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 J237181

Bay Head Road Annex
NSWC Annapolis
Maryland

December 2020

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
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TestAmerica Job ID: 320-23718-1

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

For:

AECOM Technical Services Inc.
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Attn: Kurt Vangelder

Authorized for release by:
12/9/2016 3:49:48 PM

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Qualifiers

LCMS

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

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: 320-23718-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: AECOM Technical Services Inc.

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

Report Number: 320-23718-1

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

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 applicable 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.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica West Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

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 11/19/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was -0.1 C.

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 Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonate (PFOS) with the following samples exceeded the instrument calibration range: DPT-16-17-GW-16-20 (320-23718-1), DPT-16-17-GW-31-35 (320-23718-2) and DPT-16-29-GW-16-20 (320-23718-5). These samples have been run at a dilution and both sets of data have been reported.

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

Job ID: 320-23718-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

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: 320-23718-1

Client Sample ID: DPT-16-17-GW-16-20 — Lab Sample ID: 320-23718-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.44	E	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.23		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.49	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.22	D M	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.061	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-17-GW-31-35 — Lab Sample ID: 320-23718-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.42	E	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.26	M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.063		0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.45	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.26	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.037	D	0.025	0.0091	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-29-SO-14-15 — Lab Sample ID: 320-23718-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.49	J	0.61	0.13	ug/Kg	1	☼	537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.5		0.61	0.15	ug/Kg	1	☼	537 (Modified)	Total/NA

Client Sample ID: DPT-16-29-GW-31-35 — Lab Sample ID: 320-23718-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.15		0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.14		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-29-GW-16-20 — Lab Sample ID: 320-23718-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	M E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.29	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.1	D M	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.062	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-17-GW-16-20 — Lab Sample ID: 320-23718-1

Date Collected: 11/17/16 14:00 **Matrix: Water**
Date Received: 11/19/16 09:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.44	E	0.0025	0.00075	ug/L		11/22/16 11:44	12/07/16 15:18	1
Perfluorooctane Sulfonate (PFOS)	0.23		0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 15:18	1
Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.00092	ug/L		11/22/16 11:44	12/07/16 15:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*69*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:18*	*1*
13C4 PFOS	*109*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:18*	*1*
18O2 PFHxS	*66*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:18*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.49	D	0.025	0.0075	ug/L		11/22/16 11:44	12/03/16 19:11	10
Perfluorooctane Sulfonate (PFOS)	0.22	D M	0.040	0.013	ug/L		11/22/16 11:44	12/03/16 19:11	10
Perfluorobutanesulfonic acid (PFBS)	0.061	D	0.025	0.0092	ug/L		11/22/16 11:44	12/03/16 19:11	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*74*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:11*	*10*
13C4 PFOS	*99*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:11*	*10*
18O2 PFHxS	*100*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:11*	*10*

Client Sample ID: DPT-16-17-GW-31-35 — Lab Sample ID: 320-23718-2

Date Collected: 11/17/16 14:35 **Matrix: Water**
Date Received: 11/19/16 09:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.42	E	0.0025	0.00075	ug/L		11/22/16 11:44	12/07/16 15:26	1
Perfluorooctane Sulfonate (PFOS)	0.26	M	0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 15:26	1
Perfluorobutanesulfonic acid (PFBS)	0.063		0.0025	0.00091	ug/L		11/22/16 11:44	12/07/16 15:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*70*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:26*	*1*
13C4 PFOS	*110*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:26*	*1*
18O2 PFHxS	*71*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:26*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.45	D	0.025	0.0075	ug/L		11/22/16 11:44	12/03/16 19:18	10
Perfluorooctane Sulfonate (PFOS)	0.26	D	0.040	0.013	ug/L		11/22/16 11:44	12/03/16 19:18	10
Perfluorobutanesulfonic acid (PFBS)	0.037	D	0.025	0.0091	ug/L		11/22/16 11:44	12/03/16 19:18	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*99*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:18*	*10*
13C4 PFOS	*114*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:18*	*10*
18O2 PFHxS	*117*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:18*	*10*

Client Sample ID: DPT-16-29-SO-14-15 — Lab Sample ID: 320-23718-3

Date Collected: 11/18/16 13:16 — **Matrix: Solid**
Date Received: 11/19/16 09:00 — **Percent Solids: 81.4**

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.49	J	0.61	0.13	ug/Kg	☼	11/28/16 11:03	12/02/16 15:29	1
Perfluorooctane Sulfonate (PFOS)	1.5		0.61	0.15	ug/Kg	☼	11/28/16 11:03	12/02/16 15:29	1
Perfluorobutanesulfonic acid (PFBS)	0.37	U	0.49	0.13	ug/Kg	☼	11/28/16 11:03	12/02/16 15:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*98*		*25 - 150*	*11/28/16 11:03*	*12/02/16 15:29*	*1*
13C4 PFOS	*77*		*25 - 150*	*11/28/16 11:03*	*12/02/16 15:29*	*1*
18O2 PFHxS	*91*		*25 - 150*	*11/28/16 11:03*	*12/02/16 15:29*	*1*

Client Sample ID: DPT-16-29-GW-31-35 — Lab Sample ID: 320-23718-4

Date Collected: 11/18/16 15:05 — **Matrix: Water**
Date Received: 11/19/16 09:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.15		0.0025	0.00075	ug/L		11/22/16 11:44	12/07/16 15:33	1
Perfluorooctane Sulfonate (PFOS)	0.14		0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 15:33	1
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00092	ug/L		11/22/16 11:44	12/07/16 15:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*64*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:33*	*1*
13C4 PFOS	*107*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:33*	*1*
18O2 PFHxS	*83*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:33*	*1*

Client Sample ID: DPT-16-29-GW-16-20 — Lab Sample ID: 320-23718-5

Date Collected: 11/18/16 15:20 — **Matrix: Water**
Date Received: 11/19/16 09:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.00075	ug/L		11/22/16 11:44	12/07/16 15:41	1
Perfluorooctane Sulfonate (PFOS)	1.6	M E	0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 15:41	1
Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.00092	ug/L		11/22/16 11:44	12/07/16 15:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*63*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:41*	*1*
13C4 PFOS	*60*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:41*	*1*
18O2 PFHxS	*62*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:41*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.29	D	0.025	0.0075	ug/L		11/22/16 11:44	12/03/16 19:26	10
Perfluorooctane Sulfonate (PFOS)	2.1	D M	0.040	0.013	ug/L		11/22/16 11:44	12/03/16 19:26	10
Perfluorobutanesulfonic acid (PFBS)	0.062	D	0.025	0.0092	ug/L		11/22/16 11:44	12/03/16 19:26	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*80*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:26*	*10*
13C4 PFOS	*93*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:26*	*10*
18O2 PFHxS	*98*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:26*	*10*

Isotope Dilution Summary

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

TestAmerica Job ID: 320-23718-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	3C4 PFO/ (25-150)	3C4 PFOS (25-150)	3O2 PFHx (25-150)						
320-23718-3	DPT-16-29-SO-14-15	98	77	91						
320-23718-3 MS	DPT-16-29-SO-14-15-MS	103	91	105						
320-23718-3 MSD	DPT-16-29-SO-14-15-MSD	93	79	94						
LCS 320-139627/2-A	Lab Control Sample	119	112	120						
MB 320-139627/1-A	Method Blank	108	94	104						

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 PFO/ (25-150)	3C4 PFOS (25-150)	3O2 PFHx (25-150)						
320-23718-1 - DL	DPT-16-17-GW-16-20	74	99	100						
320-23718-1	DPT-16-17-GW-16-20	69	109	66						
320-23718-2 - DL	DPT-16-17-GW-31-35	99	114	117						
320-23718-2	DPT-16-17-GW-31-35	70	110	71						
320-23718-4	DPT-16-29-GW-31-35	64	107	83						
320-23718-5 - DL	DPT-16-29-GW-16-20	80	93	98						
320-23718-5	DPT-16-29-GW-16-20	63	60	62						
LCS 320-139076/2-A	Lab Control Sample	118	118	120						
LCSD 320-139076/3-A	Lab Control Sample Dup	120	120	117						
MB 320-139076/1-A	Method Blank	112	103	107						

Surrogate Legend

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

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-139076/1-A
Matrix: Water
Analysis Batch: 141054

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 139076

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		11/22/16 11:44	12/07/16 14:55	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 14:55	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		11/22/16 11:44	12/07/16 14:55	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*112*		*25 - 150*	*11/22/16 11:44*	*12/07/16 14:55*	*1*
13C4 PFOS	*103*		*25 - 150*	*11/22/16 11:44*	*12/07/16 14:55*	*1*
18O2 PFHxS	*107*		*25 - 150*	*11/22/16 11:44*	*12/07/16 14:55*	*1*

Lab Sample ID: LCS 320-139076/2-A
Matrix: Water
Analysis Batch: 141054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 139076

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0420		ug/L		105	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0394		ug/L		106	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0415		ug/L		117	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*118*		*25 - 150*
13C4 PFOS	*118*		*25 - 150*
18O2 PFHxS	*120*		*25 - 150*

Lab Sample ID: LCSD 320-139076/3-A
Matrix: Water
Analysis Batch: 141054

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 139076

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0400	0.0408		ug/L		102	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0386		ug/L		104	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0412		ug/L		117	50 - 150	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOA	*120*		*25 - 150*
13C4 PFOS	*120*		*25 - 150*
18O2 PFHxS	*117*		*25 - 150*

Lab Sample ID: MB 320-139627/1-A
Matrix: Solid
Analysis Batch: 140429

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 139627

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		11/28/16 11:03	12/02/16 14:59	1
Perfluorooctane Sulfonate (PFOS)	0.30	U	0.50	0.13	ug/Kg		11/28/16 11:03	12/02/16 14:59	1
Perfluorobutanesulfonic acid (PFBS)	0.30	U	0.40	0.10	ug/Kg		11/28/16 11:03	12/02/16 14:59	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	108		25 - 150	11/28/16 11:03	12/02/16 14:59	1
13C4 PFOS	94		25 - 150	11/28/16 11:03	12/02/16 14:59	1
18O2 PFHxS	104		25 - 150	11/28/16 11:03	12/02/16 14:59	1

Lab Sample ID: LCS 320-139627/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 140429 — **Prep Batch: 139627**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	4.00	4.25		ug/Kg		106	60 - 140
Perfluorooctane Sulfonate (PFOS)	3.71	3.66		ug/Kg		99	60 - 140
Perfluorobutanesulfonic acid (PFBS)	3.54	4.03		ug/Kg		114	50 - 150

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFOA	119		25 - 150
13C4 PFOS	112		25 - 150
18O2 PFHxS	120		25 - 150

Lab Sample ID: 320-23718-3 MS — **Client Sample ID: DPT-16-29-SO-14-15-MS**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 140429 — **Prep Batch: 139627**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.49	J	4.90	5.53		ug/Kg	☼	103	60 - 140
Perfluorooctane Sulfonate (PFOS)	1.5		4.55	5.71	M	ug/Kg	☼	93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.37	U	4.33	4.78		ug/Kg	☼	110	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA	103		25 - 150
13C4 PFOS	91		25 - 150
18O2 PFHxS	105		25 - 150

Lab Sample ID: 320-23718-3 MSD — **Client Sample ID: DPT-16-29-SO-14-15-MSD**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 140429 — **Prep Batch: 139627**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.49	J	4.83	5.37		ug/Kg	☼	101	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS)	1.5		4.49	5.57	M	ug/Kg	☼	91	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	0.37	U	4.27	4.71		ug/Kg	☼	110	50 - 150	2	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA	93		25 - 150
13C4 PFOS	79		25 - 150
18O2 PFHxS	94		25 - 150

LCMS

Prep Batch: 139076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-1	DPT-16-17-GW-16-20	Total/NA	Water	3535	
320-23718-1 - DL	DPT-16-17-GW-16-20	Total/NA	Water	3535	
320-23718-2	DPT-16-17-GW-31-35	Total/NA	Water	3535	
320-23718-2 - DL	DPT-16-17-GW-31-35	Total/NA	Water	3535	
320-23718-4	DPT-16-29-GW-31-35	Total/NA	Water	3535	
320-23718-5	DPT-16-29-GW-16-20	Total/NA	Water	3535	
320-23718-5 - DL	DPT-16-29-GW-16-20	Total/NA	Water	3535	
MB 320-139076/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-139076/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-139076/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 139627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-3	DPT-16-29-SO-14-15	Total/NA	Solid	SHAKE	
MB 320-139627/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-139627/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-23718-3 MS	DPT-16-29-SO-14-15-MS	Total/NA	Solid	SHAKE	
320-23718-3 MSD	DPT-16-29-SO-14-15-MSD	Total/NA	Solid	SHAKE	

Analysis Batch: 140429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-3	DPT-16-29-SO-14-15	Total/NA	Solid	537 (Modified)	139627
MB 320-139627/1-A	Method Blank	Total/NA	Solid	537 (Modified)	139627
LCS 320-139627/2-A	Lab Control Sample	Total/NA	Solid	537 (Modified)	139627
320-23718-3 MS	DPT-16-29-SO-14-15-MS	Total/NA	Solid	537 (Modified)	139627
320-23718-3 MSD	DPT-16-29-SO-14-15-MSD	Total/NA	Solid	537 (Modified)	139627

Analysis Batch: 140675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-1 - DL	DPT-16-17-GW-16-20	Total/NA	Water	537 (Modified)	139076
320-23718-2 - DL	DPT-16-17-GW-31-35	Total/NA	Water	537 (Modified)	139076
320-23718-5 - DL	DPT-16-29-GW-16-20	Total/NA	Water	537 (Modified)	139076

Analysis Batch: 141054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-1	DPT-16-17-GW-16-20	Total/NA	Water	537 (Modified)	139076
320-23718-2	DPT-16-17-GW-31-35	Total/NA	Water	537 (Modified)	139076
320-23718-4	DPT-16-29-GW-31-35	Total/NA	Water	537 (Modified)	139076
320-23718-5	DPT-16-29-GW-16-20	Total/NA	Water	537 (Modified)	139076
MB 320-139076/1-A	Method Blank	Total/NA	Water	537 (Modified)	139076
LCS 320-139076/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	139076
LCSD 320-139076/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	139076

General Chemistry

Analysis Batch: 140225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-3	DPT-16-29-SO-14-15	Total/NA	Solid	D 2216	
320-23718-3 DU	DPT-16-29-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: 320-23718-1

Client Sample ID: DPT-16-17-GW-16-20

Lab Sample ID: 320-23718-1
Date Collected: 11/17/16 14:00
Matrix: Water
Date Received: 11/19/16 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		249.4 mL	0.5 mL	139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			140675	12/03/16 19:11	SBC	TAL SAC
Total/NA	Prep	3535			249.4 mL	0.5 mL	139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1			141054	12/07/16 15:18	SBC	TAL SAC

Client Sample ID: DPT-16-17-GW-31-35

Lab Sample ID: 320-23718-2
Date Collected: 11/17/16 14:35
Matrix: Water
Date Received: 11/19/16 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		250.9 mL	0.5 mL	139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			140675	12/03/16 19:18	SBC	TAL SAC
Total/NA	Prep	3535			250.9 mL	0.5 mL	139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1			141054	12/07/16 15:26	SBC	TAL SAC

Client Sample ID: DPT-16-29-SO-14-15

Lab Sample ID: 320-23718-3
Date Collected: 11/18/16 13:16
Matrix: Solid
Date Received: 11/19/16 09:00

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			140225	12/01/16 13:50	KSL	TAL SAC

Client Sample ID: DPT-16-29-SO-14-15

Lab Sample ID: 320-23718-3
Date Collected: 11/18/16 13:16
Matrix: Solid
Date Received: 11/19/16 09:00
Percent Solids: 81.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.00 g	1.00 mL	139627	11/28/16 11:03	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1			140429	12/02/16 15:29	SBC	TAL SAC

Client Sample ID: DPT-16-29-GW-31-35

Lab Sample ID: 320-23718-4
Date Collected: 11/18/16 15:05
Matrix: Water
Date Received: 11/19/16 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			249.2 mL	0.5 mL	139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1			141054	12/07/16 15:33	SBC	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-23718-1

Client Sample ID: DPT-16-29-GW-16-20
Date Collected: 11/18/16 15:20
Date Received: 11/19/16 09:00

Lab Sample ID: 320-23718-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		250.4 mL	0.5 mL	139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			140675	12/03/16 19:26	SBC	TAL SAC
Total/NA	Prep	3535			250.4 mL	0.5 mL	139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1			141054	12/07/16 15:41	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: 320-23718-1
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: 320-23718-1

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: 320-23718-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23718-1	DPT-16-17-GW-16-20	Water	11/17/16 14:00	11/19/16 09:00
320-23718-2	DPT-16-17-GW-31-35	Water	11/17/16 14:35	11/19/16 09:00
320-23718-3	DPT-16-29-SO-14-15	Solid	11/18/16 13:16	11/19/16 09:00
320-23718-4	DPT-16-29-GW-31-35	Water	11/18/16 15:05	11/19/16 09:00
320-23718-5	DPT-16-29-GW-16-20	Water	11/18/16 15:20	11/19/16 09:00

Chain of Custody Record

Temperature on Receipt ~0.1°

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM		11/18/16	299018
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 KELLMAN	
Project Name and Location (State)	**Carrier/Waybill Number**		
FORMER BAY HEAD RD ANNEX	FEDEX		
Contract/Purchase Order/Quote No.			
KURT VANGELDER			

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-16-17-GW-16-20	11/17/16	1400		✓			2						✓	✓	✓
DPT-16-17-GW-31-35	11/17/16	1435		✓			2						✓	✓	✓
DPT-16-29-SO-14-15	11/18/16	1316				✓	1						✓	✓	✓
DPT-16-29-SO-14-15-MS	↓	↓				✓	1						✓	✓	✓
DPT-16-29-SO-14-15-MSD	↓	↓				✓	1						✓	✓	✓
DPT-16-29-GW-31-35	11/18/16	1505		✓			2						✓	✓	✓
DPT-16-29-GW-16-20	11/18/16	1520		✓			2						✓	✓	✓

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

320-23718 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
1. Relinquished By: AECOM	11/18/16	1700
2. Relinquished By:		
3. Relinquished By:		

	Date	Time
1. Received By: TRANSFER TO FEDEX	11/18/16	1720
2. Received By: TAWS	11/19/16	09:00
3. Received By:		

Comments

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

12/9/2016

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-23718-1

Login Number: 23718 **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.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	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.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Job Number: 320-23718-1

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
12/9/2016 3:50 PM

Jill Kellmann, Manager of Project Management
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4402
jill.kellmann@testamericainc.com
12/09/2016

Table of Contents

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Qualifiers

LCMS

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

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: 320-23718-1

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

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 applicable 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.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica West Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

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 11/19/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was -0.1 C.

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 Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonate (PFOS) with the following samples exceeded the instrument calibration range: DPT-16-17-GW-16-20 (320-23718-1), DPT-16-17-GW-31-35 (320-23718-2) and DPT-16-29-GW-16-20 (320-23718-5). These samples have been run at a dilution and both sets of data have been reported.

No 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: 320-23718-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Client Sample ID: DPT-16-17-GW-16-20 Lab Sample ID: 320-23718-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.44	E	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.23		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.49	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.22	D M	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.061	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-17-GW-31-35 Lab Sample ID: 320-23718-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.42	E	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.26	M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.063		0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.45	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.26	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.037	D	0.025	0.0091	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-29-SO-14-15 Lab Sample ID: 320-23718-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.49	J	0.61	0.13	ug/Kg	1	☼	537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.5		0.61	0.15	ug/Kg	1	☼	537 (Modified)	Total/NA

Client Sample ID: DPT-16-29-GW-31-35 Lab Sample ID: 320-23718-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.15		0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.14		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-29-GW-16-20 Lab Sample ID: 320-23718-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	M E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.29	D	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.1	D M	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.062	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-17-GW-16-20 — Lab Sample ID: 320-23718-1

Date Collected: 11/17/16 14:00 — **Matrix: Water**
Date Received: 11/19/16 09:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.44	E	0.0025	0.00075	ug/L		11/22/16 11:44	12/07/16 15:18	1
Perfluorooctane Sulfonate (PFOS)	0.23		0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 15:18	1
Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.00092	ug/L		11/22/16 11:44	12/07/16 15:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*69*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:18*	*1*
13C4 PFOS	*109*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:18*	*1*
18O2 PFHxS	*66*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:18*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.49	D	0.025	0.0075	ug/L		11/22/16 11:44	12/03/16 19:11	10
Perfluorooctane Sulfonate (PFOS)	0.22	D M	0.040	0.013	ug/L		11/22/16 11:44	12/03/16 19:11	10
Perfluorobutanesulfonic acid (PFBS)	0.061	D	0.025	0.0092	ug/L		11/22/16 11:44	12/03/16 19:11	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*74*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:11*	*10*
13C4 PFOS	*99*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:11*	*10*
18O2 PFHxS	*100*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:11*	*10*

Client Sample ID: DPT-16-17-GW-31-35 — Lab Sample ID: 320-23718-2

Date Collected: 11/17/16 14:35 — **Matrix: Water**
Date Received: 11/19/16 09:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.42	E	0.0025	0.00075	ug/L		11/22/16 11:44	12/07/16 15:26	1
Perfluorooctane Sulfonate (PFOS)	0.26	M	0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 15:26	1
Perfluorobutanesulfonic acid (PFBS)	0.063		0.0025	0.00091	ug/L		11/22/16 11:44	12/07/16 15:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*70*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:26*	*1*
13C4 PFOS	*110*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:26*	*1*
18O2 PFHxS	*71*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:26*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.45	D	0.025	0.0075	ug/L		11/22/16 11:44	12/03/16 19:18	10
Perfluorooctane Sulfonate (PFOS)	0.26	D	0.040	0.013	ug/L		11/22/16 11:44	12/03/16 19:18	10
Perfluorobutanesulfonic acid (PFBS)	0.037	D	0.025	0.0091	ug/L		11/22/16 11:44	12/03/16 19:18	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*99*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:18*	*10*
13C4 PFOS	*114*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:18*	*10*
18O2 PFHxS	*117*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:18*	*10*

Client Sample ID: DPT-16-29-SO-14-15 — Lab Sample ID: 320-23718-3

Date Collected: 11/18/16 13:16 — **Matrix: Solid**
Date Received: 11/19/16 09:00 — **Percent Solids: 81.4**

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.49	J	0.61	0.13	ug/Kg	☼	11/28/16 11:03	12/02/16 15:29	1
Perfluorooctane Sulfonate (PFOS)	1.5		0.61	0.15	ug/Kg	☼	11/28/16 11:03	12/02/16 15:29	1
Perfluorobutanesulfonic acid (PFBS)	0.37	U	0.49	0.13	ug/Kg	☼	11/28/16 11:03	12/02/16 15:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*98*		*25 - 150*	*11/28/16 11:03*	*12/02/16 15:29*	*1*
13C4 PFOS	*77*		*25 - 150*	*11/28/16 11:03*	*12/02/16 15:29*	*1*
18O2 PFHxS	*91*		*25 - 150*	*11/28/16 11:03*	*12/02/16 15:29*	*1*

Client Sample ID: DPT-16-29-GW-31-35 — Lab Sample ID: 320-23718-4

Date Collected: 11/18/16 15:05 — **Matrix: Water**
Date Received: 11/19/16 09:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.15		0.0025	0.00075	ug/L		11/22/16 11:44	12/07/16 15:33	1
Perfluorooctane Sulfonate (PFOS)	0.14		0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 15:33	1
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00092	ug/L		11/22/16 11:44	12/07/16 15:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*64*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:33*	*1*
13C4 PFOS	*107*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:33*	*1*
18O2 PFHxS	*83*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:33*	*1*

Client Sample ID: DPT-16-29-GW-16-20 — Lab Sample ID: 320-23718-5

Date Collected: 11/18/16 15:20 — **Matrix: Water**
Date Received: 11/19/16 09:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.00075	ug/L		11/22/16 11:44	12/07/16 15:41	1
Perfluorooctane Sulfonate (PFOS)	1.6	M E	0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 15:41	1
Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.00092	ug/L		11/22/16 11:44	12/07/16 15:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*63*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:41*	*1*
13C4 PFOS	*60*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:41*	*1*
18O2 PFHxS	*62*		*25 - 150*	*11/22/16 11:44*	*12/07/16 15:41*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.29	D	0.025	0.0075	ug/L		11/22/16 11:44	12/03/16 19:26	10
Perfluorooctane Sulfonate (PFOS)	2.1	D M	0.040	0.013	ug/L		11/22/16 11:44	12/03/16 19:26	10
Perfluorobutanesulfonic acid (PFBS)	0.062	D	0.025	0.0092	ug/L		11/22/16 11:44	12/03/16 19:26	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*80*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:26*	*10*
13C4 PFOS	*93*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:26*	*10*
18O2 PFHxS	*98*		*25 - 150*	*11/22/16 11:44*	*12/03/16 19:26*	*10*

Default Detection Limits

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23718-1
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: 320-23718-1
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)
320-23718-3	DPT-16-29-SO-14-15	98	77	91
320-23718-3 MS	DPT-16-29-SO-14-15-MS	103	91	105
320-23718-3 MSD	DPT-16-29-SO-14-15-MSD	93	79	94
LCS 320-139627/2-A	Lab Control Sample	119	112	120
MB 320-139627/1-A	Method Blank	108	94	104

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)
320-23718-1 - DL	DPT-16-17-GW-16-20	74	99	100
320-23718-1	DPT-16-17-GW-16-20	69	109	66
320-23718-2 - DL	DPT-16-17-GW-31-35	99	114	117
320-23718-2	DPT-16-17-GW-31-35	70	110	71
320-23718-4	DPT-16-29-GW-31-35	64	107	83
320-23718-5 - DL	DPT-16-29-GW-16-20	80	93	98
320-23718-5	DPT-16-29-GW-16-20	63	60	62
LCS 320-139076/2-A	Lab Control Sample	118	118	120
LCSD 320-139076/3-A	Lab Control Sample Dup	120	120	117
MB 320-139076/1-A	Method Blank	112	103	107

Surrogate Legend

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

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-139076/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 141054 — **Prep Batch: 139076**

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		11/22/16 11:44	12/07/16 14:55	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		11/22/16 11:44	12/07/16 14:55	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		11/22/16 11:44	12/07/16 14:55	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*112*		*25 - 150*	*11/22/16 11:44*	*12/07/16 14:55*	*1*
13C4 PFOS	*103*		*25 - 150*	*11/22/16 11:44*	*12/07/16 14:55*	*1*
18O2 PFHxS	*107*		*25 - 150*	*11/22/16 11:44*	*12/07/16 14:55*	*1*

Lab Sample ID: LCS 320-139076/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 141054 — **Prep Batch: 139076**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0420		ug/L		105	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0394		ug/L		106	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0415		ug/L		117	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*118*		*25 - 150*
13C4 PFOS	*118*		*25 - 150*
18O2 PFHxS	*120*		*25 - 150*

Lab Sample ID: LCSD 320-139076/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 141054 — **Prep Batch: 139076**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0400	0.0408		ug/L		102	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0386		ug/L		104	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0412		ug/L		117	50 - 150	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOA	*120*		*25 - 150*
13C4 PFOS	*120*		*25 - 150*
18O2 PFHxS	*117*		*25 - 150*

Lab Sample ID: MB 320-139627/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 140429 — **Prep Batch: 139627**

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		11/28/16 11:03	12/02/16 14:59	1
Perfluorooctane Sulfonate (PFOS)	0.30	U	0.50	0.13	ug/Kg		11/28/16 11:03	12/02/16 14:59	1
Perfluorobutanesulfonic acid (PFBS)	0.30	U	0.40	0.10	ug/Kg		11/28/16 11:03	12/02/16 14:59	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	108		25 - 150	11/28/16 11:03	12/02/16 14:59	1
13C4 PFOS	94		25 - 150	11/28/16 11:03	12/02/16 14:59	1
18O2 PFHxS	104		25 - 150	11/28/16 11:03	12/02/16 14:59	1

Lab Sample ID: LCS 320-139627/2-A

Client Sample ID: Lab Control Sample

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 140429

Prep Batch: 139627

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	4.00	4.25		ug/Kg		106	60 - 140
Perfluorooctane Sulfonate (PFOS)	3.71	3.66		ug/Kg		99	60 - 140
Perfluorobutanesulfonic acid (PFBS)	3.54	4.03		ug/Kg		114	50 - 150

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFOA	119		25 - 150
13C4 PFOS	112		25 - 150
18O2 PFHxS	120		25 - 150

Lab Sample ID: 320-23718-3 MS

Client Sample ID: DPT-16-29-SO-14-15-MS

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 140429

Prep Batch: 139627

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.49	J	4.90	5.53		ug/Kg	☼	103	60 - 140
Perfluorooctane Sulfonate (PFOS)	1.5		4.55	5.71	M	ug/Kg	☼	93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.37	U	4.33	4.78		ug/Kg	☼	110	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA	103		25 - 150
13C4 PFOS	91		25 - 150
18O2 PFHxS	105		25 - 150

Lab Sample ID: 320-23718-3 MSD

Client Sample ID: DPT-16-29-SO-14-15-MSD

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 140429

Prep Batch: 139627

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.49	J	4.83	5.37		ug/Kg	☼	101	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS)	1.5		4.49	5.57	M	ug/Kg	☼	91	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	0.37	U	4.27	4.71		ug/Kg	☼	110	50 - 150	2	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA	93		25 - 150
13C4 PFOS	79		25 - 150
18O2 PFHxS	94		25 - 150

LCMS

Prep Batch: 139076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-1	DPT-16-17-GW-16-20	Total/NA	Water	3535	
320-23718-1 - DL	DPT-16-17-GW-16-20	Total/NA	Water	3535	
320-23718-2	DPT-16-17-GW-31-35	Total/NA	Water	3535	
320-23718-2 - DL	DPT-16-17-GW-31-35	Total/NA	Water	3535	
320-23718-4	DPT-16-29-GW-31-35	Total/NA	Water	3535	
320-23718-5 - DL	DPT-16-29-GW-16-20	Total/NA	Water	3535	
320-23718-5	DPT-16-29-GW-16-20	Total/NA	Water	3535	
MB 320-139076/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-139076/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-139076/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 139627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-3	DPT-16-29-SO-14-15	Total/NA	Solid	SHAKE	
MB 320-139627/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-139627/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-23718-3 MS	DPT-16-29-SO-14-15-MS	Total/NA	Solid	SHAKE	
320-23718-3 MSD	DPT-16-29-SO-14-15-MSD	Total/NA	Solid	SHAKE	

Analysis Batch: 140429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-3	DPT-16-29-SO-14-15	Total/NA	Solid	537 (Modified)	139627
MB 320-139627/1-A	Method Blank	Total/NA	Solid	537 (Modified)	139627
LCS 320-139627/2-A	Lab Control Sample	Total/NA	Solid	537 (Modified)	139627
320-23718-3 MS	DPT-16-29-SO-14-15-MS	Total/NA	Solid	537 (Modified)	139627
320-23718-3 MSD	DPT-16-29-SO-14-15-MSD	Total/NA	Solid	537 (Modified)	139627

Analysis Batch: 140675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-1 - DL	DPT-16-17-GW-16-20	Total/NA	Water	537 (Modified)	139076
320-23718-2 - DL	DPT-16-17-GW-31-35	Total/NA	Water	537 (Modified)	139076
320-23718-5 - DL	DPT-16-29-GW-16-20	Total/NA	Water	537 (Modified)	139076

Analysis Batch: 141054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-1	DPT-16-17-GW-16-20	Total/NA	Water	537 (Modified)	139076
320-23718-2	DPT-16-17-GW-31-35	Total/NA	Water	537 (Modified)	139076
320-23718-4	DPT-16-29-GW-31-35	Total/NA	Water	537 (Modified)	139076
320-23718-5	DPT-16-29-GW-16-20	Total/NA	Water	537 (Modified)	139076
MB 320-139076/1-A	Method Blank	Total/NA	Water	537 (Modified)	139076
LCS 320-139076/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	139076
LCSD 320-139076/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	139076

General Chemistry

Analysis Batch: 140225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23718-3	DPT-16-29-SO-14-15	Total/NA	Solid	D 2216	
320-23718-3 DU	DPT-16-29-SO-14-15	Total/NA	Solid	D 2216	

Client Sample ID: DPT-16-17-GW-16-20 — Lab Sample ID: 320-23718-1

Date Collected: 11/17/16 14:00 — **Matrix: Water**
Date Received: 11/19/16 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	140675	12/03/16 19:11	SBC	TAL SAC
Total/NA	Prep	3535			139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1	141054	12/07/16 15:18	SBC	TAL SAC

Client Sample ID: DPT-16-17-GW-31-35 — Lab Sample ID: 320-23718-2

Date Collected: 11/17/16 14:35 — **Matrix: Water**
Date Received: 11/19/16 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	140675	12/03/16 19:18	SBC	TAL SAC
Total/NA	Prep	3535			139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1	141054	12/07/16 15:26	SBC	TAL SAC

Client Sample ID: DPT-16-29-SO-14-15 — Lab Sample ID: 320-23718-3

Date Collected: 11/18/16 13:16 — **Matrix: Solid**
Date Received: 11/19/16 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	140225	12/01/16 13:50	KSL	TAL SAC

Client Sample ID: DPT-16-29-SO-14-15 — Lab Sample ID: 320-23718-3

Date Collected: 11/18/16 13:16 — **Matrix: Solid**
Date Received: 11/19/16 09:00 — **Percent Solids: 81.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			139627	11/28/16 11:03	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1	140429	12/02/16 15:29	SBC	TAL SAC

Client Sample ID: DPT-16-29-GW-31-35 — Lab Sample ID: 320-23718-4

Date Collected: 11/18/16 15:05 — **Matrix: Water**
Date Received: 11/19/16 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1	141054	12/07/16 15:33	SBC	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-23718-1

Client Sample ID: DPT-16-29-GW-16-20

Date Collected: 11/18/16 15:20
Date Received: 11/19/16 09:00

Lab Sample ID: 320-23718-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	140675	12/03/16 19:26	SBC	TAL SAC
Total/NA	Prep	3535			139076	11/22/16 11:44	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1	141054	12/07/16 15:41	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: 320-23718-1
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: 320-23718-1
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: 320-23718-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23718-1	DPT-16-17-GW-16-20	Water	11/17/16 14:00	11/19/16 09:00
320-23718-2	DPT-16-17-GW-31-35	Water	11/17/16 14:35	11/19/16 09:00
320-23718-3	DPT-16-29-SO-14-15	Solid	11/18/16 13:16	11/19/16 09:00
320-23718-4	DPT-16-29-GW-31-35	Water	11/18/16 15:05	11/19/16 09:00
320-23718-5	DPT-16-29-GW-16-20	Water	11/18/16 15:20	11/19/16 09:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

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

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 140429

Lab Sample ID: 320-23718-3 MS Client Sample ID: DPT-16-29-SO-14-15-MS MS

Date Analyzed: 12/02/16 15:37 Lab File ID: 02DEC2016C_006.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.26	Baseline	chandrasenas	12/04/16 18:20

Lab Sample ID: 320-23718-3 MSD Client Sample ID: DPT-16-29-SO-14-15-MSD MSD

Date Analyzed: 12/02/16 15:44 Lab File ID: 02DEC2016C_007.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.27	Baseline	chandrasenas	12/04/16 18:21

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 140564

Lab Sample ID: IC 320-140564/4 Client Sample ID:

Date Analyzed: 12/03/16 13:48 Lab File ID: 03DEC2016A_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	3.28	Incomplete Integration	chandrasenas	12/05/16 09:42
Perfluoroundecanoic acid (PFUnA)	3.97	Incomplete Integration	chandrasenas	12/05/16 09:42

Lab Sample ID: IC 320-140564/7 Client Sample ID:

Date Analyzed: 12/03/16 14:11 Lab File ID: 03DEC2016A_007.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.53	Baseline	chandrasenas	12/05/16 09:41
Perfluorooctanoic acid (PFOA)	2.89	Baseline	chandrasenas	12/05/16 09:41

Lab Sample ID: IC 320-140564/9 Client Sample ID:

Date Analyzed: 12/03/16 14:26 Lab File ID: 03DEC2016A_009.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorotridecanoic Acid (PFTriA)	4.50	Incomplete Integration	chandrasenas	12/05/16 09:44

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 140675

Lab Sample ID: CCV 320-140675/2 Client Sample ID:

Date Analyzed: 12/03/16 18:48 Lab File ID: 03DEC2016C_002.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.50	Baseline	chandrasenas	12/06/16 15:46

Lab Sample ID: 320-23718-1 DL Client Sample ID: DPT-16-17-GW-16-20 DL

Date Analyzed: 12/03/16 19:11 Lab File ID: 03DEC2016C_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.21	Baseline	chandrasenas	12/06/16 15:48

Lab Sample ID: 320-23718-5 DL Client Sample ID: DPT-16-29-GW-16-20 DL

Date Analyzed: 12/03/16 19:26 Lab File ID: 03DEC2016C_007.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.21	Baseline	chandrasenas	12/06/16 15:49

Lab Sample ID: CCV 320-140675/16 Client Sample ID:

Date Analyzed: 12/03/16 20:33 Lab File ID: 03DEC2016C_016.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.49	Baseline	chandrasenas	12/06/16 15:54
Perfluorooctanoic acid (PFOA)	2.83	Baseline	chandrasenas	12/06/16 15:54

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 141054

Lab Sample ID: 320-23718-2 Client Sample ID: DPT-16-17-GW-31-35

Date Analyzed: 12/07/16 15:26 Lab File ID: 07DEC2016A_026.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.17	Baseline	chandrasenas	12/07/16 17:07

Lab Sample ID: 320-23718-5 Client Sample ID: DPT-16-29-GW-16-20

Date Analyzed: 12/07/16 15:41 Lab File ID: 07DEC2016A_028.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.17	Baseline	chandrasenas	12/07/16 17:09

537 (Modified)

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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.: 320-23718-1

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-L4_00023	02/01/17	09/30/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00045	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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

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	100 uL	Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctane Sulfonate (PFOS)	18.56 ng/mL
.LCMPFCSU_00045	03/01/17	08/31/16	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	LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctane Sulfonate (PFOS)	0.928 ug/mL
..LCPFBS_00004	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCPFC-L5_00020	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid	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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

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

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SDG No.:

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

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SDG No.:

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

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SDG No.:

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

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SDG No.:

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

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SDG No.:

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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19		WELLINGTON, Lot dNEtFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17		WELLINGTON, Lot M262FTS0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17		WELLINGTON, Lot M282FTS0414		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCIC_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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	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
					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_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

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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
					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
LCPFCSP_00070	05/15/17	11/15/16	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_00009	100 uL	Perfluoroheptane Sulfonate	0.476 ug/mL
							Perfluoroheptanesulfonic Acid	0.476 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxA_00004	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA_00006	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
					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_00005	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_00009	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_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(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_00005	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

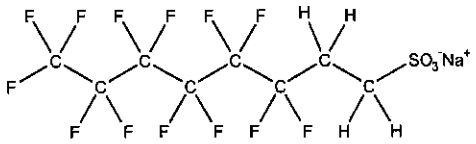
WELLINGTON LABORATORIES

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
B.G. Chittim (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

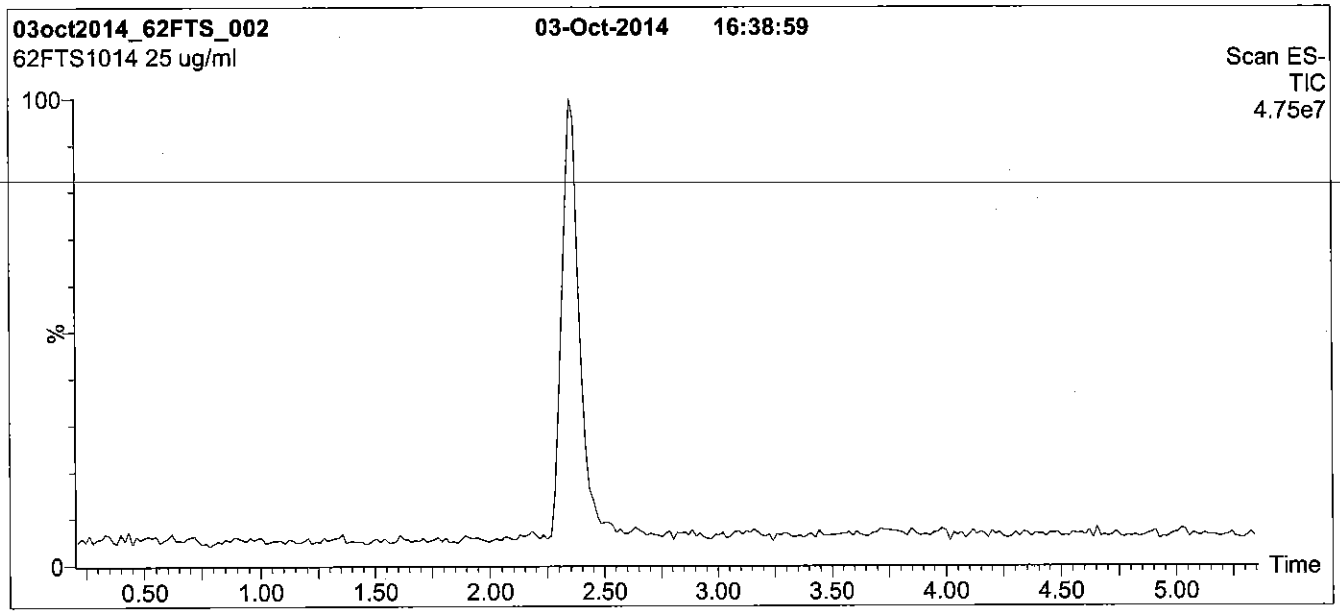
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

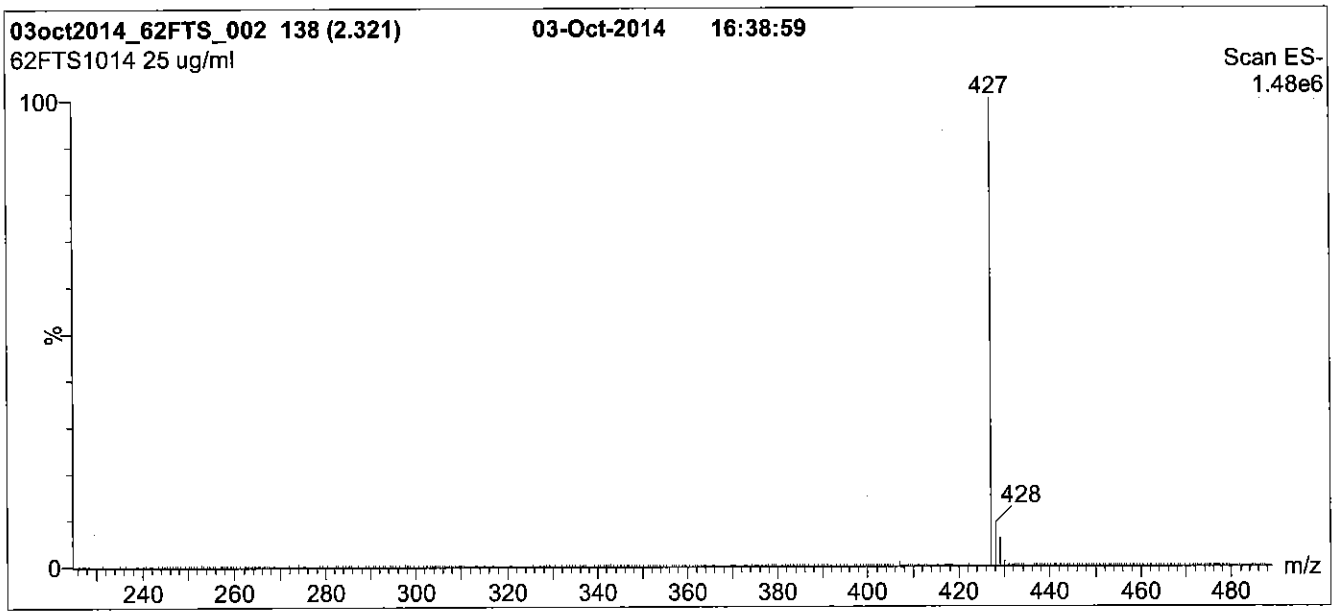
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO Guide 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

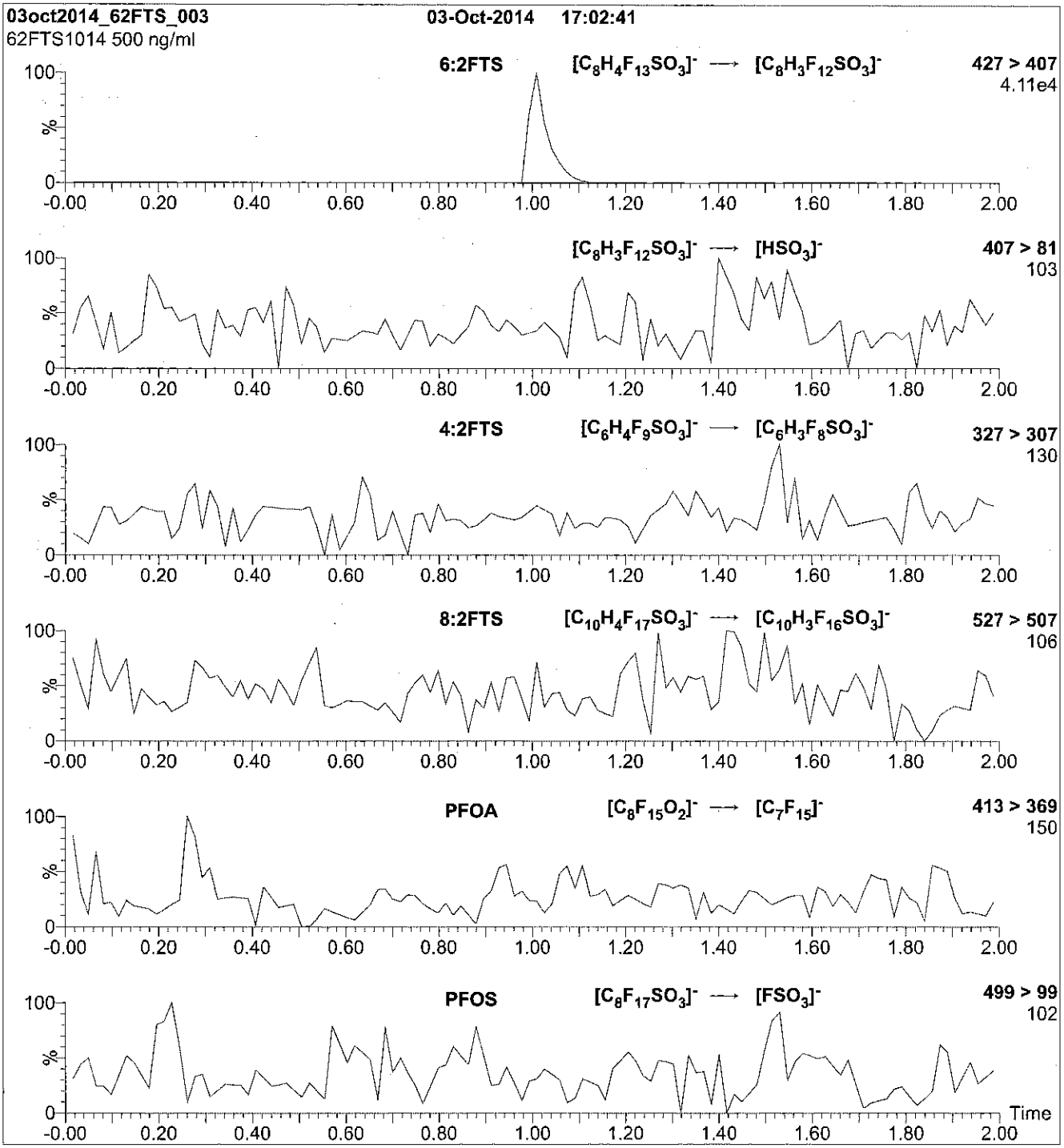
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LC6:2FTS_00002

R: 8/23/16 SBC

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

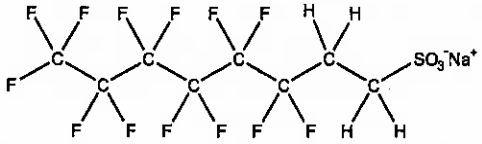
WELLINGTON LABORATORIES

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

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

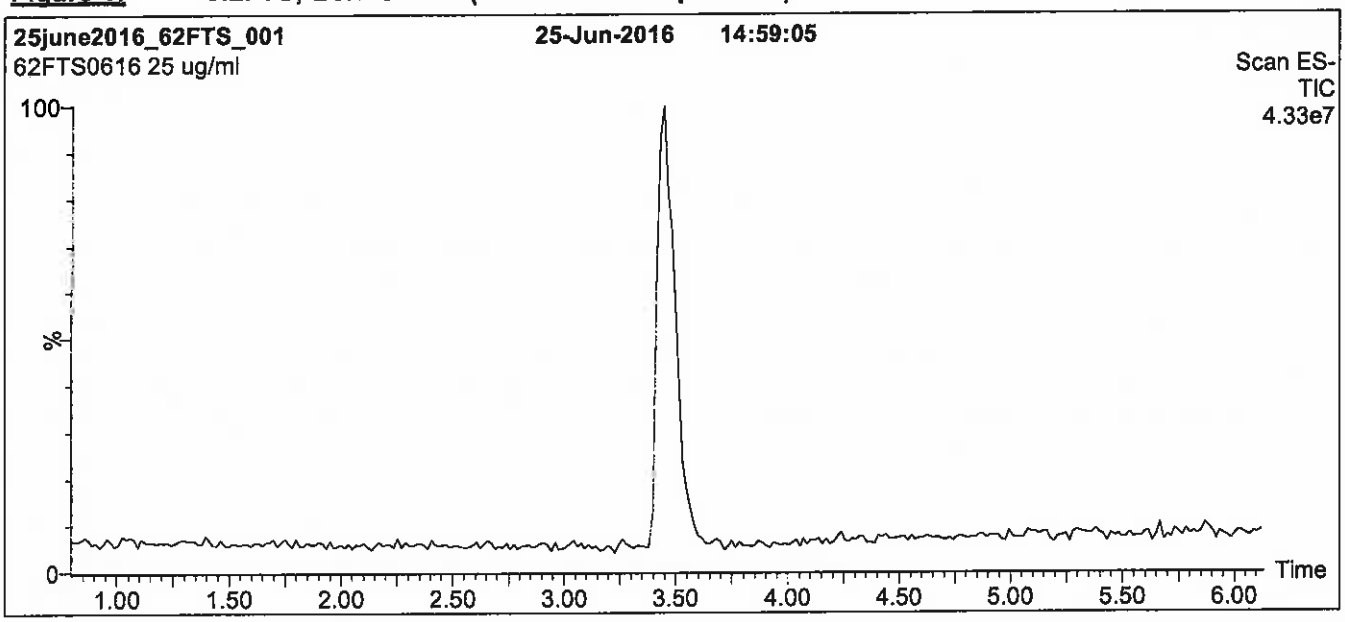
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

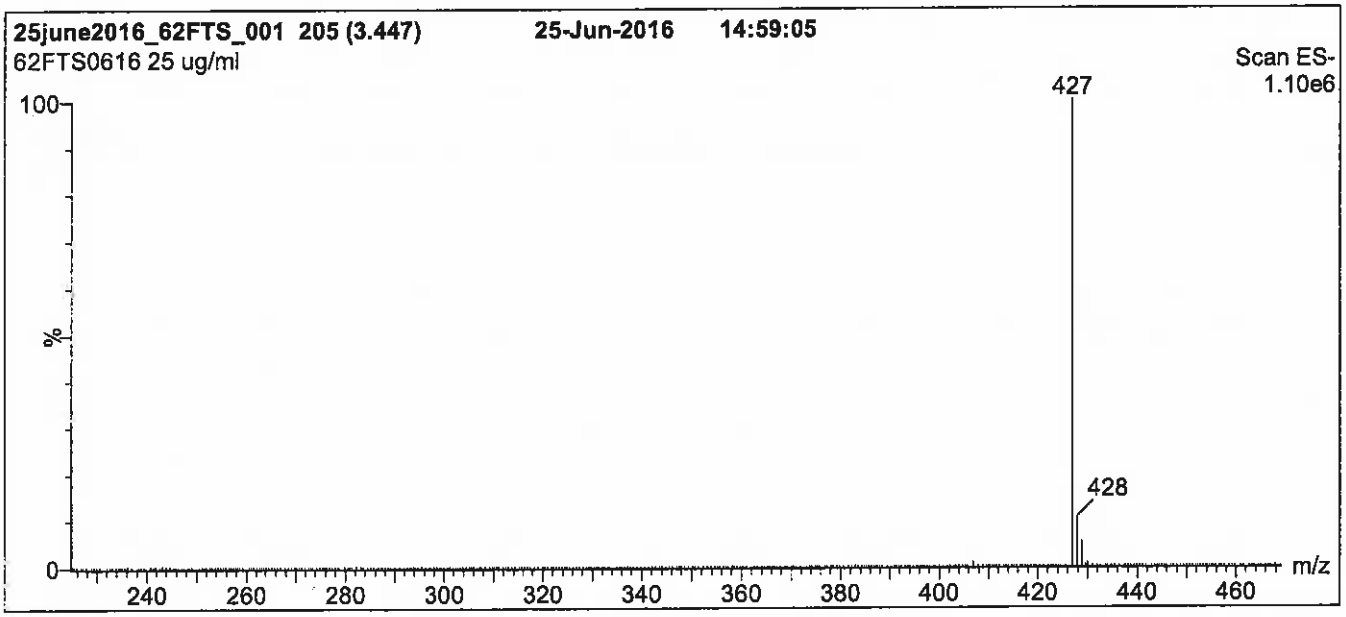
CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

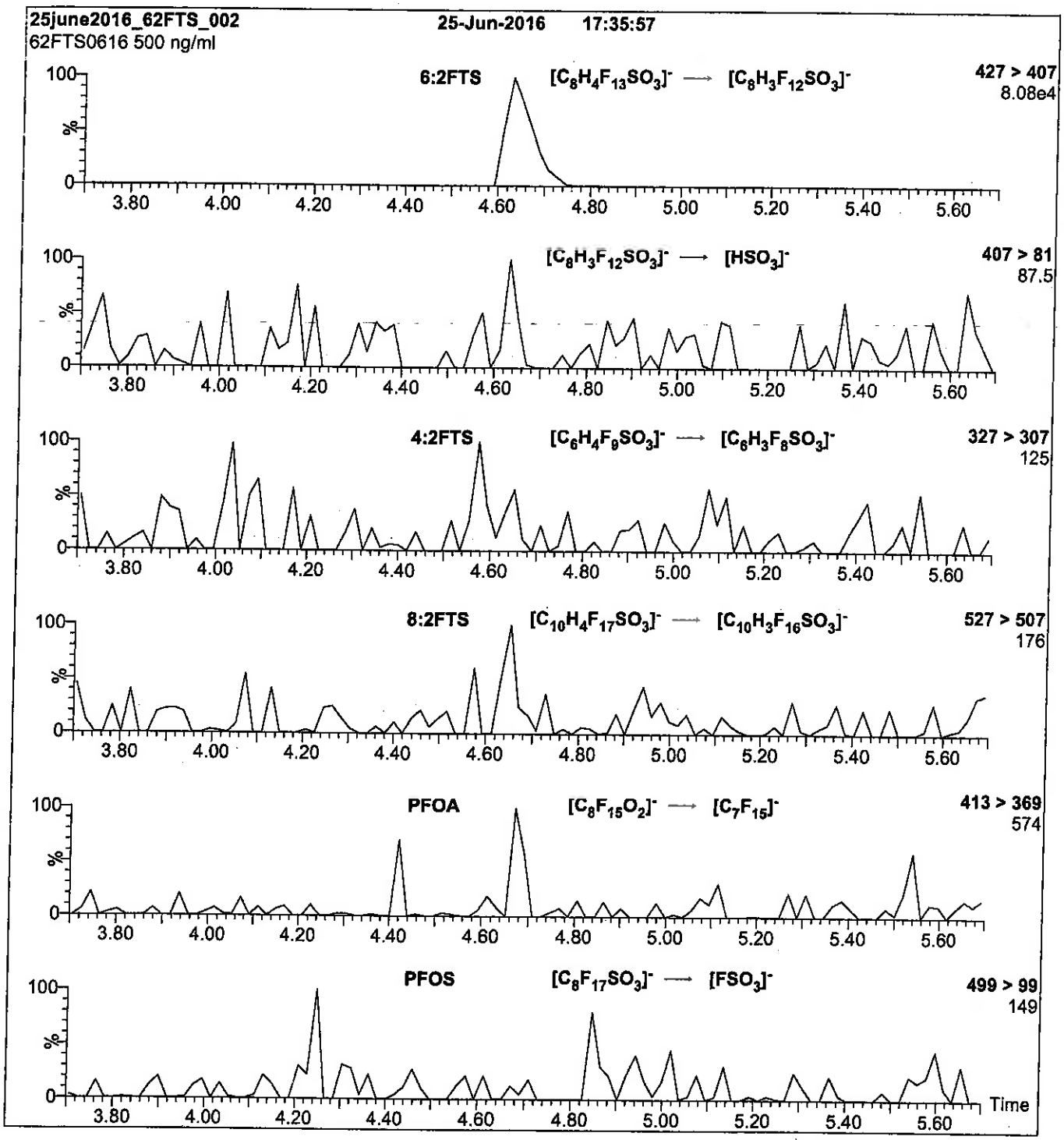
Flow: 300 µl/min

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

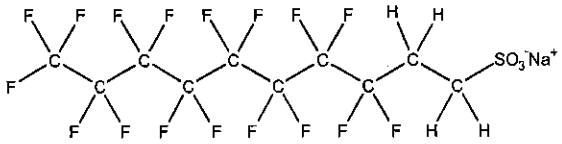
WELLINGTON LABORATORIES

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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

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UNCERTAINTY:

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

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

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

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

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

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LIMITED WARRANTY:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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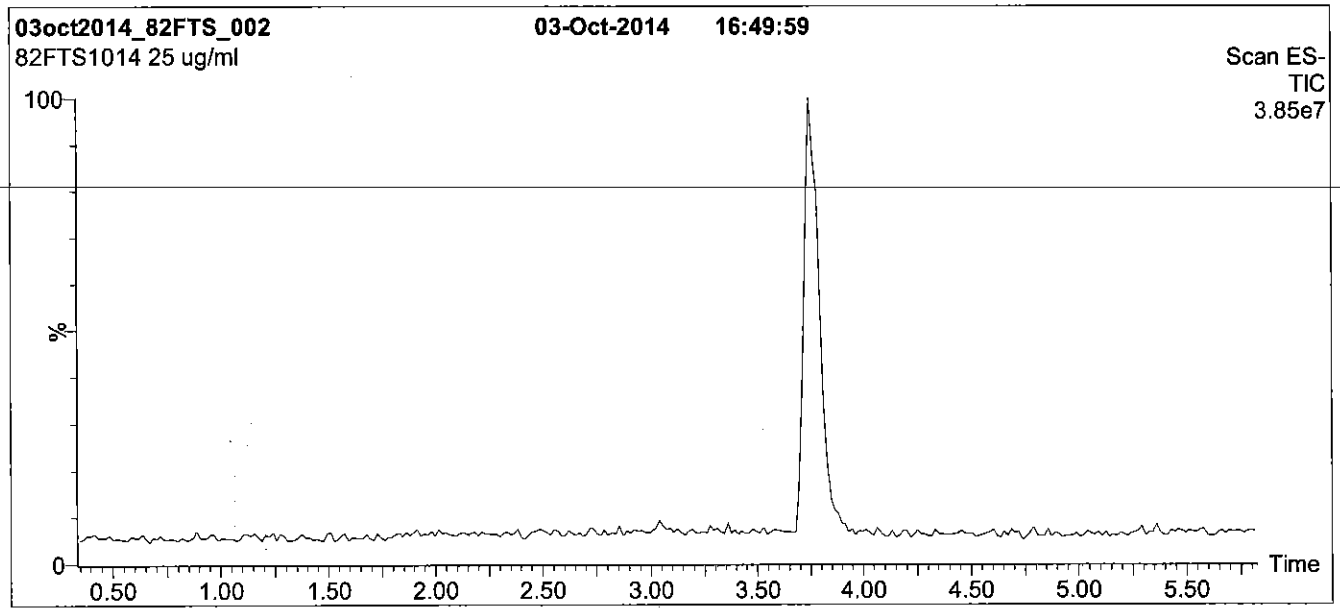
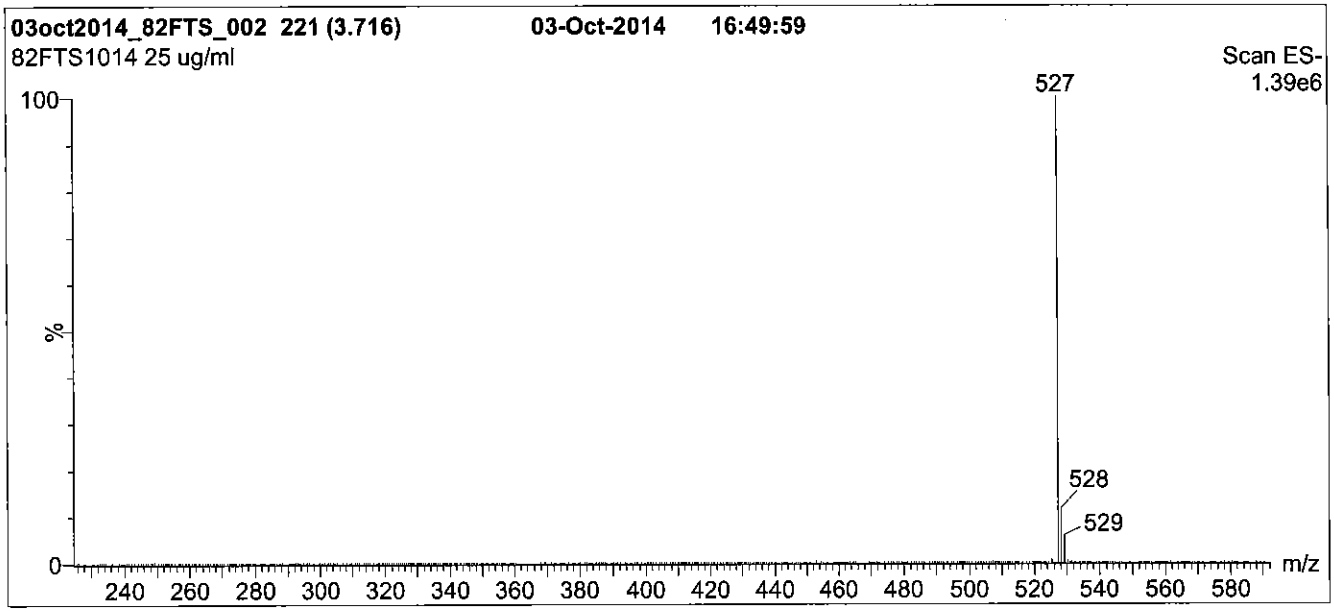
Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

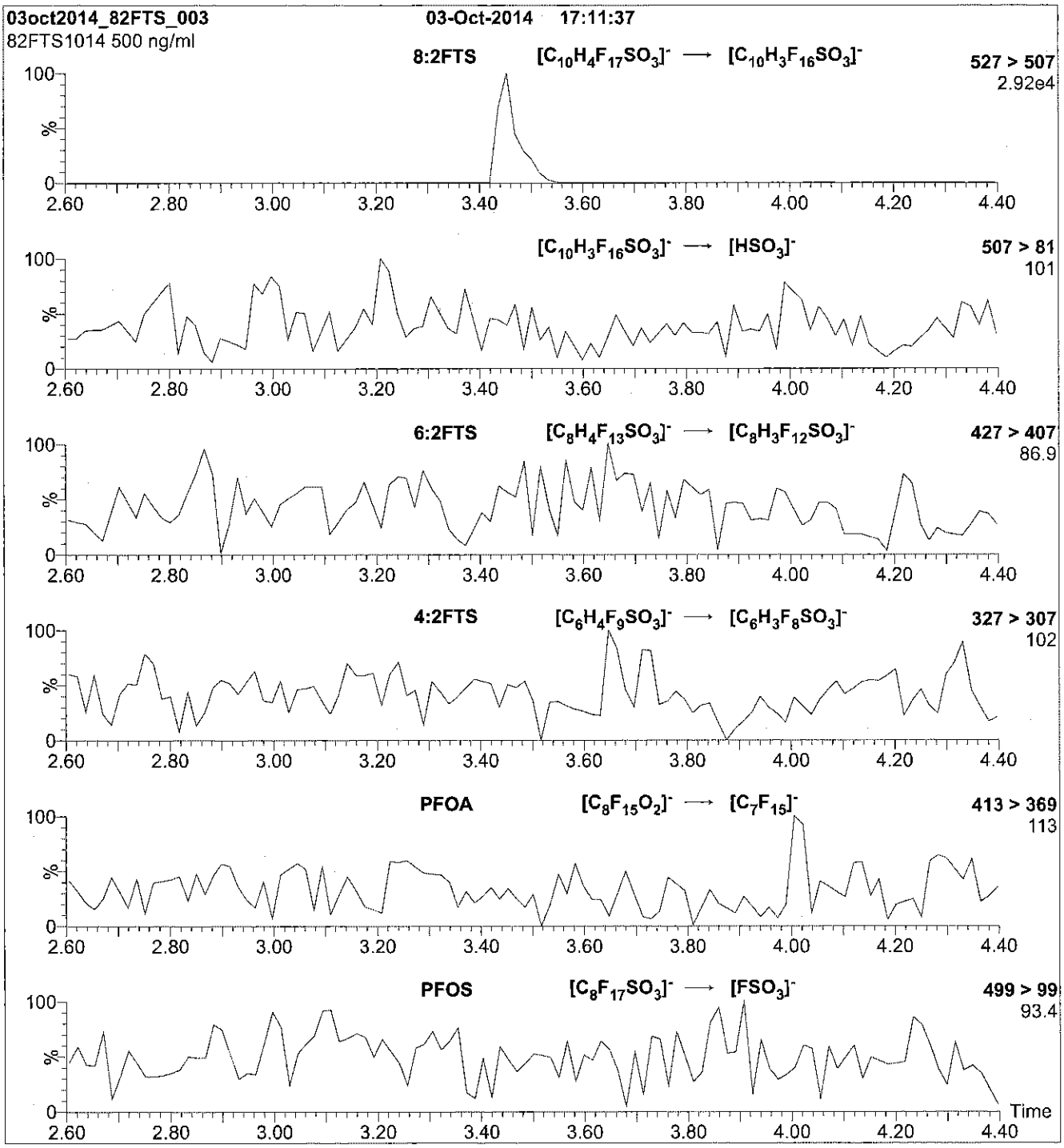
Flow: 300 µl/min

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

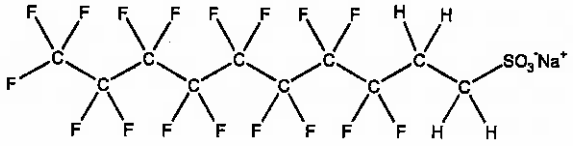
WELLINGTON LABORATORIES

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
	47.9 ± 2.4 µg/ml	(8:2FTS anion)		
CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	10/23/2015			
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020			
RECOMMENDED STORAGE:	Refrigerate ampoule			

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Certified By: B.G. Chittim **Date:** 10/27/2015 (mm/dd/yyyy)

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CALA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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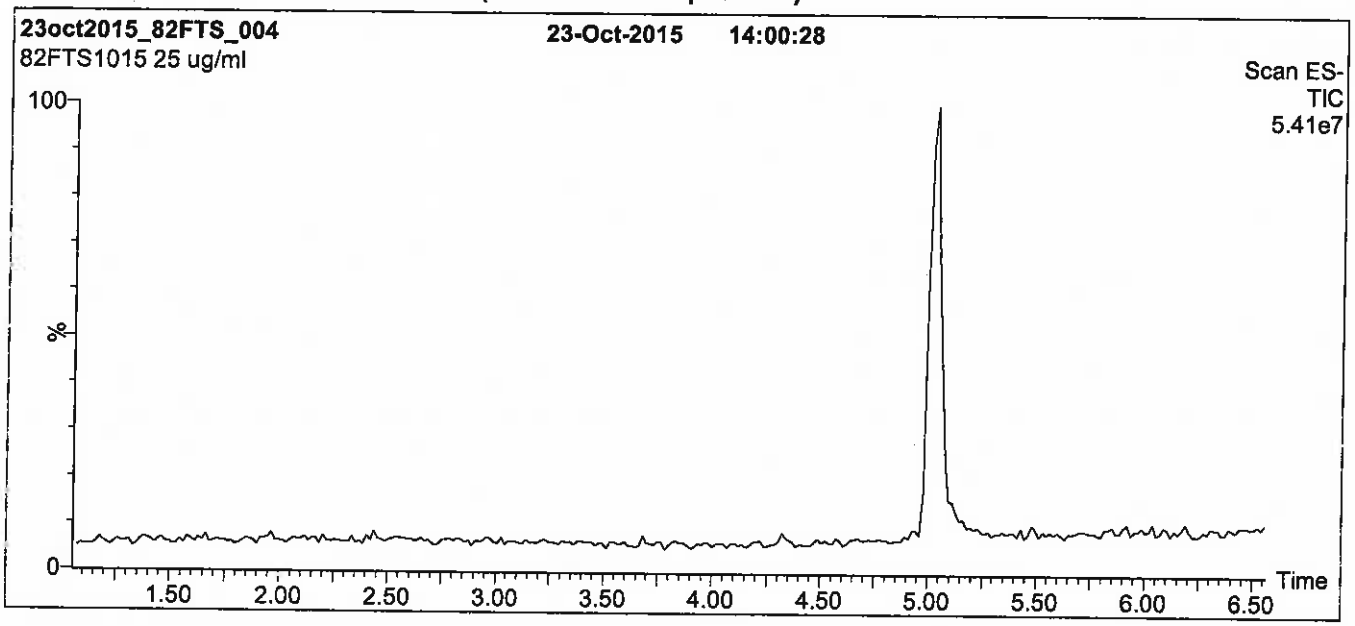
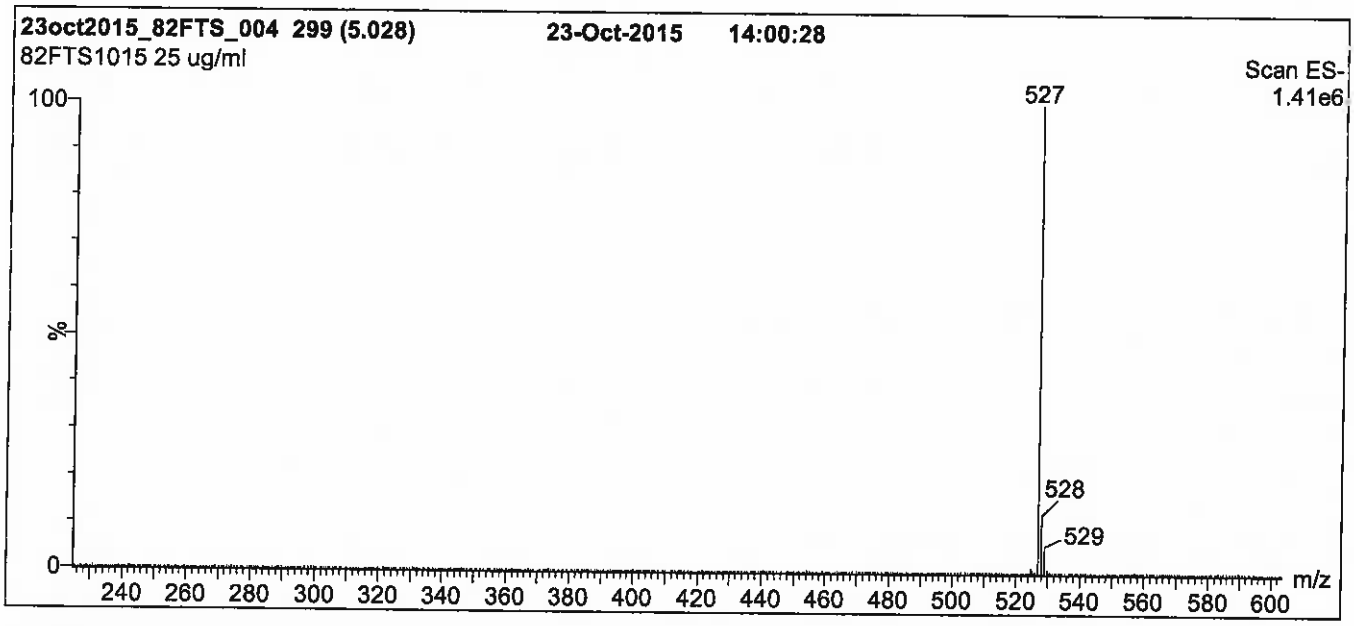




Conditions for Figure 1:

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

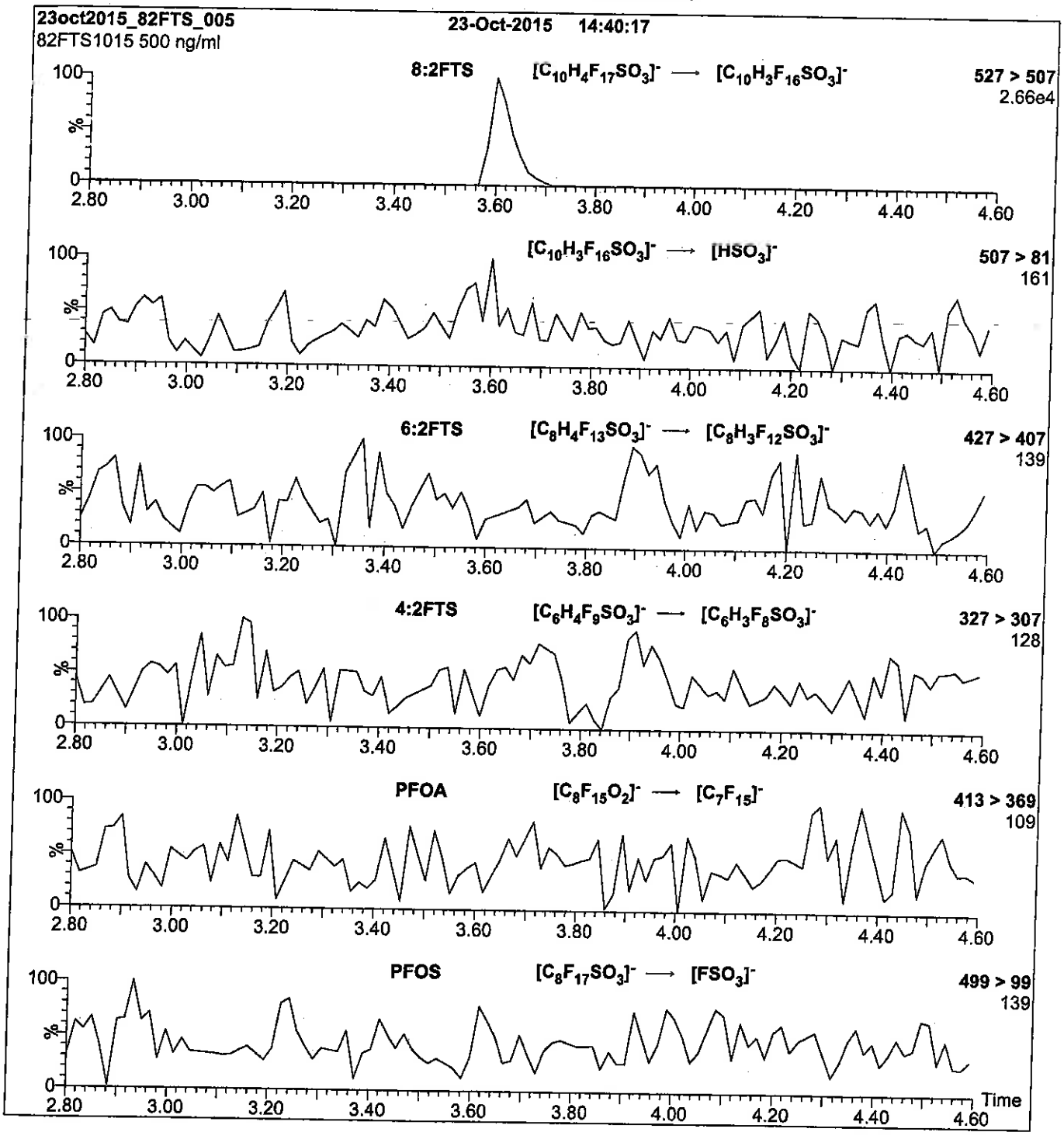
Flow: 300 µl/min

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

WELLINGTON LABORATORIES

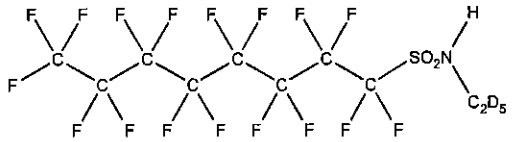
CERTIFICATE OF ANALYSIS DOCUMENTATION

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:

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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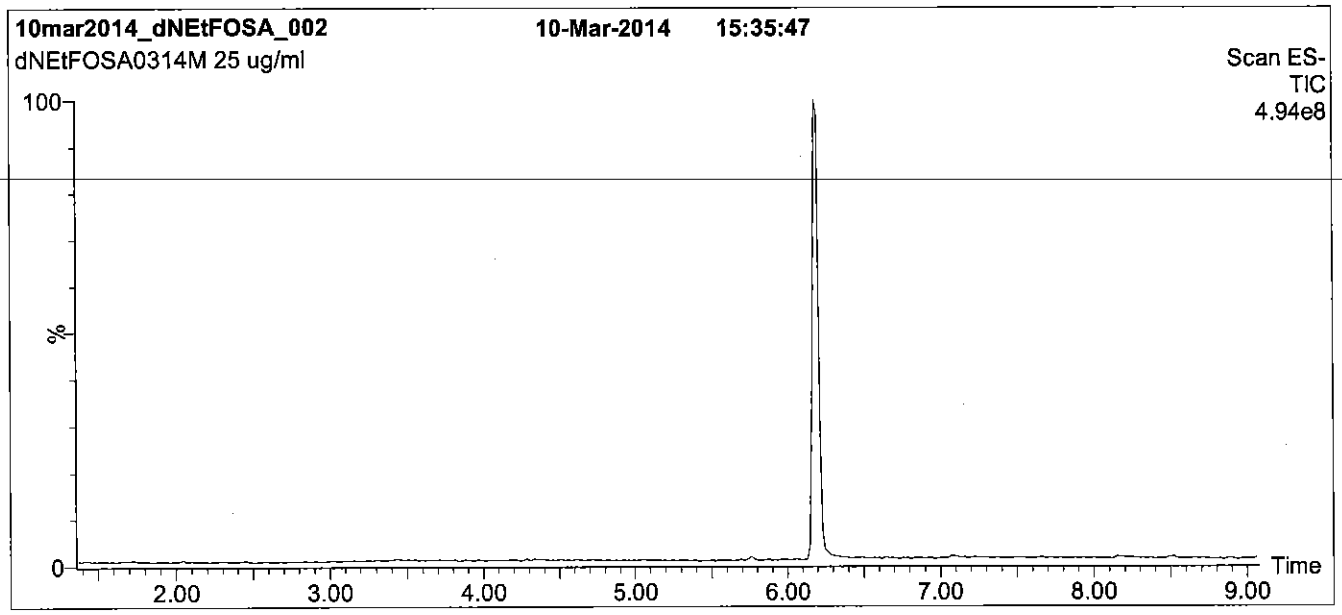
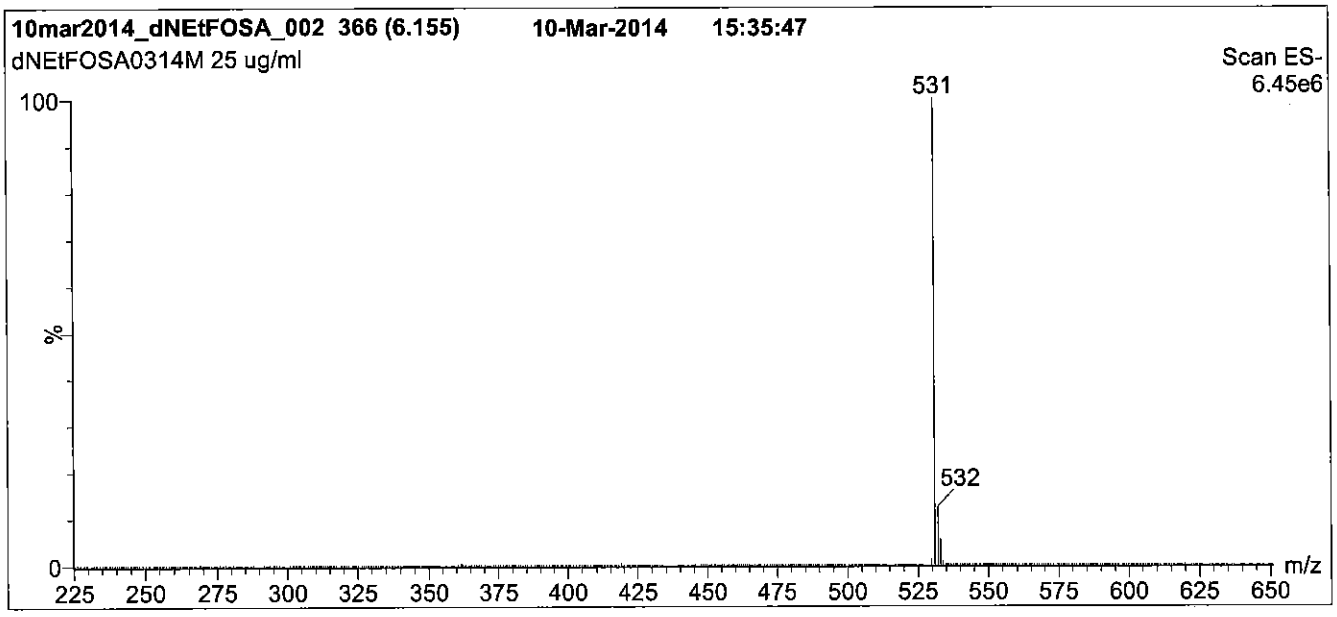
Figure 1: **d-N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

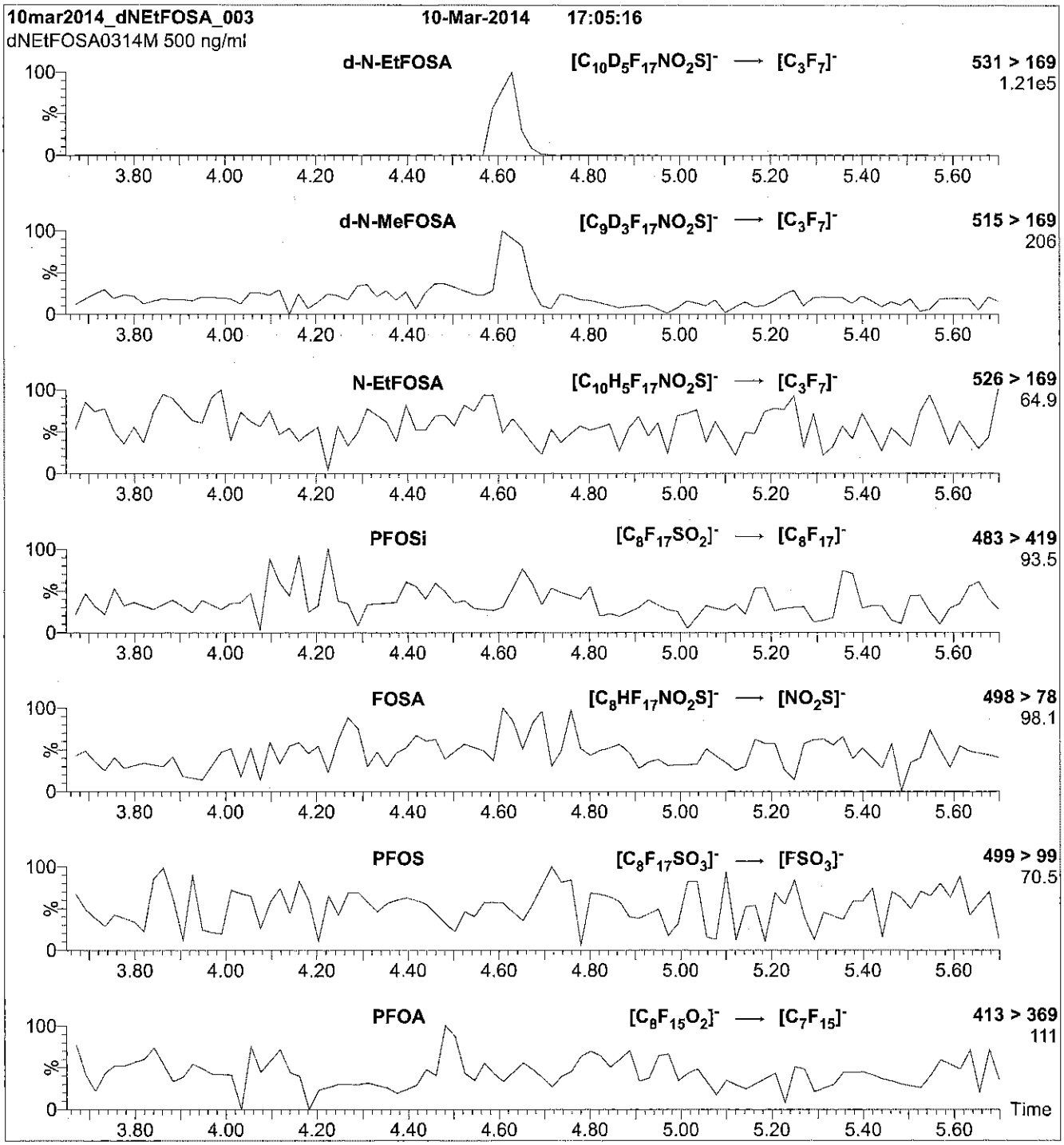
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NEtFOSA-M_00002

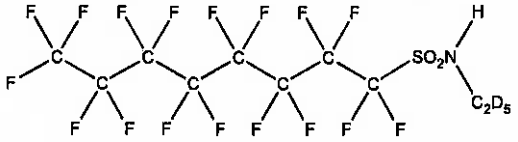
R - 7/6/16 CBW

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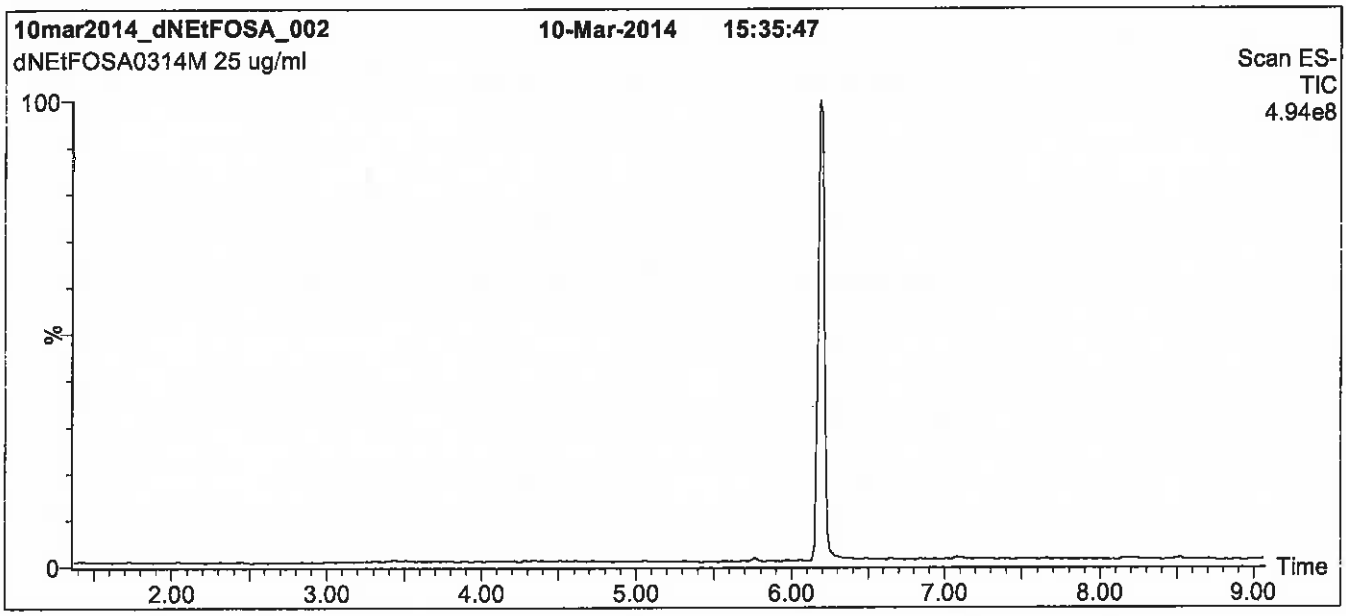
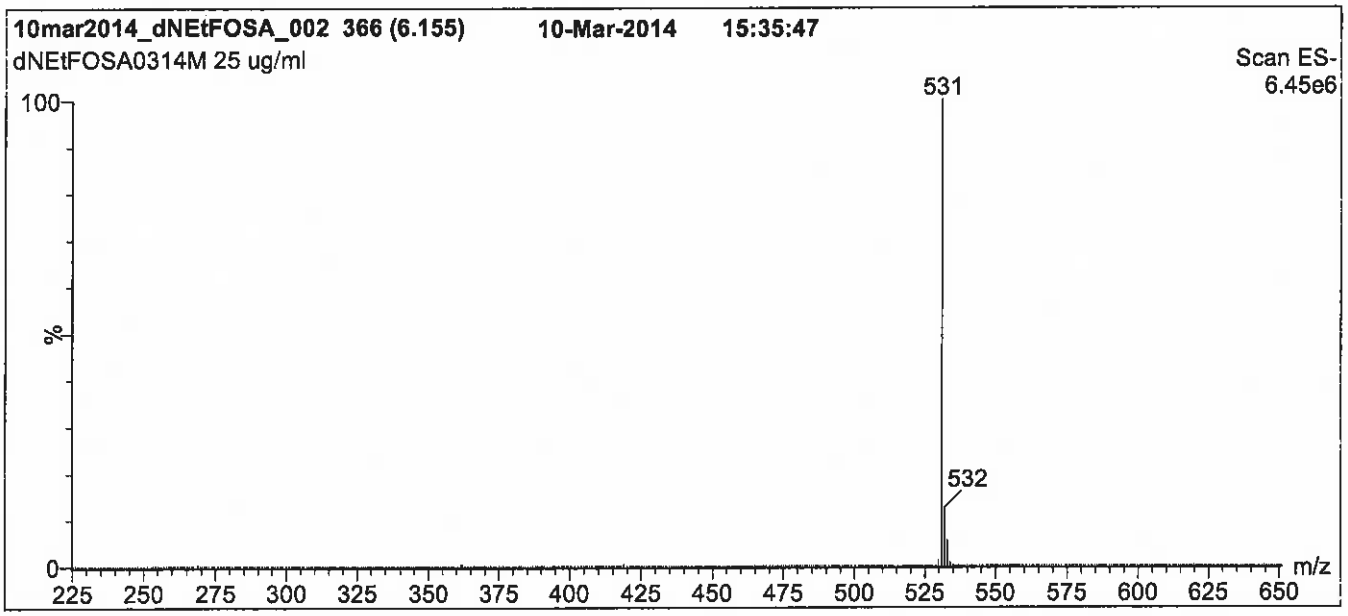
Figure 1: **d-N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

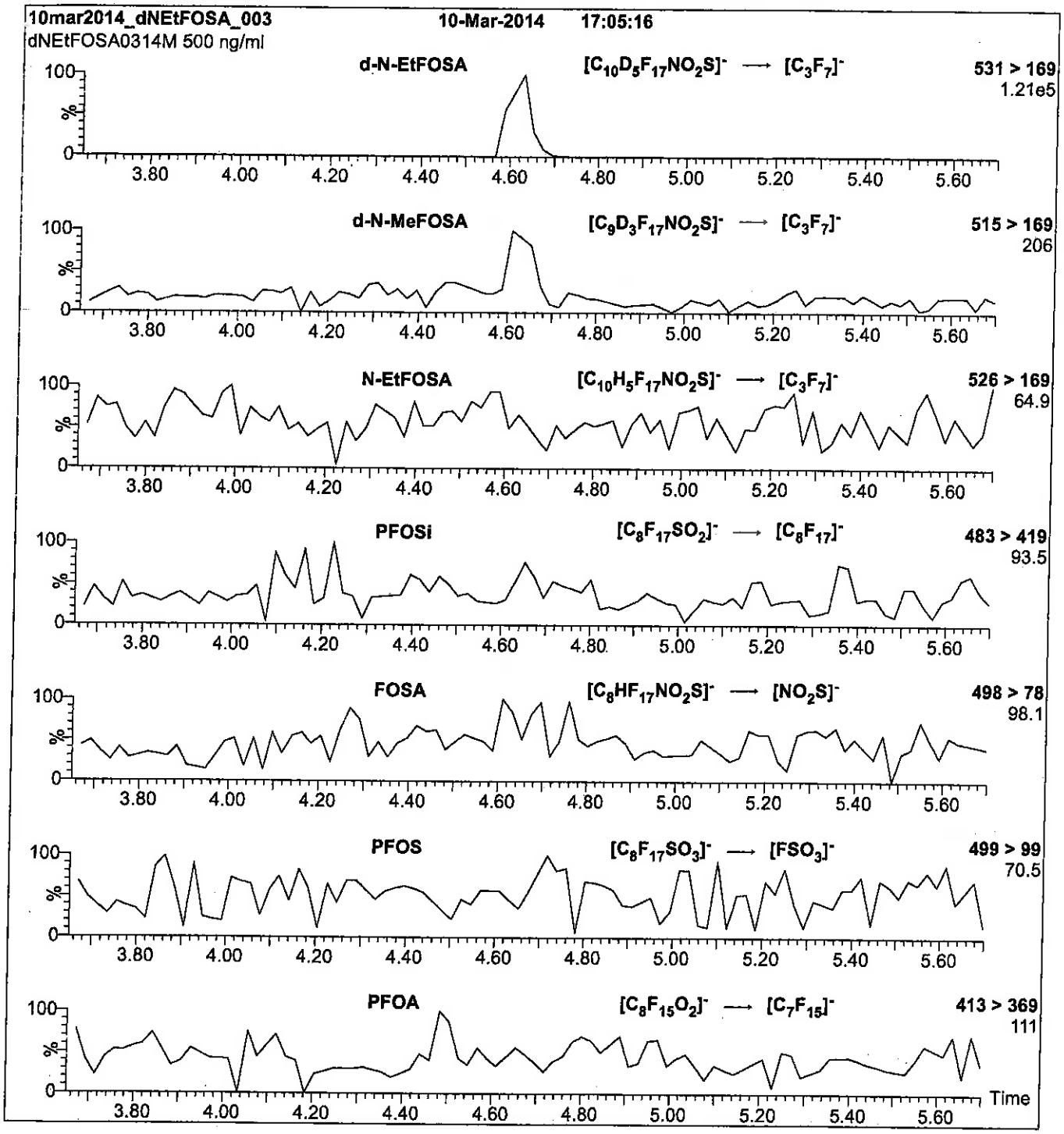
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NMeFOSA-M_00001

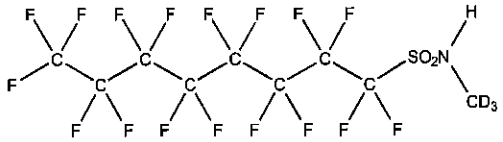
R: 7/16/15 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

INTENDED USE:

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HAZARDS:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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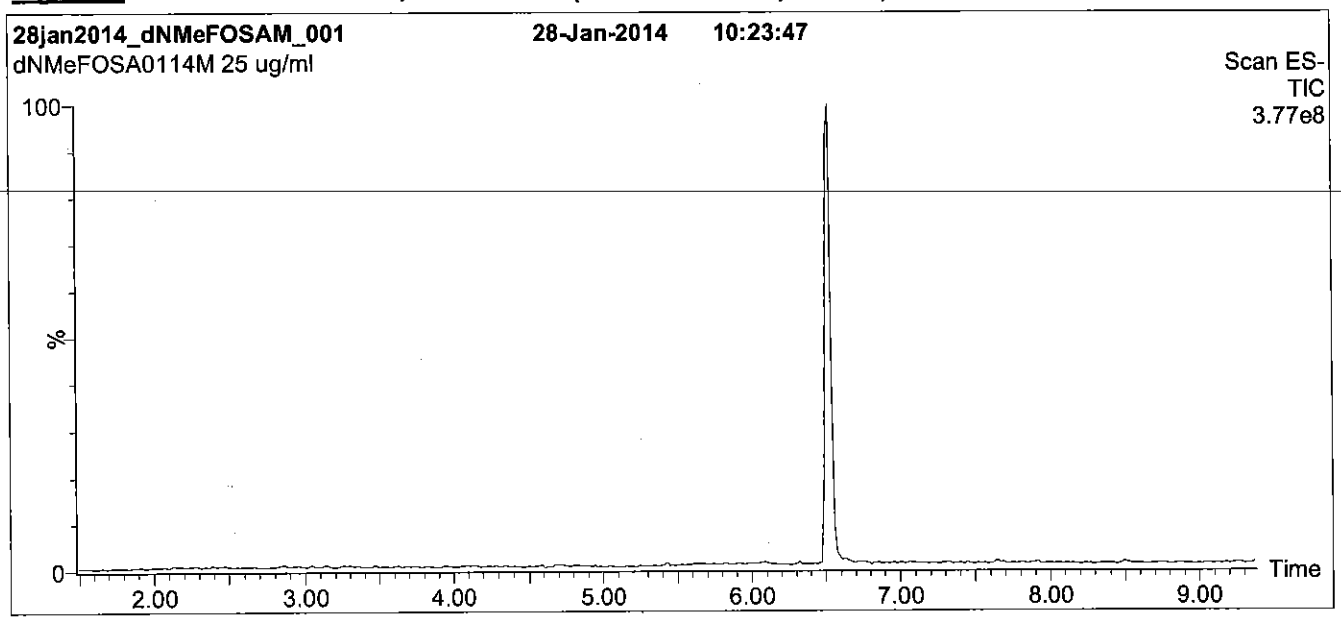
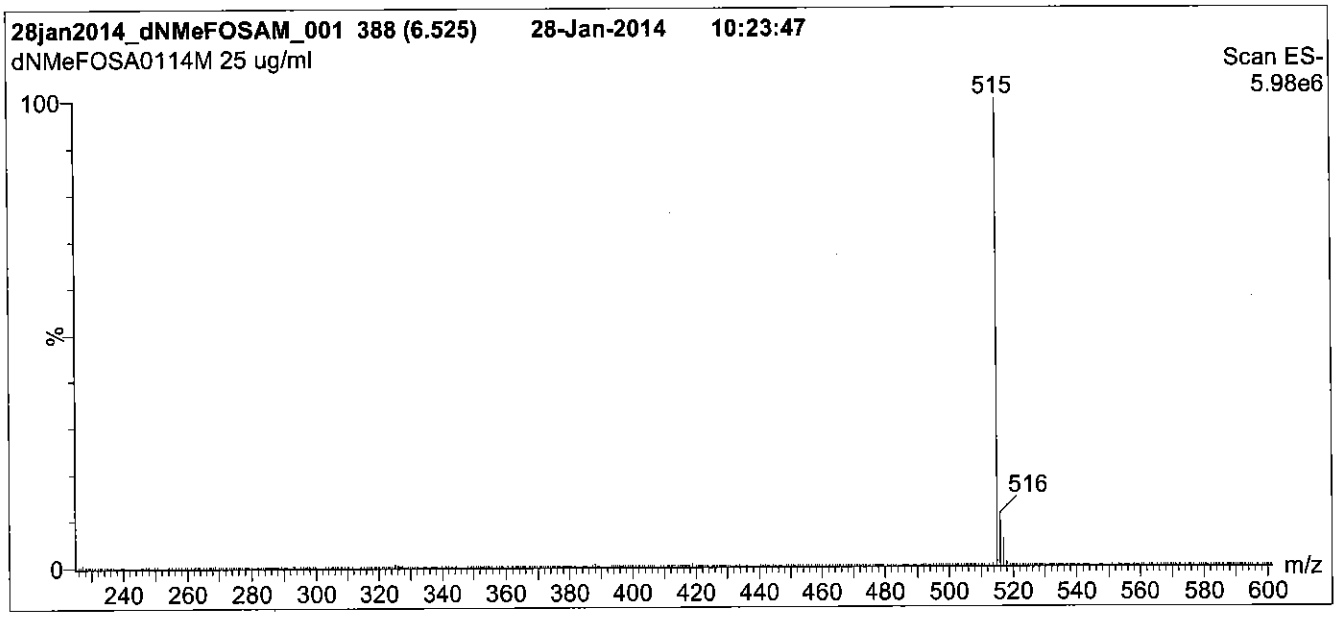




Conditions for Figure 1:

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% 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

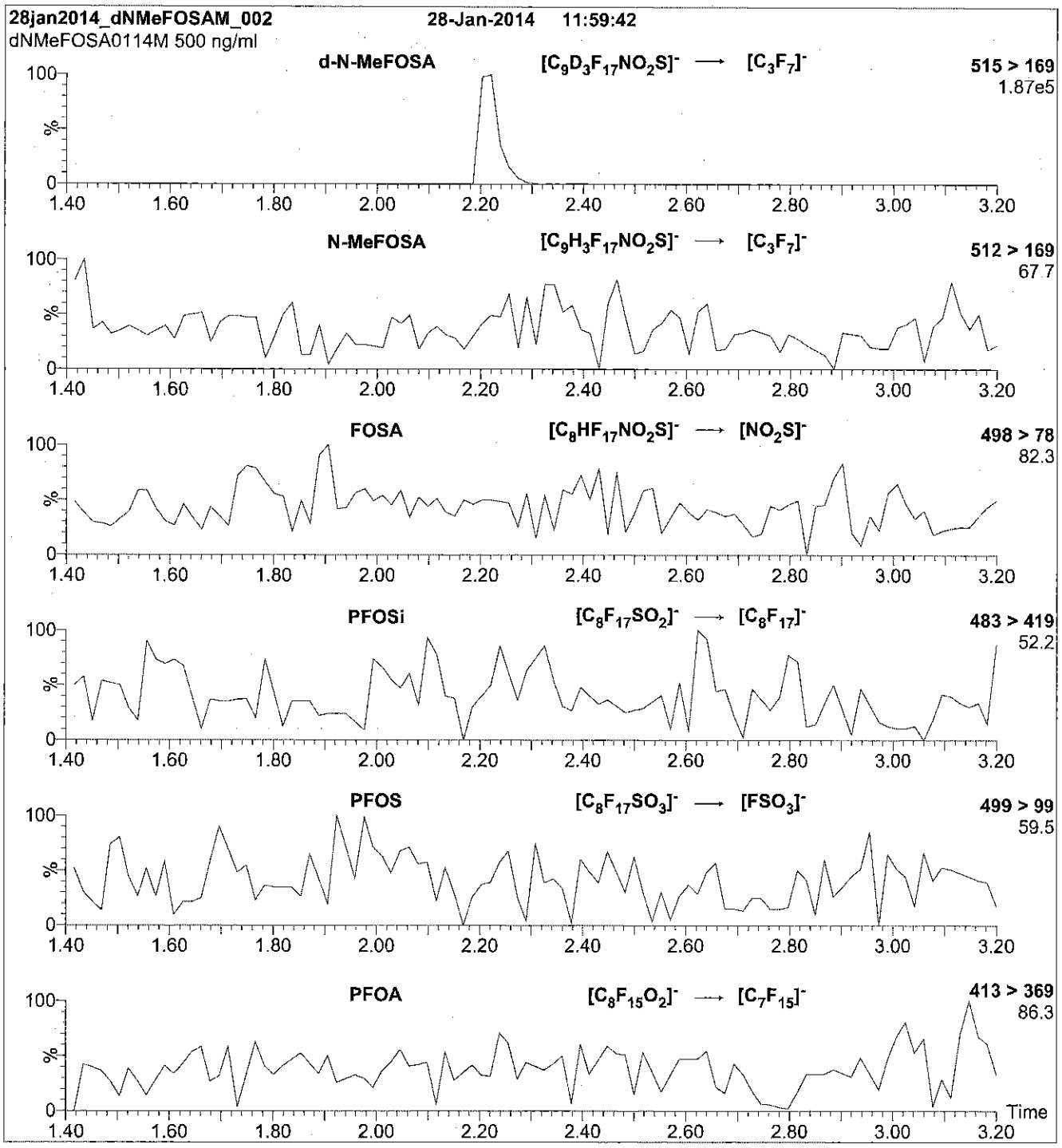
Flow: 300 µl/min

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

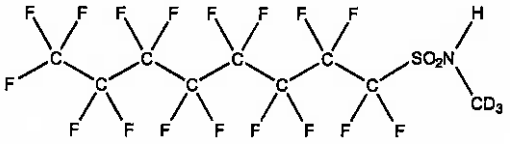
WELLINGTON LABORATORIES

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

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CALA

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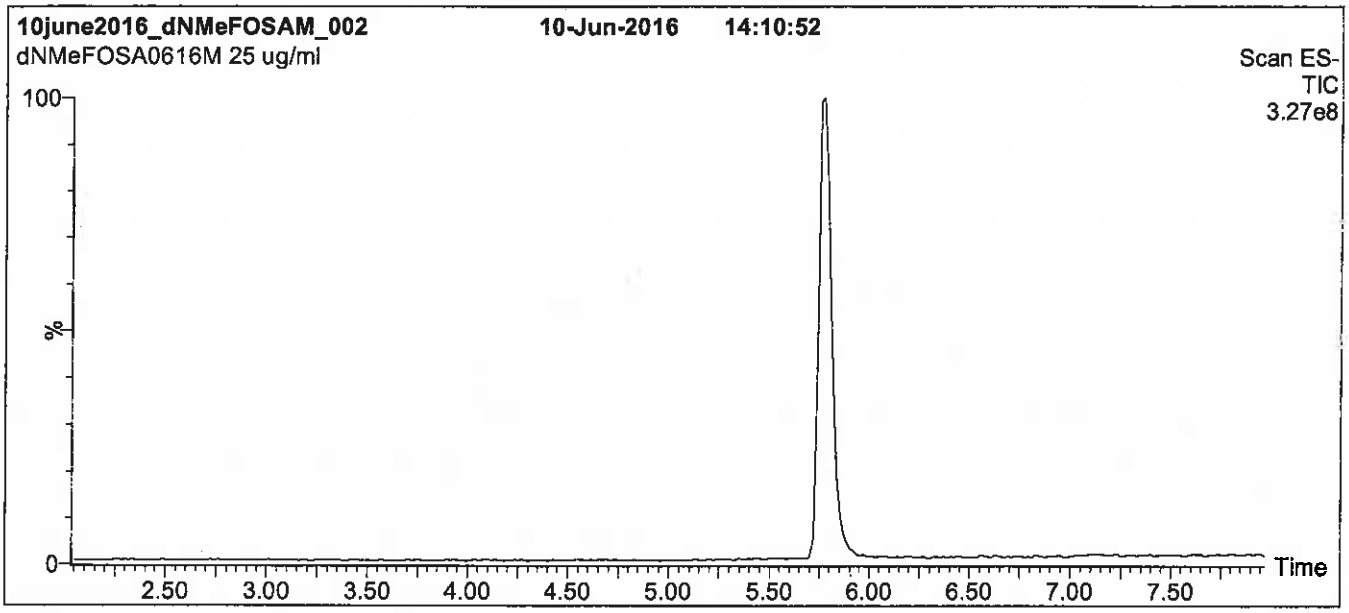
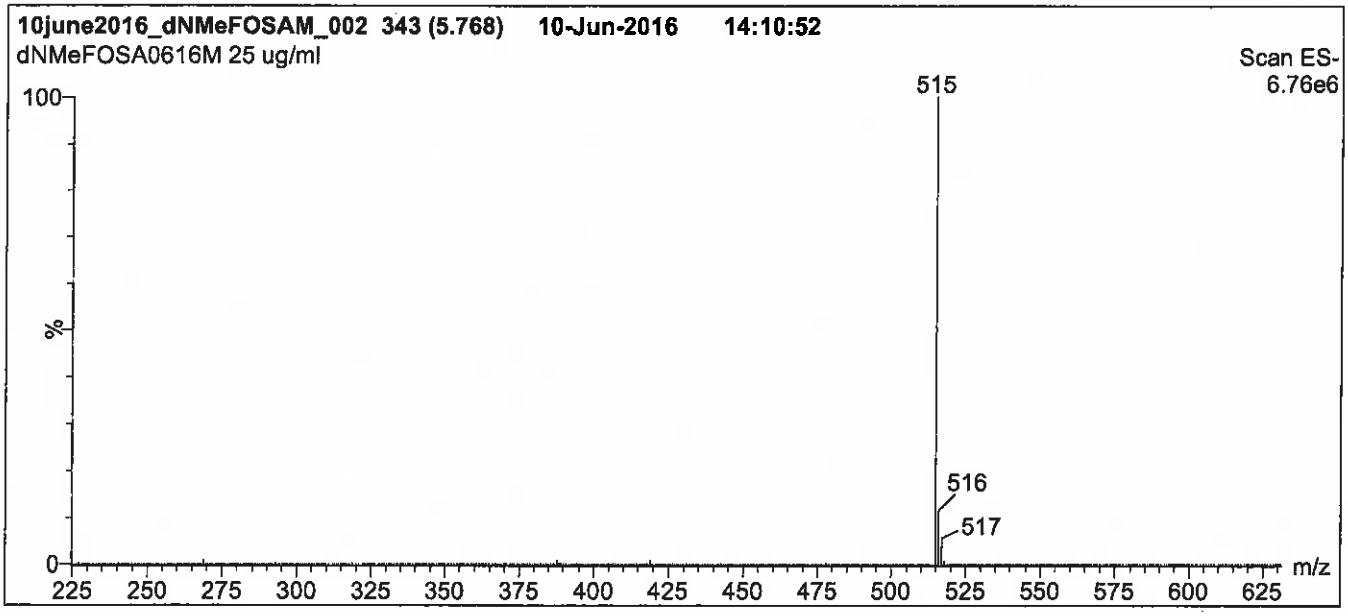




Conditions for Figure 1:

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: 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

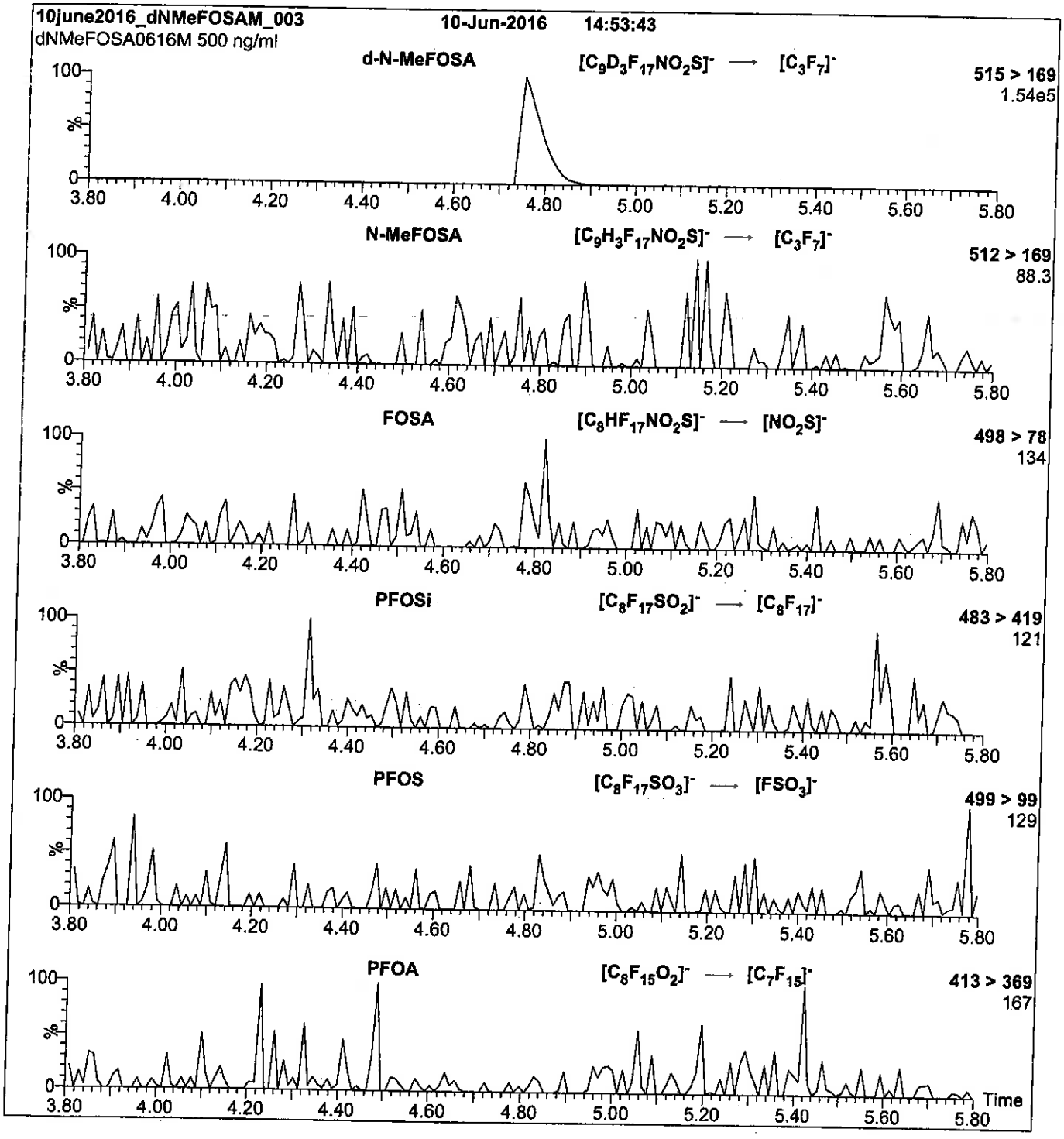
Flow: 300 µl/min

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

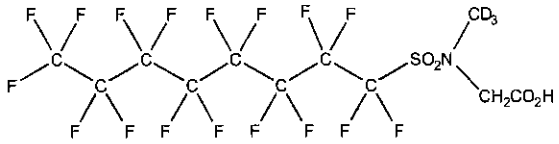
WELLINGTON LABORATORIES

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.

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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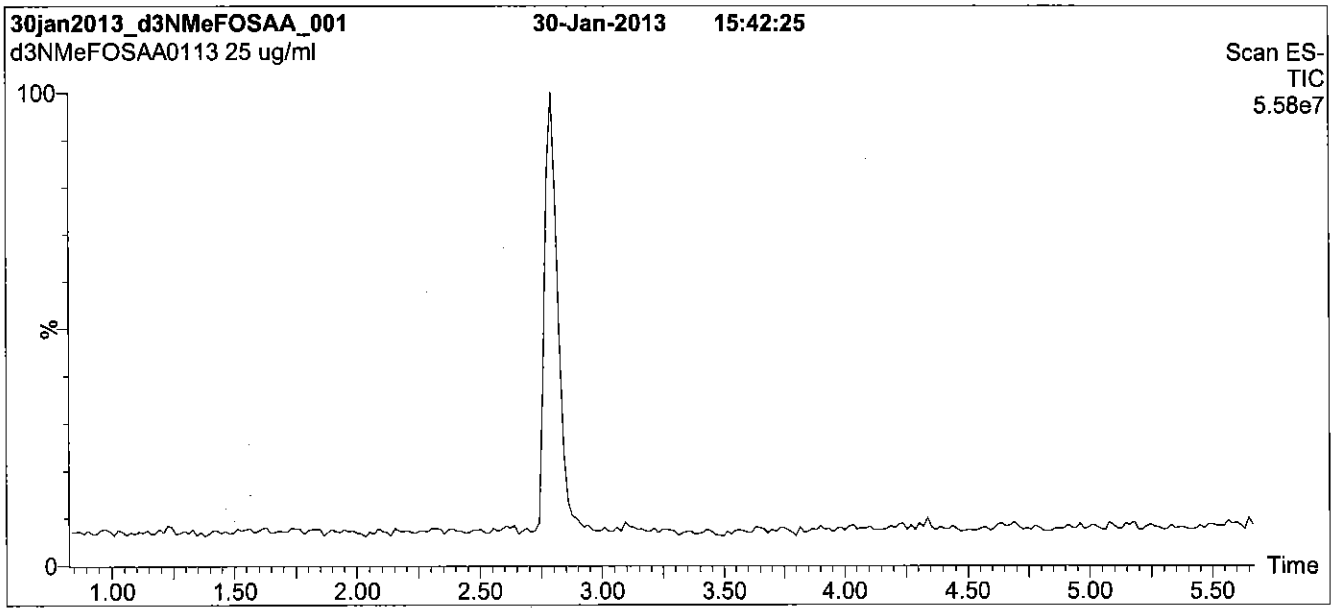
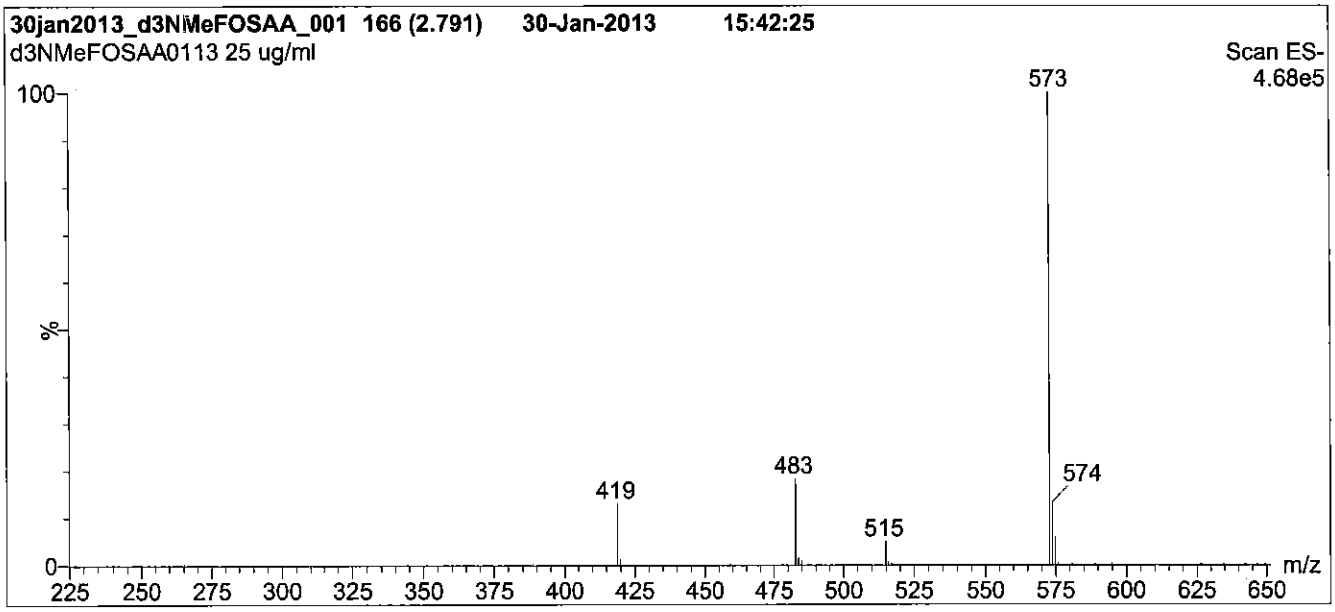
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

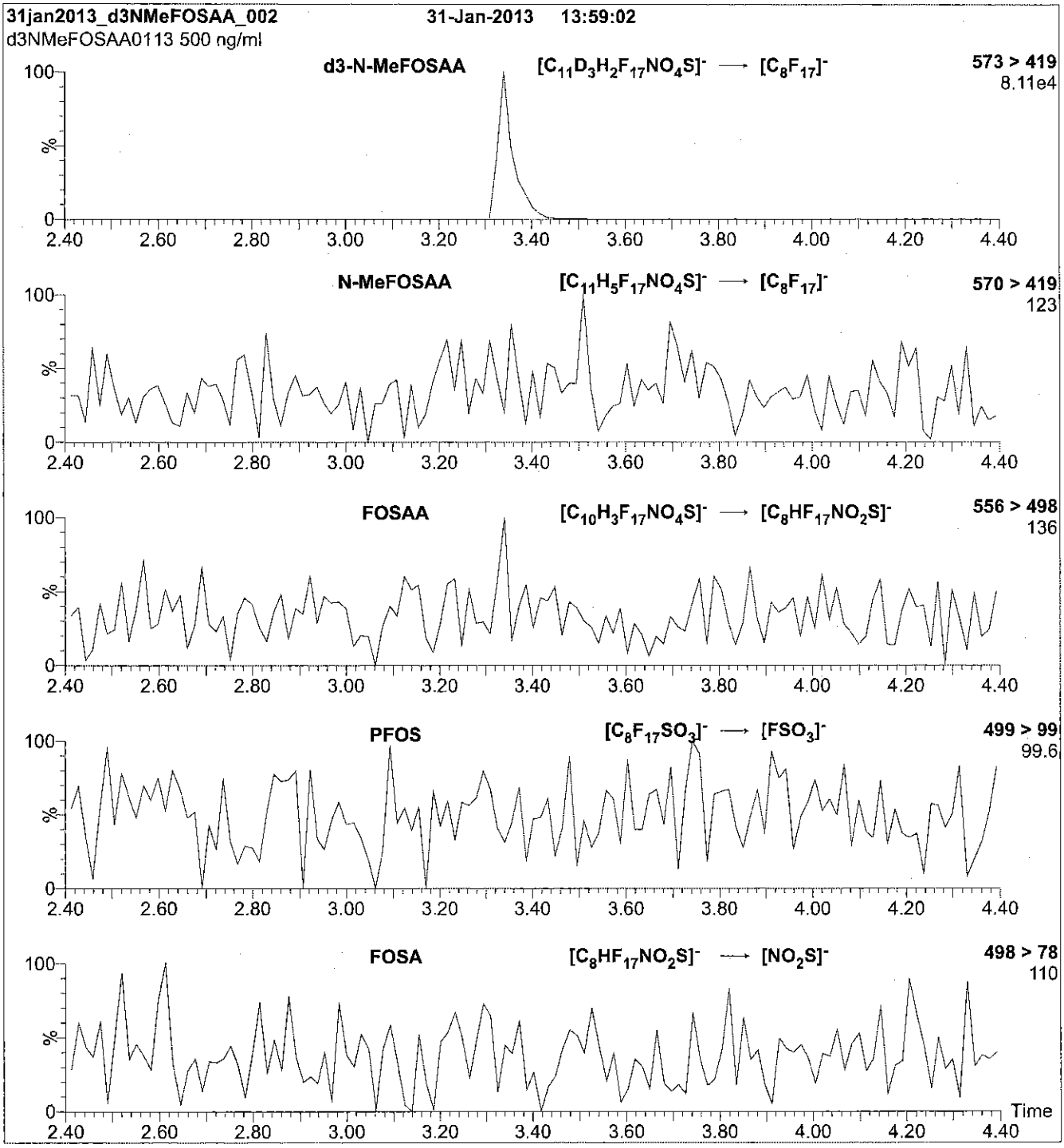
Flow: 300 µl/min

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: 7/6/16 CBW

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

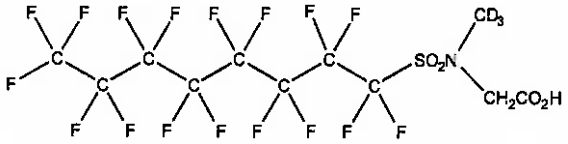
WELLINGTON LABORATORIES

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.
- 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:** 01/25/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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HOMOGENEITY:

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

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

TRACEABILITY:

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CALA

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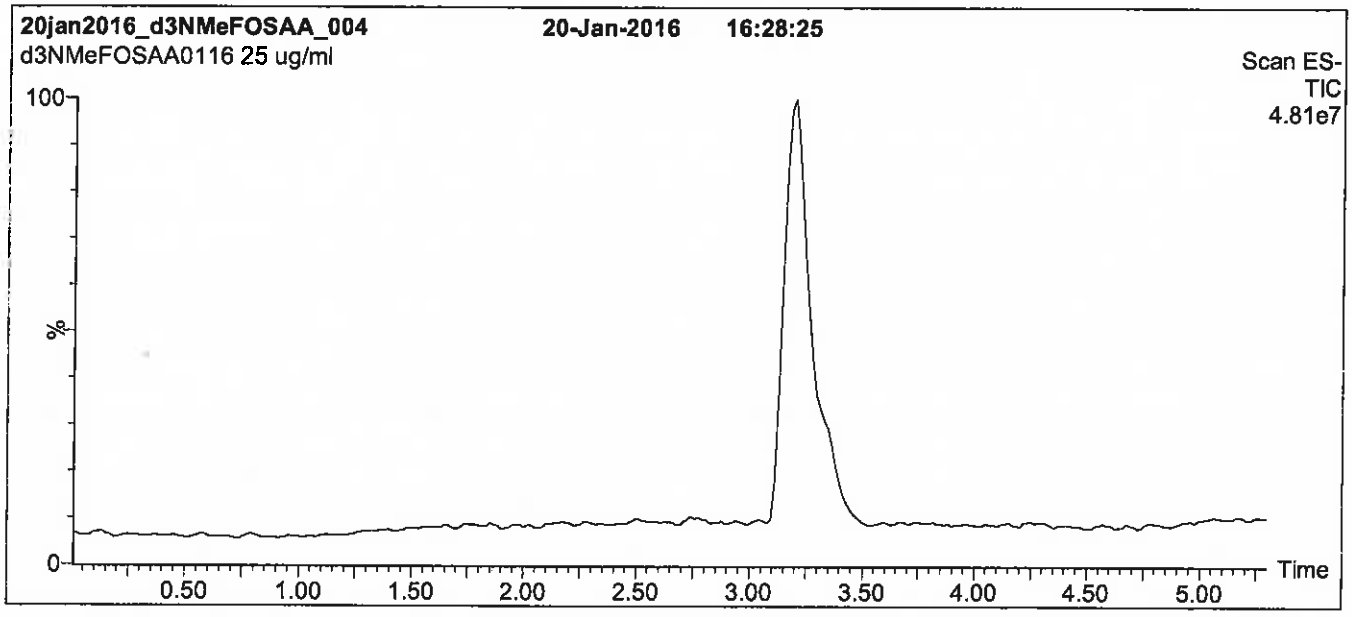

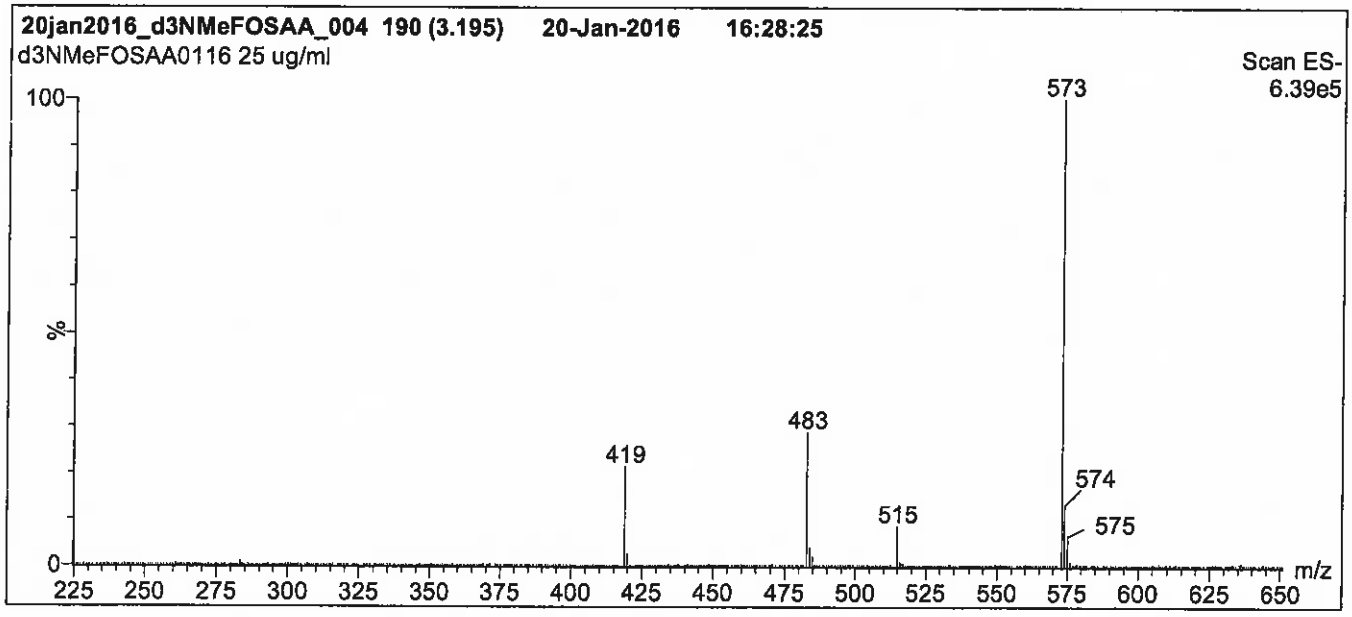

Conditions for Figure 1:

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Chromatographic Conditions

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1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
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Ramp to 90% organic over 7 min and hold for 1.5 min
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Time: 10 min

Flow: 300 µl/min

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Experiment: Full Scan (225 - 850 amu)

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

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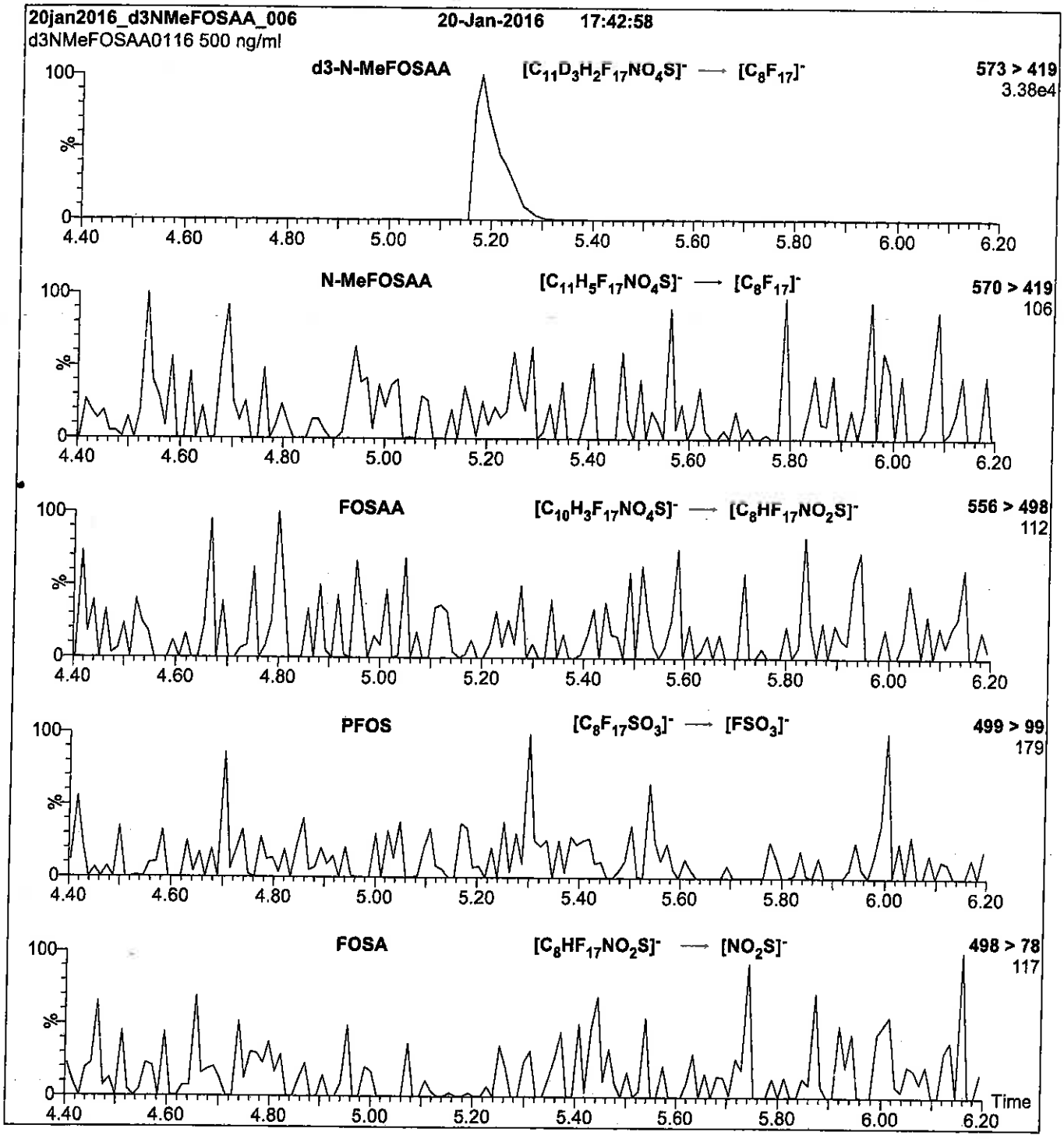


Conditions for Figure 2:

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

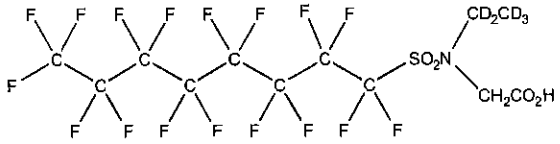
WELLINGTON LABORATORIES

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)
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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

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CALA Testing Accreditation No. A 1226

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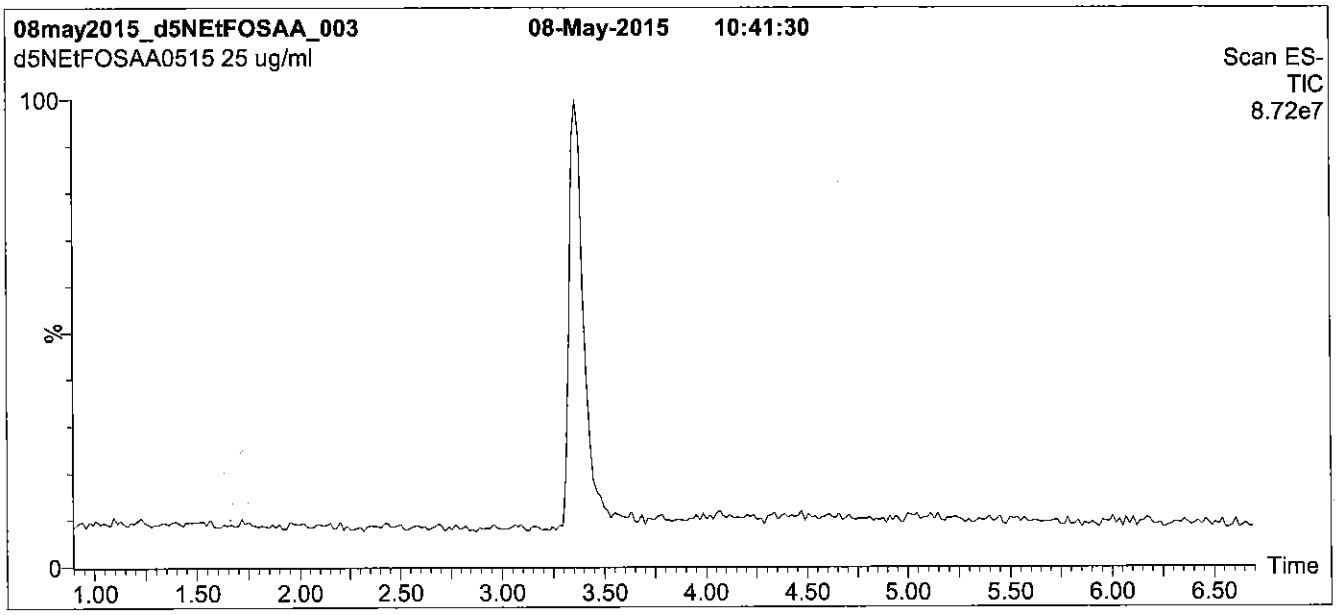

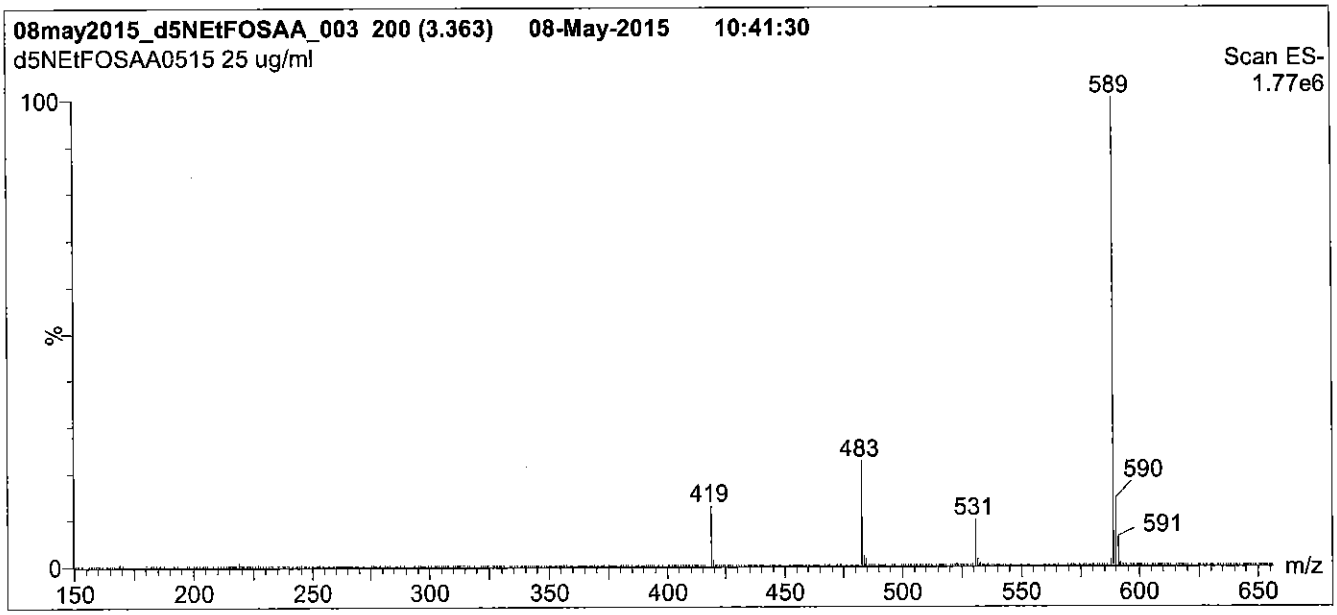

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MS: **Micromass Quattro *micro* API MS**

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1.7 µm, 2.1 x 100 mm

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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

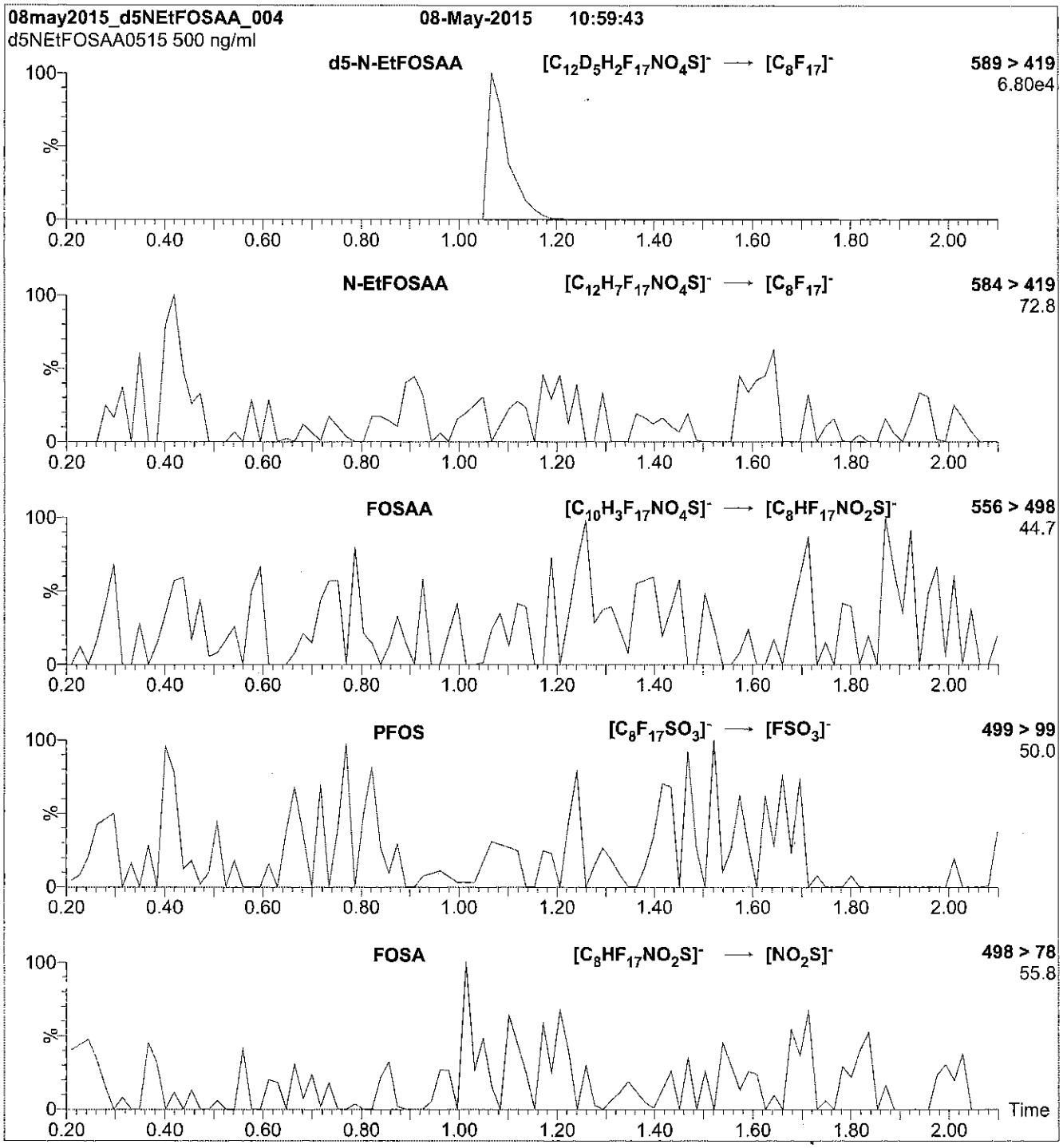
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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

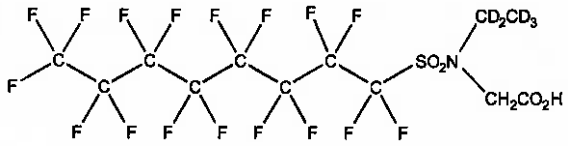
R: 7/6/16 CBW

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



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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		

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

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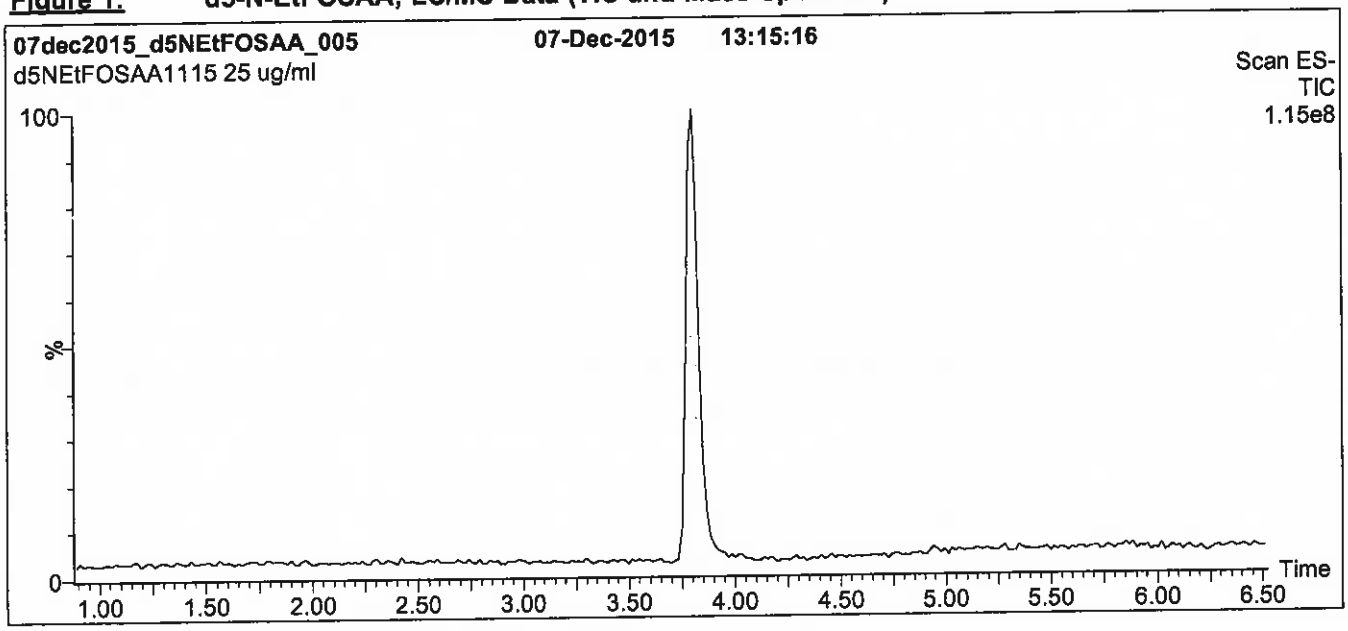
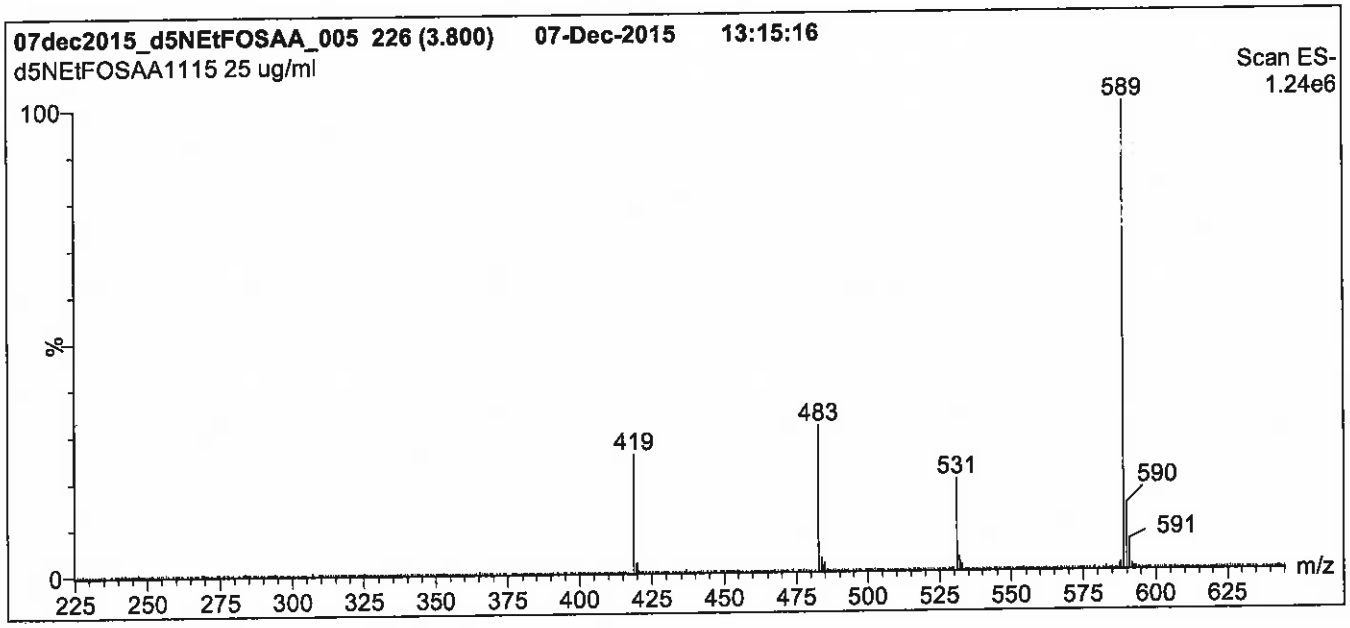
Figure 1: **d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

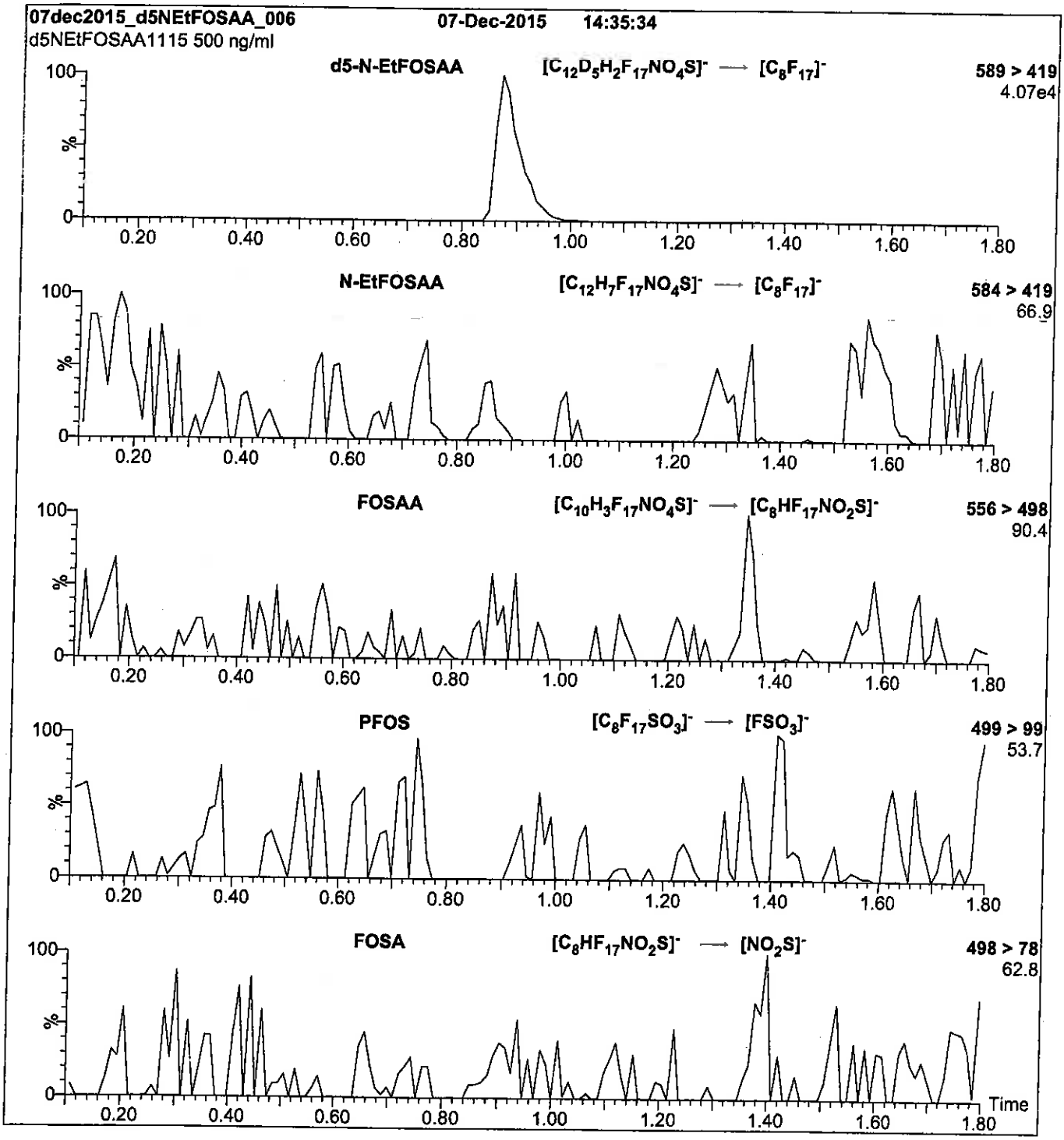
Flow: 300 µl/min

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

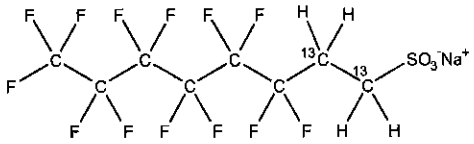
WELLINGTON LABORATORIES

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

INTENDED USE:

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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:

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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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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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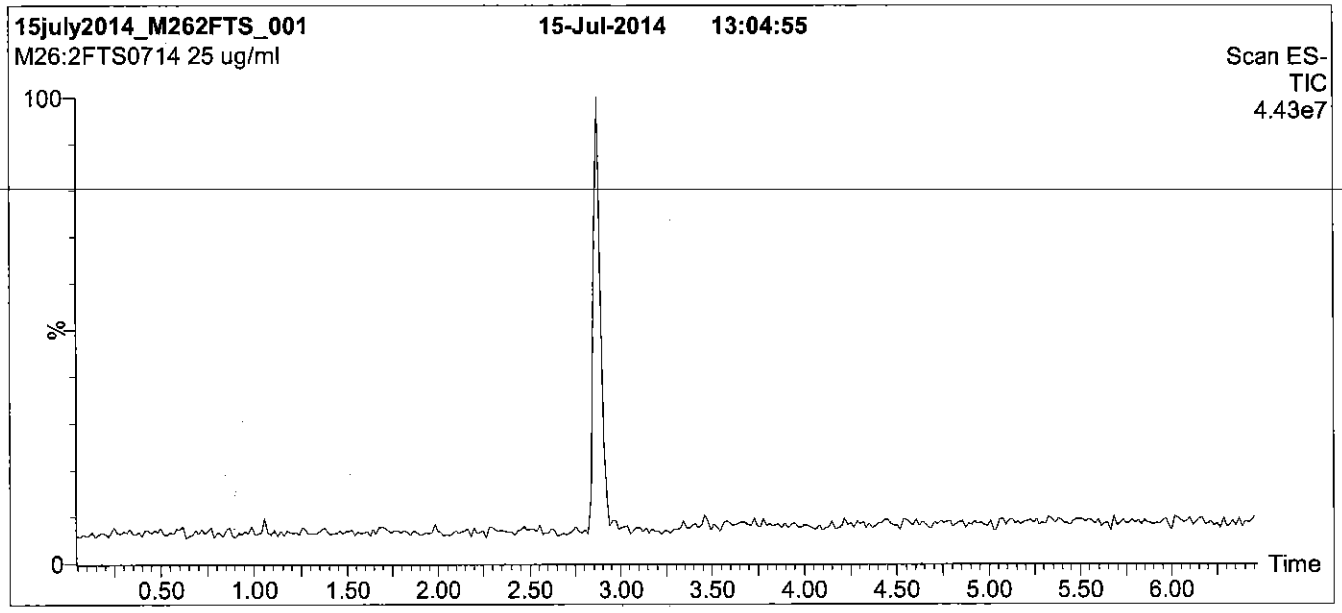
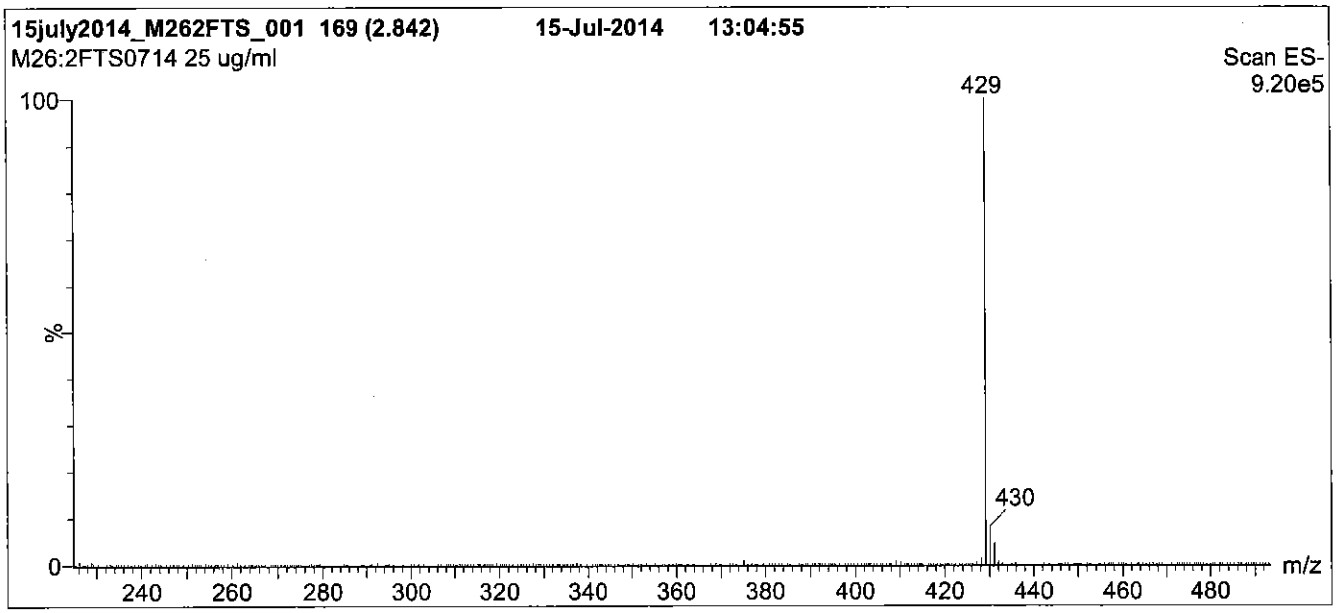
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

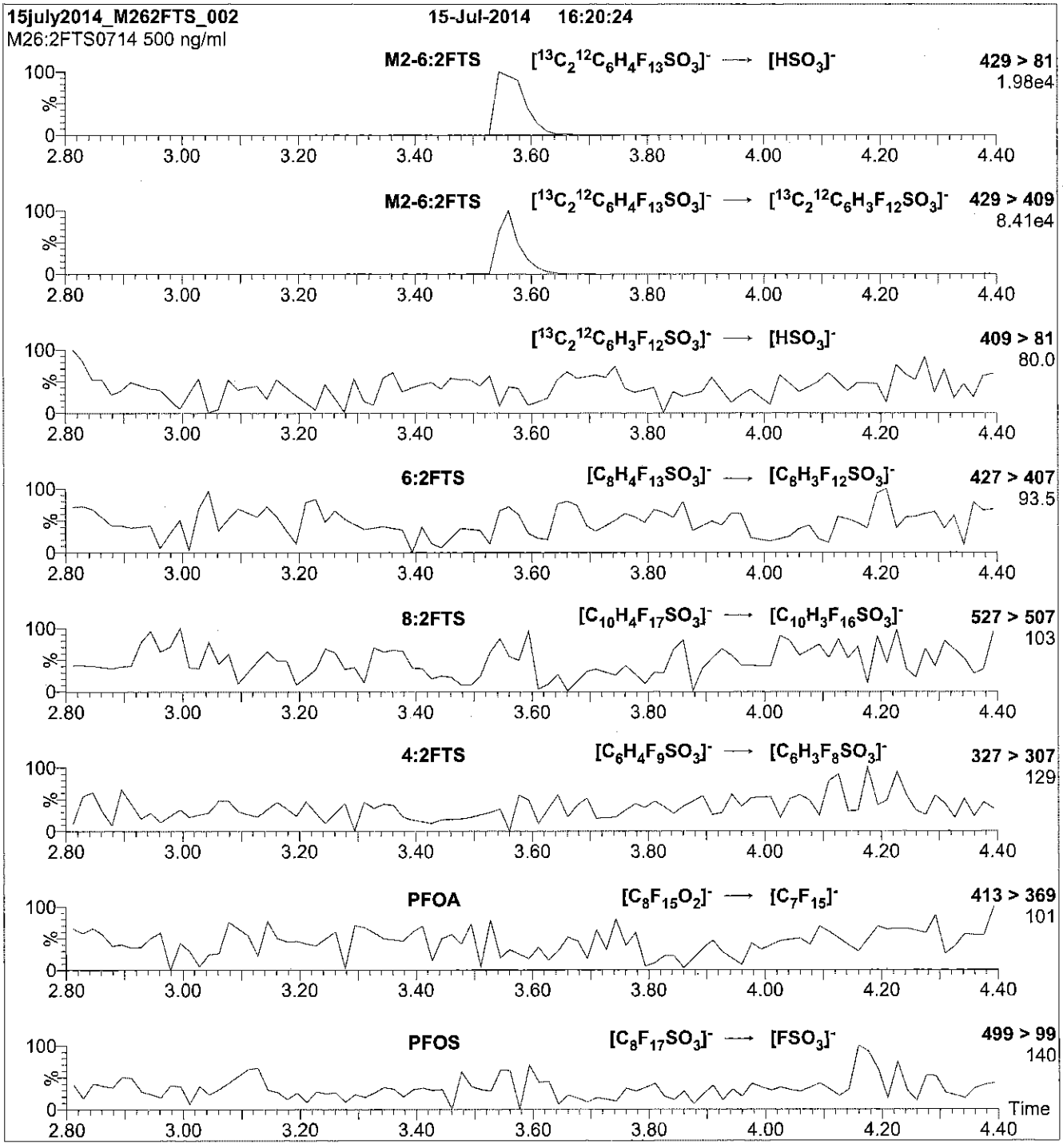
Flow: 300 µl/min

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

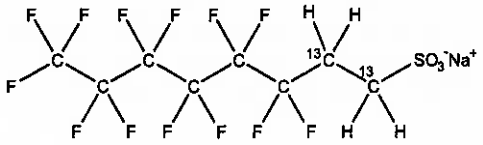
WELLINGTON LABORATORIES

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

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ANAB ACCREDITED

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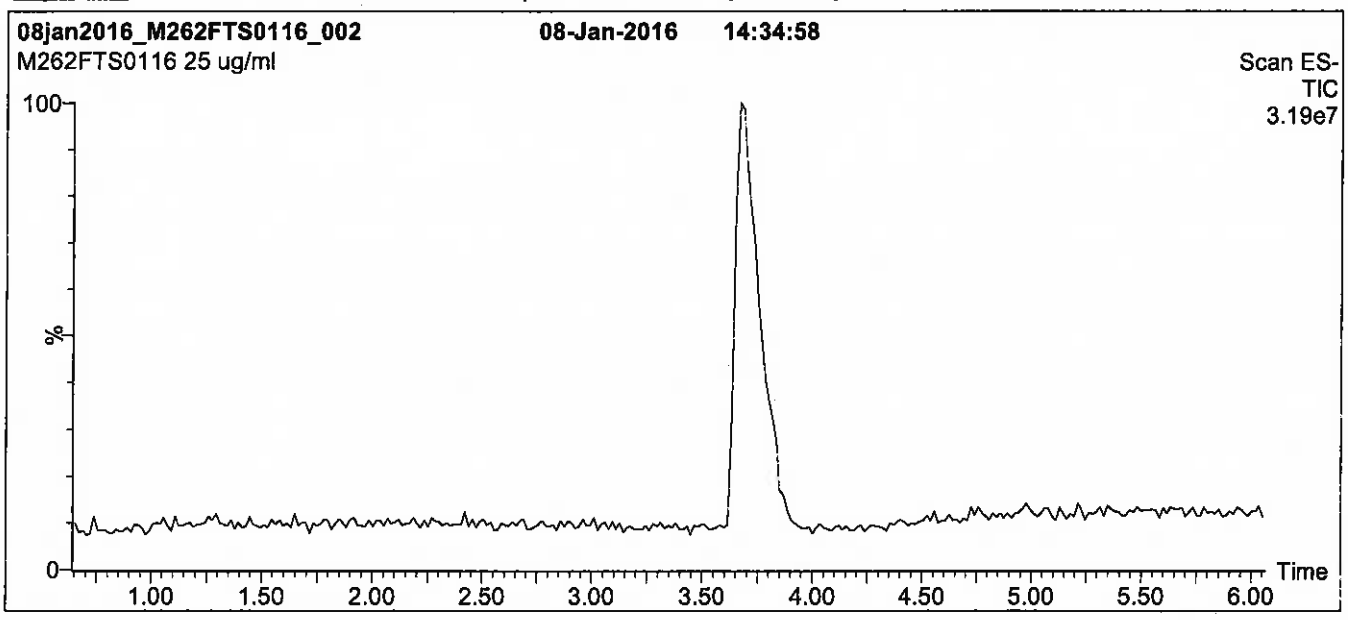
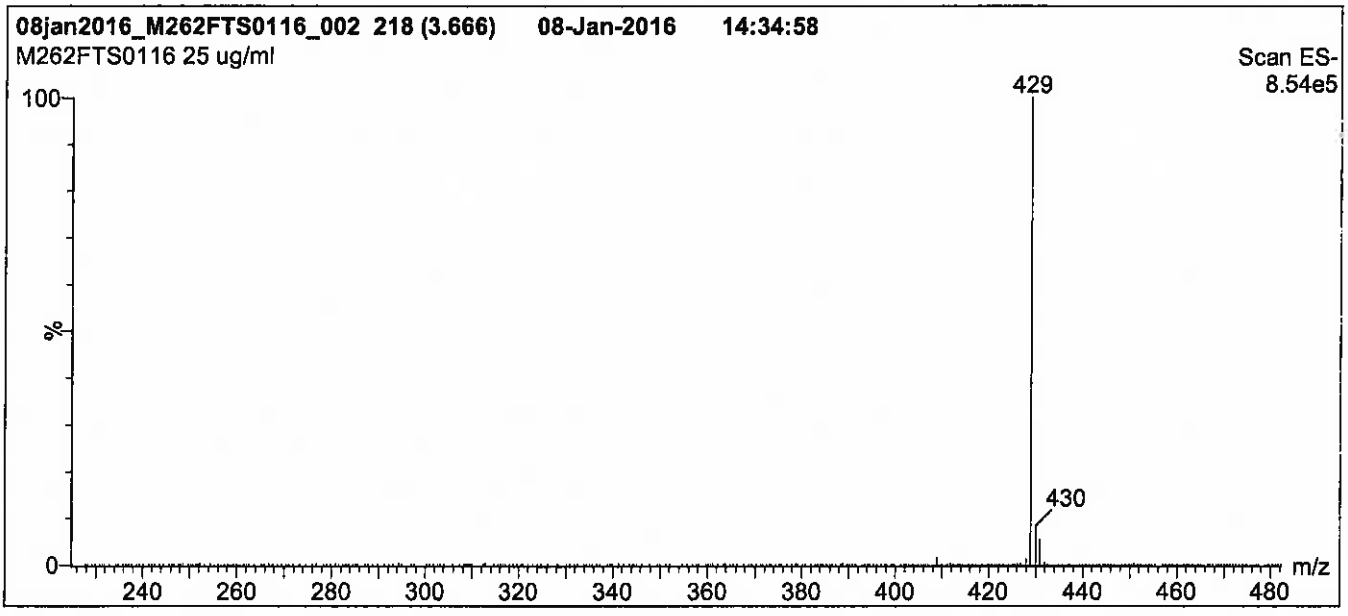
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

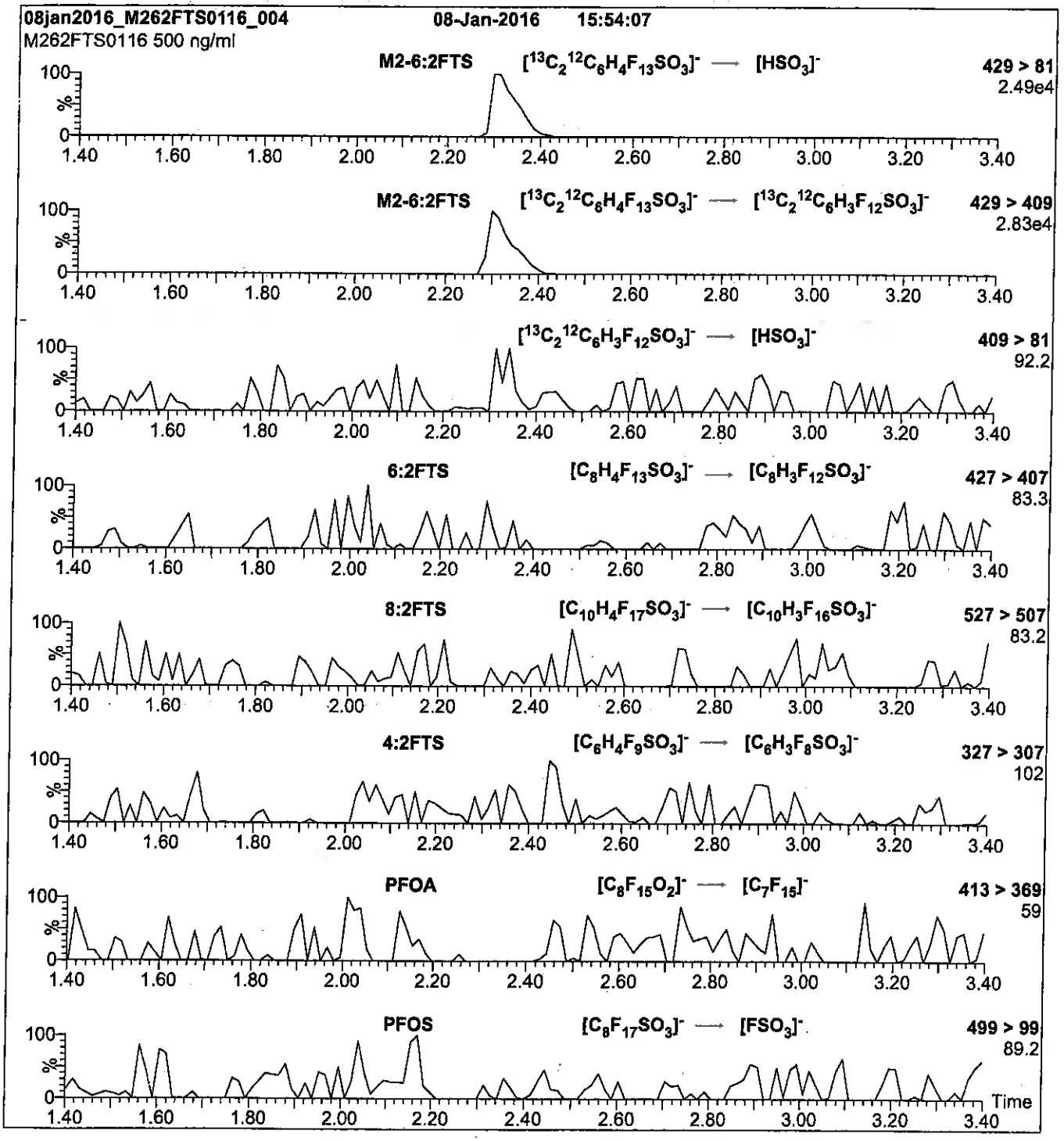
Flow: 300 µl/min

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

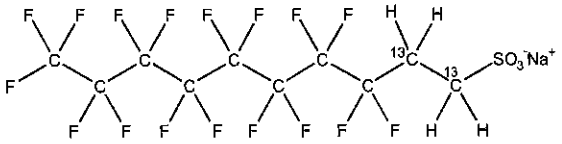
WELLINGTON LABORATORIES

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 ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/13/2014		
EXPIRY DATE: (mm/dd/yyyy)	04/13/2017		
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DOCUMENTATION/ DATA ATTACHED:

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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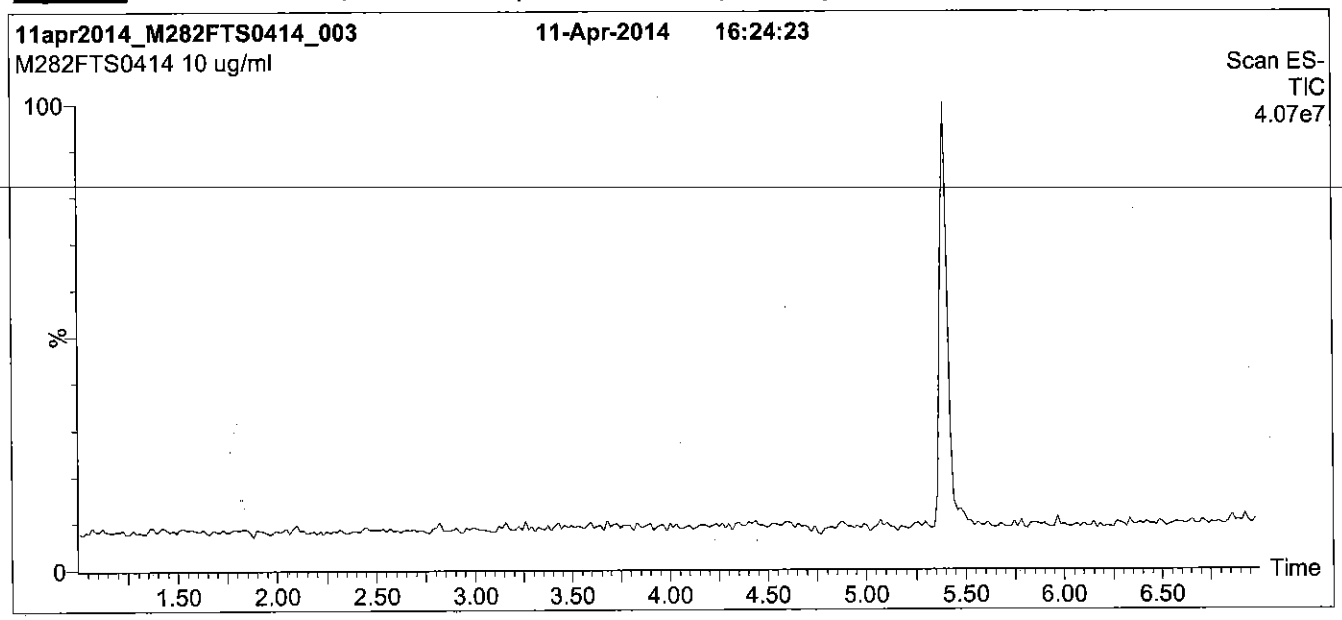
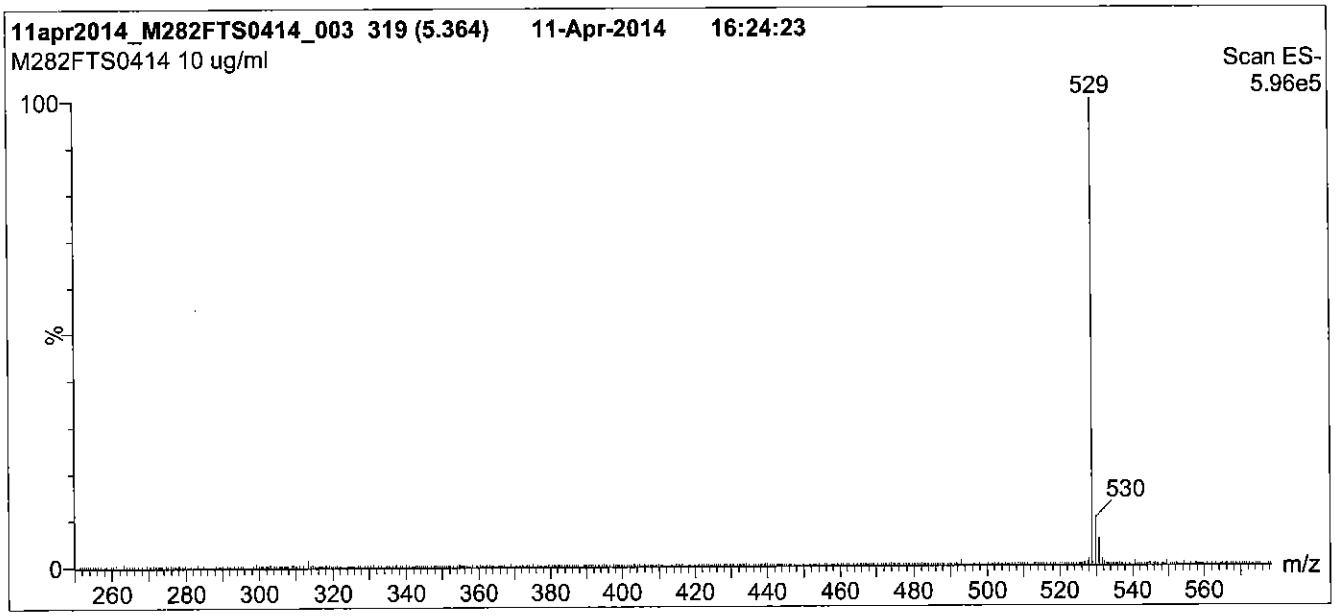
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

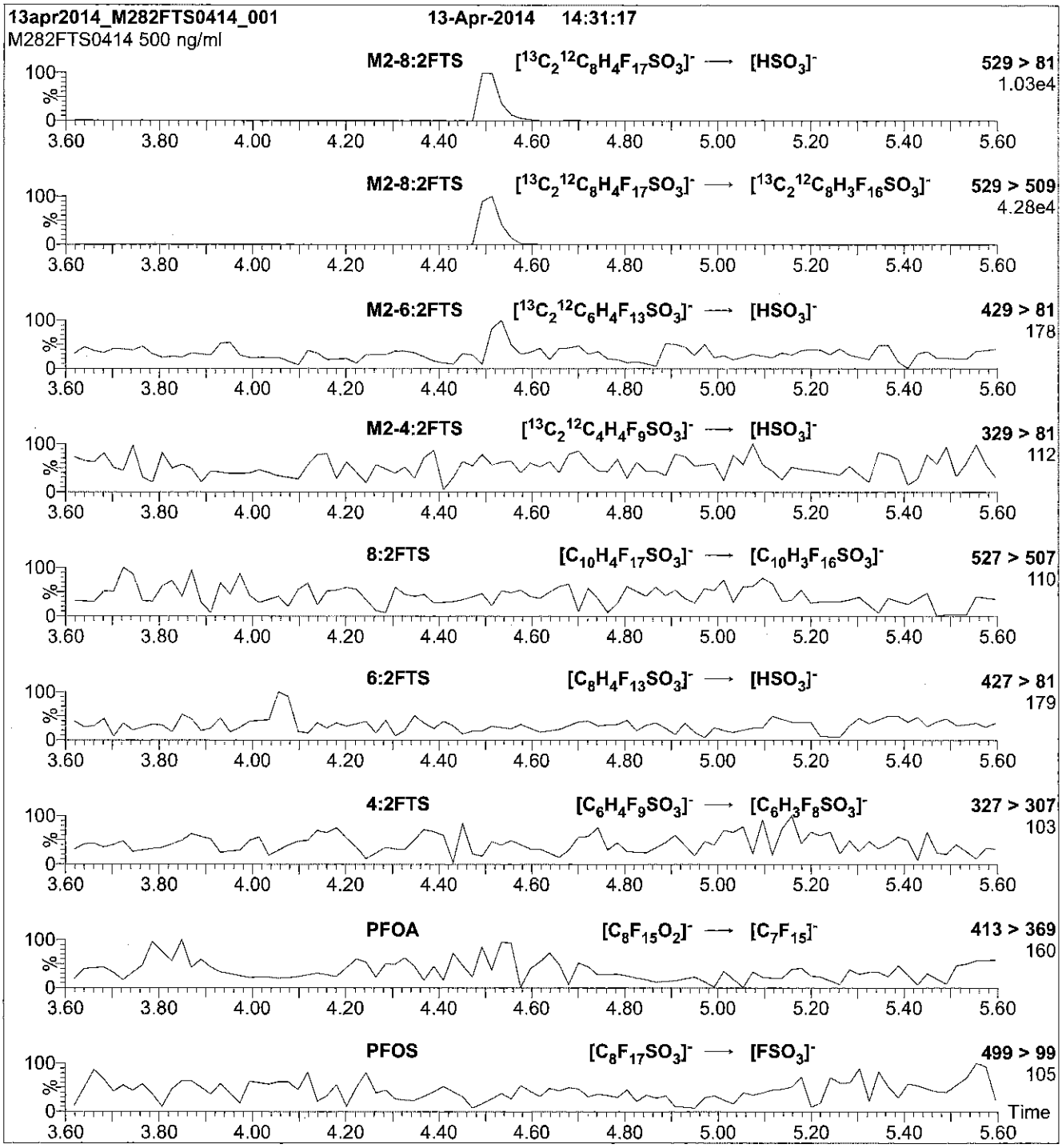
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM2-8:2FTS_00002

R: 7/6/16 cw

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

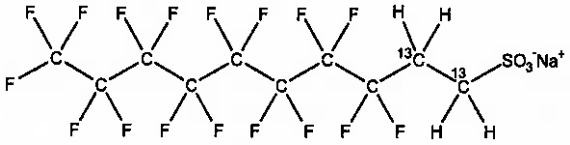
WELLINGTON LABORATORIES

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



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) 47.9 ± 2.4 µg/ml (M2-8:2FTS 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 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

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

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:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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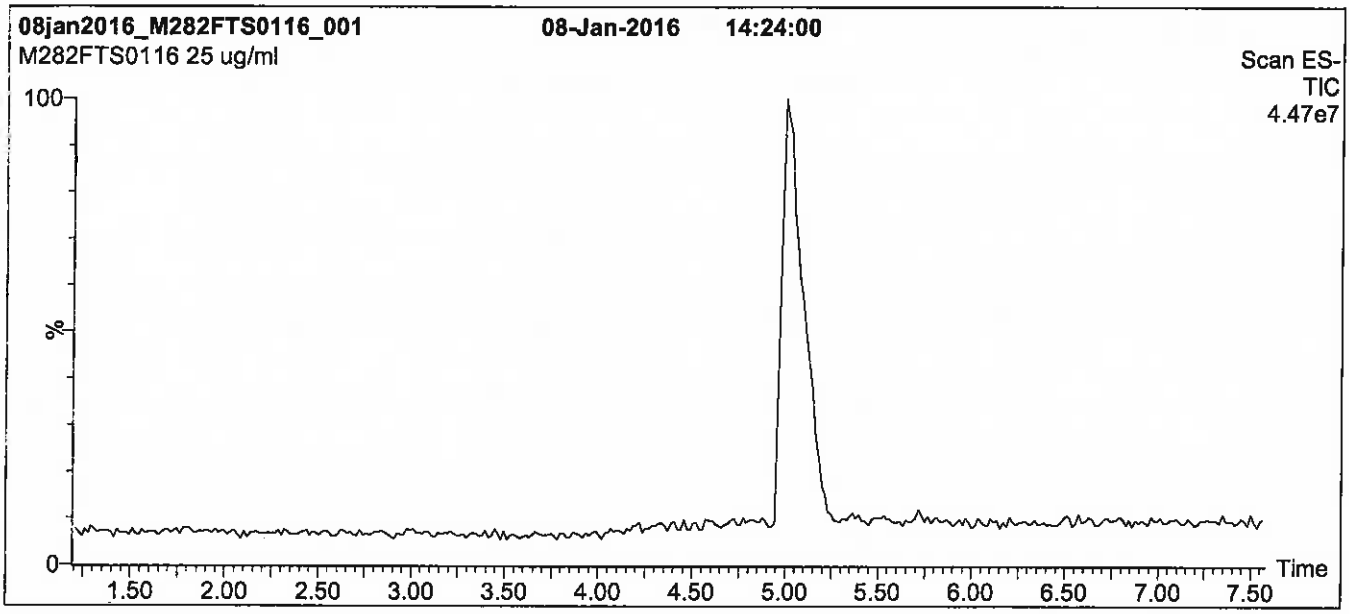
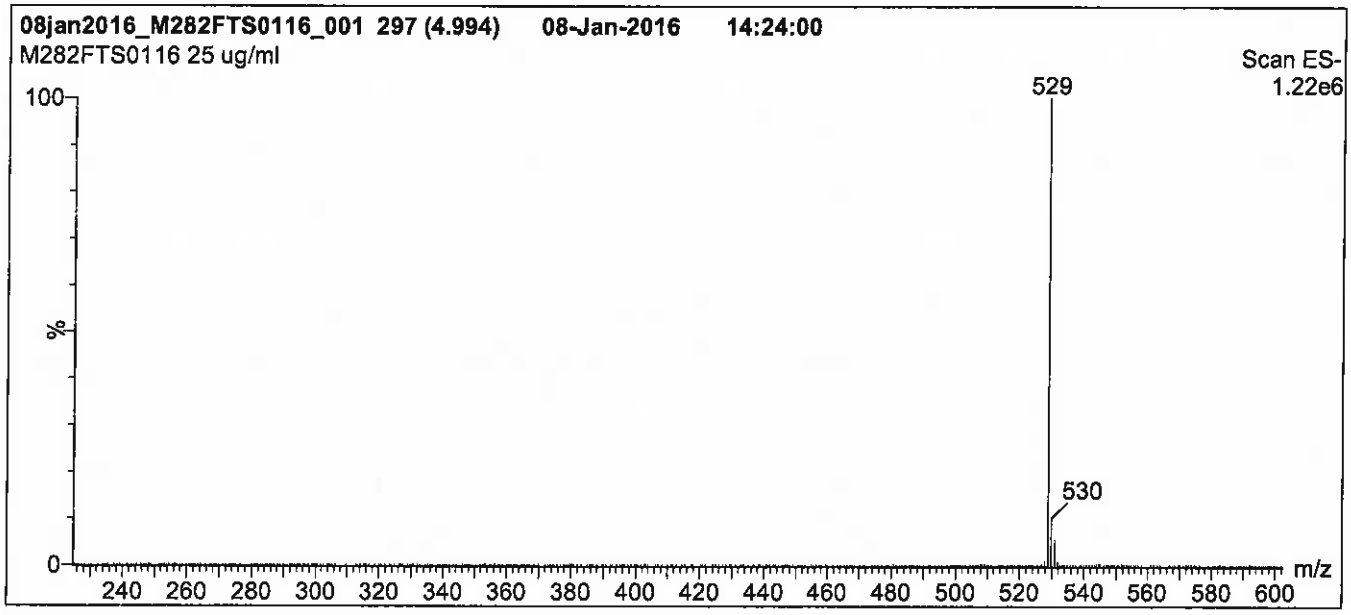




Conditions for Figure 1:

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

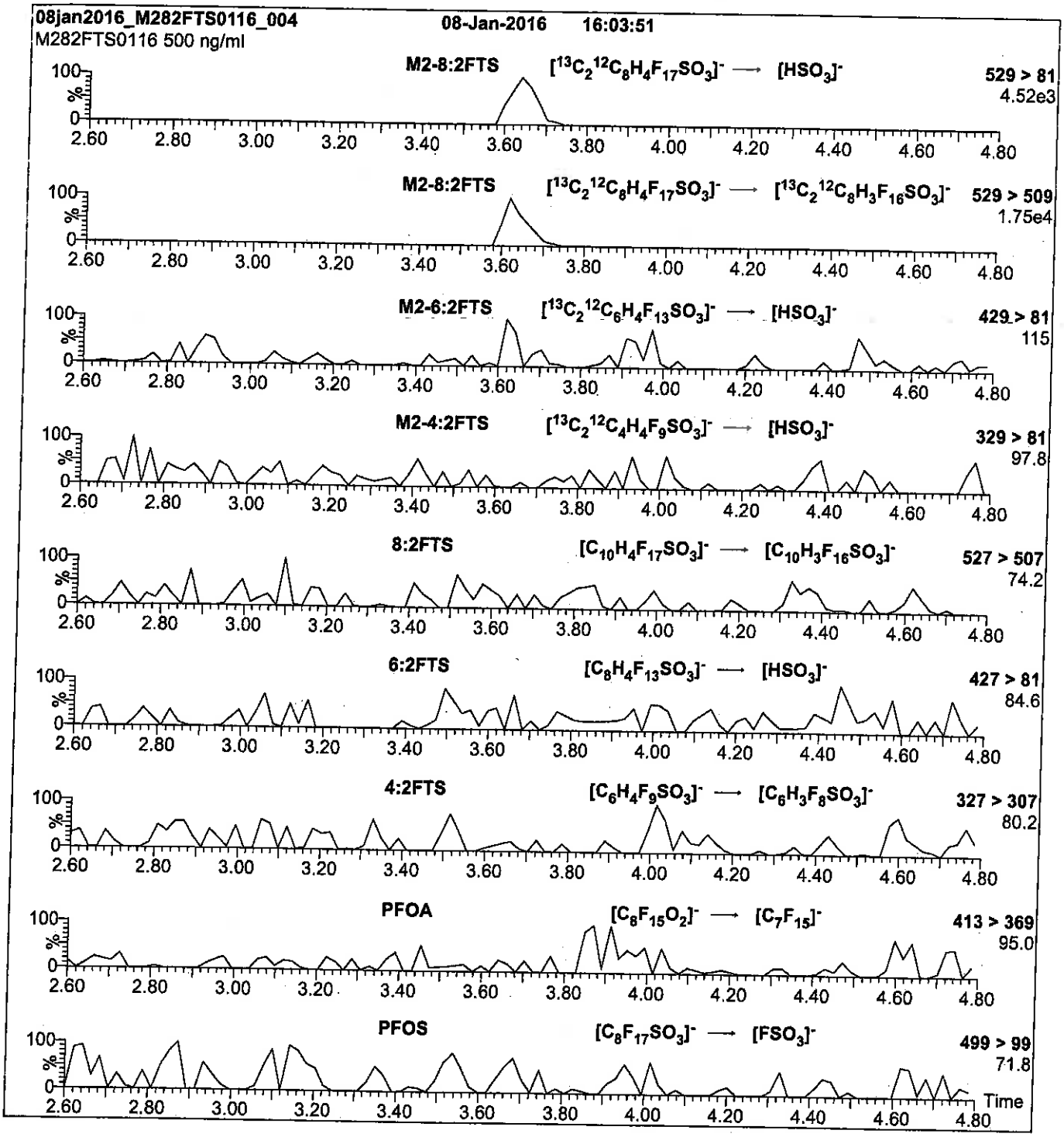
Flow: 300 µl/min

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

Reagent

LCM2PFHxDA_00008

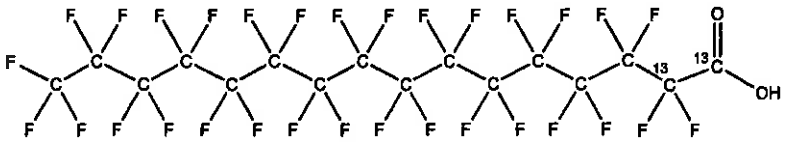
R: SBC 9/22/16

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-$^{13}C_2$)
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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

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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

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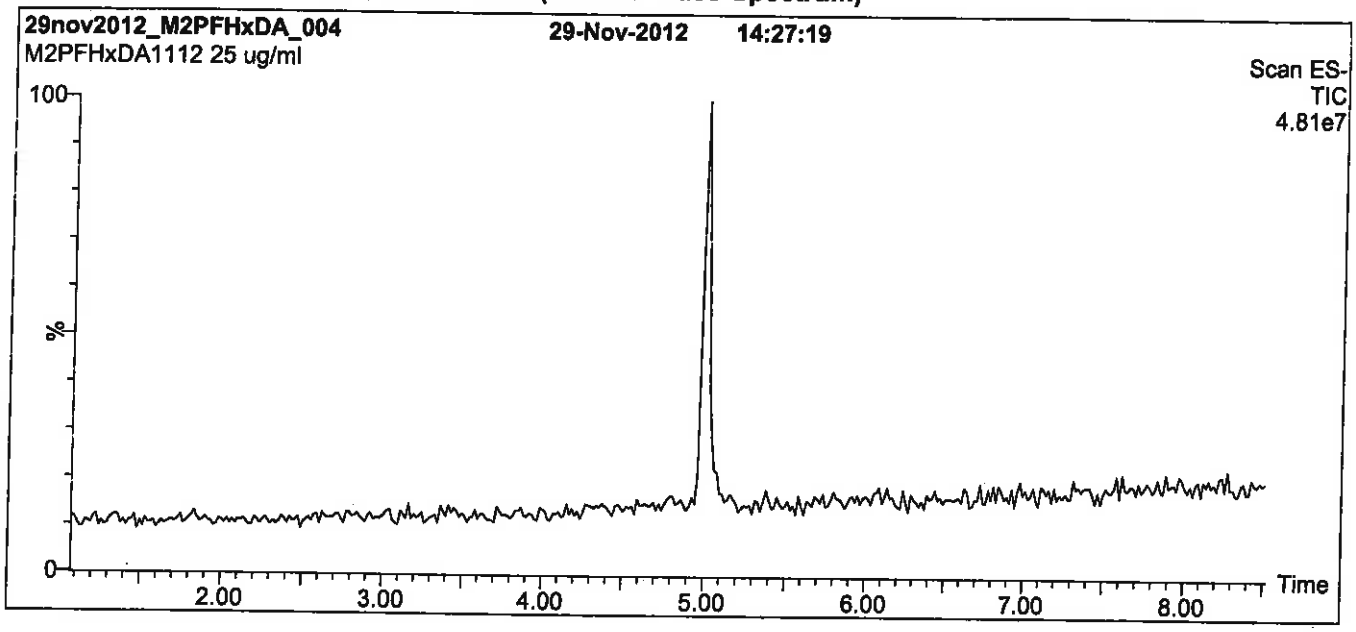
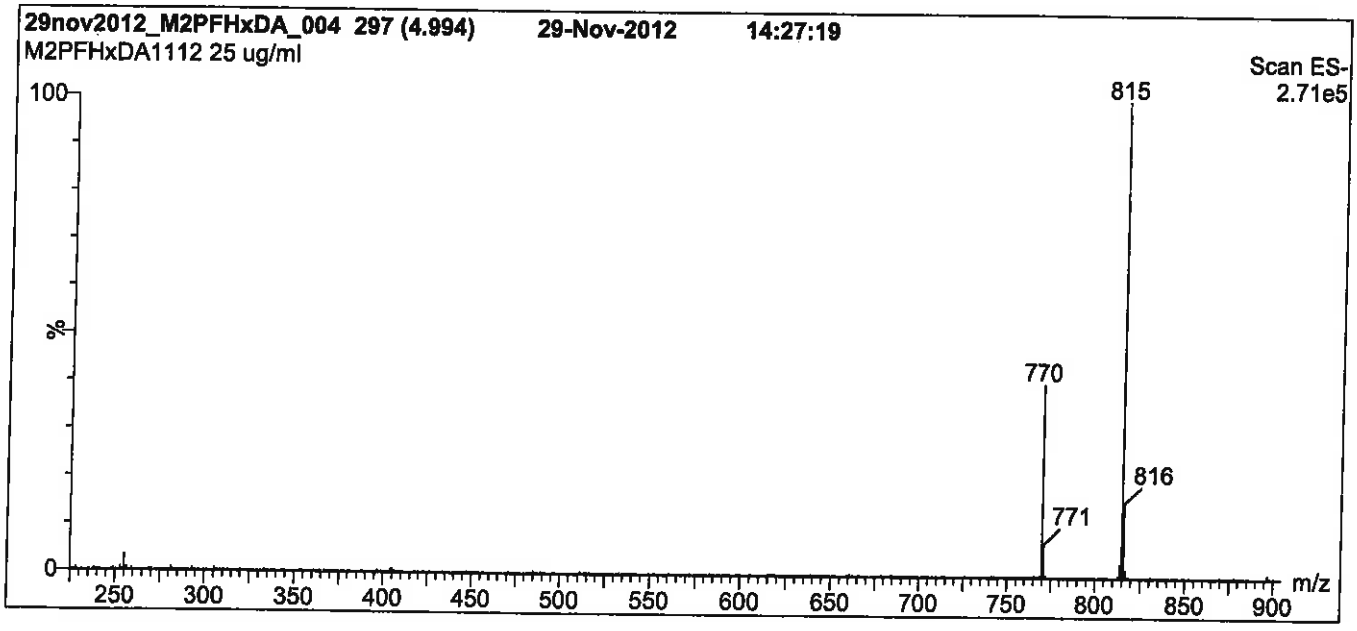
Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

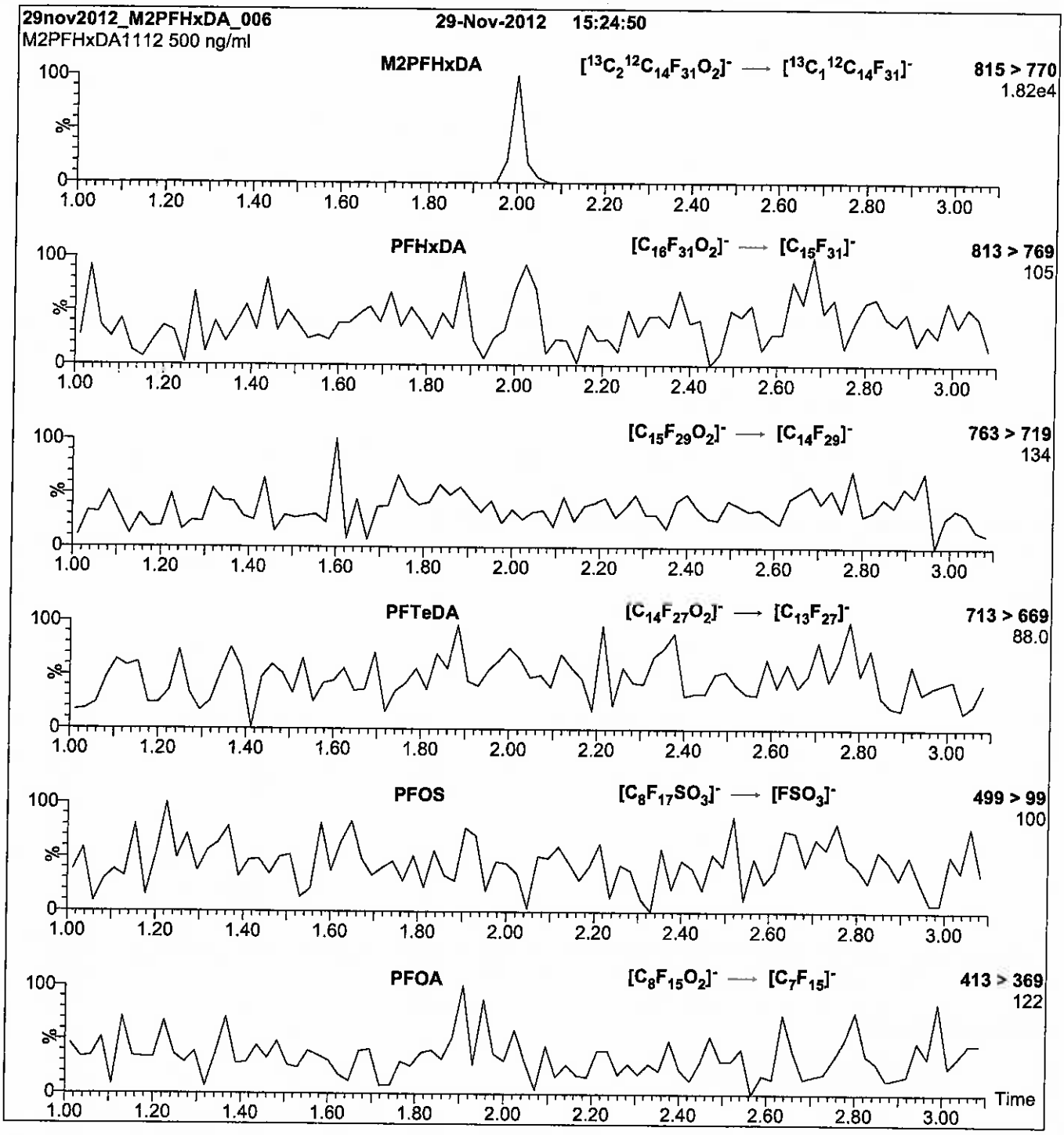
Flow: 300 µl/min

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

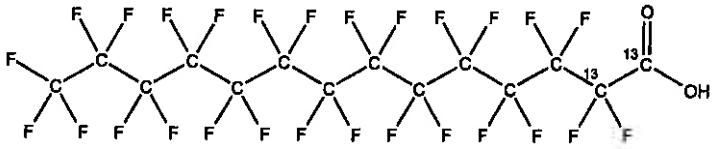
Scanned 10/14/16 R: SBC 9/22/16

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)

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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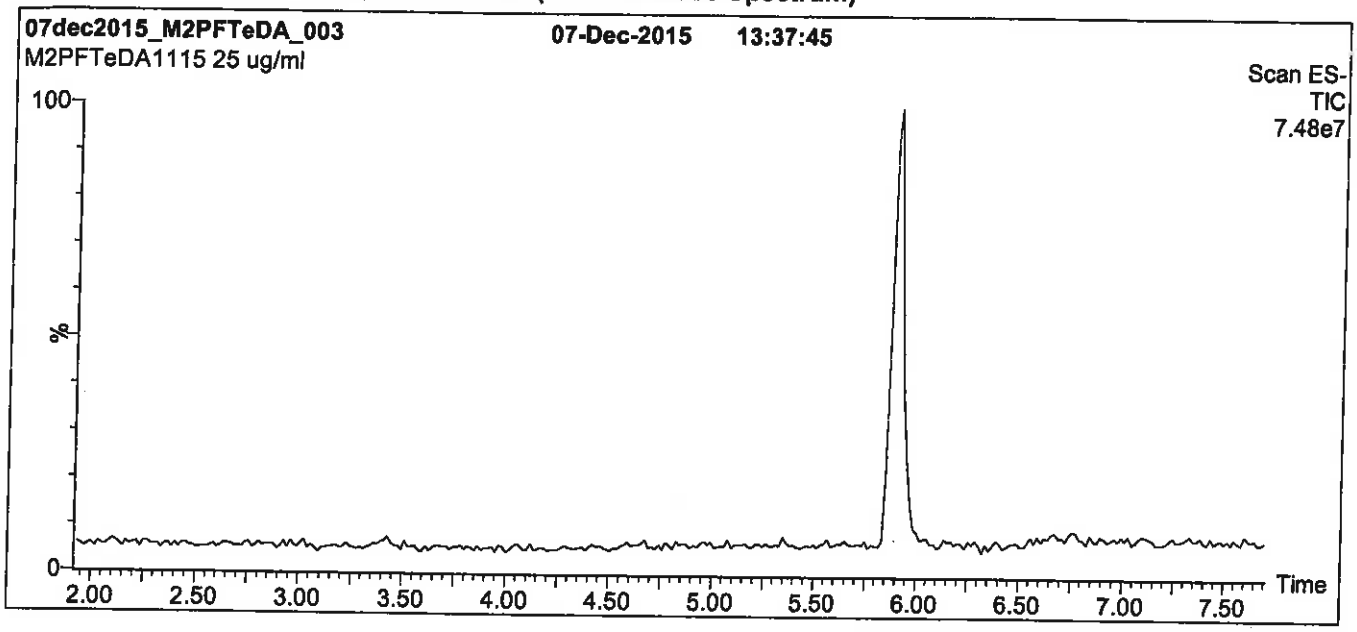
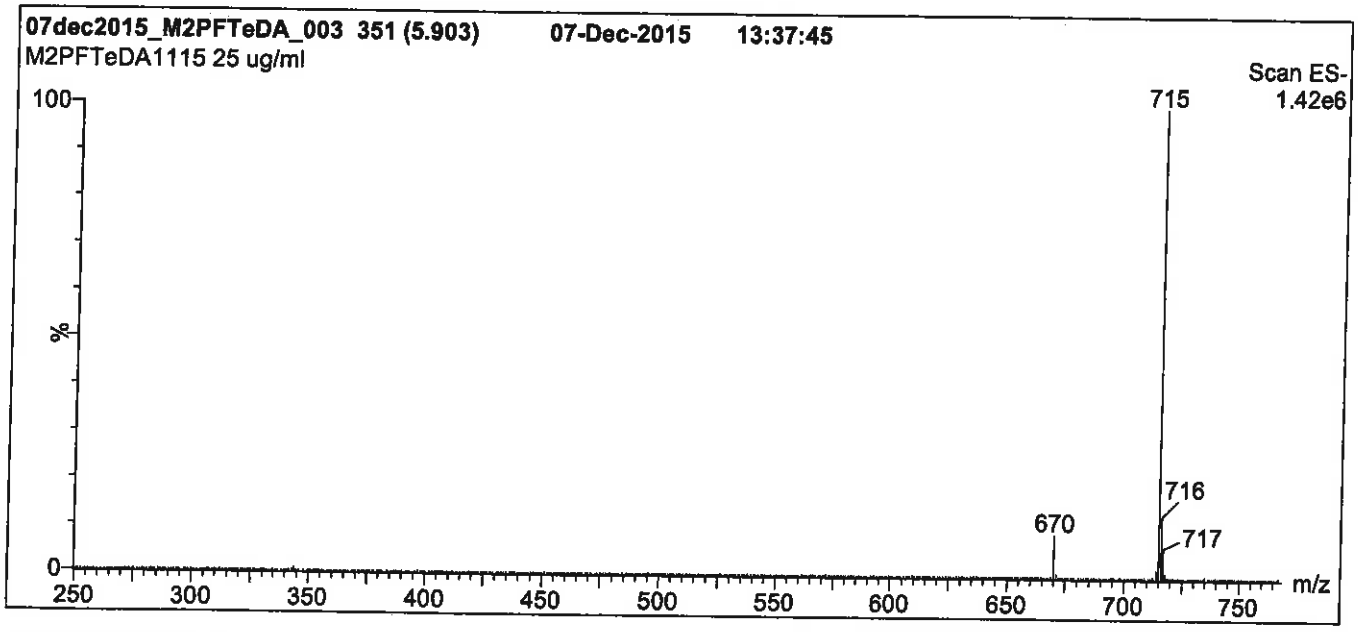
Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





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

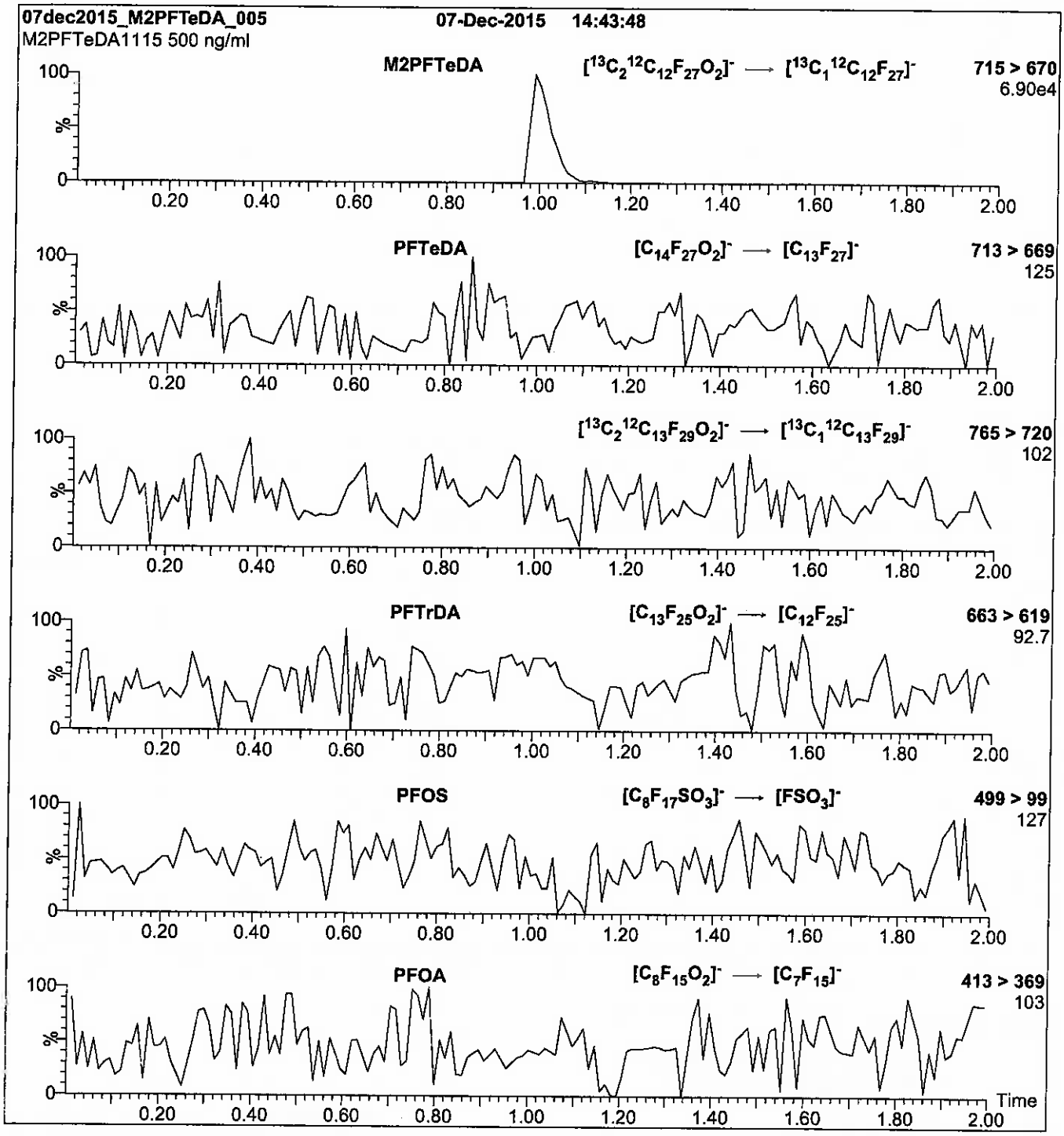
Flow: 300 µl/min

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

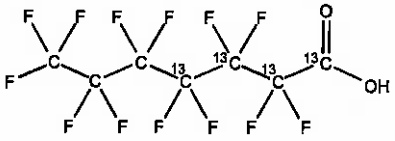
WELLINGTON LABORATORIES

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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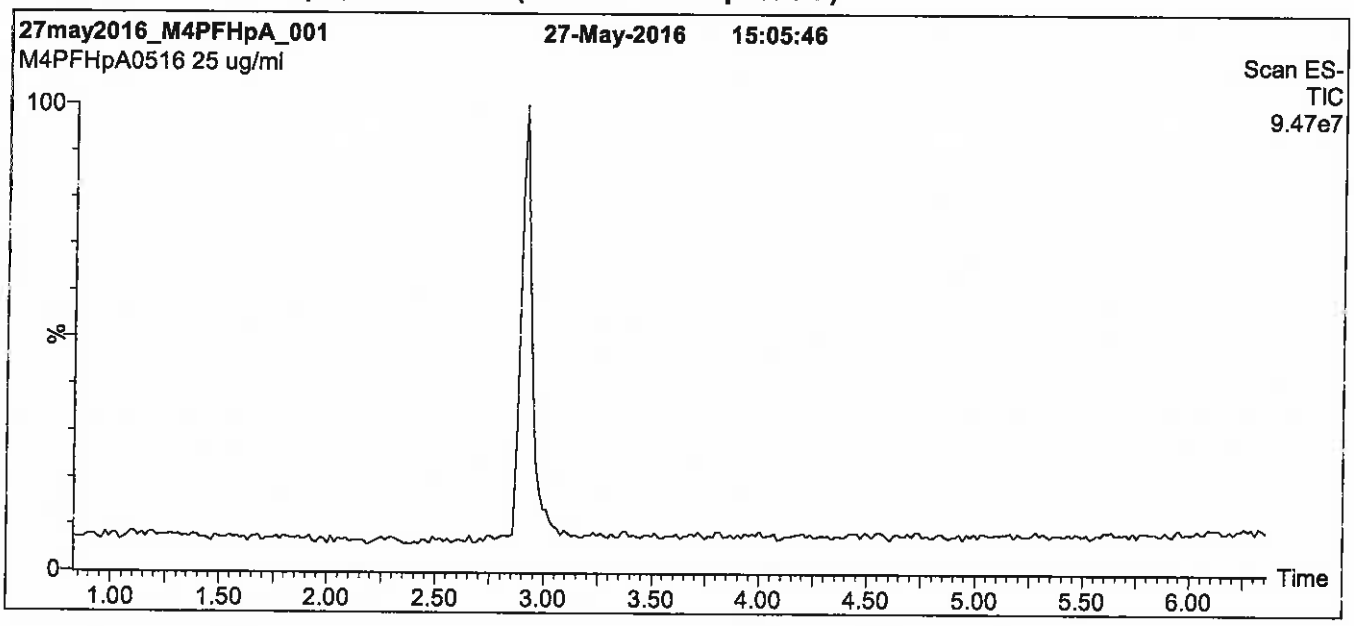
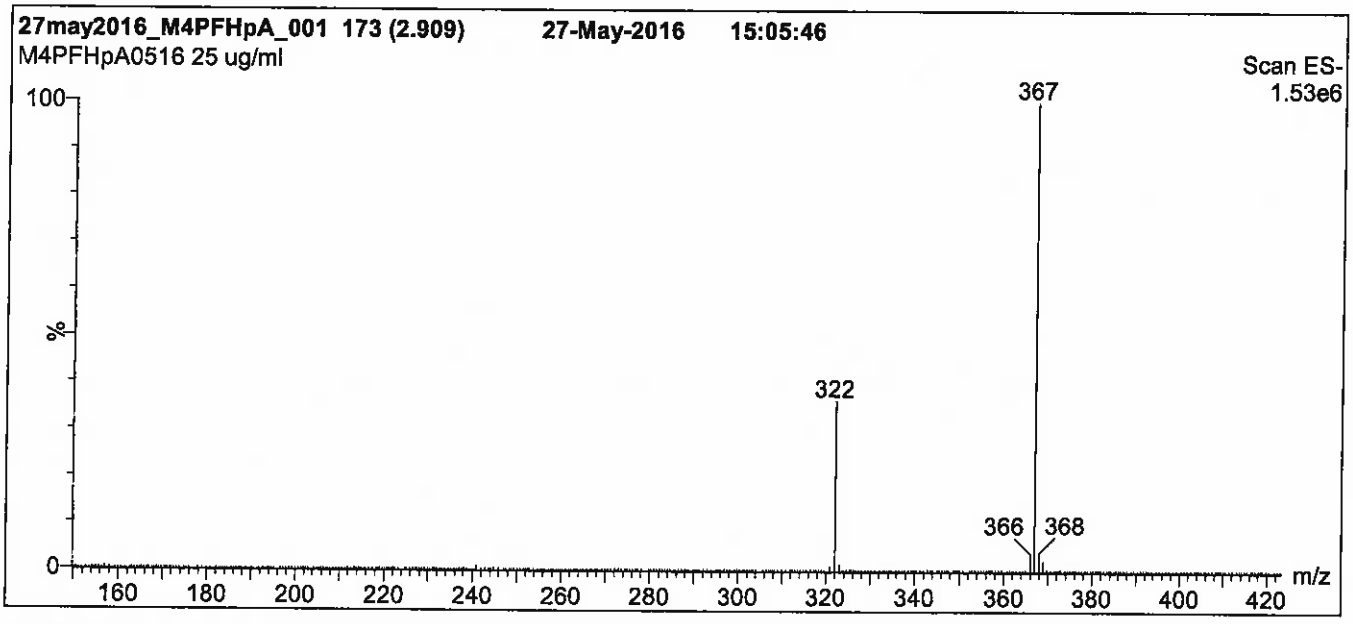
Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





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

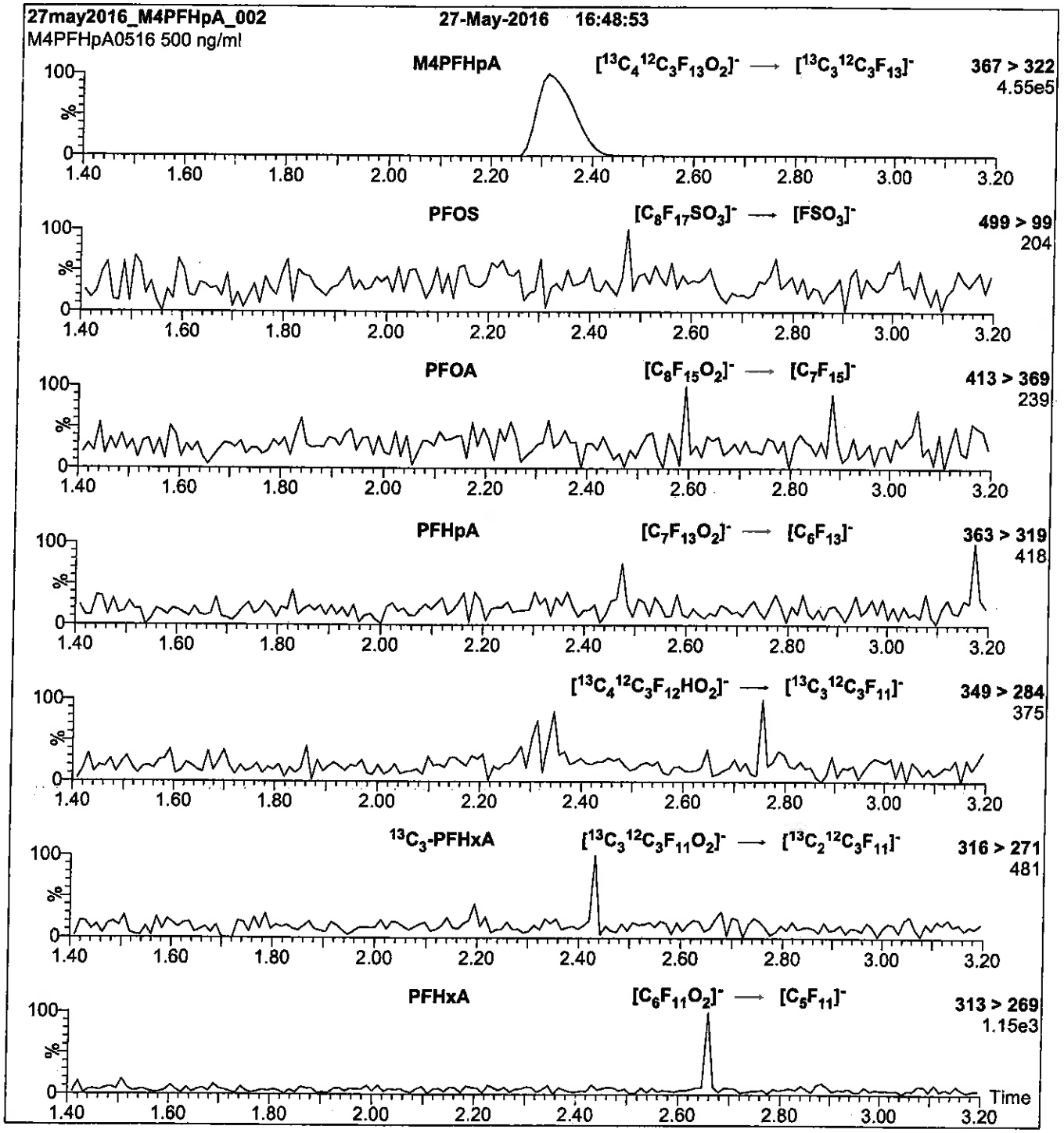
Flow: 300 µl/min

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

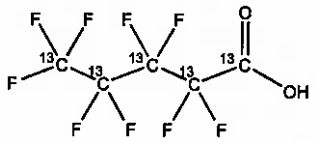
739590
ID: LCM5PFPEA_00008
Exp: 05/22/20 Prpd: SBC
13C5-Perfluoropentanoic a

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:

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

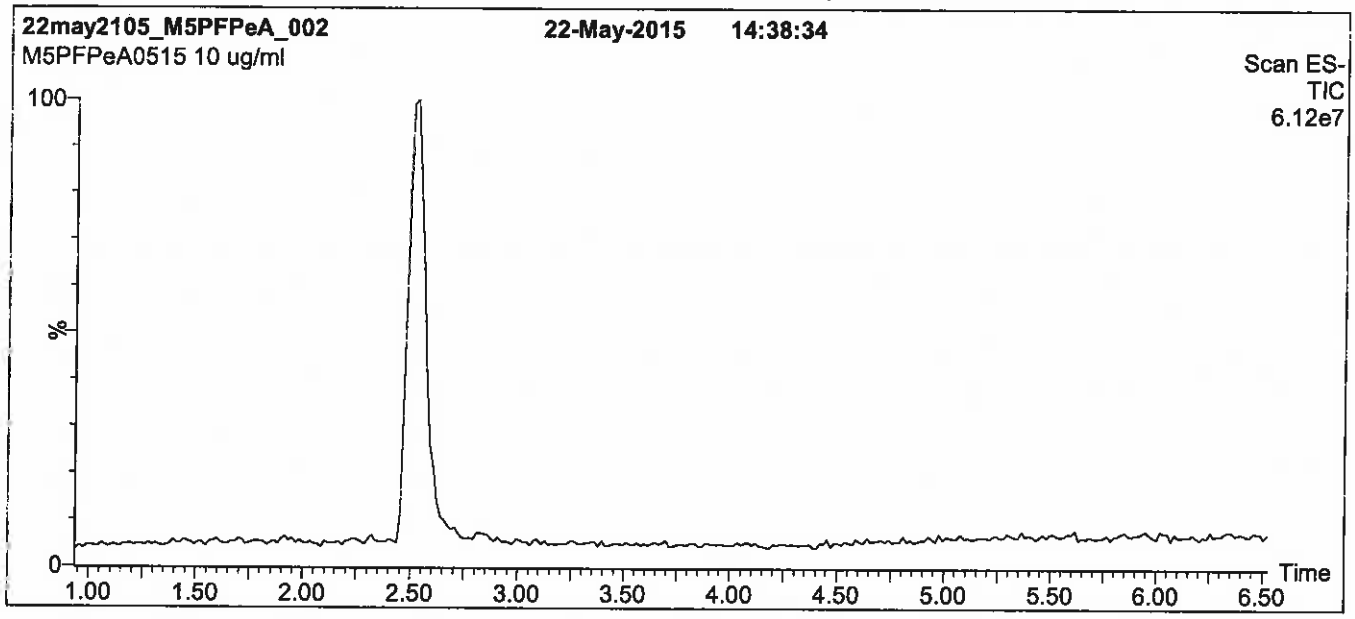
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

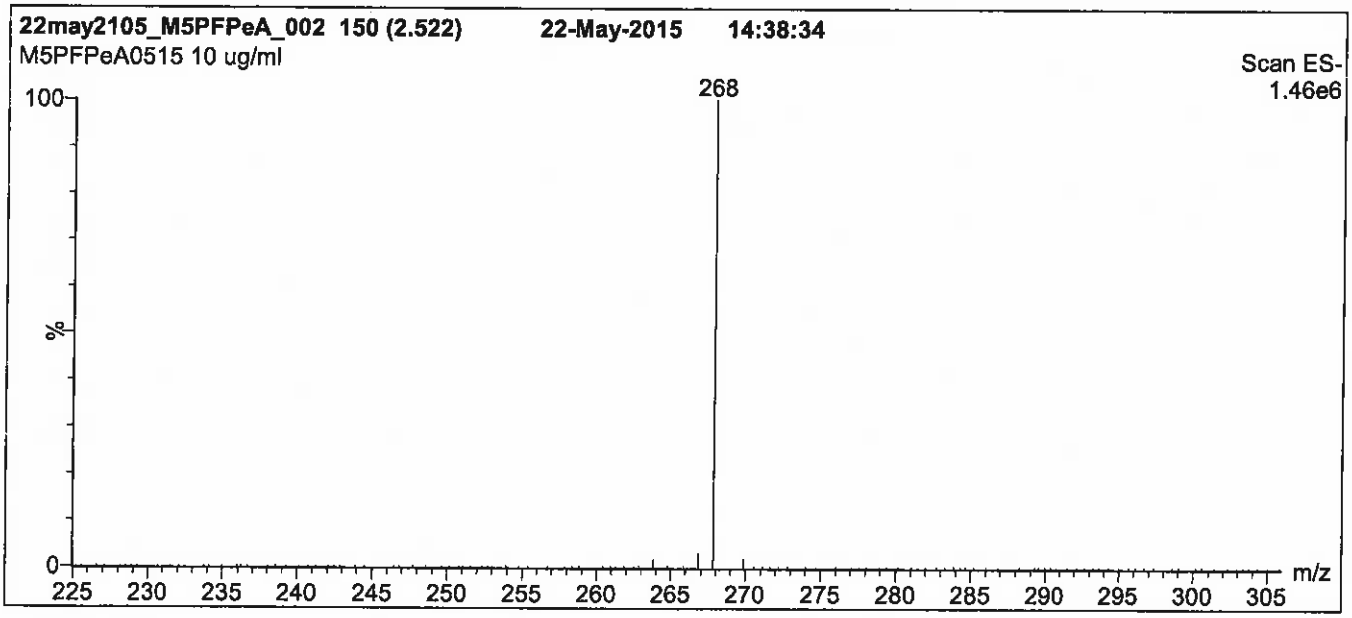
CALA

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

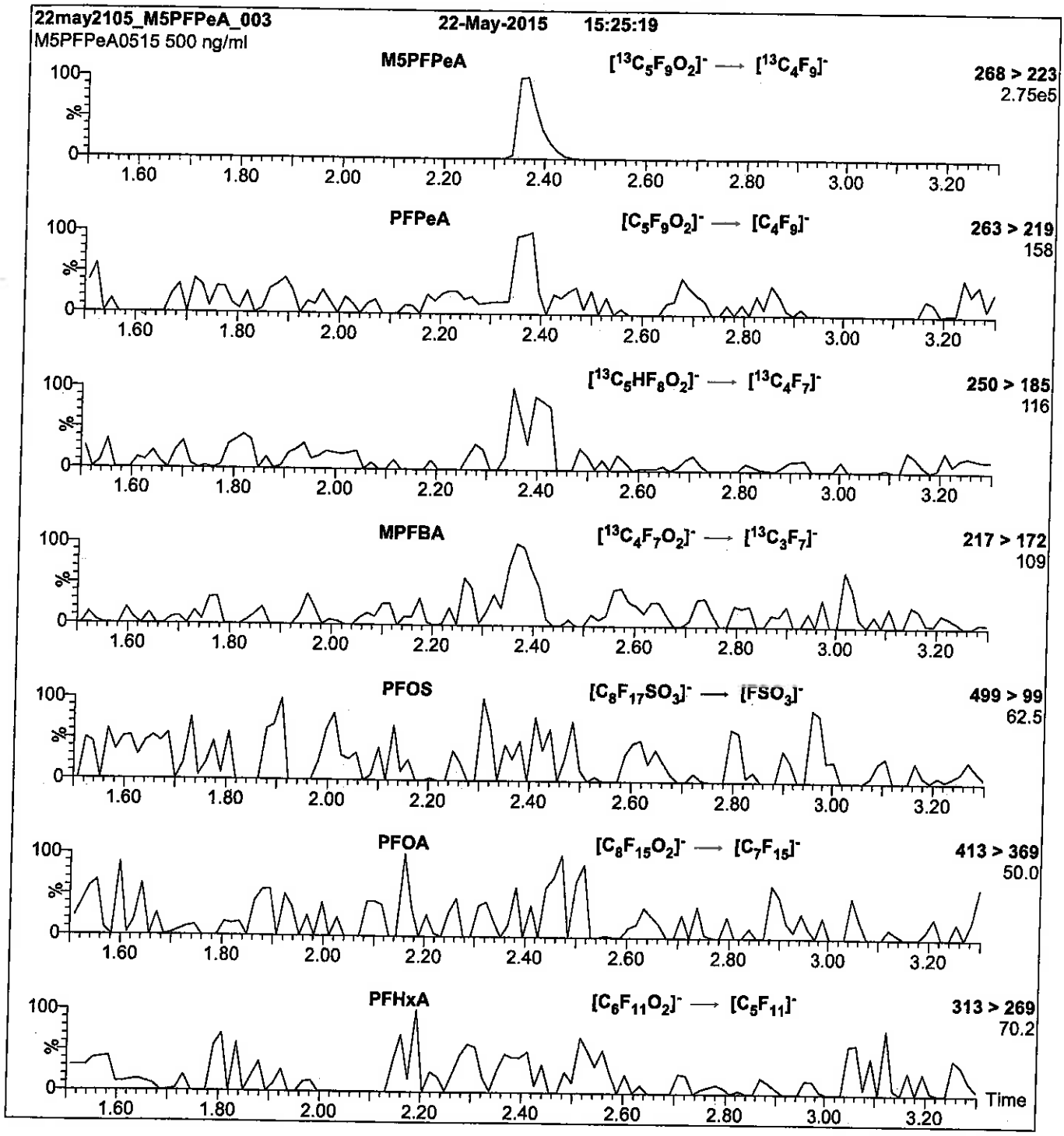
Flow: 300 µl/min

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

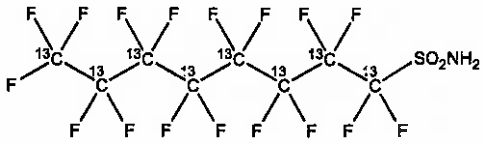
R: SBC 9/22/16
Scanned 10/14/16 SBC

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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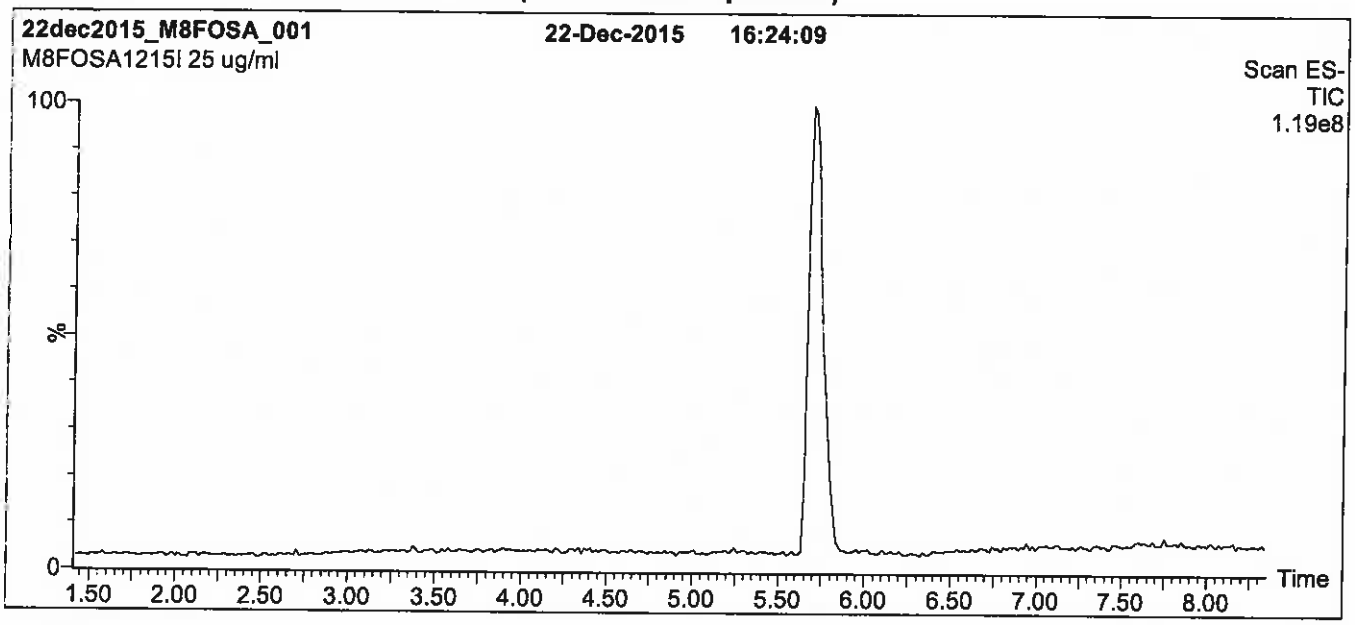
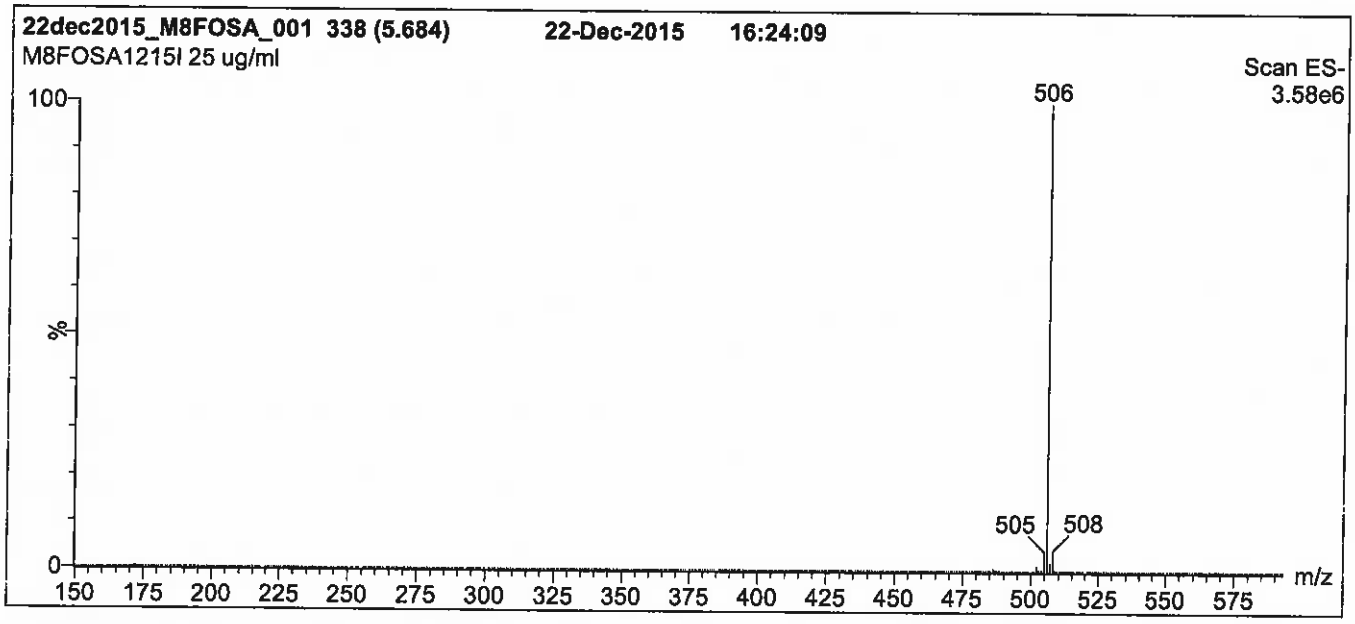
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

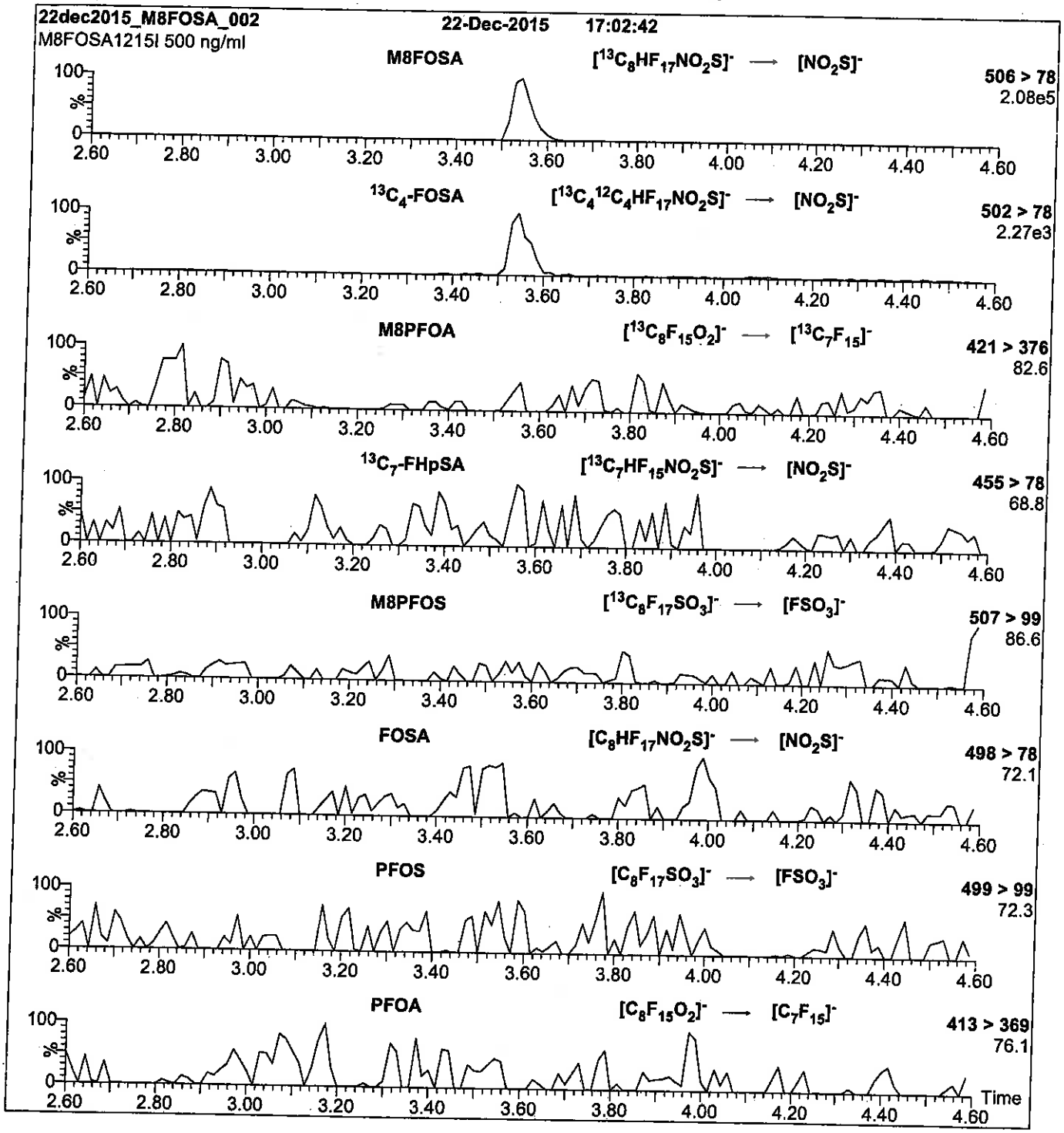
Flow: 300 µl/min

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

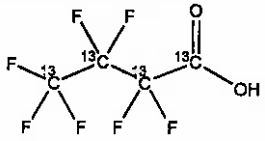
739593
ID: LCMPFBA_00008
Exp: 05/24/21 Prpd: SBC
13C4-Perfluorobutanoic ac

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

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

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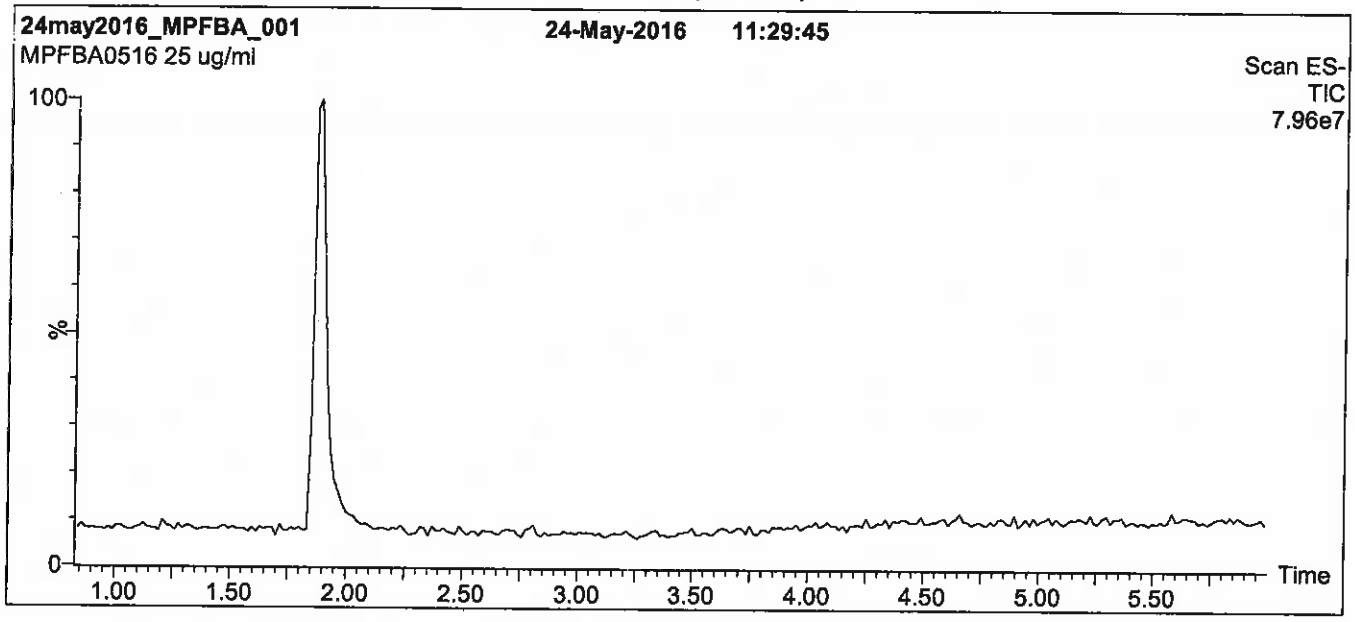
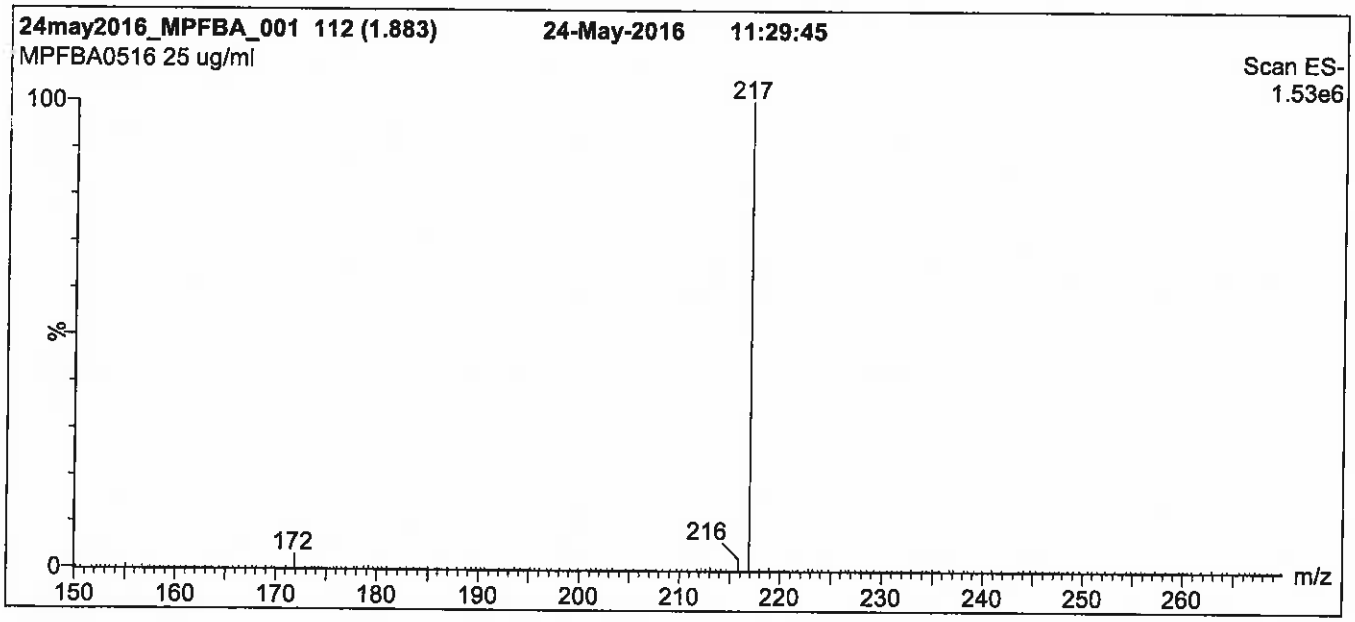
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





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

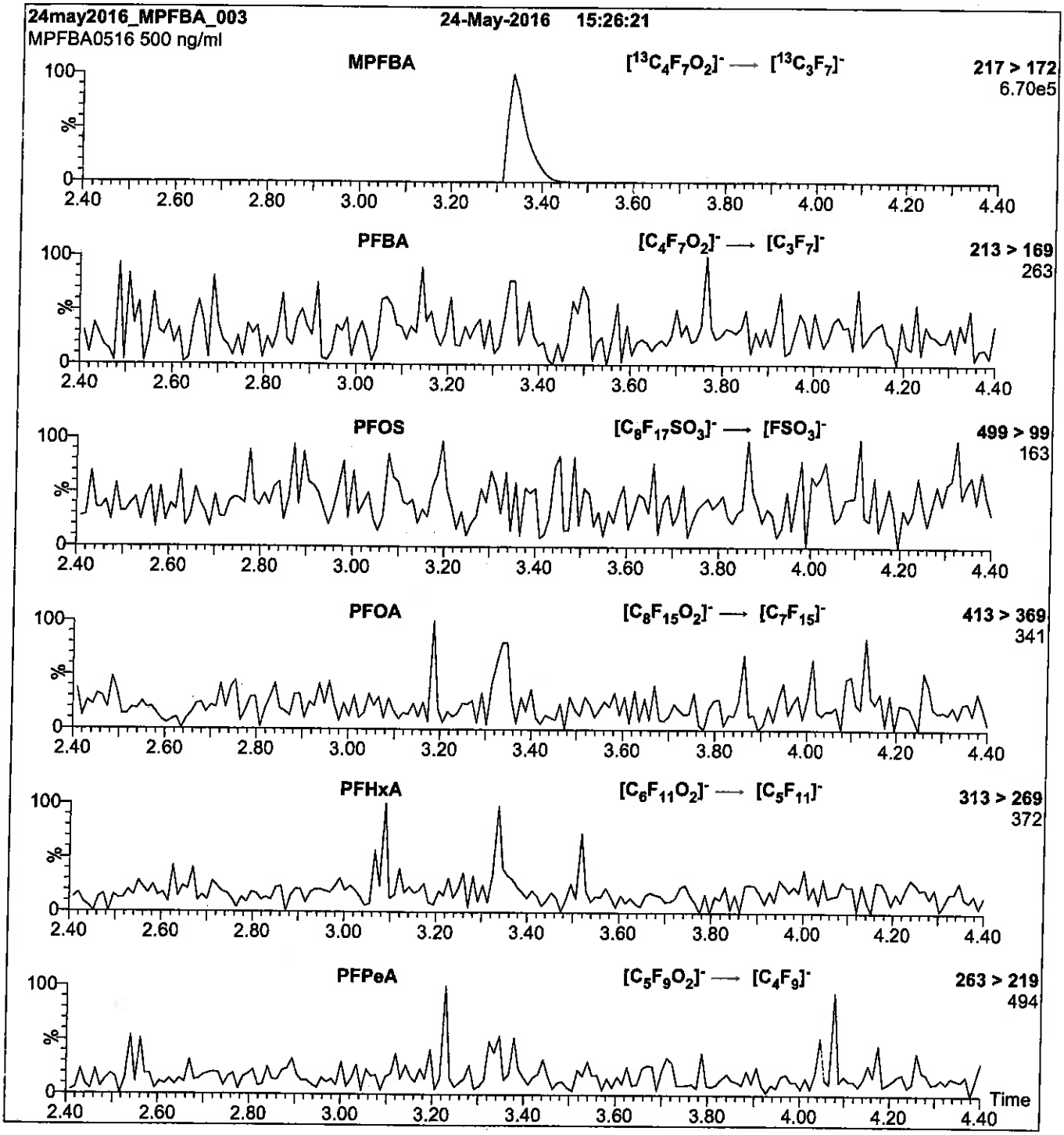
Flow: 300 µl/min

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

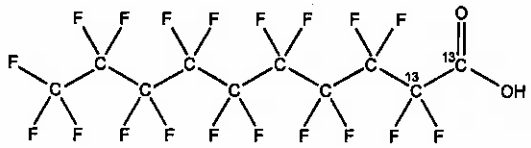
Scanned 10/14/16 R: SBC 9/22/16

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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

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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 Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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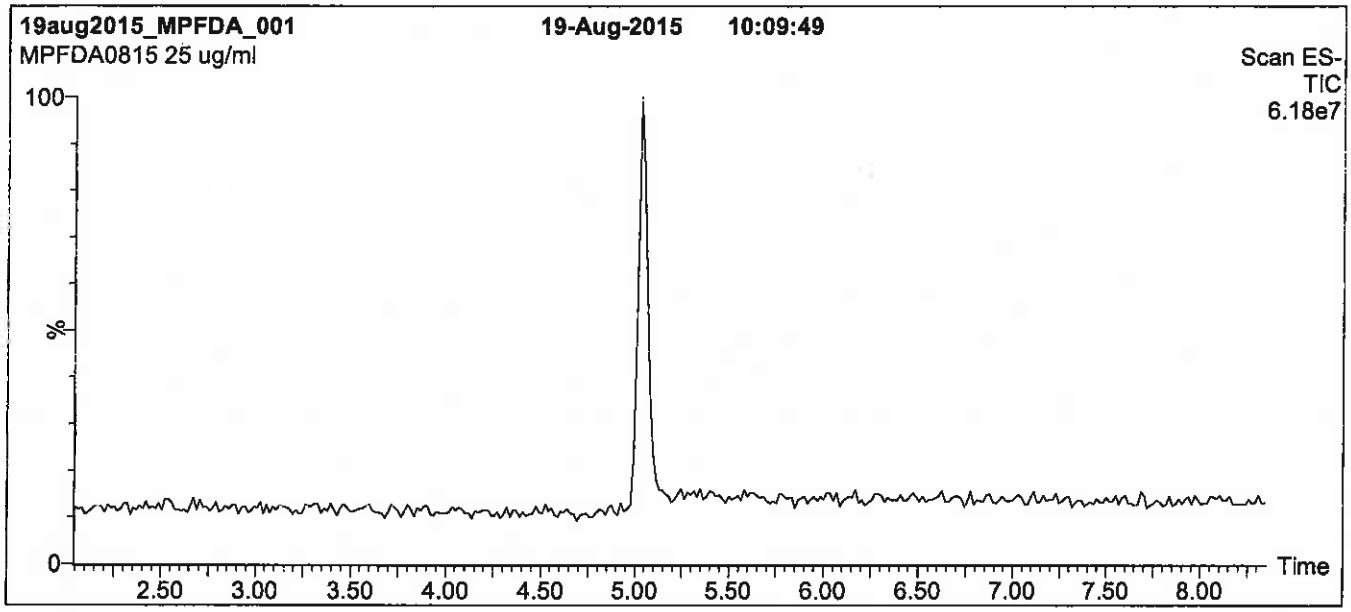
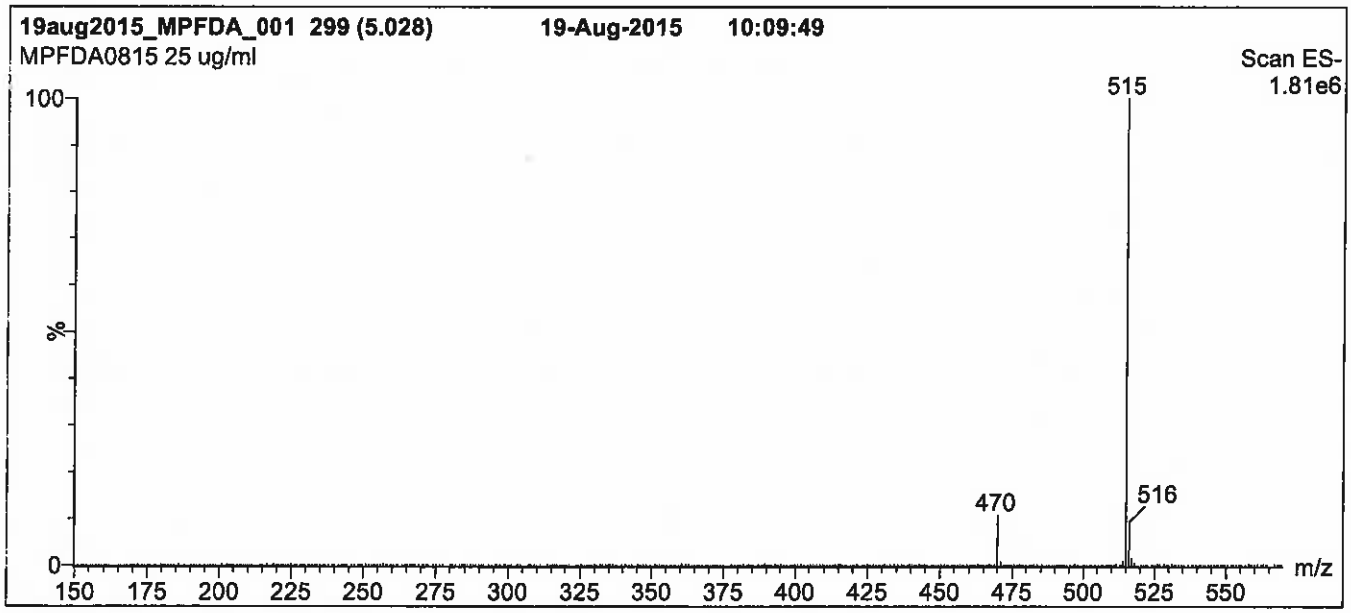
Figure 1: **MPFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

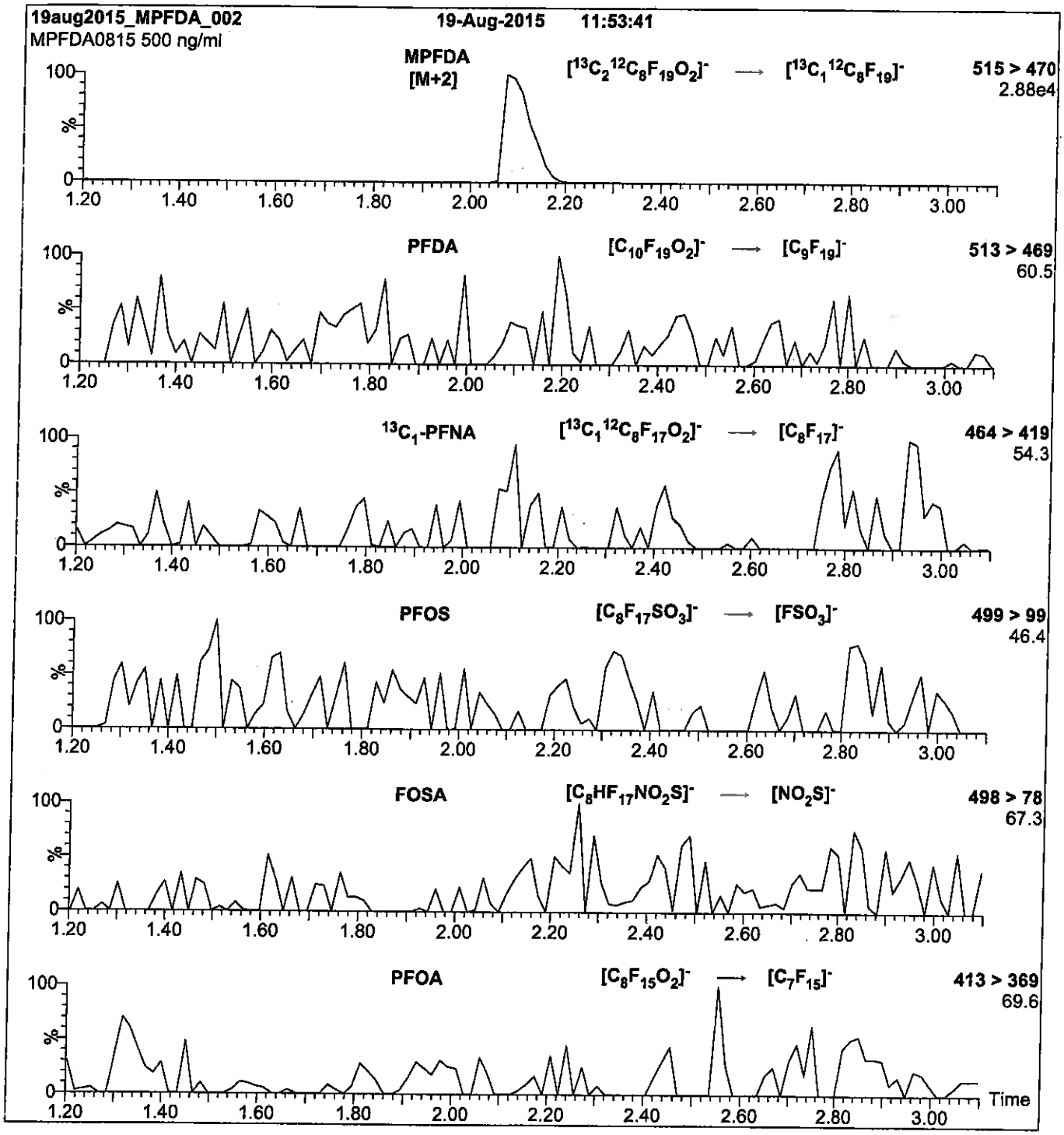
Flow: 300 µl/min

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

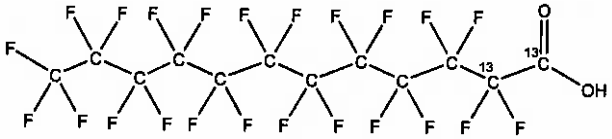
WELLINGTON LABORATORIES

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 ($1,2\text{-}^{13}C_2$)
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.

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
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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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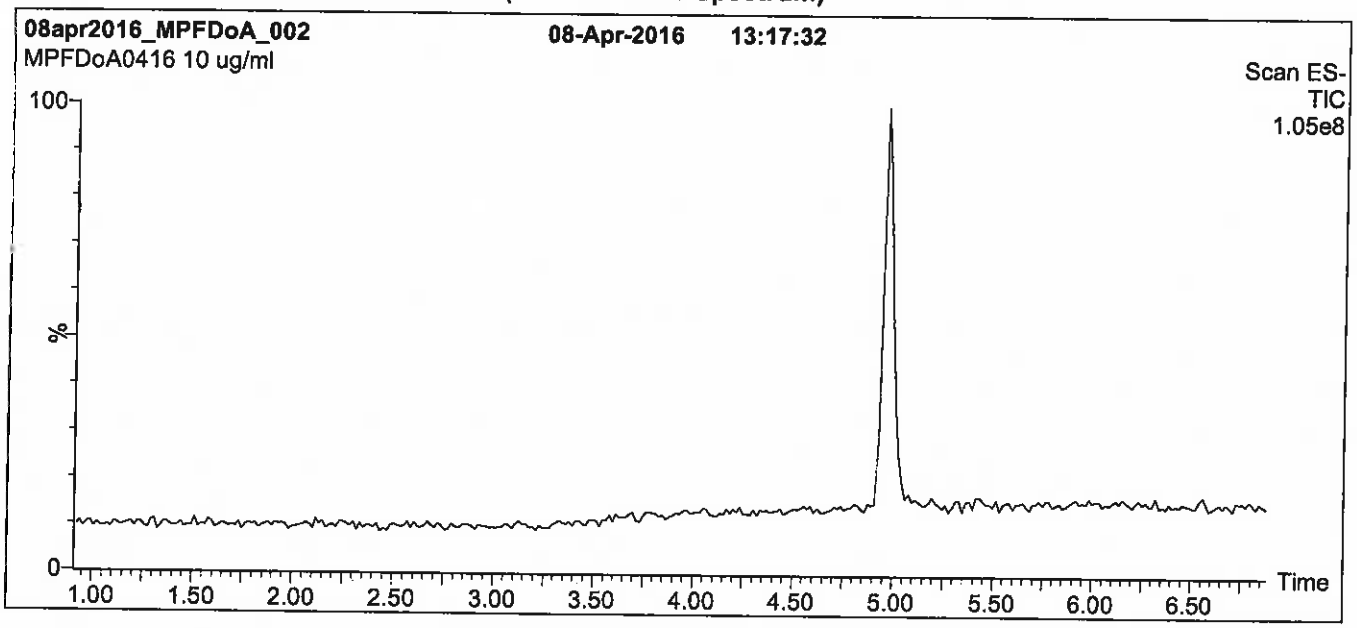
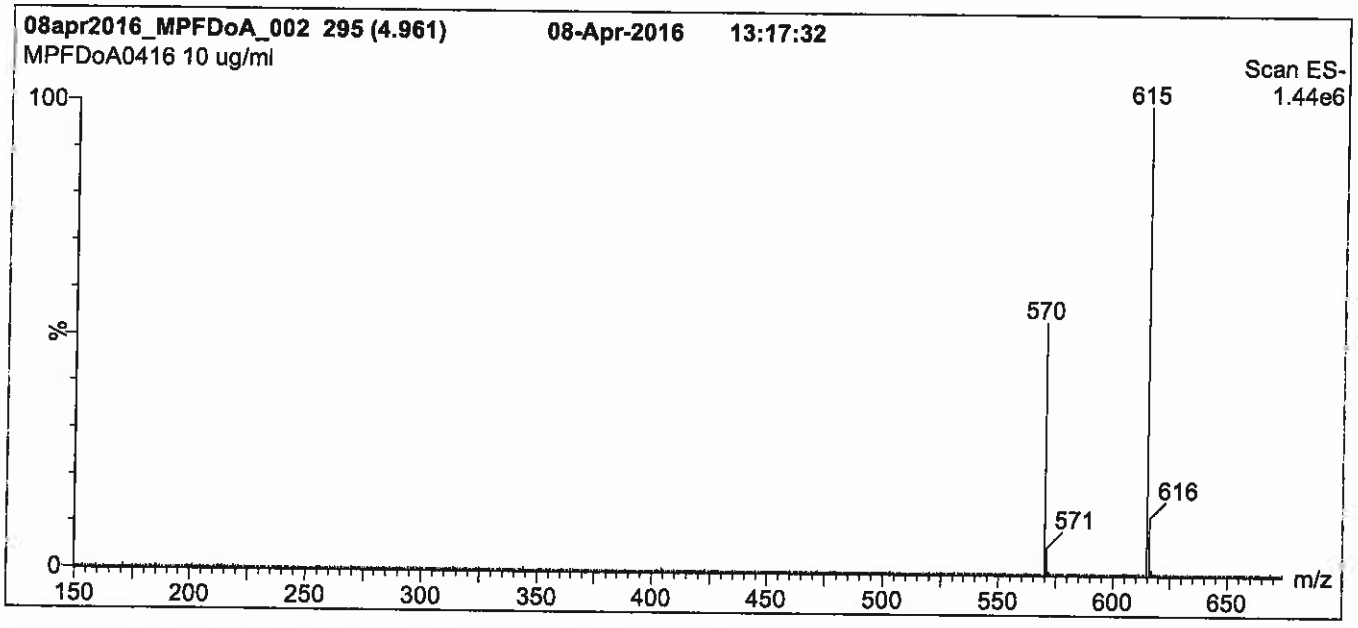
Figure 1: **MPFDoA; LC/MS Data (TIC and Mass Spectrum)**





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

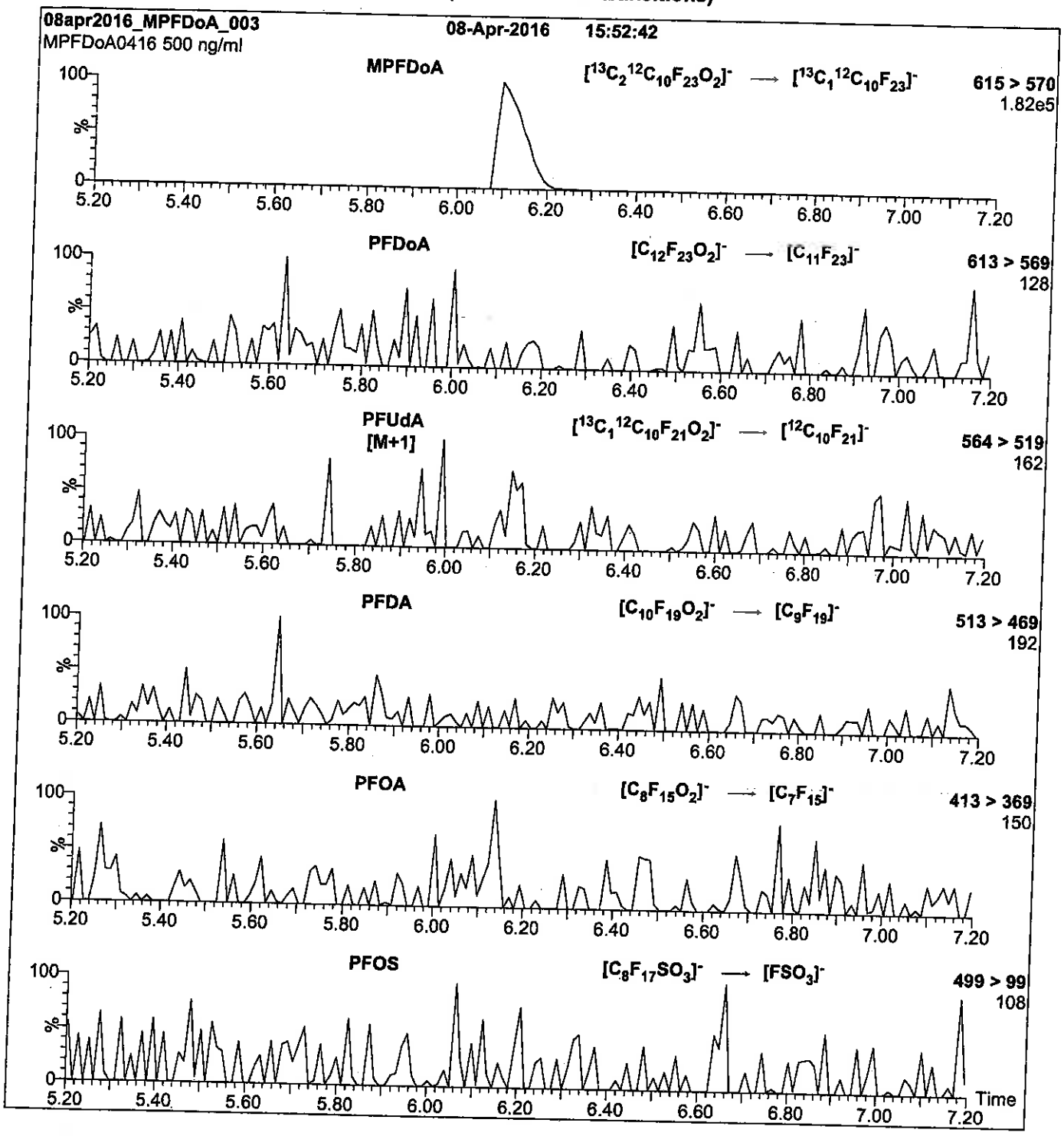
Flow: 300 µl/min

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

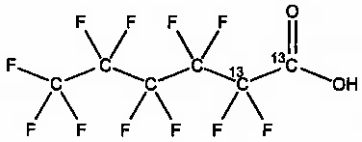
Scanned 10/14/16 JR R: SBC 9/22/16

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

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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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

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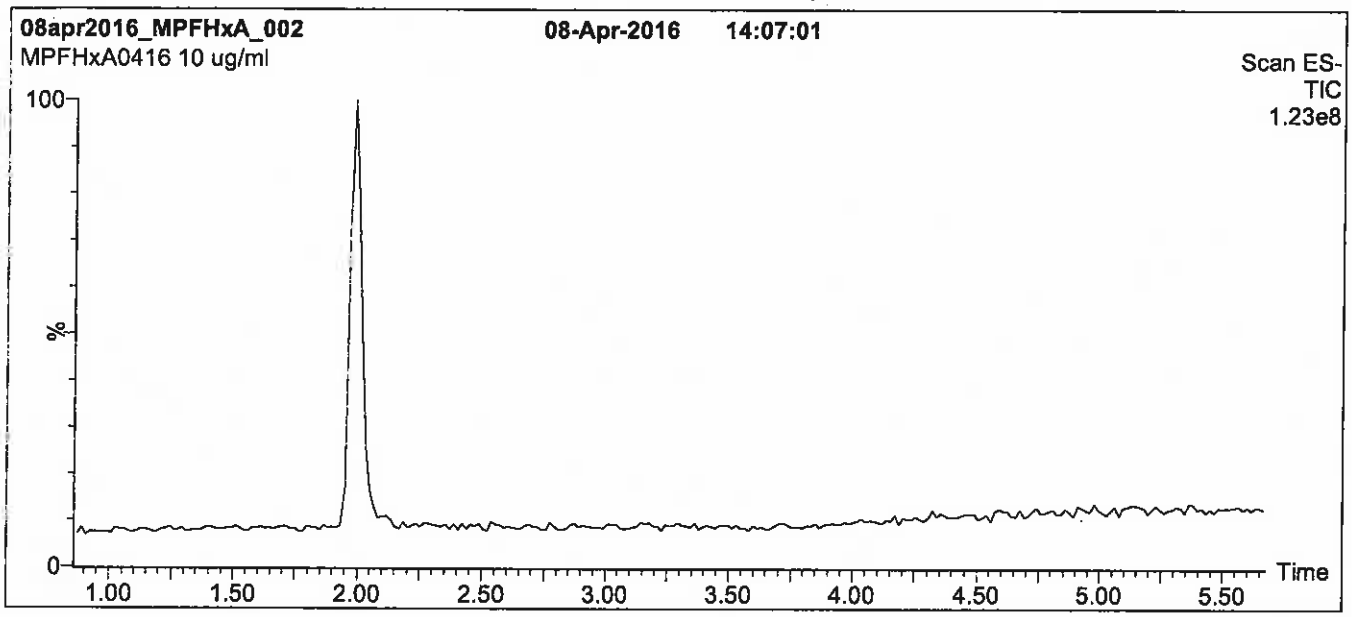
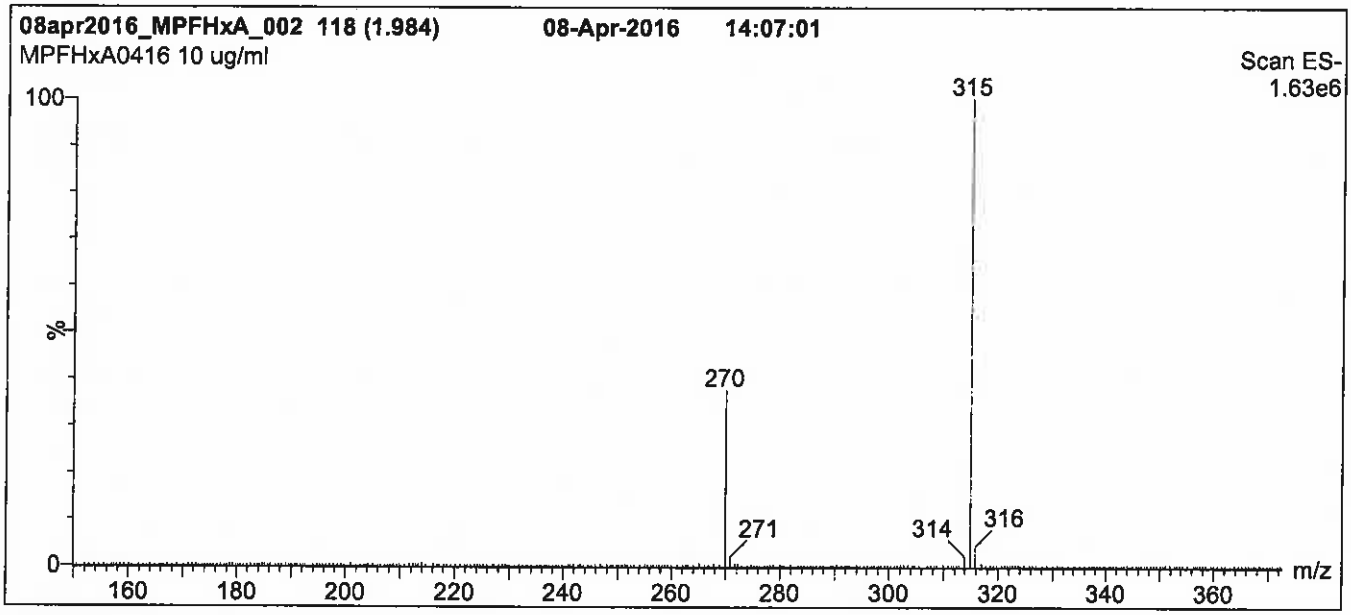
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





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

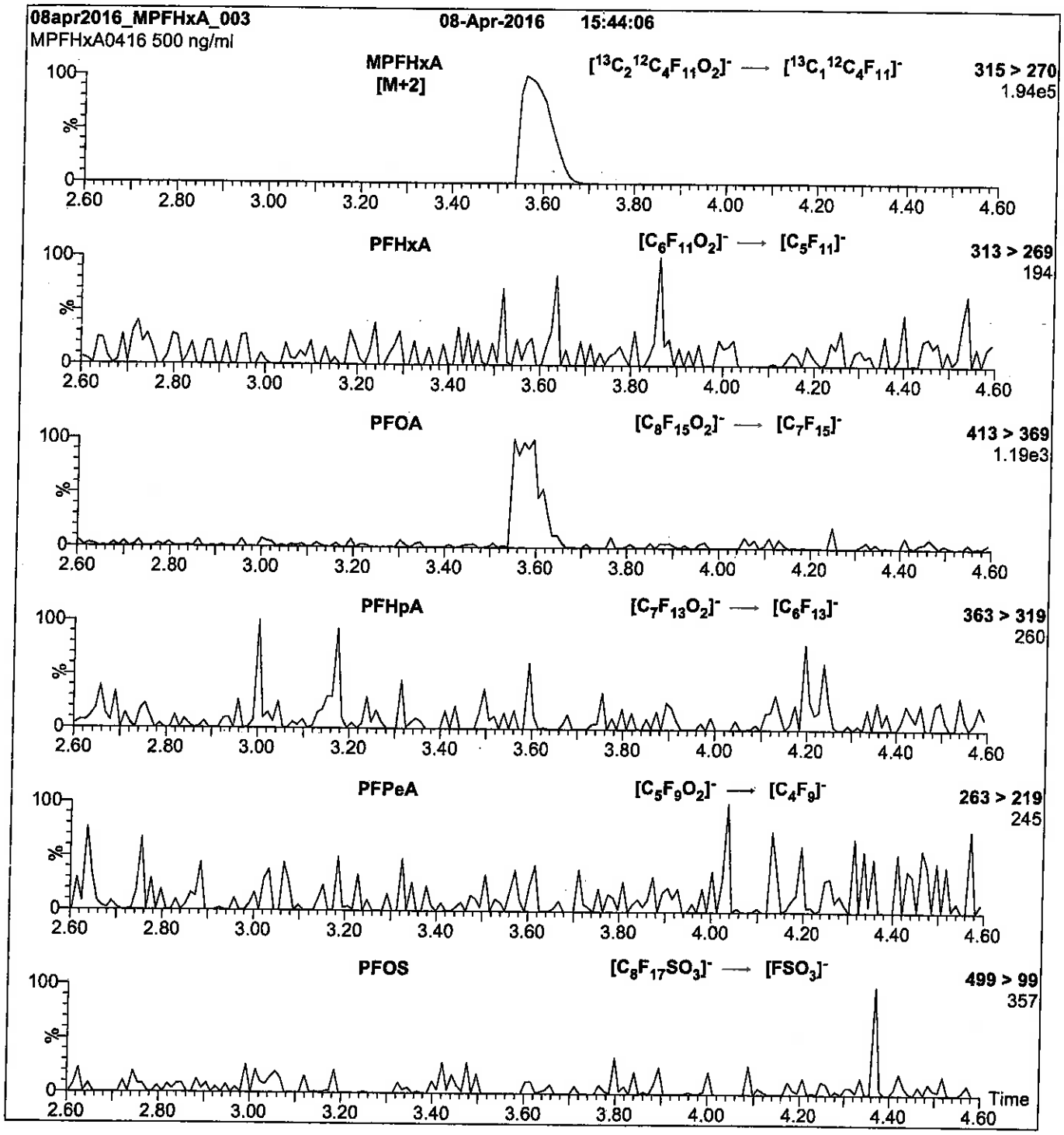
Flow: 300 µl/min

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

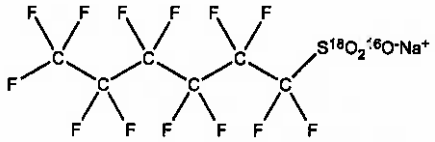
739601
ID: LCMPFHxS_00008
Exp: 10/23/20 Prpd: SBC
18O2-Perfluorohexanesulfo

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:

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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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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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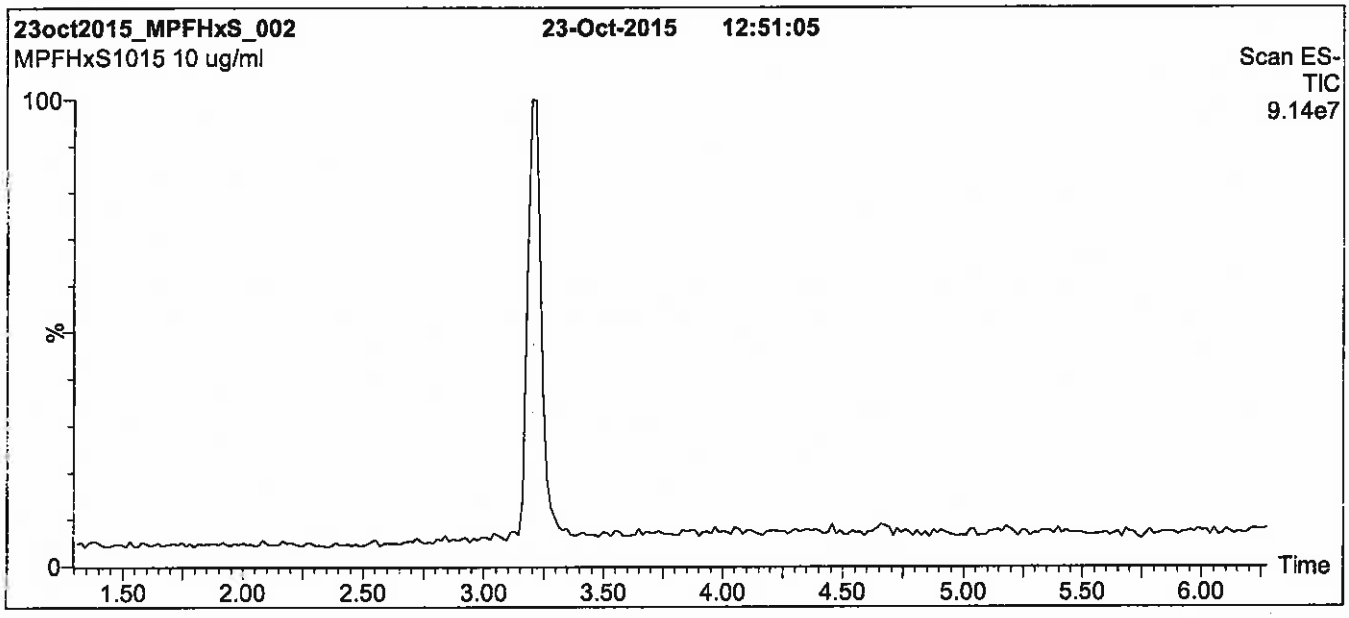
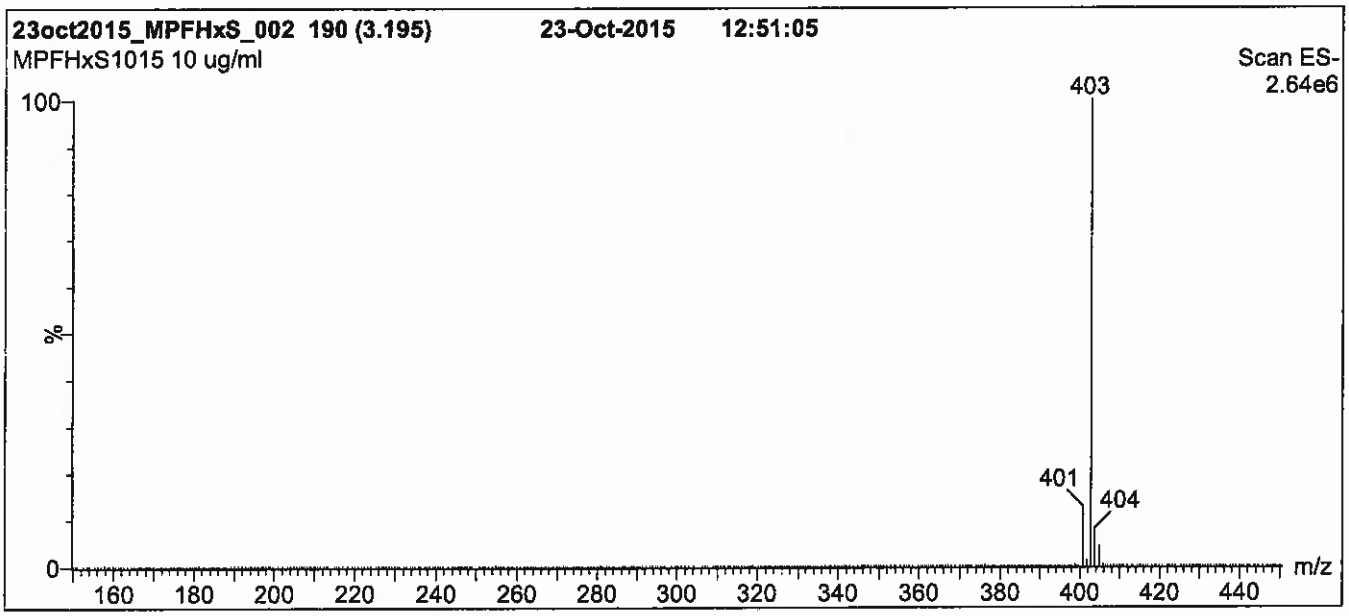
Figure 1: **MPFHxS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

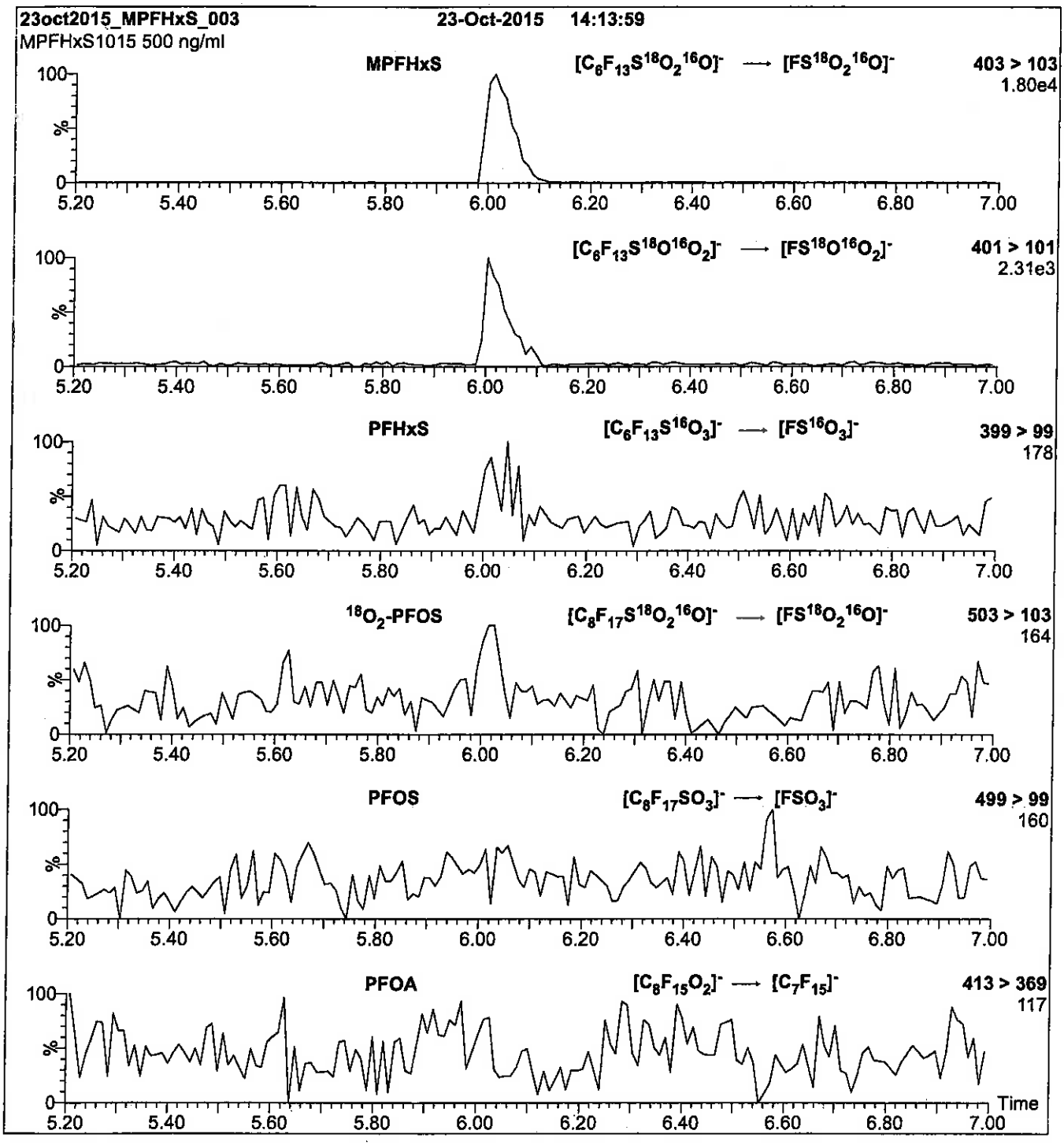
Flow: 300 µl/min

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

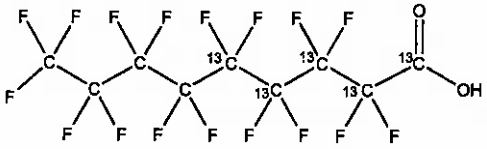
Scanned 10/14/16 R: SBC 9/22/16

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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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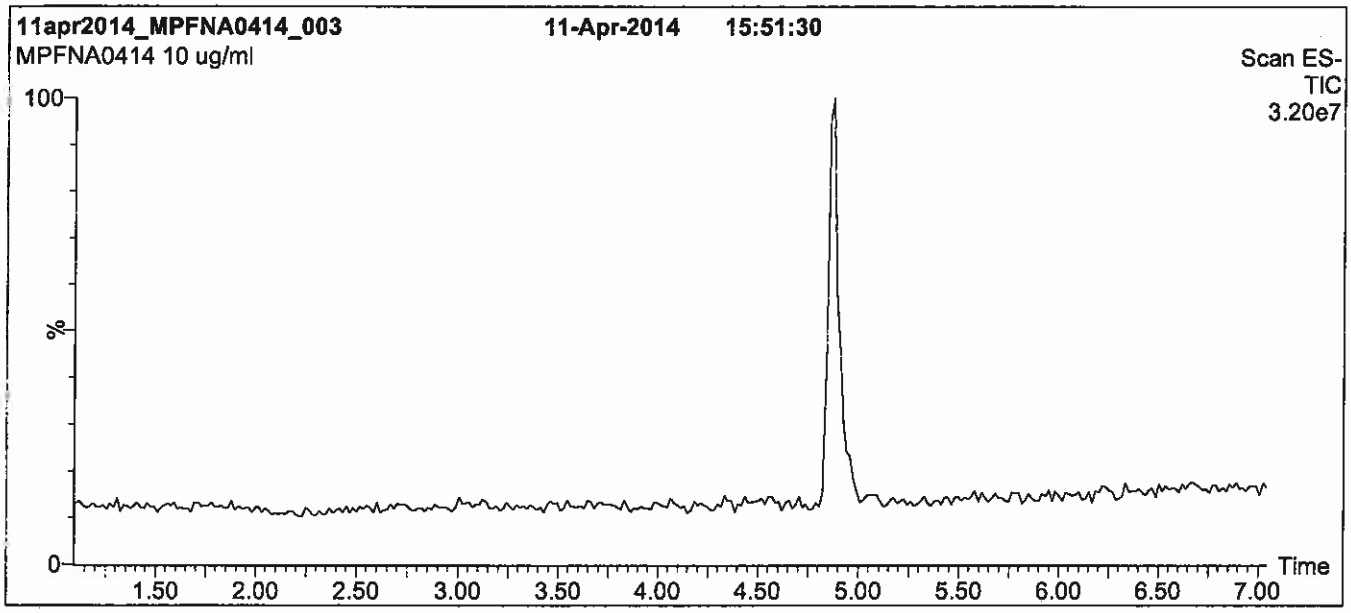
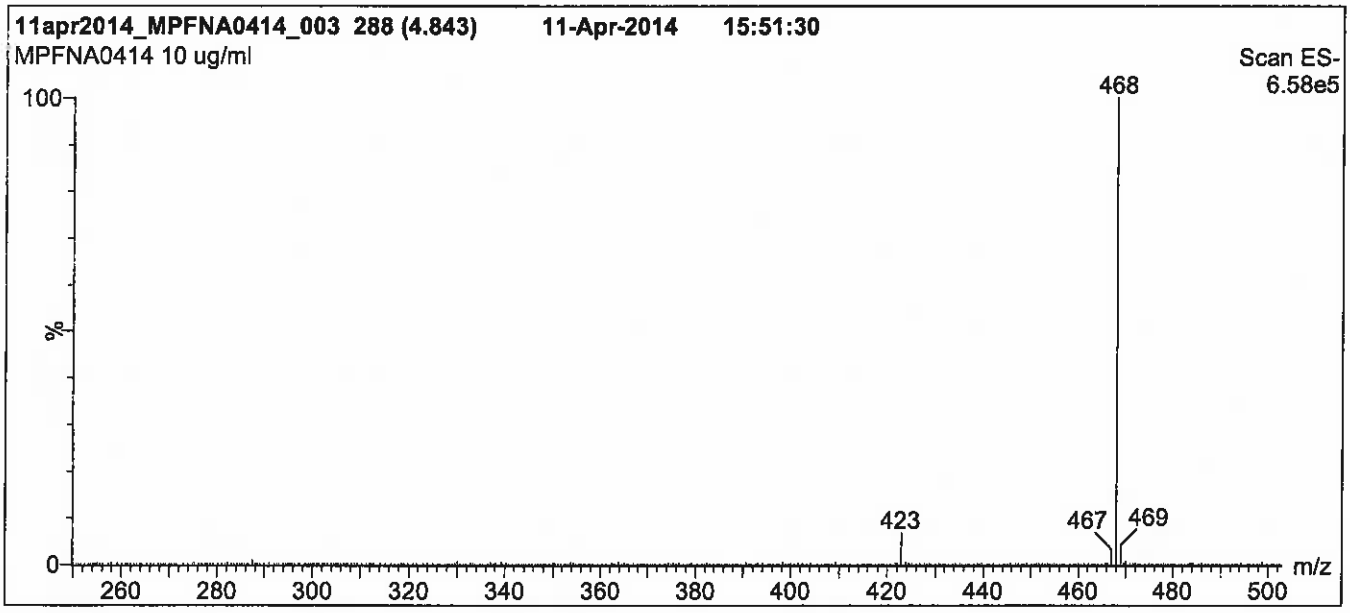




Conditions for Figure 1:

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

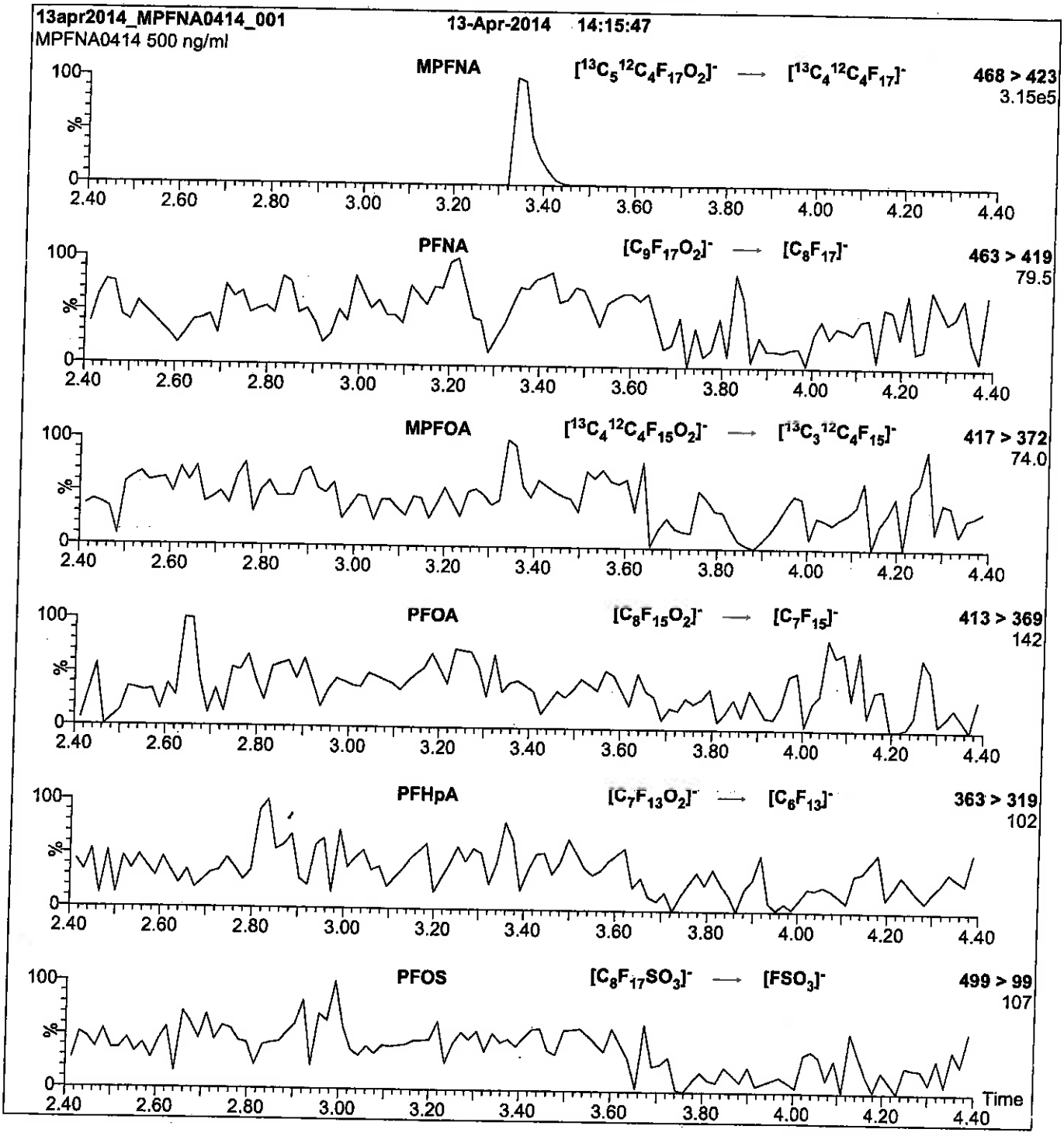
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

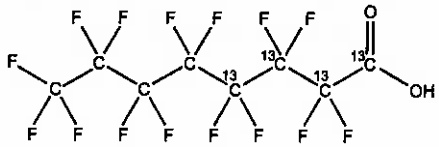
R: SBC 9/22/16

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)

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

Form#:27, Issued 2004-11-10
Revision#:3, Revised 2015-03-24

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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:

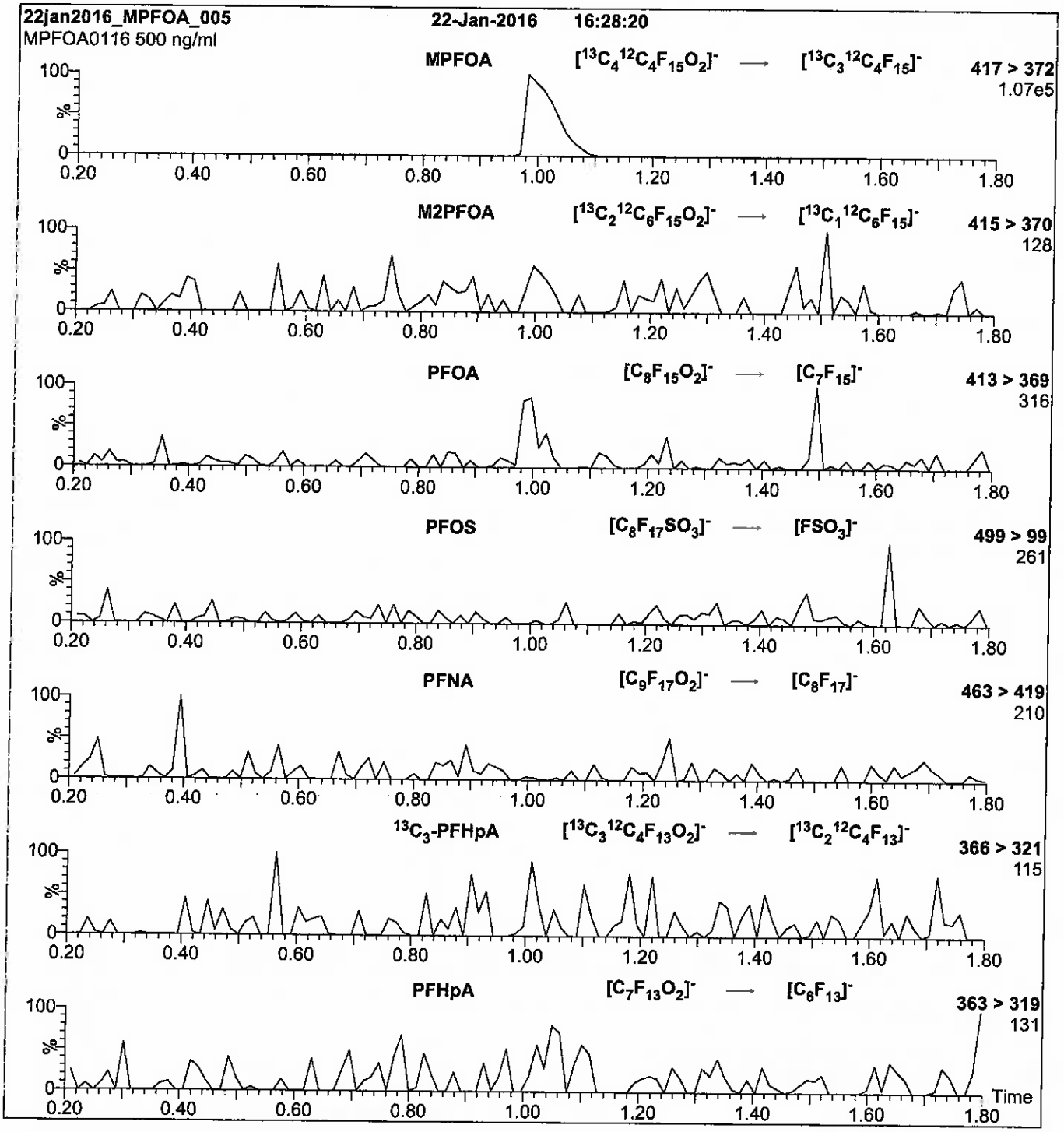
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

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



Conditions for Figure 2:

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

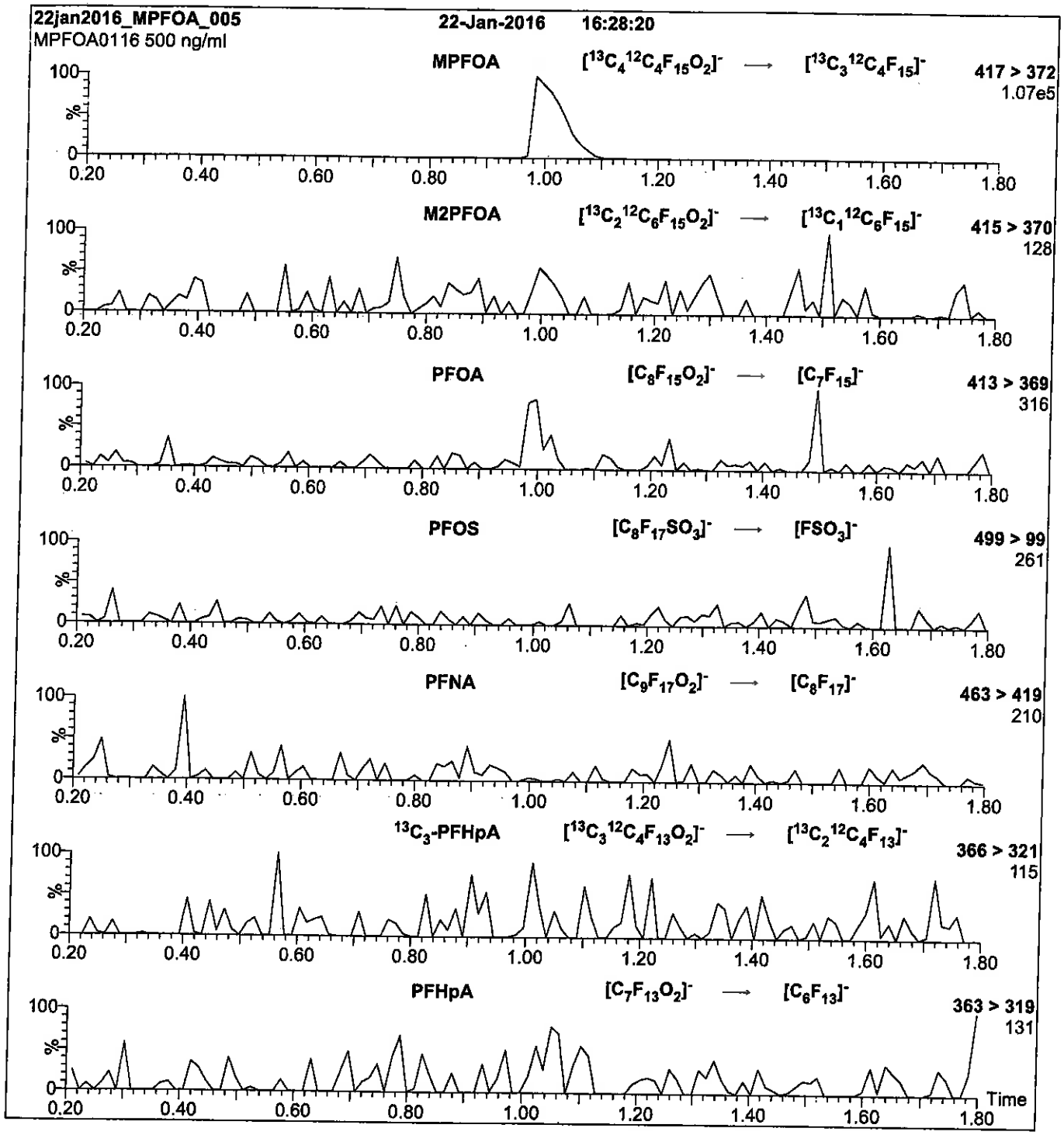
Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

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

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

Reagent

LCMPFOS_00017

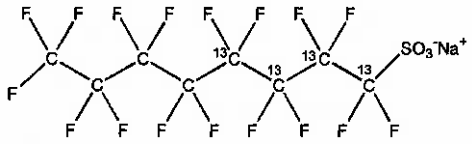
R: 9/9/16 SBC

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		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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.

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

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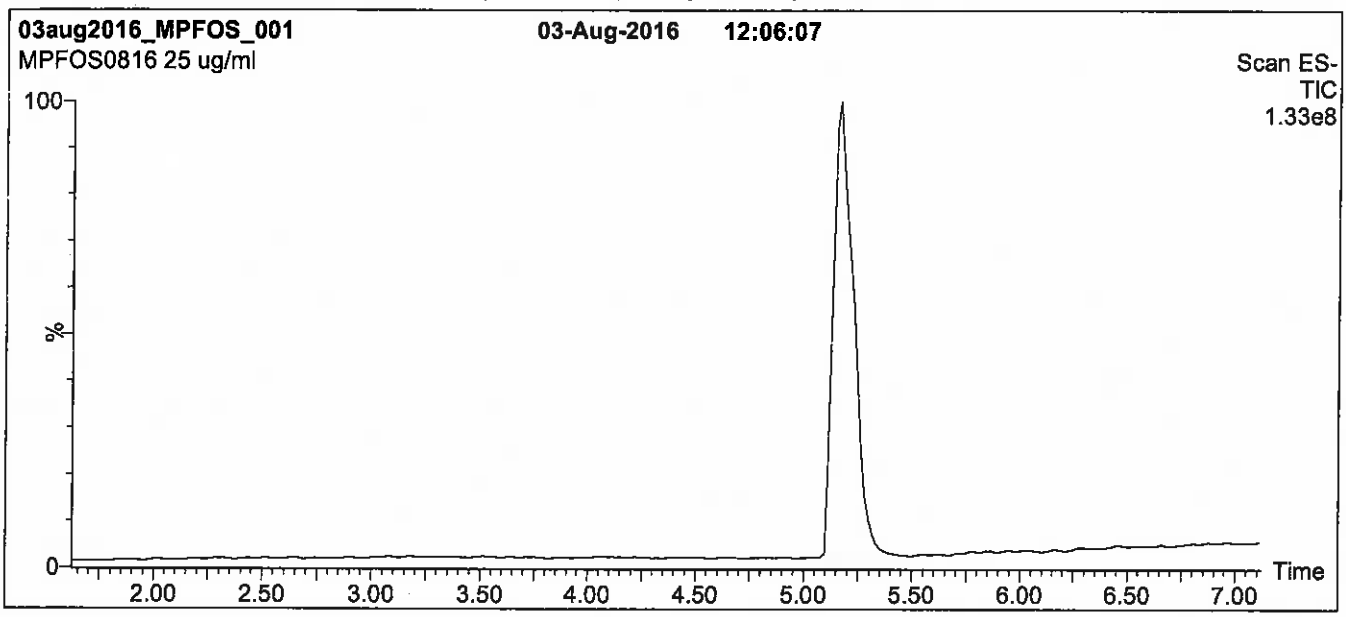
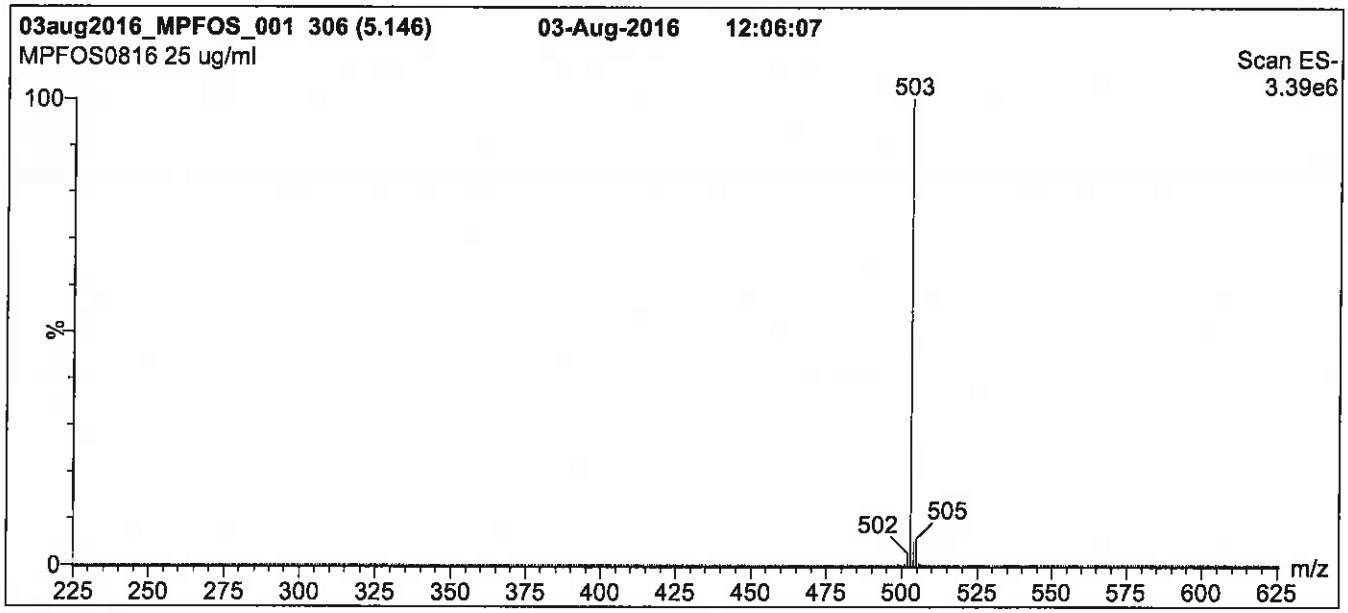
CALA

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

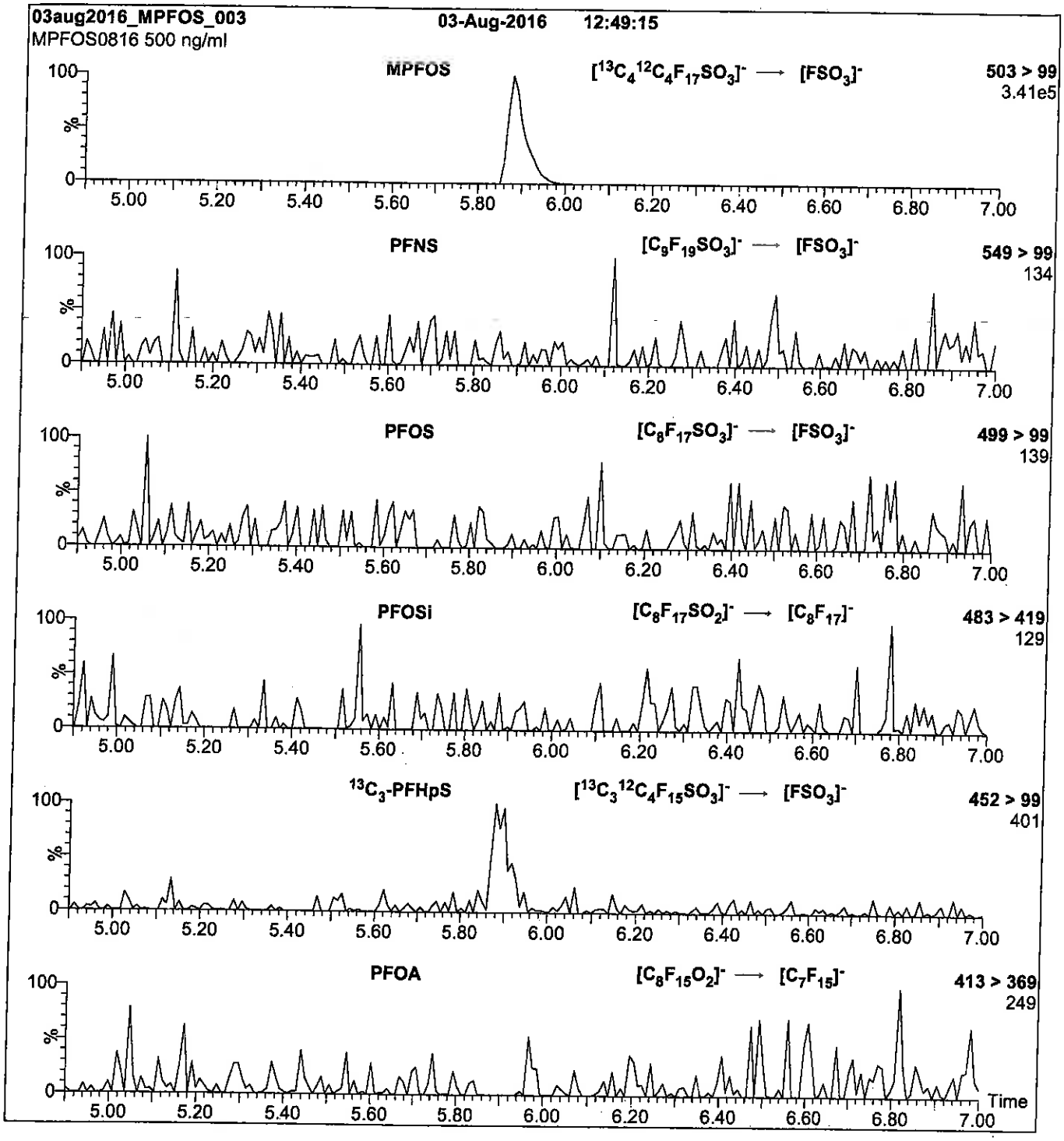
Flow: 300 µl/min

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

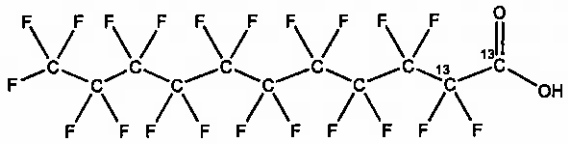
WELLINGTON LABORATORIES

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-$^{13}C_2$)
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

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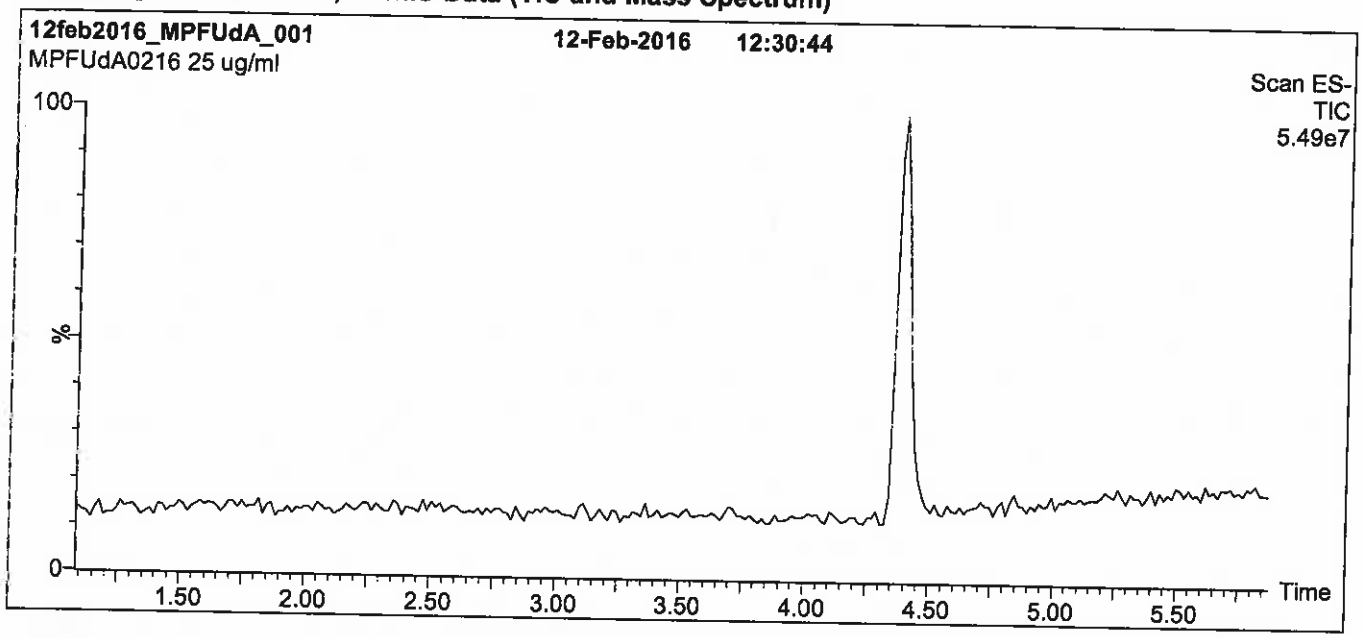
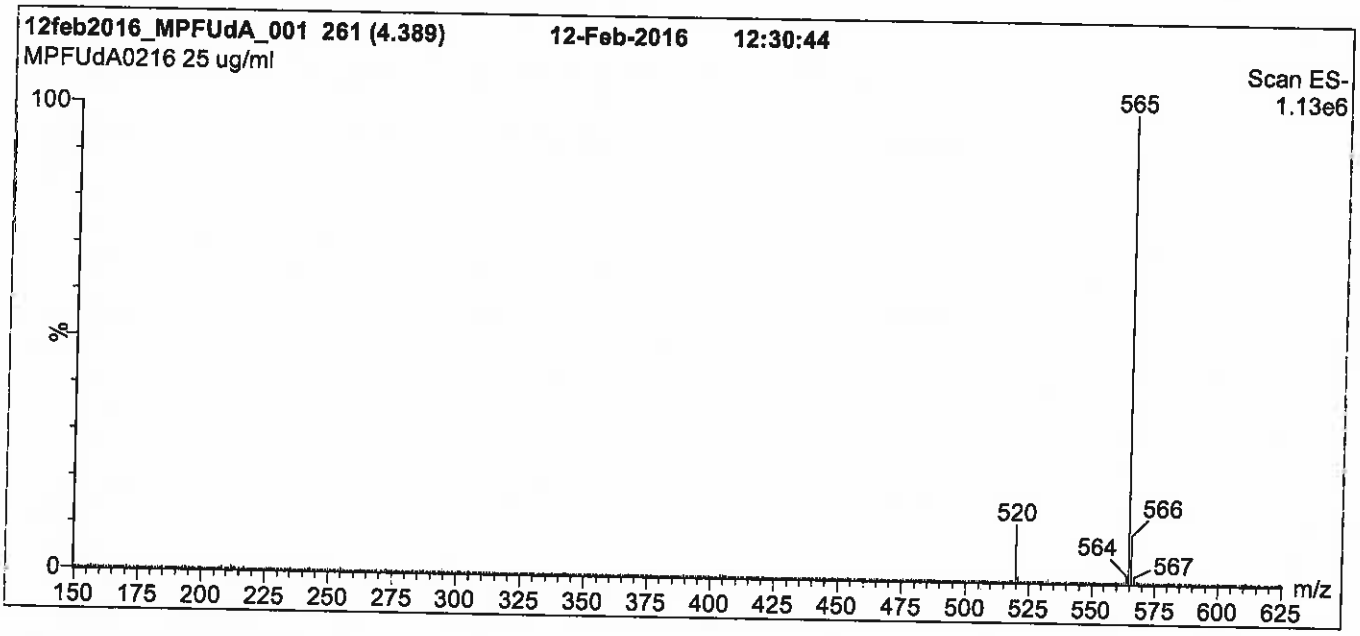
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





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

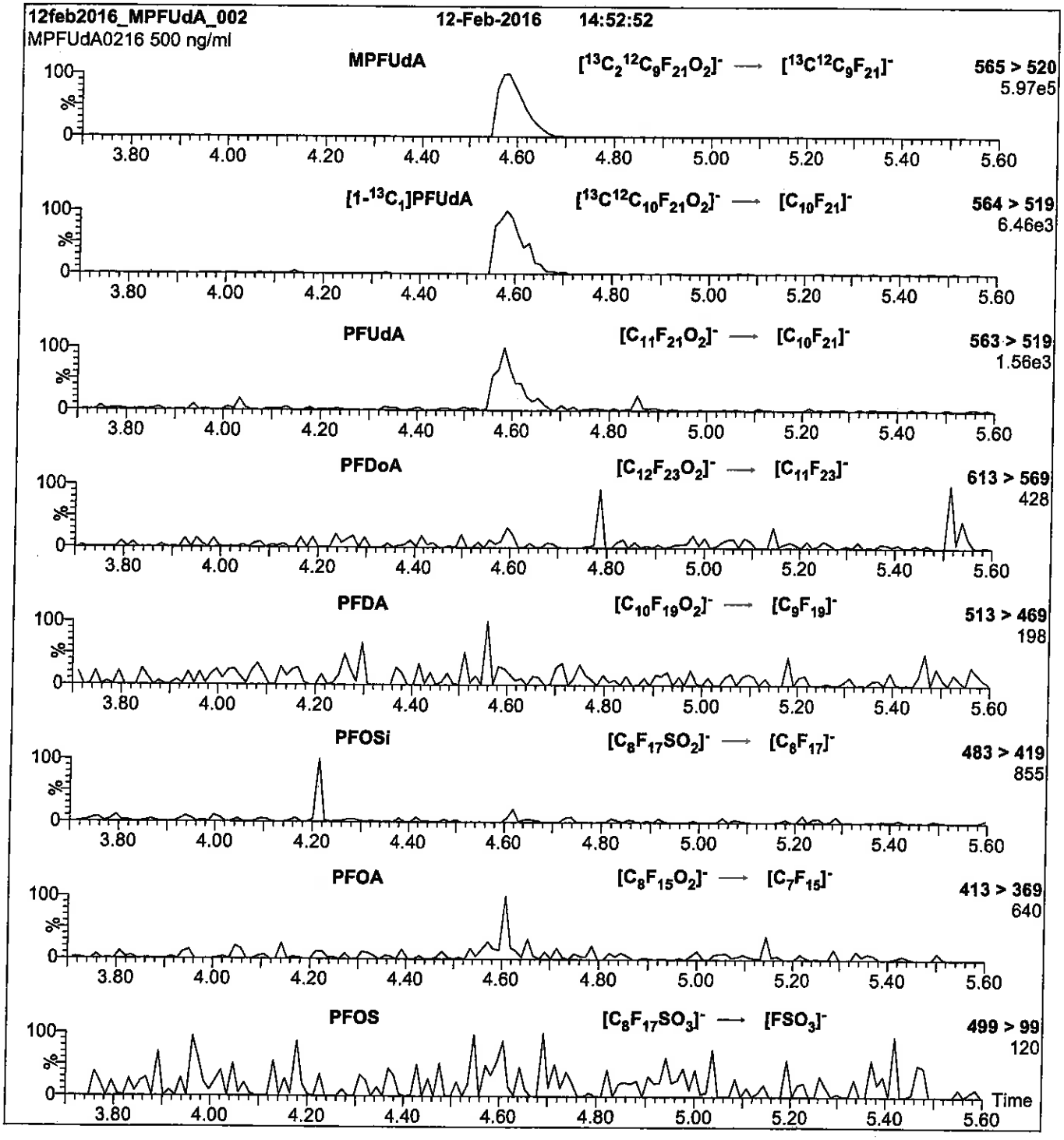
Flow: 300 µl/min

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

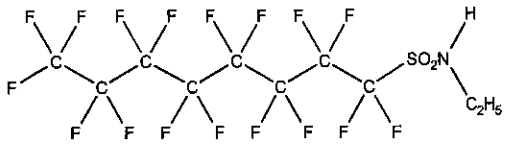
R: 7/16/15 SW

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

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

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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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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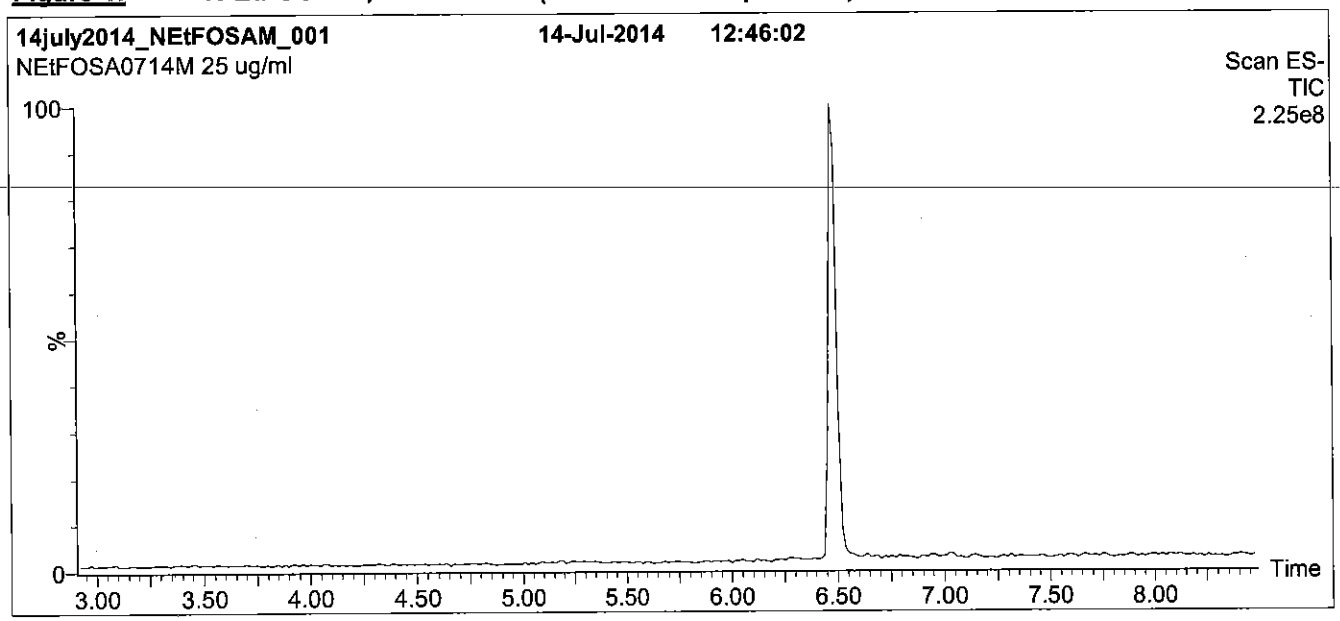
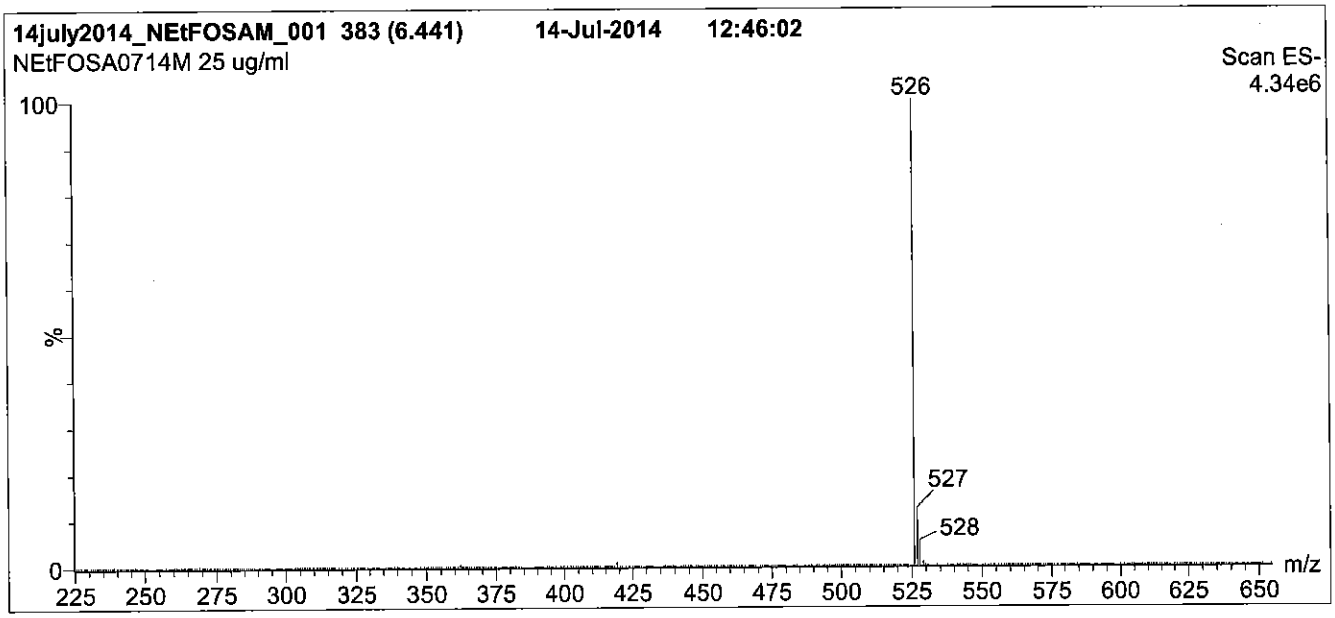
Figure 1: **N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

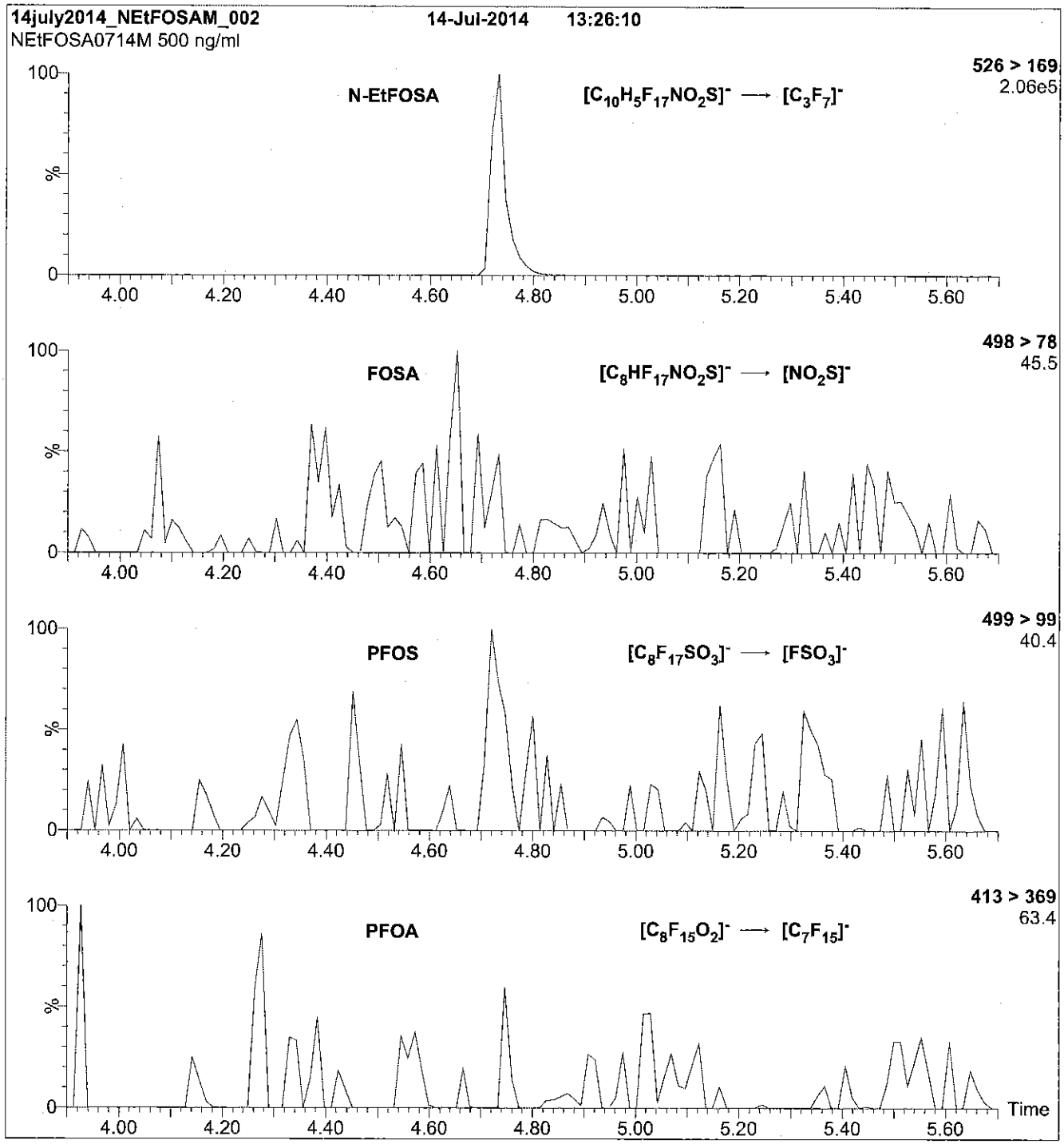
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCN-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

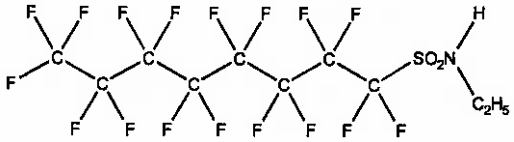
CERTIFICATE OF ANALYSIS DOCUMENTATION

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:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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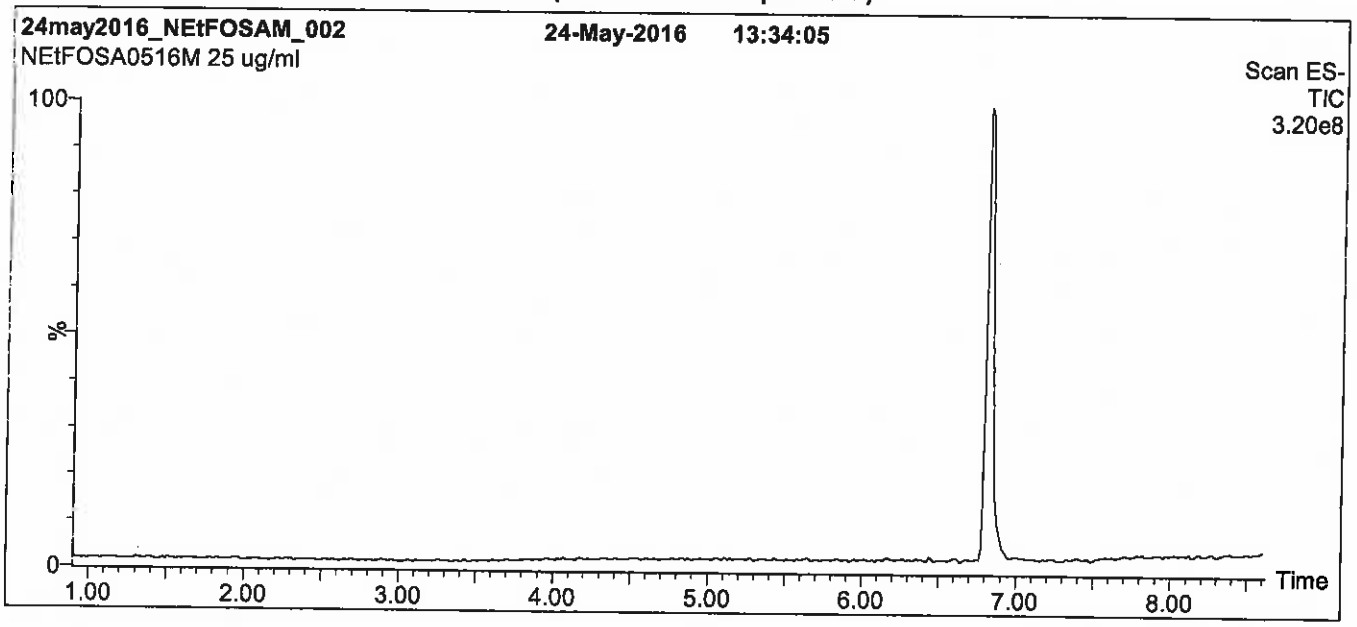
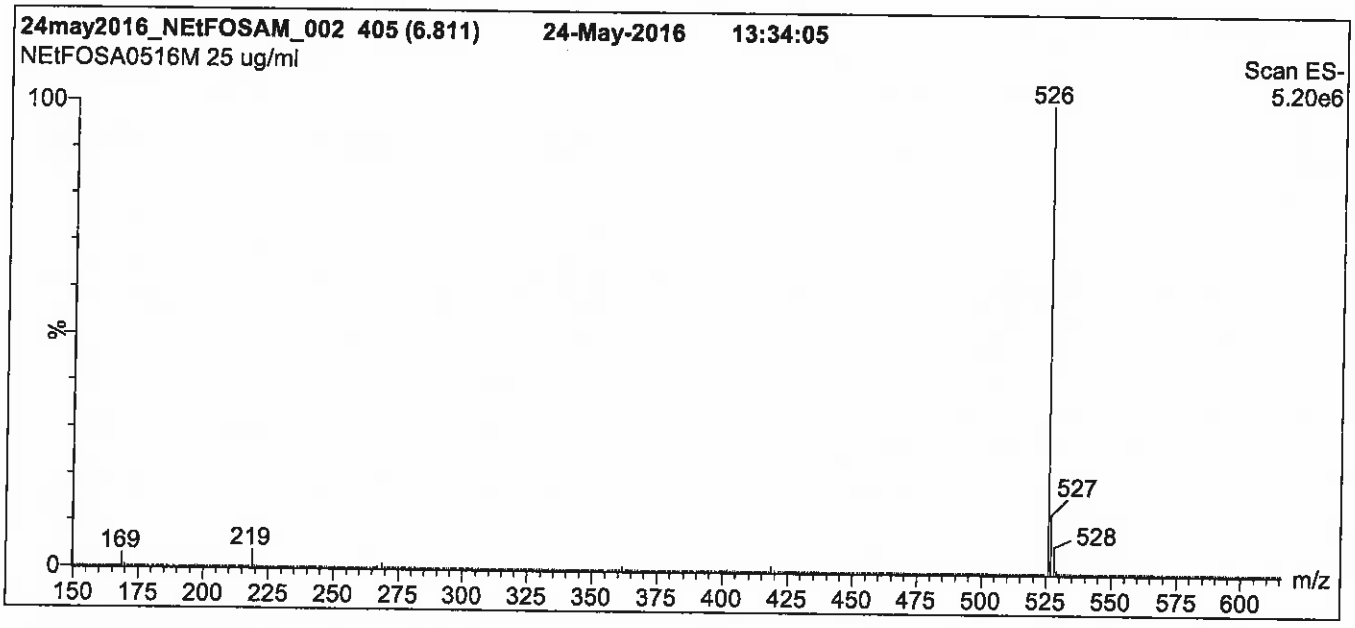




Conditions for Figure 1:

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: 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

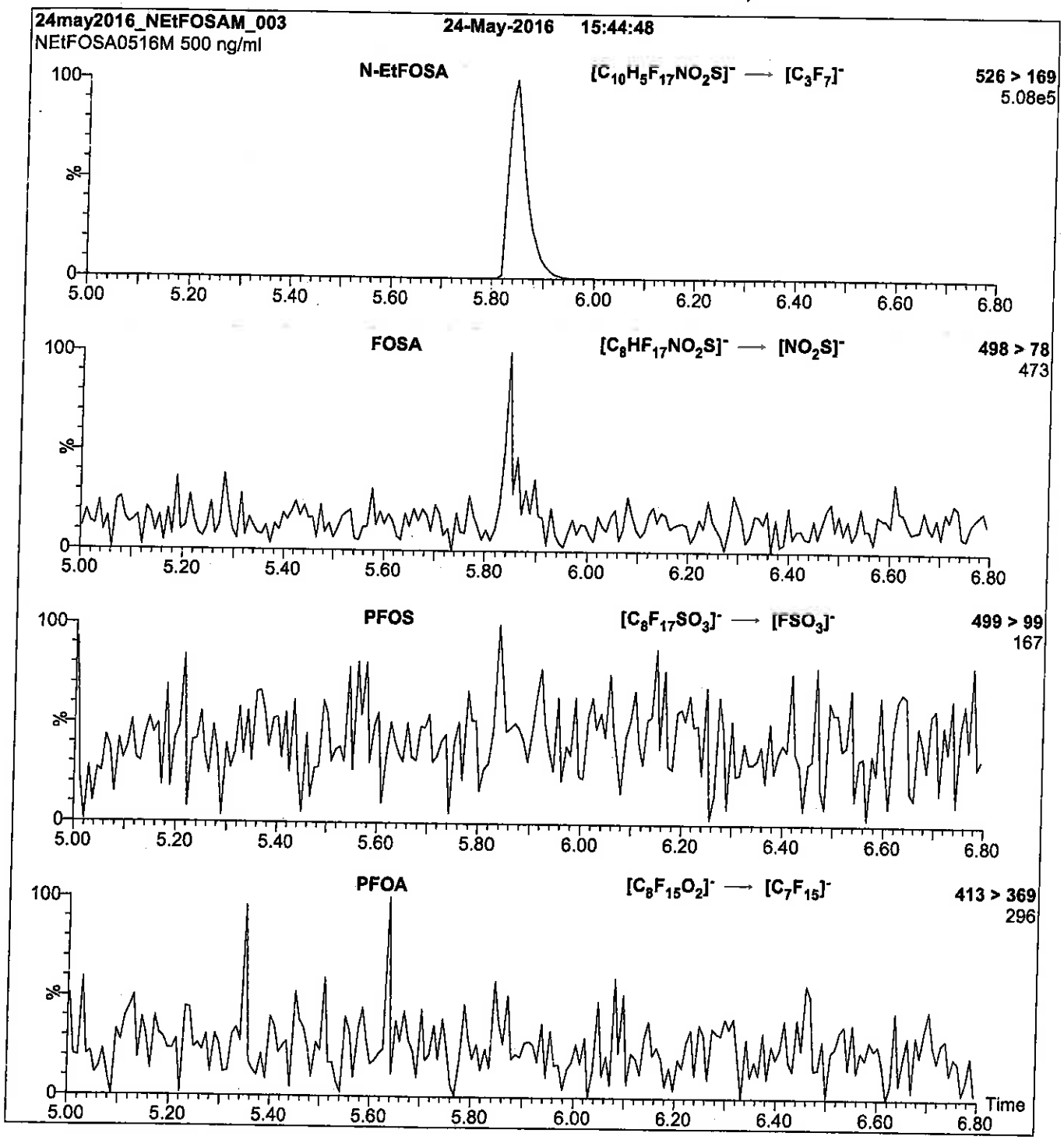
Flow: 300 µl/min

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

N: 7/11/15 SKV

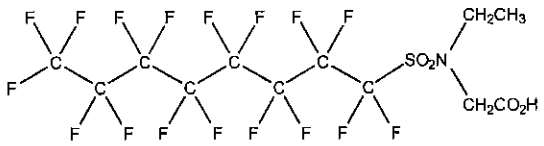
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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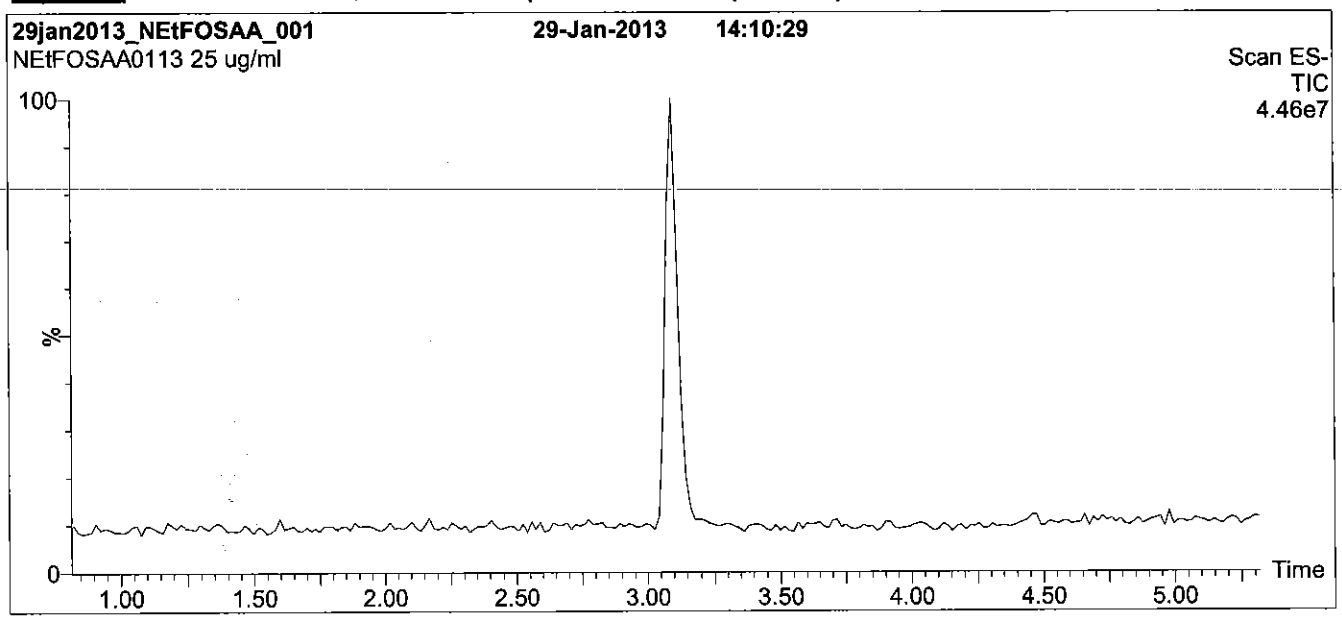
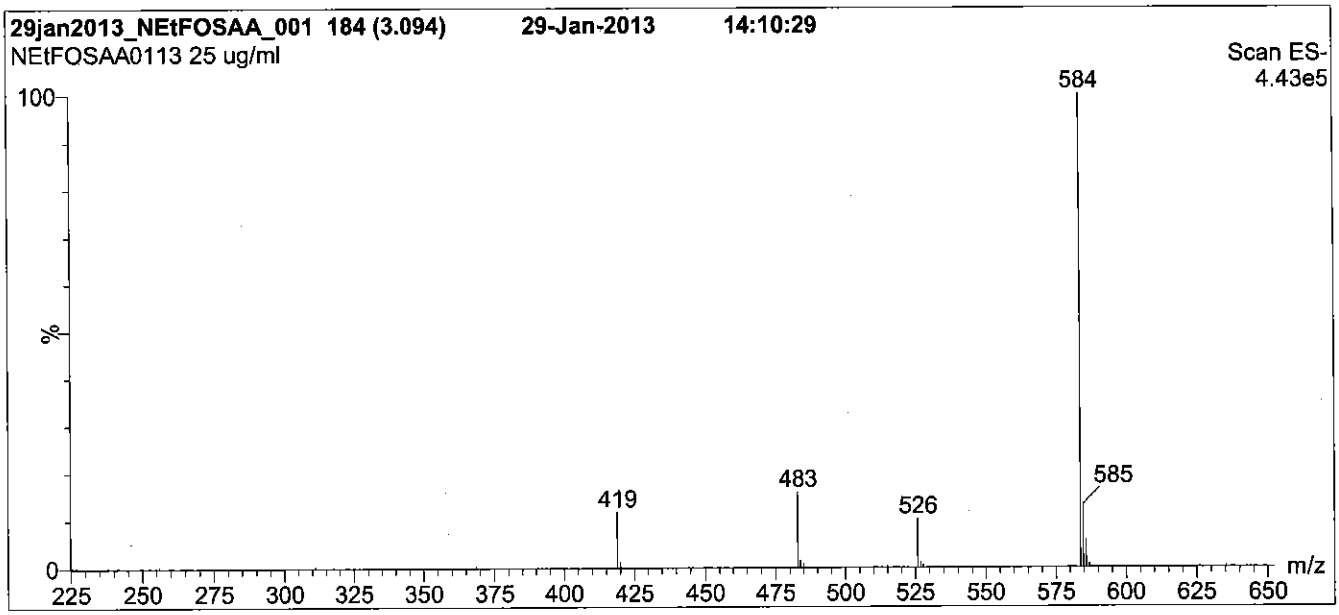
Figure 1: **N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

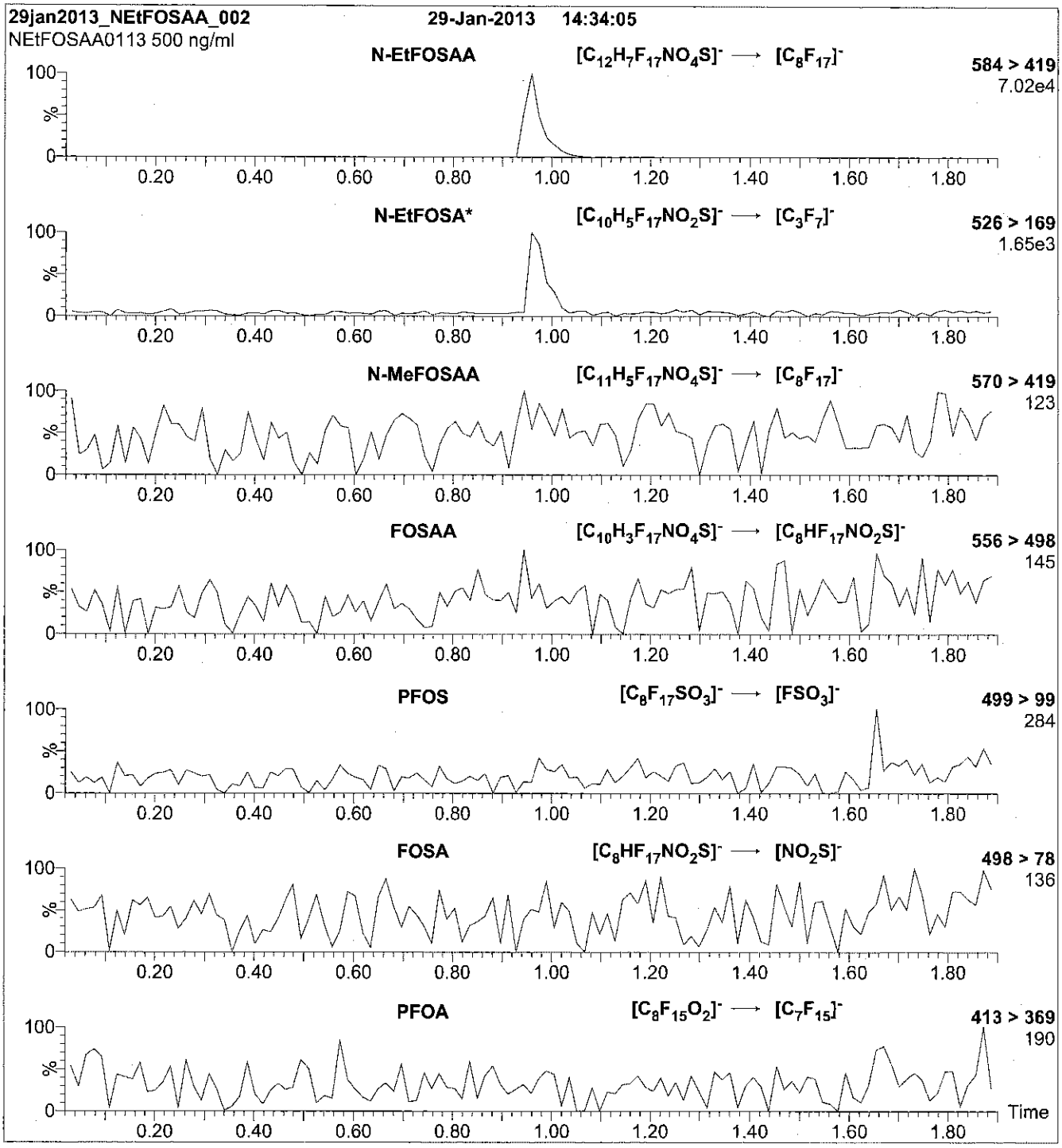
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



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

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-EtFOSAA_00002

R: 8/23/16 SBC

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

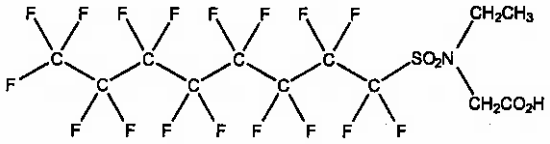
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

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



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Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/20/2016

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

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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

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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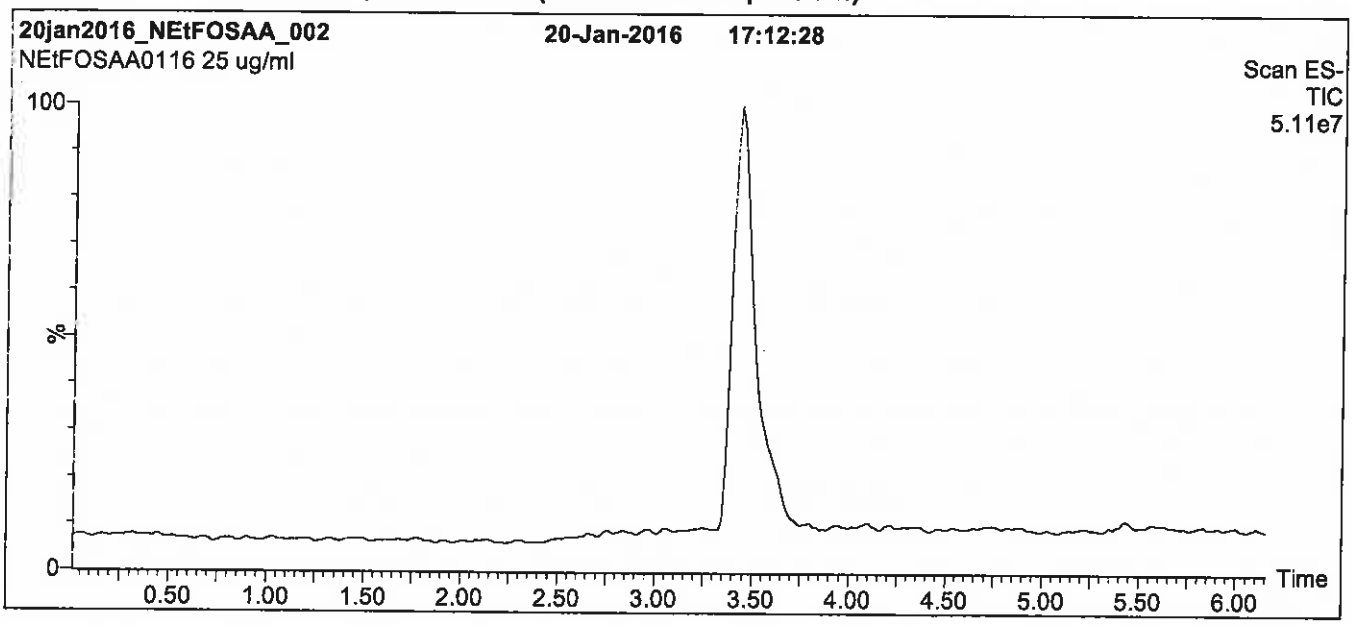
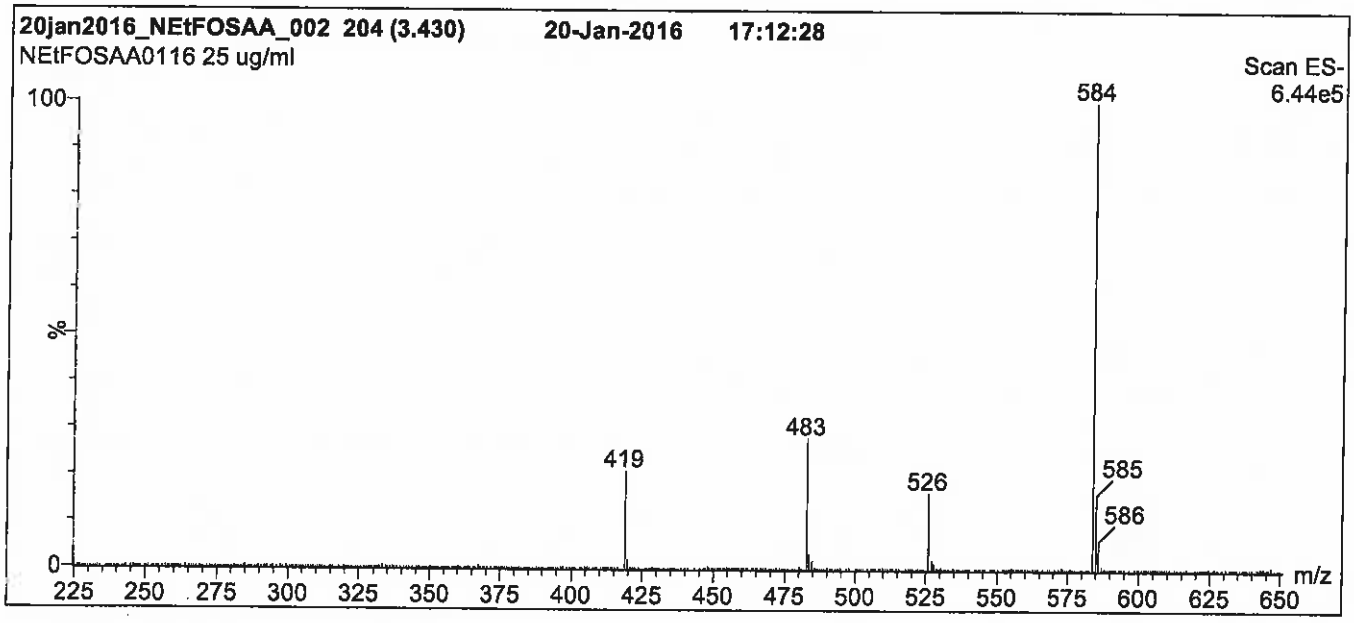
Figure 1: **N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

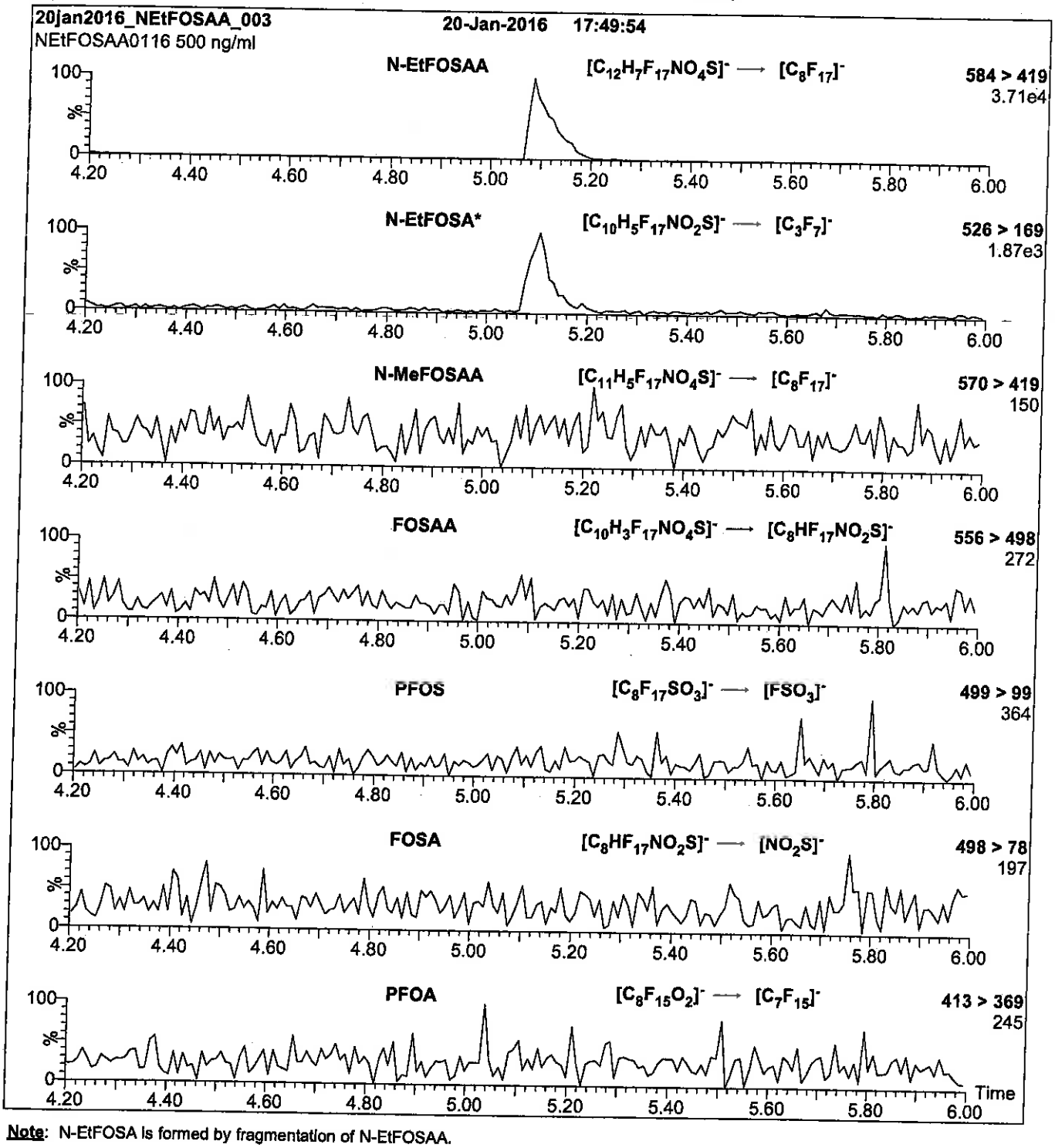
Flow: 300 µl/min

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

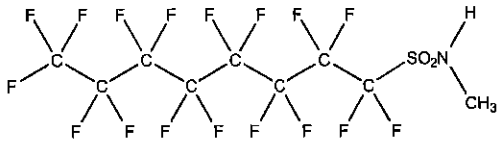
R: 7/16/15 SW

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.

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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HAZARDS:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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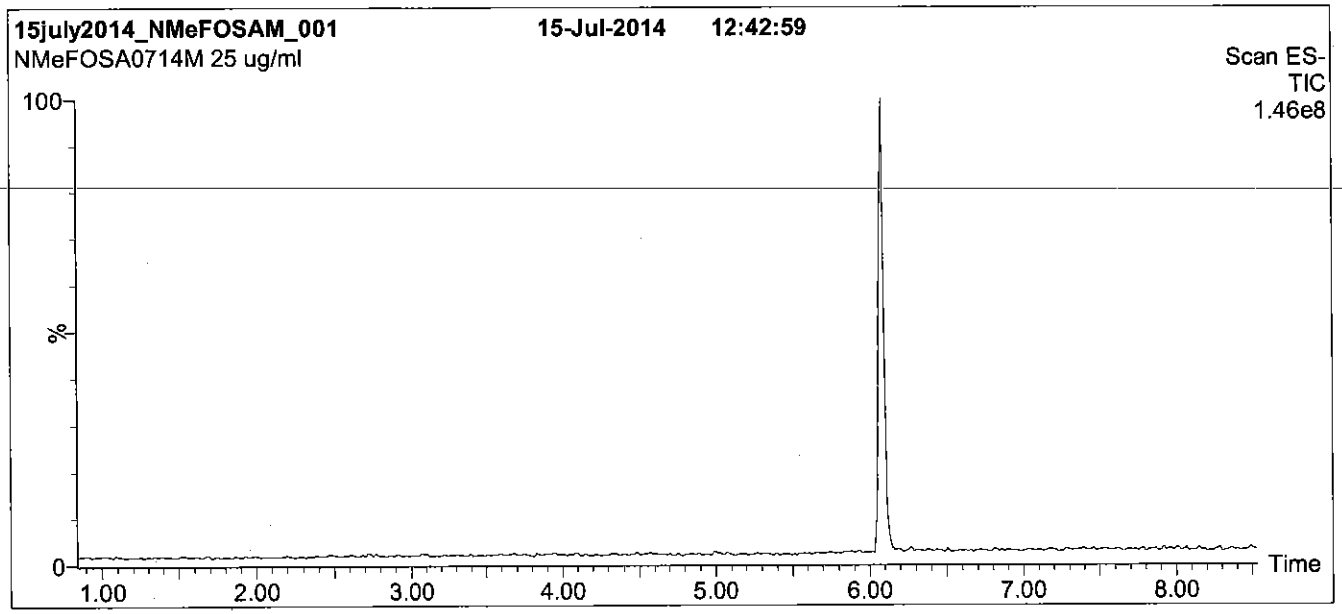
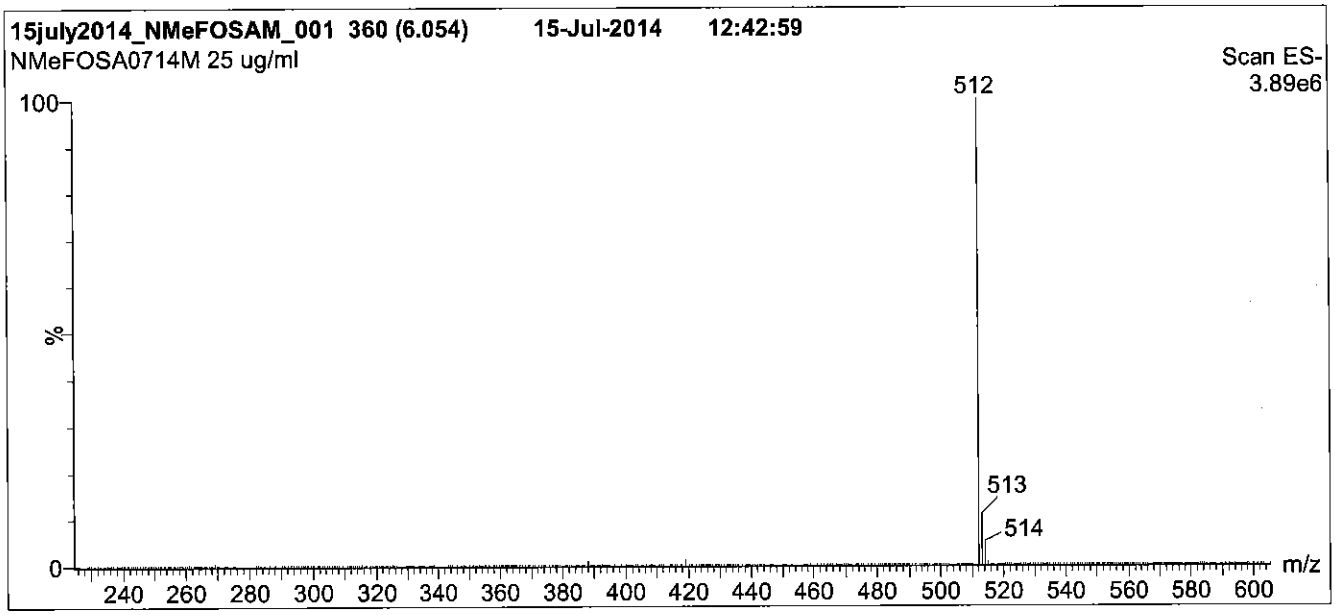
Figure 1: **N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





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

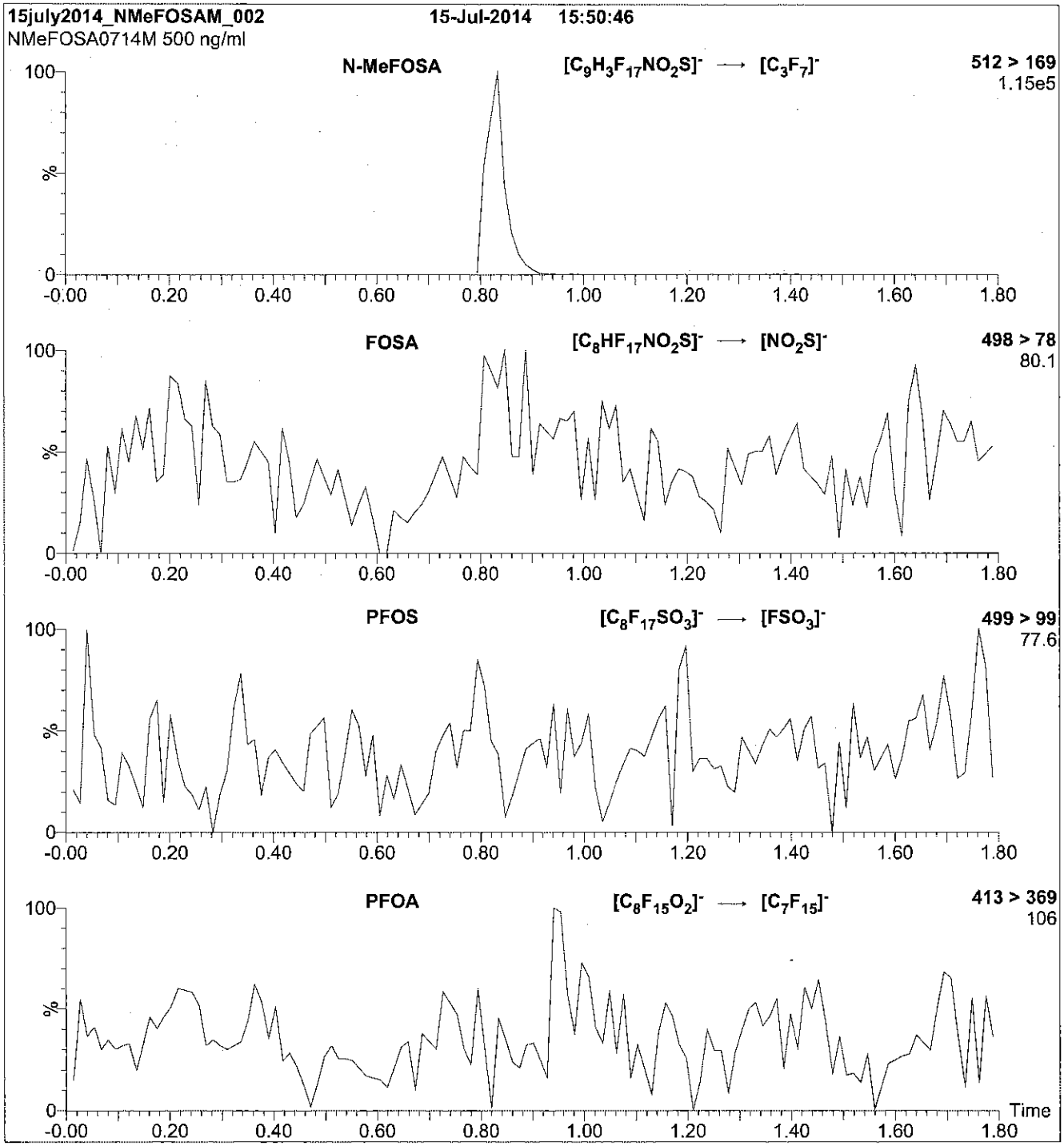
Flow: 300 µl/min

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-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

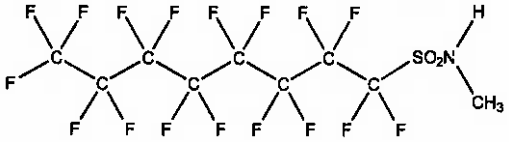
R: 8/23/16 SBC

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

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CALA

ANAB ACCREDITED

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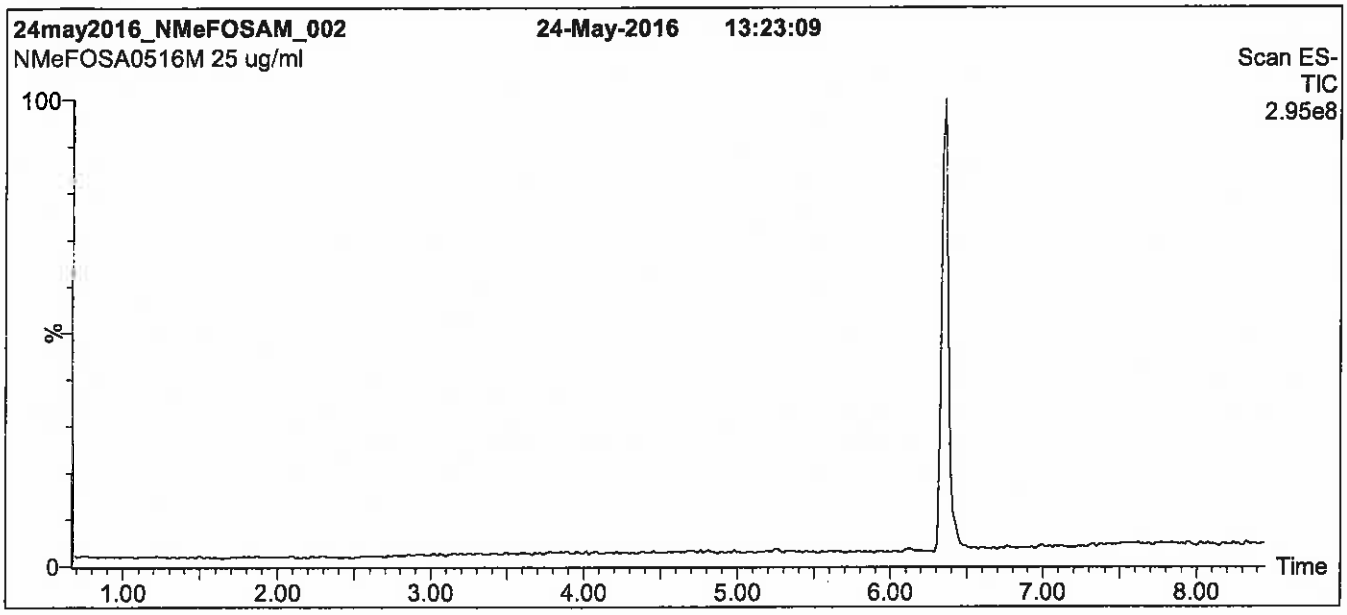

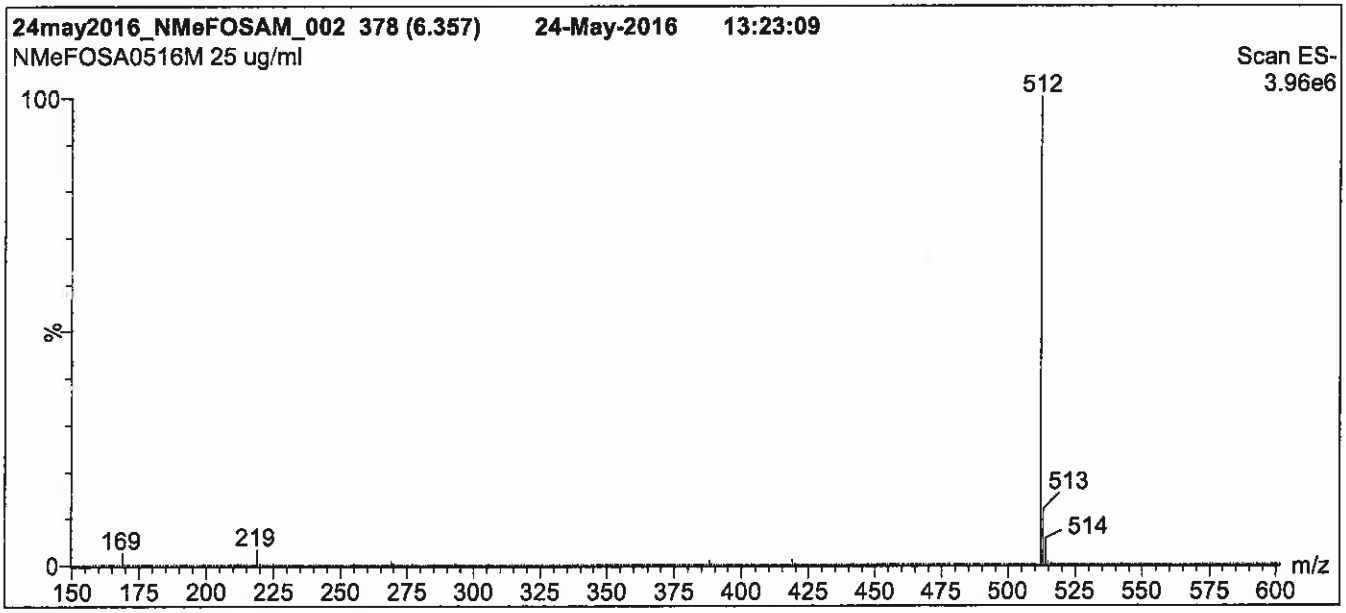

Conditions for Figure 1:

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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: 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

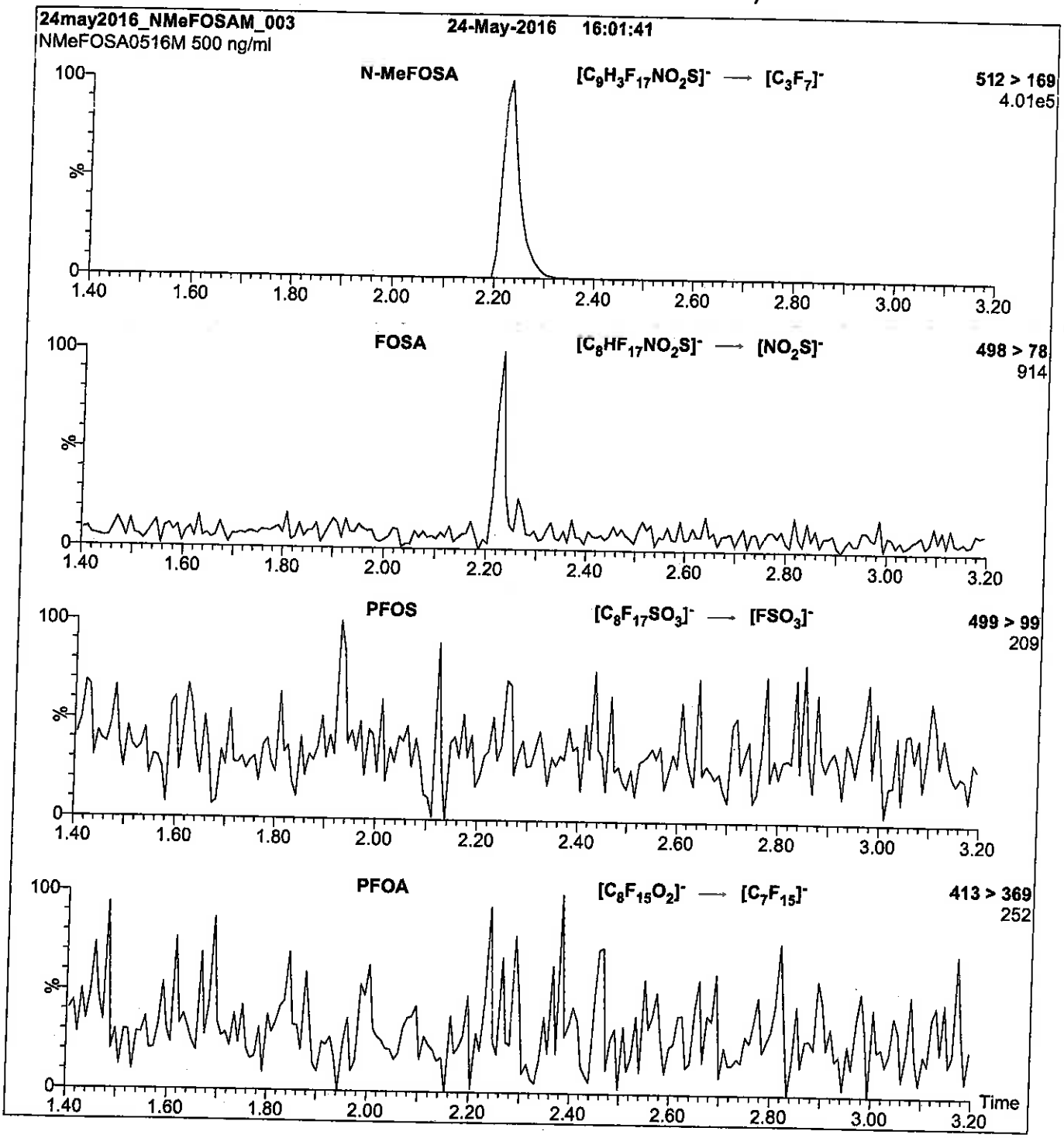
Flow: 300 µl/min

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

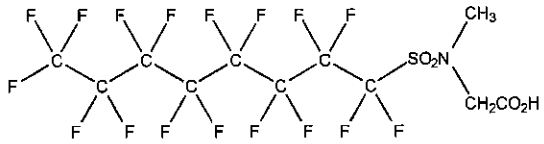
WELLINGTON LABORATORIES

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.

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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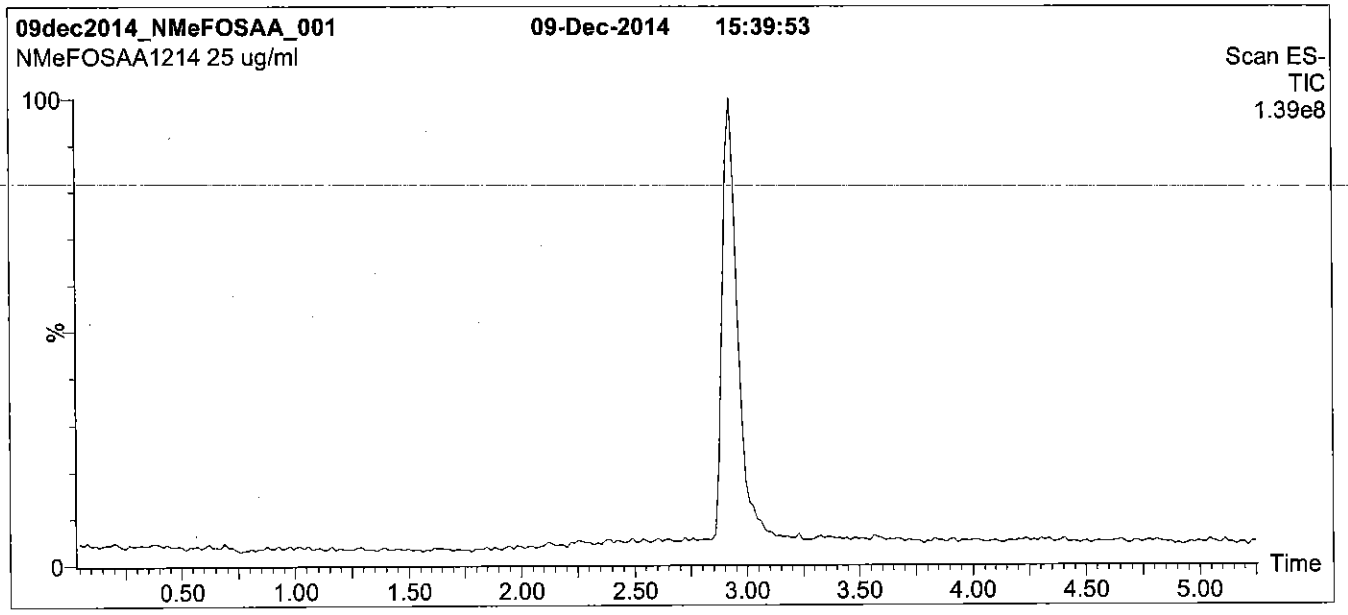
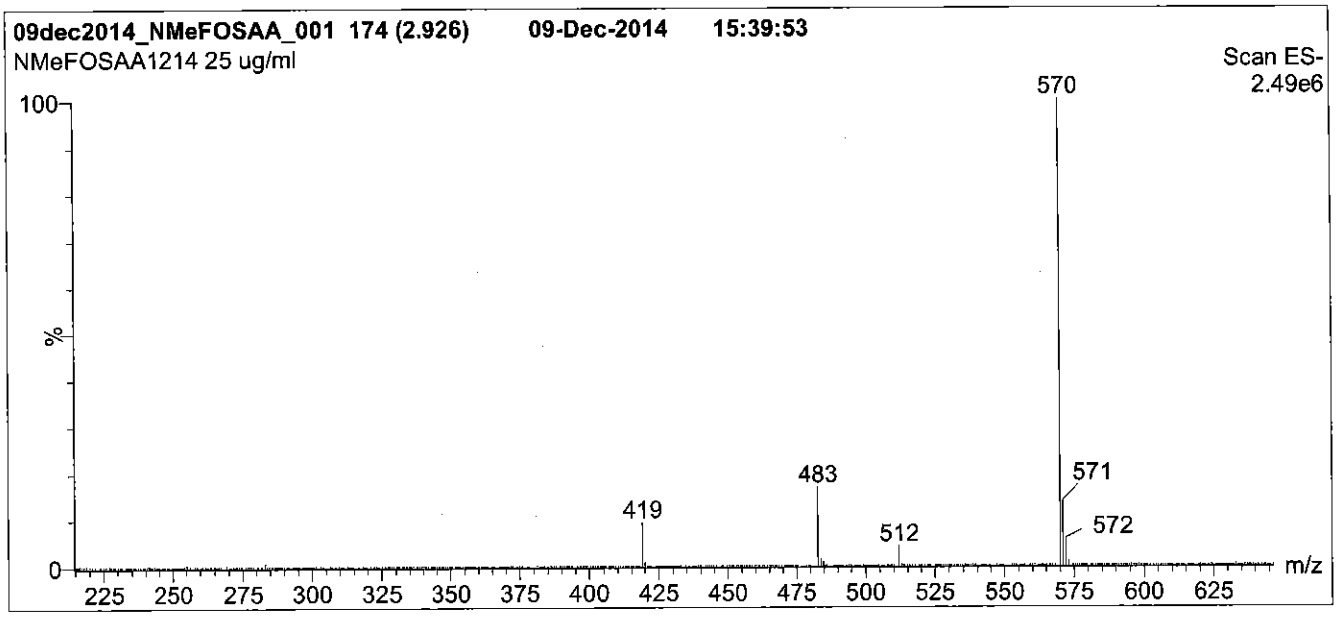
Figure 1: **N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

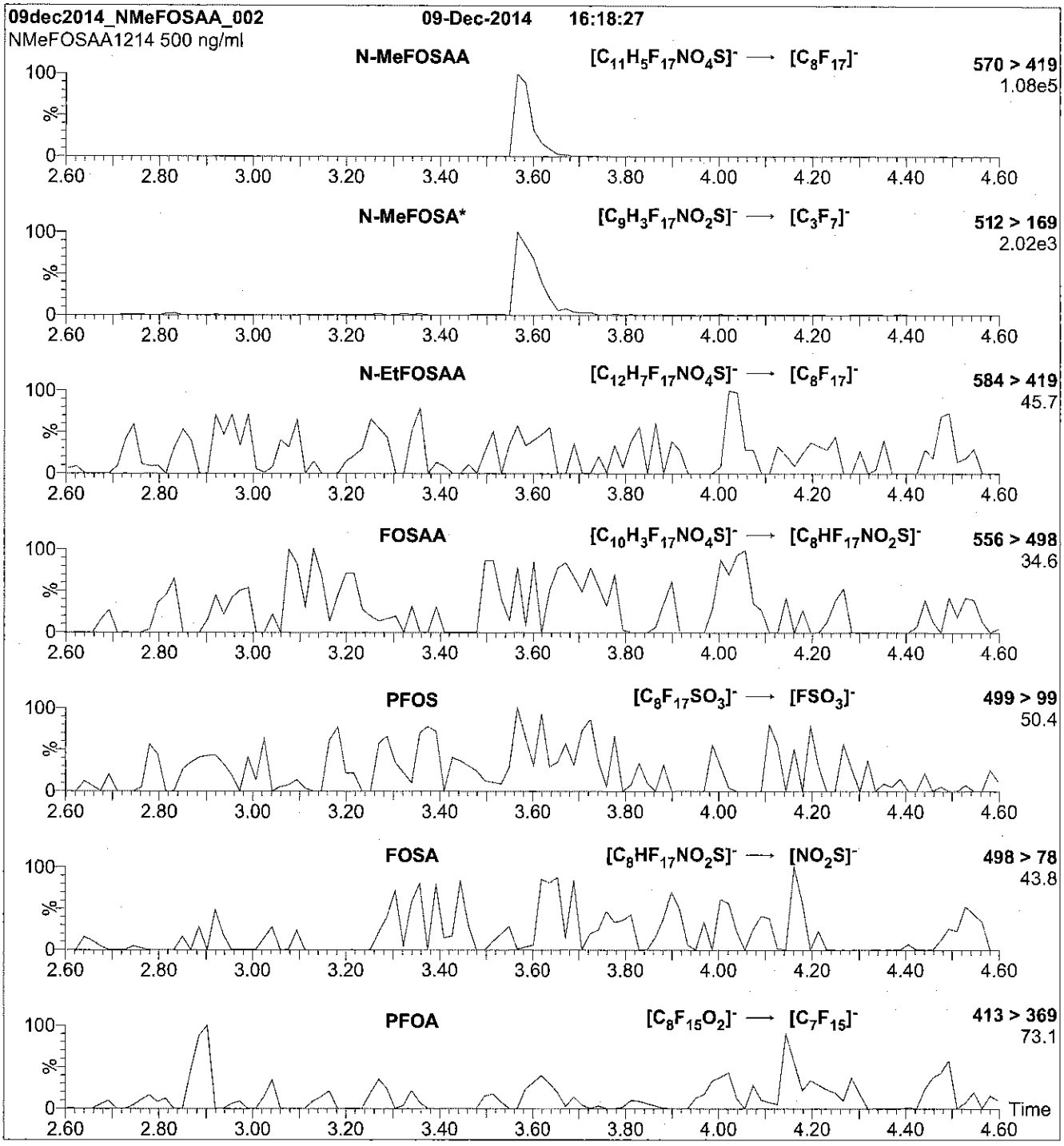
Flow: 300 µl/min

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

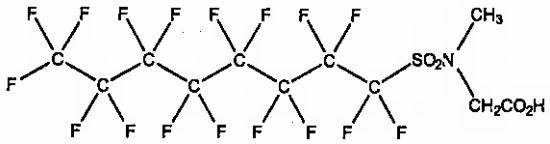
WELLINGTON LABORATORIES

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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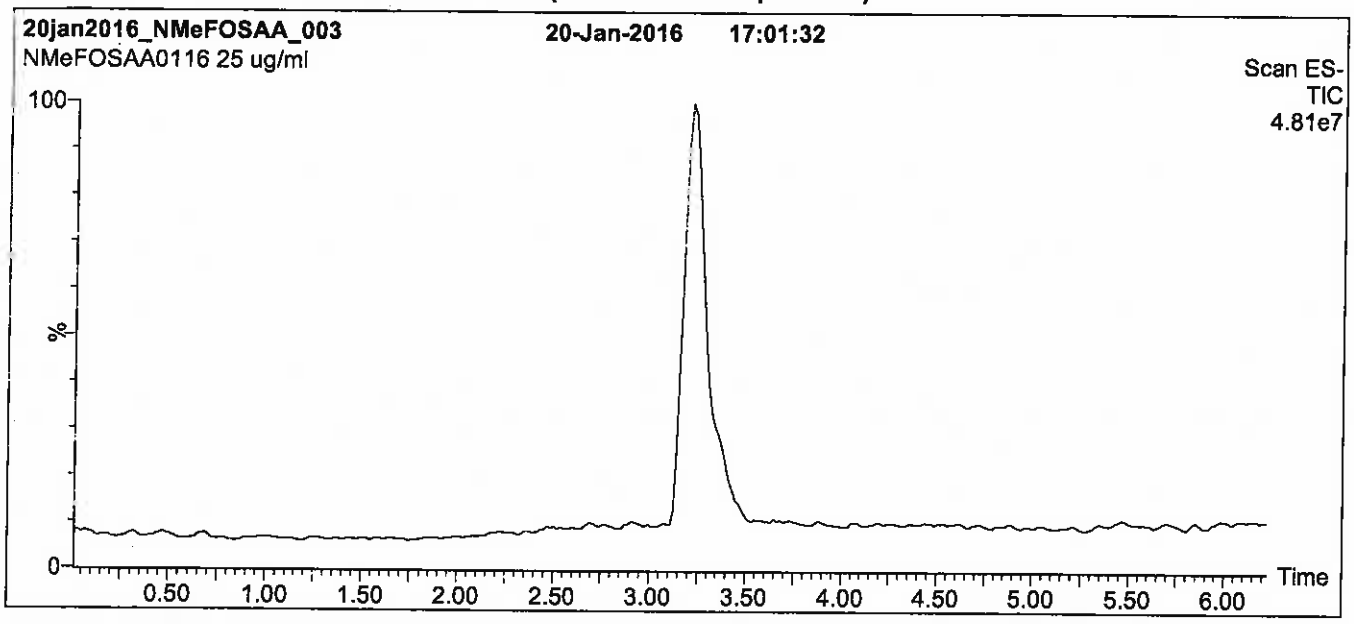
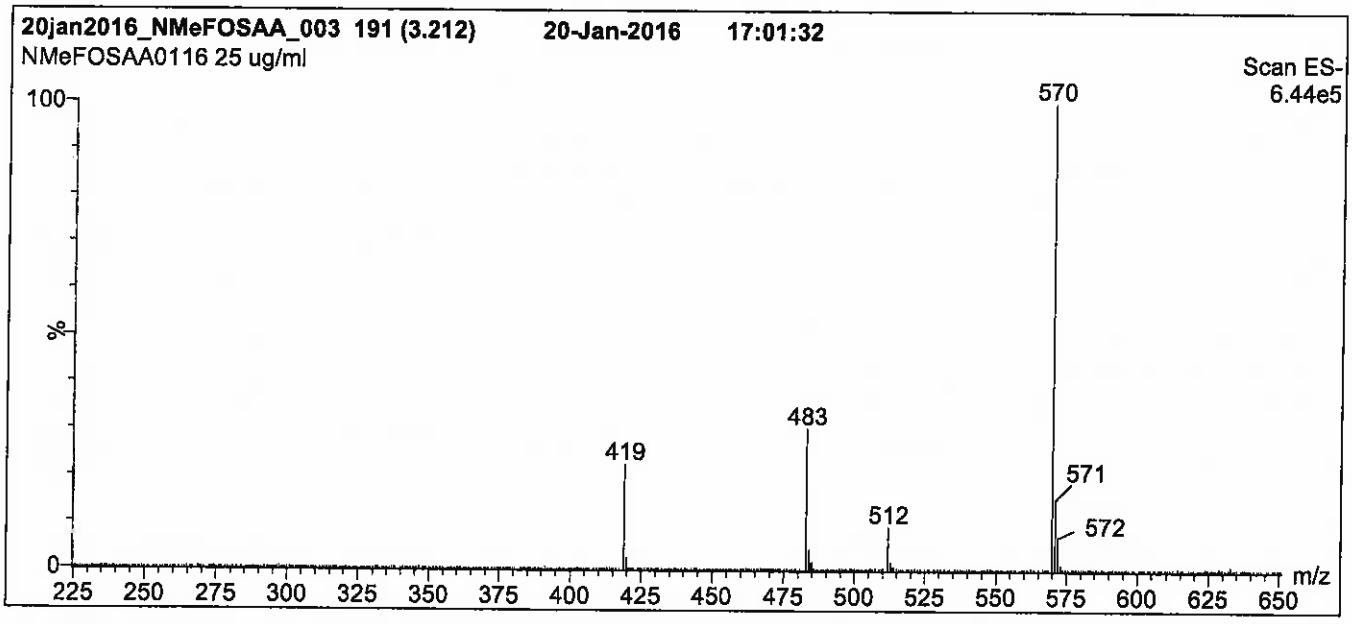
Figure 1: **N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

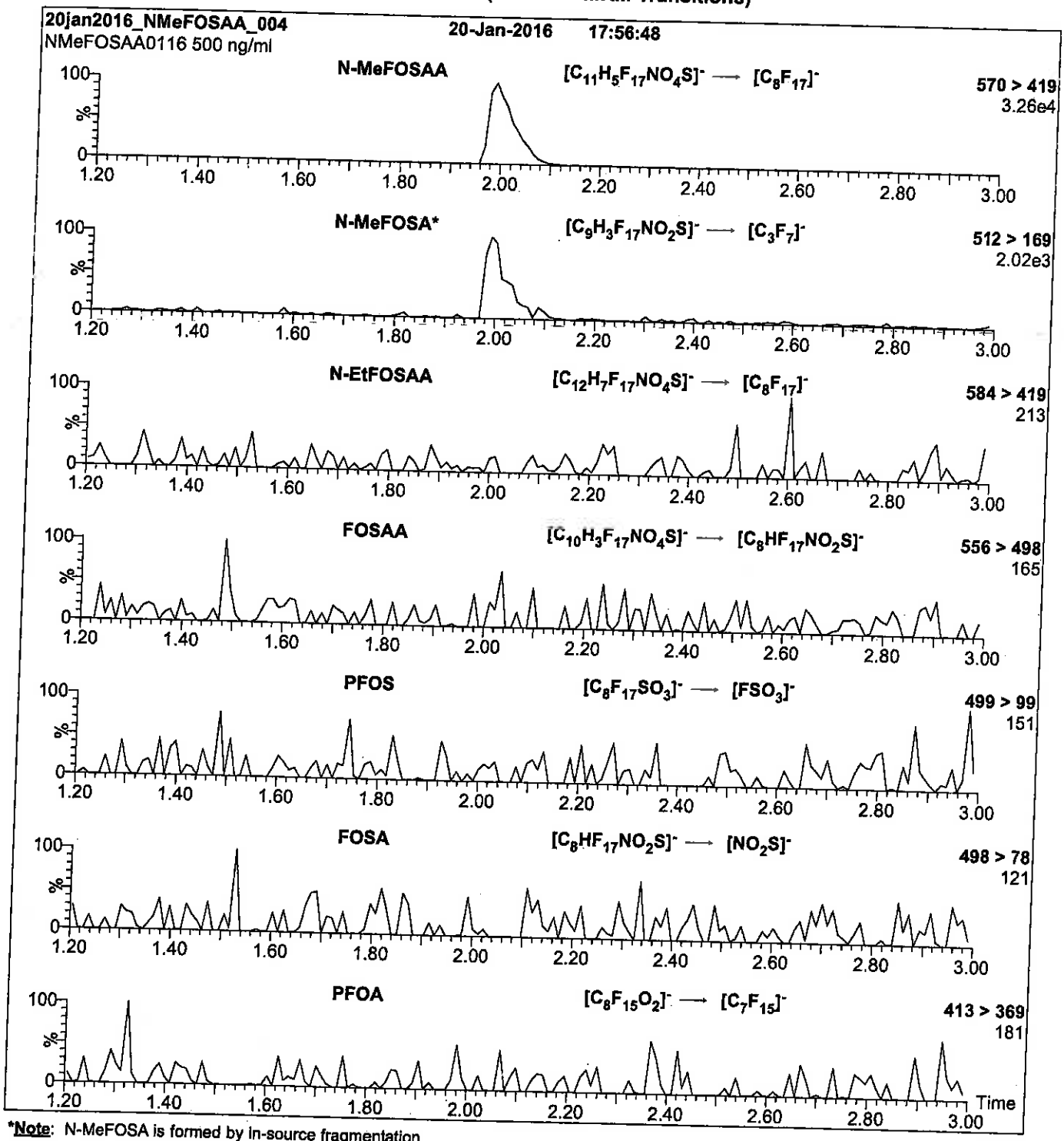
Flow: 300 µl/min

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.

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing

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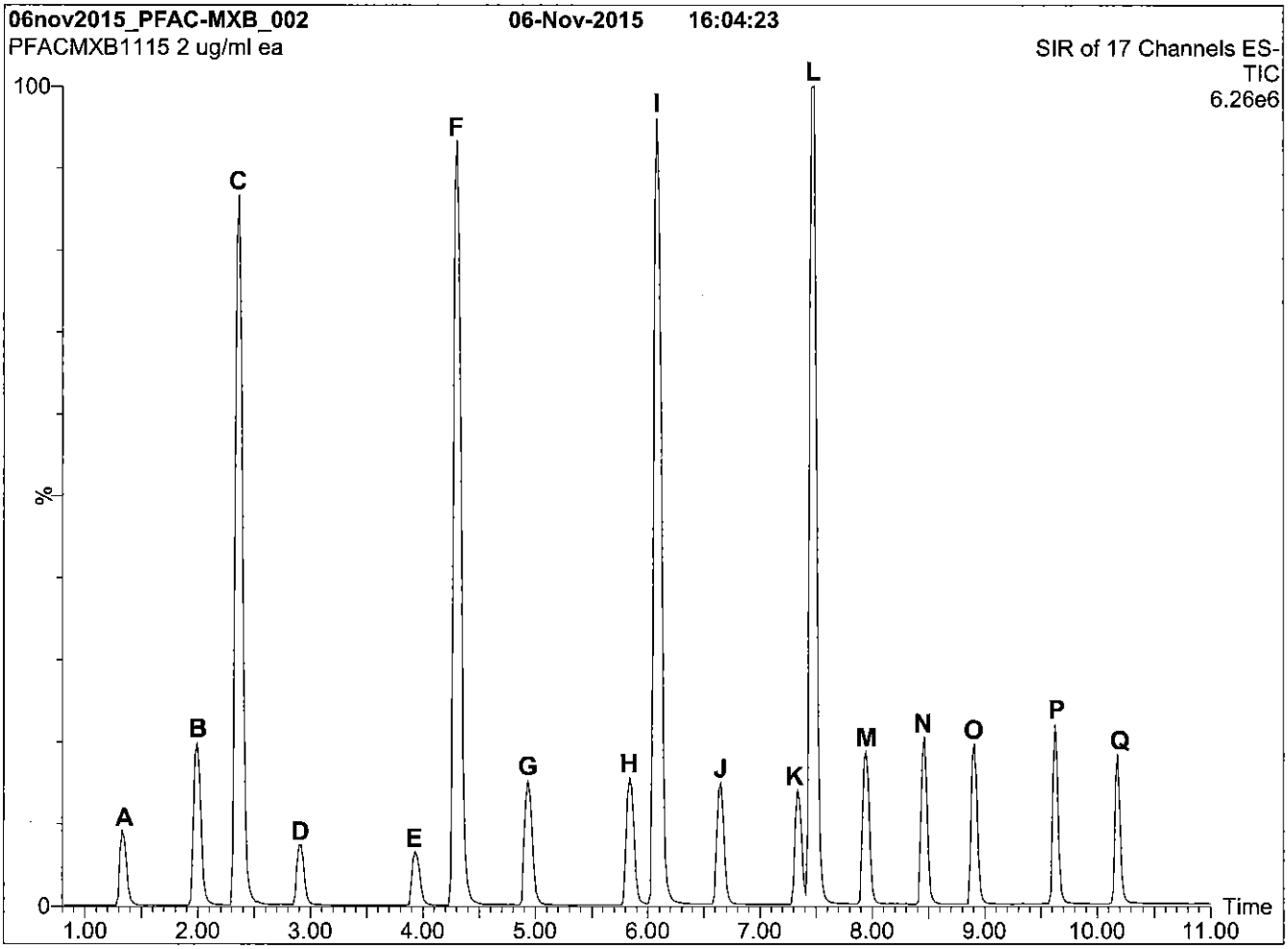
Table A: **PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))**

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)**

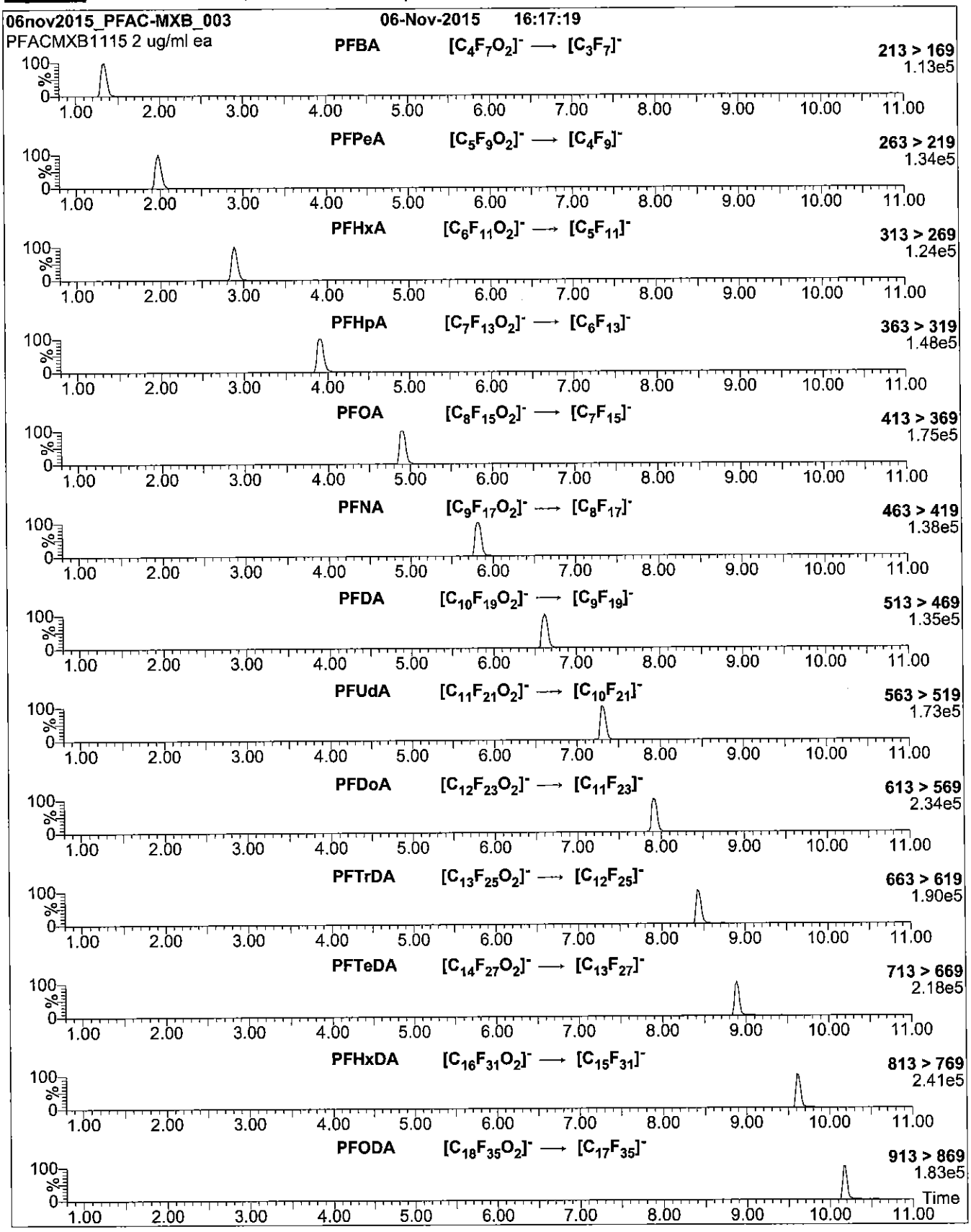
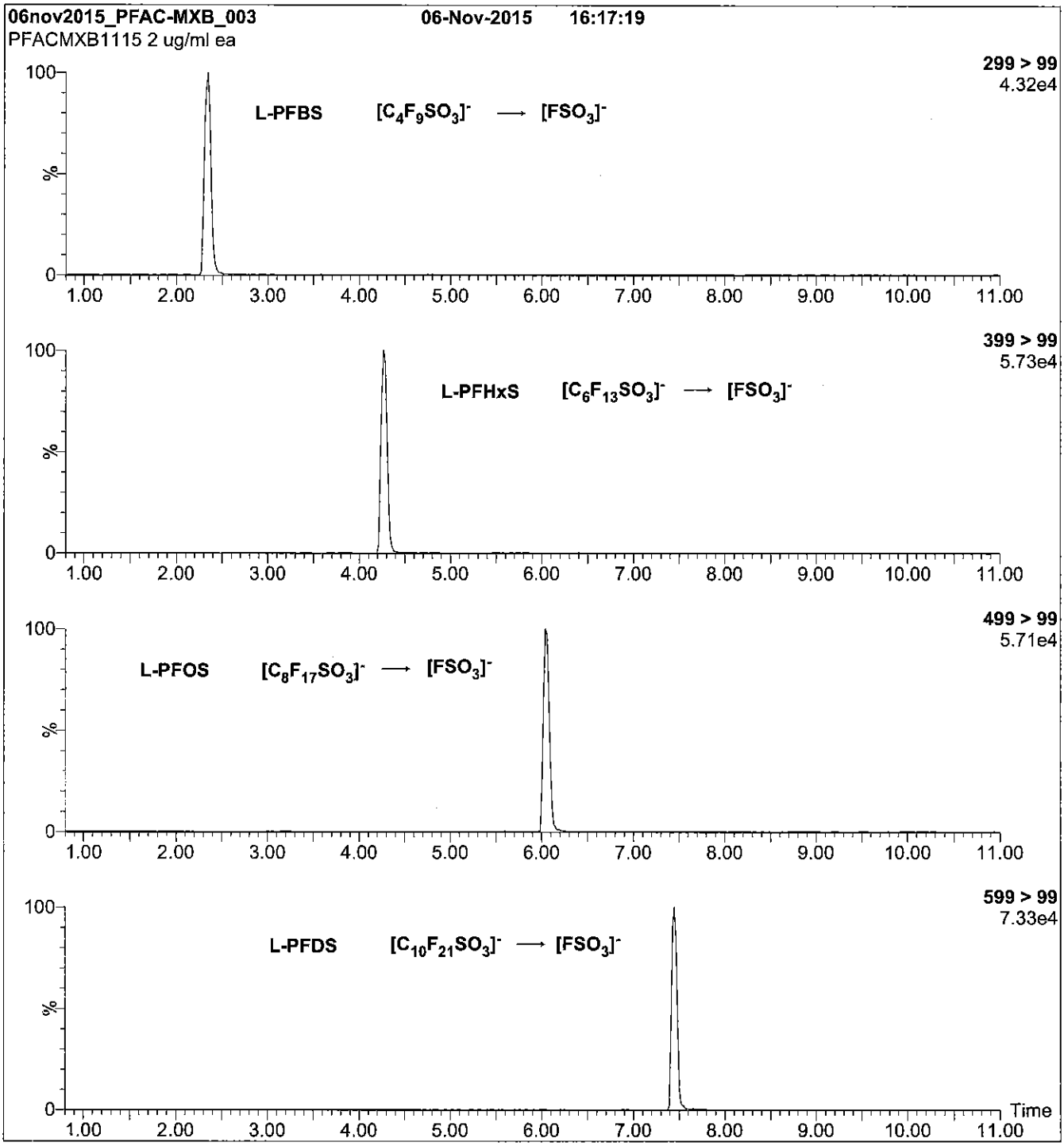


Figure 3: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



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

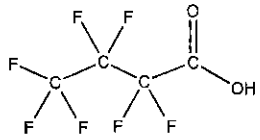
587895
ID: LCPFBA_00004
Exp: 01/30/20 Prpd: CBW
PF-n-butanoic acid

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)

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CALA Testing Accredited by A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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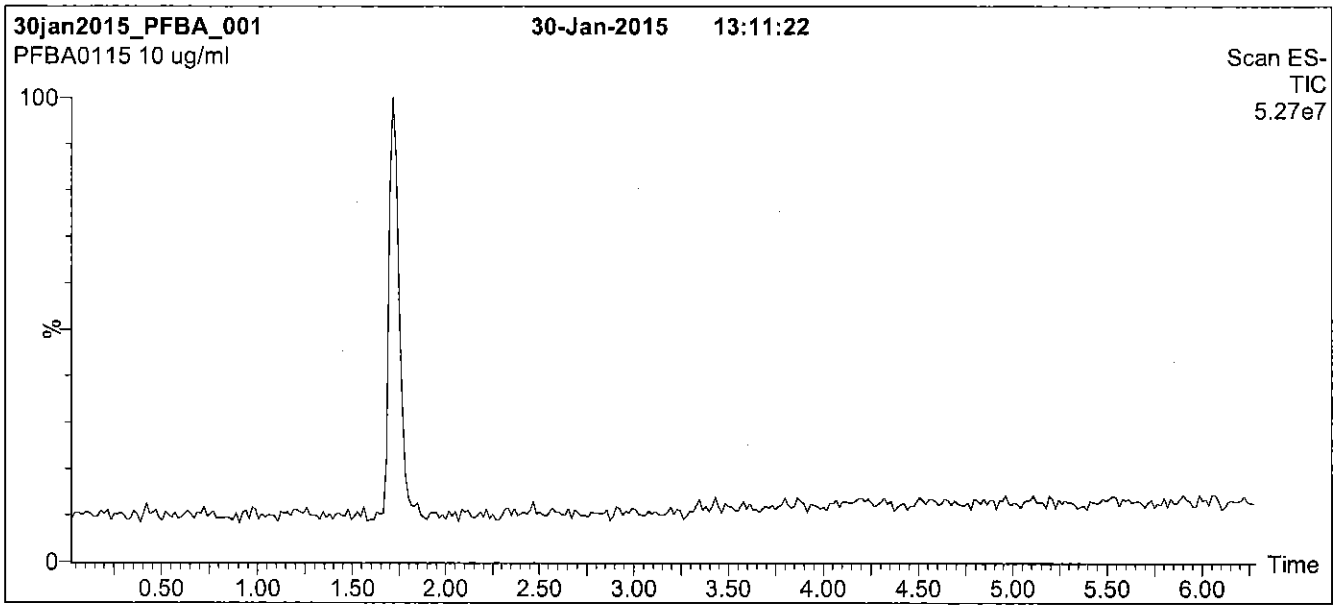
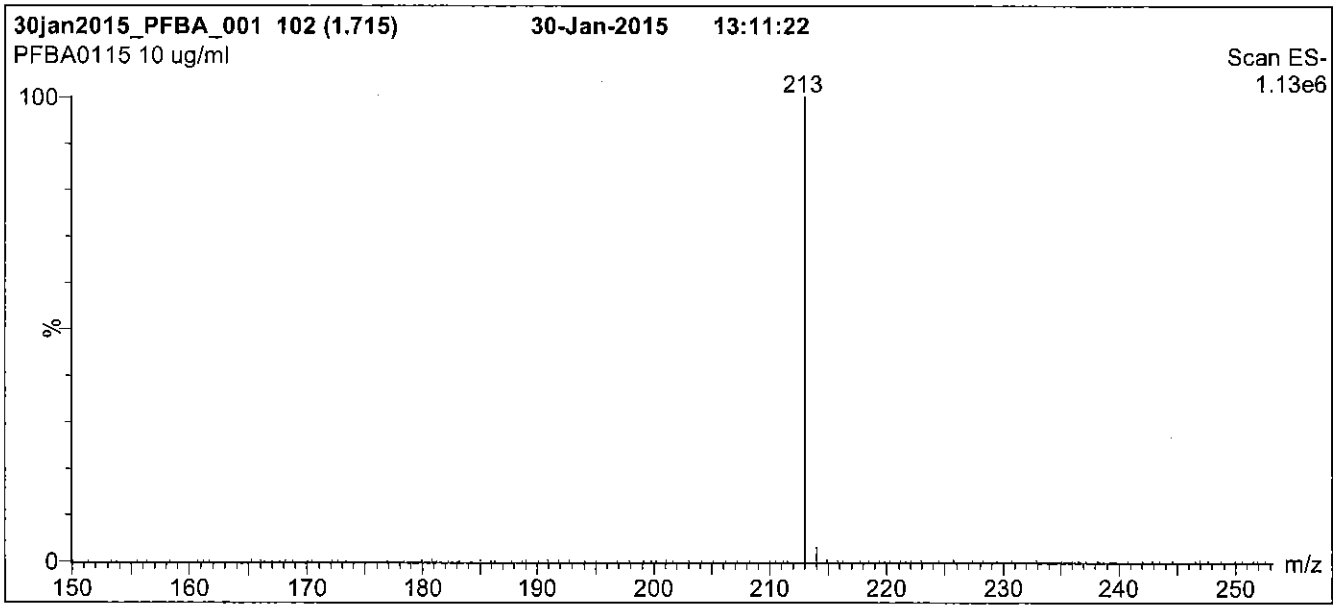
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





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

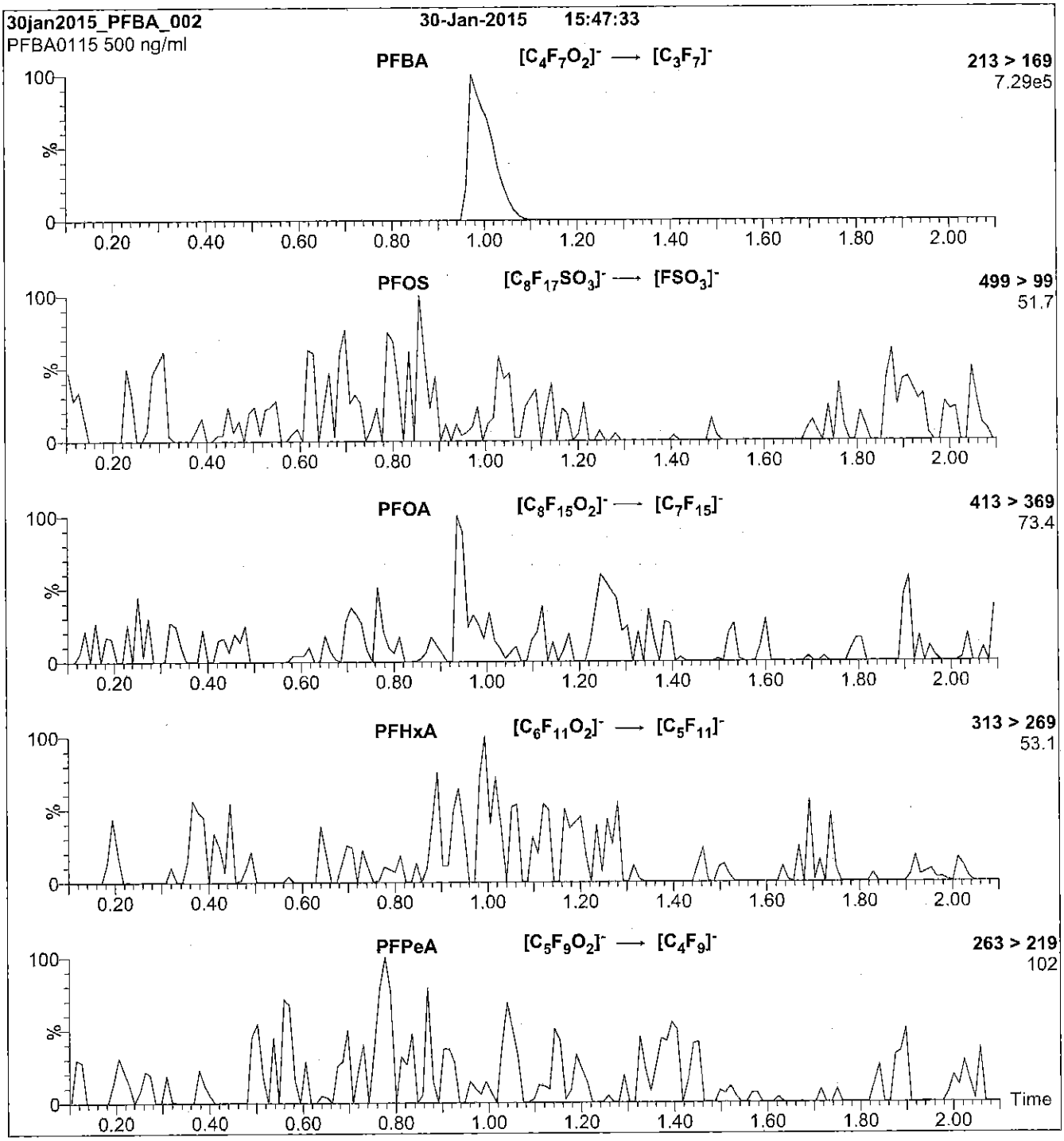
Flow: 300 µl/min

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

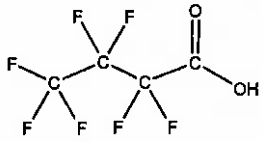
730531
ID: LCPFBA_00005
Exp: 05/27/21 Prpd: SBC
PF-n-butanoic acid

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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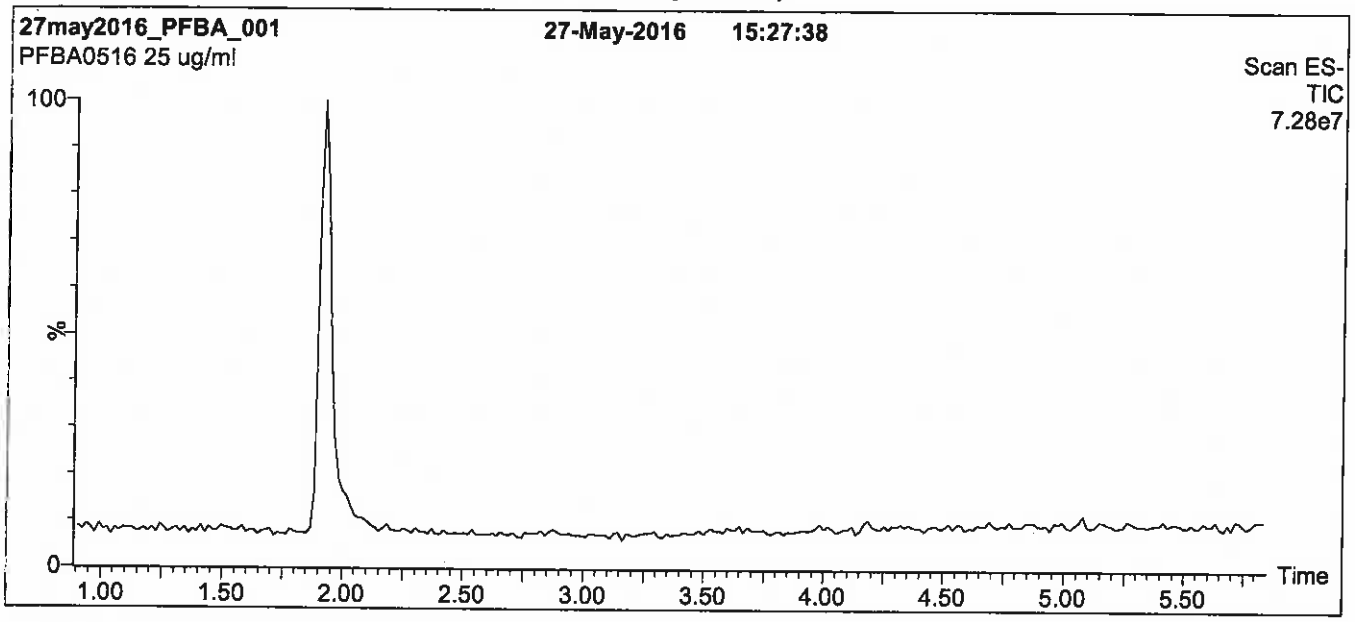
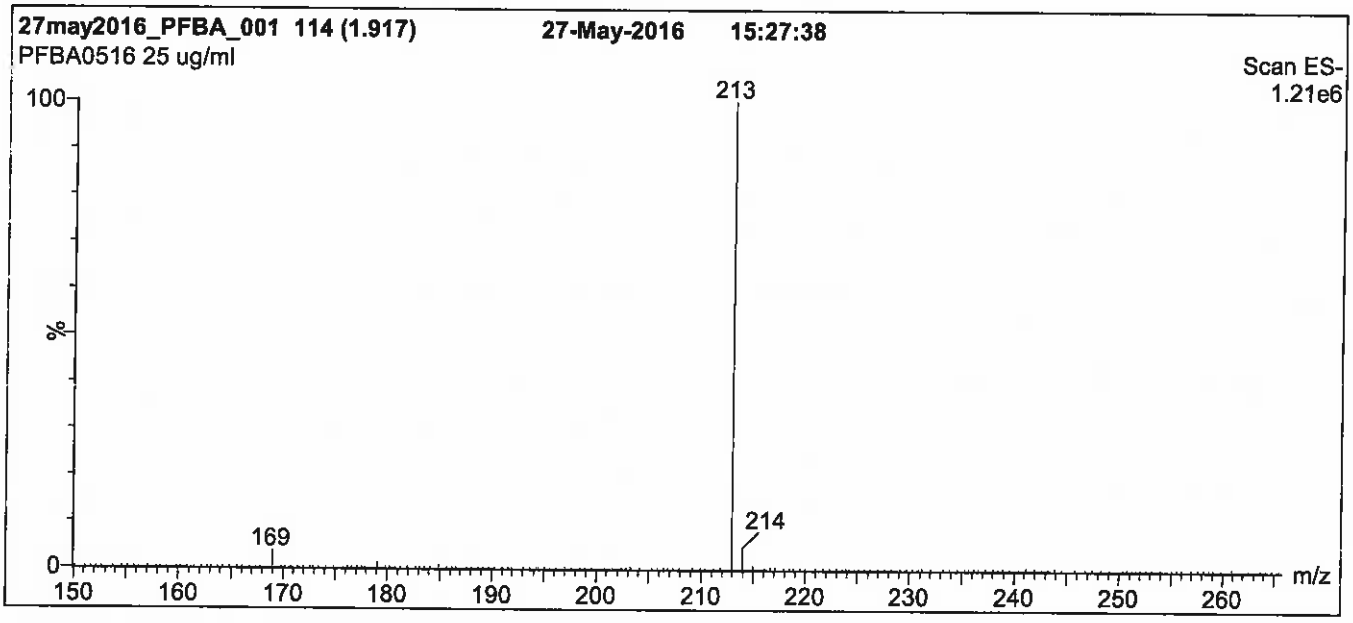
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





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

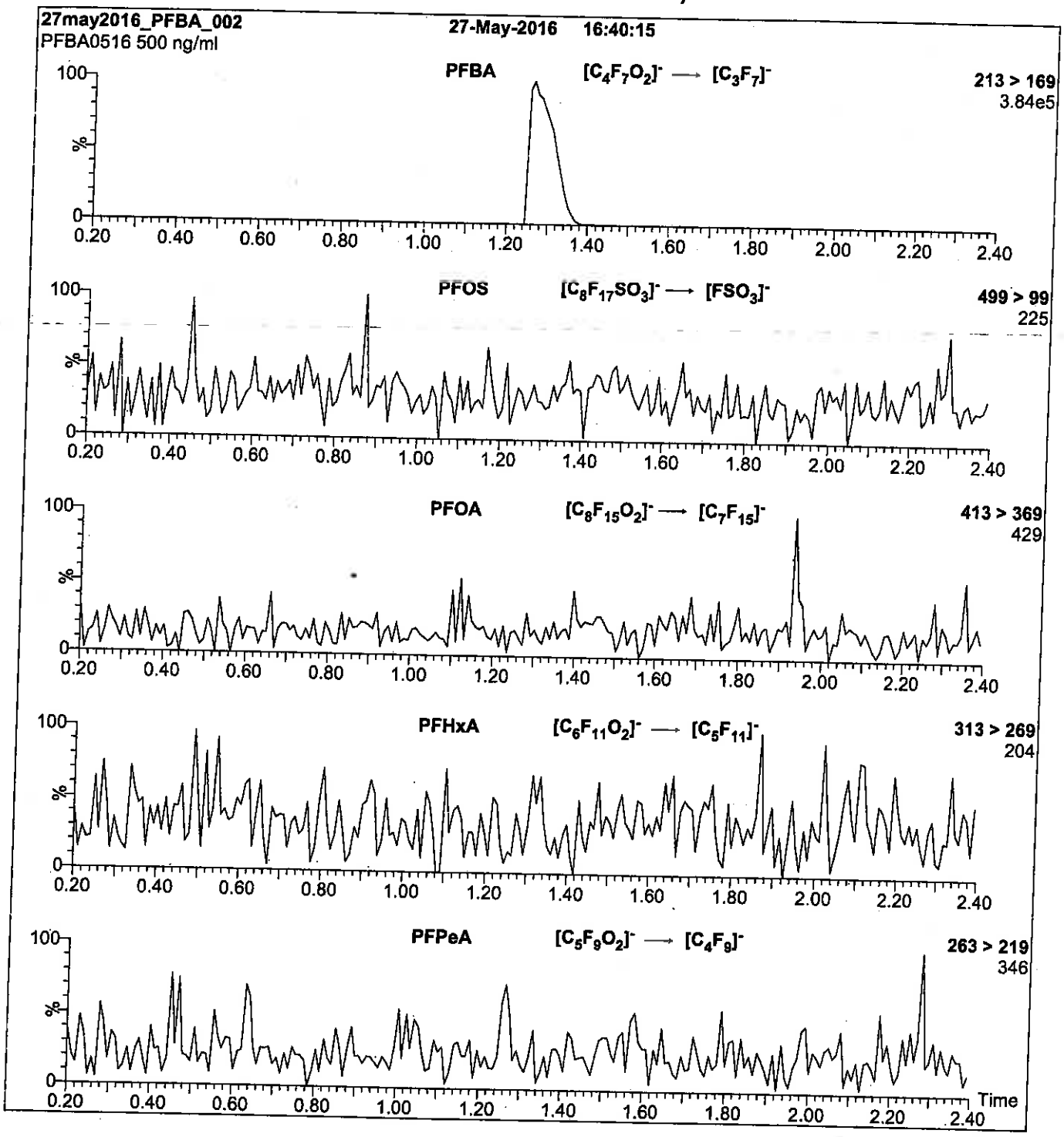
Flow: 300 µl/min

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

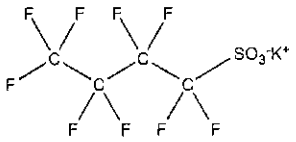
LCPFBS_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:



CAS #: 29420-49-3

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 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:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

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QUALITY MANAGEMENT:

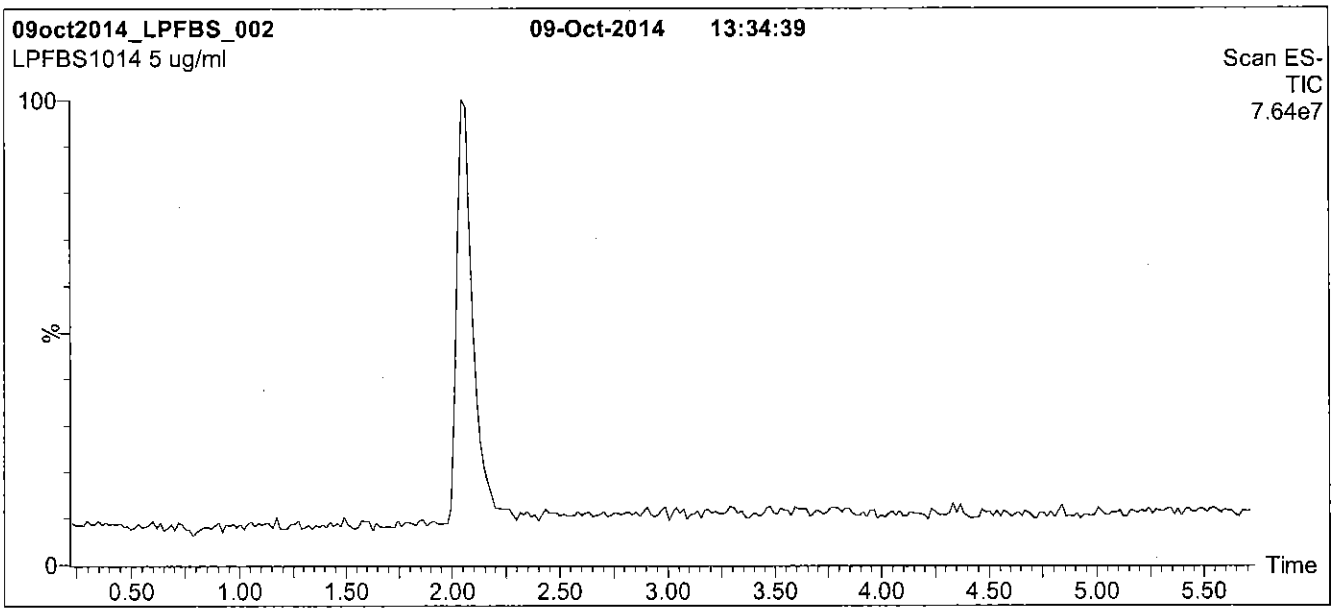
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

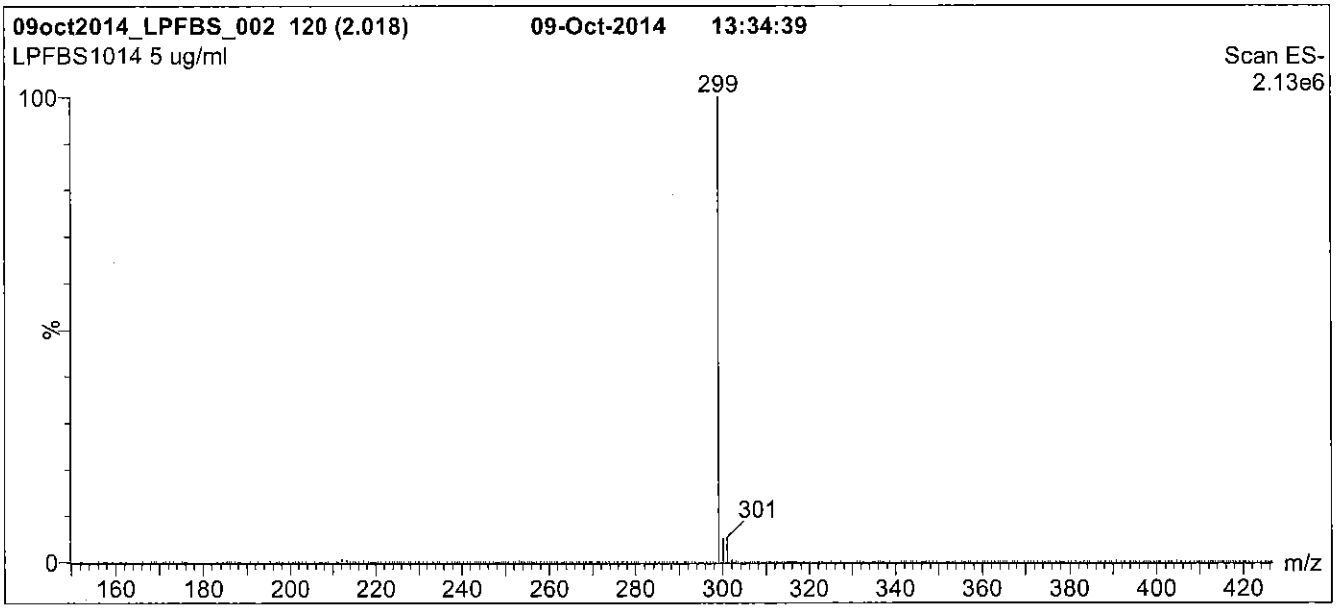
CALA Testing Accredited Calibration Lab. A 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

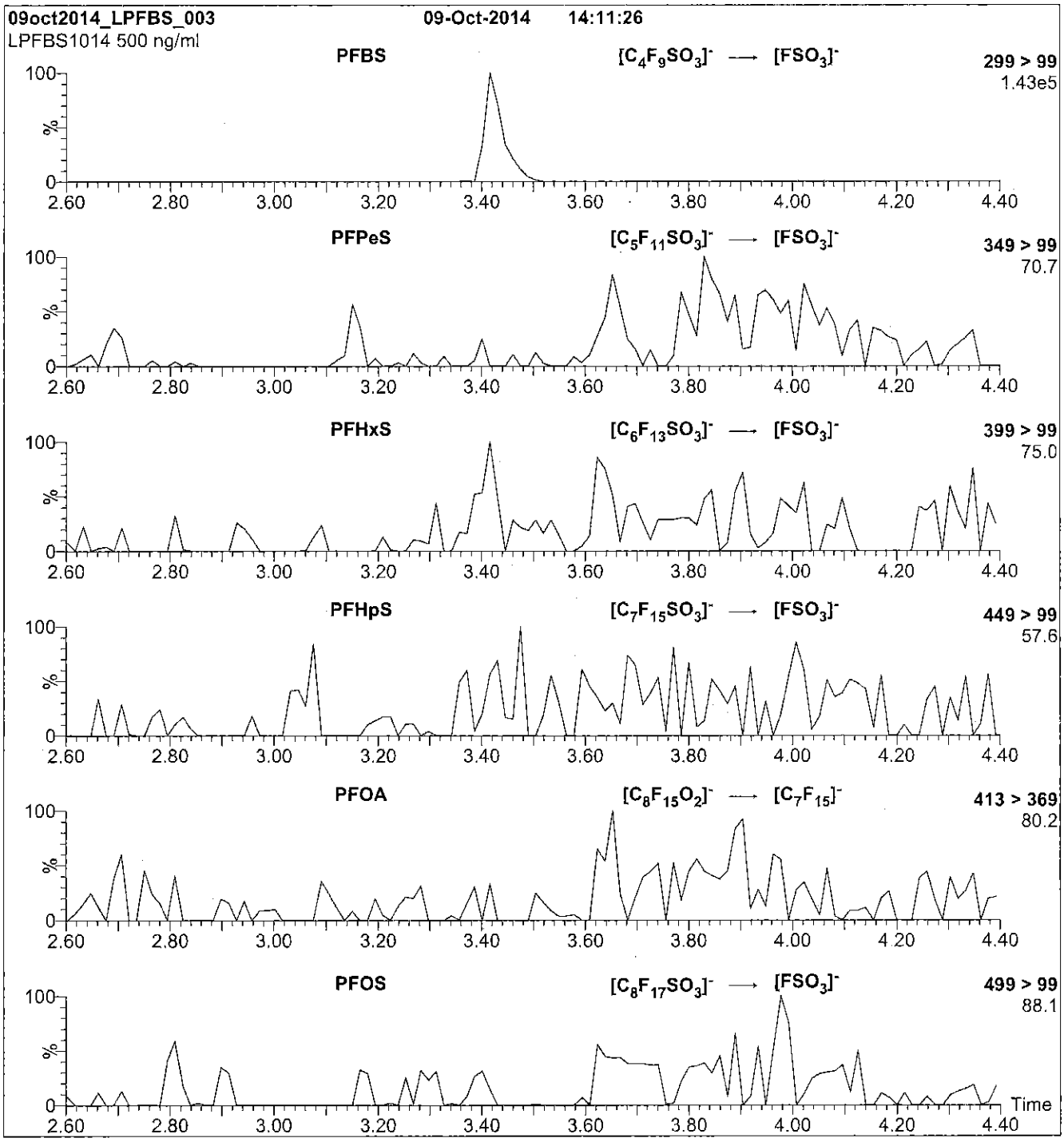
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFBS_00005

R: 9/9/16 SBC

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

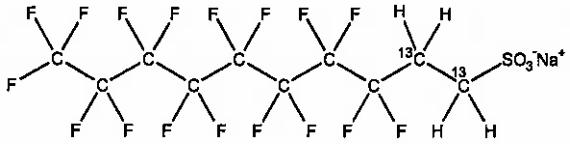
WELLINGTON LABORATORIES

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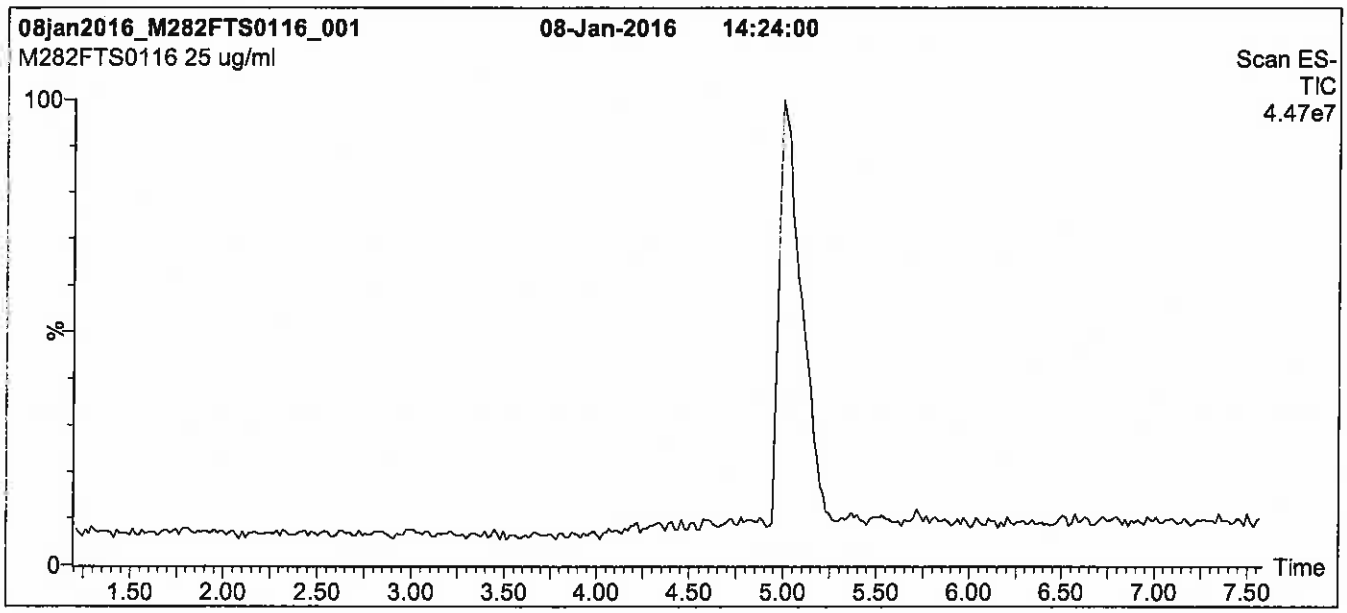
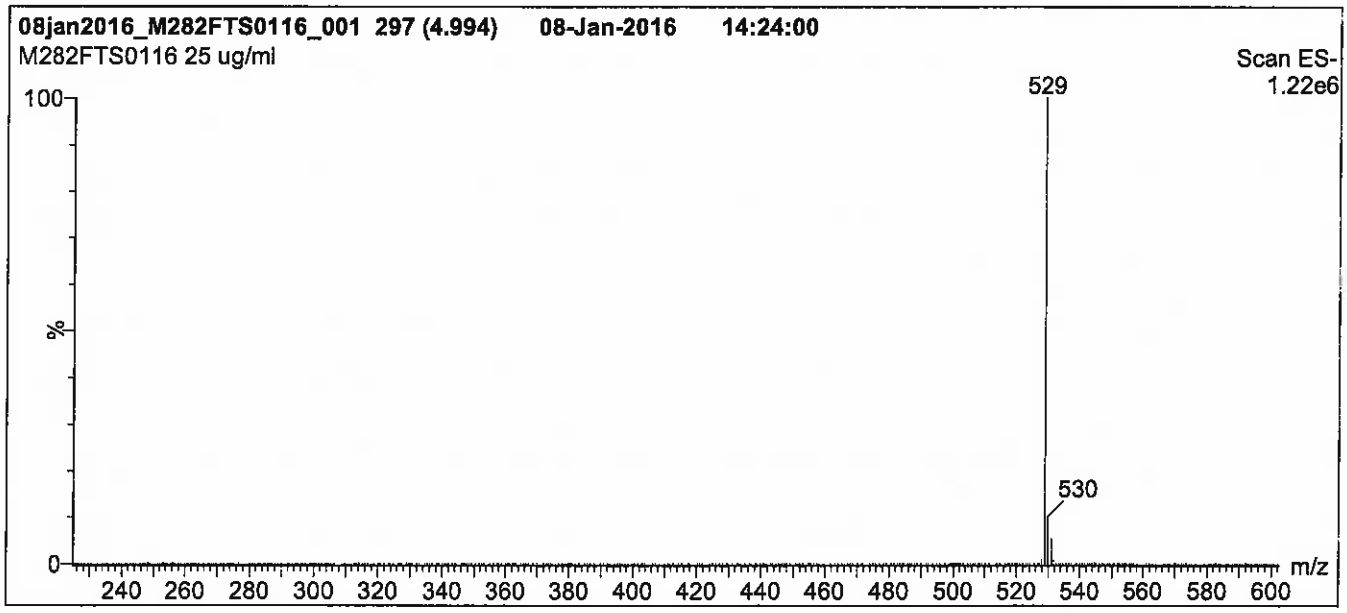
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

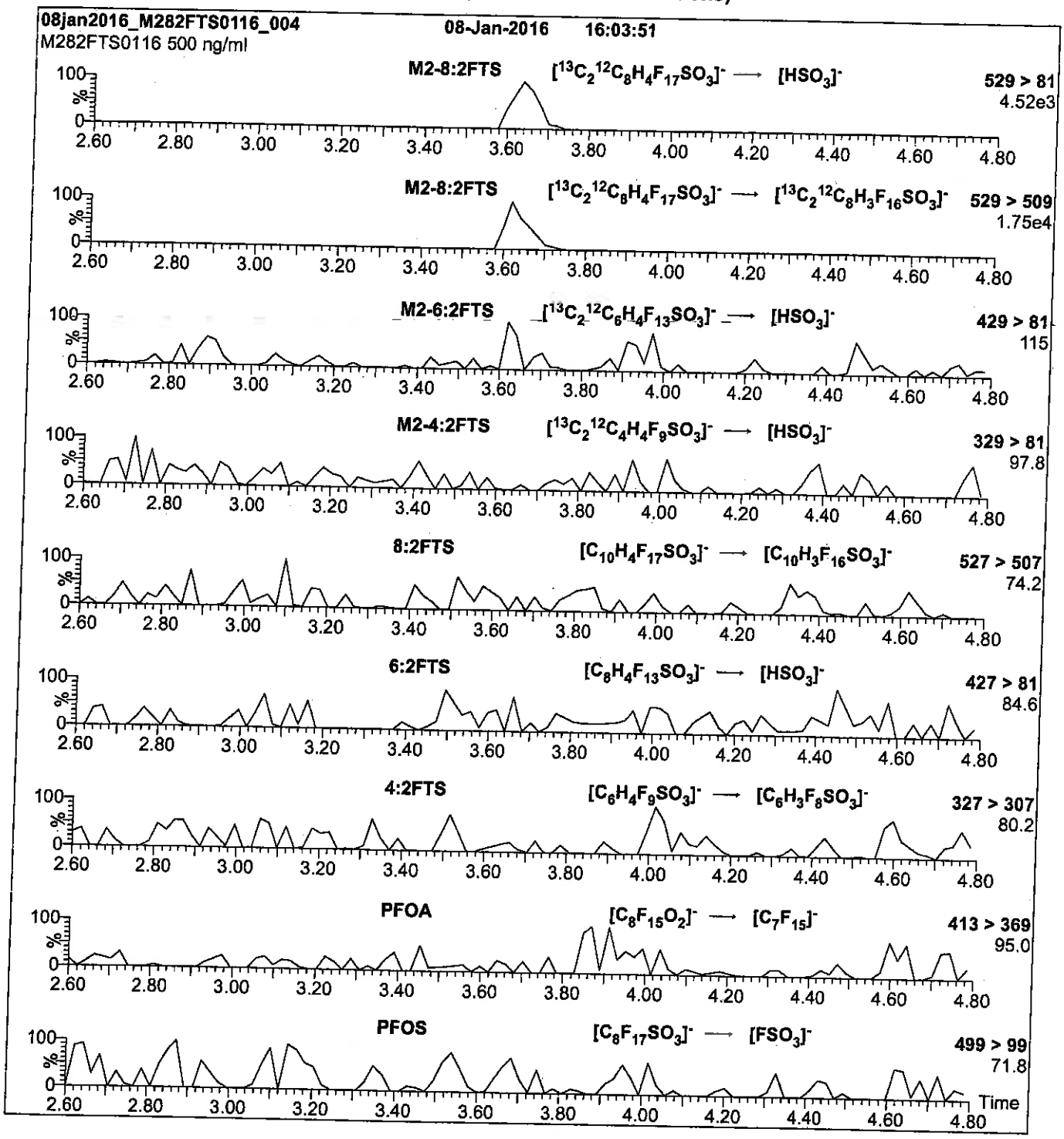
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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

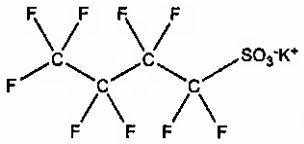
730511
ID: LCPFBS_00005
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

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:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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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.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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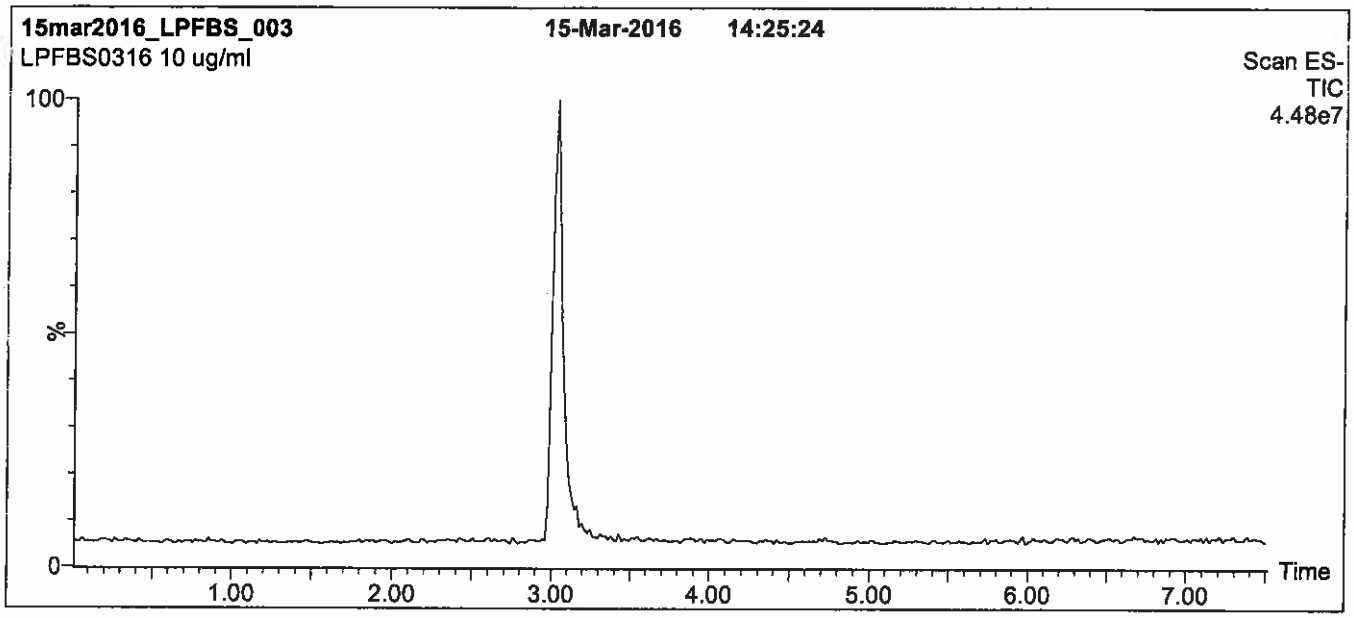
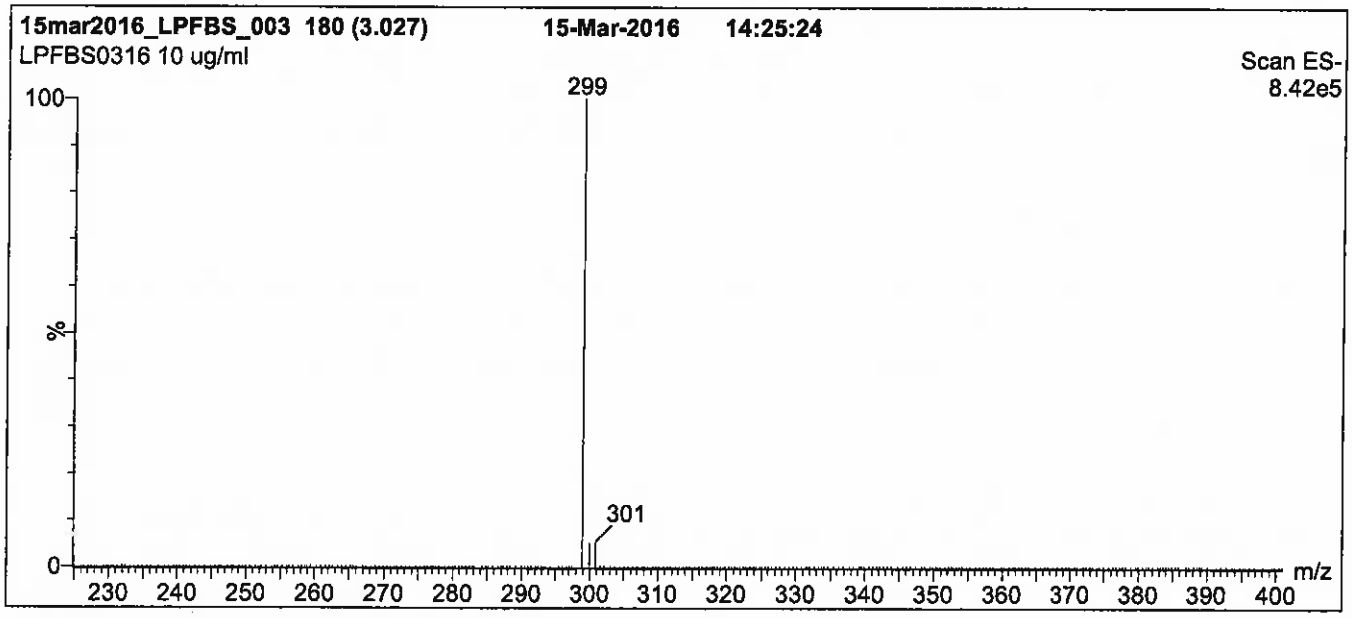
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





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

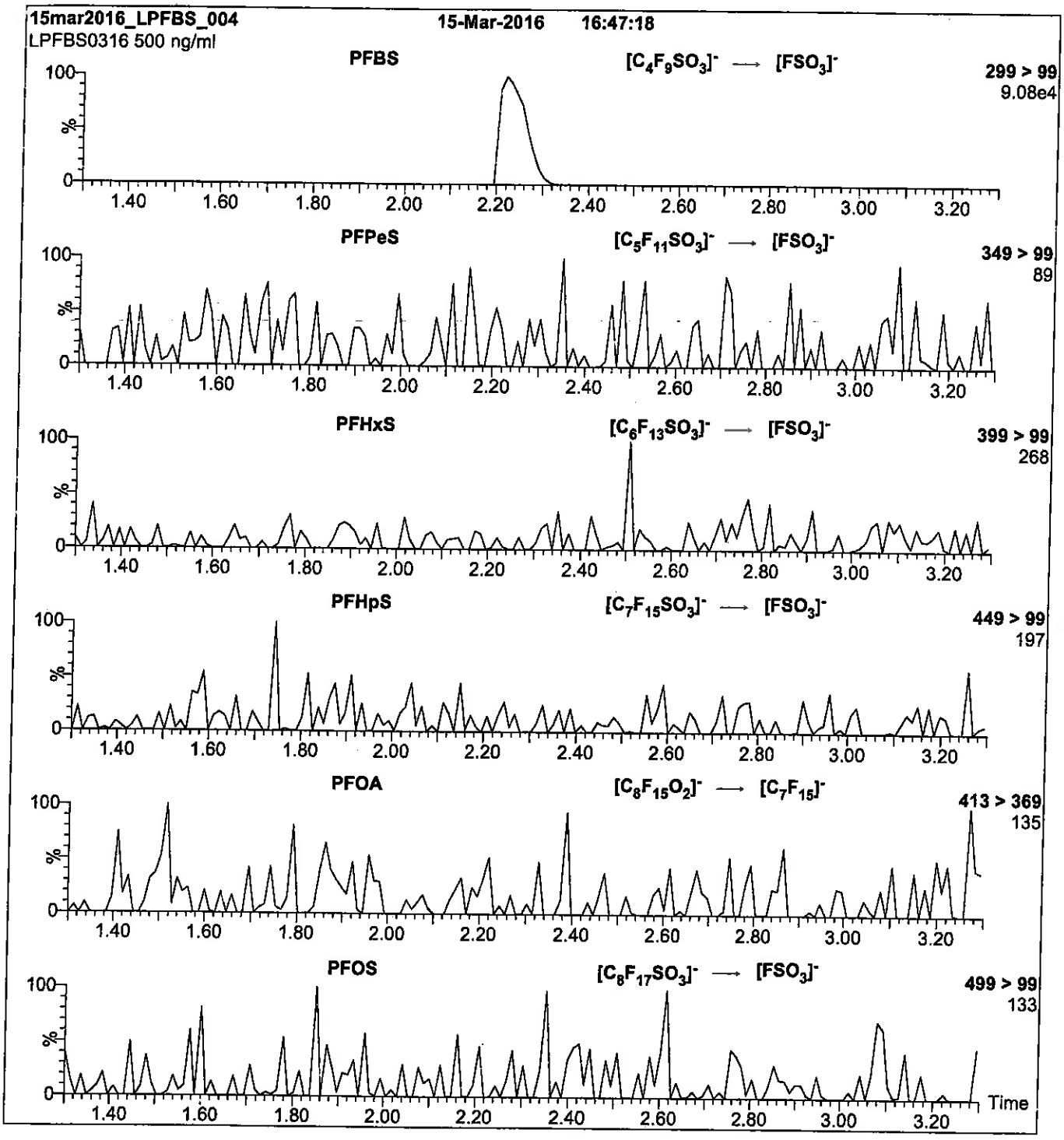
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 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

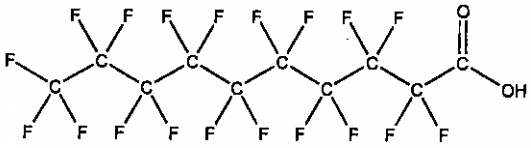
WELLINGTON LABORATORIES

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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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HOMOGENEITY:

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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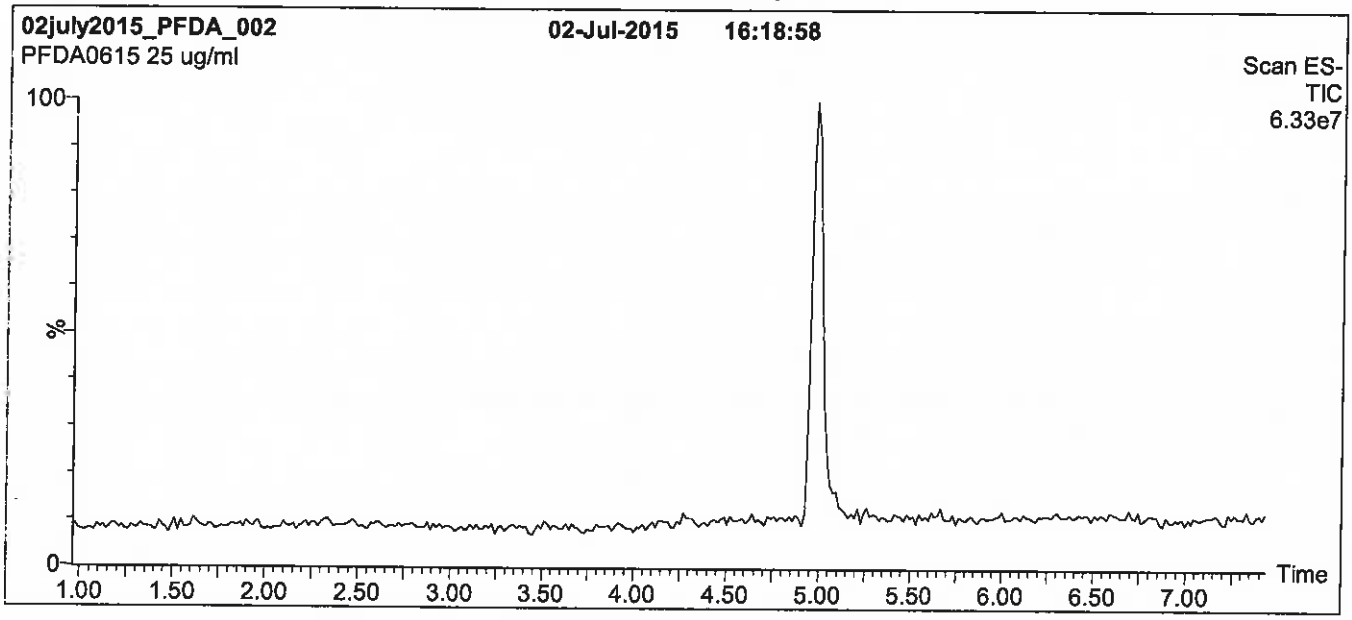
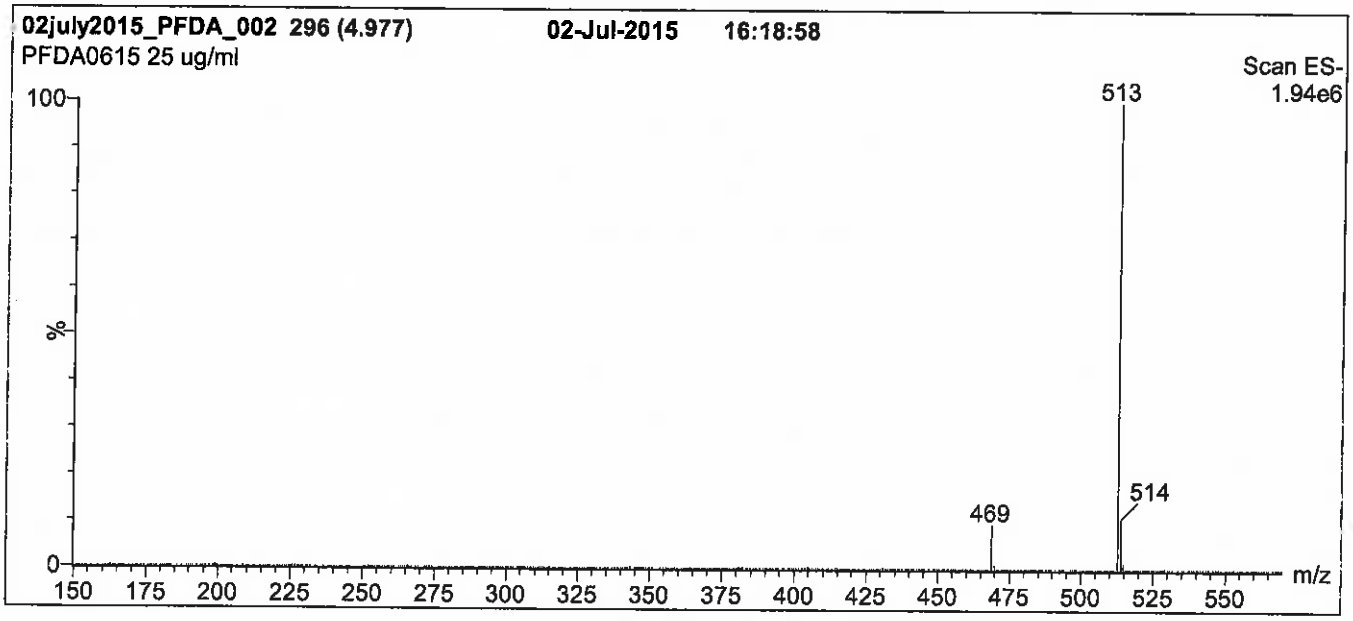
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

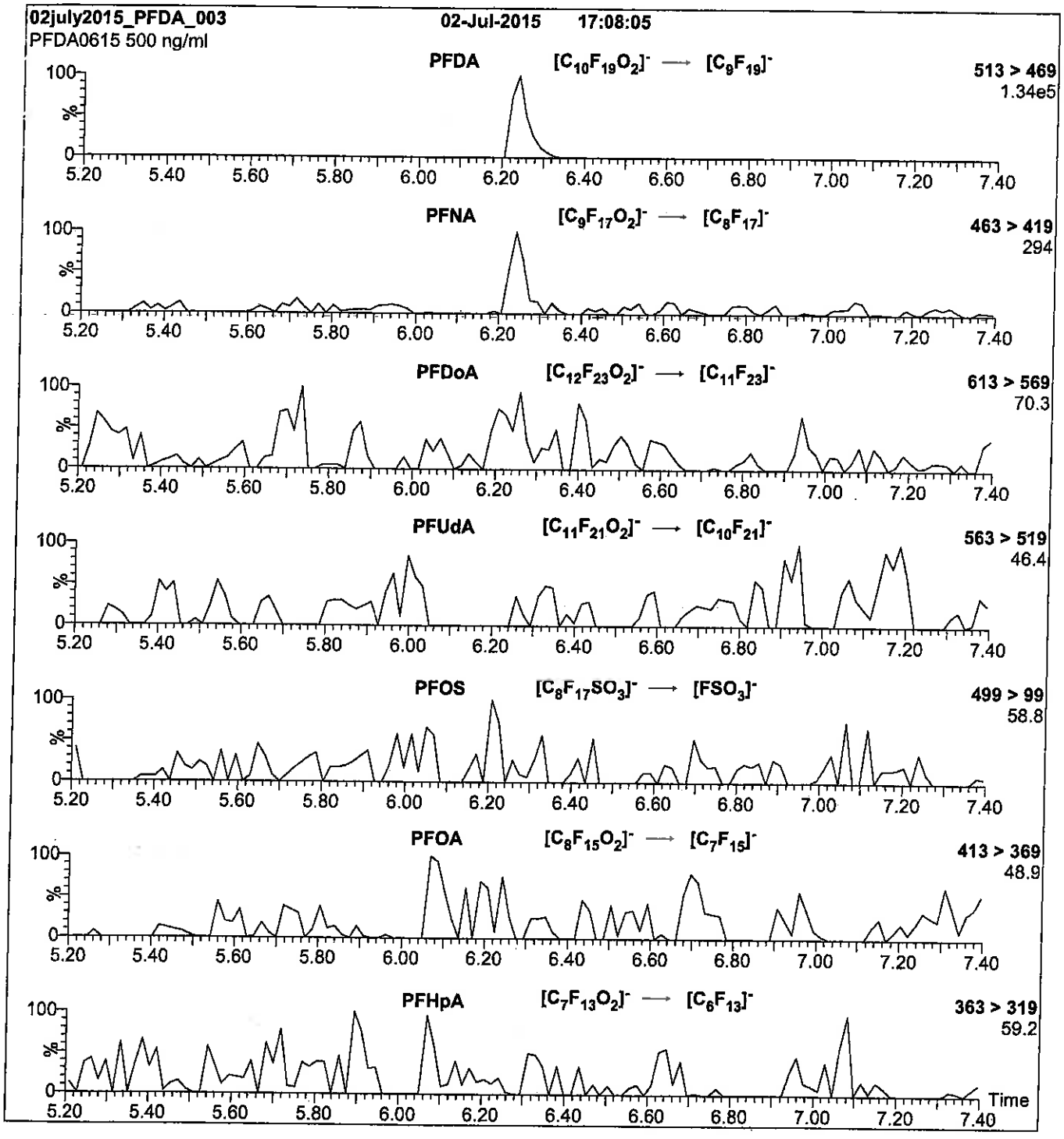
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFDoA_00005

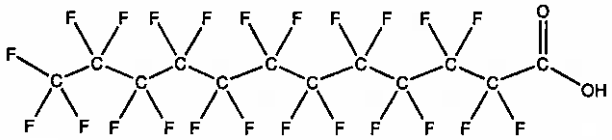
R: 7/6/16 ca

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.

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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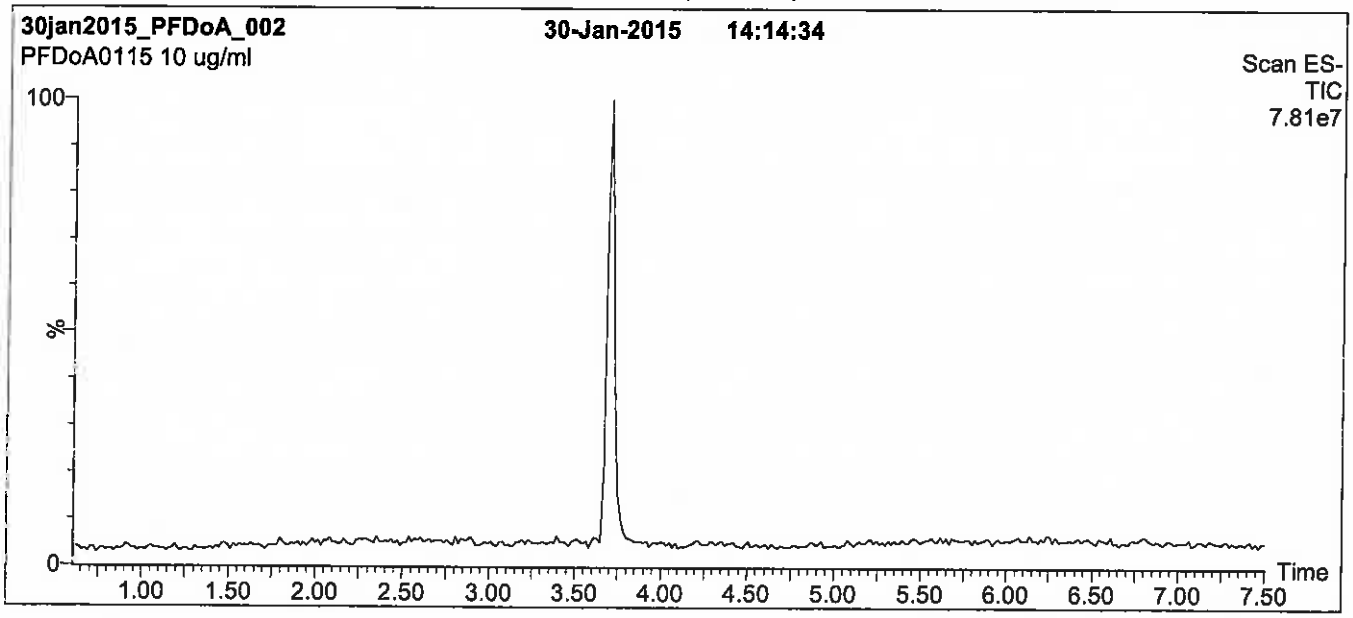
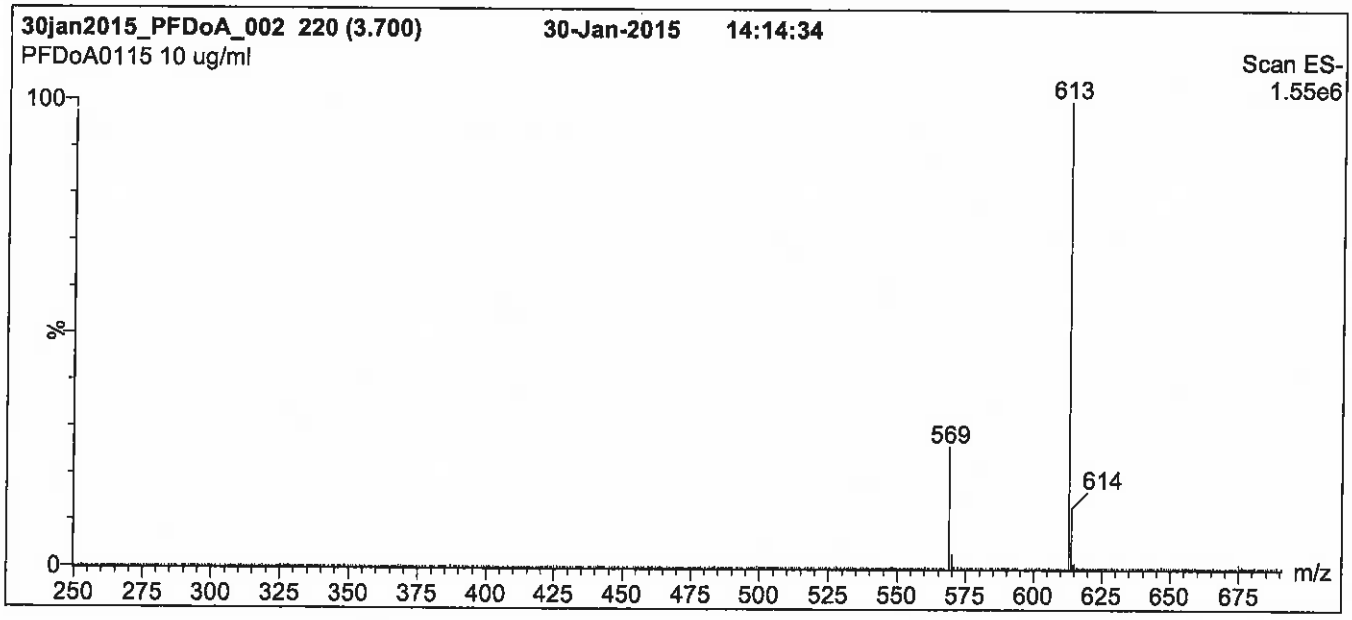
Figure 1: **PFDoA; LC/MS Data (TIC and Mass Spectrum)**





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

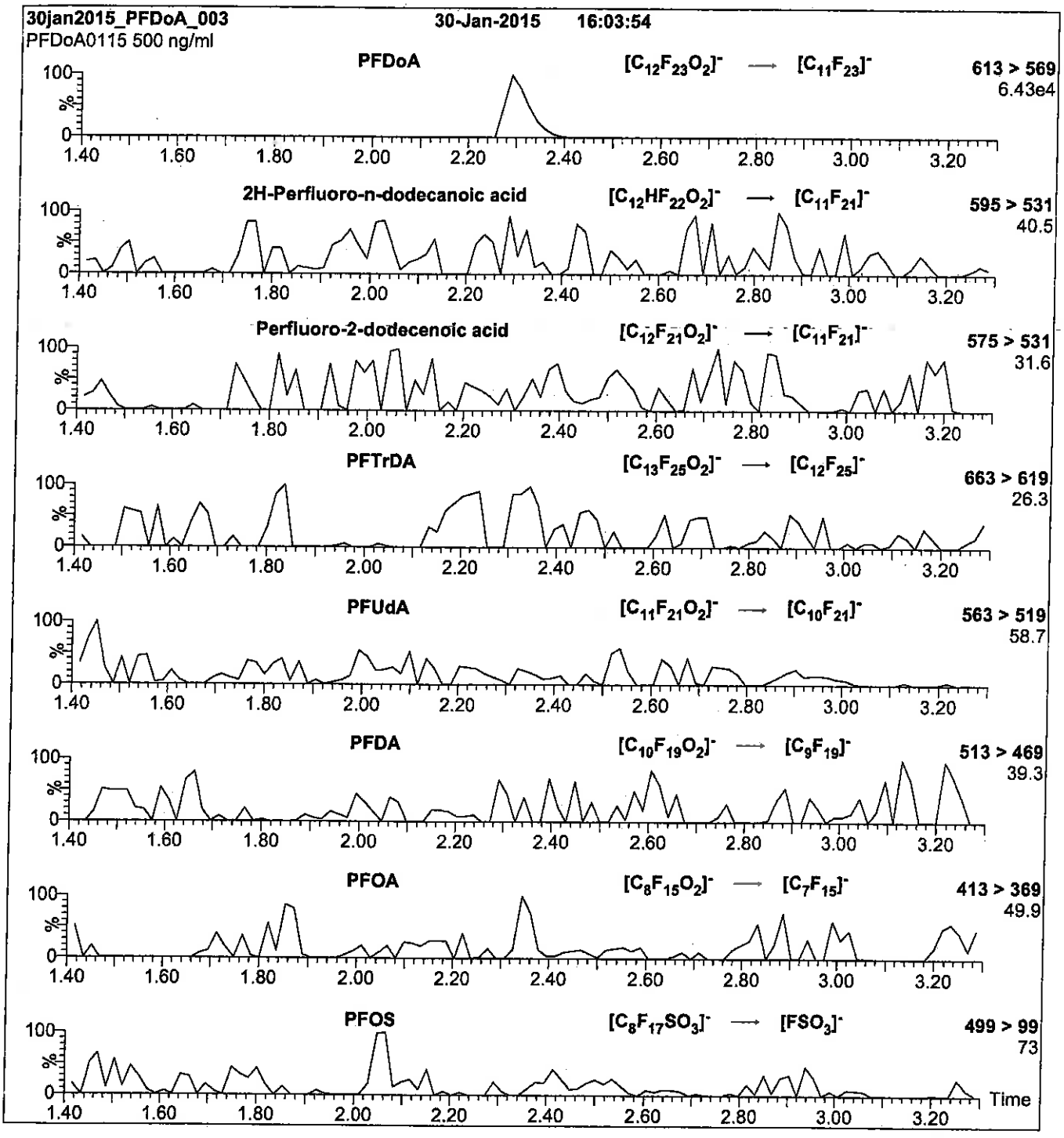
Flow: 300 µl/min

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)	**MS Parameters**	
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.28e-3 Collision Energy (eV) = 13	
Flow:	300 µl/min		

Reagent

LCPFDS_00005

Rec. 3/29/16 JRB

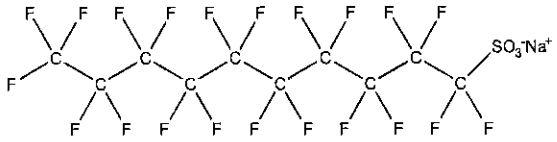
WELLINGTON LABORATORIES

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:

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:

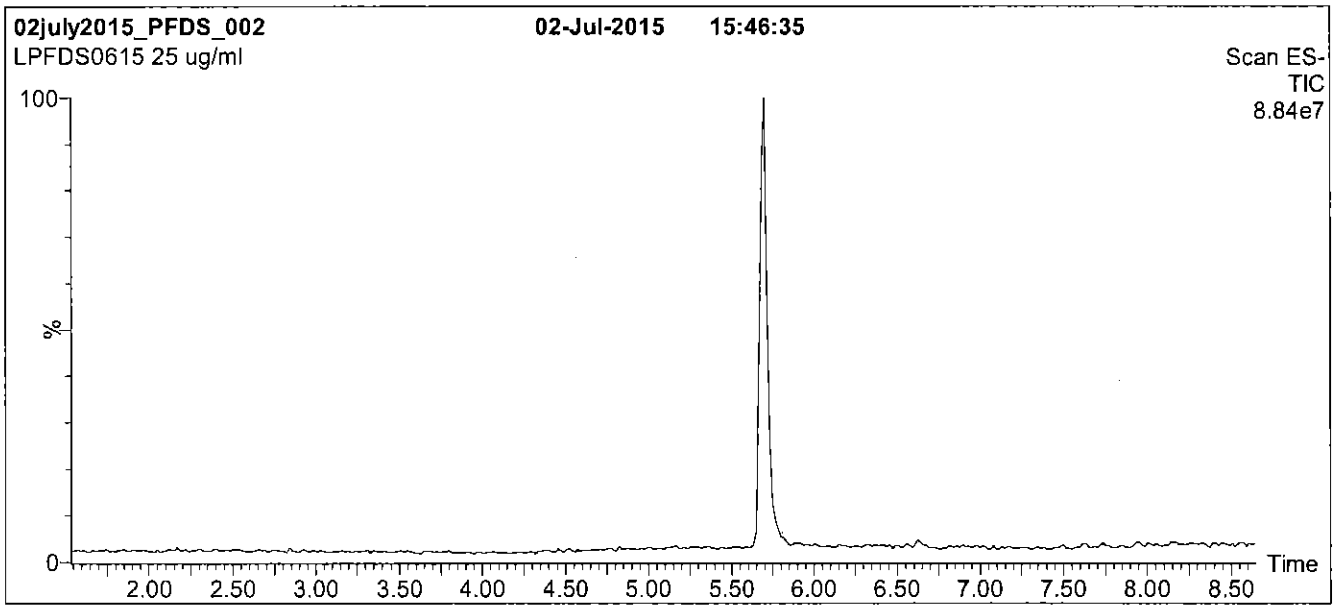
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

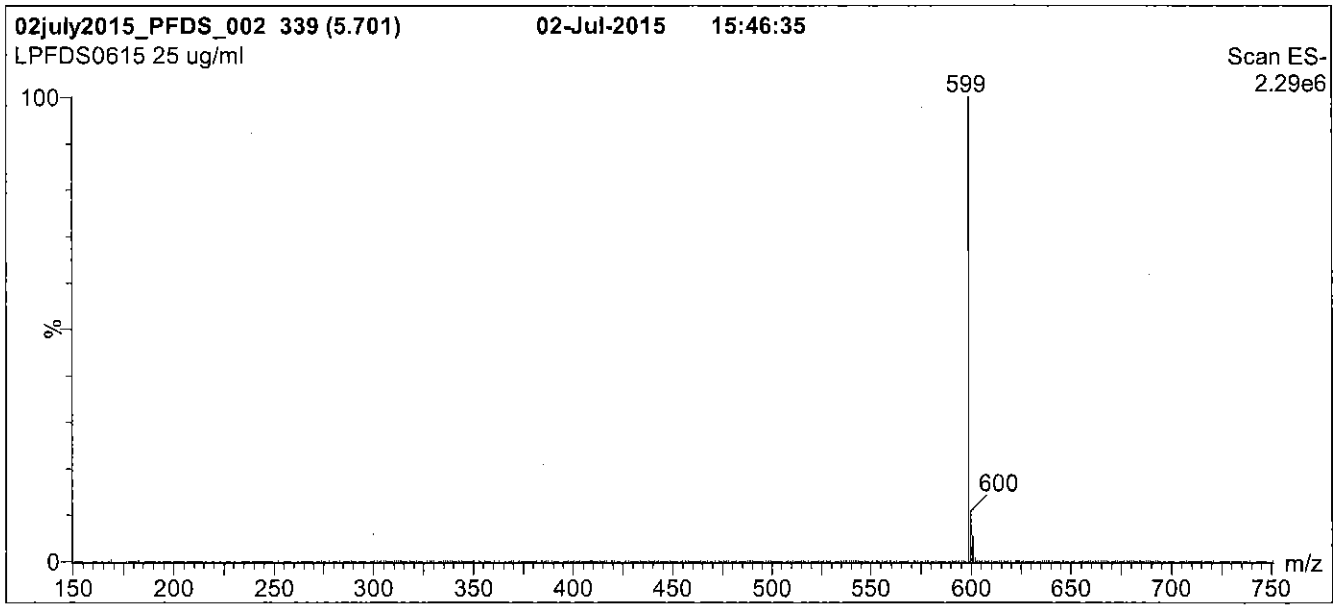
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

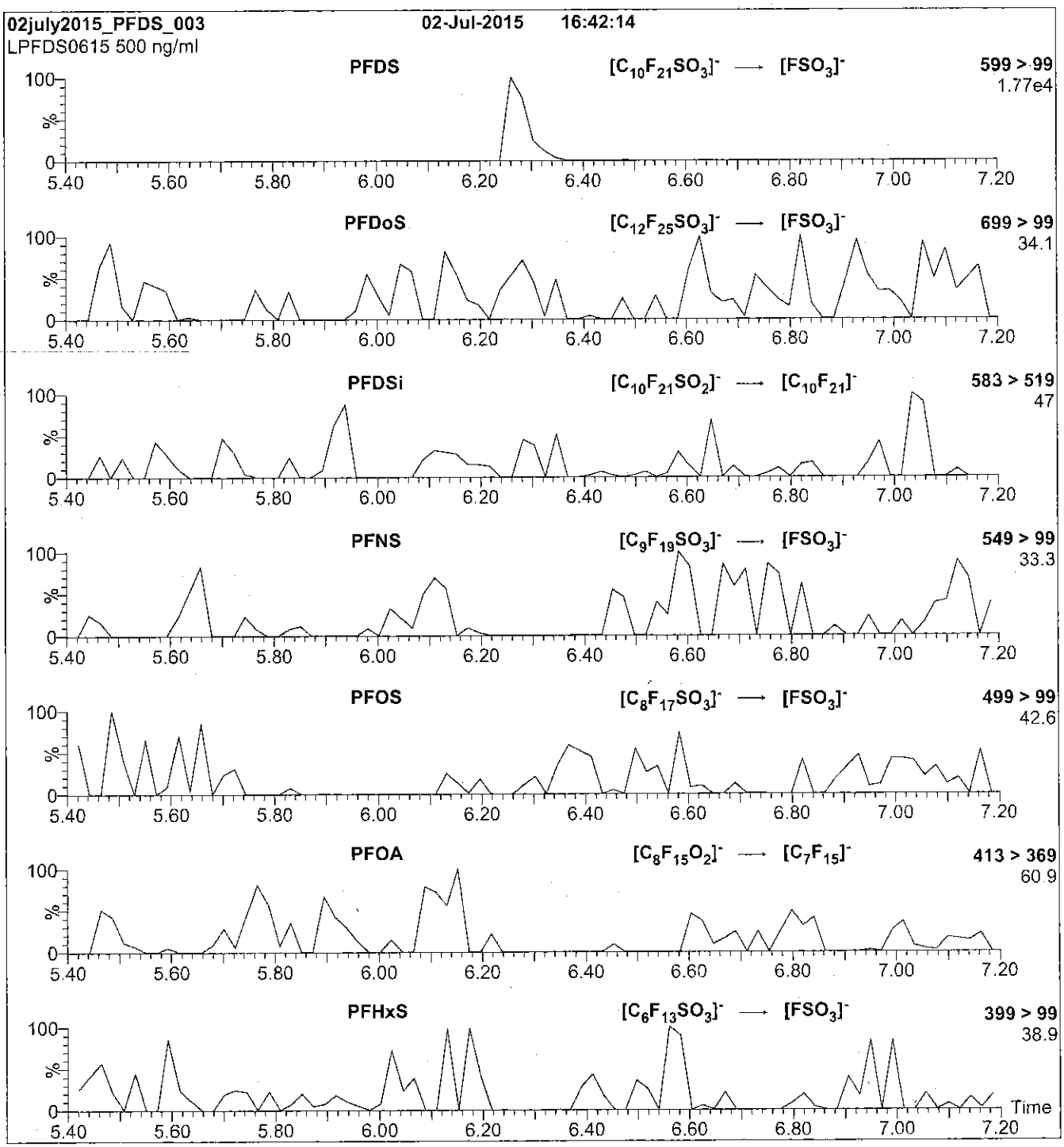
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHpA_00005

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

R: 4/7/16 CBW

WELLINGTON LABORATORIES

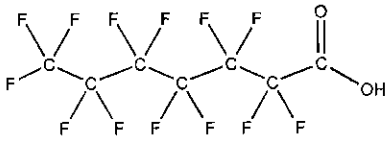
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



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

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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:

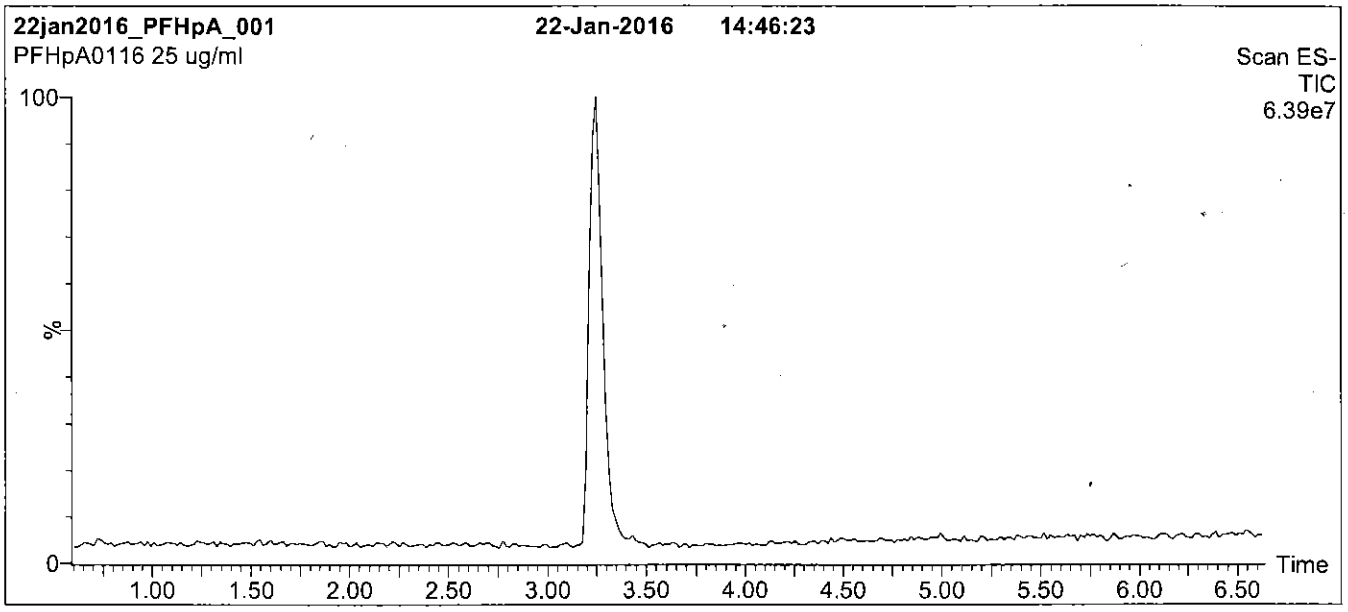
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

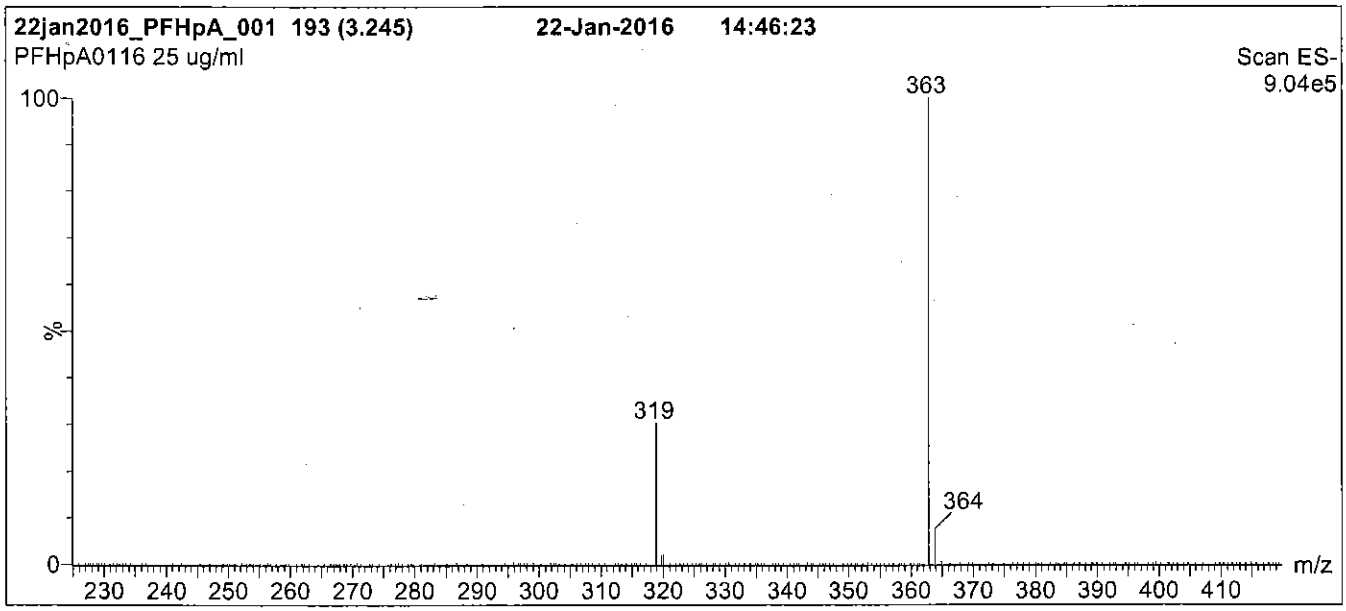
CALA Testing Accreditation No. A1226

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: **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

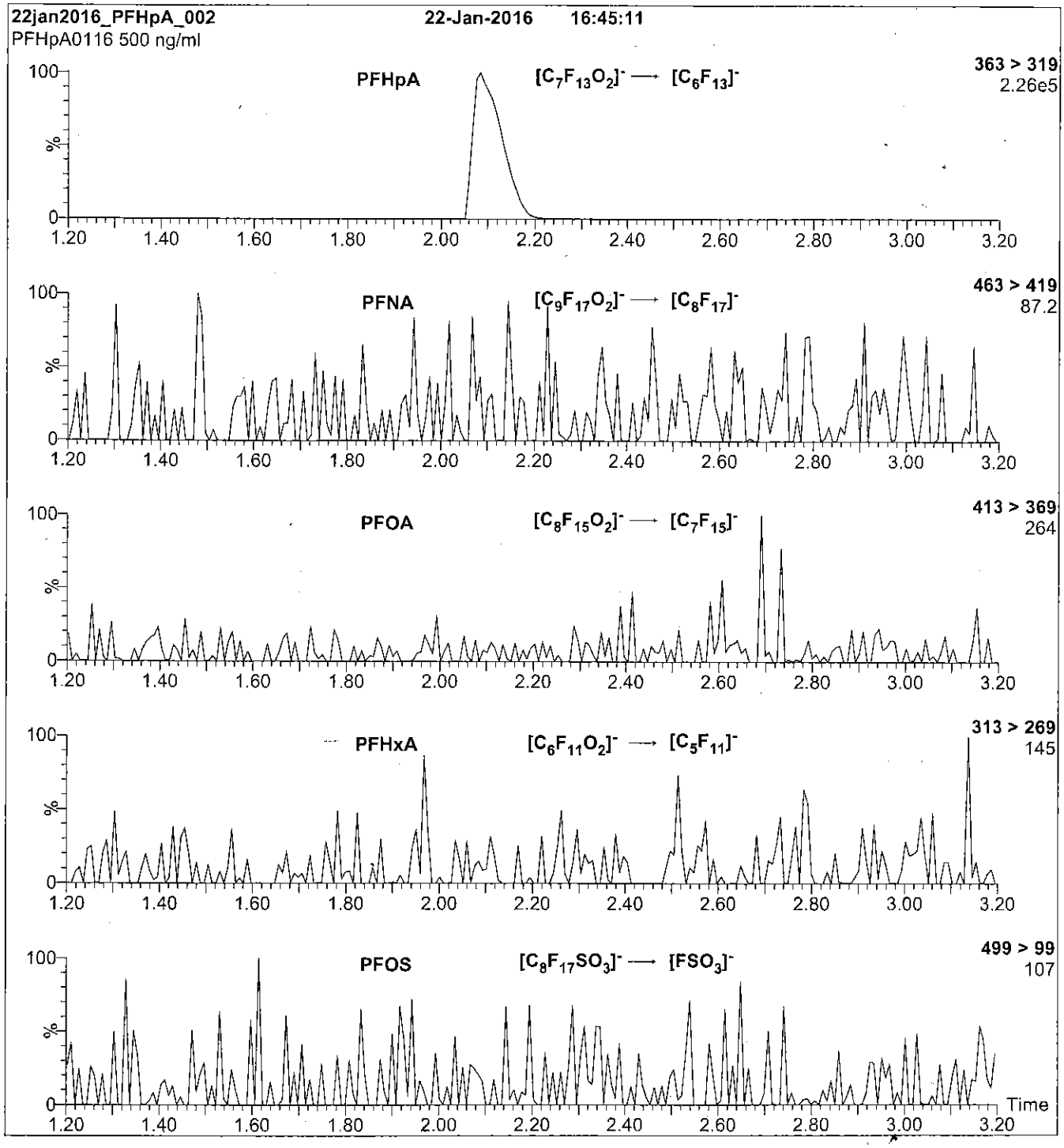
Flow: 300 µl/min

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

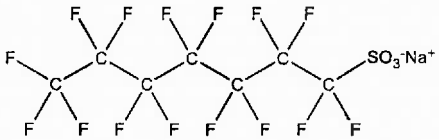
627751
ID: LCPFHpS_00008
Exp: 11/06/20 Prpd: CBW
PFHpS at 47.6ug/mL

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
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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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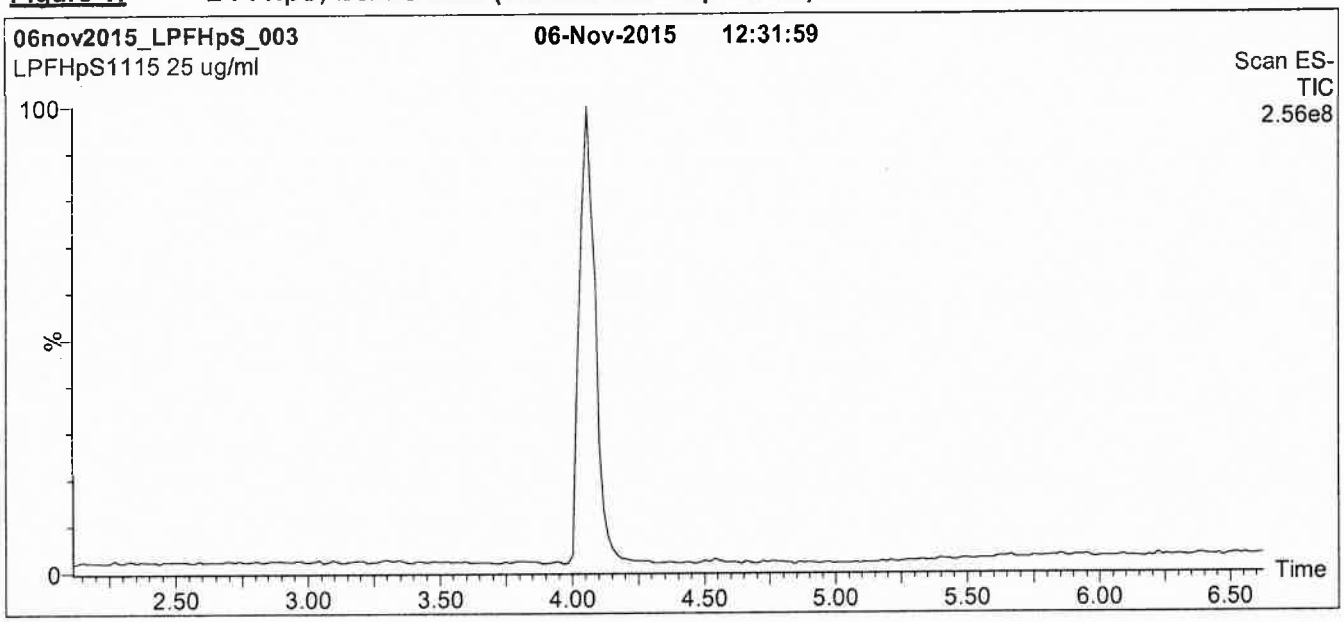
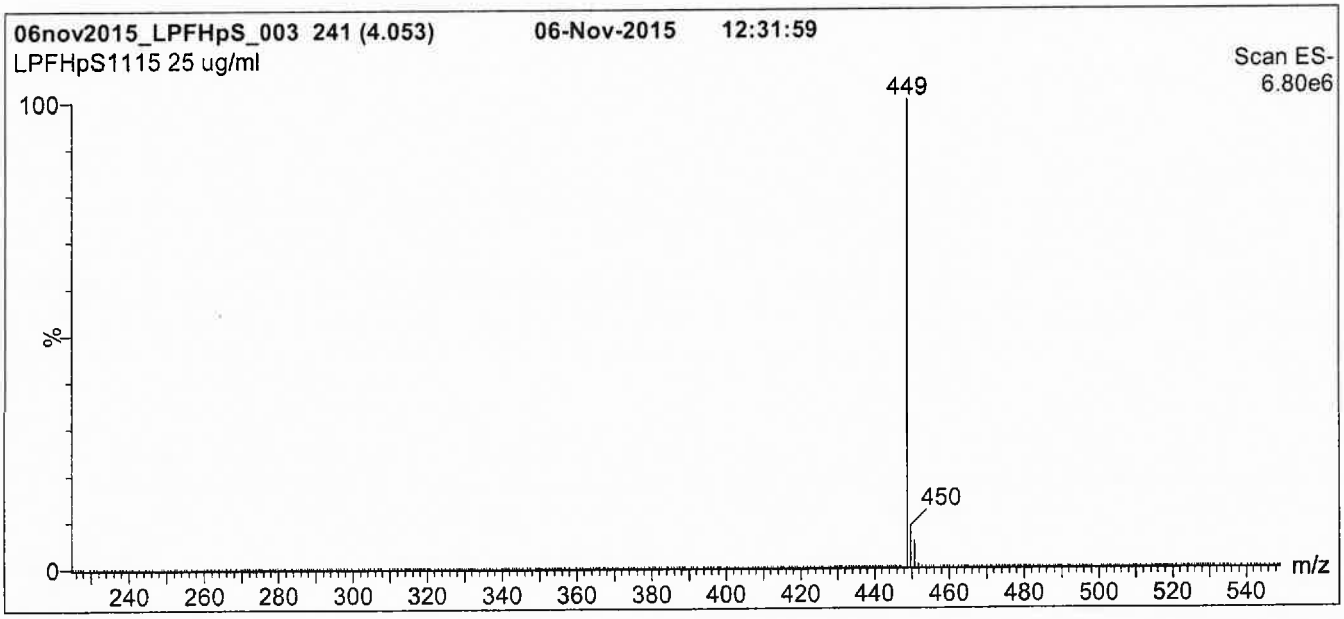
Figure 1: **L-PFHpS; LC/MS Data (TIC and Mass Spectrum)**





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

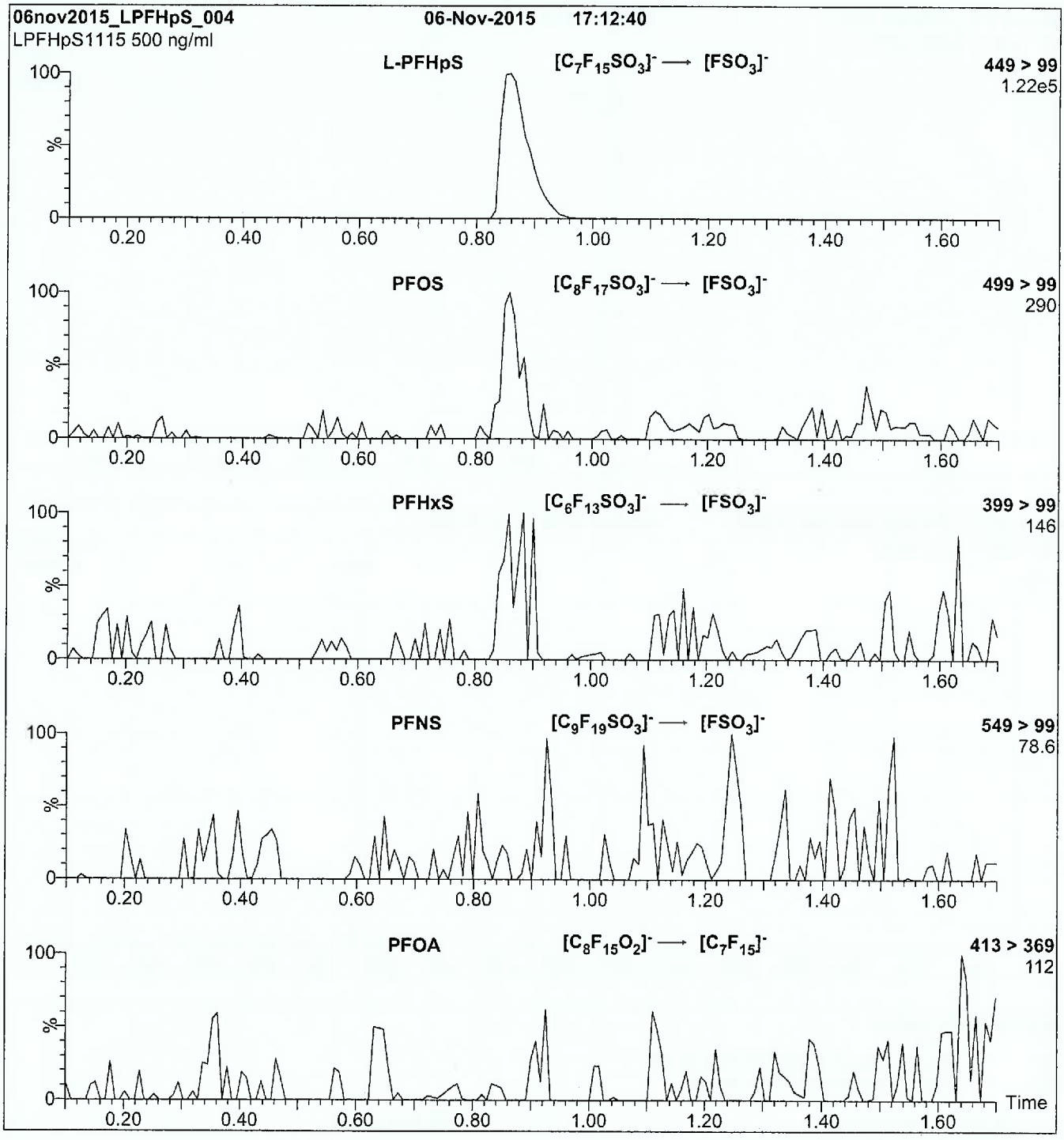
Flow: 300 µl/min

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

LCPFHpS_00009

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

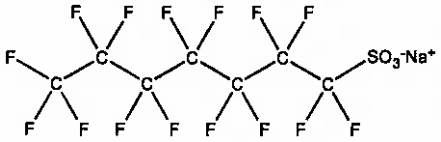
730635
ID: LCPFHpS_00009
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL

730639
ID: LCPFHpS_00010
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL

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:

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

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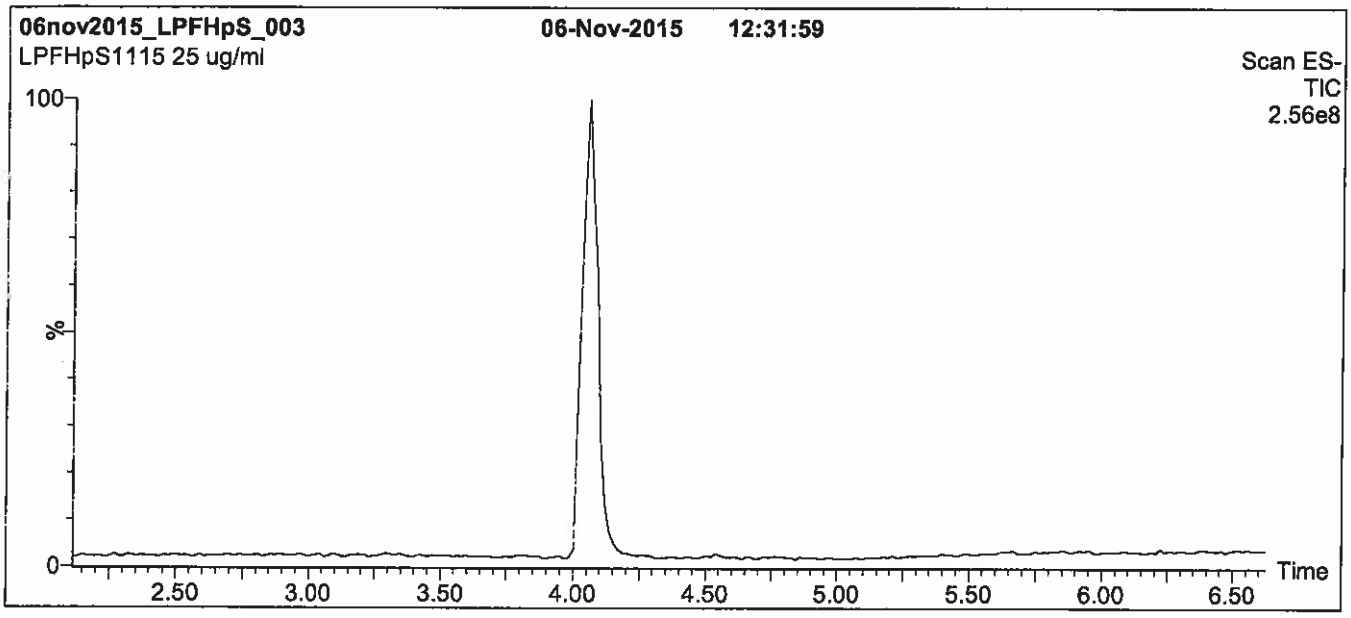
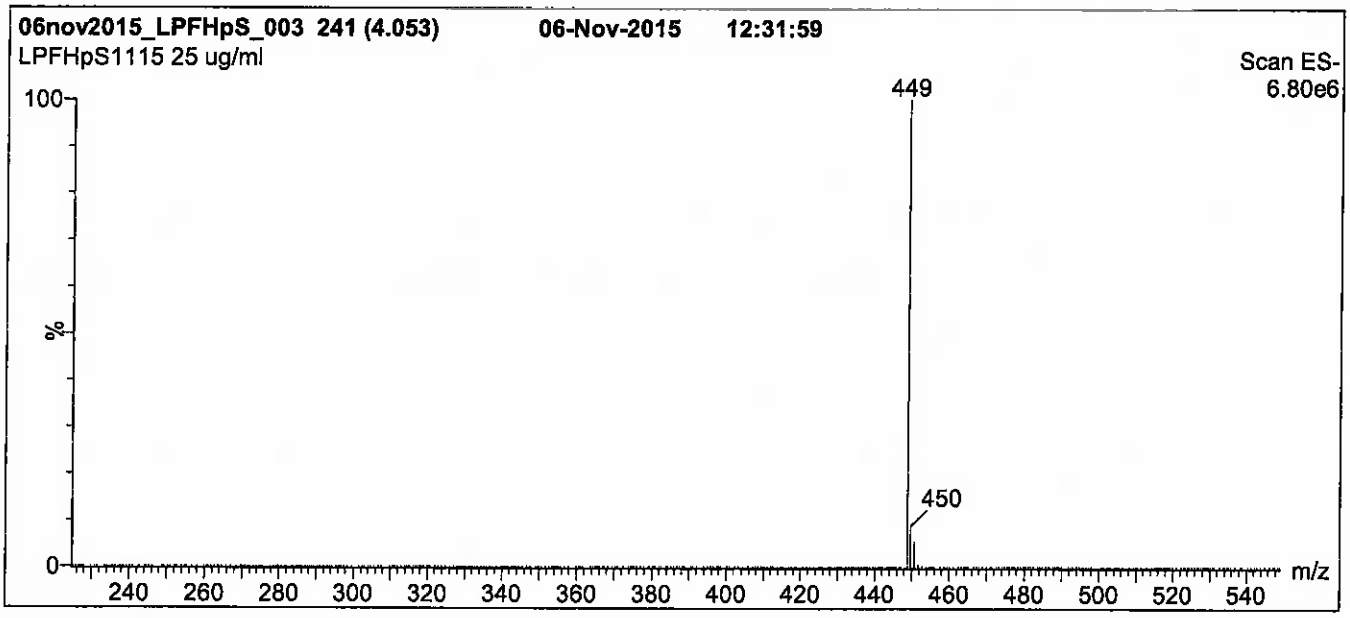
Figure 1: **L-PFHpS; LC/MS Data (TIC and Mass Spectrum)**





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

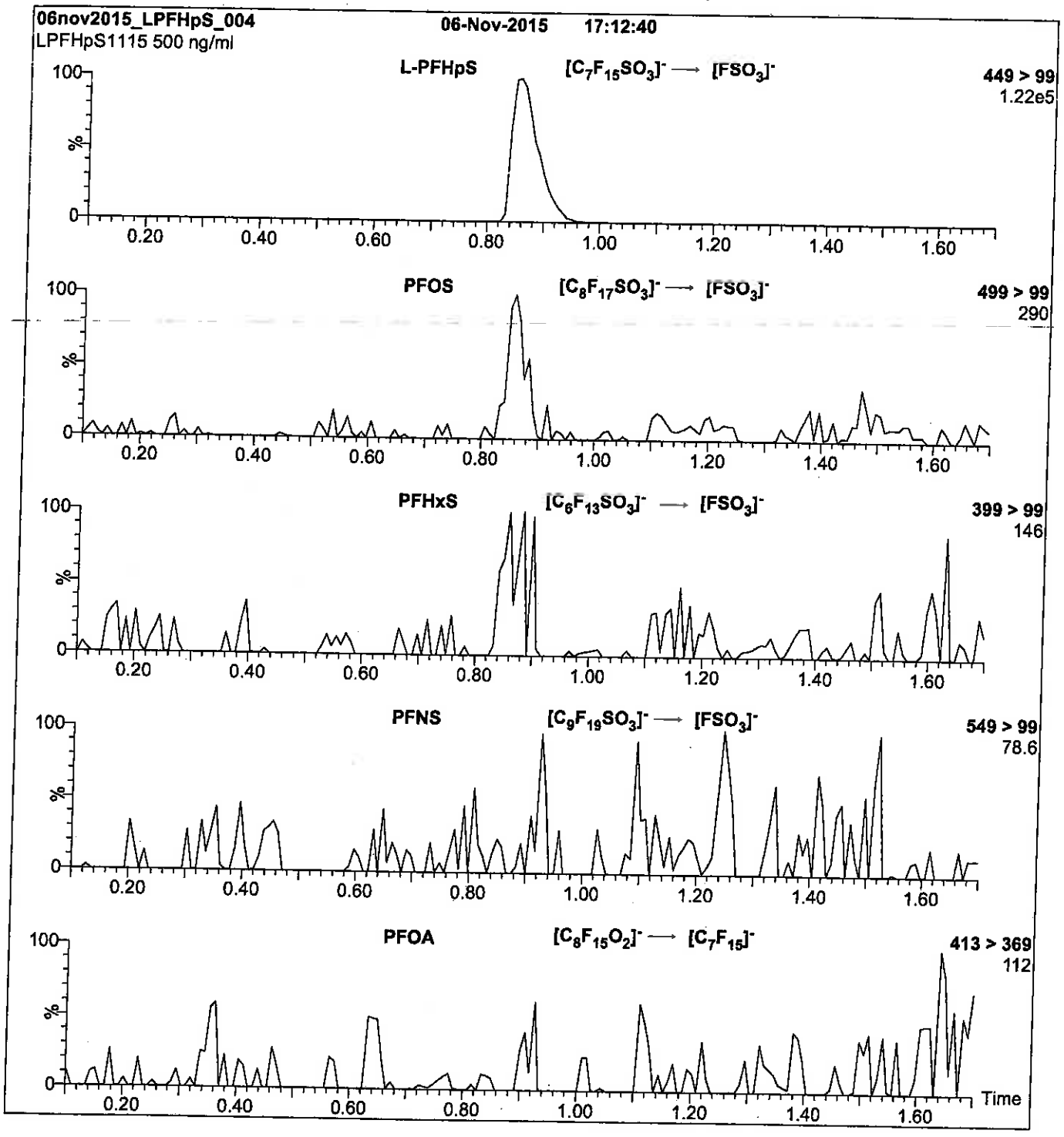
Flow: 300 µl/min

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

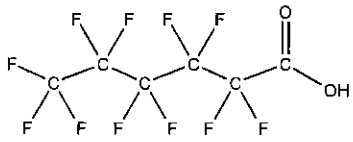
WELLINGTON LABORATORIES

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)

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CALA Testing

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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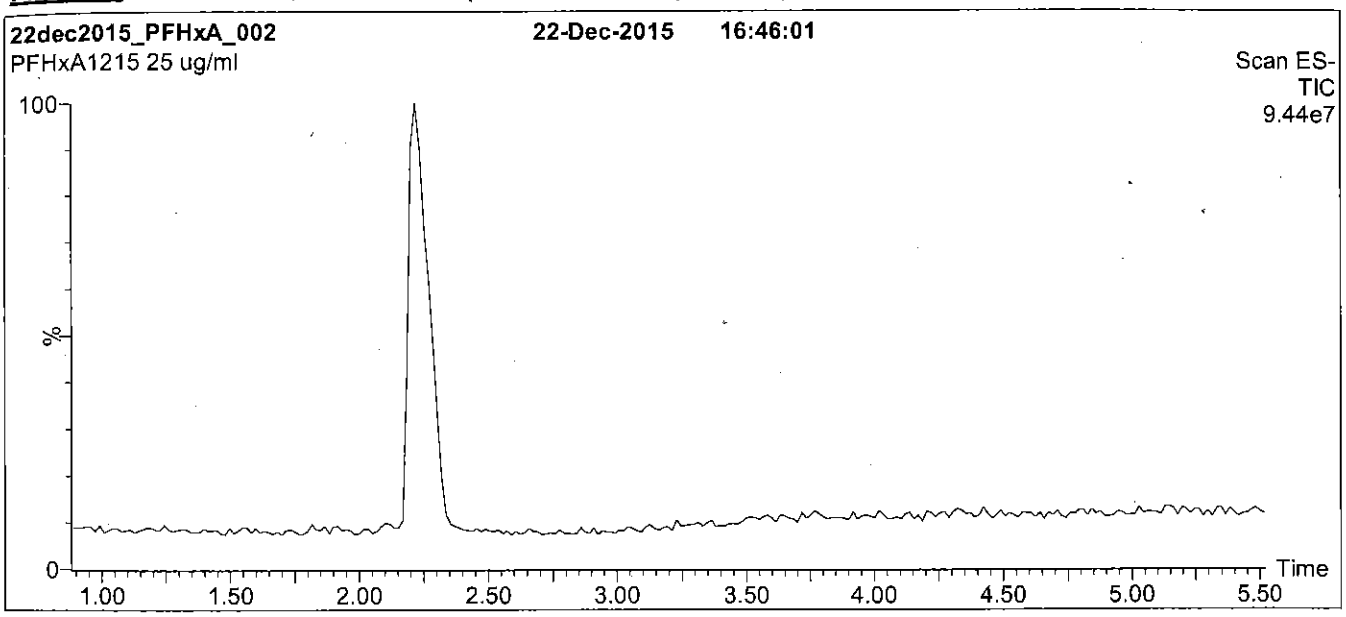
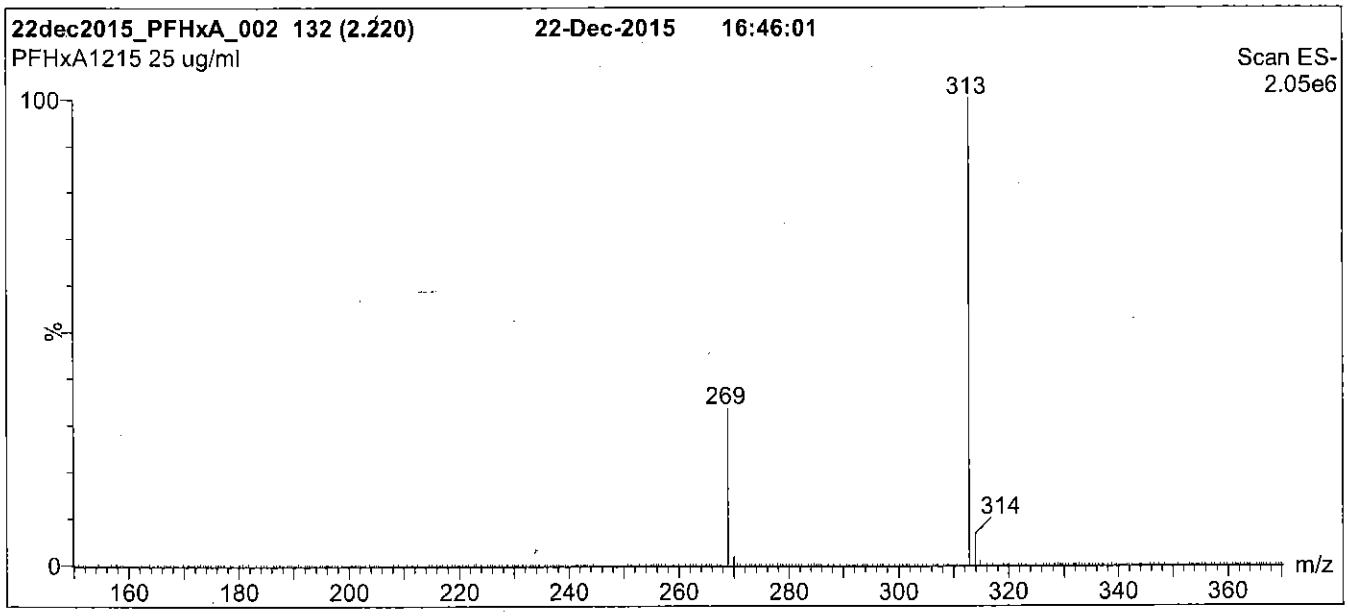
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





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

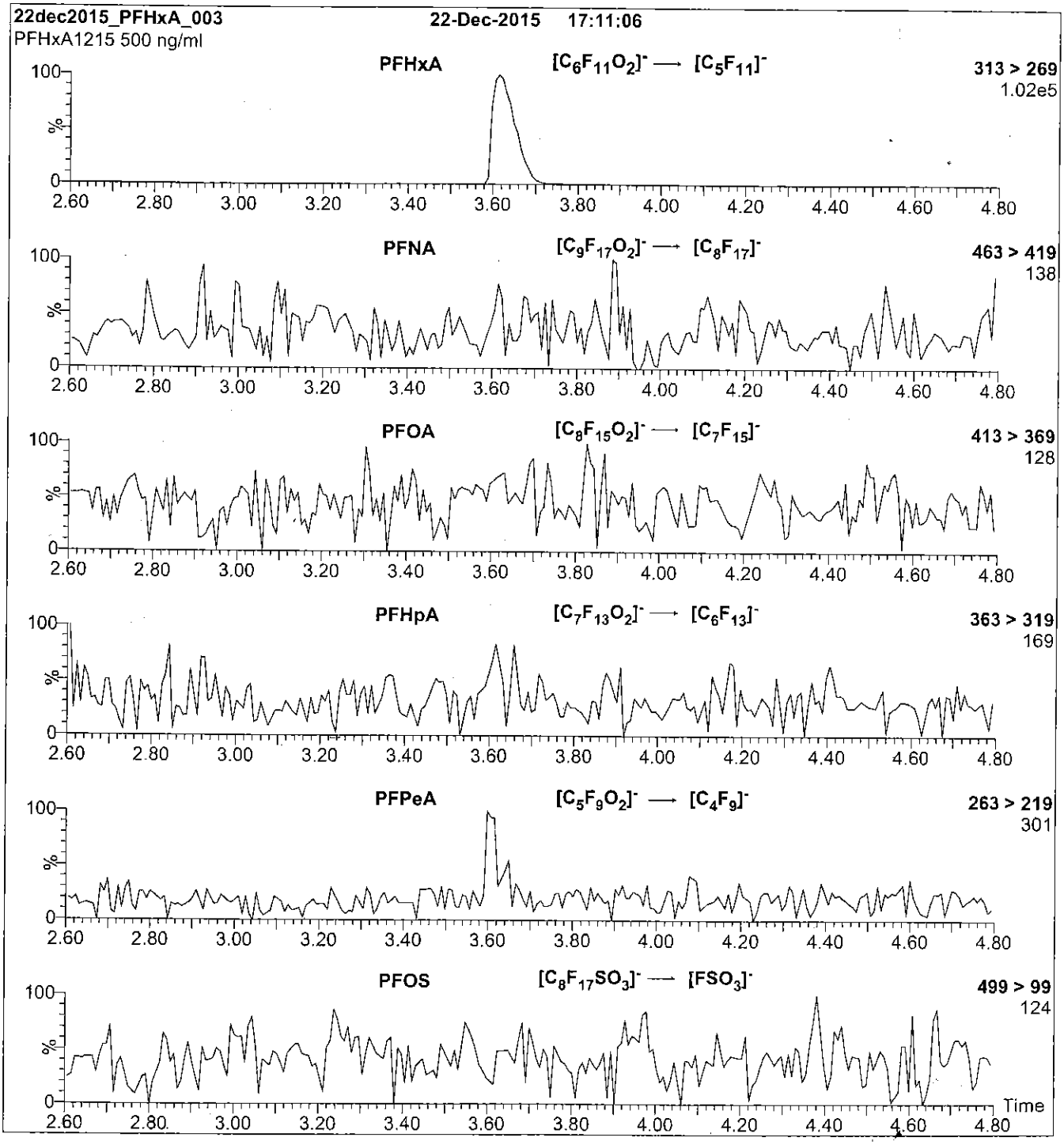
Flow: 300 µl/min

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

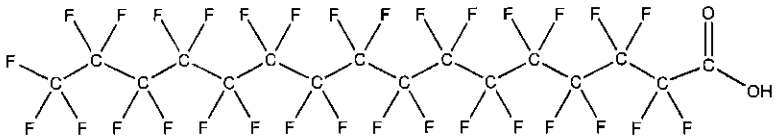
Rec. 3/29/16 JRB ✓

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxDA
LOT NUMBER: PFHxDA0614
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE:
CAS #: 67905-19-5



MOLECULAR FORMULA: $C_{16}HF_{31}O_2$
MOLECULAR WEIGHT: 814.13
CONCENTRATION: 50 ± 2.5 µg/ml
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
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CALA Testing Accredited as per ISO 17025

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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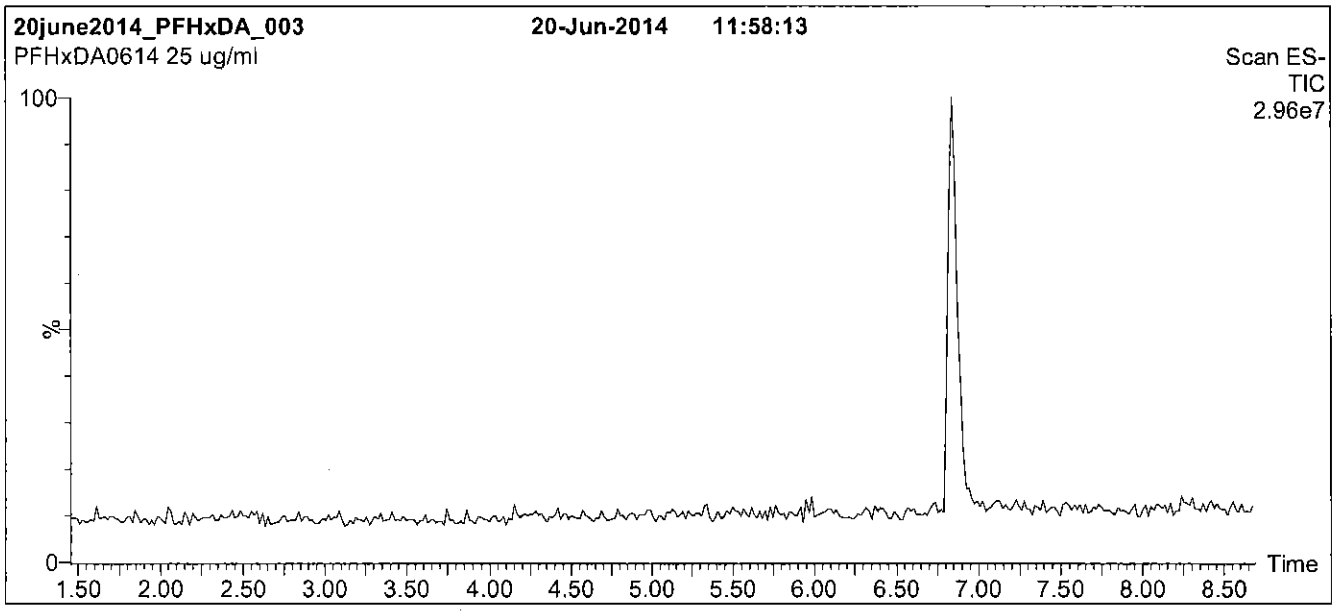
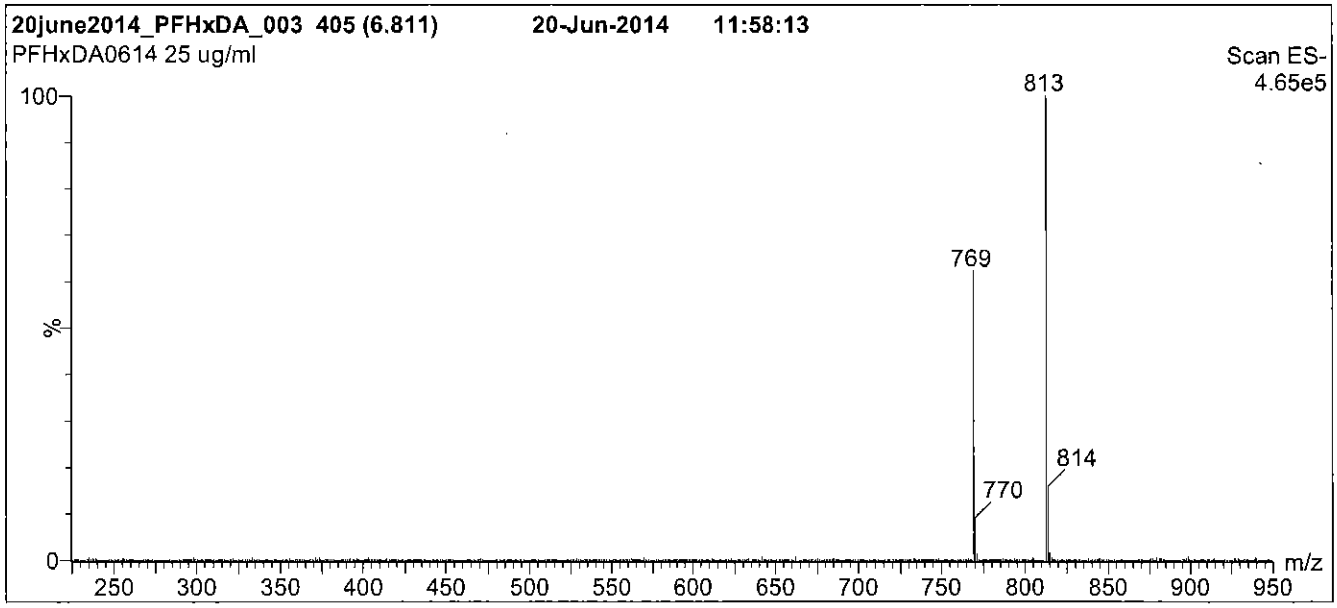
Figure 1: **PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





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

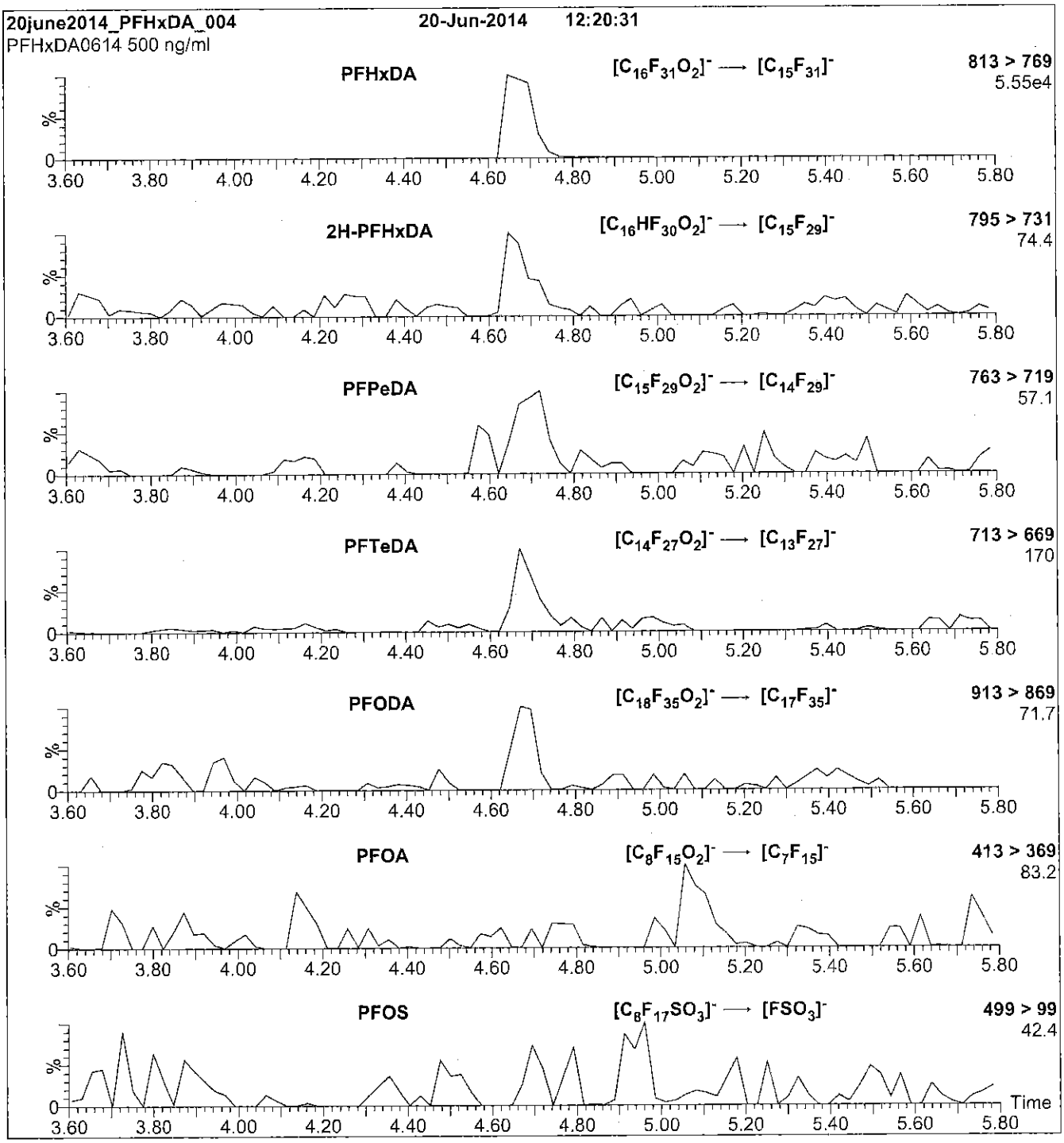
Flow: 300 µl/min

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

LCPFHxDA_00006

R: SBC 9/13/16

Scanned 10/14/16 SK

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

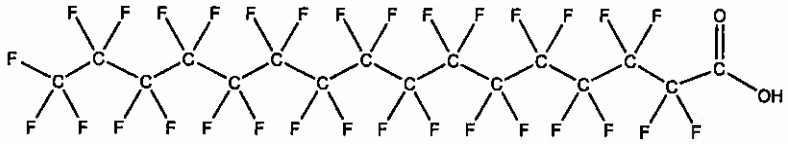
730631
ID: LCPFHxDA_00007
Exp: 05/25/21 Prpd: SBC
PFHxDA stock 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxDA
LOT NUMBER: PFHxDA0516
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE:
CAS #: 67905-19-5



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MOLECULAR WEIGHT: 814.13
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/25/2016
EXPIRY DATE: (mm/dd/yyyy) 05/25/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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

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

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

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

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 REFERENCE MATERIAL PRODUCER

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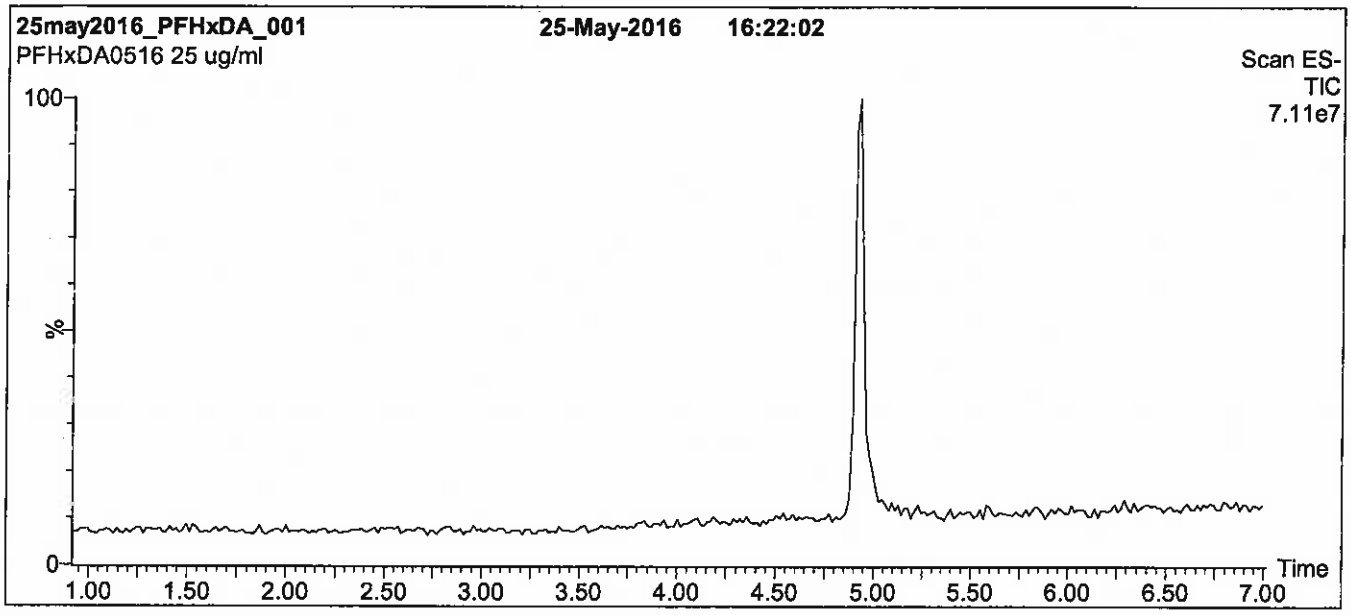
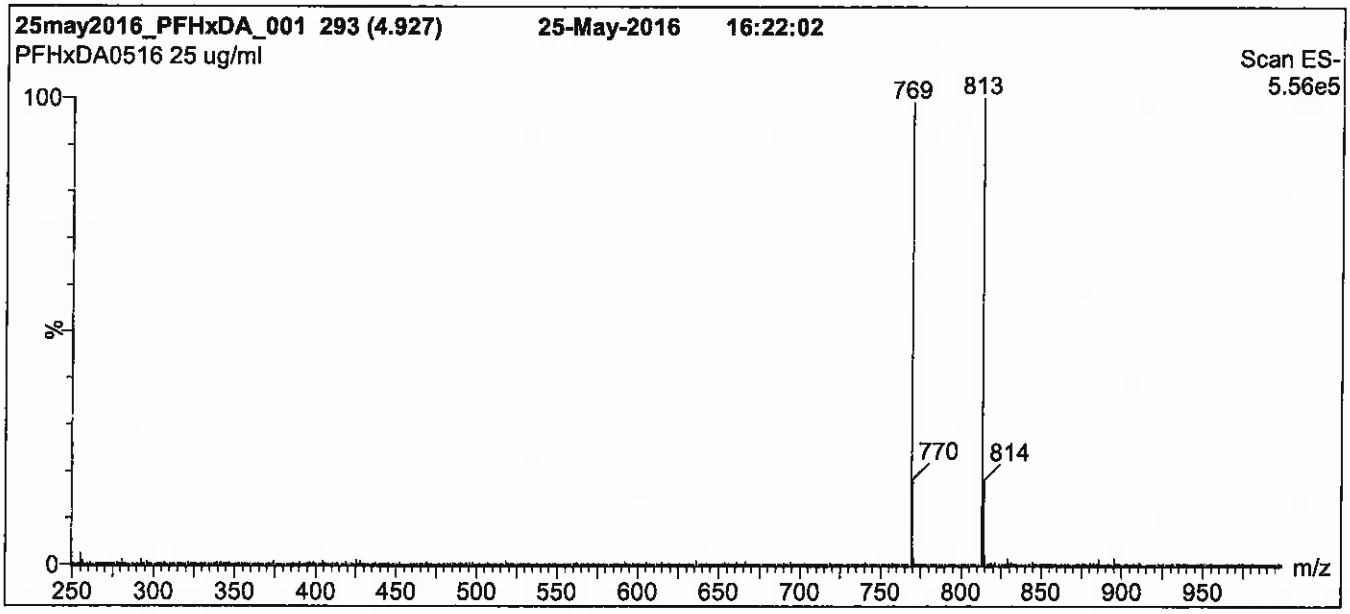
Figure 1: **PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





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: 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 6 min and hold for 2.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

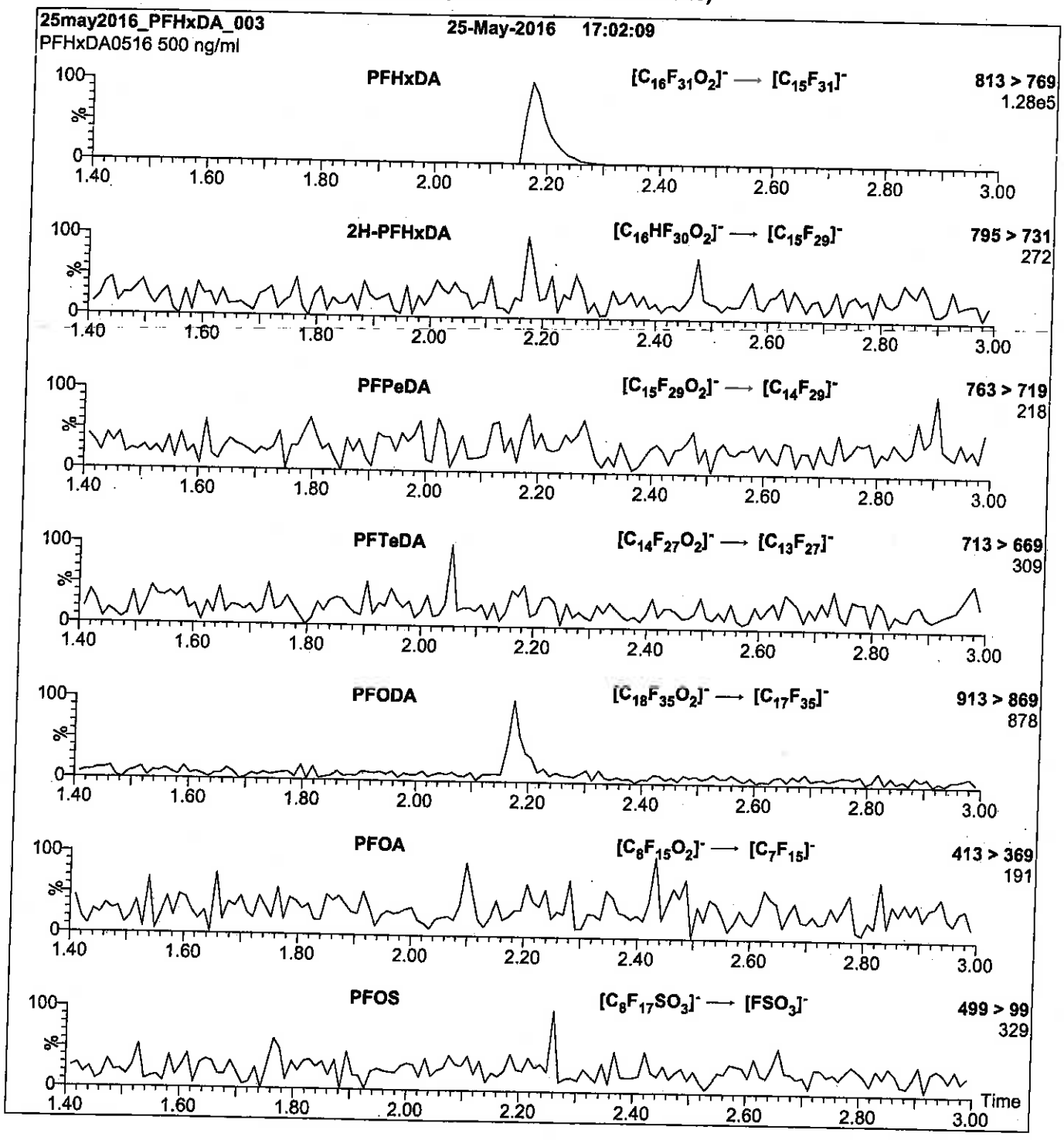
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 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) = 3.66e-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:

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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

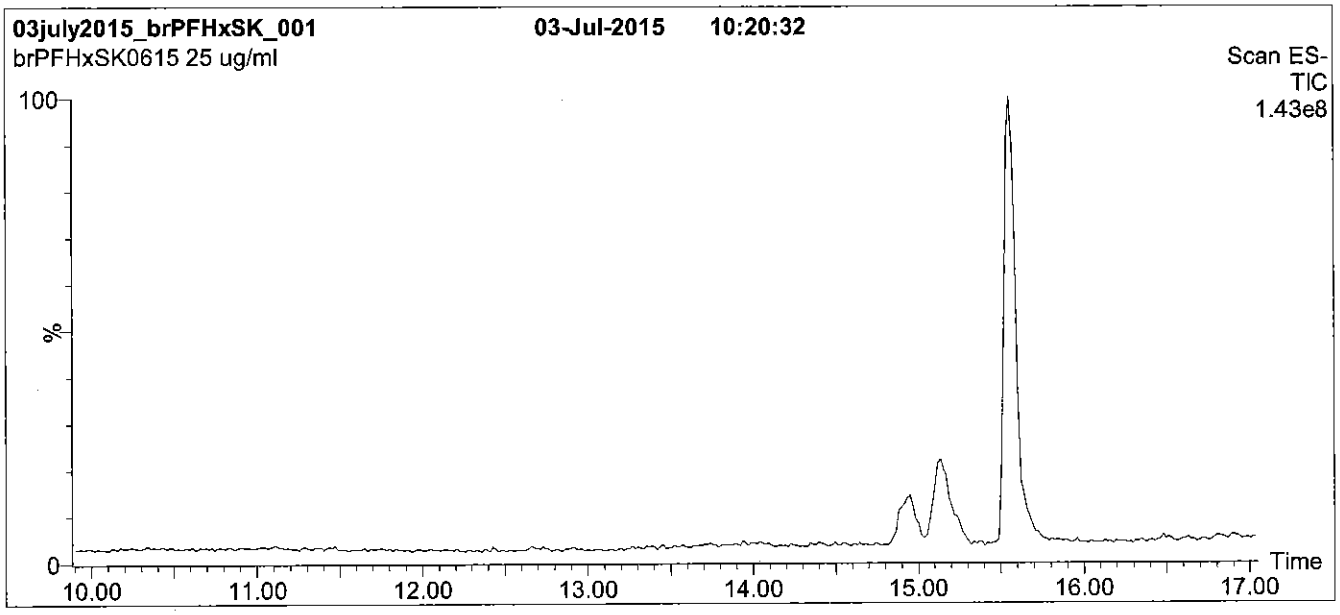
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

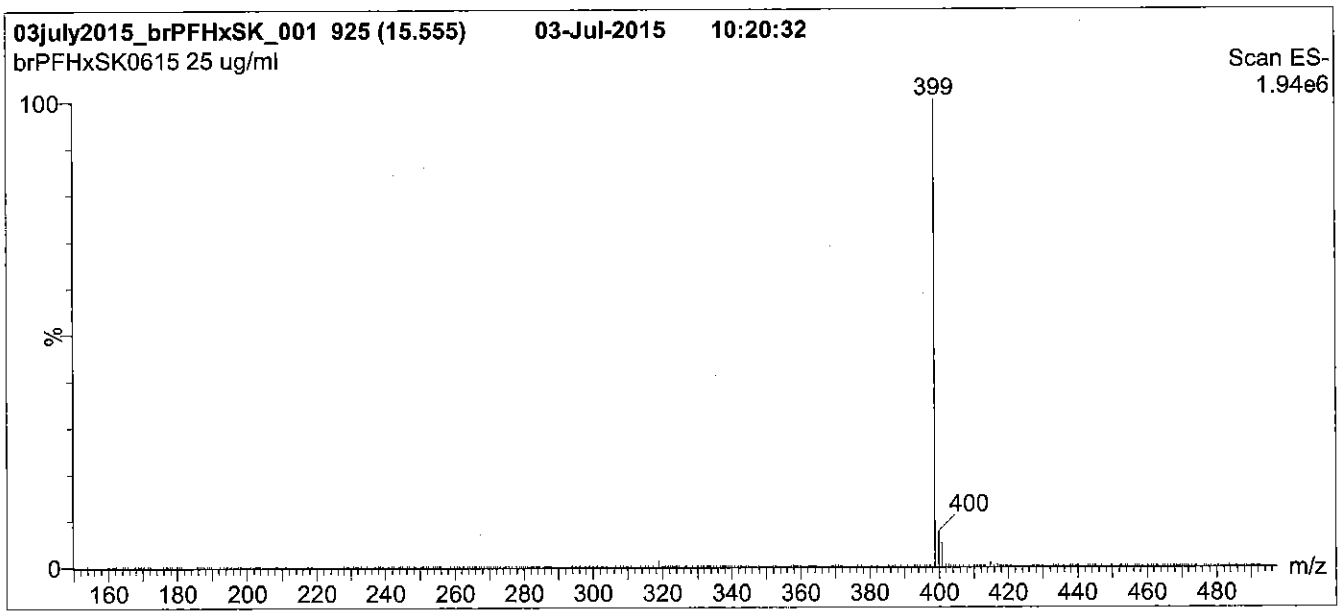
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$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

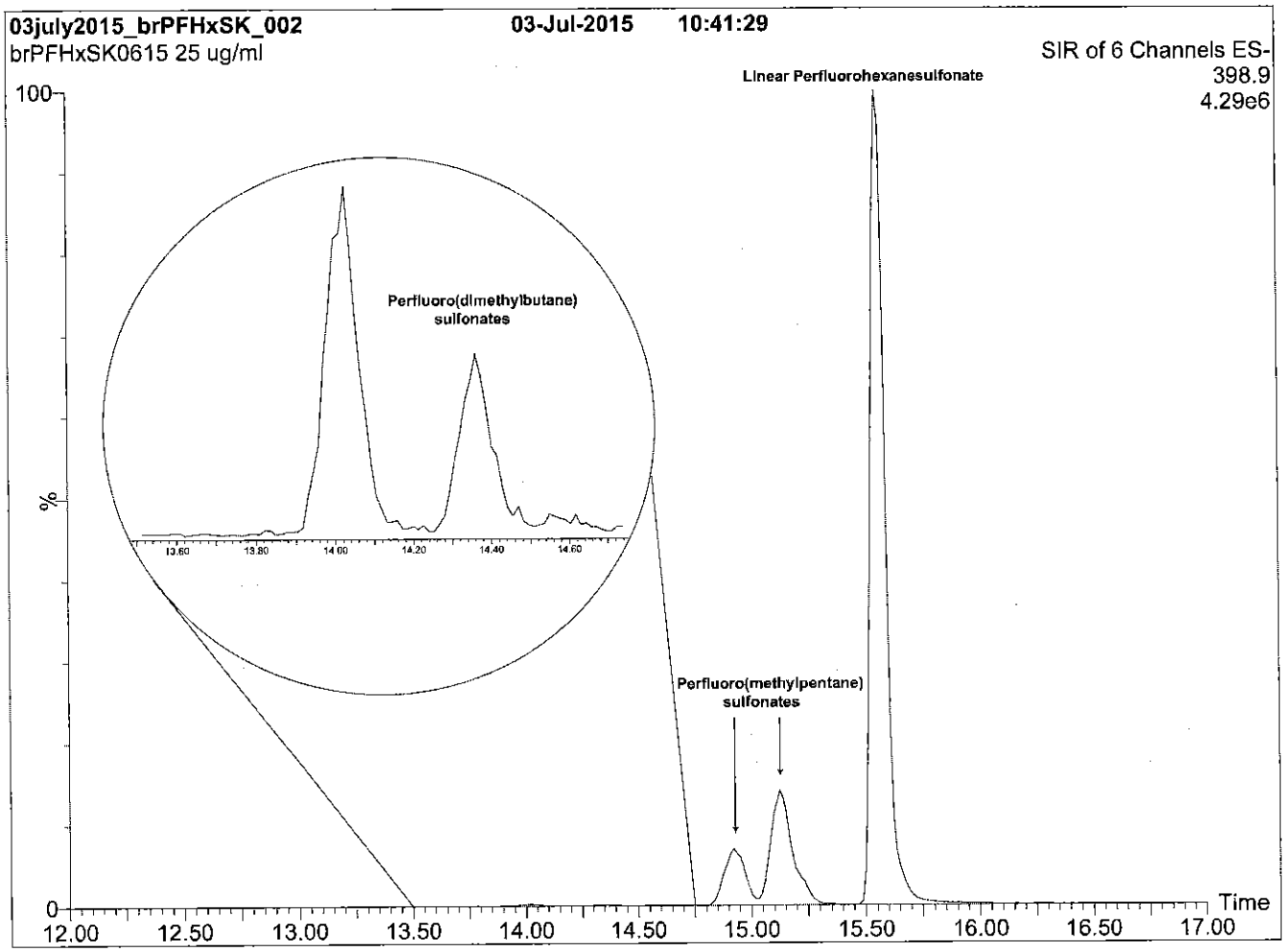
Flow: 300 µl/min

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

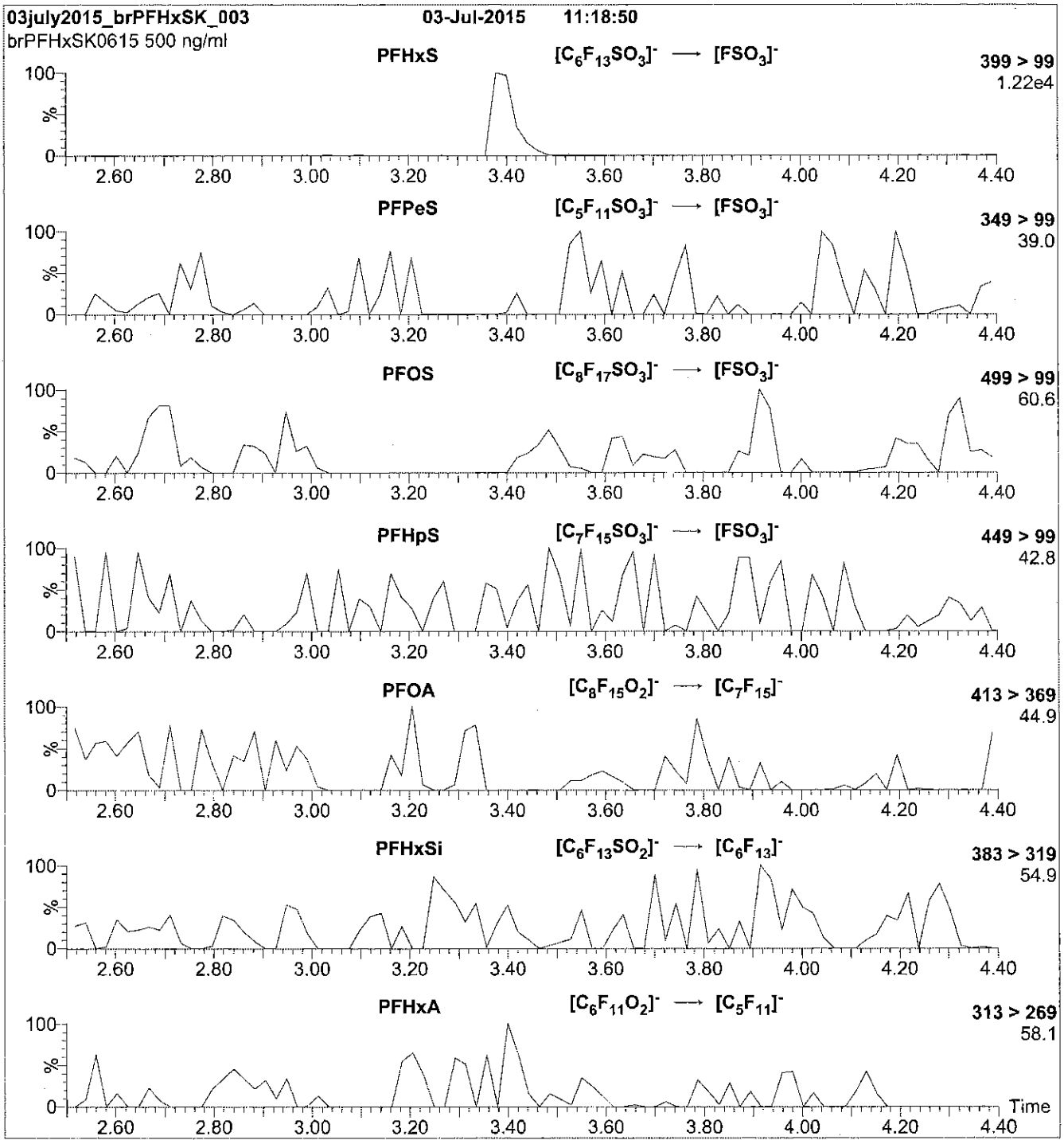
Flow: 300 µl/min

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).

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

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HAZARDS:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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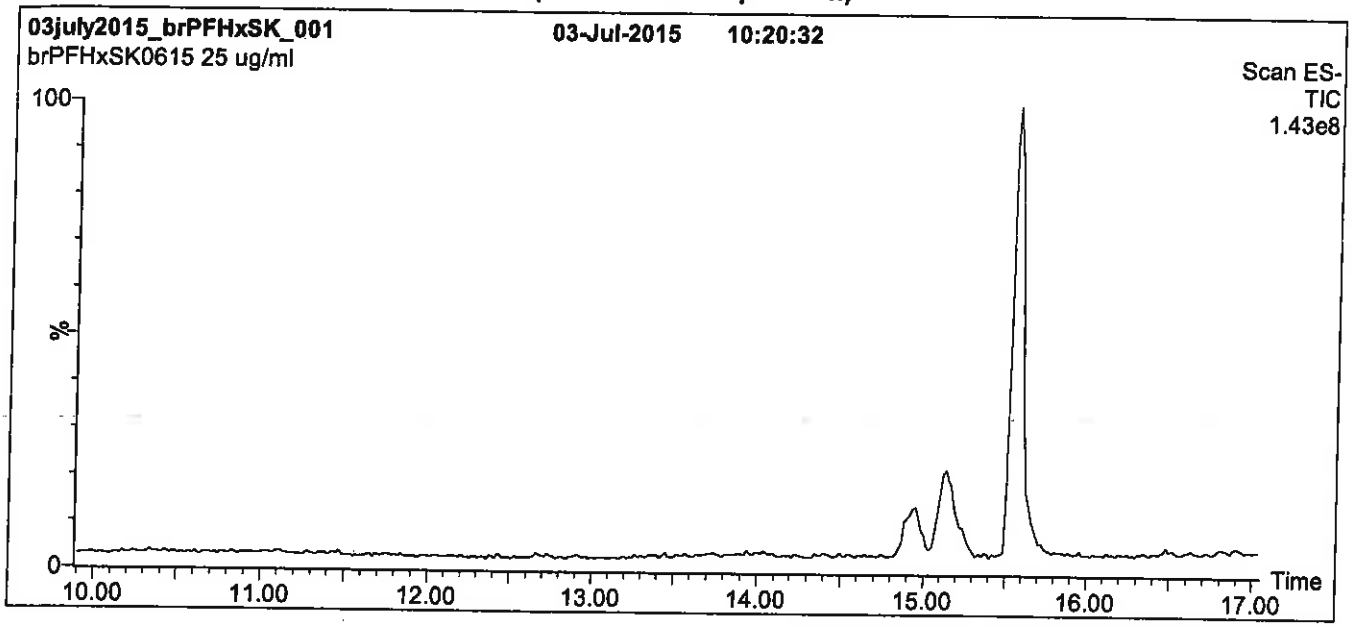
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

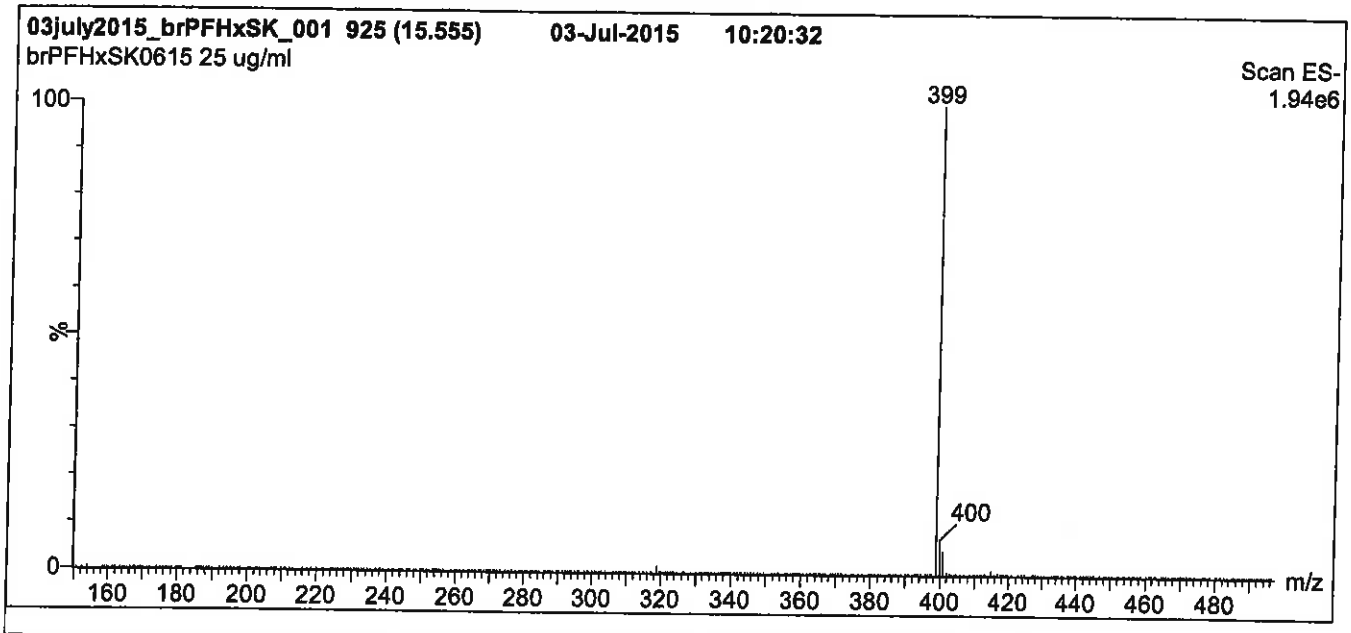
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$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

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

Certified By: 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

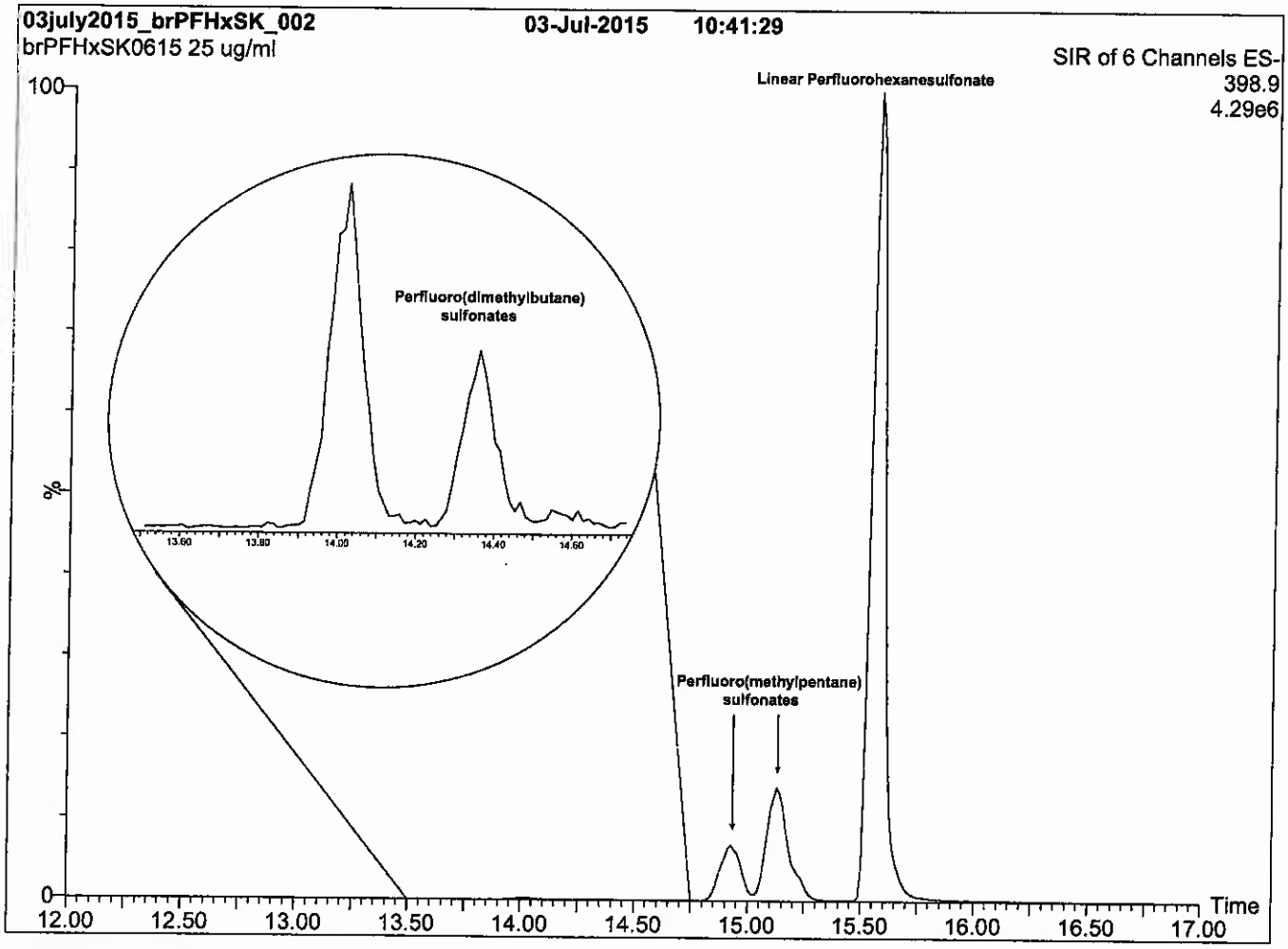
Flow: 300 µl/min

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

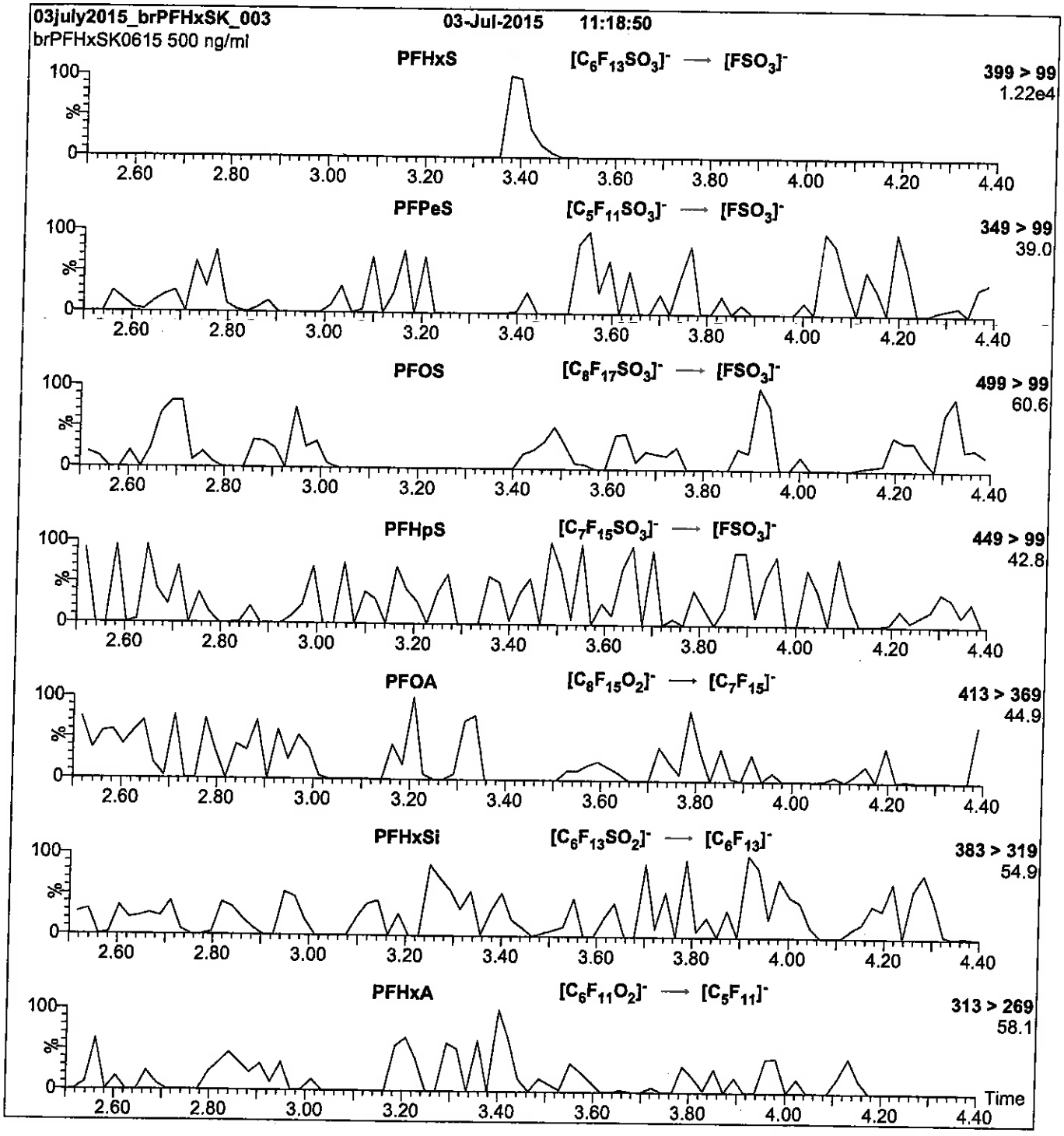
Flow: 300 µl/min

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

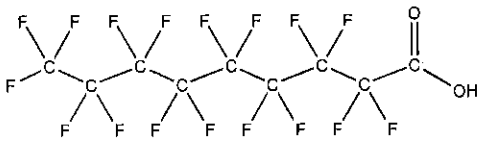
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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:

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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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. A226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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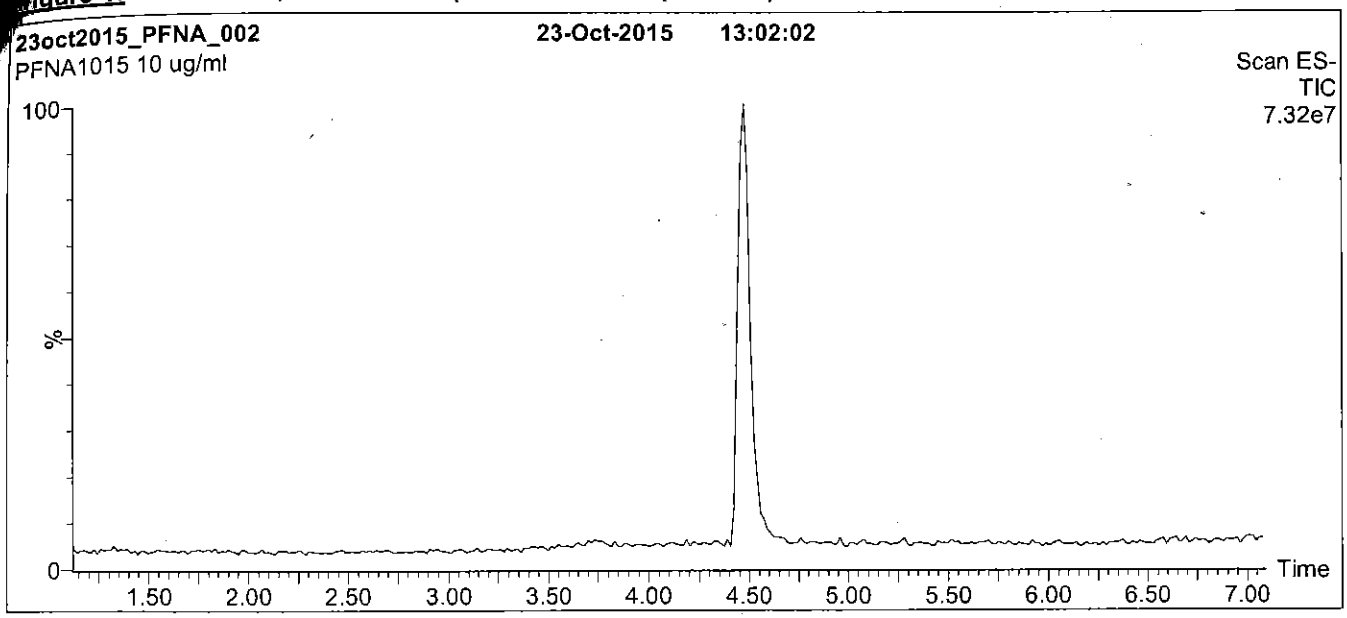
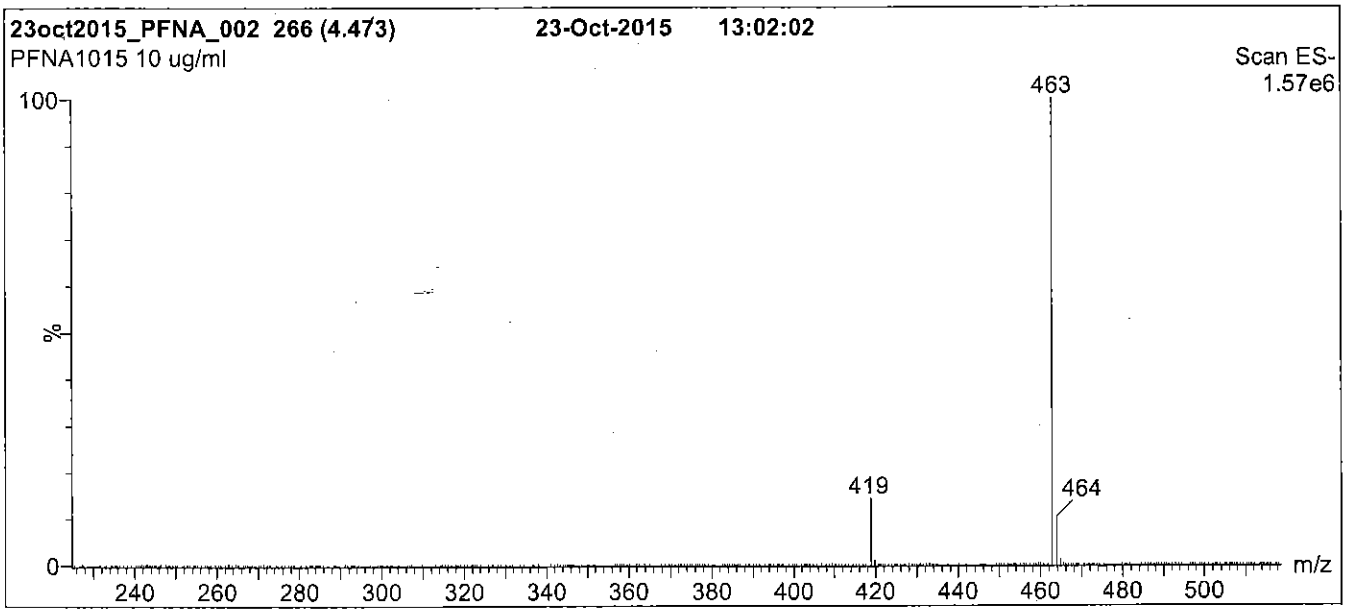
Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)





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

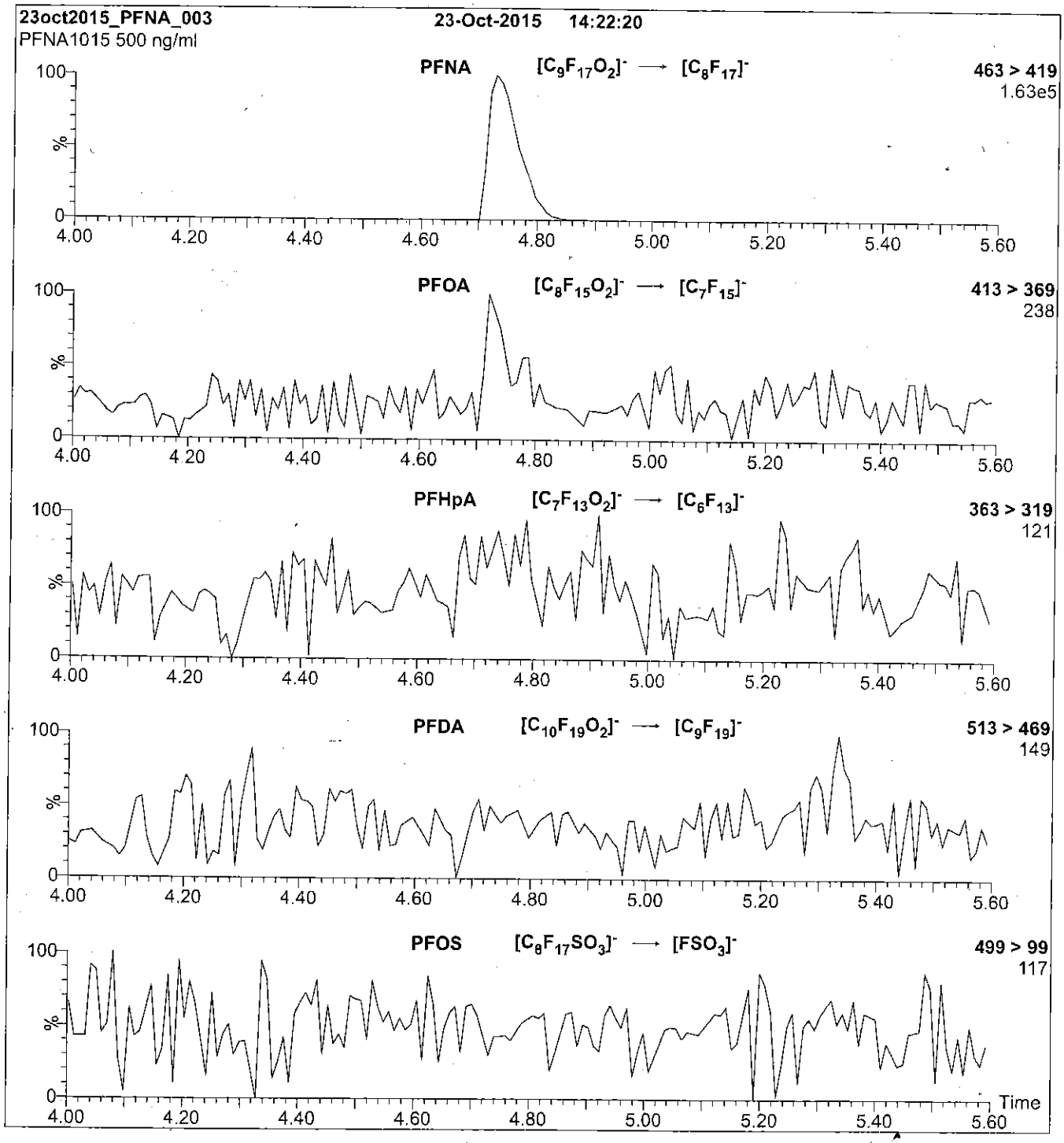
Flow: 300 µl/min

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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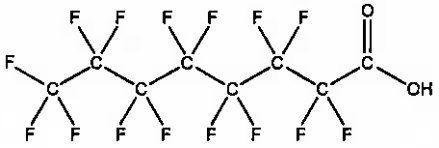
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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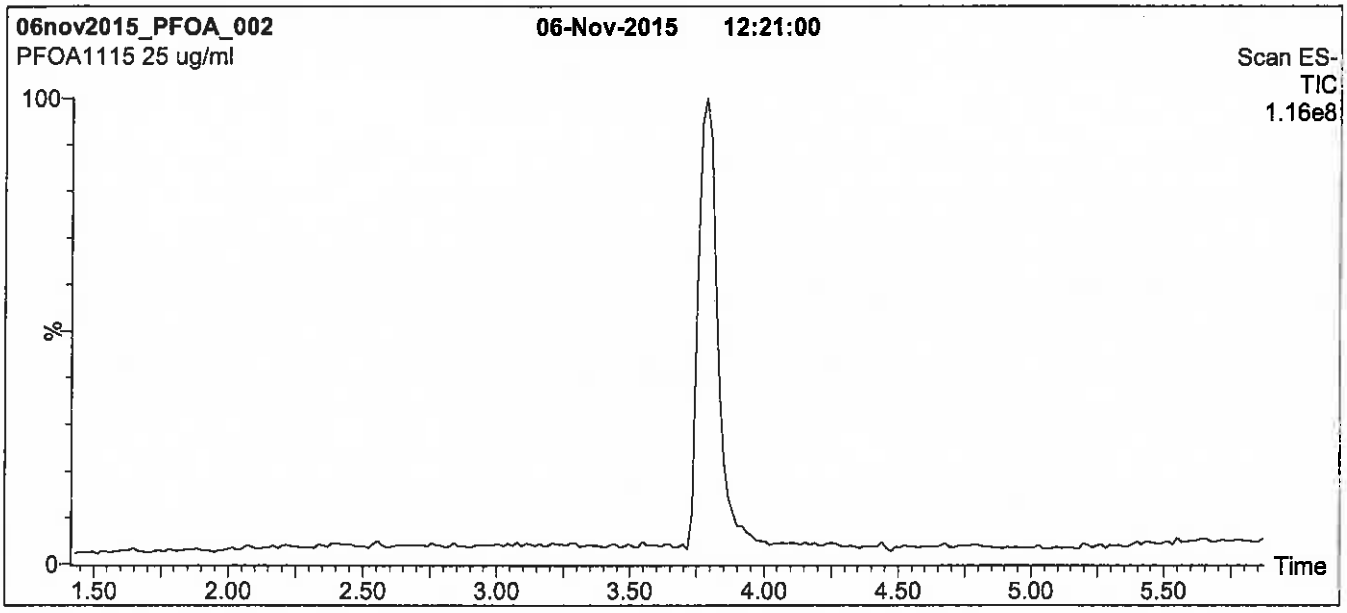
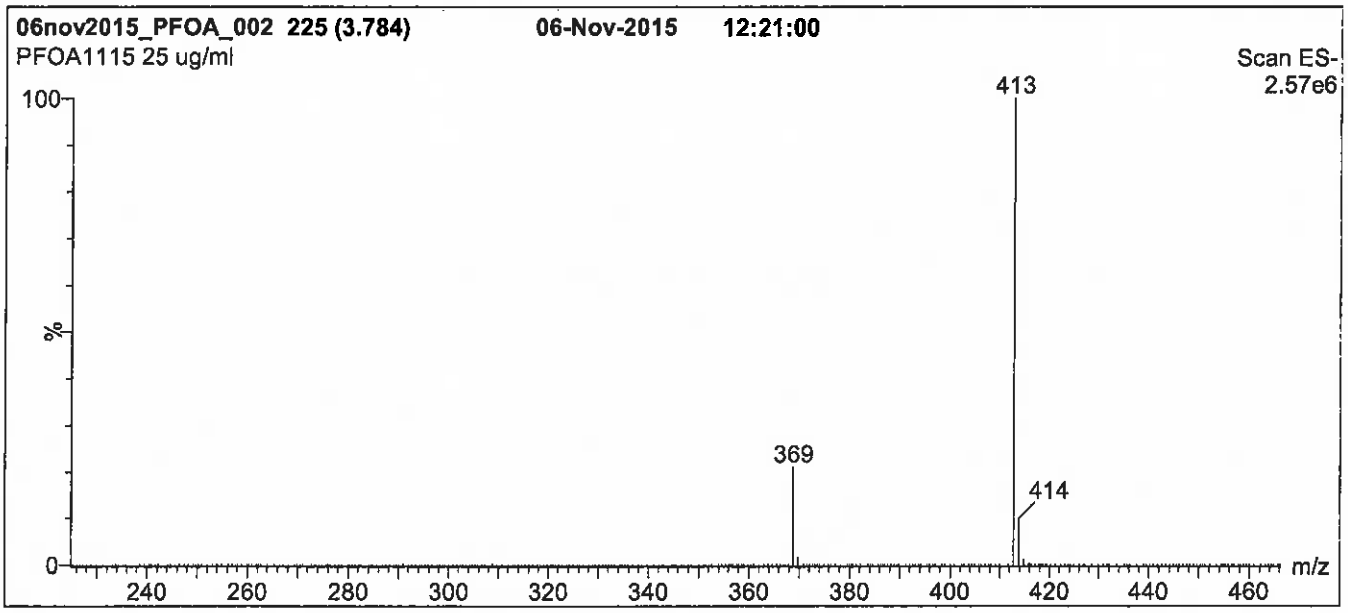
Figure 1: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





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

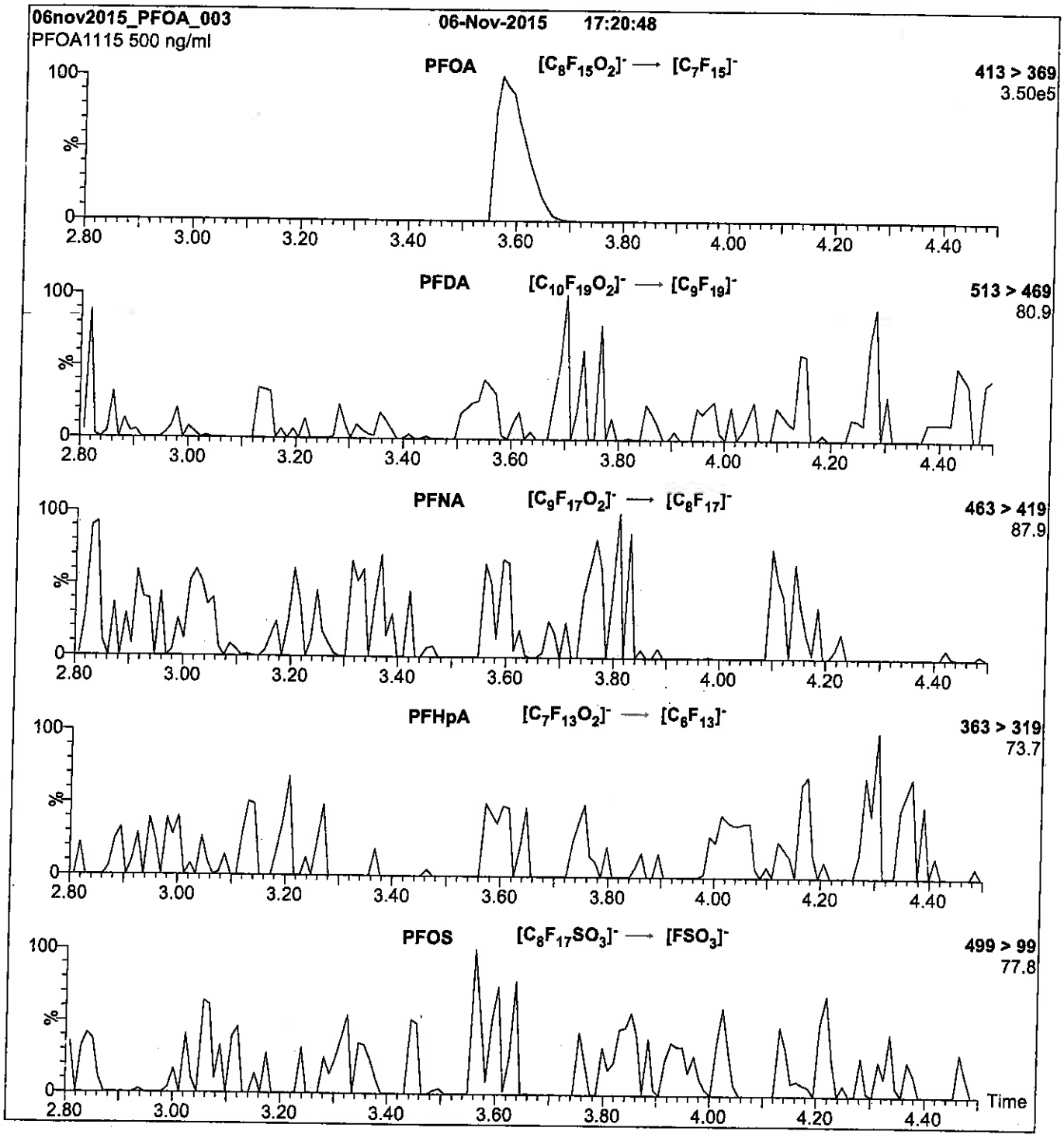
Flow: 300 µl/min

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

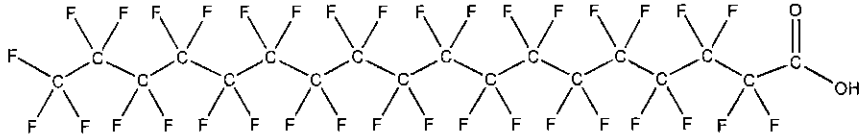
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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CALA Testing Accreditation No. A1226

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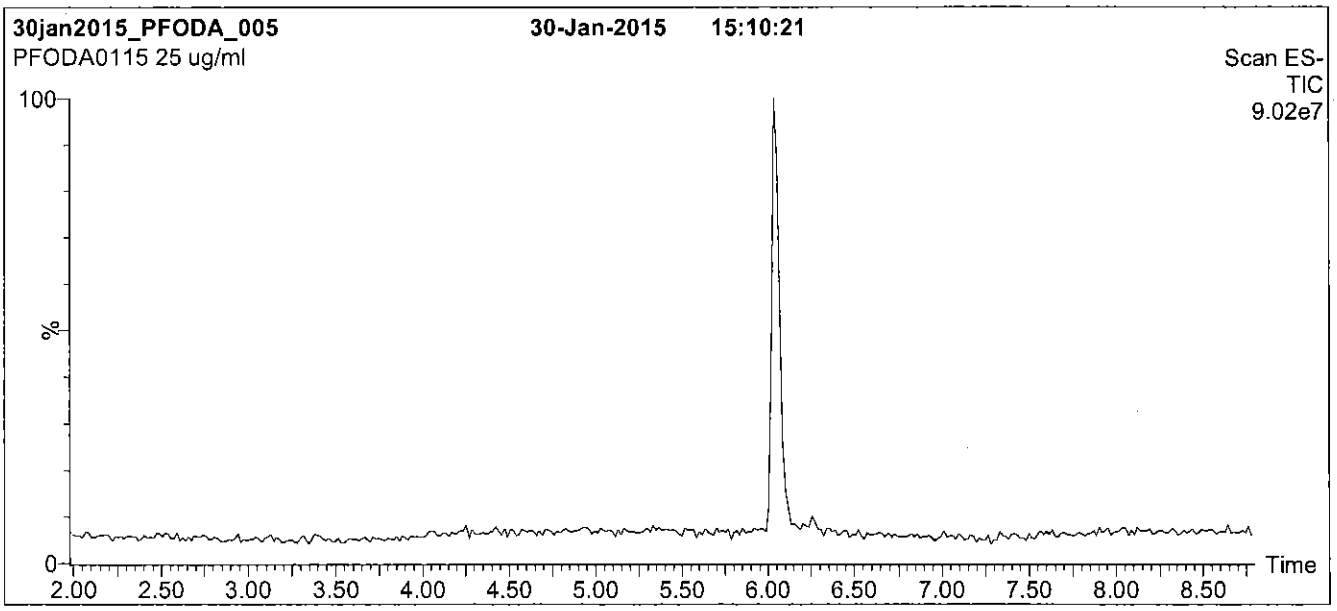
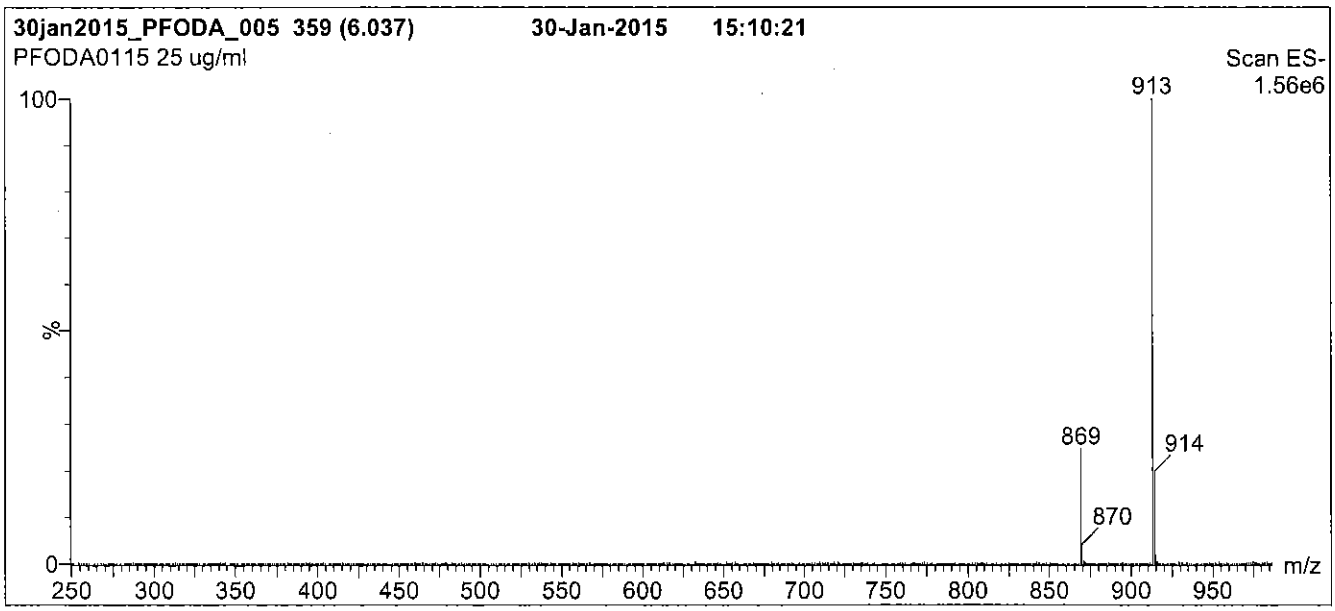
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

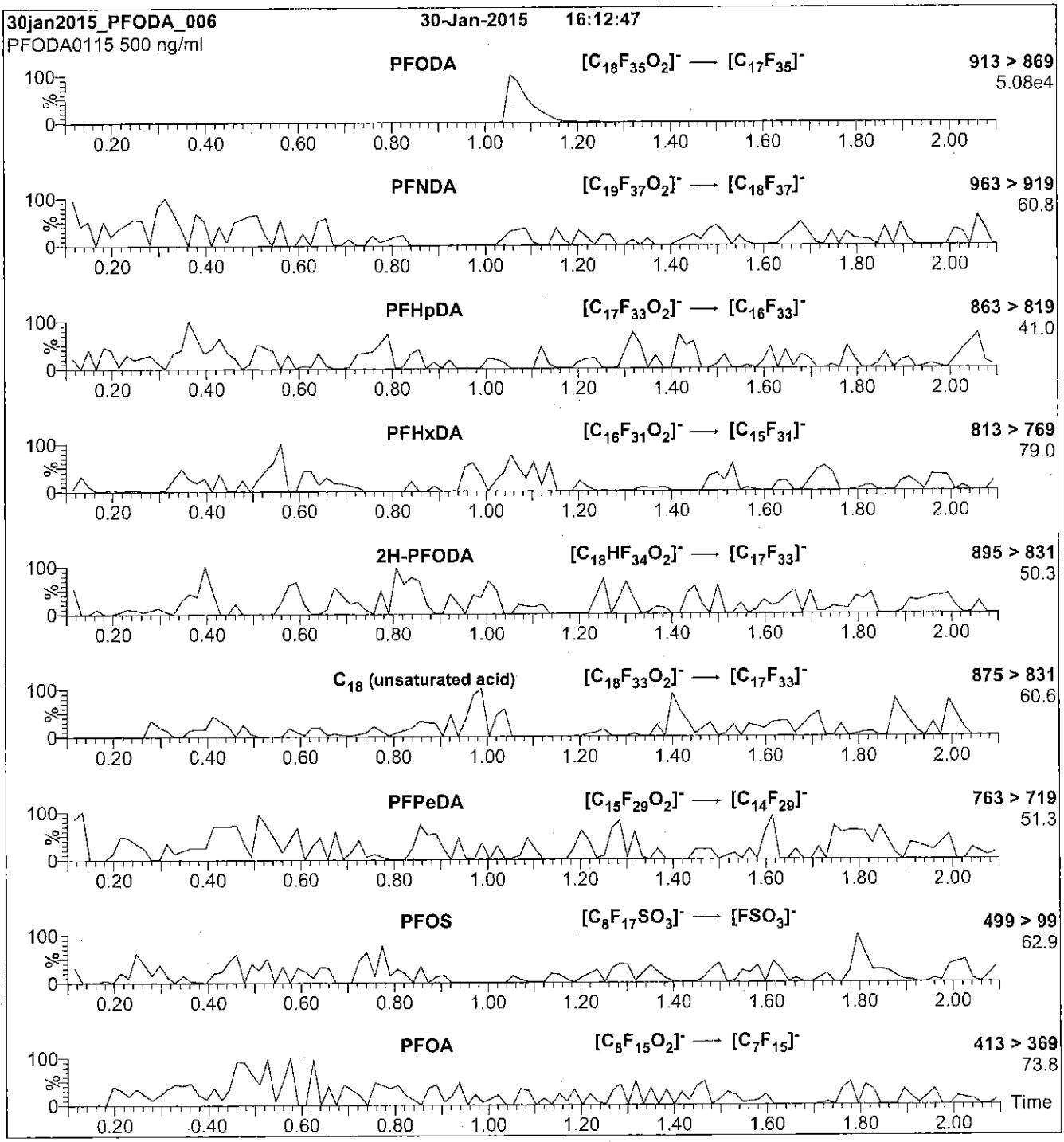
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFOS-br_00001

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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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. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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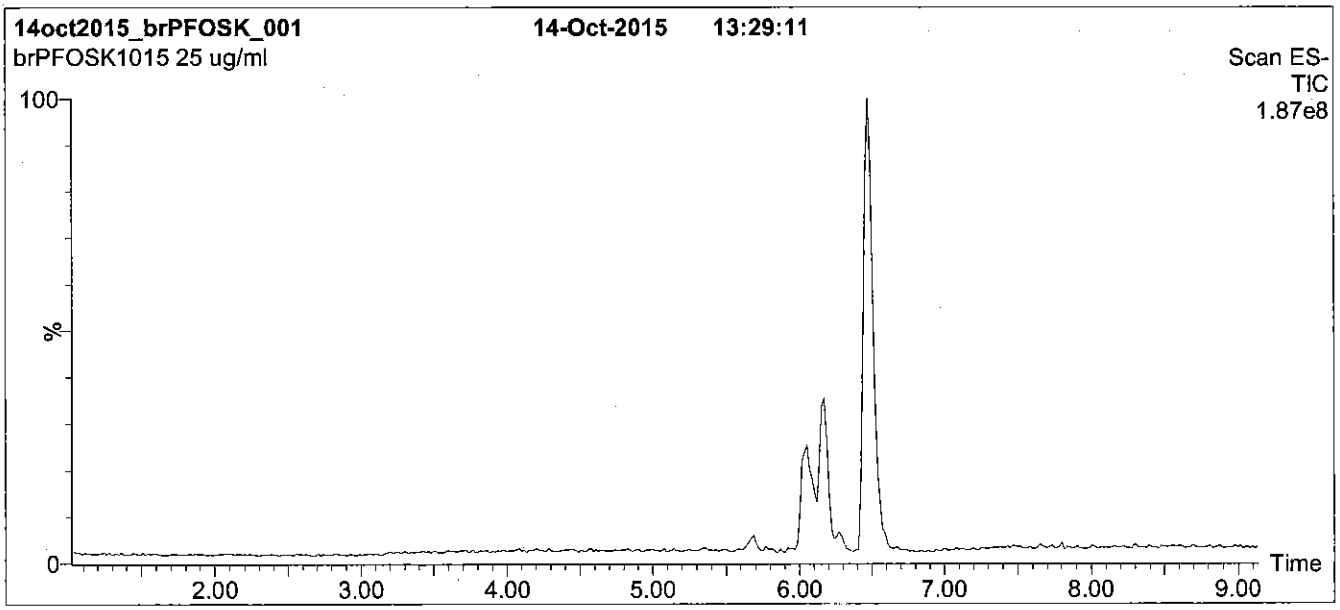
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

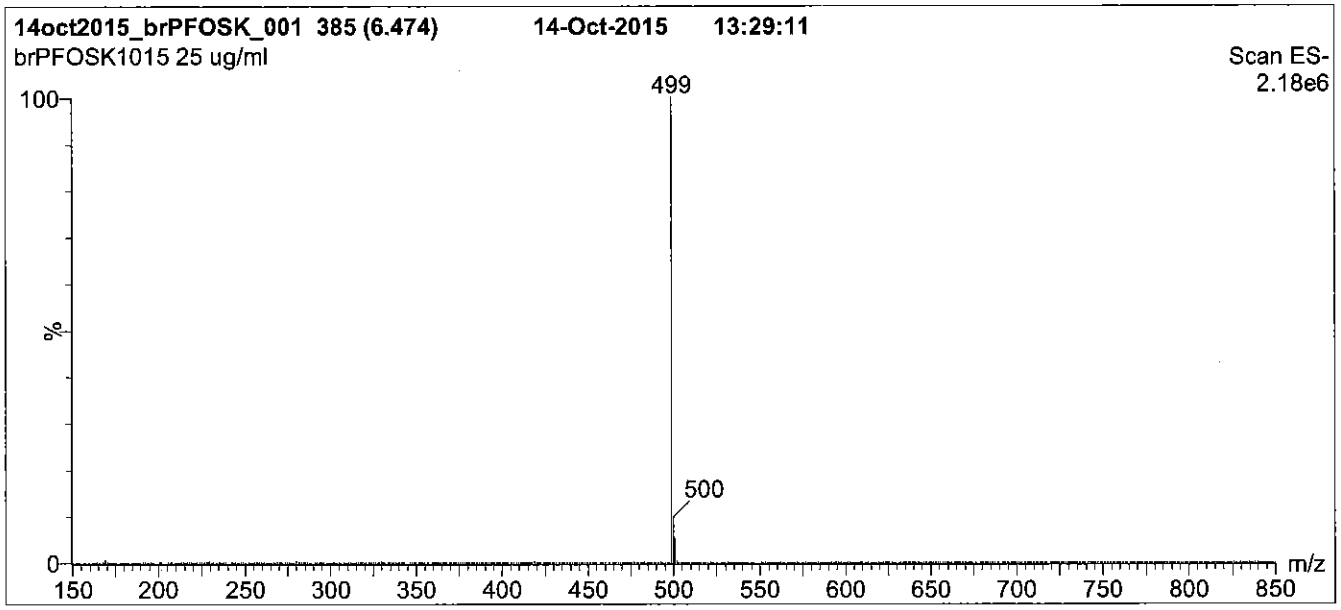
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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	$CF_3CF_2-C(CF_3)_2-CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3^-K^+$	0.07

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

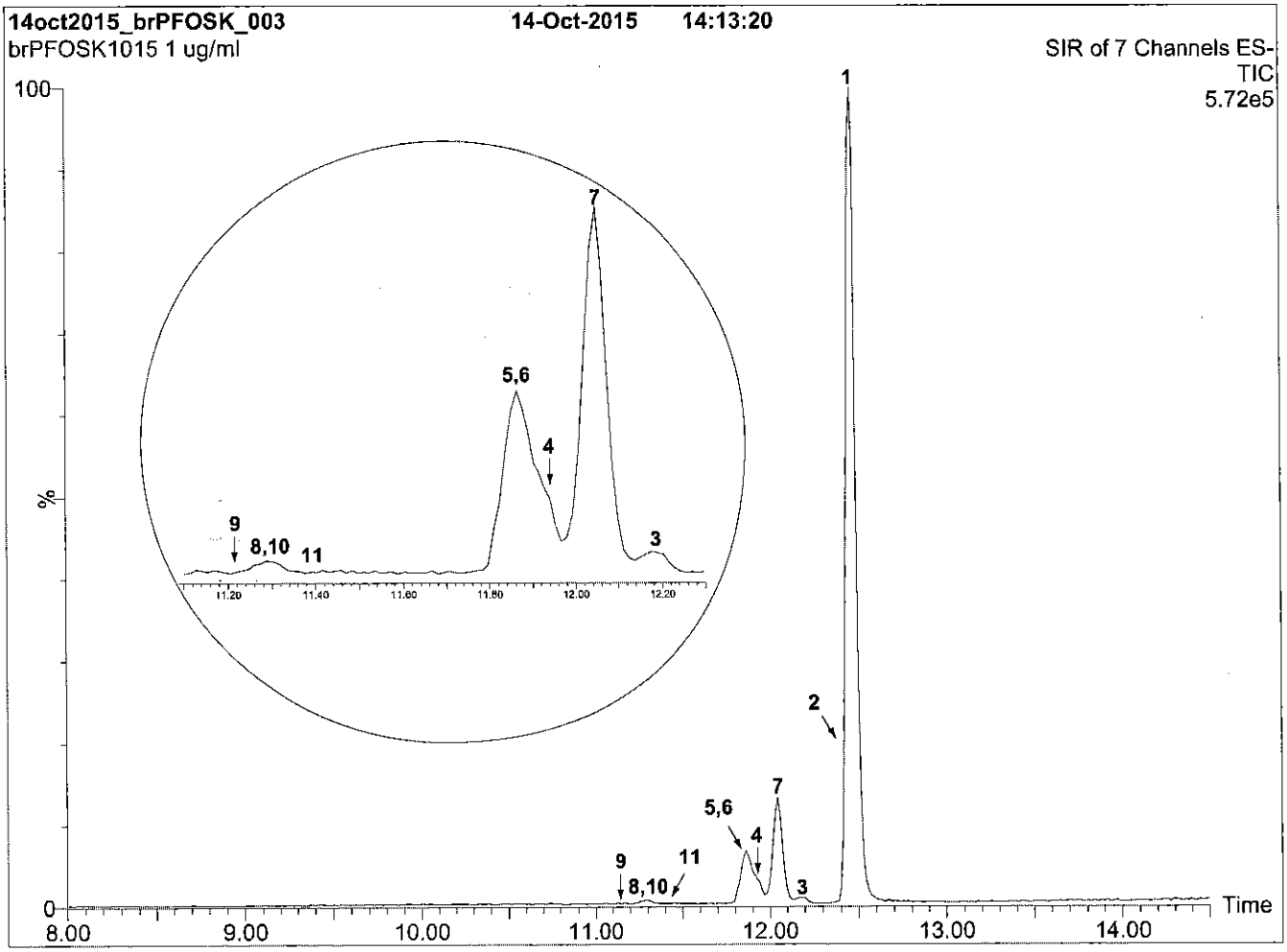
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions:

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

Injection: 1.0 µg/ml of br-PFOSK

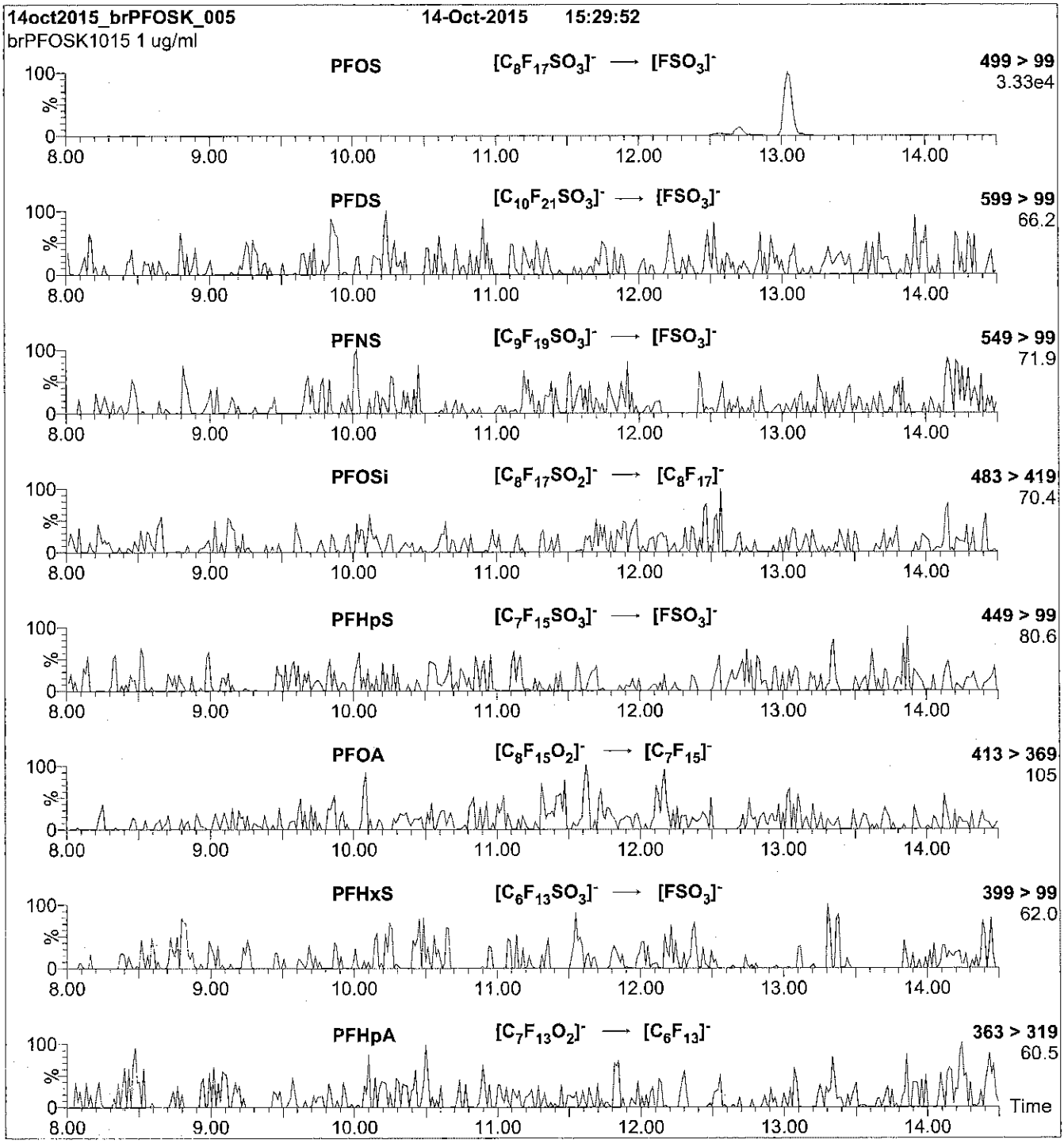
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

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

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



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.

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CALA Testing Accredited A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	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
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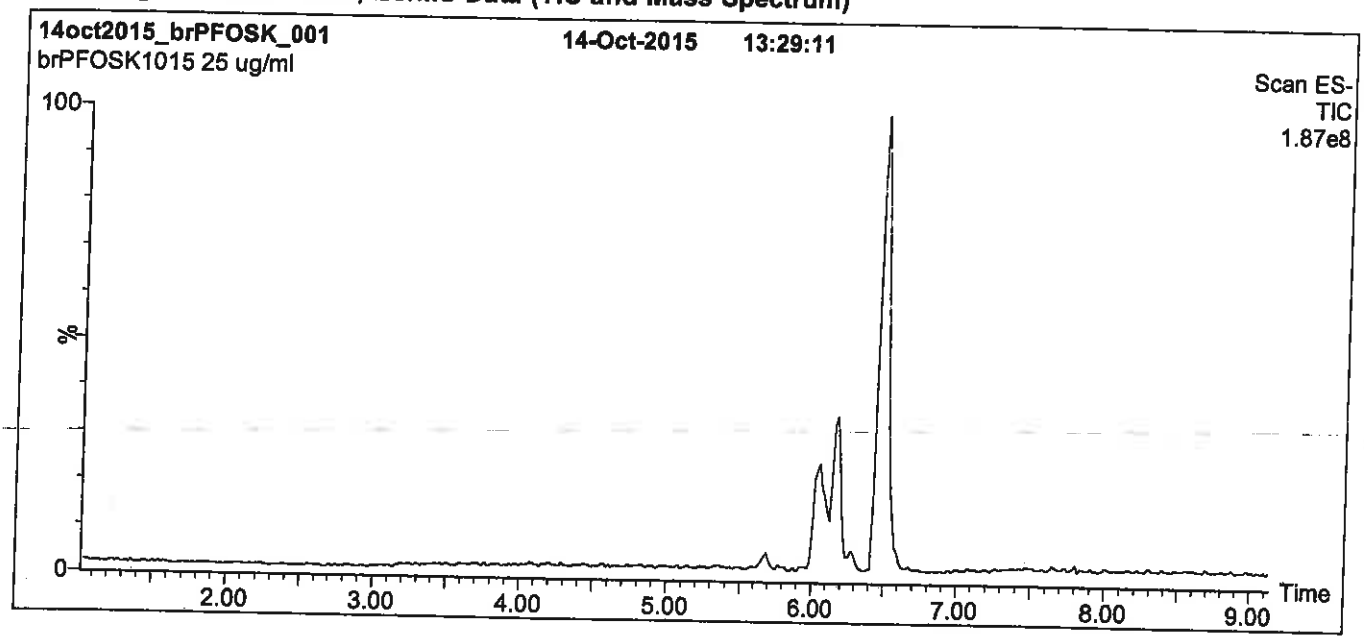
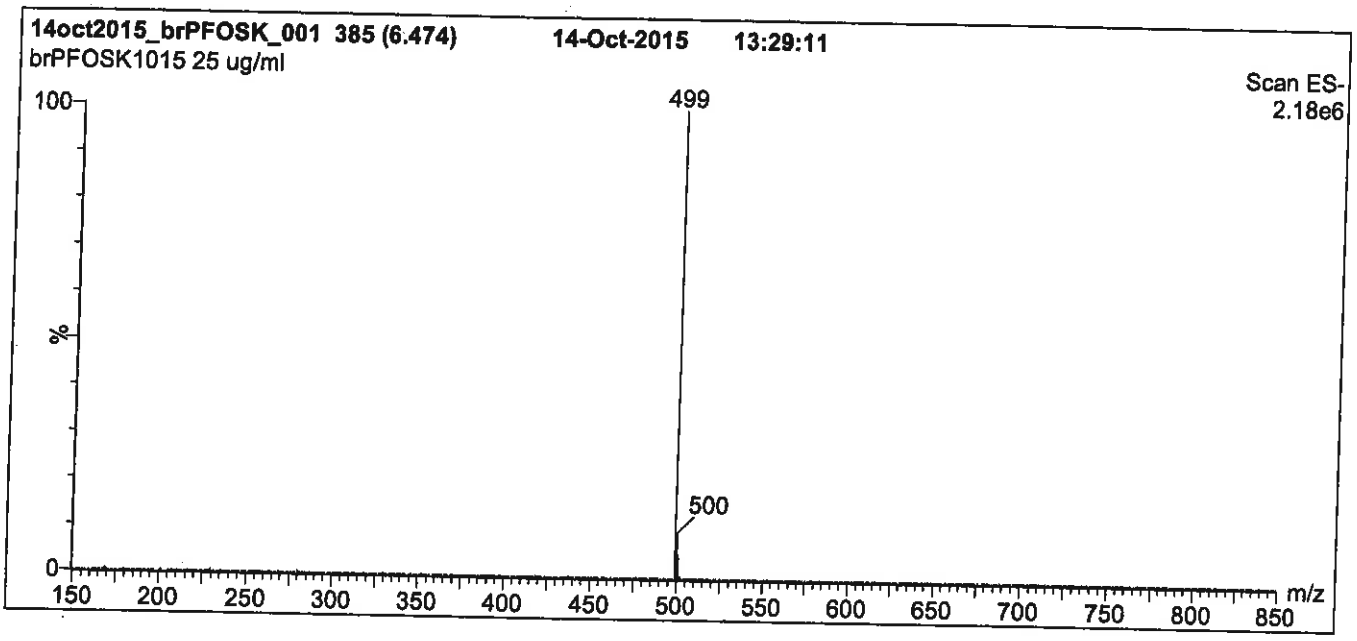
* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

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

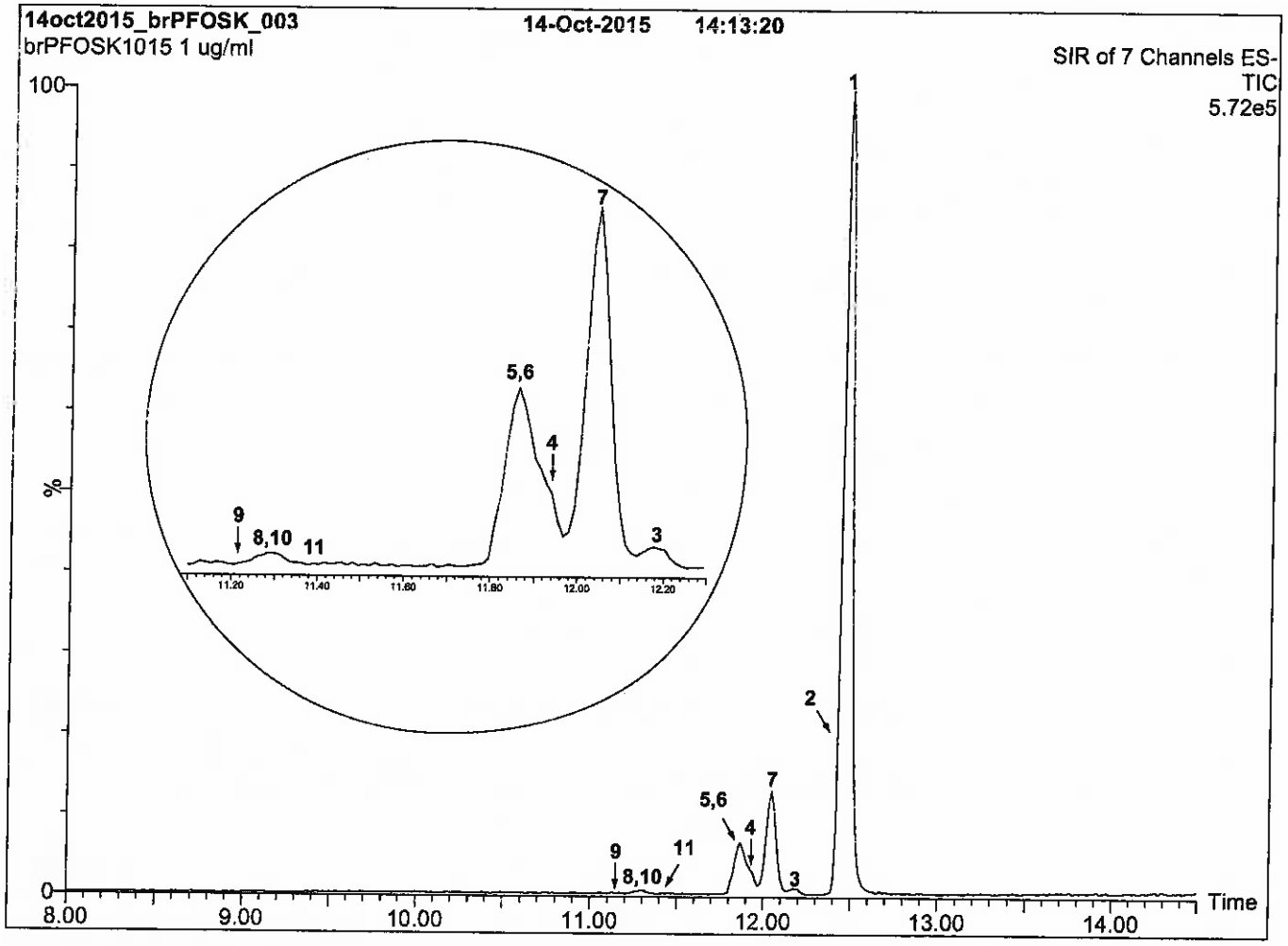
Flow: 300 µl/min

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.
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Flow: 300 µl/min

MS Conditions:

SIR (ES^-)
Source = 110 °C
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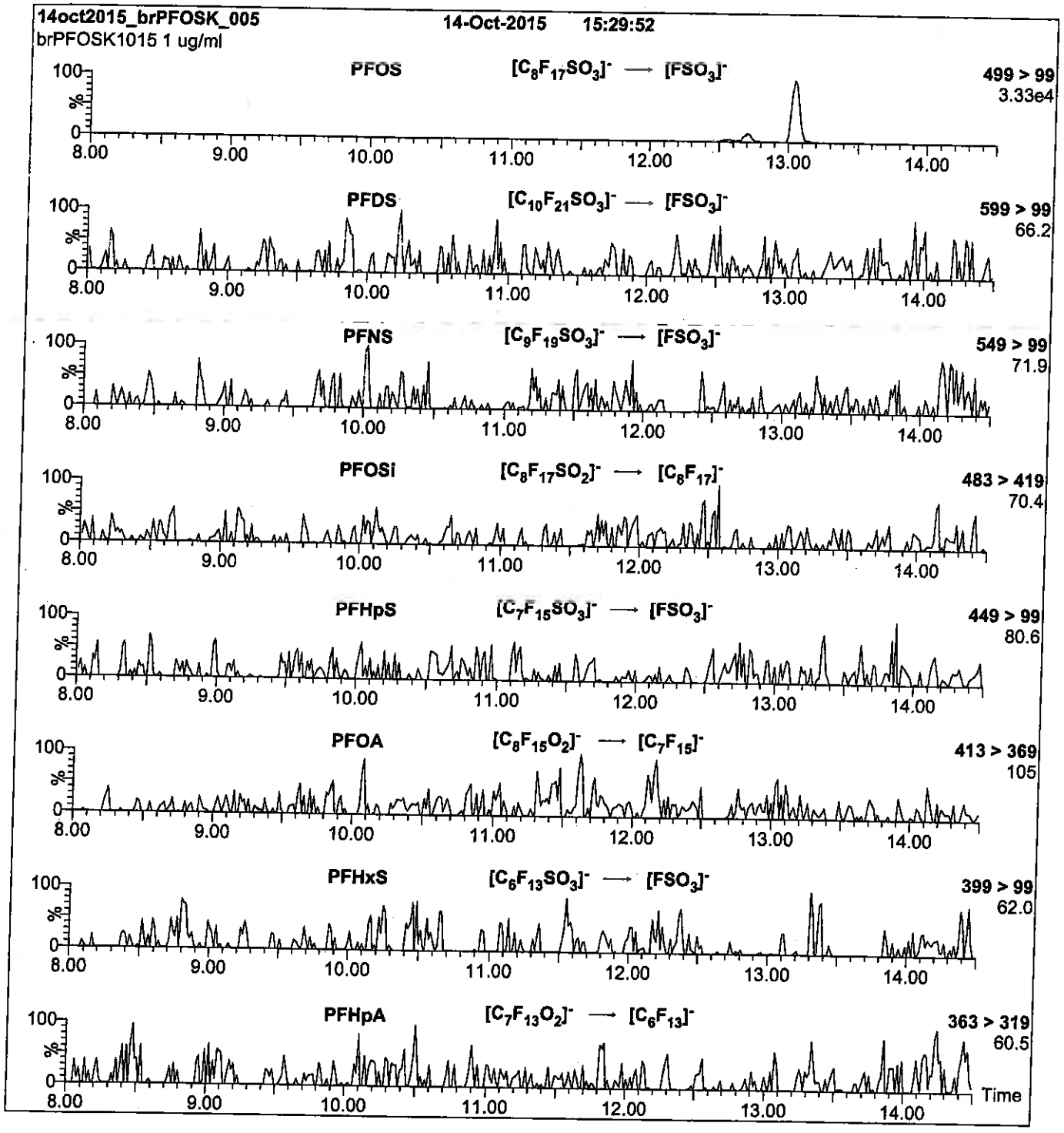
Figure 3: **br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**



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

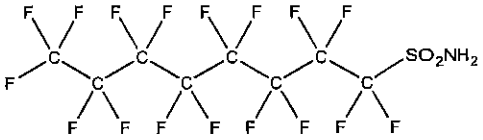
WELLINGTON LABORATORIES

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.

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

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CALA Testing Accreditation No. A1226

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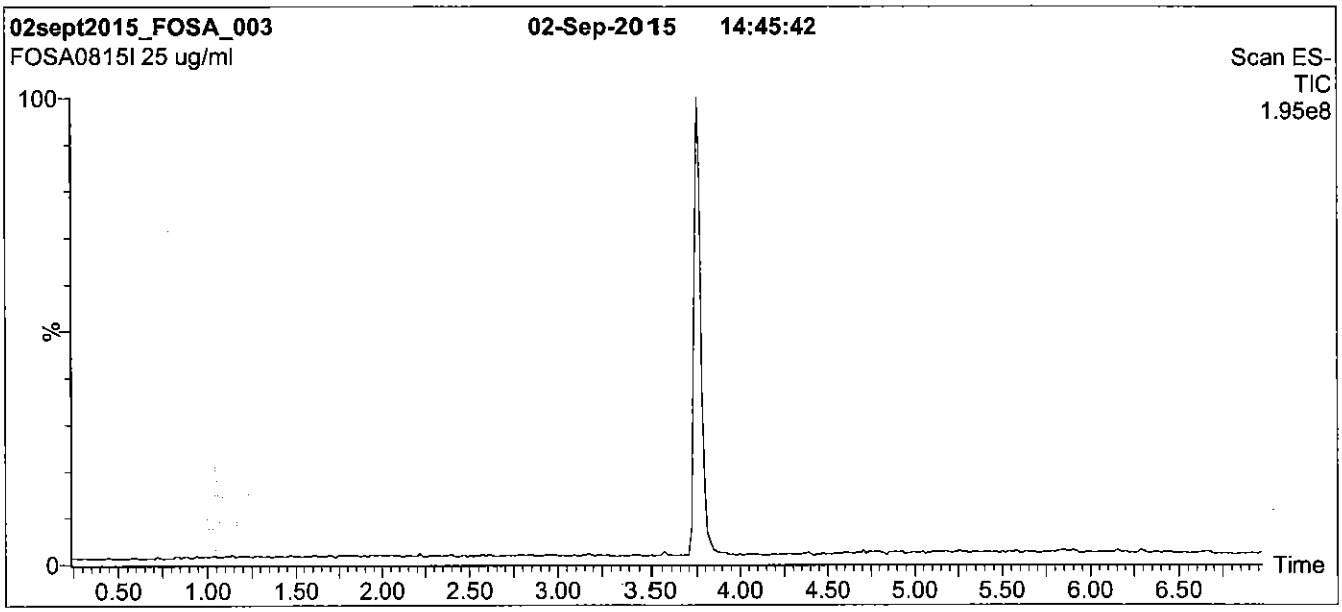
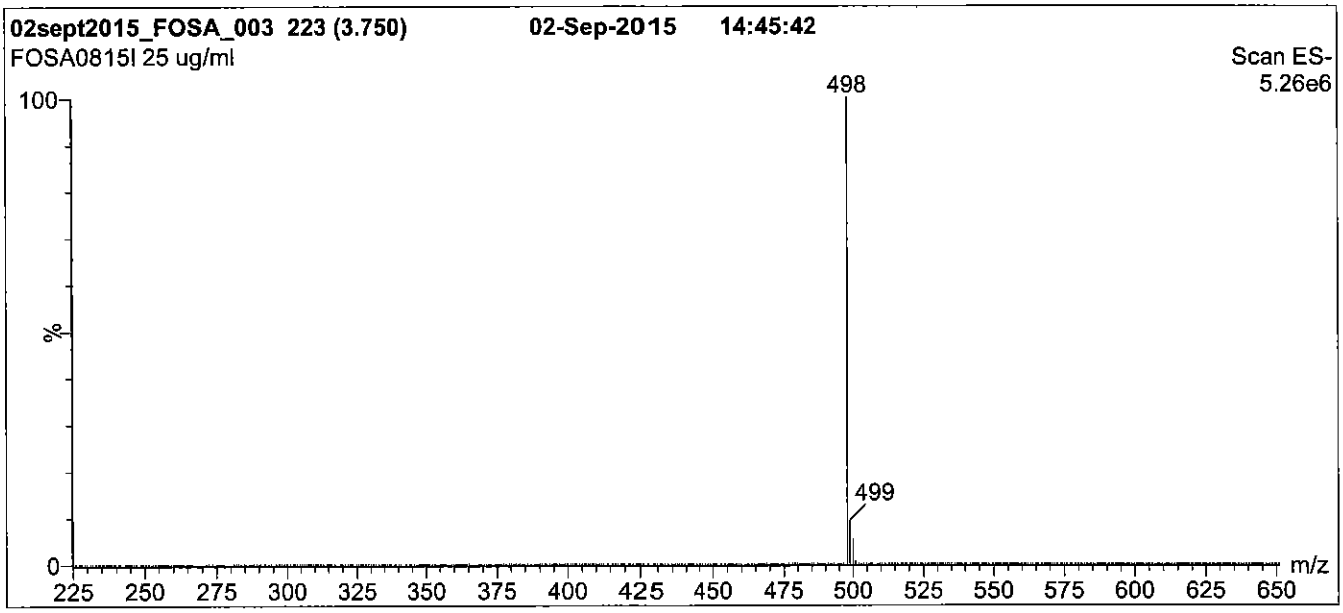
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

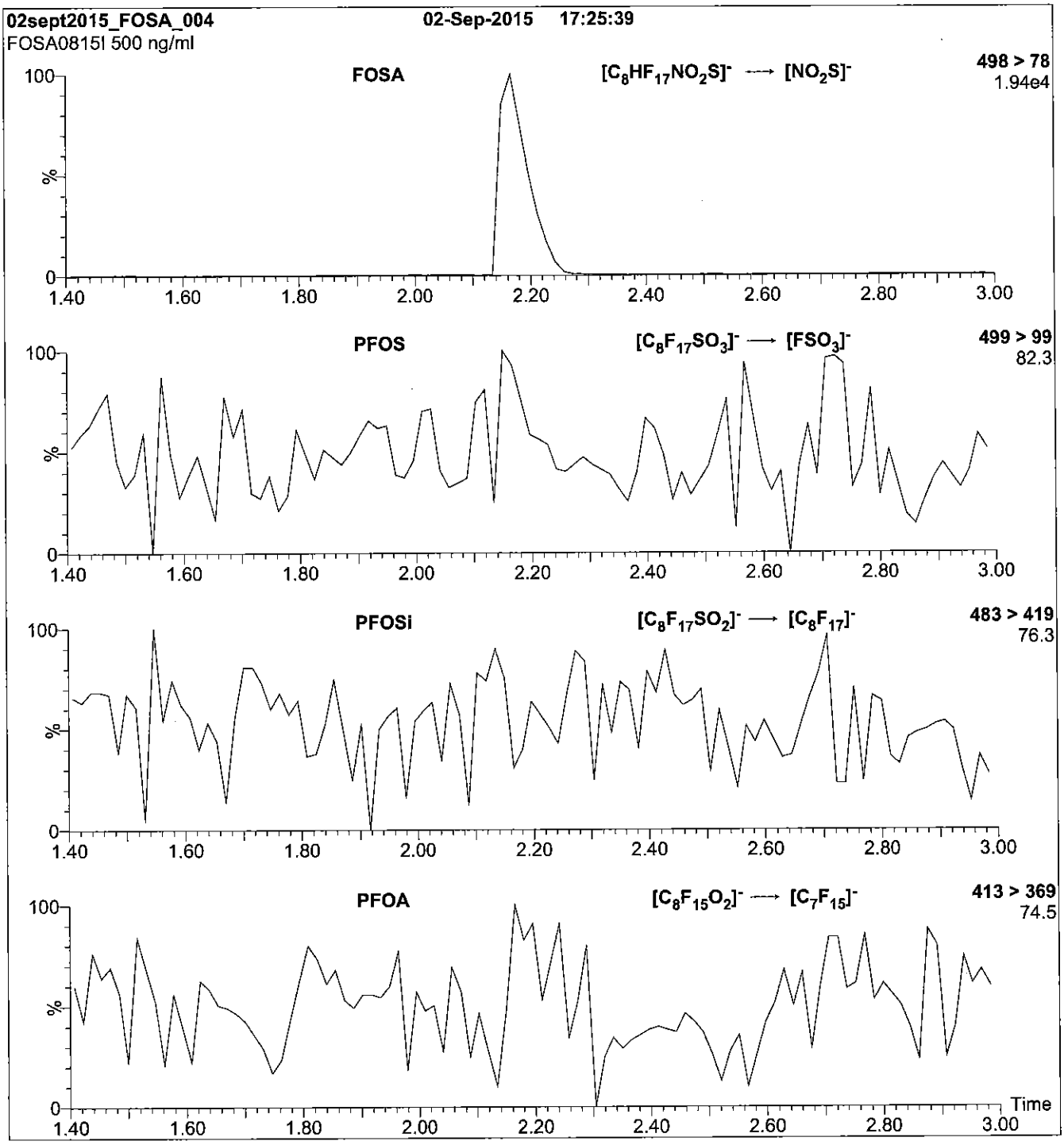
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFPeA_00005

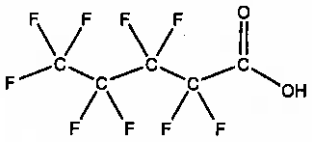
R: 7/6/16 CBW

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

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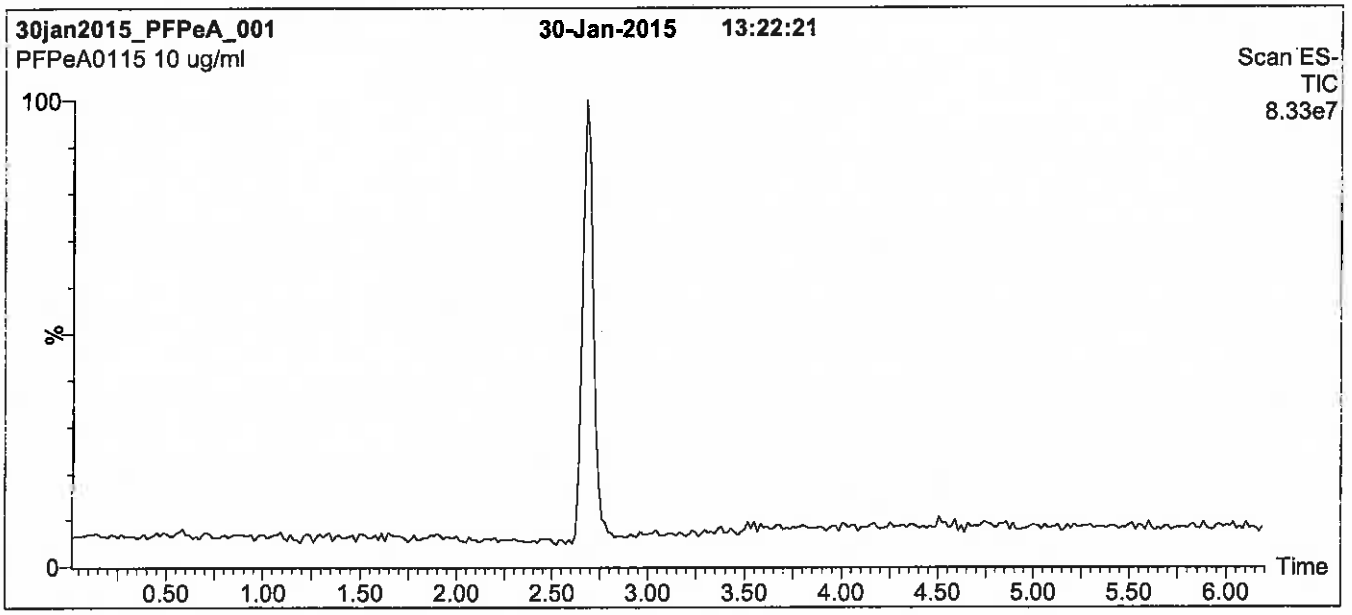
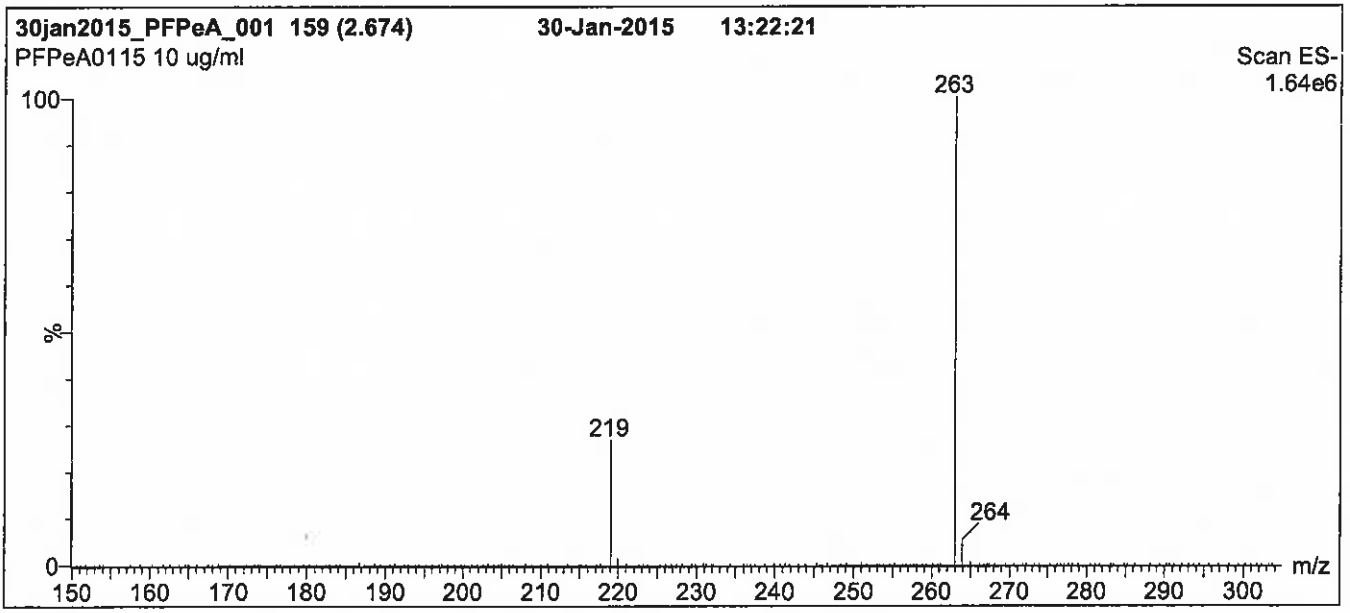
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

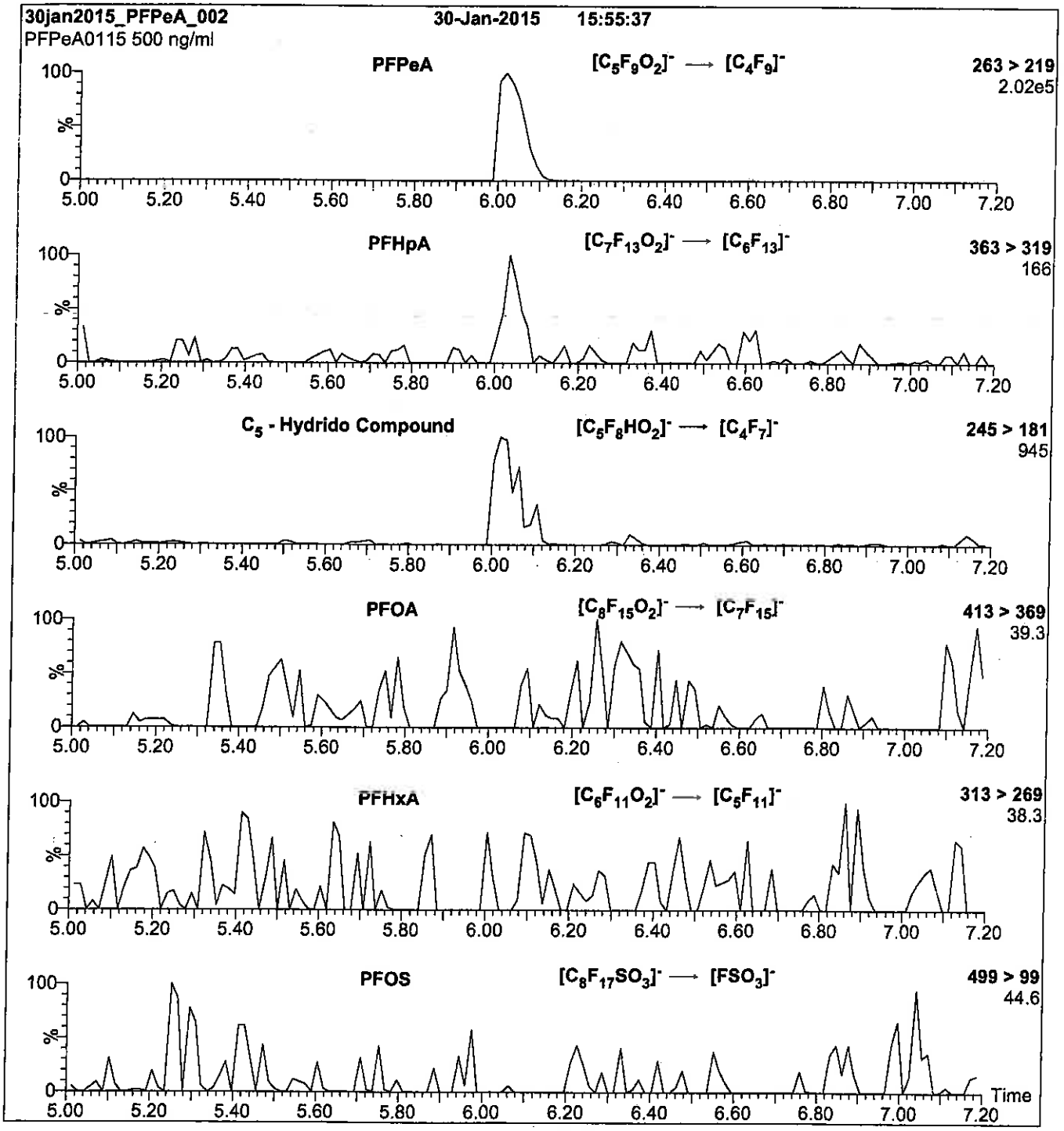
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCPFTeDA_00004

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

R: 4/7/16 CBW

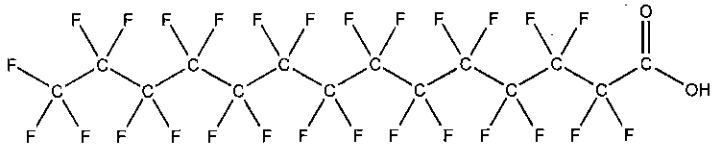
WELLINGTON LABORATORIES

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:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ 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. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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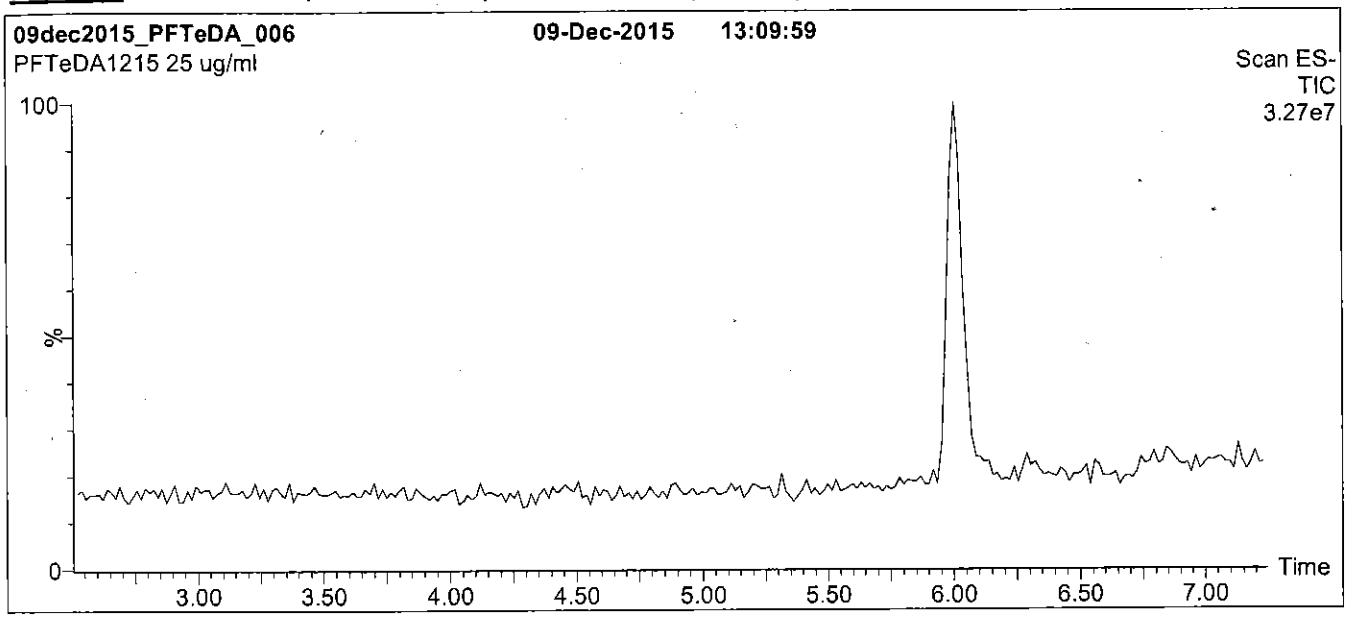
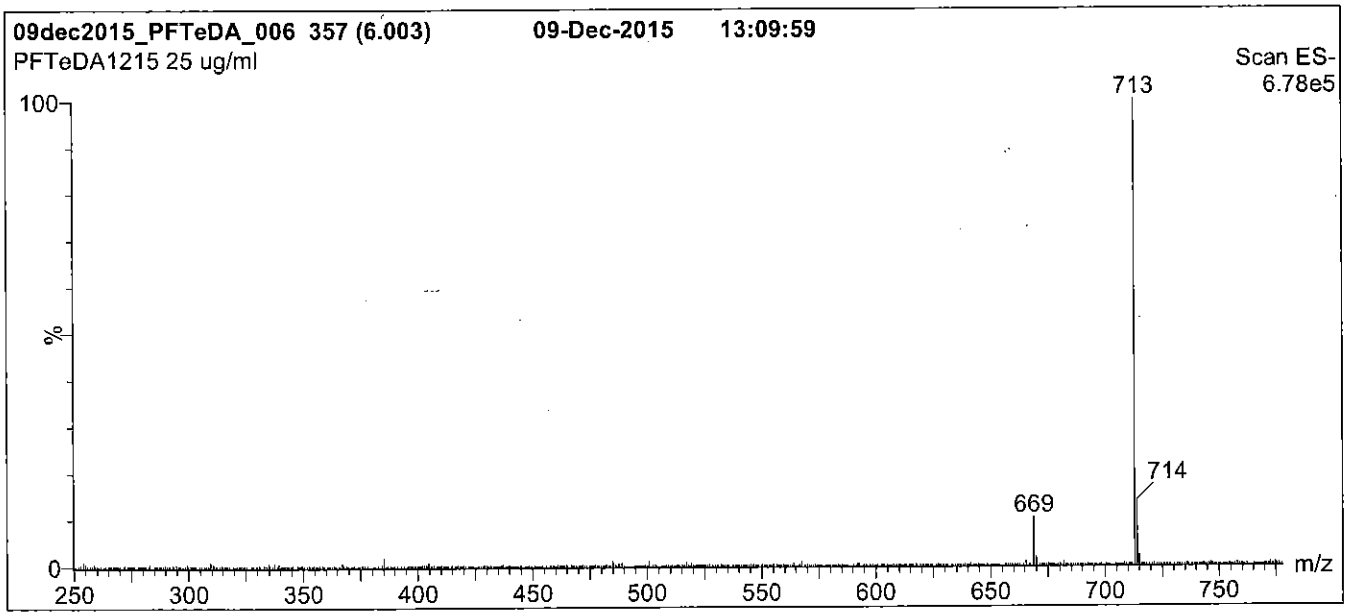
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

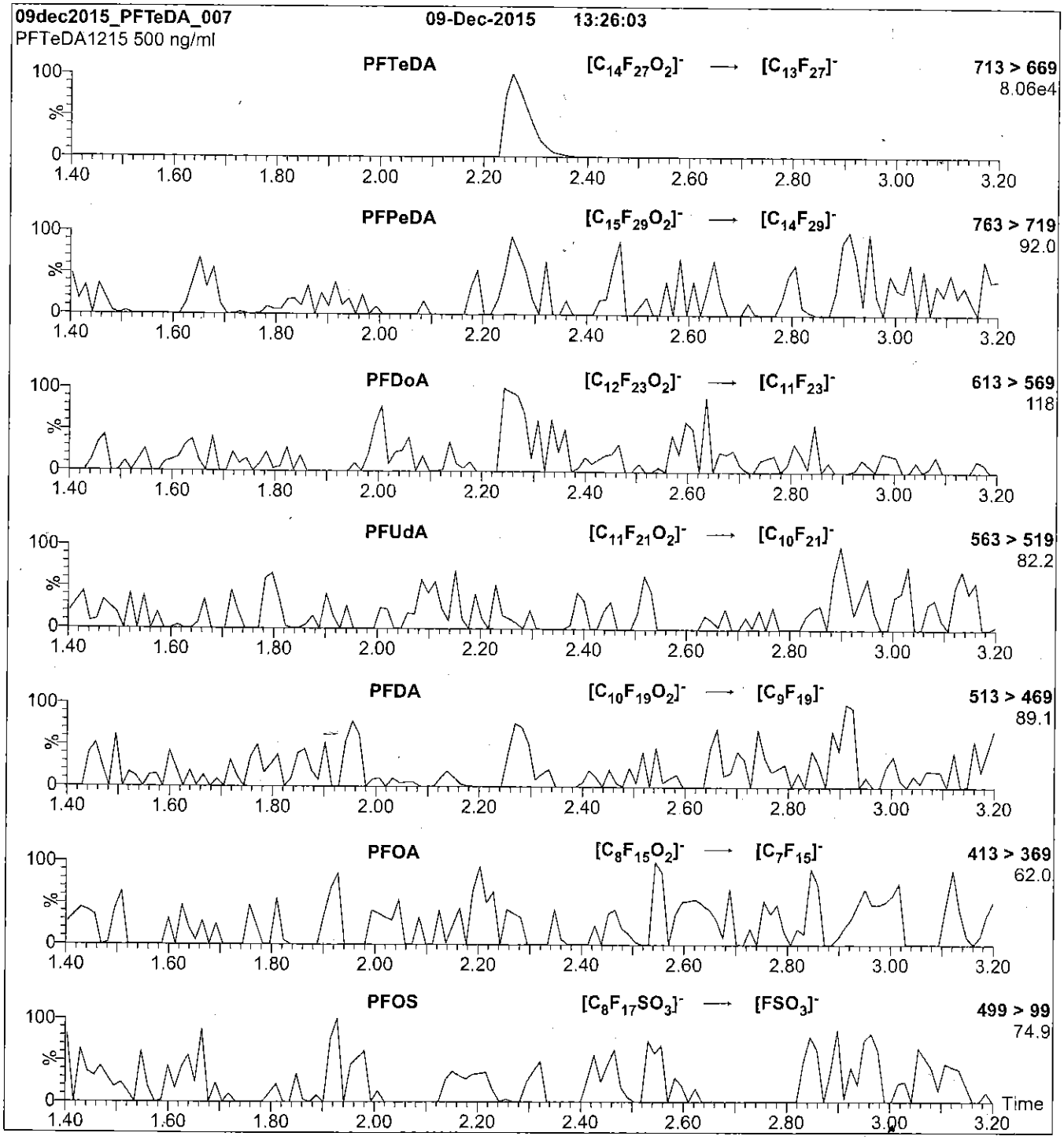
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFTrDA_00004

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

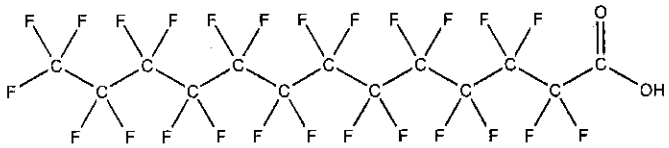
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 72629-94-8



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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$); ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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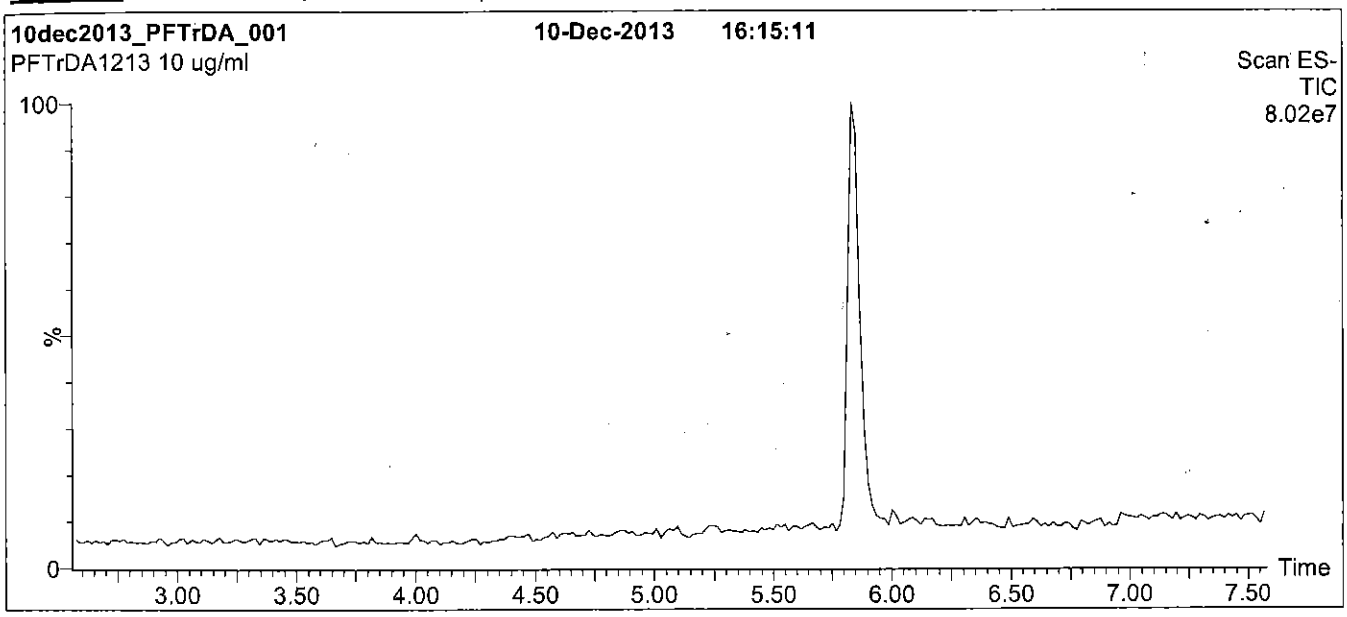
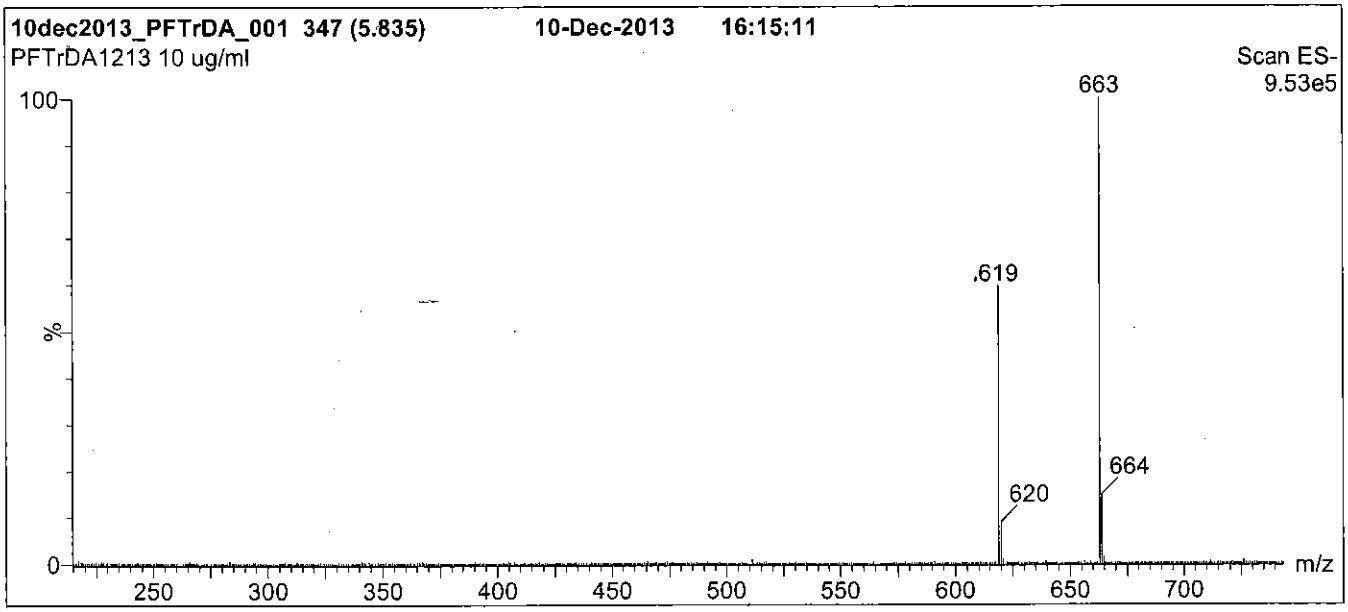
Figure 1: **PFTrDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

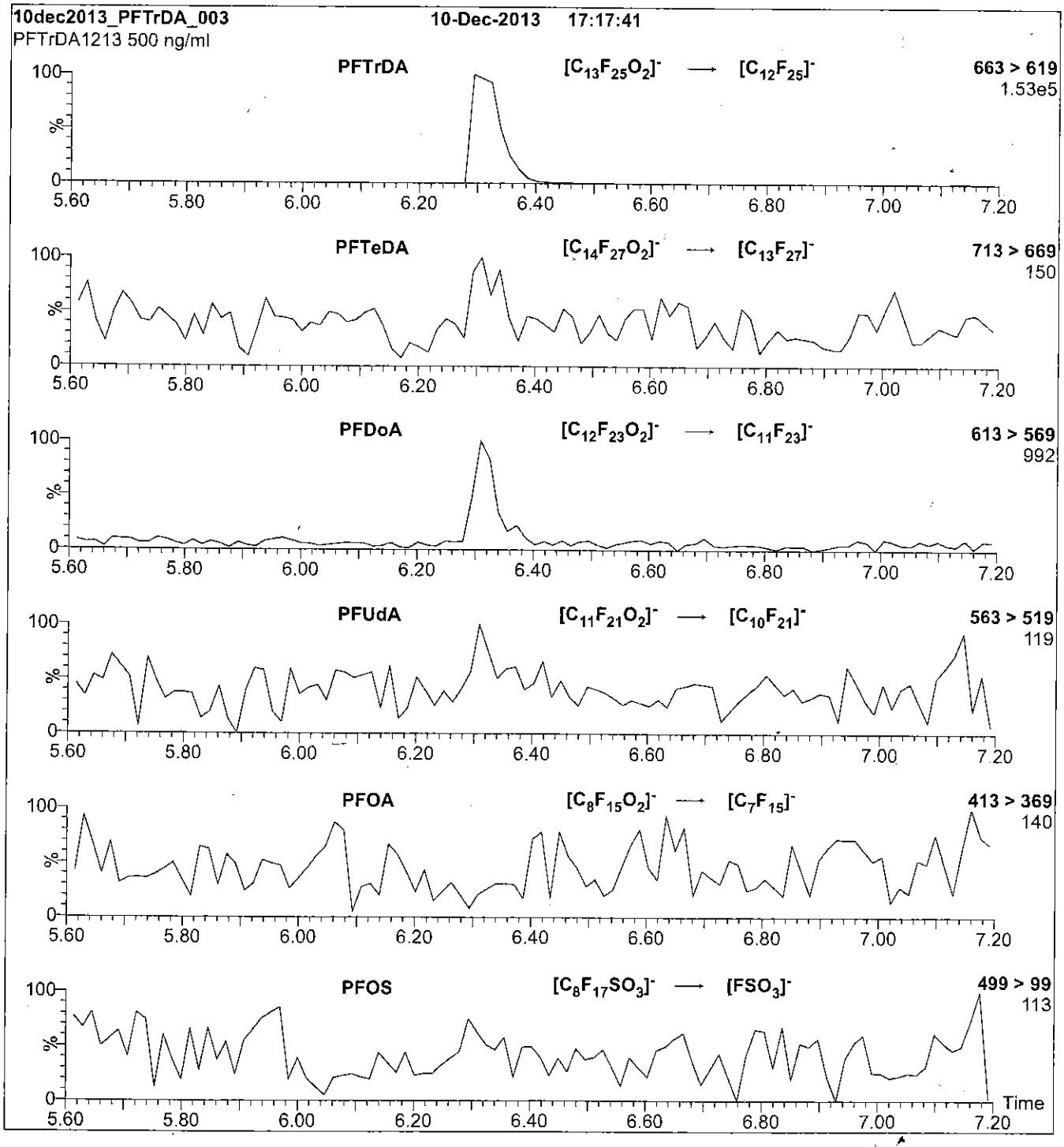
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFUdA_00004

Rec. 3/29/16 JRB ✓

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

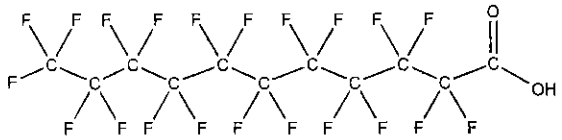
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:

CAS #: 2058-94-8



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

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

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:

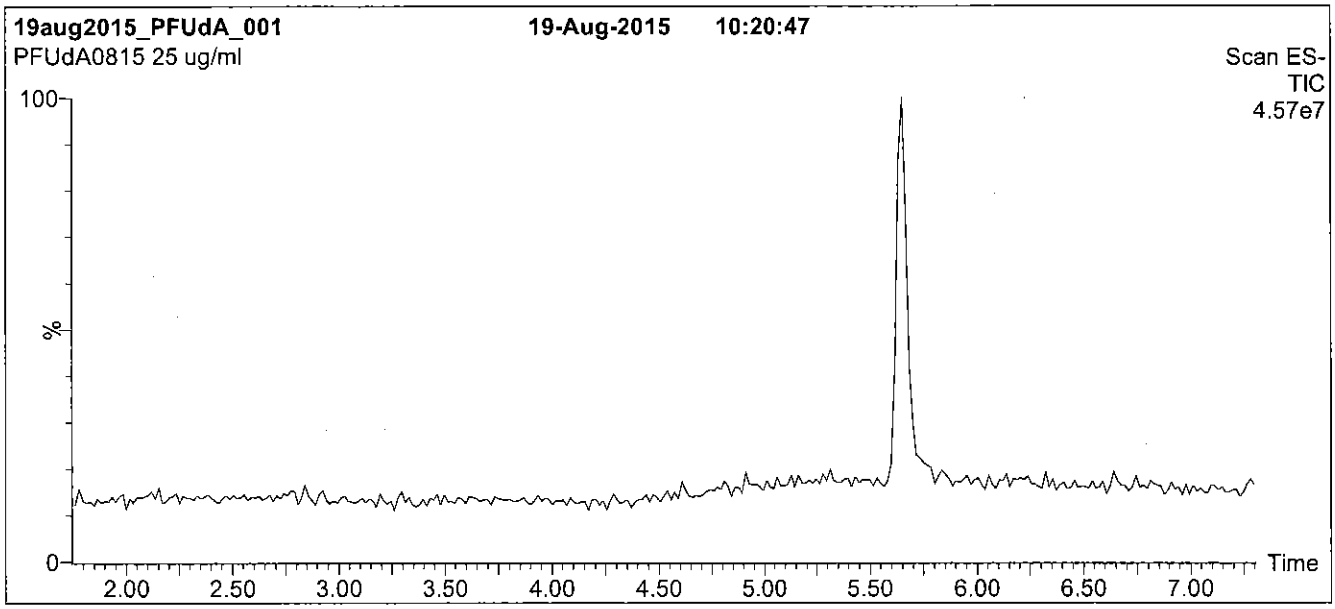
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

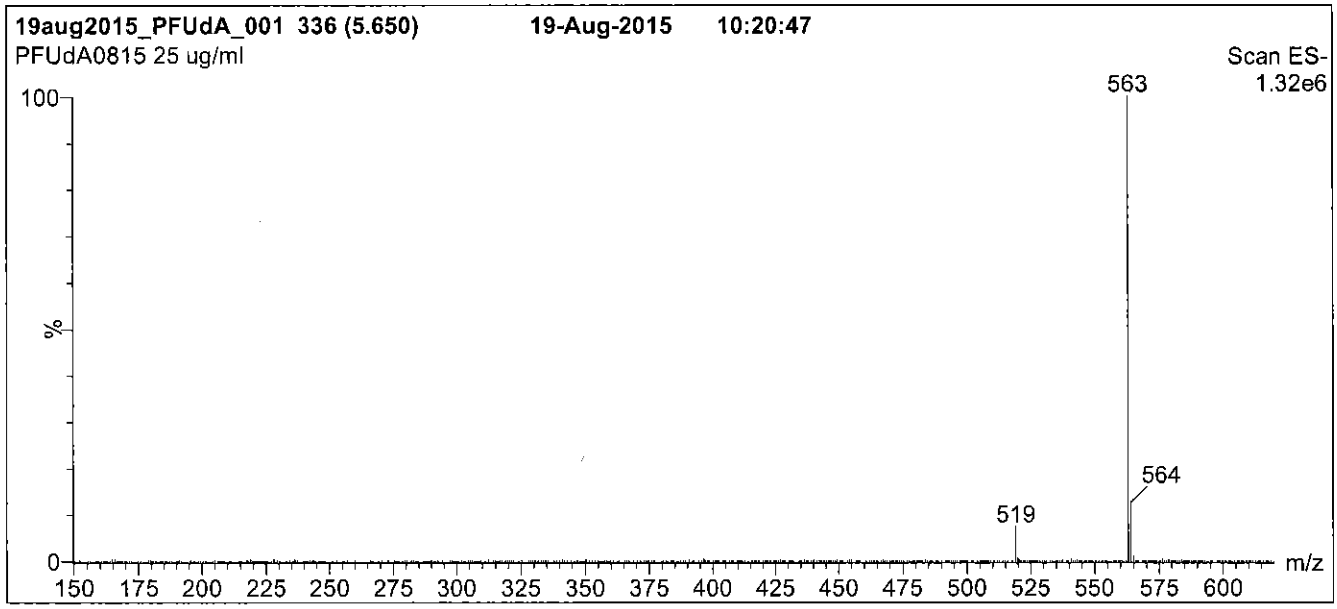
CALA Testing Accreditation No. A1226

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

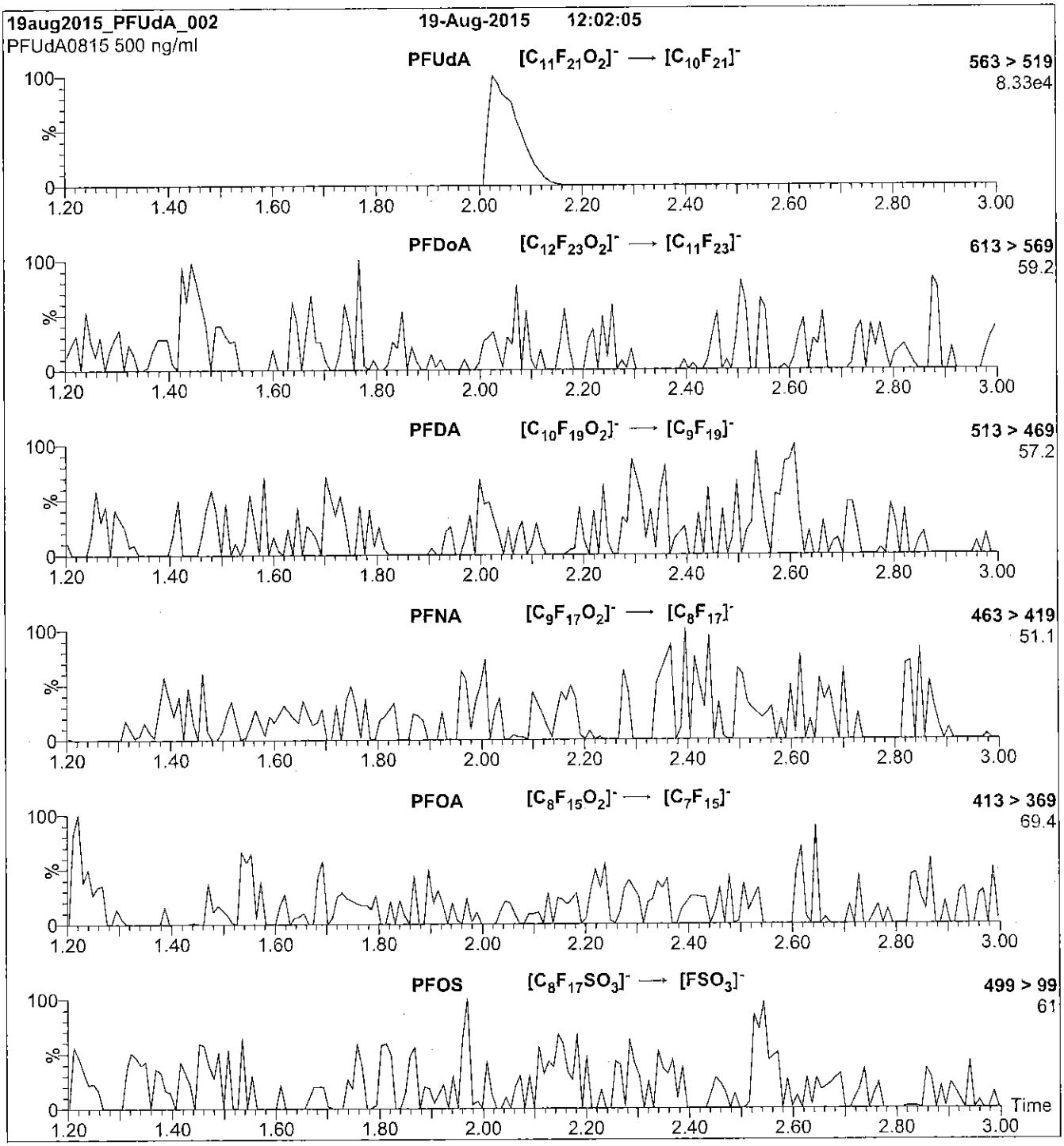
Flow: 300 µl/min

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

Reagent

LCPFUdA_00005

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

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

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

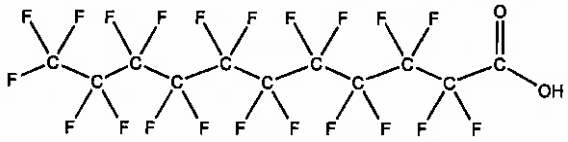
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:

CAS #: 2058-94-8



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Water (<1%)

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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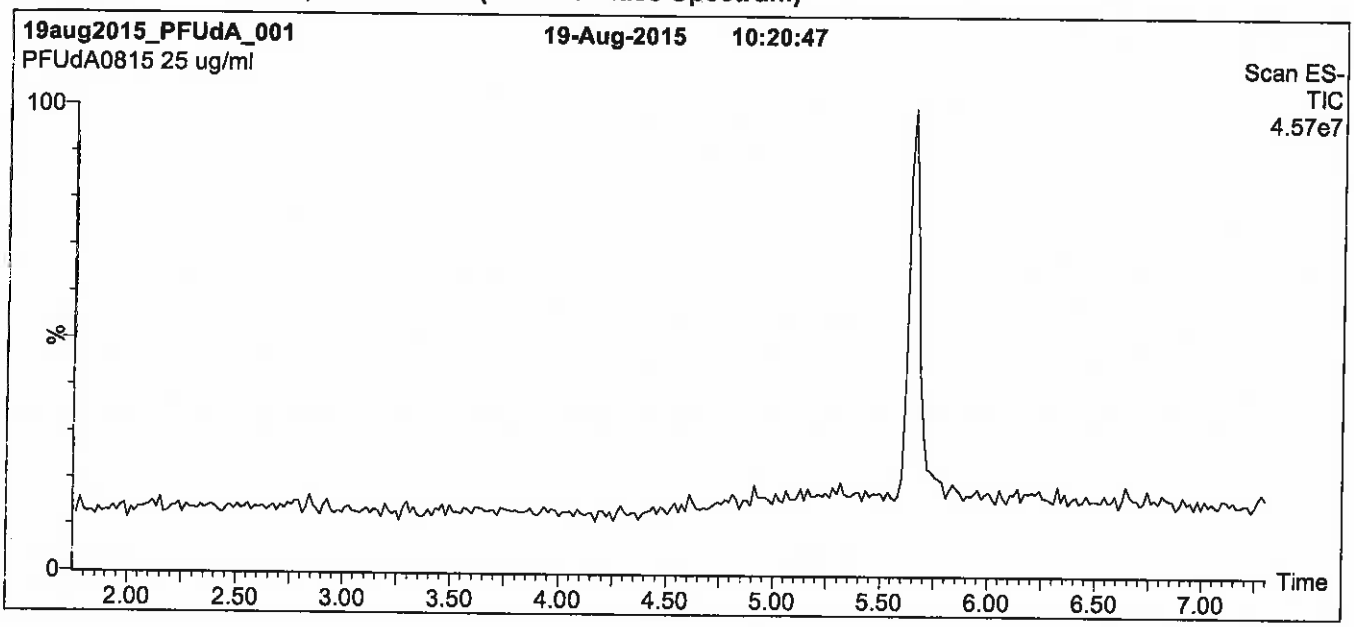
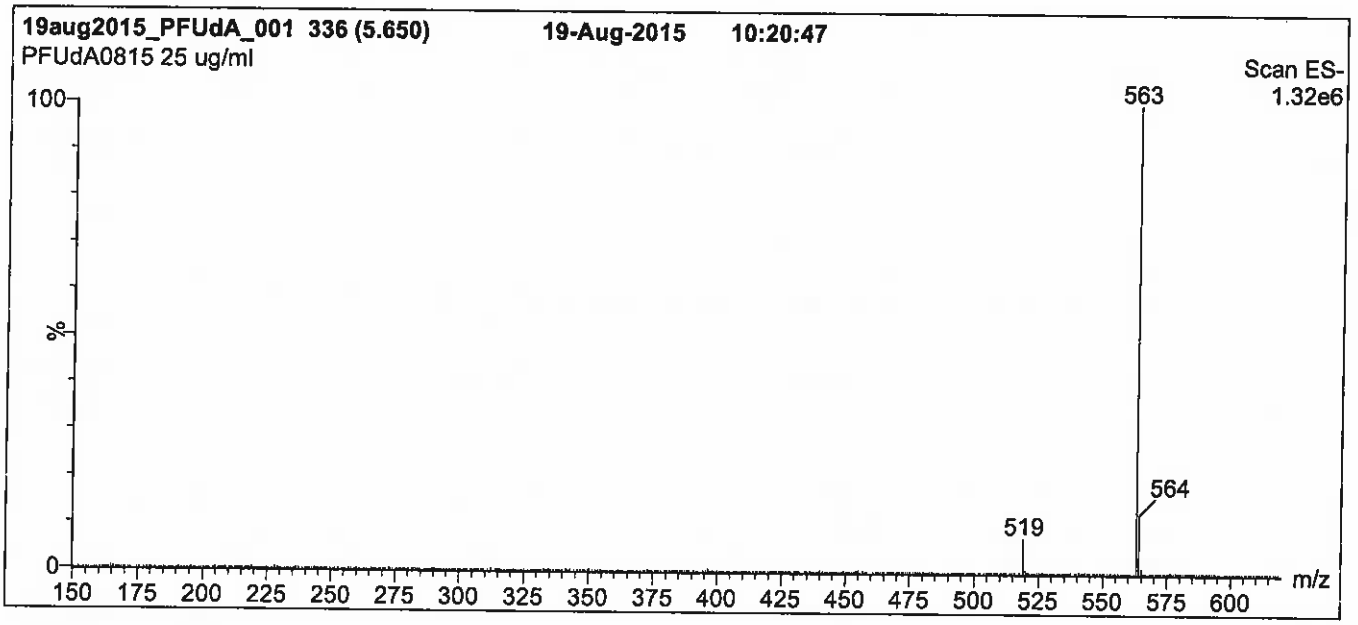




Conditions for Figure 1:

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

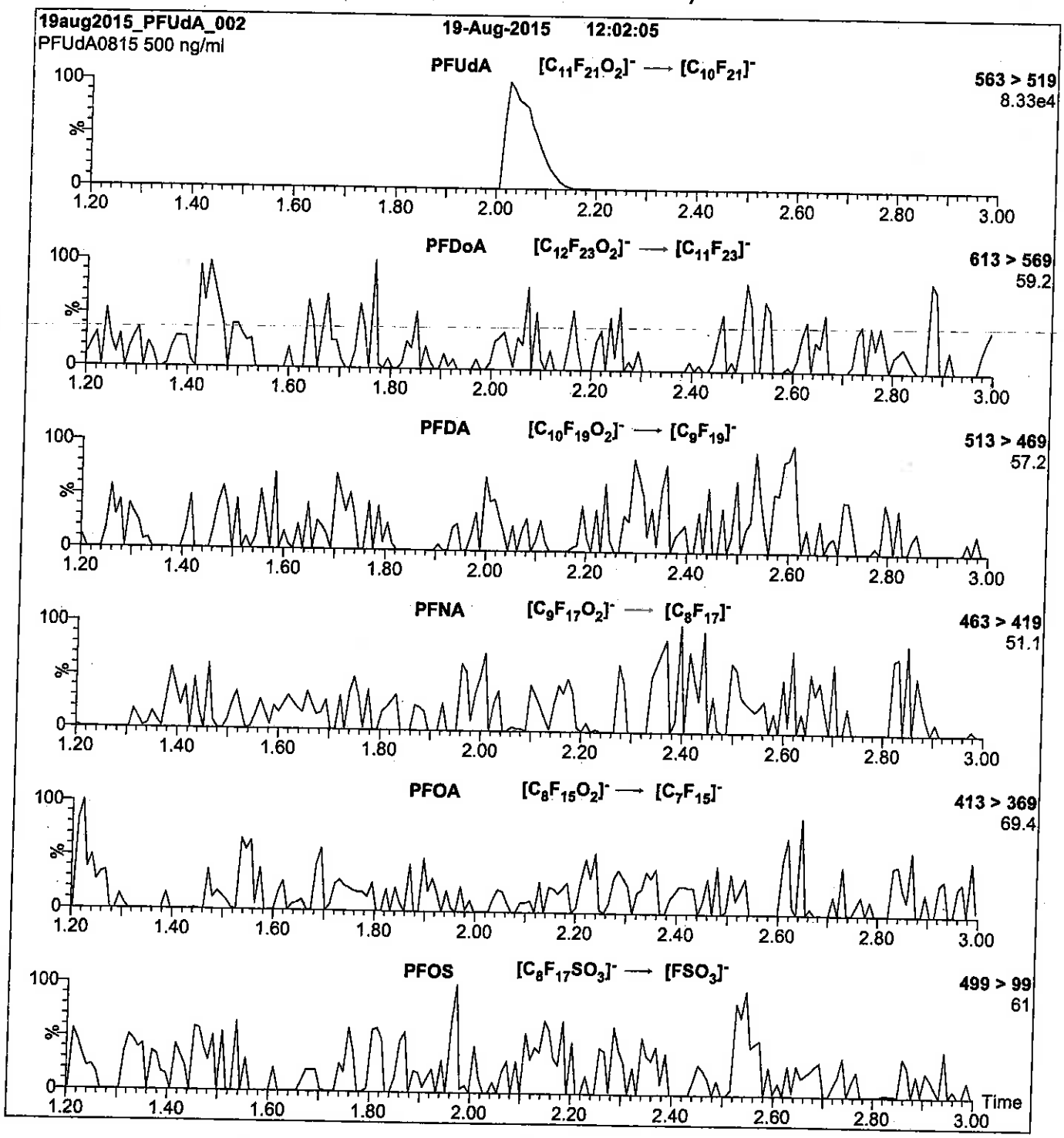
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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.: 320-23718-1

SDG No.:

Matrix: Solid Level: Low

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

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
DPT-16-29-SO-14-15	320-23718-3	91	98	77
	MB 320-139627/1-A	104	108	94
	LCS 320-139627/2-A	120	119	112
DPT-16-29-SO-14-15 -MS MS	320-23718-3 MS	105	103	91
DPT-16-29-SO-14-15 -MSD MSD	320-23718-3 MSD	94	93	79

	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.: 320-23718-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
DPT-16-17-GW-16-20	320-23718-1	66	69	109
DPT-16-17-GW-16-20 DL	320-23718-1 DL	100	74	99
DPT-16-17-GW-31-35	320-23718-2	71	70	110
DPT-16-17-GW-31-35 DL	320-23718-2 DL	117	99	114
DPT-16-29-GW-31-35	320-23718-4	83	64	107
DPT-16-29-GW-16-20	320-23718-5	62	63	60
DPT-16-29-GW-16-20 DL	320-23718-5 DL	98	80	93
	MB 320-139076/1-A	107	112	103
	LCS 320-139076/2-A	120	118	118
	LCSD 320-139076/3-A	117	120	120

	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.: 320-23718-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 07DEC2016A_023.d

Lab ID: LCS 320-139076/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	0.0420	105	60-140	
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0394	106	60-140	
13C4 PFOA	0.100	0.118	118	25-150	
13C4 PFOS	0.0956	0.113	118	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0415	117	50-150	
18O2 PFHxS	0.0946	0.114	120	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.: 320-23718-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 02DEC2016C_002.d

Lab ID: LCS 320-139627/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	4.00	4.25	106	60-140	
Perfluorooctane Sulfonate (PFOS)	3.71	3.66	99	60-140	
13C4 PFOA	10.0	11.9	119	25-150	
13C4 PFOS	9.56	10.7	112	25-150	
Perfluorobutanesulfonic acid (PFBS)	3.54	4.03	114	50-150	
18O2 PFHxS	9.46	11.3	120	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 07DEC2016A_024.d

Lab ID: LCSD 320-139076/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	0.0408	102	3	30	60-140	
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0386	104	2	30	60-140	
13C4 PFOA	0.100	0.120	120			25-150	
13C4 PFOS	0.0956	0.115	120			25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0412	117	1	30	50-150	
18O2 PFHxS	0.0946	0.111	117			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.: 320-23718-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 02DEC2016C_006.d

Lab ID: 320-23718-3 MS Client ID: DPT-16-29-SO-14-15-MS MS

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	4.90	0.49 J	5.53	103	60-140	
Perfluorooctane Sulfonate (PFOS)	4.55	1.5	5.71	93	60-140	M
13C4 PFOA	12.3	12	12.6	103	25-150	
13C4 PFOS	11.7	9.1	10.6	91	25-150	
Perfluorobutanesulfonic acid (PFBS)	4.33	0.37 U	4.78	110	50-150	
18O2 PFHxS	11.6	11	12.2	105	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.: 320-23718-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 02DEC2016C_007.d

Lab ID: 320-23718-3 MSD Client ID: DPT-16-29-SO-14-15-MSD MSD

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	4.83	5.37	101	3	30	60-140	
Perfluorooctane Sulfonate (PFOS)	4.49	5.57	91	2	30	60-140	M
13C4 PFOA	12.1	11.2	93			25-150	
13C4 PFOS	11.6	9.10	79			25-150	
Perfluorobutanesulfonic acid (PFBS)	4.27	4.71	110	2	30	50-150	
18O2 PFHxS	11.4	10.8	94			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.: 320-23718-1

SDG No.:

Lab File ID: 07DEC2016A_022.d Lab Sample ID: MB 320-139076/1-A

Matrix: Water Date Extracted: 11/22/2016 11:44

Instrument ID: A8_N Date Analyzed: 12/07/2016 14:55

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
DPT-16-17-GW-16-20 DL	320-23718-1 DL	03DEC2016C_005.d	12/03/2016 19:11
DPT-16-17-GW-31-35 DL	320-23718-2 DL	03DEC2016C_006.d	12/03/2016 19:18
DPT-16-29-GW-16-20 DL	320-23718-5 DL	03DEC2016C_007.d	12/03/2016 19:26
	LCS 320-139076/2-A	07DEC2016A_023.d	12/07/2016 15:03
	LCSD 320-139076/3-A	07DEC2016A_024.d	12/07/2016 15:11
DPT-16-17-GW-16-20	320-23718-1	07DEC2016A_025.d	12/07/2016 15:18
DPT-16-17-GW-31-35	320-23718-2	07DEC2016A_026.d	12/07/2016 15:26
DPT-16-29-GW-31-35	320-23718-4	07DEC2016A_027.d	12/07/2016 15:33
DPT-16-29-GW-16-20	320-23718-5	07DEC2016A_028.d	12/07/2016 15:41

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Lab File ID: 02DEC2016C_001.d Lab Sample ID: MB 320-139627/1-A

Matrix: Solid Date Extracted: 11/28/2016 11:03

Instrument ID: A8_N Date Analyzed: 12/02/2016 14:59

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-139627/2-A	02DEC2016C_002.d	12/02/2016 15:07
DPT-16-29-SO-14-15	320-23718-3	02DEC2016C_005.d	12/02/2016 15:29
DPT-16-29-SO-14-15-MS MS	320-23718-3 MS	02DEC2016C_006.d	12/02/2016 15:37
DPT-16-29-SO-14-15-MSD MSD	320-23718-3 MSD	02DEC2016C_007.d	12/02/2016 15:44

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-17-GW-16-20 Lab Sample ID: 320-23718-1

Matrix: Water Lab File ID: 07DEC2016A_025.d

Analysis Method: 537 (Modified) Date Collected: 11/17/2016 14:00

Extraction Method: 3535 Date Extracted: 11/22/2016 11:44

Sample wt/vol: 249.4(mL) Date Analyzed: 12/07/2016 15:18

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.: 141054 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.44*	*E*	*0.0025*	0.0020	*0.00075*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.23		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	69		25-150
STL00991	13C4 PFOS	109		25-150
STL00994	18O2 PFHxS	66		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_025.d
Lims ID: 320-23718-A-1-A
Client ID: DPT-16-17-GW-16-20
Sample Type: Client
Inject. Date: 07-Dec-2016 15:18:31 ALS Bottle#: 14 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23718-a-1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:04:52 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:05:05

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	1.858	1.858	0.0	1.000	17973432	54.5				
298.90 > 99.00	1.858	1.858	0.0	1.000	7769457		2.31(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.464	2.470	-0.006		9777477	31.3		66.2	686011	
15 Perfluorooctanoic acid										E
413.00 > 369.00	2.807	2.809	-0.002	1.000	35862560	220.0			504224	E
413.00 > 169.00	2.783	2.809	-0.026	0.991	26466143		1.36(0.90-1.10)		55892	
D 14 13C4 PFOA										
417.00 > 372.00	2.807	2.809	-0.002		7604028	34.7		69.4	661576	
D 17 13C4 PFOS										
503.00 > 80.00	3.185	3.185	0.0		12778573	51.9		109	248191	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.059	3.185	-0.126	1.000	32963481	113.6			433705	
499.00 > 99.00	3.185	3.185	0.0	1.041	6142629		5.37(0.90-1.10)		411433	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount

Report Date: 07-Dec-2016 17:05:05 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_025.d

Injection Date: 07-Dec-2016 15:18:31 Instrument ID: A8_N

Lims ID: 320-23718-A-1-A Lab Sample ID: 320-23718-1

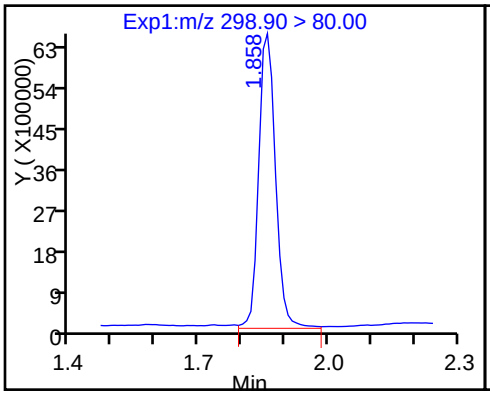
Client ID: DPT-16-17-GW-16-20

Operator ID: A8-PC\A8 ALS Bottle#: 14 Worklist Smp#: 27

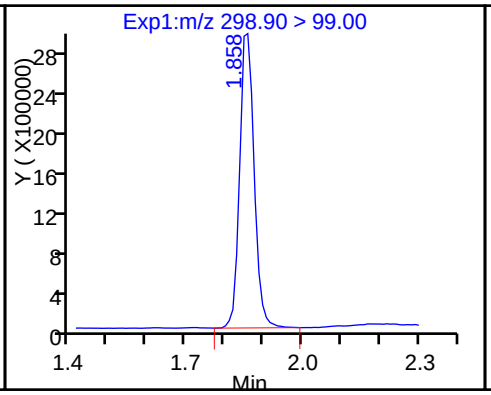
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

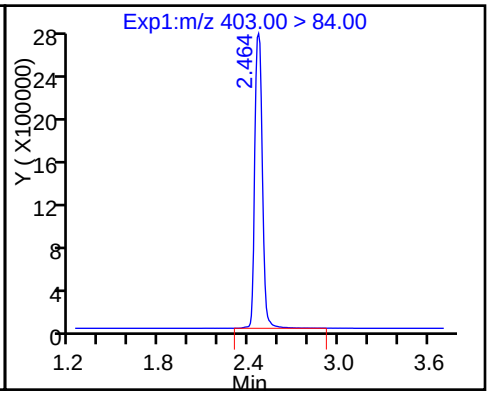
5 Perfluorobutanesulfonic acid



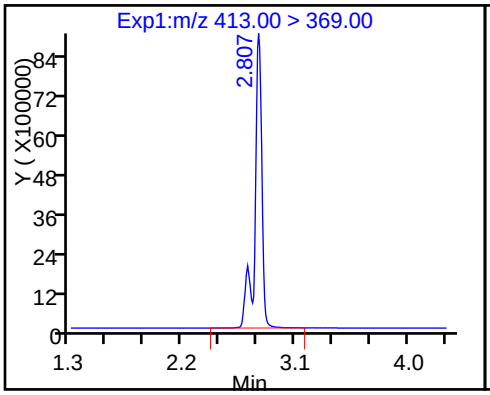
5 Perfluorobutanesulfonic acid



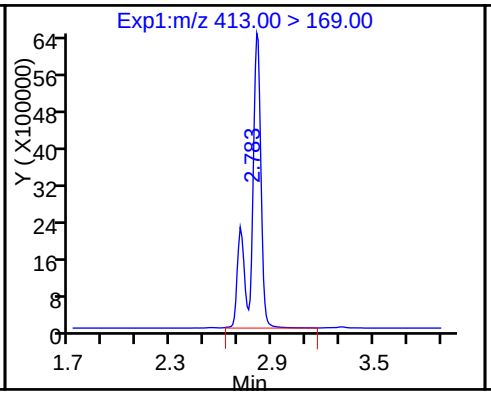
D 10 18O2 PFHxS



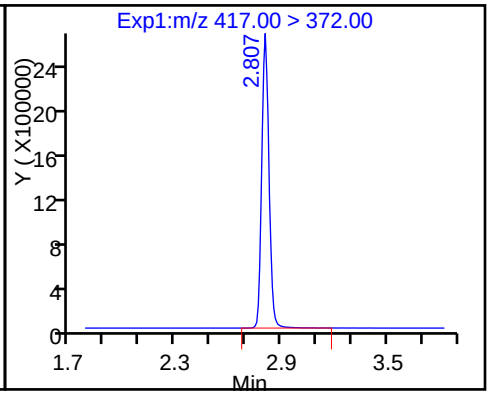
15 Perfluorooctanoic acid



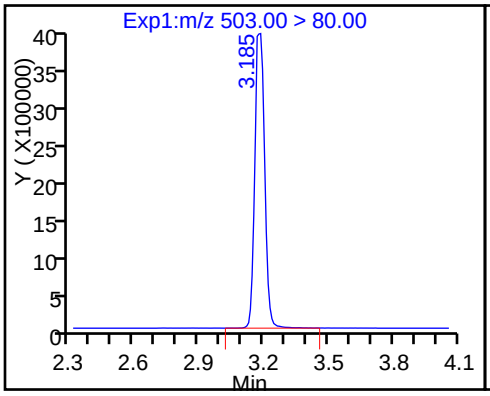
15 Perfluorooctanoic acid



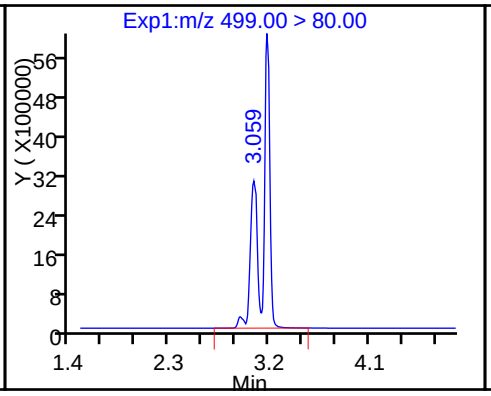
D 14 13C4 PFOA



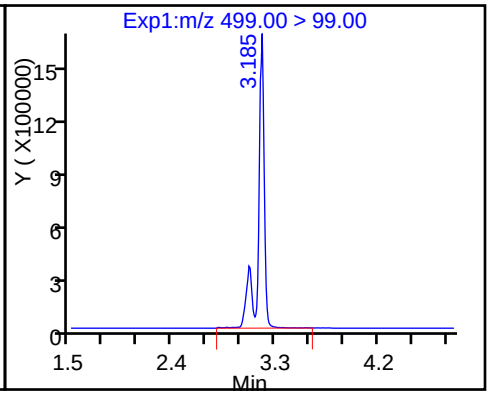
D 17 13C4 PFOS



18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-17-GW-16-20 DL Lab Sample ID: 320-23718-1 DL

Matrix: Water Lab File ID: 03DEC2016C_005.d

Analysis Method: 537 (Modified) Date Collected: 11/17/2016 14:00

Extraction Method: 3535 Date Extracted: 11/22/2016 11:44

Sample wt/vol: 249.4(mL) Date Analyzed: 12/03/2016 19:11

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.: 140675 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.49	D	0.025	0.020	0.0075
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.22*	*D M*	*0.040*	0.030	*0.013*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.061*	*D*	*0.025*	0.020	*0.0092*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	74		25-150
STL00991	13C4 PFOS	99		25-150
STL00994	18O2 PFHxS	100		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_005.d
Lims ID: 320-23718-A-1-A
Client ID: DPT-16-17-GW-16-20
Sample Type: Client
Inject. Date: 03-Dec-2016 19:11:13 ALS Bottle#: 10 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23718-a-1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 06-Dec-2016 16:26:44 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 06-Dec-2016 15:48:01

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	1.871	1.877	-0.006	1.000	1524760	3.06				
298.90 > 99.00	1.871	1.877	-0.006	1.000	653039		2.33(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.485	2.481	0.004		1477744	4.73		10.0	191041	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.840	2.836	0.004	1.000	4288924	24.6			57146	
413.00 > 169.00	2.840	2.836	0.004	1.000	2834564		1.51(0.90-1.10)		60818	
D 14 13C4 PFOA										
417.00 > 372.00	2.848	2.836	0.012		812412	3.71		7.4	95216	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.210	3.215	-0.005	1.000	2854773	10.8			206502	
499.00 > 99.00	3.210	3.215	-0.005	1.000	547513		5.21(0.90-1.10)		24920	M
D 17 13C4 PFOS										
503.00 > 80.00	3.210	3.215	-0.005		1160717	4.72		9.9	60468	

QC Flag Legend

Review Flags
M - Manually Integrated

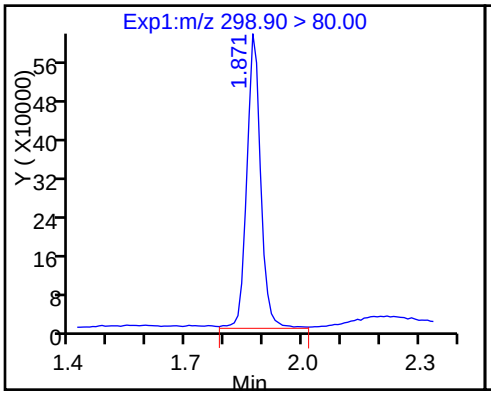
Report Date: 07-Dec-2016 17:28:16 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

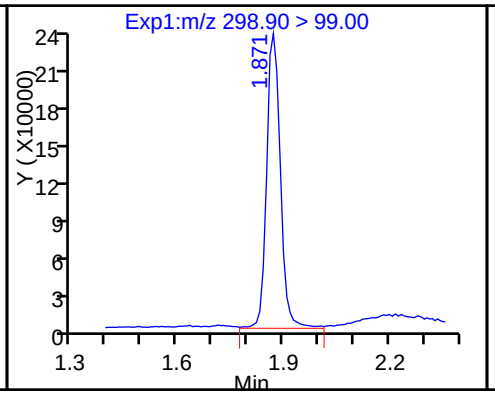
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_005.d

Injection Date:	03-Dec-2016 19:11:13	Instrument ID:	A8_N		
Lims ID:	320-23718-A-1-A	Lab Sample ID:	320-23718-1		
Client ID:	DPT-16-17-GW-16-20				
Operator ID:	A8-PC\A8	ALS Bottle#:	10	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

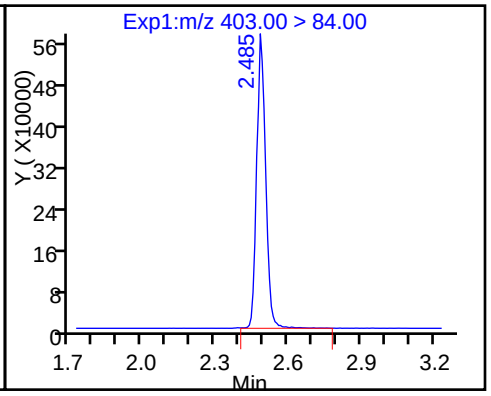
5 Perfluorobutanesulfonic acid



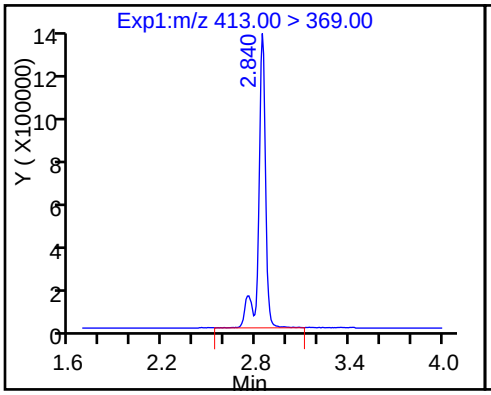
5 Perfluorobutanesulfonic acid



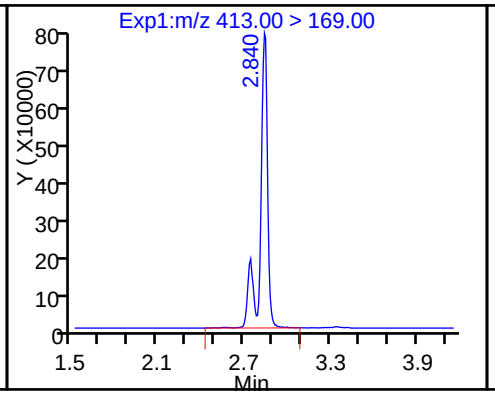
D 10 18O2 PFHxS



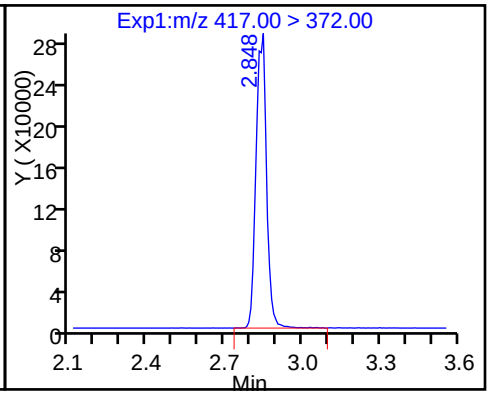
15 Perfluorooctanoic acid



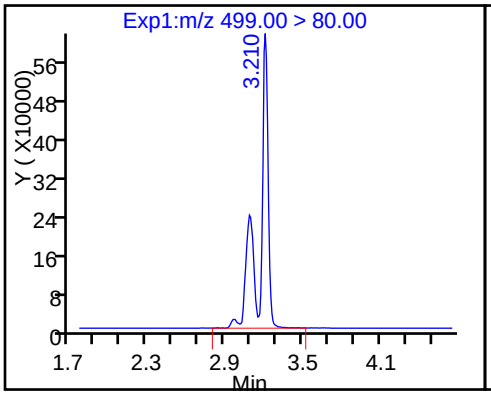
15 Perfluorooctanoic acid



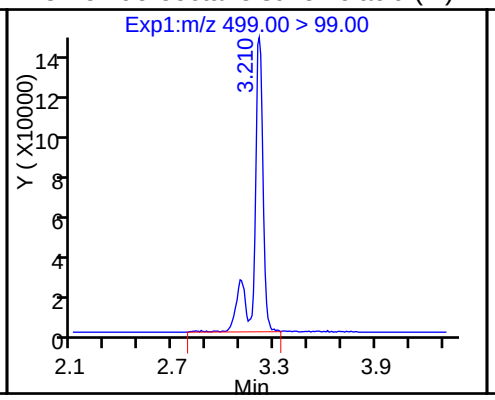
D 14 13C4 PFOA



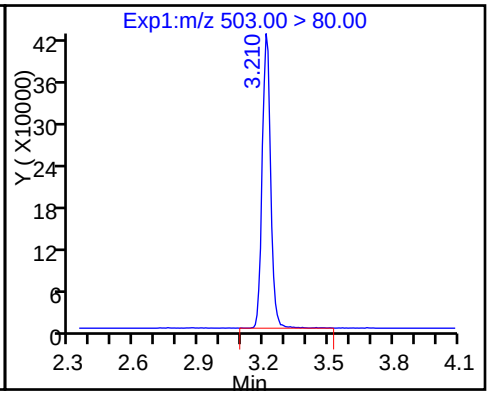
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid (M)



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

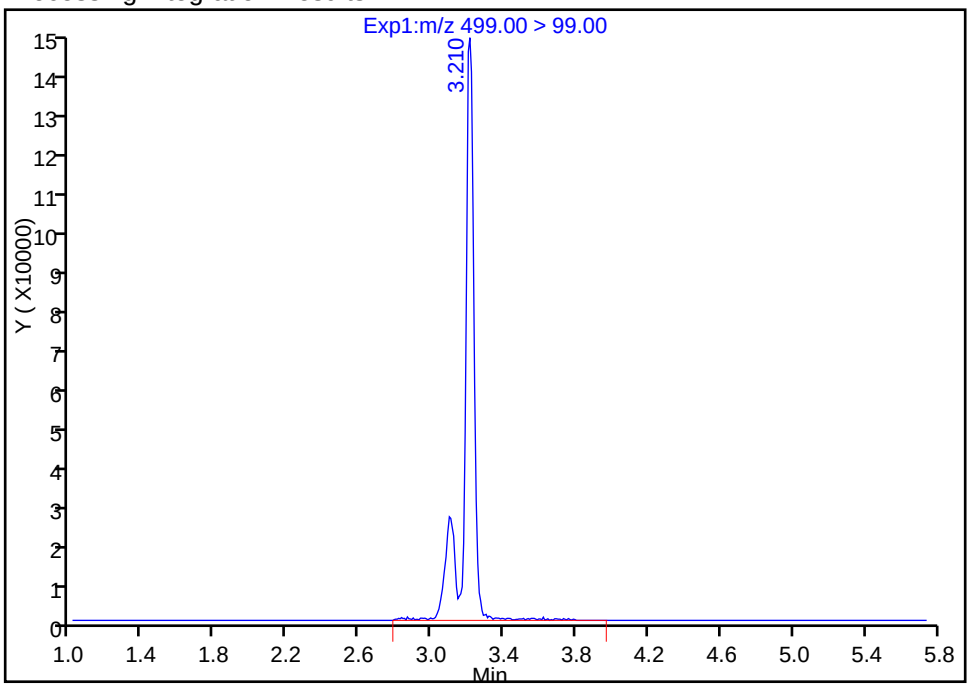
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_005.d				
Injection Date:	03-Dec-2016 19:11:13	Instrument ID:	A8_N		
Lims ID:	320-23718-A-1-A	Lab Sample ID:	320-23718-1		
Client ID:	DPT-16-17-GW-16-20				
Operator ID:	A8-PC\A8	ALS Bottle#:	10	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

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

Signal: 2

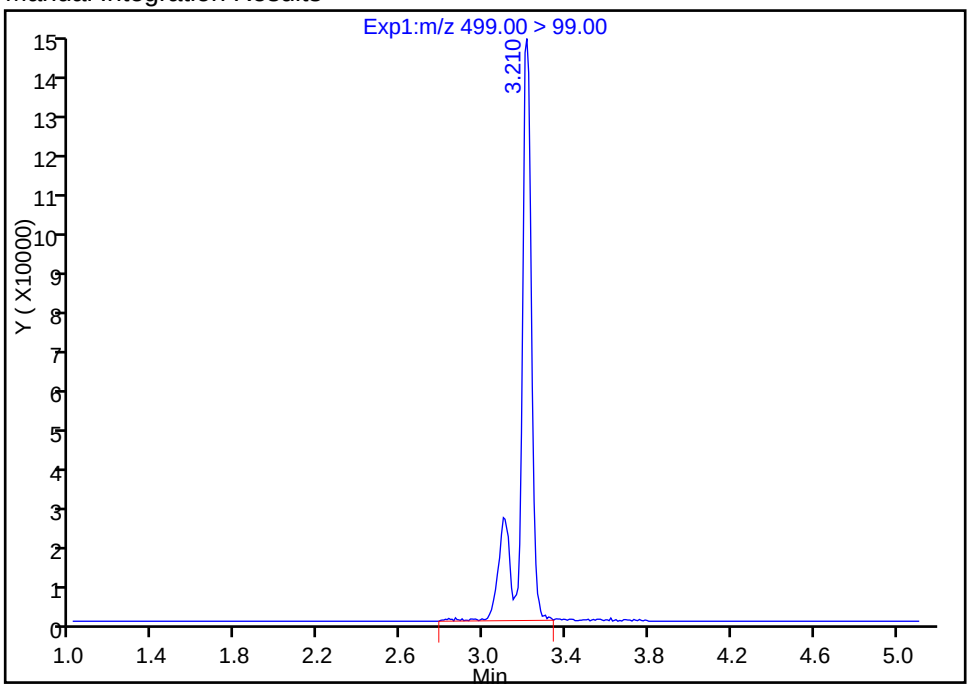
Processing Integration Results

RT: 3.21
Area: 560991
Amount: 10.833124
Amount Units: ng/ml



Manual Integration Results

RT: 3.21
Area: 547513
Amount: 10.833124
Amount Units: ng/ml



Reviewer: chandrasenas, 06-Dec-2016 15:48:01

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-17-GW-31-35 Lab Sample ID: 320-23718-2

Matrix: Water Lab File ID: 07DEC2016A_026.d

Analysis Method: 537 (Modified) Date Collected: 11/17/2016 14:35

Extraction Method: 3535 Date Extracted: 11/22/2016 11:44

Sample wt/vol: 250.9(mL) Date Analyzed: 12/07/2016 15:26

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.: 141054 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.42*	*E*	*0.0025*	0.0020	*0.00075*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.26	M	0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.063		0.0025	0.0020	0.00091

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	70		25-150
STL00991	13C4 PFOS	110		25-150
STL00994	18O2 PFHxS	71		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_026.d
Lims ID: 320-23718-A-2-A
Client ID: DPT-16-17-GW-31-35
Sample Type: Client
Inject. Date: 07-Dec-2016 15:26:01 ALS Bottle#: 15 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23718-a-2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:07:45 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:07:45

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	1.848	1.858	-0.010	1.000	11126796	31.5				
298.90 > 99.00	1.848	1.858	-0.010	1.000	4949108		2.25(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.455	2.470	-0.015		10453860	33.5		70.8	450196	
15 Perfluorooctanoic acid										E
413.00 > 369.00	2.812	2.809	0.003	1.000	34436144	210.7			1278163	E
413.00 > 169.00	2.709	2.809	-0.100	0.963	25018725		1.38(0.90-1.10)		133178	
D 14 13C4 PFOA										
417.00 > 372.00	2.804	2.809	-0.005		7623196	34.8		69.5	278693	
D 17 13C4 PFOS										
503.00 > 80.00	3.171	3.185	-0.014		12934269	52.6		110	398662	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.171	3.185	-0.014	1.000	37900356	129.1			419863	M
499.00 > 99.00	3.171	3.185	-0.014	1.000	7391208		5.13(0.90-1.10)		292461	M

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

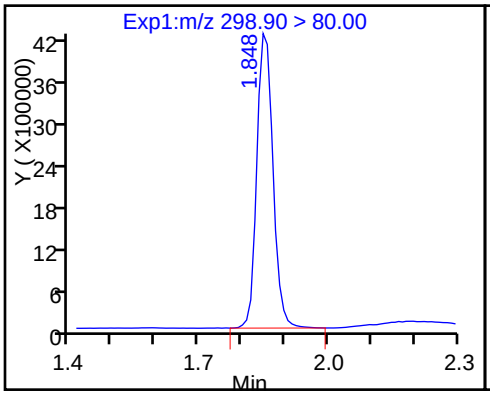
Report Date: 07-Dec-2016 17:07:45 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

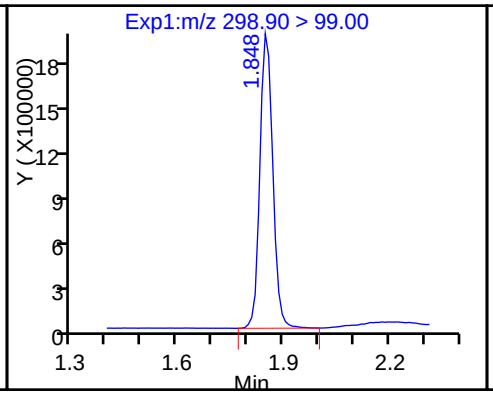
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_026.d

Injection Date:	07-Dec-2016 15:26:01	Instrument ID:	A8_N
Lims ID:	320-23718-A-2-A	Lab Sample ID:	320-23718-2
Client ID:	DPT-16-17-GW-31-35		
Operator ID:	A8-PC\A8	ALS Bottle#:	15 Worklist Smp#: 28
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL

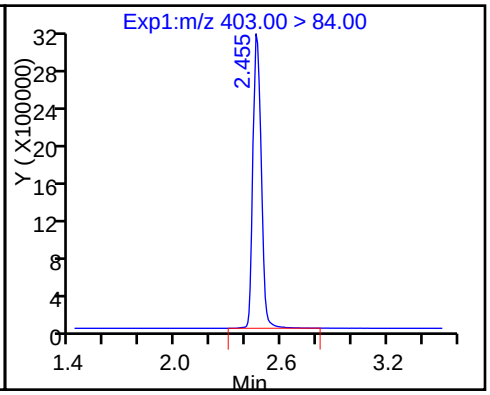
5 Perfluorobutanesulfonic acid



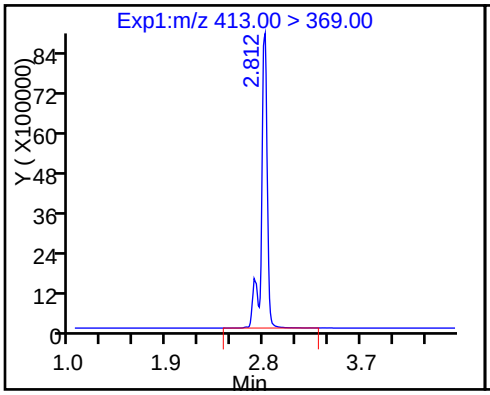
5 Perfluorobutanesulfonic acid



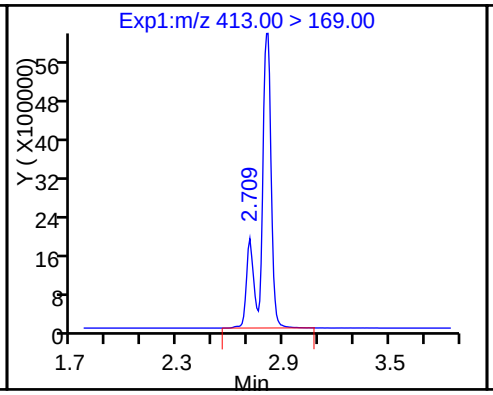
D 10 18O2 PFHxS



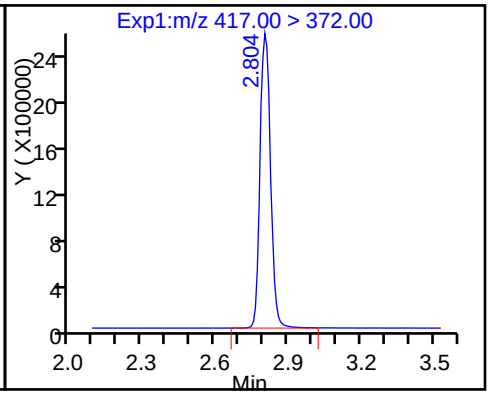
15 Perfluorooctanoic acid



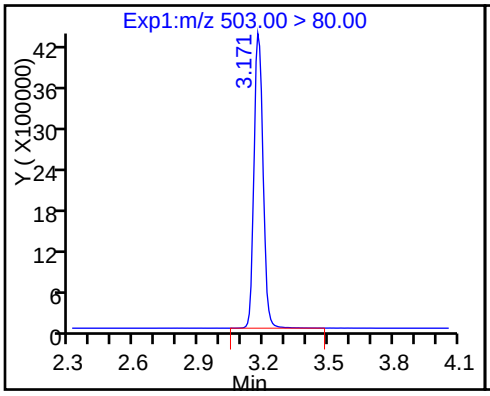
15 Perfluorooctanoic acid



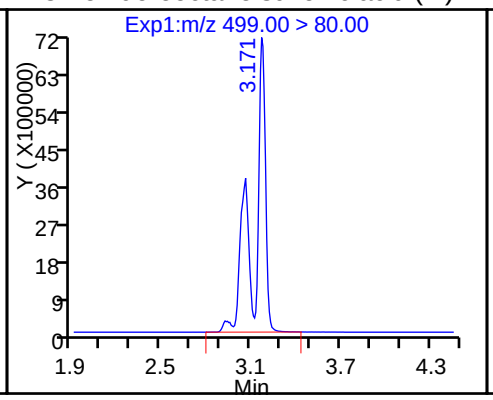
D 14 13C4 PFOA



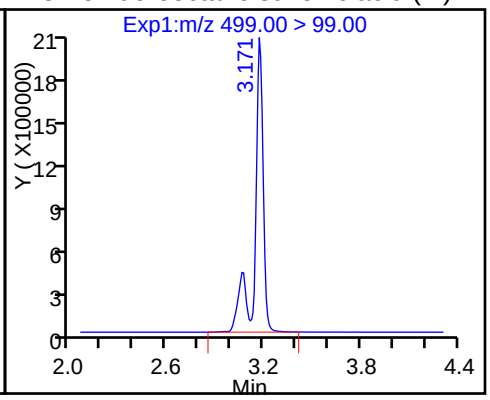
D 17 13C4 PFOS



18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

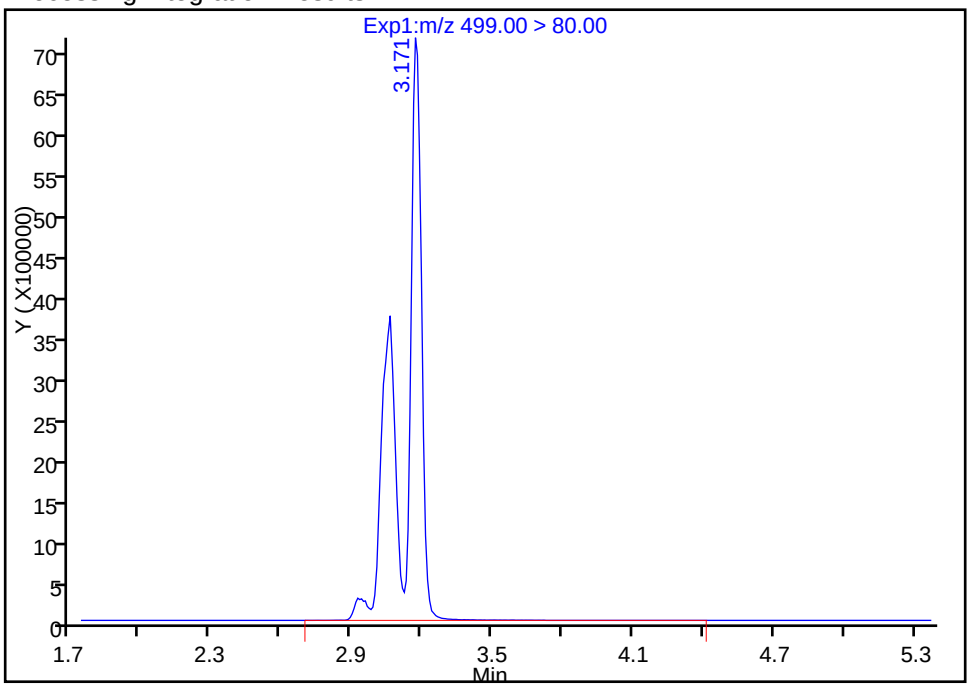
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_026.d				
Injection Date:	07-Dec-2016 15:26:01	Instrument ID:	A8_N		
Lims ID:	320-23718-A-2-A	Lab Sample ID:	320-23718-2		
Client ID:	DPT-16-17-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	15	Worklist Smp#:	28
Injection Vol:	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: 1

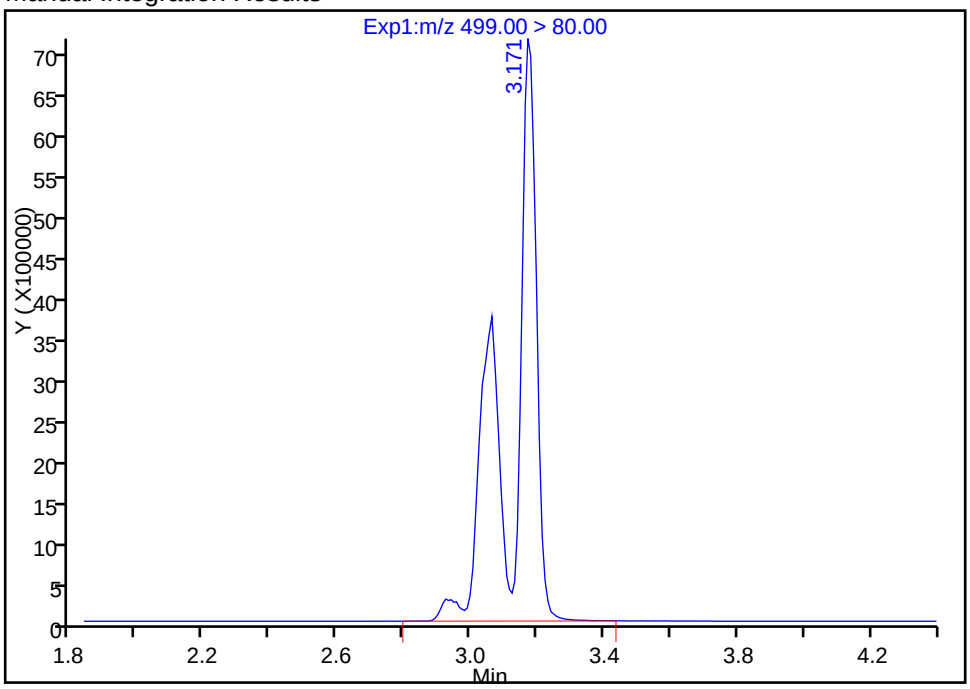
Processing Integration Results

RT: 3.17
Area: 38042323
Amount: 129.5489
Amount Units: ng/ml



Manual Integration Results

RT: 3.17
Area: 37900356
Amount: 129.0654
Amount Units: ng/ml



Reviewer: chandrasenas, 07-Dec-2016 17:07:45

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_026.d

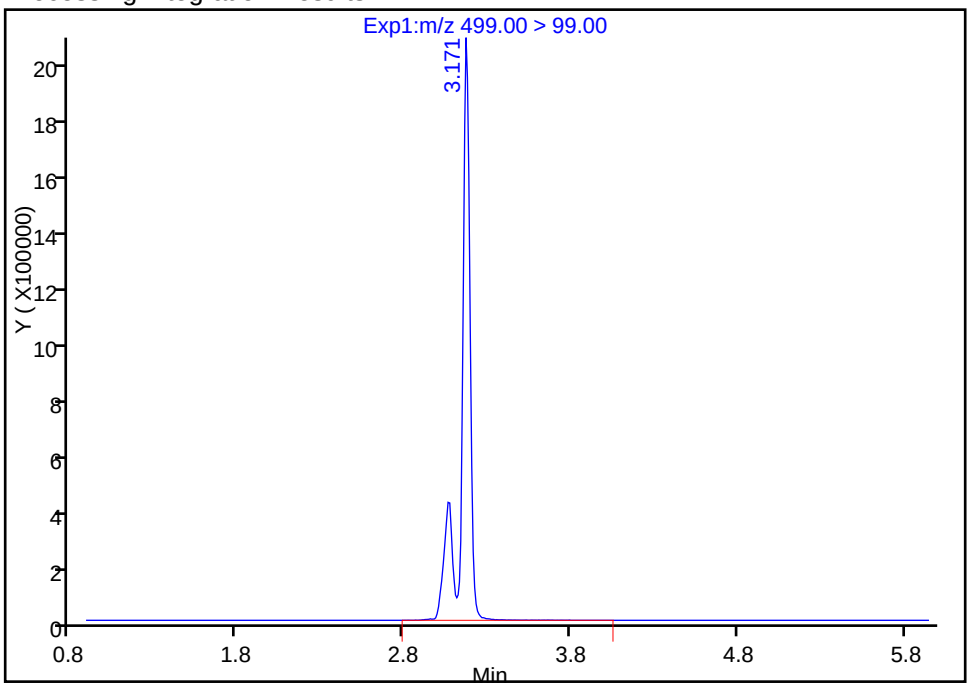
Injection Date:	07-Dec-2016 15:26:01	Instrument ID:	A8_N		
Lims ID:	320-23718-A-2-A	Lab Sample ID:	320-23718-2		
Client ID:	DPT-16-17-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	15	Worklist Smp#:	28
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

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

Signal: 2

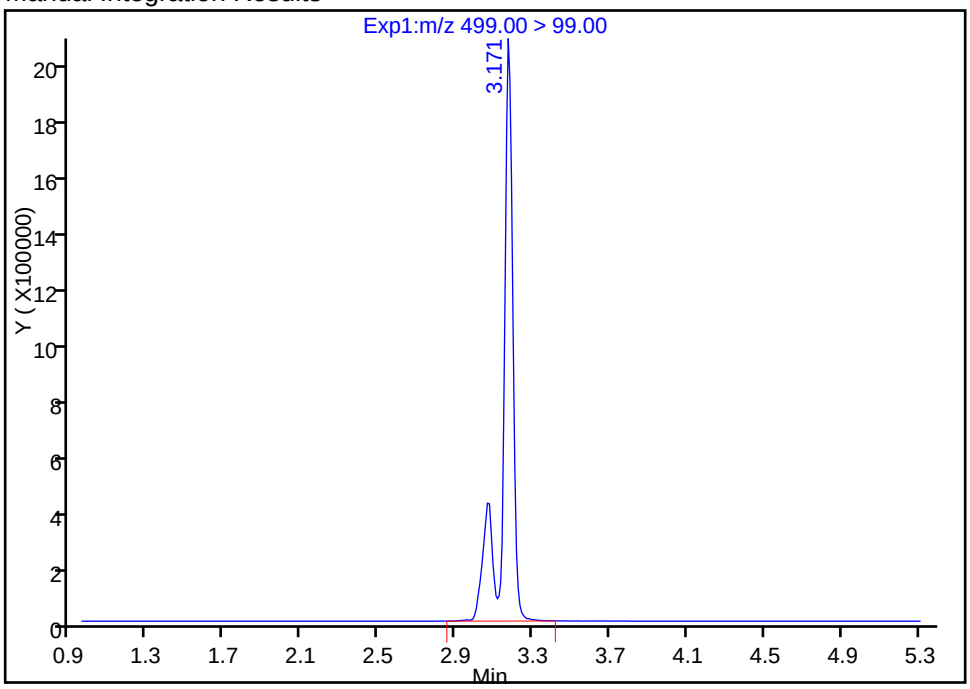
Processing Integration Results

RT: 3.17
Area: 7419570
Amount: 129.5489
Amount Units: ng/ml



Manual Integration Results

RT: 3.17
Area: 7391208
Amount: 129.0654
Amount Units: ng/ml



Reviewer: chandrasenas, 07-Dec-2016 17:07:45

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-17-GW-31-35 DL Lab Sample ID: 320-23718-2 DL

Matrix: Water Lab File ID: 03DEC2016C_006.d

Analysis Method: 537 (Modified) Date Collected: 11/17/2016 14:35

Extraction Method: 3535 Date Extracted: 11/22/2016 11:44

Sample wt/vol: 250.9(mL) Date Analyzed: 12/03/2016 19:18

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.: 140675 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.45	D	0.025	0.020	0.0075
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.26*	*D*	*0.040*	0.030	*0.013*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.037*	*D*	*0.025*	0.020	*0.0091*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	99		25-150
STL00991	13C4 PFOS	114		25-150
STL00994	18O2 PFHxS	117		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_006.d
Lims ID: 320-23718-A-2-A
Client ID: DPT-16-17-GW-31-35
Sample Type: Client
Inject. Date: 03-Dec-2016 19:18:44 ALS Bottle#: 11 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23718-a-2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 06-Dec-2016 16:26:44 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 06-Dec-2016 15:48:34

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	1.877	1.877	0.0	1.000	1075026	1.84				
298.90 > 99.00	1.877	1.877	0.0	1.000	425466		2.53(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.498	2.481	0.017		1731844	5.54		11.7	160064	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.845	2.836	0.009	1.000	5213114	22.5			70768	
413.00 > 169.00	2.845	2.836	0.009	1.000	3424607		1.52(0.90-1.10)		141460	
D 14 13C4 PFOA										
417.00 > 372.00	2.845	2.836	0.009		1080638	4.93		9.9	198813	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.217	3.215	0.002	1.000	3884730	12.8			291987	
499.00 > 99.00	3.226	3.215	0.011	1.003	766460		5.07(0.90-1.10)		106991	
D 17 13C4 PFOS										
503.00 > 80.00	3.217	3.215	0.002		1335066	5.43		11.4	158742	

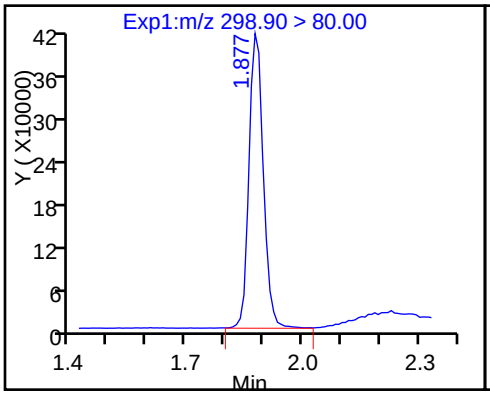
Report Date: 07-Dec-2016 17:28:18 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

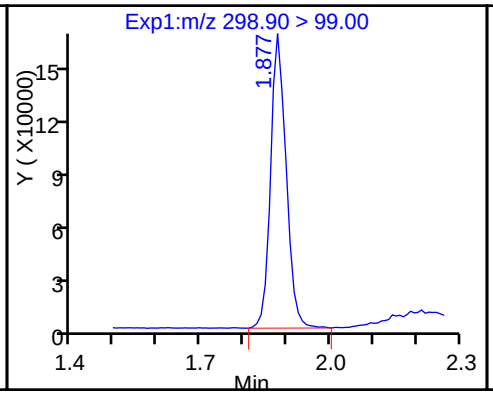
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_006.d

Injection Date:	03-Dec-2016 19:18:44	Instrument ID:	A8_N
Lims ID:	320-23718-A-2-A	Lab Sample ID:	320-23718-2
Client ID:	DPT-16-17-GW-31-35		
Operator ID:	A8-PC\A8	ALS Bottle#:	11 Worklist Smp#: 6
Injection Vol:	2.0 ul	Dil. Factor:	10.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL

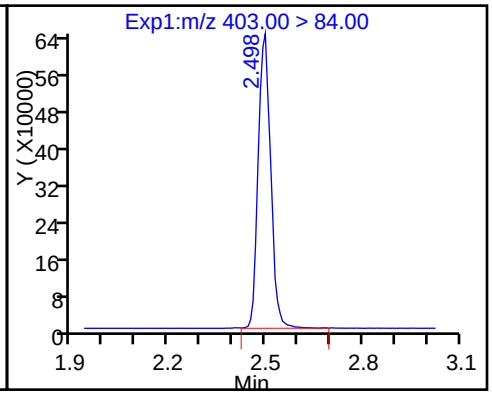
5 Perfluorobutanesulfonic acid



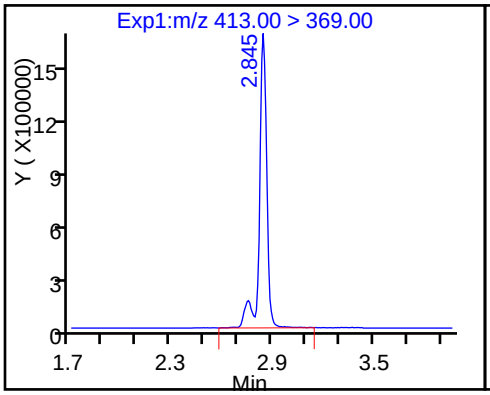
5 Perfluorobutanesulfonic acid



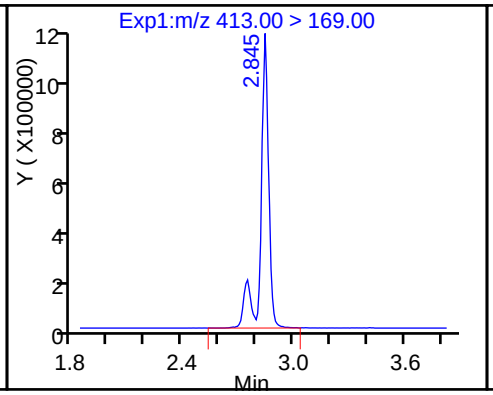
D 10 18O2 PFHxS



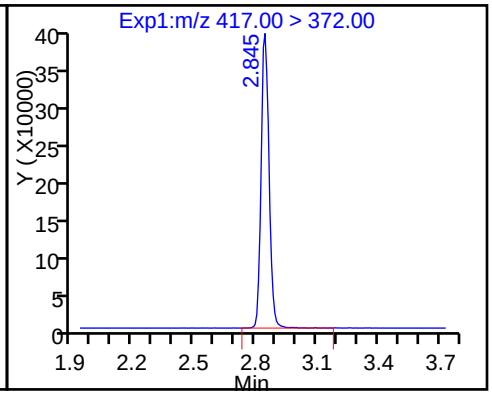
15 Perfluorooctanoic acid



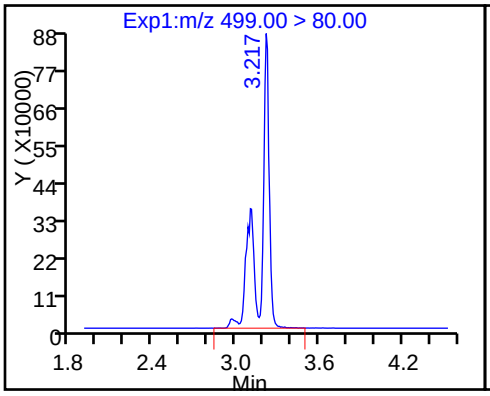
15 Perfluorooctanoic acid



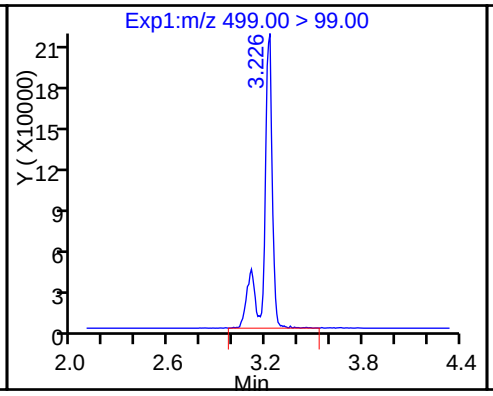
D 14 13C4 PFOA



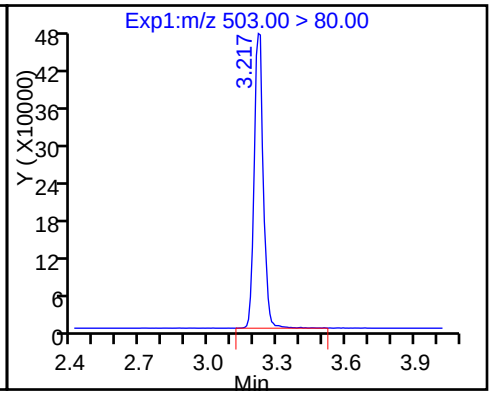
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-29-SO-14-15 Lab Sample ID: 320-23718-3

Matrix: Solid Lab File ID: 02DEC2016C_005.d

Analysis Method: 537 (Modified) Date Collected: 11/18/2016 13:16

Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03

Sample wt/vol: 5.00(g) Date Analyzed: 12/02/2016 15:29

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

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

% Moisture: 18.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 140429 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.49	J	0.61	0.37	0.13
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5		0.61	0.37	0.15
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.37	U	0.49	0.37	0.13

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	98		25-150
STL00991	13C4 PFOS	77		25-150
STL00994	18O2 PFHxS	91		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_005.d
Lims ID: 320-23718-A-3-A
Client ID: DPT-16-29-SO-14-15
Sample Type: Client
Inject. Date: 02-Dec-2016 15:29:37 ALS Bottle#: 5 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23718-a-3-a
Misc. Info.: Plate: 1 Rack: 4
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 18:25:25 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 18:19:47

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	1.582	1.574	0.008	1.000	35229	0.1282			248	
D 2 13C4 PFBA										
217.00 > 172.00	1.582	1.574	0.008		15519905	45.6		91.2	1740841	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.868	0.0	1.000	61370	0.2331			422	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.868	0.0		12647855	46.8		93.6	1047231	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.906	1.907	-0.001	1.000	54515	0.1226				
298.90 > 99.00	1.897	1.907	-0.010	0.995	23939		2.28(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.179	2.173	0.006	1.000	192722	0.9275			2925	
D 6 13C2 PFHxA										
315.00 > 270.00	2.170	2.173	-0.003		10868873	44.1		88.2	2162306	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.521	2.519	0.002	1.000	26433	0.1244			309	
D 11 13C4-PFHpA										
367.00 > 322.00	2.521	2.519	0.002		10273845	48.8		97.6	676791	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.544	2.534	0.010	1.000	1503906	5.15				
D 10 18O2 PFHxS										
403.00 > 84.00	2.536	2.534	0.002		13036898	43.1		91.1	738623	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.862	2.870	-0.008	1.000	4409	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.862	2.870	-0.008		956	0.006864		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.894	2.886	0.008		10750876	49.0		98.0	416624	

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	434335	1.98			5663	
413.00 > 169.00	2.902	2.894	0.008	1.003	282042		1.54(0.90-1.10)		13892	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.894	2.902	-0.008	1.000	18738	0.0846				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.275	3.267	0.008	1.000	1237818	6.01			175204	
499.00 > 99.00	3.275	3.267	0.008	1.000	284513		4.35(0.90-1.10)		17933	
D 17 13C4 PFOS										
503.00 > 80.00	3.268	3.267	0.001		9052422	37.0		77.4	356877	
20 Perfluorononanoic acid										
463.00 > 419.00	3.283	3.275	0.008	1.000	6018	0.0378			101	
D 19 13C5 PFNA										
468.00 > 423.00	3.275	3.275	0.0		8032698	45.1		90.2	425102	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.599	3.589	0.009	1.000	26462	0.2450			1148	
D 21 13C8 FOSA										
506.00 > 78.00	3.590	3.589	0.001		5774290	13.9		27.9	292109	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.615	3.624	-0.009	0.998	6853	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.624	3.624	0.0		775	0.005805		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.632	3.631	0.001		6523522	39.3		78.6	212900	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.607	3.631	-0.024	1.000	2586	0.0204			27.3	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.806	3.790	0.016		398	0.004975		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.777	3.799	-0.022	0.992	948	NR				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.972	3.955	0.017		4125	0.0463		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.962	3.967	-0.005		4362388	34.7		69.4	294337	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.044	4.079	-0.035		260	0.002445		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.260	4.259	0.001		2960538	25.3		50.6	96958	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.260	4.261	-0.001		466	0.004573		0.0		
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.726	4.772	-0.046	1.000	19041	0.1664			7.8	
713.00 > 169.00	4.759	4.772	-0.013	1.007	1235		15.42(0.00-0.00)		606	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.767	4.772	-0.005		3235289	13.4		26.7	237216	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.189	5.184	0.005		898257	6.89		13.8	58379	

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	5.189	5.194	-0.005	1.000	15345	-0.5602			86.4	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.775	5.562	0.213	1.000	430	0.009236			6.5	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

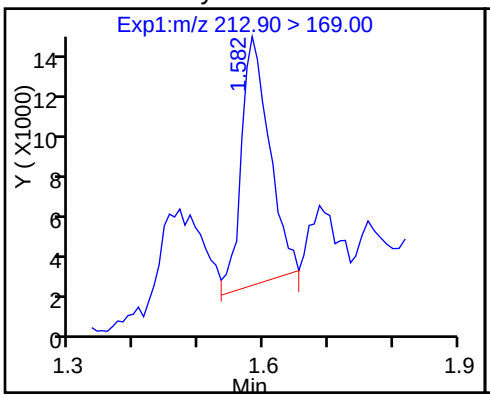
Report Date: 04-Dec-2016 18:25:33 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

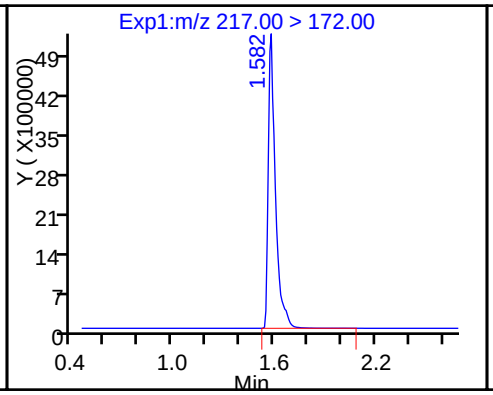
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_005.d

Injection Date:	02-Dec-2016 15:29:37	Instrument ID:	A8_N
Lims ID:	320-23718-A-3-A	Lab Sample ID:	320-23718-3
Client ID:	DPT-16-29-SO-14-15		
Operator ID:	A8-PC\A8	ALS Bottle#:	5 Worklist Smp#: 9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL

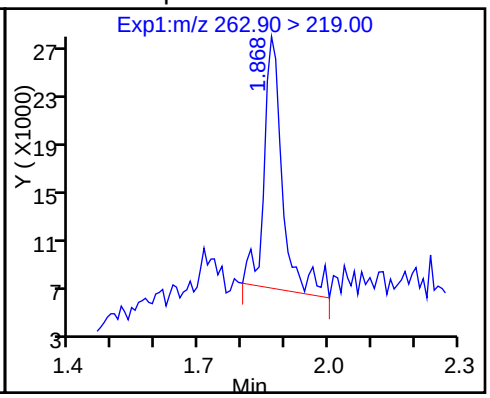
1 Perfluorobutyric acid



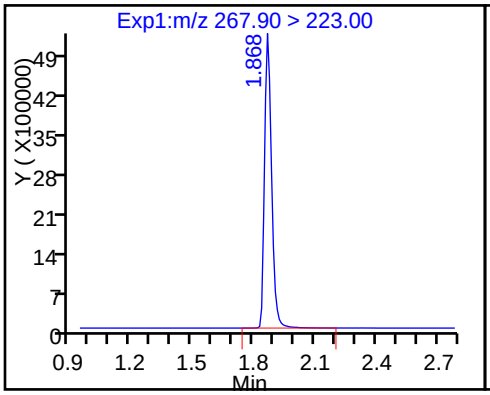
D 2 13C4 PFBA



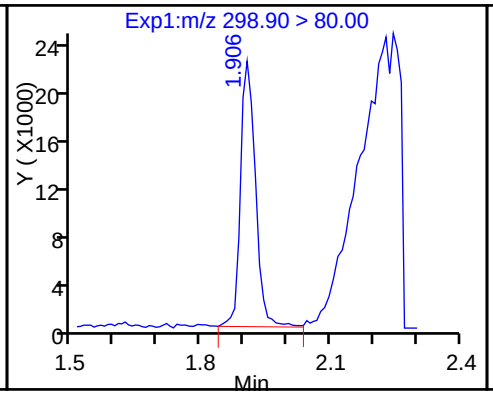
3 Perfluoropentanoic acid



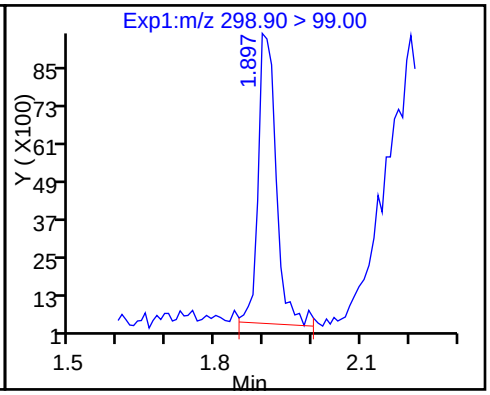
D 4 13C5-PFPeA



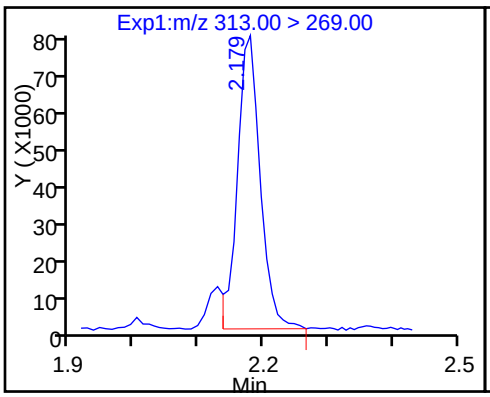
5 Perfluorobutanesulfonic acid



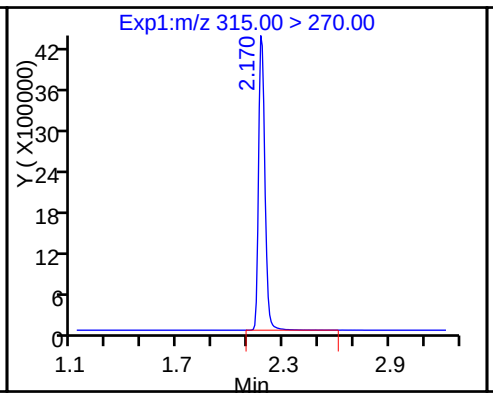
5 Perfluorobutanesulfonic acid



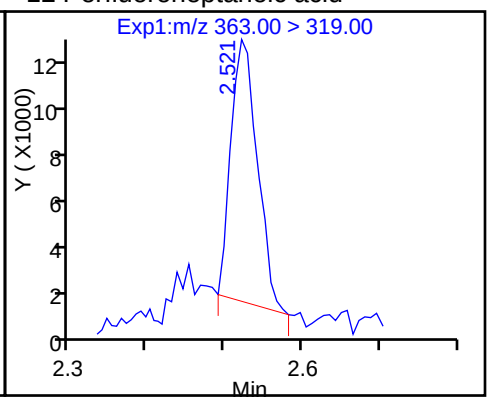
7 Perfluorohexanoic acid



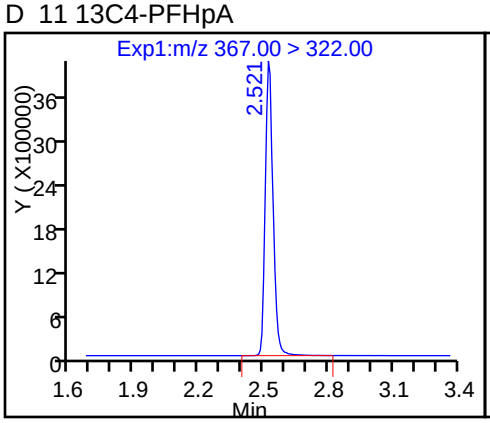
D 6 13C2 PFHxA



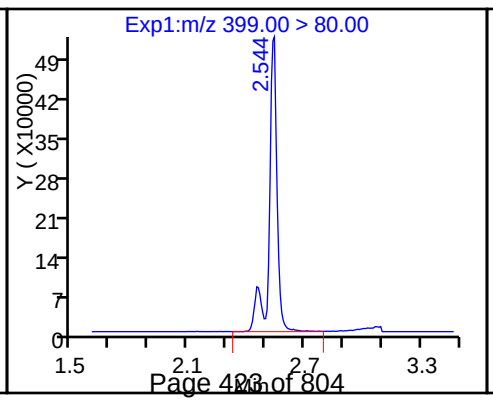
12 Perfluoroheptanoic acid



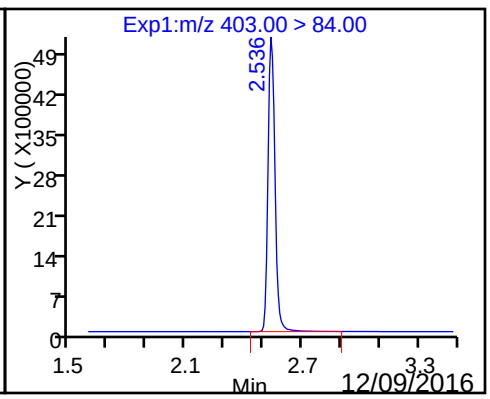
D 11 13C4-PFHpA



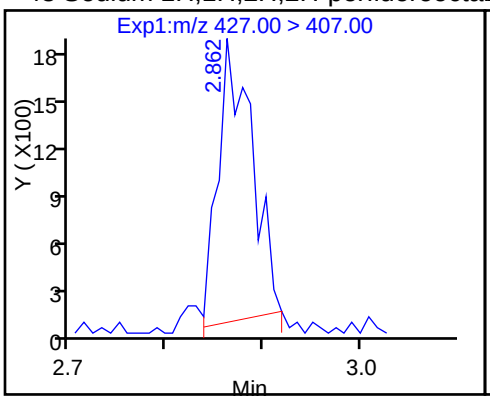
9 Perfluorohexanesulfonic acid



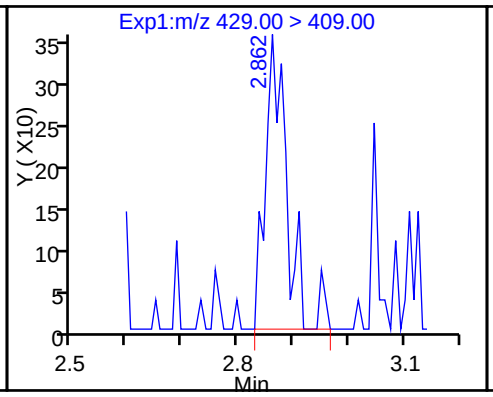
D 10 18O2 PFHxS



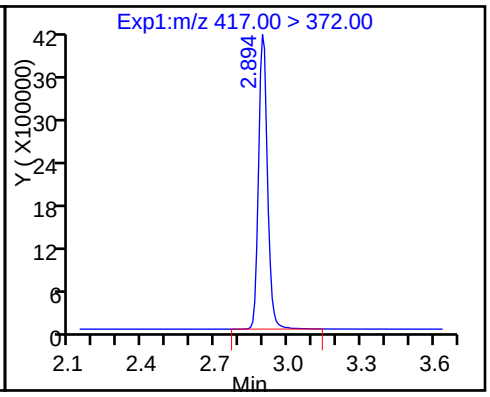
48 Sodium 1H,1H,2H,2H-perfluorooctane



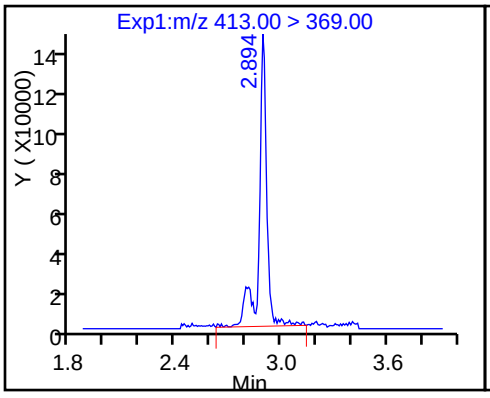
D 47 M2-6:2FTS



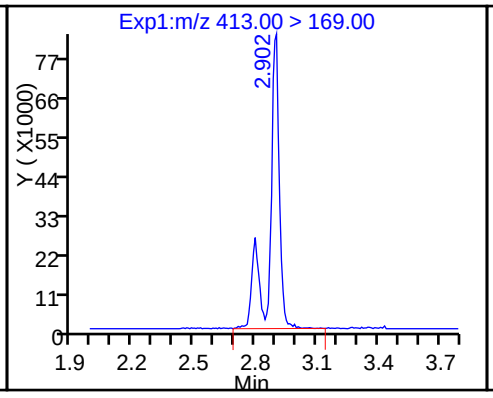
D 14 13C4 PFOA



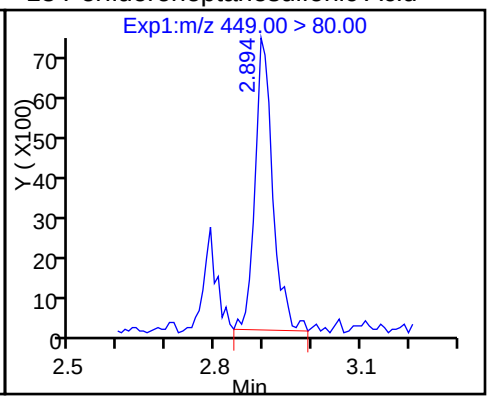
15 Perfluorooctanoic acid



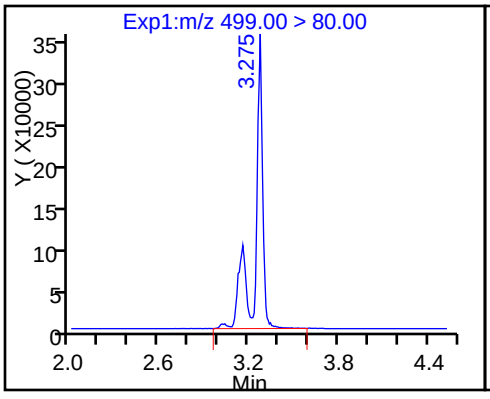
15 Perfluorooctanoic acid



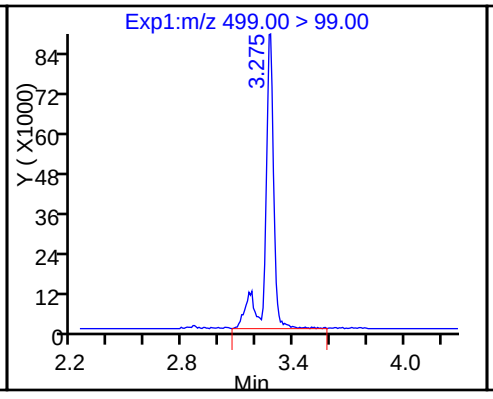
13 Perfluoroheptanesulfonic Acid



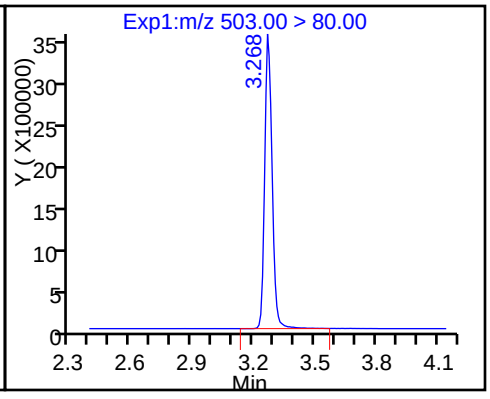
18 Perfluorooctane sulfonic acid



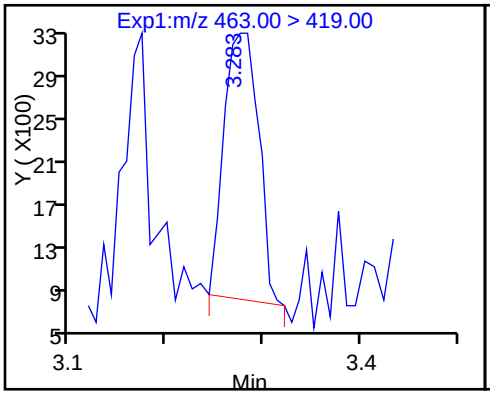
18 Perfluorooctane sulfonic acid



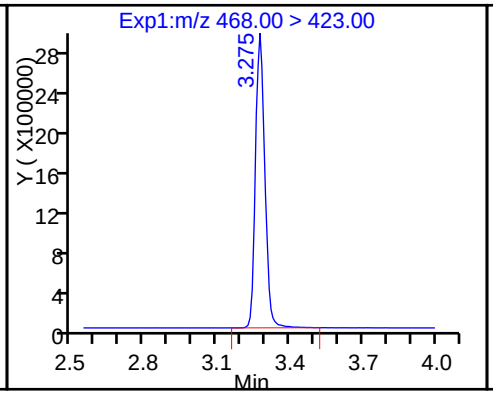
D 17 13C4 PFOS



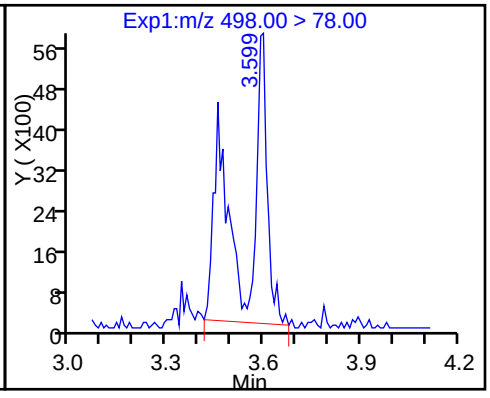
20 Perfluorononanoic acid



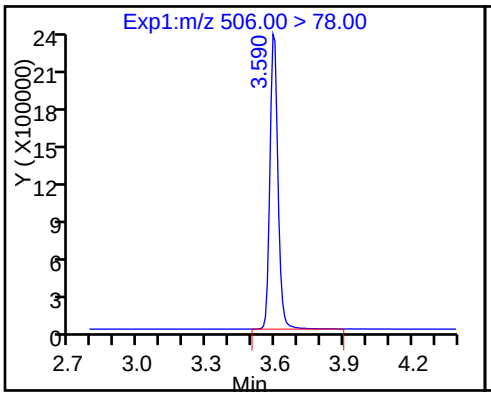
D 19 13C5 PFNA



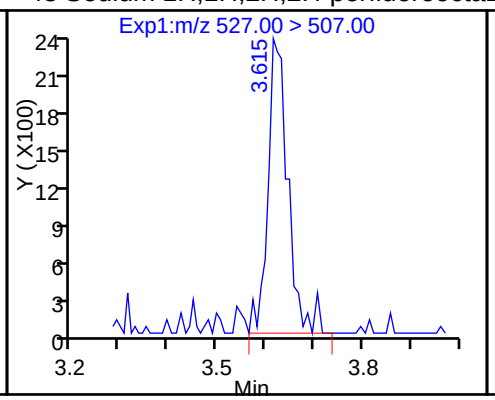
22 Perfluorooctane Sulfonamide



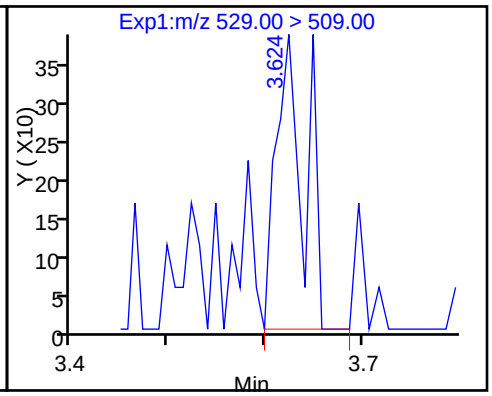
D 21 13C8 FOSA



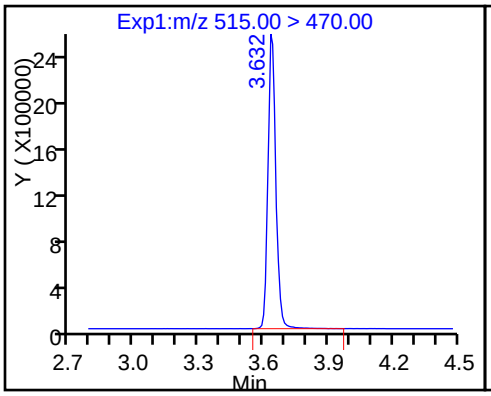
43 Sodium 1H,1H,2H,2H-perfluorooctane



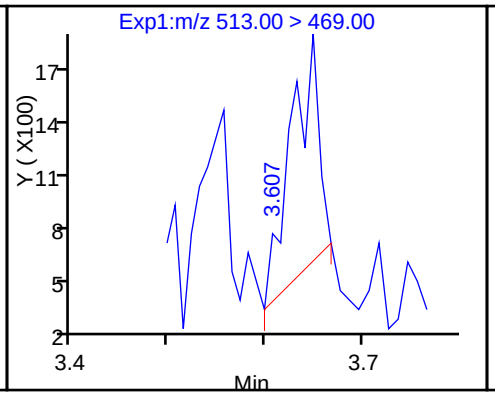
D 42 M2-8:2FTS



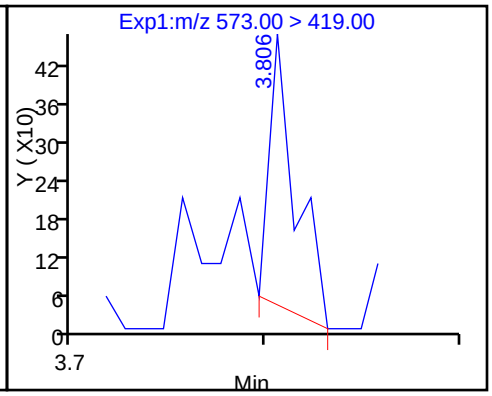
D 23 13C2 PFDA



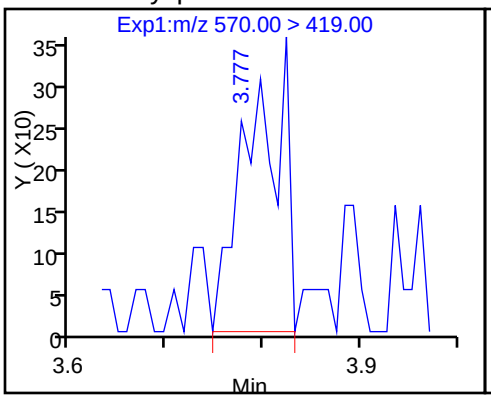
24 Perfluorodecanoic acid



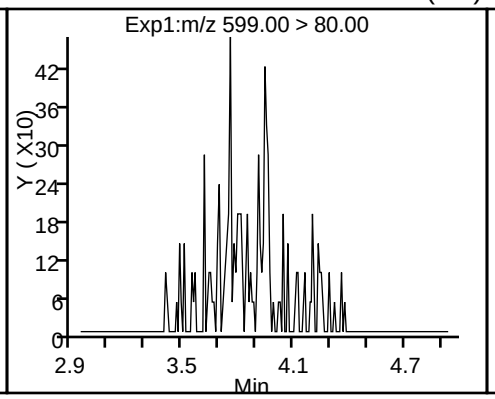
D 45 d3-NMeFOSAA



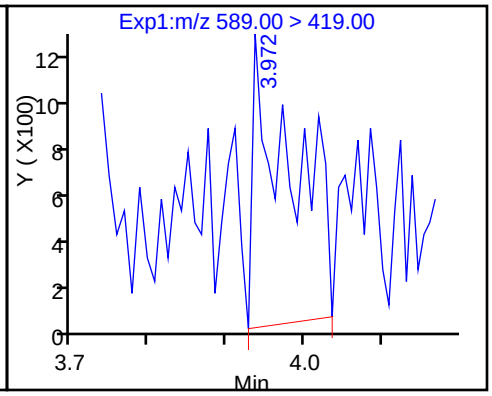
44 N-methyl perfluorooctane sulfonami



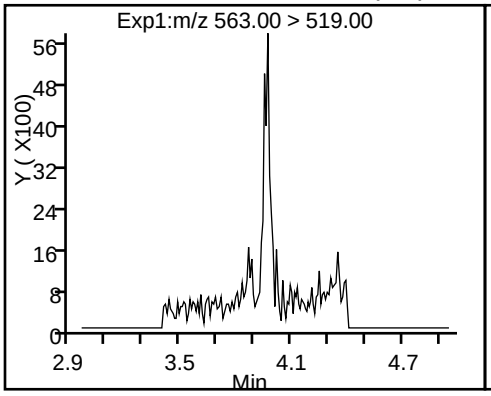
26 Perfluorodecane Sulfonic acid (ND)



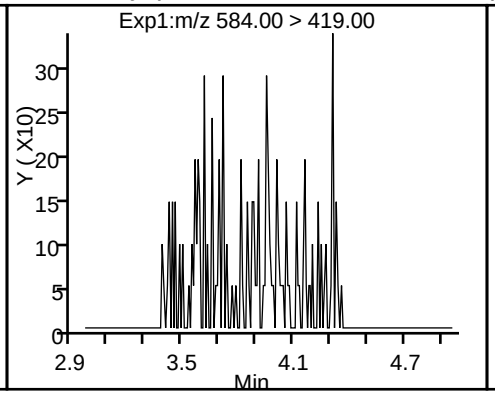
D 46 d5-NEtFOSAA



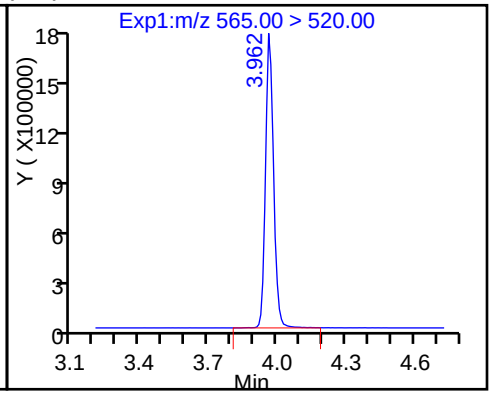
28 Perfluoroundecanoic acid (ND)



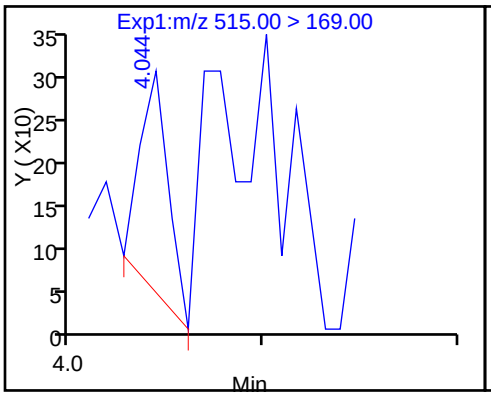
49 N-ethyl perfluorooctane sulfonamid (ND)



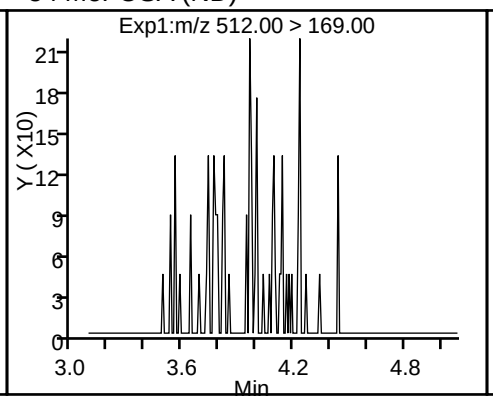
D 27 13C2 PFUnA



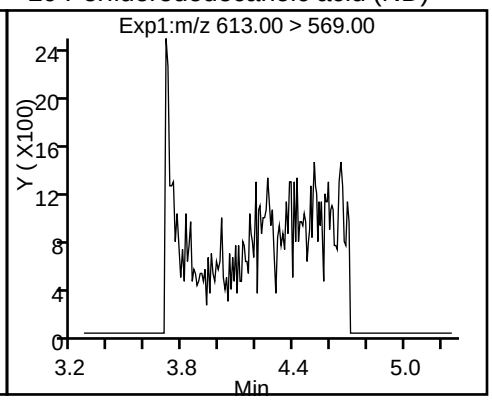
D 52 d-N-MeFOSA-M



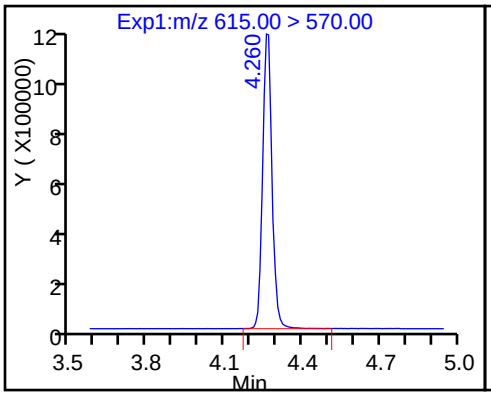
54 MeFOSA (ND)



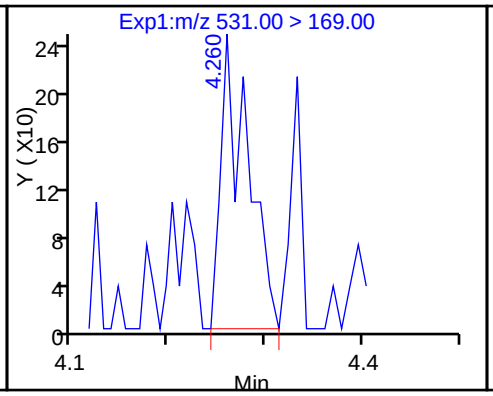
29 Perfluorododecanoic acid (ND)



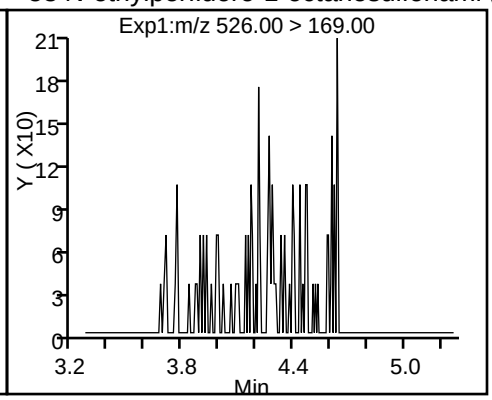
D 30 13C2 PFDoA



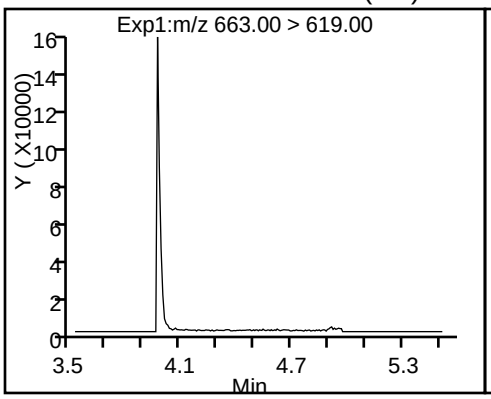
D 51 d-N-EtFOSA-M



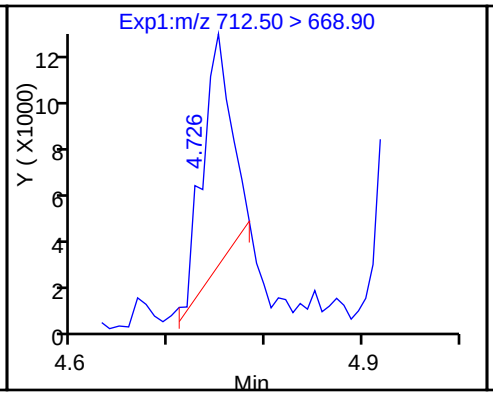
53 N-ethylperfluoro-1-octanesulfonami (ND)



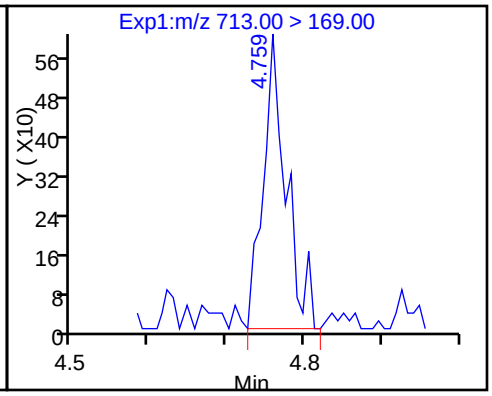
31 Perfluorotridecanoic acid (ND)



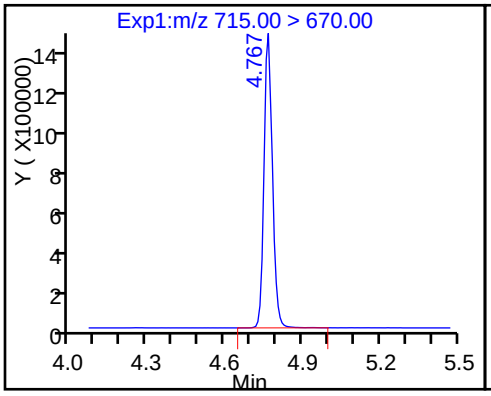
33 Perfluorotetradecanoic acid



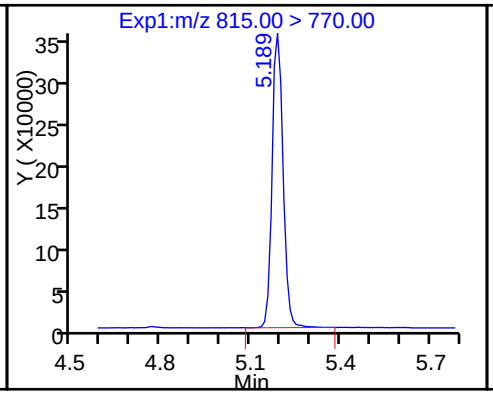
33 Perfluorotetradecanoic acid



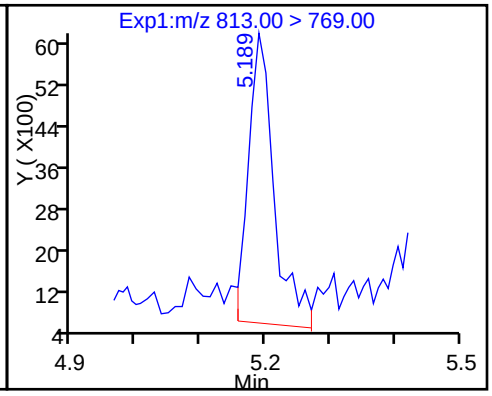
D 32 13C2-PFTeDA



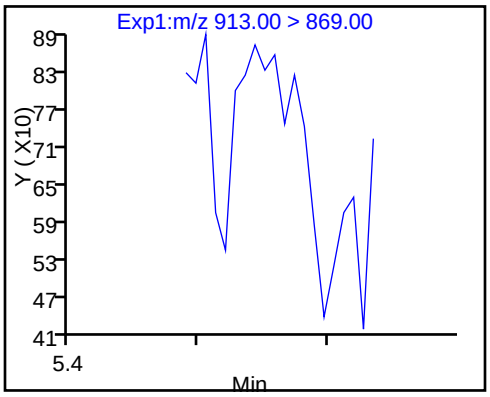
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-29-GW-31-35 Lab Sample ID: 320-23718-4

Matrix: Water Lab File ID: 07DEC2016A_027.d

Analysis Method: 537 (Modified) Date Collected: 11/18/2016 15:05

Extraction Method: 3535 Date Extracted: 11/22/2016 11:44

Sample wt/vol: 249.2(mL) Date Analyzed: 12/07/2016 15:33

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.: 141054 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.15		0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.14		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	64		25-150
STL00991	13C4 PFOS	107		25-150
STL00994	18O2 PFHxS	83		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_027.d
Lims ID: 320-23718-A-4-A
Client ID: DPT-16-29-GW-31-35
Sample Type: Client
Inject. Date: 07-Dec-2016 15:33:31 ALS Bottle#: 16 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23718-a-4-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:07:45 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:08:51

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	1.848	1.858	-0.010	1.000	7003048	17.0				
298.90 > 99.00	1.848	1.858	-0.010	1.000	3150415		2.22(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.458	2.470	-0.012		12213356	39.1		82.7	486910	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.804	2.809	-0.005	1.000	11521125	76.4			218800	
413.00 > 169.00	2.772	2.809	-0.037	0.989	7673289		1.50(0.90-1.10)		6893	
D 14 13C4 PFOA										
417.00 > 372.00	2.804	2.809	-0.005		7031160	32.1		64.1	1287384	
D 17 13C4 PFOS										
503.00 > 80.00	3.171	3.185	-0.014		12628218	51.3		107	499083	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.171	3.185	-0.014	1.000	19460670	67.9			738304	
499.00 > 99.00	3.171	3.185	-0.014	1.000	4074676		4.78(0.90-1.10)		69786	

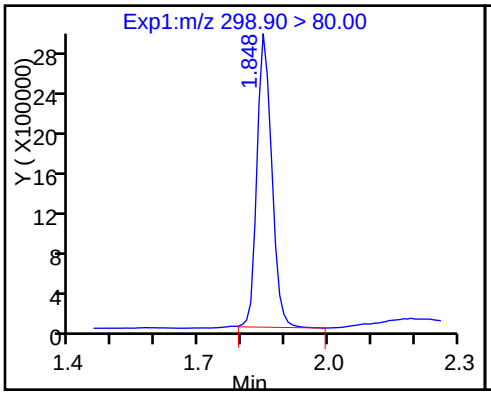
Report Date: 07-Dec-2016 17:08:51 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

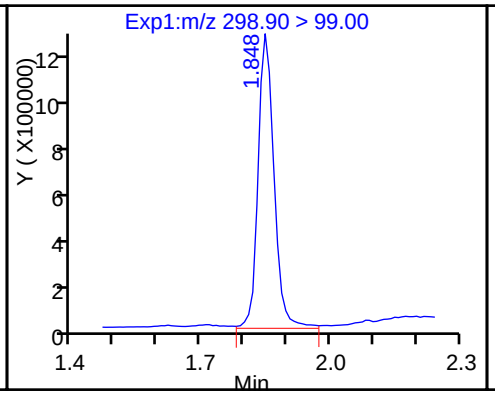
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_027.d

Injection Date:	07-Dec-2016 15:33:31	Instrument ID:	A8_N		
Lims ID:	320-23718-A-4-A	Lab Sample ID:	320-23718-4		
Client ID:	DPT-16-29-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	16	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

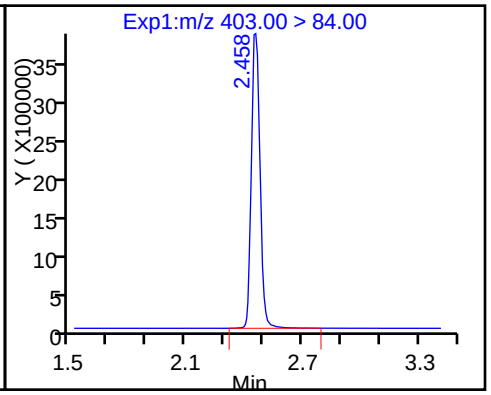
5 Perfluorobutanesulfonic acid



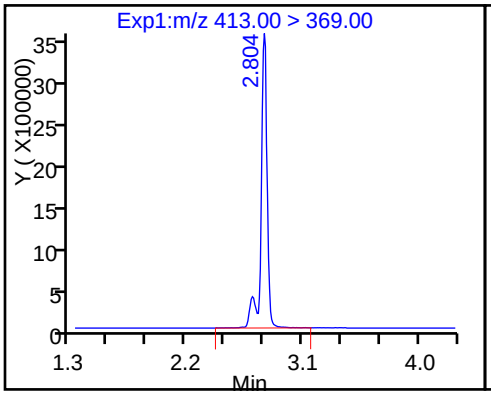
5 Perfluorobutanesulfonic acid



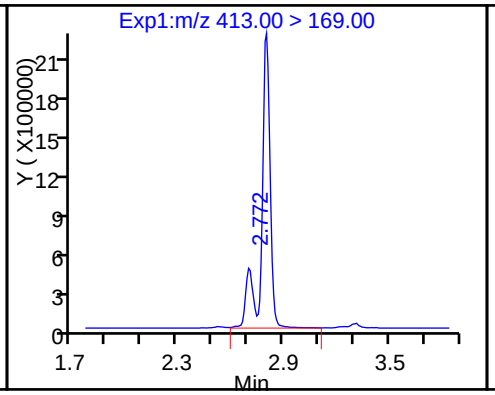
D 10 18O2 PFHxS



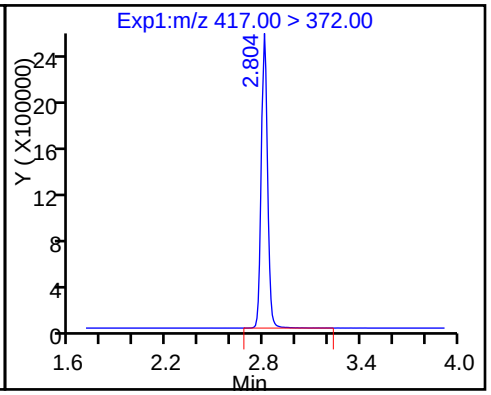
15 Perfluorooctanoic acid



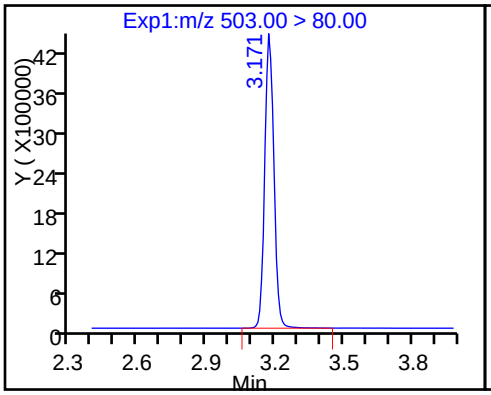
15 Perfluorooctanoic acid



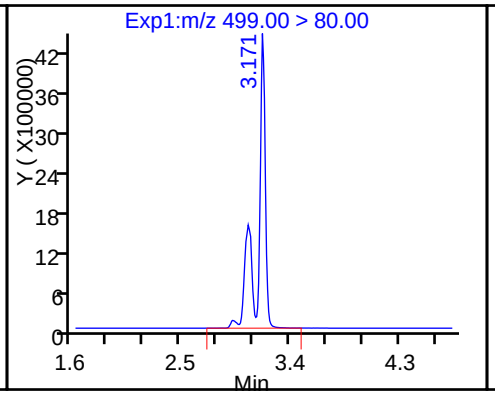
D 14 13C4 PFOA



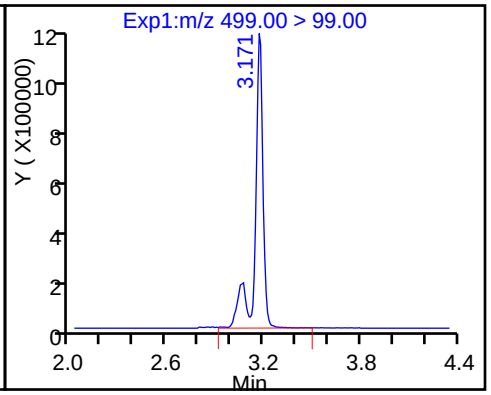
D 17 13C4 PFOS



18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-29-GW-16-20 | Lab Sample ID: 320-23718-5

Matrix: Water | Lab File ID: 07DEC2016A_028.d

Analysis Method: 537 (Modified) | Date Collected: 11/18/2016 15:20

Extraction Method: 3535 | Date Extracted: 11/22/2016 11:44

Sample wt/vol: 250.4(mL) | Date Analyzed: 12/07/2016 15:41

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.: 141054 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.0020	0.00075
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1.6*	*M E*	*0.0040*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	63		25-150
STL00991	13C4 PFOS	60		25-150
STL00994	18O2 PFHxS	62		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_028.d
Lims ID: 320-23718-A-5-A
Client ID: DPT-16-29-GW-16-20
Sample Type: Client
Inject. Date: 07-Dec-2016 15:41:00 ALS Bottle#: 17 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23718-a-5-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:10:50 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:09:33

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	1.848	1.858	-0.010	1.000	16563441	53.8				
298.90 > 99.00	1.848	1.858	-0.010	1.000	7217861		2.29(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.458	2.470	-0.012		9125828	29.2		61.8	904816	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.800	2.809	-0.009	1.000	19692778	133.8			447817	
413.00 > 169.00	2.703	2.809	-0.106	0.966	13938826		1.41(0.90-1.10)		94894	
D 14 13C4 PFOA										
417.00 > 372.00	2.800	2.809	-0.009		6867006	31.3		62.6	408937	
D 17 13C4 PFOS										
503.00 > 80.00	3.177	3.185	-0.008		7067962	28.7		60.1	112191	
18 Perfluorooctane sulfonic acid										EM
499.00 > 80.00	3.169	3.185	-0.016	1.000	128555536	801.1			736073	EM
499.00 > 99.00	3.169	3.185	-0.016	1.000	37007341		3.47(0.90-1.10)		769294	M

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

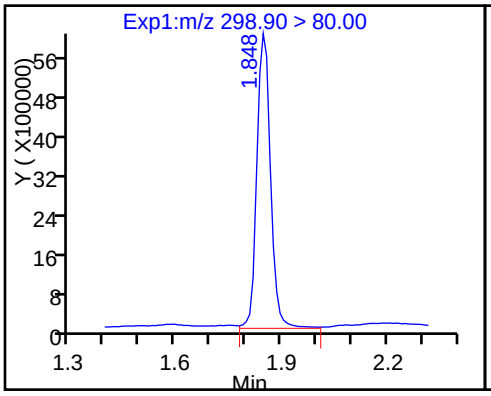
Report Date: 07-Dec-2016 17:11:10 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

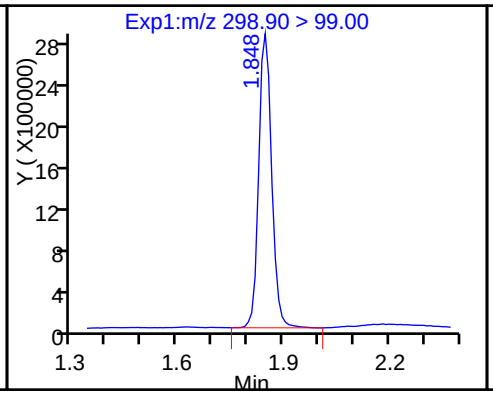
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_028.d

Injection Date:	07-Dec-2016 15:41:00	Instrument ID:	A8_N		
Lims ID:	320-23718-A-5-A	Lab Sample ID:	320-23718-5		
Client ID:	DPT-16-29-GW-16-20				
Operator ID:	A8-PC\A8	ALS Bottle#:	17	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

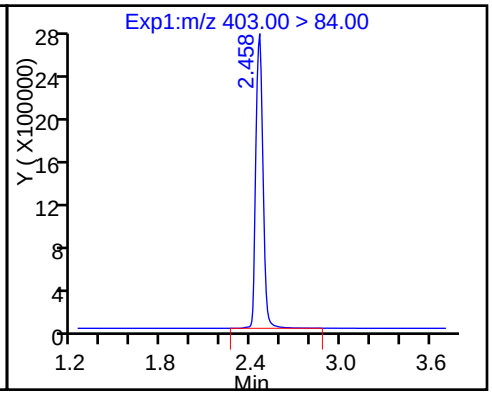
5 Perfluorobutanesulfonic acid



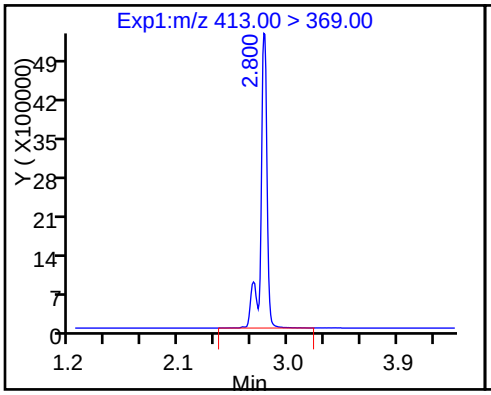
5 Perfluorobutanesulfonic acid



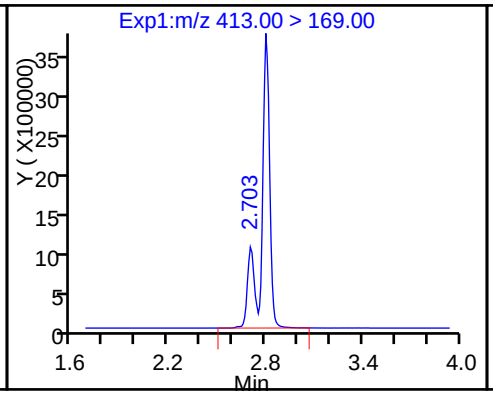
D 10 18O2 PFHxS



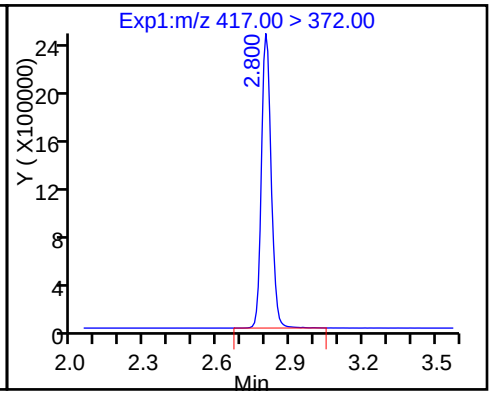
15 Perfluorooctanoic acid



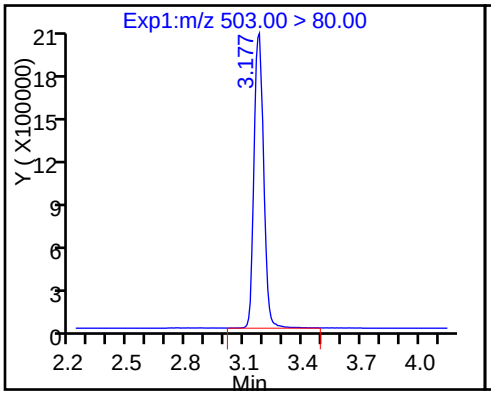
15 Perfluorooctanoic acid



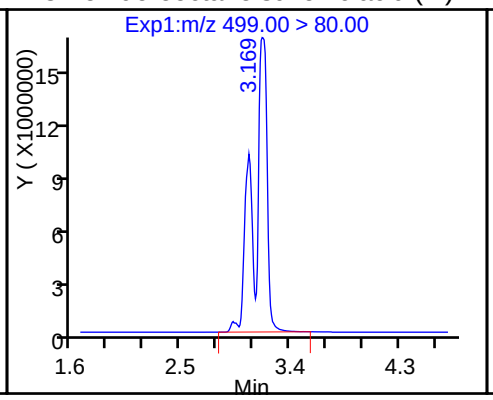
D 14 13C4 PFOA



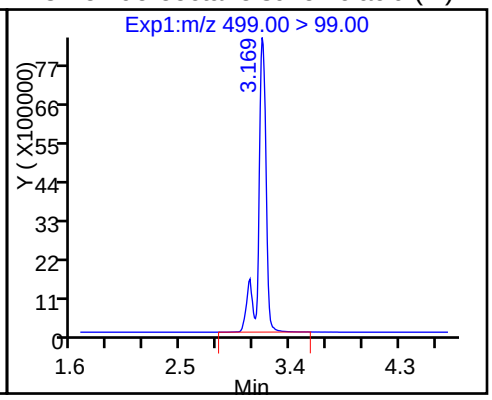
D 17 13C4 PFOS



18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

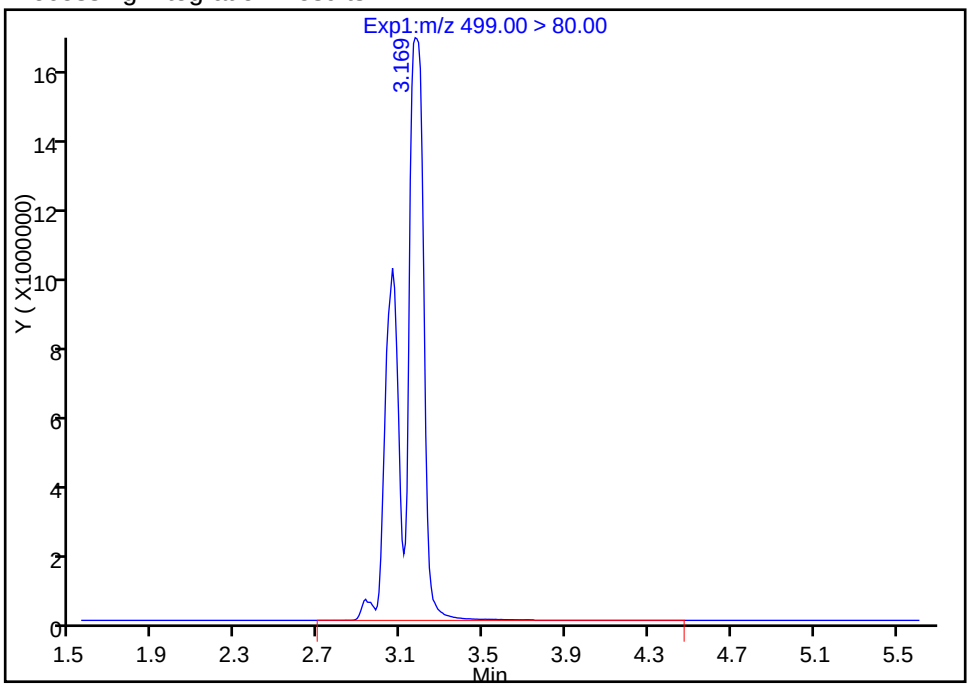
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_028.d				
Injection Date:	07-Dec-2016 15:41:00	Instrument ID:	A8_N		
Lims ID:	320-23718-A-5-A	Lab Sample ID:	320-23718-5		
Client ID:	DPT-16-29-GW-16-20				
Operator ID:	A8-PC\A8	ALS Bottle#:	17	Worklist Smp#:	30
Injection Vol:	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: 1

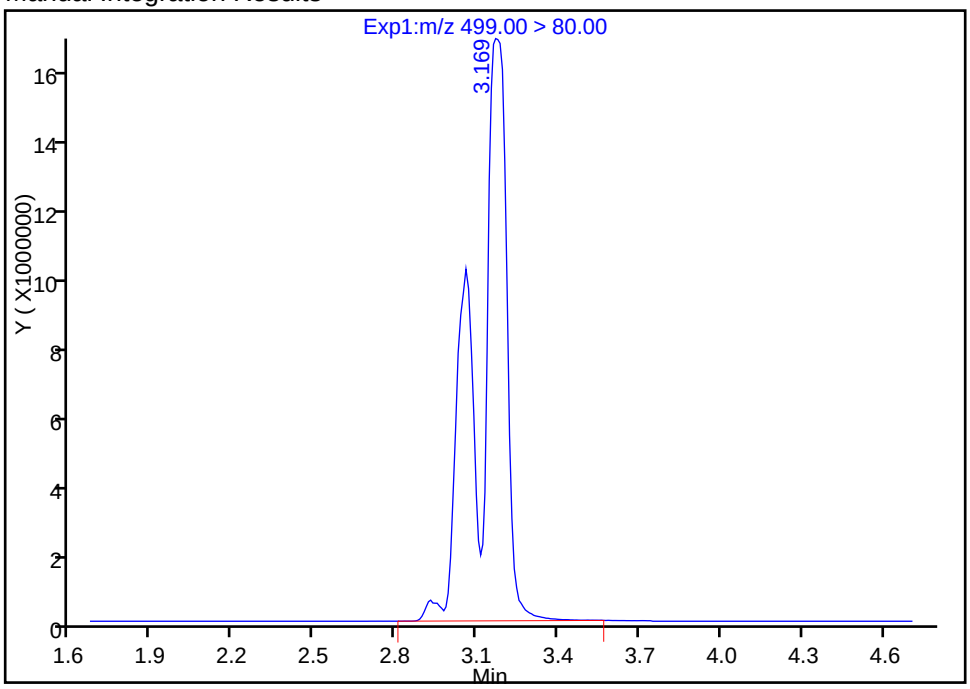
Processing Integration Results

RT: 3.17
Area: 129351098
Amount: 806.0916
Amount Units: ng/ml



Manual Integration Results

RT: 3.17
Area: 128555536
Amount: 801.1338
Amount Units: ng/ml



Reviewer: chandrasenas, 07-Dec-2016 17:09:33

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

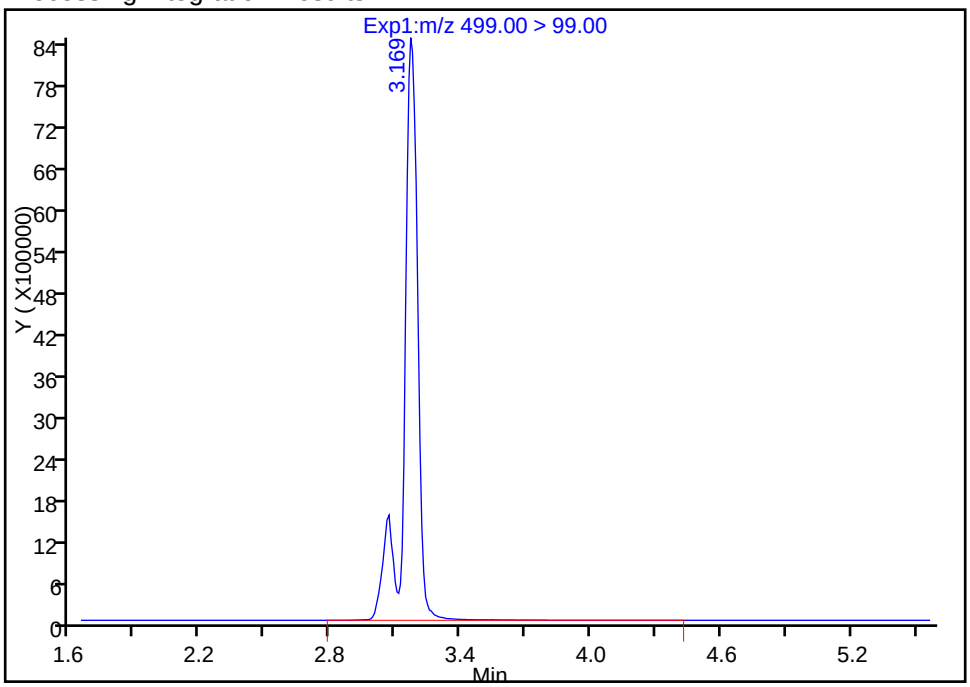
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_028.d				
Injection Date:	07-Dec-2016 15:41:00	Instrument ID:	A8_N		
Lims ID:	320-23718-A-5-A	Lab Sample ID:	320-23718-5		
Client ID:	DPT-16-29-GW-16-20				
Operator ID:	A8-PC\A8	ALS Bottle#:	17	Worklist Smp#:	30
Injection Vol:	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

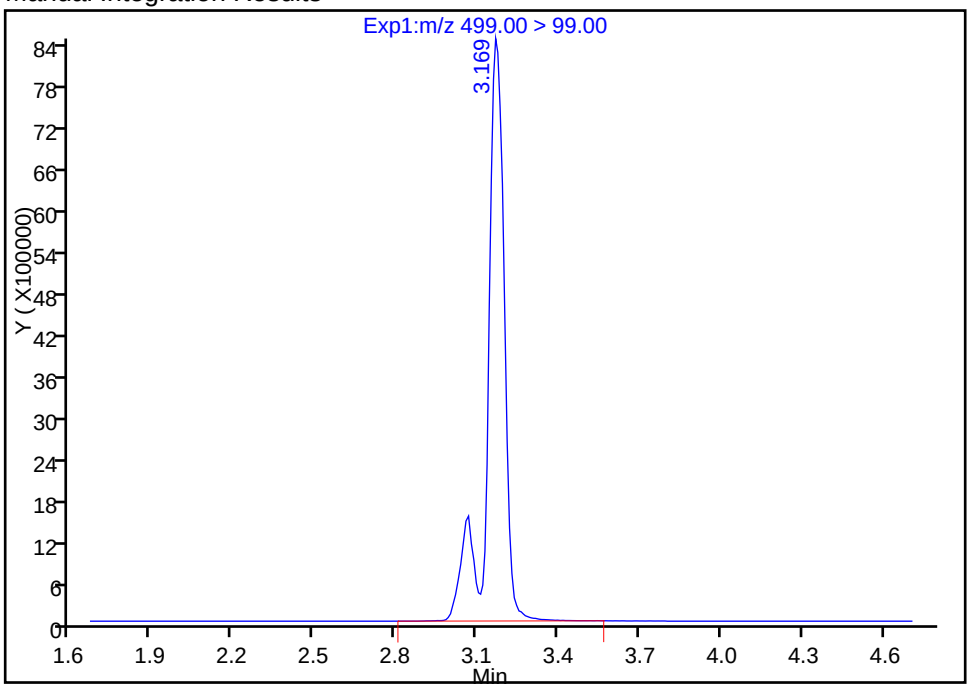
Processing Integration Results

RT: 3.17
Area: 37195349
Amount: 806.0916
Amount Units: ng/ml



Manual Integration Results

RT: 3.17
Area: 37007341
Amount: 801.1338
Amount Units: ng/ml



Reviewer: chandrasenas, 07-Dec-2016 17:09:33

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-29-GW-16-20 DL | Lab Sample ID: 320-23718-5 DL

Matrix: Water | Lab File ID: 03DEC2016C_007.d

Analysis Method: 537 (Modified) | Date Collected: 11/18/2016 15:20

Extraction Method: 3535 | Date Extracted: 11/22/2016 11:44

Sample wt/vol: 250.4(mL) | Date Analyzed: 12/03/2016 19:26

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.: 140675 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.29*	*D*	*0.025*	0.020	*0.0075*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.1	D M	0.040	0.030	0.013
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.062*	*D*	*0.025*	0.020	*0.0092*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	80		25-150
STL00991	13C4 PFOS	93		25-150
STL00994	18O2 PFHxS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_007.d
Lims ID: 320-23718-A-5-A
Client ID: DPT-16-29-GW-16-20
Sample Type: Client
Inject. Date: 03-Dec-2016 19:26:15 ALS Bottle#: 12 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23718-a-5-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 06-Dec-2016 16:26:44 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 06-Dec-2016 15:49:08

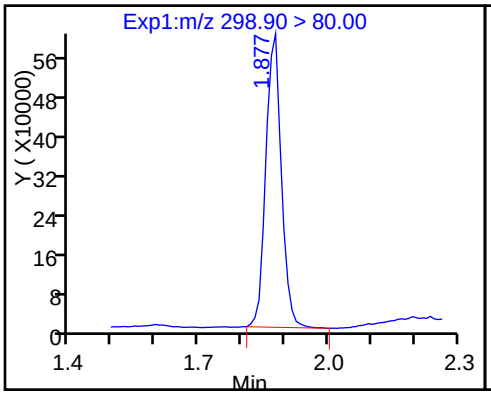
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.877	1.877	0.0	1.000	1513590	3.09				
298.90 > 99.00	1.868	1.877	-0.009	0.995	662881		2.28(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.488	2.481	0.007		1451840	4.65		9.8	173941	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.836	2.836	0.0	1.000	2705339	14.3			41461	
413.00 > 169.00	2.836	2.836	0.0	1.000	1750913		1.55(0.90-1.10)		50299	
D 14 13C4 PFOA										
417.00 > 372.00	2.836	2.836	0.0		880304	4.01		8.0	78174	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.206	3.215	-0.009	1.000	26644906	107.4			504675	M
499.00 > 99.00	3.206	3.215	-0.009	1.000	5969460		4.46(0.90-1.10)		476878	
D 17 13C4 PFOS										
503.00 > 80.00	3.206	3.215	-0.009		1092382	4.44		9.3	49703	

QC Flag Legend

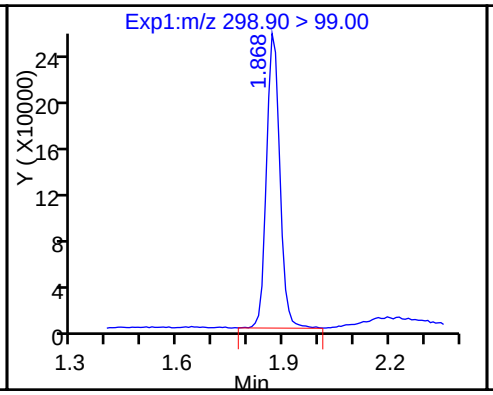
Review Flags
M - Manually Integrated

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_007.d
Injection Date: 03-Dec-2016 19:26:15 Instrument ID: A8_N
Lims ID: 320-23718-A-5-A Lab Sample ID: 320-23718-5
Client ID: DPT-16-29-GW-16-20
Operator ID: A8-PC\A8 ALS Bottle#: 12 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

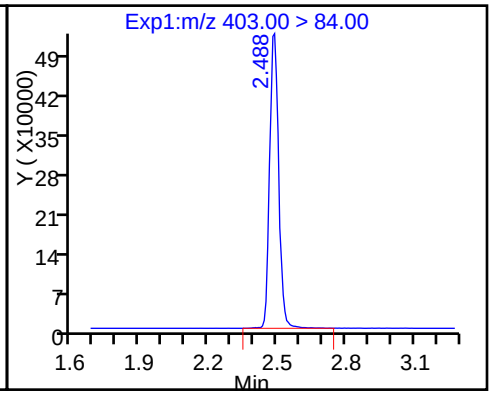
5 Perfluorobutanesulfonic acid



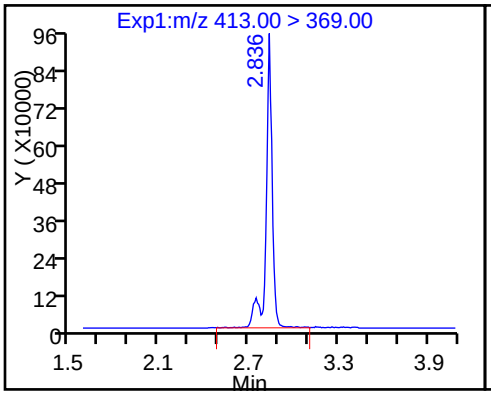
5 Perfluorobutanesulfonic acid



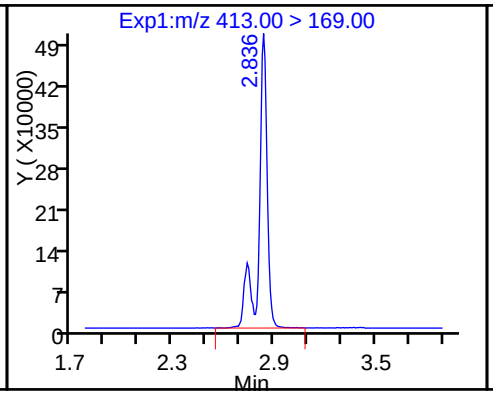
D 10 18O2 PFHxS



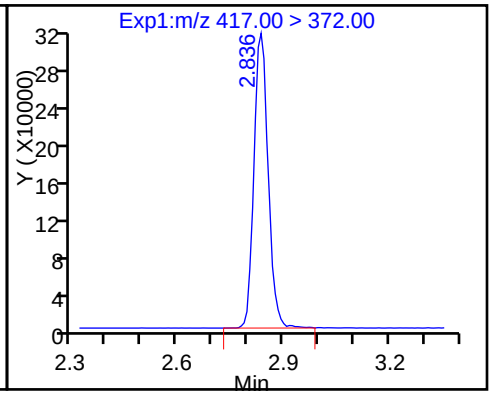
15 Perfluorooctanoic acid



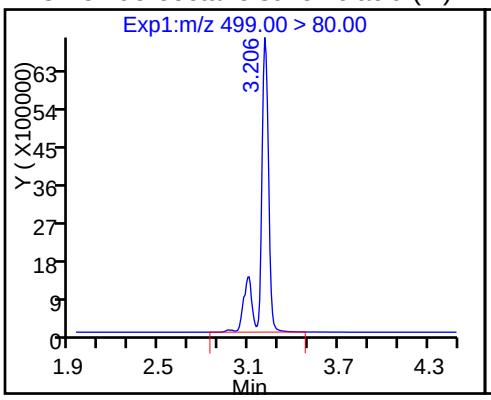
15 Perfluorooctanoic acid



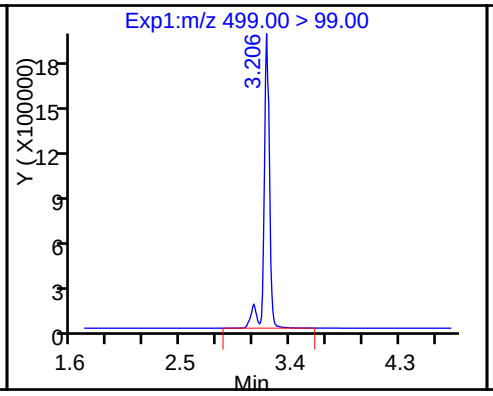
D 14 13C4 PFOA



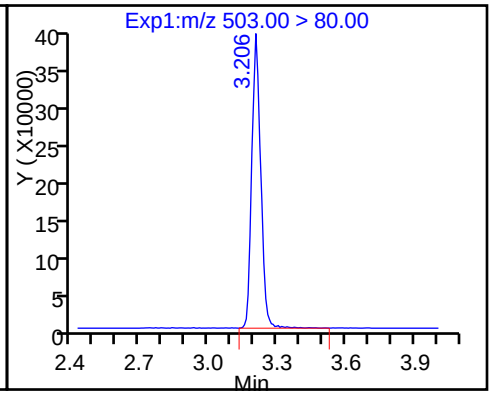
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

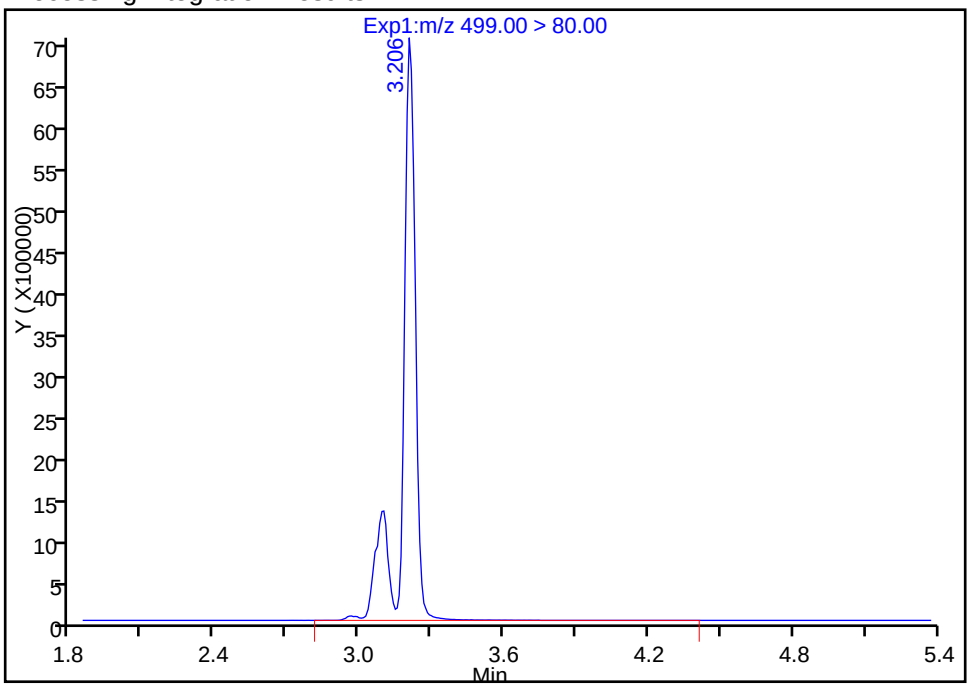
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_007.d				
Injection Date:	03-Dec-2016 19:26:15	Instrument ID:	A8_N		
Lims ID:	320-23718-A-5-A	Lab Sample ID:	320-23718-5		
Client ID:	DPT-16-29-GW-16-20				
Operator ID:	A8-PC\A8	ALS Bottle#:	12	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

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

Signal: 1

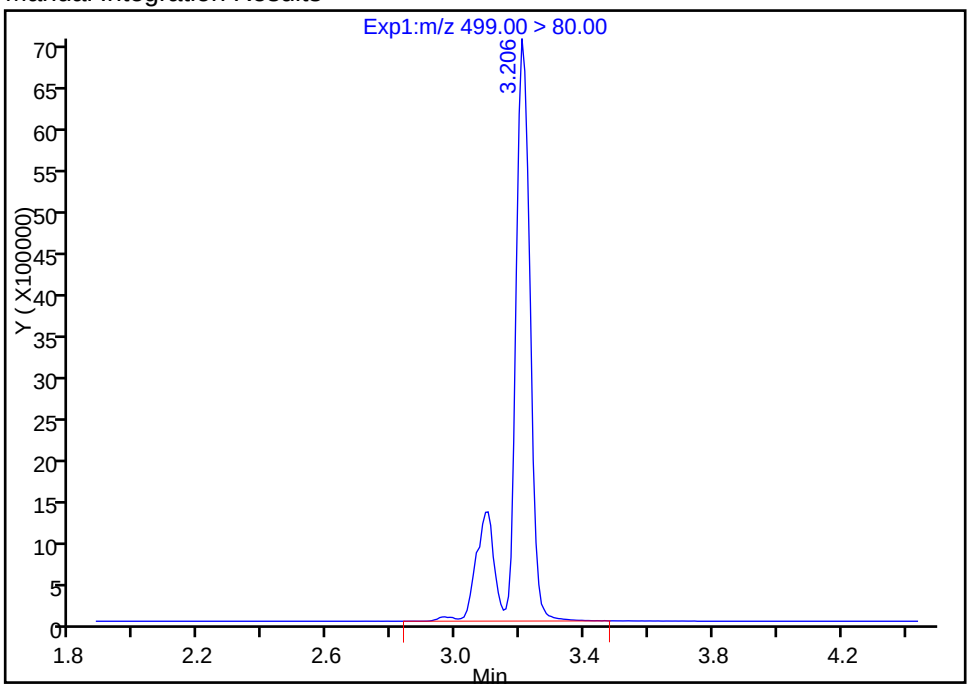
Processing Integration Results

RT: 3.21
Area: 26773252
Amount: 107.9531
Amount Units: ng/ml



Manual Integration Results

RT: 3.21
Area: 26644906
Amount: 107.4356
Amount Units: ng/ml



Reviewer: chandrasenas, 06-Dec-2016 15:49:08

Audit Action: Manually Integrated Audit Reason: Baseline

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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 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.: 320-23718-1 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.: 320-23718-1 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.: 320-23718-1 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.: 320-23718-1 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.: 320-23718-1 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.

FORM VI

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 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.

FORM VI

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 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.: 320-23718-1 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.: 320-23718-1 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.: 320-23718-1 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

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 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
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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.: 320-23718-1 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	+++++		290666		1560911	+++++		1.00		5.00
			29789966	5603089	47490545	10948383		200	20.0	400	50.0	
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	131950		284917		1774408	0.476		0.952		4.76
			38018954	6947857	+++++	13319919		190	19.0	+++++	47.6	
Perfluorooctane Sulfonate (PFOS)		AveID	+++++		255695		1469896	+++++		0.928		4.64
			41837729	5745134	80249842	12334342		186	18.6	371	46.4	
Perfluorononanoic acid (PFNA)		AveID	85074		184877		1085508	0.500		1.00		5.00
			25204338	4006430	+++++	8209339		200	20.0	+++++	50.0	
Perfluorooctane Sulfonamide (FOSA)		AveID	180345		403791		2370271	0.500		1.00		5.00
			51108754	9372172	+++++	18995833		200	20.0	+++++	50.0	
8:2FTS		AveID		44037		94573			0.479		0.958	
			431909	19463965	2799477	+++++	5753486	4.79	192	19.2	+++++	47.9
Perfluorodecanoic acid (PFDA)		AveID	77889		159778		938853	0.500		1.00		5.00
			25614867	3671358	+++++	7581125		200	20.0	+++++	50.0	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID		30895		59295			0.500		1.00	
			289882	13773335	1829869	28724886	3696988	5.00	200	20.0	400	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID		30016		56004			0.500		1.00	
			283960	14065497	1881436	28356327	3546696	5.00	200	20.0	400	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	66721		150902		972225	0.482		0.964		4.82
			24374906	3647236	41362935	7816007		193	19.3	386	48.2	
Perfluoroundecanoic acid (PFUnA)		AveID	76058		148792		764307	0.500		1.00		5.00
			17998762	2908196	+++++	5577456		200	20.0	+++++	50.0	
MeFOSA		AveID		37277		73327			0.500		1.00	
			360259	15814534	2129108	35701676	4836683	5.00	200	20.0	400	50.0
N-EtFOSA-M		AveID		35535		78846			0.500		1.00	
			365734	16550291	2187091	35493503	5044937	5.00	200	20.0	400	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 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

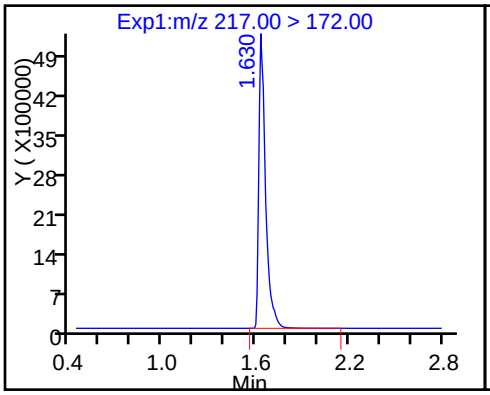
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

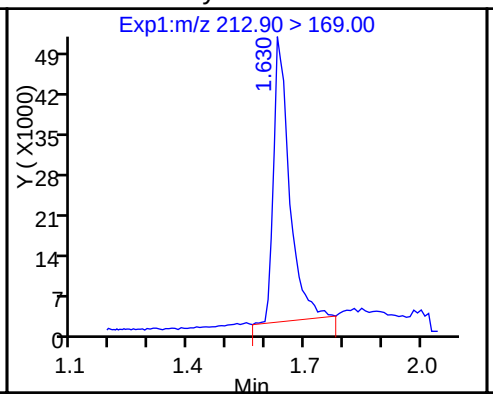
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

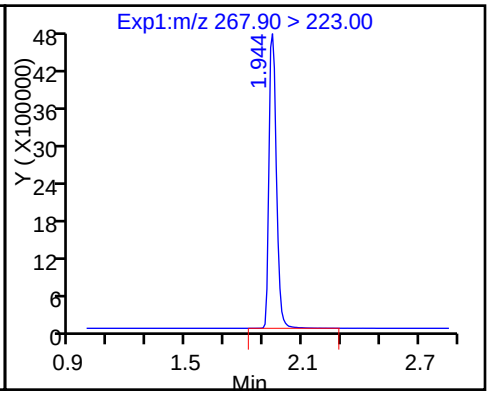
D 2 13C4 PFBA



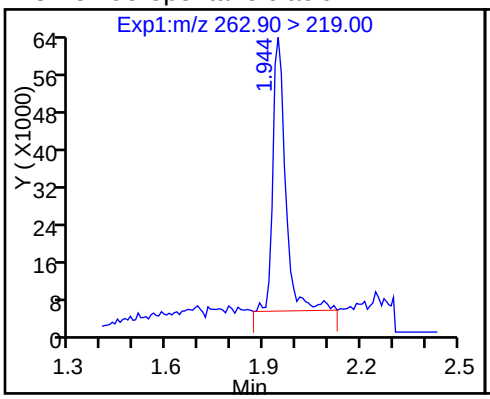
1 Perfluorobutyric acid



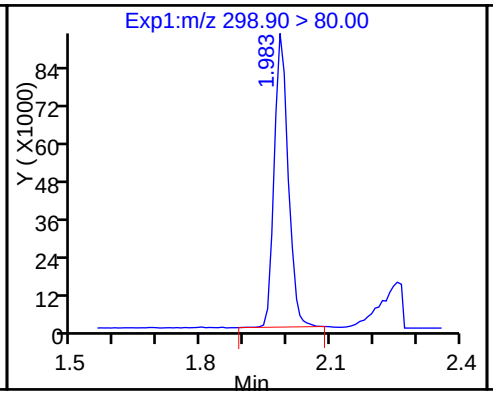
D 4 13C5-PFPeA



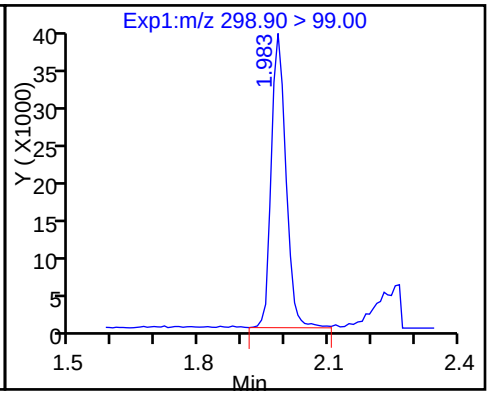
3 Perfluoropentanoic acid



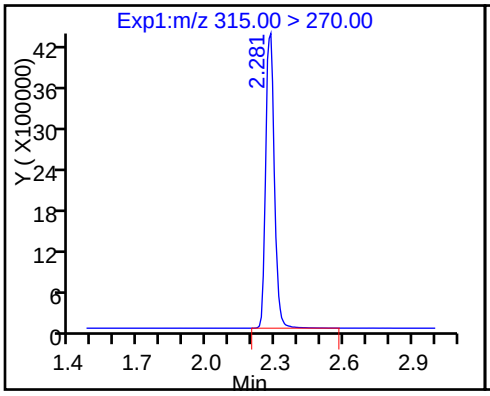
5 Perfluorobutanesulfonic acid



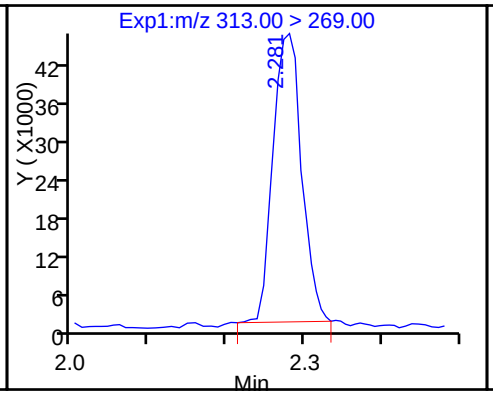
5 Perfluorobutanesulfonic acid



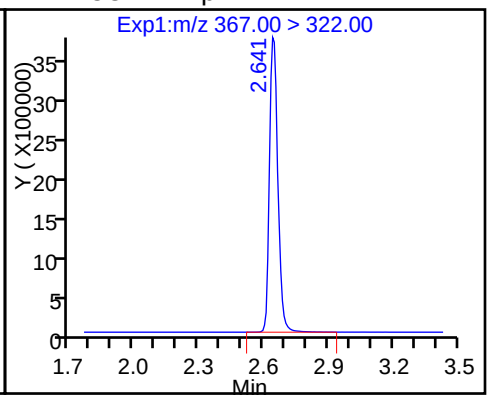
D 6 13C2 PFHxA



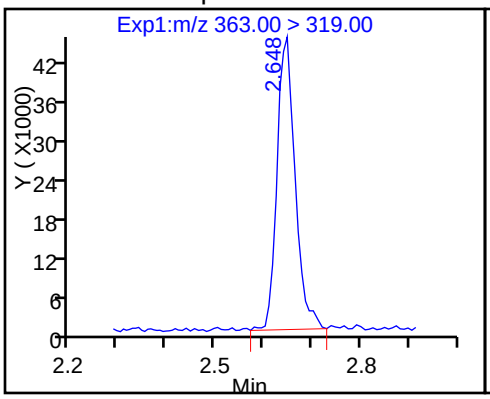
7 Perfluorohexanoic acid



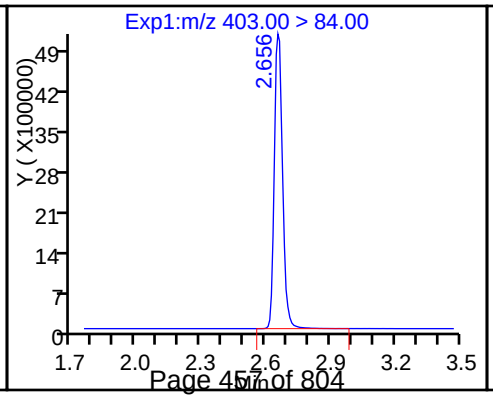
D 11 13C4-PFHpA



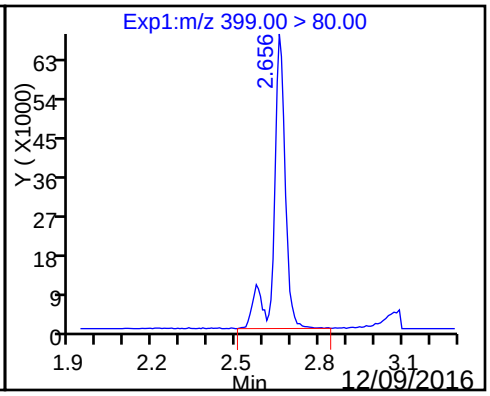
12 Perfluoroheptanoic acid



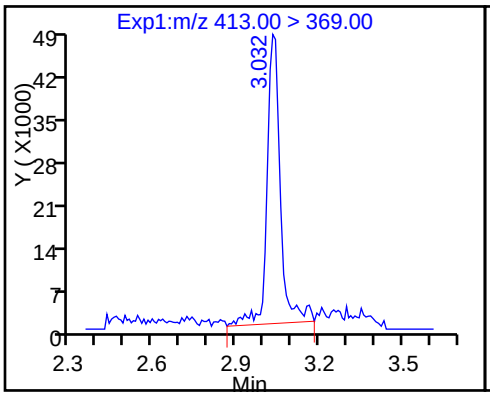
D 10 18O2 PFHxS



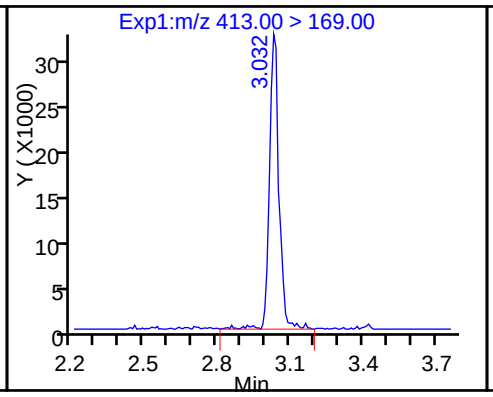
9 Perfluorohexanesulfonic acid



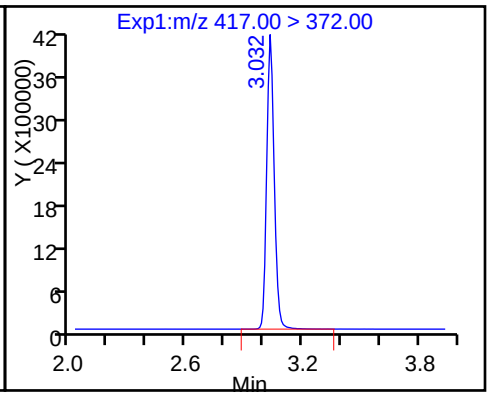
15 Perfluorooctanoic acid



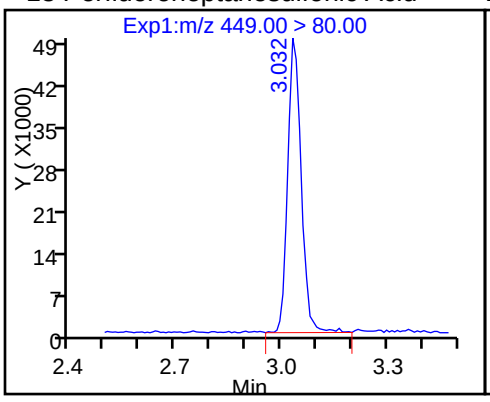
15 Perfluorooctanoic acid



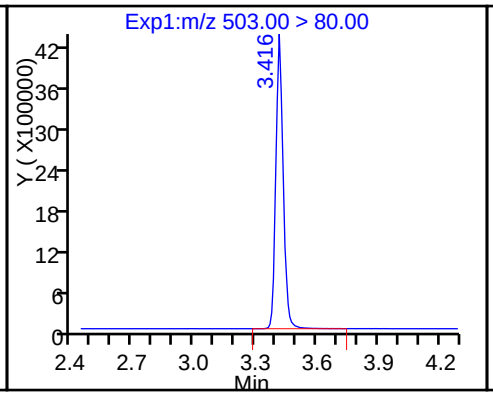
D 14 13C4 PFOA



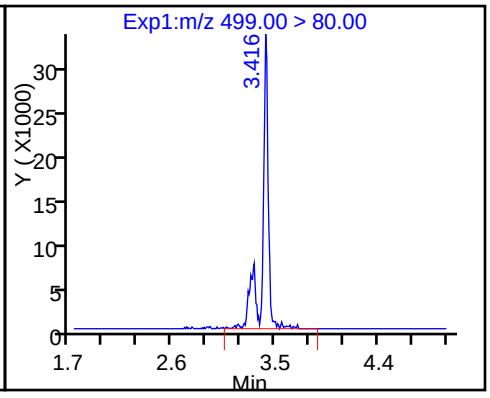
13 Perfluoroheptanesulfonic Acid



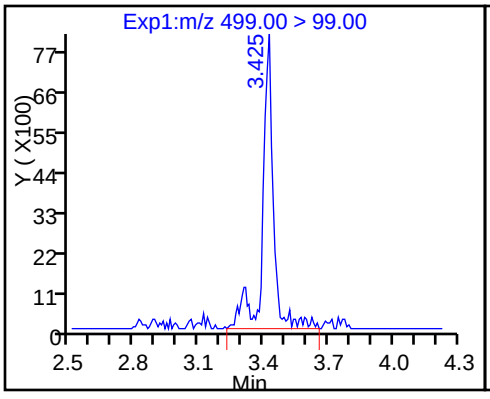
D 17 13C4 PFOS



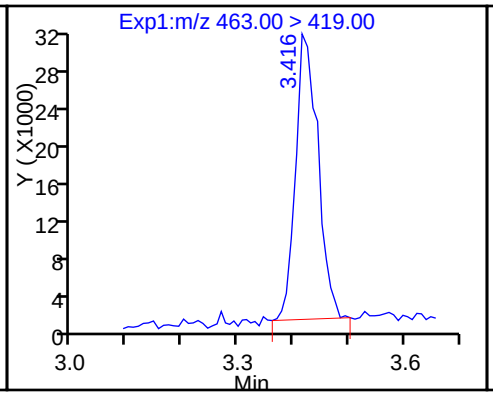
18 Perfluorooctane sulfonic acid



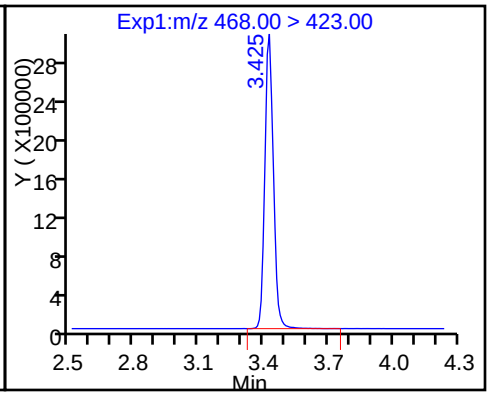
18 Perfluorooctane sulfonic acid



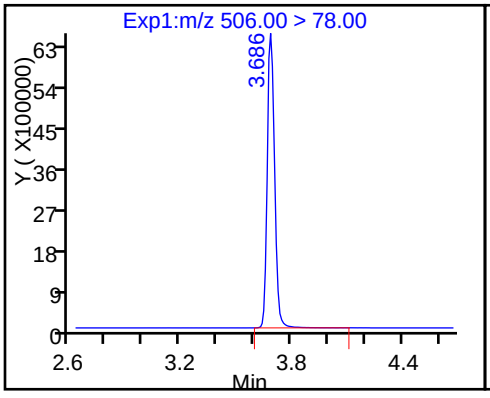
20 Perfluorononanoic acid



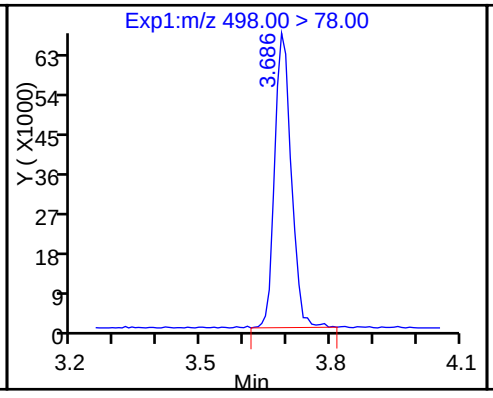
D 19 13C5 PFNA



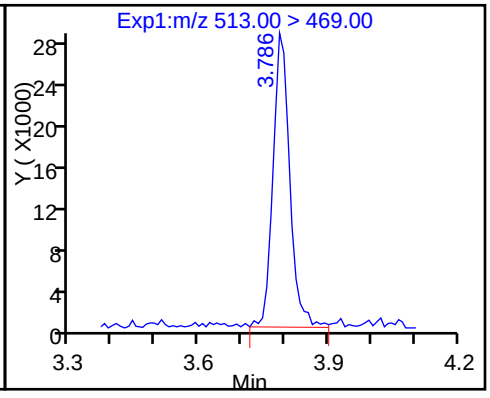
D 21 13C8 FOSA



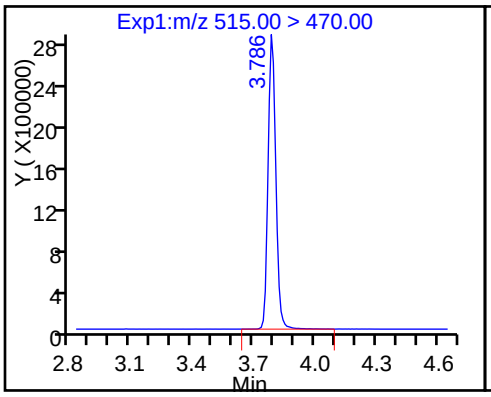
22 Perfluorooctane Sulfonamide



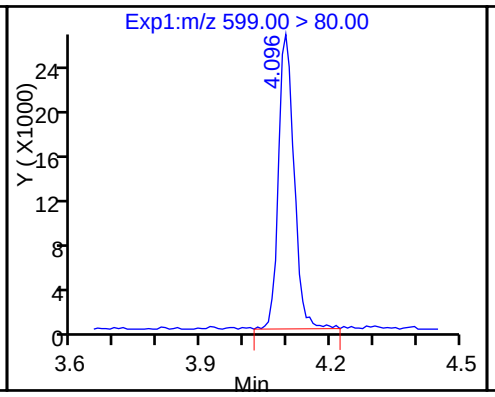
24 Perfluorodecanoic acid



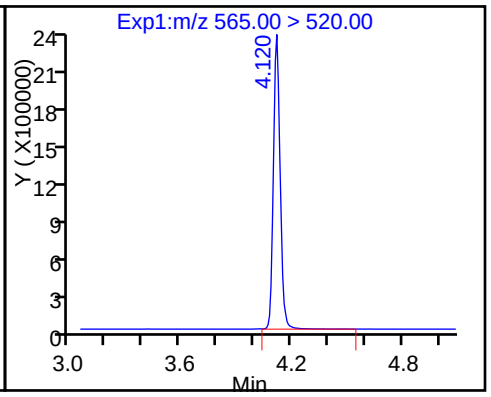
D 23 13C2 PFDA



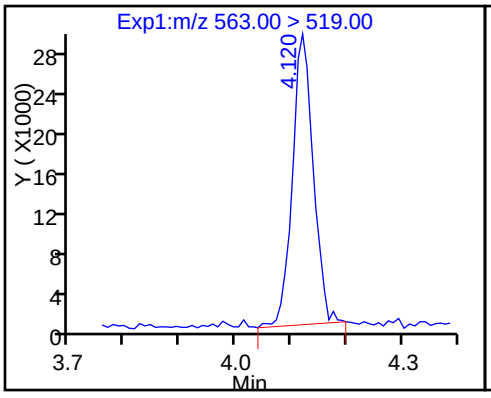
26 Perfluorodecane Sulfonic acid



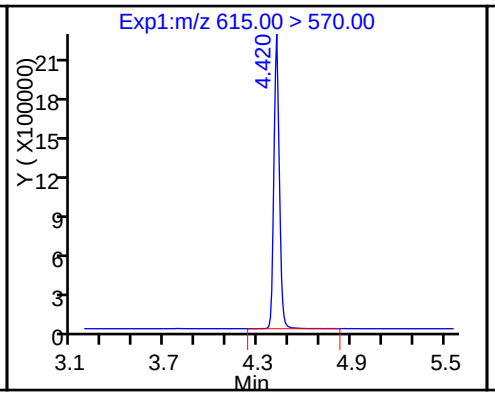
D 27 13C2 PFUnA



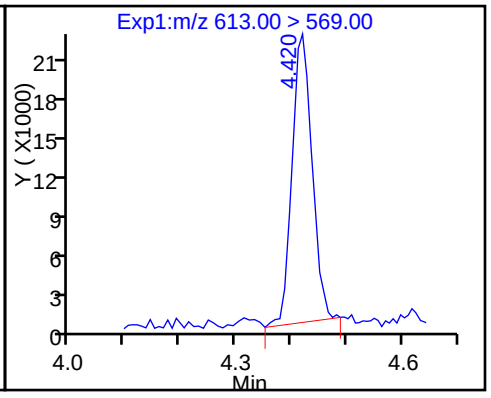
28 Perfluoroundecanoic acid



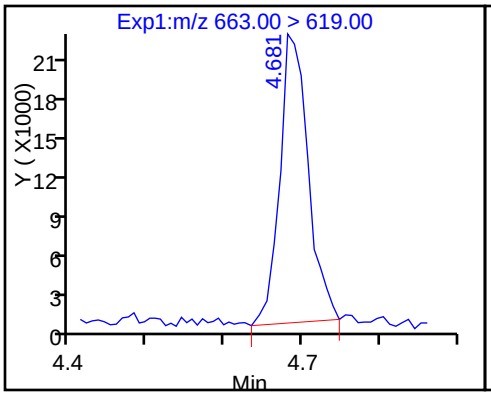
D 30 13C2 PFDoA



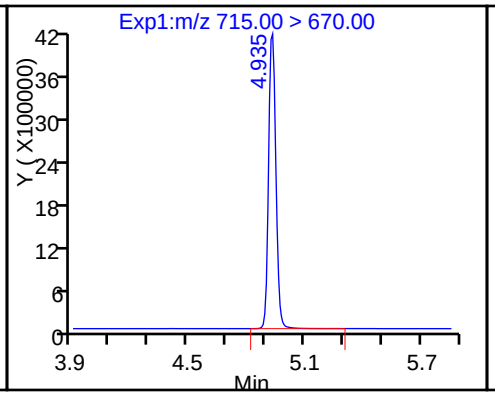
29 Perfluorododecanoic acid



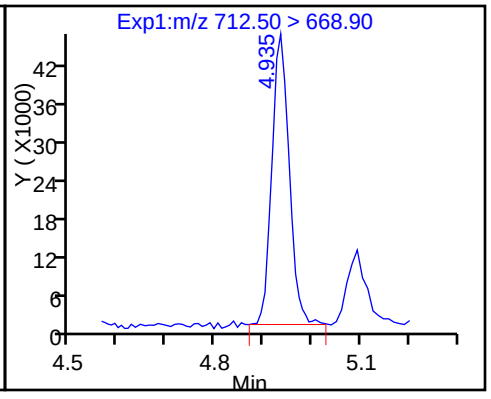
31 Perfluorotridecanoic acid



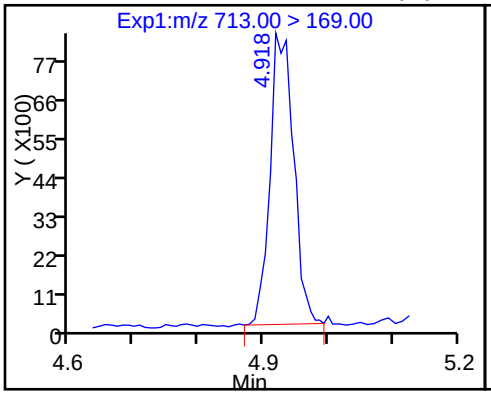
D 32 13C2-PFTeDA



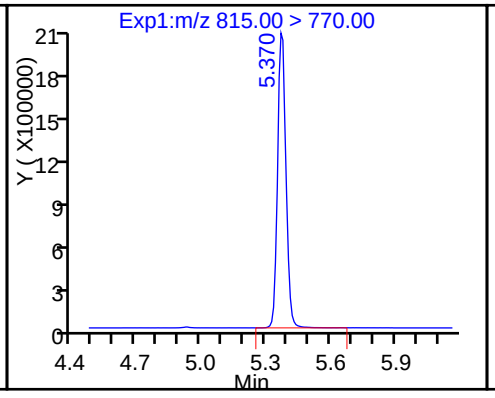
33 Perfluorotetradecanoic acid



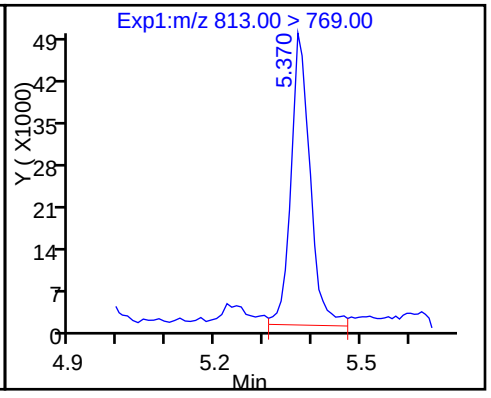
33 Perfluorotetradecanoic acid (M)



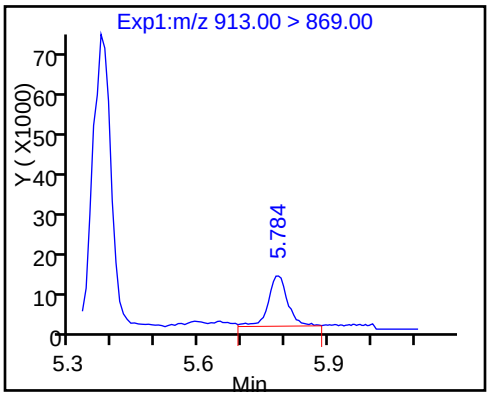
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

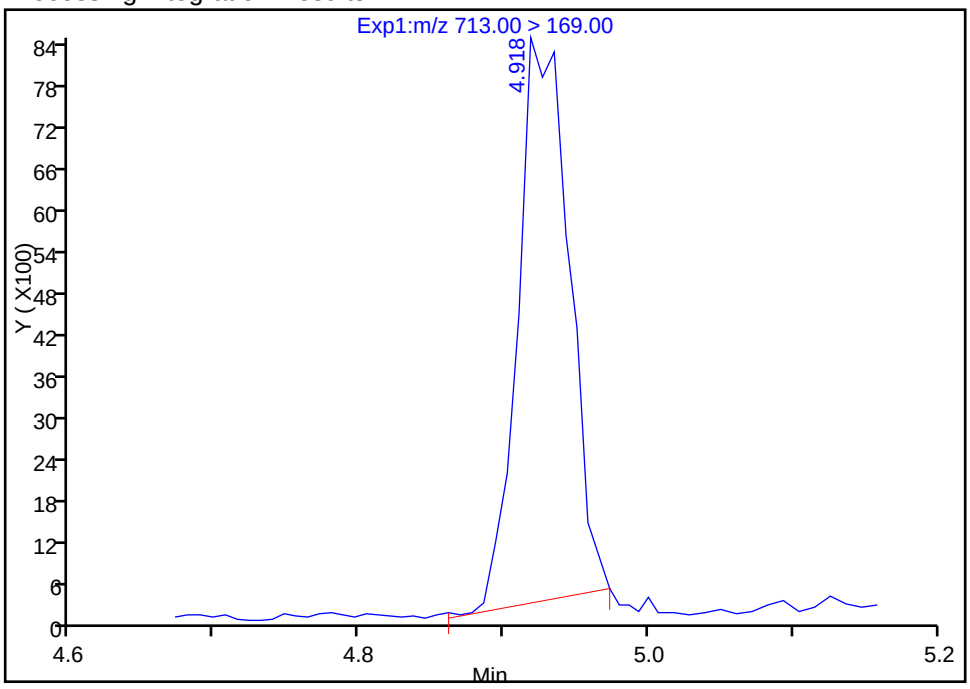
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_004.d
Injection Date: 02-Dec-2016 10:29:38 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

33 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 2

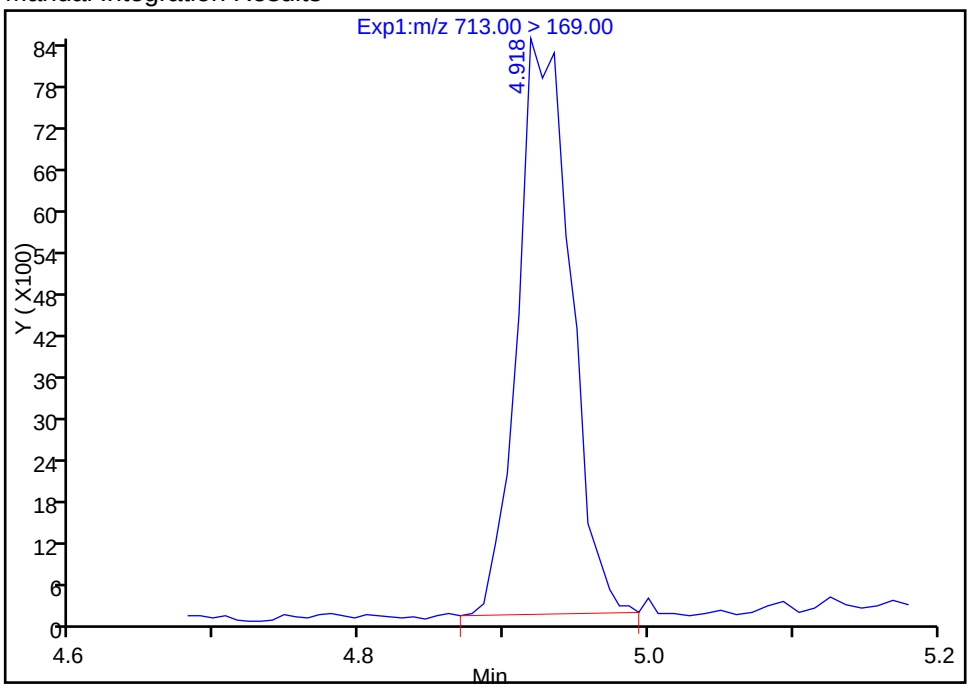
Processing Integration Results

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

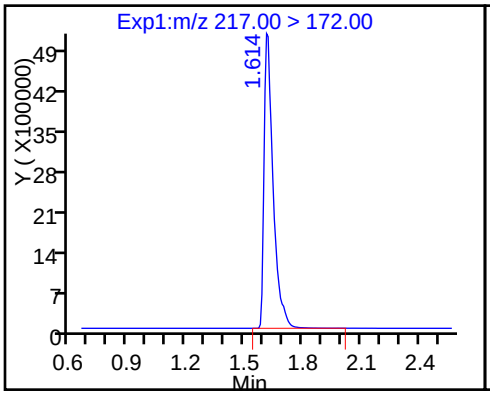
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

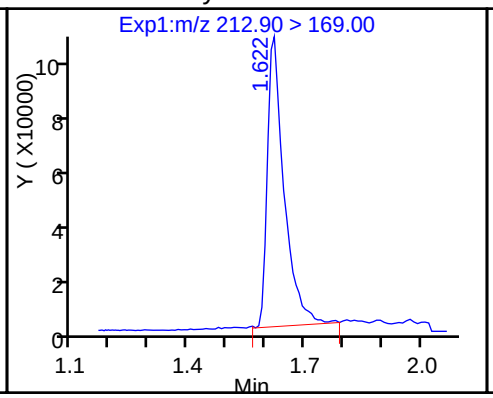
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

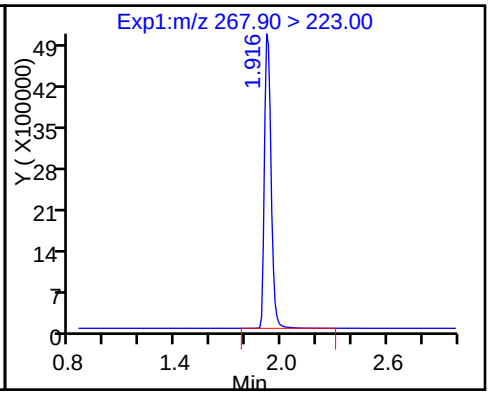
D 2 13C4 PFBA



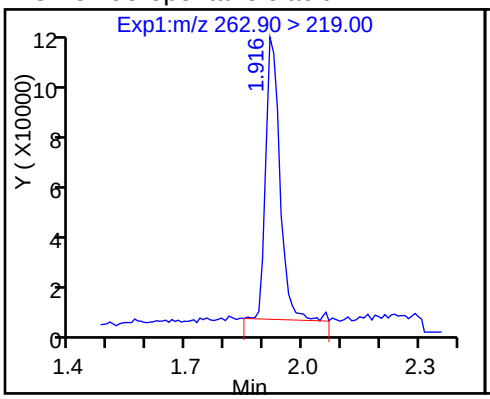
1 Perfluorobutyric acid



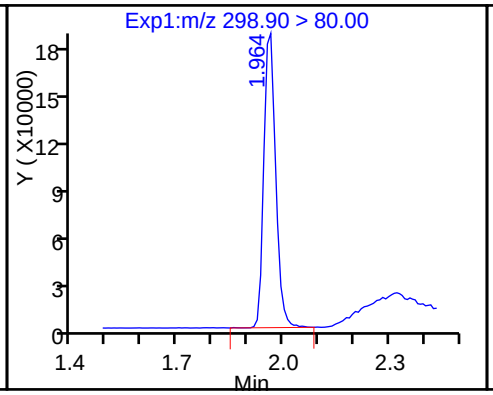
D 4 13C5-PFPeA



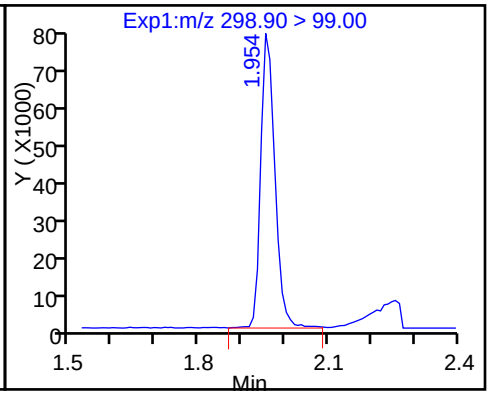
3 Perfluoropentanoic acid



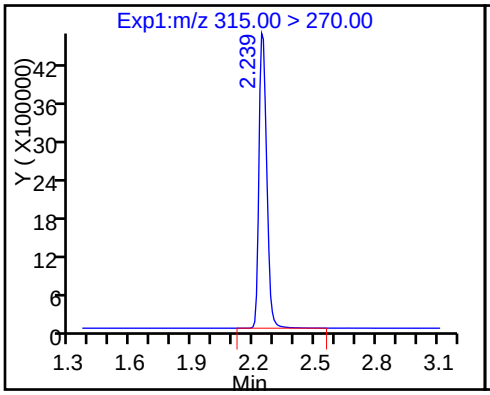
5 Perfluorobutanesulfonic acid



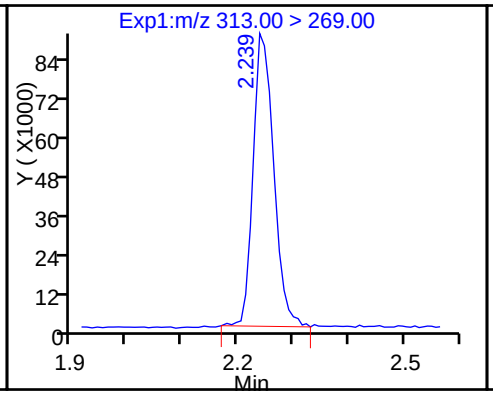
5 Perfluorobutanesulfonic acid



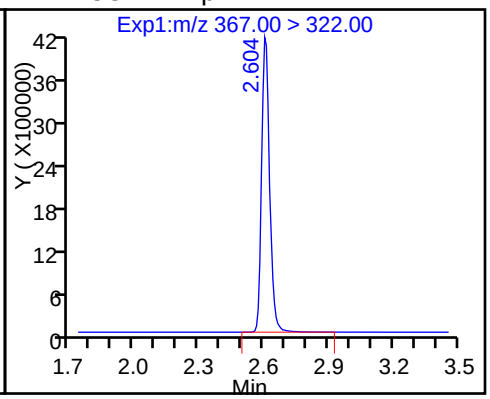
D 6 13C2 PFHxA



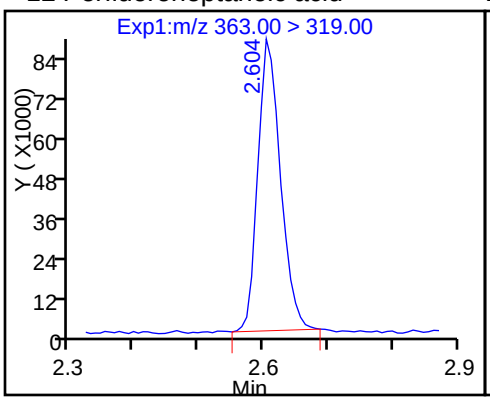
7 Perfluorohexanoic acid



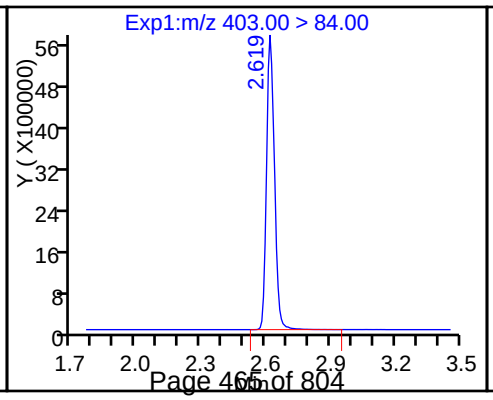
D 11 13C4-PFHpA



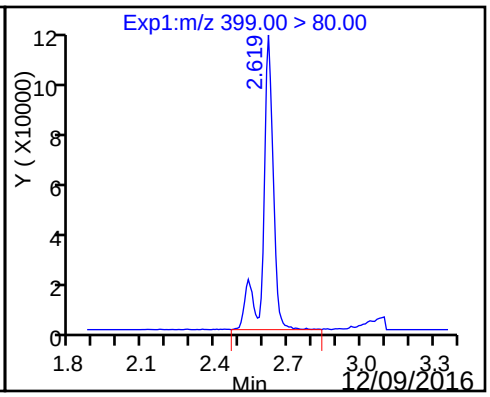
12 Perfluoroheptanoic acid



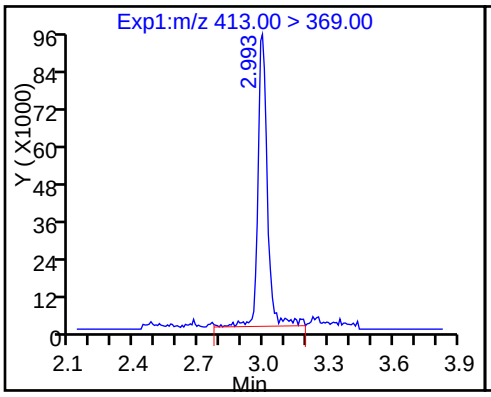
D 10 18O2 PFHxS



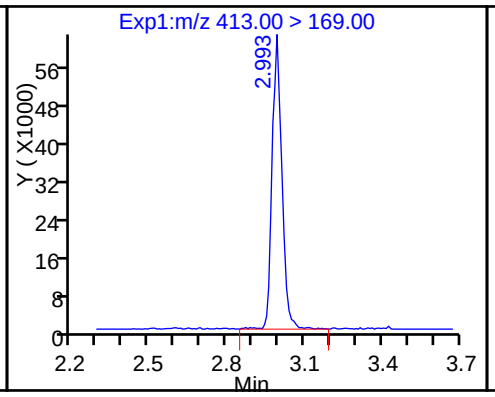
9 Perfluorohexanesulfonic acid



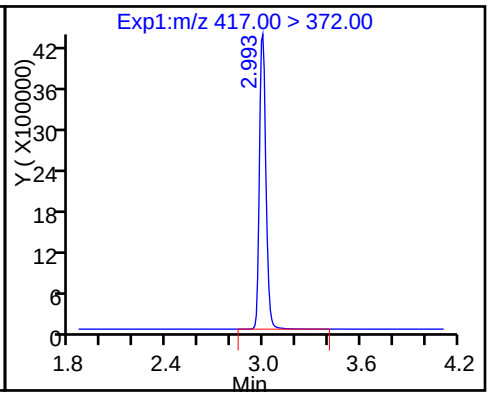
15 Perfluorooctanoic acid



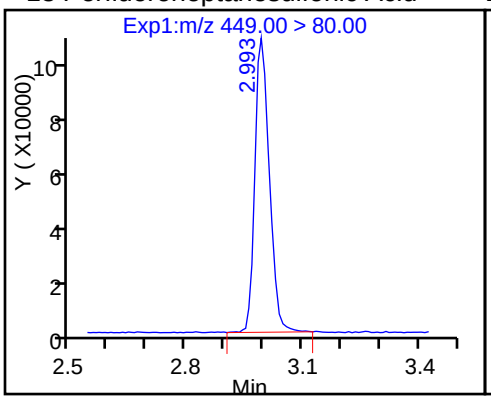
15 Perfluorooctanoic acid



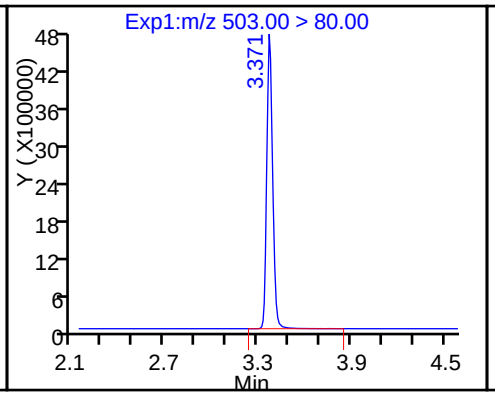
D 14 13C4 PFOA



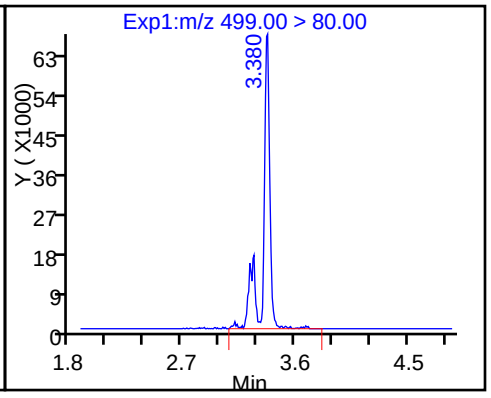
13 Perfluoroheptanesulfonic Acid



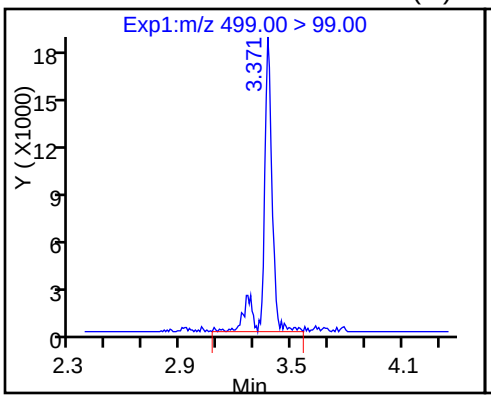
D 17 13C4 PFOS



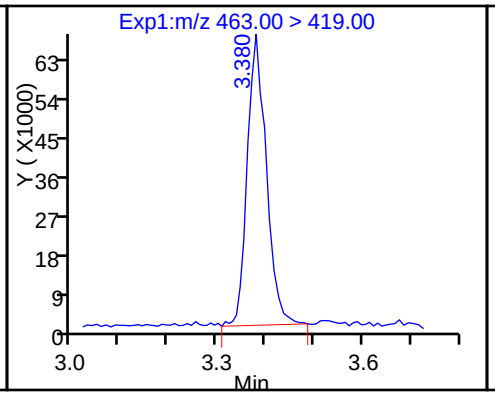
18 Perfluorooctane sulfonic acid



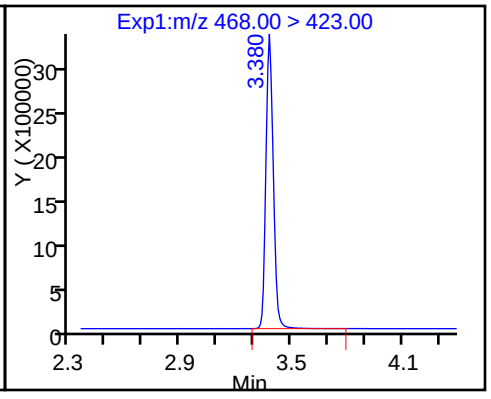
18 Perfluorooctane sulfonic acid (M)



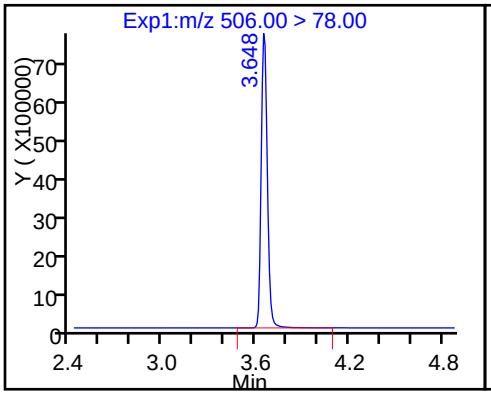
20 Perfluorononanoic acid



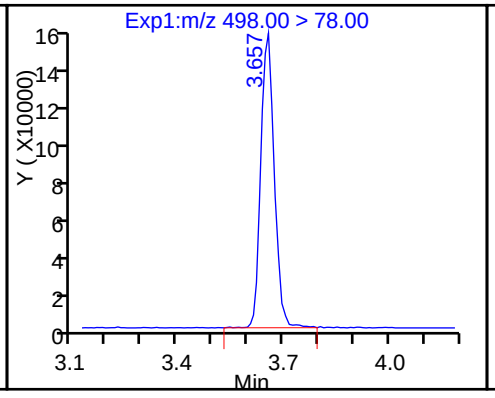
D 19 13C5 PFNA



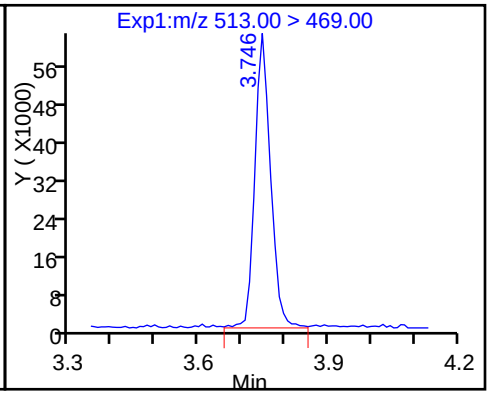
D 21 13C8 FOSA



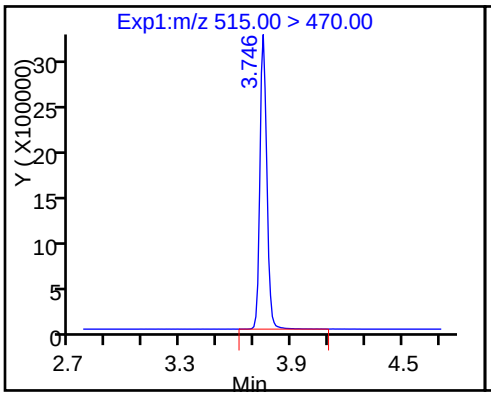
22 Perfluorooctane Sulfonamide



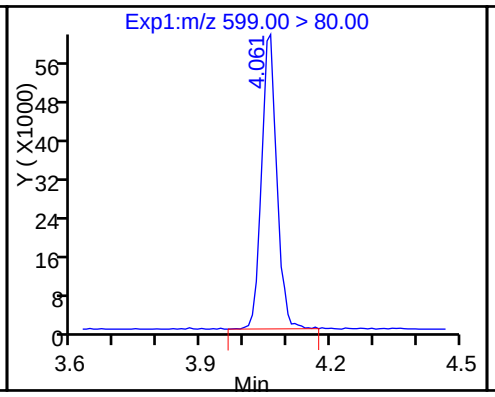
24 Perfluorodecanoic acid



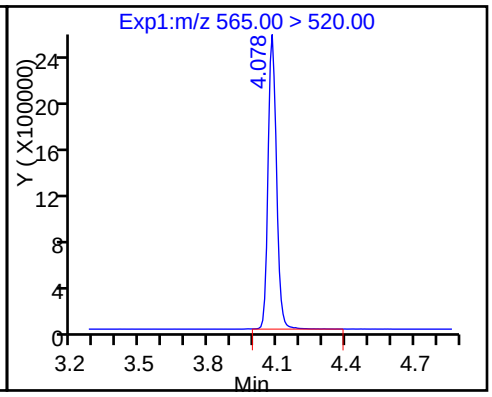
D 23 13C2 PFDA



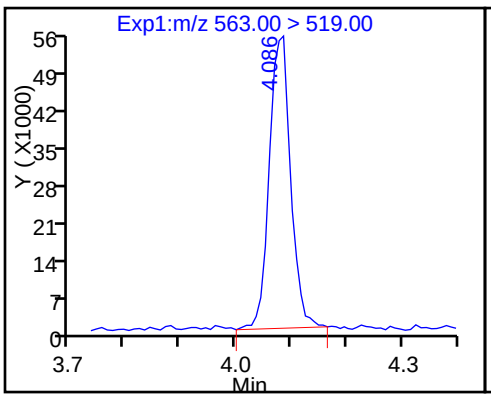
26 Perfluorodecane Sulfonic acid



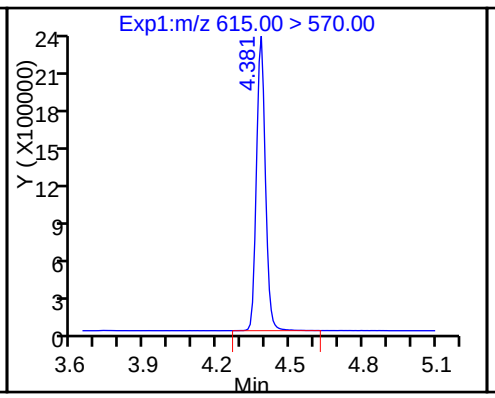
D 27 13C2 PFUnA



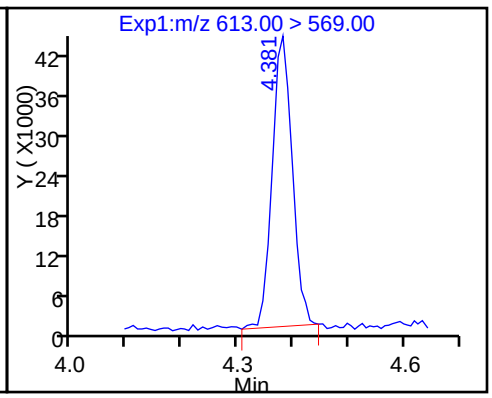
28 Perfluoroundecanoic acid



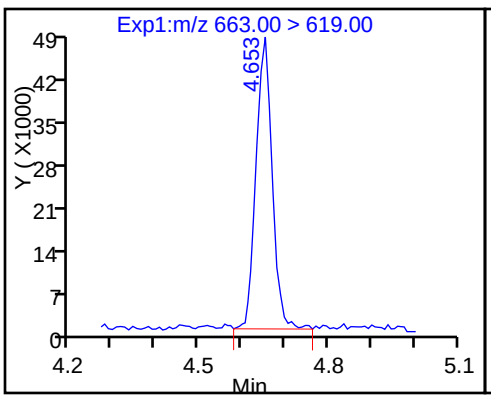
D 30 13C2 PFDoA



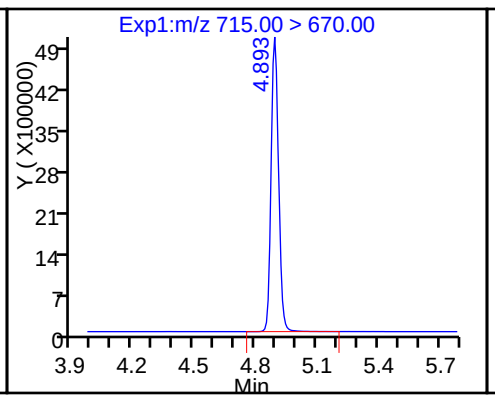
29 Perfluorododecanoic acid



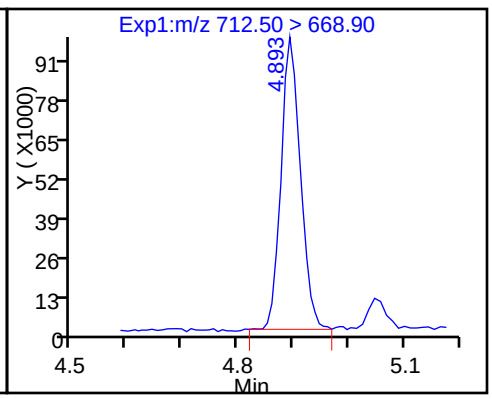
31 Perfluorotridecanoic acid



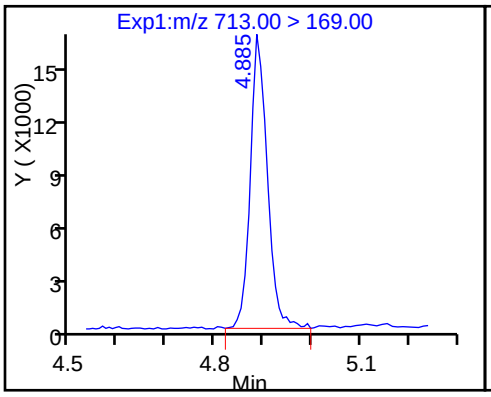
D 32 13C2-PFTeDA



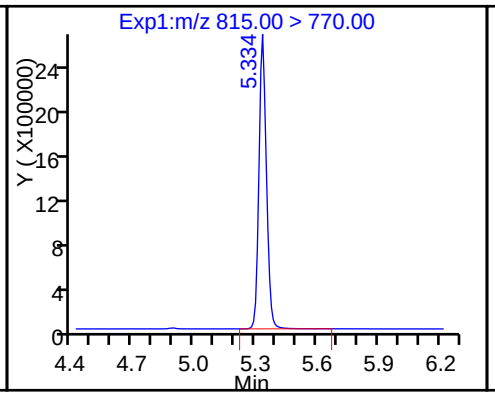
33 Perfluorotetradecanoic acid



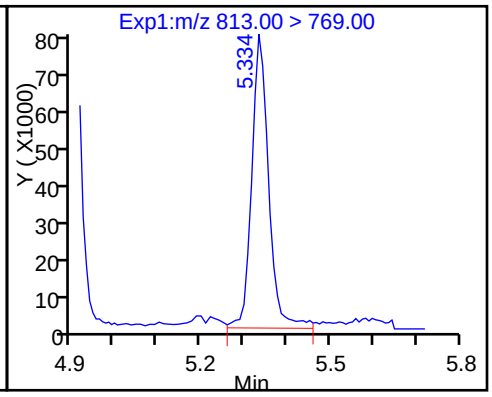
33 Perfluorotetradecanoic acid



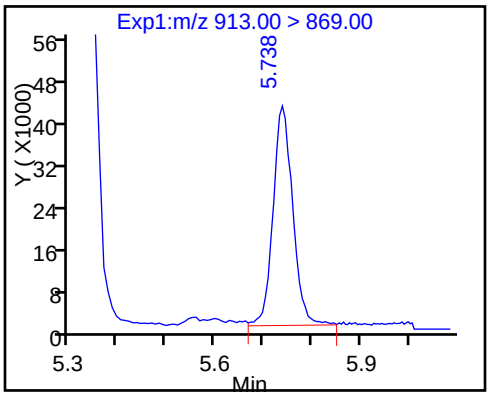
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

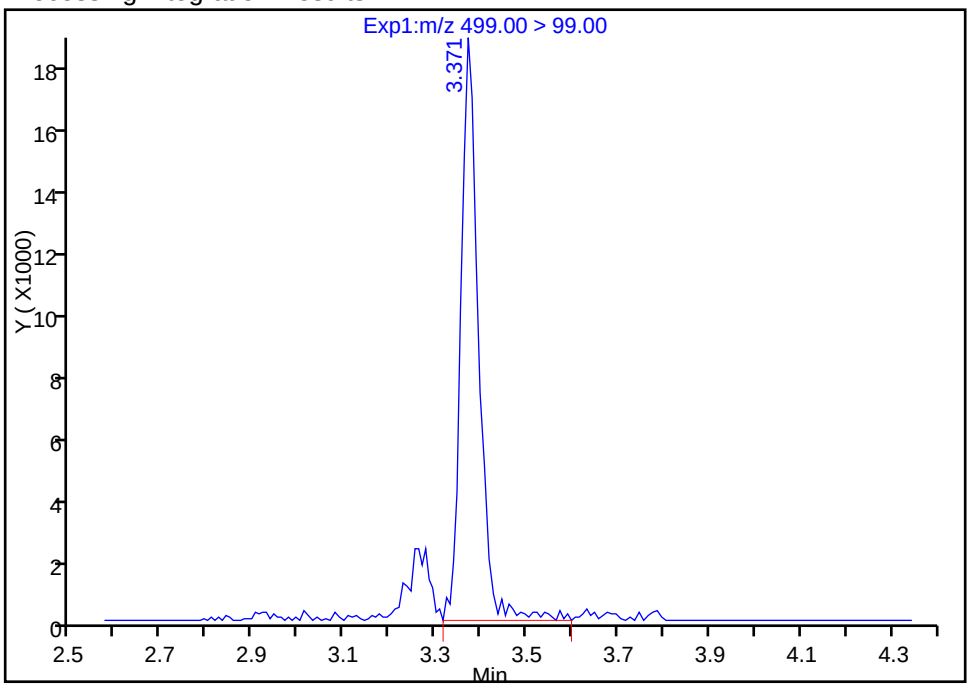
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_005.d
Injection Date: 02-Dec-2016 10:37:07 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

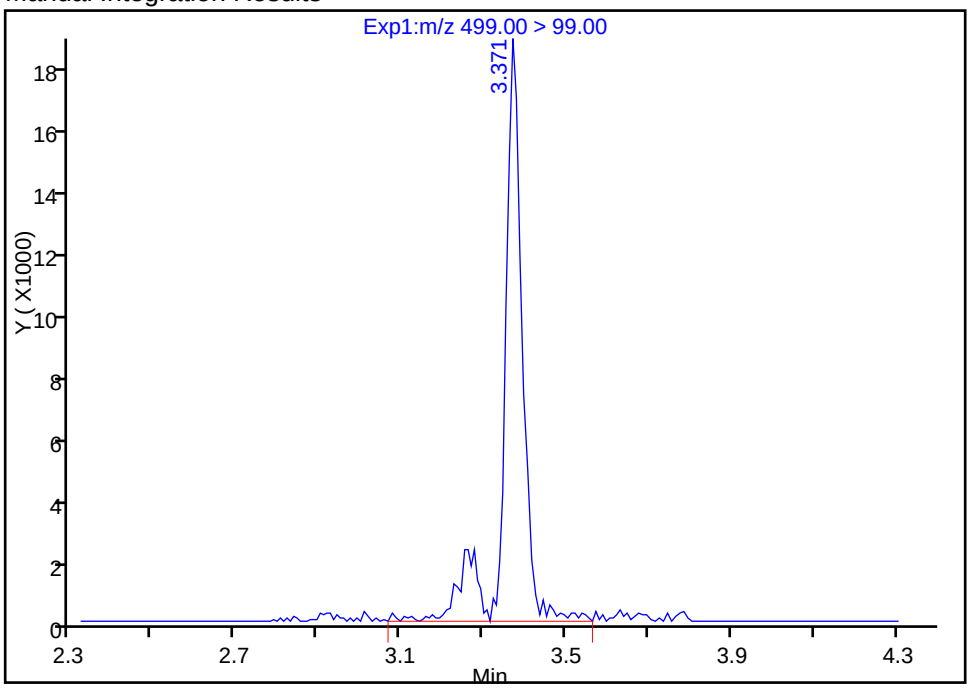
Processing Integration Results

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

Report Date: 02-Dec-2016 14:51:33 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_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

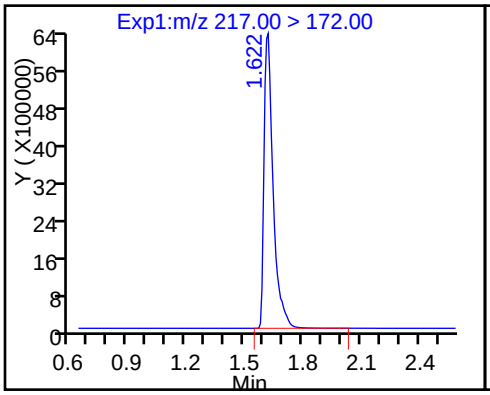
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

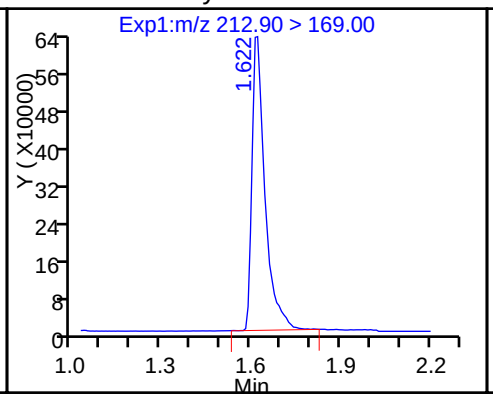
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

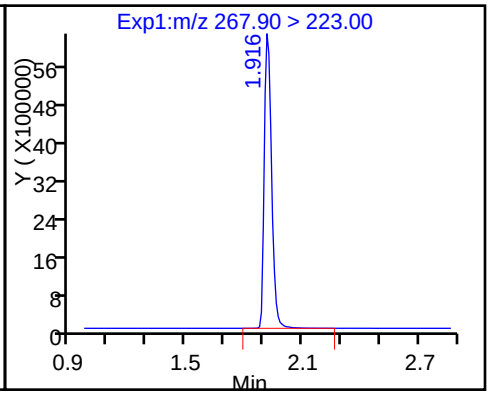
D 2 13C4 PFBA



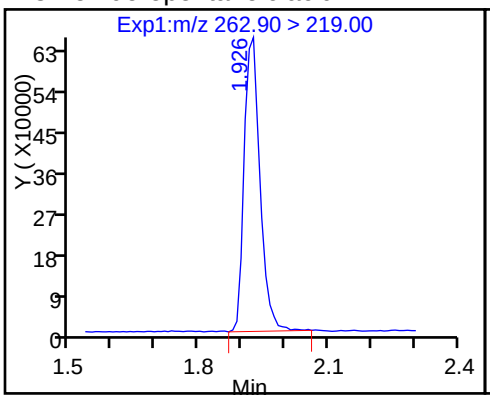
1 Perfluorobutyric acid



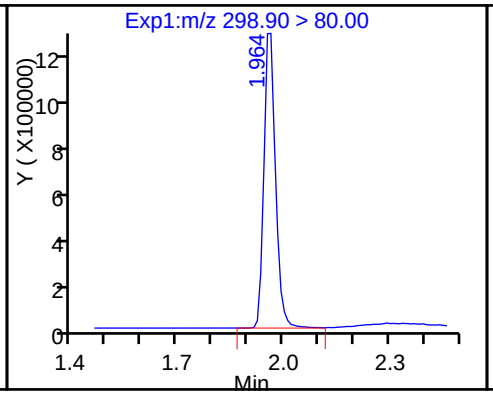
D 4 13C5-PFPeA



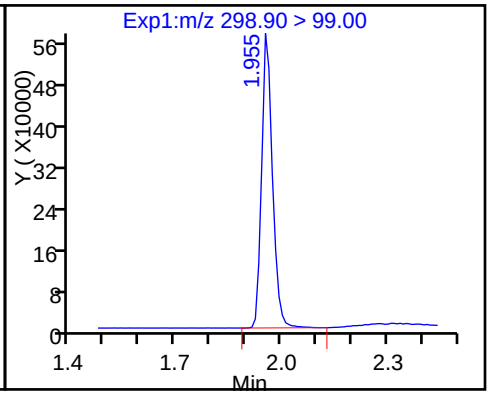
3 Perfluoropentanoic acid



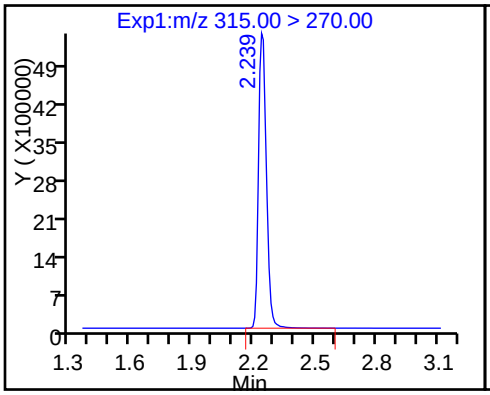
5 Perfluorobutanesulfonic acid



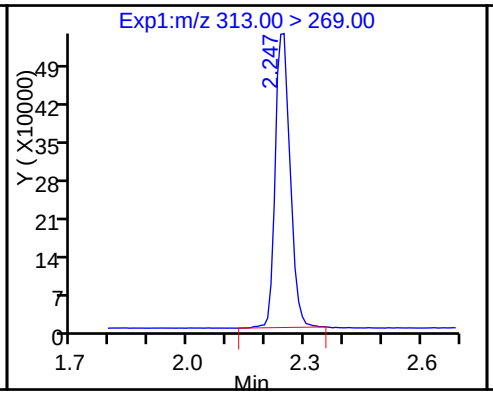
5 Perfluorobutanesulfonic acid



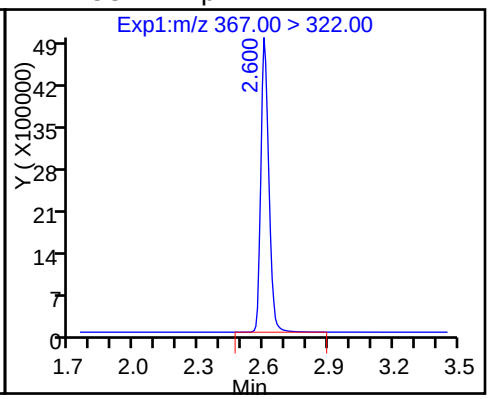
D 6 13C2 PFHxA



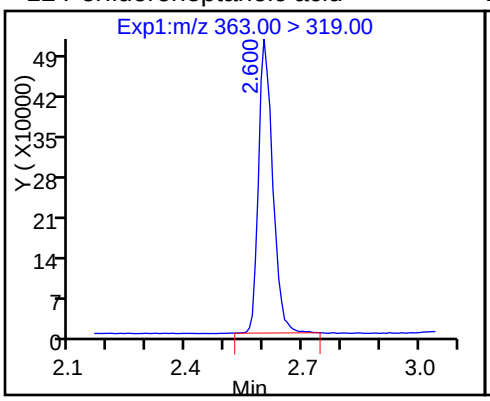
7 Perfluorohexanoic acid



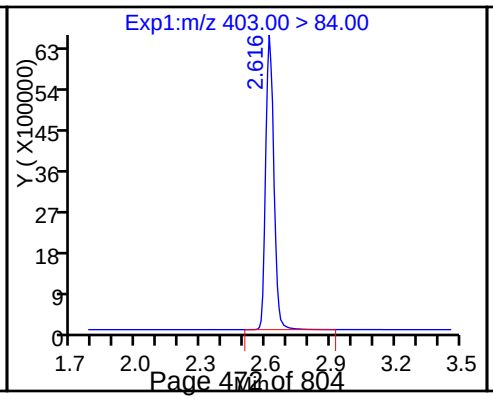
D 11 13C4-PFHpA



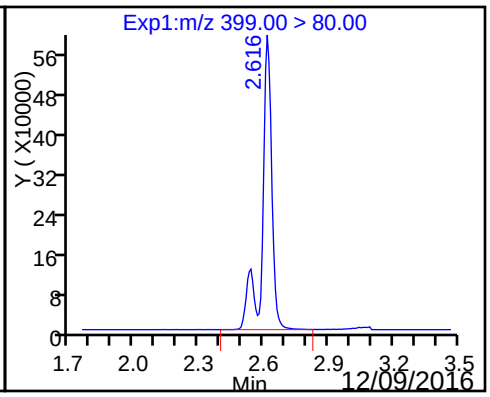
12 Perfluoroheptanoic acid



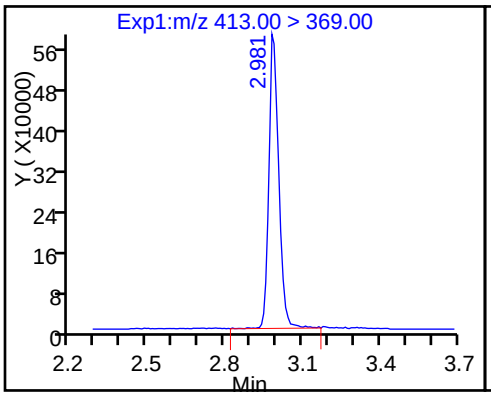
D 10 18O2 PFHxS



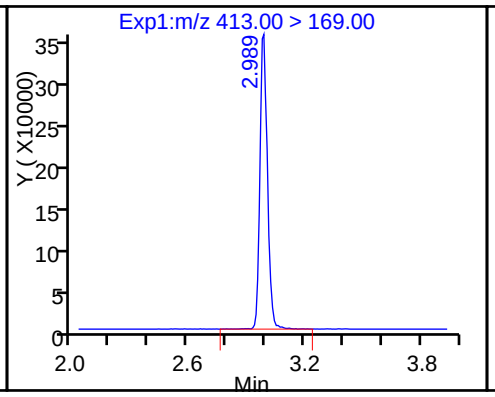
9 Perfluorohexanesulfonic acid



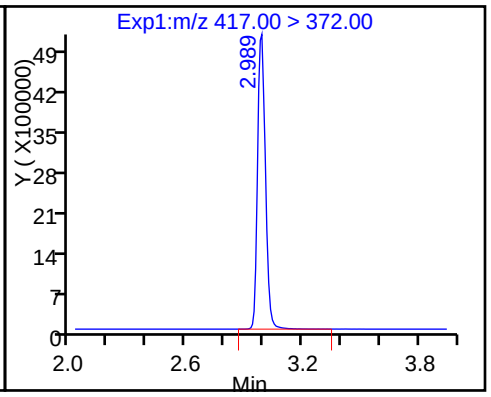
15 Perfluorooctanoic acid



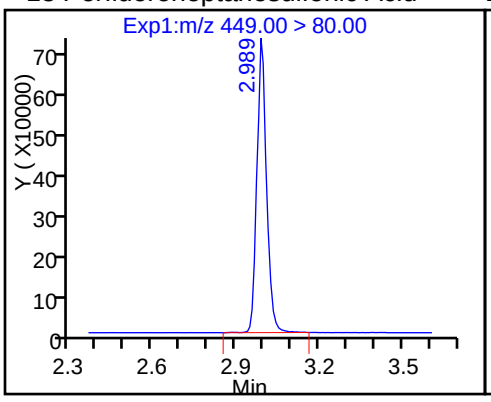
15 Perfluorooctanoic acid



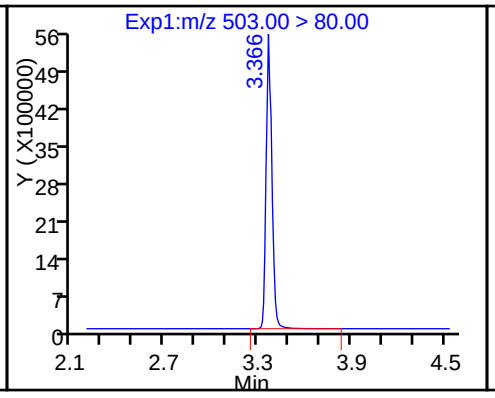
D 14 13C4 PFOA



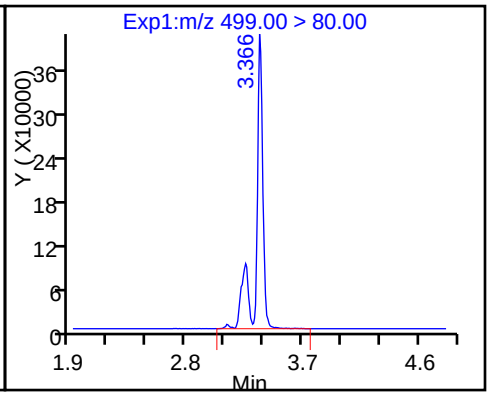
13 Perfluoroheptanesulfonic Acid



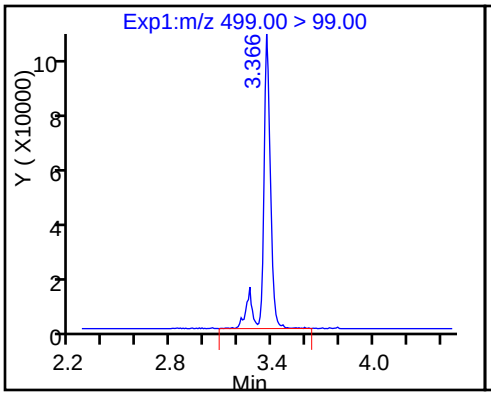
D 17 13C4 PFOS



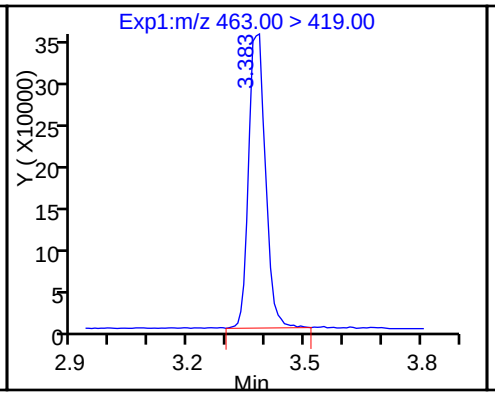
18 Perfluorooctane sulfonic acid



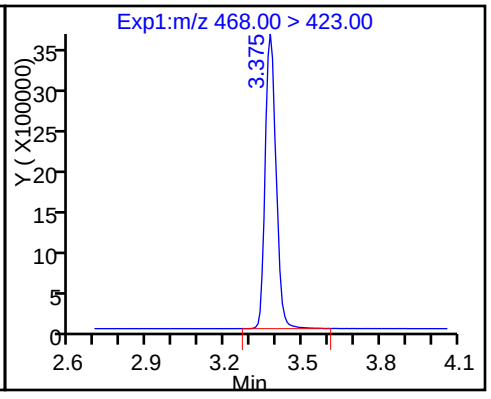
18 Perfluorooctane sulfonic acid



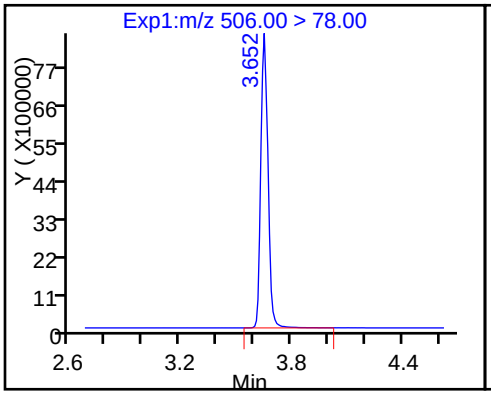
20 Perfluorononanoic acid



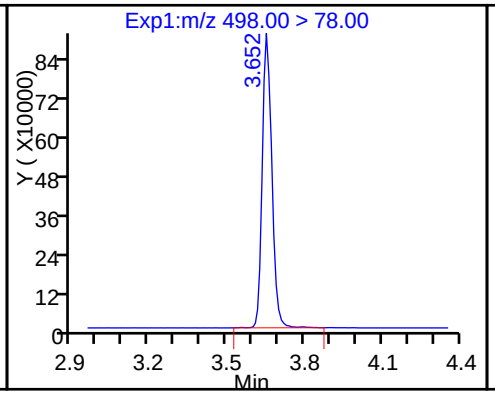
D 19 13C5 PFNA



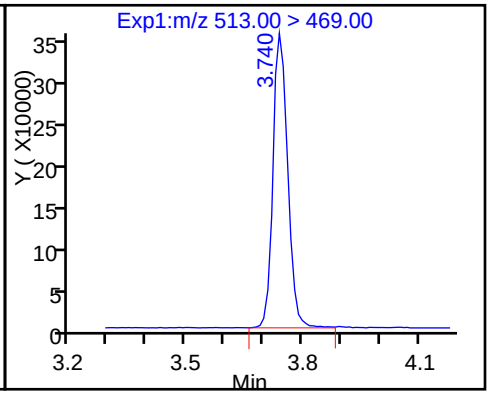
D 21 13C8 FOSA



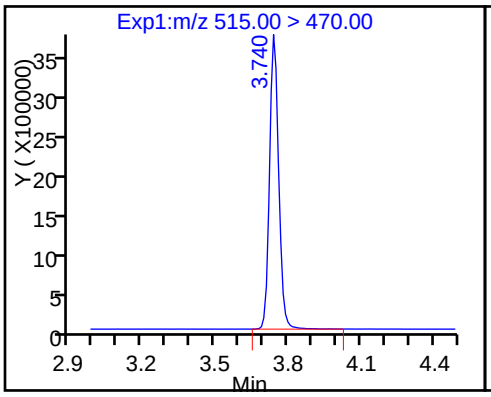
22 Perfluorooctane Sulfonamide



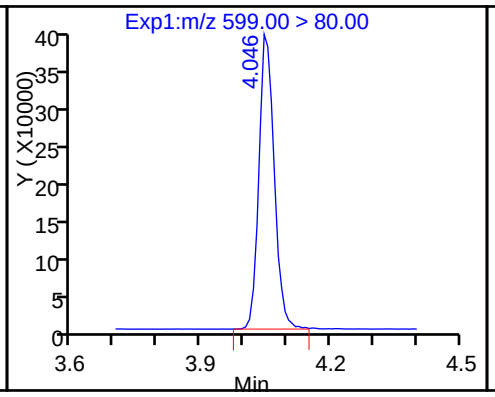
24 Perfluorodecanoic acid



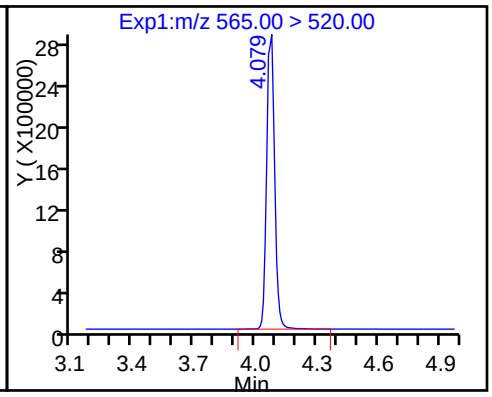
D 23 13C2 PFDA



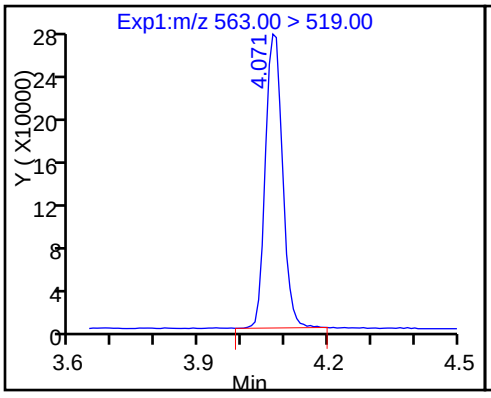
26 Perfluorodecane Sulfonic acid



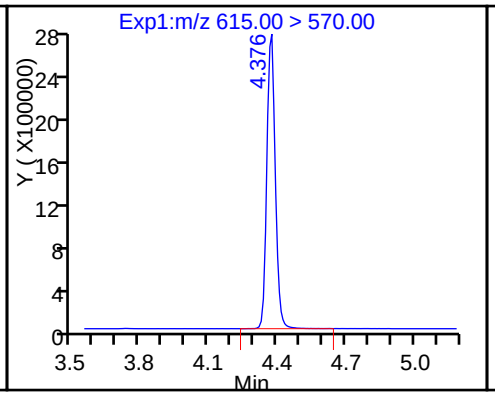
D 27 13C2 PFUnA



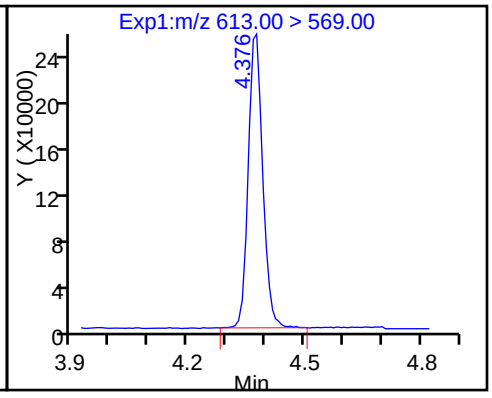
28 Perfluoroundecanoic acid



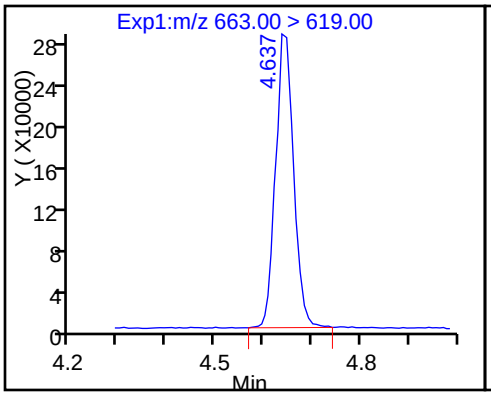
D 30 13C2 PFDoA



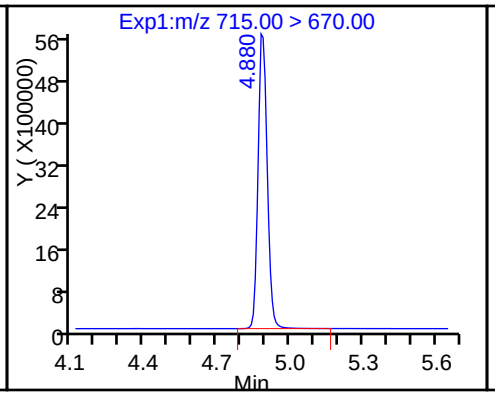
29 Perfluorododecanoic acid



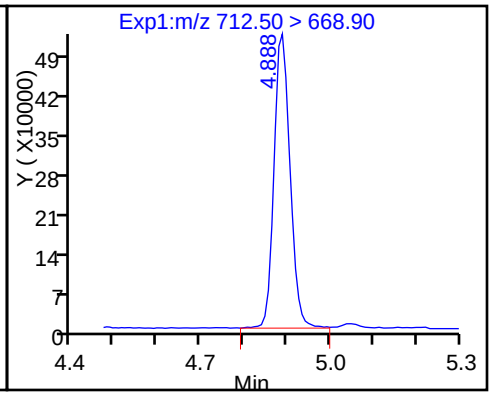
31 Perfluorotridecanoic acid



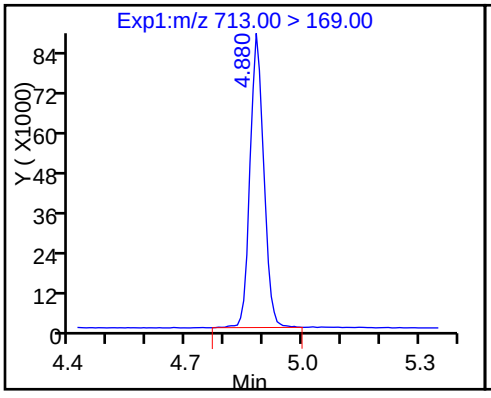
D 32 13C2-PFTeDA



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



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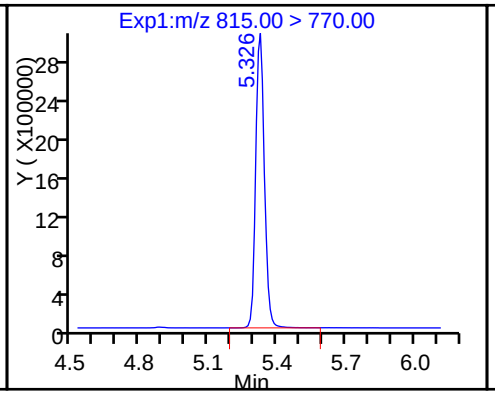
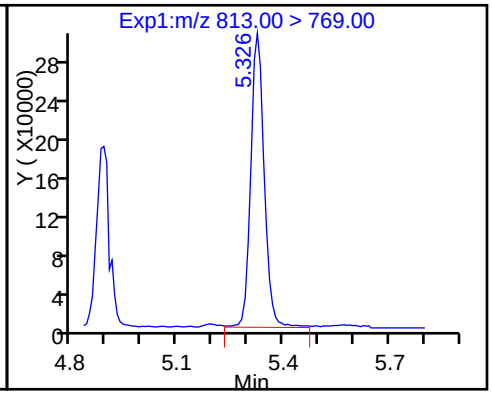
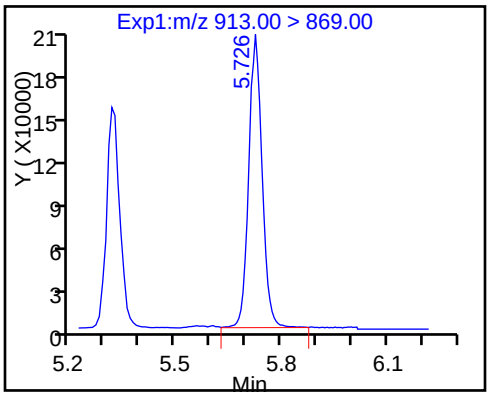


35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Report Date: 02-Dec-2016 14:51:35 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_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

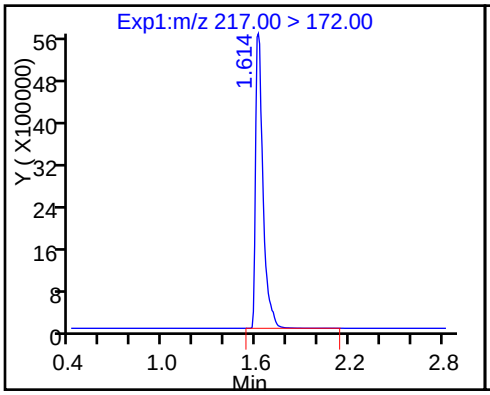
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7

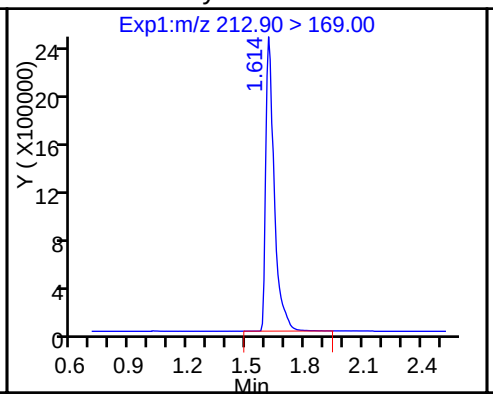
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

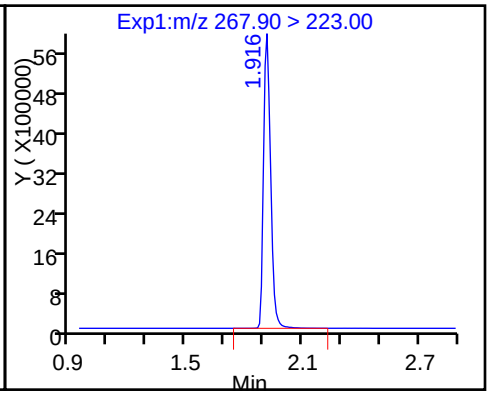
D 2 13C4 PFBA



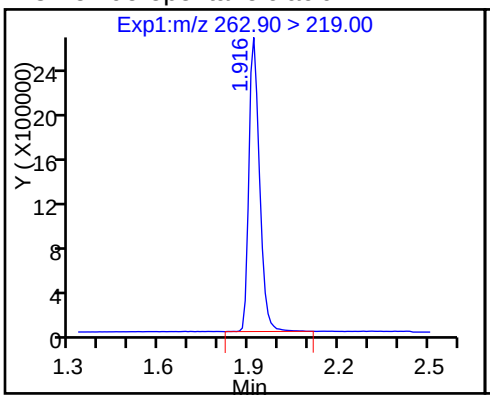
1 Perfluorobutyric acid



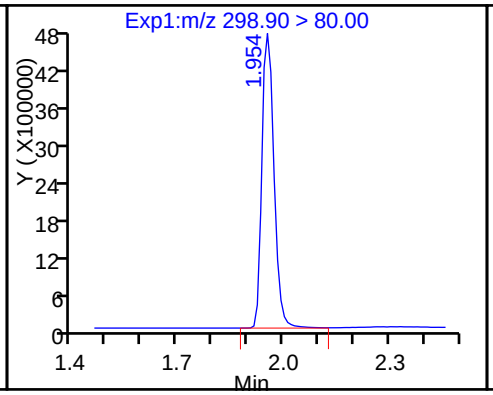
D 4 13C5-PFPeA



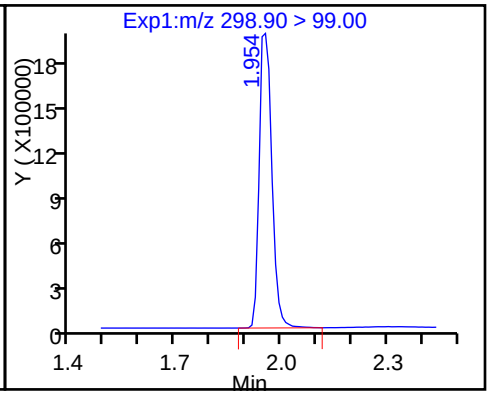
3 Perfluoropentanoic acid



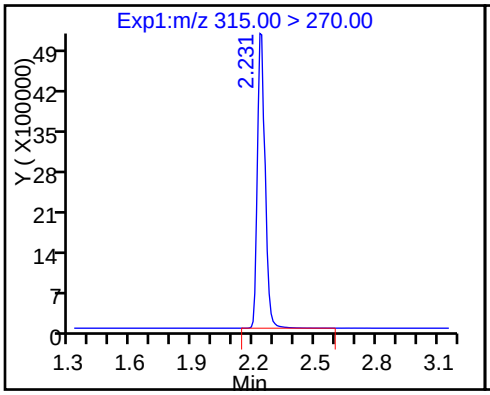
5 Perfluorobutanesulfonic acid



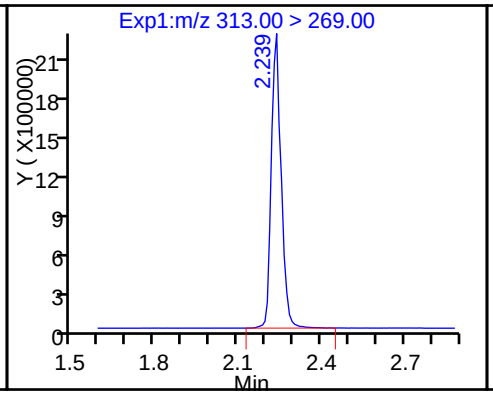
5 Perfluorobutanesulfonic acid



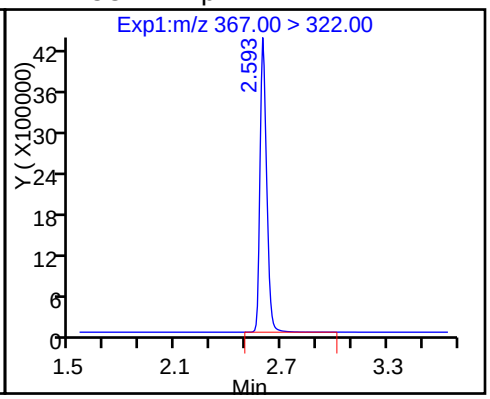
D 6 13C2 PFHxA



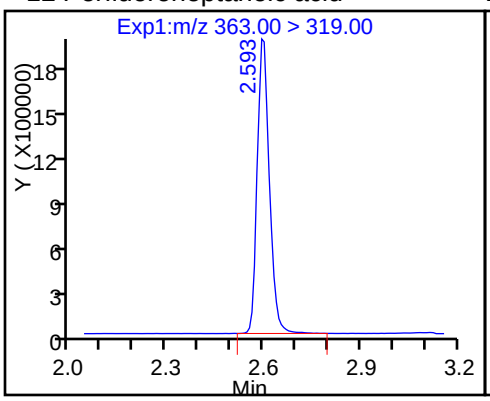
7 Perfluorohexanoic acid



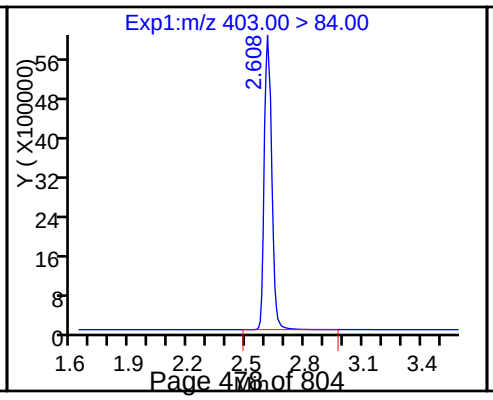
D 11 13C4-PFHpA



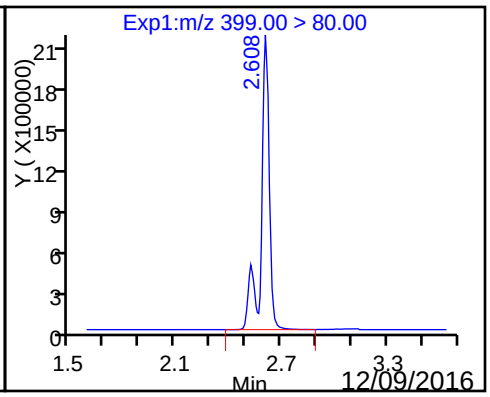
12 Perfluoroheptanoic acid



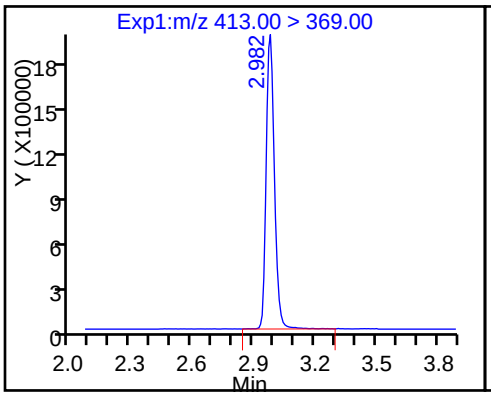
D 10 18O2 PFHxS



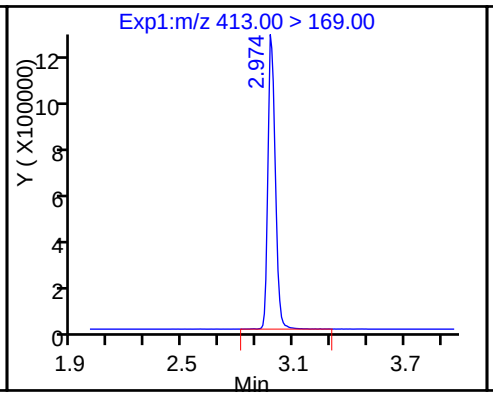
9 Perfluorohexanesulfonic acid



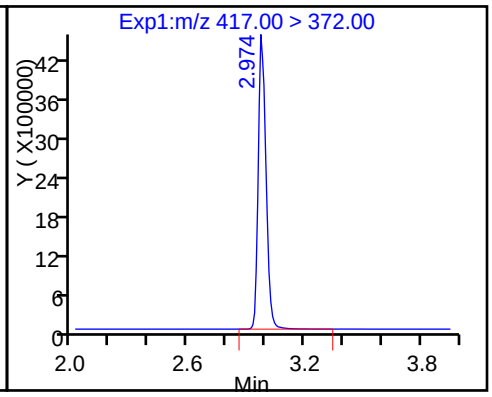
15 Perfluorooctanoic acid



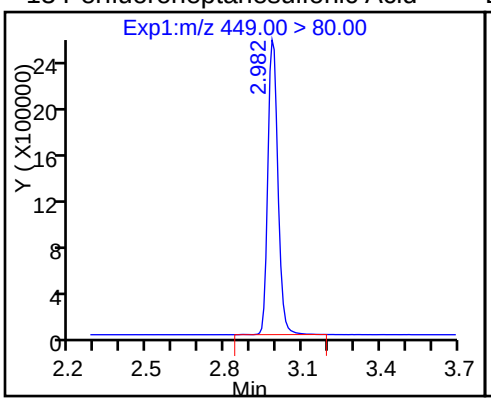
15 Perfluorooctanoic acid



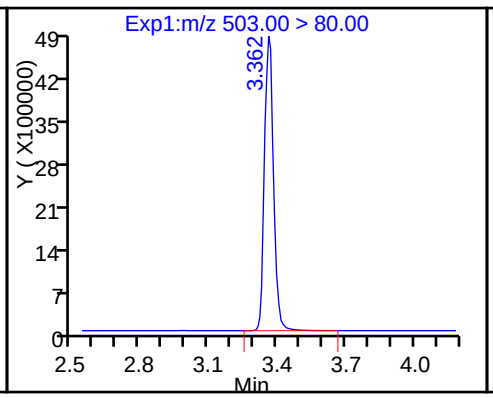
D 14 13C4 PFOA



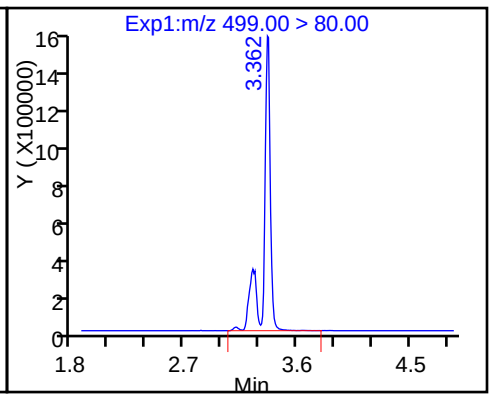
13 Perfluoroheptanesulfonic Acid



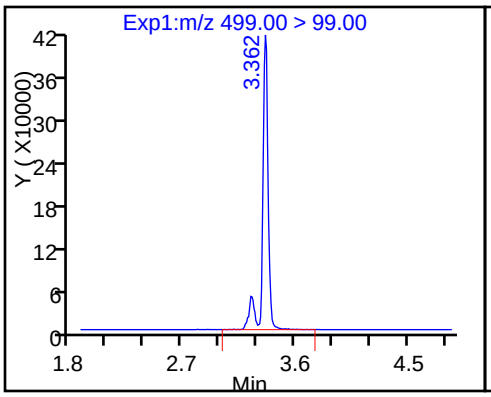
D 17 13C4 PFOS



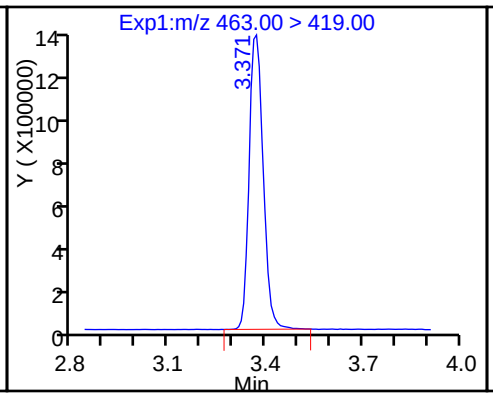
18 Perfluorooctane sulfonic acid



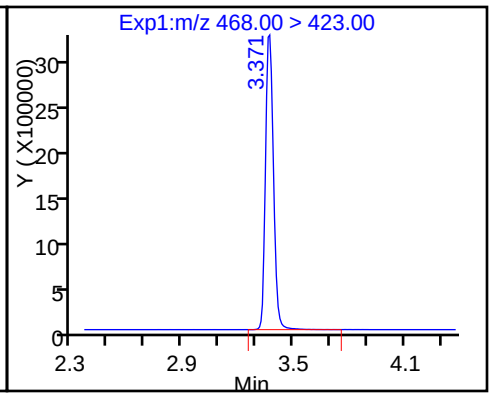
18 Perfluorooctane sulfonic acid



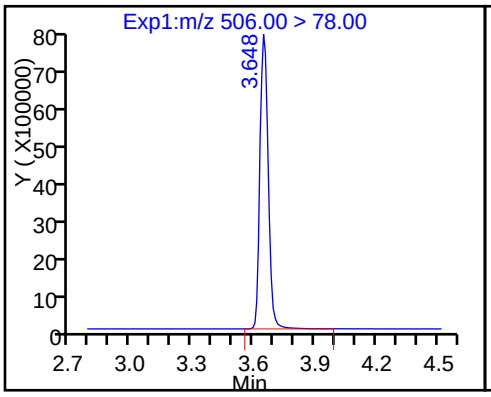
20 Perfluorononanoic acid



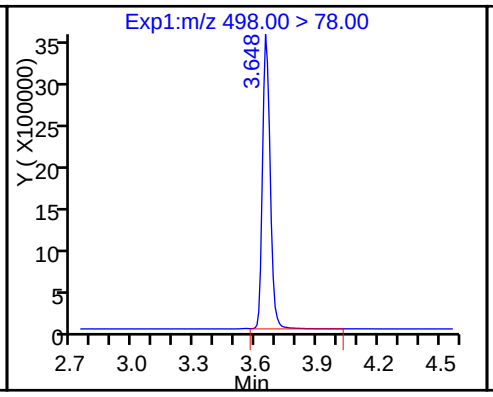
D 19 13C5 PFNA



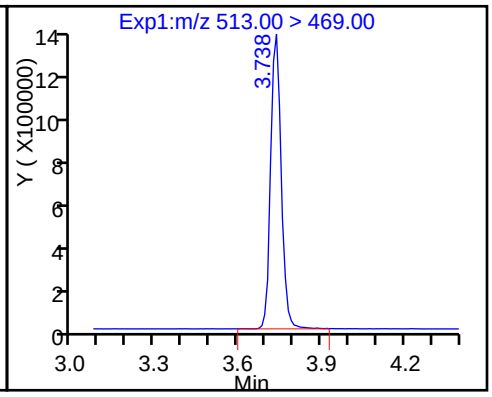
D 21 13C8 FOSA



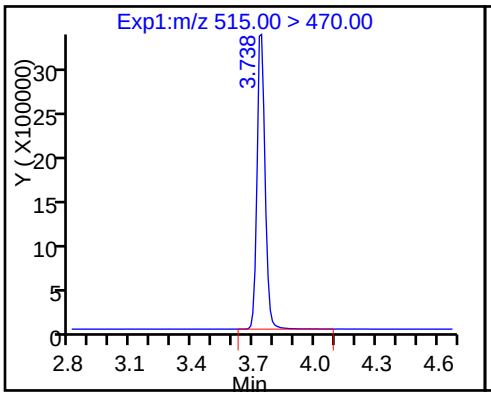
22 Perfluorooctane Sulfonamide



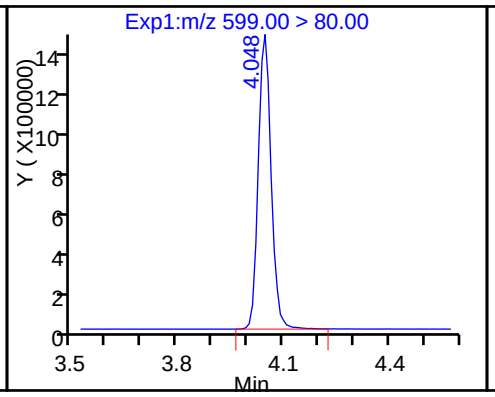
24 Perfluorodecanoic acid



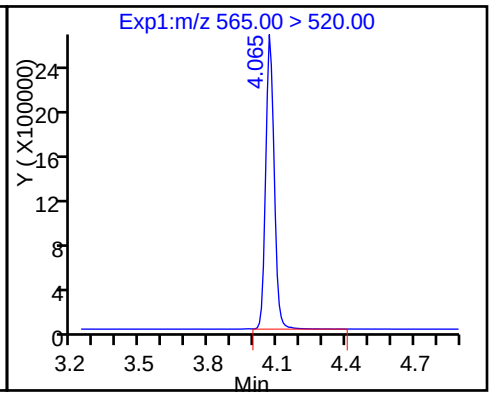
D 23 13C2 PFDA



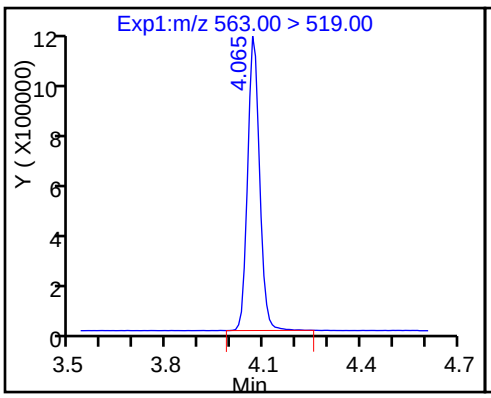
26 Perfluorodecane Sulfonic acid



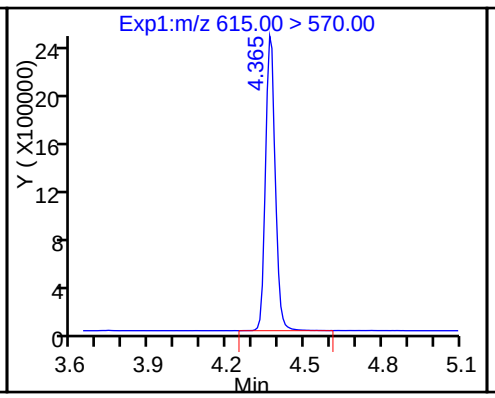
D 27 13C2 PFUnA



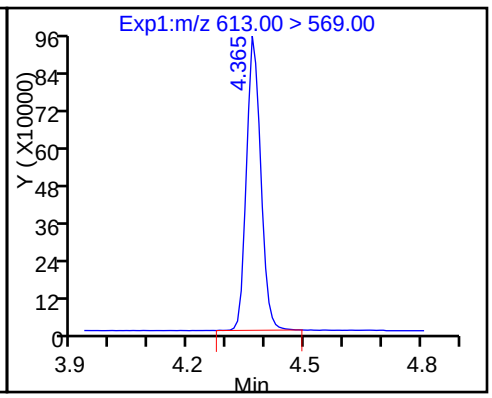
28 Perfluoroundecanoic acid



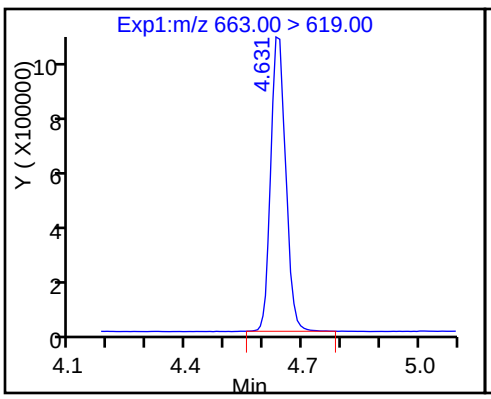
D 30 13C2 PFDoA



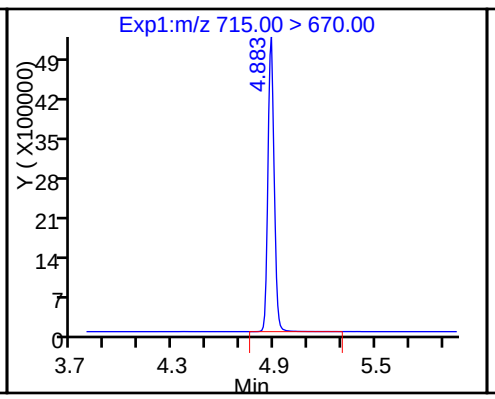
29 Perfluorododecanoic acid



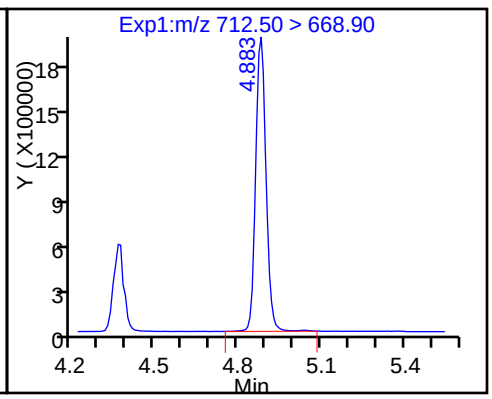
31 Perfluorotridecanoic acid



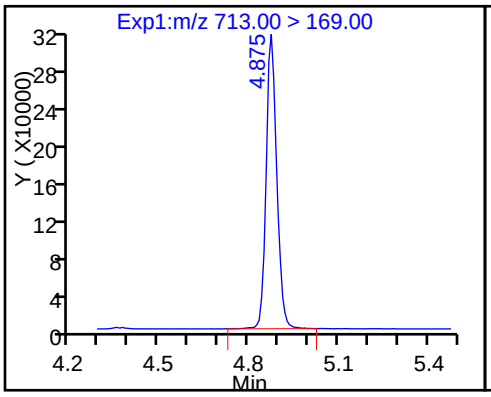
D 32 13C2-PFTeDA



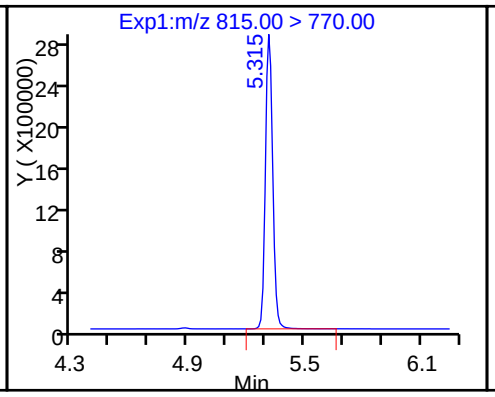
33 Perfluorotetradecanoic acid



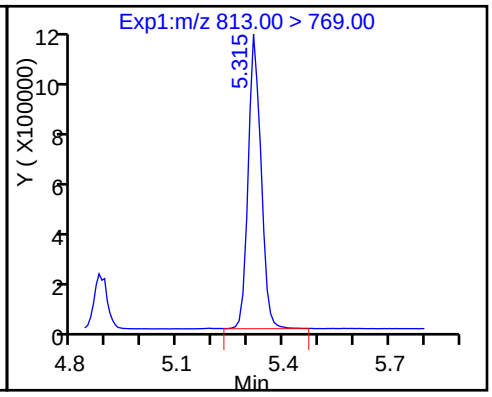
33 Perfluorotetradecanoic acid



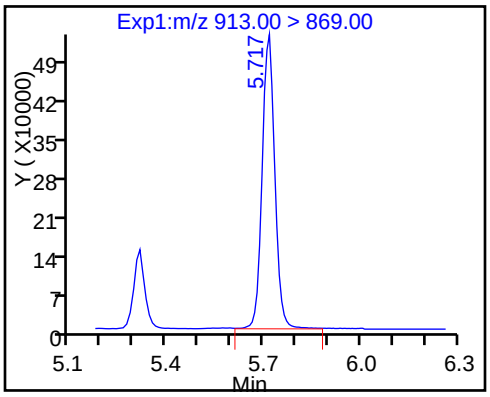
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_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

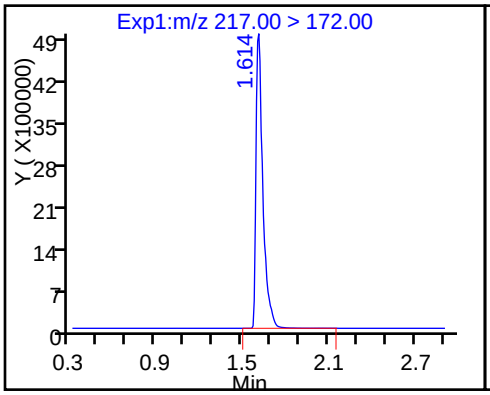
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 8

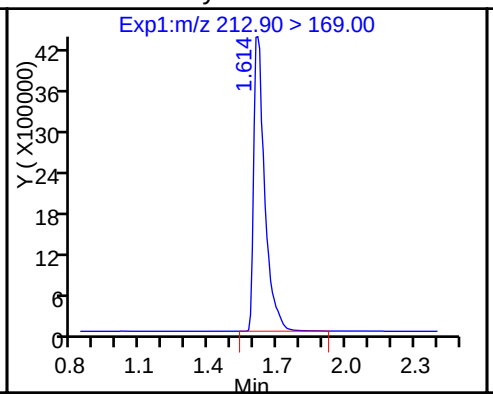
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

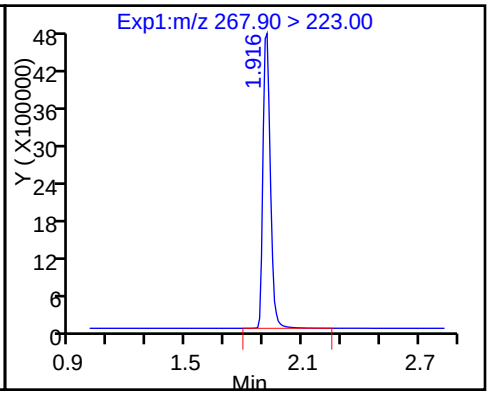
D 2 13C4 PFBA



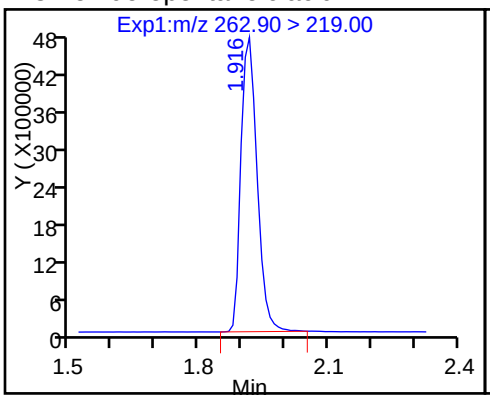
1 Perfluorobutyric acid



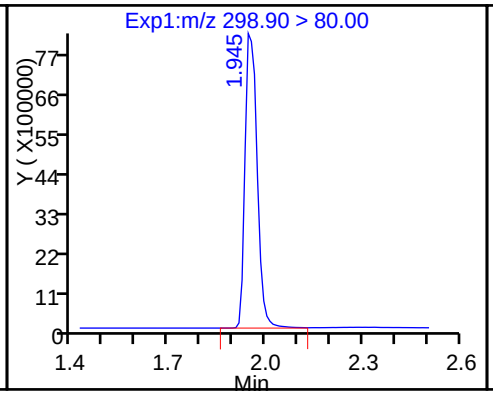
D 4 13C5-PFPeA



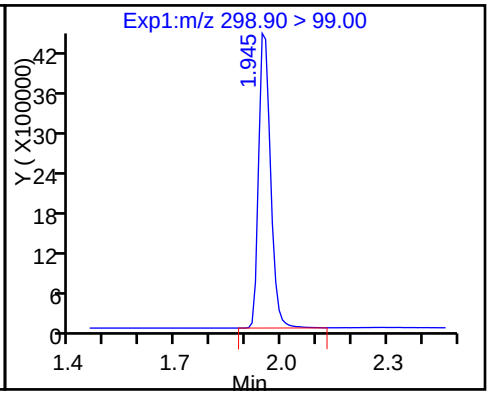
3 Perfluoropentanoic acid



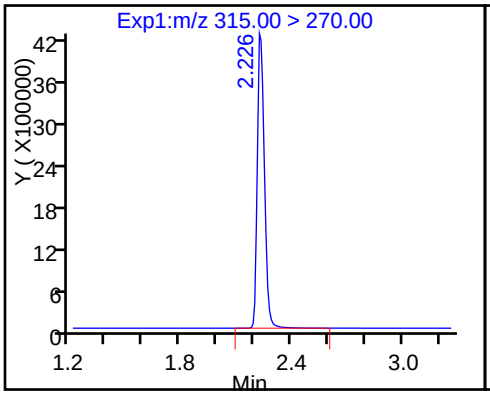
5 Perfluorobutanesulfonic acid



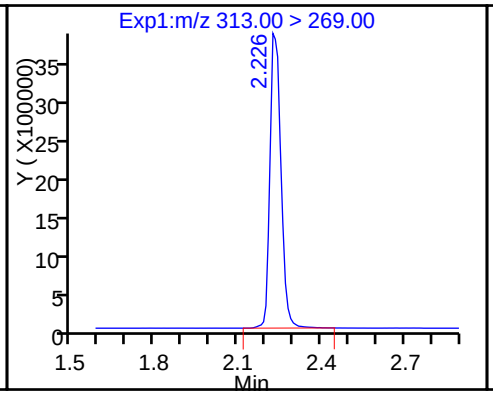
5 Perfluorobutanesulfonic acid



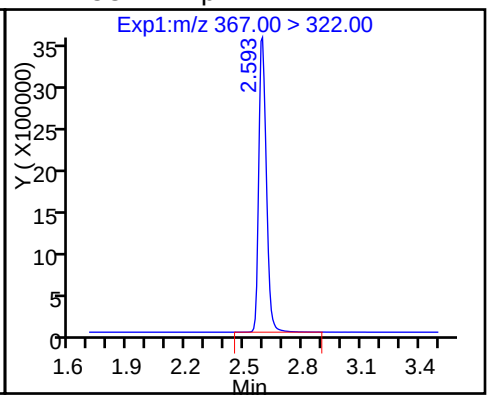
D 6 13C2 PFHxA



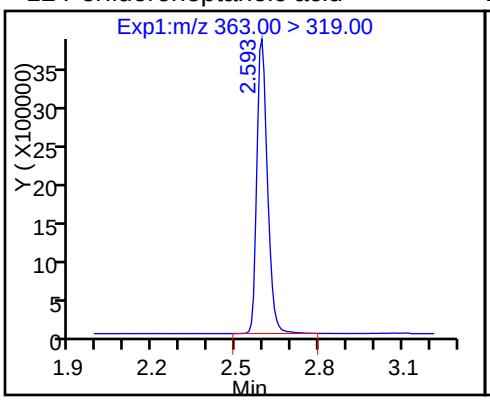
7 Perfluorohexanoic acid



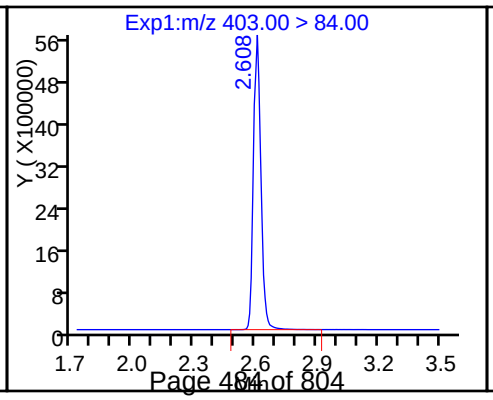
D 11 13C4-PFHpA



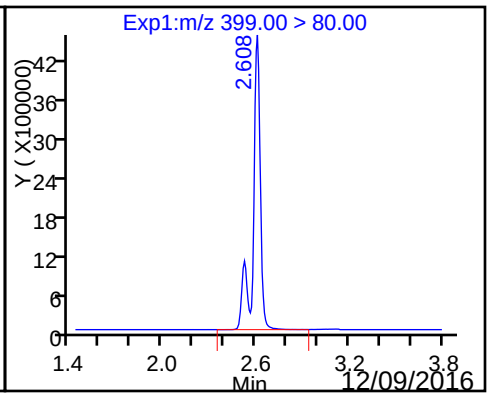
12 Perfluoroheptanoic acid



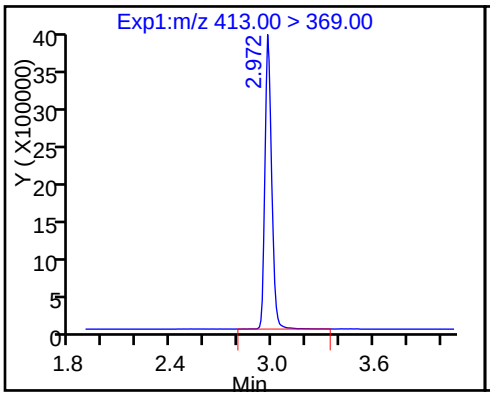
D 10 18O2 PFHxS



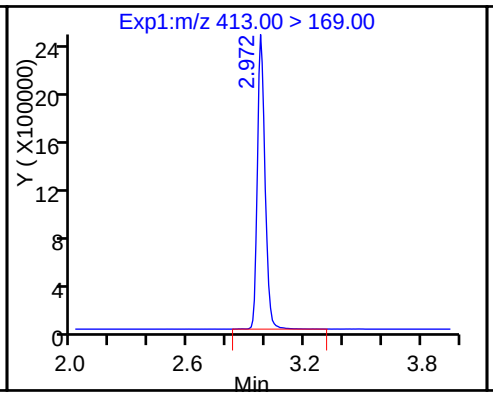
9 Perfluorohexanesulfonic acid



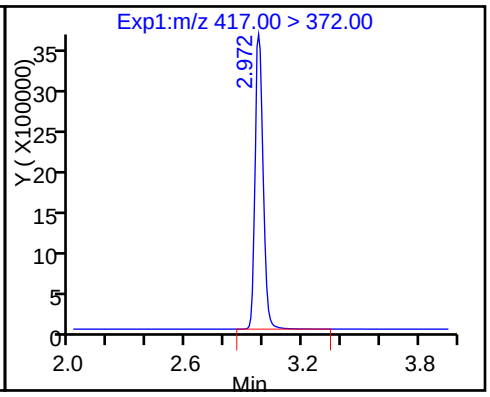
15 Perfluorooctanoic acid



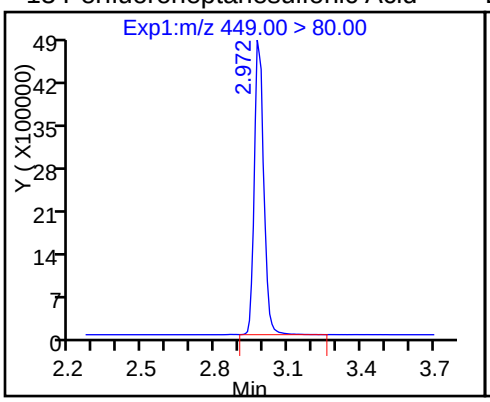
15 Perfluorooctanoic acid



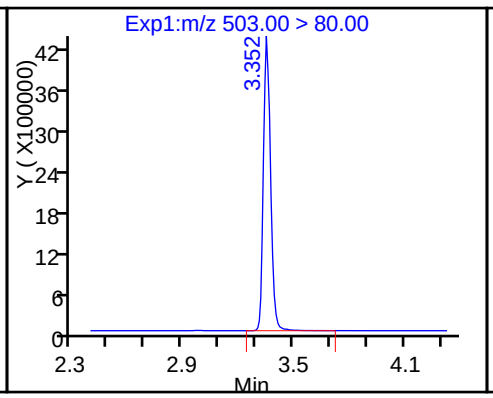
D 14 13C4 PFOA



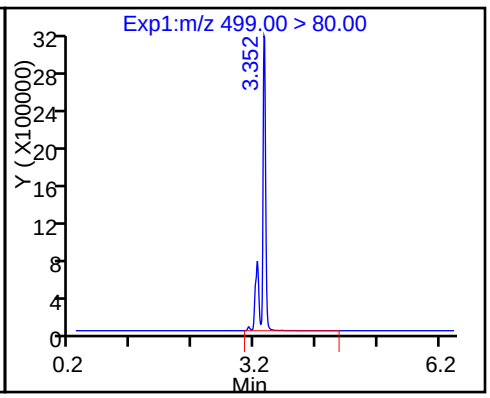
13 Perfluoroheptanesulfonic Acid



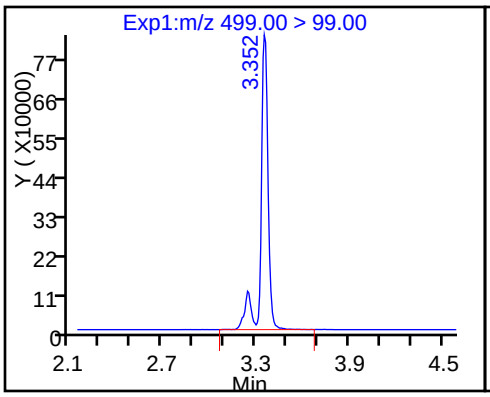
D 17 13C4 PFOS



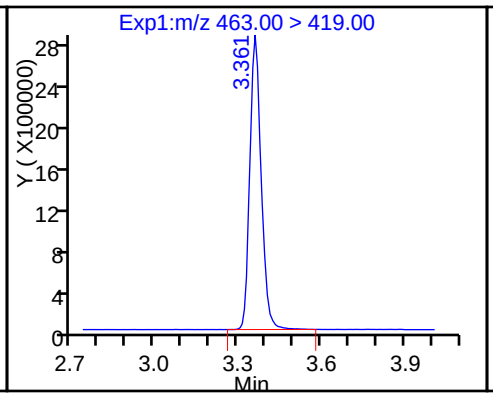
18 Perfluorooctane sulfonic acid



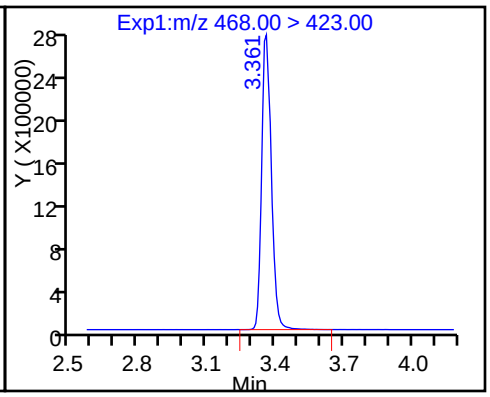
18 Perfluorooctane sulfonic acid



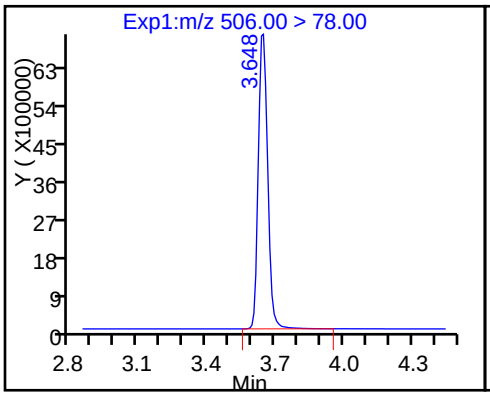
20 Perfluorononanoic acid



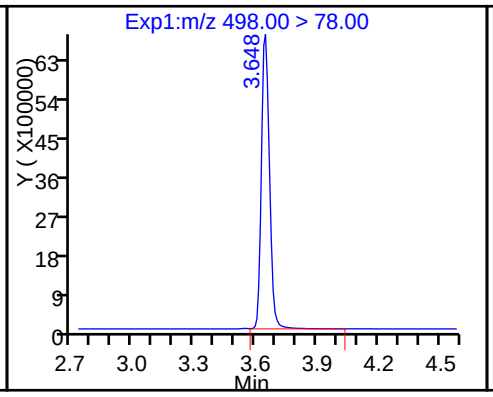
D 19 13C5 PFNA



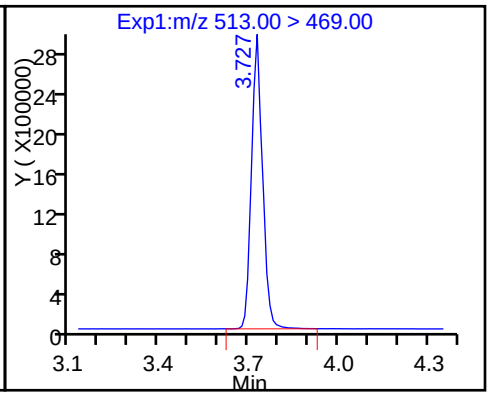
D 21 13C8 FOSA



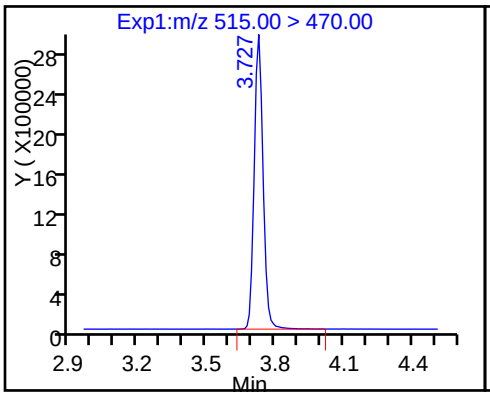
22 Perfluorooctane Sulfonamide



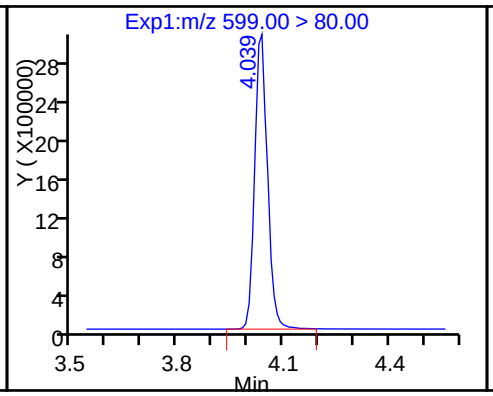
24 Perfluorodecanoic acid



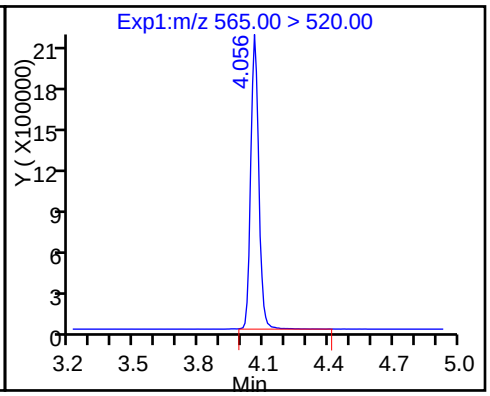
D 23 13C2 PFDA



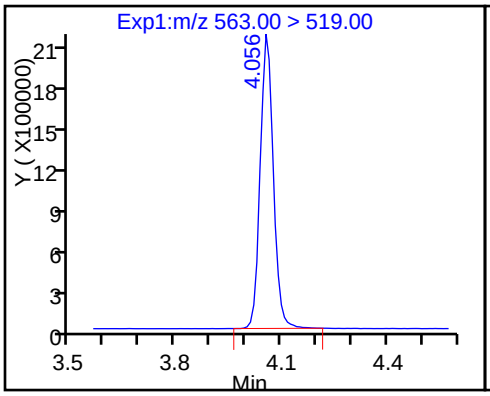
26 Perfluorodecane Sulfonic acid



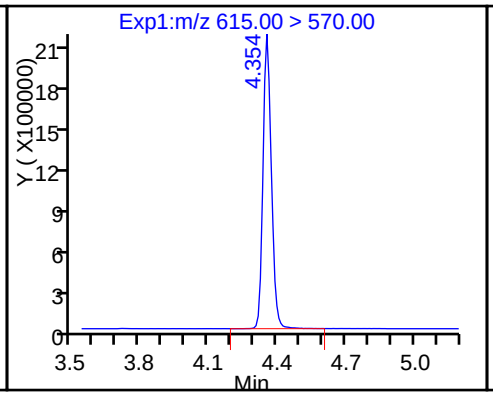
D 27 13C2 PFUnA



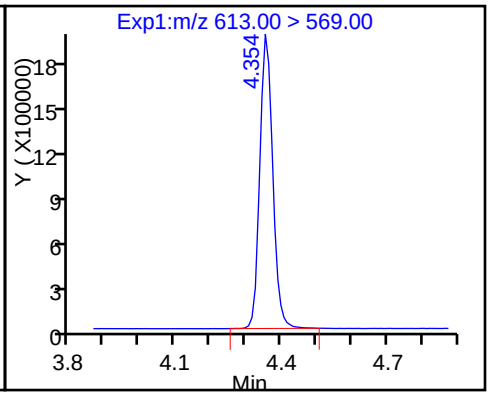
28 Perfluoroundecanoic acid



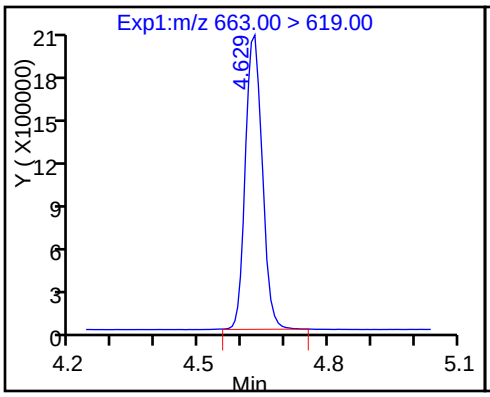
D 30 13C2 PFDoA



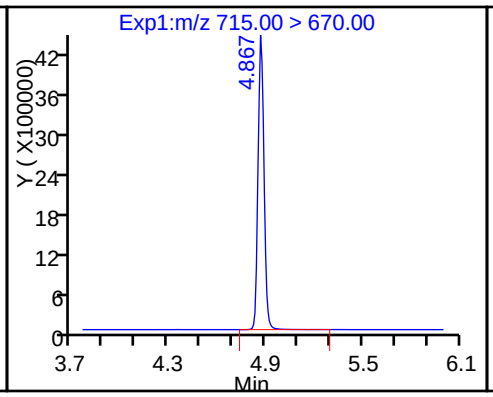
29 Perfluorododecanoic acid



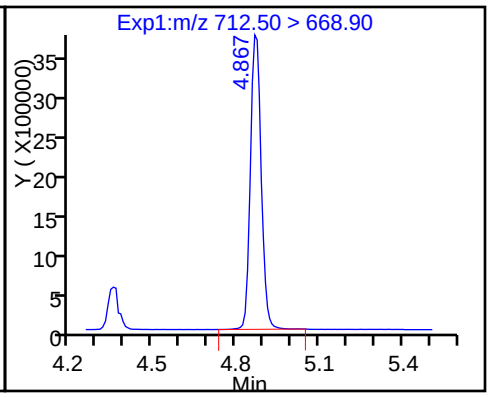
31 Perfluorotridecanoic acid



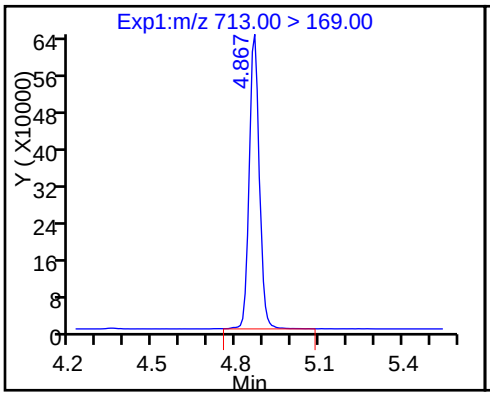
D 32 13C2-PFTeDA



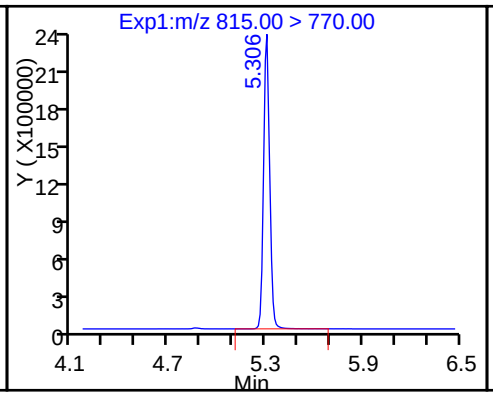
33 Perfluorotetradecanoic acid



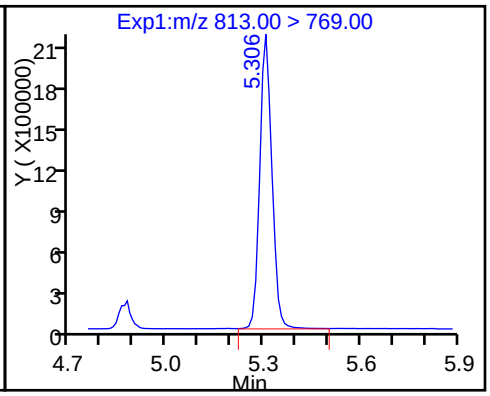
33 Perfluorotetradecanoic acid



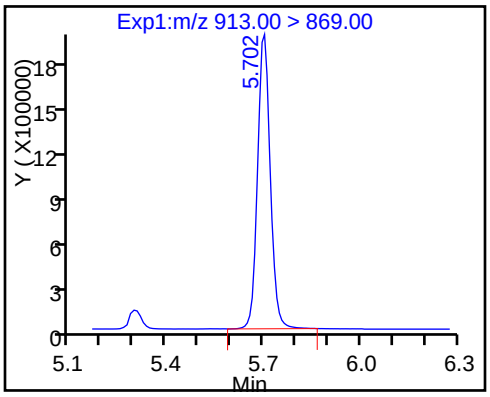
D 34 13C2-PFHxDA



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

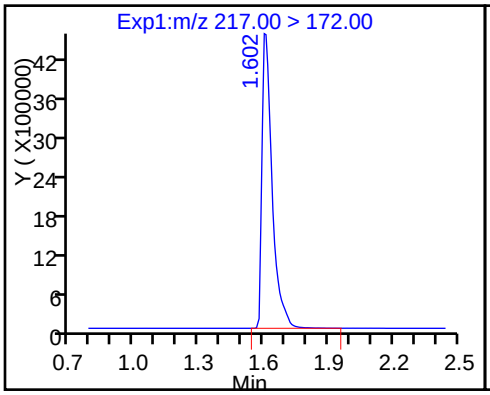
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9

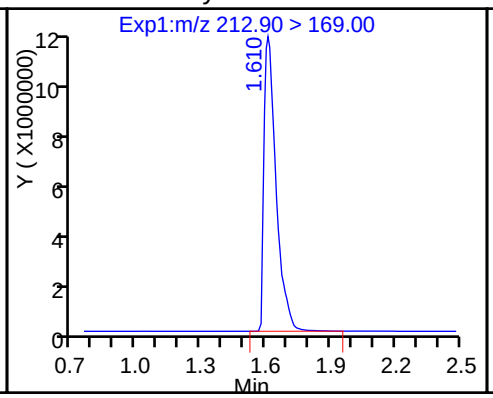
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

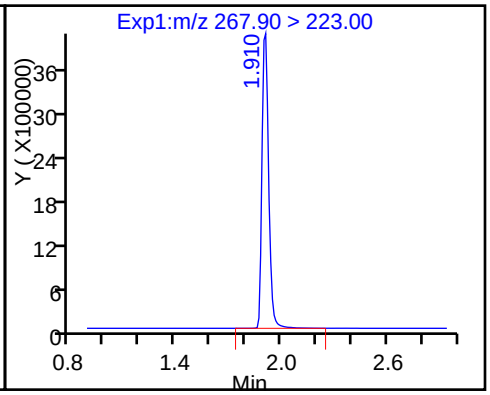
D 2 13C4 PFBA



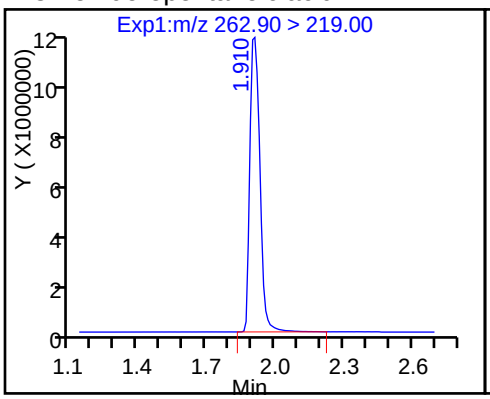
1 Perfluorobutyric acid



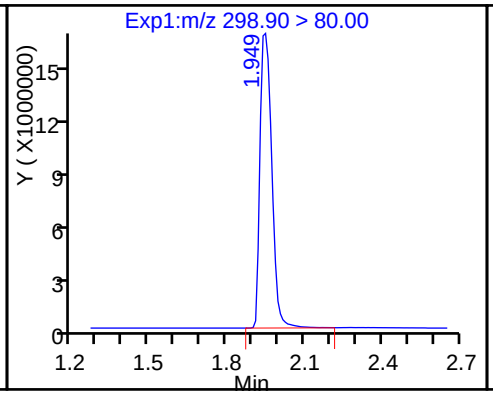
D 4 13C5-PFPeA



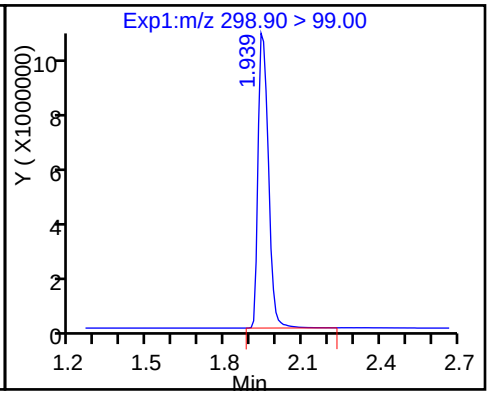
3 Perfluoropentanoic acid



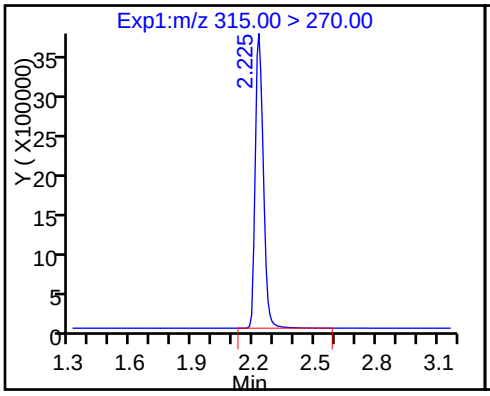
5 Perfluorobutanesulfonic acid



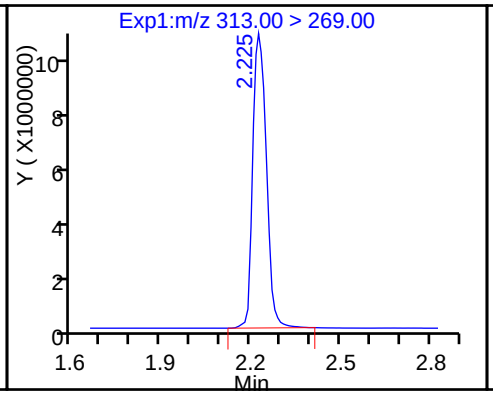
5 Perfluorobutanesulfonic acid



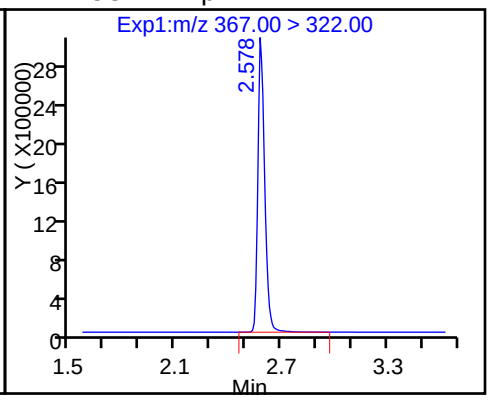
D 6 13C2 PFHxA



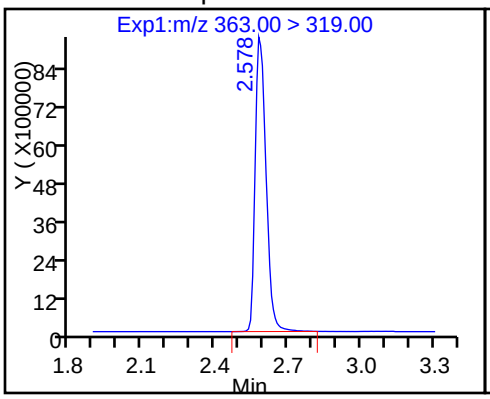
7 Perfluorohexanoic acid



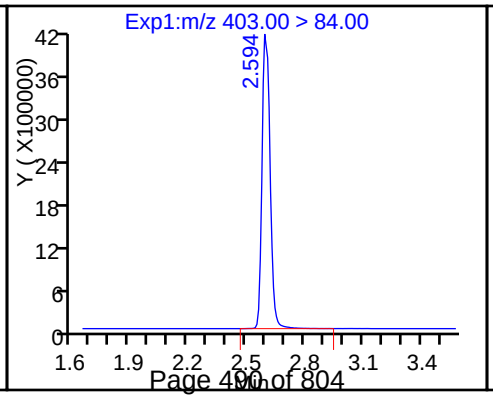
D 11 13C4-PFHpA



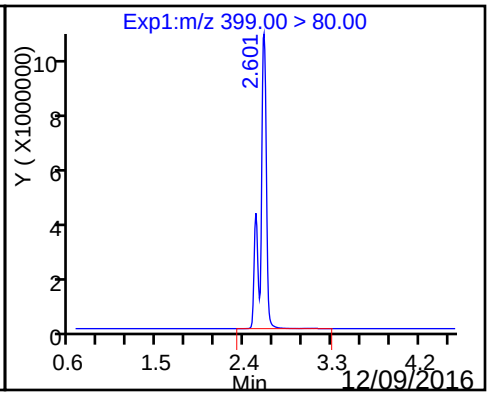
12 Perfluoroheptanoic acid



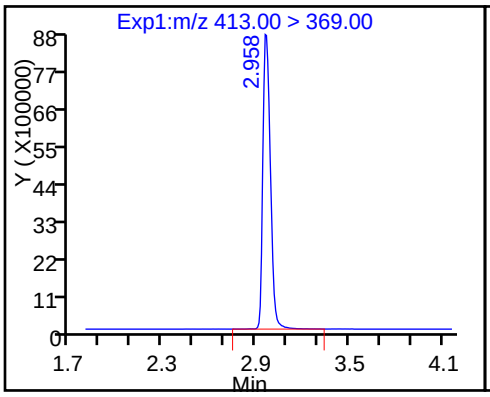
D 10 18O2 PFHxS



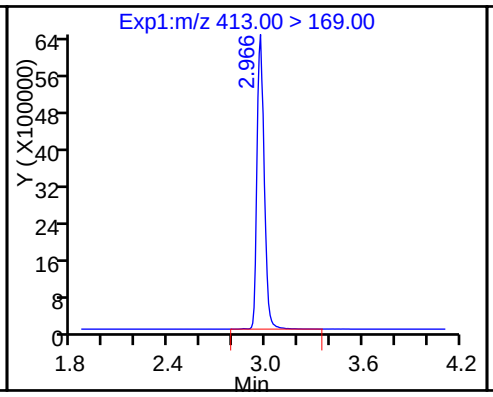
9 Perfluorohexanesulfonic acid



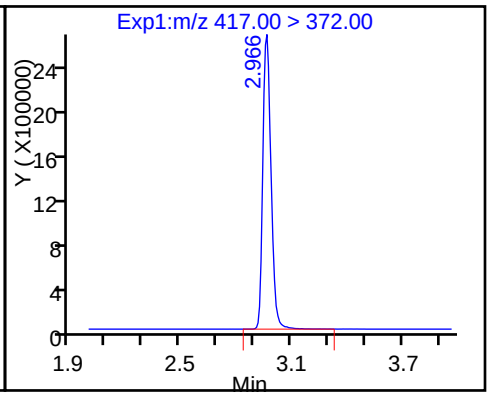
15 Perfluorooctanoic acid



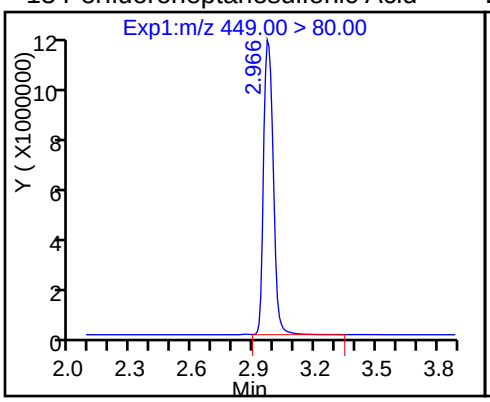
15 Perfluorooctanoic acid



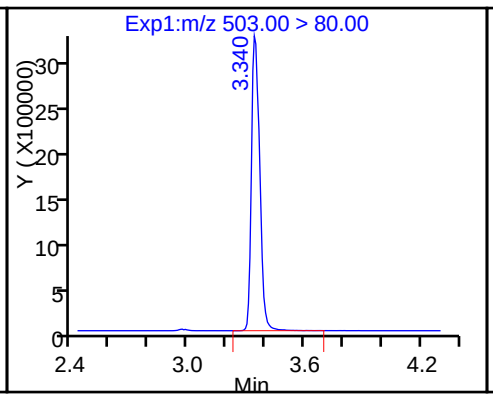
D 14 13C4 PFOA



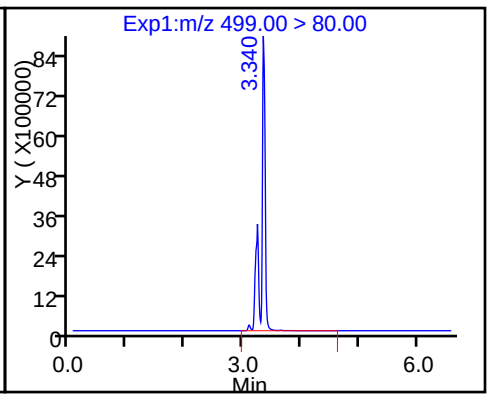
13 Perfluoroheptanesulfonic Acid



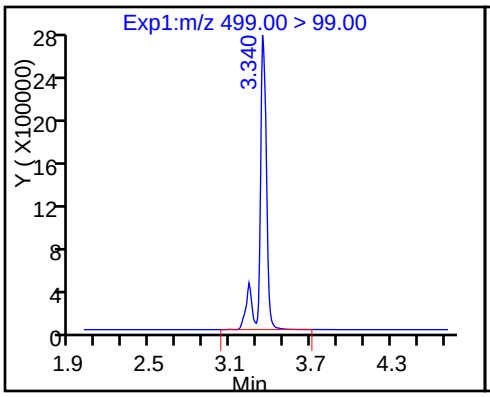
D 17 13C4 PFOS



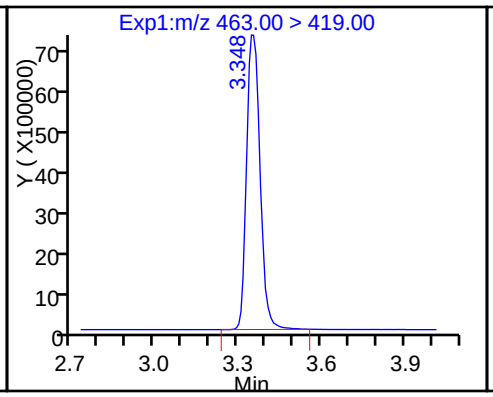
18 Perfluorooctane sulfonic acid



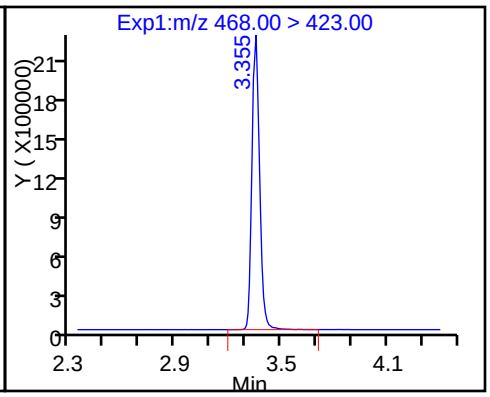
18 Perfluorooctane sulfonic acid



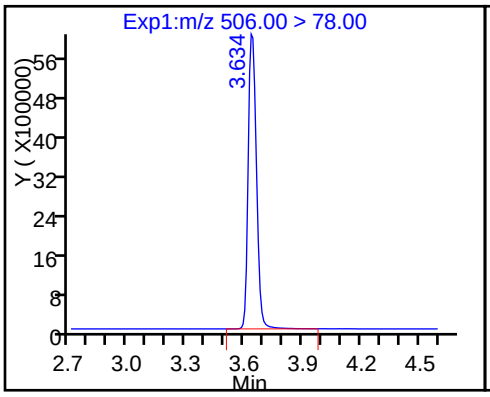
20 Perfluorononanoic acid



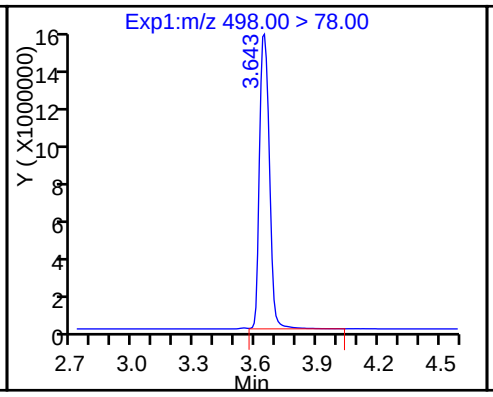
D 19 13C5 PFNA



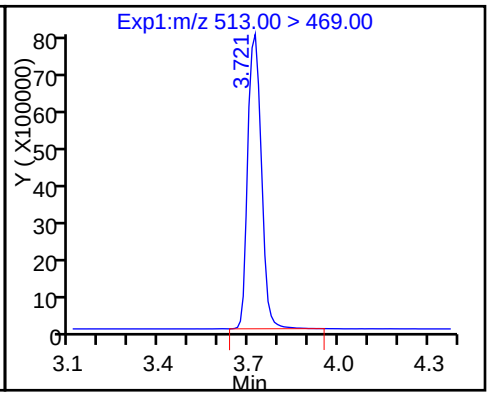
D 21 13C8 FOSA



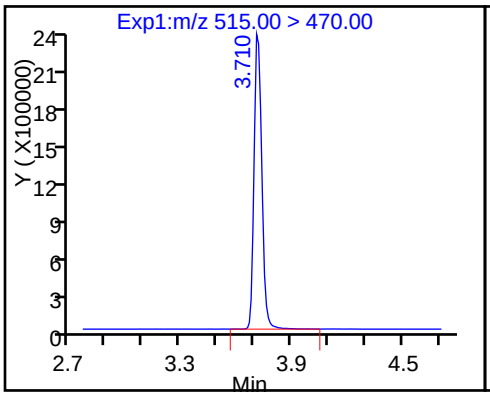
22 Perfluorooctane Sulfonamide



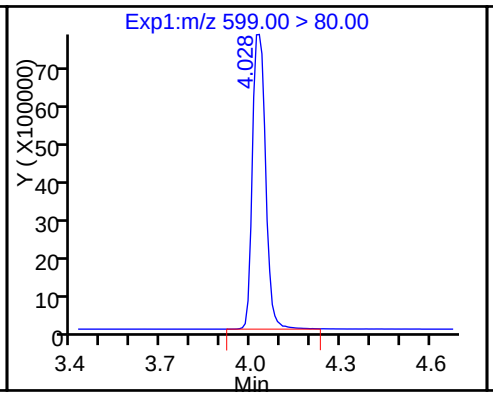
24 Perfluorodecanoic acid



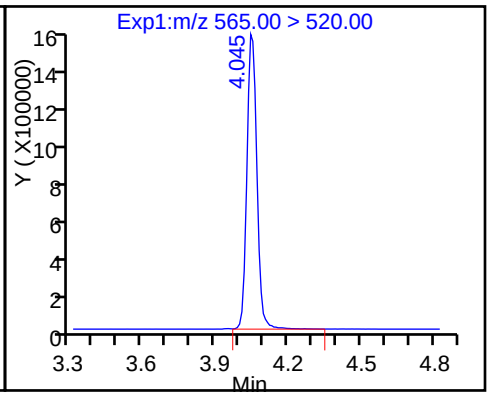
D 23 13C2 PFDA



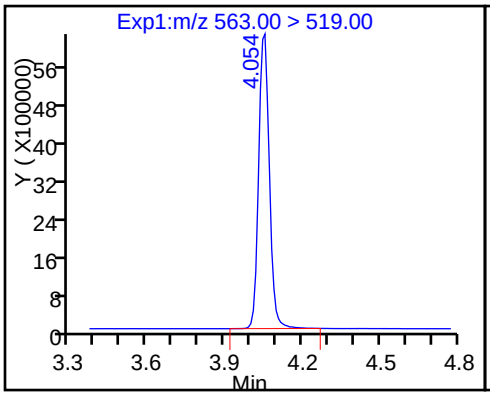
26 Perfluorodecane Sulfonic acid



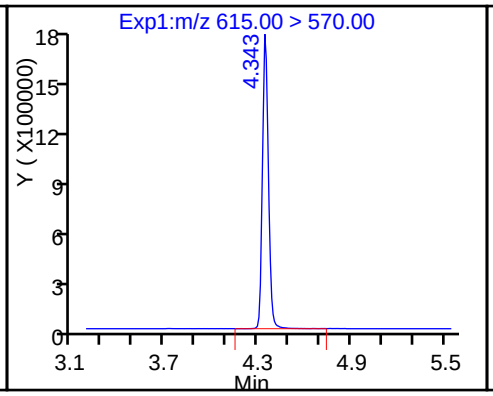
D 27 13C2 PFUnA



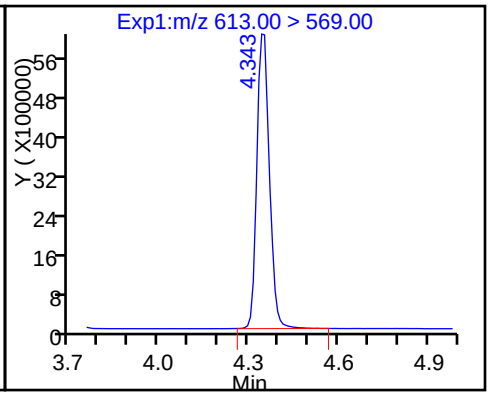
28 Perfluoroundecanoic acid



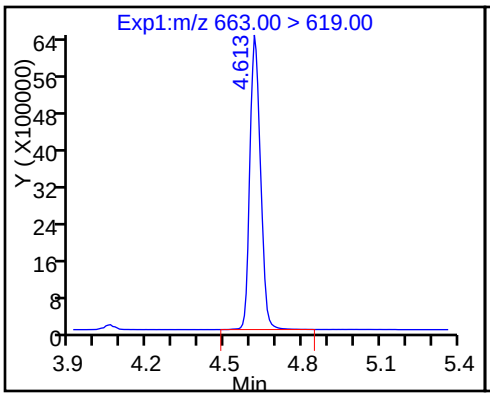
D 30 13C2 PFDoA



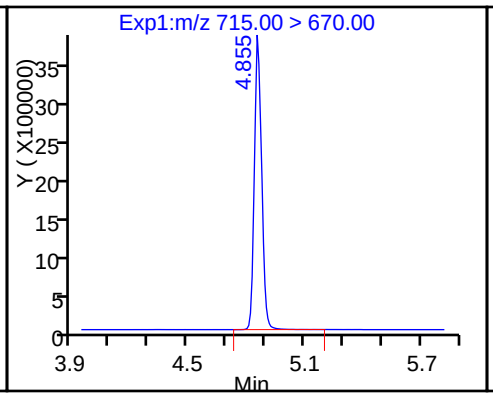
29 Perfluorododecanoic acid



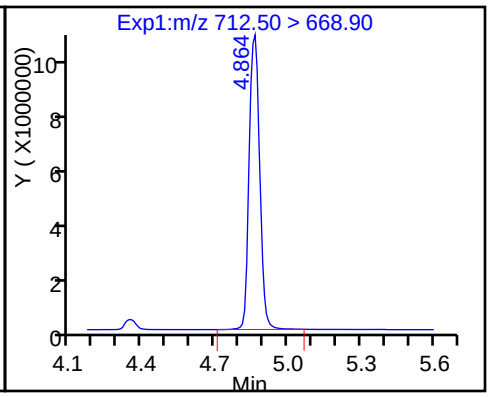
31 Perfluorotridecanoic acid



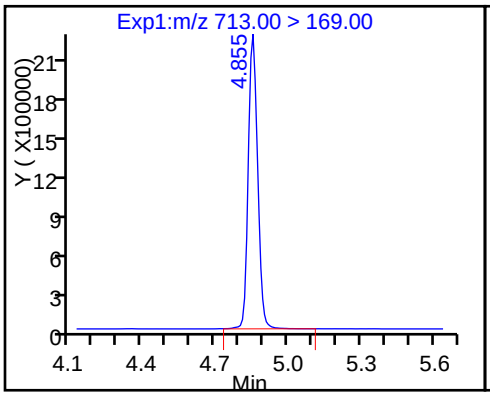
D 32 13C2-PFTeDA



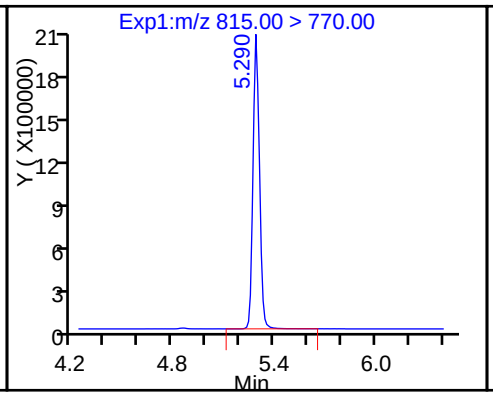
33 Perfluorotetradecanoic acid



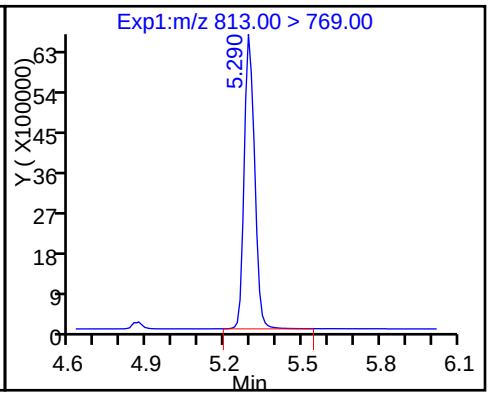
33 Perfluorotetradecanoic acid



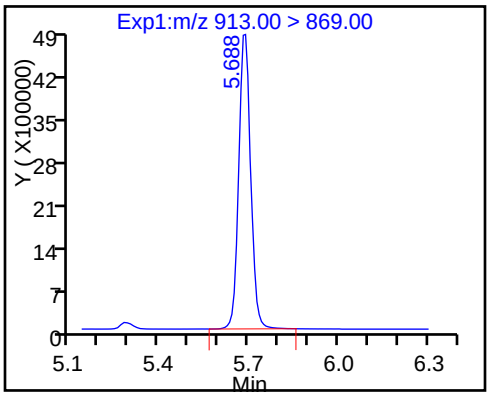
D 34 13C2-PFHxDA



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

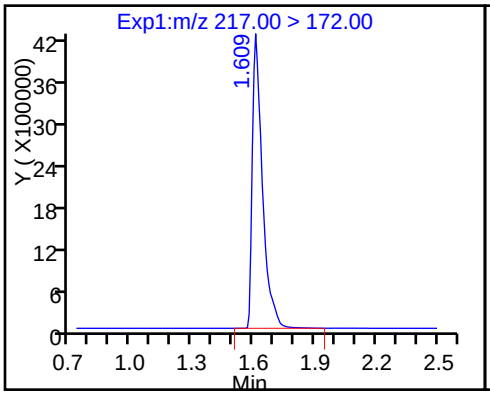
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 43 Worklist Smp#: 10

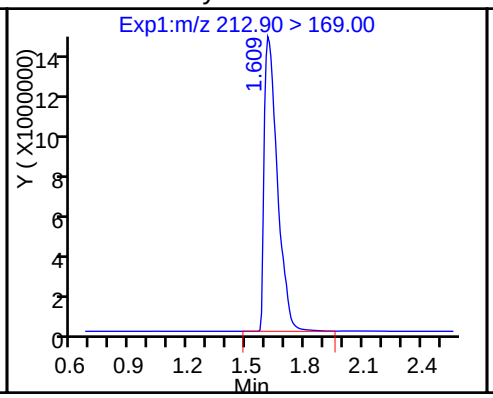
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

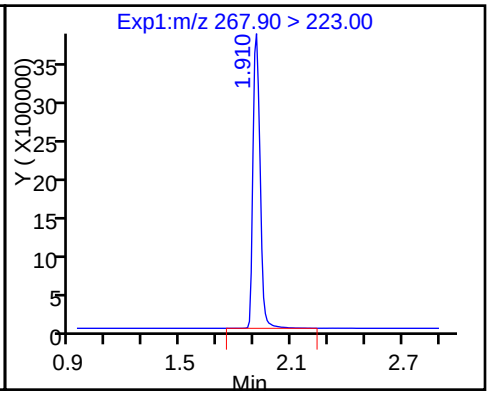
D 2 13C4 PFBA



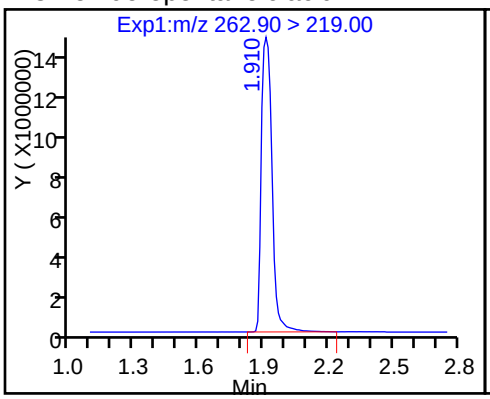
1 Perfluorobutyric acid



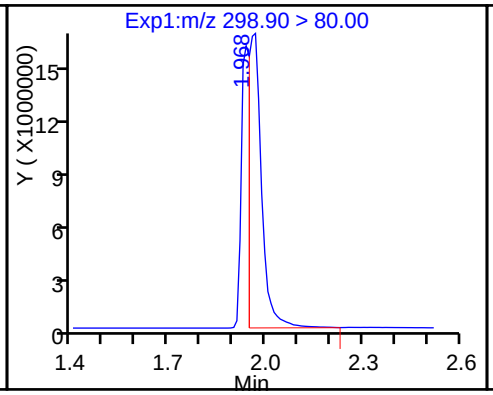
D 4 13C5-PFPeA



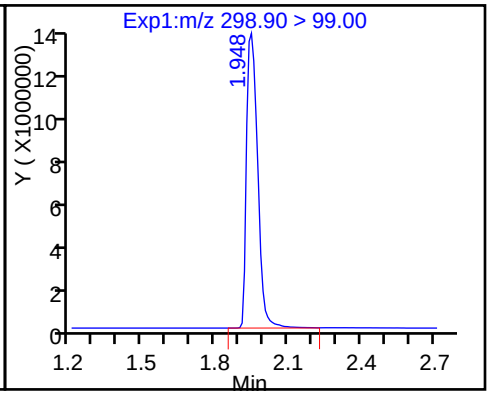
3 Perfluoropentanoic acid



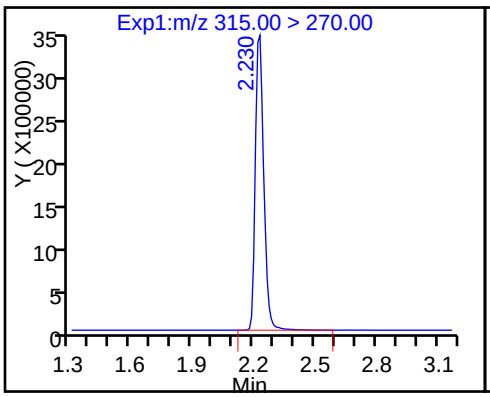
5 Perfluorobutanesulfonic acid



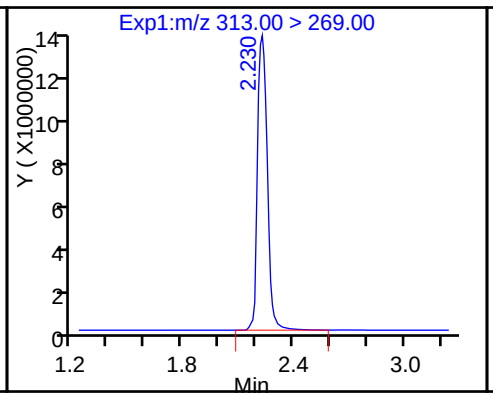
5 Perfluorobutanesulfonic acid



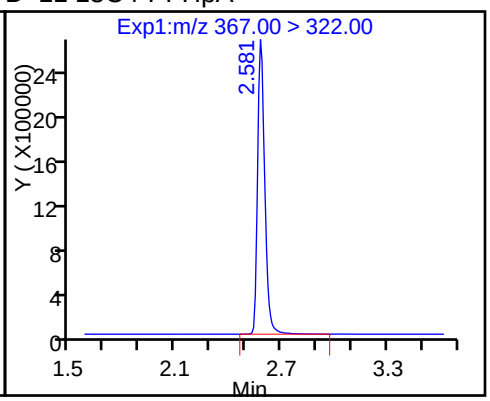
D 6 13C2 PFHxA



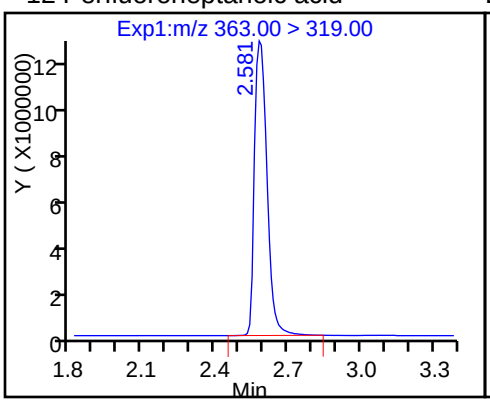
7 Perfluorohexanoic acid



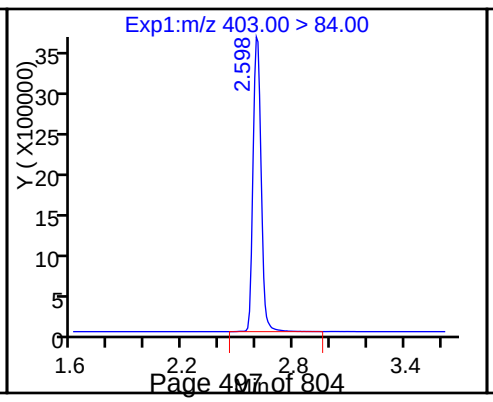
D 11 13C4-PFHpA



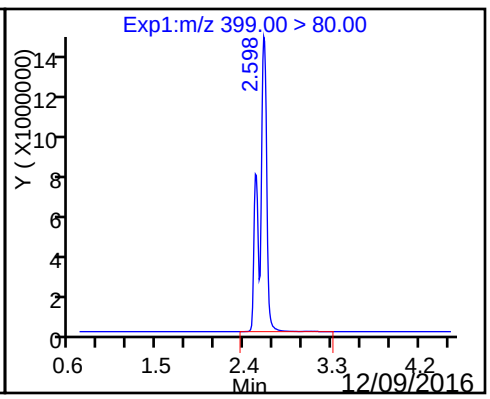
12 Perfluoroheptanoic acid



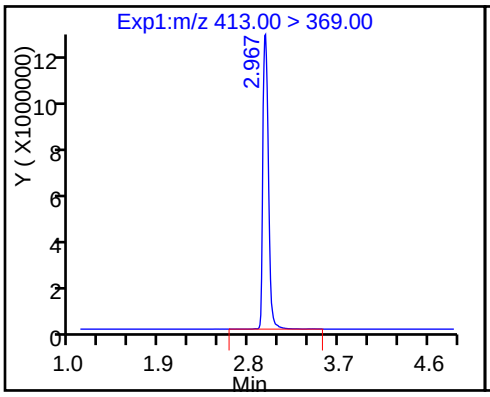
D 10 18O2 PFHxS



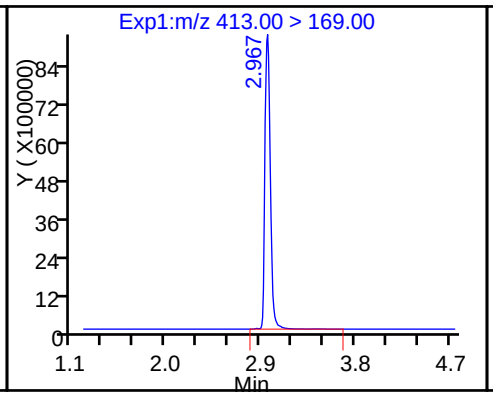
9 Perfluorohexanesulfonic acid



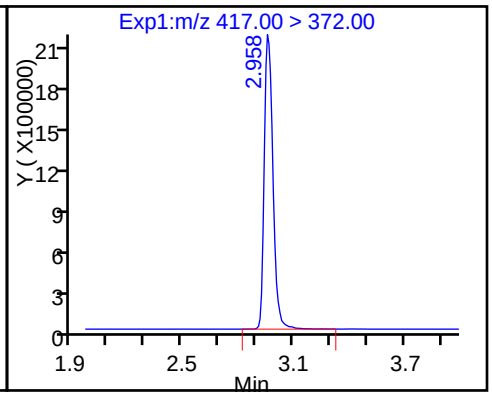
15 Perfluorooctanoic acid



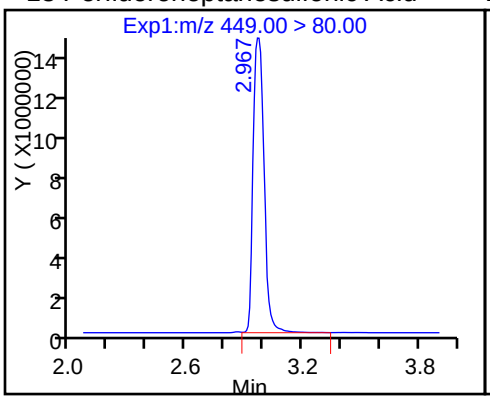
15 Perfluorooctanoic acid



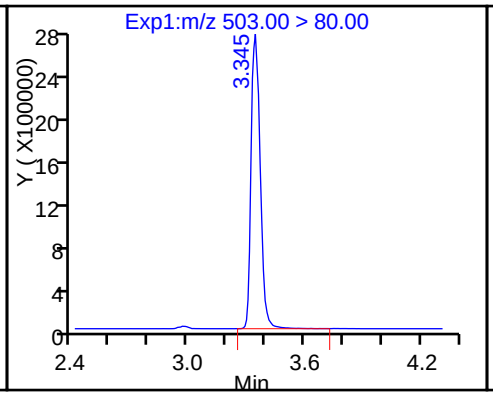
D 14 13C4 PFOA



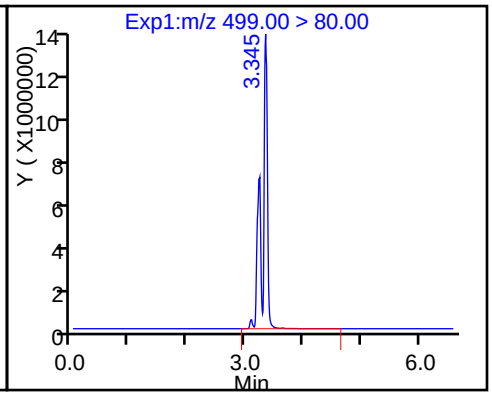
13 Perfluoroheptanesulfonic Acid



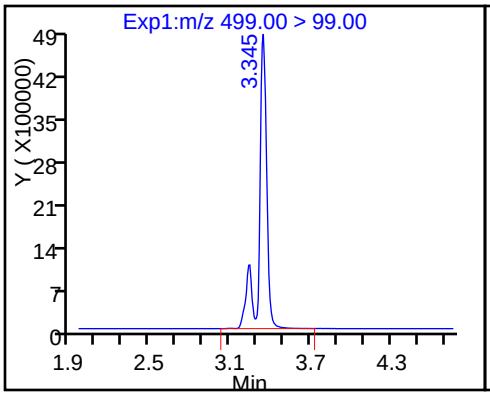
D 17 13C4 PFOS



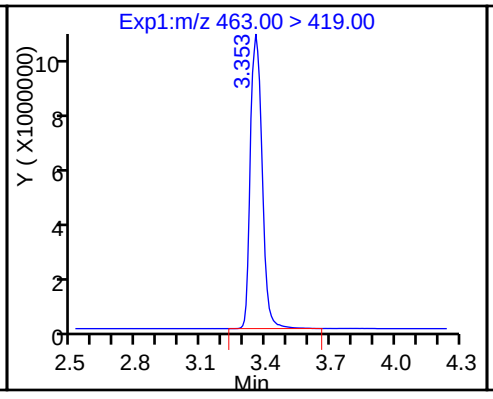
18 Perfluorooctane sulfonic acid



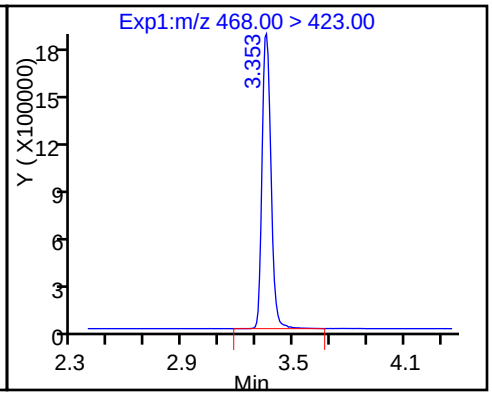
18 Perfluorooctane sulfonic acid



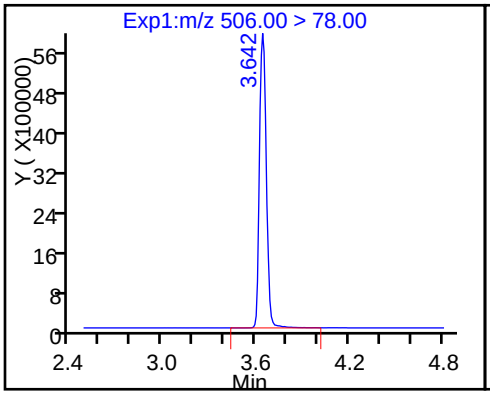
20 Perfluorononanoic acid



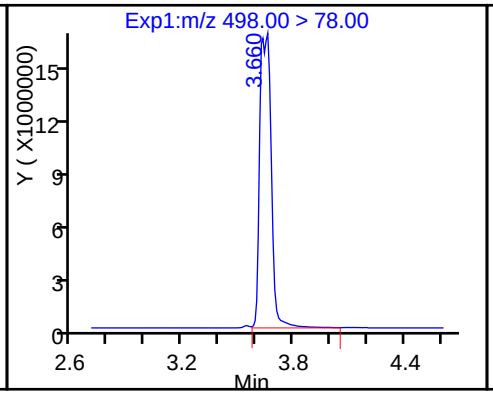
D 19 13C5 PFNA



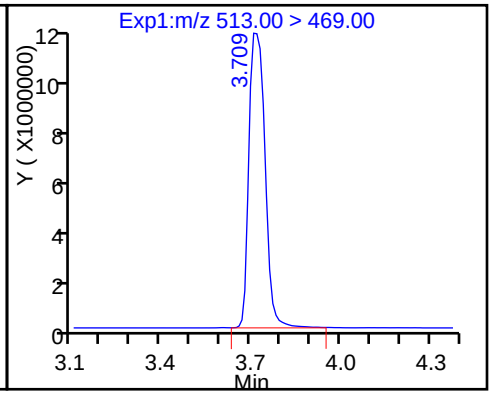
D 21 13C8 FOSA



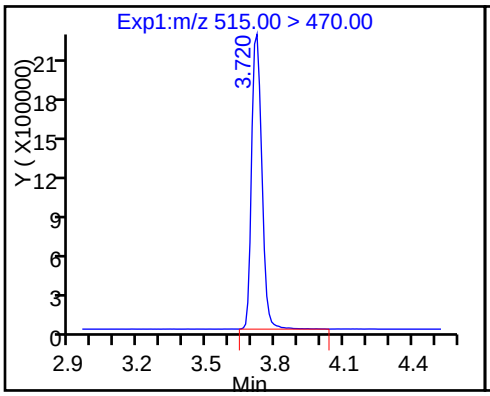
22 Perfluorooctane Sulfonamide



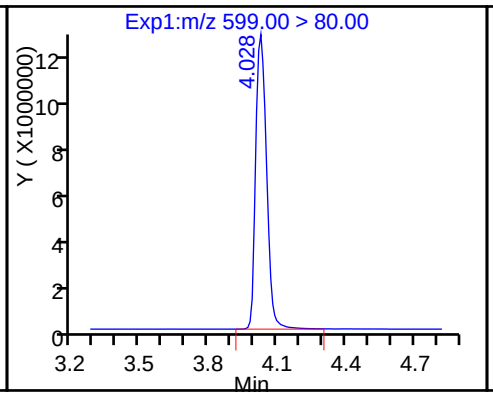
24 Perfluorodecanoic acid



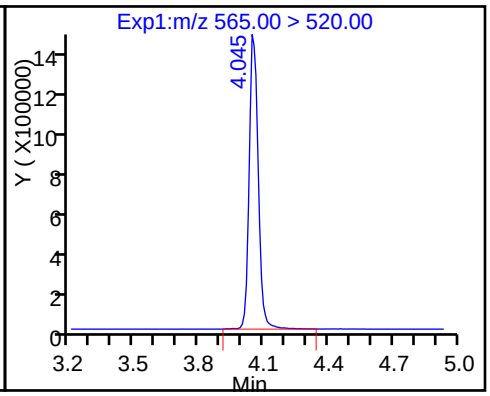
D 23 13C2 PFDA



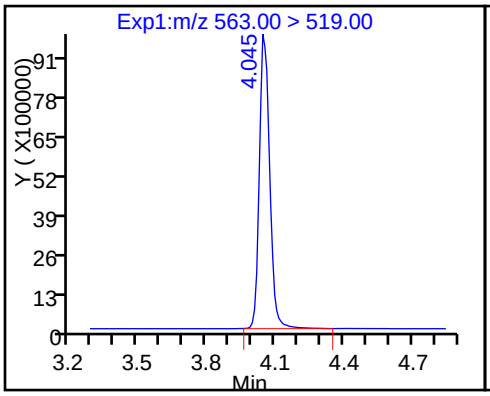
26 Perfluorodecane Sulfonic acid



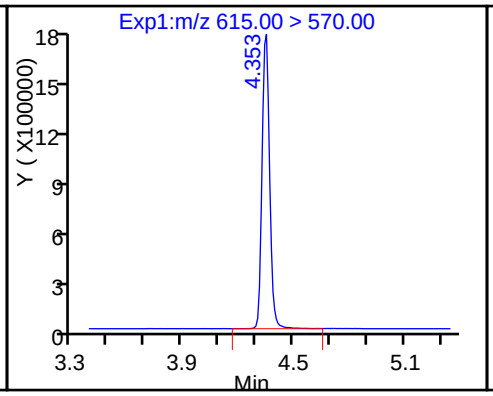
D 27 13C2 PFUnA



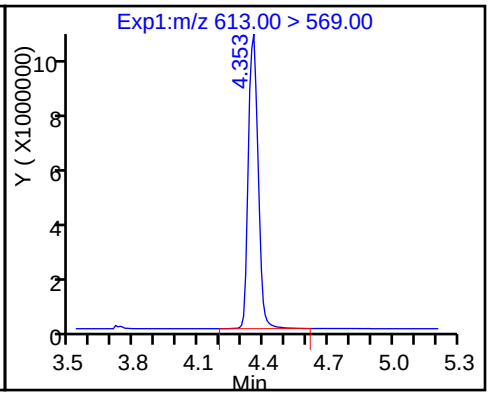
28 Perfluoroundecanoic acid



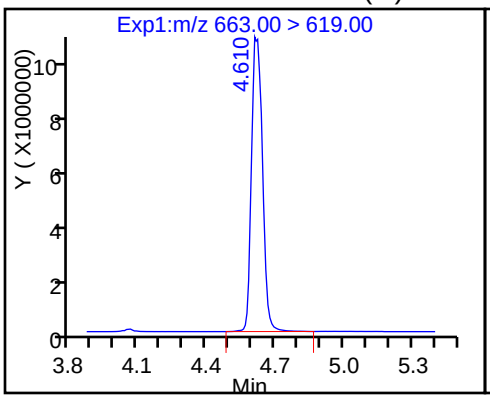
D 30 13C2 PFDoA



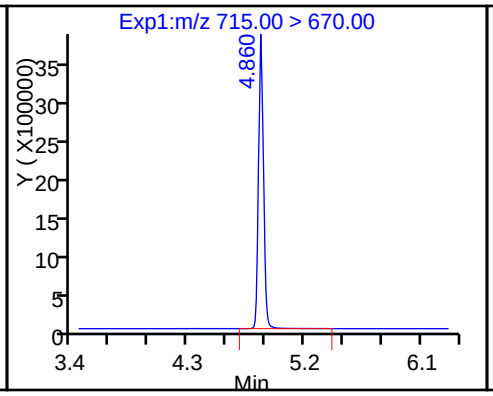
29 Perfluorododecanoic acid



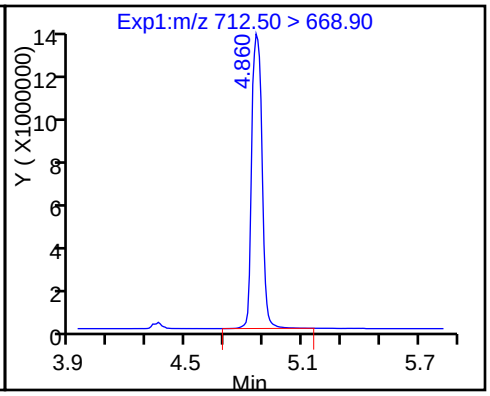
31 Perfluorotridecanoic acid (M)



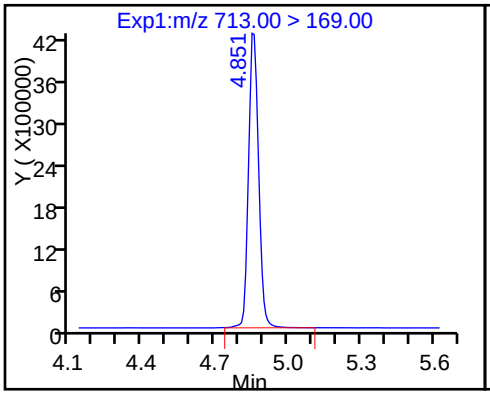
D 32 13C2-PFTeDA



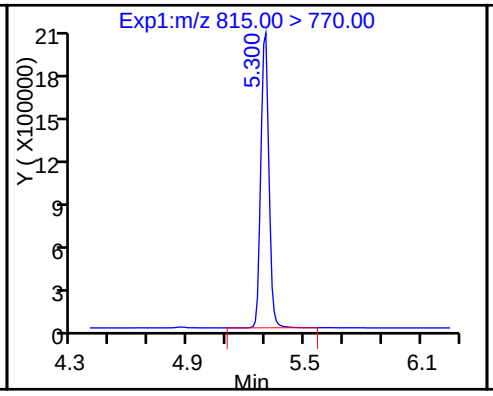
33 Perfluorotetradecanoic acid



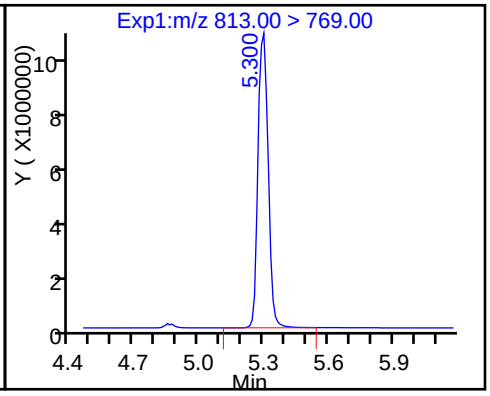
33 Perfluorotetradecanoic acid



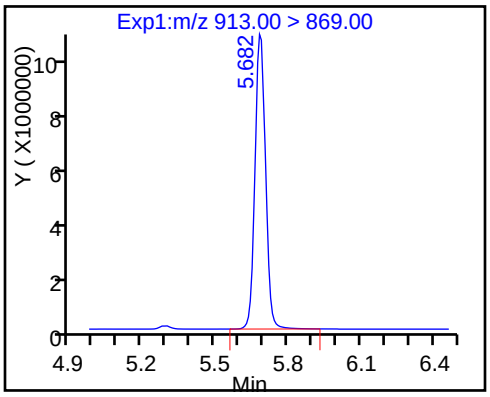
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

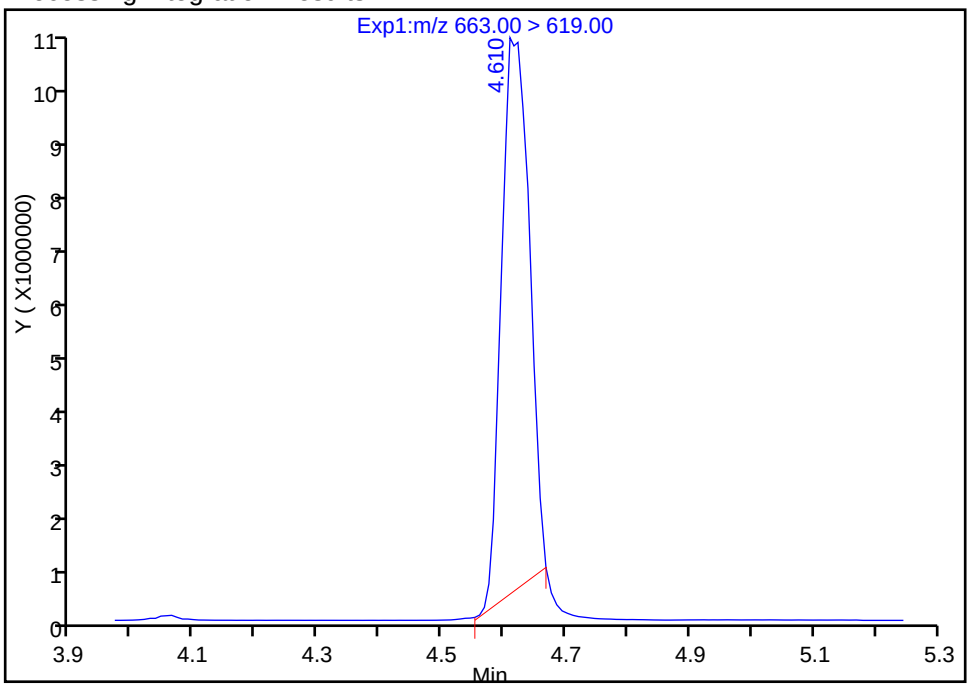
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_010.d
Injection Date: 02-Dec-2016 11:14:32 Instrument ID: A8_N
Lims ID: IC L7
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 43 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

31 Perfluorotridecanoic acid, CAS: 72629-94-8

Signal: 1

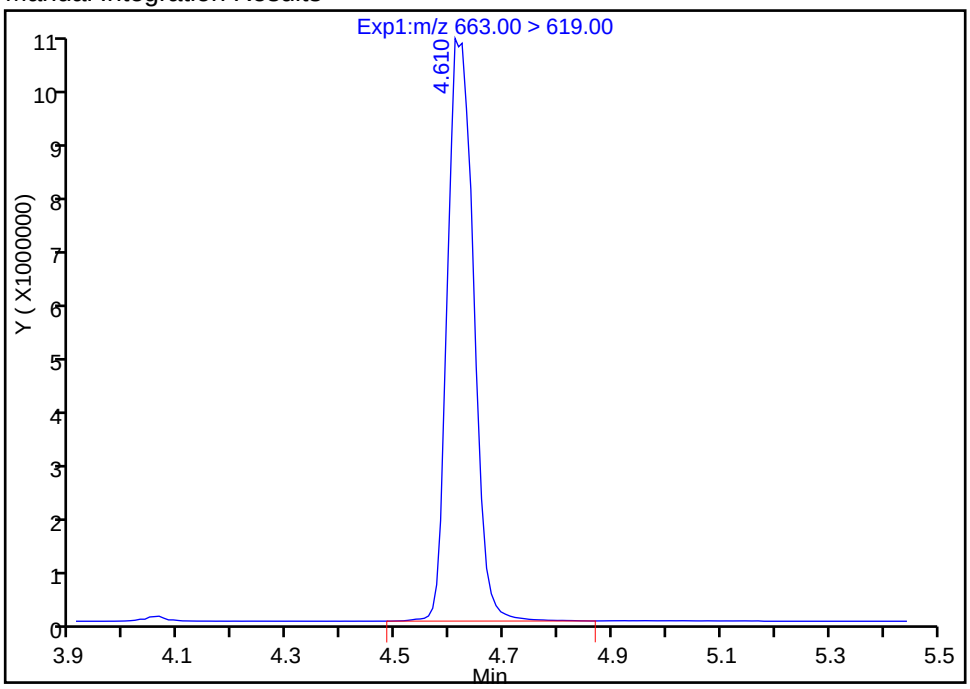
Processing Integration Results

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

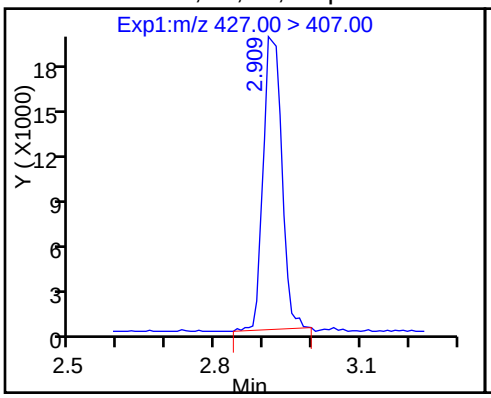
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 46 Worklist Smp#: 14

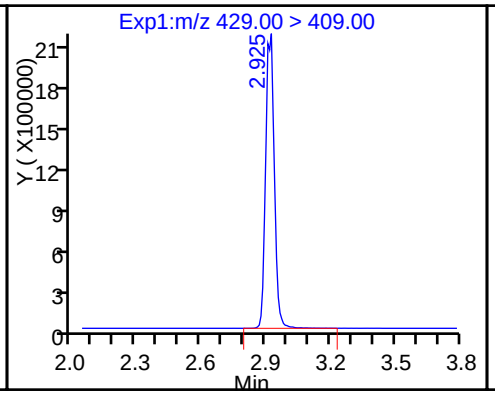
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

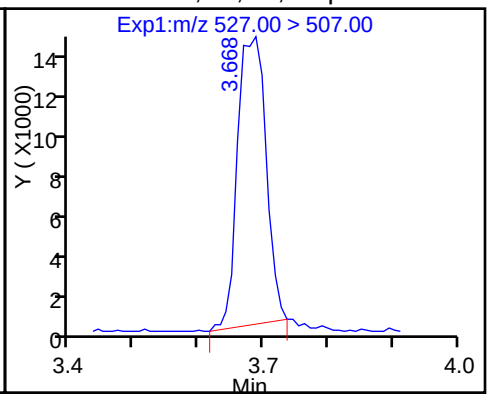
48 Sodium 1H,1H,2H,2H-perfluorooctane



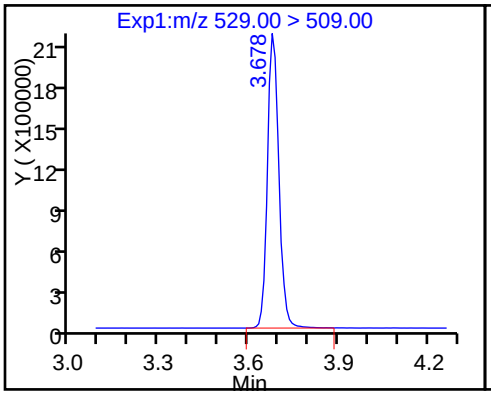
D 47 M2-6:2FTS



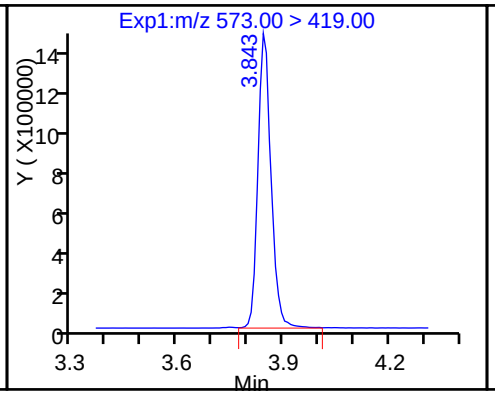
43 Sodium 1H,1H,2H,2H-perfluorooctane



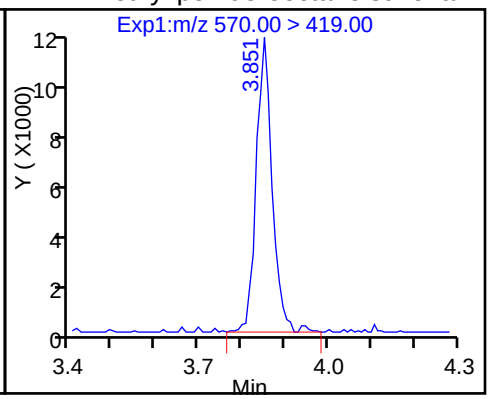
D 42 M2-8:2FTS



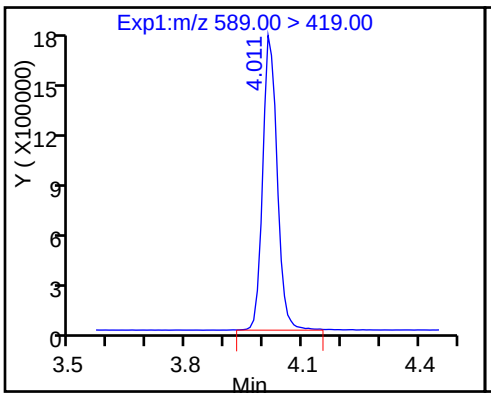
D 45 d3-NMeFOSAA



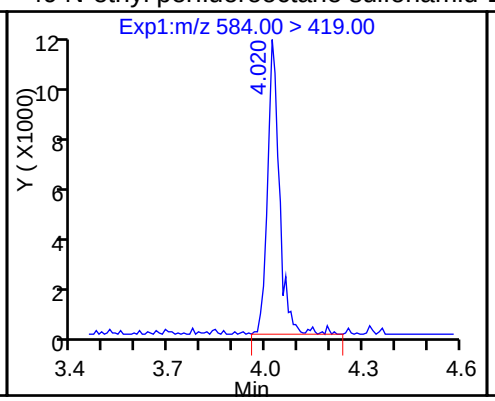
44 N-methyl perfluorooctane sulfonami



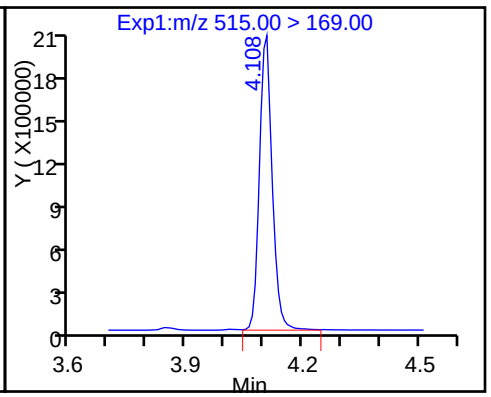
D 46 d5-NEtFOSAA



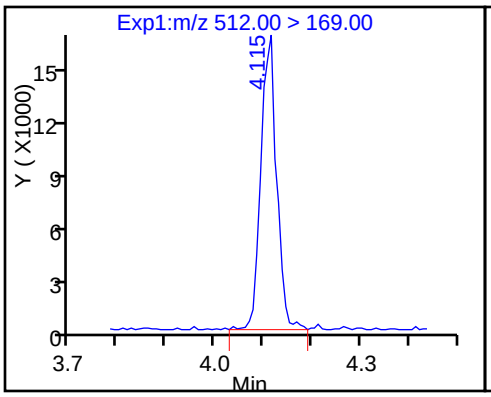
49 N-ethyl perfluorooctane sulfonamid



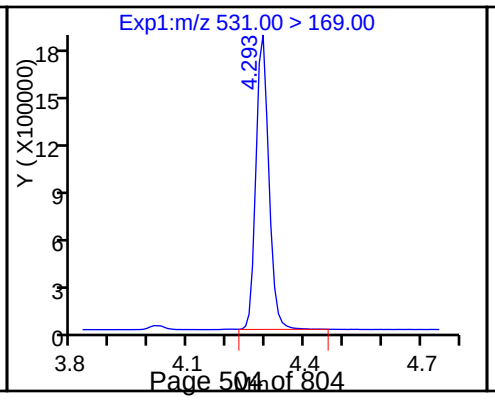
D 52 d-N-MeFOSA-M



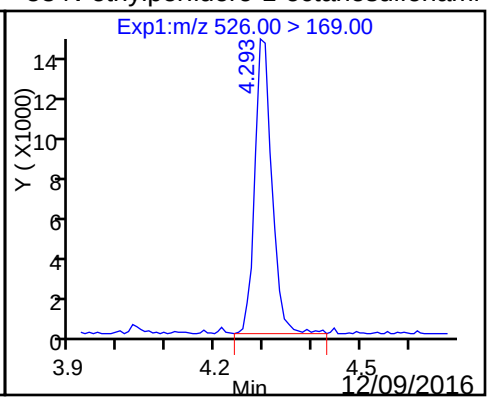
54 MeFOSA



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

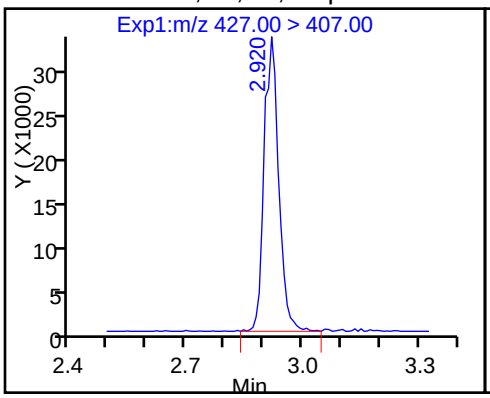
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 47 Worklist Smp#: 15

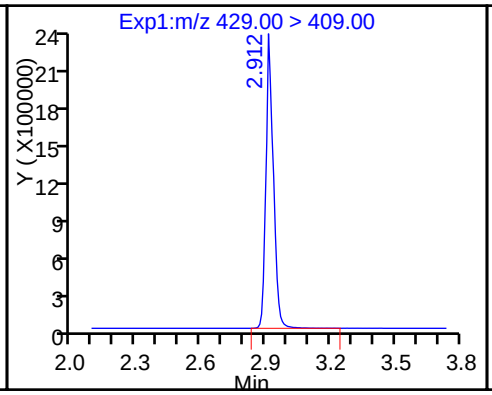
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

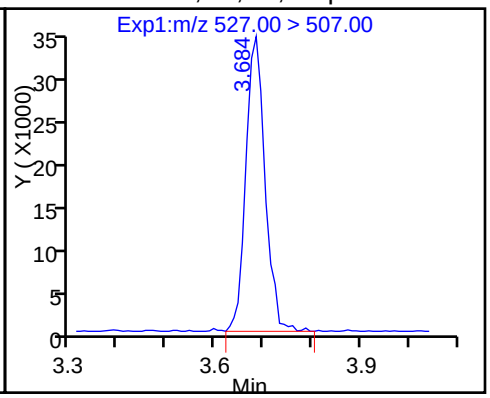
48 Sodium 1H,1H,2H,2H-perfluorooctane



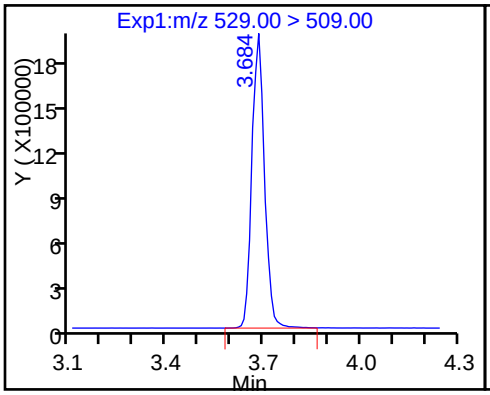
D 47 M2-6:2FTS



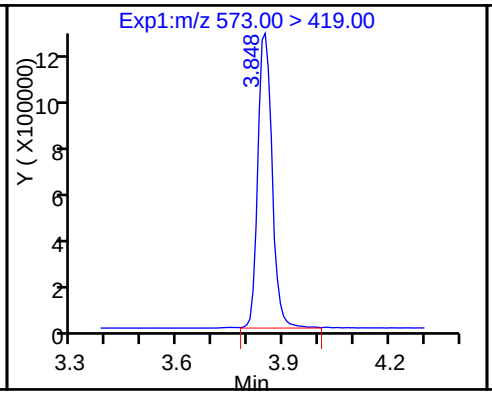
43 Sodium 1H,1H,2H,2H-perfluorooctane



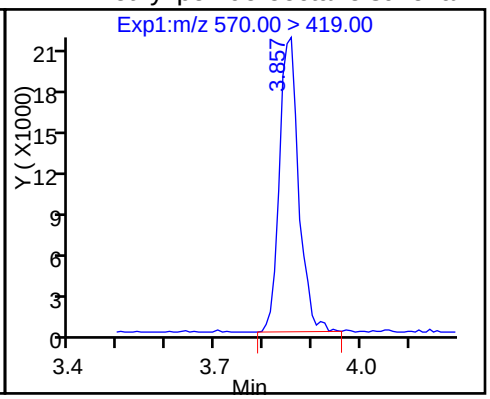
D 42 M2-8:2FTS



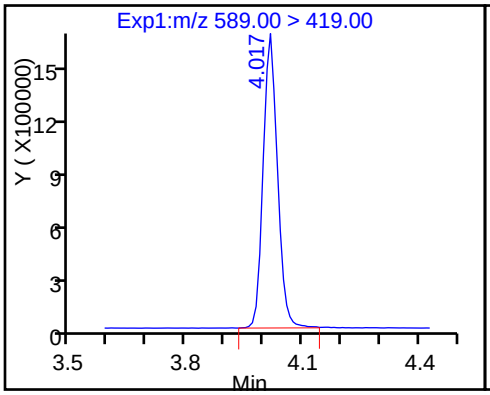
D 45 d3-NMeFOSAA



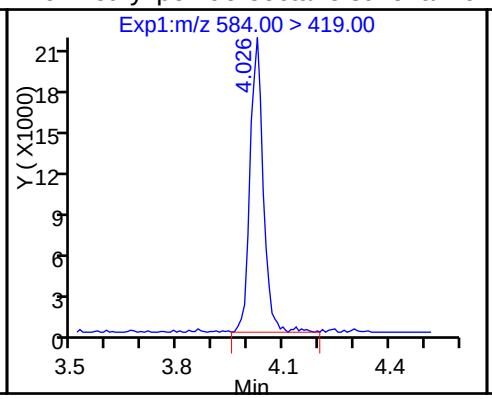
44 N-methyl perfluorooctane sulfonami



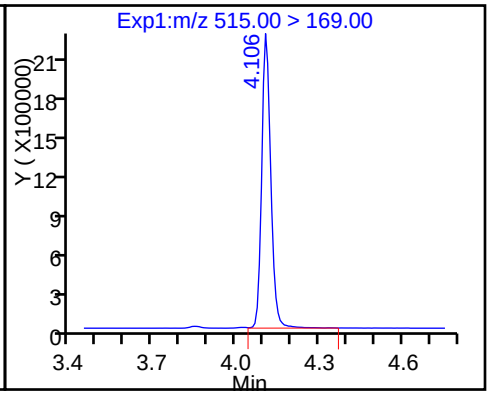
D 46 d5-NEtFOSAA



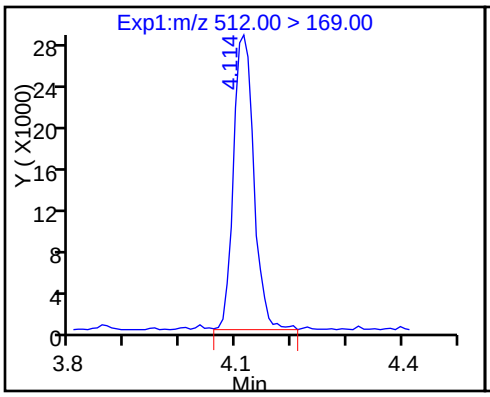
49 N-ethyl perfluorooctane sulfonamid



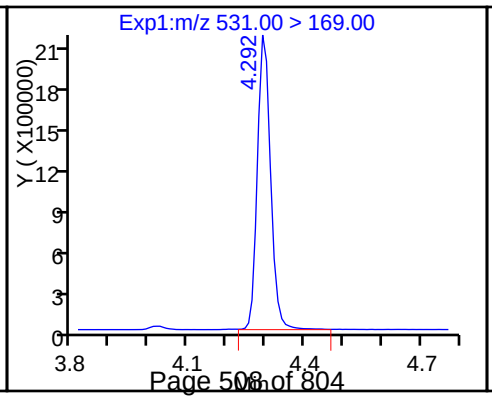
D 52 d-N-MeFOSA-M



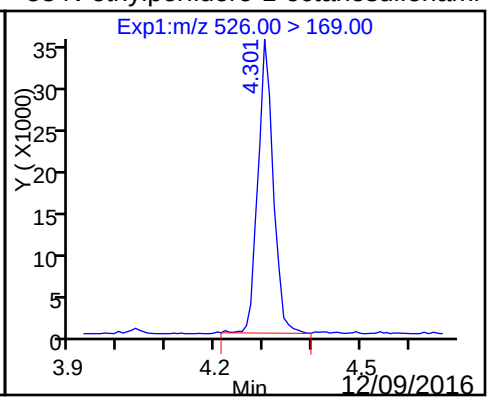
54 MeFOSA



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

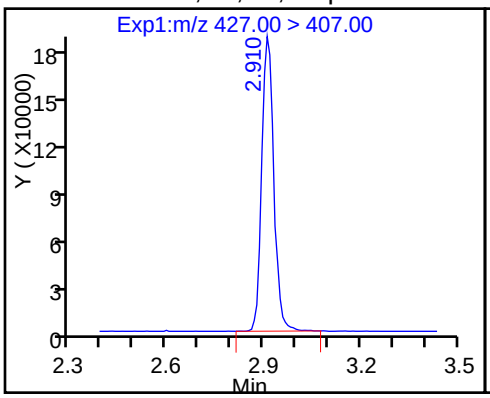
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 48 Worklist Smp#: 16

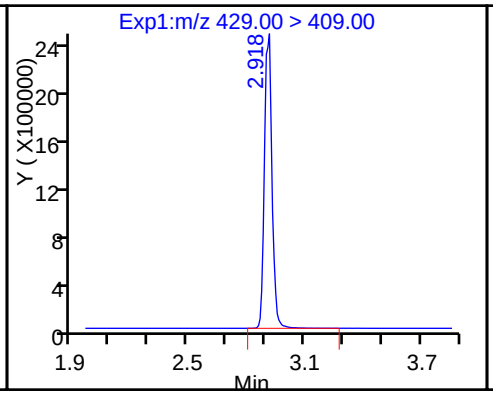
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

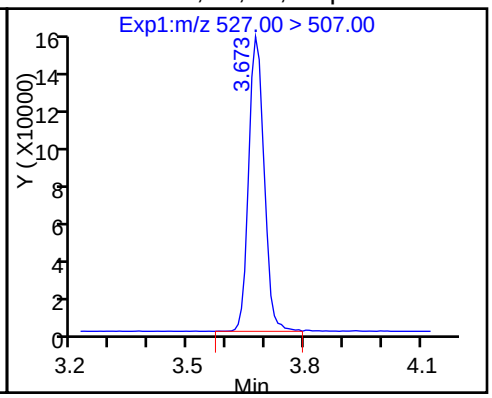
48 Sodium 1H,1H,2H,2H-perfluorooctane



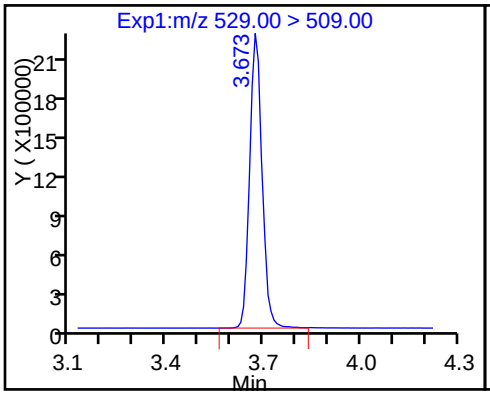
D 47 M2-6:2FTS



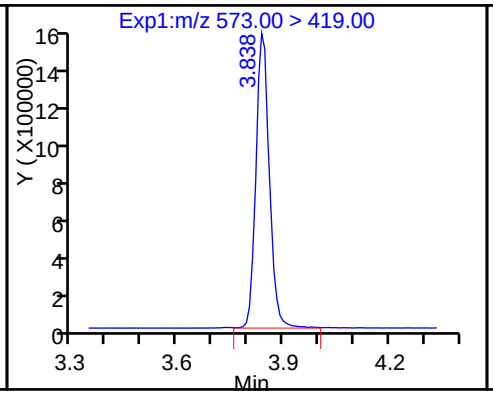
43 Sodium 1H,1H,2H,2H-perfluorooctane



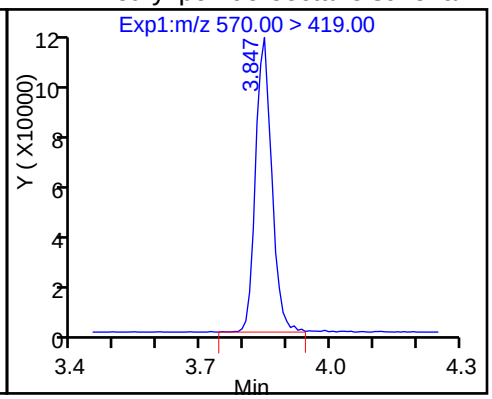
D 42 M2-8:2FTS



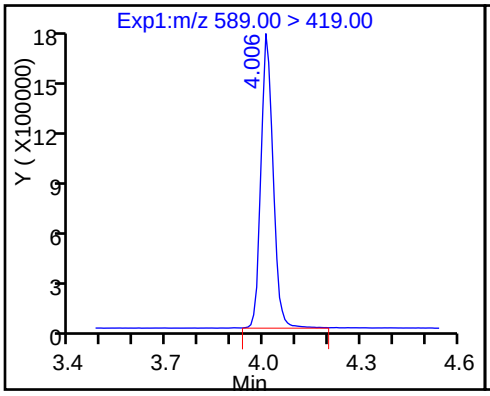
D 45 d3-NMeFOSAA



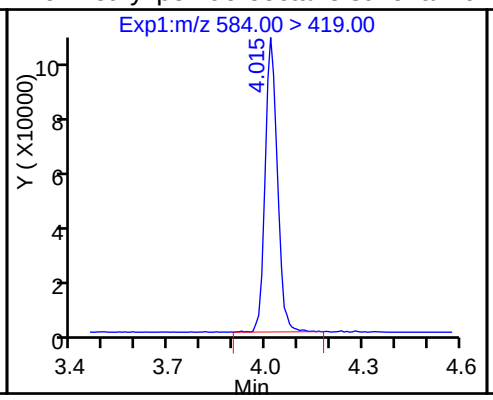
44 N-methyl perfluorooctane sulfonami



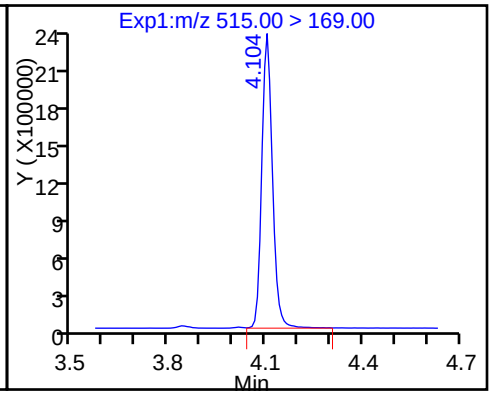
D 46 d5-NEtFOSAA



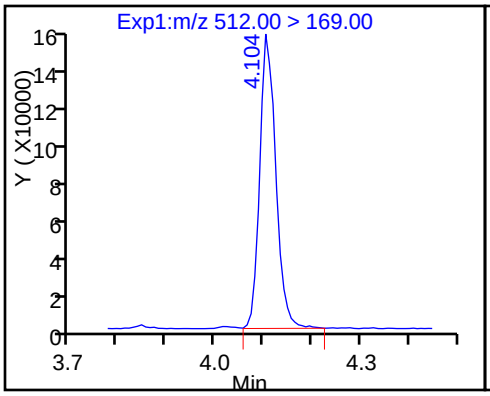
49 N-ethyl perfluorooctane sulfonamid



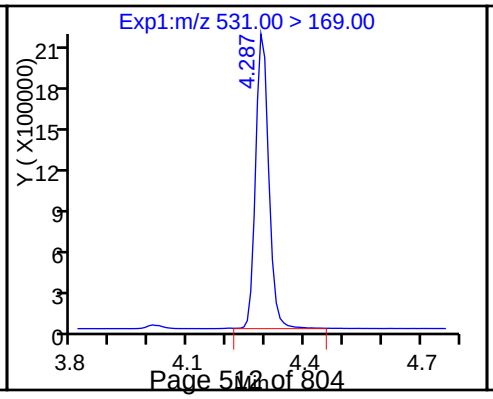
D 52 d-N-MeFOSA-M



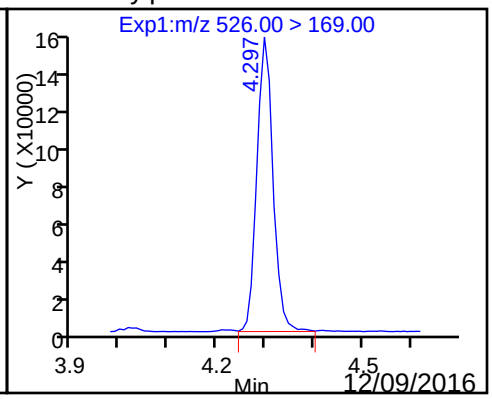
54 MeFOSA



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

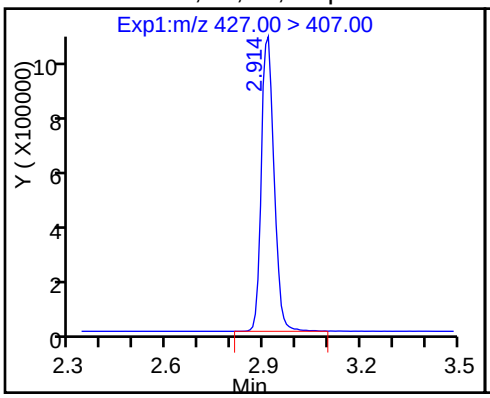
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 49 Worklist Smp#: 17

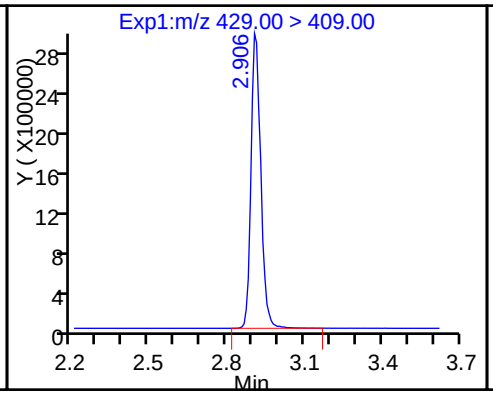
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

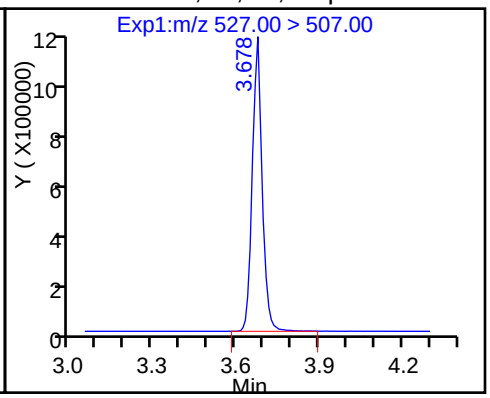
48 Sodium 1H,1H,2H,2H-perfluorooctane



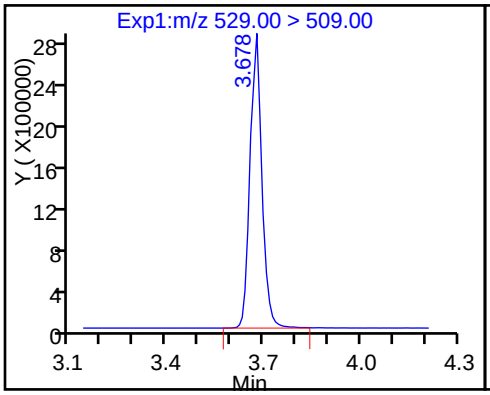
D 47 M2-6:2FTS



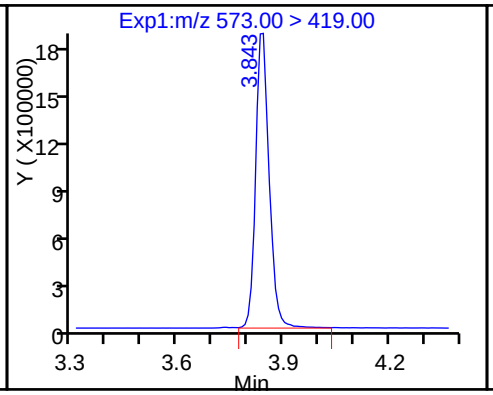
43 Sodium 1H,1H,2H,2H-perfluorooctane



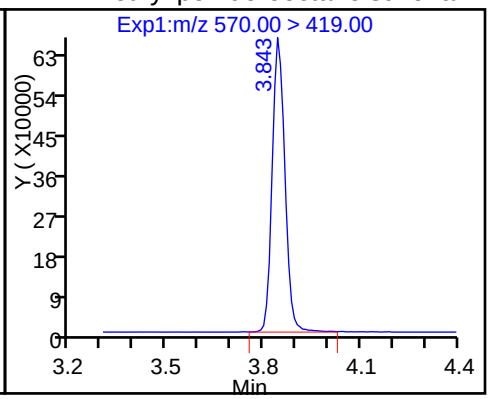
D 42 M2-8:2FTS



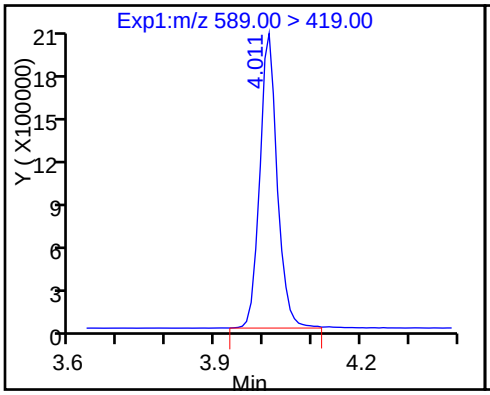
D 45 d3-NMeFOSAA



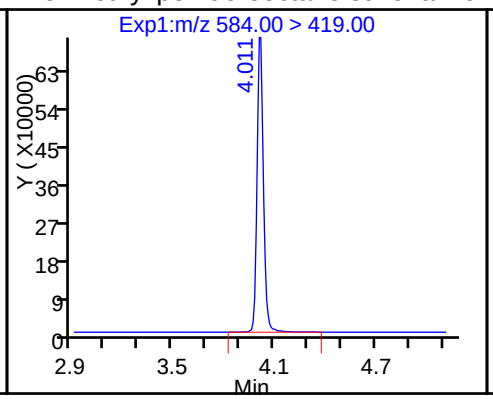
44 N-methyl perfluorooctane sulfonami



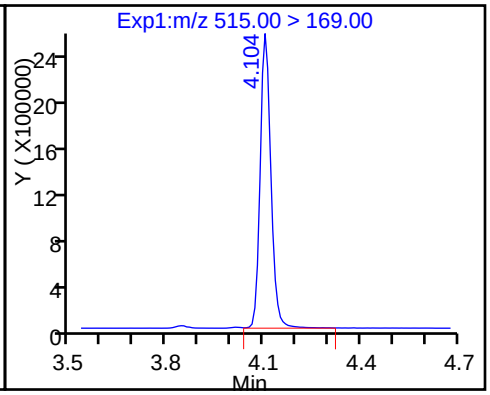
D 46 d5-NEtFOSAA



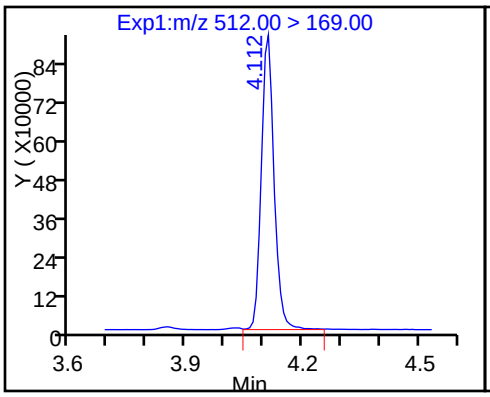
49 N-ethyl perfluorooctane sulfonamid



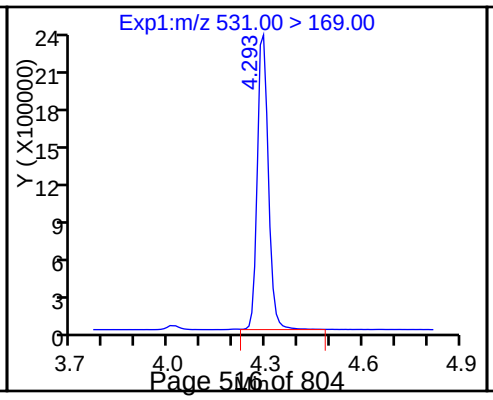
D 52 d-N-MeFOSA-M



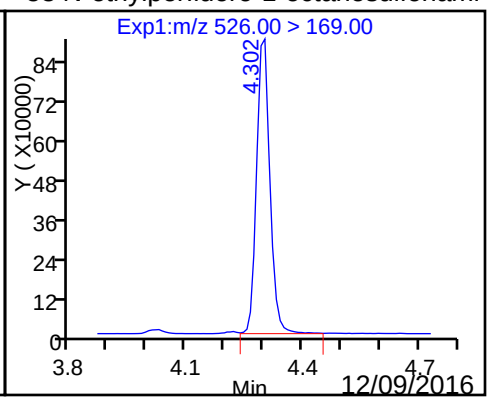
54 MeFOSA



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_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

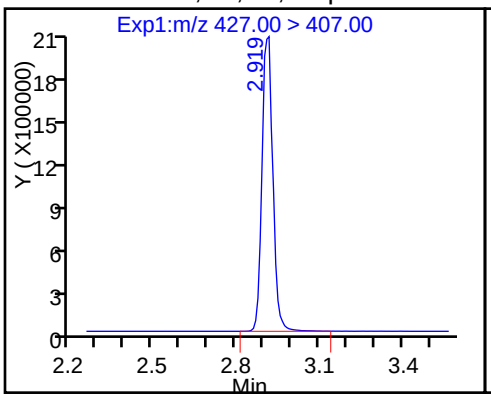
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 50 Worklist Smp#: 18

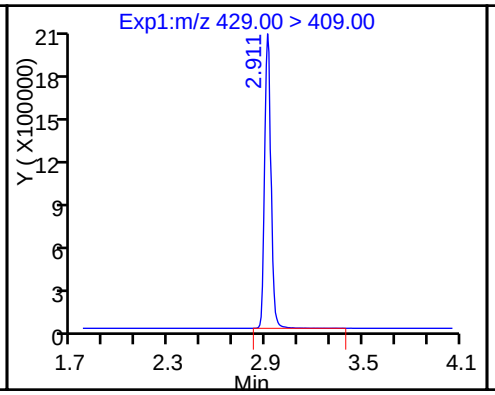
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

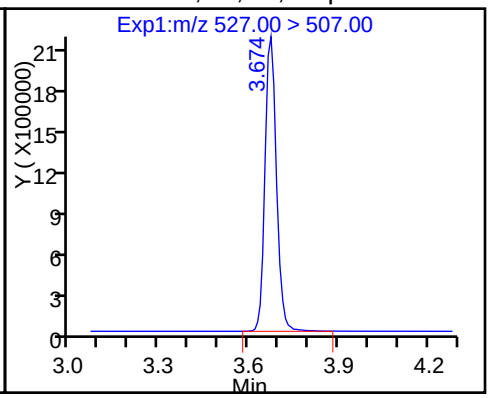
48 Sodium 1H,1H,2H,2H-perfluorooctane



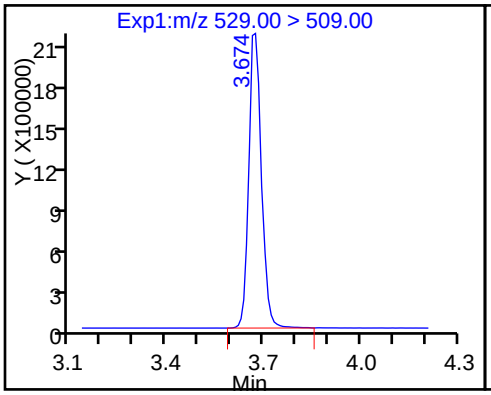
D 47 M2-6:2FTS



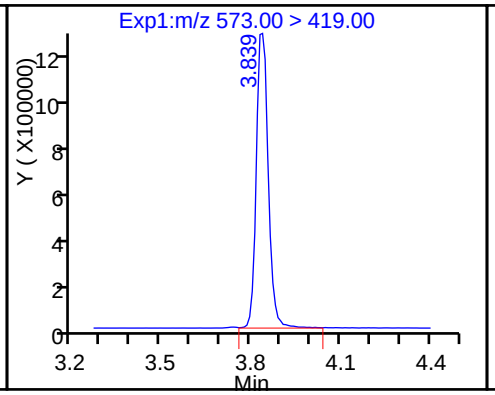
43 Sodium 1H,1H,2H,2H-perfluorooctane



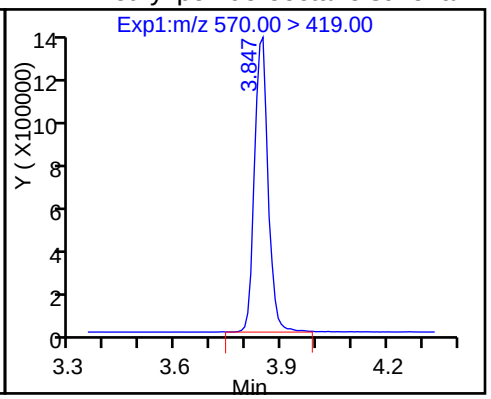
D 42 M2-8:2FTS



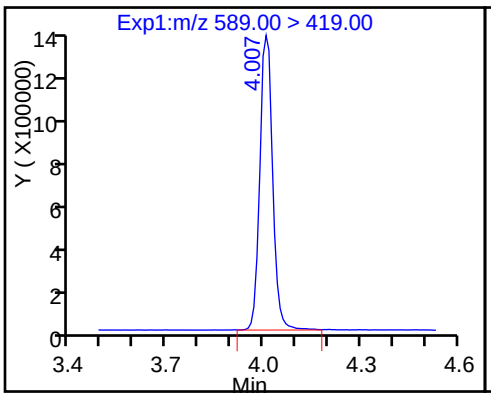
D 45 d3-NMeFOSAA



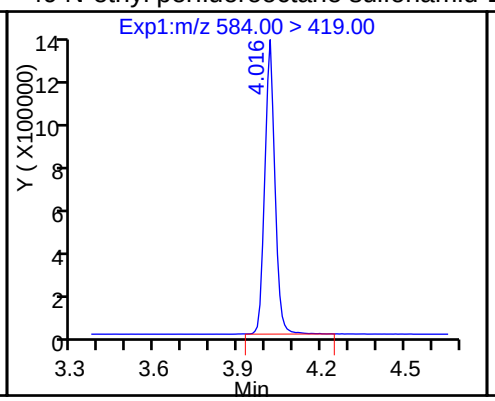
44 N-methyl perfluorooctane sulfonami



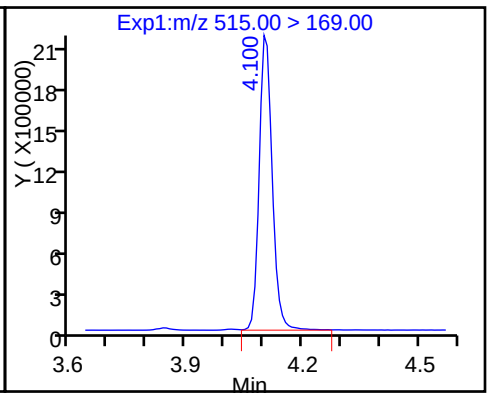
D 46 d5-NEtFOSAA



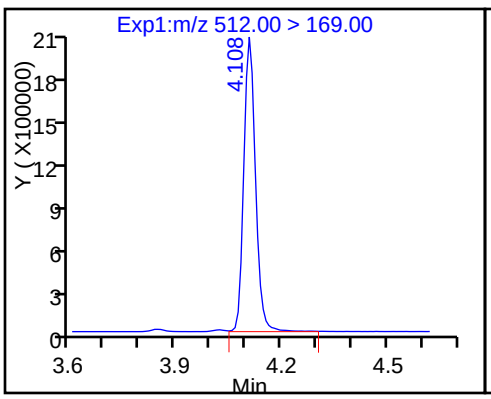
49 N-ethyl perfluorooctane sulfonamid



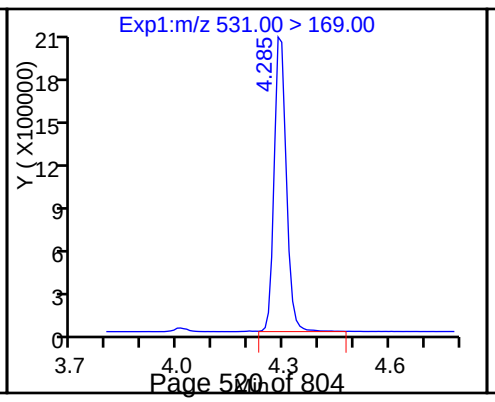
D 52 d-N-MeFOSA-M



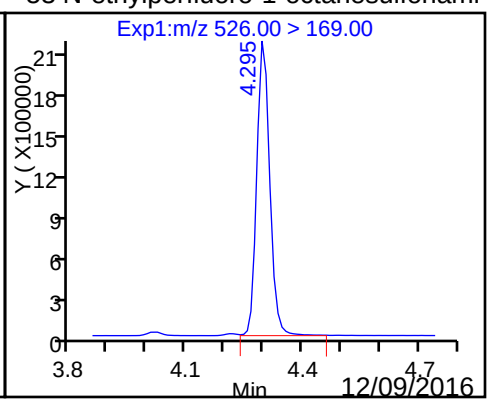
54 MeFOSA



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

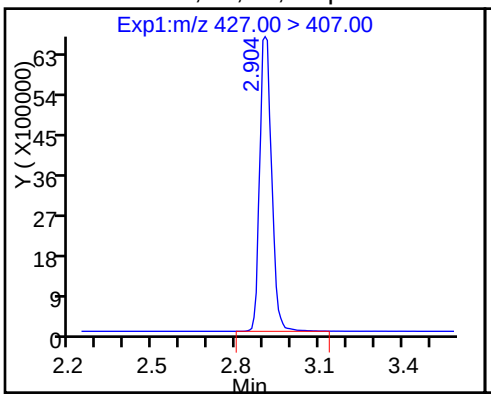
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 19

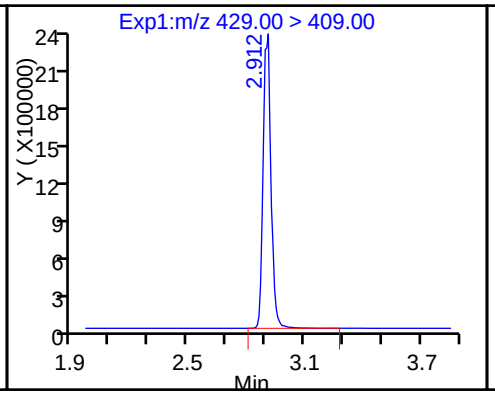
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

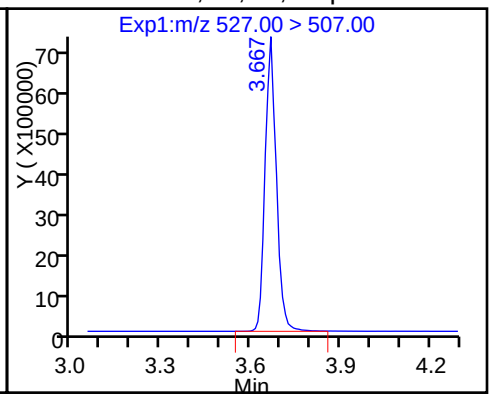
48 Sodium 1H,1H,2H,2H-perfluorooctane



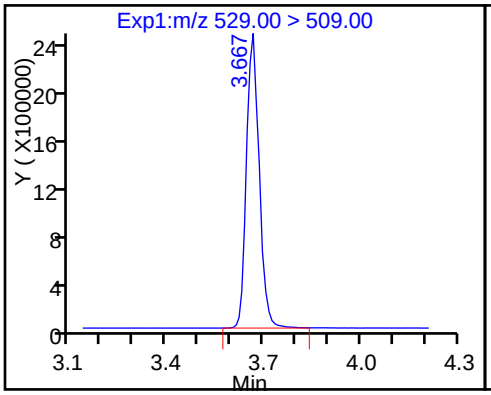
D 47 M2-6:2FTS



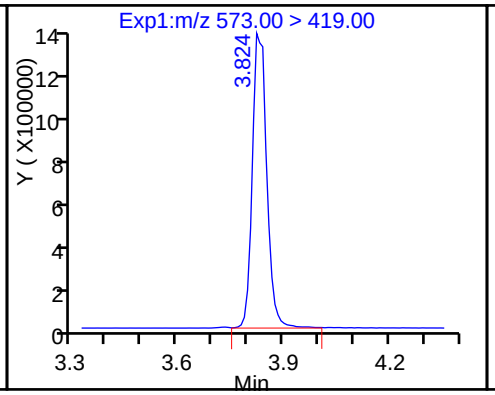
43 Sodium 1H,1H,2H,2H-perfluorooctane



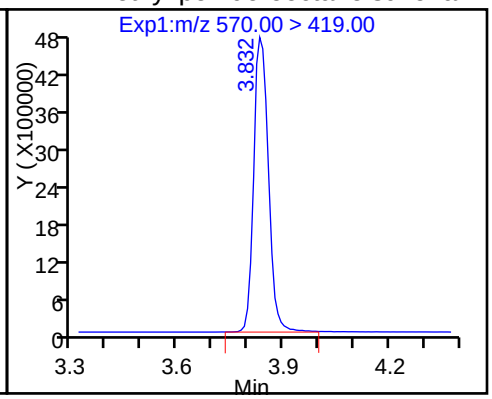
D 42 M2-8:2FTS



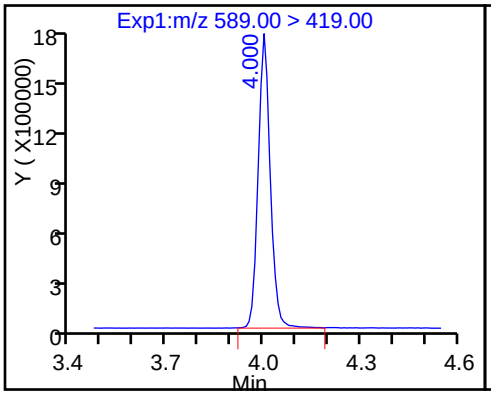
D 45 d3-NMeFOSAA



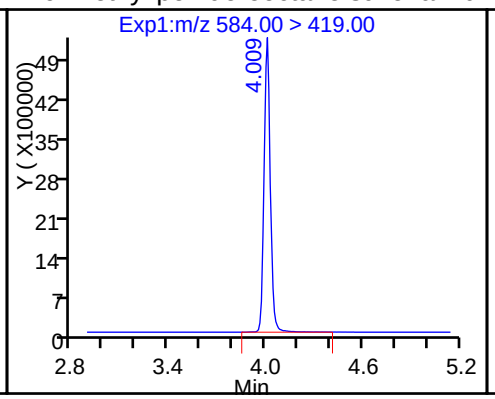
44 N-methyl perfluorooctane sulfonami



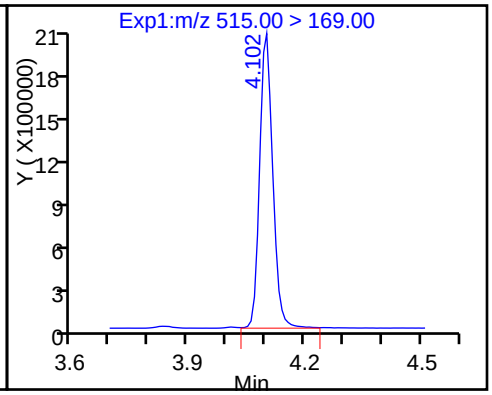
D 46 d5-NEtFOSAA



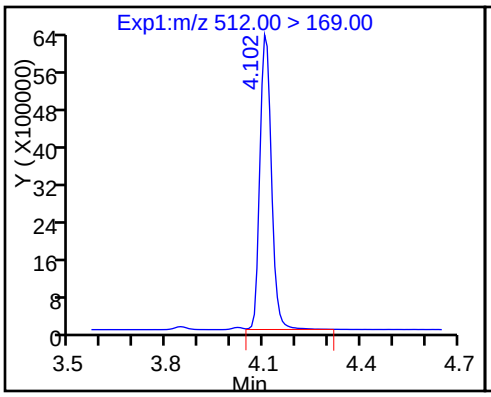
49 N-ethyl perfluorooctane sulfonamid



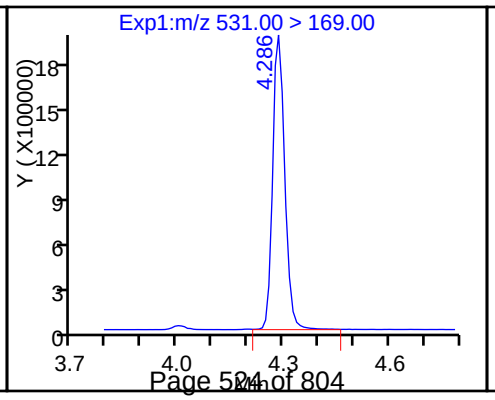
D 52 d-N-MeFOSA-M



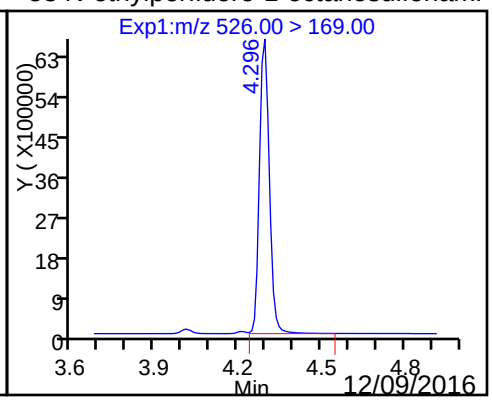
54 MeFOSA



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

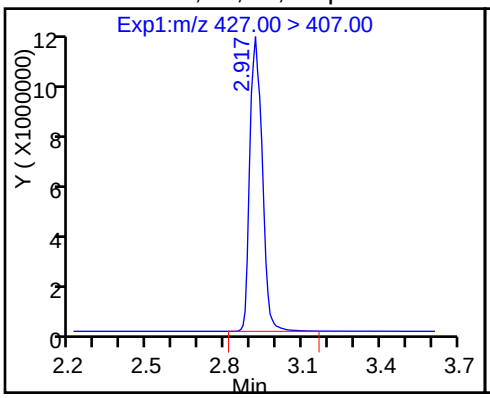
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 52 Worklist Smp#: 20

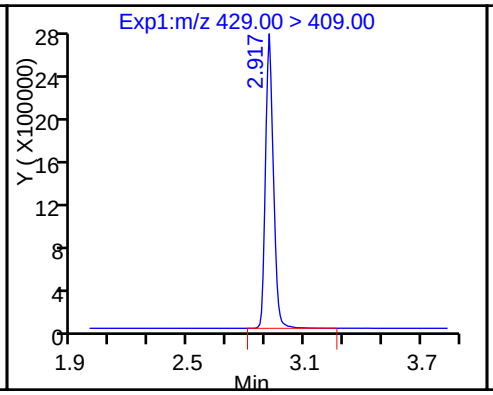
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

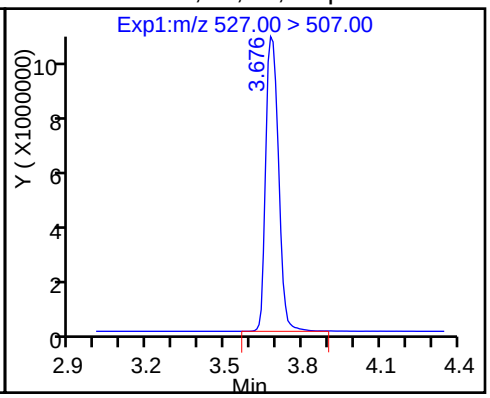
48 Sodium 1H,1H,2H,2H-perfluorooctane



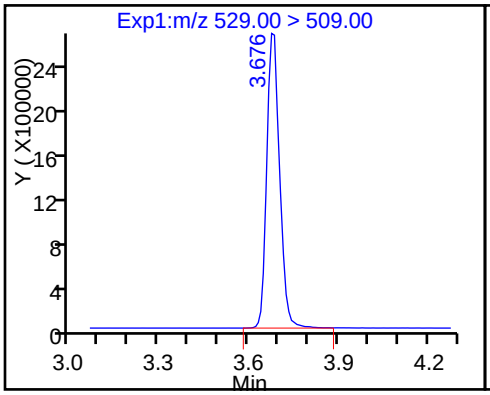
D 47 M2-6:2FTS



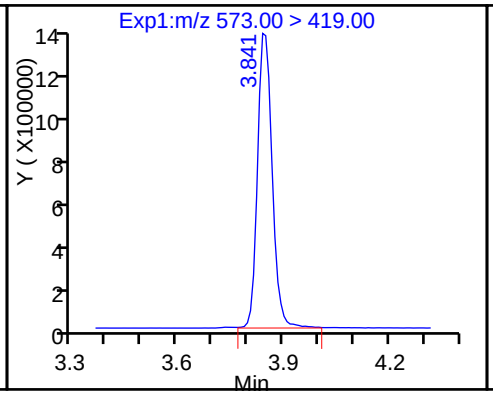
43 Sodium 1H,1H,2H,2H-perfluorooctane



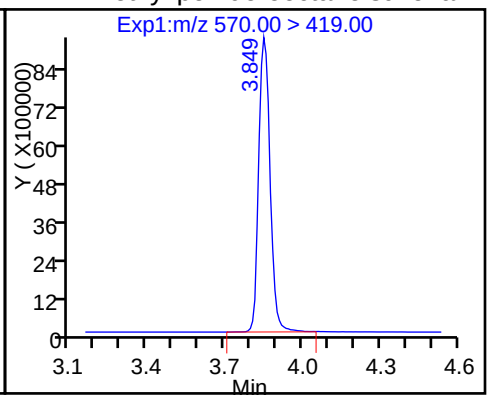
D 42 M2-8:2FTS



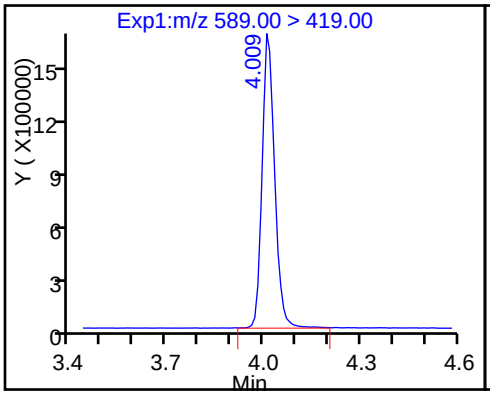
D 45 d3-NMeFOSAA



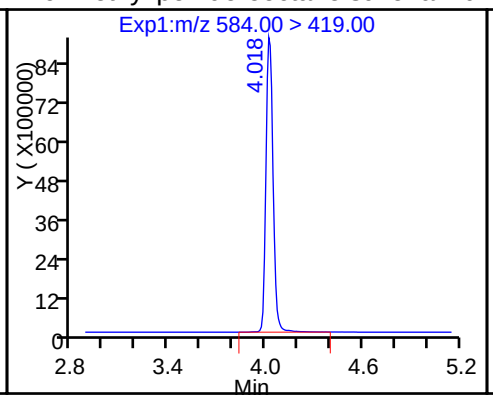
44 N-methyl perfluorooctane sulfonami



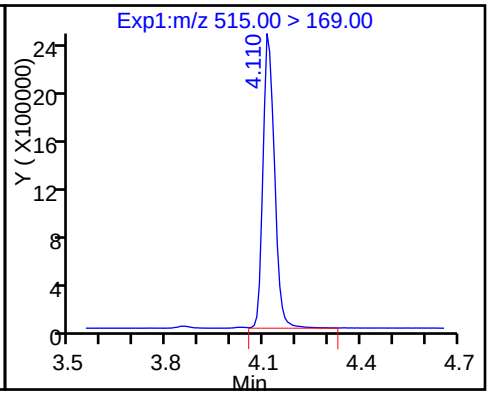
D 46 d5-NEtFOSAA



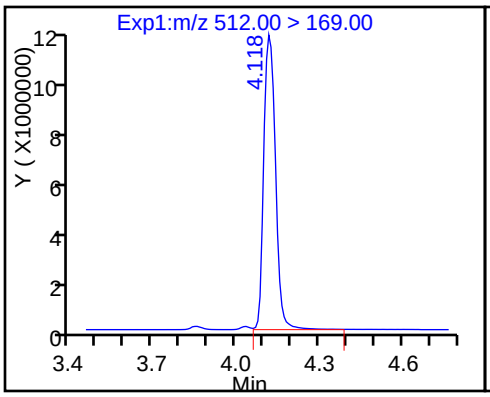
49 N-ethyl perfluorooctane sulfonamid



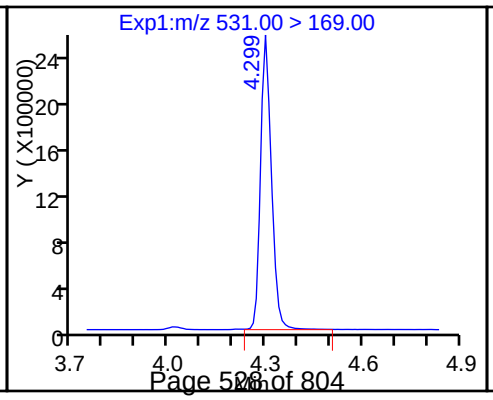
D 52 d-N-MeFOSA-M



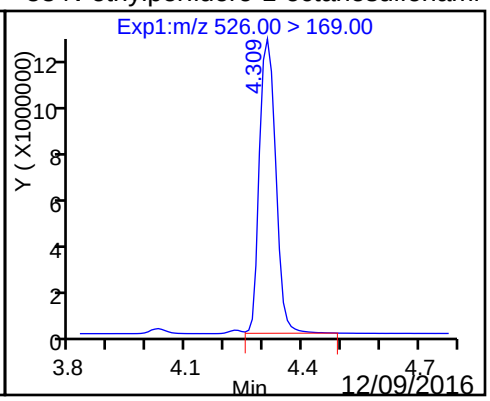
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-140564/4	03DEC2016A_004.d
Level 2	IC 320-140564/13	03DEC2016A_013.d
Level 3	IC 320-140564/5	03DEC2016A_005.d
Level 4	IC 320-140564/14	03DEC2016A_014.d
Level 5	IC 320-140564/6	03DEC2016A_006.d
Level 6	IC 320-140564/15	03DEC2016A_015.d
Level 7	IC 320-140564/7	03DEC2016A_007.d
Level 8	IC 320-140564/16	03DEC2016A_016.d
Level 9	IC 320-140564/8	03DEC2016A_008.d
Level 10	IC 320-140564/17	03DEC2016A_017.d
Level 11	IC 320-140564/9	03DEC2016A_009.d
Level 12	IC 320-140564/18	03DEC2016A_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)	1.582 1.574		1.574		1.574		1.582		1.574		1.327 - 1.827	1.577
Perfluoropentanoic acid (PFPeA)	1.868 1.858		1.858		1.858		1.868		1.858		1.611 - 2.111	1.861
Perfluorobutanesulfonic acid (PFBS)	1.906 1.896		1.897		1.897		1.907		1.897		1.720 - 2.080	1.900
Perfluorohexanoic acid (PFHxA)	2.170 2.157		2.164		2.163		2.171		2.160		1.914 - 2.414	2.164
Perfluoroheptanoic acid (PFHpA)	2.521 2.501		2.512		2.516		2.512		2.510		2.262 - 2.762	2.512
Perfluorohexanesulfonic acid (PFHxS)	+++++ 2.526		2.535		2.531		2.527		2.525		2.281 - 2.781	2.529
6:2FTS		+++++ 2.838		2.830		2.838		2.840		2.830	2.586 - 3.086	2.835
Perfluorooctanoic acid (PFOA)	+++++ 2.868		2.894		2.880		2.894		2.884		2.637 - 3.137	2.884
Perfluoroheptanesulfonic Acid (PFHpS)	2.902 2.884		2.886		2.888		2.886		2.884		2.638 - 3.138	2.888
Perfluorooctane Sulfonate (PFOS)	+++++ 3.249		3.259		3.255		3.259		3.257		3.008 - 3.508	3.256
Perfluorononanoic acid (PFNA)	3.275 3.249		3.268		3.263		3.267		3.257		3.013 - 3.513	3.263
Perfluorooctane Sulfonamide (FOSA)	3.581 3.571		3.573		3.576		3.573		3.570		3.324 - 3.824	3.574
8:2FTS		3.601 3.589		3.579		3.588		3.592		3.579	3.338 - 3.838	3.588
Perfluorodecanoic acid (PFDA)	3.632 3.613		3.632		3.618		3.623		3.620		3.373 - 3.873	3.623

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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

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)		3.774 3.752		3.760		3.760		3.756		3.750	3.509 - 4.009	3.759
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		3.931 3.927		3.935		3.926		3.931		3.925	3.679 - 4.179	3.929
Perfluorodecanesulfonic acid (PFDS)	3.945 3.921		3.944		3.938		3.939		3.928		3.686 - 4.186	3.936
Perfluoroundecanoic acid (PFUnA)	3.971 3.947		3.953		3.956		3.956		3.946		3.705 - 4.205	3.955
MeFOSA		4.063 4.061		4.051		4.051		4.063		4.051	3.807 - 4.307	4.057
N-EtFOSA-M		4.253 4.249		4.239		4.240		4.244		4.245	3.995 - 4.495	4.245
Perfluorododecanoic acid (PFDoA)	4.261 4.236		4.254		4.253		4.253		4.242		4.000 - 4.500	4.250
Perfluorotridecanoic Acid (PFTriA)	4.535 4.501		4.515		4.521		4.524		4.510		4.268 - 4.768	4.518
Perfluorotetradecanoic acid (PFTeA)	4.778 4.746		4.770		4.761		4.764		4.750		4.511 - 5.011	4.762
Perfluoro-n-hexadecanoic acid (PFHxDA)	5.208 5.160		5.196		5.191		5.187		5.177		4.936 - 5.436	5.187
Perfluoro-n-octadecanoic acid (PFODA)	5.584 5.536		5.565		5.561		5.563		5.547		5.309 - 5.809	5.559
13C4 PFBA	1.582 1.565		1.574		1.574		1.574		1.574		1.324 - 1.824	1.574
13C5-PFPeA	1.868 1.858		1.858		1.858		1.868		1.858		1.611 - 2.111	1.861
13C2 PFHxA	2.179 2.157		2.164		2.163		2.162		2.160		1.914 - 2.414	2.164
13C4-PFHpA	2.521 2.501		2.512		2.508		2.512		2.510		2.261 - 2.761	2.511
18O2 PFHxS	2.544 2.518		2.535		2.531		2.535		2.525		2.281 - 2.781	2.531
M2-6:2FTS		2.840 2.838		2.830		2.838		2.840		2.830	2.586 - 3.086	2.836
13C4 PFOA	2.886 2.868		2.886		2.880		2.886		2.876		2.630 - 3.130	2.880
13C4 PFOS	3.267 3.249		3.259		3.263		3.259		3.257		3.009 - 3.509	3.259
13C5 PFNA	3.275 3.249		3.268		3.263		3.267		3.257		3.013 - 3.513	3.263
13C8 FOSA	3.581 3.562		3.565		3.576		3.573		3.570		3.321 - 3.821	3.571
M2-8:2FTS		3.601 3.589		3.579		3.596		3.592		3.587	3.341 - 3.841	3.591

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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

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	3.640 3.621		3.624		3.627		3.623		3.620		3.376 - 3.876	3.626
d3-NMeFOSAA		3.765 3.752		3.760		3.751		3.756		3.750	3.506 - 4.006	3.756
d5-NEtFOSAA		3.931 3.919		3.918		3.918		3.931		3.917	3.672 - 4.172	3.922
13C2 PFUnA	3.971 3.947		3.961		3.956		3.965		3.946		3.708 - 4.208	3.958
d-N-MeFOSA-M		4.054 4.052		4.051		4.051		4.055		4.042	3.801 - 4.301	4.051
d-N-EtFOSA-M		4.244 4.239		4.231		4.240		4.244		4.236	3.989 - 4.489	4.239
13C2 PFDoA	4.261 4.236		4.262		4.253		4.253		4.242		4.001 - 4.501	4.251
13C2-PFTeDA	4.778 4.738		4.762		4.761		4.764		4.750		4.509 - 5.009	4.759
13C2-PFHxDA	5.208 5.171		5.196		5.180		5.187		5.177		4.936 - 5.436	5.187

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

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-140564/4	03DEC2016A_004.d
Level 2	IC 320-140564/13	03DEC2016A_013.d
Level 3	IC 320-140564/5	03DEC2016A_005.d
Level 4	IC 320-140564/14	03DEC2016A_014.d
Level 5	IC 320-140564/6	03DEC2016A_006.d
Level 6	IC 320-140564/15	03DEC2016A_015.d
Level 7	IC 320-140564/7	03DEC2016A_007.d
Level 8	IC 320-140564/16	03DEC2016A_016.d
Level 9	IC 320-140564/8	03DEC2016A_008.d
Level 10	IC 320-140564/17	03DEC2016A_017.d
Level 11	IC 320-140564/9	03DEC2016A_009.d
Level 12	IC 320-140564/18	03DEC2016A_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	310185 395986 320580		331347 365089 291784		Ave		335828.500				11.4		50.0			
13C5-PFPeA	254875 312687 249553		258388 288538 223232		Ave		264545.467				11.9		50.0			
13C2 PFHxA	230194 279196 219710		235263 254328 206225		Ave		237485.877				10.9		50.0			
13C4-PFHpA	200488 249965 193077		209795 229496 161658		Ave		207413.233				14.7		50.0			
18O2 PFHxS	293993 367326 302399		309858 340372 260105		Ave		312342.301				12.0		50.0			
M2-6:2FTS		91389 101069 97657		86632 132540 123901	Ave		105531.519				17.5		50.0			
13C4 PFOA	219399 265152 198189		227804 241383 163620		Ave		219257.923				16.1		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.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

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	228339 292548 236006		232908 275934 210320		Ave		246009.066				12.7		50.0			
13C5 PFNA	162836 202161 157087		167249 178407 130751		Ave		166415.157				14.2		50.0			
13C8 FOSA	382785 462525 385863		396984 446533 338985		Ave		402279.103				11.3		50.0			
M2-8:2FTS		89009 92918 86527		81776 112285 120341	Ave		97142.4774				15.9		50.0			
13C2 PFDA	153345 184278 148117		157229 175727 128207		Ave		157817.020				12.7		50.0			
d3-NMeFOSAA		66435 73365 62459		67366 86475 79076	Ave		72529.4733				12.4		50.0			
d5-NEtFOSAA		76443 81901 68389		76375 93004 81834	Ave		79657.5967				10.3		50.0			
13C2 PFUnA	116625 141738 112505		121719 129709 90276		Ave		118762.217				14.6		50.0			
d-N-MeFOSA-M		93925 110531 95888		97701 123254 109309	Ave		105101.257				10.8		50.0			
d-N-EtFOSA-M		87118 101086 93356		94000 114956 104475	Ave		99165.2500				9.9		50.0			
13C2 PFDoA	107060 131990 106770		108978 121360 96346		Ave		112083.837				11.2		50.0			
13C2-PFTeDA	220709 269763 220622		228021 257560 190365		Ave		231173.483				12.4		50.0			
13C2-PFHxDA	122044 151839 117867		129673 147280 109649		Ave		129725.210				12.9		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.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

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)	285568 214032	350423	286663	280973	351800	AveID		0.8740				8.8		35.0			
Perfluoropentanoic acid (PFPeA)	300210 177640	305783	267561	251941	316000	AveID		1.0148				12.2		35.0			
Perfluorobutanesulfonic acid (PFBS)	504086 300541	615867	490253	486734	626278	AveID		1.5960				14.4		50.0			
Perfluorohexanoic acid (PFHxA)	235776 165590	261205	221801	208409	271706	AveID		0.9531				8.6		35.0			
Perfluoroheptanoic acid (PFHpA)	221302 150068	245911	215700	198314	250864	AveID		1.0271				5.9		35.0			
Perfluorohexanesulfonic acid (PFHxS)	+++++ 259457	382897	373893	318646	405919	AveID		1.0976				7.2		35.0			
6:2FTS	74414	+++++ 95077	114411	73191	96558	AveID		0.8401				11.7		35.0			
Perfluorooctanoic acid (PFOA)	+++++ 154270	264619	266474	208682	291075	AveID		1.0719				7.8		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	288964 206923	350751	264304	290052	344790	AveID		1.1771				9.2		50.0			
Perfluorooctane Sulfonate (PFOS)	+++++ 232098	303437	248775	257626	311027	AveID		1.0852				1.7		35.0			
Perfluorononanoic acid (PFNA)	173474 124497	190216	158219	153501	196312	AveID		0.9963				5.5		35.0			
Perfluorooctane Sulfonamide (FOSA)	370100 253291	455589	375193	365380	452435	AveID		0.9341				10.2		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.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

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	68103	78395 87944	105918	66735	89333	AveID		0.8560				14.0		35.0			
Perfluorodecanoic acid (PFDA)	156640 117857	171719	147102	143186	173721	AveID		0.9605				3.8		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	52006	47238 67834	82772	53845	69682	AveID		0.8583				18.3		35.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	53051	50866 65238	81472	49948	65231	AveID		0.7657				17.0		35.0			
Perfluorodecanesulfonic acid (PFDS)	142463 129604	184058	155987	152444	180118	AveID		0.6398				3.9		50.0			
Perfluoroundecanoic acid (PFUnA)	154250 89091	133679	130643	111061	140855	AveID		1.0657				12.2		35.0			
MeFOSA	71380	74884 88180	109492	72155	93127	AveID		0.8080				14.0		35.0			
N-EtFOSA-M	73063	72158 91173	110071	72107	94707	AveID		0.8605				12.9		35.0			
Perfluorododecanoic acid (PFDoA)	106404 88867	120759	100943	100016	121390	AveID		0.9490				3.8		35.0			
Perfluorotridecanoic Acid (PFTriA)	106898 87470	118653	100348	100682	125535	AveID		0.9498				3.6		50.0			
Perfluorotetradecanoic acid (PFTeA)	219098 152968	234056	215694	192030	235101	AveID		1.8536				8.9		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	254818 94562	143517	184956	107642	153296	L1ID	0.7490	0.9930							0.9980		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	100080 89220	110258	119152	114581	134794	AveID		0.9929				8.1		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.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-140564/4	03DEC2016A_004.d
Level 2	IC 320-140564/13	03DEC2016A_013.d
Level 3	IC 320-140564/5	03DEC2016A_005.d
Level 4	IC 320-140564/14	03DEC2016A_014.d
Level 5	IC 320-140564/6	03DEC2016A_006.d
Level 6	IC 320-140564/15	03DEC2016A_015.d
Level 7	IC 320-140564/7	03DEC2016A_007.d
Level 8	IC 320-140564/16	03DEC2016A_016.d
Level 9	IC 320-140564/8	03DEC2016A_008.d
Level 10	IC 320-140564/17	03DEC2016A_017.d
Level 11	IC 320-140564/9	03DEC2016A_009.d
Level 12	IC 320-140564/18	03DEC2016A_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	15509259 14589192	18254473	16567343	16029004	19799279	50.0 50.0	50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	12743752 11161582	14426922	12919402	12477636	15634346	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	11509685 10311260	12716423	11763139	10985481	13959775	50.0 50.0	50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	10024418 8082881	11474824	10489748	9653835	12498264	50.0 50.0	50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	13905891 12302944	16099619	14656306	14303487	17374498	47.3 47.3	47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	4800798	4340981 5885296	6295656	4115043	4638709	47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	10969960 8181000	12069172	11390215	9909434	13257596	50.0 50.0	50.0	50.0	50.0	50.0
13C4 PFOS	Ave	10914613 10053294	13189624	11132983	11281105	13983781	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.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

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	8141793 6537549	8920352	8362456	7854327	10108070	50.0 50.0	50.0	50.0	50.0	50.0
13C8 FOSA	Ave	19139237 16949269	22326638	19849207	19293148	23126232	50.0 50.0	50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	4450751	4263521 5764339	5378444	3917070	4144623	47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	7667226 6410340	8786342	7861453	7405870	9213875	50.0 50.0	50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	3668263	3321758 3953776	4323749	3368323	3122973	50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	4095032	3822164 4091711	4650188	3818745	3419439	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	5831263 4513820	6485474	6085968	5625237	7086903	50.0 50.0	50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	5526561	4696243 5465444	6162693	4885054	4794382	50.0	50.0 50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	5054297	4355916 5223764	5747792	4699997	4667809	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	5353024 4817286	6067987	5448882	5338479	6599493	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	11035471 9518260	12877999	11401035	11031119	13488161	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	6102203 5482429	7363997	6483658	5893329	7591947	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.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-140564/4	03DEC2016A_004.d
Level 2	IC 320-140564/13	03DEC2016A_013.d
Level 3	IC 320-140564/5	03DEC2016A_005.d
Level 4	IC 320-140564/14	03DEC2016A_014.d
Level 5	IC 320-140564/6	03DEC2016A_006.d
Level 6	IC 320-140564/15	03DEC2016A_015.d
Level 7	IC 320-140564/7	03DEC2016A_007.d
Level 8	IC 320-140564/16	03DEC2016A_016.d
Level 9	IC 320-140564/8	03DEC2016A_008.d
Level 10	IC 320-140564/17	03DEC2016A_017.d
Level 11	IC 320-140564/9	03DEC2016A_009.d
Level 12	IC 320-140564/18	03DEC2016A_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	142784 42806432	7008467	286663	14048645	1758998	0.500 200	20.0	1.00	50.0	5.00
Perfluoropentanoic acid (PFPeA)		AveID	150105 35527936	6115663	267561	12597041	1580002	0.500 200	20.0	1.00	50.0	5.00
Perfluorobutanesulfonic acid (PFBS)		AveID	222806 53135654	10888534	433384	21513660	2768149	0.442 177	17.7	0.884	44.2	4.42
Perfluorohexanoic acid (PFHxA)		AveID	117888 33117925	5224102	221801	10420431	1358530	0.500 200	20.0	1.00	50.0	5.00
Perfluoroheptanoic acid (PFHpA)		AveID	110651 30013620	4918226	215700	9915679	1254320	0.500 200	20.0	1.00	50.0	5.00
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 47221104	6968734	340243	14498414	1846932	+++++ 182	18.2	0.910	45.5	4.55
6:2FTS		AveID	352721	+++++ 18026595	2169230	69385	4576863	4.74	+++++ 190	19.0	0.948	47.4
Perfluorooctanoic acid (PFOA)		AveID	+++++ 30853962	5292388	266474	10434085	1455373	+++++ 200	20.0	1.00	50.0	5.00

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

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	137547 39398056	6678298	251617	13806464	1641199	0.476 190	19.0	0.952	47.6	4.76
Perfluorooctane Sulfonate (PFOS)		AveID	+++++ 43077470	5631788	230863	11953842	1443163	+++++ 186	18.6	0.928	46.4	4.64
Perfluorononanoic acid (PFNA)		AveID	86737 24899337	3804327	158219	7675034	981559	0.500 200	20.0	1.00	50.0	5.00
Perfluorooctane Sulfonamide (FOSA)		AveID	185050 50658186	9111782	375193	18269014	2262174	0.500 200	20.0	1.00	50.0	5.00
8:2FTS		AveID	326213	37551 16850029	2029390	63932	4279048	4.79	0.479 192	19.2	0.958	47.9
Perfluorodecanoic acid (PFDA)		AveID	78320 23571490	3434382	147102	7159278	868604	0.500 200	20.0	1.00	50.0	5.00
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	260030	23619 13566790	1655435	53845	3484088	5.00	0.500 200	20.0	1.00	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	265257	25433 13047697	1629443	49948	3261537	5.00	0.500 200	20.0	1.00	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	68667 24987612	3548629	150371	7347809	868168	0.482 193	19.3	0.964	48.2	4.82
Perfluoroundecanoic acid (PFUnA)		AveID	77125 17818228	2673576	130643	5553051	704273	0.500 200	20.0	1.00	50.0	5.00
MeFOSA		AveID	356898	37442 17635948	2189848	72155	4656344	5.00	0.500 200	20.0	1.00	50.0
N-EtFOSA-M		AveID	365313	36079 18234509	2201423	72107	4735360	5.00	0.500 200	20.0	1.00	50.0
Perfluorododecanoic acid (PFDoA)		AveID	53202 17773370	2415187	100943	5000795	606951	0.500 200	20.0	1.00	50.0	5.00

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1 Analy Batch No.: 140564

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/03/2016 13:48 Calibration End Date: 12/03/2016 15:33 Calibration ID: 26875

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	53449 17494025	2373060	100348	5034109	627673	0.500 200	20.0	1.00	50.0	5.00
Perfluorotetradecanoic acid (PFTeA)		AveID	109549 30593527	4681126	215694	9601518	1175506	0.500 200	20.0	1.00	50.0	5.00
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	127409 18912385	2870345	184956	5382109	766480	0.500 200	20.0	1.00	50.0	5.00
Perfluoro-n-octadecanoic acid (PFODA)		AveID	50040 17844066	2205153	119152	5729058	673971	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\20161205-37491.b\03DEC2016A_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 03-Dec-2016 13:48:41 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:24:05 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:42:37

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	1.574	0.008		15509259	46.2		92.4	1670611	
1 Perfluorobutyric acid										
212.90 > 169.00	1.582	1.577	0.005	1.000	142784	0.5267		105	902	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.861	0.007	1.000	150105	0.5803		116	1311	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.861	0.007		12743752	48.2		96.3	785537	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.906	1.900	0.006	1.000	222806	0.4748		107		
298.90 > 99.00	1.906	1.900	0.006	1.000	90815		2.45(0.00-0.00)	107		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.170	2.164	0.006	1.000	117888	0.5373		107	2866	
D 6 13C2 PFHxA										
315.00 > 270.00	2.179	2.164	0.015		11509685	48.5		96.9	1035144	
D 11 13C4-PFHpA										
367.00 > 322.00	2.521	2.511	0.010		10024418	48.3		96.7	941002	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.521	2.512	0.009	1.000	110651	0.5374		107	1512	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.544	2.531	0.013	1.000	195583	0.6061		133		
D 10 18O2 PFHxS										
403.00 > 84.00	2.544	2.531	0.013		13905891	44.5		94.1	1599849	
D 14 13C4 PFOA										
417.00 > 372.00	2.886	2.880	0.006		10969960	50.0		100	702523	

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	2.902	2.887	0.015	1.000	176658	0.7512		150	2006	
413.00 > 169.00	2.902	2.887	0.015	1.000	83124		2.13(0.90-1.10)	150	4894	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.902	2.888	0.014	1.000	137547	0.5117		108		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.267	3.258	0.009	1.000	118203	0.4770		103	15866	
499.00 > 99.00	3.250	3.258	-0.008	0.995	0		0.00(0.90-1.10)	103		
D 17 13C4 PFOS										
503.00 > 80.00	3.267	3.259	0.008		10914613	44.4		92.8	963774	
D 19 13C5 PFNA										
468.00 > 423.00	3.275	3.263	0.012		8141793	48.9		97.8	521938	
20 Perfluorononanoic acid										M
463.00 > 419.00	3.275	3.263	0.012	1.000	86737	0.5346		107	1741	M
D 21 13C8 FOSA										
506.00 > 78.00	3.581	3.571	0.010		19139237	47.6		95.2	555083	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.581	3.574	0.007	1.000	185050	0.5175		104	16767	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.632	3.623	0.009	1.000	78320	0.5318		106	2431	
D 23 13C2 PFDA										
515.00 > 470.00	3.640	3.626	0.014		7667226	48.6		97.2	219644	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.945	3.936	0.009	1.000	68667	0.4701		97.5		
28 Perfluoroundecanoic acid										M
563.00 > 519.00	3.971	3.955	0.016	1.000	77125	0.6205		124	2113	M
D 27 13C2 PFUnA										
565.00 > 520.00	3.971	3.958	0.013		5831263	49.1		98.2	341809	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.261	4.250	0.011	1.000	53202	0.5236		105	752	
D 30 13C2 PFDoA										
615.00 > 570.00	4.261	4.251	0.010		5353024	47.8		95.5	191441	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.535	4.518	0.017	1.000	53449	0.5256		105	91.0	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.778	4.759	0.019		11035471	47.7		95.5	488569	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.778	4.761	0.017	1.000	109549	0.5520		110	60.5	
713.00 > 169.00	4.770	4.761	0.009	0.998	20451		5.36(0.00-0.00)	110	3502	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.208	5.186	0.022		6102203	47.0		94.1	113568	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.208	5.186	0.022	1.000	127409	0.4441		88.8	179	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.584	5.559	0.025	1.000	50040	0.4708		94.2	82.2	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L1_00021 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:24:06 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_004.d

Injection Date: 03-Dec-2016 13:48:41 Instrument ID: A8_N

Lims ID: IC L1

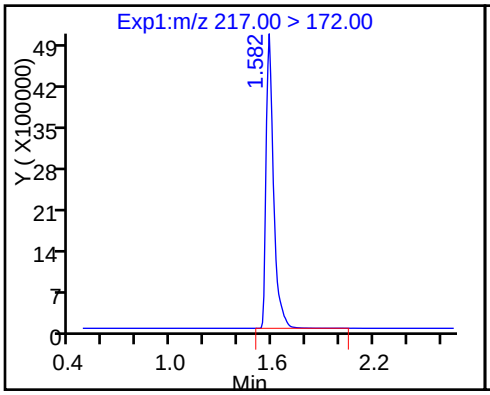
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

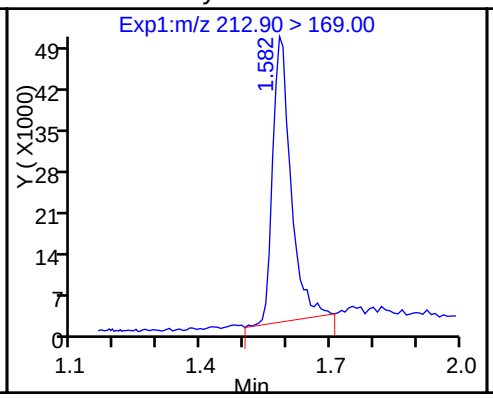
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

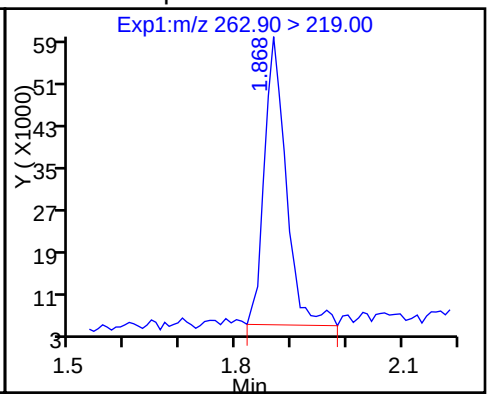
D 2 13C4 PFBA



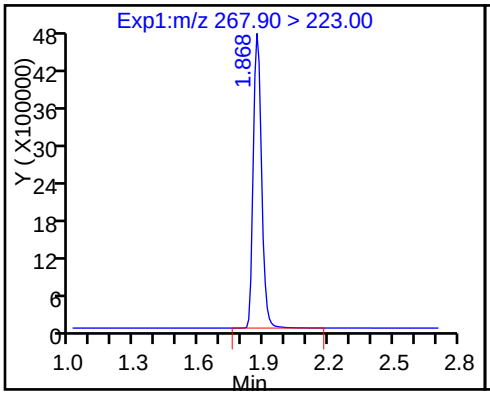
1 Perfluorobutyric acid



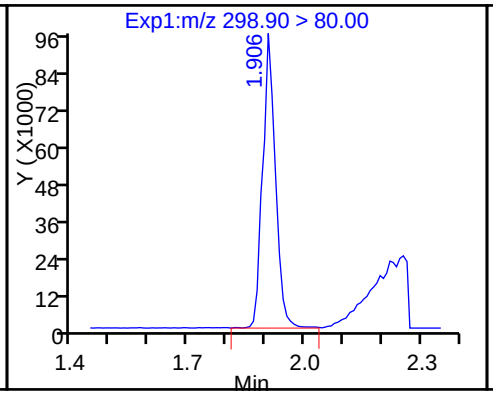
3 Perfluoropentanoic acid



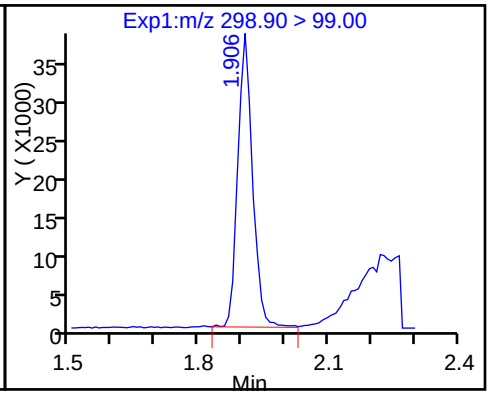
D 4 13C5-PFPeA



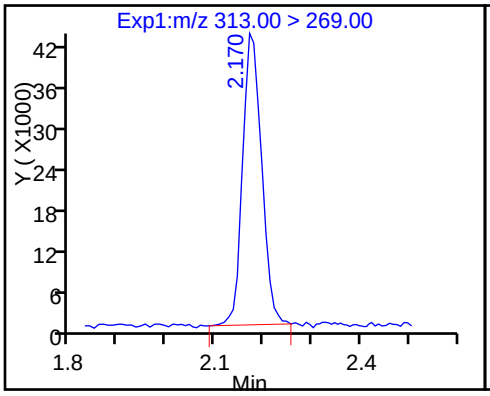
5 Perfluorobutanesulfonic acid



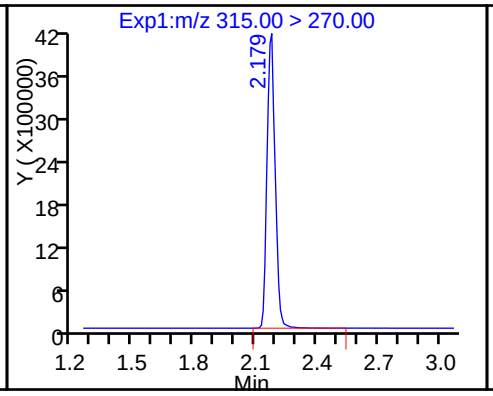
5 Perfluorobutanesulfonic acid



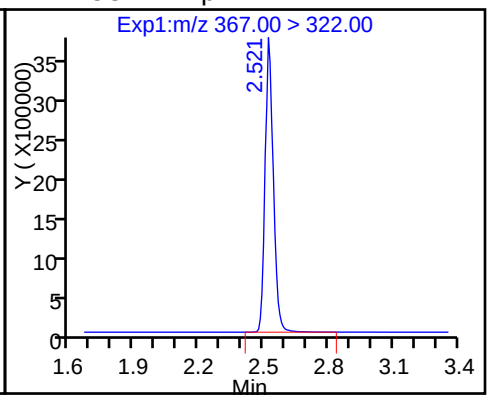
7 Perfluorohexanoic acid



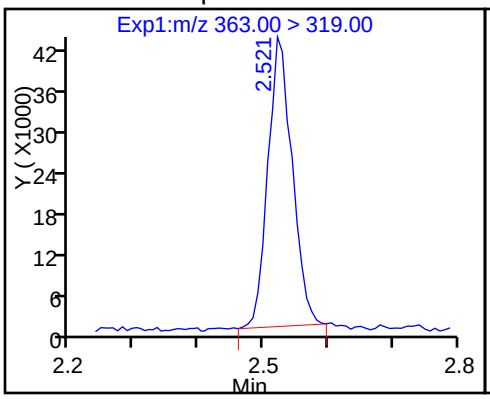
D 6 13C2 PFHxA



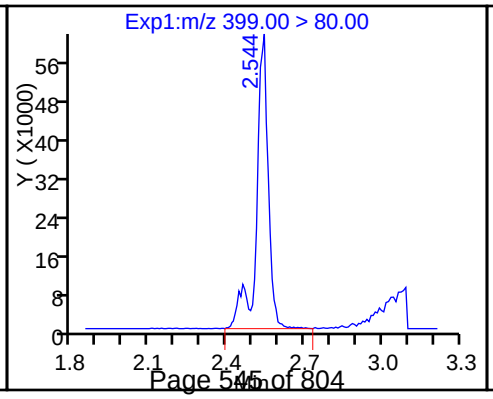
D 11 13C4-PFHpA



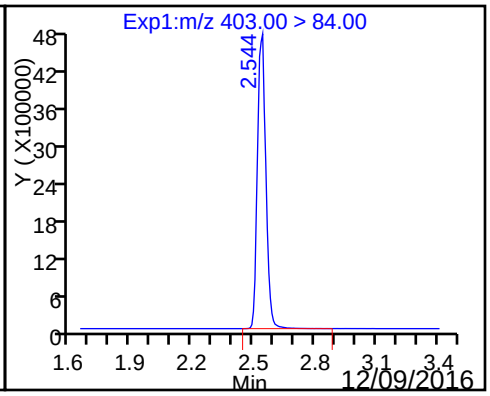
12 Perfluoroheptanoic acid



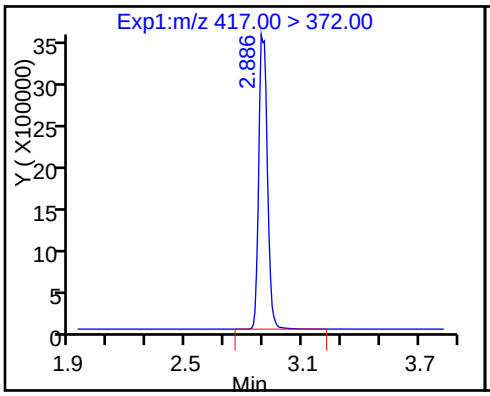
9 Perfluorohexanesulfonic acid



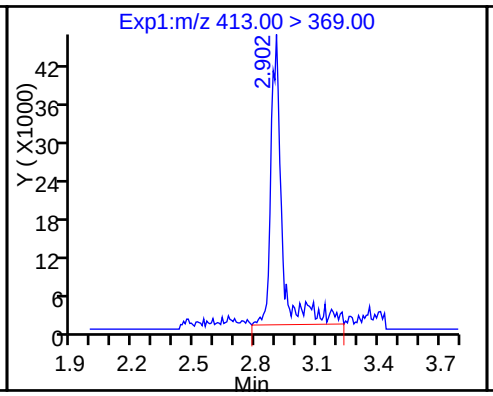
D 10 18O2 PFHxS



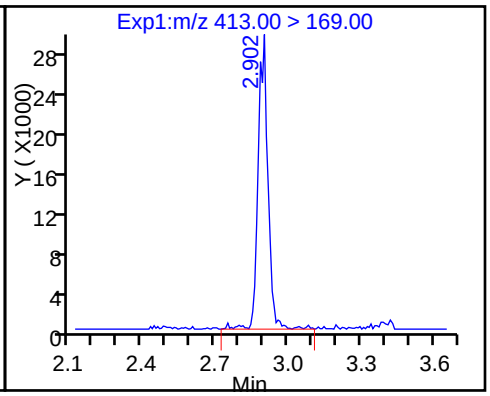
D 14 13C4 PFOA



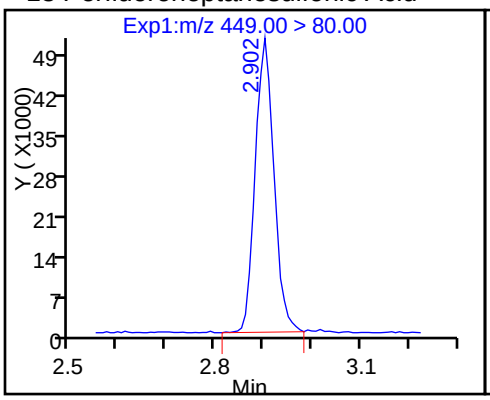
15 Perfluorooctanoic acid



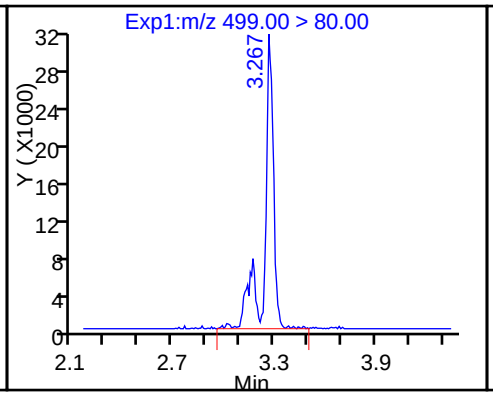
15 Perfluorooctanoic acid



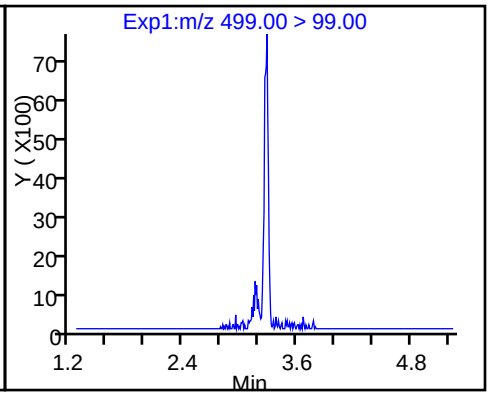
13 Perfluoroheptanesulfonic Acid



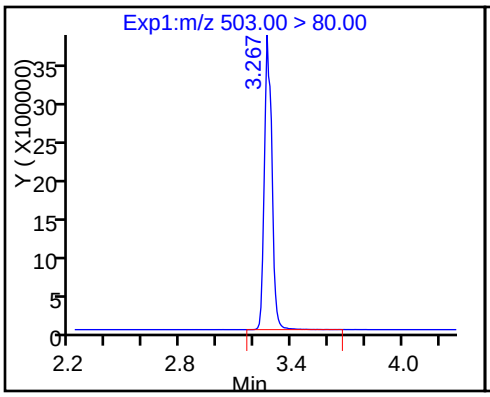
18 Perfluorooctane sulfonic acid



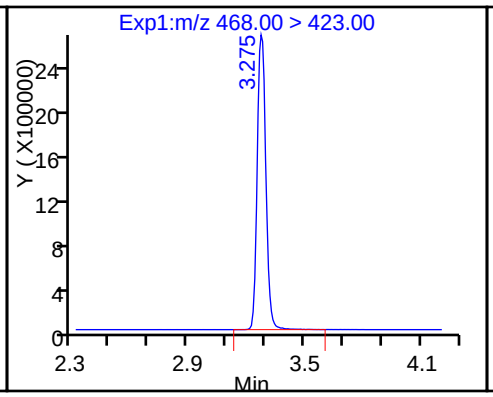
18 Perfluorooctane sulfonic acid



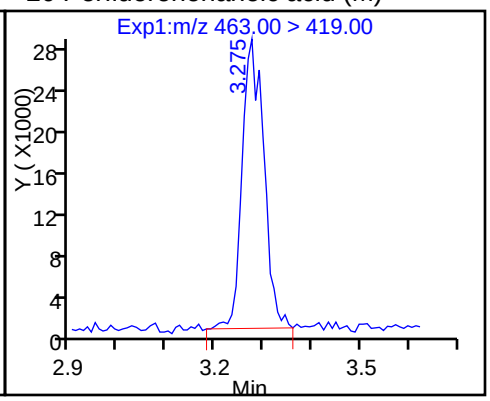
D 17 13C4 PFOS



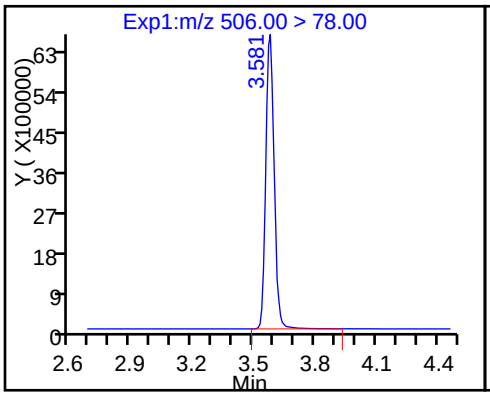
D 19 13C5 PFNA



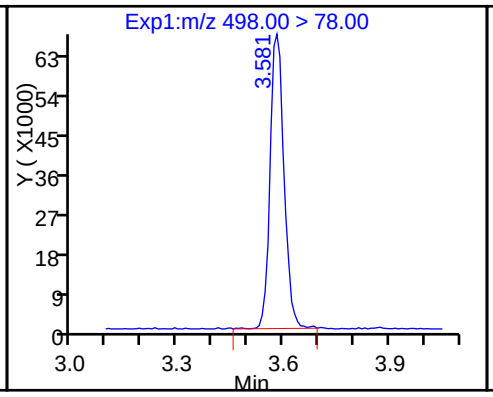
20 Perfluorononanoic acid (M)



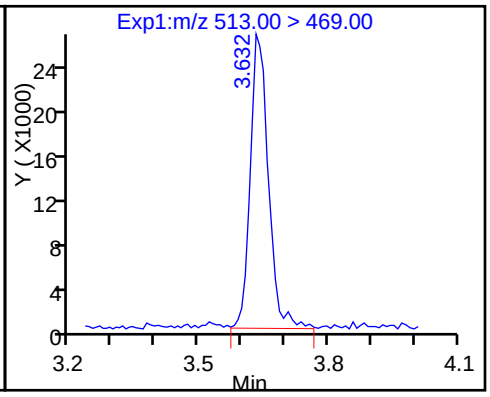
D 21 13C8 FOSA



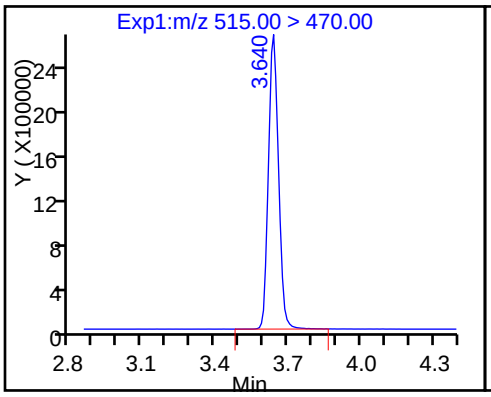
22 Perfluorooctane Sulfonamide



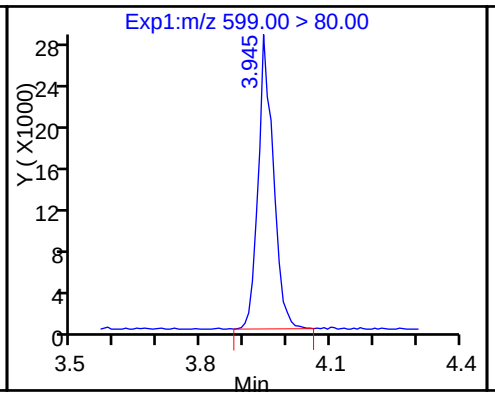
24 Perfluorodecanoic acid



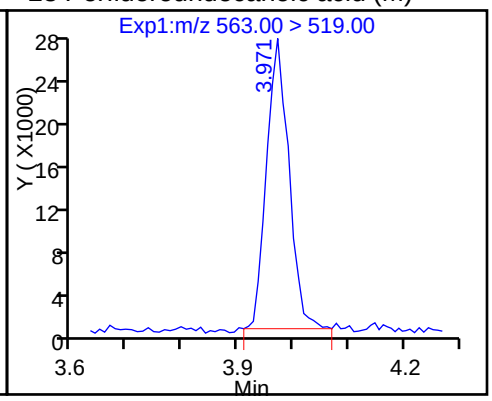
D 23 13C2 PFDA



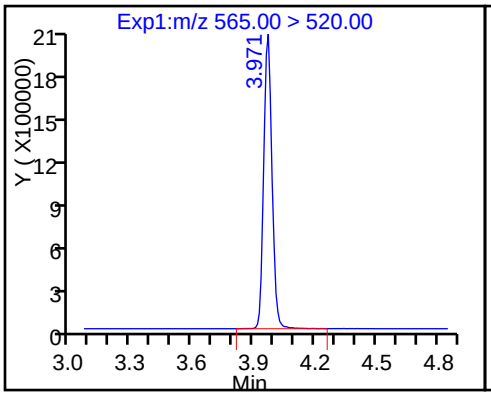
26 Perfluorodecane Sulfonic acid



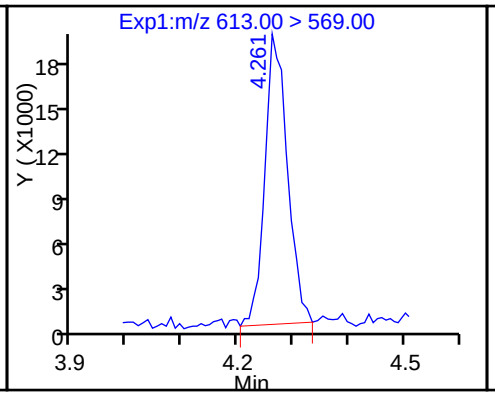
28 Perfluoroundecanoic acid (M)



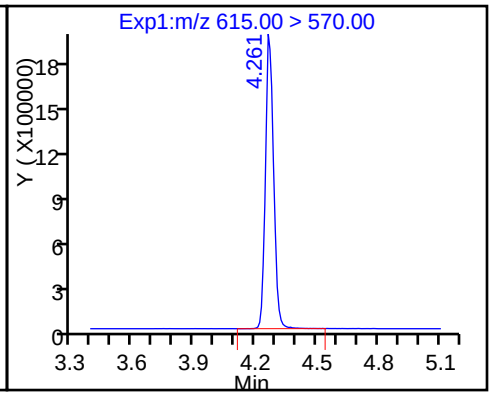
D 27 13C2 PFUnA



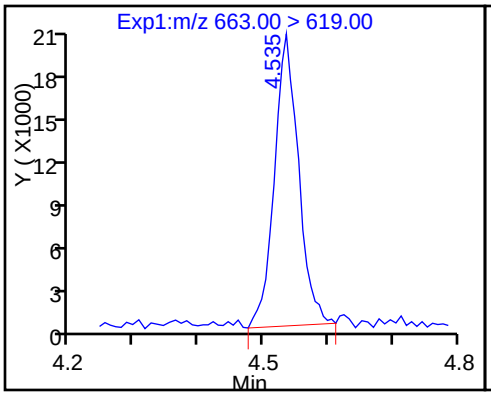
29 Perfluorododecanoic acid



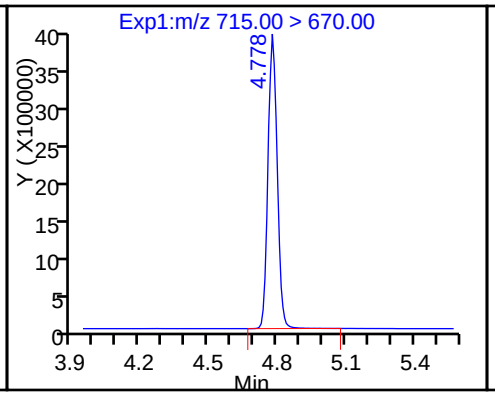
D 30 13C2 PFDoA



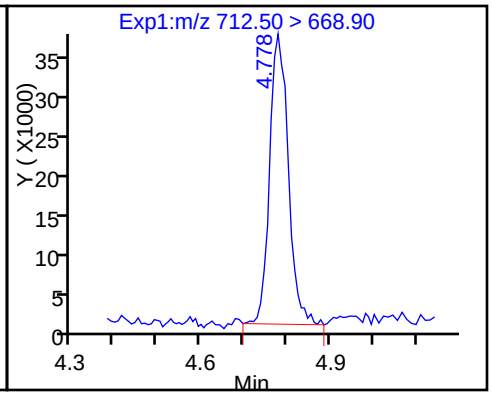
31 Perfluorotridecanoic acid



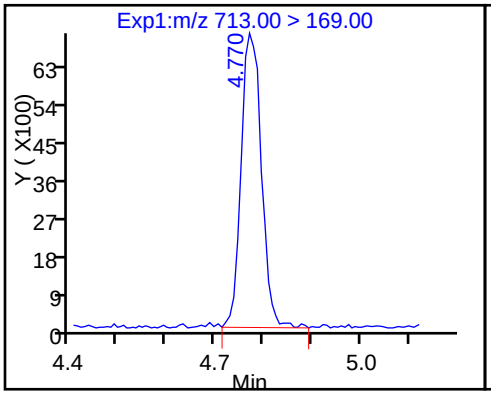
D 32 13C2-PFTeDA



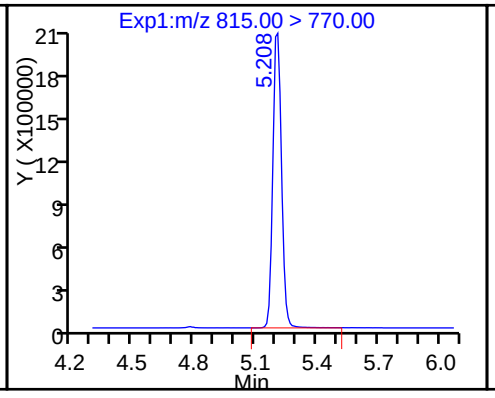
33 Perfluorotetradecanoic acid



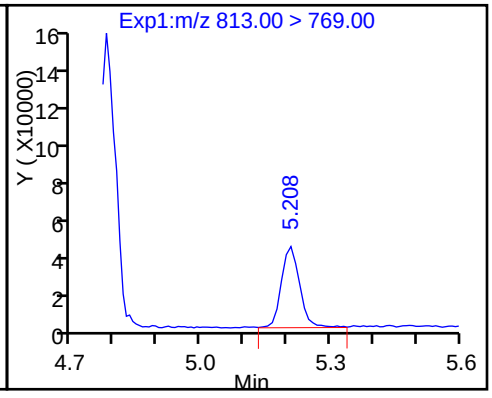
33 Perfluorotetradecanoic acid



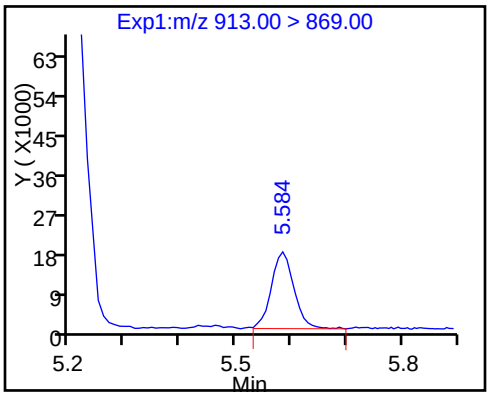
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

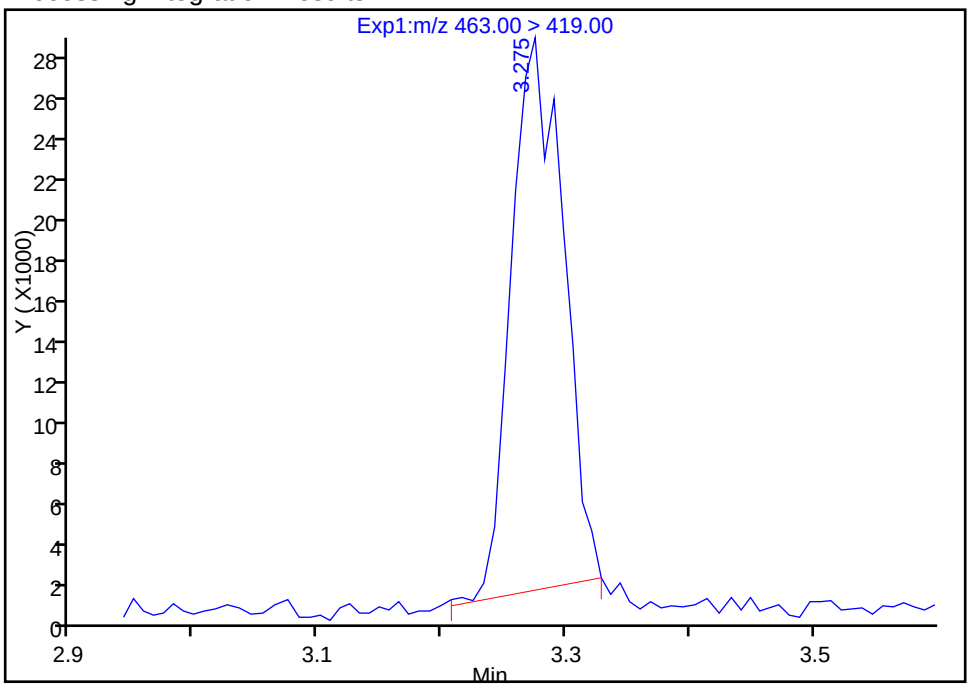
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_004.d
Injection Date: 03-Dec-2016 13:48:41 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

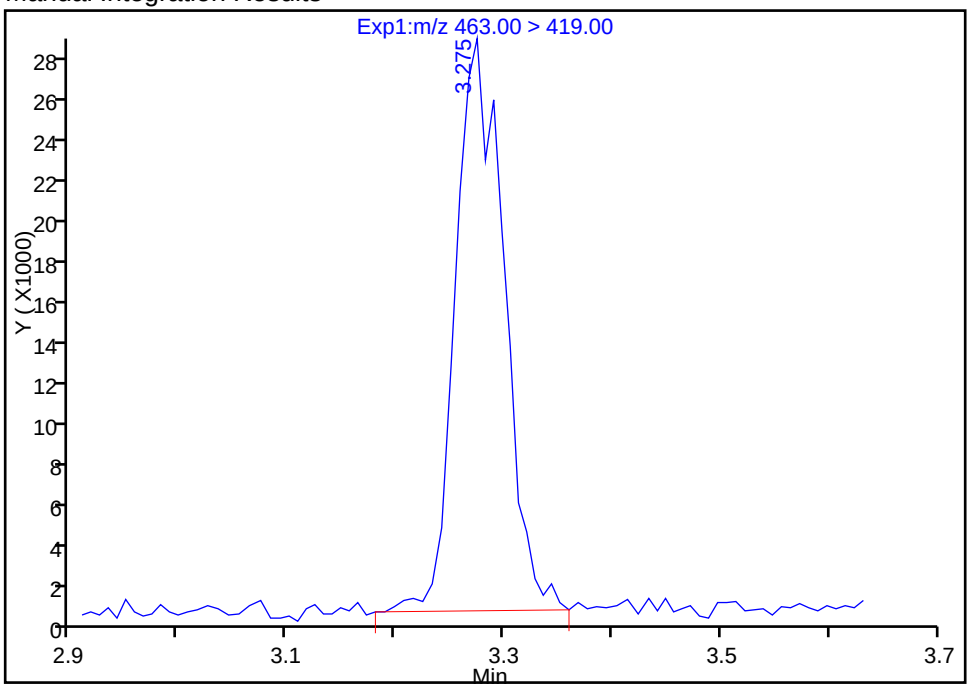
Processing Integration Results

RT: 3.28
Area: 78587
Amount: 0.492646
Amount Units: ng/ml



Manual Integration Results

RT: 3.28
Area: 86737
Amount: 0.534631
Amount Units: ng/ml



Reviewer: chandrasenas, 05-Dec-2016 09:42:37
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento

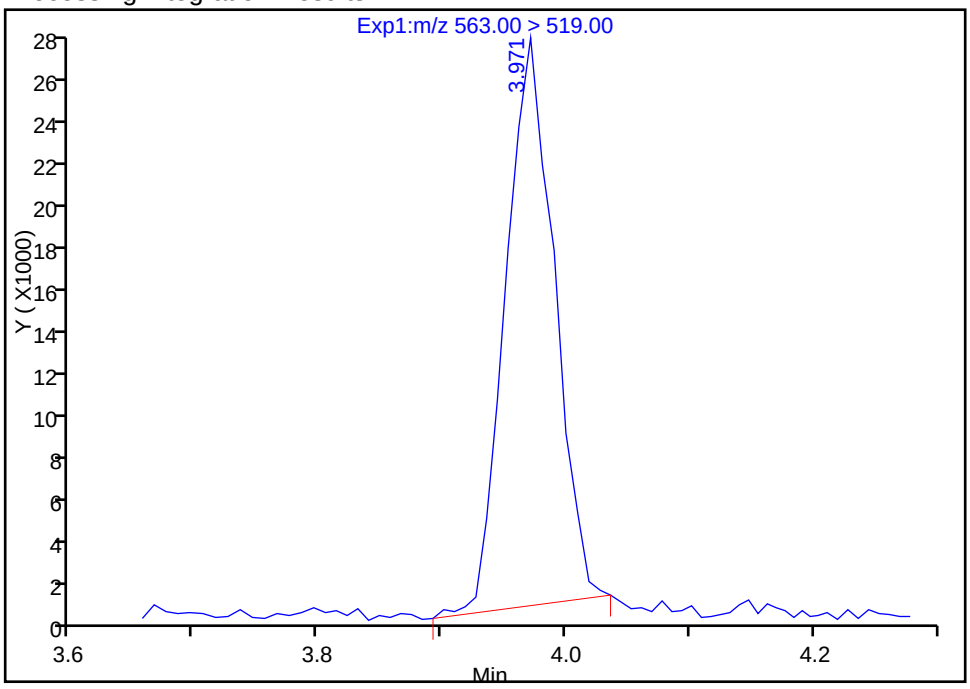
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_004.d
Injection Date: 03-Dec-2016 13:48:41 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

28 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 1

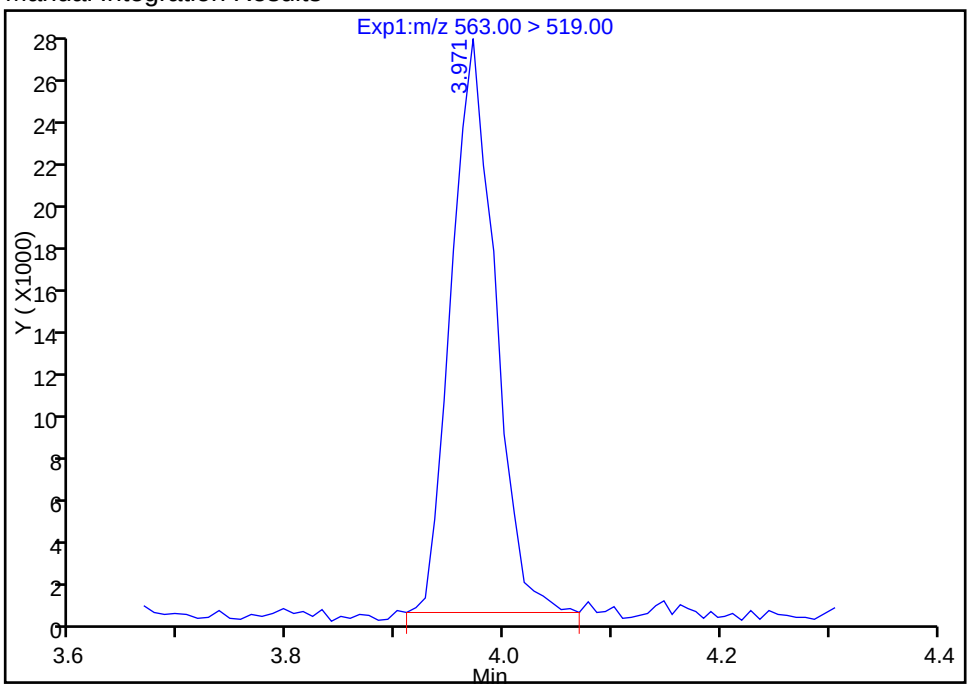
Processing Integration Results

RT: 3.97
Area: 74499
Amount: 0.603647
Amount Units: ng/ml



Manual Integration Results

RT: 3.97
Area: 77125
Amount: 0.620524
Amount Units: ng/ml



Reviewer: chandrasenas, 05-Dec-2016 09:42:37
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-Dec-2016 13:56:13 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:24:08 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:43:09

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	1.574	1.574	0.0		16567343	49.3		98.7	1253121	
1 Perfluorobutyric acid										
212.90 > 169.00	1.574	1.577	-0.003	1.000	286663	0.9899		99.0	1783	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.858	1.861	-0.003	1.000	267561	1.02		102	2233	
D 4 13C5-PFPeA										
267.90 > 223.00	1.858	1.861	-0.003		12919402	48.8		97.7	738841	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.897	1.900	-0.003	1.000	433384	0.8763		99.1		
298.90 > 99.00	1.897	1.900	-0.003	1.000	173533		2.50(0.00-0.00)	99.1		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.164	2.164	0.0	1.000	221801	0.9891		98.9	4857	
D 6 13C2 PFHxA										
315.00 > 270.00	2.164	2.164	0.0		11763139	49.5		99.1	702628	
D 11 13C4-PFHpA										
367.00 > 322.00	2.512	2.511	0.001		10489748	50.6		101	757325	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.512	2.512	0.0	1.000	215700	1.00		100	2505	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.535	2.531	0.004	1.000	340243	1.00		110		
D 10 18O2 PFHxS										
403.00 > 84.00	2.535	2.531	0.004		14656306	46.9		99.2	569002	
D 14 13C4 PFOA										
417.00 > 372.00	2.886	2.880	0.006		11390215	51.9		104	1255788	

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	2.887	0.007	1.000	266474	1.09		109	2568	
413.00 > 169.00	2.886	2.887	-0.001	0.997	153584		1.74(0.90-1.10)	109	8517	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.886	2.888	-0.002	1.000	251617	0.9178		96.4		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.259	3.258	0.001	1.000	230863	0.9134		98.4	60496	
499.00 > 99.00	3.268	3.258	0.010	1.003	49554		4.66(0.90-1.10)	98.4	7390	
D 17 13C4 PFOS										
503.00 > 80.00	3.259	3.259	0.0		11132983	45.3		94.7	553508	
D 19 13C5 PFNA										
468.00 > 423.00	3.268	3.263	0.005		8362456	50.3		101	686636	
20 Perfluorononanoic acid										
463.00 > 419.00	3.268	3.263	0.005	1.000	158219	0.9495		94.9	2139	
D 21 13C8 FOSA										
506.00 > 78.00	3.565	3.571	-0.006		19849207	49.3		98.7	435087	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.573	3.574	-0.001	1.000	375193	1.01		101	37696	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.632	3.623	0.009	1.000	147102	0.9741		97.4	6264	
D 23 13C2 PFDA										
515.00 > 470.00	3.624	3.626	-0.002		7861453	49.8		99.6	210924	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.944	3.936	0.008	1.000	150371	1.01		105		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.953	3.955	-0.003	1.000	130643	1.01		101	3153	
D 27 13C2 PFUnA										
565.00 > 520.00	3.961	3.958	0.003		6085968	51.2		102	355525	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.254	4.250	0.004	1.000	100943	0.9761		97.6	1508	
D 30 13C2 PFDoA										
615.00 > 570.00	4.262	4.251	0.011		5448882	48.6		97.2	155924	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.515	4.518	-0.003	1.000	100348	0.9695		96.9	172	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.762	4.759	0.003		11401035	49.3		98.6	776058	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.770	4.761	0.009	1.000	215694	1.07		107	105	
713.00 > 169.00	4.762	4.761	0.001	0.998	35526		6.07(0.00-0.00)	107	12035	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.196	5.186	0.010		6483658	50.0		100.0	170445	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.196	5.186	0.010	1.000	184956	0.9549		95.5	215	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.565	5.559	0.006	1.000	119152	1.10		110	244	

Reagents:

LCPFC-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:24:08 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_005.d

Injection Date: 03-Dec-2016 13:56:13 Instrument ID: A8_N

Lims ID: IC L2

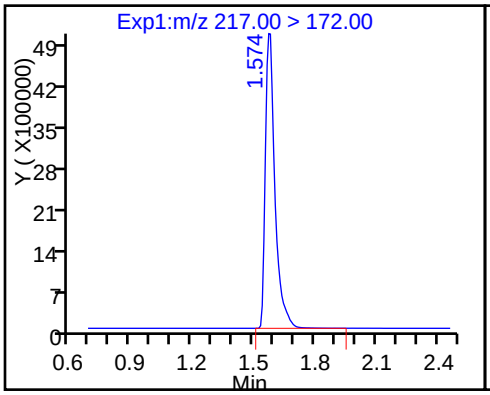
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

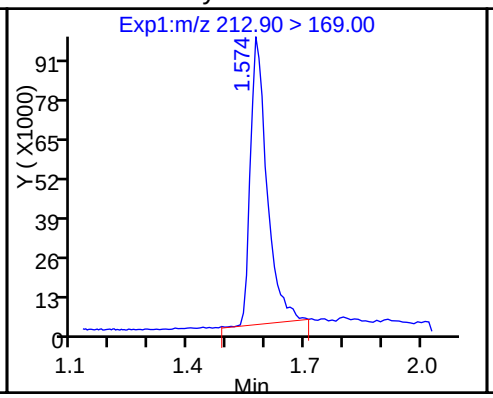
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

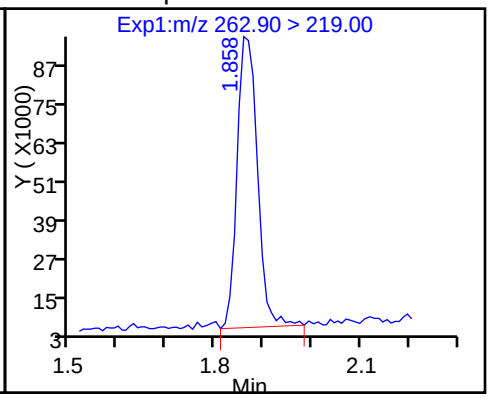
D 2 13C4 PFBA



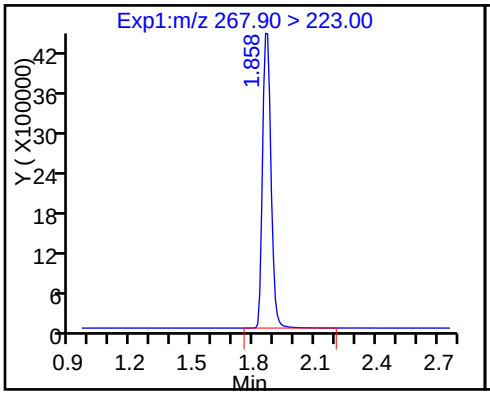
1 Perfluorobutyric acid



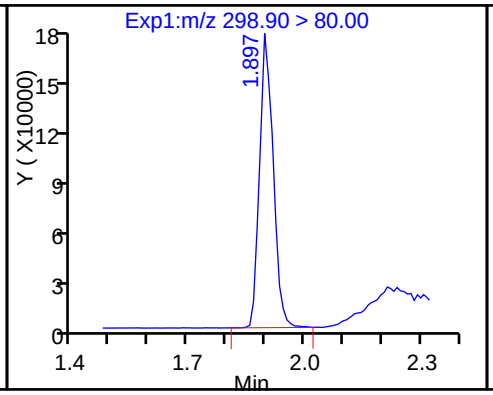
3 Perfluoropentanoic acid



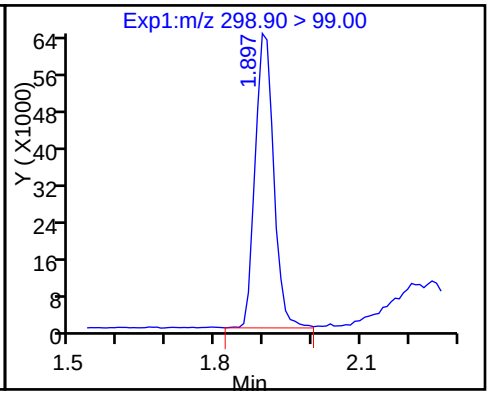
D 4 13C5-PFPeA



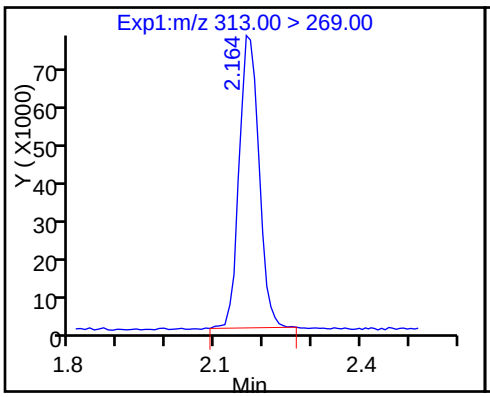
5 Perfluorobutanesulfonic acid



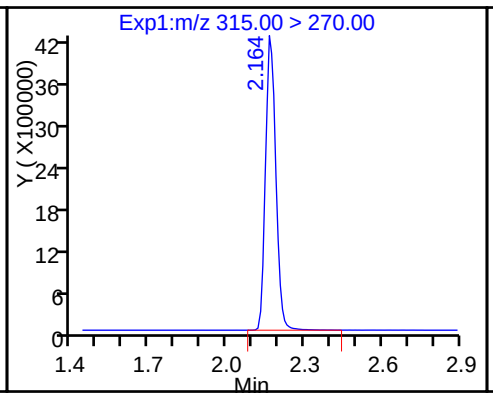
5 Perfluorobutanesulfonic acid



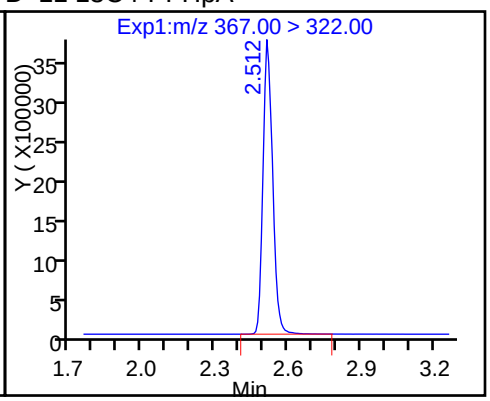
7 Perfluorohexanoic acid



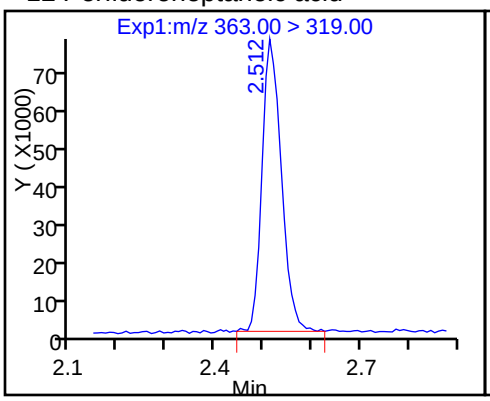
D 6 13C2 PFHxA



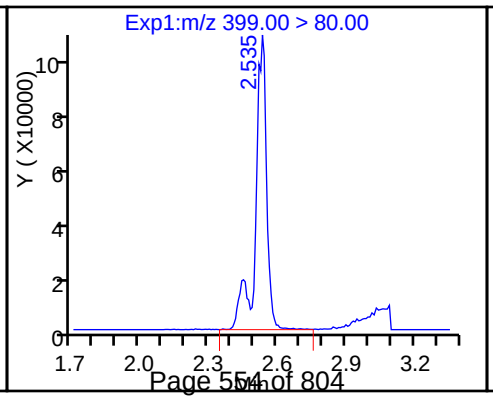
D 11 13C4-PFHpA



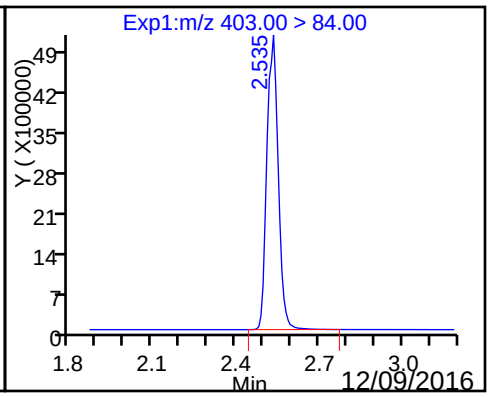
12 Perfluoroheptanoic acid



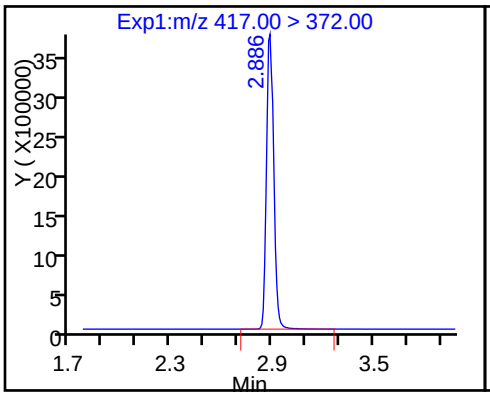
9 Perfluorohexanesulfonic acid



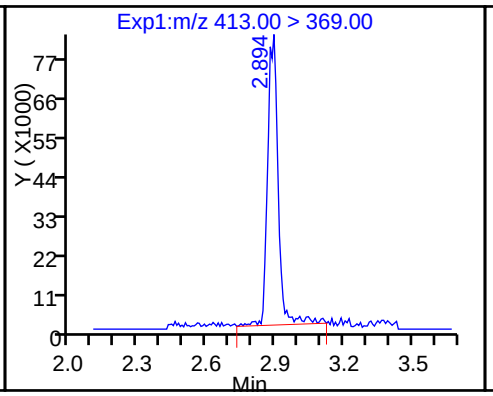
D 10 18O2 PFHxS



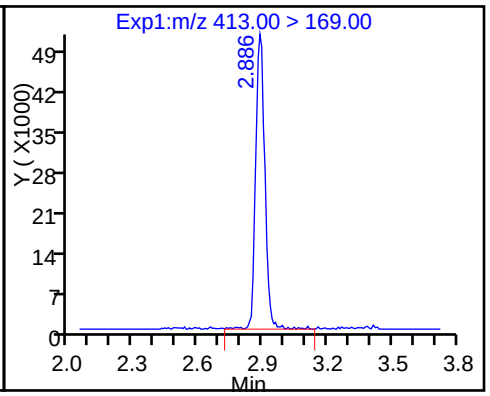
D 14 13C4 PFOA



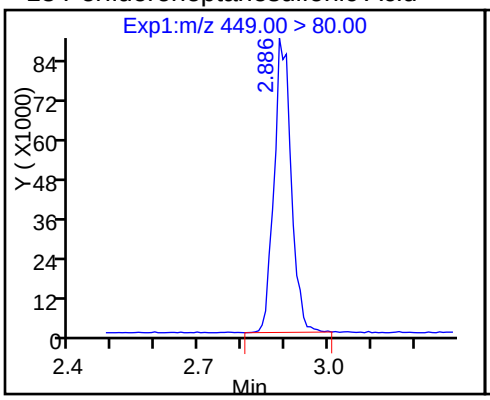
15 Perfluorooctanoic acid



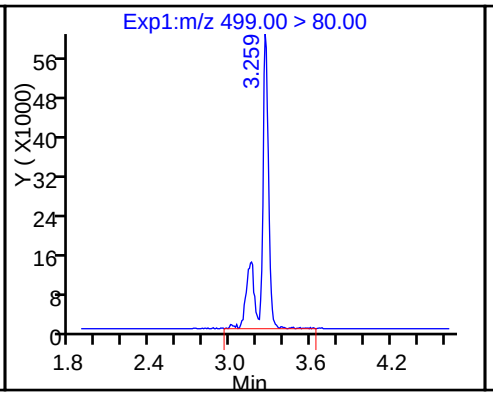
15 Perfluorooctanoic acid



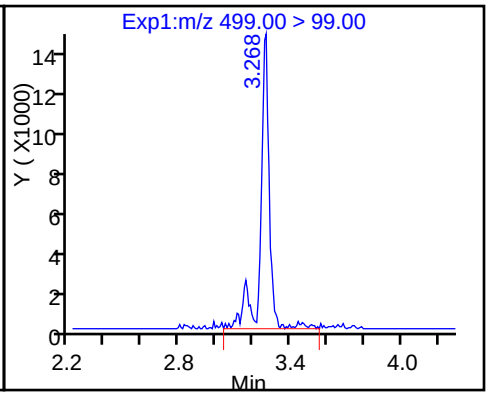
13 Perfluoroheptanesulfonic Acid



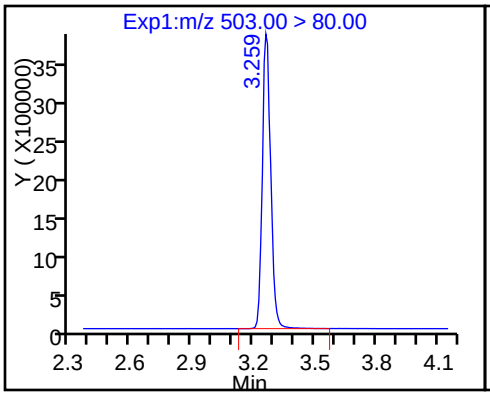
18 Perfluorooctane sulfonic acid



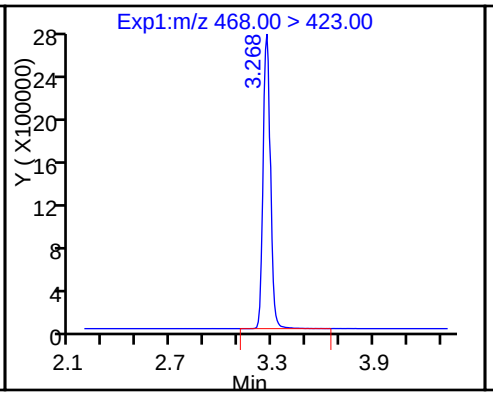
18 Perfluorooctane sulfonic acid



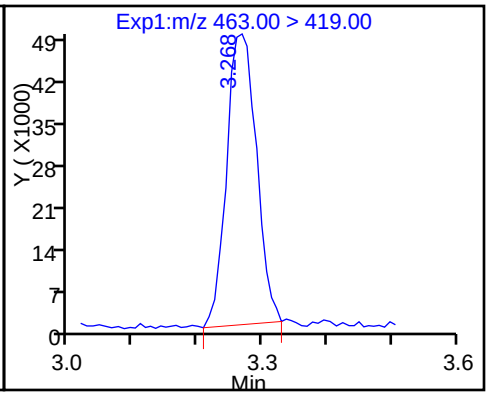
D 17 13C4 PFOS



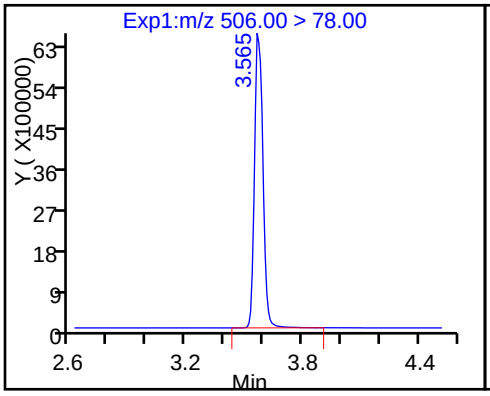
D 19 13C5 PFNA



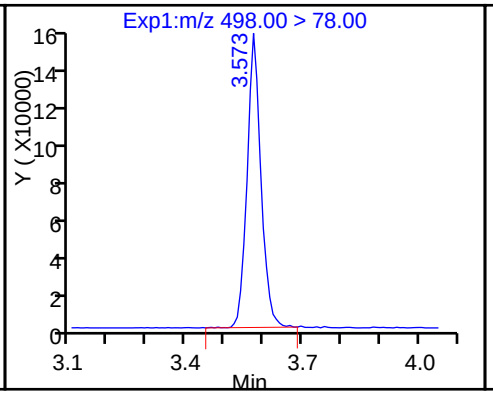
20 Perfluorononanoic acid



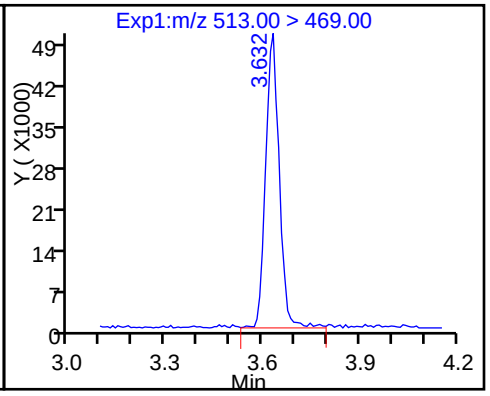
D 21 13C8 FOSA



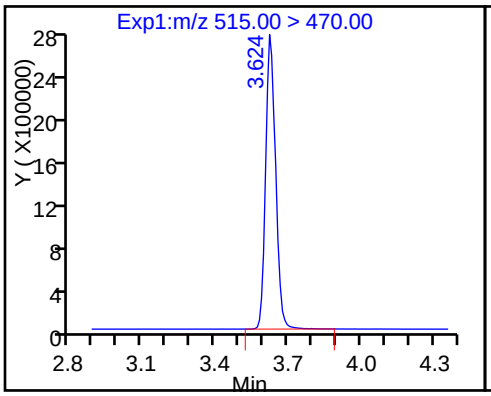
22 Perfluorooctane Sulfonamide



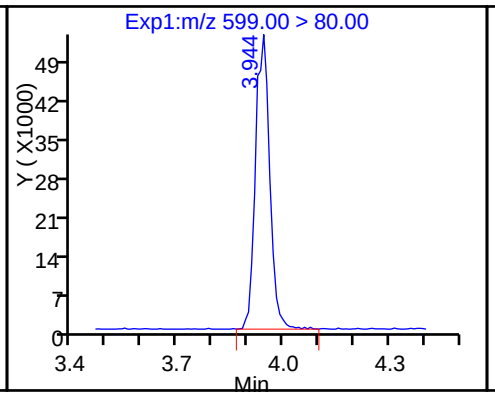
24 Perfluorodecanoic acid



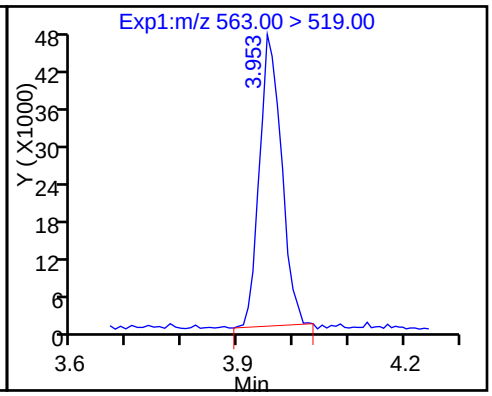
D 23 13C2 PFDA



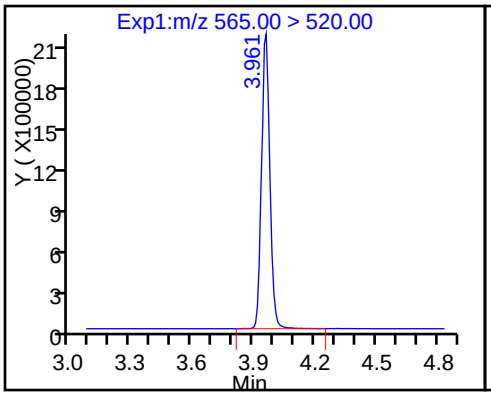
26 Perfluorodecane Sulfonic acid



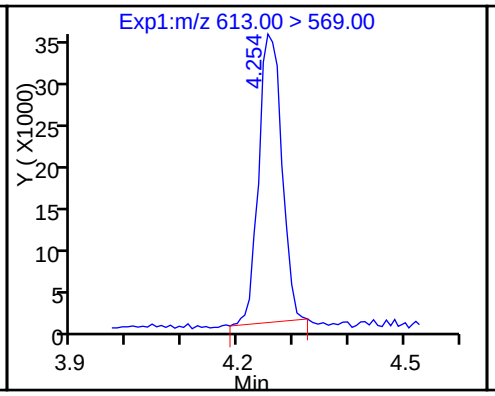
28 Perfluoroundecanoic acid



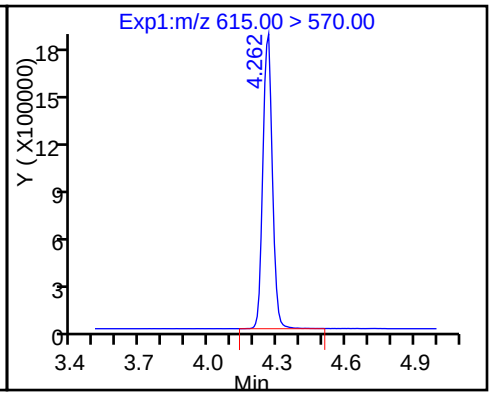
D 27 13C2 PFUnA



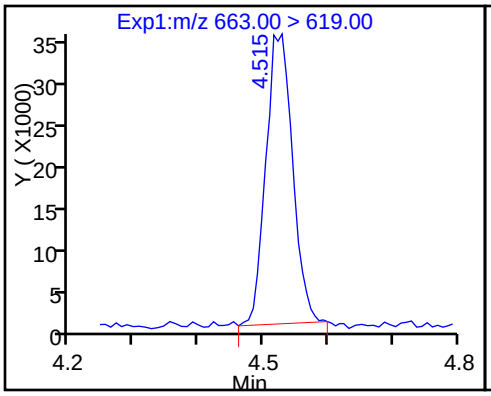
29 Perfluorododecanoic acid



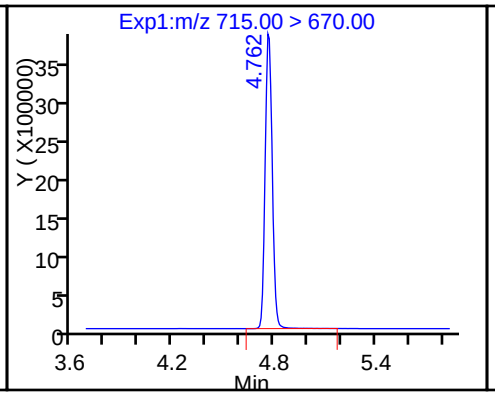
D 30 13C2 PFDoA



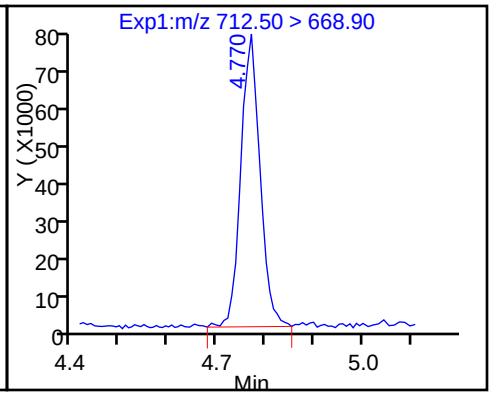
31 Perfluorotridecanoic acid



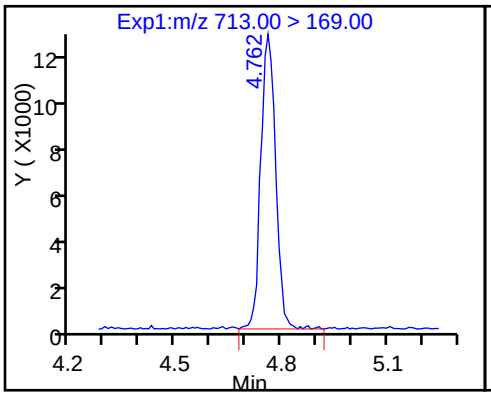
D 32 13C2-PFTeDA



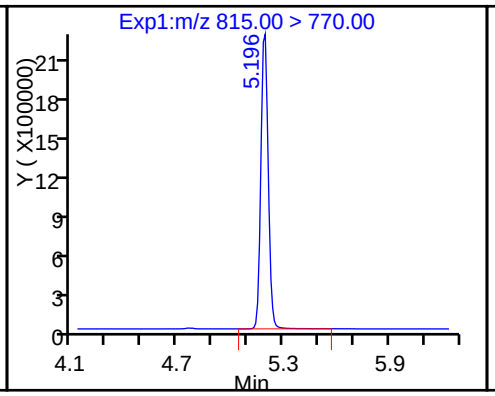
33 Perfluorotetradecanoic acid



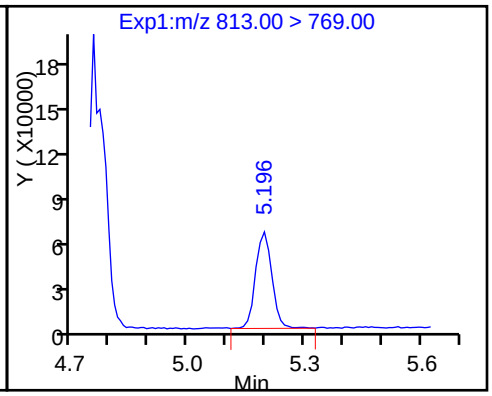
33 Perfluorotetradecanoic acid



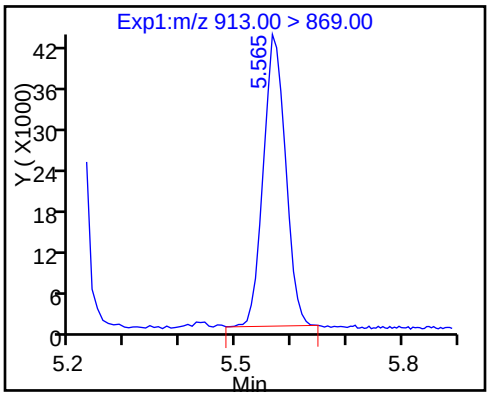
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-Dec-2016 14:03:44 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:24:10 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:43:24

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	1.574	1.574	0.0		19799279	59.0		118	1507463	
1 Perfluorobutyric acid										
212.90 > 169.00	1.574	1.577	-0.003	1.000	1758998	5.08		102	10276	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.858	1.861	-0.003	1.000	1580002	4.98		99.6	13754	
D 4 13C5-PFPeA										
267.90 > 223.00	1.858	1.861	-0.003		15634346	59.1		118	910049	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.897	1.900	-0.003	1.000	2768149	4.72		107		
298.90 > 99.00	1.897	1.900	-0.003	1.000	1152600		2.40(0.00-0.00)	107		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.163	2.164	-0.001	1.000	1358530	5.11		102	38617	
D 6 13C2 PFHxA										
315.00 > 270.00	2.163	2.164	-0.001		13959775	58.8		118	866927	
D 11 13C4-PFHpA										
367.00 > 322.00	2.508	2.511	-0.003		12498264	60.3		121	1070818	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.516	2.512	0.004	1.000	1254320	4.89		97.7	16816	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.531	2.531	0.0	1.000	1846932	4.58		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.531	2.531	0.0		17374498	55.6		118	872275	
D 14 13C4 PFOA										
417.00 > 372.00	2.880	2.880	0.0		13257596	60.5		121	935997	

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	2.880	2.887	-0.007	1.000	1455373	5.12		102	23006	
413.00 > 169.00	2.888	2.887	0.001	1.003	828495		1.76(0.90-1.10)	102	49224	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.888	2.888	0.0	1.000	1641199	4.77		100		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.255	3.258	-0.003	1.000	1443163	4.55		98.0	374092	
499.00 > 99.00	3.255	3.258	-0.003	1.000	319030		4.52(0.90-1.10)	98.0	32937	
D 17 13C4 PFOS										
503.00 > 80.00	3.263	3.259	0.004		13983781	56.8		119	604878	
D 19 13C5 PFNA										
468.00 > 423.00	3.263	3.263	0.0		10108070	60.7		121	545062	
20 Perfluorononanoic acid										
463.00 > 419.00	3.263	3.263	0.0	1.000	981559	4.87		97.5	16647	
D 21 13C8 FOSA										
506.00 > 78.00	3.576	3.571	0.005		23126232	57.5		115	745838	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.576	3.574	0.002	1.000	2262174	5.24		105	133644	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.618	3.623	-0.005	1.000	868604	4.91		98.1	29437	
D 23 13C2 PFDA										
515.00 > 470.00	3.627	3.626	0.001		9213875	58.4		117	291561	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.938	3.936	0.002	1.000	868168	4.64		96.2		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.956	3.955	0.001	1.000	704273	4.66		93.2	19079	
D 27 13C2 PFUnA										
565.00 > 520.00	3.956	3.958	-0.002		7086903	59.7		119	336150	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.253	4.250	0.003	1.000	606951	4.85		96.9	11284	
D 30 13C2 PFDoA										
615.00 > 570.00	4.253	4.251	0.002		6599493	58.9		118	172819	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.521	4.518	0.003	1.000	627673	5.01		100	1096	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.761	4.759	0.002		13488161	58.3		117	1155339	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.761	4.761	0.0	1.000	1175506	4.80		96.1	484	
713.00 > 169.00	4.761	4.761	0.0	1.000	194335		6.05(0.00-0.00)	96.1	68892	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.180	5.186	-0.006		7591947	58.5		117	144235	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.191	5.186	0.005	1.000	766480	5.09		102	693	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.561	5.559	0.002	1.000	673971	5.14		103	887	

Reagents:

LCPFC-L3_00019 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:24:11 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_006.d

Injection Date: 03-Dec-2016 14:03:44 Instrument ID: A8_N

Lims ID: IC L3

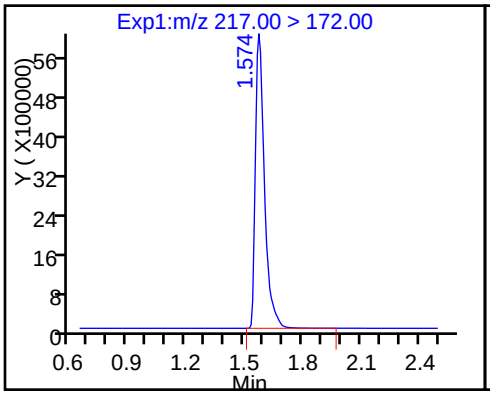
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

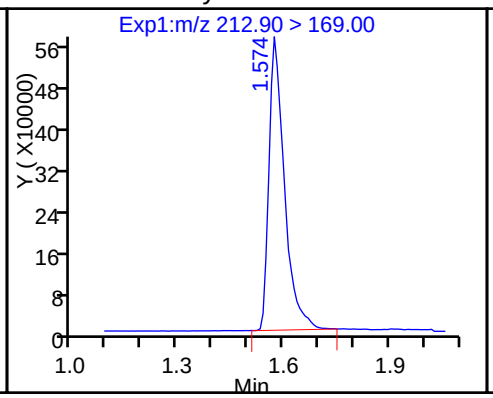
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

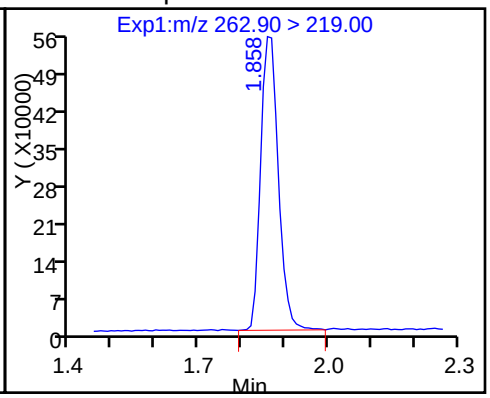
D 2 13C4 PFBA



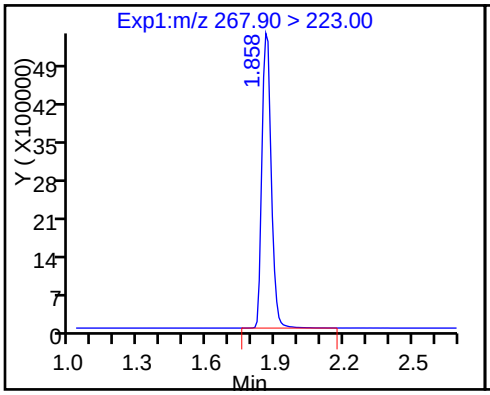
1 Perfluorobutyric acid



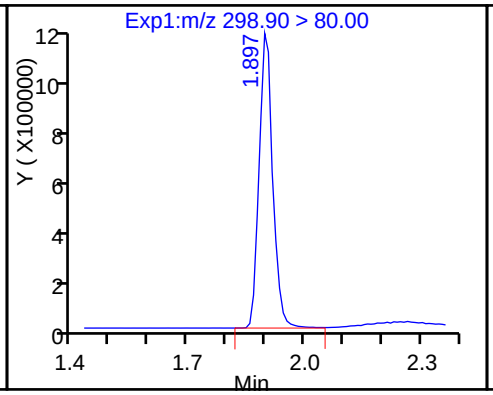
3 Perfluoropentanoic acid



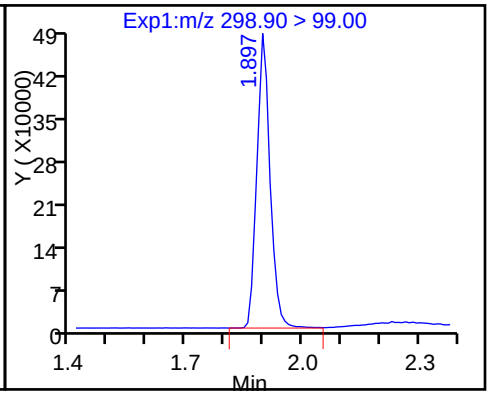
D 4 13C5-PFPeA



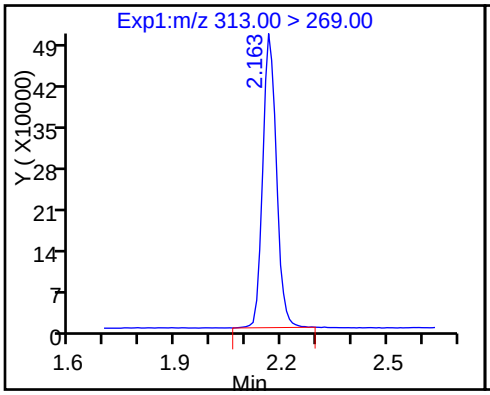
5 Perfluorobutanesulfonic acid



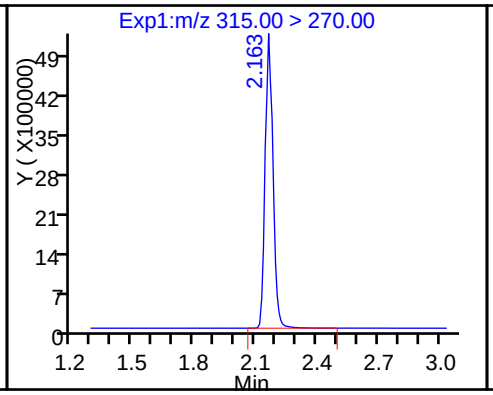
5 Perfluorobutanesulfonic acid



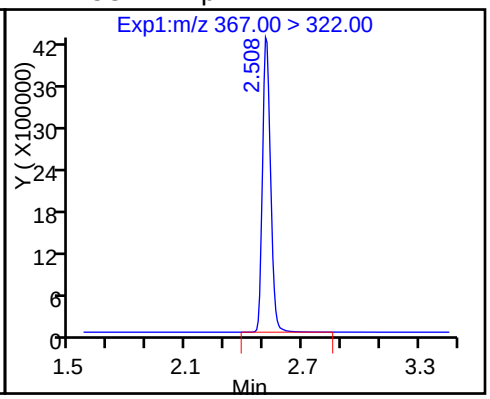
7 Perfluorohexanoic acid



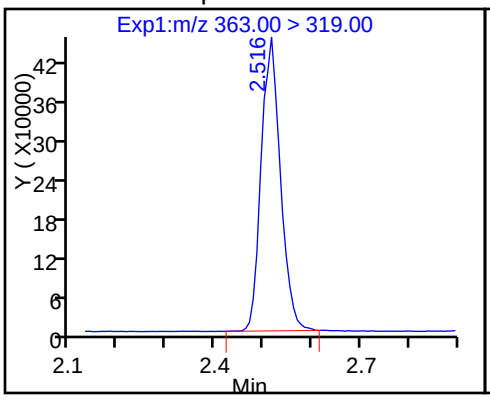
D 6 13C2 PFHxA



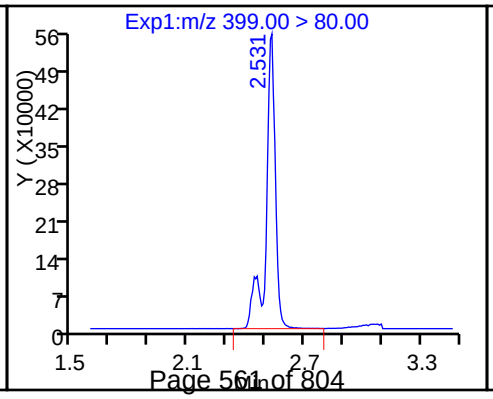
D 11 13C4-PFHpA



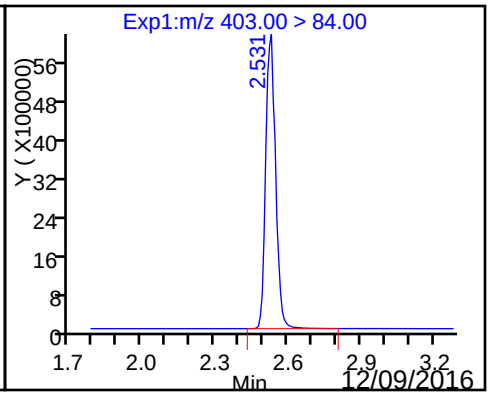
12 Perfluoroheptanoic acid



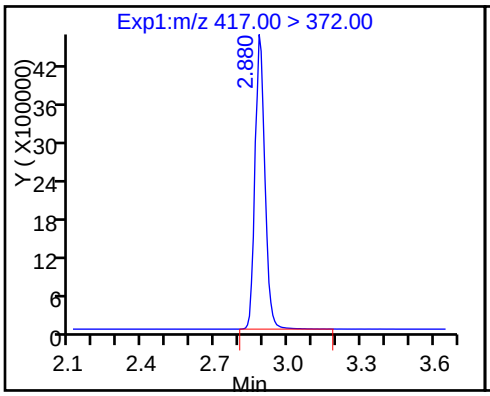
9 Perfluorohexanesulfonic acid



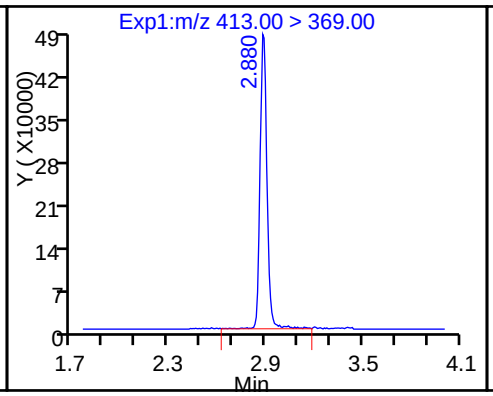
D 10 18O2 PFHxS



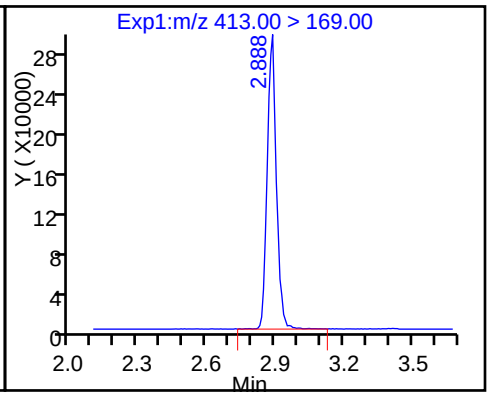
D 14 13C4 PFOA



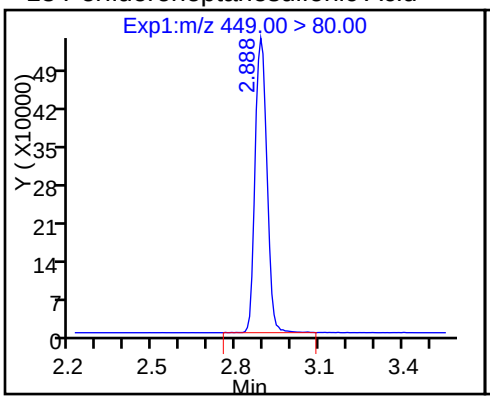
15 Perfluorooctanoic acid



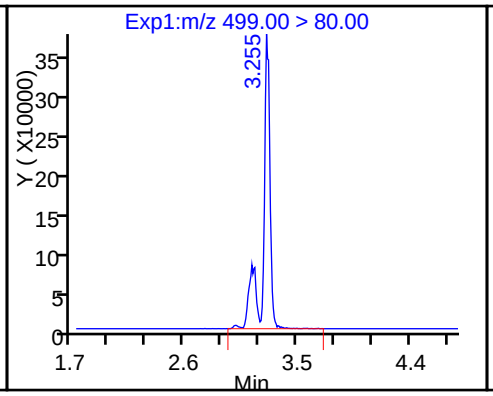
15 Perfluorooctanoic acid



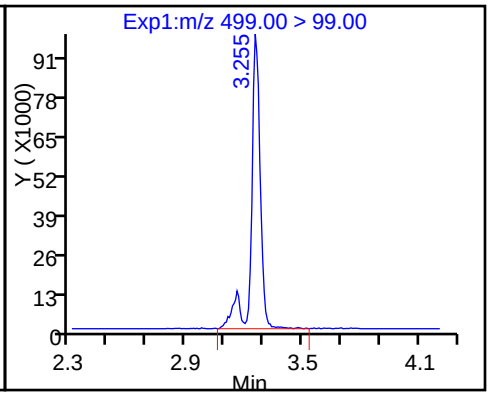
13 Perfluoroheptanesulfonic Acid



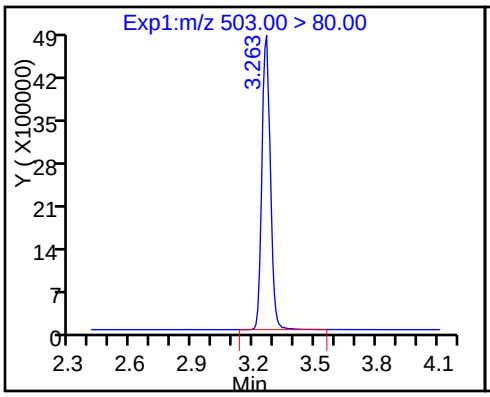
18 Perfluorooctane sulfonic acid



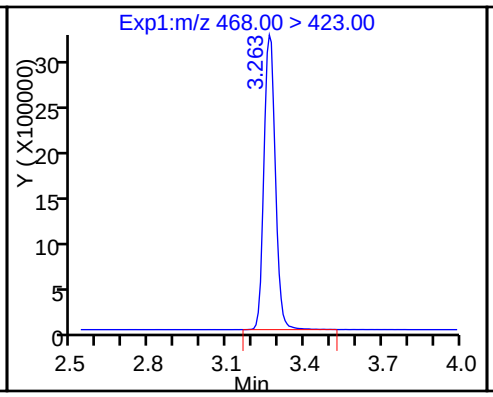
18 Perfluorooctane sulfonic acid



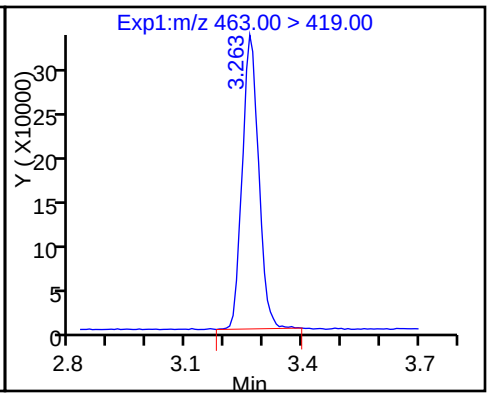
D 17 13C4 PFOS



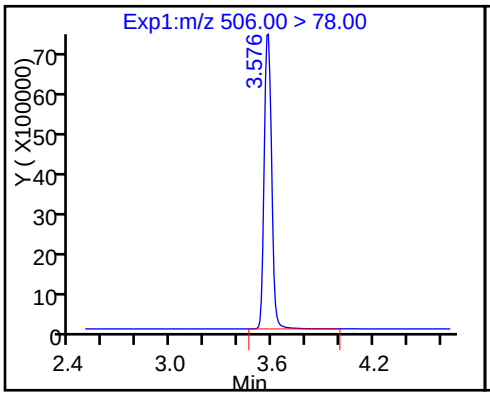
D 19 13C5 PFNA



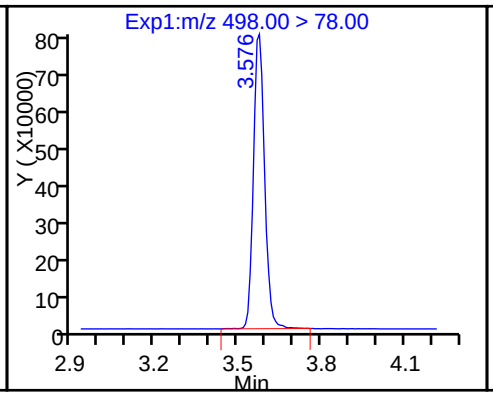
20 Perfluorononanoic acid



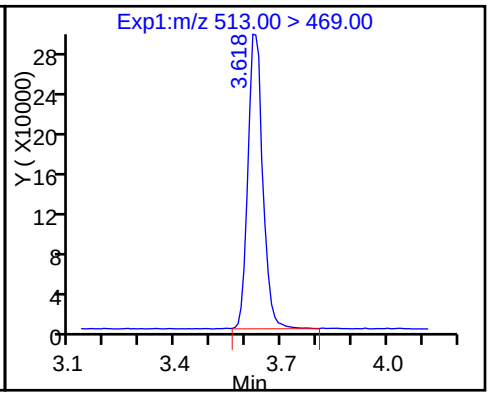
D 21 13C8 FOSA



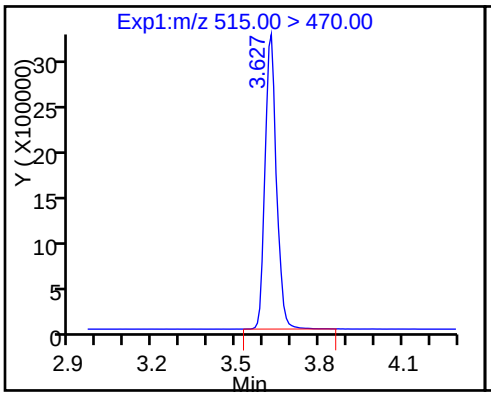
22 Perfluorooctane Sulfonamide



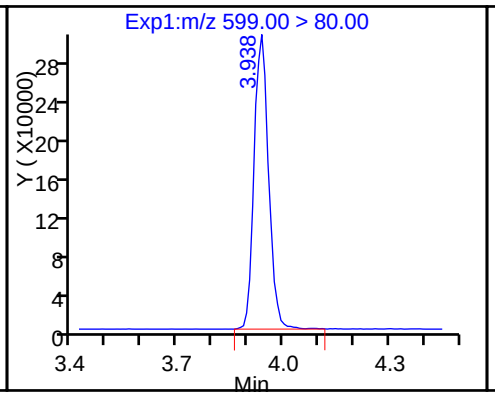
24 Perfluorodecanoic acid



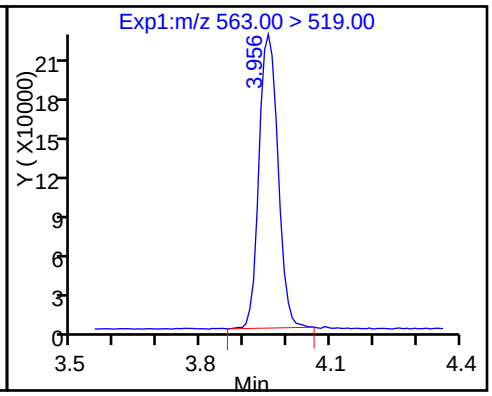
D 23 13C2 PFDA



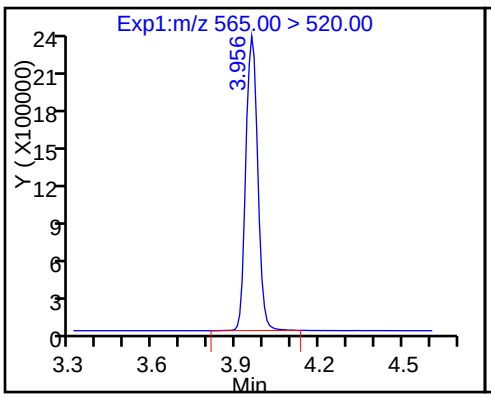
26 Perfluorodecane Sulfonic acid



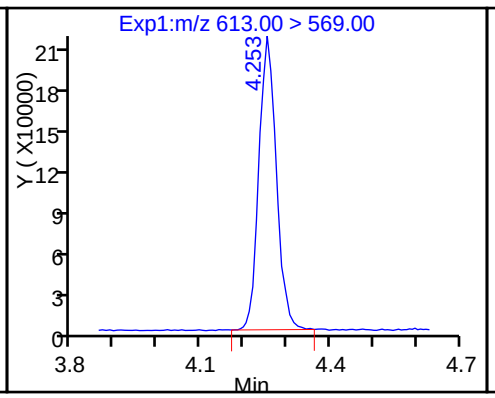
28 Perfluoroundecanoic acid



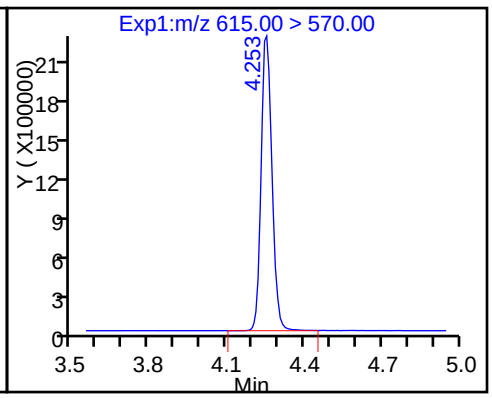
D 27 13C2 PFUnA



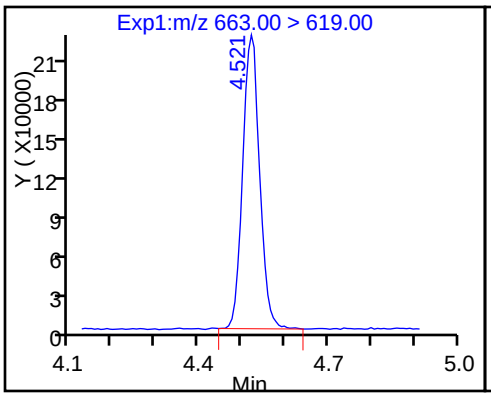
29 Perfluorododecanoic acid



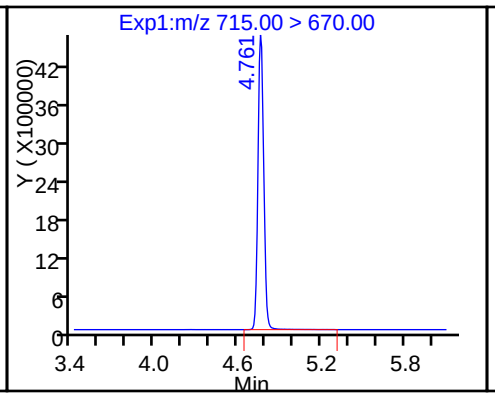
D 30 13C2 PFDoA



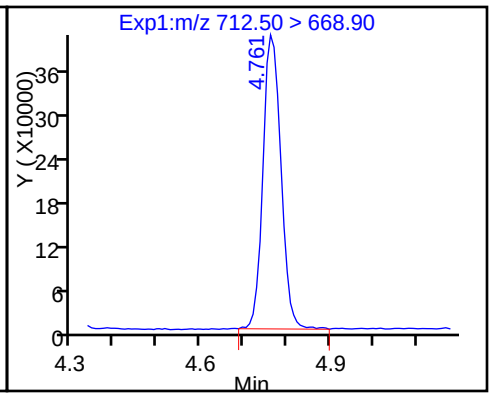
31 Perfluorotridecanoic acid



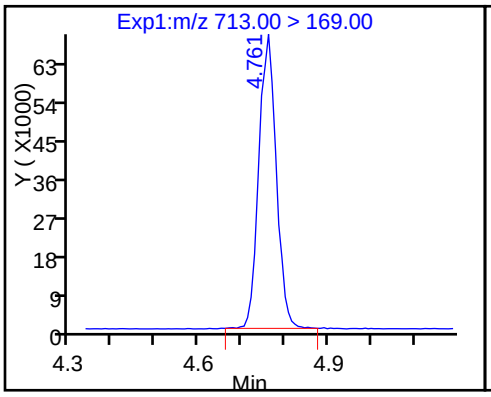
D 32 13C2-PFTeDA



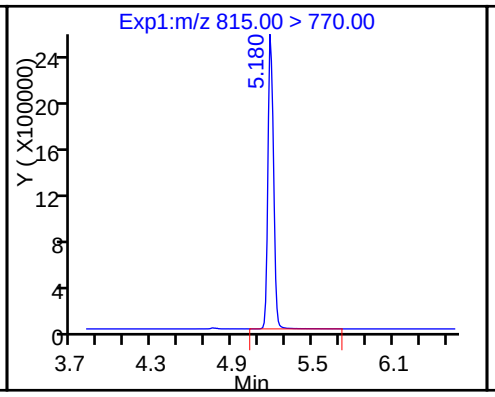
33 Perfluorotetradecanoic acid



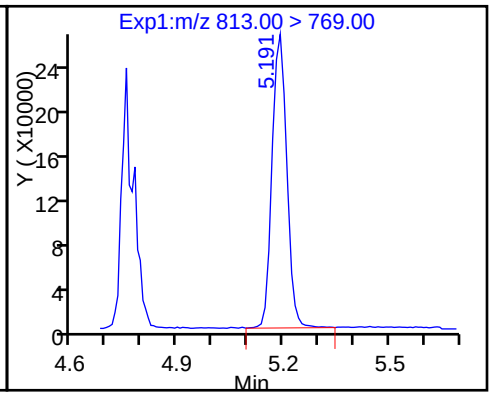
33 Perfluorotetradecanoic acid



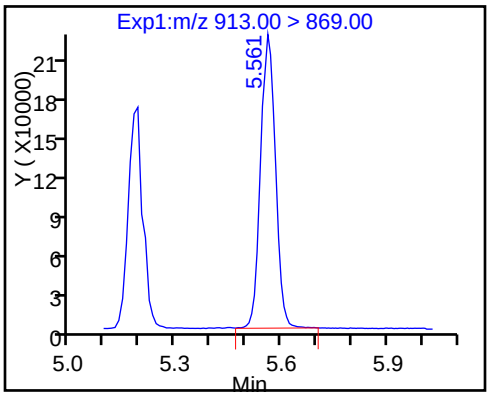
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_007.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 03-Dec-2016 14:11:14 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:24:13 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:41:57

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	1.574	1.574	0.0		18254473	54.4		109	916244	
1 Perfluorobutyric acid										
212.90 > 169.00	1.582	1.577	0.005	1.000	7008467	22.0		110	42848	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.861	0.007	1.000	6115663	20.9		104	53754	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.861	0.007		14426922	54.5		109	1030803	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.907	1.900	0.007	1.000	10888534	20.0		113		
298.90 > 99.00	1.897	1.900	-0.003	0.995	4709173		2.31(0.00-0.00)	113		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.171	2.164	0.007	1.000	5224102	21.6		108	141802	
D 6 13C2 PFHxA										
315.00 > 270.00	2.162	2.164	-0.002		12716423	53.5		107	709396	
D 11 13C4-PFHpA										
367.00 > 322.00	2.512	2.511	0.001		11474824	55.3		111	830208	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.512	2.512	0.0	1.000	4918226	20.9		104	66176	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.527	2.531	-0.004	1.000	6968734	18.7		102		M
D 10 18O2 PFHxS										
403.00 > 84.00	2.535	2.531	0.004		16099619	51.5		109	1076833	
D 14 13C4 PFOA										
417.00 > 372.00	2.886	2.880	0.006		12069172	55.0		110	656359	

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	2.894	2.887	0.007	1.000	5292388	20.5		102	50246	M
413.00 > 169.00	2.886	2.887	-0.001	0.997	3252983		1.63(0.90-1.10)	102	188817	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.886	2.888	-0.002	1.000	6678298	20.6		108		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.259	3.258	0.001	1.000	5631788	18.8		101	741165	
499.00 > 99.00	3.259	3.258	0.001	1.000	1257953		4.48(0.90-1.10)	101	196382	
D 17 13C4 PFOS										
503.00 > 80.00	3.259	3.259	0.0		13189624	53.6		112	527854	
D 19 13C5 PFNA										
468.00 > 423.00	3.267	3.263	0.004		8920352	53.6		107	500218	
20 Perfluorononanoic acid										
463.00 > 419.00	3.267	3.263	0.004	1.000	3804327	21.4		107	70301	
D 21 13C8 FOSA										
506.00 > 78.00	3.573	3.571	0.002		22326638	55.5		111	379770	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.573	3.574	-0.001	1.000	9111782	21.8		109	354493	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.623	3.623	0.0	1.000	3434382	20.3		102	104771	
D 23 13C2 PFDA										
515.00 > 470.00	3.623	3.626	-0.003		8786342	55.7		111	333180	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.939	3.936	0.003	1.000	3548629	20.1		104		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.956	3.955	0.001	1.000	2673576	19.3		96.7	68734	
D 27 13C2 PFUnA										
565.00 > 520.00	3.965	3.958	0.007		6485474	54.6		109	683577	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.253	4.250	0.003	1.000	2415187	21.0		105	47125	
D 30 13C2 PFDoA										
615.00 > 570.00	4.253	4.251	0.002		6067987	54.1		108	181188	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.524	4.518	0.006	1.000	2373060	20.6		103	5080	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.764	4.759	0.005		12877999	55.7		111	442175	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.764	4.761	0.003	1.000	4681126	20.8		104	1697	
713.00 > 169.00	4.756	4.761	-0.005	0.998	771098		6.07(0.00-0.00)	104	90317	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.187	5.186	0.001		7363997	56.8		114	132680	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.187	5.186	0.001	1.000	2870345	23.1		115	2476	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.563	5.559	0.004	1.000	2205153	18.3		91.5	3091	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L4_00022 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:24:13 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_007.d

Injection Date: 03-Dec-2016 14:11:14 Instrument ID: A8_N

Lims ID: IC L4

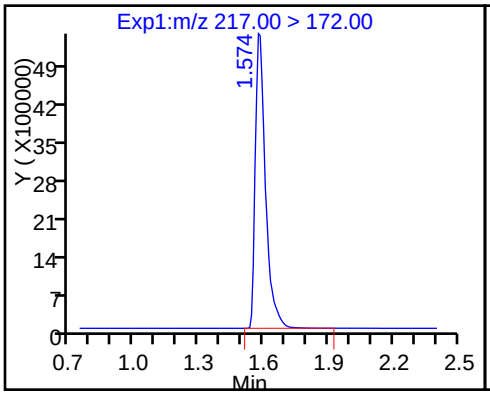
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7

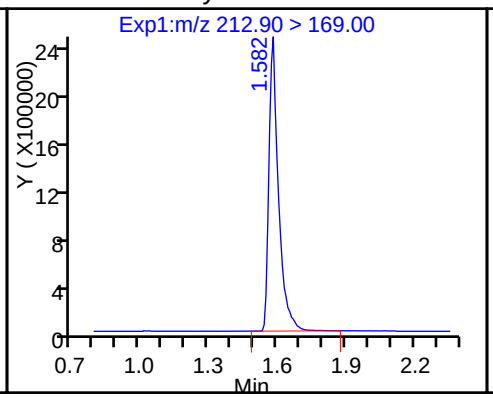
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

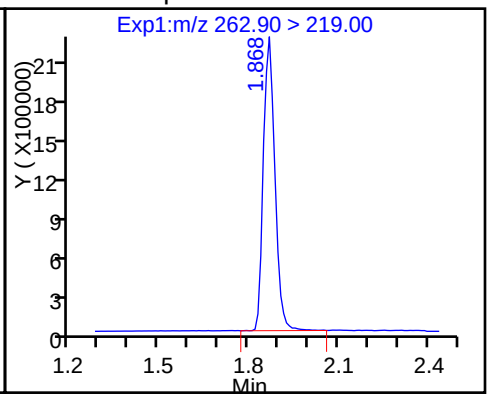
D 2 13C4 PFBA



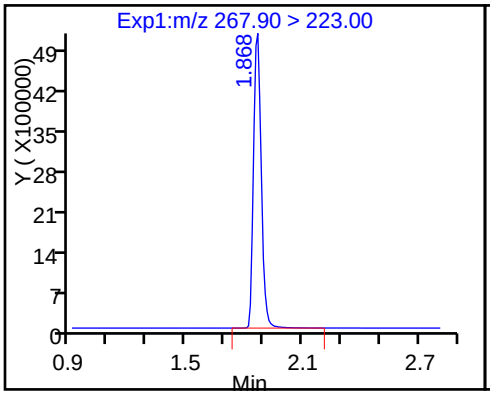
1 Perfluorobutyric acid



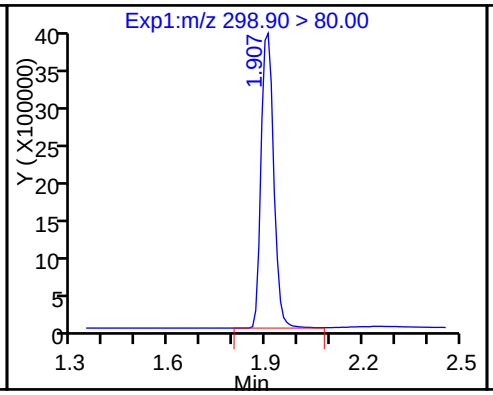
3 Perfluoropentanoic acid



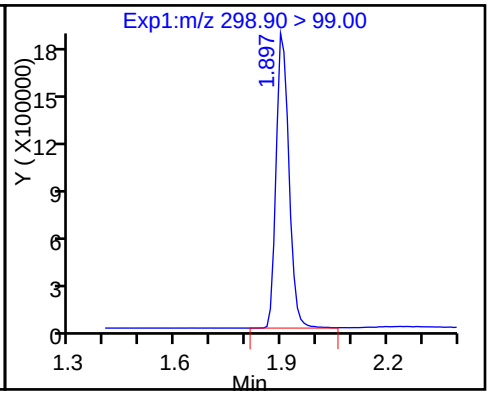
D 4 13C5-PFPeA



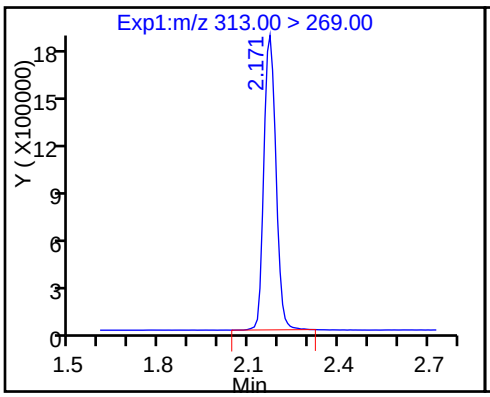
5 Perfluorobutanesulfonic acid



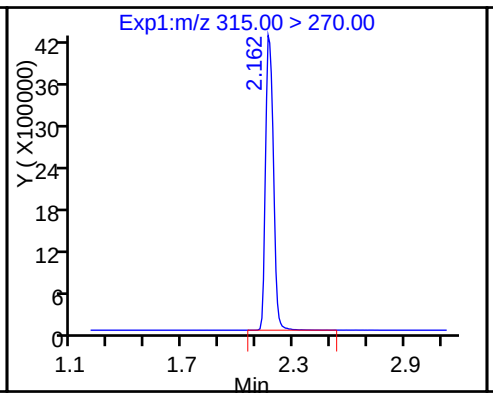
5 Perfluorobutanesulfonic acid



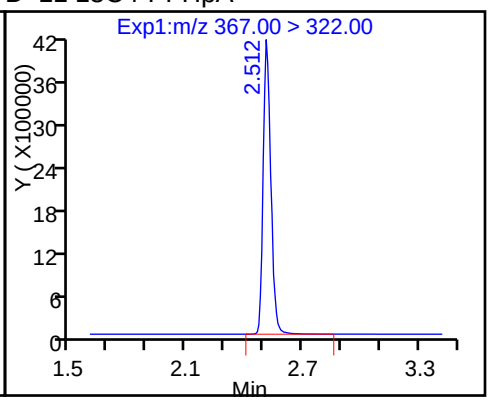
7 Perfluorohexanoic acid



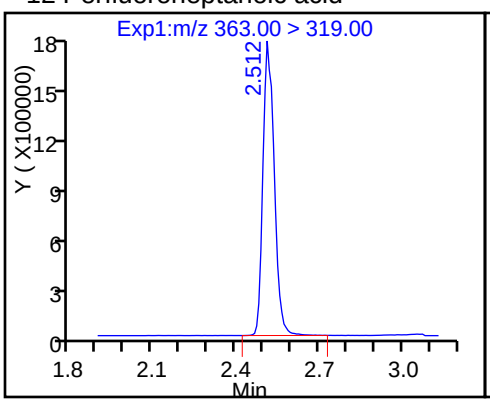
D 6 13C2 PFHxA



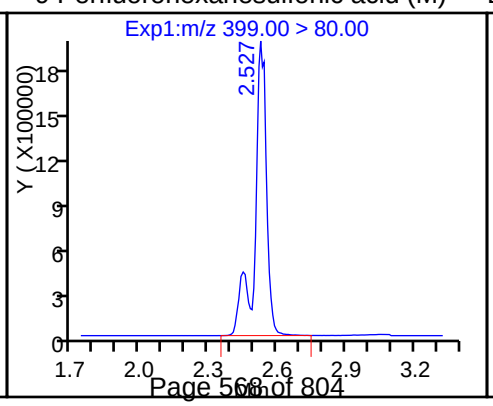
D 11 13C4-PFHpA



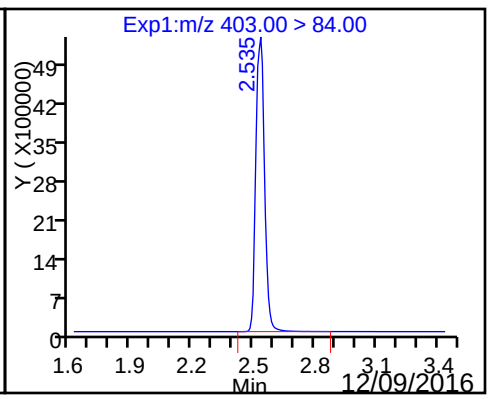
12 Perfluoroheptanoic acid



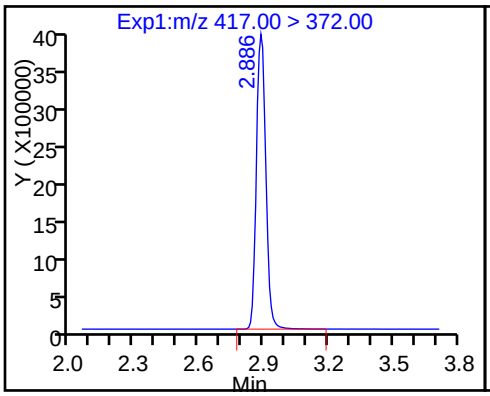
9 Perfluorohexanesulfonic acid (M)



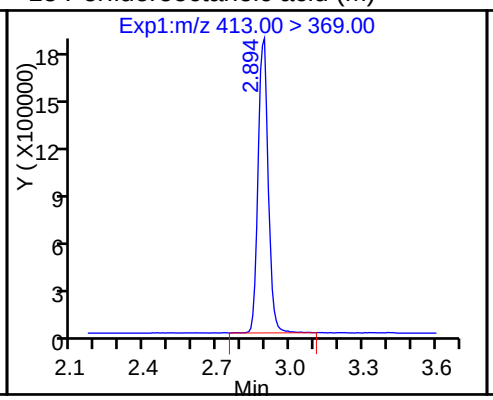
D 10 18O2 PFHxS



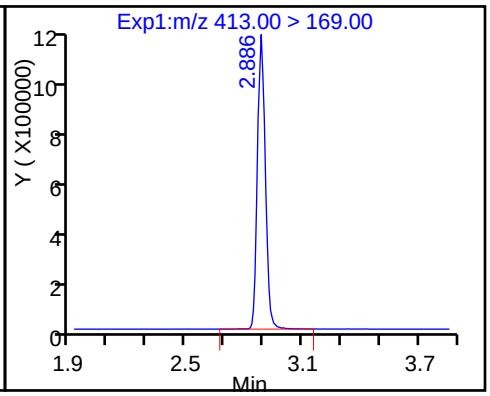
D 14 13C4 PFOA



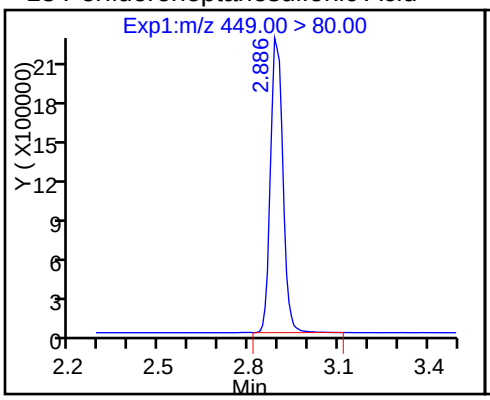
15 Perfluorooctanoic acid (M)



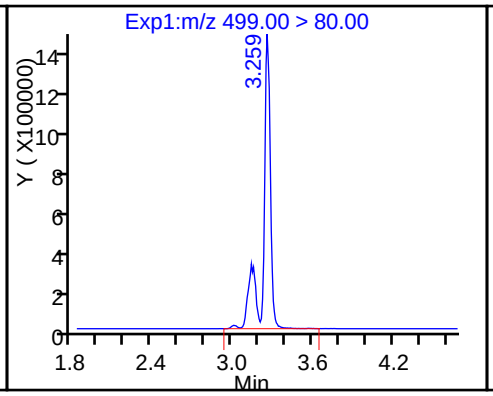
15 Perfluorooctanoic acid



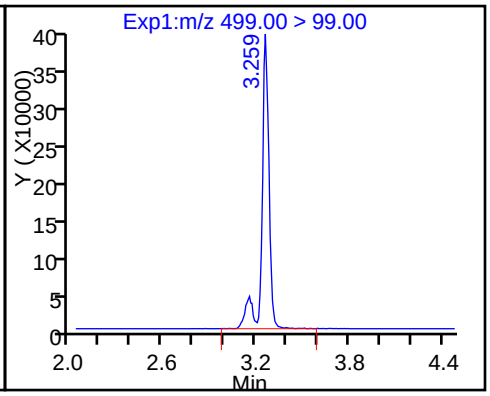
13 Perfluoroheptanesulfonic Acid



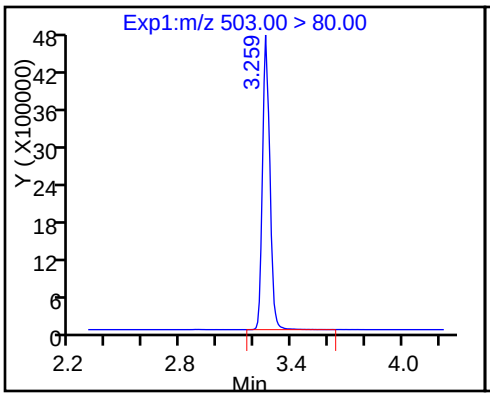
18 Perfluorooctane sulfonic acid



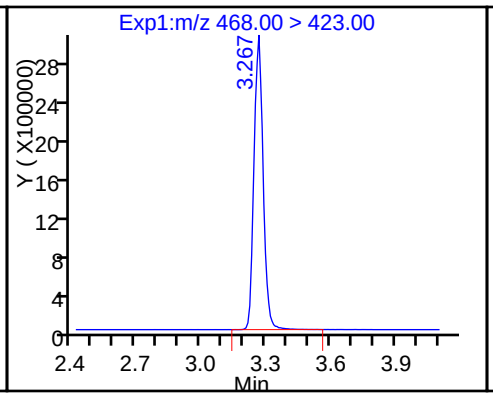
18 Perfluorooctane sulfonic acid



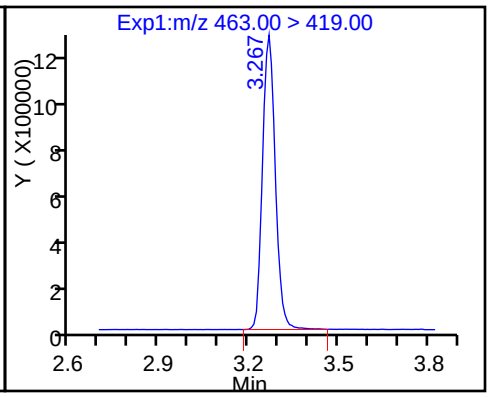
D 17 13C4 PFOS



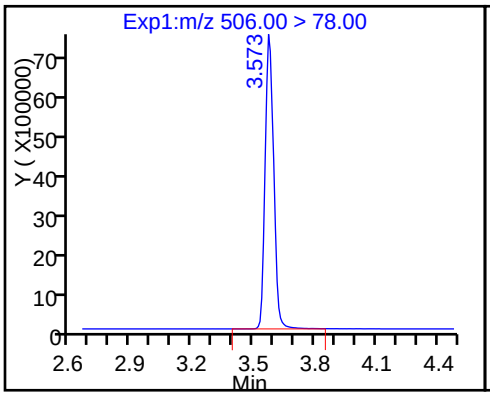
D 19 13C5 PFNA



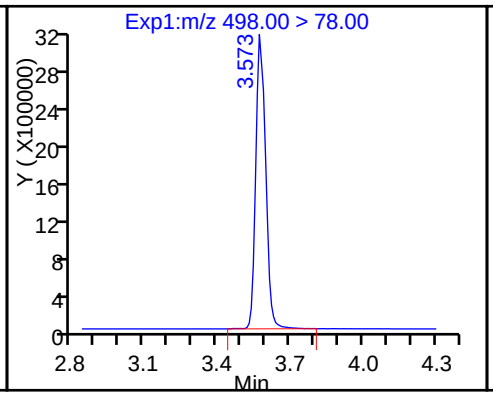
20 Perfluorononanoic acid



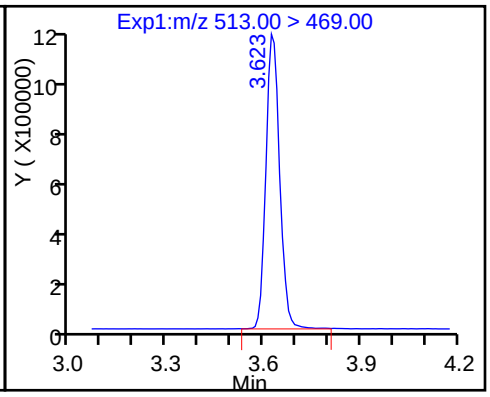
D 21 13C8 FOSA



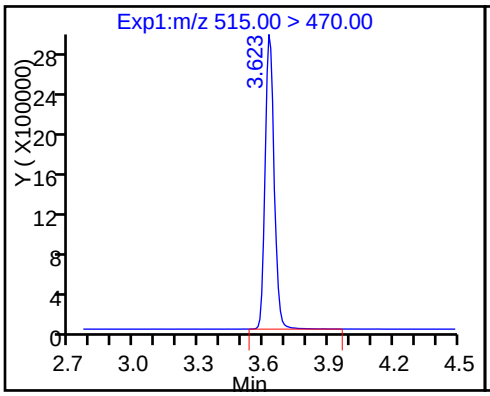
22 Perfluorooctane Sulfonamide



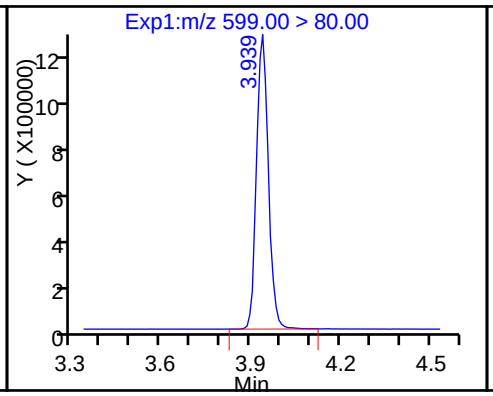
24 Perfluorodecanoic acid



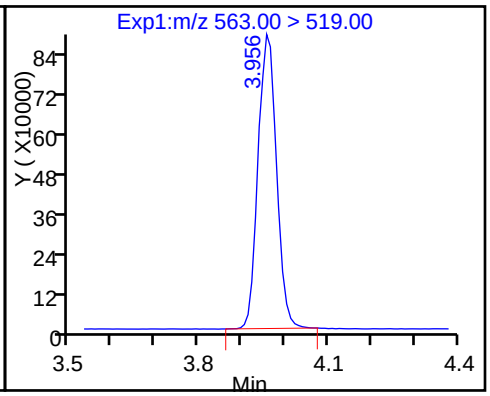
D 23 13C2 PFDA



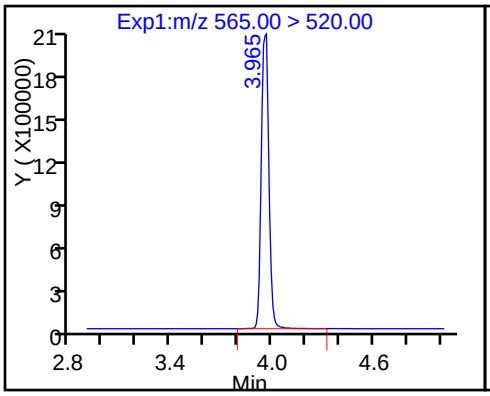
26 Perfluorodecane Sulfonic acid



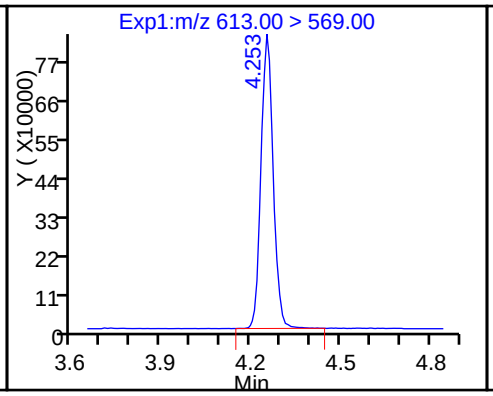
28 Perfluoroundecanoic acid



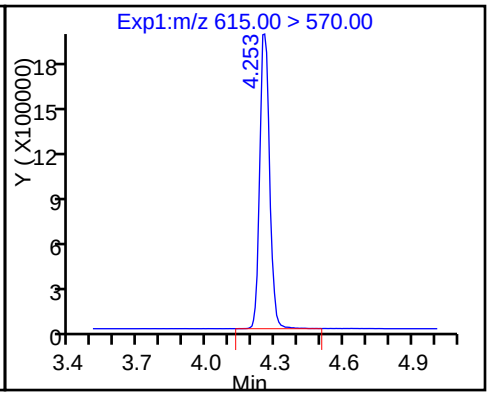
D 27 13C2 PFUnA



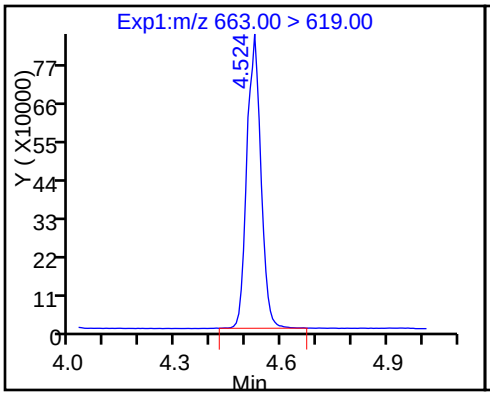
29 Perfluorododecanoic acid



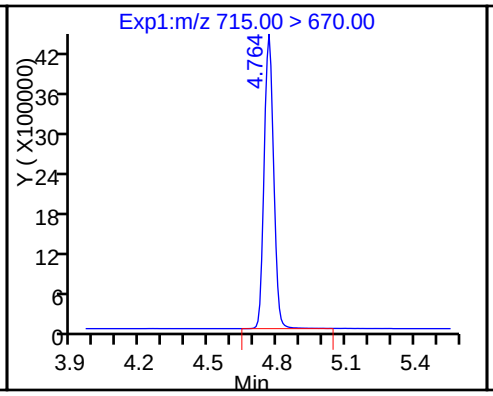
D 30 13C2 PFDoA



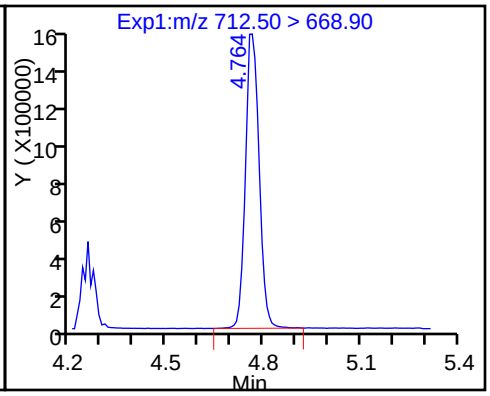
31 Perfluorotridecanoic acid



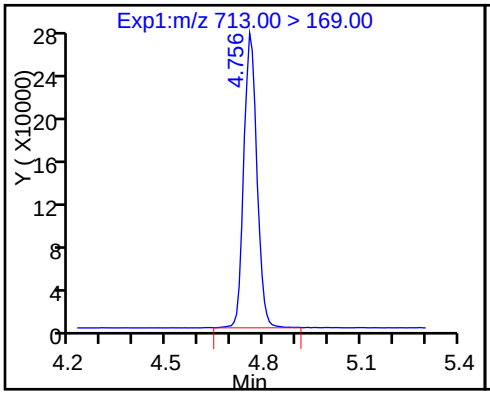
D 32 13C2-PFTeDA



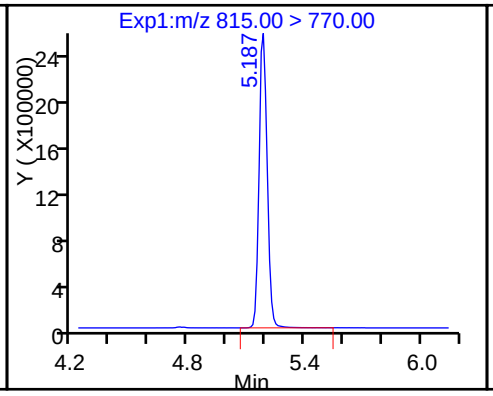
33 Perfluorotetradecanoic acid



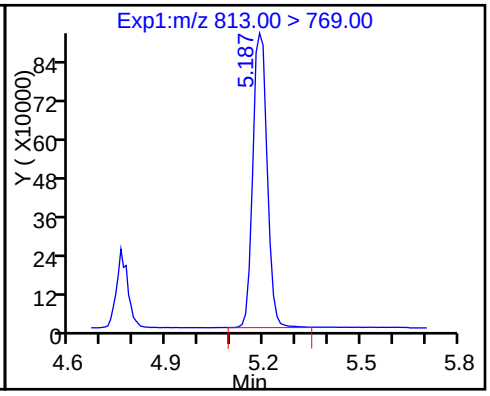
33 Perfluorotetradecanoic acid



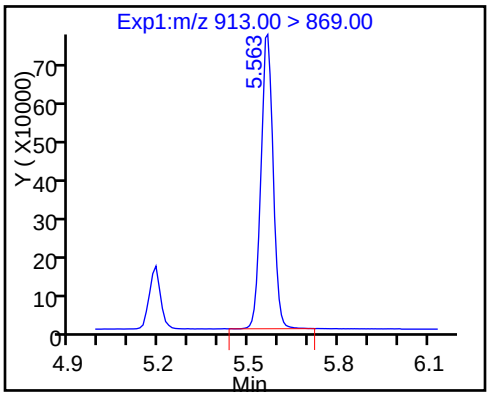
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

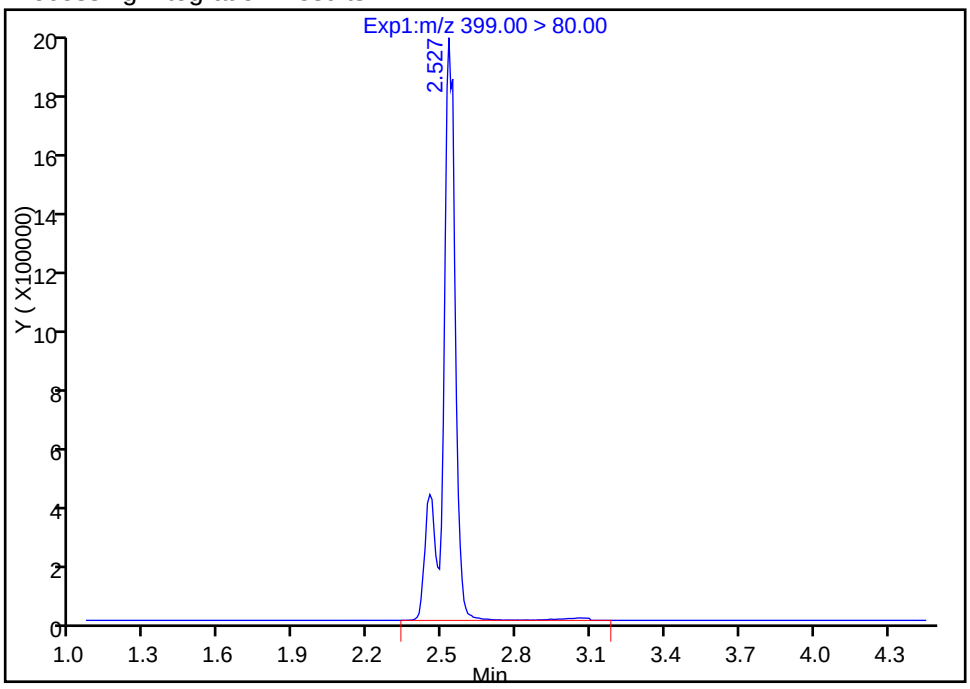
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_007.d
Injection Date: 03-Dec-2016 14:11:14 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

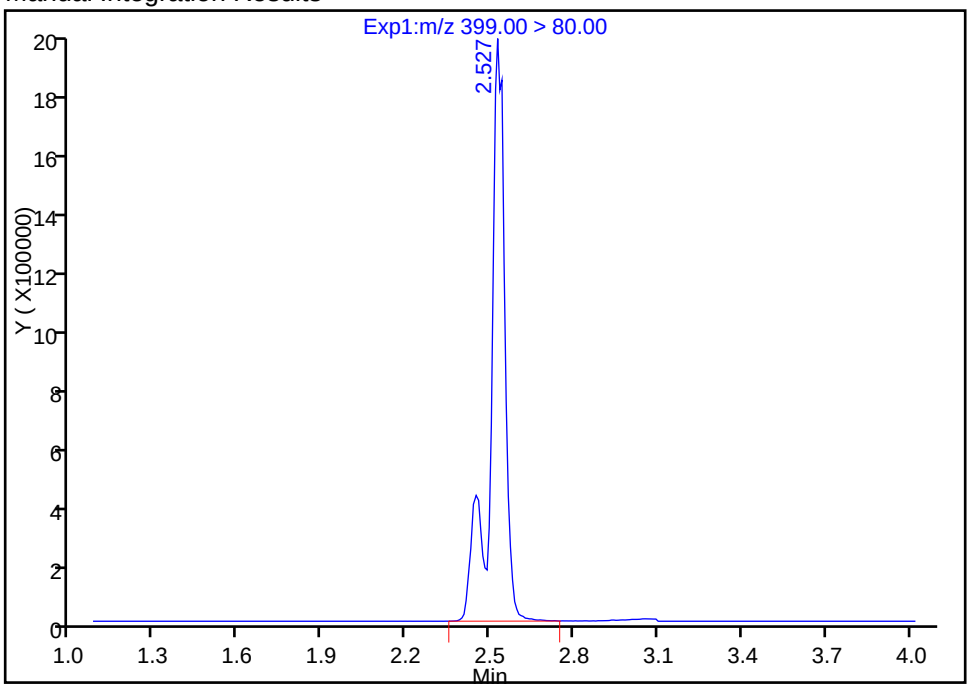
Processing Integration Results

RT: 2.53
Area: 7050184
Amount: 18.826548
Amount Units: ng/ml



Manual Integration Results

RT: 2.53
Area: 6968734
Amount: 18.653631
Amount Units: ng/ml



Reviewer: chandrasenas, 05-Dec-2016 09:41:57
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento

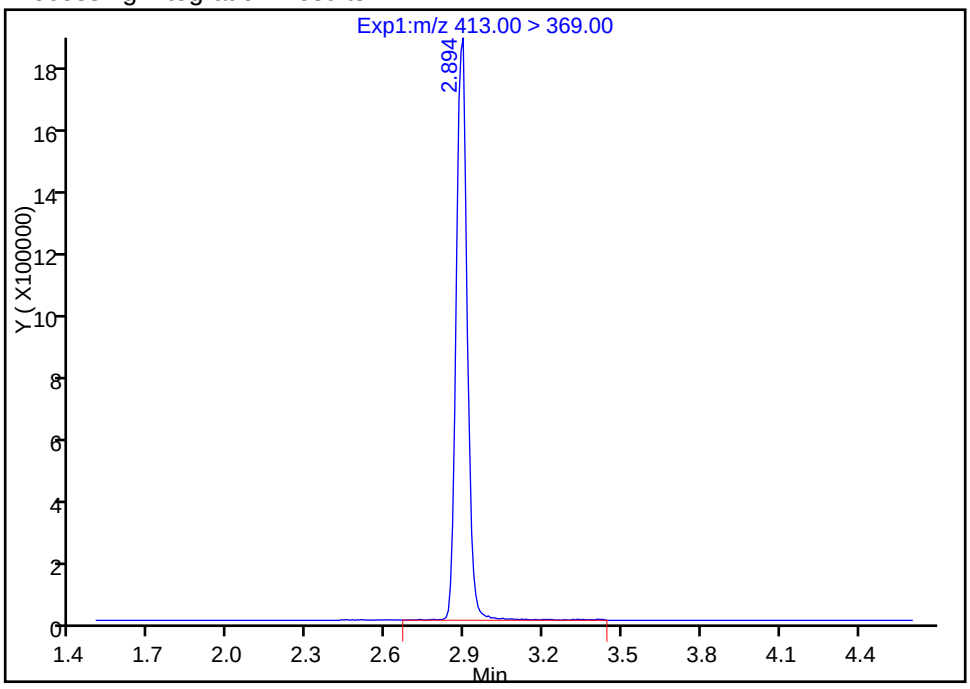
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_007.d
Injection Date: 03-Dec-2016 14:11:14 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

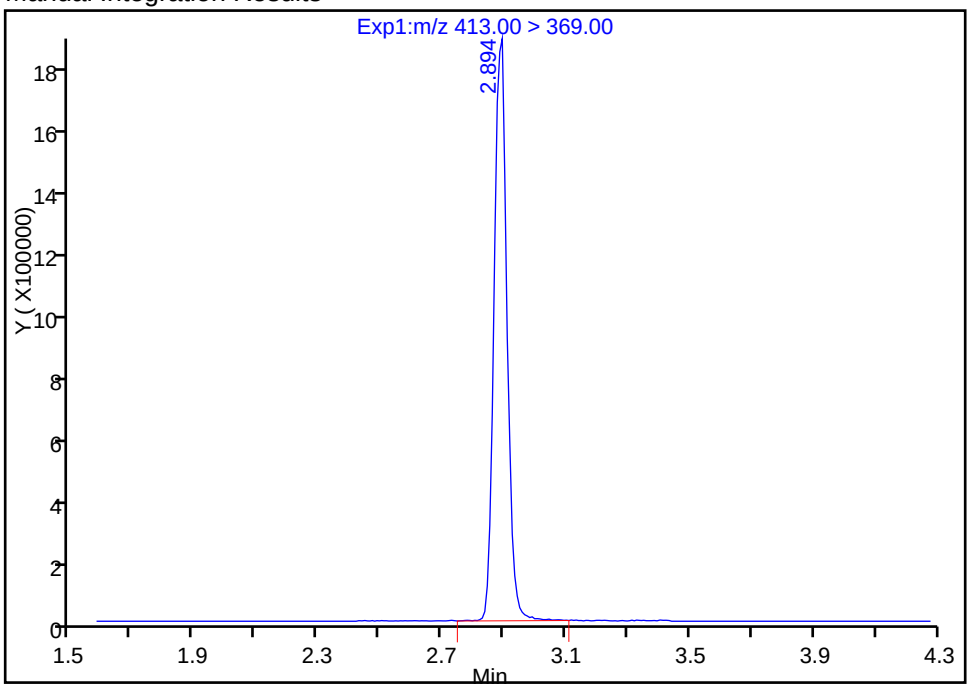
Processing Integration Results

RT: 2.89
Area: 5360428
Amount: 20.662890
Amount Units: ng/ml



Manual Integration Results

RT: 2.89
Area: 5292388
Amount: 20.454262
Amount Units: ng/ml



Reviewer: chandrasenas, 05-Dec-2016 09:41:57
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Dec-2016 14:18:44 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:24:15 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:43:57

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	1.574	1.574	0.0		16029004	47.7		95.5	1234710	
1 Perfluorobutyric acid										
212.90 > 169.00	1.574	1.577	-0.003	1.000	14048645	50.1		100	74155	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.858	1.861	-0.003	1.000	12597041	49.7		99.5	116129	
D 4 13C5-PFPeA										
267.90 > 223.00	1.858	1.861	-0.003		12477636	47.2		94.3	1170062	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.897	1.900	-0.003	1.000	21513660	44.6		101		
298.90 > 99.00	1.897	1.900	-0.003	1.000	9875959		2.18(0.00-0.00)	101		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.160	2.164	-0.004	1.000	10420431	49.8		99.5	246256	
D 6 13C2 PFHxA										
315.00 > 270.00	2.160	2.164	-0.004		10985481	46.3		92.5	787845	
D 11 13C4-PFHpA										
367.00 > 322.00	2.510	2.511	-0.001		9653835	46.5		93.1	803660	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.510	2.512	-0.002	1.000	9915679	50.0		100	147911	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.525	2.531	-0.006	1.000	14498414	43.7		96.0		
D 10 18O2 PFHxS										
403.00 > 84.00	2.525	2.531	-0.006		14303487	45.8		96.8	5055434	
D 14 13C4 PFOA										
417.00 > 372.00	2.876	2.880	-0.004		9909434	45.2		90.4	408580	

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	2.884	2.887	-0.003	1.000	10434085	49.1		98.2	197146	
413.00 > 169.00	2.876	2.887	-0.011	0.997	6358650		1.64(0.90-1.10)	98.2	316749	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.884	2.888	-0.004	1.000	13806464	49.7		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.257	3.258	-0.001	1.000	11953842	46.7		101	39071	
499.00 > 99.00	3.248	3.258	-0.010	0.997	2570510		4.65(0.90-1.10)	101	263704	
D 17 13C4 PFOS										
503.00 > 80.00	3.257	3.259	-0.002		11281105	45.9		95.9	268992	
D 19 13C5 PFNA										
468.00 > 423.00	3.257	3.263	-0.006		7854327	47.2		94.4	841834	
20 Perfluorononanoic acid										
463.00 > 419.00	3.257	3.263	-0.006	1.000	7675034	49.0		98.1	142675	
D 21 13C8 FOSA										
506.00 > 78.00	3.570	3.571	-0.001		19293148	48.0		95.9	389510	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.570	3.574	-0.004	1.000	18269014	50.7		101	626245	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.620	3.623	-0.003	1.000	7159278	50.3		101	175242	
D 23 13C2 PFDA										
515.00 > 470.00	3.620	3.626	-0.006		7405870	46.9		93.9	311468	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.928	3.936	-0.008	1.000	7347809	48.7		101		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.946	3.955	-0.009	1.000	5553051	46.3		92.6	133337	
D 27 13C2 PFUnA										
565.00 > 520.00	3.946	3.958	-0.012		5625237	47.4		94.7	281129	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.242	4.250	-0.008	1.000	5000795	49.4		98.7	86155	
D 30 13C2 PFDoA										
615.00 > 570.00	4.242	4.251	-0.009		5338479	47.6		95.3	147109	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.510	4.518	-0.008	1.000	5034109	49.6		99.3	21741	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.750	4.759	-0.009		11031119	47.7		95.4	553742	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.750	4.761	-0.011	1.000	9601518	48.5		97.0	4445	
713.00 > 169.00	4.750	4.761	-0.011	1.000	1523287		6.30(0.00-0.00)	97.0	181298	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.177	5.186	-0.009		5893329	45.4		90.9	104400	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.177	5.186	-0.009	1.000	5382109	50.0		100	6406	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.547	5.559	-0.012	1.000	5729058	54.0		108	9772	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:24:16 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_008.d

Injection Date: 03-Dec-2016 14:18:44 Instrument ID: A8_N

Lims ID: IC L5

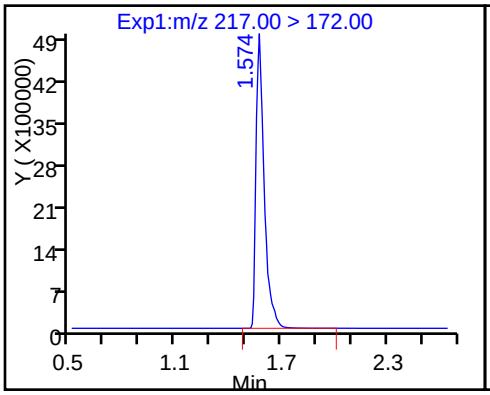
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 8

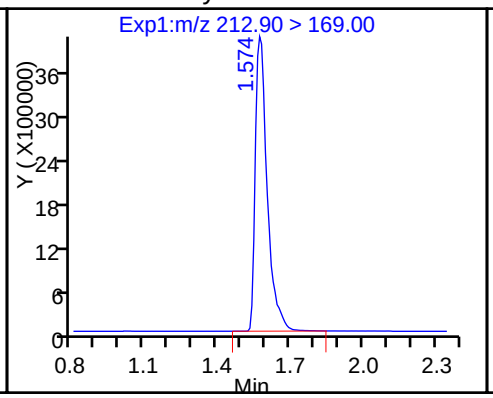
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

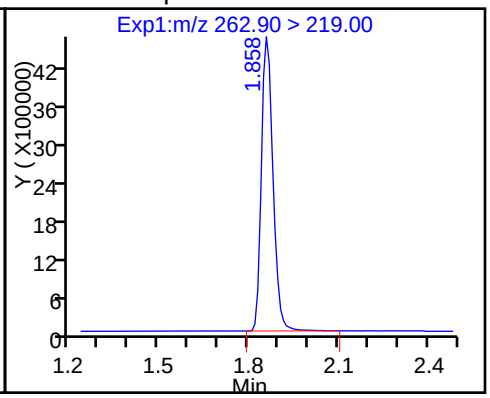
D 2 13C4 PFBA



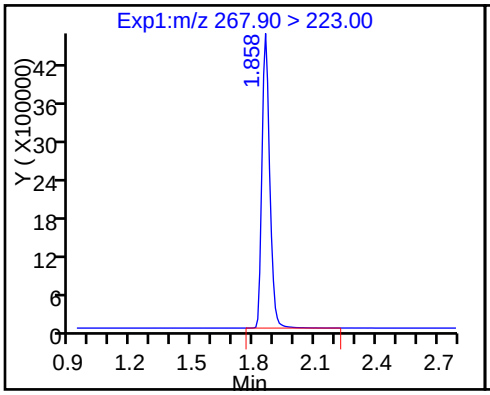
1 Perfluorobutyric acid



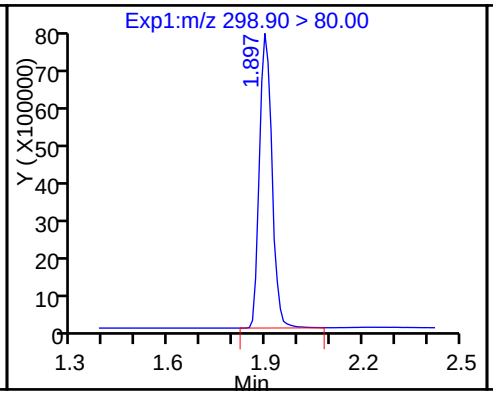
3 Perfluoropentanoic acid



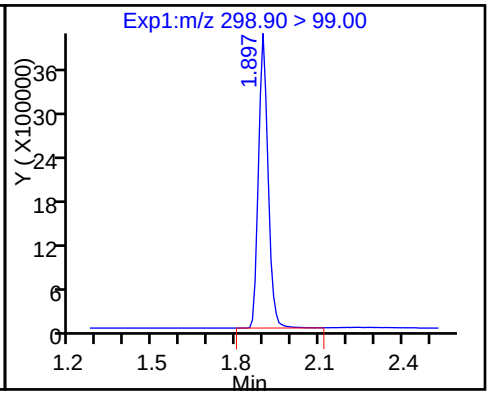
D 4 13C5-PFPeA



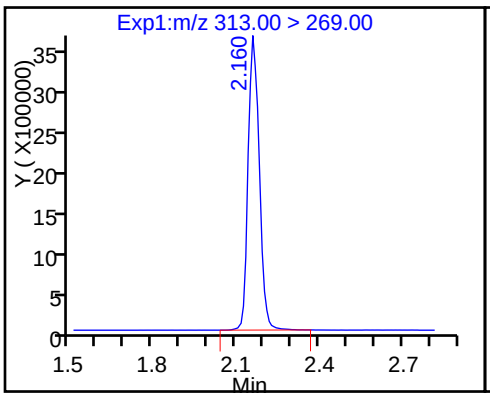
5 Perfluorobutanesulfonic acid



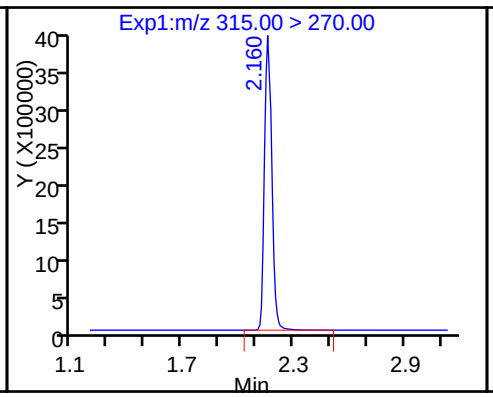
5 Perfluorobutanesulfonic acid



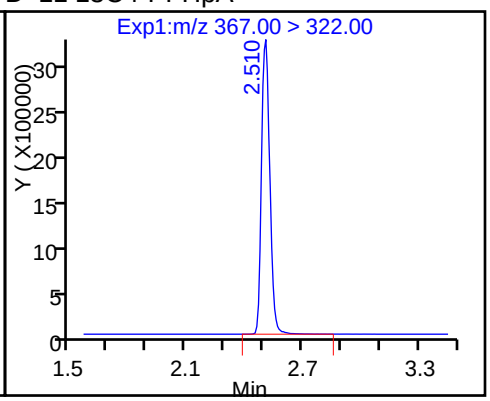
7 Perfluorohexanoic acid



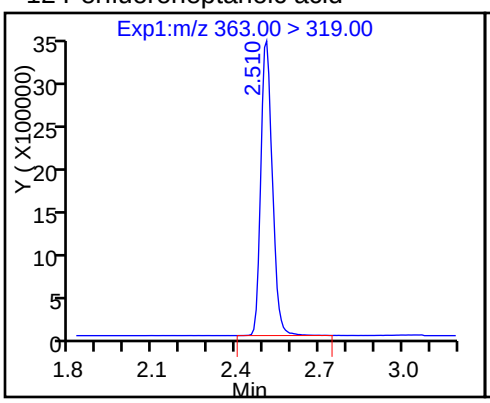
D 6 13C2 PFHxA



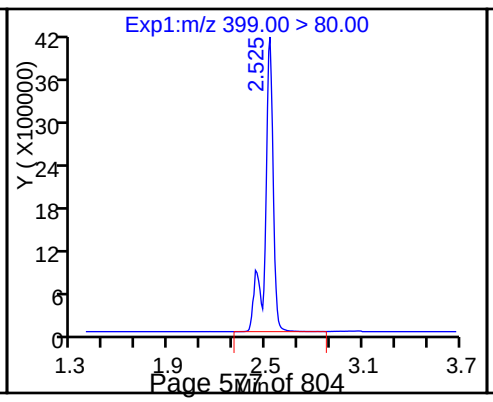
D 11 13C4-PFHpA



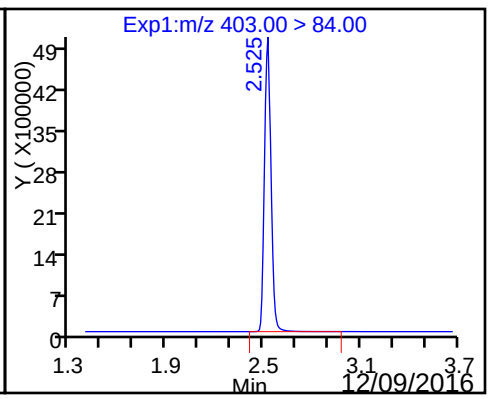
12 Perfluoroheptanoic acid



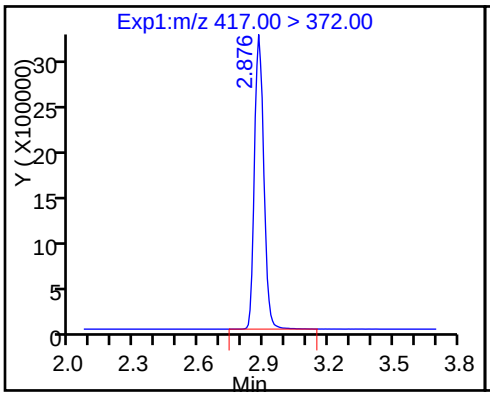
9 Perfluorohexanesulfonic acid



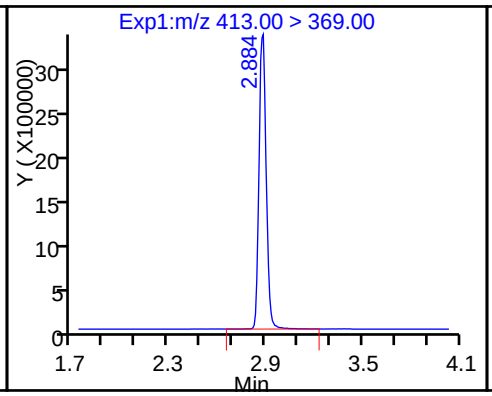
D 10 18O2 PFHxS



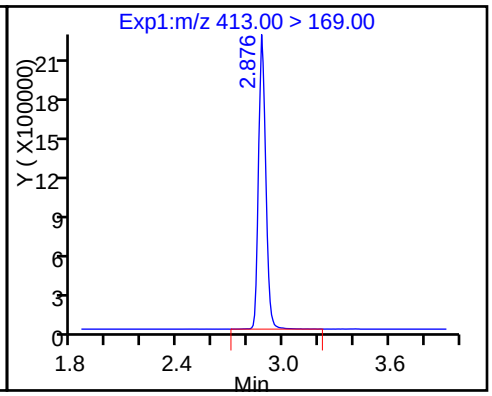
D 14 13C4 PFOA



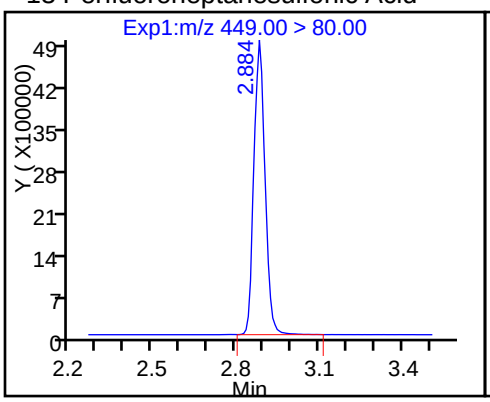
15 Perfluorooctanoic acid



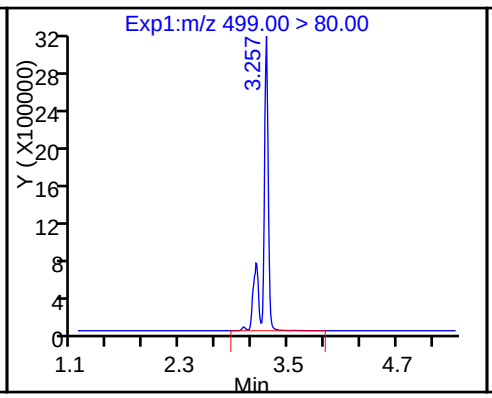
15 Perfluorooctanoic acid



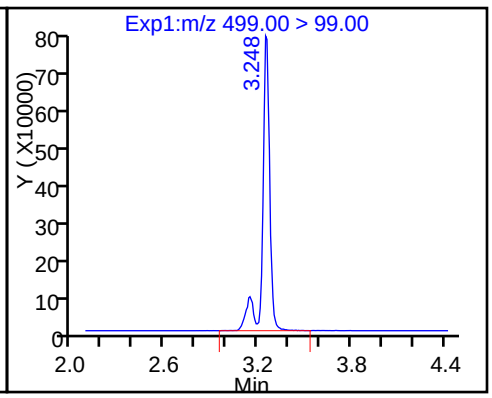
13 Perfluoroheptanesulfonic Acid



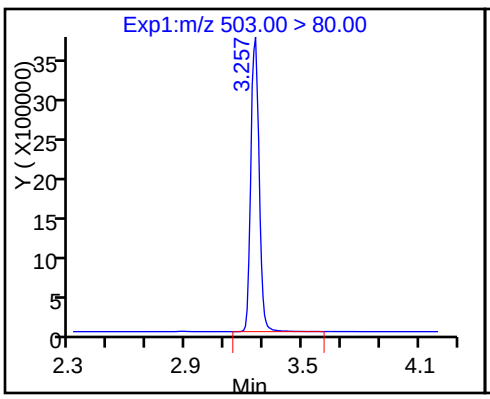
18 Perfluorooctane sulfonic acid



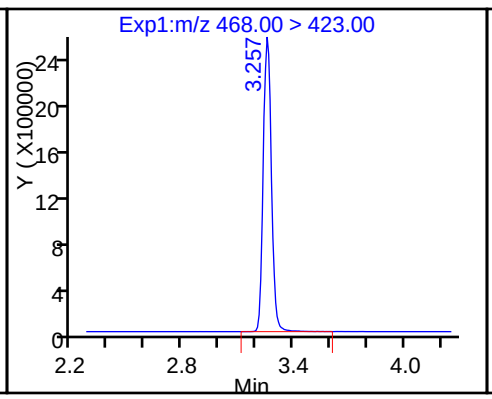
18 Perfluorooctane sulfonic acid



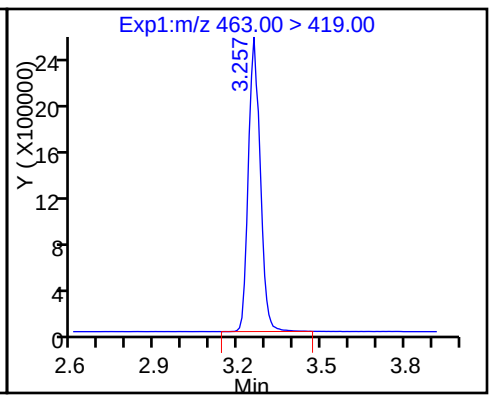
D 17 13C4 PFOS



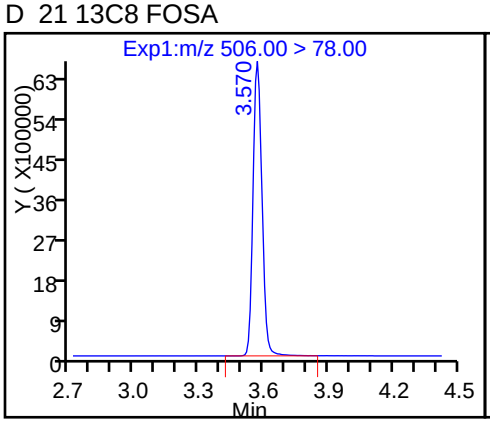
D 19 13C5 PFNA



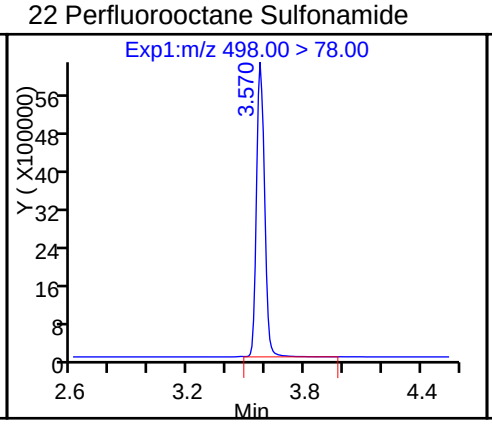
20 Perfluorononanoic acid



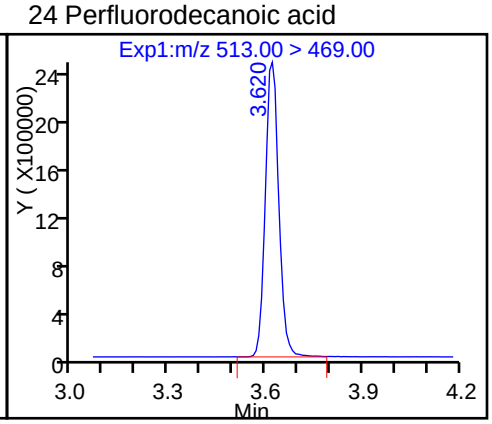
D 21 13C8 FOSA



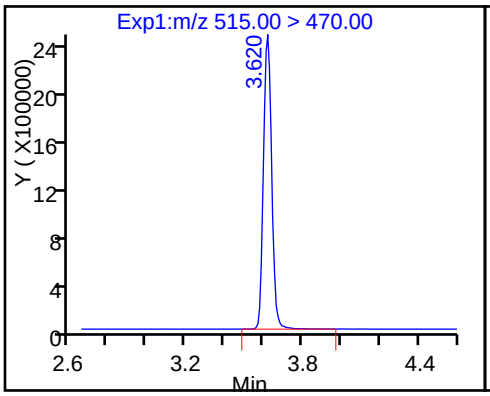
22 Perfluorooctane Sulfonamide



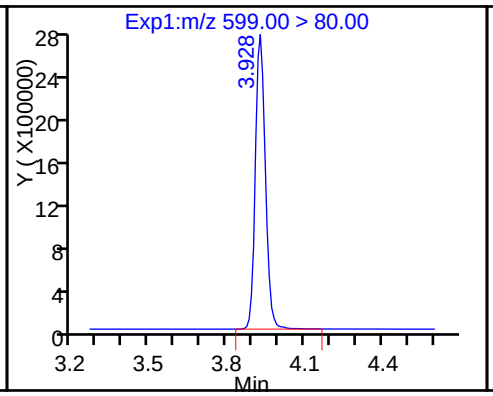
24 Perfluorodecanoic acid



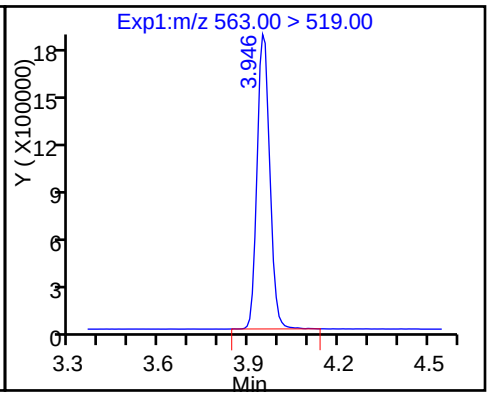
D 23 13C2 PFDA



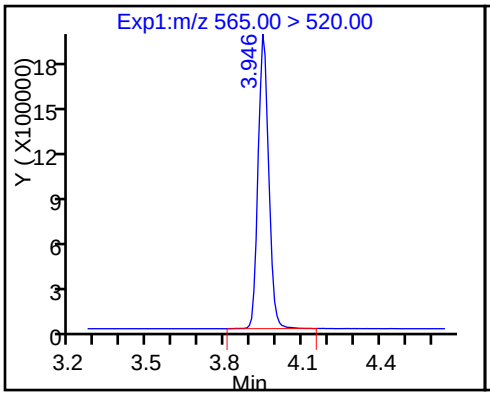
26 Perfluorodecane Sulfonic acid



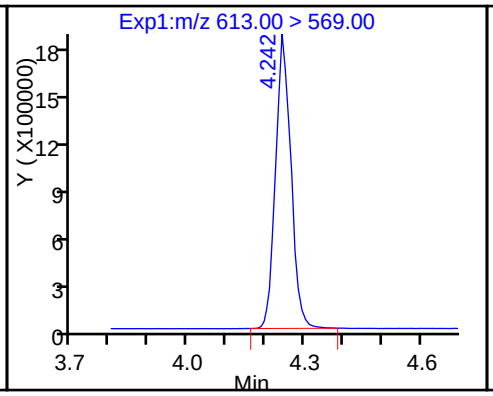
28 Perfluoroundecanoic acid



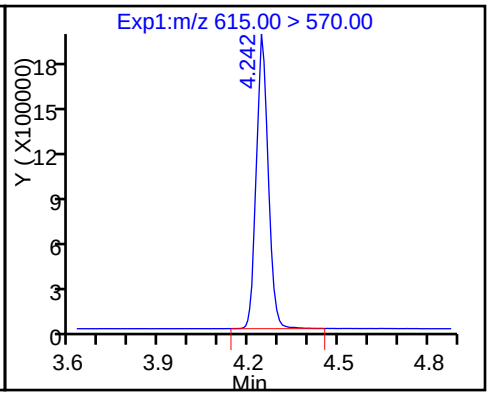
D 27 13C2 PFUnA



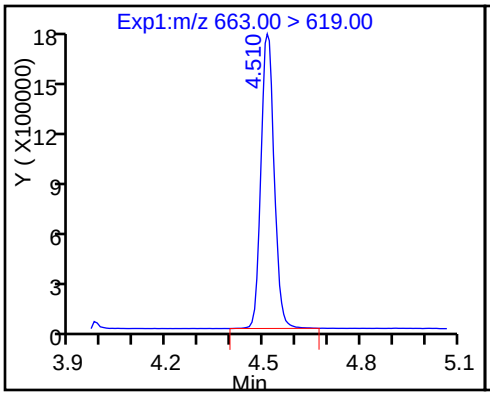
29 Perfluorododecanoic acid



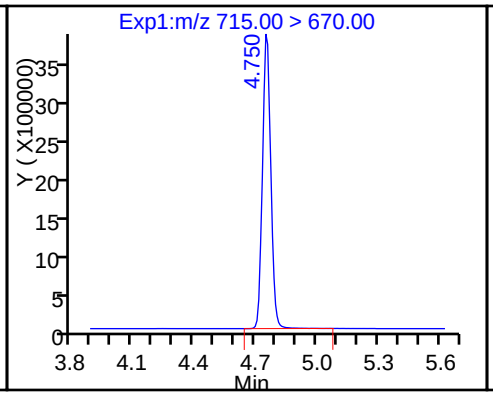
D 30 13C2 PFDoA



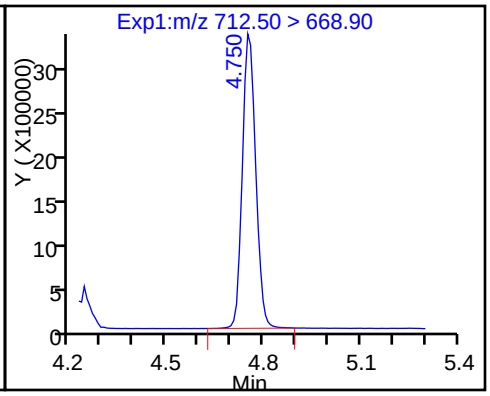
31 Perfluorotridecanoic acid



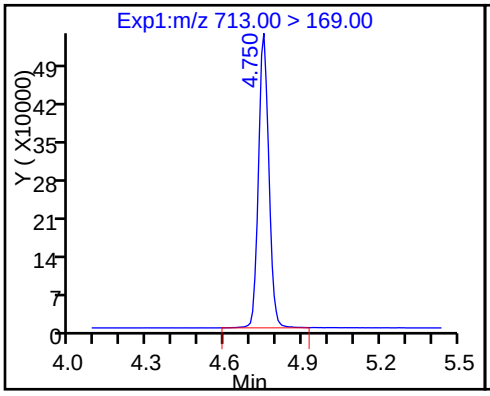
D 32 13C2-PFTeDA



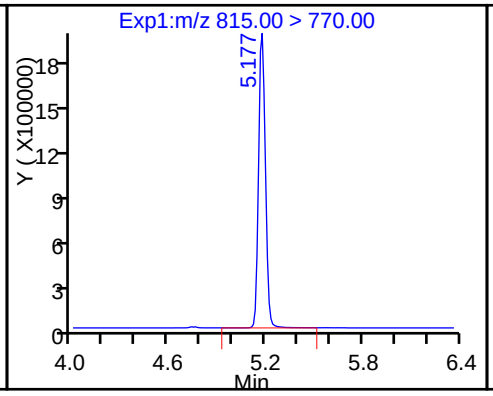
33 Perfluorotetradecanoic acid



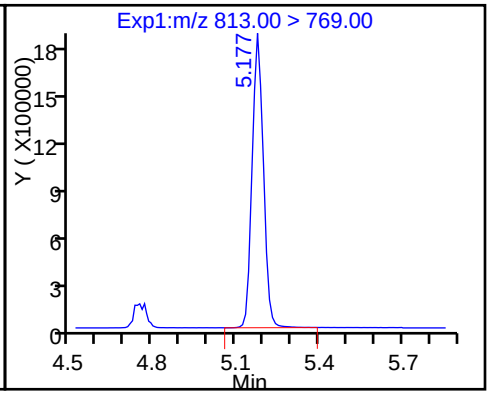
33 Perfluorotetradecanoic acid



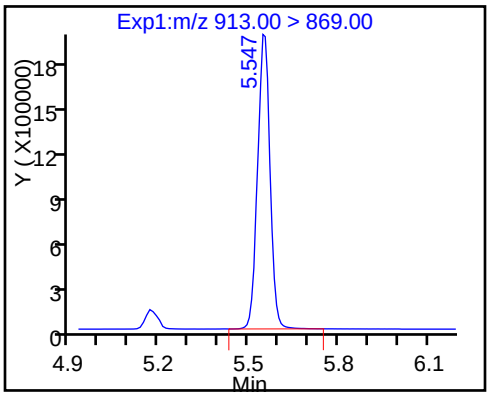
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 03-Dec-2016 14:26:13 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:24:17 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:44:26

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	1.565	1.574	-0.009		14589192	43.4		86.9	865034	
1 Perfluorobutyric acid										
212.90 > 169.00	1.574	1.577	-0.003	1.000	42806432	167.9		83.9	195743	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.858	1.861	-0.003	1.000	35527936	156.8		78.4	261830	
D 4 13C5-PFPeA										
267.90 > 223.00	1.858	1.861	-0.003		11161582	42.2		84.4	966643	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.896	1.900	-0.004	1.000	53135654	128.0		72.4		
298.90 > 99.00	1.896	1.900	-0.004	1.000	29815085		1.78(0.00-0.00)	72.4		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.157	2.164	-0.007	1.000	33117925	168.5		84.2	581515	
D 6 13C2 PFHxA										
315.00 > 270.00	2.157	2.164	-0.007		10311260	43.4		86.8	509947	
D 11 13C4-PFHpA										
367.00 > 322.00	2.501	2.511	-0.010		8082881	39.0		77.9	826093	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.501	2.512	-0.011	1.000	30013620	180.8		90.4	294610	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.526	2.531	-0.005	1.000	47221104	165.4		90.9		
D 10 18O2 PFHxS										
403.00 > 84.00	2.518	2.531	-0.013		12302944	39.4		83.3	1330084	
D 14 13C4 PFOA										
417.00 > 372.00	2.868	2.880	-0.012		8181000	37.3		74.6	486964	

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	2.868	2.887	-0.019	1.000	30853962	175.9		88.0	291973	
413.00 > 169.00	2.876	2.887	-0.011	1.003	20504099		1.50(0.90-1.10)	88.0	540708	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.884	2.888	-0.004	1.000	39398056	159.1		83.6		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.249	3.258	-0.009	1.000	43077470	188.7		102	75165	
499.00 > 99.00	3.249	3.258	-0.009	1.000	9992099		4.31(0.90-1.10)	102	2648708	
D 17 13C4 PFOS										
503.00 > 80.00	3.249	3.259	-0.010		10053294	40.9		85.5	90966	
D 19 13C5 PFNA										
468.00 > 423.00	3.249	3.263	-0.014		6537549	39.3		78.6	482383	
20 Perfluorononanoic acid										
463.00 > 419.00	3.249	3.263	-0.014	1.000	24899337	191.1		95.6	358972	
D 21 13C8 FOSA										
506.00 > 78.00	3.562	3.571	-0.009		16949269	42.1		84.3	560152	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.571	3.574	-0.003	1.000	50658186	160.0		80.0	335690	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.613	3.623	-0.010	1.000	23571490	191.4		95.7	488396	
D 23 13C2 PFDA										
515.00 > 470.00	3.621	3.626	-0.005		6410340	40.6		81.2	207594	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.921	3.936	-0.015	1.000	24987612	185.7		96.3		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.947	3.955	-0.008	1.000	17818228	185.2		92.6	329189	
D 27 13C2 PFUnA										
565.00 > 520.00	3.947	3.958	-0.011		4513820	38.0		76.0	155727	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.236	4.250	-0.014	1.000	17773370	194.4		97.2	287464	
D 30 13C2 PFDoA										
615.00 > 570.00	4.236	4.251	-0.015		4817286	43.0		86.0	195663	
31 Perfluorotridecanoic acid										M
663.00 > 619.00	4.501	4.518	-0.017	1.000	17494025	191.2		95.6	67382	M
D 32 13C2-PFTeDA										
715.00 > 670.00	4.738	4.759	-0.021		9518260	41.2		82.3	367157	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.746	4.761	-0.015	1.000	30593527	171.3		85.7	17849	
713.00 > 169.00	4.746	4.761	-0.015	1.000	5666745		5.40(0.00-0.00)	85.7	258419	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.171	5.186	-0.015		5482429	42.3		84.5	117464	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.160	5.186	-0.026	1.000	18912385	196.9		98.5	16230	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.536	5.559	-0.023	1.000	17844066	186.5		93.3	33443	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L6_00019 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:24:18 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_009.d

Injection Date: 03-Dec-2016 14:26:13 Instrument ID: A8_N

Lims ID: IC L6

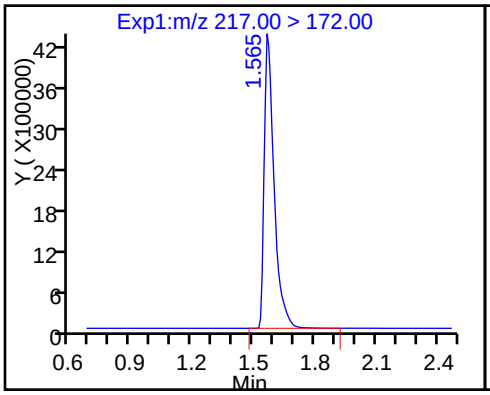
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9

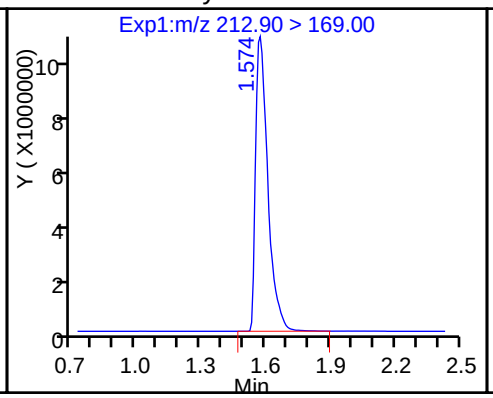
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

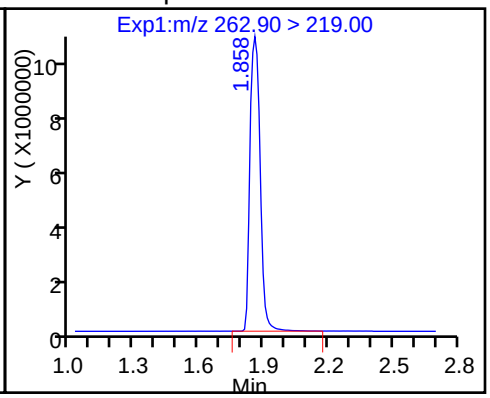
D 2 13C4 PFBA



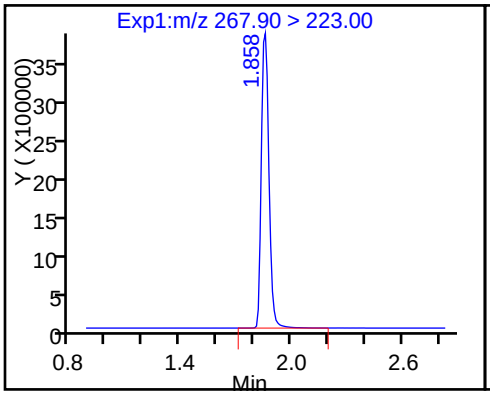
1 Perfluorobutyric acid



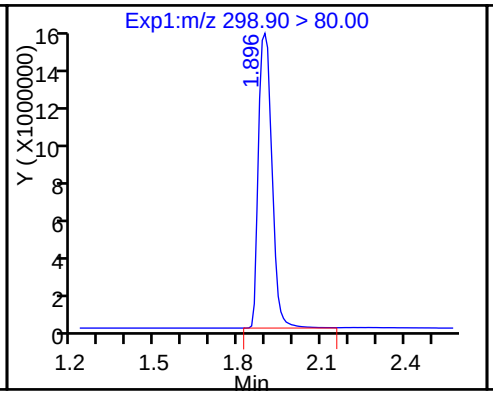
3 Perfluoropentanoic acid



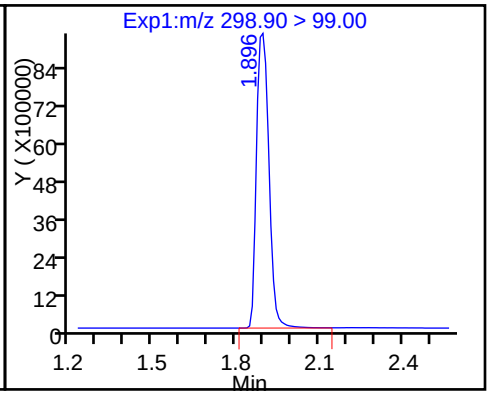
D 4 13C5-PFPeA



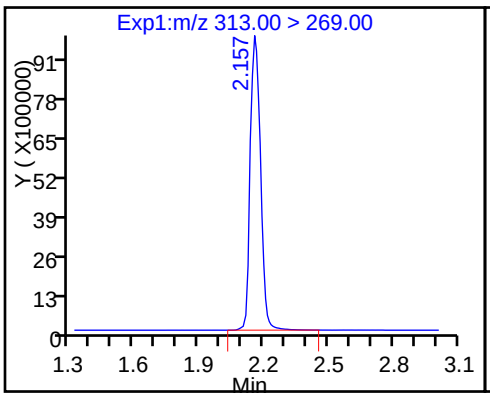
5 Perfluorobutanesulfonic acid



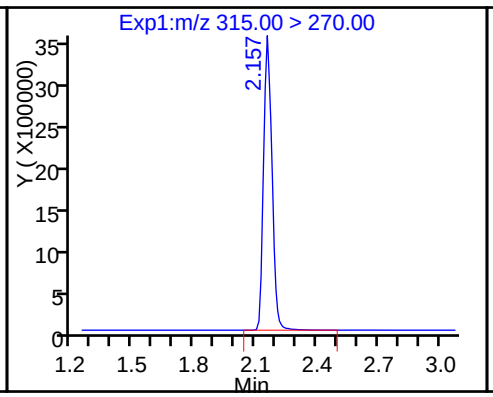
5 Perfluorobutanesulfonic acid



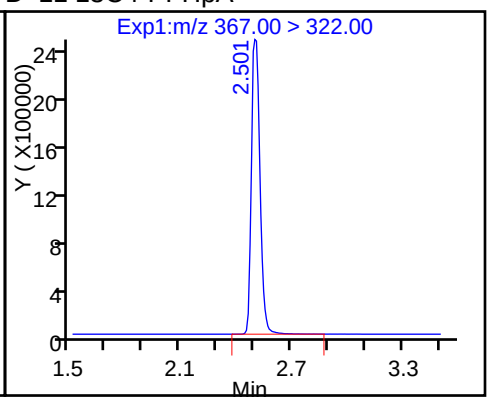
7 Perfluorohexanoic acid



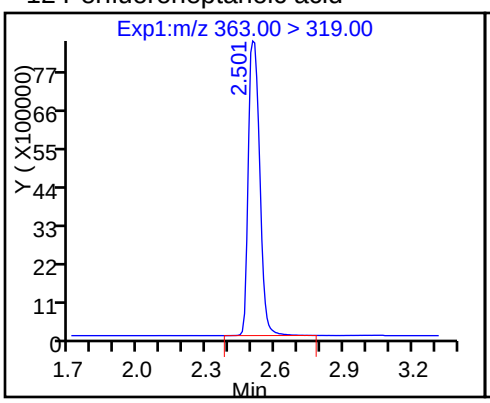
D 6 13C2 PFHxA



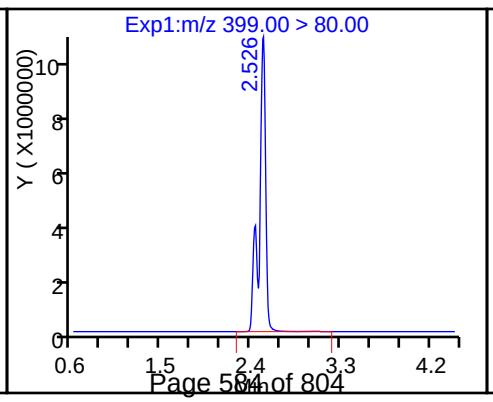
D 11 13C4-PFHpA



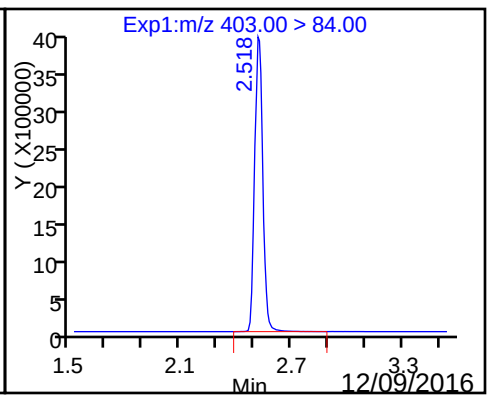
12 Perfluoroheptanoic acid



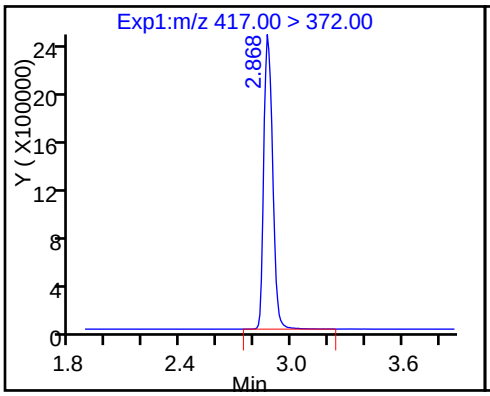
9 Perfluorohexanesulfonic acid



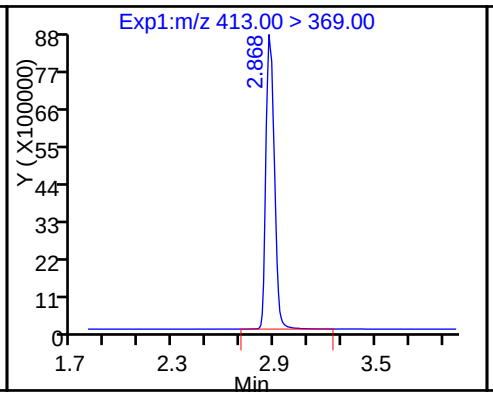
D 10 18O2 PFHxS



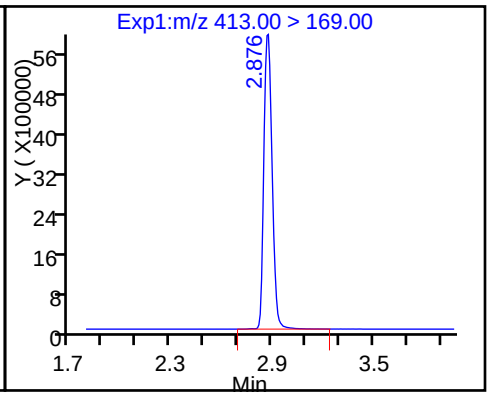
D 14 13C4 PFOA



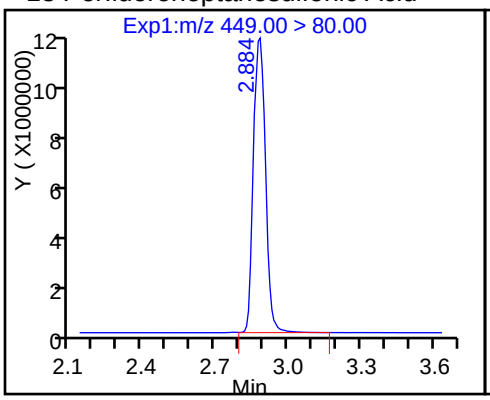
15 Perfluorooctanoic acid



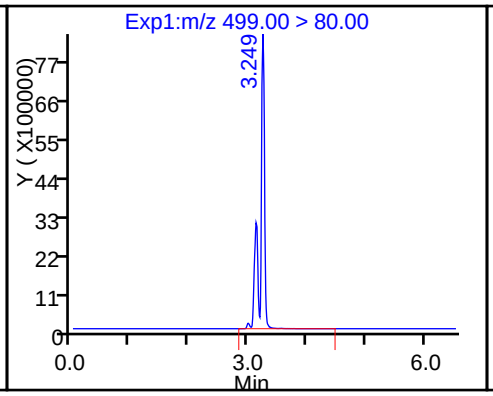
15 Perfluorooctanoic acid



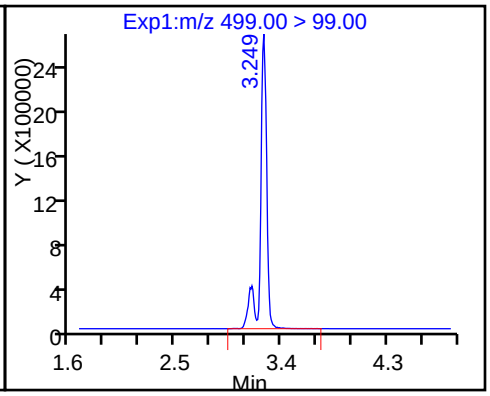
13 Perfluoroheptanesulfonic Acid



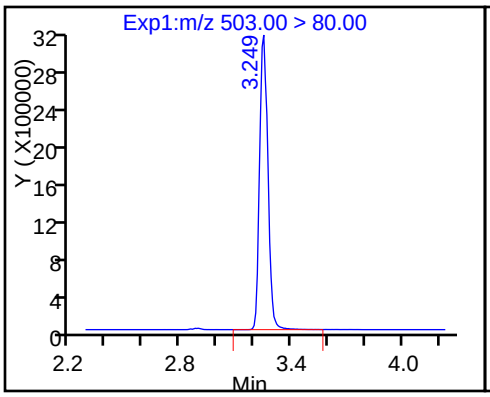
18 Perfluorooctane sulfonic acid



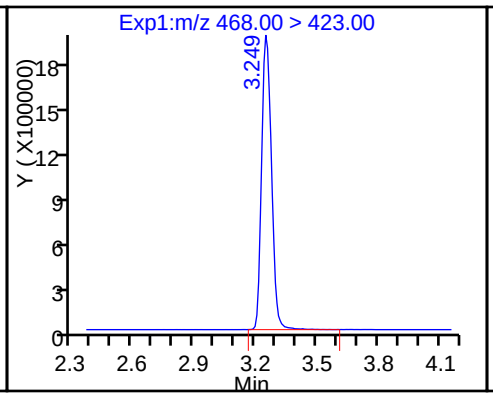
18 Perfluorooctane sulfonic acid



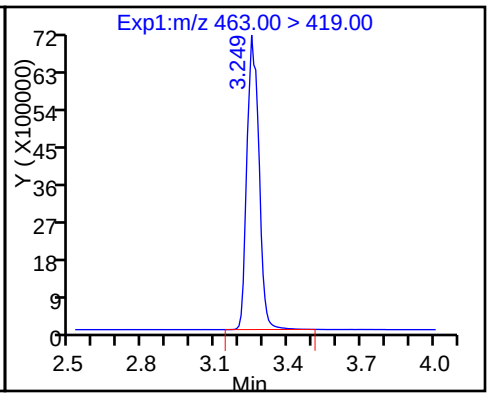
D 17 13C4 PFOS



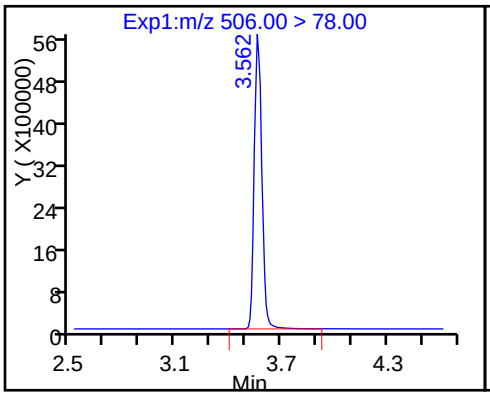
D 19 13C5 PFNA



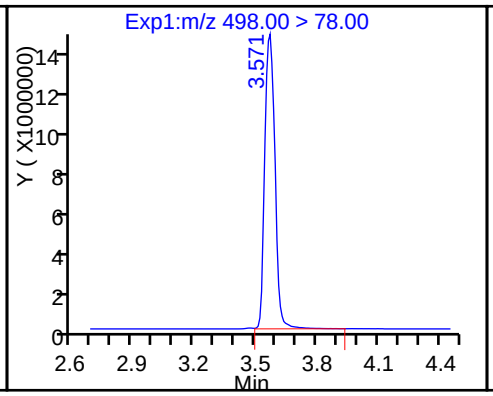
20 Perfluorononanoic acid



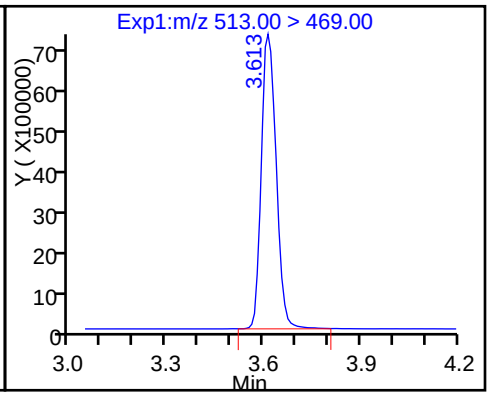
D 21 13C8 FOSA



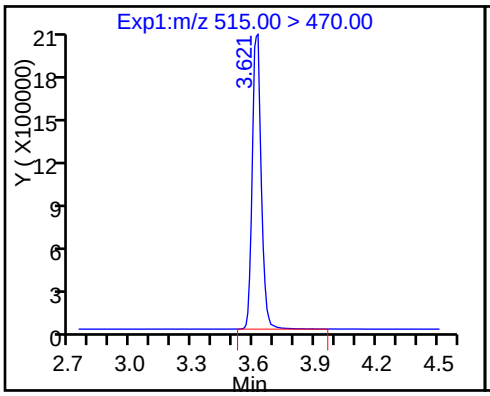
22 Perfluorooctane Sulfonamide



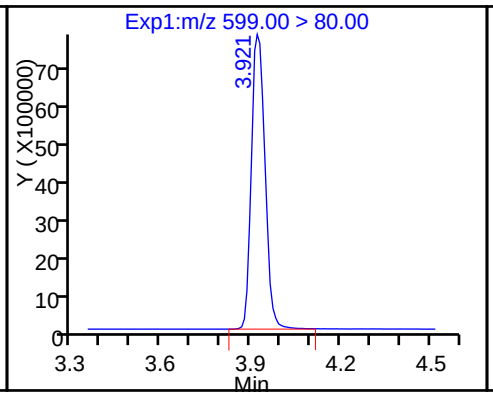
24 Perfluorodecanoic acid



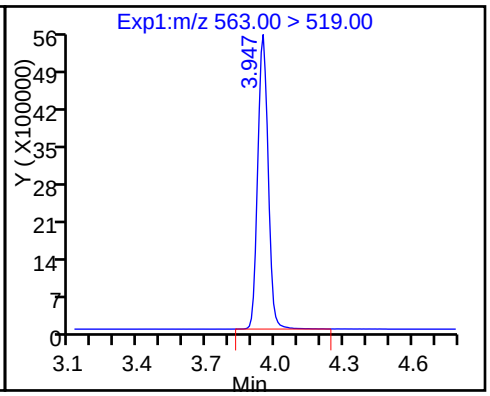
D 23 13C2 PFDA



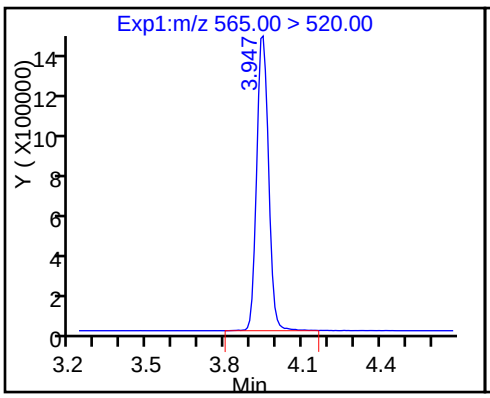
26 Perfluorodecane Sulfonic acid



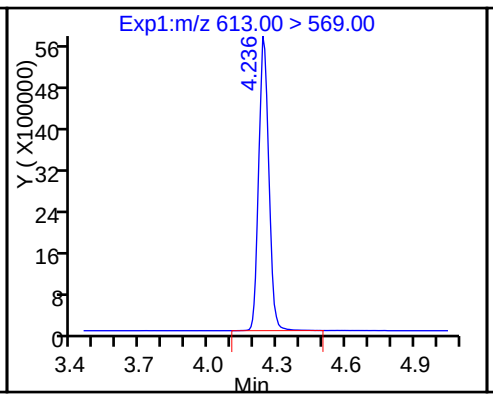
28 Perfluoroundecanoic acid



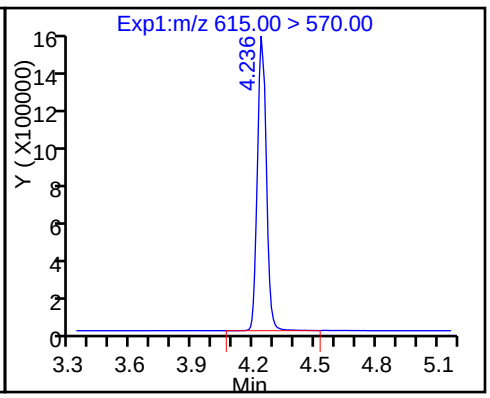
D 27 13C2 PFUnA



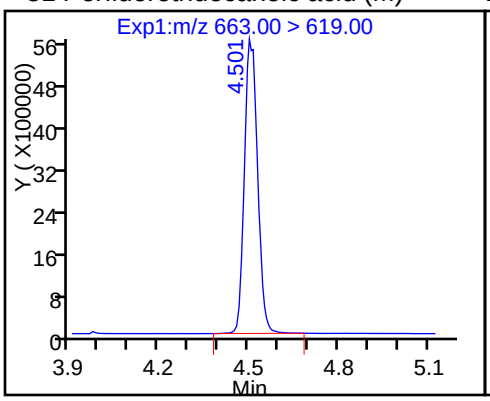
29 Perfluorododecanoic acid



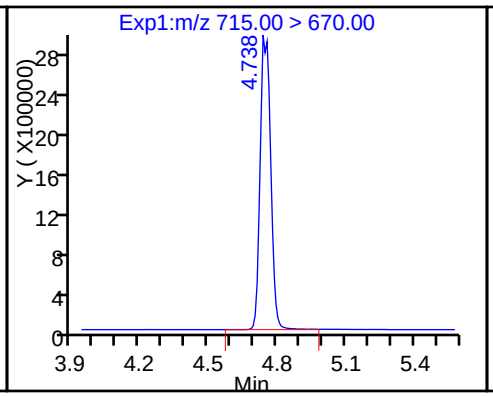
D 30 13C2 PFDoA



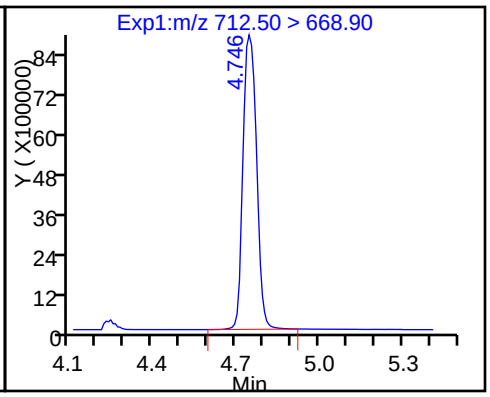
31 Perfluorotridecanoic acid (M)



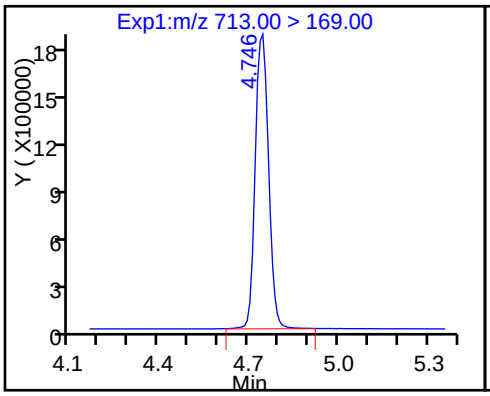
D 32 13C2-PFTeDA



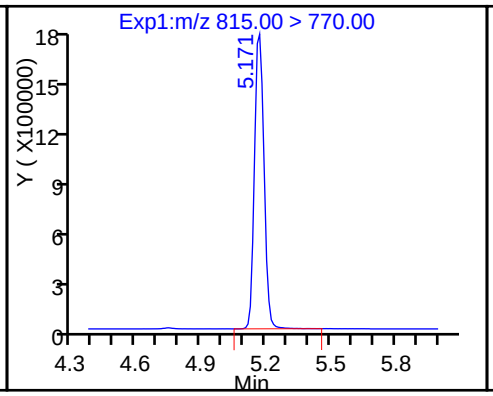
33 Perfluorotetradecanoic acid



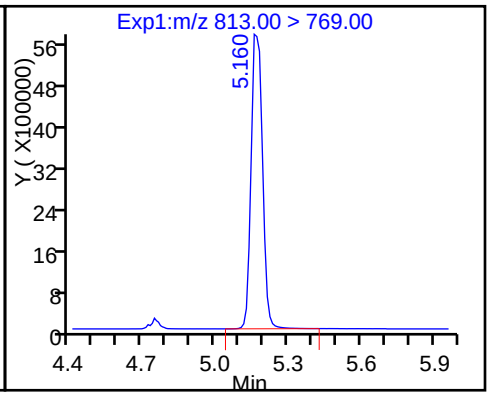
33 Perfluorotetradecanoic acid



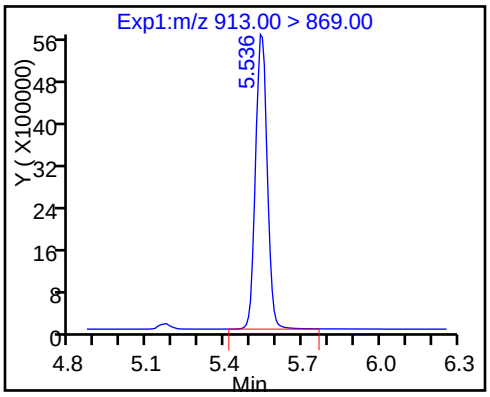
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

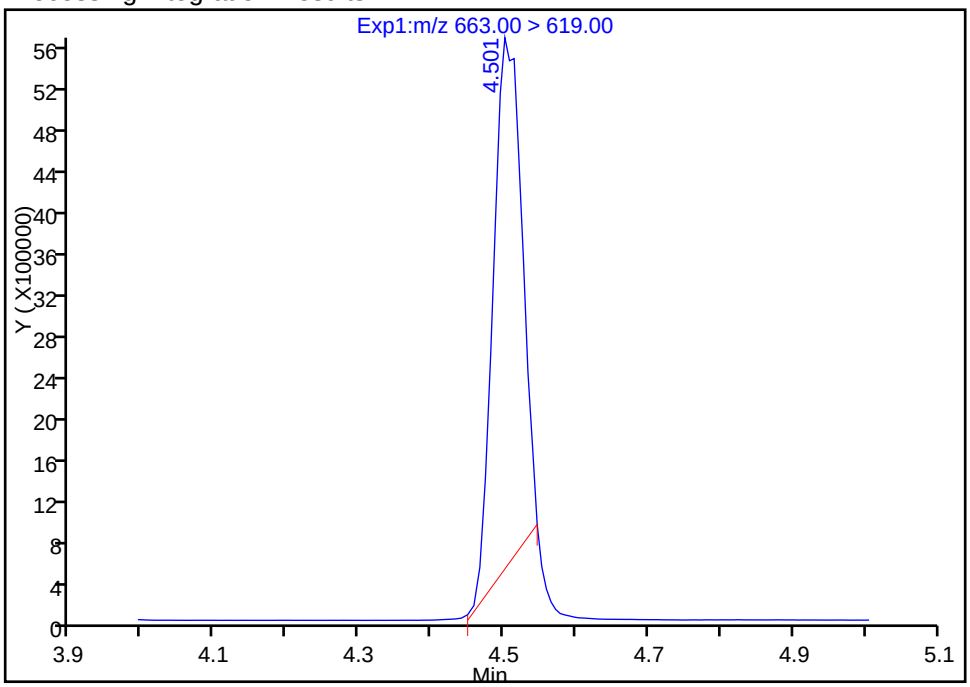
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_009.d
Injection Date: 03-Dec-2016 14:26:13 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

31 Perfluorotridecanoic acid, CAS: 72629-94-8

Signal: 1

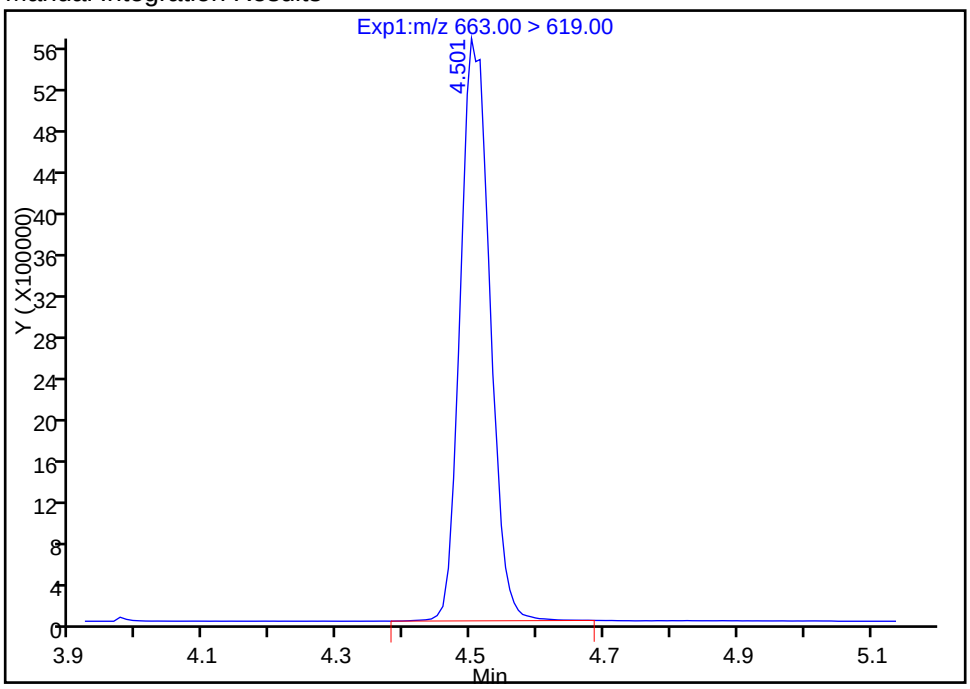
Processing Integration Results

RT: 4.50
Area: 14077685
Amount: 158.7746
Amount Units: ng/ml



Manual Integration Results

RT: 4.50
Area: 17494025
Amount: 191.1674
Amount Units: ng/ml



Reviewer: chandrasenas, 05-Dec-2016 09:44:26
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_013.d
Lims ID: IC L1 Add-on
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 03-Dec-2016 14:56:13 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:28:00 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:47:53

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	2.840	2.836	0.004	1.000	40088	0.5222		110		
D 47 M2-6:2FTS										
429.00 > 409.00	2.840	2.836	0.004		4340981	41.1		86.6		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.601	3.588	0.013	1.000	37551	0.4928		103		
D 42 M2-8:2FTS										
529.00 > 509.00	3.601	3.591	0.010		4263521	43.9		91.6		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.765	3.756	0.009		3321758	45.8		91.6		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.774	3.759	0.015	1.002	23619	0.4142		82.8		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.931	3.922	0.009		3822164	48.0		96.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.931	3.929	0.002	1.000	25433	0.4345		86.9		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.054	4.051	0.003		4696243	44.7		89.4		
54 MeFOSA										
512.00 > 169.00	4.063	4.057	0.006	1.000	37442	0.4934		98.7		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.244	4.239	0.005		4355916	43.9		87.9		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.253	4.245	0.008	1.000	36079	0.4813		96.3		

Reagents:

LCPFC2-L1_00002 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:28:00 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_013.d

Injection Date: 03-Dec-2016 14:56:13 Instrument ID: A8_N

Lims ID: IC L1 Add-on

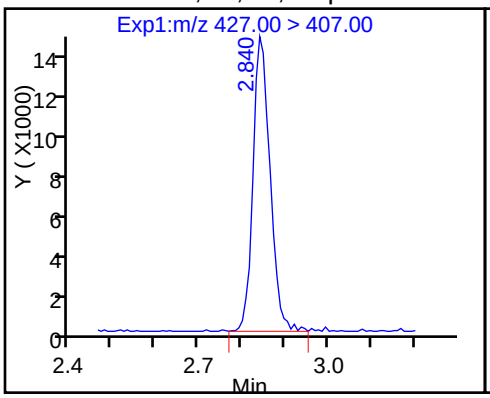
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 46 Worklist Smp#: 13

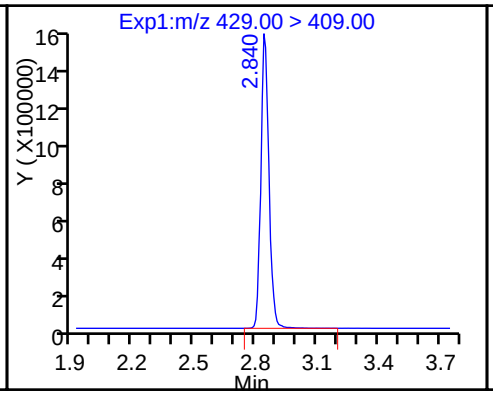
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

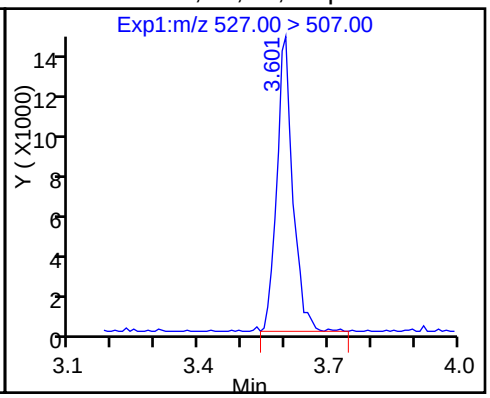
48 Sodium 1H,1H,2H,2H-perfluorooctane



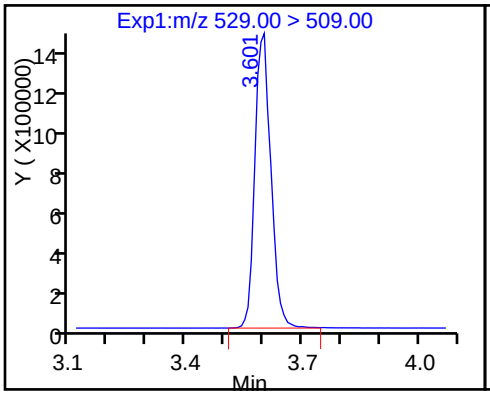
D 47 M2-6:2FTS



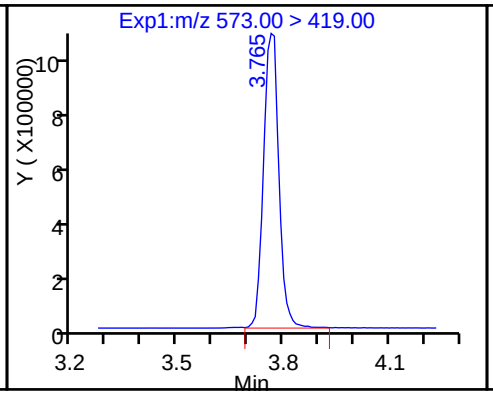
43 Sodium 1H,1H,2H,2H-perfluorooctane



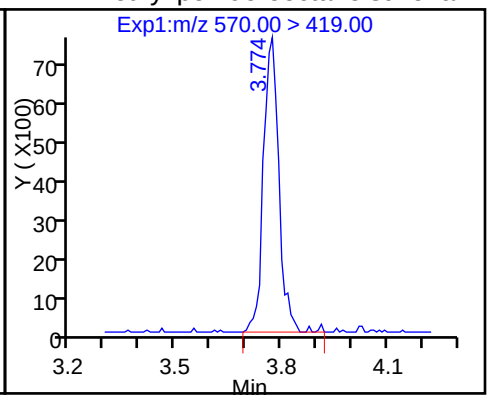
D 42 M2-8:2FTS



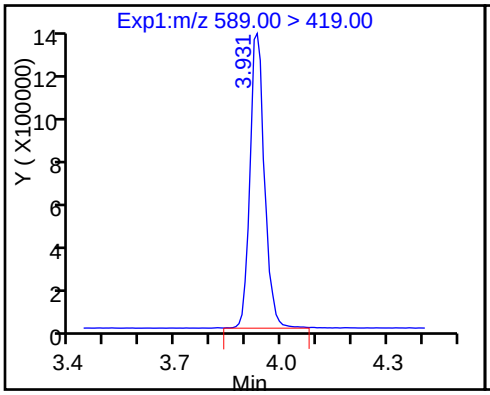
D 45 d3-NMeFOSAA



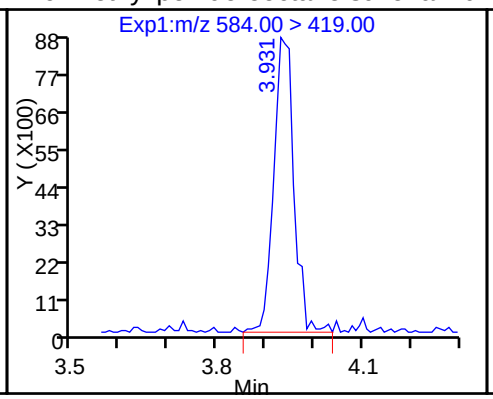
44 N-methyl perfluorooctane sulfonami



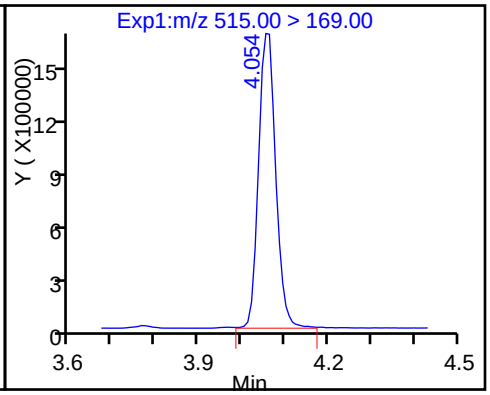
D 46 d5-NEtFOSAA



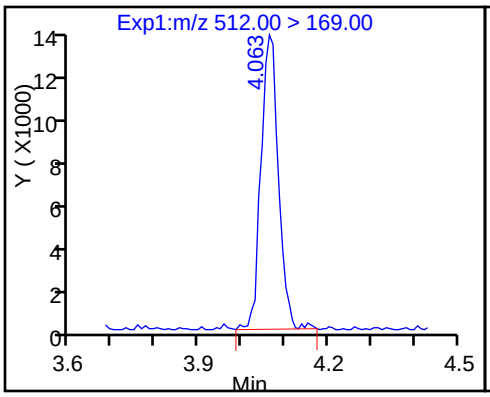
49 N-ethyl perfluorooctane sulfonamid



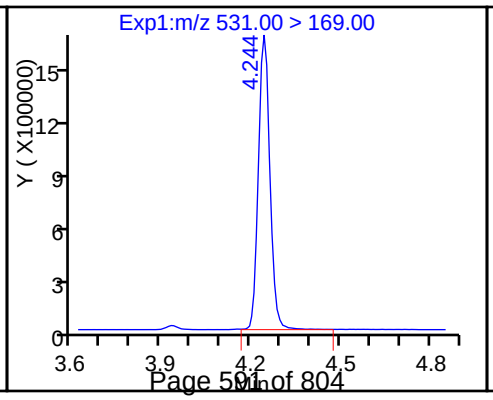
D 52 d-N-MeFOSA-M



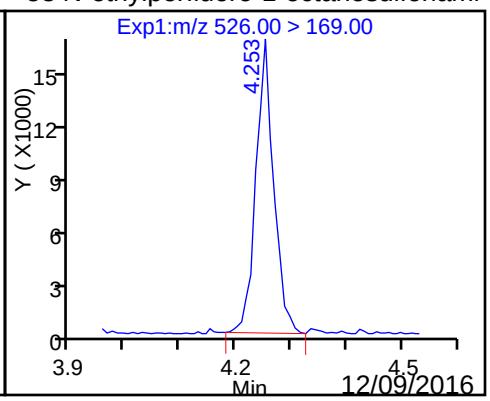
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_014.d
Lims ID: IC L2 Add-on
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-Dec-2016 15:03:43 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:28:01 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:48:07

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	2.830	2.836	-0.006	1.000	69385	0.9534		101		
D 47 M2-6:2FTS										
429.00 > 409.00	2.830	2.836	-0.006		4115043	39.0		82.1		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.579	3.588	-0.009	1.000	63932	0.9133		95.3		
D 42 M2-8:2FTS										
529.00 > 509.00	3.579	3.591	-0.012		3917070	40.3		84.2		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.760	3.756	0.004		3368323	46.4		92.9		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.760	3.759	0.001	1.000	53845	0.9312		93.1		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.918	3.922	-0.004		3818745	47.9		95.9		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.935	3.929	0.006	1.004	49948	0.8541		85.4		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.051	4.051	0.0		4885054	46.5		93.0		
54 MeFOSA										
512.00 > 169.00	4.051	4.057	-0.006	1.000	72155	0.9140		91.4		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.231	4.239	-0.008		4699997	47.4		94.8		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.239	4.245	-0.006	1.000	72107	0.8915		89.1		

Reagents:

LCPFC2-L2_00002 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:28:03 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_014.d

Injection Date: 03-Dec-2016 15:03:43 Instrument ID: A8_N

Lims ID: IC L2 Add-on

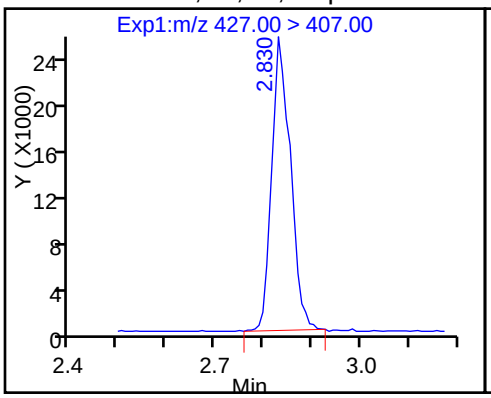
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 47 Worklist Smp#: 14

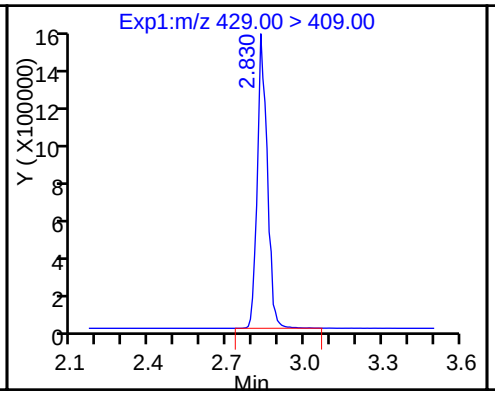
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

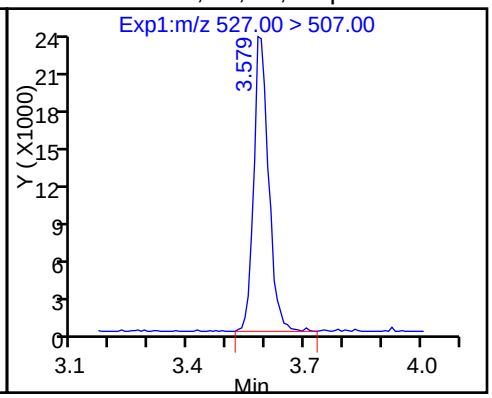
48 Sodium 1H,1H,2H,2H-perfluorooctane



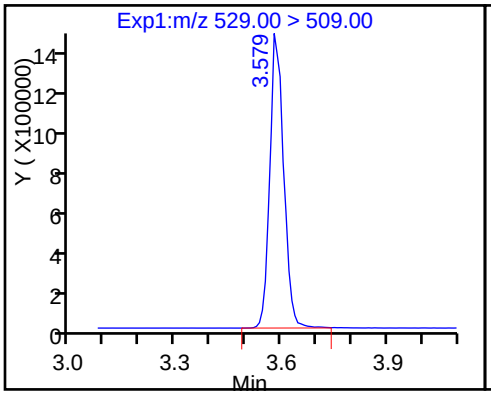
D 47 M2-6:2FTS



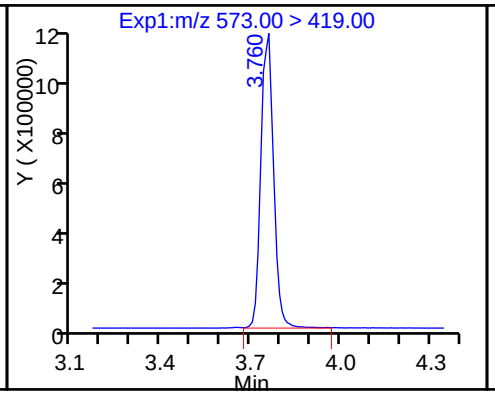
43 Sodium 1H,1H,2H,2H-perfluorooctane



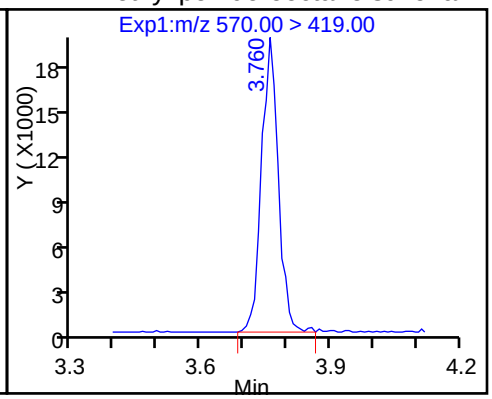
D 42 M2-8:2FTS



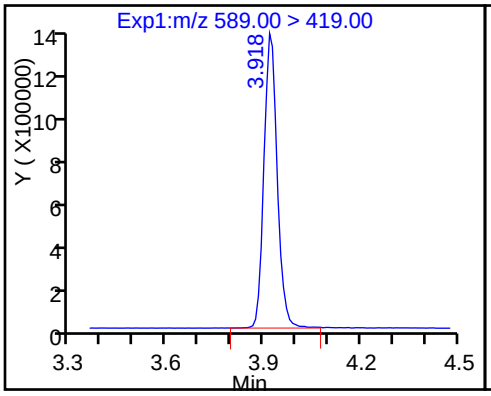
D 45 d3-NMeFOSAA



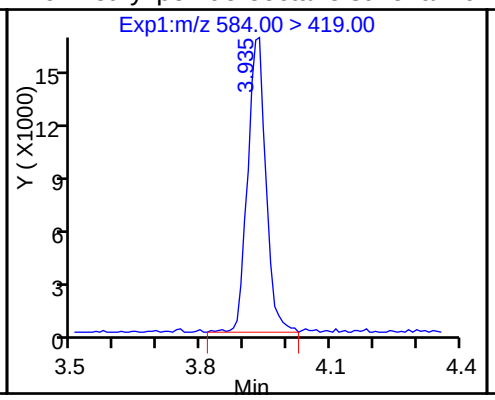
44 N-methyl perfluorooctane sulfonami



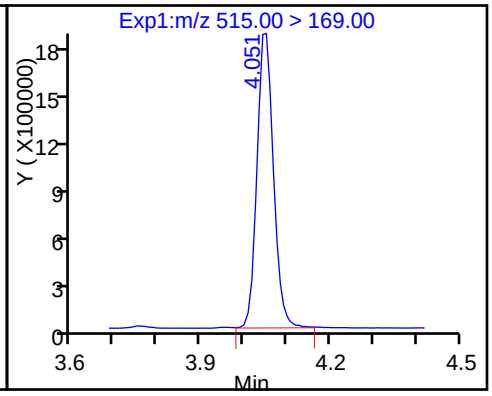
D 46 d5-NEtFOSAA



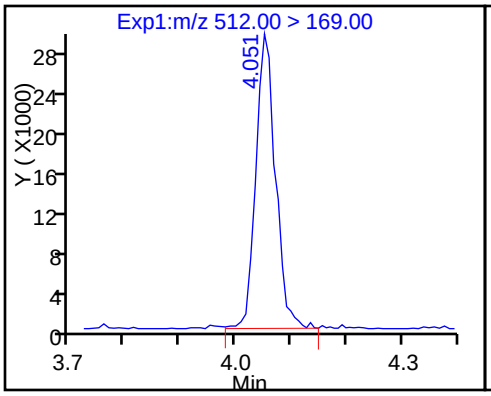
49 N-ethyl perfluorooctane sulfonamid



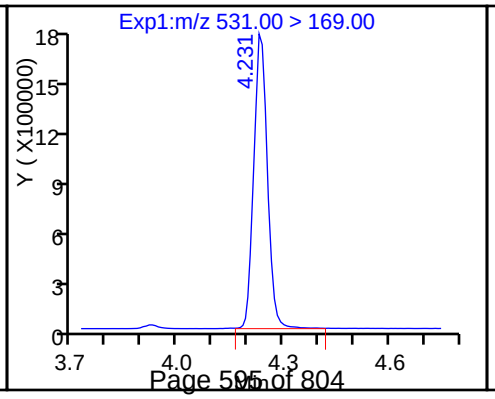
D 52 d-N-MeFOSA-M



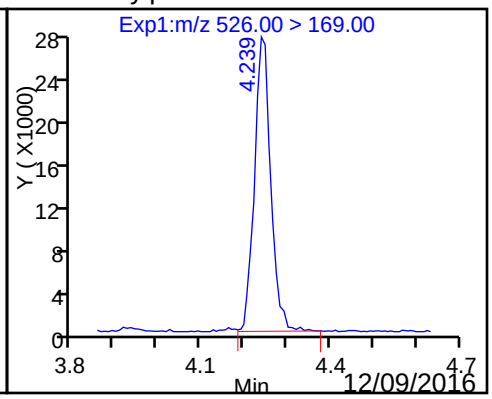
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_015.d
Lims ID: IC L3 Add-on
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-Dec-2016 15:11:13 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:28:04 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:48:18

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	2.838	2.836	0.002	1.000	352721	4.15		87.6		
D 47 M2-6:2FTS										
429.00 > 409.00	2.838	2.836	0.002		4800798	45.5		95.8		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.588	3.588	0.0	0.998	326213	4.10		85.6		
D 42 M2-8:2FTS										
529.00 > 509.00	3.596	3.591	0.005		4450751	45.8		95.7		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.751	3.756	-0.005		3668263	50.6		101		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.760	3.759	0.001	1.002	260030	4.13		82.6		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.918	3.922	-0.004		4095032	51.4		103		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.926	3.929	-0.003	1.002	265257	4.23		84.6		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.051	4.051	0.0		5526561	52.6		105		
54 MeFOSA										
512.00 > 169.00	4.051	4.057	-0.006	1.000	356898	4.00		79.9		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.240	4.239	0.001		5054297	51.0		102		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.240	4.245	-0.005	1.000	365313	4.20		84.0		

Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:28:05 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_015.d

Injection Date: 03-Dec-2016 15:11:13 Instrument ID: A8_N

Lims ID: IC L3 Add-on

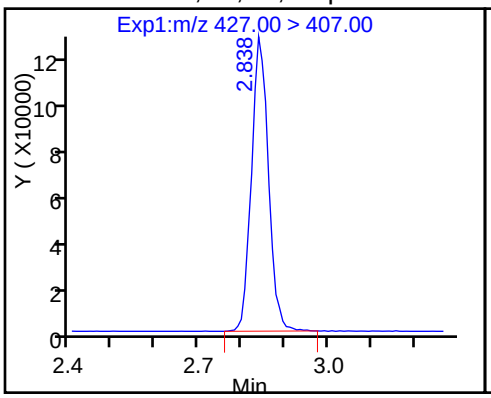
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 48 Worklist Smp#: 15

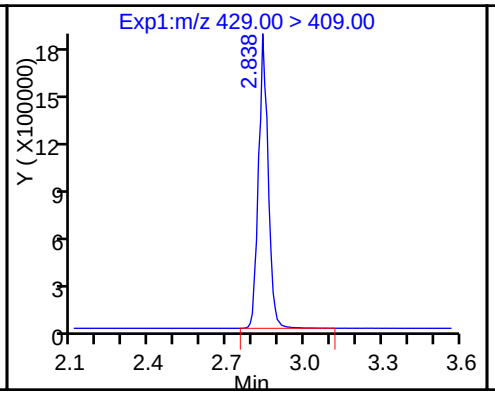
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

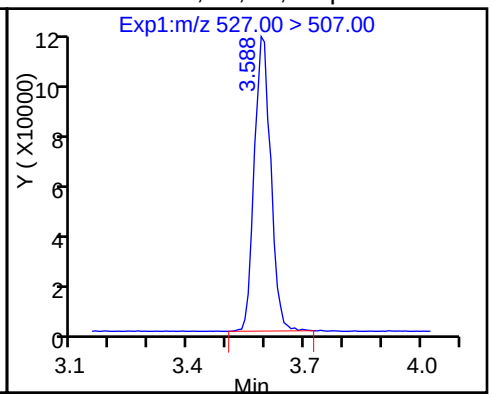
48 Sodium 1H,1H,2H,2H-perfluorooctane



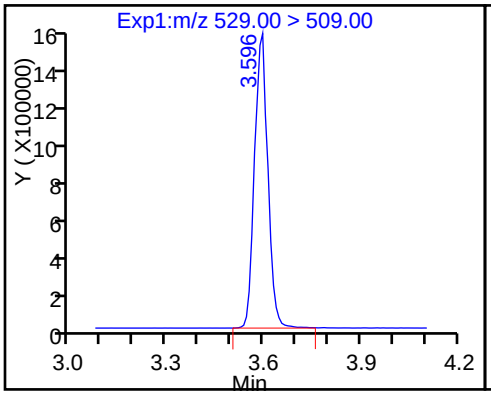
D 47 M2-6:2FTS



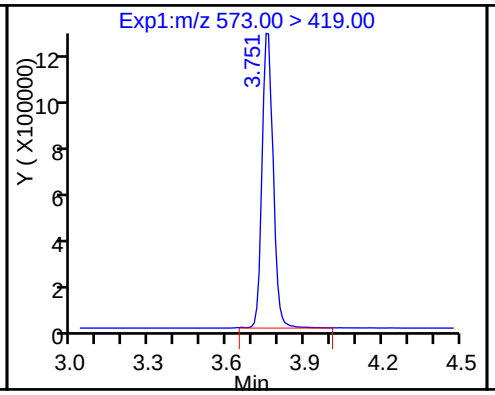
43 Sodium 1H,1H,2H,2H-perfluorooctane



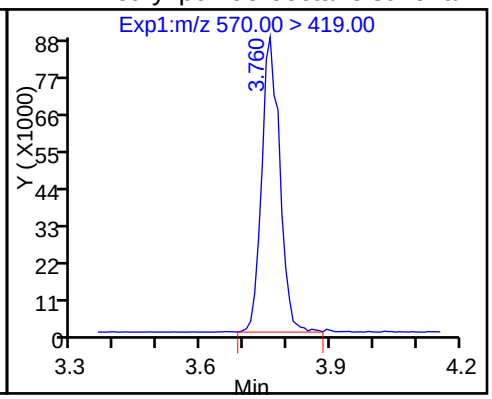
D 42 M2-8:2FTS



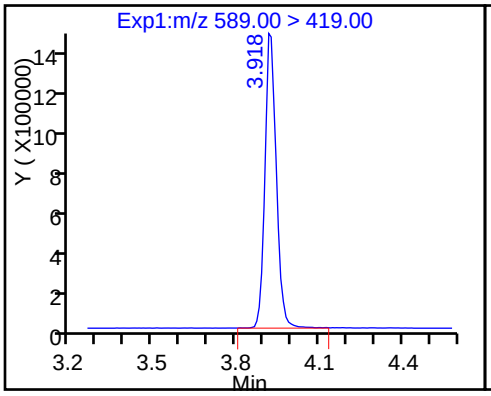
D 45 d3-NMeFOSAA



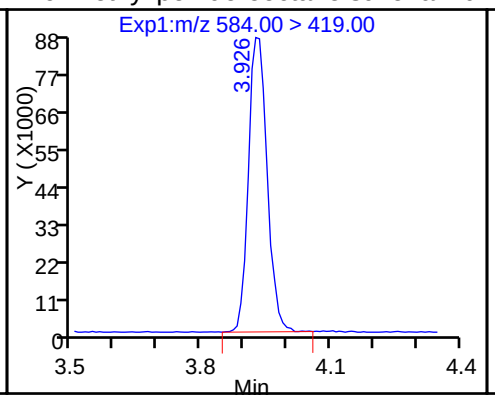
44 N-methyl perfluorooctane sulfonami



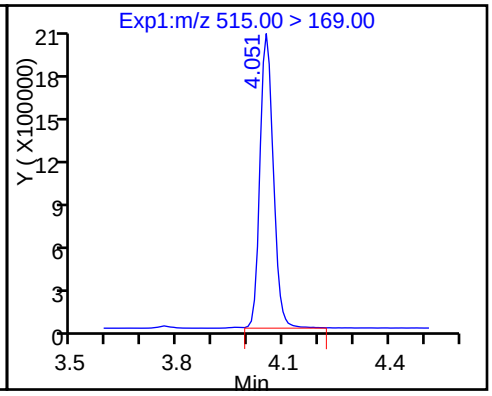
D 46 d5-NEtFOSAA



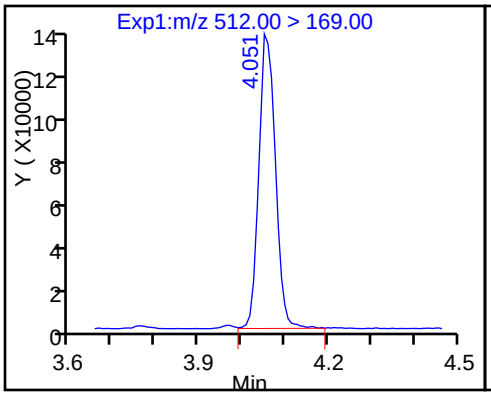
49 N-ethyl perfluorooctane sulfonamid



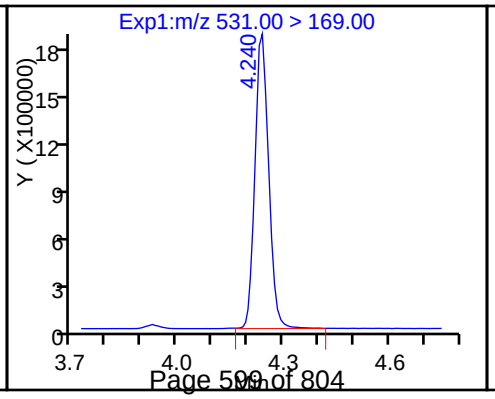
D 52 d-N-MeFOSA-M



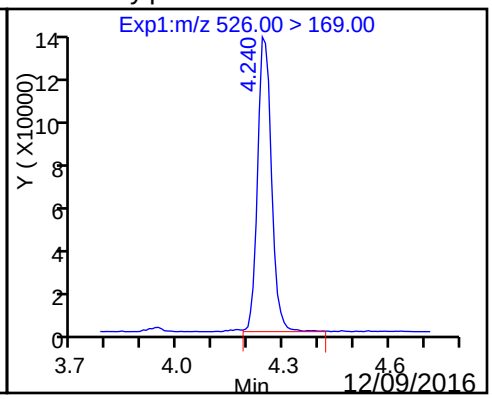
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_016.d
Lims ID: IC L4 Add-on
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 03-Dec-2016 15:18:43 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:28:06 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:47:40

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	2.840	2.836	0.004	1.000	2169230	19.5		103		
D 47 M2-6:2FTS										
429.00 > 409.00	2.840	2.836	0.004		6295656	59.7		126		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.592	3.588	0.004	1.000	2029390	21.1		110		
D 42 M2-8:2FTS										
529.00 > 509.00	3.592	3.591	0.001		5378444	55.4		116		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.756	3.756	0.0		4323749	59.6		119		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.756	3.759	-0.003	1.000	1655435	22.3		112		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.931	3.922	0.009		4650188	58.4		117		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.931	3.929	0.002	1.000	1629443	22.9		114		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.055	4.051	0.004		6162693	58.6		117		
54 MeFOSA										
512.00 > 169.00	4.063	4.057	0.006	1.000	2189848	22.0		110		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.244	4.239	0.005		5747792	58.0		116		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.244	4.245	-0.001	1.000	2201423	22.3		111		

Reagents:

LCPFC2-L4_00003 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:28:06 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_016.d

Injection Date: 03-Dec-2016 15:18:43 Instrument ID: A8_N

Lims ID: IC L4 Add-on

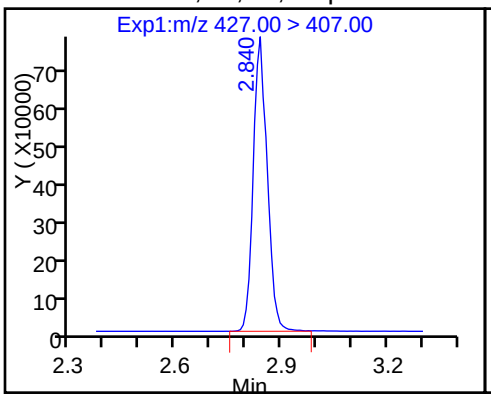
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 49 Worklist Smp#: 16

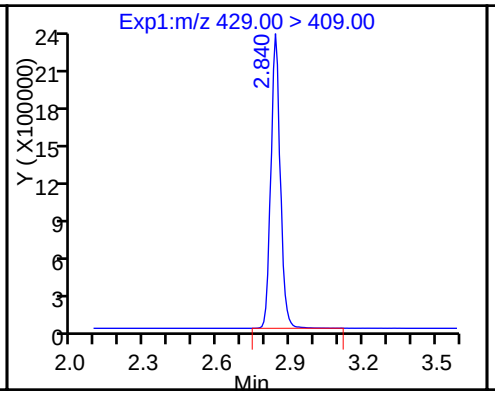
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

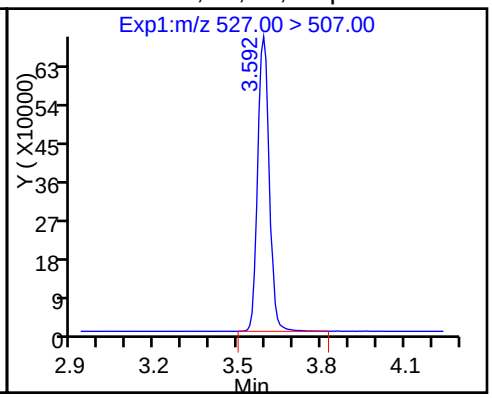
48 Sodium 1H,1H,2H,2H-perfluorooctane



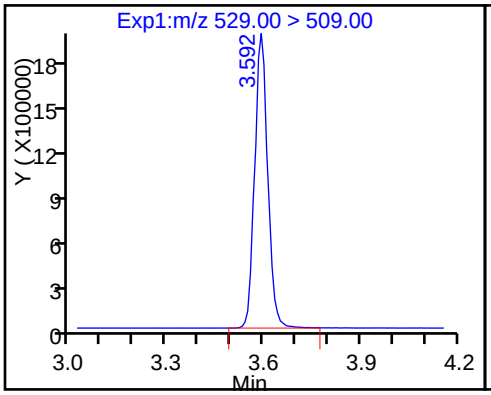
D 47 M2-6:2FTS



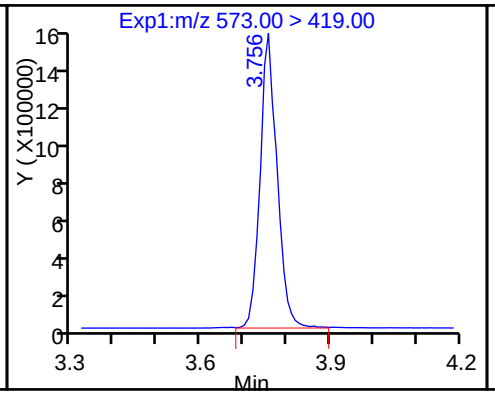
43 Sodium 1H,1H,2H,2H-perfluorooctane



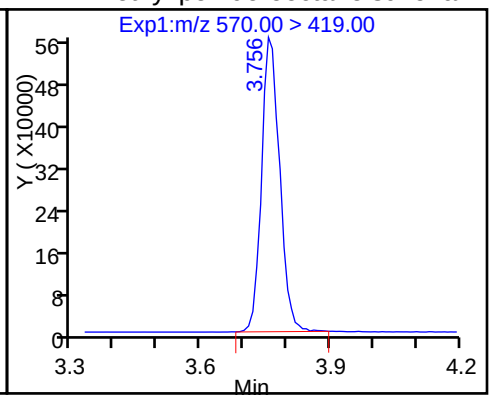
D 42 M2-8:2FTS



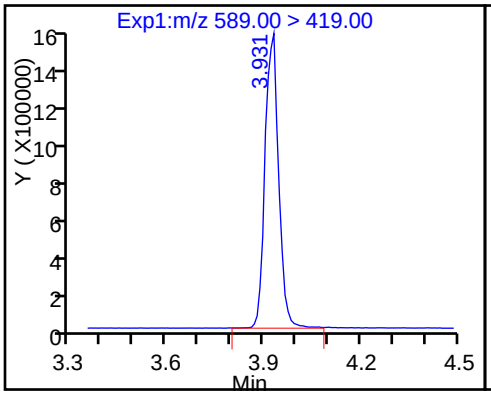
D 45 d3-NMeFOSAA



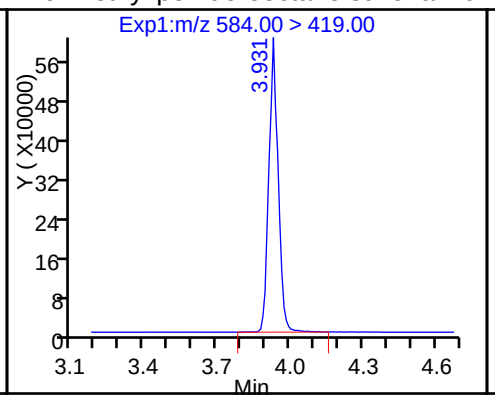
44 N-methyl perfluorooctane sulfonami



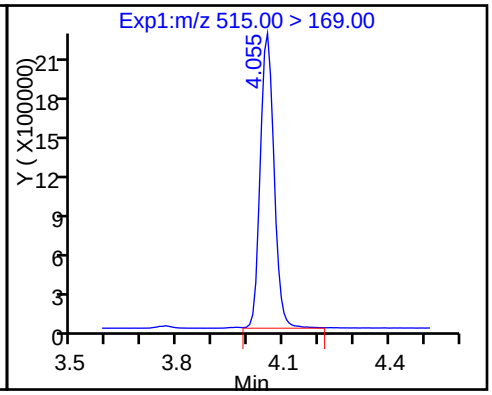
D 46 d5-NEtFOSAA



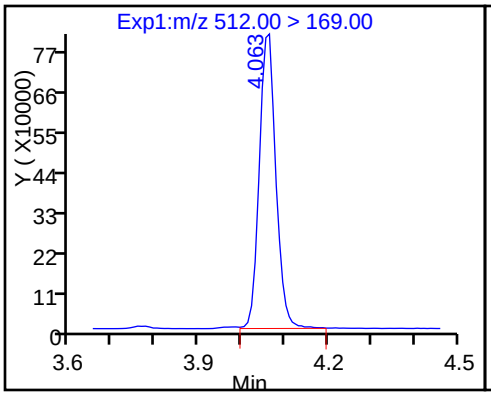
49 N-ethyl perfluorooctane sulfonamid



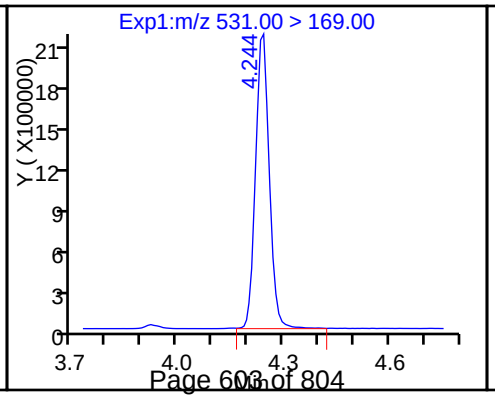
D 52 d-N-MeFOSA-M



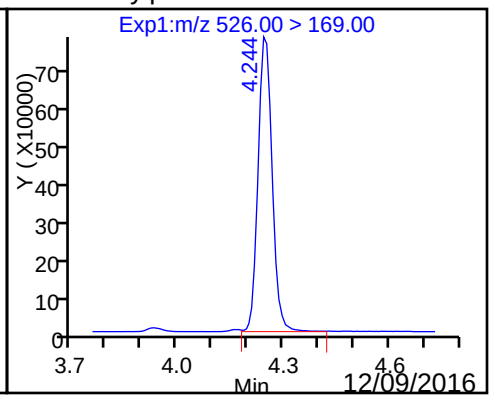
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_017.d
Lims ID: IC L5 Add-on
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Dec-2016 15:26:12 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:28:07 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:48:43

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	2.830	2.836	-0.006	1.000	4576863	55.8		118		
D 47 M2-6:2FTS										
429.00 > 409.00	2.830	2.836	-0.006		4638709	44.0		92.5		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.579	3.588	-0.009	0.998	4279048	57.8		121		
D 42 M2-8:2FTS										
529.00 > 509.00	3.587	3.591	-0.004		4144623	42.7		89.1		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.750	3.756	-0.006		3122973	43.1		86.1		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.750	3.759	-0.009	1.000	3484088	65.0		130		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.917	3.922	-0.005		3419439	42.9		85.9		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.925	3.929	-0.004	1.002	3261537	62.3		125		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.042	4.051	-0.009		4794382	45.6		91.2		
54 MeFOSA										
512.00 > 169.00	4.051	4.057	-0.006	1.000	4656344	60.1		120		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.236	4.239	-0.003		4667809	47.1		94.1		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.245	4.245	0.0	1.000	4735360	58.9		118		

Reagents:

LCPFC2-L5_00002 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:28:08 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_017.d

Injection Date: 03-Dec-2016 15:26:12 Instrument ID: A8_N

Lims ID: IC L5 Add-on

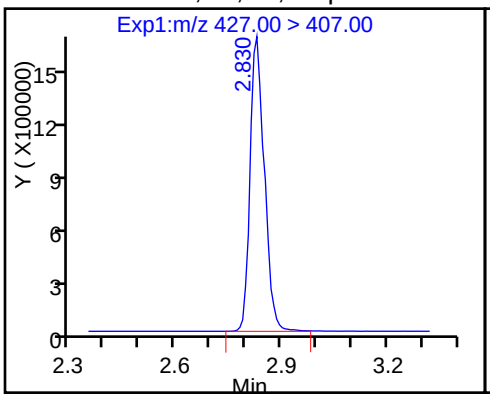
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 50 Worklist Smp#: 17

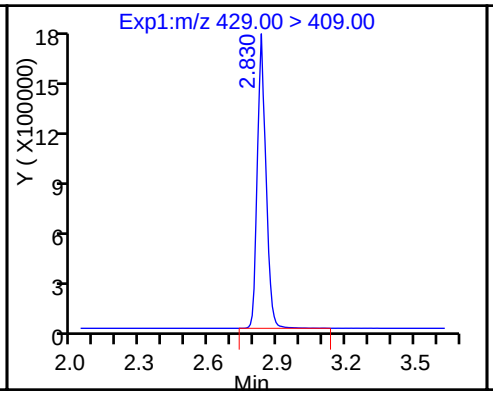
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

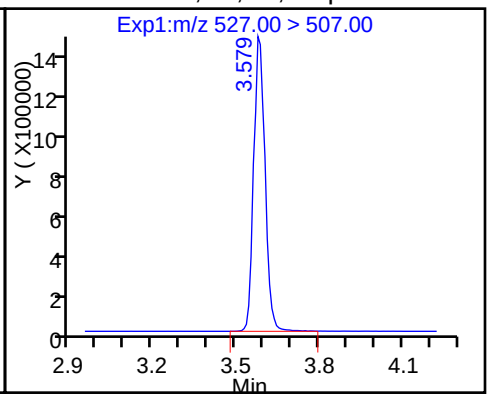
48 Sodium 1H,1H,2H,2H-perfluorooctane



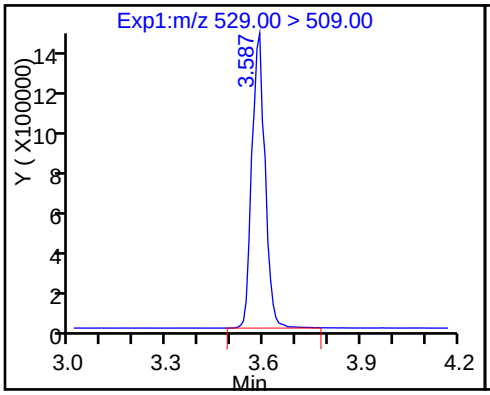
D 47 M2-6:2FTS



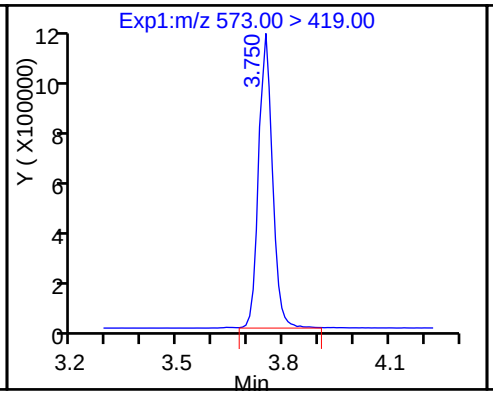
43 Sodium 1H,1H,2H,2H-perfluorooctane



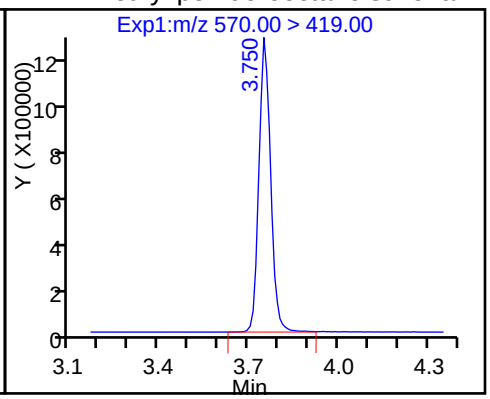
D 42 M2-8:2FTS



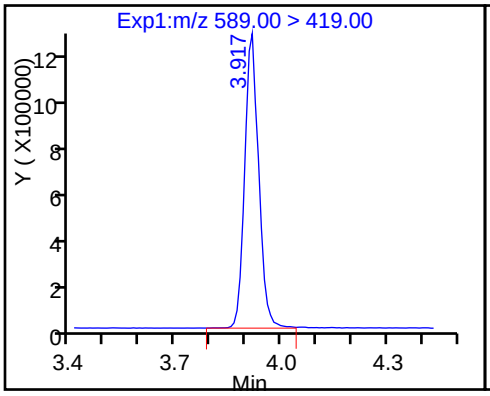
D 45 d3-NMeFOSAA



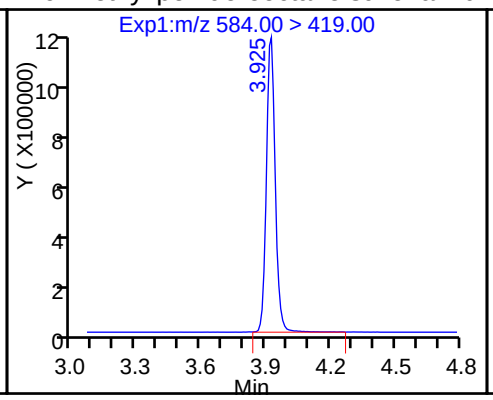
44 N-methyl perfluorooctane sulfonami



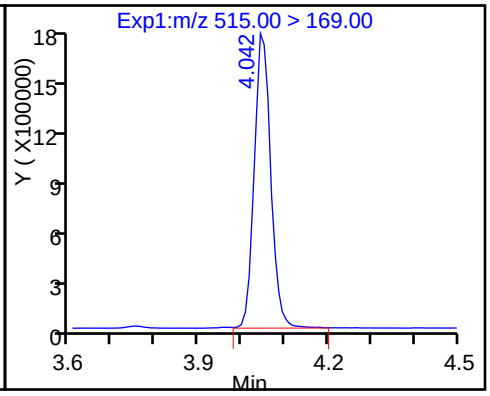
D 46 d5-NEtFOSAA



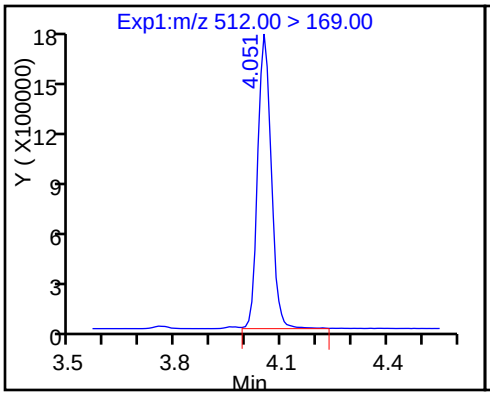
49 N-ethyl perfluorooctane sulfonamid



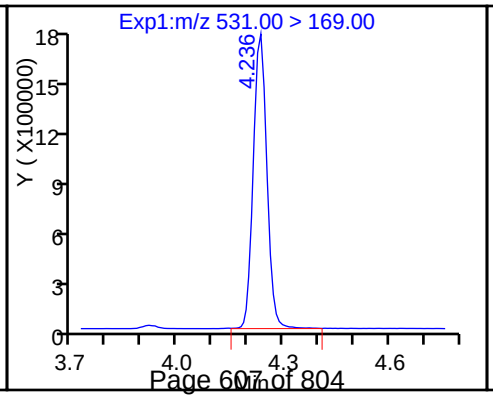
D 52 d-N-MeFOSA-M



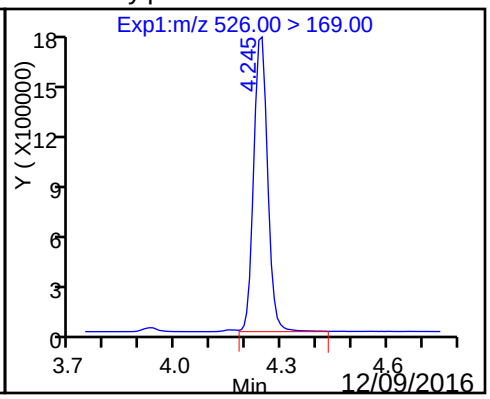
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d
Lims ID: IC L6 Add-on
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 03-Dec-2016 15:33:40 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:28:09 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:49:51

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	2.838	2.836	0.002	1.000	18026595	173.2		91.3		
D 47 M2-6:2FTS										
429.00 > 409.00	2.838	2.836	0.002		5885296	55.8		117		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.589	3.588	0.001	1.000	16850029	163.6		85.4		
D 42 M2-8:2FTS										
529.00 > 509.00	3.589	3.591	-0.002		5764339	59.3		124		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.752	3.756	-0.004		3953776	54.5		109		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.752	3.759	-0.007	1.000	13566790	199.9		99.9		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.919	3.922	-0.003		4091711	51.4		103		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.927	3.929	-0.002	1.002	13047697	208.2		104		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.052	4.051	0.001		5465444	52.0		104		
54 MeFOSA										
512.00 > 169.00	4.061	4.057	0.004	1.000	17635948	199.7		99.8		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.239	4.239	0.0		5223764	52.7		105		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.249	4.245	0.003	1.000	18234509	202.8		101		

Reagents:

LCPFC2-L6_00002 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:28:09 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Injection Date: 03-Dec-2016 15:33:40 Instrument ID: A8_N

Lims ID: IC L6 Add-on

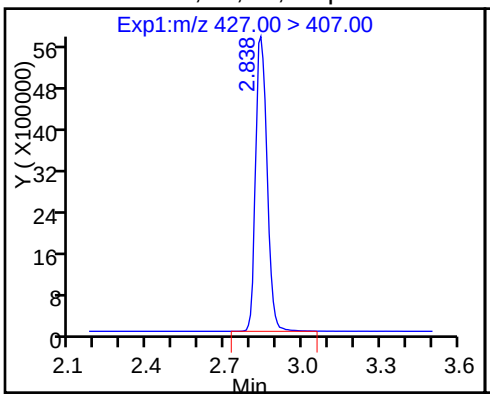
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 18

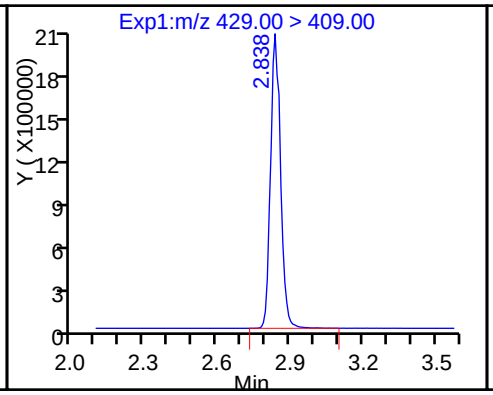
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

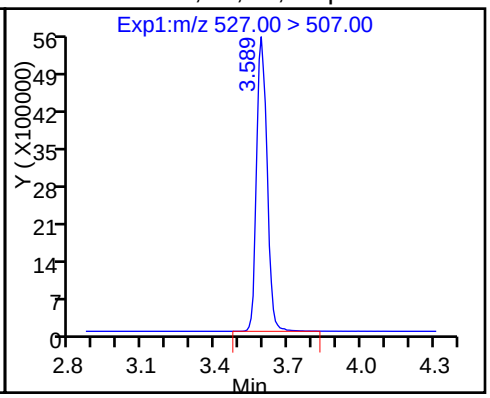
48 Sodium 1H,1H,2H,2H-perfluorooctane



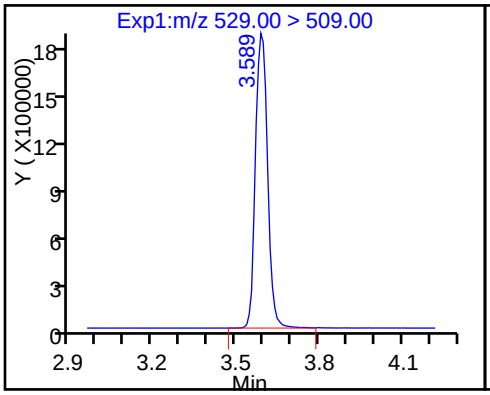
D 47 M2-6:2FTS



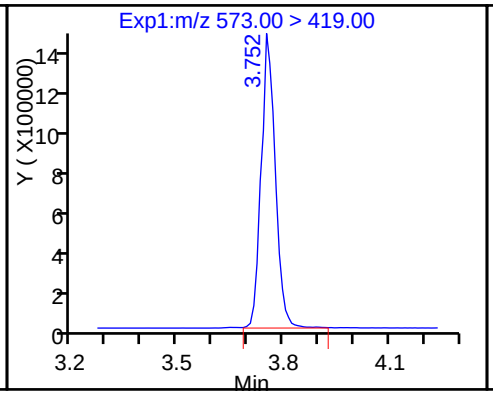
43 Sodium 1H,1H,2H,2H-perfluorooctane



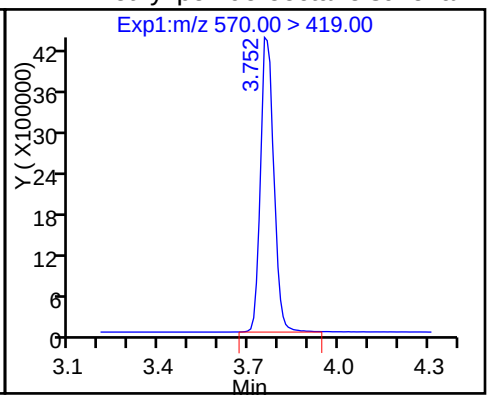
D 42 M2-8:2FTS



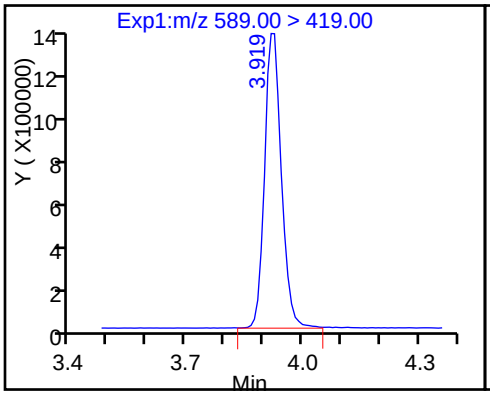
D 45 d3-NMeFOSAA



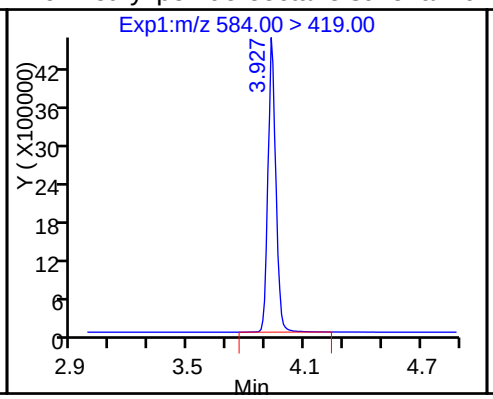
44 N-methyl perfluorooctane sulfonami



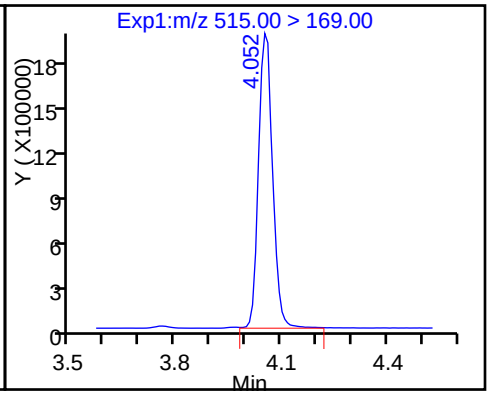
D 46 d5-NEtFOSAA



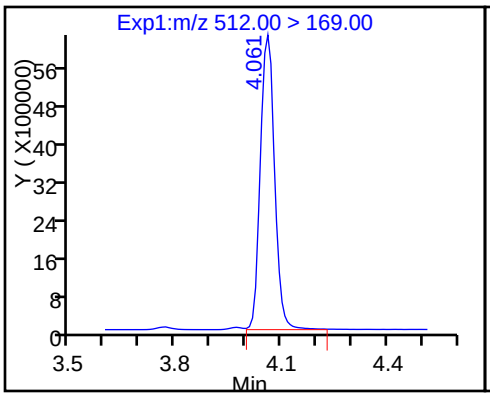
49 N-ethyl perfluorooctane sulfonamid



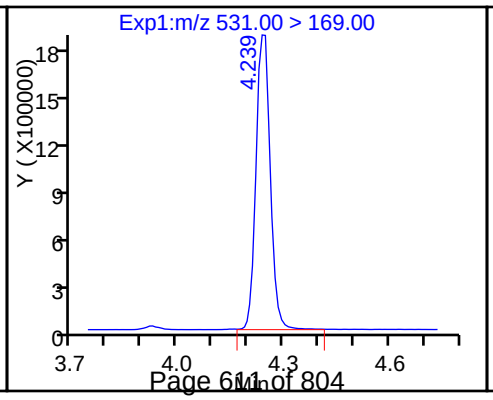
D 52 d-N-MeFOSA-M



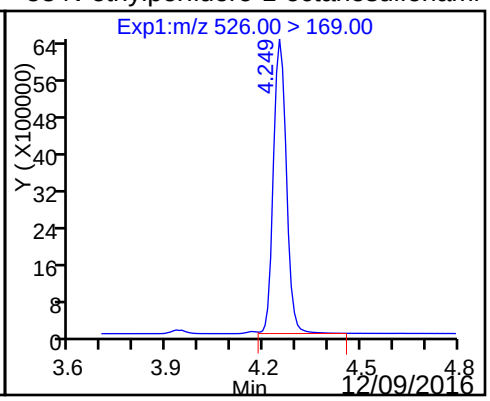
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

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

FORM VII 537 (Modified)

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

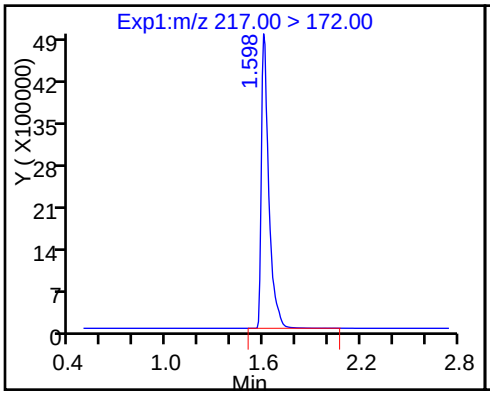
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 12

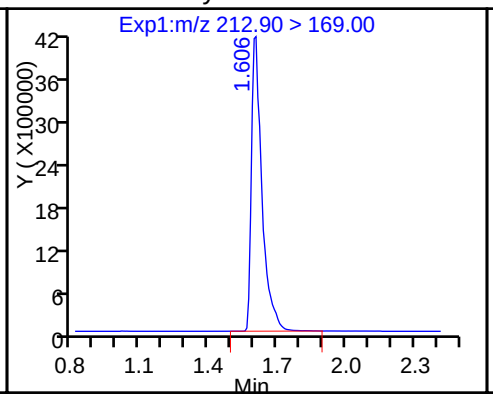
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

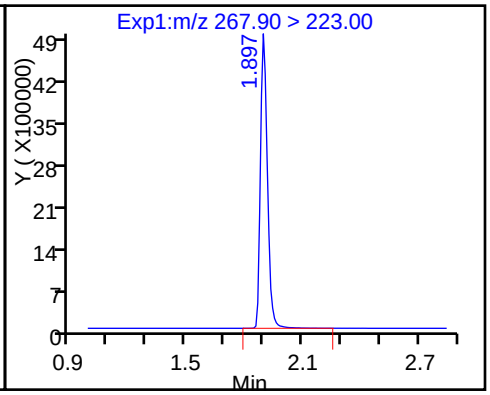
D 2 13C4 PFBA



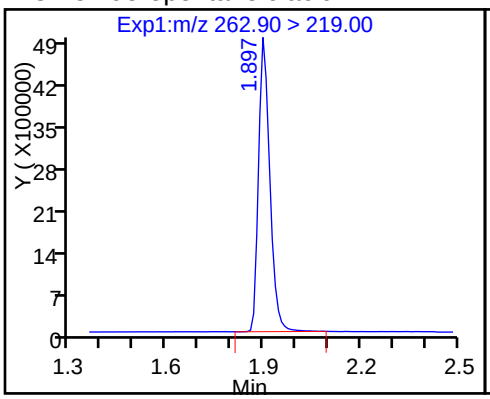
1 Perfluorobutyric acid



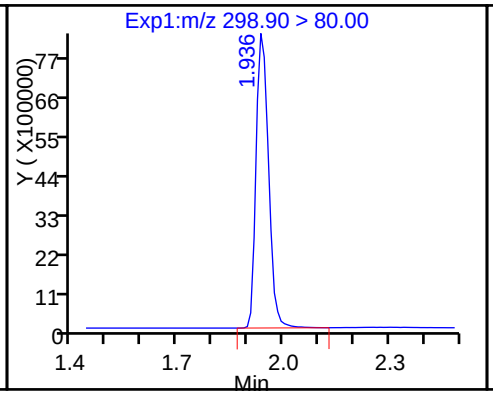
D 4 13C5-PFPeA



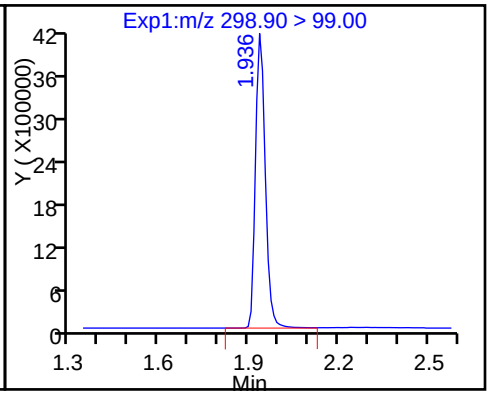
3 Perfluoropentanoic acid



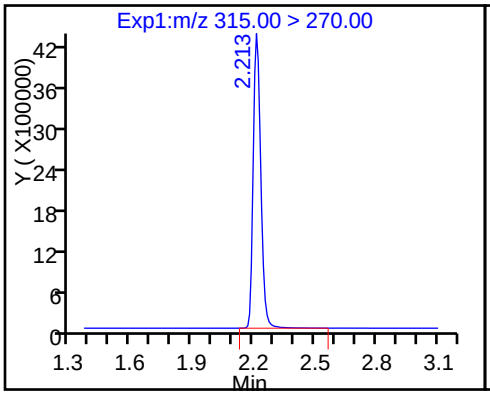
5 Perfluorobutanesulfonic acid



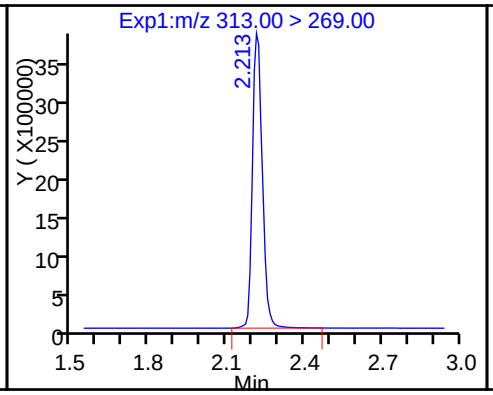
5 Perfluorobutanesulfonic acid



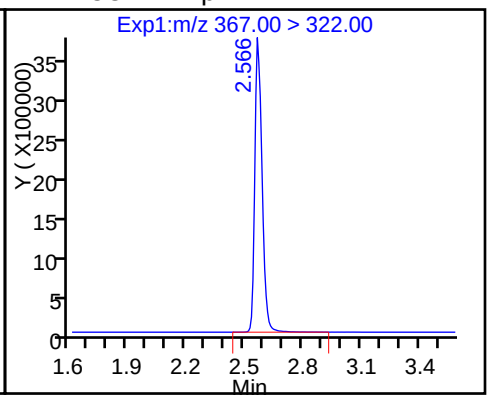
D 6 13C2 PFHxA



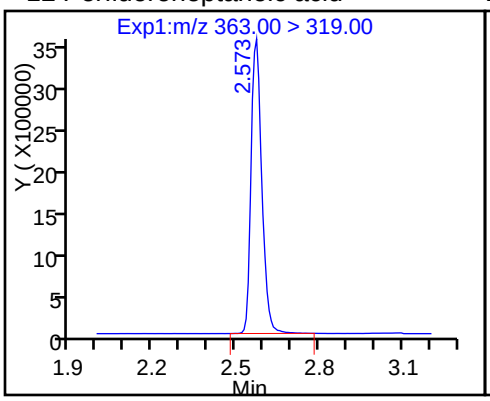
7 Perfluorohexanoic acid



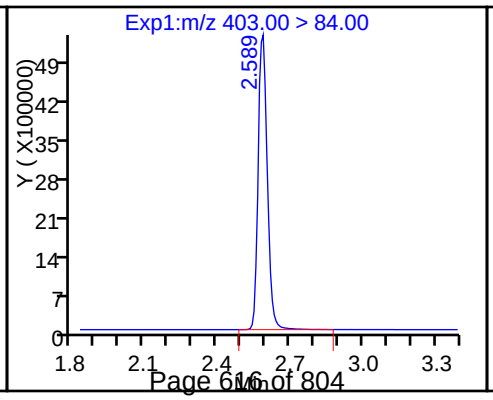
D 11 13C4-PFHpA



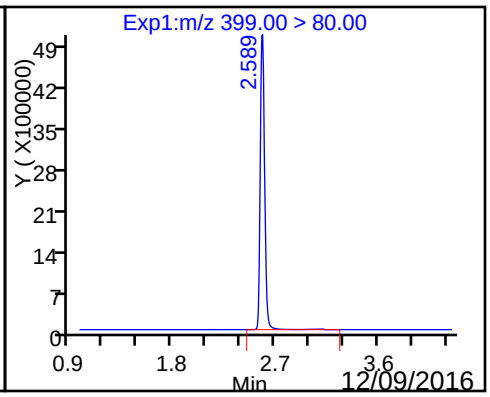
12 Perfluoroheptanoic acid



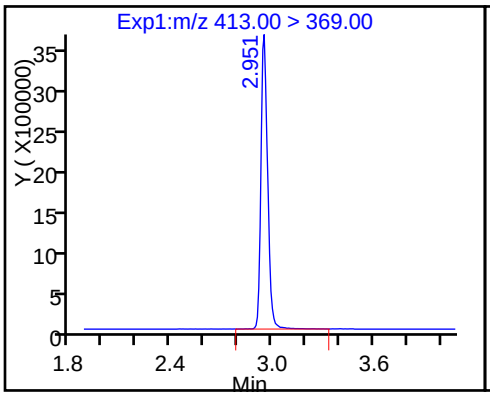
D 10 18O2 PFHxS



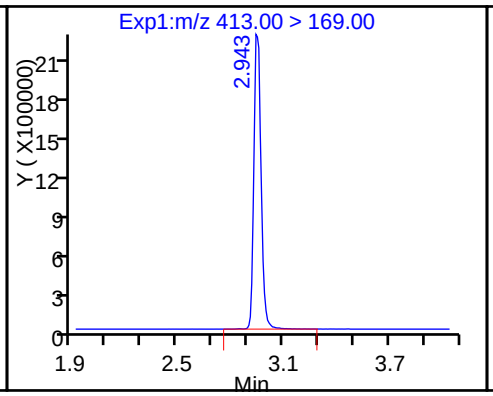
9 Perfluorohexanesulfonic acid



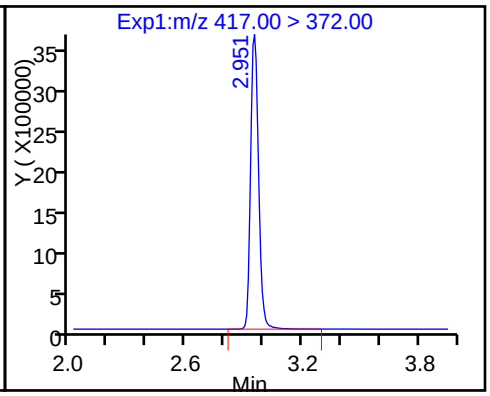
15 Perfluorooctanoic acid



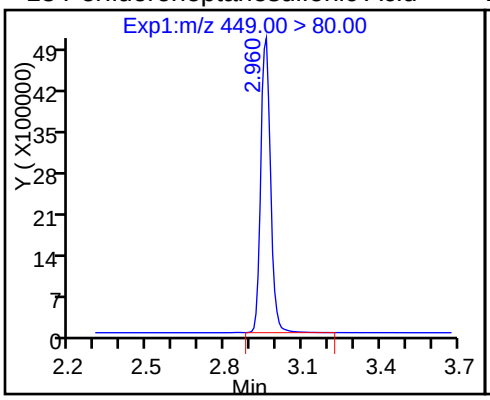
15 Perfluorooctanoic acid



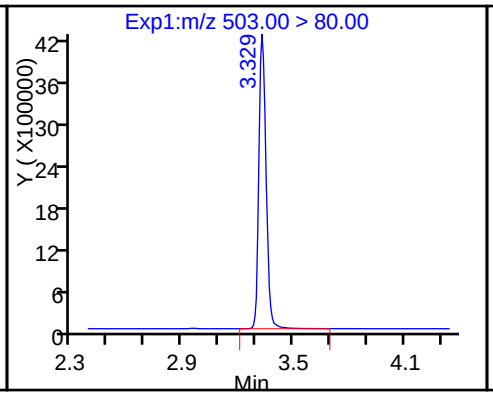
D 14 13C4 PFOA



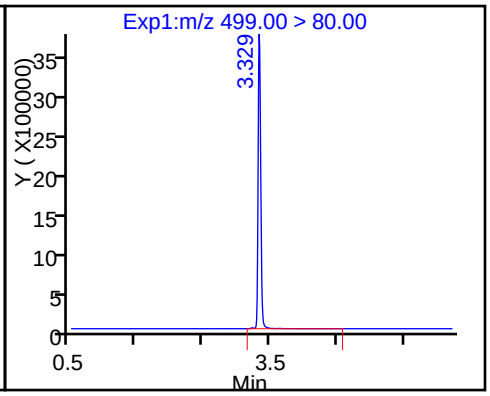
13 Perfluoroheptanesulfonic Acid



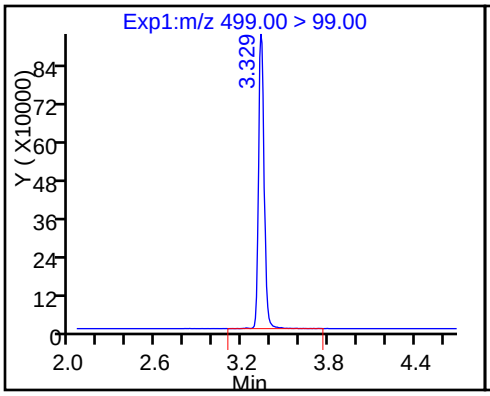
D 17 13C4 PFOS



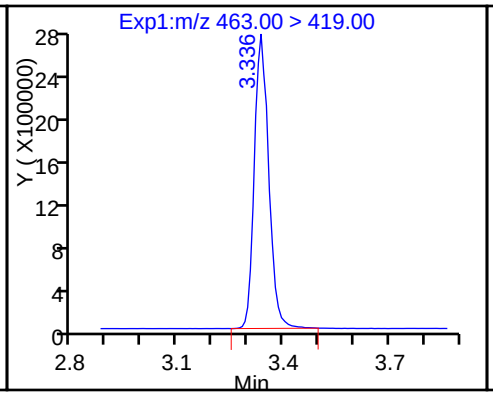
18 Perfluorooctane sulfonic acid



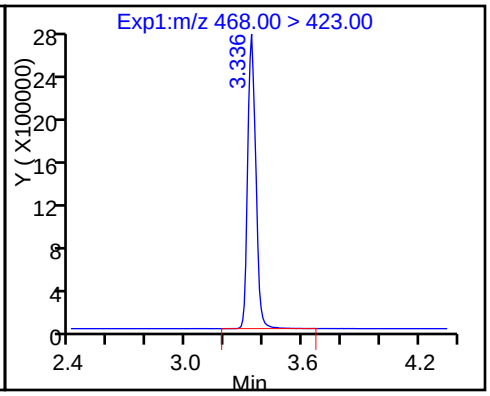
18 Perfluorooctane sulfonic acid



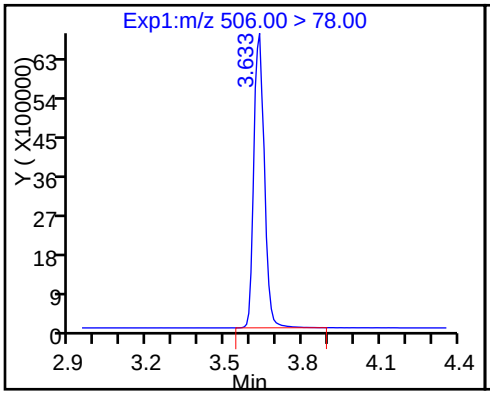
20 Perfluorononanoic acid



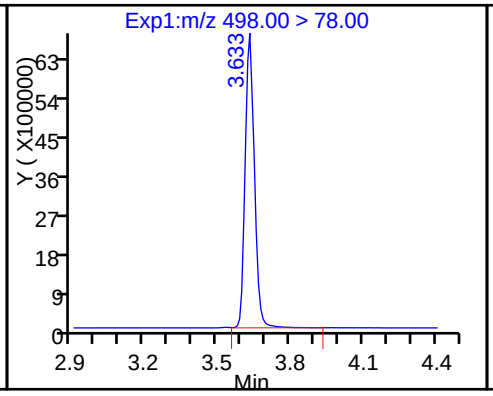
D 19 13C5 PFNA



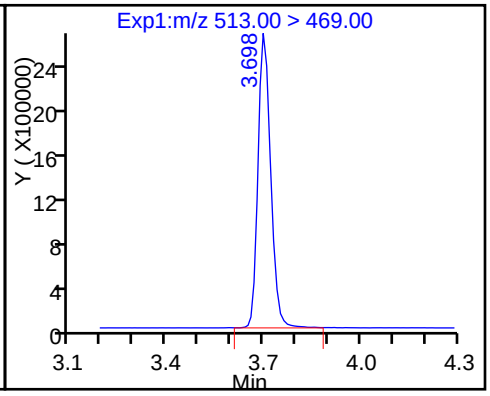
D 21 13C8 FOSA



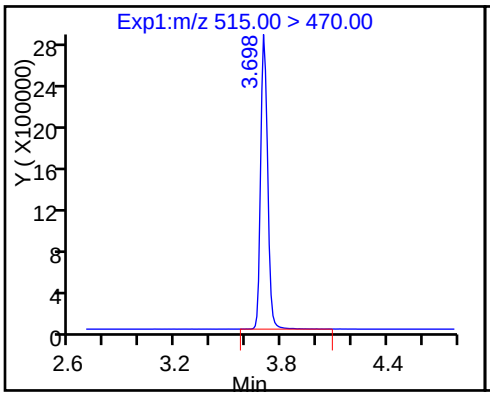
22 Perfluorooctane Sulfonamide



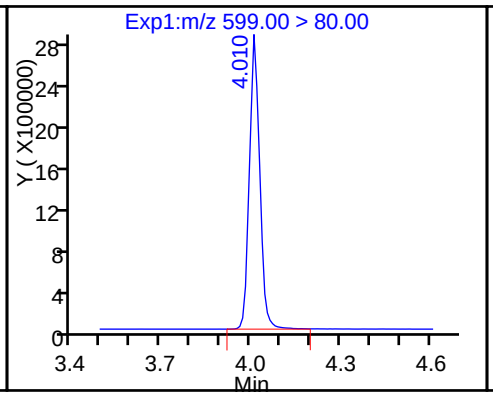
24 Perfluorodecanoic acid



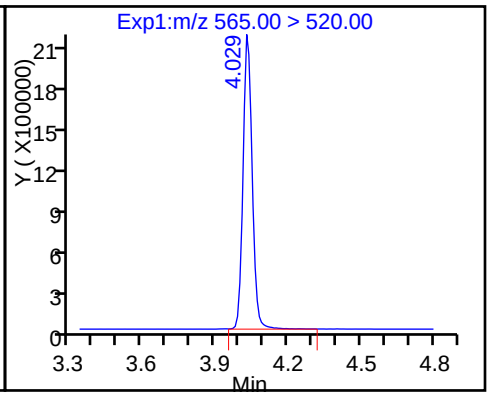
D 23 13C2 PFDA



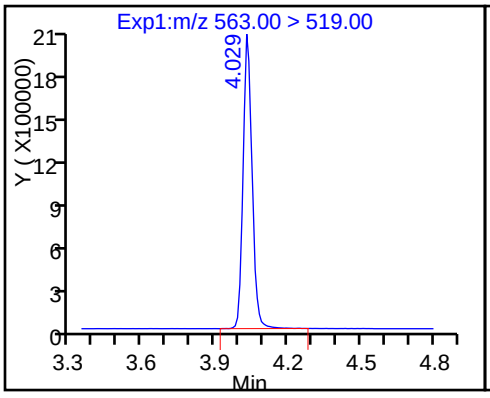
26 Perfluorodecane Sulfonic acid



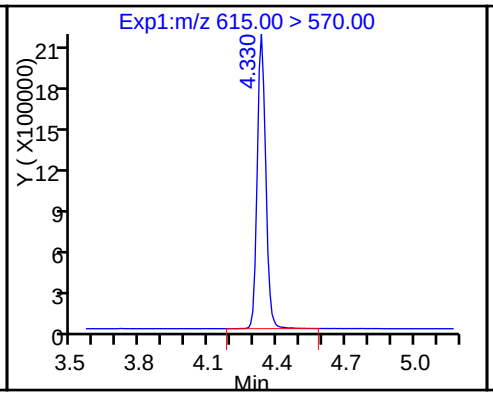
D 27 13C2 PFUnA



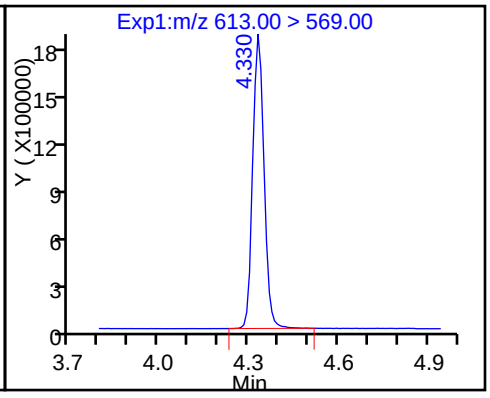
28 Perfluoroundecanoic acid



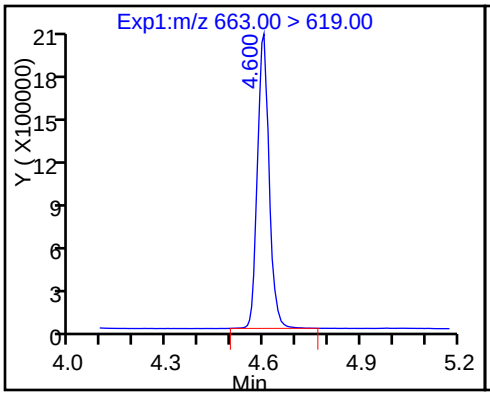
D 30 13C2 PFDoA



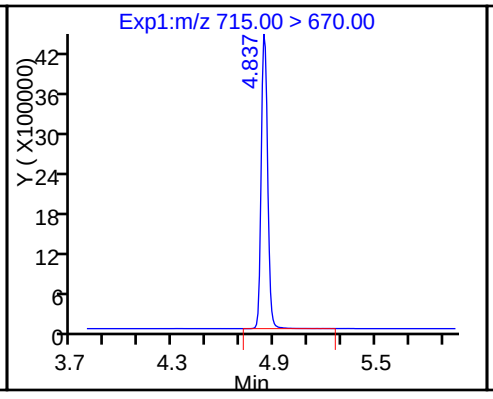
29 Perfluorododecanoic acid



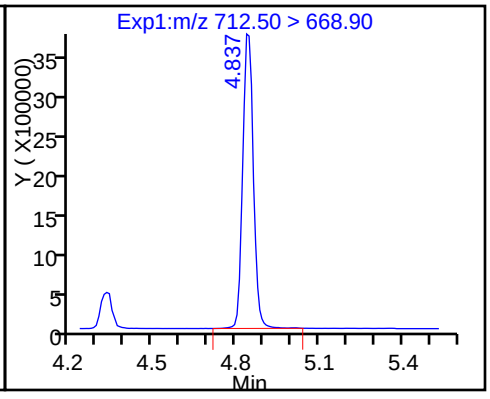
31 Perfluorotridecanoic acid



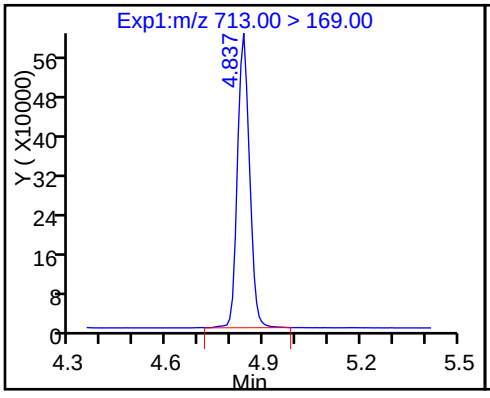
D 32 13C2-PFTeDA



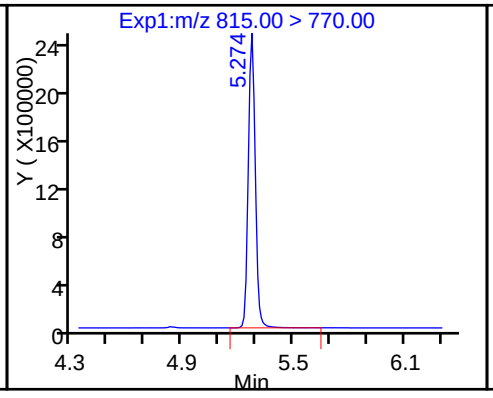
33 Perfluorotetradecanoic acid



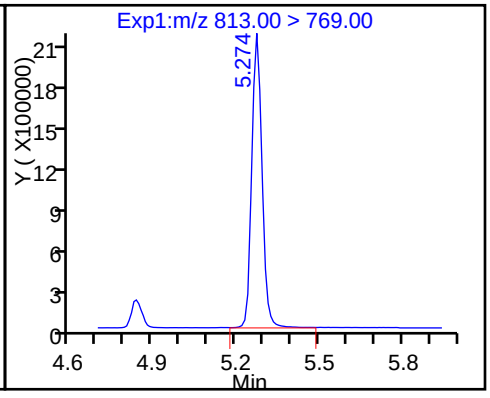
33 Perfluorotetradecanoic acid



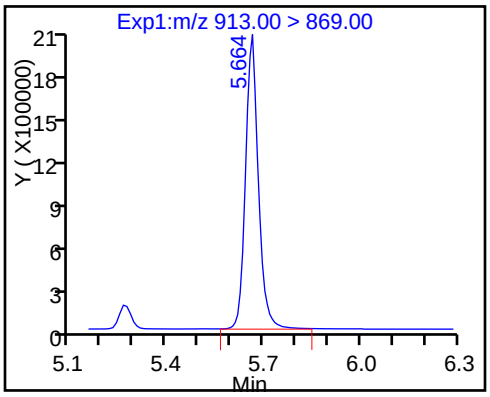
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

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

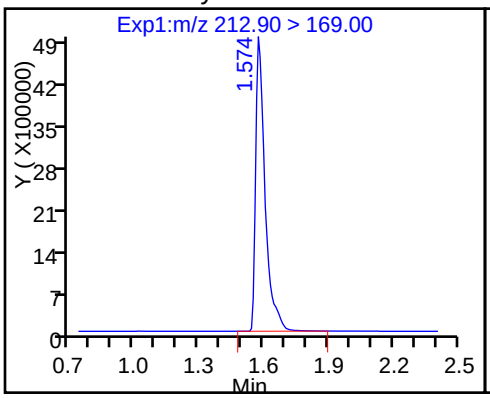
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2

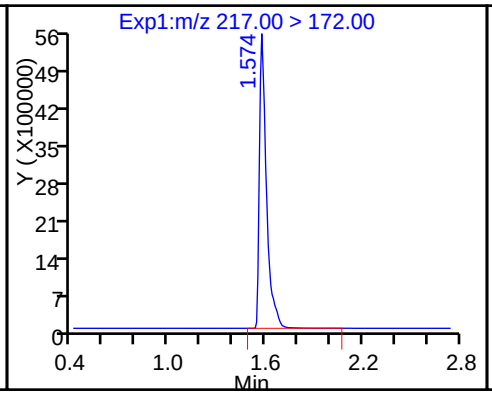
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

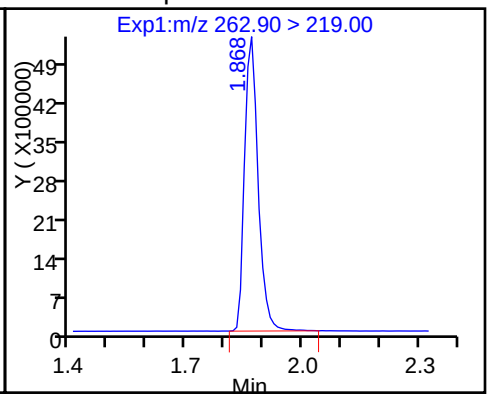
1 Perfluorobutyric acid



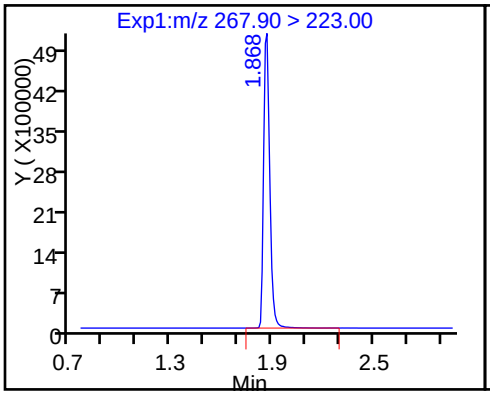
D 2 13C4 PFBA



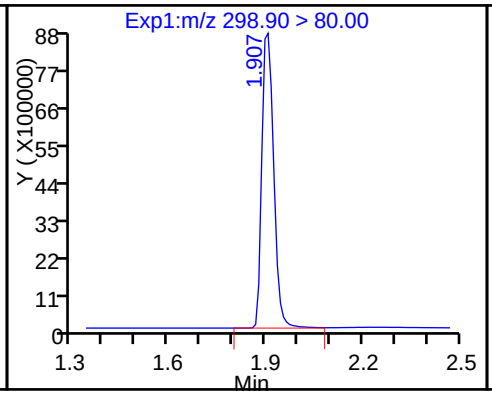
3 Perfluoropentanoic acid



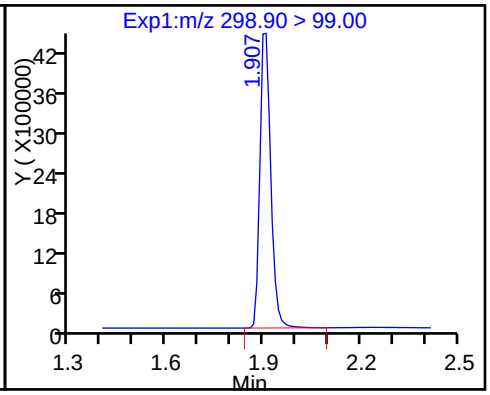
D 4 13C5-PFPeA



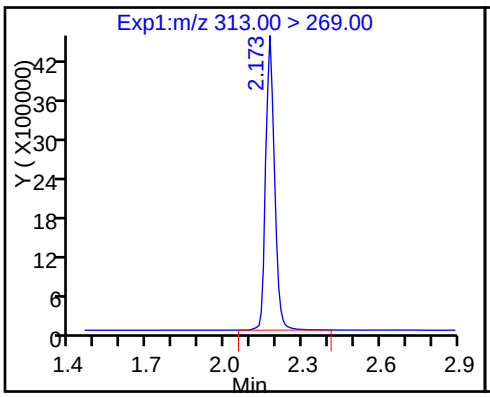
5 Perfluorobutanesulfonic acid



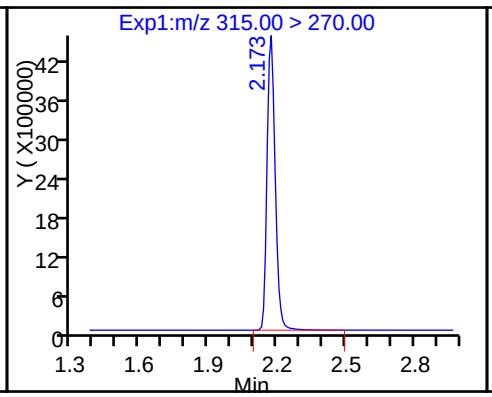
5 Perfluorobutanesulfonic acid



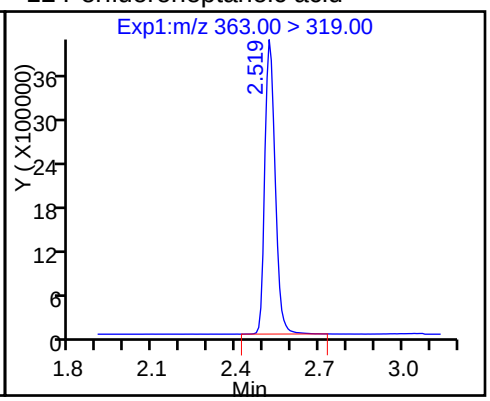
7 Perfluorohexanoic acid



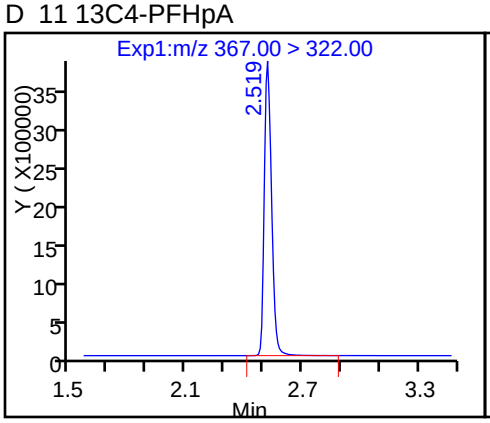
D 6 13C2 PFHxA



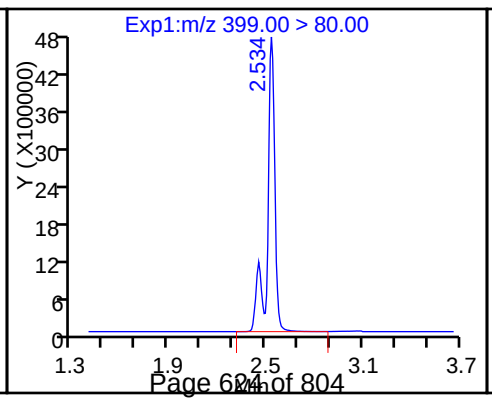
12 Perfluoroheptanoic acid



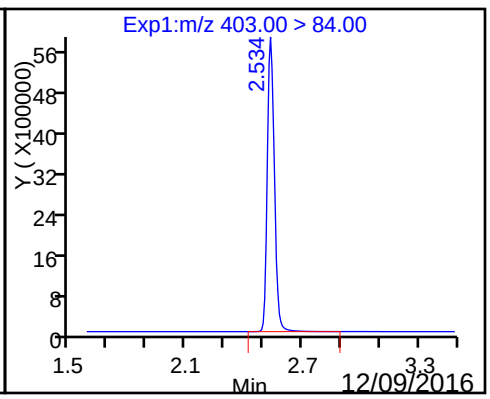
D 11 13C4-PFHpA



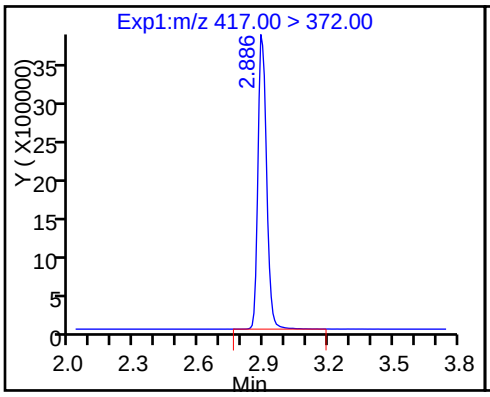
9 Perfluorohexanesulfonic acid



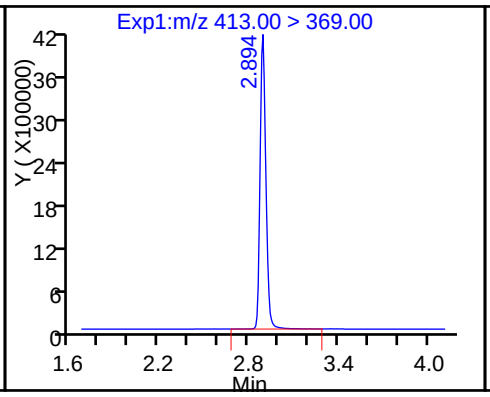
D 10 18O2 PFHxS



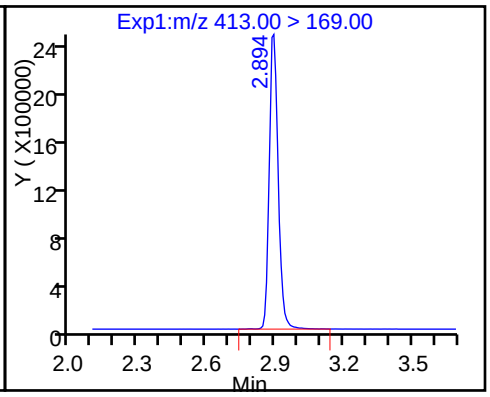
D 14 13C4 PFOA



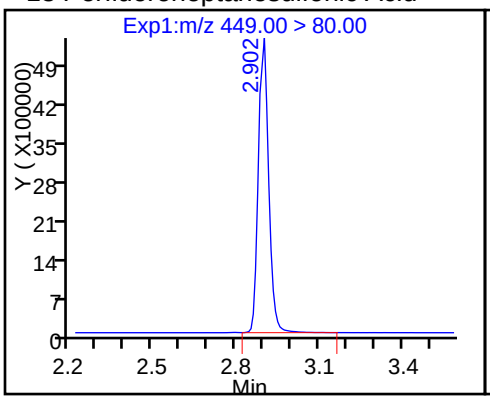
15 Perfluorooctanoic acid



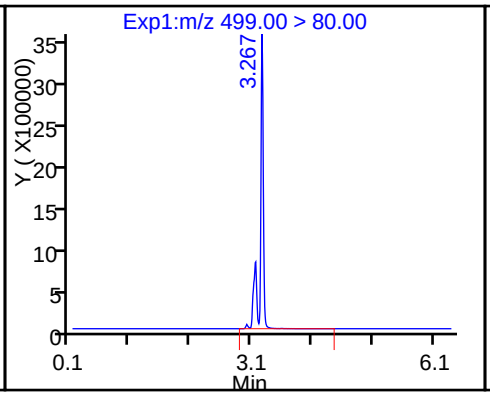
15 Perfluorooctanoic acid



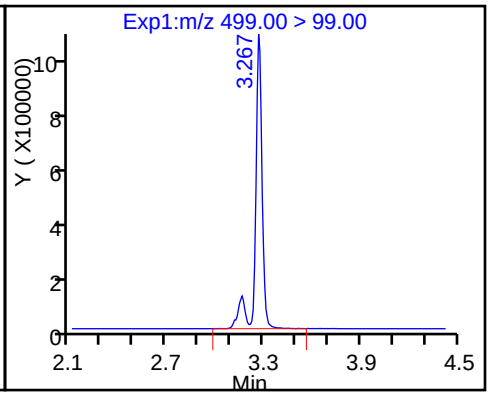
13 Perfluoroheptanesulfonic Acid



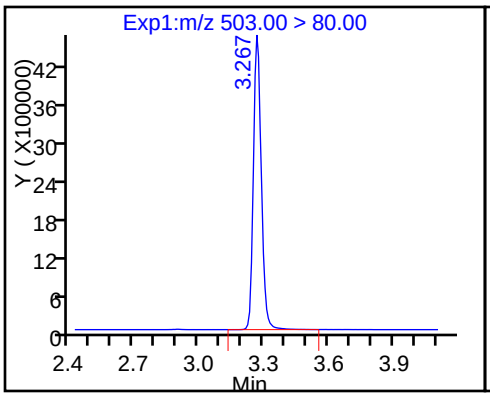
18 Perfluorooctane sulfonic acid



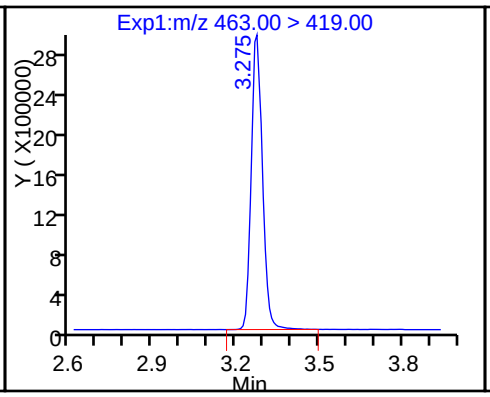
18 Perfluorooctane sulfonic acid



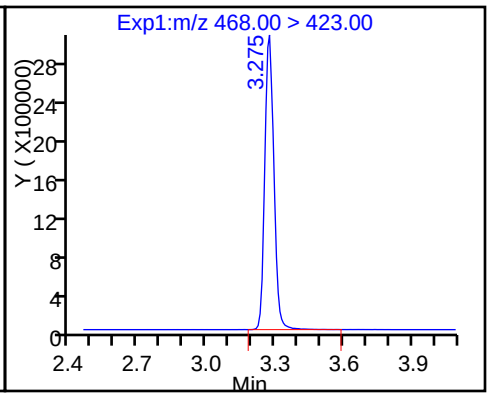
D 17 13C4 PFOS



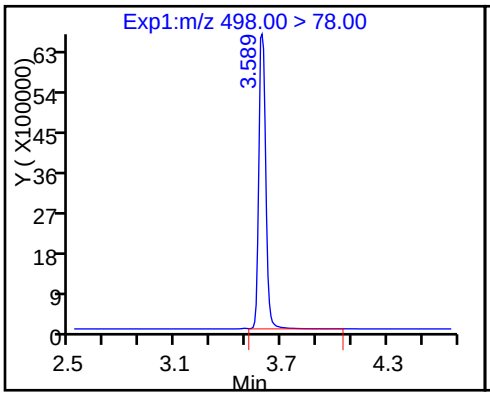
20 Perfluorononanoic acid



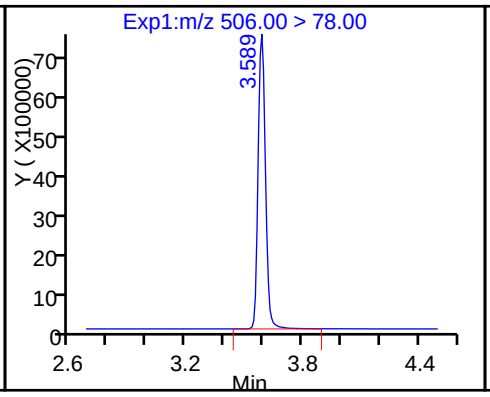
D 19 13C5 PFNA



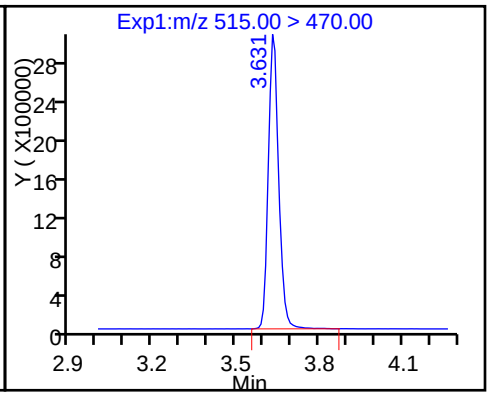
22 Perfluorooctane Sulfonamide



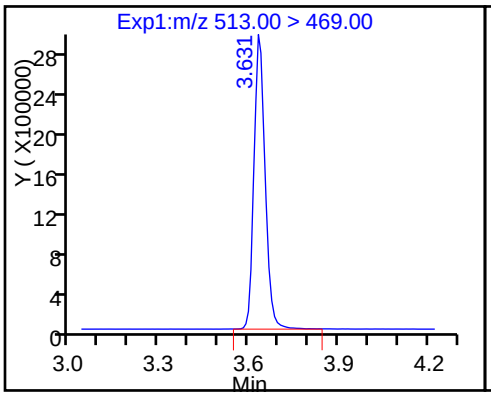
D 21 13C8 FOSA



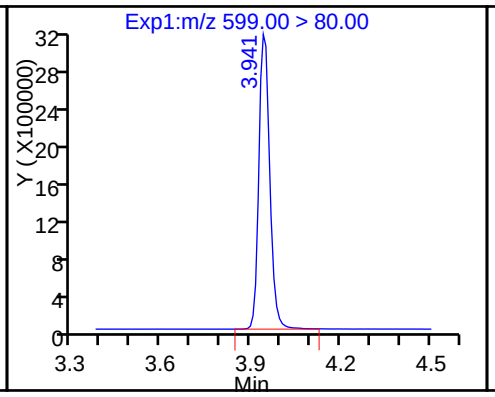
D 23 13C2 PFDA



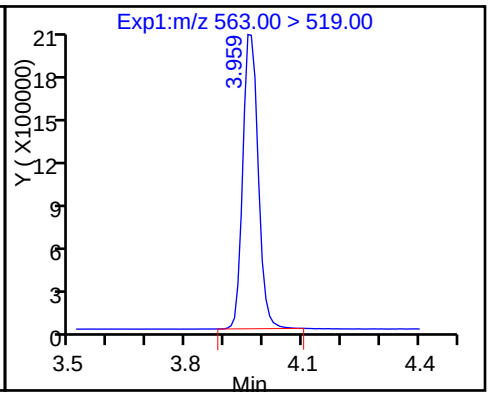
24 Perfluorodecanoic acid



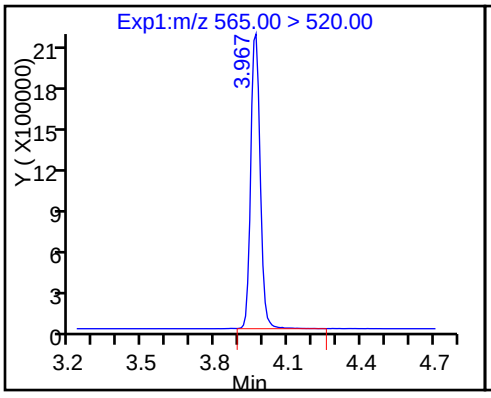
26 Perfluorodecane Sulfonic acid



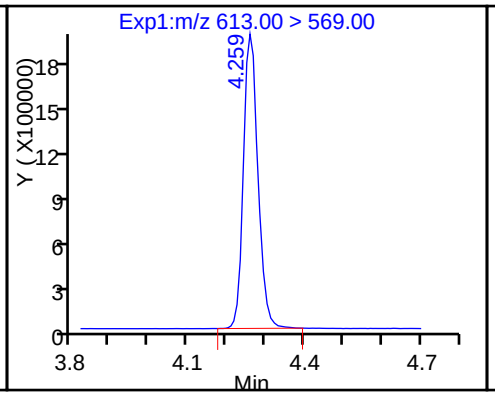
28 Perfluoroundecanoic acid



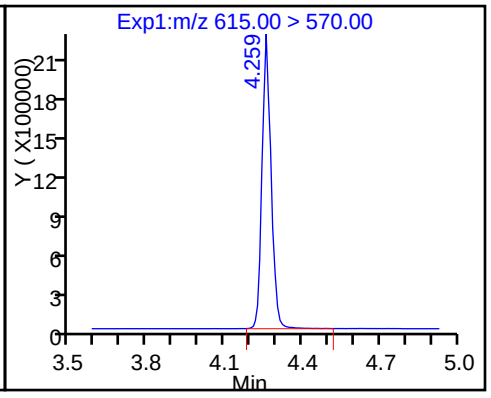
D 27 13C2 PFUnA



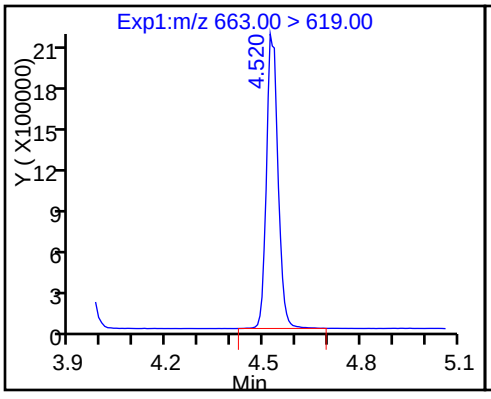
29 Perfluorododecanoic acid



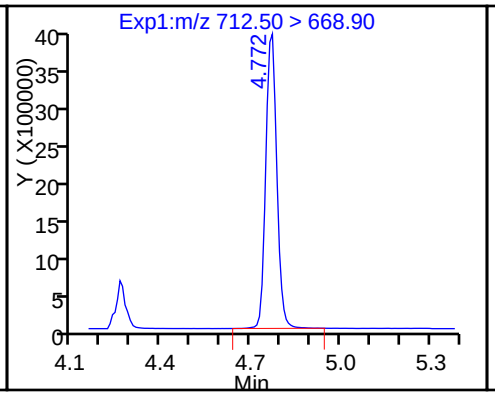
D 30 13C2 PFDoA



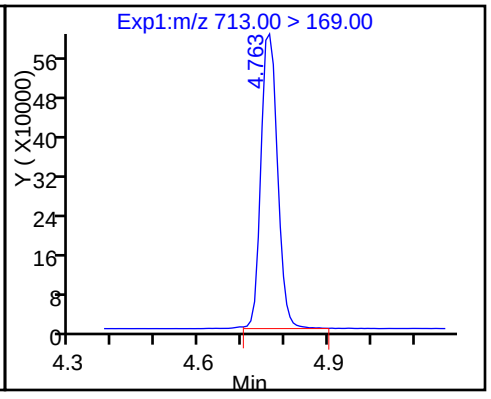
31 Perfluorotridecanoic acid



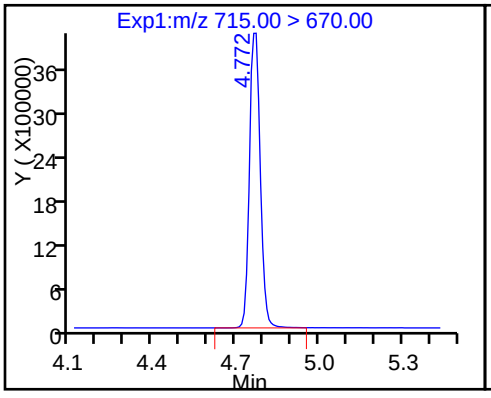
33 Perfluorotetradecanoic acid



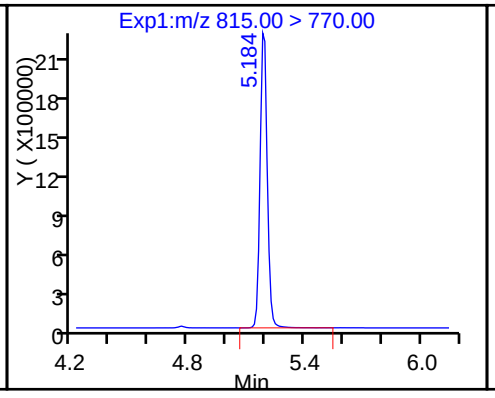
33 Perfluorotetradecanoic acid



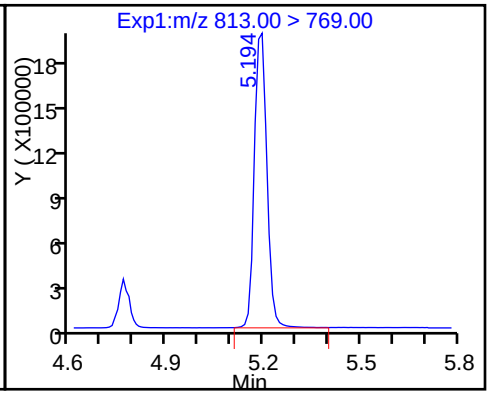
D 32 13C2-PFTeDA



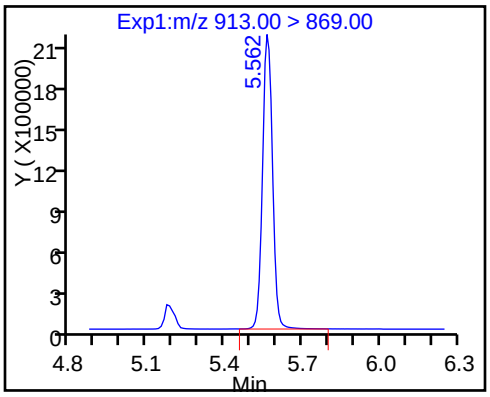
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

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

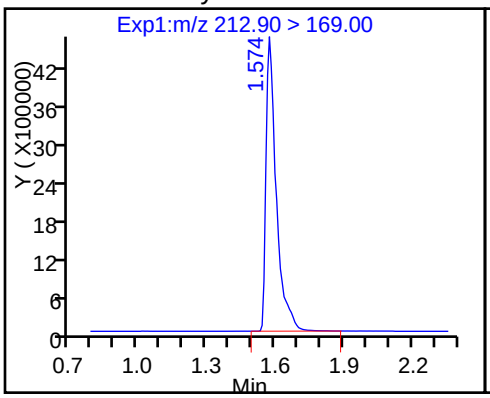
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 16

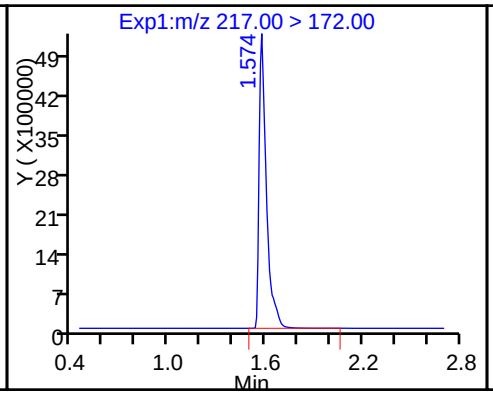
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

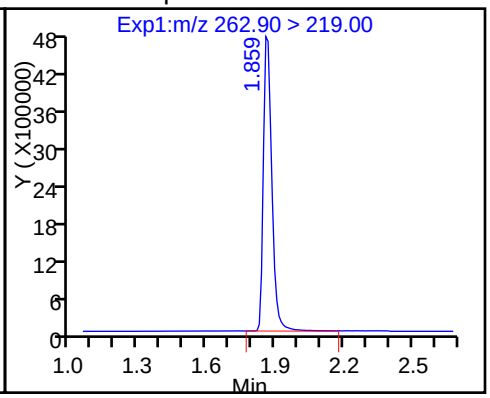
1 Perfluorobutyric acid



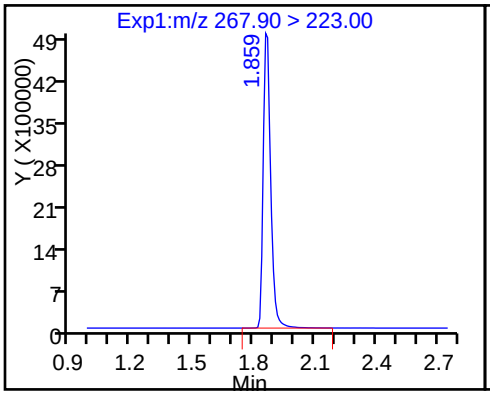
D 2 13C4 PFBA



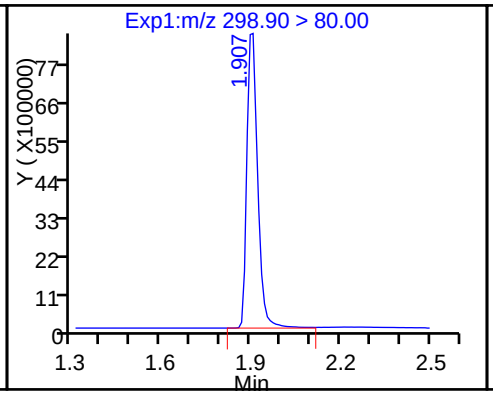
3 Perfluoropentanoic acid



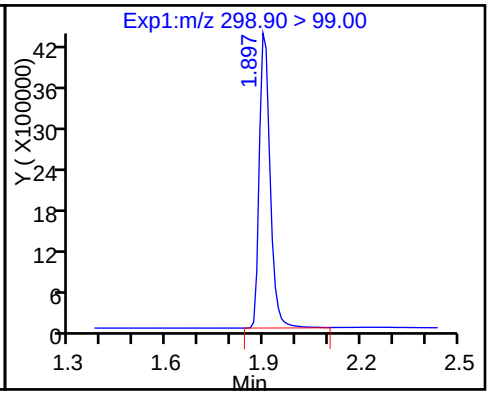
D 4 13C5-PFPeA



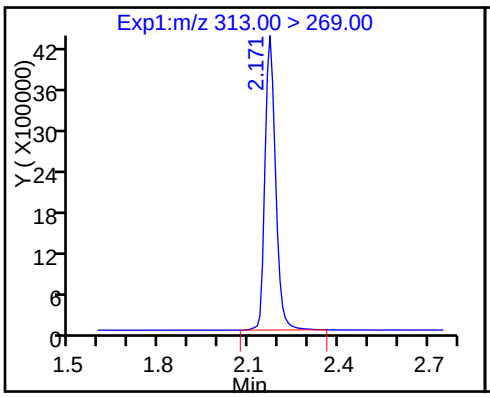
5 Perfluorobutanesulfonic acid



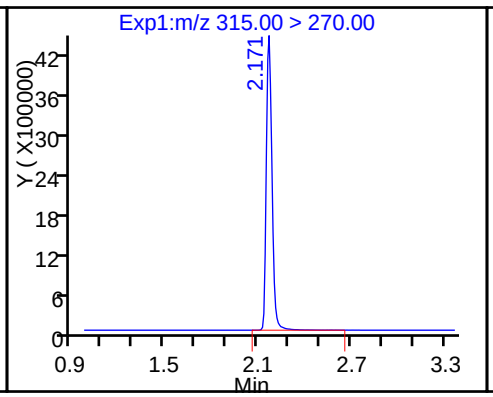
5 Perfluorobutanesulfonic acid



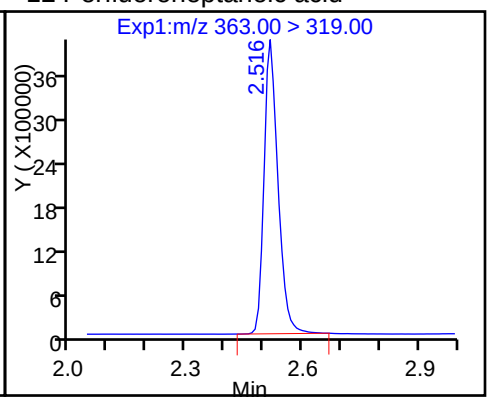
7 Perfluorohexanoic acid



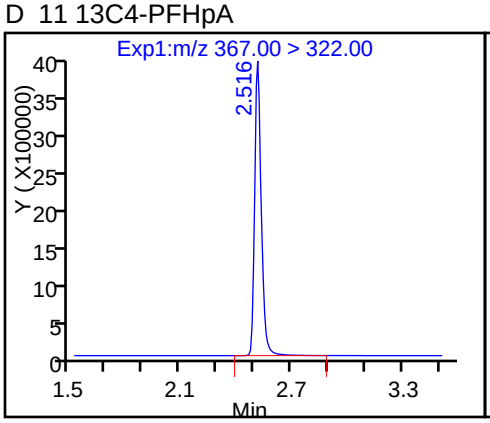
D 6 13C2 PFHxA



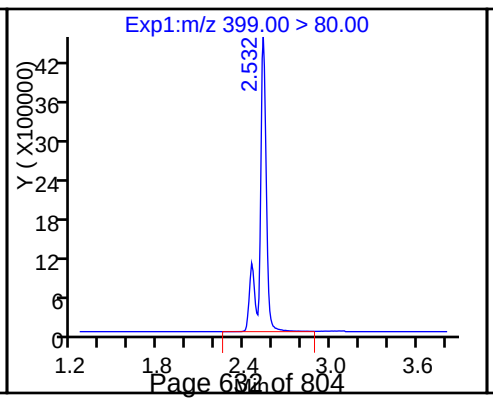
12 Perfluoroheptanoic acid



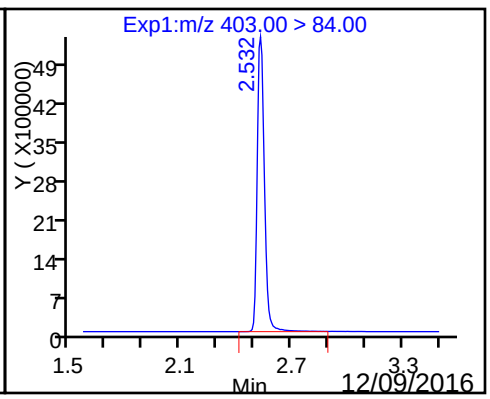
D 11 13C4-PFHpA



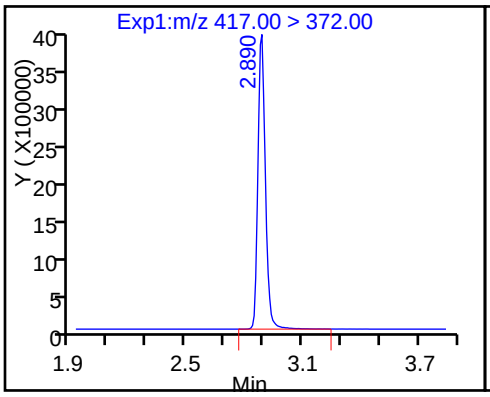
9 Perfluorohexanesulfonic acid



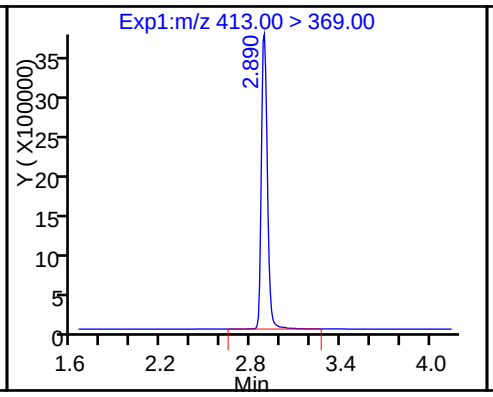
D 10 18O2 PFHxS



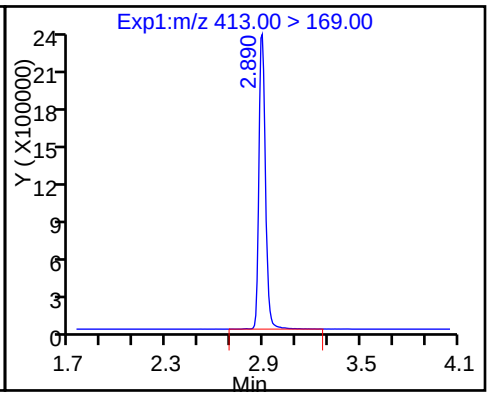
D 14 13C4 PFOA



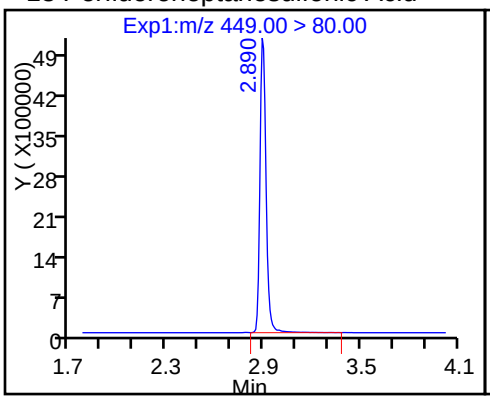
15 Perfluorooctanoic acid



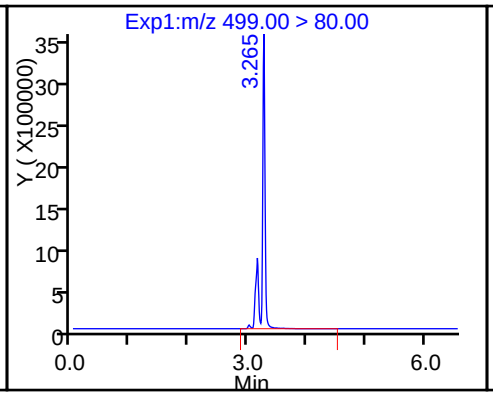
15 Perfluorooctanoic acid



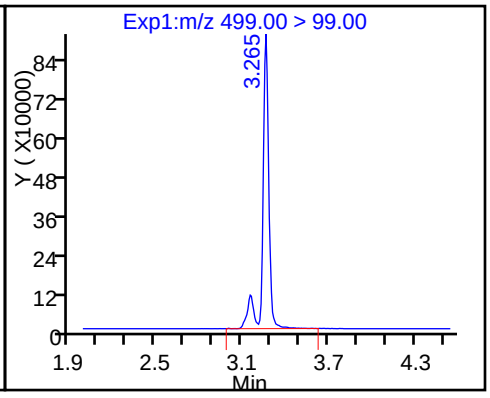
13 Perfluoroheptanesulfonic Acid



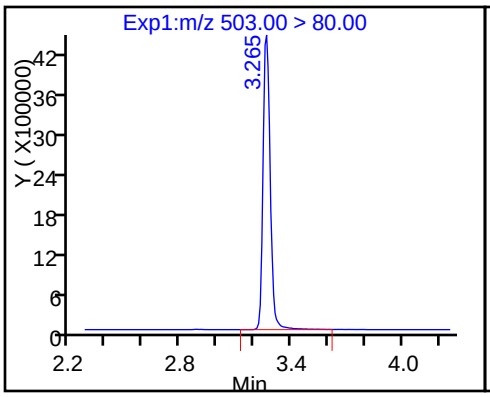
18 Perfluorooctane sulfonic acid



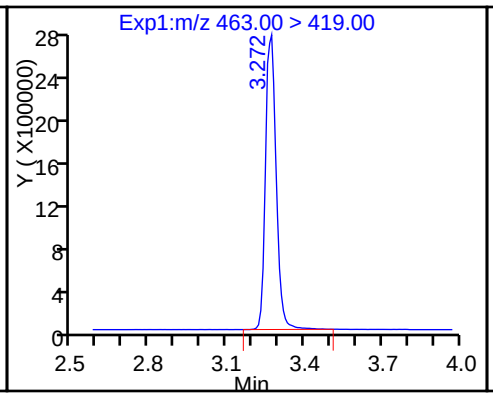
18 Perfluorooctane sulfonic acid



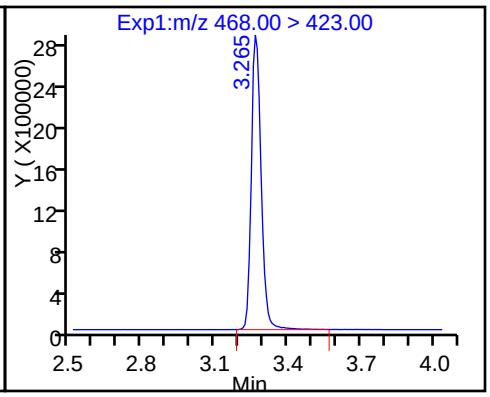
D 17 13C4 PFOS



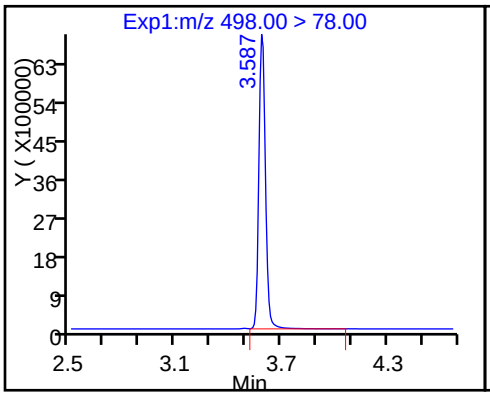
20 Perfluorononanoic acid



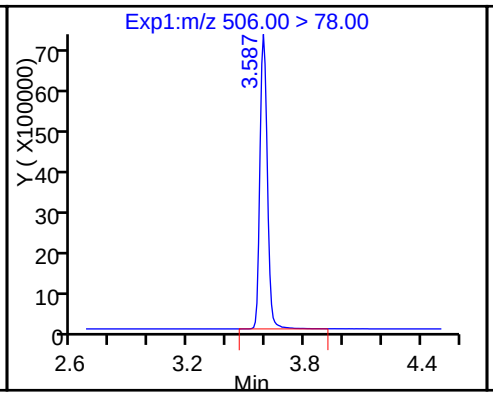
D 19 13C5 PFNA



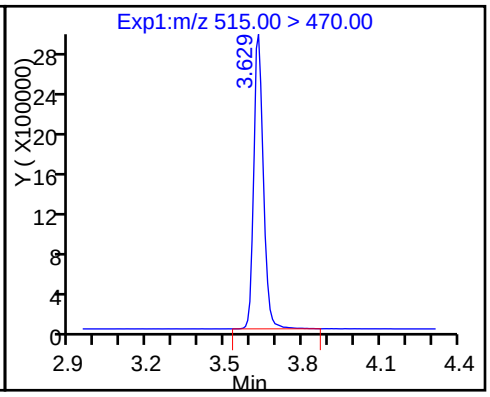
22 Perfluorooctane Sulfonamide



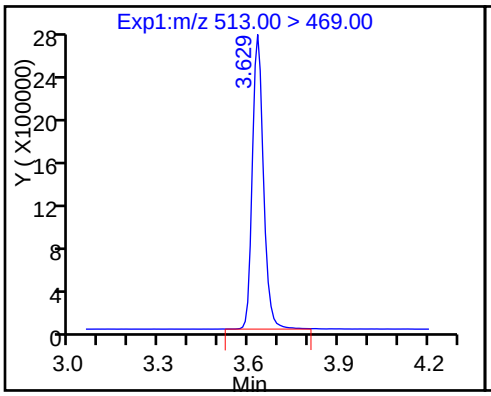
D 21 13C8 FOSA



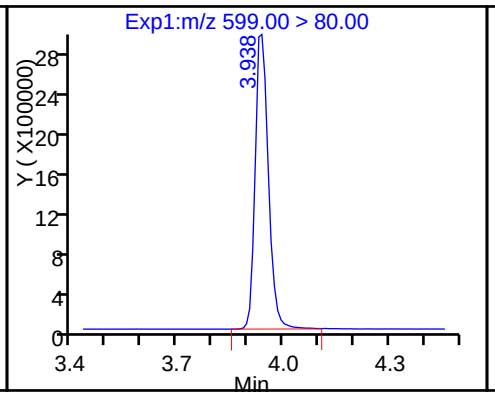
D 23 13C2 PFDA



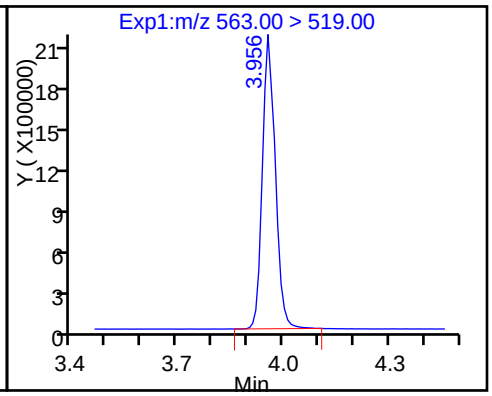
24 Perfluorodecanoic acid



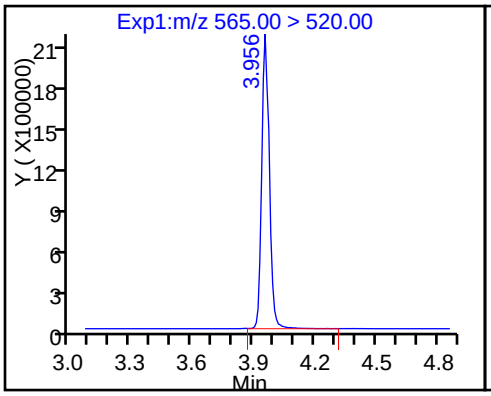
26 Perfluorodecane Sulfonic acid



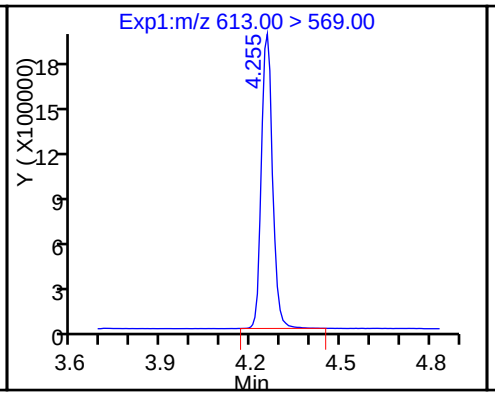
28 Perfluoroundecanoic acid



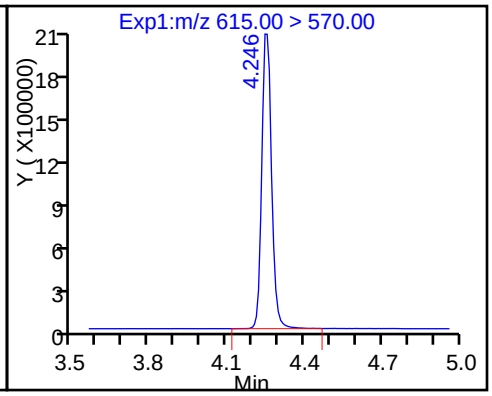
D 27 13C2 PFUnA



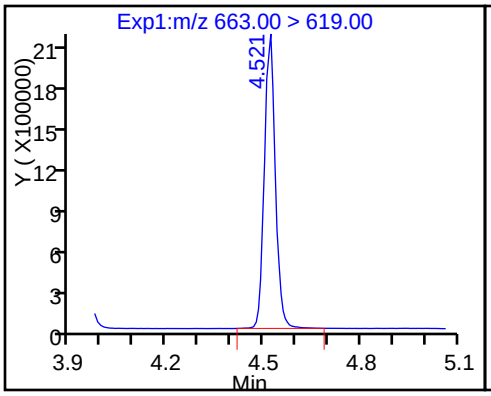
29 Perfluorododecanoic acid



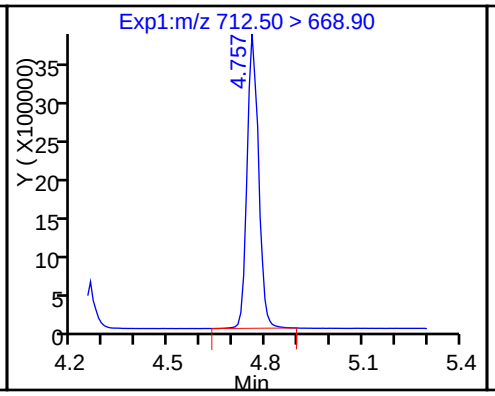
D 30 13C2 PFDoA



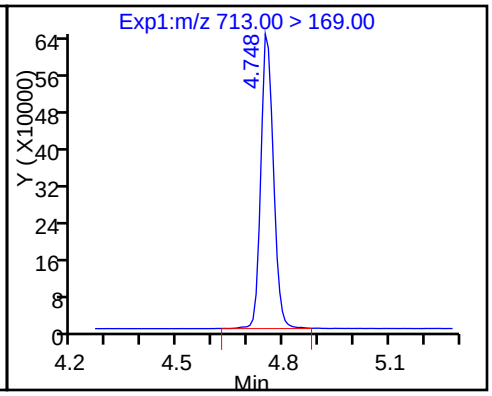
31 Perfluorotridecanoic acid



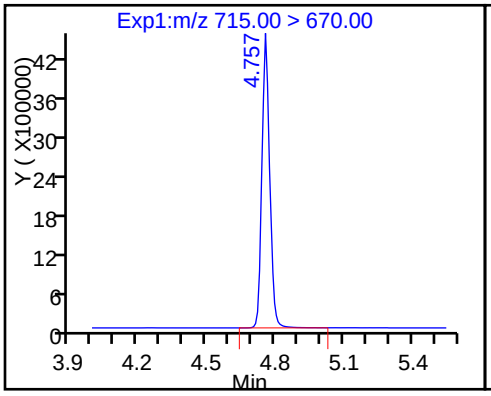
33 Perfluorotetradecanoic acid



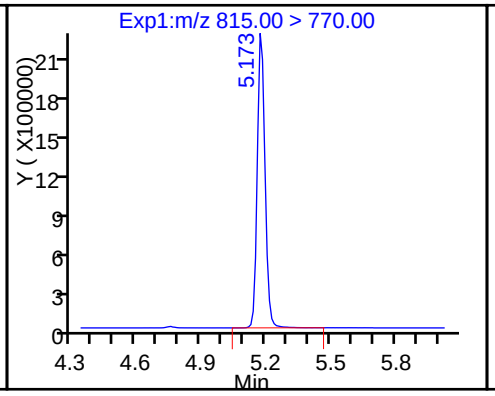
33 Perfluorotetradecanoic acid



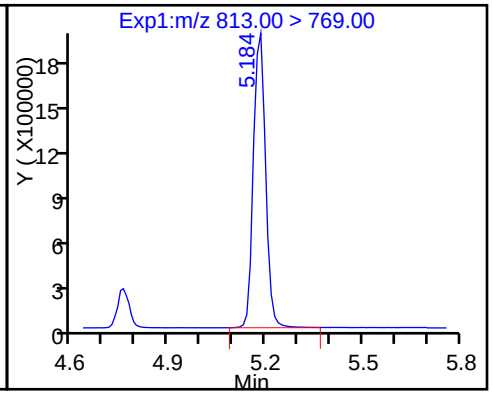
D 32 13C2-PFTeDA



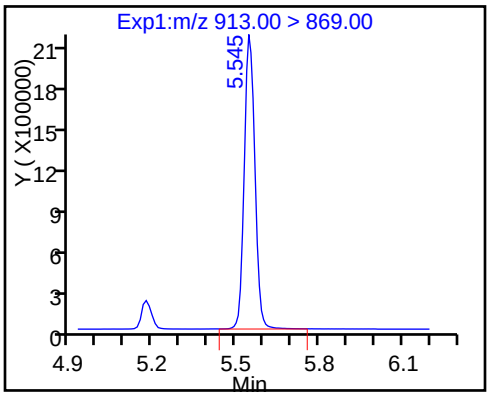
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Lab Sample ID: ICV 320-140564/11 Calibration Date: 12/03/2016 14:41

Instrument ID: A8_N Calib Start Date: 12/03/2016 13:48

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/03/2016 15:33

Lab File ID: 03DEC2016A_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	0.8740	0.8445		48.3	50.0	-3.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.015	0.9455		46.6	50.0	-6.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.596	1.545		42.8	44.3	-3.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9531	0.8739		45.8	50.0	-8.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.027	0.9517		46.3	50.0	-7.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.098	0.9678		41.7	47.3	-11.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.177	1.212		49.0	47.6	3.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	0.9942		46.4	50.0	-7.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.996	0.9336		46.9	50.0	-6.3	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.085	0.9006		39.6	47.8	-17.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9341	0.8796		47.1	50.0	-5.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9605	0.9194		47.9	50.0	-4.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6398	0.6253		47.2	48.3	-2.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.066	0.9541		44.8	50.0	-10.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9490	0.9026		47.6	50.0	-4.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9498	0.8737		46.0	50.0	-8.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.854	1.715		46.3	50.0	-7.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9305		46.1	50.0	-7.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9929	1.003		50.5	50.0	1.1	25.0
13C4 PFBA	Ave	335829	312410		46.5	50.0	-7.0	50.0
13C5-PFPeA	Ave	264545	243307		46.0	50.0	-8.0	50.0
13C2 PFHxA	Ave	237486	229267		48.3	50.0	-3.5	50.0
13C4-PFHpA	Ave	207413	195333		47.1	50.0	-5.8	50.0
18O2 PFHxS	Ave	312342	294291		44.6	47.3	-5.8	50.0
13C4 PFOA	Ave	219258	198224		45.2	50.0	-9.6	50.0
13C4 PFOS	Ave	246009	225320		43.8	47.8	-8.4	50.0
13C5 PFNA	Ave	166415	156724		47.1	50.0	-5.8	50.0
13C8 FOSA	Ave	402279	382595		47.6	50.0	-4.9	50.0
13C2 PFDA	Ave	157817	146344		46.4	50.0	-7.3	50.0
13C2 PFUnA	Ave	118762	109554		46.1	50.0	-7.8	50.0
13C2 PFDoA	Ave	112084	109278		48.7	50.0	-2.5	50.0
13C2-PFTeDA	Ave	231173	214390		46.4	50.0	-7.3	50.0
13C2-PFHxDA	Ave	129725	121978		47.0	50.0	-6.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_011.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-Dec-2016 14:41:13 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\20161205-37491.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 05-Dec-2016 10:26:23 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK020

First Level Reviewer: chandrasenas Date: 05-Dec-2016 09:47:22

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	1.566	1.574	-0.008		15620513	46.5		93.0	1612048	
1 Perfluorobutyric acid										
212.90 > 169.00	1.566	1.577	-0.011	1.000	13190679	48.3			70053	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.848	1.861	-0.013	1.000	11502032	46.6			76938	
D 4 13C5-PFPeA										
267.90 > 223.00	1.848	1.861	-0.013		12165345	46.0		92.0	911947	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.887	1.900	-0.013	1.000	20121282	42.8				
298.90 > 99.00	1.887	1.900	-0.013	1.000	9272505		2.17(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.158	2.164	-0.006	1.000	10017573	45.8			244705	
D 6 13C2 PFHxA										
315.00 > 270.00	2.158	2.164	-0.006		11463370	48.3		96.5	672140	
D 11 13C4-PFHpA										
367.00 > 322.00	2.499	2.511	-0.012		9766668	47.1		94.2	852072	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.499	2.512	-0.013	1.000	9294490	46.3			100010	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.514	2.531	-0.017	1.000	13456842	41.7				
D 10 18O2 PFHxS										
403.00 > 84.00	2.514	2.531	-0.017		13919947	44.6		94.2	810316	
D 14 13C4 PFOA										
417.00 > 372.00	2.870	2.880	-0.010		9911203	45.2		90.4	548349	

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	2.870	2.887	-0.017	1.000	9853753	46.4			123535	
413.00 > 169.00	2.862	2.887	-0.025	0.997	6029090		1.63(0.90-1.10)		244064	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.870	2.888	-0.018	1.000	13003397	49.0				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.244	3.258	-0.014	1.000	9689735	39.6			1641854	
499.00 > 99.00	3.235	3.258	-0.023	0.997	2361166		4.10(0.90-1.10)		256440	
D 17 13C4 PFOS										
503.00 > 80.00	3.235	3.259	-0.024		10770309	43.8		91.6	336185	
D 19 13C5 PFNA										
468.00 > 423.00	3.244	3.263	-0.019		7836220	47.1		94.2	638662	
20 Perfluorononanoic acid										
463.00 > 419.00	3.244	3.263	-0.019	1.000	7315987	46.9			101636	
D 21 13C8 FOSA										
506.00 > 78.00	3.557	3.571	-0.014		19129770	47.6		95.1	889404	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.565	3.574	-0.009	1.000	16827146	47.1			307442	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.607	3.623	-0.016	1.000	6727679	47.9			161083	
D 23 13C2 PFDA										
515.00 > 470.00	3.607	3.626	-0.019		7317194	46.4		92.7	293278	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.912	3.936	-0.024	1.000	6797886	47.2				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.938	3.955	-0.017	1.000	5226274	44.8			120213	
D 27 13C2 PFUnA										
565.00 > 520.00	3.938	3.958	-0.020		5477711	46.1		92.2	312875	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.224	4.250	-0.026	1.000	4931801	47.6			90828	
D 30 13C2 PFDoA										
615.00 > 570.00	4.232	4.251	-0.019		5463889	48.7		97.5	309492	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.503	4.518	-0.015	1.000	4773745	46.0			36970	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.732	4.759	-0.027		10719523	46.4		92.7	360593	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.740	4.761	-0.021	1.000	9370597	46.3			4744	
713.00 > 169.00	4.732	4.761	-0.029	0.998	1459995		6.42(0.00-0.00)		102221	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.158	5.186	-0.028		6098899	47.0		94.0	113553	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.158	5.186	-0.028	1.000	5084325	46.1			4219	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.523	5.559	-0.036	1.000	5482963	50.5			9364	

Reagents:

LCPFCIC_00020 Amount Added: 1.00 Units: mL

Report Date: 05-Dec-2016 10:26:23 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_011.d

Injection Date: 03-Dec-2016 14:41:13 Instrument ID: A8_N

Lims ID: ICV

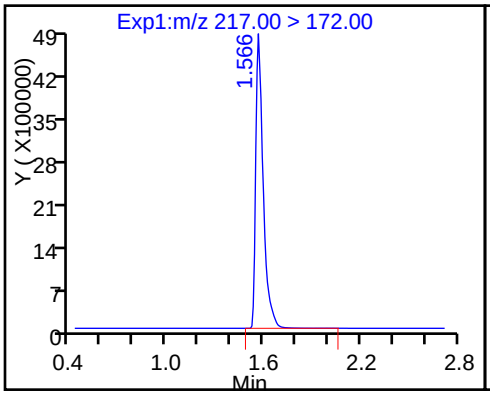
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 11

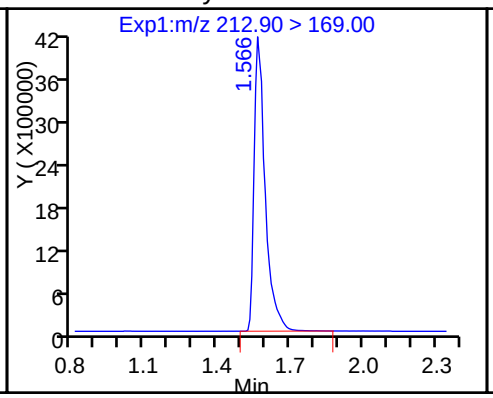
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

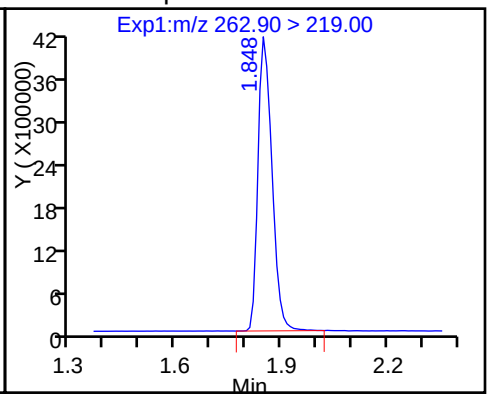
D 2 13C4 PFBA



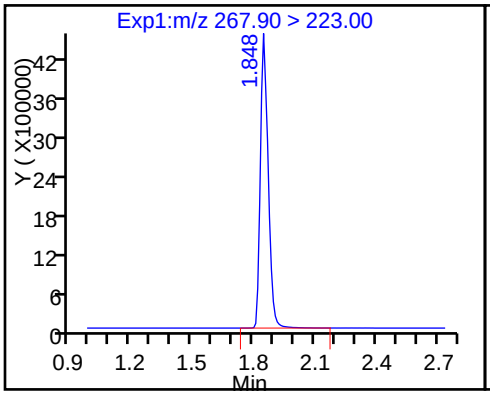
1 Perfluorobutyric acid



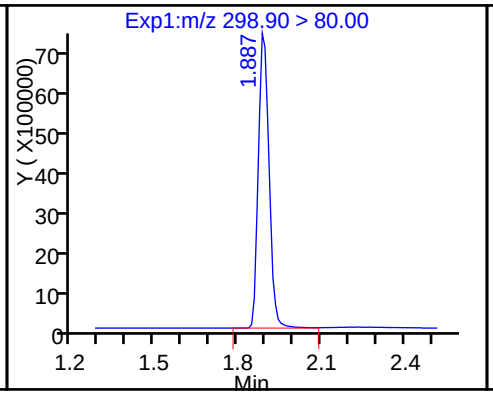
3 Perfluoropentanoic acid



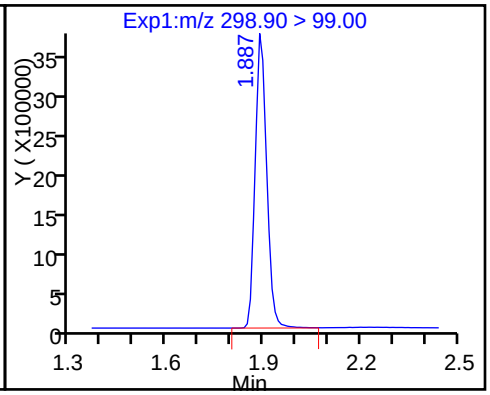
D 4 13C5-PFPeA



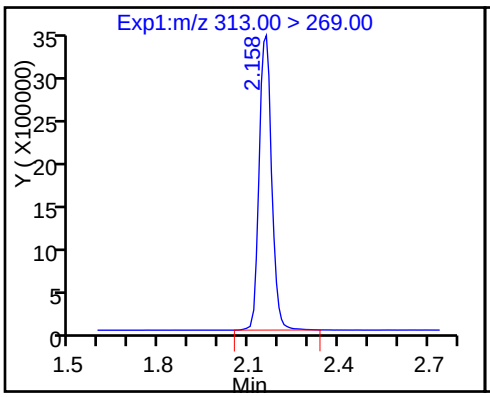
5 Perfluorobutanesulfonic acid



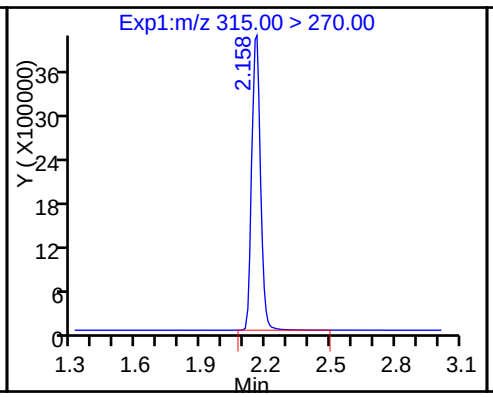
5 Perfluorobutanesulfonic acid



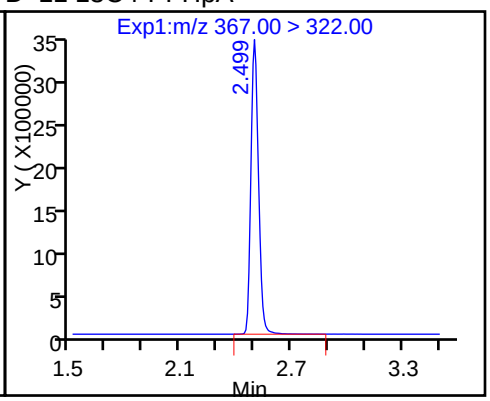
7 Perfluorohexanoic acid



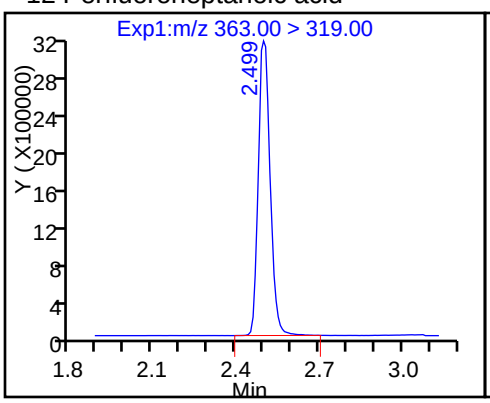
D 6 13C2 PFHxA



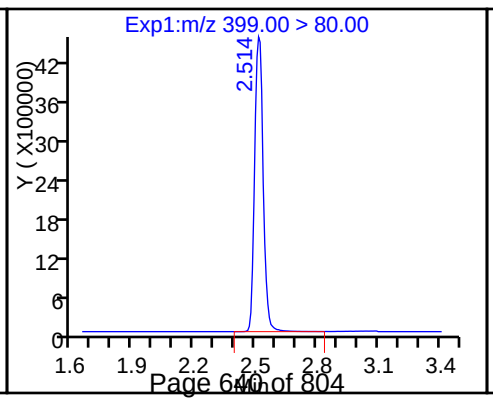
D 11 13C4-PFHpA



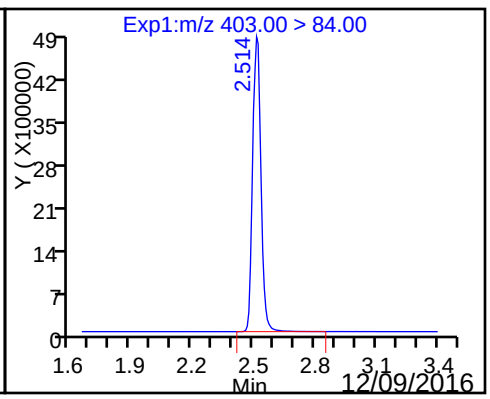
12 Perfluoroheptanoic acid



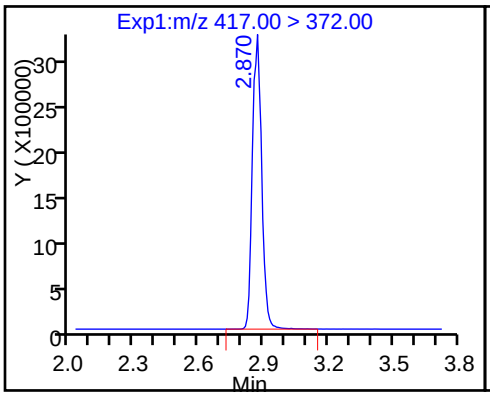
9 Perfluorohexanesulfonic acid



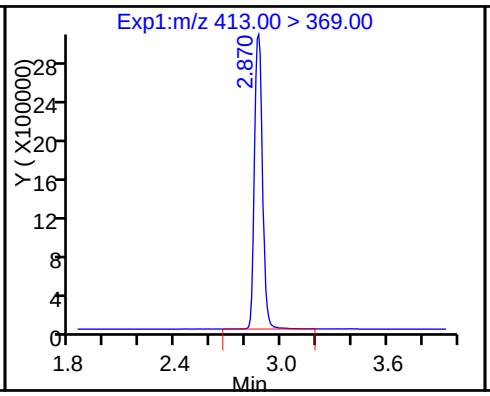
D 10 18O2 PFHxS



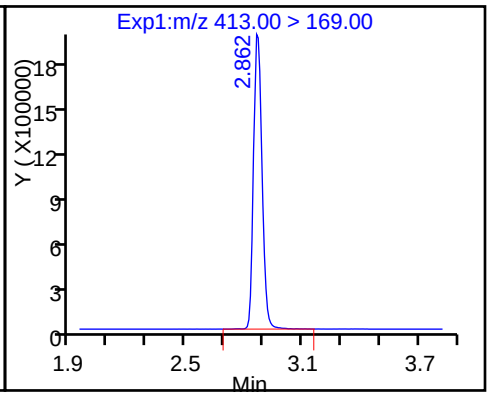
D 14 13C4 PFOA



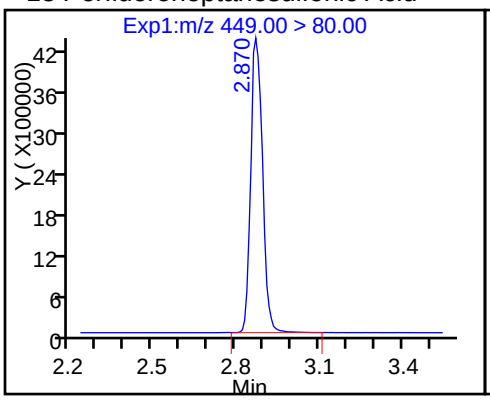
15 Perfluorooctanoic acid



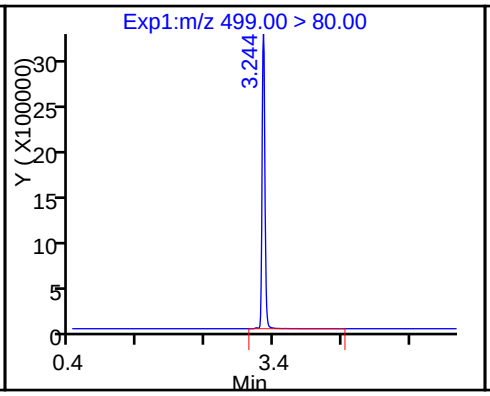
15 Perfluorooctanoic acid



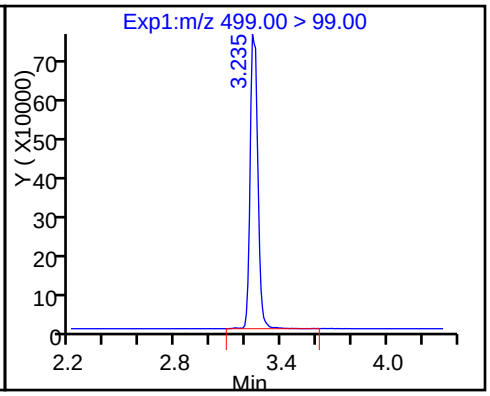
13 Perfluoroheptanesulfonic Acid



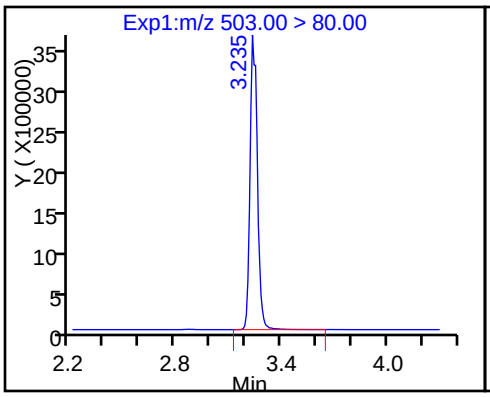
18 Perfluorooctane sulfonic acid



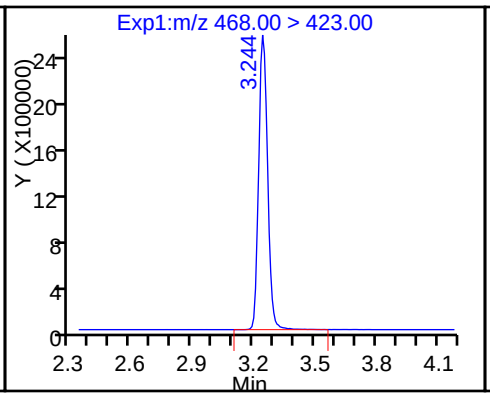
18 Perfluorooctane sulfonic acid



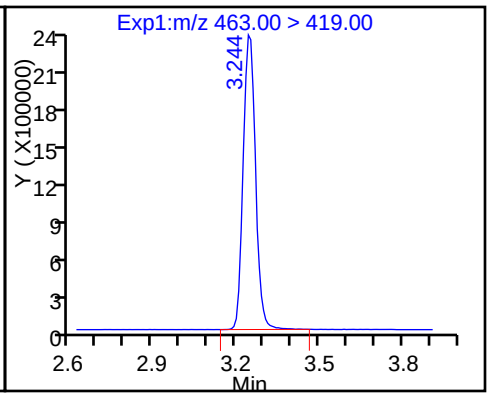
D 17 13C4 PFOS



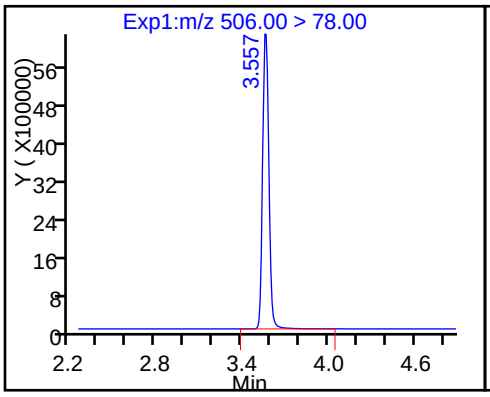
D 19 13C5 PFNA



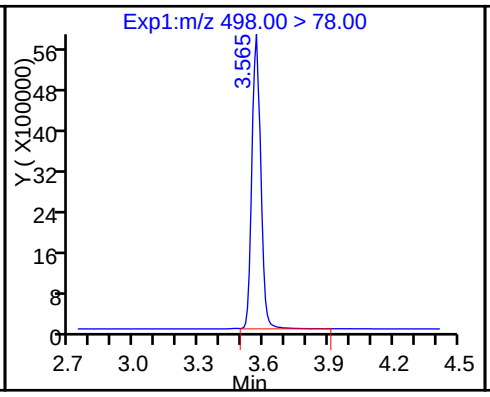
20 Perfluorononanoic acid



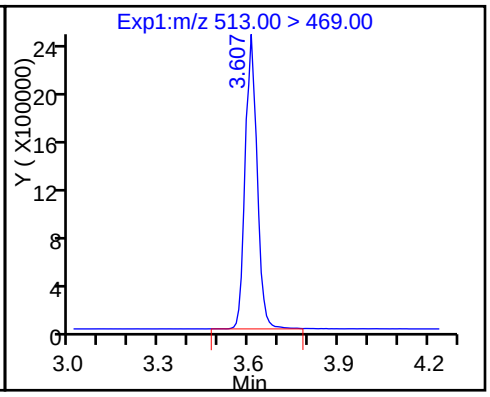
D 21 13C8 FOSA



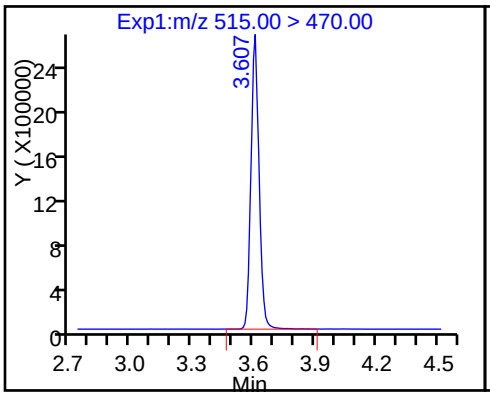
22 Perfluorooctane Sulfonamide



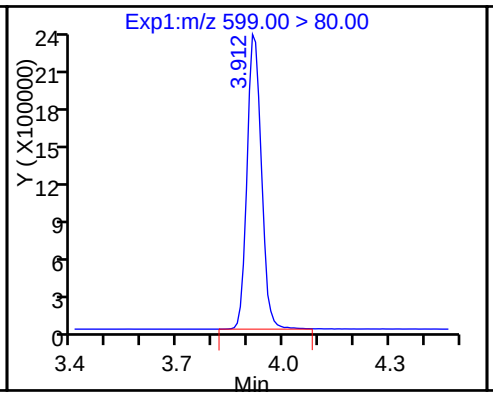
24 Perfluorodecanoic acid



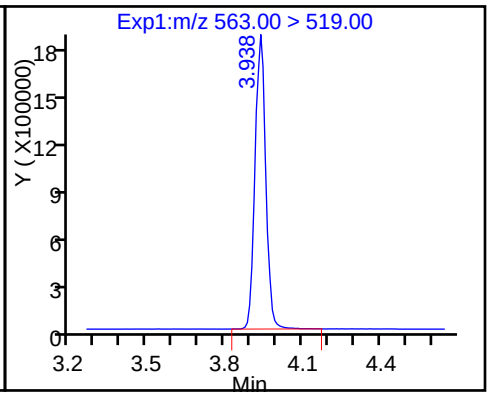
D 23 13C2 PFDA



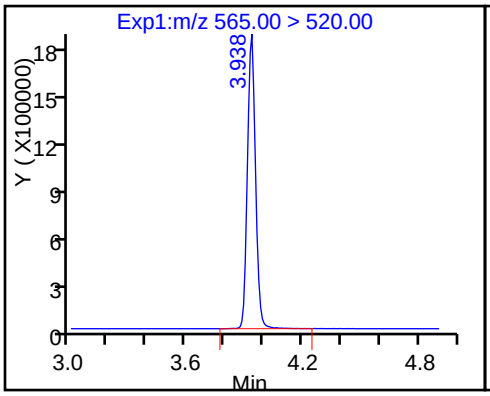
26 Perfluorodecane Sulfonic acid



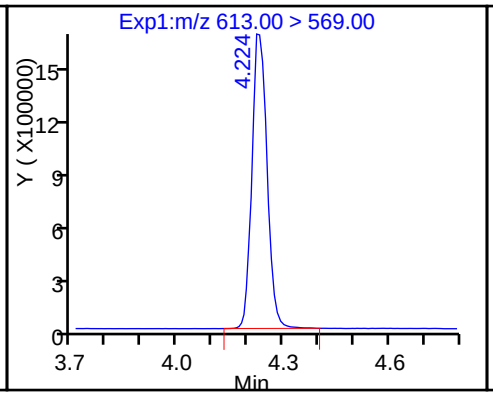
28 Perfluoroundecanoic acid



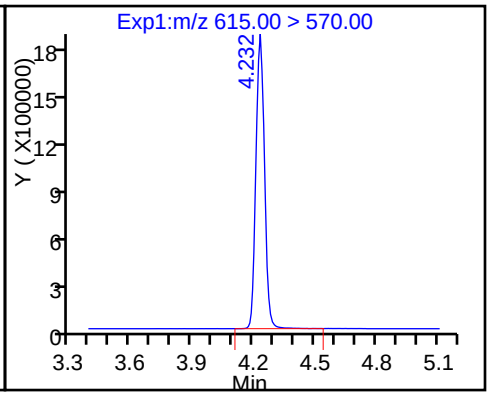
D 27 13C2 PFUnA



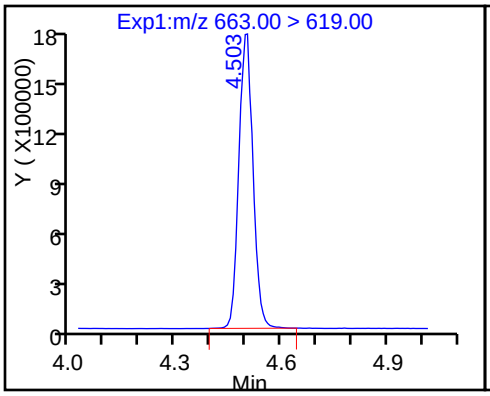
29 Perfluorododecanoic acid



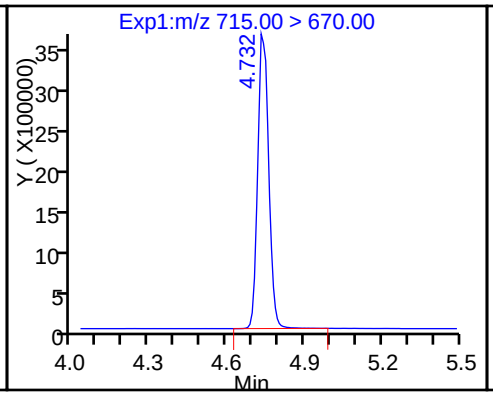
D 30 13C2 PFDoA



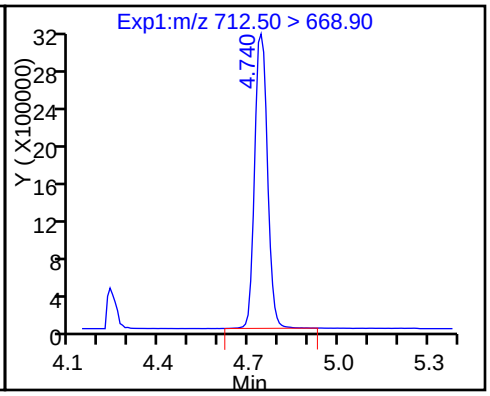
31 Perfluorotridecanoic acid



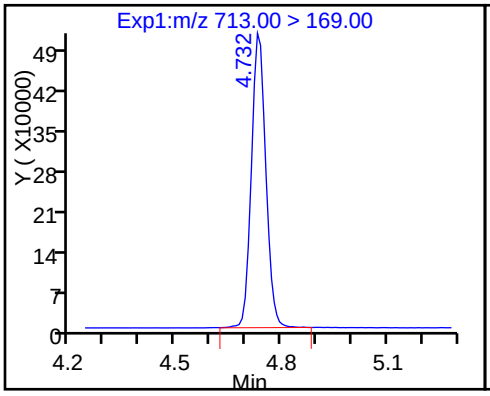
D 32 13C2-PFTeDA



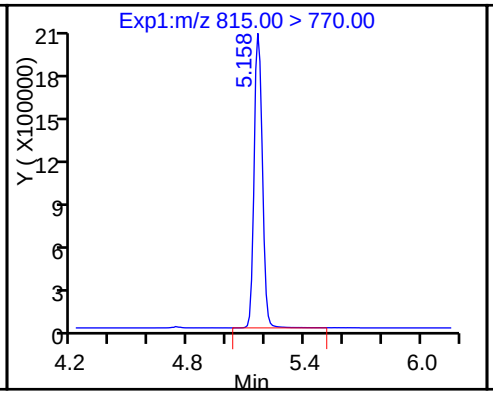
33 Perfluorotetradecanoic acid



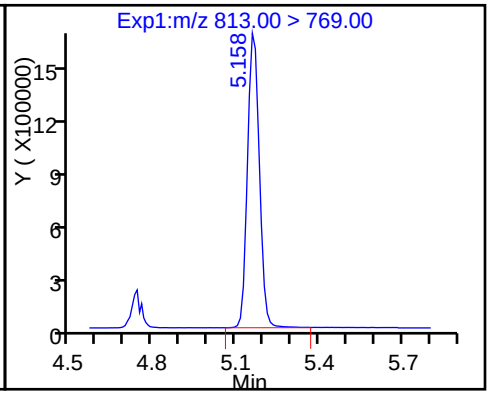
33 Perfluorotetradecanoic acid



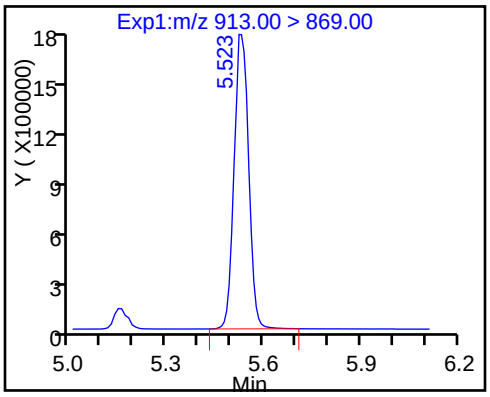
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Lab Sample ID: CCV 320-140675/2 Calibration Date: 12/03/2016 18:48

Instrument ID: A8_N Calib Start Date: 12/03/2016 13:48

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/03/2016 15:33

Lab File ID: 03DEC2016C_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	0.8740	0.8870		50.7	50.0	1.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.015	0.9860		48.6	50.0	-2.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.596	1.630		45.1	44.2	2.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9531	0.9496		49.8	50.0	-0.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.027	1.022		49.8	50.0	-0.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.098	1.042		43.2	45.5	-5.1	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	1.038		48.4	50.0	-3.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.177	1.170		47.3	47.6	-0.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.996	1.019		51.1	50.0	2.2	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.085	1.083		46.3	46.4	-0.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9341	0.9263		49.6	50.0	-0.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9605	0.9574		49.8	50.0	-0.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6398	0.6461		48.7	48.2	1.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.066	1.002		47.0	50.0	-6.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9490	0.9155		48.2	50.0	-3.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9498	0.9108		47.9	50.0	-4.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.854	1.663		44.9	50.0	-10.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9334		46.2	50.0	-7.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9929	0.9371		47.2	50.0	-5.6	25.0
13C4 PFBA	Ave	335829	317895		47.3	50.0	-5.3	50.0
13C5-PFPeA	Ave	264545	246822		46.7	50.0	-6.7	50.0
13C2 PFHxA	Ave	237486	222152		46.8	50.0	-6.5	50.0
13C4-PFHpA	Ave	207413	192428		46.4	50.0	-7.2	50.0
18O2 PFHxS	Ave	312342	301492		45.7	47.3	-3.5	50.0
13C4 PFOA	Ave	219258	204589		46.7	50.0	-6.7	50.0
13C4 PFOS	Ave	246009	237189		46.1	47.8	-3.6	50.0
13C5 PFNA	Ave	166415	152839		45.9	50.0	-8.2	50.0
13C8 FOSA	Ave	402279	381872		47.5	50.0	-5.1	50.0
13C2 PFDA	Ave	157817	142696		45.2	50.0	-9.6	50.0
13C2 PFUnA	Ave	118762	106534		44.9	50.0	-10.3	50.0
13C2 PFDoA	Ave	112084	108237		48.3	50.0	-3.4	50.0
13C2-PFTeDA	Ave	231173	210290		45.5	50.0	-9.0	50.0
13C2-PFHxDA	Ave	129725	114152		44.0	50.0	-12.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_002.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 03-Dec-2016 18:48:43 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\20161205-37521.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 06-Dec-2016 15:46:29 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: chandrasenas Date: 06-Dec-2016 15:46:28

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	1.549	1.549	0.0		15894745	47.3		94.7	958748	
1 Perfluorobutyric acid										
212.90 > 169.00	1.558	1.558	0.0	1.000	14098512	50.7		101	84606	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.829	0.0	1.000	12168319	48.6		97.2	103529	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		12341093	46.7		93.3	1123757	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.877	1.877	0.0	1.000	21720920	45.1		102		
298.90 > 99.00	1.877	1.877	0.0	1.000	10181627		2.13(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.129	2.129	0.0		11107576	46.8		93.5	748884	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.138	2.138	0.0	1.000	10547762	49.8		99.6	235486	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.466	2.466	0.0	1.000	9833631	49.8		99.5	94455	
D 11 13C4-PFHpA										
367.00 > 322.00	2.473	2.473	0.0		9621389	46.4		92.8	563290	
D 10 18O2 PFHxS										
403.00 > 84.00	2.481	2.481	0.0		14260550	45.7		96.5	532618	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.496	2.496	0.0	1.000	14288466	43.2		94.9		M
15 Perfluorooctanoic acid										
413.00 > 369.00	2.836	2.836	0.0	1.000	10614419	48.4		96.8	137120	
413.00 > 169.00	2.836	2.836	0.0	1.000	6412073		1.66(0.90-1.10)		409924	
D 14 13C4 PFOA										
417.00 > 372.00	2.836	2.836	0.0		10229453	46.7		93.3	414272	

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	2.845	2.845	0.0	1.000	13208901	47.3		99.4		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.215	3.215	0.0	1.000	11914246	46.3		99.8	3171452	
499.00 > 99.00	3.215	3.215	0.0	1.000	2545283		4.68(0.90-1.10)		267307	
20 Perfluorononanoic acid										
463.00 > 419.00	3.215	3.215	0.0	1.000	7784054	51.1		102	139363	
D 17 13C4 PFOS										
503.00 > 80.00	3.215	3.215	0.0		11337625	46.1		96.4	327062	
D 19 13C5 PFNA										
468.00 > 423.00	3.215	3.215	0.0		7641928	45.9		91.8	419625	
D 21 13C8 FOSA										
506.00 > 78.00	3.537	3.537	0.0		19093582	47.5		94.9	544701	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.546	3.546	0.0	1.000	17685723	49.6		99.2	383341	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.571	3.571	0.0	1.000	6830682	49.8		99.7	214871	
D 23 13C2 PFDA										
515.00 > 470.00	3.580	3.580	0.0		7134818	45.2		90.4	398107	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.879	3.879	0.0	1.000	7386951	48.7		101		
D 27 13C2 PFUnA										
565.00 > 520.00	3.897	3.897	0.0		5326723	44.9		89.7	201306	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.897	3.897	0.0	1.000	5337461	47.0		94.0	121632	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.193	4.193	0.0	1.000	4954410	48.2		96.5	81350	
D 30 13C2 PFDoA										
615.00 > 570.00	4.193	4.193	0.0		5411867	48.3		96.6	152672	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.460	4.460	0.0	1.000	4929029	47.9		95.9	77514	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.703	4.703	0.0	1.000	8998609	44.9		89.7	10356	
713.00 > 169.00	4.694	4.703	-0.008	0.998	1477525		6.09(0.00-0.00)		262211	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.703	4.703	0.0		10514518	45.5		91.0	606589	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.122	5.122	0.0	1.000	5051202	46.2		92.5	4673	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.122	5.122	0.0		5707582	44.0		88.0	126024	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.476	5.476	0.0	1.000	5071280	47.2		94.4	7993	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 06-Dec-2016 15:46:30 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_002.d

Injection Date: 03-Dec-2016 18:48:43 Instrument ID: A8_N

Lims ID: CCV L5

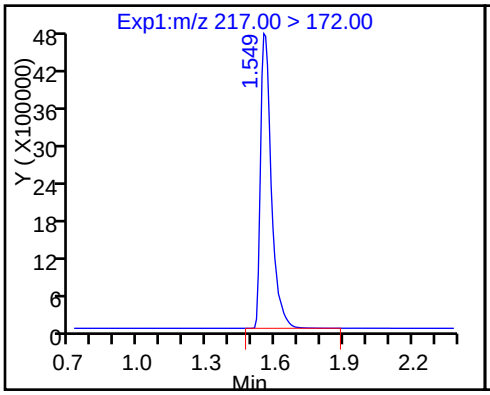
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2

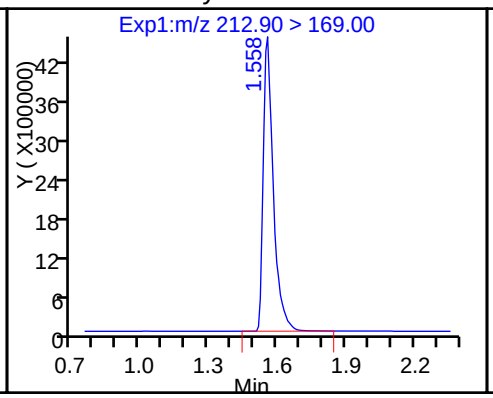
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

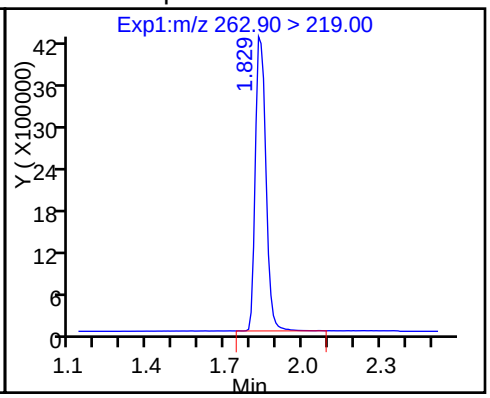
D 2 13C4 PFBA



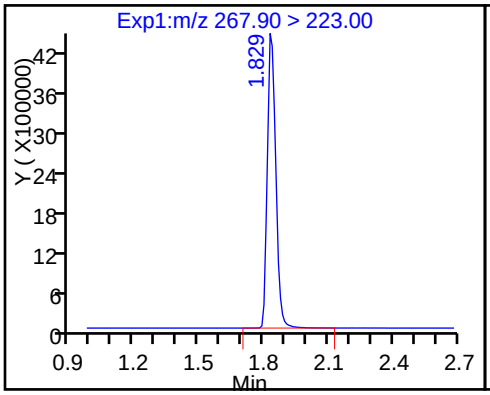
1 Perfluorobutyric acid



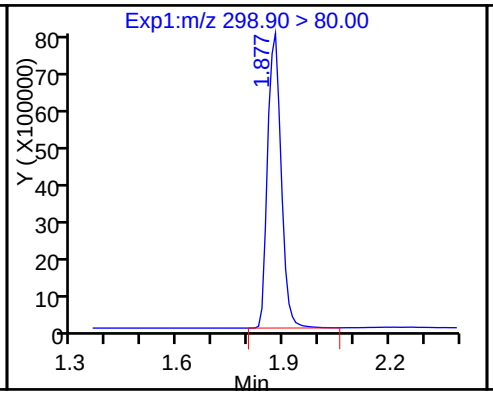
3 Perfluoropentanoic acid



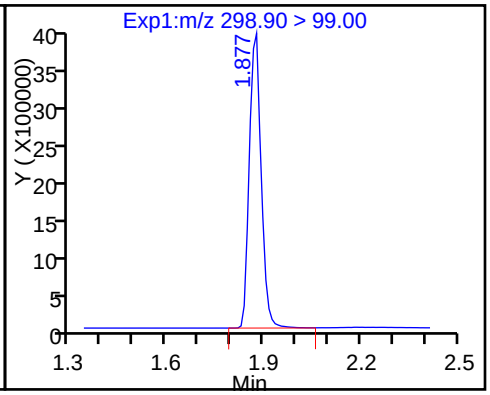
D 4 13C5-PFPeA



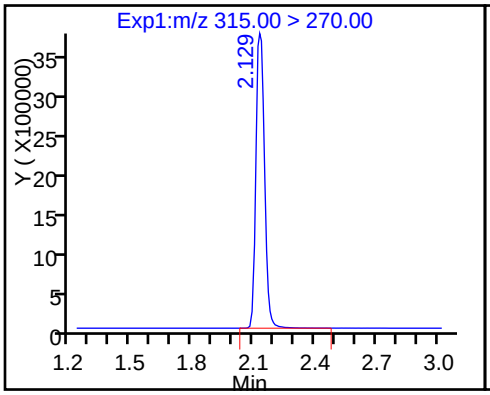
5 Perfluorobutanesulfonic acid



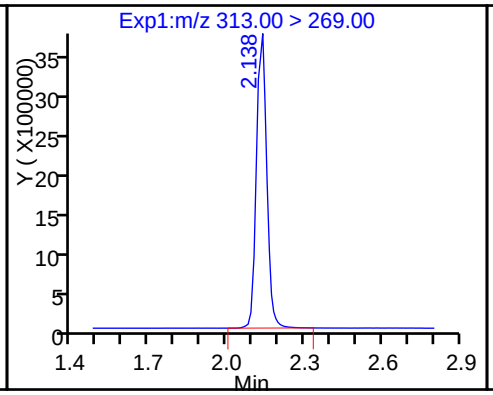
5 Perfluorobutanesulfonic acid



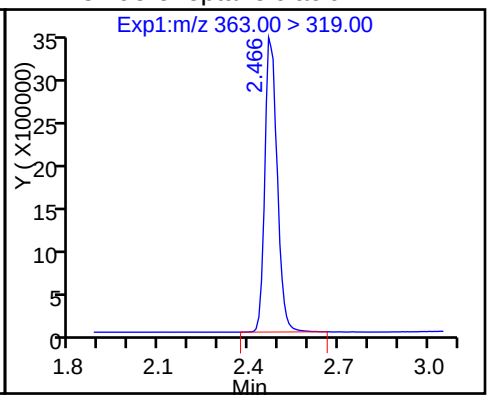
D 6 13C2 PFHxA



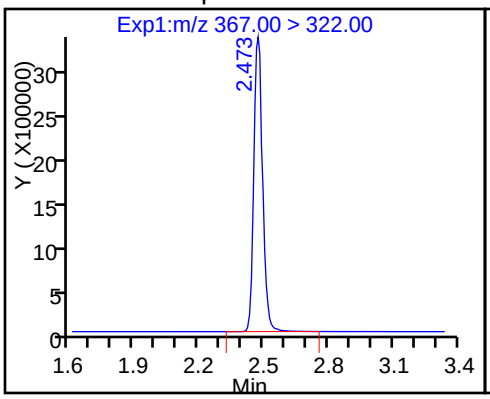
7 Perfluorohexanoic acid



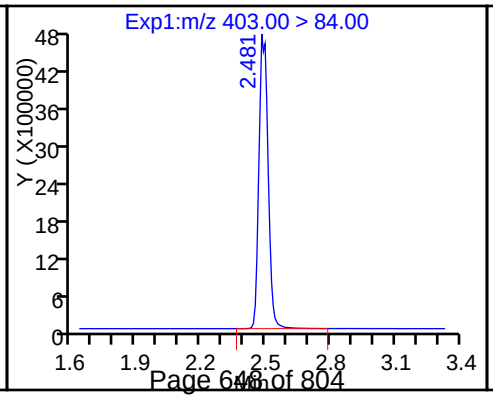
12 Perfluoroheptanoic acid



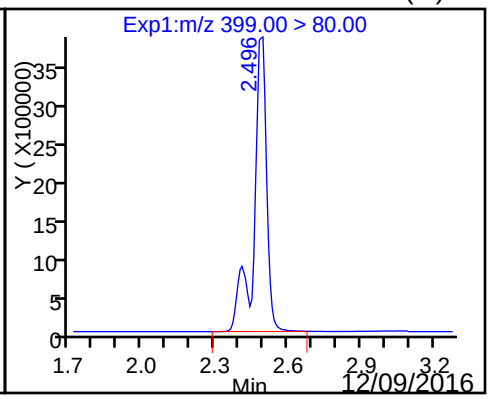
D 11 13C4-PFHpA



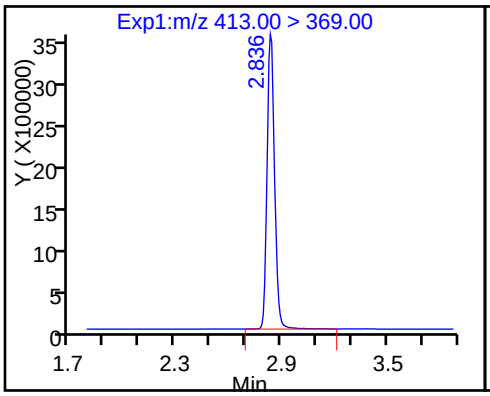
D 10 18O2 PFHxS



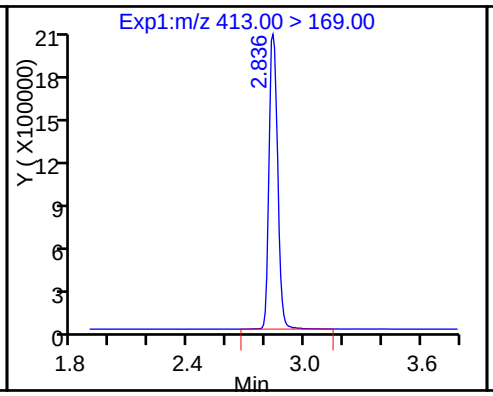
9 Perfluorohexanesulfonic acid (M)



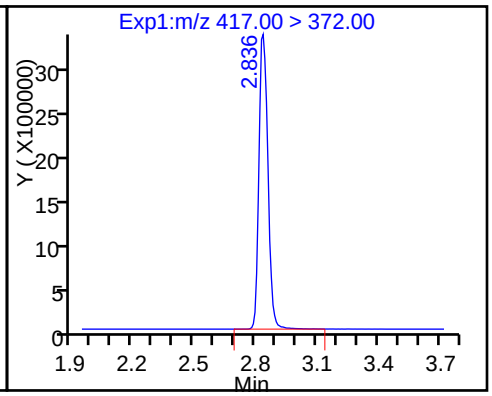
15 Perfluorooctanoic acid



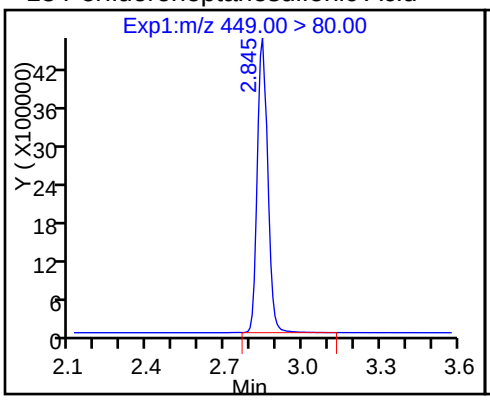
15 Perfluorooctanoic acid



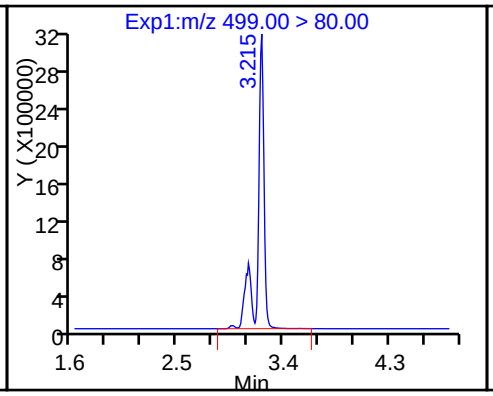
D 14 13C4 PFOA



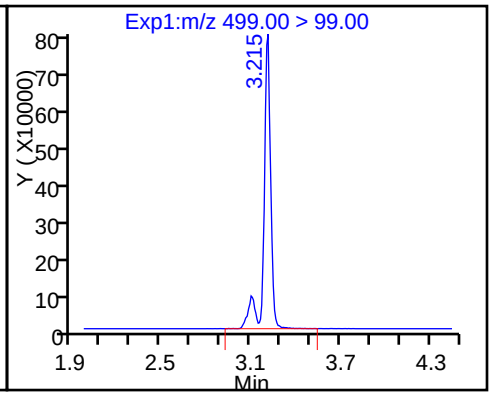
13 Perfluoroheptanesulfonic Acid



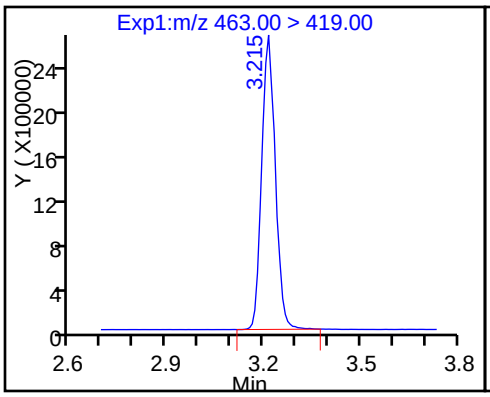
18 Perfluorooctane sulfonic acid



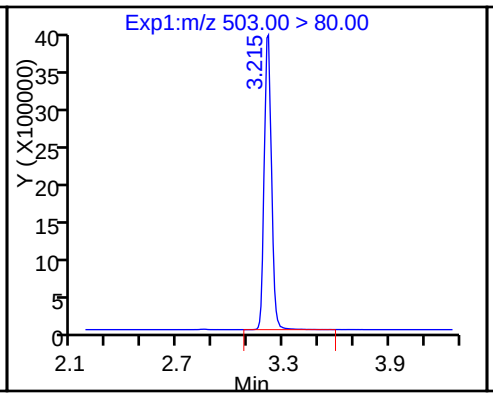
18 Perfluorooctane sulfonic acid



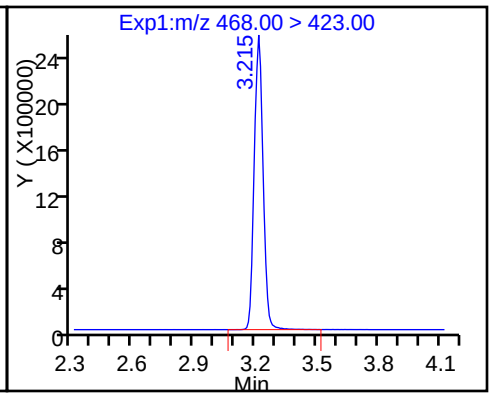
20 Perfluorononanoic acid



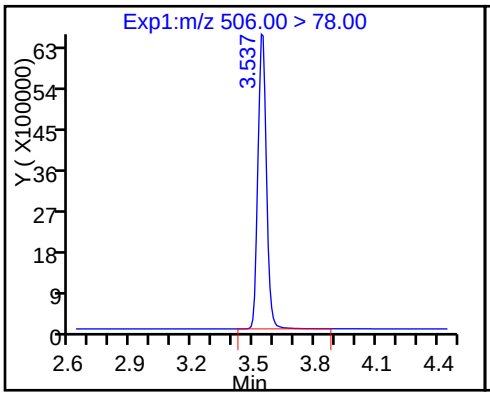
D 17 13C4 PFOS



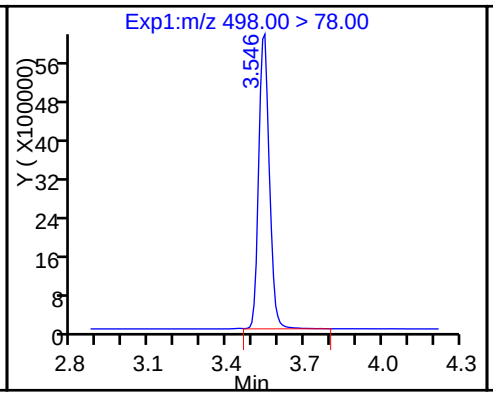
D 19 13C5 PFNA



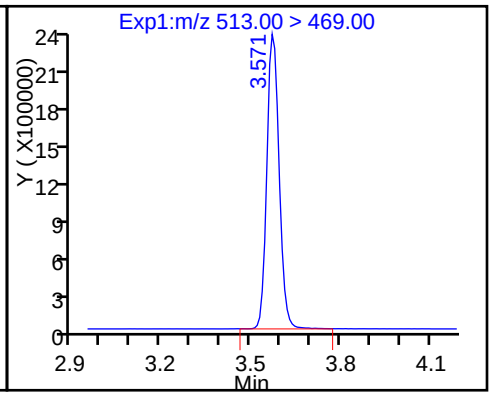
D 21 13C8 FOSA



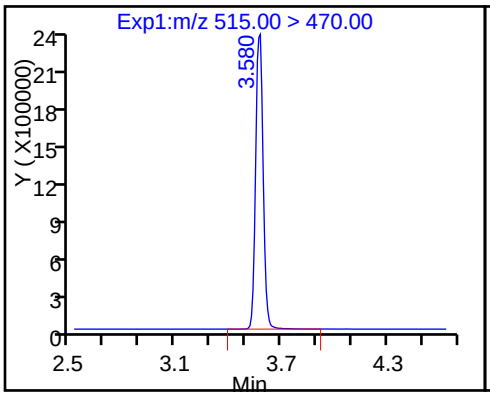
22 Perfluorooctane Sulfonamide



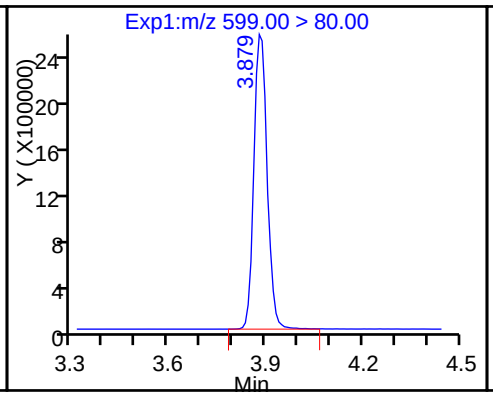
24 Perfluorodecanoic acid



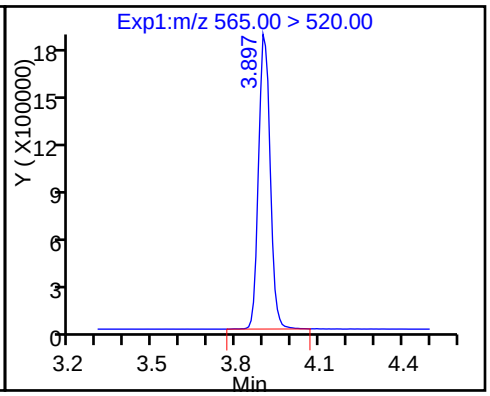
D 23 13C2 PFDA



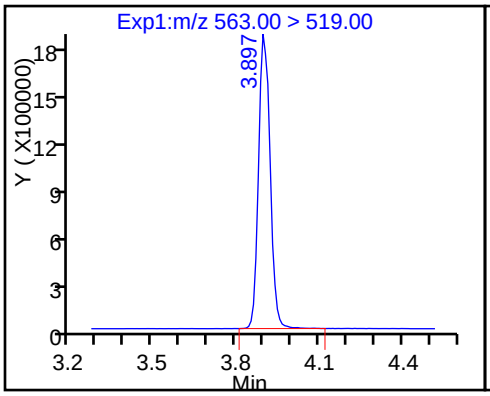
26 Perfluorodecane Sulfonic acid



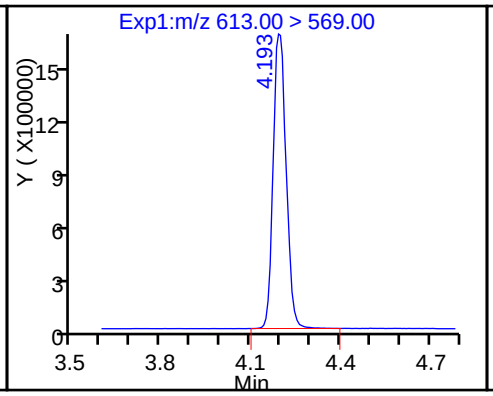
D 27 13C2 PFUnA



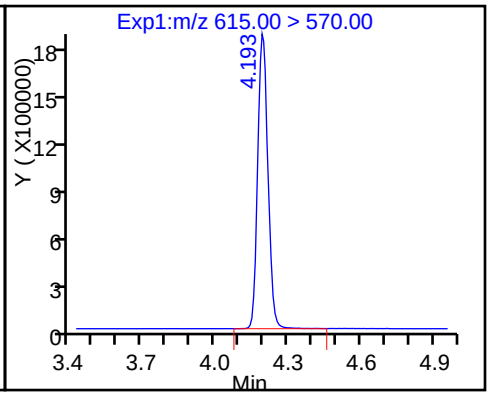
28 Perfluoroundecanoic acid



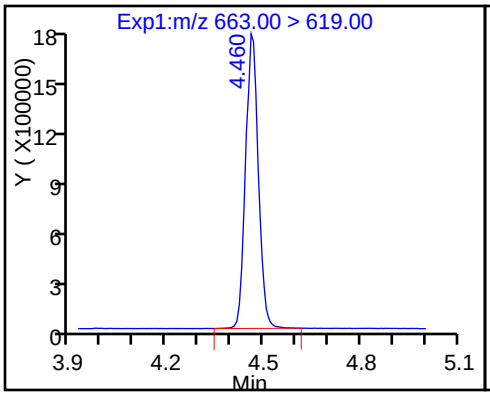
29 Perfluorododecanoic acid



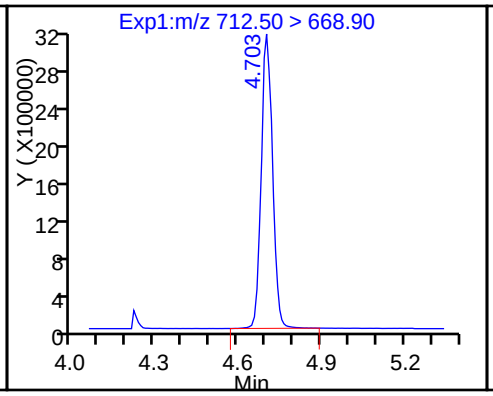
D 30 13C2 PFDoA



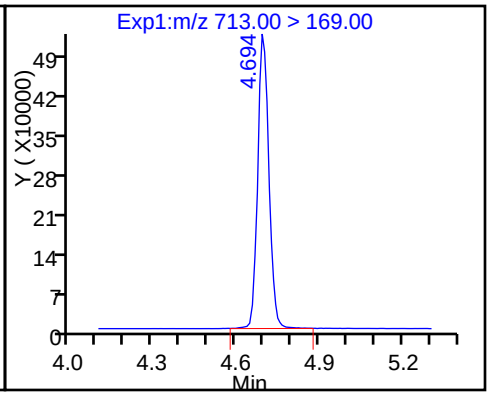
31 Perfluorotridecanoic acid



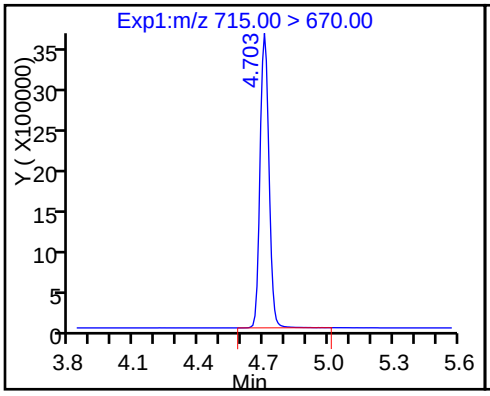
33 Perfluorotetradecanoic acid



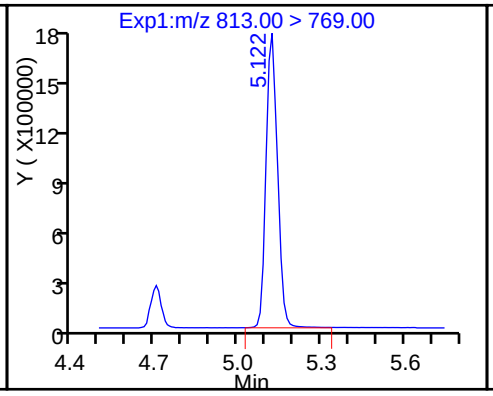
33 Perfluorotetradecanoic acid



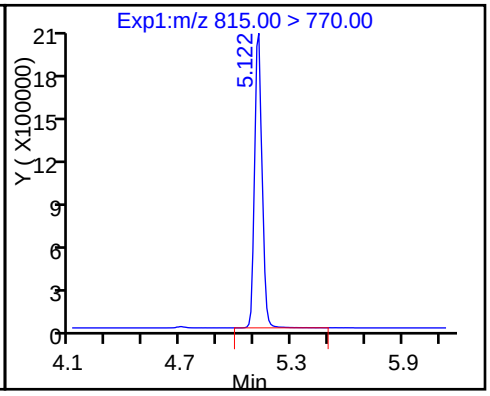
D 32 13C2-PFTeDA



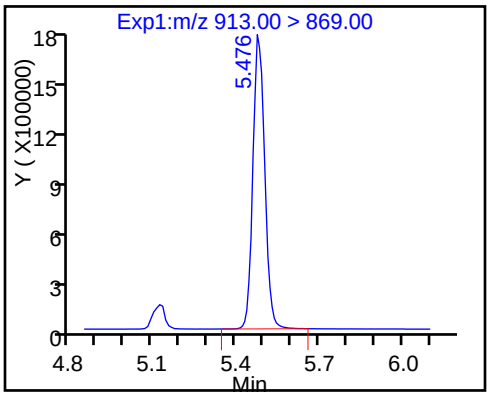
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

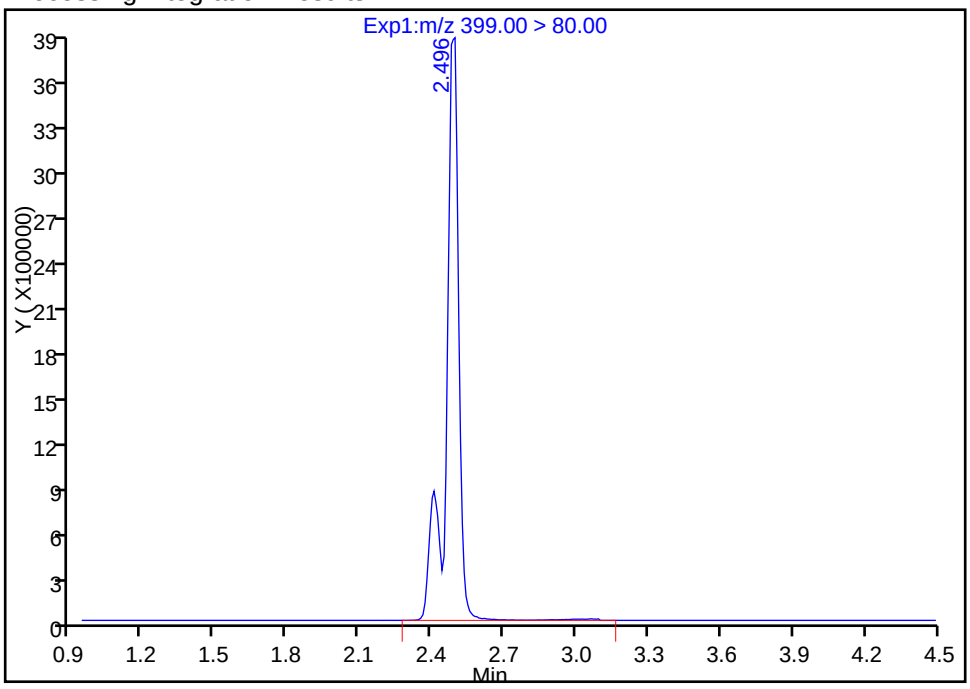
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_002.d
Injection Date: 03-Dec-2016 18:48:43 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

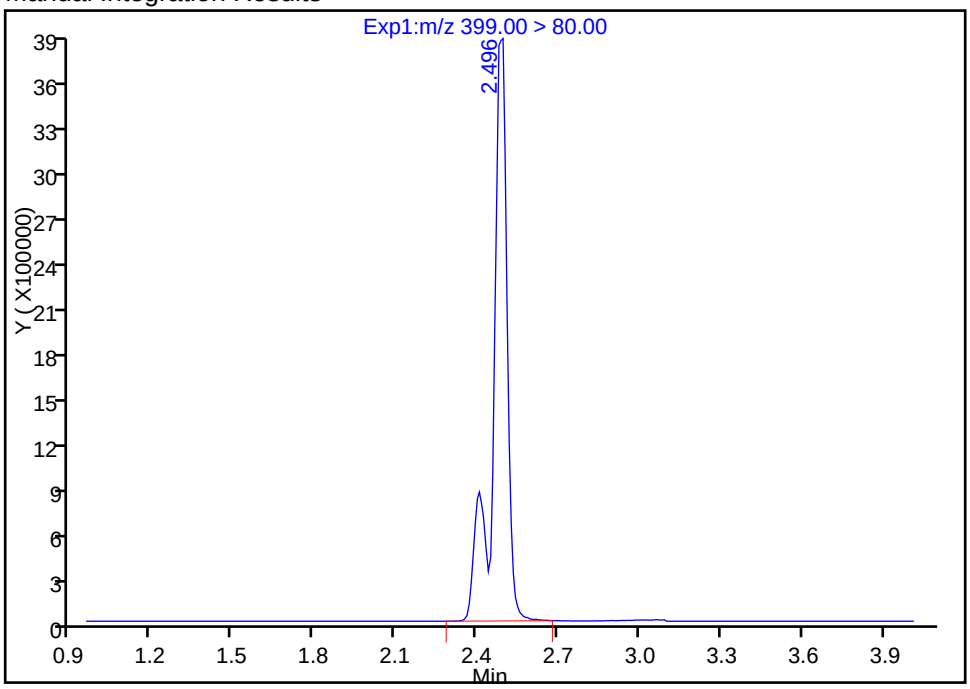
Processing Integration Results

RT: 2.50
Area: 14447568
Amount: 43.659984
Amount Units: ng/ml



Manual Integration Results

RT: 2.50
Area: 14288466
Amount: 43.179184
Amount Units: ng/ml



Reviewer: chandrasenas, 06-Dec-2016 15:46:28
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Lab Sample ID: CCV 320-140675/16 Calibration Date: 12/03/2016 20:33

Instrument ID: A8_N Calib Start Date: 12/03/2016 13:48

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/03/2016 15:33

Lab File ID: 03DEC2016C_016.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8740	0.8914		51.0	50.0	2.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.015	0.9617		47.4	50.0	-5.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.596	1.587		43.9	44.2	-0.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9531	0.9270		48.6	50.0	-2.7	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.027	1.008		49.1	50.0	-1.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.098	1.055		43.7	45.5	-3.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	1.013		47.3	50.0	-5.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.177	1.185		47.9	47.6	0.7	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.085	1.064		45.5	46.4	-2.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.996	0.9823		49.3	50.0	-1.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9341	0.9224		49.4	50.0	-1.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9605	0.9516		49.5	50.0	-0.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6398	0.6457		48.6	48.2	0.9	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.066	0.9823		46.1	50.0	-7.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9490	0.9146		48.2	50.0	-3.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9498	0.8914		46.9	50.0	-6.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.854	1.608		43.4	50.0	-13.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9333		46.2	50.0	-7.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9929	0.9514		47.9	50.0	-4.2	25.0
13C4 PFBA	Ave	335829	326803		48.7	50.0	-2.7	50.0
13C5-PFPeA	Ave	264545	259678		49.1	50.0	-1.8	50.0
13C2 PFHxA	Ave	237486	232896		49.0	50.0	-1.9	50.0
13C4-PFHpA	Ave	207413	199363		48.1	50.0	-3.9	50.0
18O2 PFHxS	Ave	312342	305681		46.3	47.3	-2.1	50.0
13C4 PFOA	Ave	219258	209830		47.9	50.0	-4.3	50.0
13C5 PFNA	Ave	166415	160335		48.2	50.0	-3.7	50.0
13C4 PFOS	Ave	246009	234145		45.5	47.8	-4.8	50.0
13C8 FOSA	Ave	402279	382450		47.5	50.0	-4.9	50.0
13C2 PFDA	Ave	157817	148747		47.1	50.0	-5.7	50.0
13C2 PFUnA	Ave	118762	110669		46.6	50.0	-6.8	50.0
13C2 PFDoA	Ave	112084	111283		49.6	50.0	-0.7	50.0
13C2-PFTeDA	Ave	231173	211582		45.8	50.0	-8.5	50.0
13C2-PFHxDA	Ave	129725	119114		45.9	50.0	-8.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_016.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 03-Dec-2016 20:33:48 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\20161205-37521.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 06-Dec-2016 15:54:55 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK027

First Level Reviewer: chandrasenas Date: 06-Dec-2016 15:54:55

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	1.550	1.549	0.001		16340134	48.7		97.3	875721	
1 Perfluorobutyric acid										
212.90 > 169.00	1.558	1.558	0.0	1.000	14565163	51.0		102	99308	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.839	1.829	0.010	1.000	12486402	47.4		94.8	92221	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		12983923	49.1		98.2	934618	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.877	1.877	0.0	1.000	21438166	43.9		99.4		
298.90 > 99.00	1.868	1.877	-0.009	0.995	9996180		2.14(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.129	2.129	0.0		11644793	49.0		98.1	859379	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.129	2.138	-0.009	1.000	10794455	48.6		97.3	263624	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.463	2.466	-0.003	1.000	10045379	49.1		98.1	133447	
D 11 13C4-PFHpA										
367.00 > 322.00	2.471	2.473	-0.002		9968126	48.1		96.1	881881	
D 10 18O2 PFHxS										
403.00 > 84.00	2.486	2.481	0.005		14458712	46.3		97.9	894334	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.486	2.496	-0.010	1.000	14675162	43.7		96.1		M
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.833	2.836	-0.003	1.000	10632043	47.3		94.5	100327	M
413.00 > 169.00	2.833	2.836	-0.003	1.000	6500450		1.64(0.90-1.10)		262001	
D 14 13C4 PFOA										
417.00 > 372.00	2.833	2.836	-0.003		10491517	47.9		95.7	599243	

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	2.842	2.845	-0.003	1.000	13211814	47.9		101		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.203	3.215	-0.012	1.000	11558737	45.5		98.0	514286	
499.00 > 99.00	3.203	3.215	-0.012	1.000	2568461		4.50(0.90-1.10)		395957	
20 Perfluorononanoic acid										
463.00 > 419.00	3.212	3.215	-0.003	1.000	7874467	49.3		98.6	134004	
D 17 13C4 PFOS										
503.00 > 80.00	3.212	3.215	-0.003		11192132	45.5		95.2	232852	
D 19 13C5 PFNA										
468.00 > 423.00	3.203	3.215	-0.012		8016755	48.2		96.3	1282619	
D 21 13C8 FOSA										
506.00 > 78.00	3.543	3.537	0.006		19122477	47.5		95.1	462169	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.543	3.546	-0.003	1.000	17638669	49.4		98.7	299383	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.568	3.571	-0.003	1.000	7077188	49.5		99.1	317487	
D 23 13C2 PFDA										
515.00 > 470.00	3.568	3.580	-0.012		7437346	47.1		94.3	272346	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.885	3.879	0.006	1.000	7287294	48.6		101		
D 27 13C2 PFUnA										
565.00 > 520.00	3.894	3.897	-0.003		5533441	46.6		93.2	334769	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.894	3.897	-0.003	1.000	5435679	46.1		92.2	136561	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.190	4.193	-0.003	1.000	5088854	48.2		96.4	96093	
D 30 13C2 PFDoA										
615.00 > 570.00	4.190	4.193	-0.003		5564141	49.6		99.3	197986	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.456	4.460	-0.004	1.000	4959865	46.9		93.8	64600	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.697	4.703	-0.005	1.000	8945568	43.4		86.7	16855	
713.00 > 169.00	4.688	4.703	-0.014	0.998	1529851		5.85(0.00-0.00)		178000	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.697	4.703	-0.005		10579112	45.8		91.5	460975	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.114	5.122	-0.008	1.000	5193042	46.2		92.5	5413	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.114	5.122	-0.008		5955689	45.9		91.8	123000	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.478	5.476	0.002	1.000	5293904	47.9		95.8	7074	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 06-Dec-2016 15:54:55 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_016.d

Injection Date: 03-Dec-2016 20:33:48 Instrument ID: A8_N

Lims ID: CCV L5

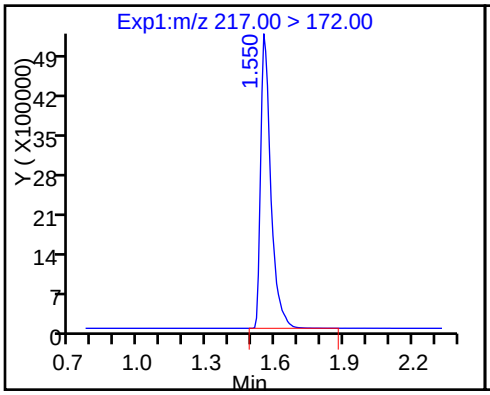
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 16

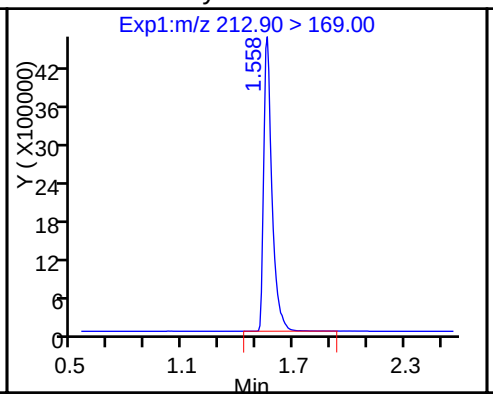
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

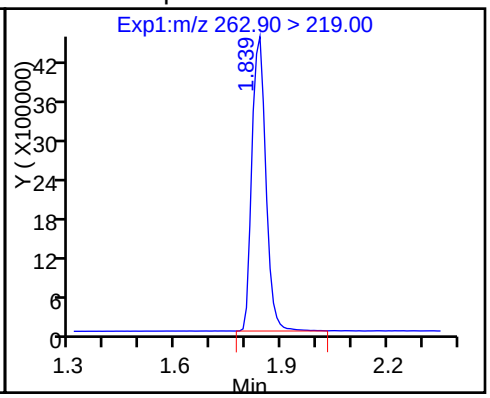
D 2 13C4 PFBA



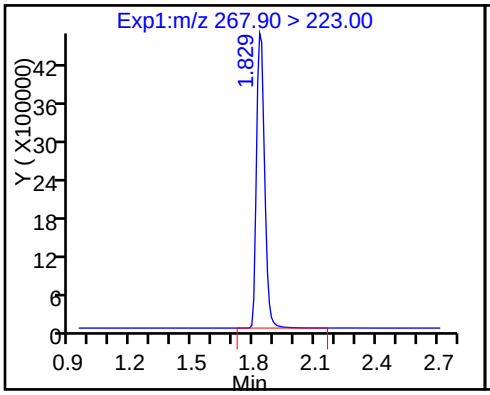
1 Perfluorobutyric acid



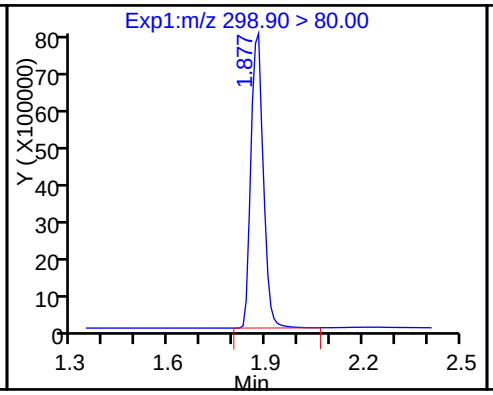
3 Perfluoropentanoic acid



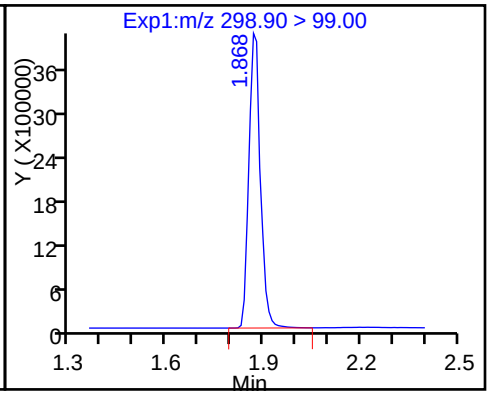
D 4 13C5-PFPeA



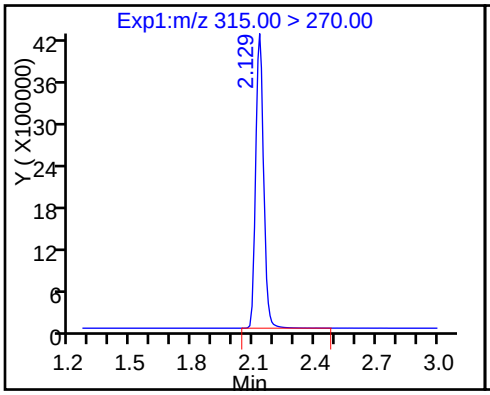
5 Perfluorobutanesulfonic acid



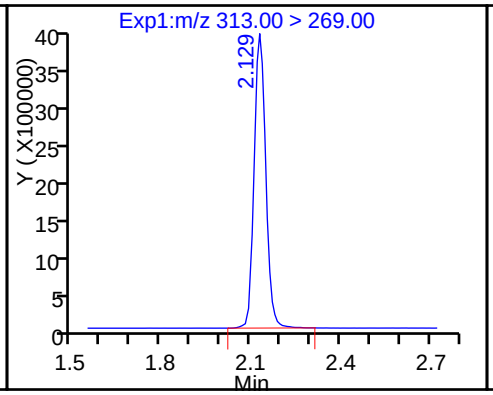
5 Perfluorobutanesulfonic acid



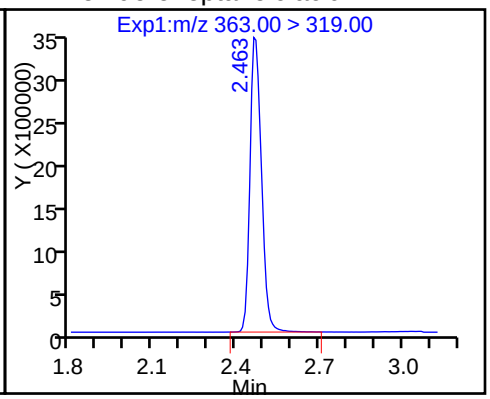
D 6 13C2 PFHxA



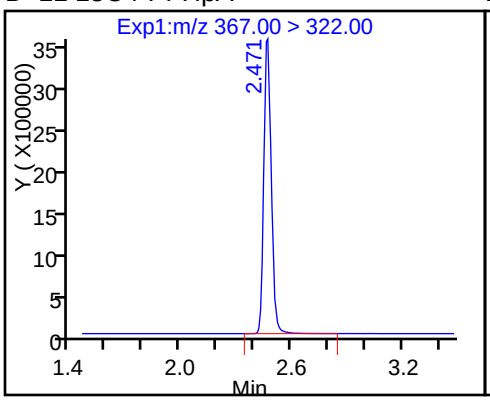
7 Perfluorohexanoic acid



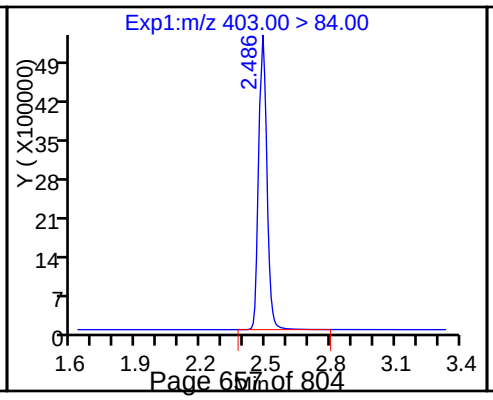
12 Perfluoroheptanoic acid



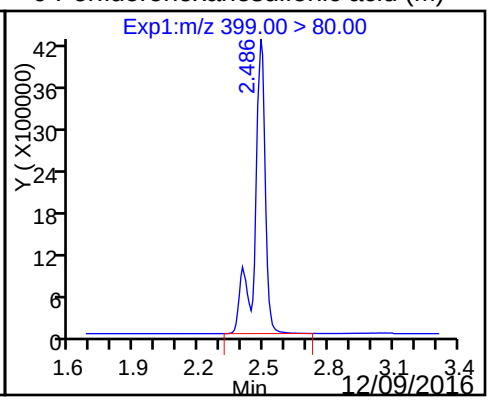
D 11 13C4-PFHpA



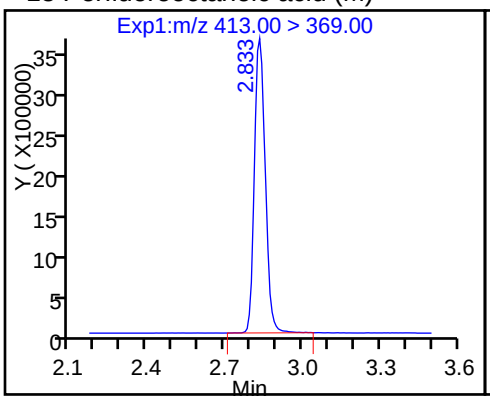
D 10 18O2 PFHxS



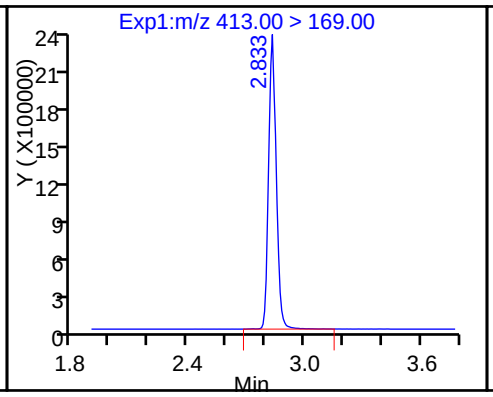
9 Perfluorohexanesulfonic acid (M)



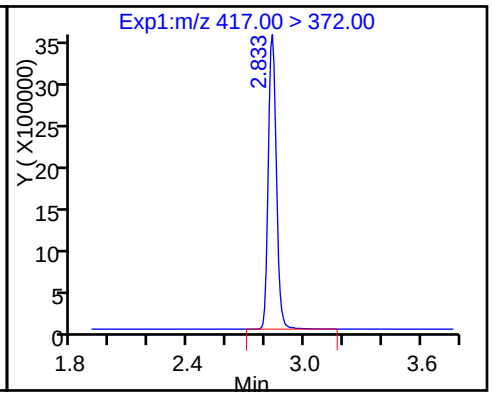
15 Perfluorooctanoic acid (M)



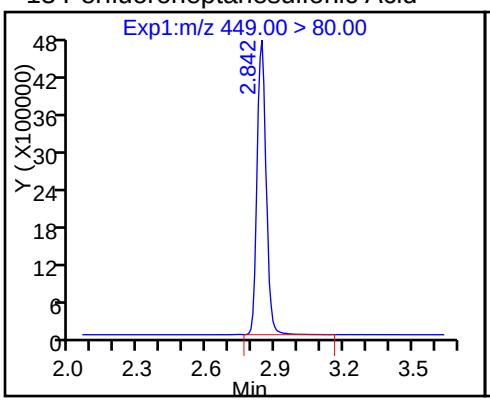
15 Perfluorooctanoic acid



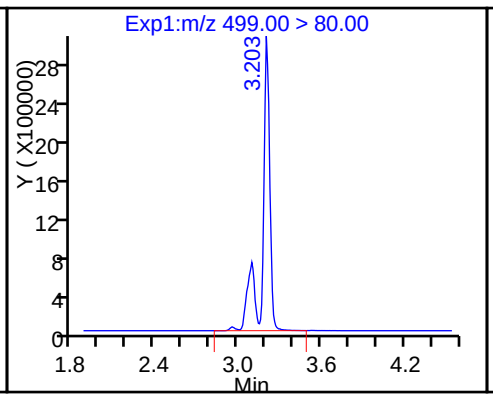
D 14 13C4 PFOA



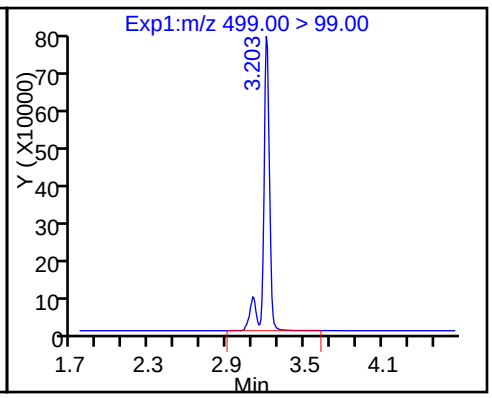
13 Perfluoroheptanesulfonic Acid



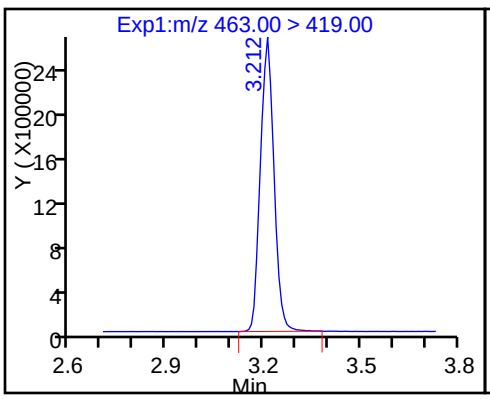
18 Perfluorooctane sulfonic acid



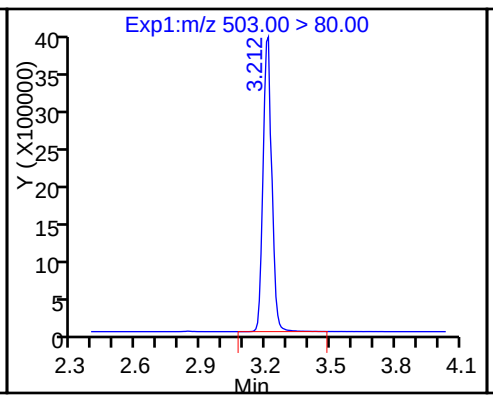
18 Perfluorooctane sulfonic acid



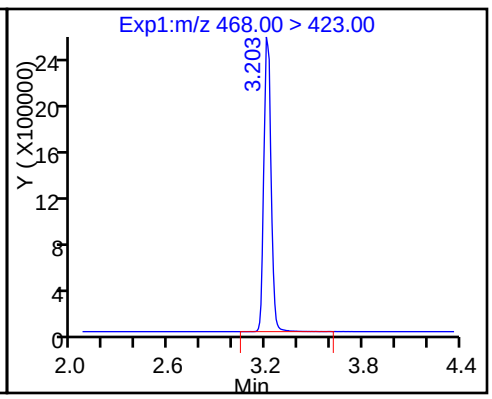
20 Perfluorononanoic acid



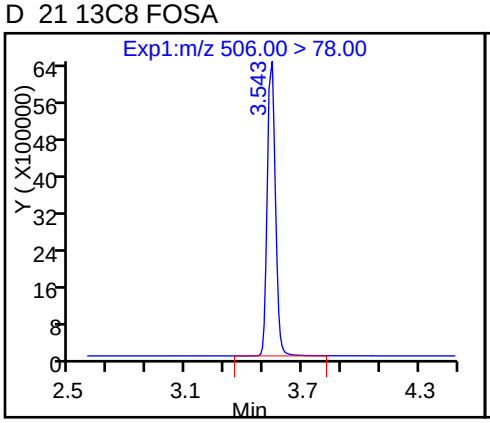
D 17 13C4 PFOS



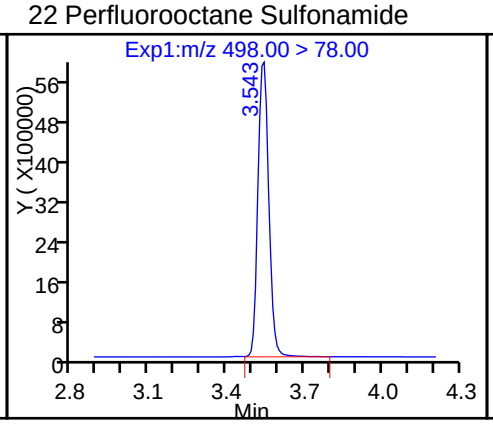
D 19 13C5 PFNA



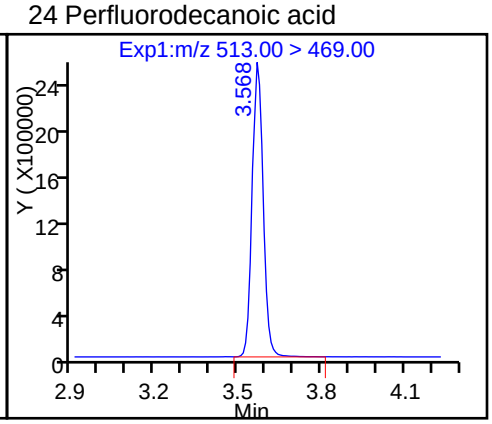
D 21 13C8 FOSA



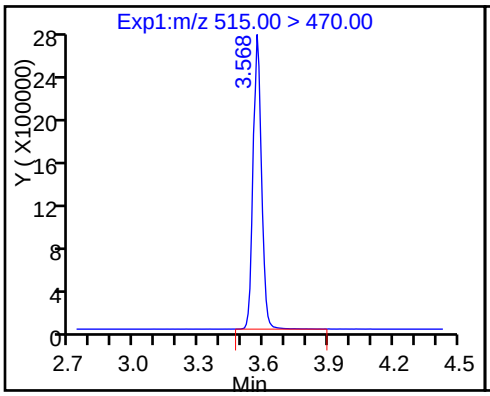
22 Perfluorooctane Sulfonamide



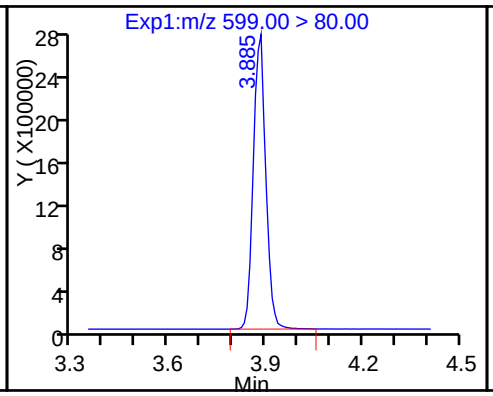
24 Perfluorodecanoic acid



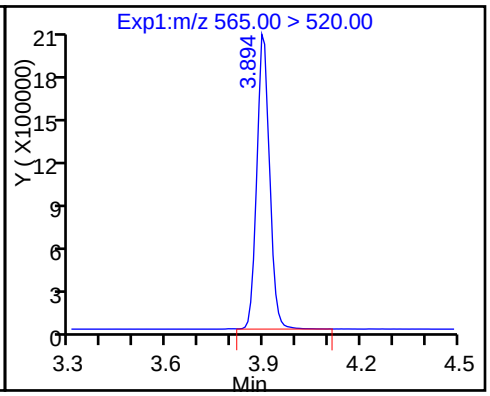
D 23 13C2 PFDA



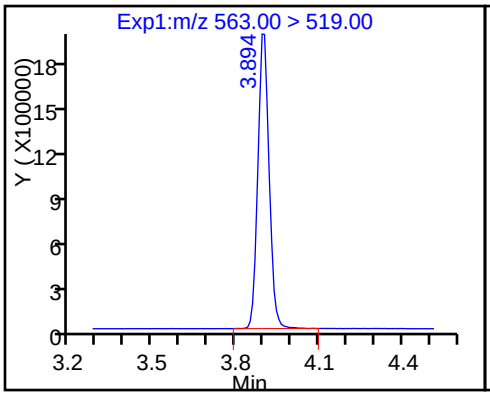
26 Perfluorodecane Sulfonic acid



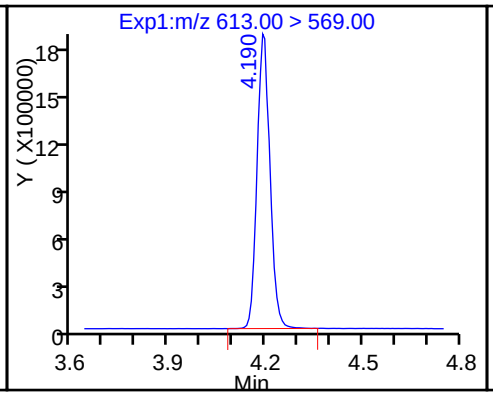
D 27 13C2 PFUnA



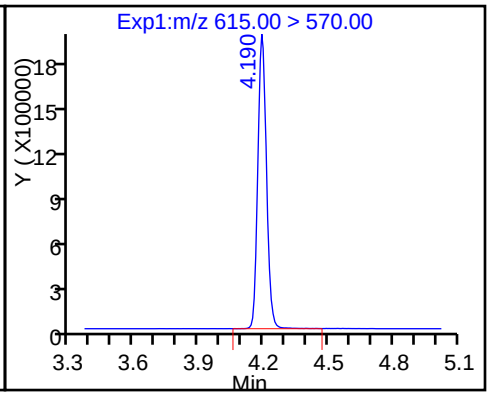
28 Perfluoroundecanoic acid



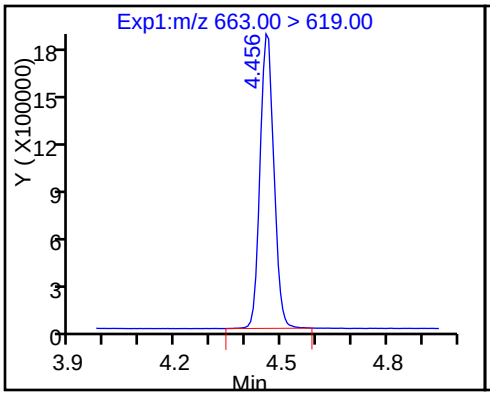
29 Perfluorododecanoic acid



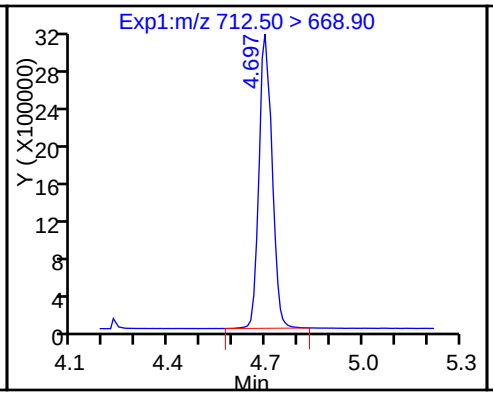
D 30 13C2 PFDoA



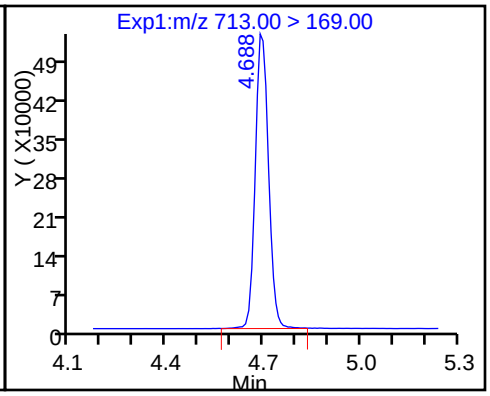
31 Perfluorotridecanoic acid



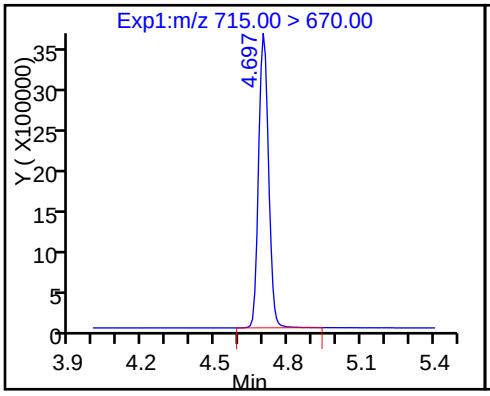
33 Perfluorotetradecanoic acid



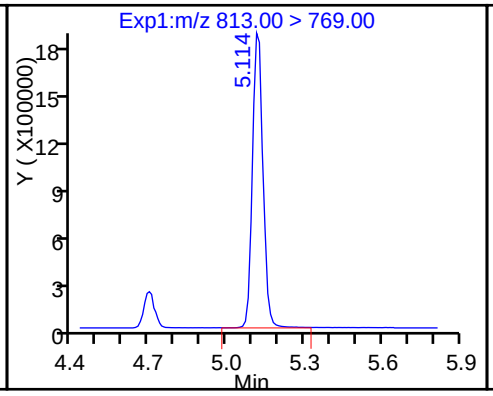
33 Perfluorotetradecanoic acid



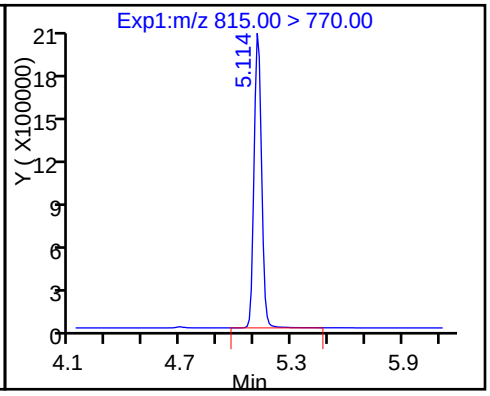
D 32 13C2-PFTeDA



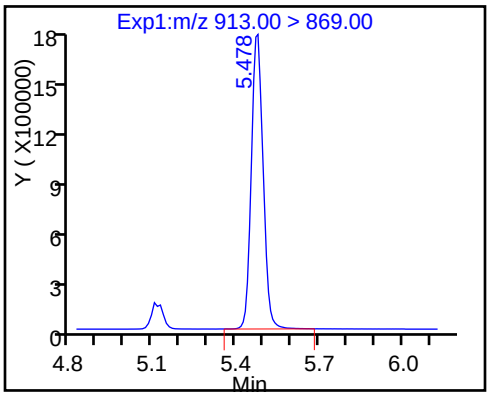
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

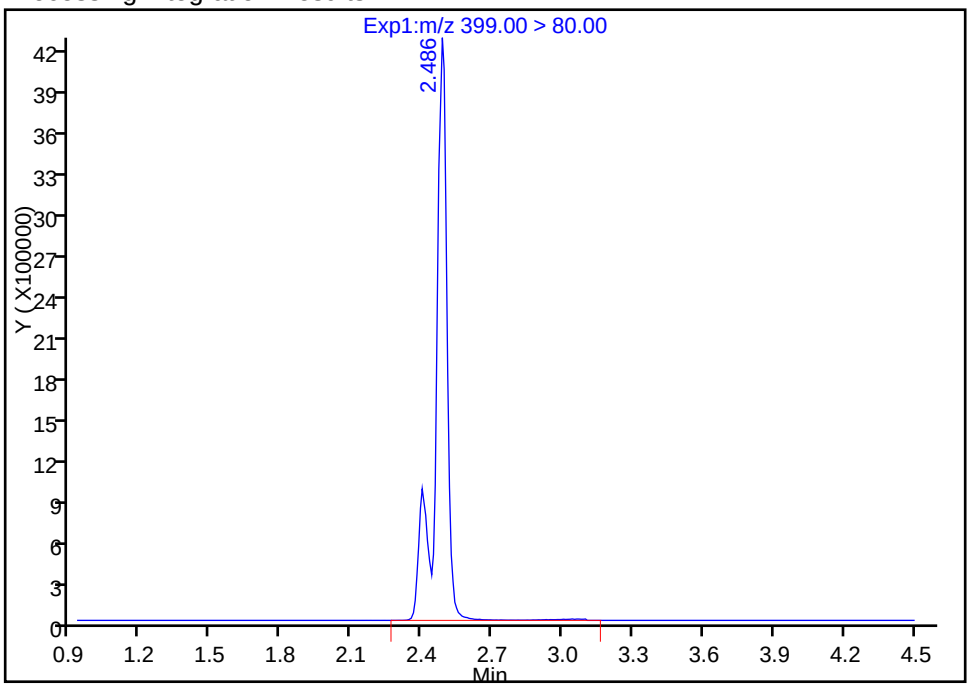
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_016.d
Injection Date: 03-Dec-2016 20:33:48 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

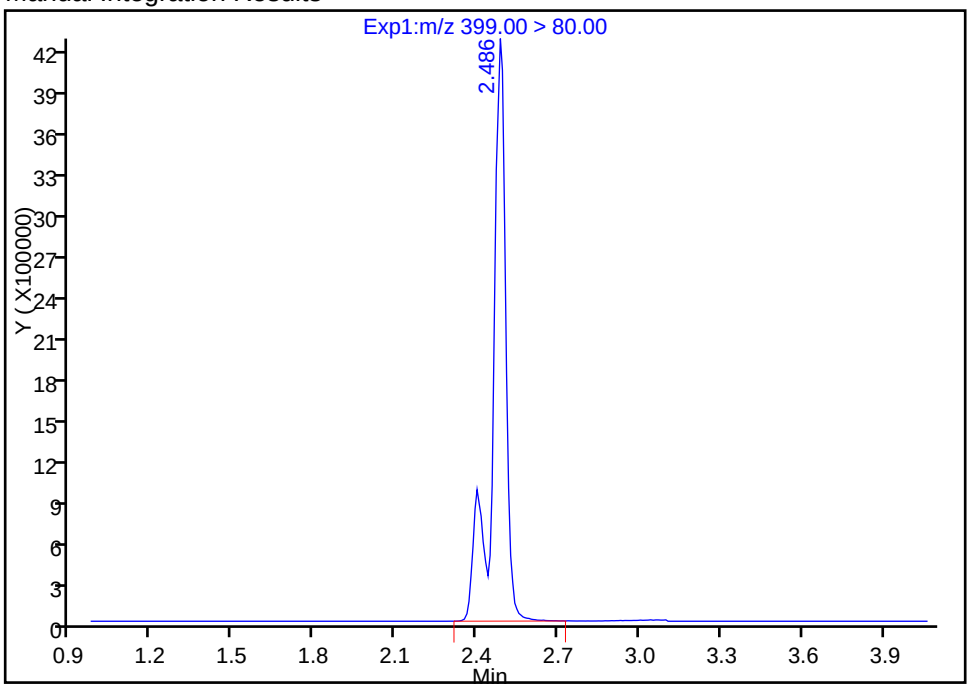
Processing Integration Results

RT: 2.49
Area: 14809951
Amount: 44.141706
Amount Units: ng/ml



Manual Integration Results

RT: 2.49
Area: 14675162
Amount: 43.739961
Amount Units: ng/ml



Reviewer: chandrasenas, 06-Dec-2016 15:54:55
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

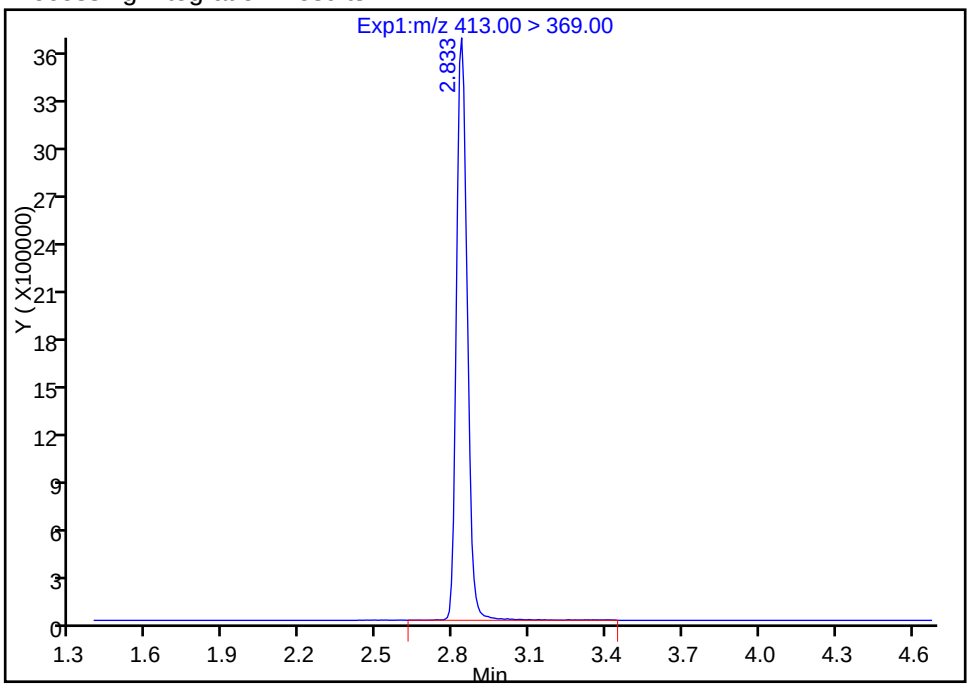
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b\03DEC2016C_016.d
Injection Date: 03-Dec-2016 20:33:48 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

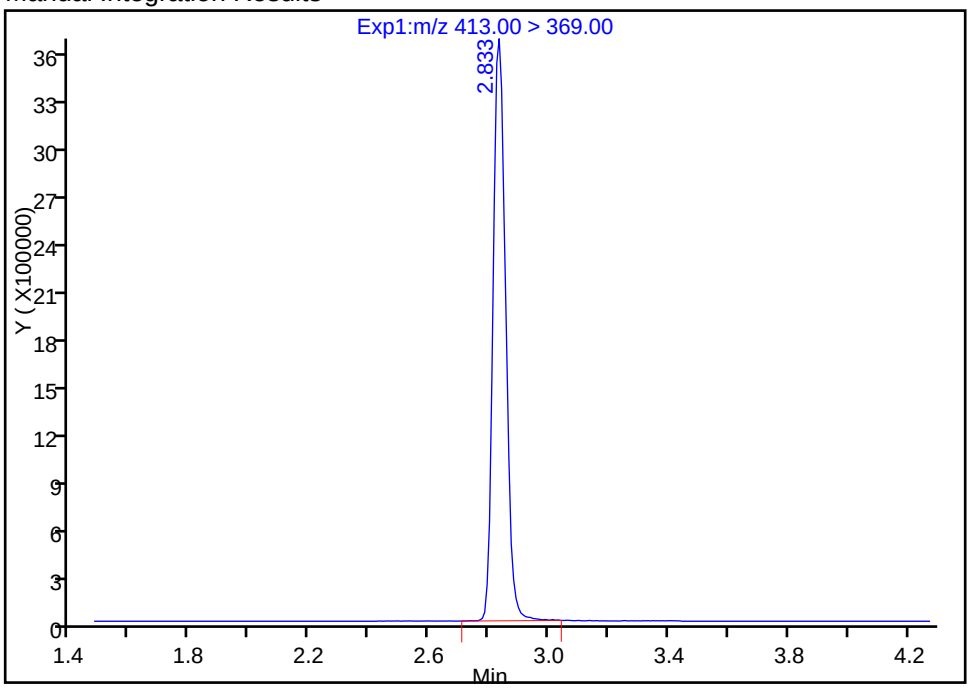
Processing Integration Results

RT: 2.83
Area: 10750845
Amount: 47.798463
Amount Units: ng/ml



Manual Integration Results

RT: 2.83
Area: 10632043
Amount: 47.270267
Amount Units: ng/ml



Reviewer: chandrasenas, 06-Dec-2016 15:54:55
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Lab Sample ID: CCV 320-141054/5 Calibration Date: 12/07/2016 12:33

Instrument ID: A8_N Calib Start Date: 12/03/2016 13:48

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/03/2016 15:33

Lab File ID: 07DEC2016A_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	0.8740	0.8808		1.01	1.00	0.8	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.015	1.034		1.02	1.00	1.9	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.596	1.541		0.854	0.884	-3.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9531	0.9625		1.01	1.00	1.0	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.098	1.203		0.998	0.910	9.6	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.027	1.019		0.992	1.00	-0.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	1.129		1.05	1.00	5.3	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.177	1.146		0.927	0.952	-2.7	50.0
Perfluorononanoic acid (PFNA)	AveID	0.996	0.9901		0.994	1.00	-0.6	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.085	1.033		0.883	0.928	-4.8	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9341	0.9540		1.02	1.00	2.1	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9605	0.9134		0.951	1.00	-4.9	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6398	0.5926		0.893	0.964	-7.4	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.066	1.043		0.979	1.00	-2.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9490	0.9210		0.971	1.00	-2.9	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9498	0.9222		0.971	1.00	-2.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.854	1.867		1.01	1.00	0.7	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.546		0.802	1.00	-19.8	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9929	0.9526		0.959	1.00	-4.1	50.0
13C4 PFBA	Ave	335829	347833		51.8	50.0	3.6	50.0
13C5-PFPeA	Ave	264545	268424		50.7	50.0	1.5	50.0
13C2 PFHxA	Ave	237486	238270		50.2	50.0	0.3	50.0
13C4-PFHpA	Ave	207413	222068		53.5	50.0	7.1	50.0
18O2 PFHxS	Ave	312342	329175		49.8	47.3	5.4	50.0
13C4 PFOA	Ave	219258	238888		54.5	50.0	9.0	50.0
13C4 PFOS	Ave	246009	260205		50.6	47.8	5.8	50.0
13C5 PFNA	Ave	166415	172520		51.8	50.0	3.7	50.0
13C8 FOSA	Ave	402279	413977		51.5	50.0	2.9	50.0
13C2 PFDA	Ave	157817	150832		47.8	50.0	-4.4	50.0
13C2 PFUnA	Ave	118762	116003		48.8	50.0	-2.3	50.0
13C2 PFDoA	Ave	112084	106415		47.5	50.0	-5.1	50.0
13C2-PFTeDA	Ave	231173	215301		46.6	50.0	-6.9	50.0
13C2-PFHxDA	Ave	129725	113138		43.6	50.0	-12.8	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_003.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 07-Dec-2016 12:33:22 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: RB
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\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 16:54:02 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 07-Dec-2016 13:15:35

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	1.549	1.545	0.004		17391644	51.8		104	1100126	
1 Perfluorobutyric acid										
212.90 > 169.00	1.549	1.553	-0.004	1.000	306359	1.01		101	2645	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.819	1.823	-0.004	1.000	277648	1.02		102	2023	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.823	0.006		13421195	50.7		101	972065	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.861	-0.003	1.000	448461	0.8536		96.6		
298.90 > 99.00	1.858	1.861	-0.003	1.000	193951		2.31(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.114	2.114	0.0		11913489	50.2		100	718986	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.122	2.114	0.008	1.000	229334	1.01		101	8638	
D 11 13C4-PFHpA										
367.00 > 322.00	2.460	2.458	0.002		11103394	53.5		107	1285501	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.460	2.458	0.002	1.000	226253	0.99		99.2	2493	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.400	2.476	-0.076	1.000	360442	1.00		110		
D 10 18O2 PFHxS										
403.00 > 84.00	2.469	2.476	-0.007		15569961	49.8		105	806616	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.820	2.817	0.003	1.000	269704	1.05		105	3455	
413.00 > 169.00	2.820	2.817	0.003	1.000	155122		1.74(0.90-1.10)		11443	
D 14 13C4 PFOA										
417.00 > 372.00	2.820	2.817	0.003		11944378	54.5		109	834384	

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	2.828	2.825	0.003	1.000	283824	0.9266		97.3		
D 17 13C4 PFOS										
503.00 > 80.00	3.196	3.195	0.001		12437802	50.6		106	530071	
D 19 13C5 PFNA										
468.00 > 423.00	3.196	3.195	0.001		8625976	51.8		104	470795	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.196	3.195	0.001	1.000	249466	0.8834		95.2	22889	
499.00 > 99.00	3.188	3.195	-0.007	0.997	55540		4.49(0.90-1.10)		4147	
20 Perfluorononanoic acid										
463.00 > 419.00	3.196	3.195	0.001	1.000	170815	0.99		99.4	3586	
D 21 13C8 FOSA										
506.00 > 78.00	3.528	3.528	0.0		20698866	51.5		103	424878	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.528	3.528	0.0	1.000	394931	1.02		102	35277	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.554	3.553	0.001	1.000	137775	0.9510		95.1	4027	
D 23 13C2 PFDA										
515.00 > 470.00	3.554	3.562	-0.008		7541616	47.8		95.6	223929	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.866	3.867	-0.001	1.000	148657	0.8930		92.6		
D 27 13C2 PFUnA										
565.00 > 520.00	3.884	3.884	0.0		5800144	48.8		97.7	519081	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.884	3.884	0.0	1.000	120975	0.9785		97.9	3375	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.178	4.173	0.005	1.000	98011	0.9705		97.1	2182	
D 30 13C2 PFDoA										
615.00 > 570.00	4.178	4.173	0.005		5320731	47.5		94.9	273006	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.443	4.452	-0.009	1.000	98135	0.9709		97.1	1794	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.681	4.684	-0.003	1.000	198704	1.01		101	759	
713.00 > 169.00	4.681	4.684	-0.003	1.000	32416		6.13(0.00-0.00)		11795	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.690	4.693	-0.003		10765061	46.6		93.1	966268	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.102	5.104	-0.002	1.000	164498	0.8024		80.2	178	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.102	5.104	-0.002		5656875	43.6		87.2	101566	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.460	5.462	-0.002	1.000	101370	0.9594		95.9	121	

Reagents:

LCPFC-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 07-Dec-2016 16:54:02 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_003.d

Injection Date: 07-Dec-2016 12:33:22 Instrument ID: A8_N

Lims ID: CCV L2

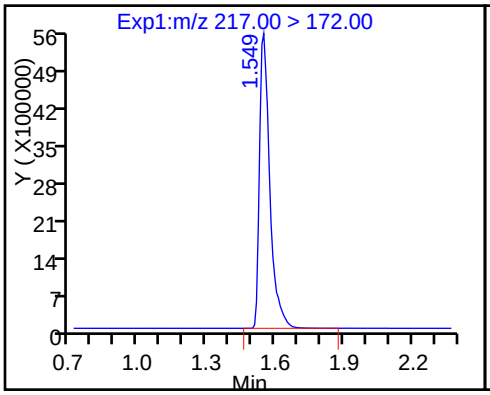
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

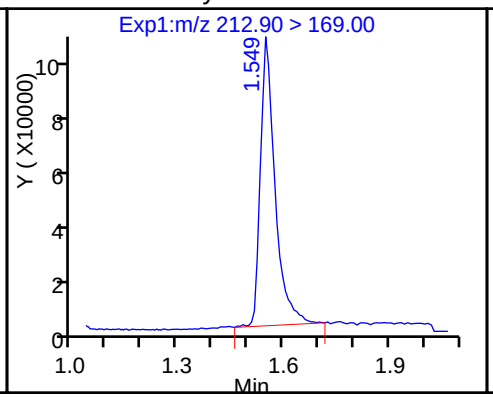
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

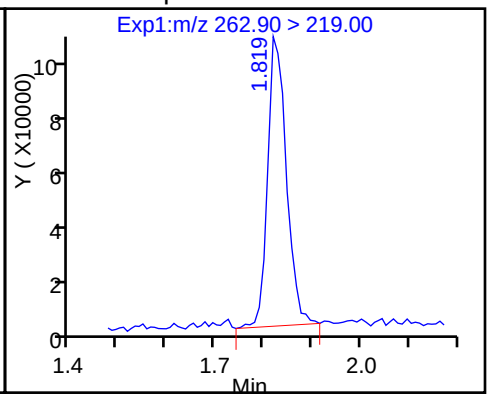
D 2 13C4 PFBA



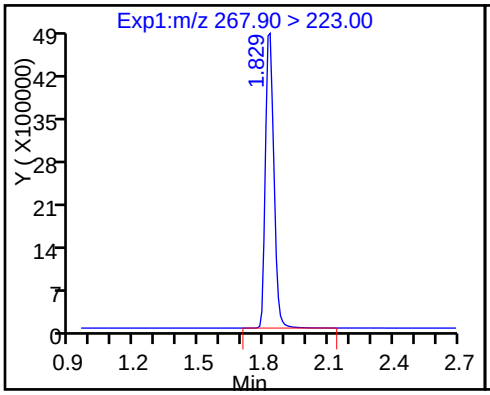
1 Perfluorobutyric acid



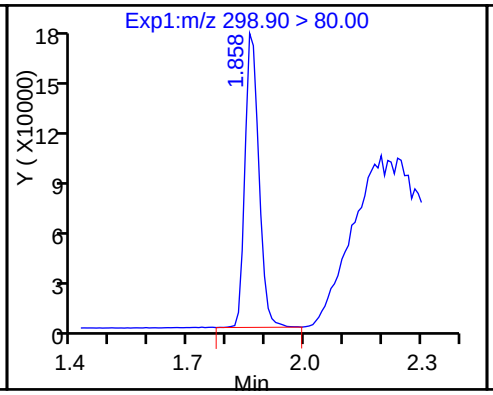
3 Perfluoropentanoic acid



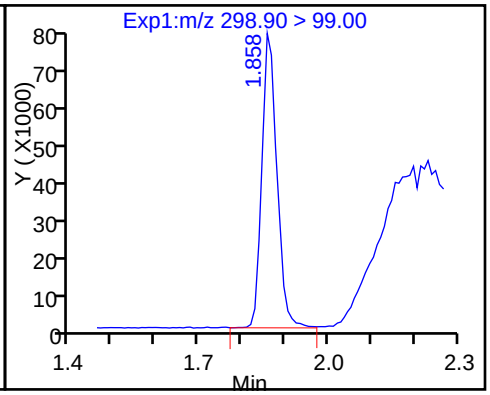
D 4 13C5-PFPeA



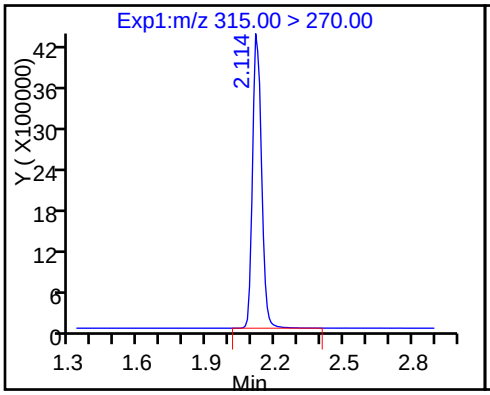
5 Perfluorobutanesulfonic acid



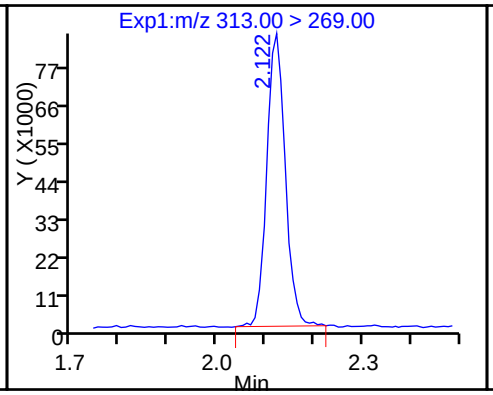
5 Perfluorobutanesulfonic acid



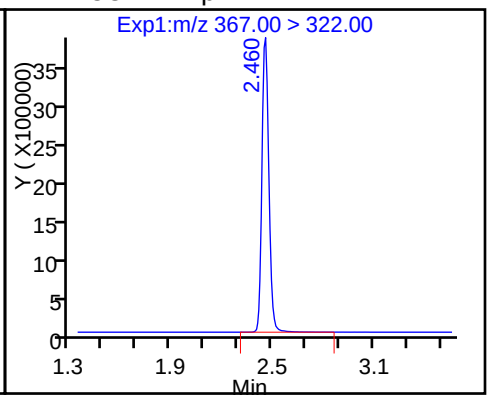
D 6 13C2 PFHxA



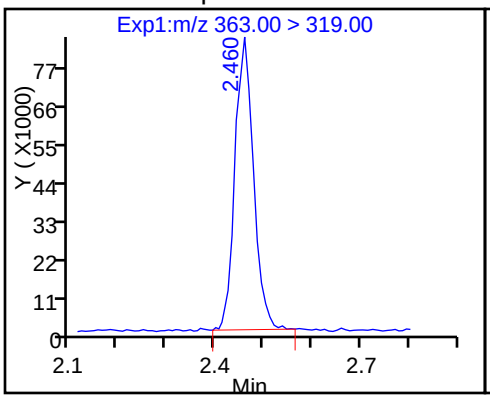
7 Perfluorohexanoic acid



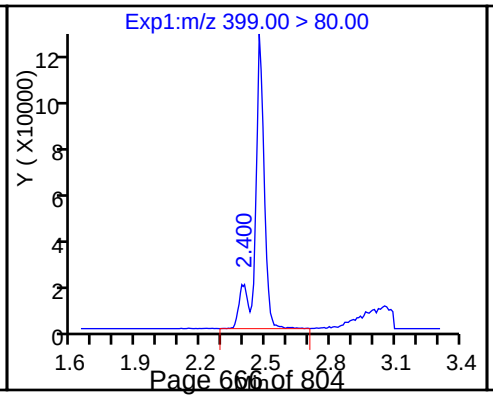
D 11 13C4-PFHpA



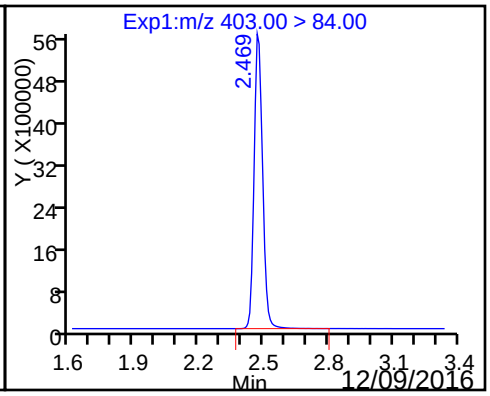
12 Perfluoroheptanoic acid



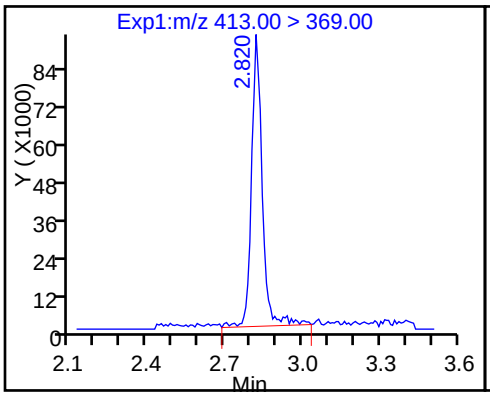
9 Perfluorohexanesulfonic acid



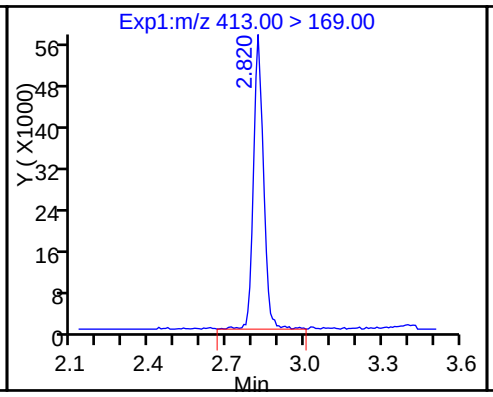
D 10 18O2 PFHxS



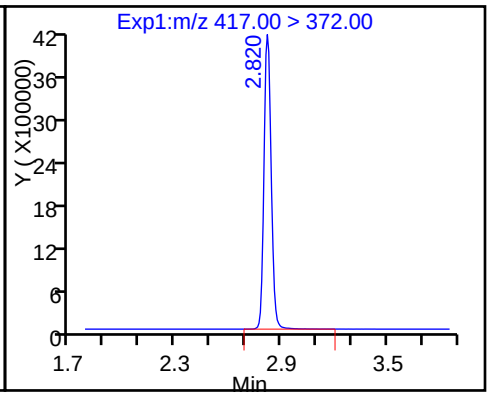
15 Perfluorooctanoic acid



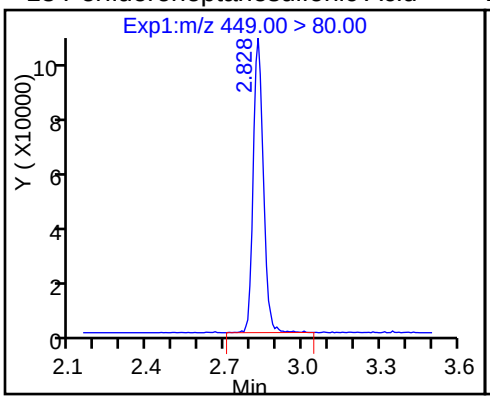
15 Perfluorooctanoic acid



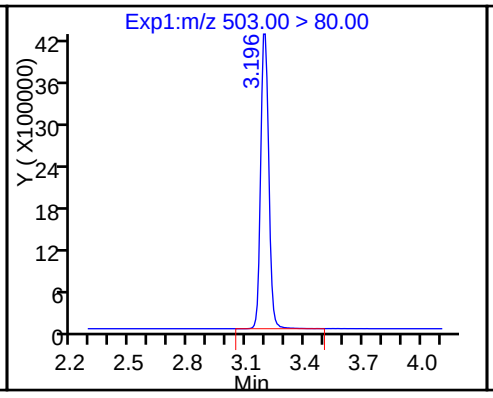
D 14 13C4 PFOA



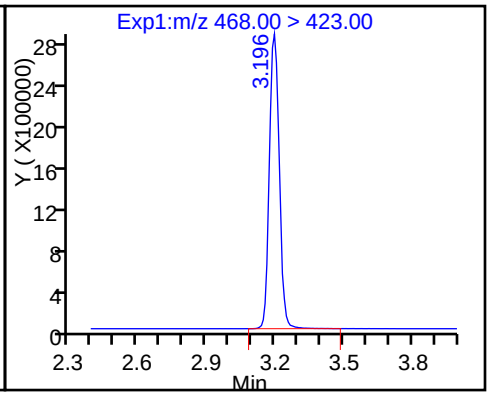
13 Perfluoroheptanesulfonic Acid



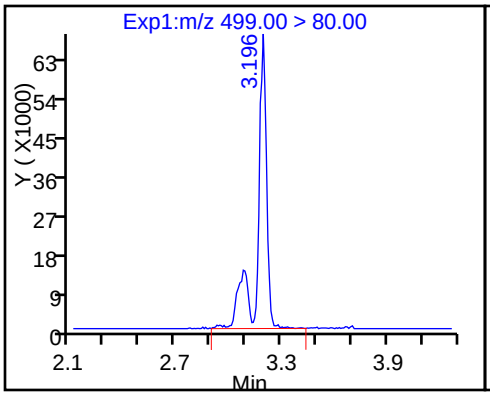
D 17 13C4 PFOS



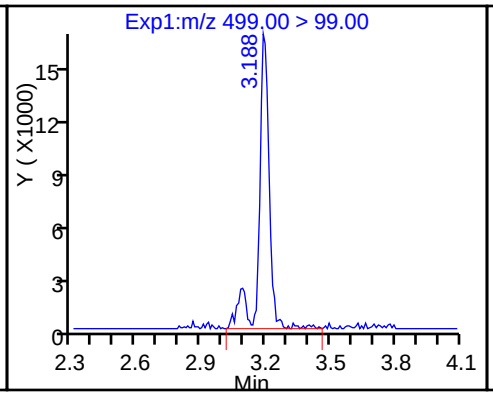
D 19 13C5 PFNA



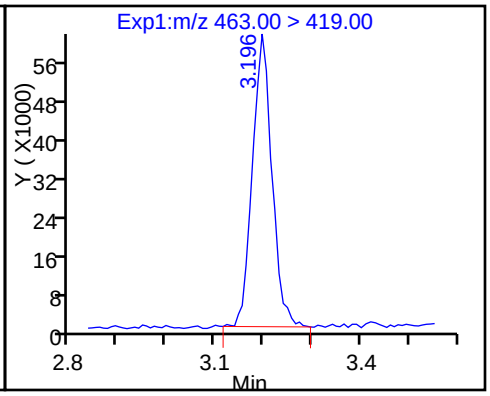
18 Perfluorooctane sulfonic acid



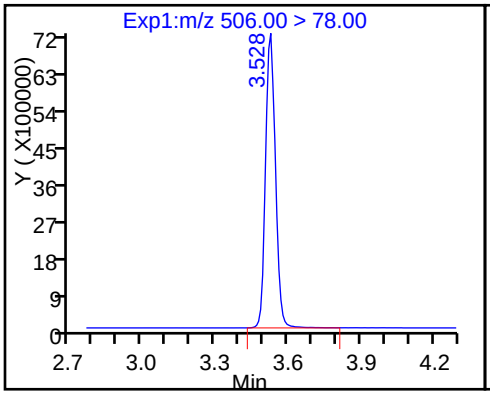
18 Perfluorooctane sulfonic acid



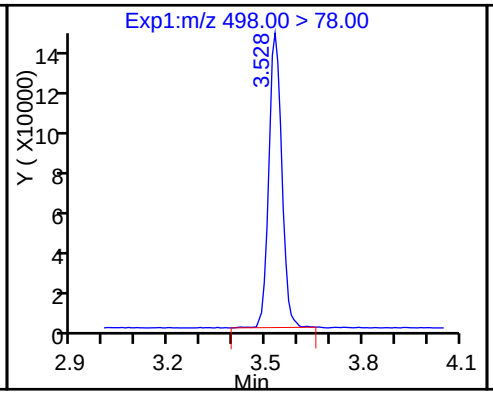
20 Perfluorononanoic acid



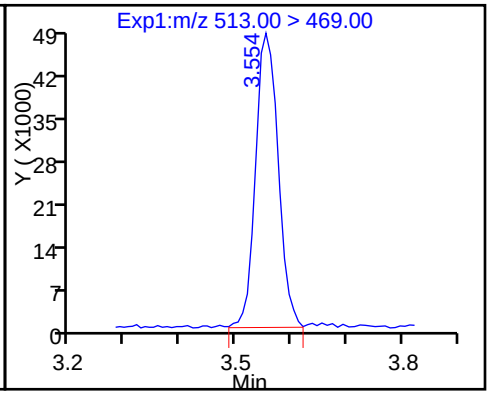
D 21 13C8 FOSA



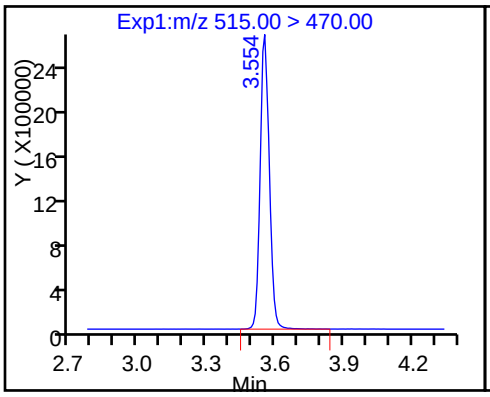
22 Perfluorooctane Sulfonamide



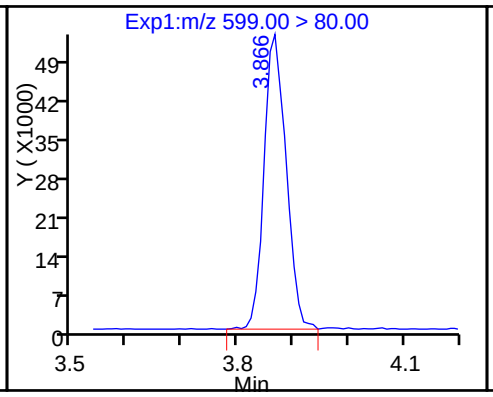
24 Perfluorodecanoic acid



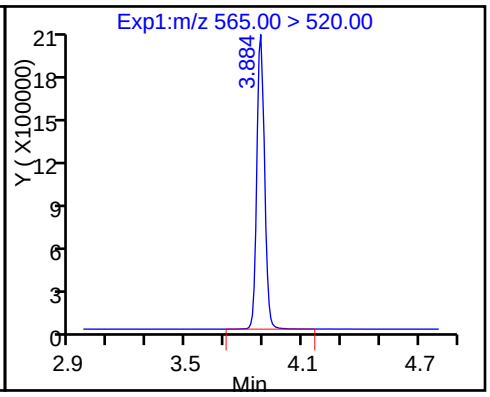
D 23 13C2 PFDA



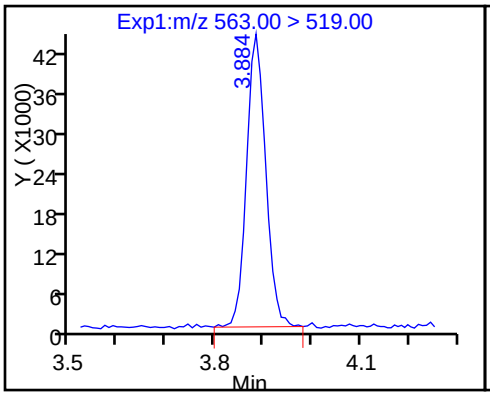
26 Perfluorodecane Sulfonic acid



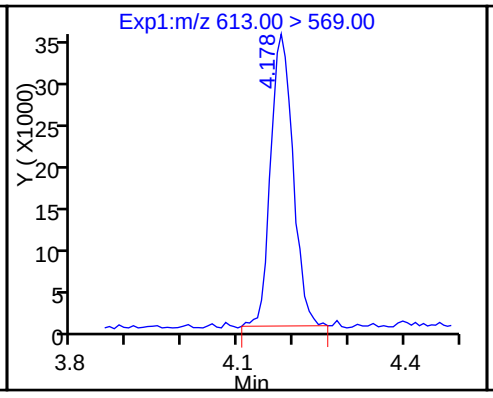
D 27 13C2 PFUnA



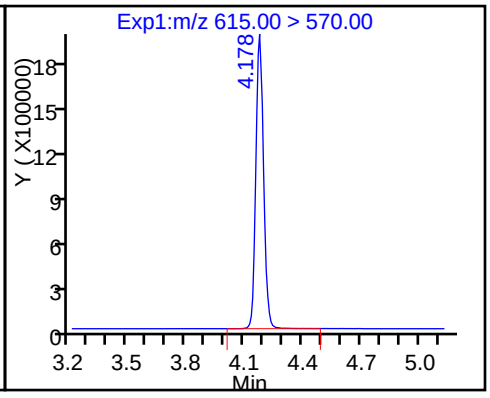
28 Perfluoroundecanoic acid



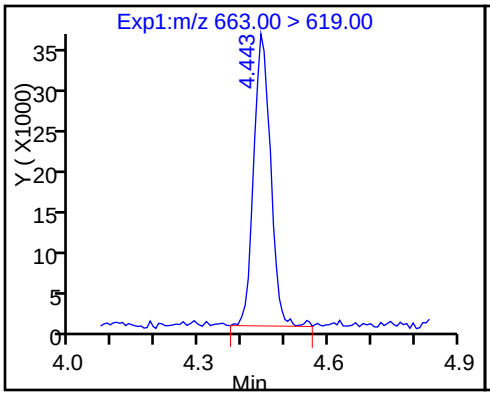
29 Perfluorododecanoic acid



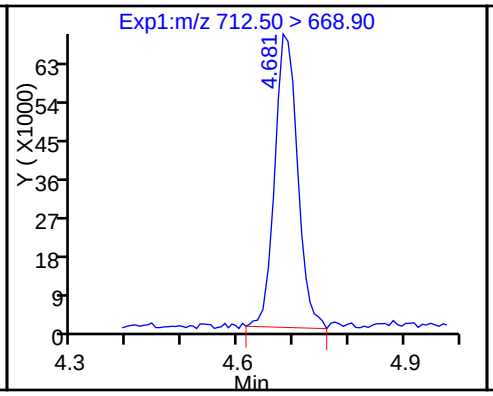
D 30 13C2 PFDoA



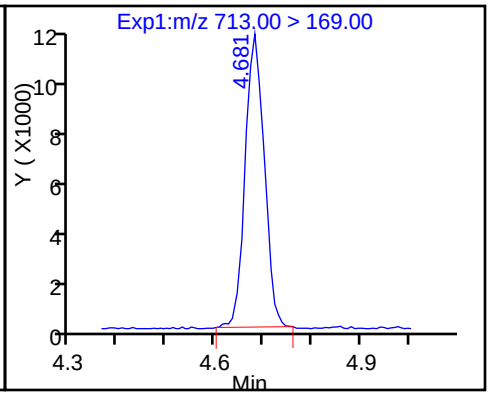
31 Perfluorotridecanoic acid



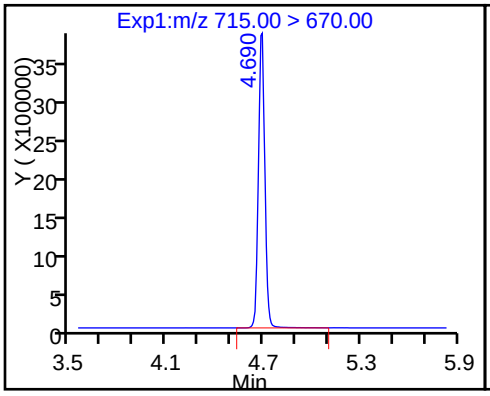
33 Perfluorotetradecanoic acid



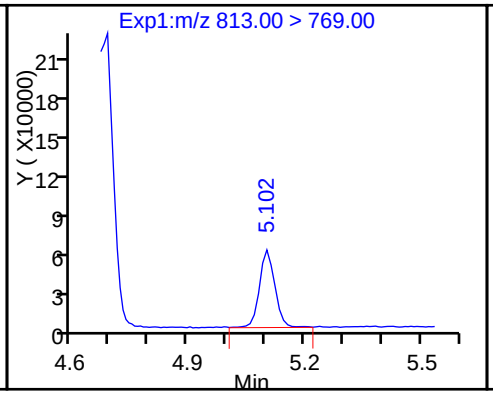
33 Perfluorotetradecanoic acid



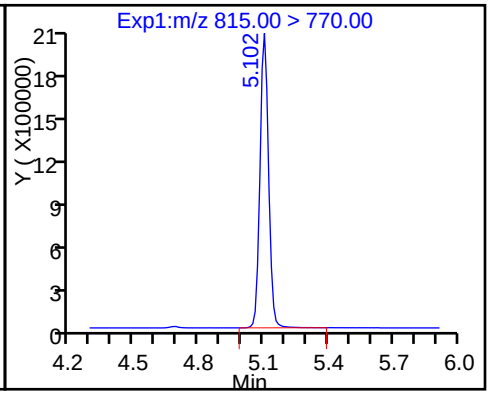
D 32 13C2-PFTeDA



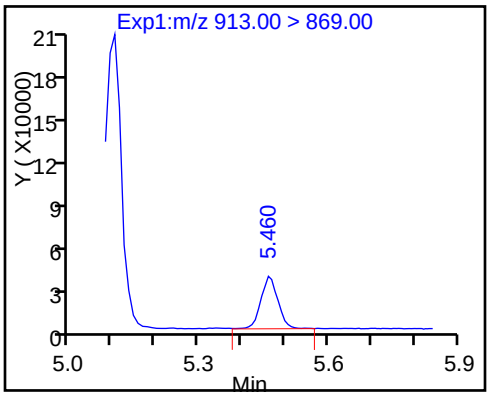
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Lab Sample ID: CCV 320-141054/21 Calibration Date: 12/07/2016 14:33

Instrument ID: A8_N Calib Start Date: 12/03/2016 13:48

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/03/2016 15:33

Lab File ID: 07DEC2016A_019.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8740	0.9548		21.8	20.0	9.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.015	1.072		21.1	20.0	5.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.596	1.771		19.6	17.7	11.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9531	0.9706		20.4	20.0	1.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.027	1.059		20.6	20.0	3.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.098	1.112		18.4	18.2	1.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	1.091		20.4	20.0	1.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.177	1.253		20.3	19.0	6.4	25.0
Perfluorononanoic acid (PFNA)	AveID	0.996	1.029		20.6	20.0	3.2	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.085	1.105		18.9	18.6	1.8	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9341	0.9938		21.3	20.0	6.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9605	0.9562		19.9	20.0	-0.4	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6398	0.6130		18.5	19.3	-4.2	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.066	1.011		19.0	20.0	-5.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9490	0.9586		20.2	20.0	1.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9498	0.9539		20.1	20.0	0.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.854	1.913		20.6	20.0	3.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.073		20.8	20.0	4.2	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9929	0.8384		16.9	20.0	-15.6	25.0
13C4 PFBA	Ave	335829	357565		53.2	50.0	6.5	50.0
13C5-PFPeA	Ave	264545	269132		50.9	50.0	1.7	50.0
13C2 PFHxA	Ave	237486	247389		52.1	50.0	4.2	50.0
13C4-PFHpA	Ave	207413	221907		53.5	50.0	7.0	50.0
18O2 PFHxS	Ave	312342	333032		50.4	47.3	6.6	50.0
13C4 PFOA	Ave	219258	226060		51.6	50.0	3.1	50.0
13C4 PFOS	Ave	246009	260405		50.6	47.8	5.9	50.0
13C5 PFNA	Ave	166415	169232		50.8	50.0	1.7	50.0
13C8 FOSA	Ave	402279	411661		51.2	50.0	2.3	50.0
13C2 PFDA	Ave	157817	152650		48.4	50.0	-3.3	50.0
13C2 PFUnA	Ave	118762	114119		48.0	50.0	-3.9	50.0
13C2 PFDoA	Ave	112084	104197		46.5	50.0	-7.0	50.0
13C2-PFTeDA	Ave	231173	208449		45.1	50.0	-9.8	50.0
13C2-PFHxDA	Ave	129725	118523		45.7	50.0	-8.6	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_019.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 07-Dec-2016 14:33:30 ALS Bottle#: 40 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
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\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:03:36 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:03:36

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	1.542	1.542	0.0		17878227	53.2		106	1861666	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	6827950	21.8		109	58367	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.820	0.0	1.000	5769361	21.1		106	55057	
D 4 13C5-PFPeA										
267.90 > 223.00	1.820	1.820	0.0		13456607	50.9		102	1010658	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.858	0.0	1.000	10429055	19.6		111		
298.90 > 99.00	1.858	1.858	0.0	1.000	4398285		2.37(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.115	2.115	0.0		12369430	52.1		104	634749	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.115	2.115	0.0	1.000	4802326	20.4		102	173981	
D 11 13C4-PFHpA										
367.00 > 322.00	2.452	2.452	0.0		11095372	53.5		107	964785	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.452	2.452	0.0	1.000	4700242	20.6		103	55530	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.470	2.470	0.0	1.000	6742745	18.4		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.470	2.470	0.0		15752436	50.4		107	1362975	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.809	2.809	0.0	1.000	4932992	20.4		102	112140	
413.00 > 169.00	2.809	2.809	0.0	1.000	3055508		1.61(0.90-1.10)		210188	
D 14 13C4 PFOA										
417.00 > 372.00	2.809	2.809	0.0		11302991	51.6		103	796424	

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	2.817	2.817	0.0	1.000	6211239	20.3		106		
D 17 13C4 PFOS										
503.00 > 80.00	3.185	3.185	0.0		12447367	50.6		106	544044	
D 19 13C5 PFNA										
468.00 > 423.00	3.185	3.185	0.0		8461599	50.8		102	401875	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.185	3.185	0.0	1.000	5341198	18.9		102	747955	
499.00 > 99.00	3.185	3.185	0.0	1.000	1173877		4.55(0.90-1.10)		125985	
20 Perfluorononanoic acid										
463.00 > 419.00	3.185	3.185	0.0	1.000	3481380	20.6		103	59918	
D 21 13C8 FOSA										
506.00 > 78.00	3.518	3.518	0.0		20583054	51.2		102	1034331	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.518	3.518	0.0	1.000	8182387	21.3		106	424891	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.543	3.543	0.0	1.000	2919290	19.9		99.6	87387	
D 23 13C2 PFDA										
515.00 > 470.00	3.543	3.543	0.0		7632519	48.4		96.7	269971	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.864	3.864	0.0	1.000	3077754	18.5		95.8		
D 27 13C2 PFUnA										
565.00 > 520.00	3.872	3.872	0.0		5705960	48.0		96.1	435851	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.872	3.872	0.0	1.000	2307176	19.0		94.9	67790	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.168	4.168	0.0	1.000	1997585	20.2		101	47933	
D 30 13C2 PFDoA										
615.00 > 570.00	4.168	4.168	0.0		5209844	46.5		93.0	183958	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.440	4.440	0.0	1.000	1987844	20.1		100	37534	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.679	4.679	0.0	1.000	3985566	20.6		103	37050	
713.00 > 169.00	4.670	4.679	-0.009	0.998	608603		6.55(0.00-0.00)		73158	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.679	4.679	0.0		10422471	45.1		90.2	529513	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.090	5.090	0.0	1.000	2235188	20.8		104	2773	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.090	5.090	0.0		5926168	45.7		91.4	136976	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.452	5.452	0.0	1.000	1747131	16.9		84.4	2060	

Reagents:

LCPFC-L4_00023 Amount Added: 1.00 Units: mL

Report Date: 07-Dec-2016 17:03:37 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_019.d

Injection Date: 07-Dec-2016 14:33:30 Instrument ID: A8_N

Lims ID: CCV L4

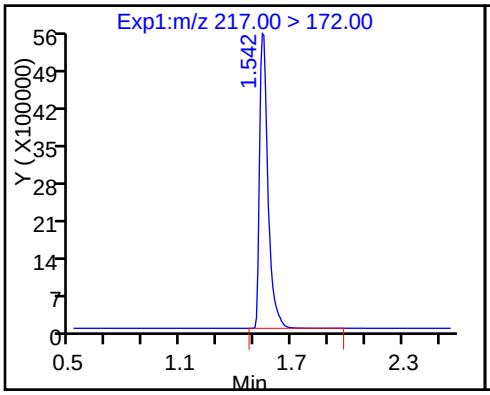
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 21

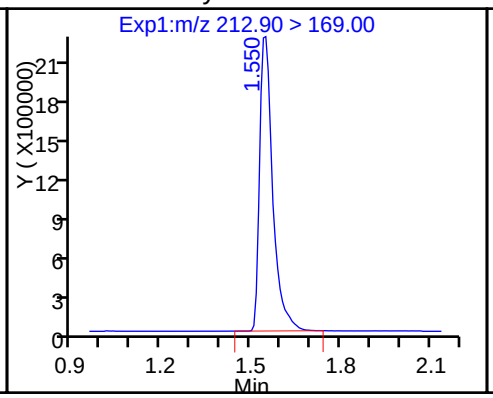
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

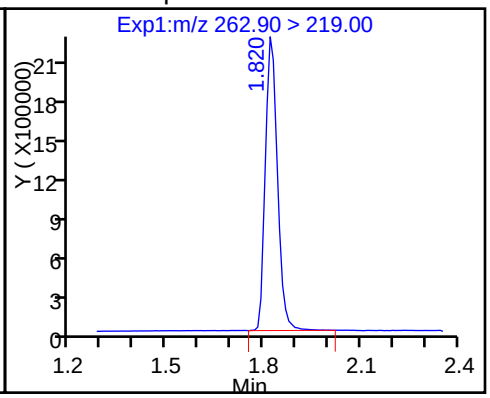
D 2 13C4 PFBA



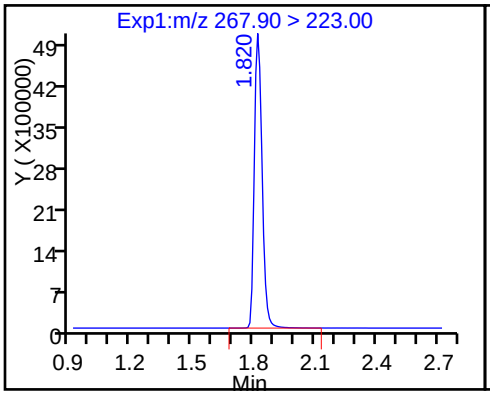
1 Perfluorobutyric acid



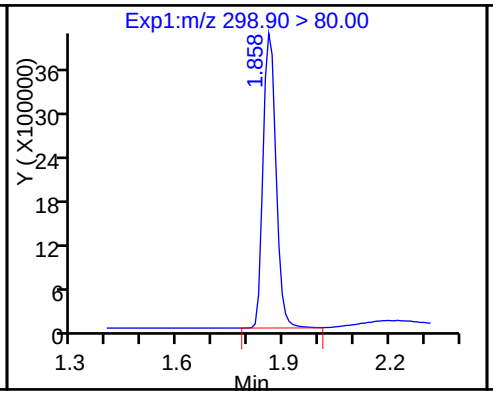
3 Perfluoropentanoic acid



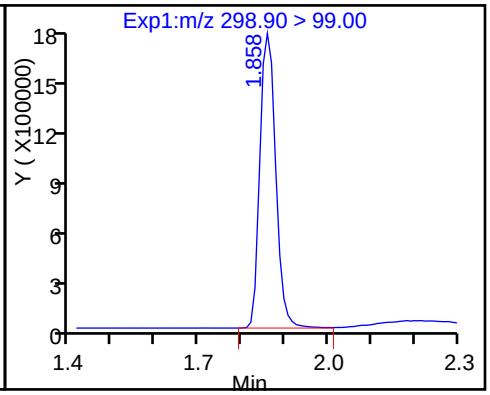
D 4 13C5-PFPeA



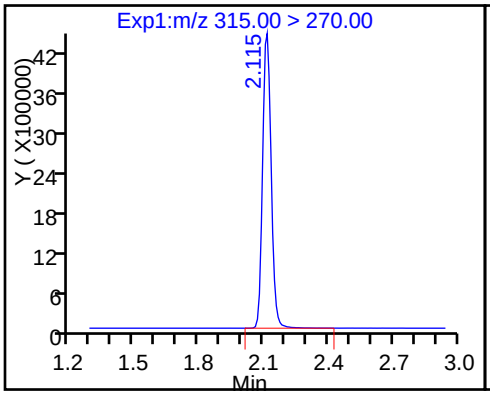
5 Perfluorobutanesulfonic acid



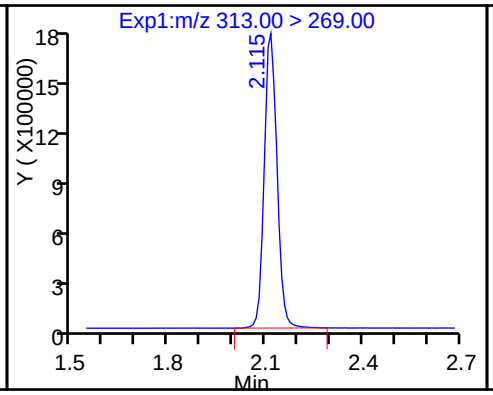
5 Perfluorobutanesulfonic acid



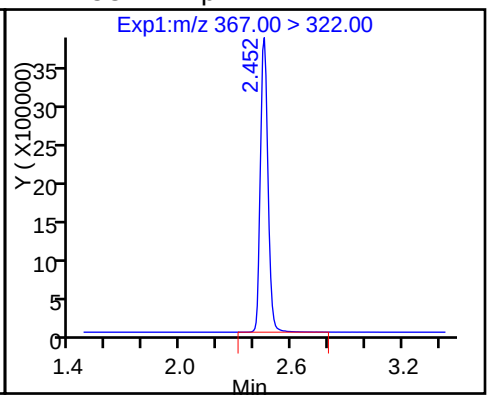
D 6 13C2 PFHxA



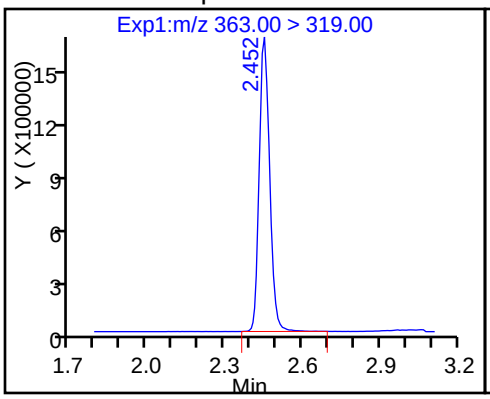
7 Perfluorohexanoic acid



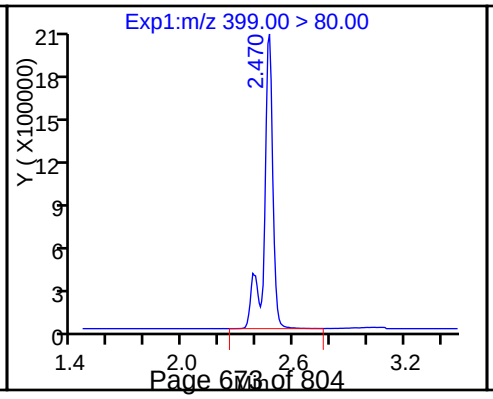
D 11 13C4-PFHpA



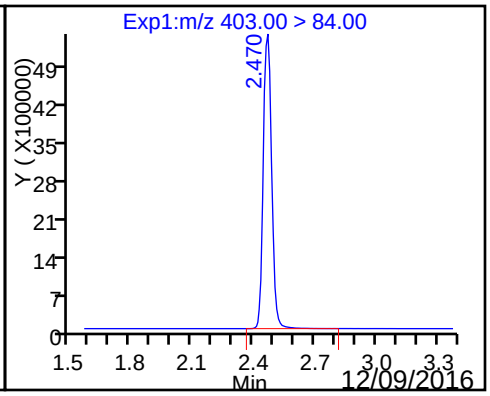
12 Perfluoroheptanoic acid



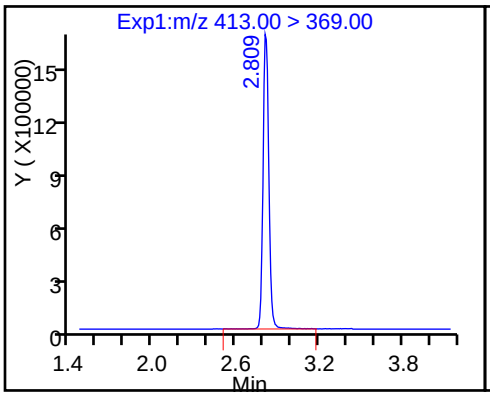
9 Perfluorohexanesulfonic acid



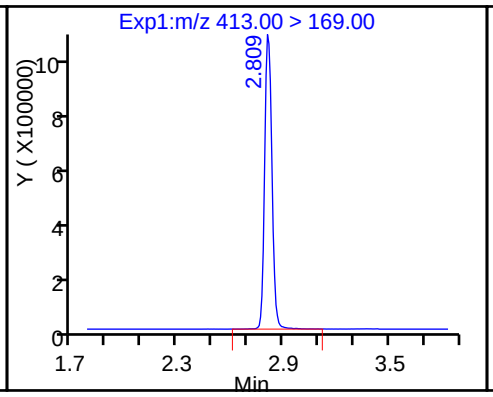
D 10 18O2 PFHxS



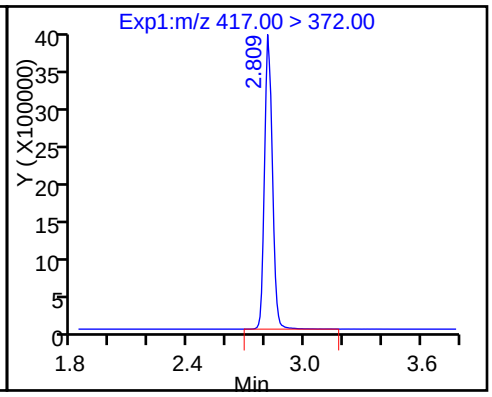
15 Perfluorooctanoic acid



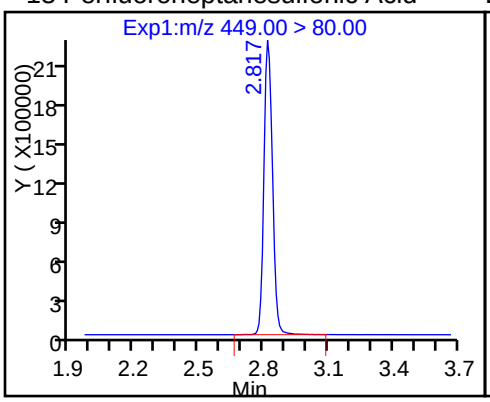
15 Perfluorooctanoic acid



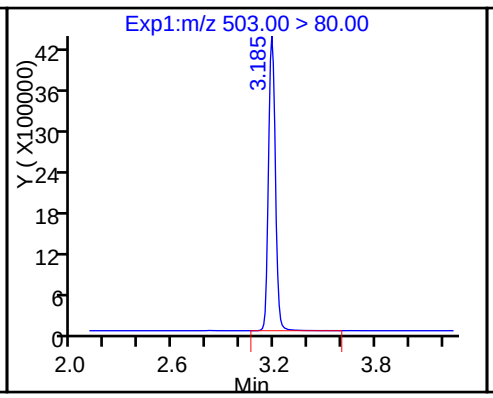
D 14 13C4 PFOA



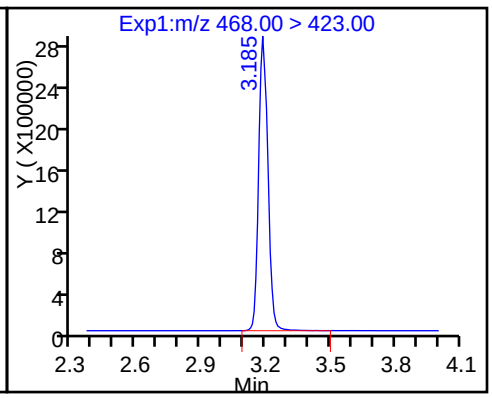
13 Perfluoroheptanesulfonic Acid



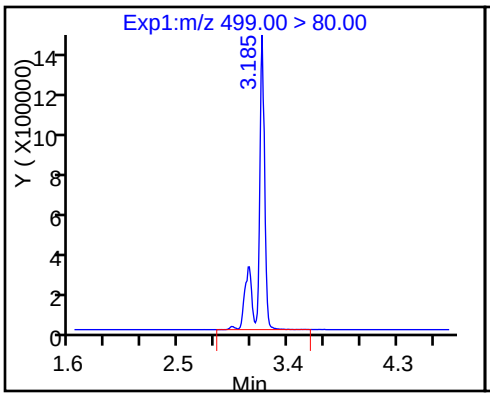
D 17 13C4 PFOS



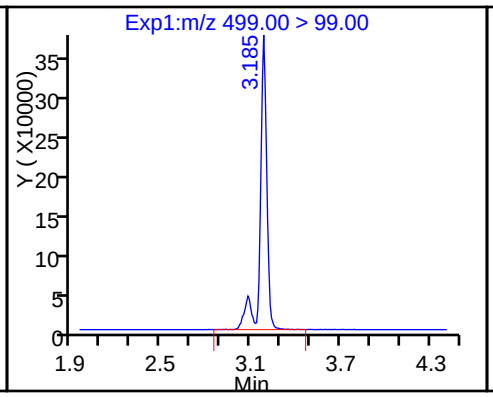
D 19 13C5 PFNA



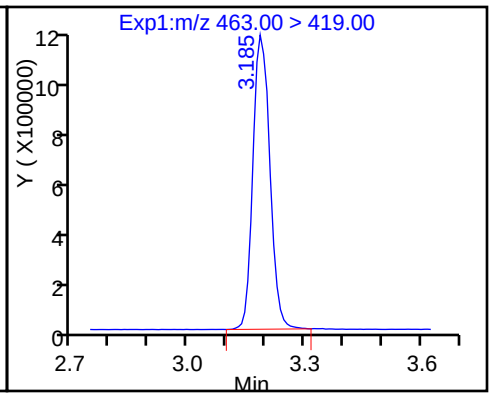
18 Perfluorooctane sulfonic acid



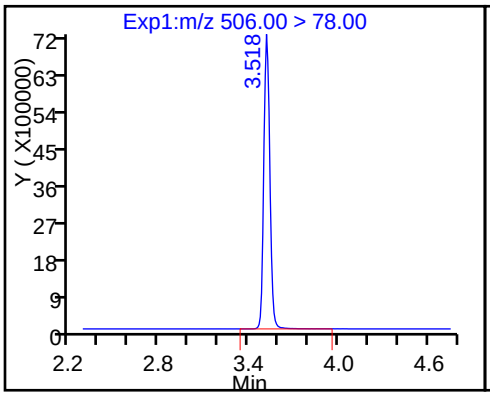
18 Perfluorooctane sulfonic acid



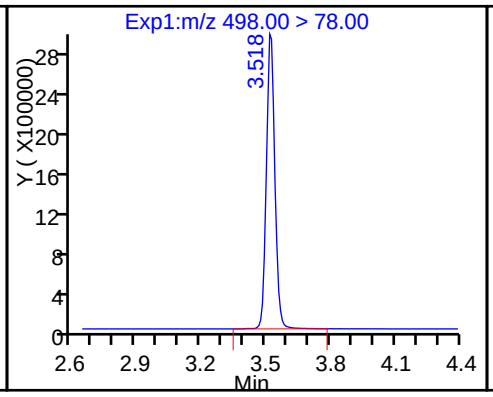
20 Perfluorononanoic acid



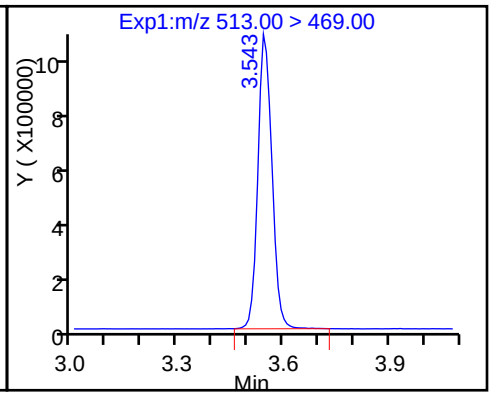
D 21 13C8 FOSA



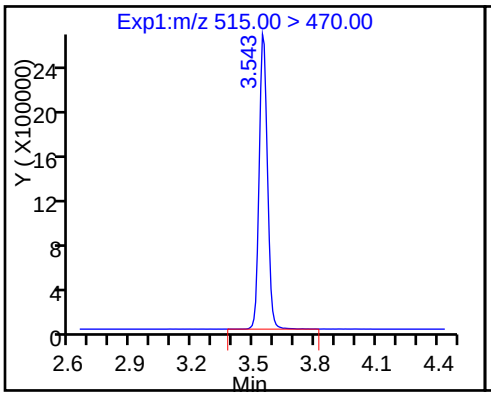
22 Perfluorooctane Sulfonamide



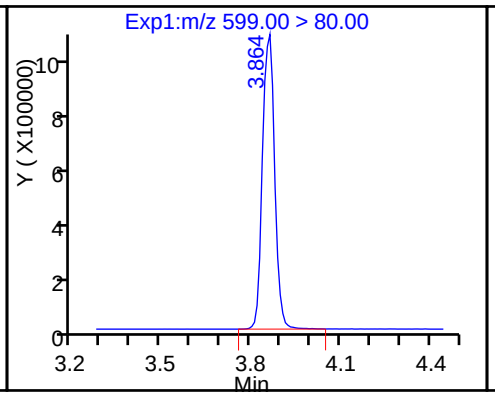
24 Perfluorodecanoic acid



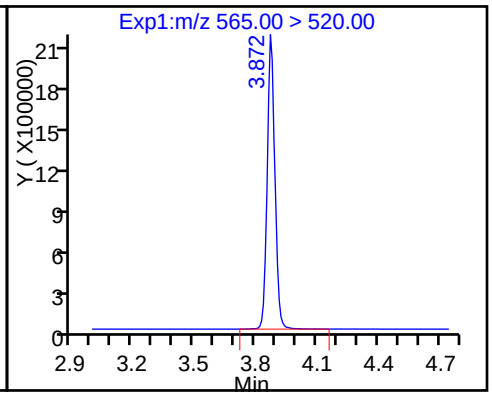
D 23 13C2 PFDA



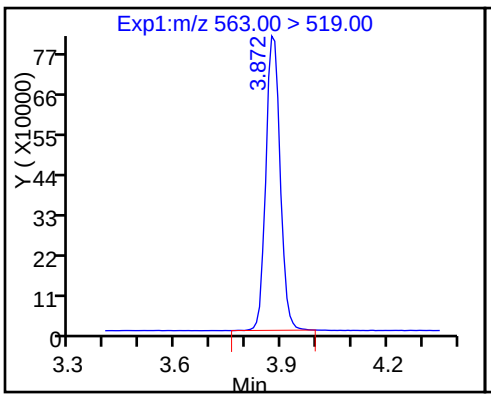
26 Perfluorodecane Sulfonic acid



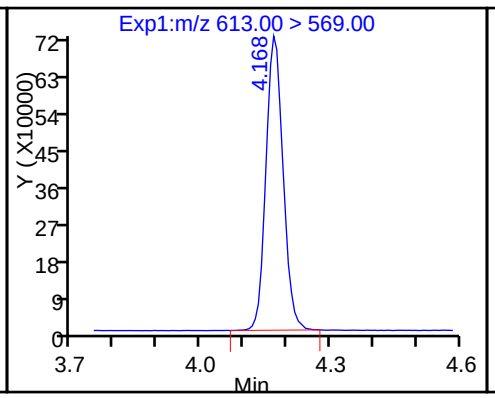
D 27 13C2 PFUnA



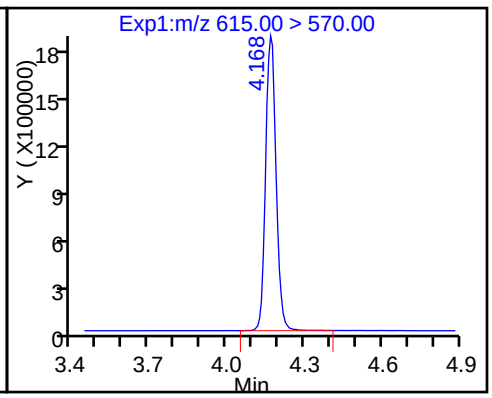
28 Perfluoroundecanoic acid



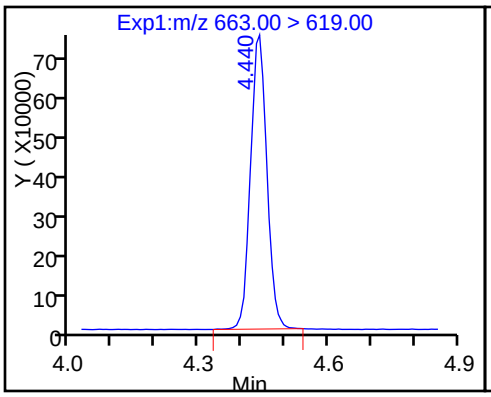
29 Perfluorododecanoic acid



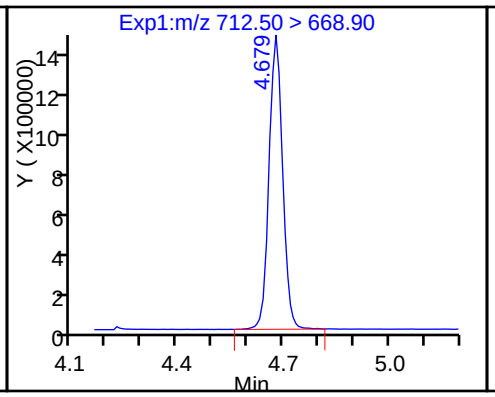
D 30 13C2 PFDoA



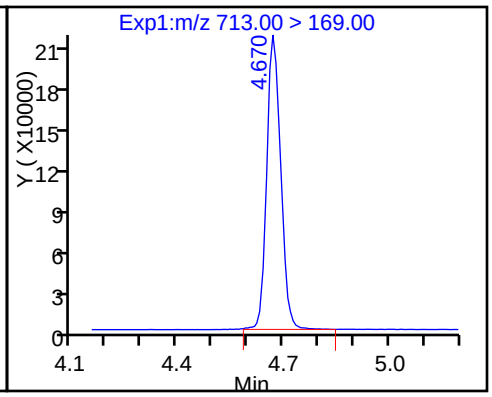
31 Perfluorotridecanoic acid



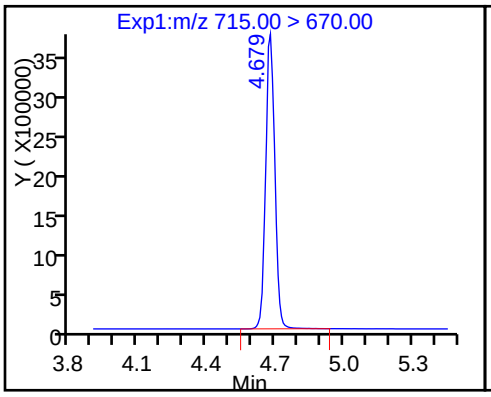
33 Perfluorotetradecanoic acid



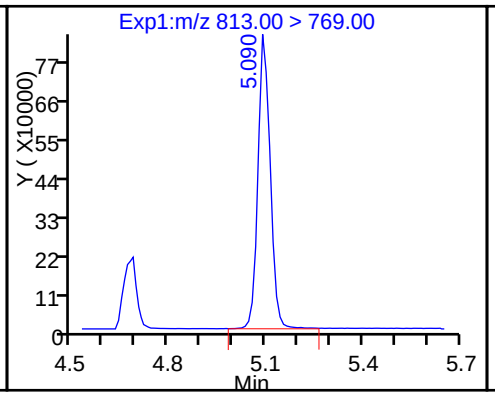
33 Perfluorotetradecanoic acid



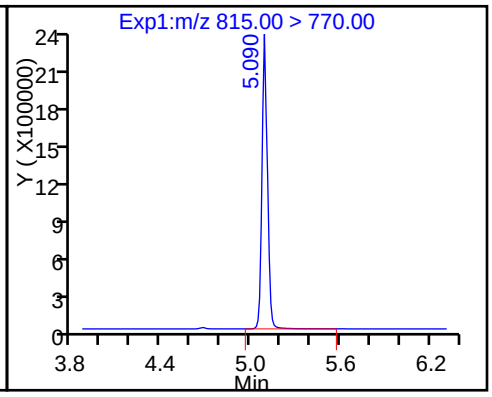
D 32 13C2-PFTeDA



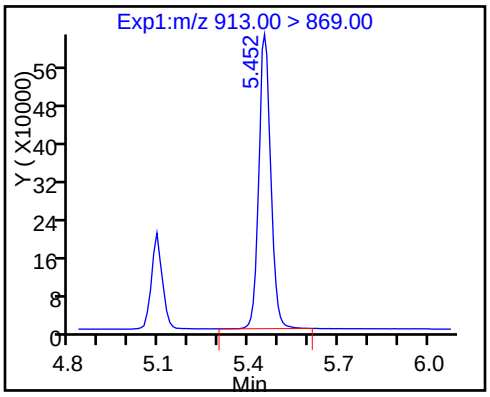
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Lab Sample ID: CCV 320-141054/34 Calibration Date: 12/07/2016 16:10

Instrument ID: A8_N Calib Start Date: 12/03/2016 13:48

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/03/2016 15:33

Lab File ID: 07DEC2016A_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8740	0.8735		50.0	50.0	-0.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.015	0.9861		48.6	50.0	-2.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.596	1.595		44.2	44.2	-0.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9531	0.9441		49.5	50.0	-1.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.027	1.019		49.6	50.0	-0.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.098	1.054		43.7	45.5	-4.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	1.043		48.6	50.0	-2.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.177	1.143		46.2	47.6	-2.9	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.085	1.058		45.3	46.4	-2.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.996	0.9873		49.5	50.0	-0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9341	0.9073		48.6	50.0	-2.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9605	0.9585		49.9	50.0	-0.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6398	0.6076		45.8	48.2	-5.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.066	0.9585		45.0	50.0	-10.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9490	0.9083		47.9	50.0	-4.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9498	0.9363		49.3	50.0	-1.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.854	1.717		46.3	50.0	-7.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.998		49.5	50.0	-1.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9929	0.9460		47.6	50.0	-4.7	25.0
13C4 PFBA	Ave	335829	326358		48.6	50.0	-2.8	50.0
13C5-PFPeA	Ave	264545	244715		46.3	50.0	-7.5	50.0
13C2 PFHxA	Ave	237486	222879		46.9	50.0	-6.2	50.0
13C4-PFHpA	Ave	207413	191513		46.2	50.0	-7.7	50.0
18O2 PFHxS	Ave	312342	298367		45.2	47.3	-4.5	50.0
13C4 PFOA	Ave	219258	196116		44.7	50.0	-10.6	50.0
13C4 PFOS	Ave	246009	240128		46.7	47.8	-2.4	50.0
13C5 PFNA	Ave	166415	152780		45.9	50.0	-8.2	50.0
13C8 FOSA	Ave	402279	371090		46.1	50.0	-7.8	50.0
13C2 PFDA	Ave	157817	138029		43.7	50.0	-12.5	50.0
13C2 PFUnA	Ave	118762	101020		42.5	50.0	-14.9	50.0
13C2 PFDoA	Ave	112084	95560		42.6	50.0	-14.7	50.0
13C2-PFTeDA	Ave	231173	195247		42.2	50.0	-15.5	50.0
13C2-PFHxDA	Ave	129725	103587		39.9	50.0	-20.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_032.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 07-Dec-2016 16:10:58 ALS Bottle#: 41 Worklist Smp#: 34
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\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:10:18 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:10:18

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	1.542	1.542	0.0		16317882	48.6		97.2	1049707	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.550	-0.008	1.000	14253845	50.0		99.9	107069	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.820	0.0	1.000	12064984	48.6		97.2	125847	
D 4 13C5-PFPeA										
267.90 > 223.00	1.820	1.820	0.0		12235733	46.3		92.5	1131331	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.858	0.0	1.000	21037330	44.2		99.9		
298.90 > 99.00	1.858	1.858	0.0	1.000	9747107		2.16(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.109	2.115	-0.006		11143933	46.9		93.8	814771	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.109	2.115	-0.006	1.000	10520485	49.5		99.0	288880	
D 11 13C4-PFHpA										
367.00 > 322.00	2.447	2.452	-0.005		9575668	46.2		92.3	670754	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.447	2.452	-0.005	1.000	9758395	49.6		99.2	98576	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.465	2.470	-0.005	1.000	14305115	43.7		96.0		
D 10 18O2 PFHxS										
403.00 > 84.00	2.465	2.470	-0.005		14112761	45.2		95.5	1727907	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.809	2.809	0.0	1.000	10222870	48.6		97.3	191175	
413.00 > 169.00	2.809	2.809	0.0	1.000	6271228		1.63(0.90-1.10)		361898	
D 14 13C4 PFOA										
417.00 > 372.00	2.809	2.809	0.0		9805808	44.7		89.4	1138405	

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	2.817	2.817	0.0	1.000	13060849	46.2		97.1		
D 17 13C4 PFOS										
503.00 > 80.00	3.178	3.185	-0.007		11478108	46.7		97.6	297892	
D 19 13C5 PFNA										
468.00 > 423.00	3.178	3.185	-0.007		7638977	45.9		91.8	427091	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.080	3.185	-0.105	1.000	11793094	45.3		97.5	224575	
499.00 > 99.00	3.178	3.185	-0.007	1.032	2555074		4.62(0.90-1.10)		404411	
20 Perfluorononanoic acid										
463.00 > 419.00	3.186	3.185	0.001	1.000	7541671	49.5		99.1	128449	
D 21 13C8 FOSA										
506.00 > 78.00	3.519	3.518	0.001		18554505	46.1		92.2	888759	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.519	3.518	0.001	1.000	16833883	48.6		97.1	538126	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.536	3.543	-0.007	1.000	6615311	49.9		99.8	212144	
D 23 13C2 PFDA										
515.00 > 470.00	3.536	3.543	-0.007		6901436	43.7		87.5	351052	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.848	3.864	-0.016	1.000	7032619	45.8		95.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.874	3.872	0.002		5051015	42.5		85.1	889941	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.865	3.872	-0.007	1.000	4841409	45.0		89.9	130651	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.162	4.168	-0.006	1.000	4339643	47.9		95.7	91180	
D 30 13C2 PFDoA										
615.00 > 570.00	4.155	4.168	-0.013		4777975	42.6		85.3	211109	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.427	4.440	-0.013	1.000	4473506	49.3		98.6	106398	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.671	4.679	-0.008	1.000	8202686	46.3		92.6	81533	
713.00 > 169.00	4.663	4.679	-0.016	0.998	1383579		5.93(0.00-0.00)		159948	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.671	4.679	-0.008		9762341	42.2		84.5	608971	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.090	5.090	0.0	1.000	4767219	49.5		99.0	6362	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.080	5.090	-0.010		5179334	39.9		79.9	132915	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.444	5.452	-0.008	1.000	4520014	47.6		95.3	6975	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 07-Dec-2016 17:10:18 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_032.d

Injection Date: 07-Dec-2016 16:10:58 Instrument ID: A8_N

Lims ID: CCV L5

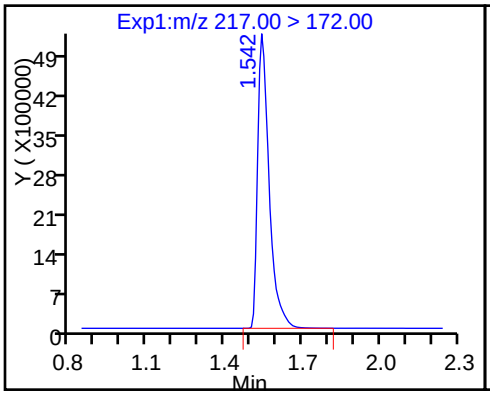
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 34

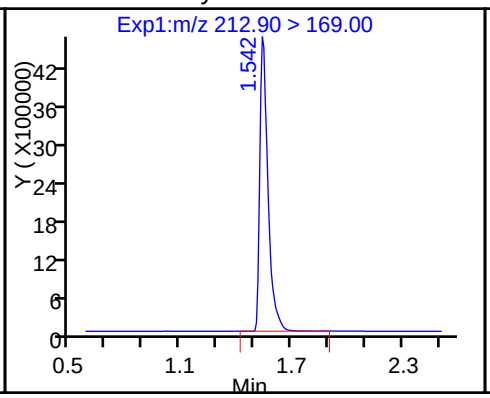
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

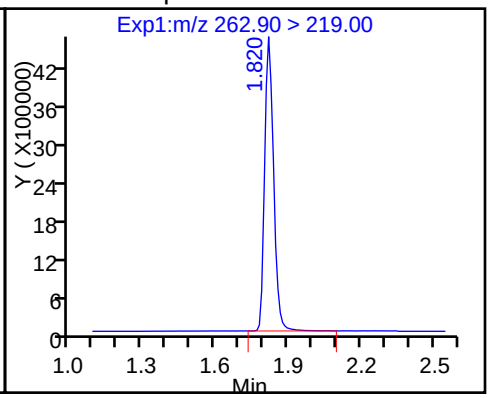
D 2 13C4 PFBA



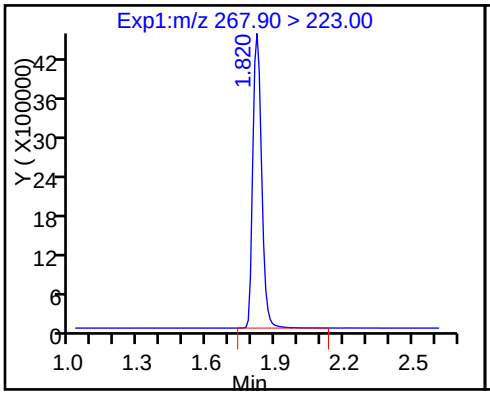
1 Perfluorobutyric acid



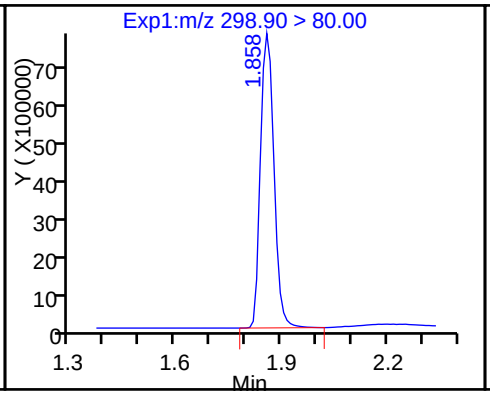
3 Perfluoropentanoic acid



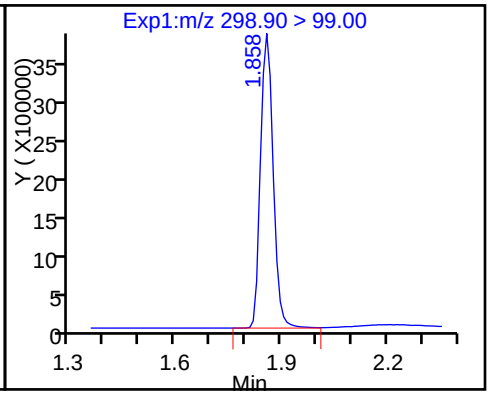
D 4 13C5-PFPeA



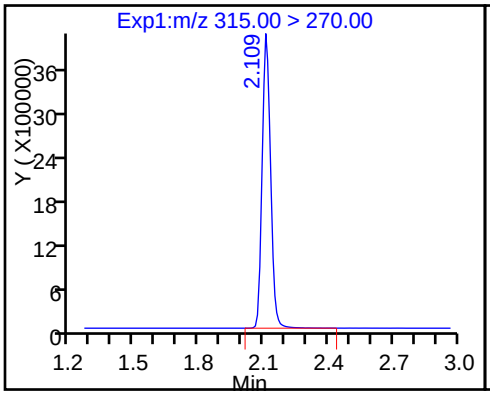
5 Perfluorobutanesulfonic acid



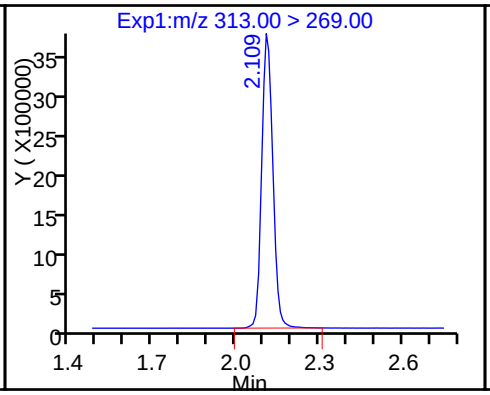
5 Perfluorobutanesulfonic acid



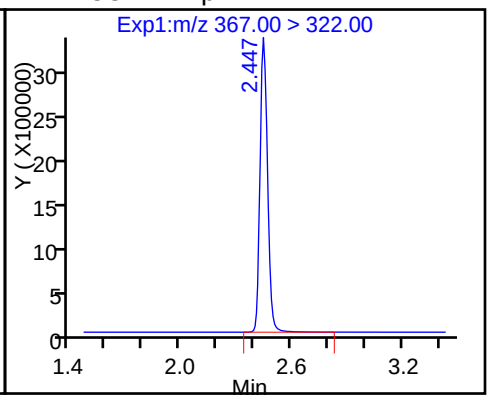
D 6 13C2 PFHxA



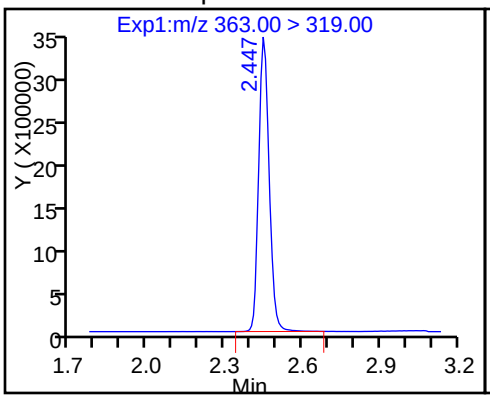
7 Perfluorohexanoic acid



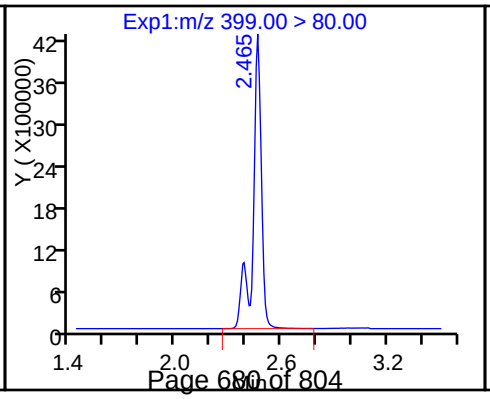
D 11 13C4-PFHpA



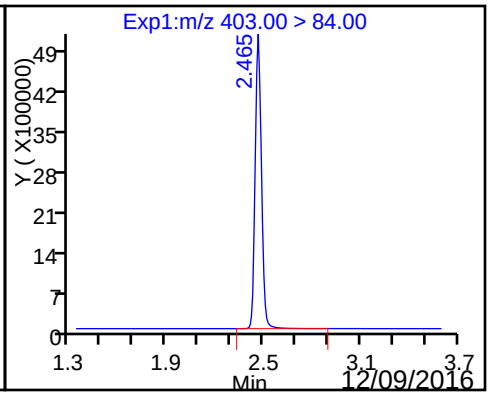
12 Perfluoroheptanoic acid



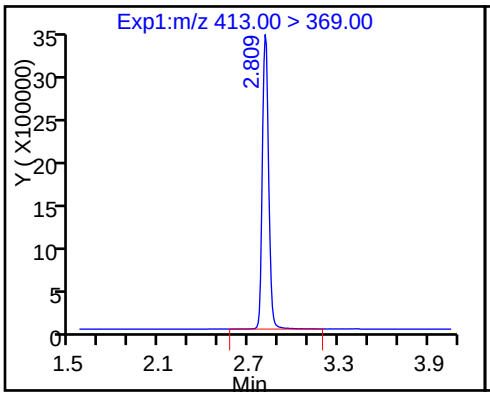
9 Perfluorohexanesulfonic acid



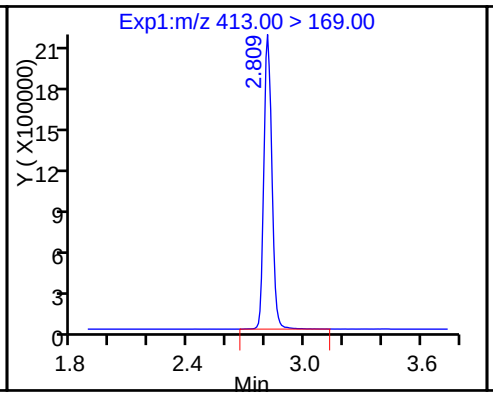
D 10 18O2 PFHxS



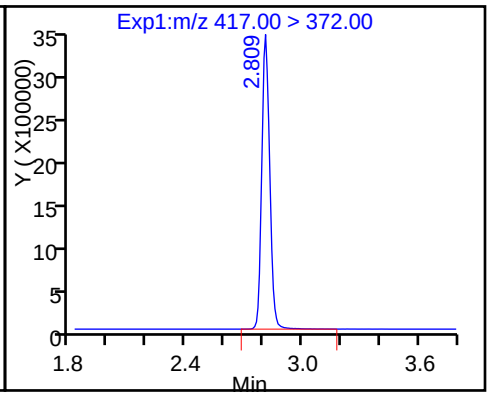
15 Perfluorooctanoic acid



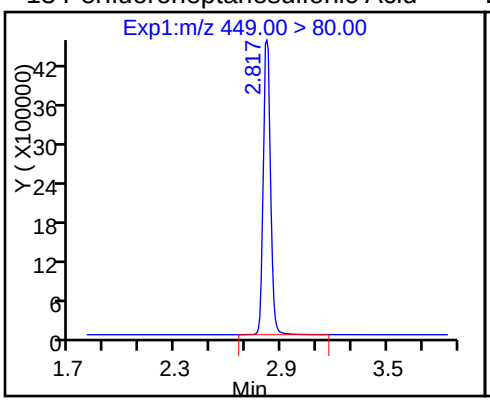
15 Perfluorooctanoic acid



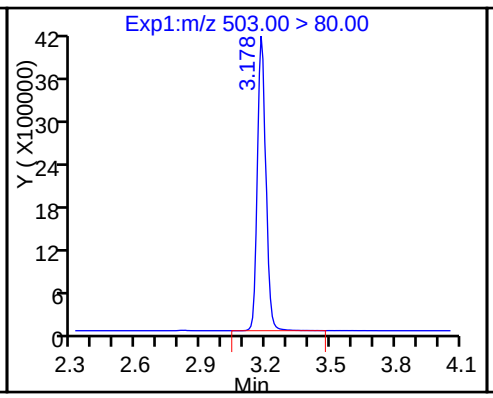
D 14 13C4 PFOA



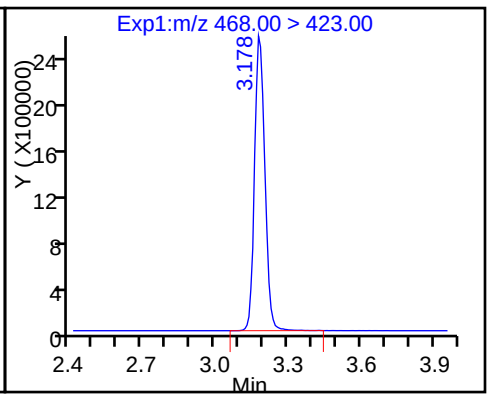
13 Perfluoroheptanesulfonic Acid



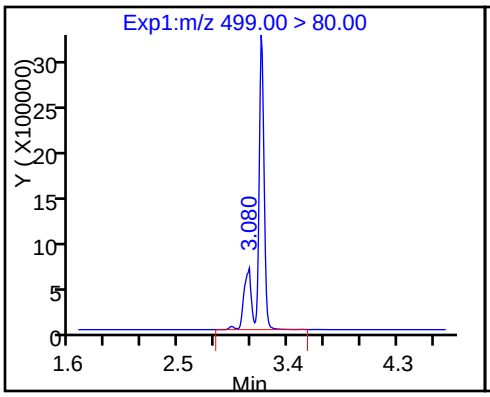
D 17 13C4 PFOS



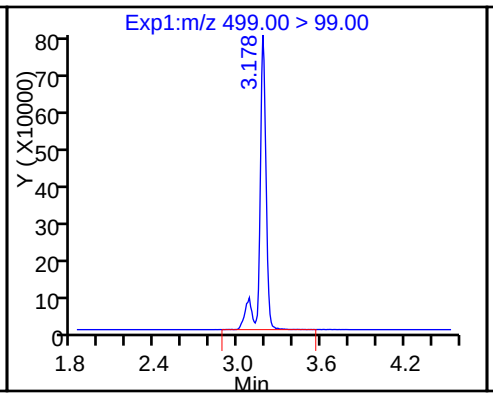
D 19 13C5 PFNA



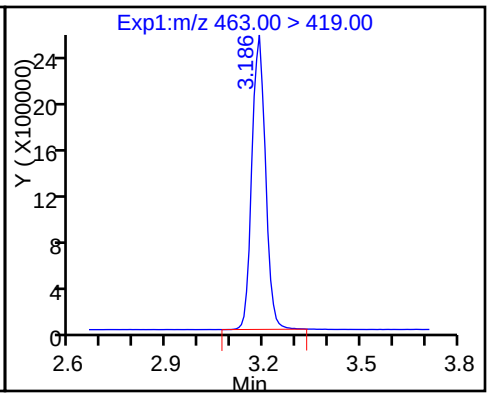
18 Perfluorooctane sulfonic acid



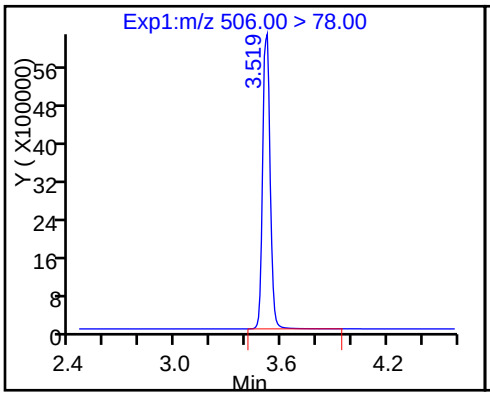
18 Perfluorooctane sulfonic acid



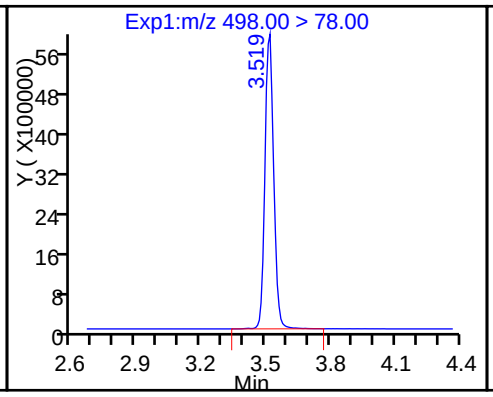
20 Perfluorononanoic acid



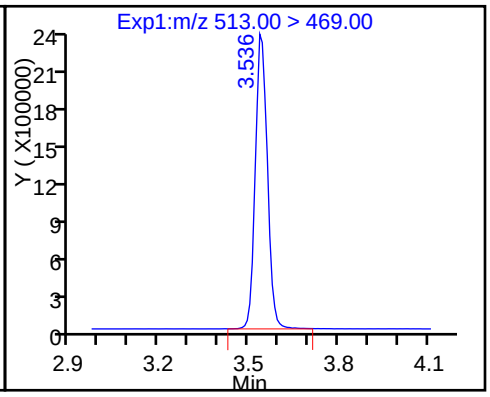
D 21 13C8 FOSA



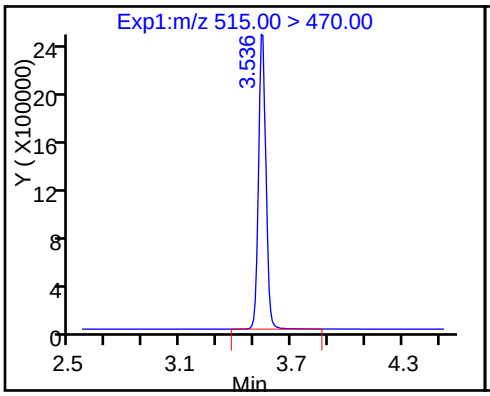
22 Perfluorooctane Sulfonamide



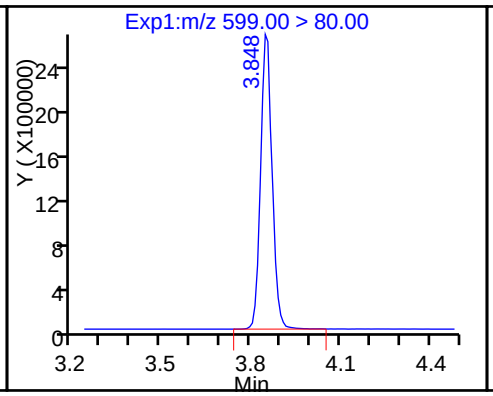
24 Perfluorodecanoic acid



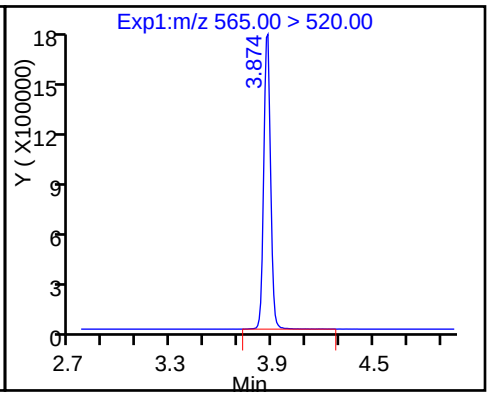
D 23 13C2 PFDA



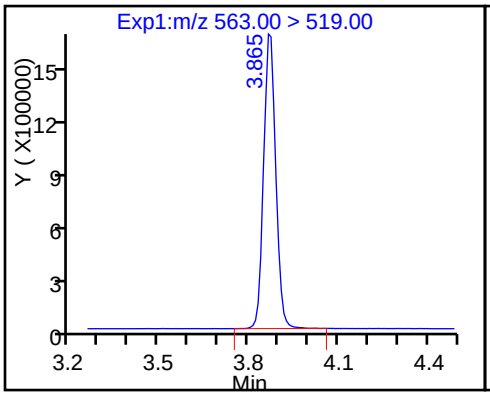
26 Perfluorodecane Sulfonic acid



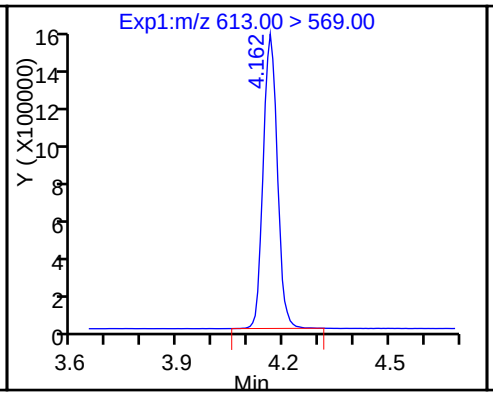
D 27 13C2 PFUnA



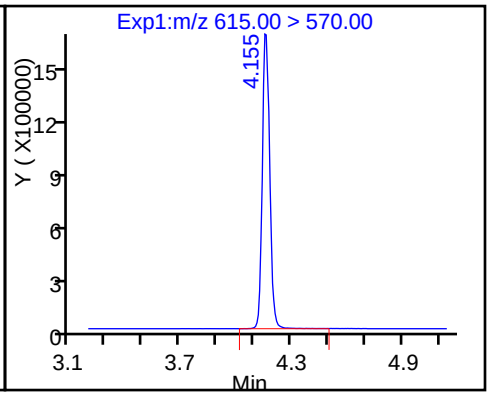
28 Perfluoroundecanoic acid



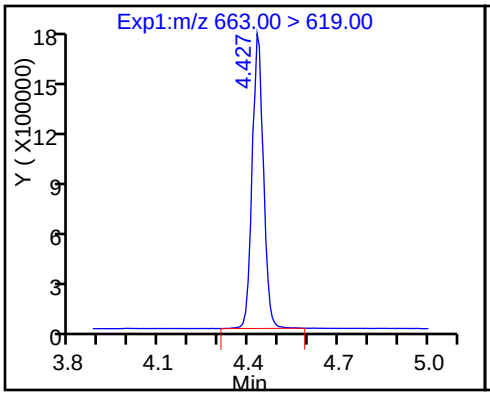
29 Perfluorododecanoic acid



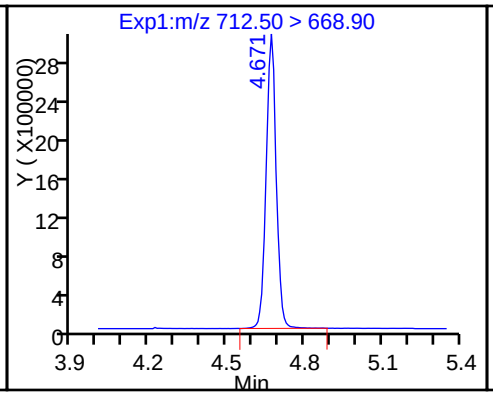
D 30 13C2 PFDoA



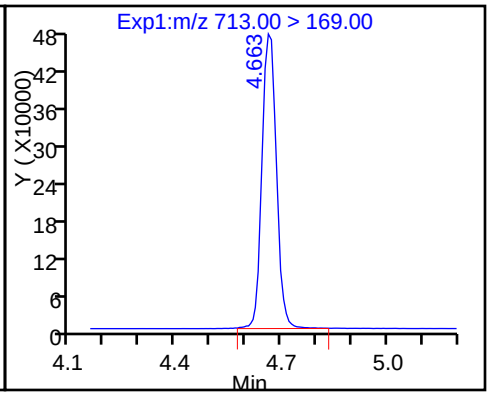
31 Perfluorotridecanoic acid



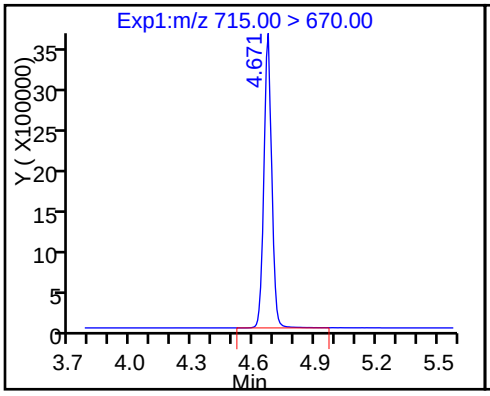
33 Perfluorotetradecanoic acid



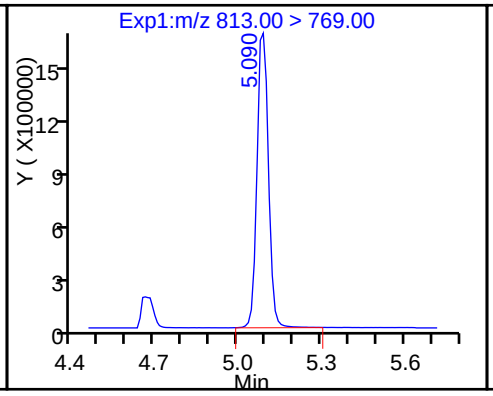
33 Perfluorotetradecanoic acid



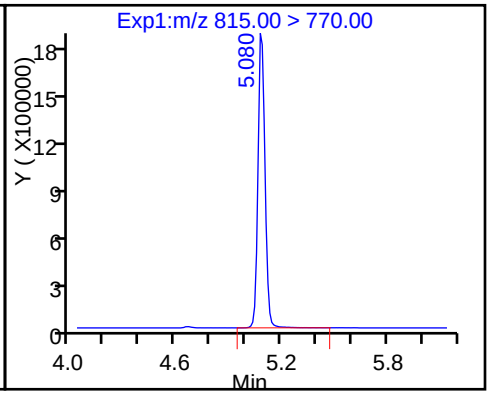
D 32 13C2-PFTeDA



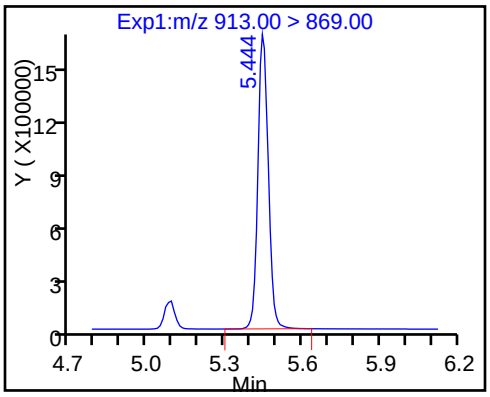
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-139076/1-A

Matrix: Water Lab File ID: 07DEC2016A_022.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 11/22/2016 11:44

Sample wt/vol: 250(mL) Date Analyzed: 12/07/2016 14:55

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.: 141054 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	112		25-150
STL00991	13C4 PFOS	103		25-150
STL00994	18O2 PFHxS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_022.d
Lims ID: MB 320-139076/1-A
Client ID:
Sample Type: MB
Inject. Date: 07-Dec-2016 14:55:59 ALS Bottle#: 11 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-139076/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:03:59 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:04:19

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	1.542	1.542	0.0		18426475	54.9		110	1473913	
1 Perfluorobutyric acid										
212.90 > 169.00	1.574	1.550	0.024	1.000	57798	0.1794			319	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.820	-0.010	1.000	25045	0.0839			169	
D 4 13C5-PFPeA										
267.90 > 223.00	1.819	1.820	-0.001		14712872	55.6		111	920190	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.858	-0.010	1.000	11049	0.0207				
298.90 > 99.00	1.858	1.858	0.0	1.005	4504		2.45(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.104	2.115	-0.011		12226042	51.5		103	720716	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.112	2.115	-0.003	1.000	11088	0.0476			242	
D 11 13C4-PFHpA										
367.00 > 322.00	2.448	2.452	-0.004		11739769	56.6		113	1015791	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.465	2.470	-0.005	1.000	64196	0.1745				
D 10 18O2 PFHxS										
403.00 > 84.00	2.456	2.470	-0.014		15855780	50.8		107	948505	
D 47 M2-6:2FTS										
429.00 > 409.00	2.783	2.782	0.001		2170	0.0206		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.783	2.782	0.001	1.000	11580	NR				
15 Perfluorooctanoic acid										
413.00 > 369.00	2.807	2.809	-0.002	1.000	37578	0.1433			252	
413.00 > 169.00	2.807	2.809	-0.002	1.000	16296		2.31(0.90-1.10)		840	

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	2.807	2.809	-0.002		12230083	55.8		112	626799	
D 17 13C4 PFOS										
503.00 > 80.00	3.175	3.185	-0.010		12121135	49.3		103	821089	
D 19 13C5 PFNA										
468.00 > 423.00	3.175	3.185	-0.010		8914900	53.6		107	755949	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.183	3.185	-0.002	1.000	30008	0.1090			1626	
499.00 > 99.00	3.185	3.185	0.0	1.001	0		0.00(0.90-1.10)			
D 21 13C8 FOSA										
506.00 > 78.00	3.516	3.518	-0.002		17252392	42.9		85.8	600393	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.507	3.518	-0.011	1.000	11739	0.0364			882	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.532	3.528	0.004	1.010	466	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.499	3.537	-0.038		1098	0.0113		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.532	3.543	-0.011	1.000	5183	0.0331			150	
D 23 13C2 PFDA										
515.00 > 470.00	3.541	3.543	-0.002		8153460	51.7		103	326941	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.688	3.693	-0.005		8866	0.1222		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.600	3.704	-0.104	0.976	232	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.852	3.864	-0.012	1.000	1632	0.0101				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.852	3.865	-0.013		18269	0.2293		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.870	3.872	-0.002		6056751	51.0		102	556661	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.861	3.872	-0.011	1.000	18234	0.1412			469	
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.852	3.874	-0.022	1.000	2922	NR				
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.012	4.007	0.005		2716	0.0258		0.0		
54 MeFOSA										
512.00 > 169.00	4.012	4.016	-0.004	1.000	502	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.156	4.168	-0.012		5241037	46.8		93.5	245826	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.178	4.195	-0.017		2944	0.0297		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.204	4.202	0.002	1.000	236	NR				

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	4.672	4.679	-0.007	1.000	36288	0.1868			228	
713.00 > 169.00	4.654	4.679	-0.025	0.996	6461		5.62(0.00-0.00)		2460	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.664	4.679	-0.015		13903795	60.1		120	838126	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.081	5.090	-0.009	1.000	71008	-0.0721			149	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.081	5.090	-0.009		5496399	42.4		84.7	181919	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.444	5.452	-0.008	1.000	3897	0.0374			4.7	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 07-Dec-2016 17:04:19 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_022.d

Injection Date: 07-Dec-2016 14:55:59 Instrument ID: A8_N

Lims ID: MB 320-139076/1-A

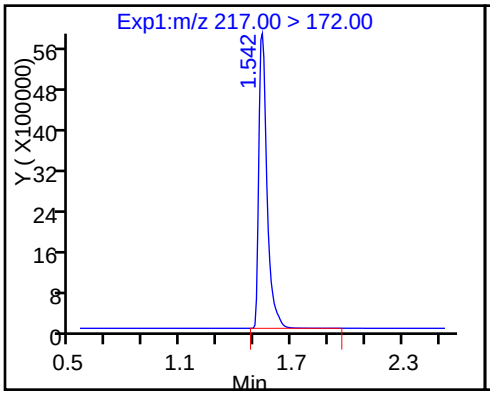
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 11 Worklist Smp#: 24

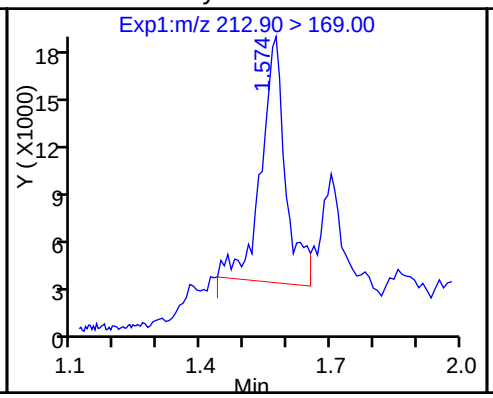
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

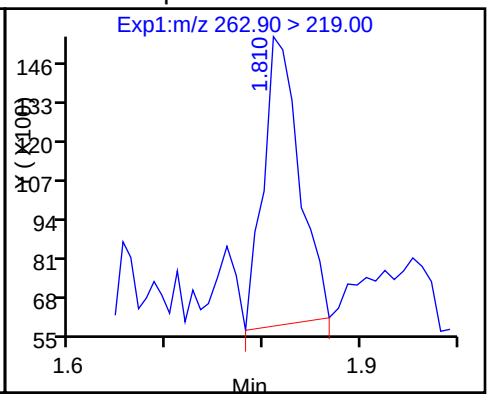
D 2 13C4 PFBA



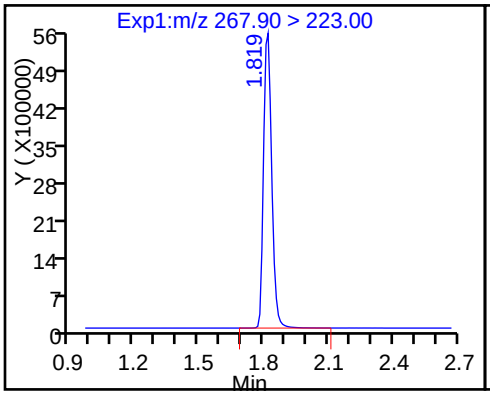
1 Perfluorobutyric acid



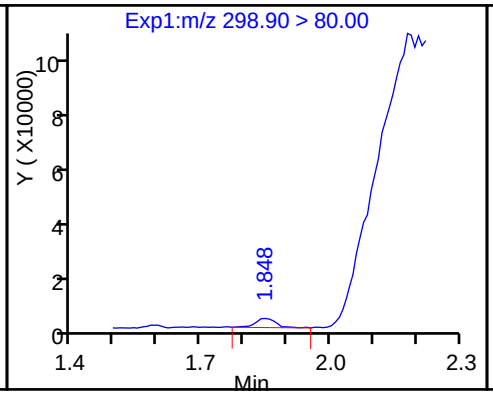
3 Perfluoropentanoic acid



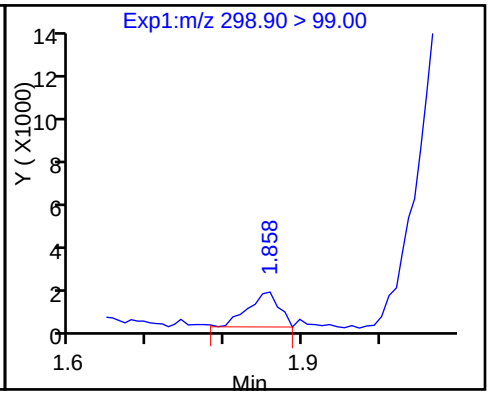
D 4 13C5-PFPeA



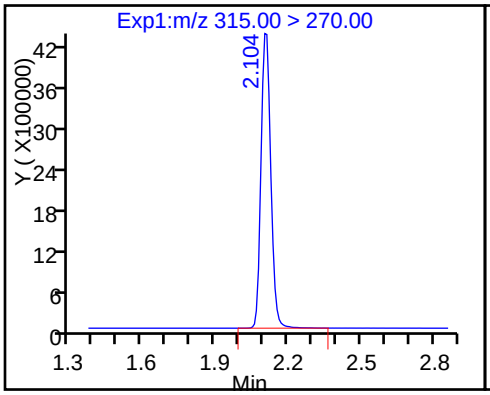
5 Perfluorobutanesulfonic acid



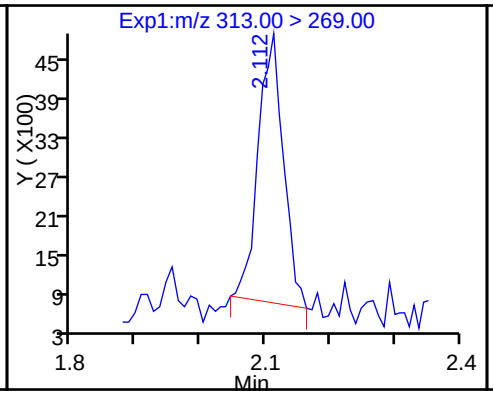
5 Perfluorobutanesulfonic acid



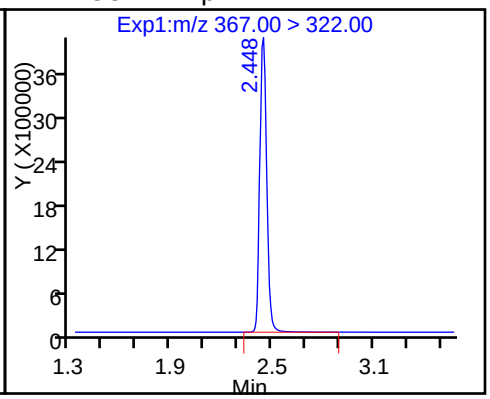
D 6 13C2 PFHxA



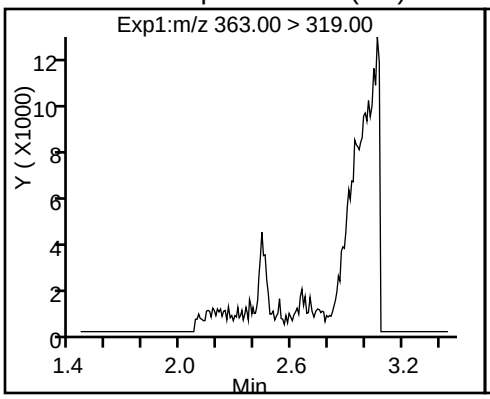
7 Perfluorohexanoic acid



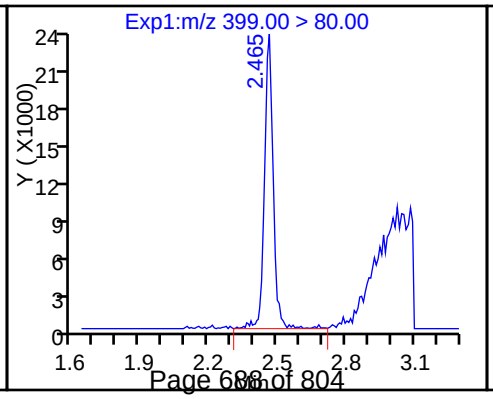
D 11 13C4-PFHpA



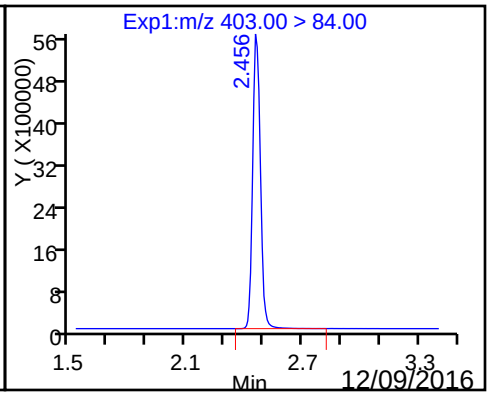
12 Perfluoroheptanoic acid (ND)



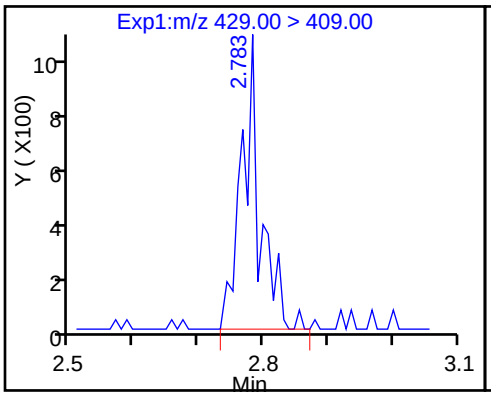
9 Perfluorohexanesulfonic acid



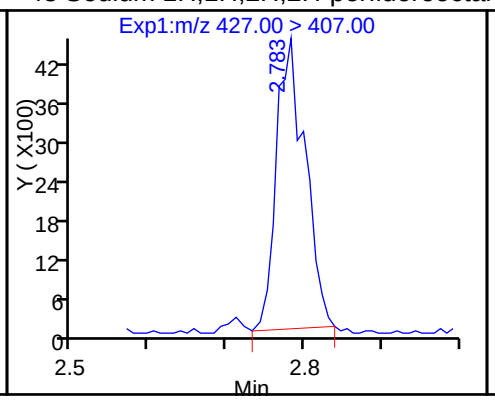
D 10 18O2 PFHxS



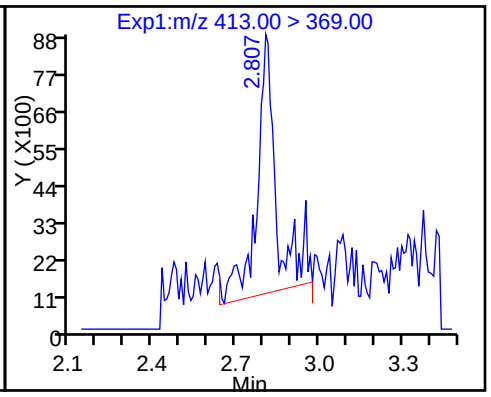
D 47 M2-6:2FTS



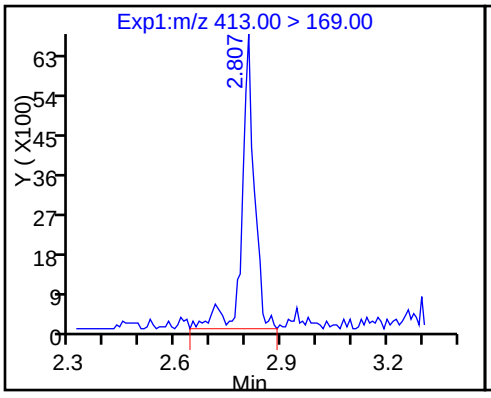
48 Sodium 1H,1H,2H,2H-perfluorooctane



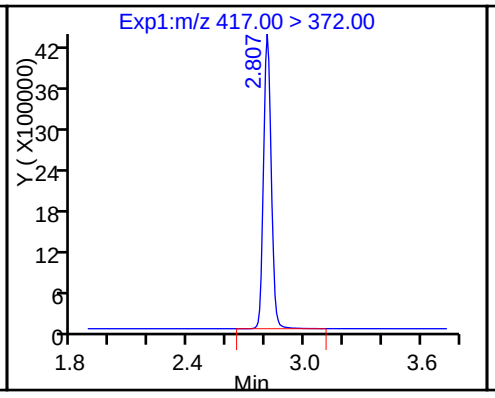
15 Perfluorooctanoic acid



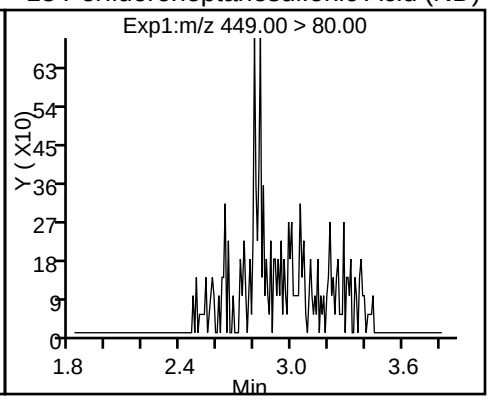
15 Perfluorooctanoic acid



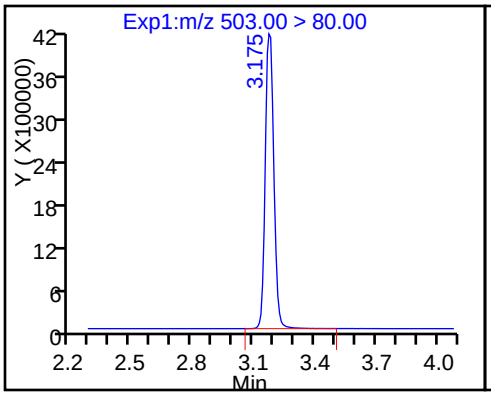
D 14 13C4 PFOA



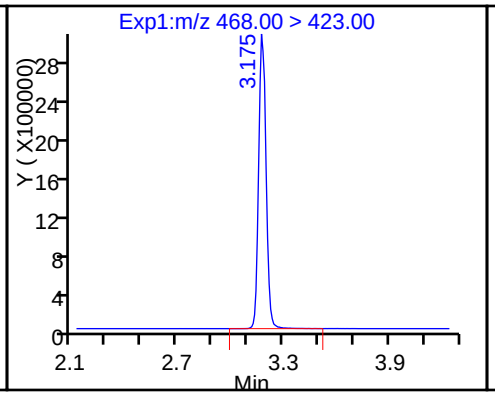
13 Perfluoroheptanesulfonic Acid (ND)



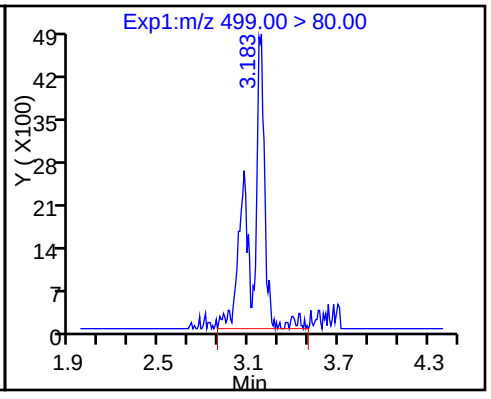
D 17 13C4 PFOS



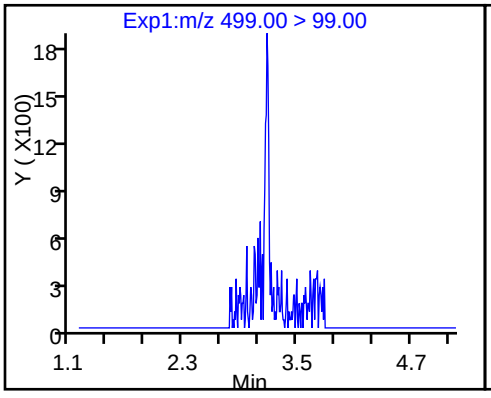
D 19 13C5 PFNA



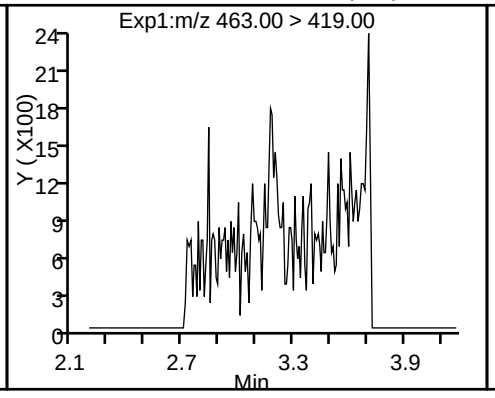
18 Perfluorooctane sulfonic acid



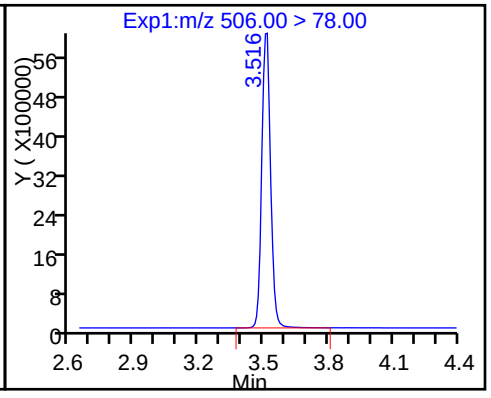
18 Perfluorooctane sulfonic acid



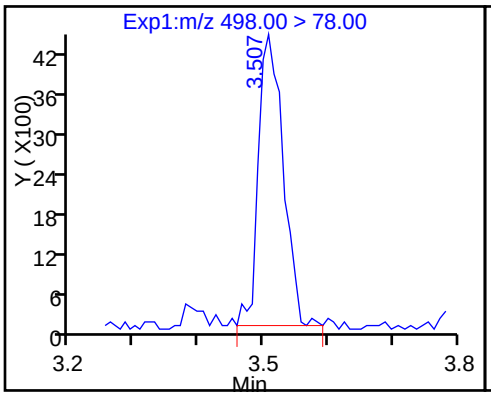
20 Perfluorononanoic acid (ND)



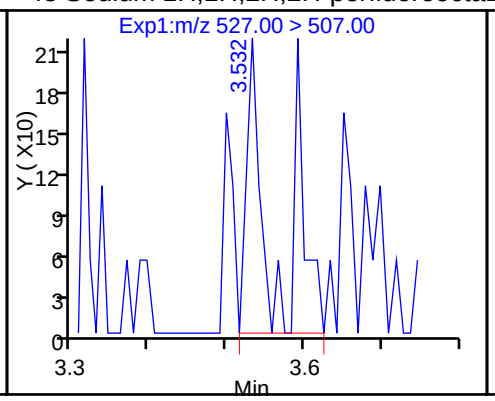
D 21 13C8 FOSA



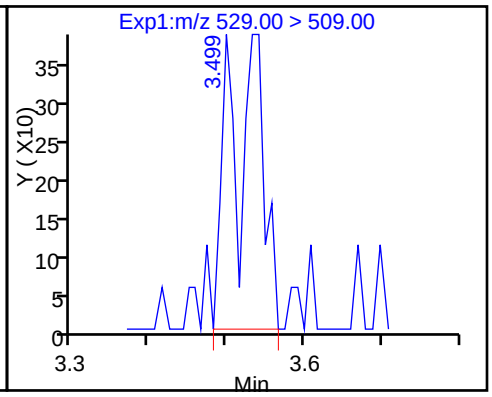
22 Perfluorooctane Sulfonamide



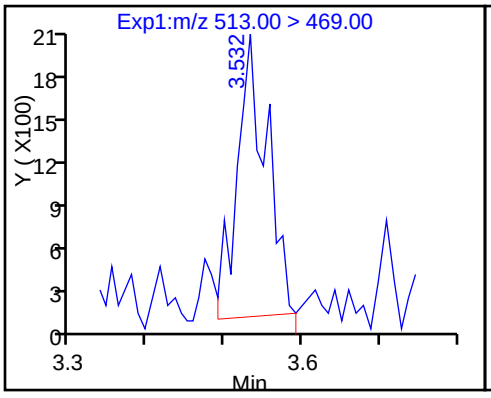
43 Sodium 1H,1H,2H,2H-perfluorooctane



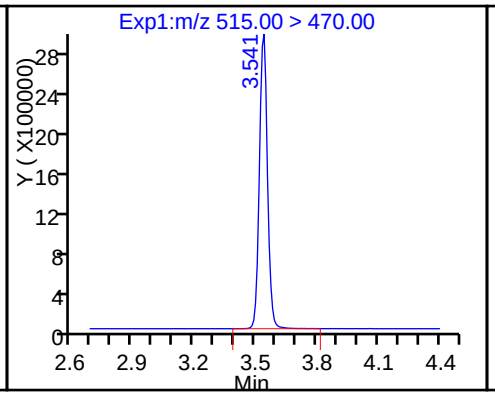
D 42 M2-8:2FTS



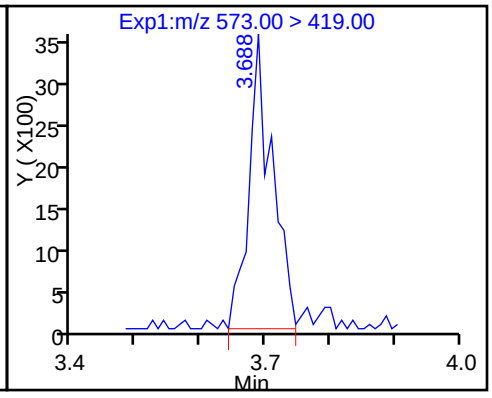
24 Perfluorodecanoic acid



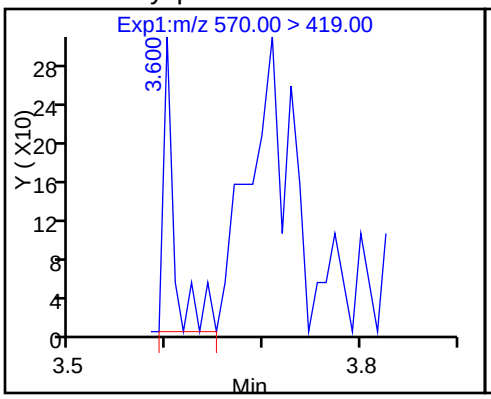
D 23 13C2 PFDA



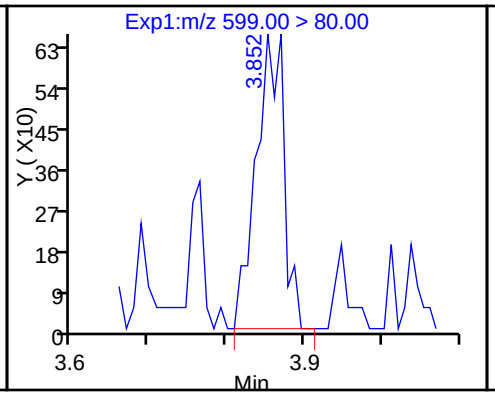
D 45 d3-NMeFOSAA



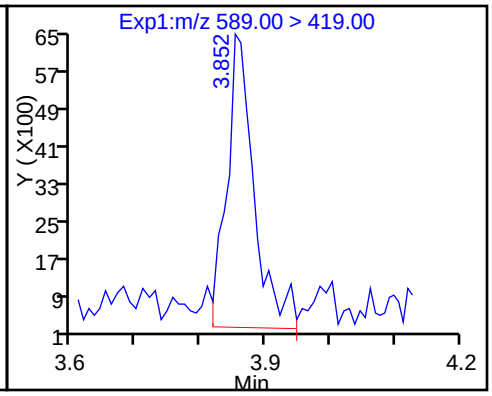
44 N-methyl perfluorooctane sulfonami



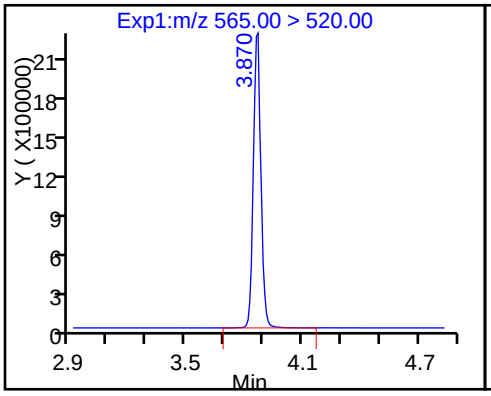
26 Perfluorodecane Sulfonic acid



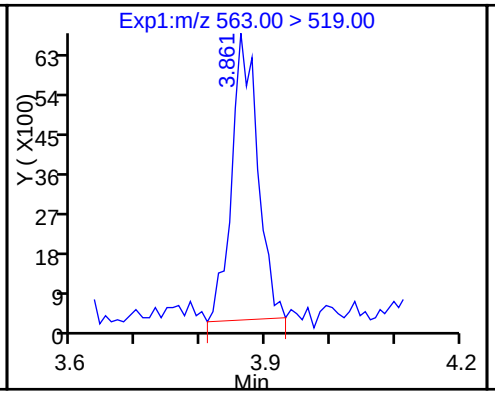
D 46 d5-NEtFOSAA



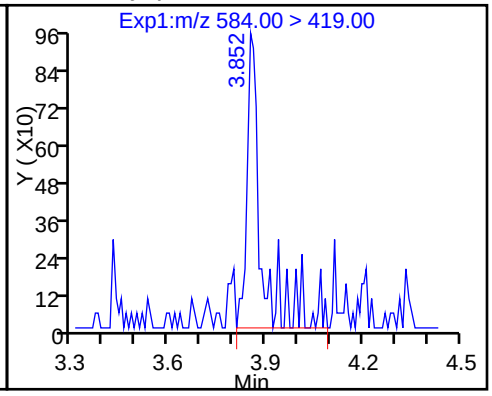
D 27 13C2 PFUnA



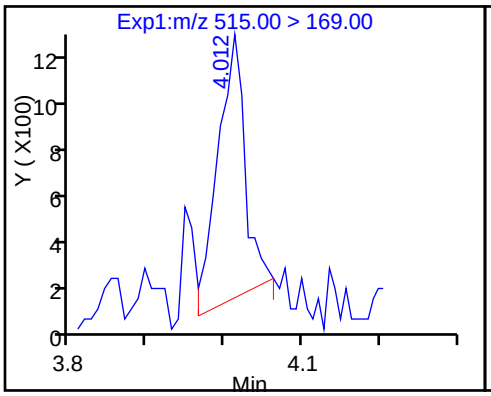
28 Perfluoroundecanoic acid



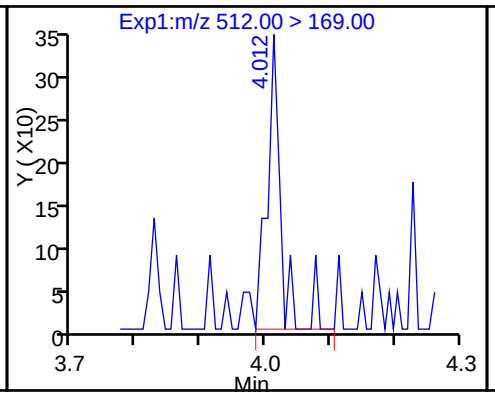
49 N-ethyl perfluorooctane sulfonamid



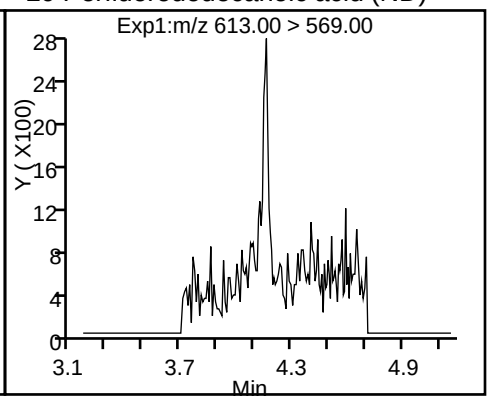
D 52 d-N-MeFOSA-M



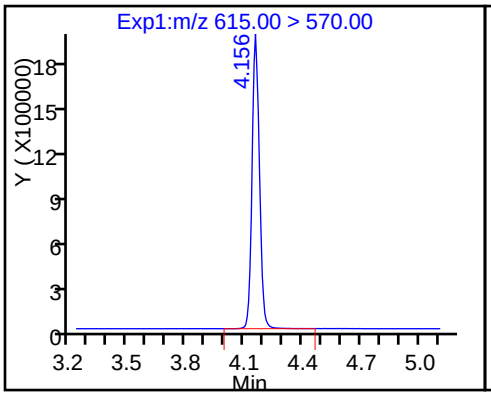
54 MeFOSA



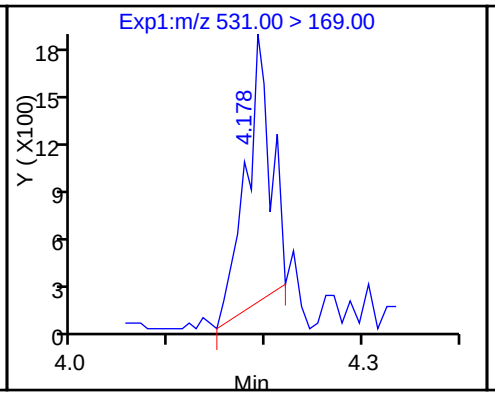
29 Perfluorododecanoic acid (ND)



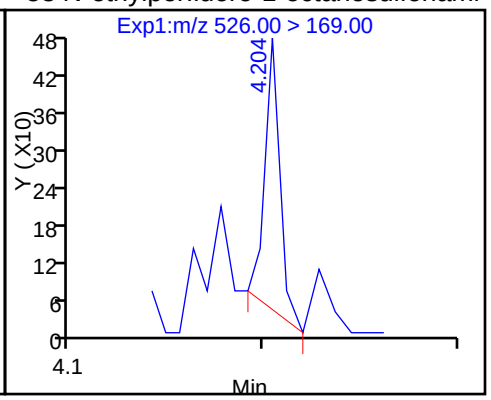
D 30 13C2 PFDoA



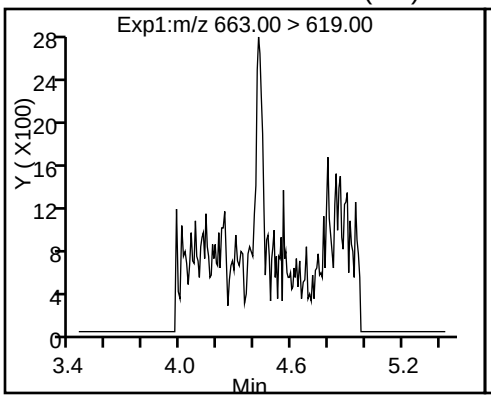
D 51 d-N-EtFOSA-M



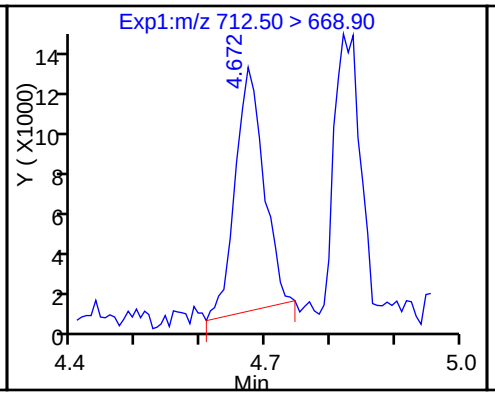
53 N-ethylperfluoro-1-octanesulfonami



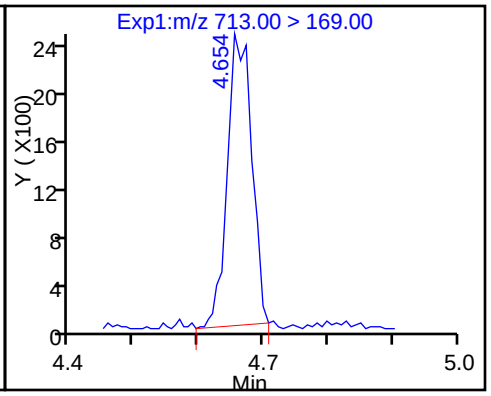
31 Perfluorotridecanoic acid (ND)



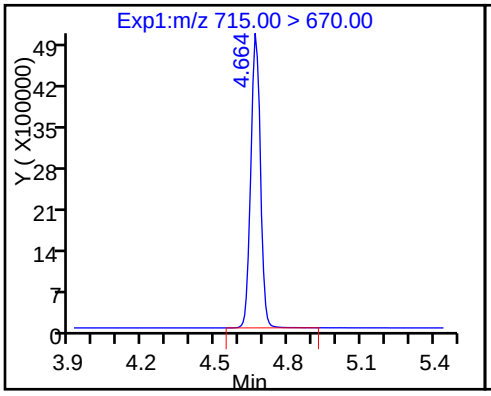
33 Perfluorotetradecanoic acid



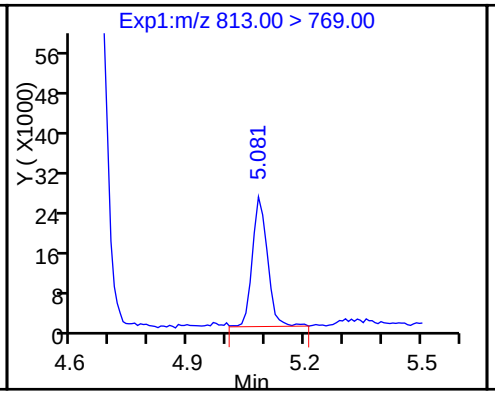
33 Perfluorotetradecanoic acid



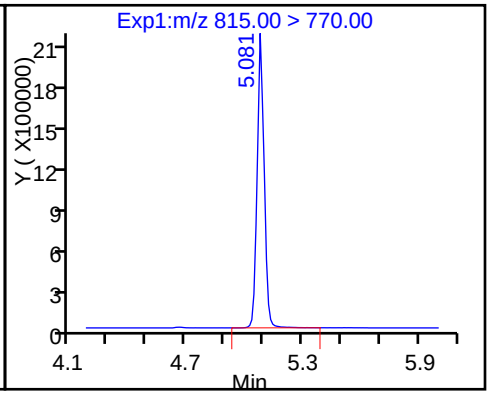
D 32 13C2-PFTeDA



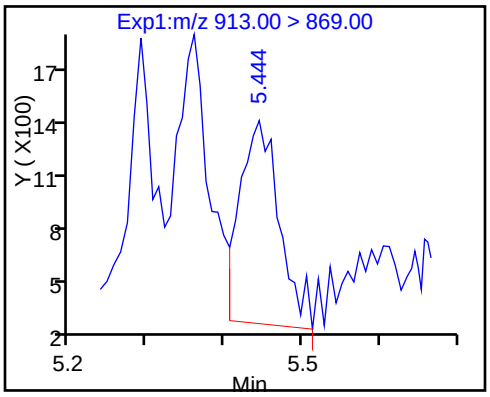
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-139627/1-A

Matrix: Solid Lab File ID: 02DEC2016C_001.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03

Sample wt/vol: 5.00(g) Date Analyzed: 12/02/2016 14:59

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

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

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

Analysis Batch No.: 140429 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	108		25-150
STL00991	13C4 PFOS	94		25-150
STL00994	18O2 PFHxS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_001.d
Lims ID: MB 320-139627/1-A
Client ID:
Sample Type: MB
Inject. Date: 02-Dec-2016 14:59:32 ALS Bottle#: 1 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-139627/1-a
Misc. Info.: Plate: 1 Rack: 4
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 18:16:35 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 18:16:34

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	21795	0.0719			154	
D 2 13C4 PFBA										
217.00 > 172.00	1.574	1.574	0.0		17111077	50.3		101	1388607	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.868	0.0	1.000	23535	0.0847			149	
D 4 13C5-PFPeA										
267.90 > 223.00	1.858	1.868	-0.010		13340497	49.4		98.7	1043506	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.897	1.907	-0.010	1.000	5255	0.0103				
298.90 > 99.00	1.887	1.907	-0.020	0.995	2254		2.33(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.179	2.173	0.006	1.000	13669	0.0634			241	
D 6 13C2 PFHxA										
315.00 > 270.00	2.162	2.173	-0.011		11285724	45.8		91.6	435771	
D 11 13C4-PFHpA										
367.00 > 322.00	2.520	2.519	0.001		11132042	52.9		106	1111017	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.527	2.534	-0.007	1.000	54849	0.1642				
D 10 18O2 PFHxS										
403.00 > 84.00	2.535	2.534	0.001		14913821	49.3		104	737756	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.862	2.870	-0.008	1.000	3757	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.870	2.870	0.0		2973	0.0213		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.886	2.886	0.0		11840544	54.0		108	891757	

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	2.902	2.894	0.008	1.000	58370	0.2416			382	
413.00 > 169.00	2.902	2.894	0.008	1.000	22471		2.60(0.90-1.10)		970	
D 17 13C4 PFOS										
503.00 > 80.00	3.268	3.267	0.001		11022180	45.1		94.3	717052	
D 19 13C5 PFNA										
468.00 > 423.00	3.268	3.275	-0.007		8809234	49.5		98.9	641246	
D 21 13C8 FOSA										
506.00 > 78.00	3.582	3.589	-0.007		12412970	30.0		59.9	447762	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.632	3.624	0.008	1.005	1156	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.616	3.624	-0.008		3435	0.0257		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.632	3.631	0.001		7837443	47.2		94.4	389458	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.632	3.631	0.001	1.000	4782	0.0315			163	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.787	3.790	-0.003		11498	0.1437		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.777	3.799	-0.022	0.997	2321	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.936	3.941	-0.005	1.000	808	0.005587				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.953	3.955	-0.002		16818	0.1888		0.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.971	3.959	0.012	1.000	14456	0.1155			354	
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.953	3.963	-0.010	1.000	3184	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.962	3.967	-0.005		5905793	47.0		93.9	315207	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.052	4.079	-0.027		5561	0.0523		0.0		
54 MeFOSA										
512.00 > 169.00	4.085	4.087	-0.002	1.000	998	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.251	4.259	-0.008		4628188	39.6		79.2	143761	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.251	4.261	-0.010		6878	0.0675		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.285	4.271	0.014	1.000	842	NR				
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.743	4.772	-0.030	1.000	30983	0.1732			15.8	
713.00 > 169.00	4.759	4.772	-0.013	1.003	2876		10.77(0.00-0.00)		1371	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.759	4.772	-0.013		7246692	30.0		59.9	383039	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.178	5.184	-0.006		2329899	17.9		35.7	106732	

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	5.178	5.194	-0.016	1.000	34261	-0.4475			71.7	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.566	5.562	0.004	1.000	2419	0.0332			11.2	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 04-Dec-2016 18:16:36 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_001.d

Injection Date: 02-Dec-2016 14:59:32 Instrument ID: A8_N

Lims ID: MB 320-139627/1-A

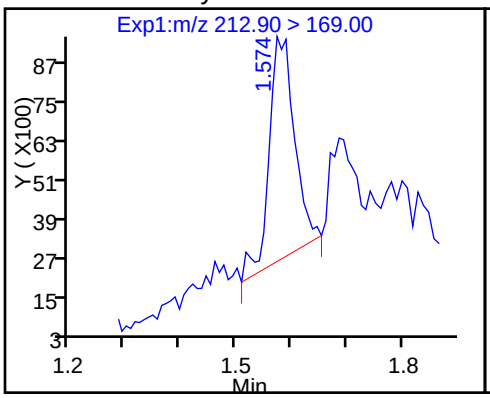
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 1 Worklist Smp#: 5

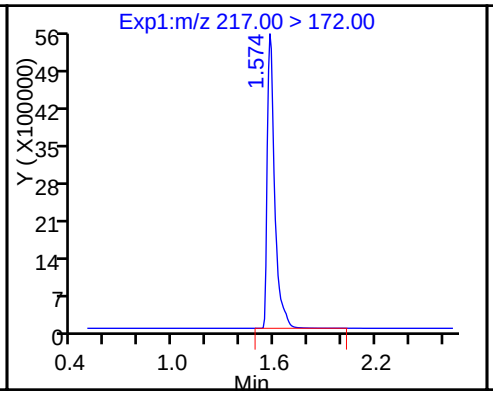
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

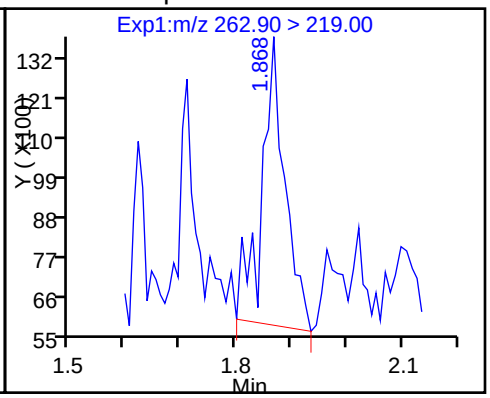
1 Perfluorobutyric acid



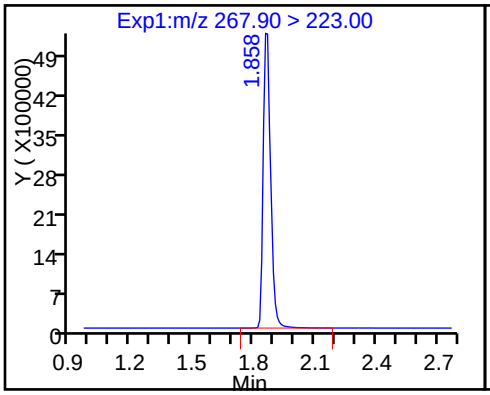
D 2 13C4 PFBA



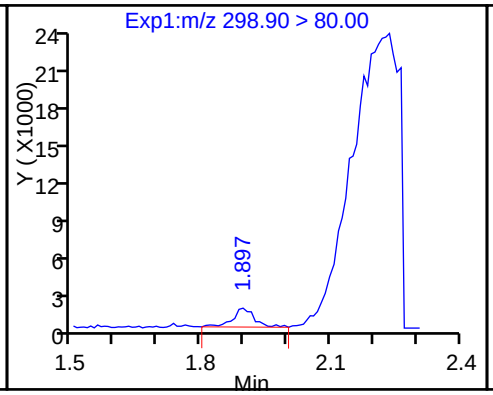
3 Perfluoropentanoic acid



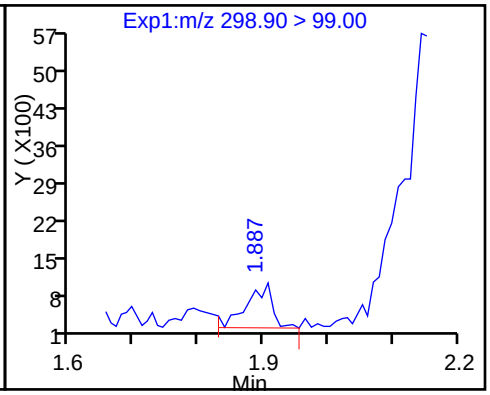
D 4 13C5-PFPeA



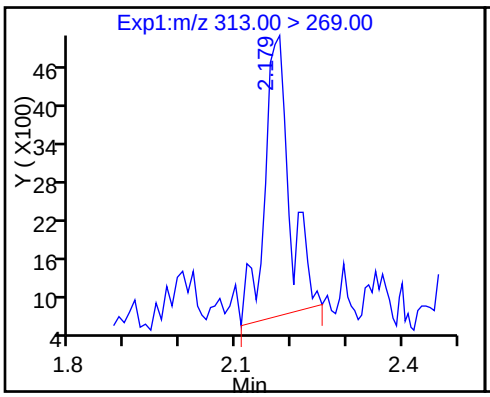
5 Perfluorobutanesulfonic acid



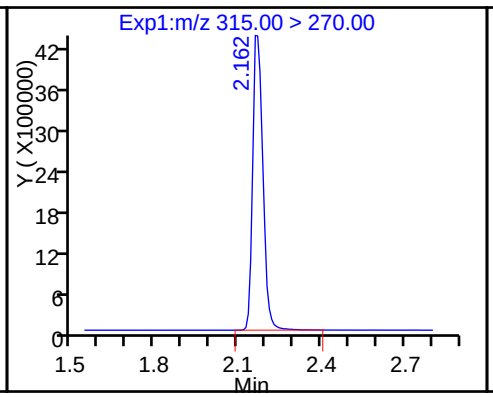
5 Perfluorobutanesulfonic acid



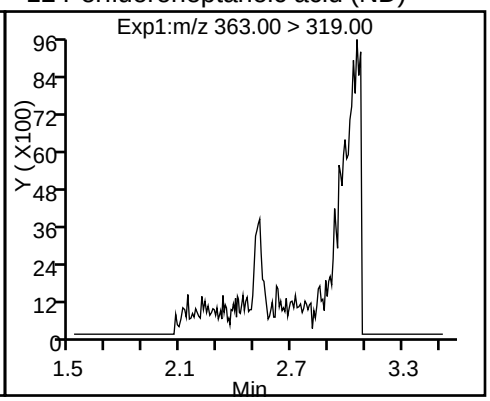
7 Perfluorohexanoic acid



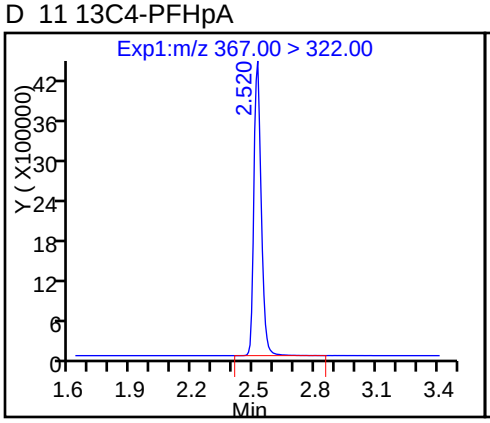
D 6 13C2 PFHxA



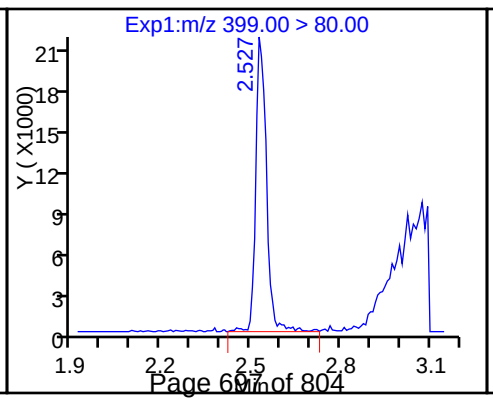
12 Perfluoroheptanoic acid (ND)



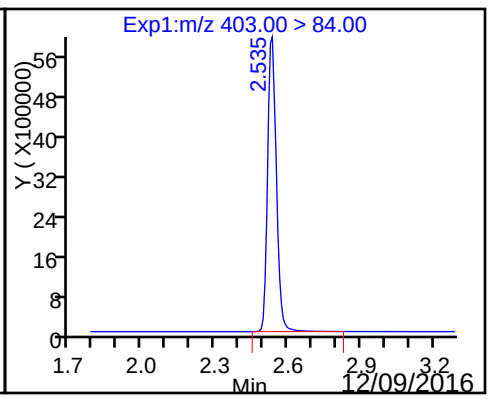
D 11 13C4-PFHpA



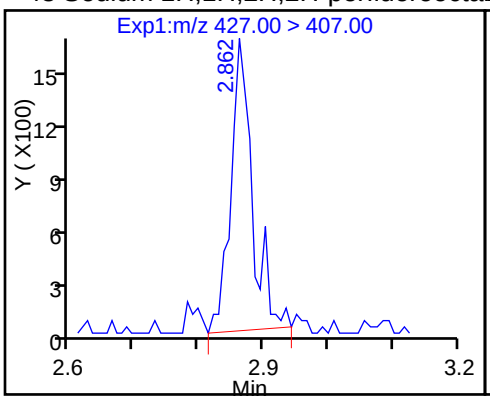
9 Perfluorohexanesulfonic acid



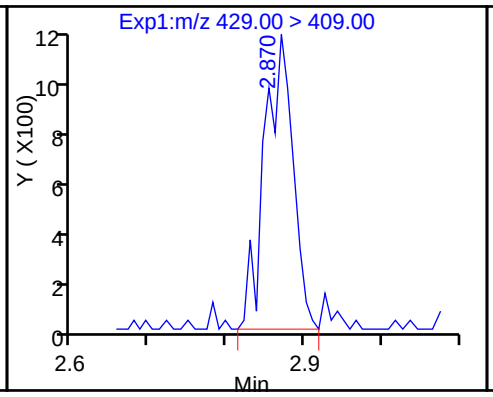
D 10 18O2 PFHxS



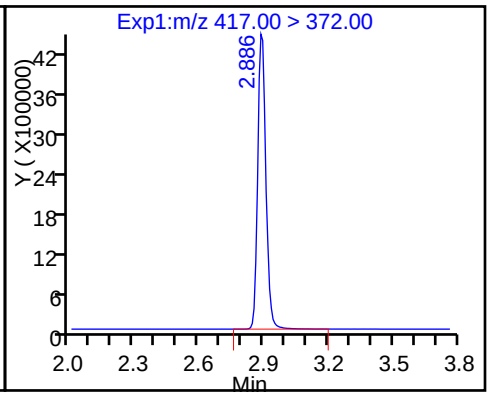
48 Sodium 1H,1H,2H,2H-perfluorooctane



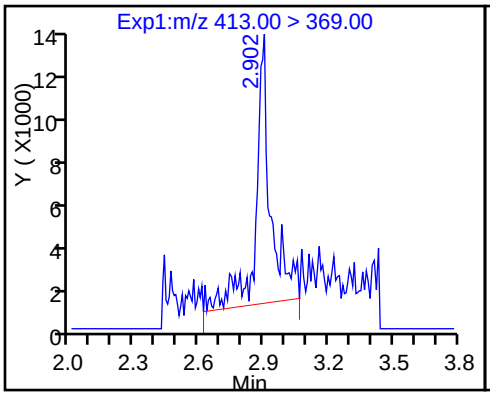
D 47 M2-6:2FTS



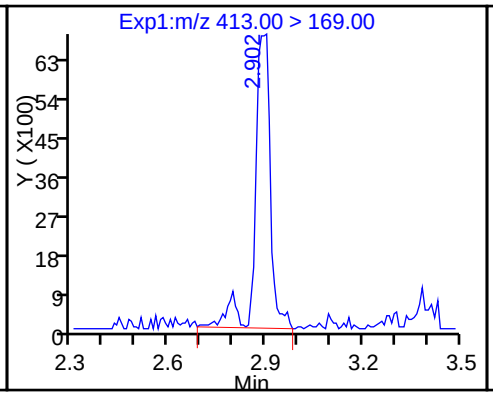
D 14 13C4 PFOA



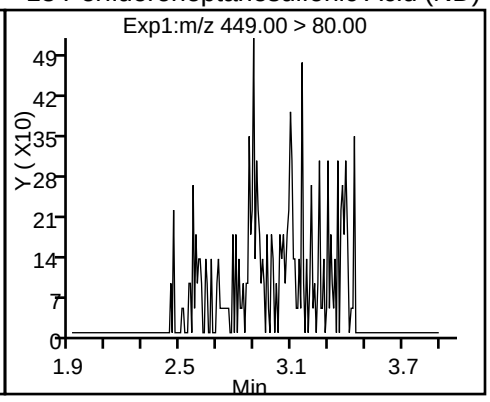
15 Perfluorooctanoic acid



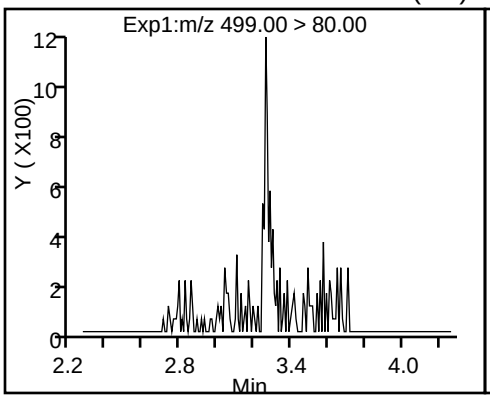
15 Perfluorooctanoic acid



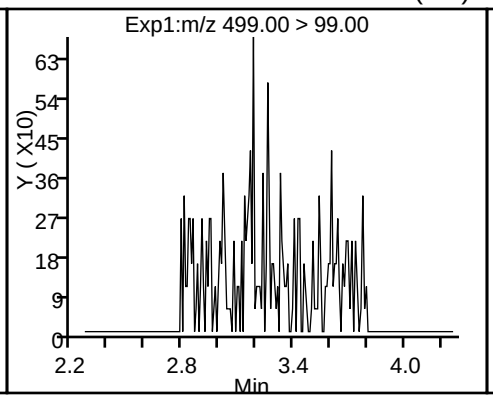
13 Perfluoroheptanesulfonic Acid (ND)



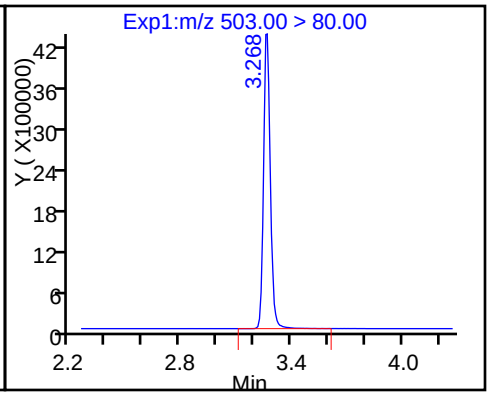
18 Perfluorooctane sulfonic acid (ND)



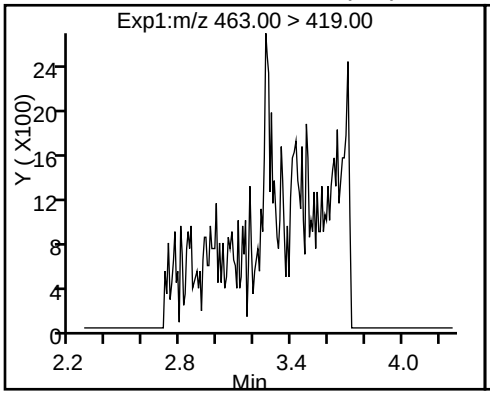
18 Perfluorooctane sulfonic acid (ND)



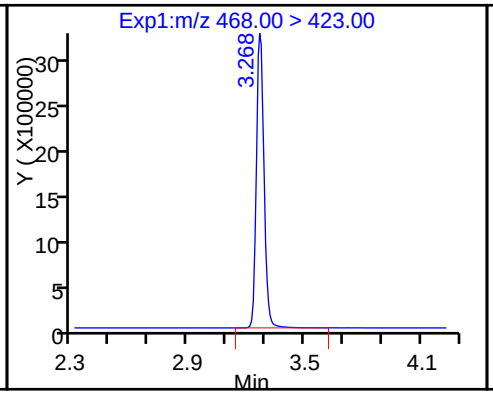
D 17 13C4 PFOS



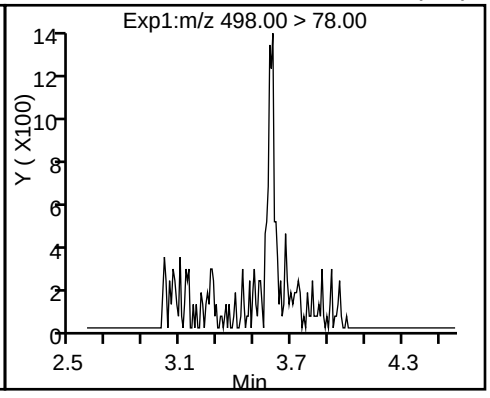
20 Perfluorononanoic acid (ND)



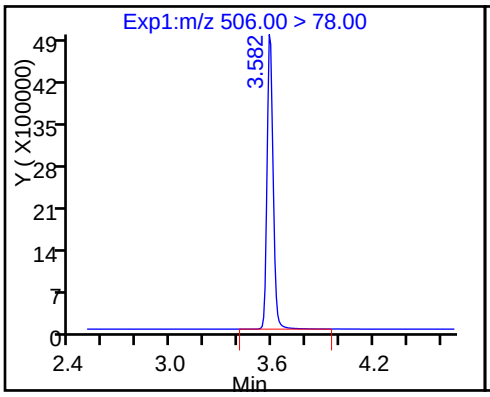
D 19 13C5 PFNA



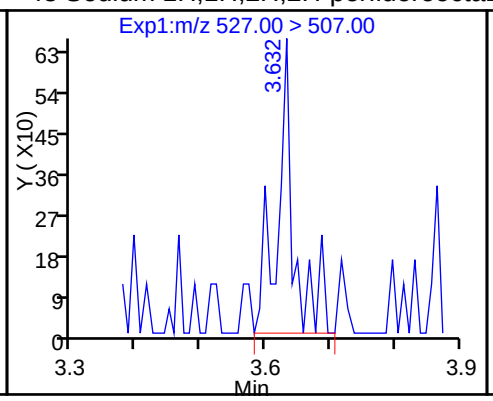
22 Perfluorooctane Sulfonamide (ND)



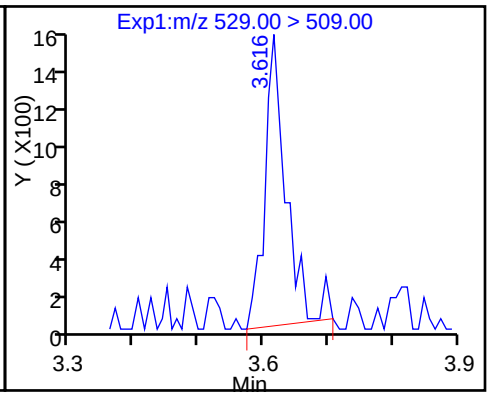
D 21 13C8 FOSA



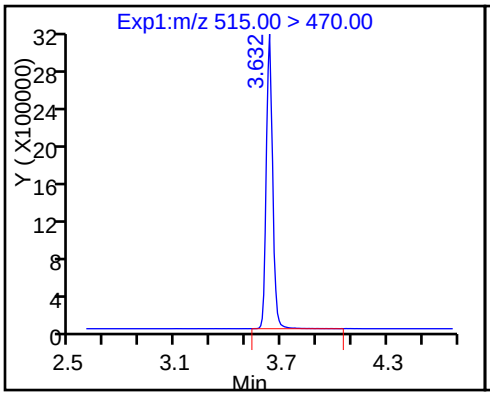
43 Sodium 1H,1H,2H,2H-perfluorooctane



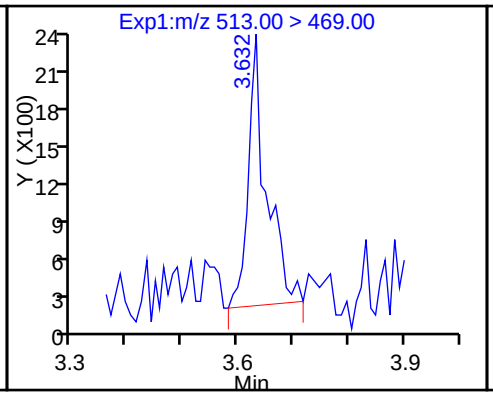
D 42 M2-8:2FTS



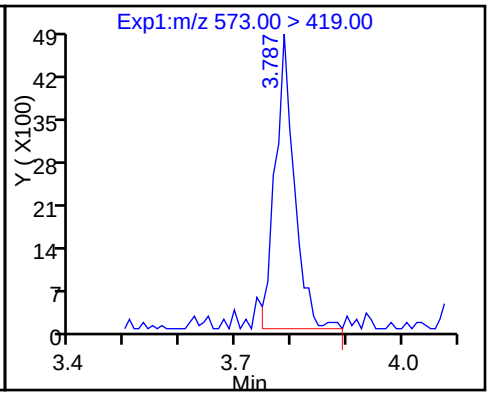
D 23 13C2 PFDA



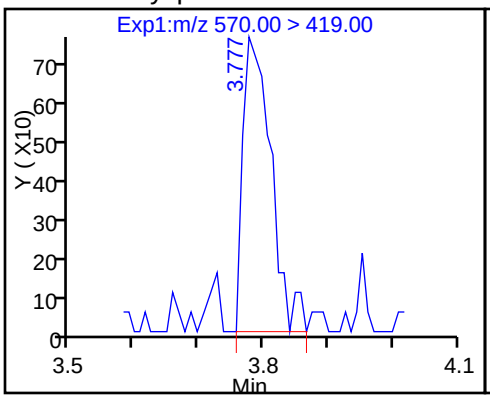
24 Perfluorodecanoic acid



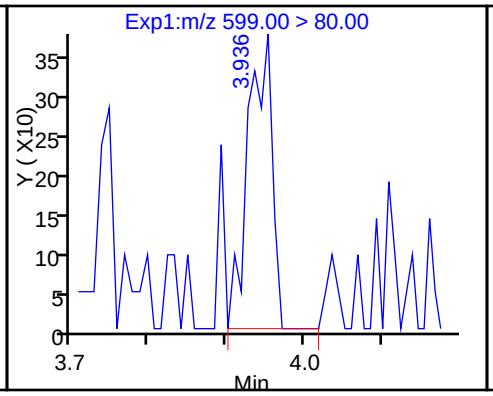
D 45 d3-NMeFOSAA



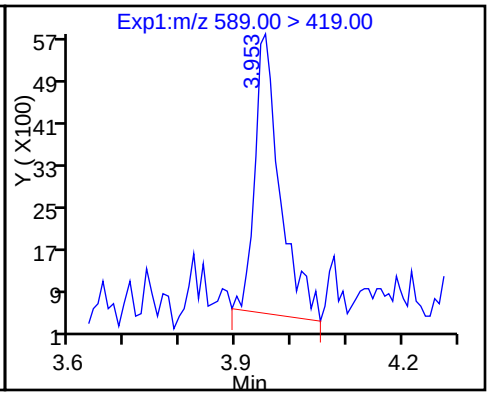
44 N-methyl perfluorooctane sulfonami



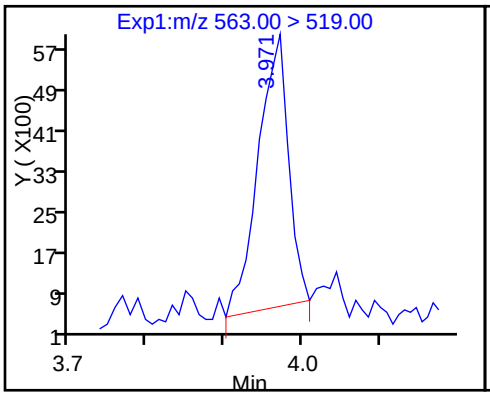
26 Perfluorodecane Sulfonic acid



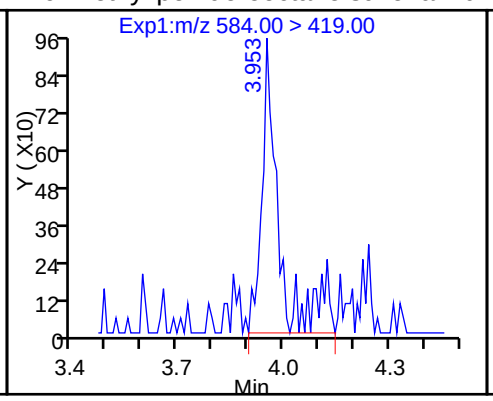
D 46 d5-NEtFOSAA



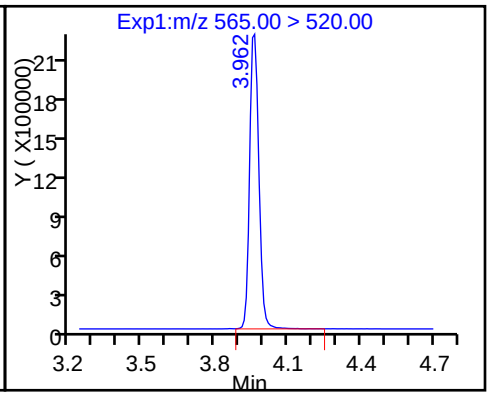
28 Perfluoroundecanoic acid



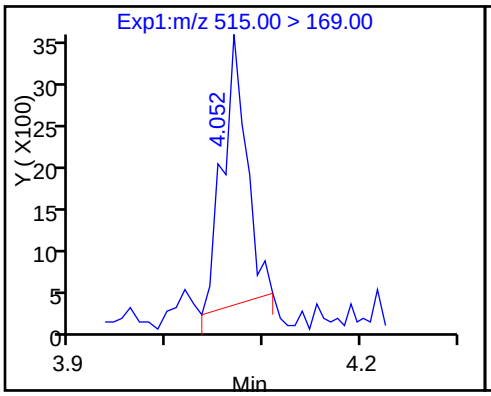
49 N-ethyl perfluorooctane sulfonamid



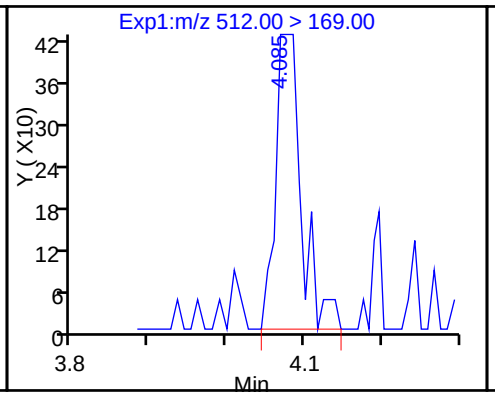
D 27 13C2 PFUnA



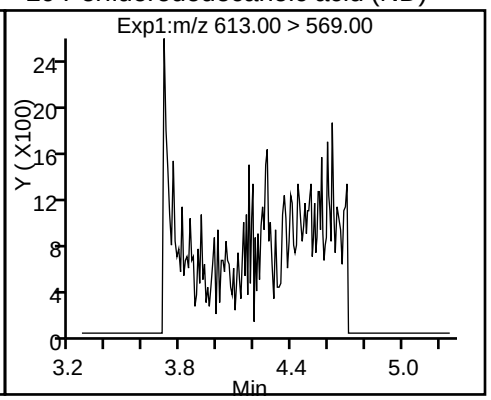
D 52 d-N-MeFOSA-M



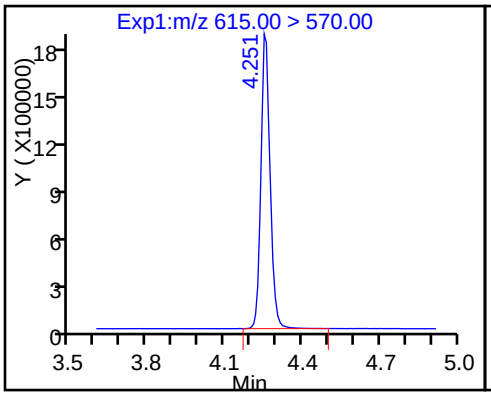
54 MeFOSA



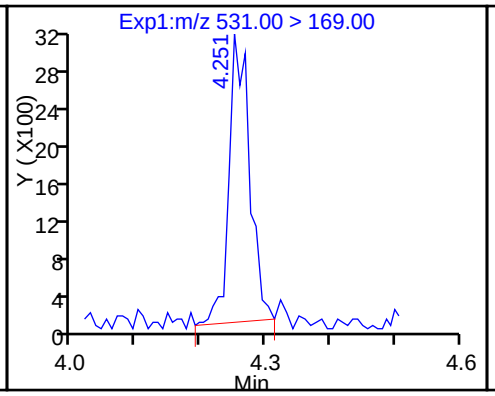
29 Perfluorododecanoic acid (ND)



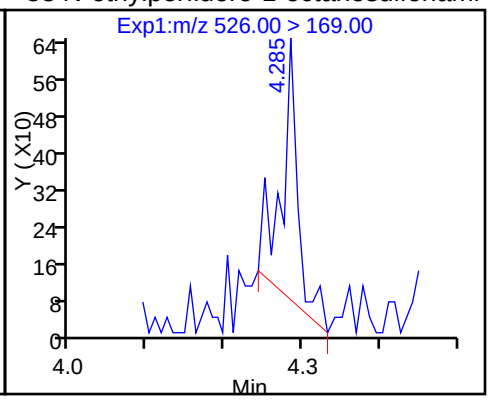
D 30 13C2 PFDoA



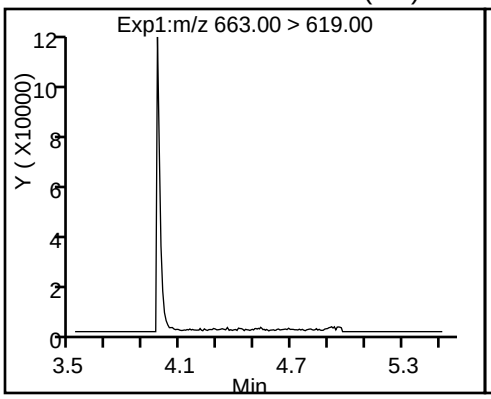
D 51 d-N-EtFOSA-M



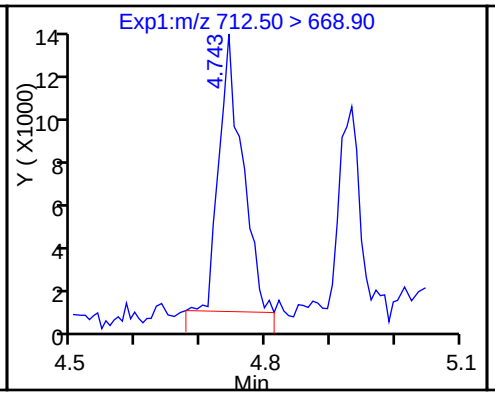
53 N-ethylperfluoro-1-octanesulfonami



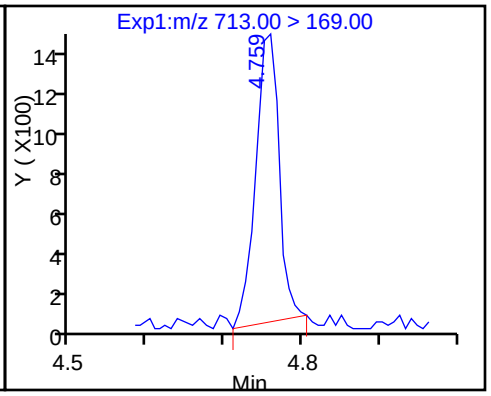
31 Perfluorotridecanoic acid (ND)



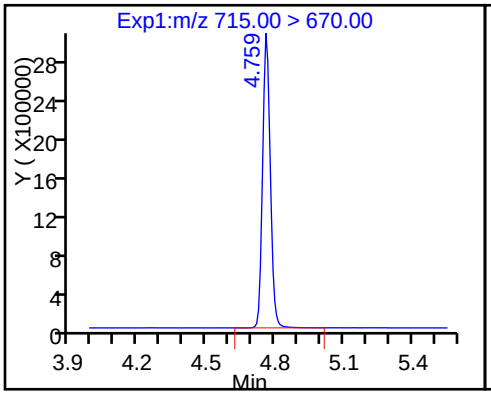
33 Perfluorotetradecanoic acid



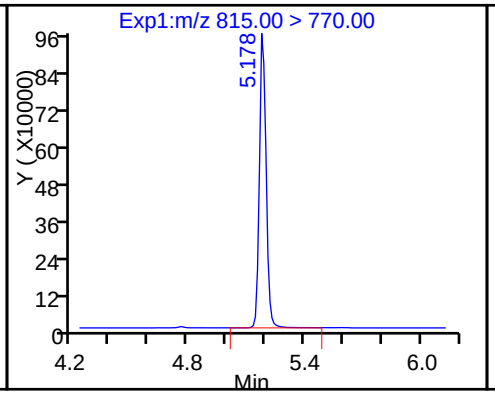
33 Perfluorotetradecanoic acid



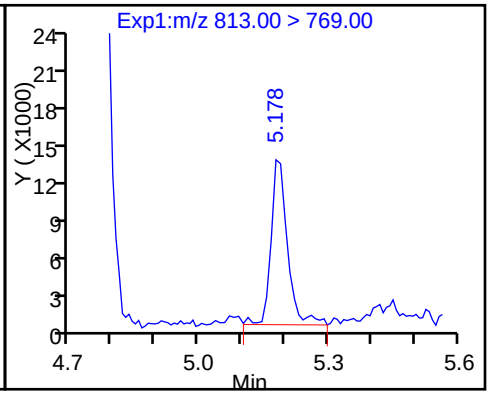
D 32 13C2-PFTeDA



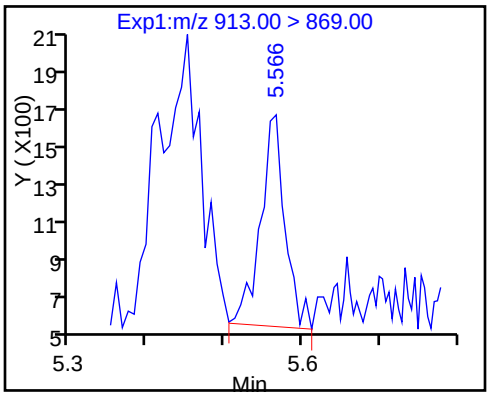
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-139076/2-A

Matrix: Water Lab File ID: 07DEC2016A_023.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 11/22/2016 11:44

Sample wt/vol: 250(mL) Date Analyzed: 12/07/2016 15:03

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.: 141054 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0420		0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0394		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0415		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	118		25-150
STL00991	13C4 PFOS	118		25-150
STL00994	18O2 PFHxS	120		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_023.d
Lims ID: LCS 320-139076/2-A
Client ID:
Sample Type: LCS
Inject. Date: 07-Dec-2016 15:03:29 ALS Bottle#: 12 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-139076/2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:03:59 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:04:32

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	1.542	1.542	0.0		20033370	59.7		119	892675	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.550	-0.008	1.000	8024624	22.9		115	62214	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.819	1.820	-0.001	1.000	6855420	21.2		106	59314	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.820	-0.010		15922788	60.2		120	960869	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.858	-0.010	1.000	12422727	20.8		117		
298.90 > 99.00	1.848	1.858	-0.010	1.000	5324572		2.33(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.107	2.115	-0.008		13716132	57.8		116	1223858	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.107	2.115	-0.008	1.000	5689480	21.8		109	175866	
D 11 13C4-PFHpA										
367.00 > 322.00	2.443	2.452	-0.009		12863255	62.0		124	632287	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.443	2.452	-0.009	1.000	5849638	22.1		111	69873	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.461	2.470	-0.009	1.000	7775936	18.9		104		
D 10 18O2 PFHxS										
403.00 > 84.00	2.461	2.470	-0.009		17730273	56.8		120	1570382	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.803	2.809	-0.006	1.000	5828523	21.0		105	122398	
413.00 > 169.00	2.803	2.809	-0.006	1.000	3569779		1.63(0.90-1.10)		177146	
D 14 13C4 PFOA										
417.00 > 372.00	2.803	2.809	-0.006		12945150	59.0		118	629083	

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	2.811	2.817	-0.006	1.000	7241722	21.1		111		
D 17 13C4 PFOS										
503.00 > 80.00	3.178	3.185	-0.007		13908832	56.5		118	297548	
D 19 13C5 PFNA										
468.00 > 423.00	3.171	3.185	-0.014		9852448	59.2		118	404240	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.063	3.185	-0.123	1.000	6217979	19.7		106	341976	
499.00 > 99.00	3.178	3.185	-0.007	1.038	1356538		4.58(0.90-1.10)		137354	
20 Perfluorononanoic acid										
463.00 > 419.00	3.178	3.185	-0.007	1.000	4286296	21.8		109	86367	
D 21 13C8 FOSA										
506.00 > 78.00	3.511	3.518	-0.007		14830657	36.9		73.7	487632	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.511	3.518	-0.007	1.000	6092199	22.0		110	140212	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.536	3.543	-0.007	1.000	3803613	21.9		110	136952	
D 23 13C2 PFDA										
515.00 > 470.00	3.536	3.543	-0.007		9023113	57.2		114	270457	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.847	3.864	-0.017	1.000	3806559	20.4		106		
D 27 13C2 PFUnA										
565.00 > 520.00	3.865	3.872	-0.007		6712615	56.5		113	480471	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.865	3.872	-0.007	1.000	2787245	19.5		97.4	78475	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.154	4.168	-0.014	1.000	2377087	20.4		102	61028	
D 30 13C2 PFDoA										
615.00 > 570.00	4.154	4.168	-0.014		6133841	54.7		109	201619	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.418	4.440	-0.022	1.000	2806909	24.1		120	56919	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.661	4.679	-0.018	1.000	6003237	26.4		132	58653	
713.00 > 169.00	4.661	4.679	-0.018	1.000	939411		6.39(0.00-0.00)		114429	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.670	4.679	-0.009		16148017	69.9		140	1125561	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.079	5.090	-0.011	1.000	2498741	19.8		98.8	4692	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.079	5.090	-0.011		6281910	48.4		96.8	193540	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.444	5.452	-0.008	1.000	2078443	17.1		85.3	2944	

Report Date: 07-Dec-2016 17:04:32 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_023.d

Injection Date: 07-Dec-2016 15:03:29 Instrument ID: A8_N

Lims ID: LCS 320-139076/2-A

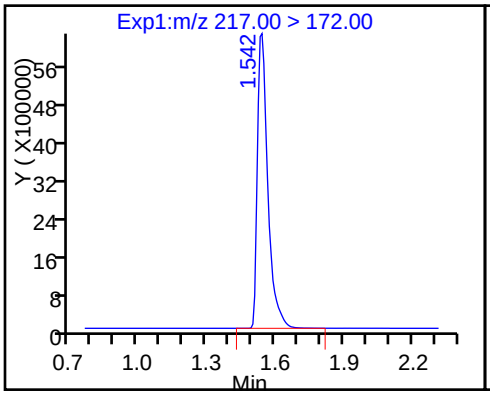
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 12 Worklist Smp#: 25

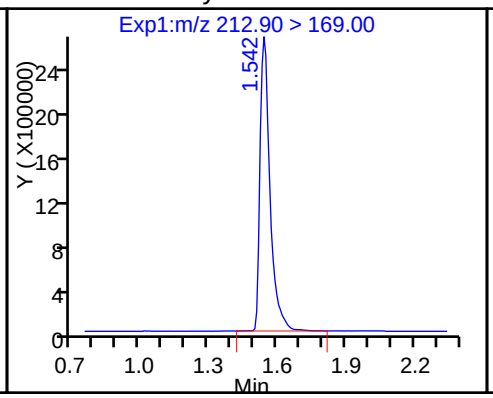
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

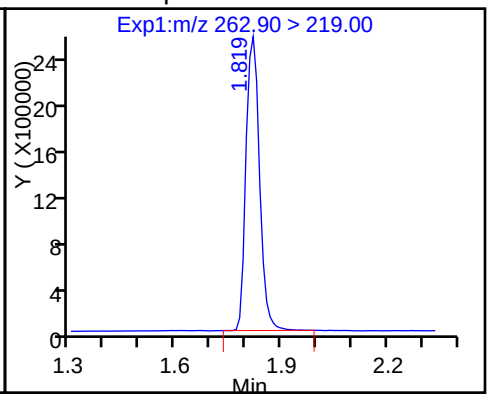
D 2 13C4 PFBA



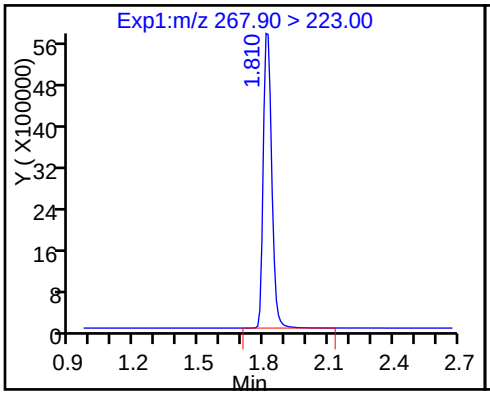
1 Perfluorobutyric acid



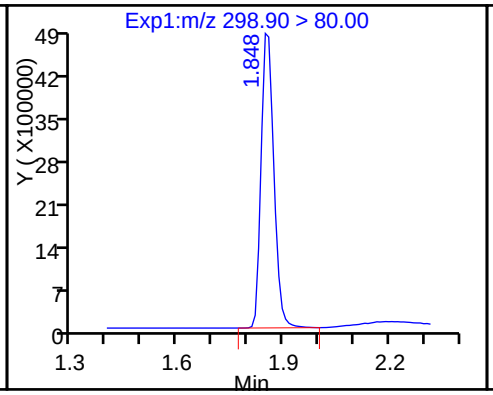
3 Perfluoropentanoic acid



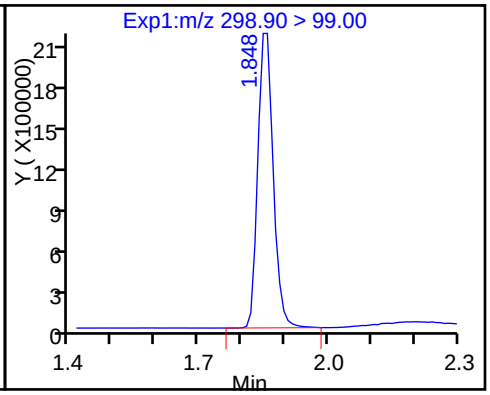
D 4 13C5-PFPeA



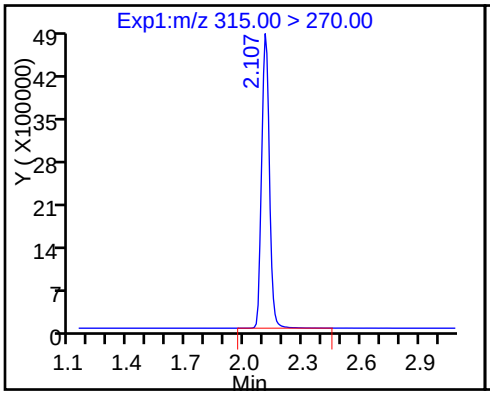
5 Perfluorobutanesulfonic acid



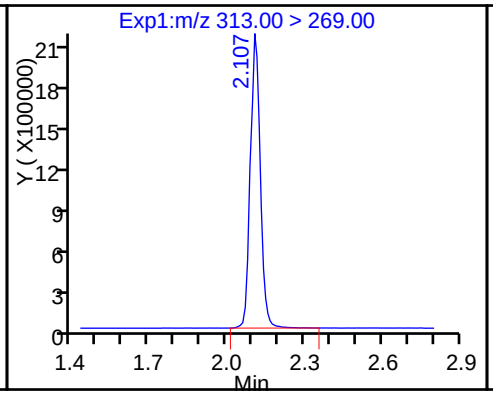
5 Perfluorobutanesulfonic acid



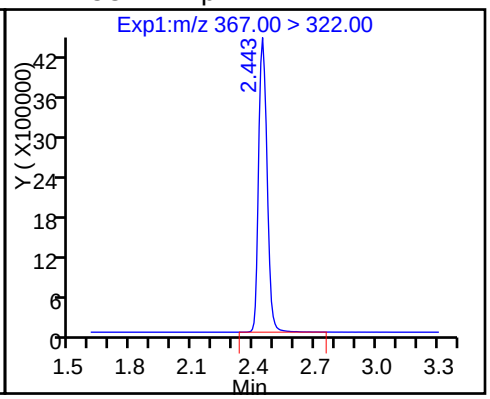
D 6 13C2 PFHxA



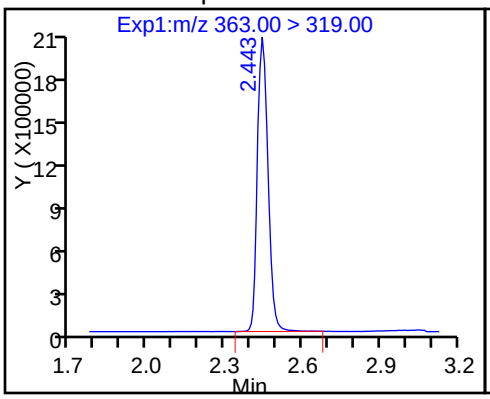
7 Perfluorohexanoic acid



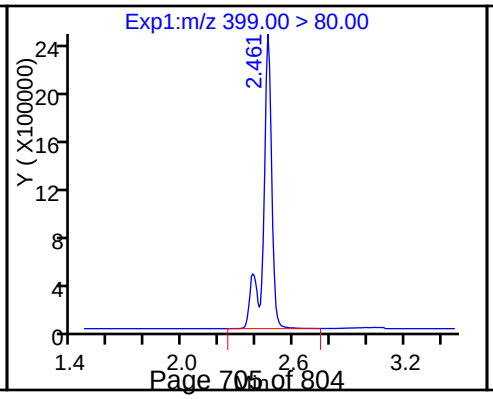
D 11 13C4-PFHpA



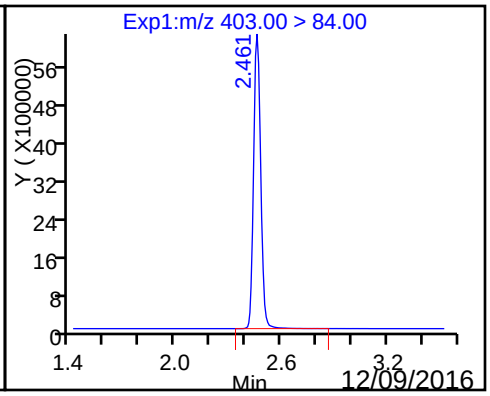
12 Perfluoroheptanoic acid



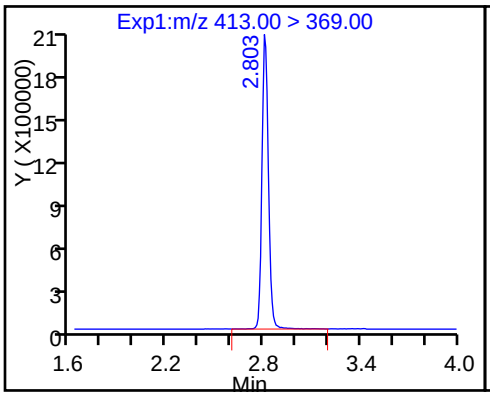
9 Perfluorohexanesulfonic acid



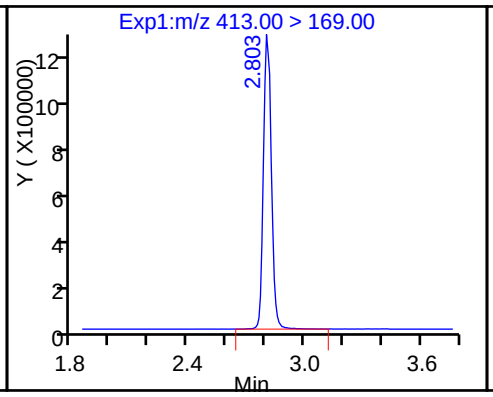
D 10 18O2 PFHxS



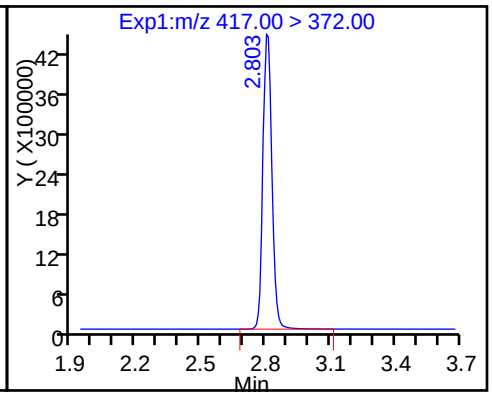
15 Perfluorooctanoic acid



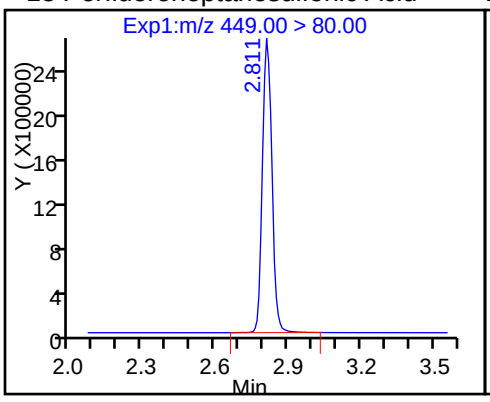
15 Perfluorooctanoic acid



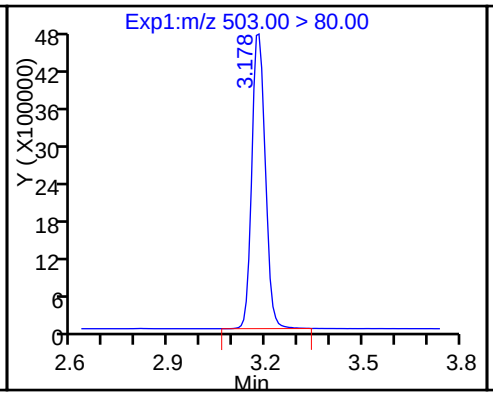
D 14 13C4 PFOA



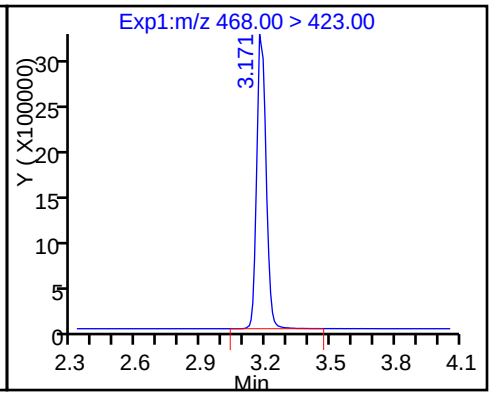
13 Perfluoroheptanesulfonic Acid



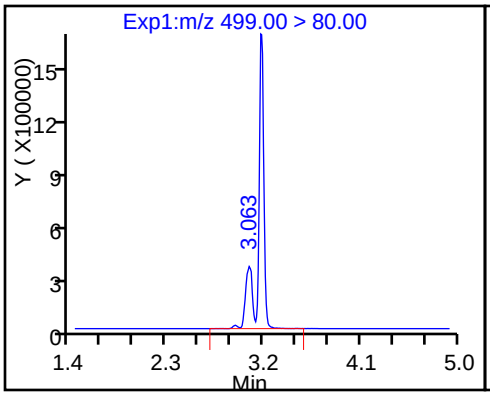
D 17 13C4 PFOS



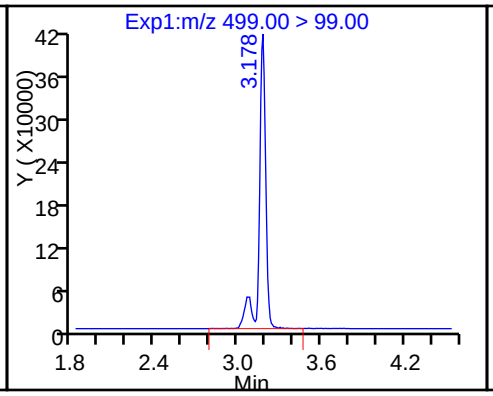
D 19 13C5 PFNA



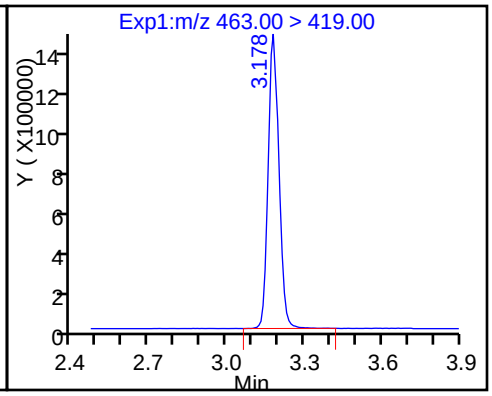
18 Perfluorooctane sulfonic acid



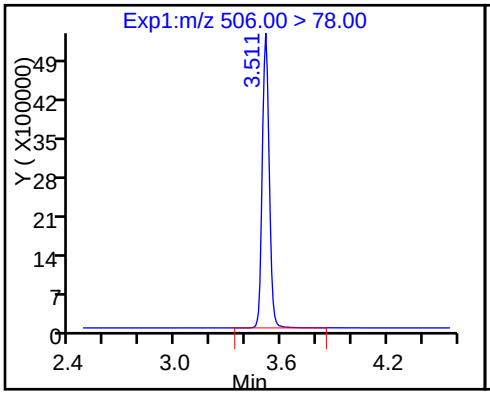
18 Perfluorooctane sulfonic acid



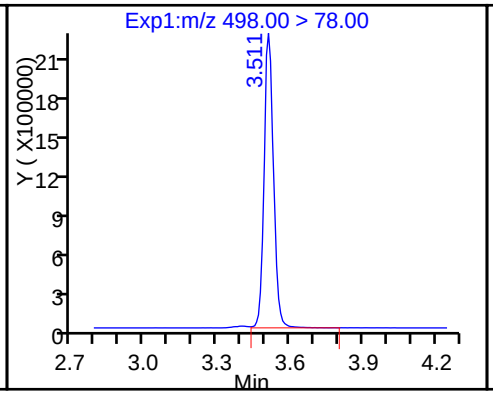
20 Perfluorononanoic acid



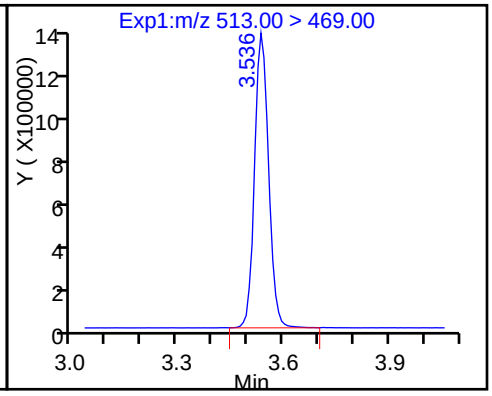
D 21 13C8 FOSA



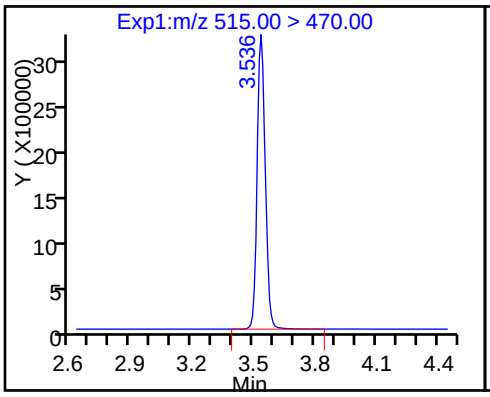
22 Perfluorooctane Sulfonamide



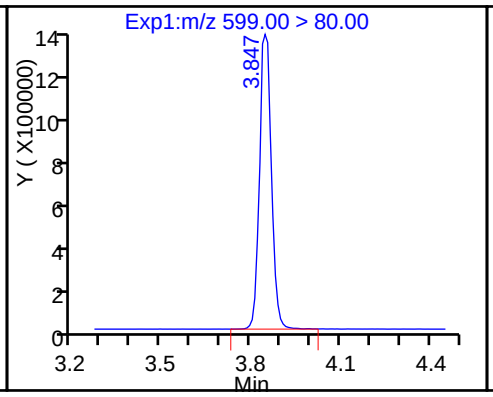
24 Perfluorodecanoic acid



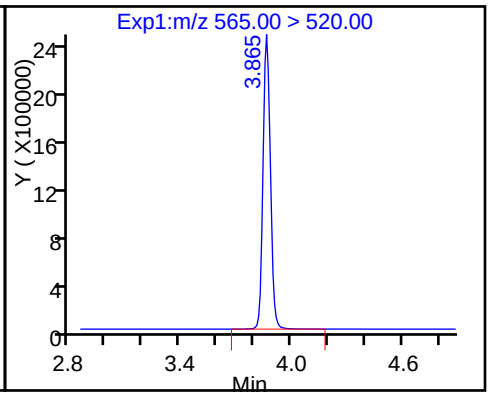
D 23 13C2 PFDA



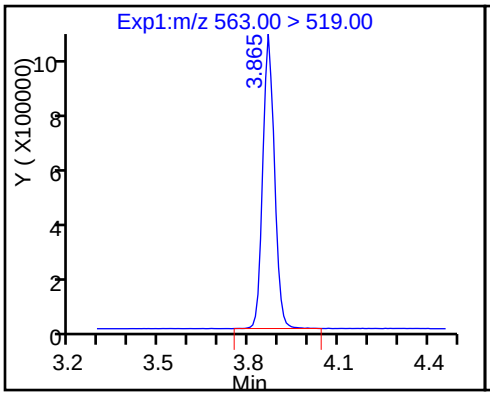
26 Perfluorodecane Sulfonic acid



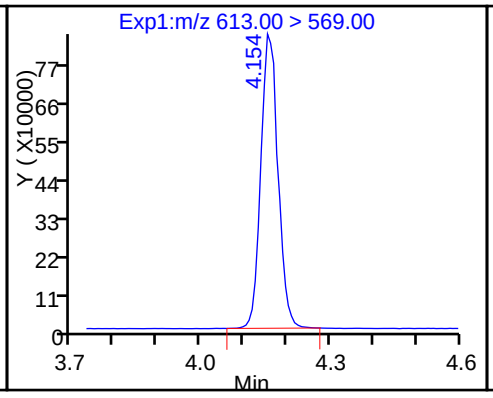
D 27 13C2 PFUnA



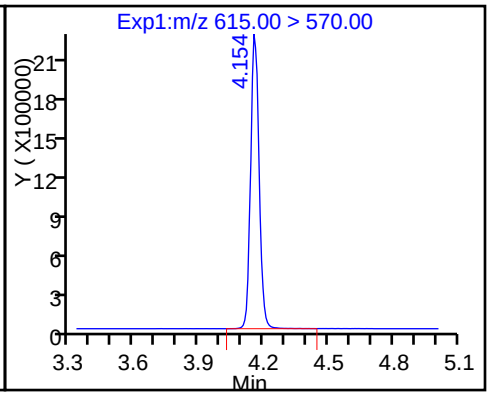
28 Perfluoroundecanoic acid



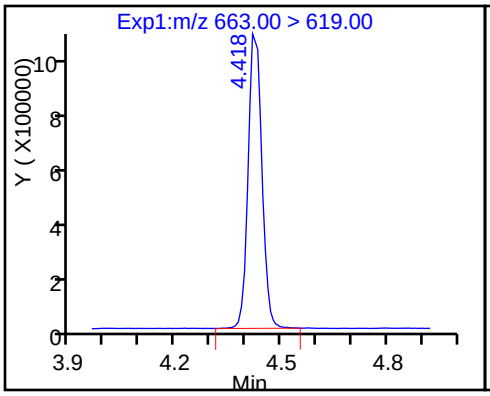
29 Perfluorododecanoic acid



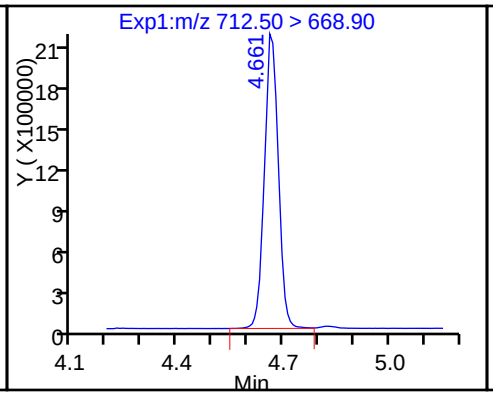
D 30 13C2 PFDoA



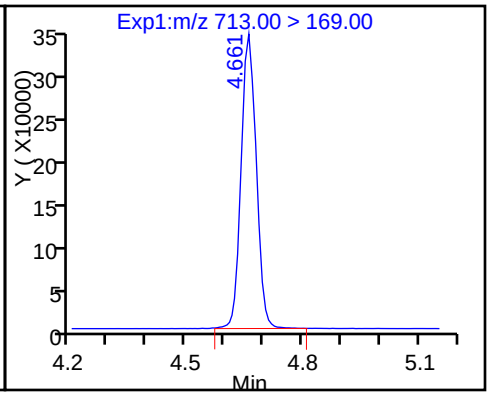
31 Perfluorotridecanoic acid



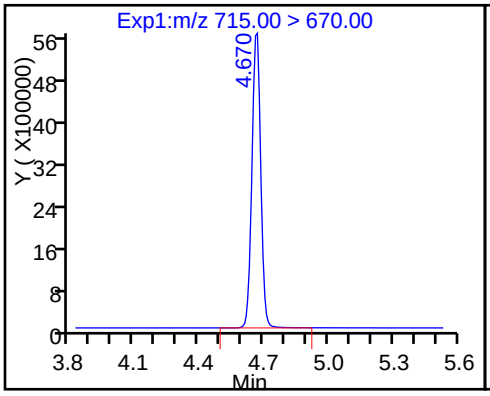
33 Perfluorotetradecanoic acid



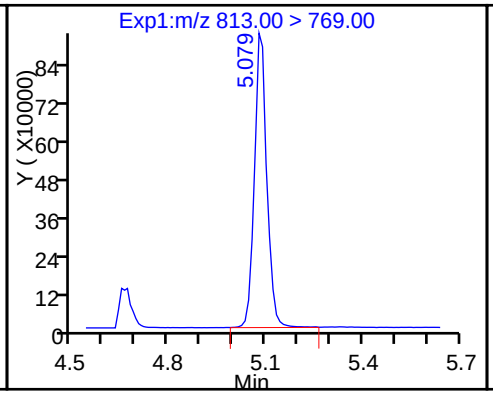
33 Perfluorotetradecanoic acid



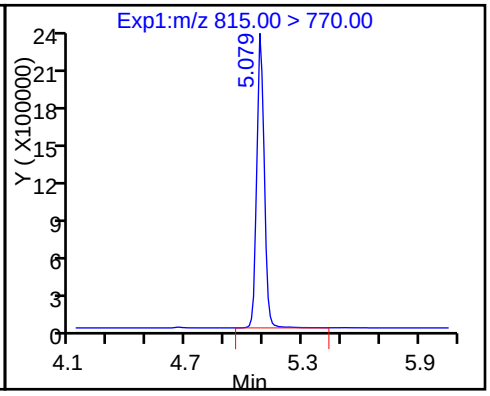
D 32 13C2-PFTeDA



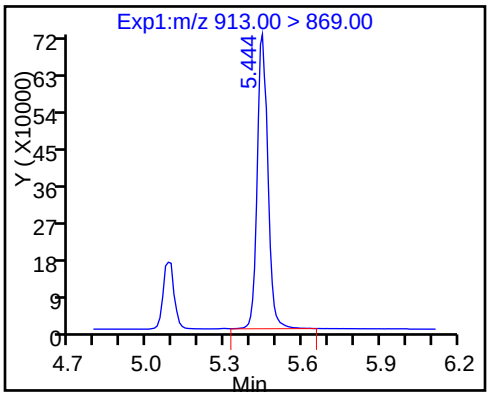
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-139627/2-A

Matrix: Solid Lab File ID: 02DEC2016C_002.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03

Sample wt/vol: 5.00(g) Date Analyzed: 12/02/2016 15:07

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

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

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

Analysis Batch No.: 140429 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	4.25		0.50	0.30	0.10
1763-23-1	Perfluorooctane Sulfonate (PFOS)	3.66		0.50	0.30	0.13
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.03		0.40	0.30	0.10

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	119		25-150
STL00991	13C4 PFOS	112		25-150
STL00994	18O2 PFHxS	120		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_002.d
Lims ID: LCS 320-139627/2-A
Client ID:
Sample Type: LCS
Inject. Date: 02-Dec-2016 15:07:03 ALS Bottle#: 2 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-139627/2-a
Misc. Info.: Plate: 1 Rack: 4
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 18:17:14 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 18:17:14

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	1.582	1.574	0.008	1.000	7714134	21.3		106	70812	
D 2 13C4 PFBA										
217.00 > 172.00	1.574	1.574	0.0		20481402	60.2		120	1265290	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.868	0.0	1.000	6535777	19.3		96.7	62609	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.868	0.0		16242034	60.1		120	1094905	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.906	1.907	-0.001	1.000	11783909	20.1		114		
298.90 > 99.00	1.906	1.907	-0.001	1.000	5085170		2.32(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.179	2.173	0.006	1.000	5304421	20.8		104	102430	
D 6 13C2 PFHxA										
315.00 > 270.00	2.179	2.173	0.006		13349831	54.2		108	1044992	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.520	2.519	0.001	1.000	5325594	20.3		101	84952	
D 11 13C4-PFHpA										
367.00 > 322.00	2.520	2.519	0.001		12690645	60.3		121	811314	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.536	2.534	0.002	1.000	6956903	18.1		99.4		
D 10 18O2 PFHxS										
403.00 > 84.00	2.536	2.534	0.002		17161737	56.7		120	2215913	
D 14 13C4 PFOA										
417.00 > 372.00	2.895	2.886	0.009		13102595	59.7		119	818355	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.895	2.894	0.001	1.000	5685652	21.3		106	81058	
413.00 > 169.00	2.895	2.894	0.001	1.000	3320781		1.71(0.90-1.10)		187412	

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	2.903	2.902	0.001	1.000	6325837	19.8		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.269	3.267	0.002	1.000	5437362	18.3		98.5	1603544	
499.00 > 99.00	3.276	3.267	0.009	1.002	1198769		4.54(0.90-1.10)		67382	
D 17 13C4 PFOS										
503.00 > 80.00	3.269	3.267	0.002		13071743	53.4		112	495633	
20 Perfluorononanoic acid										
463.00 > 419.00	3.276	3.275	0.001	1.000	4107662	19.9		99.3	64639	
D 19 13C5 PFNA										
468.00 > 423.00	3.276	3.275	0.001		10430504	58.6		117	602616	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.591	3.589	0.002	1.000	6225860	20.9		104	196040	
D 21 13C8 FOSA										
506.00 > 78.00	3.591	3.589	0.002		15929131	38.5		76.9	599228	
D 23 13C2 PFDA										
515.00 > 470.00	3.633	3.631	0.002		9554899	57.5		115	328216	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.633	3.631	0.002	1.000	3686742	19.9		99.5	78094	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.943	3.941	0.002	1.000	2787512	16.3		84.3		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.969	3.959	0.010	1.000	2452827	17.5		87.3	60912	
D 27 13C2 PFUnA										
565.00 > 520.00	3.969	3.967	0.002		6630265	52.7		105	285640	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.260	4.259	0.001	1.000	1878687	19.1		95.7	31690	
D 30 13C2 PFDoA										
615.00 > 570.00	4.260	4.259	0.001		5187445	44.4		88.7	159341	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.530	4.520	0.010	1.000	1368885	12.7		63.4	2551	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.763	4.772	-0.009	1.000	2525010	12.6		63.0	1335	
713.00 > 169.00	4.763	4.772	-0.009	1.000	405389		6.23(0.00-0.00)		85374	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.763	4.772	-0.009		7044061	29.1		58.2	372548	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.186	5.184	0.002		2287334	17.5		35.1	108956	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.186	5.194	-0.008	1.000	788728	6.89		34.5	2778	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.569	5.562	0.007	1.000	812724	9.96		49.8	3215	

Report Date: 04-Dec-2016 18:17:16 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_002.d

Injection Date: 02-Dec-2016 15:07:03 Instrument ID: A8_N

Lims ID: LCS 320-139627/2-A

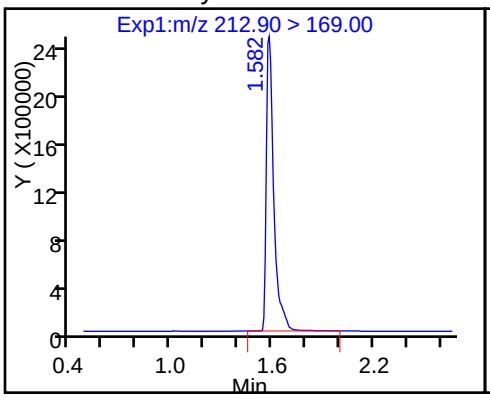
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 2 Worklist Smp#: 6

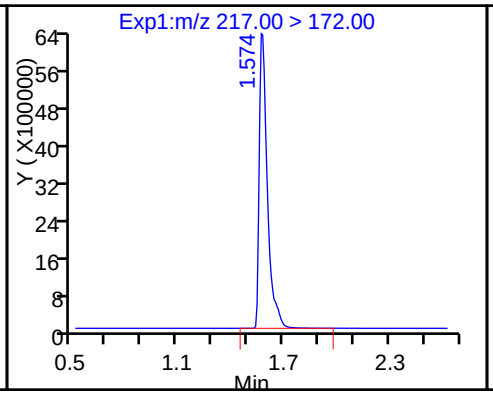
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

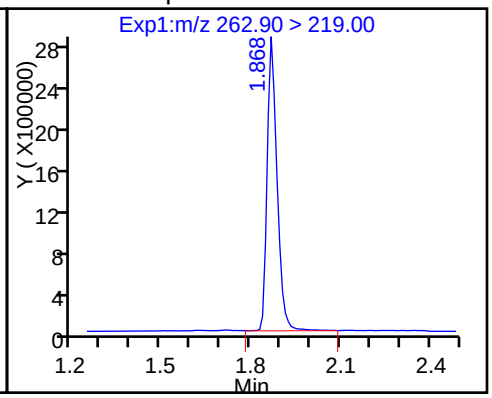
1 Perfluorobutyric acid



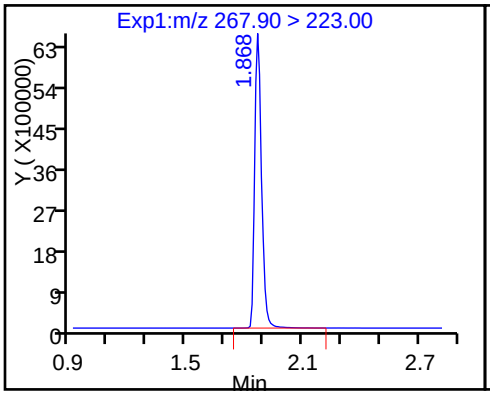
D 2 13C4 PFBA



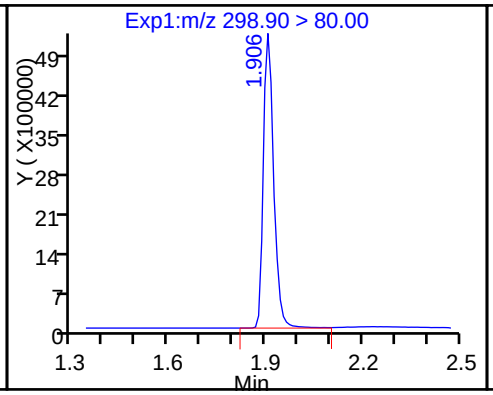
3 Perfluoropentanoic acid



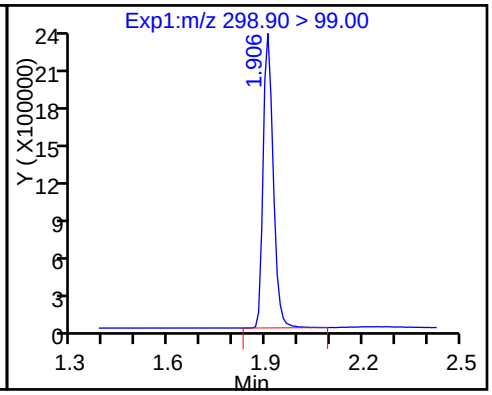
D 4 13C5-PFPeA



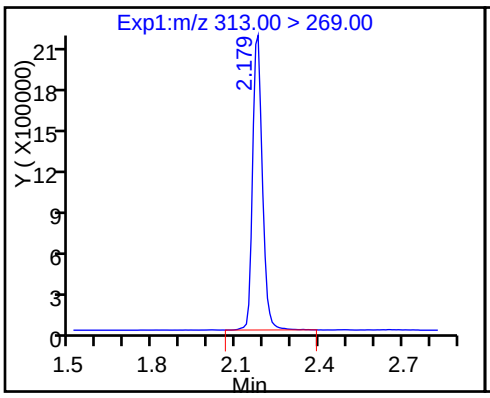
5 Perfluorobutanesulfonic acid



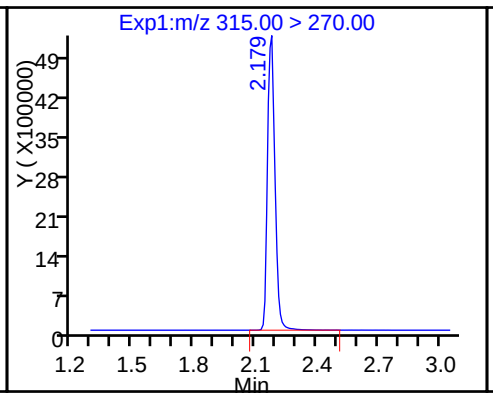
5 Perfluorobutanesulfonic acid



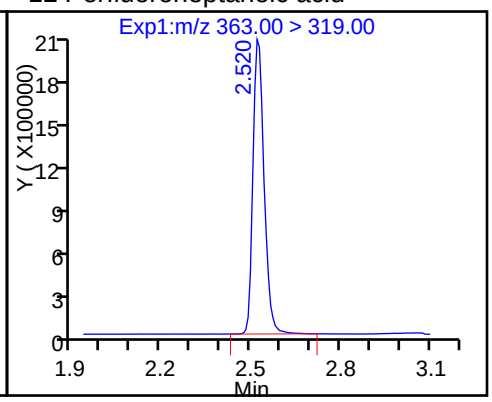
7 Perfluorohexanoic acid



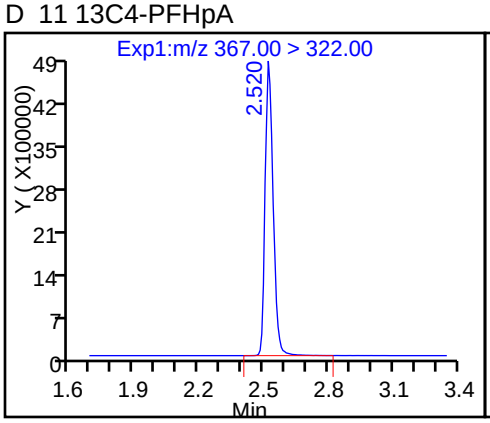
D 6 13C2 PFHxA



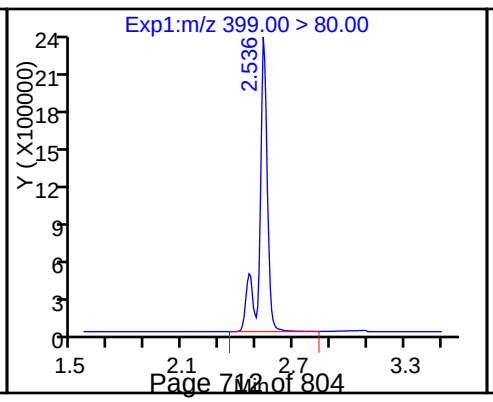
12 Perfluoroheptanoic acid



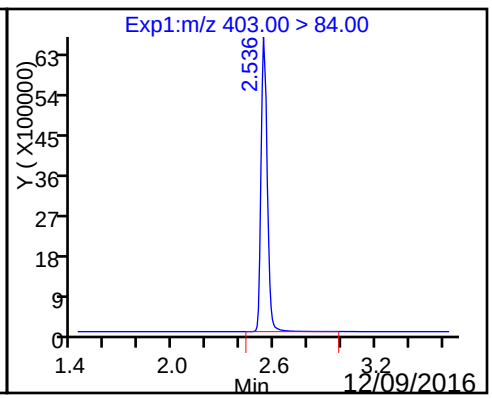
D 11 13C4-PFHpA



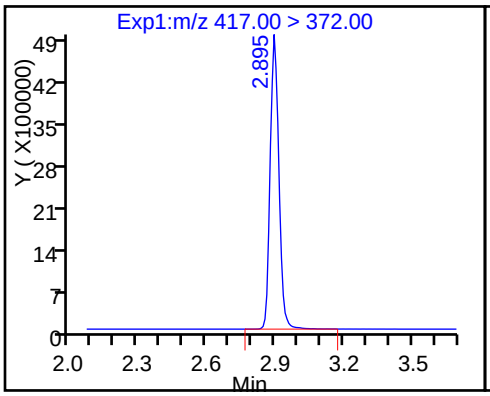
9 Perfluorohexanesulfonic acid



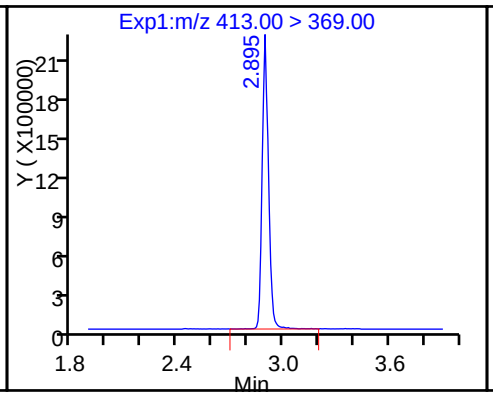
D 10 18O2 PFHxS



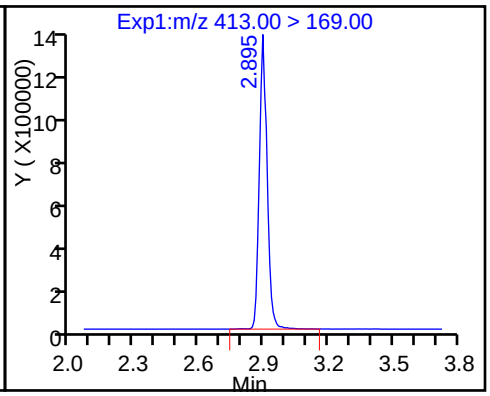
D 14 13C4 PFOA



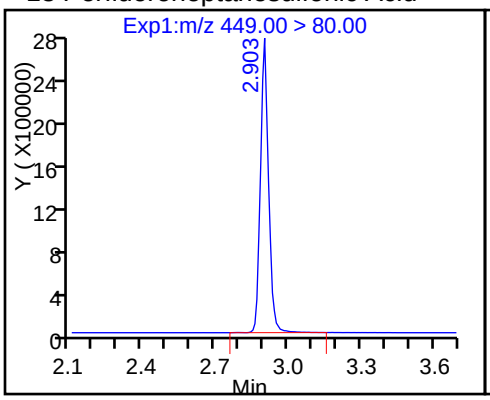
15 Perfluorooctanoic acid



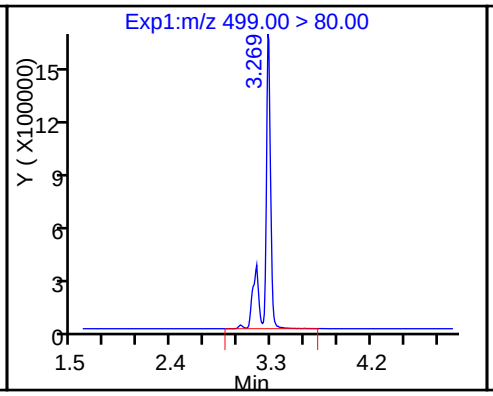
15 Perfluorooctanoic acid



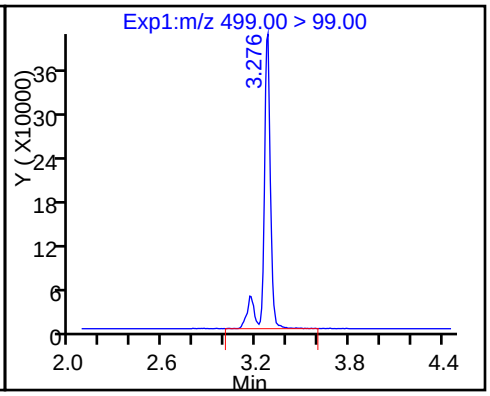
13 Perfluoroheptanesulfonic Acid



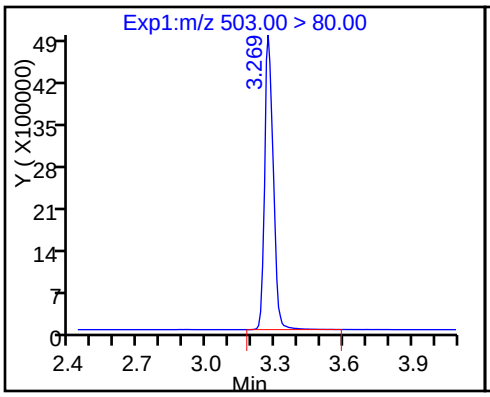
18 Perfluorooctane sulfonic acid



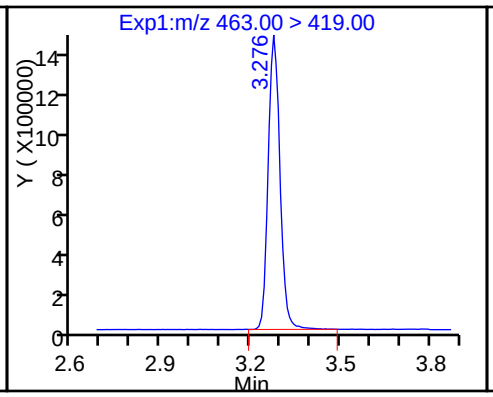
18 Perfluorooctane sulfonic acid



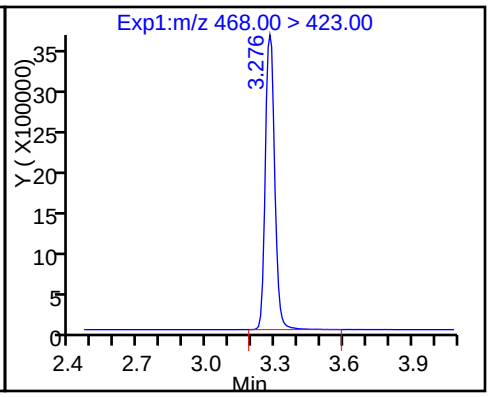
D 17 13C4 PFOS



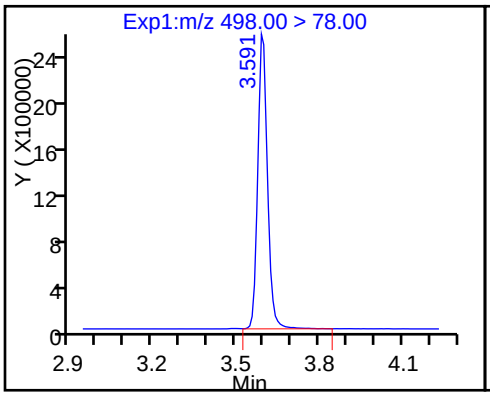
20 Perfluorononanoic acid



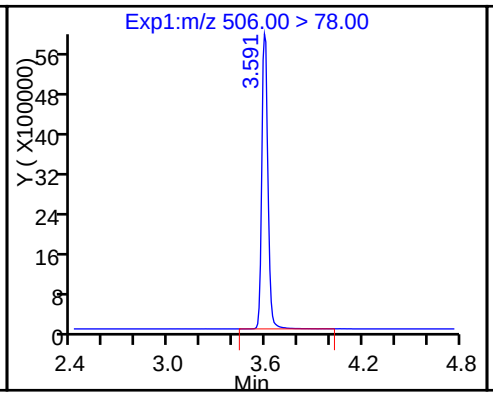
D 19 13C5 PFNA



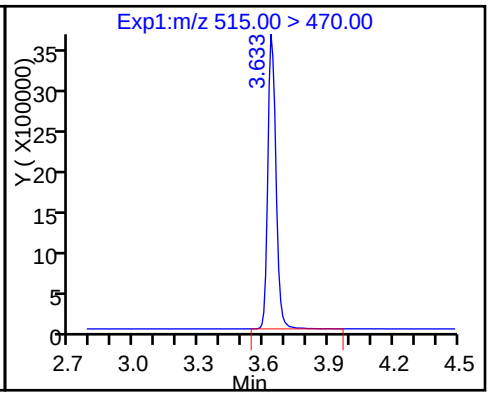
22 Perfluorooctane Sulfonamide



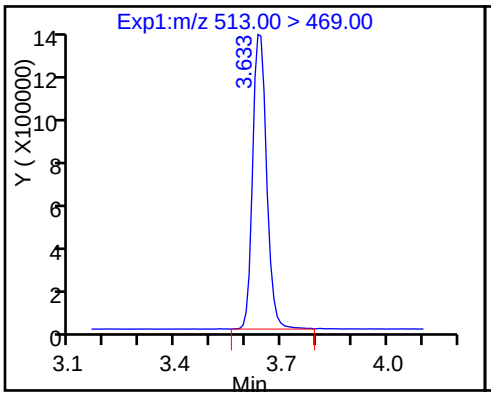
D 21 13C8 FOSA



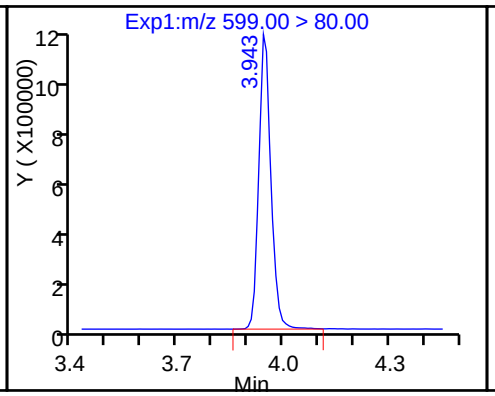
D 23 13C2 PFDA



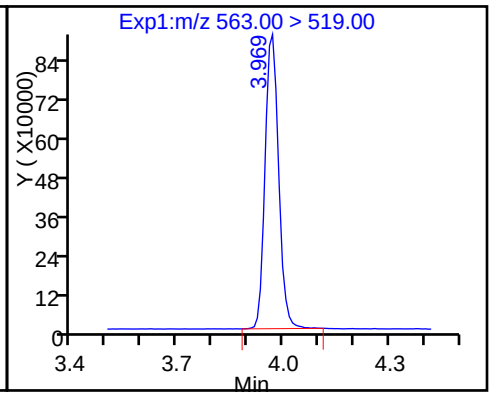
24 Perfluorodecanoic acid



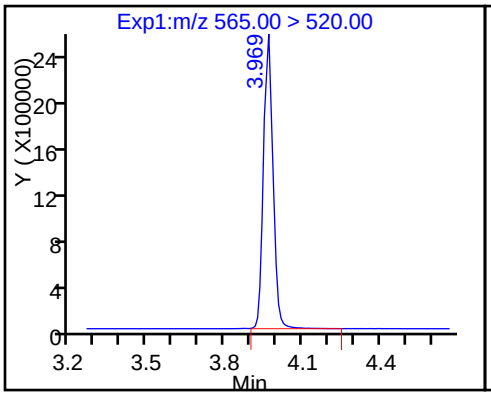
26 Perfluorodecane Sulfonic acid



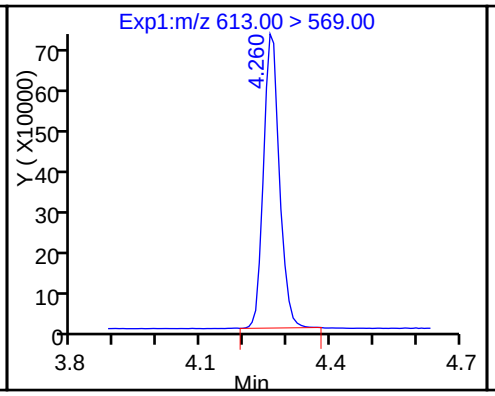
28 Perfluoroundecanoic acid



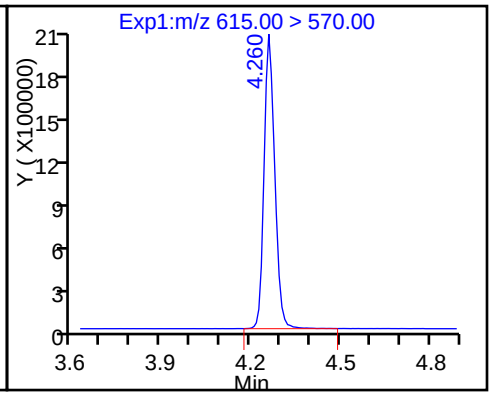
D 27 13C2 PFUnA



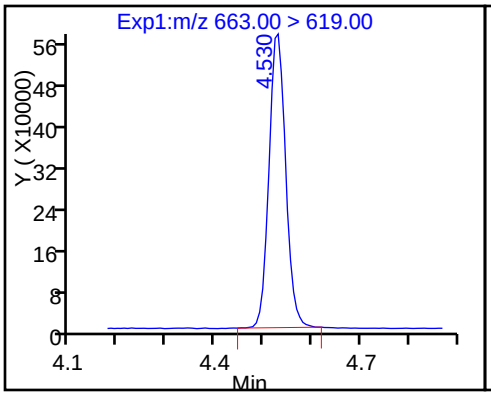
29 Perfluorododecanoic acid



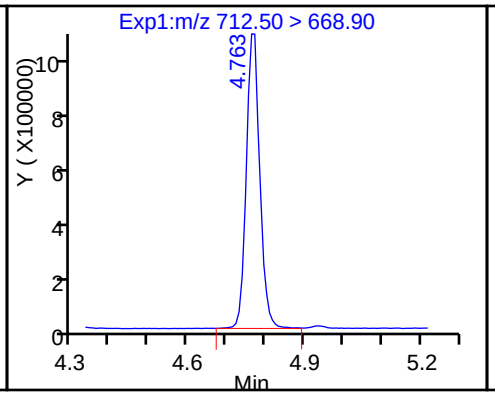
D 30 13C2 PFDoA



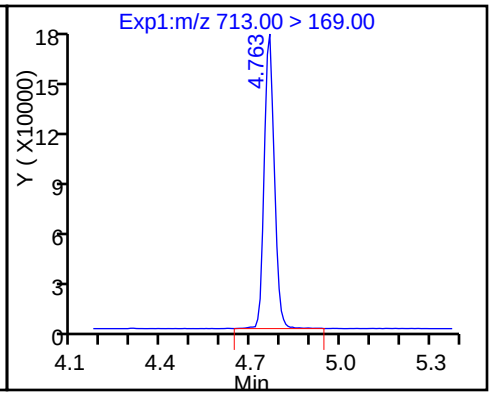
31 Perfluorotridecanoic acid



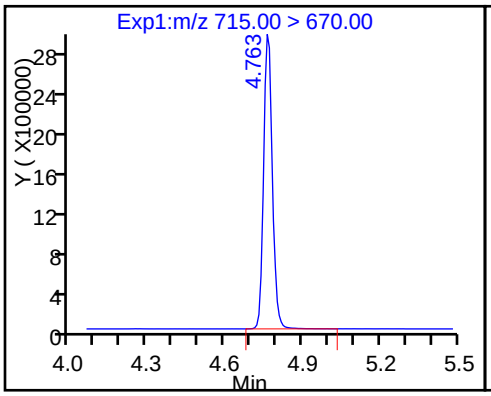
33 Perfluorotetradecanoic acid



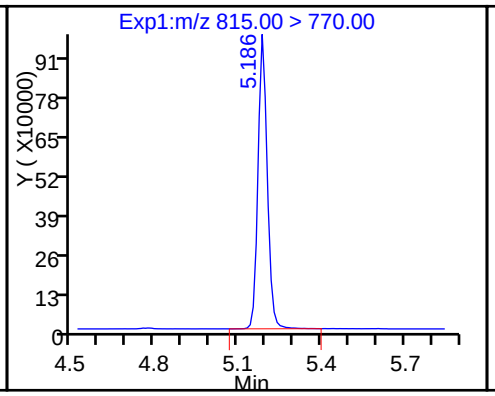
33 Perfluorotetradecanoic acid



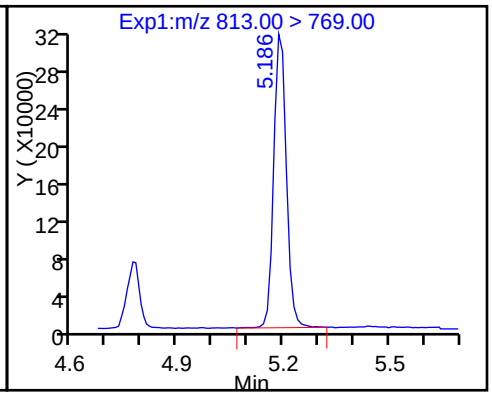
D 32 13C2-PFTeDA



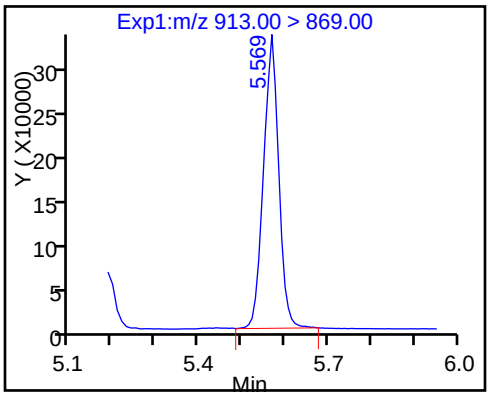
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-139076/3-A

Matrix: Water Lab File ID: 07DEC2016A_024.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 11/22/2016 11:44

Sample wt/vol: 250(mL) Date Analyzed: 12/07/2016 15:11

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.: 141054 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0408		0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0386		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0412		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	120		25-150
STL00991	13C4 PFOS	120		25-150
STL00994	18O2 PFHxS	117		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_024.d
Lims ID: LCSD 320-139076/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 07-Dec-2016 15:11:00 ALS Bottle#: 13 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-139076/3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 07-Dec-2016 17:04:52 Calib Date: 03-Dec-2016 15:33:40
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161205-37491.b\03DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 07-Dec-2016 17:04:52

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	1.542	1.542	0.0		20439326	60.9		122	1099769	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.550	-0.008	1.000	8070095	22.6		113	68947	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.820	0.0	1.000	6903685	21.0		105	58618	
D 4 13C5-PFPeA										
267.90 > 223.00	1.820	1.820	0.0		16178900	61.2		122	854032	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.858	0.0	1.000	12044485	20.6		117		
298.90 > 99.00	1.858	1.858	0.0	1.000	5201745		2.32(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.109	2.115	-0.006		14178200	59.7		119	983022	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.109	2.115	-0.006	1.000	5777863	21.4		107	141327	
D 11 13C4-PFHpA										
367.00 > 322.00	2.446	2.452	-0.006		13031603	62.8		126	1105090	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.446	2.452	-0.006	1.000	5639160	21.1		105	53267	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.464	2.470	-0.006	1.000	7318981	18.2		100		M
D 10 18O2 PFHxS										
403.00 > 84.00	2.464	2.470	-0.006		17313067	55.4		117	1041687	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.813	2.809	0.004	1.000	5749146	20.4		102	110366	
413.00 > 169.00	2.805	2.809	-0.004	0.997	3522665		1.63(0.90-1.10)		155799	
D 14 13C4 PFOA										
417.00 > 372.00	2.805	2.809	-0.004		13149022	60.0		120	778784	

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	2.813	2.817	-0.004	1.000	7099590	20.4		107		
D 17 13C4 PFOS										
503.00 > 80.00	3.173	3.185	-0.012		14107725	57.3		120	430449	
D 19 13C5 PFNA										
468.00 > 423.00	3.181	3.185	-0.004		10193592	61.3		123	377554	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.181	3.185	-0.004	1.000	6184415	19.3		104	1566440	
499.00 > 99.00	3.084	3.185	-0.101	0.970	1316887		4.70(0.90-1.10)		8754	
20 Perfluorononanoic acid										
463.00 > 419.00	3.181	3.185	-0.004	1.000	4210906	20.7		104	70095	
D 21 13C8 FOSA										
506.00 > 78.00	3.514	3.518	-0.004		14567260	36.2		72.4	471136	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.514	3.518	-0.004	1.000	5916933	21.7		109	252849	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.539	3.543	-0.004	1.000	3664641	20.7		103	118327	
D 23 13C2 PFDA										
515.00 > 470.00	3.539	3.543	-0.004		9217839	58.4		117	237011	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.851	3.864	-0.013	1.000	3589715	19.0		98.6		
D 27 13C2 PFUnA										
565.00 > 520.00	3.868	3.872	-0.004		6736395	56.7		113	307894	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.868	3.872	-0.004	1.000	2731838	19.0		95.1	63462	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.163	4.168	-0.005	1.000	2366095	20.8		104	63057	
D 30 13C2 PFDoA										
615.00 > 570.00	4.163	4.168	-0.005		5987149	53.4		107	245610	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.428	4.440	-0.012	1.000	2720898	23.9		120	52162	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.664	4.679	-0.015	1.000	5732138	25.8		129	45711	
713.00 > 169.00	4.664	4.679	-0.015	1.000	923880		6.20(0.00-0.00)		171322	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.672	4.679	-0.007		15359387	66.4		133	1087338	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.091	5.090	0.001	1.000	2470568	20.0		100	3727	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.081	5.090	-0.009		6540443	50.4		101	199249	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.444	5.452	-0.008	1.000	2115354	17.8		89.0	2903	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 07-Dec-2016 17:04:52 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b\07DEC2016A_024.d

Injection Date: 07-Dec-2016 15:11:00 Instrument ID: A8_N

Lims ID: LCSD 320-139076/3-A

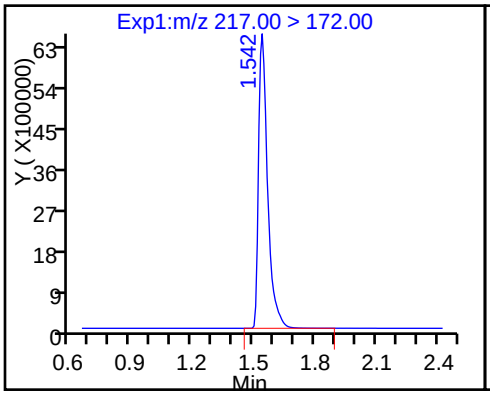
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 13 Worklist Smp#: 26

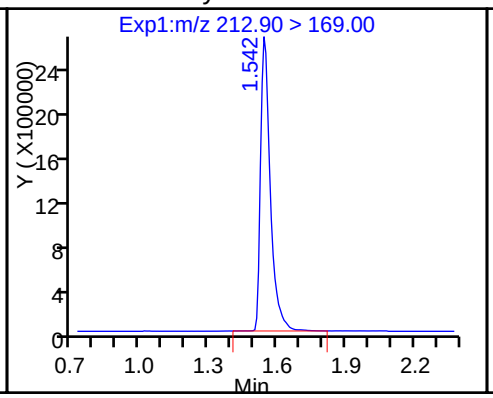
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

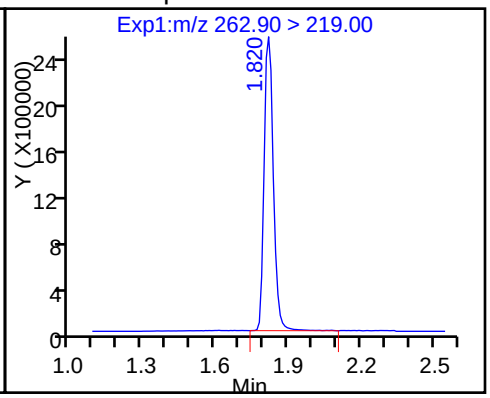
D 2 13C4 PFBA



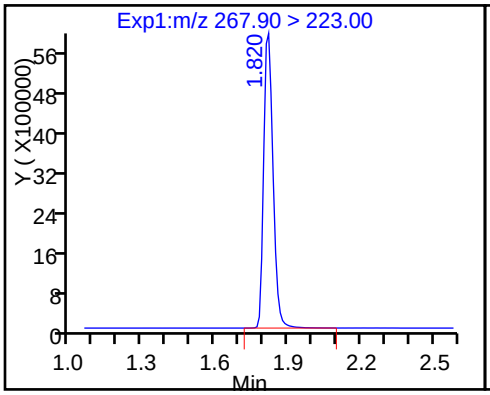
1 Perfluorobutyric acid



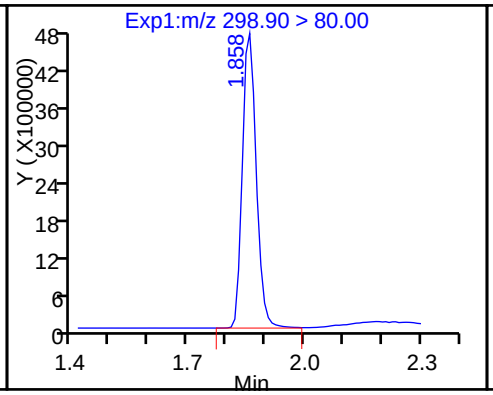
3 Perfluoropentanoic acid



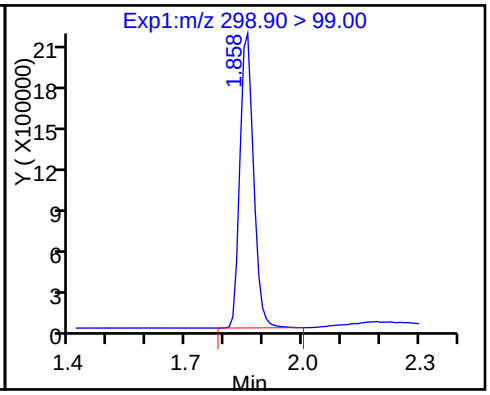
D 4 13C5-PFPeA



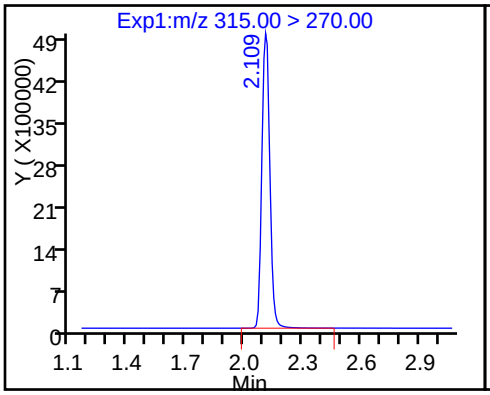
5 Perfluorobutanesulfonic acid



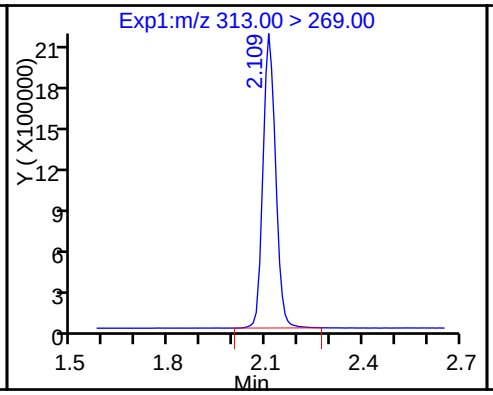
5 Perfluorobutanesulfonic acid



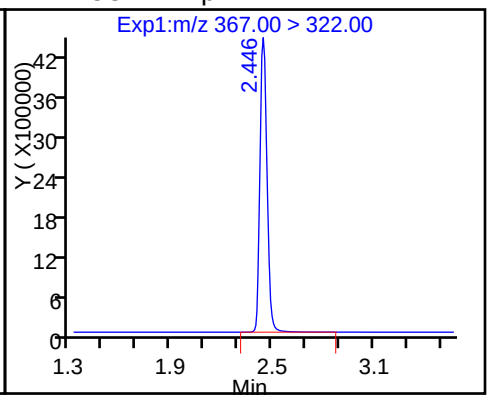
D 6 13C2 PFHxA



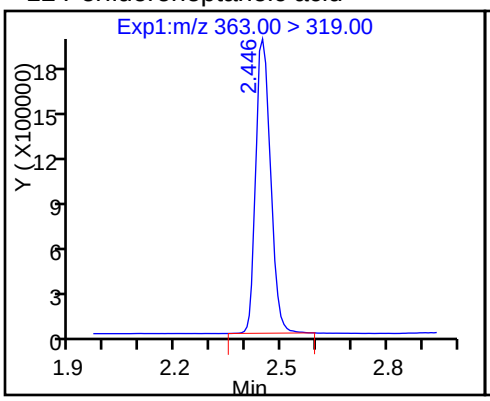
7 Perfluorohexanoic acid



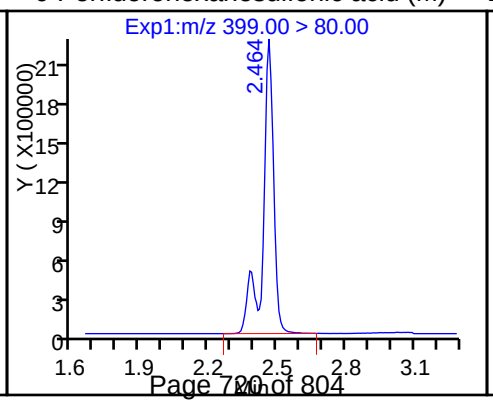
D 11 13C4-PFHpA



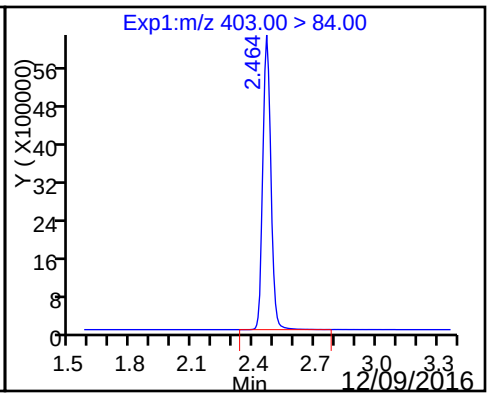
12 Perfluoroheptanoic acid



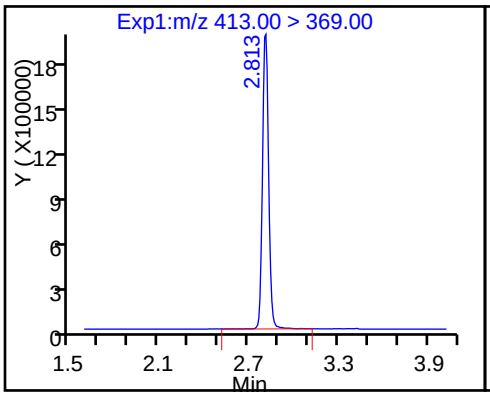
9 Perfluorohexanesulfonic acid (M)



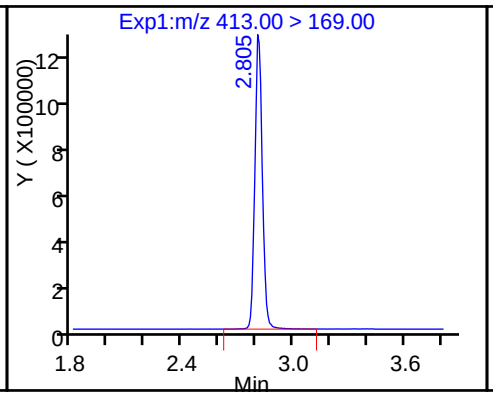
D 10 18O2 PFHxS



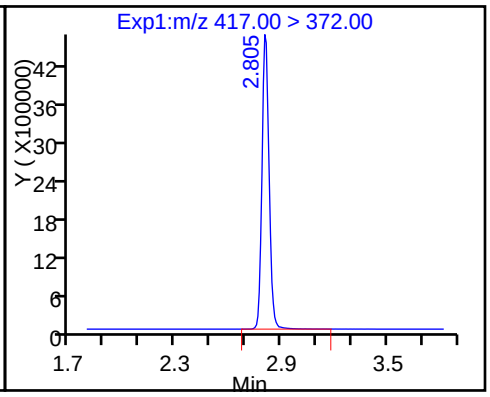
15 Perfluorooctanoic acid



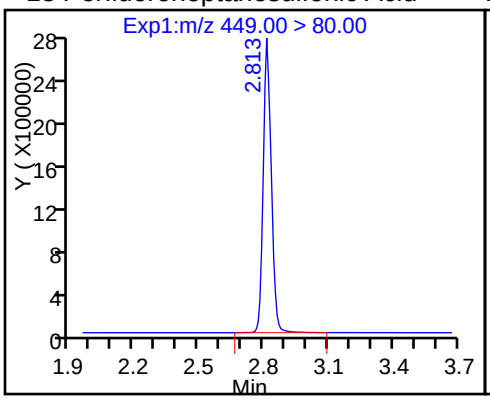
15 Perfluorooctanoic acid



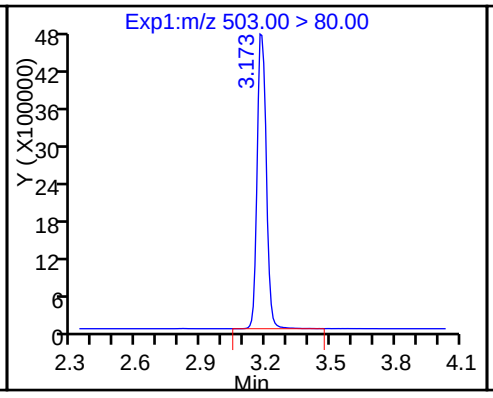
D 14 13C4 PFOA



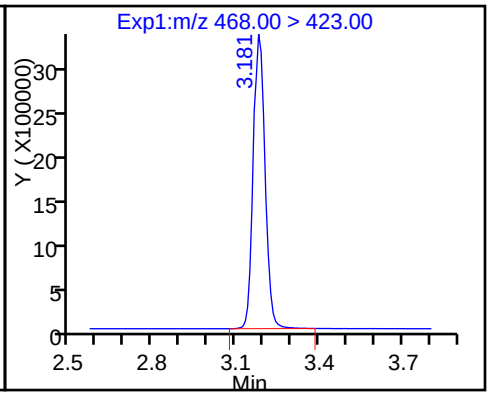
13 Perfluoroheptanesulfonic Acid



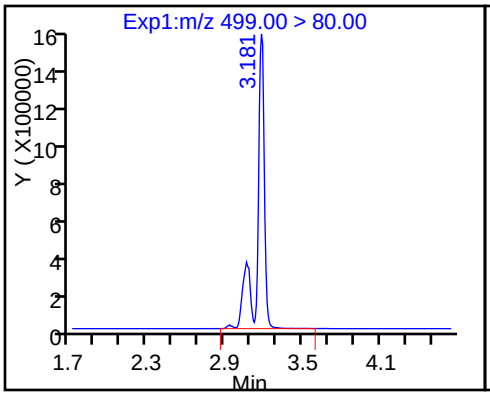
D 17 13C4 PFOS



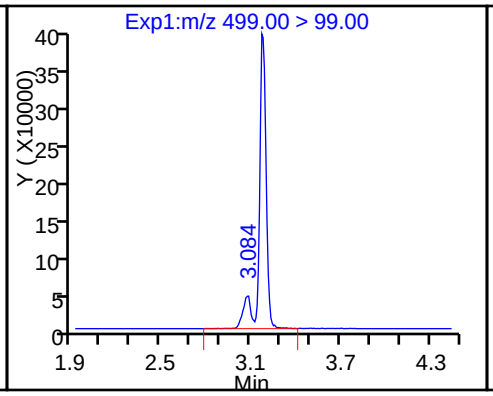
D 19 13C5 PFNA



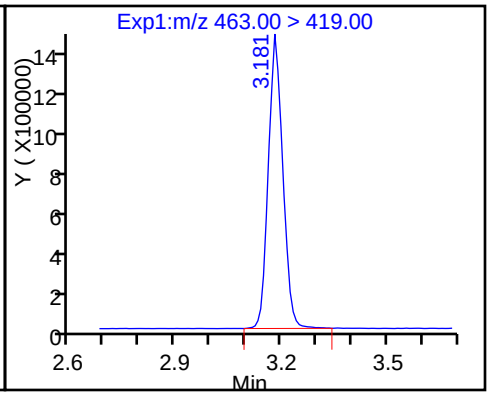
18 Perfluorooctane sulfonic acid



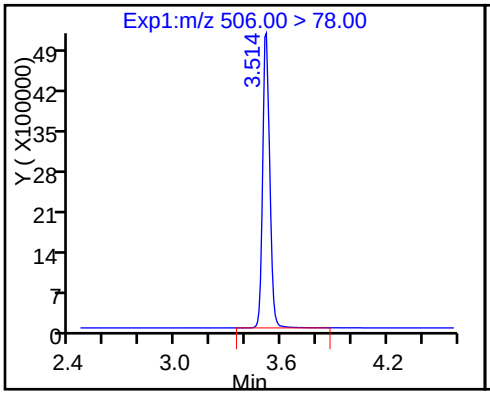
18 Perfluorooctane sulfonic acid



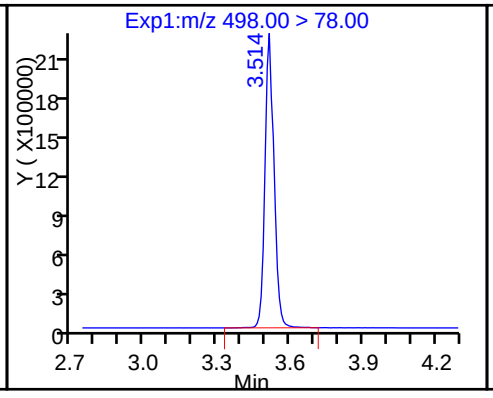
20 Perfluorononanoic acid



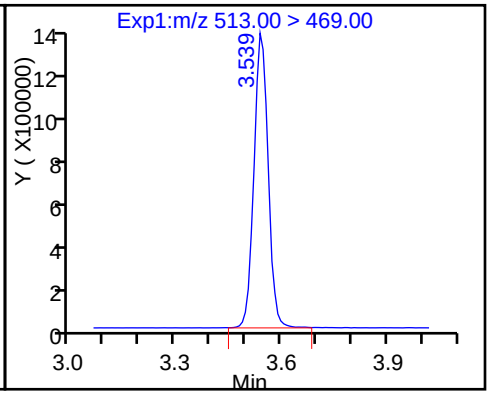
D 21 13C8 FOSA



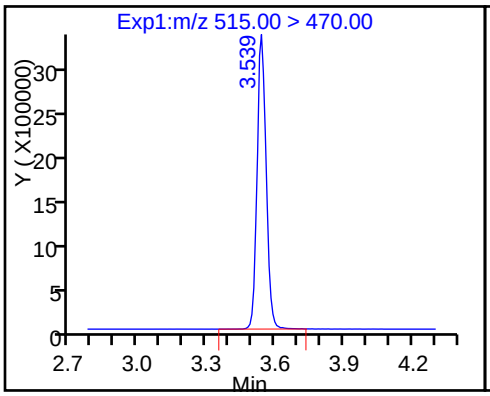
22 Perfluorooctane Sulfonamide



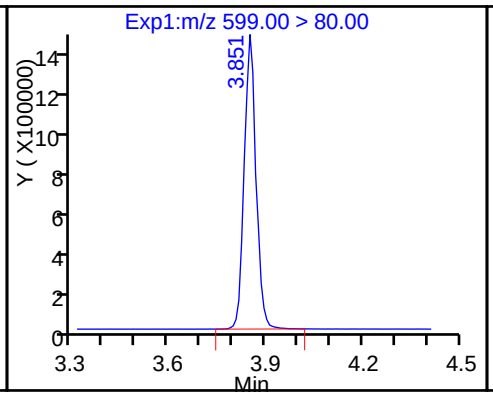
24 Perfluorodecanoic acid



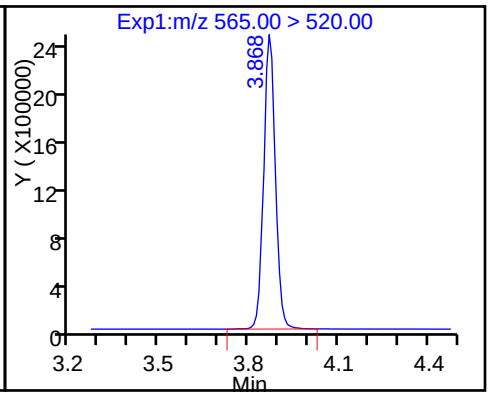
D 23 13C2 PFDA



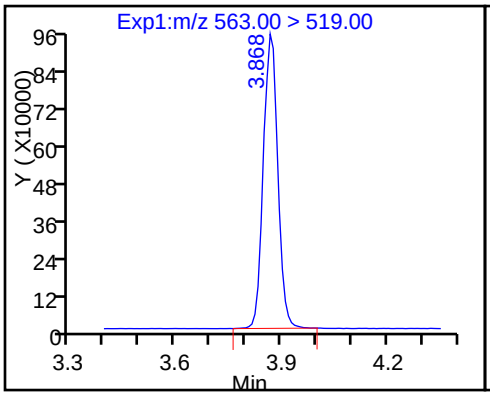
26 Perfluorodecane Sulfonic acid



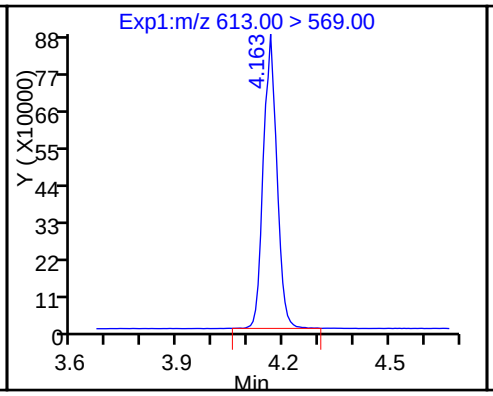
D 27 13C2 PFUnA



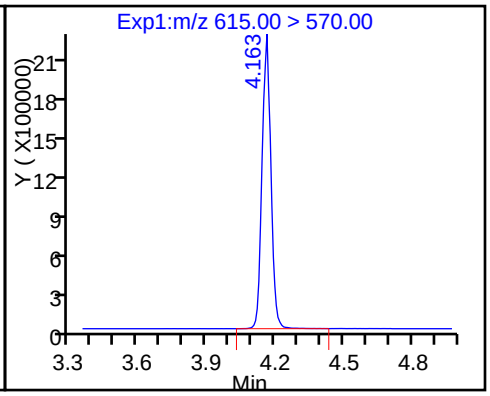
28 Perfluoroundecanoic acid



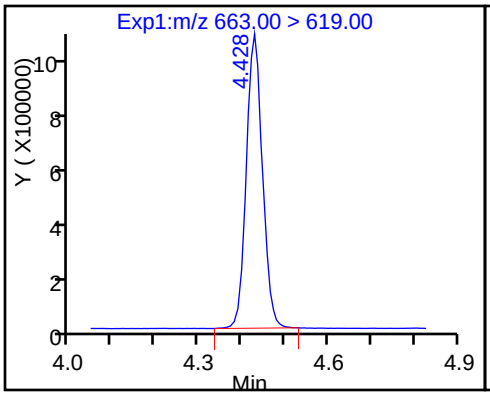
29 Perfluorododecanoic acid



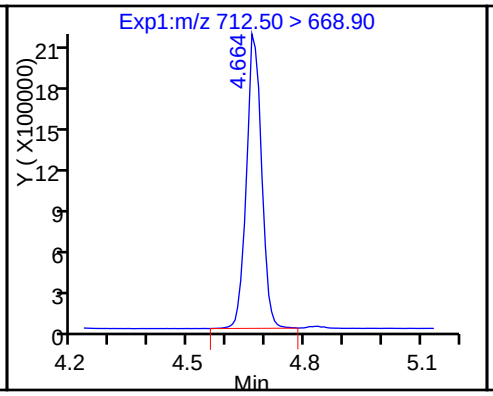
D 30 13C2 PFDoA



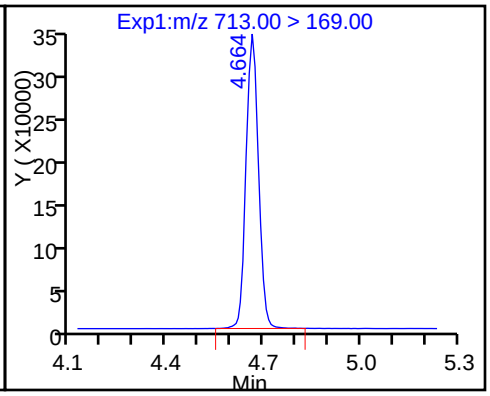
31 Perfluorotridecanoic acid



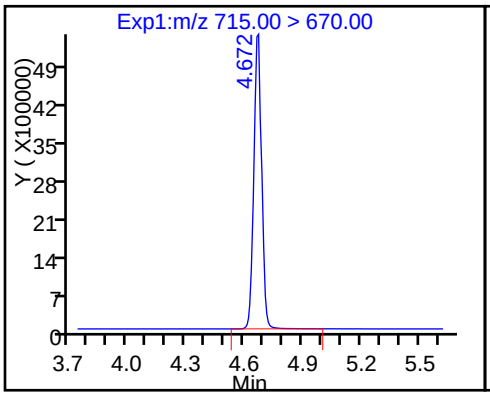
33 Perfluorotetradecanoic acid



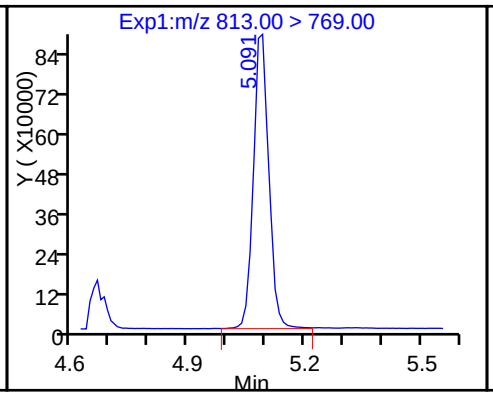
33 Perfluorotetradecanoic acid



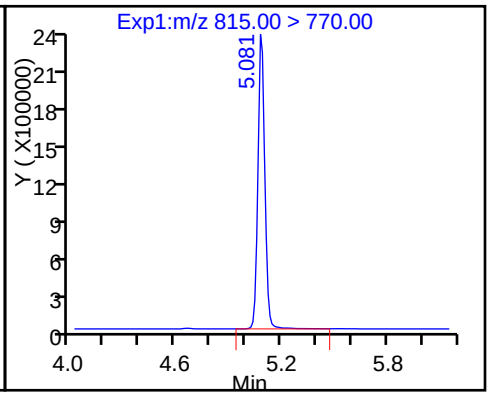
D 32 13C2-PFTeDA



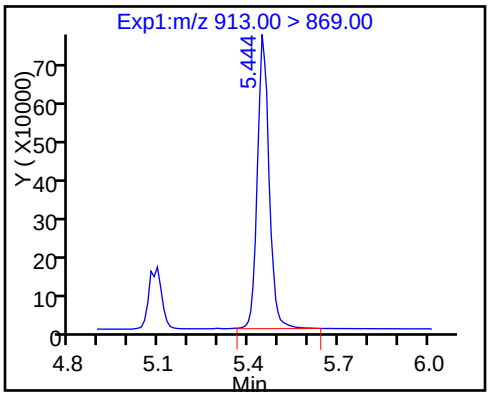
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-29-SO-14-15-MS MS Lab Sample ID: 320-23718-3 MS

Matrix: Solid Lab File ID: 02DEC2016C_006.d

Analysis Method: 537 (Modified) Date Collected: 11/18/2016 13:16

Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03

Sample wt/vol: 5.01(g) Date Analyzed: 12/02/2016 15:37

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

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

% Moisture: 18.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 140429 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	5.53		0.61	0.37	0.13
1763-23-1	Perfluorooctane Sulfonate (PFOS)	5.71	M	0.61	0.37	0.15
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.78		0.49	0.37	0.13

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	103		25-150
STL00991	13C4 PFOS	91		25-150
STL00994	18O2 PFHxS	105		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_006.d
Lims ID: 320-23718-A-3-B MS
Client ID: DPT-16-29-SO-14-15-MS
Sample Type: MS
Inject. Date: 02-Dec-2016 15:37:08 ALS Bottle#: 6 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23718-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\20161202-37461.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 04-Dec-2016 18:25:25 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 18:20:58

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	6647428	20.7		104	56317	
D 2 13C4 PFBA										
217.00 > 172.00	1.574	1.574	0.0		18116422	53.2		106	1481597	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.858	1.868	-0.010	1.000	5932719	19.5		97.4	50967	
D 4 13C5-PFPeA										
267.90 > 223.00	1.858	1.868	-0.010		14627042	54.1		108	1437246	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.897	1.907	-0.010	1.000	10017547	19.5		110		
298.90 > 99.00	1.897	1.907	-0.010	1.000	4453295		2.25(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.167	2.173	-0.006	1.000	4715992	21.2		106	88734	
D 6 13C2 PFHxA										
315.00 > 270.00	2.167	2.173	-0.006		11622905	47.2		94.3	926788	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.515	2.519	-0.004	1.000	4589034	19.9		99.7	64701	
D 11 13C4-PFHpA										
367.00 > 322.00	2.515	2.519	-0.004		11126406	52.9		106	860510	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.530	2.534	-0.004	1.000	7725573	22.9		126		M
D 10 18O2 PFHxS										
403.00 > 84.00	2.530	2.534	-0.004		15043963	49.7		105	943626	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.855	2.870	-0.015	1.000	737	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.855	2.870	-0.015		1115	0.008006		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.888	2.886	0.002		11289140	51.5		103	847452	

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	2.888	2.894	-0.006	1.000	5194436	22.5		113	105612	
413.00 > 169.00	2.888	2.894	-0.006	1.000	3192516		1.63(0.90-1.10)		197867	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.896	2.902	-0.006	1.000	5352868	20.7		109		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.262	3.267	-0.005	1.000	5610347	23.3		126	168814	M
499.00 > 99.00	3.262	3.267	-0.005	1.000	1238437		4.53(0.90-1.10)		32382	M
D 17 13C4 PFOS										
503.00 > 80.00	3.269	3.267	0.002		10584155	43.3		90.5	264030	
20 Perfluorononanoic acid										
463.00 > 419.00	3.269	3.275	-0.006	1.000	3362507	19.6		98.0	61590	
D 19 13C5 PFNA										
468.00 > 423.00	3.269	3.275	-0.006		8650362	48.6		97.1	780910	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.592	3.589	0.003	1.000	2627923	20.2		101	82908	
D 21 13C8 FOSA										
506.00 > 78.00	3.583	3.589	-0.006		6947948	16.8		33.5	253067	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.617	3.624	-0.007	1.000	2185	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.617	3.624	-0.007		594	0.004449		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.625	3.631	-0.006		7269861	43.8		87.6	279623	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.634	3.631	0.003	1.000	2807852	19.9		99.6	64611	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.785	3.790	-0.005		833	0.0104		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.795	3.799	-0.004	1.003	536	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.158	3.941	0.217	1.000	1541	0.0111		0.1		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.960	3.955	0.005		2278	0.0256		0.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.960	3.959	0.001	1.000	1822294	17.6		88.2	56127	
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.960	3.963	-0.003	1.000	1298	NR		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.960	3.967	-0.007		4874374	38.8		77.5	279058	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.103	4.079	0.024		530	0.004984		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.256	4.259	-0.003	1.000	1172663	19.9		99.6	30371	
D 30 13C2 PFDoA										
615.00 > 570.00	4.256	4.259	-0.003		3108577	26.6		53.2	109331	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.491	4.261	0.230		450	0.004416		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.523	4.520	0.003	1.000	686205	10.6		53.1	3114	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.755	4.772	-0.017	1.000	1110180	9.24		46.2	981	
713.00 > 169.00	4.755	4.772	-0.017	1.000	175299		6.33(0.00-0.00)		38232	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.755	4.772	-0.017		3100850	12.8		25.6	193196	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.186	5.184	0.002		772636	5.93		11.9	62193	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.186	5.194	-0.008	1.000	261997	3.46		17.3	1962	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.555	5.562	-0.007	1.000	196848	4.03		20.1	1722	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Report Date: 04-Dec-2016 18:25:35 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_006.d

Injection Date: 02-Dec-2016 15:37:08 Instrument ID: A8_N

Lims ID: 320-23718-A-3-B MS

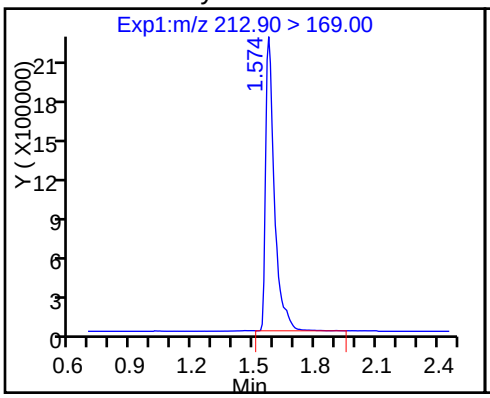
Client ID: DPT-16-29-SO-14-15-MS

Operator ID: A8-PC\A8 ALS Bottle#: 6 Worklist Smp#: 10

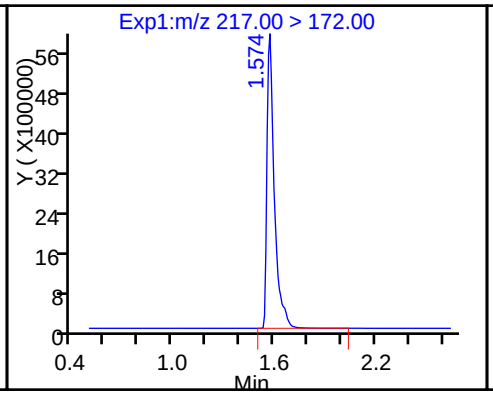
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

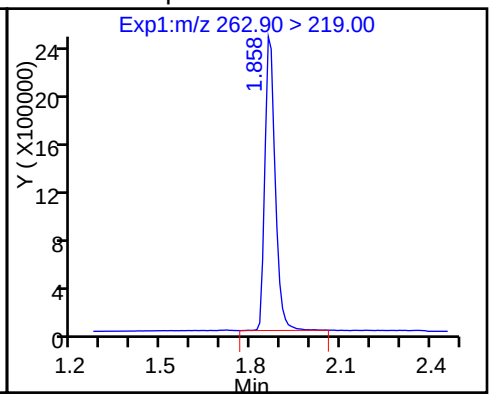
1 Perfluorobutyric acid



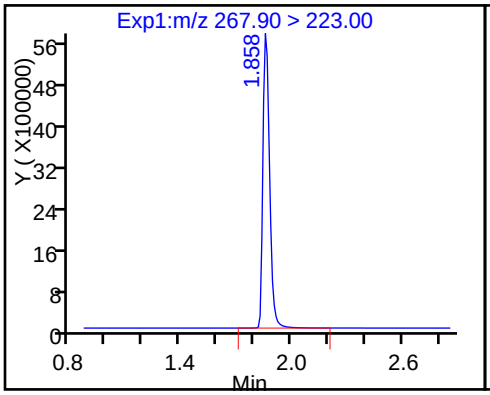
D 2 13C4 PFBA



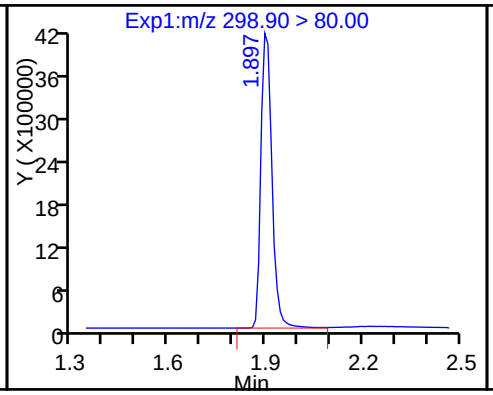
3 Perfluoropentanoic acid



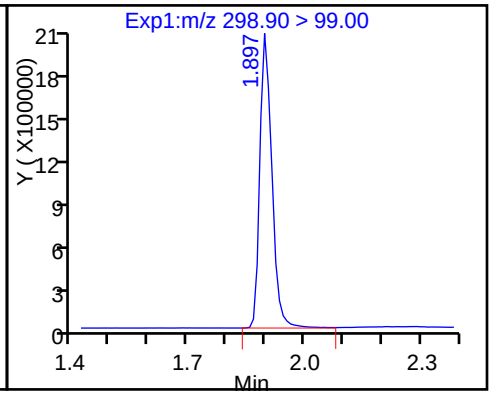
D 4 13C5-PFPeA



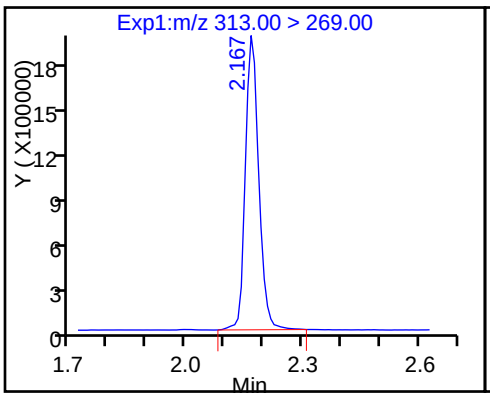
5 Perfluorobutanesulfonic acid



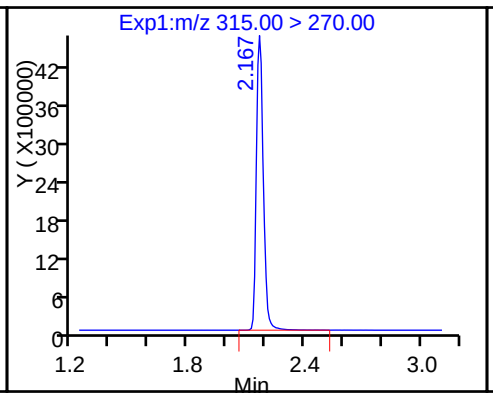
5 Perfluorobutanesulfonic acid



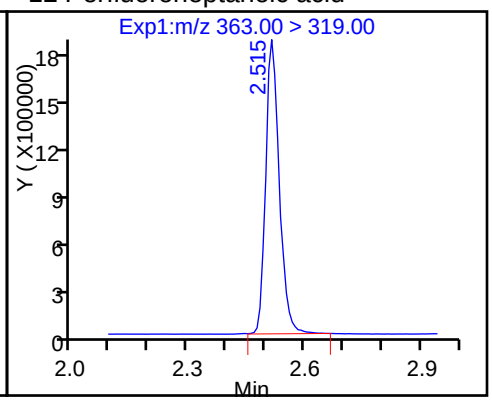
7 Perfluorohexanoic acid



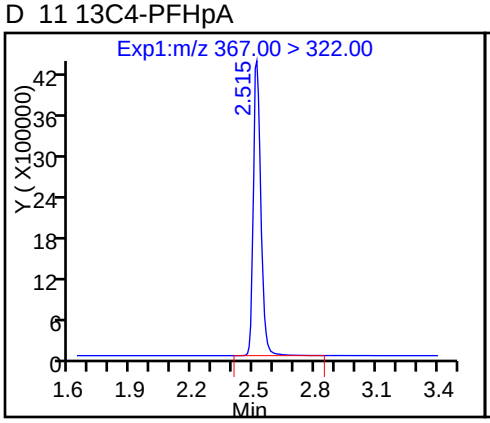
D 6 13C2 PFHxA



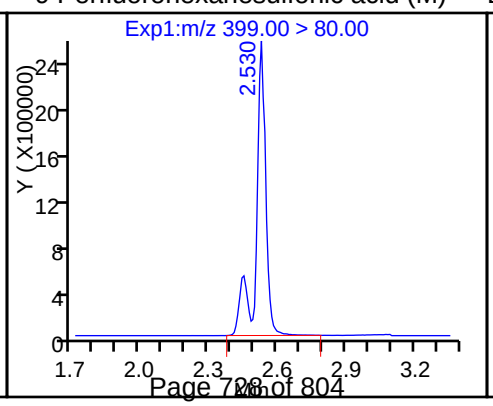
12 Perfluoroheptanoic acid



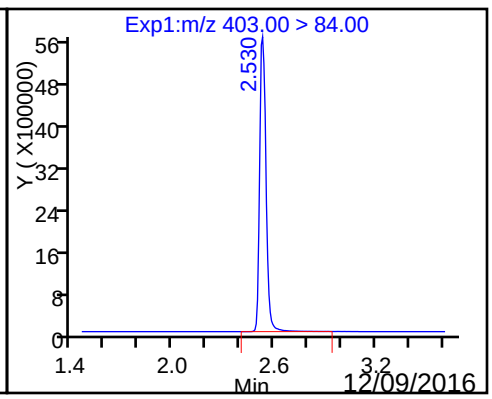
D 11 13C4-PFHpA



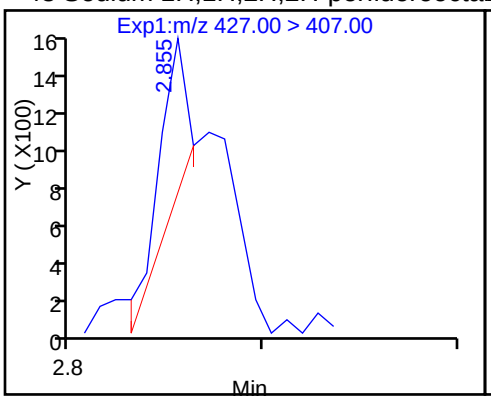
9 Perfluorohexanesulfonic acid (M)



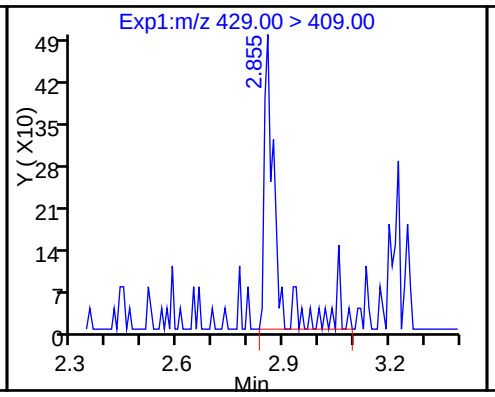
D 10 18O2 PFHxS



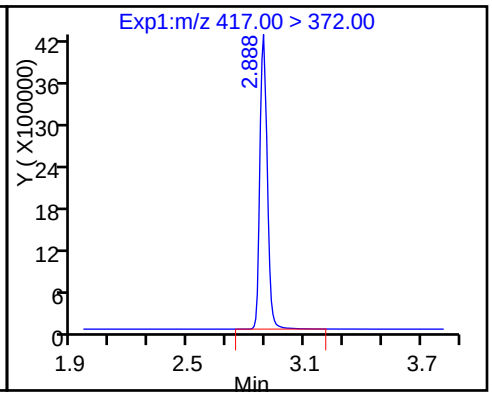
48 Sodium 1H,1H,2H,2H-perfluorooctane



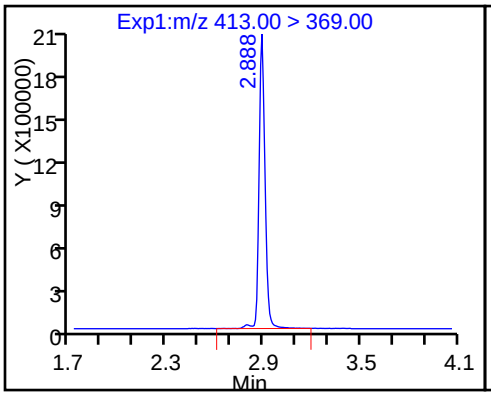
D 47 M2-6:2FTS



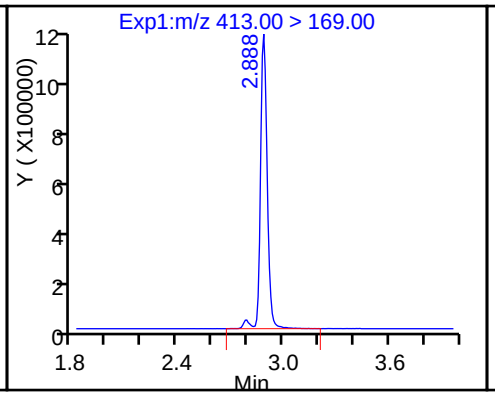
D 14 13C4 PFOA



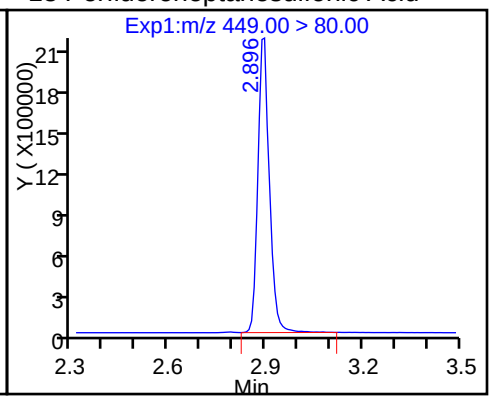
15 Perfluorooctanoic acid



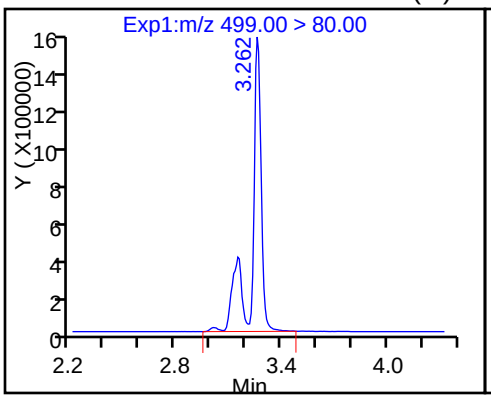
15 Perfluorooctanoic acid



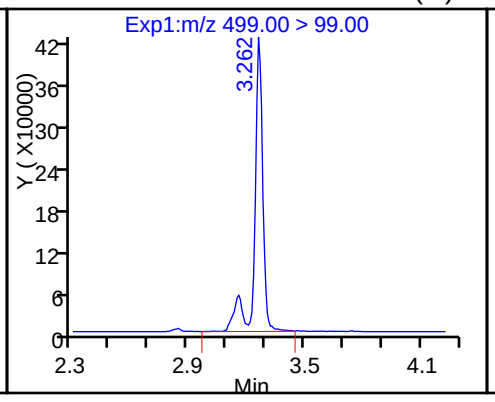
13 Perfluoroheptanesulfonic Acid



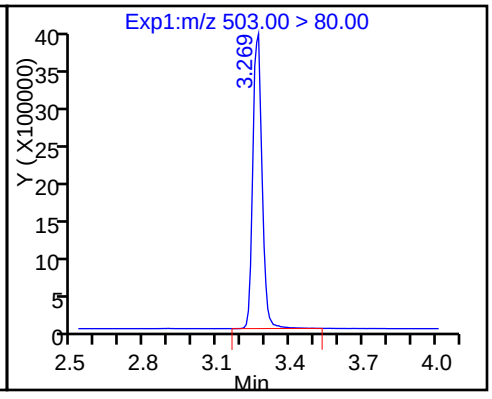
18 Perfluorooctane sulfonic acid (M)



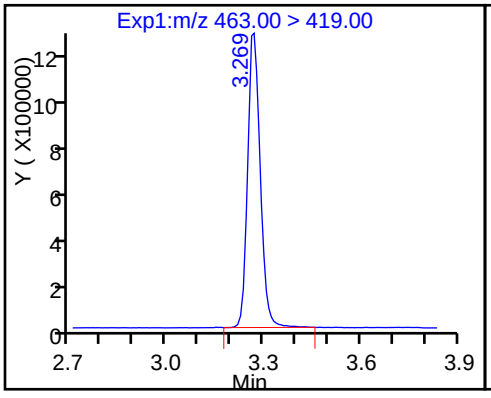
18 Perfluorooctane sulfonic acid (M)



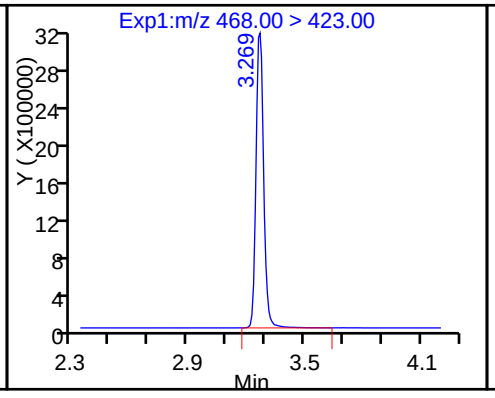
D 17 13C4 PFOS



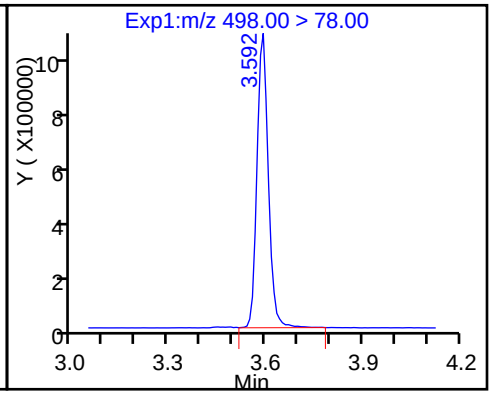
20 Perfluorononanoic acid



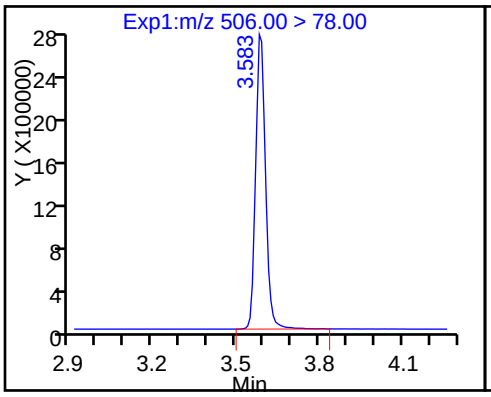
D 19 13C5 PFNA



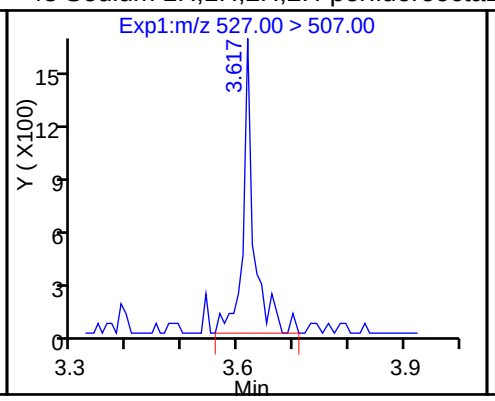
22 Perfluorooctane Sulfonamide



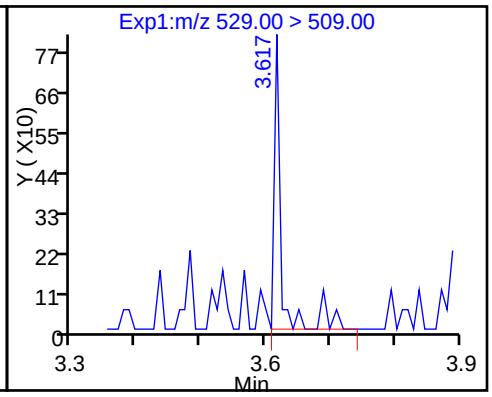
D 21 13C8 FOSA



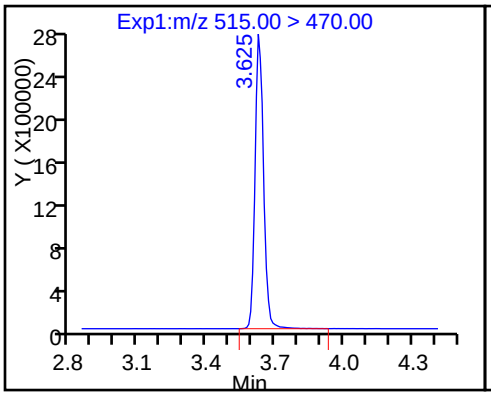
43 Sodium 1H,1H,2H,2H-perfluorooctane



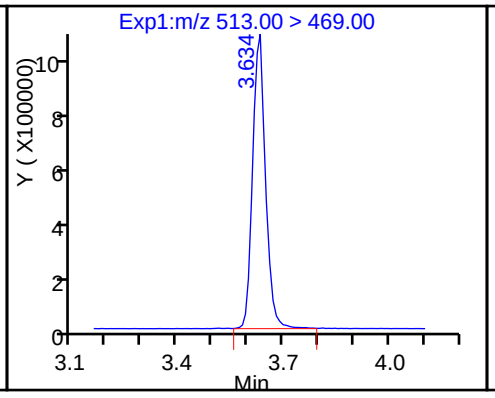
D 42 M2-8:2FTS



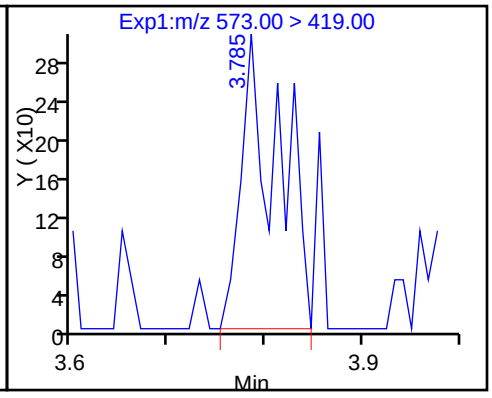
D 23 13C2 PFDA



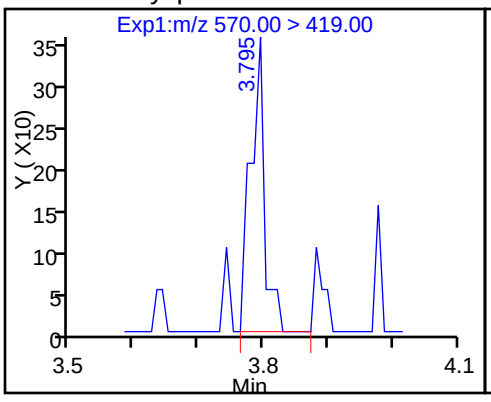
24 Perfluorodecanoic acid



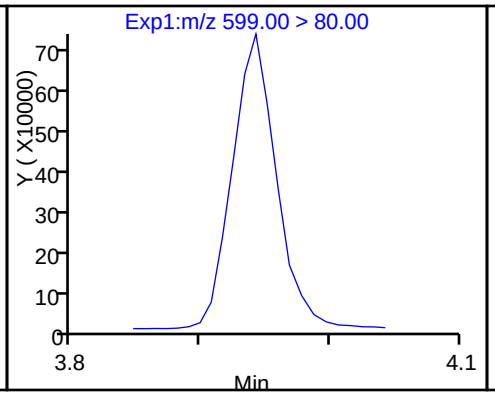
D 45 d3-NMeFOSAA



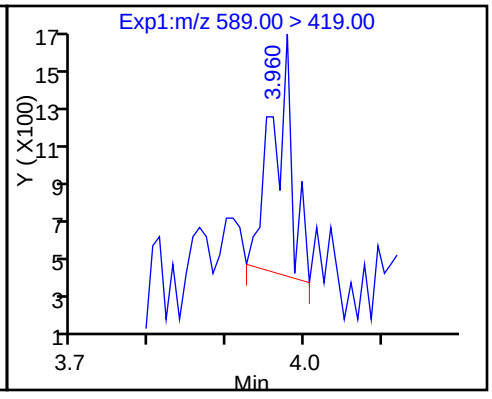
44 N-methyl perfluorooctane sulfonami



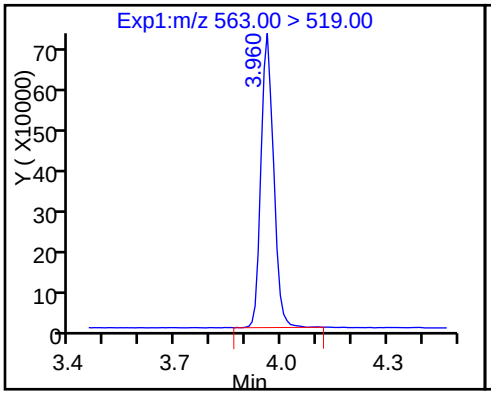
26 Perfluorodecane Sulfonic acid



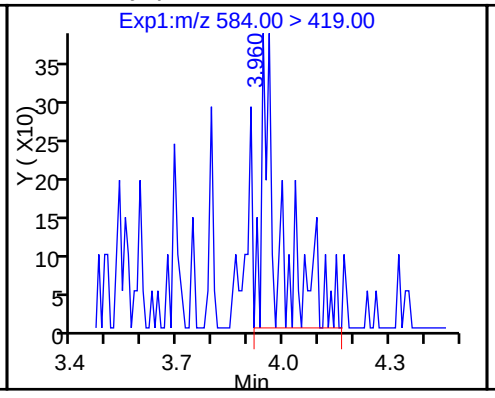
D 46 d5-NEtFOSAA



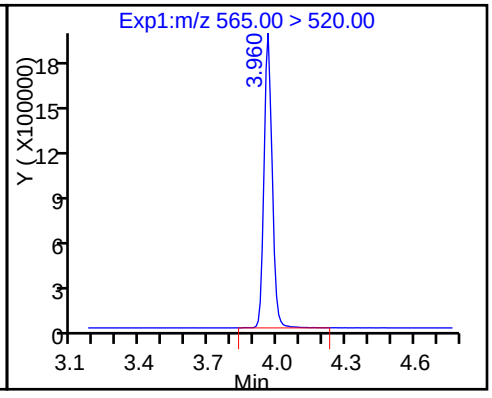
28 Perfluoroundecanoic acid



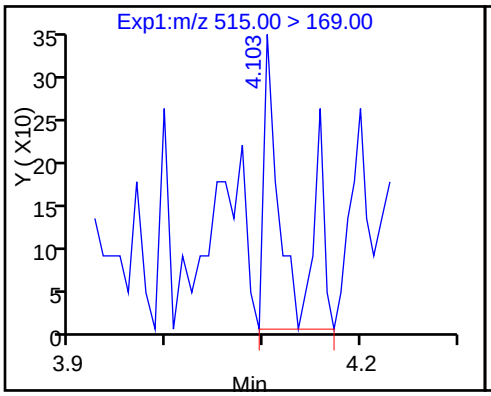
49 N-ethyl perfluorooctane sulfonamid



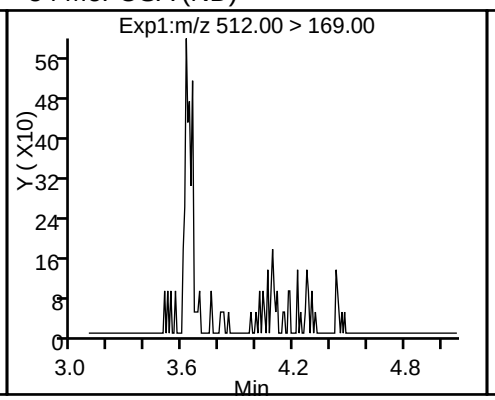
D 27 13C2 PFUnA



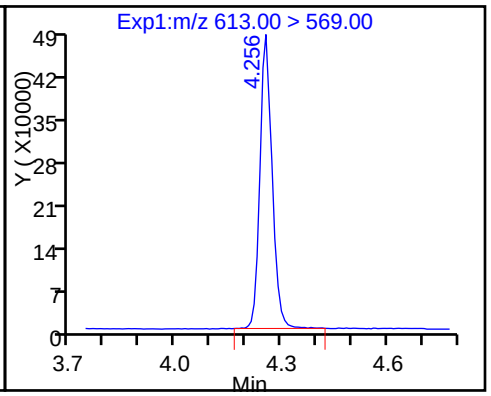
D 52 d-N-MeFOSA-M



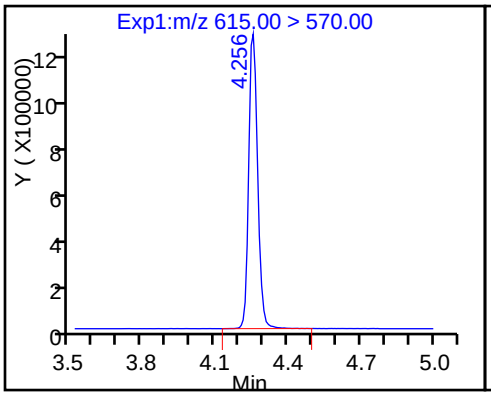
54 MeFOSA (ND)



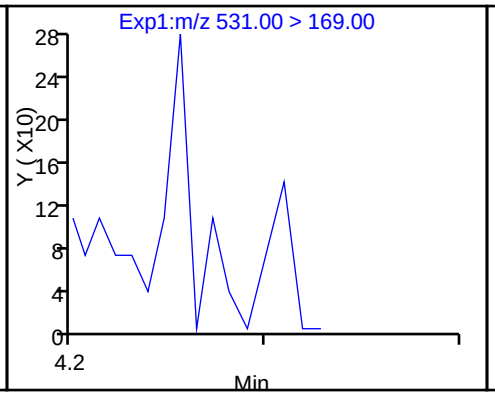
29 Perfluorododecanoic acid



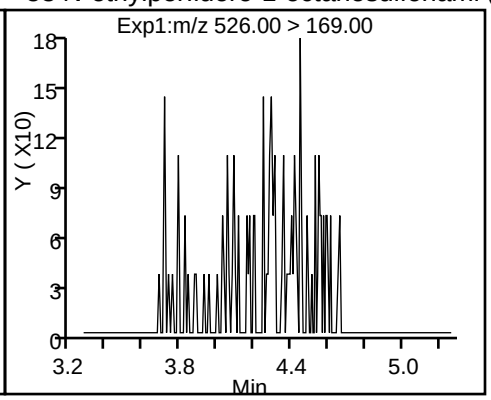
D 30 13C2 PFDoA



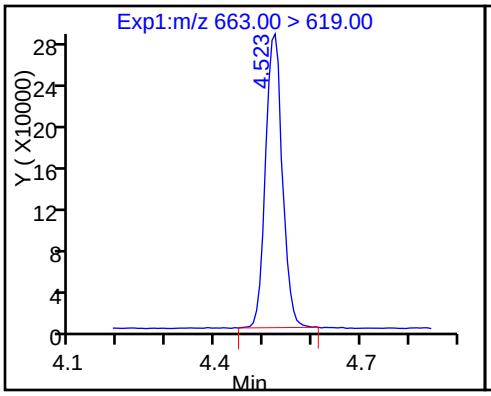
D 51 d-N-EtFOSA-M



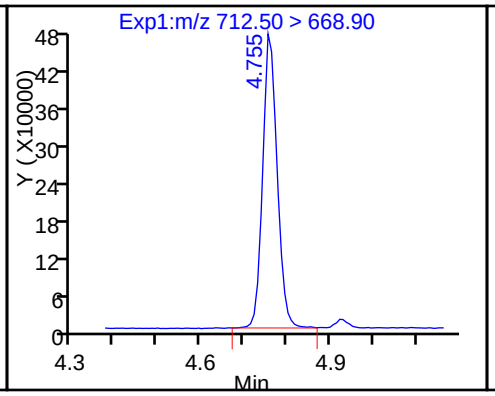
53 N-ethylperfluoro-1-octanesulfonami (ND)



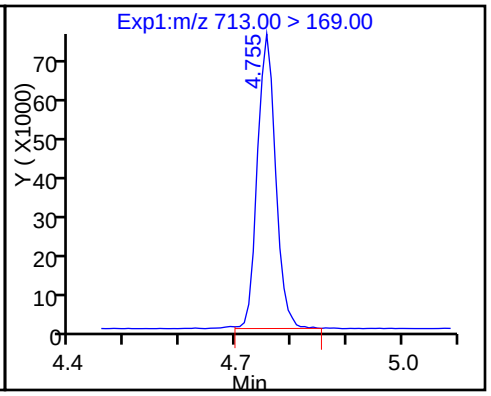
31 Perfluorotridecanoic acid



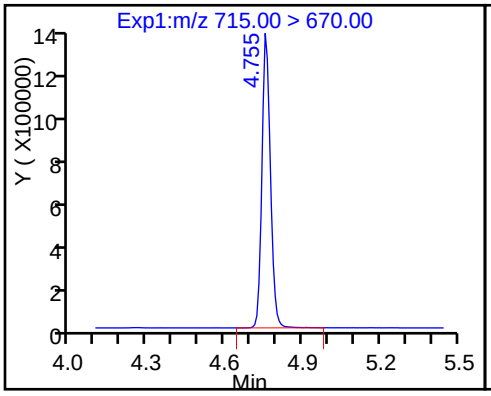
33 Perfluorotetradecanoic acid



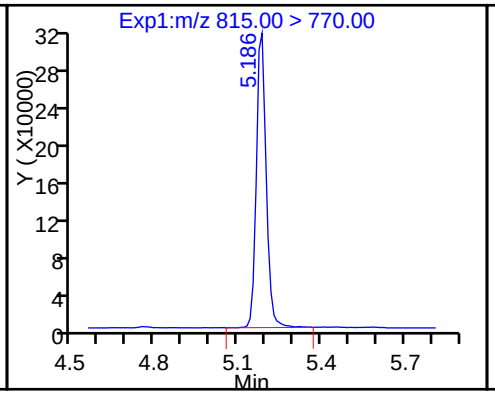
33 Perfluorotetradecanoic acid



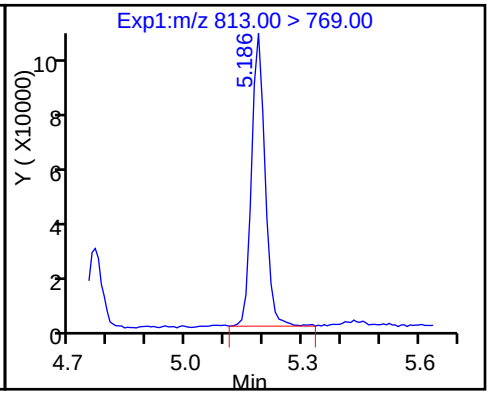
D 32 13C2-PFTeDA



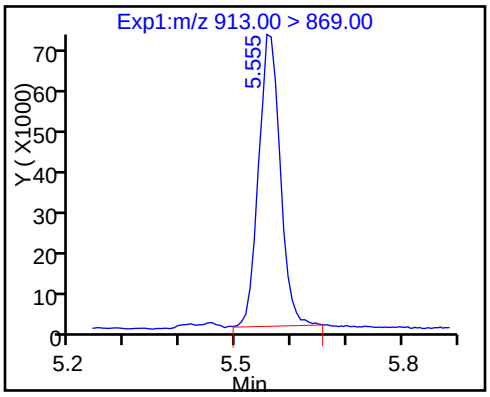
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

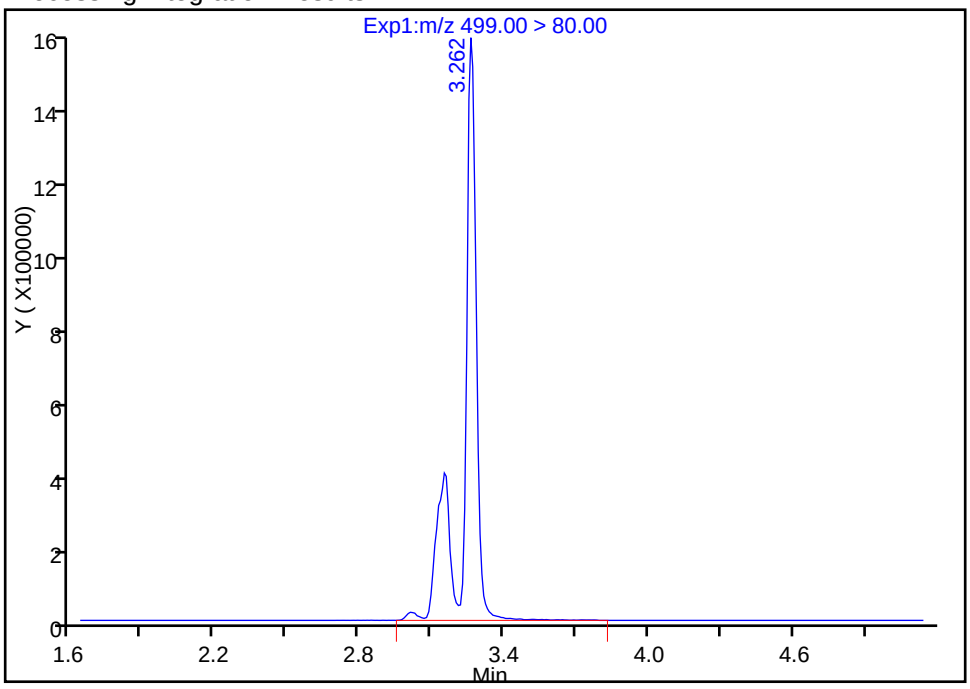
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_006.d				
Injection Date:	02-Dec-2016 15:37:08	Instrument ID:	A8_N		
Lims ID:	320-23718-A-3-B MS				
Client ID:	DPT-16-29-SO-14-15-MS				
Operator ID:	A8-PC\A8	ALS Bottle#:	6	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

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

Signal: 1

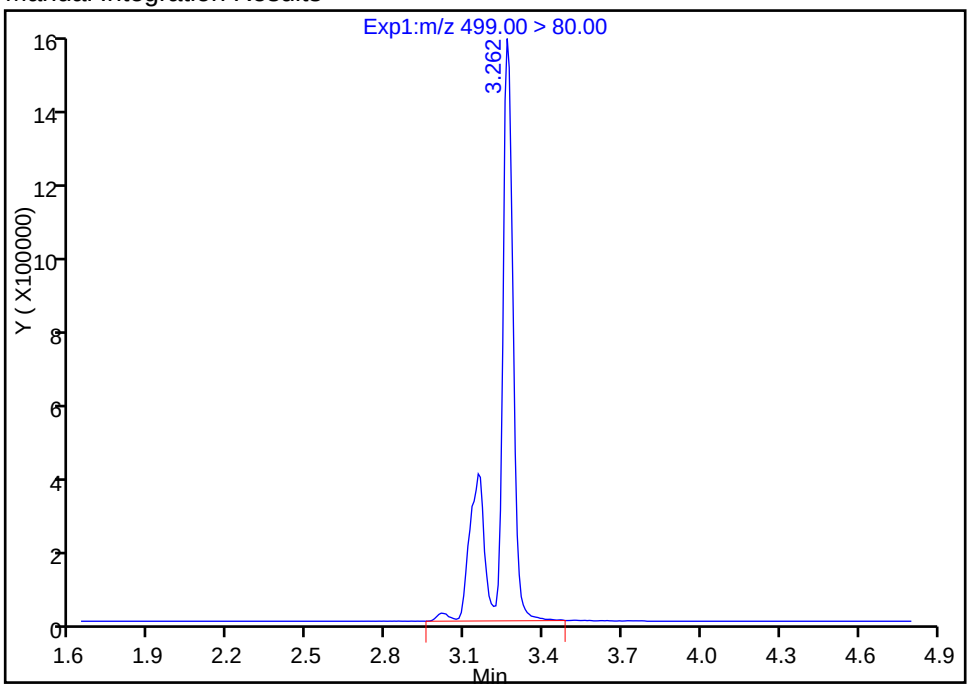
Processing Integration Results

RT: 3.26
Area: 5664733
Amount: 23.527993
Amount Units: ng/ml



Manual Integration Results

RT: 3.26
Area: 5610347
Amount: 23.302105
Amount Units: ng/ml



Reviewer: chandrasenas, 04-Dec-2016 18:20:58

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

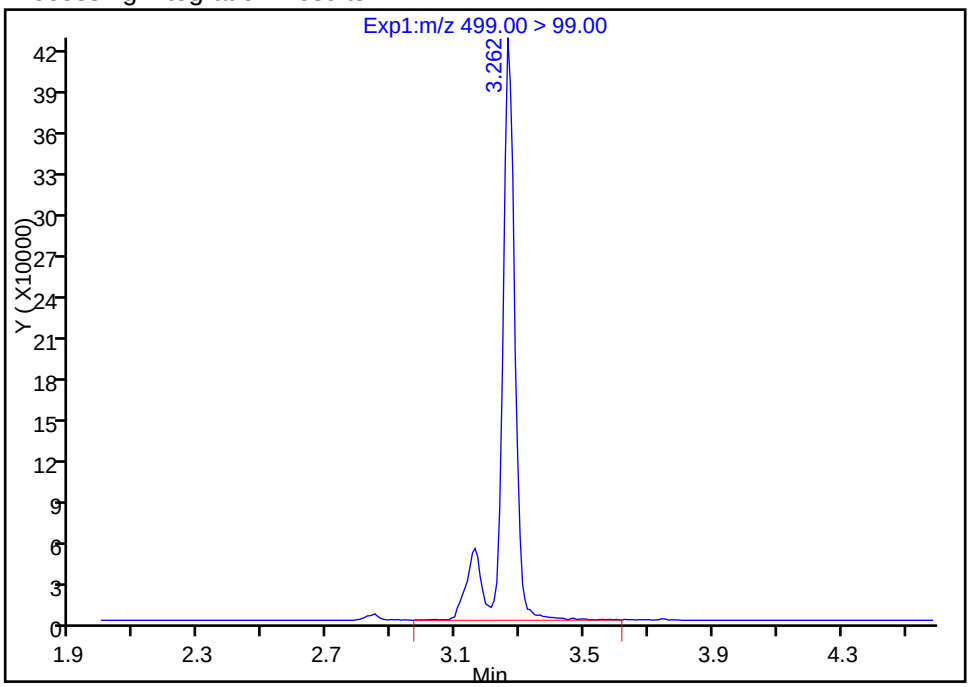
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_006.d				
Injection Date:	02-Dec-2016 15:37:08	Instrument ID:	A8_N		
Lims ID:	320-23718-A-3-B MS				
Client ID:	DPT-16-29-SO-14-15-MS				
Operator ID:	A8-PC\A8	ALS Bottle#:	6	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

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

Signal: 2

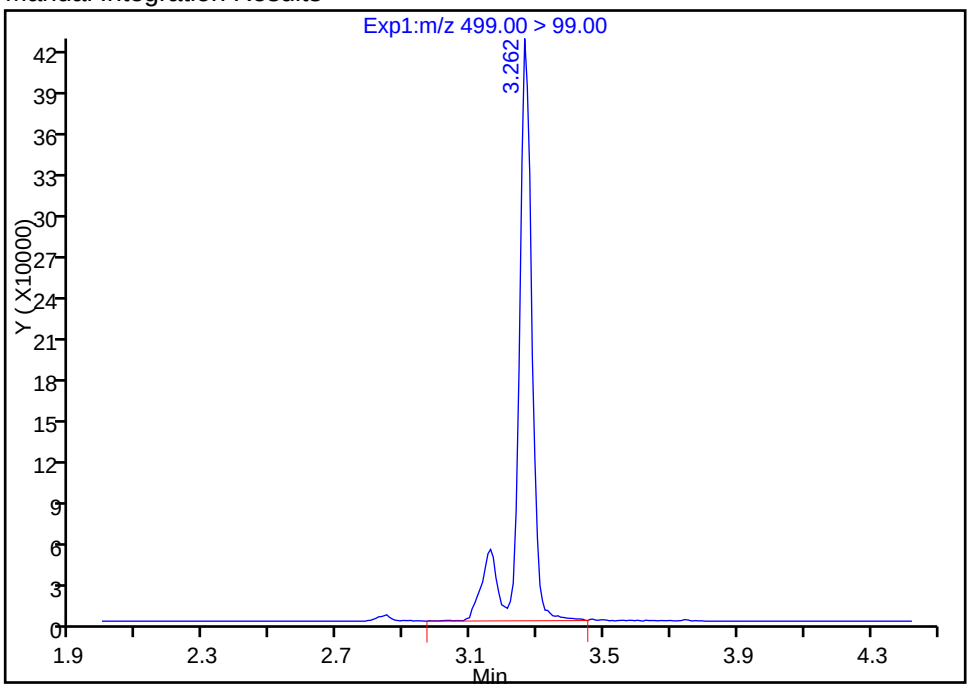
Processing Integration Results

RT: 3.26
Area: 1249616
Amount: 23.527993
Amount Units: ng/ml



Manual Integration Results

RT: 3.26
Area: 1238437
Amount: 23.302105
Amount Units: ng/ml



Reviewer: chandrasenas, 04-Dec-2016 18:20:58

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Client Sample ID: DPT-16-29-SO-14-15-MSD Lab Sample ID: 320-23718-3 MSD

Matrix: Solid Lab File ID: 02DEC2016C_007.d

Analysis Method: 537 (Modified) Date Collected: 11/18/2016 13:16

Extraction Method: SHAKE Date Extracted: 11/28/2016 11:03

Sample wt/vol: 5.08(g) Date Analyzed: 12/02/2016 15:44

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

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

% Moisture: 18.6 GPC Cleanup:(Y/N) N

Analysis Batch No.: 140429 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	5.37		0.60	0.36	0.12
1763-23-1	Perfluorooctane Sulfonate (PFOS)	5.57	M	0.60	0.36	0.15
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.71		0.48	0.36	0.12

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	93		25-150
STL00991	13C4 PFOS	79		25-150
STL00994	18O2 PFHxS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_007.d
Lims ID: 320-23718-A-3-C MSD
Client ID: DPT-16-29-SO-14-15-MSD
Sample Type: MSD
Inject. Date: 02-Dec-2016 15:44:39 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23718-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\20161202-37461.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 04-Dec-2016 18:25:25 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 18:21:47

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	1.582	1.574	0.008	1.000	6240548	21.2		106	44598	
D 2 13C4 PFBA										
217.00 > 172.00	1.582	1.574	0.008		16628765	48.9		97.7	1380496	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.868	0.0	1.000	5312040	19.6		98.1	49606	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.868	0.0		13004844	48.1		96.3	1293913	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.906	1.907	-0.001	1.000	8948169	19.5		110		
298.90 > 99.00	1.906	1.907	-0.001	1.000	3683337		2.43(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.177	2.173	0.004	1.000	4268377	21.6		108	78228	
D 6 13C2 PFHxA										
315.00 > 270.00	2.177	2.173	0.004		10332158	41.9		83.8	618101	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.526	2.519	0.007	1.000	4258526	20.2		101	63731	
D 11 13C4-PFHpA										
367.00 > 322.00	2.526	2.519	0.007		10181087	48.4		96.7	1004145	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.541	2.534	0.007	1.000	7147959	23.7		130		
D 10 18O2 PFHxS										
403.00 > 84.00	2.541	2.534	0.007		13460153	44.5		94.1	600643	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.868	2.870	-0.002	1.000	3936	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.860	2.870	-0.010		1196	0.008587		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.900	2.886	0.014		10194877	46.5		92.9	767558	

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	2.900	2.894	0.006	1.000	4623091	22.2		111	111859	
413.00 > 169.00	2.900	2.894	0.006	1.000	2879772		1.61(0.90-1.10)		223329	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.900	2.902	-0.002	1.000	4732746	21.0		110		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.274	3.267	0.007	1.000	4827044	23.1		124	143706	M
499.00 > 99.00	3.274	3.267	0.007	1.000	1091517		4.42(0.90-1.10)		33791	M
D 17 13C4 PFOS										
503.00 > 80.00	3.274	3.267	0.007		9204203	37.6		78.7	620748	
20 Perfluorononanoic acid										
463.00 > 419.00	3.281	3.275	0.006	1.000	3040905	20.2		101	53293	
D 19 13C5 PFNA										
468.00 > 423.00	3.281	3.275	0.006		7586819	42.6		85.2	465737	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.596	3.589	0.007	1.000	2676560	20.6		103	93106	
D 21 13C8 FOSA										
506.00 > 78.00	3.596	3.589	0.007		6934343	16.7		33.5	266479	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.621	3.624	-0.003	0.998	1755	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.629	3.624	0.005		578	0.004330		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.638	3.631	0.007		6386452	38.5		76.9	275597	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.638	3.631	0.007	1.000	2446248	19.8		98.8	66083	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.808	3.790	0.018		617	0.007713		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.947	3.941	0.006	1.000	1506209	12.5		64.7		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.965	3.955	0.010		3041	0.0341		0.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.974	3.959	0.015	1.000	1514770	17.2		85.8	37129	
D 27 13C2 PFUnA										
565.00 > 520.00	3.965	3.967	-0.002		4165604	33.1		66.2	229309	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.003	4.079	-0.076		370	0.003479		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.267	4.259	0.008	1.000	998899	19.8		98.8	18991	
D 30 13C2 PFDoA										
615.00 > 570.00	4.267	4.259	0.008		2669944	22.8		45.7	82516	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.276	4.261	0.015		473	0.004641		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.532	4.520	0.012	1.000	721169	13.0		64.9	1626	

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	4.767	4.772	-0.005	1.000	1563099	15.1		75.7	1664	
713.00 > 169.00	4.759	4.772	-0.013	0.998	248207		6.30(0.00-0.00)		53251	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.767	4.772	-0.005		4348607	18.0		36.0	312189	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.189	5.184	0.005		1788516	13.7		27.4	125031	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.200	5.194	0.006	1.000	609275	10.8		53.8	3105	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.567	5.562	0.005	1.000	428148	10.2		51.0	1942	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Report Date: 04-Dec-2016 18:25:38 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_007.d

Injection Date: 02-Dec-2016 15:44:39 Instrument ID: A8_N

Lims ID: 320-23718-A-3-C MSD

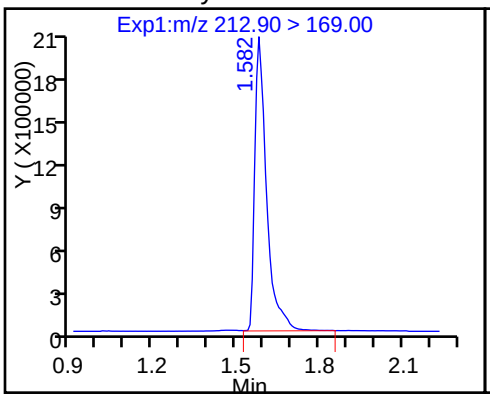
Client ID: DPT-16-29-SO-14-15-MSD

Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 11

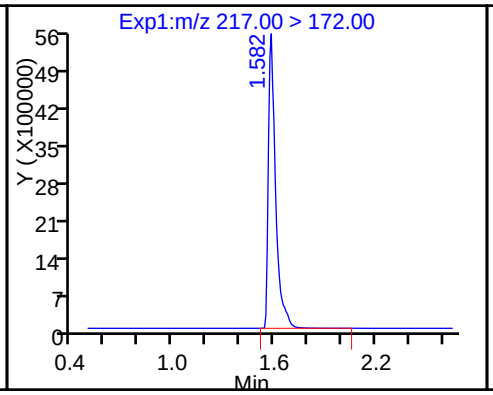
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

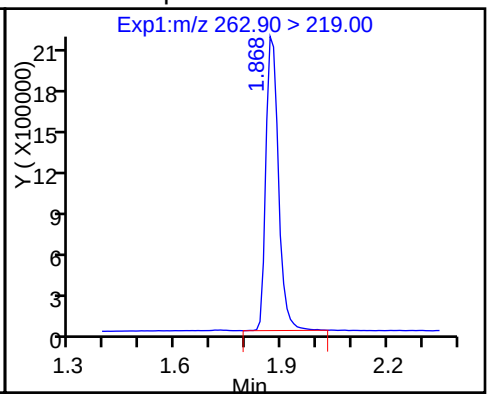
1 Perfluorobutyric acid



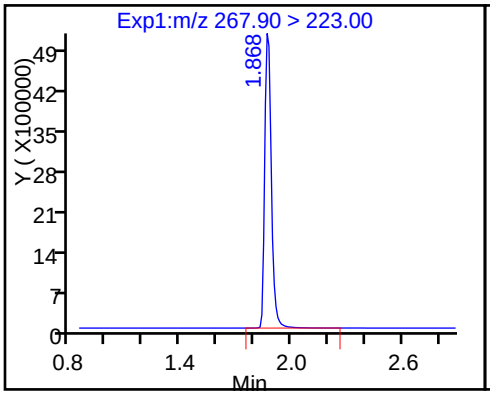
D 2 13C4 PFBA



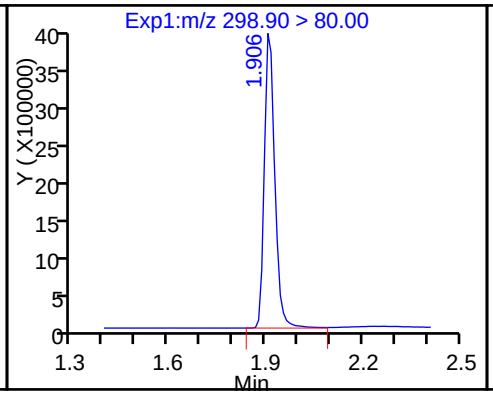
3 Perfluoropentanoic acid



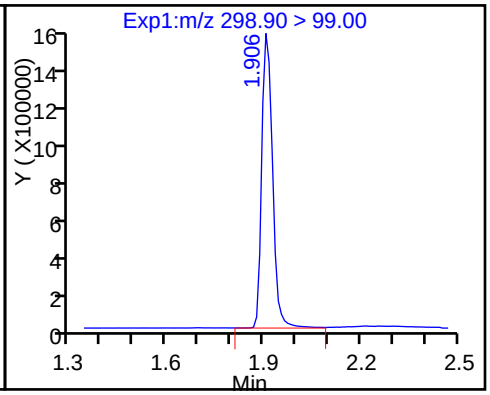
D 4 13C5-PFPeA



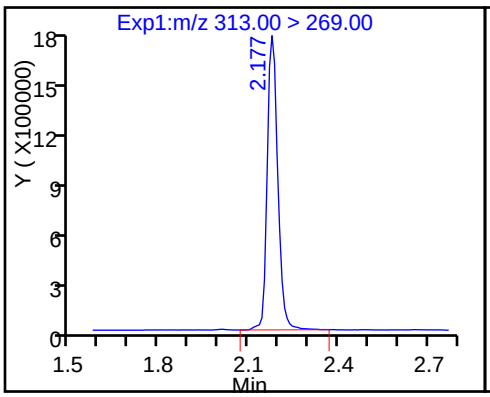
5 Perfluorobutanesulfonic acid



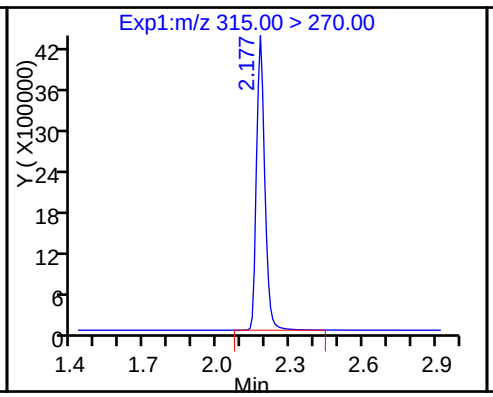
5 Perfluorobutanesulfonic acid



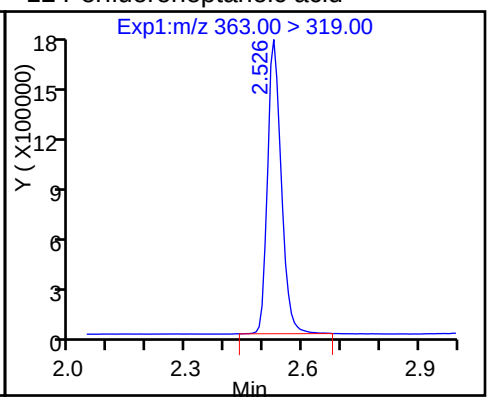
7 Perfluorohexanoic acid



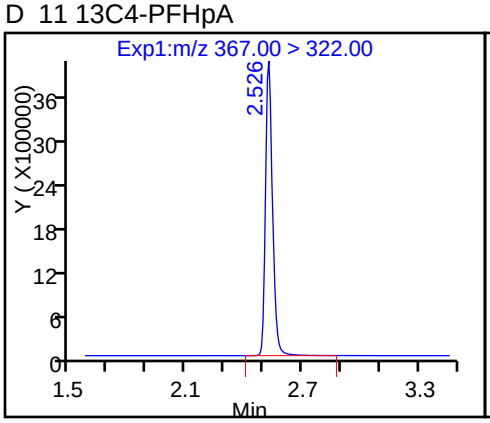
D 6 13C2 PFHxA



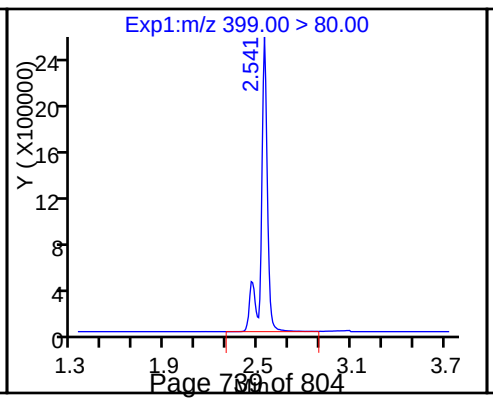
12 Perfluoroheptanoic acid



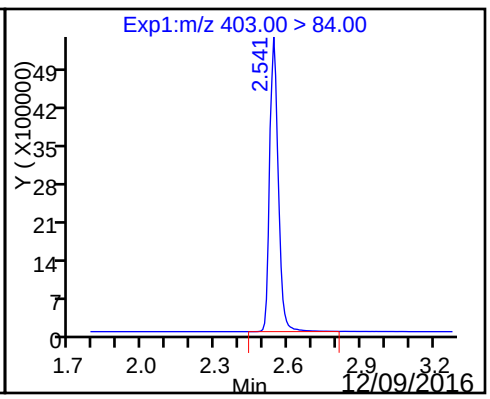
D 11 13C4-PFHpA



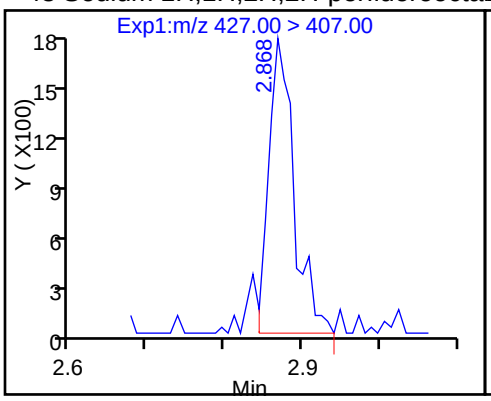
9 Perfluorohexanesulfonic acid



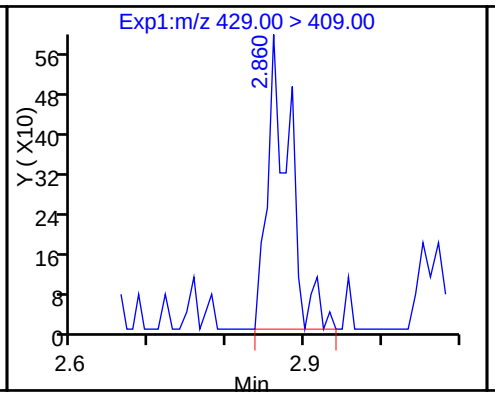
D 10 18O2 PFHxS



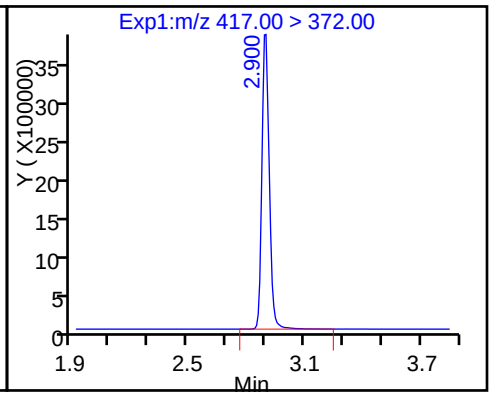
48 Sodium 1H,1H,2H,2H-perfluorooctane



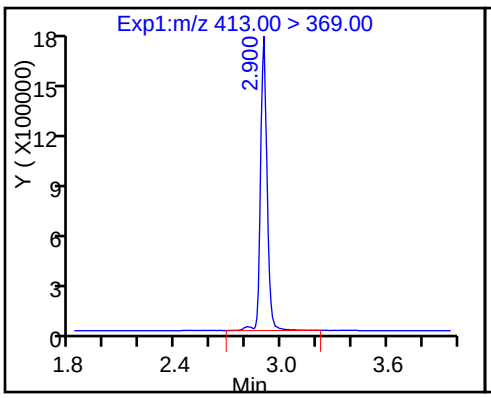
D 47 M2-6:2FTS



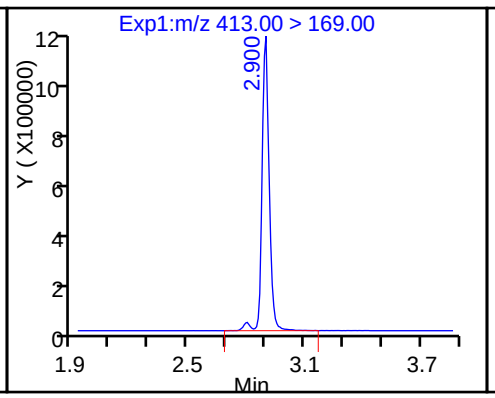
D 14 13C4 PFOA



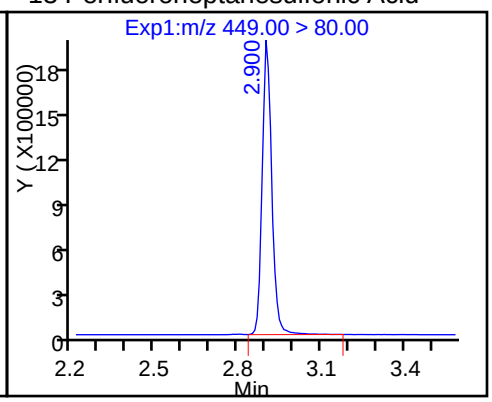
15 Perfluorooctanoic acid



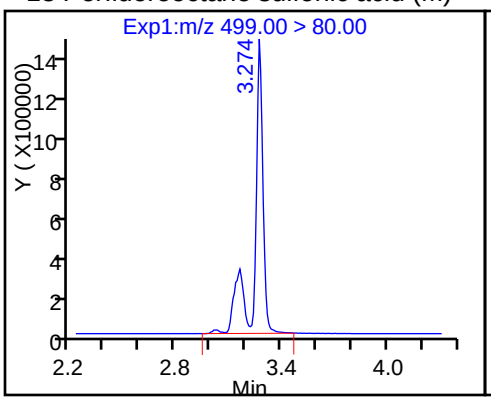
15 Perfluorooctanoic acid



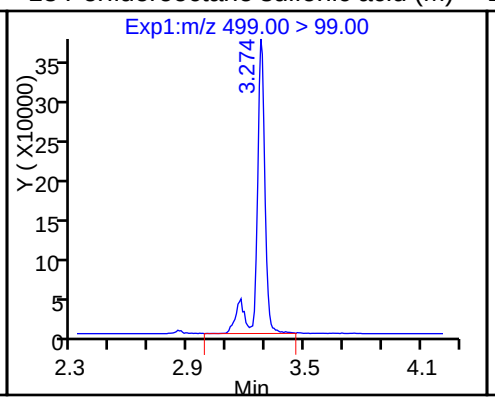
13 Perfluoroheptanesulfonic Acid



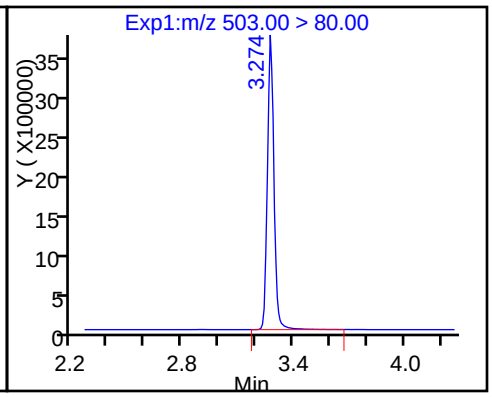
18 Perfluorooctane sulfonic acid (M)



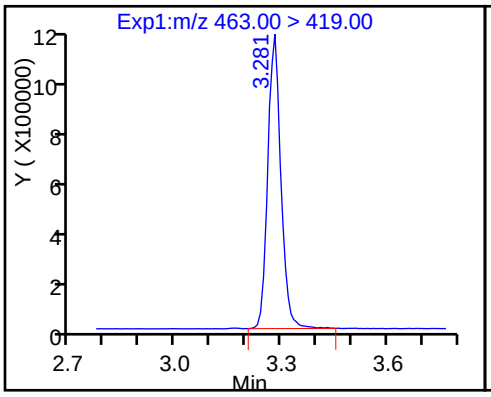
18 Perfluorooctane sulfonic acid (M)



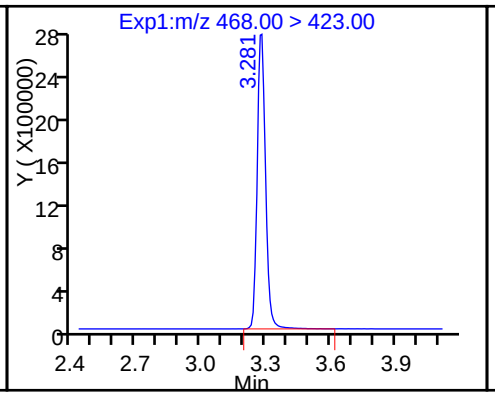
D 17 13C4 PFOS



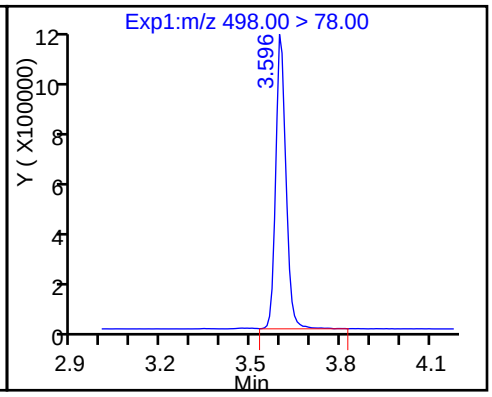
20 Perfluorononanoic acid



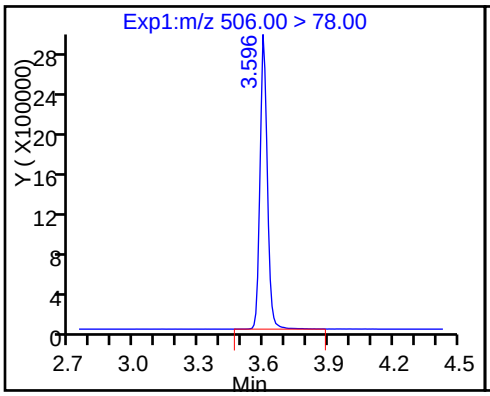
D 19 13C5 PFNA



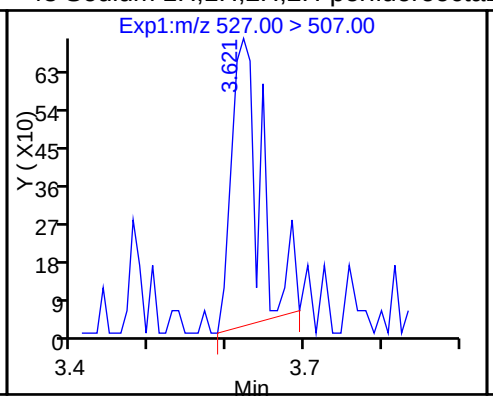
22 Perfluorooctane Sulfonamide



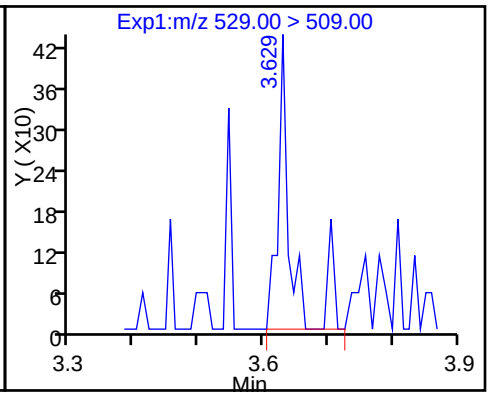
D 21 13C8 FOSA



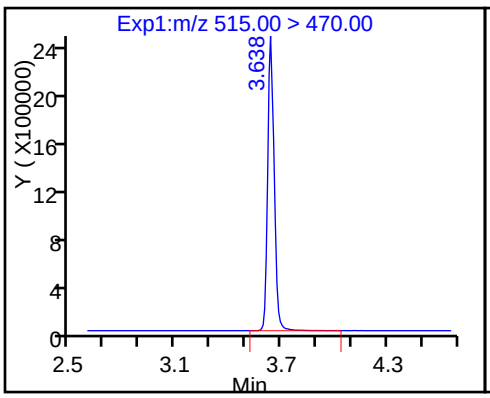
43 Sodium 1H,1H,2H,2H-perfluorooctane



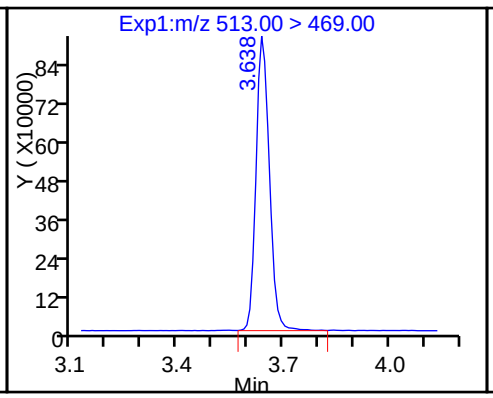
D 42 M2-8:2FTS



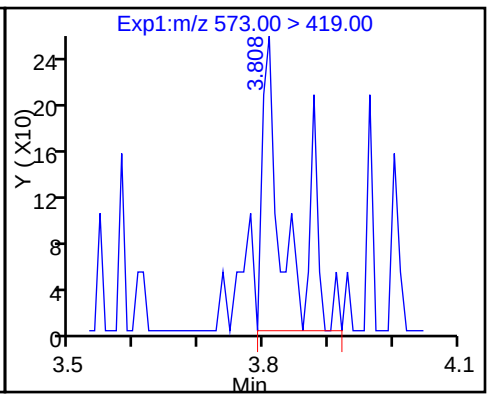
D 23 13C2 PFDA



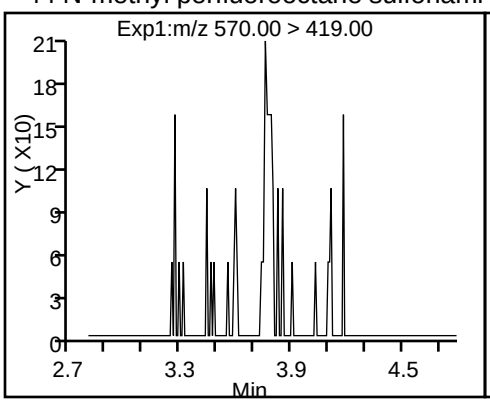
24 Perfluorodecanoic acid



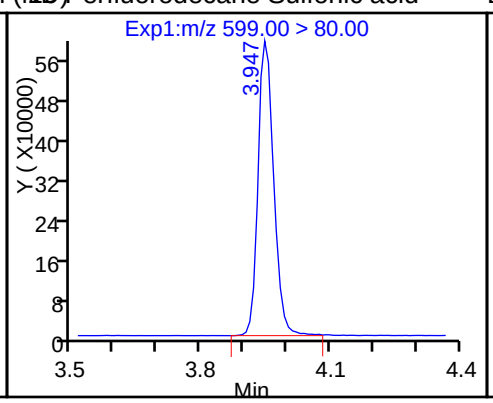
D 45 d3-NMeFOSAA



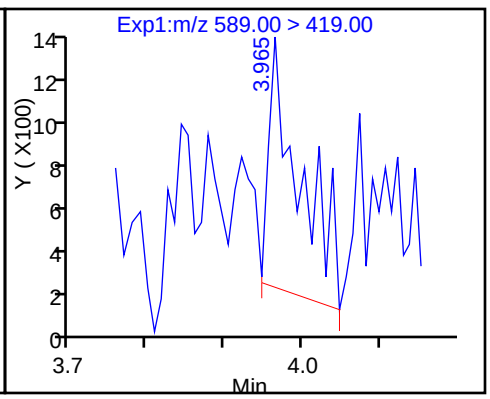
44 N-methyl perfluorooctane sulfonami (NMeFOSA)



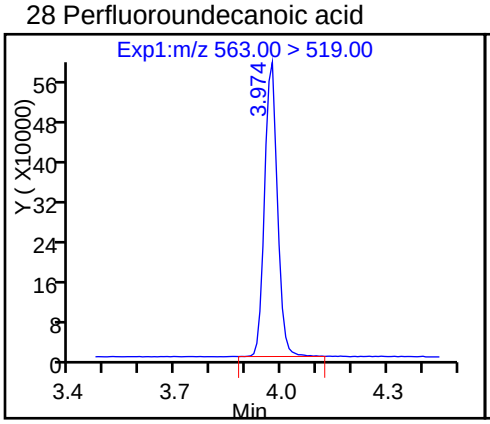
25 Perfluorodecane Sulfonic acid



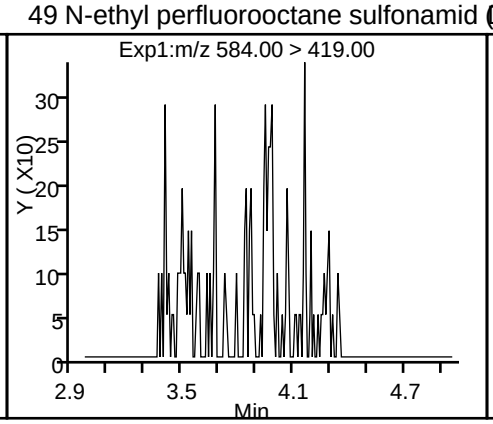
D 46 d5-NEtFOSAA



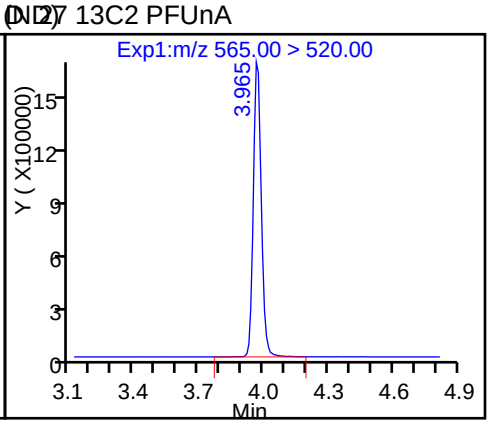
28 Perfluoroundecanoic acid



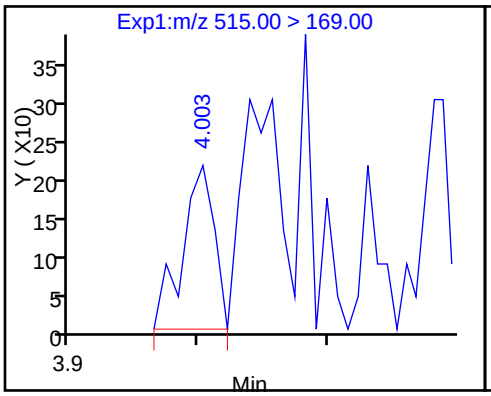
49 N-ethyl perfluorooctane sulfonamid (NEtFOSA)



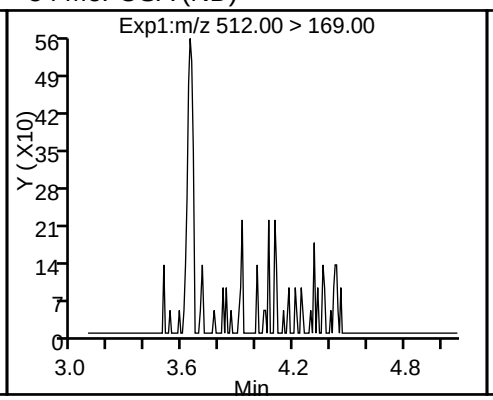
D 27 13C2 PFUnA



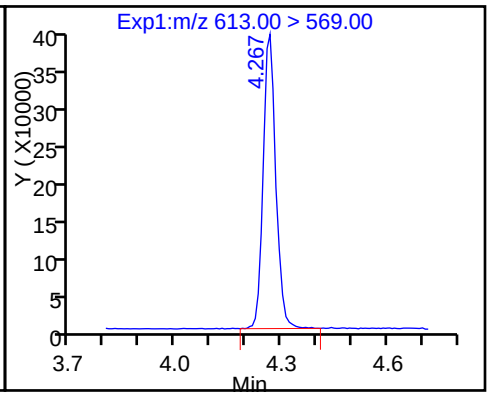
D 52 d-N-MeFOSA-M



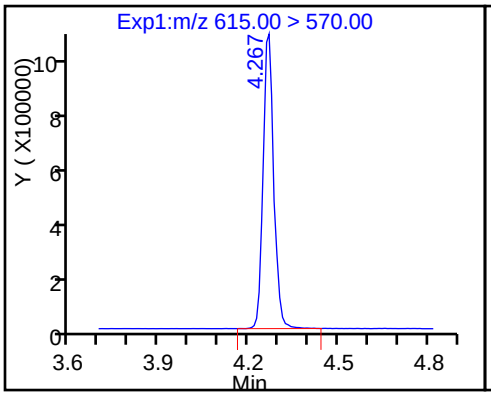
54 MeFOSA (ND)



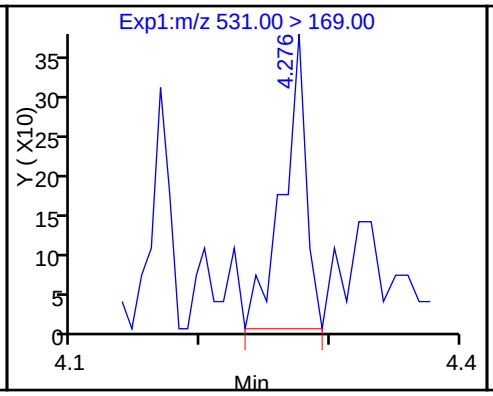
29 Perfluorododecanoic acid



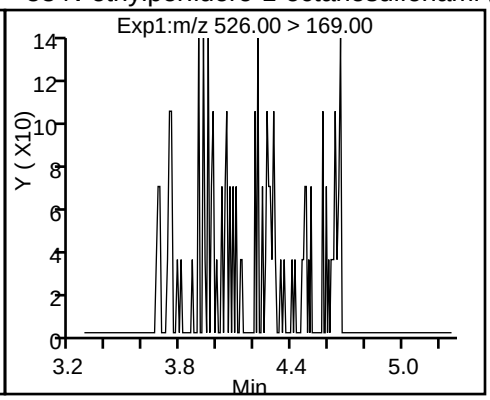
D 30 13C2 PFDoA



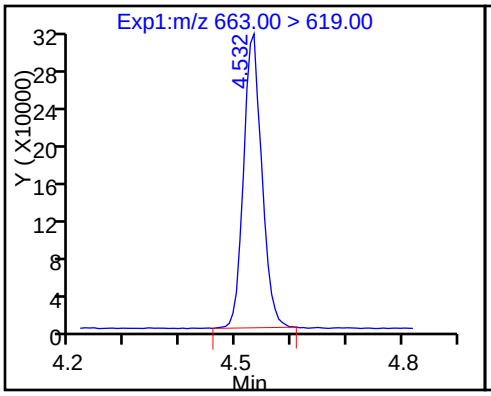
D 51 d-N-EtFOSA-M



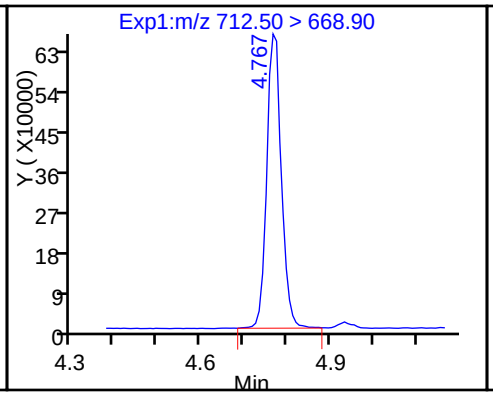
53 N-ethylperfluoro-1-octanesulfonami (ND)



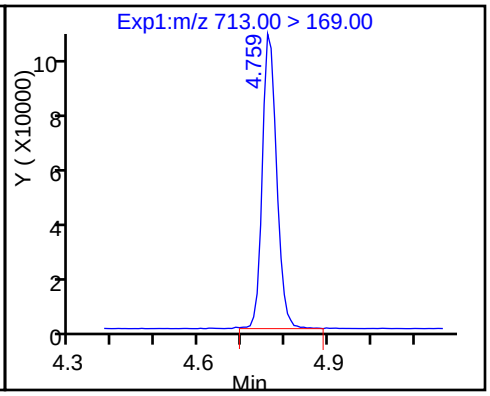
31 Perfluorotridecanoic acid



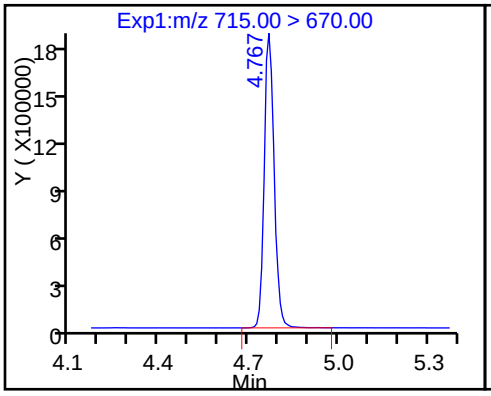
33 Perfluorotetradecanoic acid



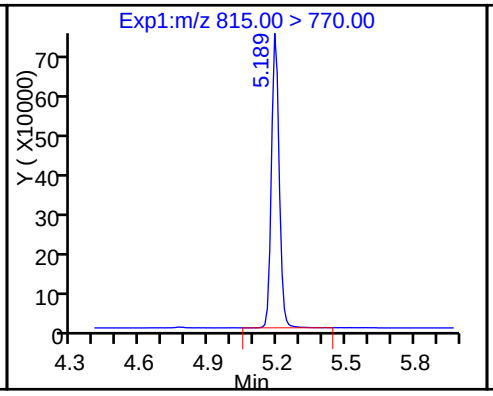
33 Perfluorotetradecanoic acid



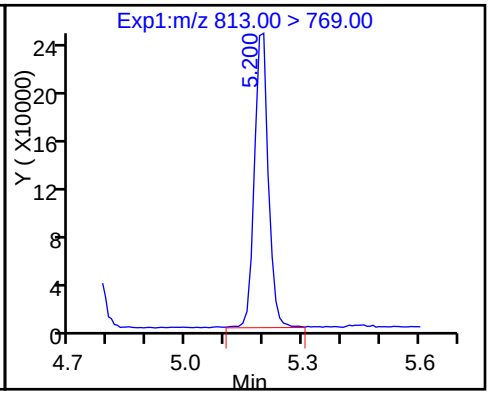
D 32 13C2-PFTeDA



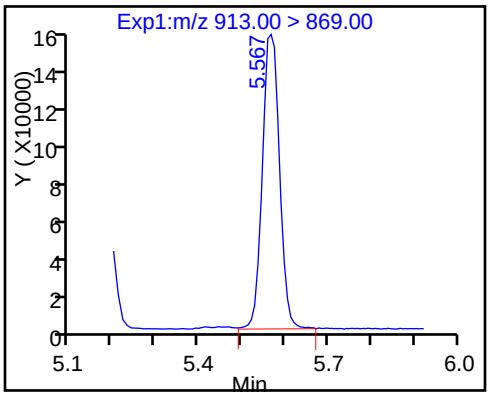
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

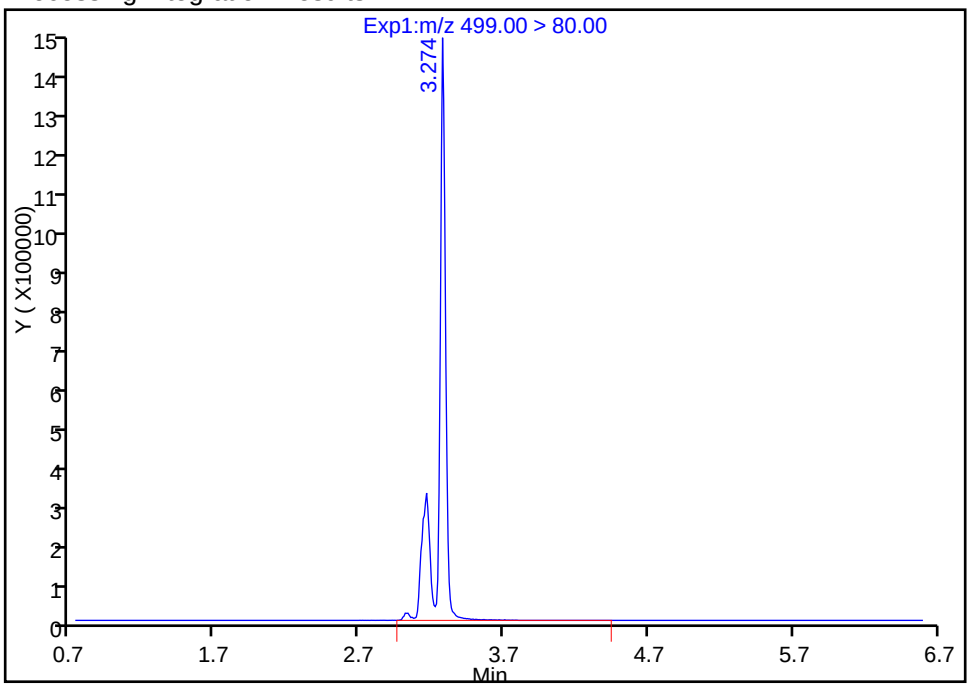
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_007.d
Injection Date: 02-Dec-2016 15:44:39 Instrument ID: A8_N
Lims ID: 320-23718-A-3-C MSD
Client ID: DPT-16-29-SO-14-15-MSD
Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

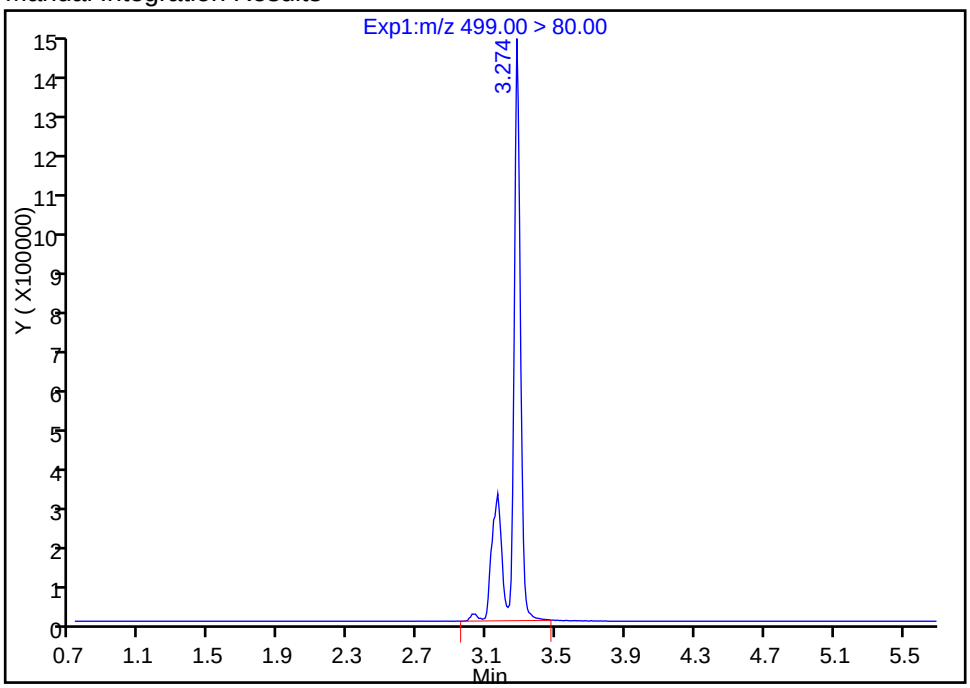
Processing Integration Results

RT: 3.27
Area: 4888258
Amount: 23.346918
Amount Units: ng/ml



Manual Integration Results

RT: 3.27
Area: 4827044
Amount: 23.054552
Amount Units: ng/ml



Reviewer: chandrasenas, 04-Dec-2016 18:21:47
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

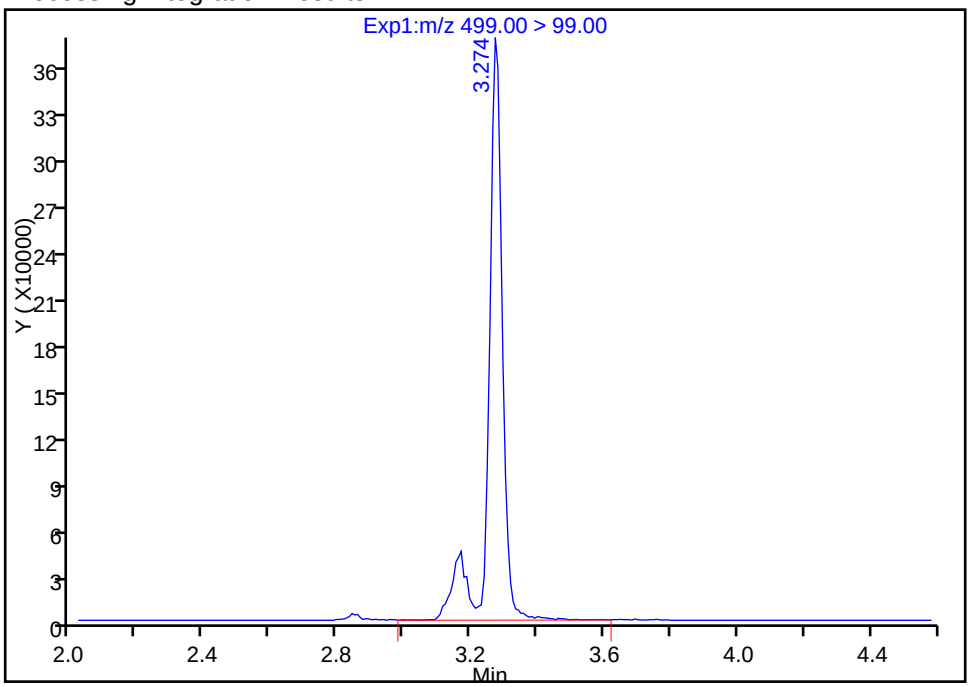
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_007.d				
Injection Date:	02-Dec-2016 15:44:39	Instrument ID:	A8_N		
Lims ID:	320-23718-A-3-C MSD				
Client ID:	DPT-16-29-SO-14-15-MSD				
Operator ID:	A8-PC\A8	ALS Bottle#:	7	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

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

Signal: 2

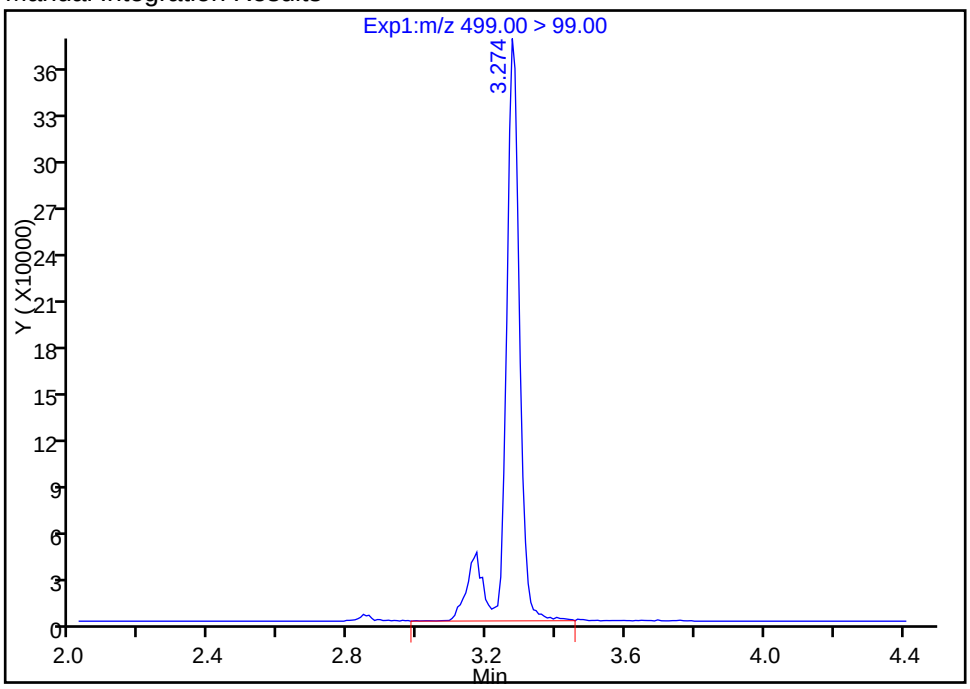
Processing Integration Results

RT: 3.27
Area: 1097083
Amount: 23.346918
Amount Units: ng/ml



Manual Integration Results

RT: 3.27
Area: 1091517
Amount: 23.054552
Amount Units: ng/ml



Reviewer: chandrasenas, 04-Dec-2016 18:21:47

Audit Action: Manually Integrated Audit Reason: Baseline

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

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)
ZZZZZ		12/02/2016 12:59	100		Acquity 2.1(mm)
ZZZZZ		12/02/2016 13:06	100		Acquity 2.1(mm)
ZZZZZ		12/02/2016 13:14	100		Acquity 2.1(mm)
ZZZZZ		12/02/2016 13:22	10		Acquity 2.1(mm)
ZZZZZ		12/02/2016 13:29	10		Acquity 2.1(mm)
ZZZZZ		12/02/2016 13:37	10		Acquity 2.1(mm)
ZZZZZ		12/02/2016 13:44	10		Acquity 2.1(mm)
ZZZZZ		12/02/2016 13:52	10		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		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.: 320-23718-1

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)
MB 320-139627/1-A		12/02/2016 14:59	1	02DEC2016C_001.d	Acquity 2.1(mm)
LCS 320-139627/2-A		12/02/2016 15:07	1	02DEC2016C_002.d	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)
320-23718-3		12/02/2016 15:29	1	02DEC2016C_005.d	Acquity 2.1(mm)
320-23718-3 MS		12/02/2016 15:37	1	02DEC2016C_006.d	Acquity 2.1(mm)
320-23718-3 MSD		12/02/2016 15:44	1	02DEC2016C_007.d	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)
ZZZZZ		12/02/2016 16:14	10		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 ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Instrument ID: A8_N Start Date: 12/03/2016 13:26

Analysis Batch Number: 140564 End Date: 12/03/2016 18:33

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-140564/1 CCB		12/03/2016 13:26	1		Acquity 2.1(mm)
RB 320-140564/2 CCB		12/03/2016 13:33	1		Acquity 2.1(mm)
RB 320-140564/3 CCB		12/03/2016 13:41	1		Acquity 2.1(mm)
IC 320-140564/4		12/03/2016 13:48	1	03DEC2016A_004.d	Acquity 2.1(mm)
IC 320-140564/5		12/03/2016 13:56	1	03DEC2016A_005.d	Acquity 2.1(mm)
IC 320-140564/6		12/03/2016 14:03	1	03DEC2016A_006.d	Acquity 2.1(mm)
IC 320-140564/7		12/03/2016 14:11	1	03DEC2016A_007.d	Acquity 2.1(mm)
IC 320-140564/8		12/03/2016 14:18	1	03DEC2016A_008.d	Acquity 2.1(mm)
IC 320-140564/9		12/03/2016 14:26	1	03DEC2016A_009.d	Acquity 2.1(mm)
ICB 320-140564/10		12/03/2016 14:33	1		Acquity 2.1(mm)
ICV 320-140564/11		12/03/2016 14:41	1	03DEC2016A_011.d	Acquity 2.1(mm)
RB 320-140564/12 CCB		12/03/2016 14:48	1		Acquity 2.1(mm)
IC 320-140564/13		12/03/2016 14:56	1	03DEC2016A_013.d	Acquity 2.1(mm)
IC 320-140564/14		12/03/2016 15:03	1	03DEC2016A_014.d	Acquity 2.1(mm)
IC 320-140564/15		12/03/2016 15:11	1	03DEC2016A_015.d	Acquity 2.1(mm)
IC 320-140564/16		12/03/2016 15:18	1	03DEC2016A_016.d	Acquity 2.1(mm)
IC 320-140564/17		12/03/2016 15:26	1	03DEC2016A_017.d	Acquity 2.1(mm)
IC 320-140564/18		12/03/2016 15:33	1	03DEC2016A_018.d	Acquity 2.1(mm)
ICB 320-140564/19		12/03/2016 15:41	1		Acquity 2.1(mm)
ICV 320-140564/20		12/03/2016 15:48	1		Acquity 2.1(mm)
RB 320-140564/21 CCB		12/03/2016 15:56	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 16:03	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 16:11	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 16:18	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 16:26	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 16:33	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 16:41	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 16:48	1		Acquity 2.1(mm)
RB 320-140564/29 CCB		12/03/2016 16:56	1		Acquity 2.1(mm)
CCV 320-140564/30		12/03/2016 17:03	1		Acquity 2.1(mm)
CCV 320-140564/31		12/03/2016 17:11	1		Acquity 2.1(mm)
RB 320-140564/32 CCB		12/03/2016 17:18	1		Acquity 2.1(mm)
RB 320-140564/39 CCB		12/03/2016 18:11	1		Acquity 2.1(mm)
CCV 320-140564/40		12/03/2016 18:18	1		Acquity 2.1(mm)
CCV 320-140564/41		12/03/2016 18:26	1		Acquity 2.1(mm)
RB 320-140564/42 CCB		12/03/2016 18:33	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Instrument ID: A8_N Start Date: 12/03/2016 18:41

Analysis Batch Number: 140675 End Date: 12/03/2016 23:26

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-140675/1 CCB		12/03/2016 18:41	1		Acquity 2.1(mm)
CCV 320-140675/2		12/03/2016 18:48	1	03DEC2016C_002.d	Acquity 2.1(mm)
CCV 320-140675/3		12/03/2016 18:56	1		Acquity 2.1(mm)
RB 320-140675/4 CCB		12/03/2016 19:03	1		Acquity 2.1(mm)
320-23718-1 DL		12/03/2016 19:11	10	03DEC2016C_005.d	Acquity 2.1(mm)
320-23718-2 DL		12/03/2016 19:18	10	03DEC2016C_006.d	Acquity 2.1(mm)
320-23718-5 DL		12/03/2016 19:26	10	03DEC2016C_007.d	Acquity 2.1(mm)
ZZZZZ		12/03/2016 19:33	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 19:41	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 19:48	100		Acquity 2.1(mm)
ZZZZZ		12/03/2016 19:56	100		Acquity 2.1(mm)
ZZZZZ		12/03/2016 20:03	100		Acquity 2.1(mm)
ZZZZZ		12/03/2016 20:11	10		Acquity 2.1(mm)
ZZZZZ		12/03/2016 20:18	10		Acquity 2.1(mm)
RB 320-140675/15 CCB		12/03/2016 20:26	1		Acquity 2.1(mm)
CCV 320-140675/16		12/03/2016 20:33	1	03DEC2016C_016.d	Acquity 2.1(mm)
CCV 320-140675/17		12/03/2016 20:41	1		Acquity 2.1(mm)
RB 320-140675/18 CCB		12/03/2016 20:48	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 20:56	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 21:03	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 21:11	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 21:18	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 21:26	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 21:33	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 21:41	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 21:48	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 21:56	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 22:03	1		Acquity 2.1(mm)
RB 320-140675/29 CCB		12/03/2016 22:11	1		Acquity 2.1(mm)
CCV 320-140675/30		12/03/2016 22:18	1		Acquity 2.1(mm)
CCV 320-140675/31		12/03/2016 22:26	1		Acquity 2.1(mm)
RB 320-140675/32 CCB		12/03/2016 22:33	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 22:41	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 22:48	1		Acquity 2.1(mm)
ZZZZZ		12/03/2016 22:56	1		Acquity 2.1(mm)
RB 320-140675/36 CCB		12/03/2016 23:03	1		Acquity 2.1(mm)
CCV 320-140675/37		12/03/2016 23:11	1		Acquity 2.1(mm)
CCV 320-140675/38		12/03/2016 23:18	1		Acquity 2.1(mm)
RB 320-140675/39 CCB		12/03/2016 23:26	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Instrument ID: A8_N Start Date: 12/07/2016 12:18

Analysis Batch Number: 141054 End Date: 12/07/2016 16:25

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-141054/3 CCB		12/07/2016 12:18	1		Acquity 2.1(mm)
RB 320-141054/4 CCB		12/07/2016 12:25	1		Acquity 2.1(mm)
CCV 320-141054/5 CCVL		12/07/2016 12:33	1	07DEC2016A_003.d	Acquity 2.1(mm)
CCV 320-141054/6 CCVL		12/07/2016 12:40	1		Acquity 2.1(mm)
CCV 320-141054/7		12/07/2016 12:48	1		Acquity 2.1(mm)
CCV 320-141054/8		12/07/2016 12:55	1		Acquity 2.1(mm)
RB 320-141054/9 CCB		12/07/2016 13:03	1		Acquity 2.1(mm)
RB 320-141054/20 CCB		12/07/2016 14:26	1		Acquity 2.1(mm)
CCV 320-141054/21		12/07/2016 14:33	1	07DEC2016A_019.d	Acquity 2.1(mm)
CCV 320-141054/22		12/07/2016 14:41	1		Acquity 2.1(mm)
RB 320-141054/23 CCB		12/07/2016 14:48	1		Acquity 2.1(mm)
MB 320-139076/1-A		12/07/2016 14:55	1	07DEC2016A_022.d	Acquity 2.1(mm)
LCS 320-139076/2-A		12/07/2016 15:03	1	07DEC2016A_023.d	Acquity 2.1(mm)
LCSD 320-139076/3-A		12/07/2016 15:11	1	07DEC2016A_024.d	Acquity 2.1(mm)
320-23718-1		12/07/2016 15:18	1	07DEC2016A_025.d	Acquity 2.1(mm)
320-23718-2		12/07/2016 15:26	1	07DEC2016A_026.d	Acquity 2.1(mm)
320-23718-4		12/07/2016 15:33	1	07DEC2016A_027.d	Acquity 2.1(mm)
320-23718-5		12/07/2016 15:41	1	07DEC2016A_028.d	Acquity 2.1(mm)
RB 320-141054/31 CCB		12/07/2016 15:48	1		Acquity 2.1(mm)
RB 320-141054/32 CCB		12/07/2016 15:55	1		Acquity 2.1(mm)
RB 320-141054/33 CCB		12/07/2016 16:03	1		Acquity 2.1(mm)
CCV 320-141054/34		12/07/2016 16:10	1	07DEC2016A_032.d	Acquity 2.1(mm)
CCV 320-141054/35		12/07/2016 16:18	1		Acquity 2.1(mm)
RB 320-141054/36 CCB		12/07/2016 16:25	1		Acquity 2.1(mm)

537 (Modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Batch Number: 139076 Batch Start Date: 11/22/16 11:44 Batch Analyst: Arauz, Horacio J

Batch Method: 3535 Batch End Date: 11/23/16 16:23

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00066
MB 320-139076/1		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	
LCS 320-139076/2		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
LCSD 320-139076/3		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
320-23718-A-1	DPT-16-17-GW-16-20	3535, 537 (Modified)	T	275.26 g	25.84 g	249.4 mL	0.5 mL	25 uL	
320-23718-A-2	DPT-16-17-GW-31-35	3535, 537 (Modified)	T	276.54 g	25.62 g	250.9 mL	0.5 mL	25 uL	
320-23718-A-4	DPT-16-29-GW-31-35	3535, 537 (Modified)	T	275.55 g	26.37 g	249.2 mL	0.5 mL	25 uL	
320-23718-A-5	DPT-16-29-GW-16-20	3535, 537 (Modified)	T	275.98 g	25.56 g	250.4 mL	0.5 mL	25 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O_00026
H2O ID	11-21-16
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	ERW
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.: 320-23718-1

SDG No.:

Batch Number: 139627 Batch Start Date: 11/28/16 11:03 Batch Analyst: Arauz, Horacio J

Batch Method: SHAKE Batch End Date: 11/30/16 16:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00070		
MB 320-139627/1		SHAKE, 537 (Modified)		5.00 g	1.00 mL	50 uL			
LCS 320-139627/2		SHAKE, 537 (Modified)		5.00 g	1.00 mL	50 uL	40 uL		
320-23718-A-3	DPT-16-29-SO-14-15	SHAKE, 537 (Modified)	T	5.00 g	1.00 mL	50 uL			
320-23718-A-3 MS	DPT-16-29-SO-14-15-MS	SHAKE, 537 (Modified)	T	5.01 g	1.00 mL	50 uL	40 uL		
320-23718-A-3 MSD	DPT-16-29-SO-14-15-MSD	SHAKE, 537 (Modified)	T	5.08 g	1.00 mL	50 uL	40 uL		

Batch Notes	
Acetic Acid ID	429065
Balance ID	QA-070
Batch Comment	Pipette MD05306
Hexane ID	J.T.BAKER 0000146278
Manifold ID	5,9
Methanol ID	789824
Methanolic Potassium Hydroxide ID	757037
Millipore Water Dispense Date	11-29-16
Sodium Hydroxide ID	758321
Ammonium Hydroxide/MeOH ID	794501
Analyst ID - Reagent Drop Witness	NSH
Blank Sand Lot #	Fisher 156690
SPE Cartridge ID	016636277A
SPE Cartridge Type	WAX 150mg

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; 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 ✓	

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

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12/09/2016

Printed : 11/28/2016

TestAmerica Sacramento

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

Method Code: 320-Shake_Bath_14D-320

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

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:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 23718; 23696; 23691 Work List ID(s): 37599; 37521; 37624

Extraction Batch: 139076; 139316; Analysis Batch(es): 141054; 140675; 141150

Delivery Rank 4 Due Date: 11/25/16; 11/28/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 140564	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• $RF_{average}$ criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓		
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?	✓		✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): _____ Date: 12/8/16

2nd Level Reviewer: _____ Date: 12/9/16

NCMs: 72253; 71975; 72289; 72290

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 03DEC2016B_PFC Worklist Number: 37521
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161205-37521.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 140675	LC PFC ICAL Raw Batch: 140676	LC PFAS ICAL Raw Batch: 140677
# 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
# 5 320-23718-A-1-A	# 5 320-23718-A-1-A		
# 6 320-23718-A-2-A	# 6 320-23718-A-2-A		
# 7 320-23718-A-5-A	# 7 320-23718-A-5-A		
# 8 MB 320-139316/1-A	# 8 MB 320-139316/1-A	Tune NCM	
# 9 LCS 320-139316/2-A	# 9 LCS 320-139316/2-A	71975	
#10 320-23696-A-3-A	#10 320-23696-A-3-A		
#11 320-23696-A-3-B MS	#11 320-23696-A-3-B MS		
#12 320-23696-A-3-C MSD	#12 320-23696-A-3-C MSD needs 10x; 1x		
#13 320-23696-A-6-A	#13 320-23696-A-6-A needs 100x		
#14 320-23696-A-7-A	#14 320-23696-A-7-A		
#15 RB	#15 RB ↳not necessary	#15 RB	#15 RB
#16 CCV L5	#16 CCV L5	#16 CCV L5	#16 CCV L5
#17 CCV L5 Add-on	#17 CCV L5 Add-on	#17 CCV L5 Add-on	#17 CCV L5 Add-on
#18 RB	#18 RB	#18 RB	#18 RB
#19 320-23696-A-1-A	#19 320-23696-A-1-A		
#20 320-23696-A-2-A	#20 320-23696-A-2-A		
#21 320-23696-A-4-A	#21 320-23696-A-4-A		
#22 320-23696-A-5-A	#22 320-23696-A-5-A E flags NCM 72289		
#23 320-23696-A-8-A	#23 320-23696-A-8-A		
#24 320-23696-A-9-A	#24 320-23696-A-9-A		
#25 320-23691-A-1-A	#25 320-23691-A-1-A		
#26 320-23691-A-2-A	#26 320-23691-A-2-A		
#27 320-23691-A-3-A	#27 320-23691-A-3-A		
#28 320-23691-A-4-A	#28 320-23691-A-4-A		
#29 RB	#29 RB	#29 RB	#29 RB
#30 CCV L5	#30 CCV L5	#30 CCV L5	#30 CCV L5
#31 CCV L5 Add-on	#31 CCV L5 Add-on	#31 CCV L5 Add-on	#31 CCV L5 Add-on
#32 RB	#32 RB	#32 RB	#32 RB
#33 320-23691-A-5-A	#33 320-23691-A-5-A		
#34 320-23696-A-6-A	#34 320-23696-A-6-A		
#35 320-23696-A-7-A	#35 320-23696-A-7-A - no carryover		
#36 RB	#36 RB	#36 RB	#36 RB
#37 CCV L5	#37 CCV L5	#37 CCV L5	#37 CCV L5
#38 CCV L5 Add-on	#38 CCV L5 Add-on	#38 CCV L5 Add-on	#38 CCV L5 Add-on
#39 RB	#39 RB	#39 RB	#39 RB

~~ICV #3~~ SBC 12/7/16

ICV 140564

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 07DEC2016A_PFC Worklist Number: 37599
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161207-37599.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 141054	LC PFC ICAL Raw Batch: 141055	LC PFAS ICAL Raw Batch: 141056
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 RB	# 2 RB	# 2 RB	# 2 RB
# 3 RB	# 3 RB	# 3 RB	# 3 RB
# 4 RB	# 4 RB	# 4 RB	# 4 RB
# 5 CCV L2	# 5 CCV L2	# 5 CCV L2	# 5 CCV L2
# 6 CCV L2 Add-on	# 6 CCV L2 Add-on	# 6 CCV L2 Add-on	# 6 CCV L2 Add-on
# 7 CCV L5	# 7 CCV L5	# 7 CCV L5	# 7 CCV L5
# 8 CCV L5 Add-on	# 8 CCV L5 Add-on	# 8 CCV L5 Add-on	# 8 CCV L5 Add-on
# 9 RB	# 9 RB	# 9 RB	# 9 RB
#10 MB 320-139083/1-A		#10 MB 320-139083/1-A	
#11 LCS 320-139083/2-A		#11 LCS 320-139083/2-A	
#12 LCSD 320-139083/3-A		#12 LCSD 320-139083/3-A	
#13 320-23631-A-1-A		#13 320-23631-A-1-A	#13 320-23631-A-1-A
#14 320-23631-A-2-A		#14 320-23631-A-2-A	#14 320-23631-A-2-A
#15 MB 320-140240/1-A		#15 MB 320-140240/1-A	
#16 LCS 320-140240/2-A		#16 LCS 320-140240/2-A	
#17 LCSD 320-140240/3-A		#17 LCSD 320-140240/3-A	
#18 320-23631-B-1-A		#18 320-23631-B-1-A	#18 320-23631-B-1-A
#19 320-23631-B-2-A		#19 320-23631-B-2-A	#19 320-23631-B-2-A
#20 RB	#20 RB	#20 RB	#20 RB
#21 CCV L4	#21 CCV L4	#21 CCV L4	#21 CCV L4
#22 CCV L4 Add-on	#22 CCV L4 Add-on	#22 CCV L4 Add-on	#22 CCV L4 Add-on
#23 RB	#23 RB	#23 RB	#23 RB
#24 MB 320-139076/1-A	#24 MB 320-139076/1-A		
#25 LCS 320-139076/2-A	#25 LCS 320-139076/2-A		
#26 LCSD 320-139076/3-A	#26 LCSD 320-139076/3-A		
#27 320-23718-A-1-A	#27 320-23718-A-1-A		
#28 320-23718-A-2-A	#28 320-23718-A-2-A		
#29 320-23718-A-4-A	#29 320-23718-A-4-A		
#30 320-23718-A-5-A	#30 320-23718-A-5-A		
#31 RB	#31 RB	#31 RB	#31 RB
#32 RB	#32 RB	#32 RB	#32 RB
#33 RB	#33 RB	#33 RB	#33 RB
#34 CCV L5	#34 CCV L5	#34 CCV L5	#34 CCV L5
#35 CCV L5 Add-on	#35 CCV L5 Add-on	#35 CCV L5 Add-on	#35 CCV L5 Add-on
#36 RB	#36 RB	#36 RB	#36 RB

E flags NCM 72253

ICV 140564 140565

Tune NCM 71975

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 07DEC2016C_PFC Worklist Number: 37624
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161208-37624.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 141150	LC PFC ICAL Raw Batch: 141151	LC PFAS ICAL Raw Batch: 141152
# 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
# 5 320-23696-A-6-A	# 5 320-23696-A-6-A		
# 6 320-23696-A-3-A	# 6 320-23696-A-3-A		
# 7 320-23696-A-3-B MS	# 7 320-23696-A-3-B MS		
# 8 320-23696-A-3-C MSD	# 8 320-23696-A-3-C MSD		
# 9 320-23696-A-2-A	# 9 320-23696-A-2-A		
#10 320-23696-A-7-A	#10 320-23696-A-7-A		
#11 320-23696-A-3-A	#11 320-23696-A-3-A		
#12 320-23696-A-3-B MS	#12 320-23696-A-3-B MS		
#13 320-23696-A-3-C MSD	#13 320-23696-A-3-C MSD		
#14 RB	#14 RB	#14 RB	#14 RB
#15 RB	#15 RB	#15 RB	#15 RB
#16 CCV L4	#16 CCV L4	#16 CCV L4	#16 CCV L4
#17 CCV L4 Add-on	#17 CCV L4 Add-on	#17 CCV L4 Add-on	#17 CCV L4 Add-on
#18 RB	#18 RB	#18 RB	#18 RB

High targets NCM 72290

#23

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

AS 11/29/16
11/30/16

Batch Number: 320-139076

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/22/2016 11:44:00AM

Batch End: 11/23/16 16:23

Solid-Phase Extraction (SPE)

Due 12/8 12/3/16

	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~320-139076/1 N/A	N/A		250 mL				N/A	N/A	N/A	RI CCVL2 out 1x	MB 320-139076/1-A
				0.5 mL								
2	LCS~320-139076/2 N/A	N/A		250 mL				N/A	N/A	N/A		LCS 320-139076/2-A
				0.5 mL								
3	LCSD~320-139076/3 N/A	N/A		250 mL				N/A	N/A	N/A		LCSD 320-139076/3-A
				0.5 mL								
4	320-23718-A-1 (PFC_IDA_DOD5)	N/A (320-23718-1)	275.26 g	249.4 mL				11/25/16	16_Days	4	10x PFOA 236.67	320-23718-A-1-A
			25.84 g	0.5 mL								
5	320-23718-A-2 (PFC_IDA_DOD5)	N/A (320-23718-1)	276.54 g	250.9 mL				11/25/16	16_Days	4	10x PFOA 220.58	320-23718-A-2-A
			25.62 g	0.5 mL								
6	320-23718-A-4 (PFC_IDA_DOD5)	N/A (320-23718-1)	275.55 g	249.2 mL				11/25/16	16_Days	4		320-23718-A-4-A
			26.37 g	0.5 mL								
7	320-23718-A-5 (PFC_IDA_DOD5)	N/A (320-23718-1)	275.98 g	250.4 mL				11/25/16	16_Days	4	10x PFOS 866.48	320-23718-A-5-A
			25.56 g	0.5 mL								

12/09/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139076

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/22/2016 11:44:00AM

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	11-21-16
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	ERW
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139076

Analyst: Arauz, Horacio J

Batch Open: 11/22/2016 11:44:00AM

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: 320-139076

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/22/2016 11:44:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-139076/1	LCMPFCSU_00046	25 uL	0.5 mL	HSA 11-22-16	ERW 11/22/16
LCS 320-139076/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-139076/2	LCPFCSP_00066	20 uL	0.5 mL		
LCSD 320-139076/3	LCMPFCSU_00046	25 uL	0.5 mL		
LCSD 320-139076/3	LCPFCSP_00066	20 uL	0.5 mL		
320-23718-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-23718-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-23718-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-23718-A-5	LCMPFCSU_00046	25 uL	0.5 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-139076 Test: PFC-L

Earliest Holding Time: 11-24-16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted		✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: VPM Date: 11/23/16

2nd Level Reviewer: ERW Date: 11/23/16

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC-IDA_D005 **Job #** 23718

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	↓	↓	↓	↓
5				

SBC 12/2/16

Comments:

C:\Users\phomsophat\AppData\Local\Microsoft\Windows\Temporary Internet Files\OLK708B\QA-747_SampleDilutionRecord.doc
10/20/16 RBH

#5

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

KB 11/29/16 W/30/16 12/7/16

Batch Number: 320-139316

Method Code: 320-3535_IVWT-320

Analyst: Sharifi, Nooshin

Batch Open: 11/23/2016 11:47:00AM

Batch End: 11/25/2016 12:49:00PM

KB ~~12/2/16~~ SBC 12/2/16 12/3/16

Solid-Phase Extraction (SPE)

Due 12/8

	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~320-139316/1 N/A	N/A		500 mL				N/A	N/A	N/A		MB 320-139316/1-A
				1.0 mL								
2	LCS~320-139316/2 N/A	N/A		500 mL				N/A	N/A	N/A		LCS 320-139316/2-A
				1.0 mL								
3	320-23696-A-1 (PFC_IDA_DOD5)	N/A (320-23696-1)	568.18 g	524.6 mL				11/28/16	12_Days	4	See NCM for these samples becaues they have sediment for job number 23696.	320-23696-A-1-A
			43.60 g	1.0 mL								
4	320-23696-A-2 (PFC_IDA_DOD5)	N/A (320-23696-1)	564.77 g	520.2 mL				11/28/16	12_Days	4	10X PFHxS PFOS	320-23696-A-2-A
			44.61 g	1.0 mL								
5	320-23696-A-3 (PFC_IDA_DOD5)	N/A (320-23696-1)	527.27 g	482.4 mL				11/28/16	12_Days	4	100x Screen (10x, 1x)	320-23696-A-3-A
			44.83 g	1.0 mL								
6	320-23696-A-3~MS (PFC_IDA_DOD5)	N/A (320-23696-1)	526.56 g	481.5 mL				11/28/16	12_Days	4		320-23696-A-3-B MS
			45.09 g	1.0 mL								
7	320-23696-A-3~MSD (PFC_IDA_DOD5)	N/A (320-23696-1)	531.69 g	484.9 mL				11/28/16	12_Days	4		320-23696-A-3-C MSD
			46.77 g	1.0 mL								
8	320-23696-A-4 (PFC_IDA_DOD5)	N/A (320-23696-1)	551.15 g	507 mL				11/28/16	12_Days	4		320-23696-A-4-A
			44.20 g	1.0 mL								
9	320-23696-A-5 (PFC_IDA_DOD5)	N/A (320-23696-1)	541.80 g	496.1 mL				11/28/16	12_Days	4		320-23696-A-5-A
			45.75 g	1.0 mL								

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12/09/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139316

Analyst: Sharifi, Nooshin

Batch Open: 11/23/2016 11:47:00AM

Method Code: 320-3535_IVWT-320

Batch End: 11/25/2016 12:49:00PM

10	320-23696-A-6 (PFC_IDA_DOD5)	N/A (320-23696-1)	552.52 g / 45.65 g	506.9 mL / 1.0 mL				11/28/16	12_Days	4	10x, 1x 100x PFOS	320-23696-A-6-A
11	320-23696-A-7 (PFC_IDA_DOD5)	N/A (320-23696-1)	525.84 g / 44.73 g	481.1 mL / 1.0 mL				11/28/16	12_Days	4	~~10x~~ 1x RI	320-23696-A-7-A
12	320-23696-A-8 (PFC_IDA_DOD5)	N/A (320-23696-1)	556.77 g / 43.62 g	513.2 mL / 1.0 mL				11/28/16	12_Days	4		320-23696-A-8-A
13	320-23696-A-9 (PFC_IDA_DOD5)	N/A (320-23696-1)	560.02 g / 45.48 g	514.5 mL / 1.0 mL				11/28/16	12_Days	4		320-23696-A-9-A
14	320-23691-A-1 (PFC_IDA_DOD5)	N/A (320-23691-1)	559.23 g / 44.38 g	514.9 mL / 1.0 mL				11/28/16	12_Days	4		320-23691-A-1-A
15	320-23691-A-2 (PFC_IDA_DOD5)	N/A (320-23691-1)	566.86 g / 45.61 g	521.3 mL / 1.0 mL				11/28/16	12_Days	4		320-23691-A-2-A
16	320-23691-A-3 (PFC_IDA_DOD5)	N/A (320-23691-1)	548.61 g / 44.46 g	504.2 mL / 1.0 mL				11/28/16	12_Days	4		320-23691-A-3-A
17	320-23691-A-4 (PFC_IDA_DOD5)	N/A (320-23691-1)	552.53 g / 45.25 g	507.3 mL / 1.0 mL				11/28/16	12_Days	4		320-23691-A-4-A
18	320-23691-A-5 (PFC_IDA_DOD5)	N/A (320-23691-1)	563.48 g / 45.48 g	518 mL / 1.0 mL				11/28/16	12_Days	4		320-23691-A-5-A

#5

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139316
Analyst: Sharifi, Nooshin
Batch Open: 11/23/2016 11:47:00AM
Method Code: 320-3535_IVWT-320
Batch End: 11/25/2016 12:49:00PM

Solid-Phase Extraction (SPE)

Due 12/8

	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~320-139316/1 N/A	N/A		500 mL				N/A	N/A	N/A		MB 320-139316/1-A
				1.0 mL								
2	LCS~320-139316/2 N/A	N/A		500 mL				N/A	N/A	N/A		LCS 320-139316/2-A
				1.0 mL								
3	320-23696-A-1 (PFC_IDA_DOD5)	N/A (320-23696-1)	568.18 g	524.6 mL				11/28/16	12_Days	4	See NCM for these samples becaues they have sediment for job number 23696.	320-23696-A-1-A
			43.60 g	1.0 mL								
4	320-23696-A-2 (PFC_IDA_DOD5)	N/A (320-23696-1)	564.77 g	520.2 mL				11/28/16	12_Days	4		320-23696-A-2-A
			44.61 g	1.0 mL								
5	320-23696-A-3 (PFC_IDA_DOD5)	N/A (320-23696-1)	527.27 g	482.4 mL				11/28/16	12_Days	4	100x, +10x 58 ng/mL	320-23696-A-3-A
			44.83 g	1.0 mL								
6	320-23696-A-3~MS (PFC_IDA_DOD5)	N/A (320-23696-1)	526.56 g	481.5 mL				11/28/16	12_Days	4		320-23696-A-3-B MS
			45.09 g	1.0 mL								
7	320-23696-A-3~MSD (PFC_IDA_DOD5)	N/A (320-23696-1)	531.69 g	484.9 mL				11/28/16	12_Days	4		320-23696-A-3-C MSD
			46.77 g	1.0 mL								
8	320-23696-A-4 (PFC_IDA_DOD5)	N/A (320-23696-1)	551.15 g	507 mL				11/28/16	12_Days	4		320-23696-A-4-A
			44.20 g	1.0 mL								
9	320-23696-A-5 (PFC_IDA_DOD5)	N/A (320-23696-1)	541.80 g	496.1 mL				11/28/16	12_Days	4		320-23696-A-5-A
			45.75 g	1.0 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139316

Analyst: Sharifi, Nooshin

Batch Open: 11/23/2016 11:47:00AM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-23696-A-7 (PFC_IDA_DOD5)	N/A (320-23696-1)	525.84 g / 44.73 g	481.1 mL / 1.0 mL				11/28/16	12_Days	4	See NCM 10x, 1x	
12	320-23696-A-8 (PFC_IDA_DOD5)	N/A (320-23696-1)	556.77 g / 43.62 g	513.2 mL / 1.0 mL				11/28/16	12_Days	4	See NCM	
13	320-23696-A-9 (PFC_IDA_DOD5)	N/A (320-23696-1)	560.02 g / 45.48 g	514.5 mL / 1.0 mL				11/28/16	12_Days	4	See NCM	
14	320-23691-A-1 (PFC_IDA_DOD5)	N/A (320-23691-1)	559.23 g / 44.38 g	514.9 mL / 1.0 mL				11/28/16	12_Days	4	See NCM	
15	320-23691-A-2 (PFC_IDA_DOD5)	N/A (320-23691-1)	566.86 g / 45.61 g	521.3 mL / 1.0 mL				11/28/16	12_Days	4	See NCM	
16	320-23691-A-3 (PFC_IDA_DOD5)	N/A (320-23691-1)	548.61 g / 44.46 g	504.2 mL / 1.0 mL				11/28/16	12_Days	4	See NCM	
17	320-23691-A-4 (PFC_IDA_DOD5)	N/A (320-23691-1)	552.53 g / 45.25 g	507.3 mL / 1.0 mL				11/28/16	12_Days	4	See NCM	
18	320-23691-A-5 (PFC_IDA_DOD5)	N/A (320-23691-1)	563.48 g / 45.48 g	518 mL / 1.0 mL				11/28/16	12_Days	4	See NCM	

12/09/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139316

Analyst: Sharifi, Nooshin

Batch Open: 11/23/2016 11:47:00AM

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

Manifold ID	2,4
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	11-21-16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH-Me
Solvent Lot #	776672
Analyst ID - Reagent Drop	NSH
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	HJA
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: 320-139316

Analyst: Sharifi, Nooshin

Batch Open: 11/23/2016 11:47:00AM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number	WS-LC-0025
Batch Comment	0.1N NaOH/H2O_00026

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139316
Method Code: 320-3535_IVWT-320

Analyst: Sharifi, Nooshin

Batch Open: 11/23/2016 11:47:00AM
Batch End:

Comments

320-23696-A-1	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-2	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-3	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-3~MS	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-3~MSD	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-4	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-5	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-6	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-7	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-8	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23696-A-9	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23691-A-1	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23691-A-2	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23691-A-3	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23691-A-4	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-23691-A-5	Method Comments:	Q5Rev111213_StdVarApp_30day disposal

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139316

Analyst: Sharifi, Nooshin

Batch Open: 11/23/2016 11:47:00AM

Method Code: 320-3535_IVWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-139316/1	LCMPFCSU_00046	50 uL	1.0 mL	NSH 11-23-16	11/23/16
LCS 320-139316/2	LCMPFCSU_00046	50 uL	1.0 mL		
LCS 320-139316/2	LCPFCSP_00070	40 uL	1.0 mL		
320-23696-A-1	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-2	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-3	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-3 MS	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-3 MS	LCPFCSP_00070	40 uL	1.0 mL		
320-23696-A-3 MSD	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-3 MSD	LCPFCSP_00070	40 uL	1.0 mL		
320-23696-A-4	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-5	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-6	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-7	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-8	LCMPFCSU_00046	50 uL	1.0 mL		
320-23696-A-9	LCMPFCSU_00046	50 uL	1.0 mL		
320-23691-A-1	LCMPFCSU_00046	50 uL	1.0 mL		
320-23691-A-2	LCMPFCSU_00046	50 uL	1.0 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139316

Analyst: Sharifi, Nooshin

Batch Open: 11/23/2016 11:47:00AM

Method Code: 320-3535_IVWT-320

Batch End:

320-23691-A-3	LCMPFCSU_00046	50 uL	1.0 mL	NSH 11-23-16	11/23/16
320-23691-A-4	LCMPFCSU_00046	50 uL	1.0 mL	↓	↓
320-23691-A-5	LCMPFCSU_00046	50 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): 1393116 Test: PFC_IDA_0005 (L)

Earliest Holding Time: 11-23-16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: VPM Date: 11/25/16

2nd Level Reviewer: ERW Date: 11/25/16

Comments: _____

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC-IDA-DOD5 **Job #** 23696

Analyst (Print Name) Sruthi Chandrasenan **Analyst Initials** SC

Date 11/29/16

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
3	1000	100	1000	10
MS		100	1000	10
MSD		100	1000	10
3		100	1000	100
MS		100	1000	100
MSD		100	1000	100
6		100	1000	10
7		100	1000	10

Comments:

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-23718-1

SDG No.:

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

Client Sample ID	Lab Sample ID
DPT-16-29-SO-14-15	320-23718-3

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-23718-1

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: 320-23718-1

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.: 320-23718-1

SDG No.:

Instrument ID: NOEQUIP

Analysis Method: D 2216

Start Date: 12/01/2016 13:50

End Date: 12/01/2016 13:50

Lab Sample Id	D/F	Type	Time	Analytes	
				%Sol	Moist
320-23718-3	1	T	13:50	X	X
320-23718-3 DU	1	T	13:50	X	X
ZZZZZZ			13:50		
ZZZZZZ			13:50		
ZZZZZZ			13:50		
ZZZZZZ			13:50		
ZZZZZZ			13:50		
ZZZZZZ			13:50		
ZZZZZZ			13:50		
ZZZZZZ			13:50		

Prep Types:

T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23718-1

SDG No.:

Batch Number: 140225 Batch Start Date: 12/01/16 13:50 Batch Analyst: Lo, KitSeong S

Batch Method: D 2216 Batch End Date: 12/02/16 09:43

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
320-23718-A-3	DPT-16-29-SO-14-15	D 2216	T	1	1.04 g	6.48 g	5.47 g		
320-23718-A-3 DU	DPT-16-29-SO-14-15	D 2216	T	2	1.03 g	6.23 g	5.24 g		

Batch Notes	
Balance ID	QA-068 No Unit
Date and Time Samples in Desiccator	12/02/2016 @ 09:05
Date and Time Samples out of Desiccator	12/02/2016 @ 09:43
Date samples were placed in the oven	12/01/2016
Oven Temp In	111 Degrees C
Time samples were place in the oven	14:06
Date samples were removed from oven	12/02/2016
Oven Temp Out	109 Degrees C
Time Samples were removed from oven	09:05
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.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 140225 Test: % Moisture

Earliest Holding Time: N/A

320-23718, -23669

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	✓	✓
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)	N/A	✓
The pH is transcribed correctly in TALS	N/A	✓
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	✓
All spike amounts correct and added to necessary samples and QC	N/A	✓
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: KL Date: 12/02/16

2nd Level Reviewer: JMD Date: 12/02/16

Comments:

Shipping and Receiving Documents

Chain of Custody Record

Temperature on Receipt ~0.1°

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM		11/18/16	299018
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 KELLMAN	
Project Name and Location (State)	**Carrier/Waybill Number**		
FORMER BAYHEAD RD ANNEX	FEDEX		
Contract/Purchase Order/Quote No.			
KURT VANGELDER			

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	Analysis: PFOA	PFOS	PFBS
DPT-16-17-GW-16-20	11/17/16	1400		✓			2						✓	✓	✓
DPT-16-17-GW-31-35	11/17/16	1435		✓			2						✓	✓	✓
DPT-16-29-SO-14-15	11/18/16	1316				✓	1						✓	✓	✓
DPT-16-29-SO-14-15-MS	↓	↓				✓	1						✓	✓	✓
DPT-16-29-SO-14-15-MSD	↓	↓				✓	1						✓	✓	✓
DPT-16-29-GW-31-35	11/18/16	1505		✓			2						✓	✓	✓
DPT-16-29-GW-16-20	11/18/16	1520		✓			2						✓	✓	✓

Special Instructions/ Conditions of Receipt

320-23718 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: 11/18/16	Time: 1700	1. Received By: TRANSFER TO FEDEX	Date: 11/18/16	Time: 1720
2. Relinquished By:	Date:	Time:	2. Received By: TAWS	Date: 11/19/16	Time: 09:00
Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments

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

Page 803 of 804

12/09/2016

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-23718-1

Login Number: 23718 **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.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	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.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"DPT-16-17-GW-16-20","537","12/03/16","19:11","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.061","","TRG","No","Y","D","Y","0.0092","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-17-GW-16-20","537","12/03/16","19:11","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.22","","TRG","No","Y","DM","Y","0.013","0.030","0.040","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-17-GW-16-20","537","12/03/16","19:11","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","0.49","","TRG","Yes","Y","D","Y","0.0075","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-17-GW-16-20","537","12/07/16","15:18","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.11","","TRG","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-17-GW-16-20","537","12/07/16","15:18","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.23","","TRG","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-17-GW-16-20","537","12/07/16","15:18","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.44","","TRG","No","Y","E","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","",
"","","","","","","","","","","",""
"DPT-16-17-GW-31-35","537","12/03/16","19:18","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.037","","TRG","No","Y","D","Y","0.0091","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-17-GW-31-35","537","12/03/16","19:18","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.26","","TRG","No","Y","D","Y","0.013","0.030","0.040","UG_L","UG_L","","","0","","","","0","","","","",
"","","","","","","","","",""
"DPT-16-17-GW-31-35","537","12/03/16","19:18","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","0.45","","TRG","Yes","Y","D","Y","0.0075","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-17-GW-31-35","537","12/07/16","15:26","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.063","","TRG","Yes","Y","","Y","0.00091","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","",
"","","","","","","","","","","",""
"DPT-16-17-GW-31-35","537","12/07/16","15:26","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.26","","TRG","Yes","Y","M","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","",
"","","","","","","","","","","",""
"DPT-16-17-GW-31-35","537","12/07/16","15:26","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.42","","TRG","No","Y","E","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","",
"","","","","","","","","","","",""
"DPT-16-29-GW-16-20","537","12/03/16","19:26","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.062","","TRG","No","Y","D","Y","0.0092","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-29-GW-16-20","537","12/03/16","19:26","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","2.1","","TRG","Yes","Y","DM","Y","0.013","0.030","0.040","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-29-GW-16-20","537","12/03/16","19:26","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","0.29","","TRG","No","Y","D","Y","0.0075","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-29-GW-16-20","537","12/07/16","15:41","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.11","","TRG","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-29-GW-16-20","537","12/07/16","15:41","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","1.6","","TRG","No","Y","ME","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-29-GW-16-20","537","12/07/16","15:41","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.27","","TRG","Yes","Y","","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","

","","","","","","","","","","","",""
"DPT-16-29-GW-31-35","537","12/07/16","15:33","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.15","","TRG","Yes","Y","","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","","",""
"DPT-16-29-GW-31-35","537","12/07/16","15:33","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.14","","TRG","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","","",""
"DPT-16-29-GW-31-35","537","12/07/16","15:33","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.034","","TRG","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","",
"","","","","","","","","","","","",""
"DPT-16-29-SO-14-15","537","12/02/16","15:29","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.13","0.37","0.49","UG_KG","UG_KG","","","0","","","","0","","","","","",
"","","","","","","","","",""
"DPT-16-29-SO-14-15","537","12/02/16","15:29","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","1.5","","TRG","Yes","Y","","Y","0.15","0.37","0.61","UG_KG","UG_KG","","","0","","","","0","","","","","
","","","","","","","","","",""
"DPT-16-29-SO-14-15","537","12/02/16","15:29","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.49","","TRG","Yes","Y","J","Y","0.13","0.37","0.61","UG_KG","UG_KG","","","0","","","","0","","","","
","","","","","","","","","","",""
"DPT-16-29-SO-14-15-MSDSD","537","12/02/16","15:44","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","5.37","","SC","Yes","Y","","Y","0.12","0.36","0.60","UG_KG","UG_KG","","","0","","","","0.49","4.83","5 .37","101","3","60","140","30","","","","","","",""
"DPT-16-29-SO-14-15-MSDSD","537","12/02/16","15:44","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","5.57","","SC","Yes","Y","M","Y","0.15","0.36","0.60","UG_KG","UG_KG","","","0","","","","1.5","4.49"," 5.57","91","2","60","140","30","","","","","","",""
"DPT-16-29-SO-14-15-MSDSD","537","12/02/16","15:44","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","4.71","","SC","Yes","Y","","Y","0.12","0.36","0.48","UG_KG","UG_KG","","","0","","","","0.37","4.27","4. 71","110","2","50","150","30","","","","","","",""
"DPT-16-29-SO-14-15-MSMS","537","12/02/16","15:37","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","4.78","","SC","Yes","Y","","Y","0.13","0.37","0.49","UG_KG","UG_KG","","","0.37","4.33","4.78","110"," 0","","","","","","50","150","","","","","","","",""
"DPT-16-29-SO-14-15-MSMS","537","12/02/16","15:37","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","5.53","","SC","Yes","Y","","Y","0.13","0.37","0.61","UG_KG","UG_KG","","","0.49","4.90","5.53","103"," 0","","","","","","60","140","","","","","","","",""
"DPT-16-29-SO-14-15-MSMS","537","12/02/16","15:37","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","5.71","","SC","Yes","Y","M","Y","0.15","0.37","0.61","UG_KG","UG_KG","","","1.5","4.55","5.71","93"," 0","","","","","","60","140","","","","","","","",""
"LCS 320-139076/2-A","537","12/07/16","15:03","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.0415","","SC","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","0.0354","0.0415 ","117","0","","","","","","50","150","","","","","","","",""
"LCS 320-139076/2-A","537","12/07/16","15:03","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.0394","","SC","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","0.0371","0.0394", "106","0","","","","","","60","140","","","","","","","",""
"LCS 320-139076/2-A","537","12/07/16","15:03","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.0420","","SC","Yes","Y","","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","0.0400","0.0420 ","105","0","","","","","","60","140","","","","","","","",""
"LCS 320-139627/2-A","537","12/02/16","15:07","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","4.03","","SC","Yes","Y","","Y","0.10","0.30","0.40","UG_KG","UG_KG","","","0","3.54","4.03","114","0", "","","","","50","150","","","","","","","",""
"LCS 320-139627/2-A","537","12/02/16","15:07","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","3.66","","SC","Yes","Y","","Y","0.13","0.30","0.50","UG_KG","UG_KG","","","0","3.71","3.66","99","0","" ,"","","","60","140","","","","","","","",""
"LCS 320-139627/2-A","537","12/02/16","15:07","T","NA","Initial","335-67-1","Perfluorooctanoic acid

(PFOA)","4.25","","SC","Yes","Y","","Y","0.10","0.30","0.50","UG_KG","UG_KG","","","0","4.00","4.25","106","0","","","","","60","140","","","","","","","","","","
"LCSD 320-139076/3-A","537","12/07/16","15:11","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.0412","","SC","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","0.0354","0.0412","117","1","50","150","30","","","","","","","","
"LCSD 320-139076/3-A","537","12/07/16","15:11","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.0386","","SC","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","0.0371","0.0386","104","2","60","140","30","","","","","","","","
"LCSD 320-139076/3-A","537","12/07/16","15:11","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.0408","","SC","Yes","Y","","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","0.0400","0.0408","102","3","60","140","30","","","","","","","","
"MB 320-139076/1-A","537","12/07/16","14:55","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","
"MB 320-139076/1-A","537","12/07/16","14:55","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","","","TRG","Yes","N","U","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","
"MB 320-139076/1-A","537","12/07/16","14:55","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","","","TRG","Yes","N","U","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","
"MB 320-139627/1-A","537","12/02/16","14:59","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.10","0.30","0.40","UG_KG","UG_KG","","","0","","","","0","
"MB 320-139627/1-A","537","12/02/16","14:59","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","","","TRG","Yes","N","U","Y","0.13","0.30","0.50","UG_KG","UG_KG","","","0","","","","0","
"MB 320-139627/1-A","537","12/02/16","14:59","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","","","TRG","Yes","N","U","Y","0.10","0.30","0.50","UG_KG","UG_KG","","","0","","","","0","

Data Validation Report

Project:	Former Bay Head Road Annex- Annapolis, MD	
Laboratory:	TestAmerica-West Sacramento, CA	
Job Number:	320-23718-1	
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: 12/13/16
Reviewed by:	Robert Kennedy/Resolution Consultants	Completed on: 12/14/16
File Name: J23718-1_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 17-18, 2016.

Sample ID	Matrix/Sample Type
DPT-16-17-GW-16-20	Groundwater
DPT-16-17-GW-31-35	Groundwater
DPT-16-29-GW-16-20	Groundwater
DPT-16-29-GW-31-35	Groundwater
DPT-16-29-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)/laboratory control sample duplicate (LCSD) 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. Qualification of the data was not required.

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.

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 recoveries (%Rs) and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

LCS/LCSD Results

The LCS/LCSD %Rs and RPDs were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Field Duplicate Results

A field duplicate pair was not submitted with this data set. Data were not qualified 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.

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.

QUALIFICATION ACTIONS

Qualification of the data was not required.

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-16-17	Direct Push/Geoprobe	1474660	496307	DPT-16-17-GW-16-20	Ground water	11/17/2016	Perfluoroalkyl Compounds	320-23718-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-17	Direct Push/Geoprobe	1474660	496307	DPT-16-17-GW-31-35	Ground water	11/17/2016	Perfluoroalkyl Compounds	320-23718-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-29	Direct Push/Geoprobe	1474600	496348	DPT-16-29-GW-16-20	Ground water	11/18/2016	Perfluoroalkyl Compounds	320-23718-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-29	Direct Push/Geoprobe	1474600	496348	DPT-16-29-GW-31-35	Ground water	11/18/2016	Perfluoroalkyl Compounds	320-23718-1