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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 J238901

Bay Head Road Annex
NSWC Annapolis
Maryland

December 2020

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

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TestAmerica Job ID: 320-23890-1

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

For:

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LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23890-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
D	The reported value is from a dilution.
U	Undetected at the Limit of Detection.

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: 320-23890-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: AECOM Technical Services Inc.

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

Report Number: 320-23890-1

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 11/30/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.4 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 Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C4 PFOA, 18O2 PFHxS and 13C4 PFOS: DPT-16-21-GW-19-23 (320-23890-5), DPT-16-31-GW-19-23 (320-23890-7) and DPT-16-13-GW-18-22 (320-23890-10). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than

Job ID: 320-23890-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

10:1, which is achieved for all IDA in the samples.

The concentration of Perfluorooctanesulfonic acid (PFOS) in the following sample exceeded the instrument calibration range: DPT-16-31-GW-19-23 (320-23890-7). This analyte has been qualified; however, the peak did not saturate the instrument detector. The maximum dilution was performed for the sample. All sets of data have been reported.

Samples DPT-16-30-GW-31-35 (320-23890-1)[50X], DPT-16-30-GW-18-22 (320-23890-2)[25X], DPT-16-32-GW-19-23 (320-23890-3)[25X], DPT-16-32-GW-31-35 (320-23890-4)[10X], DPT-16-21-GW-19-23 (320-23890-5)[50X], DPT-16-21-GW-31-35 (320-23890-6)[10X], DPT-16-31-GW-19-23 (320-23890-7)[100X], DPT-16-31-GW-31-35 (320-23890-8)[10X], DPT-16-13-GW-31-35 (320-23890-9)[10X] and DPT-16-13-GW-18-22 (320-23890-10)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Organic Prep

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-140271.

Due to excessive sediment in sample bottles the aqueous portion of the samples was decanted to new bottles prior to spiking and extraction. DPT-16-30-GW-31-35 (320-23890-1), DPT-16-30-GW-18-22 (320-23890-2), DPT-16-32-GW-19-23 (320-23890-3), DPT-16-32-GW-31-35 (320-23890-4), DPT-16-21-GW-19-23 (320-23890-5), DPT-16-21-GW-31-35 (320-23890-6), DPT-16-31-GW-19-23 (320-23890-7), DPT-16-31-GW-31-35 (320-23890-8), DPT-16-13-GW-31-35 (320-23890-9) and DPT-16-13-GW-18-22 (320-23890-10)

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: 320-23890-1

Client Sample ID: DPT-16-30-GW-31-35 — Lab Sample ID: 320-23890-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.0	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.7	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.31		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.4	D	0.13	0.038	ug/L	50		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	11	D	0.20	0.064	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.13	D	0.13	0.046	ug/L	50		537 (Modified)	Total/NA

Client Sample ID: DPT-16-30-GW-18-22 — Lab Sample ID: 320-23890-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.98	E M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	4.0	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.00095	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.4	D M	0.065	0.019	ug/L	25		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	6.6	D	0.10	0.033	ug/L	25		537 (Modified)	Total/NA

Client Sample ID: DPT-16-32-GW-19-23 — Lab Sample ID: 320-23890-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.59	E M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.2	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.14		0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.68	D M	0.063	0.019	ug/L	25		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	9.2	D	0.10	0.032	ug/L	25		537 (Modified)	Total/NA

Client Sample ID: DPT-16-32-GW-31-35 — Lab Sample ID: 320-23890-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.56	E M	0.0026	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.12		0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.65	D M	0.026	0.0076	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.1	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-21-GW-19-23 — Lab Sample ID: 320-23890-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	5.9	E M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	6.1	E M	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	E M	0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	15	D M	0.13	0.038	ug/L	50		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	12	D	0.20	0.065	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	1.1	D	0.13	0.046	ug/L	50		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 320-23890-1

Client Sample ID: DPT-16-21-GW-31-35 — Lab Sample ID: 320-23890-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.60	E M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.74	D M	0.025	0.0076	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	3.2	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-31-GW-19-23 — Lab Sample ID: 320-23890-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	8.4	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	14	E M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.67	E	0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	28	D M	0.25	0.075	ug/L	100		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	42	D E	0.40	0.13	ug/L	100		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	1.1	D	0.25	0.092	ug/L	100		537 (Modified)	Total/NA

Client Sample ID: DPT-16-31-GW-31-35 — Lab Sample ID: 320-23890-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.34	M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.5	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.086		0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.36	D M	0.026	0.0077	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.0	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-13-GW-31-35 — Lab Sample ID: 320-23890-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.31	M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.52	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.34	D M	0.025	0.0076	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.62	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-13-GW-18-22 — Lab Sample ID: 320-23890-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.7	E M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	6.8	E M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	E	0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	7.0	D	0.12	0.037	ug/L	50		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	14	D	0.20	0.063	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.91	D	0.12	0.046	ug/L	50		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-30-GW-31-35 — Lab Sample ID: 320-23890-1

Date Collected: 11/29/16 09:40 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.0	E M	0.0025	0.00075	ug/L		12/01/16 19:42	12/14/16 18:01	1
Perfluorooctane Sulfonate (PFOS)	5.7	E	0.0040	0.0013	ug/L		12/01/16 19:42	12/14/16 18:01	1
Perfluorobutanesulfonic acid (PFBS)	0.31		0.0025	0.00092	ug/L		12/01/16 19:42	12/14/16 18:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*65*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:01*	*1*
13C4 PFOS	*33*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:01*	*1*
18O2 PFHxS	*34*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:01*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.4	D	0.13	0.038	ug/L		12/01/16 19:42	12/18/16 23:26	50
Perfluorooctane Sulfonate (PFOS)	11	D	0.20	0.064	ug/L		12/01/16 19:42	12/18/16 23:26	50
Perfluorobutanesulfonic acid (PFBS)	0.13	D	0.13	0.046	ug/L		12/01/16 19:42	12/18/16 23:26	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*163*	*Q*	*25 - 150*	*12/01/16 19:42*	*12/18/16 23:26*	*50*
13C4 PFOS	*145*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:26*	*50*
18O2 PFHxS	*149*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:26*	*50*

Client Sample ID: DPT-16-30-GW-18-22 — Lab Sample ID: 320-23890-2

Date Collected: 11/29/16 10:00 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.98	E M	0.0026	0.00077	ug/L		12/01/16 19:42	12/14/16 18:08	1
Perfluorooctane Sulfonate (PFOS)	4.0	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:08	1
Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.00095	ug/L		12/01/16 19:42	12/14/16 18:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*62*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:08*	*1*
13C4 PFOS	*48*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:08*	*1*
18O2 PFHxS	*41*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:08*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.4	D M	0.065	0.019	ug/L		12/01/16 19:42	12/16/16 12:52	25
Perfluorooctane Sulfonate (PFOS)	6.6	D	0.10	0.033	ug/L		12/01/16 19:42	12/16/16 12:52	25

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*98*		*25 - 150*	*12/01/16 19:42*	*12/16/16 12:52*	*25*
13C4 PFOS	*93*		*25 - 150*	*12/01/16 19:42*	*12/16/16 12:52*	*25*

Client Sample ID: DPT-16-32-GW-19-23 — Lab Sample ID: 320-23890-3

Date Collected: 11/28/16 10:00 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.59	E M	0.0025	0.00076	ug/L		12/01/16 19:42	12/14/16 18:16	1

Client Sample ID: DPT-16-32-GW-19-23 — Lab Sample ID: 320-23890-3

Date Collected: 11/28/16 10:00 — **Matrix: Water**
Date Received: 11/30/16 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonate (PFOS)	5.2	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:16	1
Perfluorobutanesulfonic acid (PFBS)	0.14		0.0025	0.00093	ug/L		12/01/16 19:42	12/14/16 18:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*71*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:16*	*1*
13C4 PFOS	*33*	*M*	*25 - 150*	*12/01/16 19:42*	*12/14/16 18:16*	*1*
18O2 PFHxS	*44*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:16*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.68	D M	0.063	0.019	ug/L		12/01/16 19:42	12/16/16 13:00	25
Perfluorooctane Sulfonate (PFOS)	9.2	D	0.10	0.032	ug/L		12/01/16 19:42	12/16/16 13:00	25

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*107*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:00*	*25*
13C4 PFOS	*86*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:00*	*25*

Client Sample ID: DPT-16-32-GW-31-35 — Lab Sample ID: 320-23890-4

Date Collected: 11/28/16 10:45 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.56	E M	0.0026	0.00076	ug/L		12/01/16 19:42	12/14/16 18:23	1
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:23	1
Perfluorobutanesulfonic acid (PFBS)	0.12		0.0026	0.00094	ug/L		12/01/16 19:42	12/14/16 18:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*65*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:23*	*1*
13C4 PFOS	*70*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:23*	*1*
18O2 PFHxS	*64*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:23*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.65	D M	0.026	0.0076	ug/L		12/01/16 19:42	12/16/16 13:07	10
Perfluorooctane Sulfonate (PFOS)	2.1	D	0.041	0.013	ug/L		12/01/16 19:42	12/16/16 13:07	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*85*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:07*	*10*
13C4 PFOS	*99*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:07*	*10*

Client Sample ID: DPT-16-21-GW-19-23 — Lab Sample ID: 320-23890-5

Date Collected: 11/28/16 12:20 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.9	E M	0.0025	0.00076	ug/L		12/01/16 19:42	12/14/16 18:31	1
Perfluorooctane Sulfonate (PFOS)	6.1	E M	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:31	1
Perfluorobutanesulfonic acid (PFBS)	1.7	E M	0.0025	0.00093	ug/L		12/01/16 19:42	12/14/16 18:31	1

Client Sample ID: DPT-16-21-GW-19-23 — Lab Sample ID: 320-23890-5

Date Collected: 11/28/16 12:20 — **Matrix: Water**
Date Received: 11/30/16 09:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	24	Q	25 - 150	12/01/16 19:42	12/14/16 18:31	1
13C4 PFOS	34		25 - 150	12/01/16 19:42	12/14/16 18:31	1
18O2 PFHxS	16	Q	25 - 150	12/01/16 19:42	12/14/16 18:31	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	15	D M	0.13	0.038	ug/L		12/01/16 19:42	12/18/16 23:34	50
Perfluorooctane Sulfonate (PFOS)	12	D	0.20	0.065	ug/L		12/01/16 19:42	12/18/16 23:34	50
Perfluorobutanesulfonic acid (PFBS)	1.1	D	0.13	0.046	ug/L		12/01/16 19:42	12/18/16 23:34	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	118		25 - 150	12/01/16 19:42	12/18/16 23:34	50
13C4 PFOS	134		25 - 150	12/01/16 19:42	12/18/16 23:34	50
18O2 PFHxS	111		25 - 150	12/01/16 19:42	12/18/16 23:34	50

Client Sample ID: DPT-16-21-GW-31-35 — Lab Sample ID: 320-23890-6

Date Collected: 11/28/16 12:55 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.60	E M	0.0025	0.00076	ug/L		12/01/16 19:42	12/14/16 18:38	1
Perfluorooctane Sulfonate (PFOS)	2.2	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:38	1
Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.00093	ug/L		12/01/16 19:42	12/14/16 18:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	70		25 - 150	12/01/16 19:42	12/14/16 18:38	1
13C4 PFOS	64		25 - 150	12/01/16 19:42	12/14/16 18:38	1
18O2 PFHxS	63		25 - 150	12/01/16 19:42	12/14/16 18:38	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.74	D M	0.025	0.0076	ug/L		12/01/16 19:42	12/16/16 13:22	10
Perfluorooctane Sulfonate (PFOS)	3.2	D	0.041	0.013	ug/L		12/01/16 19:42	12/16/16 13:22	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	88		25 - 150	12/01/16 19:42	12/16/16 13:22	10
13C4 PFOS	99		25 - 150	12/01/16 19:42	12/16/16 13:22	10

Client Sample ID: DPT-16-31-GW-19-23 — Lab Sample ID: 320-23890-7

Date Collected: 11/28/16 13:30 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	8.4	E M	0.0025	0.00075	ug/L		12/01/16 19:42	12/14/16 19:16	1
Perfluorooctane Sulfonate (PFOS)	14	E M	0.0040	0.0013	ug/L		12/01/16 19:42	12/14/16 19:16	1
Perfluorobutanesulfonic acid (PFBS)	0.67	E	0.0025	0.00092	ug/L		12/01/16 19:42	12/14/16 19:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	18	Q	25 - 150	12/01/16 19:42	12/14/16 19:16	1
13C4 PFOS	17	Q	25 - 150	12/01/16 19:42	12/14/16 19:16	1

Client Sample ID: DPT-16-31-GW-19-23 — Lab Sample ID: 320-23890-7

Date Collected: 11/28/16 13:30 — **Matrix: Water**
Date Received: 11/30/16 09:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	15	Q	25 - 150	12/01/16 19:42	12/14/16 19:16	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	28	D M	0.25	0.075	ug/L		12/01/16 19:42	12/18/16 23:19	100
Perfluorooctane Sulfonate (PFOS)	42	D E	0.40	0.13	ug/L		12/01/16 19:42	12/18/16 23:19	100
Perfluorobutanesulfonic acid (PFBS)	1.1	D	0.25	0.092	ug/L		12/01/16 19:42	12/18/16 23:19	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	139		25 - 150	12/01/16 19:42	12/18/16 23:19	100
13C4 PFOS	143		25 - 150	12/01/16 19:42	12/18/16 23:19	100
18O2 PFHxS	154	Q	25 - 150	12/01/16 19:42	12/18/16 23:19	100

Client Sample ID: DPT-16-31-GW-31-35 — Lab Sample ID: 320-23890-8

Date Collected: 11/28/16 14:15 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.34	M	0.0026	0.00077	ug/L		12/01/16 19:42	12/14/16 19:23	1
Perfluorooctane Sulfonate (PFOS)	1.5	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 19:23	1
Perfluorobutanesulfonic acid (PFBS)	0.086		0.0026	0.00094	ug/L		12/01/16 19:42	12/14/16 19:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	67		25 - 150	12/01/16 19:42	12/14/16 19:23	1
13C4 PFOS	73		25 - 150	12/01/16 19:42	12/14/16 19:23	1
18O2 PFHxS	72		25 - 150	12/01/16 19:42	12/14/16 19:23	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.36	D M	0.026	0.0077	ug/L		12/01/16 19:42	12/16/16 13:37	10
Perfluorooctane Sulfonate (PFOS)	2.0	D	0.041	0.013	ug/L		12/01/16 19:42	12/16/16 13:37	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	88		25 - 150	12/01/16 19:42	12/16/16 13:37	10
13C4 PFOS	101		25 - 150	12/01/16 19:42	12/16/16 13:37	10

Client Sample ID: DPT-16-13-GW-31-35 — Lab Sample ID: 320-23890-9

Date Collected: 11/29/16 10:40 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.31	M	0.0025	0.00076	ug/L		12/01/16 19:42	12/14/16 19:31	1
Perfluorooctane Sulfonate (PFOS)	0.52	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 19:31	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00093	ug/L		12/01/16 19:42	12/14/16 19:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	74		25 - 150	12/01/16 19:42	12/14/16 19:31	1
13C4 PFOS	92		25 - 150	12/01/16 19:42	12/14/16 19:31	1
18O2 PFHxS	67		25 - 150	12/01/16 19:42	12/14/16 19:31	1

Client Sample ID: DPT-16-13-GW-31-35 — Lab Sample ID: 320-23890-9

Date Collected: 11/29/16 10:40 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.34	D M	0.025	0.0076	ug/L		12/01/16 19:42	12/16/16 13:45	10
Perfluorooctane Sulfonate (PFOS)	0.62	D	0.041	0.013	ug/L		12/01/16 19:42	12/16/16 13:45	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*82*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:45*	*10*
13C4 PFOS	*93*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:45*	*10*

Client Sample ID: DPT-16-13-GW-18-22 — Lab Sample ID: 320-23890-10

Date Collected: 11/29/16 11:10 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.7	E M	0.0025	0.00074	ug/L		12/01/16 19:42	12/14/16 19:38	1
Perfluorooctane Sulfonate (PFOS)	6.8	E M	0.0040	0.0013	ug/L		12/01/16 19:42	12/14/16 19:38	1
Perfluorobutanesulfonic acid (PFBS)	1.2	E	0.0025	0.00091	ug/L		12/01/16 19:42	12/14/16 19:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*34*		*25 - 150*	*12/01/16 19:42*	*12/14/16 19:38*	*1*
13C4 PFOS	*30*		*25 - 150*	*12/01/16 19:42*	*12/14/16 19:38*	*1*
18O2 PFHxS	*21*	*Q*	*25 - 150*	*12/01/16 19:42*	*12/14/16 19:38*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.0	D	0.12	0.037	ug/L		12/01/16 19:42	12/18/16 23:41	50
Perfluorooctane Sulfonate (PFOS)	14	D	0.20	0.063	ug/L		12/01/16 19:42	12/18/16 23:41	50
Perfluorobutanesulfonic acid (PFBS)	0.91	D	0.12	0.046	ug/L		12/01/16 19:42	12/18/16 23:41	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*121*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:41*	*50*
13C4 PFOS	*128*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:41*	*50*
18O2 PFHxS	*123*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:41*	*50*

Isotope Dilution Summary

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

TestAmerica Job ID: 320-23890-1

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)						
320-23890-1	DPT-16-30-GW-31-35	65	33	34						
320-23890-1 - DL	DPT-16-30-GW-31-35	163 Q	145	149						
320-23890-2	DPT-16-30-GW-18-22	62	48	41						
320-23890-2 - DL	DPT-16-30-GW-18-22	98	93							
320-23890-3	DPT-16-32-GW-19-23	71	33 M	44						
320-23890-3 - DL	DPT-16-32-GW-19-23	107	86							
320-23890-4	DPT-16-32-GW-31-35	65	70	64						
320-23890-4 - DL	DPT-16-32-GW-31-35	85	99							
320-23890-5	DPT-16-21-GW-19-23	24 Q	34	16 Q						
320-23890-5 - DL	DPT-16-21-GW-19-23	118	134	111						
320-23890-6	DPT-16-21-GW-31-35	70	64	63						
320-23890-6 - DL	DPT-16-21-GW-31-35	88	99							
320-23890-7	DPT-16-31-GW-19-23	18 Q	17 Q	15 Q						
320-23890-7 - DL	DPT-16-31-GW-19-23	139	143	154 Q						
320-23890-8	DPT-16-31-GW-31-35	67	73	72						
320-23890-8 - DL	DPT-16-31-GW-31-35	88	101							
320-23890-9	DPT-16-13-GW-31-35	74	92	67						
320-23890-9 - DL	DPT-16-13-GW-31-35	82	93							
320-23890-10	DPT-16-13-GW-18-22	34	30	21 Q						
320-23890-10 - DL	DPT-16-13-GW-18-22	121	128	123						
LCS 320-140271/2-A	Lab Control Sample	112	109	109						
LCSD 320-140271/3-A	Lab Control Sample Dup	116	115	114						
MB 320-140271/1-A	Method Blank	123	115	117						

Surrogate Legend

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

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-140271/1-A

Matrix: Water
Analysis Batch: 142338

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 140271

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		12/01/16 19:42	12/14/16 17:38	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/01/16 19:42	12/14/16 17:38	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/01/16 19:42	12/14/16 17:38	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*123*		*25 - 150*	*12/01/16 19:42*	*12/14/16 17:38*	*1*
13C4 PFOS	*115*		*25 - 150*	*12/01/16 19:42*	*12/14/16 17:38*	*1*
18O2 PFHxS	*117*		*25 - 150*	*12/01/16 19:42*	*12/14/16 17:38*	*1*

Lab Sample ID: LCS 320-140271/2-A

Matrix: Water
Analysis Batch: 142338

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 140271

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0384		ug/L		96	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0355		ug/L		96	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0373		ug/L		106	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*112*		*25 - 150*
13C4 PFOS	*109*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*

Lab Sample ID: LCSD 320-140271/3-A

Matrix: Water
Analysis Batch: 142338

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 140271

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0400	0.0374		ug/L		93	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0341		ug/L		92	60 - 140	4	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0367		ug/L		104	50 - 150	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOA	*116*		*25 - 150*
13C4 PFOS	*115*		*25 - 150*
18O2 PFHxS	*114*		*25 - 150*

LCMS

Prep Batch: 140271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23890-1 - DL	DPT-16-30-GW-31-35	Total/NA	Water	3535	
320-23890-1	DPT-16-30-GW-31-35	Total/NA	Water	3535	
320-23890-2 - DL	DPT-16-30-GW-18-22	Total/NA	Water	3535	
320-23890-2	DPT-16-30-GW-18-22	Total/NA	Water	3535	
320-23890-3 - DL	DPT-16-32-GW-19-23	Total/NA	Water	3535	
320-23890-3	DPT-16-32-GW-19-23	Total/NA	Water	3535	
320-23890-4	DPT-16-32-GW-31-35	Total/NA	Water	3535	
320-23890-4 - DL	DPT-16-32-GW-31-35	Total/NA	Water	3535	
320-23890-5	DPT-16-21-GW-19-23	Total/NA	Water	3535	
320-23890-5 - DL	DPT-16-21-GW-19-23	Total/NA	Water	3535	
320-23890-6	DPT-16-21-GW-31-35	Total/NA	Water	3535	
320-23890-6 - DL	DPT-16-21-GW-31-35	Total/NA	Water	3535	
320-23890-7 - DL	DPT-16-31-GW-19-23	Total/NA	Water	3535	
320-23890-7	DPT-16-31-GW-19-23	Total/NA	Water	3535	
320-23890-8	DPT-16-31-GW-31-35	Total/NA	Water	3535	
320-23890-8 - DL	DPT-16-31-GW-31-35	Total/NA	Water	3535	
320-23890-9	DPT-16-13-GW-31-35	Total/NA	Water	3535	
320-23890-9 - DL	DPT-16-13-GW-31-35	Total/NA	Water	3535	
320-23890-10 - DL	DPT-16-13-GW-18-22	Total/NA	Water	3535	
320-23890-10	DPT-16-13-GW-18-22	Total/NA	Water	3535	
MB 320-140271/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-140271/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-140271/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 142338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23890-1	DPT-16-30-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-2	DPT-16-30-GW-18-22	Total/NA	Water	537 (Modified)	140271
320-23890-3	DPT-16-32-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-4	DPT-16-32-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-5	DPT-16-21-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-6	DPT-16-21-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-7	DPT-16-31-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-8	DPT-16-31-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-9	DPT-16-13-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-10	DPT-16-13-GW-18-22	Total/NA	Water	537 (Modified)	140271
MB 320-140271/1-A	Method Blank	Total/NA	Water	537 (Modified)	140271
LCS 320-140271/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	140271
LCSD 320-140271/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	140271

Analysis Batch: 142598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23890-2 - DL	DPT-16-30-GW-18-22	Total/NA	Water	537 (Modified)	140271
320-23890-3 - DL	DPT-16-32-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-4 - DL	DPT-16-32-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-6 - DL	DPT-16-21-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-8 - DL	DPT-16-31-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-9 - DL	DPT-16-13-GW-31-35	Total/NA	Water	537 (Modified)	140271

LCMS (Continued)

Analysis Batch: 142819

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23890-1 - DL	DPT-16-30-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-5 - DL	DPT-16-21-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-7 - DL	DPT-16-31-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-10 - DL	DPT-16-13-GW-18-22	Total/NA	Water	537 (Modified)	140271

Lab Chronicle

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

TestAmerica Job ID: 320-23890-1

Client Sample ID: DPT-16-30-GW-31-35

Lab Sample ID: 320-23890-1
Date Collected: 11/29/16 09:40
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			248.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 18:01	SBC	TAL SAC
Total/NA	Prep	3535	DL		248.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	50			142819	12/18/16 23:26	SBC	TAL SAC

Client Sample ID: DPT-16-30-GW-18-22

Lab Sample ID: 320-23890-2
Date Collected: 11/29/16 10:00
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			241.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 18:08	SBC	TAL SAC
Total/NA	Prep	3535	DL		241.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	25			142598	12/16/16 12:52	SBC	TAL SAC

Client Sample ID: DPT-16-32-GW-19-23

Lab Sample ID: 320-23890-3
Date Collected: 11/28/16 10:00
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246.8 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 18:16	SBC	TAL SAC
Total/NA	Prep	3535	DL		246.8 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	25			142598	12/16/16 13:00	SBC	TAL SAC

Client Sample ID: DPT-16-32-GW-31-35

Lab Sample ID: 320-23890-4
Date Collected: 11/28/16 10:45
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			244.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 18:23	SBC	TAL SAC
Total/NA	Prep	3535	DL		244.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			142598	12/16/16 13:07	SBC	TAL SAC

Client Sample ID: DPT-16-21-GW-19-23

Lab Sample ID: 320-23890-5
Date Collected: 11/28/16 12:20
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246.8 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 18:31	SBC	TAL SAC
Total/NA	Prep	3535	DL		246.8 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-23890-1

Client Sample ID: DPT-16-21-GW-19-23

Lab Sample ID: 320-23890-5
Date Collected: 11/28/16 12:20
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	537 (Modified)	DL	50			142819	12/18/16 23:34	SBC	TAL SAC

Client Sample ID: DPT-16-21-GW-31-35

Lab Sample ID: 320-23890-6
Date Collected: 11/28/16 12:55
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			245.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 18:38	SBC	TAL SAC
Total/NA	Prep	3535	DL		245.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			142598	12/16/16 13:22	SBC	TAL SAC

Client Sample ID: DPT-16-31-GW-19-23

Lab Sample ID: 320-23890-7
Date Collected: 11/28/16 13:30
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250.8 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 19:16	SBC	TAL SAC
Total/NA	Prep	3535	DL		250.8 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100			142819	12/18/16 23:19	SBC	TAL SAC

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

Lab Sample ID: 320-23890-8
Date Collected: 11/28/16 14:15
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			243.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 19:23	SBC	TAL SAC
Total/NA	Prep	3535	DL		243.5 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			142598	12/16/16 13:37	SBC	TAL SAC

Client Sample ID: DPT-16-13-GW-31-35

Lab Sample ID: 320-23890-9
Date Collected: 11/29/16 10:40
Matrix: Water
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			245.7 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 19:31	SBC	TAL SAC
Total/NA	Prep	3535	DL		245.7 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			142598	12/16/16 13:45	SBC	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-23890-1

Client Sample ID: DPT-16-13-GW-18-22

Date Collected: 11/29/16 11:10
Date Received: 11/30/16 09:30

Lab Sample ID: 320-23890-10

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			252.1 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			142338	12/14/16 19:38	SBC	TAL SAC
Total/NA	Prep	3535	DL		252.1 mL	0.5 mL	140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	50			142819	12/18/16 23:41	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: 320-23890-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

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

Method Summary

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

TestAmerica Job ID: 320-23890-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 320-23890-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23890-1	DPT-16-30-GW-31-35	Water	11/29/16 09:40	11/30/16 09:30
320-23890-2	DPT-16-30-GW-18-22	Water	11/29/16 10:00	11/30/16 09:30
320-23890-3	DPT-16-32-GW-19-23	Water	11/28/16 10:00	11/30/16 09:30
320-23890-4	DPT-16-32-GW-31-35	Water	11/28/16 10:45	11/30/16 09:30
320-23890-5	DPT-16-21-GW-19-23	Water	11/28/16 12:20	11/30/16 09:30
320-23890-6	DPT-16-21-GW-31-35	Water	11/28/16 12:55	11/30/16 09:30
320-23890-7	DPT-16-31-GW-19-23	Water	11/28/16 13:30	11/30/16 09:30
320-23890-8	DPT-16-31-GW-31-35	Water	11/28/16 14:15	11/30/16 09:30
320-23890-9	DPT-16-13-GW-31-35	Water	11/29/16 10:40	11/30/16 09:30
320-23890-10	DPT-16-13-GW-18-22	Water	11/29/16 11:10	11/30/16 09:30

Chain of Custody Record

Temperature on Receipt 1.4°C

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM Technical Services Inc.	Kurt VanGelder	11/29/16	295761
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
3101 Wilson Blvd	703-682-9041		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Arlington / VA / 22201	Anay Shah	Jill K.	
Project Name and Location (State)	**Carrier/Waybill Number**		
Former Bay Head Rd Annex	FEDEX		
Contract/Purchase Order/Quote No.			
320074449 / 60444465			

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	PFOA	PFOS	PFBS
DPT-16-30-GW-31-35	11/29/16	0940		✓			2						✓	✓	✓
DPT-16-30-GW-18-22	11/29/16	1000		✓			2						✓	✓	✓
DPT-16-32-GW-19-23	11/28/16	1000		✓			2						✓	✓	✓
DPT-16-32-GW-31-35	11/28/16	1045		✓			2						✓	✓	✓
DPT-16-21-GW-19-23	11/28/16	1220		✓			2						✓	✓	✓
DPT-16-21-GW-31-35	11/28/16	1255		✓			2						✓	✓	✓
~~DPT-16-~~-AS															
DPT-16-31-GW-19-23	11/28/16	1330		✓			2						✓	✓	✓
DPT-16-31-GW-31-35	11/28/16	1415		✓			2						✓	✓	✓
DPT-16-13-GW-31-35	11/29/16	1040		✓			2						✓	✓	✓
DPT-16-13-GW-18-22	11/29/16	1110		✓			2						✓	✓	✓

320-23890 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	Date	Time	1. Received By	Date	Time
/AECOM	11/29/16	1300	Troy G Thompson TGT	11/30/16	09:30
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments: 1.4°C rec

* labeled DPT-16-32-GW-19-22 at 11:30:16

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

12/20/2016

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-23890-1

Login Number: 23890 **List Source: TestAmerica Sacramento**
List Number: 1
Creator: Hytrek, Cheryl

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	False	IDs on containers do not match the COC. Logged in per COC.
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: 320-23890-1

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

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

Attention: Devon Chicoine



Approved for release.
David R Alltucker
Project Manager I
12/20/2016 2:31 PM

Designee for
Jill Kellmann, Manager of Project Management
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4402
jill.kellmann@testamericainc.com
12/20/2016

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Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
D	The reported value is from a dilution.
U	Undetected at the Limit of Detection.

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: 320-23890-1

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 11/30/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.4 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 Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C4 PFOA, 18O2 PFHxS and 13C4 PFOS: DPT-16-21-GW-19-23 (320-23890-5), DPT-16-31-GW-19-23 (320-23890-7) and DPT-16-13-GW-18-22 (320-23890-10). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

The concentration of Perfluorooctanesulfonic acid (PFOS) in the following sample exceeded the instrument calibration range: DPT-16-31-GW-19-23 (320-23890-7). This analyte has been qualified; however, the peak did not saturate the instrument detector. The maximum dilution was performed for the sample. All sets of data have been reported.

Samples DPT-16-30-GW-31-35 (320-23890-1)[50X], DPT-16-30-GW-18-22 (320-23890-2)[25X], DPT-16-32-GW-19-23 (320-23890-3)[25X], DPT-16-32-GW-31-35 (320-23890-4)[10X], DPT-16-21-GW-19-23 (320-23890-5)[50X], DPT-16-21-GW-31-35 (320-23890-6)[10X], DPT-16-31-GW-19-23 (320-23890-7)[100X], DPT-16-31-GW-31-35 (320-23890-8)[10X], DPT-16-13-GW-31-35 (320-23890-9)[10X] and DPT-16-13-GW-18-22 (320-23890-10)[50X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Organic Prep

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-140271.

Due to excessive sediment in sample bottles the aqueous portion of the samples was decanted to new bottles prior to spiking and extraction. DPT-16-30-GW-31-35 (320-23890-1), DPT-16-30-GW-18-22 (320-23890-2), DPT-16-32-GW-19-23 (320-23890-3), DPT-16-32-GW-31-35 (320-23890-4), DPT-16-21-GW-19-23 (320-23890-5), DPT-16-21-GW-31-35 (320-23890-6), DPT-16-31-GW-19-23 (320-23890-7), DPT-16-31-GW-31-35 (320-23890-8), DPT-16-13-GW-31-35 (320-23890-9) and DPT-16-13-GW-18-22 (320-23890-10)

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: 320-23890-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Client Sample ID: DPT-16-30-GW-31-35 Lab Sample ID: 320-23890-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.0	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.7	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.31		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.4	D	0.13	0.038	ug/L	50		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	11	D	0.20	0.064	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.13	D	0.13	0.046	ug/L	50		537 (Modified)	Total/NA

Client Sample ID: DPT-16-30-GW-18-22 Lab Sample ID: 320-23890-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.98	E M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	4.0	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.00095	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.4	D M	0.065	0.019	ug/L	25		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	6.6	D	0.10	0.033	ug/L	25		537 (Modified)	Total/NA

Client Sample ID: DPT-16-32-GW-19-23 Lab Sample ID: 320-23890-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.59	E M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.2	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.14		0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.68	D M	0.063	0.019	ug/L	25		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	9.2	D	0.10	0.032	ug/L	25		537 (Modified)	Total/NA

Client Sample ID: DPT-16-32-GW-31-35 Lab Sample ID: 320-23890-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.56	E M	0.0026	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.12		0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.65	D M	0.026	0.0076	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.1	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-21-GW-19-23 Lab Sample ID: 320-23890-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	5.9	E M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	6.1	E M	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	E M	0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	15	D M	0.13	0.038	ug/L	50		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	12	D	0.20	0.065	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	1.1	D	0.13	0.046	ug/L	50		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 320-23890-1

Client Sample ID: DPT-16-21-GW-31-35 — Lab Sample ID: 320-23890-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.60	E M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.74	D M	0.025	0.0076	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	3.2	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-31-GW-19-23 — Lab Sample ID: 320-23890-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	8.4	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	14	E M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.67	E	0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	28	D M	0.25	0.075	ug/L	100		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	42	D E	0.40	0.13	ug/L	100		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	1.1	D	0.25	0.092	ug/L	100		537 (Modified)	Total/NA

Client Sample ID: DPT-16-31-GW-31-35 — Lab Sample ID: 320-23890-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.34	M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.5	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.086		0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.36	D M	0.026	0.0077	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.0	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-13-GW-31-35 — Lab Sample ID: 320-23890-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.31	M	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.52	E	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.34	D M	0.025	0.0076	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.62	D	0.041	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-13-GW-18-22 — Lab Sample ID: 320-23890-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.7	E M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	6.8	E M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	E	0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	7.0	D	0.12	0.037	ug/L	50		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	14	D	0.20	0.063	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.91	D	0.12	0.046	ug/L	50		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-30-GW-31-35 — Lab Sample ID: 320-23890-1

Date Collected: 11/29/16 09:40 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.0	E M	0.0025	0.00075	ug/L		12/01/16 19:42	12/14/16 18:01	1
Perfluorooctane Sulfonate (PFOS)	5.7	E	0.0040	0.0013	ug/L		12/01/16 19:42	12/14/16 18:01	1
Perfluorobutanesulfonic acid (PFBS)	0.31		0.0025	0.00092	ug/L		12/01/16 19:42	12/14/16 18:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*65*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:01*	*1*
13C4 PFOS	*33*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:01*	*1*
18O2 PFHxS	*34*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:01*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.4	D	0.13	0.038	ug/L		12/01/16 19:42	12/18/16 23:26	50
Perfluorooctane Sulfonate (PFOS)	11	D	0.20	0.064	ug/L		12/01/16 19:42	12/18/16 23:26	50
Perfluorobutanesulfonic acid (PFBS)	0.13	D	0.13	0.046	ug/L		12/01/16 19:42	12/18/16 23:26	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*163*	*Q*	*25 - 150*	*12/01/16 19:42*	*12/18/16 23:26*	*50*
13C4 PFOS	*145*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:26*	*50*
18O2 PFHxS	*149*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:26*	*50*

Client Sample ID: DPT-16-30-GW-18-22 — Lab Sample ID: 320-23890-2

Date Collected: 11/29/16 10:00 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.98	E M	0.0026	0.00077	ug/L		12/01/16 19:42	12/14/16 18:08	1
Perfluorooctane Sulfonate (PFOS)	4.0	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:08	1
Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.00095	ug/L		12/01/16 19:42	12/14/16 18:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*62*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:08*	*1*
13C4 PFOS	*48*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:08*	*1*
18O2 PFHxS	*41*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:08*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.4	D M	0.065	0.019	ug/L		12/01/16 19:42	12/16/16 12:52	25
Perfluorooctane Sulfonate (PFOS)	6.6	D	0.10	0.033	ug/L		12/01/16 19:42	12/16/16 12:52	25

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*98*		*25 - 150*	*12/01/16 19:42*	*12/16/16 12:52*	*25*
13C4 PFOS	*93*		*25 - 150*	*12/01/16 19:42*	*12/16/16 12:52*	*25*

Client Sample ID: DPT-16-32-GW-19-23 — Lab Sample ID: 320-23890-3

Date Collected: 11/28/16 10:00 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.59	E M	0.0025	0.00076	ug/L		12/01/16 19:42	12/14/16 18:16	1

Client Sample ID: DPT-16-32-GW-19-23 — Lab Sample ID: 320-23890-3

Date Collected: 11/28/16 10:00 **Matrix: Water**
Date Received: 11/30/16 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonate (PFOS)	5.2	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:16	1
Perfluorobutanesulfonic acid (PFBS)	0.14		0.0025	0.00093	ug/L		12/01/16 19:42	12/14/16 18:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*71*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:16*	*1*
13C4 PFOS	*33*	*M*	*25 - 150*	*12/01/16 19:42*	*12/14/16 18:16*	*1*
18O2 PFHxS	*44*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:16*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.68	D M	0.063	0.019	ug/L		12/01/16 19:42	12/16/16 13:00	25
Perfluorooctane Sulfonate (PFOS)	9.2	D	0.10	0.032	ug/L		12/01/16 19:42	12/16/16 13:00	25

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*107*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:00*	*25*
13C4 PFOS	*86*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:00*	*25*

Client Sample ID: DPT-16-32-GW-31-35 — Lab Sample ID: 320-23890-4

Date Collected: 11/28/16 10:45 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.56	E M	0.0026	0.00076	ug/L		12/01/16 19:42	12/14/16 18:23	1
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:23	1
Perfluorobutanesulfonic acid (PFBS)	0.12		0.0026	0.00094	ug/L		12/01/16 19:42	12/14/16 18:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*65*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:23*	*1*
13C4 PFOS	*70*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:23*	*1*
18O2 PFHxS	*64*		*25 - 150*	*12/01/16 19:42*	*12/14/16 18:23*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.65	D M	0.026	0.0076	ug/L		12/01/16 19:42	12/16/16 13:07	10
Perfluorooctane Sulfonate (PFOS)	2.1	D	0.041	0.013	ug/L		12/01/16 19:42	12/16/16 13:07	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*85*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:07*	*10*
13C4 PFOS	*99*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:07*	*10*

Client Sample ID: DPT-16-21-GW-19-23 — Lab Sample ID: 320-23890-5

Date Collected: 11/28/16 12:20 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.9	E M	0.0025	0.00076	ug/L		12/01/16 19:42	12/14/16 18:31	1
Perfluorooctane Sulfonate (PFOS)	6.1	E M	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:31	1
Perfluorobutanesulfonic acid (PFBS)	1.7	E M	0.0025	0.00093	ug/L		12/01/16 19:42	12/14/16 18:31	1

Client Sample ID: DPT-16-21-GW-19-23 — Lab Sample ID: 320-23890-5

Date Collected: 11/28/16 12:20 — **Matrix: Water**
Date Received: 11/30/16 09:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	24	Q	25 - 150	12/01/16 19:42	12/14/16 18:31	1
13C4 PFOS	34		25 - 150	12/01/16 19:42	12/14/16 18:31	1
18O2 PFHxS	16	Q	25 - 150	12/01/16 19:42	12/14/16 18:31	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	15	D M	0.13	0.038	ug/L		12/01/16 19:42	12/18/16 23:34	50
Perfluorooctane Sulfonate (PFOS)	12	D	0.20	0.065	ug/L		12/01/16 19:42	12/18/16 23:34	50
Perfluorobutanesulfonic acid (PFBS)	1.1	D	0.13	0.046	ug/L		12/01/16 19:42	12/18/16 23:34	50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	118		25 - 150	12/01/16 19:42	12/18/16 23:34	50
13C4 PFOS	134		25 - 150	12/01/16 19:42	12/18/16 23:34	50
18O2 PFHxS	111		25 - 150	12/01/16 19:42	12/18/16 23:34	50

Client Sample ID: DPT-16-21-GW-31-35 — Lab Sample ID: 320-23890-6

Date Collected: 11/28/16 12:55 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.60	E M	0.0025	0.00076	ug/L		12/01/16 19:42	12/14/16 18:38	1
Perfluorooctane Sulfonate (PFOS)	2.2	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 18:38	1
Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.00093	ug/L		12/01/16 19:42	12/14/16 18:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	70		25 - 150	12/01/16 19:42	12/14/16 18:38	1
13C4 PFOS	64		25 - 150	12/01/16 19:42	12/14/16 18:38	1
18O2 PFHxS	63		25 - 150	12/01/16 19:42	12/14/16 18:38	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.74	D M	0.025	0.0076	ug/L		12/01/16 19:42	12/16/16 13:22	10
Perfluorooctane Sulfonate (PFOS)	3.2	D	0.041	0.013	ug/L		12/01/16 19:42	12/16/16 13:22	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	88		25 - 150	12/01/16 19:42	12/16/16 13:22	10
13C4 PFOS	99		25 - 150	12/01/16 19:42	12/16/16 13:22	10

Client Sample ID: DPT-16-31-GW-19-23 — Lab Sample ID: 320-23890-7

Date Collected: 11/28/16 13:30 — **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	8.4	E M	0.0025	0.00075	ug/L		12/01/16 19:42	12/14/16 19:16	1
Perfluorooctane Sulfonate (PFOS)	14	E M	0.0040	0.0013	ug/L		12/01/16 19:42	12/14/16 19:16	1
Perfluorobutanesulfonic acid (PFBS)	0.67	E	0.0025	0.00092	ug/L		12/01/16 19:42	12/14/16 19:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	18	Q	25 - 150	12/01/16 19:42	12/14/16 19:16	1
13C4 PFOS	17	Q	25 - 150	12/01/16 19:42	12/14/16 19:16	1

Client Sample ID: DPT-16-31-GW-19-23 — Lab Sample ID: 320-23890-7

Date Collected: 11/28/16 13:30 **Matrix: Water**
Date Received: 11/30/16 09:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	15	Q	25 - 150	12/01/16 19:42	12/14/16 19:16	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	28	D M	0.25	0.075	ug/L		12/01/16 19:42	12/18/16 23:19	100
Perfluorooctane Sulfonate (PFOS)	42	D E	0.40	0.13	ug/L		12/01/16 19:42	12/18/16 23:19	100
Perfluorobutanesulfonic acid (PFBS)	1.1	D	0.25	0.092	ug/L		12/01/16 19:42	12/18/16 23:19	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	139		25 - 150	12/01/16 19:42	12/18/16 23:19	100
13C4 PFOS	143		25 - 150	12/01/16 19:42	12/18/16 23:19	100
18O2 PFHxS	154	Q	25 - 150	12/01/16 19:42	12/18/16 23:19	100

Client Sample ID: DPT-16-31-GW-31-35 — Lab Sample ID: 320-23890-8

Date Collected: 11/28/16 14:15 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.34	M	0.0026	0.00077	ug/L		12/01/16 19:42	12/14/16 19:23	1
Perfluorooctane Sulfonate (PFOS)	1.5	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 19:23	1
Perfluorobutanesulfonic acid (PFBS)	0.086		0.0026	0.00094	ug/L		12/01/16 19:42	12/14/16 19:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	67		25 - 150	12/01/16 19:42	12/14/16 19:23	1
13C4 PFOS	73		25 - 150	12/01/16 19:42	12/14/16 19:23	1
18O2 PFHxS	72		25 - 150	12/01/16 19:42	12/14/16 19:23	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.36	D M	0.026	0.0077	ug/L		12/01/16 19:42	12/16/16 13:37	10
Perfluorooctane Sulfonate (PFOS)	2.0	D	0.041	0.013	ug/L		12/01/16 19:42	12/16/16 13:37	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	88		25 - 150	12/01/16 19:42	12/16/16 13:37	10
13C4 PFOS	101		25 - 150	12/01/16 19:42	12/16/16 13:37	10

Client Sample ID: DPT-16-13-GW-31-35 — Lab Sample ID: 320-23890-9

Date Collected: 11/29/16 10:40 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.31	M	0.0025	0.00076	ug/L		12/01/16 19:42	12/14/16 19:31	1
Perfluorooctane Sulfonate (PFOS)	0.52	E	0.0041	0.0013	ug/L		12/01/16 19:42	12/14/16 19:31	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00093	ug/L		12/01/16 19:42	12/14/16 19:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	74		25 - 150	12/01/16 19:42	12/14/16 19:31	1
13C4 PFOS	92		25 - 150	12/01/16 19:42	12/14/16 19:31	1
18O2 PFHxS	67		25 - 150	12/01/16 19:42	12/14/16 19:31	1

Client Sample ID: DPT-16-13-GW-31-35 — Lab Sample ID: 320-23890-9

Date Collected: 11/29/16 10:40 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.34	D M	0.025	0.0076	ug/L		12/01/16 19:42	12/16/16 13:45	10
Perfluorooctane Sulfonate (PFOS)	0.62	D	0.041	0.013	ug/L		12/01/16 19:42	12/16/16 13:45	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*82*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:45*	*10*
13C4 PFOS	*93*		*25 - 150*	*12/01/16 19:42*	*12/16/16 13:45*	*10*

Client Sample ID: DPT-16-13-GW-18-22 — Lab Sample ID: 320-23890-10

Date Collected: 11/29/16 11:10 **Matrix: Water**
Date Received: 11/30/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.7	E M	0.0025	0.00074	ug/L		12/01/16 19:42	12/14/16 19:38	1
Perfluorooctane Sulfonate (PFOS)	6.8	E M	0.0040	0.0013	ug/L		12/01/16 19:42	12/14/16 19:38	1
Perfluorobutanesulfonic acid (PFBS)	1.2	E	0.0025	0.00091	ug/L		12/01/16 19:42	12/14/16 19:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*34*		*25 - 150*	*12/01/16 19:42*	*12/14/16 19:38*	*1*
13C4 PFOS	*30*		*25 - 150*	*12/01/16 19:42*	*12/14/16 19:38*	*1*
18O2 PFHxS	*21*	*Q*	*25 - 150*	*12/01/16 19:42*	*12/14/16 19:38*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.0	D	0.12	0.037	ug/L		12/01/16 19:42	12/18/16 23:41	50
Perfluorooctane Sulfonate (PFOS)	14	D	0.20	0.063	ug/L		12/01/16 19:42	12/18/16 23:41	50
Perfluorobutanesulfonic acid (PFBS)	0.91	D	0.12	0.046	ug/L		12/01/16 19:42	12/18/16 23:41	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*121*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:41*	*50*
13C4 PFOS	*128*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:41*	*50*
18O2 PFHxS	*123*		*25 - 150*	*12/01/16 19:42*	*12/18/16 23:41*	*50*

Default Detection Limits

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23890-1
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)

Isotope Dilution Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23890-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

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)						
320-23890-1	DPT-16-30-GW-31-35	65	33	34						
320-23890-1 - DL	DPT-16-30-GW-31-35	163 Q	145	149						
320-23890-2	DPT-16-30-GW-18-22	62	48	41						
320-23890-2 - DL	DPT-16-30-GW-18-22	98	93							
320-23890-3	DPT-16-32-GW-19-23	71	33 M	44						
320-23890-3 - DL	DPT-16-32-GW-19-23	107	86							
320-23890-4	DPT-16-32-GW-31-35	65	70	64						
320-23890-4 - DL	DPT-16-32-GW-31-35	85	99							
320-23890-5	DPT-16-21-GW-19-23	24 Q	34	16 Q						
320-23890-5 - DL	DPT-16-21-GW-19-23	118	134	111						
320-23890-6	DPT-16-21-GW-31-35	70	64	63						
320-23890-6 - DL	DPT-16-21-GW-31-35	88	99							
320-23890-7	DPT-16-31-GW-19-23	18 Q	17 Q	15 Q						
320-23890-7 - DL	DPT-16-31-GW-19-23	139	143	154 Q						
320-23890-8	DPT-16-31-GW-31-35	67	73	72						
320-23890-8 - DL	DPT-16-31-GW-31-35	88	101							
320-23890-9	DPT-16-13-GW-31-35	74	92	67						
320-23890-9 - DL	DPT-16-13-GW-31-35	82	93							
320-23890-10	DPT-16-13-GW-18-22	34	30	21 Q						
320-23890-10 - DL	DPT-16-13-GW-18-22	121	128	123						
LCS 320-140271/2-A	Lab Control Sample	112	109	109						
LCSD 320-140271/3-A	Lab Control Sample Dup	116	115	114						
MB 320-140271/1-A	Method Blank	123	115	117						

Surrogate Legend

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

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-140271/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 142338 **Prep Batch: 140271**

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		12/01/16 19:42	12/14/16 17:38	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/01/16 19:42	12/14/16 17:38	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/01/16 19:42	12/14/16 17:38	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*123*		*25 - 150*	*12/01/16 19:42*	*12/14/16 17:38*	*1*
13C4 PFOS	*115*		*25 - 150*	*12/01/16 19:42*	*12/14/16 17:38*	*1*
18O2 PFHxS	*117*		*25 - 150*	*12/01/16 19:42*	*12/14/16 17:38*	*1*

Lab Sample ID: LCS 320-140271/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 142338 **Prep Batch: 140271**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0384		ug/L		96	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0355		ug/L		96	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0373		ug/L		106	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*112*		*25 - 150*
13C4 PFOS	*109*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*

Lab Sample ID: LCSD 320-140271/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 142338 **Prep Batch: 140271**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0400	0.0374		ug/L		93	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0341		ug/L		92	60 - 140	4	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0367		ug/L		104	50 - 150	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOA	*116*		*25 - 150*
13C4 PFOS	*115*		*25 - 150*
18O2 PFHxS	*114*		*25 - 150*

LCMS

Prep Batch: 140271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23890-1 - DL	DPT-16-30-GW-31-35	Total/NA	Water	3535	
320-23890-1	DPT-16-30-GW-31-35	Total/NA	Water	3535	
320-23890-2 - DL	DPT-16-30-GW-18-22	Total/NA	Water	3535	
320-23890-2	DPT-16-30-GW-18-22	Total/NA	Water	3535	
320-23890-3 - DL	DPT-16-32-GW-19-23	Total/NA	Water	3535	
320-23890-3	DPT-16-32-GW-19-23	Total/NA	Water	3535	
320-23890-4 - DL	DPT-16-32-GW-31-35	Total/NA	Water	3535	
320-23890-4	DPT-16-32-GW-31-35	Total/NA	Water	3535	
320-23890-5	DPT-16-21-GW-19-23	Total/NA	Water	3535	
320-23890-5 - DL	DPT-16-21-GW-19-23	Total/NA	Water	3535	
320-23890-6 - DL	DPT-16-21-GW-31-35	Total/NA	Water	3535	
320-23890-6	DPT-16-21-GW-31-35	Total/NA	Water	3535	
320-23890-7 - DL	DPT-16-31-GW-19-23	Total/NA	Water	3535	
320-23890-7	DPT-16-31-GW-19-23	Total/NA	Water	3535	
320-23890-8 - DL	DPT-16-31-GW-31-35	Total/NA	Water	3535	
320-23890-8	DPT-16-31-GW-31-35	Total/NA	Water	3535	
320-23890-9 - DL	DPT-16-13-GW-31-35	Total/NA	Water	3535	
320-23890-9	DPT-16-13-GW-31-35	Total/NA	Water	3535	
320-23890-10	DPT-16-13-GW-18-22	Total/NA	Water	3535	
320-23890-10 - DL	DPT-16-13-GW-18-22	Total/NA	Water	3535	
MB 320-140271/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-140271/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-140271/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 142338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23890-1	DPT-16-30-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-2	DPT-16-30-GW-18-22	Total/NA	Water	537 (Modified)	140271
320-23890-3	DPT-16-32-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-4	DPT-16-32-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-5	DPT-16-21-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-6	DPT-16-21-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-7	DPT-16-31-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-8	DPT-16-31-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-9	DPT-16-13-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-10	DPT-16-13-GW-18-22	Total/NA	Water	537 (Modified)	140271
MB 320-140271/1-A	Method Blank	Total/NA	Water	537 (Modified)	140271
LCS 320-140271/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	140271
LCSD 320-140271/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	140271

Analysis Batch: 142598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23890-2 - DL	DPT-16-30-GW-18-22	Total/NA	Water	537 (Modified)	140271
320-23890-3 - DL	DPT-16-32-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-4 - DL	DPT-16-32-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-6 - DL	DPT-16-21-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-8 - DL	DPT-16-31-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-9 - DL	DPT-16-13-GW-31-35	Total/NA	Water	537 (Modified)	140271

LCMS (Continued)

Analysis Batch: 142819

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23890-1 - DL	DPT-16-30-GW-31-35	Total/NA	Water	537 (Modified)	140271
320-23890-5 - DL	DPT-16-21-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-7 - DL	DPT-16-31-GW-19-23	Total/NA	Water	537 (Modified)	140271
320-23890-10 - DL	DPT-16-13-GW-18-22	Total/NA	Water	537 (Modified)	140271

Client Sample ID: DPT-16-30-GW-31-35 Lab Sample ID: 320-23890-1

Date Collected: 11/29/16 09:40 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 18:01	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	50	142819	12/18/16 23:26	SBC	TAL SAC

Client Sample ID: DPT-16-30-GW-18-22 Lab Sample ID: 320-23890-2

Date Collected: 11/29/16 10:00 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 18:08	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	25	142598	12/16/16 12:52	SBC	TAL SAC

Client Sample ID: DPT-16-32-GW-19-23 Lab Sample ID: 320-23890-3

Date Collected: 11/28/16 10:00 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 18:16	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	25	142598	12/16/16 13:00	SBC	TAL SAC

Client Sample ID: DPT-16-32-GW-31-35 Lab Sample ID: 320-23890-4

Date Collected: 11/28/16 10:45 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 18:23	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	142598	12/16/16 13:07	SBC	TAL SAC

Client Sample ID: DPT-16-21-GW-19-23 Lab Sample ID: 320-23890-5

Date Collected: 11/28/16 12:20 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 18:31	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC

Client Sample ID: DPT-16-21-GW-19-23 — Lab Sample ID: 320-23890-5

Date Collected: 11/28/16 12:20 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	537 (Modified)	DL	50	142819	12/18/16 23:34	SBC	TAL SAC

Client Sample ID: DPT-16-21-GW-31-35 — Lab Sample ID: 320-23890-6

Date Collected: 11/28/16 12:55 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 18:38	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	142598	12/16/16 13:22	SBC	TAL SAC

Client Sample ID: DPT-16-31-GW-19-23 — Lab Sample ID: 320-23890-7

Date Collected: 11/28/16 13:30 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 19:16	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100	142819	12/18/16 23:19	SBC	TAL SAC

Client Sample ID: DPT-16-31-GW-31-35 — Lab Sample ID: 320-23890-8

Date Collected: 11/28/16 14:15 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 19:23	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	142598	12/16/16 13:37	SBC	TAL SAC

Client Sample ID: DPT-16-13-GW-31-35 — Lab Sample ID: 320-23890-9

Date Collected: 11/29/16 10:40 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 19:31	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	142598	12/16/16 13:45	SBC	TAL SAC

Lab Chronicle

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23890-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Client Sample ID: DPT-16-13-GW-18-22 **Lab Sample ID: 320-23890-10**
Date Collected: 11/29/16 11:10 **Matrix: Water**
Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1	142338	12/14/16 19:38	SBC	TAL SAC
Total/NA	Prep	3535	DL		140271	12/01/16 19:42	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	50	142819	12/18/16 23:41	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: 320-23890-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

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

Method Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23890-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23890-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23890-1	DPT-16-30-GW-31-35	Water	11/29/16 09:40	11/30/16 09:30
320-23890-2	DPT-16-30-GW-18-22	Water	11/29/16 10:00	11/30/16 09:30
320-23890-3	DPT-16-32-GW-19-23	Water	11/28/16 10:00	11/30/16 09:30
320-23890-4	DPT-16-32-GW-31-35	Water	11/28/16 10:45	11/30/16 09:30
320-23890-5	DPT-16-21-GW-19-23	Water	11/28/16 12:20	11/30/16 09:30
320-23890-6	DPT-16-21-GW-31-35	Water	11/28/16 12:55	11/30/16 09:30
320-23890-7	DPT-16-31-GW-19-23	Water	11/28/16 13:30	11/30/16 09:30
320-23890-8	DPT-16-31-GW-31-35	Water	11/28/16 14:15	11/30/16 09:30
320-23890-9	DPT-16-13-GW-31-35	Water	11/29/16 10:40	11/30/16 09:30
320-23890-10	DPT-16-13-GW-18-22	Water	11/29/16 11:10	11/30/16 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142082

Lab Sample ID: IC 320-142082/4 Client Sample ID:

Date Analyzed: 12/14/16 08:54 Lab File ID: 14DEC2016A_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.43	Assign Peak	chandrasenas	12/14/16 10:32
Perfluorooctane Sulfonate (PFOS)	3.13	Assign Peak	chandrasenas	12/14/16 10:32

Lab Sample ID: IC 320-142082/5 Client Sample ID:

Date Analyzed: 12/14/16 09:01 Lab File ID: 14DEC2016A_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.13	Assign Peak	chandrasenas	12/14/16 10:33

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142338

Lab Sample ID: CCV 320-142338/2 Client Sample ID:

Date Analyzed: 12/14/16 17:16 Lab File ID: 14DEC2016C_002.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.42	Isomers	westendorfc	12/15/16 14:38

Lab Sample ID: 320-23890-1 Client Sample ID: DPT-16-30-GW-31-35

Date Analyzed: 12/14/16 18:01 Lab File ID: 14DEC2016C_008.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Isomers	westendorfc	12/15/16 14:41

Lab Sample ID: 320-23890-2 Client Sample ID: DPT-16-30-GW-18-22

Date Analyzed: 12/14/16 18:08 Lab File ID: 14DEC2016C_009.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.77	Isomers	westendorfc	12/15/16 14:42

Lab Sample ID: 320-23890-3 Client Sample ID: DPT-16-32-GW-19-23

Date Analyzed: 12/14/16 18:16 Lab File ID: 14DEC2016C_010.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.77	Isomers	westendorfc	12/15/16 14:42
13C4 PFOS	3.14	Incomplete Integration	westendorfc	12/15/16 14:42

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142338

Lab Sample ID: 320-23890-4 Client Sample ID: DPT-16-32-GW-31-35

Date Analyzed: 12/14/16 18:23 Lab File ID: 14DEC2016C_011.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.77	Isomers	westendorfc	12/15/16 14:48

Lab Sample ID: 320-23890-5 Client Sample ID: DPT-16-21-GW-19-23

Date Analyzed: 12/14/16 18:31 Lab File ID: 14DEC2016C_012.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.84	Baseline	westendorfc	12/15/16 14:49
Perfluorooctanoic acid (PFOA)	2.80	Incomplete Integration	westendorfc	12/15/16 14:49
Perfluorooctane Sulfonate (PFOS)	2.98	Incomplete Integration	westendorfc	12/15/16 14:49

Lab Sample ID: 320-23890-6 Client Sample ID: DPT-16-21-GW-31-35

Date Analyzed: 12/14/16 18:38 Lab File ID: 14DEC2016C_013.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.77	Isomers	westendorfc	12/15/16 14:50

Lab Sample ID: 320-23890-7 Client Sample ID: DPT-16-31-GW-19-23

Date Analyzed: 12/14/16 19:16 Lab File ID: 14DEC2016C_018.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Incomplete Integration	westendorfc	12/15/16 15:57
Perfluorooctane Sulfonate (PFOS)	3.09	Incomplete Integration	westendorfc	12/15/16 15:57

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142338

Lab Sample ID: 320-23890-8 Client Sample ID: DPT-16-31-GW-31-35

Date Analyzed: 12/14/16 19:23 Lab File ID: 14DEC2016C_019.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Isomers	westendorfc	12/15/16 14:51

Lab Sample ID: 320-23890-9 Client Sample ID: DPT-16-13-GW-31-35

Date Analyzed: 12/14/16 19:31 Lab File ID: 14DEC2016C_020.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.77	Isomers	westendorfc	12/15/16 14:52

Lab Sample ID: 320-23890-10 Client Sample ID: DPT-16-13-GW-18-22

Date Analyzed: 12/14/16 19:38 Lab File ID: 14DEC2016C_021.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Incomplete Integration	westendorfc	12/15/16 14:53
Perfluorooctane Sulfonate (PFOS)	3.17	Incomplete Integration	westendorfc	12/15/16 14:53

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142379

Lab Sample ID: IC 320-142379/4 Client Sample ID:

Date Analyzed: 12/15/16 12:29 Lab File ID: 15DEC2016B_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.43	Assign Peak	chandrasenas	12/15/16 13:48
Perfluorohexanesulfonic acid (PFHxS)	2.44	Assign Peak	chandrasenas	12/15/16 13:48
Perfluorooctane Sulfonate (PFOS)	3.15	Assign Peak	chandrasenas	12/15/16 13:48
Perfluorododecanoic acid (PFDoA)	4.14	Incomplete Integration	chandrasenas	12/15/16 13:48

Lab Sample ID: IC 320-142379/5 Client Sample ID:

Date Analyzed: 12/15/16 12:36 Lab File ID: 15DEC2016B_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.15	Assign Peak	chandrasenas	12/15/16 13:50

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142571

Lab Sample ID: CCV 320-142571/4 CCVL Client Sample ID:

Date Analyzed: 12/16/16 10:23 Lab File ID: 16DEC2016A_002.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.29	Assign Peak	chandrasenas	12/16/16 14:29

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142598

Lab Sample ID: 320-23890-2 DL Client Sample ID: DPT-16-30-GW-18-22 DL

Date Analyzed: 12/16/16 12:52 Lab File ID: 16DEC2016B_002.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.85	Isomers	chandrasenas	12/18/16 16:30

Lab Sample ID: 320-23890-3 DL Client Sample ID: DPT-16-32-GW-19-23 DL

Date Analyzed: 12/16/16 13:00 Lab File ID: 16DEC2016B_003.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.85	Isomers	chandrasenas	12/18/16 16:30

Lab Sample ID: 320-23890-4 DL Client Sample ID: DPT-16-32-GW-31-35 DL

Date Analyzed: 12/16/16 13:07 Lab File ID: 16DEC2016B_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.85	Isomers	chandrasenas	12/18/16 16:31

Lab Sample ID: 320-23890-6 DL Client Sample ID: DPT-16-21-GW-31-35 DL

Date Analyzed: 12/16/16 13:22 Lab File ID: 16DEC2016B_006.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.86	Isomers	chandrasenas	12/18/16 16:33

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142598

Lab Sample ID: 320-23890-8 DL Client Sample ID: DPT-16-31-GW-31-35 DL

Date Analyzed: 12/16/16 13:37 Lab File ID: 16DEC2016B_008.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.85	Isomers	chandrasenas	12/18/16 16:35

Lab Sample ID: 320-23890-9 DL Client Sample ID: DPT-16-13-GW-31-35 DL

Date Analyzed: 12/16/16 13:45 Lab File ID: 16DEC2016B_009.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.85	Isomers	chandrasenas	12/18/16 16:35

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142815

Lab Sample ID: CCV 320-142815/2 CCVL Client Sample ID:

Date Analyzed: 12/18/16 19:19 Lab File ID: 18DEC2016A_002.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.32	Assign Peak	chandrasenas	12/19/16 09:47
Perfluoro-n-hexadecanoic acid (PFHxDA)	5.31	Incomplete Integration	chandrasenas	12/19/16 09:47

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 142819

Lab Sample ID: 320-23890-7 DL Client Sample ID: DPT-16-31-GW-19-23 DL

Date Analyzed: 12/18/16 23:19 Lab File ID: 18DEC2016B_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.97	Isomers	chandrasenas	12/19/16 11:15

Lab Sample ID: 320-23890-5 DL Client Sample ID: DPT-16-21-GW-19-23 DL

Date Analyzed: 12/18/16 23:34 Lab File ID: 18DEC2016B_007.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.98	Isomers	chandrasenas	12/19/16 11:14

537 (Modified)

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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.: 320-23890-1

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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.: 320-23890-1

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-L1_00022	05/15/17	12/15/16	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00047	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_00071	25 uL	Perfluorobutyric acid	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid	0.5 ng/mL
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroundecanoic acid	0.5 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	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
.LCPFCSP_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00070	2000 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.: 320-23890-1

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_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	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 Sulfonic acid	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					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	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)		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 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)		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)		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
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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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	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
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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.: 320-23890-1

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-L2_00023	05/15/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	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_00071	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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	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
.LCPFCSP_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00070	2000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	0.1 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_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	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 Sulfonic acid	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					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	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)		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 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)		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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFHxS-br_00002	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_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
LCPFC-L3_00019	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00057	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid	4.82 ng/mL
							Perfluoroheptanoic acid	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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_00020	05/15/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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_00071	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_00047	06/14/17	12/14/16	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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
.LCPFCSP_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00070	2000 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_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	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 Sulfonic acid	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					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	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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUdA_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)		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 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)		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)		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
LCPFC-L4_00022	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 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		
							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
					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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	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
LCPFC-L4_00024	06/14/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	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.: 320-23890-1

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_00074	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid	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_00047	06/14/17	12/14/16	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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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
.LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00005	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_00006	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00002	200 uL	Perfluorooctane Sulfonate (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00005	200 uL	Perfluoroundecanoic acid	1 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)		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 Sulfonic acid	48.2 ug/mL
..LCPFHpA_00006	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)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	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)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00006	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_00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
..LCPFOSA_00008	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_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L5_00020	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L5_00022	06/14/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	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_00074	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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoropentanoic acid	50 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
							Perfluoroundecanoic acid	50 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	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
.LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00005	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_00006	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS-br_00002	200 uL	Perfluorooctane Sulfonate (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00005	200 uL	Perfluoroundecanoic acid	1 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)		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 Sulfonic acid	48.2 ug/mL
..LCPFHpA_00006	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)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	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)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00006	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_00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(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_00008	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_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00005	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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid	182 ng/mL
							Perfluorononanoic acid	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctane Sulfonate (PFOS)	185.6 ng/mL
							Perfluorooctane Sulfonamide	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							Perfluorotetradecanoic acid	200 ng/mL
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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-L6_00020	12/28/16	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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_00074	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_00047	06/14/17	12/14/16	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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
.LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00005	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_00006	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00002	200 uL	Perfluorooctane Sulfonate (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00005	200 uL	Perfluoroundecanoic acid	1 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)		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 Sulfonic acid	48.2 ug/mL
..LCPFHpA_00006	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)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	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)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00006	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_00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(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_00008	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_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCPFC2-L1_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	25 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	0.5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
							MeFOSA	0.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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_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-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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	4.74 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	4.79 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							MeFOSA	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L4_00003	02/26/17	09/22/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00008	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00017	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	18.96 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	19.16 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	20 ng/mL
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC8:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ug/mL
					LCN-EtFOSA-M_00003	100 uL	N-ethylperfluoro-1-octanesulfonamide	0.5 ug/mL
					LCN-EtFOSAA_00002	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCN-MeFOSA-M_00002	100 uL	MeFOSA	0.5 ug/mL
					LCN-MeFOSAA_00003	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
..LC6:2FTS_00002	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00002	10/23/20	WELLINGTON, Lot 82FTS1015			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00003	05/24/21	WELLINGTON, Lot NEtFOSA0516M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21	WELLINGTON, Lot NEtFOSAA0116			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00002	05/24/21	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21	WELLINGTON, Lot NMeFOSAA0116			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L5_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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
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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFACMXB_00007	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluorooctane Sulfonate (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00046	03/01/17	11/03/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					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_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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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
					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: 7/6/15 SV
S: 7/20/15 SV

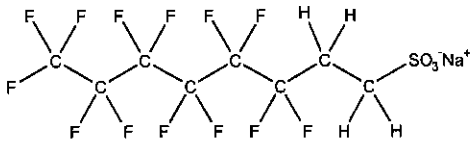
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/27/2015
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:

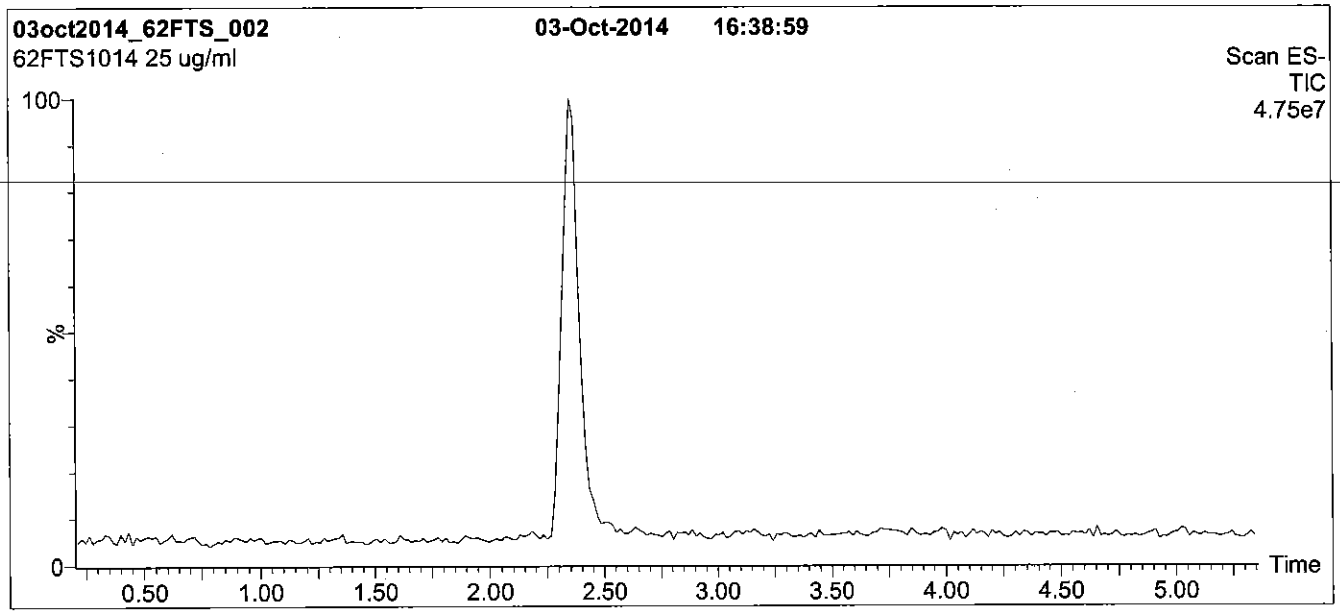
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

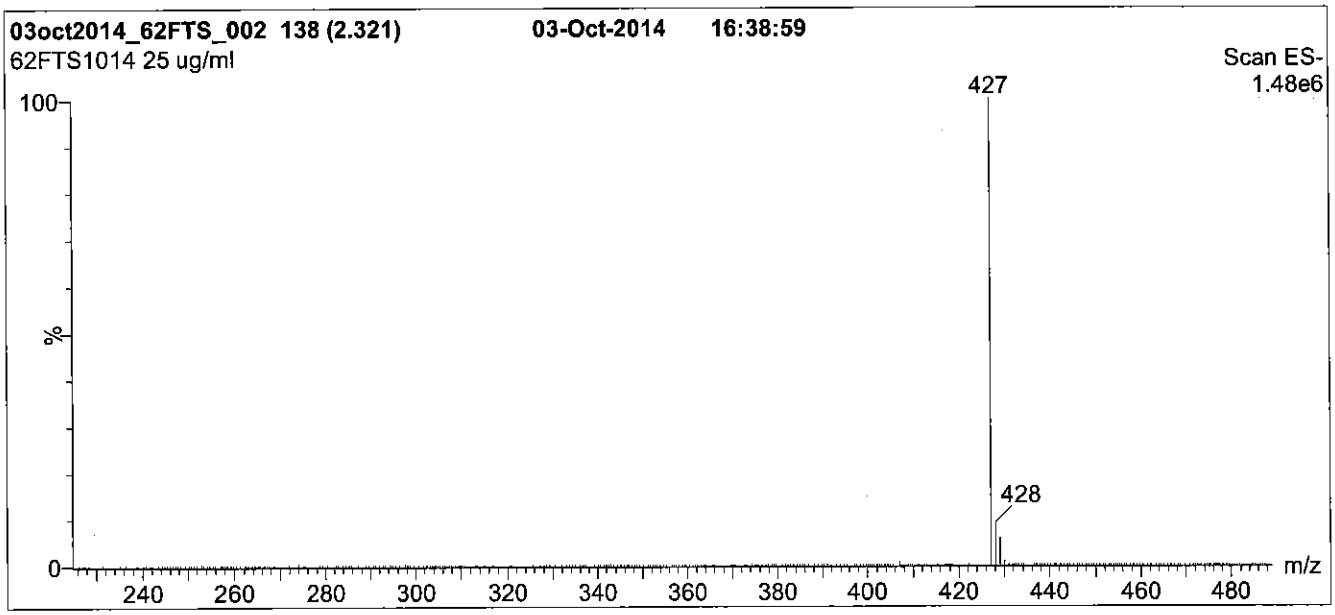
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 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: **6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

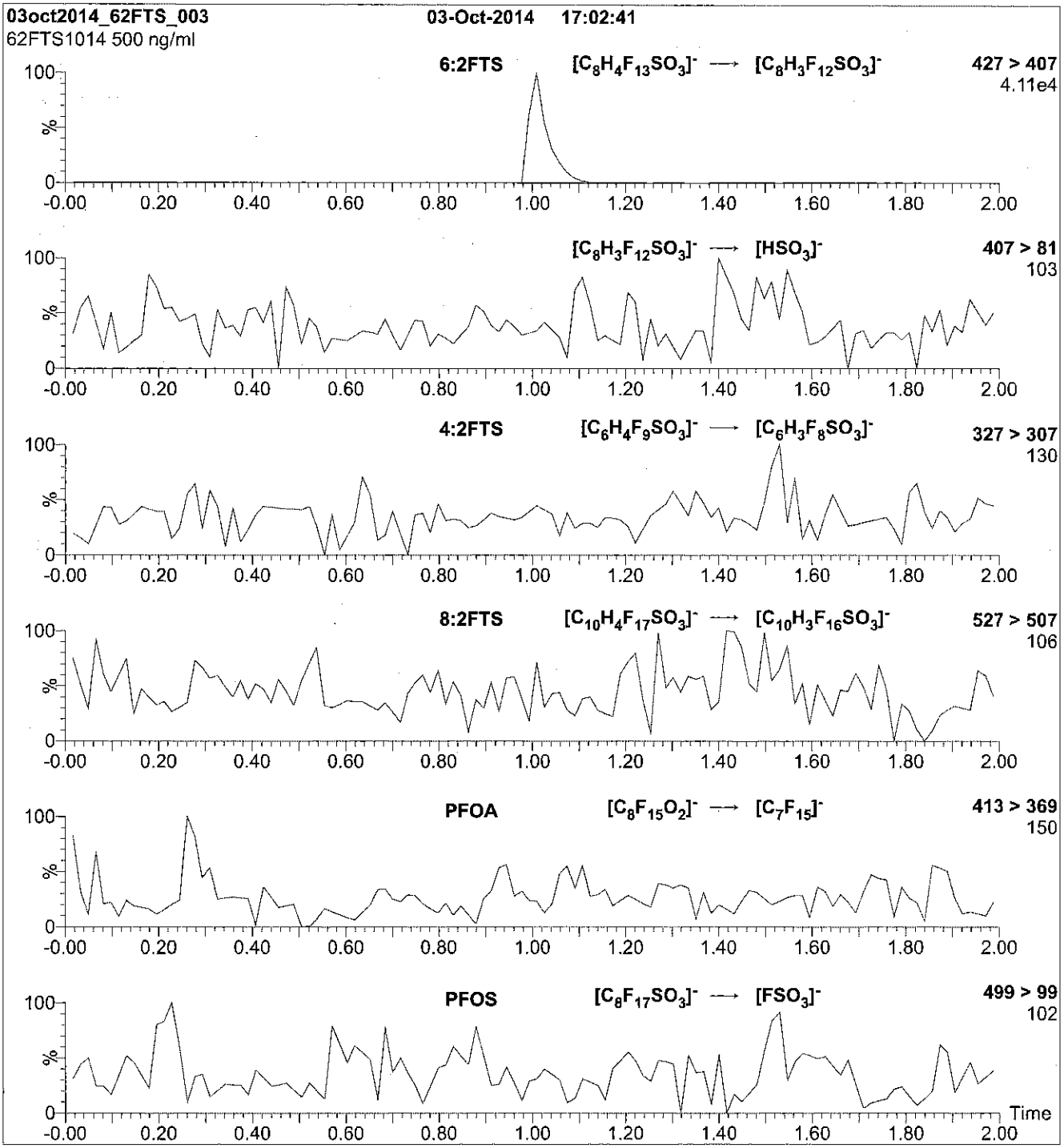
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LC6:2FTS_00002

R: 8/23/16 SBC

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

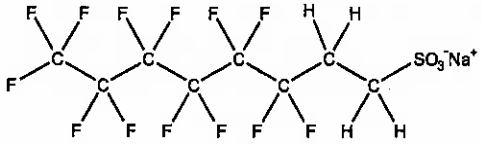
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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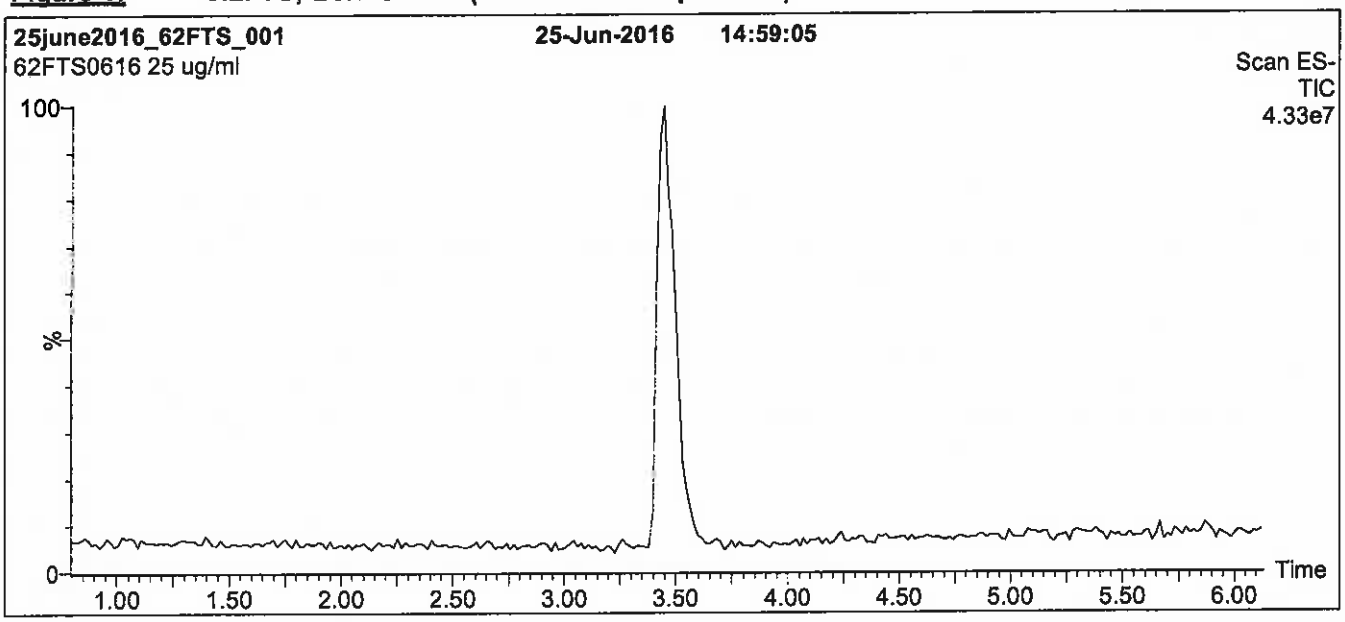

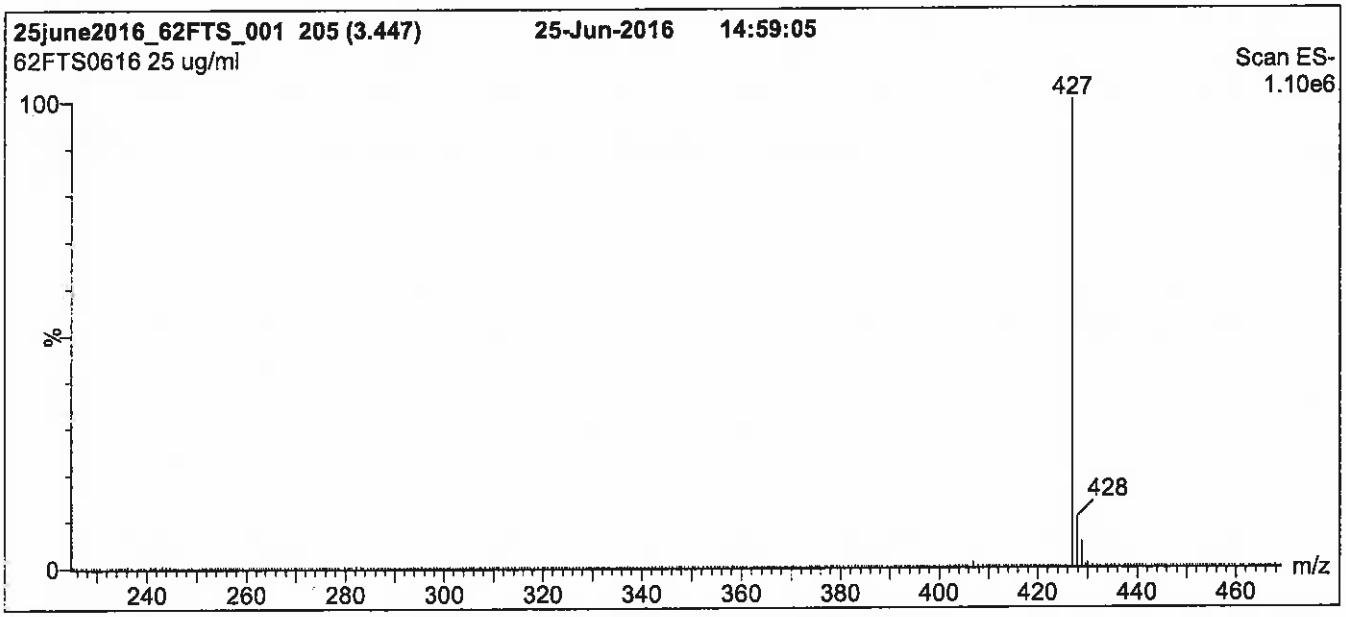

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MS: **Micromass Quattro *micro* API MS**

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1.7 µm, 2.1 x 100 mm

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Start: 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

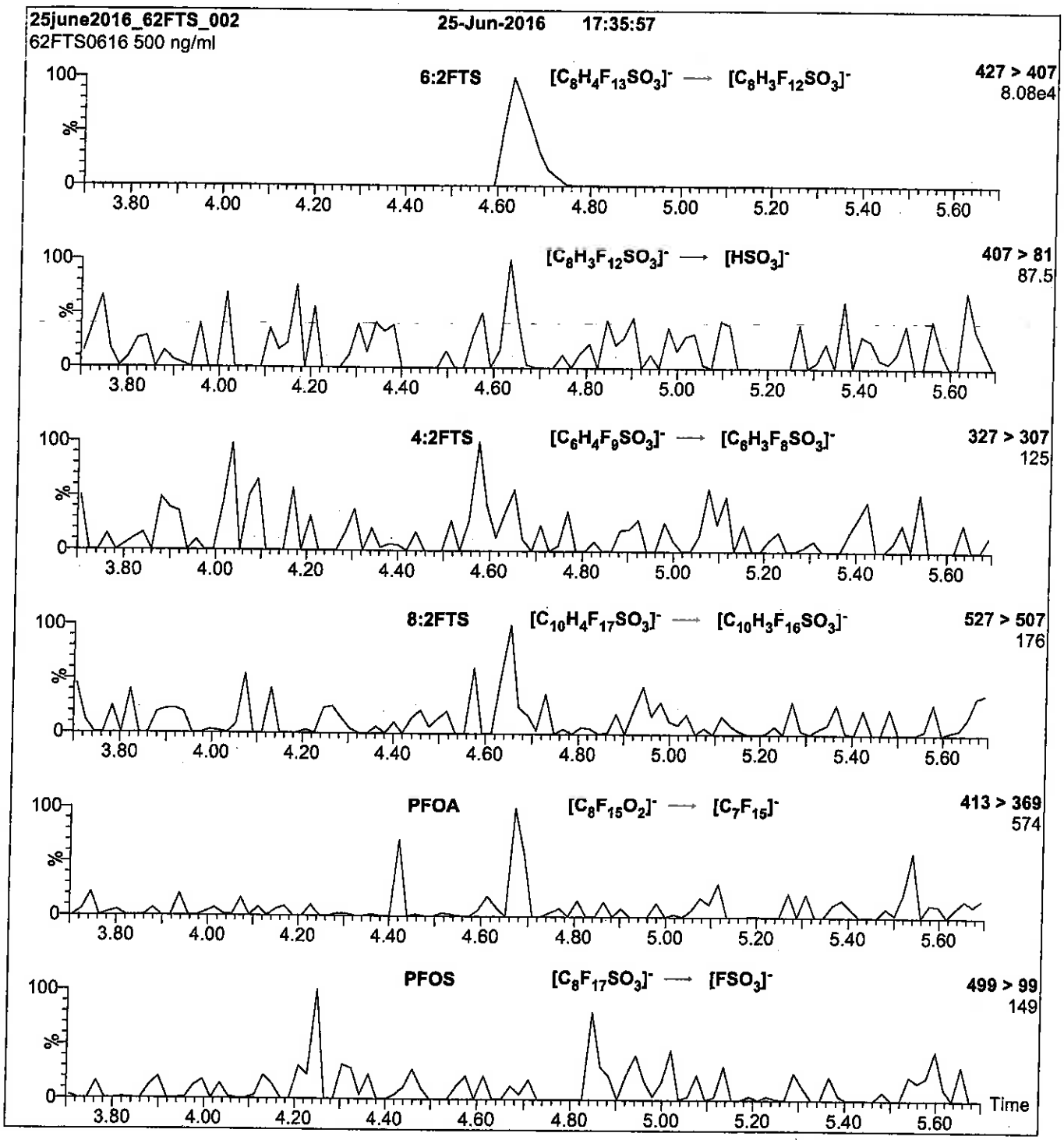
Flow: 300 µl/min

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

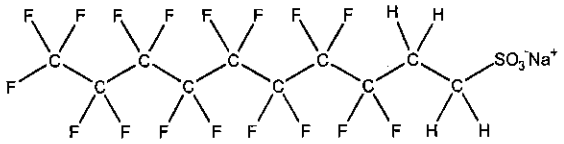
WELLINGTON LABORATORIES

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

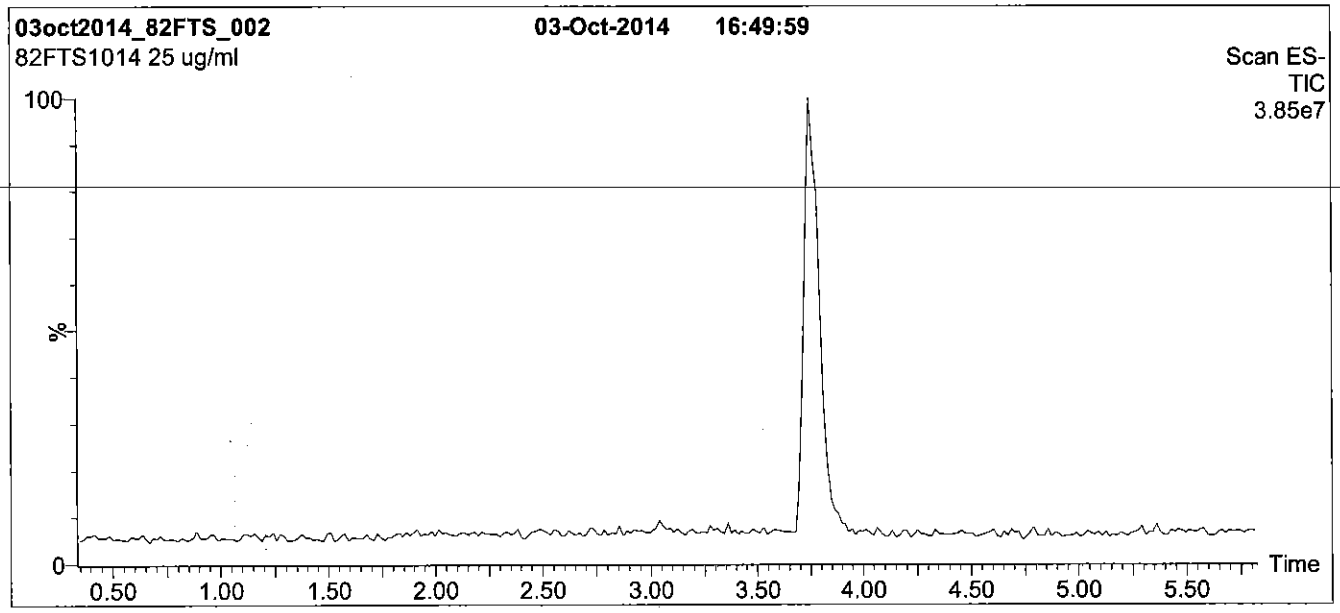
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

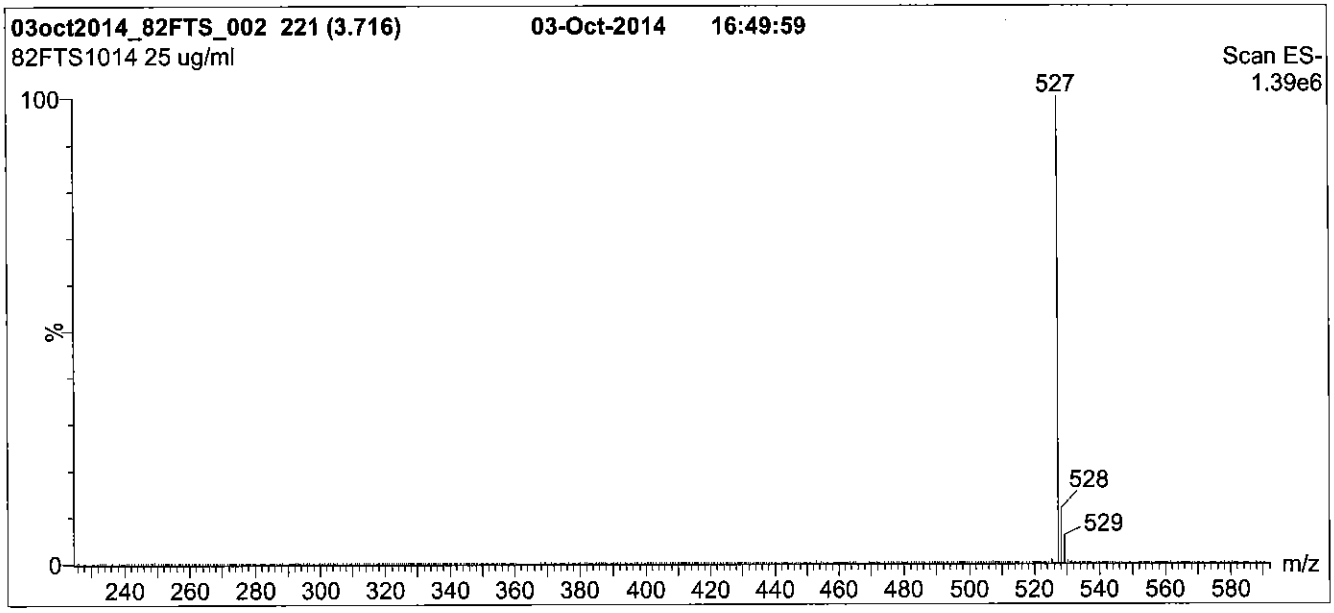
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

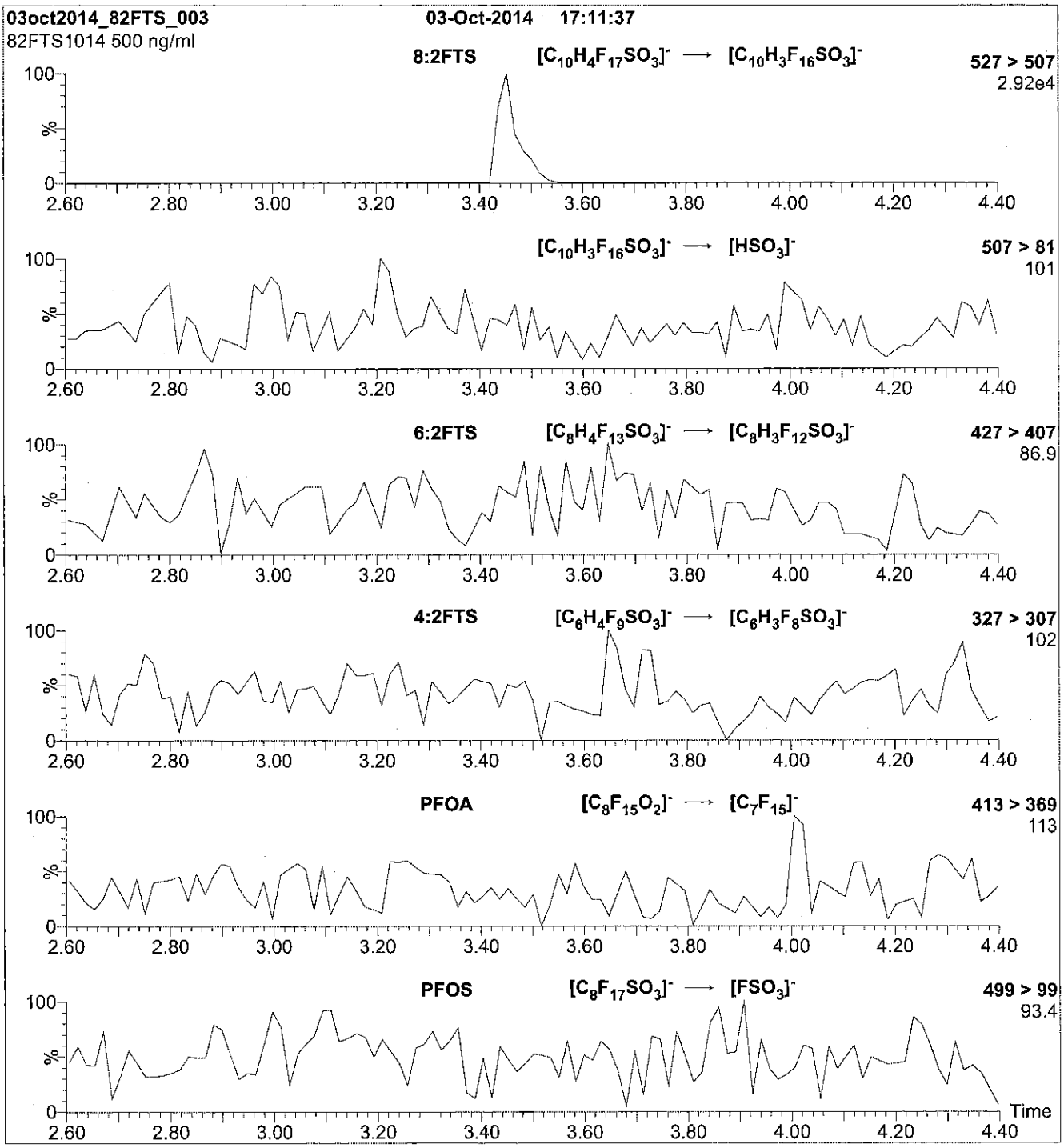
Flow: 300 µl/min

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

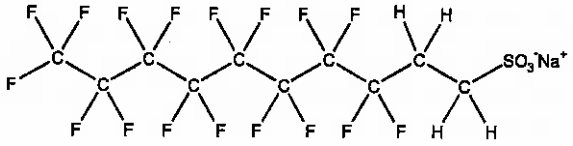
WELLINGTON LABORATORIES

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			

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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

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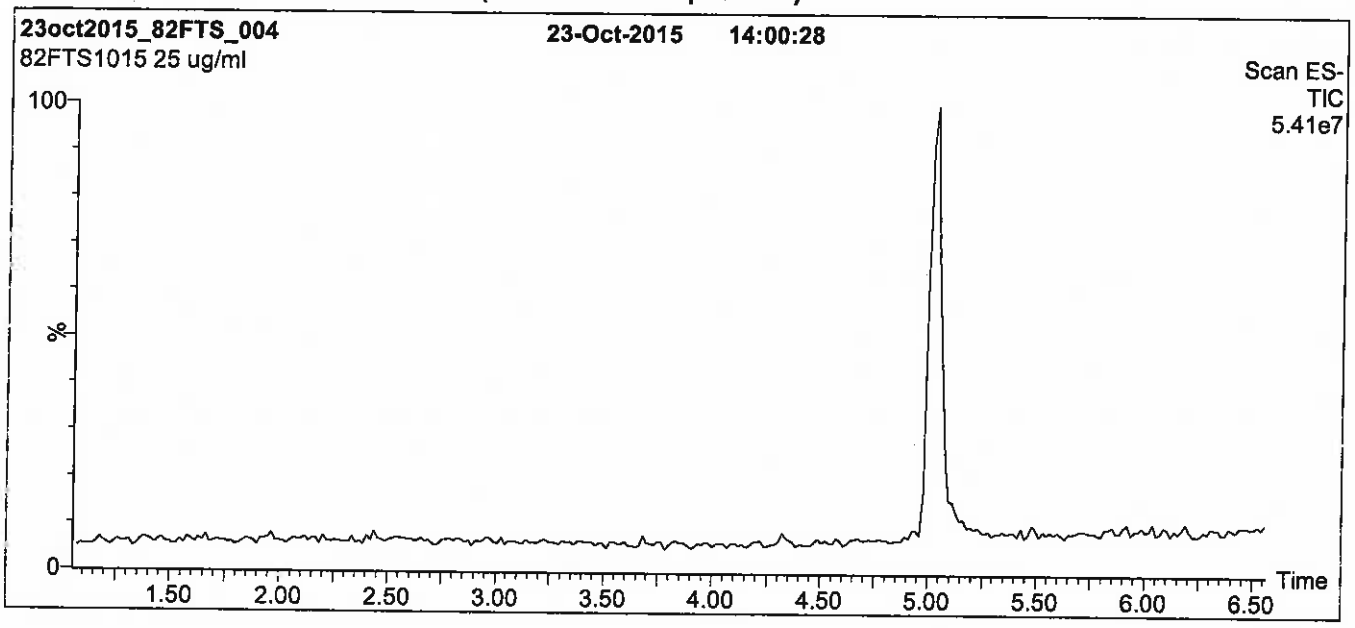
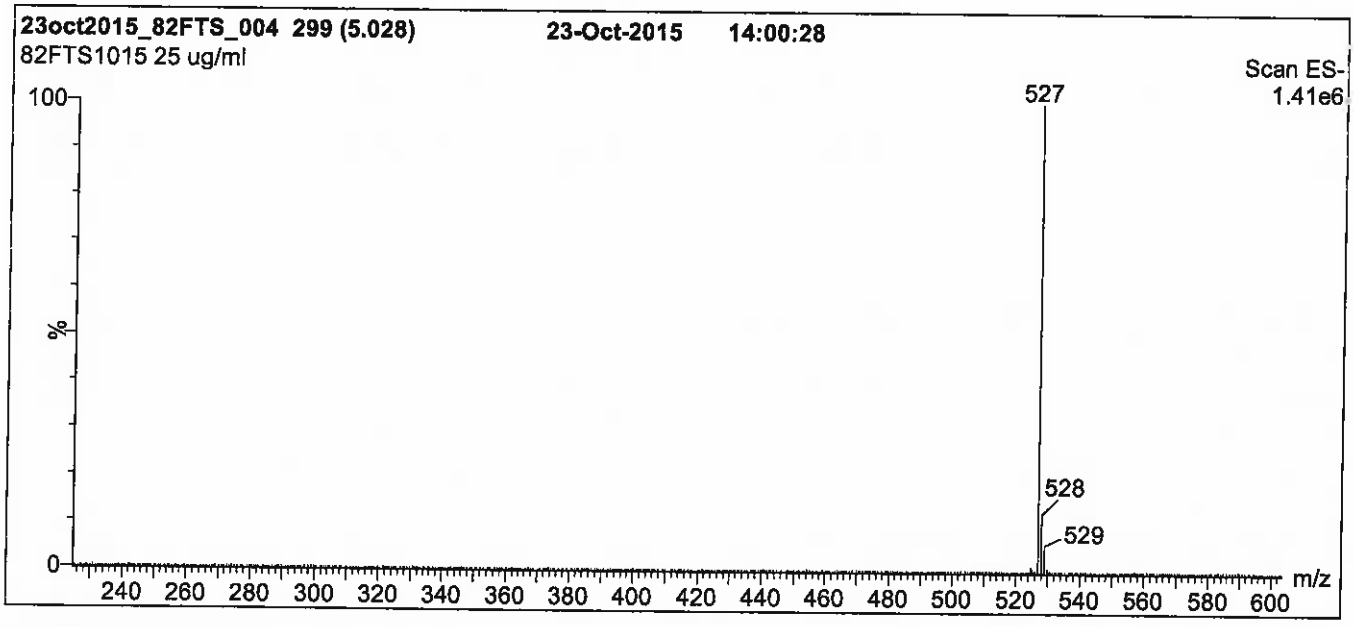
Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

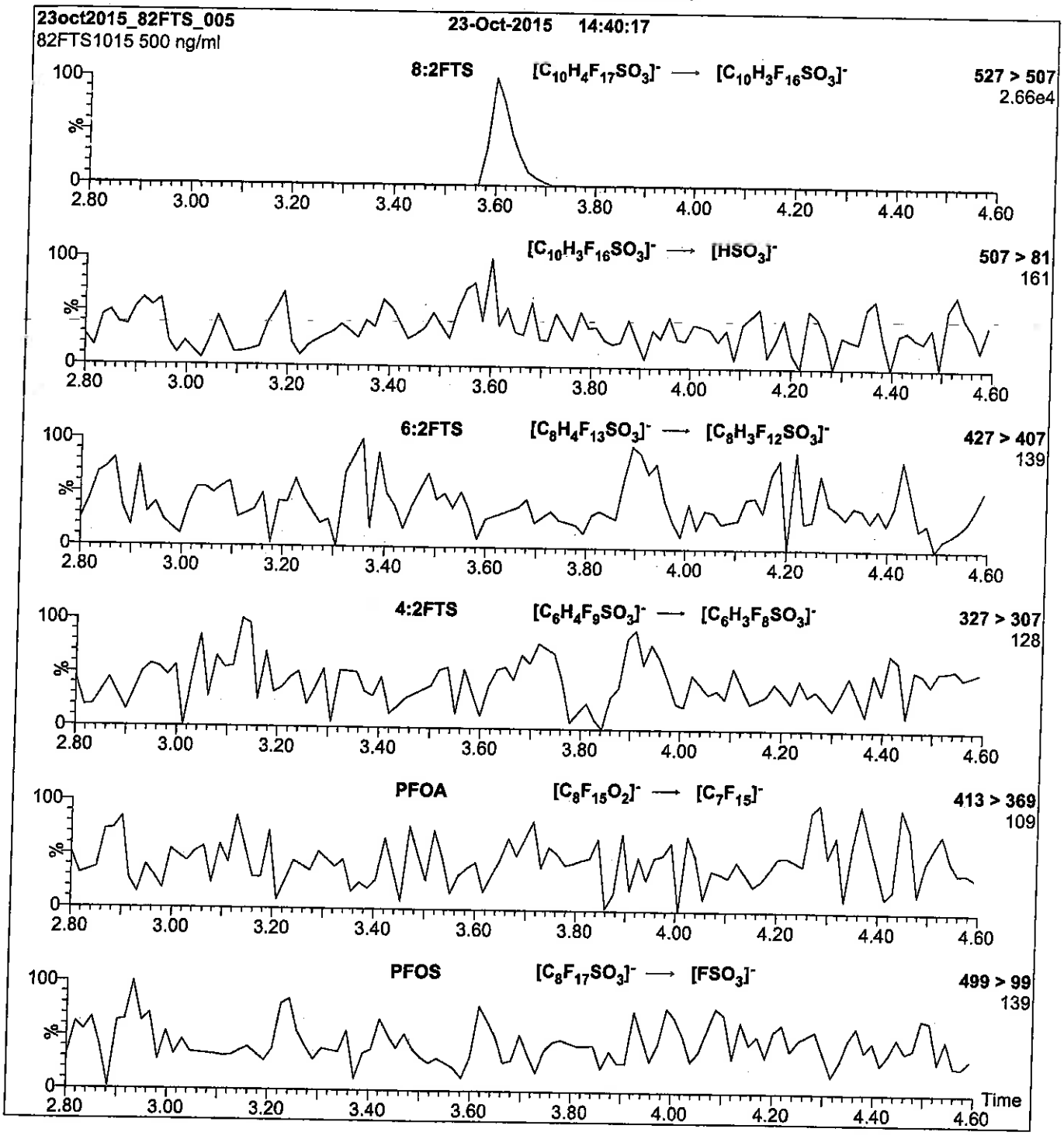
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NEtFOSA-M_00001

R: 7/16/15 SV

WELLINGTON LABORATORIES

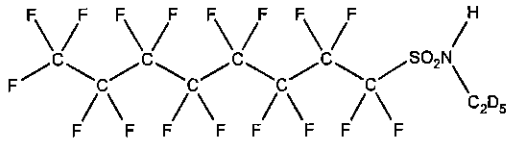
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: dNEtFOSA0314M

STRUCTURE:

CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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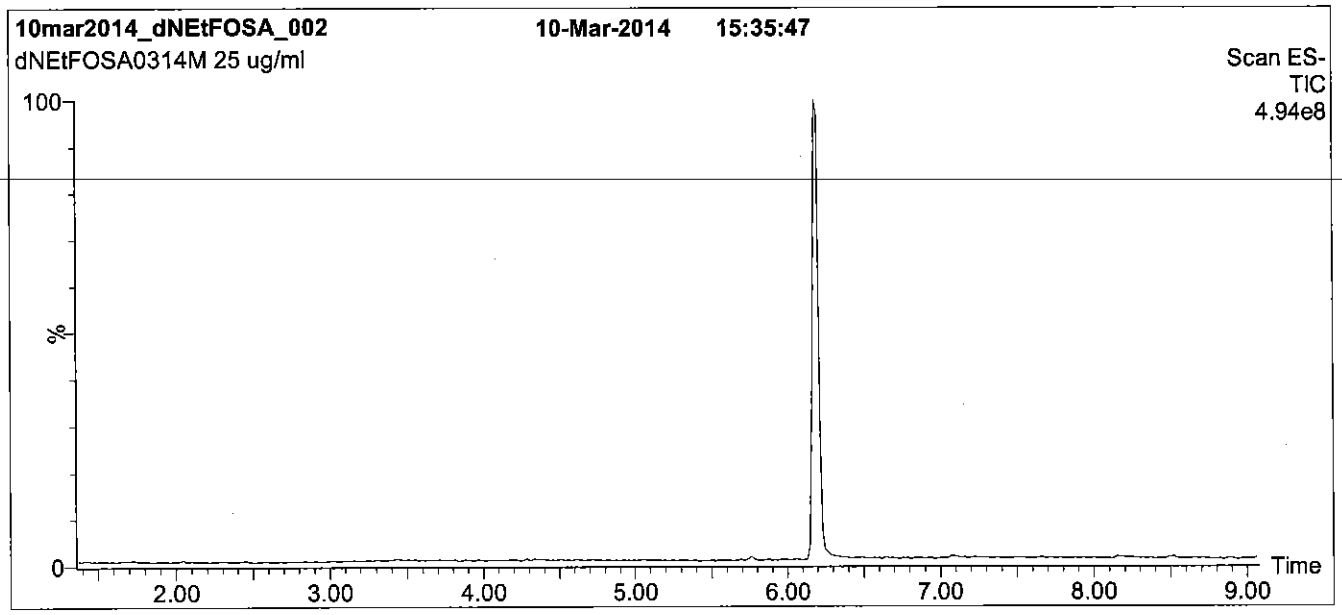
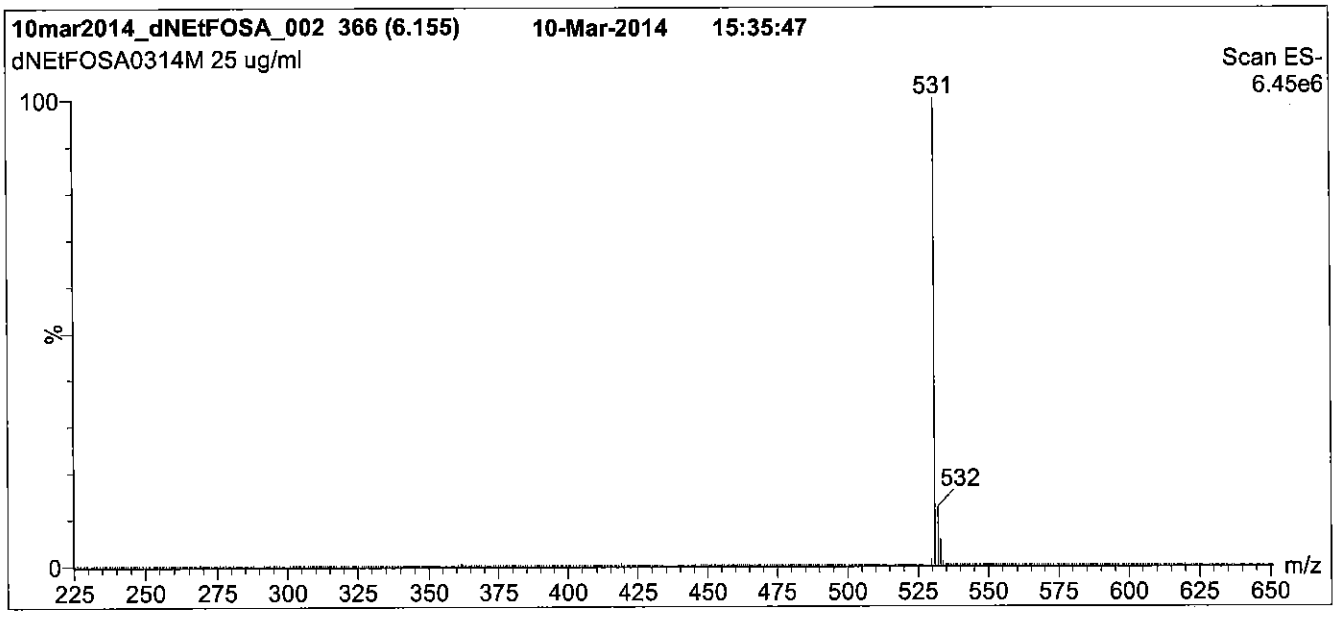
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

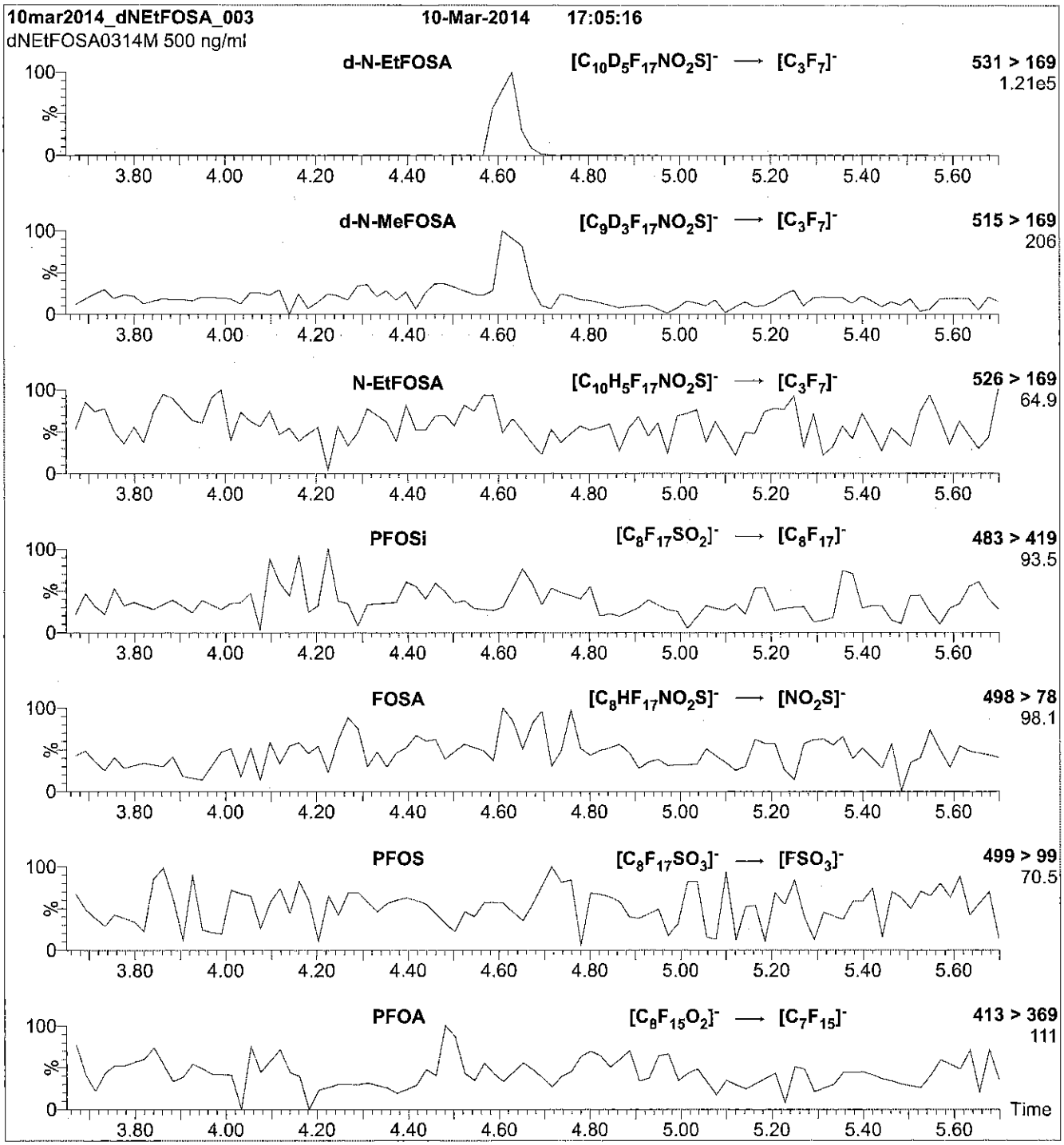
Flow: 300 µl/min

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

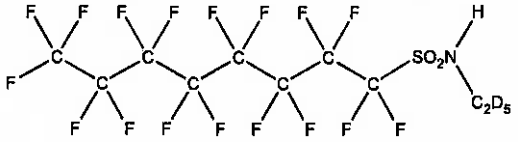
R - 7/6/16 CBW

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



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)
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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:

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.

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

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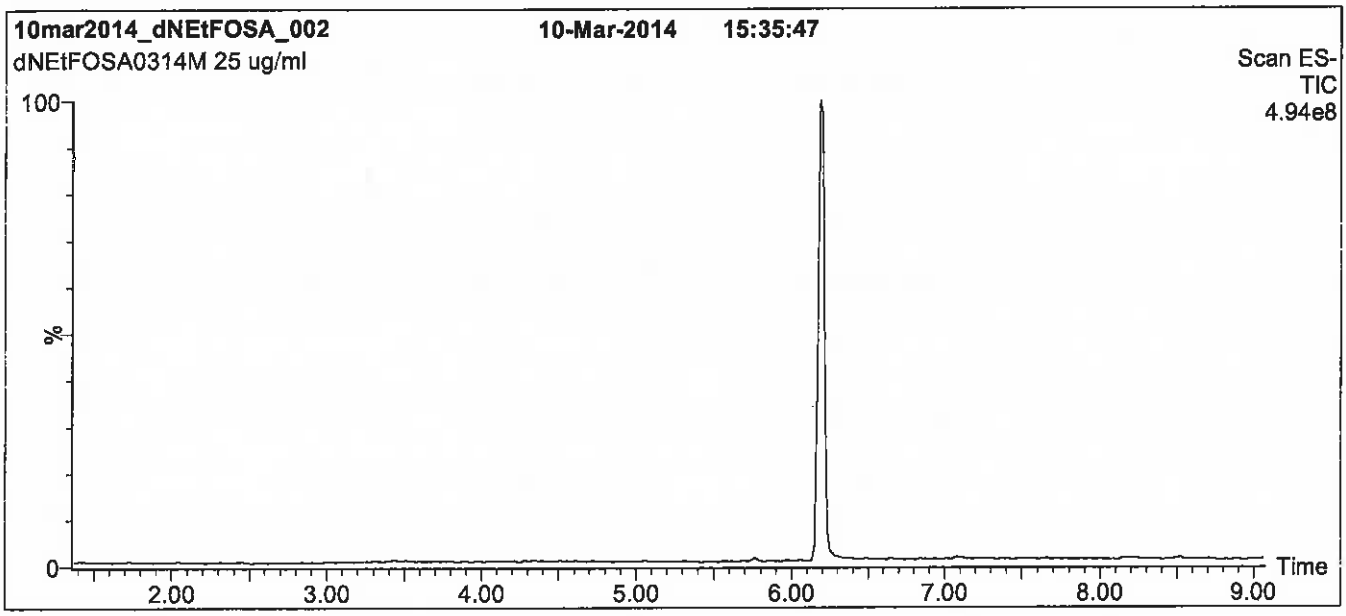
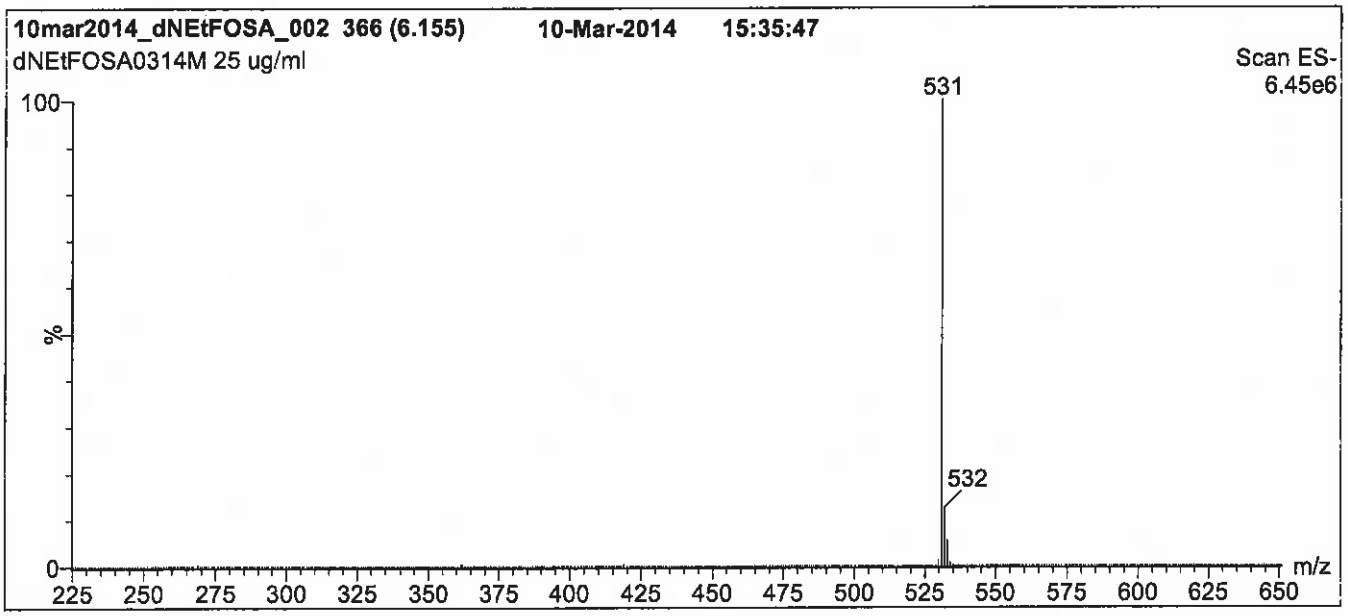
Figure 1: **d-N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

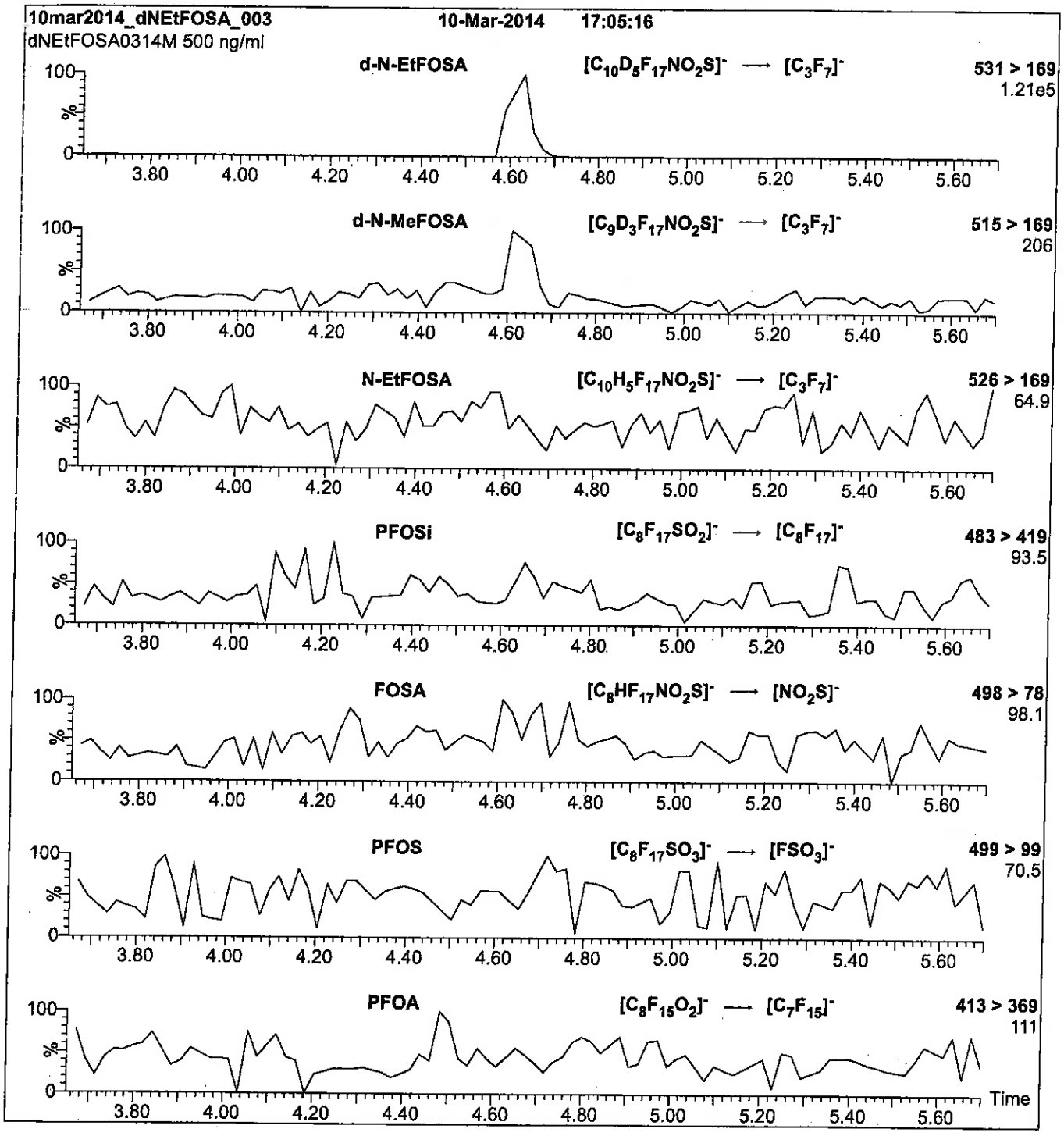
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NMeFOSA-M_00001

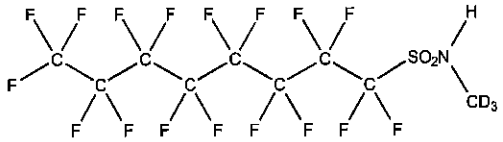
R: 7/16/15 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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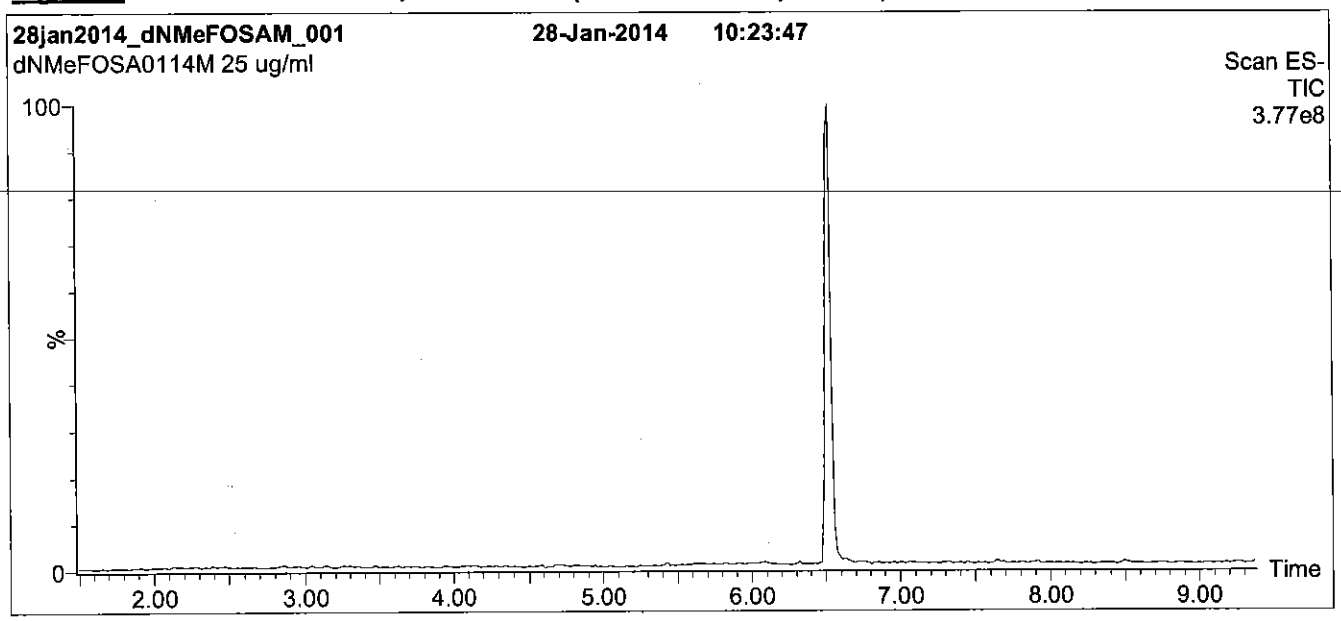
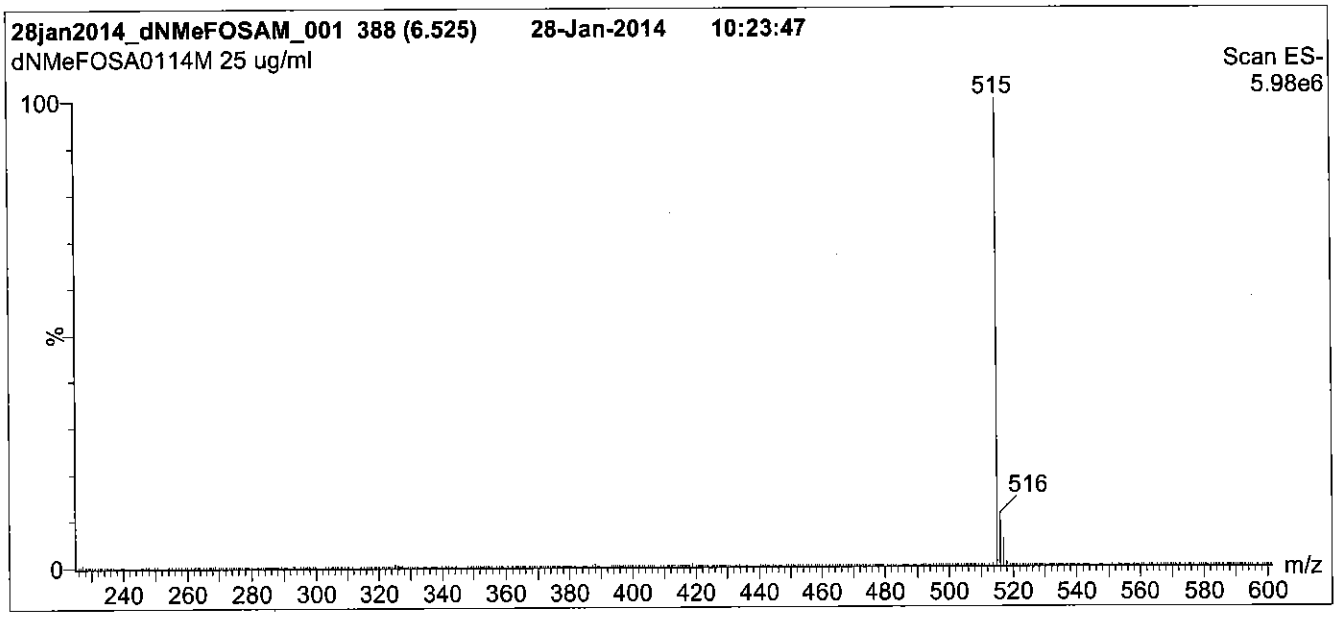




Conditions for Figure 1:

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

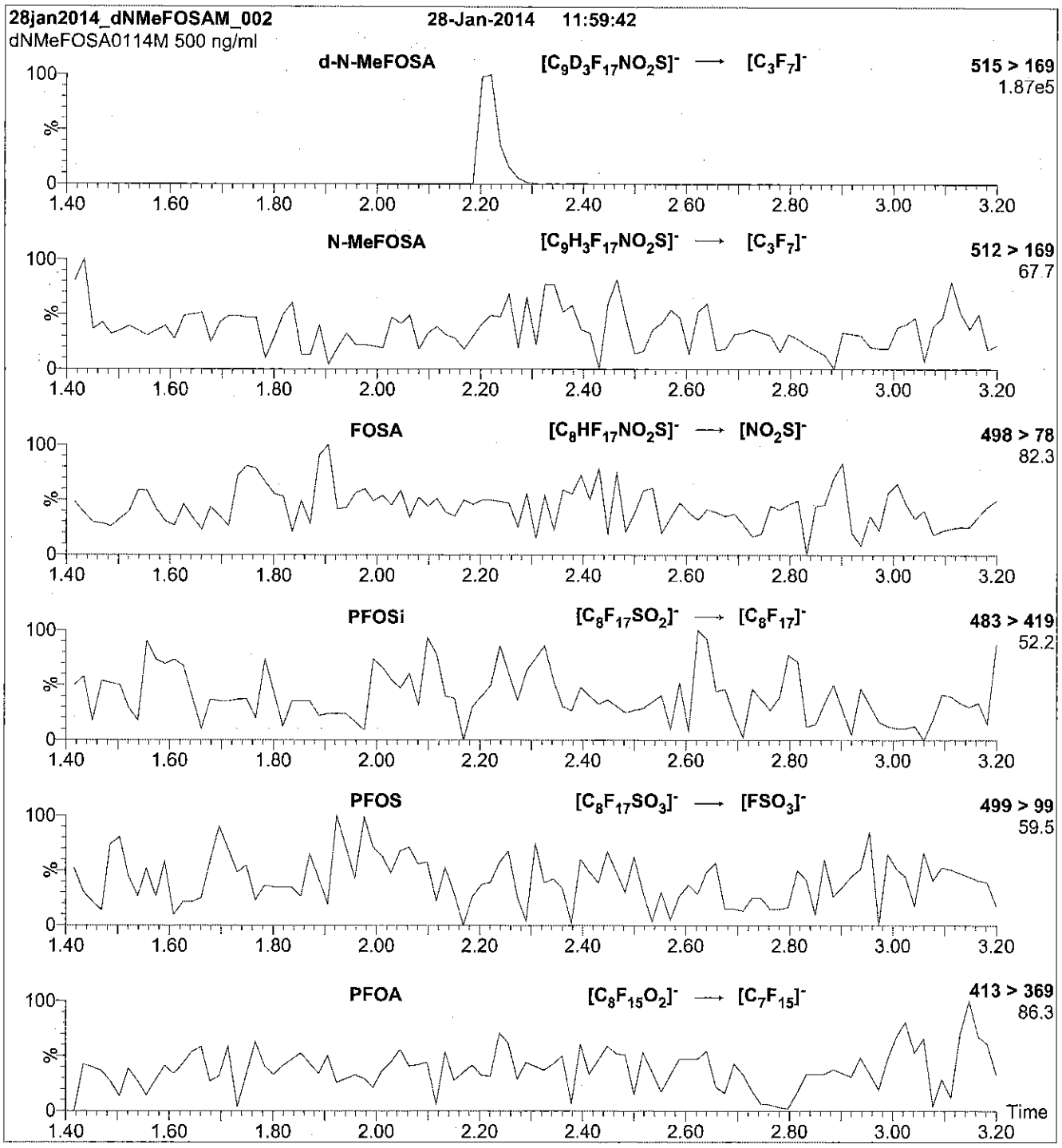
Flow: 300 µl/min

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

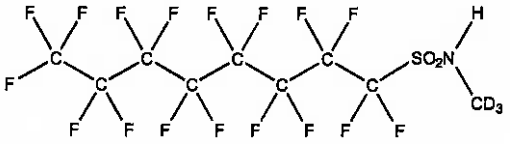
671625
ID: LCd-NMeFOSA-M_00002
Exp: 06/13/21 Prpd: CBW
d-N-MeFOSA-M

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		

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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:** 06/16/2016 (mm/dd/yyyy)

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CALA

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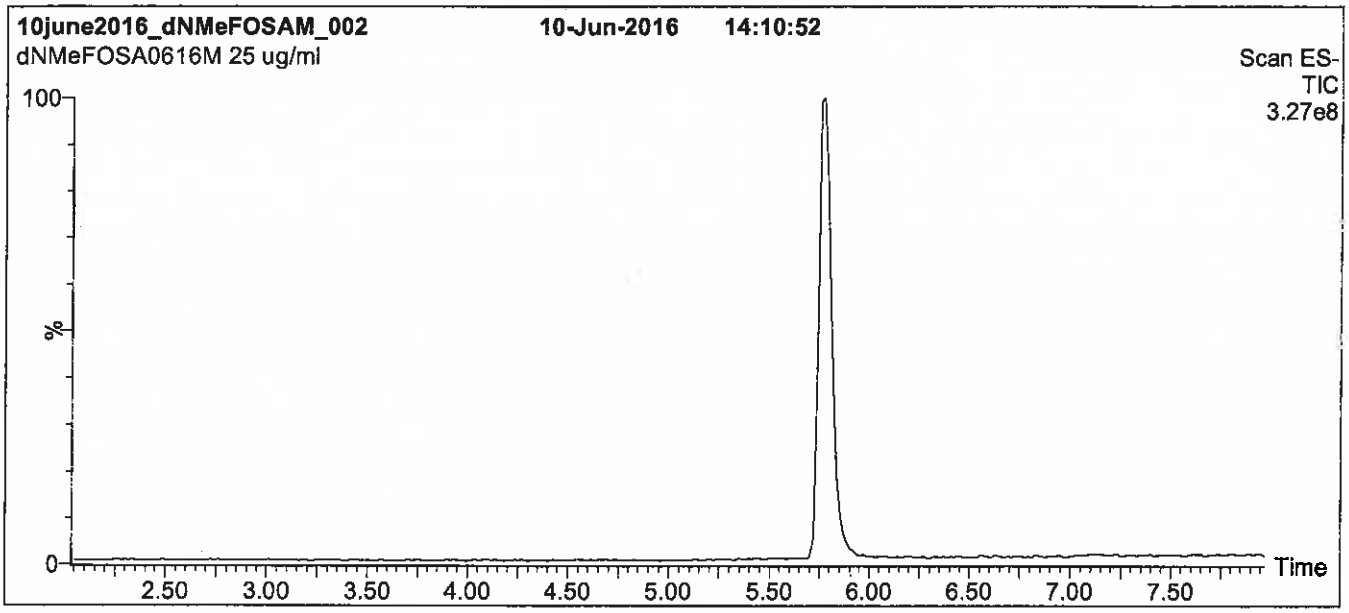
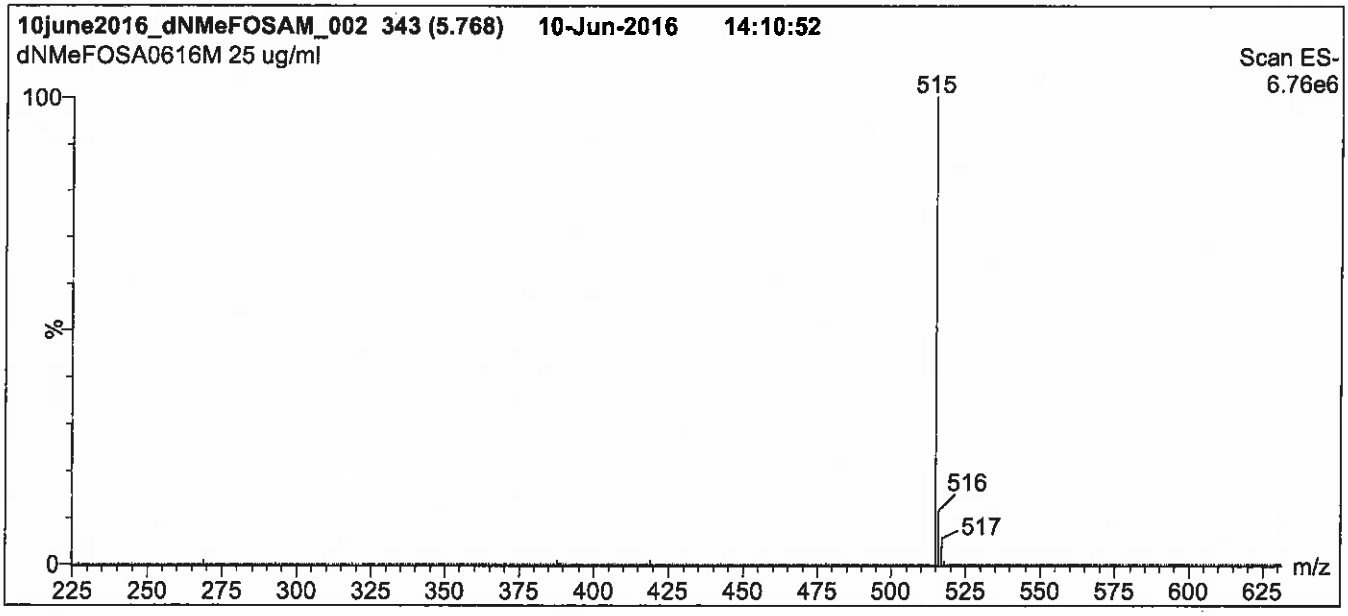




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

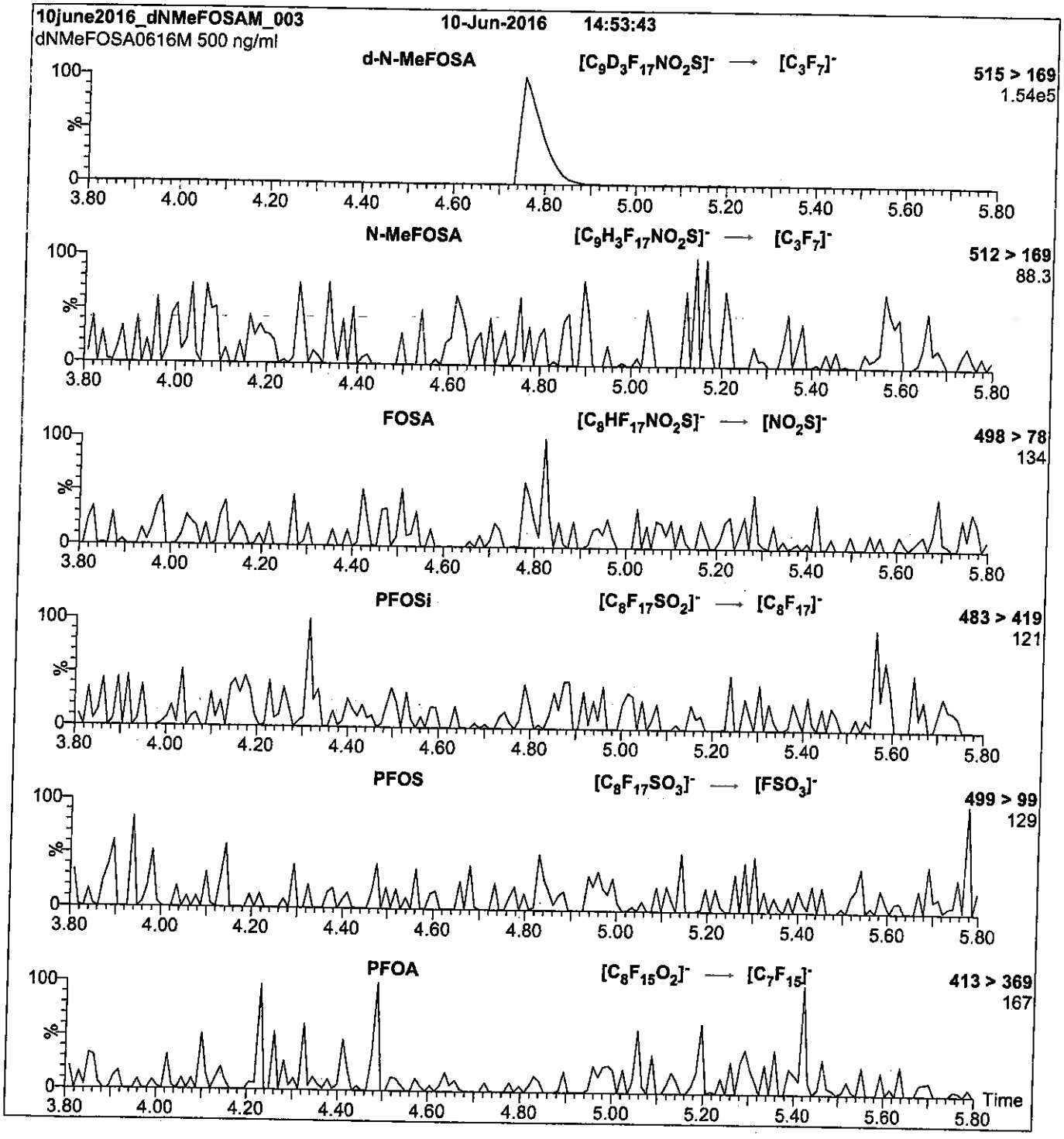
Flow: 300 µl/min

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

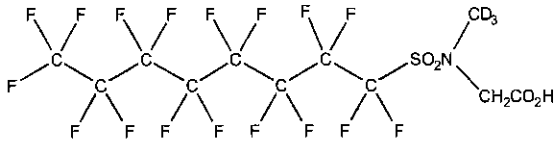
WELLINGTON LABORATORIES

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:

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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.

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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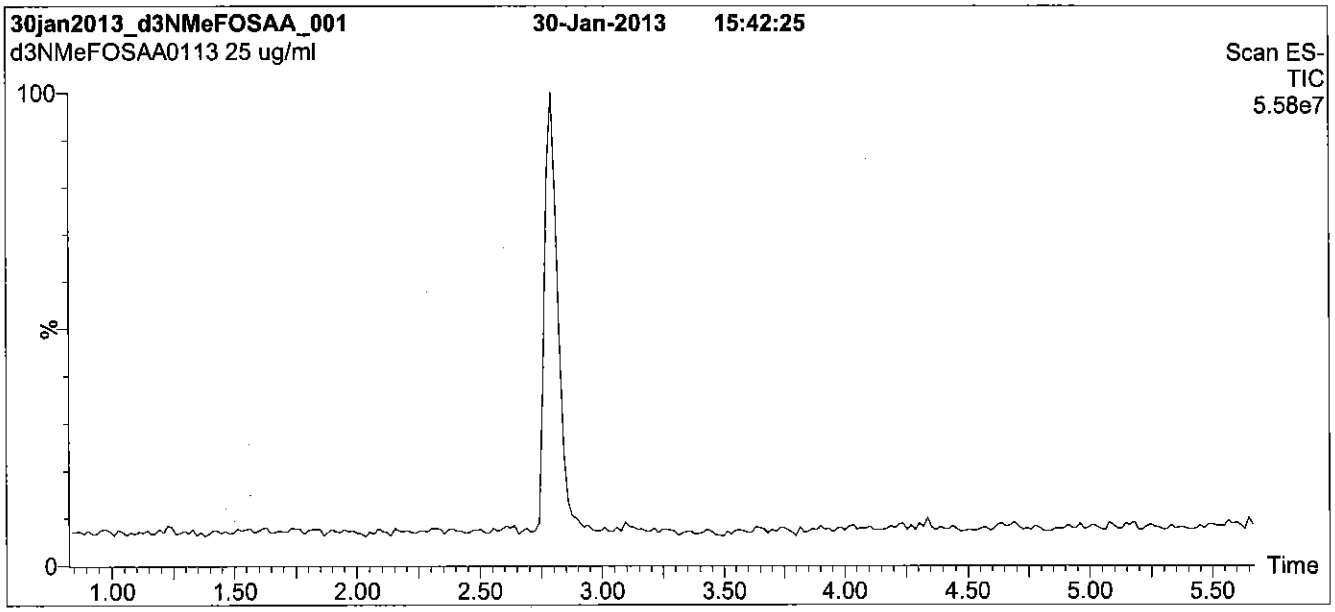
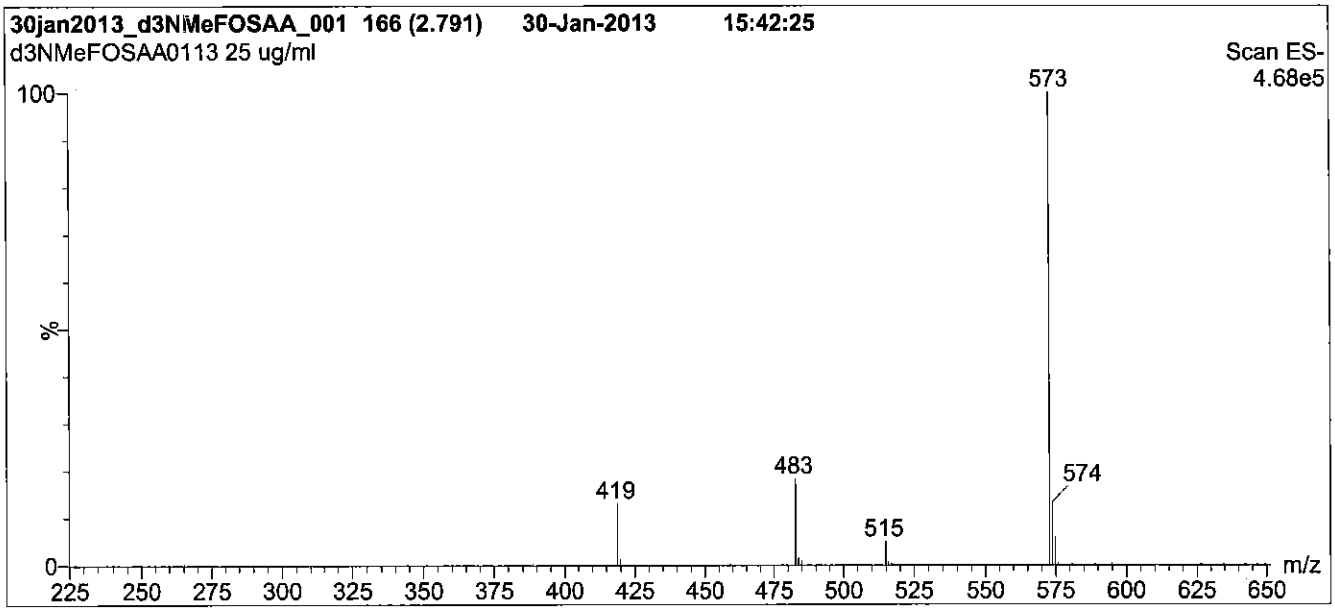
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

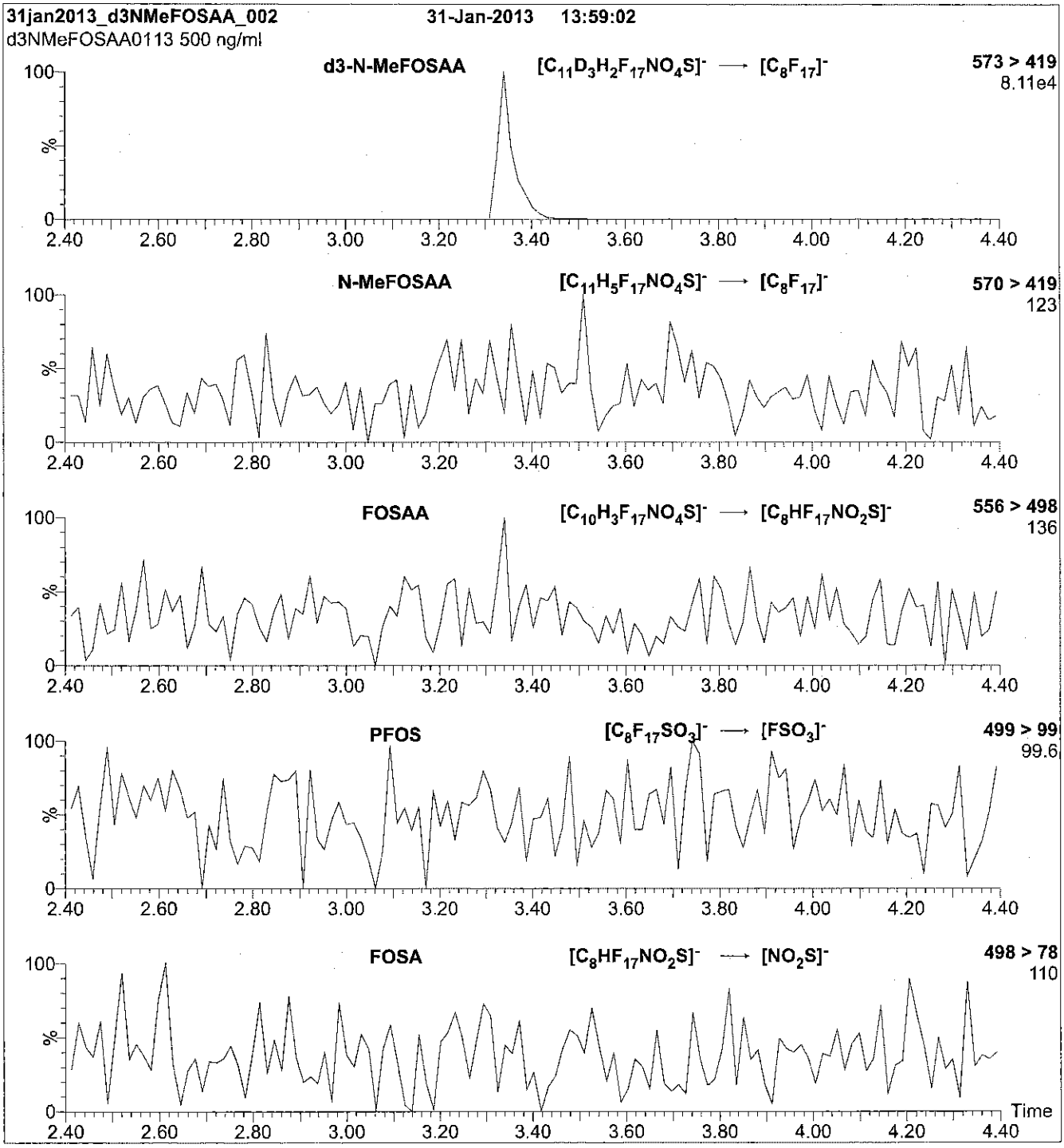
Flow: 300 µl/min

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

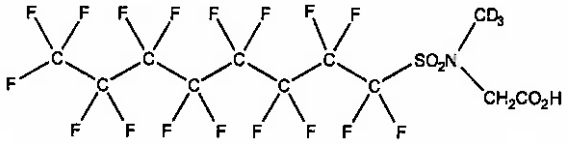
WELLINGTON LABORATORIES

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:

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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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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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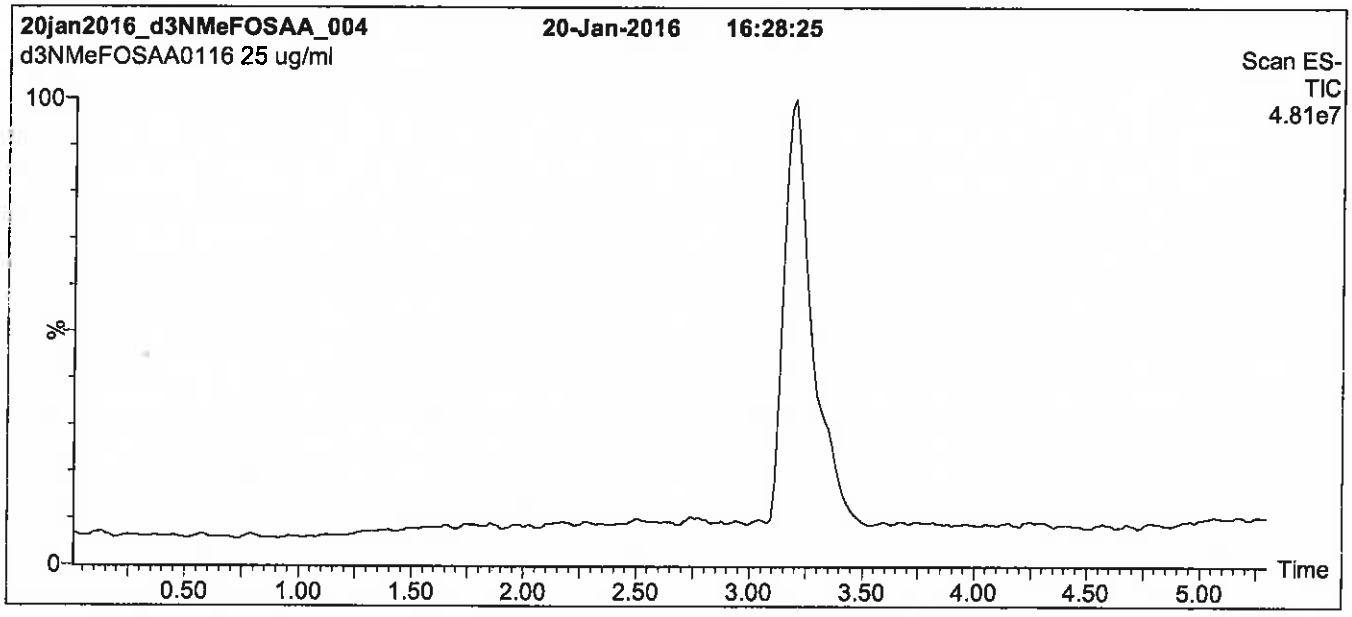
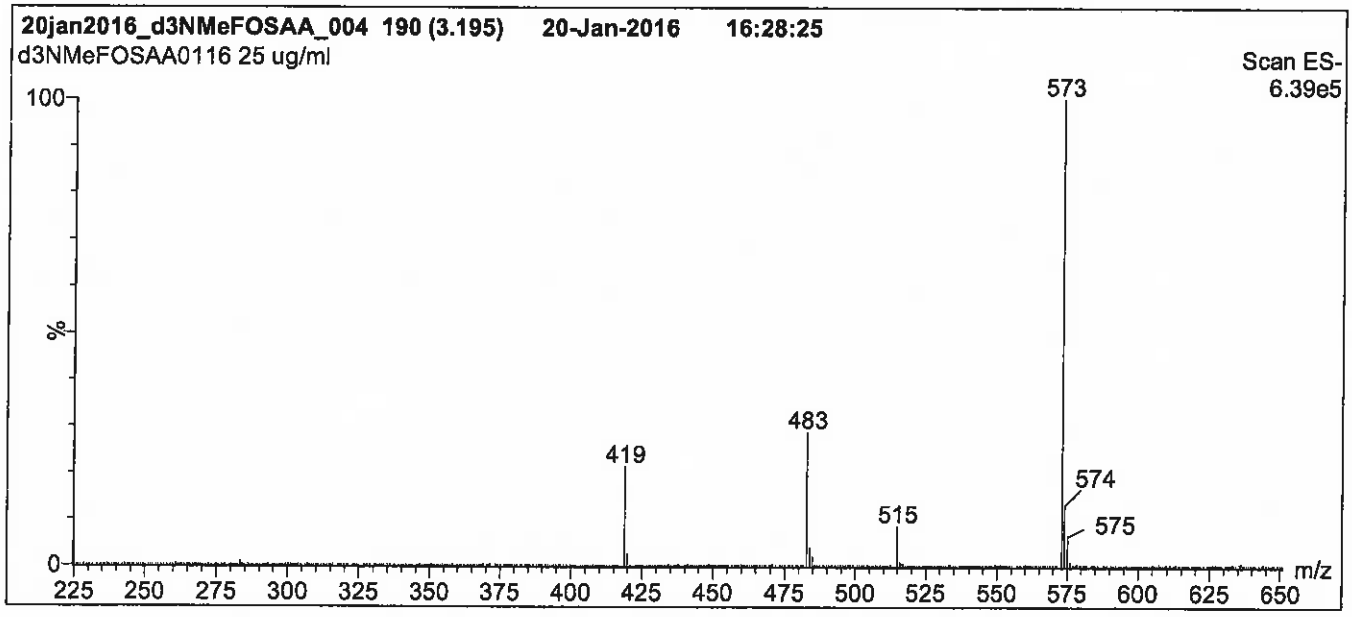




Conditions for Figure 1:

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

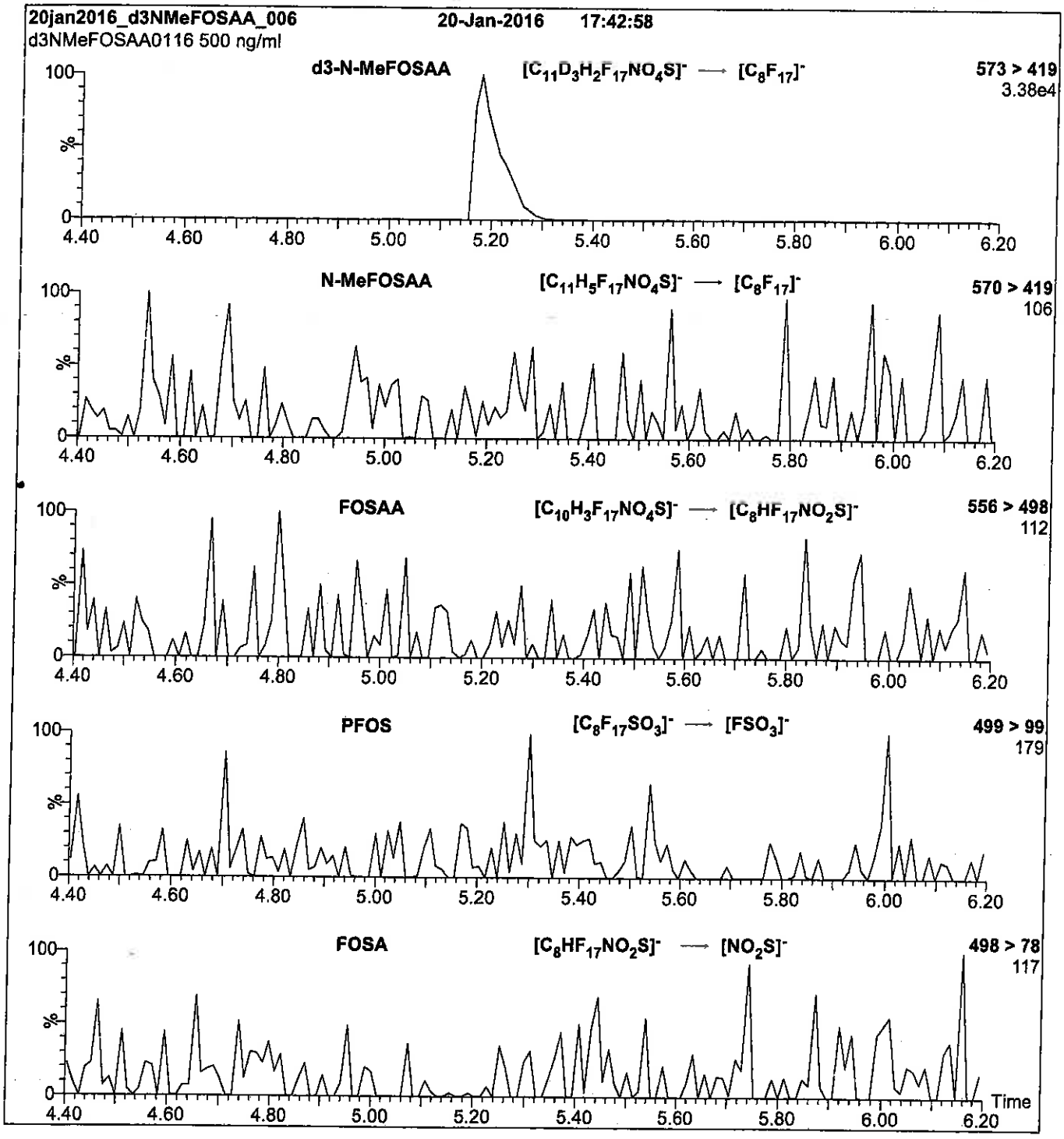
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd5-NEtFOSAA_00001

P: 7/10/15 SW

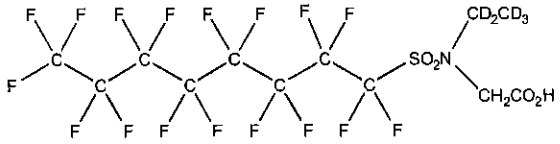
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{12}D_5H_3F_{17}NO_4S$ **MOLECULAR WEIGHT:** 590.27

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

CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% $^2H_5$

LAST TESTED: (mm/dd/yyyy) 05/08/2015

EXPIRY DATE: (mm/dd/yyyy) 05/08/2020

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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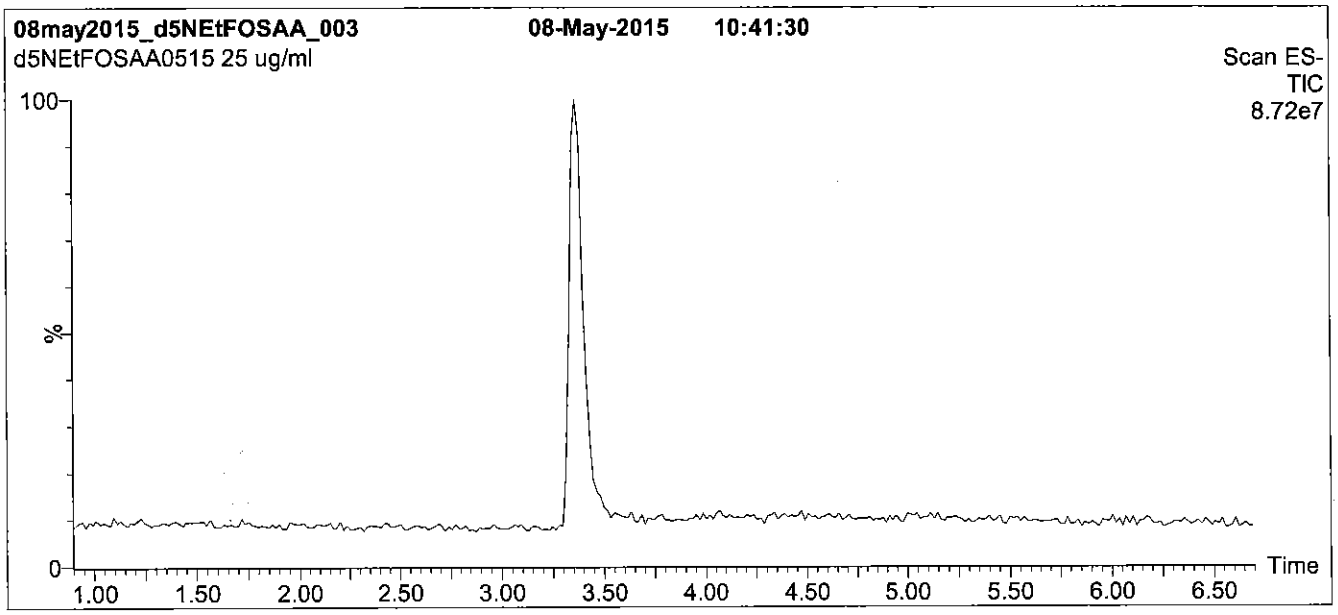
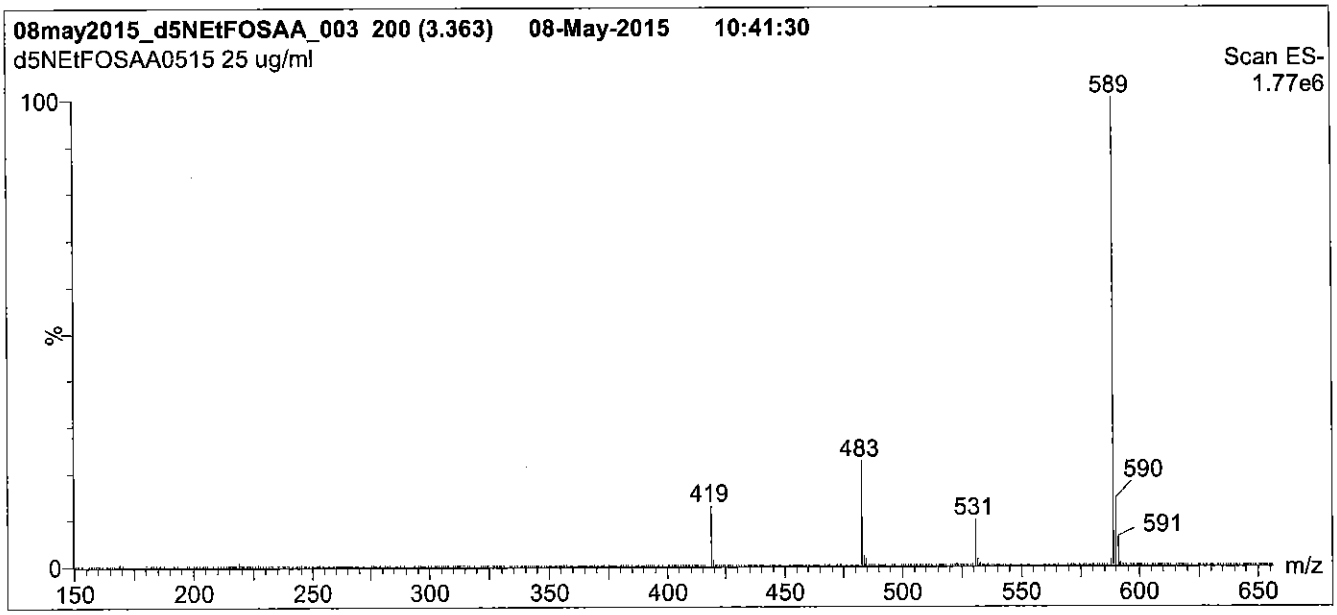




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

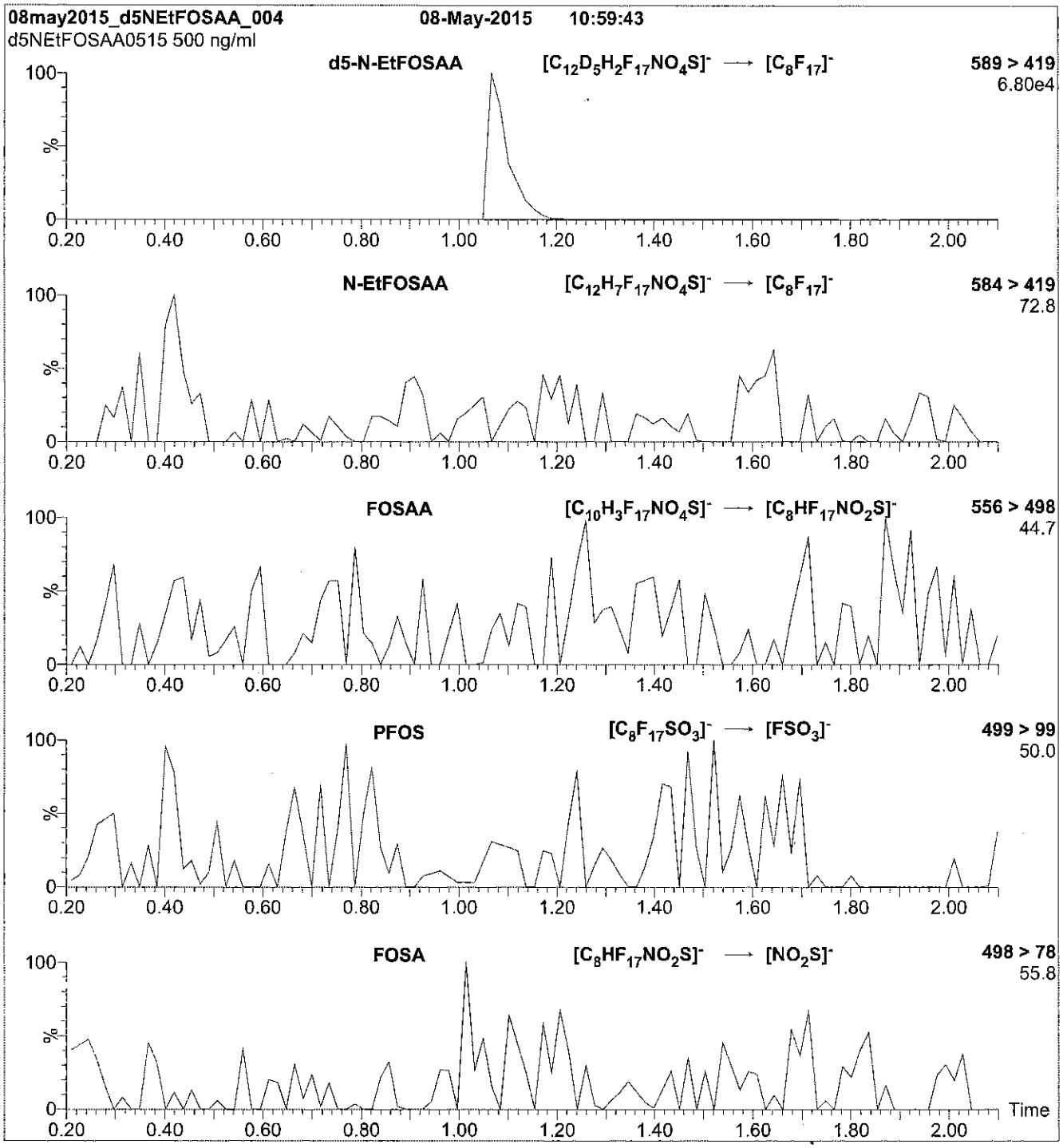
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCd5-NEtFOSAA_00002

R: 7/6/16 CBW

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

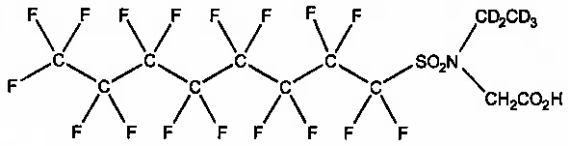
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{12}D_5H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	590.27
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_6$
LAST TESTED: (mm/dd/yyyy)	12/07/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/07/2020		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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CALA

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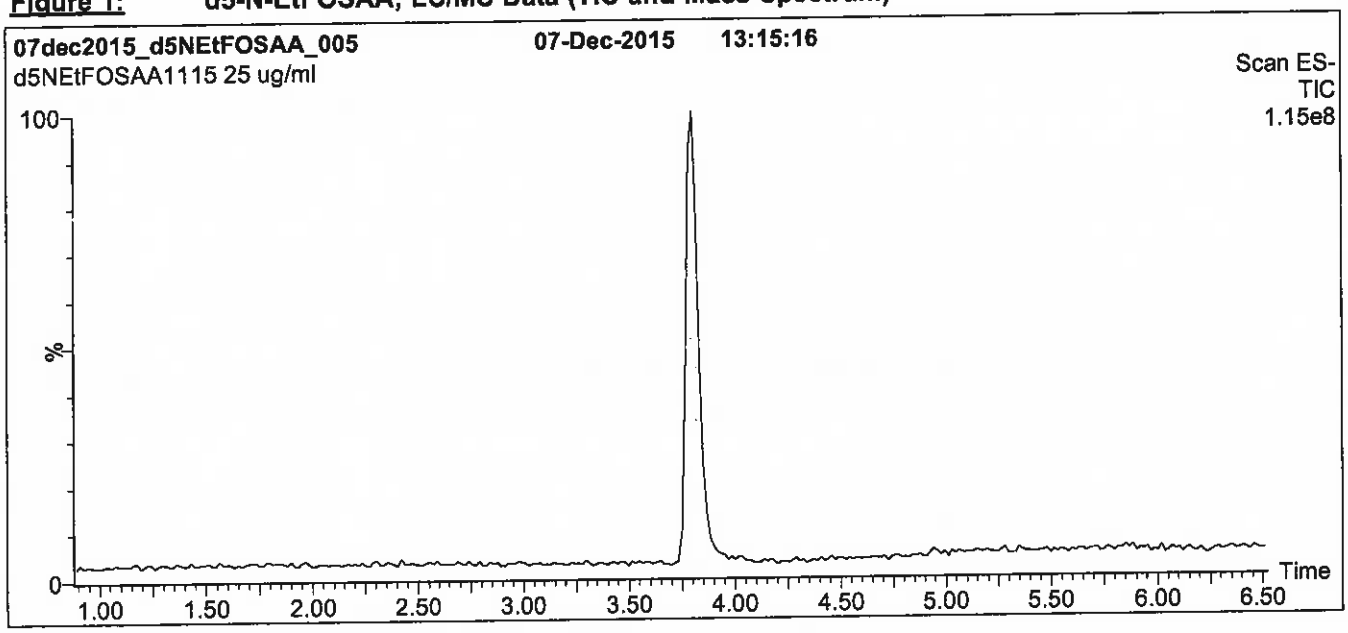
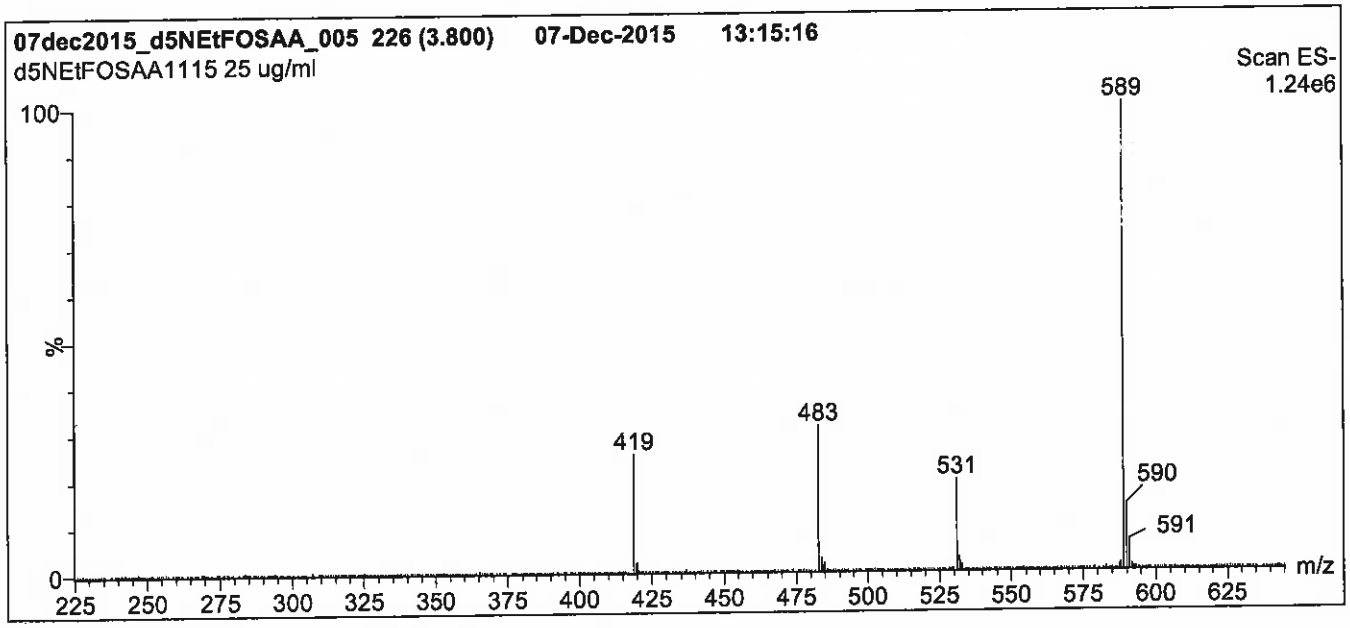
Figure 1: **d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

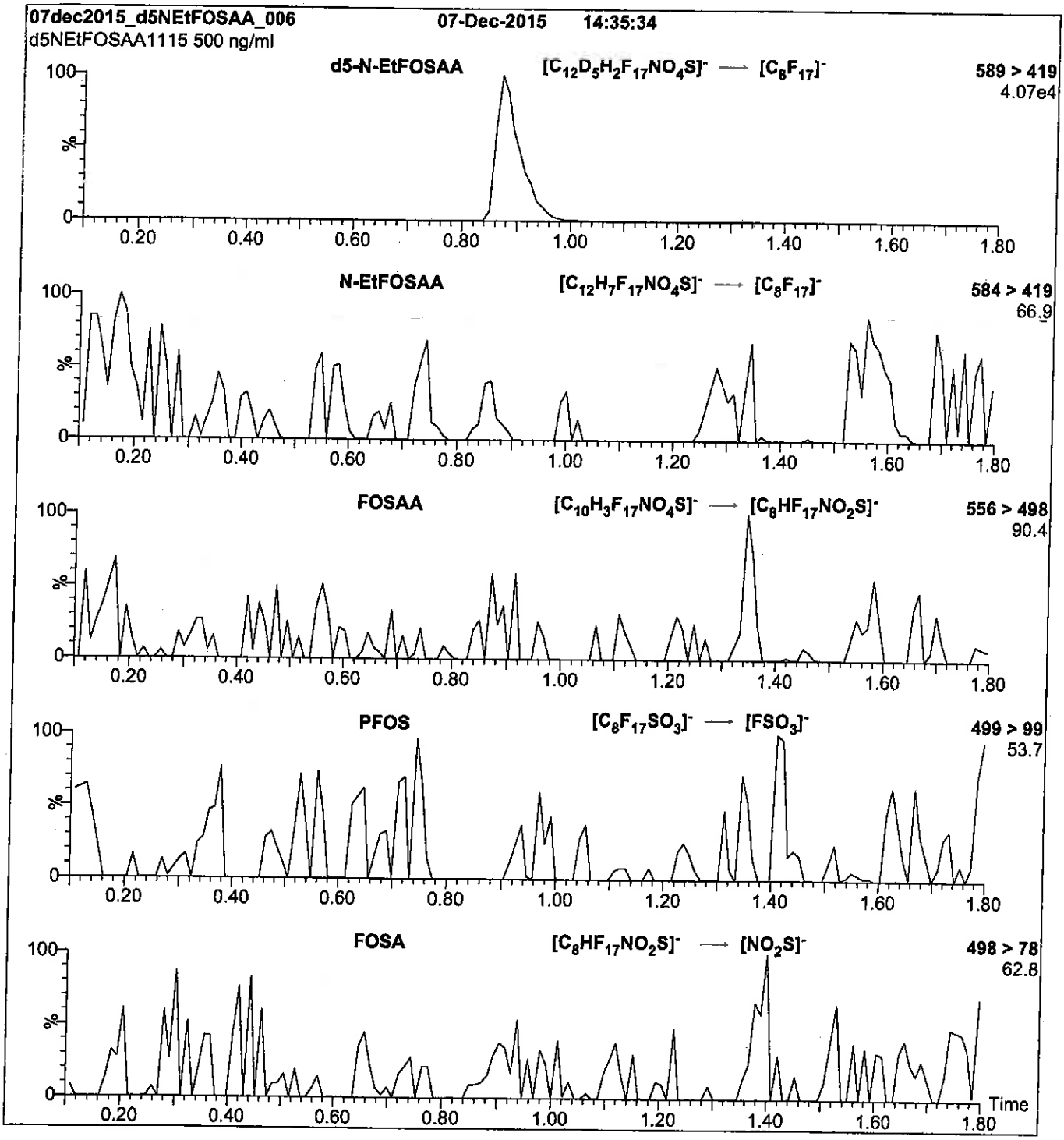
Flow: 300 µl/min

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

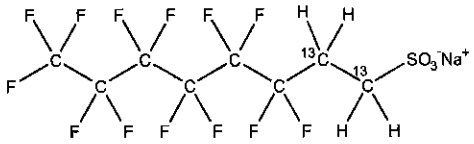
WELLINGTON LABORATORIES

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:

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,...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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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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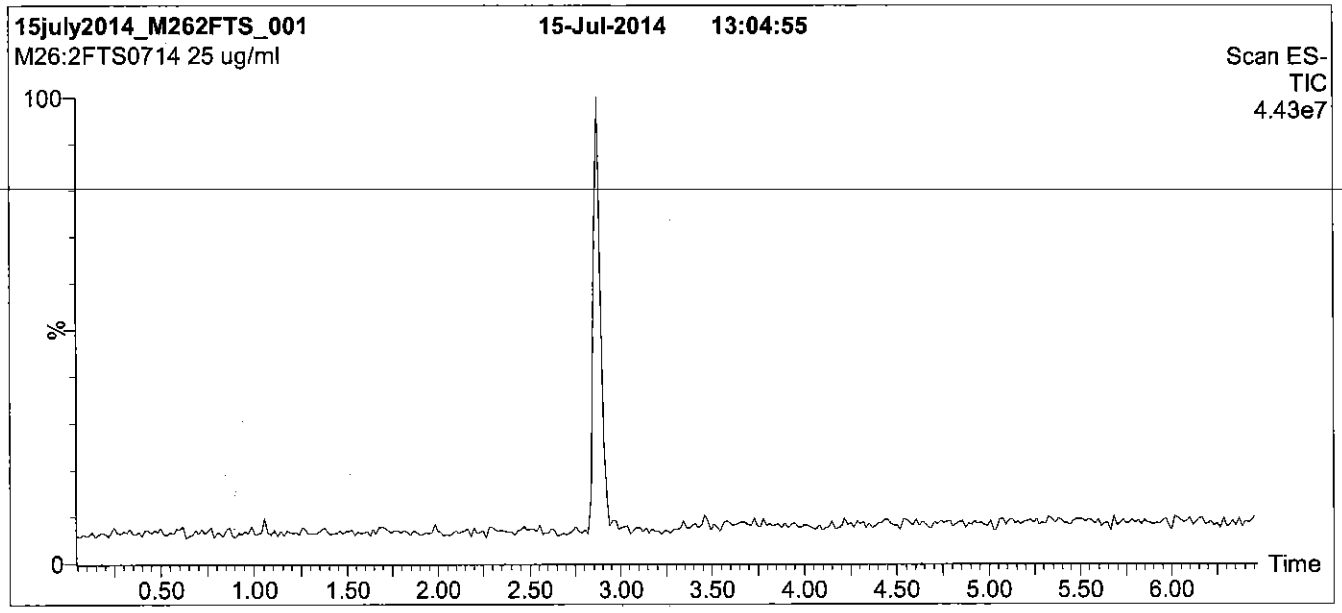
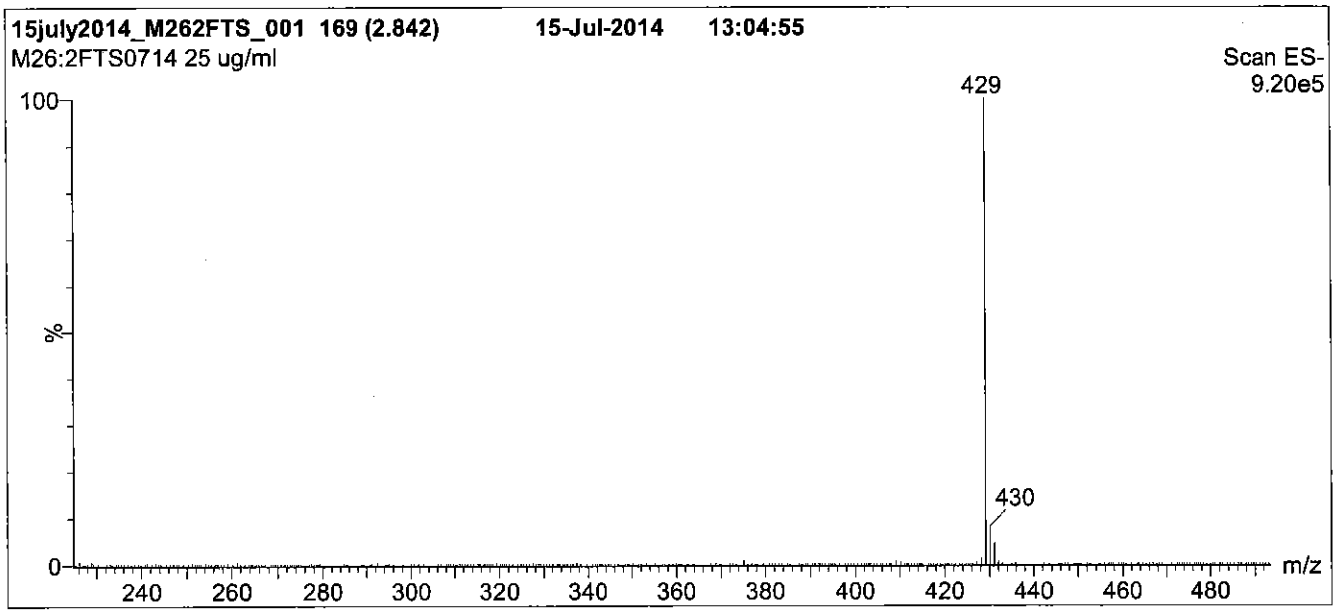
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

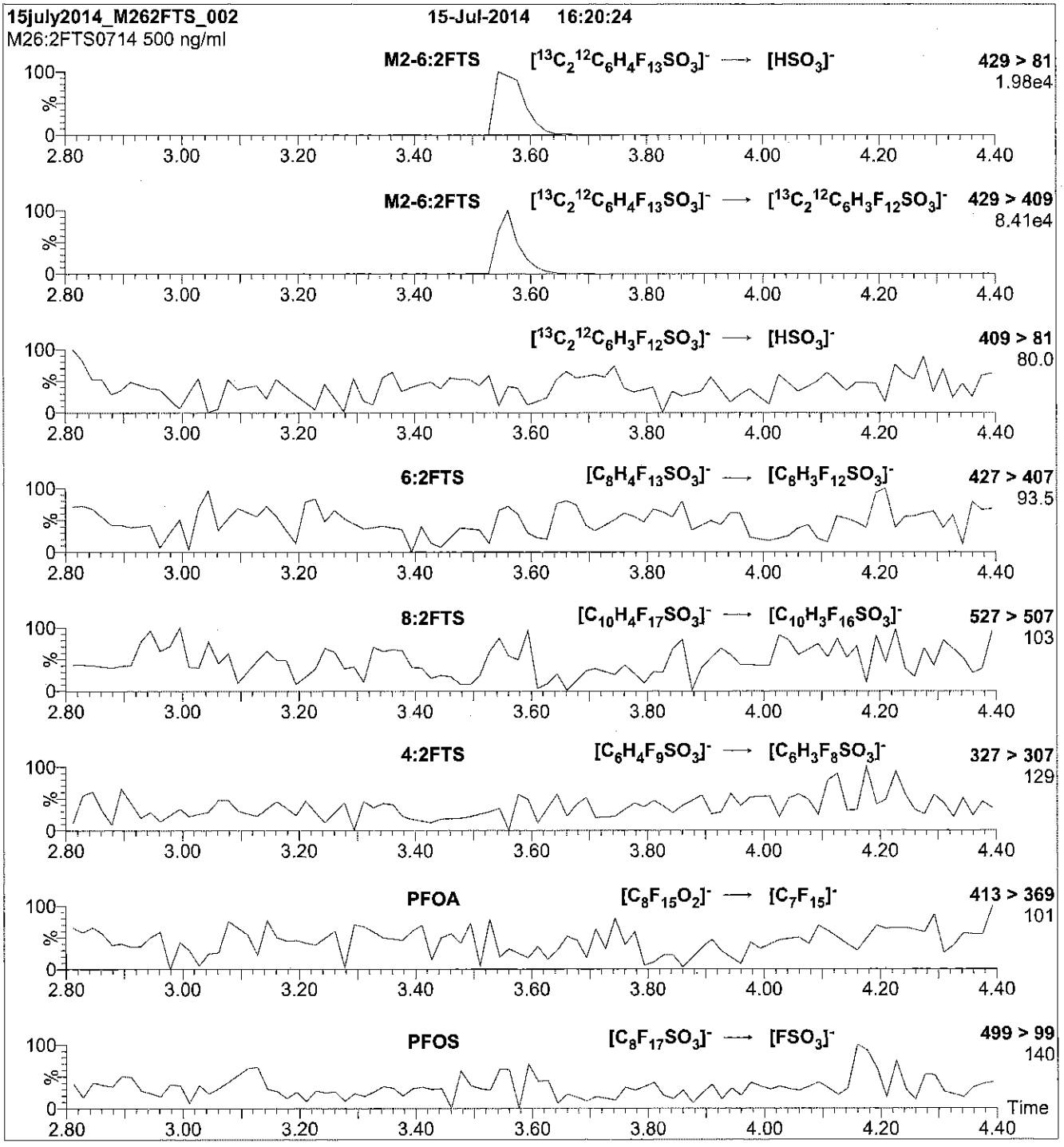
Flow: 300 µl/min

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

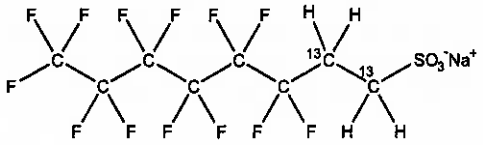
WELLINGTON LABORATORIES

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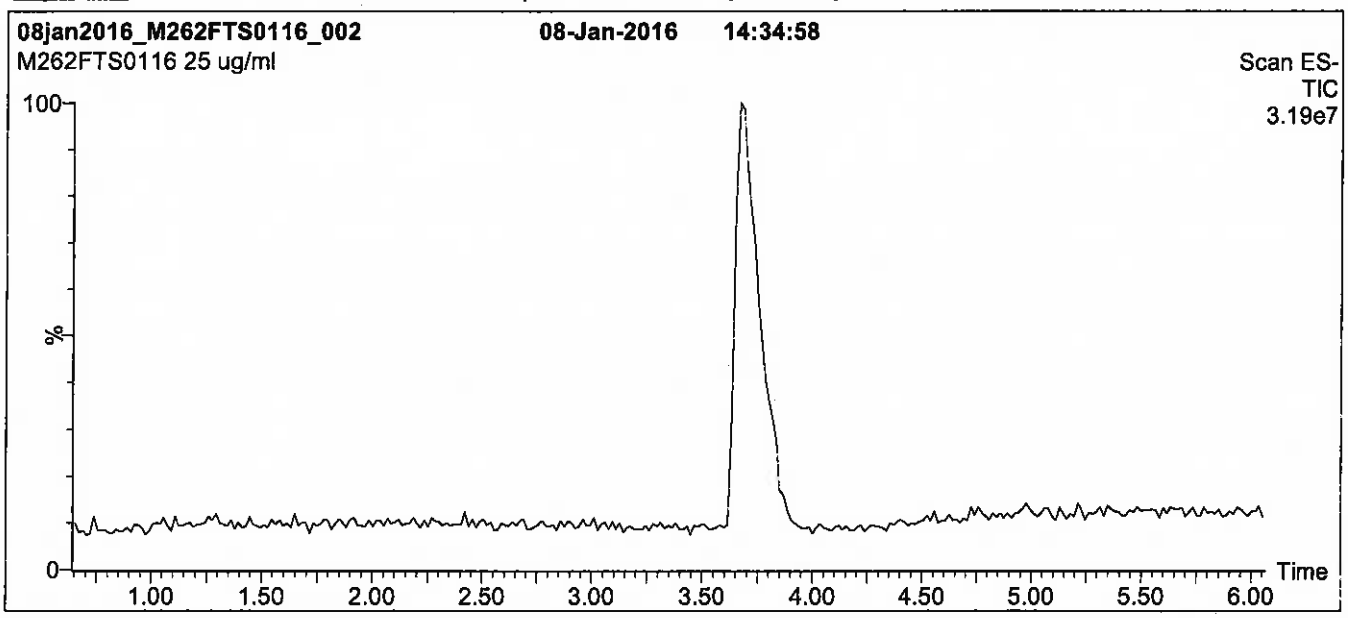
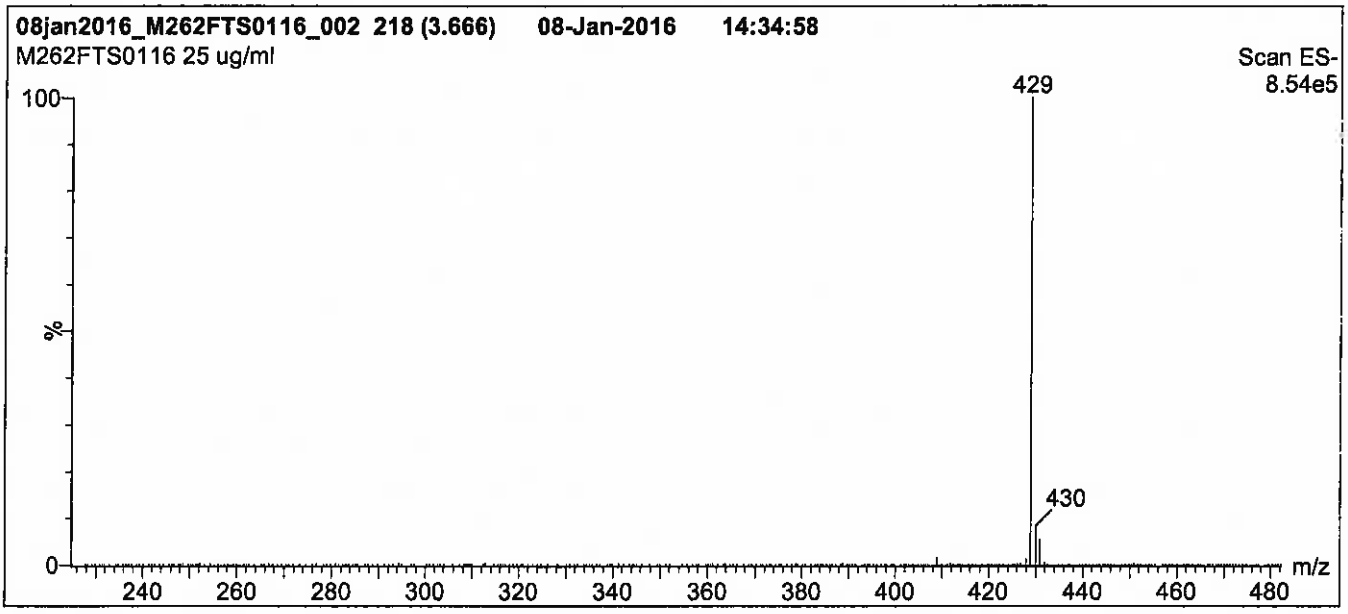
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

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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

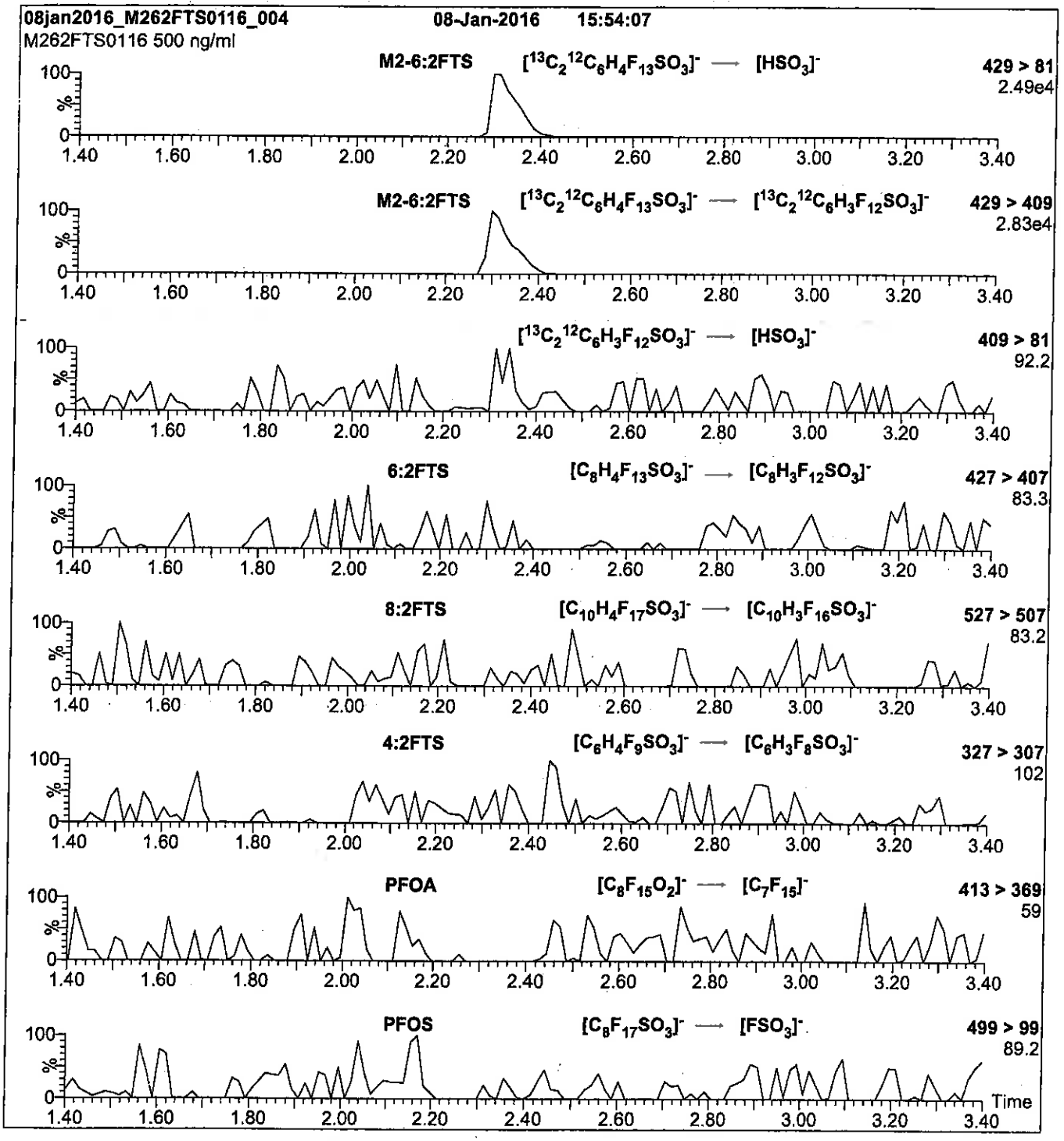
Flow: 300 µl/min

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
s · 7/22/15 STV

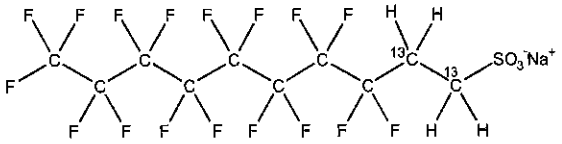
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/13/2014		
EXPIRY DATE: (mm/dd/yyyy)	04/13/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

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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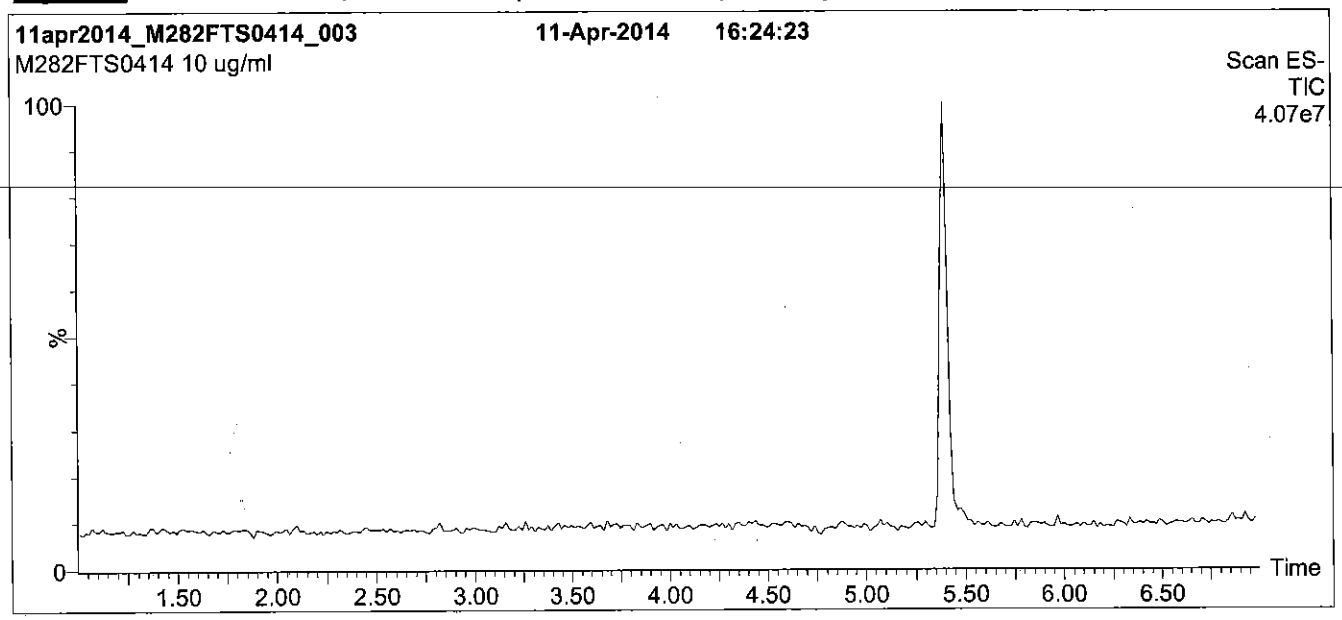
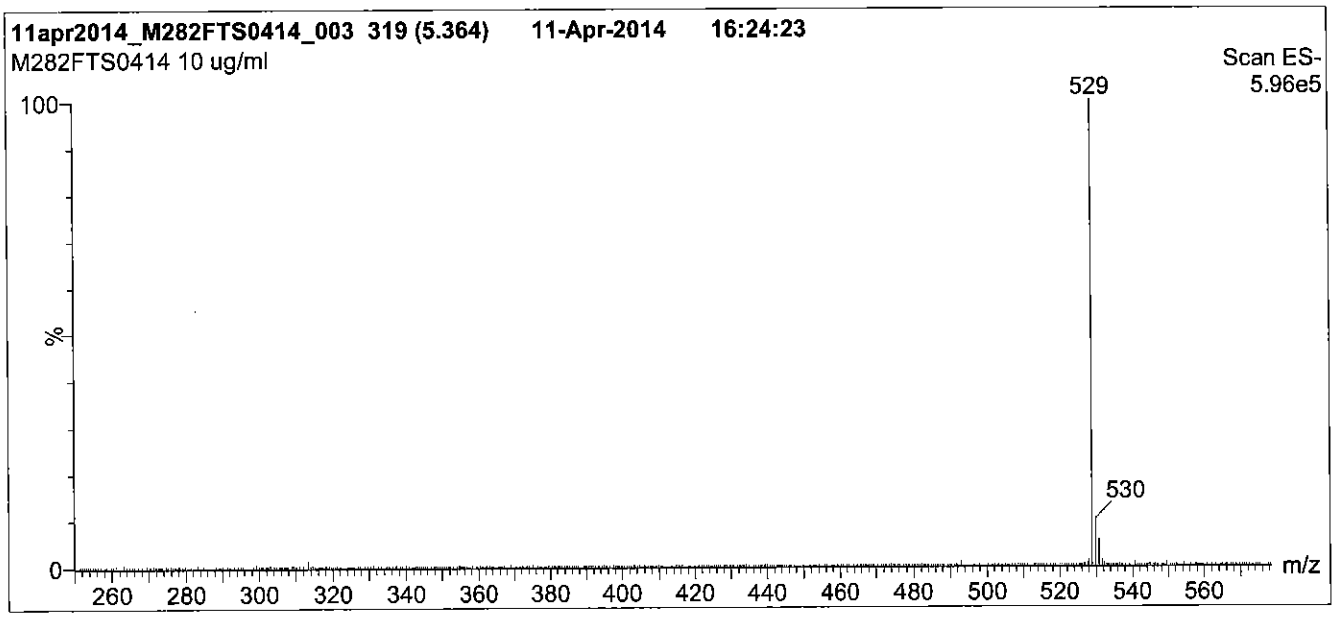




Conditions for Figure 1:

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

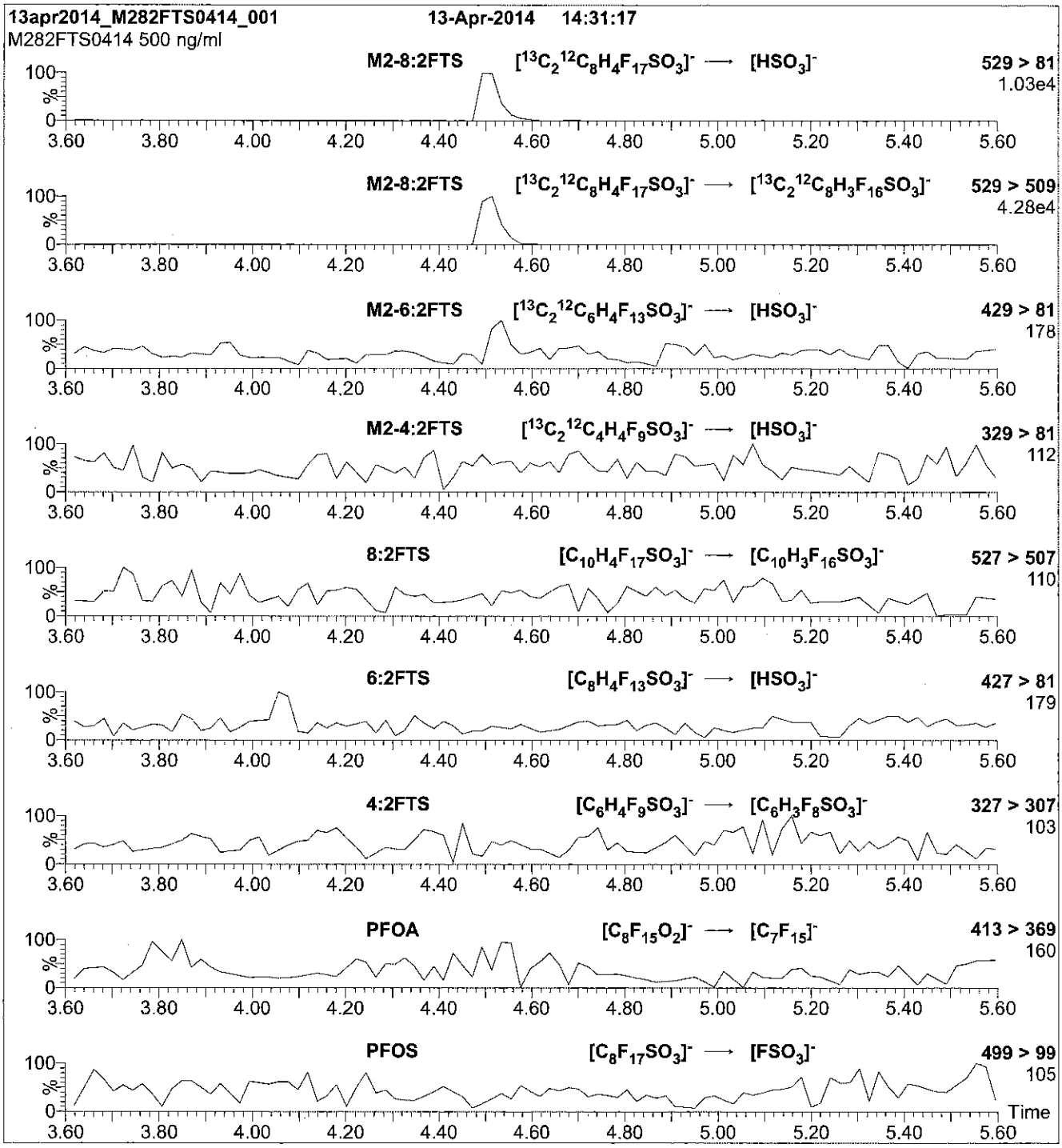
Flow: 300 µl/min

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

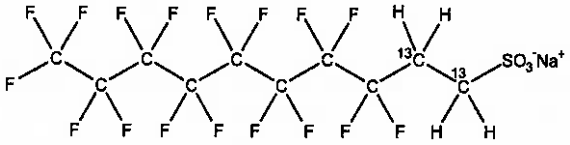
WELLINGTON LABORATORIES

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)	**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

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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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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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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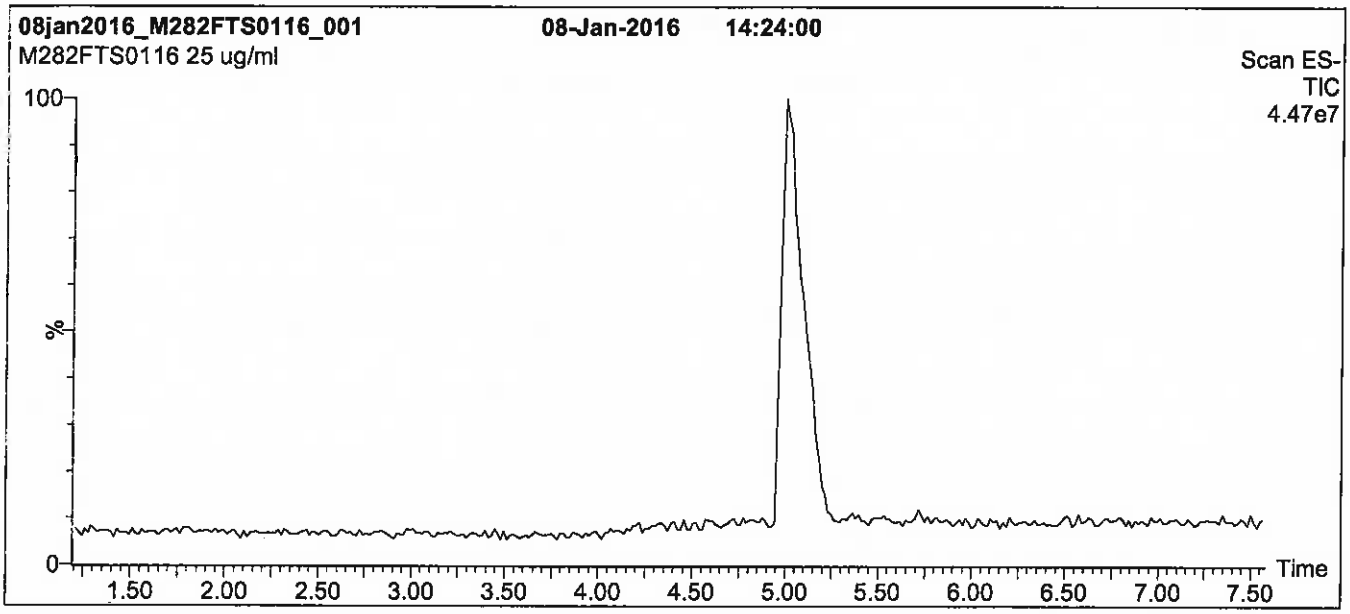
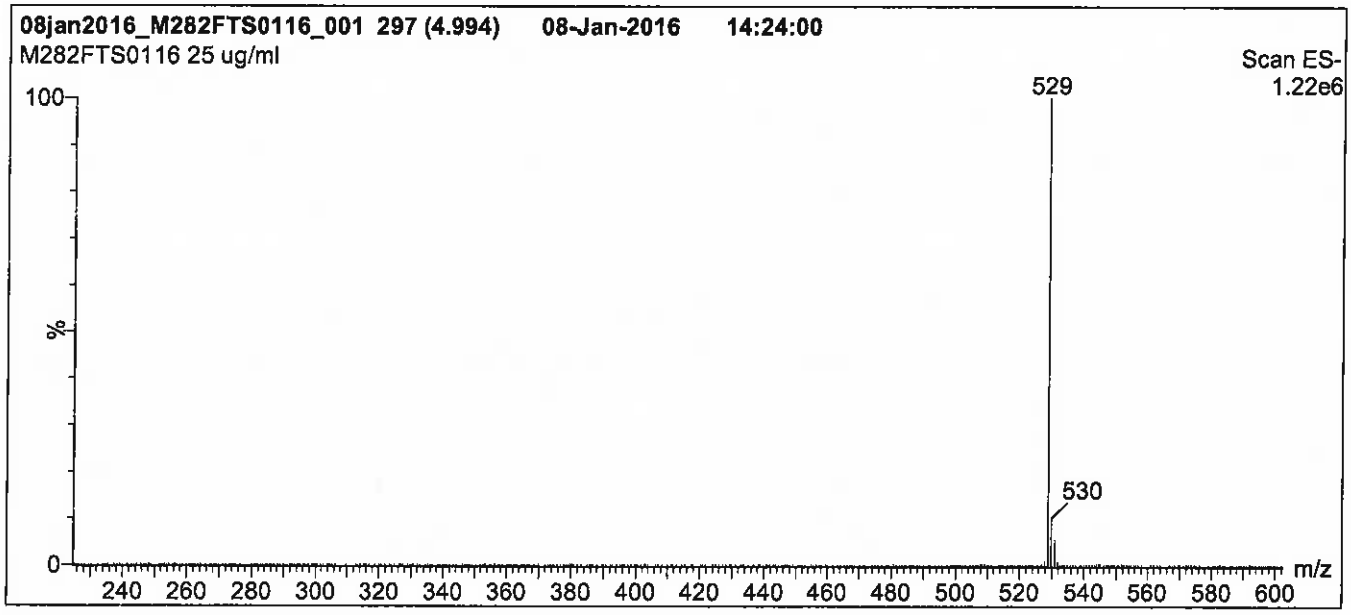
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

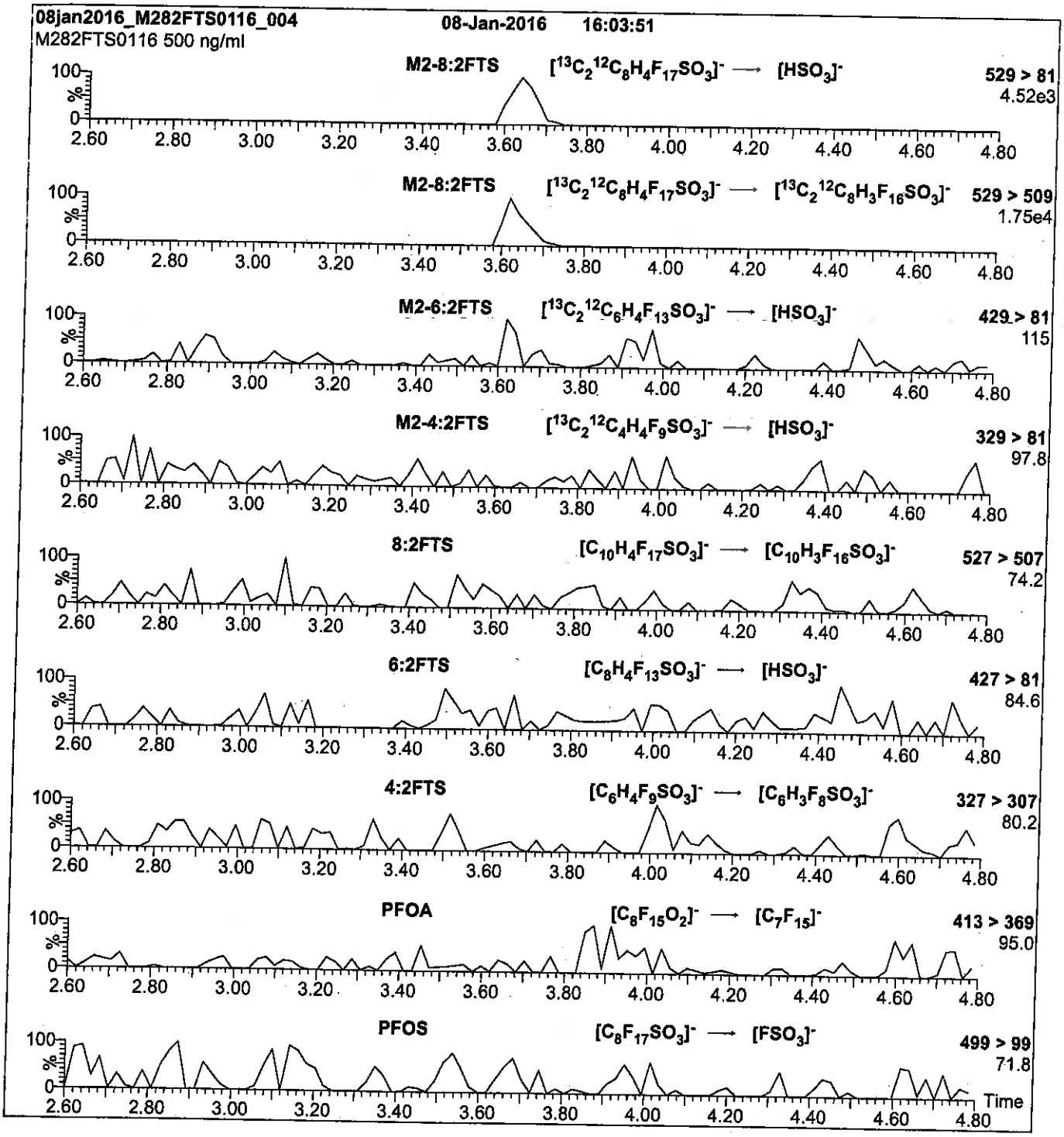
Flow: 300 µl/min

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

Reagent

LCM2PFHxDA_00008

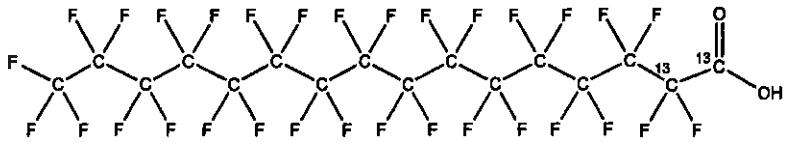
R: SBC 9/22/16

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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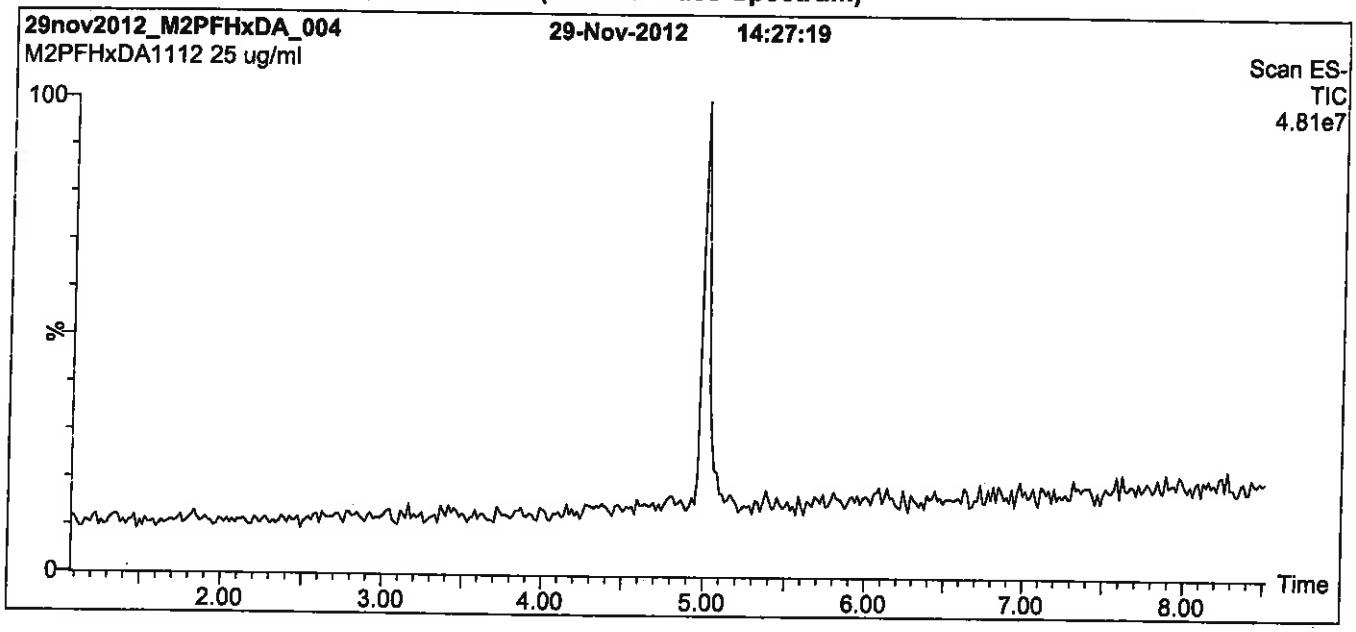
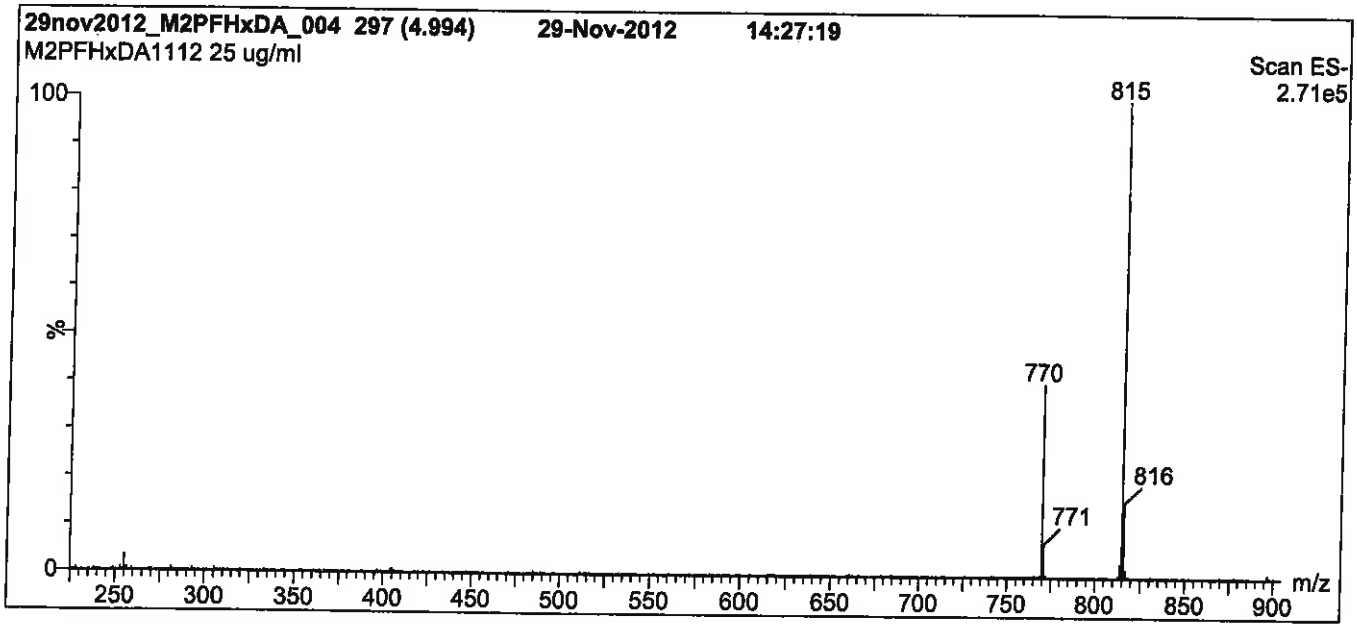
Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





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

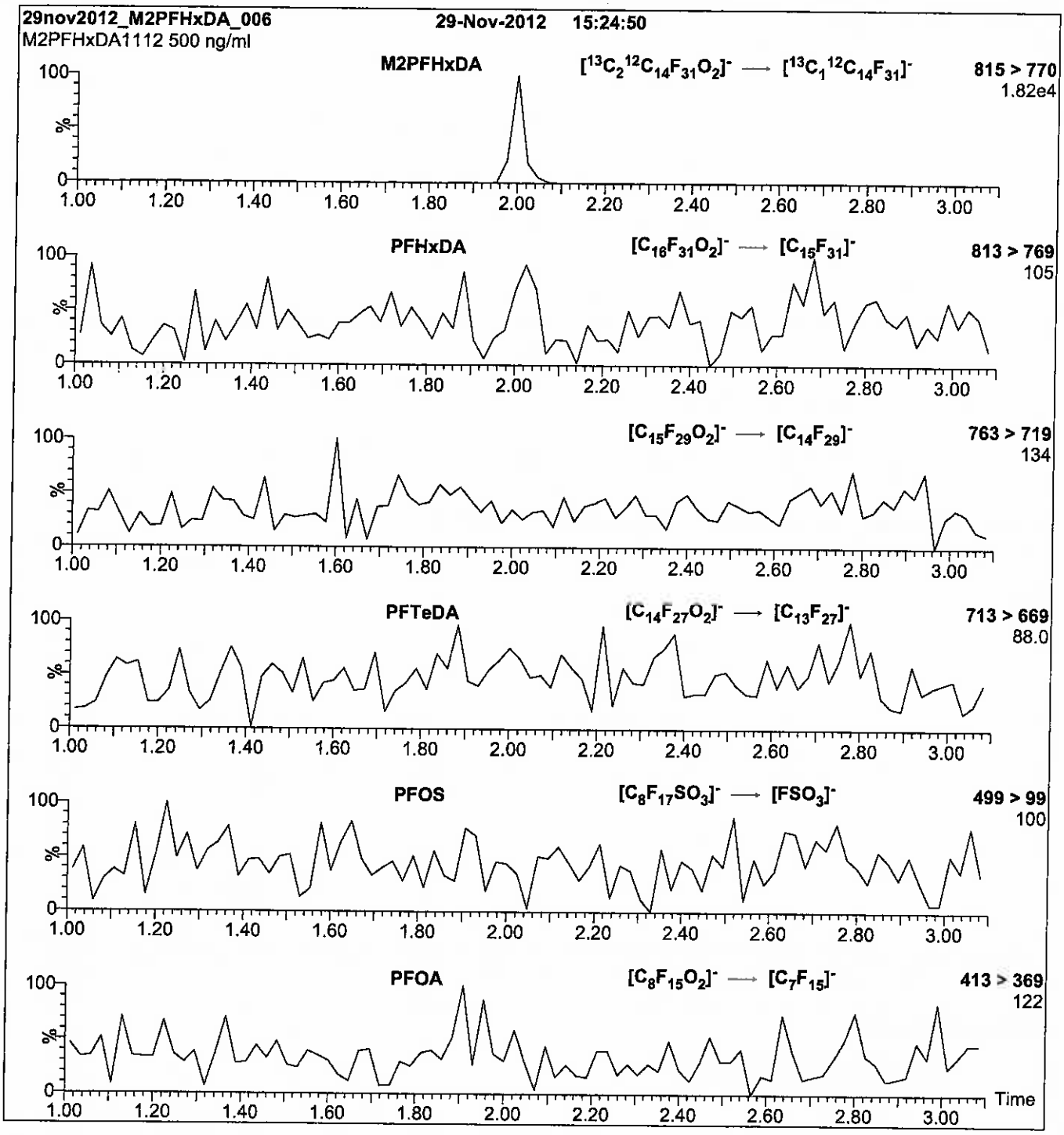
Flow: 300 µl/min

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

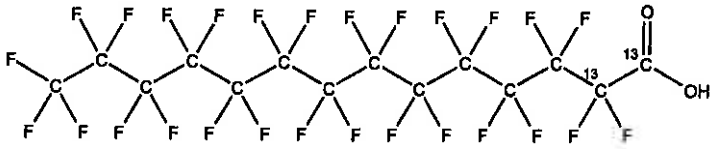
738563
ID: LCM2PFTeDA_00007
Exp: 12/07/20 Prpd: SBC
13C2-PFTeDA at 50ug/mL

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-$^{13}C_2$)
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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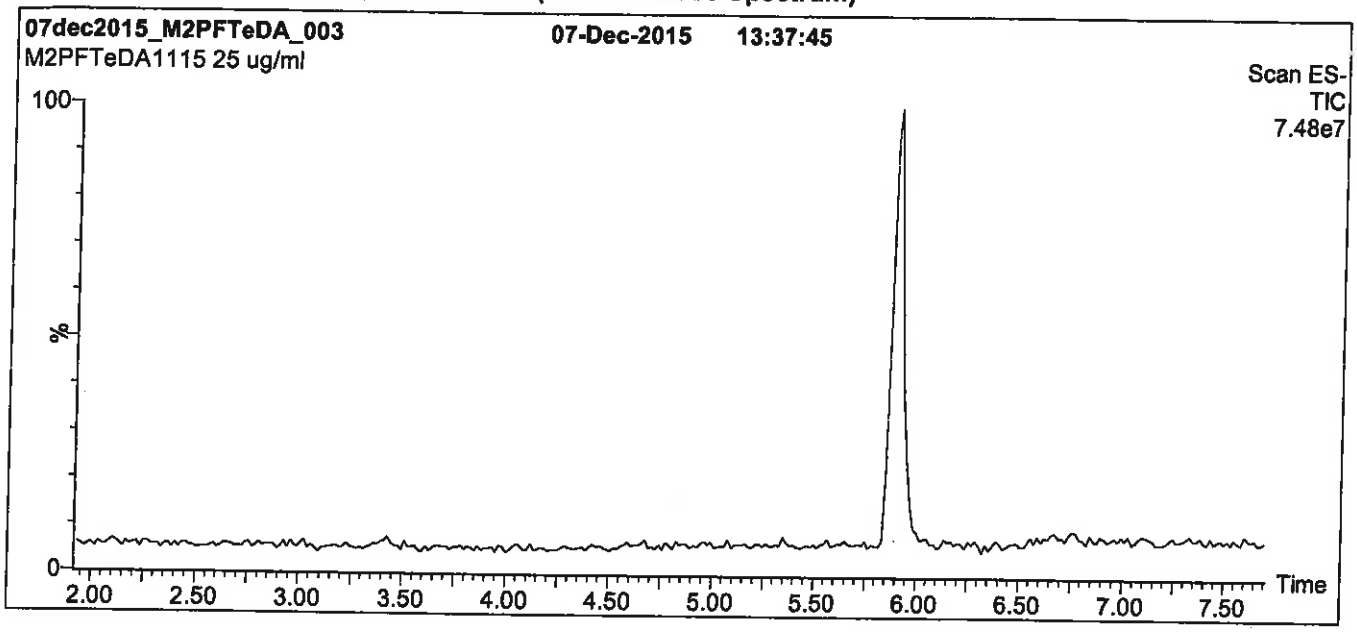
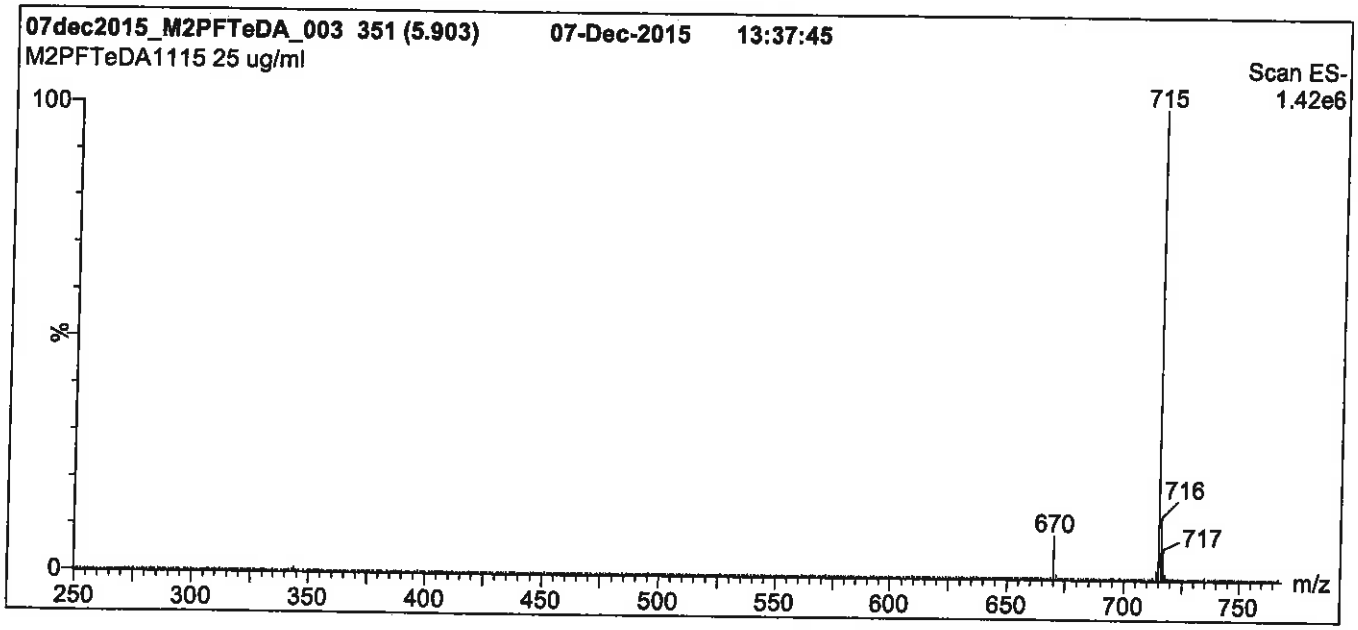
Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





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

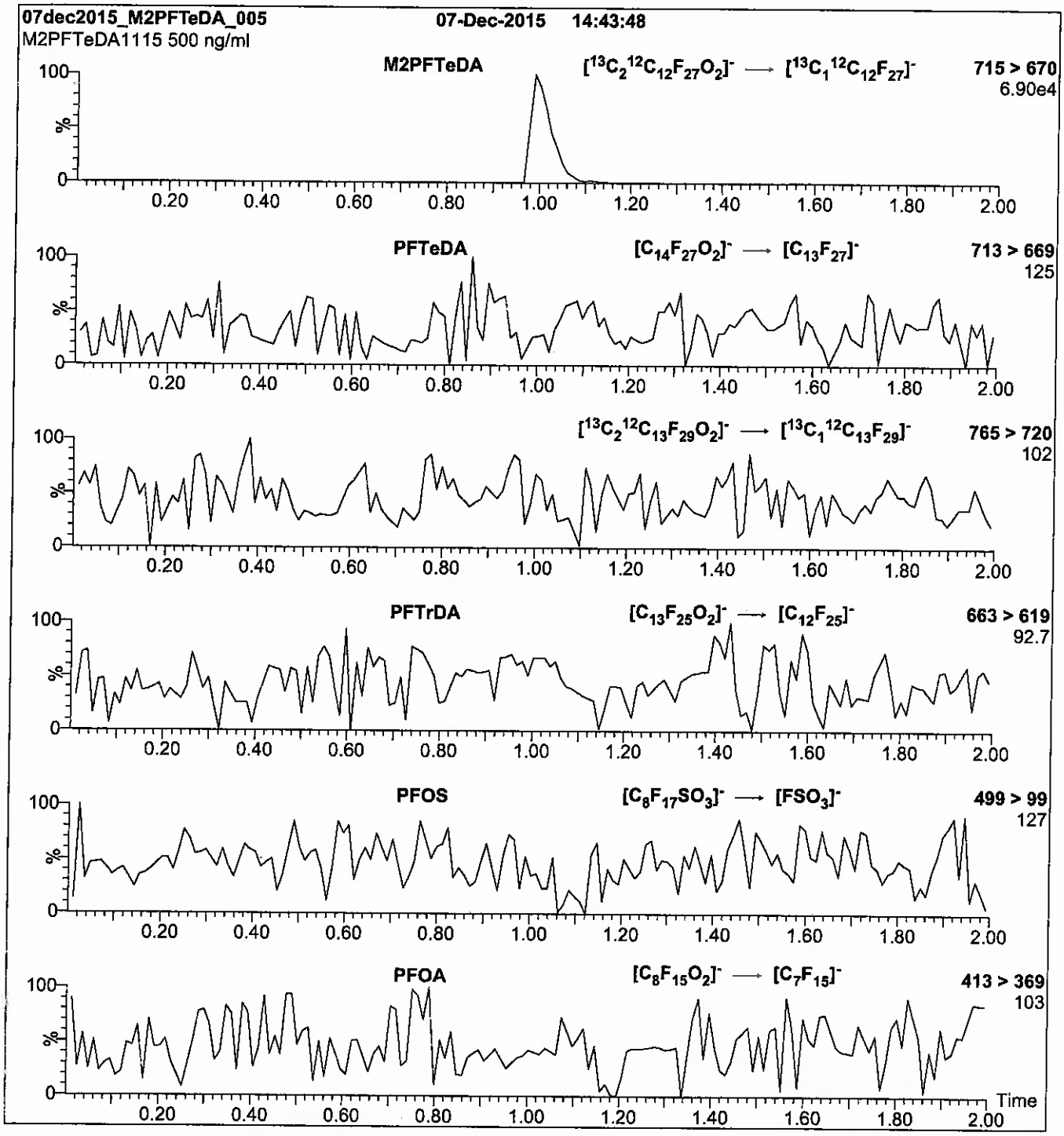
Flow: 300 µl/min

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

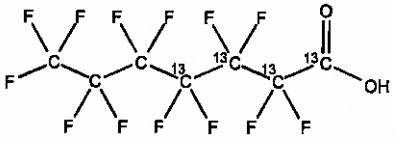
WELLINGTON LABORATORIES

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,...x_n on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

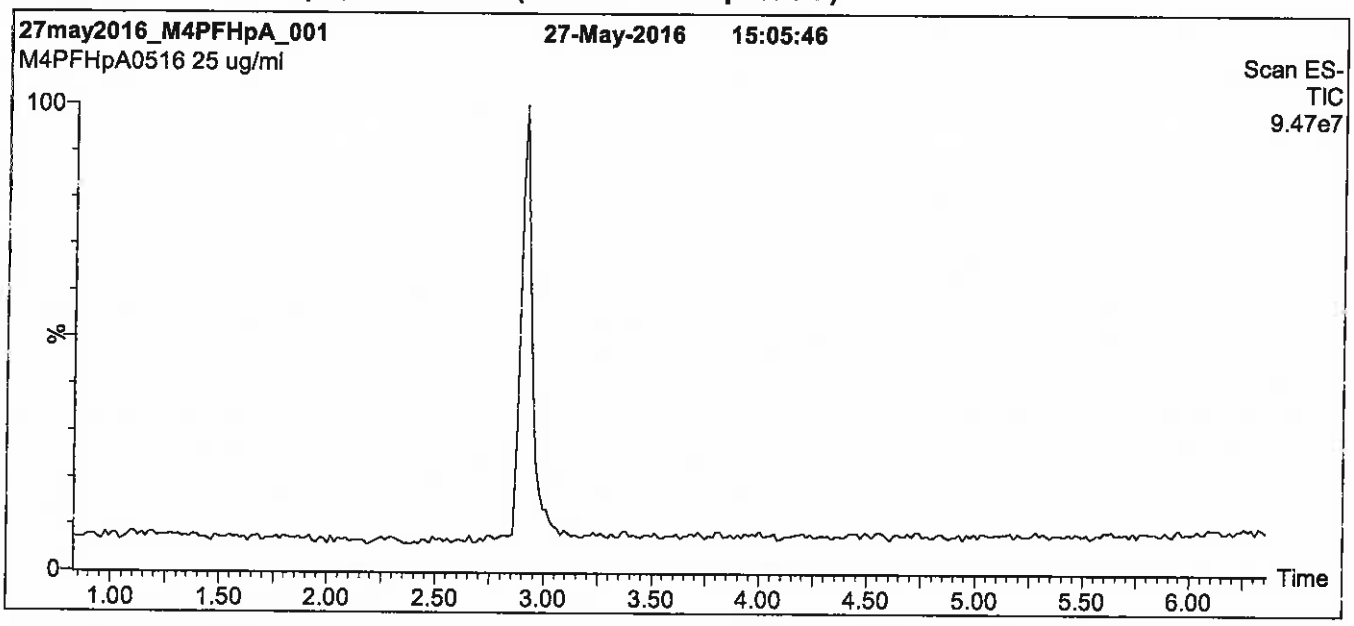
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

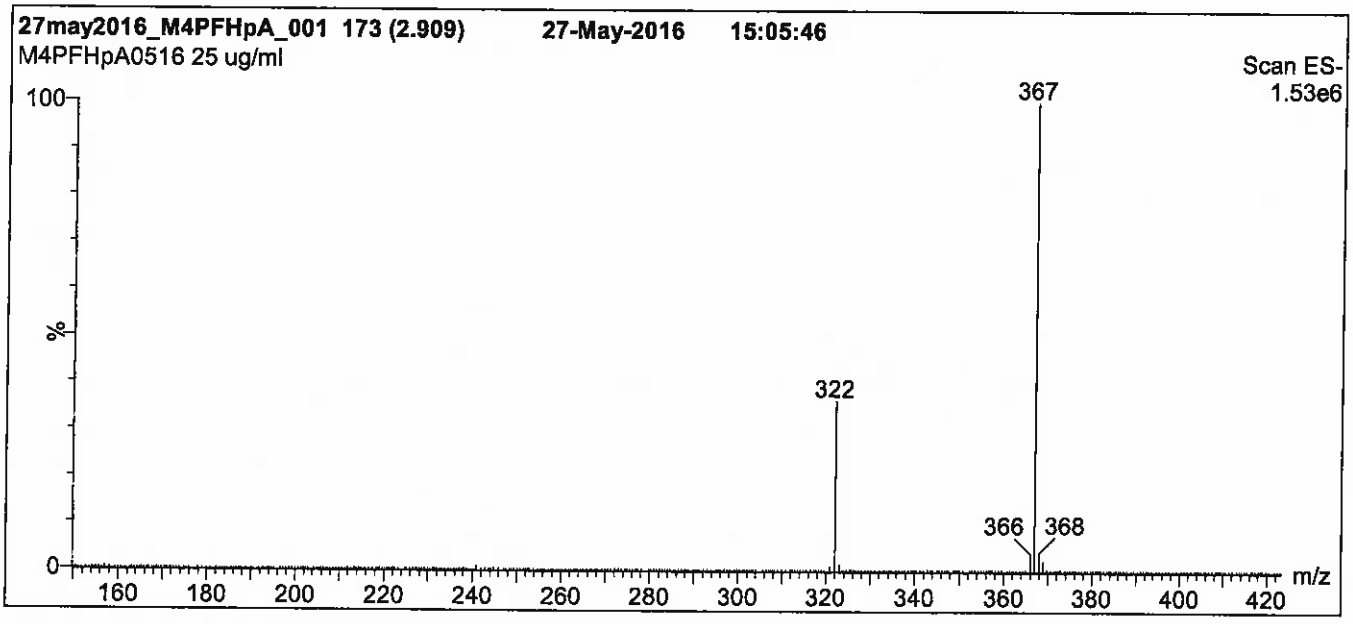
CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

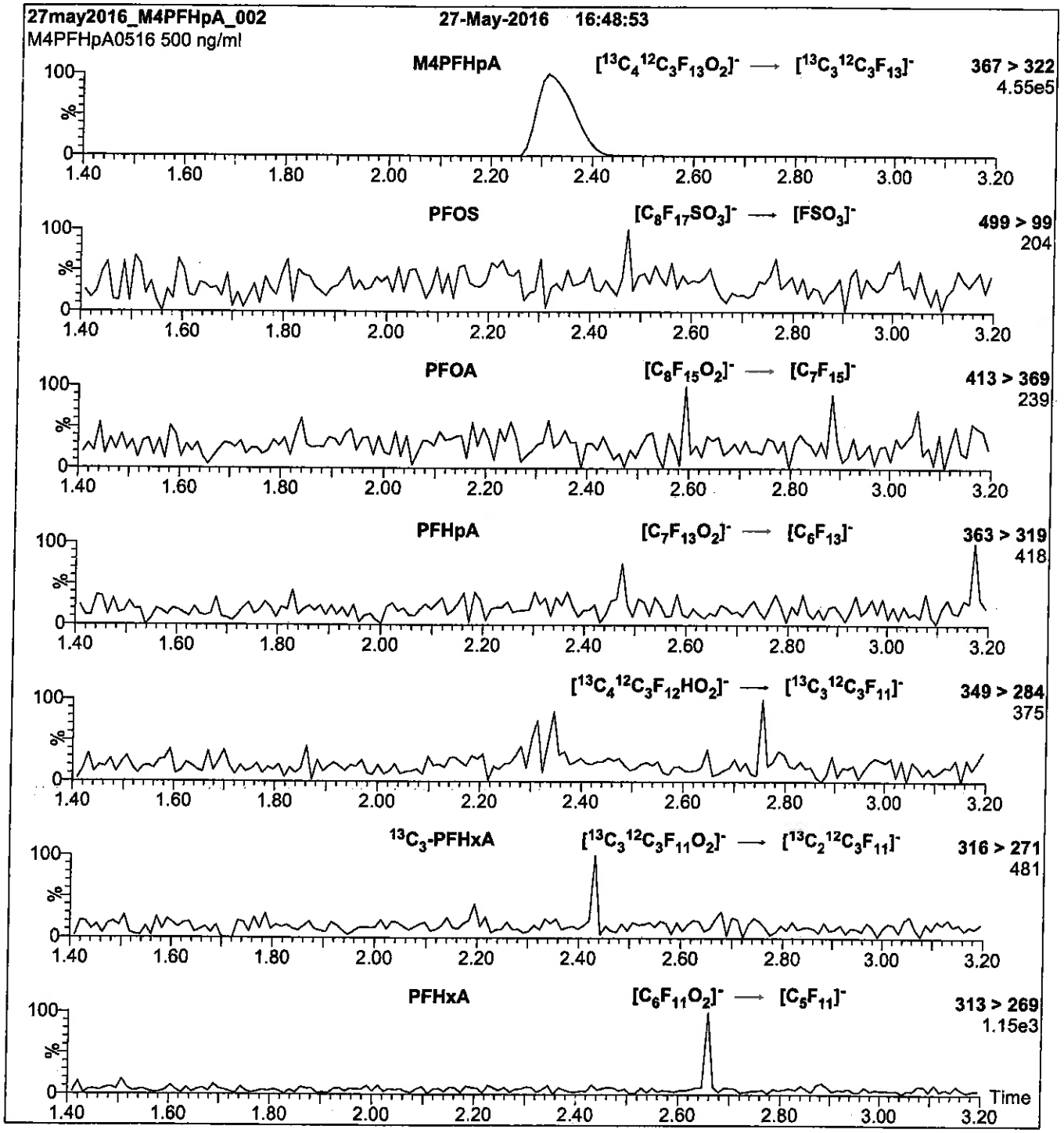
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM5PFPEA_00008

R: SBC 9/22/16

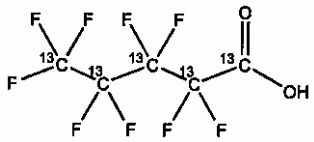
739590
ID: LCM5PFPEA_00008
Exp: 05/22/20 Prpd: SBC
13C5-Perfluoropentanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

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



MOLECULAR FORMULA:	$^{13}C_5HF_9O_2$	**MOLECULAR WEIGHT:**	269.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	05/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/22/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/25/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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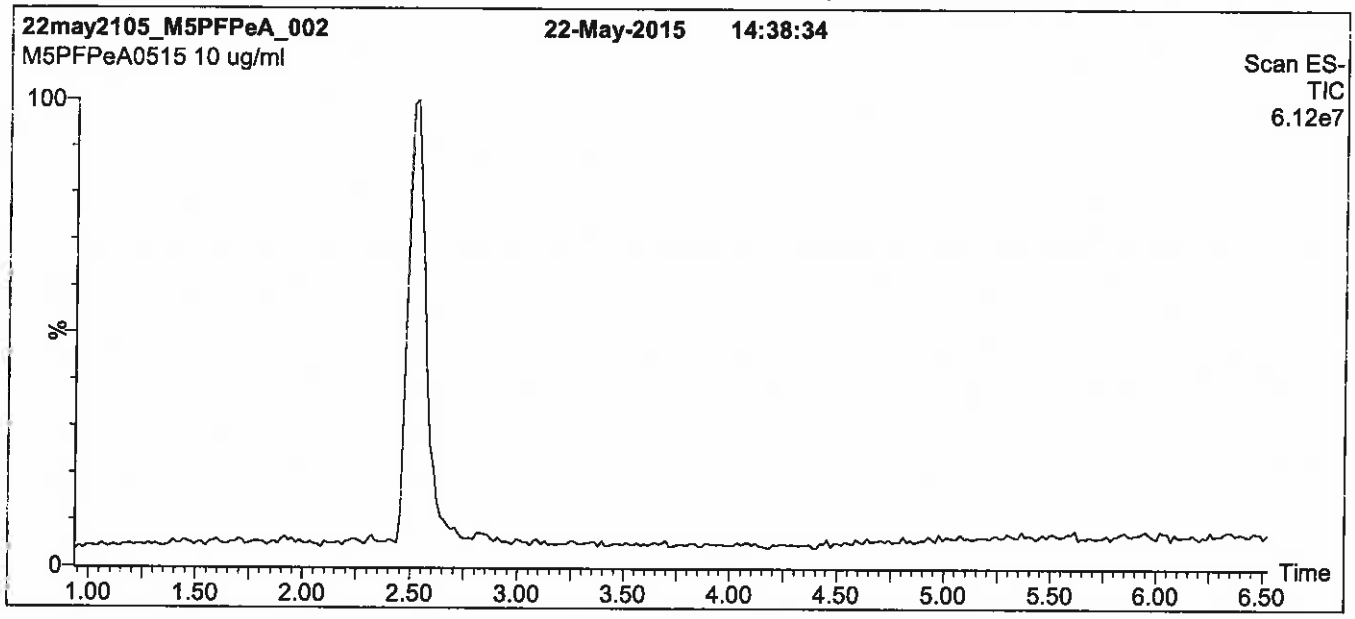
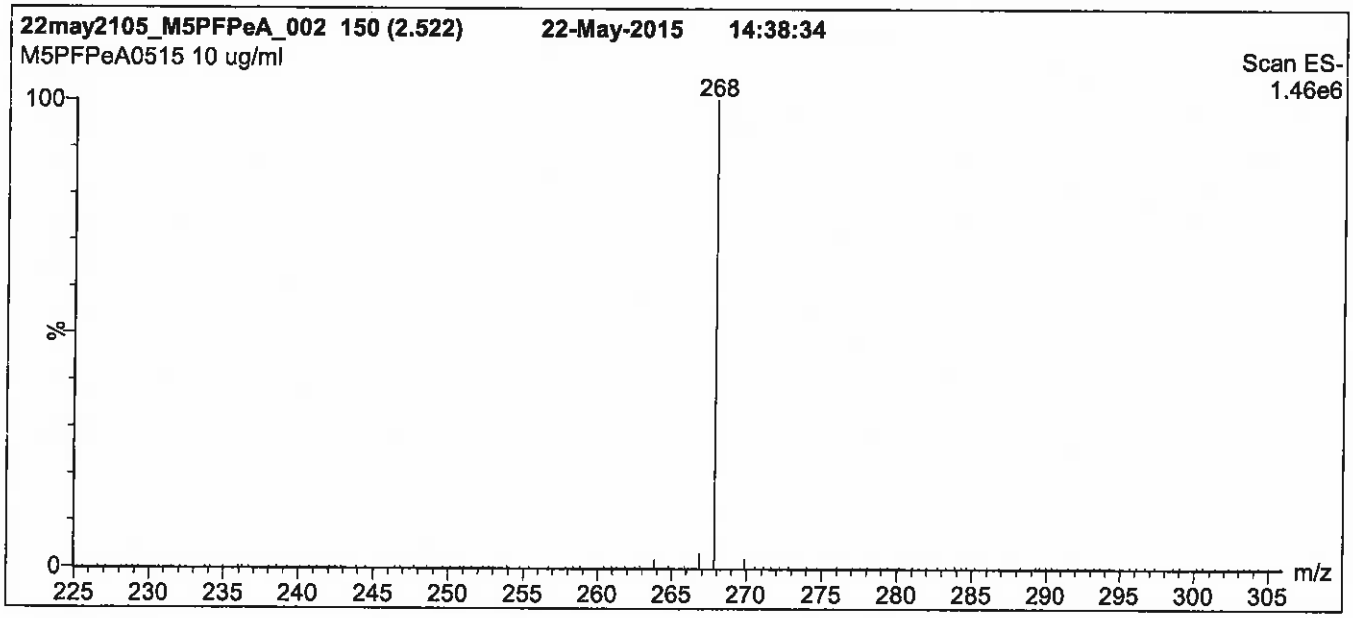
CALA

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

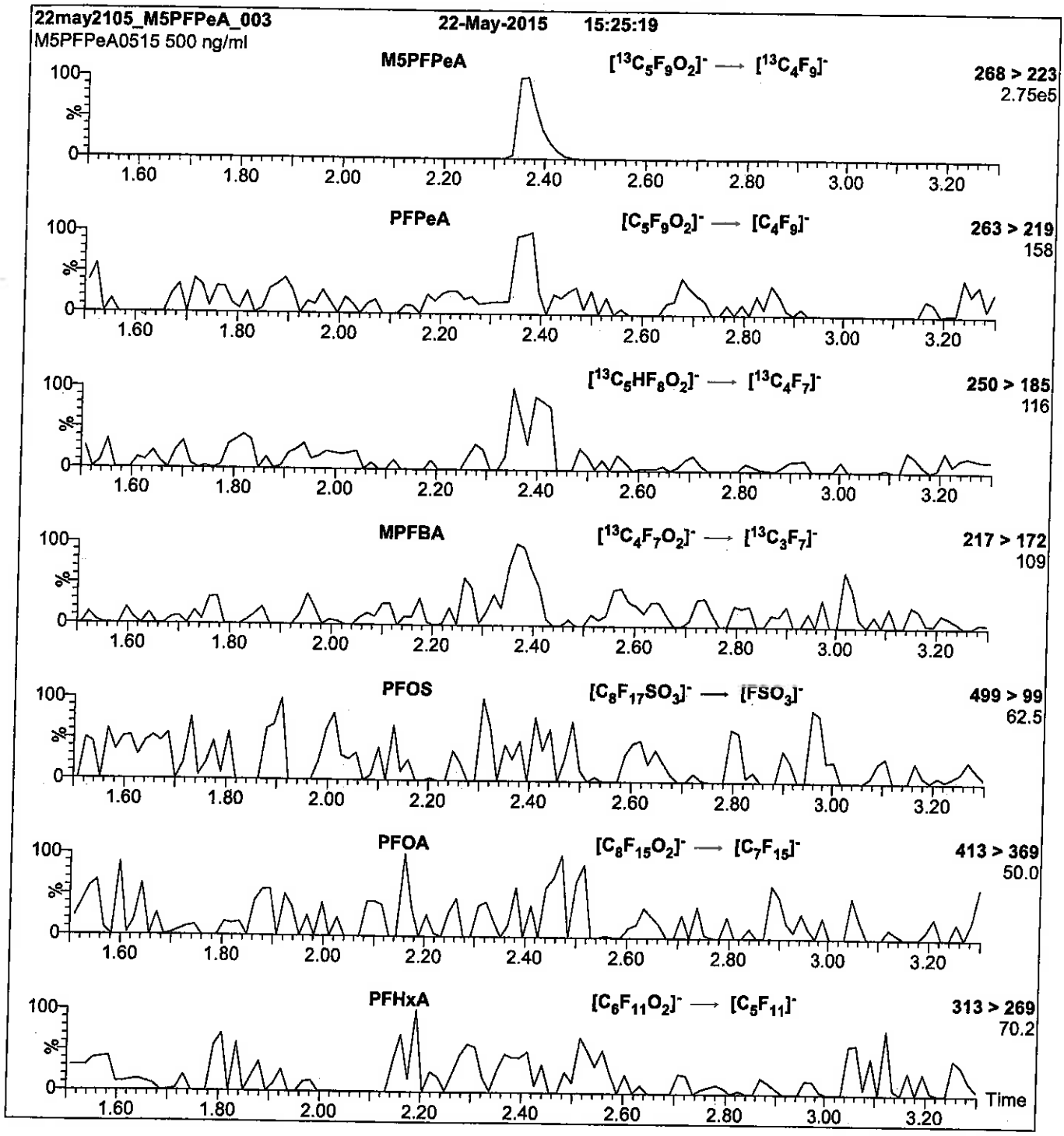
Flow: 300 µl/min

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

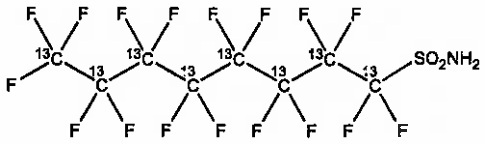
R: SBC 9/22/16
Scanned 10/14/16 SBC

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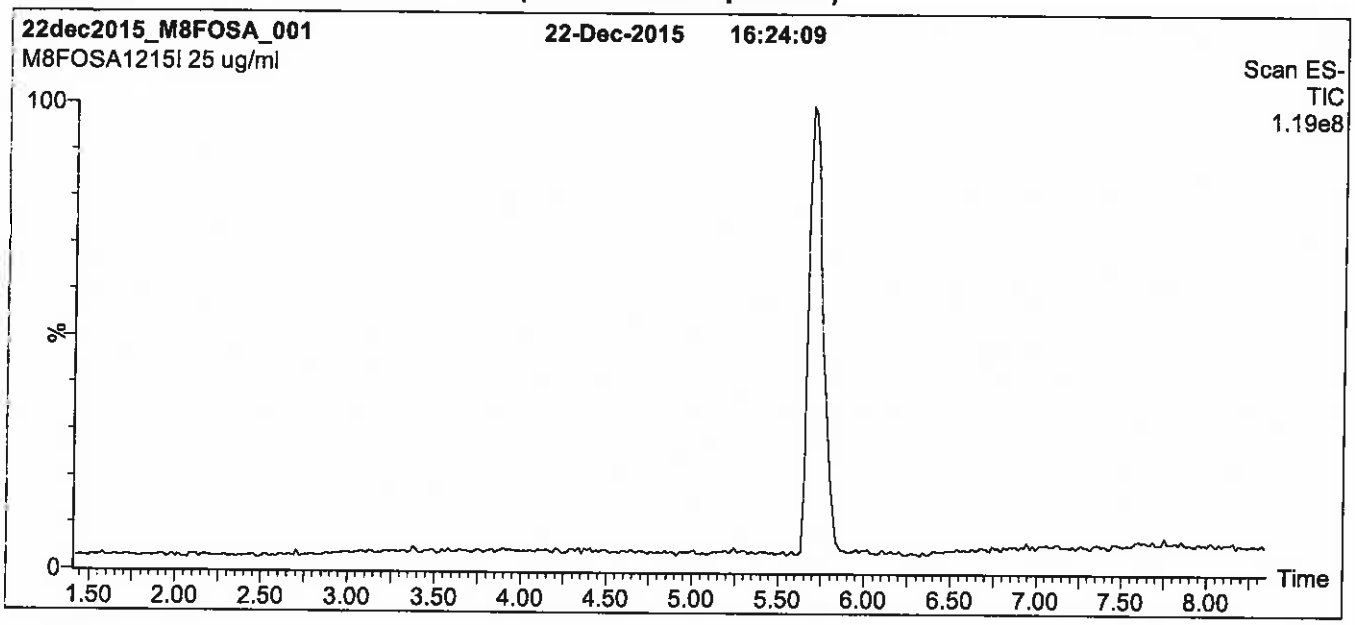
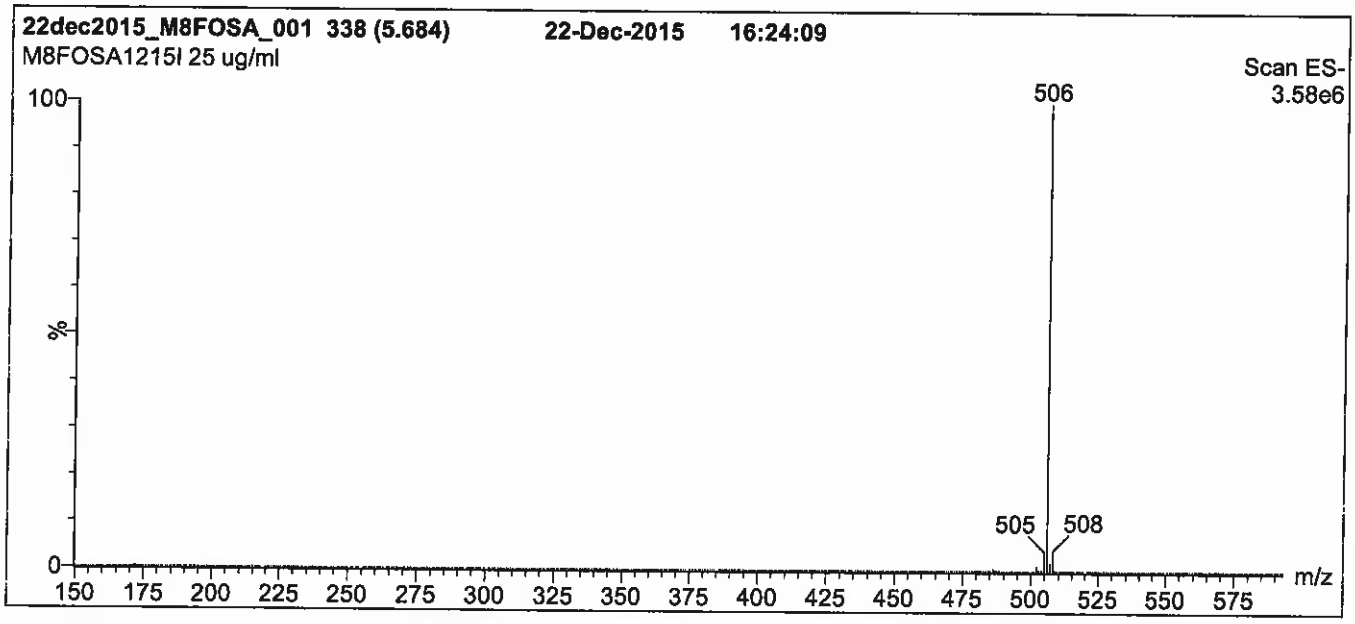
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

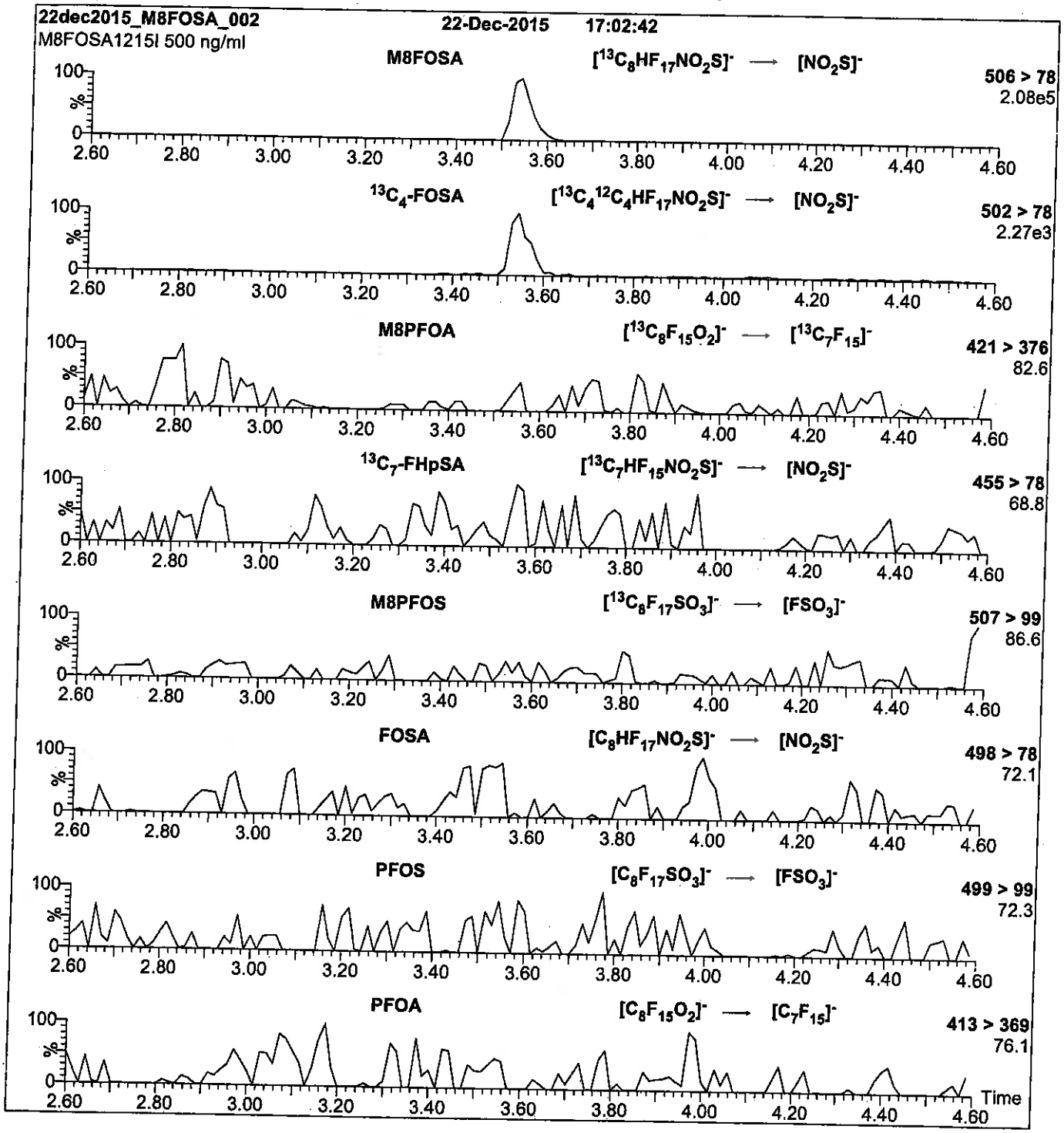
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M8FOSA-I)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCMPFBA_00008

R: SBC 9/22/16

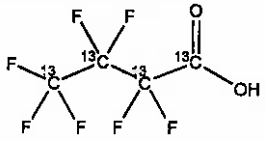
739593
ID: LCMPFBA_00008
Exp: 05/24/21 Prpd: SBC
13C4-Perfluorobutanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ 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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All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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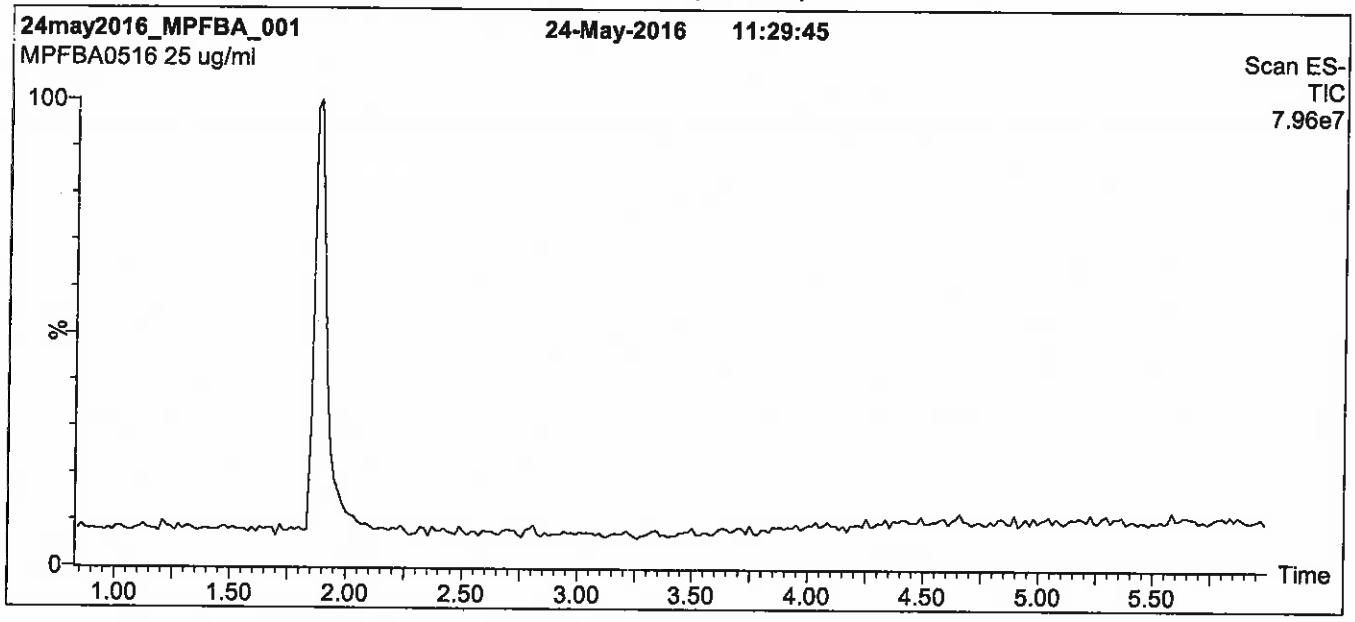
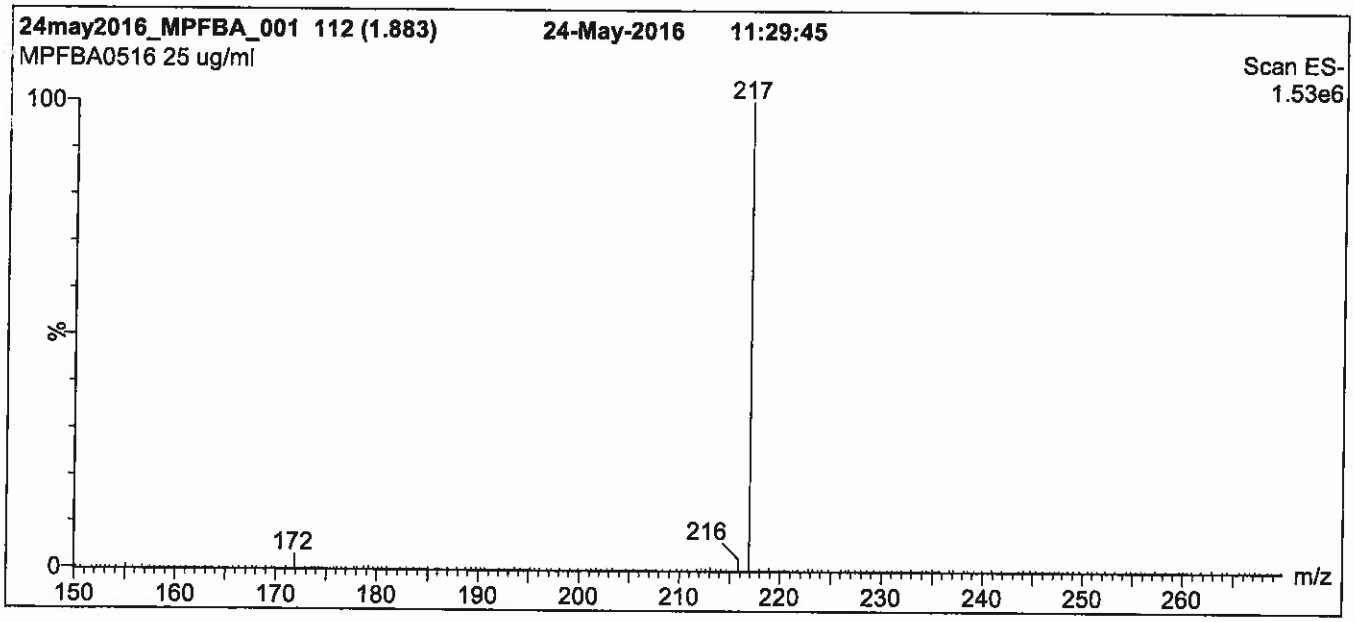
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

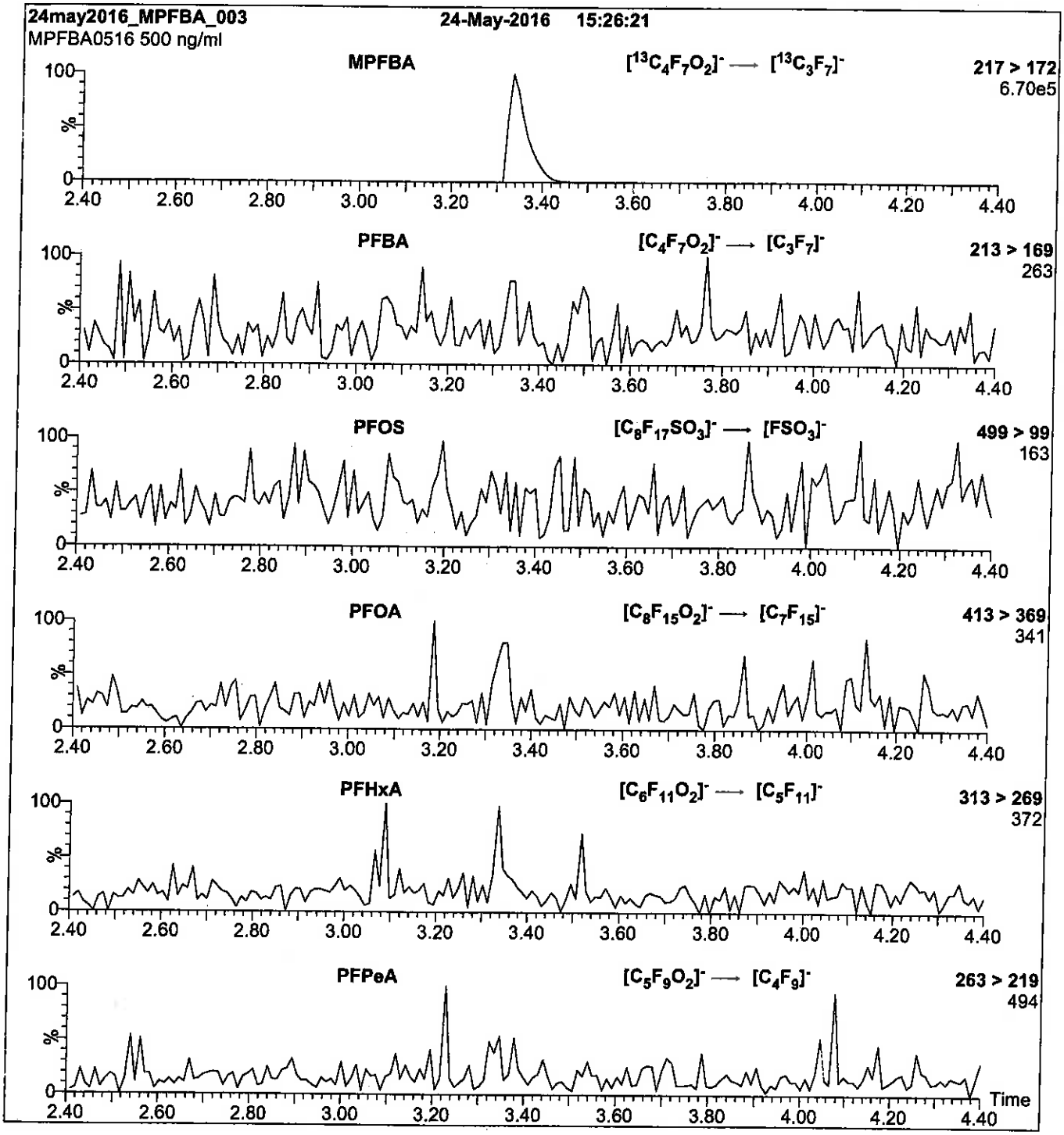
Flow: 300 µl/min

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

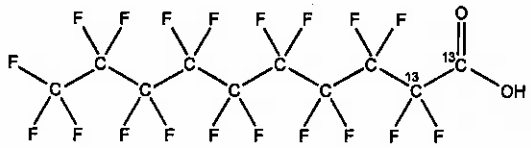
Scanned 10/14/16 R: SBC 9/22/16

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.

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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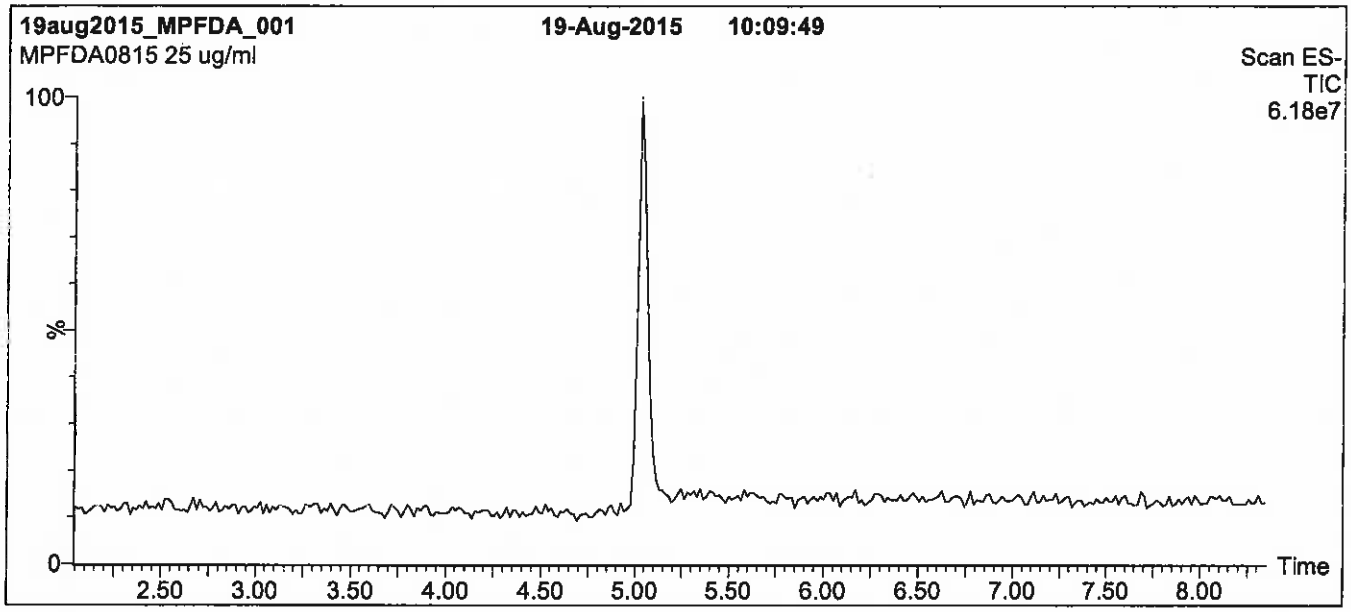
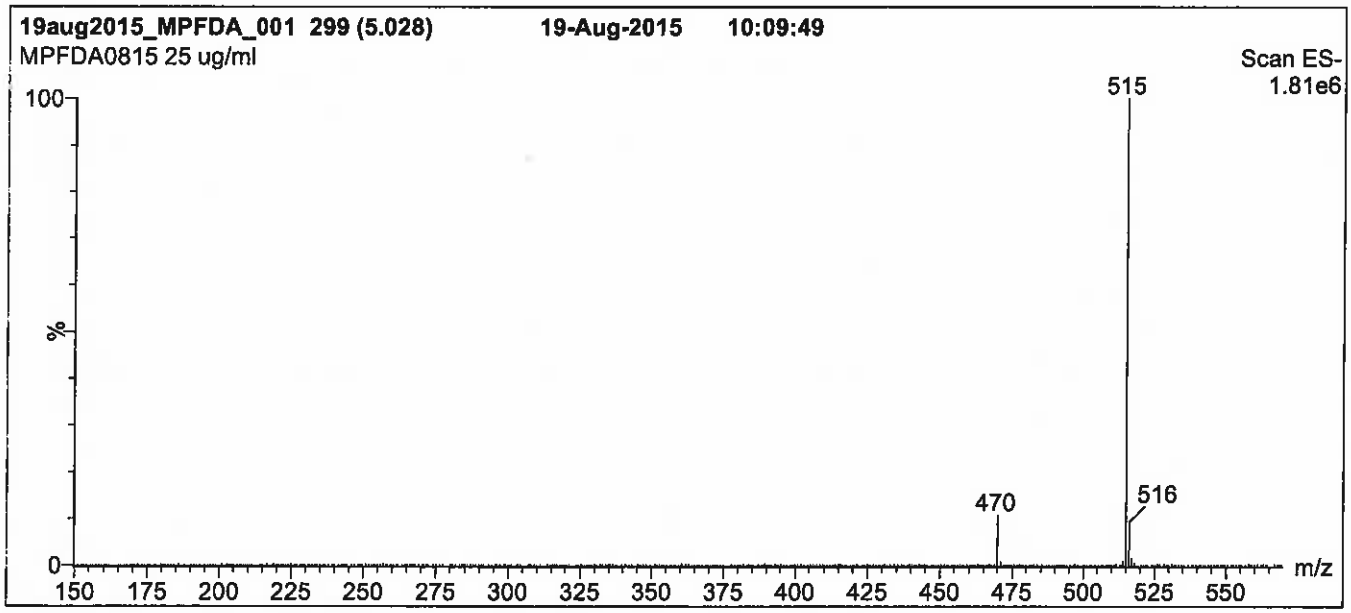




Conditions for Figure 1:

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

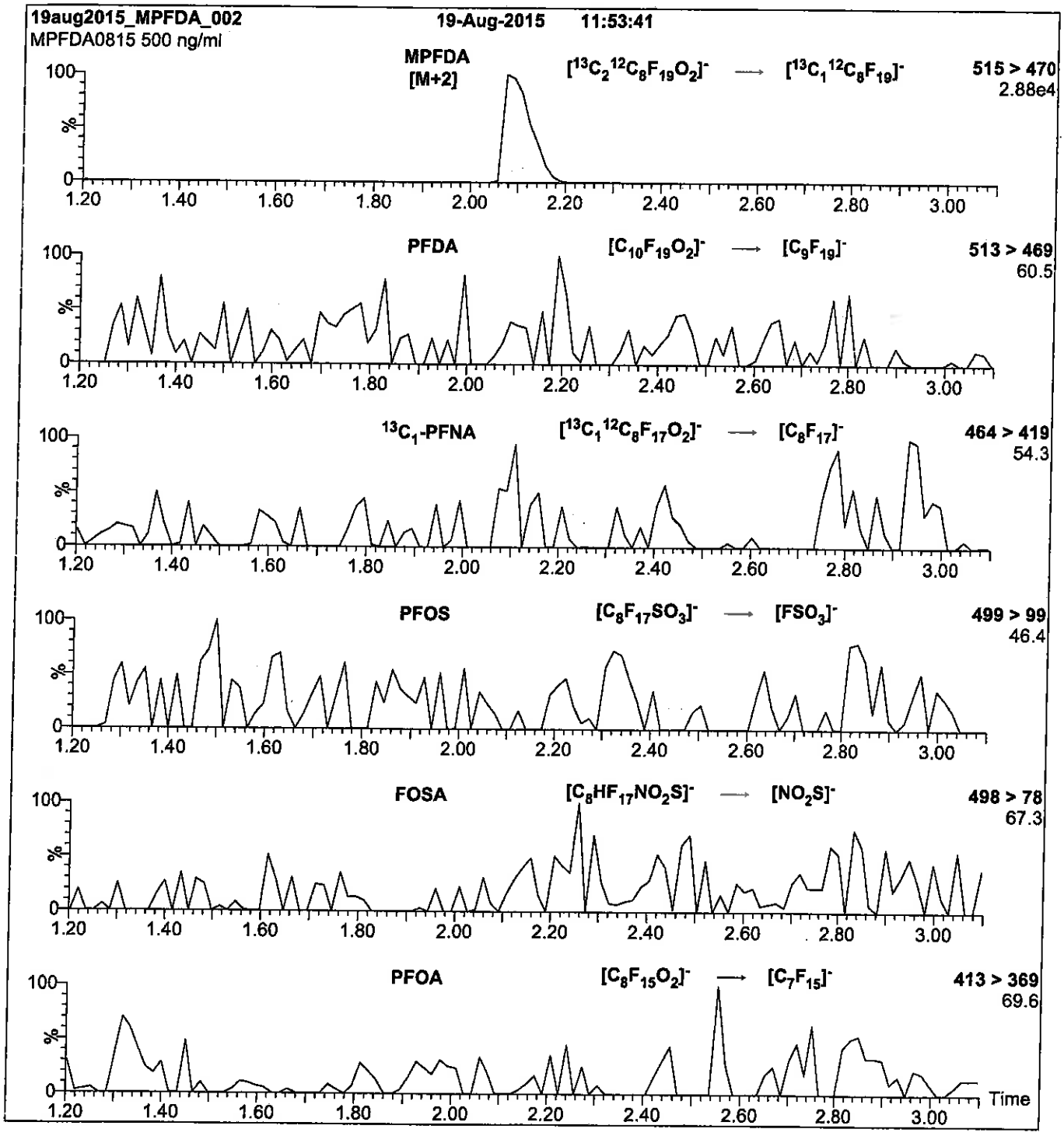
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

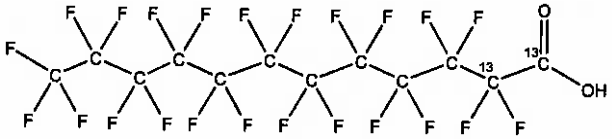
CERTIFICATE OF ANALYSIS DOCUMENTATION

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)

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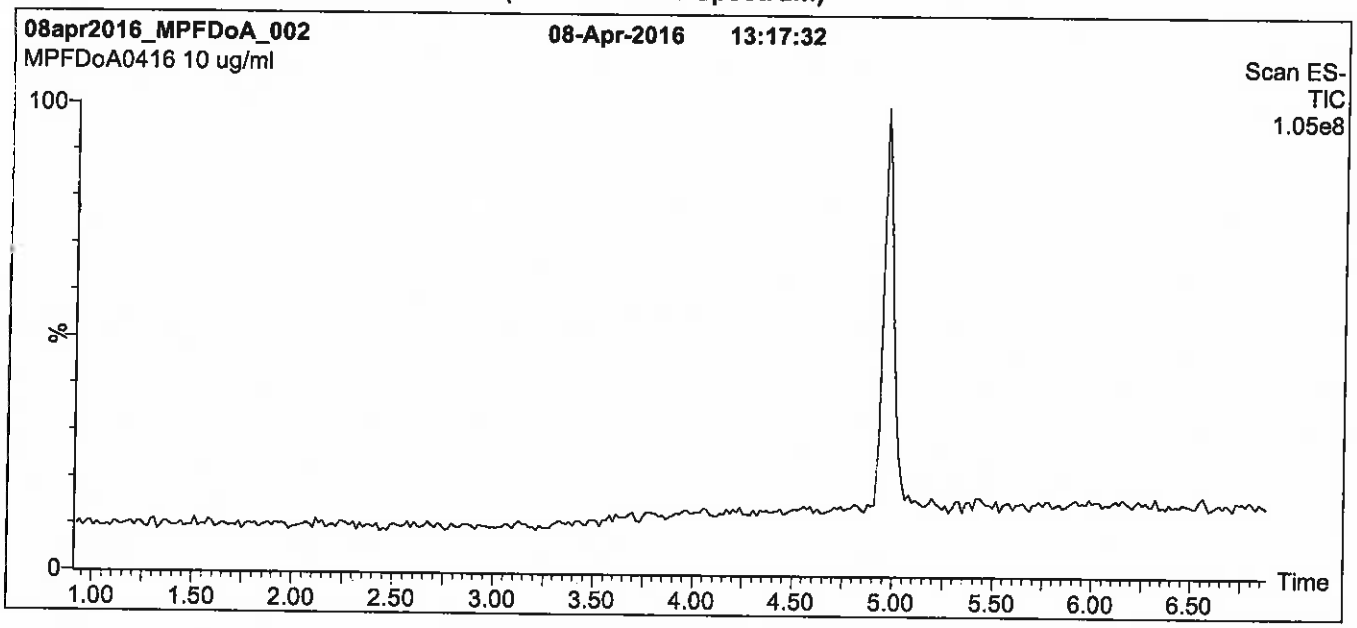
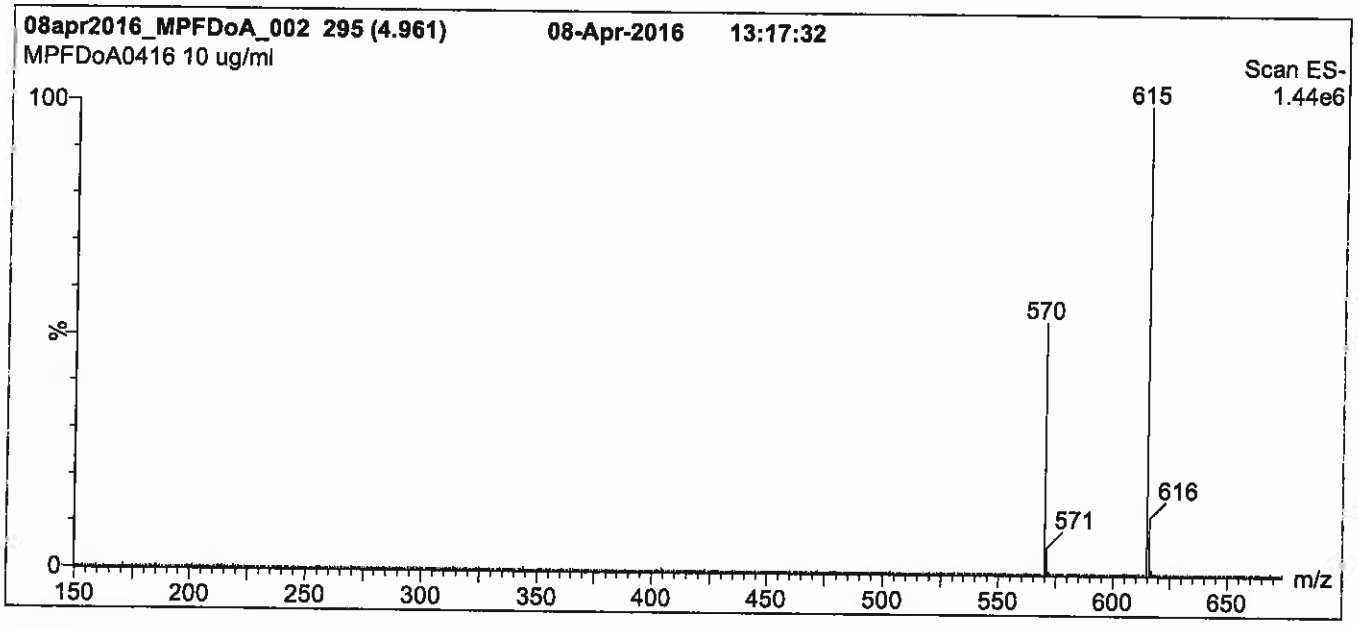




Conditions for Figure 1:

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: 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

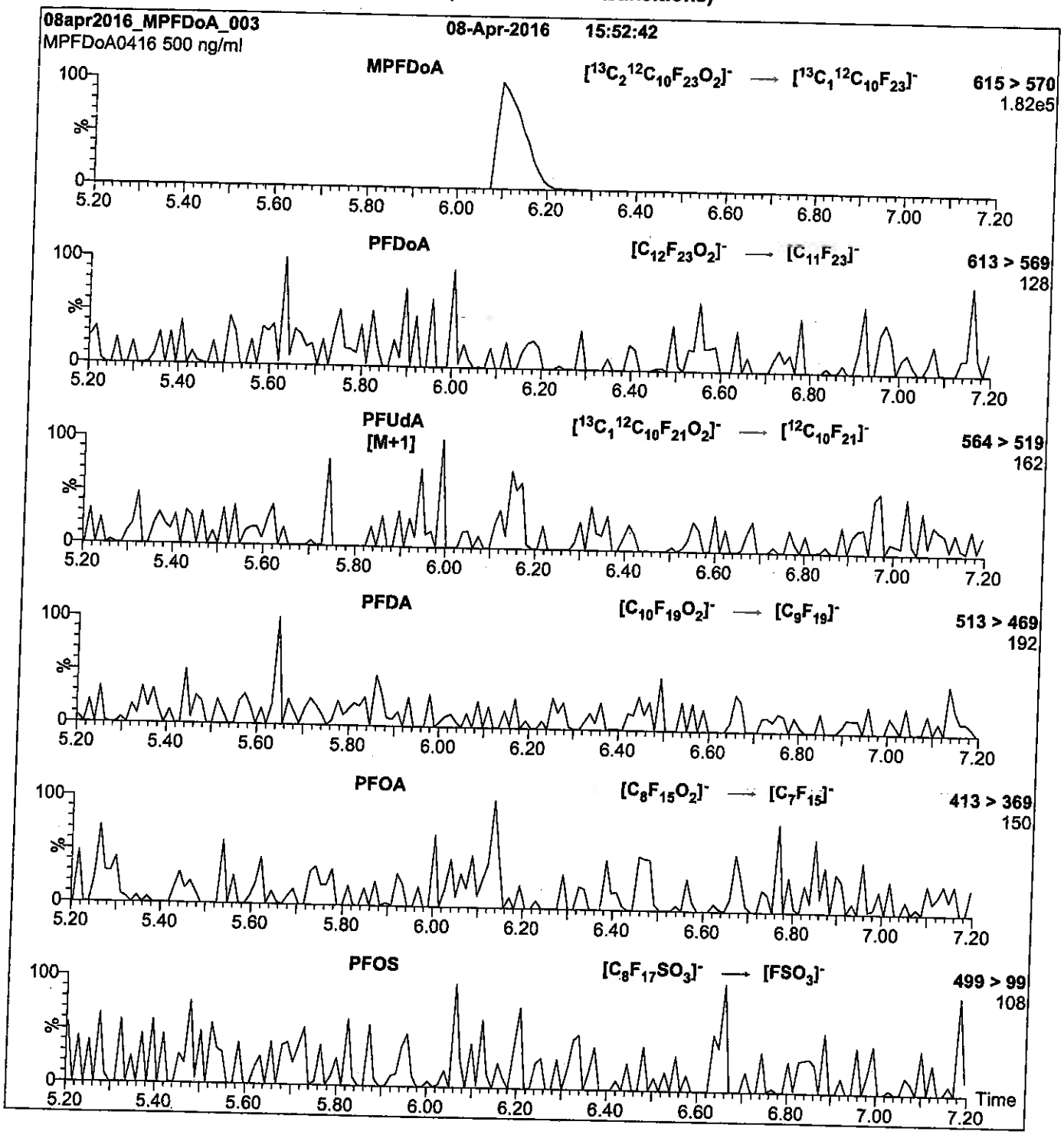
Flow: 300 µl/min

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

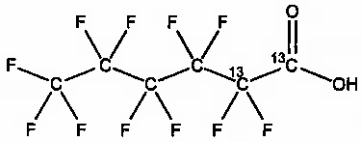
Scanned 10/14/16 JR R: SBC 9/22/16

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		

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

ADDITIONAL INFORMATION:

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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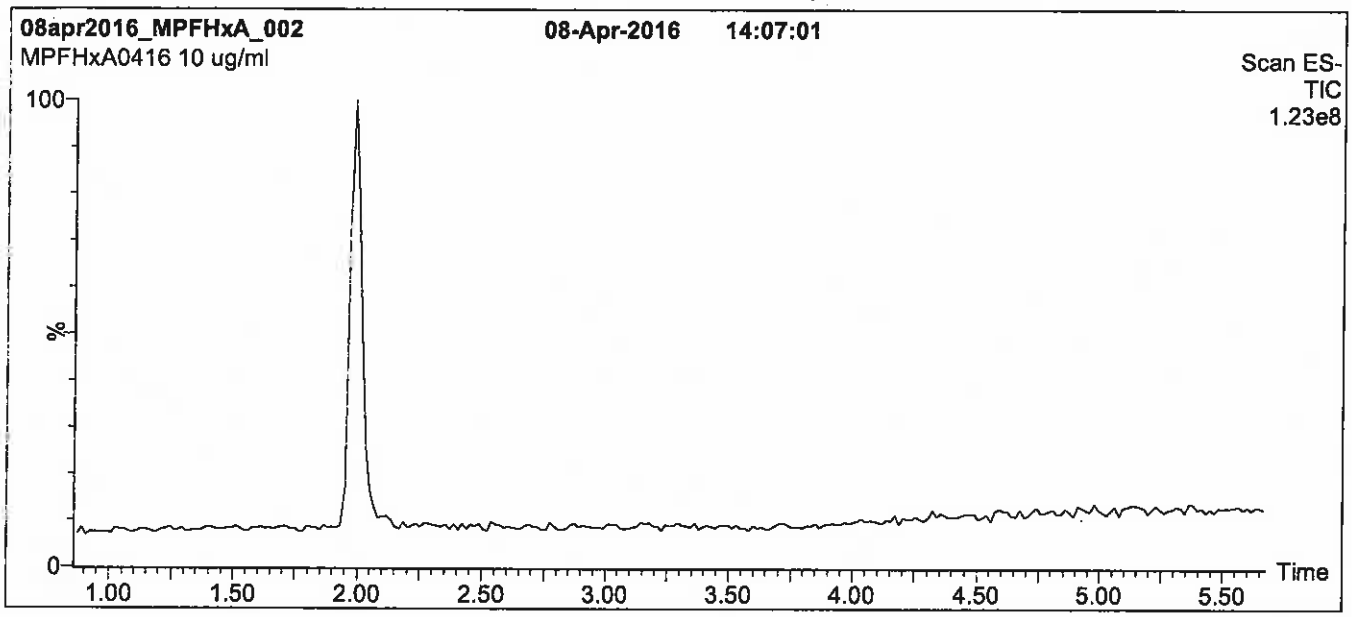
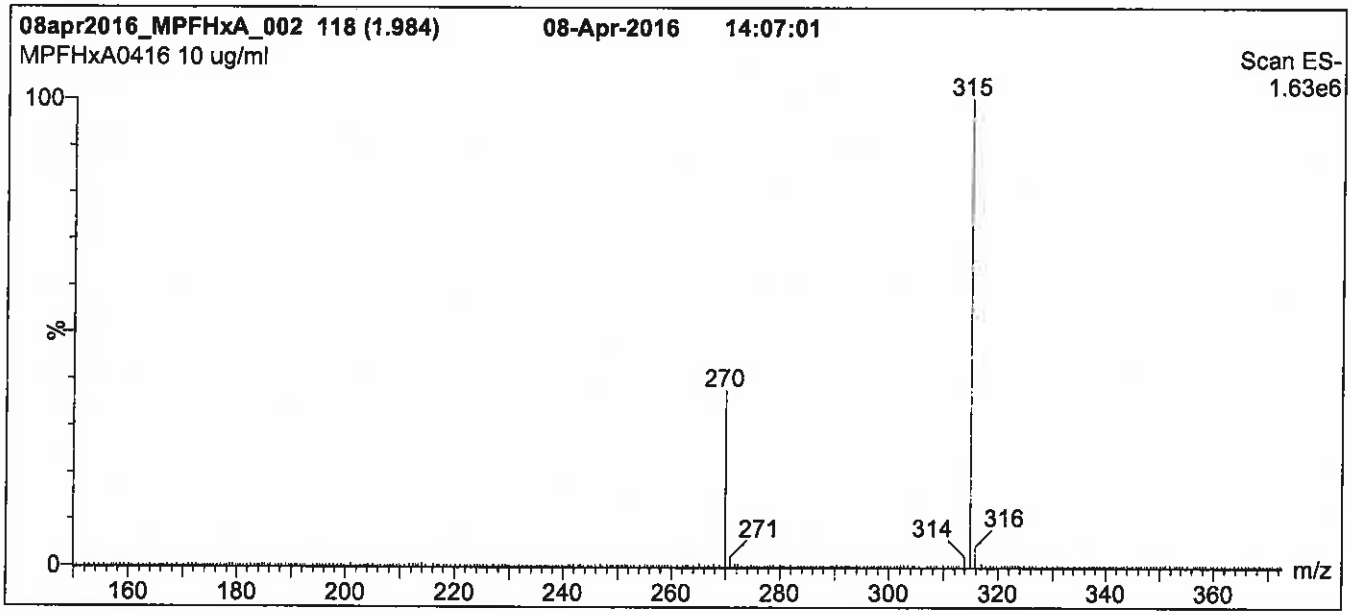
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions over 0.5 min.
Time: 10 min

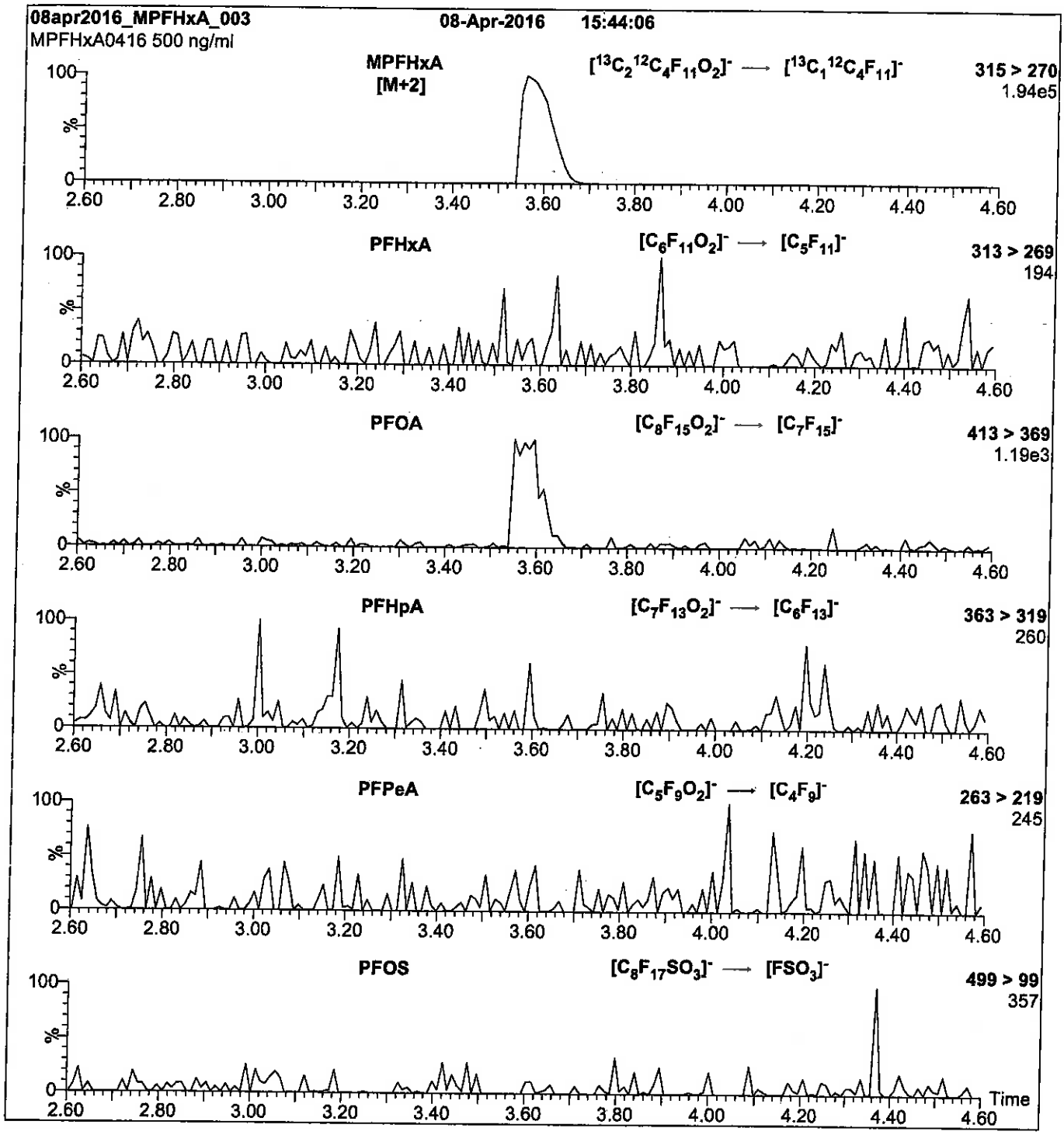
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFHxS_00008

R: SBC 9/22/16

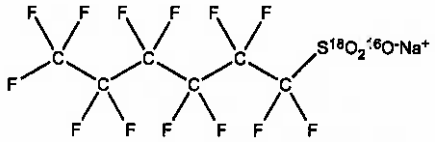
739601
ID: LCMPFHxS_00008
Exp: 10/23/20 Prpd: SBC
18O2-Perfluorohexanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

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



MOLECULAR FORMULA:	$C_6F_{13}S^{18}O_2{}^{16}ONa$	**MOLECULAR WEIGHT:**	426.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (MPFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>94% ($^{18}O_2$)
LAST TESTED: (mm/dd/yyyy)	10/23/2015		
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{16}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/28/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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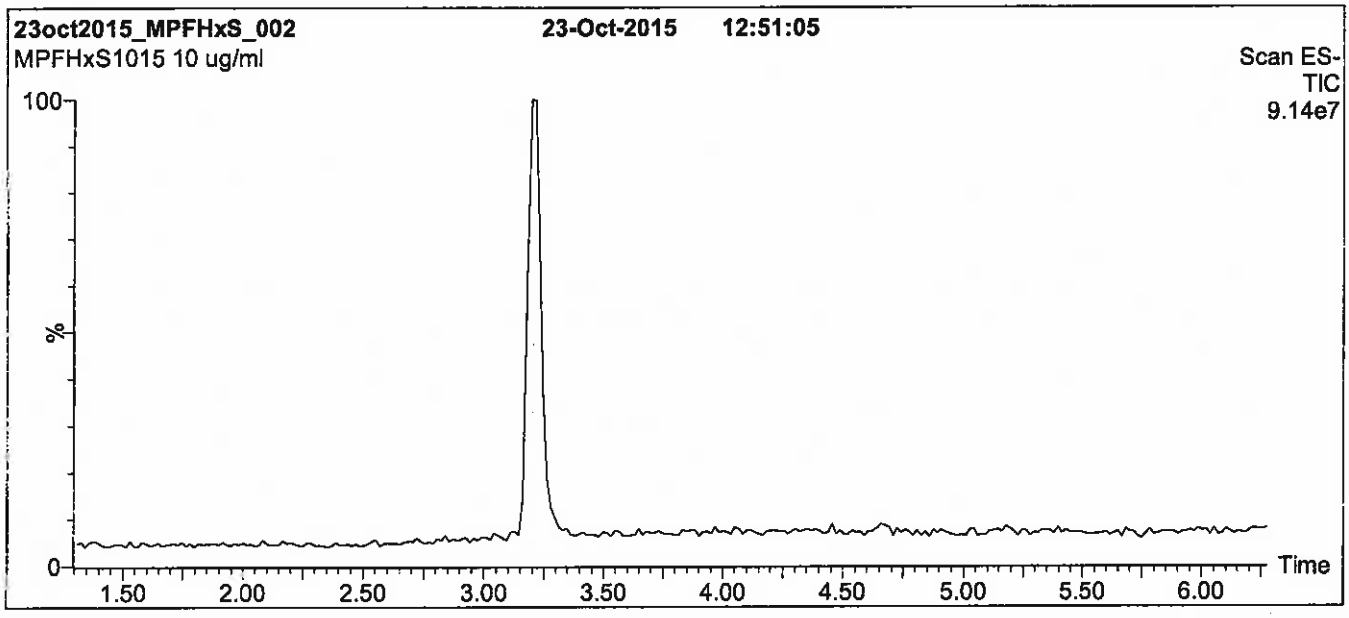
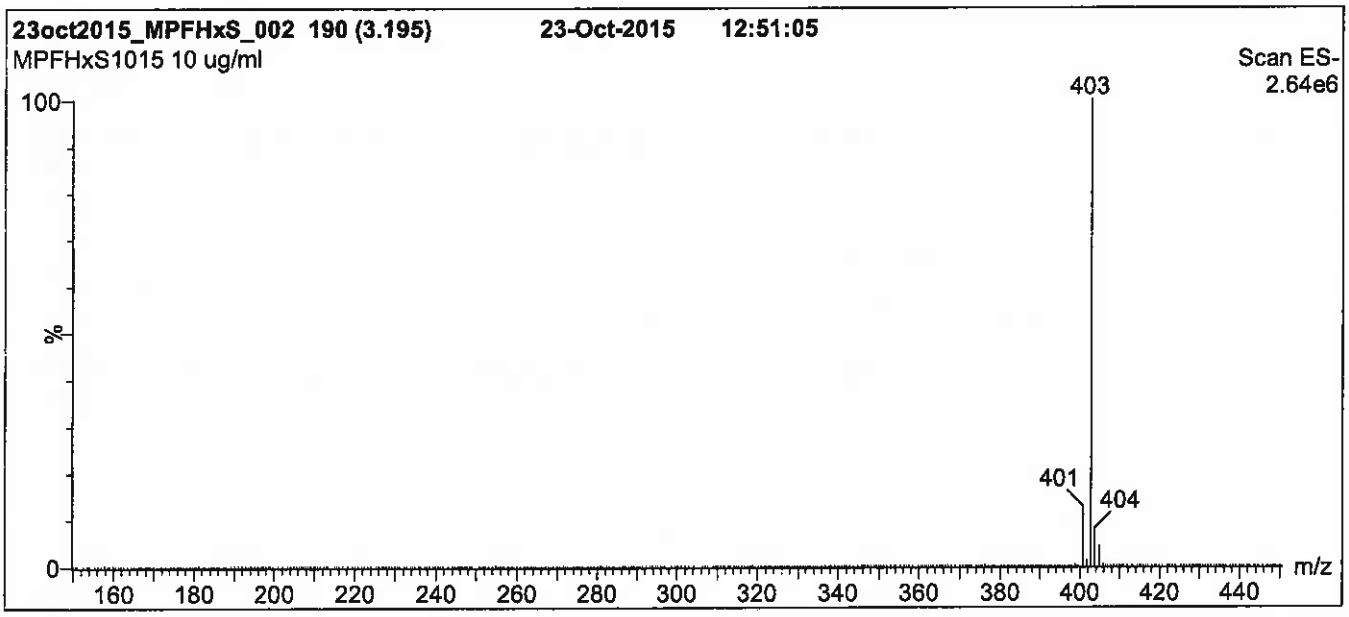




Conditions for Figure 1:

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

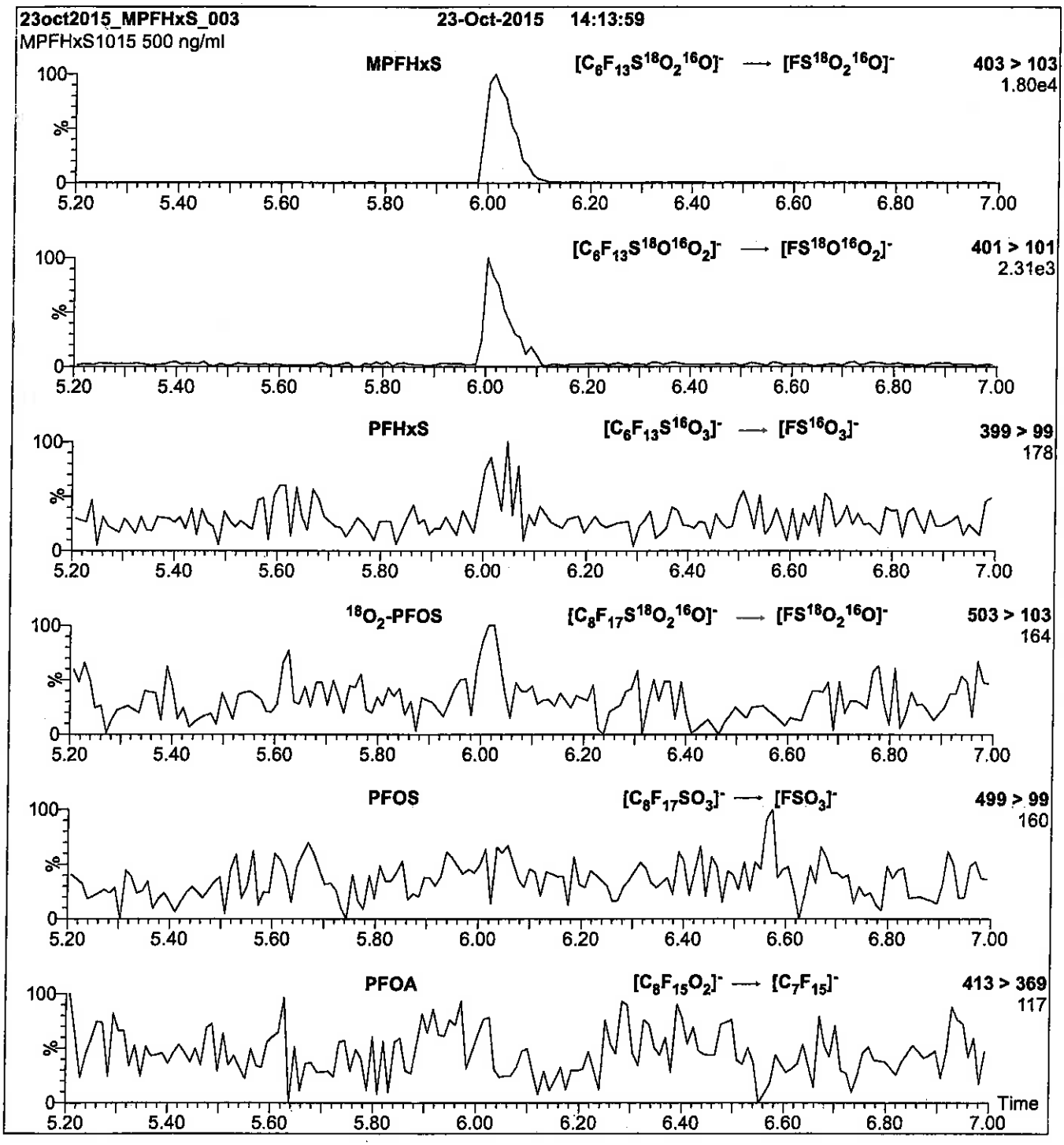
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

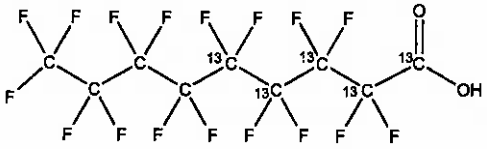
Scanned 10/14/16 R: SBC 9/22/16

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-$^{13}C_5$)
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)

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

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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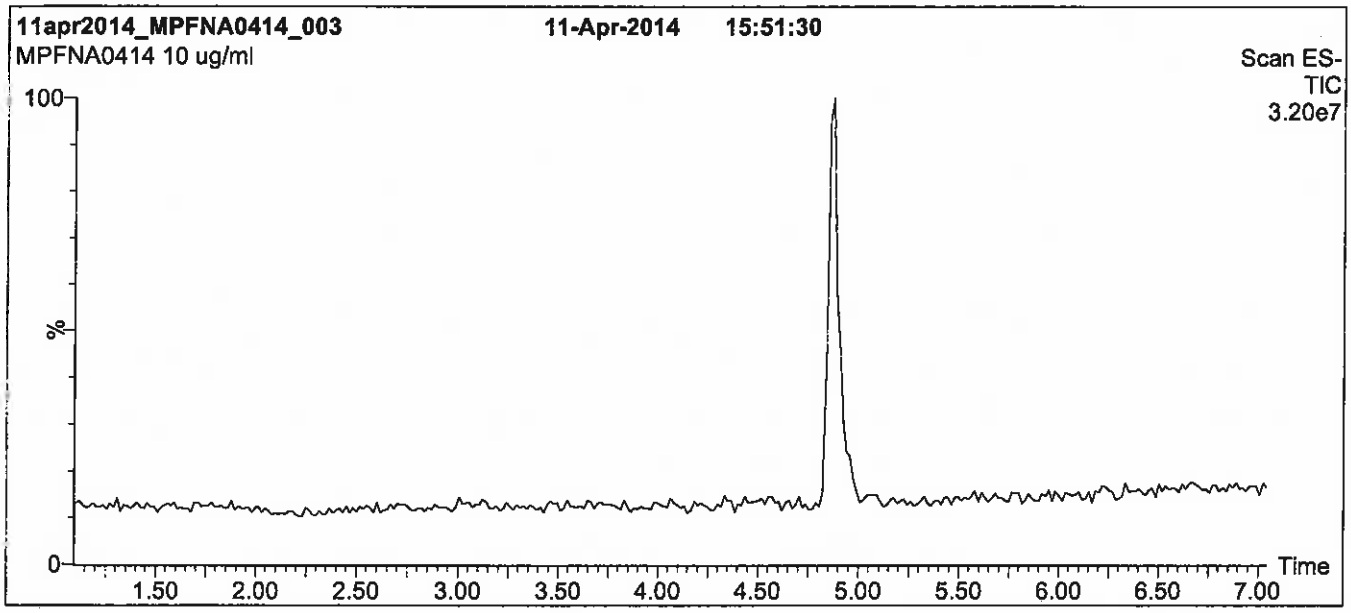
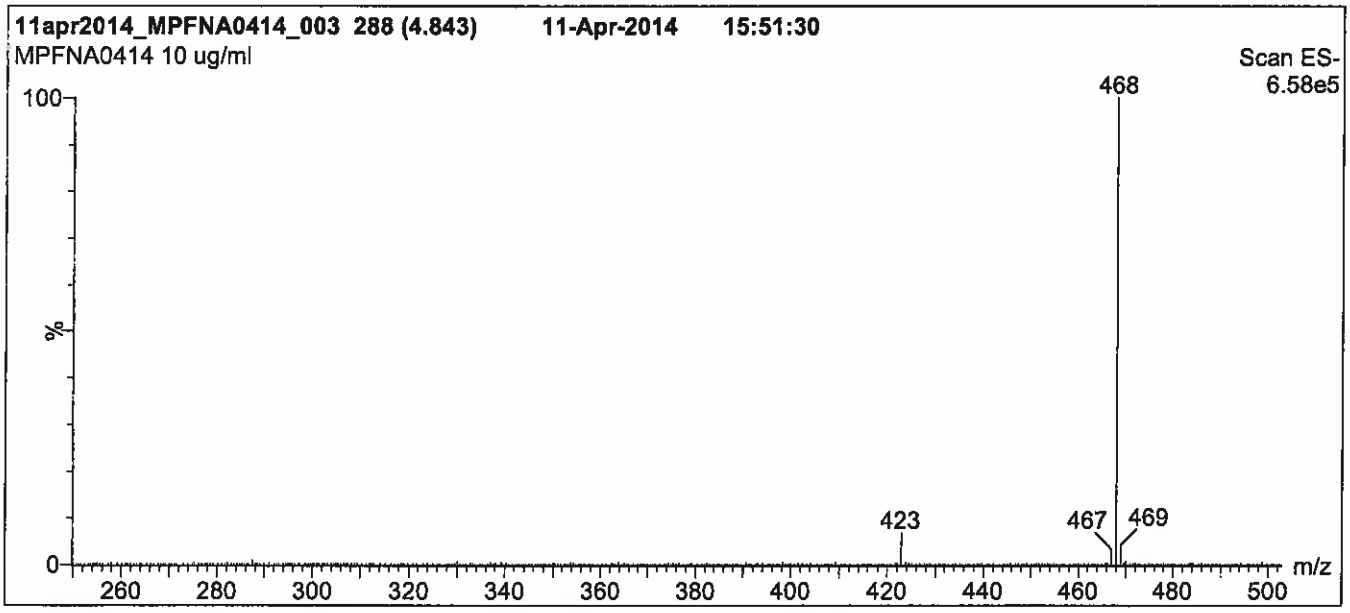




Conditions for Figure 1:

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

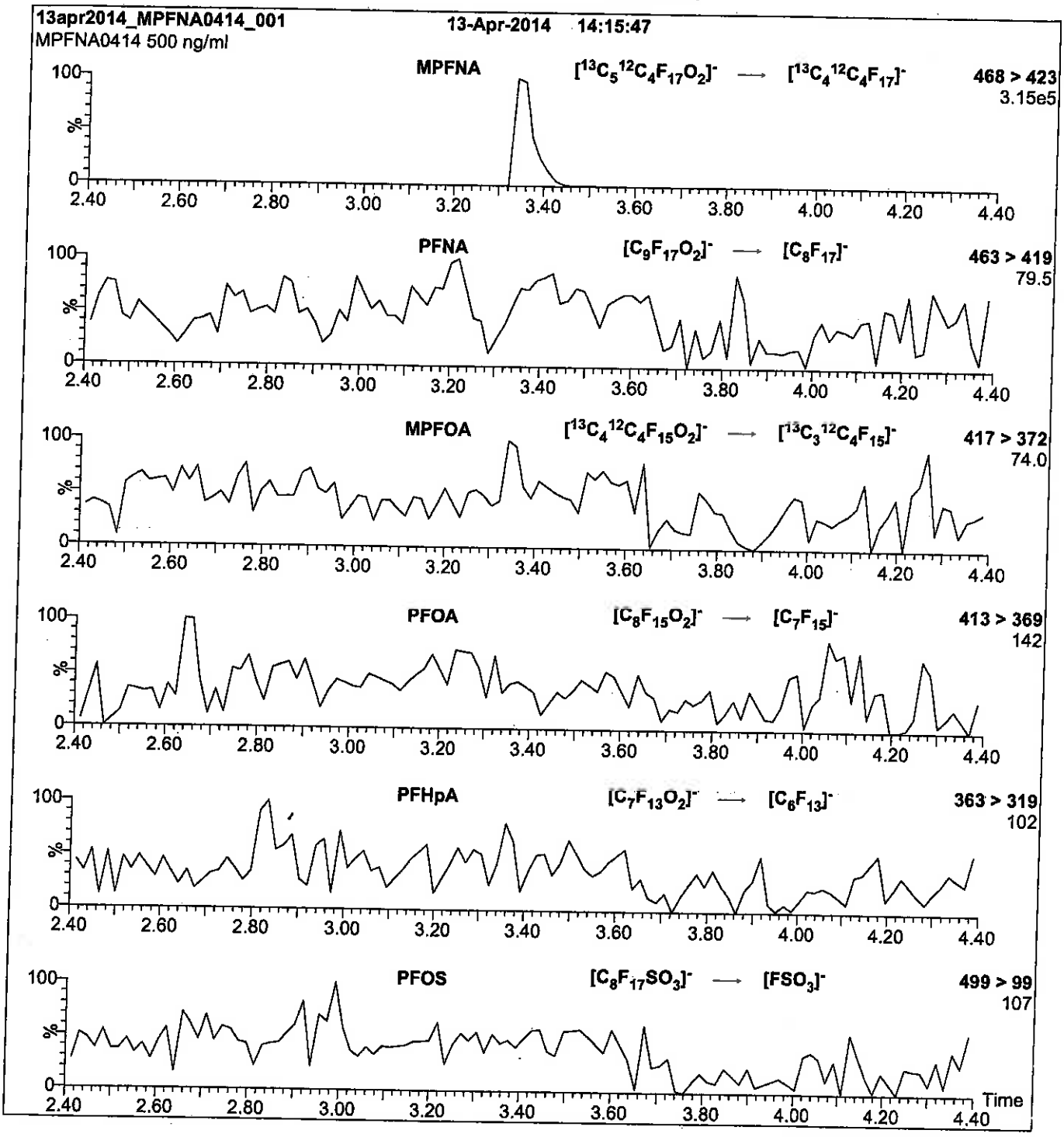
Flow: 300 µl/min

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

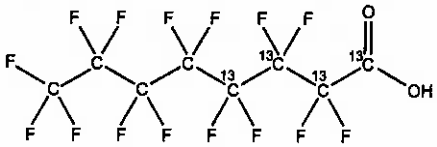
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid

LOT NUMBER: MPFOA0116

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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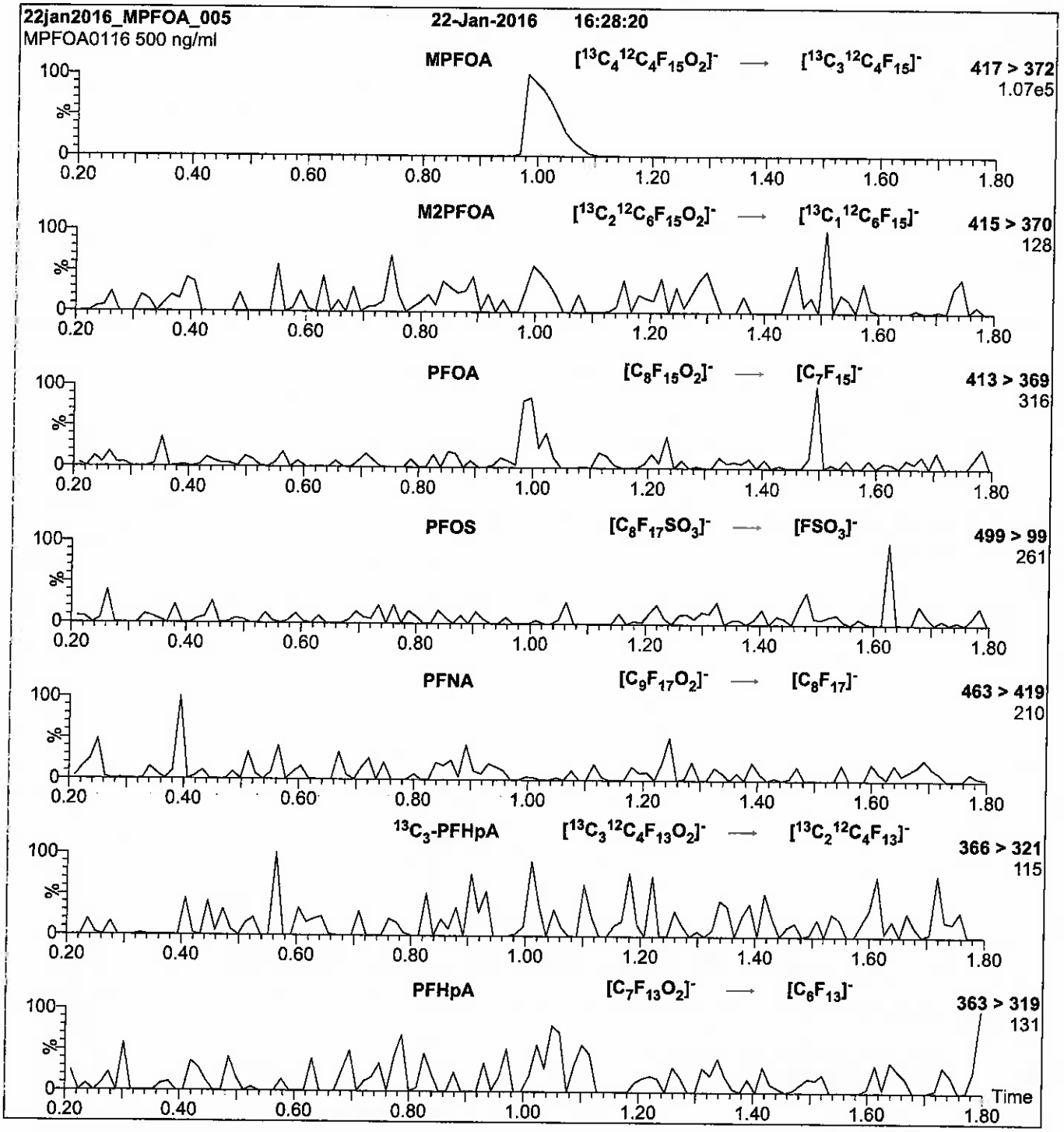
Figure 2: **MPFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

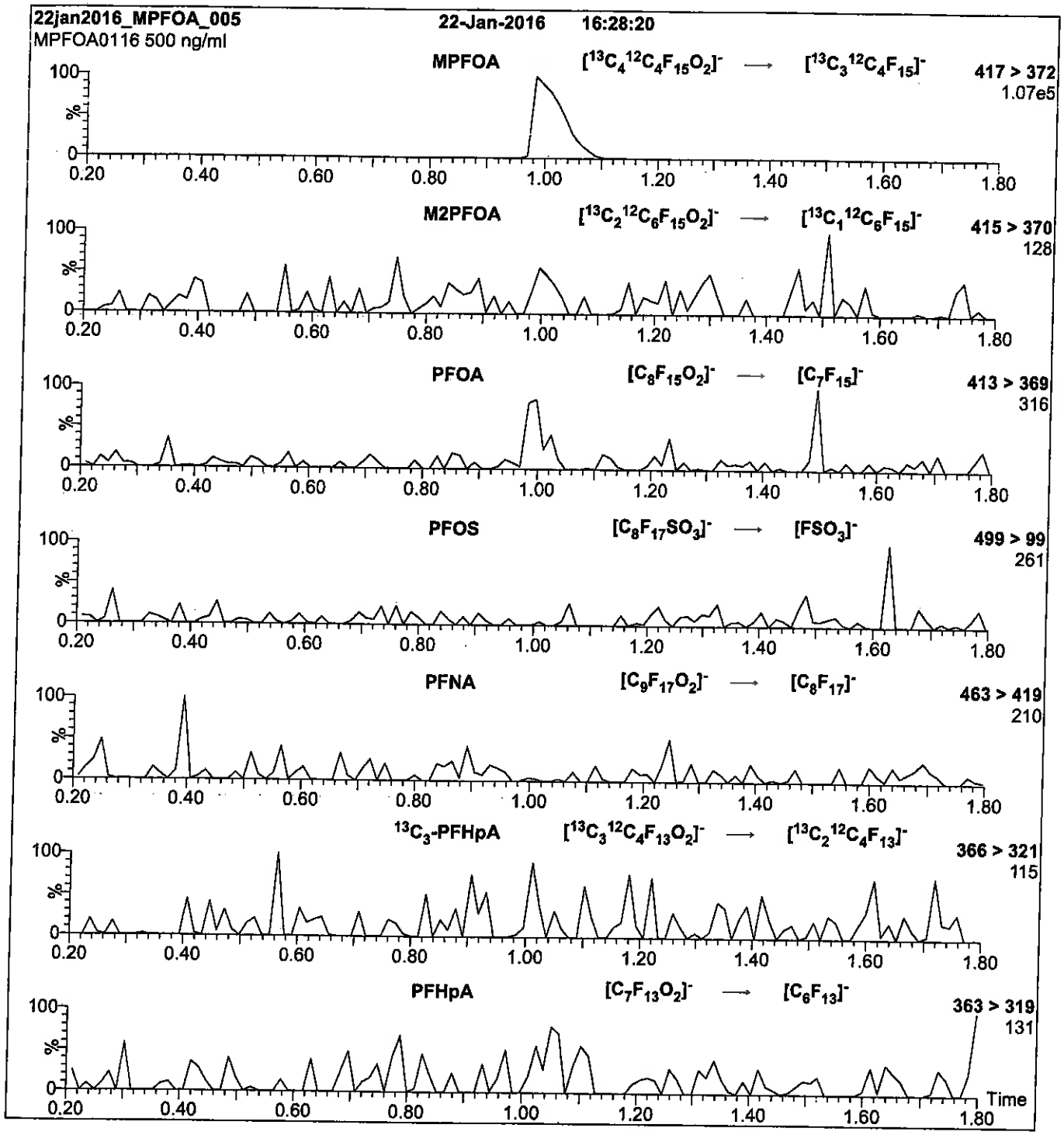
Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

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

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

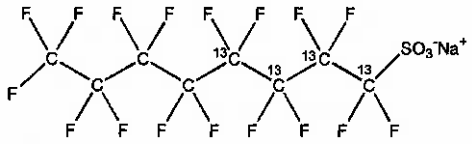
R: 9/9/16 SBC

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:

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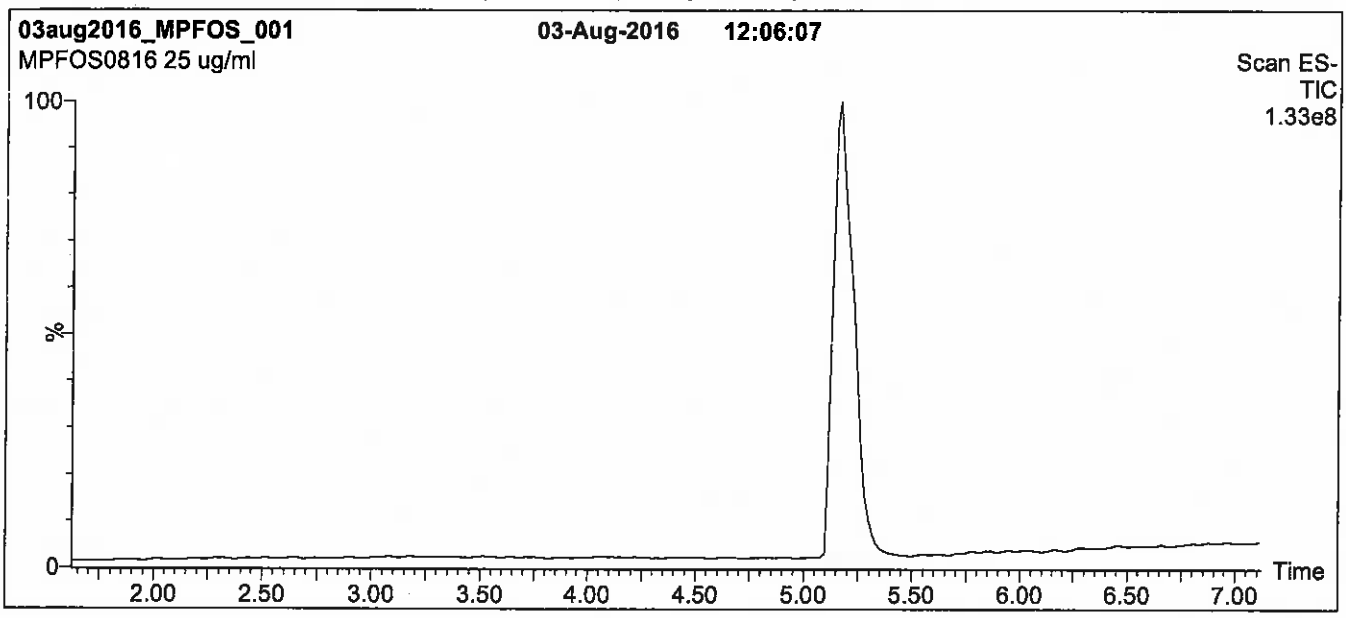
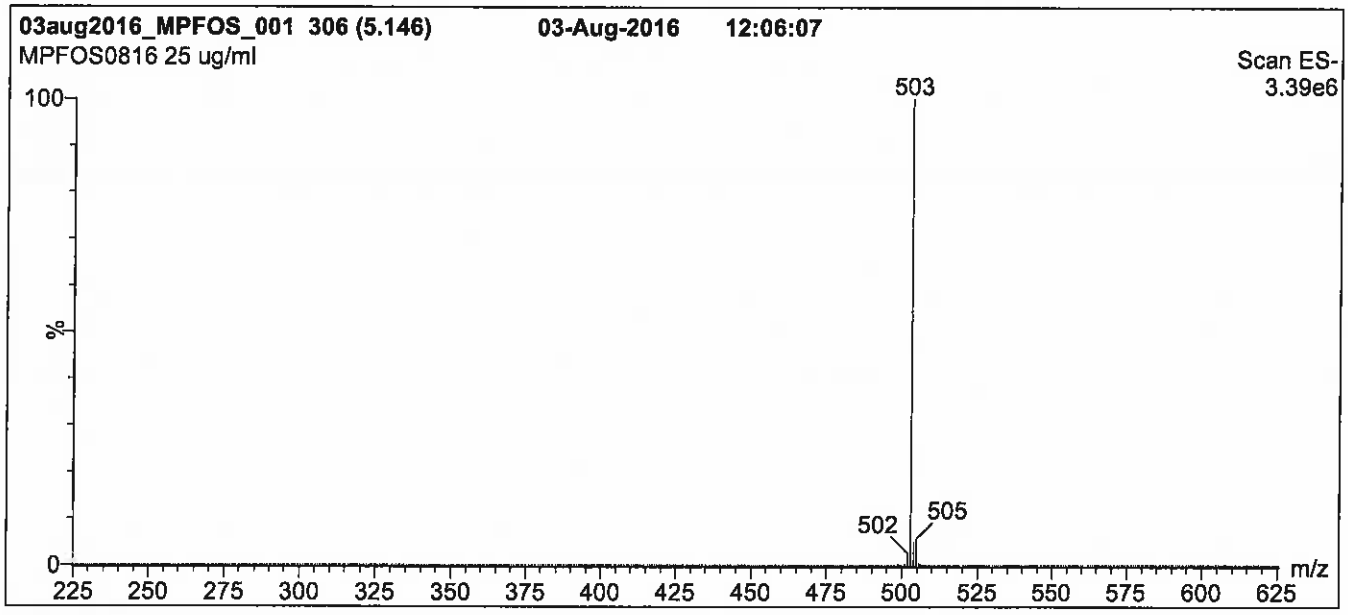
Figure 1: **MPFOS; LC/MS Data (TIC and Mass Spectrum)**





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

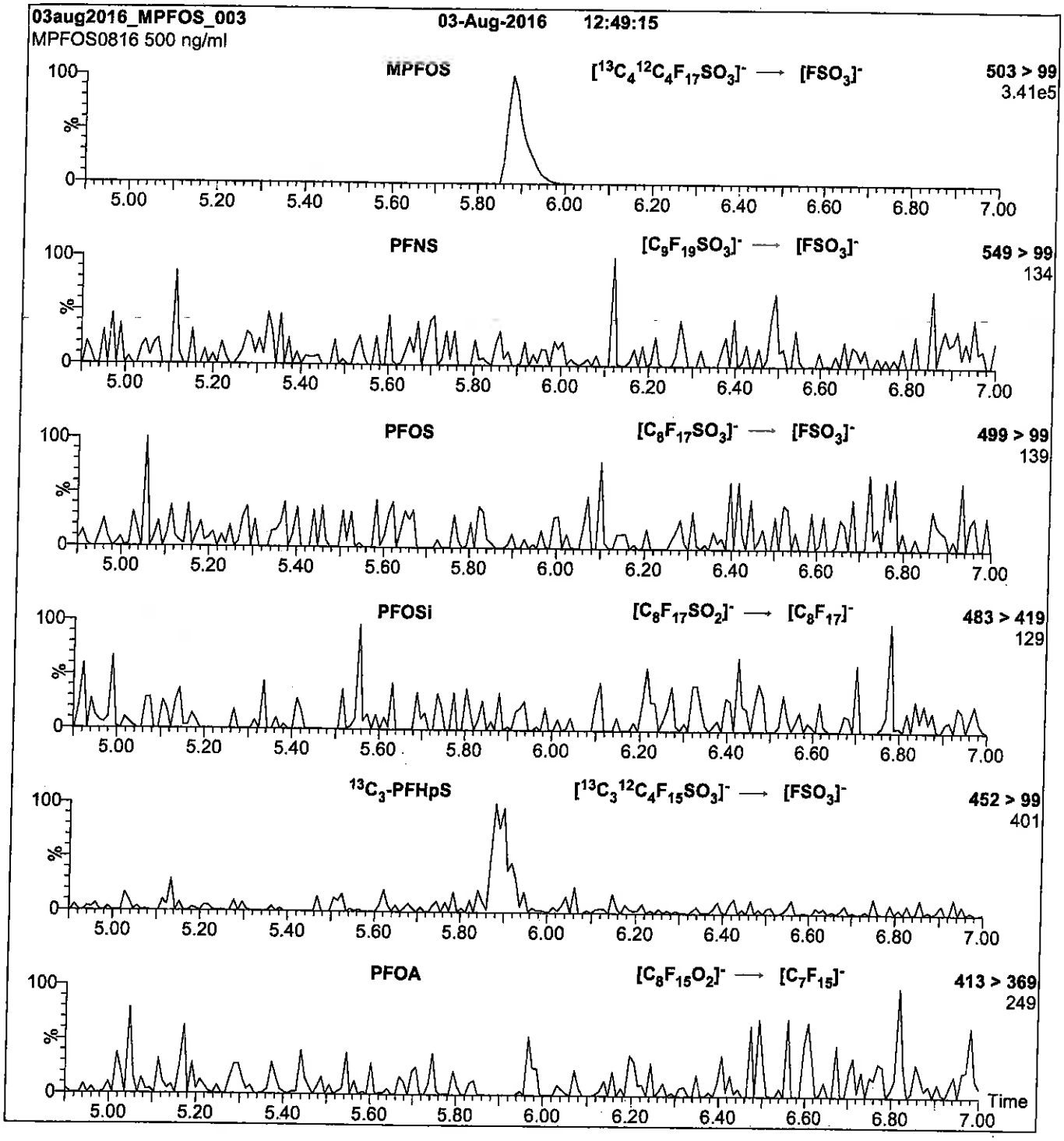
Flow: 300 µl/min

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

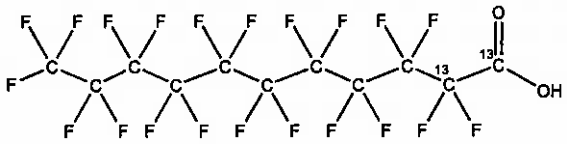
WELLINGTON LABORATORIES

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

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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QUALITY MANAGEMENT:

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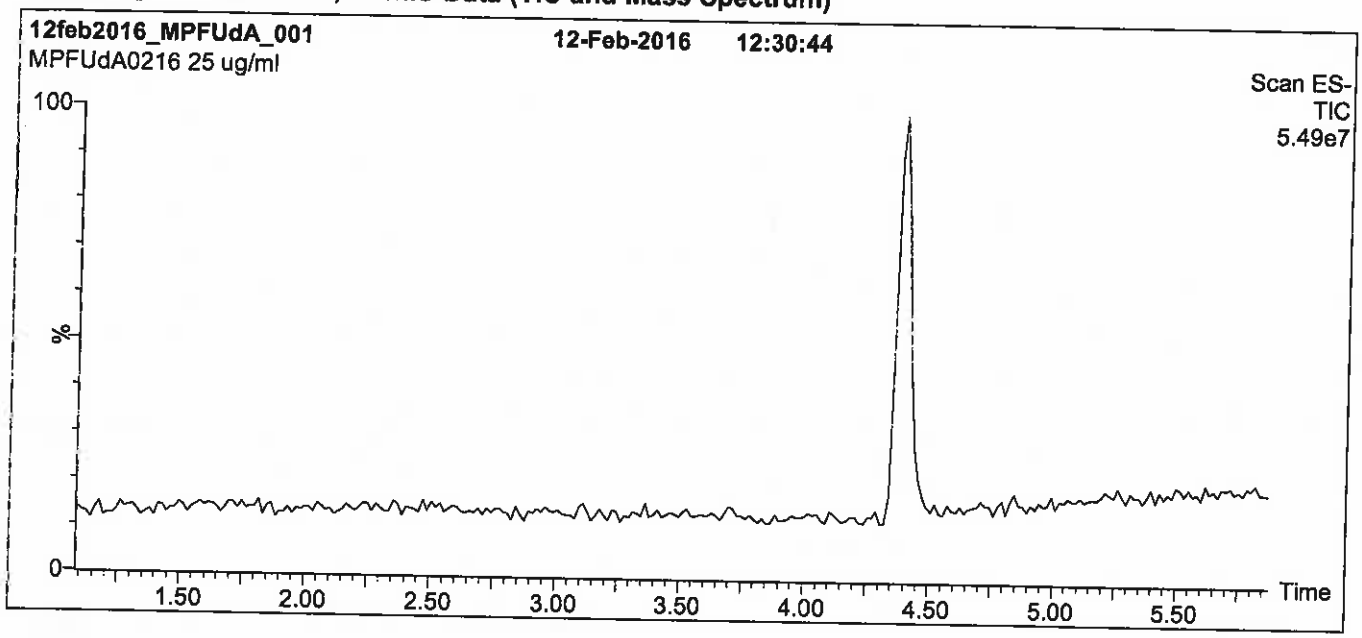
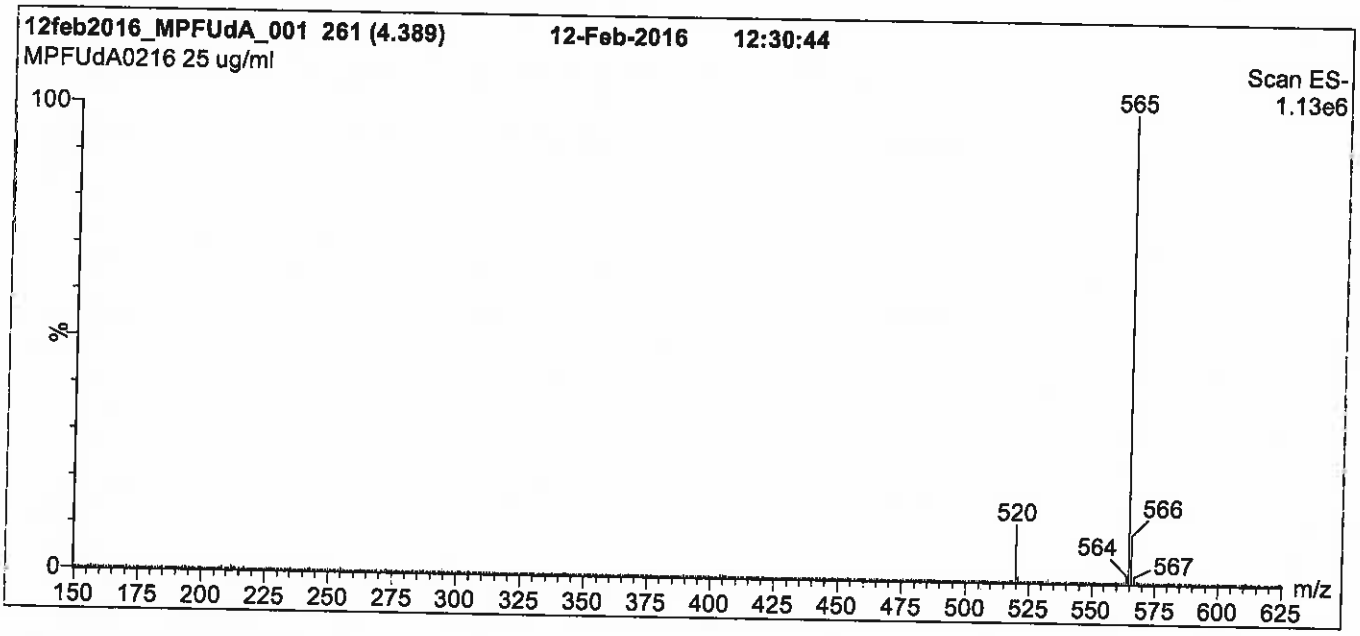
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

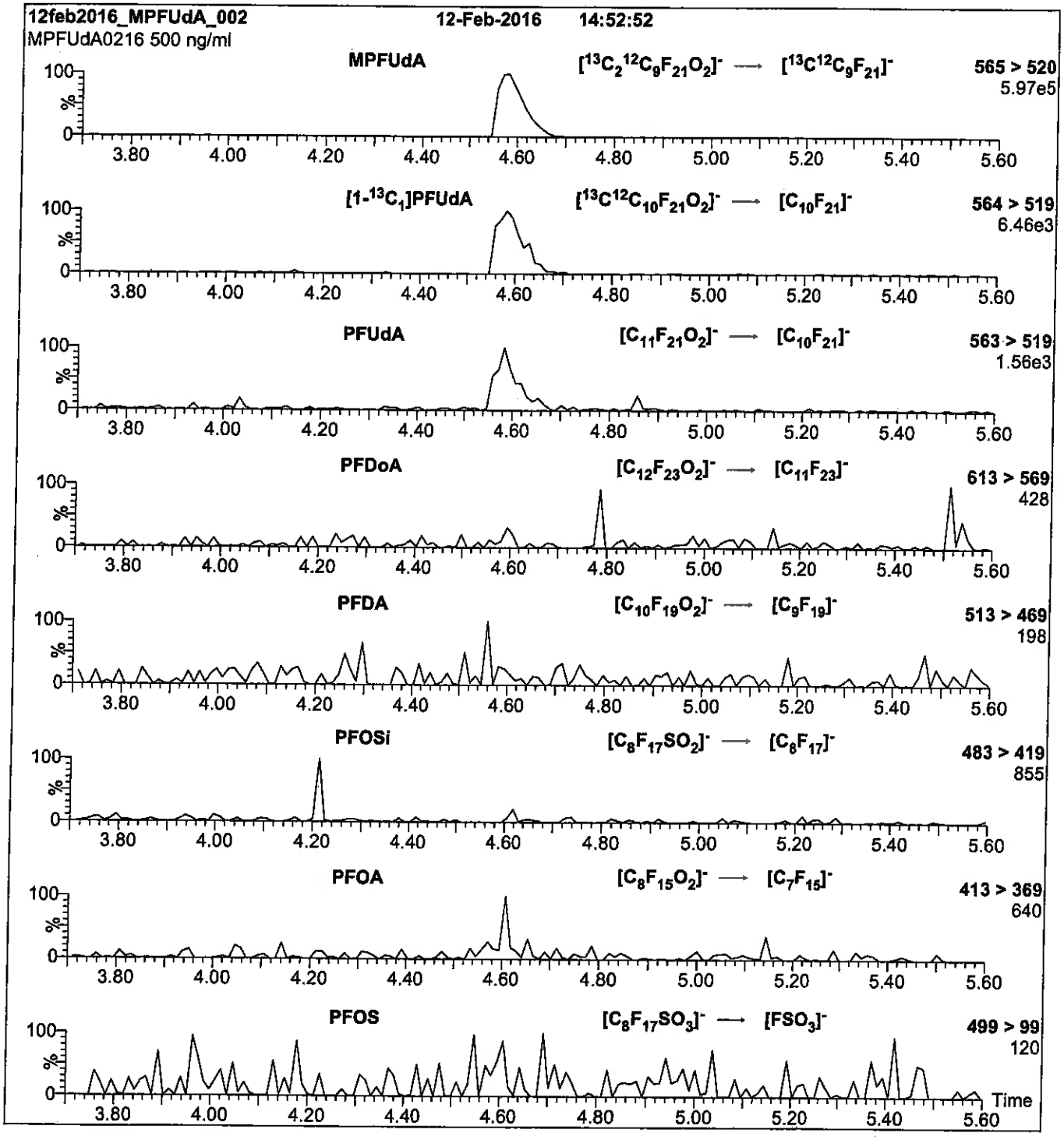
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-EtFOSA-M_00002

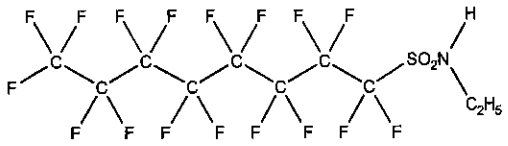
R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 4151-50-2



MOLECULAR FORMULA:	$C_{10}H_6F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/14/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/14/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

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

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QUALITY MANAGEMENT:

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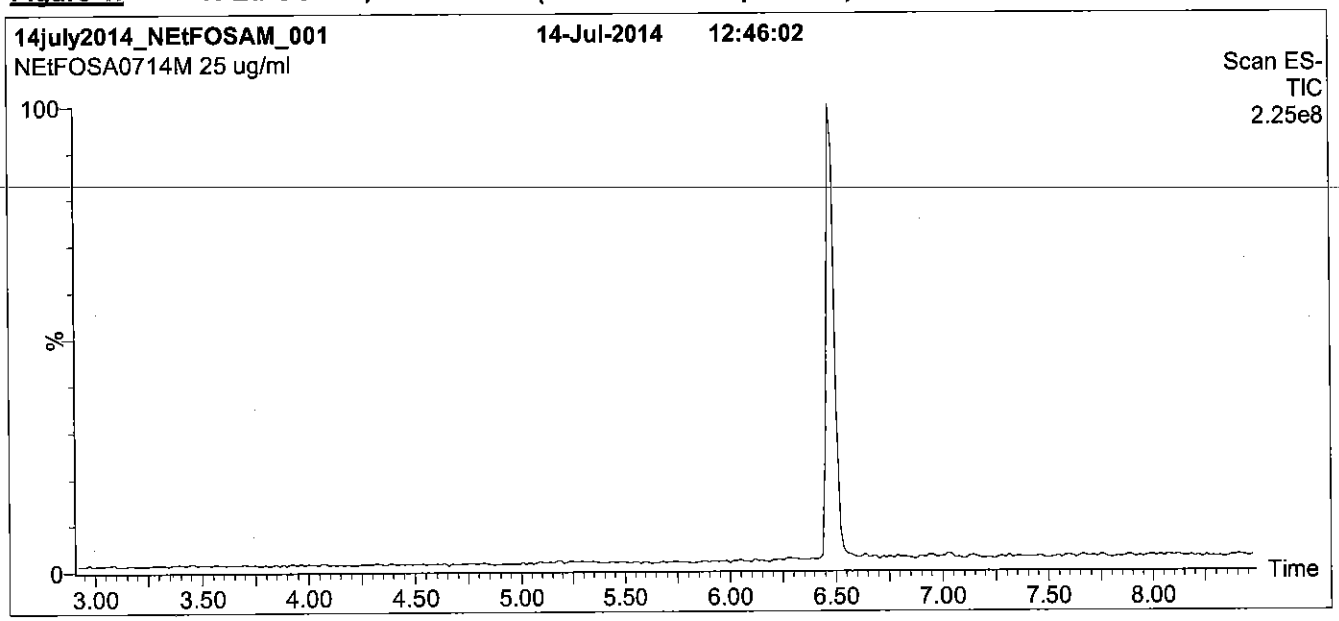
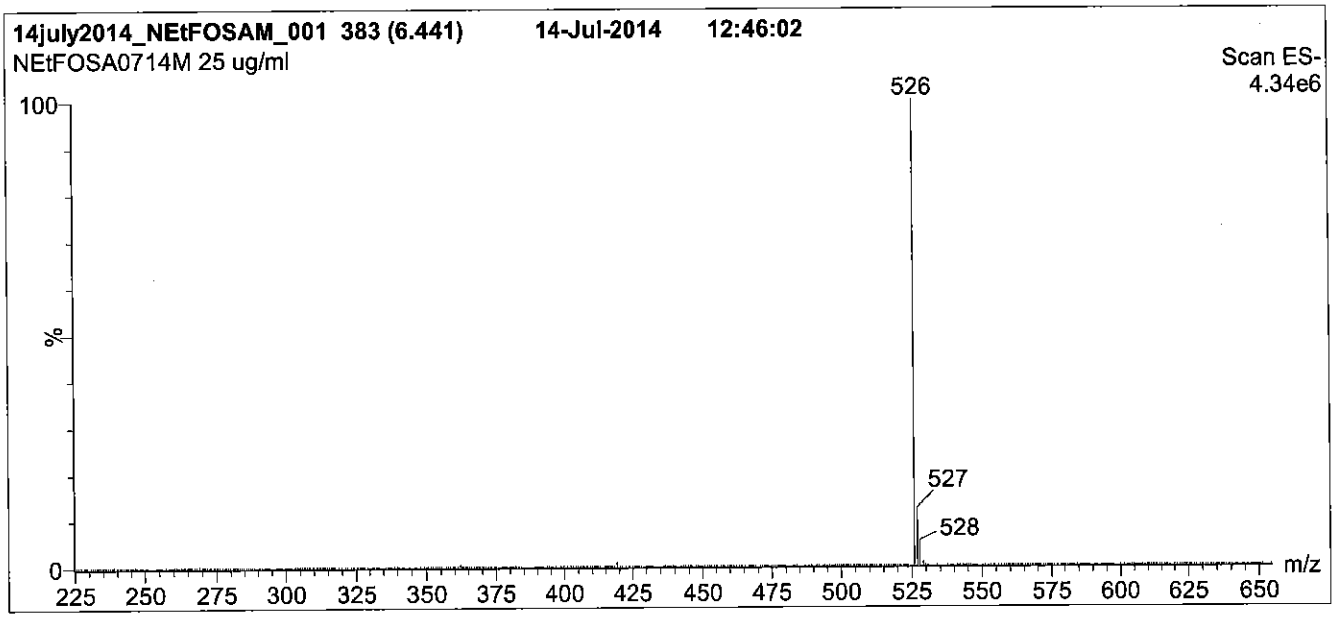
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

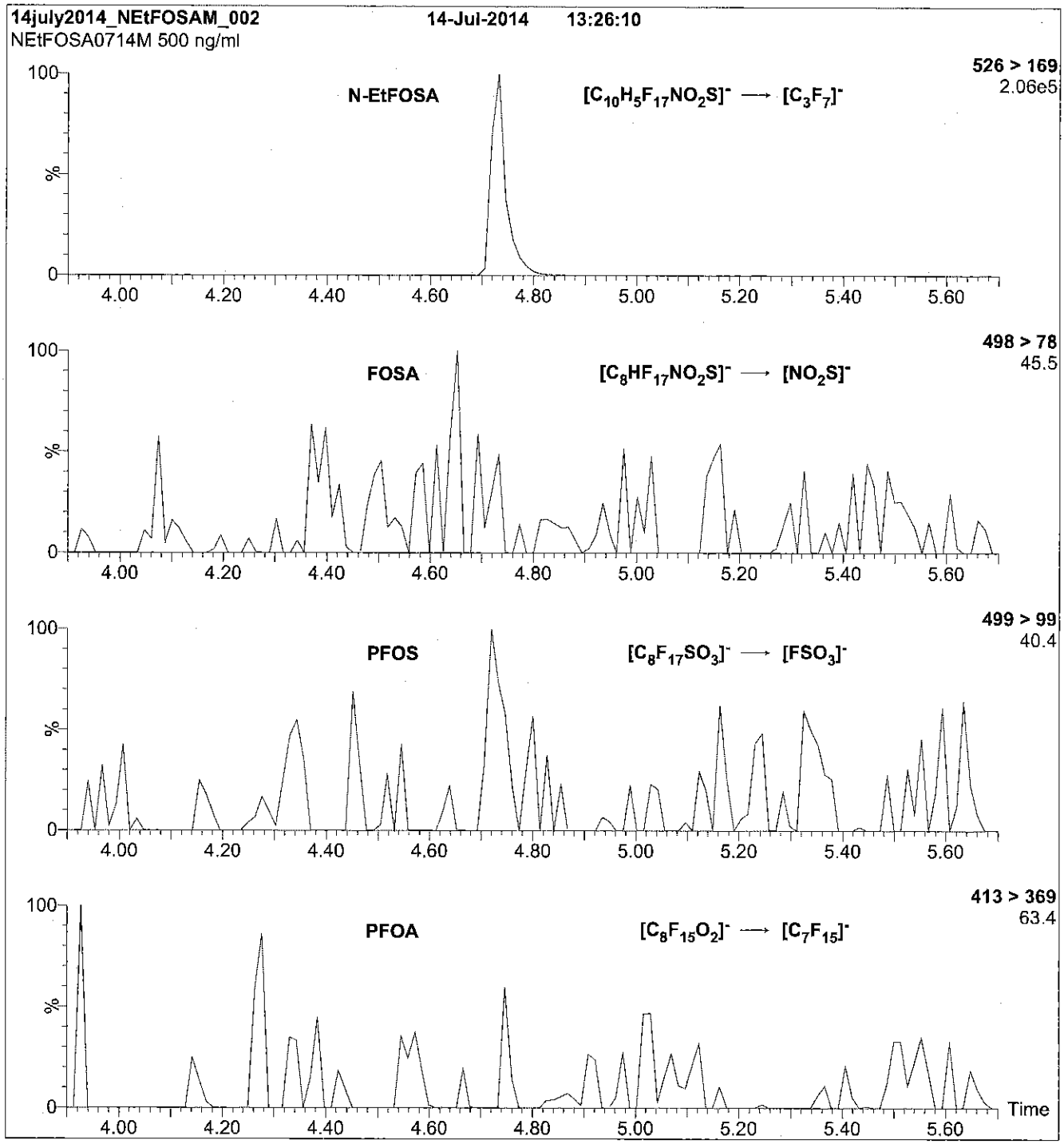
Flow: 300 µl/min

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

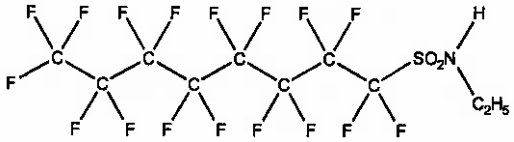
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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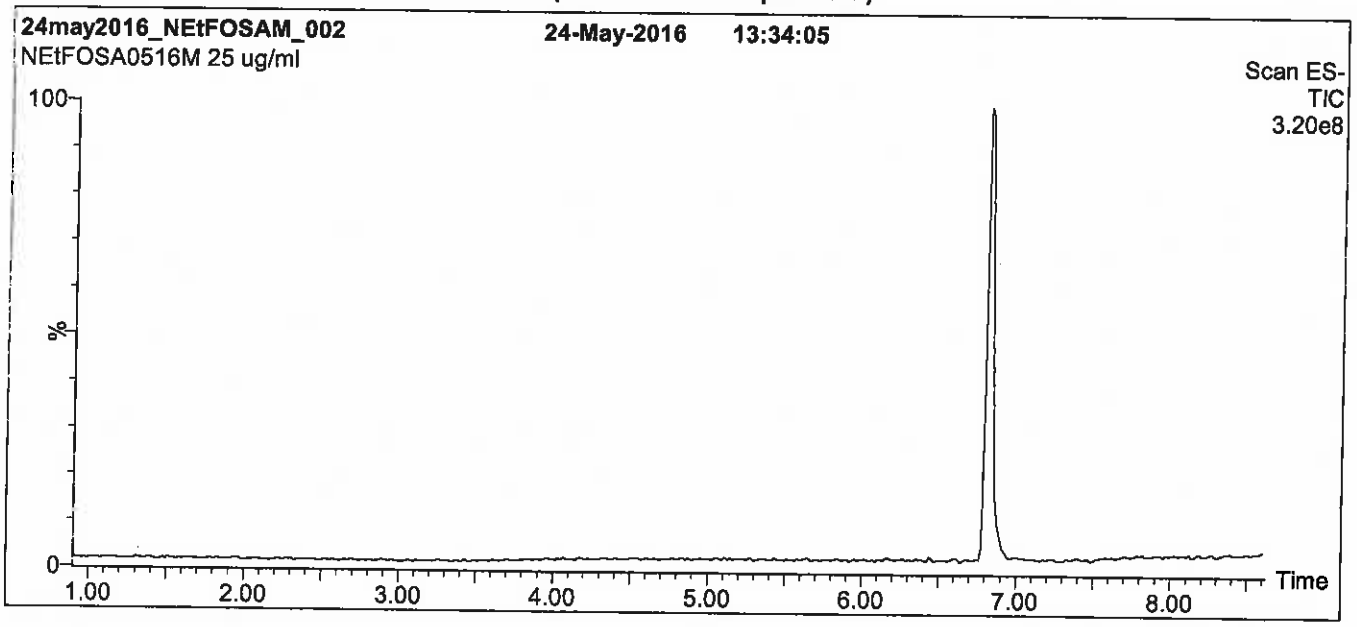
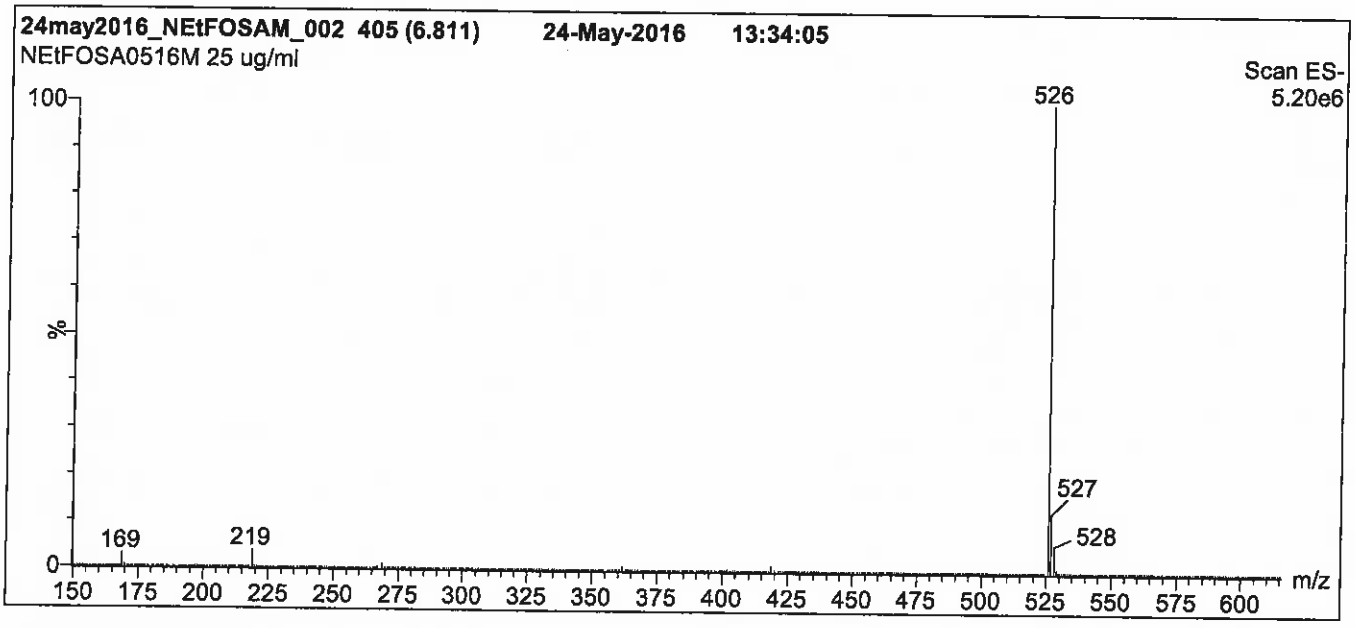
Figure 1: **N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

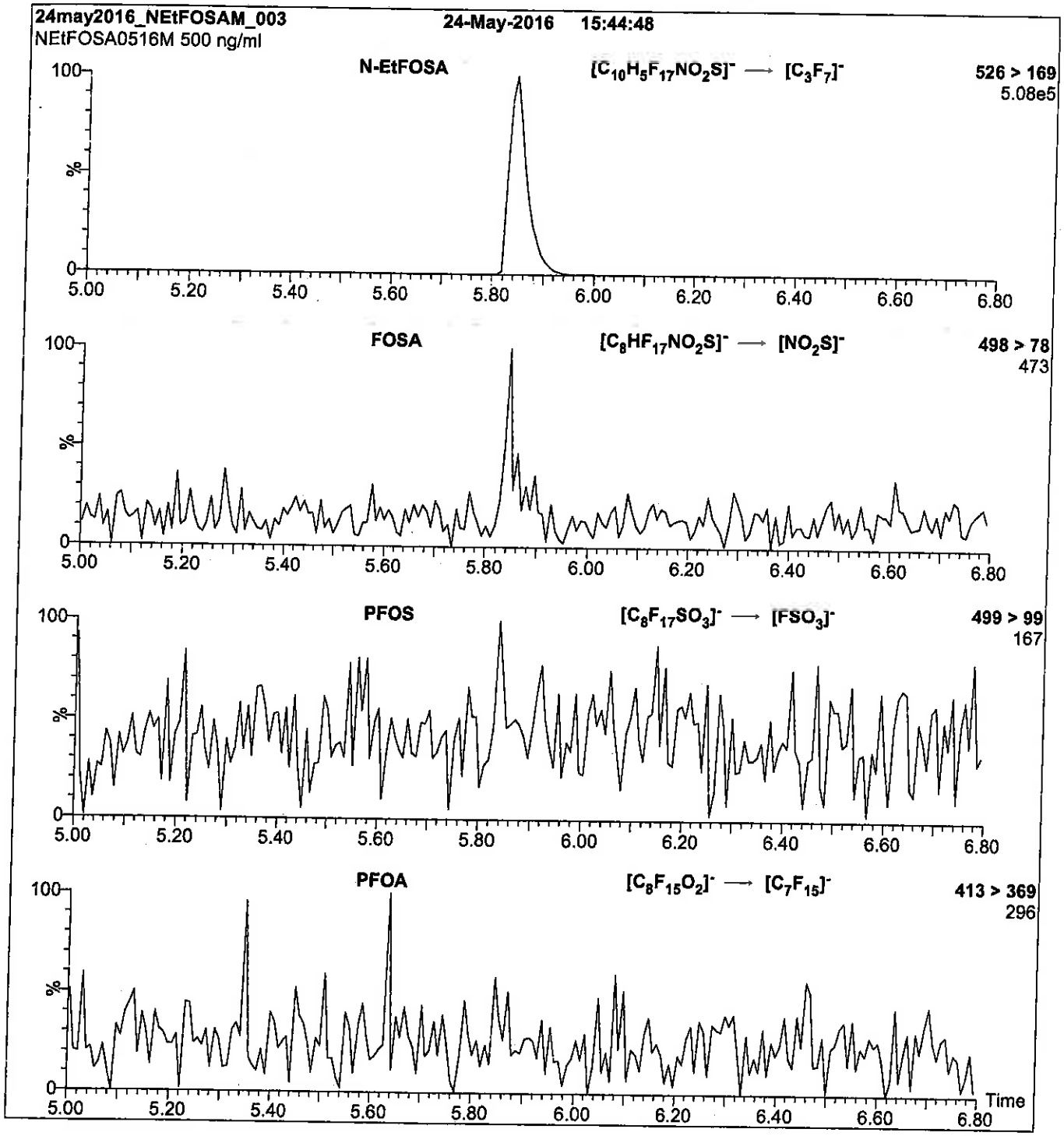
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCN-EtFOSAA_00001

r: 7/10/15 SKV

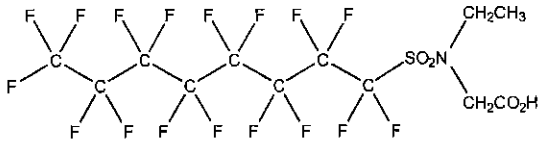
WELLINGTON LABORATORIES

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)

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

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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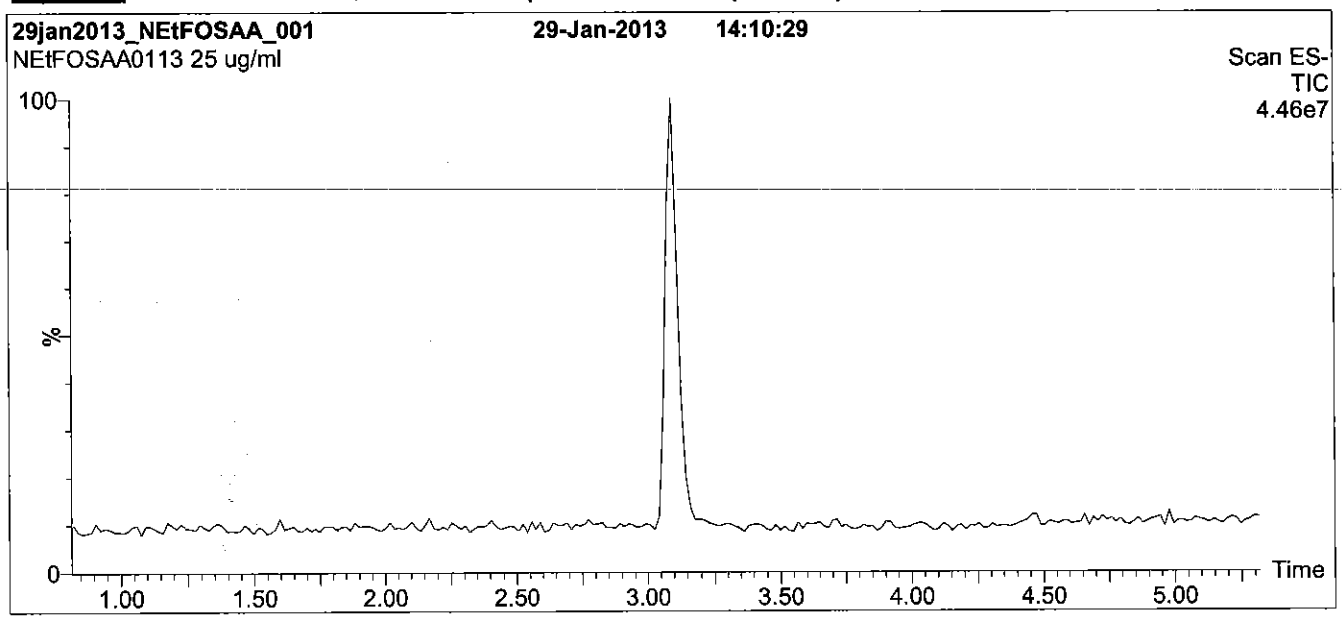
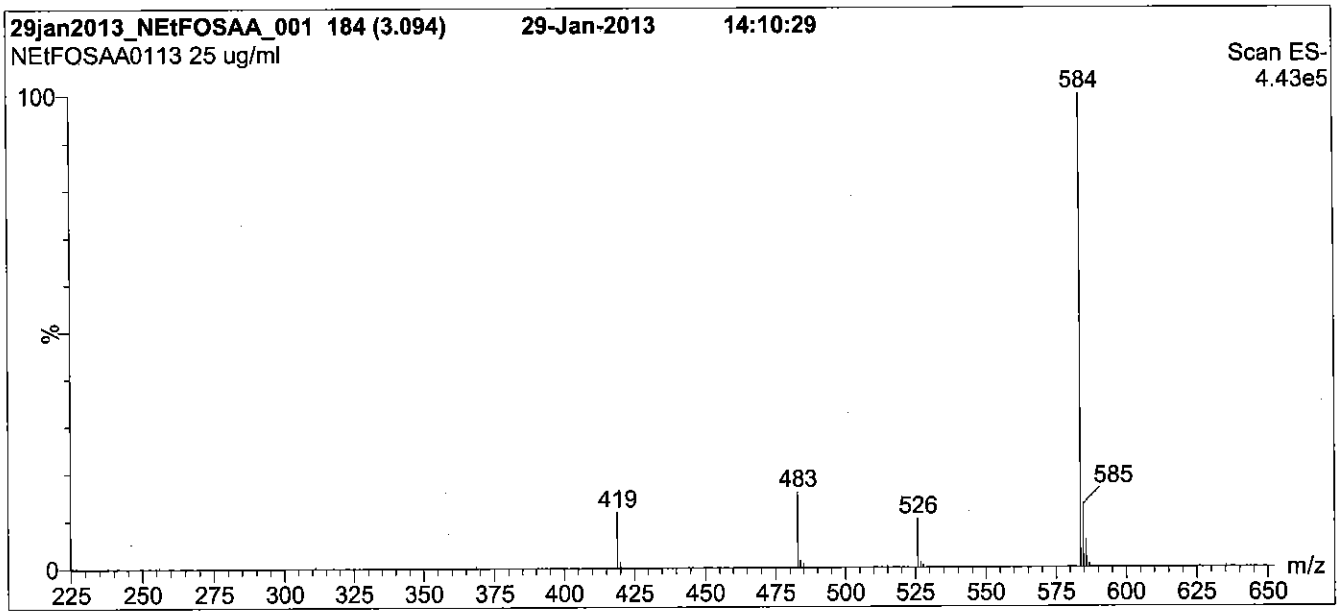
Figure 1: **N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

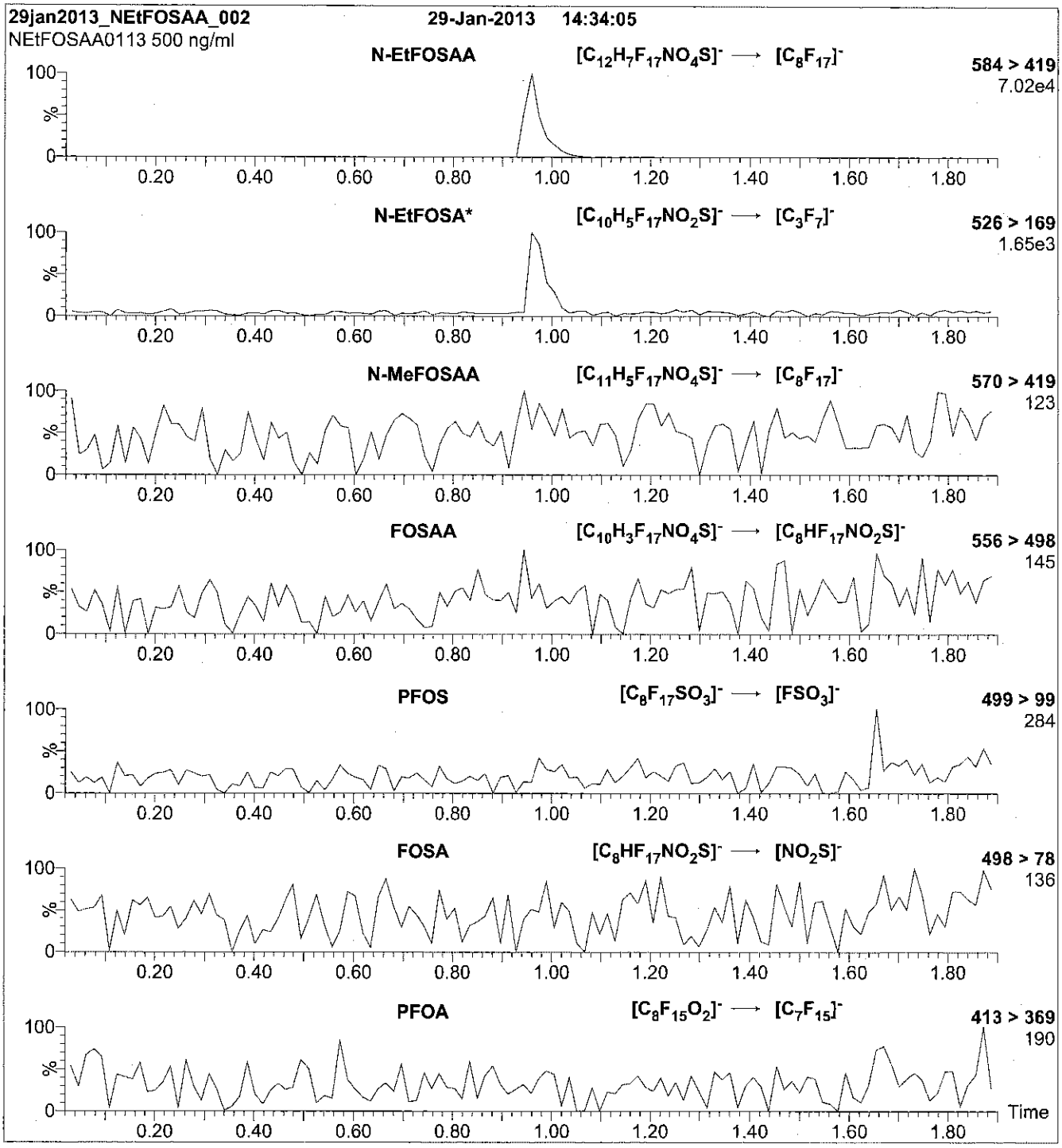
Flow: 300 µl/min

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

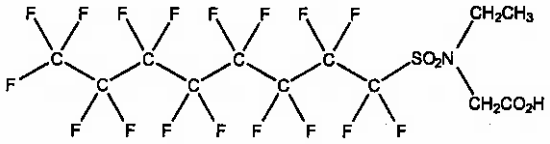
WELLINGTON LABORATORIES

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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CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Refrigerate ampoule

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- See page 2 for further details.
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CALA

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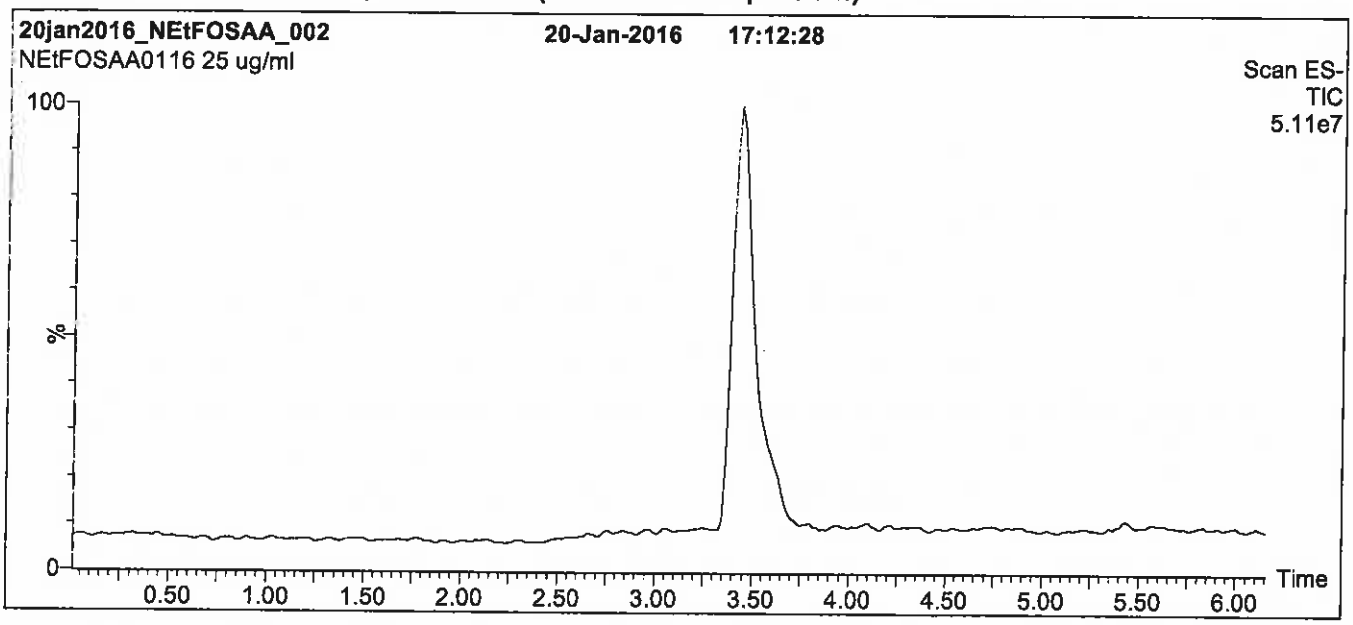

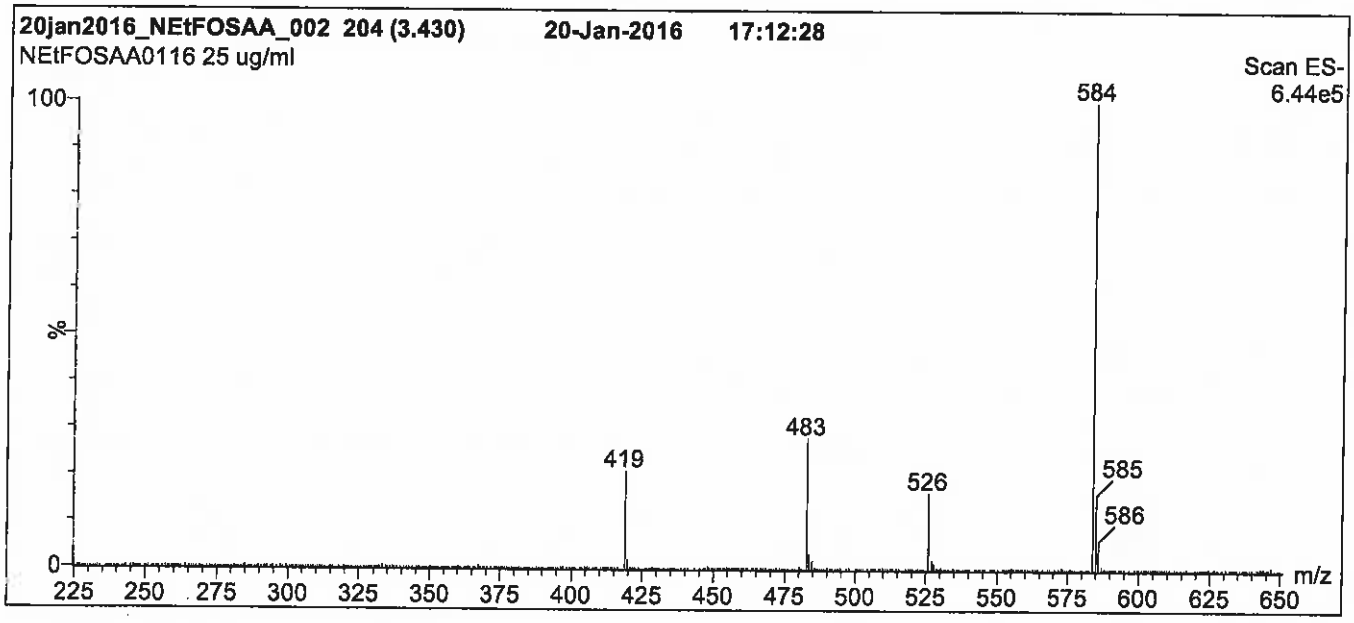

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MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

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

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

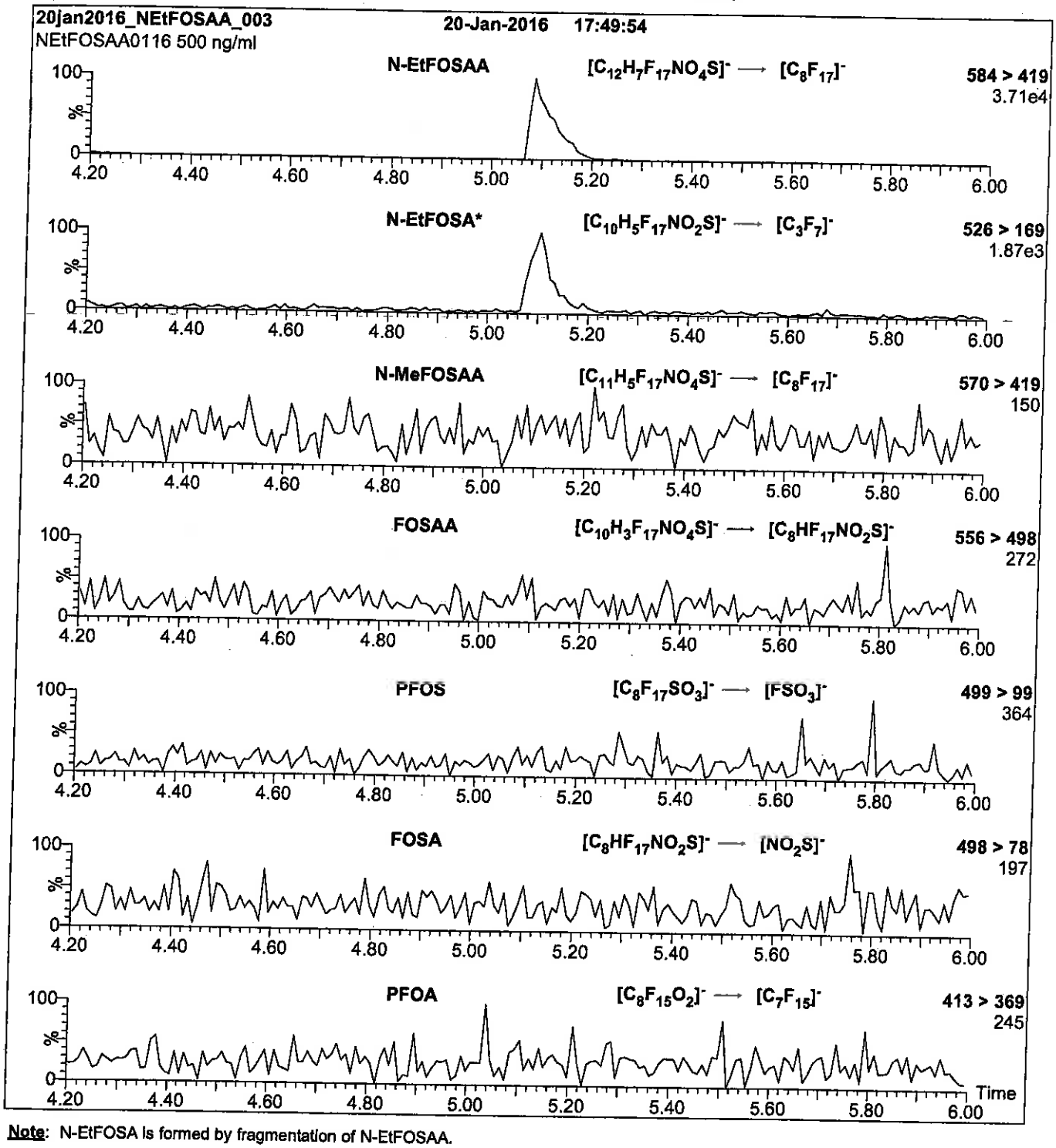
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



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

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-MeFOSA-M_00001

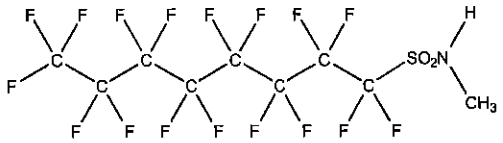
R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: 31506-32-8



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

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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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

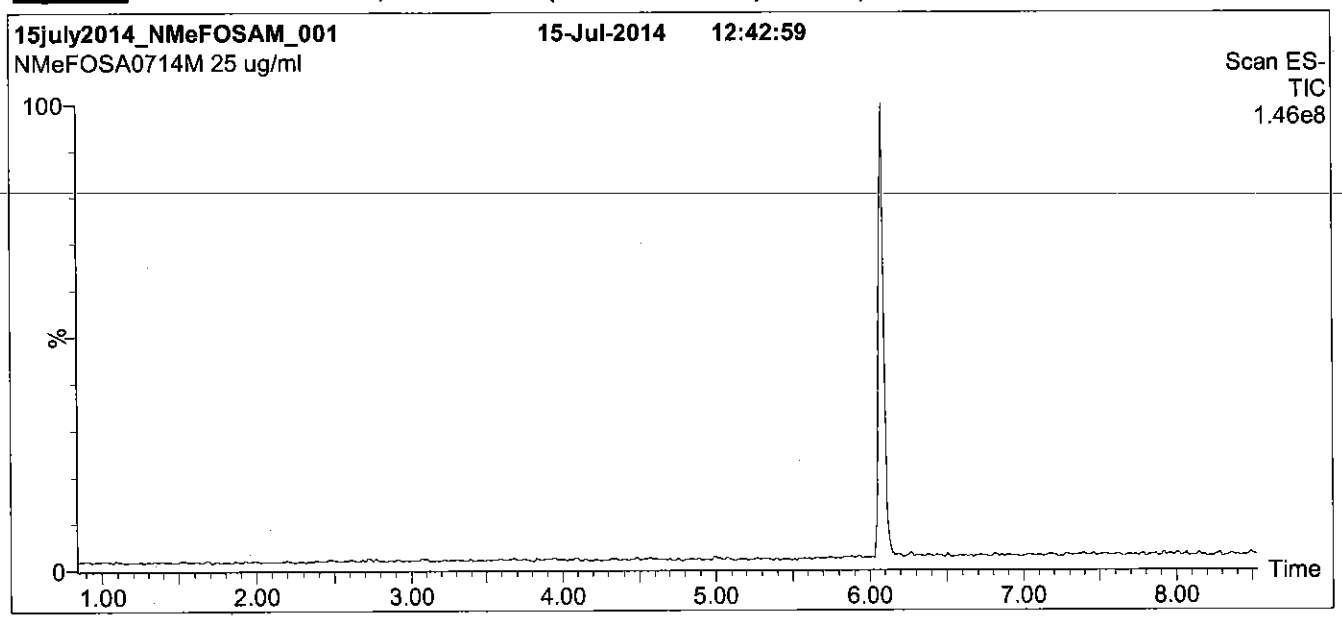
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

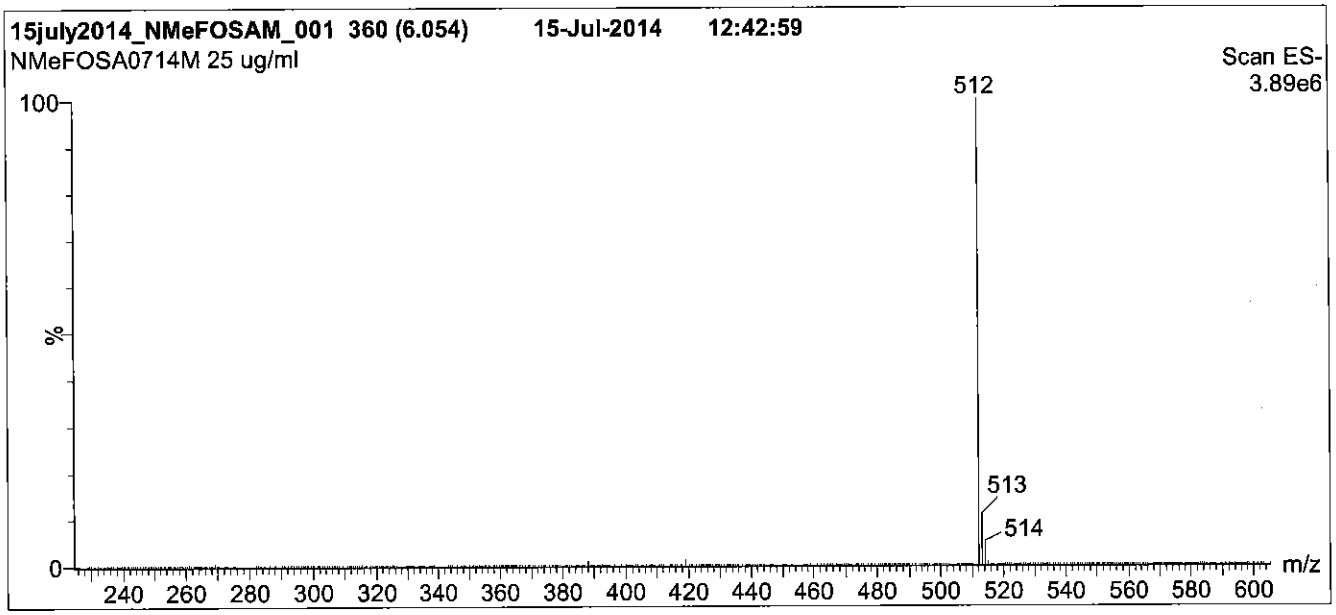
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED Reference Material Producer

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

Figure 1: **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

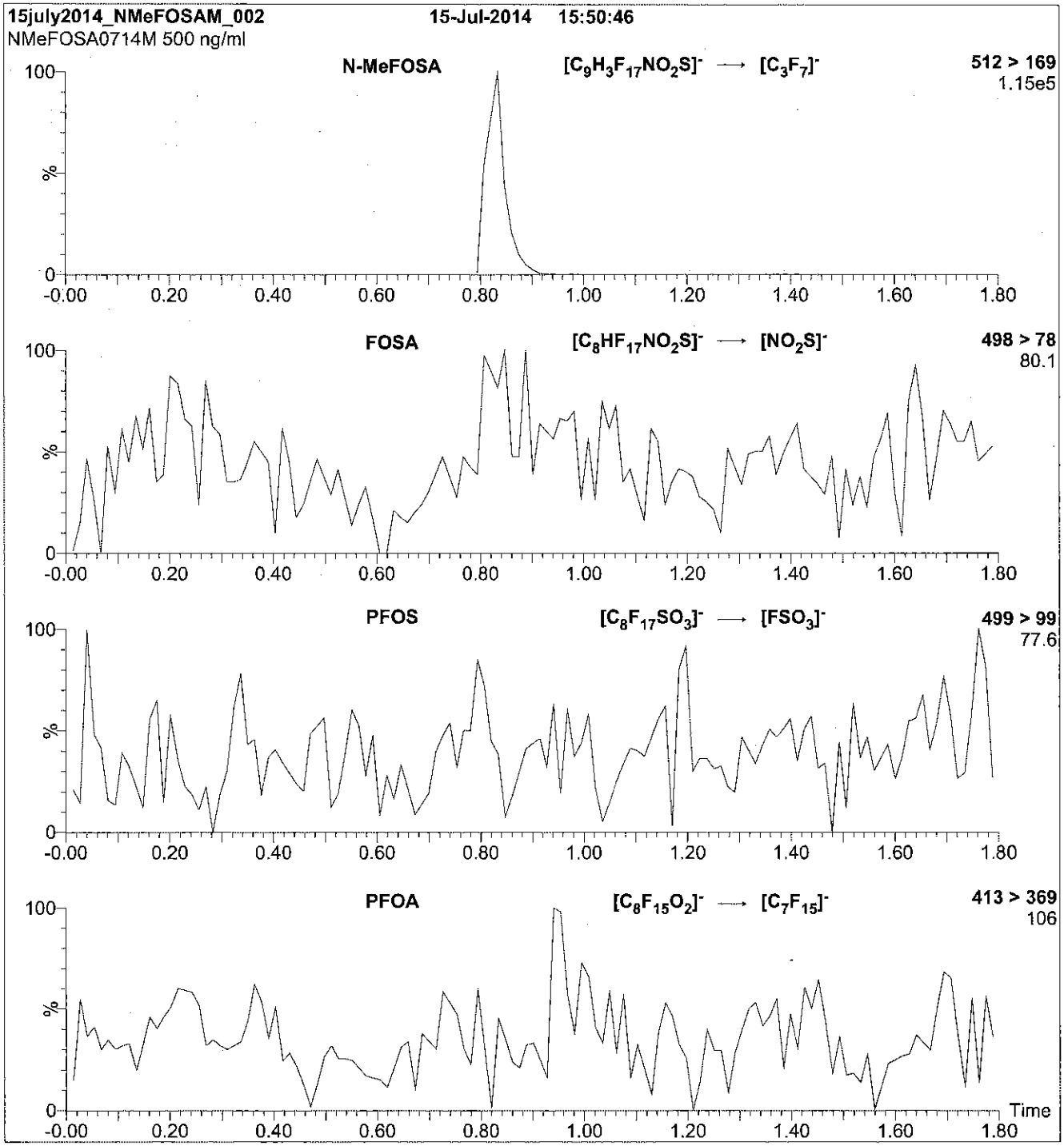
Flow: 300 µl/min

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

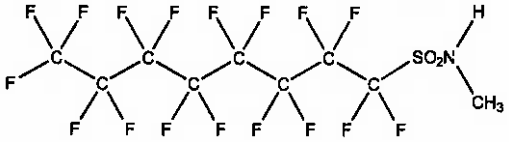
R: 8/23/16 SBC

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

INTENDED USE:

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CALA

ANAB ACCREDITED

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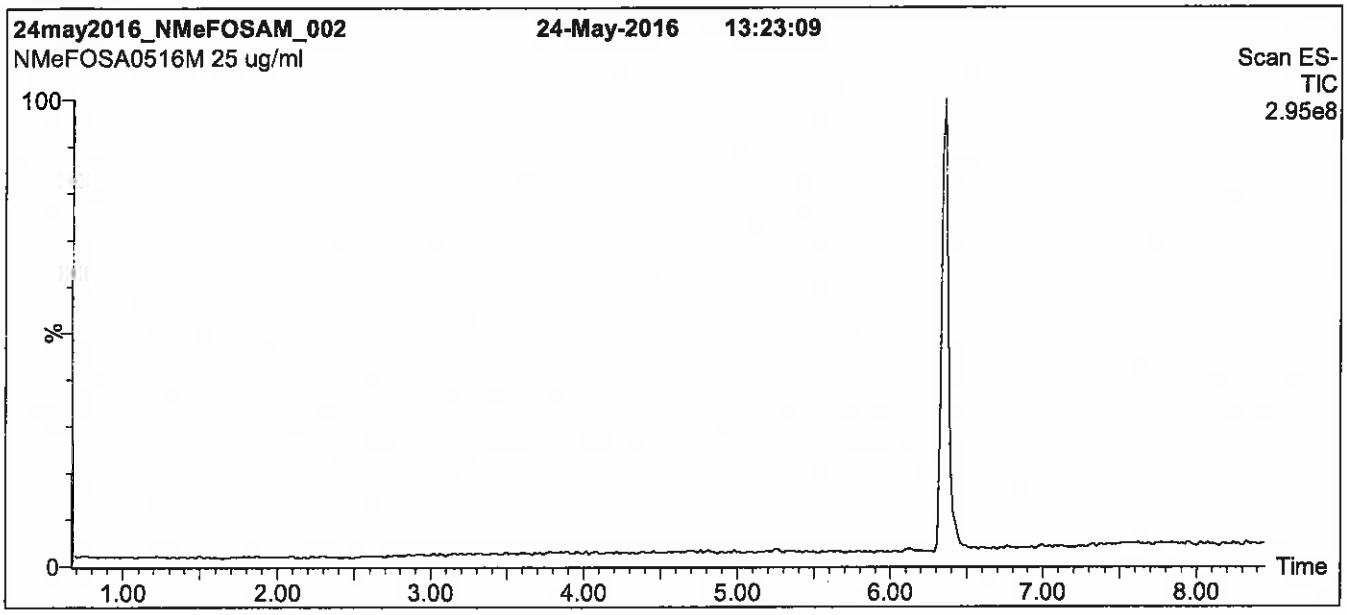

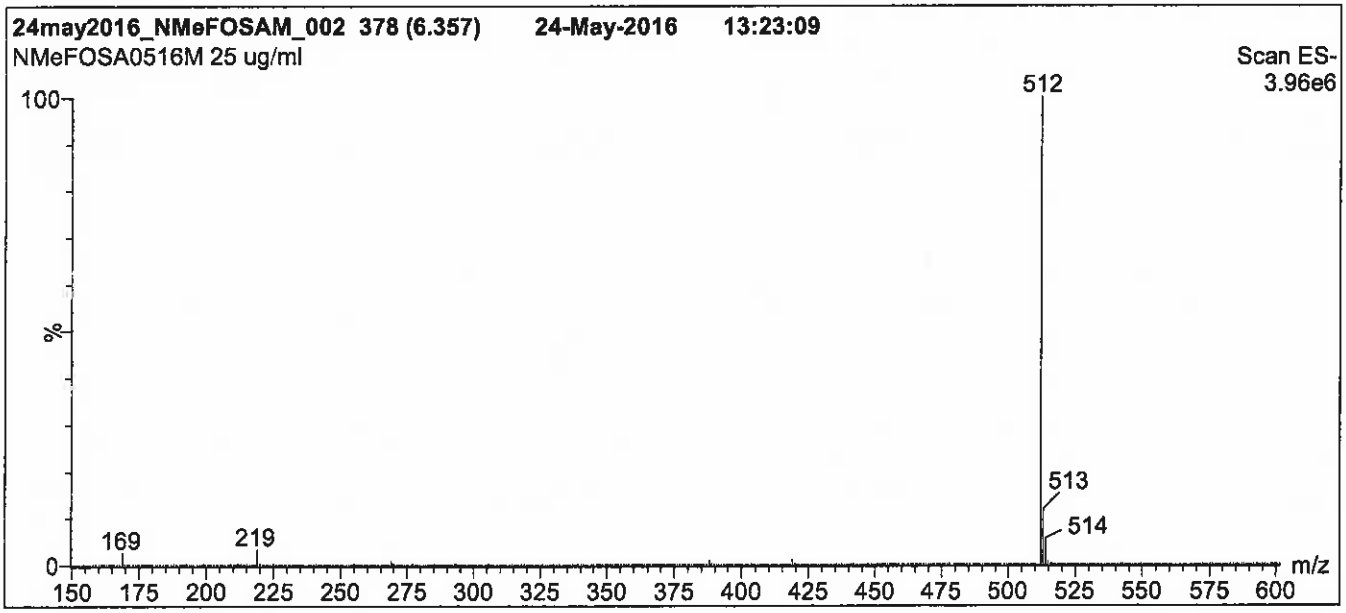

Conditions for Figure 1:

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

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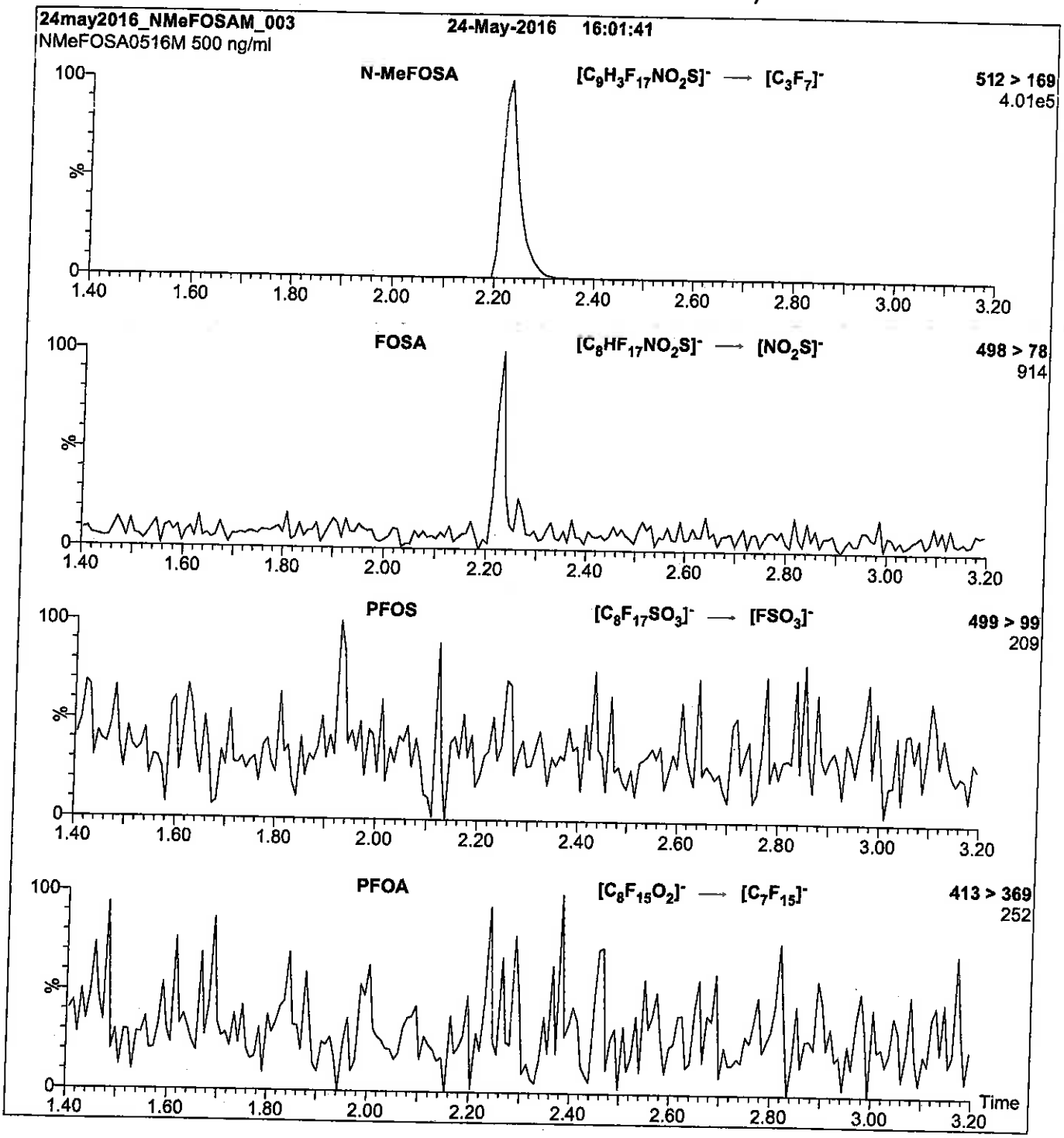


Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCN-MeFOSAA_00001

R: 7/10/15 SEU

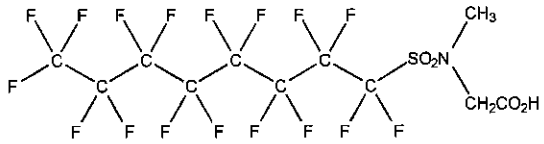
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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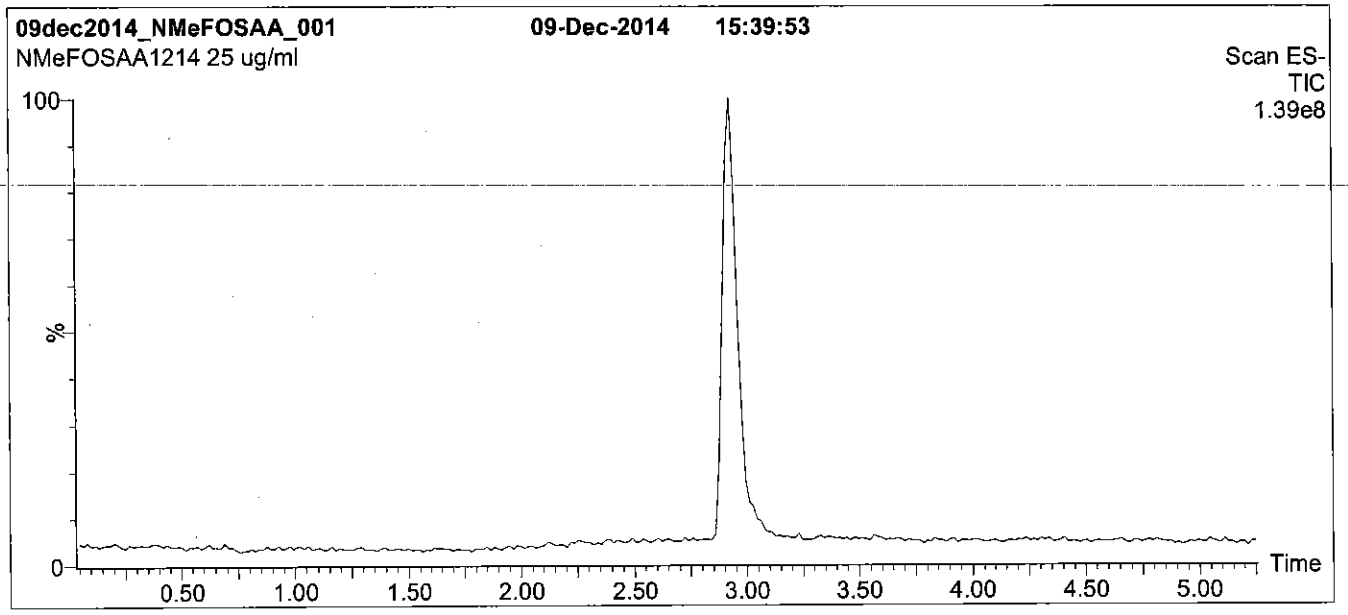
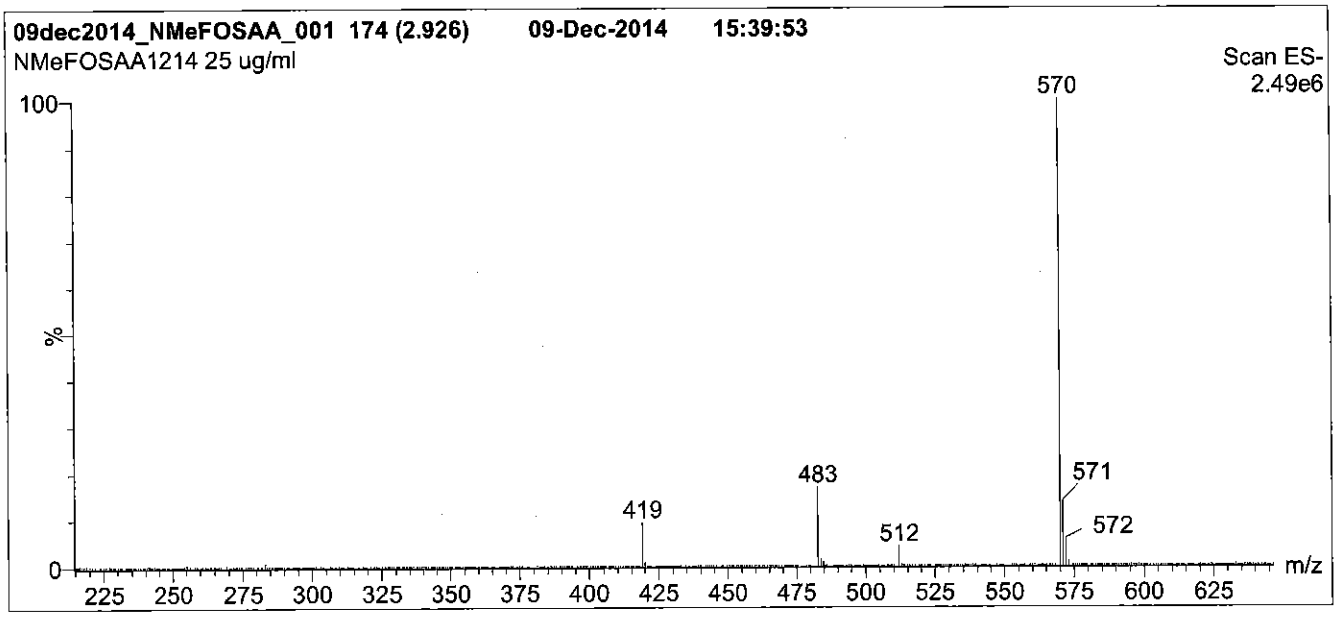
Figure 1: **N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

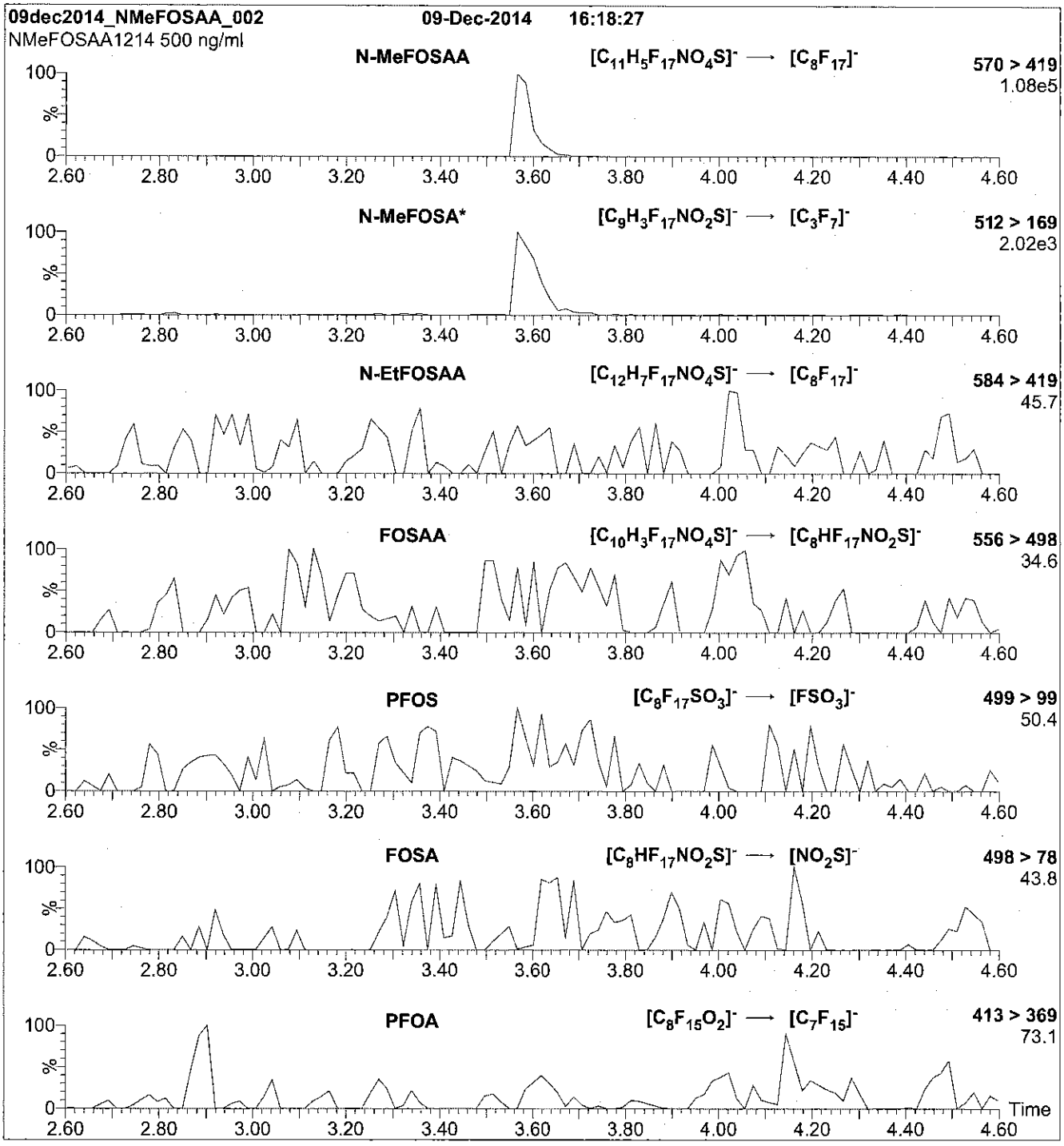
Flow: 300 µl/min

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

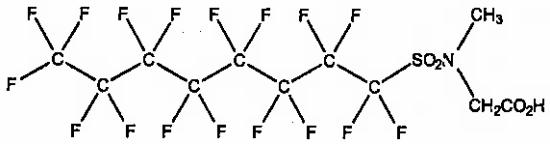
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

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



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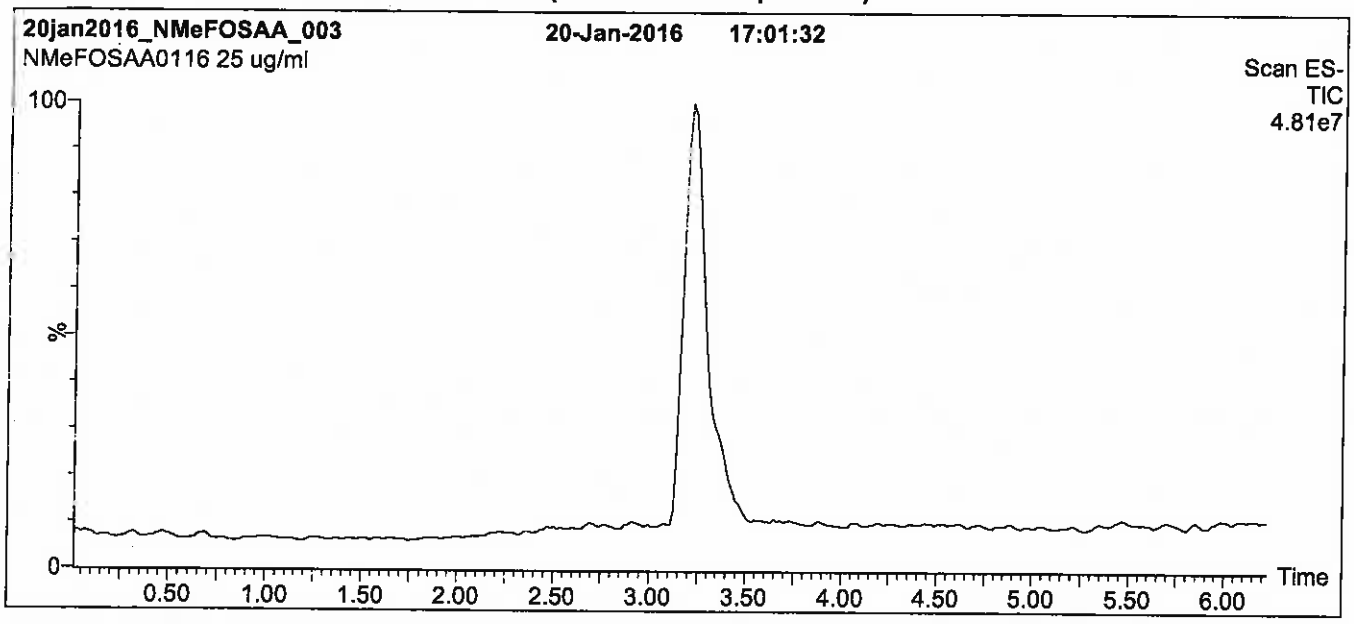
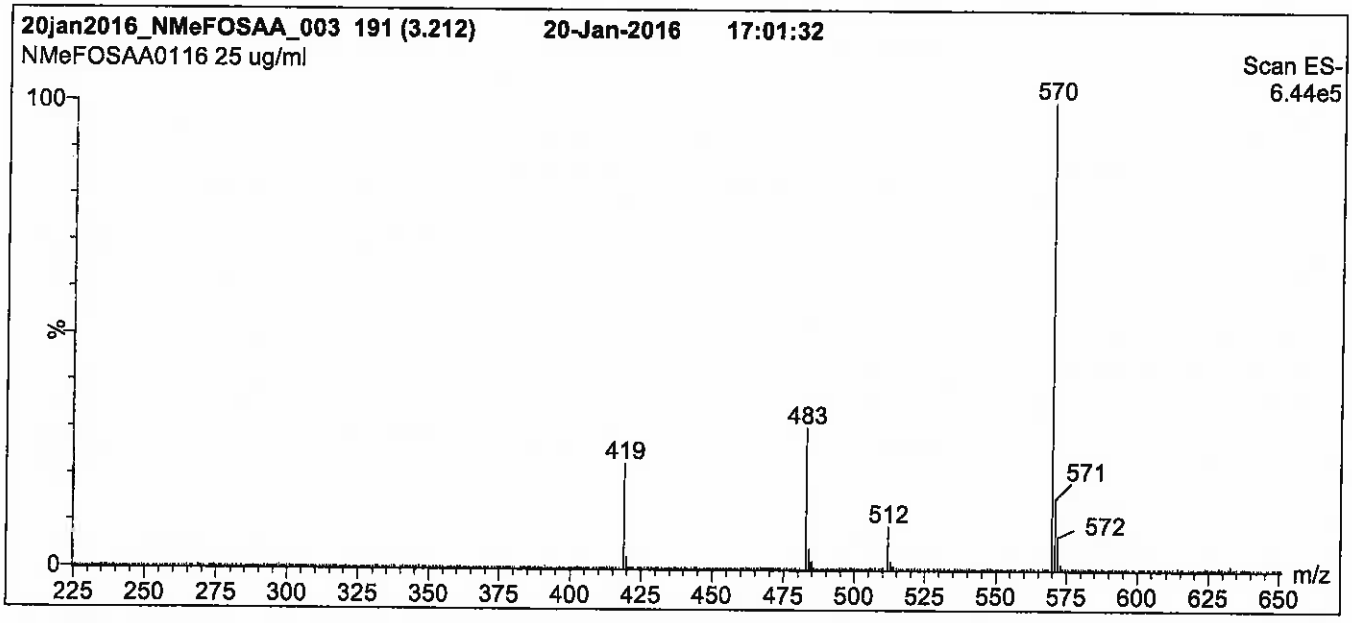
Figure 1: **N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

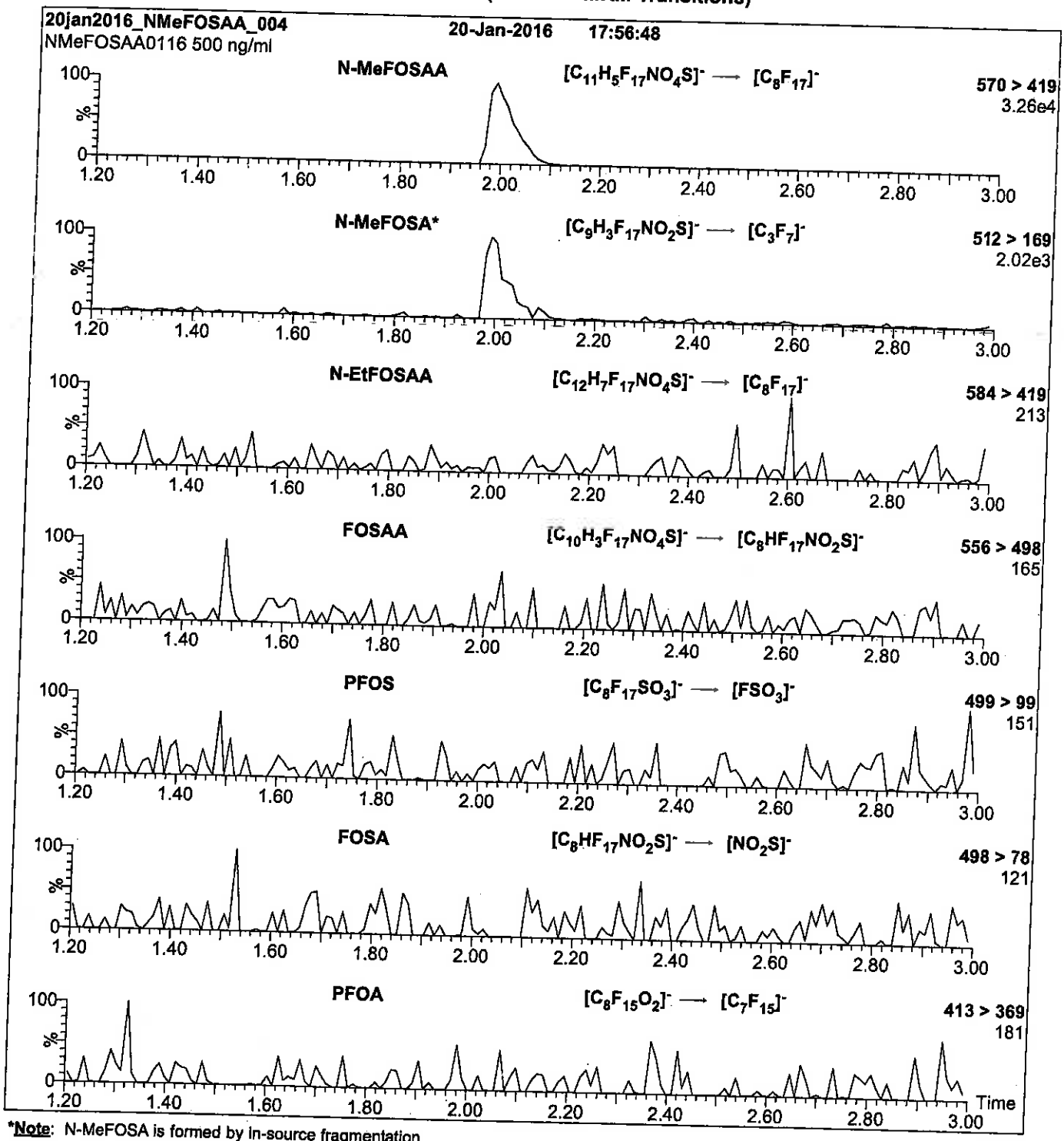
Flow: 300 µl/min

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

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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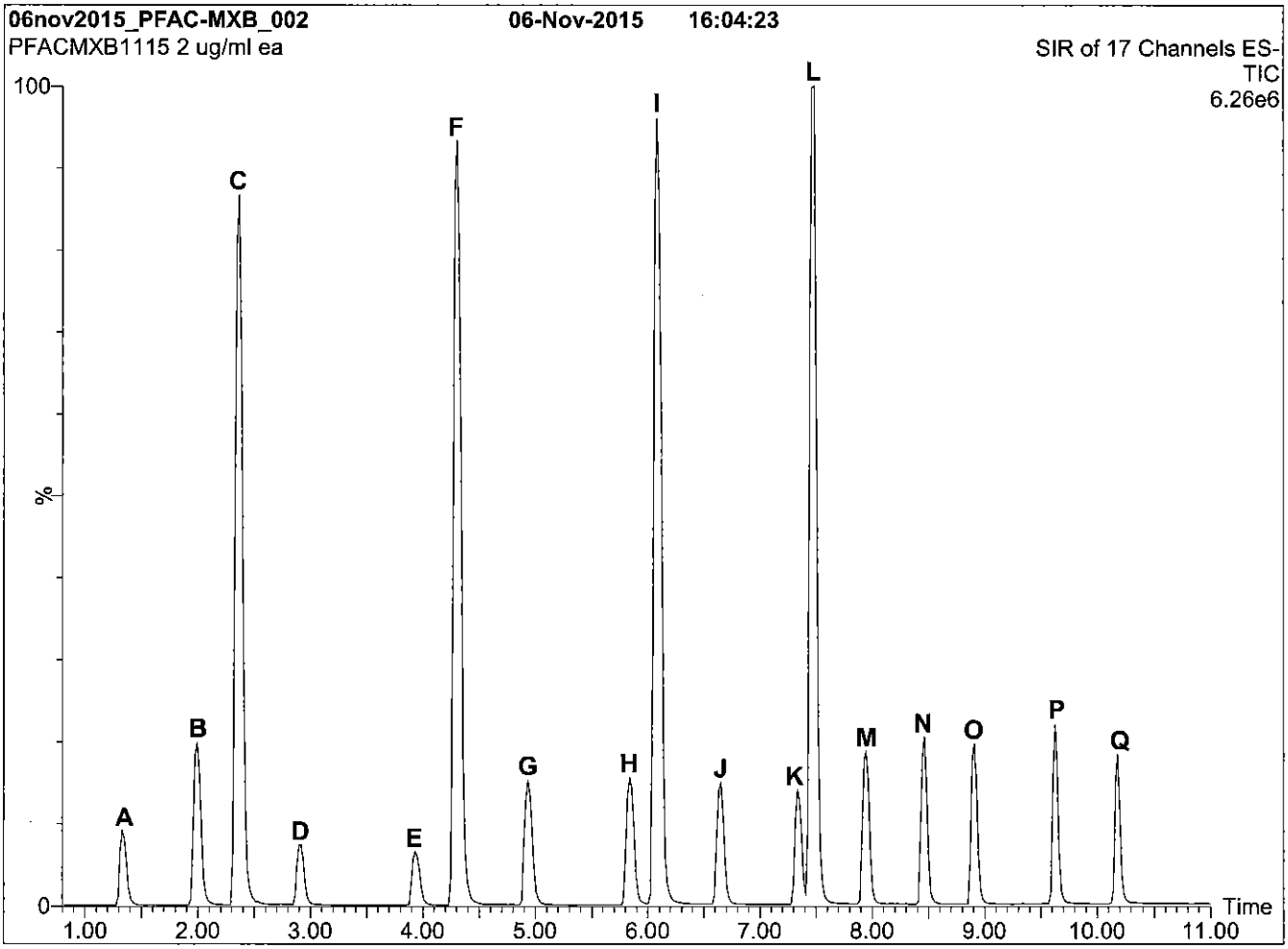
Table A: **PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))**

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

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

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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR of 17 Channels

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

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

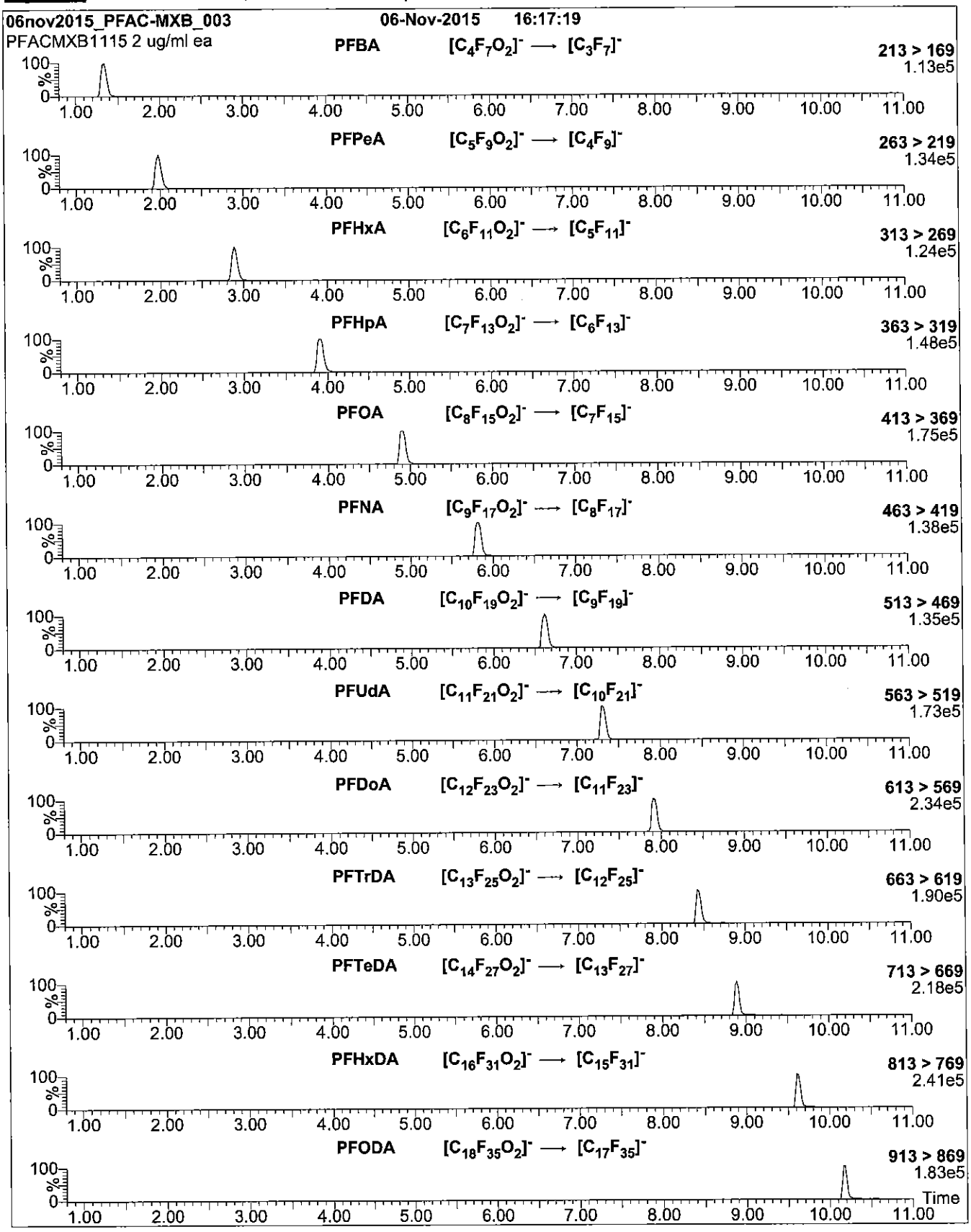
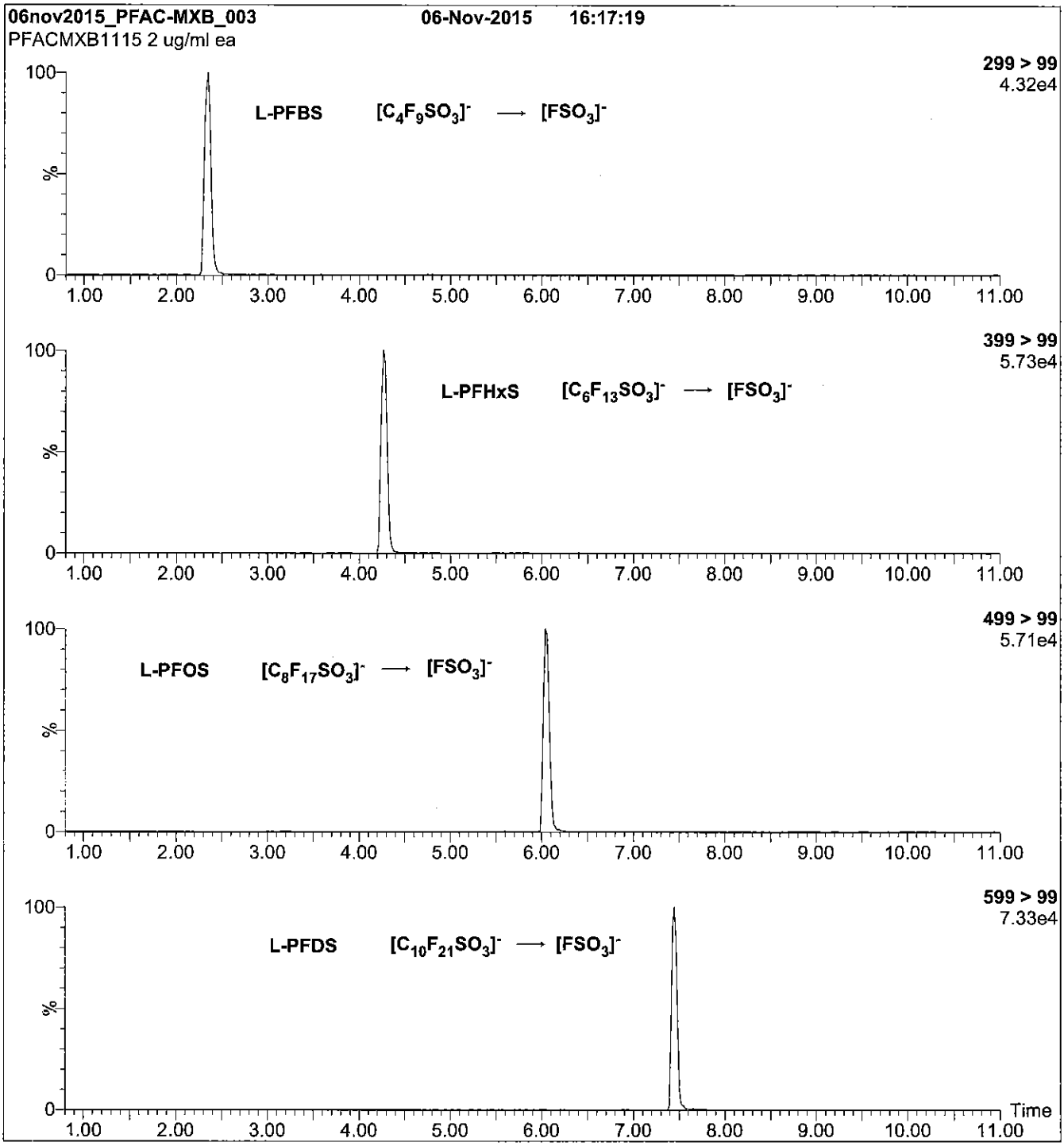


Figure 3: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figures 2 and 3:

Injection: on-column (PFAC-MXB)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

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

Reagent

LCPFBA_00004

R: 2/25/16 CBW

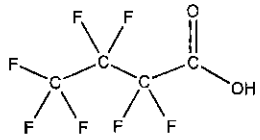
587895
ID: LCPFBA_00004
Exp: 01/30/20 Prpd: CBW
PF-n-butanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
MOLECULAR WEIGHT: 214.04
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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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:

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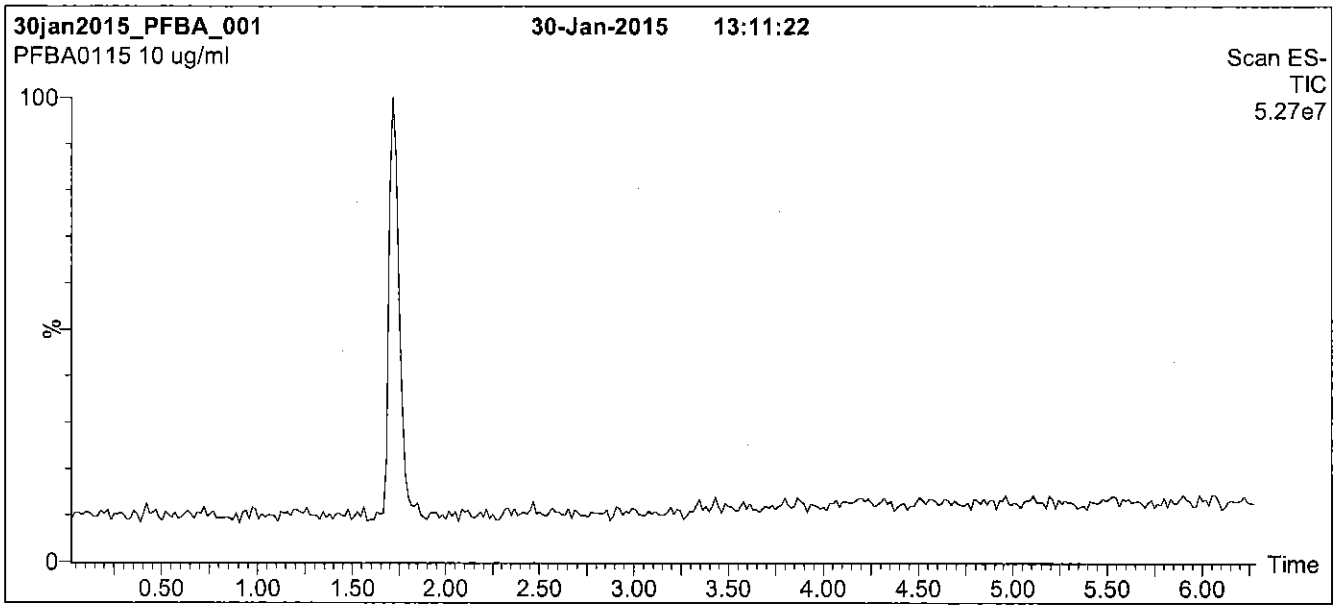
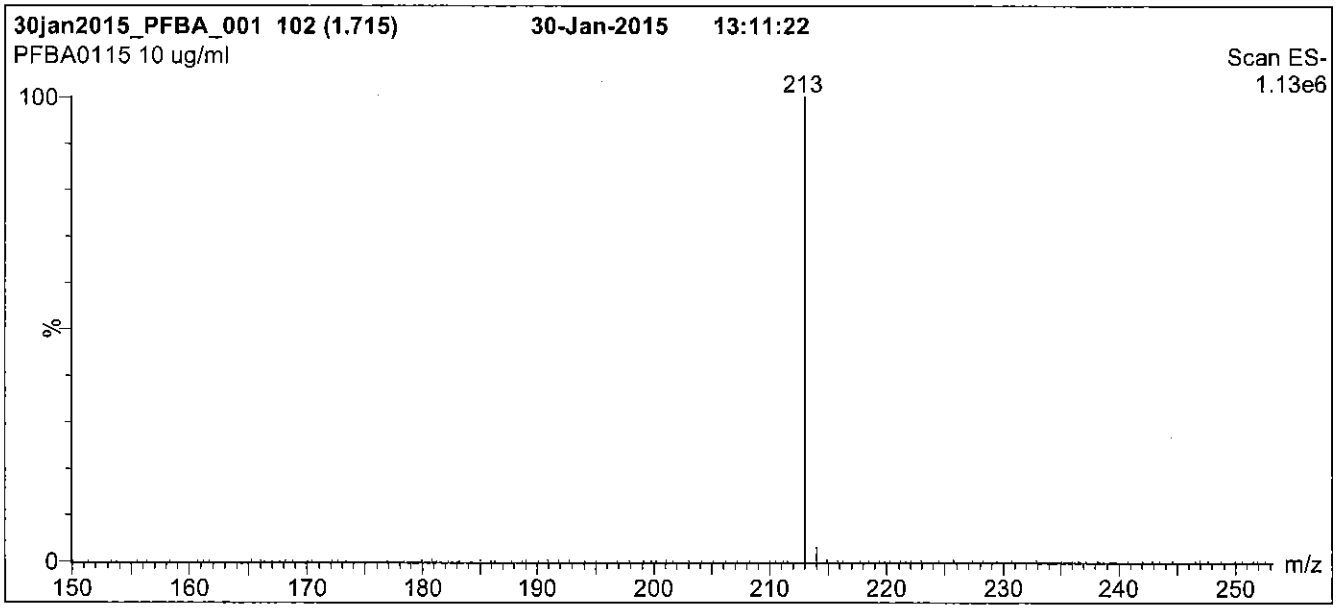
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





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

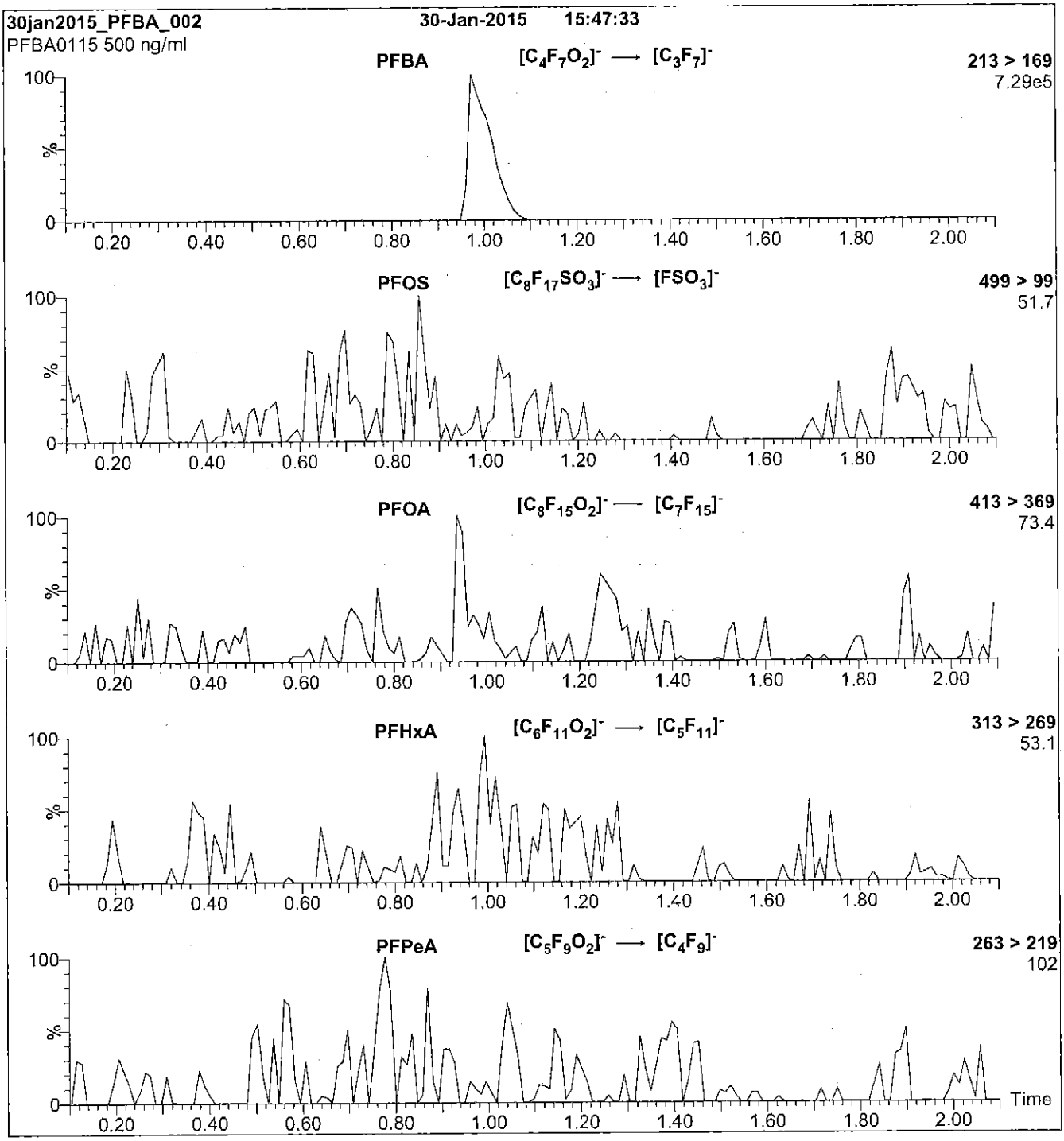
Flow: 300 µl/min

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

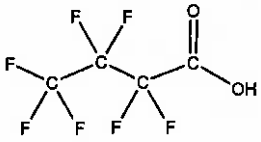
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: PFBA0516

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/27/2016
EXPIRY DATE: (mm/dd/yyyy) 05/27/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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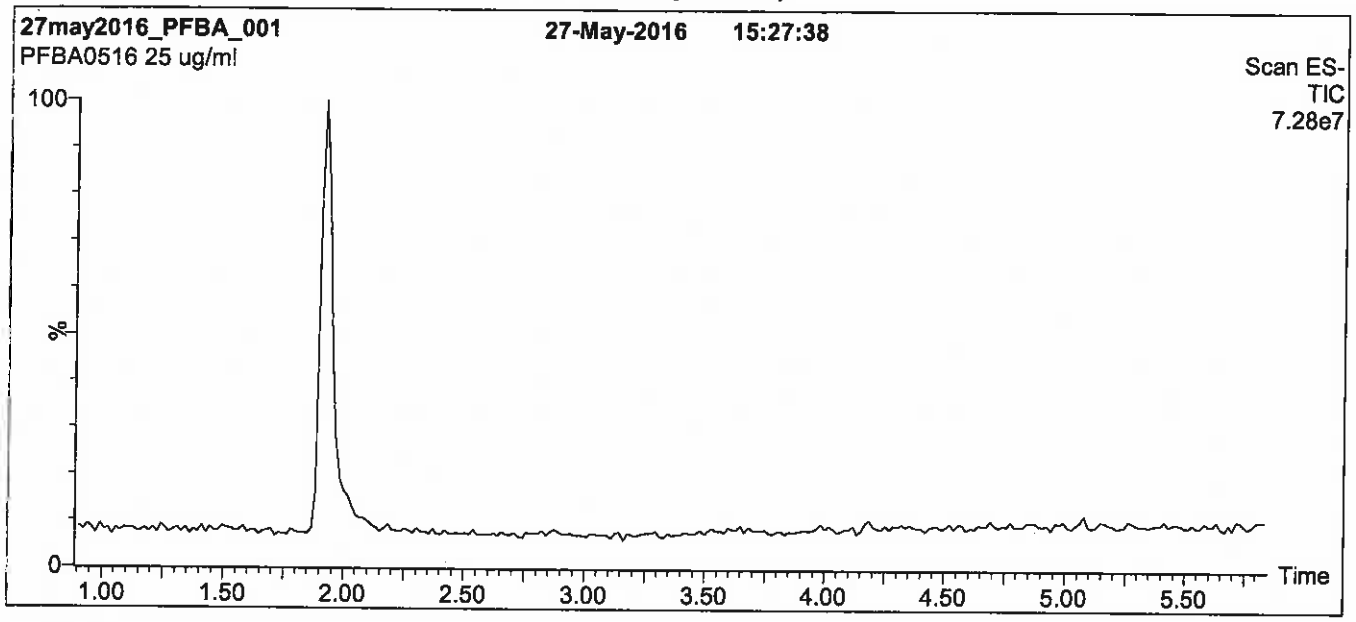
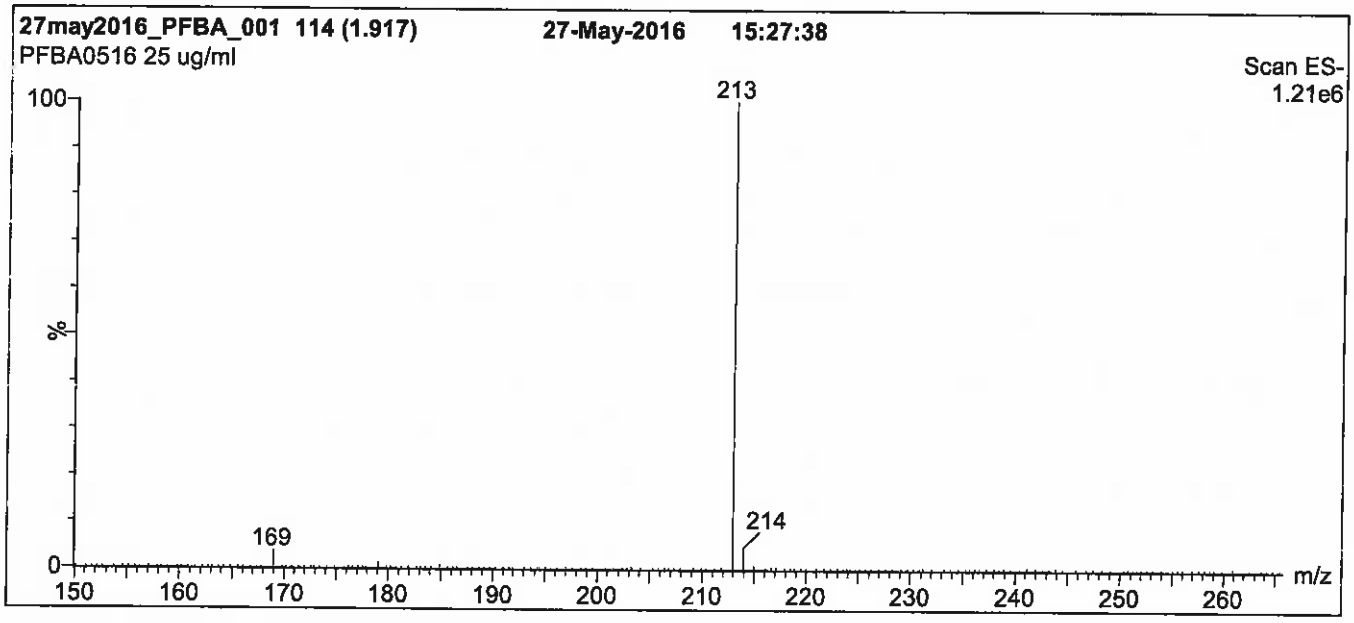
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





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

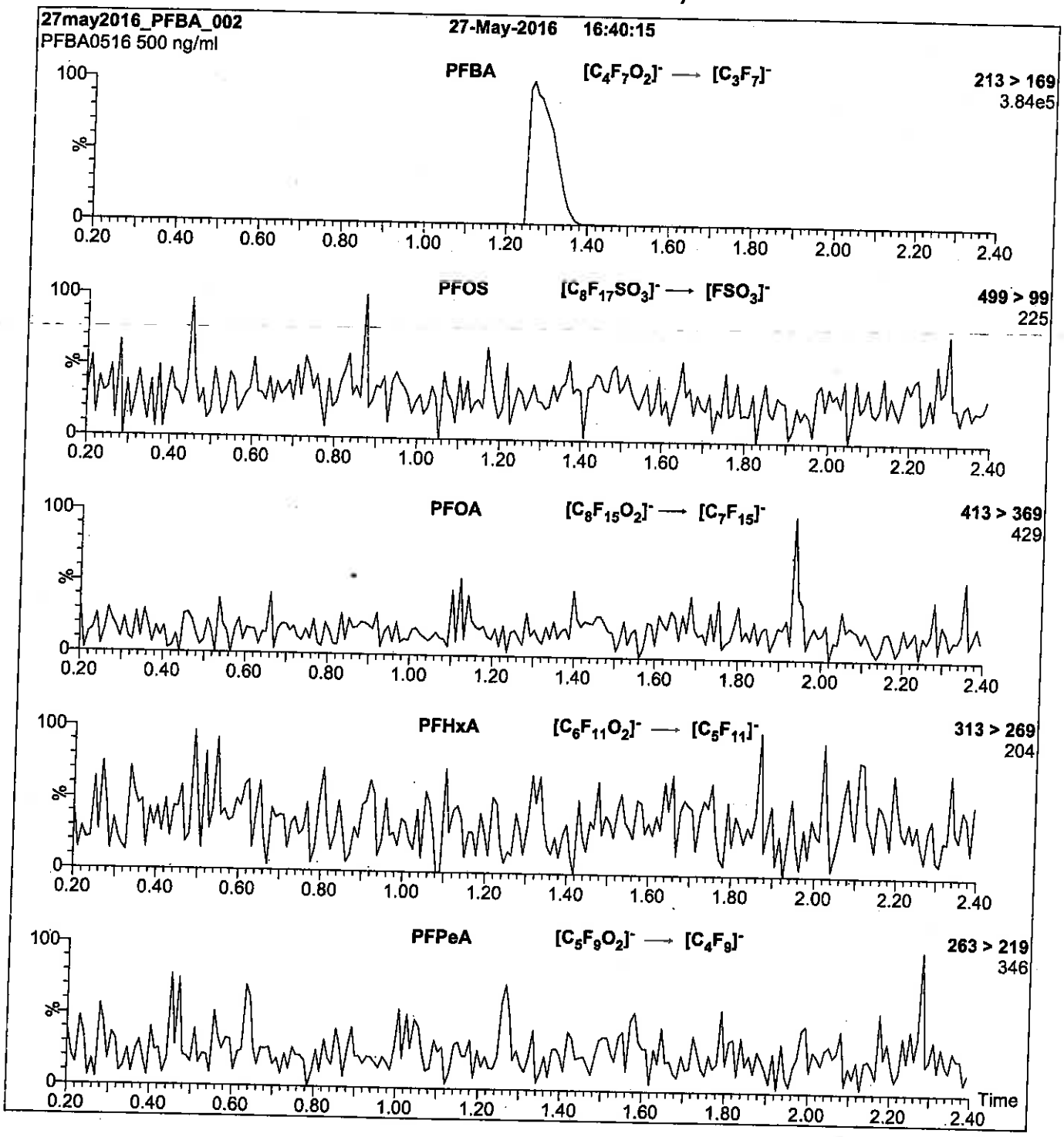
Flow: 300 µl/min

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

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

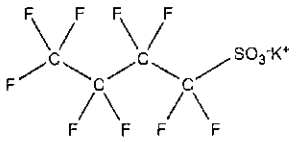
Rec. 3/29/16 JRB ✓

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 29420-49-3



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

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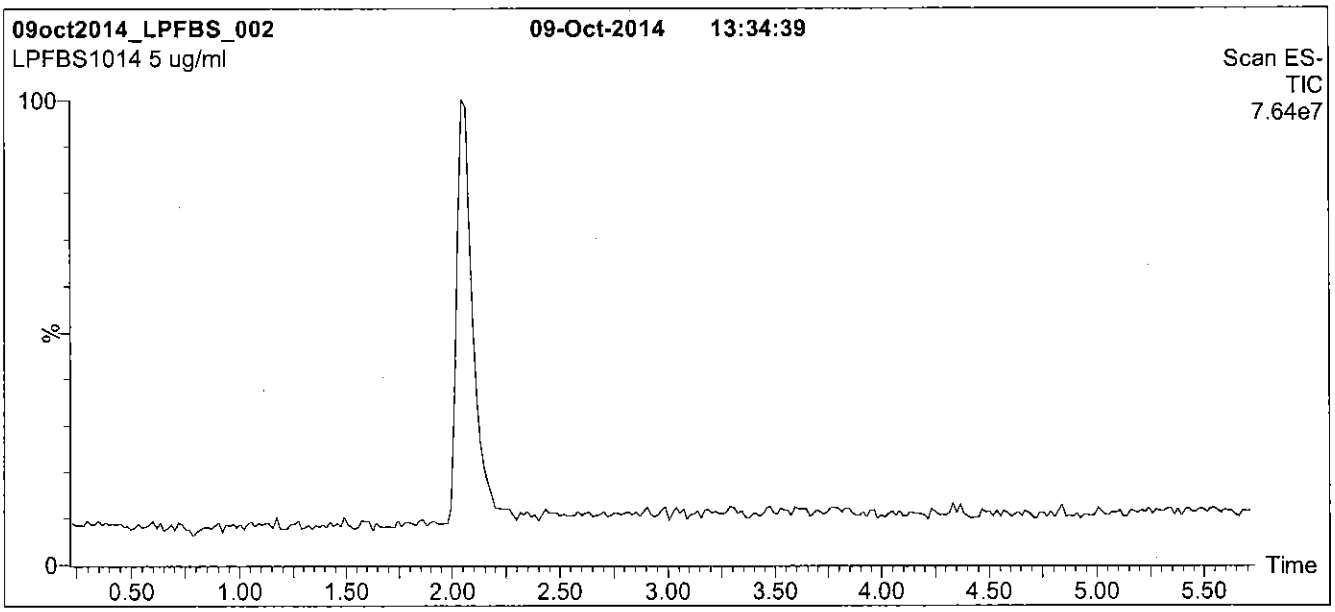
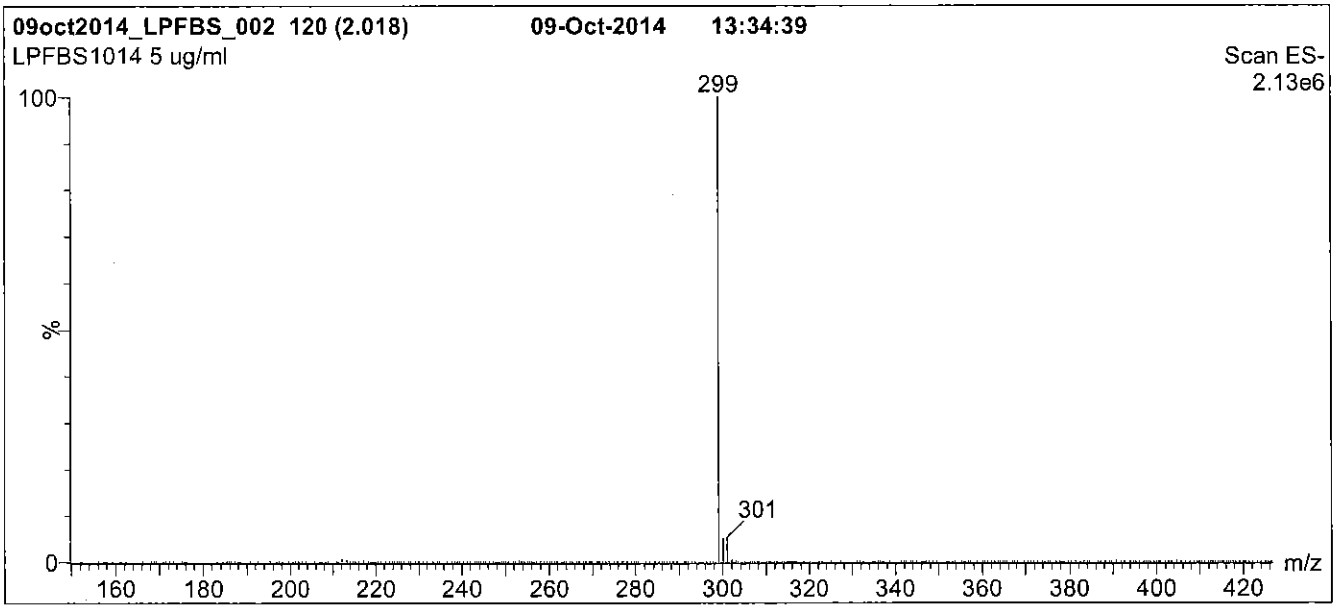
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

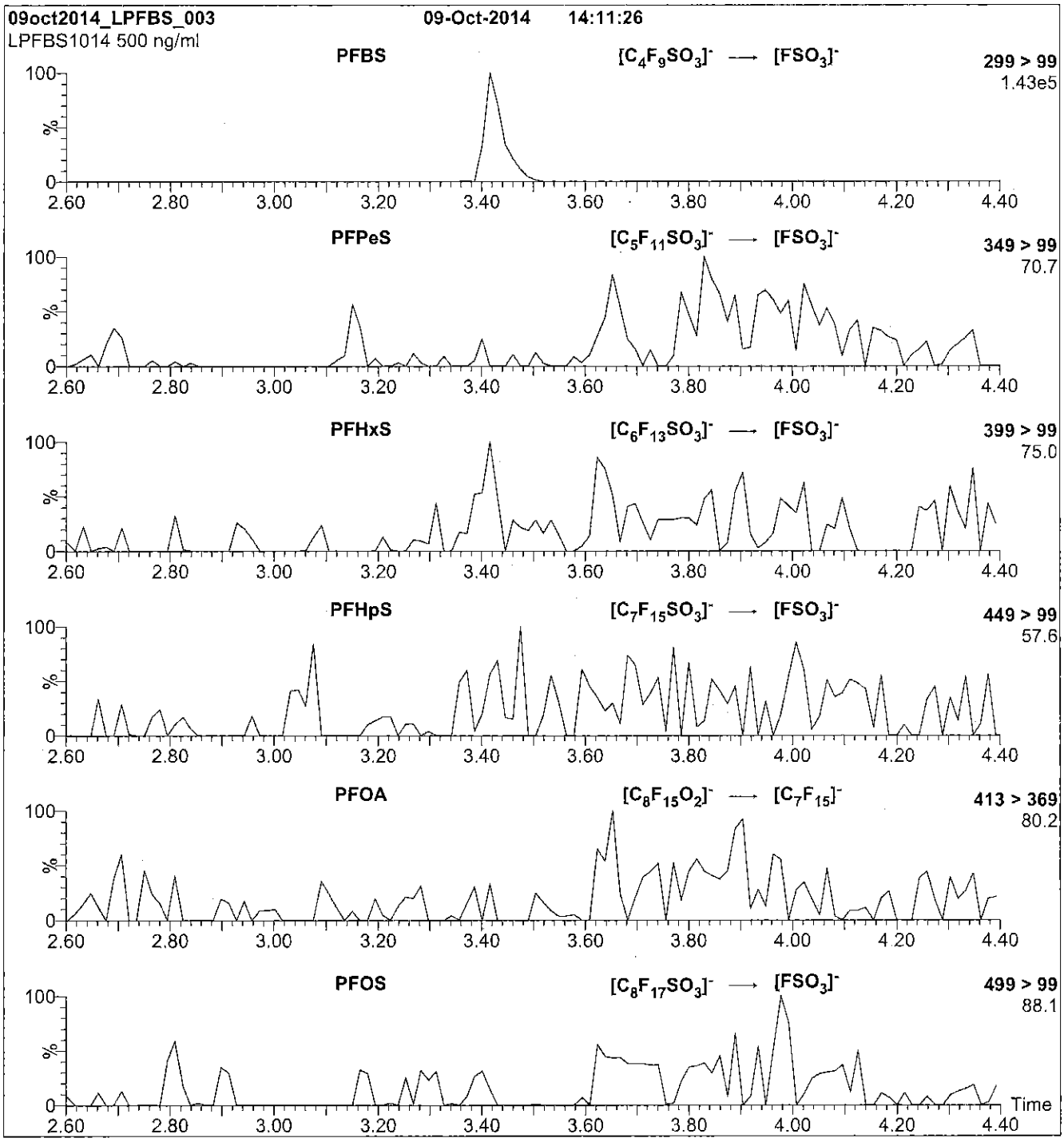
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFBS_00005

R: 9/9/16 SBC

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

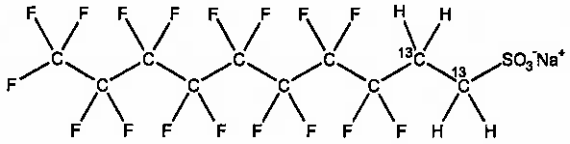
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C
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 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:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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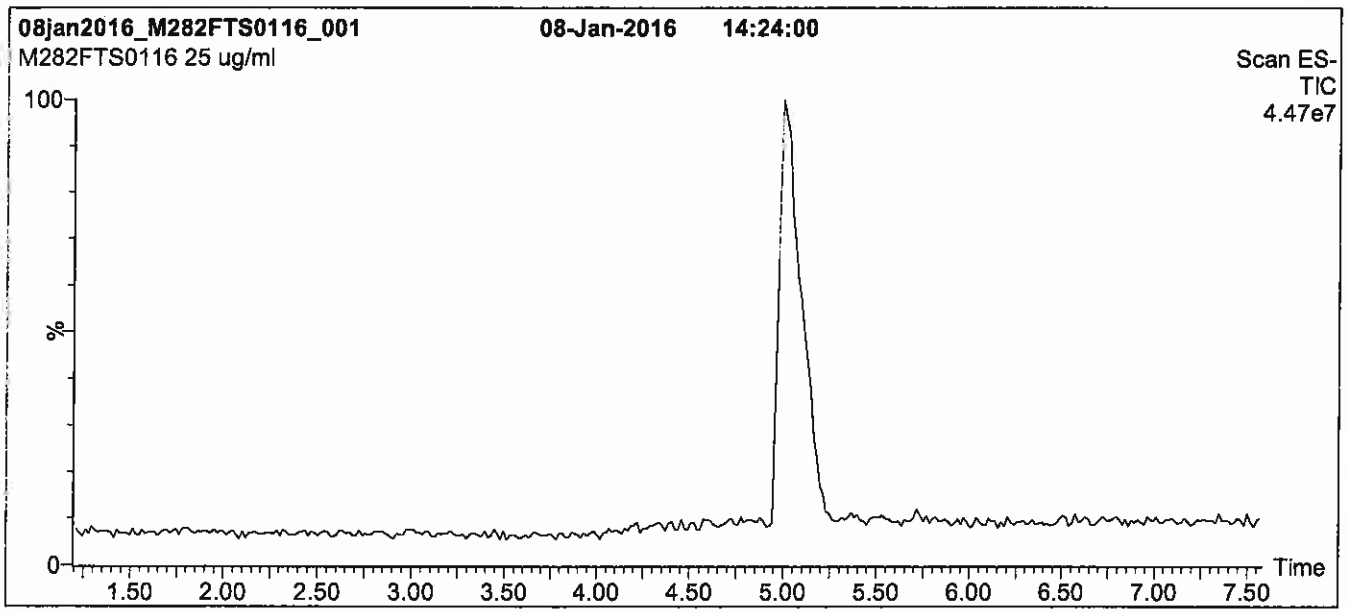
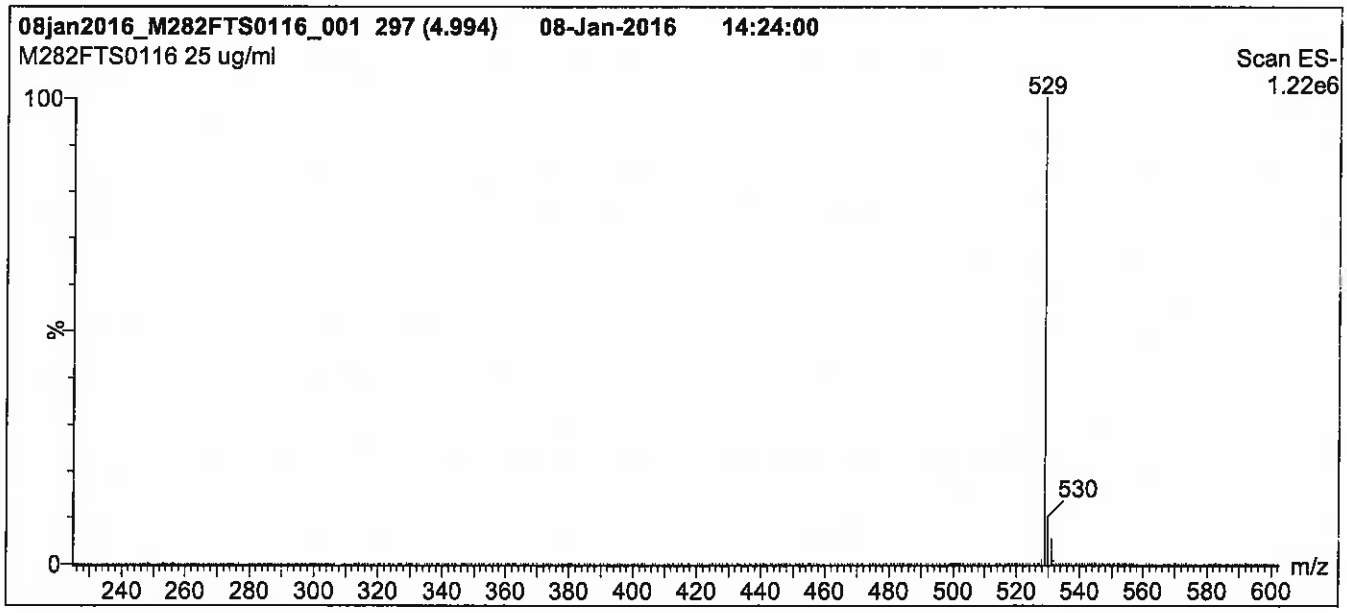
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

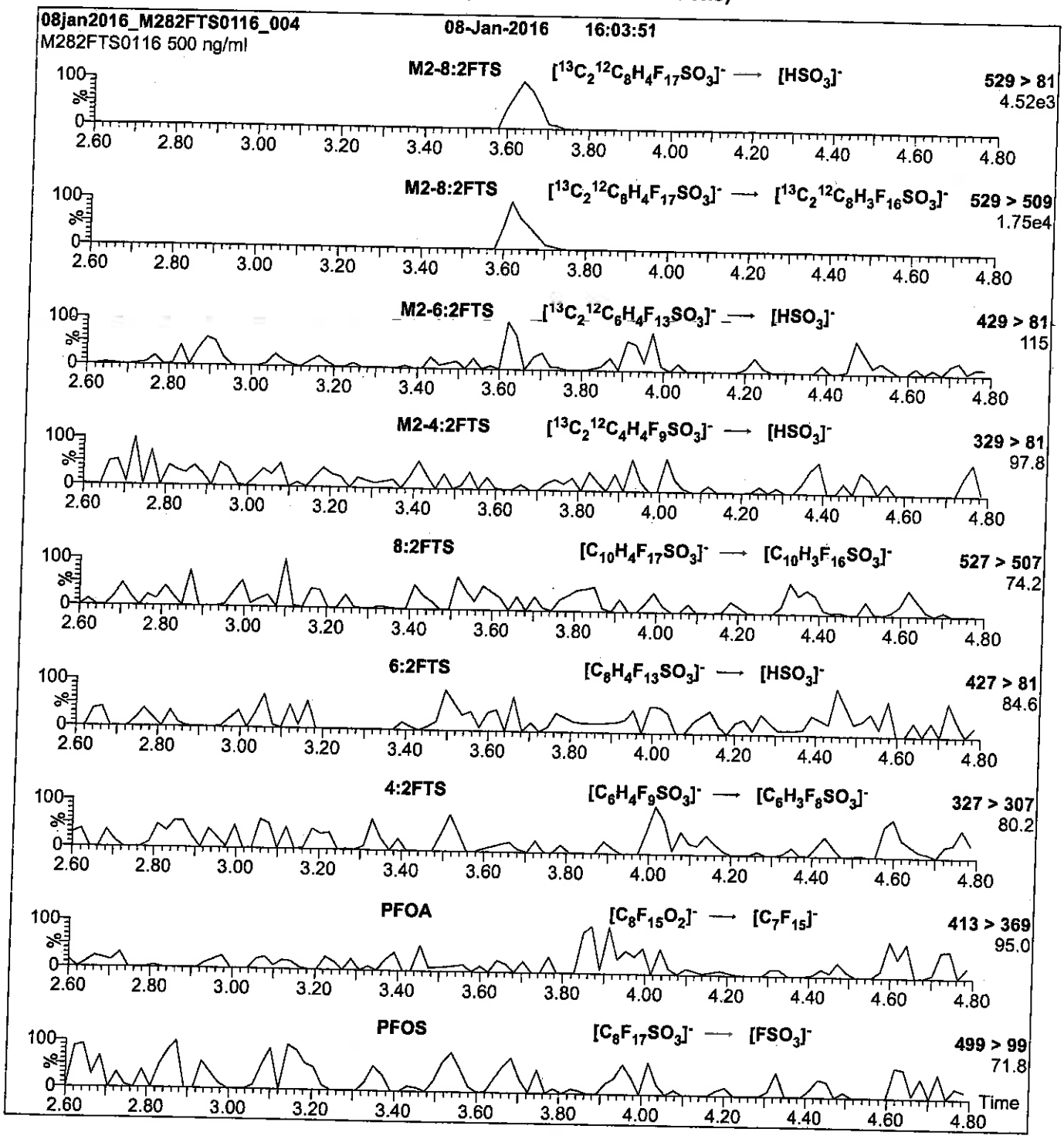
Flow: 300 µl/min

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

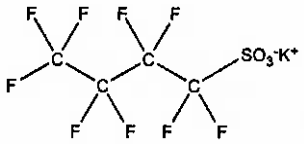
730511
ID: LCPFBS_00005
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

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.

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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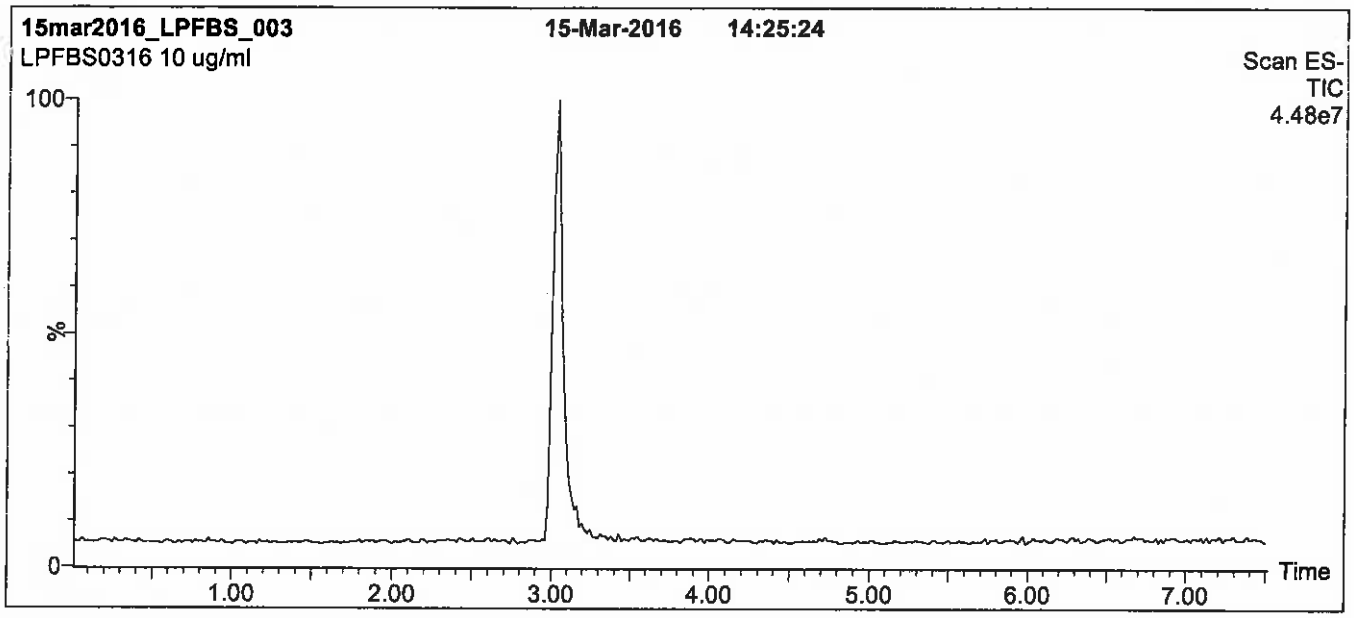

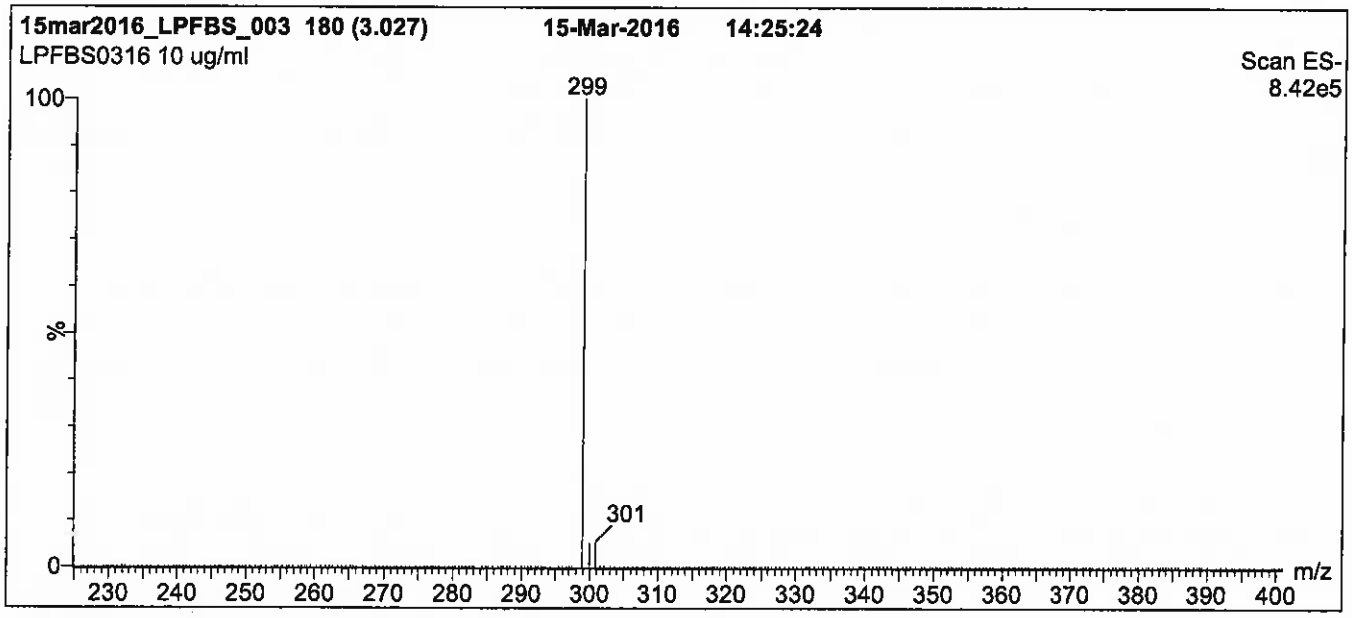

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MS: **Micromass Quattro *micro* API MS**

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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

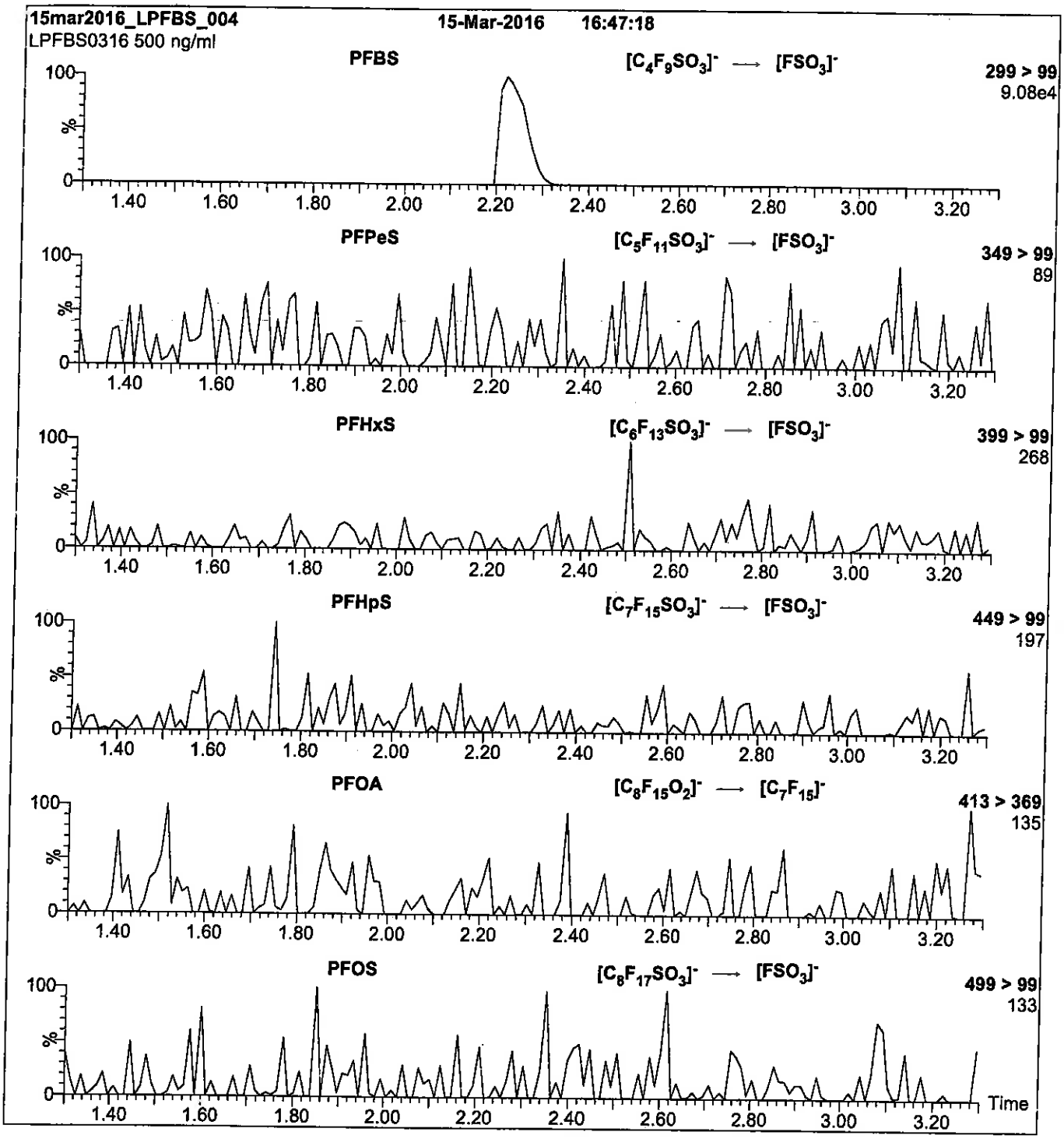
Flow: 300 µl/min

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

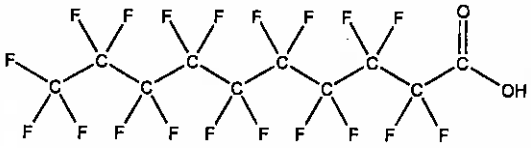
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

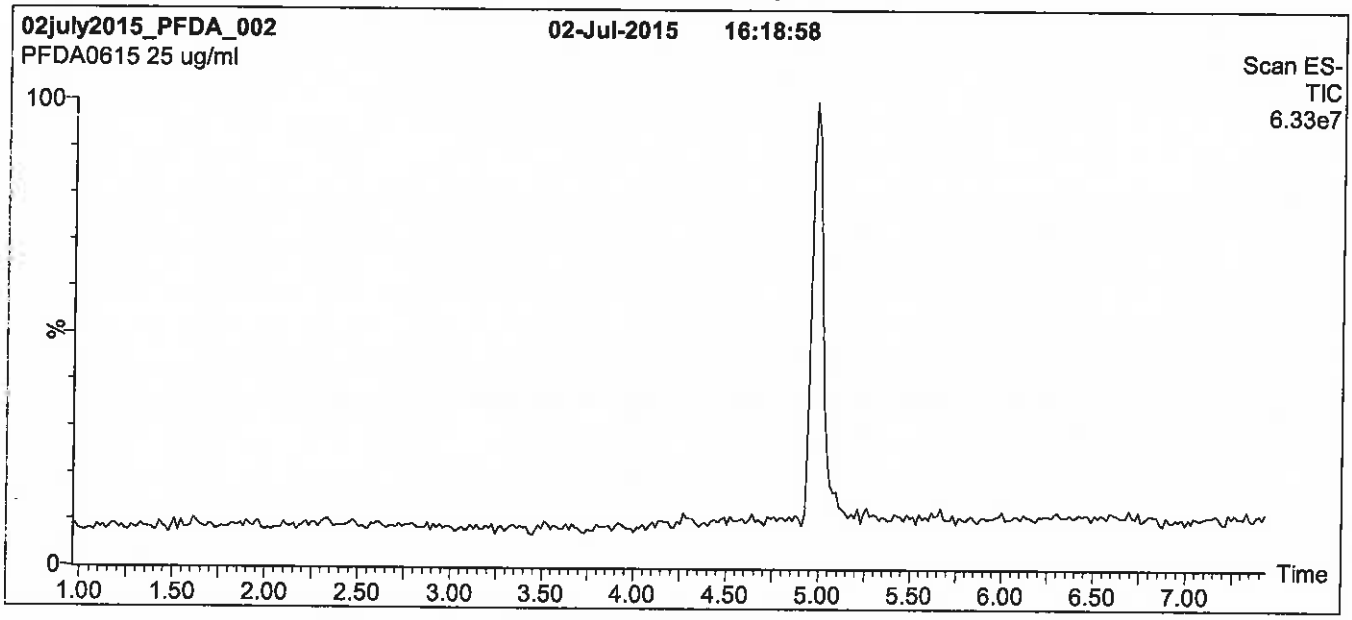
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

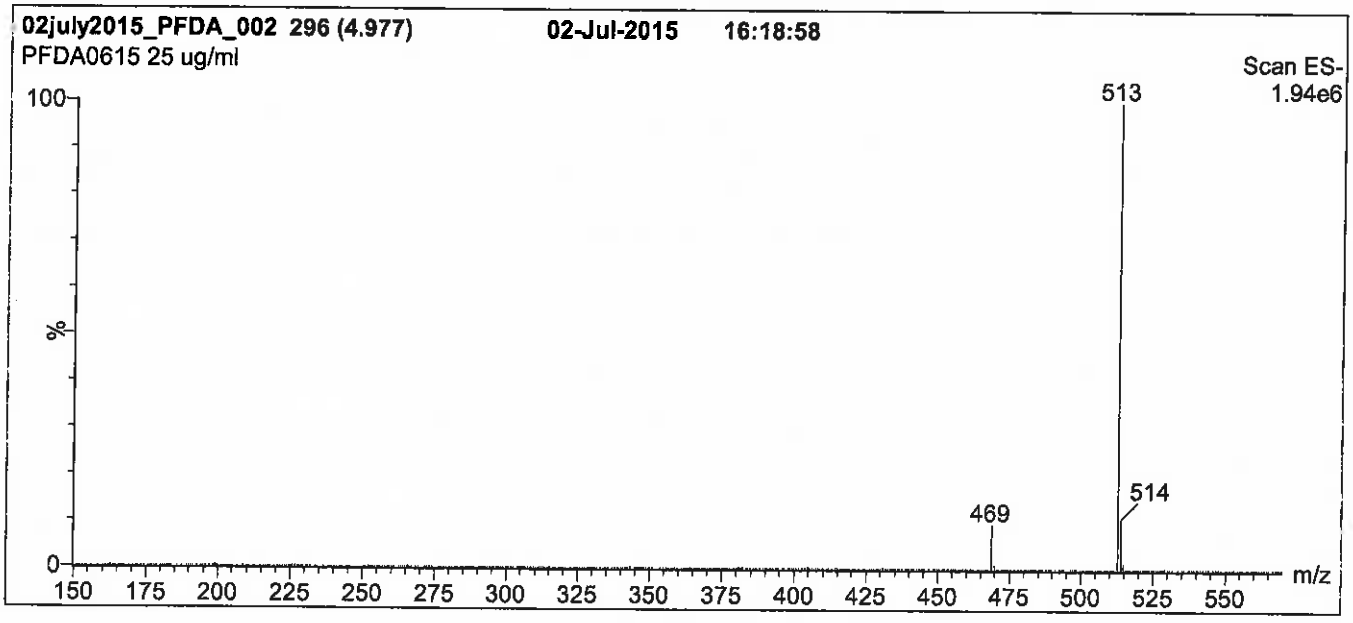
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

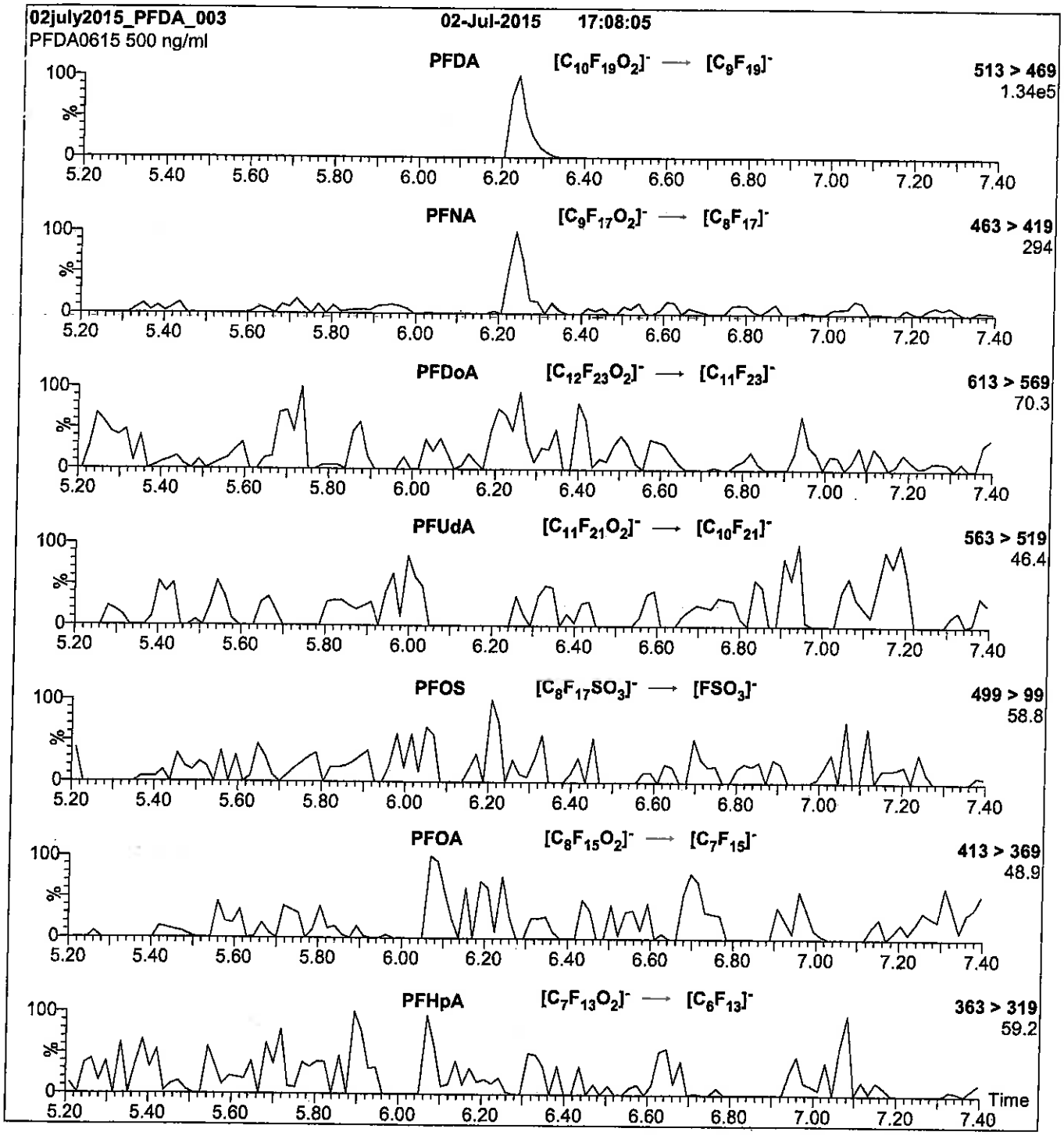
Flow: 300 µl/min

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

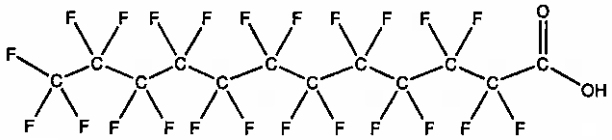
R: 7/6/16 ca

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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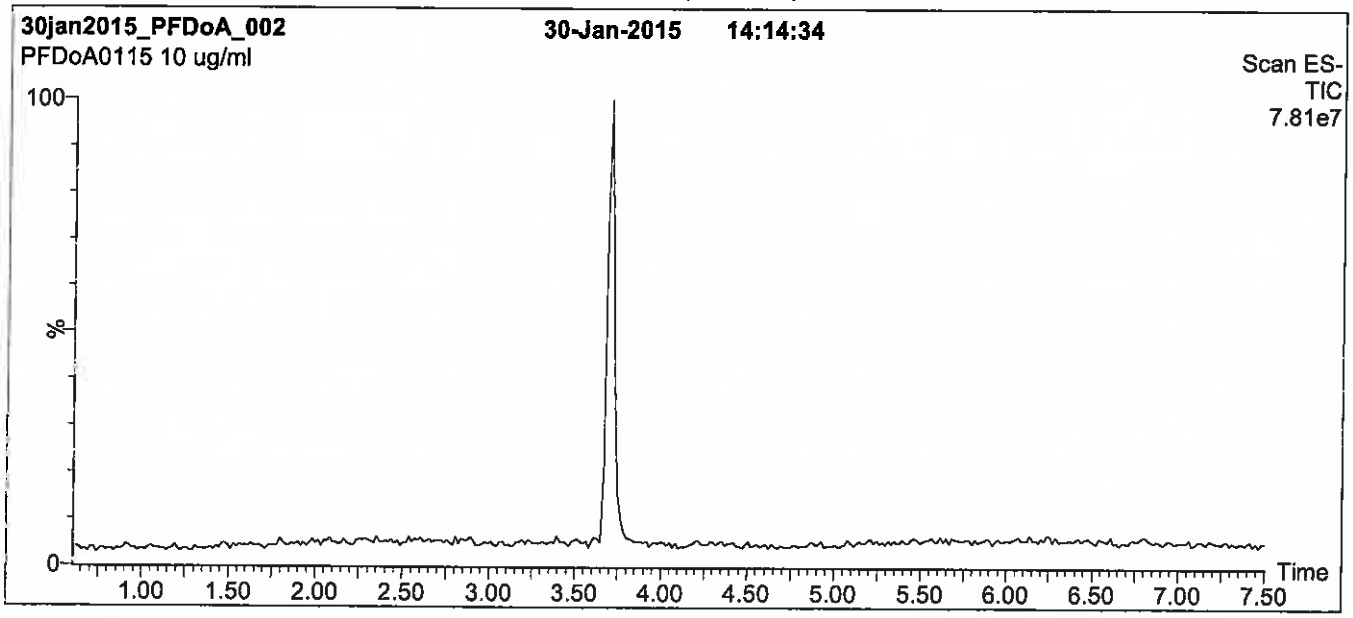
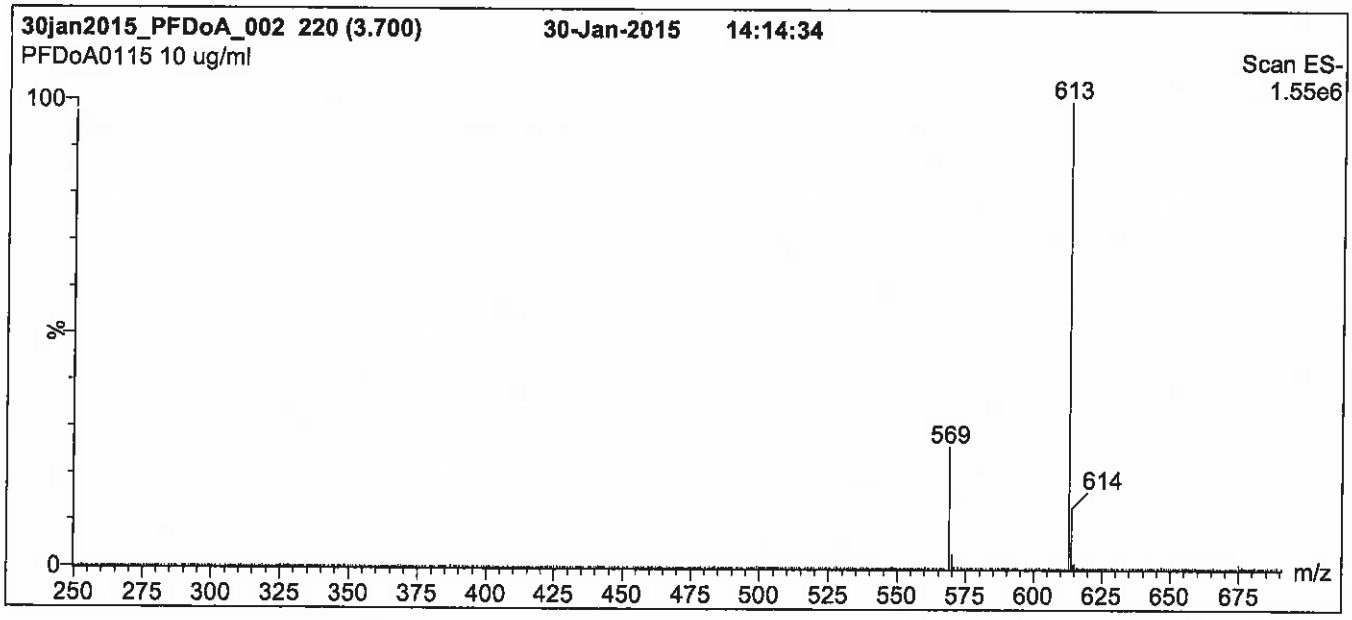
Figure 1: **PFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

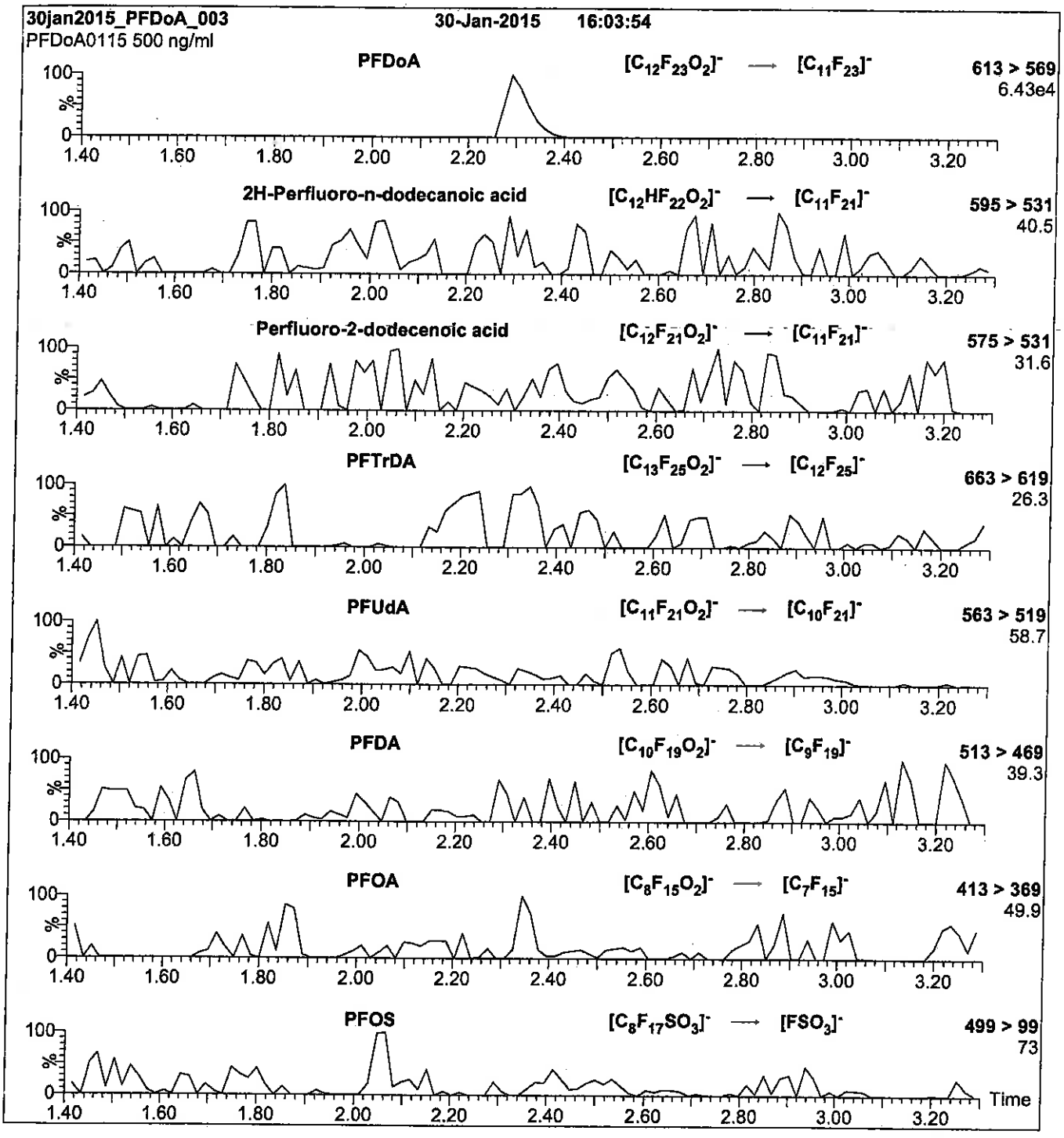
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFDS_00005

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

Rec. 3/29/16 JRB

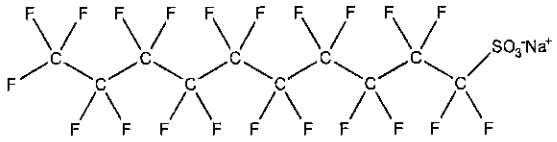
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS0615
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:

CAS #: 2806-15-7



MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$
MOLECULAR WEIGHT:	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)
SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%
LAST TESTED: (mm/dd/yyyy)	07/02/2015
EXPIRY DATE: (mm/dd/yyyy)	07/02/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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CALA

ANAB ACCREDITED

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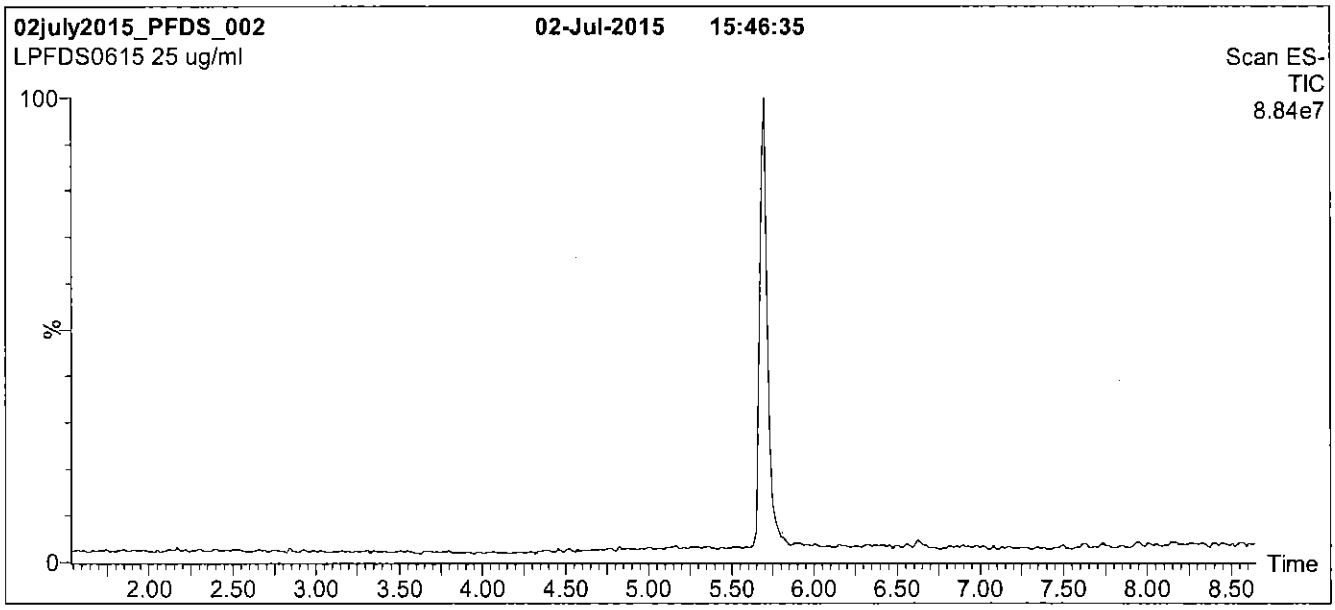
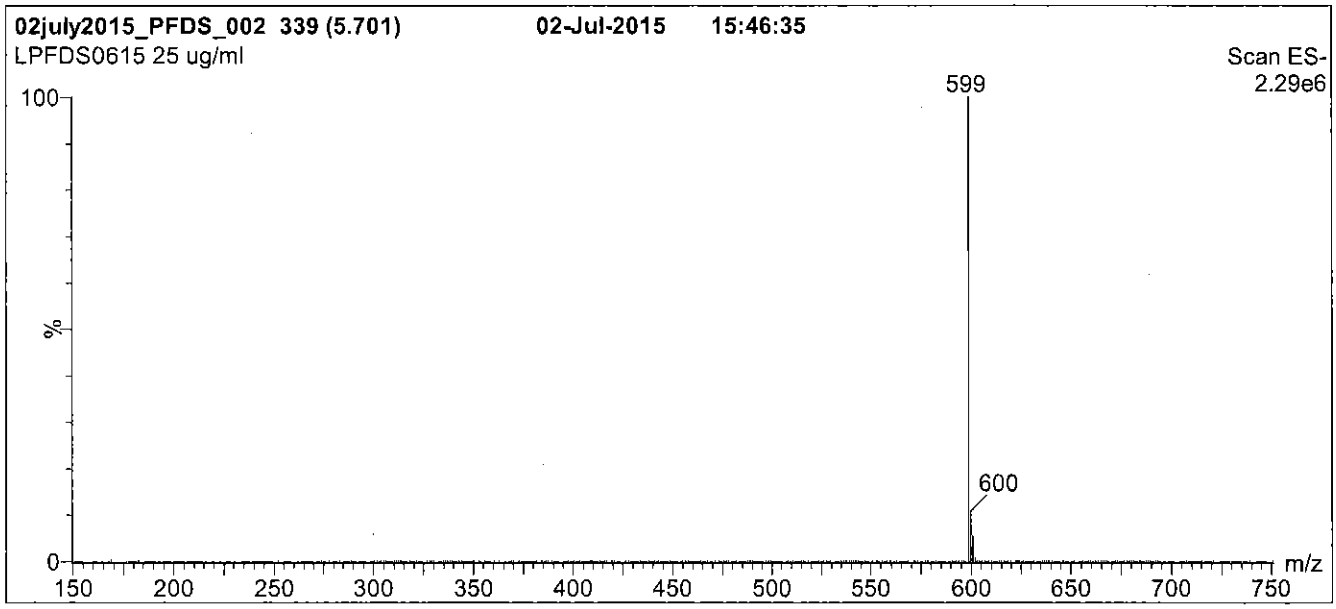
Figure 1: **L-PFDS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

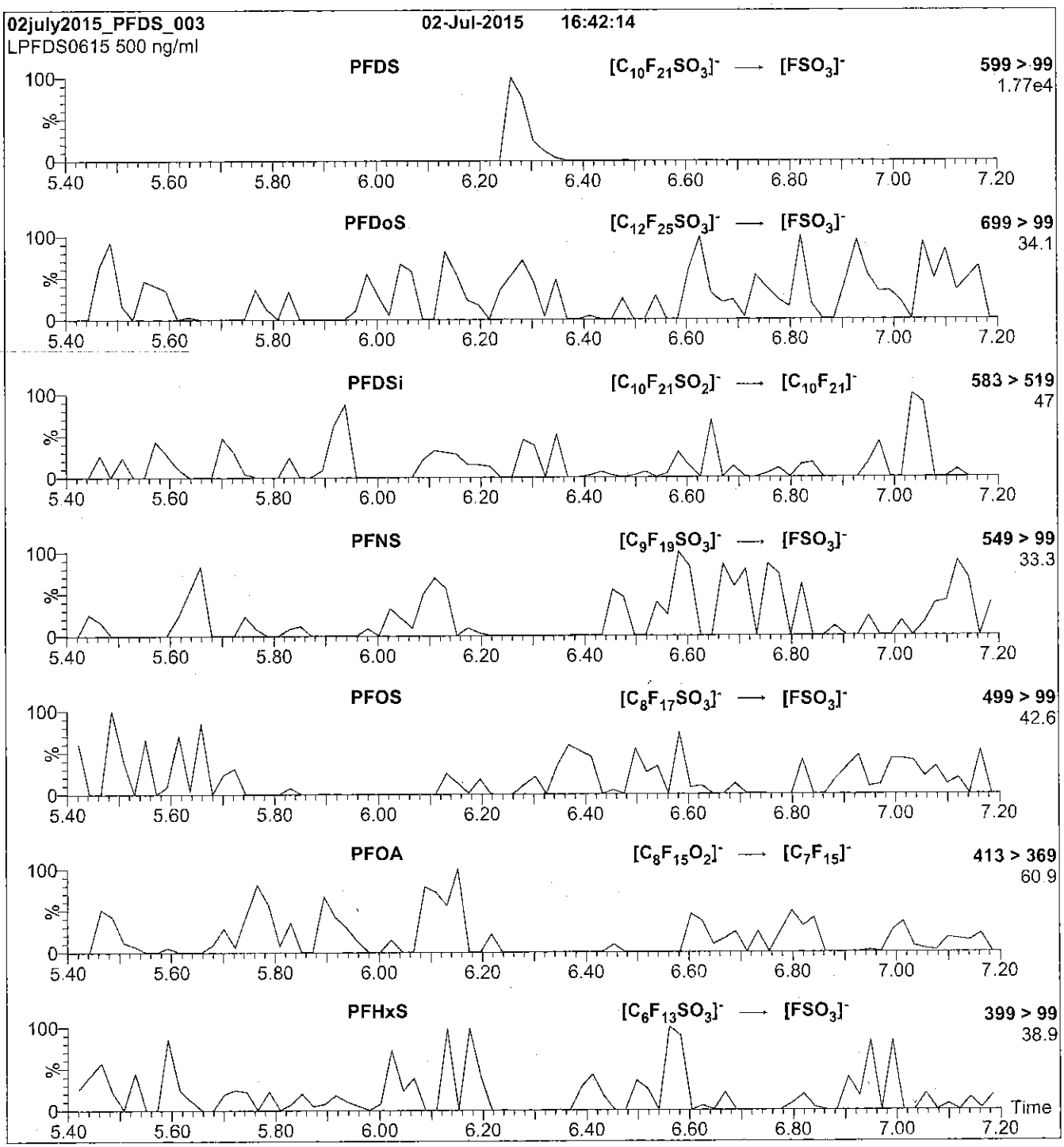
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHpA_00005

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

R: 4/7/16 CBW

WELLINGTON LABORATORIES

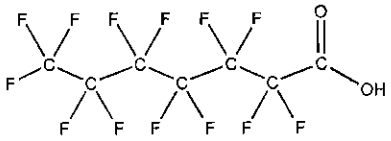
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



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

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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HOMOGENEITY:

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UNCERTAINTY:

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

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

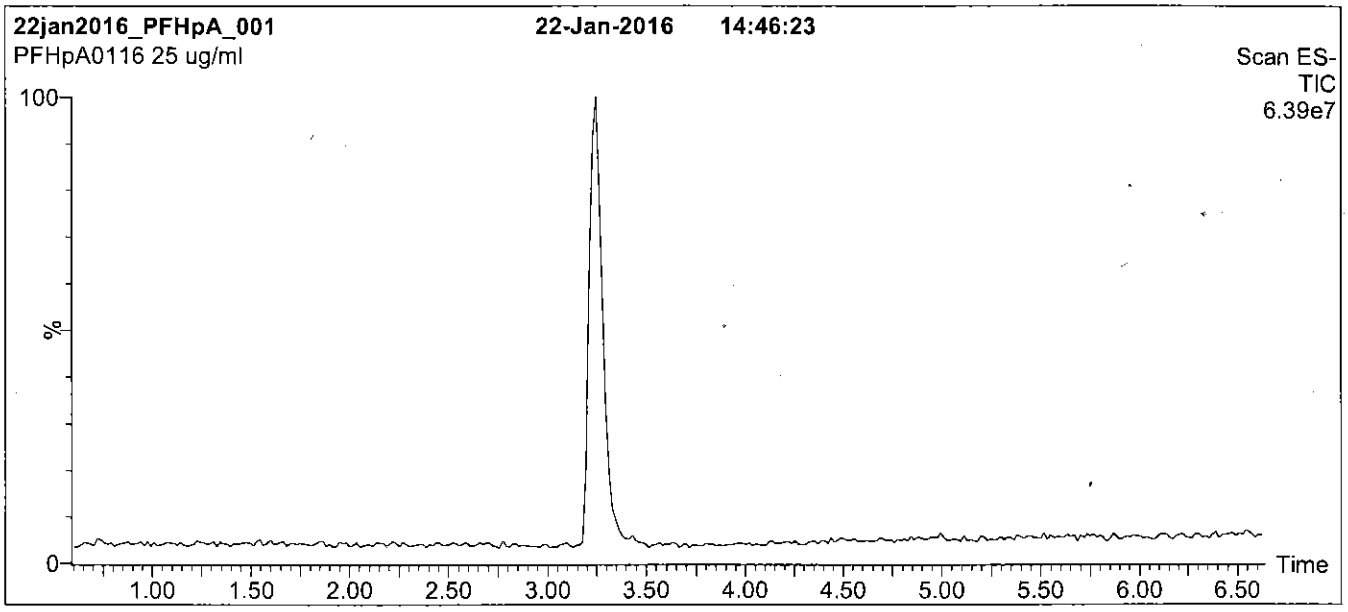
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

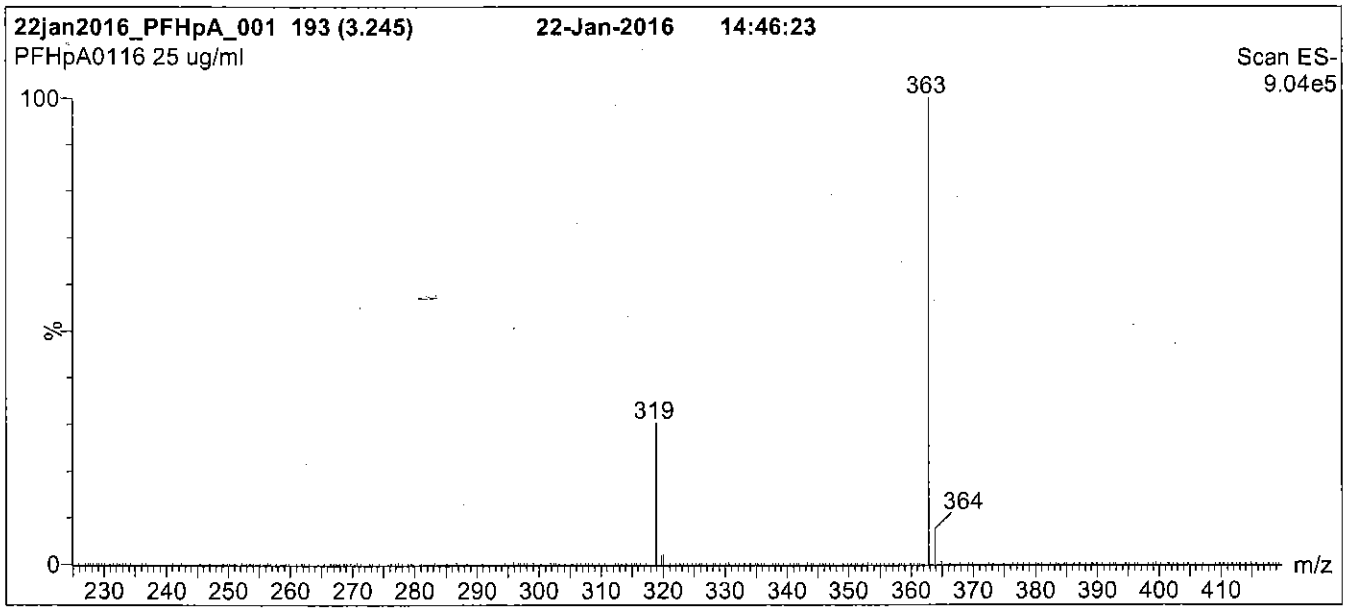
CALA Testing Accreditation No. A1226

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

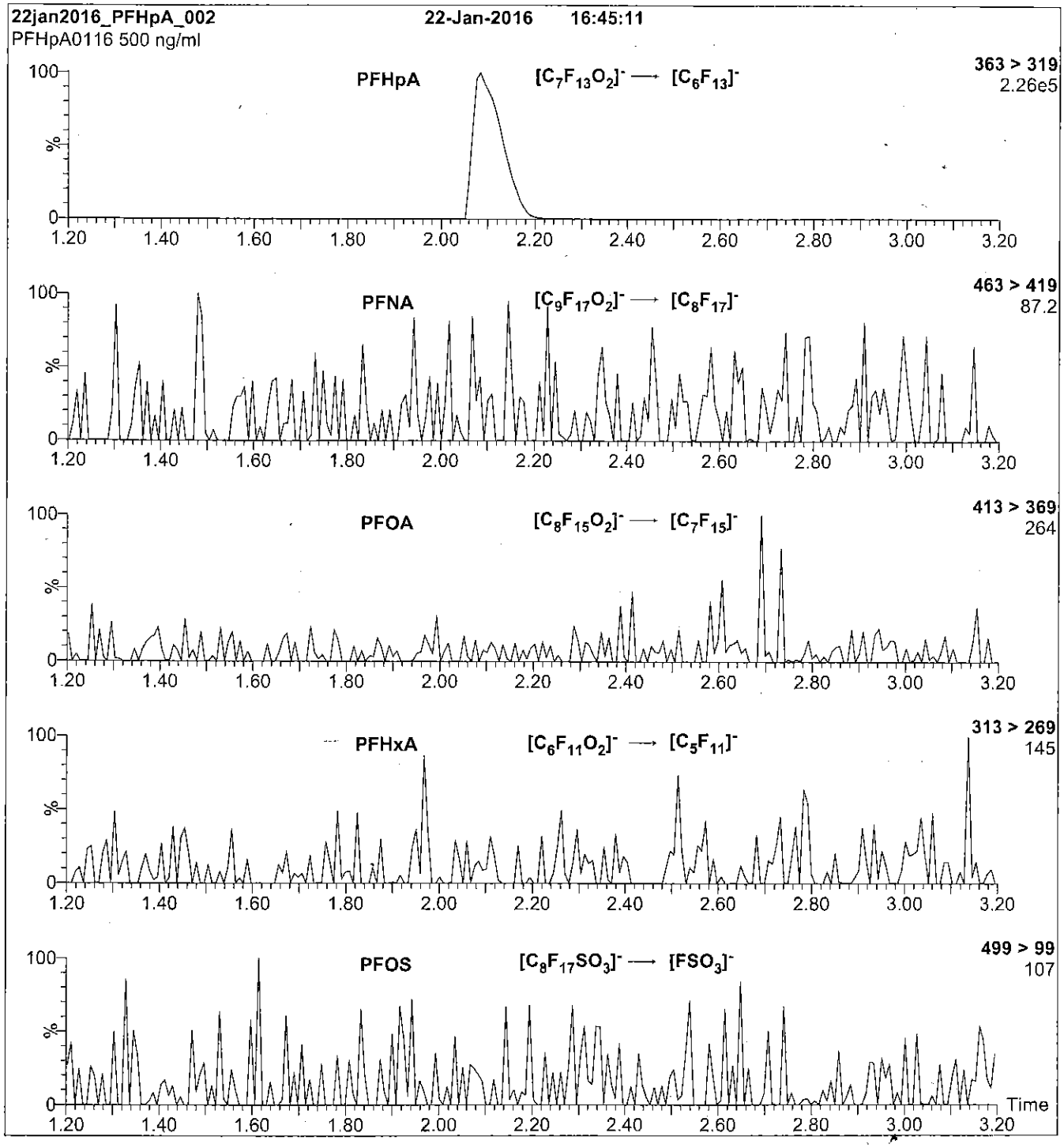
Flow: 300 µl/min

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

LCPFHpA_00006

Scanned 10/4/16 SM R: SBC 9/13/16

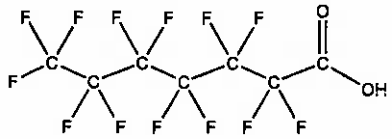
730517
ID: LCPFHpA_00006
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid

730518
ID: LCPFHpA_00007
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFHpA	**LOT NUMBER:**	PFHpA0116
COMPOUND:	Perfluoro-n-heptanoic acid		
STRUCTURE:		**CAS #:**	375-85-9



MOLECULAR FORMULA:	$C_7HF_{13}O_2$	**MOLECULAR WEIGHT:**	364.06
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/22/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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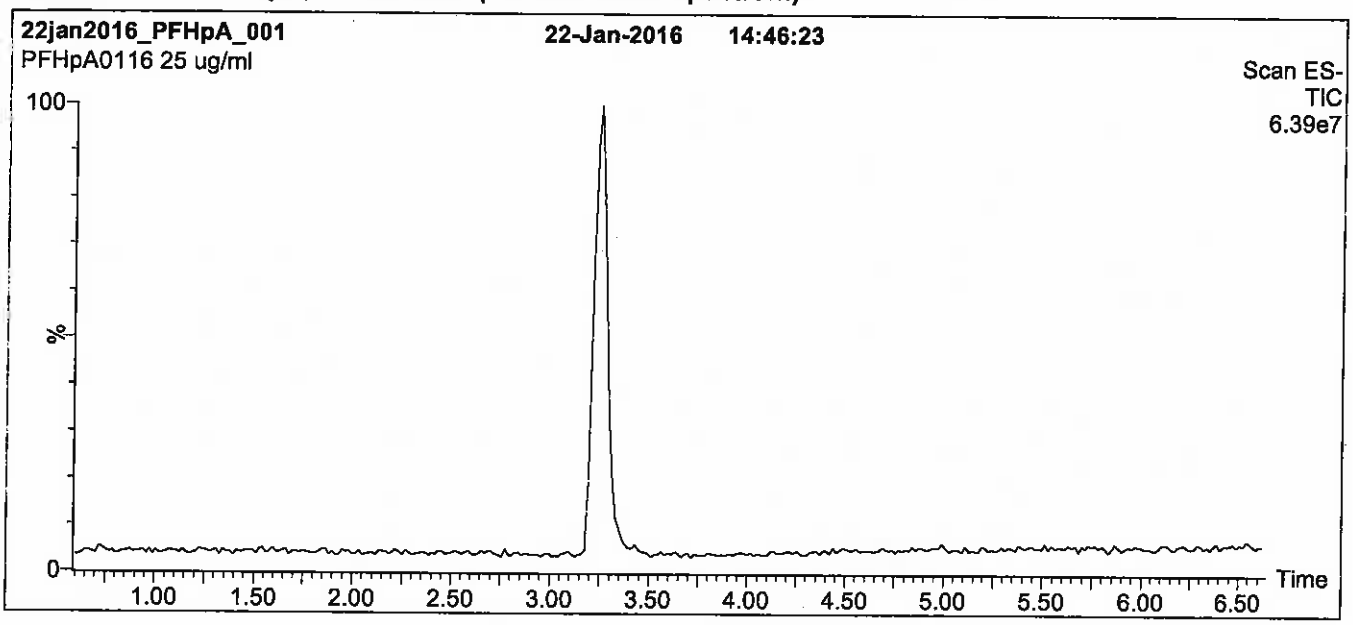
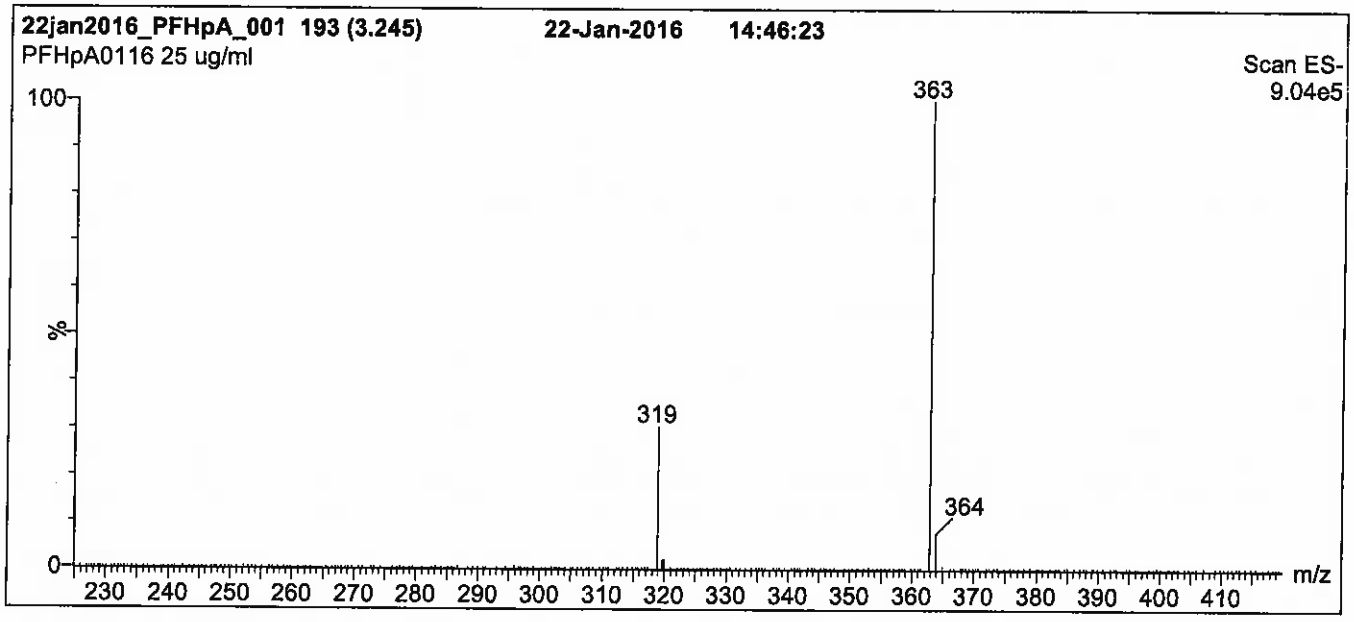
Figure 1: **PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

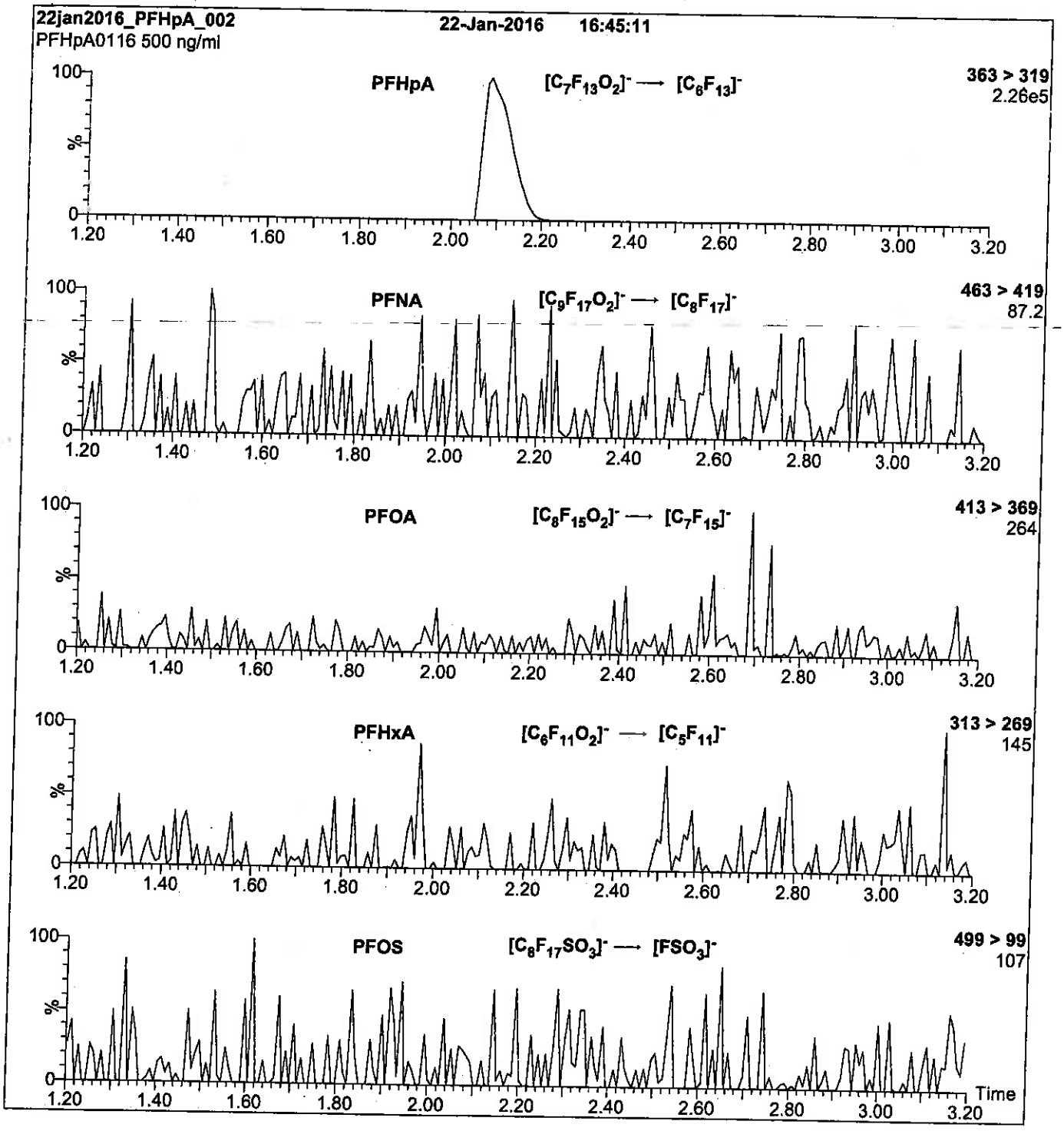
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHpS_00008

R: 5/10/16 CBW

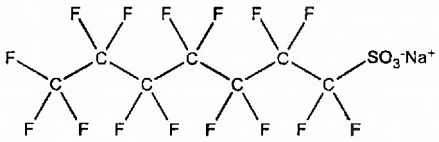
627751
ID: LCPFHpS_00008
Exp: 11/06/20 Prpd: CBW
PFHpS at 47.6ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:



CAS #: Not available

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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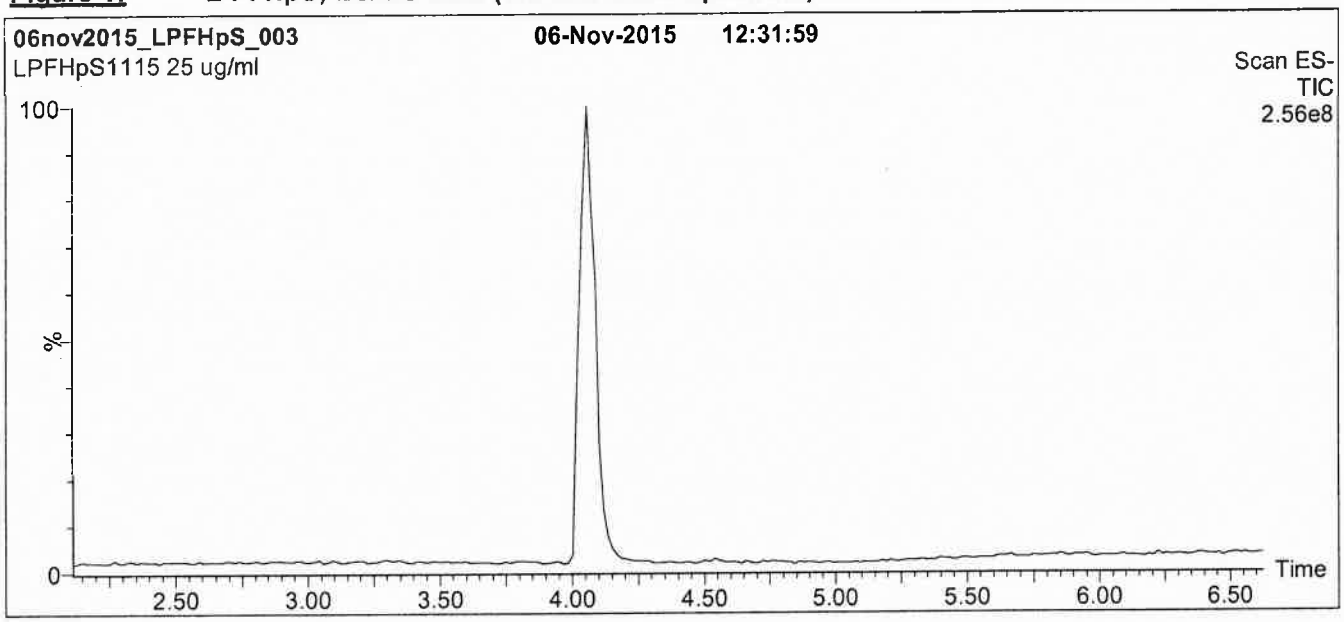
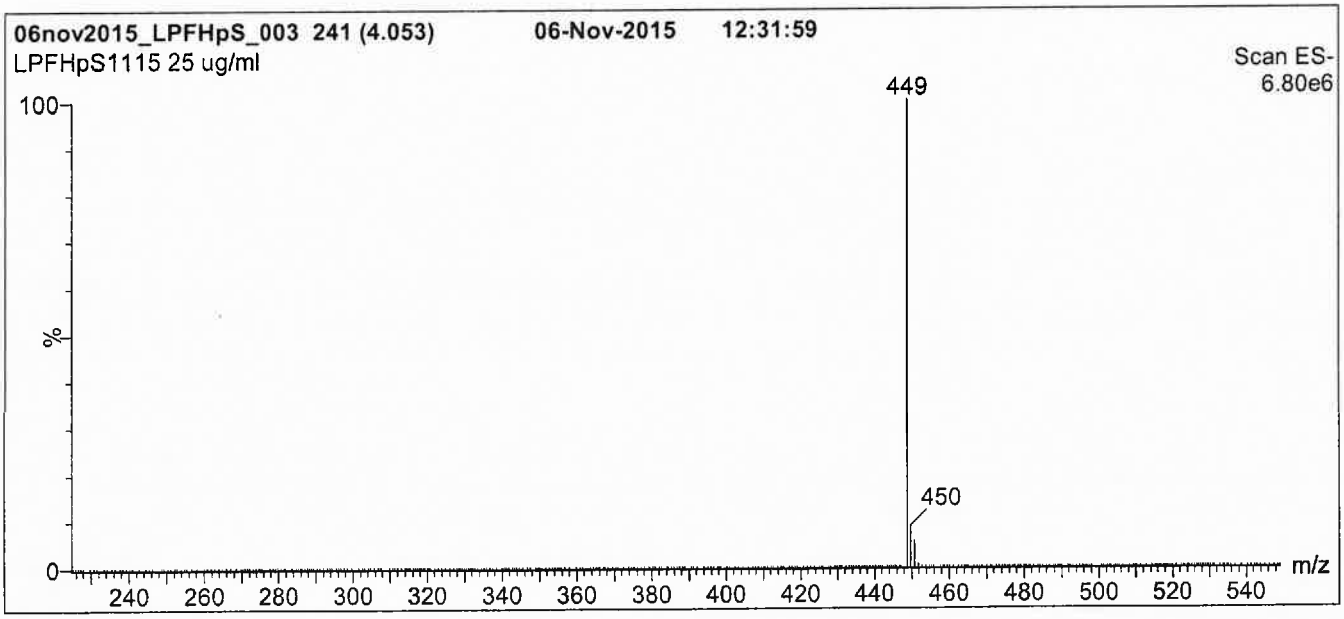
Figure 1: **L-PFHpS; LC/MS Data (TIC and Mass Spectrum)**





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

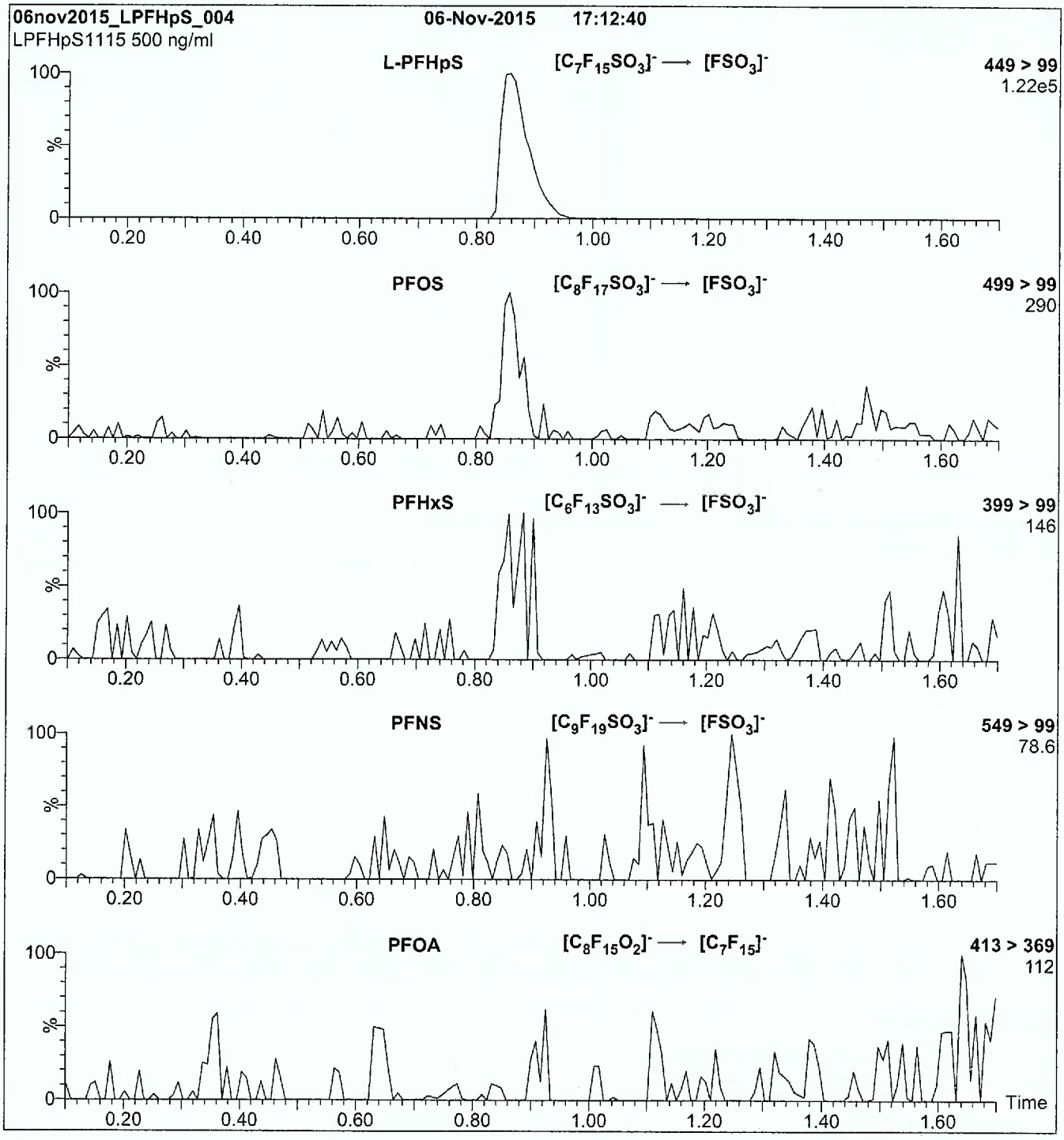
Flow: 300 µl/min

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

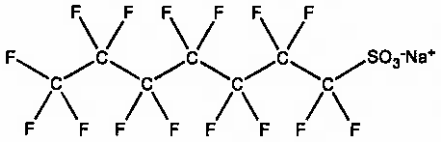
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
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LAST TESTED: (mm/dd/yyyy)	11/06/2015		
EXPIRY DATE: (mm/dd/yyyy)	11/06/2020		
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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

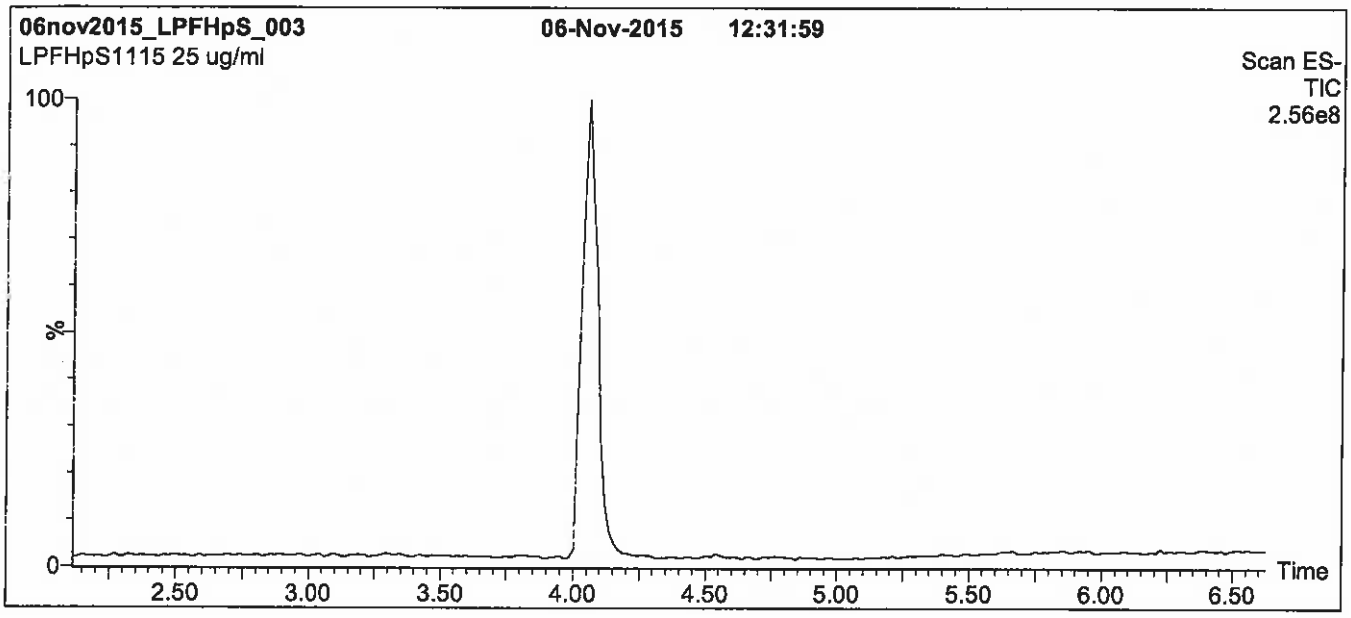
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

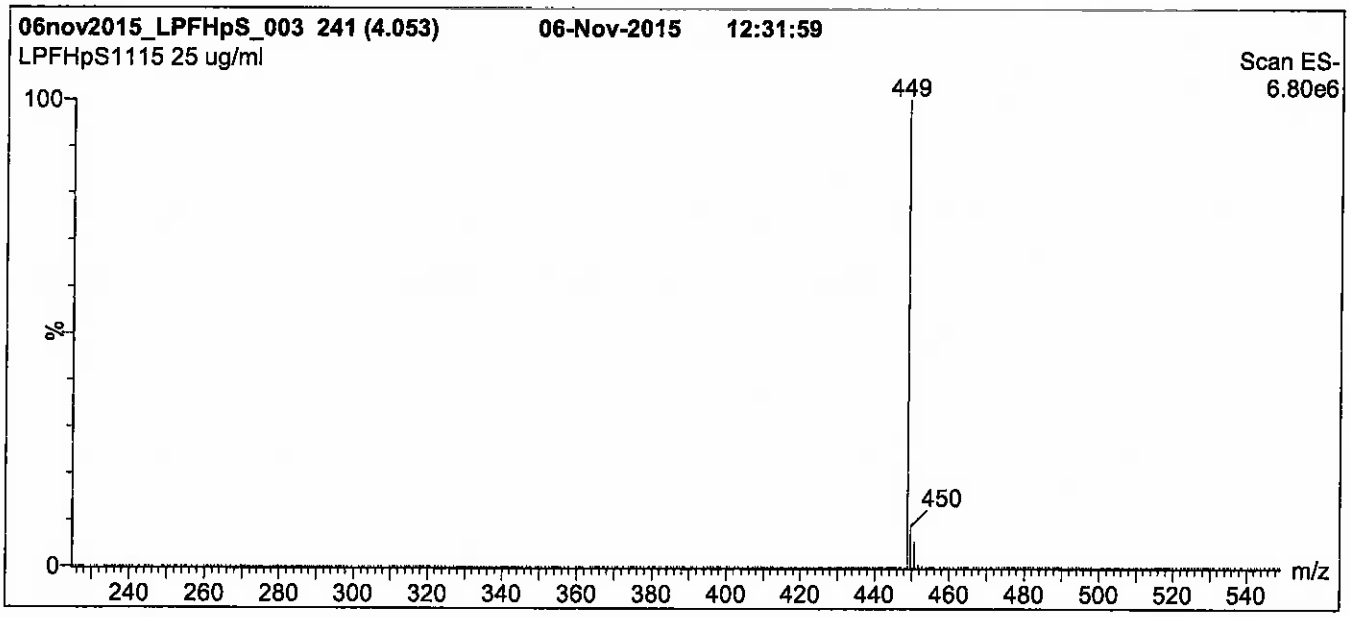
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

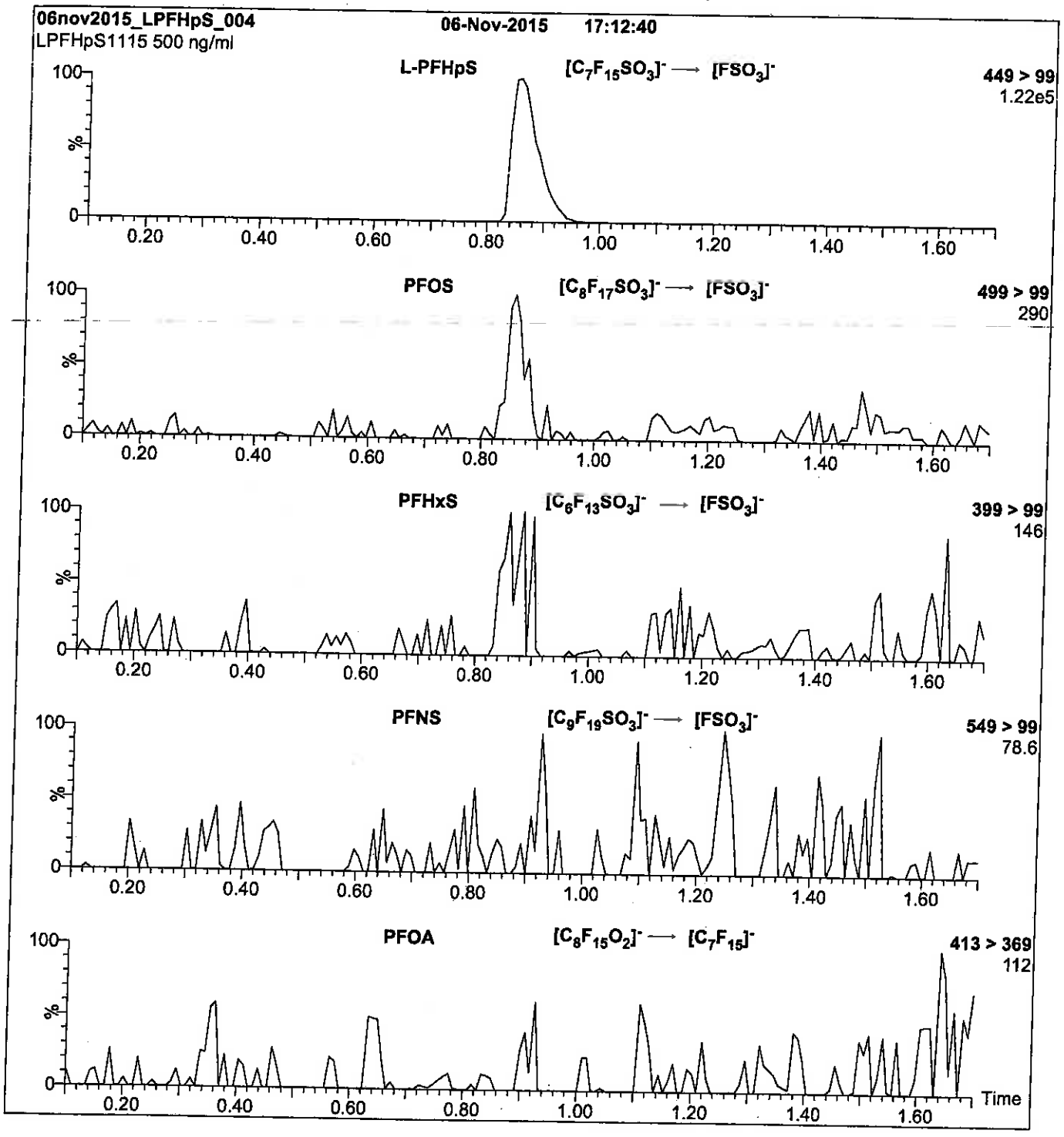
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHxA_00004

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

R: 4/7/16 CBW

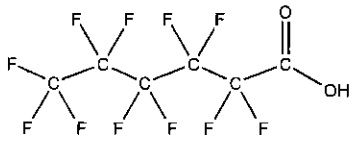
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:

CAS #: 307-24-4



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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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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.

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CALA Testing

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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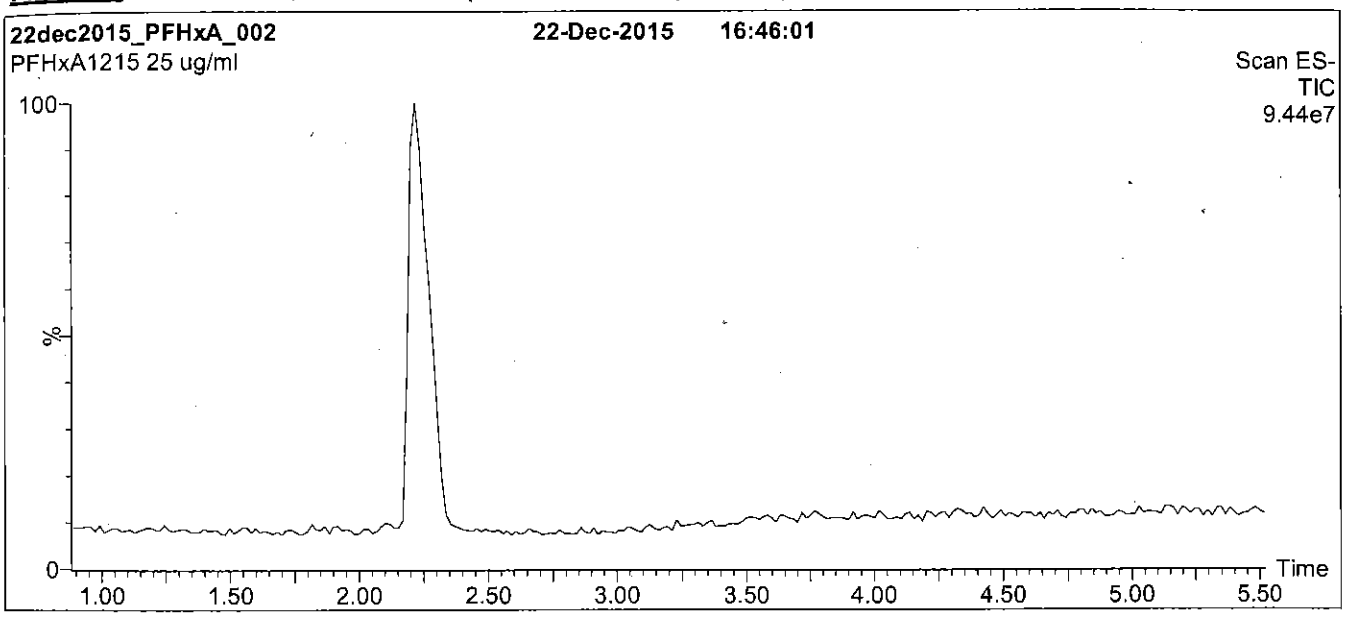
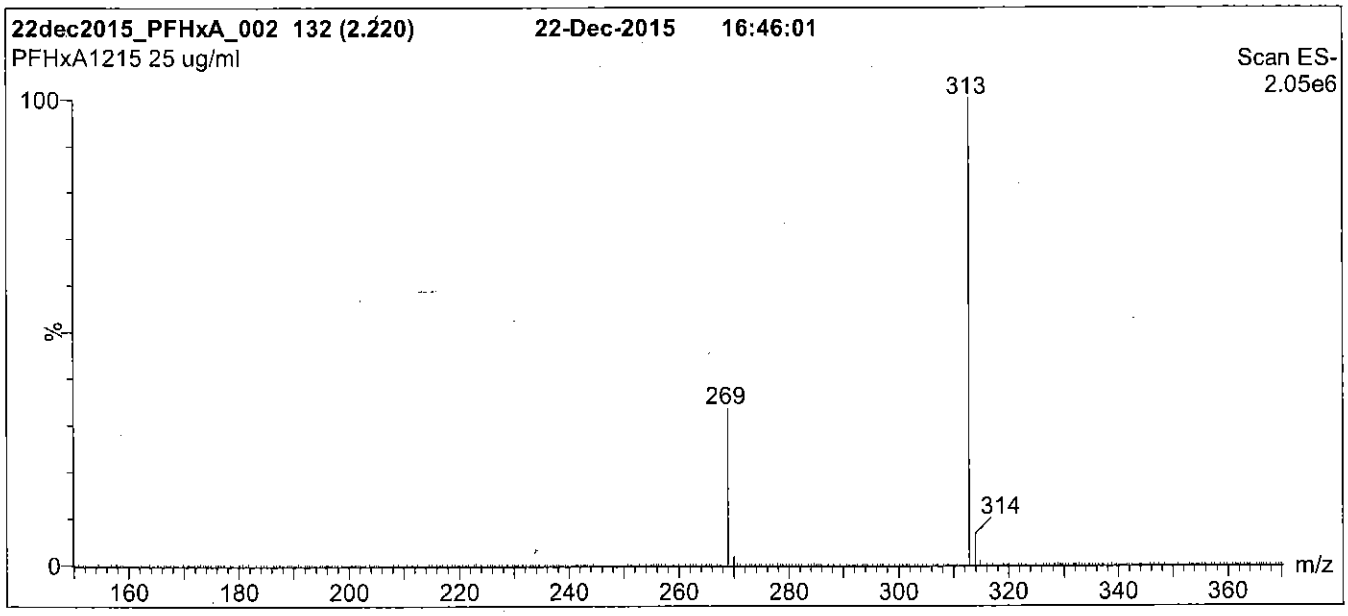




Conditions for Figure 1:

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

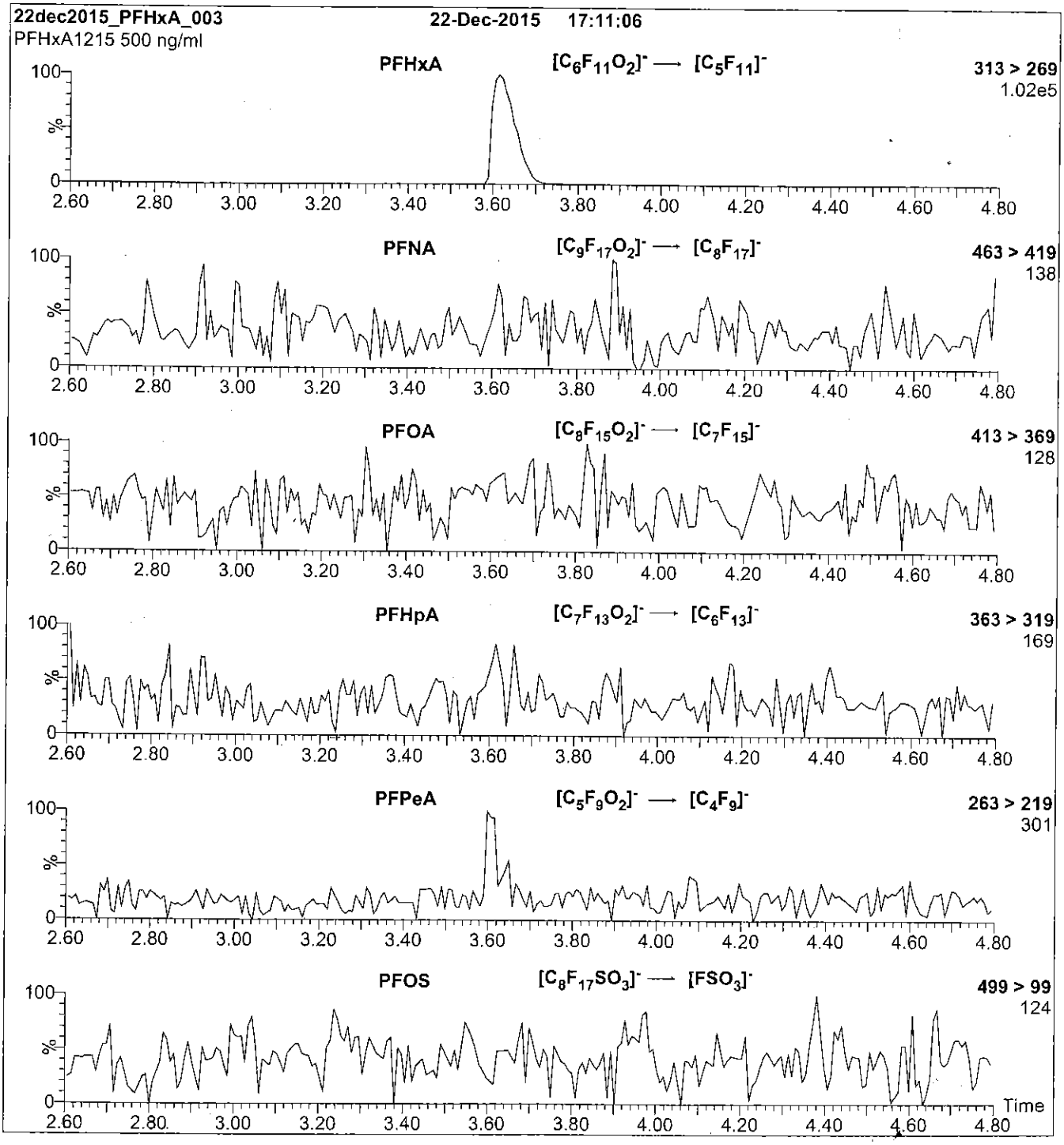
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

LCPFHxA_00005

R: SBC 9/13/16

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

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

WELLINGTON LABORATORIES

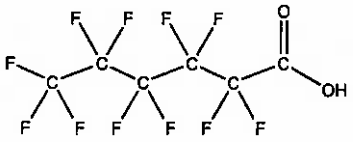
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFHxA1215

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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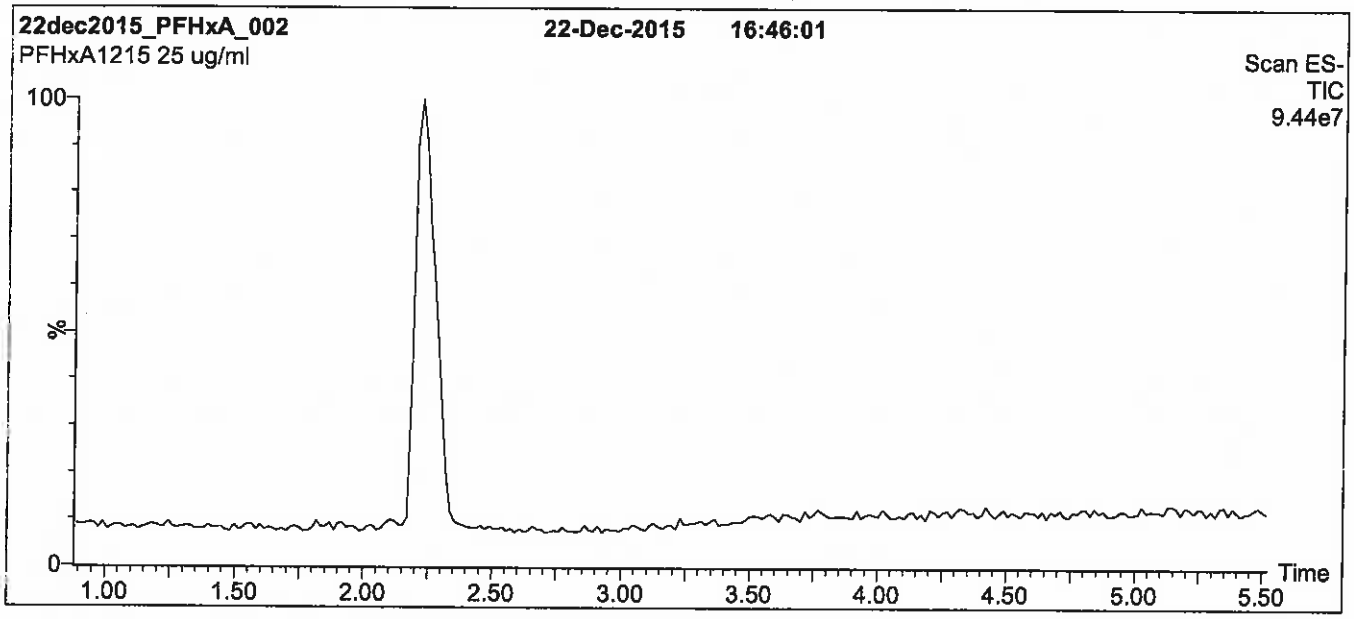
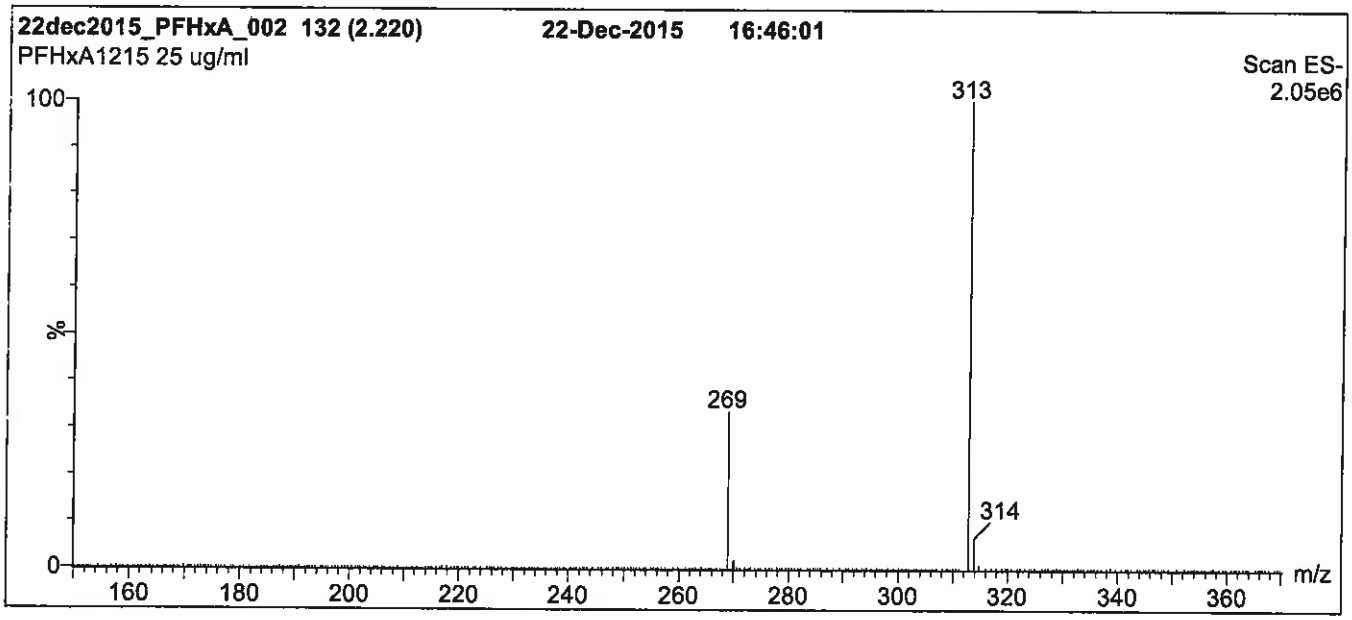
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





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

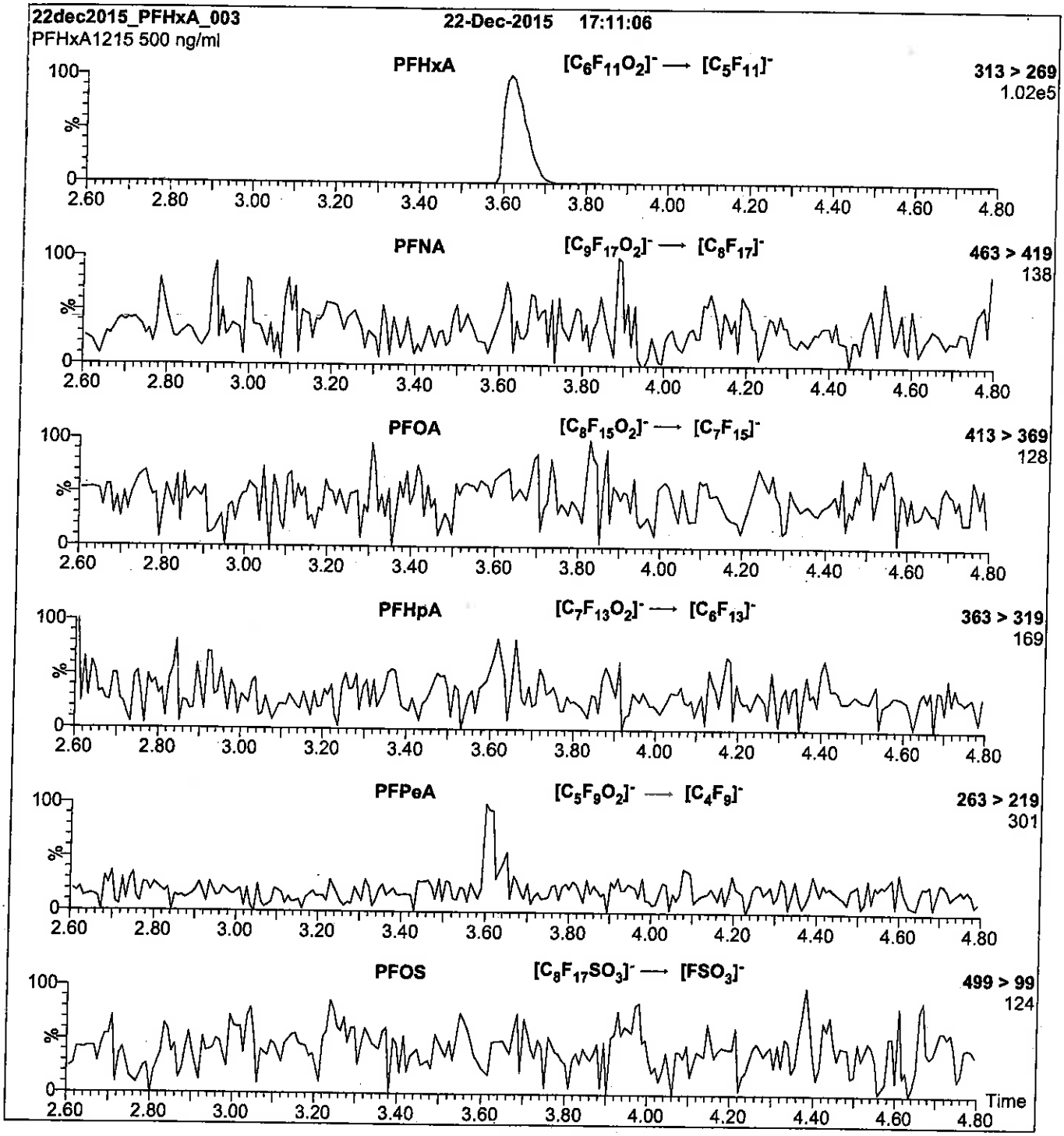
Flow: 300 µl/min

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_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

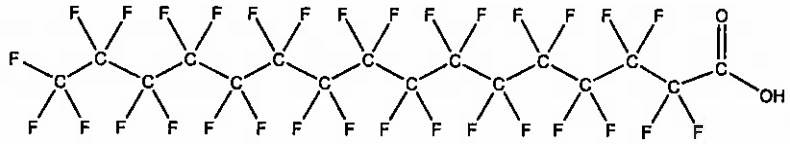
730631
ID: LCPFHxDA_00007
Exp: 05/25/21 Prpd: SBC
PFHxDA stock 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 67905-19-5



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) 05/25/2016
EXPIRY DATE: (mm/dd/yyyy) 05/25/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% of PFODA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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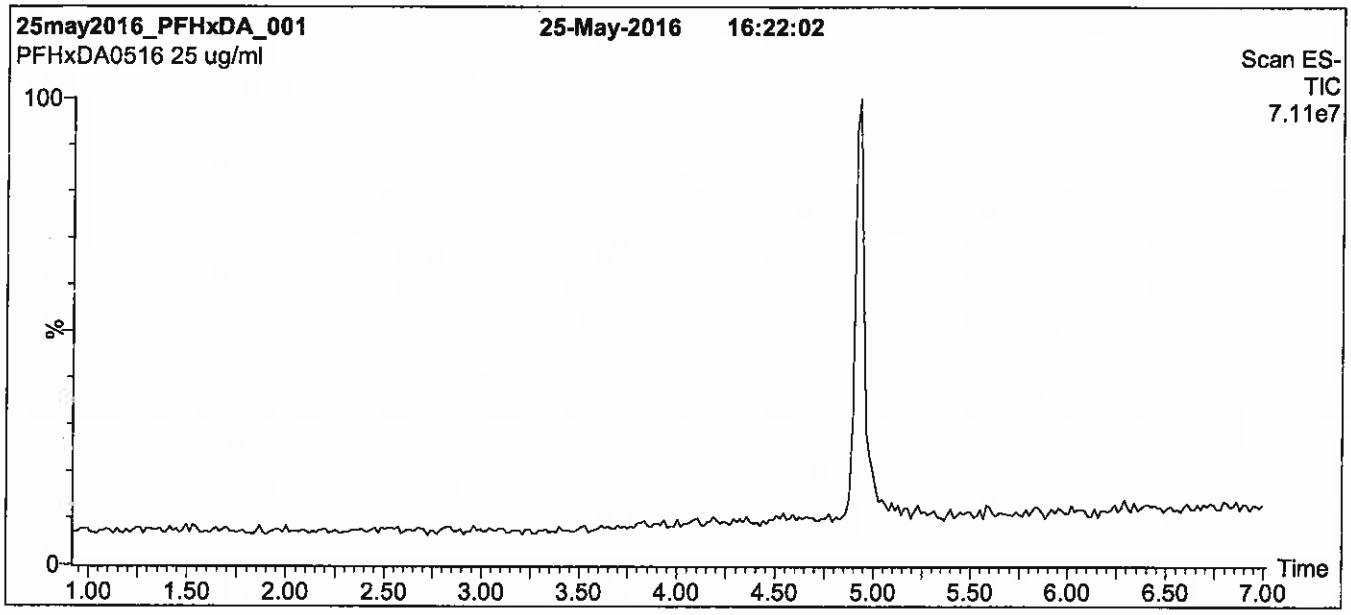

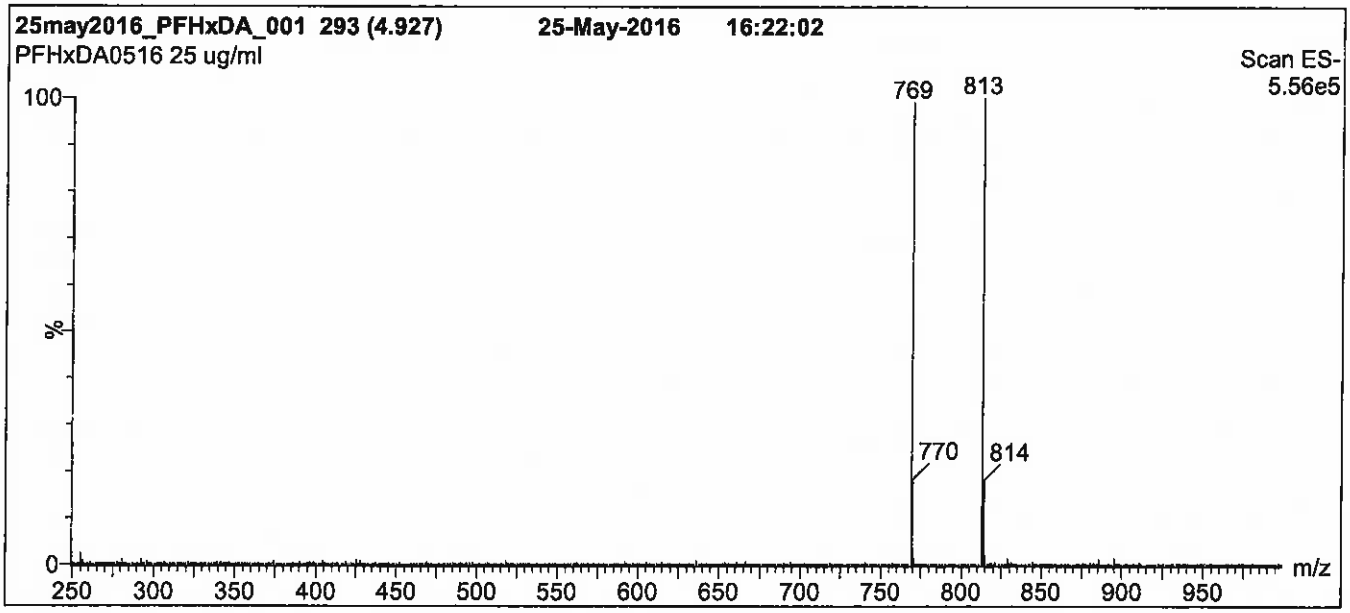

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MS: **Micromass Quattro *micro* API MS**

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1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 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

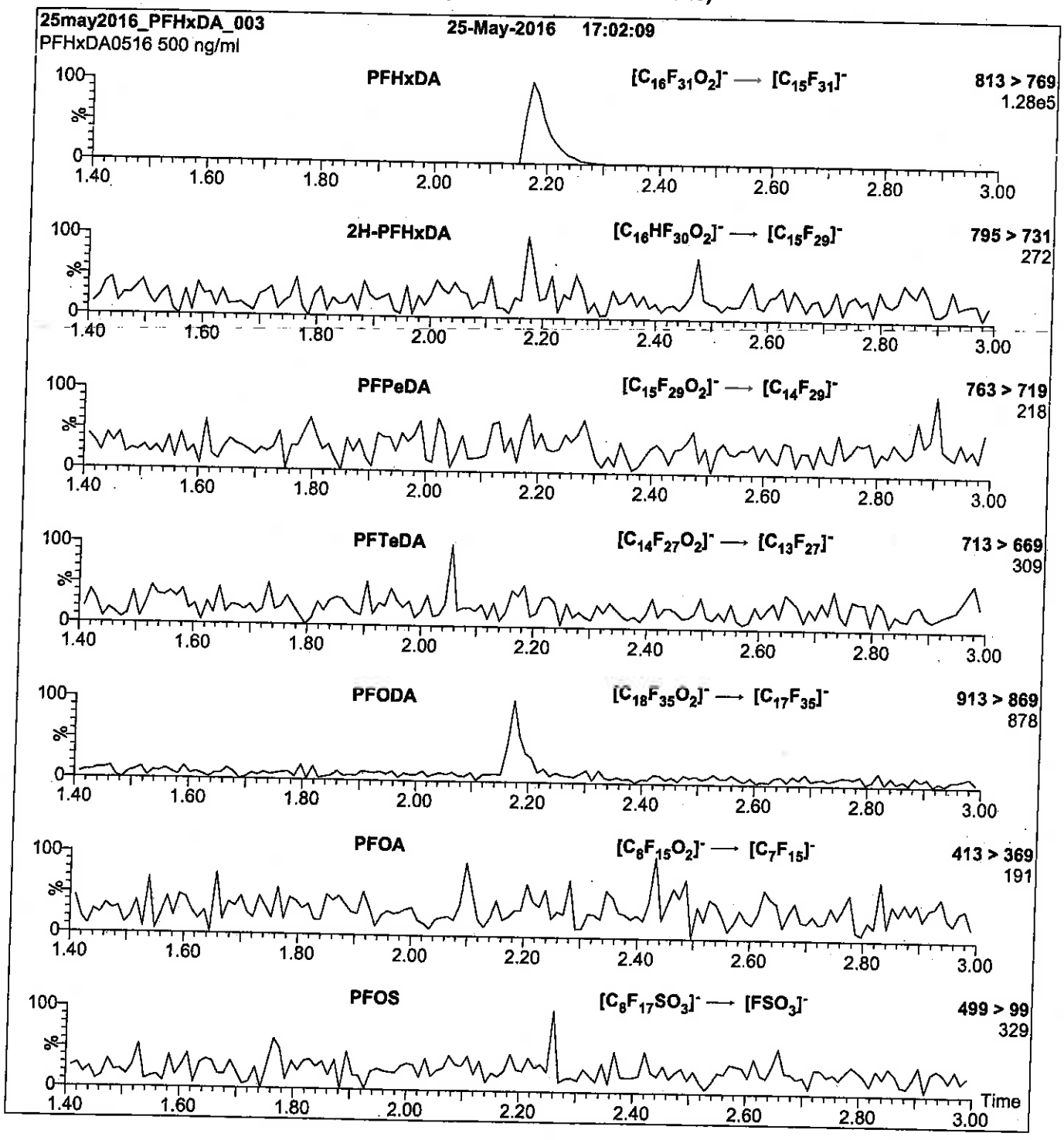
Flow: 300 µl/min

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

566007
ID: LCPFHxS-br_00001
Exp: 07/03/20 Prpd: CBW
Potassium Perfluorohexane

P: 12/9/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

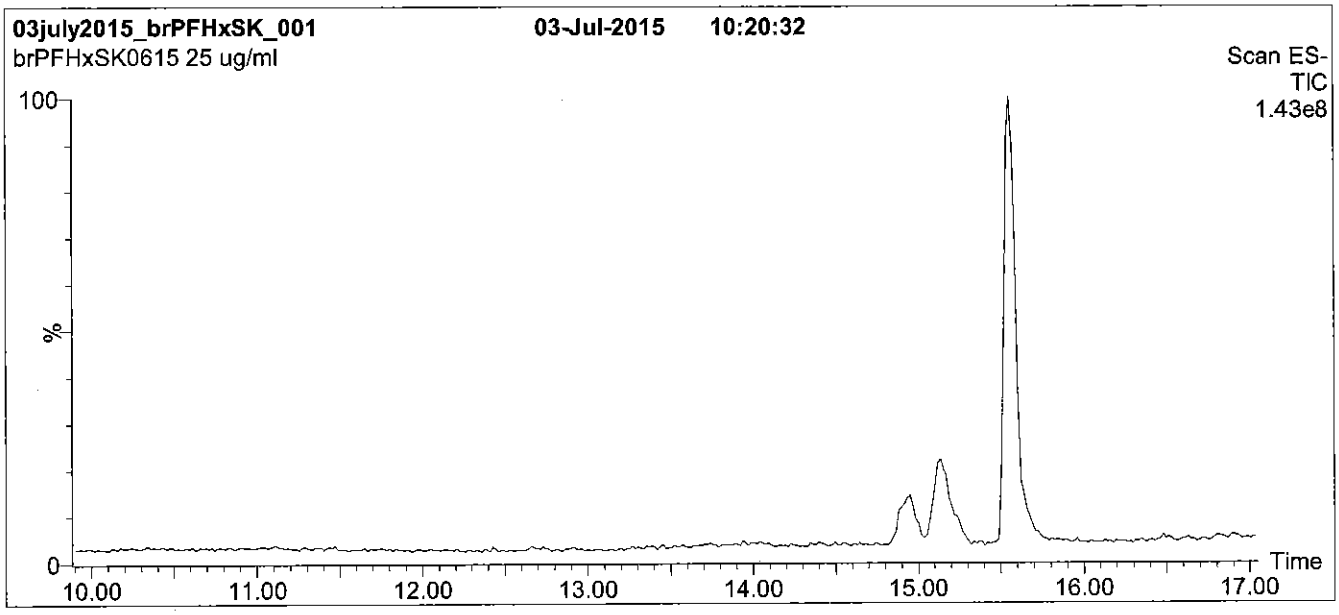
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

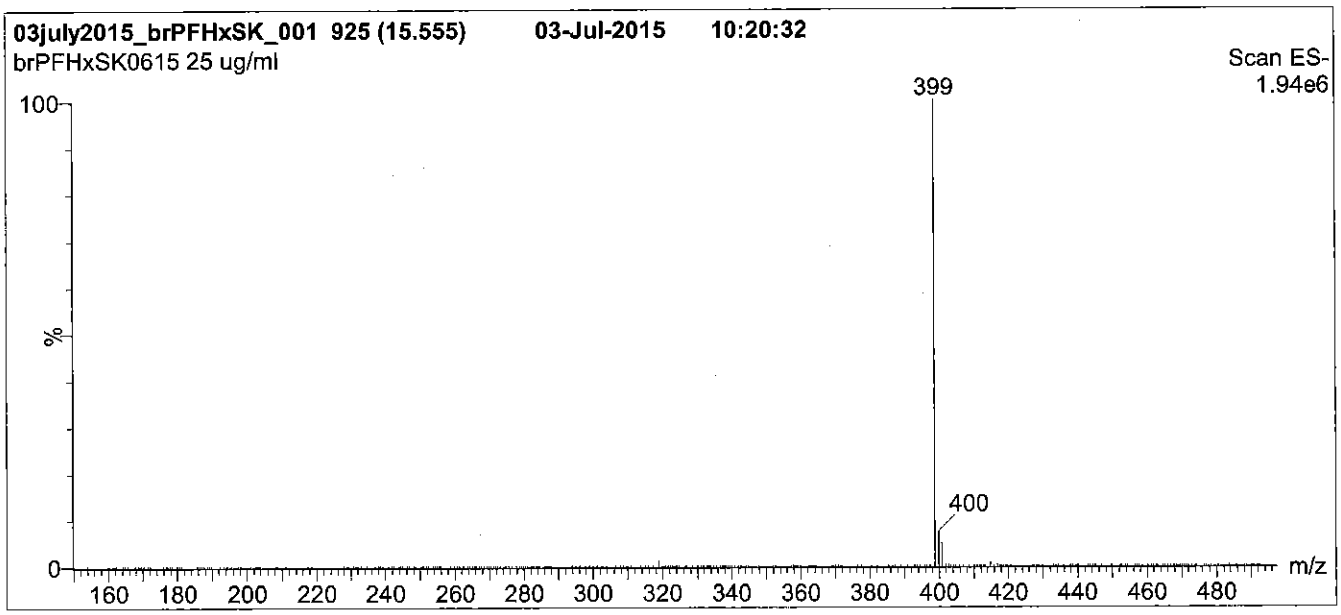
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$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

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

Certified By: _____ **Date:** 07/15/2015
B.G. Chittim (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

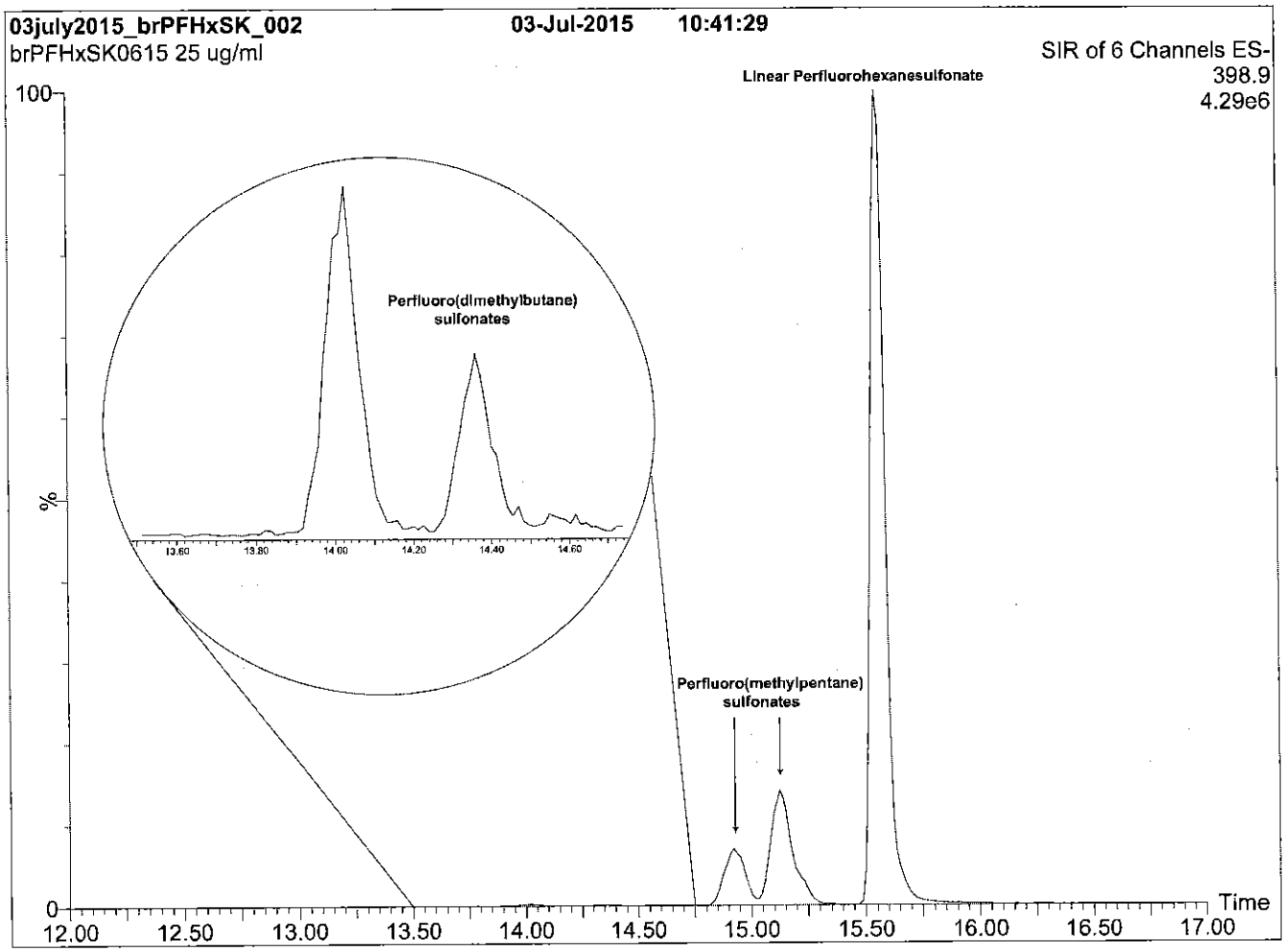
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

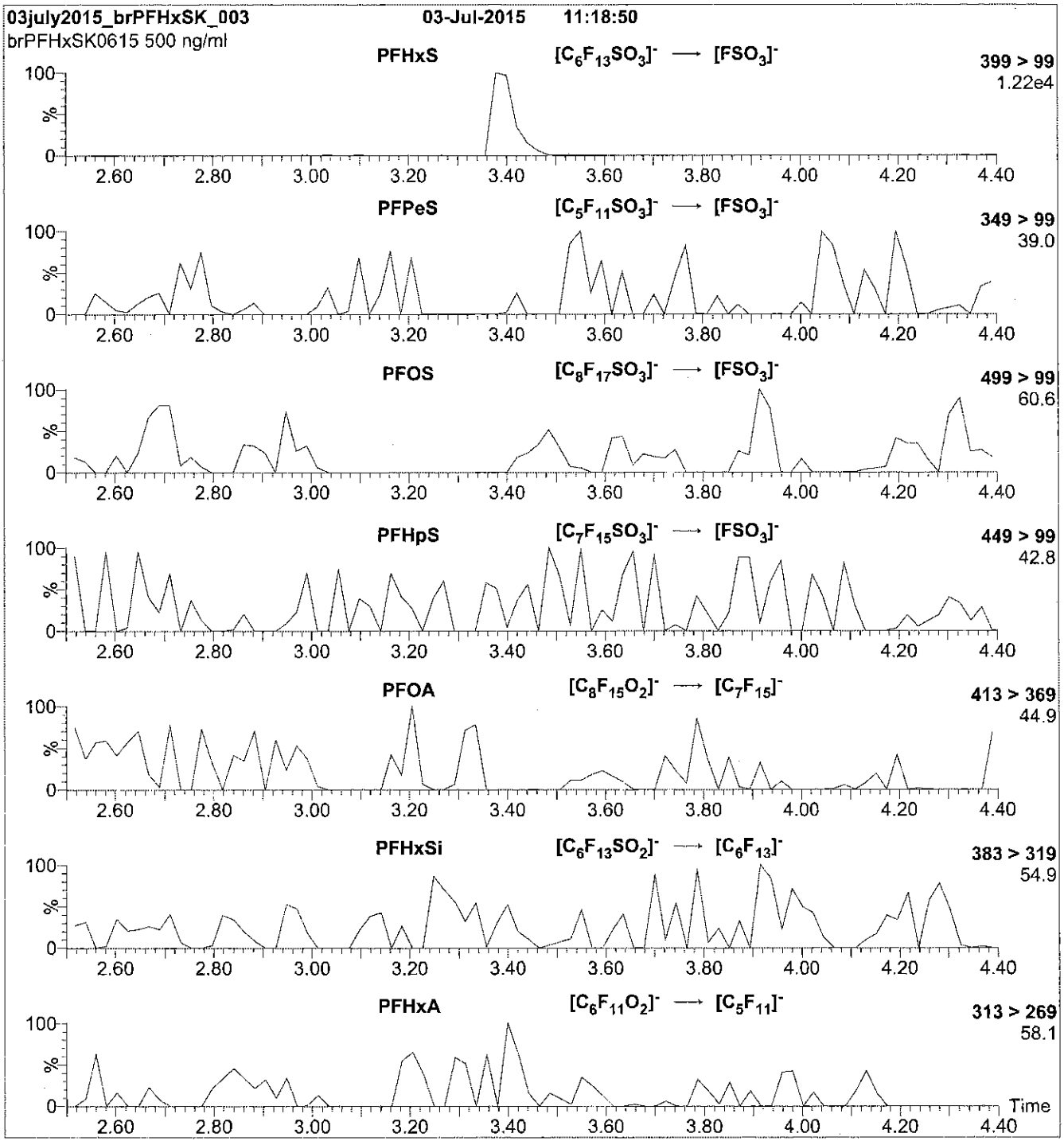
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

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

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



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml br-PFHxSK)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHxS-br_00002

SBC
R: 9/13/16

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

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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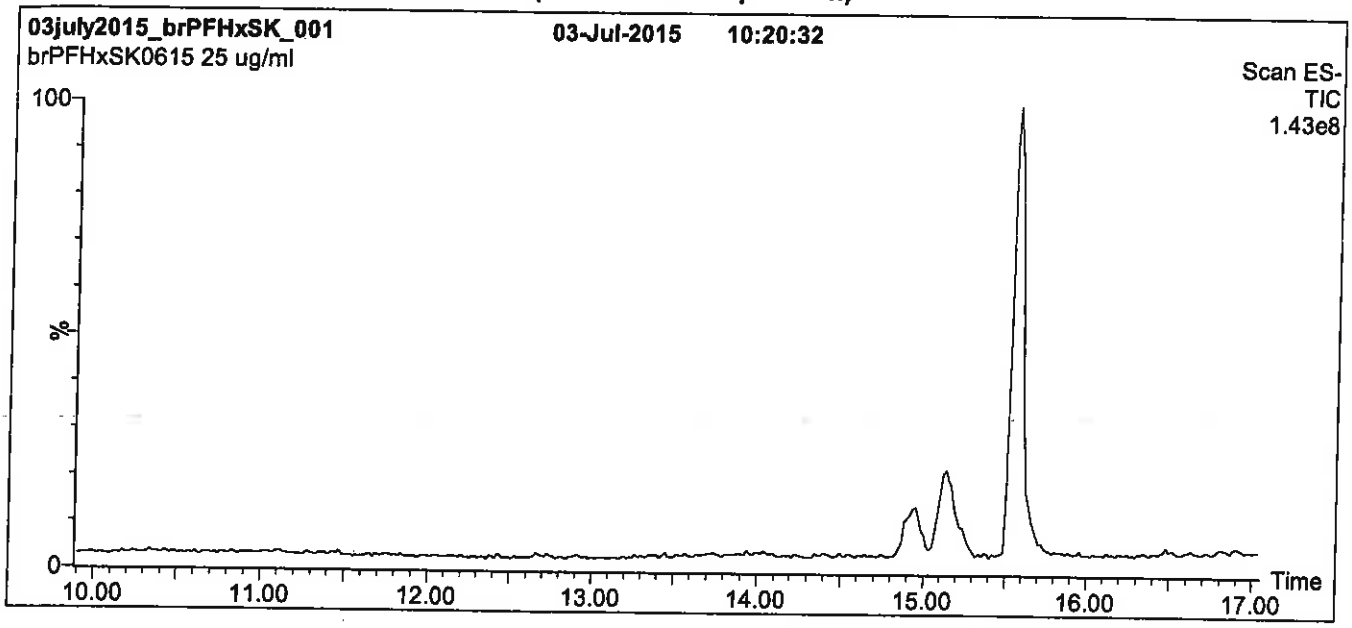
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

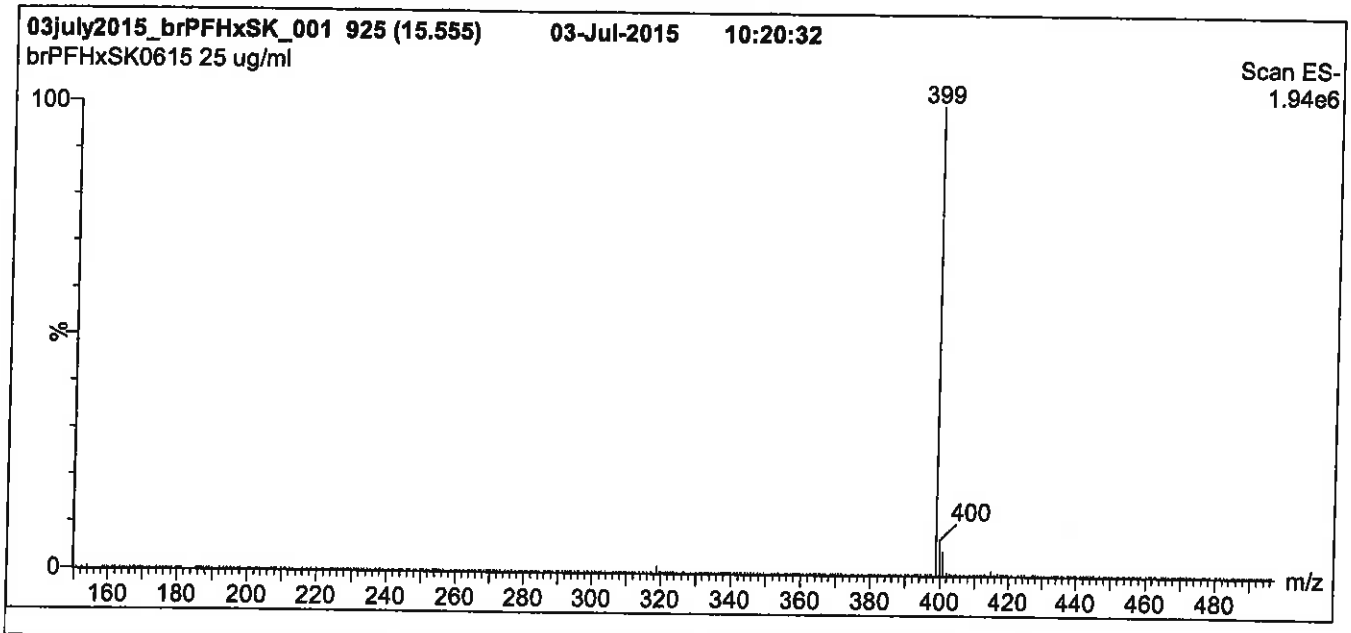
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	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: B.G. Chittim **Date:** 07/15/2015 (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

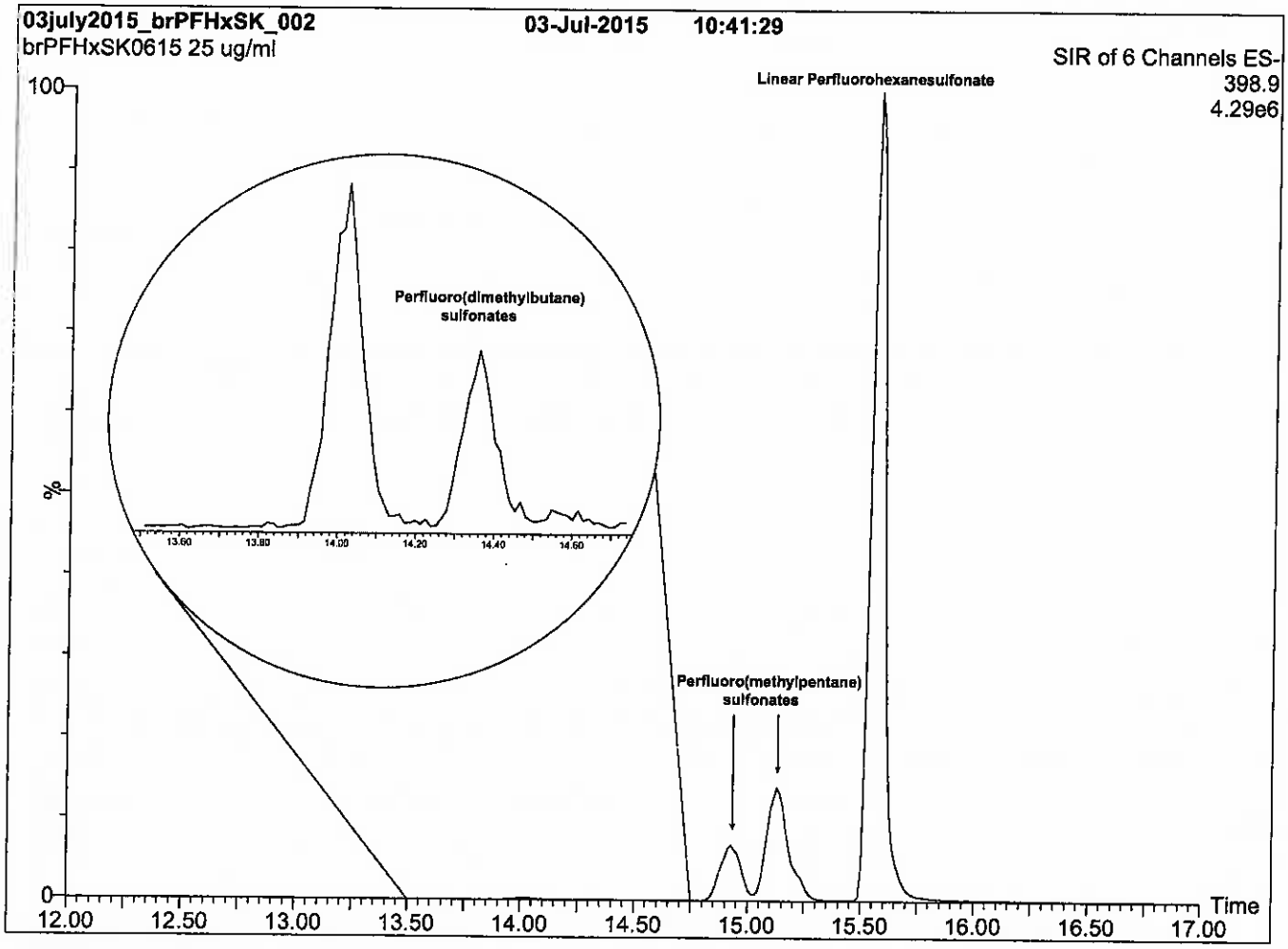
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

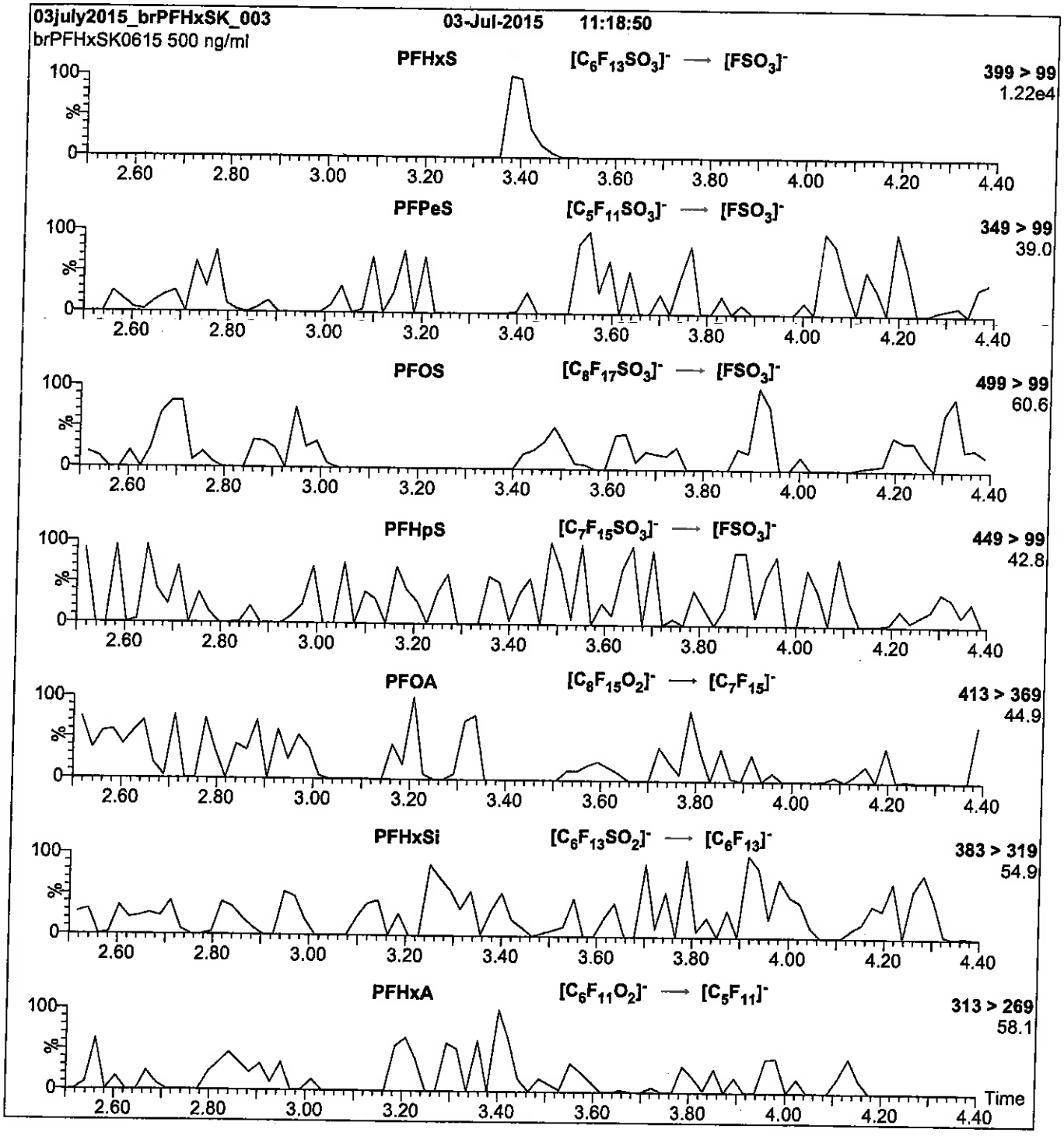
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

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

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



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml br-PFHxSK)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFNA_00005

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

R 4/7/16 CBW

WELLINGTON LABORATORIES

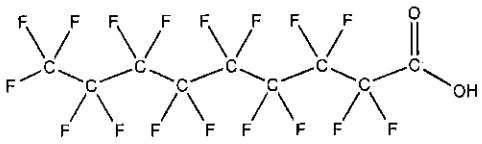
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFNA1015

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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QUALITY MANAGEMENT:

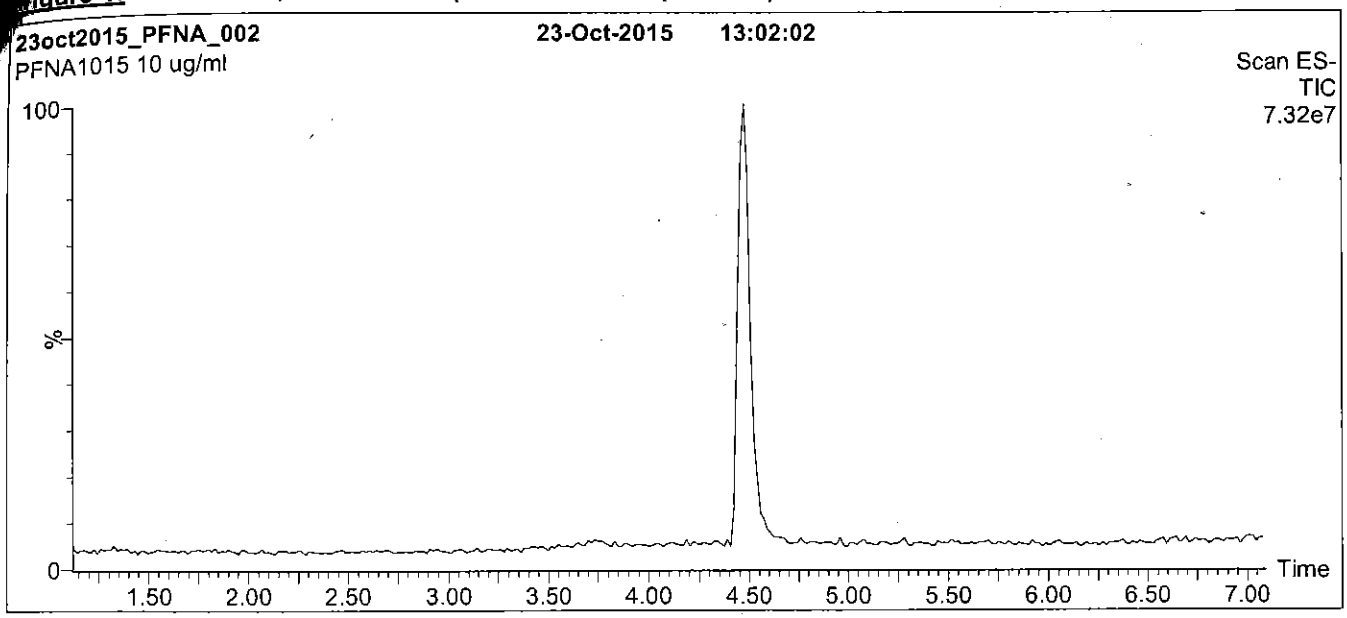
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

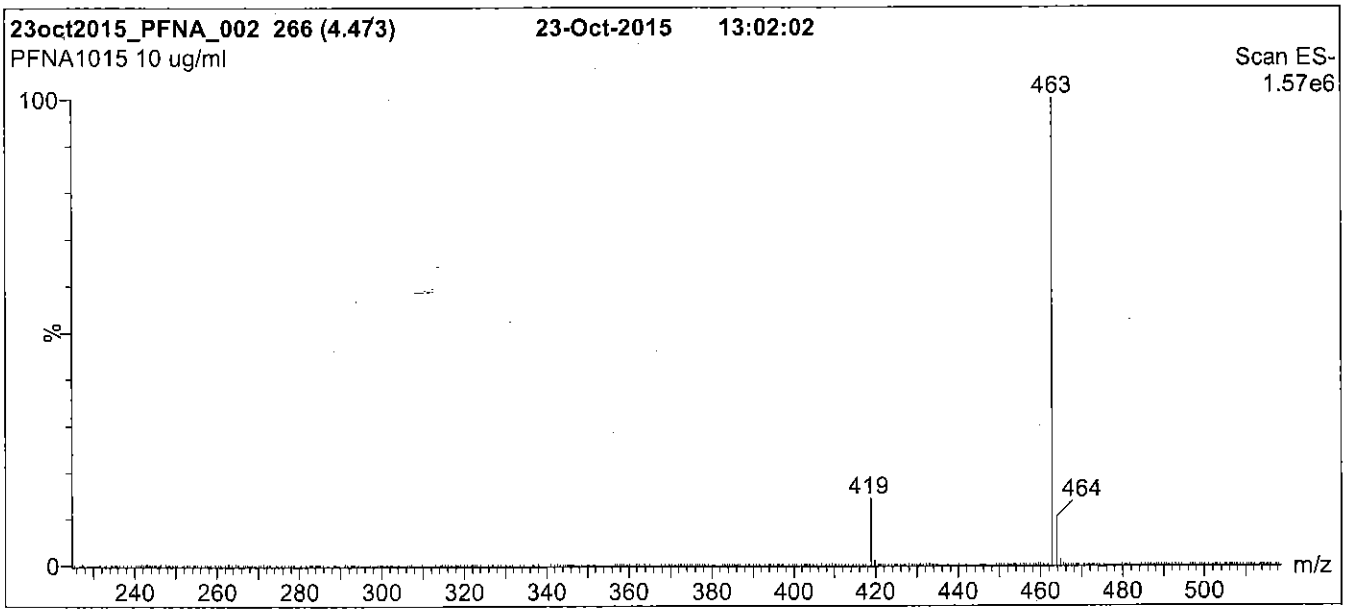
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

Figure 1: 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

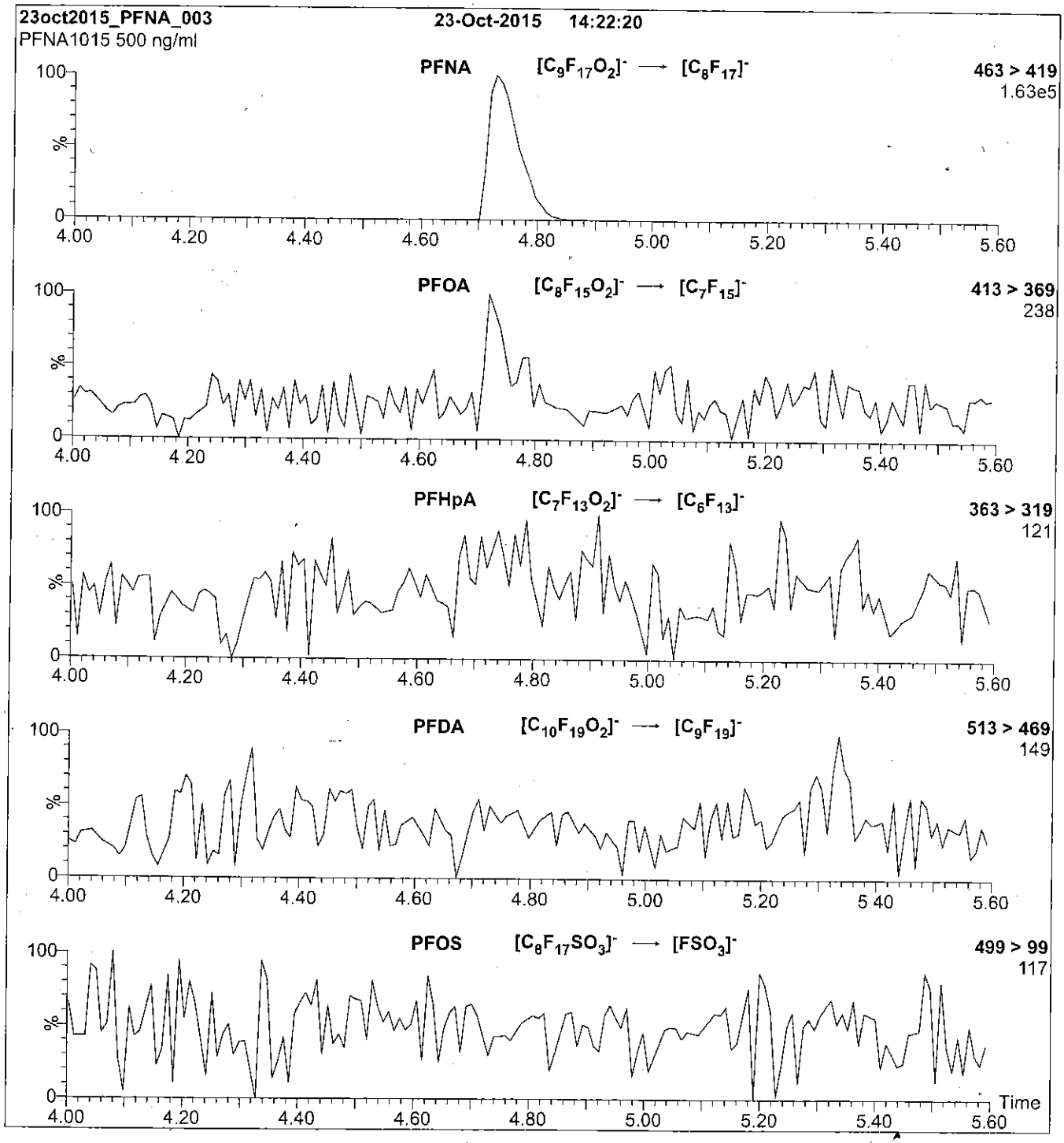
Flow: 300 µl/min

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

LCPFNA_00006

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

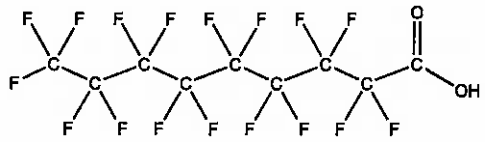
730559
ID: LCPFNA_00006
Exp: 10/23/20 Prpd: SBC
PF-n-nonanoic acid

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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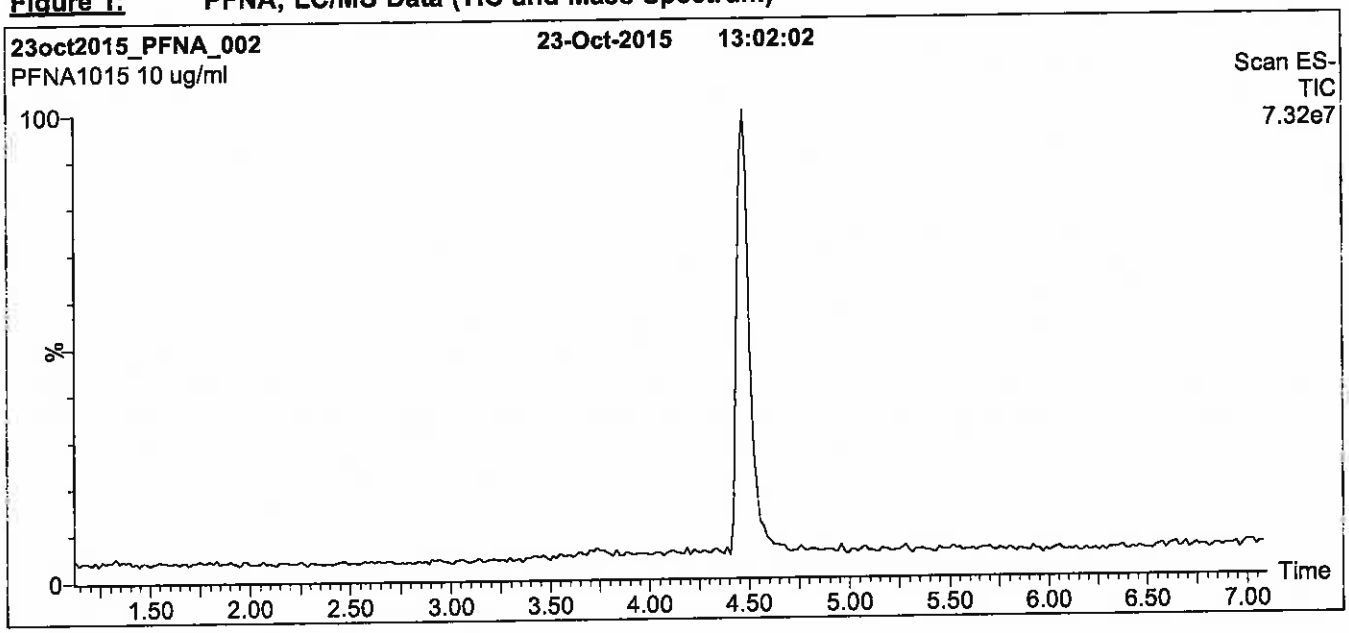
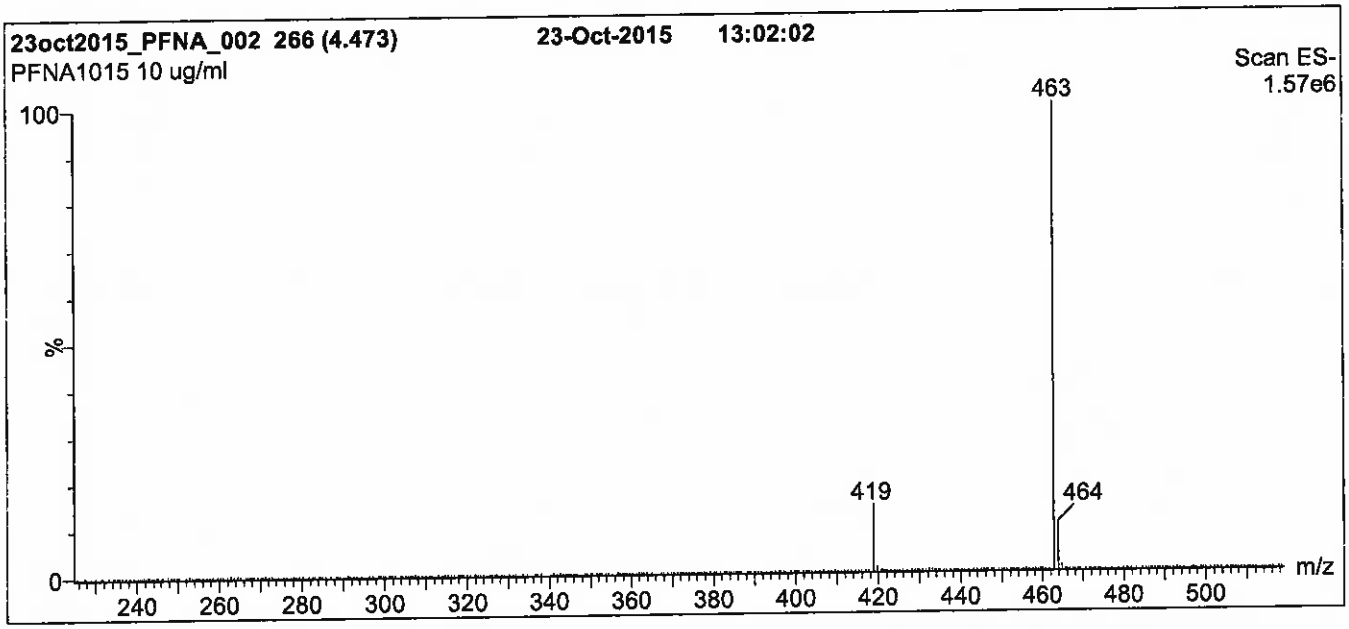




Conditions for Figure 1:

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

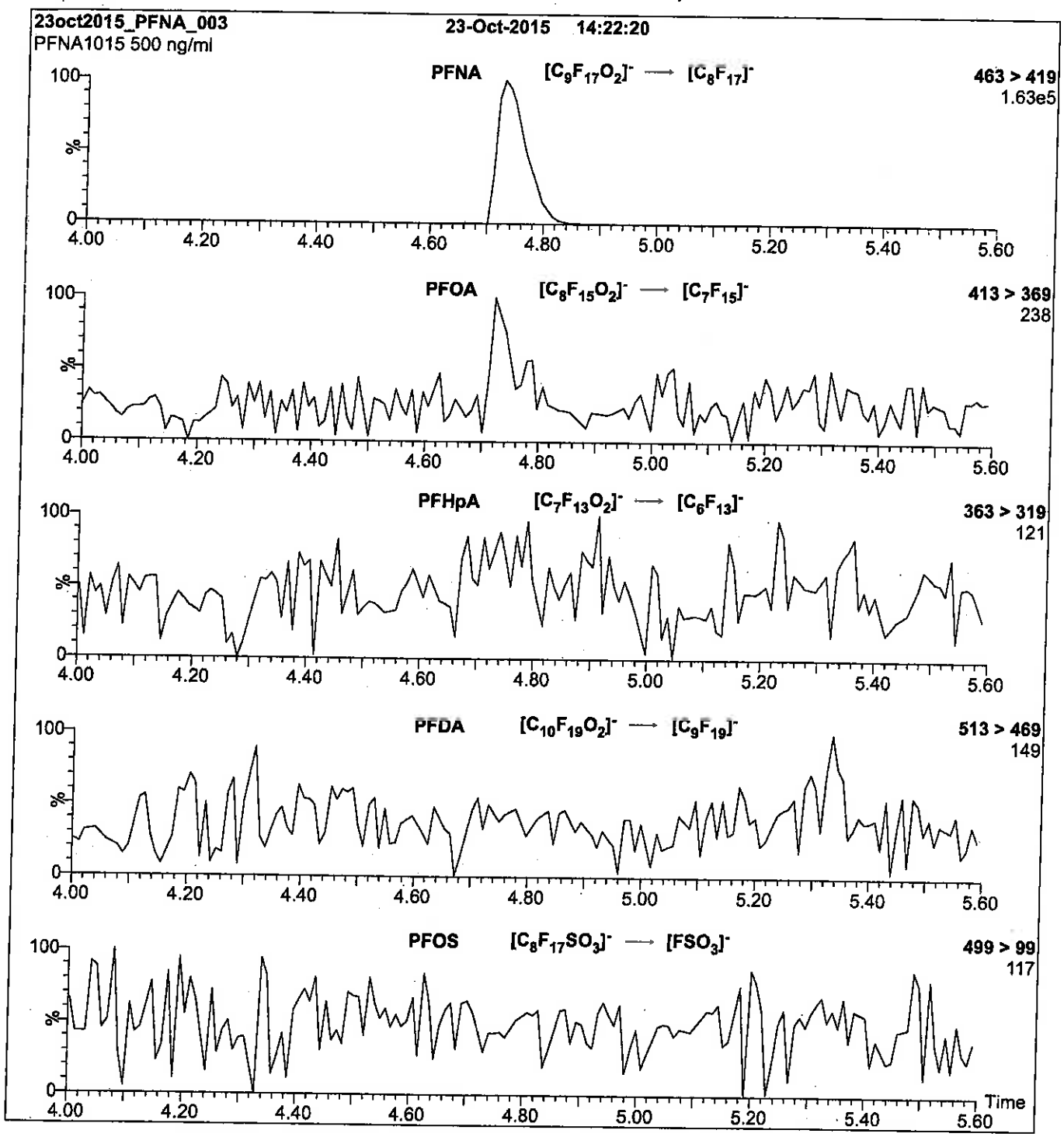
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

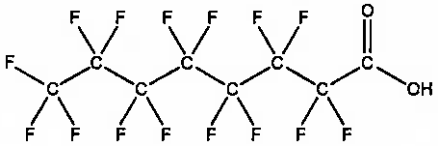
R-7/6/16 CBW

671577
ID: LCPFOA_00006
Exp: 11/06/20 Prpd: CBW
PF-n-octanoic acid

WELLINGTON LABORATORIES

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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HOMOGENEITY:

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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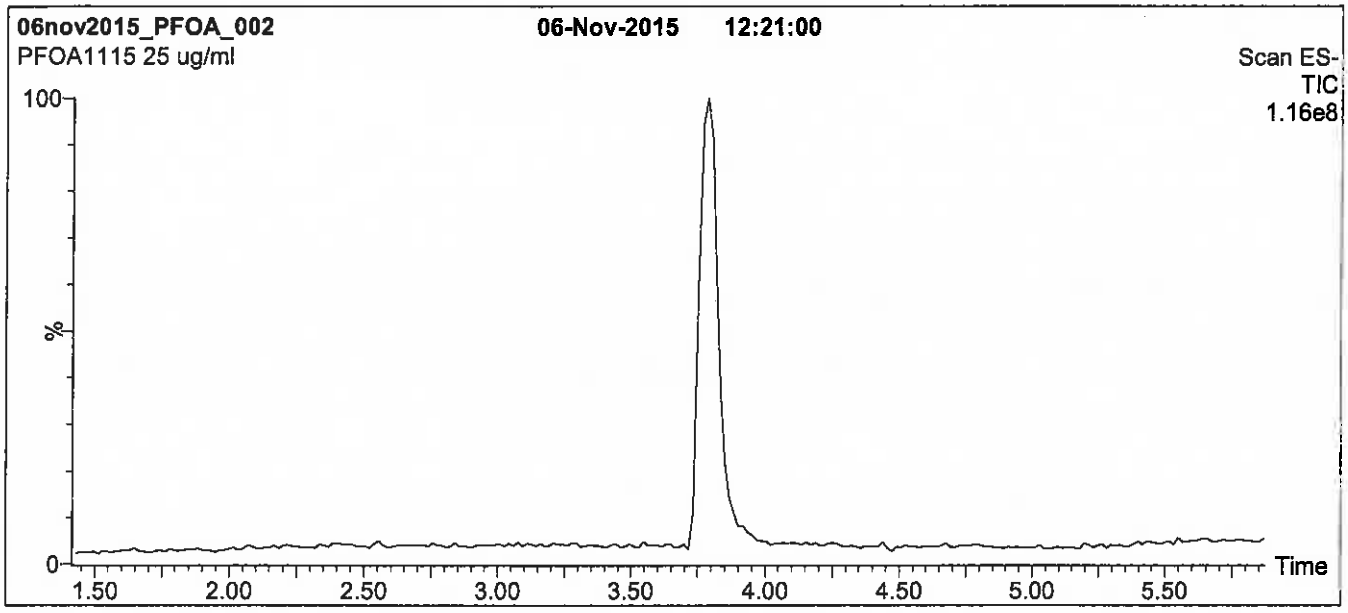
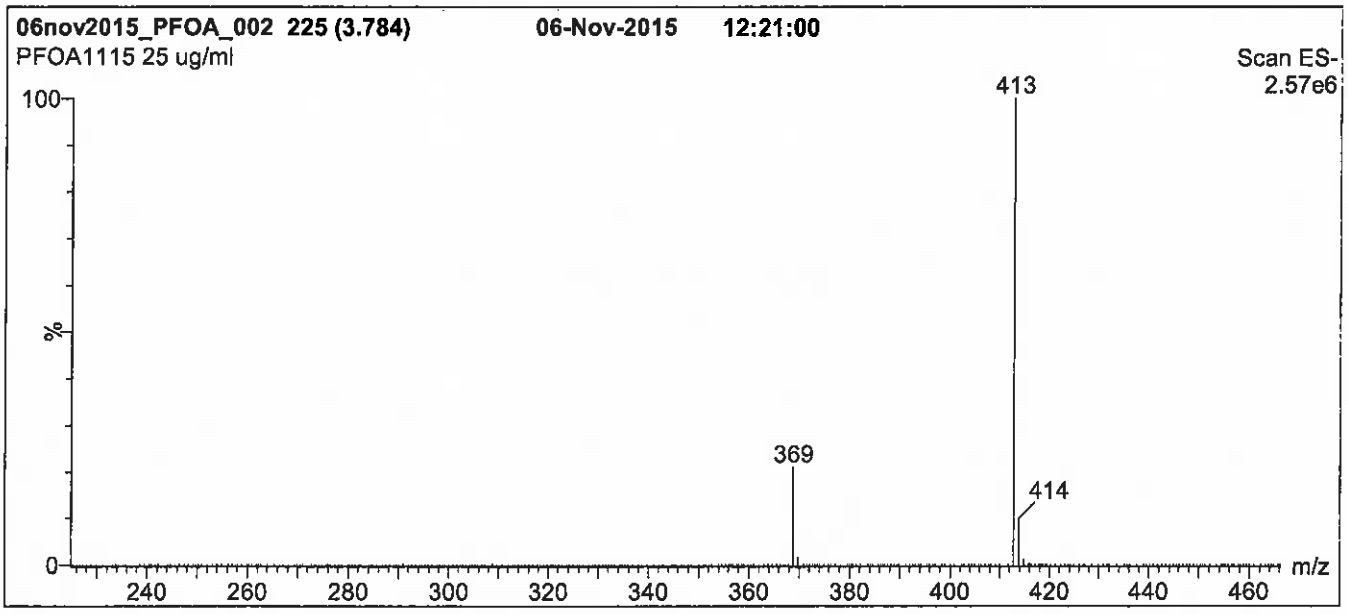
Figure 1: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





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

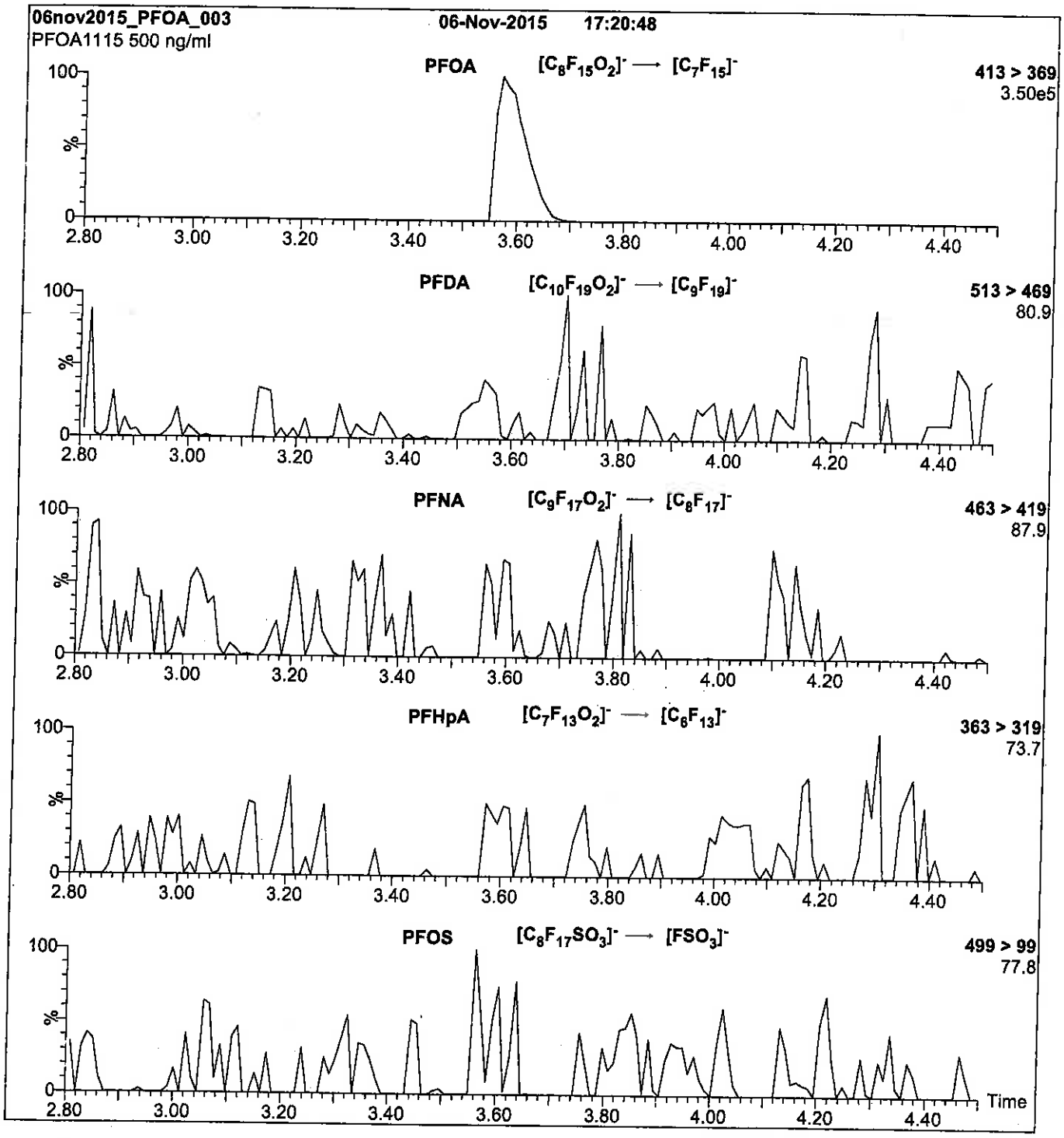
Flow: 300 µl/min

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

605234
ID: LCPFODA_00005
Exp: 01/30/20 Prpd: CBW
PFODA stock 50ug/mL

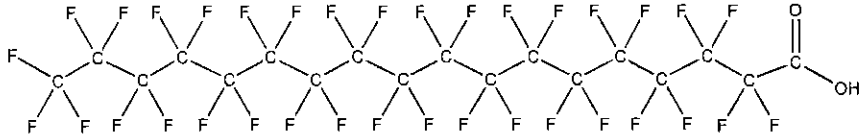
Rec. 3/29/16 JRB

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid
LOT NUMBER: PFODA0115

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
MOLECULAR WEIGHT: 914.14
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

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

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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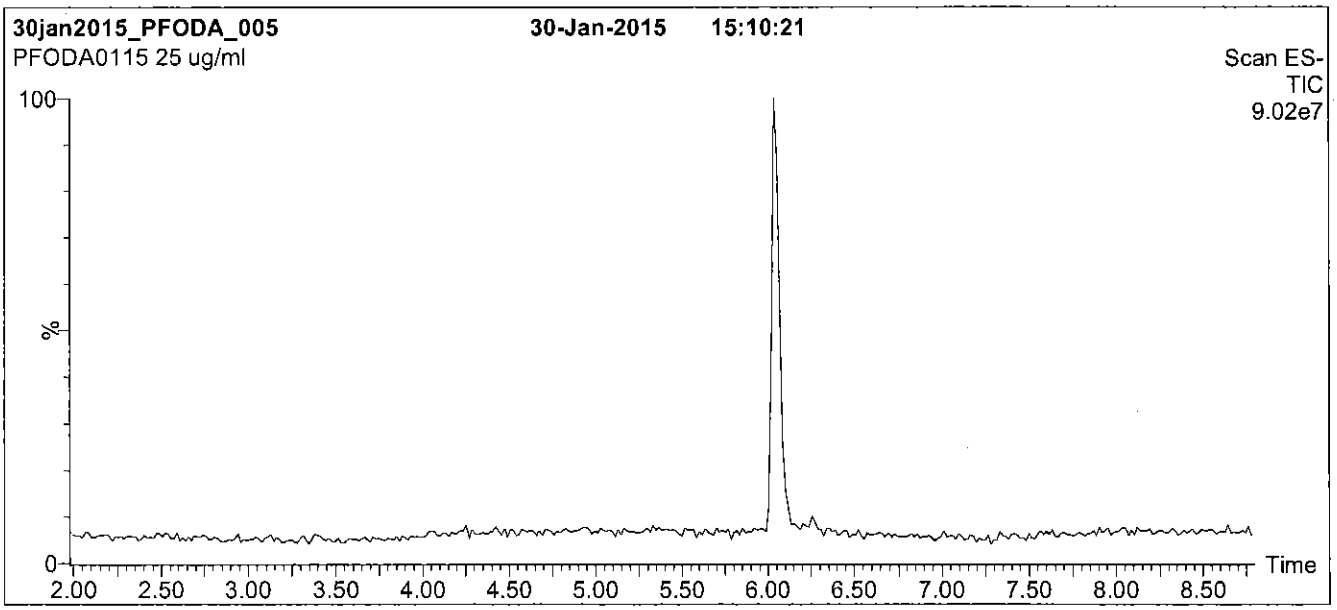
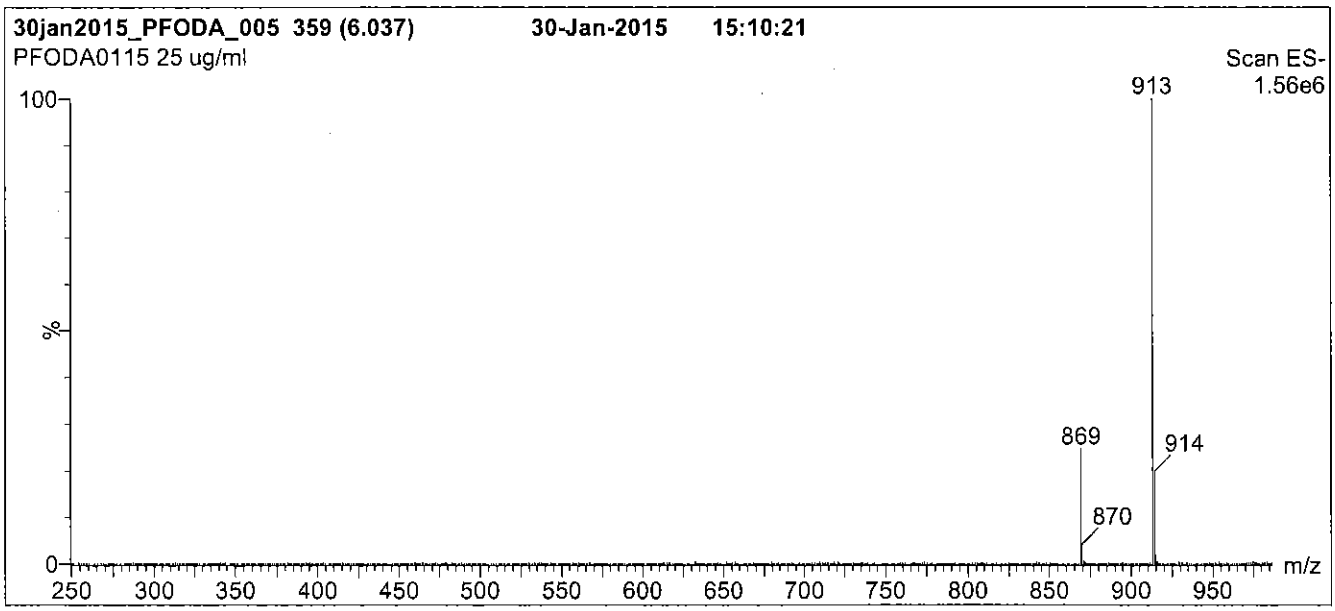
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

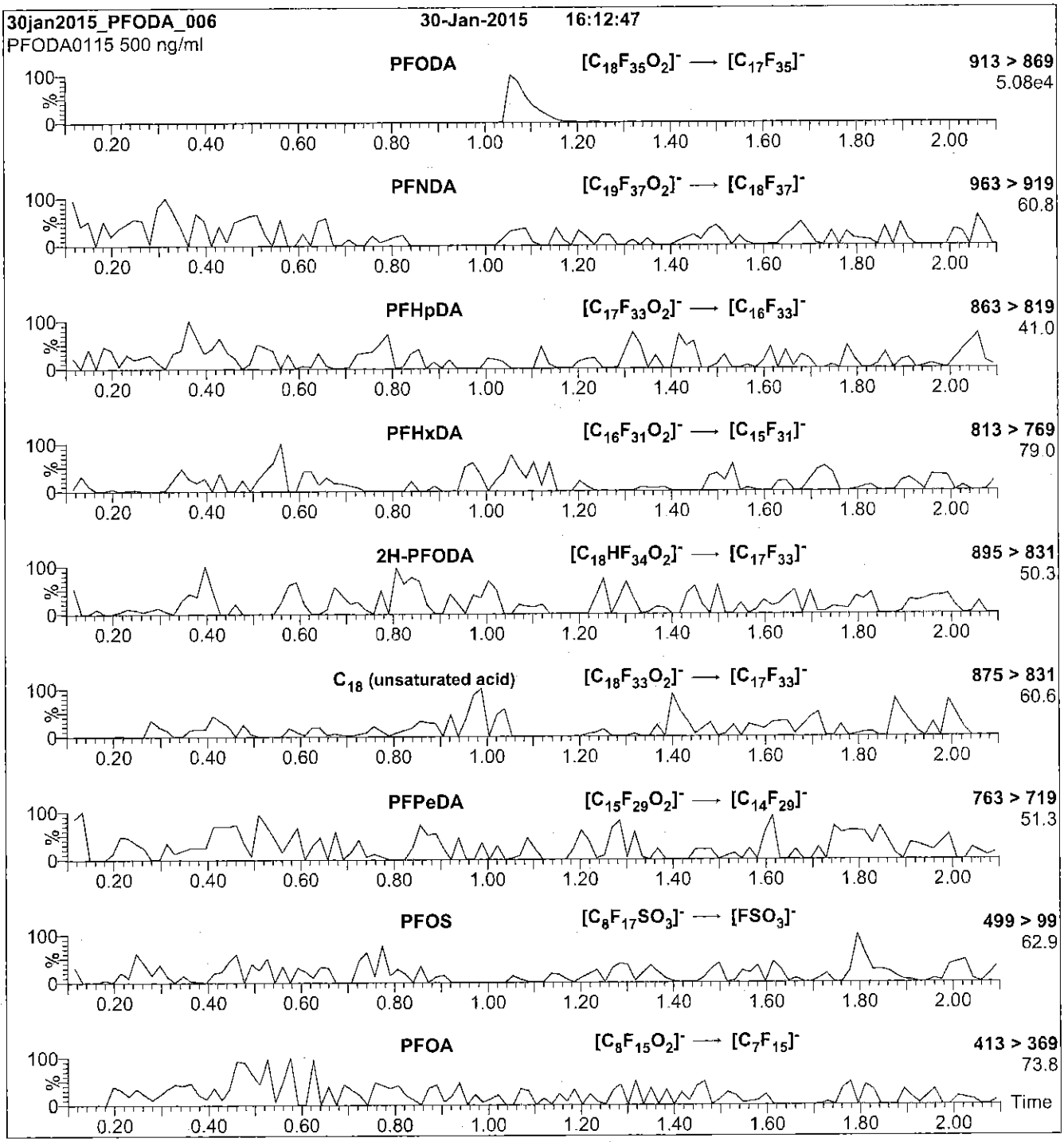
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFODA_00006

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

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

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

WELLINGTON LABORATORIES

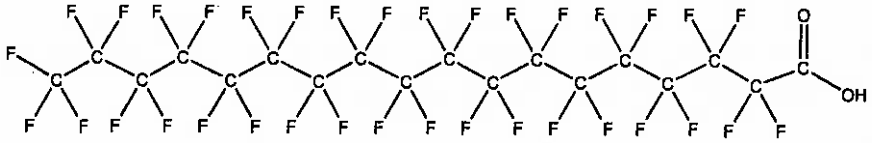
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: PFODA0416

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) 04/29/2016
EXPIRY DATE: (mm/dd/yyyy) 04/29/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/20/2016 (mm/dd/yyyy)

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

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:

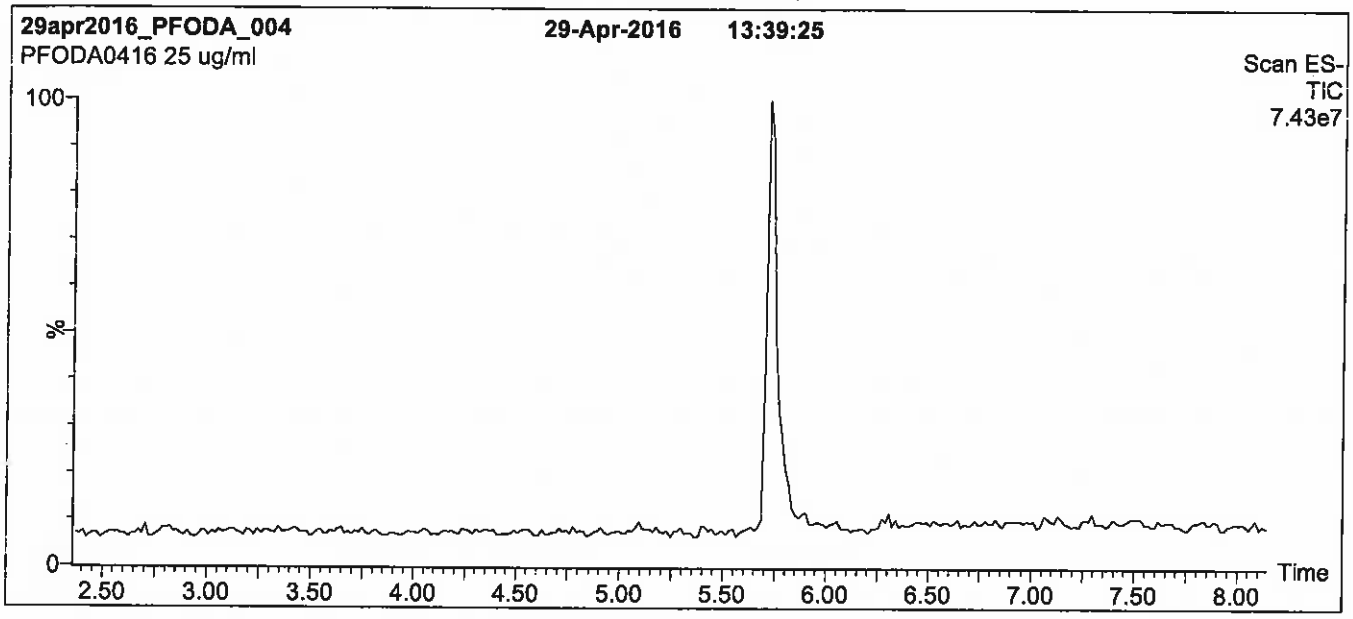
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

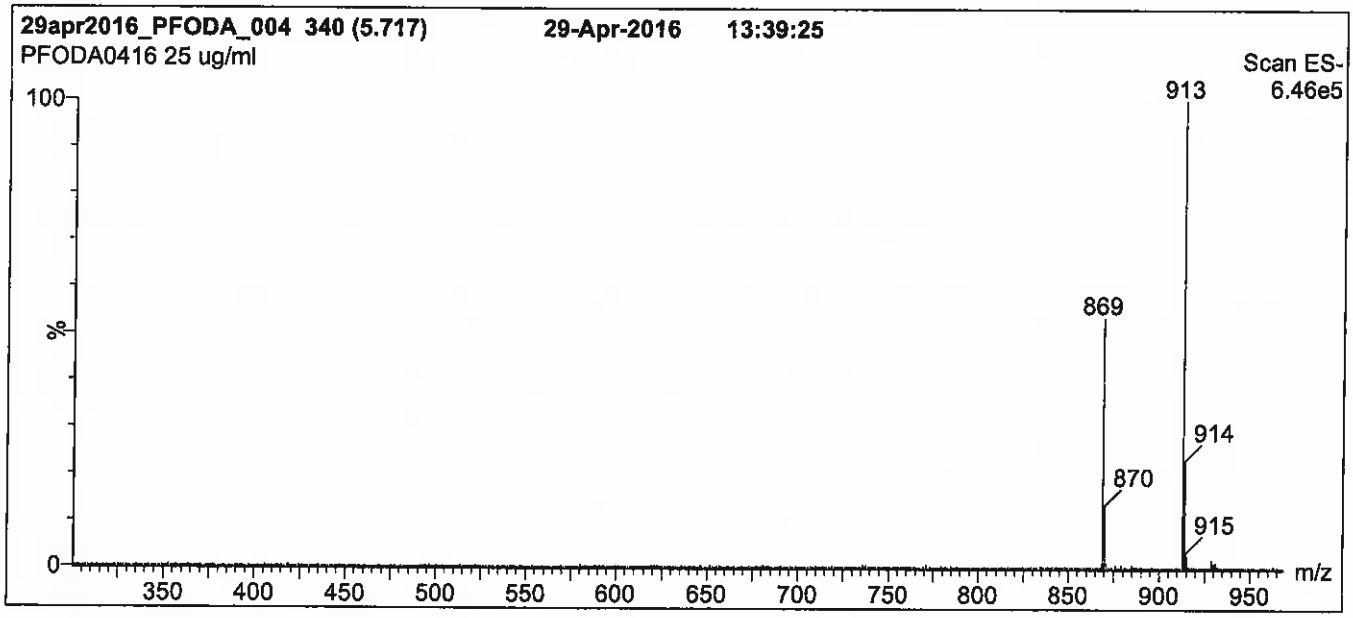
CALA Testing A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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: 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

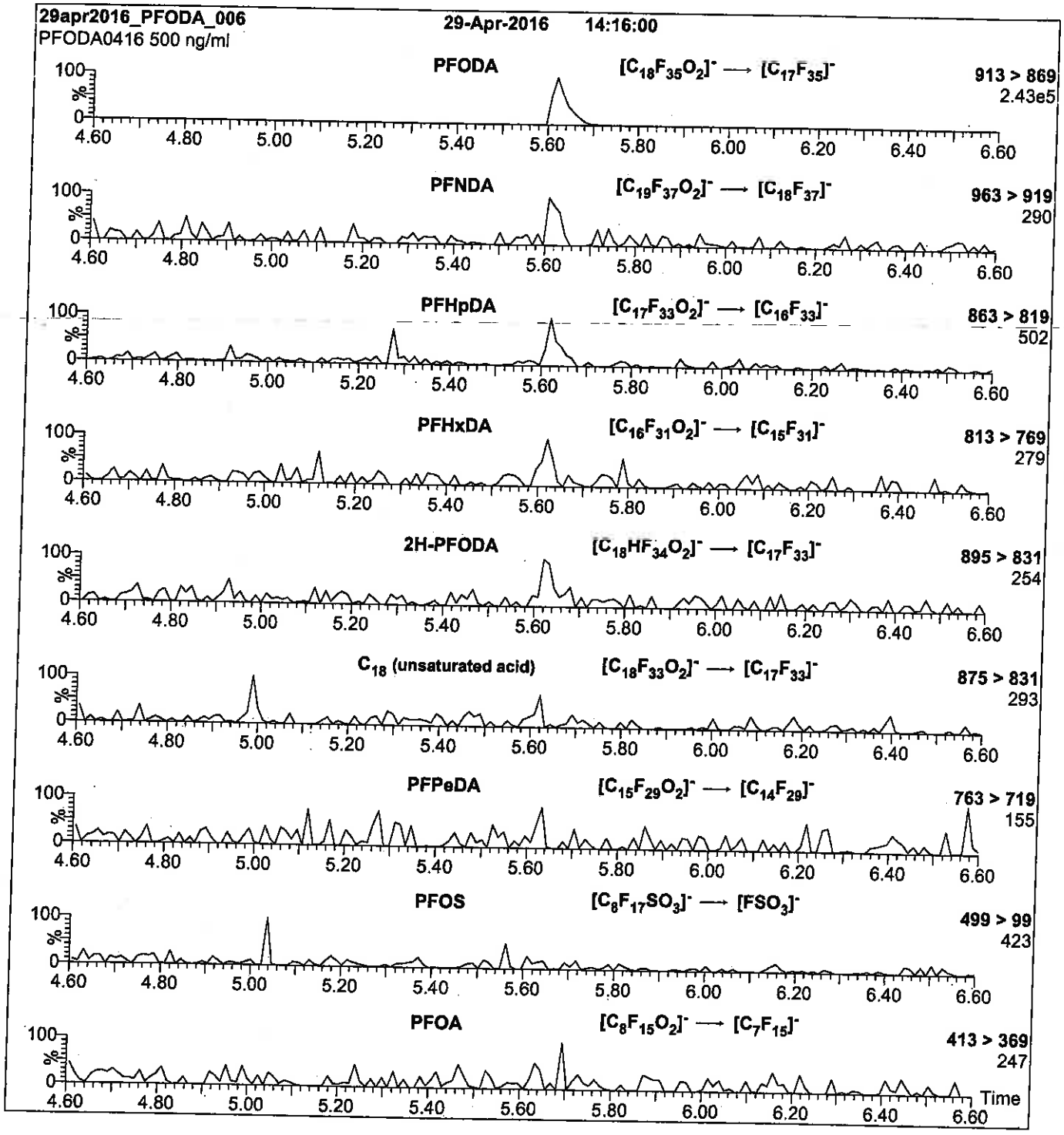
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 90% (80:20 MeOH:ACN) / 10% 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

LCPFOS-br_00001

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

P: 12/9/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

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

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA 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

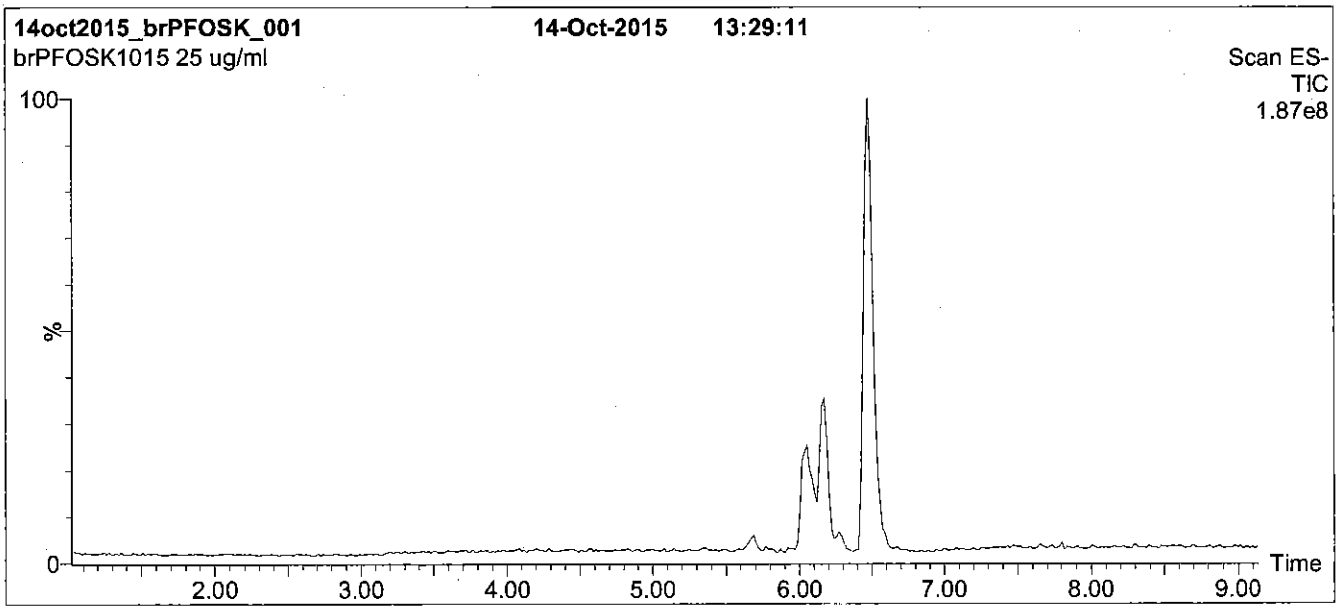
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

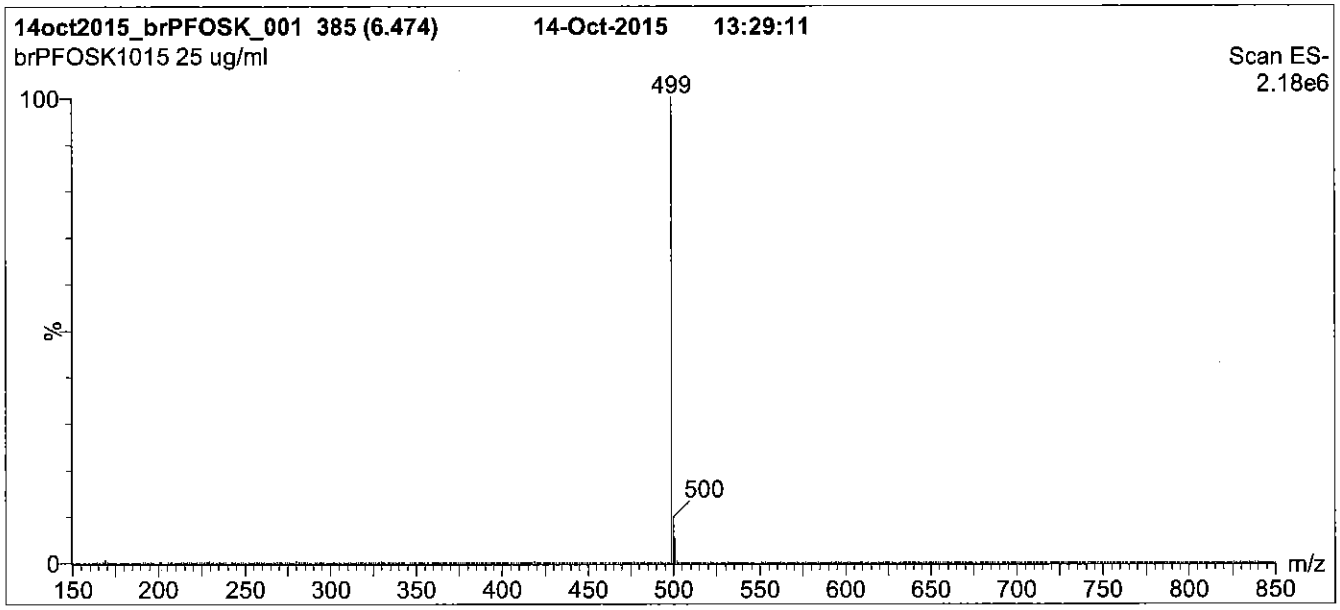
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate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

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

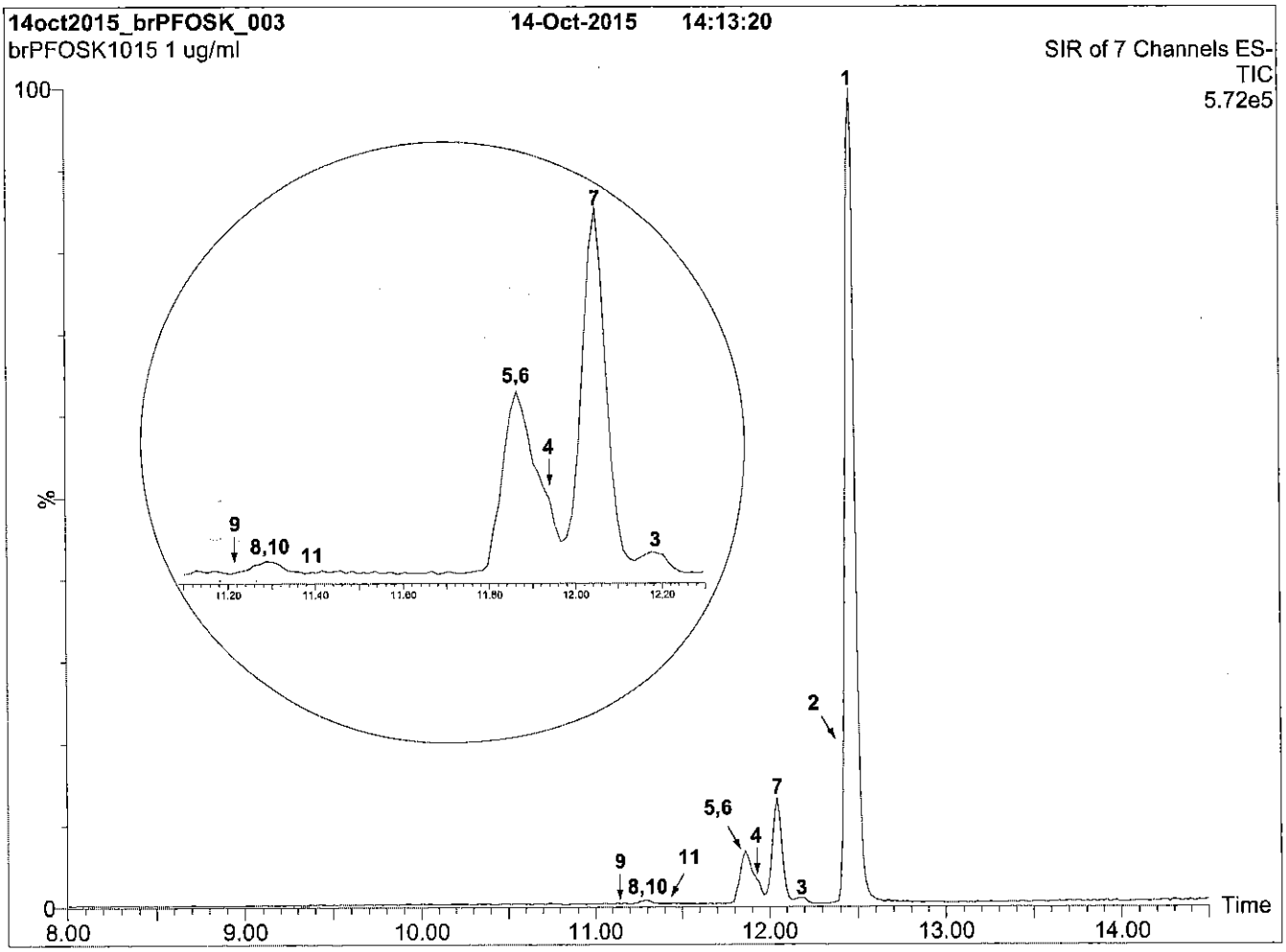
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions:

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

Injection: 1.0 µg/ml of br-PFOSK

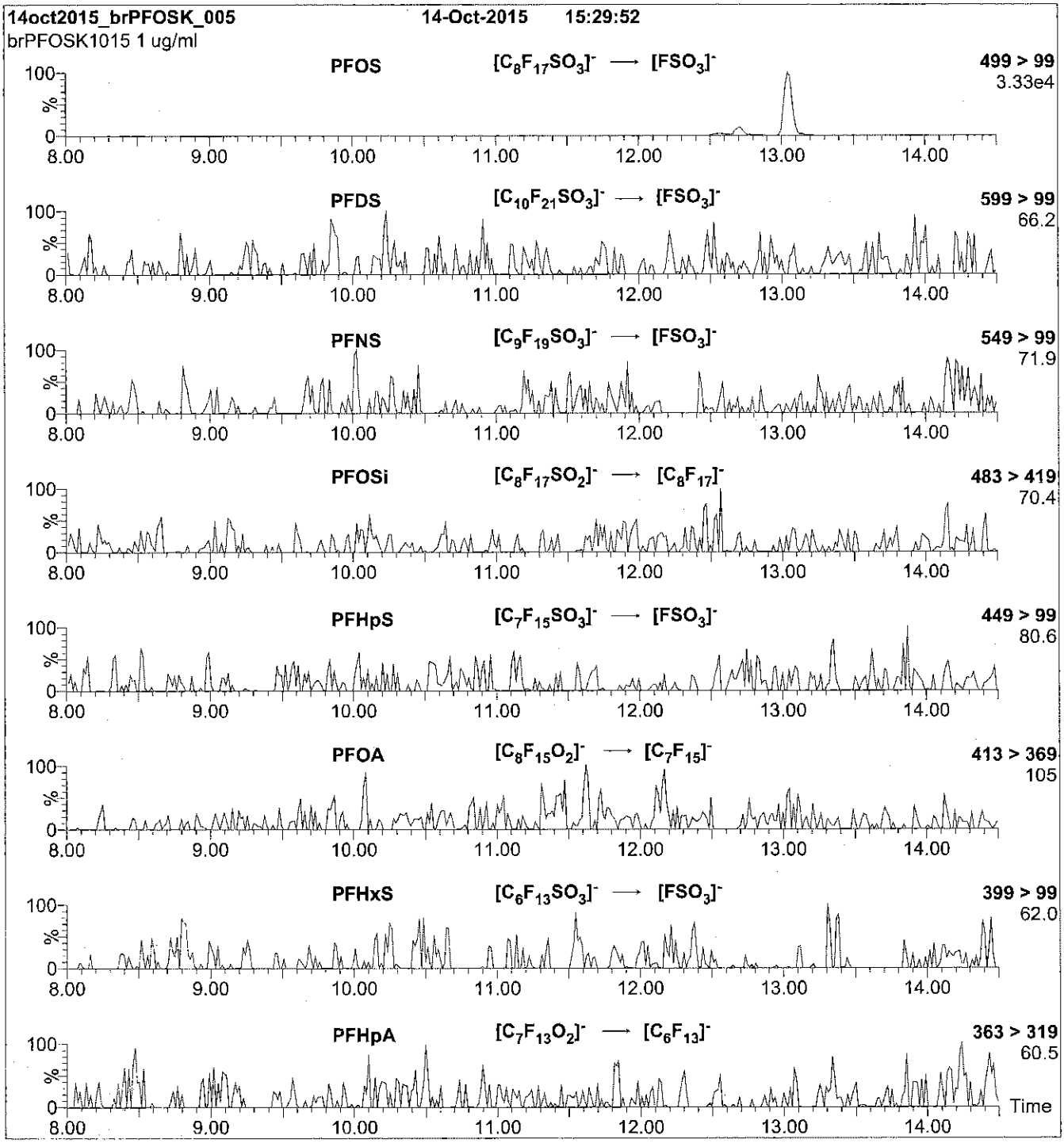
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

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

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



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

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UNCERTAINTY:

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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

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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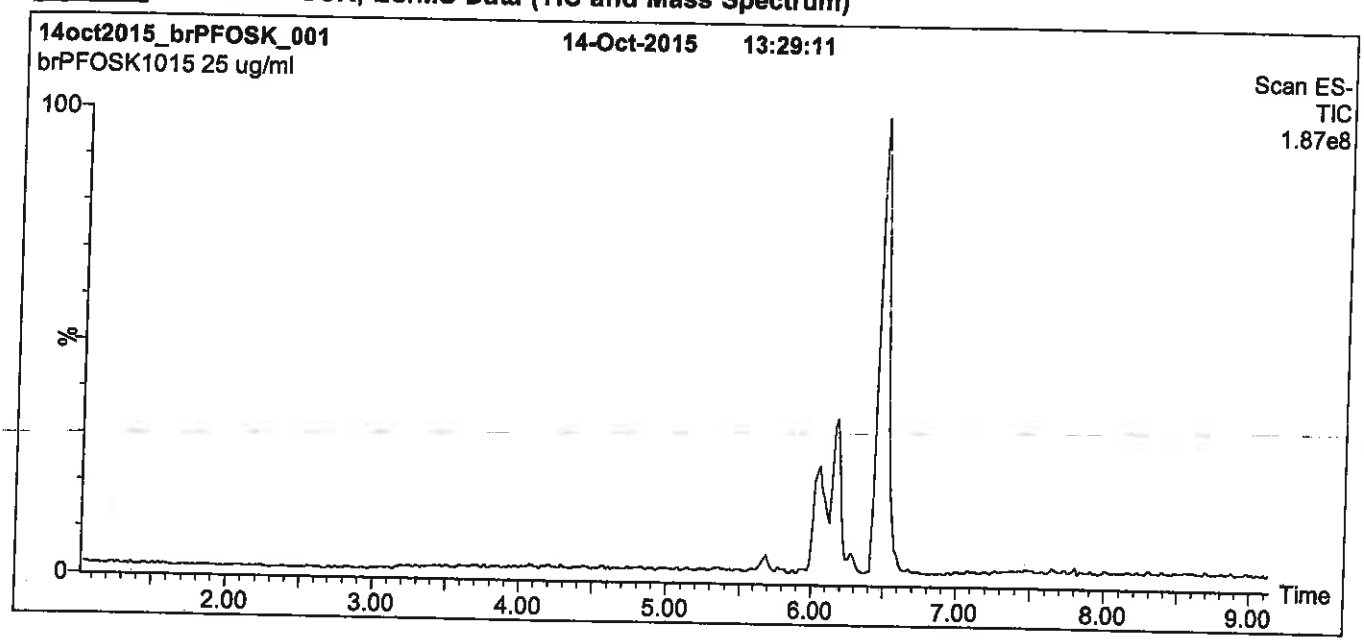
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

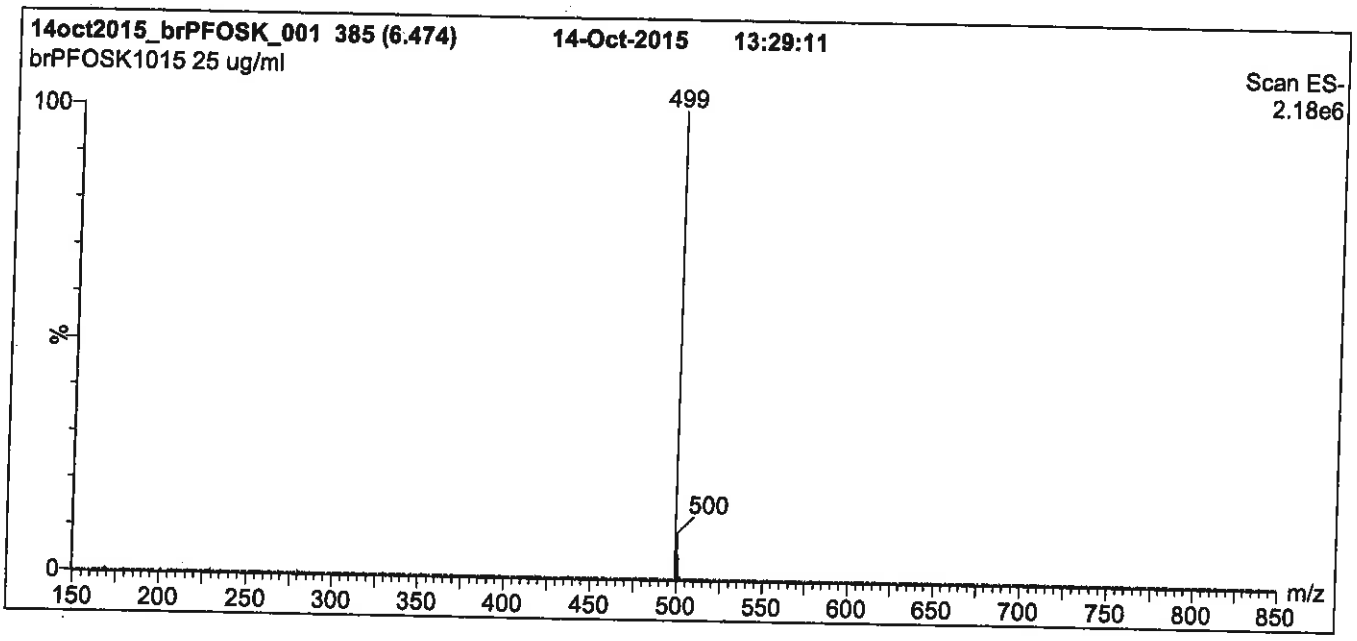
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate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

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

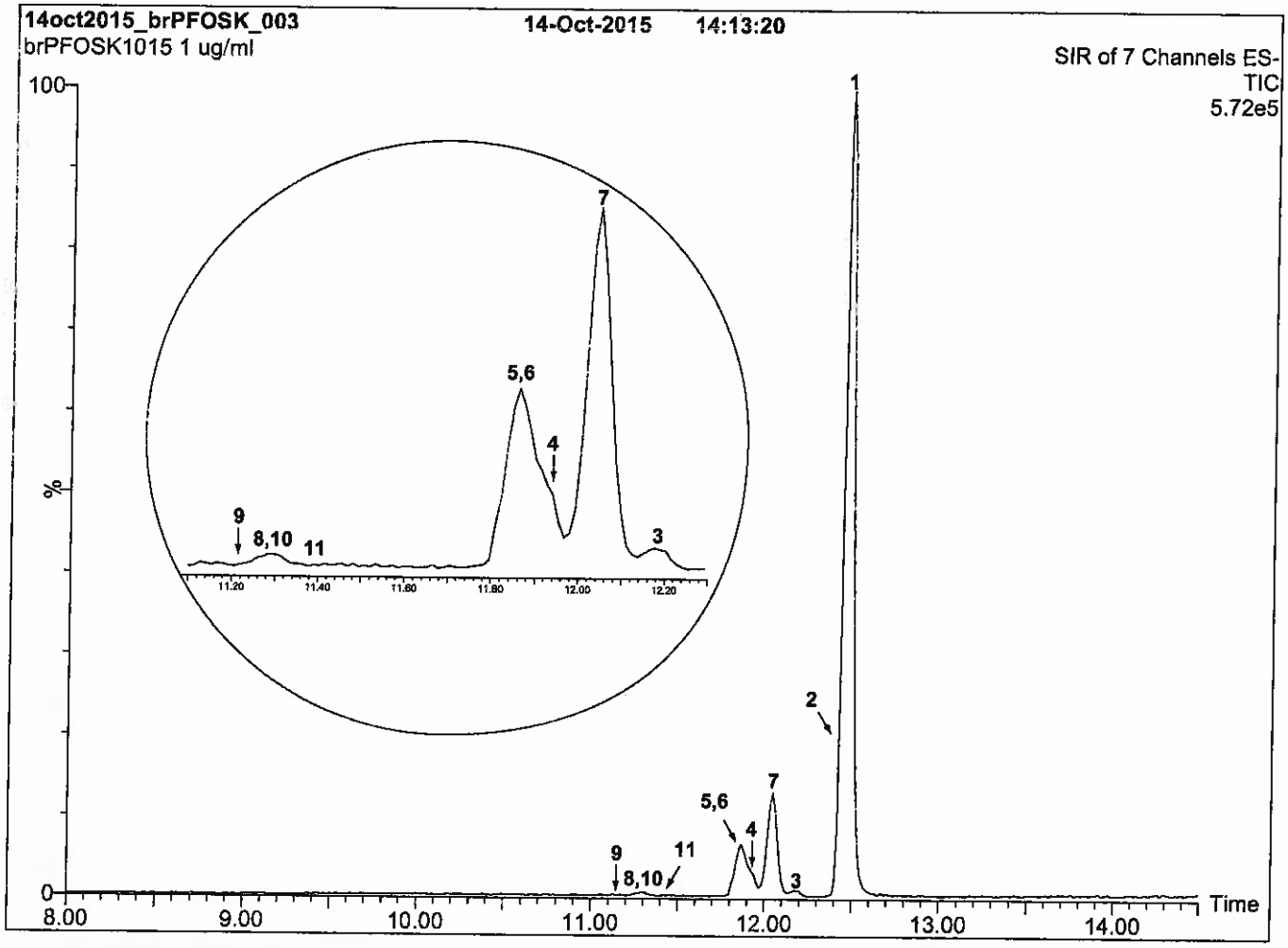
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions:

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

Injection: 1.0 µg/ml of br-PFOSK

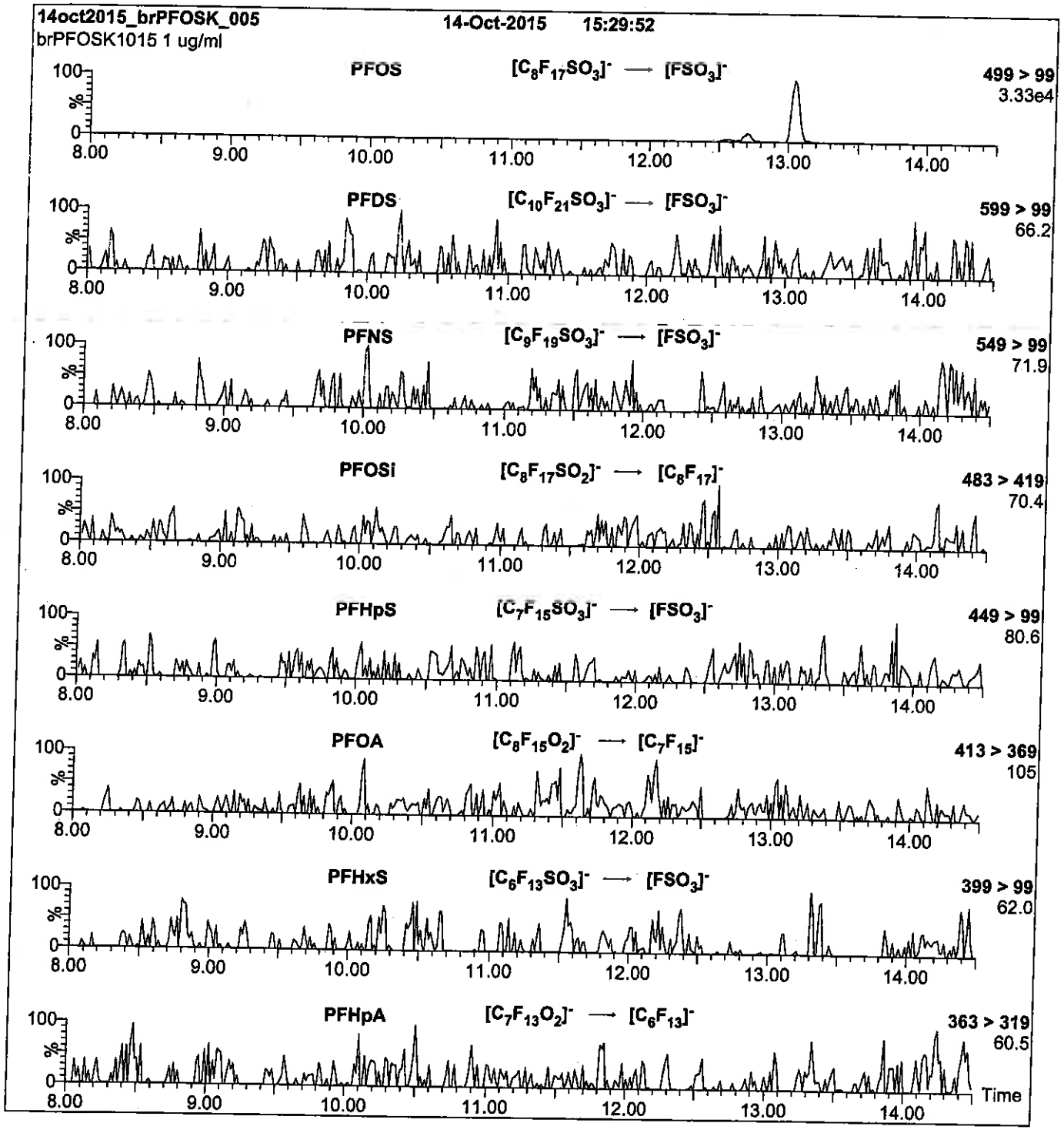
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

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

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



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFOSA_00006

Rec 12/30/15 CW

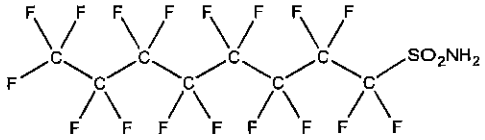
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:

CAS #: 754-91-6



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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.

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 AR REFERENCE MATERIAL PRODUCER

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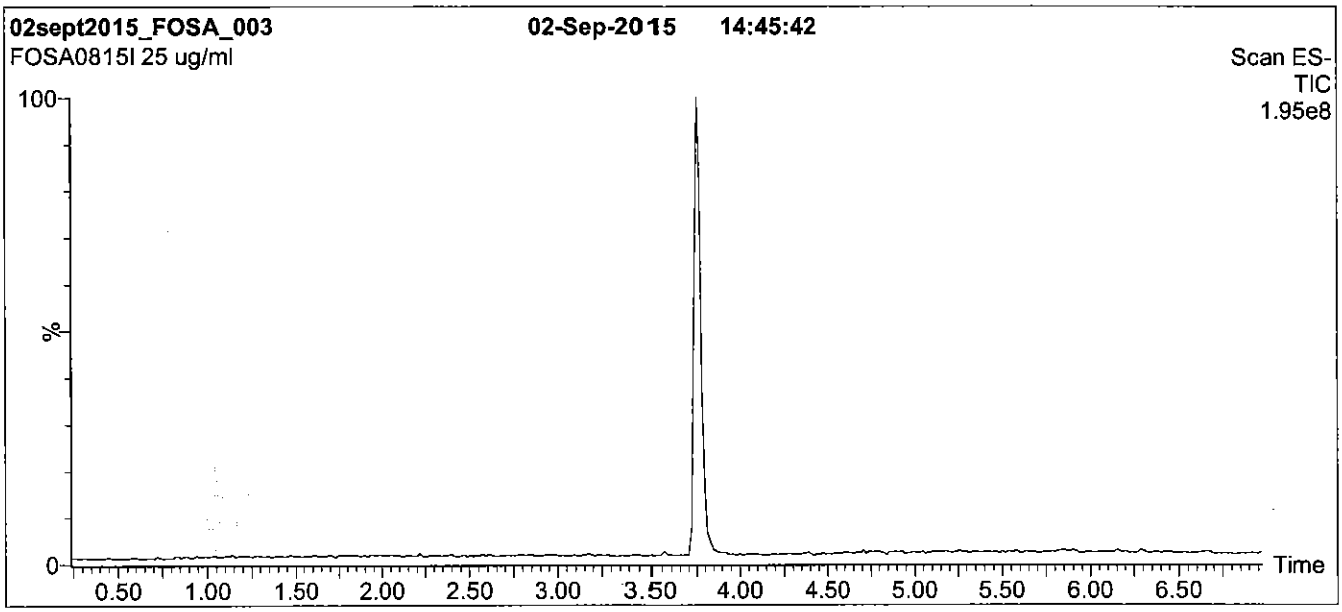
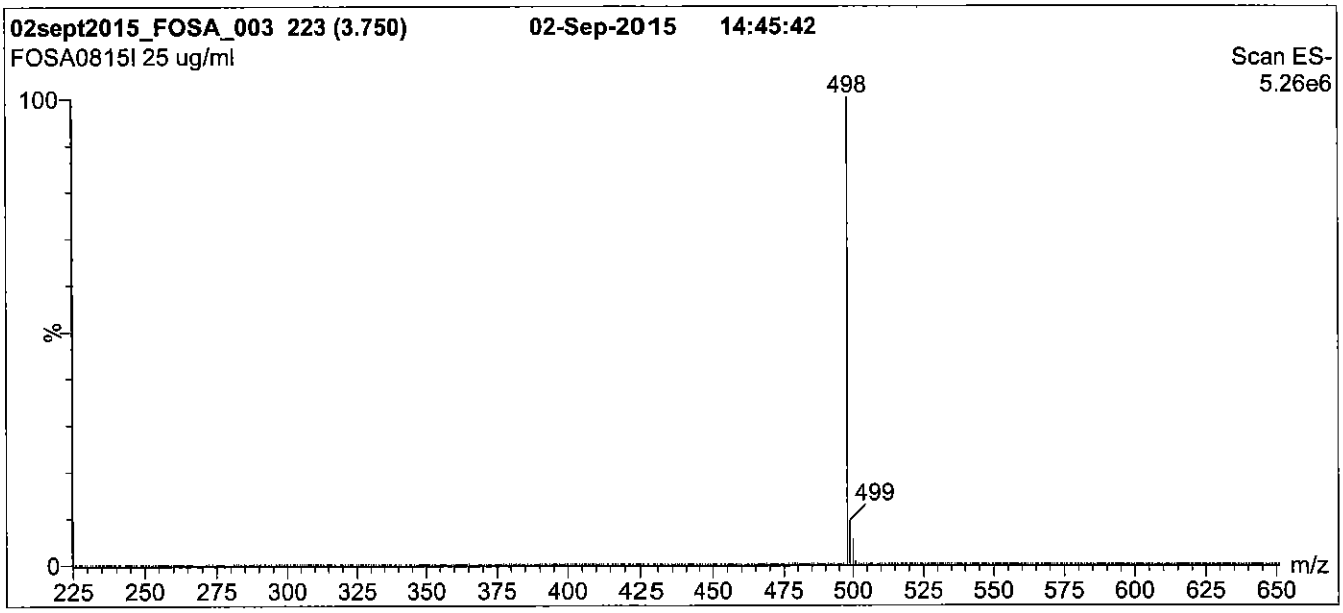




Conditions for Figure 1:

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: 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

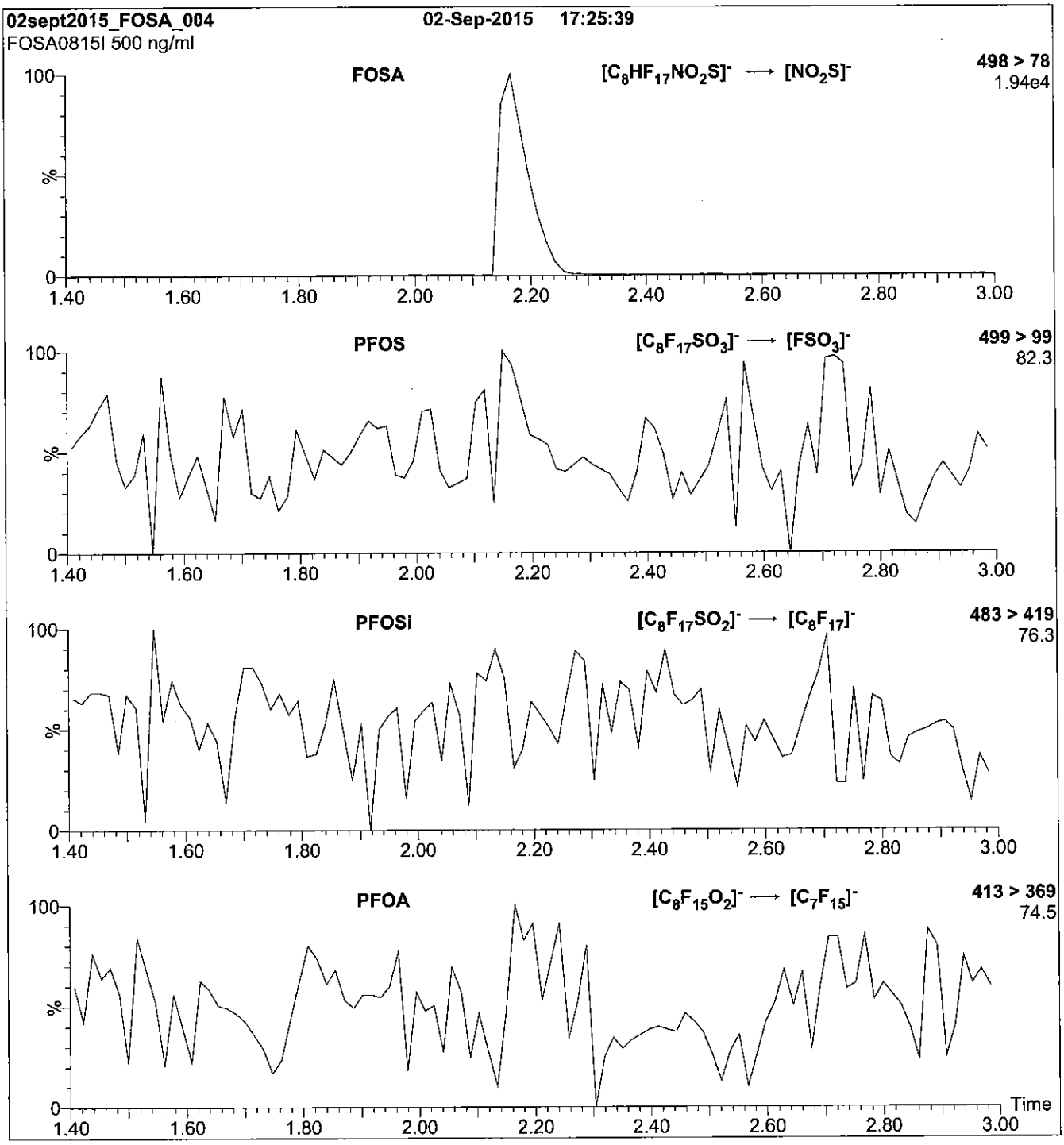
Flow: 300 µl/min

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

LCPFOSA_00008

Scanned 10/14/16

R: SBC 9/13/16

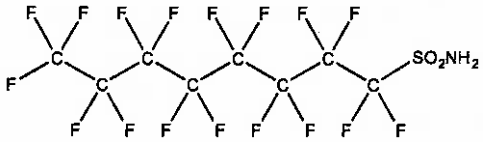
730534
ID: LCPFOSA_00009
Exp: 09/02/17 Prpd: SBC
PF-1-octanesulfonamide

730533
ID: LCPFOSA_00008
Exp: 09/02/17 Prpd: SBC
PF-1-octanesulfonamide

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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 ISO 17025 REFERENCE MATERIAL PRODUCER

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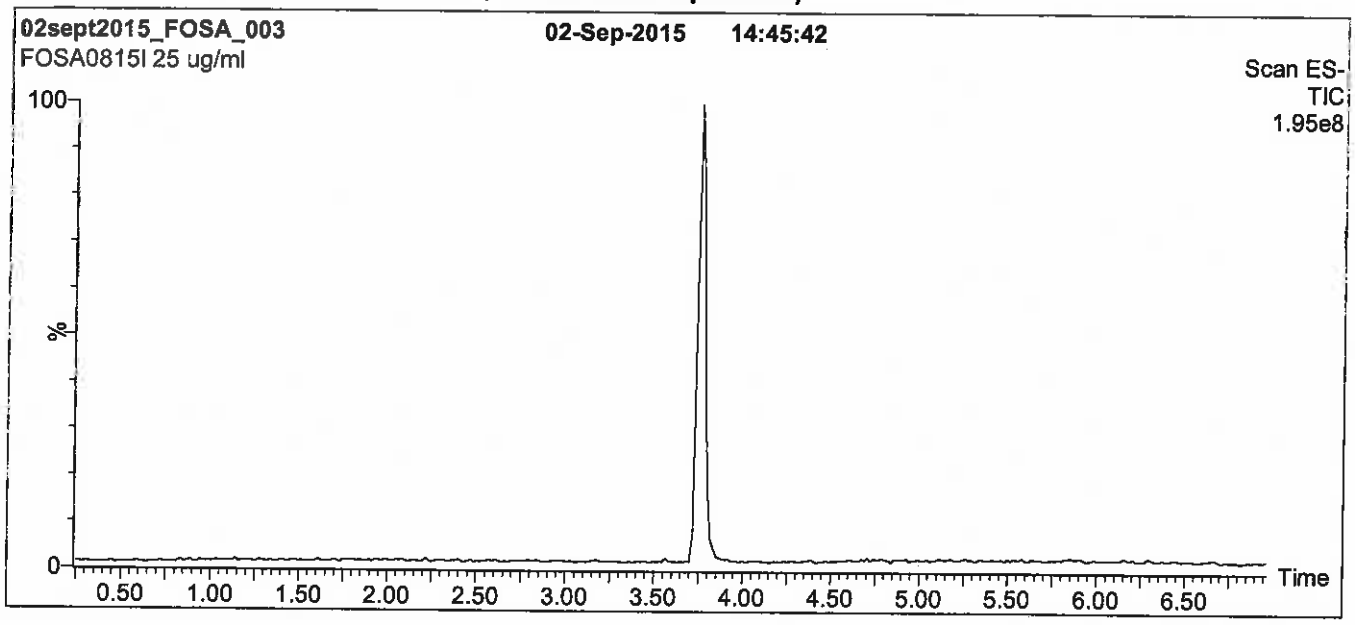

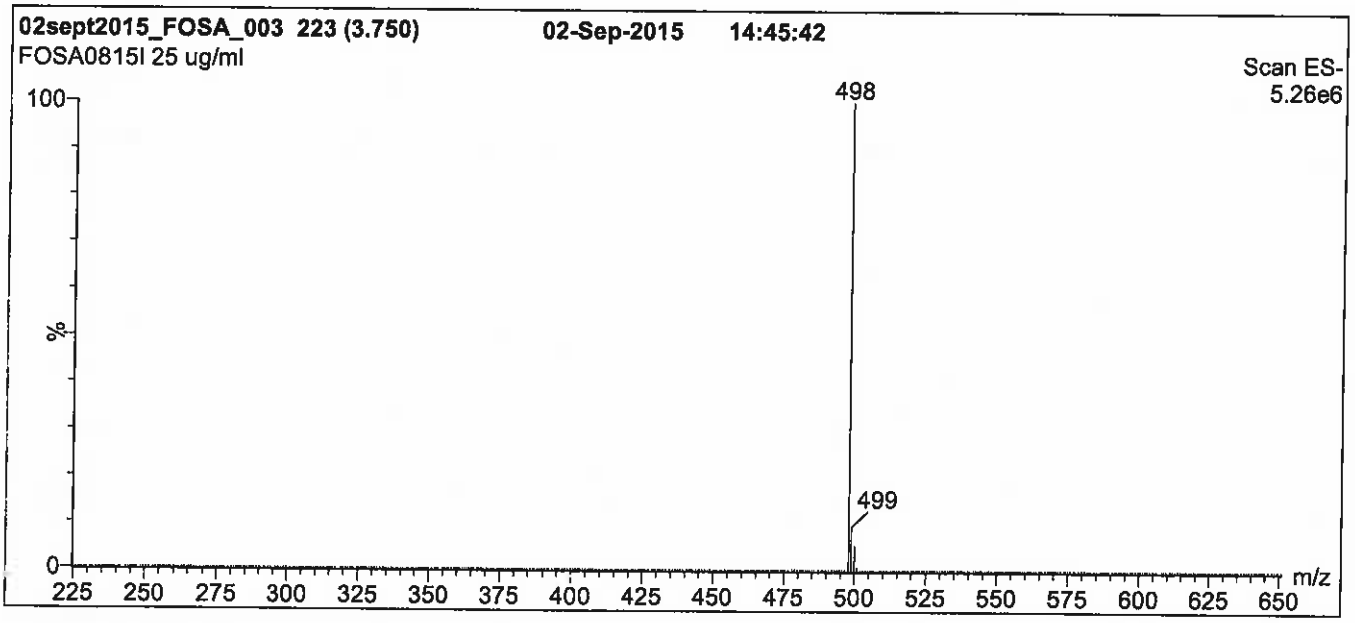

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MS: **Micromass Quattro *micro* API MS**

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

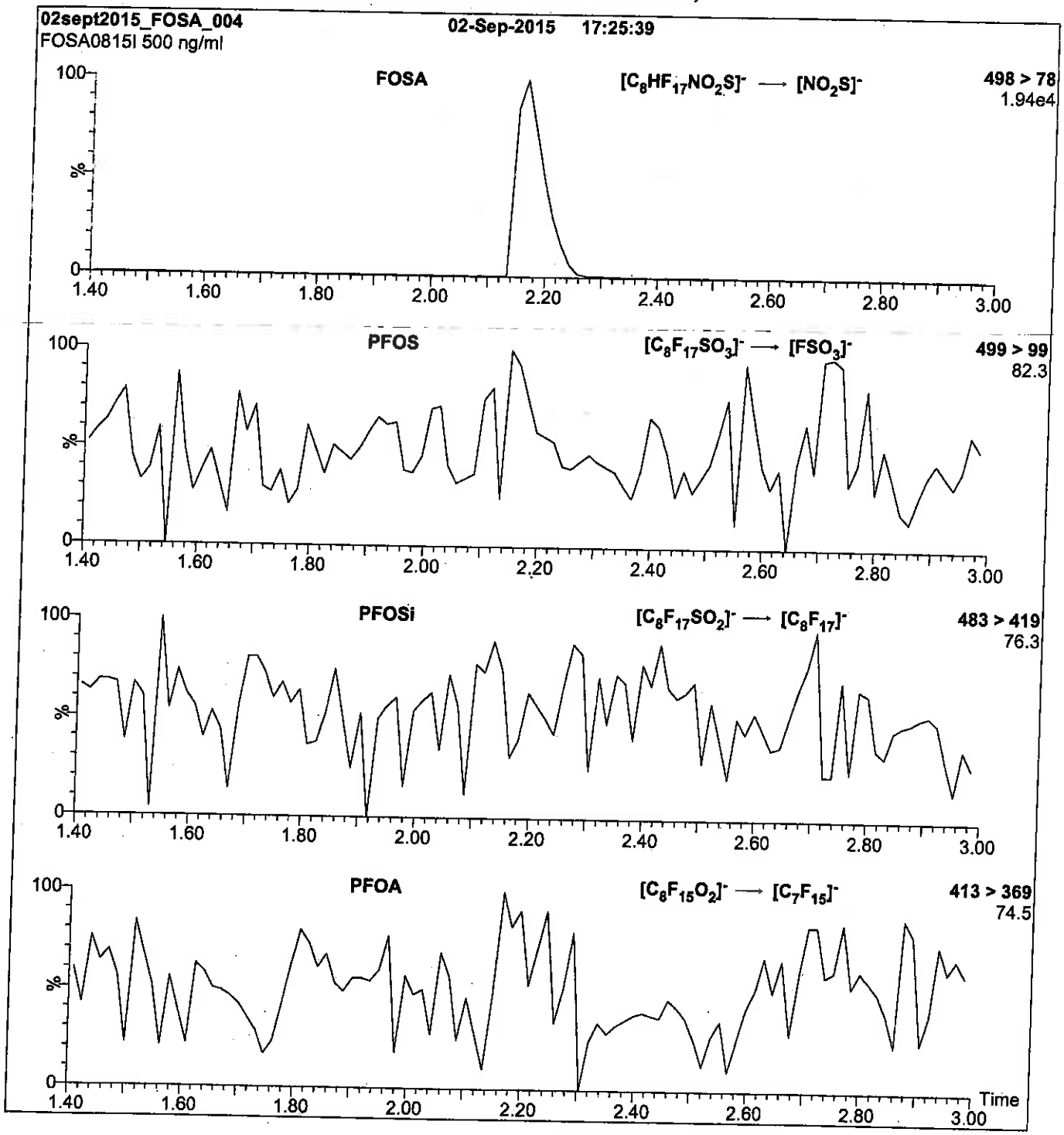
Flow: 300 µl/min

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

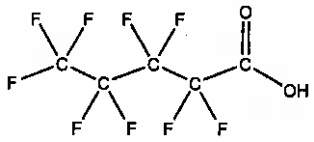
R: 7/6/16 CBW

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

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

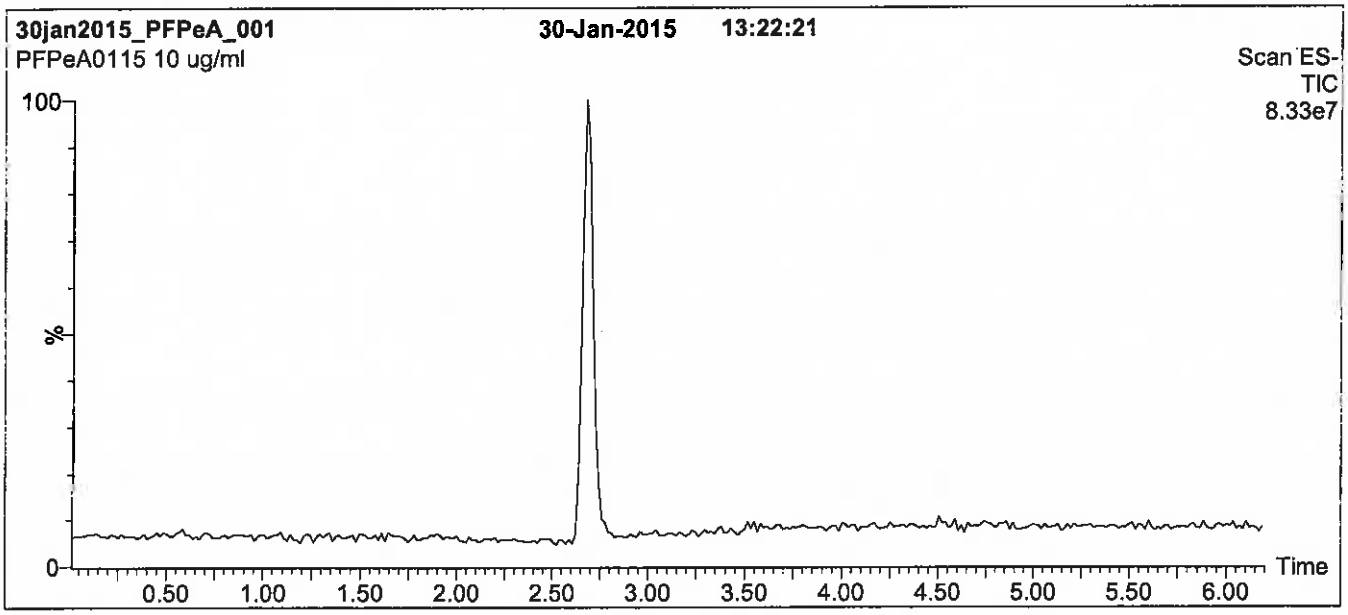
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

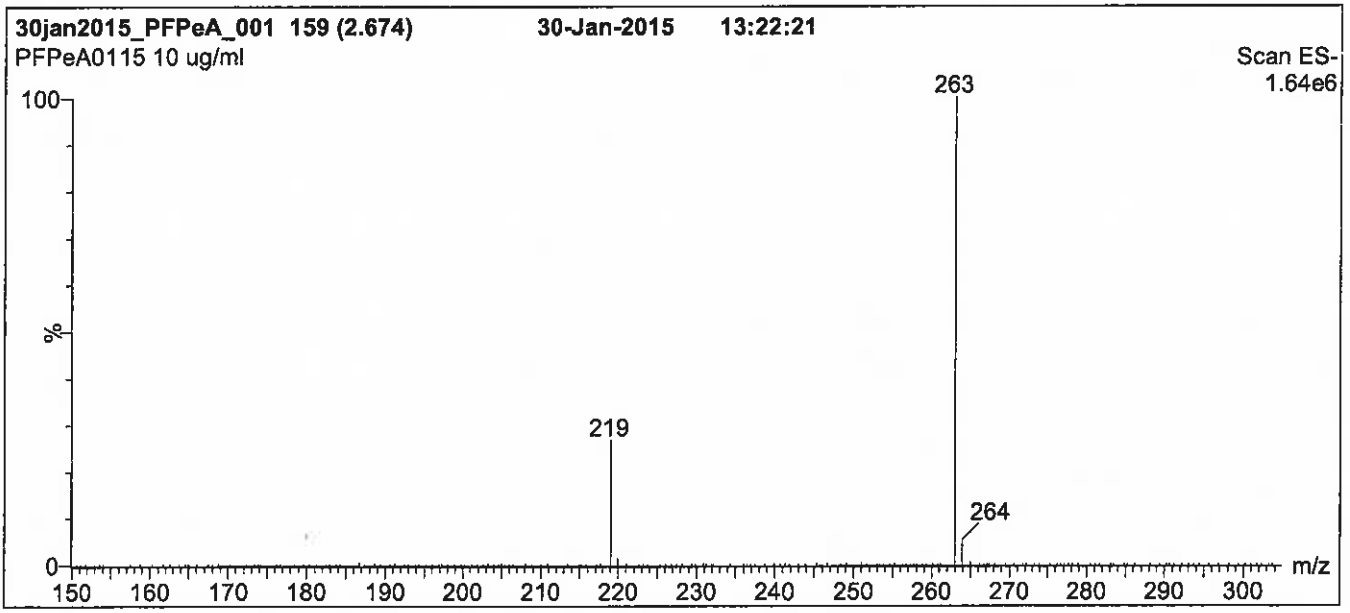
CALA

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: **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

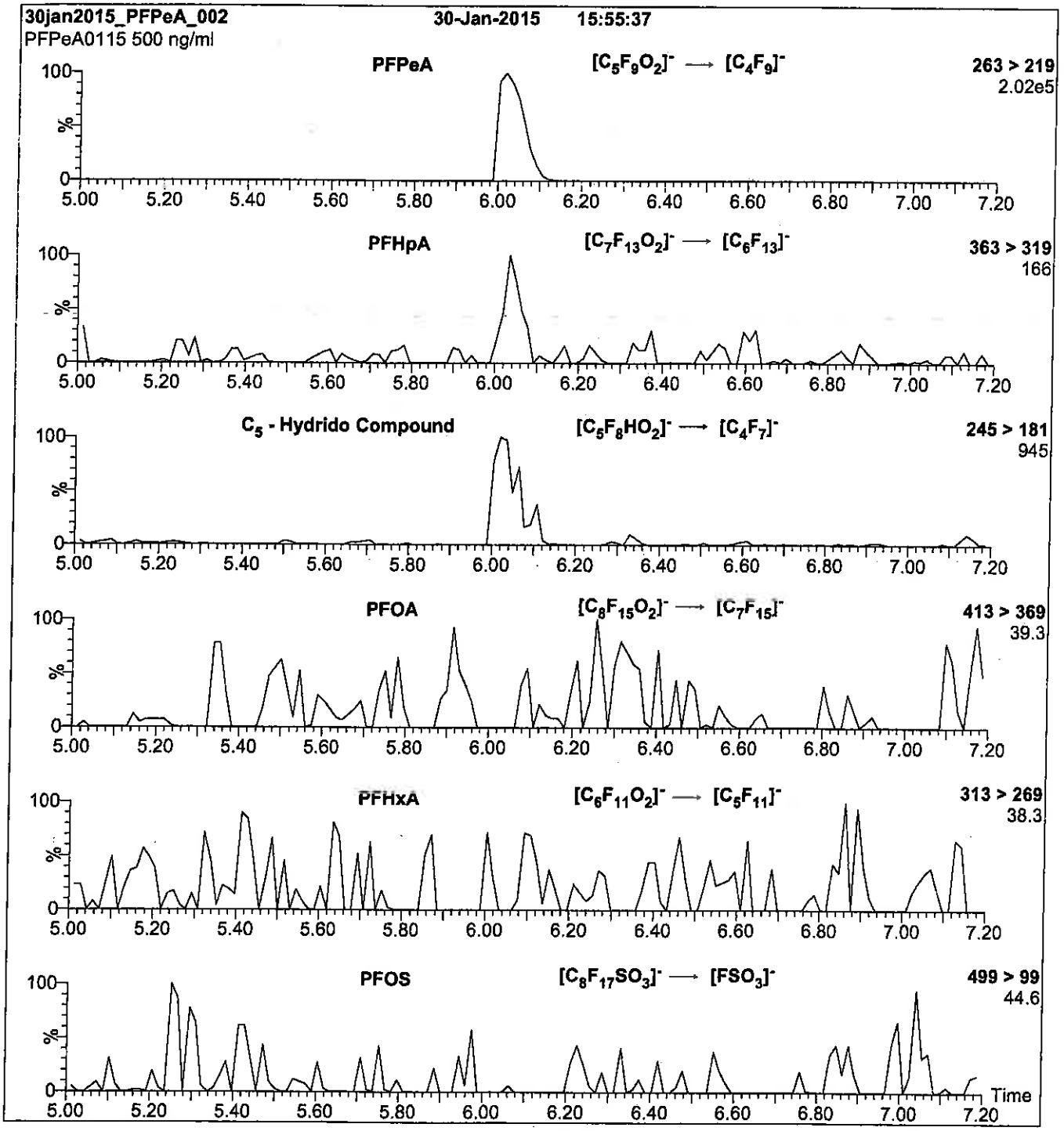
Flow: 300 µl/min

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

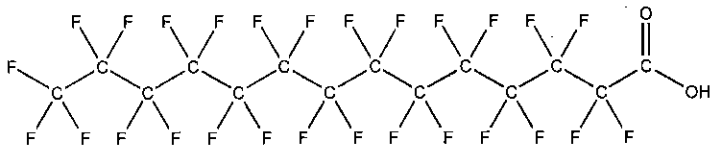
WELLINGTON LABORATORIES

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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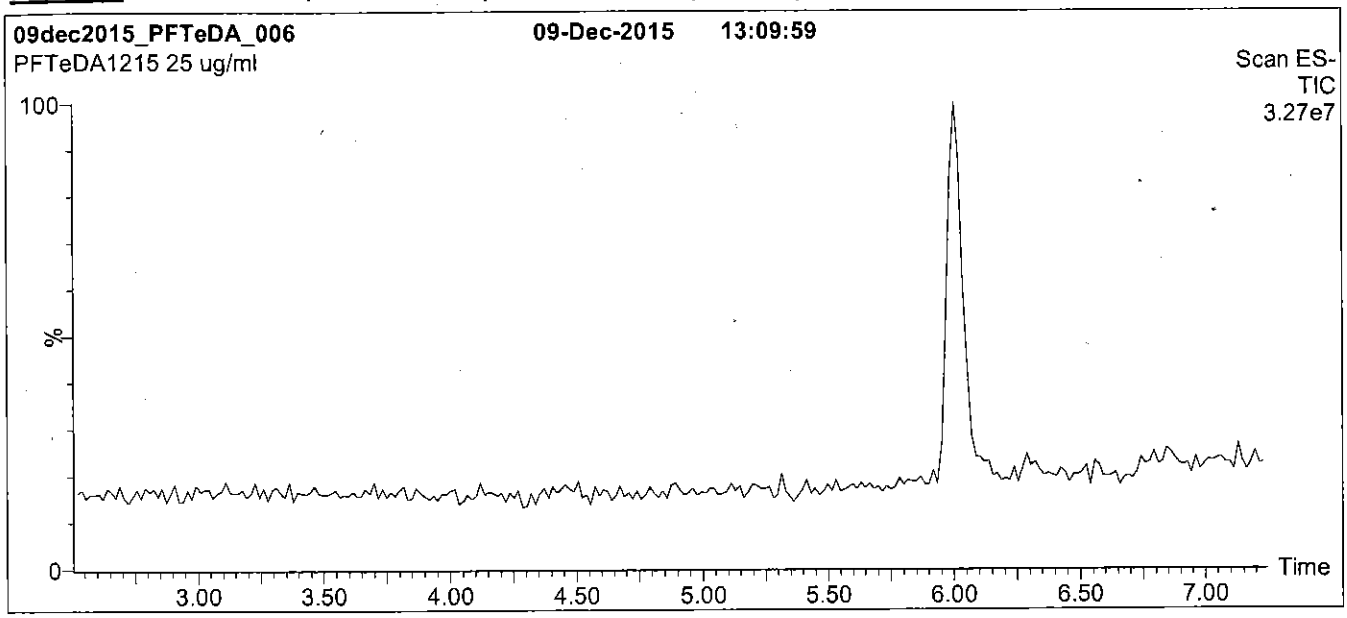
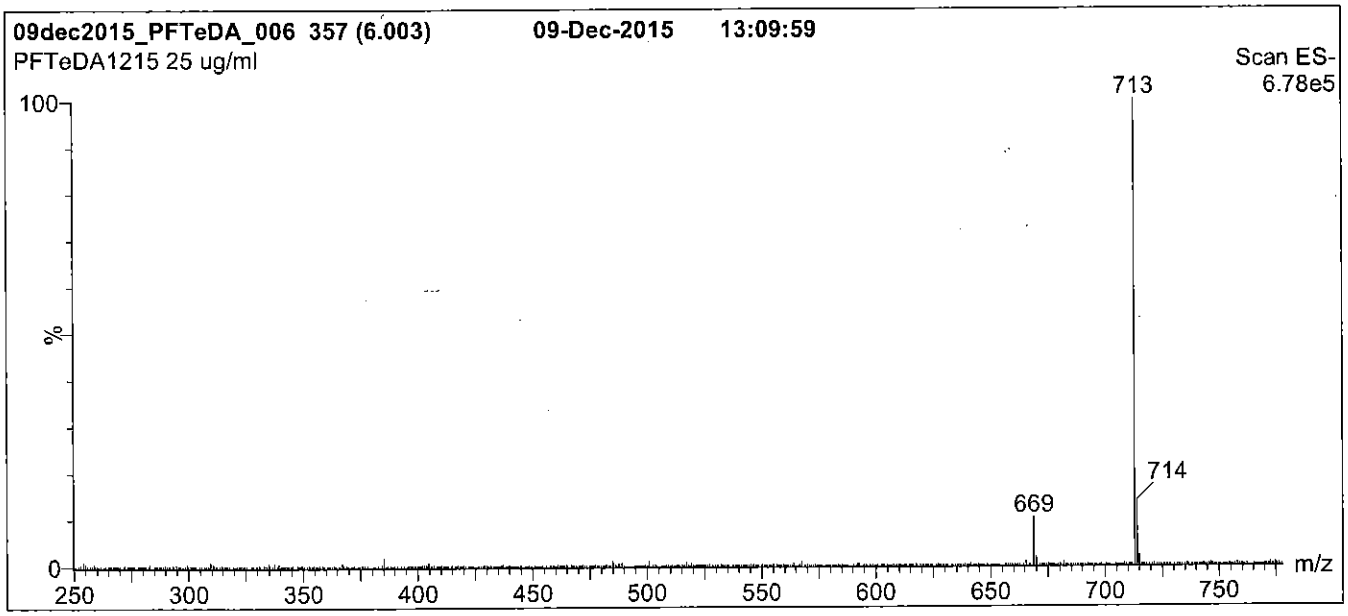




Conditions for Figure 1:

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: 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

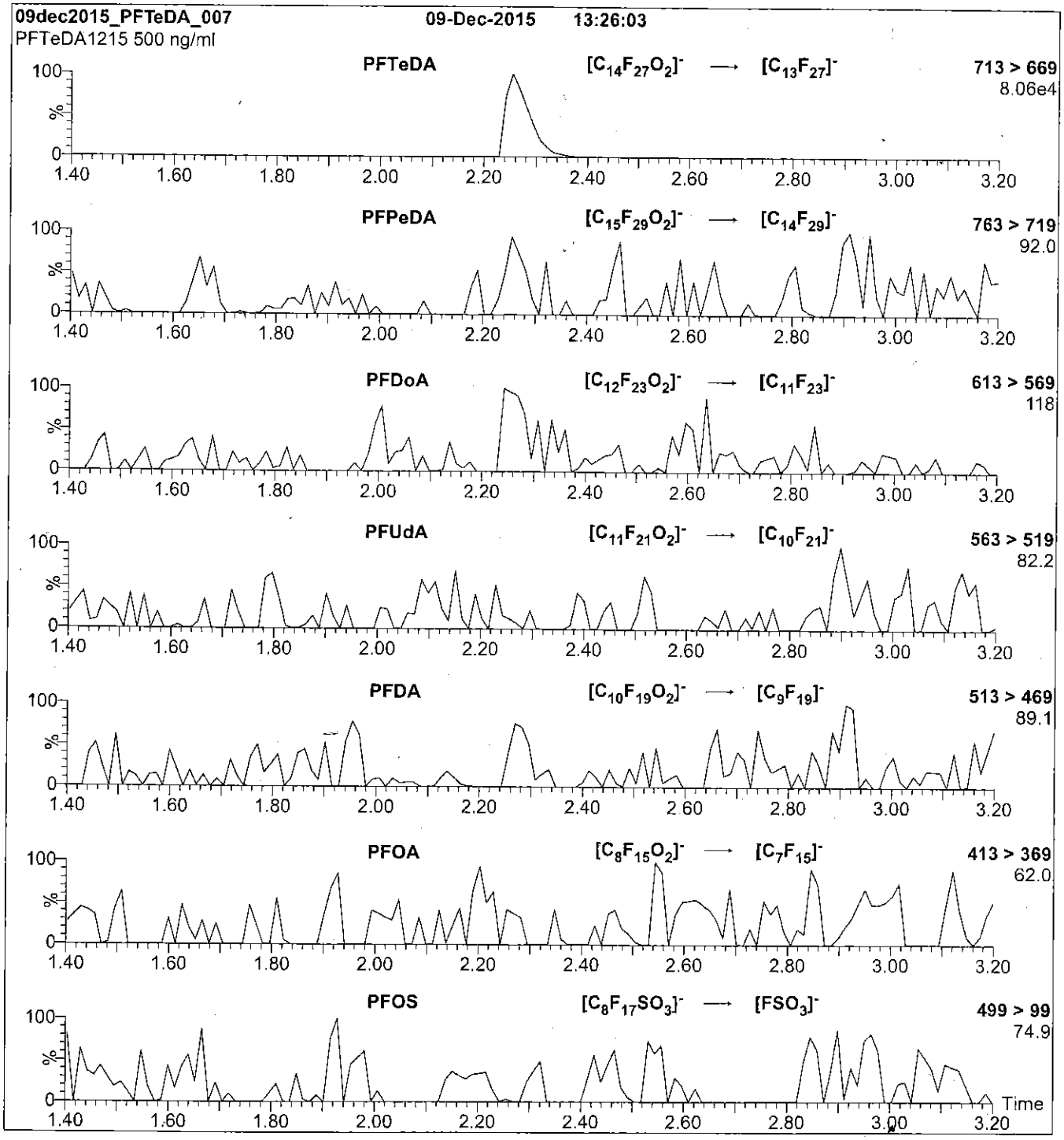
Flow: 300 µl/min

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

LCPFTeDA_00005

R: SBG 9/13/16

730645
ID: LCPFTeDA_00005
Exp: 12/09/20 Prpd: SBC
PF-n-tetradecanoic acid

730659
ID: LCPFTeDA_00006
Exp: 12/09/20 Prpd: SBC
PF-n-tetradecanoic acid

WELLINGTON LABORATORIES

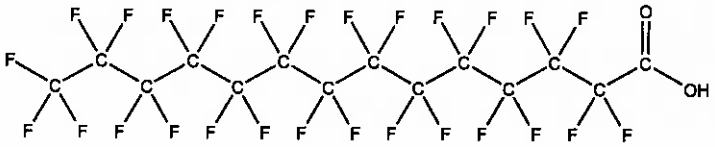
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA
COMPOUND: Perfluoro-n-tetradecanoic acid

LOT NUMBER: PFTeDA1215

STRUCTURE:

CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 714.11
SOLVENT(S): Methanol
Water (<1%)

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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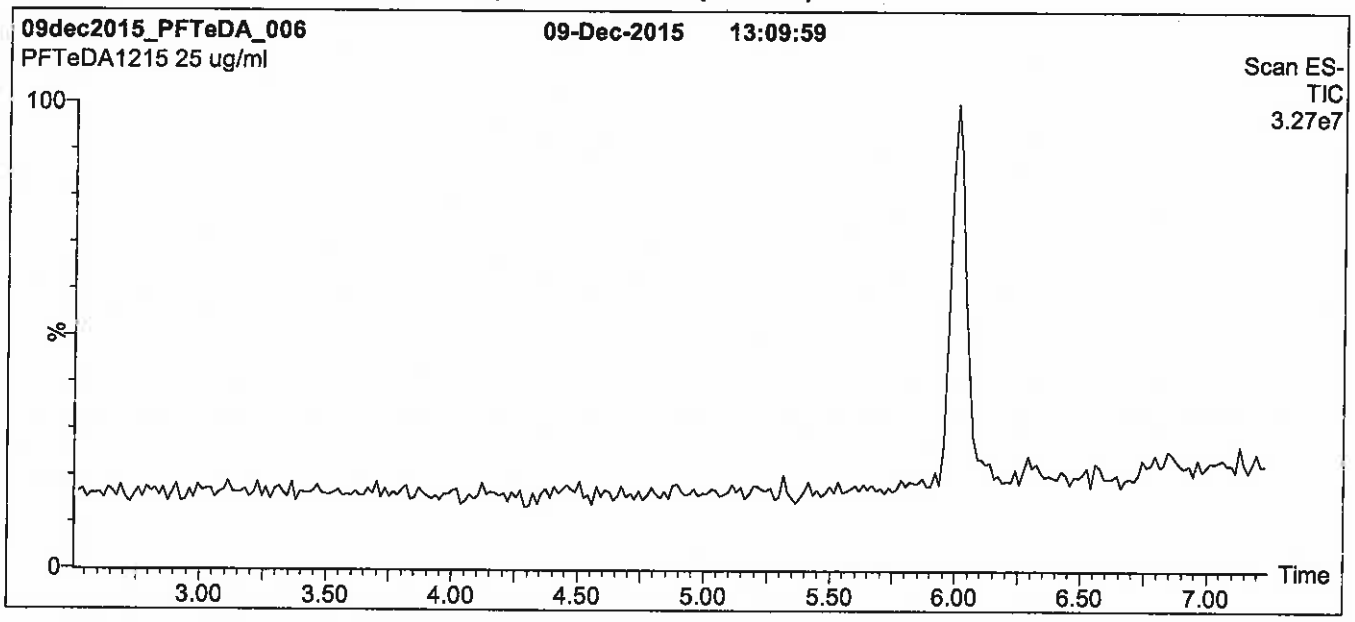
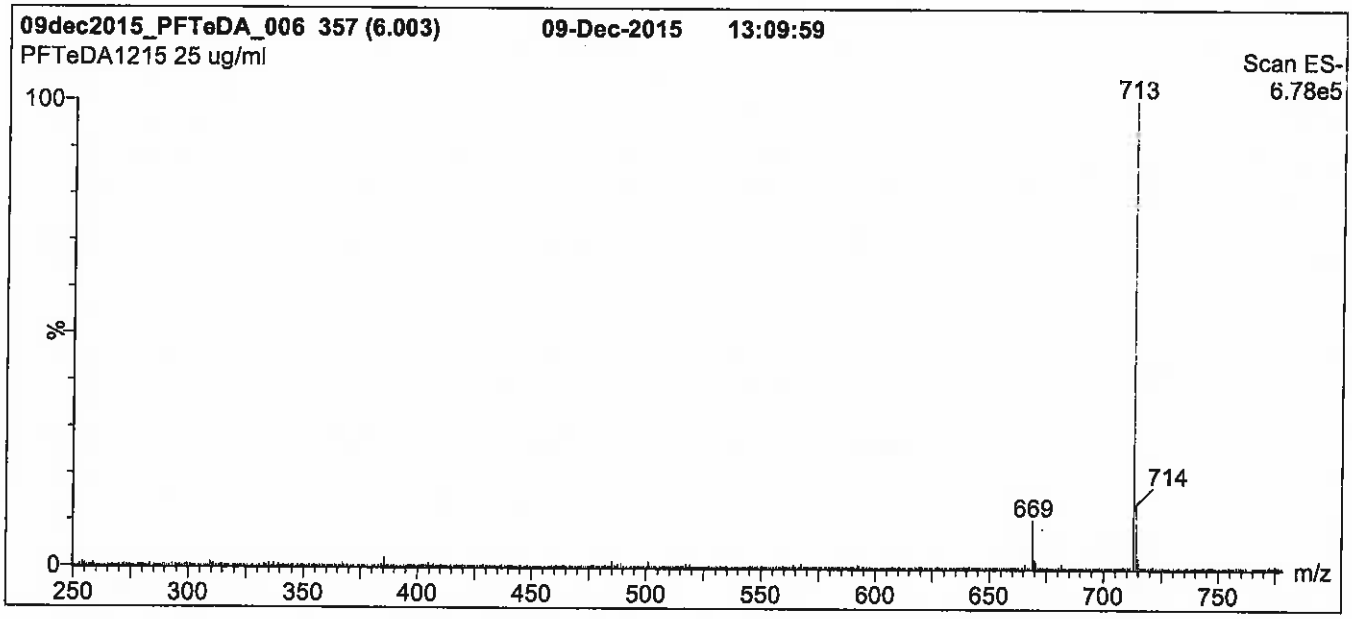
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

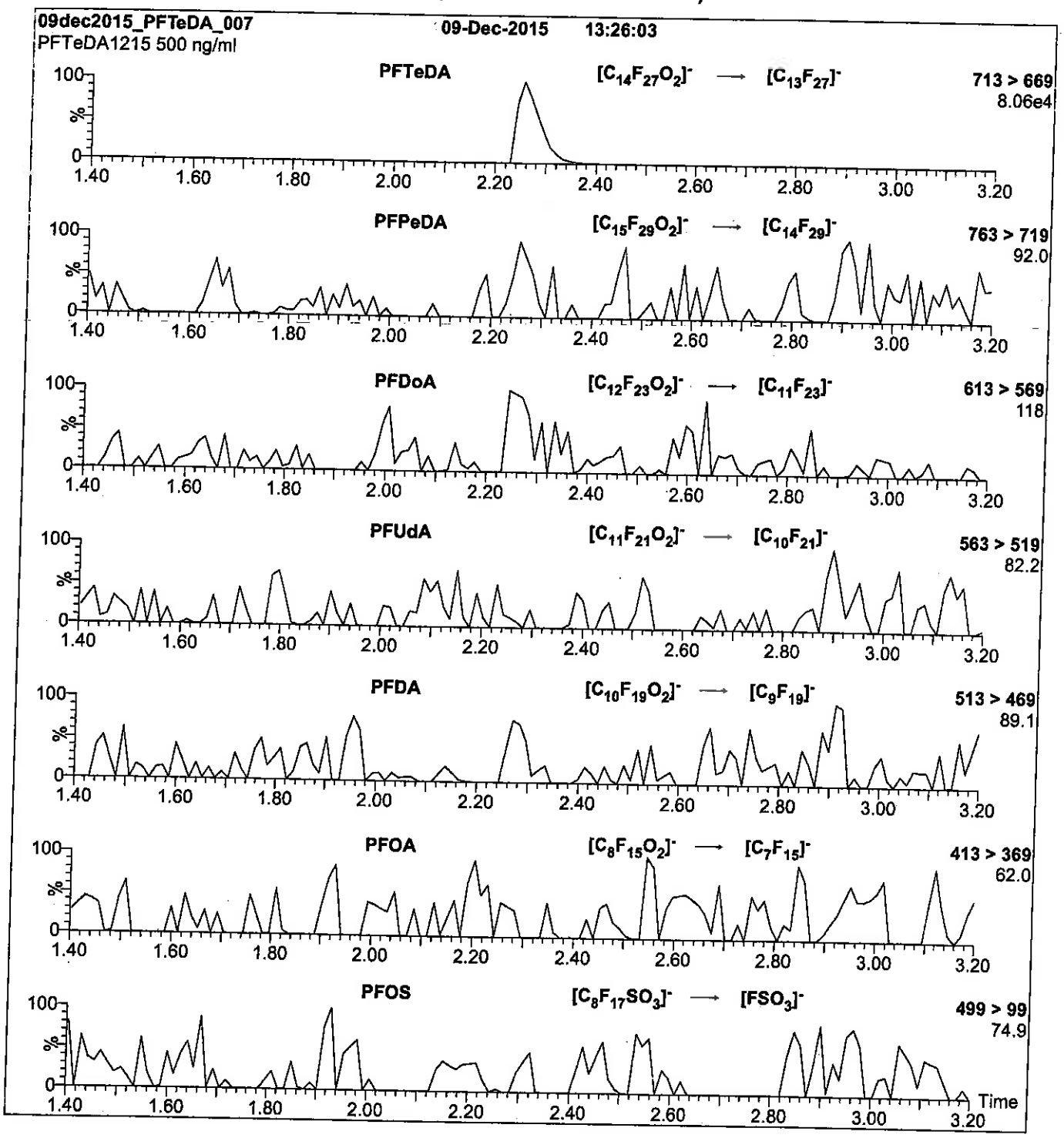
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFTrDA_00004

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

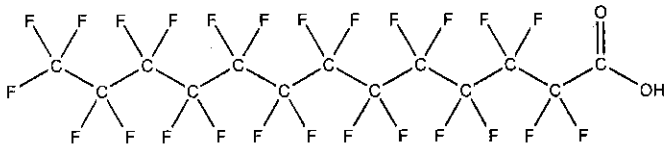
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 72629-94-8



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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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CALA Member Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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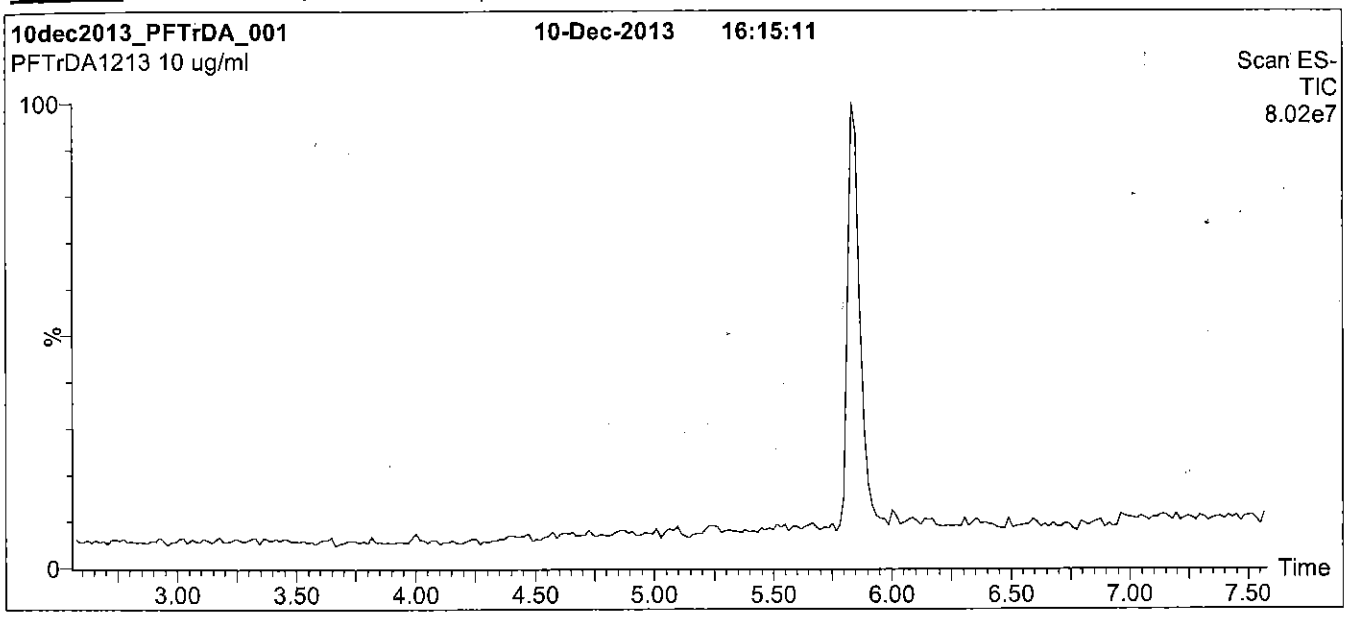
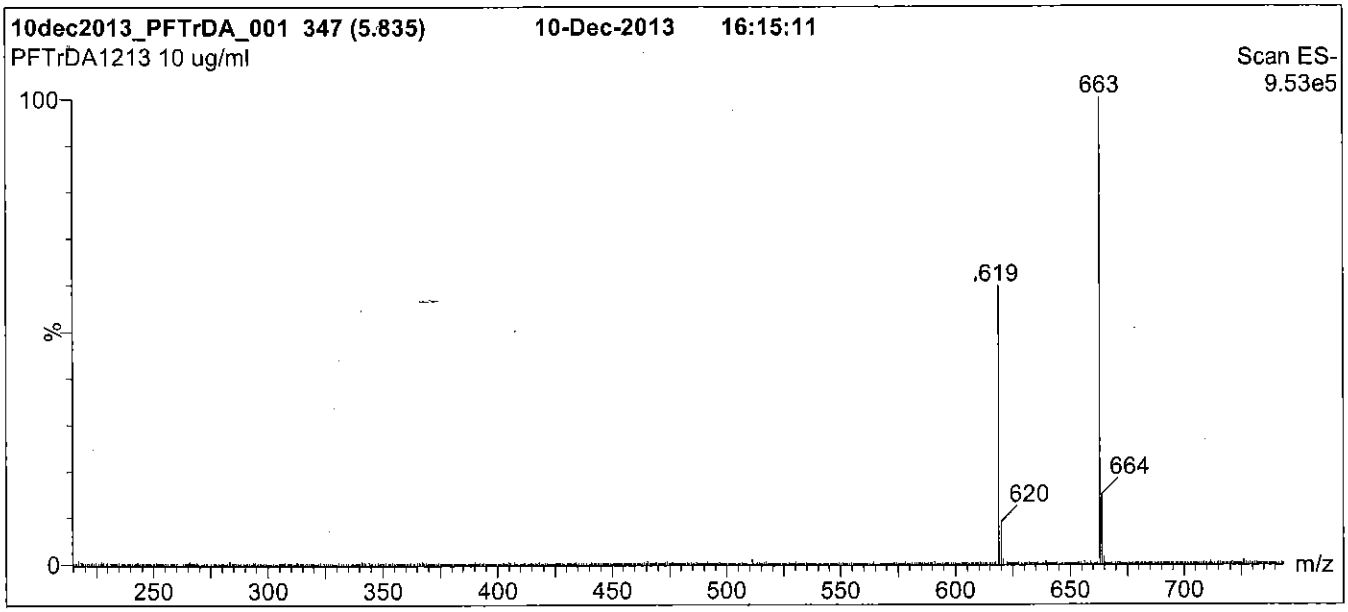
Figure 1: **PFTrDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

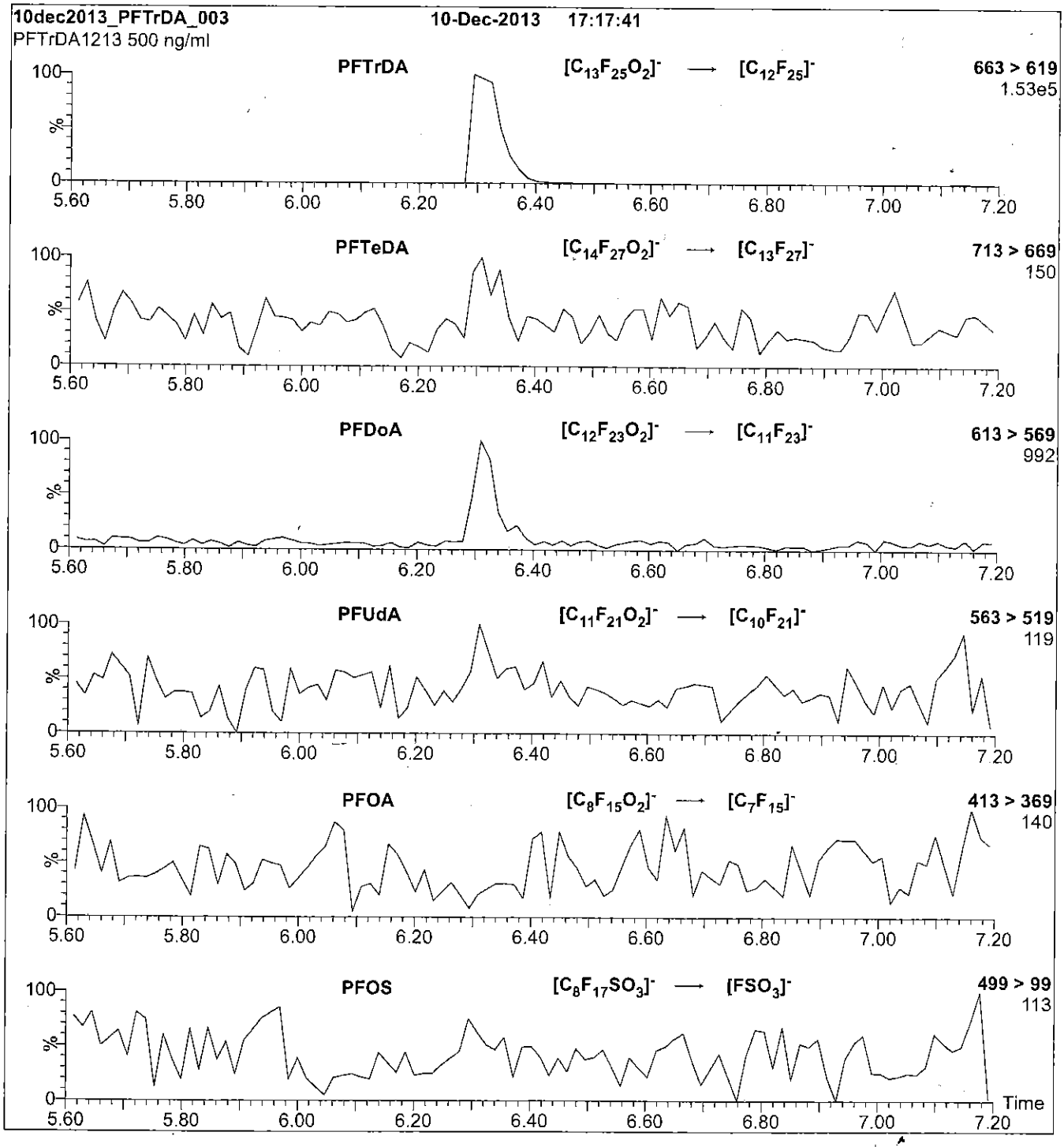
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFTrDA_00005

R: SBC 9/13/16

730665
ID: LCPFTrDA_00005
Exp: 02/12/21 Prpd: SBC
PF-n-tridecanoic acid

730666
ID: LCPFTrDA_00006
Exp: 02/12/21 Prpd: SBC
PF-n-tridecanoic acid

WELLINGTON LABORATORIES

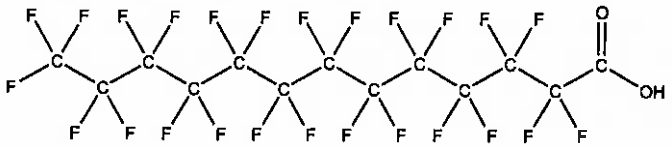
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid

LOT NUMBER: PFTrDA0216

STRUCTURE:

CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 664.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 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:** 02/16/2016 (mm/dd/yyyy)

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

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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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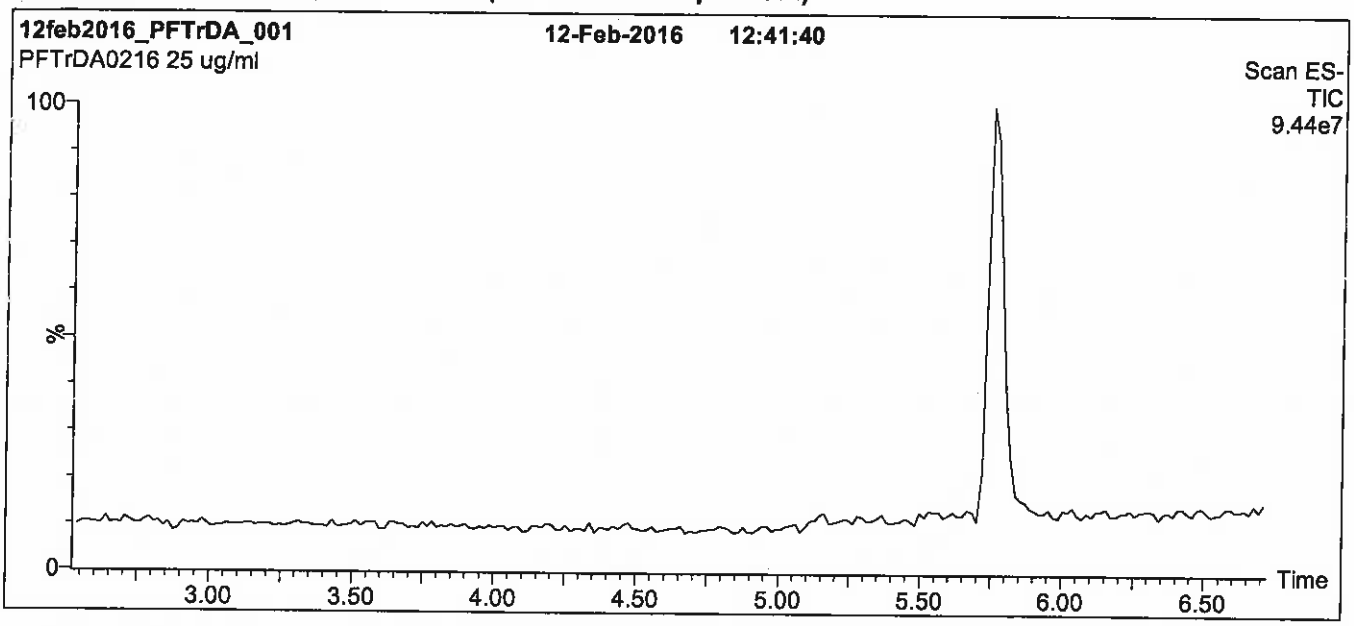

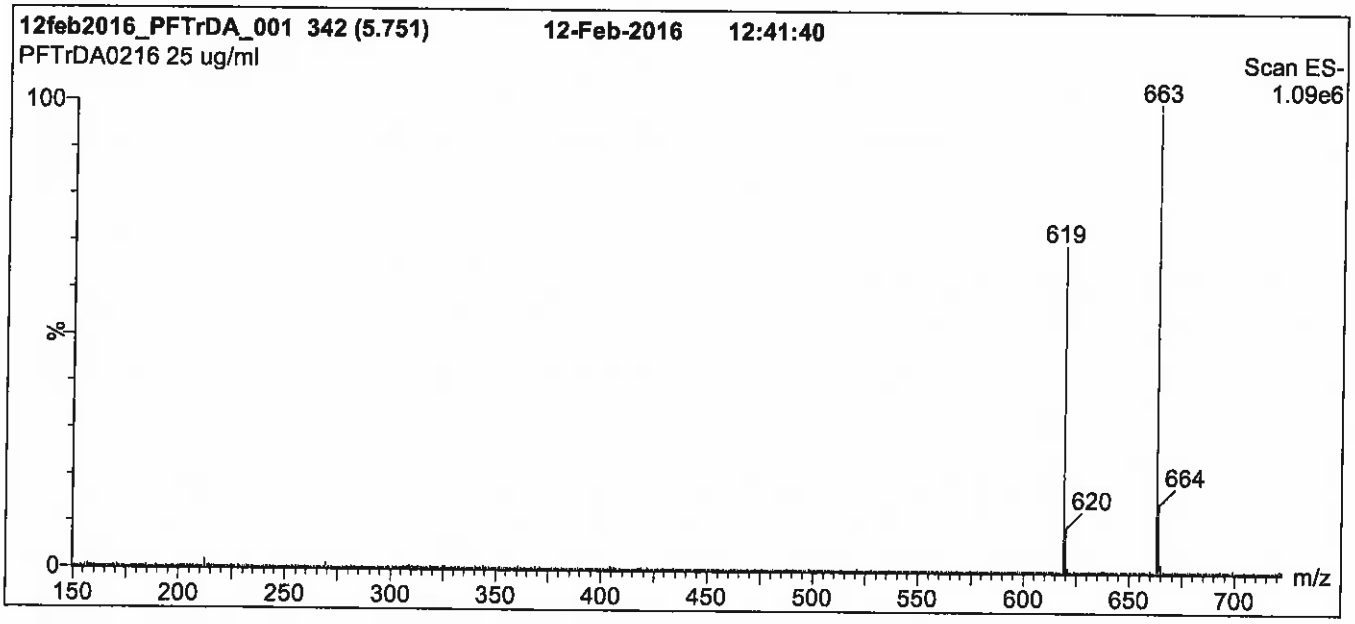

Conditions for Figure 1:

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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: 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
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Cone Gas Flow (l/hr) = 60
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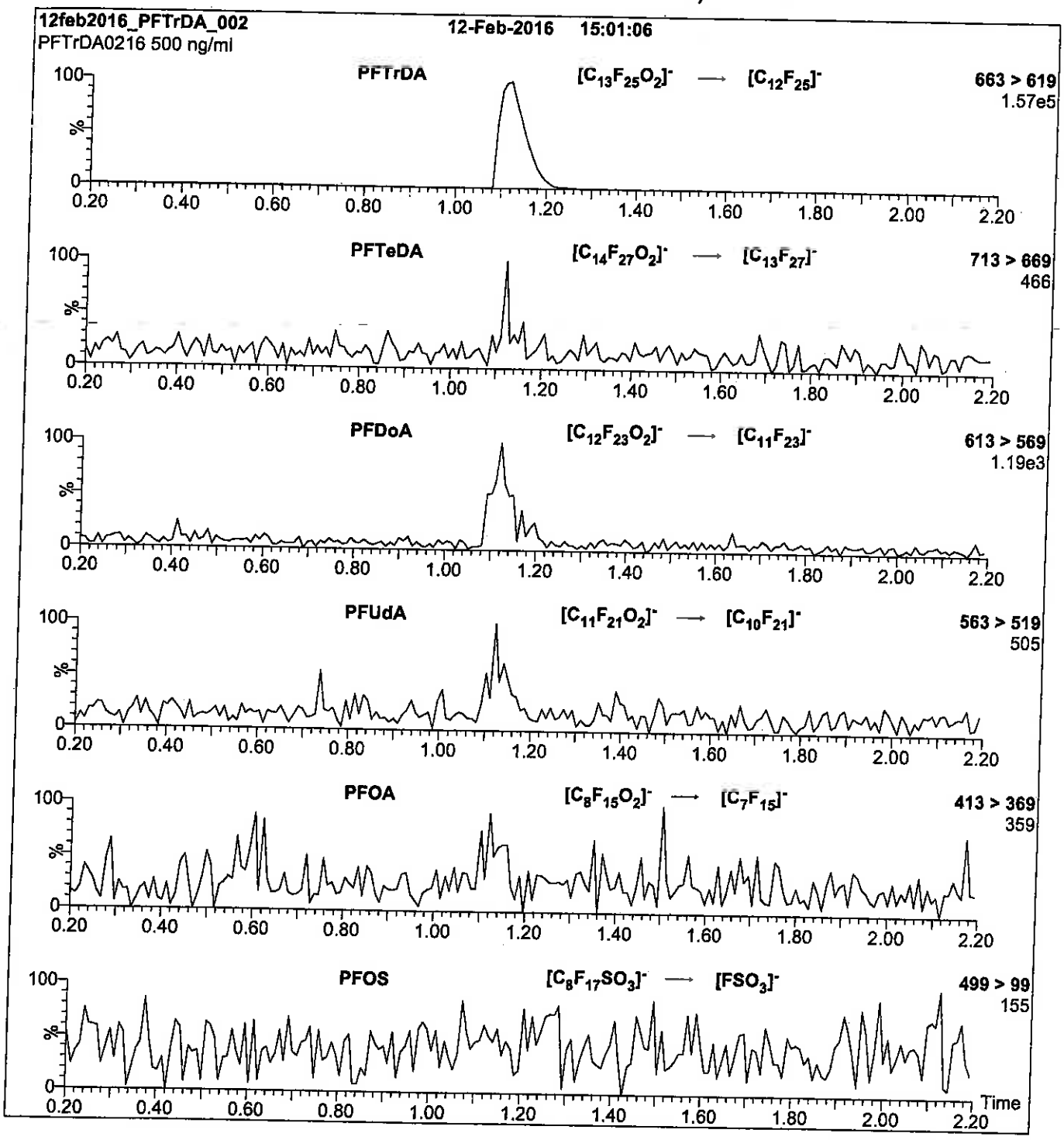
Figure 2: **PFTrDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00004

Rec. 3/29/16 JRB ✓

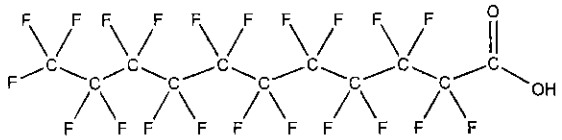
605242
ID: LCPFUdA_00004
Exp: 08/19/20 Prpd: CBW
PF-n-undecanoic acid

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:

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

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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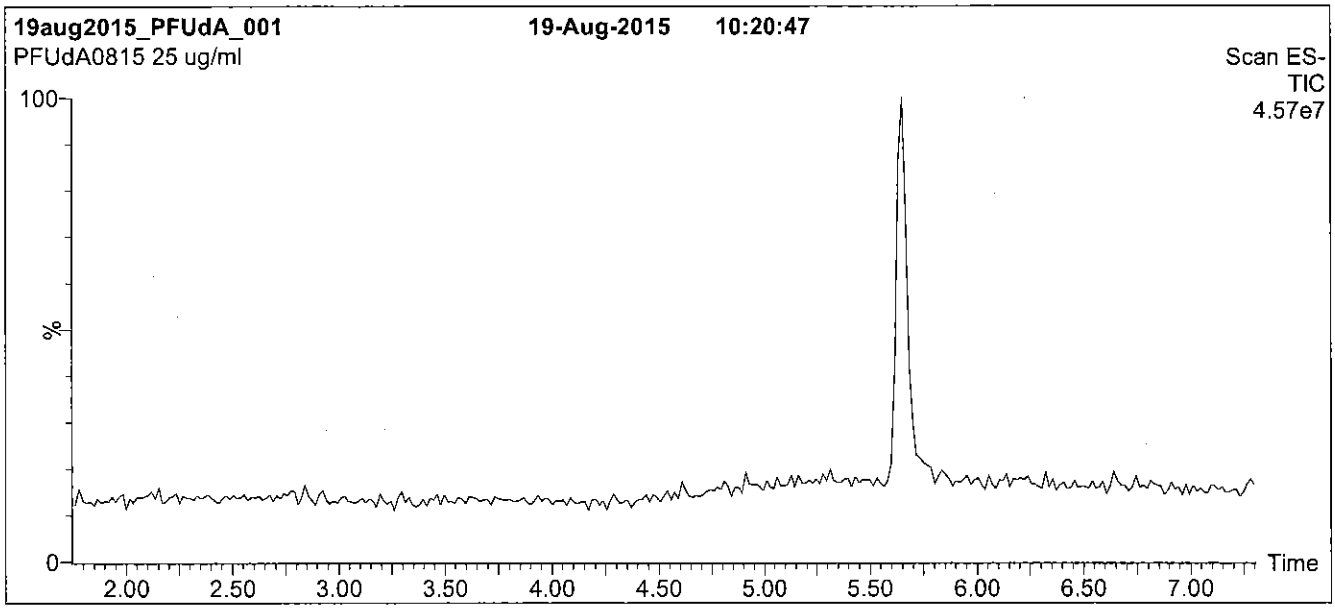
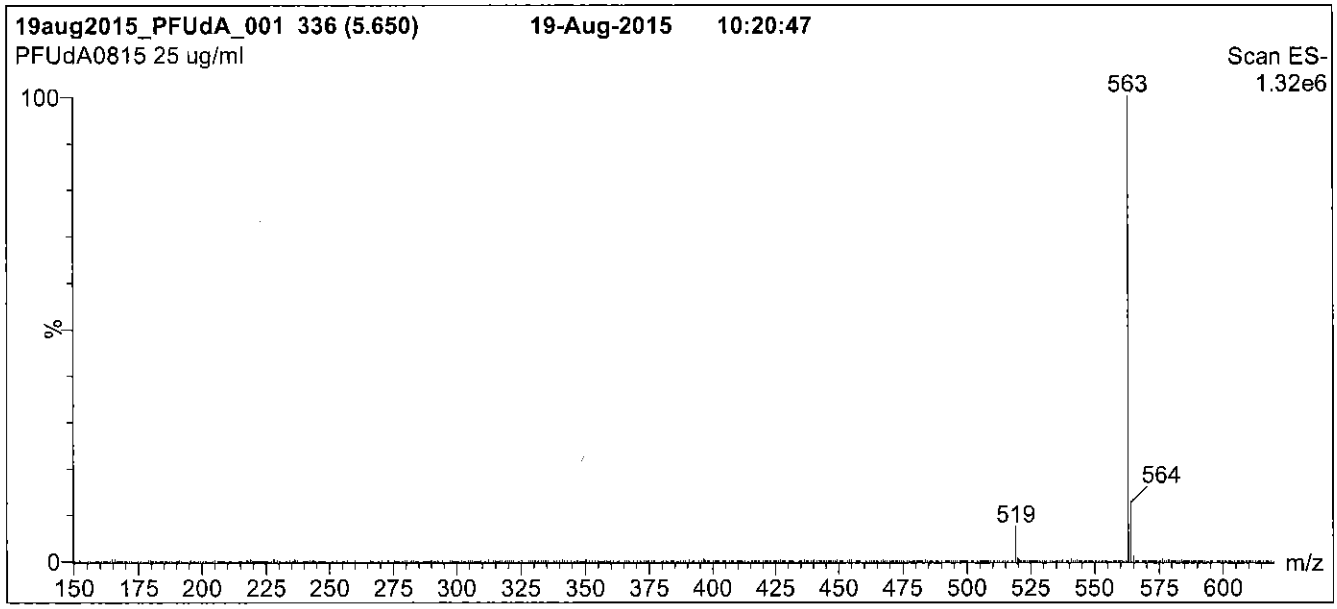
Figure 1: **PFUdA; LC/MS Data (TIC and Mass Spectrum)**





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

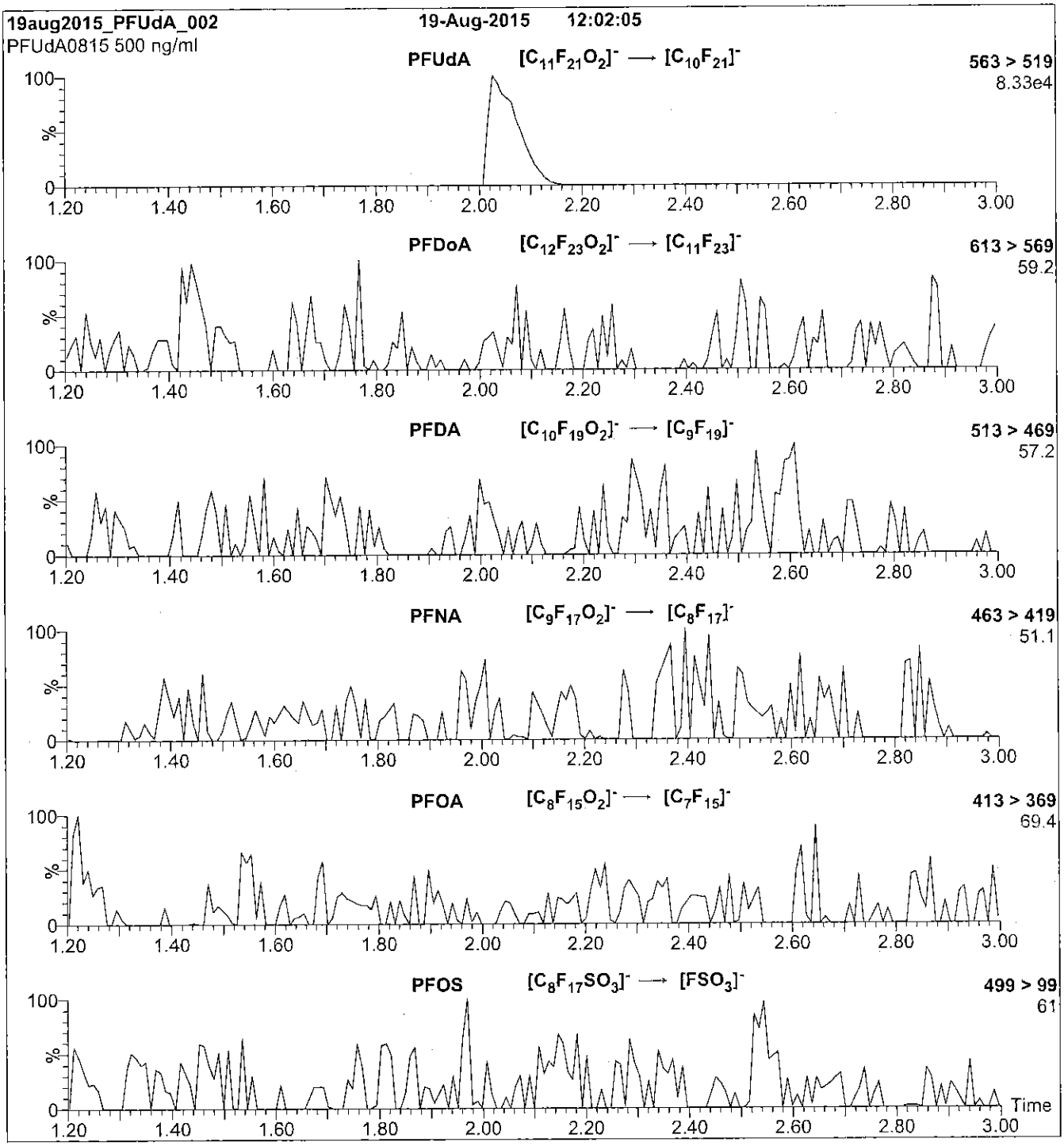
Flow: 300 µl/min

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

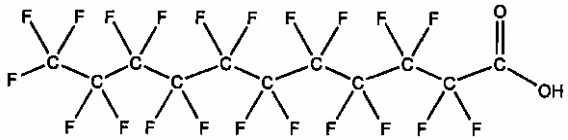
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:

CAS #: 2058-94-8



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LAST TESTED: (mm/dd/yyyy) 08/19/2015
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CALA

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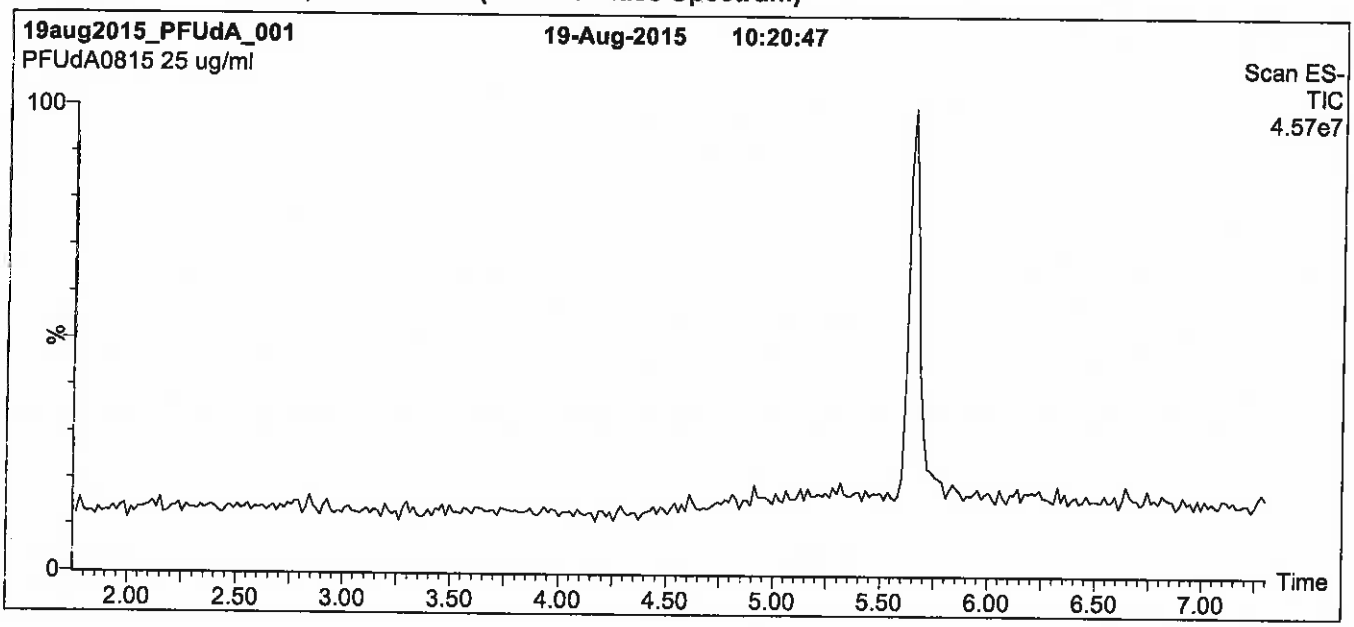

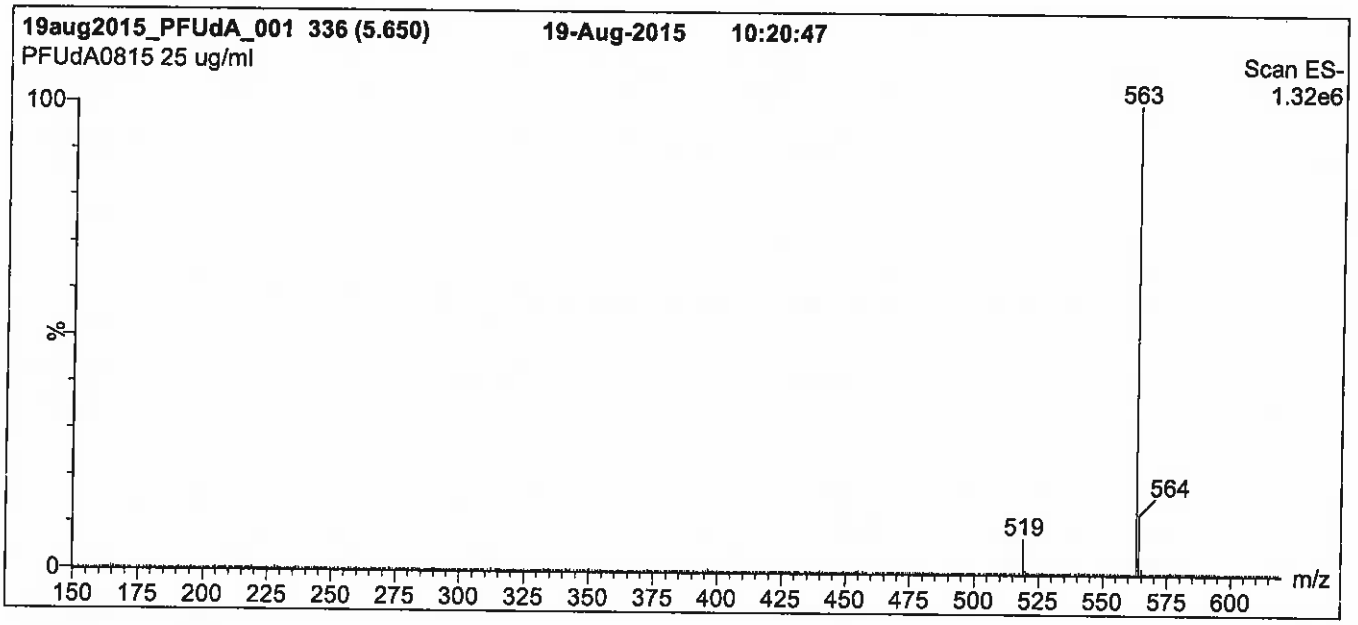

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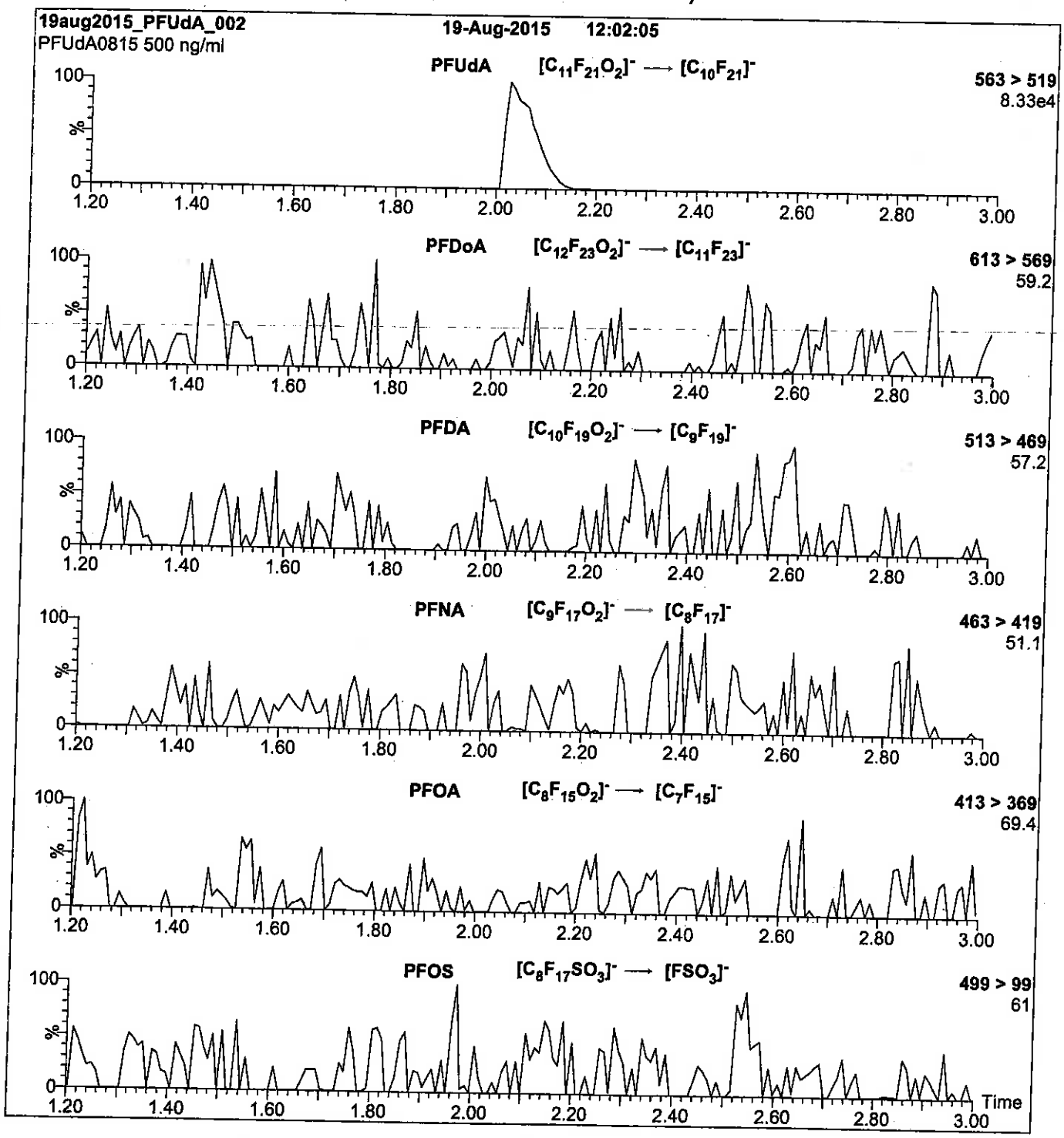
Experiment: Full Scan (150 - 850 amu)

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.: 320-23890-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxS	#	PFOA	#	PFOS	#
DPT-16-30-GW-31-35	320-23890-1	34		65		33	
DPT-16-30-GW-31-35 DL	320-23890-1 DL	149		163	Q	145	
DPT-16-30-GW-18-22	320-23890-2	41		62		48	
DPT-16-32-GW-19-23	320-23890-3	44		71		33	M
DPT-16-32-GW-31-35	320-23890-4	64		65		70	
DPT-16-21-GW-19-23	320-23890-5	16	Q	24	Q	34	
DPT-16-21-GW-19-23 DL	320-23890-5 DL	111		118		134	
DPT-16-21-GW-31-35	320-23890-6	63		70		64	
DPT-16-31-GW-19-23	320-23890-7	15	Q	18	Q	17	Q
DPT-16-31-GW-19-23 DL	320-23890-7 DL	154	Q	139		143	
DPT-16-31-GW-31-35	320-23890-8	72		67		73	
DPT-16-13-GW-31-35	320-23890-9	67		74		92	
DPT-16-13-GW-18-22	320-23890-10	21	Q	34		30	
DPT-16-13-GW-18-22 DL	320-23890-10 DL	123		121		128	
	MB 320-140271/1-A	117		123		115	
	LCS 320-140271/2-A	109		112		109	
	LCSD 320-140271/3-A	114		116		115	

	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.: 320-23890-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
DPT-16-30-GW-18-22 DL	320-23890-2 DL	98	93
DPT-16-32-GW-19-23 DL	320-23890-3 DL	107	86
DPT-16-32-GW-31-35 DL	320-23890-4 DL	85	99
DPT-16-21-GW-31-35 DL	320-23890-6 DL	88	99
DPT-16-31-GW-31-35 DL	320-23890-8 DL	88	101
DPT-16-13-GW-31-35 DL	320-23890-9 DL	82	93

	QC LIMITS
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.: 320-23890-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 14DEC2016C_006.d

Lab ID: LCS 320-140271/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	0.0384	96	60-140	
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0355	96	60-140	
13C4 PFOA	0.100	0.112	112	25-150	
13C4 PFOS	0.0956	0.104	109	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0373	106	50-150	
18O2 PFHxS	0.0946	0.103	109	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.: 320-23890-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 14DEC2016C_007.d

Lab ID: LCSD 320-140271/3-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	0.0374	93	3	30	60-140	
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0341	92	4	30	60-140	
13C4 PFOA	0.100	0.116	116			25-150	
13C4 PFOS	0.0956	0.110	115			25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0367	104	2	30	50-150	
18O2 PFHxS	0.0946	0.108	114			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.: 320-23890-1

SDG No.:

Lab File ID: 14DEC2016C_005.d Lab Sample ID: MB 320-140271/1-A

Matrix: Water Date Extracted: 12/01/2016 19:42

Instrument ID: A8_N Date Analyzed: 12/14/2016 17:38

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-140271/2-A	14DEC2016C_006.d	12/14/2016 17:46
	LCSD 320-140271/3-A	14DEC2016C_007.d	12/14/2016 17:53
DPT-16-30-GW-31-35	320-23890-1	14DEC2016C_008.d	12/14/2016 18:01
DPT-16-30-GW-18-22	320-23890-2	14DEC2016C_009.d	12/14/2016 18:08
DPT-16-32-GW-19-23	320-23890-3	14DEC2016C_010.d	12/14/2016 18:16
DPT-16-32-GW-31-35	320-23890-4	14DEC2016C_011.d	12/14/2016 18:23
DPT-16-21-GW-19-23	320-23890-5	14DEC2016C_012.d	12/14/2016 18:31
DPT-16-21-GW-31-35	320-23890-6	14DEC2016C_013.d	12/14/2016 18:38
DPT-16-31-GW-19-23	320-23890-7	14DEC2016C_018.d	12/14/2016 19:16
DPT-16-31-GW-31-35	320-23890-8	14DEC2016C_019.d	12/14/2016 19:23
DPT-16-13-GW-31-35	320-23890-9	14DEC2016C_020.d	12/14/2016 19:31
DPT-16-13-GW-18-22	320-23890-10	14DEC2016C_021.d	12/14/2016 19:38
DPT-16-30-GW-18-22 DL	320-23890-2 DL	16DEC2016B_002.d	12/16/2016 12:52
DPT-16-32-GW-19-23 DL	320-23890-3 DL	16DEC2016B_003.d	12/16/2016 13:00
DPT-16-32-GW-31-35 DL	320-23890-4 DL	16DEC2016B_004.d	12/16/2016 13:07
DPT-16-21-GW-31-35 DL	320-23890-6 DL	16DEC2016B_006.d	12/16/2016 13:22
DPT-16-31-GW-31-35 DL	320-23890-8 DL	16DEC2016B_008.d	12/16/2016 13:37
DPT-16-13-GW-31-35 DL	320-23890-9 DL	16DEC2016B_009.d	12/16/2016 13:45
DPT-16-31-GW-19-23 DL	320-23890-7 DL	18DEC2016B_005.d	12/18/2016 23:19
DPT-16-30-GW-31-35 DL	320-23890-1 DL	18DEC2016B_006.d	12/18/2016 23:26
DPT-16-21-GW-19-23 DL	320-23890-5 DL	18DEC2016B_007.d	12/18/2016 23:34
DPT-16-13-GW-18-22 DL	320-23890-10 DL	18DEC2016B_008.d	12/18/2016 23:41

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-30-GW-31-35 Lab Sample ID: 320-23890-1

Matrix: Water Lab File ID: 14DEC2016C_008.d

Analysis Method: 537 (Modified) Date Collected: 11/29/2016 09:40

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 248.5(mL) Date Analyzed: 12/14/2016 18:01

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.0*	*E M*	*0.0025*	0.0020	*0.00075*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*5.7*	*E*	*0.0040*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.31		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	65		25-150
STL00991	13C4 PFOS	33		25-150
STL00994	18O2 PFHxS	34		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_008.d
Lims ID: 320-23890-A-1-A
Client ID: DPT-16-30-GW-31-35
Sample Type: Client
Inject. Date: 14-Dec-2016 18:01:22 ALS Bottle#: 15 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:41:38

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	1.829	1.829	0.0	1.000	24835317	154.5				
298.90 > 99.00	1.829	1.829	0.0	1.000	11974816		2.07(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.413	2.424	-0.011		5070848	16.1		34.0	139373	
D 14 13C4 PFOA										
417.00 > 372.00	2.758	2.759	-0.001		6998139	32.6		65.2	326116	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.758	2.767	-0.009	1.000	73985867	510.6			1055724	EM
413.00 > 169.00	2.665	2.767	-0.102	0.966	60016329		1.23(0.90-1.10)		153340	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.101	3.135	-0.034	1.000	225697925	2824.0			118936	E
499.00 > 99.00	3.125	3.135	-0.010	1.008	83087548		2.72(0.90-1.10)		442502	
D 17 13C4 PFOS										
503.00 > 80.00	3.125	3.135	-0.010		3581713	15.7		32.8	65205	

QC Flag Legend

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

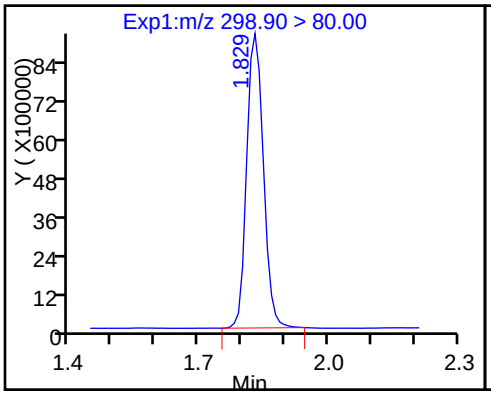
Report Date: 15-Dec-2016 14:55:05 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

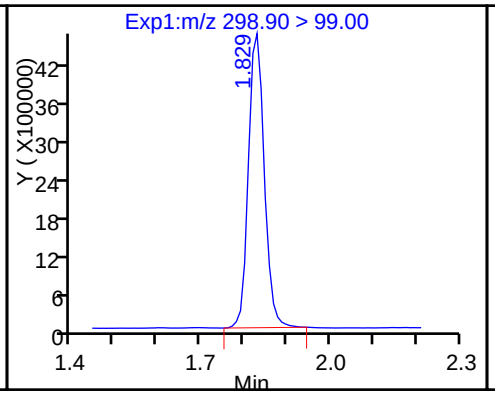
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_008.d

Injection Date:	14-Dec-2016 18:01:22	Instrument ID:	A8_N		
Lims ID:	320-23890-A-1-A	Lab Sample ID:	320-23890-1		
Client ID:	DPT-16-30-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	15	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

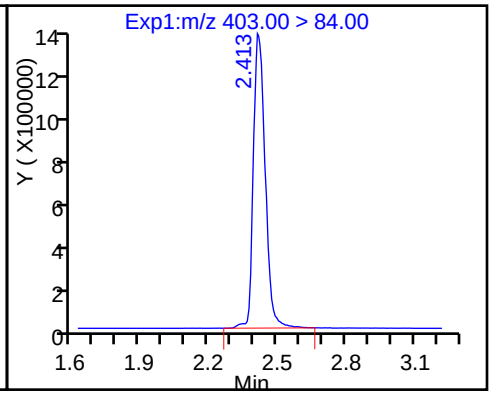
5 Perfluorobutanesulfonic acid



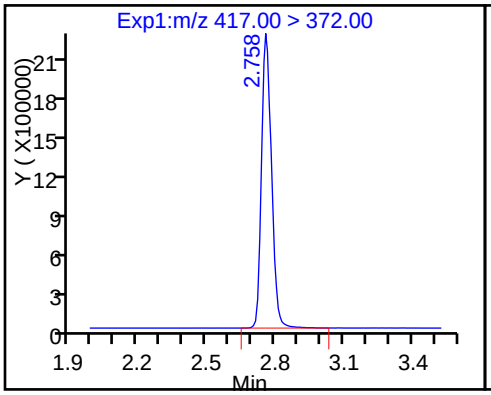
5 Perfluorobutanesulfonic acid



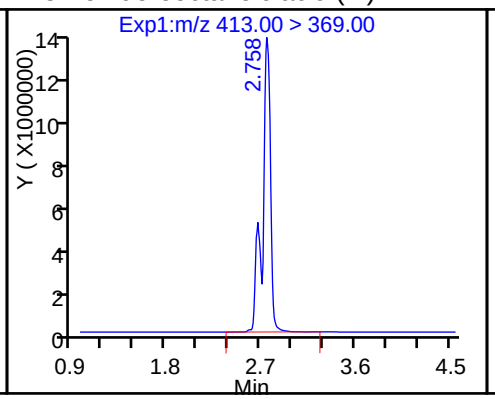
D 10 18O2 PFHxS



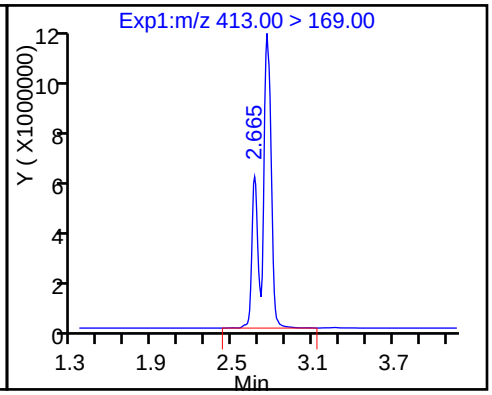
D 14 13C4 PFOA



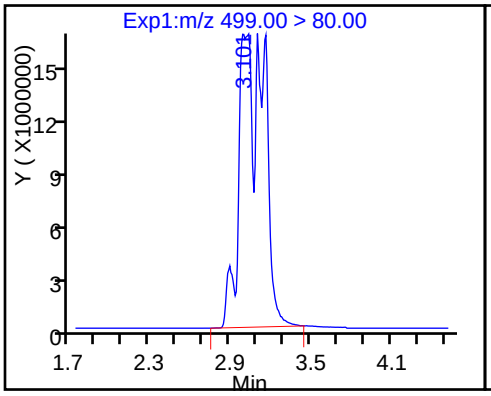
15 Perfluorooctanoic acid (M)



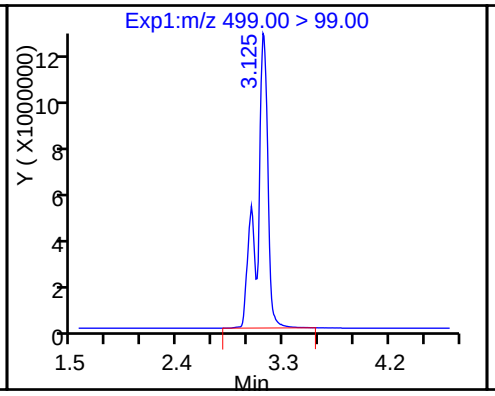
15 Perfluorooctanoic acid



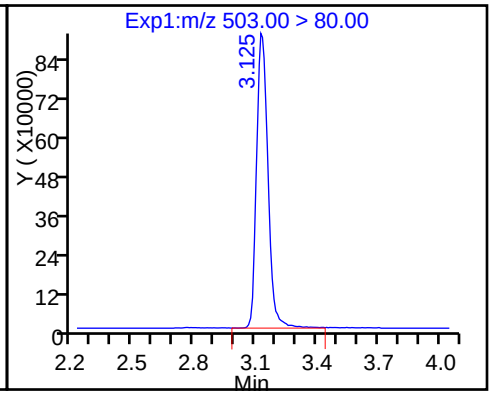
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

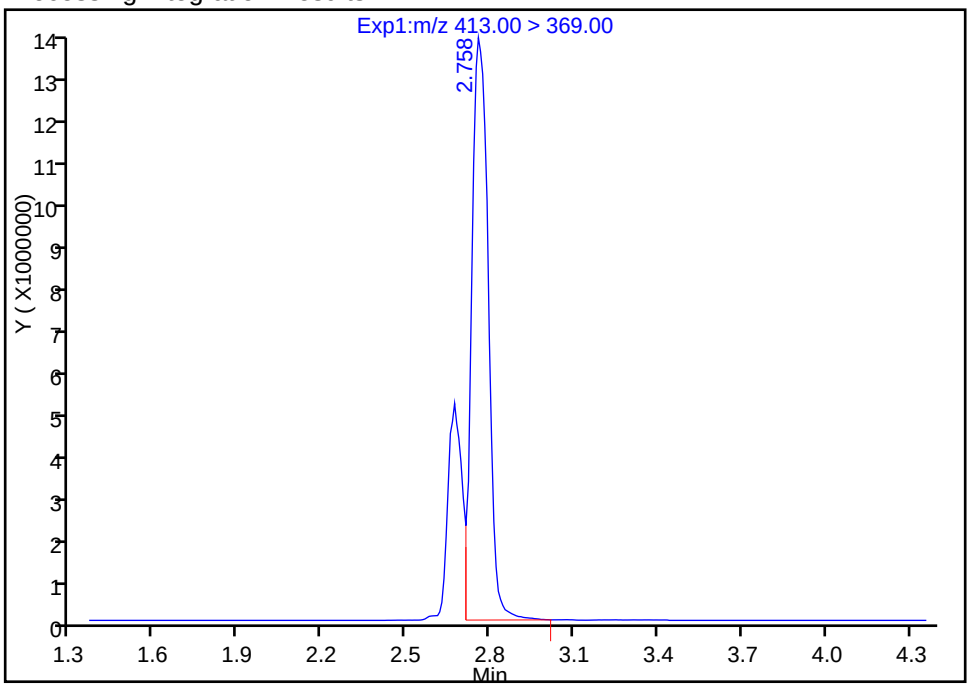
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_008.d				
Injection Date:	14-Dec-2016 18:01:22	Instrument ID:	A8_N		
Lims ID:	320-23890-A-1-A	Lab Sample ID:	320-23890-1		
Client ID:	DPT-16-30-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	15	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

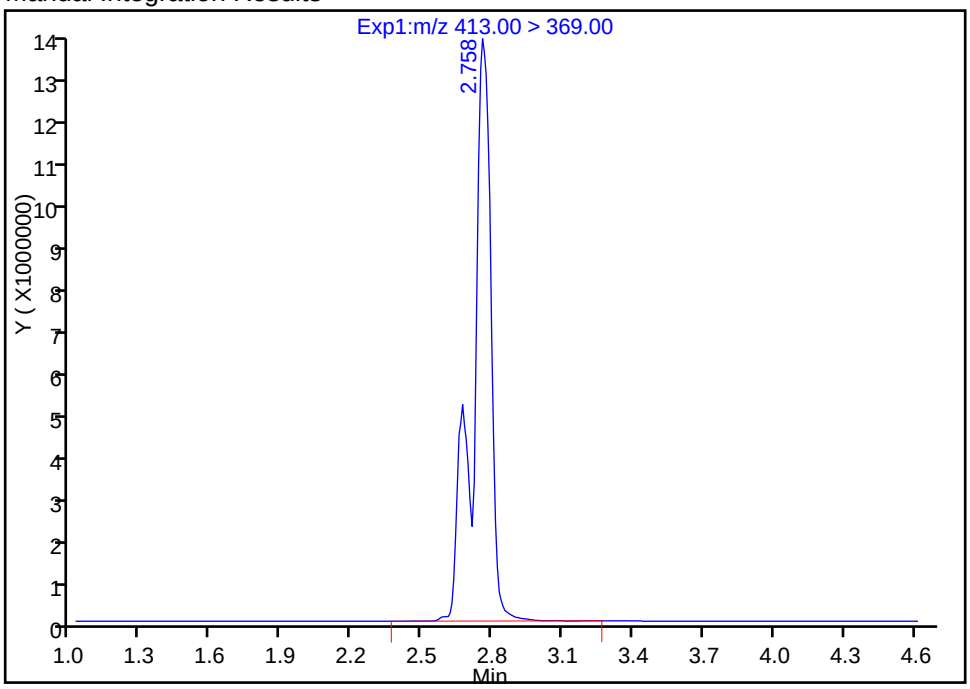
Processing Integration Results

RT: 2.76
Area: 56076854
Amount: 387.0260
Amount Units: ng/ml



Manual Integration Results

RT: 2.76
Area: 73985867
Amount: 510.6287
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:41:38

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-30-GW-31-35 DL Lab Sample ID: 320-23890-1 DL

Matrix: Water Lab File ID: 18DEC2016B_006.d

Analysis Method: 537 (Modified) Date Collected: 11/29/2016 09:40

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 248.5(mL) Date Analyzed: 12/18/2016 23:26

Con. Extract Vol.: 0.5(mL) Dilution Factor: 50

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

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

Analysis Batch No.: 142819 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.4	D	0.13	0.10	0.038
1763-23-1	Perfluorooctane Sulfonate (PFOS)	11	D	0.20	0.15	0.064
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.13*	*D*	*0.13*	0.10	*0.046*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	163	Q	25-150
STL00991	13C4 PFOS	145		25-150
STL00994	18O2 PFHxS	149		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_006.d
Lims ID: 320-23890-A-1-A
Client ID: DPT-16-30-GW-31-35
Sample Type: Client
Inject. Date: 18-Dec-2016 23:26:42 ALS Bottle#: 17 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 50.0000
Sample Info: 320-23890-a-1-a 50X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 19-Dec-2016 11:17:33 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 19-Dec-2016 11:14:33

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	1.973	1.983	-0.010	1.000	879595	1.27				
298.90 > 99.00	1.973	1.983	-0.010	1.000	364901		2.41(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.615	2.621	-0.006		462163	1.41		3.0	52115	
D 14 13C4 PFOA										
417.00 > 372.00	2.980	2.976	0.004		374612	1.63		3.3	64750	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.980	2.984	-0.004	1.000	5088749	13.5			11784	
413.00 > 169.00	2.984	2.984	0.0	1.002	0		0.00(0.90-1.10)			
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.227	3.244	-0.017	1.000	38069238	106.2			142296	
499.00 > 99.00	3.315	3.244	0.071	1.027	9041052		4.21(0.90-1.10)		128925	
D 17 13C4 PFOS										
503.00 > 80.00	3.353	3.361	-0.008		344706	1.39		2.9	21761	

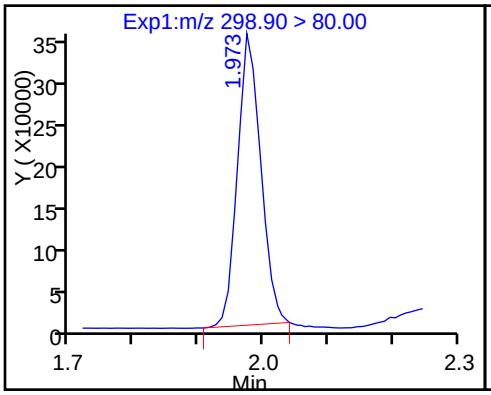
Report Date: 19-Dec-2016 11:17:44 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

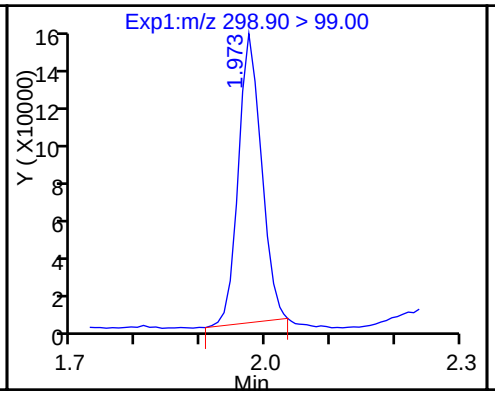
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_006.d

Injection Date:	18-Dec-2016 23:26:42	Instrument ID:	A8_N		
Lims ID:	320-23890-A-1-A	Lab Sample ID:	320-23890-1		
Client ID:	DPT-16-30-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	17	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	50.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

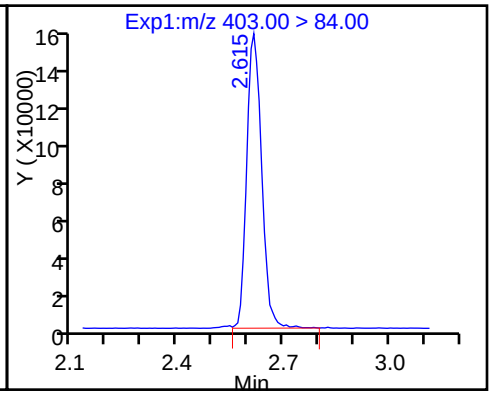
5 Perfluorobutanesulfonic acid



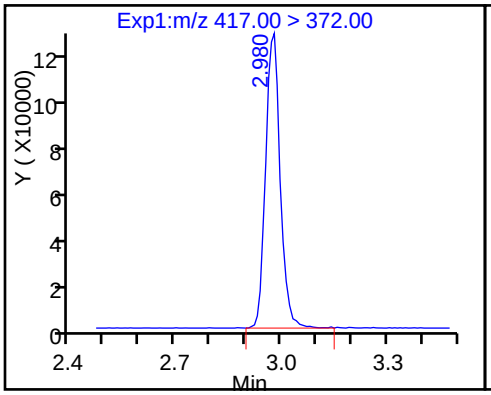
5 Perfluorobutanesulfonic acid



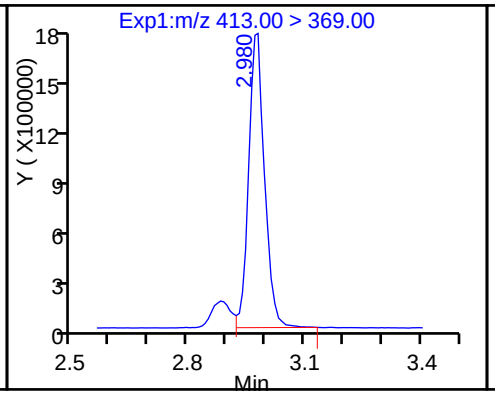
D 10 18O2 PFHxS



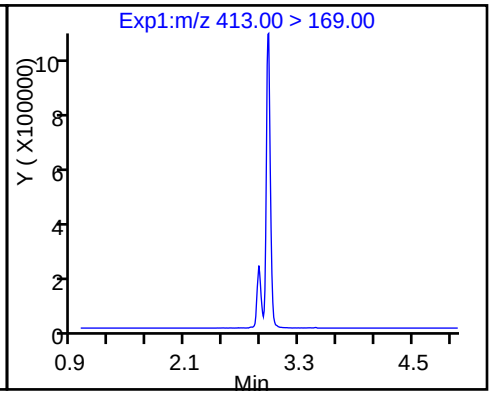
D 14 13C4 PFOA



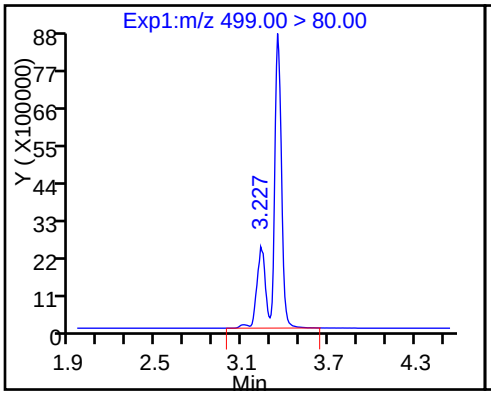
15 Perfluorooctanoic acid



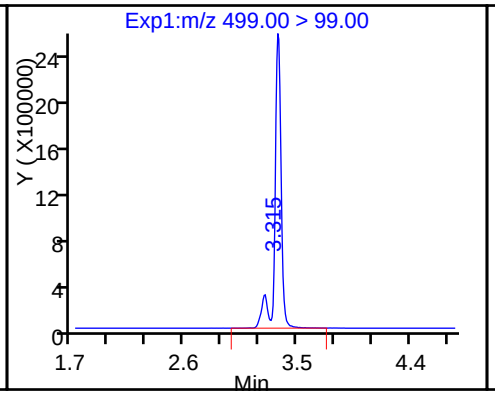
15 Perfluorooctanoic acid



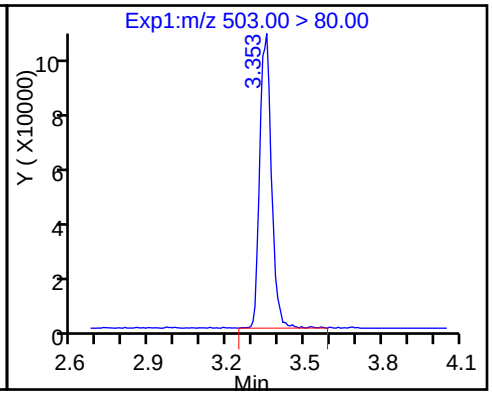
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-30-GW-18-22 Lab Sample ID: 320-23890-2

Matrix: Water Lab File ID: 14DEC2016C_009.d

Analysis Method: 537 (Modified) Date Collected: 11/29/2016 10:00

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 241.5(mL) Date Analyzed: 12/14/2016 18:08

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.98*	*E M*	*0.0026*	0.0021	*0.00077*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*4.0*	*E*	*0.0041*	0.0031	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.21		0.0026	0.0021	0.00095

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	62		25-150
STL00991	13C4 PFOS	48		25-150
STL00994	18O2 PFHxS	41		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_009.d
Lims ID: 320-23890-A-2-A
Client ID: DPT-16-30-GW-18-22
Sample Type: Client
Inject. Date: 14-Dec-2016 18:08:51 ALS Bottle#: 16 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:42:00

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	1.832	1.829	0.003	1.000	19700073	101.0				
298.90 > 99.00	1.832	1.829	0.003	1.000	9047220		2.18(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.429	2.424	0.005		6154487	19.5		41.3	329133	
D 14 13C4 PFOA										
417.00 > 372.00	2.774	2.759	0.015		6653959	31.0		62.0	260978	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.766	2.767	-0.001	1.000	65305015	474.0			0.0	EM
413.00 > 169.00	2.672	2.767	-0.095	0.966	50427209		1.30(0.90-1.10)		159852	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.000	3.135	-0.135	1.000	227206523	1952.3			191321	E
499.00 > 99.00	3.118	3.135	-0.017	1.039	65904679		3.45(0.90-1.10)		332813	
D 17 13C4 PFOS										
503.00 > 80.00	3.142	3.135	0.007		5215475	22.8		47.7	101348	

QC Flag Legend

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

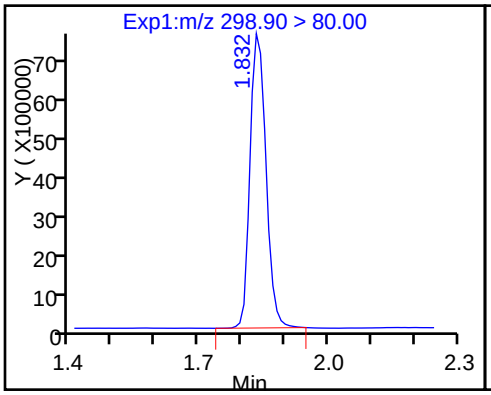
Report Date: 15-Dec-2016 14:55:06 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

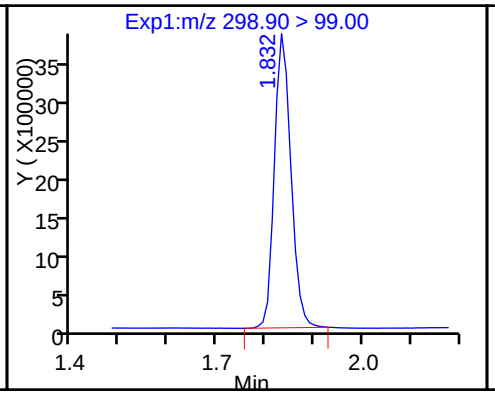
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_009.d

Injection Date:	14-Dec-2016 18:08:51	Instrument ID:	A8_N		
Lims ID:	320-23890-A-2-A	Lab Sample ID:	320-23890-2		
Client ID:	DPT-16-30-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	16	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

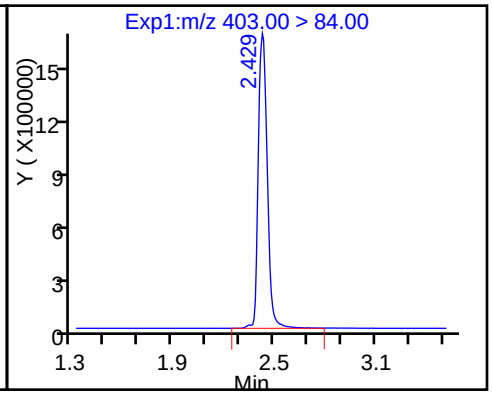
5 Perfluorobutanesulfonic acid



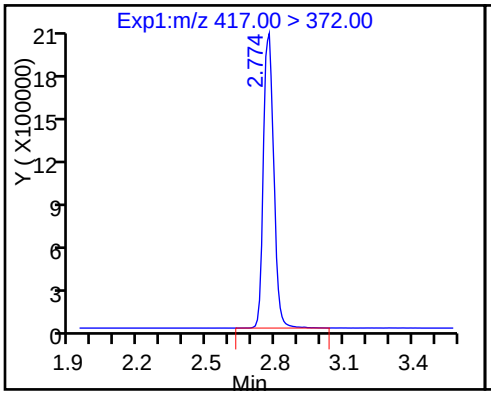
5 Perfluorobutanesulfonic acid



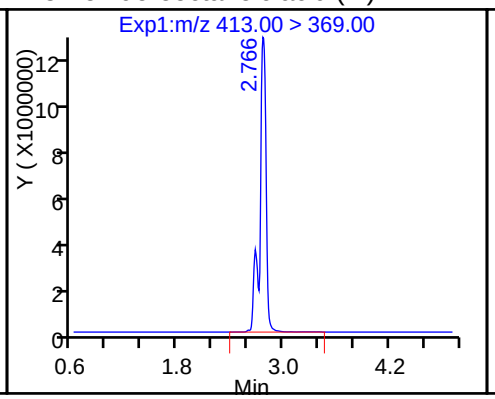
D 10 18O2 PFHxS



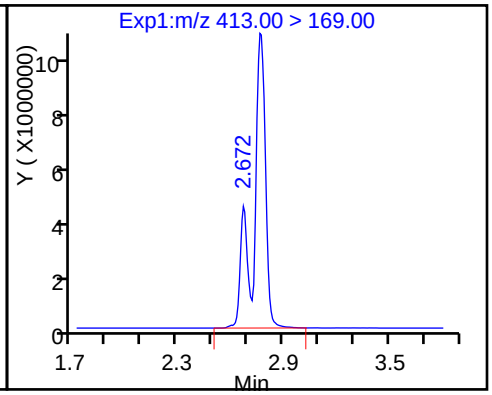
D 14 13C4 PFOA



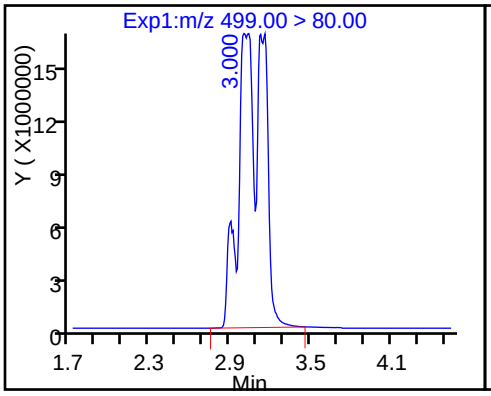
15 Perfluorooctanoic acid (M)



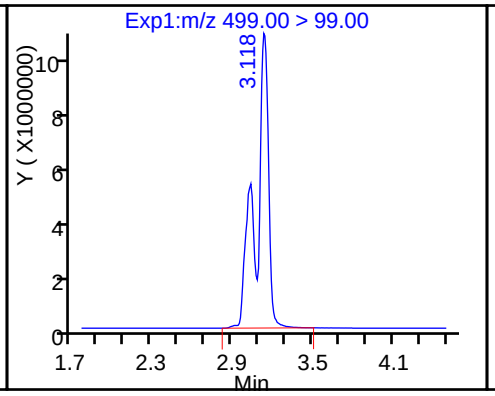
15 Perfluorooctanoic acid



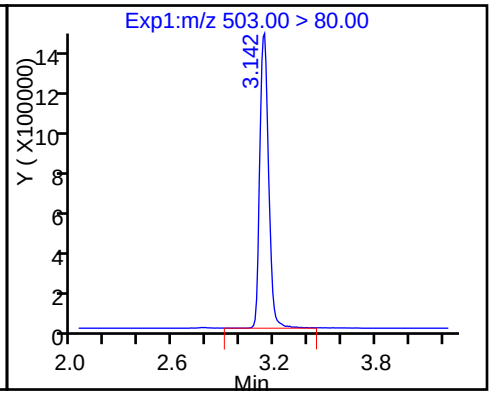
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

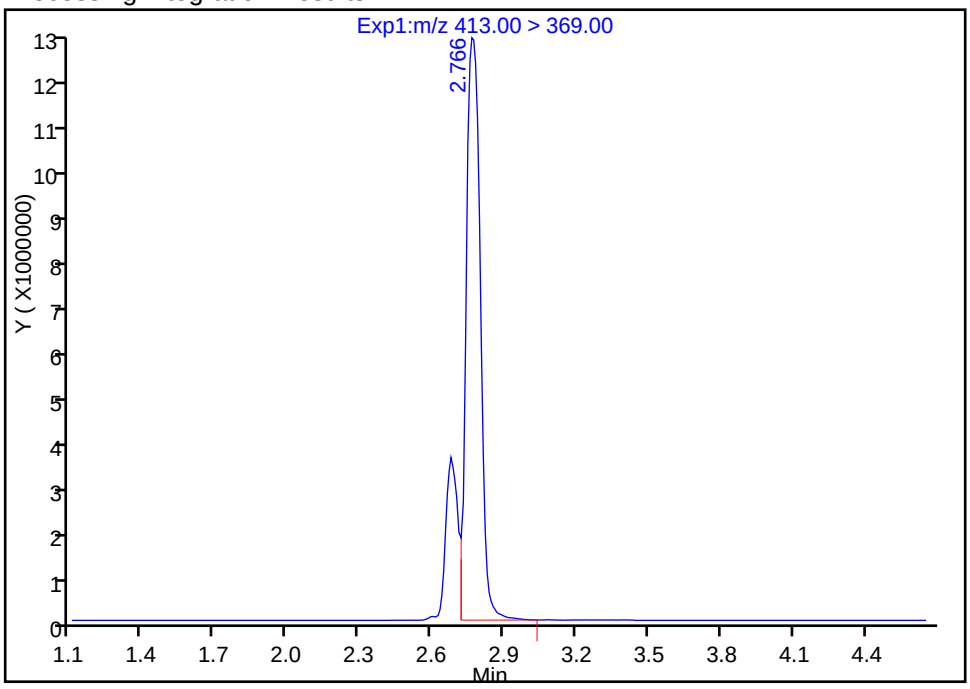
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_009.d				
Injection Date:	14-Dec-2016 18:08:51	Instrument ID:	A8_N		
Lims ID:	320-23890-A-2-A	Lab Sample ID:	320-23890-2		
Client ID:	DPT-16-30-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	16	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

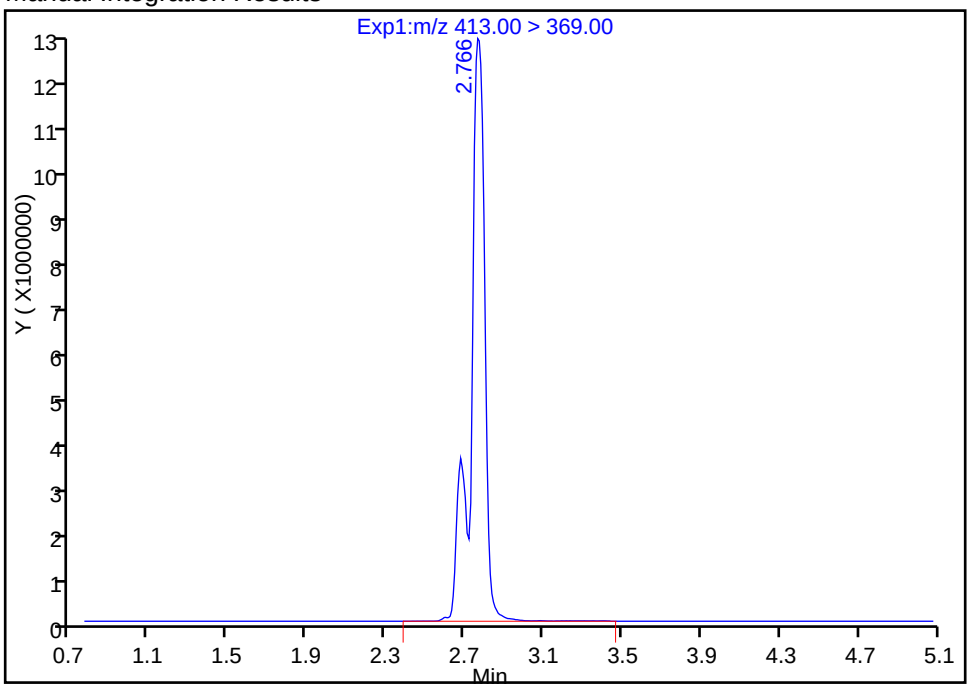
Processing Integration Results

RT: 2.77
Area: 52376314
Amount: 380.1840
Amount Units: ng/ml



Manual Integration Results

RT: 2.77
Area: 65305015
Amount: 474.0296
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:42:00

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-30-GW-18-22 DL Lab Sample ID: 320-23890-2 DL

Matrix: Water Lab File ID: 16DEC2016B_002.d

Analysis Method: 537 (Modified) Date Collected: 11/29/2016 10:00

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 241.5(mL) Date Analyzed: 12/16/2016 12:52

Con. Extract Vol.: 0.5(mL) Dilution Factor: 25

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

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

Analysis Batch No.: 142598 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.4	D M	0.065	0.052	0.019
1763-23-1	Perfluorooctane Sulfonate (PFOS)	6.6	D	0.10	0.078	0.033

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	98		25-150
STL00991	13C4 PFOS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_002.d
Lims ID: 320-23890-A-2-A
Client ID: DPT-16-30-GW-18-22
Sample Type: Client
Inject. Date: 16-Dec-2016 12:52:48 ALS Bottle#: 46 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 25.0000
Sample Info: 320-23890-a-2-a 25X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 18-Dec-2016 16:42:38 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 18-Dec-2016 16:30:09

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	1.897	1.906	-0.009	1.000	695986	1.59				
298.90 > 99.00	1.887	1.906	-0.019	0.995	291554		2.39(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.501	2.518	-0.017		584254	1.79		3.8	71697	
D 14 13C4 PFOA										
417.00 > 372.00	2.848	2.860	-0.012		451606	1.96		3.9	78548	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.848	2.860	-0.012	1.000	5945421	26.2			43207	M
413.00 > 169.00	2.848	2.860	-0.012	1.000	3876545		1.53(0.90-1.10)		170307	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.220	3.123	0.097	1.000	29526455	128.0			1052793	
499.00 > 99.00	3.220	3.123	0.097	1.000	5505555		5.36(0.90-1.10)		208068	
D 17 13C4 PFOS										
503.00 > 80.00	3.220	3.231	-0.011		443454	1.78		3.7	53372	

QC Flag Legend

Review Flags
M - Manually Integrated

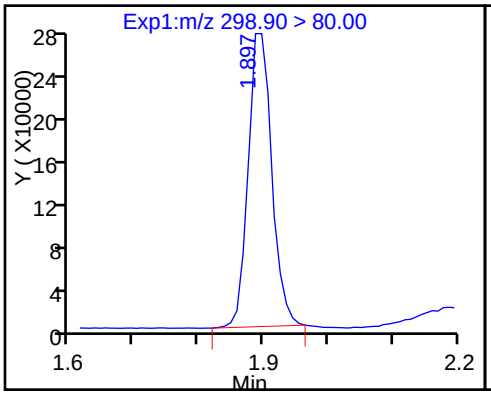
Report Date: 18-Dec-2016 16:42:45 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

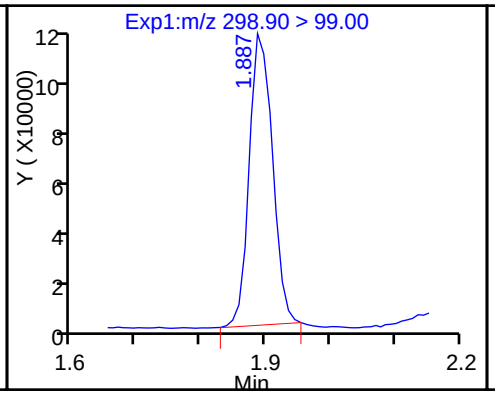
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_002.d

Injection Date:	16-Dec-2016 12:52:48	Instrument ID:	A8_N		
Lims ID:	320-23890-A-2-A	Lab Sample ID:	320-23890-2		
Client ID:	DPT-16-30-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	46	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	25.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

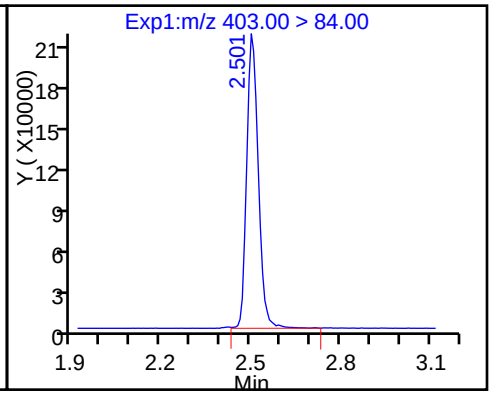
5 Perfluorobutanesulfonic acid



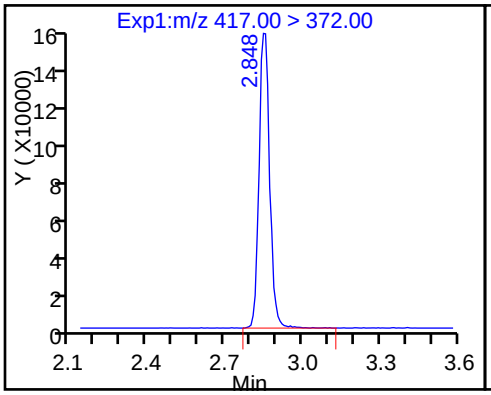
5 Perfluorobutanesulfonic acid



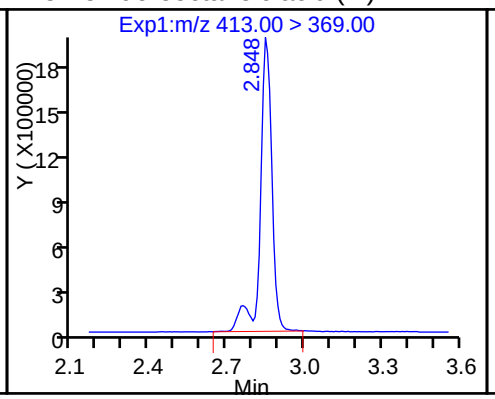
D 10 18O2 PFHxS



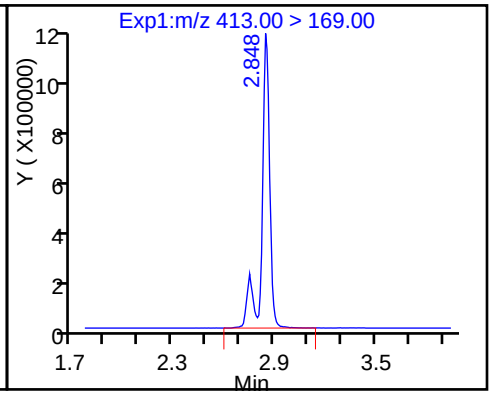
D 14 13C4 PFOA



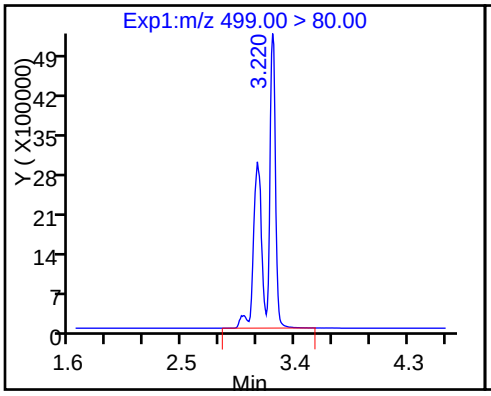
15 Perfluorooctanoic acid (M)



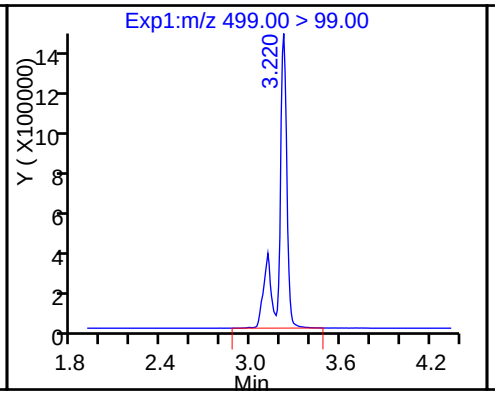
15 Perfluorooctanoic acid



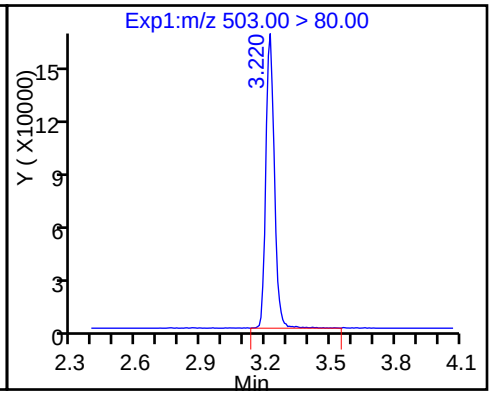
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

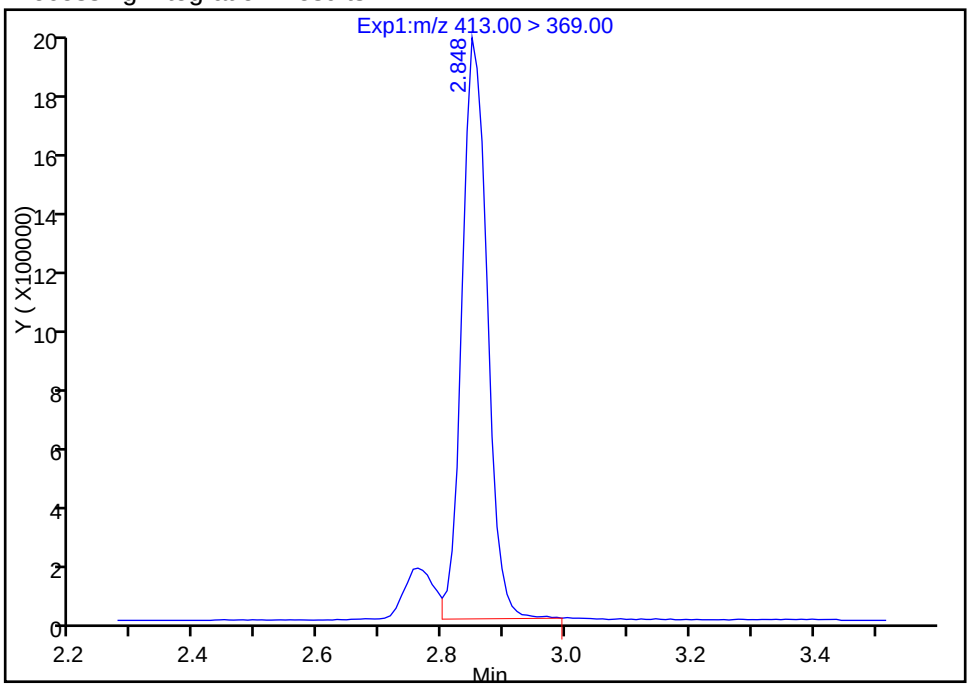
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_002.d				
Injection Date:	16-Dec-2016 12:52:48	Instrument ID:	A8_N		
Lims ID:	320-23890-A-2-A	Lab Sample ID:	320-23890-2		
Client ID:	DPT-16-30-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	46	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	25.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

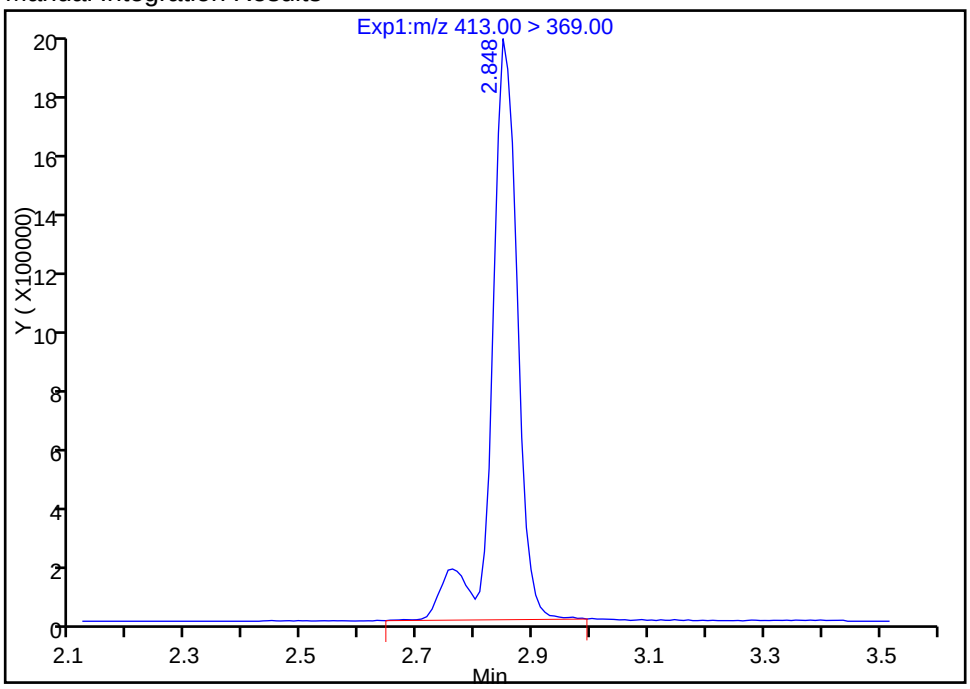
Processing Integration Results

RT: 2.85
Area: 5385745
Amount: 23.776782
Amount Units: ng/ml



Manual Integration Results

RT: 2.85
Area: 5945421
Amount: 26.247618
Amount Units: ng/ml



Reviewer: chandrasenas, 18-Dec-2016 16:30:09

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-32-GW-19-23 | Lab Sample ID: 320-23890-3

Matrix: Water | Lab File ID: 14DEC2016C_010.d

Analysis Method: 537 (Modified) | Date Collected: 11/28/2016 10:00

Extraction Method: 3535 | Date Extracted: 12/01/2016 19:42

Sample wt/vol: 246.8(mL) | Date Analyzed: 12/14/2016 18:16

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.: 142338 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.59*	*E M*	*0.0025*	0.0020	*0.00076*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*5.2*	*E*	*0.0041*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.14		0.0025	0.0020	0.00093

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	71		25-150
STL00991	13C4 PFOS	33	M	25-150
STL00994	18O2 PFHxS	44		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_010.d
Lims ID: 320-23890-A-3-A
Client ID: DPT-16-32-GW-19-23
Sample Type: Client
Inject. Date: 14-Dec-2016 18:16:21 ALS Bottle#: 17 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:42:41

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	1.832	1.829	0.003	1.000	14506840	69.7				
298.90 > 99.00	1.832	1.829	0.003	1.000	6289350		2.31(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.425	2.424	0.001		6565013	20.8		44.1	315454	
D 14 13C4 PFOA										
417.00 > 372.00	2.768	2.759	0.009		7660259	35.7		71.3	374510	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.768	2.767	0.001	1.000	46181342	291.2			602076	EM
413.00 > 169.00	2.768	2.767	0.001	1.000	33832367		1.37(0.90-1.10)		709759	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.113	3.135	-0.022	1.000	205952657	2577.0			135387	E
499.00 > 99.00	3.137	3.135	0.002	1.008	71798261		2.87(0.90-1.10)		481990	
D 17 13C4 PFOS										M
503.00 > 80.00	3.137	3.135	0.002		3581566	15.7		32.8	314385	M

QC Flag Legend

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

Report Date: 15-Dec-2016 14:55:07 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_010.d

Injection Date: 14-Dec-2016 18:16:21 Instrument ID: A8_N

Lims ID: 320-23890-A-3-A Lab Sample ID: 320-23890-3

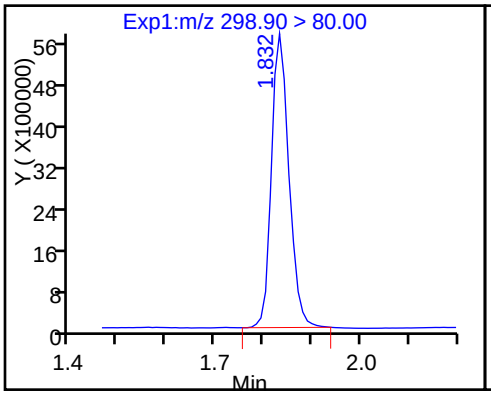
Client ID: DPT-16-32-GW-19-23

Operator ID: A8-PC\A8 ALS Bottle#: 17 Worklist Smp#: 10

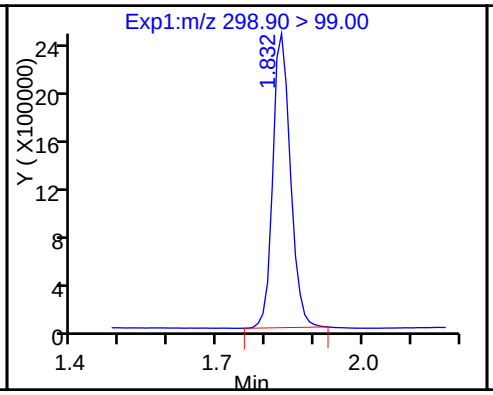
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

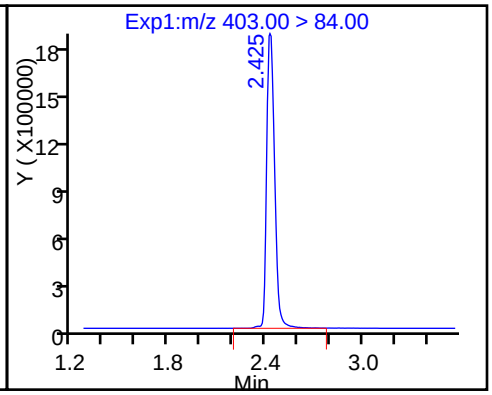
5 Perfluorobutanesulfonic acid



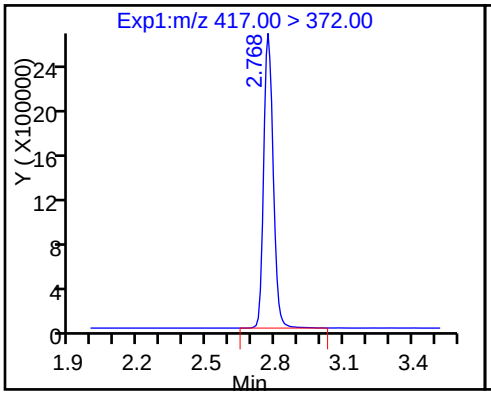
5 Perfluorobutanesulfonic acid



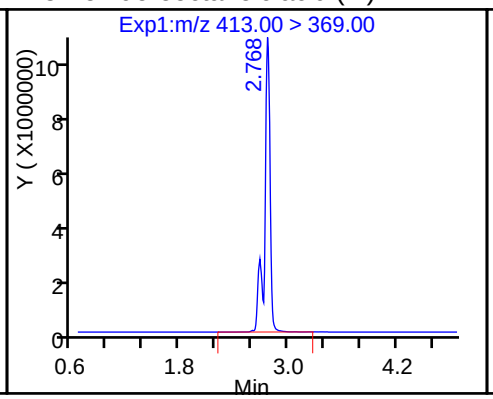
D 10 18O2 PFHxS



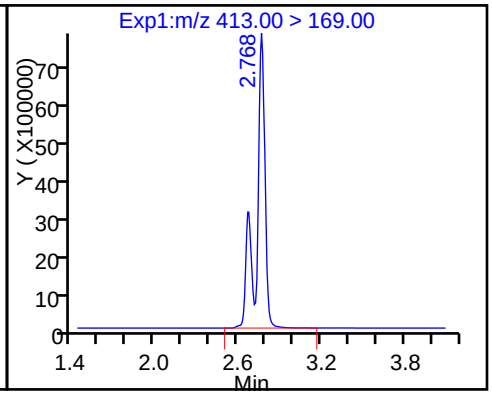
D 14 13C4 PFOA



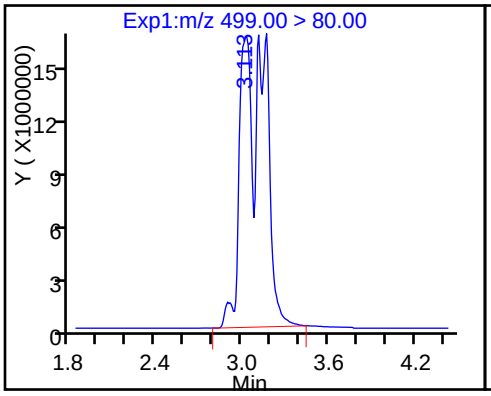
15 Perfluorooctanoic acid (M)



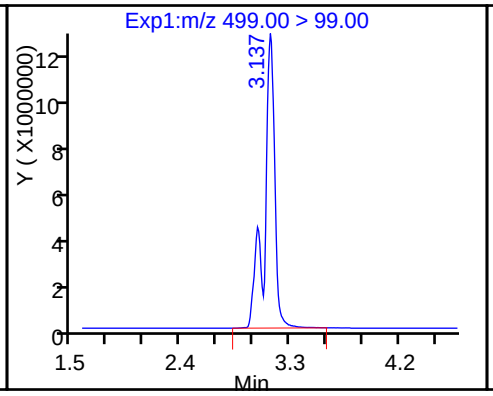
15 Perfluorooctanoic acid



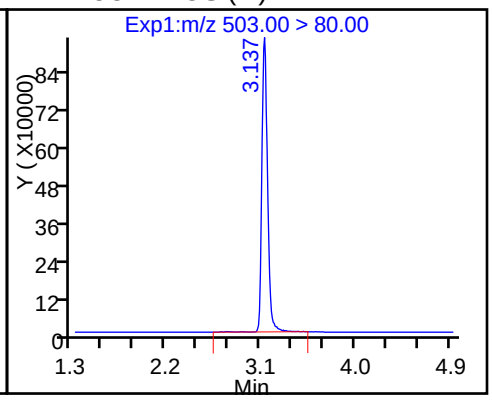
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS (M)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

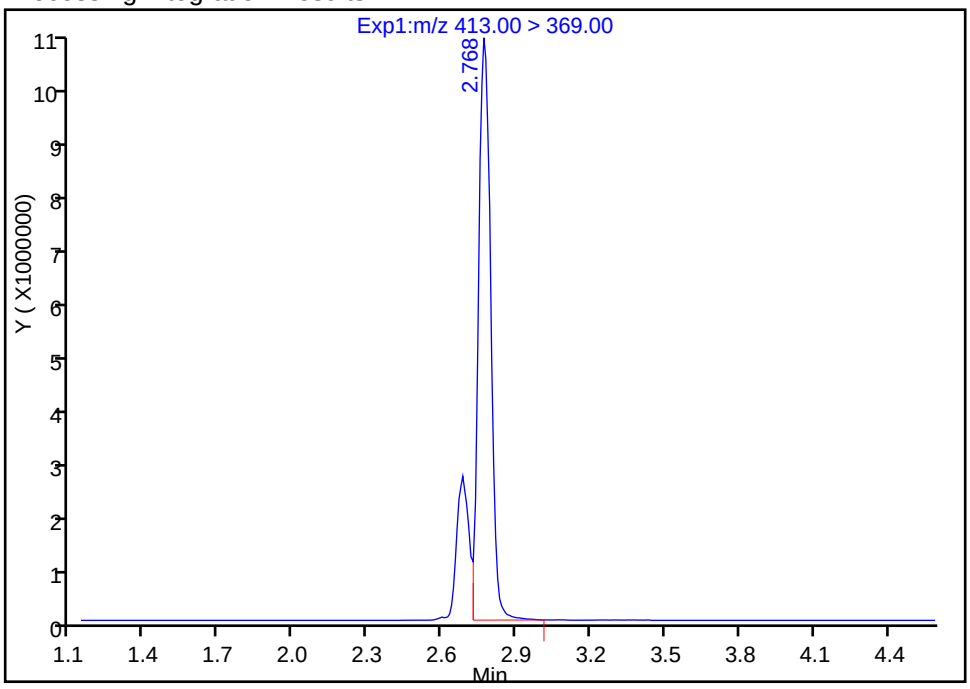
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_010.d				
Injection Date:	14-Dec-2016 18:16:21	Instrument ID:	A8_N		
Lims ID:	320-23890-A-3-A	Lab Sample ID:	320-23890-3		
Client ID:	DPT-16-32-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	17	Worklist Smp#:	10
Injection Vol:	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

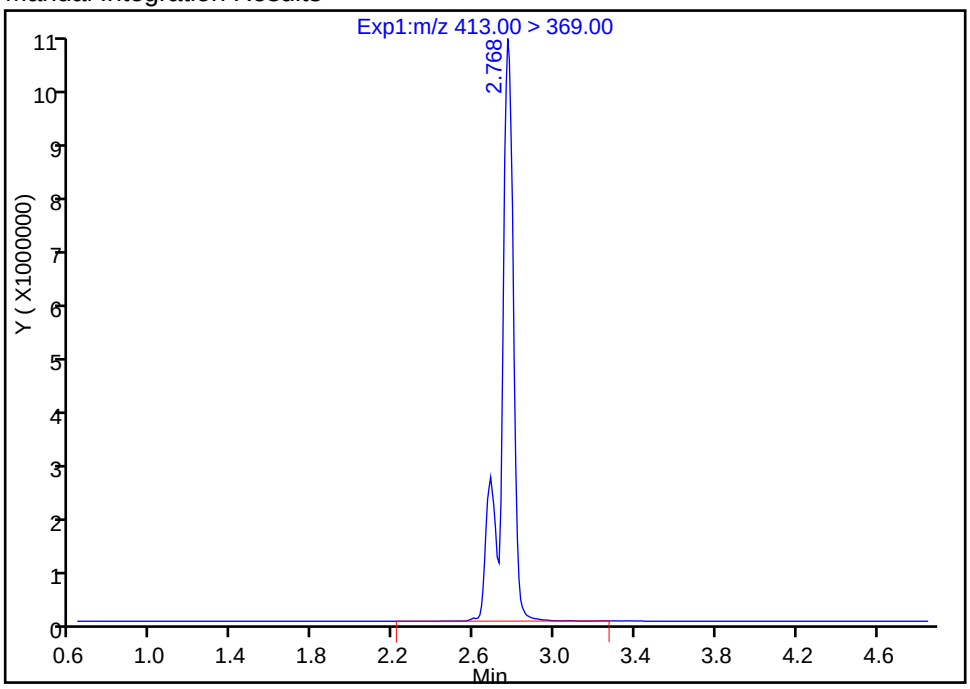
Processing Integration Results

RT: 2.77
Area: 36800099
Amount: 232.0302
Amount Units: ng/ml



Manual Integration Results

RT: 2.77
Area: 46181342
Amount: 291.1804
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:42:41

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

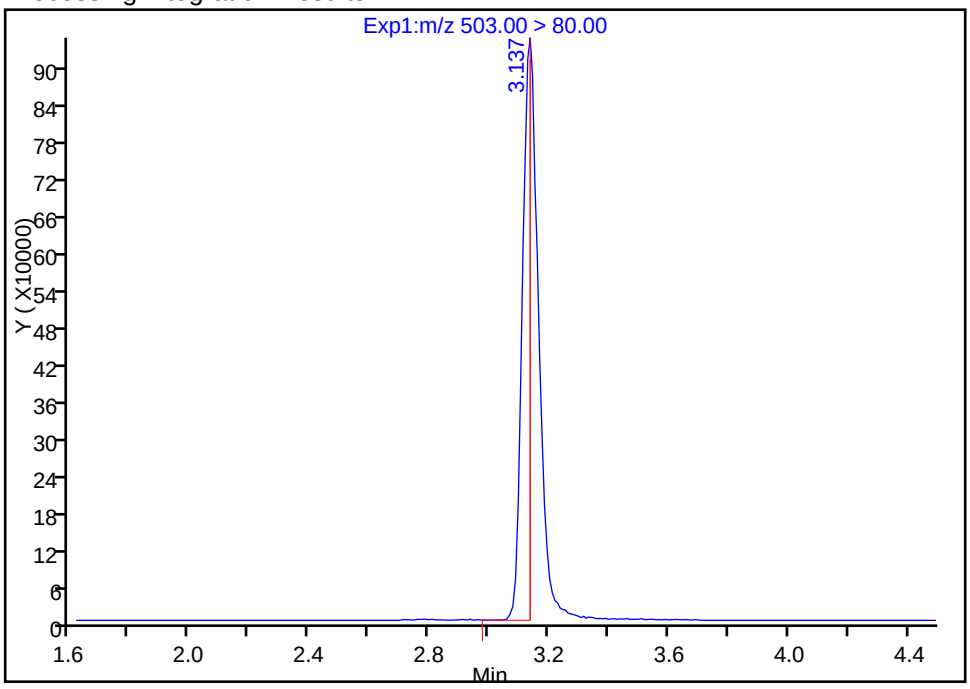
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_010.d				
Injection Date:	14-Dec-2016 18:16:21	Instrument ID:	A8_N		
Lims ID:	320-23890-A-3-A	Lab Sample ID:	320-23890-3		
Client ID:	DPT-16-32-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	17	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

D 17 13C4 PFOS, CAS: STL00991

Signal: 1

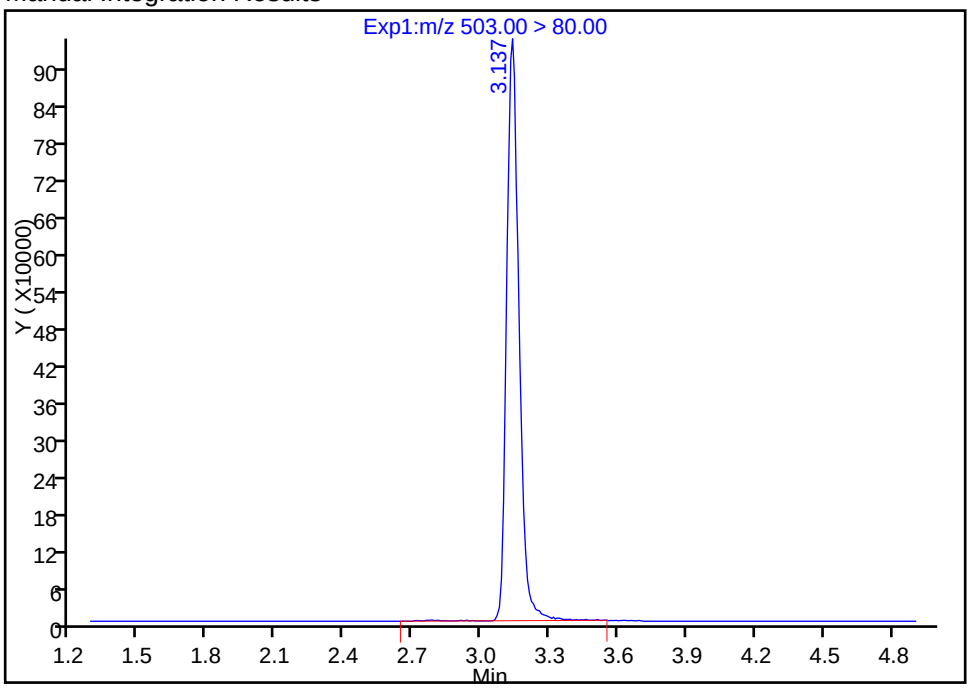
Processing Integration Results

RT: 3.14
Area: 1652730
Amount: 7.228716
Amount Units: ng/ml



Manual Integration Results

RT: 3.14
Area: 3581566
Amount: 15.665064
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:42:41

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-32-GW-19-23 DL Lab Sample ID: 320-23890-3 DL

Matrix: Water Lab File ID: 16DEC2016B_003.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 10:00

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 246.8(mL) Date Analyzed: 12/16/2016 13:00

Con. Extract Vol.: 0.5(mL) Dilution Factor: 25

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

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

Analysis Batch No.: 142598 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.68	D M	0.063	0.051	0.019
1763-23-1	Perfluorooctane Sulfonate (PFOS)	9.2	D	0.10	0.076	0.032

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	107		25-150
STL00991	13C4 PFOS	86		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_003.d
Lims ID: 320-23890-A-3-A
Client ID: DPT-16-32-GW-19-23
Sample Type: Client
Inject. Date: 16-Dec-2016 13:00:17 ALS Bottle#: 47 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 25.0000
Sample Info: 320-23890-a-3-a 25X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 18-Dec-2016 16:42:38 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 18-Dec-2016 16:30:47

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	1.887	1.906	-0.019	1.000	648941	1.44				
298.90 > 99.00	1.887	1.906	-0.019	1.000	273200		2.38(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.498	2.518	-0.020		600544	1.84		3.9	111859	
D 14 13C4 PFOA										
417.00 > 372.00	2.854	2.860	-0.006		494957	2.15		4.3	91744	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.854	2.860	-0.006	1.000	3352651	13.5			30279	M
413.00 > 169.00	2.846	2.860	-0.014	0.997	2205443		1.52(0.90-1.10)		92371	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.216	3.123	0.093	1.000	38507458	181.3			736951	
499.00 > 99.00	3.216	3.123	0.093	1.000	9036718		4.26(0.90-1.10)		565934	
D 17 13C4 PFOS										
503.00 > 80.00	3.216	3.231	-0.015		408261	1.64		3.4	22627	

QC Flag Legend

Review Flags
M - Manually Integrated

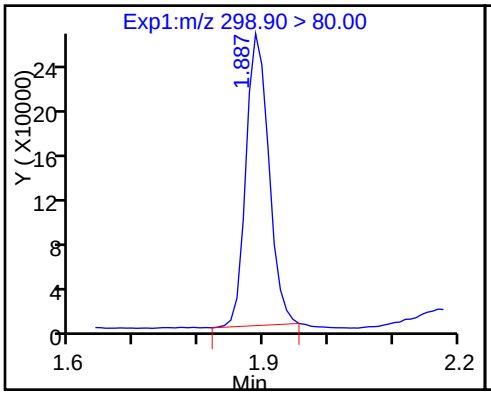
Report Date: 18-Dec-2016 16:42:46 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

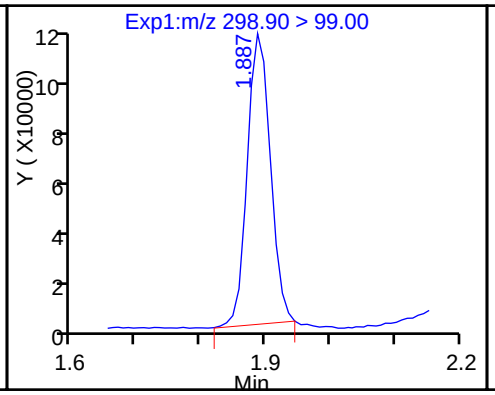
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_003.d

Injection Date:	16-Dec-2016 13:00:17	Instrument ID:	A8_N		
Lims ID:	320-23890-A-3-A	Lab Sample ID:	320-23890-3		
Client ID:	DPT-16-32-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	47	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	25.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

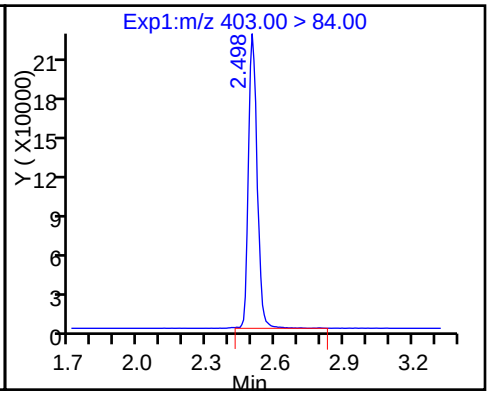
5 Perfluorobutanesulfonic acid



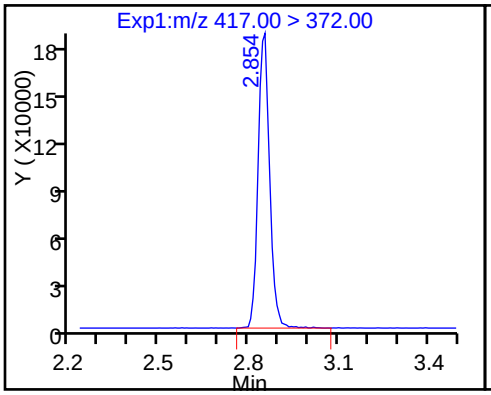
5 Perfluorobutanesulfonic acid



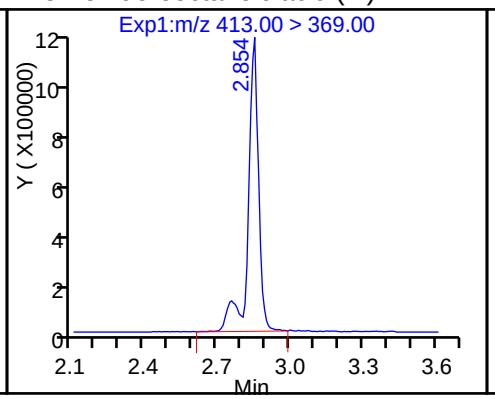
D 10 18O2 PFHxS



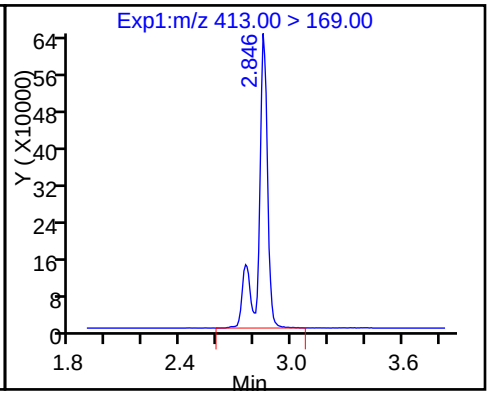
D 14 13C4 PFOA



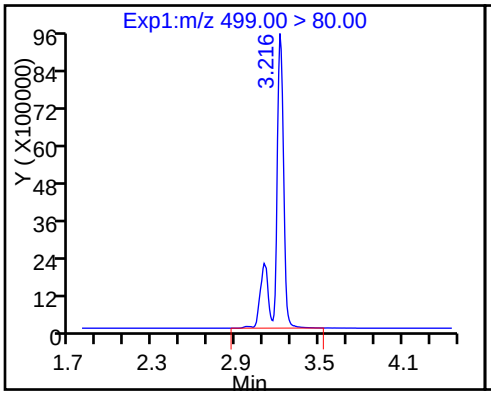
15 Perfluorooctanoic acid (M)



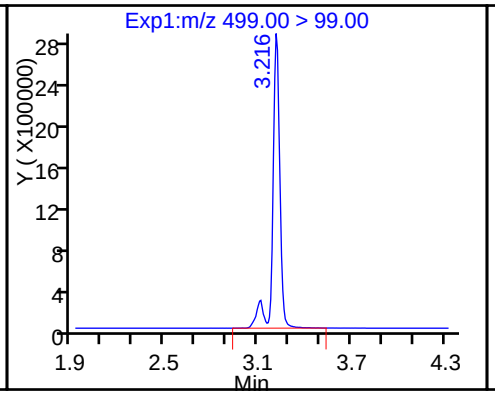
15 Perfluorooctanoic acid



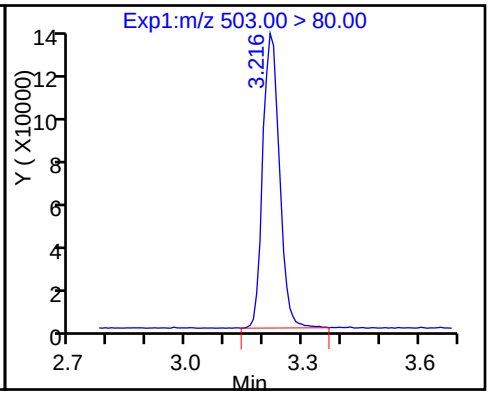
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

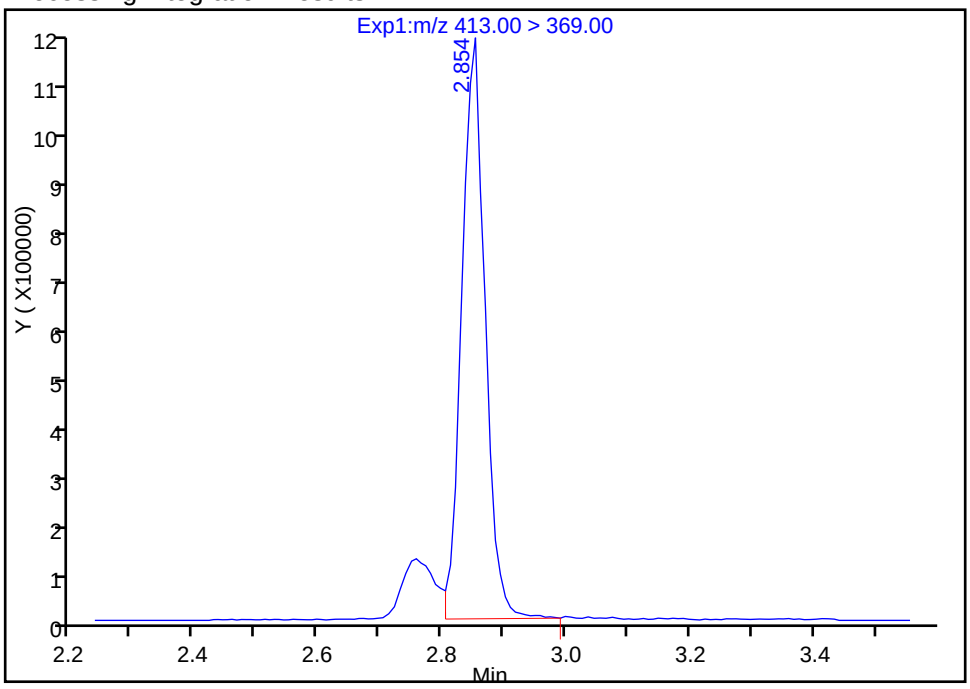
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_003.d				
Injection Date:	16-Dec-2016 13:00:17	Instrument ID:	A8_N		
Lims ID:	320-23890-A-3-A	Lab Sample ID:	320-23890-3		
Client ID:	DPT-16-32-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	47	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	25.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

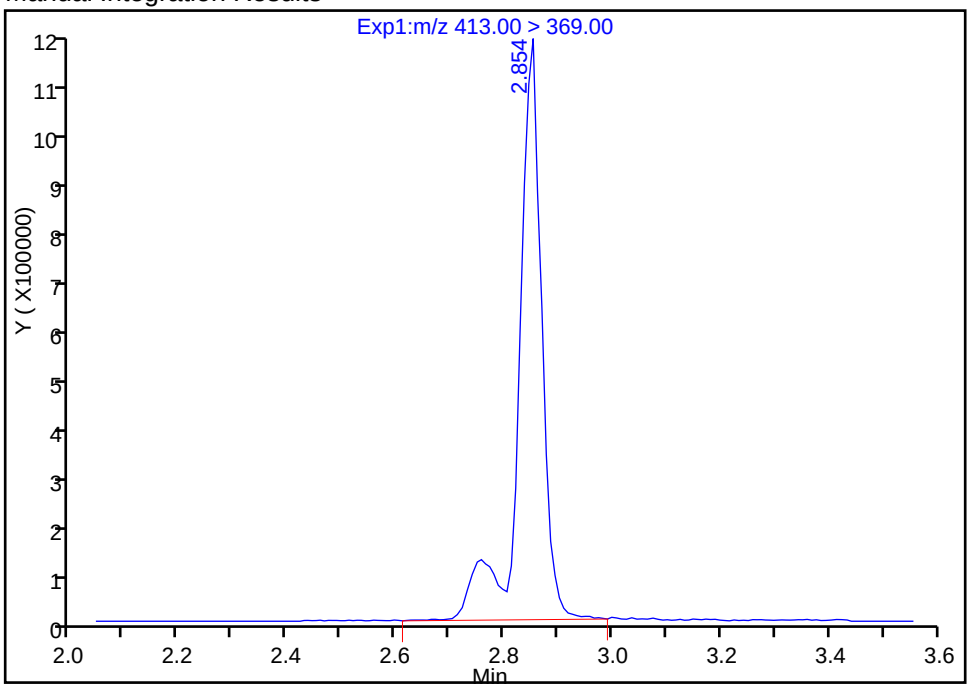
Processing Integration Results

RT: 2.85
Area: 2918535
Amount: 11.756131
Amount Units: ng/ml



Manual Integration Results

RT: 2.85
Area: 3352651
Amount: 13.504791
Amount Units: ng/ml



Reviewer: chandrasenas, 18-Dec-2016 16:30:47

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-32-GW-31-35 Lab Sample ID: 320-23890-4

Matrix: Water Lab File ID: 14DEC2016C_011.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 10:45

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 244.5(mL) Date Analyzed: 12/14/2016 18:23

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.56*	*E M*	*0.0026*	0.0020	*0.00076*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1.6*	*E*	*0.0041*	0.0031	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.12		0.0026	0.0020	0.00094

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	65		25-150
STL00991	13C4 PFOS	70		25-150
STL00994	18O2 PFHxS	64		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_011.d
Lims ID: 320-23890-A-4-A
Client ID: DPT-16-32-GW-31-35
Sample Type: Client
Inject. Date: 14-Dec-2016 18:23:51 ALS Bottle#: 18 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:48:52

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	1.842	1.829	0.013	1.000	17680317	58.5				
298.90 > 99.00	1.832	1.829	0.003	0.995	8044141		2.20(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.429	2.424	0.005		9540338	30.3		64.0	287351	
D 14 13C4 PFOA										
417.00 > 372.00	2.773	2.759	0.014		6984860	32.5		65.0	323009	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.766	2.767	-0.001	1.000	39388231	272.4			0.0	EM
413.00 > 169.00	2.671	2.767	-0.096	0.966	28643539		1.38(0.90-1.10)		56053	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.125	3.135	-0.010	1.000	131264625	771.3			382931	E
499.00 > 99.00	3.141	3.135	0.006	1.005	37928047		3.46(0.90-1.10)		555247	
D 17 13C4 PFOS										
503.00 > 80.00	3.133	3.135	-0.002		7626732	33.4		69.8	114366	

QC Flag Legend

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

Report Date: 15-Dec-2016 14:55:09 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_011.d

Injection Date: 14-Dec-2016 18:23:51 Instrument ID: A8_N

Lims ID: 320-23890-A-4-A Lab Sample ID: 320-23890-4

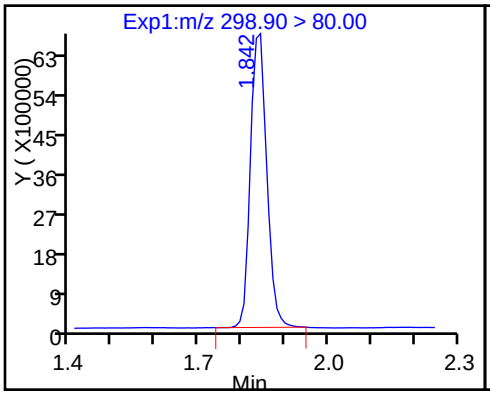
Client ID: DPT-16-32-GW-31-35

Operator ID: A8-PC\A8 ALS Bottle#: 18 Worklist Smp#: 11

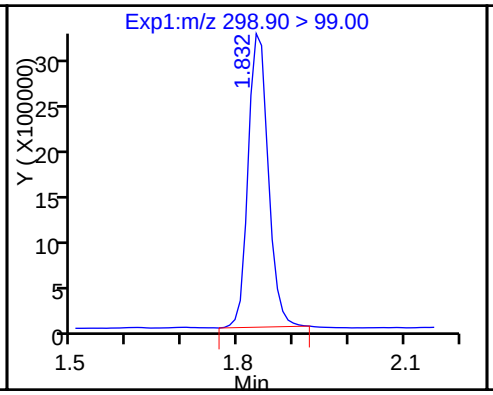
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

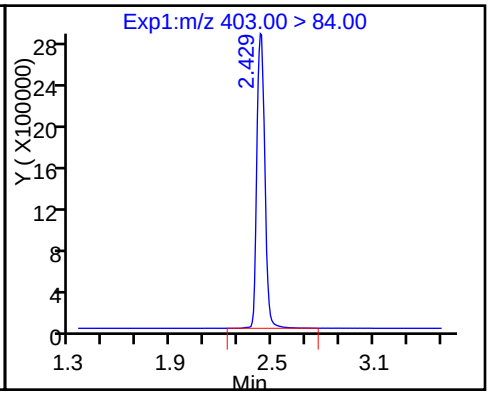
5 Perfluorobutanesulfonic acid



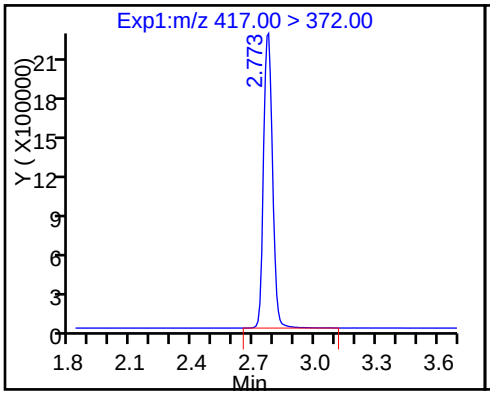
5 Perfluorobutanesulfonic acid



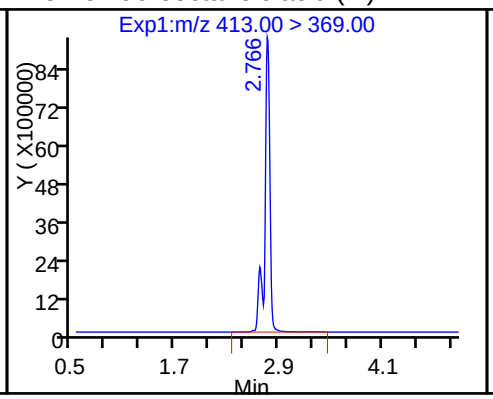
D 10 18O2 PFHxS



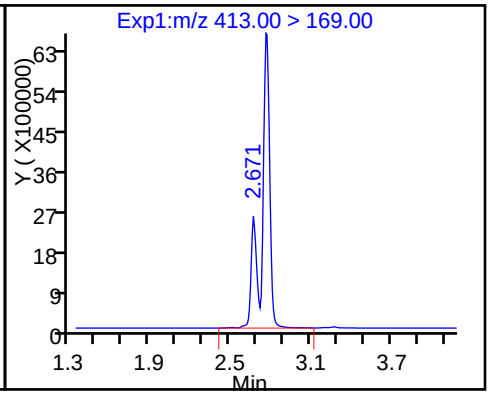
D 14 13C4 PFOA



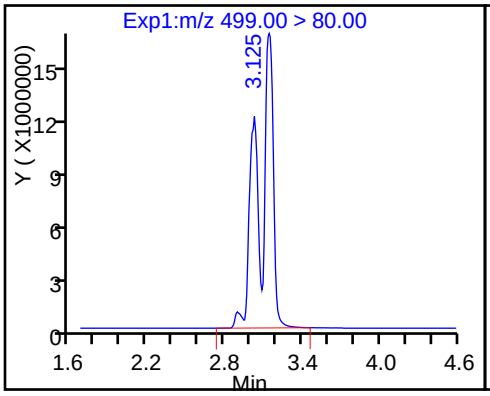
15 Perfluorooctanoic acid (M)



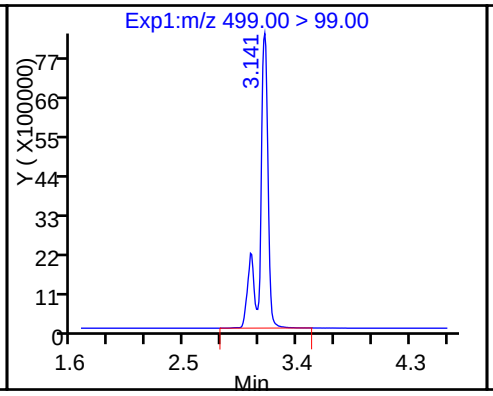
15 Perfluorooctanoic acid



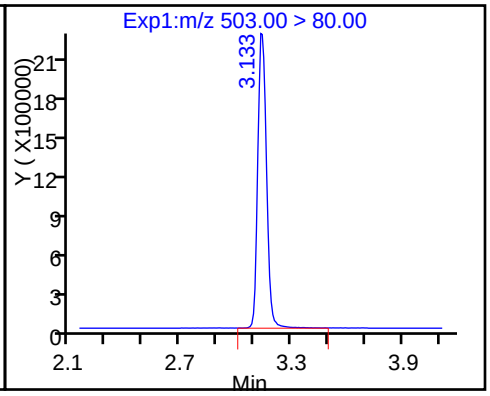
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

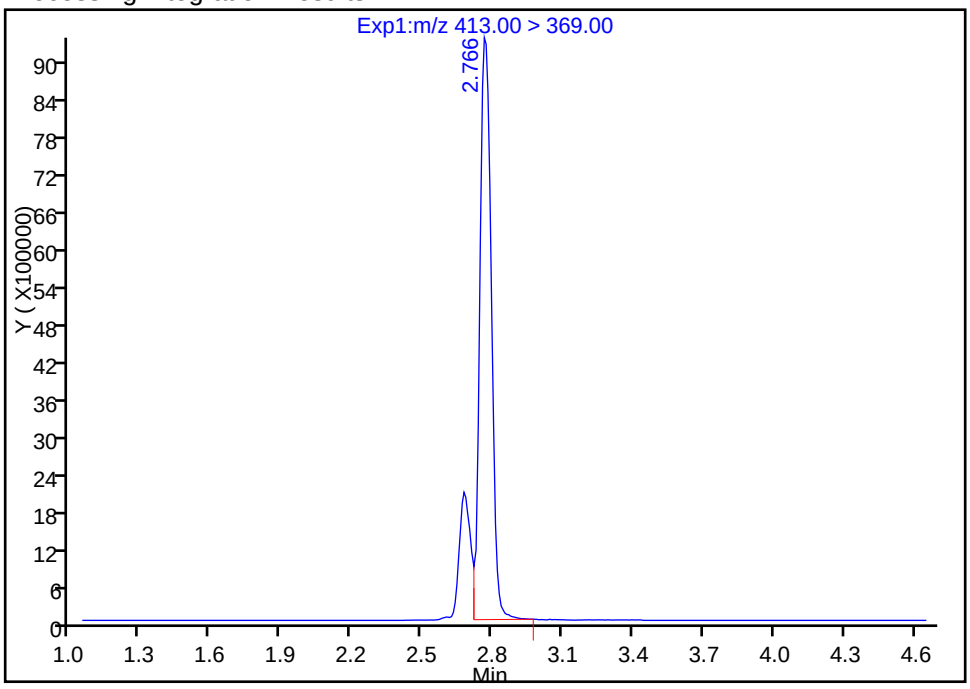
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_011.d				
Injection Date:	14-Dec-2016 18:23:51	Instrument ID:	A8_N		
Lims ID:	320-23890-A-4-A	Lab Sample ID:	320-23890-4		
Client ID:	DPT-16-32-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	18	Worklist Smp#:	11
Injection Vol:	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

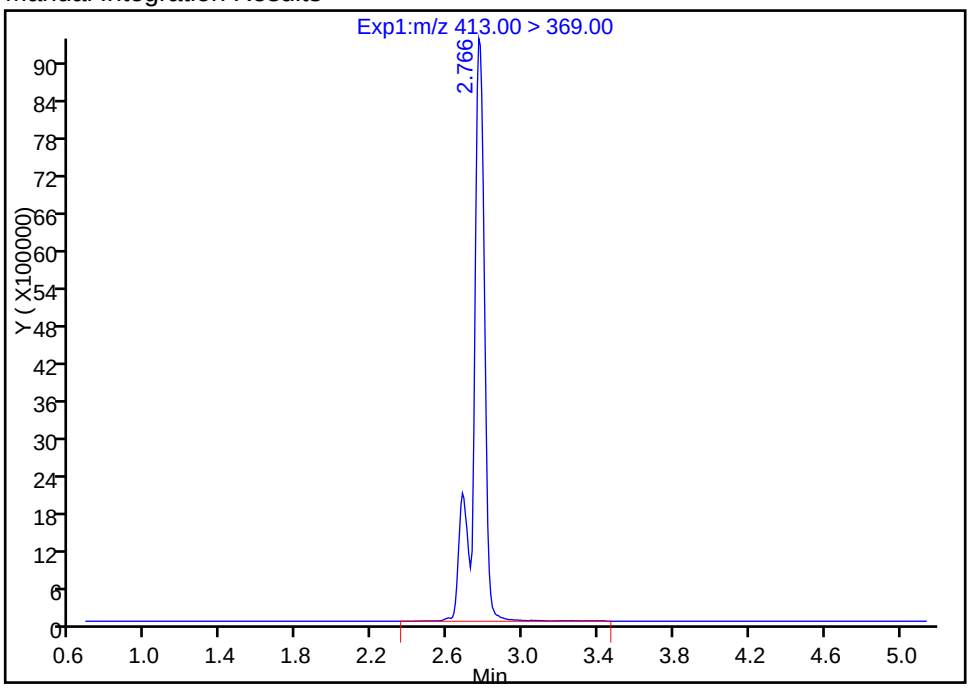
Processing Integration Results

RT: 2.77
Area: 31978725
Amount: 221.1274
Amount Units: ng/ml



Manual Integration Results

RT: 2.77
Area: 39388231
Amount: 272.3628
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:48:52

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-32-GW-31-35 DL Lab Sample ID: 320-23890-4 DL

Matrix: Water Lab File ID: 16DEC2016B_004.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 10:45

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 244.5(mL) Date Analyzed: 12/16/2016 13:07

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.: 142598 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.65	D M	0.026	0.020	0.0076
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.1	D	0.041	0.031	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	85		25-150
STL00991	13C4 PFOS	99		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_004.d
Lims ID: 320-23890-A-4-A
Client ID: DPT-16-32-GW-31-35
Sample Type: Client
Inject. Date: 16-Dec-2016 13:07:47 ALS Bottle#: 48 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23890-a-4-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 18-Dec-2016 16:42:38 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 18-Dec-2016 16:31:11

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	1.887	1.906	-0.019	1.000	2202000	4.74				
298.90 > 99.00	1.887	1.906	-0.019	1.000	876510		2.51(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.501	2.518	-0.017		1549376	4.74		10.0	140666	
D 14 13C4 PFOA										
417.00 > 372.00	2.848	2.860	-0.012		984323	4.27		8.5	91875	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.848	2.860	-0.012	1.000	6240961	31.6			51246	M
413.00 > 169.00	2.753	2.860	-0.107	0.967	4196753		1.49(0.90-1.10)		22573	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.105	3.123	-0.018	1.000	25539790	104.2			148996	
499.00 > 99.00	3.220	3.123	0.097	1.037	5964368		4.28(0.90-1.10)		267364	
D 17 13C4 PFOS										
503.00 > 80.00	3.220	3.231	-0.011		1178567	4.74		9.9	38751	

QC Flag Legend

Review Flags
M - Manually Integrated

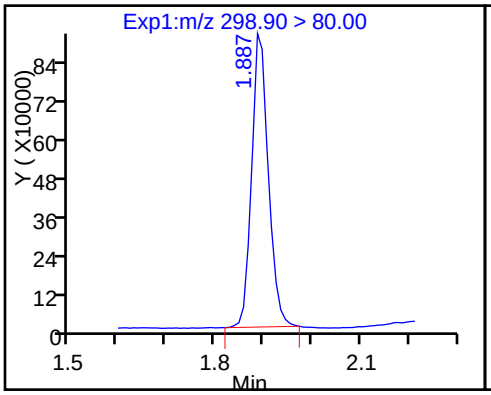
Report Date: 18-Dec-2016 16:42:47 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

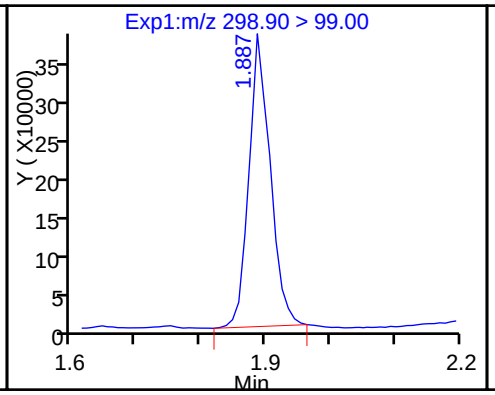
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_004.d

Injection Date:	16-Dec-2016 13:07:47	Instrument ID:	A8_N		
Lims ID:	320-23890-A-4-A	Lab Sample ID:	320-23890-4		
Client ID:	DPT-16-32-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	48	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

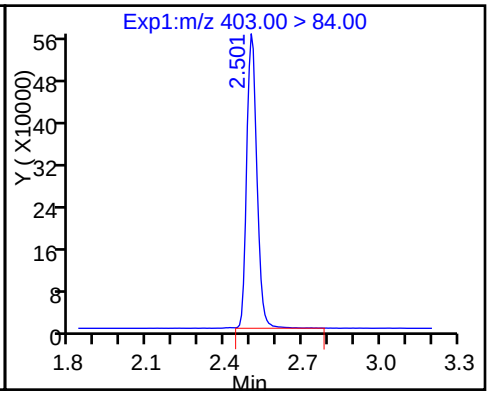
5 Perfluorobutanesulfonic acid



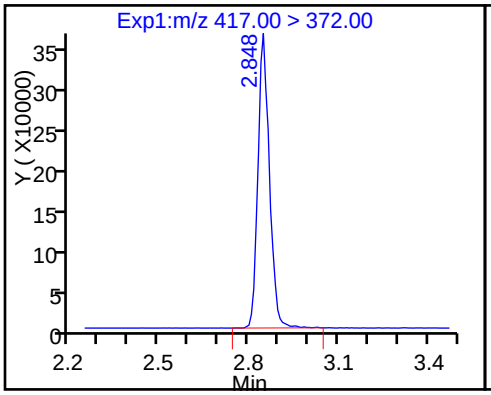
5 Perfluorobutanesulfonic acid



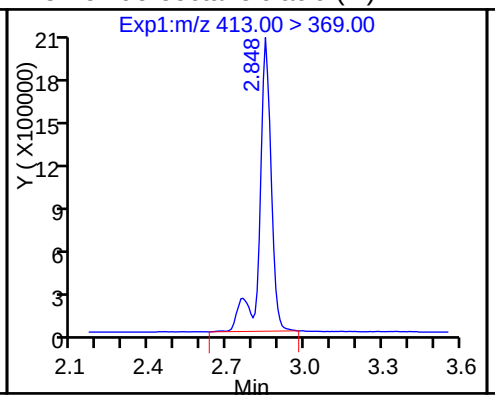
D 10 18O2 PFHxS



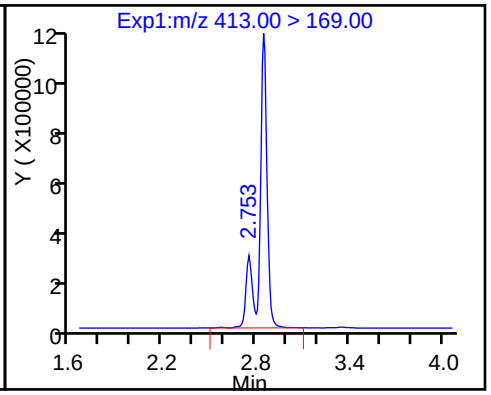
D 14 13C4 PFOA



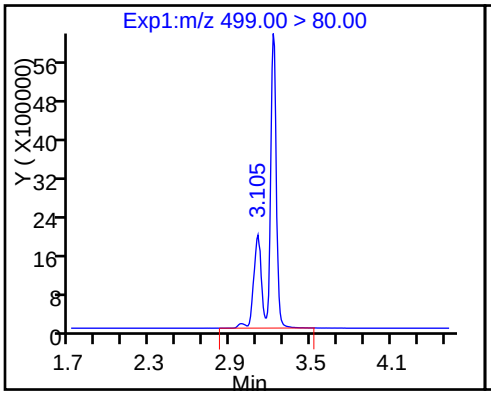
15 Perfluorooctanoic acid (M)



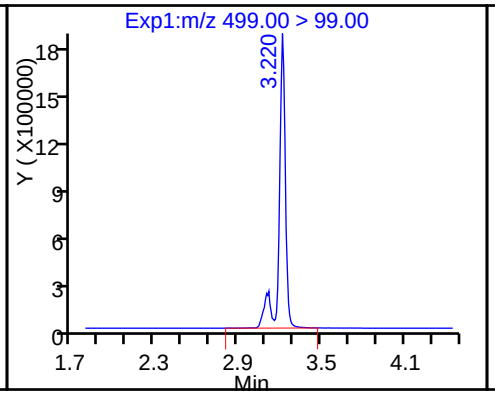
15 Perfluorooctanoic acid



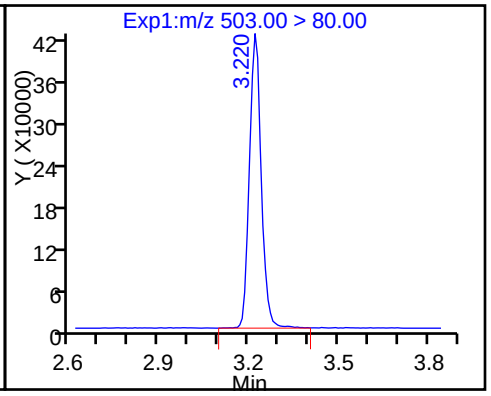
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

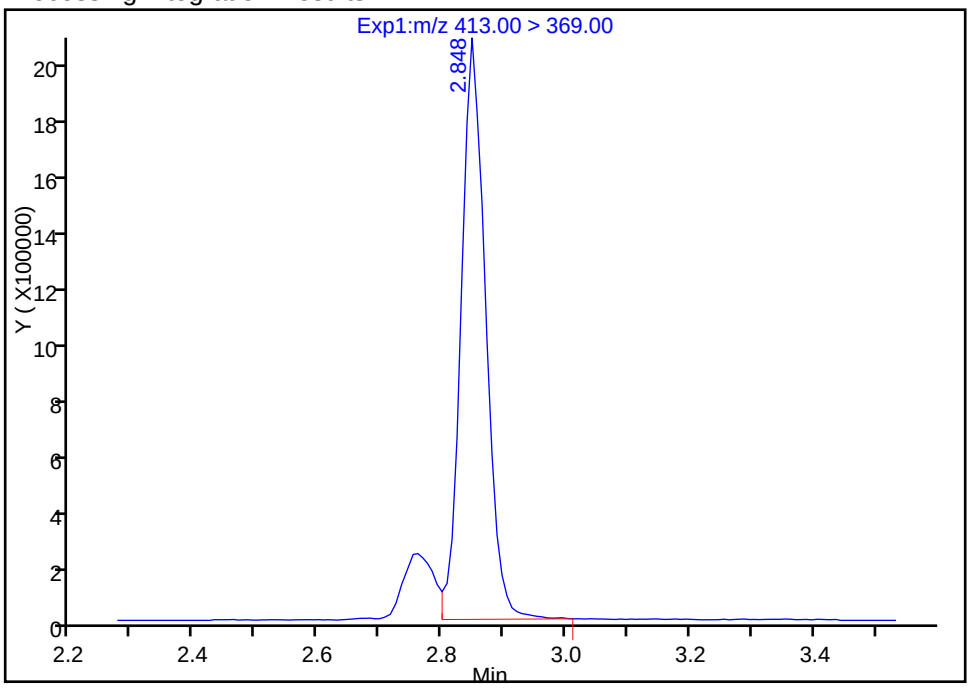
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_004.d				
Injection Date:	16-Dec-2016 13:07:47	Instrument ID:	A8_N		
Lims ID:	320-23890-A-4-A	Lab Sample ID:	320-23890-4		
Client ID:	DPT-16-32-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	48	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

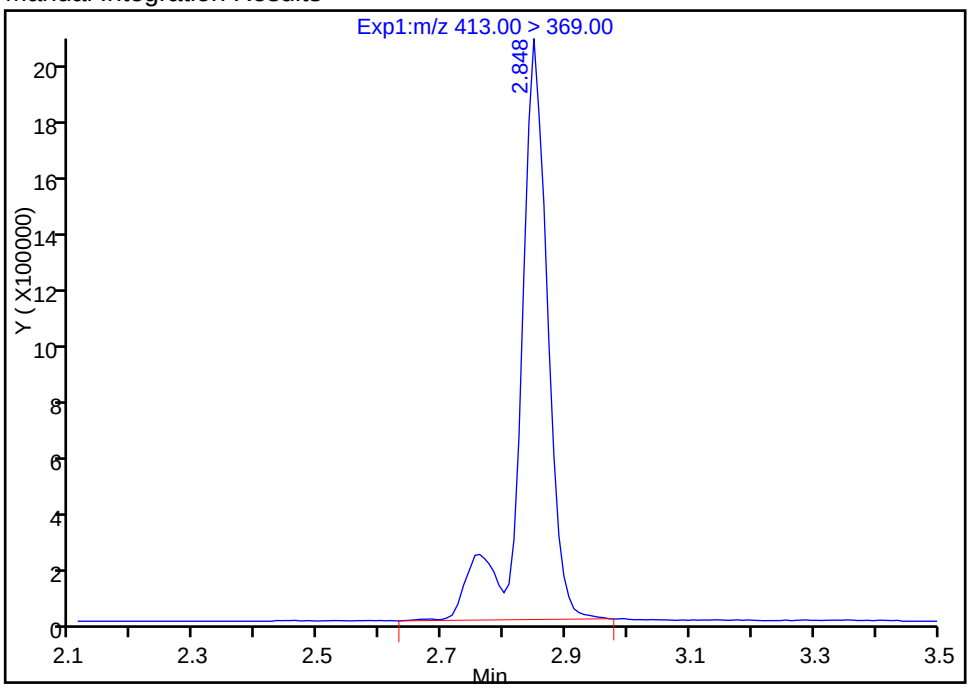
Processing Integration Results

RT: 2.85
Area: 5496376
Amount: 27.832089
Amount Units: ng/ml



Manual Integration Results

RT: 2.85
Area: 6240961
Amount: 31.602456
Amount Units: ng/ml



Reviewer: chandrasenas, 18-Dec-2016 16:31:11

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-21-GW-19-23 Lab Sample ID: 320-23890-5

Matrix: Water Lab File ID: 14DEC2016C_012.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 12:20

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 246.8(mL) Date Analyzed: 12/14/2016 18:31

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*5.9*	*E M*	*0.0025*	0.0020	*0.00076*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*6.1*	*E M*	*0.0041*	0.0030	*0.0013*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*1.7*	*E M*	*0.0025*	0.0020	*0.00093*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	24	Q	25-150
STL00991	13C4 PFOS	34		25-150
STL00994	18O2 PFHxS	16	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_012.d
Lims ID: 320-23890-A-5-A
Client ID: DPT-16-21-GW-19-23
Sample Type: Client
Inject. Date: 14-Dec-2016 18:31:20 ALS Bottle#: 19 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:49:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										EM
298.90 > 80.00	1.842	1.829	0.013	1.000	64136927	844.1				EM
298.90 > 99.00	1.833	1.829	0.004	0.995	39574672		1.62(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.415	2.424	-0.010		2397072	7.61		16.1	19590	
D 14 13C4 PFOA										
417.00 > 372.00	2.759	2.759	0.0		2533427	11.8		23.6	121091	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.798	2.767	0.031	1.000	151768904	2893.4			74105	EM
413.00 > 169.00	2.782	2.767	0.015	0.994	153968698		0.99(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										EM
499.00 > 80.00	2.983	3.135	-0.152	1.000	254394085	3035.6			432079	EM
499.00 > 99.00	3.129	3.135	-0.006	1.049	89646509		2.84(0.90-1.10)		515325	
D 17 13C4 PFOS										
503.00 > 80.00	3.129	3.135	-0.006		3755688	16.4		34.4	61443	

QC Flag Legend

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

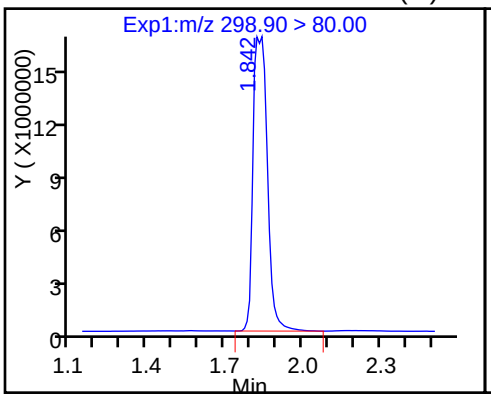
Report Date: 15-Dec-2016 14:55:10 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

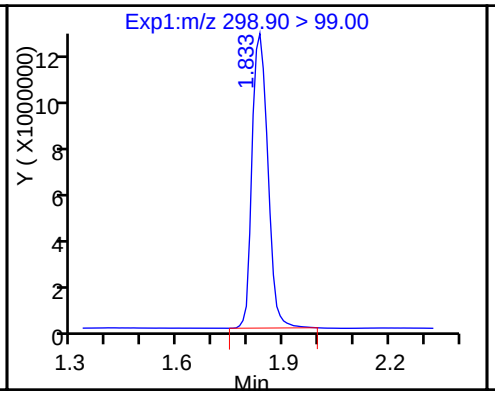
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_012.d

Injection Date:	14-Dec-2016 18:31:20	Instrument ID:	A8_N		
Lims ID:	320-23890-A-5-A	Lab Sample ID:	320-23890-5		
Client ID:	DPT-16-21-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	19	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

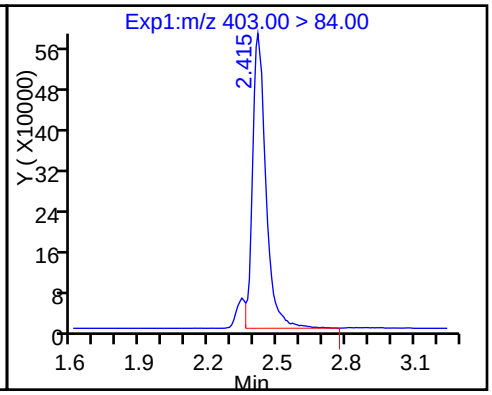
5 Perfluorobutanesulfonic acid (M)



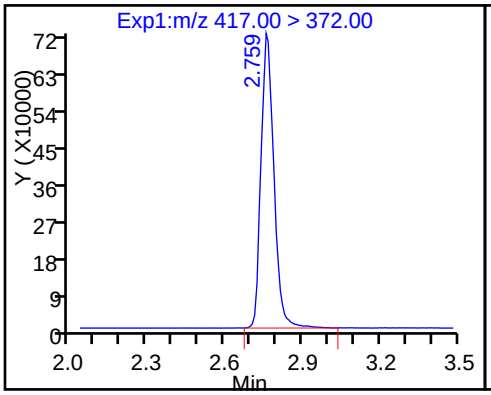
5 Perfluorobutanesulfonic acid



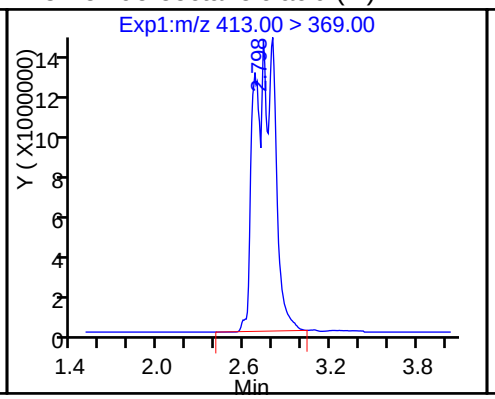
D 10 18O2 PFHxS



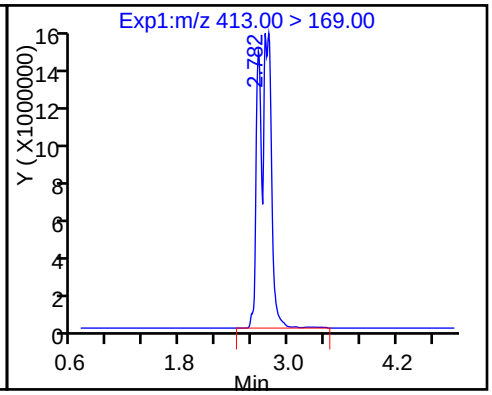
D 14 13C4 PFOA



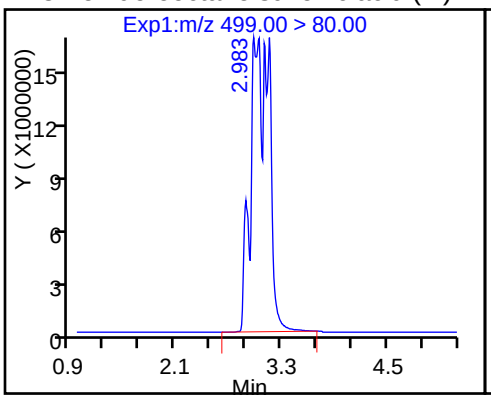
15 Perfluorooctanoic acid (M)



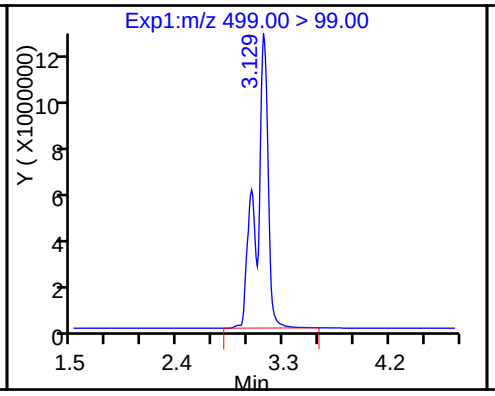
15 Perfluorooctanoic acid



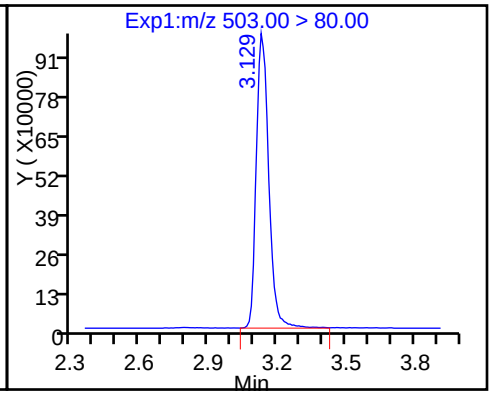
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



TestAmerica Sacramento

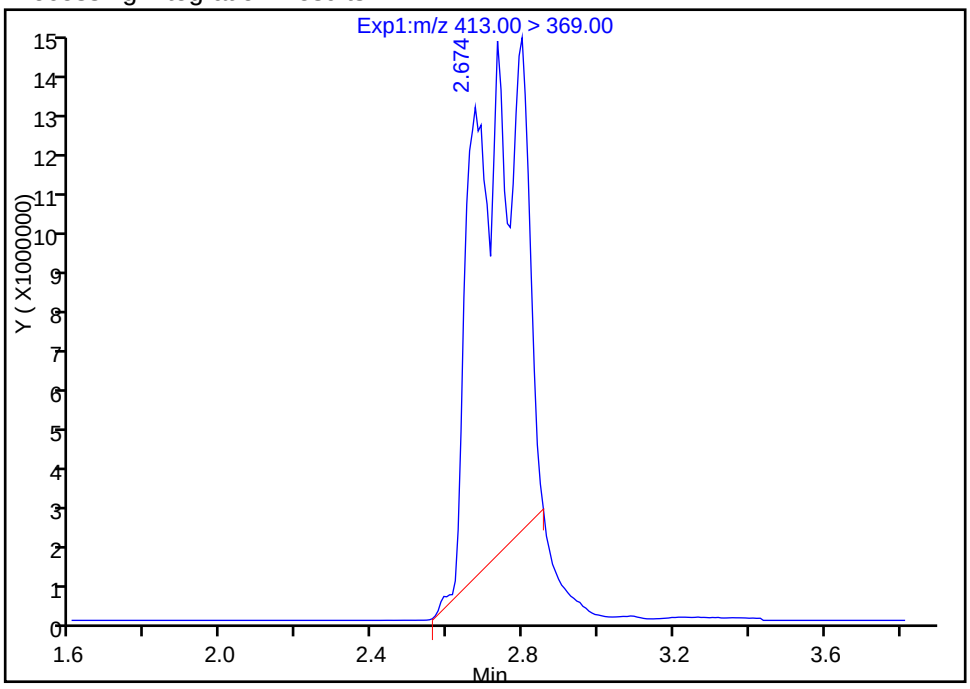
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_012.d				
Injection Date:	14-Dec-2016 18:31:20	Instrument ID:	A8_N		
Lims ID:	320-23890-A-5-A	Lab Sample ID:	320-23890-5		
Client ID:	DPT-16-21-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	19	Worklist Smp#:	12
Injection Vol:	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

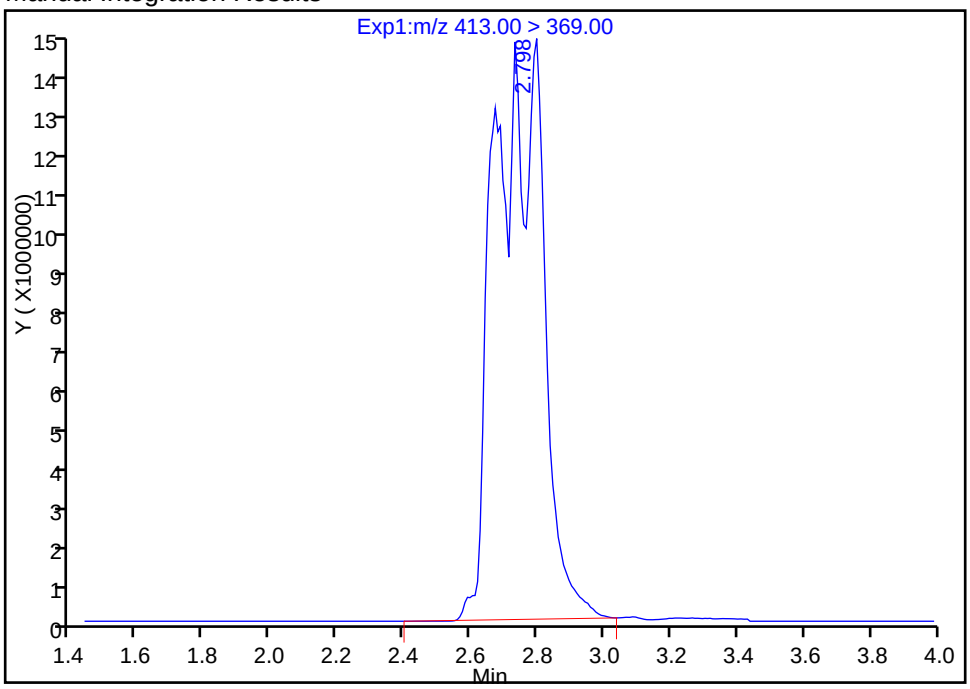
Processing Integration Results

RT: 2.67
Area: 120588422
Amount: 2298.9857
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 151768904
Amount: 2893.4331
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:49:43
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

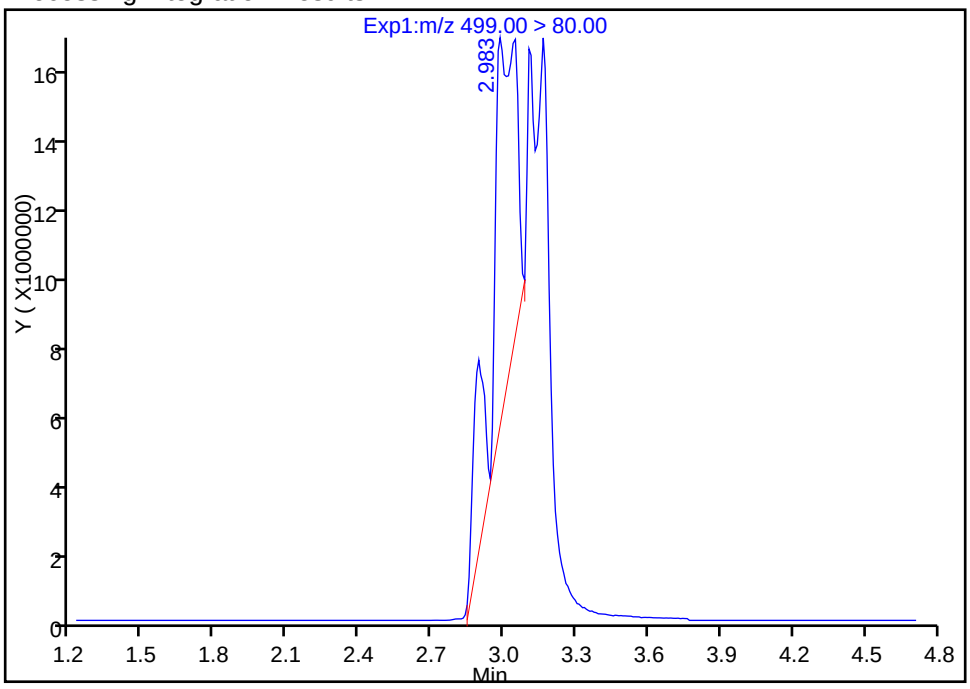
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_012.d				
Injection Date:	14-Dec-2016 18:31:20	Instrument ID:	A8_N		
Lims ID:	320-23890-A-5-A	Lab Sample ID:	320-23890-5		
Client ID:	DPT-16-21-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	19	Worklist Smp#:	12
Injection Vol:	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

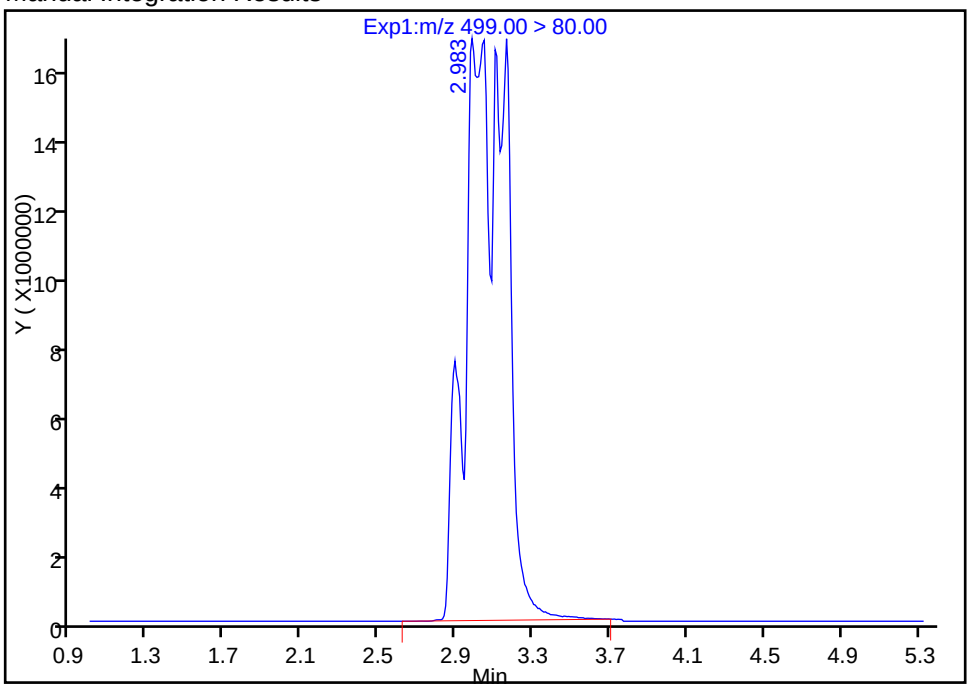
Processing Integration Results

RT: 2.98
Area: 77327708
Amount: 922.7163
Amount Units: ng/ml



Manual Integration Results

RT: 2.98
Area: 254394085
Amount: 3035.5688
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:49:43

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

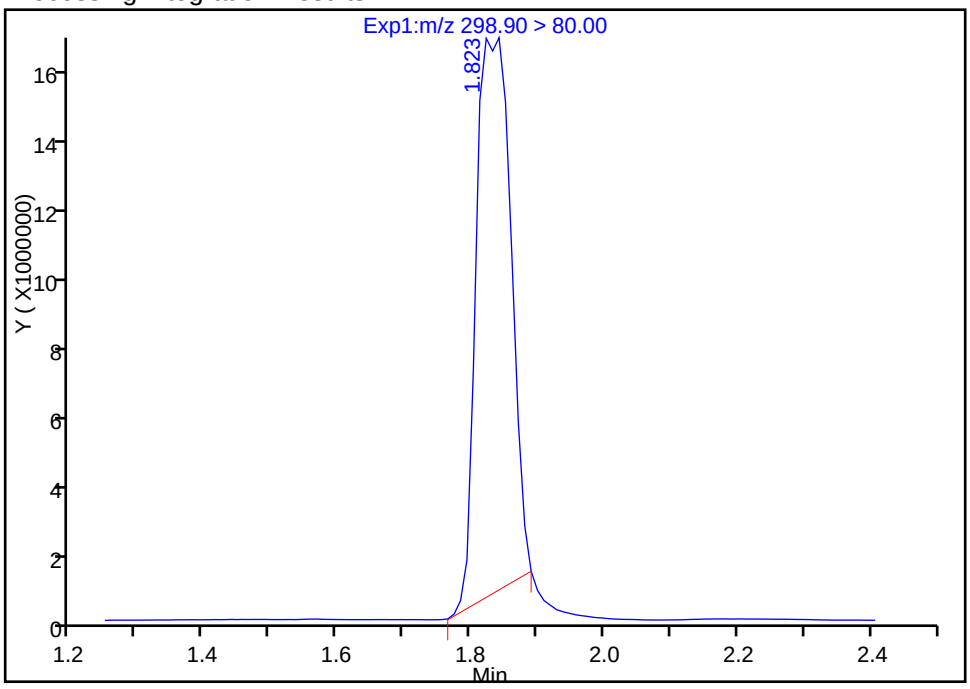
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_012.d				
Injection Date:	14-Dec-2016 18:31:20	Instrument ID:	A8_N		
Lims ID:	320-23890-A-5-A	Lab Sample ID:	320-23890-5		
Client ID:	DPT-16-21-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	19	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

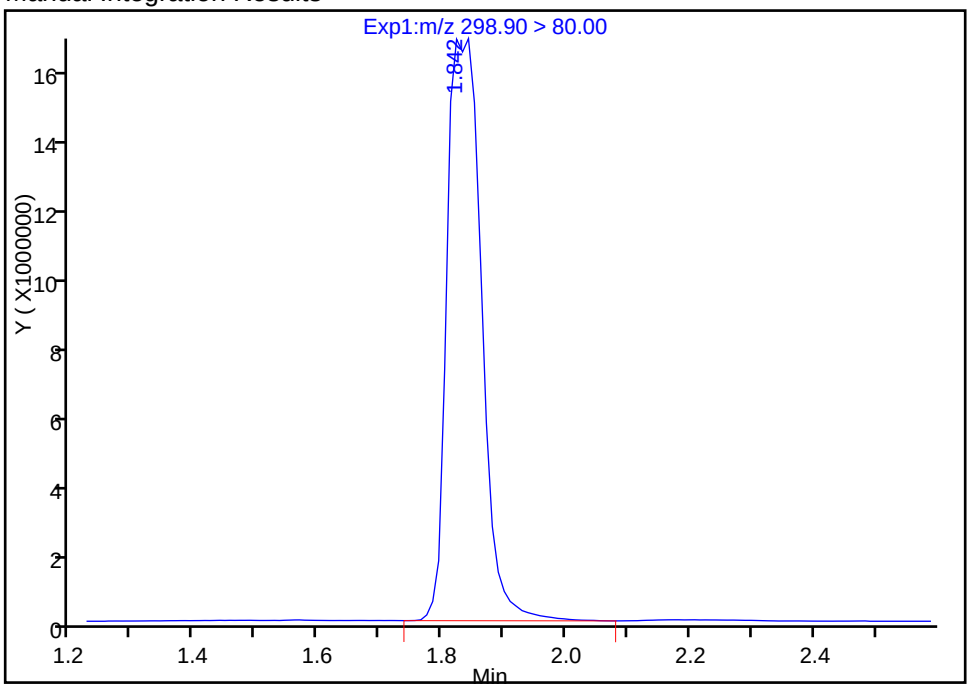
Processing Integration Results

RT: 1.82
Area: 56760213
Amount: 747.0326
Amount Units: ng/ml



Manual Integration Results

RT: 1.84
Area: 64136927
Amount: 844.1190
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:49:43

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-21-GW-19-23 DL Lab Sample ID: 320-23890-5 DL

Matrix: Water Lab File ID: 18DEC2016B_007.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 12:20

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 246.8(mL) Date Analyzed: 12/18/2016 23:34

Con. Extract Vol.: 0.5(mL) Dilution Factor: 50

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

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

Analysis Batch No.: 142819 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	15	D M	0.13	0.10	0.038
1763-23-1	Perfluorooctane Sulfonate (PFOS)	12	D	0.20	0.15	0.065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.1	D	0.13	0.10	0.046

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	118		25-150
STL00991	13C4 PFOS	134		25-150
STL00994	18O2 PFHxS	111		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_007.d
Lims ID: 320-23890-A-5-A
Client ID: DPT-16-21-GW-19-23
Sample Type: Client
Inject. Date: 18-Dec-2016 23:34:11 ALS Bottle#: 18 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 50.0000
Sample Info: 320-23890-a-5-a 50X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 19-Dec-2016 11:17:33 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 19-Dec-2016 11:14:54

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	1.974	1.983	-0.009	1.000	5479697	10.6				
298.90 > 99.00	1.974	1.983	-0.009	1.000	2299268		2.38(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.608	2.621	-0.013		343646	1.05		2.2	25905	
D 14 13C4 PFOA										
417.00 > 372.00	2.959	2.976	-0.017		271477	1.18		2.4	41222	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.975	2.984	-0.009	1.000	41412573	152.1			251672	M
413.00 > 169.00	2.967	2.984	-0.017	0.997	30447199		1.36(0.90-1.10)		926626	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.327	3.244	0.083	1.000	38041605	115.1			466141	
499.00 > 99.00	3.335	3.244	0.091	1.002	8032614		4.74(0.90-1.10)		528298	
D 17 13C4 PFOS										
503.00 > 80.00	3.342	3.361	-0.019		317737	1.28		2.7	21825	

QC Flag Legend

Review Flags
M - Manually Integrated

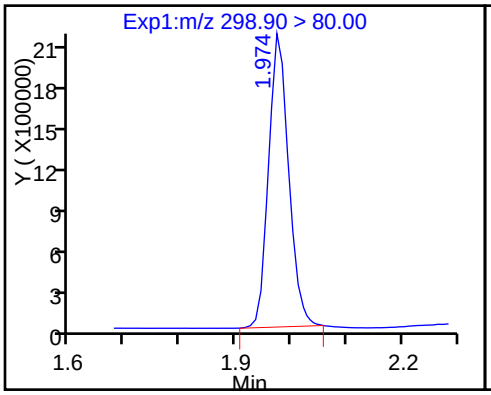
Report Date: 19-Dec-2016 11:17:47 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

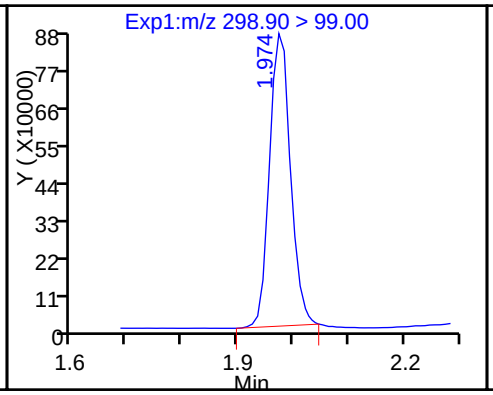
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_007.d

Injection Date:	18-Dec-2016 23:34:11	Instrument ID:	A8_N		
Lims ID:	320-23890-A-5-A	Lab Sample ID:	320-23890-5		
Client ID:	DPT-16-21-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	18	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	50.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

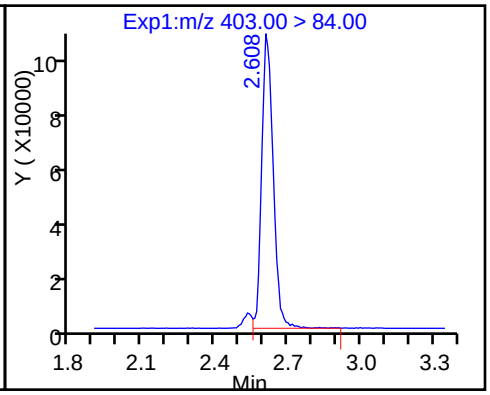
5 Perfluorobutanesulfonic acid



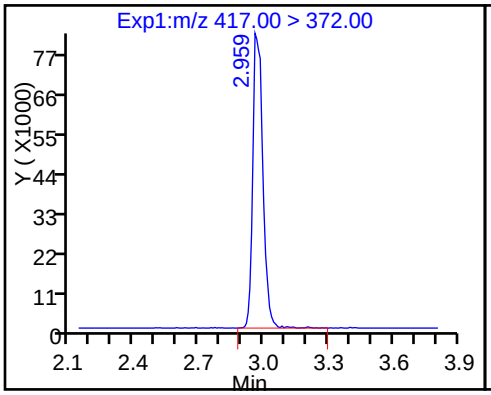
5 Perfluorobutanesulfonic acid



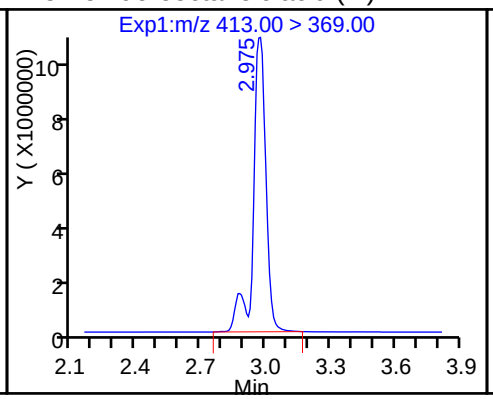
D 10 18O2 PFHxS



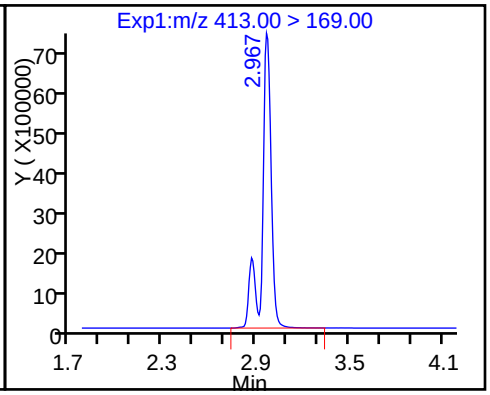
D 14 13C4 PFOA



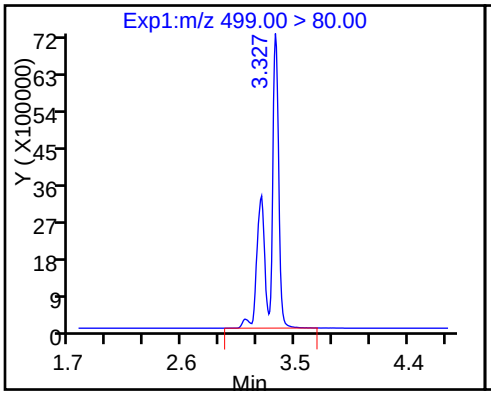
15 Perfluorooctanoic acid (M)



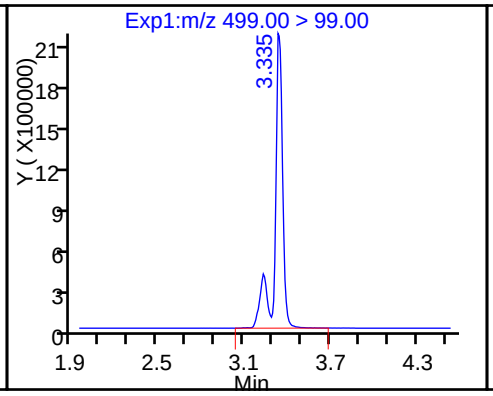
15 Perfluorooctanoic acid



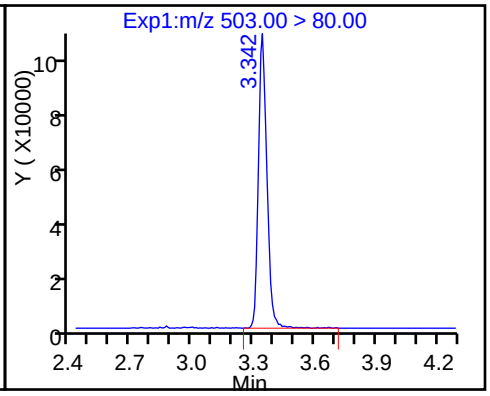
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

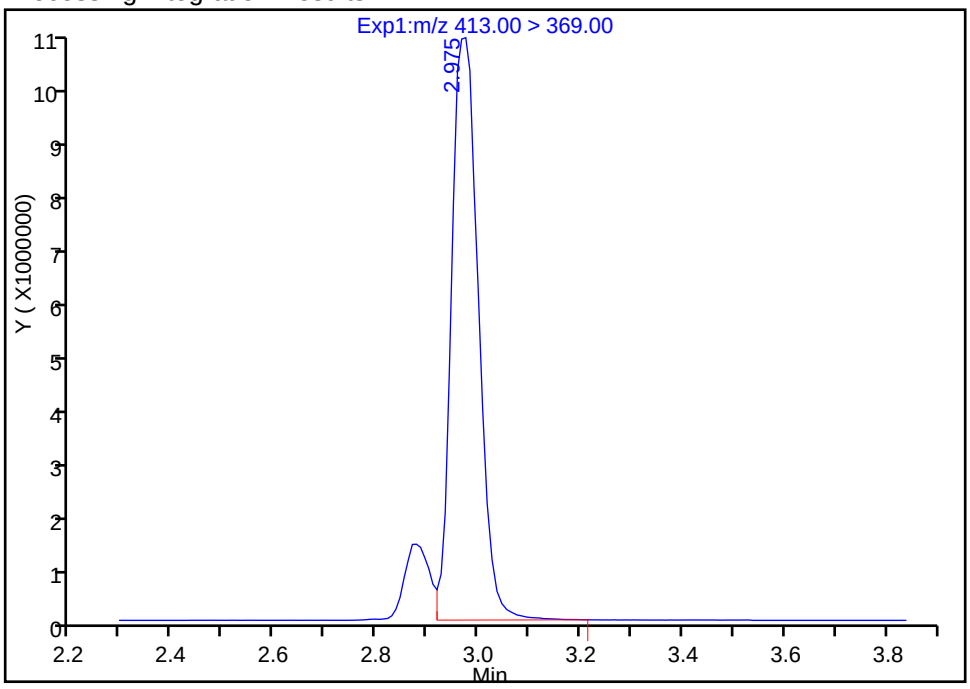
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_007.d				
Injection Date:	18-Dec-2016 23:34:11	Instrument ID:	A8_N		
Lims ID:	320-23890-A-5-A	Lab Sample ID:	320-23890-5		
Client ID:	DPT-16-21-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	18	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	50.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

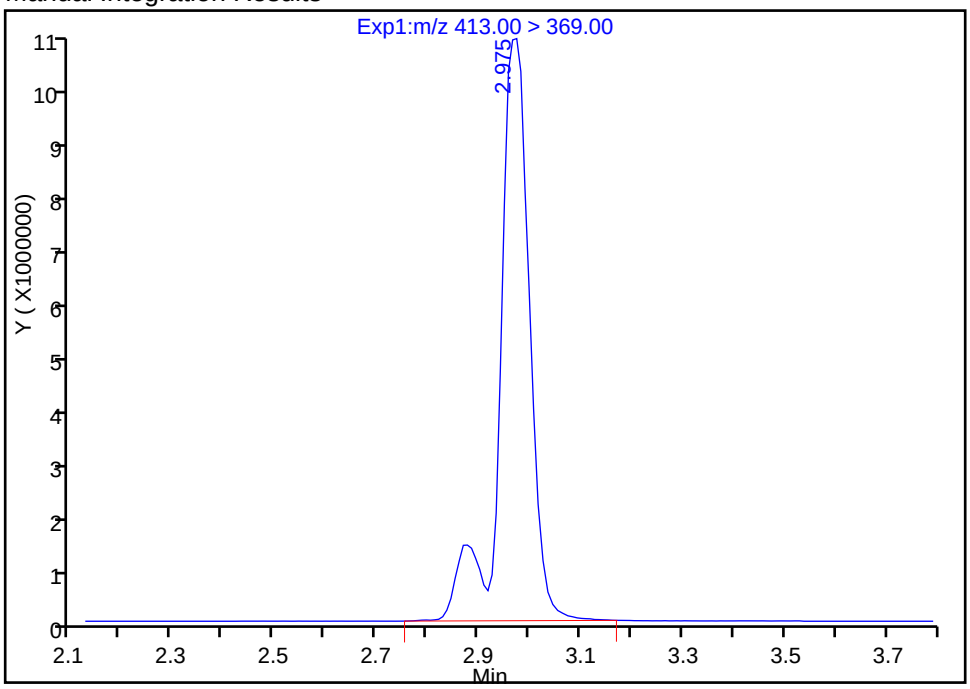
Processing Integration Results

RT: 2.97
Area: 37012916
Amount: 135.9118
Amount Units: ng/ml



Manual Integration Results

RT: 2.97
Area: 41412573
Amount: 152.0674
Amount Units: ng/ml



Reviewer: chandrasenas, 19-Dec-2016 11:14:54

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-21-GW-31-35 Lab Sample ID: 320-23890-6

Matrix: Water Lab File ID: 14DEC2016C_013.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 12:55

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 245.5(mL) Date Analyzed: 12/14/2016 18:38

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.60*	*E M*	*0.0025*	0.0020	*0.00076*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.2*	*E*	*0.0041*	0.0031	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.16		0.0025	0.0020	0.00093

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	70		25-150
STL00991	13C4 PFOS	64		25-150
STL00994	18O2 PFHxS	63		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_013.d
Lims ID: 320-23890-A-6-A
Client ID: DPT-16-21-GW-31-35
Sample Type: Client
Inject. Date: 14-Dec-2016 18:38:49 ALS Bottle#: 20 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:50:19

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	1.832	1.829	0.003	1.000	23932124	80.3				
298.90 > 99.00	1.832	1.829	0.003	1.000	11090469		2.16(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.430	2.424	0.006		9399661	29.8		63.1	457772	
D 14 13C4 PFOA										
417.00 > 372.00	2.767	2.759	0.008		7476894	34.8		69.6	316737	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.767	2.767	0.0	1.000	45901613	296.5			272693	EM
413.00 > 169.00	2.672	2.767	-0.095	0.966	34171440		1.34(0.90-1.10)		50990	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.127	3.135	-0.008	1.000	170214246	1092.2			358336	E
499.00 > 99.00	3.135	3.135	0.0	1.003	54907192		3.10(0.90-1.10)		957983	
D 17 13C4 PFOS										
503.00 > 80.00	3.135	3.135	0.0		6984164	30.5		63.9	125502	

QC Flag Legend

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

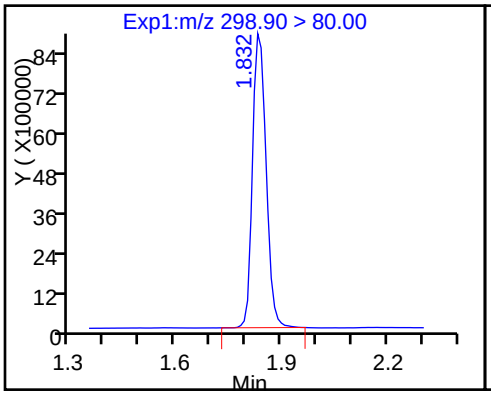
Report Date: 15-Dec-2016 14:55:11 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

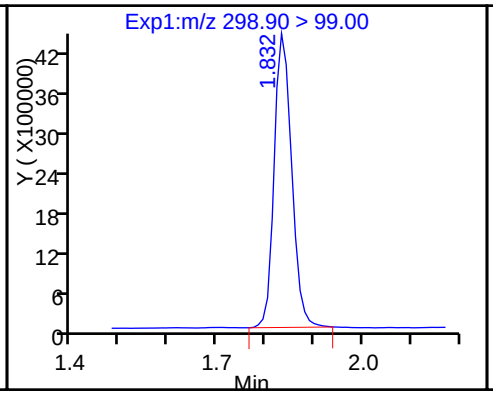
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_013.d

Injection Date:	14-Dec-2016 18:38:49	Instrument ID:	A8_N
Lims ID:	320-23890-A-6-A	Lab Sample ID:	320-23890-6
Client ID:	DPT-16-21-GW-31-35		
Operator ID:	A8-PC\A8	ALS Bottle#:	20 Worklist Smp#: 13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL

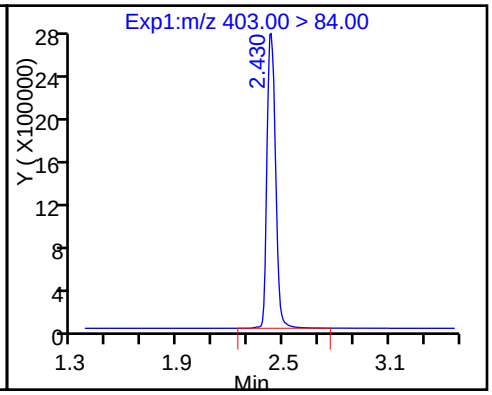
5 Perfluorobutanesulfonic acid



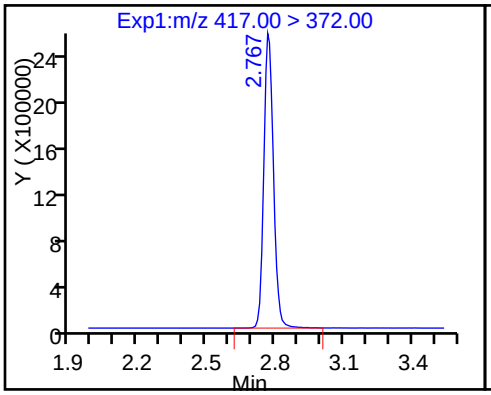
5 Perfluorobutanesulfonic acid



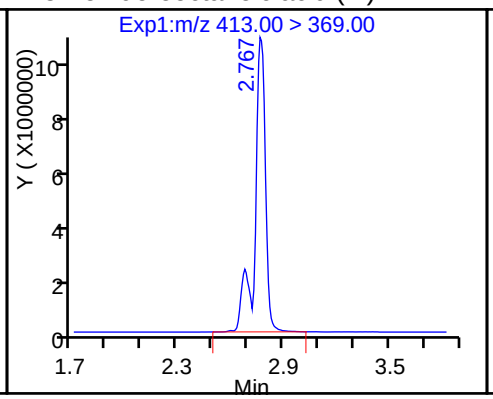
D 10 18O2 PFHxS



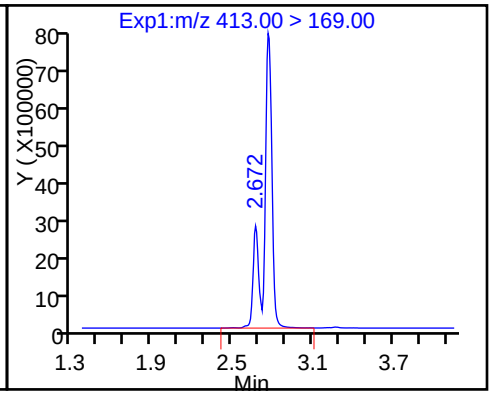
D 14 13C4 PFOA



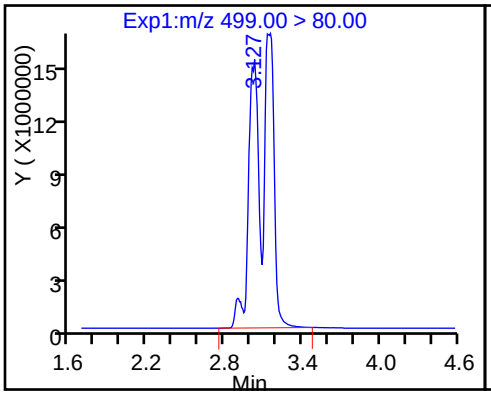
15 Perfluorooctanoic acid (M)



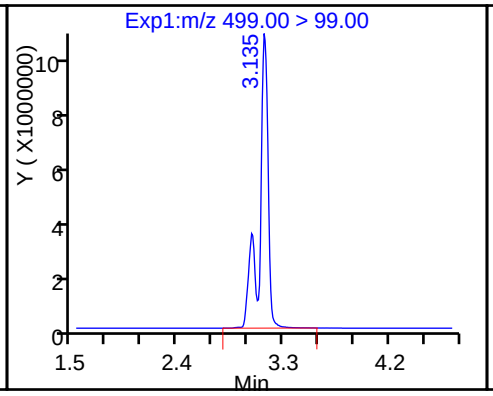
15 Perfluorooctanoic acid



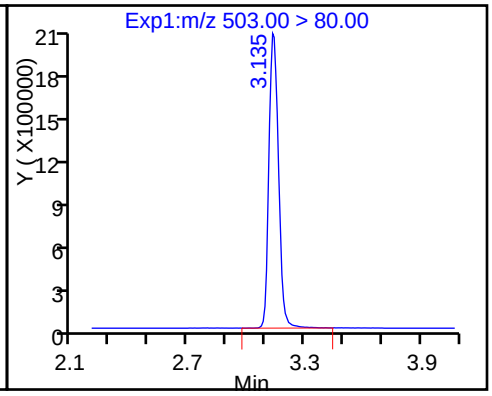
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

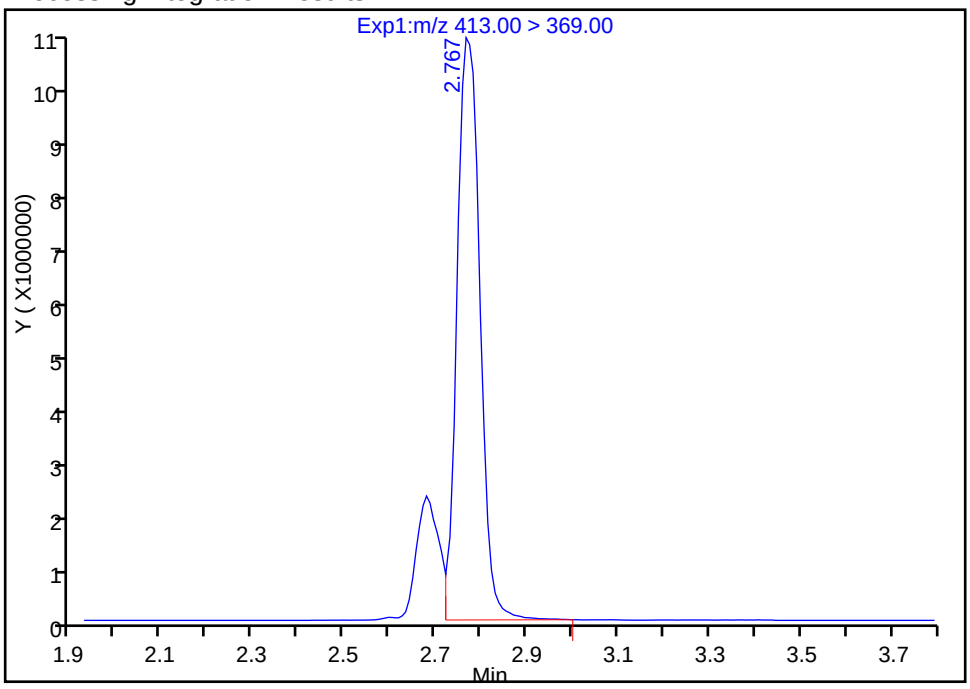
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_013.d				
Injection Date:	14-Dec-2016 18:38:49	Instrument ID:	A8_N		
Lims ID:	320-23890-A-6-A	Lab Sample ID:	320-23890-6		
Client ID:	DPT-16-21-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	20	Worklist Smp#:	13
Injection Vol:	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

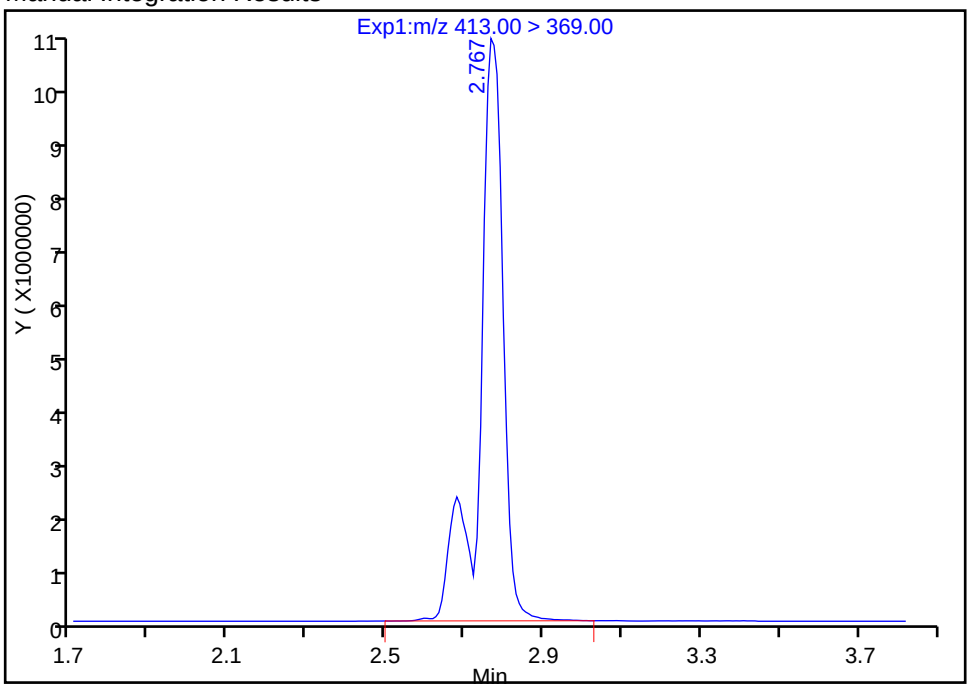
Processing Integration Results

RT: 2.77
Area: 37958780
Amount: 245.2054
Amount Units: ng/ml



Manual Integration Results

RT: 2.77
Area: 45901613
Amount: 296.5144
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:50:19

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-21-GW-31-35 DL Lab Sample ID: 320-23890-6 DL

Matrix: Water Lab File ID: 16DEC2016B_006.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 12:55

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 245.5(mL) Date Analyzed: 12/16/2016 13:22

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

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

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

Analysis Batch No.: 142598 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.74	D M	0.025	0.020	0.0076
1763-23-1	Perfluorooctane Sulfonate (PFOS)	3.2	D	0.041	0.031	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	88		25-150
STL00991	13C4 PFOS	99		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_006.d
Lims ID: 320-23890-A-6-A
Client ID: DPT-16-21-GW-31-35
Sample Type: Client
Inject. Date: 16-Dec-2016 13:22:46 ALS Bottle#: 50 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23890-a-6-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 18-Dec-2016 16:42:38 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 18-Dec-2016 16:33:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.900	1.906	-0.006	1.000	2958690	6.39				
298.90 > 99.00	1.900	1.906	-0.006	1.000	1223342		2.42(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.509	2.518	-0.009		1544906	4.72		10.0	191383	
D 14 13C4 PFOA										
417.00 > 372.00	2.858	2.860	-0.002		1012596	4.40		8.8	179182	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.858	2.860	-0.002	1.000	7335301	36.1			57994	M
413.00 > 169.00	2.762	2.860	-0.098	0.967	4963611		1.48(0.90-1.10)		34539	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.115	3.123	-0.008	1.000	38309372	156.6			161272	
499.00 > 99.00	3.222	3.123	0.099	1.034	9080258		4.22(0.90-1.10)		240393	
D 17 13C4 PFOS										
503.00 > 80.00	3.222	3.231	-0.009		1176022	4.73		9.9	83878	

QC Flag Legend

Review Flags
M - Manually Integrated

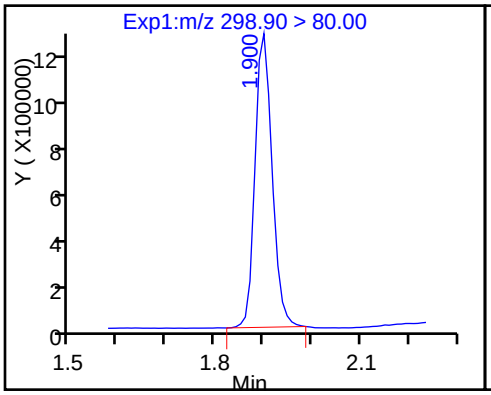
Report Date: 18-Dec-2016 16:42:49 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

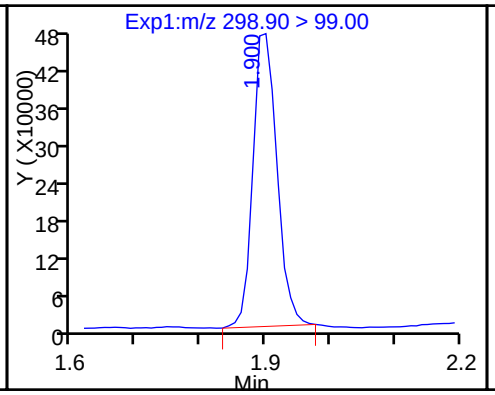
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_006.d

Injection Date:	16-Dec-2016 13:22:46	Instrument ID:	A8_N		
Lims ID:	320-23890-A-6-A	Lab Sample ID:	320-23890-6		
Client ID:	DPT-16-21-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	50	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

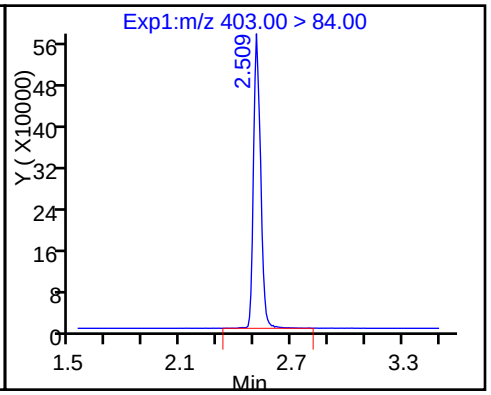
5 Perfluorobutanesulfonic acid



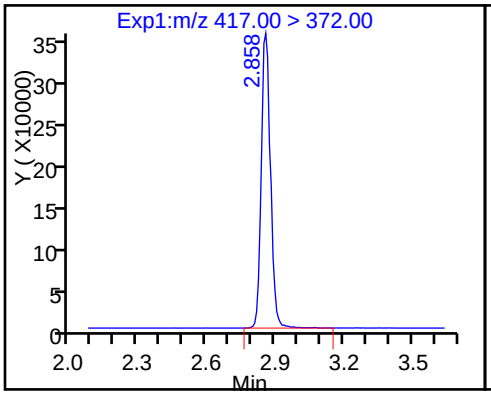
5 Perfluorobutanesulfonic acid



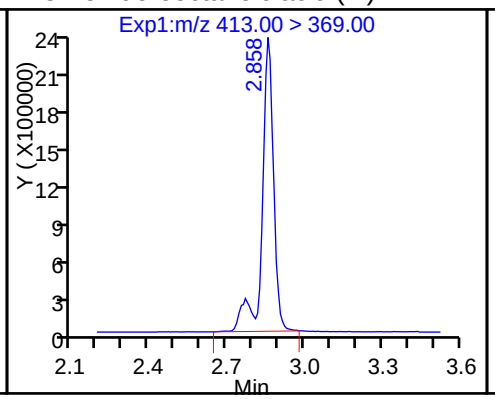
D 10 18O2 PFHxS



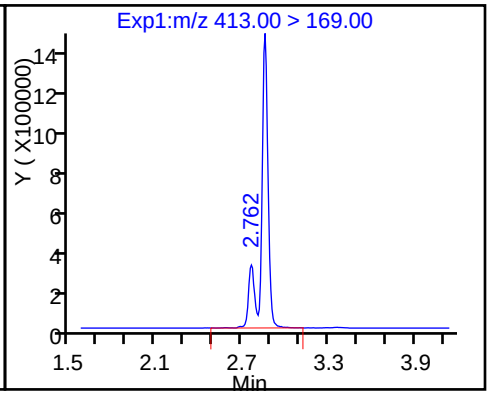
D 14 13C4 PFOA



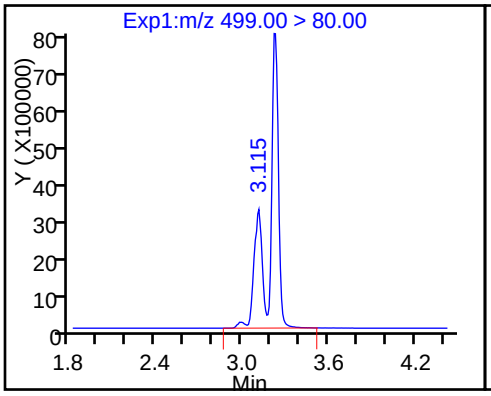
15 Perfluorooctanoic acid (M)



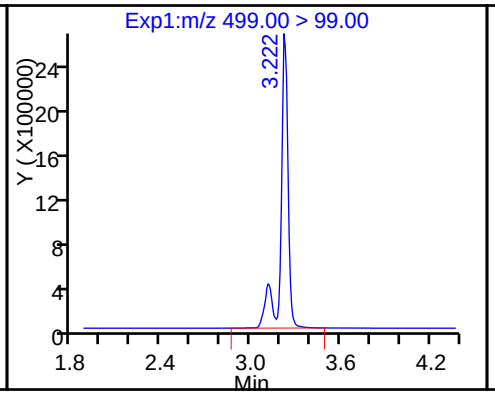
15 Perfluorooctanoic acid



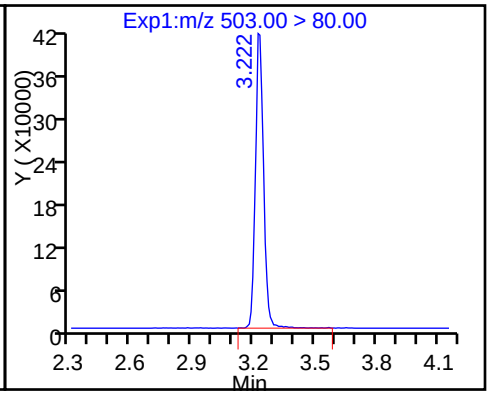
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

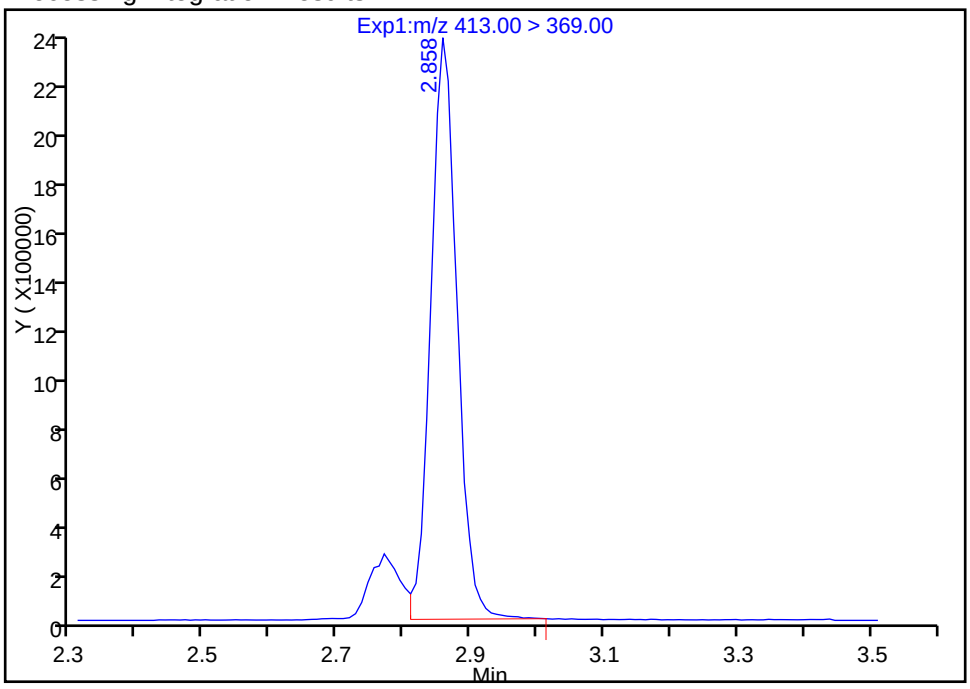
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_006.d				
Injection Date:	16-Dec-2016 13:22:46	Instrument ID:	A8_N		
Lims ID:	320-23890-A-6-A	Lab Sample ID:	320-23890-6		
Client ID:	DPT-16-21-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	50	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

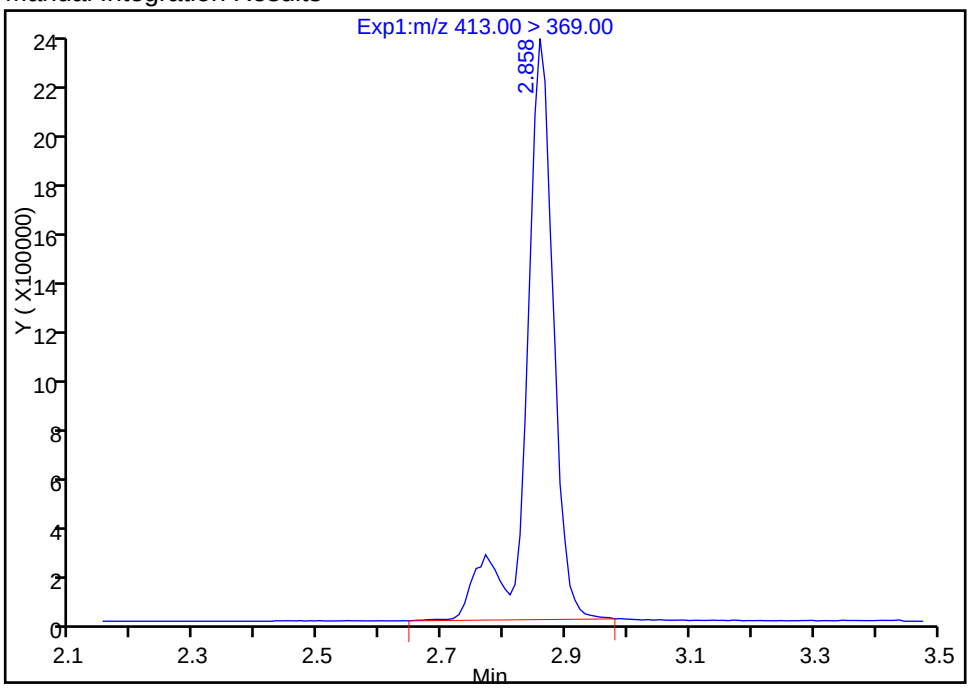
Processing Integration Results

RT: 2.86
Area: 6513298
Amount: 32.060607
Amount Units: ng/ml



Manual Integration Results

RT: 2.86
Area: 7335301
Amount: 36.106778
Amount Units: ng/ml



Reviewer: chandrasenas, 18-Dec-2016 16:33:02

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-31-GW-19-23 Lab Sample ID: 320-23890-7

Matrix: Water Lab File ID: 14DEC2016C_018.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 13:30

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 250.8(mL) Date Analyzed: 12/14/2016 19:16

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*8.4*	*E M*	*0.0025*	0.0020	*0.00075*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*14*	*E M*	*0.0040*	0.0030	*0.0013*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.67*	*E*	*0.0025*	0.0020	*0.00092*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	18	Q	25-150
STL00991	13C4 PFOS	17	Q	25-150
STL00994	18O2 PFHxS	15	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_018.d
Lims ID: 320-23890-A-7-A
Client ID: DPT-16-31-GW-19-23
Sample Type: Client
Inject. Date: 14-Dec-2016 19:16:17 ALS Bottle#: 21 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 15:57:22 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:51:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.819	1.833	-0.014	1.000	23898647	335.8				E
298.90 > 99.00	1.829	1.833	-0.004	1.005	42667889		0.56(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.416	2.430	-0.014		2245168	7.13		15.1	16609	
D 14 13C4 PFOA										
417.00 > 372.00	2.756	2.765	-0.009		1905675	8.87		17.7	88248	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.795	2.765	0.030	1.000	165406798	4192.2			47081	EM
413.00 > 169.00	2.787	2.765	0.022	0.997	170737191		0.97(0.90-1.10)		92105	M
18 Perfluorooctane sulfonic acid										EM
499.00 > 80.00	3.088	3.117	-0.029	1.000	300796749	7137.4			128808	EM
499.00 > 99.00	3.132	3.117	0.015	1.014	154735346		1.94(0.90-1.10)		0.0	
D 17 13C4 PFOS										
503.00 > 80.00	3.132	3.140	-0.008		1888656	8.26		17.3	23778	

QC Flag Legend

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

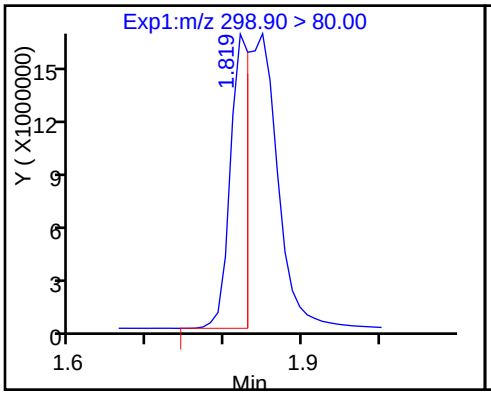
Report Date: 15-Dec-2016 15:57:39 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

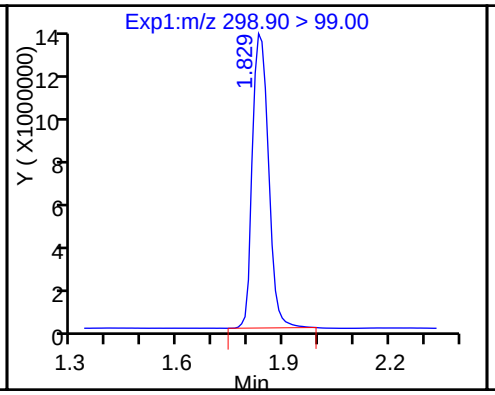
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_018.d

Injection Date:	14-Dec-2016 19:16:17	Instrument ID:	A8_N		
Lims ID:	320-23890-A-7-A	Lab Sample ID:	320-23890-7		
Client ID:	DPT-16-31-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	21	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

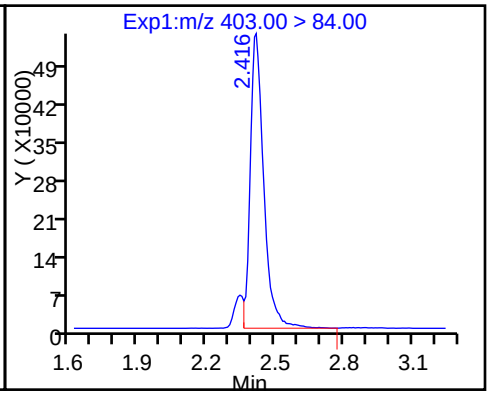
5 Perfluorobutanesulfonic acid



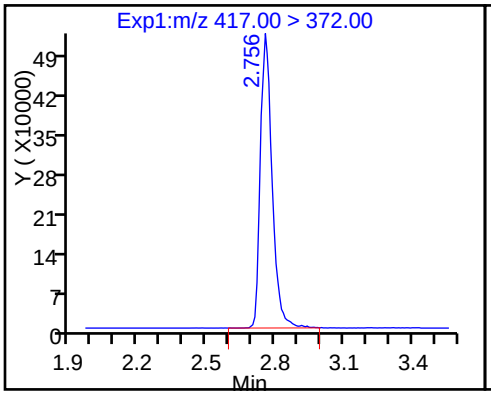
5 Perfluorobutanesulfonic acid



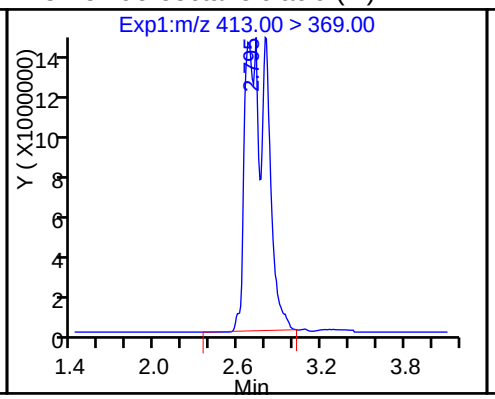
D 10 18O2 PFHxS



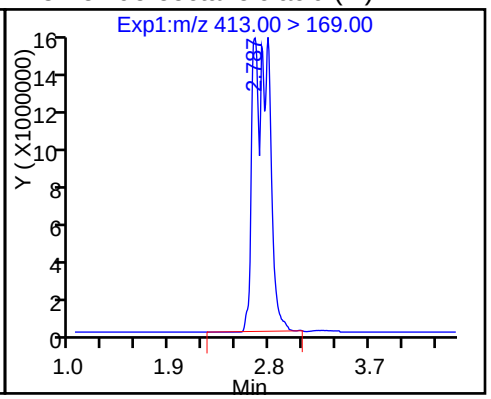
D 14 13C4 PFOA



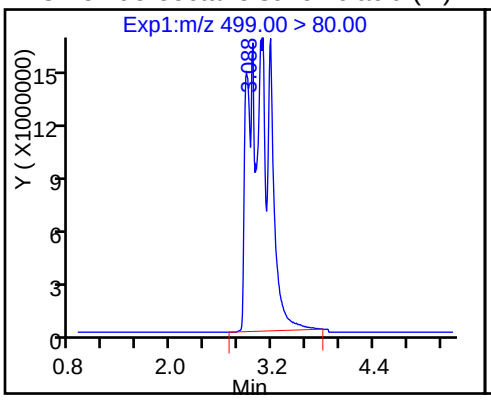
15 Perfluorooctanoic acid (M)



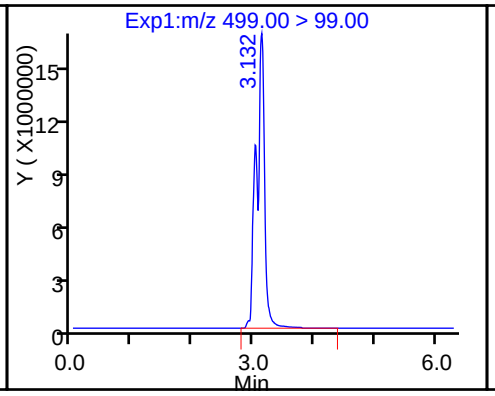
15 Perfluorooctanoic acid (M)



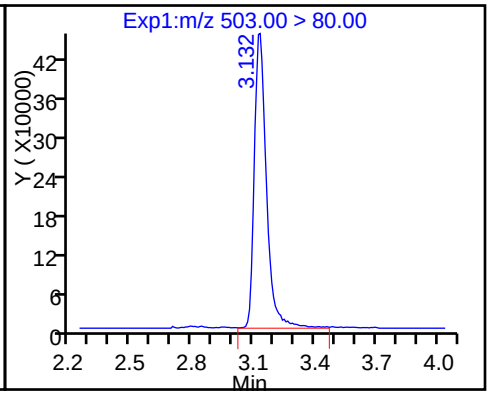
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

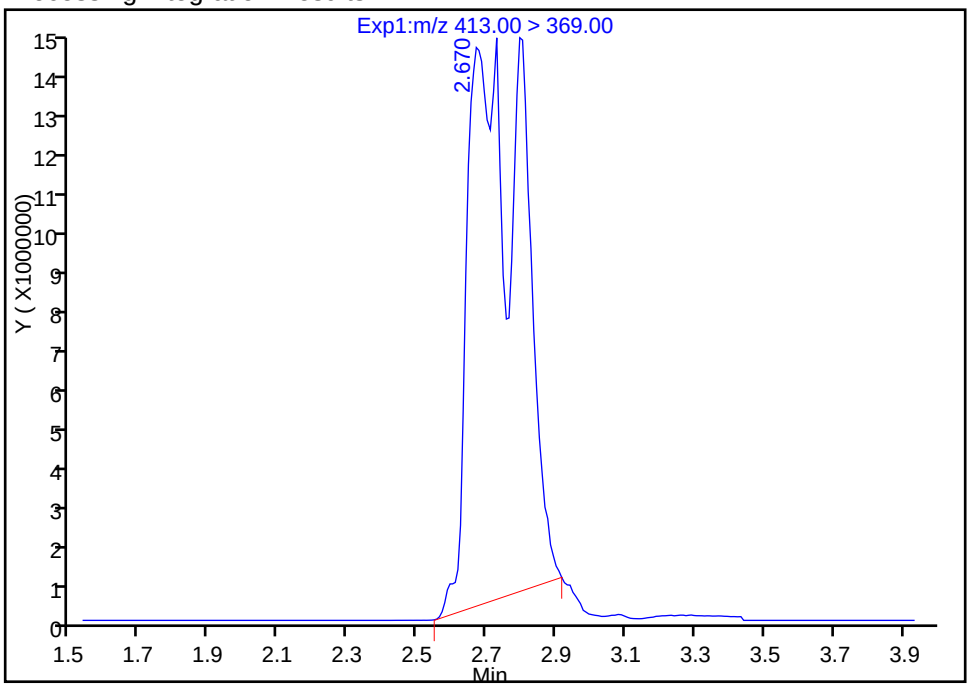
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_018.d				
Injection Date:	14-Dec-2016 19:16:17	Instrument ID:	A8_N		
Lims ID:	320-23890-A-7-A	Lab Sample ID:	320-23890-7		
Client ID:	DPT-16-31-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	21	Worklist Smp#:	18
Injection Vol:	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

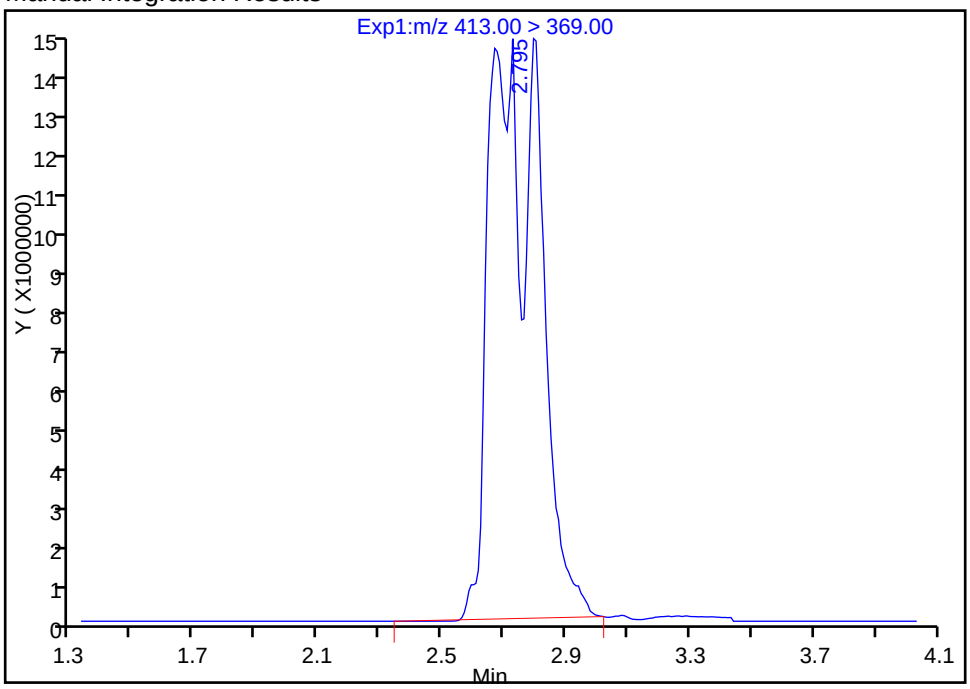
Processing Integration Results

RT: 2.67
Area: 152603947
Amount: 3867.7284
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 165406798
Amount: 4192.2151
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 15:57:22

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

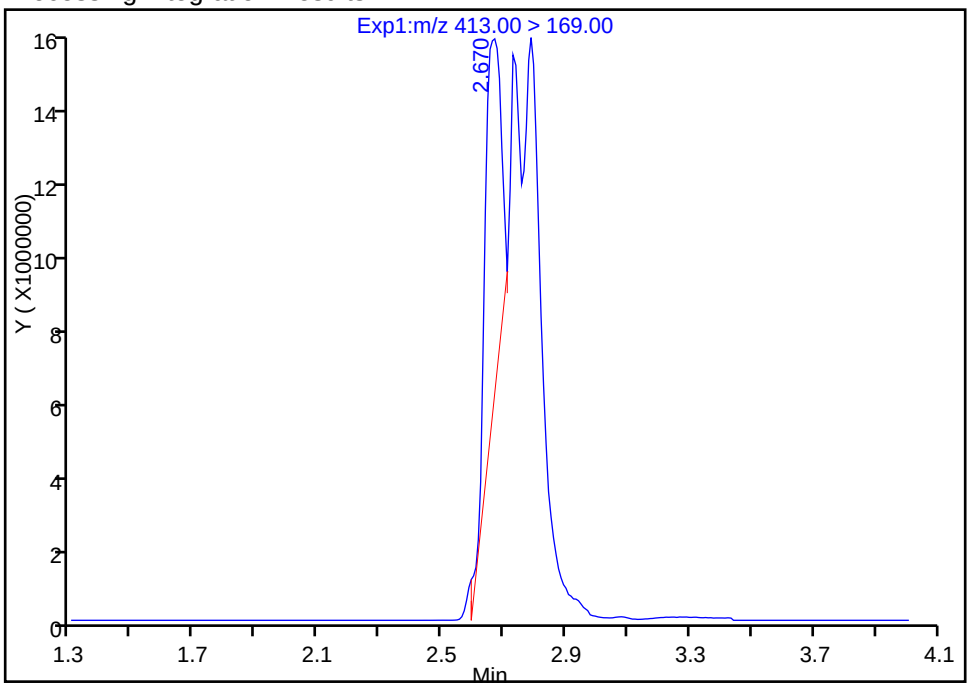
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_018.d				
Injection Date:	14-Dec-2016 19:16:17	Instrument ID:	A8_N		
Lims ID:	320-23890-A-7-A	Lab Sample ID:	320-23890-7		
Client ID:	DPT-16-31-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	21	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

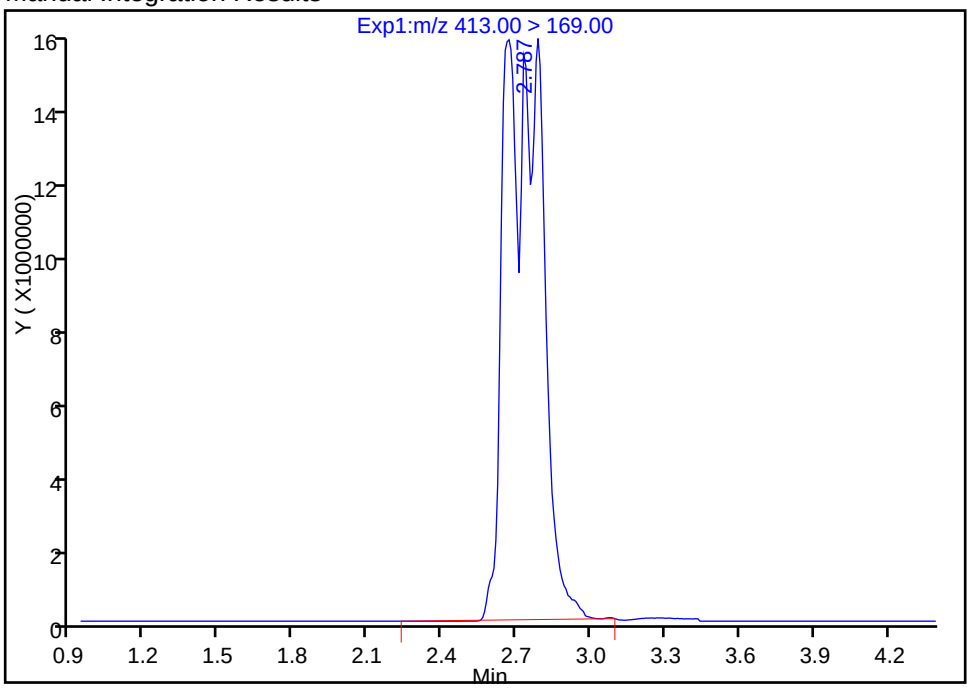
Processing Integration Results

RT: 2.67
Area: 35618205
Amount: 3867.7284
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 170737191
Amount: 4192.2151
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 15:57:22

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

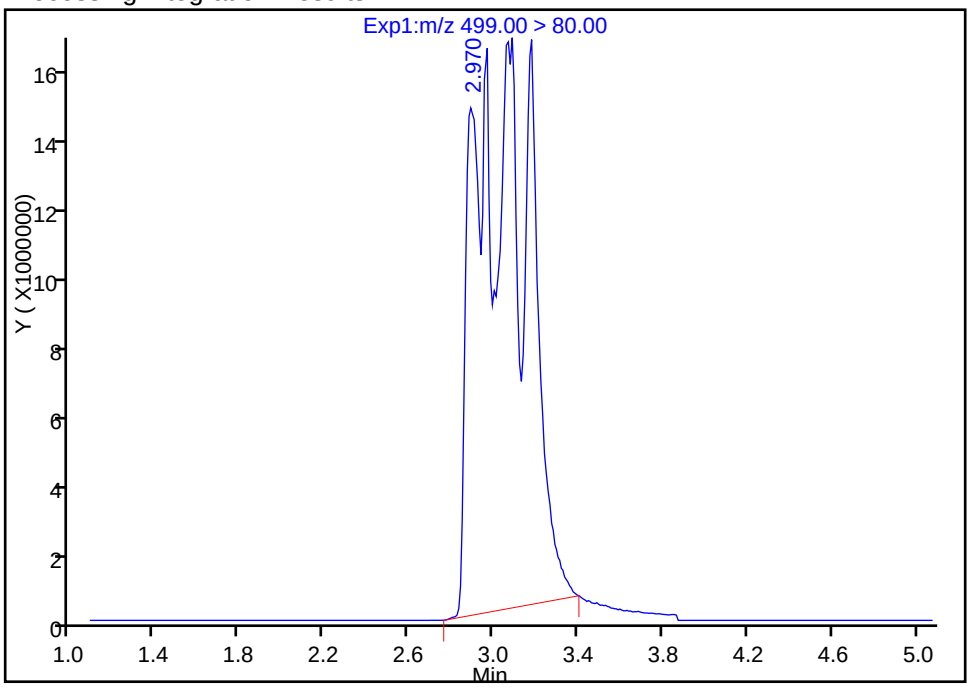
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_018.d				
Injection Date:	14-Dec-2016 19:16:17	Instrument ID:	A8_N		
Lims ID:	320-23890-A-7-A	Lab Sample ID:	320-23890-7		
Client ID:	DPT-16-31-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	21	Worklist Smp#:	18
Injection Vol:	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

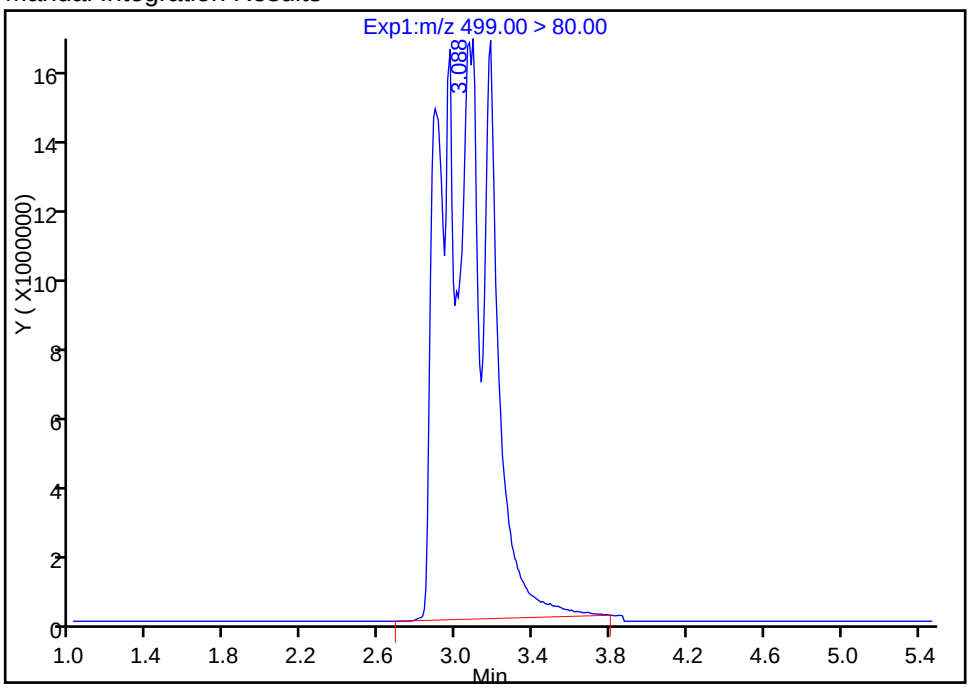
Processing Integration Results

RT: 2.97
Area: 284626958
Amount: 6753.7620
Amount Units: ng/ml



Manual Integration Results

RT: 3.09
Area: 300796749
Amount: 7137.4463
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 15:57:22

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-31-GW-19-23 DL Lab Sample ID: 320-23890-7 DL

Matrix: Water Lab File ID: 18DEC2016B_005.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 13:30

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 250.8(mL) Date Analyzed: 12/18/2016 23:19

Con. Extract Vol.: 0.5(mL) Dilution Factor: 100

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

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

Analysis Batch No.: 142819 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	28	D M	0.25	0.20	0.075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	42	D E	0.40	0.30	0.13
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.1	D	0.25	0.20	0.092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	139		25-150
STL00991	13C4 PFOS	143		25-150
STL00994	18O2 PFHxS	154	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_005.d
Lims ID: 320-23890-A-7-A
Client ID: DPT-16-31-GW-19-23
Sample Type: Client
Inject. Date: 18-Dec-2016 23:19:13 ALS Bottle#: 16 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 100.0000
Sample Info: 320-23890-a-7-a 100X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 19-Dec-2016 11:17:33 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 19-Dec-2016 10:43:42

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	1.974	1.983	-0.009	1.000	4009475	5.61				
298.90 > 99.00	1.974	1.983	-0.009	1.000	1663579		2.41(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.614	2.621	-0.007		238585	0.7297		1.5	24309	
D 14 13C4 PFOA										
417.00 > 372.00	2.973	2.976	-0.003		160078	0.6949		1.4	17281	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.965	2.984	-0.019	1.000	44807987	139.5			260758	M
413.00 > 169.00	2.965	2.984	-0.019	1.000	33549666		1.34(0.90-1.10)		985690	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.325	3.244	0.081	1.000	74390177	210.9			579246	E
499.00 > 99.00	3.340	3.244	0.096	1.005	17097210		4.35(0.90-1.10)		589113	
D 17 13C4 PFOS										
503.00 > 80.00	3.340	3.361	-0.021		169524	0.6812		1.4	7541	

QC Flag Legend

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

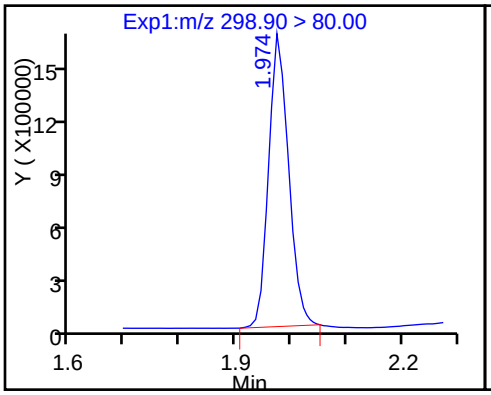
Report Date: 19-Dec-2016 11:17:42 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

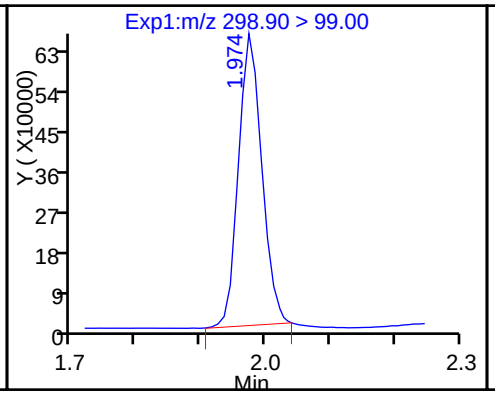
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_005.d

Injection Date:	18-Dec-2016 23:19:13	Instrument ID:	A8_N		
Lims ID:	320-23890-A-7-A	Lab Sample ID:	320-23890-7		
Client ID:	DPT-16-31-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	16	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	100.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

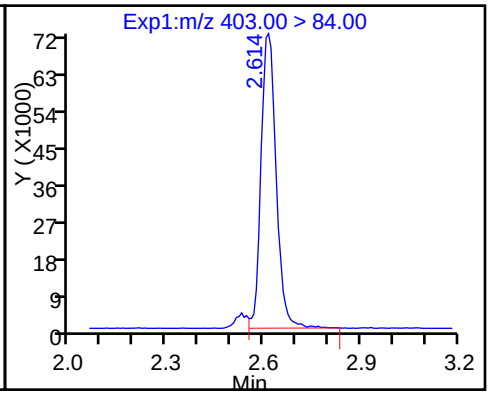
5 Perfluorobutanesulfonic acid



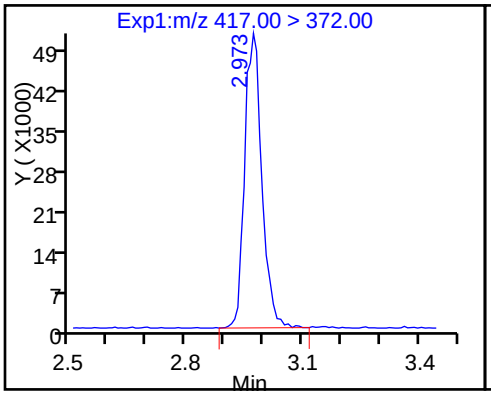
5 Perfluorobutanesulfonic acid



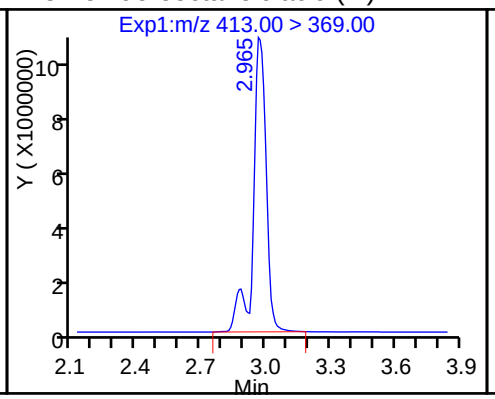
D 10 18O2 PFHxS



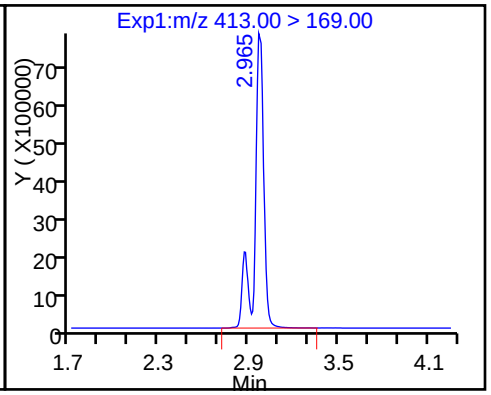
D 14 13C4 PFOA



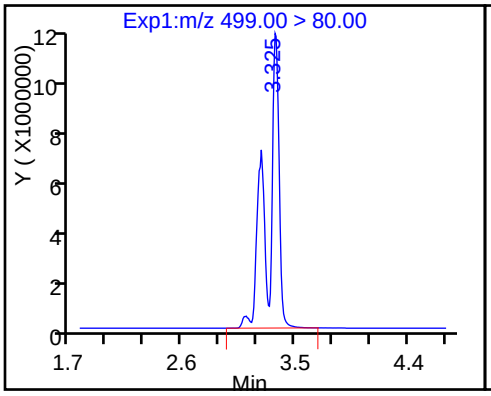
15 Perfluorooctanoic acid (M)



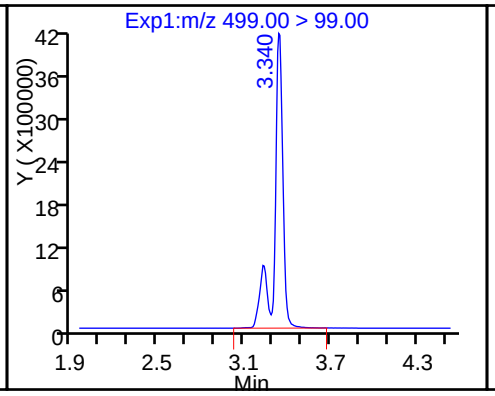
15 Perfluorooctanoic acid



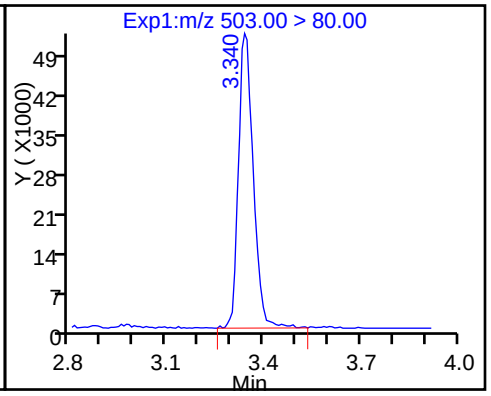
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

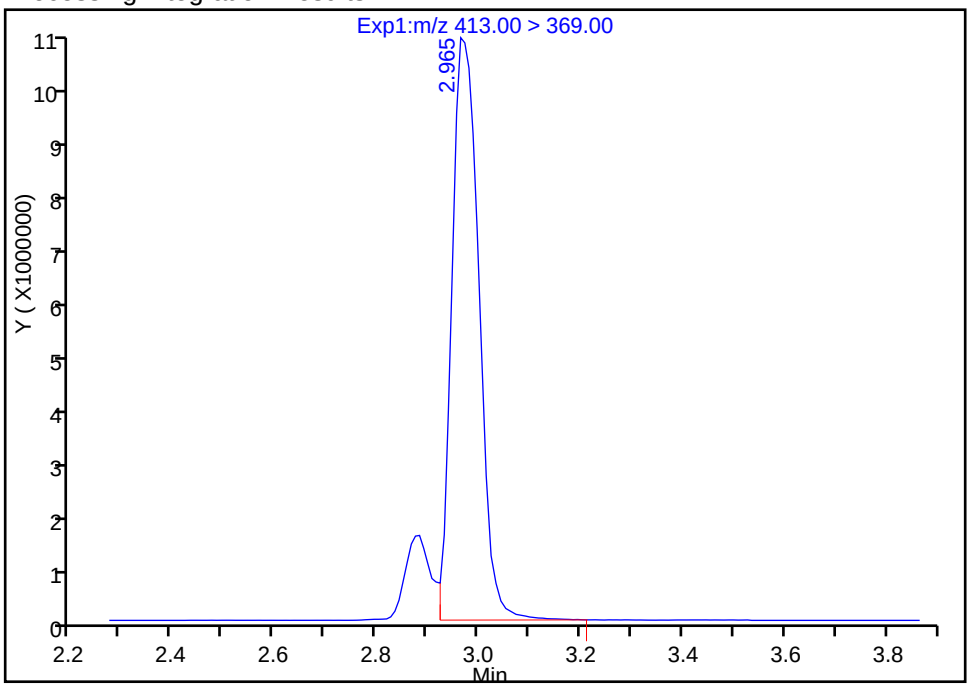
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_005.d				
Injection Date:	18-Dec-2016 23:19:13	Instrument ID:	A8_N		
Lims ID:	320-23890-A-7-A	Lab Sample ID:	320-23890-7		
Client ID:	DPT-16-31-GW-19-23				
Operator ID:	A8-PC\A8	ALS Bottle#:	16	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	100.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

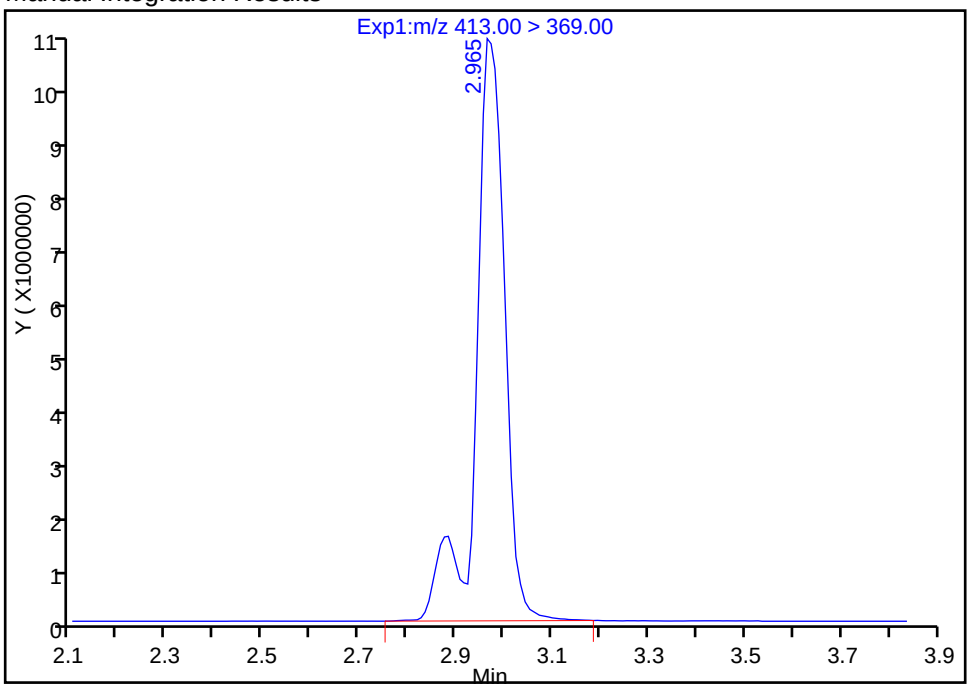
Processing Integration Results

RT: 2.96
Area: 39475052
Amount: 122.9131
Amount Units: ng/ml



Manual Integration Results

RT: 2.96
Area: 44807987
Amount: 139.5182
Amount Units: ng/ml



Reviewer: chandrasenas, 19-Dec-2016 11:15:43

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-31-GW-31-35 Lab Sample ID: 320-23890-8

Matrix: Water Lab File ID: 14DEC2016C_019.d

Analysis Method: 537 (Modified) Date Collected: 11/28/2016 14:15

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 243.5(mL) Date Analyzed: 12/14/2016 19:23

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.34	M	0.0026	0.0021	0.00077
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1.5*	*E*	*0.0041*	0.0031	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.086		0.0026	0.0021	0.00094

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	67		25-150
STL00991	13C4 PFOS	73		25-150
STL00994	18O2 PFHxS	72		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_019.d
Lims ID: 320-23890-A-8-A
Client ID: DPT-16-31-GW-31-35
Sample Type: Client
Inject. Date: 14-Dec-2016 19:23:47 ALS Bottle#: 22 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:55:15 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:51:58

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	1.829	1.833	-0.004	1.000	14118619	41.7				
298.90 > 99.00	1.829	1.833	-0.004	1.000	6033326		2.34(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.420	2.430	-0.010		10691521	33.9		71.8	648750	
D 14 13C4 PFOA										
417.00 > 372.00	2.760	2.765	-0.005		7167580	33.4		66.7	354180	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.760	2.765	-0.005	1.000	24719605	166.6			469102	M
413.00 > 169.00	2.660	2.765	-0.105	0.964	16633713		1.49(0.90-1.10)		82829	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.113	3.117	-0.004	1.000	132113573	743.8			335550	E
499.00 > 99.00	3.137	3.117	0.020	1.008	39697060		3.33(0.90-1.10)		463968	
D 17 13C4 PFOS										
503.00 > 80.00	3.129	3.140	-0.011		7960153	34.8		72.8	195265	

QC Flag Legend

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

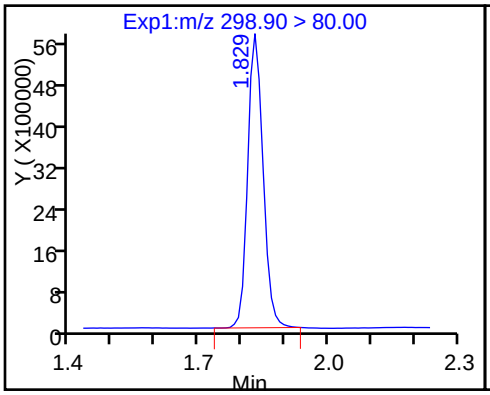
Report Date: 15-Dec-2016 14:55:20 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

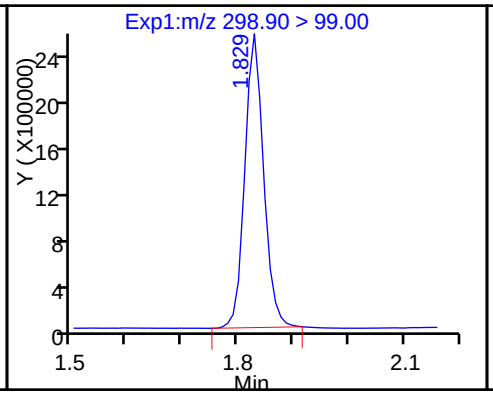
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_019.d

Injection Date:	14-Dec-2016 19:23:47	Instrument ID:	A8_N		
Lims ID:	320-23890-A-8-A	Lab Sample ID:	320-23890-8		
Client ID:	DPT-16-31-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

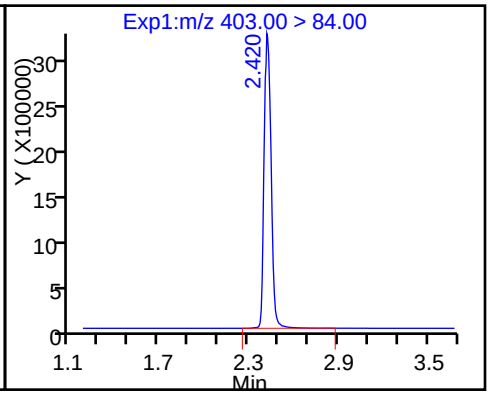
5 Perfluorobutanesulfonic acid



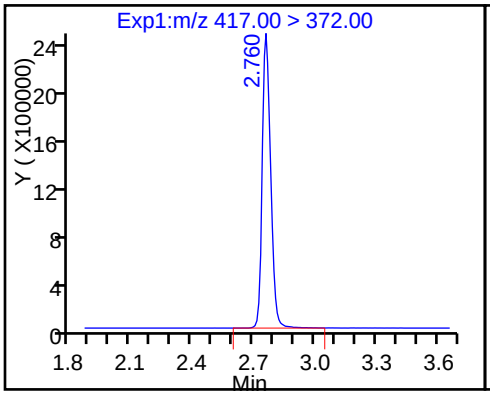
5 Perfluorobutanesulfonic acid



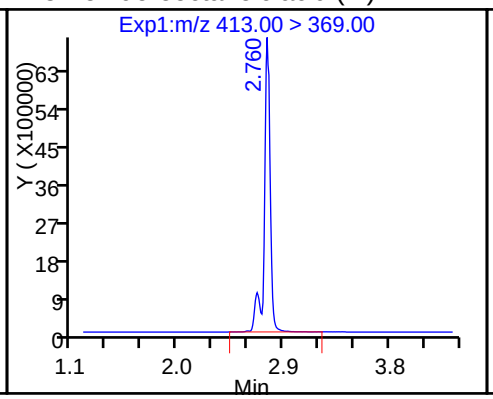
D 10 18O2 PFHxS



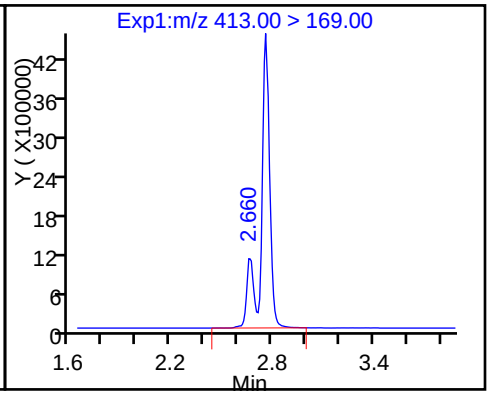
D 14 13C4 PFOA



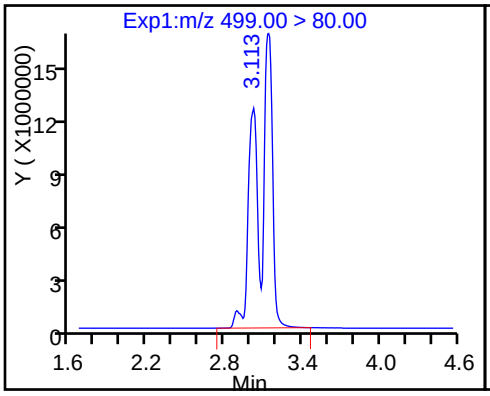
15 Perfluorooctanoic acid (M)



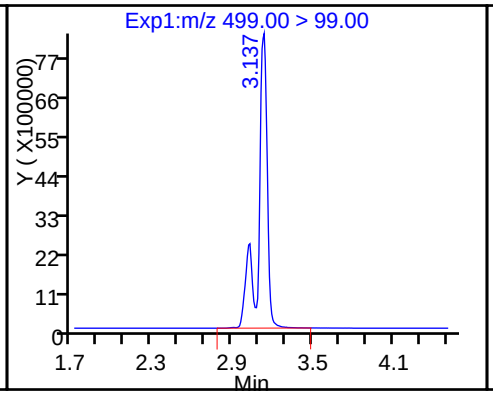
15 Perfluorooctanoic acid



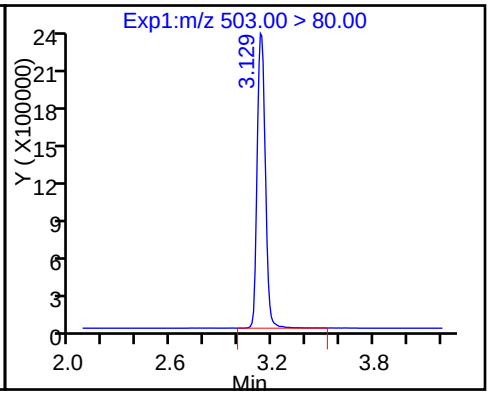
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

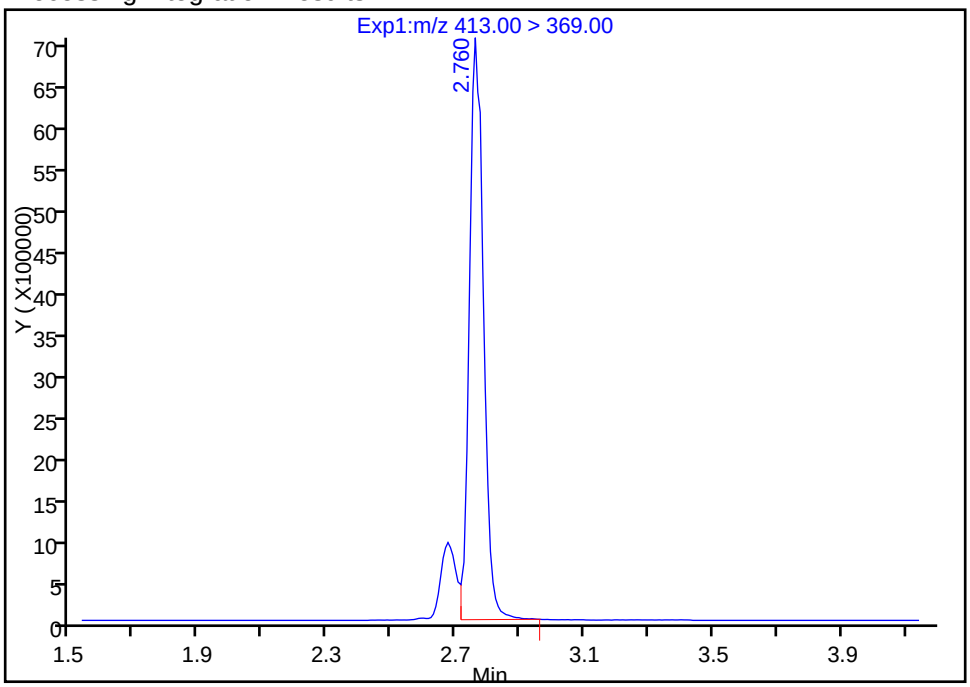
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_019.d				
Injection Date:	14-Dec-2016 19:23:47	Instrument ID:	A8_N		
Lims ID:	320-23890-A-8-A	Lab Sample ID:	320-23890-8		
Client ID:	DPT-16-31-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

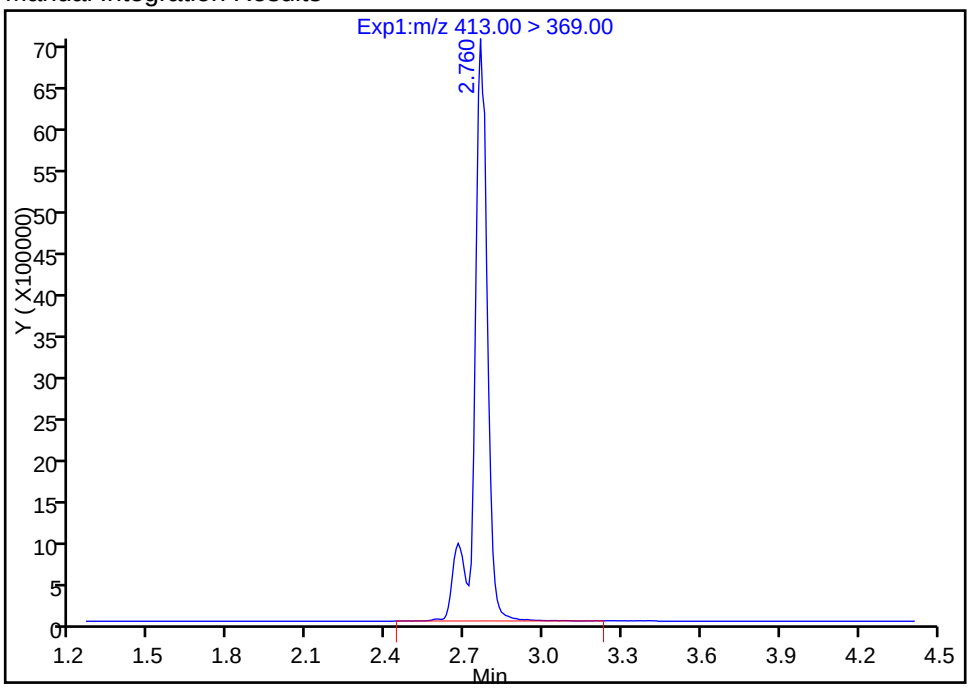
Processing Integration Results

RT: 2.76
Area: 21421561
Amount: 144.3503
Amount Units: ng/ml



Manual Integration Results

RT: 2.76
Area: 24719605
Amount: 166.5743
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:51:58

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-31-GW-31-35 DL | Lab Sample ID: 320-23890-8 DL

Matrix: Water | Lab File ID: 16DEC2016B_008.d

Analysis Method: 537 (Modified) | Date Collected: 11/28/2016 14:15

Extraction Method: 3535 | Date Extracted: 12/01/2016 19:42

Sample wt/vol: 243.5(mL) | Date Analyzed: 12/16/2016 13:37

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.: 142598 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.36*	*D M*	*0.026*	0.021	*0.0077*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.0	D	0.041	0.031	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	88		25-150
STL00991	13C4 PFOS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_008.d
Lims ID: 320-23890-A-8-A
Client ID: DPT-16-31-GW-31-35
Sample Type: Client
Inject. Date: 16-Dec-2016 13:37:47 ALS Bottle#: 52 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23890-a-8-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 18-Dec-2016 16:42:38 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 18-Dec-2016 16:35:35

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	1.887	1.906	-0.019	1.000	1653084	3.39				
298.90 > 99.00	1.887	1.906	-0.019	1.000	693960		2.38(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.497	2.518	-0.021		1626708	4.98		10.5	199164	
D 14 13C4 PFOA										
417.00 > 372.00	2.846	2.860	-0.014		1018919	4.42		8.8	91083	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.846	2.860	-0.014	1.000	3556885	17.4			30854	M
413.00 > 169.00	2.750	2.860	-0.110	0.966	2371549		1.50(0.90-1.10)		18960	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.095	3.123	-0.028	1.000	24058476	96.3			188197	
499.00 > 99.00	3.209	3.123	0.086	1.037	5708439		4.21(0.90-1.10)		270617	
D 17 13C4 PFOS										
503.00 > 80.00	3.218	3.231	-0.013		1200896	4.83		10.1	71164	

QC Flag Legend

Review Flags
M - Manually Integrated

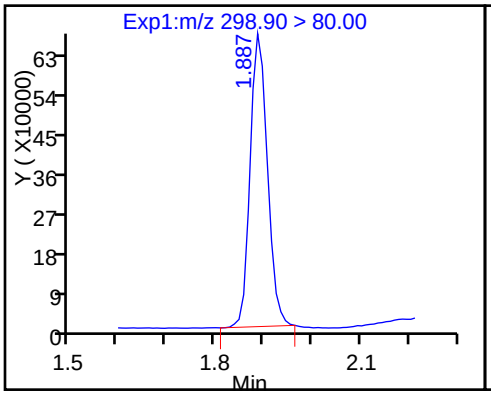
Report Date: 18-Dec-2016 16:42:51 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

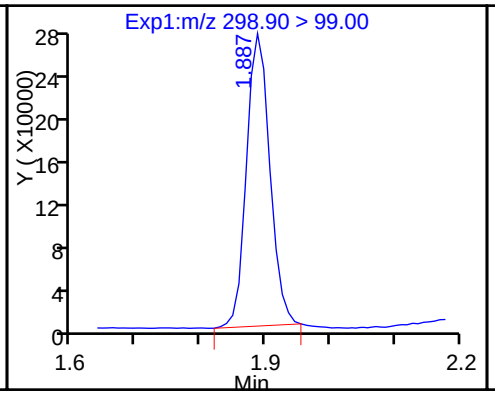
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_008.d

Injection Date:	16-Dec-2016 13:37:47	Instrument ID:	A8_N		
Lims ID:	320-23890-A-8-A	Lab Sample ID:	320-23890-8		
Client ID:	DPT-16-31-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	52	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

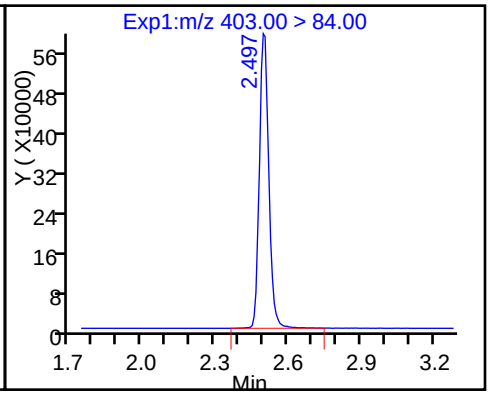
5 Perfluorobutanesulfonic acid



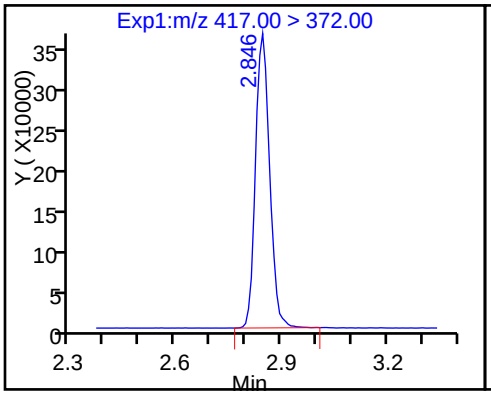
5 Perfluorobutanesulfonic acid



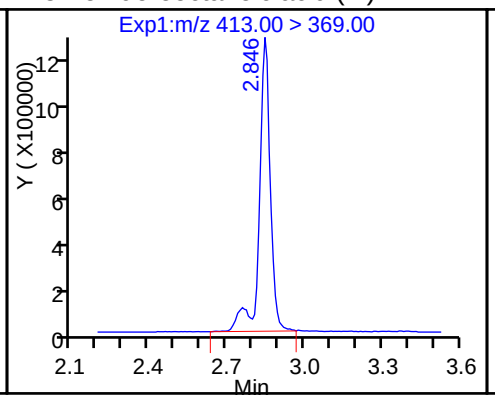
D 10 18O2 PFHxS



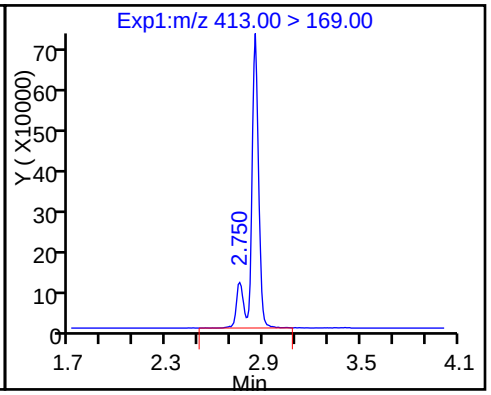
D 14 13C4 PFOA



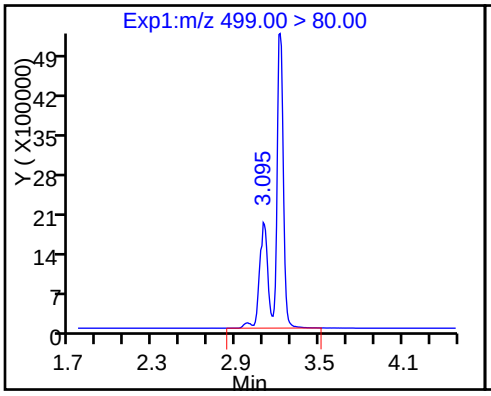
15 Perfluorooctanoic acid (M)



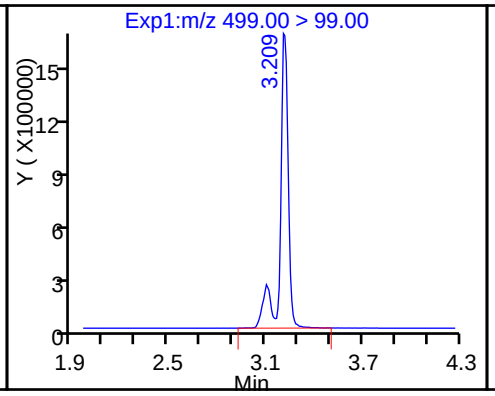
15 Perfluorooctanoic acid



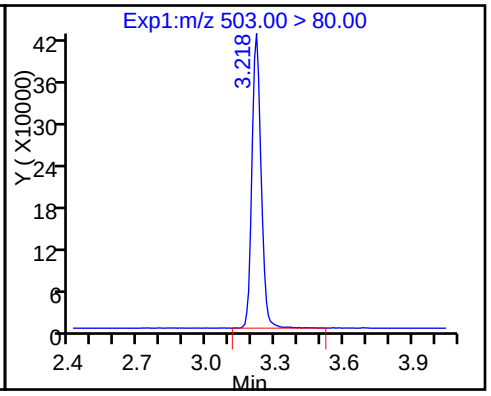
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

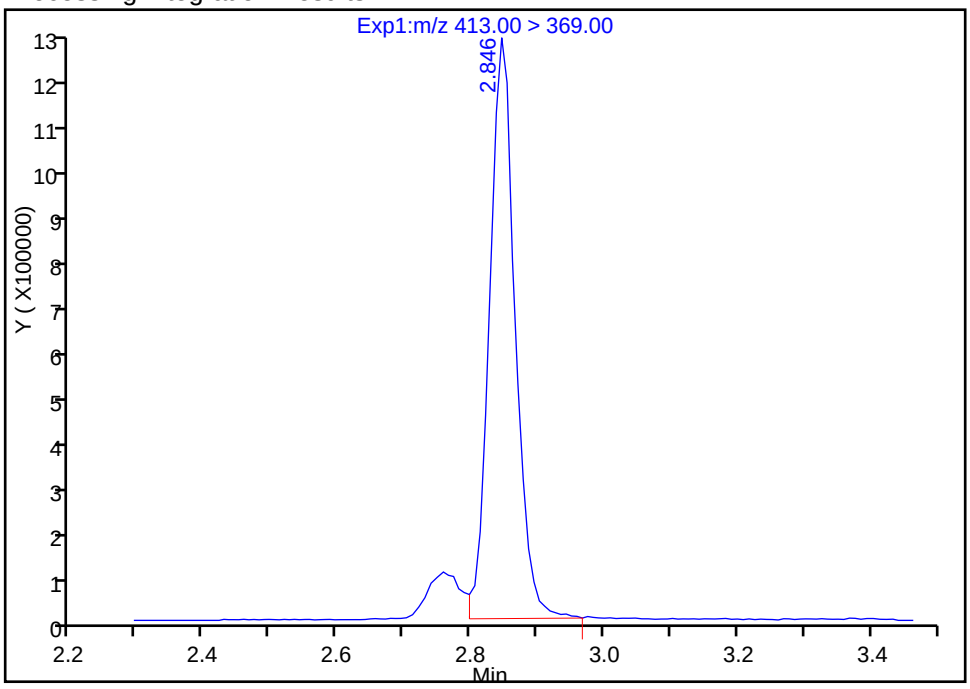
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_008.d				
Injection Date:	16-Dec-2016 13:37:47	Instrument ID:	A8_N		
Lims ID:	320-23890-A-8-A	Lab Sample ID:	320-23890-8		
Client ID:	DPT-16-31-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	52	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

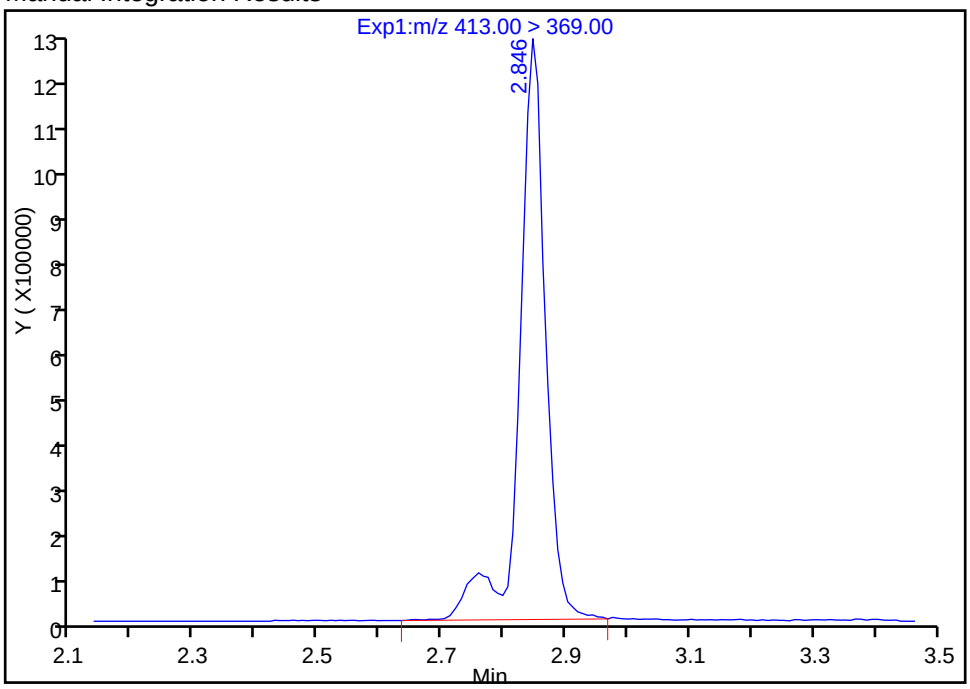
Processing Integration Results

RT: 2.85
Area: 3216084
Amount: 15.732391
Amount Units: ng/ml



Manual Integration Results

RT: 2.85
Area: 3556885
Amount: 17.399516
Amount Units: ng/ml



Reviewer: chandrasenas, 18-Dec-2016 16:35:35

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-13-GW-31-35 | Lab Sample ID: 320-23890-9

Matrix: Water | Lab File ID: 14DEC2016C_020.d

Analysis Method: 537 (Modified) | Date Collected: 11/29/2016 10:40

Extraction Method: 3535 | Date Extracted: 12/01/2016 19:42

Sample wt/vol: 245.7(mL) | Date Analyzed: 12/14/2016 19:31

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.: 142338 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.31	M	0.0025	0.0020	0.00076
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.52*	*E*	*0.0041*	0.0031	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.0020	0.00093

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	74		25-150
STL00991	13C4 PFOS	92		25-150
STL00994	18O2 PFHxS	67		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_020.d
Lims ID: 320-23890-A-9-A
Client ID: DPT-16-13-GW-31-35
Sample Type: Client
Inject. Date: 14-Dec-2016 19:31:18 ALS Bottle#: 23 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:55:15 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:52:33

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	1.838	1.833	0.005	1.000	9319378	29.4				
298.90 > 99.00	1.838	1.833	0.005	1.000	3989939		2.34(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.429	2.430	-0.001		10006628	31.8		67.2	501479	
D 14 13C4 PFOA										
417.00 > 372.00	2.774	2.765	0.009		7914503	36.8		73.7	461773	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.766	2.765	0.001	1.000	24923723	152.1			453485	M
413.00 > 169.00	2.774	2.765	0.009	1.003	17134771		1.45(0.90-1.10)		913643	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.110	3.117	-0.007	1.000	57667533	257.8			385491	E
499.00 > 99.00	3.134	3.117	0.017	1.008	13901547		4.15(0.90-1.10)		498449	
D 17 13C4 PFOS										
503.00 > 80.00	3.134	3.140	-0.006		10025916	43.9		91.7	247401	

QC Flag Legend

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

Report Date: 15-Dec-2016 14:55:21 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_020.d

Injection Date: 14-Dec-2016 19:31:18 Instrument ID: A8_N

Lims ID: 320-23890-A-9-A Lab Sample ID: 320-23890-9

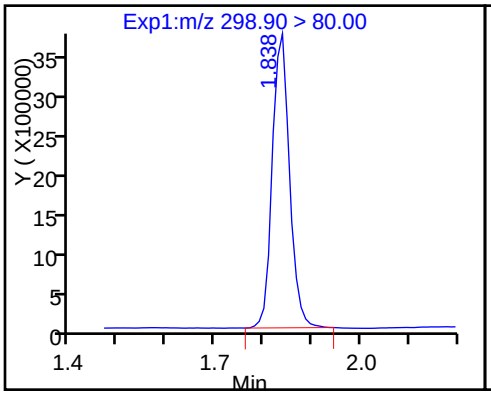
Client ID: DPT-16-13-GW-31-35

Operator ID: A8-PC\A8 ALS Bottle#: 23 Worklist Smp#: 20

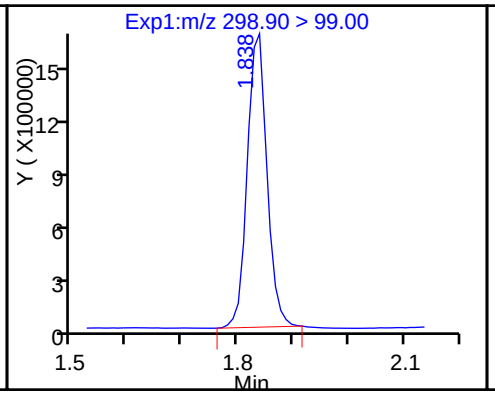
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

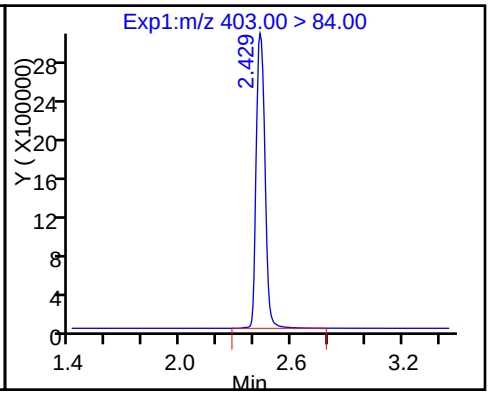
5 Perfluorobutanesulfonic acid



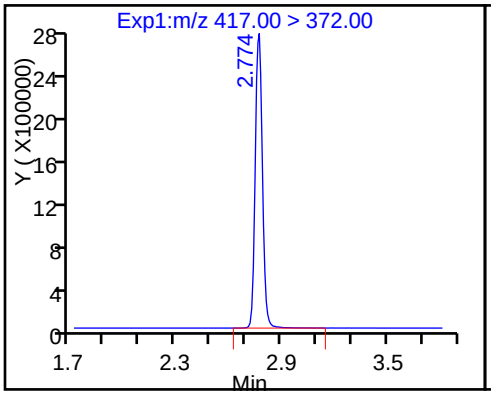
5 Perfluorobutanesulfonic acid



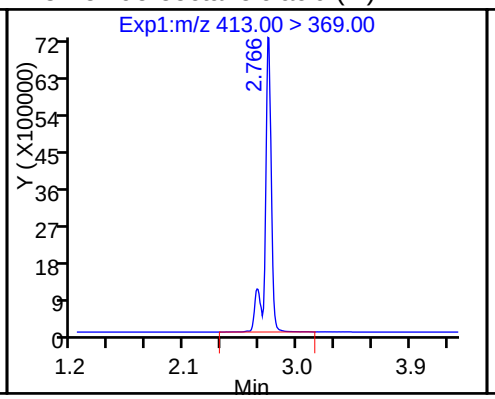
D 10 18O2 PFHxS



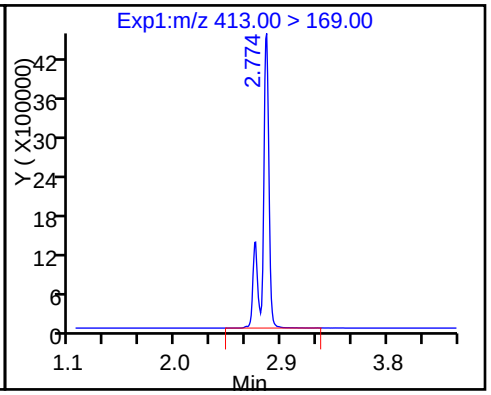
D 14 13C4 PFOA



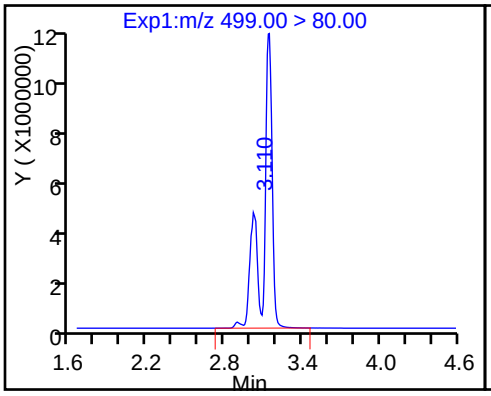
15 Perfluorooctanoic acid (M)



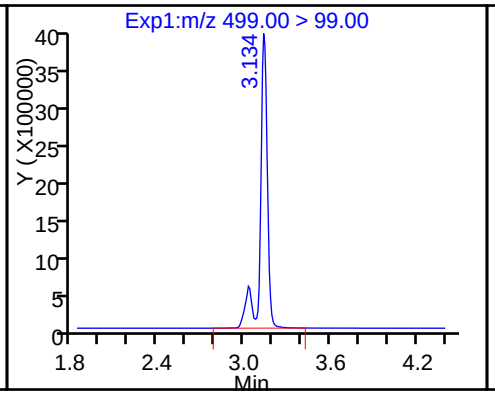
15 Perfluorooctanoic acid



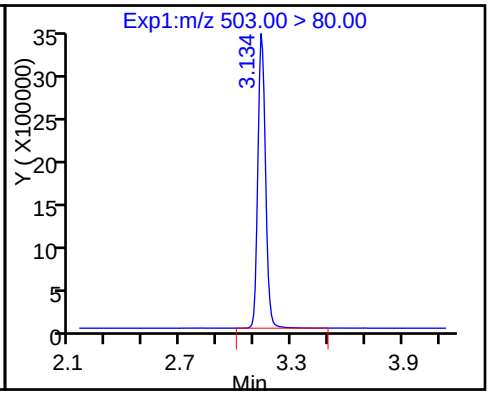
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

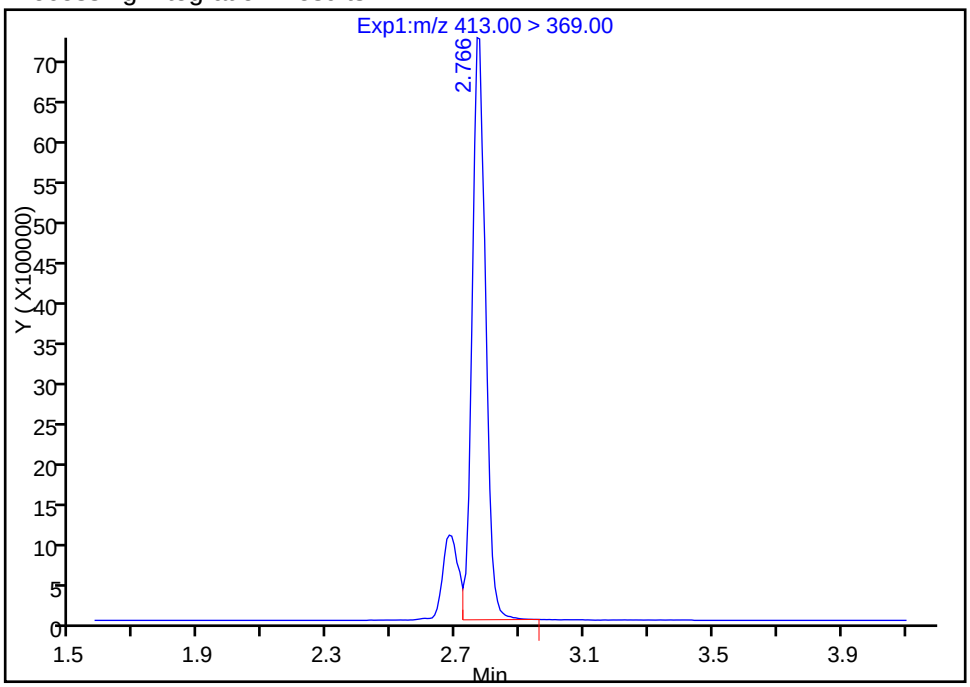
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_020.d				
Injection Date:	14-Dec-2016 19:31:18	Instrument ID:	A8_N		
Lims ID:	320-23890-A-9-A	Lab Sample ID:	320-23890-9		
Client ID:	DPT-16-13-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	23	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

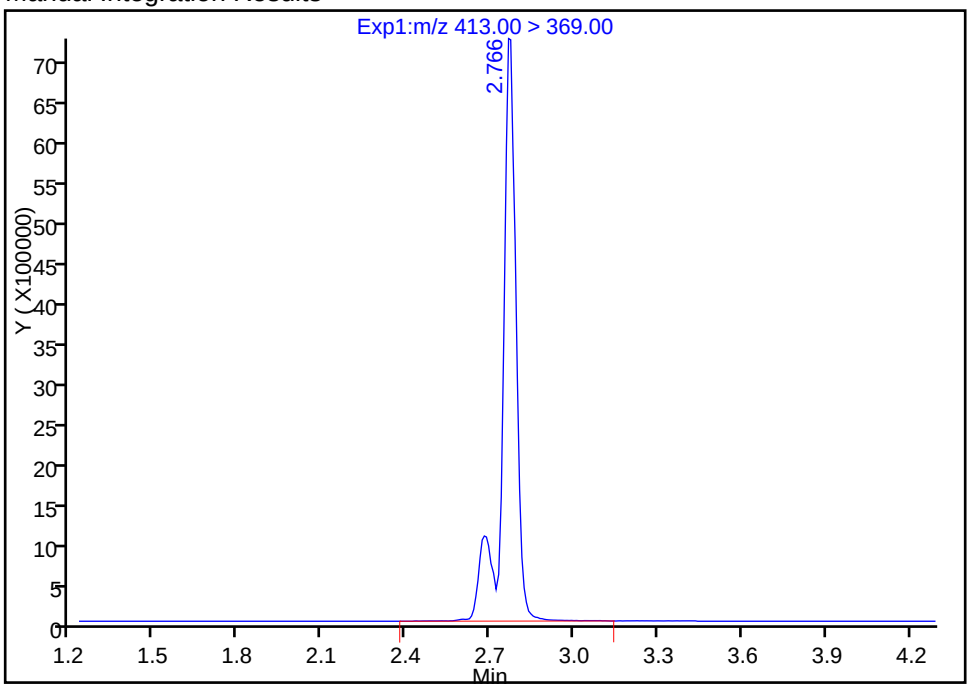
Processing Integration Results

RT: 2.77
Area: 21157772
Amount: 129.1176
Amount Units: ng/ml



Manual Integration Results

RT: 2.77
Area: 24923723
Amount: 152.0997
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:52:33

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-13-GW-31-35 DL | Lab Sample ID: 320-23890-9 DL

Matrix: Water | Lab File ID: 16DEC2016B_009.d

Analysis Method: 537 (Modified) | Date Collected: 11/29/2016 10:40

Extraction Method: 3535 | Date Extracted: 12/01/2016 19:42

Sample wt/vol: 245.7(mL) | Date Analyzed: 12/16/2016 13:45

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.: 142598 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.34*	*D M*	*0.025*	0.020	*0.0076*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.62	D	0.041	0.031	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	82		25-150
STL00991	13C4 PFOS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_009.d
Lims ID: 320-23890-A-9-A
Client ID: DPT-16-13-GW-31-35
Sample Type: Client
Inject. Date: 16-Dec-2016 13:45:17 ALS Bottle#: 53 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23890-a-9-a 10X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 18-Dec-2016 16:42:38 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 18-Dec-2016 16:35:52

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	1.897	1.906	-0.009	1.000	1053813	2.41				
298.90 > 99.00	1.897	1.906	-0.009	1.000	435357		2.42(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.504	2.518	-0.014		1457213	4.46		9.4	536865	
D 14 13C4 PFOA										
417.00 > 372.00	2.851	2.860	-0.009		941966	4.09		8.2	88252	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.851	2.860	-0.009	1.000	3187056	16.9			25197	M
413.00 > 169.00	2.756	2.860	-0.104	0.967	2074677		1.54(0.90-1.10)		20148	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.115	3.123	-0.008	1.000	6944364	30.3			63332	
499.00 > 99.00	3.222	3.123	0.099	1.034	1453195		4.78(0.90-1.10)		75882	
D 17 13C4 PFOS										
503.00 > 80.00	3.222	3.231	-0.009		1100700	4.42		9.3	65959	

QC Flag Legend

Review Flags
M - Manually Integrated

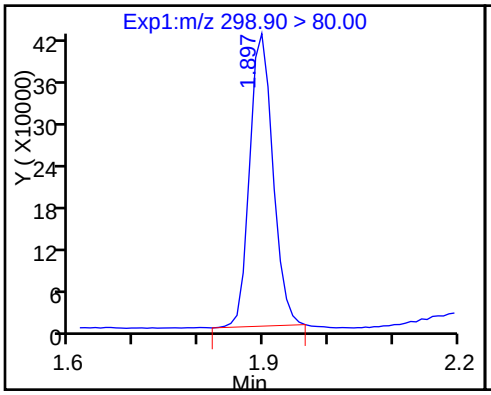
Report Date: 18-Dec-2016 16:42:52 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

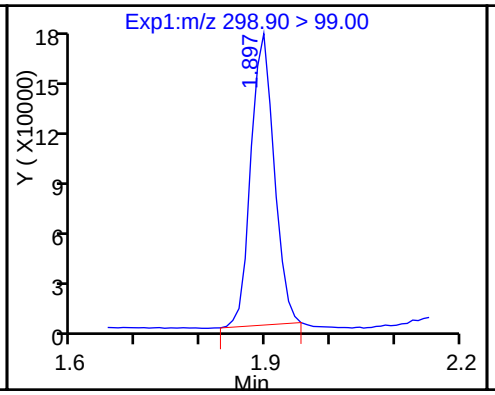
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_009.d

Injection Date:	16-Dec-2016 13:45:17	Instrument ID:	A8_N		
Lims ID:	320-23890-A-9-A	Lab Sample ID:	320-23890-9		
Client ID:	DPT-16-13-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	53	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

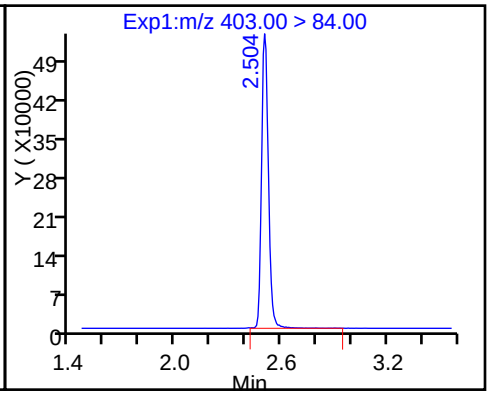
5 Perfluorobutanesulfonic acid



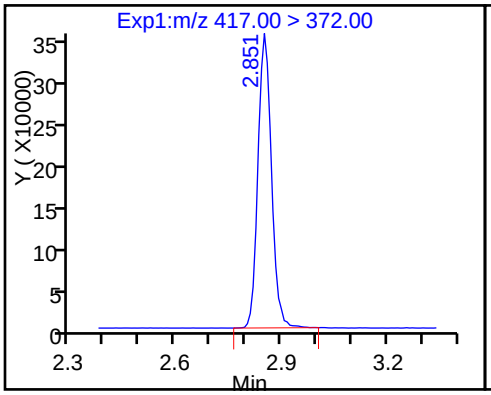
5 Perfluorobutanesulfonic acid



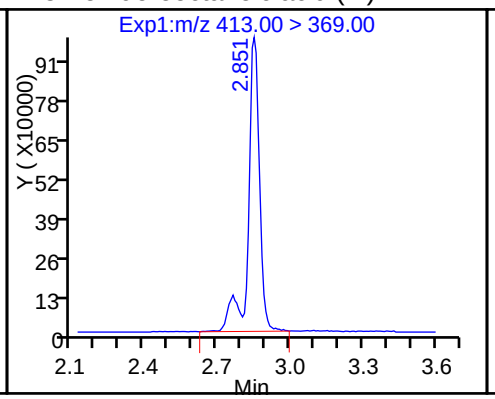
D 10 18O2 PFHxS



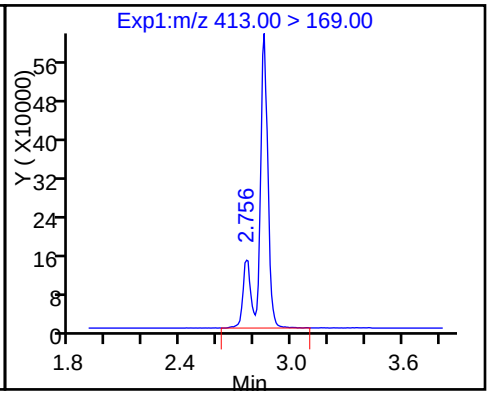
D 14 13C4 PFOA



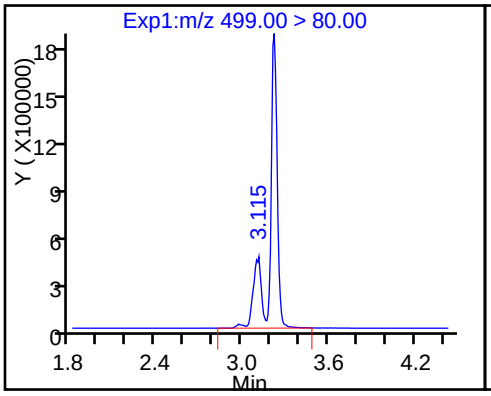
15 Perfluorooctanoic acid (M)



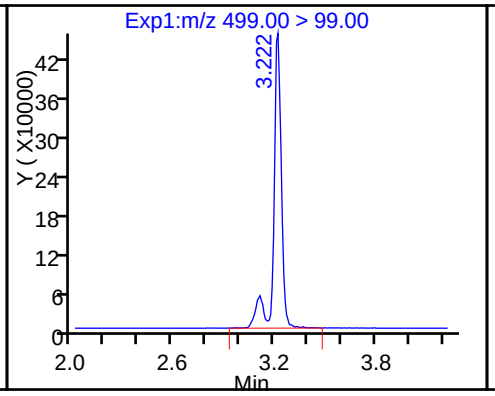
15 Perfluorooctanoic acid



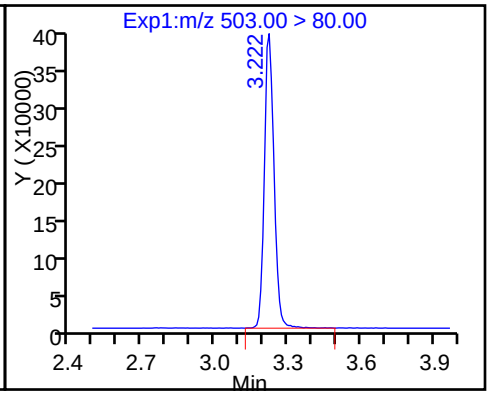
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

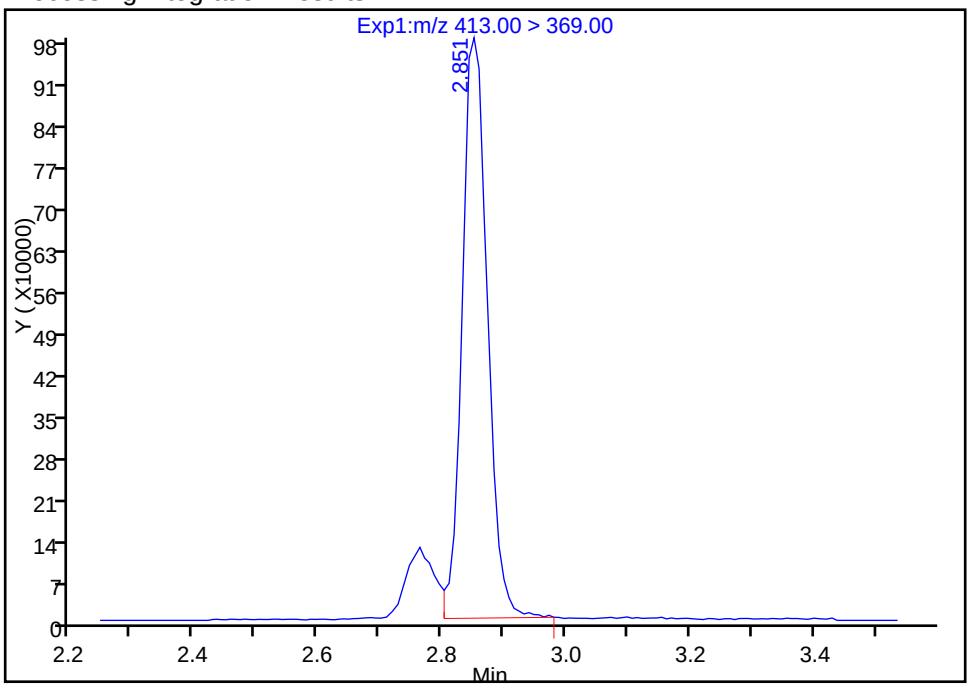
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_009.d				
Injection Date:	16-Dec-2016 13:45:17	Instrument ID:	A8_N		
Lims ID:	320-23890-A-9-A	Lab Sample ID:	320-23890-9		
Client ID:	DPT-16-13-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	53	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

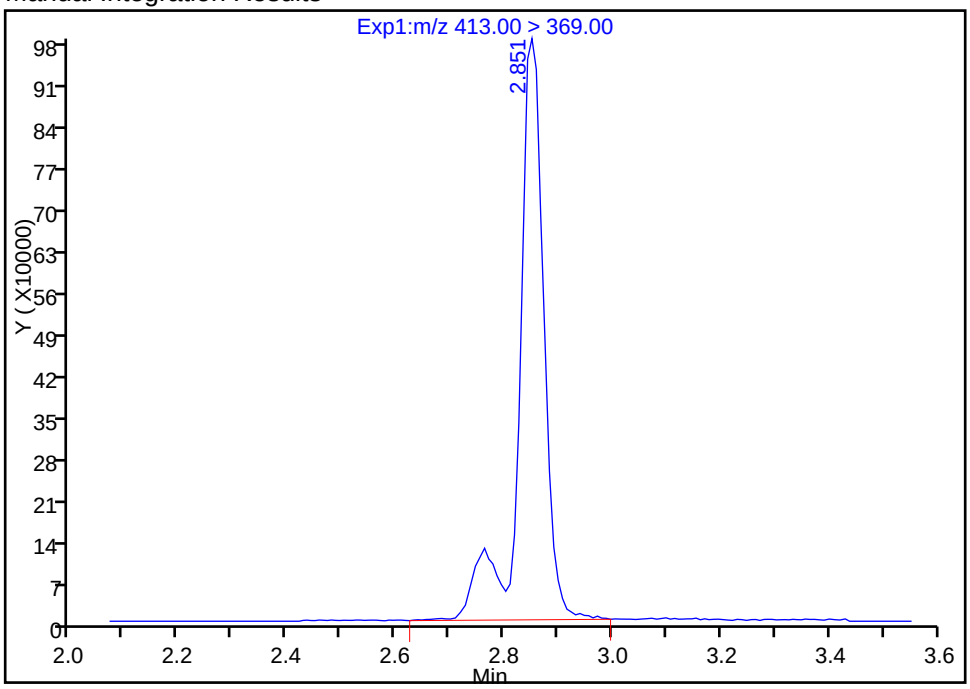
Processing Integration Results

RT: 2.85
Area: 2775444
Amount: 14.686024
Amount Units: ng/ml



Manual Integration Results

RT: 2.85
Area: 3187056
Amount: 16.864034
Amount Units: ng/ml



Reviewer: chandrasenas, 18-Dec-2016 16:35:52

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-13-GW-18-22 Lab Sample ID: 320-23890-10

Matrix: Water Lab File ID: 14DEC2016C_021.d

Analysis Method: 537 (Modified) Date Collected: 11/29/2016 11:10

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 252.1(mL) Date Analyzed: 12/14/2016 19:38

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*3.7*	*E M*	*0.0025*	0.0020	*0.00074*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*6.8*	*E M*	*0.0040*	0.0030	*0.0013*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*1.2*	*E*	*0.0025*	0.0020	*0.00091*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	34		25-150
STL00991	13C4 PFOS	30		25-150
STL00994	18O2 PFHxS	21	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_021.d
Lims ID: 320-23890-A-10-A
Client ID: DPT-16-13-GW-18-22
Sample Type: Client
Inject. Date: 14-Dec-2016 19:38:47 ALS Bottle#: 24 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23890-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:55:15 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:53:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.829	1.833	-0.004	1.000	60310883	605.7				E
298.90 > 99.00	1.829	1.833	-0.004	1.000	35340798		1.71(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.421	2.430	-0.009		3141100	9.97		21.1	31746	
D 14 13C4 PFOA										
417.00 > 372.00	2.766	2.765	0.001		3620133	16.9		33.7	215718	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.790	2.765	0.025	1.000	138912498	1853.3			232050	EM
413.00 > 169.00	2.759	2.765	-0.006	0.989	130808803		1.06(0.90-1.10)		241284	
18 Perfluorooctane sulfonic acid										EM
499.00 > 80.00	3.169	3.117	0.052	1.000	250943378	3433.5			0.0	EM
499.00 > 99.00	3.129	3.117	0.012	0.987	92624325		2.71(0.90-1.10)		465216	
D 17 13C4 PFOS										
503.00 > 80.00	3.137	3.140	-0.003		3275420	14.3		30.0	54764	

QC Flag Legend

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

Report Date: 15-Dec-2016 14:55:22 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_021.d

Injection Date: 14-Dec-2016 19:38:47 Instrument ID: A8_N

Lims ID: 320-23890-A-10-A Lab Sample ID: 320-23890-10

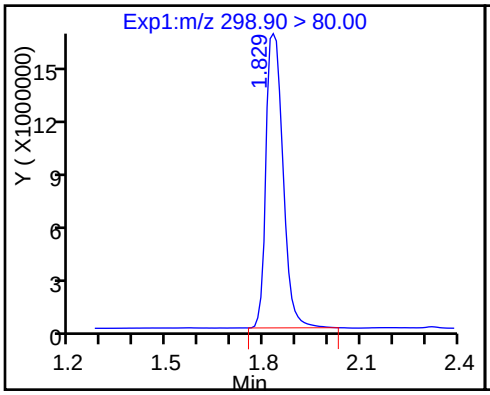
Client ID: DPT-16-13-GW-18-22

Operator ID: A8-PC\A8 ALS Bottle#: 24 Worklist Smp#: 21

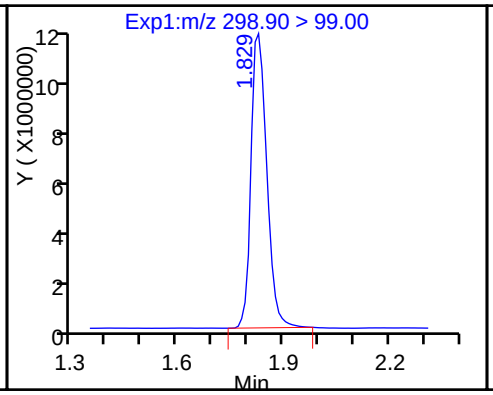
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

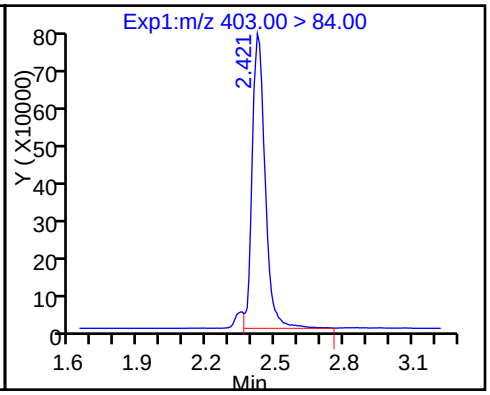
5 Perfluorobutanesulfonic acid



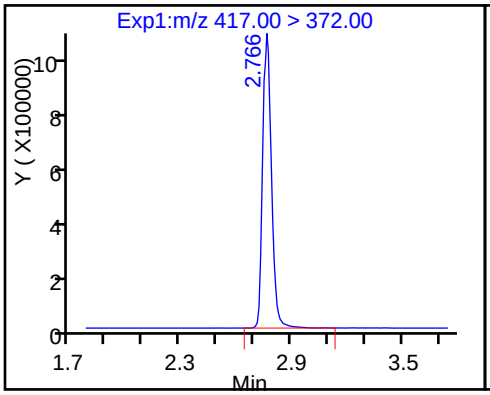
5 Perfluorobutanesulfonic acid



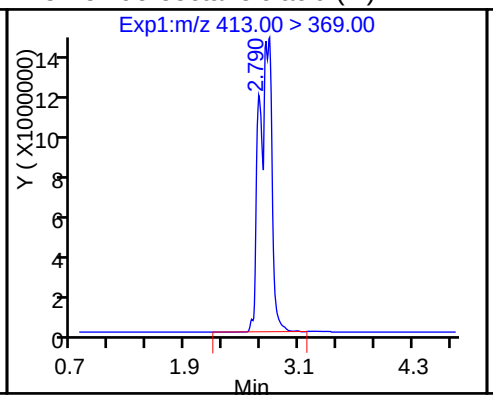
D 10 18O2 PFHxS



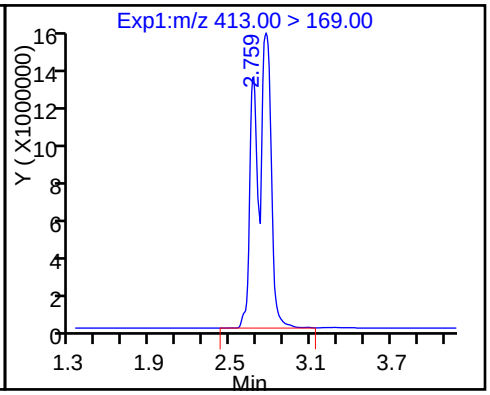
D 14 13C4 PFOA



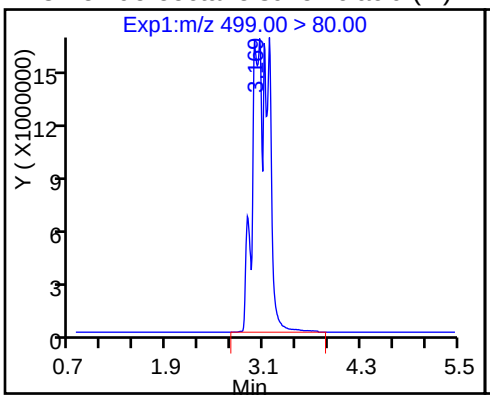
15 Perfluorooctanoic acid (M)



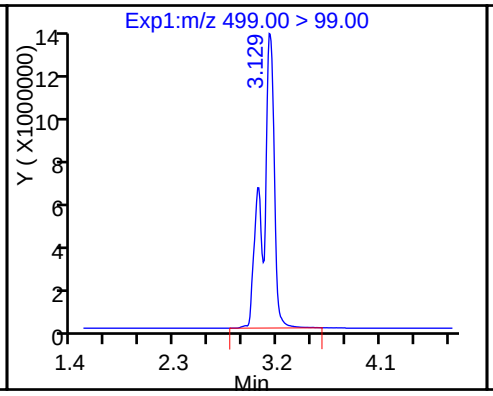
15 Perfluorooctanoic acid



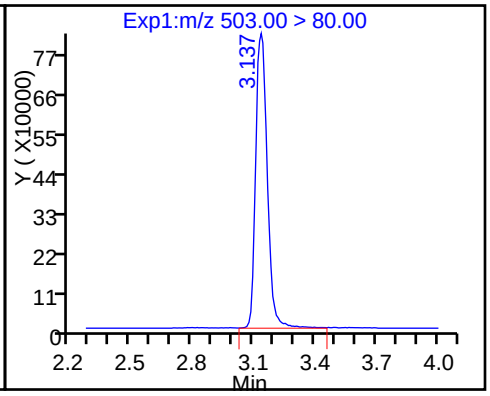
18 Perfluorooctane sulfonic acid (M)



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

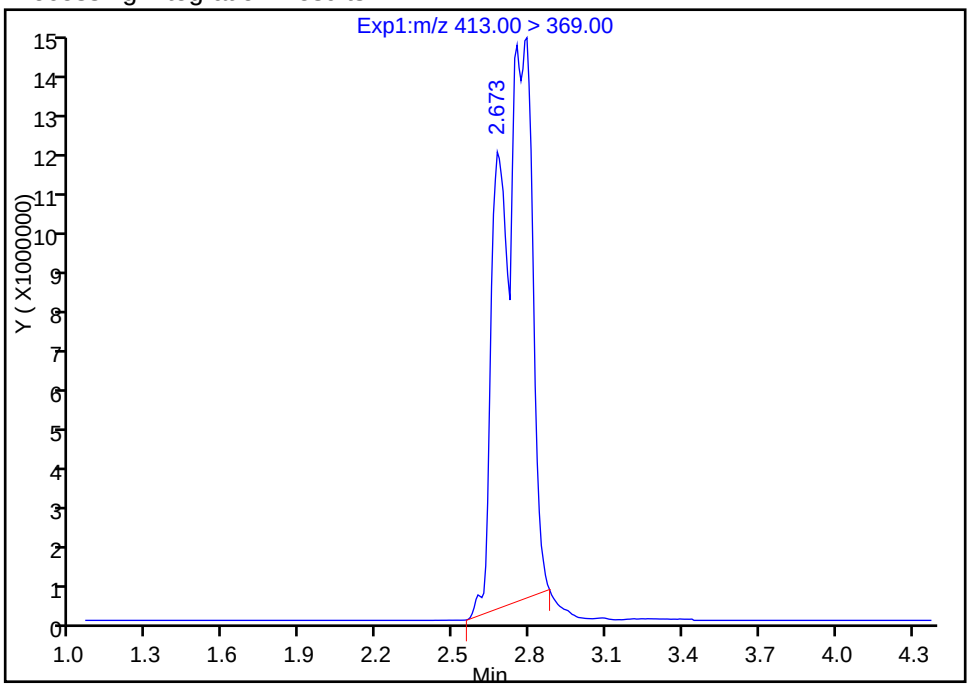
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_021.d				
Injection Date:	14-Dec-2016 19:38:47	Instrument ID:	A8_N		
Lims ID:	320-23890-A-10-A	Lab Sample ID:	320-23890-10		
Client ID:	DPT-16-13-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	24	Worklist Smp#:	21
Injection Vol:	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

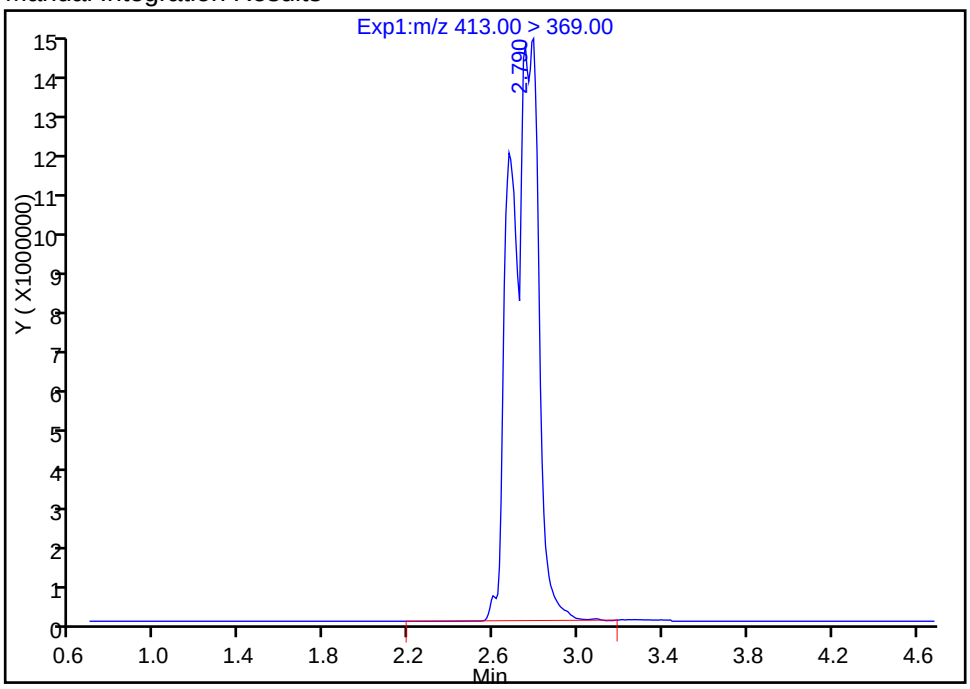
Processing Integration Results

RT: 2.67
Area: 129354850
Amount: 1725.8269
Amount Units: ng/ml



Manual Integration Results

RT: 2.79
Area: 138912498
Amount: 1853.3432
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:53:24

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

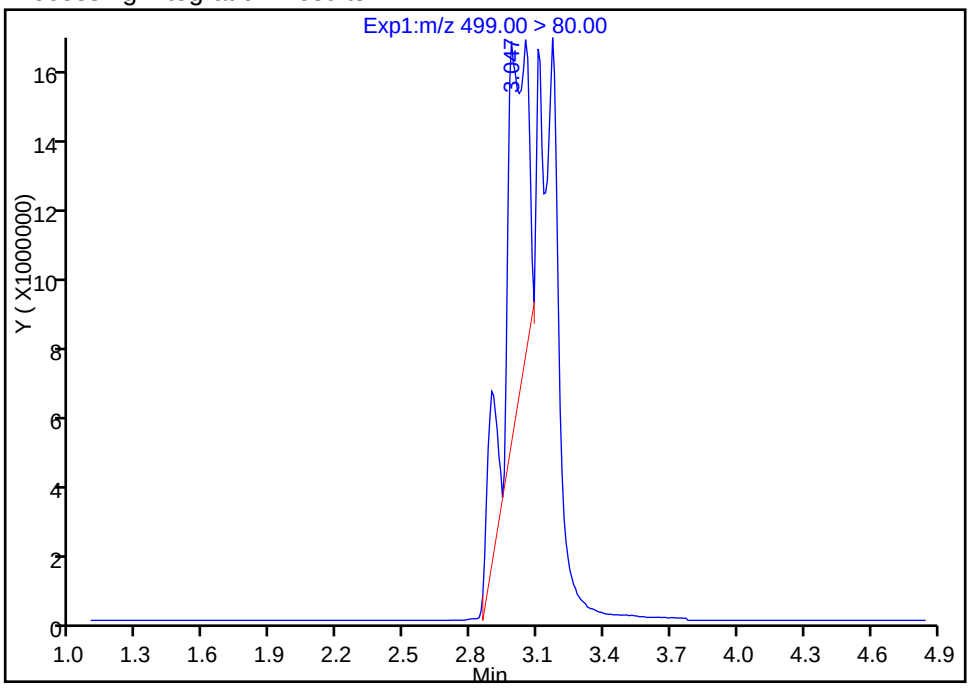
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_021.d				
Injection Date:	14-Dec-2016 19:38:47	Instrument ID:	A8_N		
Lims ID:	320-23890-A-10-A	Lab Sample ID:	320-23890-10		
Client ID:	DPT-16-13-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	24	Worklist Smp#:	21
Injection Vol:	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

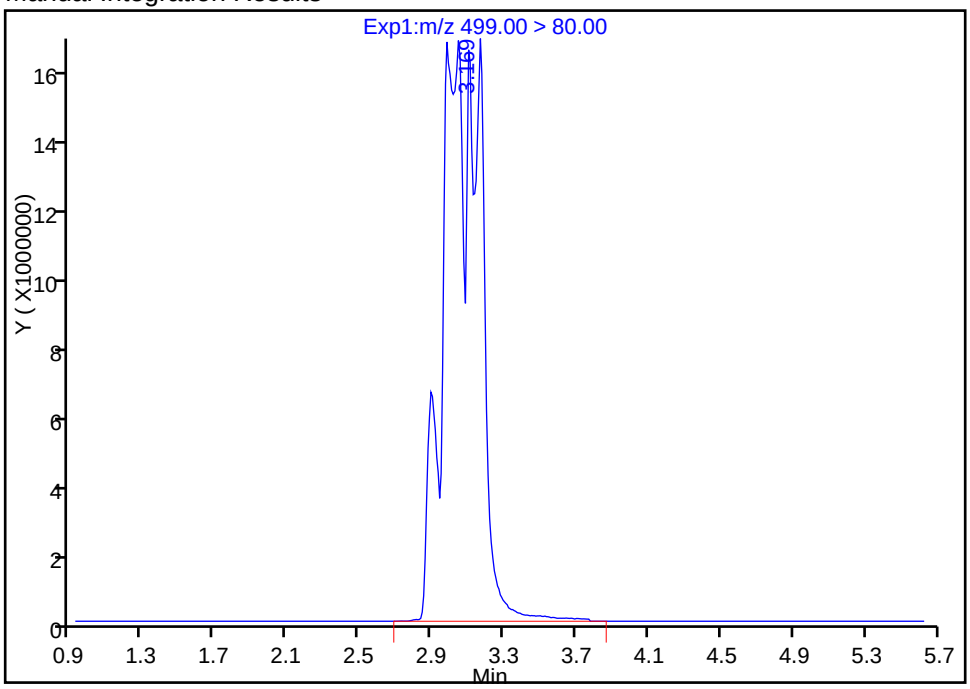
Processing Integration Results

RT: 3.05
Area: 76542772
Amount: 1047.2727
Amount Units: ng/ml



Manual Integration Results

RT: 3.17
Area: 250943378
Amount: 3433.4547
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:53:24

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: DPT-16-13-GW-18-22 DL Lab Sample ID: 320-23890-10 DL

Matrix: Water Lab File ID: 18DEC2016B_008.d

Analysis Method: 537 (Modified) Date Collected: 11/29/2016 11:10

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 252.1(mL) Date Analyzed: 12/18/2016 23:41

Con. Extract Vol.: 0.5(mL) Dilution Factor: 50

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

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

Analysis Batch No.: 142819 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	D	0.12	0.099	0.037
1763-23-1	Perfluorooctane Sulfonate (PFOS)	14	D	0.20	0.15	0.063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.91	D	0.12	0.099	0.046

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	121		25-150
STL00991	13C4 PFOS	128		25-150
STL00994	18O2 PFHxS	123		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_008.d
Lims ID: 320-23890-A-10-A
Client ID: DPT-16-13-GW-18-22
Sample Type: Client
Inject. Date: 18-Dec-2016 23:41:41 ALS Bottle#: 19 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 50.0000
Sample Info: 320-23890-a-10-a 50X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 19-Dec-2016 11:17:33 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 19-Dec-2016 11:15:07

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	1.974	1.983	-0.009	1.000	5252797	9.22				
298.90 > 99.00	1.964	1.983	-0.019	0.995	2101996		2.50(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.606	2.621	-0.015		380161	1.16		2.5	24353	
D 14 13C4 PFOA										
417.00 > 372.00	2.962	2.976	-0.014		279735	1.21		2.4	47357	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.970	2.984	-0.014	1.000	19834672	70.7			9068	
413.00 > 169.00	2.946	2.984	-0.038	0.992	16097196		1.23(0.90-1.10)		218674	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.337	3.244	0.093	1.000	43944088	138.4			603543	
499.00 > 99.00	3.337	3.244	0.093	1.000	9770891		4.50(0.90-1.10)		401133	
D 17 13C4 PFOS										
503.00 > 80.00	3.337	3.361	-0.024		305324	1.23		2.6	16905	

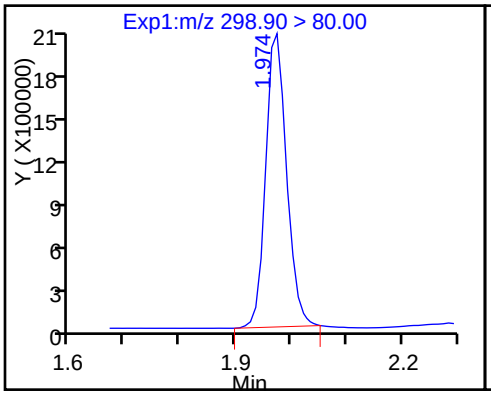
Report Date: 19-Dec-2016 11:17:49 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

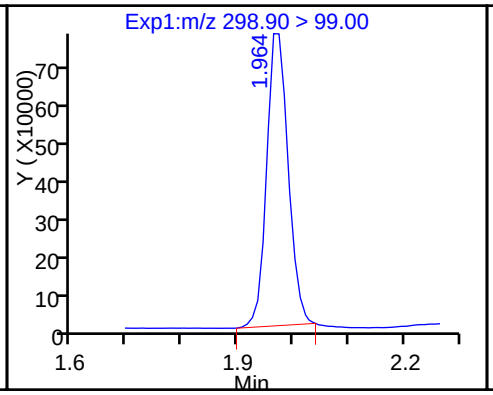
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_008.d

Injection Date:	18-Dec-2016 23:41:41	Instrument ID:	A8_N		
Lims ID:	320-23890-A-10-A	Lab Sample ID:	320-23890-10		
Client ID:	DPT-16-13-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	19	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	50.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

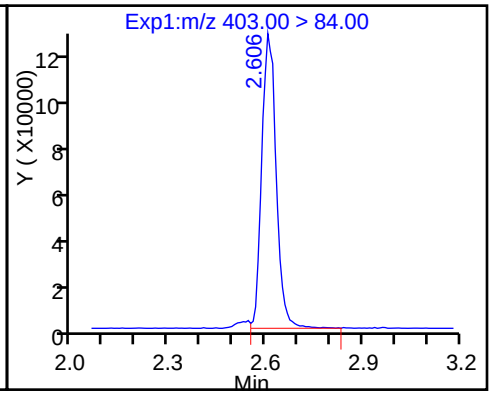
5 Perfluorobutanesulfonic acid



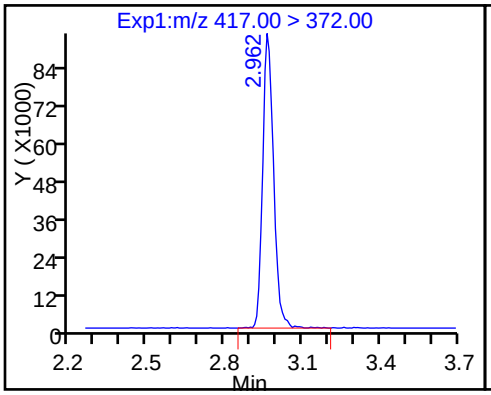
5 Perfluorobutanesulfonic acid



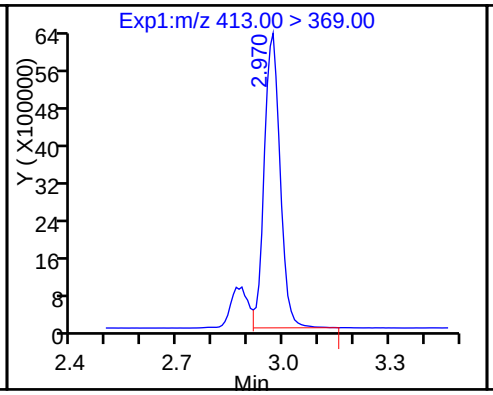
D 10 18O2 PFHxS



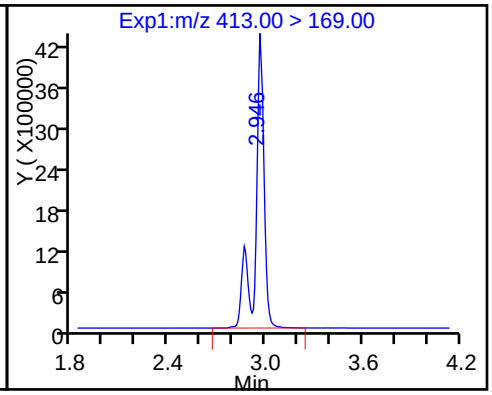
D 14 13C4 PFOA



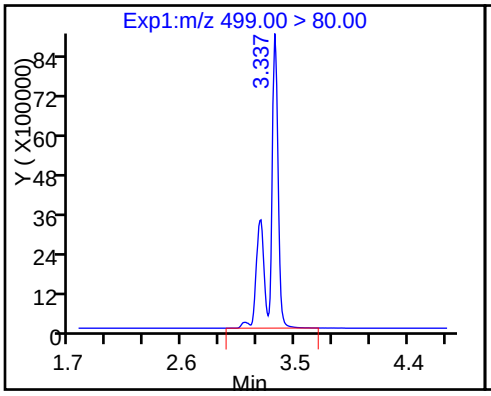
15 Perfluorooctanoic acid



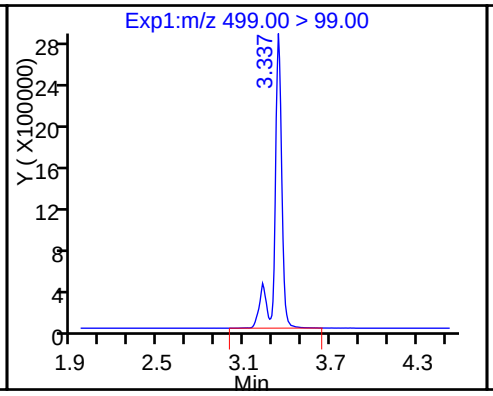
15 Perfluorooctanoic acid



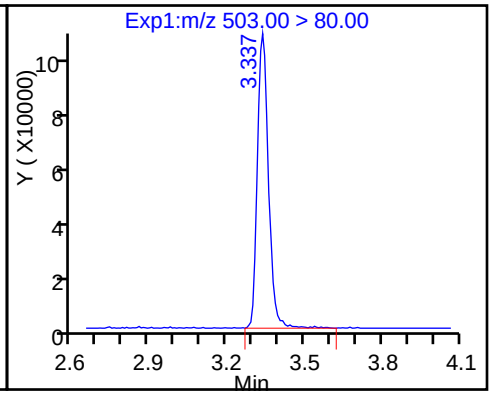
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142082/4	14DEC2016A_004.d
Level 2	IC 320-142082/13	14DEC2016A_013.d
Level 3	IC 320-142082/5	14DEC2016A_005.d
Level 4	IC 320-142082/14	14DEC2016A_014.d
Level 5	IC 320-142082/6	14DEC2016A_006.d
Level 6	IC 320-142082/15	14DEC2016A_015.d
Level 7	IC 320-142082/7	14DEC2016A_007.d
Level 8	IC 320-142082/16	14DEC2016A_016.d
Level 9	IC 320-142082/8	14DEC2016A_008.d
Level 10	IC 320-142082/17	14DEC2016A_017.d
Level 11	IC 320-142082/9	14DEC2016A_009.d
Level 12	IC 320-142082/18	14DEC2016A_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)	1.526 1.526		1.526		1.521		1.526		1.526		1.275 - 1.775	1.525
Perfluoropentanoic acid (PFPeA)	1.791 1.801		1.801		1.794		1.801		1.801		1.548 - 2.048	1.798
Perfluorobutanesulfonic acid (PFBS)	1.839 1.840		1.829		1.833		1.830		1.830		1.653 - 2.013	1.834
Perfluorohexanoic acid (PFHxA)	2.085 2.081		2.085		2.071		2.081		2.078		1.830 - 2.330	2.080
Perfluoroheptanoic acid (PFHpA)	2.412 2.408		2.417		2.402		2.407		2.412		2.160 - 2.660	2.410
Perfluorohexanesulfonic acid (PFHxS)	+++++ 2.432		2.422		2.391		2.423		2.429		2.171 - 2.671	2.419
6:2FTS		+++++ 2.765		2.743		2.740		2.740		2.750	2.496 - 2.996	2.748
Perfluorooctanoic acid (PFOA)	+++++ 2.765		2.766		2.759		2.765		2.759		2.513 - 3.013	2.763
Perfluoroheptanesulfonic Acid (PFHpS)	2.774 2.780		2.774		2.759		2.773		2.774		2.522 - 3.022	2.772
Perfluorooctane Sulfonate (PFOS)	+++++ 3.132		3.134		3.127		3.109		3.135		2.878 - 3.378	3.127
Perfluorononanoic acid (PFNA)	3.134 3.140		3.134		3.127		3.132		3.135		2.884 - 3.384	3.134
Perfluorooctane Sulfonamide (FOSA)	3.481 3.478		3.472		3.465		3.470		3.473		3.223 - 3.723	3.473
8:2FTS		3.478 3.509		3.484		3.490		3.490		3.506	3.243 - 3.743	3.493
Perfluorodecanoic acid (PFDA)	3.490 3.495		3.498		3.490		3.495		3.498		3.244 - 3.744	3.494

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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

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)		3.647 3.681		3.652		3.659		3.659		3.668	3.411 - 3.911	3.661
Perfluorodecanesulfonic acid (PFDS)	3.808 3.814		3.802		3.800		3.805		3.808		3.556 - 4.056	3.806
Perfluoroundecanoic acid (PFUnA)	3.816 3.831		3.820		3.817		3.822		3.825		3.572 - 4.072	3.822
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		3.831 3.845		3.827		3.825		3.825		3.834	3.581 - 4.081	3.831
MeFOSA		3.971 4.005		3.985		3.983		3.983		4.002	3.738 - 4.238	3.988
Perfluorododecanoic acid (PFDoA)	4.112 4.118		4.114		4.105		4.110		4.119		3.863 - 4.363	4.113
N-EtFOSA-M		4.167 4.193		4.170		4.169		4.169		4.183	3.925 - 4.425	4.175
Perfluorotridecanoic Acid (PFTriA)	4.378 4.387		4.381		4.370		4.378		4.387		4.130 - 4.630	4.380
Perfluorotetradecanoic acid (PFTeA)	4.618 4.624		4.620		4.612		4.611		4.618		4.367 - 4.867	4.617
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 5.036		5.038		5.025		5.036		5.036		4.784 - 5.284	5.034
Perfluoro-n-octadecanoic acid (PFODA)	5.383 5.398		5.391		5.383		5.382		5.390		5.138 - 5.638	5.388
13C4 PFBA	1.526 1.526		1.526		1.513		1.526		1.518		1.272 - 1.772	1.523
13C5-PFPeA	1.800 1.801		1.801		1.794		1.791		1.791		1.546 - 2.046	1.796
13C2 PFHxA	2.085 2.081		2.085		2.071		2.074		2.078		1.829 - 2.329	2.079
13C4-PFHpA	2.412 2.408		2.411		2.397		2.407		2.407		2.157 - 2.657	2.407
18O2 PFHxS	2.429 2.432		2.422		2.418		2.423		2.429		2.175 - 2.675	2.426
M2-6:2FTS		2.739 2.758		2.743		2.740		2.740		2.750	2.495 - 2.995	2.745
13C4 PFOA	2.766 2.765		2.766		2.759		2.758		2.766		2.513 - 3.013	2.763
13C5 PFNA	3.126 3.140		3.134		3.127		3.132		3.135		2.882 - 3.382	3.132
13C4 PFOS	3.134 3.140		3.134		3.127		3.132		3.135		2.884 - 3.384	3.134
13C8 FOSA	3.473 3.478		3.472		3.465		3.470		3.473		3.222 - 3.722	3.472
M2-8:2FTS		3.487 3.509		3.484		3.481		3.490		3.490	3.240 - 3.740	3.490

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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

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	3.490 3.495		3.498		3.482		3.495		3.490		3.242 - 3.742	3.492
d3-NMeFOSAA		3.647 3.672		3.644		3.650		3.650		3.668	3.405 - 3.905	3.655
13C2 PFUnA	3.816 3.831		3.820		3.817		3.822		3.825		3.572 - 4.072	3.822
d5-NEtFOSAA		3.814 3.837		3.819		3.817		3.817		3.834	3.573 - 4.073	3.823
d-N-MeFOSA-M		3.971 3.995		3.976		3.974		3.983		3.992	3.732 - 4.232	3.982
13C2 PFDoA	4.112 4.118		4.114		4.105		4.110		4.112		3.862 - 4.362	4.112
d-N-EtFOSA-M		4.160 4.179		4.163		4.162		4.162		4.176	3.917 - 4.417	4.167
13C2-PFTeDA	4.612 4.624		4.620		4.605		4.611		4.618		4.365 - 4.865	4.615
13C2-PFHxDA	5.025 5.036		5.038		5.025		5.036		5.036		4.783 - 5.283	5.033

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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142082/4	14DEC2016A_004.d
Level 2	IC 320-142082/13	14DEC2016A_013.d
Level 3	IC 320-142082/5	14DEC2016A_005.d
Level 4	IC 320-142082/14	14DEC2016A_014.d
Level 5	IC 320-142082/6	14DEC2016A_006.d
Level 6	IC 320-142082/15	14DEC2016A_015.d
Level 7	IC 320-142082/7	14DEC2016A_007.d
Level 8	IC 320-142082/16	14DEC2016A_016.d
Level 9	IC 320-142082/8	14DEC2016A_008.d
Level 10	IC 320-142082/17	14DEC2016A_017.d
Level 11	IC 320-142082/9	14DEC2016A_009.d
Level 12	IC 320-142082/18	14DEC2016A_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	330725 378927 311113		304393 338253 290182		Ave		325598.910				9.7		50.0			
13C5-PFPeA	263002 307383 240252		243918 263480 213642		Ave		255279.470				12.3		50.0			
13C2 PFHxA	250980 297921 236674		224481 256887 214774		Ave		246952.823				12.0		50.0			
13C4-PFHpA	224450 253211 187707		204289 212181 163859		Ave		207616.280				14.8		50.0			
18O2 PFHxS	322812 378093 298648		297199 324067 269163		Ave		314996.994				11.7		50.0			
M2-6:2FTS		101300 106399 89081		96870 118080 106161	Ave		102981.807				9.5		50.0			
13C4 PFOA	229992 270998 194950		210385 223269 159181		Ave		214795.767				17.4		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

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LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

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								
13C5 PFNA	171335 197131 146620		155288 166549 127041		Ave		160660.607				14.8		50.0			
13C4 PFOS	229229 271680 220900		209489 241663 198843		Ave		228633.978				11.3		50.0			
13C8 FOSA	378713 416517 350567		343741 392269 318057		Ave		366644.093				9.8		50.0			
M2-8:2FTS		89282 94157 79326		84860 101280 96605	Ave		90918.4342				8.9		50.0			
13C2 PFDA	153160 176569 134983		140286 152792 113285		Ave		145179.187				14.6		50.0			
d3-NMeFOSAA		67587 72906 57011		66835 77152 65746	Ave		67872.6633				10.1		50.0			
13C2 PFUnA	116257 136666 99150		106878 116612 87329		Ave		110481.747				15.3		50.0			
d5-NEtFOSAA		76191 78272 58956		72193 79317 69617	Ave		72424.2633				10.4		50.0			
d-N-MeFOSA-M		93628 108628 83955		100265 105026 97218	Ave		98119.8633				8.9		50.0			
13C2 PFDoA	104890 119365 94850		95148 105432 92075		Ave		101959.880				10.0		50.0			
d-N-EtFOSA-M		83793 96612 77919		89234 92962 93365	Ave		88980.8633				7.8		50.0			
13C2-PFTeDA	213519 233966 195771		197503 221118 185668		Ave		207924.060				8.7		50.0			
13C2-PFHxDA	119321 127433 107216		107896 120187 99771		Ave		113637.283				9.1		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.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

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)	318418 210311	321242	273580	271484	349873	AveID		0.8887				9.8		35.0			
Perfluoropentanoic acid (PFPeA)	322020 169109	283195	248362	238523	327601	AveID		1.0279				13.7		35.0			
Perfluorobutanesulfonic acid (PFBS)	504036 292543	557129	429778	467369	611466	AveID		1.4993				14.7		50.0			
Perfluorohexanoic acid (PFHxA)	266052 170656	262247	220309	226444	288494	AveID		0.9637				9.5		35.0			
Perfluoroheptanoic acid (PFHpA)	226194 149952	227590	206559	191629	256402	AveID		1.0067				5.1		35.0			
Perfluorohexanesulfonic acid (PFHxS)	+++++ 249283	356315	361790	305680	409538	AveID		1.0699				10.0		35.0			
6:2FTS	76793	+++++ 79320	111711	79333	88430	AveID		0.8453				14.2		35.0			
Perfluorooctanoic acid (PFOA)	+++++ 146611	244176	227957	200266	284716	AveID		1.0352				6.7		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	274847 200214	311323	246832	260349	337924	AveID		1.1825				8.1		50.0			
Perfluorooctane Sulfonate (PFOS)	+++++ 217710	262141	215584	230997	293039	AveID		1.0666				2.6		35.0			
Perfluorononanoic acid (PFNA)	164184 122531	172799	153936	145415	196645	AveID		0.9902				2.8		35.0			
Perfluorooctane Sulfonamide (FOSA)	356898 240046	393540	308602	323569	406433	AveID		0.9162				9.5		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.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

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	69110	70643 74241	96404	69487	77313	AveID		0.8398				11.9		35.0			
Perfluorodecanoic acid (PFDA)	148334 106938	147298	130552	126103	165346	AveID		0.9463				1.7		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	51298	55064 58726	70296	54479	60053	AveID		0.8652				13.6		35.0			
Perfluorodecanesulfonic acid (PFDS)	139029 123564	155279	121937	136046	163874	AveID		0.6119				3.3		50.0			
Perfluoroundecanoic acid (PFUnA)	151082 85673	121920	115000	101562	135936	AveID		1.0702				11.0		35.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	49720	54866 55259	67191	49499	55302	AveID		0.7700				14.5		35.0			
MeFOSA	77563	76210 82742	95706	76703	83019	AveID		0.8407				11.8		35.0			
Perfluorododecanoic acid (PFDoA)	107898 83575	102639	90020	88707	110895	AveID		0.9534				4.5		35.0			
N-EtFOSA-M	68220	68556 82096	90739	67937	80688	AveID		0.8628				14.6		35.0			
Perfluorotridecanoic Acid (PFTriA)	105674 80816	103686	82103	89088	114280	AveID		0.9380				6.1		50.0			
Perfluorotetradecanoic acid (PFTeA)	203224 144190	190992	163111	161467	199621	AveID		1.7340				7.3		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 89427	113194	147963	91551	127488	L1ID	0.6130	0.9703							0.9990		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	74878 87891	85611	81829	76021	94749	AveID		0.8226				9.7		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142082/4	14DEC2016A_004.d
Level 2	IC 320-142082/13	14DEC2016A_013.d
Level 3	IC 320-142082/5	14DEC2016A_005.d
Level 4	IC 320-142082/14	14DEC2016A_014.d
Level 5	IC 320-142082/6	14DEC2016A_006.d
Level 6	IC 320-142082/15	14DEC2016A_015.d
Level 7	IC 320-142082/7	14DEC2016A_007.d
Level 8	IC 320-142082/16	14DEC2016A_016.d
Level 9	IC 320-142082/8	14DEC2016A_008.d
Level 10	IC 320-142082/17	14DEC2016A_017.d
Level 11	IC 320-142082/9	14DEC2016A_009.d
Level 12	IC 320-142082/18	14DEC2016A_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	16536240 14509121	16912669	15219661	15555633	18946349	50.0 50.0	50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	13150076 10682094	13174008	12195919	12012598	15369146	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	12549002 10738696	12844328	11224054	11833722	14896045	50.0 50.0	50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	11222515 8192937	10609063	10214444	9385374	12660551	50.0 50.0	50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	15269014 12731401	15328363	14057514	14126044	17883811	47.3 47.3	47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	5053950	4811742 5042651	5608807	4601331	4231334	47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	11499578 7959067	11163447	10519257	9747477	13549904	50.0 50.0	50.0	50.0	50.0	50.0
13C5 PFNA	Ave	8566752 6352044	8327449	7764384	7331020	9856533	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.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

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 PFOS	Ave	10957161 9504692	11551477	10013563	10559009	12986323	47.8 47.8	47.8	47.8	47.8	47.8
13C8 FOSA	Ave	18935670 15902845	19613435	17187069	17528357	20825852	50.0 50.0	50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	4510142	4276589 4627379	4851294	4064816	3799738	47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	7657983 5664271	7639611	7014294	6749143	8828454	50.0 50.0	50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	3645275	3379343 3287293	3857586	3341751	2850551	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	5812831 4366437	5830576	5343893	4957476	6833311	50.0 50.0	50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	3913592	3809531 3480865	3965849	3609632	2947810	50.0	50.0 50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	5431405	4681421 4860889	5251279	5013226	4197739	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	5244488 4603758	5271593	4757375	4742500	5968250	50.0 50.0	50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	4830609	4189626 4668258	4648105	4461713	3895948	50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	10675930 9283403	11055915	9875164	9788531	11698275	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	5966029 4988563	6009370	5394790	5360805	6371628	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.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142082/4	14DEC2016A_004.d
Level 2	IC 320-142082/13	14DEC2016A_013.d
Level 3	IC 320-142082/5	14DEC2016A_005.d
Level 4	IC 320-142082/14	14DEC2016A_014.d
Level 5	IC 320-142082/6	14DEC2016A_006.d
Level 6	IC 320-142082/15	14DEC2016A_015.d
Level 7	IC 320-142082/7	14DEC2016A_007.d
Level 8	IC 320-142082/16	14DEC2016A_016.d
Level 9	IC 320-142082/8	14DEC2016A_008.d
Level 10	IC 320-142082/17	14DEC2016A_017.d
Level 11	IC 320-142082/9	14DEC2016A_009.d
Level 12	IC 320-142082/18	14DEC2016A_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	159209 42062192	6424849	273580	13574184	1749367	0.500 200	20.0	1.00	50.0	5.00
Perfluoropentanoic acid (PFPeA)		AveID	161010 33821851	5663900	248362	11926125	1638004	0.500 200	20.0	1.00	50.0	5.00
Perfluorobutanesulfonic acid (PFBS)		AveID	222784 51721665	9850035	379924	20657728	2702680	0.442 177	17.7	0.884	44.2	4.42
Perfluorohexanoic acid (PFHxA)		AveID	133026 34131293	5244948	220309	11322202	1442472	0.500 200	20.0	1.00	50.0	5.00
Perfluoroheptanoic acid (PFHpA)		AveID	113097 29990421	4551793	206559	9581439	1282010	0.500 200	20.0	1.00	50.0	5.00
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 45369475	6484937	329229	13908420	1863397	+++++ 182	18.2	0.910	45.5	4.55
6:2FTS		AveID	363998	+++++ 15039012	2118035	75208	4191567	4.74	+++++ 190	19.0	0.948	47.4
Perfluorooctanoic acid (PFOA)		AveID	+++++ 29322105	4883511	227957	10013288	1423581	+++++ 200	20.0	1.00	50.0	5.00

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

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	130827 38120740	5927582	234984	12392628	1608520	0.476 190	19.0	0.952	47.6	4.76
Perfluorooctane Sulfonate (PFOS)		AveID	+++++ 40406896	4865342	200062	10718265	1359702	+++++ 186	18.6	0.928	46.4	4.64
Perfluorononanoic acid (PFNA)		AveID	82092 24506115	3455989	153936	7270747	983226	0.500 200	20.0	1.00	50.0	5.00
Perfluorooctane Sulfonamide (FOSA)		AveID	178449 48009108	7870800	308602	16178439	2032164	0.500 200	20.0	1.00	50.0	5.00
8:2FTS		AveID	331035	33838 14224540	1847107	66569	3703316	4.79	0.479 192	19.2	0.958	47.9
Perfluorodecanoic acid (PFDA)		AveID	74167 21387501	2945950	130552	6305171	826730	0.500 200	20.0	1.00	50.0	5.00
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	256490	27532 11745145	1405911	54479	3002673	5.00	0.500 200	20.0	1.00	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	67012 23823213	2993777	117547	6557404	789872	0.482 193	19.3	0.964	48.2	4.82
Perfluoroundecanoic acid (PFUnA)		AveID	75541 17134699	2438391	115000	5078085	679681	0.500 200	20.0	1.00	50.0	5.00
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	248602	27433 11051790	1343818	49499	2765113	5.00	0.500 200	20.0	1.00	50.0
MeFOSA		AveID	387815	38105 16548419	1914115	76703	4150955	5.00	0.500 200	20.0	1.00	50.0
Perfluorododecanoic acid (PFDoA)		AveID	53949 16715075	2052789	90020	4435350	554473	0.500 200	20.0	1.00	50.0	5.00
N-EtFOSA-M		AveID	341100	34278 16419113	1814770	67937	4034402	5.00	0.500 200	20.0	1.00	50.0

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142082

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/14/2016 08:54 Calibration End Date: 12/14/2016 10:39 Calibration ID: 27081

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	52837 16163184	2073724	82103	4454407	571402	0.500 200	20.0	1.00	50.0	5.00
Perfluorotetradecanoic acid (PFTeA)		AveID	101612 28838067	3819839	163111	8073370	998104	0.500 200	20.0	1.00	50.0	5.00
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	+++++ 17885418	2263872	147963	4577547	637438	+++++ 200	20.0	1.00	50.0	5.00
Perfluoro-n-octadecanoic acid (PFODA)		AveID	37439 17578292	1712212	81829	3801058	473745	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\20161214-37828.b\14DEC2016A_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 14-Dec-2016 08:54:14 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:05:22 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 14-Dec-2016 10:32:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.526	1.522	0.004		16536240	50.8		102	965675	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.525	0.001	1.000	159209	0.5417		108	835	
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.796	0.004		13150076	51.5		103	975311	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.791	1.798	-0.007	1.000	161010	0.5956		119	1324	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.833	0.006	1.000	222784	0.4603		104		
298.90 > 99.00	1.829	1.833	-0.004	0.995	86823		2.57(0.00-0.00)	104		
D 6 13C2 PFHxA										
315.00 > 270.00	2.085	2.079	0.005		12549002	50.8		102	761654	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.085	2.080	0.004	1.000	133026	0.5500		110	3598	
D 11 13C4-PFHpA										
367.00 > 322.00	2.412	2.407	0.005		11222515	54.1		108	569856	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.412	2.410	0.002	1.000	113097	0.5005		100	1060	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.429	2.421	0.008	1.000	211503	0.6124		135		M
D 10 18O2 PFHxS										
403.00 > 84.00	2.429	2.425	0.004		15269014	48.5		102	580089	
D 14 13C4 PFOA										
417.00 > 372.00	2.766	2.763	0.003		11499578	53.5		107	596217	

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	2.766	2.763	0.003	1.000	138602	0.5821		116	1123	
413.00 > 169.00	2.766	2.763	0.003	1.000	85777		1.62(0.90-1.10)	116	2775	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.774	2.772	0.002	1.000	130827	0.4827		101		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.134	3.128	0.006	1.000	116997	0.4785		103	10812	M
499.00 > 99.00	3.126	3.128	-0.002	0.997	25671		4.56(0.90-1.10)	103	1633	M
D 19 13C5 PFNA										
468.00 > 423.00	3.126	3.132	-0.006		8566752	53.3		107	417474	
D 17 13C4 PFOS										
503.00 > 80.00	3.134	3.134	0.0		10957161	47.9		100	409993	
20 Perfluorononanoic acid										
463.00 > 419.00	3.134	3.134	0.0	1.000	82092	0.4839		96.8	1312	
D 21 13C8 FOSA										
506.00 > 78.00	3.473	3.472	0.001		18935670	51.6		103	919187	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.481	3.473	0.008	1.000	178449	0.5143		103	10934	
D 23 13C2 PFDA										
515.00 > 470.00	3.490	3.492	-0.002		7657983	52.7		105	381969	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.490	3.494	-0.004	1.000	74167	0.5117		102	2938	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.808	3.806	0.002	1.000	67012	0.4777		99.1		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.816	3.822	-0.006	1.000	75541	0.6072		121	2436	
D 27 13C2 PFUnA										
565.00 > 520.00	3.816	3.822	-0.006		5812831	52.6		105	343593	
D 30 13C2 PFDoA										
615.00 > 570.00	4.112	4.112	0.0		5244488	51.4		103	146364	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.112	4.113	-0.001	1.000	53949	0.5395		108	1230	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.378	4.380	-0.002	1.000	52837	0.5370		107	1051	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.612	4.615	-0.003		10675930	51.3		103	397512	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.618	4.617	0.001	1.000	101612	0.5587		112	1391	
713.00 > 169.00	4.612	4.617	-0.005	0.999	17347		5.86(0.00-0.00)	112	6659	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.025	5.033	-0.008		5966029	52.5		105	171217	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.036	5.034	0.002	1.000	123066	0.5774		115	338	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.383	5.388	-0.005	1.000	37439	0.4339		86.8	46.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L1_00021 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:05:23 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_004.d

Injection Date: 14-Dec-2016 08:54:14 Instrument ID: A8_N

Lims ID: IC L1

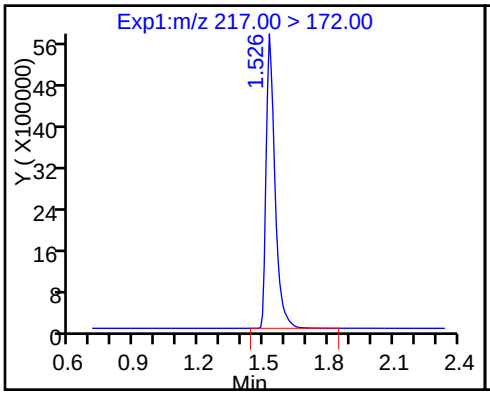
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

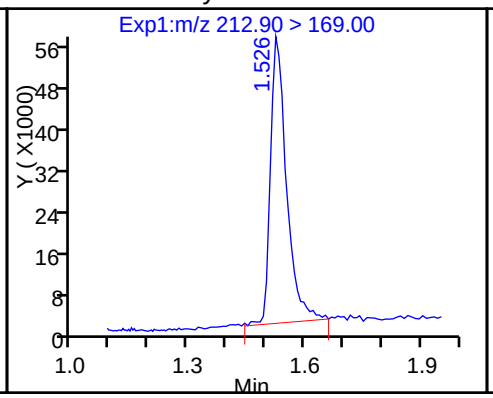
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

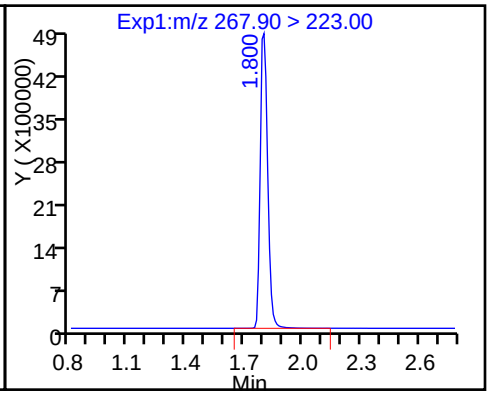
D 2 13C4 PFBA



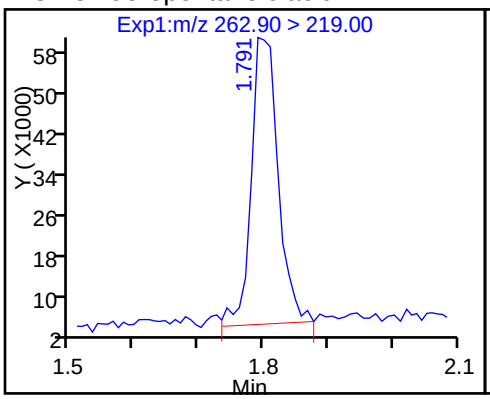
1 Perfluorobutyric acid



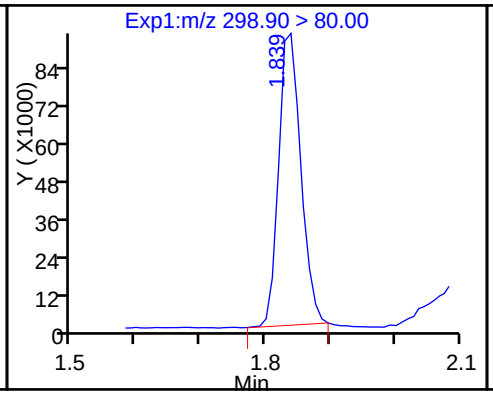
D 4 13C5-PFPeA



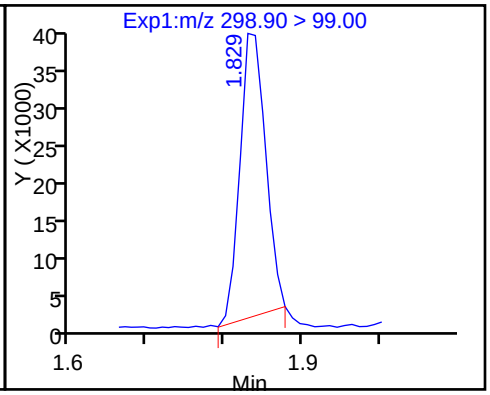
3 Perfluoropentanoic acid



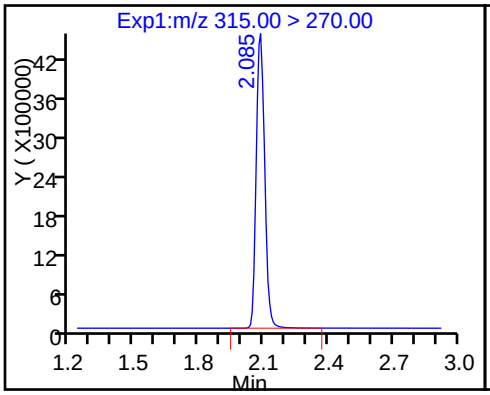
5 Perfluorobutanesulfonic acid



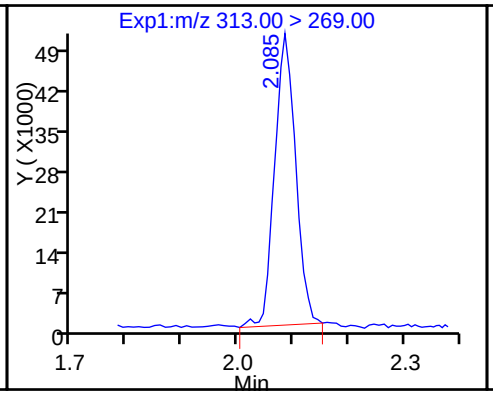
5 Perfluorobutanesulfonic acid



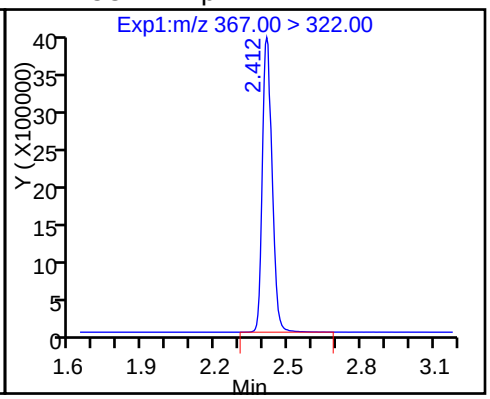
D 6 13C2 PFHxA



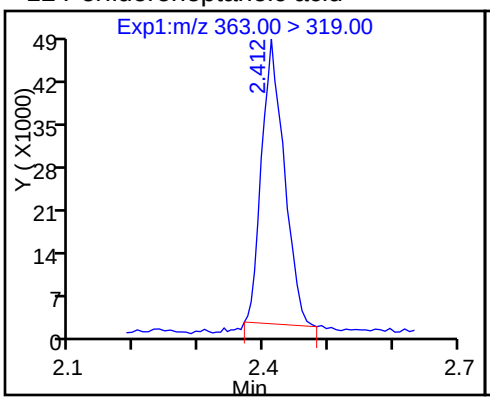
7 Perfluorohexanoic acid



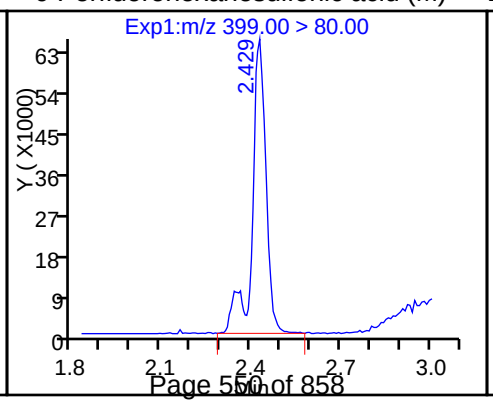
D 11 13C4-PFHpA



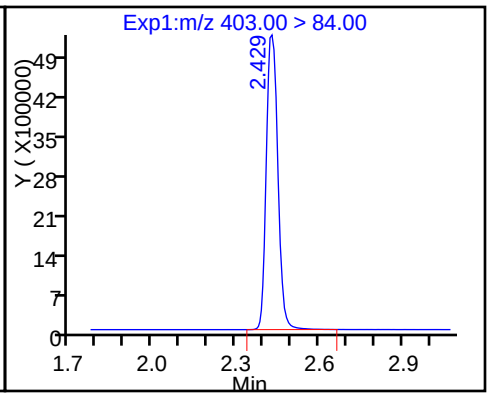
12 Perfluoroheptanoic acid



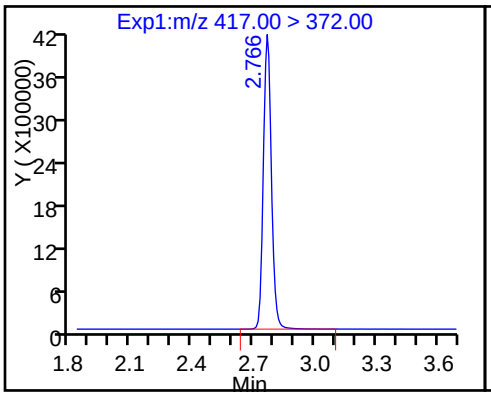
9 Perfluorohexanesulfonic acid (M)



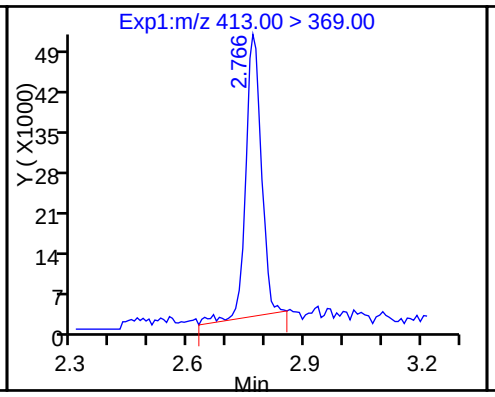
D 10 18O2 PFHxS



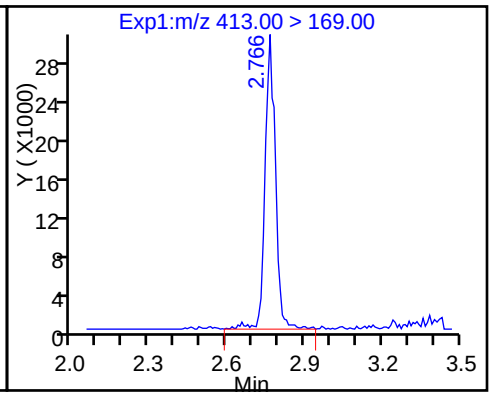
D 14 13C4 PFOA



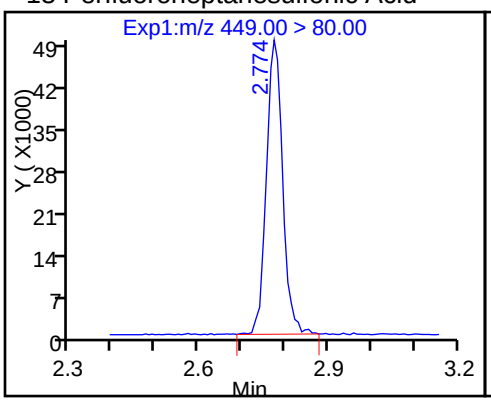
15 Perfluorooctanoic acid



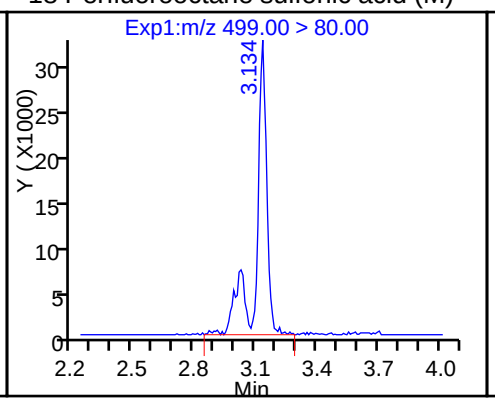
15 Perfluorooctanoic acid



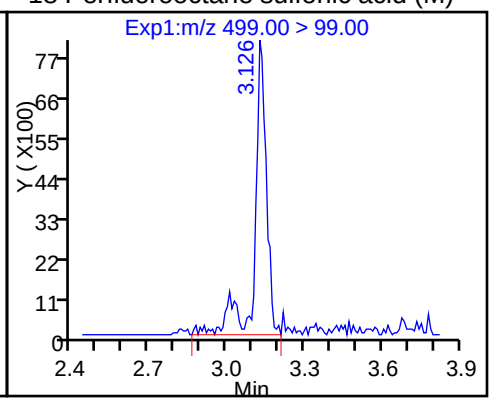
13 Perfluoroheptanesulfonic Acid



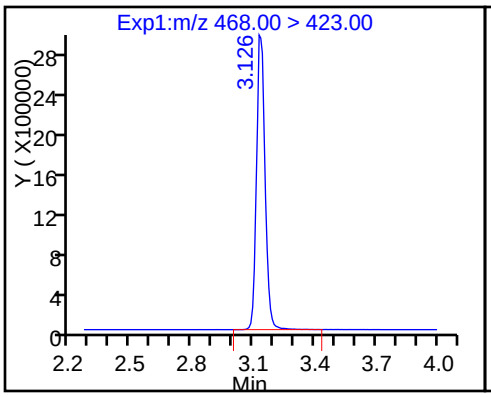
18 Perfluorooctane sulfonic acid (M)



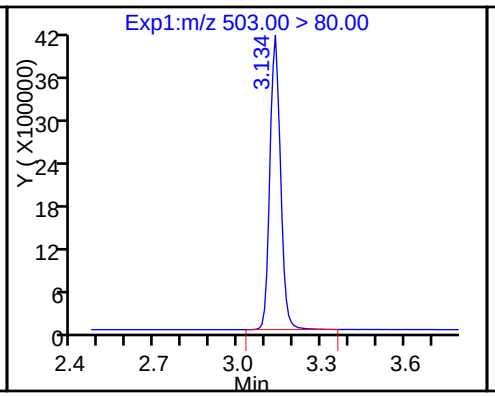
18 Perfluorooctane sulfonic acid (M)



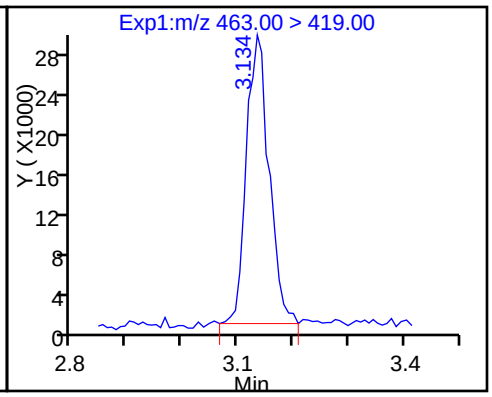
D 19 13C5 PFNA



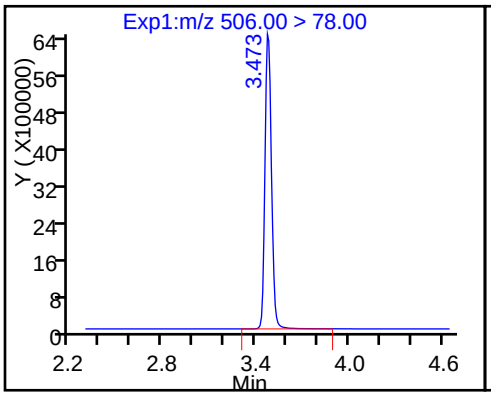
D 17 13C4 PFOS



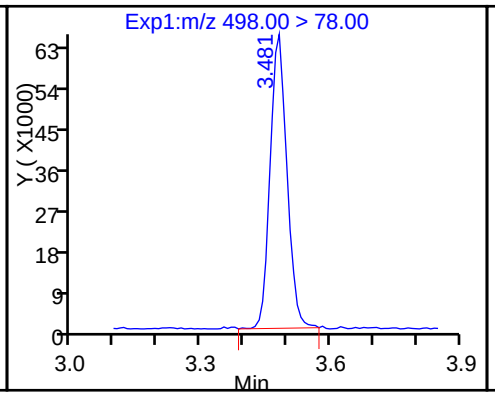
20 Perfluorononanoic acid



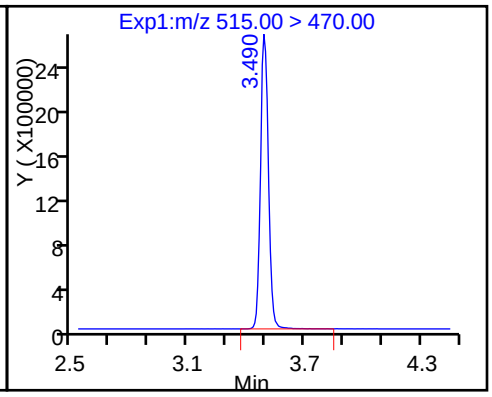
D 21 13C8 FOSA



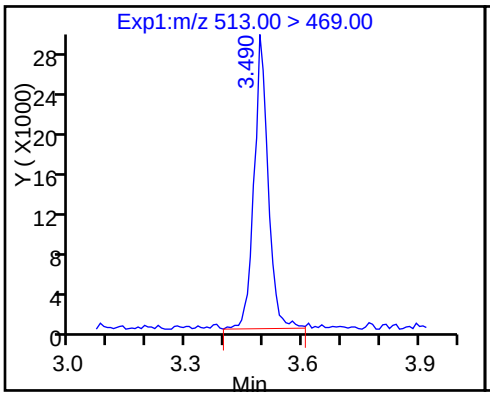
22 Perfluorooctane Sulfonamide



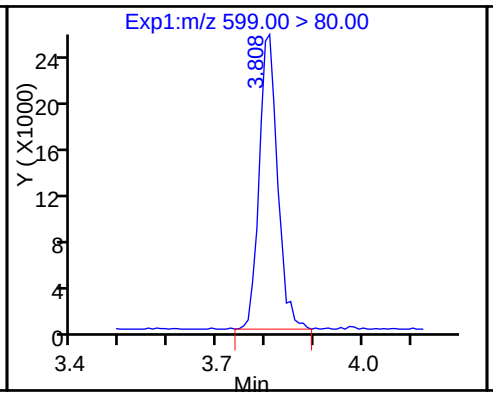
D 23 13C2 PFDA



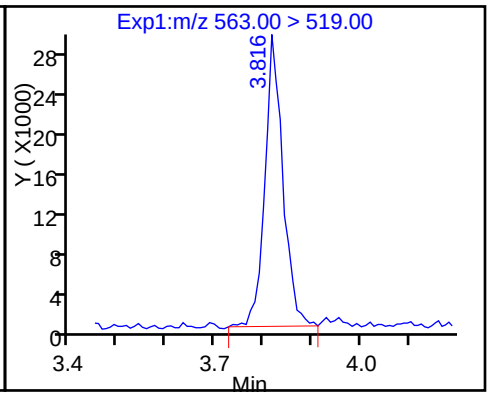
24 Perfluorodecanoic acid



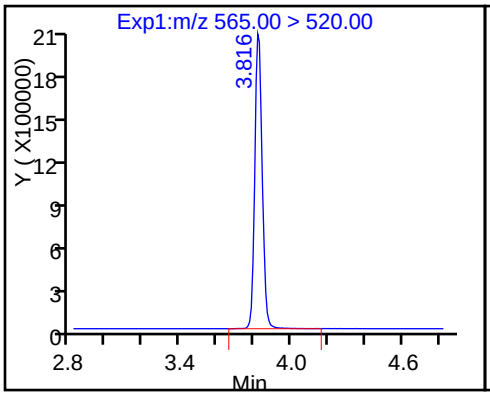
26 Perfluorodecane Sulfonic acid



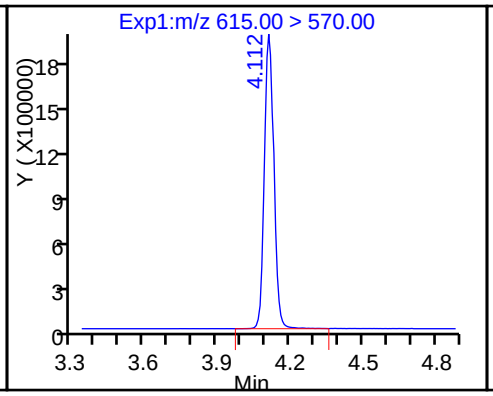
28 Perfluoroundecanoic acid



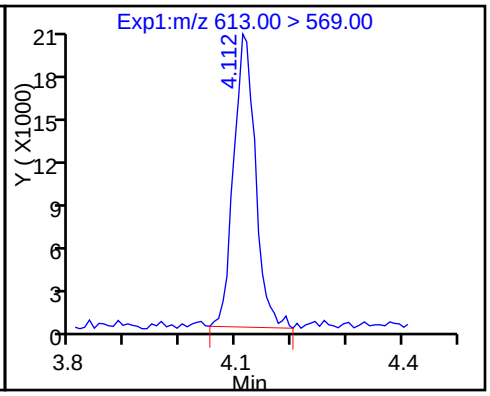
D 27 13C2 PFUnA



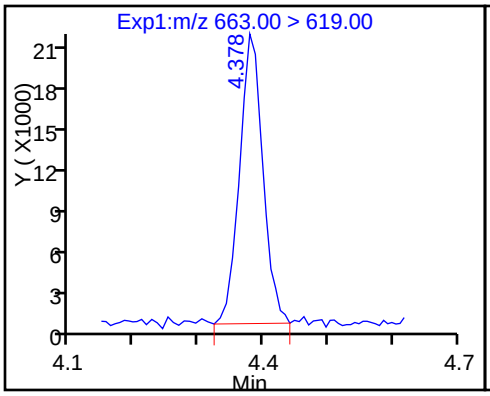
D 30 13C2 PFDoA



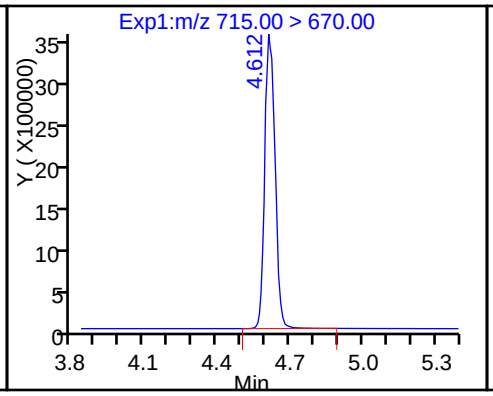
29 Perfluorododecanoic acid



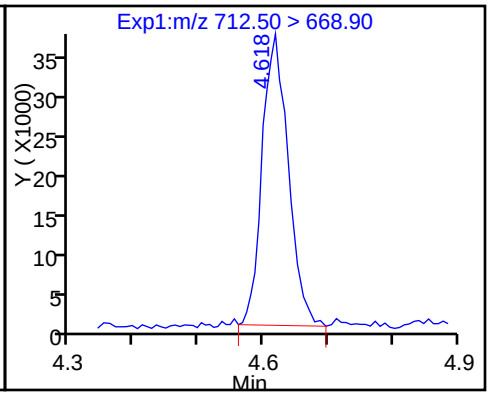
31 Perfluorotridecanoic acid



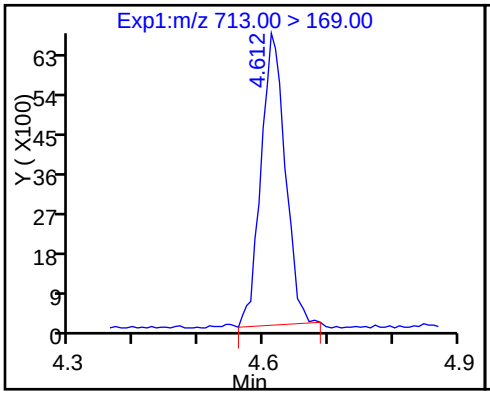
D 32 13C2-PFTeDA



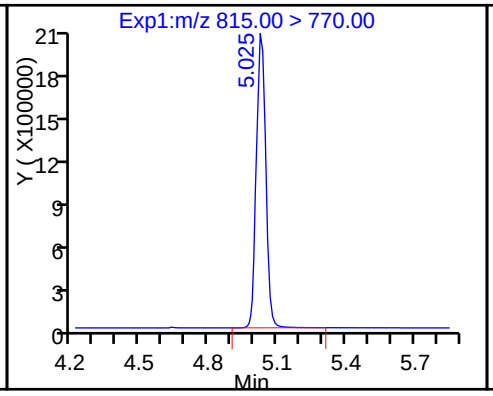
33 Perfluorotetradecanoic acid



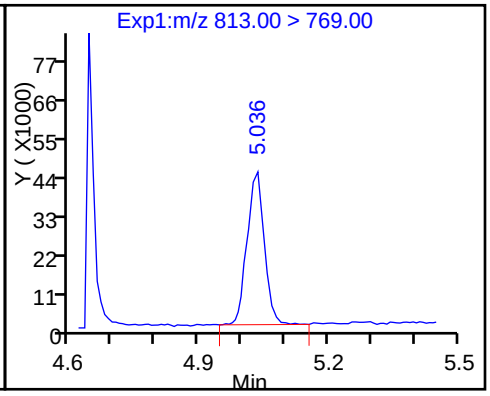
33 Perfluorotetradecanoic acid



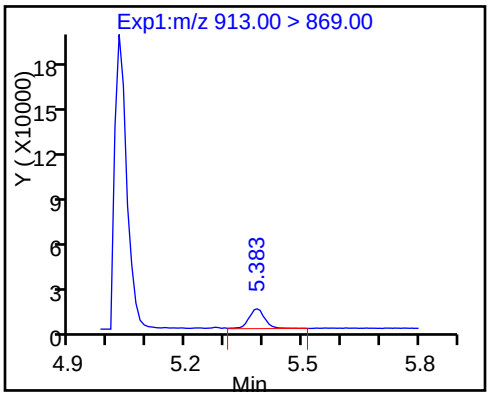
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

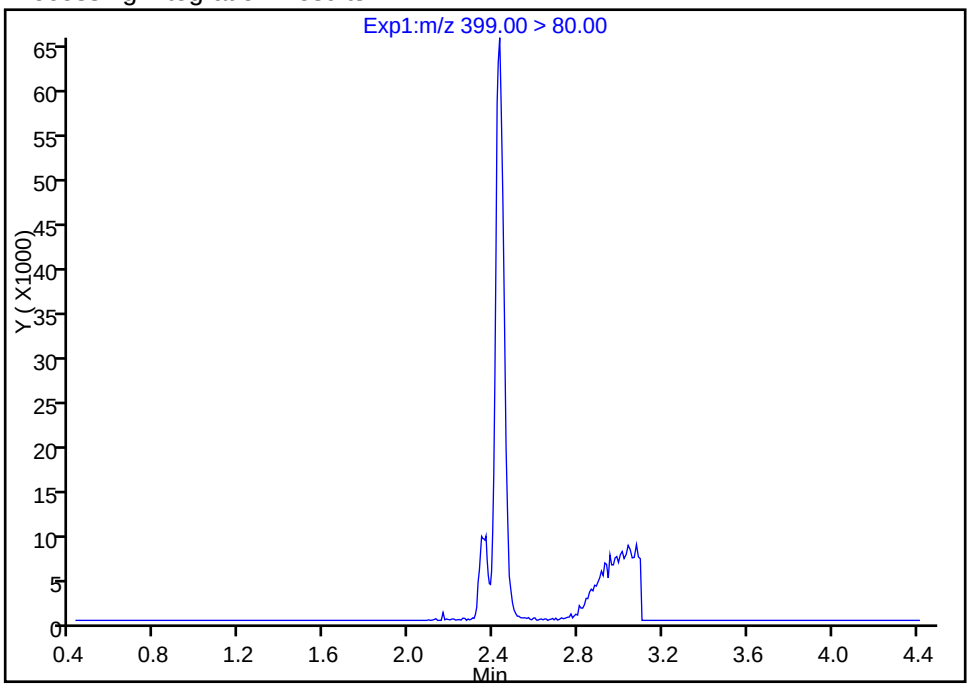
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_004.d
Injection Date: 14-Dec-2016 08:54:14 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

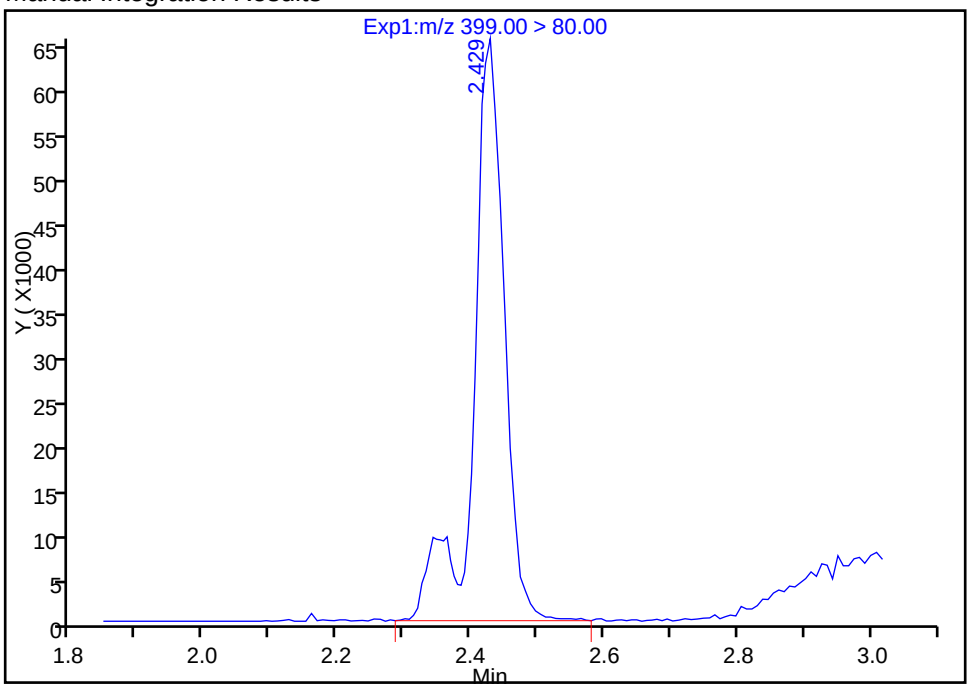
Not Detected
Expected RT: 2.42

Processing Integration Results



Manual Integration Results

RT: 2.43
Area: 211503
Amount: 0.612361
Amount Units: ng/ml



Reviewer: chandrasenas, 14-Dec-2016 10:32:31
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

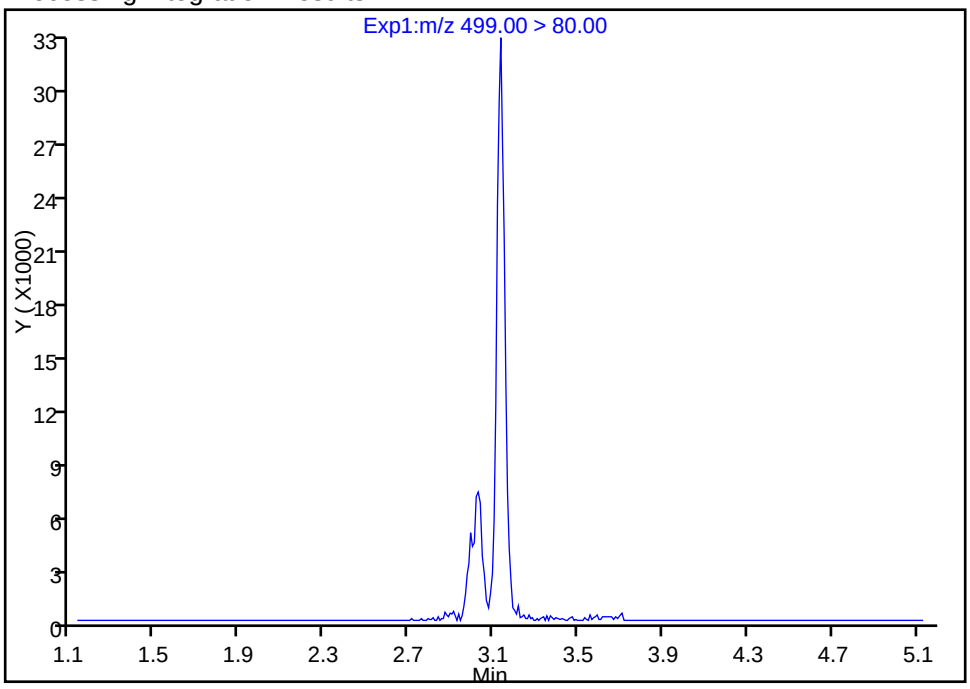
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_004.d
Injection Date: 14-Dec-2016 08:54:14 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

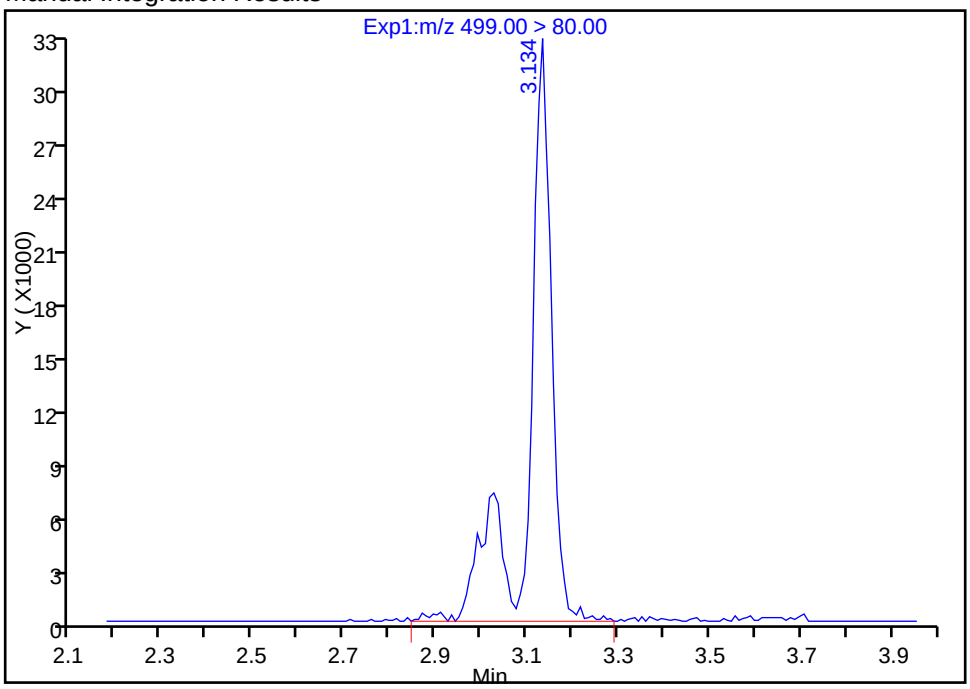
Not Detected
Expected RT: 3.13

Processing Integration Results



Manual Integration Results

RT: 3.13
Area: 116997
Amount: 0.478519
Amount Units: ng/ml



Reviewer: chandrasenas, 14-Dec-2016 10:32:31
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

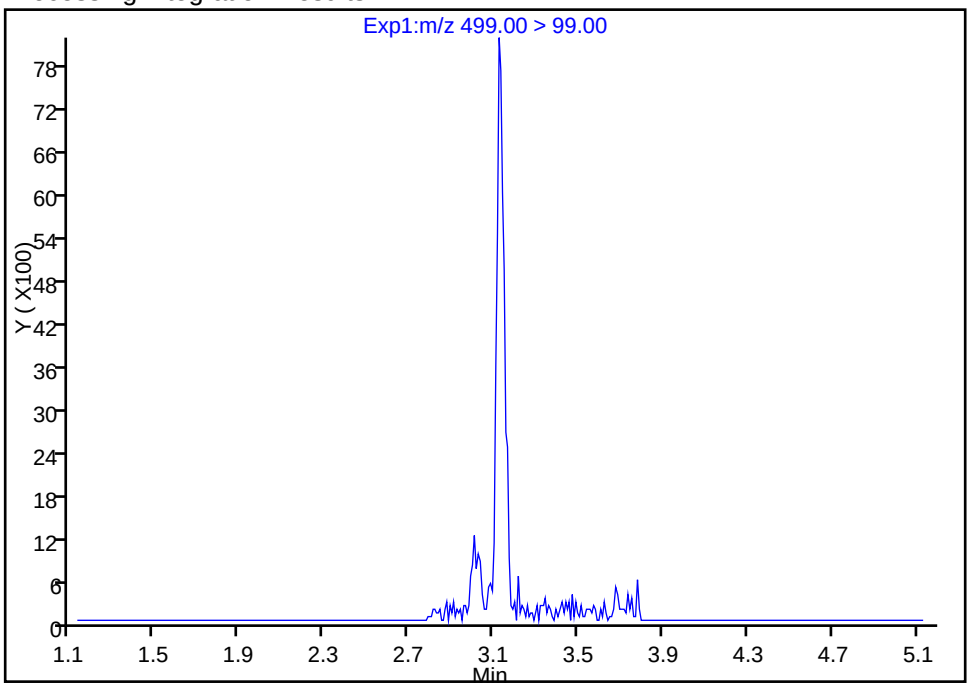
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_004.d
Injection Date: 14-Dec-2016 08:54:14 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

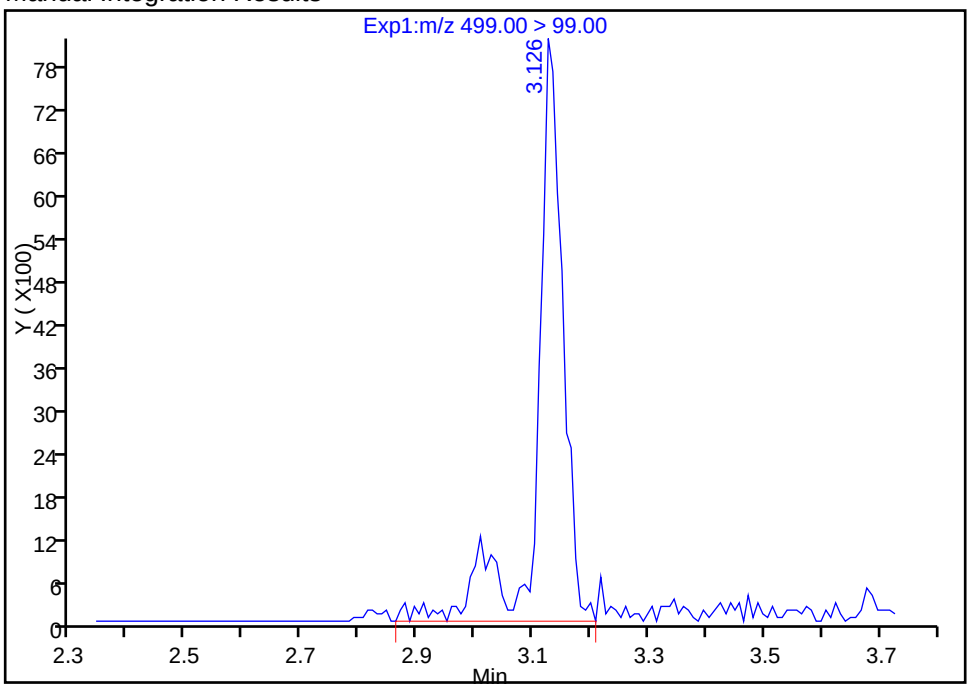
Processing Integration Results

Not Detected
Expected RT: 3.13



Manual Integration Results

RT: 3.13
Area: 25671
Amount: 0.478519
Amount Units: ng/ml



Reviewer: chandrasenas, 14-Dec-2016 10:32:31
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 14-Dec-2016 09:01:44 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:05:25 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 14-Dec-2016 10:33:28

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	1.526	1.522	0.004		15219661	46.7		93.5	842478	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.525	0.001	1.000	273580	1.01		101	1644	
D 4 13C5-PFPeA										
267.90 > 223.00	1.801	1.796	0.004		12195919	47.8		95.5	1171683	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.798	0.002	1.000	248362	0.99		99.1	2362	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.829	1.833	-0.004	1.000	379924	0.8526		96.5		
298.90 > 99.00	1.829	1.833	-0.004	1.000	159652		2.38(0.00-0.00)	96.5		
D 6 13C2 PFHxA										
315.00 > 270.00	2.085	2.079	0.006		11224054	45.5		90.9	665631	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.085	2.080	0.005	1.000	220309	1.02		102	5374	
D 11 13C4-PFHpA										
367.00 > 322.00	2.411	2.407	0.004		10214444	49.2		98.4	889983	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.417	2.410	0.007	1.000	206559	1.00		100	1442	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.422	2.421	0.001	1.000	329229	1.04		114		
D 10 18O2 PFHxS										
403.00 > 84.00	2.422	2.425	-0.003		14057514	44.6		94.3	1646295	
D 14 13C4 PFOA										
417.00 > 372.00	2.766	2.763	0.003		10519257	49.0		97.9	769059	

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	2.766	2.763	0.003	1.000	227957	1.05		105	2235	
413.00 > 169.00	2.766	2.763	0.003	1.000	137838		1.65(0.90-1.10)	105	7127	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.774	2.772	0.002	1.000	234984	0.9486		99.6		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.134	3.128	0.006	1.000	200062	0.8954		96.5	19233	M
499.00 > 99.00	3.126	3.128	-0.002	0.997	45108		4.44(0.90-1.10)	96.5	2397	M
D 19 13C5 PFNA										
468.00 > 423.00	3.134	3.132	0.002		7764384	48.3		96.7	438384	
D 17 13C4 PFOS										
503.00 > 80.00	3.134	3.134	0.0		10013563	43.8		91.6	520202	
20 Perfluorononanoic acid										
463.00 > 419.00	3.134	3.134	0.0	1.000	153936	1.00		100	2315	
D 21 13C8 FOSA										
506.00 > 78.00	3.472	3.472	0.0		17187069	46.9		93.8	448425	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.472	3.473	-0.001	1.000	308602	0.9799		98.0	17884	
D 23 13C2 PFDA										
515.00 > 470.00	3.498	3.492	0.006		7014294	48.3		96.6	309465	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.498	3.494	0.004	1.000	130552	0.9834		98.3	4177	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.802	3.806	-0.004	1.000	117547	0.9170		95.1		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.820	3.822	-0.002	1.000	115000	1.01		101	3017	
D 27 13C2 PFUnA										
565.00 > 520.00	3.820	3.822	-0.002		5343893	48.4		96.7	481046	
D 30 13C2 PFDoA										
615.00 > 570.00	4.114	4.112	0.002		4757375	46.7		93.3	242261	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.114	4.113	0.001	1.000	90020	0.99		99.2	2574	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.381	4.380	0.001	1.000	82103	0.9199		92.0	1660	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.620	4.615	0.005		9875164	47.5		95.0	379328	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.620	4.617	0.003	1.000	163111	0.9886		98.9	2428	
713.00 > 169.00	4.620	4.617	0.003	1.000	27378		5.96(0.00-0.00)	98.9	9787	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.038	5.033	0.005		5394790	47.5		94.9	185380	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.038	5.034	0.004	1.000	147963	0.9709		97.1	426	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.391	5.388	0.003	1.000	81829	1.05		105	117	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:05:26 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_005.d

Injection Date: 14-Dec-2016 09:01:44 Instrument ID: A8_N

Lims ID: IC L2

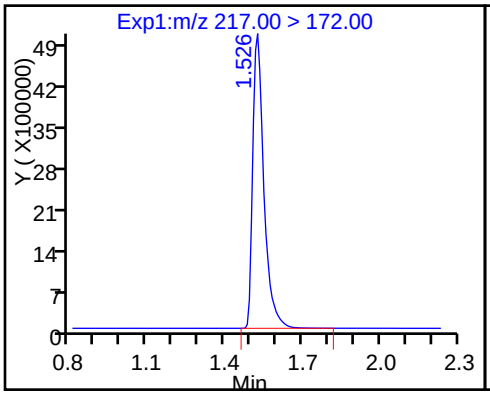
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

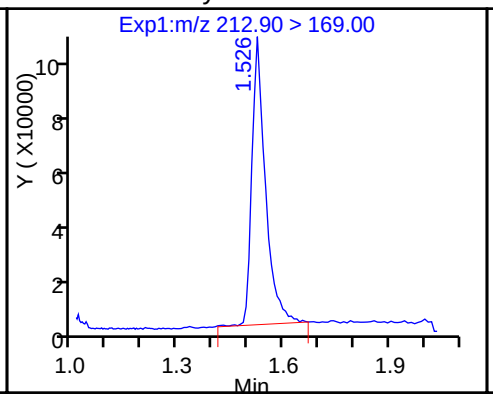
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

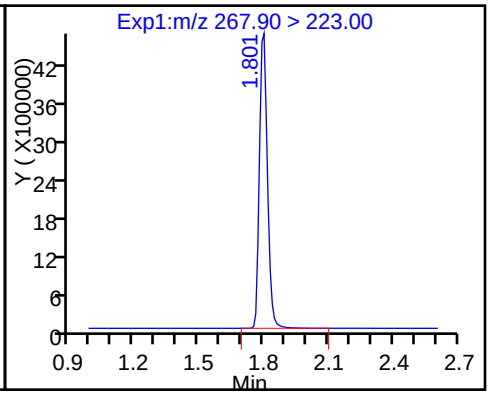
D 2 13C4 PFBA



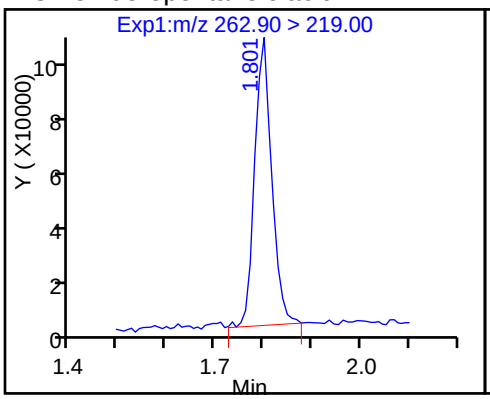
1 Perfluorobutyric acid



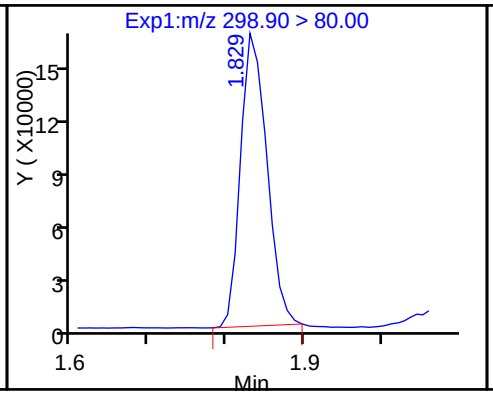
D 4 13C5-PFPeA



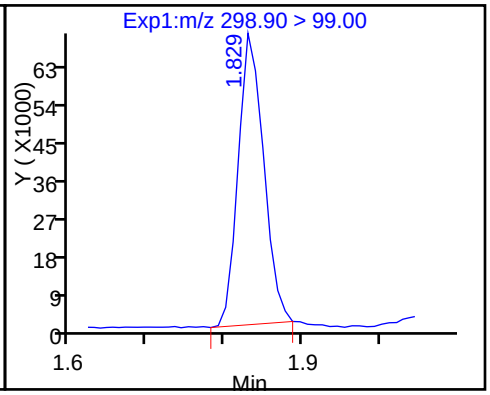
3 Perfluoropentanoic acid



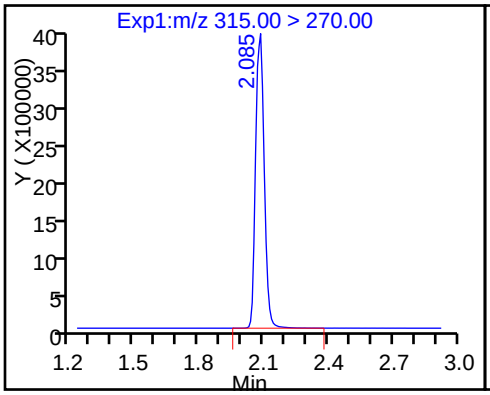
5 Perfluorobutanesulfonic acid



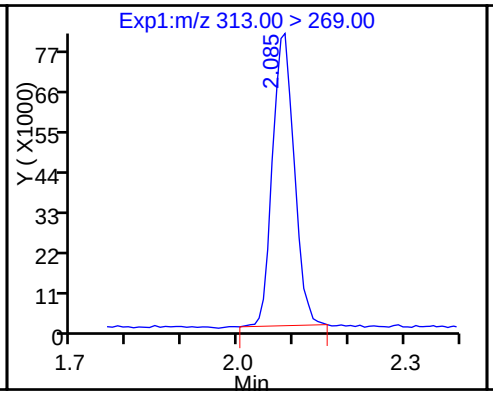
5 Perfluorobutanesulfonic acid



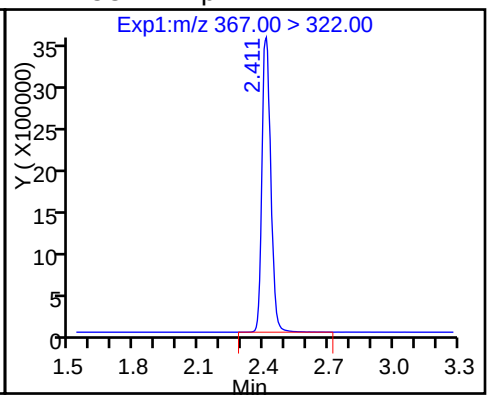
D 6 13C2 PFHxA



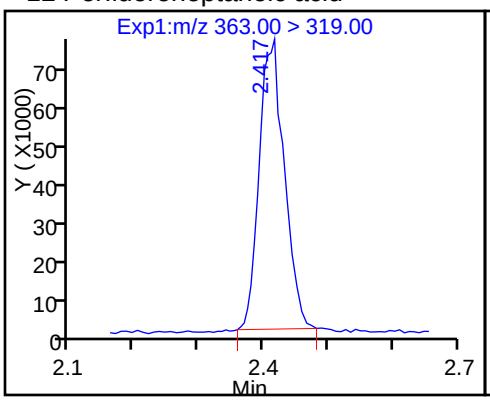
7 Perfluorohexanoic acid



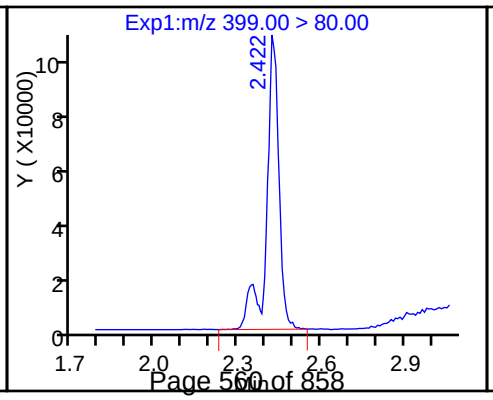
D 11 13C4-PFHpA



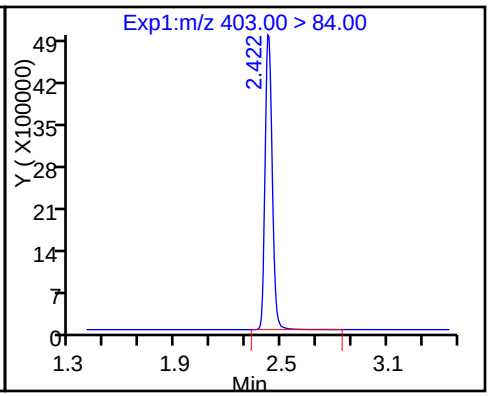
12 Perfluoroheptanoic acid



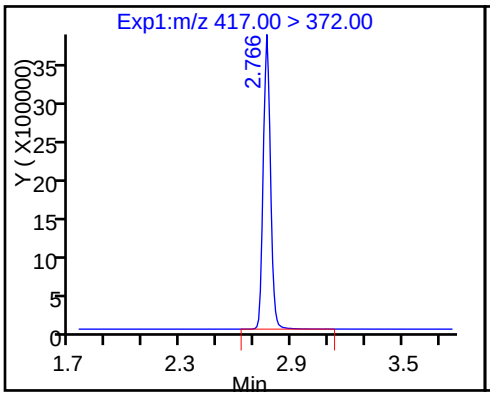
9 Perfluorohexanesulfonic acid



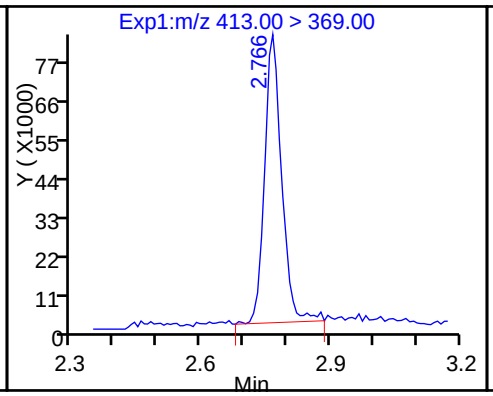
D 10 18O2 PFHxS



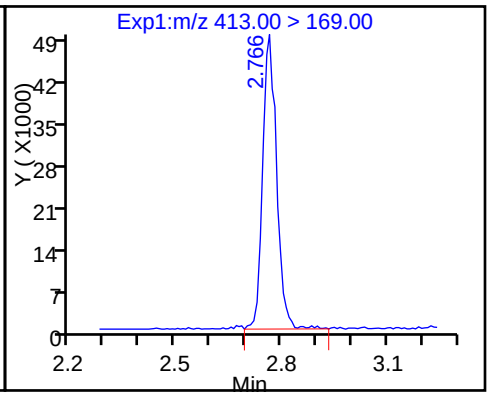
D 14 13C4 PFOA



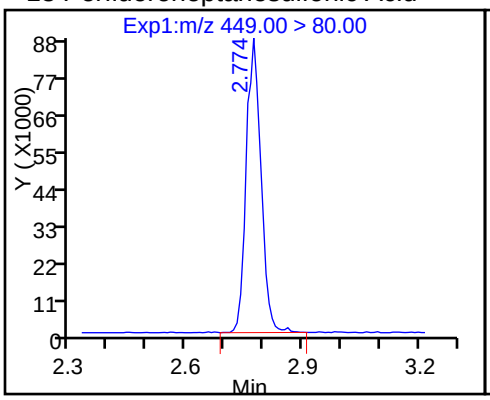
15 Perfluorooctanoic acid



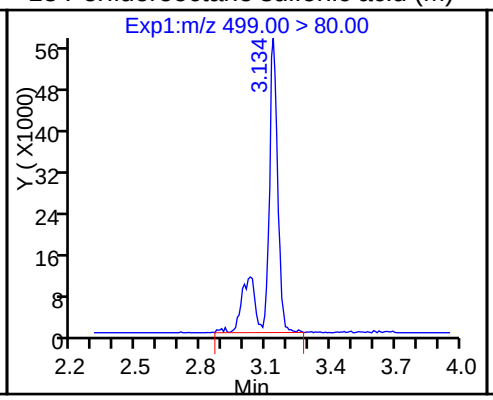
15 Perfluorooctanoic acid



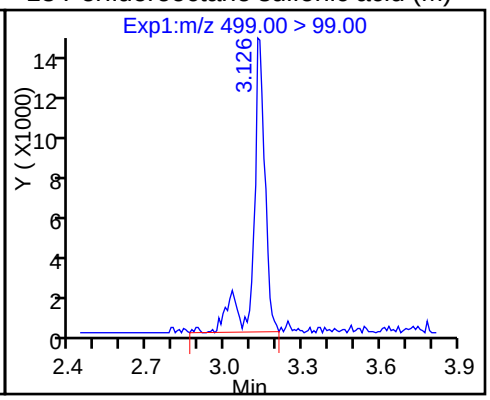
13 Perfluoroheptanesulfonic Acid



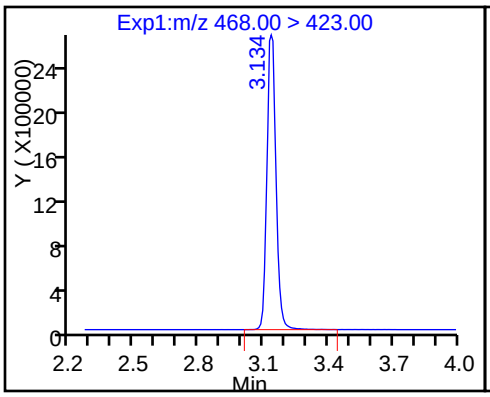
18 Perfluorooctane sulfonic acid (M)



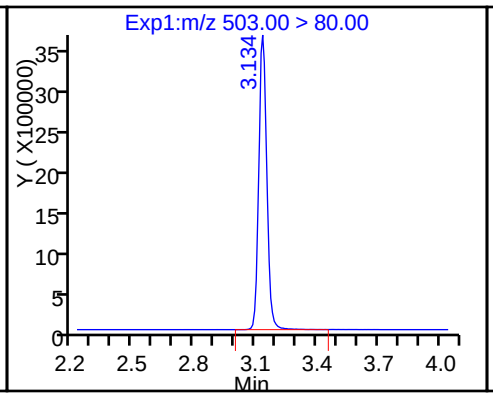
18 Perfluorooctane sulfonic acid (M)



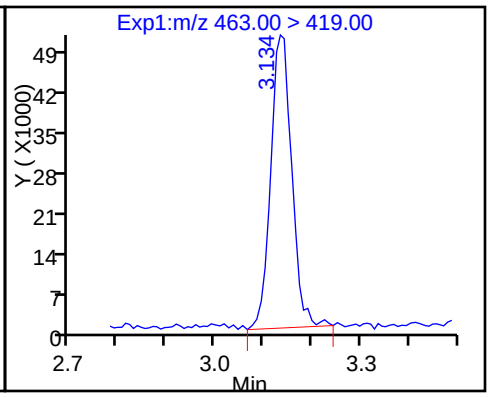
D 19 13C5 PFNA



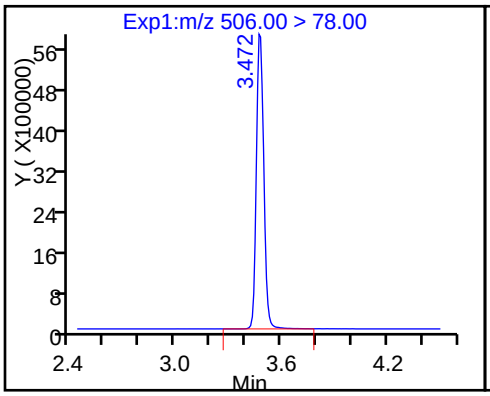
D 17 13C4 PFOS



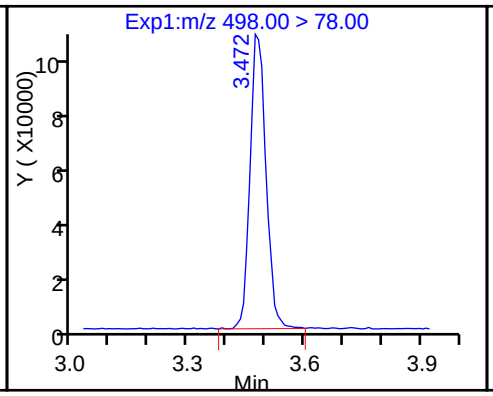
20 Perfluorononanoic acid



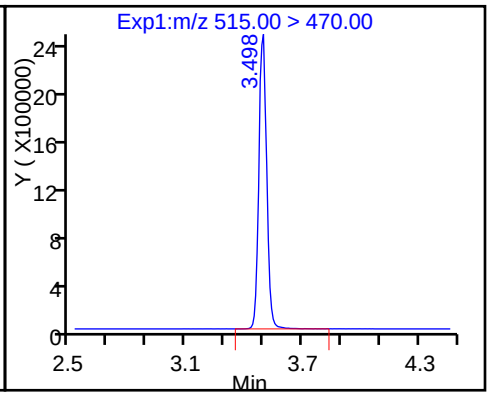
D 21 13C8 FOSA



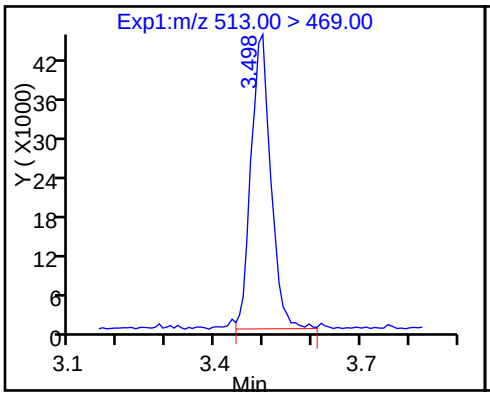
22 Perfluorooctane Sulfonamide



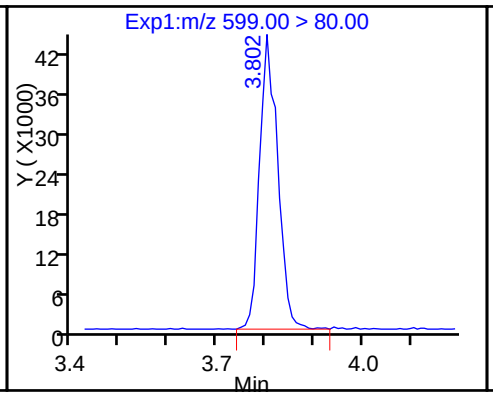
D 23 13C2 PFDA



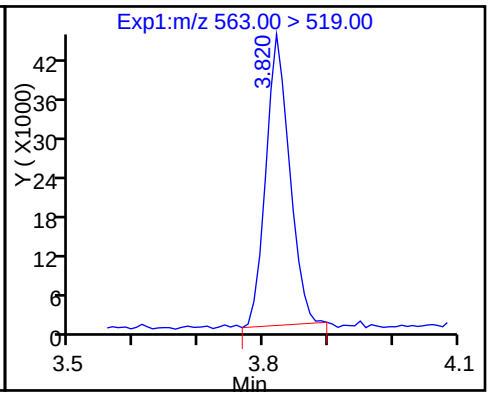
24 Perfluorodecanoic acid



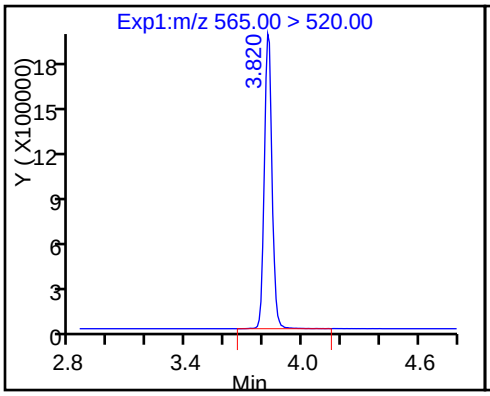
26 Perfluorodecane Sulfonic acid



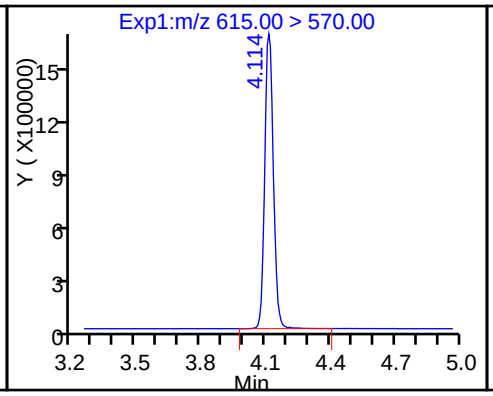
28 Perfluoroundecanoic acid



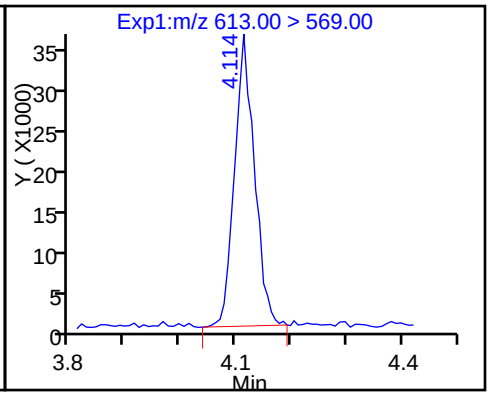
D 27 13C2 PFUnA



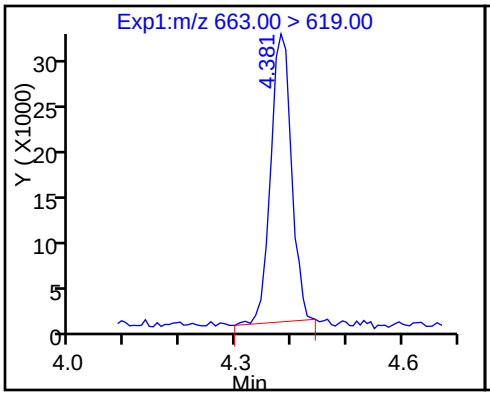
D 30 13C2 PFDoA



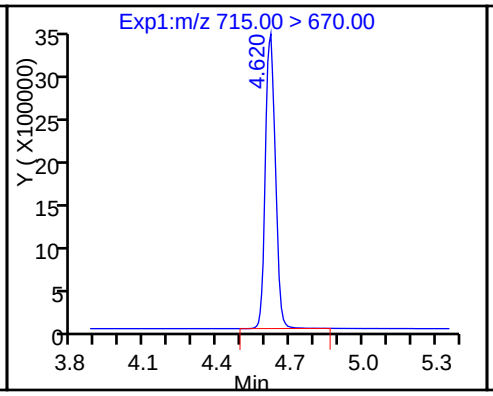
29 Perfluorododecanoic acid



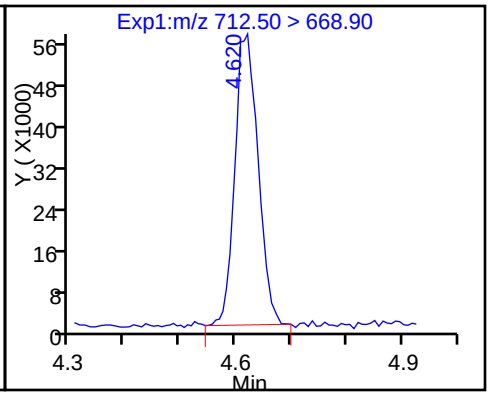
31 Perfluorotridecanoic acid



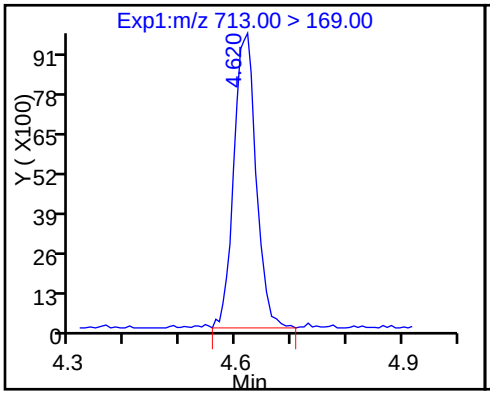
D 32 13C2-PFTeDA



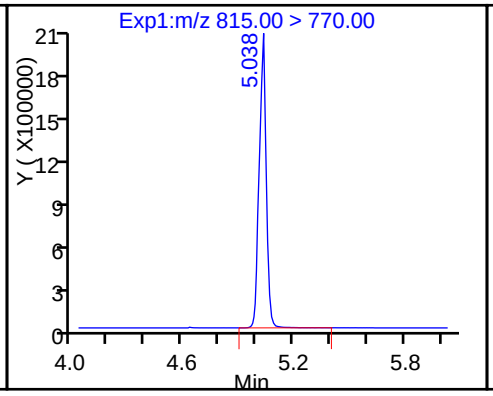
33 Perfluorotetradecanoic acid



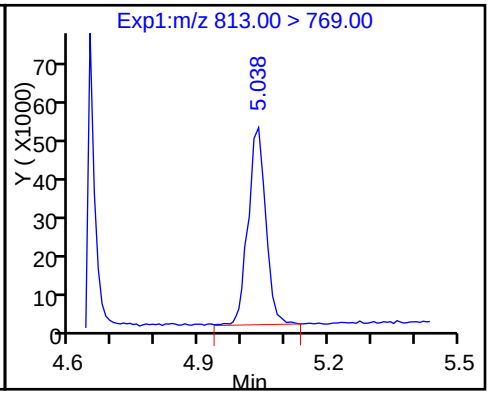
33 Perfluorotetradecanoic acid



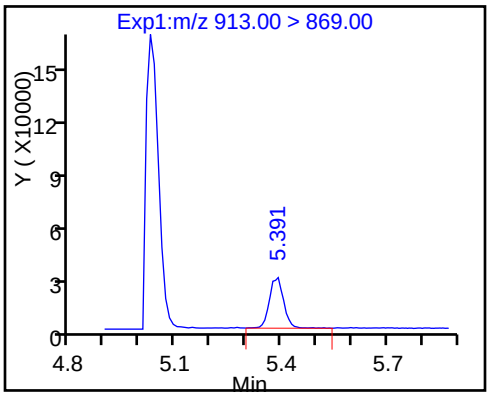
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

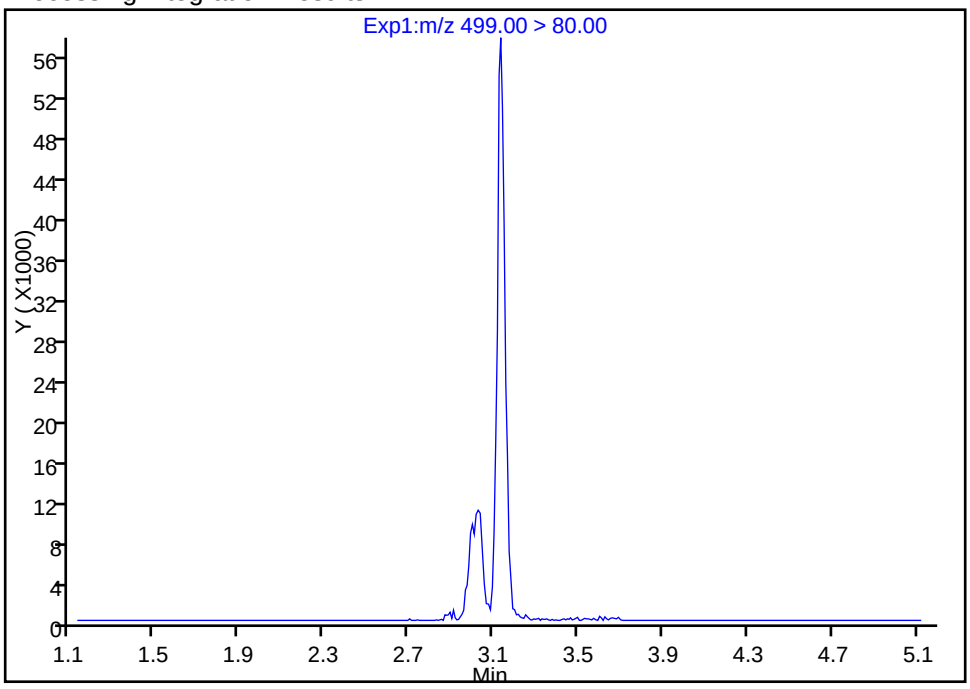
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_005.d
Injection Date: 14-Dec-2016 09:01:44 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

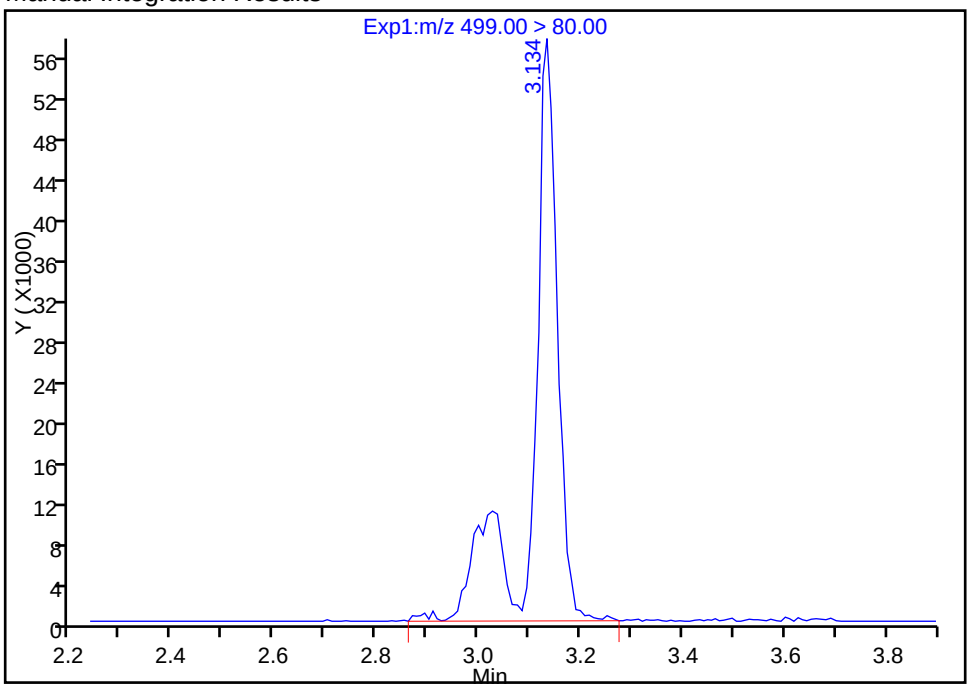
Not Detected
Expected RT: 3.13

Processing Integration Results



Manual Integration Results

RT: 3.13
Area: 200062
Amount: 0.895362
Amount Units: ng/ml



Reviewer: chandrasenas, 14-Dec-2016 10:33:28
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

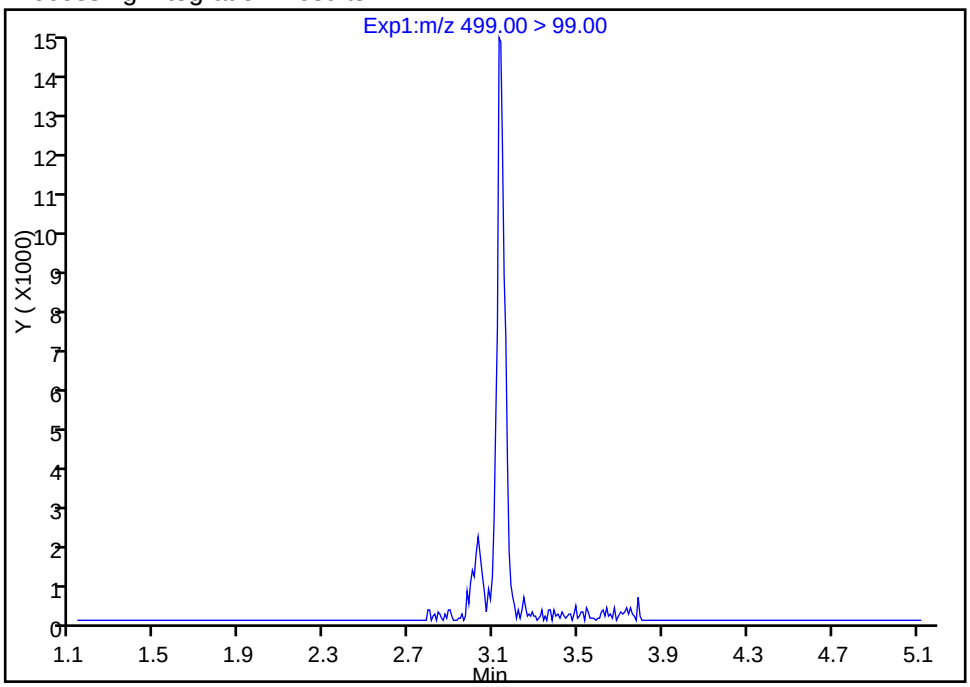
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_005.d
Injection Date: 14-Dec-2016 09:01:44 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

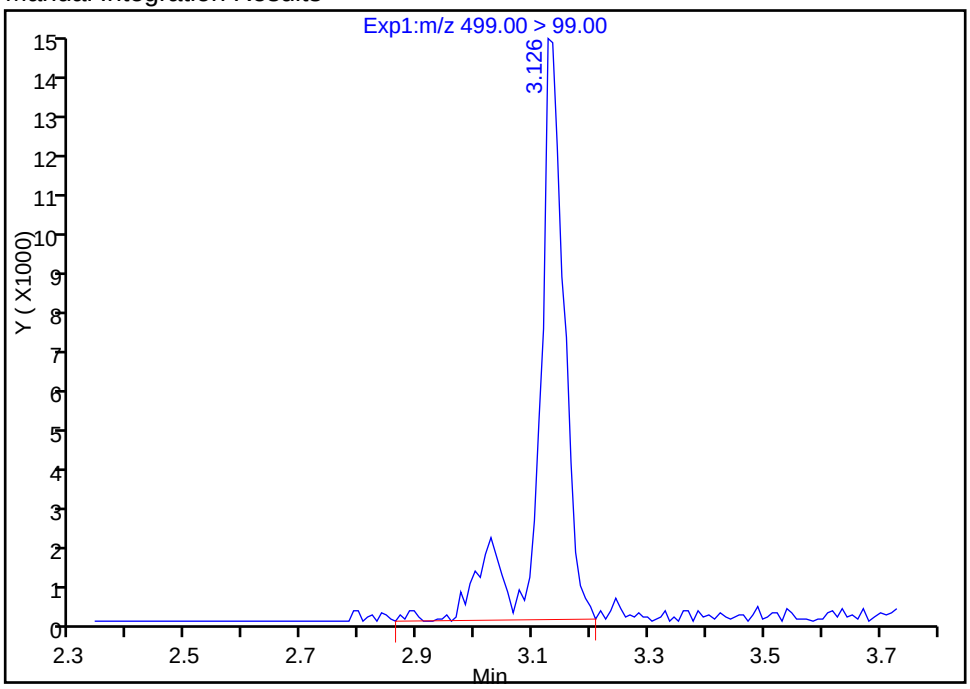
Processing Integration Results

Not Detected
Expected RT: 3.13



Manual Integration Results

RT: 3.13
Area: 45108
Amount: 0.895362
Amount Units: ng/ml



Reviewer: chandrasenas, 14-Dec-2016 10:33:28
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 14-Dec-2016 09:09:12 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:05:28 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 14-Dec-2016 10:33:59

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	1.513	1.522	-0.009		18946349	58.2		116	1532993	
1 Perfluorobutyric acid										
212.90 > 169.00	1.521	1.525	-0.004	1.000	1749367	5.20		104	9395	
D 4 13C5-PFPeA										
267.90 > 223.00	1.794	1.796	-0.002		15369146	60.2		120	1409500	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.794	1.798	-0.004	1.000	1638004	5.18		104	11615	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.833	1.833	0.0	1.000	2702680	4.77		108		
298.90 > 99.00	1.823	1.833	-0.010	0.995	1113108		2.43(0.00-0.00)	108		
D 6 13C2 PFHxA										
315.00 > 270.00	2.071	2.079	-0.008		14896045	60.3		121	598885	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.071	2.080	-0.009	1.000	1442472	5.02		100	50389	
D 11 13C4-PFHpA										
367.00 > 322.00	2.397	2.407	-0.010		12660551	61.0		122	575004	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.402	2.410	-0.008	1.000	1282010	5.03		101	11834	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.391	2.421	-0.030	1.000	1863397	4.61		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.418	2.425	-0.007		17883811	56.8		120	900083	
D 14 13C4 PFOA										
417.00 > 372.00	2.759	2.763	-0.004		13549904	63.1		126	689706	

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	2.759	2.763	-0.004	1.000	1423581	5.07		101	13805	
413.00 > 169.00	2.759	2.763	-0.004	1.000	819461		1.74(0.90-1.10)	101	36486	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.759	2.772	-0.013	1.000	1608520	5.01		105		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.127	3.128	-0.001	1.000	1359702	4.69		101	75944	
499.00 > 99.00	3.127	3.128	-0.001	1.000	286847		4.74(0.90-1.10)	101	18061	
D 19 13C5 PFNA										
468.00 > 423.00	3.127	3.132	-0.005		9856533	61.4		123	408280	
D 17 13C4 PFOS										
503.00 > 80.00	3.127	3.134	-0.007		12986323	56.8		119	768116	
20 Perfluorononanoic acid										
463.00 > 419.00	3.127	3.134	-0.007	1.000	983226	5.04		101	14769	
D 21 13C8 FOSA										
506.00 > 78.00	3.465	3.472	-0.007		20825852	56.8		114	997158	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.465	3.473	-0.008	1.000	2032164	5.33		107	90523	
D 23 13C2 PFDA										
515.00 > 470.00	3.482	3.492	-0.010		8828454	60.8		122	303461	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.490	3.494	-0.004	1.000	826730	4.95		99.0	25767	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.800	3.806	-0.006	1.000	789872	4.75		98.6		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.817	3.822	-0.005	1.000	679681	4.65		92.9	15903	
D 27 13C2 PFUnA										
565.00 > 520.00	3.817	3.822	-0.005		6833311	61.9		124	348561	
D 30 13C2 PFDoA										
615.00 > 570.00	4.105	4.112	-0.007		5968250	58.5		117	363215	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.105	4.113	-0.008	1.000	554473	4.87		97.4	10306	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.370	4.380	-0.010	1.000	571402	5.10		102	10675	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.605	4.615	-0.010		11698275	56.3		113	1022735	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.612	4.617	-0.005	1.000	998104	4.82		96.4	17629	
713.00 > 169.00	4.605	4.617	-0.012	0.999	149696		6.67(0.00-0.00)	96.4	29858	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.025	5.033	-0.008		6371628	56.1		112	209189	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.025	5.034	-0.009	1.000	637438	4.87		97.4	2477	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.383	5.388	-0.005	1.000	473745	4.82		96.5	613	

Reagents:

LCPFC-L3_00019 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:05:29 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_006.d

Injection Date: 14-Dec-2016 09:09:12 Instrument ID: A8_N

Lims ID: IC L3

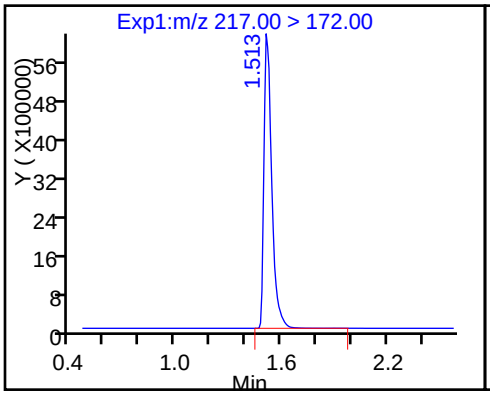
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

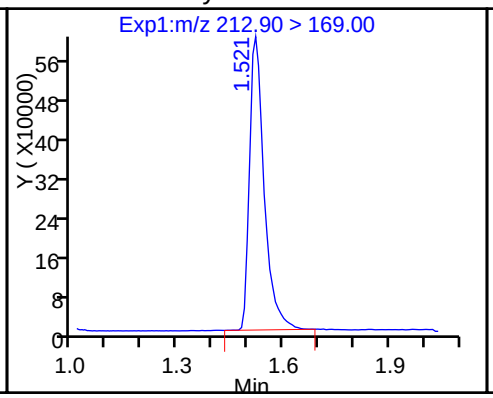
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

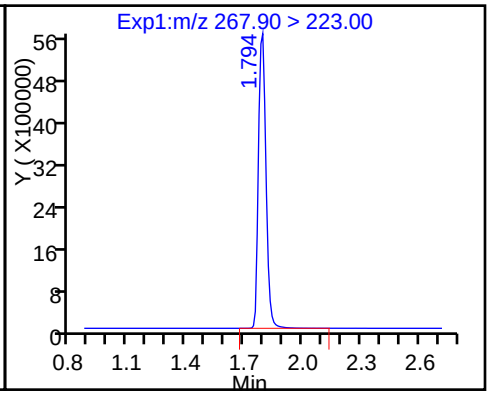
D 2 13C4 PFBA



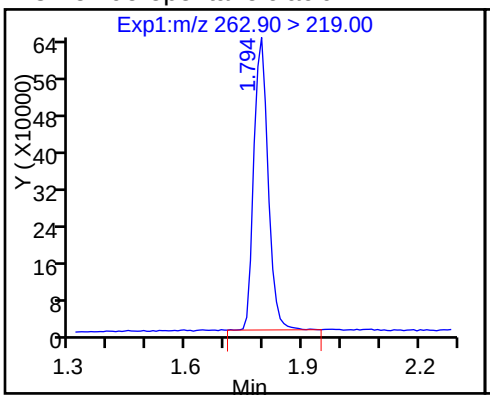
1 Perfluorobutyric acid



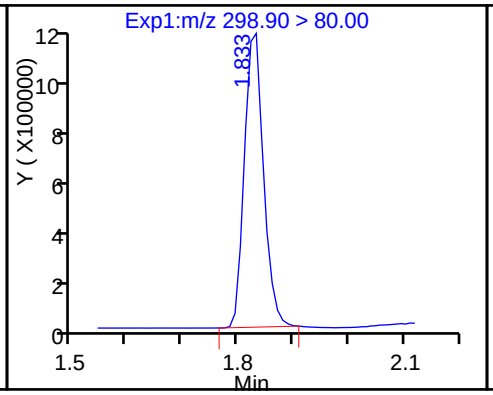
D 4 13C5-PFPeA



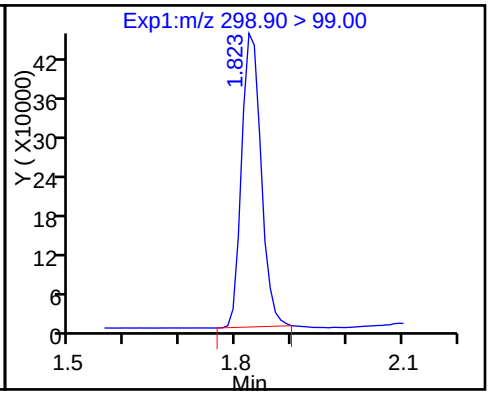
3 Perfluoropentanoic acid



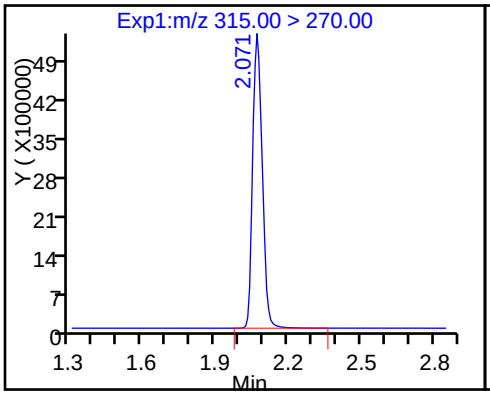
5 Perfluorobutanesulfonic acid



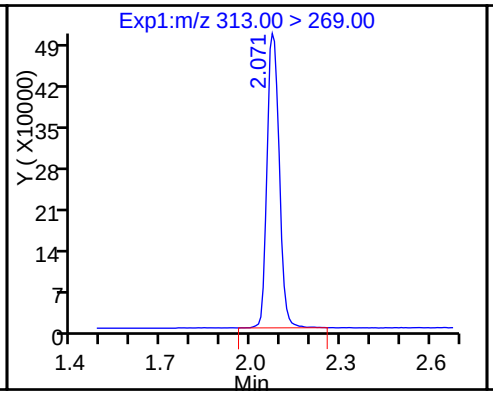
5 Perfluorobutanesulfonic acid



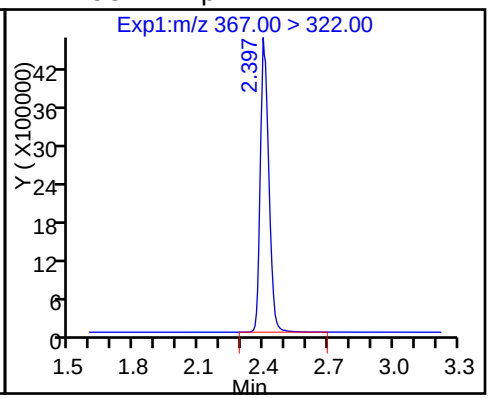
D 6 13C2 PFHxA



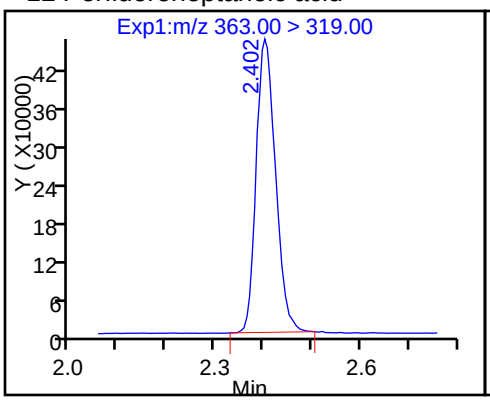
7 Perfluorohexanoic acid



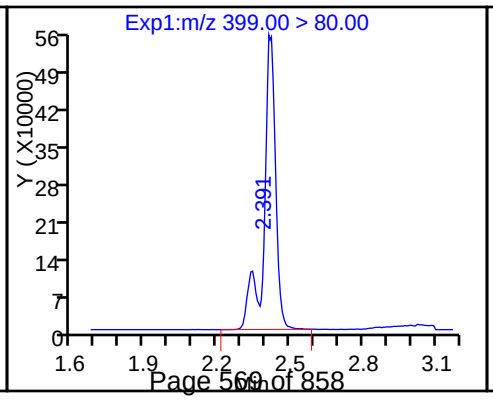
D 11 13C4-PFHpA



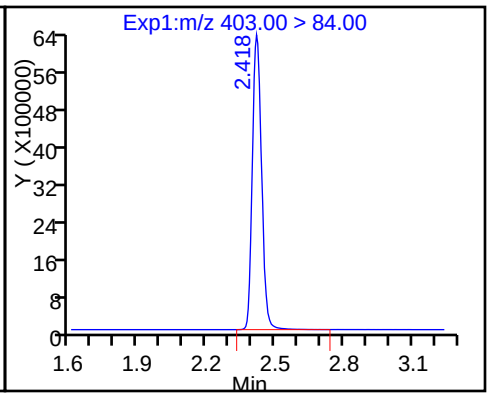
12 Perfluoroheptanoic acid



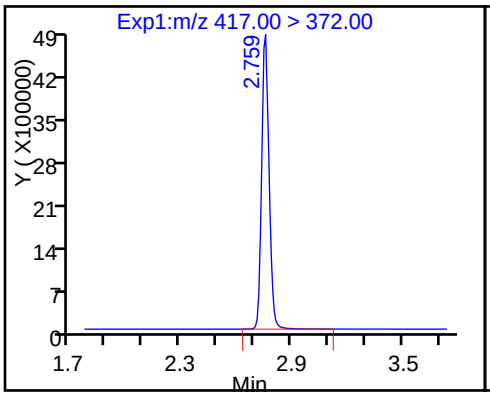
9 Perfluorohexanesulfonic acid



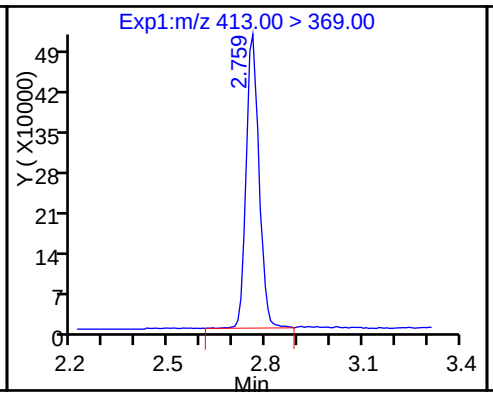
D 10 18O2 PFHxS



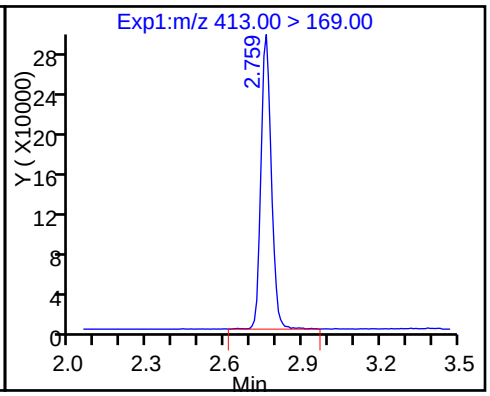
D 14 13C4 PFOA



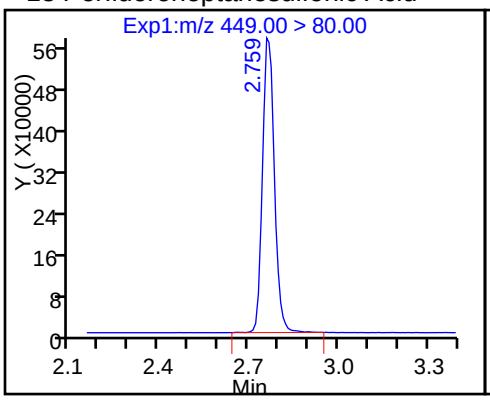
15 Perfluorooctanoic acid



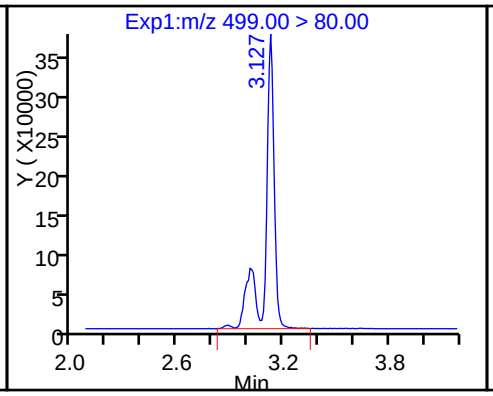
15 Perfluorooctanoic acid



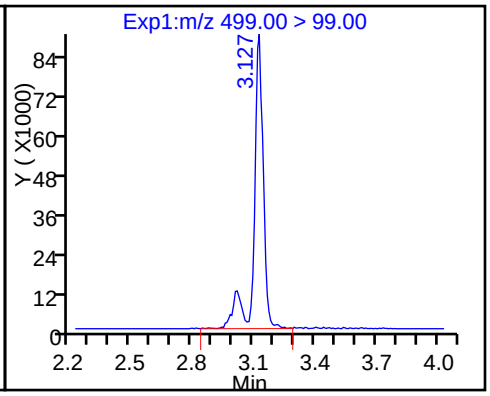
13 Perfluoroheptanesulfonic Acid



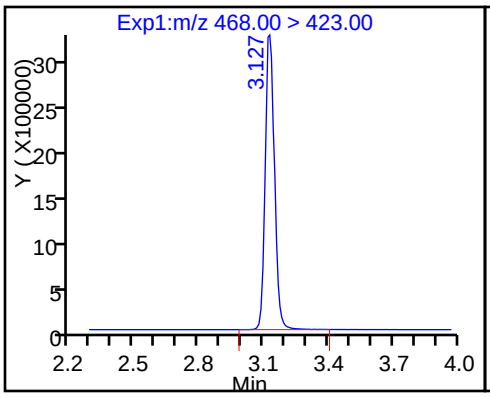
18 Perfluorooctane sulfonic acid



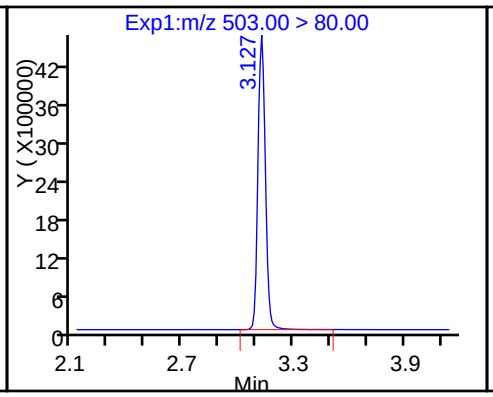
18 Perfluorooctane sulfonic acid



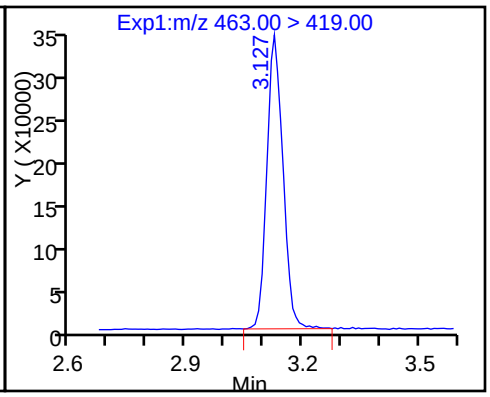
D 19 13C5 PFNA



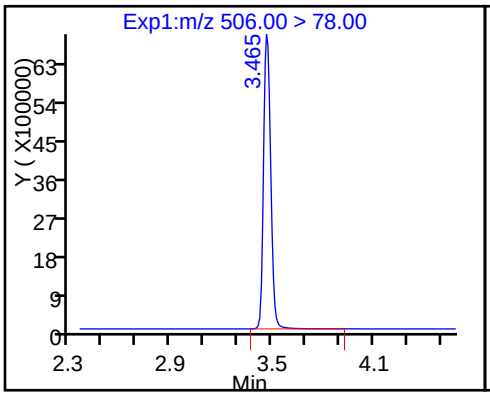
D 17 13C4 PFOS



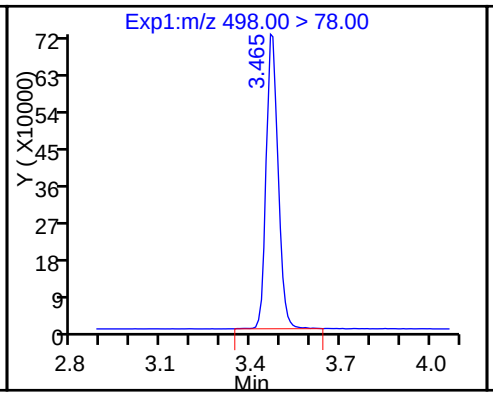
20 Perfluorononanoic acid



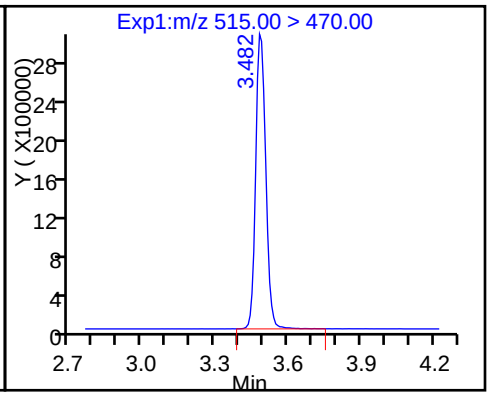
D 21 13C8 FOSA



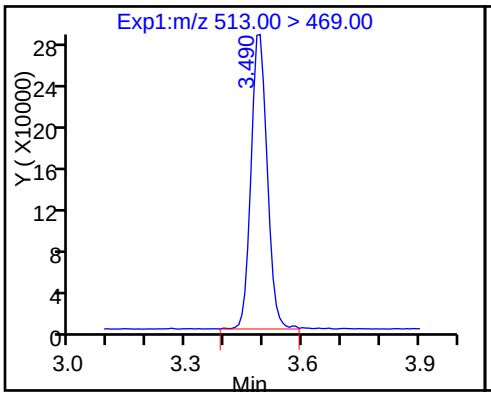
22 Perfluorooctane Sulfonamide



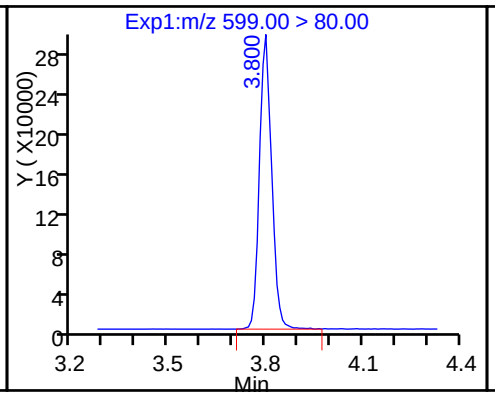
D 23 13C2 PFDA



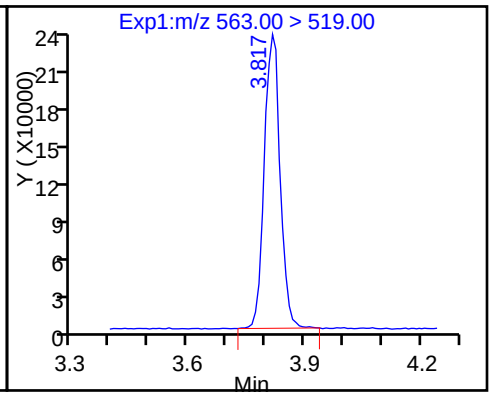
24 Perfluorodecanoic acid



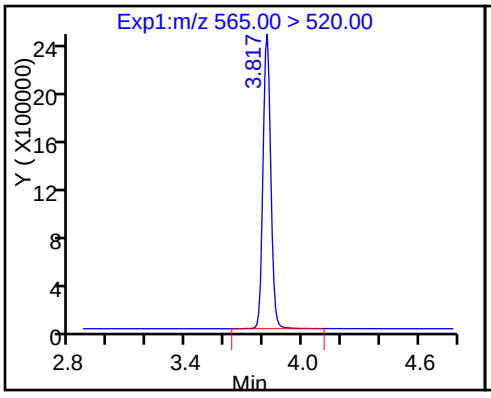
26 Perfluorodecane Sulfonic acid



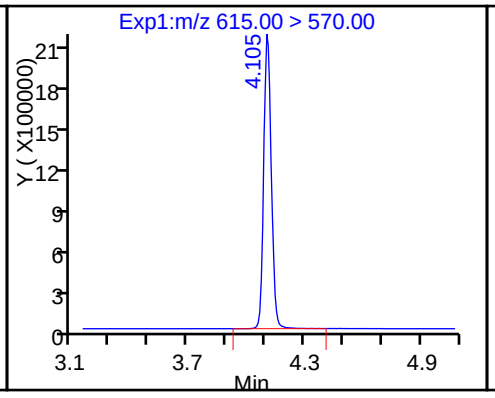
28 Perfluoroundecanoic acid



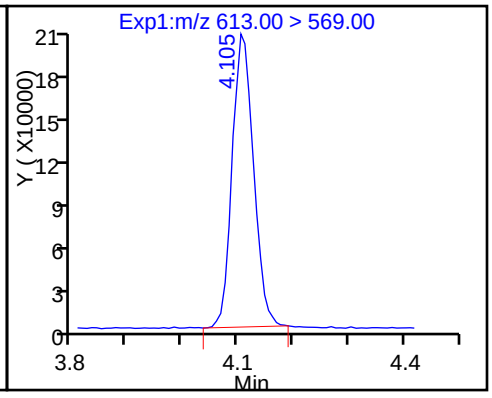
D 27 13C2 PFUnA



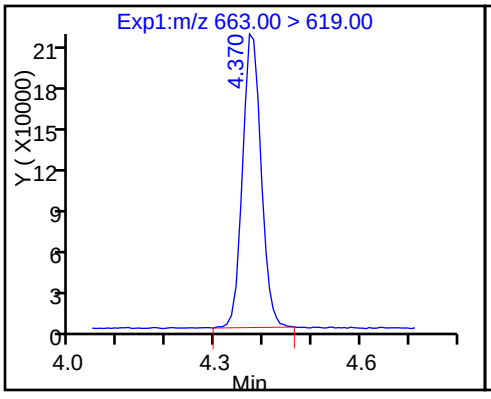
D 30 13C2 PFDoA



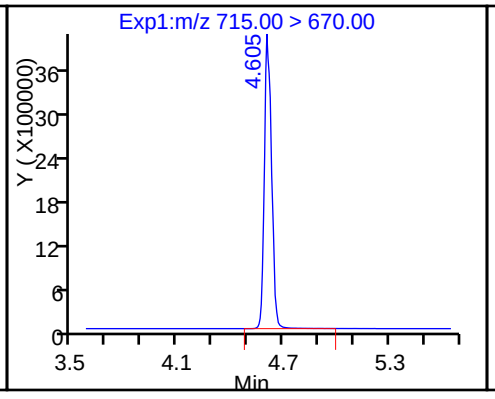
29 Perfluorododecanoic acid



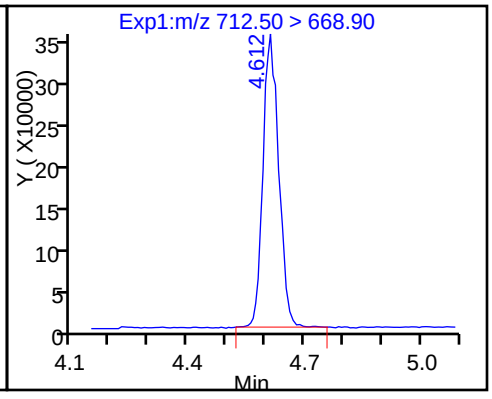
31 Perfluorotridecanoic acid



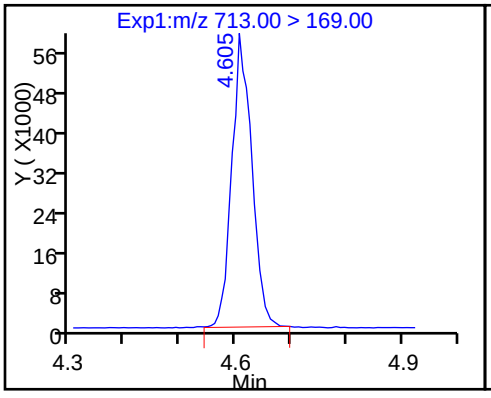
D 32 13C2-PFTeDA



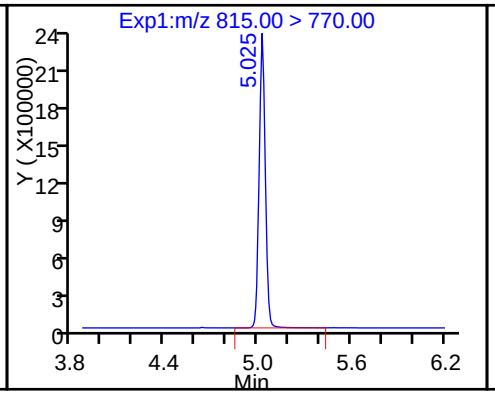
33 Perfluorotetradecanoic acid



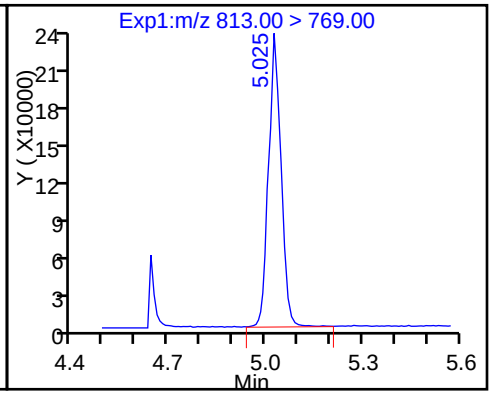
33 Perfluorotetradecanoic acid



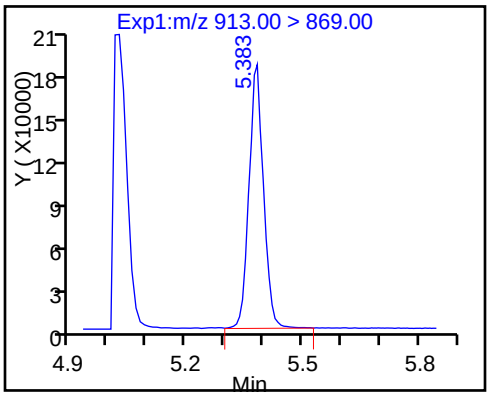
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_007.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 14-Dec-2016 09:16:42 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:05:30 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 14-Dec-2016 10:34:29

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	1.526	1.522	0.004		16912669	51.9		104	905543	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.525	0.001	1.000	6424849	21.4		107	39059	
D 4 13C5-PFPeA										
267.90 > 223.00	1.791	1.796	-0.005		13174008	51.6		103	1015772	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.798	0.003	1.000	5663900	20.9		105	57747	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.830	1.833	-0.003	1.000	9850035	20.3		115		
298.90 > 99.00	1.830	1.833	-0.003	1.000	4184574		2.35(0.00-0.00)	115		
D 6 13C2 PFHxA										
315.00 > 270.00	2.074	2.079	-0.005		12844328	52.0		104	664424	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.081	2.080	0.001	1.000	5244948	21.2		106	143561	
D 11 13C4-PFHpA										
367.00 > 322.00	2.407	2.407	0.0		10609063	51.1		102	767977	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.407	2.410	-0.003	1.000	4551793	21.3		107	38857	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.423	2.421	0.002	1.000	6484937	18.7		103		
D 10 18O2 PFHxS										
403.00 > 84.00	2.423	2.425	-0.002		15328363	48.7		103	907570	
D 14 13C4 PFOA										
417.00 > 372.00	2.758	2.763	-0.005		11163447	52.0		104	558526	

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	2.765	2.763	0.002	1.000	4883511	21.1		106	47339	
413.00 > 169.00	2.765	2.763	0.002	1.000	2867133		1.70(0.90-1.10)	106	113699	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.773	2.772	0.001	1.000	5927582	20.7		109		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.109	3.128	-0.019	1.000	4865342	18.9		102	94179	
499.00 > 99.00	3.132	3.128	0.004	1.008	1068191		4.55(0.90-1.10)	102	84348	
D 19 13C5 PFNA										
468.00 > 423.00	3.132	3.132	0.0		8327449	51.8		104	952703	
D 17 13C4 PFOS										
503.00 > 80.00	3.132	3.134	-0.002		11551477	50.5		106	343741	
20 Perfluorononanoic acid										
463.00 > 419.00	3.132	3.134	-0.002	1.000	3455989	21.0		105	64248	
D 21 13C8 FOSA										
506.00 > 78.00	3.470	3.472	-0.002		19613435	53.5		107	750301	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.470	3.473	-0.003	1.000	7870800	21.9		110	306760	
D 23 13C2 PFDA										
515.00 > 470.00	3.495	3.492	0.003		7639611	52.6		105	244893	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.495	3.494	0.001	1.000	2945950	20.4		102	93709	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.805	3.806	-0.001	1.000	2993777	20.2		105		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.822	3.822	0.0	1.000	2438391	19.5		97.7	66101	
D 27 13C2 PFUnA										
565.00 > 520.00	3.822	3.822	0.0		5830576	52.8		106	448051	
D 30 13C2 PFDoA										
615.00 > 570.00	4.110	4.112	-0.002		5271593	51.7		103	246213	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.110	4.113	-0.003	1.000	2052789	20.4		102	44214	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.378	4.380	-0.002	1.000	2073724	21.0		105	53973	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.611	4.615	-0.004		11055915	53.2		106	565987	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.611	4.617	-0.006	1.000	3819839	20.9		104	61621	
713.00 > 169.00	4.611	4.617	-0.006	1.000	550938		6.93(0.00-0.00)	104	51527	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.036	5.033	0.003		6009370	52.9		106	172491	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.036	5.034	0.002	1.000	2263872	21.5		107	6117	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.382	5.388	-0.006	1.000	1712212	19.7		98.7	2675	

Reagents:

LCPFC-L4_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:05:31 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_007.d

Injection Date: 14-Dec-2016 09:16:42 Instrument ID: A8_N

Lims ID: IC L4

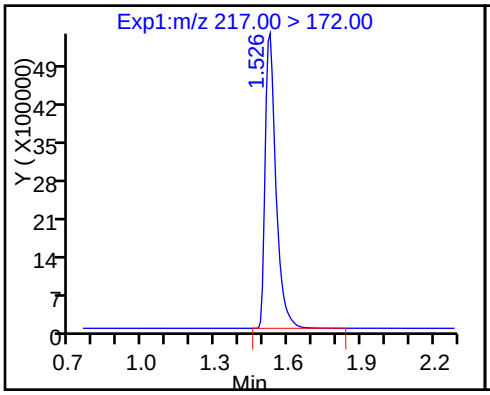
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7

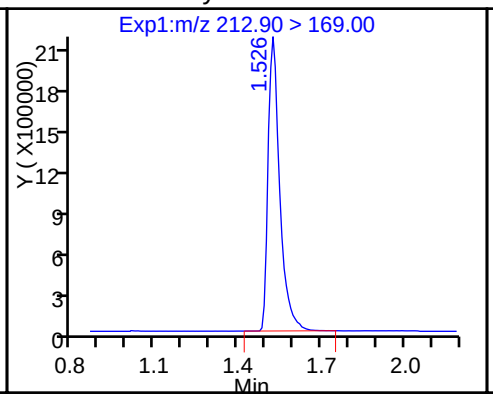
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

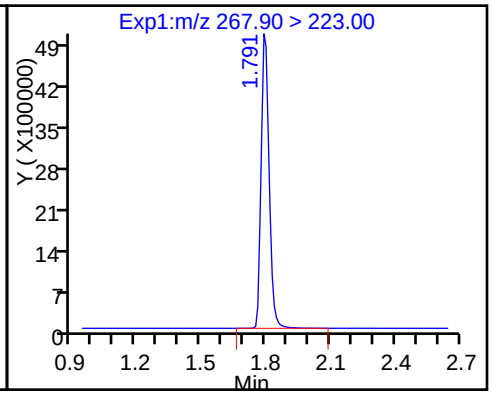
D 2 13C4 PFBA



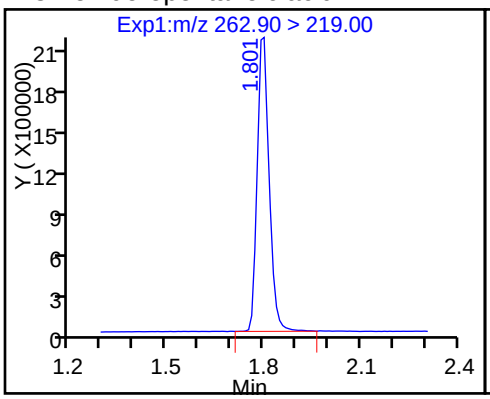
1 Perfluorobutyric acid



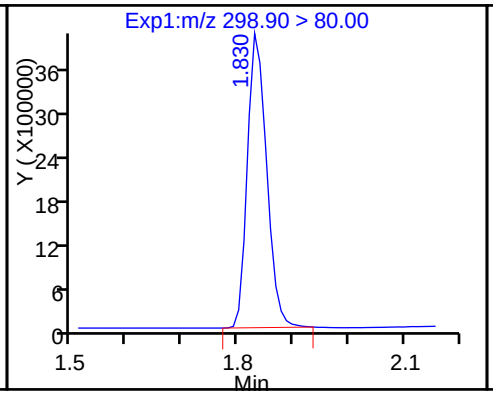
D 4 13C5-PFPeA



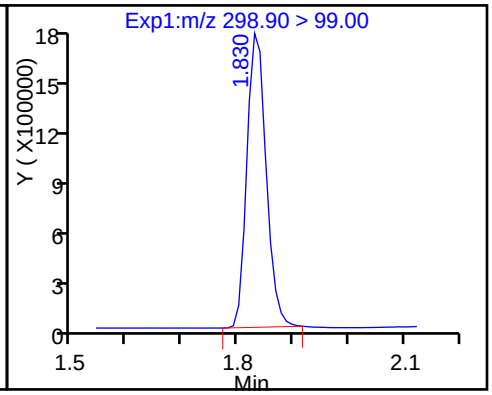
3 Perfluoropentanoic acid



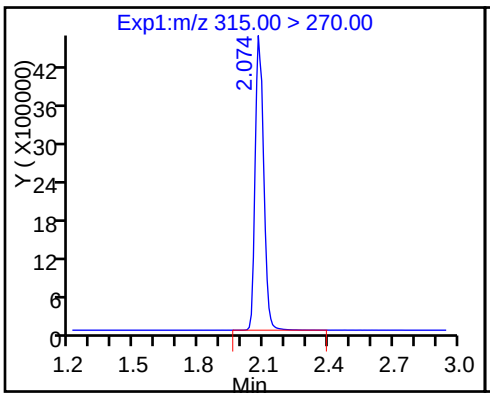
5 Perfluorobutanesulfonic acid



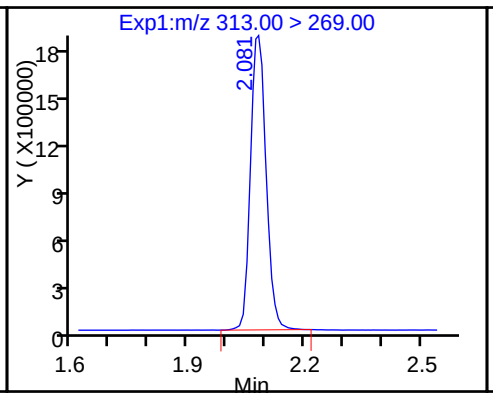
5 Perfluorobutanesulfonic acid



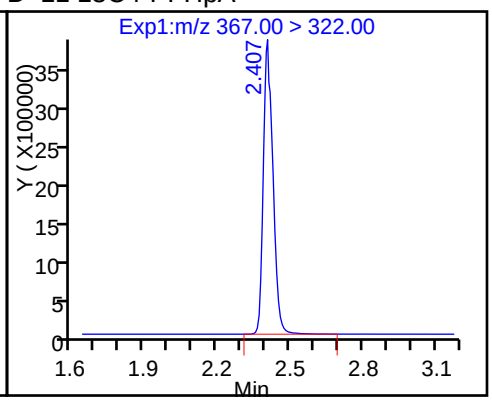
D 6 13C2 PFHxA



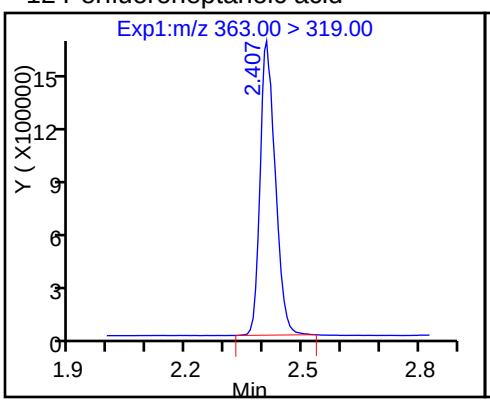
7 Perfluorohexanoic acid



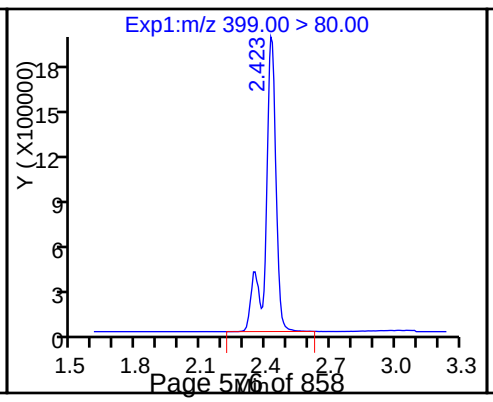
D 11 13C4-PFHpA



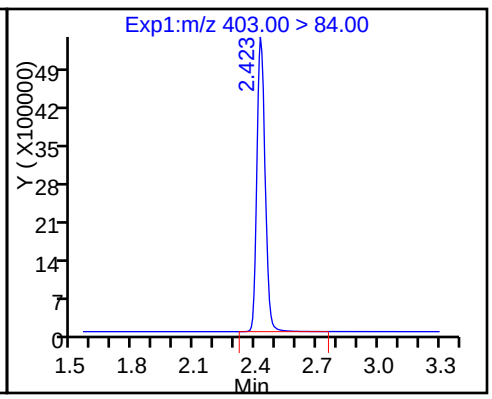
12 Perfluoroheptanoic acid



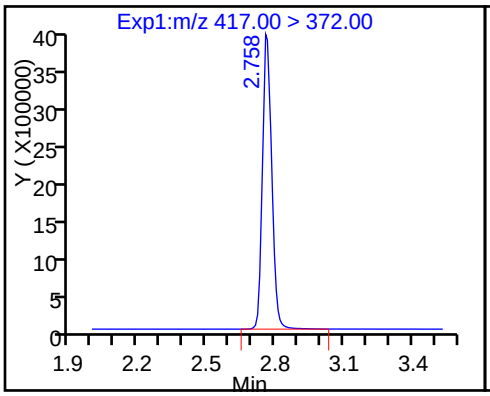
9 Perfluorohexanesulfonic acid



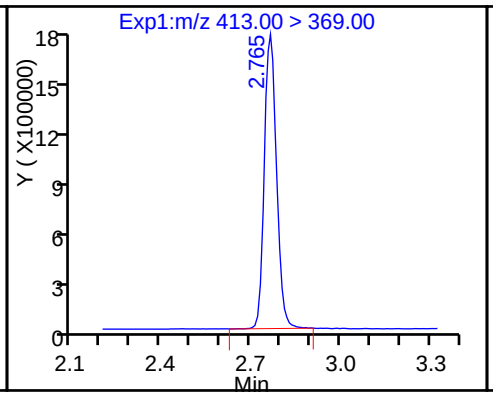
D 10 18O2 PFHxS



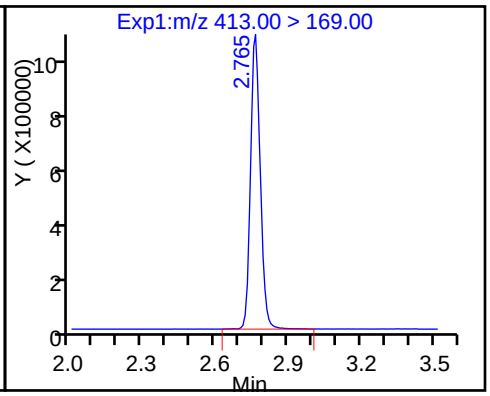
D 14 13C4 PFOA



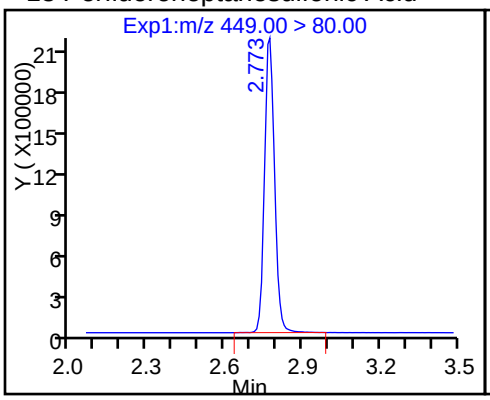
15 Perfluorooctanoic acid



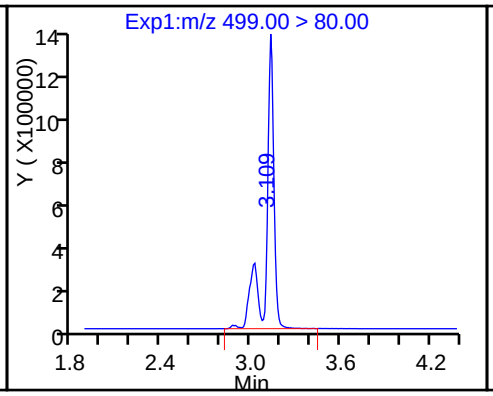
15 Perfluorooctanoic acid



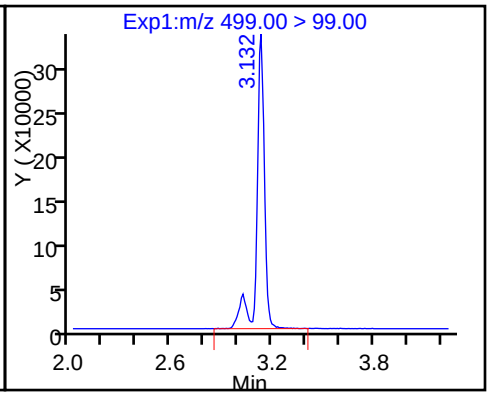
13 Perfluoroheptanesulfonic Acid



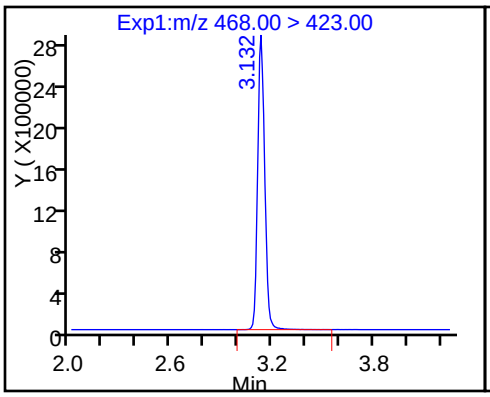
18 Perfluorooctane sulfonic acid



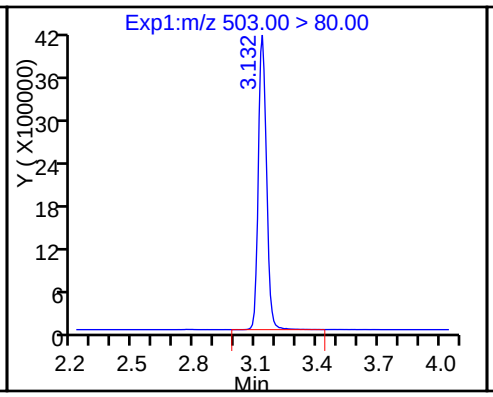
18 Perfluorooctane sulfonic acid



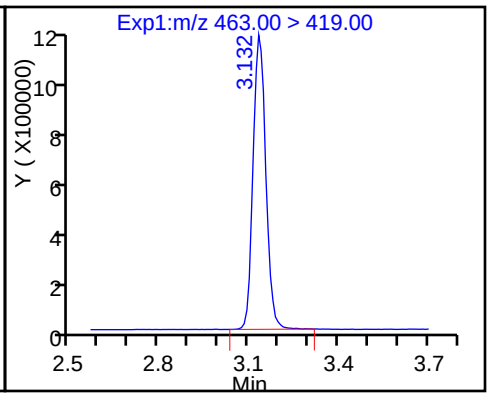
D 19 13C5 PFNA



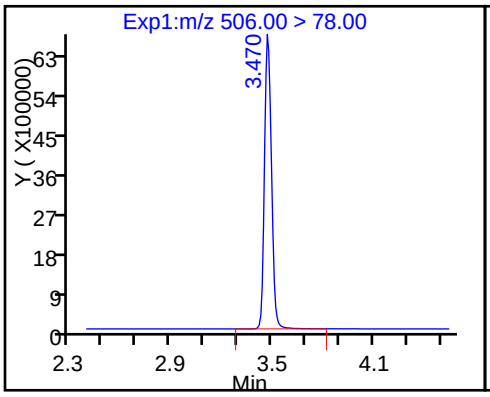
D 17 13C4 PFOS



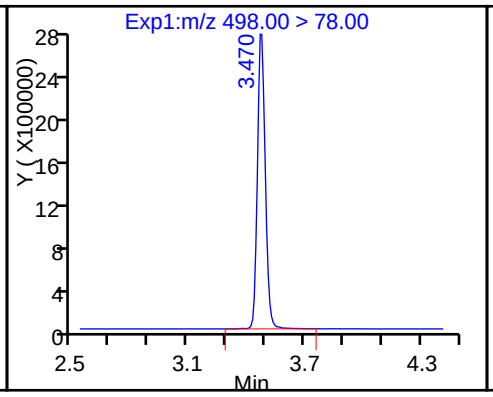
20 Perfluorononanoic acid



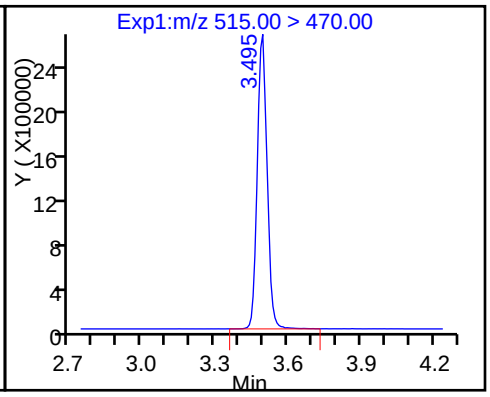
D 21 13C8 FOSA



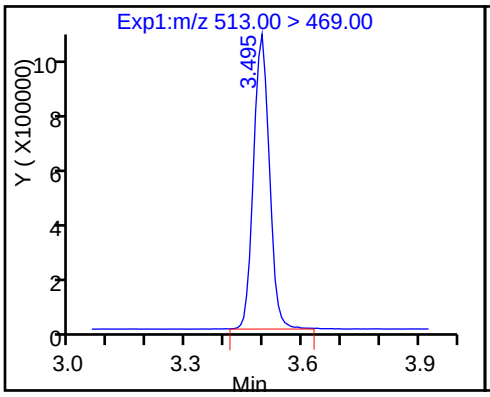
22 Perfluorooctane Sulfonamide



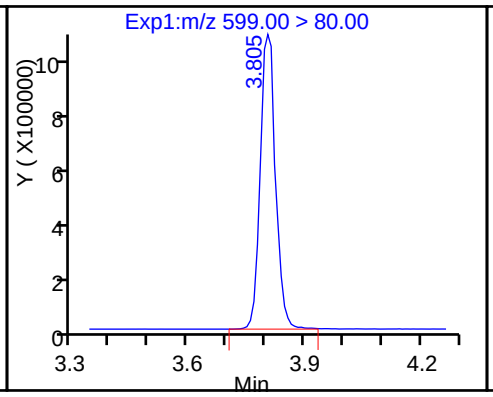
D 23 13C2 PFDA



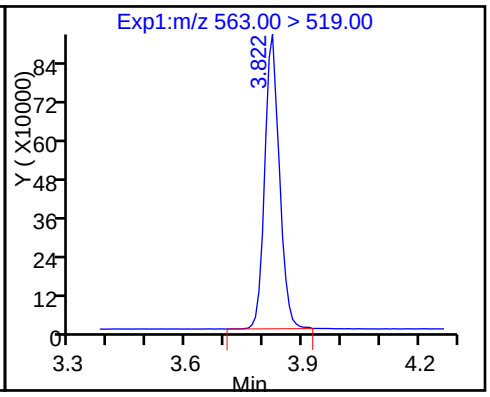
24 Perfluorodecanoic acid



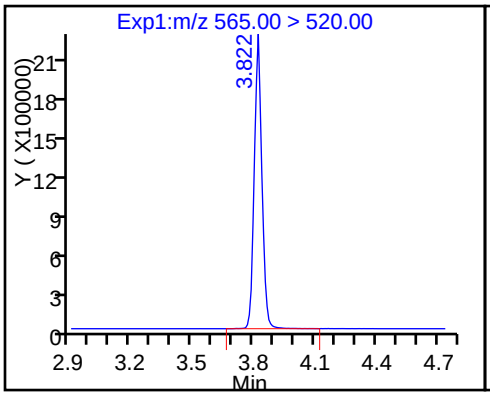
26 Perfluorodecane Sulfonic acid



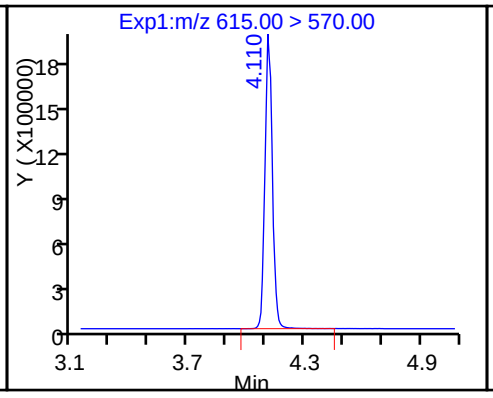
28 Perfluoroundecanoic acid



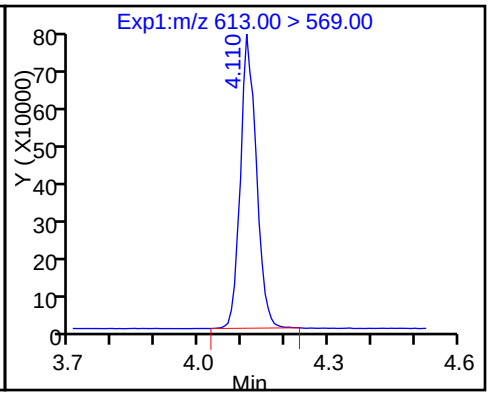
D 27 13C2 PFUnA



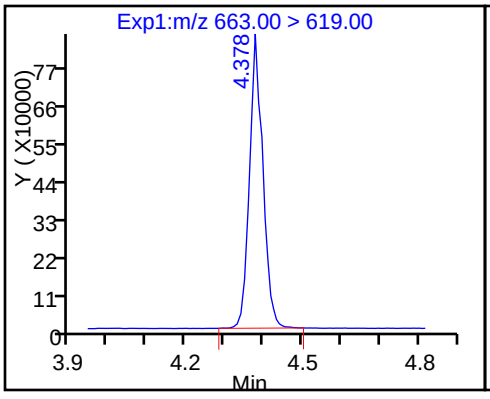
D 30 13C2 PFDoA



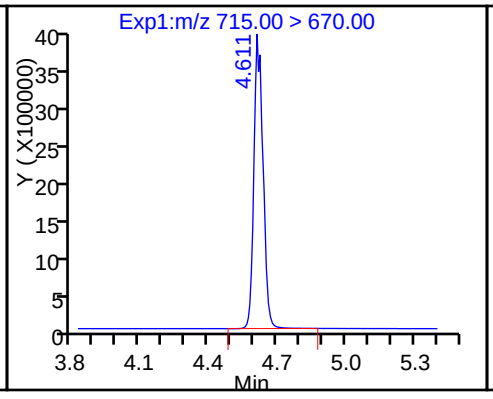
29 Perfluorododecanoic acid



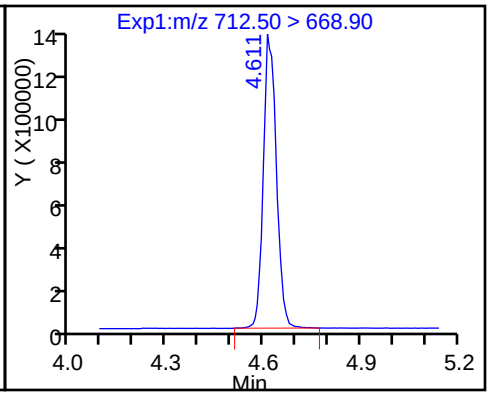
31 Perfluorotridecanoic acid



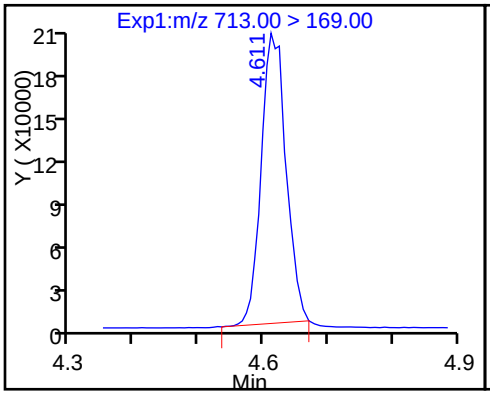
D 32 13C2-PFTeDA



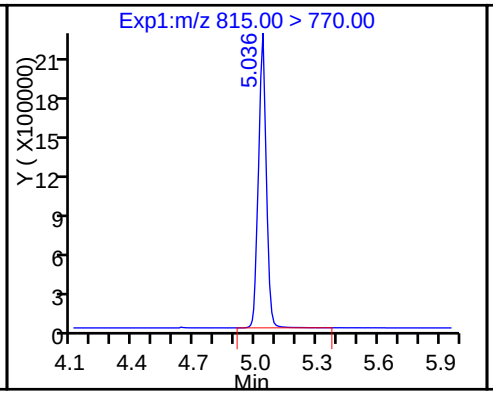
33 Perfluorotetradecanoic acid



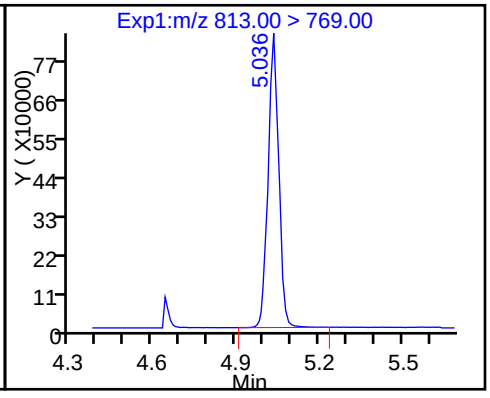
33 Perfluorotetradecanoic acid



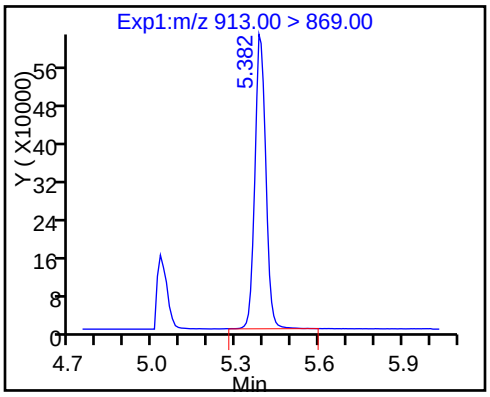
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 14-Dec-2016 09:24:11 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:05:32 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 14-Dec-2016 10:34:57

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	1.518	1.522	-0.004		15555633	47.8		95.6	1226120	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.525	0.001	1.000	13574184	49.1		98.2	77802	
D 4 13C5-PFPeA										
267.90 > 223.00	1.791	1.796	-0.005		12012598	47.1		94.1	921137	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.798	0.003	1.000	11926125	48.3		96.6	150551	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.830	1.833	-0.003	1.000	20657728	46.1		104		
298.90 > 99.00	1.830	1.833	-0.003	1.000	9507244		2.17(0.00-0.00)	104		
D 6 13C2 PFHxA										
315.00 > 270.00	2.078	2.079	-0.001		11833722	47.9		95.8	553258	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.078	2.080	-0.002	1.000	11322202	49.6		99.3	298224	
D 11 13C4-PFHpA										
367.00 > 322.00	2.407	2.407	0.0		9385374	45.2		90.4	491350	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.412	2.410	0.002	1.000	9581439	50.7		101	84814	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.429	2.421	0.008	1.000	13908420	43.5		95.7		
D 10 18O2 PFHxS										
403.00 > 84.00	2.429	2.425	0.004		14126044	44.8		94.8	800092	
D 14 13C4 PFOA										
417.00 > 372.00	2.766	2.763	0.003		9747477	45.4		90.8	560276	

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	2.759	2.763	-0.004	1.000	10013288	49.6		99.2	84219	
413.00 > 169.00	2.766	2.763	0.003	1.003	6028166		1.66(0.90-1.10)	99.2	269911	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.774	2.772	0.002	1.000	12392628	47.4		99.7		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.135	3.128	0.007	1.000	10718265	45.5		98.0	327461	
499.00 > 99.00	3.135	3.128	0.007	1.000	2302091		4.66(0.90-1.10)	98.0	180367	
D 19 13C5 PFNA										
468.00 > 423.00	3.135	3.132	0.003		7331020	45.6		91.3	500784	
D 17 13C4 PFOS										
503.00 > 80.00	3.135	3.134	0.001		10559009	46.2		96.6	249630	
20 Perfluorononanoic acid										
463.00 > 419.00	3.135	3.134	0.001	1.000	7270747	50.1		100	112049	
D 21 13C8 FOSA										
506.00 > 78.00	3.473	3.472	0.001		17528357	47.8		95.6	586762	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.473	3.473	0.0	1.000	16178439	50.4		101	508282	
D 23 13C2 PFDA										
515.00 > 470.00	3.490	3.492	-0.002		6749143	46.5		93.0	477010	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.498	3.494	0.004	1.000	6305171	49.4		98.7	142213	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.808	3.806	0.002	1.000	6557404	48.5		101		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.825	3.822	0.003	1.000	5078085	47.9		95.7	132587	
D 27 13C2 PFUnA										
565.00 > 520.00	3.825	3.822	0.003		4957476	44.9		89.7	292059	
D 30 13C2 PFDoA										
615.00 > 570.00	4.112	4.112	0.0		4742500	46.5		93.0	292423	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.119	4.113	0.006	1.000	4435350	49.0		98.1	122597	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.387	4.380	0.007	1.000	4454407	50.1		100	79270	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.618	4.615	0.003		9788531	47.1		94.2	688461	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.618	4.617	0.001	1.000	8073370	49.1		98.2	101268	
713.00 > 169.00	4.618	4.617	0.001	1.000	1270105		6.36(0.00-0.00)	98.2	112221	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.036	5.033	0.003		5360805	47.2		94.3	155495	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.036	5.034	0.002	1.000	4577547	49.1		98.2	8946	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.390	5.388	0.002	1.000	3801058	48.7		97.4	6631	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:05:33 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_008.d

Injection Date: 14-Dec-2016 09:24:11 Instrument ID: A8_N

Lims ID: IC L5

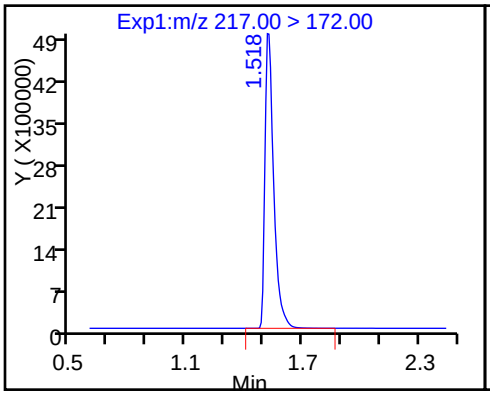
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 8

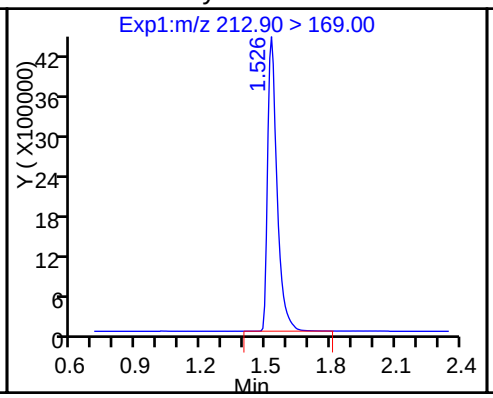
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

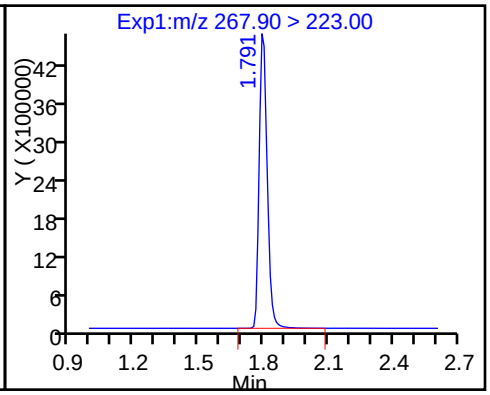
D 2 13C4 PFBA



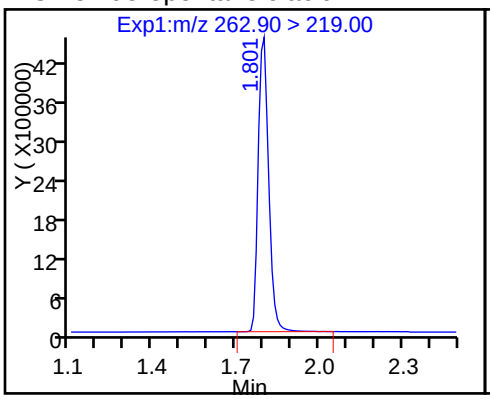
1 Perfluorobutyric acid



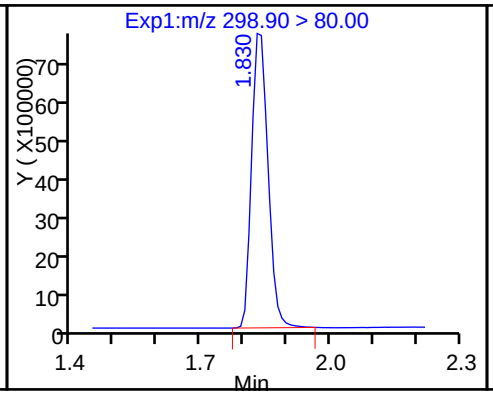
D 4 13C5-PFPeA



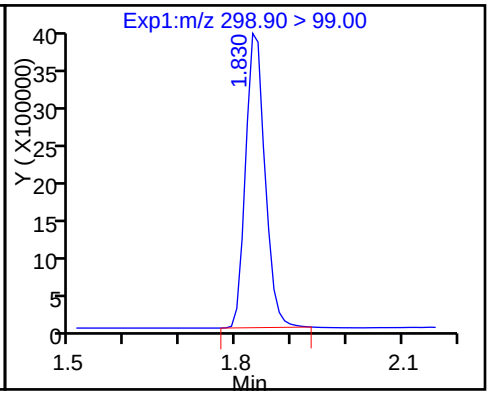
3 Perfluoropentanoic acid



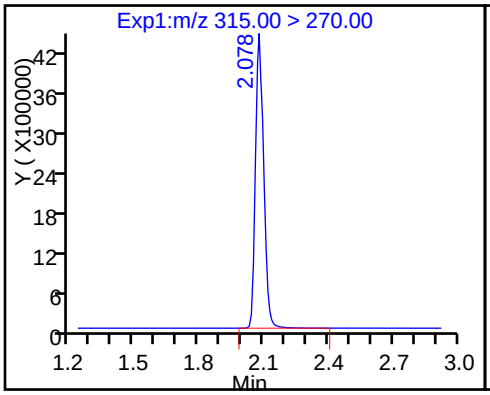
5 Perfluorobutanesulfonic acid



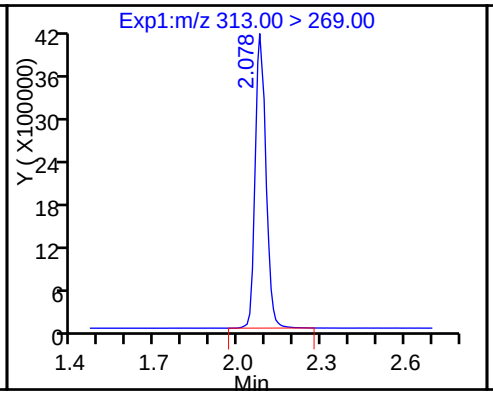
5 Perfluorobutanesulfonic acid



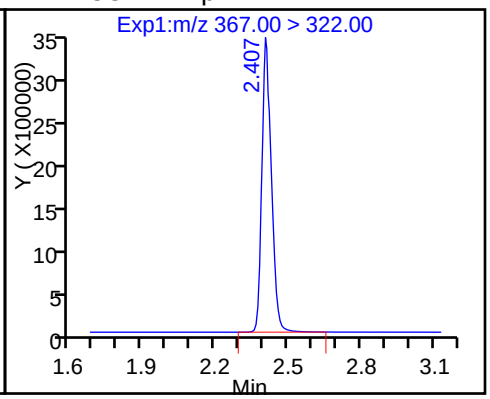
D 6 13C2 PFHxA



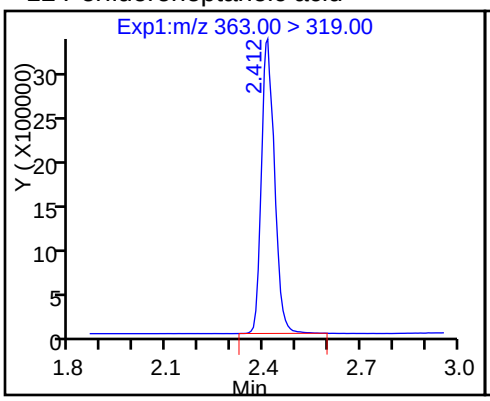
7 Perfluorohexanoic acid



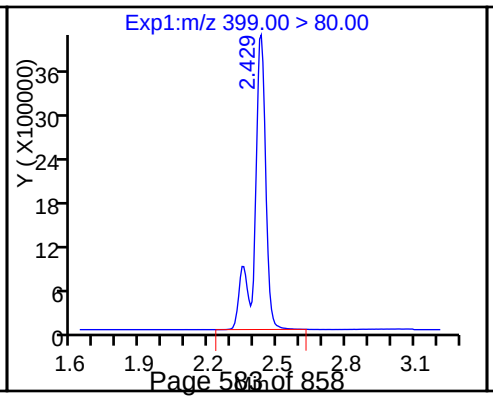
D 11 13C4-PFHpA



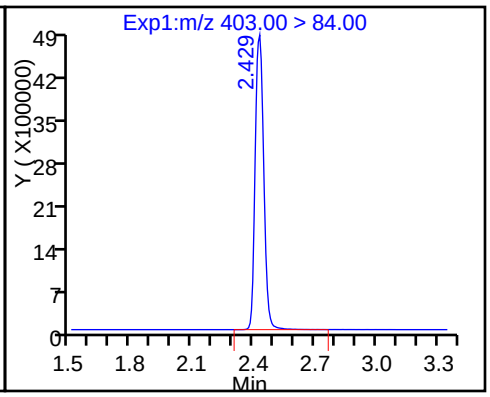
12 Perfluoroheptanoic acid



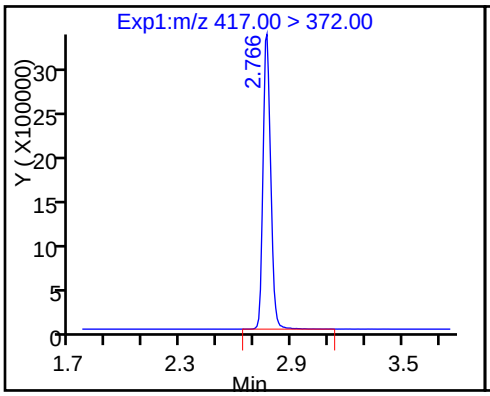
9 Perfluorohexanesulfonic acid



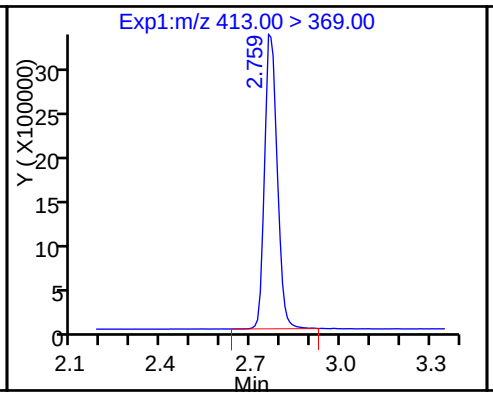
D 10 18O2 PFHxS



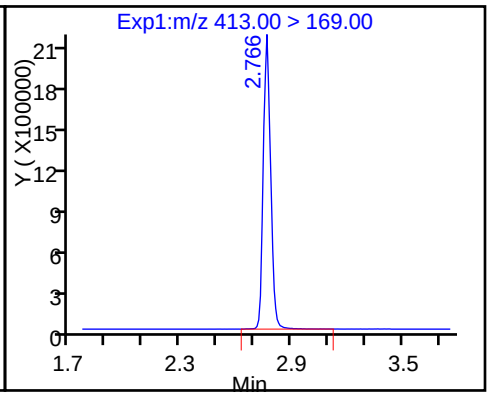
D 14 13C4 PFOA



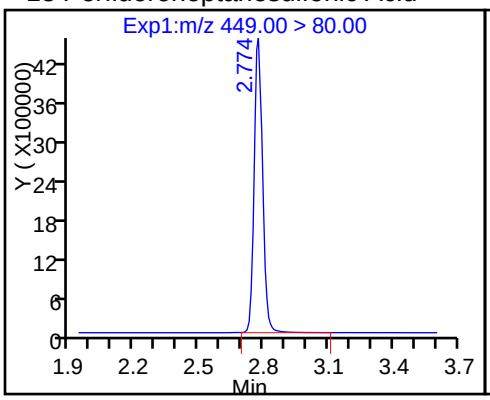
15 Perfluorooctanoic acid



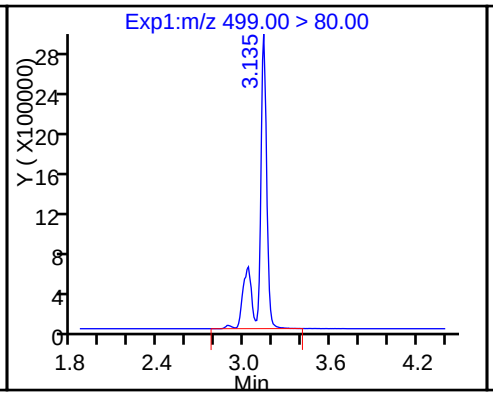
15 Perfluorooctanoic acid



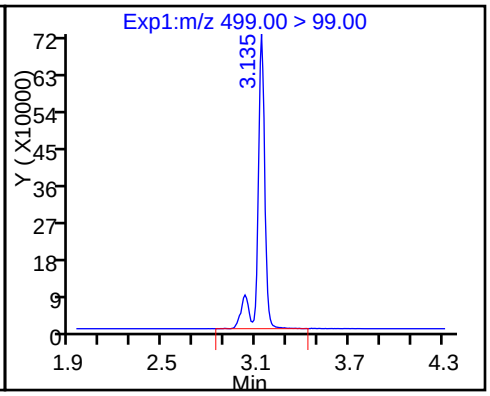
13 Perfluoroheptanesulfonic Acid



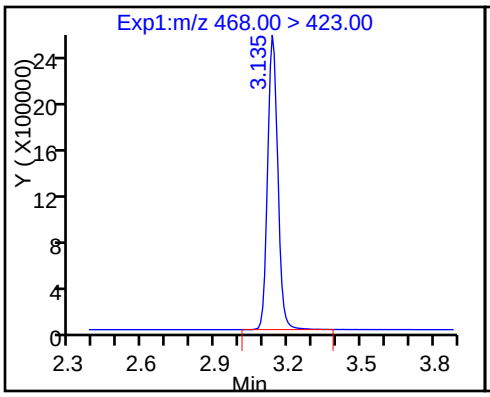
18 Perfluorooctane sulfonic acid



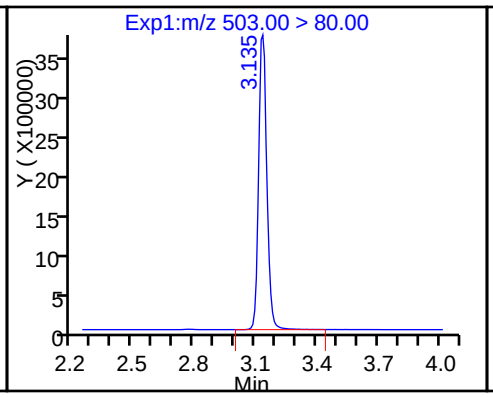
18 Perfluorooctane sulfonic acid



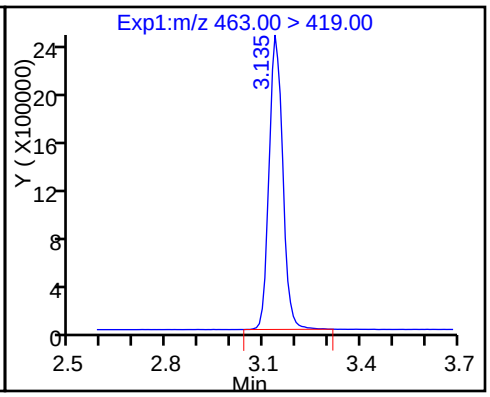
D 19 13C5 PFNA



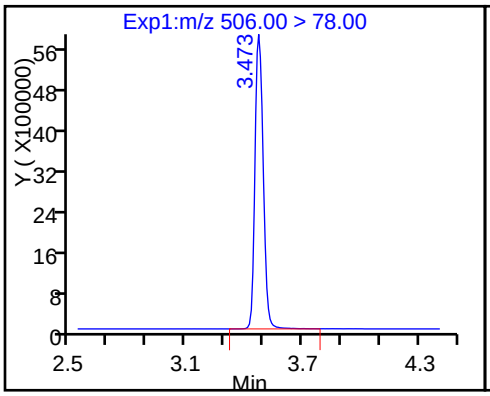
D 17 13C4 PFOS



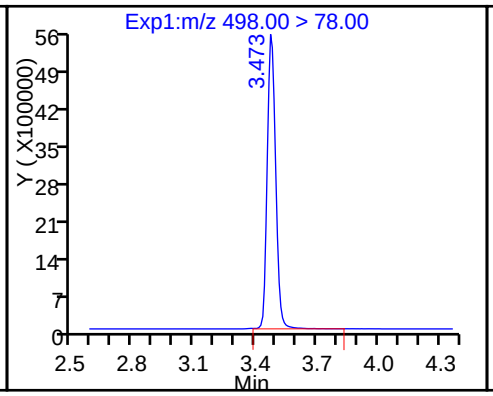
20 Perfluorononanoic acid



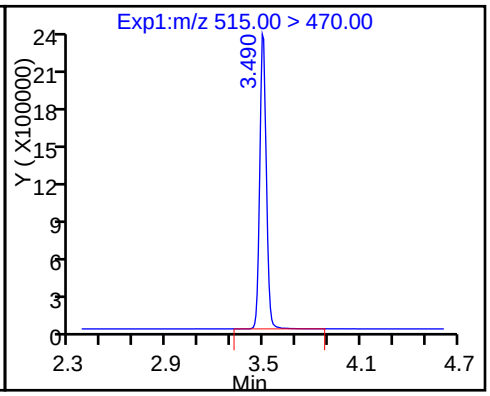
D 21 13C8 FOSA



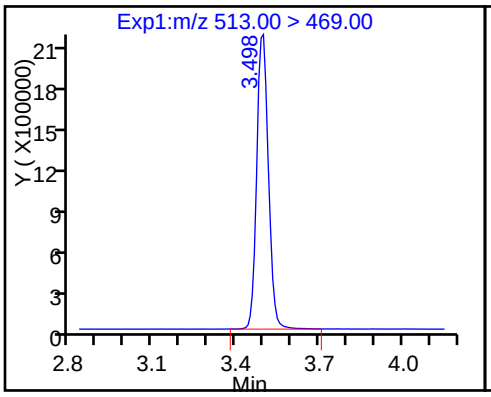
22 Perfluorooctane Sulfonamide



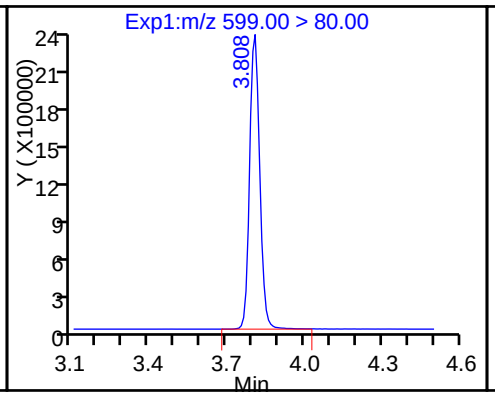
D 23 13C2 PFDA



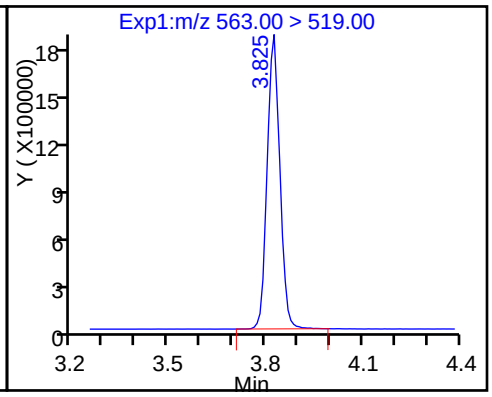
24 Perfluorodecanoic acid



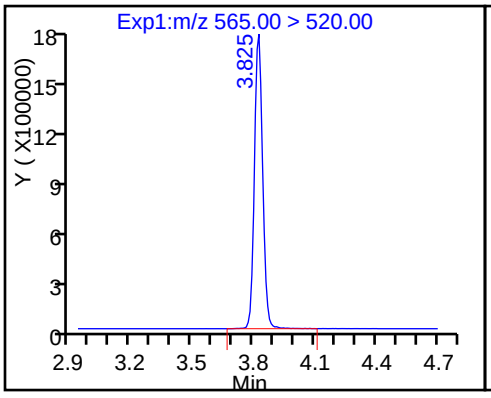
26 Perfluorodecane Sulfonic acid



28 Perfluoroundecanoic acid



D 27 13C2 PFUnA



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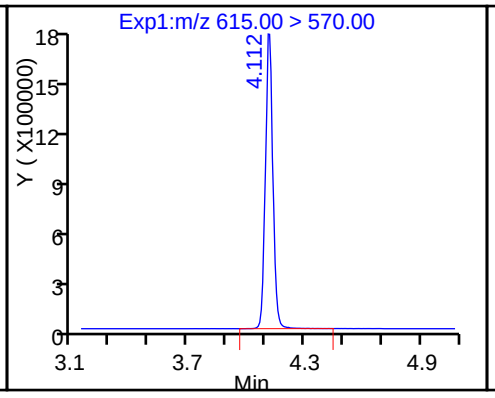
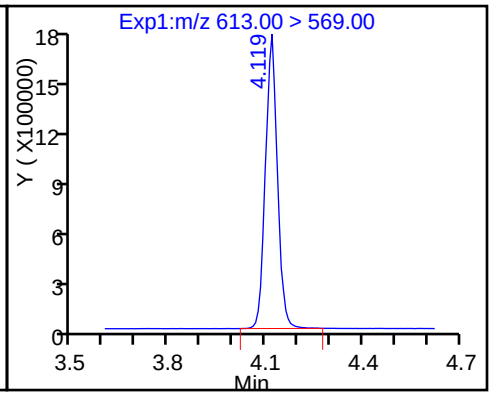
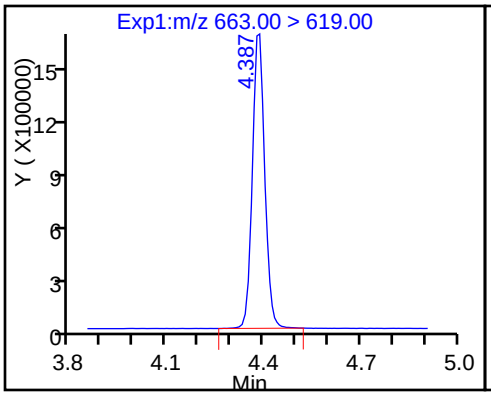


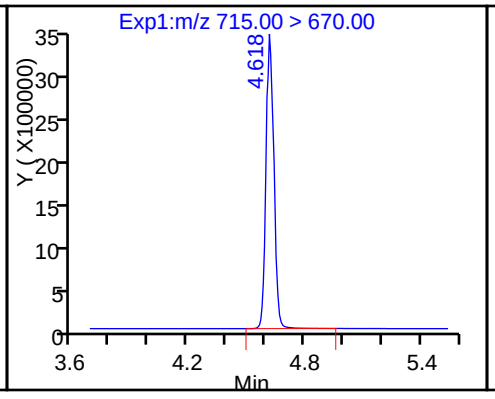
29 Perfluorododecanoic acid



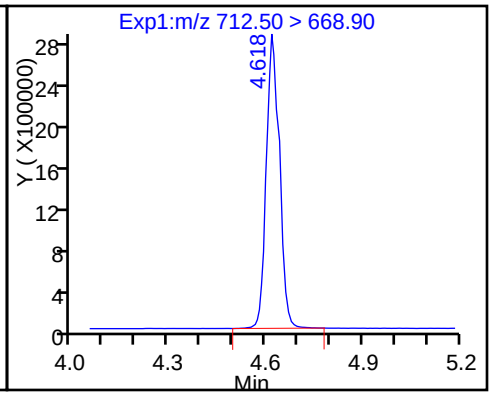
31 Perfluorotridecanoic acid



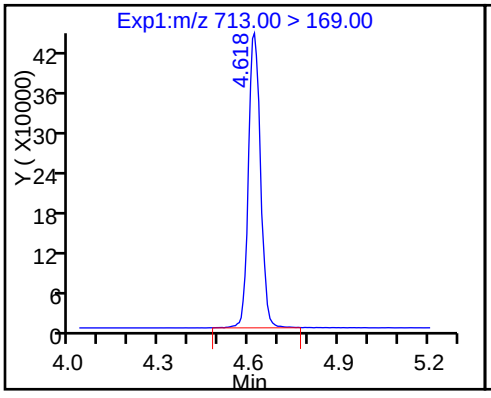
D 32 13C2-PFTeDA



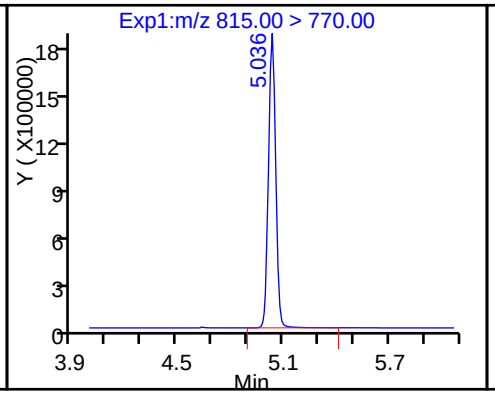
33 Perfluorotetradecanoic acid



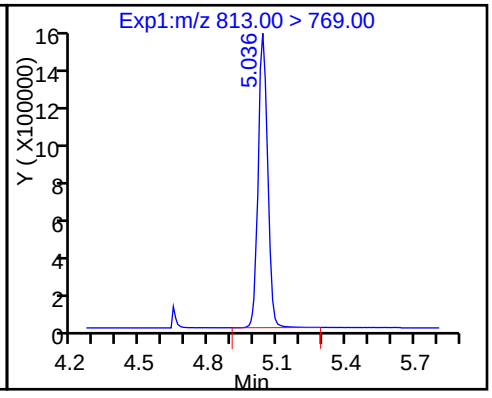
33 Perfluorotetradecanoic acid



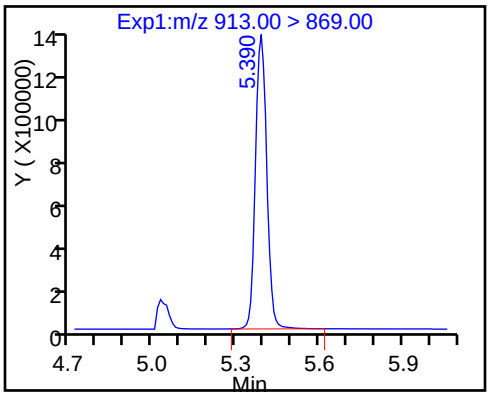
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 14-Dec-2016 09:31:40 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:05:35 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 14-Dec-2016 10:35:22

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	1.526	1.522	0.004		14509121	44.6		89.1	868381	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.525	0.001	1.000	42062192	163.1		81.6	173697	
D 4 13C5-PFPeA										
267.90 > 223.00	1.801	1.796	0.005		10682094	41.8		83.7	790874	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.798	0.003	1.000	33821851	154.0		77.0	281471	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.840	1.833	0.007	1.000	51721665	128.2		72.5		
298.90 > 99.00	1.830	1.833	-0.003	0.995	28604771		1.81(0.00-0.00)	72.5		
D 6 13C2 PFHxA										
315.00 > 270.00	2.081	2.079	0.002		10738696	43.5		87.0	579381	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.081	2.080	0.001	1.000	34131293	164.9		82.5	552724	
D 11 13C4-PFHpA										
367.00 > 322.00	2.408	2.407	0.001		8192937	39.5		78.9	546940	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.408	2.410	-0.002	1.000	29990421	181.8		90.9	210255	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.432	2.421	0.011	1.000	45369475	157.5		86.6		
D 10 18O2 PFHxS										
403.00 > 84.00	2.432	2.425	0.007		12731401	40.4		85.4	834972	
D 14 13C4 PFOA										
417.00 > 372.00	2.765	2.763	0.002		7959067	37.1		74.1	661446	

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	2.765	2.763	0.002	1.000	29322105	177.9		89.0	242337	
413.00 > 169.00	2.765	2.763	0.002	1.000	19284830		1.52(0.90-1.10)	89.0	511787	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.780	2.772	0.008	1.000	38120740	162.1		85.2		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.132	3.128	0.004	1.000	40406896	190.5		103	534474	
499.00 > 99.00	3.140	3.128	0.012	1.003	9353175		4.32(0.90-1.10)	103	334064	
D 19 13C5 PFNA										
468.00 > 423.00	3.140	3.132	0.008		6352044	39.5		79.1	232384	
D 17 13C4 PFOS										
503.00 > 80.00	3.140	3.134	0.006		9504692	41.6		87.0	99263	
20 Perfluorononanoic acid										
463.00 > 419.00	3.140	3.134	0.006	1.000	24506115	194.8		97.4	351592	
D 21 13C8 FOSA										
506.00 > 78.00	3.478	3.472	0.006		15902845	43.4		86.7	371372	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.478	3.473	0.005	1.000	48009108	164.8		82.4	470778	
D 23 13C2 PFDA										
515.00 > 470.00	3.495	3.492	0.003		5664271	39.0		78.0	175863	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.495	3.494	0.001	1.000	21387501	199.5		99.8	341202	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.814	3.806	0.008	1.000	23823213	195.8		102		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.831	3.822	0.009	1.000	17134699	183.3		91.7	248438	
D 27 13C2 PFUnA										
565.00 > 520.00	3.831	3.822	0.009		4366437	39.5		79.0	293411	
D 30 13C2 PFDoA										
615.00 > 570.00	4.118	4.112	0.006		4603758	45.2		90.3	267069	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.118	4.113	0.005	1.000	16715075	190.4		95.2	217631	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.387	4.380	0.007	1.000	16163184	187.1		93.6	183323	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.624	4.615	0.009		9283403	44.6		89.3	361450	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.624	4.617	0.007	1.000	28838067	180.6		90.3	282156	
713.00 > 169.00	4.624	4.617	0.007	1.000	5000848		5.77(0.00-0.00)	90.3	190003	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.036	5.033	0.003		4988563	43.9		87.8	172207	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.036	5.034	0.002	1.000	17885418	199.6		99.8	34191	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.398	5.388	0.010	1.000	17578292	232.1		116	24963	

Reagents:

LCPFC-L6_00019 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:05:36 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_009.d

Injection Date: 14-Dec-2016 09:31:40 Instrument ID: A8_N

Lims ID: IC L6

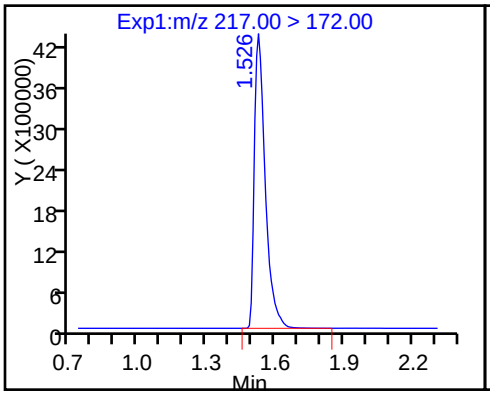
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9

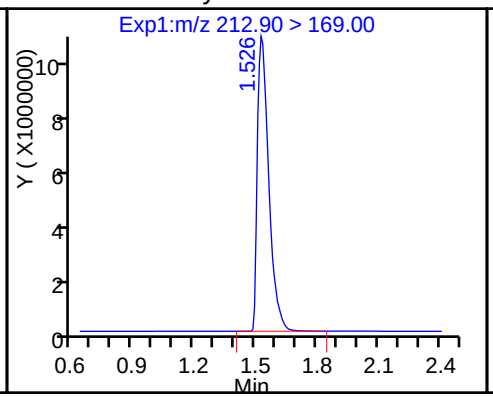
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

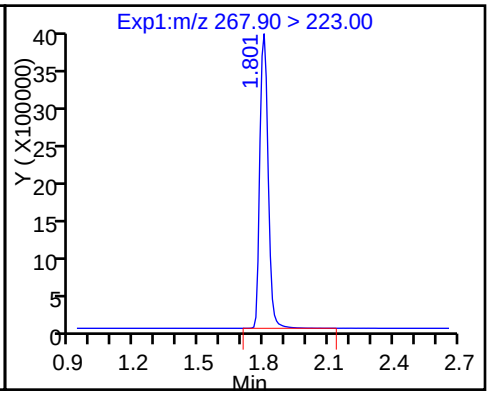
D 2 13C4 PFBA



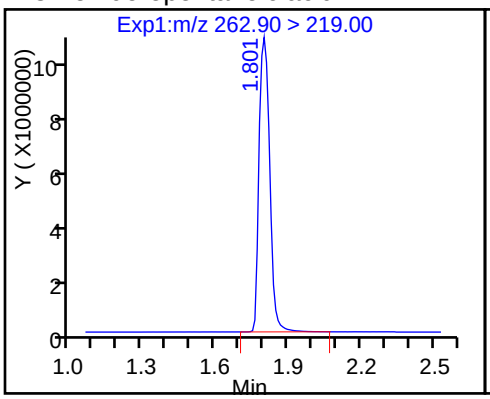
1 Perfluorobutyric acid



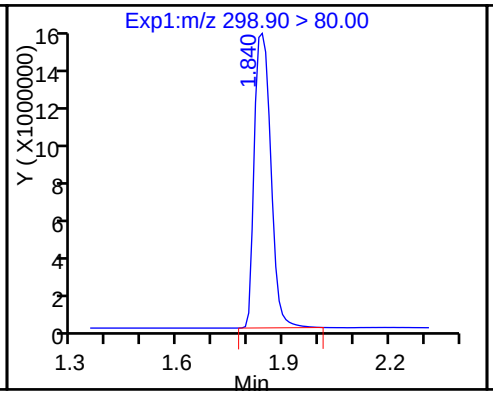
D 4 13C5-PFPeA



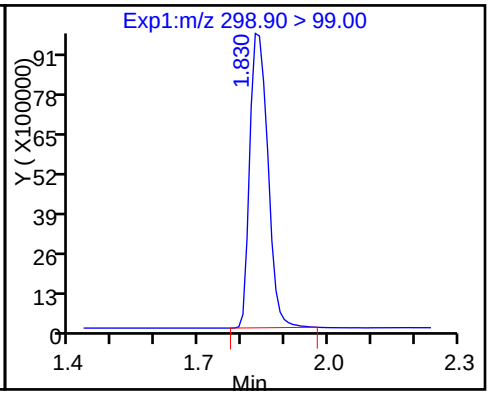
3 Perfluoropentanoic acid



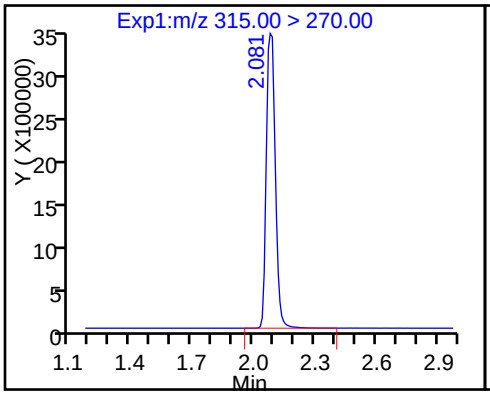
5 Perfluorobutanesulfonic acid



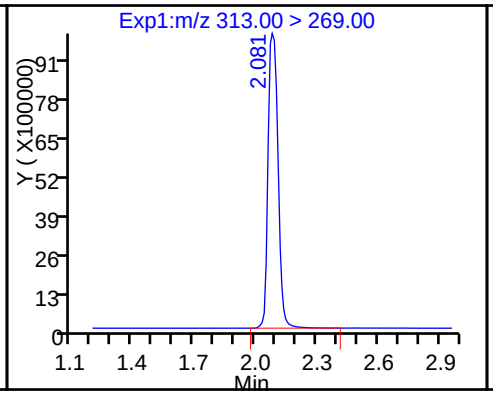
5 Perfluorobutanesulfonic acid



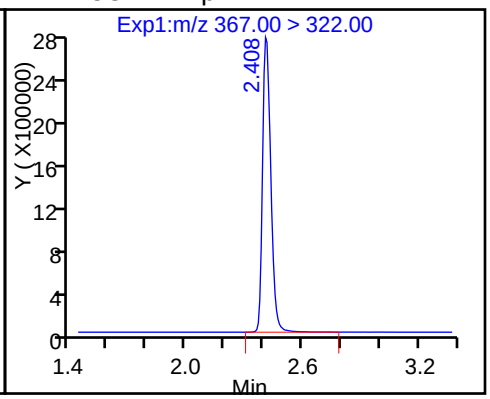
D 6 13C2 PFHxA



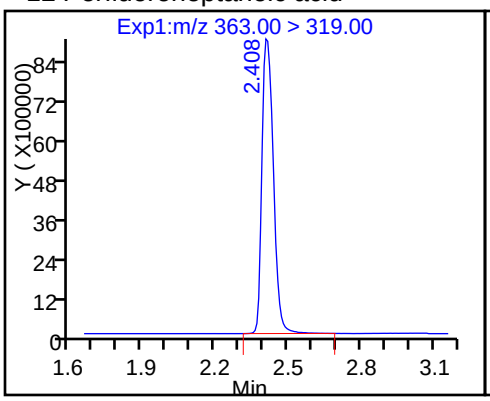
7 Perfluorohexanoic acid



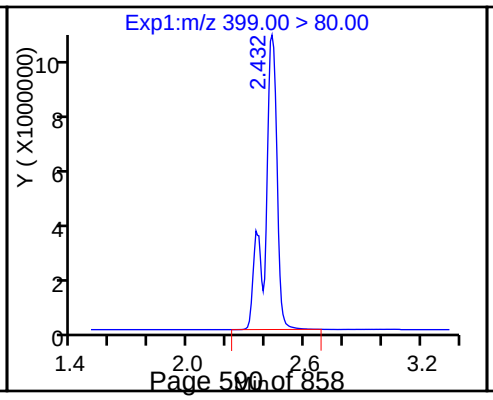
D 11 13C4-PFHpA



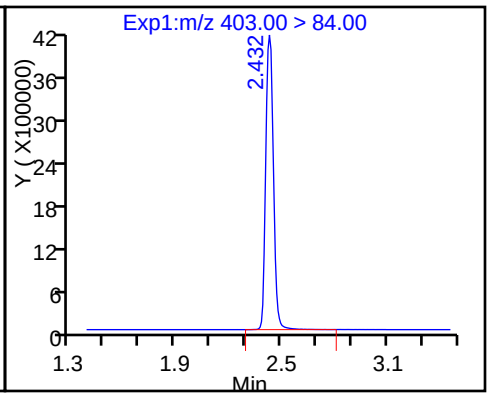
12 Perfluoroheptanoic acid



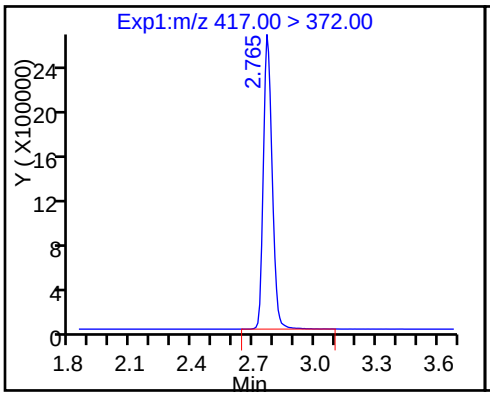
9 Perfluorohexanesulfonic acid



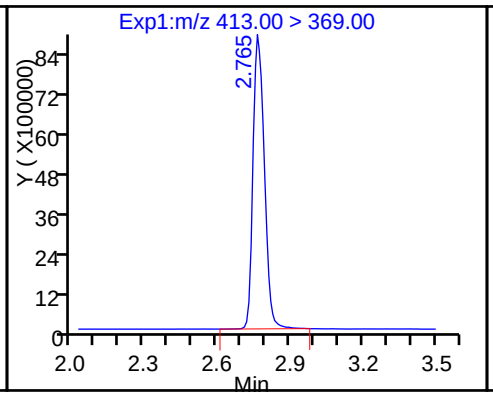
D 10 18O2 PFHxS



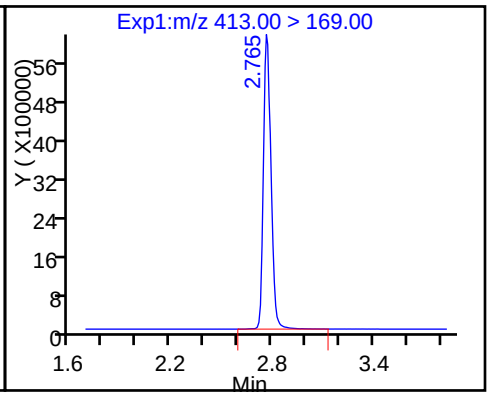
D 14 13C4 PFOA



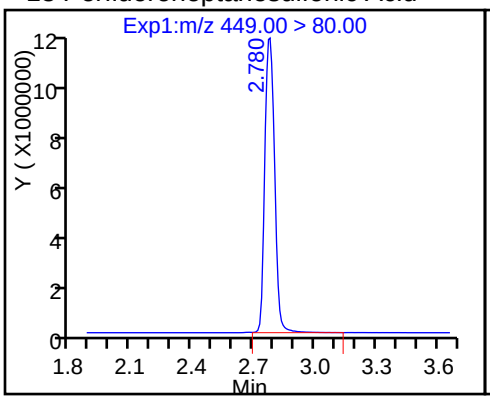
15 Perfluorooctanoic acid



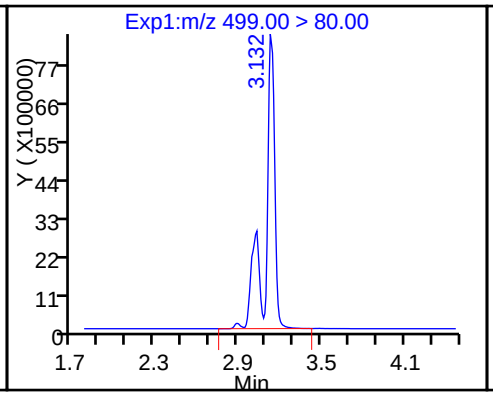
15 Perfluorooctanoic acid



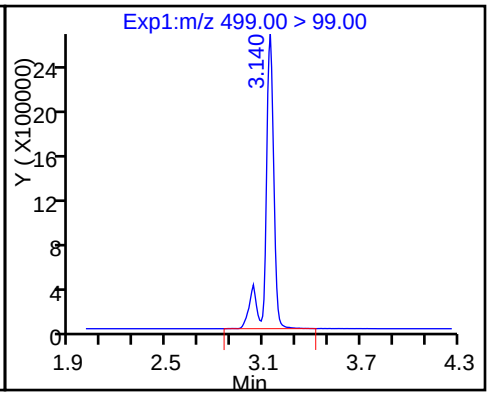
13 Perfluoroheptanesulfonic Acid



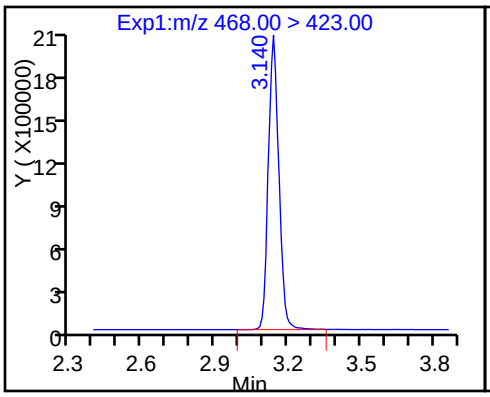
18 Perfluorooctane sulfonic acid



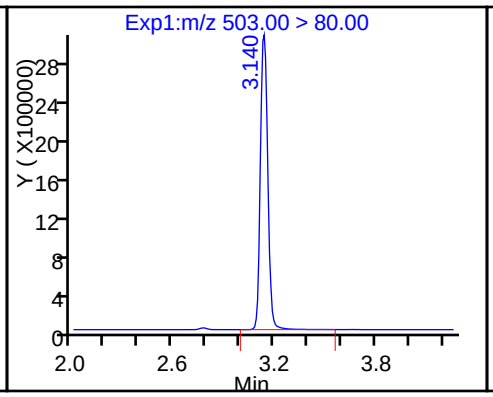
18 Perfluorooctane sulfonic acid



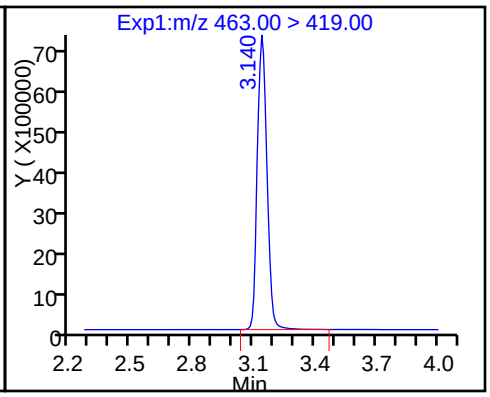
D 19 13C5 PFNA



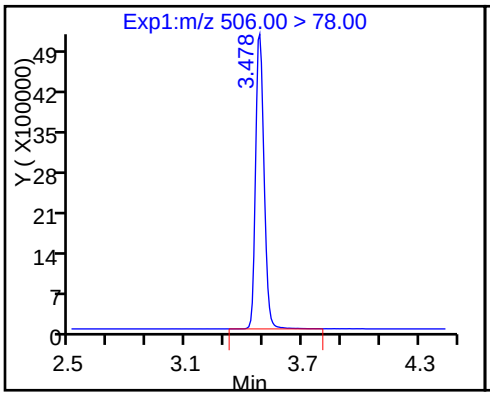
D 17 13C4 PFOS



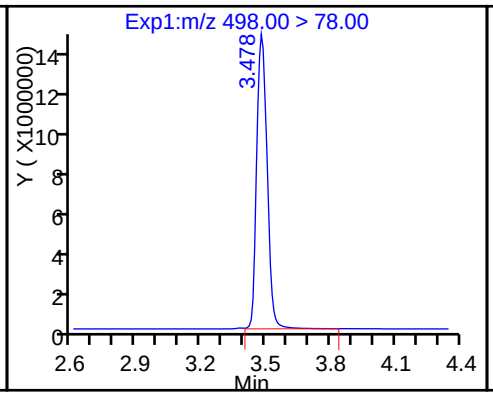
20 Perfluorononanoic acid



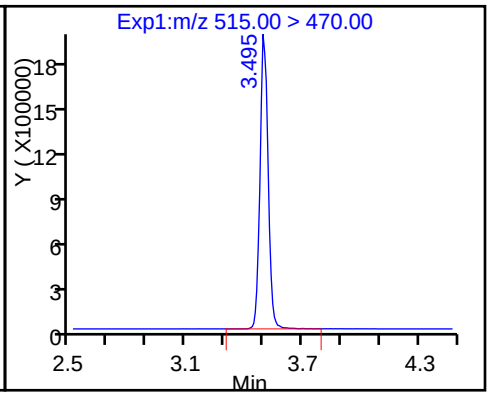
D 21 13C8 FOSA



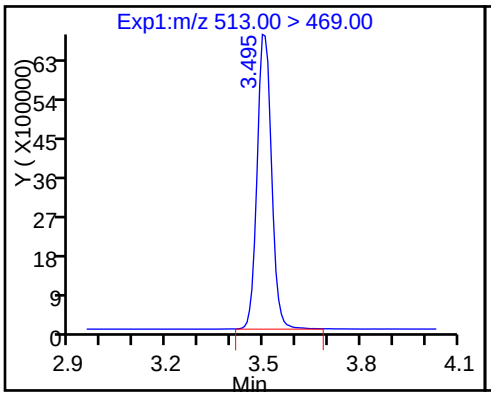
22 Perfluorooctane Sulfonamide



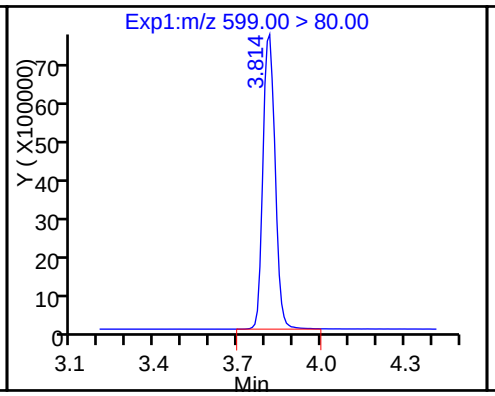
D 23 13C2 PFDA



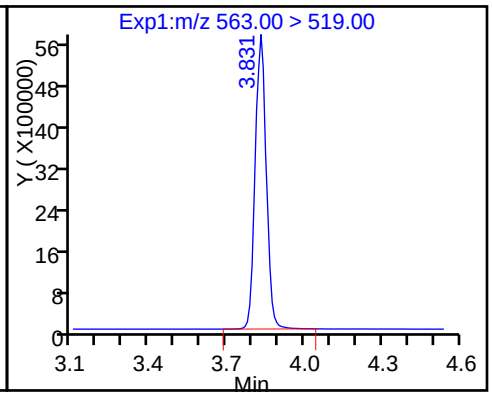
24 Perfluorodecanoic acid



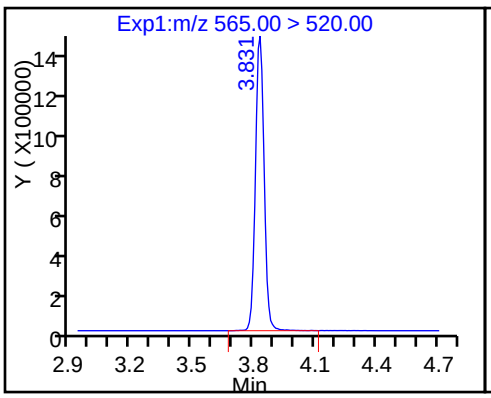
26 Perfluorodecane Sulfonic acid



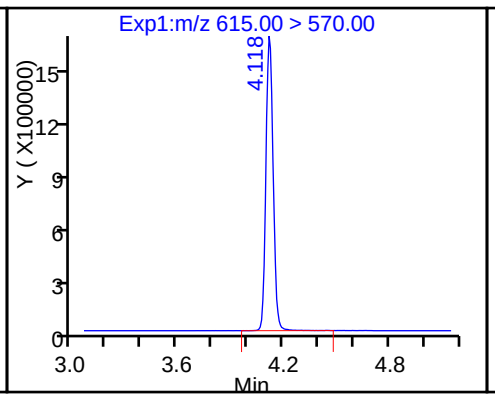
28 Perfluoroundecanoic acid



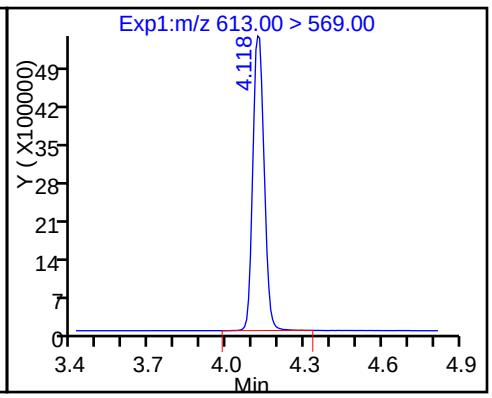
D 27 13C2 PFUnA



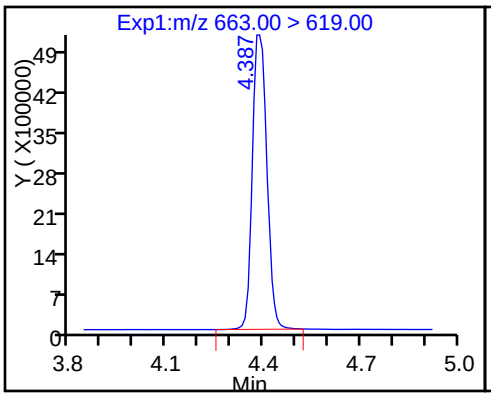
D 30 13C2 PFDoA



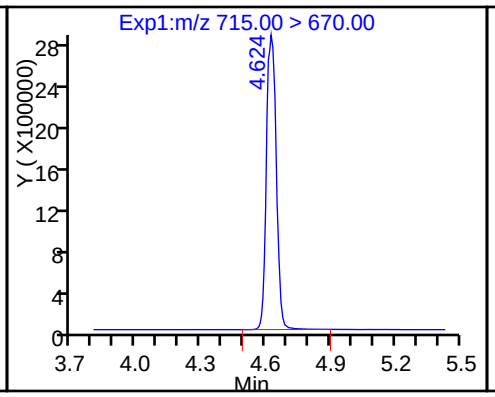
29 Perfluorododecanoic acid



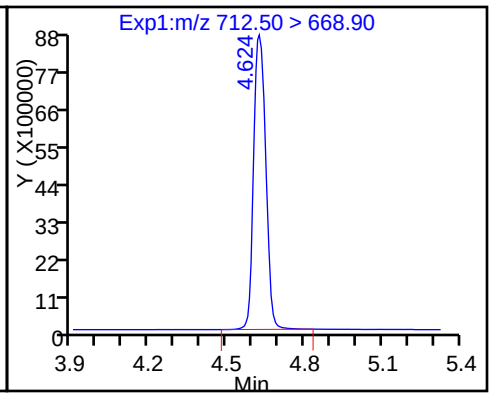
31 Perfluorotridecanoic acid



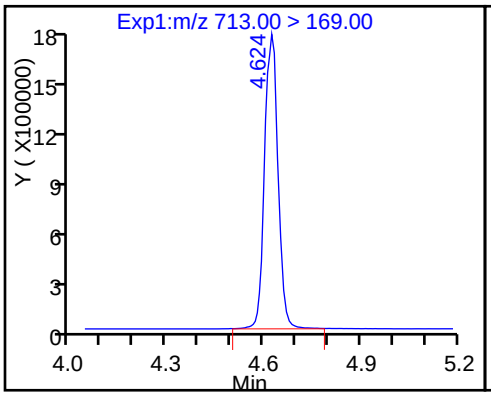
D 32 13C2-PFTeDA



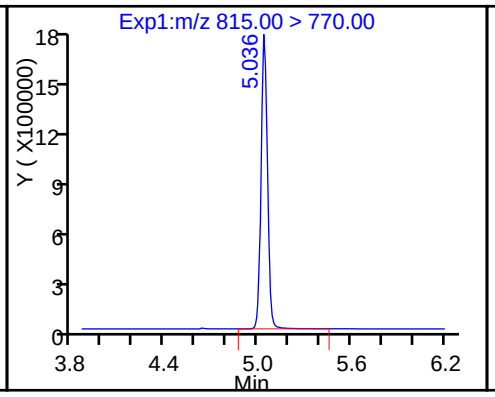
33 Perfluorotetradecanoic acid



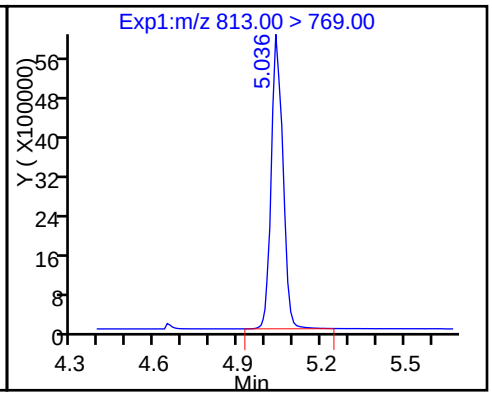
33 Perfluorotetradecanoic acid



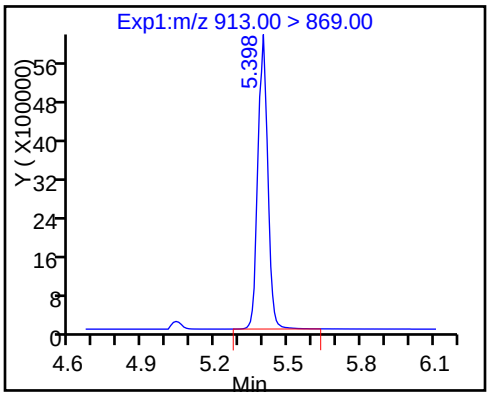
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_013.d
Lims ID: IC L1 Add-on
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 14-Dec-2016 10:01:36 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:07:18 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 14:00:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.739	2.745	-0.006		4811742	46.7		98.4		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.739	2.746	-0.007	1.000	42499	0.4963		105		
D 42 M2-8:2FTS										
529.00 > 509.00	3.487	3.490	-0.003		4276589	47.0		98.2		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.478	3.493	-0.015	0.998	33838	0.4513		94.2		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.647	3.655	-0.008		3379343	49.8		99.6		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.647	3.661	-0.014	1.000	27532	0.4708		94.2		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.814	3.823	-0.009		3809531	52.6		105		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.831	3.831	0.0	1.005	27433	0.4676		93.5		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.971	3.982	-0.011		4681421	47.7		95.4		
54 MeFOSA										
512.00 > 169.00	3.971	3.988	-0.017	1.000	38105	0.4841		96.8		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.160	4.167	-0.007		4189626	47.1		94.2		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.167	4.175	-0.008	1.000	34278	0.4742		94.8		

Reagents:

LCPFC2-L1_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:07:18 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_013.d

Injection Date: 14-Dec-2016 10:01:36 Instrument ID: A8_N

Lims ID: IC L1 Add-on

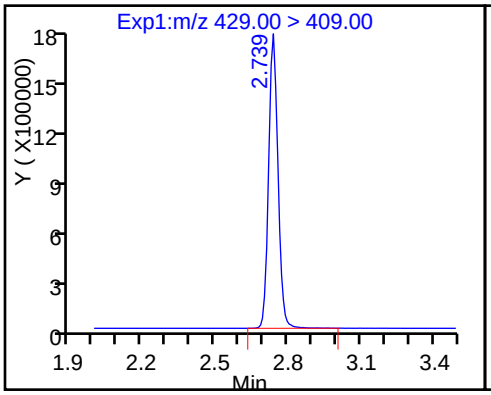
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 46 Worklist Smp#: 13

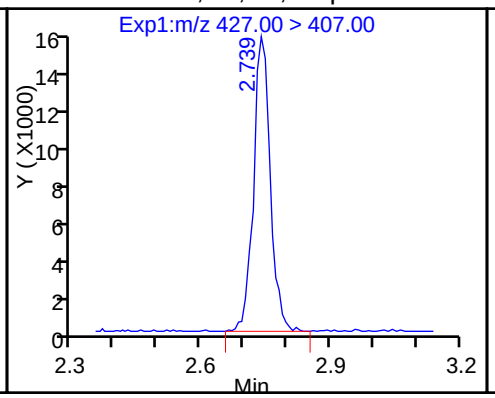
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

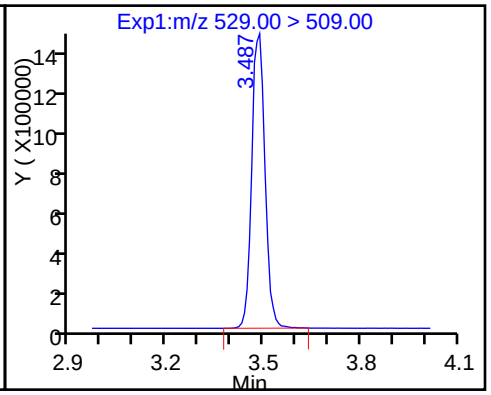
D 47 M2-6:2FTS



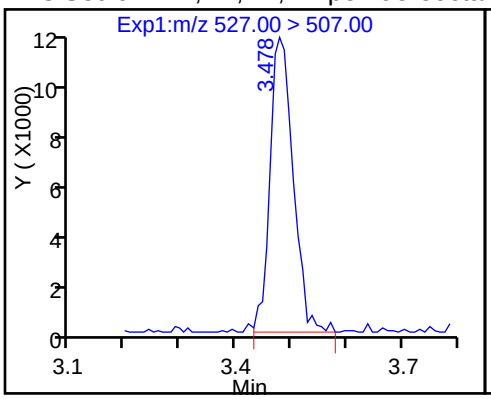
48 Sodium 1H,1H,2H,2H-perfluorooctane



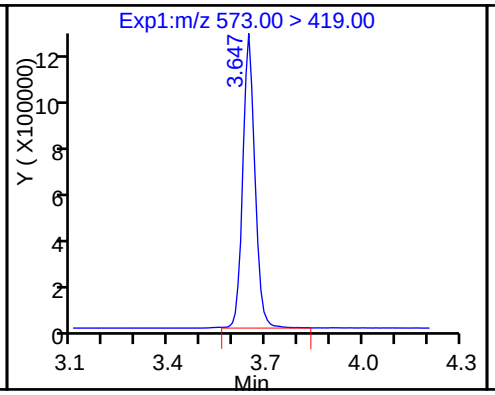
D 42 M2-8:2FTS



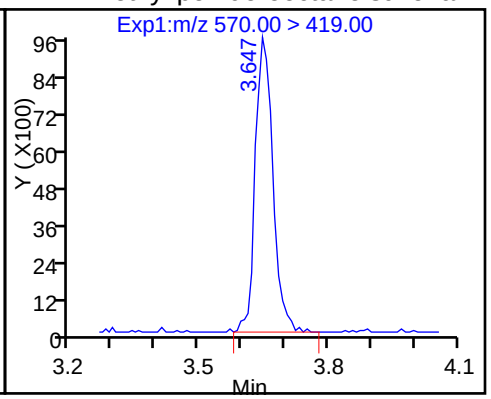
43 Sodium 1H,1H,2H,2H-perfluorooctane



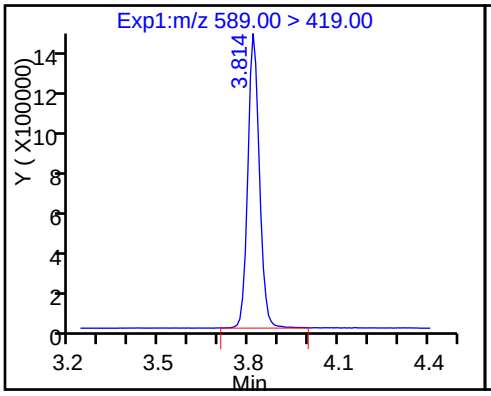
D 45 d3-NMeFOSAA



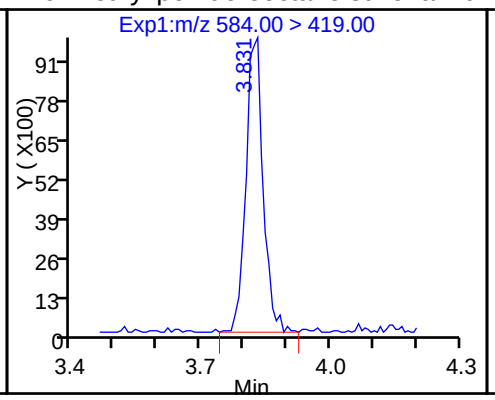
44 N-methyl perfluorooctane sulfonami



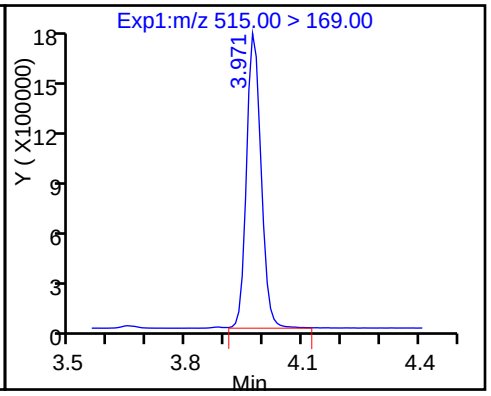
D 46 d5-NEtFOSAA



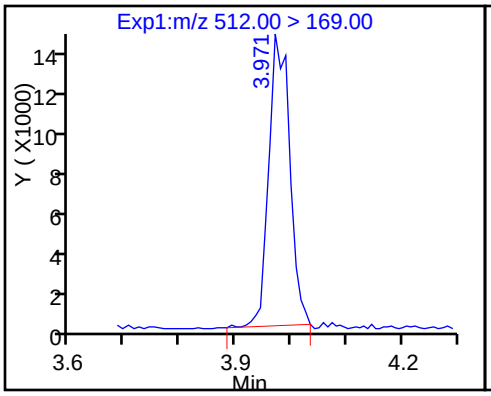
49 N-ethyl perfluorooctane sulfonamid



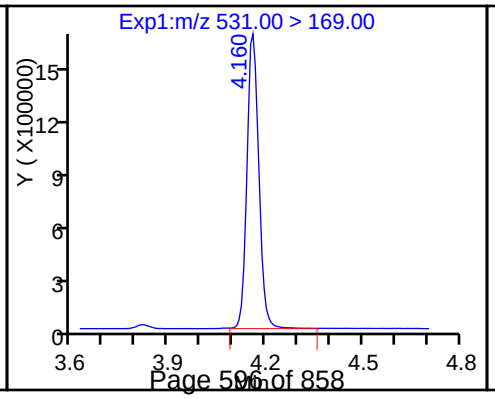
D 52 d-N-MeFOSA-M



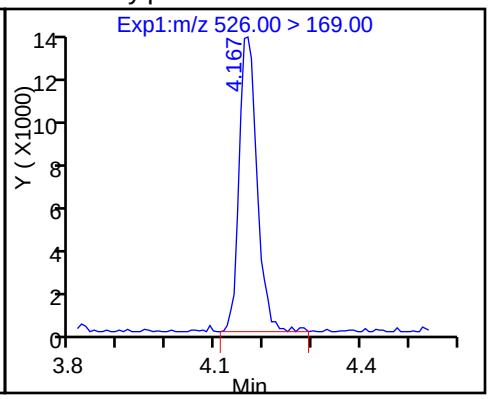
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_014.d
Lims ID: IC L2 Add-on
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 14-Dec-2016 10:09:07 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:07:19 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 14:00:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.743	2.745	-0.002		4601331	44.7		94.1		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.743	2.746	-0.003	1.000	75208	0.9184		96.9		
D 42 M2-8:2FTS										
529.00 > 509.00	3.484	3.490	-0.006		4064816	44.7		93.3		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.484	3.493	-0.009	1.000	66569	0.9340		97.5		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.644	3.655	-0.011		3341751	49.2		98.5		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.652	3.661	-0.009	1.002	54479	0.9421		94.2		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.819	3.823	-0.004		3609632	49.8		99.7		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.827	3.831	-0.004	1.002	49499	0.8905		89.0		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.976	3.982	-0.006		5013226	51.1		102		
54 MeFOSA										
512.00 > 169.00	3.985	3.988	-0.003	1.000	76703	0.9100		91.0		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.163	4.167	-0.004		4461713	50.1		100		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.170	4.175	-0.005	1.000	67937	0.8824		88.2		

Reagents:

LCPFC2-L2_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:07:20 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_014.d

Injection Date: 14-Dec-2016 10:09:07 Instrument ID: A8_N

Lims ID: IC L2 Add-on

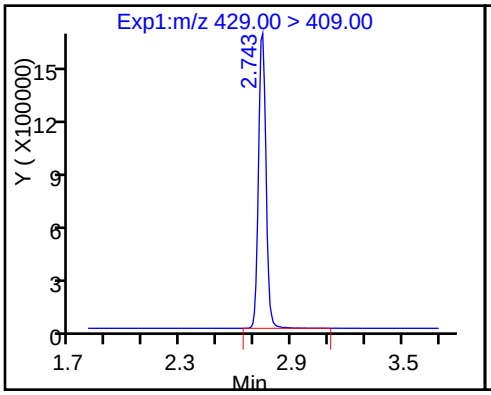
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 47 Worklist Smp#: 14

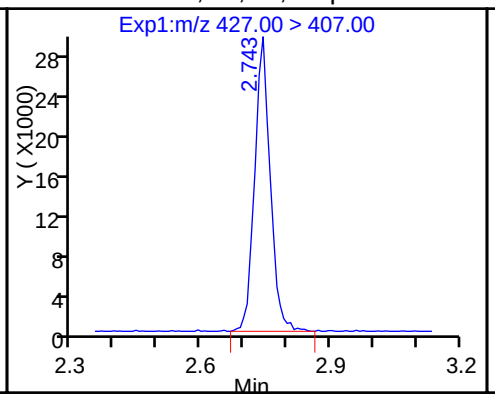
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

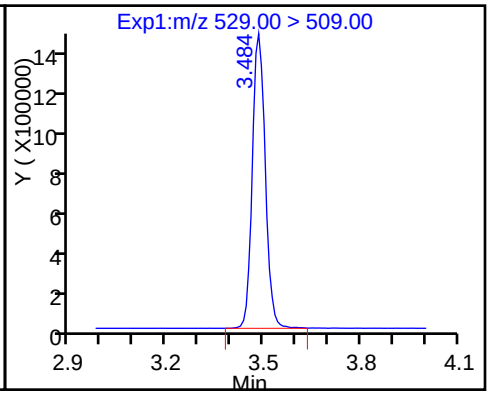
D 47 M2-6:2FTS



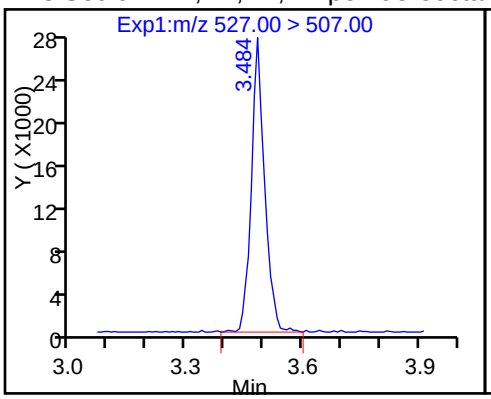
48 Sodium 1H,1H,2H,2H-perfluorooctane



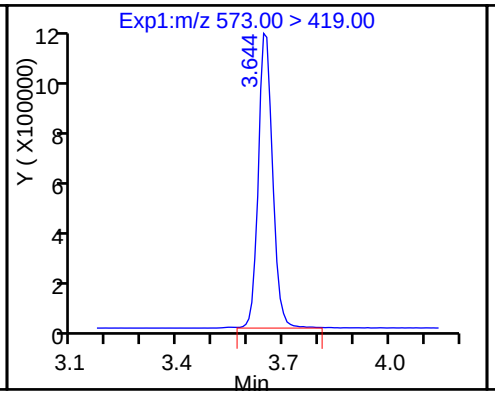
D 42 M2-8:2FTS



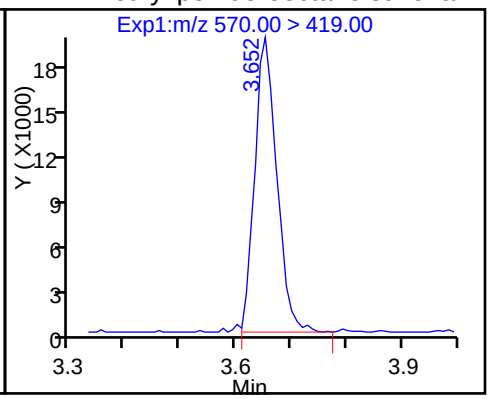
43 Sodium 1H,1H,2H,2H-perfluorooctane



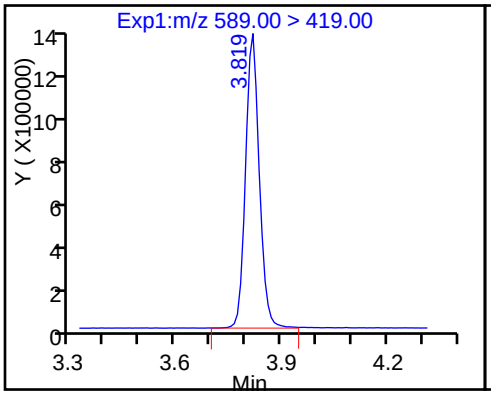
D 45 d3-NMeFOSAA



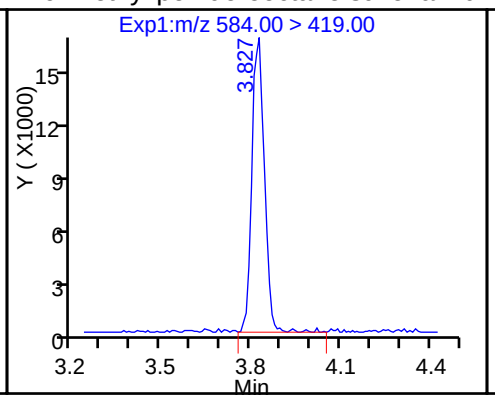
44 N-methyl perfluorooctane sulfonami



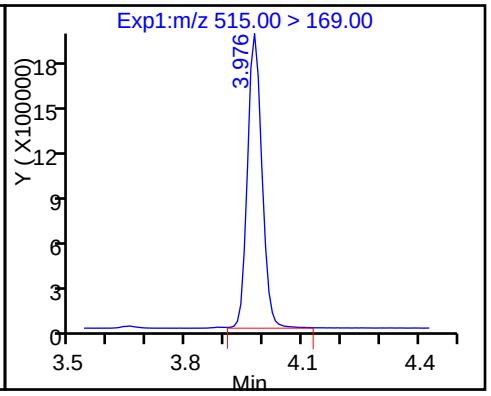
D 46 d5-NEtFOSAA



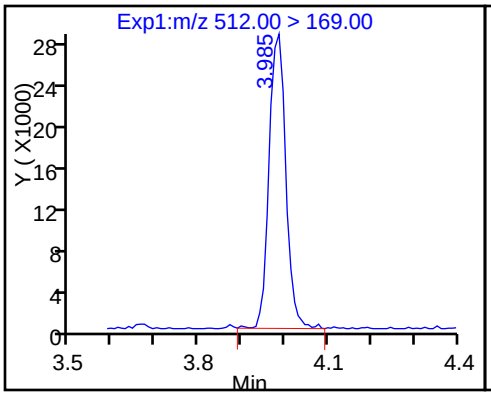
49 N-ethyl perfluorooctane sulfonamid



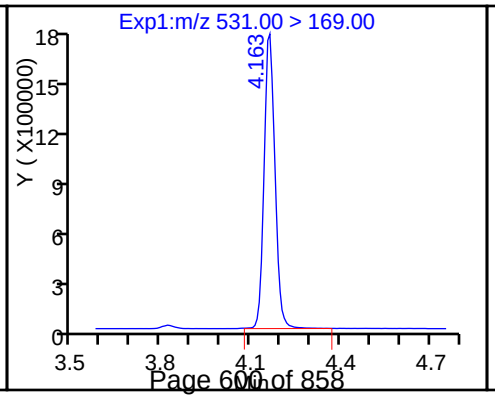
D 52 d-N-MeFOSA-M



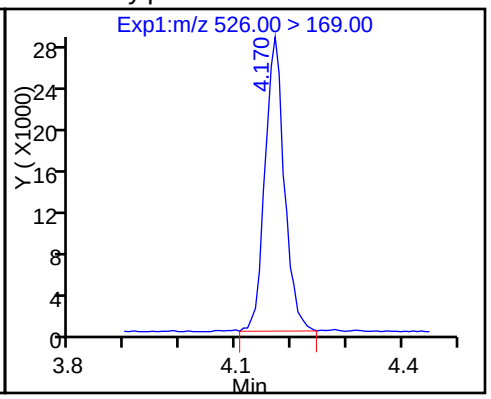
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_015.d
Lims ID: IC L3 Add-on
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 14-Dec-2016 10:16:36 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:07:21 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 14:00:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.740	2.745	-0.005		5053950	49.1		103		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.740	2.746	-0.006	1.000	363998	4.05		85.4		
D 42 M2-8:2FTS										
529.00 > 509.00	3.481	3.490	-0.009		4510142	49.6		104		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.490	3.493	-0.003	1.002	331035	4.19		87.4		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.650	3.655	-0.005		3645275	53.7		107		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.659	3.661	-0.002	1.002	256490	4.07		81.3		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.817	3.823	-0.006		3913592	54.0		108		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.825	3.831	-0.006	1.002	248602	4.12		82.5		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.974	3.982	-0.008		5431405	55.4		111		
54 MeFOSA										
512.00 > 169.00	3.983	3.988	-0.005	1.000	387815	4.25		84.9		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.162	4.167	-0.005		4830609	54.3		109		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.169	4.175	-0.006	1.000	341100	4.09		81.8		

Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:07:22 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_015.d

Injection Date: 14-Dec-2016 10:16:36 Instrument ID: A8_N

Lims ID: IC L3 Add-on

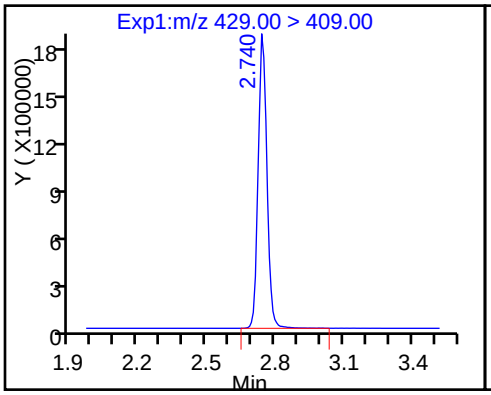
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 48 Worklist Smp#: 15

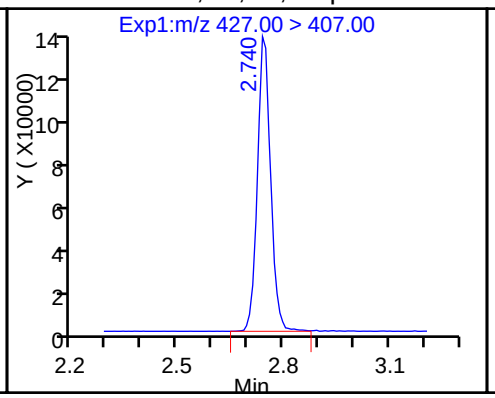
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

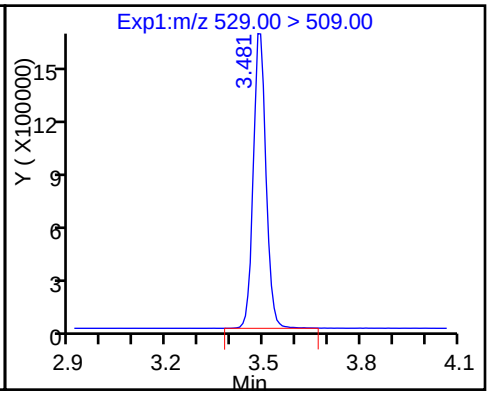
D 47 M2-6:2FTS



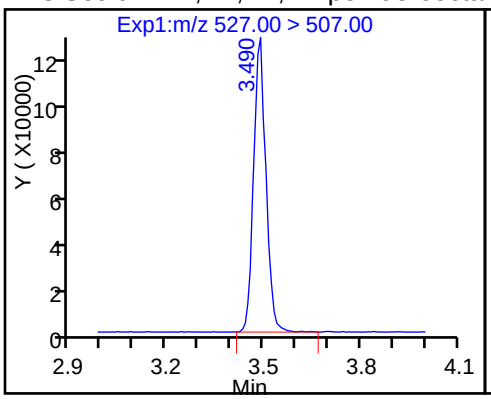
48 Sodium 1H,1H,2H,2H-perfluorooctane



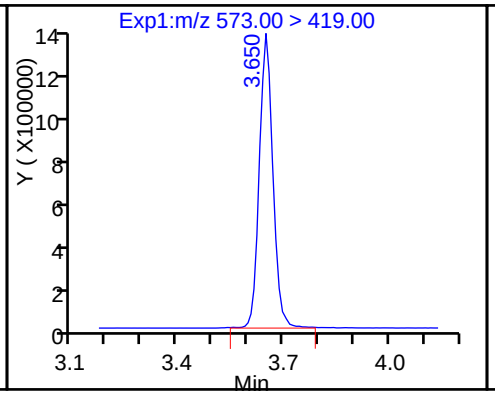
D 42 M2-8:2FTS



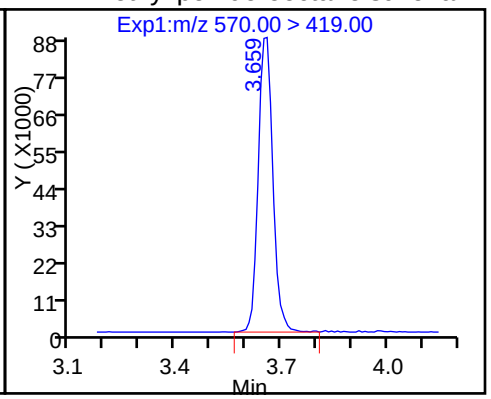
43 Sodium 1H,1H,2H,2H-perfluorooctane



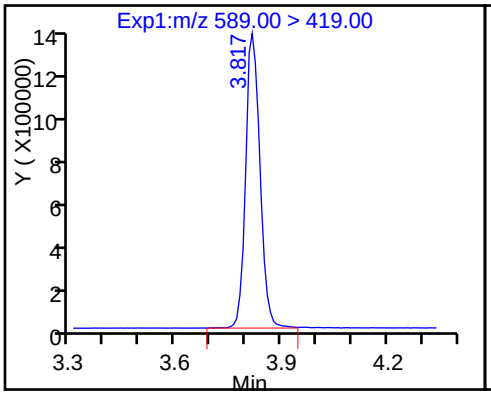
D 45 d3-NMeFOSAA



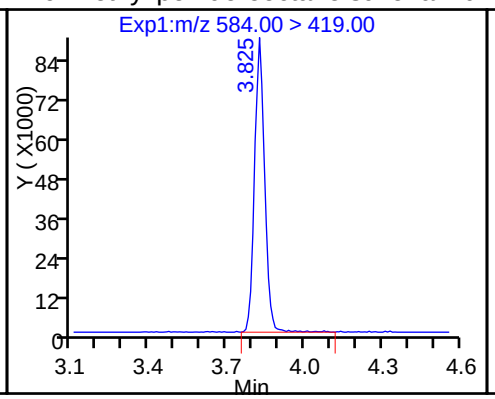
44 N-methyl perfluorooctane sulfonami



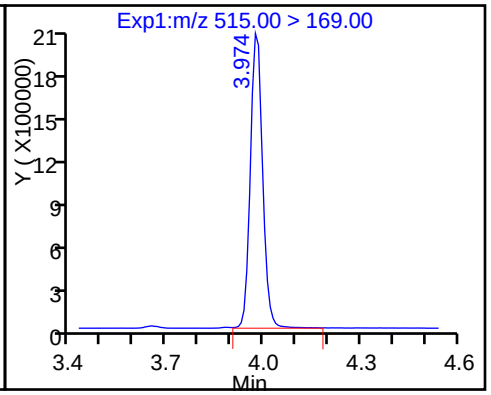
D 46 d5-NEtFOSAA



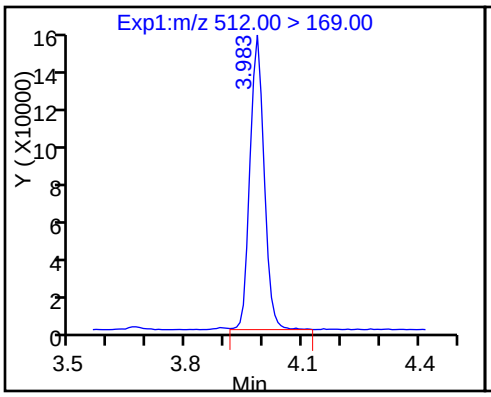
49 N-ethyl perfluorooctane sulfonamid



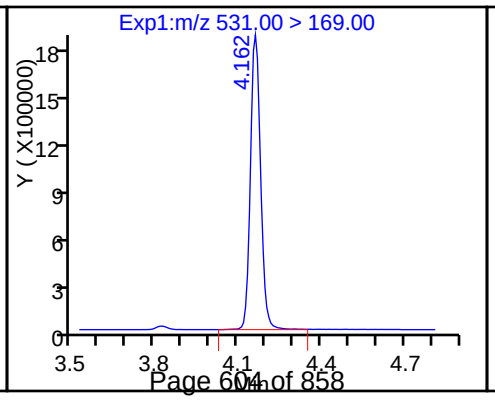
D 52 d-N-MeFOSA-M



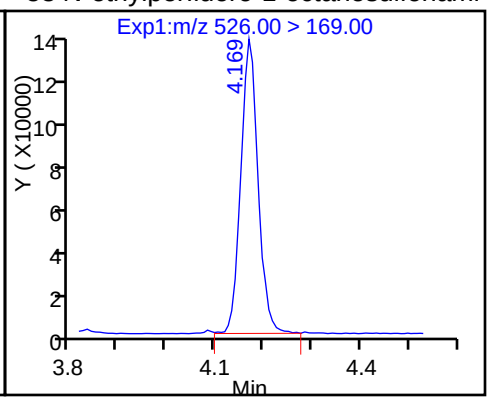
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_016.d
Lims ID: IC L4 Add-on
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 14-Dec-2016 10:24:05 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:07:23 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 14:00:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.740	2.745	-0.005		5608807	54.5		115		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.740	2.746	-0.006	1.000	2118035	21.2		112		
D 42 M2-8:2FTS										
529.00 > 509.00	3.490	3.490	0.0		4851294	53.4		111		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.490	3.493	-0.003	1.000	1847107	21.7		113		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.650	3.655	-0.005		3857586	56.8		114		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.659	3.661	-0.002	1.002	1405911	21.1		105		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.817	3.823	-0.006		3965849	54.8		110		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.825	3.831	-0.006	1.002	1343818	22.0		110		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.983	3.982	0.001		5251279	53.5		107		
54 MeFOSA										
512.00 > 169.00	3.983	3.988	-0.005	1.000	1914115	21.7		108		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.162	4.167	-0.005		4648105	52.2		104		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.169	4.175	-0.006	1.000	1814770	22.6		113		

Reagents:

LCPFC2-L4_00003 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:07:24 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_016.d

Injection Date: 14-Dec-2016 10:24:05 Instrument ID: A8_N

Lims ID: IC L4 Add-on

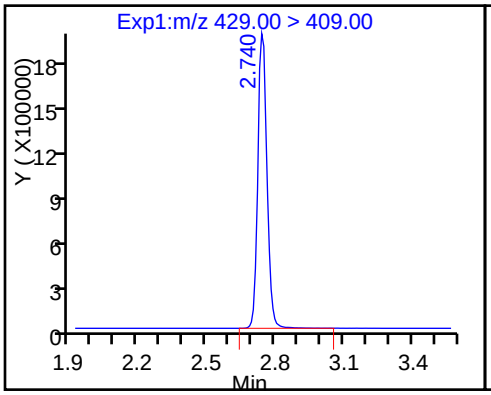
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 49 Worklist Smp#: 16

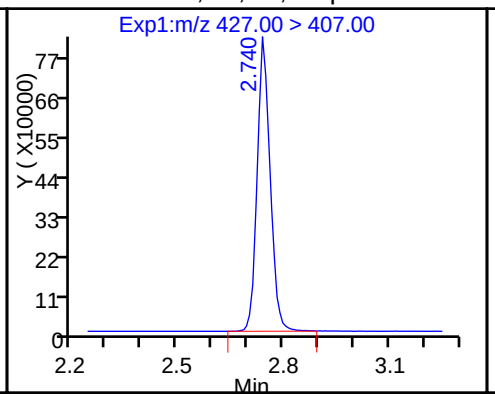
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

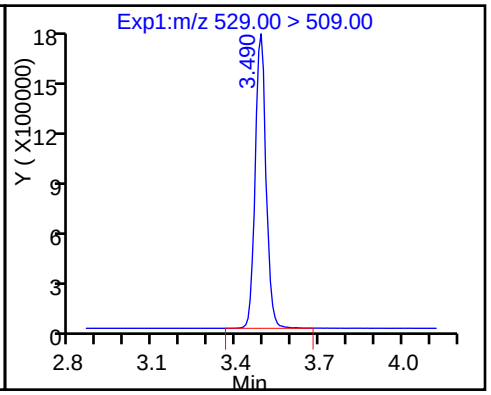
D 47 M2-6:2FTS



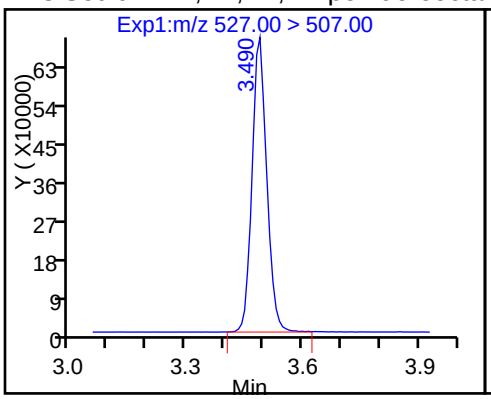
48 Sodium 1H,1H,2H,2H-perfluorooctane



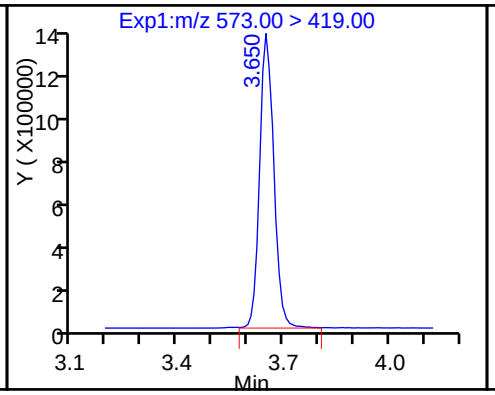
D 42 M2-8:2FTS



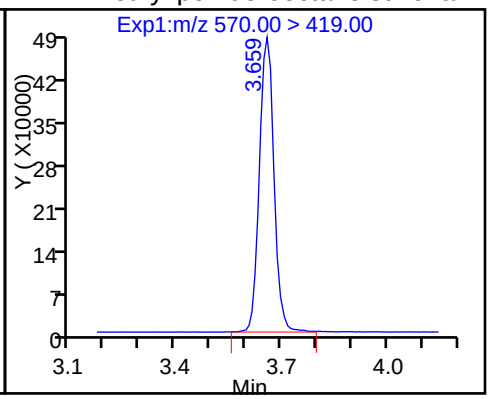
43 Sodium 1H,1H,2H,2H-perfluorooctane



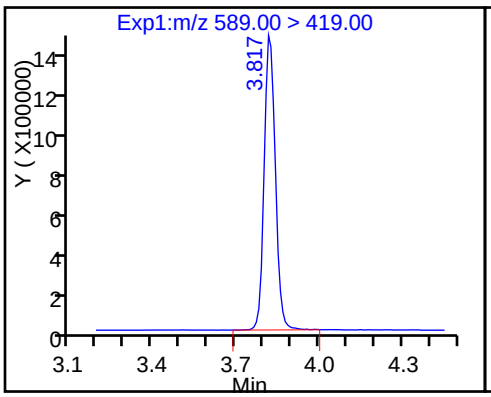
D 45 d3-NMeFOSAA



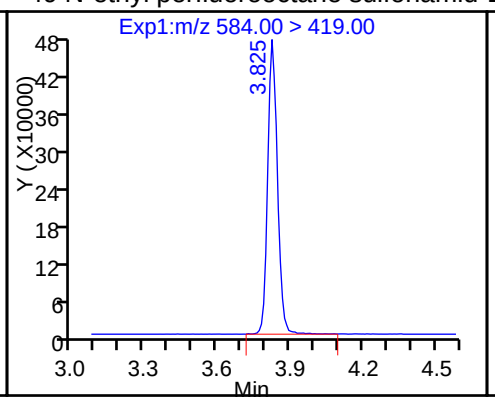
44 N-methyl perfluorooctane sulfonami



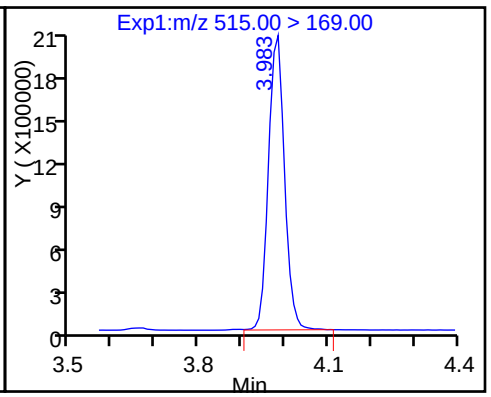
D 46 d5-NEtFOSAA



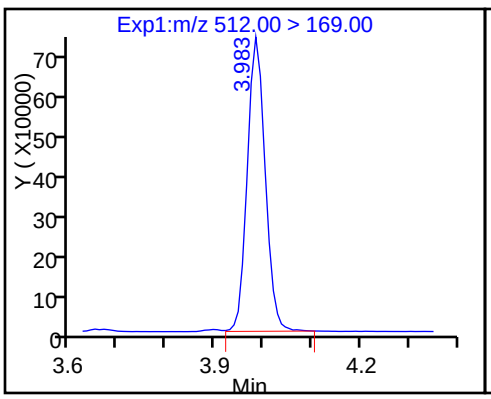
49 N-ethyl perfluorooctane sulfonamid



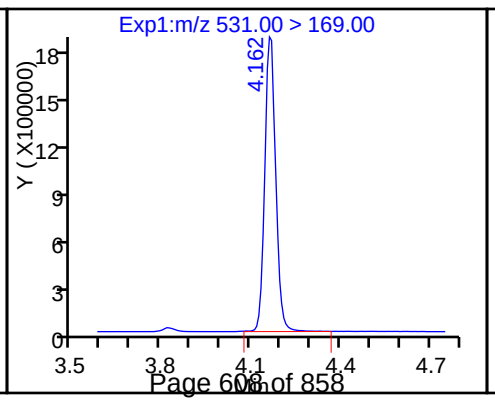
D 52 d-N-MeFOSA-M



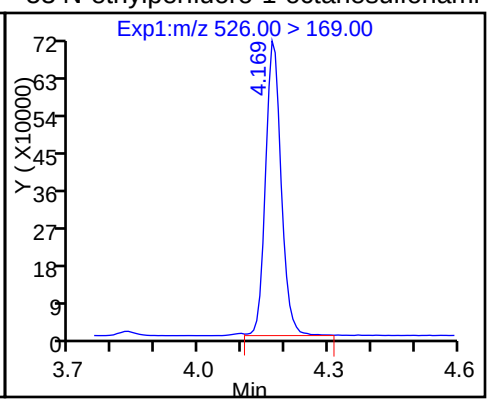
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_017.d
Lims ID: IC L5 Add-on
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 14-Dec-2016 10:31:34 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:07:25 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 14:01:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.750	2.745	0.005		4231334	41.1		86.5		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.750	2.746	0.004	1.000	4191567	55.7		117		
D 42 M2-8:2FTS										
529.00 > 509.00	3.490	3.490	0.0		3799738	41.8		87.3		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.506	3.493	0.013	1.005	3703316	55.6		116		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.668	3.655	0.013		2850551	42.0		84.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.668	3.661	0.007	1.000	3002673	60.9		122		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.834	3.823	0.011		2947810	40.7		81.4		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.834	3.831	0.003	1.000	2765113	60.9		122		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.992	3.982	0.010		4197739	42.8		85.6		
54 MeFOSA										
512.00 > 169.00	4.002	3.988	0.014	1.000	4150955	58.8		118		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.176	4.167	0.009		3895948	43.8		87.6		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.183	4.175	0.008	1.000	4034402	60.0		120		

Reagents:

LCPFC2-L5_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:07:25 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_017.d

Injection Date: 14-Dec-2016 10:31:34 Instrument ID: A8_N

Lims ID: IC L5 Add-on

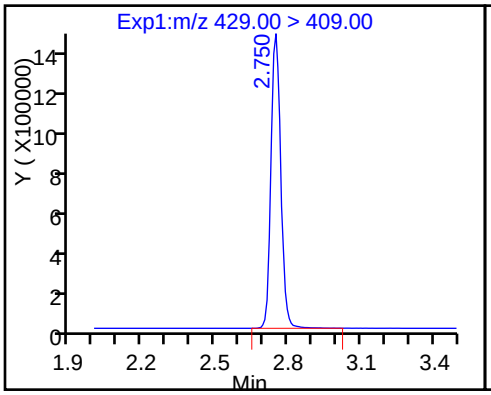
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 50 Worklist Smp#: 17

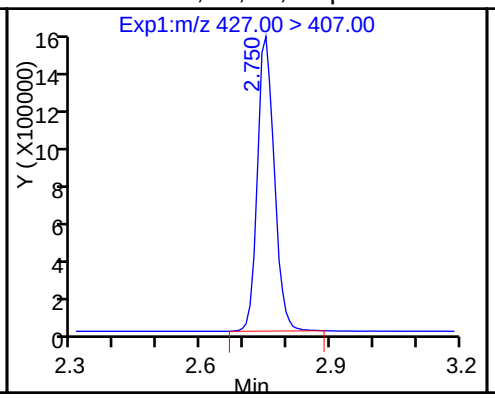
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

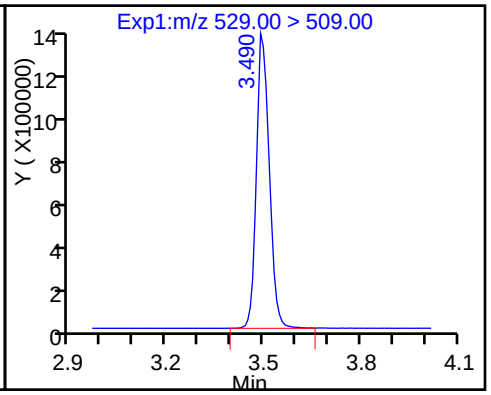
D 47 M2-6:2FTS



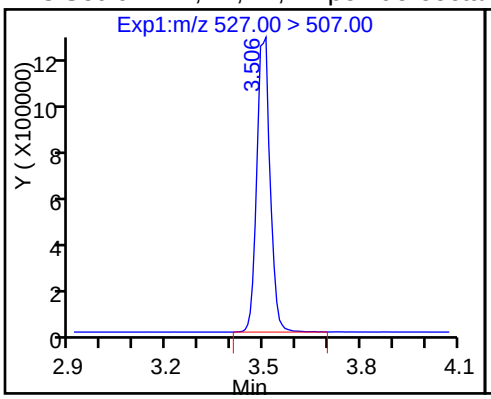
48 Sodium 1H,1H,2H,2H-perfluorooctane



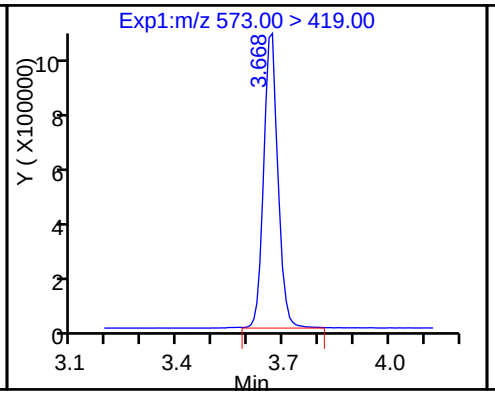
D 42 M2-8:2FTS



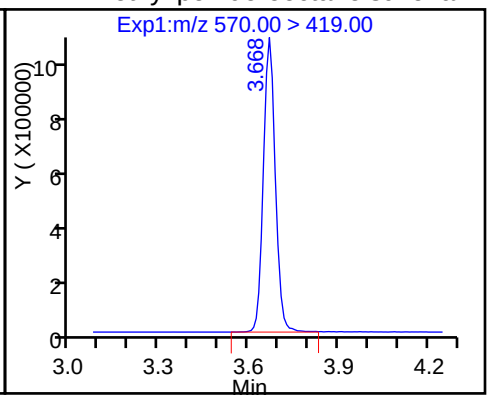
43 Sodium 1H,1H,2H,2H-perfluorooctane



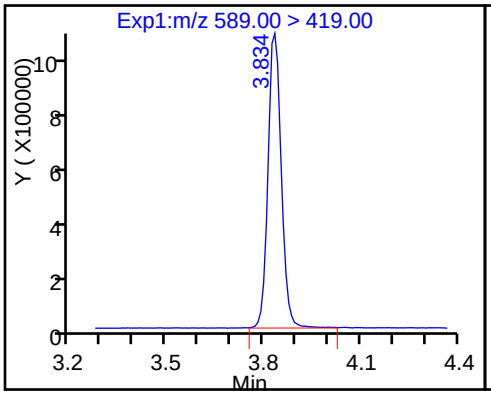
D 45 d3-NMeFOSAA



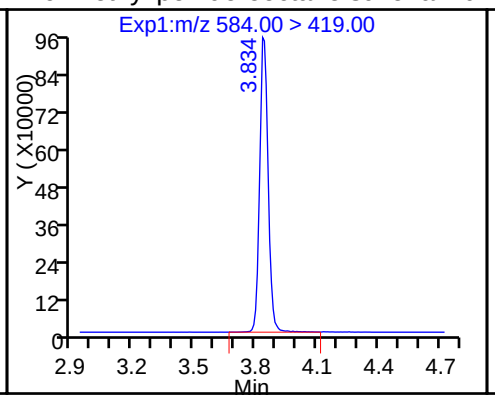
44 N-methyl perfluorooctane sulfonami



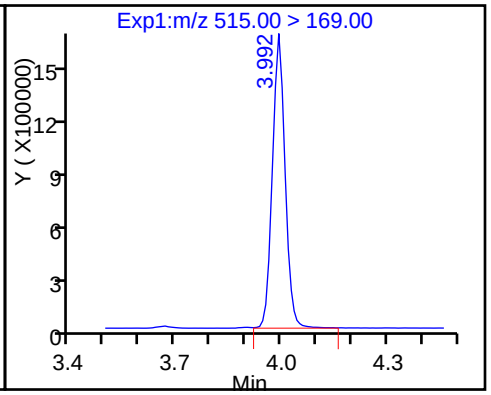
D 46 d5-NEtFOSAA



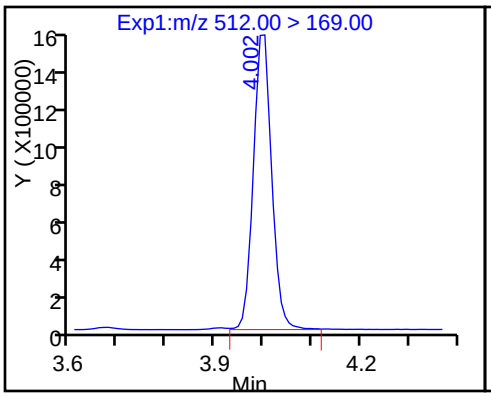
49 N-ethyl perfluorooctane sulfonamid



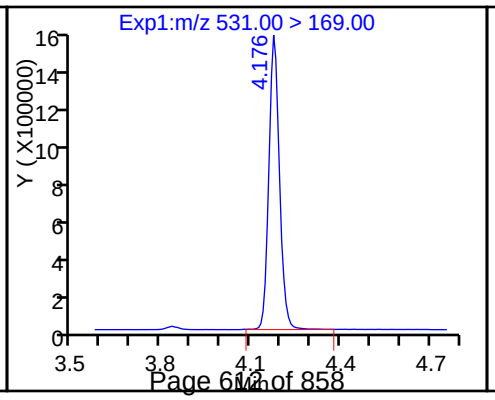
D 52 d-N-MeFOSA-M



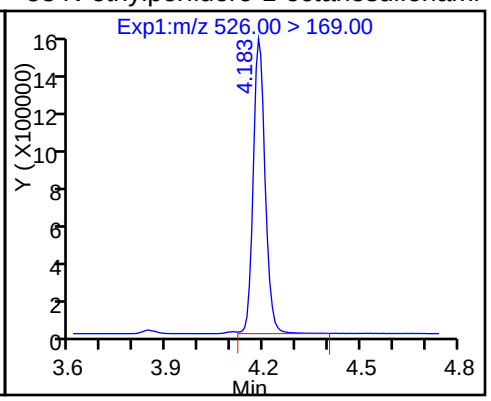
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d
Lims ID: IC L6 Add-on
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 14-Dec-2016 10:39:03 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:07:26 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 14:01:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.758	2.745	0.013		5042651	49.0		103		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.765	2.746	0.019	1.000	15039012	167.6		88.4		
D 42 M2-8:2FTS										
529.00 > 509.00	3.509	3.490	0.019		4627379	50.9		106		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.509	3.493	0.016	1.000	14224540	175.3		91.5		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.672	3.655	0.017		3287293	48.4		96.9		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.681	3.661	0.020	1.003	11745145	206.5		103		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.837	3.823	0.014		3480865	48.1		96.1		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.845	3.831	0.014	1.002	11051790	206.2		103		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.995	3.982	0.013		4860889	49.5		99.1		
54 MeFOSA										
512.00 > 169.00	4.005	3.988	0.017	1.000	16548419	202.5		101		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.179	4.167	0.012		4668258	52.5		105		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.193	4.175	0.018	1.000	16419113	203.8		102		

Reagents:

LCPFC2-L6_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:07:27 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Injection Date: 14-Dec-2016 10:39:03 Instrument ID: A8_N

Lims ID: IC L6 Add-on

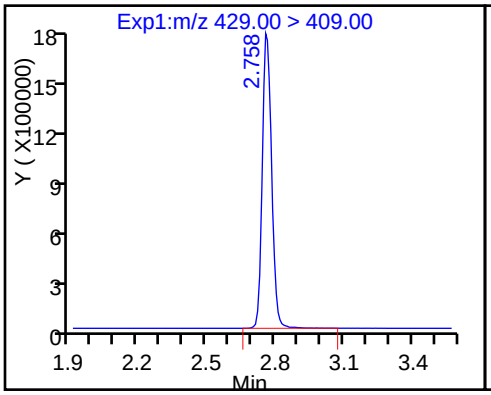
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 18

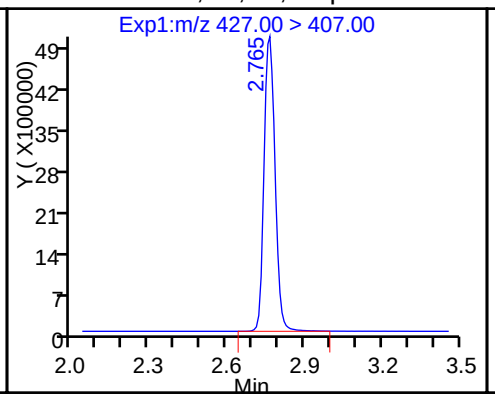
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

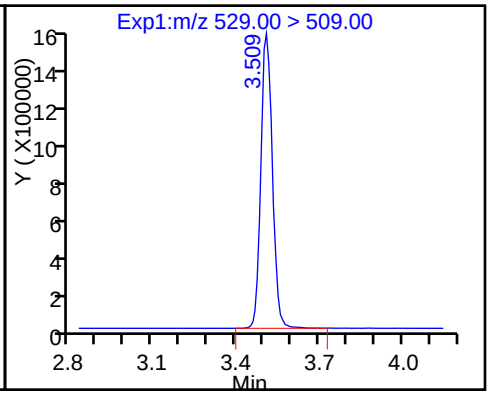
D 47 M2-6:2FTS



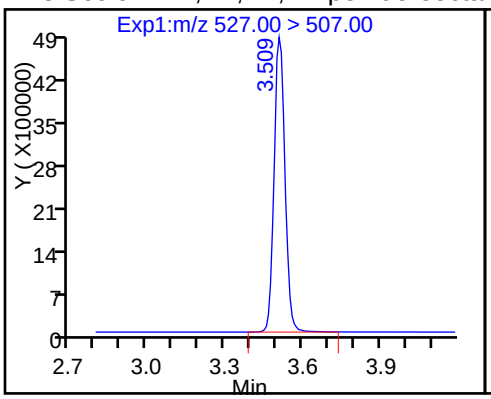
48 Sodium 1H,1H,2H,2H-perfluorooctane



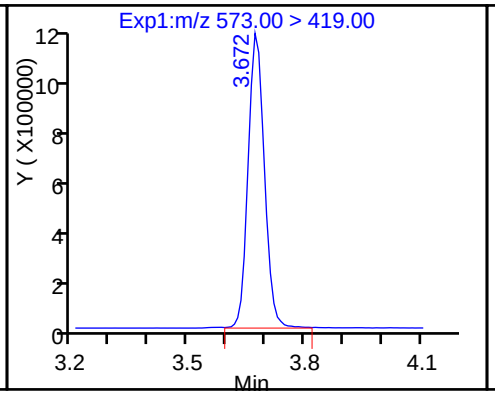
D 42 M2-8:2FTS



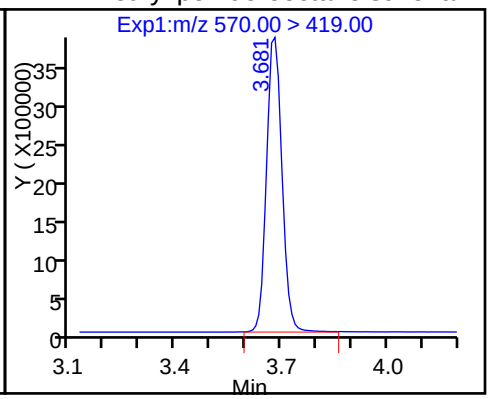
43 Sodium 1H,1H,2H,2H-perfluorooctane



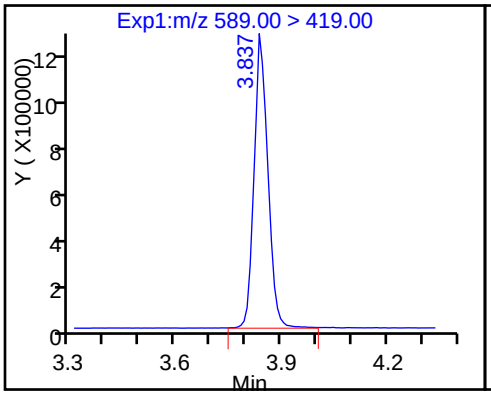
D 45 d3-NMeFOSAA



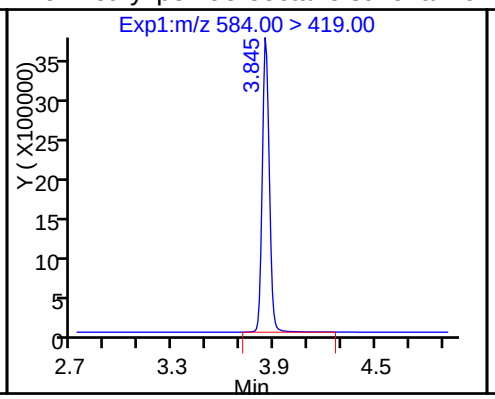
44 N-methyl perfluorooctane sulfonami



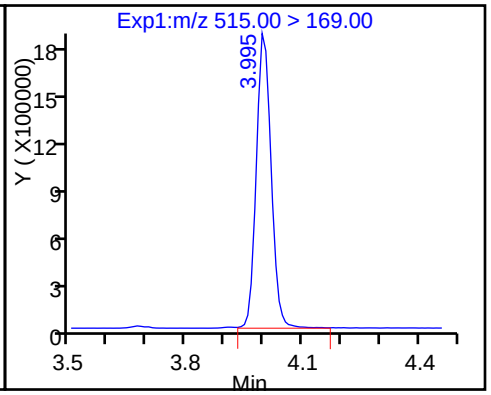
D 46 d5-NEtFOSAA



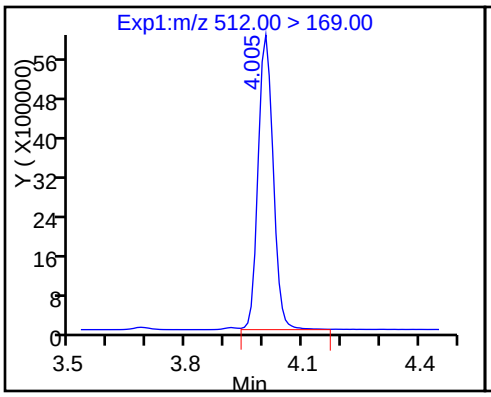
49 N-ethyl perfluorooctane sulfonamid



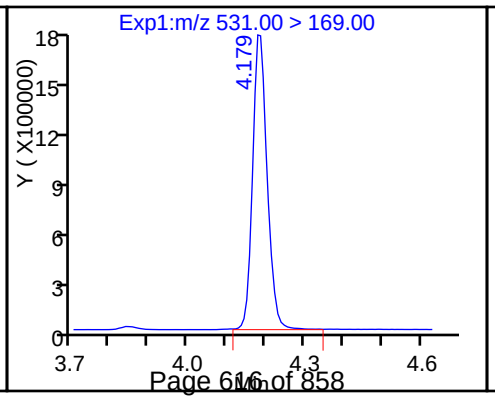
D 52 d-N-MeFOSA-M



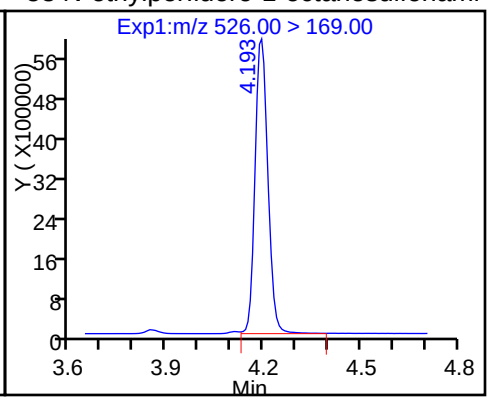
54 MeFOSA



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.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_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)	1.542 1.537		1.530		1.534		1.534		1.533		1.285 - 1.785	1.535
Perfluoropentanoic acid (PFPeA)	1.810 1.813		1.805		1.810		1.810		1.810		1.560 - 2.060	1.810
Perfluorobutanesulfonic acid (PFBS)	1.849 1.852		1.844		1.849		1.849		1.848		1.668 - 2.028	1.849
Perfluorohexanoic acid (PFHxA)	2.097 2.096		2.092		2.097		2.093		2.098		1.846 - 2.346	2.096
Perfluorohexanesulfonic acid (PFHxS)	+++++ 2.444		2.445		2.364		2.440		2.446		2.181 - 2.681	2.428
Perfluoroheptanoic acid (PFHpA)	2.430 2.426		2.430		2.432		2.426		2.424		2.178 - 2.678	2.428
6:2FTS		+++++ 2.769		2.761		2.768		2.767		2.767	2.518 - 3.018	2.766
Perfluorooctanoic acid (PFOA)	+++++ 2.783		2.781		2.783		2.785		2.782		2.533 - 3.033	2.783
Perfluoroheptanesulfonic Acid (PFHpS)	2.790 2.791		2.789		2.792		2.785		2.791		2.540 - 3.040	2.790
Perfluorooctane Sulfonate (PFOS)	+++++ 2.977		3.149		3.153		3.129		3.151		2.868 - 3.368	3.112
Perfluorononanoic acid (PFNA)	3.159 3.160		3.157		3.153		3.153		3.151		2.905 - 3.405	3.156
Perfluorooctane Sulfonamide (FOSA)	3.490 3.491		3.489		3.492		3.492		3.490		3.241 - 3.741	3.491
Perfluorodecanoic acid (PFDA)	3.515 3.516		3.506		3.509		3.509		3.507		3.260 - 3.760	3.510
8:2FTS		3.511 3.516		3.502		3.511		3.511		3.512	3.261 - 3.761	3.511

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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

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)		3.684 3.680		3.673		3.683		3.683		3.684	3.431 - 3.931	3.681
Perfluorodecanesulfonic acid (PFDS)	3.826 3.819		3.824		3.819		3.827		3.818		3.572 - 4.072	3.822
Perfluoroundecanoic acid (PFUnA)	3.834 3.845		3.833		3.837		3.844		3.844		3.589 - 4.089	3.840
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		3.865 3.853		3.855		3.847		3.847		3.857	3.604 - 4.104	3.854
MeFOSA		3.998 4.004		3.997		3.997		3.997		3.999	3.749 - 4.249	3.999
Perfluorododecanoic acid (PFDoA)	4.141 4.136		4.133		4.136		4.135		4.135		3.886 - 4.386	4.136
N-EtFOSA-M		4.187 4.193		4.179		4.186		4.186		4.189	3.937 - 4.437	4.187
Perfluorotridecanoic Acid (PFTriA)	4.404 4.407		4.396		4.398		4.398		4.398		4.150 - 4.650	4.400
Perfluorotetradecanoic acid (PFTeA)	4.643 4.635		4.643		4.645		4.644		4.645		4.392 - 4.892	4.643
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 5.060		5.058		5.059		5.059		5.059		4.809 - 5.309	5.059
Perfluoro-n-octadecanoic acid (PFODA)	5.413 5.414		5.413		5.414		5.413		5.413		5.164 - 5.664	5.413
13C4 PFBA	1.534 1.537		1.530		1.534		1.534		1.533		1.284 - 1.784	1.534
13C5-PFPeA	1.810 1.813		1.805		1.810		1.810		1.810		1.560 - 2.060	1.810
13C2 PFHxA	2.097 2.096		2.092		2.097		2.102		2.098		1.847 - 2.347	2.097
13C4-PFHpA	2.430 2.426		2.423		2.425		2.426		2.424		2.176 - 2.676	2.426
18O2 PFHxS	2.452 2.444		2.445		2.447		2.440		2.446		2.196 - 2.696	2.446
M2-6:2FTS		2.760 2.776		2.761		2.768		2.767		2.767	2.517 - 3.017	2.767
13C4 PFOA	2.782 2.783		2.781		2.783		2.785		2.782		2.533 - 3.033	2.783
13C4 PFOS	3.151 3.152		3.149		3.153		3.153		3.151		2.901 - 3.401	3.152
13C5 PFNA	3.159 3.152		3.149		3.153		3.153		3.151		2.903 - 3.403	3.153
13C8 FOSA	3.490 3.491		3.489		3.484		3.484		3.490		3.238 - 3.738	3.488
13C2 PFDA	3.515 3.508		3.514		3.509		3.517		3.516		3.263 - 3.763	3.513

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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

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
M2-8:2FTS		3.511 3.516		3.511		3.511		3.511		3.520	3.263 - 3.763	3.513
d3-NMeFOSAA		3.684 3.680		3.673		3.673		3.673		3.675	3.426 - 3.926	3.676
13C2 PFUnA	3.843 3.845		3.842		3.845		3.835		3.844		3.592 - 4.092	3.842
d5-NEtFOSAA		3.848 3.845		3.838		3.838		3.838		3.848	3.592 - 4.092	3.843
d-N-MeFOSA-M		3.988 3.995		3.987		3.987		3.997		3.999	3.742 - 4.242	3.992
13C2 PFDoA	4.134 4.129		4.133		4.129		4.135		4.135		3.882 - 4.382	4.133
d-N-EtFOSA-M		4.180 4.186		4.172		4.179		4.179		4.182	3.930 - 4.430	4.180
13C2-PFTeDA	4.643 4.635		4.633		4.645		4.644		4.645		4.391 - 4.891	4.641
13C2-PFHxDA	5.058 5.060		5.047		5.059		5.059		5.059		4.807 - 5.307	5.057

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

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_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	365277 360742 345484		364028 351708 299221		Ave		347743.167				7.2		50.0			
13C5-PFPeA	282426 281261 261073		281354 272343 217976		Ave		266072.353				9.4		50.0			
13C2 PFHxA	253106 254198 247986		256296 252164 206910		Ave		245109.910				7.7		50.0			
13C4-PFHpA	244814 245211 216032		244964 235764 171281		Ave		226344.393				12.9		50.0			
18O2 PFHxS	341723 342975 323020		340234 339593 274309		Ave		326975.747				8.2		50.0			
M2-6:2FTS		112694 117279 110718		107543 136249 117410	Ave		116982.140				8.7		50.0			
13C4 PFOA	250090 252701 222856		252554 236364 167605		Ave		230361.637				14.3		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.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

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	256822 261188 249930		260657 254876 209612		Ave		248847.249				7.9		50.0			
13C5 PFNA	189110 195552 171630		190741 184721 134367		Ave		177686.923				12.8		50.0			
13C8 FOSA	407109 400699 376084		404776 394065 322114		Ave		384141.077				8.4		50.0			
13C2 PFDA	168454 164694 153437		169609 162695 124922		Ave		157301.833				10.7		50.0			
M2-8:2FTS		100584 111541 99917		96024 124933 111666	Ave		107444.339				10.0		50.0			
d3-NMeFOSAA		72700 80292 68450		71182 87583 71744	Ave		75324.9433				9.6		50.0			
13C2 PFUnA	127043 125252 113156		124385 124531 89132		Ave		117249.927				12.5		50.0			
d5-NEtFOSAA		77796 84707 69727		75140 88209 74518	Ave		78349.4833				8.8		50.0			
d-N-MeFOSA-M		86501 102439 90246		92791 105280 93163	Ave		95069.8233				7.6		50.0			
13C2 PFDoA	116302 115598 108083		116442 116336 92982		Ave		110957.213				8.5		50.0			
d-N-EtFOSA-M		75857 91238 82985		82198 93456 88971	Ave		85784.0067				7.7		50.0			
13C2-PFTeDA	239125 244965 219010		237709 233101 190415		Ave		227387.480				8.8		50.0			
13C2-PFHxDA	131492 130859 120547		133987 126716 103803		Ave		124567.543				9.0		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.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

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)	310962 213818	334546	310647	308231	310088	AveID		0.8537				9.1		35.0			
Perfluoropentanoic acid (PFPeA)	304642 171455	288512	287573	263221	271648	AveID		0.9868				10.7		35.0			
Perfluorobutanesulfonic acid (PFBS)	490041 286903	557732	479895	487779	500362	AveID		1.4170				14.1		50.0			
Perfluorohexanoic acid (PFHxA)	252858 166120	246488	239458	230141	236657	AveID		0.9288				7.3		35.0			
Perfluorohexanesulfonic acid (PFHxS)	+++++ 253974	363991	382940	335246	339121	AveID		1.0300				7.4		35.0			
Perfluoroheptanoic acid (PFHpA)	258208 151171	237386	237734	215989	235022	AveID		0.9788				5.9		35.0			
6:2FTS	85456	+++++ 89174	127446	112813	109001	AveID		0.8914				15.8		35.0			
Perfluorooctanoic acid (PFOA)	+++++ 153922	255488	254861	228712	247908	AveID		1.0031				6.0		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	283576 201995	315862	279184	286553	283857	AveID		1.1019				8.2		50.0			
Perfluorooctane Sulfonate (PFOS)	+++++ 215911	272566	237468	253058	247933	AveID		0.9945				6.4		35.0			
Perfluorononanoic acid (PFNA)	180132 123966	178149	188341	164925	180502	AveID		0.9518				2.7		35.0			
Perfluorooctane Sulfonamide (FOSA)	391498 239019	399542	381363	354739	397863	AveID		0.9327				10.5		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.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

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								
Perfluorodecanoic acid (PFDA)	164274 113084	158337	155537	146490	154381	AveID		0.9438				3.1		35.0			
8:2FTS	83185	83106 84092	116095	79051	100536	AveID		0.8473				12.1		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	57133	59646 64621	85412	57389	74839	AveID		0.8846				15.4		35.0			
Perfluorodecanesulfonic acid (PFDS)	143714 124235	159960	145051	150246	147895	AveID		0.5840				4.8		50.0			
Perfluoroundecanoic acid (PFUnA)	130000 84265	121036	119189	108755	109942	AveID		0.9563				4.9		35.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	53544	59930 59690	75946	53623	68286	AveID		0.7929				15.1		35.0			
MeFOSA	68699	72138 80570	97349	70049	88147	AveID		0.8376				13.3		35.0			
Perfluorododecanoic acid (PFDoA)	105614 87129	111590	103481	101460	101274	AveID		0.9180				3.5		35.0			
N-EtFOSA-M	65375	61986 78901	90659	62962	85286	AveID		0.8640				13.9		35.0			
Perfluorotridecanoic Acid (PFTriA)	106640 80194	104393	109461	99013	105018	AveID		0.9069				2.9		50.0			
Perfluorotetradecanoic acid (PFTeA)	197042 136554	183949	187123	172910	180115	AveID		1.5848				4.6		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 88775	113395	173261	106364	119906	L1ID	0.5185	0.9555							1.0000		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	123098 91965	122262	114997	117393	116752	AveID		1.0304				3.9		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.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_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	18263829 14961055	17585378	18201393	17274187	18037108	50.0 50.0	50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	14121285 10898820	13617158	14067714	13053659	14063070	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	12655304 10345480	12608210	12814780	12399280	12709919	50.0 50.0	50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	12240718 8564025	11788221	12248222	10801604	12260528	50.0 50.0	50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	16163510 12974829	16062766	16093048	15278828	16222736	47.3 47.3	47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	5570739	5352965 5576967	6471813	5108306	5259120	47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	12504504 8380251	11818203	12627691	11142777	12635065	50.0 50.0	50.0	50.0	50.0	50.0
13C4 PFOS	Ave	12276070 10019454	12183062	12459383	11946650	12484772	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.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

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	9455492 6718354	9236073	9537045	8581504	9777609	50.0 50.0	50.0	50.0	50.0	50.0
13C8 FOSA	Ave	20355431 16105707	19703272	20238792	18804188	20034933	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFDA	Ave	8422718 6246112	8134734	8480447	7671861	8234678	50.0 50.0	50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	5342826	4817997 5348797	5984276	4599569	4786038	47.9	47.9 47.9	47.9	47.9	47.9
d3-NMeFOSAA	Ave	4014623	3634985 3587176	4379131	3559083	3422485	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	6352135 4456593	6226562	6219248	5657823	6262617	50.0 50.0	50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	4235352	3889792 3725902	4410456	3757014	3486329	50.0	50.0 50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	5121953	4325034 4658153	5263980	4639527	4512300	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	5815120 4649092	5816809	5822114	5404154	5779875	50.0 50.0	50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	4561882	3792851 4448546	4672820	4109875	4149228	50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	11956257 9520749	11655048	11885446	10950502	12248242	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	6574607 5190172	6335821	6699329	6027362	6542972	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.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_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	155481 42763611	6690917	310647	15411527	1550440	0.500 200	20.0	1.00	50.0	5.00
Perfluoropentanoic acid (PFPeA)		AveID	152321 34291076	5770240	287573	13161065	1358239	0.500 200	20.0	1.00	50.0	5.00
Perfluorobutanesulfonic acid (PFBS)		AveID	216598 50724469	9860707	424227	21559838	2211602	0.442 177	17.7	0.884	44.2	4.42
Perfluorohexanoic acid (PFHxA)		AveID	126429 33223923	4929766	239458	11507044	1183286	0.500 200	20.0	1.00	50.0	5.00
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 46223186	6624638	348475	15253691	1543002	+++++ 182	18.2	0.910	45.5	4.55
Perfluoroheptanoic acid (PFHpA)		AveID	129104 30234194	4747711	237734	10799449	1175112	0.500 200	20.0	1.00	50.0	5.00
6:2FTS		AveID	405060	+++++ 16907459	2416384	106947	5166665	4.74	+++++ 190	19.0	0.948	47.4
Perfluorooctanoic acid (PFOA)		AveID	+++++ 30784387	5109766	254861	11435583	1239541	+++++ 200	20.0	1.00	50.0	5.00

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

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	134982 38459925	6014021	265783	13639927	1351160	0.476 190	19.0	0.952	47.6	4.76
Perfluorooctane Sulfonate (PFOS)		AveID	+++++ 40073141	5058824	220370	11741891	1150410	+++++ 186	18.6	0.928	46.4	4.64
Perfluorononanoic acid (PFNA)		AveID	90066 24793148	3562981	188341	8246252	902512	0.500 200	20.0	1.00	50.0	5.00
Perfluorooctane Sulfonamide (FOSA)		AveID	195749 47803717	7990835	381363	17736944	1989314	0.500 200	20.0	1.00	50.0	5.00
Perfluorodecanoic acid (PFDA)		AveID	82137 22616781	3166735	155537	7324495	771905	0.500 200	20.0	1.00	50.0	5.00
8:2FTS		AveID	398457	39808 16111959	2224381	75731	4815680	4.79	0.479 192	19.2	0.958	47.9
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	285665	29823 12924122	1708231	57389	3741936	5.00	0.500 200	20.0	1.00	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	69270 23952412	3084031	139829	7241868	712852	0.482 193	19.3	0.964	48.2	4.82
Perfluoroundecanoic acid (PFUnA)		AveID	65000 16852945	2420719	119189	5437764	549708	0.500 200	20.0	1.00	50.0	5.00
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	267721	29965 11938061	1518918	53623	3414301	5.00	0.500 200	20.0	1.00	50.0
MeFOSA		AveID	343493	36069 16114020	1946985	70049	4407328	5.00	0.500 200	20.0	1.00	50.0
Perfluorododecanoic acid (PFDoA)		AveID	52807 17425873	2231794	103481	5072994	506369	0.500 200	20.0	1.00	50.0	5.00
N-EtFOSA-M		AveID	326877	30993 15780196	1813178	62962	4264314	5.00	0.500 200	20.0	1.00	50.0

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1 Analy Batch No.: 142379

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

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	53320 16038809	2087859	109461	4950651	525090	0.500 200	20.0	1.00	50.0	5.00
Perfluorotetradecanoic acid (PFTeA)		AveID	98521 27310864	3678976	187123	8645519	900575	0.500 200	20.0	1.00	50.0	5.00
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	+++++ 17754908	2267892	173261	5318207	599529	+++++ 200	20.0	1.00	50.0	5.00
Perfluoro-n-octadecanoic acid (PFODA)		AveID	61549 18392980	2445236	114997	5869666	583761	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\20161215-37881.b\15DEC2016B_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 15-Dec-2016 12:29:18 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:11 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:48:59

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	1.534	1.534	0.0		18263829	52.5		105	1469089	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.535	0.007	1.000	155481	0.4986		99.7	1121	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		14121285	53.1		106	1079323	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	152321	0.5465		109	1332	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.848	0.001	1.000	216598	0.4473		101		
298.90 > 99.00	1.849	1.848	0.001	1.000	87630		2.47(0.00-0.00)	101		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.096	0.001	1.000	126429	0.5378		108	4416	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.097	0.0		12655304	51.6		103	589404	
D 11 13C4-PFHpA										
367.00 > 322.00	2.430	2.426	0.004		12240718	54.1		108	647338	
12 Perfluoroheptanoic acid										M
363.00 > 319.00	2.430	2.428	0.002	1.000	129104	0.5388		108	1246	M
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.444	2.431	0.013	1.000	204063	0.5798		127		M
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.446	0.006		16163510	49.4		105	1405328	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.783	-0.001		12504504	54.3		109	532215	

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	2.782	2.783	-0.001	1.000	145696	0.5807		116	1257	
413.00 > 169.00	2.790	2.783	0.007	1.003	87089		1.67(0.90-1.10)	116	4416	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.790	2.790	0.0	1.000	134982	0.4770		100		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.151	3.118	0.033	1.000	116569	0.4564		98.4	7996	M
499.00 > 99.00	3.159	3.118	0.041	1.003	24244		4.81(0.90-1.10)	98.4	1329	M
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.151	0.0		12276070	49.3		103	1128009	
D 19 13C5 PFNA										
468.00 > 423.00	3.159	3.153	0.006		9455492	53.2		106	520740	
20 Perfluorononanoic acid										
463.00 > 419.00	3.159	3.155	0.004	1.000	90066	0.5004		100	1349	
D 21 13C8 FOSA										
506.00 > 78.00	3.490	3.488	0.002		20355431	53.0		106	727464	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.490	3.491	-0.001	1.000	195749	0.5155		103	25454	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.515	3.510	0.005	1.000	82137	0.5166		103	2772	
D 23 13C2 PFDA										
515.00 > 470.00	3.515	3.513	0.002		8422718	53.5		107	284895	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.826	3.822	0.004	1.000	69270	0.4619		95.8		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.834	3.839	-0.005	1.000	65000	0.5350		107	1918	
D 27 13C2 PFUnA										
565.00 > 520.00	3.843	3.842	0.001		6352135	54.2		108	398643	
D 30 13C2 PFDoA										
615.00 > 570.00	4.134	4.132	0.002		5815120	52.4		105	205155	
29 Perfluorododecanoic acid										M
613.00 > 569.00	4.141	4.136	0.005	1.000	52807	0.4946		98.9	1204	M
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.404	4.400	0.004	1.000	53320	0.5055		101	1256	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.643	4.641	0.002		11956257	52.6		105	663687	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.643	4.642	0.001	1.000	98521	0.5345		107	1284	
713.00 > 169.00	4.633	4.642	-0.009	0.998	17902		5.50(0.00-0.00)	107	7022	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.057	0.001		6574607	52.8		106	132486	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	125860	0.5899		118	92.5	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	61549	0.5136		103	54.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L1_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:12 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d

Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N

Lims ID: IC L1

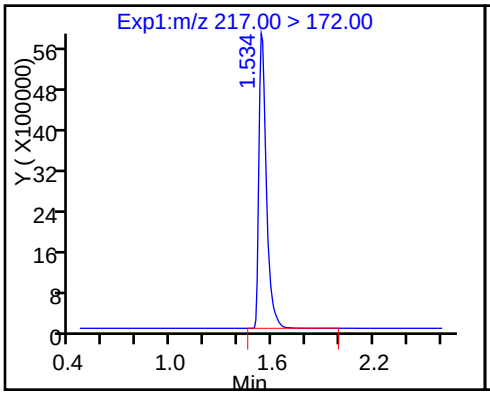
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

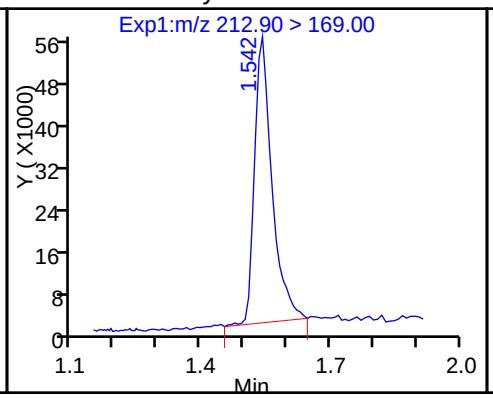
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

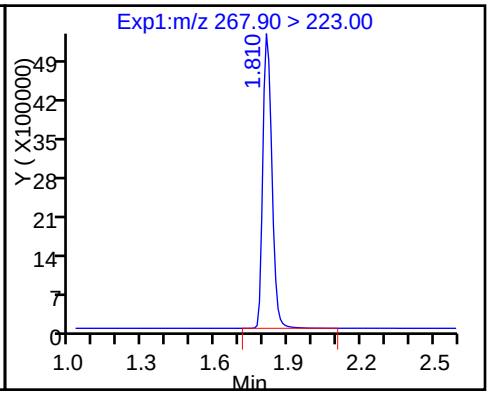
D 2 13C4 PFBA



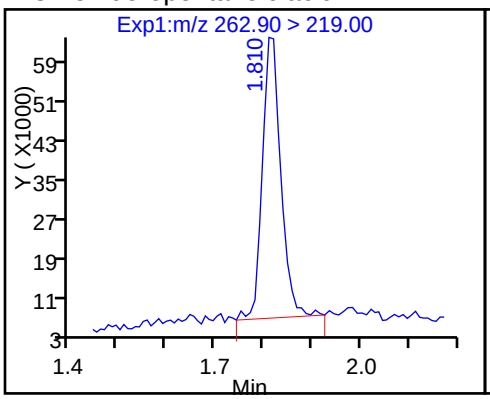
1 Perfluorobutyric acid



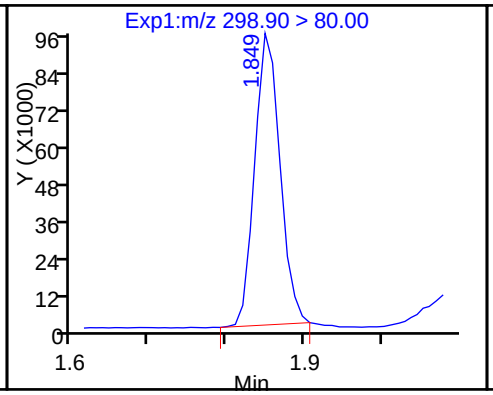
D 4 13C5-PFPeA



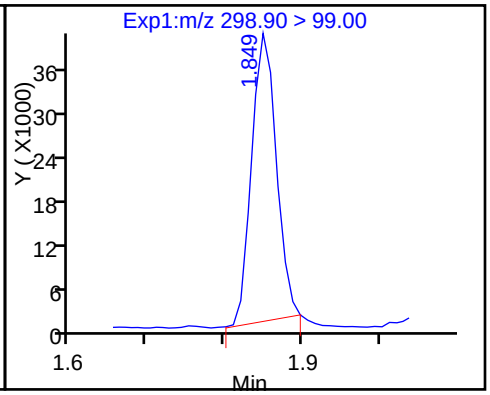
3 Perfluoropentanoic acid



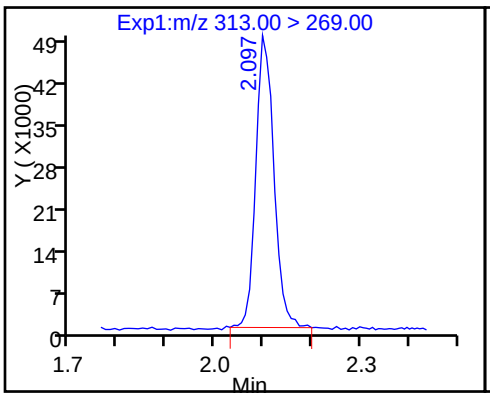
5 Perfluorobutanesulfonic acid



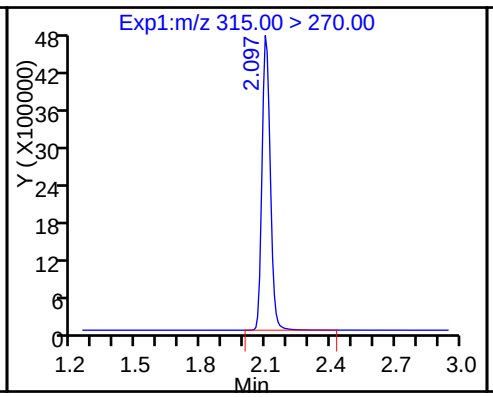
5 Perfluorobutanesulfonic acid



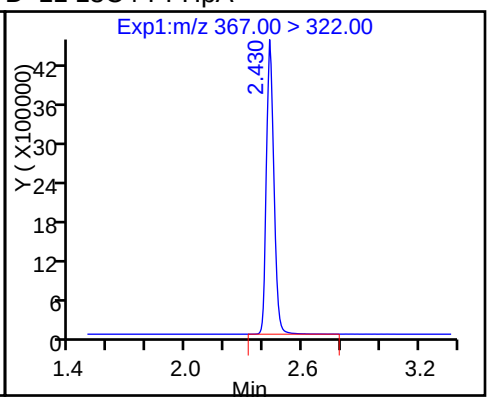
7 Perfluorohexanoic acid



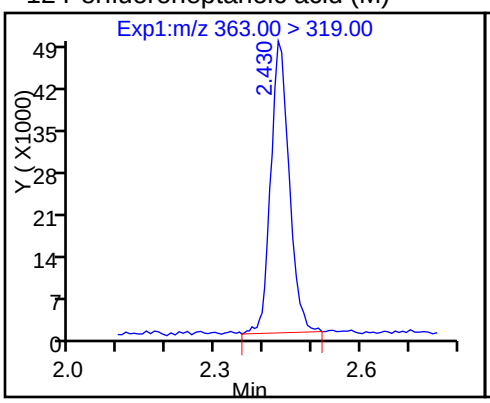
D 6 13C2 PFHxA



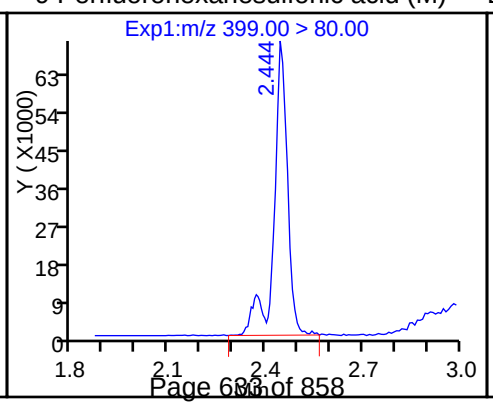
D 11 13C4-PFHpA



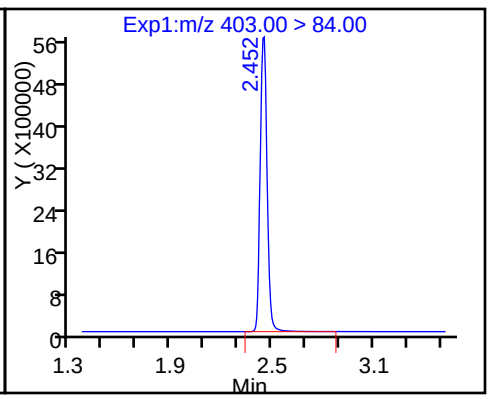
12 Perfluoroheptanoic acid (M)



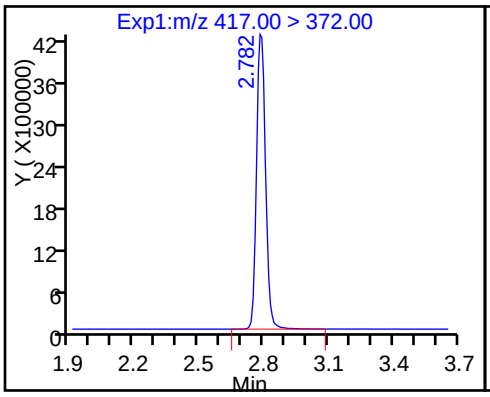
9 Perfluorohexanesulfonic acid (M)



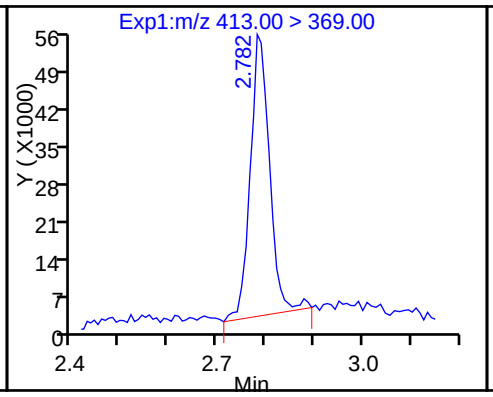
D 10 18O2 PFHxS



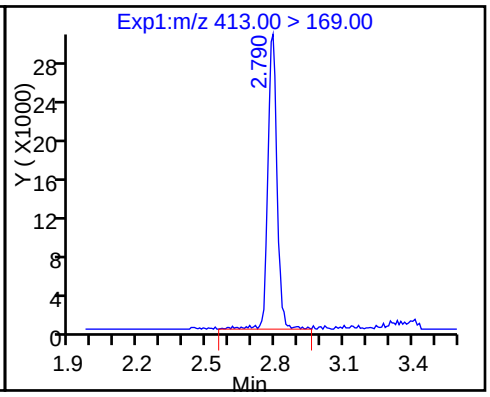
D 14 13C4 PFOA



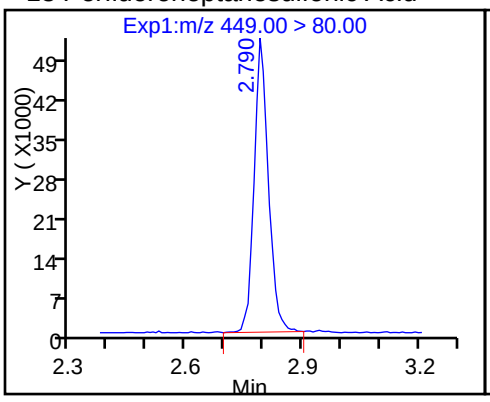
15 Perfluorooctanoic acid



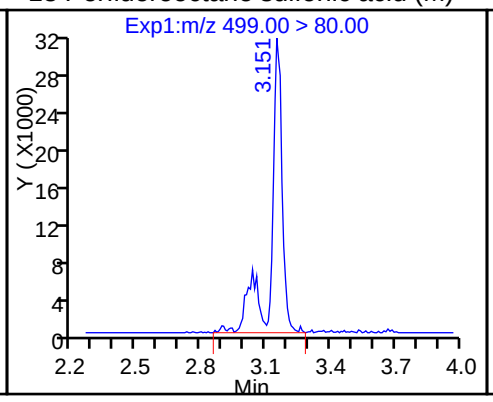
15 Perfluorooctanoic acid



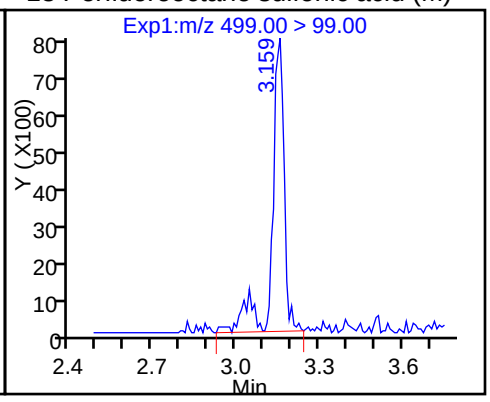
13 Perfluoroheptanesulfonic Acid



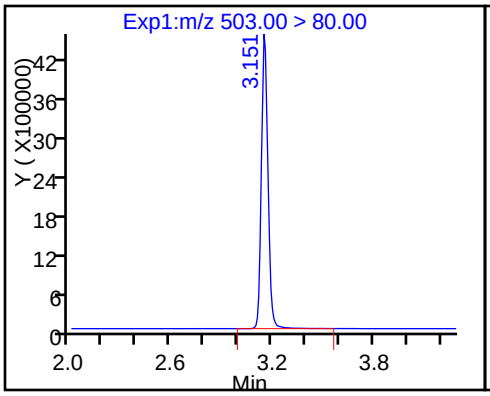
18 Perfluorooctane sulfonic acid (M)



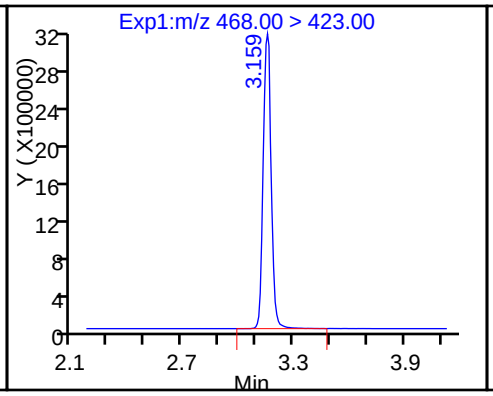
18 Perfluorooctane sulfonic acid (M)



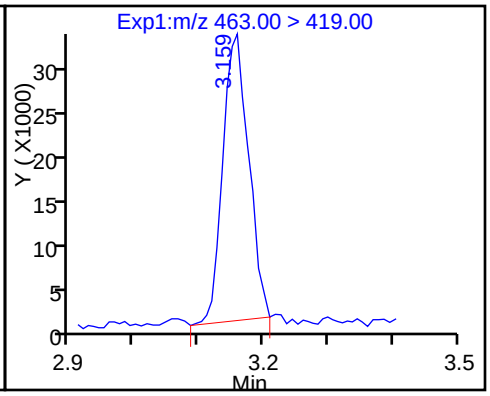
D 17 13C4 PFOS



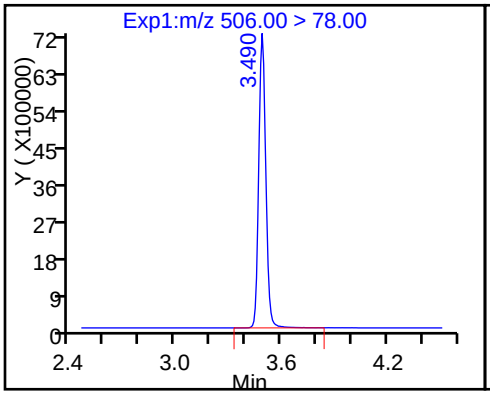
D 19 13C5 PFNA



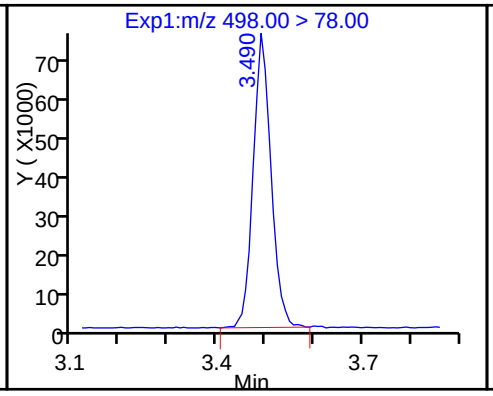
20 Perfluorononanoic acid



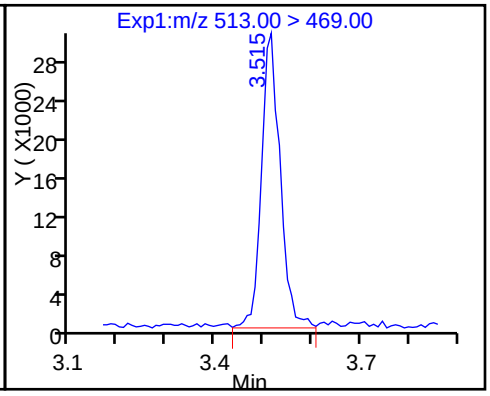
D 21 13C8 FOSA



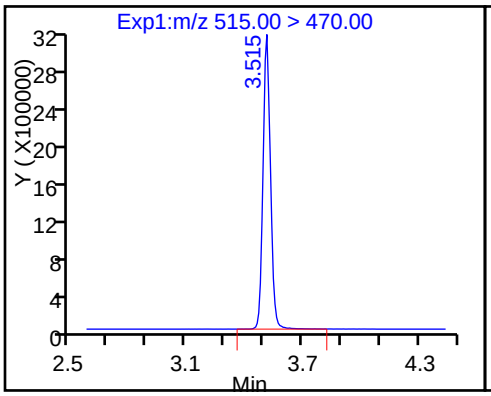
22 Perfluorooctane Sulfonamide



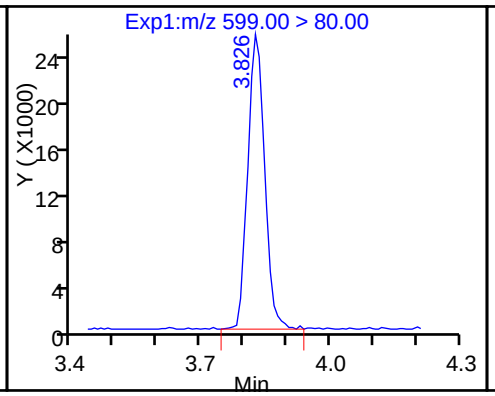
24 Perfluorodecanoic acid



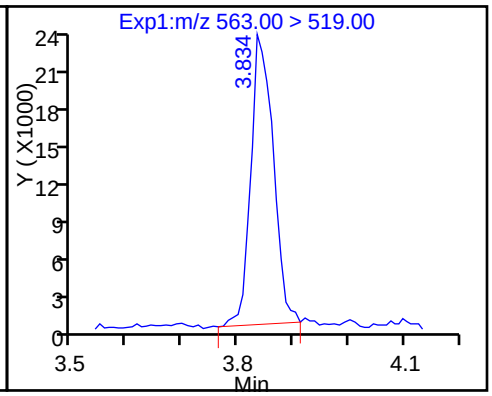
D 23 13C2 PFDA



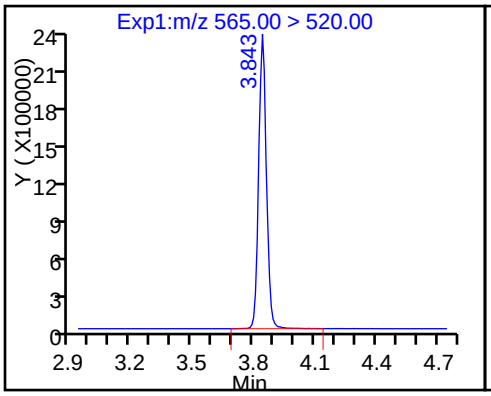
26 Perfluorodecane Sulfonic acid



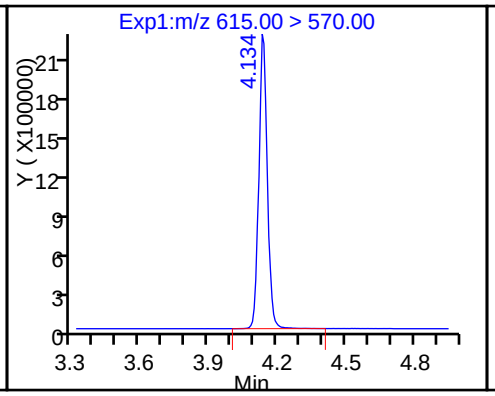
28 Perfluoroundecanoic acid



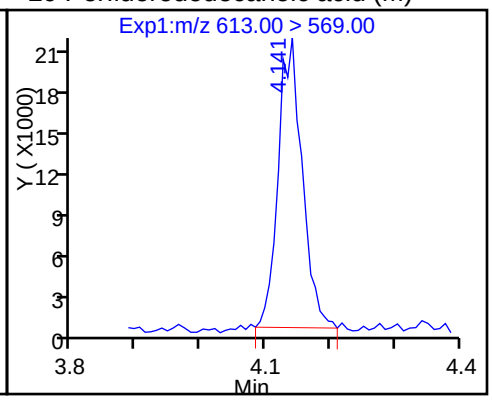
D 27 13C2 PFUnA



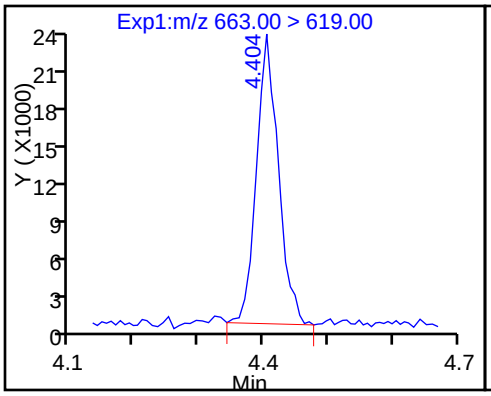
D 30 13C2 PFDoA



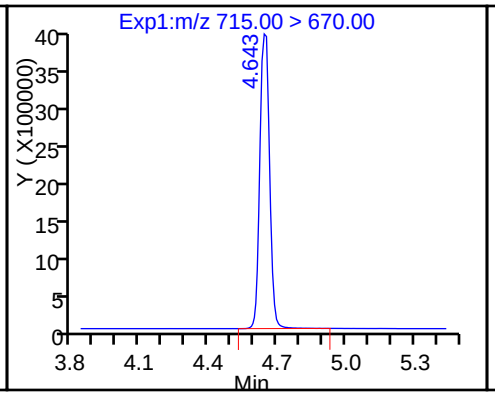
29 Perfluorododecanoic acid (M)



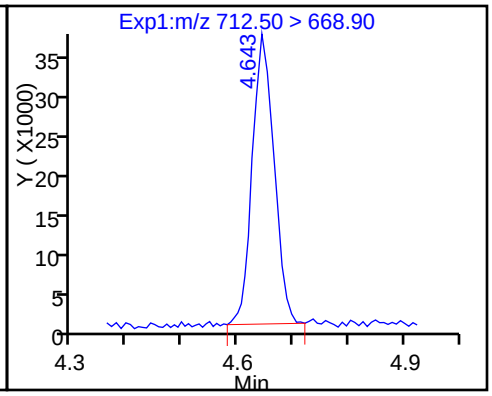
31 Perfluorotridecanoic acid



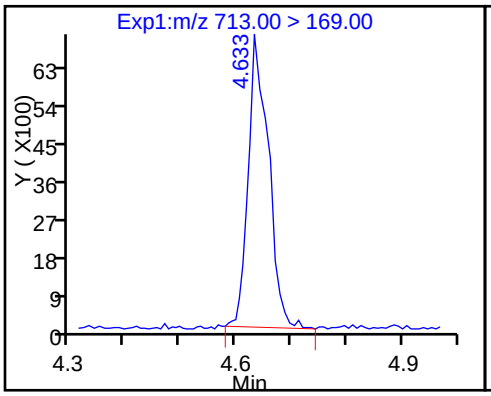
D 32 13C2-PFTeDA



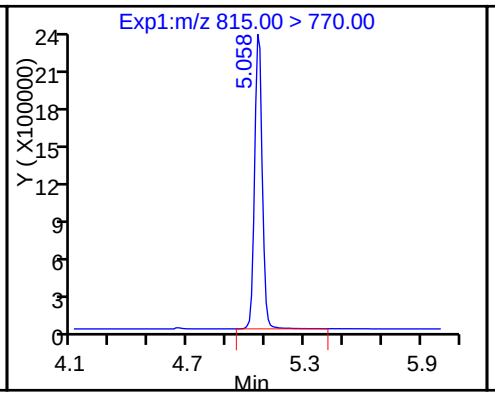
33 Perfluorotetradecanoic acid



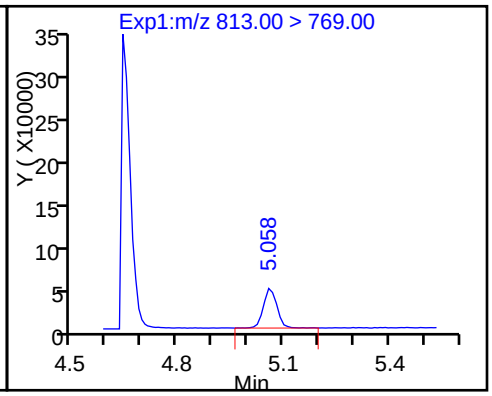
33 Perfluorotetradecanoic acid



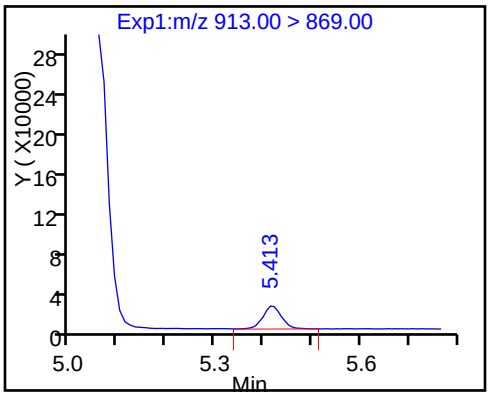
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

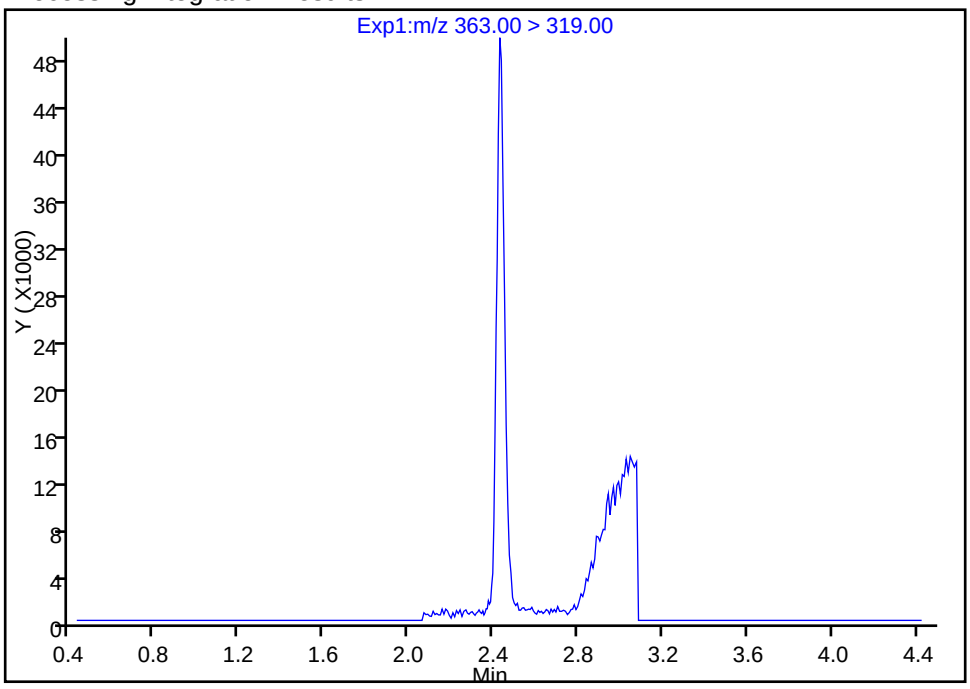
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d				
Injection Date:	15-Dec-2016 12:29:18	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	A8-PC\A8	ALS Bottle#:	37	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

12 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

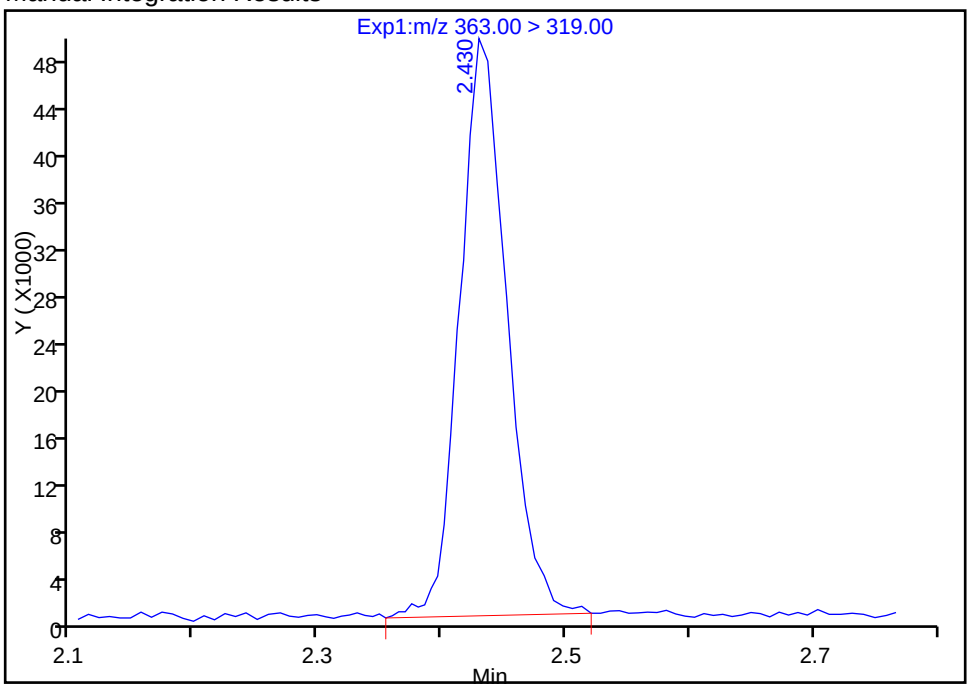
Not Detected
Expected RT: 2.43

Processing Integration Results



Manual Integration Results

RT: 2.43
Area: 129104
Amount: 0.538766
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

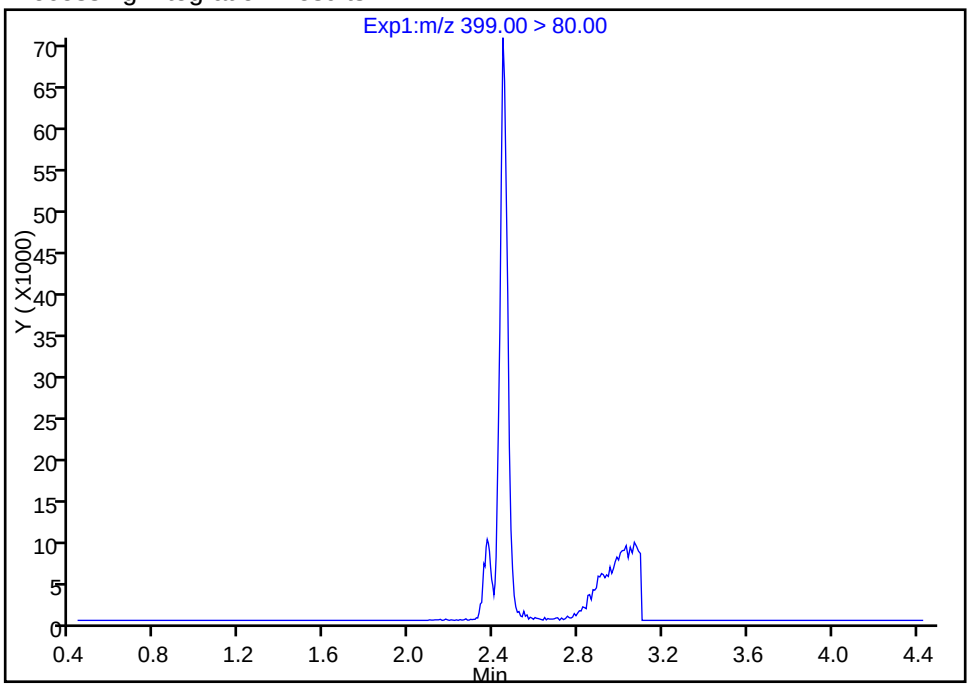
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

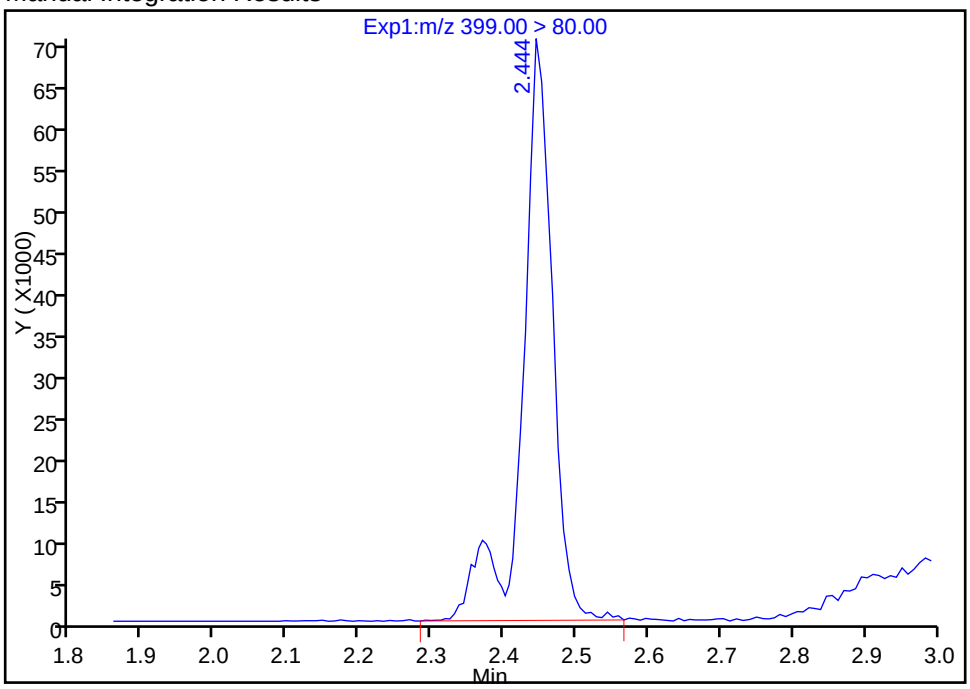
Not Detected
Expected RT: 2.43

Processing Integration Results



RT: 2.44
Area: 204063
Amount: 0.579783
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

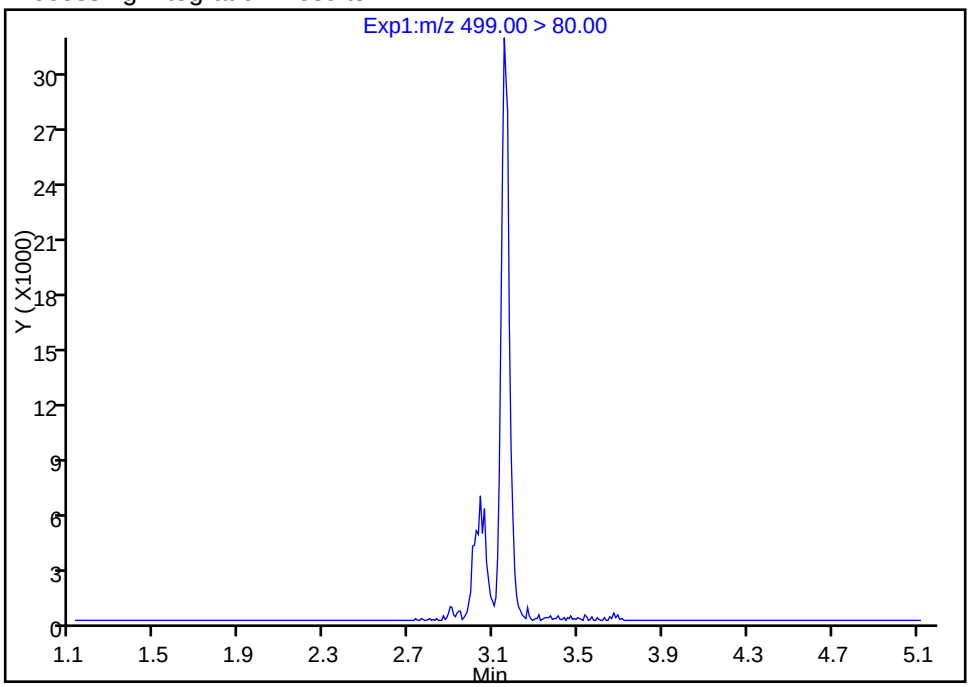
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

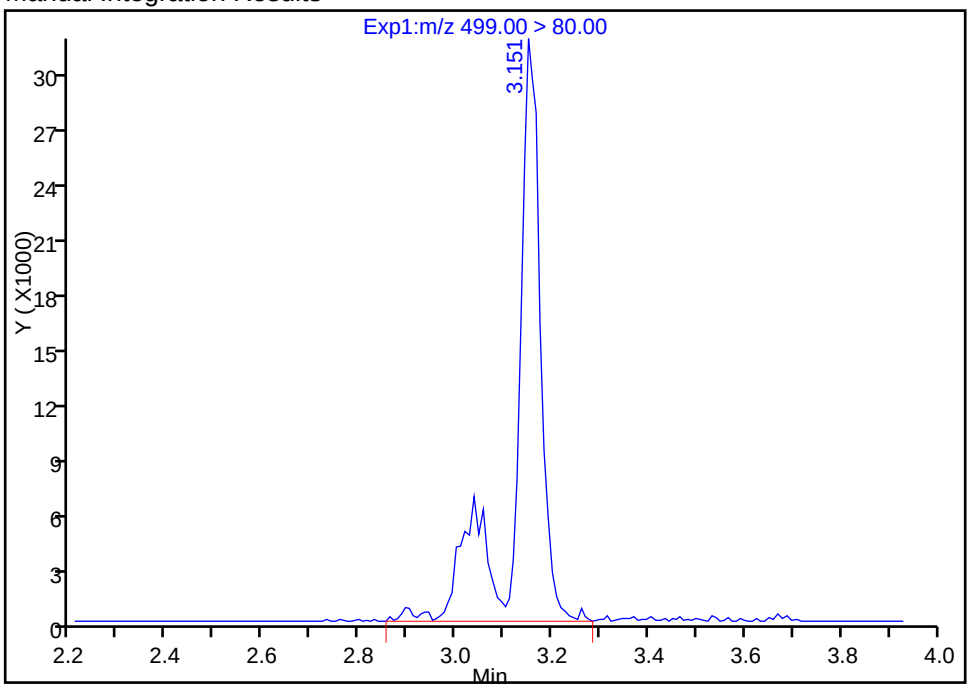
Not Detected
Expected RT: 3.12

Processing Integration Results



Manual Integration Results

RT: 3.15
Area: 116569
Amount: 0.456423
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

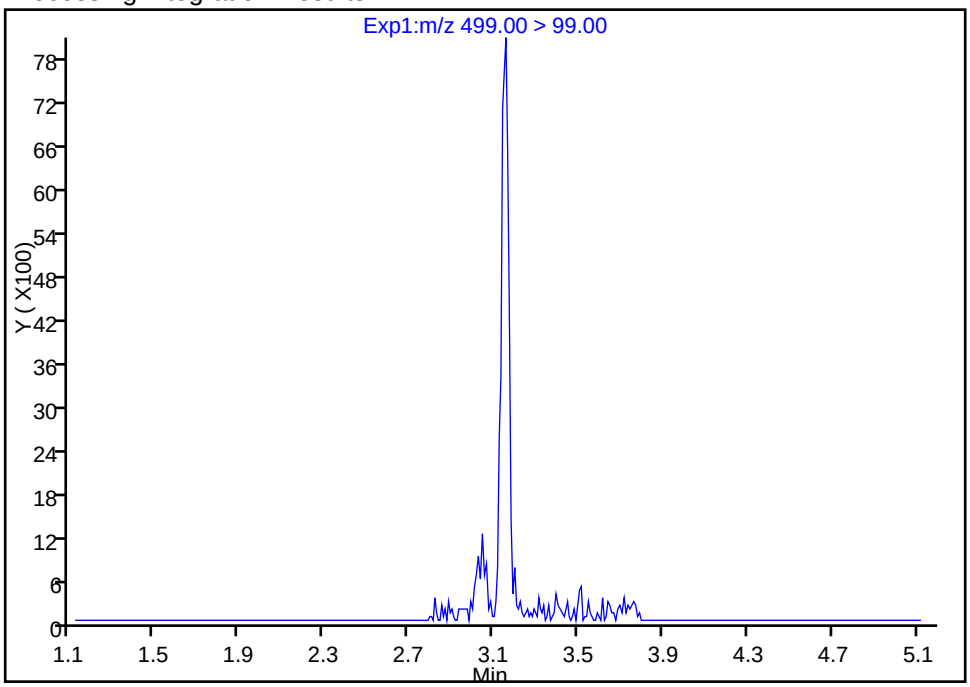
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

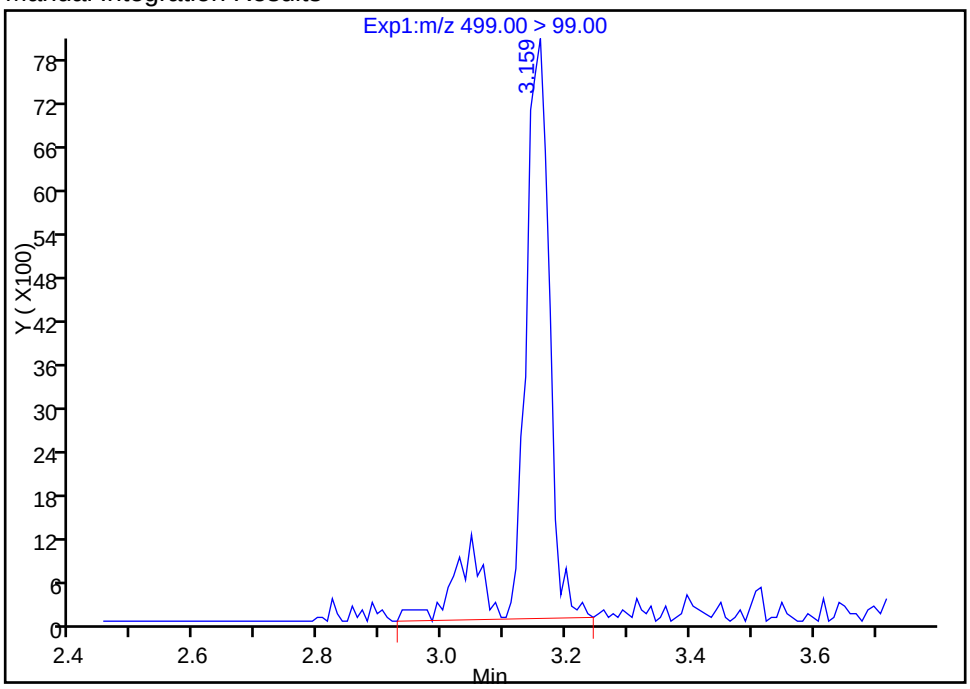
Processing Integration Results

Not Detected
Expected RT: 3.12



Manual Integration Results

RT: 3.16
Area: 24244
Amount: 0.456423
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento

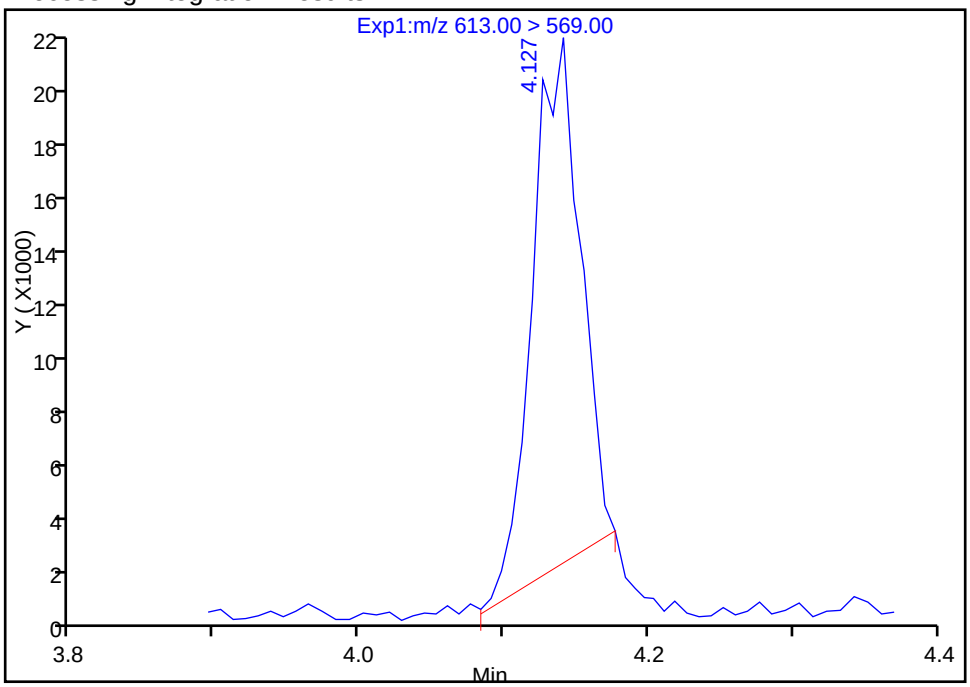
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

29 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 1

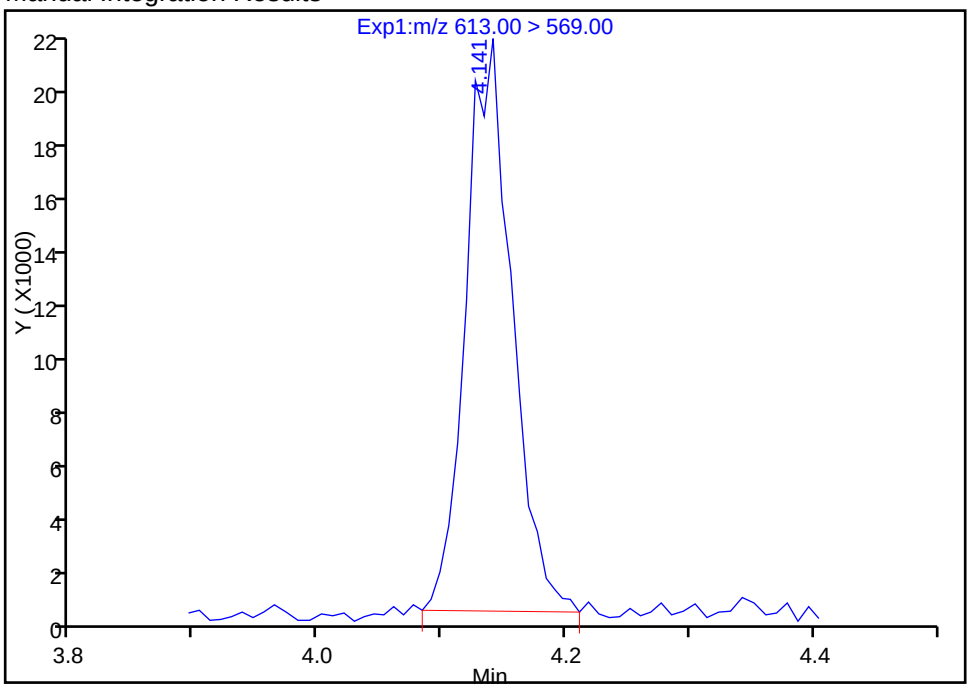
Processing Integration Results

RT: 4.13
Area: 43489
Amount: 0.419548
Amount Units: ng/ml



Manual Integration Results

RT: 4.14
Area: 52807
Amount: 0.494620
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 15-Dec-2016 12:36:48 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:15 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:50:02

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	1.530	1.534	-0.004		18201393	52.3		105	1000291	
1 Perfluorobutyric acid										
212.90 > 169.00	1.530	1.535	-0.005	1.000	310647	1.00		100.0	2583	
D 4 13C5-PFPeA										
267.90 > 223.00	1.805	1.810	-0.005		14067714	52.9		106	1093447	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.805	1.810	-0.005	1.000	287573	1.04		104	2935	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.844	1.848	-0.004	1.000	424227	0.8800		99.5		
298.90 > 99.00	1.844	1.848	-0.004	1.000	171864		2.47(0.00-0.00)	99.5		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.092	2.096	-0.004	1.000	239458	1.01		101	6854	
D 6 13C2 PFHxA										
315.00 > 270.00	2.092	2.097	-0.005		12814780	52.3		105	582538	
D 11 13C4-PFHpA										
367.00 > 322.00	2.423	2.426	-0.003		12248222	54.1		108	431068	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.430	2.428	0.002	1.000	237734	0.99		99.1	1884	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.445	2.431	0.014	1.000	348475	0.99		109		
D 10 18O2 PFHxS										
403.00 > 84.00	2.445	2.446	-0.001		16093048	49.2		104	960828	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.783	-0.002		12627691	54.8		110	657205	

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	2.781	2.783	-0.002	1.000	254861	1.01		101	2003	
413.00 > 169.00	2.781	2.783	-0.002	1.000	159259		1.60(0.90-1.10)	101	7007	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.789	2.790	-0.001	1.000	265783	0.9254		97.2		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.149	3.118	0.031	1.000	220370	0.8502		91.6	15877	M
499.00 > 99.00	3.157	3.118	0.039	1.003	52990		4.16(0.90-1.10)	91.6	5530	M
D 17 13C4 PFOS										
503.00 > 80.00	3.149	3.151	-0.002		12459383	50.1		105	1105467	
D 19 13C5 PFNA										
468.00 > 423.00	3.149	3.153	-0.004		9537045	53.7		107	472742	
20 Perfluorononanoic acid										
463.00 > 419.00	3.157	3.155	0.002	1.000	188341	1.04		104	2906	
D 21 13C8 FOSA										
506.00 > 78.00	3.489	3.488	0.001		20238792	52.7		105	766772	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.489	3.491	-0.002	1.000	381363	1.01		101	46576	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.506	3.510	-0.004	1.000	155537	0.9716		97.2	5243	
D 23 13C2 PFDA										
515.00 > 470.00	3.514	3.513	0.001		8480447	53.9		108	439565	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.824	3.822	0.002	1.000	139829	0.9186		95.3		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.833	3.839	-0.006	1.000	119189	1.00		100	2937	
D 27 13C2 PFUnA										
565.00 > 520.00	3.842	3.842	0.0		6219248	53.0		106	280274	
D 30 13C2 PFDoA										
615.00 > 570.00	4.133	4.132	0.001		5822114	52.5		105	270055	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.133	4.136	-0.003	1.000	103481	0.9681		96.8	2745	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.396	4.400	-0.004	1.000	109461	1.04		104	2155	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.633	4.641	-0.008		11885446	52.3		105	710542	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.643	4.642	0.001	1.000	187123	1.01		101	2896	
713.00 > 169.00	4.633	4.642	-0.009	0.998	31916		5.86(0.00-0.00)	101	12057	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.047	5.057	-0.010		6699329	53.8		108	126940	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	173261	1.01		101	135	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	114997	0.9585		95.8	91.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:16 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d

Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N

Lims ID: IC L2

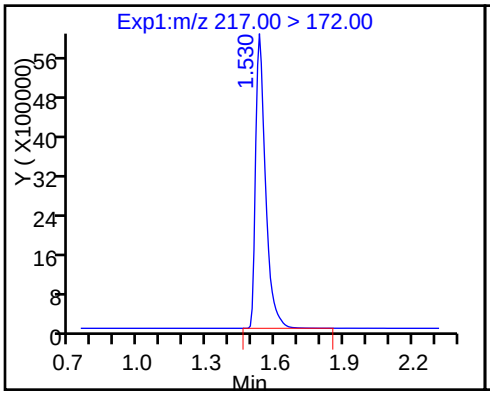
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

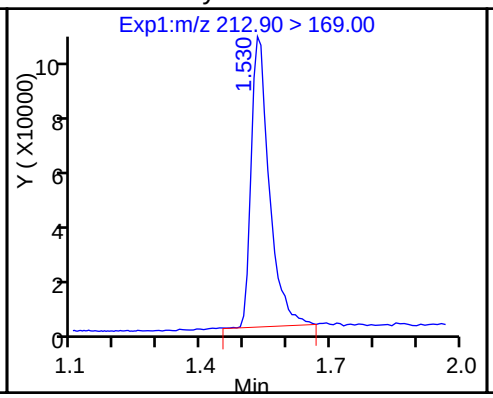
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

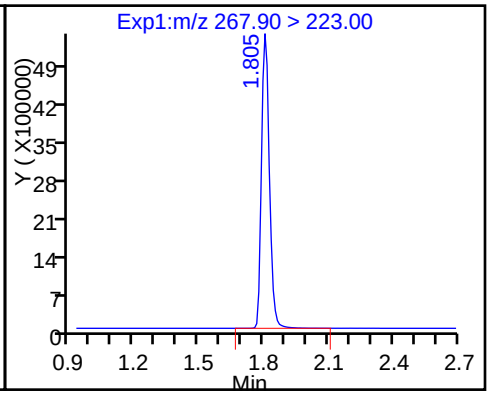
D 2 13C4 PFBA



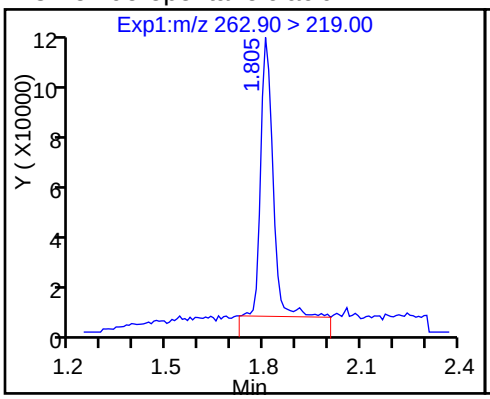
1 Perfluorobutyric acid



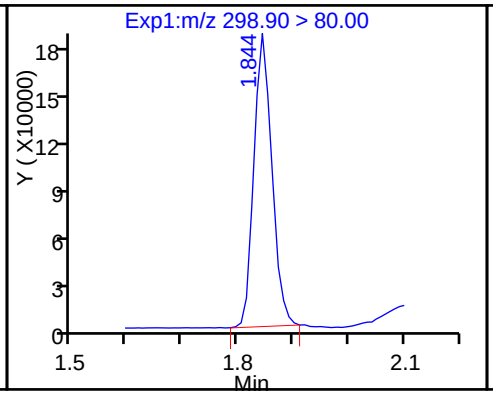
D 4 13C5-PFPeA



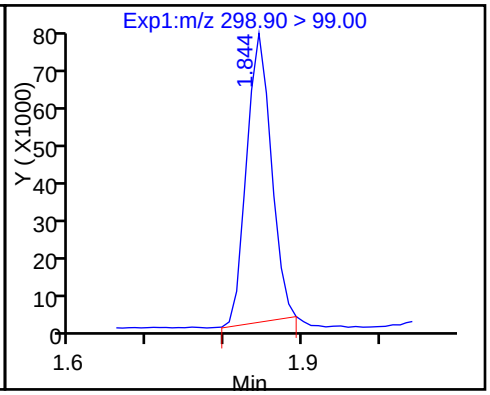
3 Perfluoropentanoic acid



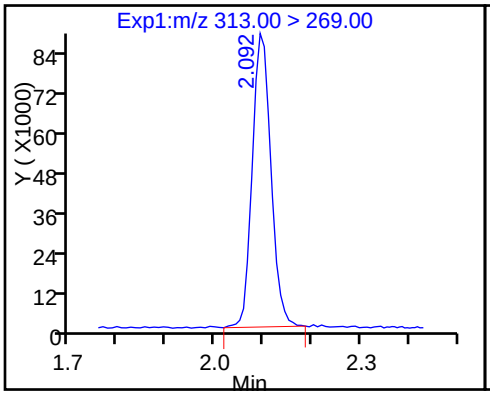
5 Perfluorobutanesulfonic acid



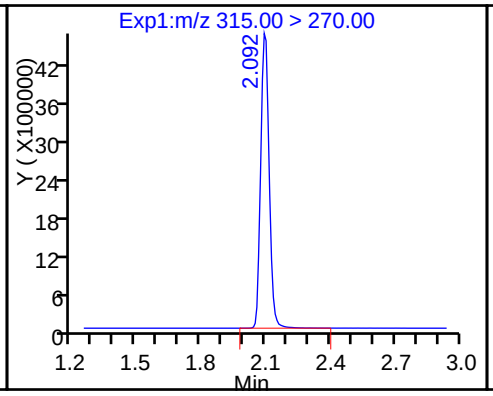
5 Perfluorobutanesulfonic acid



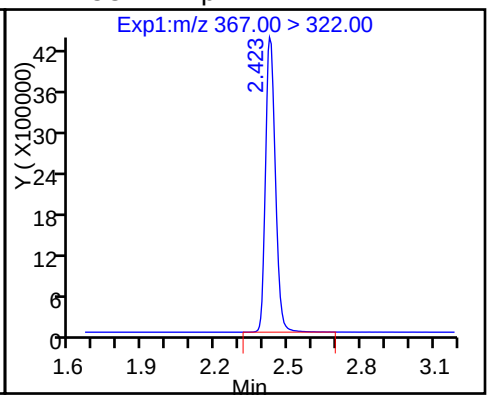
7 Perfluorohexanoic acid



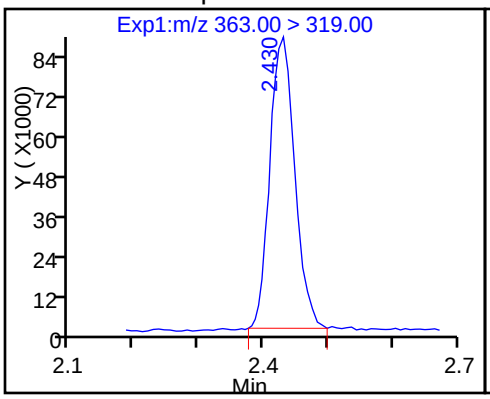
D 6 13C2 PFHxA



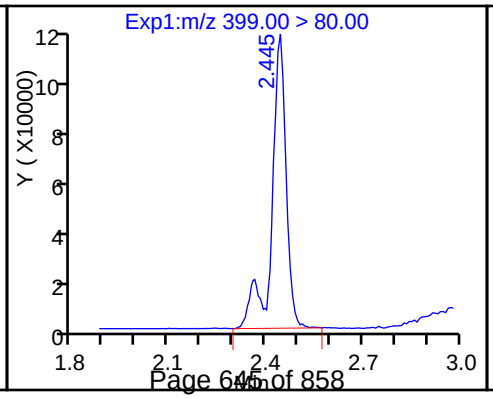
D 11 13C4-PFHpA



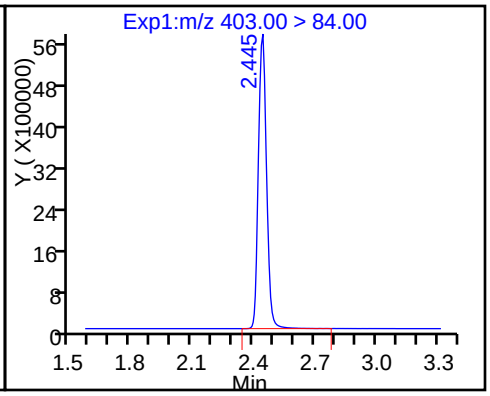
12 Perfluoroheptanoic acid



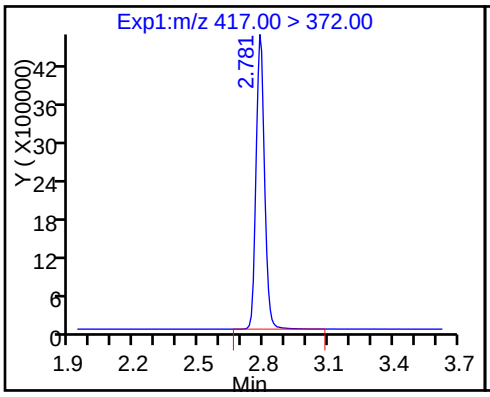
9 Perfluorohexanesulfonic acid



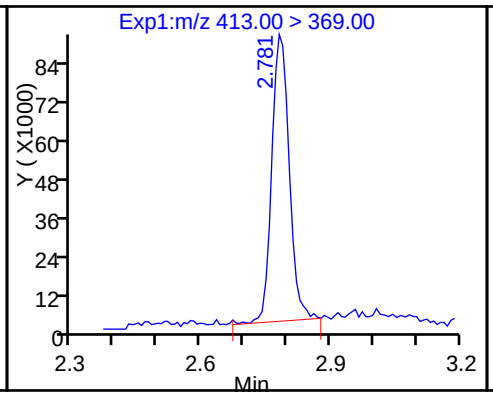
D 10 18O2 PFHxS



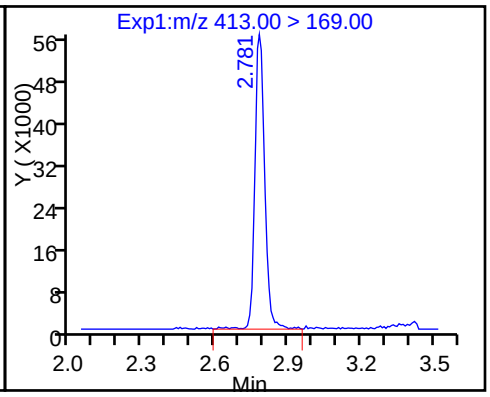
D 14 13C4 PFOA



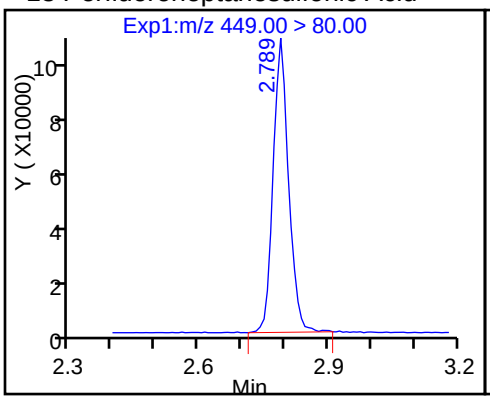
15 Perfluorooctanoic acid



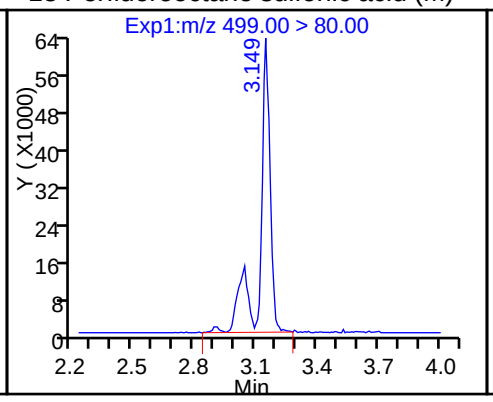
15 Perfluorooctanoic acid



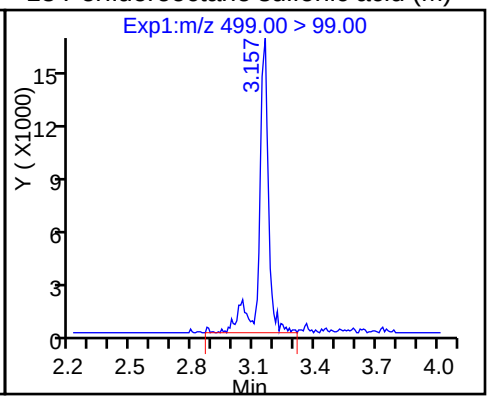
13 Perfluoroheptanesulfonic Acid



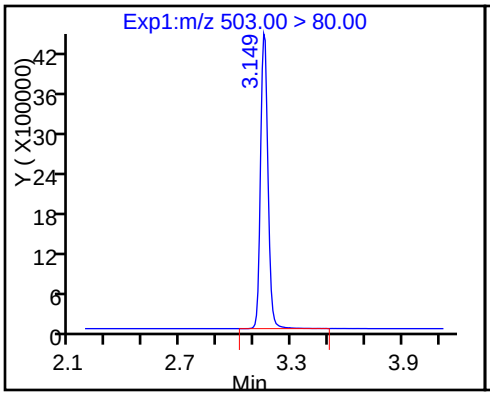
18 Perfluorooctane sulfonic acid (M)



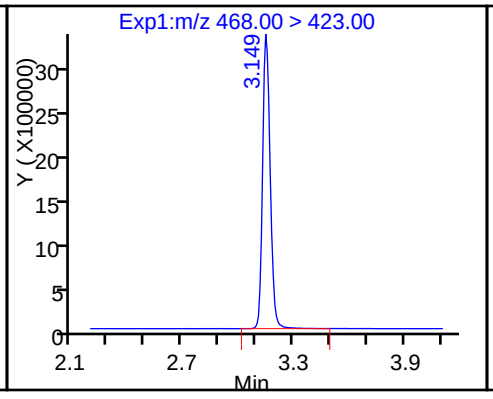
18 Perfluorooctane sulfonic acid (M)



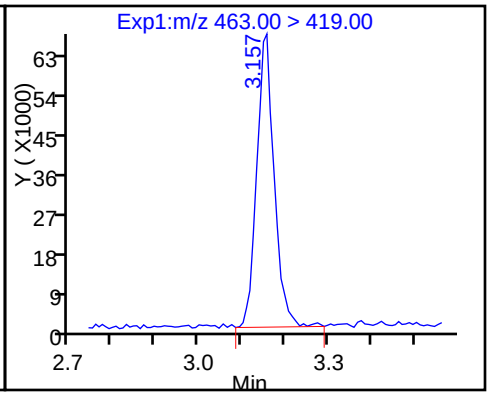
D 17 13C4 PFOS



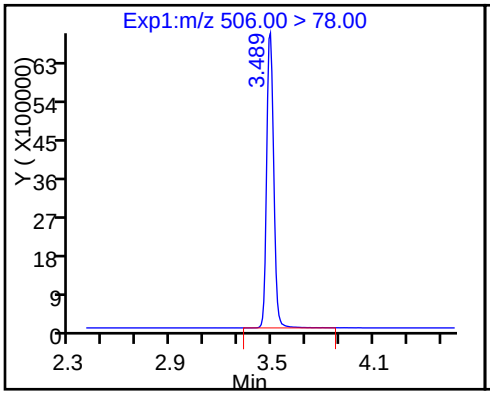
D 19 13C5 PFNA



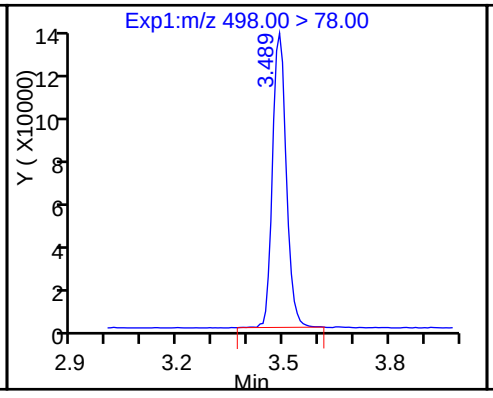
20 Perfluorononanoic acid



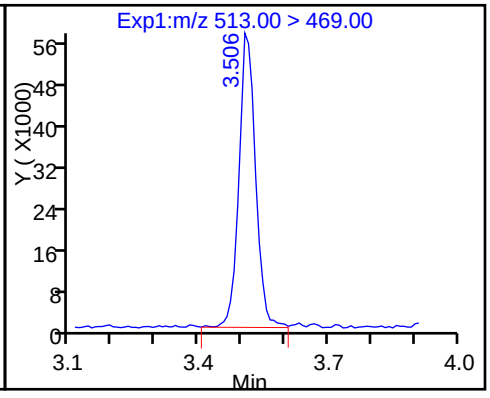
D 21 13C8 FOSA



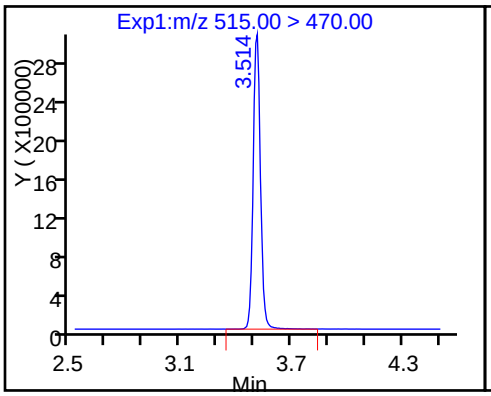
22 Perfluorooctane Sulfonamide



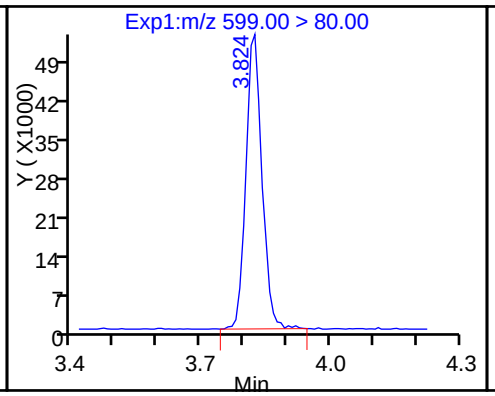
24 Perfluorodecanoic acid



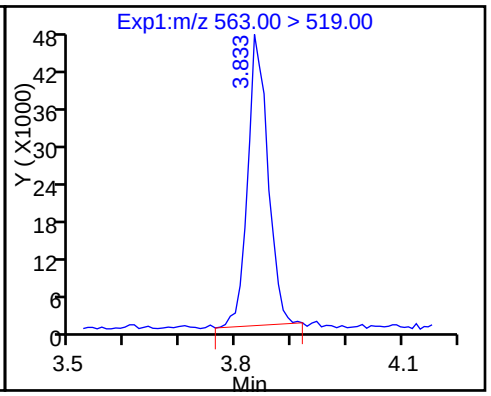
D 23 13C2 PFDA



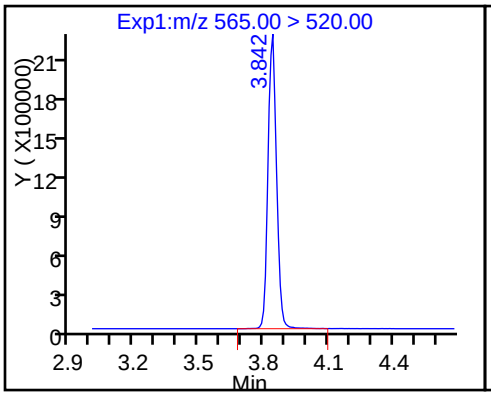
26 Perfluorodecane Sulfonic acid



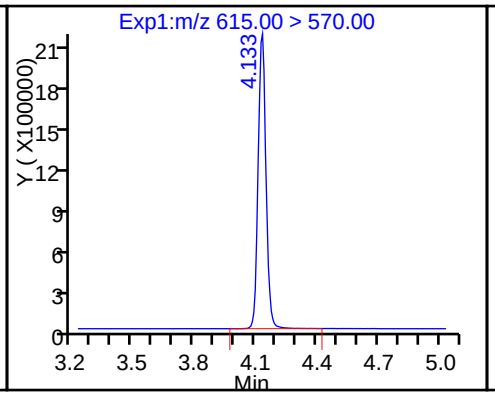
28 Perfluoroundecanoic acid



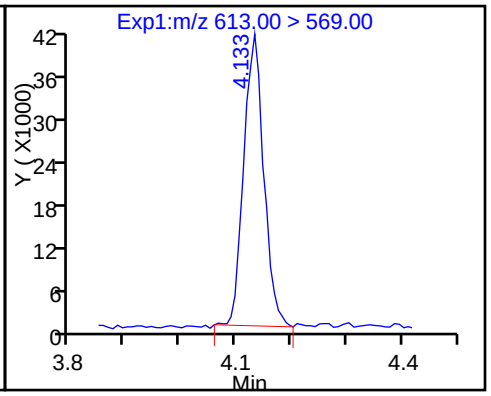
D 27 13C2 PFUnA



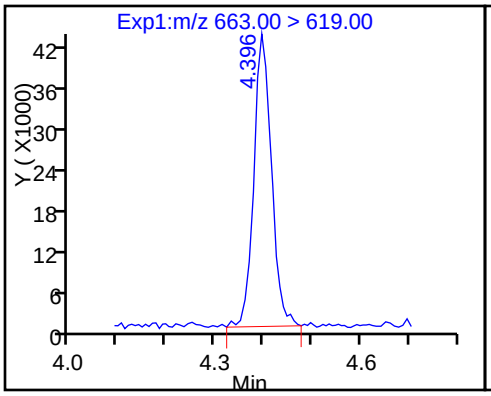
D 30 13C2 PFDoA



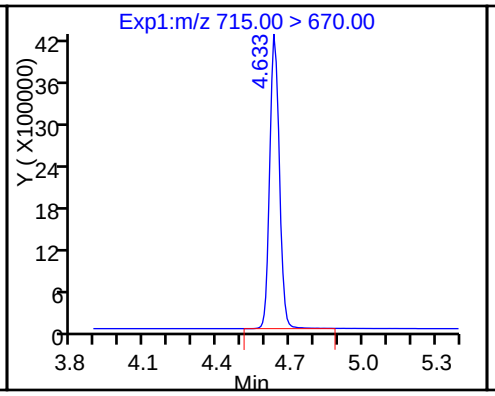
29 Perfluorododecanoic acid



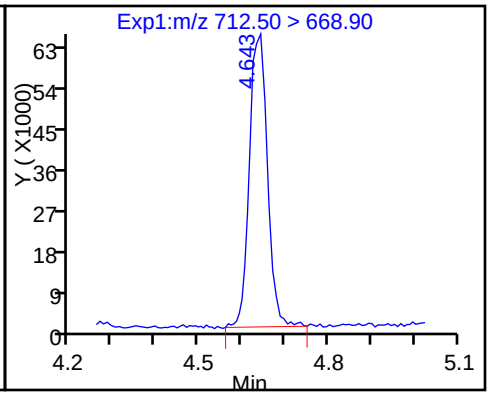
31 Perfluorotridecanoic acid



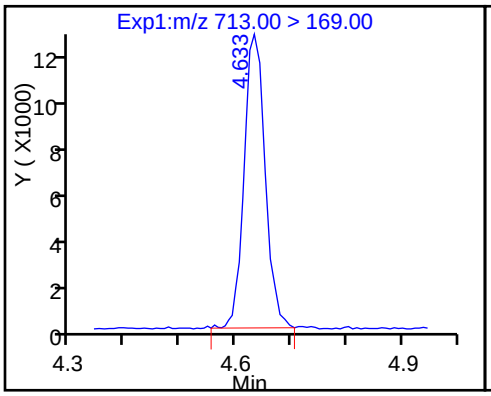
D 32 13C2-PFTeDA



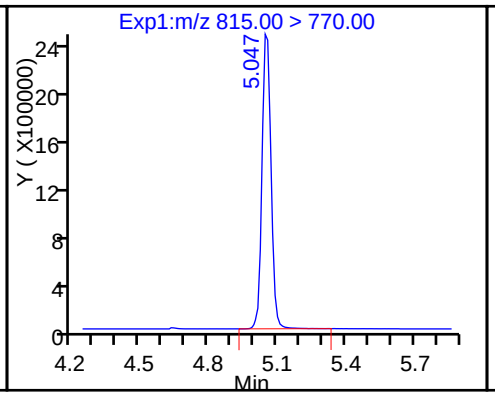
33 Perfluorotetradecanoic acid



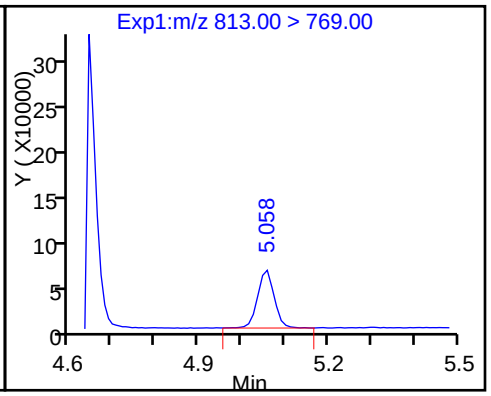
33 Perfluorotetradecanoic acid



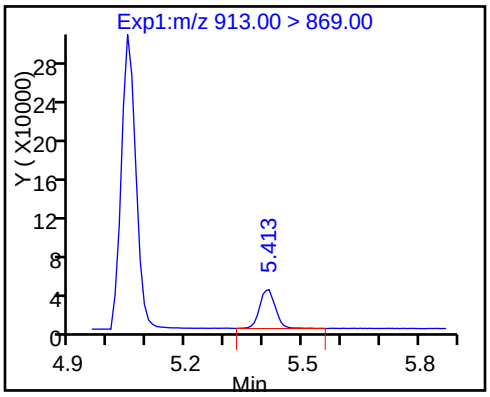
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

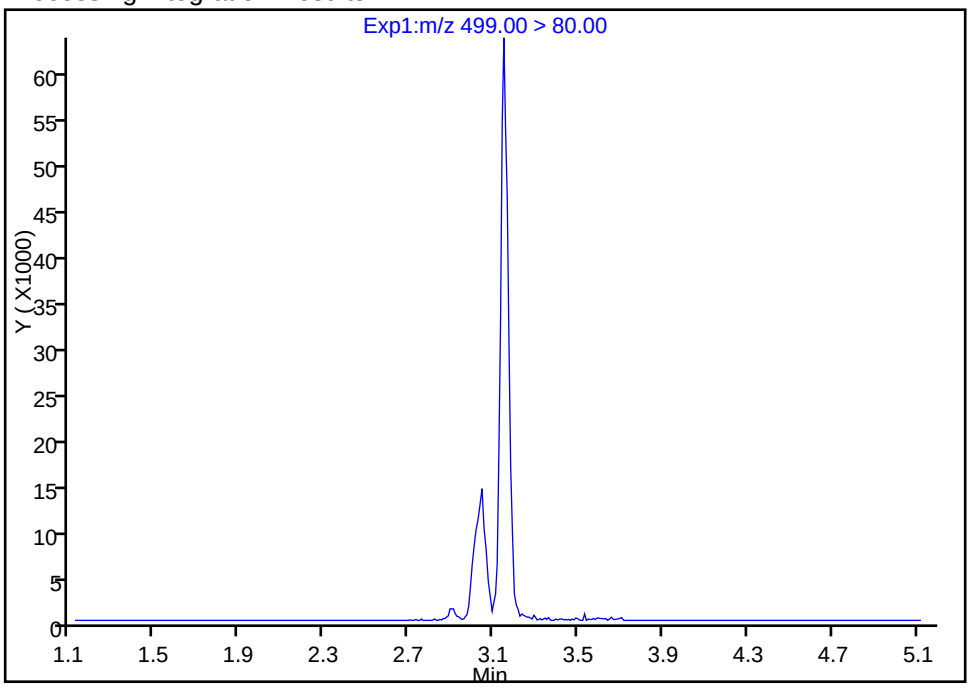
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

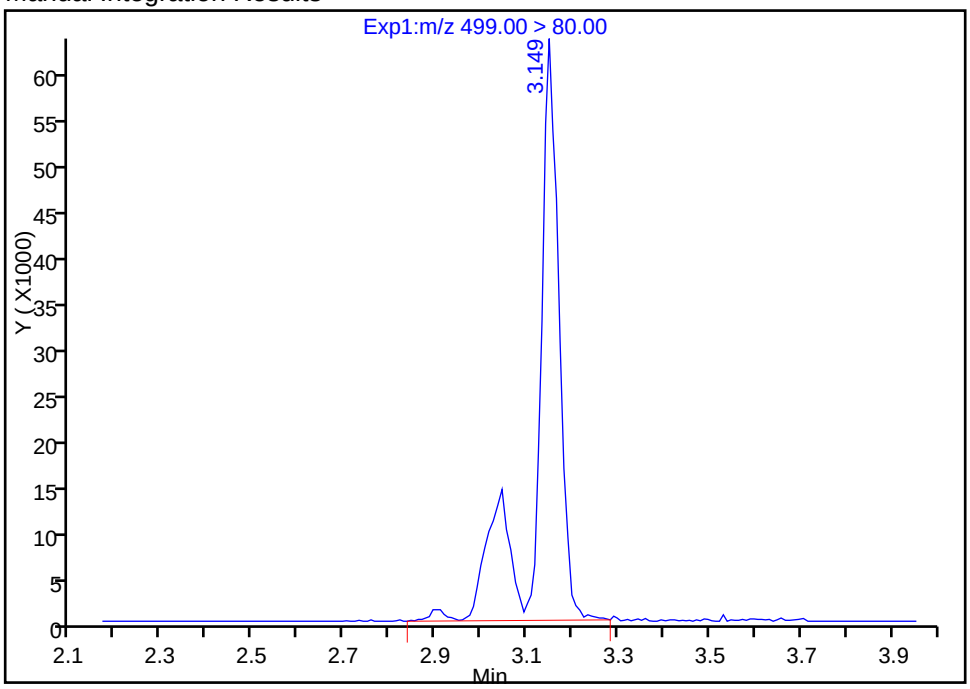
Not Detected
Expected RT: 3.12

Processing Integration Results



Manual Integration Results

RT: 3.15
Area: 220370
Amount: 0.850158
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:50:02
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

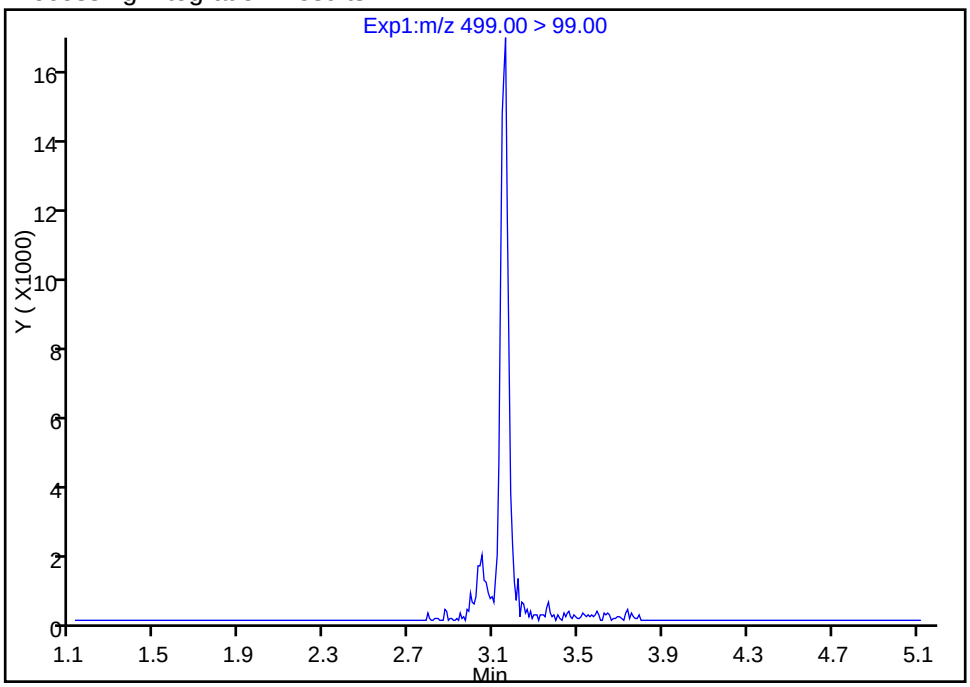
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

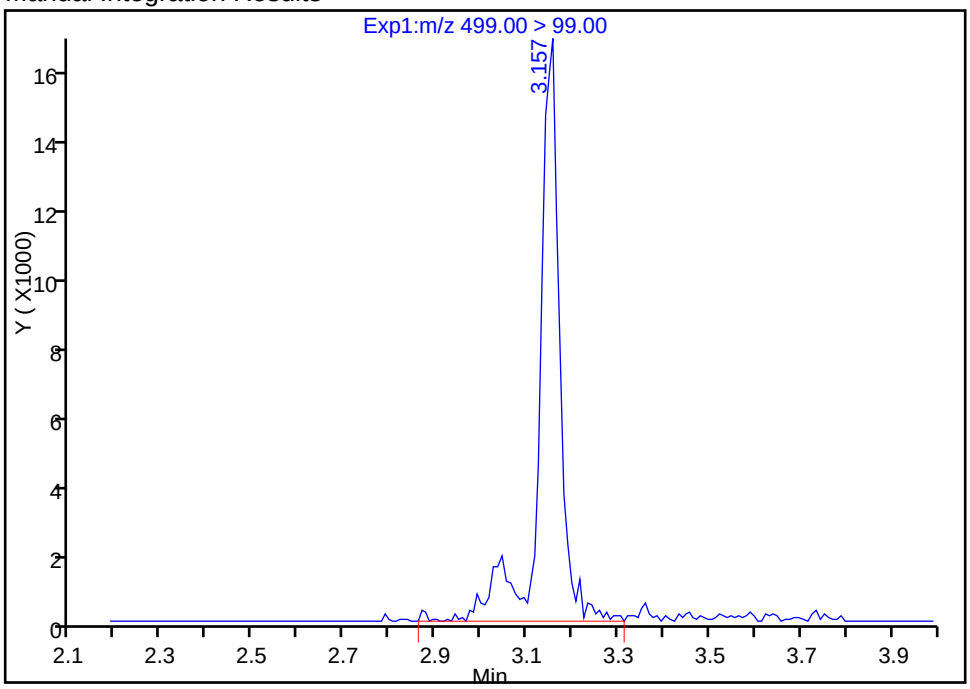
Processing Integration Results

Not Detected
Expected RT: 3.12



Manual Integration Results

RT: 3.16
Area: 52990
Amount: 0.850158
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:50:02
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 15-Dec-2016 12:44:16 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:18 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:50:22

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	1.534	1.534	0.0		18037108	51.9		104	828248	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.535	-0.001	1.000	1550440	5.03		101	13427	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		14063070	52.9		106	1078697	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	1358239	4.89		97.9	15178	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.848	0.001	1.000	2211602	4.55		103		
298.90 > 99.00	1.849	1.848	0.001	1.000	918055		2.41(0.00-0.00)	103		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.096	0.001	1.000	1183286	5.01		100	39266	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.097	0.0		12709919	51.9		104	753338	
D 11 13C4-PFHpA										
367.00 > 322.00	2.425	2.426	-0.001		12260528	54.2		108	1467079	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.432	2.428	0.004	1.000	1175112	4.90		97.9	8914	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.364	2.431	-0.067	1.000	1543002	4.37		96.0		
D 10 18O2 PFHxS										
403.00 > 84.00	2.447	2.446	0.001		16222736	49.6		105	651458	
D 14 13C4 PFOA										
417.00 > 372.00	2.783	2.783	0.0		12635065	54.8		110	746410	

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	2.783	2.783	0.0	1.000	1239541	4.89		97.8	9812	
413.00 > 169.00	2.783	2.783	0.0	1.000	731249		1.70(0.90-1.10)	97.8	28264	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.792	2.790	0.002	1.000	1351160	4.69		98.6		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.153	3.118	0.035	1.000	1150410	4.43		95.5	65030	
499.00 > 99.00	3.153	3.118	0.035	1.000	246751		4.66(0.90-1.10)	95.5	15530	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.151	0.002		12484772	50.2		105	473035	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.153	0.0		9777609	55.0		110	653324	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.155	-0.002	1.000	902512	4.85		97.0	13825	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.488	-0.004		20034933	52.2		104	309657	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.492	3.491	0.001	1.000	1989314	5.32		106	140153	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.510	-0.001	1.000	771905	4.97		99.3	27905	
D 23 13C2 PFDA										
515.00 > 470.00	3.509	3.513	-0.004		8234678	52.3		105	259288	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.819	3.822	-0.003	1.000	712852	4.67		97.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.837	3.839	-0.002	1.000	549708	4.59		91.8	14816	
D 27 13C2 PFUnA										
565.00 > 520.00	3.845	3.842	0.003		6262617	53.4		107	379922	
D 30 13C2 PFDoA										
615.00 > 570.00	4.129	4.132	-0.003		5779875	52.1		104	227122	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.136	4.136	0.0	1.000	506369	4.77		95.4	11299	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	525090	5.01		100	10475	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.645	4.641	0.004		12248242	53.9		108	1049274	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.645	4.642	0.003	1.000	900575	4.92		98.3	12522	
713.00 > 169.00	4.635	4.642	-0.007	0.998	149199		6.04(0.00-0.00)	98.3	58819	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6542972	52.5		105	140605	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	599529	4.89		97.7	502	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.414	0.0	1.000	583761	4.90		98.0	536	

Reagents:

LCPFC-L3_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:19 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_006.d

Injection Date: 15-Dec-2016 12:44:16 Instrument ID: A8_N

Lims ID: IC L3

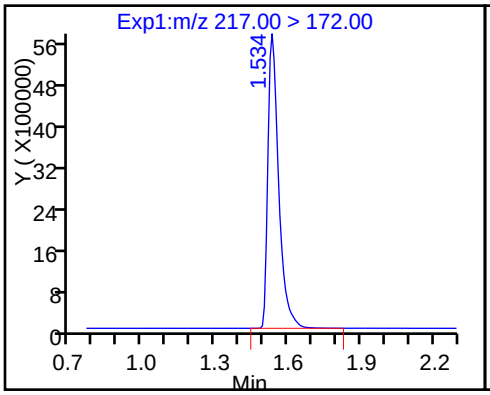
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

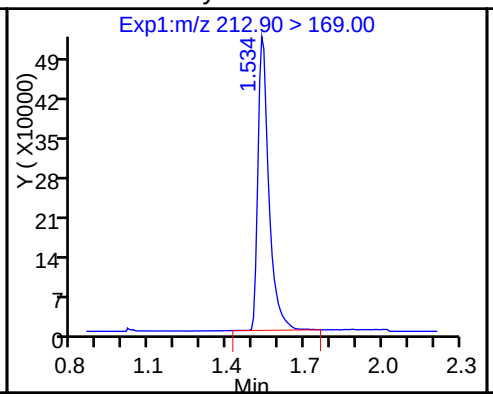
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

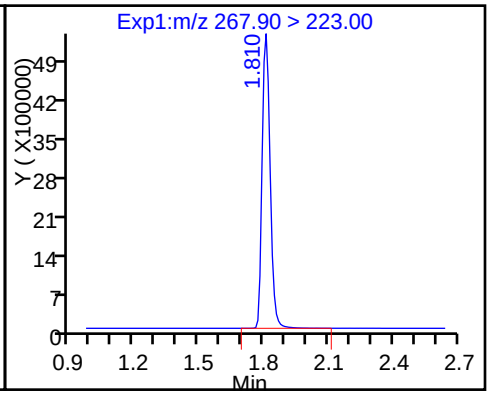
D 2 13C4 PFBA



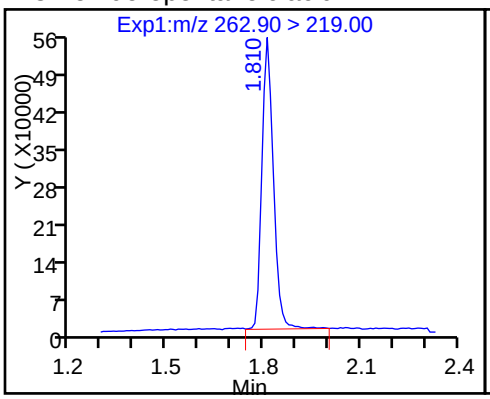
1 Perfluorobutyric acid



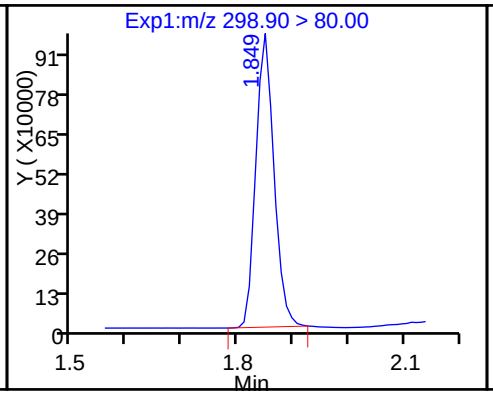
D 4 13C5-PFPeA



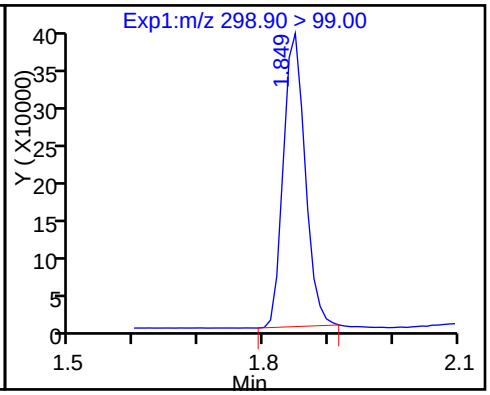
3 Perfluoropentanoic acid



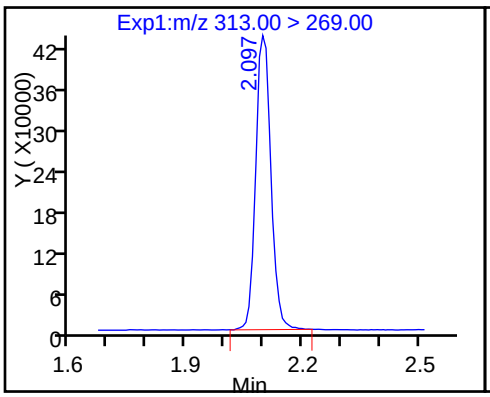
5 Perfluorobutanesulfonic acid



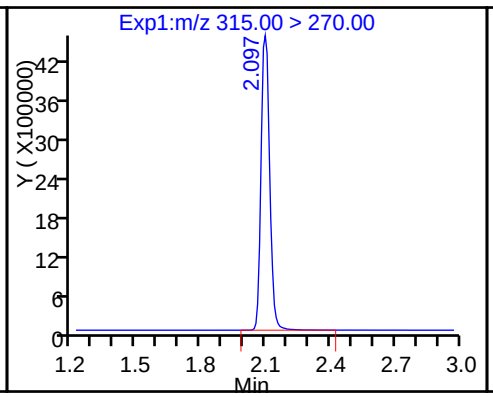
5 Perfluorobutanesulfonic acid



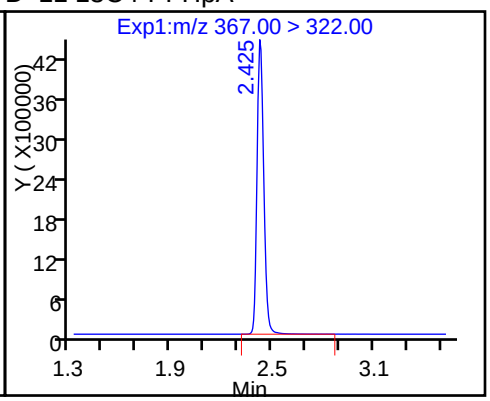
7 Perfluorohexanoic acid



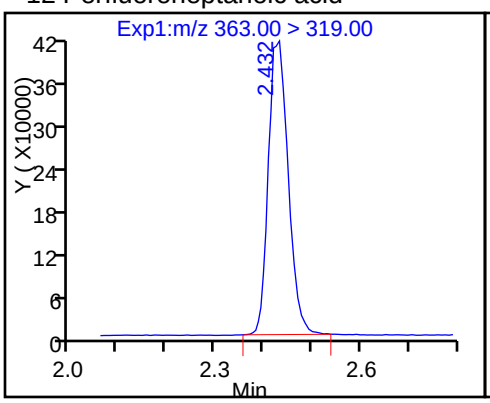
D 6 13C2 PFHxA



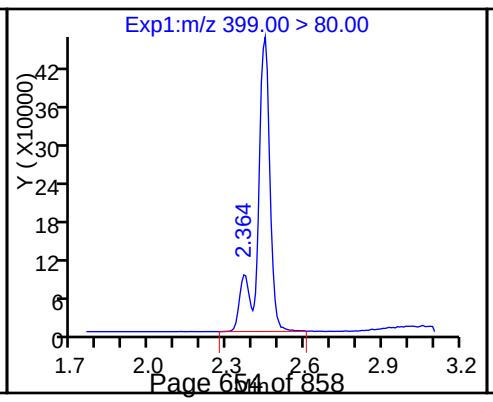
D 11 13C4-PFHpA



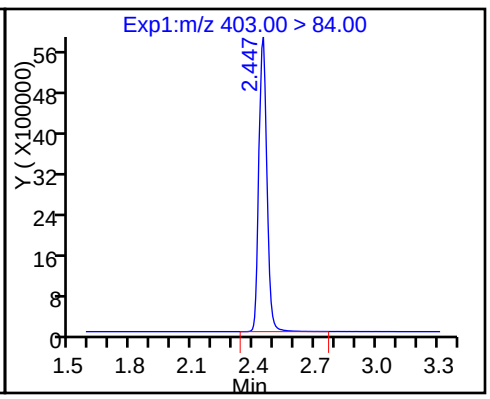
12 Perfluoroheptanoic acid



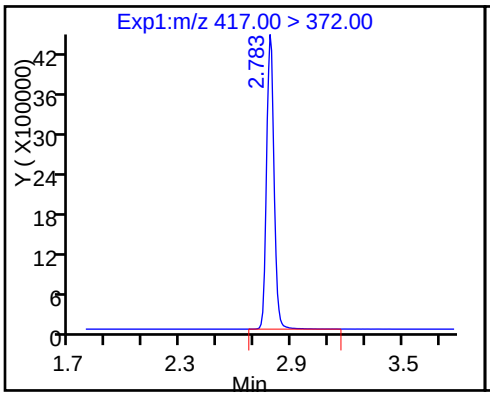
9 Perfluorohexanesulfonic acid



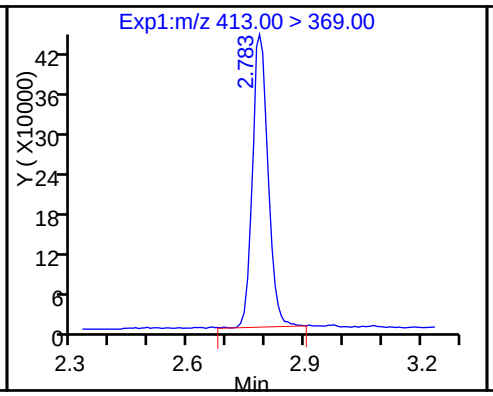
D 10 18O2 PFHxS



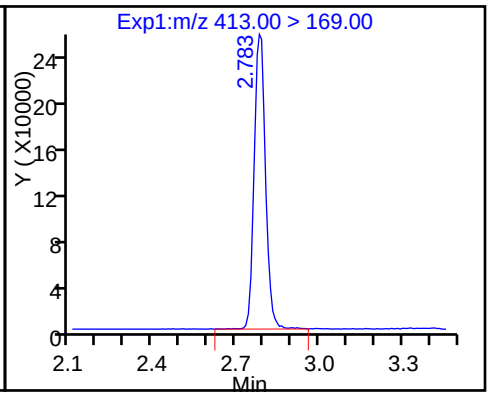
D 14 13C4 PFOA



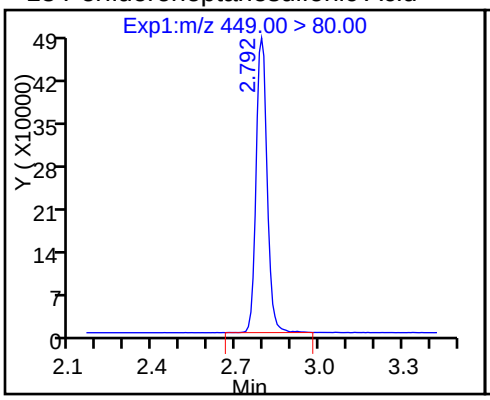
15 Perfluorooctanoic acid



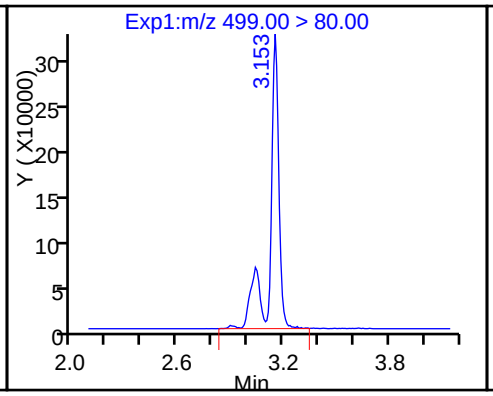
15 Perfluorooctanoic acid



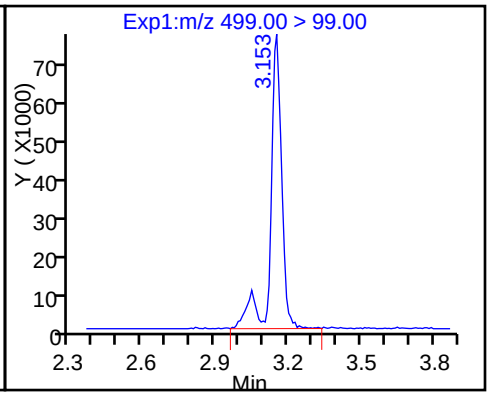
13 Perfluoroheptanesulfonic Acid



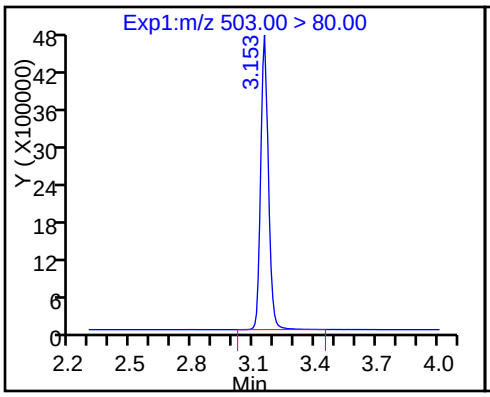
18 Perfluorooctane sulfonic acid



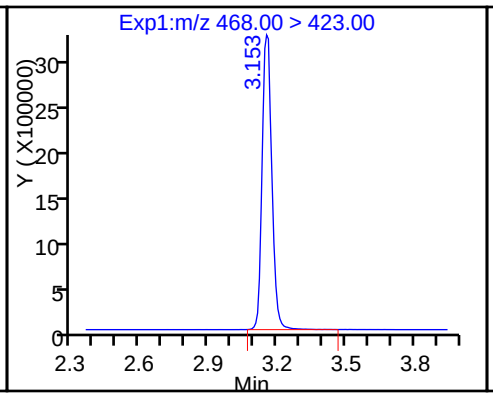
18 Perfluorooctane sulfonic acid



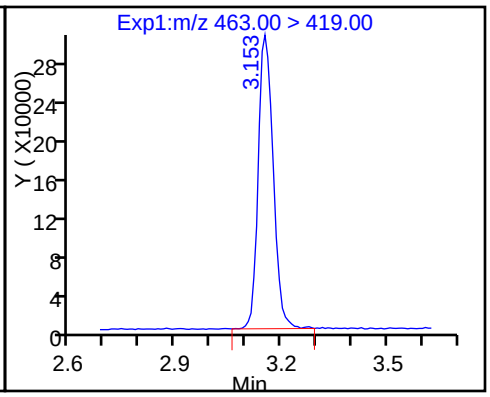
D 17 13C4 PFOS



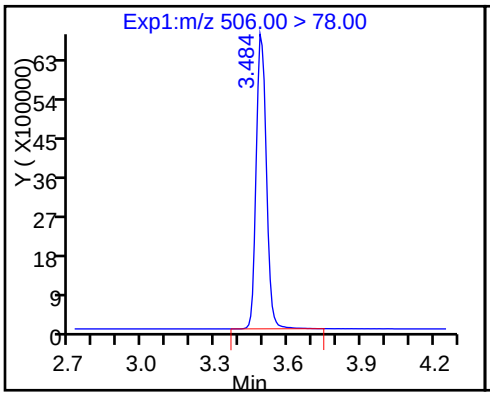
D 19 13C5 PFNA



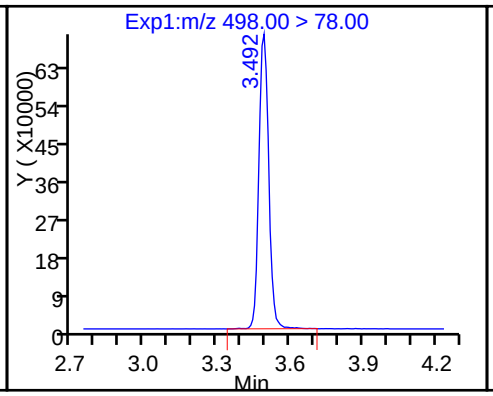
20 Perfluorononanoic acid



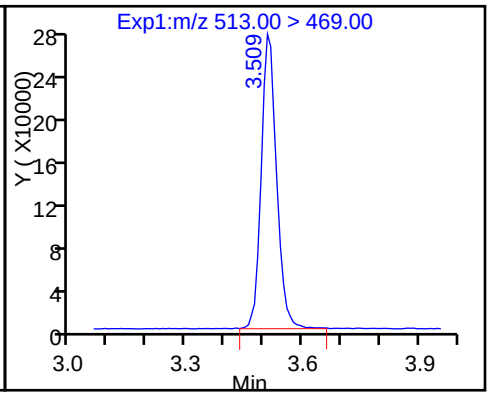
D 21 13C8 FOSA



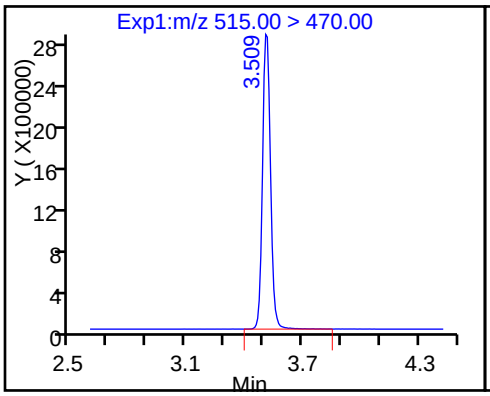
22 Perfluorooctane Sulfonamide



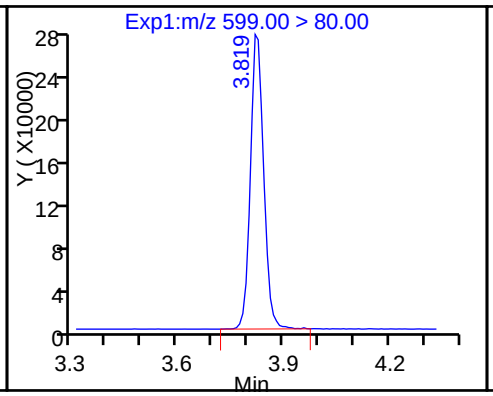
24 Perfluorodecanoic acid



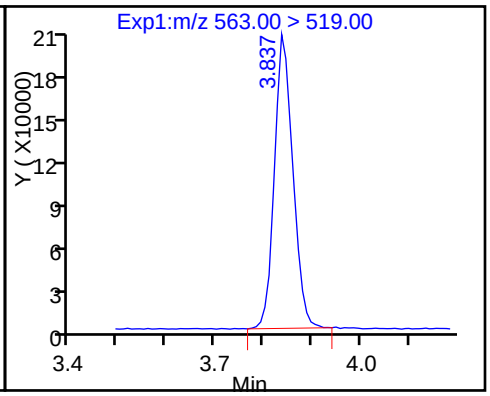
D 23 13C2 PFDA



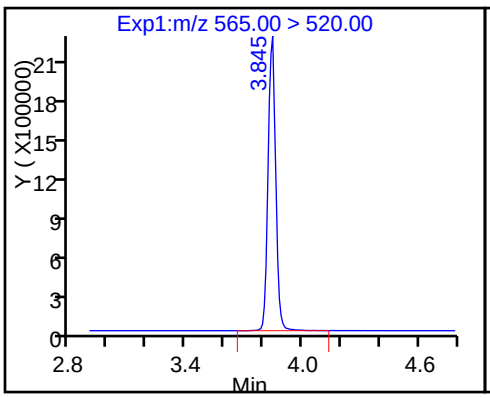
26 Perfluorodecane Sulfonic acid



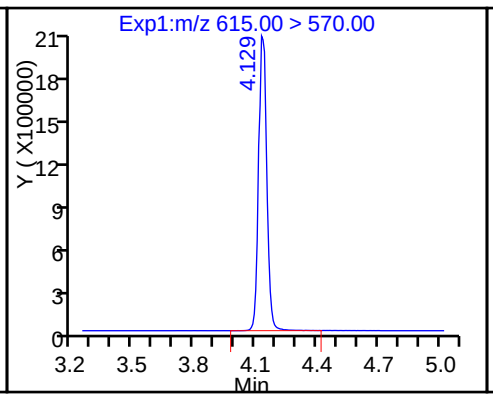
28 Perfluoroundecanoic acid



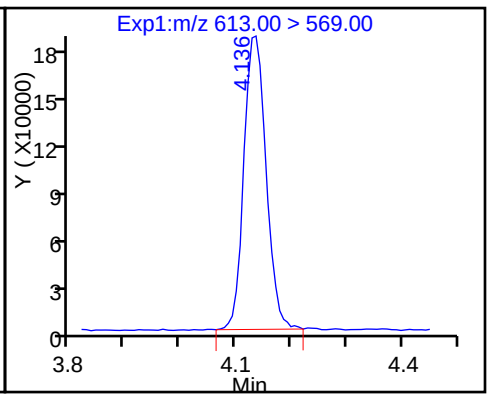
D 27 13C2 PFUnA



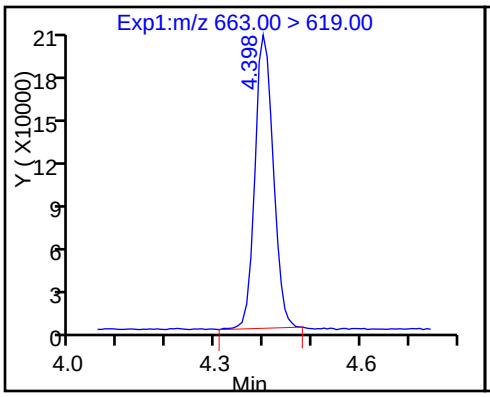
D 30 13C2 PFDoA



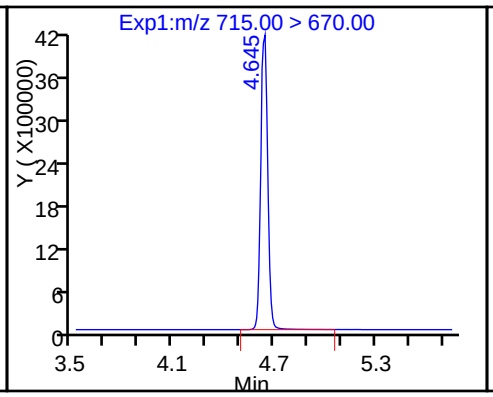
29 Perfluorododecanoic acid



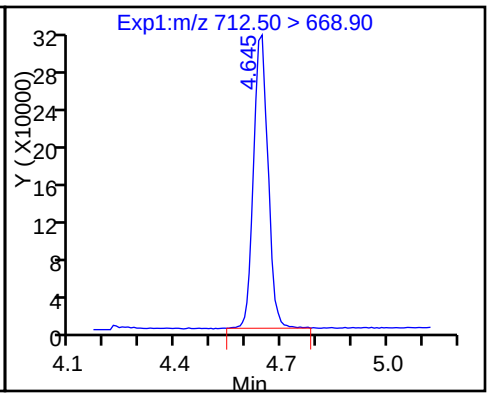
31 Perfluorotridecanoic acid



D 32 13C2-PFTeDA



33 Perfluorotetradecanoic acid



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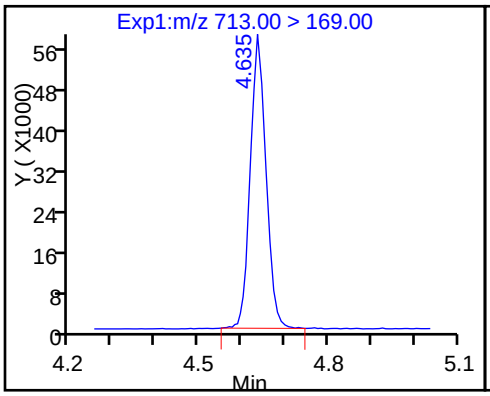
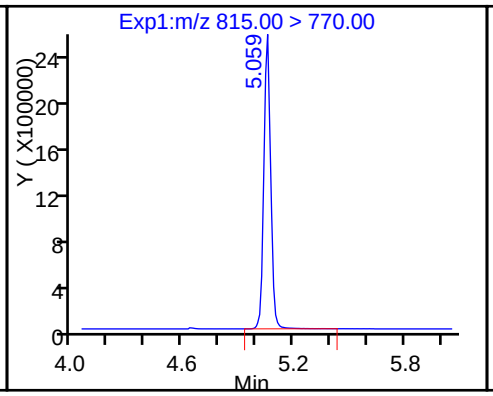
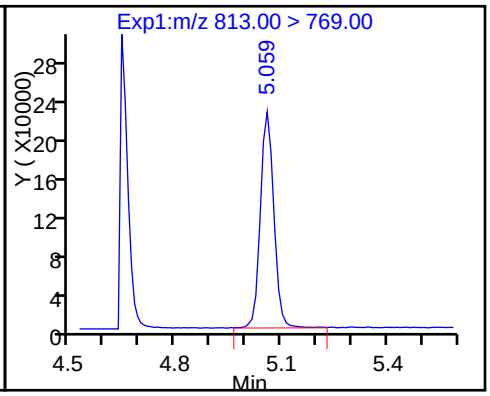


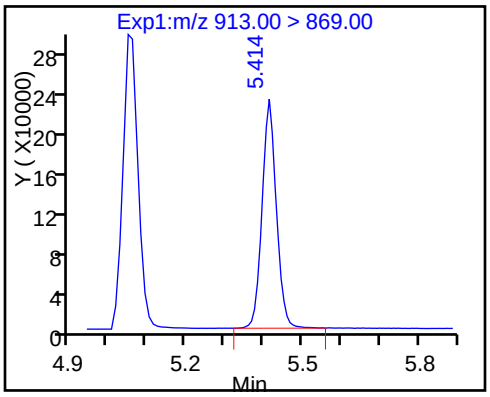
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_007.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 15-Dec-2016 12:51:47 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:21 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:46:14

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	1.534	1.534	0.0		17585378	50.6		101	1140977	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.535	-0.001	1.000	6690917	22.3		111	52374	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		13617158	51.2		102	860552	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	5770240	21.5		107	61088	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.848	0.001	1.000	9860707	20.5		116		
298.90 > 99.00	1.849	1.848	0.001	1.000	4111615		2.40(0.00-0.00)	116		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.093	2.096	-0.003	1.000	4929766	21.0		105	144495	
D 6 13C2 PFHxA										
315.00 > 270.00	2.102	2.097	0.005		12608210	51.4		103	627430	
D 11 13C4-PFHpA										
367.00 > 322.00	2.426	2.426	0.0		11788221	52.1		104	459454	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.426	2.428	-0.002	1.000	4747711	20.6		103	44179	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.440	2.431	0.009	1.000	6624638	18.9		104		
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.446	-0.006		16062766	49.1		104	697379	
D 14 13C4 PFOA										
417.00 > 372.00	2.785	2.783	0.002		11818203	51.3		103	403727	

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	2.785	2.783	0.002	1.000	5109766	21.6		108	40900	
413.00 > 169.00	2.785	2.783	0.002	1.000	3083663		1.66(0.90-1.10)	108	124075	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.785	2.790	-0.005	1.000	6014021	21.4		112		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.129	3.118	0.011	1.000	5058824	20.0		108	109804	
499.00 > 99.00	3.153	3.118	0.035	1.008	1125313		4.50(0.90-1.10)	108	92390	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.151	0.002		12183062	49.0		102	250792	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.153	0.0		9236073	52.0		104	341338	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.155	-0.002	1.000	3562981	20.3		101	53054	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.488	-0.004		19703272	51.3		103	612200	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.492	3.491	0.001	1.000	7990835	21.7		109	298669	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.510	-0.001	1.000	3166735	20.6		103	81817	
D 23 13C2 PFDA										
515.00 > 470.00	3.517	3.513	0.004		8134734	51.7		103	195073	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.827	3.822	0.005	1.000	3084031	20.7		107		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.844	3.839	0.005	1.000	2420719	20.3		102	65024	
D 27 13C2 PFUnA										
565.00 > 520.00	3.835	3.842	-0.007		6226562	53.1		106	471162	
D 30 13C2 PFDoA										
615.00 > 570.00	4.135	4.132	0.003		5816809	52.4		105	222845	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.135	4.136	-0.001	1.000	2231794	20.9		104	47124	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	2087859	19.8		98.9	37986	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.644	4.641	0.003		11655048	51.3		103	471362	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.644	4.642	0.002	1.000	3678976	20.0		99.8	48461	
713.00 > 169.00	4.635	4.642	-0.007	0.998	596997		6.16(0.00-0.00)	99.8	56132	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6335821	50.9		102	120381	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	2267892	19.9		99.3	1990	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	2445236	20.4		102	2369	

Reagents:

LCPFC-L4_00024 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:22 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_007.d

Injection Date: 15-Dec-2016 12:51:47 Instrument ID: A8_N

Lims ID: IC L4

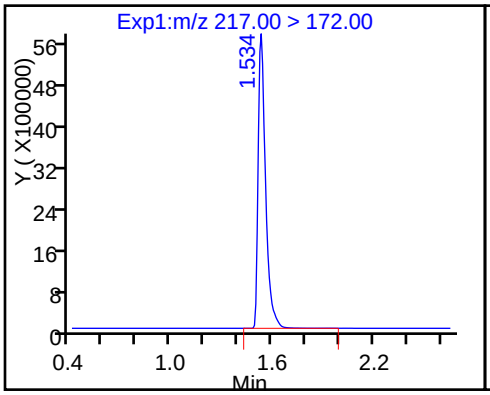
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7

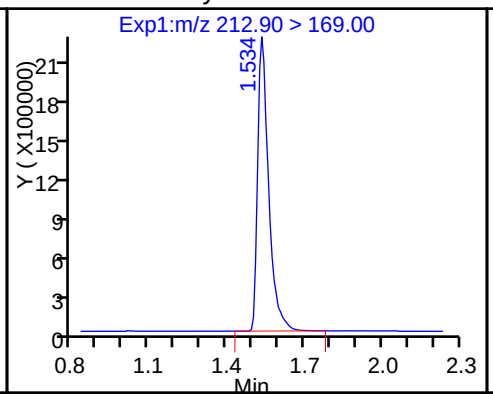
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

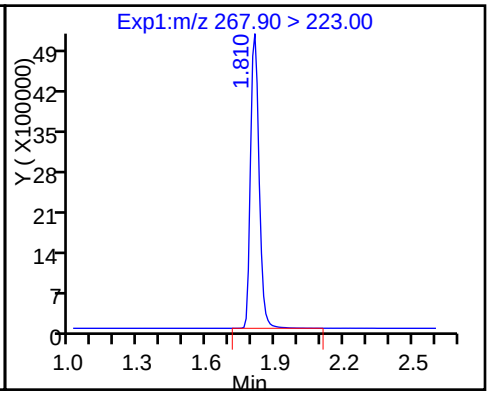
D 2 13C4 PFBA



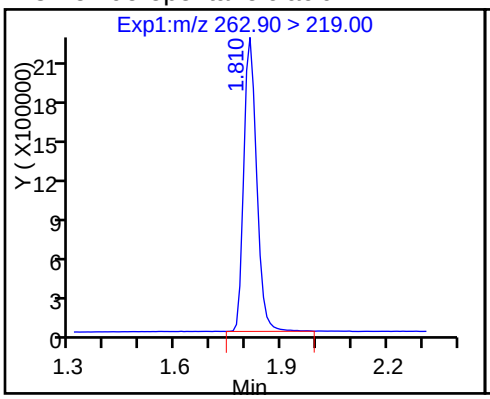
1 Perfluorobutyric acid



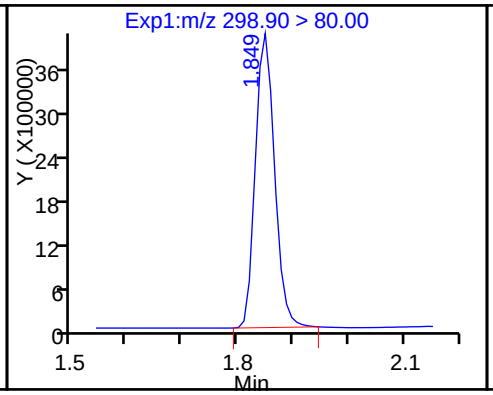
D 4 13C5-PFPeA



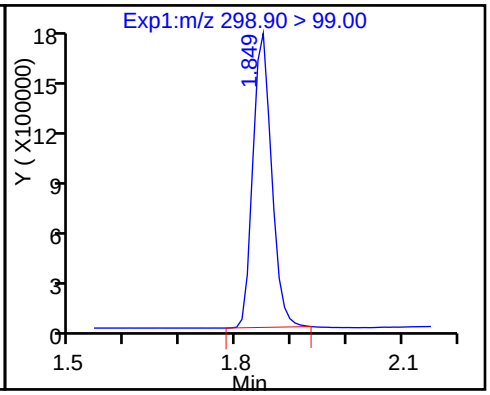
3 Perfluoropentanoic acid



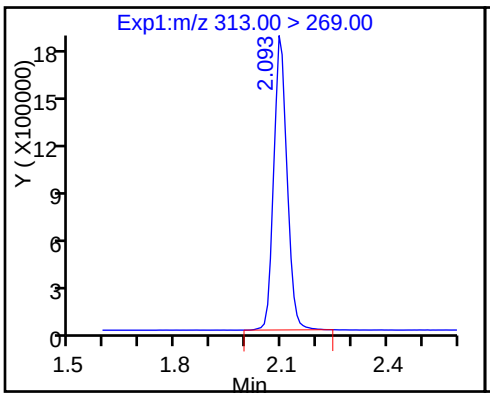
5 Perfluorobutanesulfonic acid



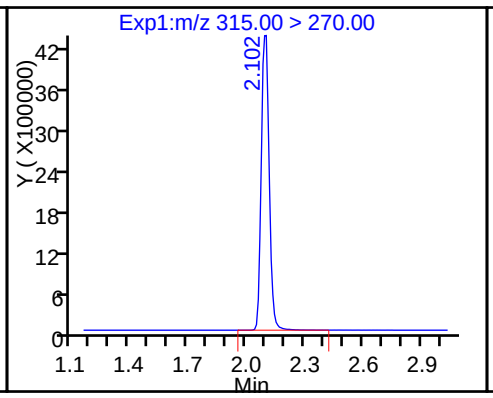
5 Perfluorobutanesulfonic acid



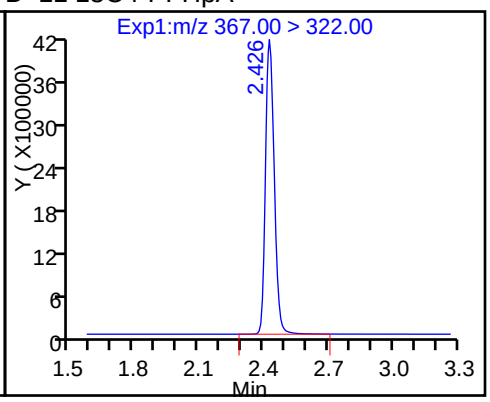
7 Perfluorohexanoic acid



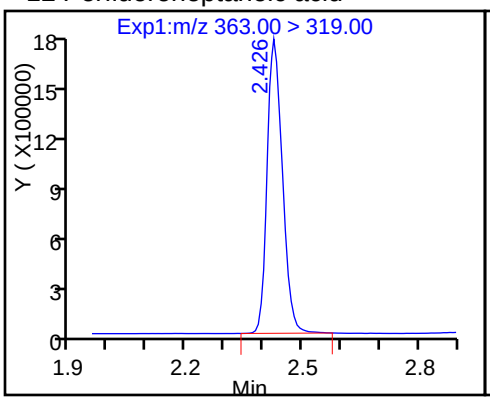
D 6 13C2 PFHxA



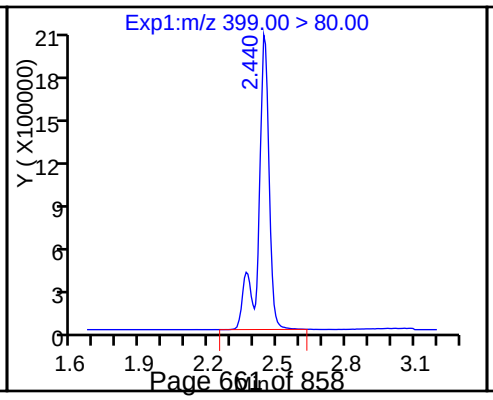
D 11 13C4-PFHpA



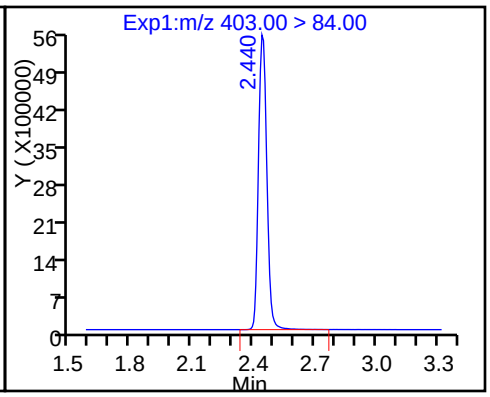
12 Perfluoroheptanoic acid



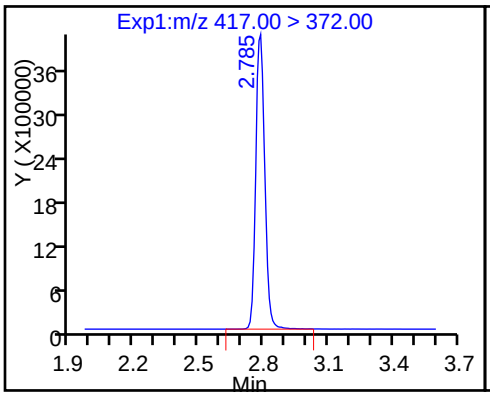
9 Perfluorohexanesulfonic acid



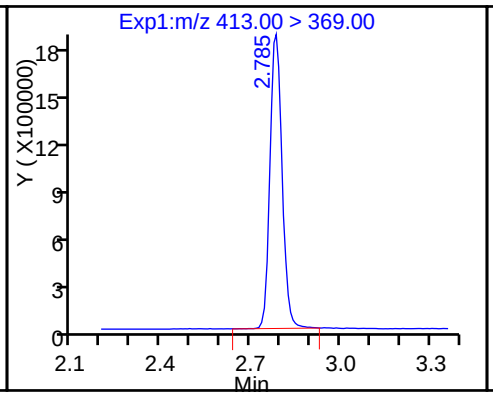
D 10 18O2 PFHxS



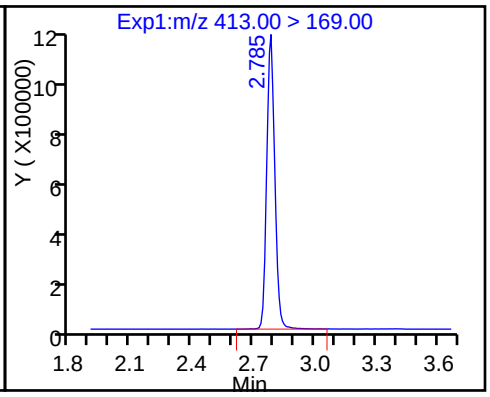
D 14 13C4 PFOA



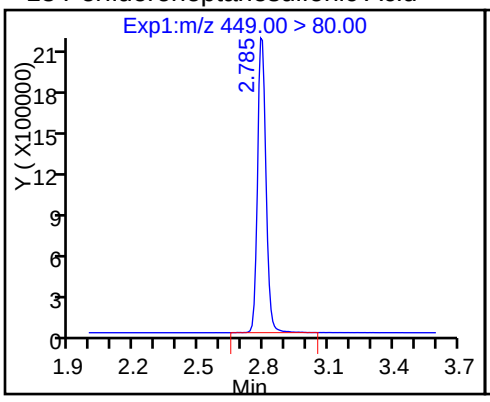
15 Perfluorooctanoic acid



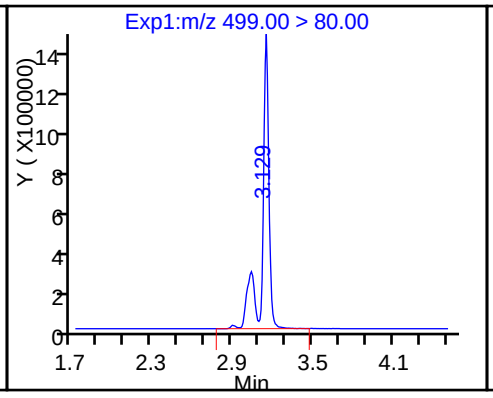
15 Perfluorooctanoic acid



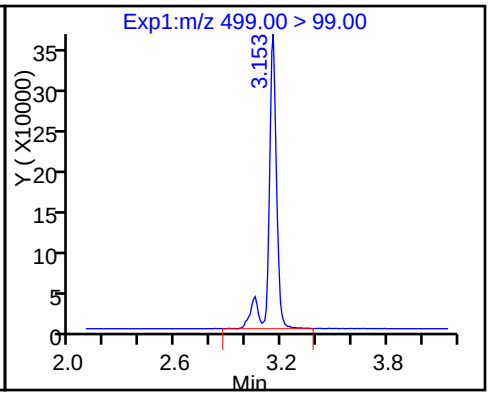
13 Perfluoroheptanesulfonic Acid



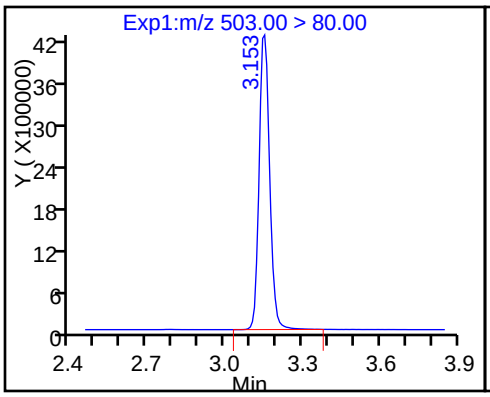
18 Perfluorooctane sulfonic acid



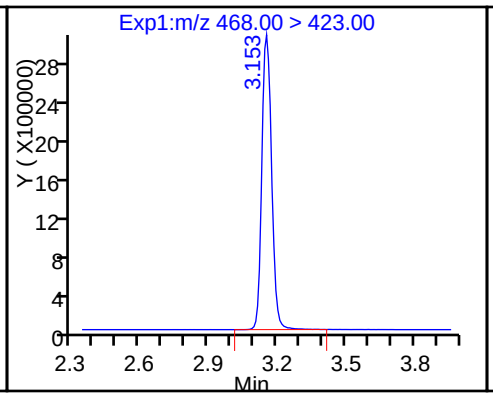
18 Perfluorooctane sulfonic acid



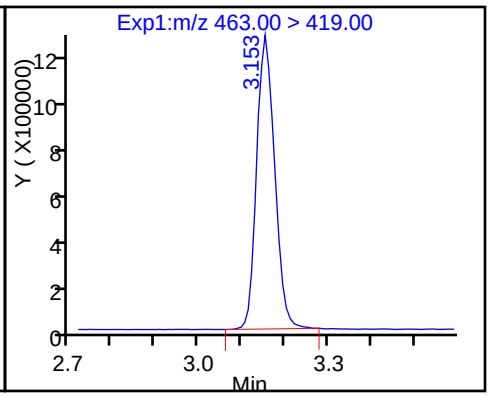
D 17 13C4 PFOS



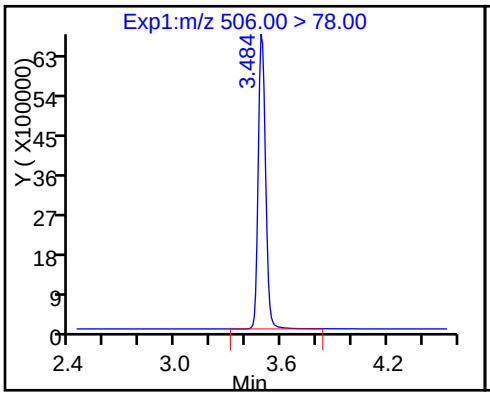
D 19 13C5 PFNA



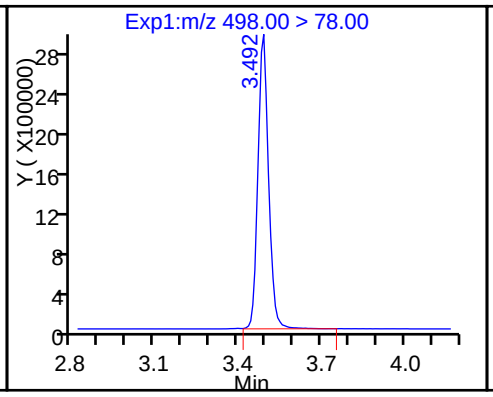
20 Perfluorononanoic acid



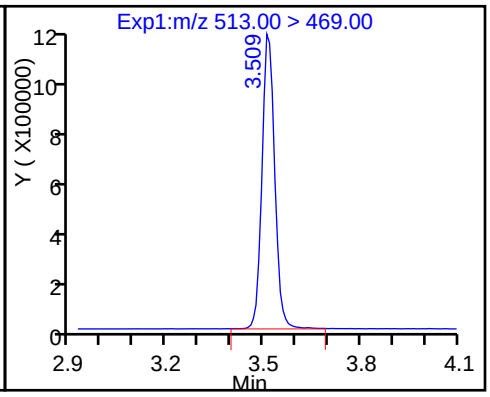
D 21 13C8 FOSA



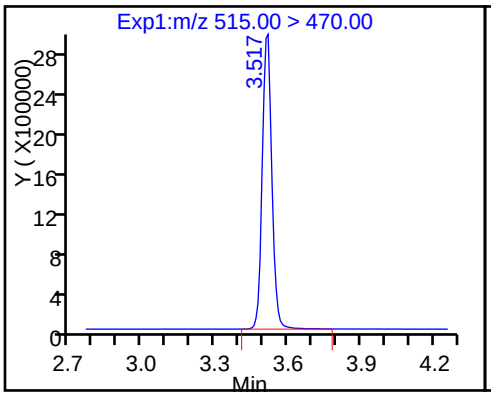
22 Perfluorooctane Sulfonamide



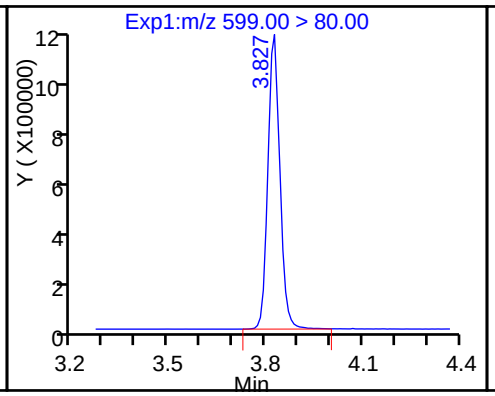
24 Perfluorodecanoic acid



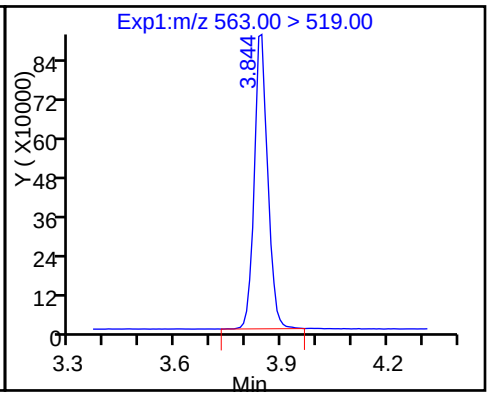
D 23 13C2 PFDA



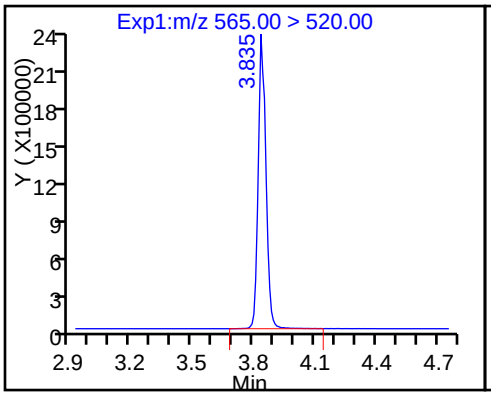
26 Perfluorodecane Sulfonic acid



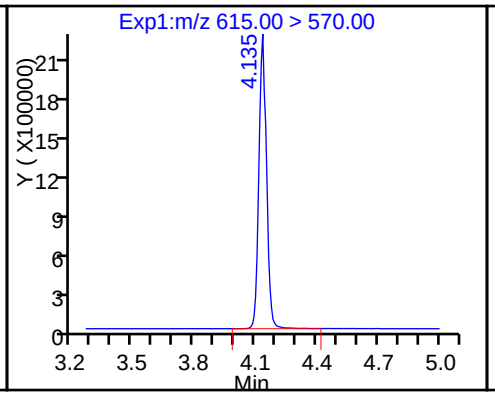
28 Perfluoroundecanoic acid



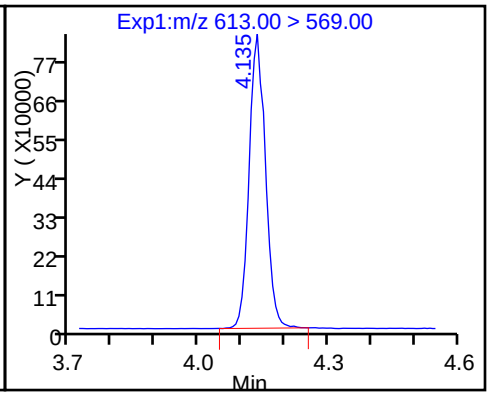
D 27 13C2 PFUnA



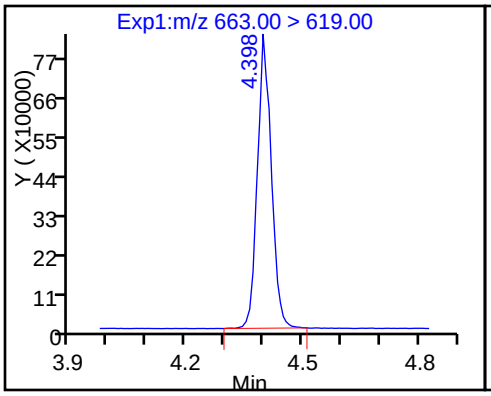
D 30 13C2 PFDoA



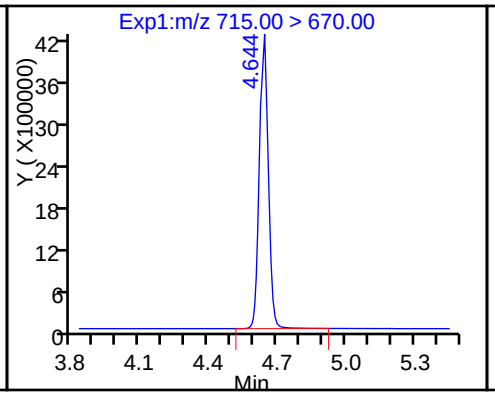
29 Perfluorododecanoic acid



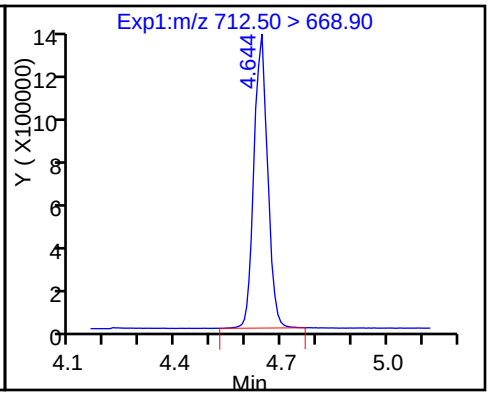
31 Perfluorotridecanoic acid



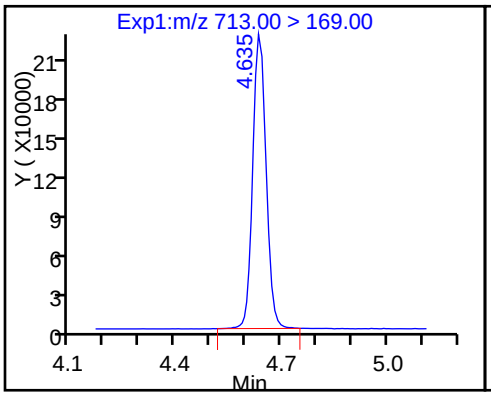
D 32 13C2-PFTeDA



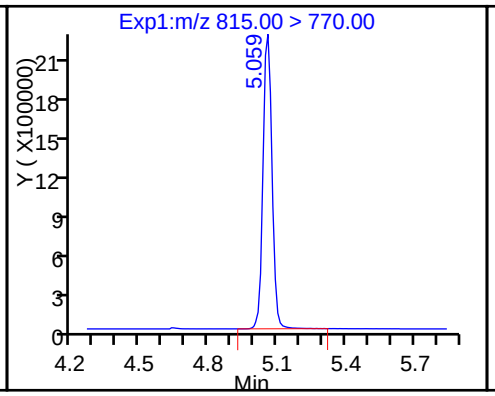
33 Perfluorotetradecanoic acid



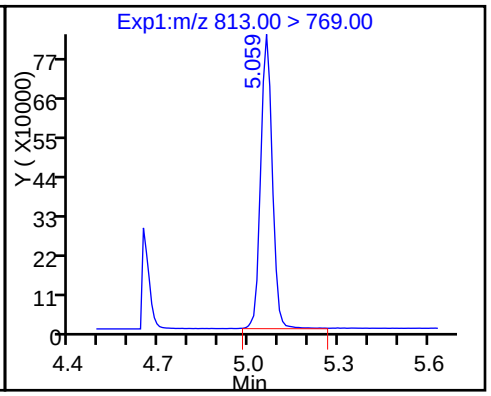
33 Perfluorotetradecanoic acid



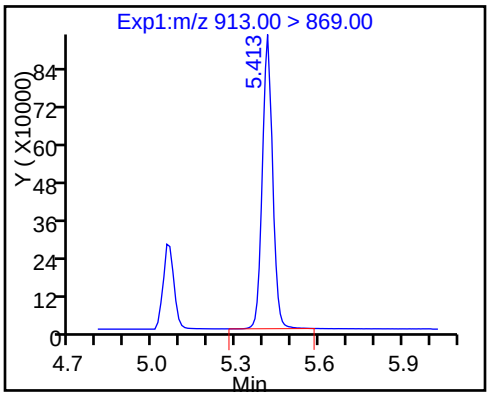
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 15-Dec-2016 12:59:16 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:24 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:51:06

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	1.533	1.534	-0.001		17274187	49.7		99.4	927175	
1 Perfluorobutyric acid										
212.90 > 169.00	1.533	1.535	-0.002	1.000	15411527	52.3		105	124871	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		13053659	49.1		98.1	1261104	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	13161065	51.1		102	158308	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.848	0.0	1.000	21559838	47.1		107		
298.90 > 99.00	1.848	1.848	0.0	1.000	10128422		2.13(0.00-0.00)	107		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.098	2.096	0.002	1.000	11507044	50.0		99.9	330809	
D 6 13C2 PFHxA										
315.00 > 270.00	2.098	2.097	0.001		12399280	50.6		101	688050	
D 11 13C4-PFHpA										
367.00 > 322.00	2.424	2.426	-0.002		10801604	47.7		95.4	530896	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.424	2.428	-0.004	1.000	10799449	51.1		102	85838	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.446	2.431	0.015	1.000	15253691	45.8		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.446	2.446	0.0		15278828	46.7		98.8	1046737	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.783	-0.001		11142777	48.4		96.7	755641	

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	2.782	2.783	-0.001	1.000	11435583	51.2		102	92940	
413.00 > 169.00	2.782	2.783	-0.001	1.000	6849991		1.67(0.90-1.10)	102	293728	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.791	2.790	0.001	1.000	13639927	49.5		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.151	3.118	0.033	1.000	11741891	47.2		102	399791	
499.00 > 99.00	3.151	3.118	0.033	1.000	2632984		4.46(0.90-1.10)	102	139087	
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.151	0.0		11946650	48.0		100	237614	
D 19 13C5 PFNA										
468.00 > 423.00	3.151	3.153	-0.002		8581504	48.3		96.6	574194	
20 Perfluorononanoic acid										
463.00 > 419.00	3.151	3.155	-0.004	1.000	8246252	50.5		101	123521	
D 21 13C8 FOSA										
506.00 > 78.00	3.490	3.488	0.002		18804188	49.0		97.9	642404	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.490	3.491	-0.001	1.000	17736944	50.6		101	676782	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.507	3.510	-0.003	1.000	7324495	50.6		101	172410	
D 23 13C2 PFDA										
515.00 > 470.00	3.516	3.513	0.003		7671861	48.8		97.5	212001	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.818	3.822	-0.004	1.000	7241868	49.6		103		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.844	3.839	0.005	1.000	5437764	50.3		101	105822	
D 27 13C2 PFUnA										
565.00 > 520.00	3.844	3.842	0.002		5657823	48.3		96.5	259964	
D 30 13C2 PFDoA										
615.00 > 570.00	4.135	4.132	0.003		5404154	48.7		97.4	211794	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.135	4.136	-0.001	1.000	5072994	51.1		102	98593	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	4950651	50.5		101	84213	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.645	4.641	0.004		10950502	48.2		96.3	504805	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.645	4.642	0.003	1.000	8645519	50.5		101	145963	
713.00 > 169.00	4.635	4.642	-0.007	0.998	1380699		6.26(0.00-0.00)	101	249413	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6027362	48.4		96.8	112750	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	5318207	51.0		102	4484	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	5869666	52.7		105	5549	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:25 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_008.d

Injection Date: 15-Dec-2016 12:59:16 Instrument ID: A8_N

Lims ID: IC L5

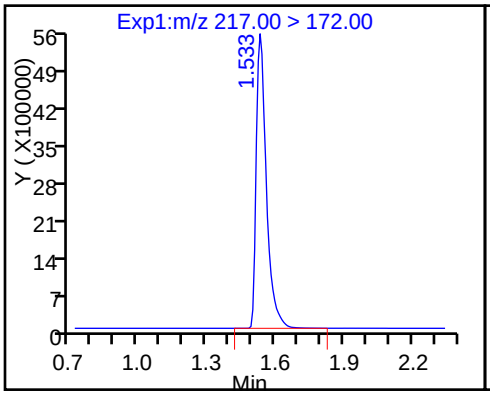
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 8

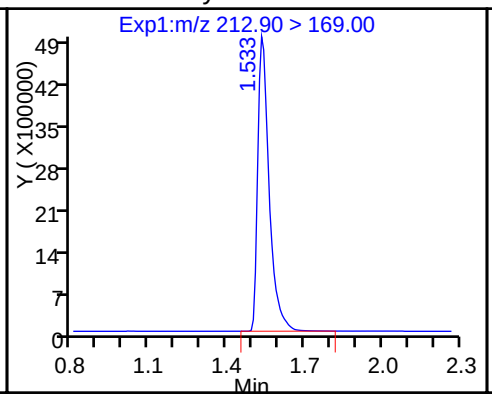
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

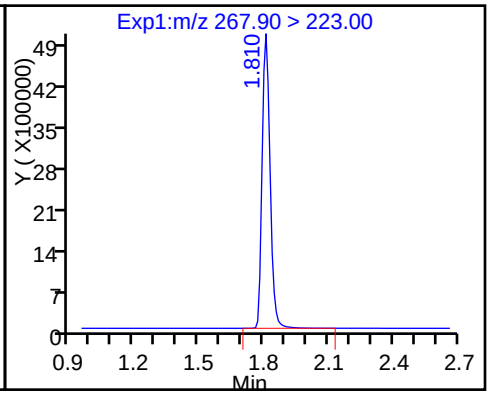
D 2 13C4 PFBA



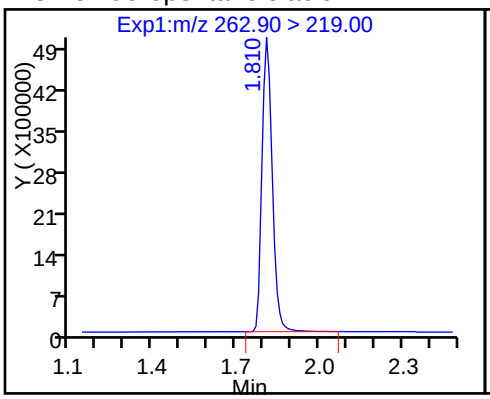
1 Perfluorobutyric acid



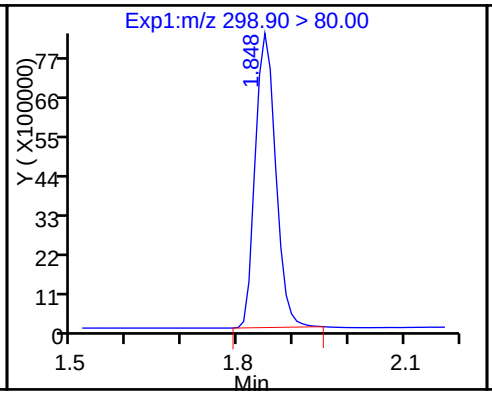
D 4 13C5-PFPeA



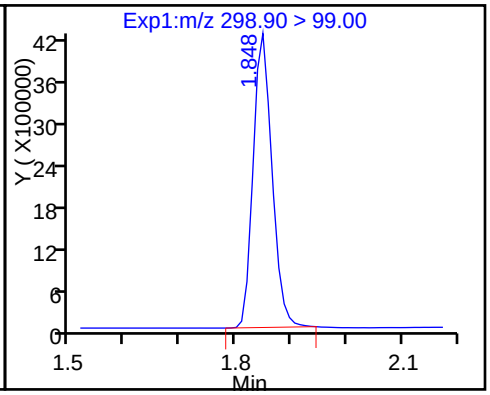
3 Perfluoropentanoic acid



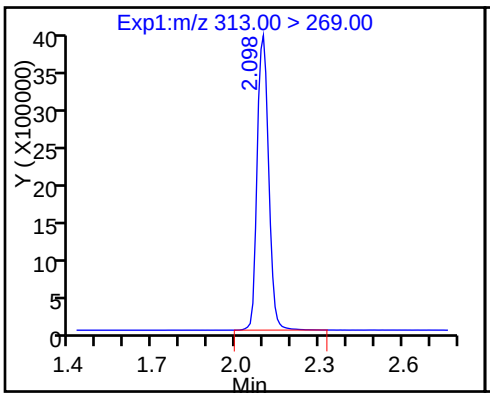
5 Perfluorobutanesulfonic acid



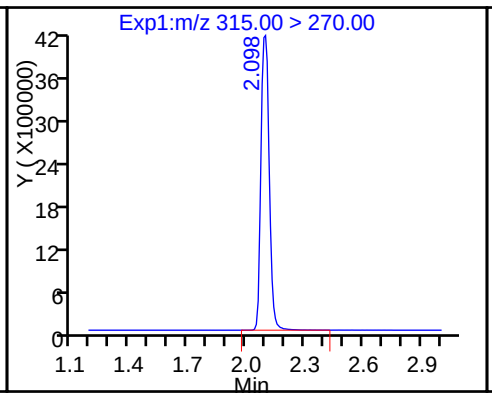
5 Perfluorobutanesulfonic acid



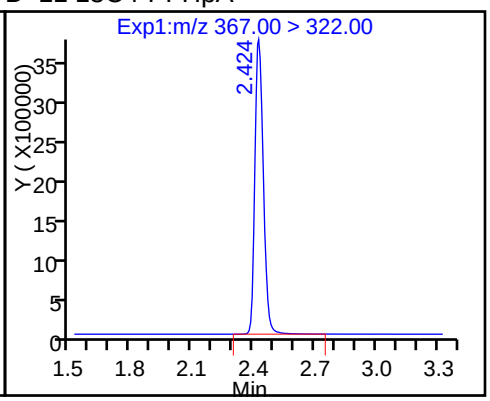
7 Perfluorohexanoic acid



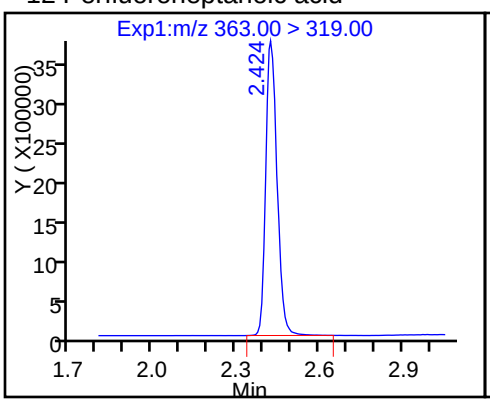
D 6 13C2 PFHxA



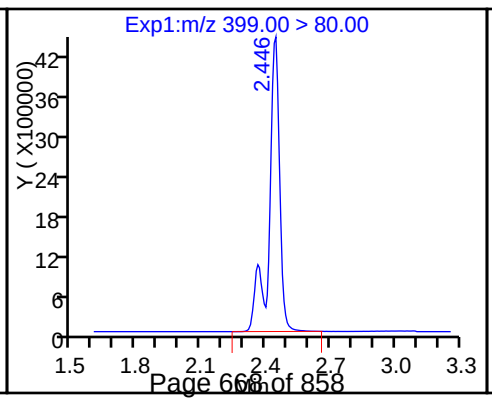
D 11 13C4-PFHpA



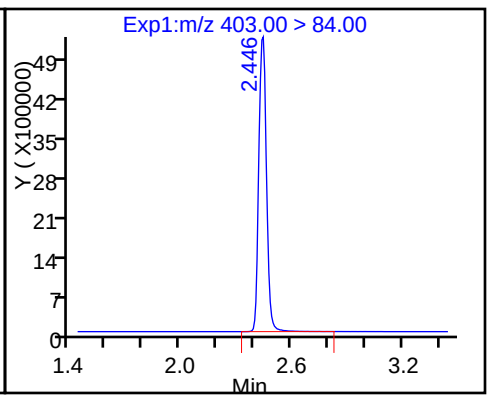
12 Perfluoroheptanoic acid



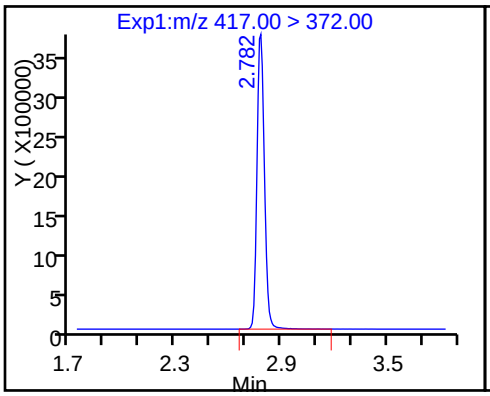
9 Perfluorohexanesulfonic acid



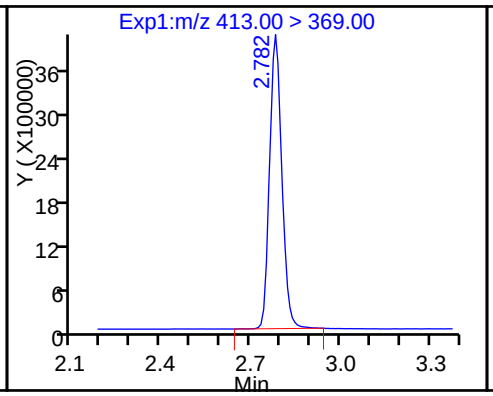
D 10 18O2 PFHxS



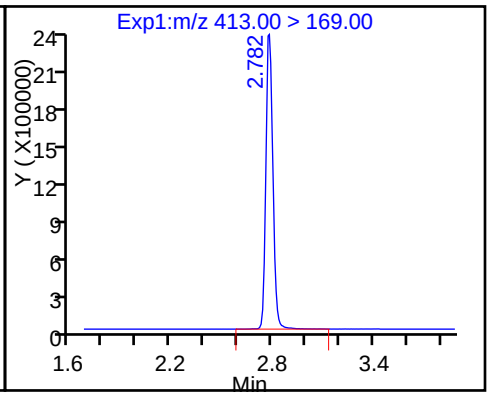
D 14 13C4 PFOA



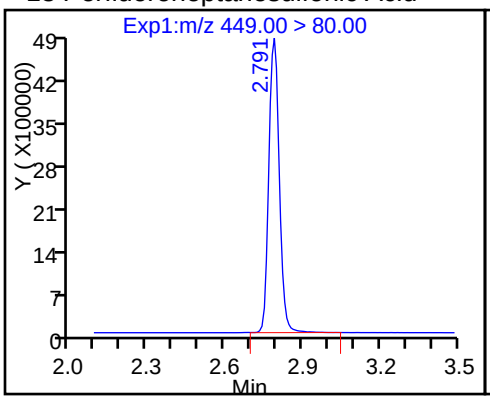
15 Perfluorooctanoic acid



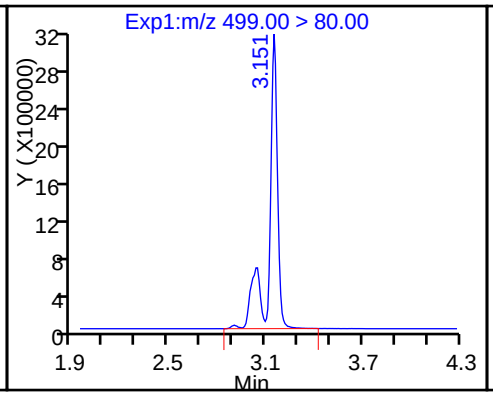
15 Perfluorooctanoic acid



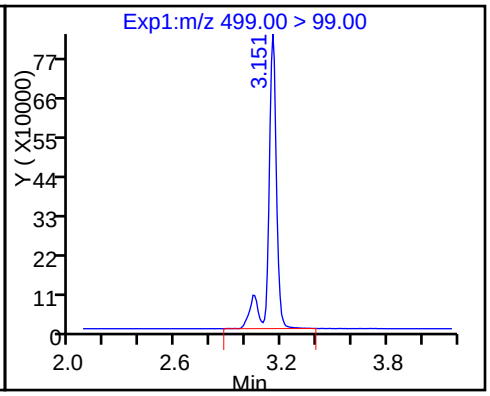
13 Perfluoroheptanesulfonic Acid



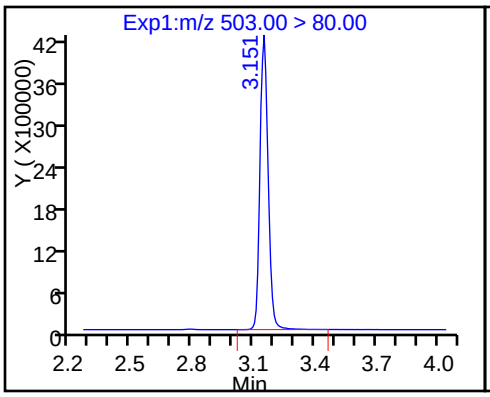
18 Perfluorooctane sulfonic acid



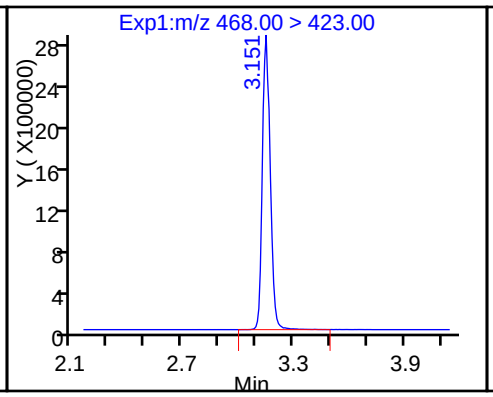
18 Perfluorooctane sulfonic acid



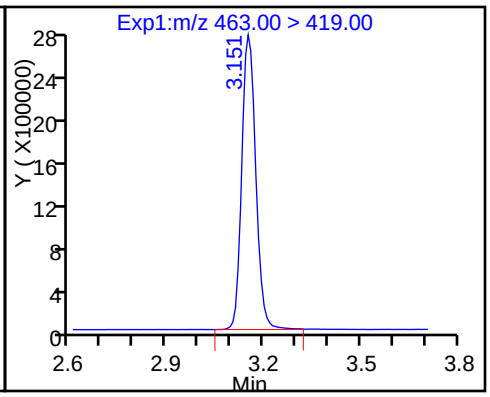
D 17 13C4 PFOS



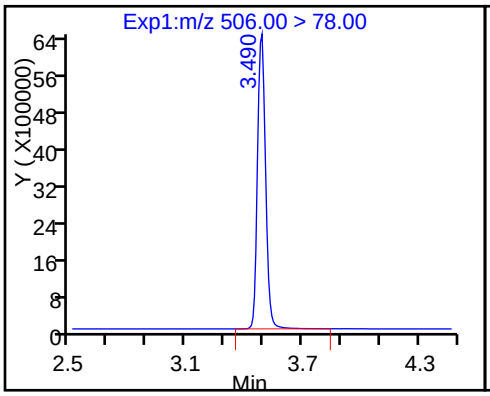
D 19 13C5 PFNA



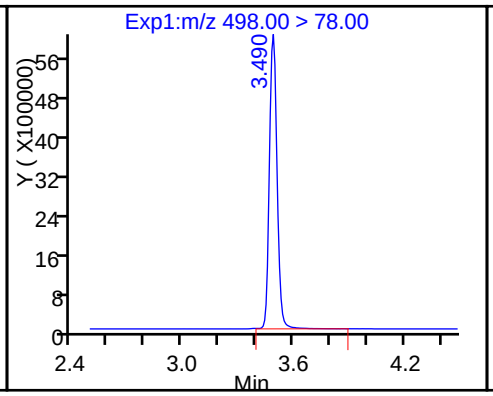
20 Perfluorononanoic acid



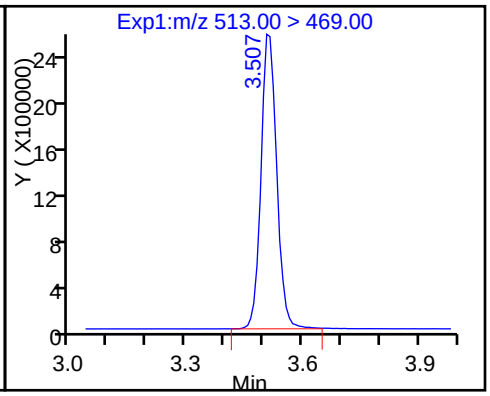
D 21 13C8 FOSA



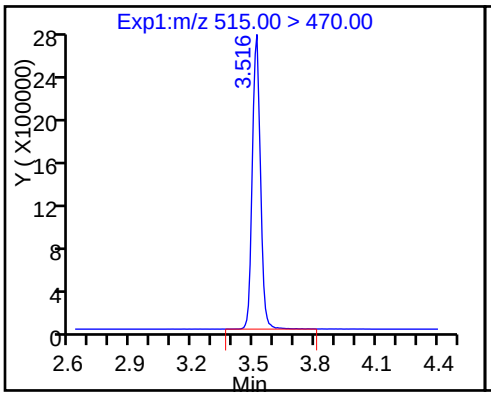
22 Perfluorooctane Sulfonamide



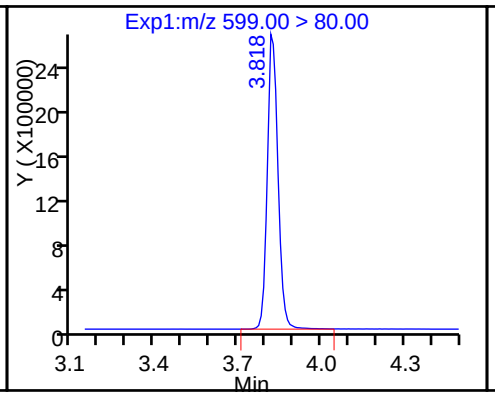
24 Perfluorodecanoic acid



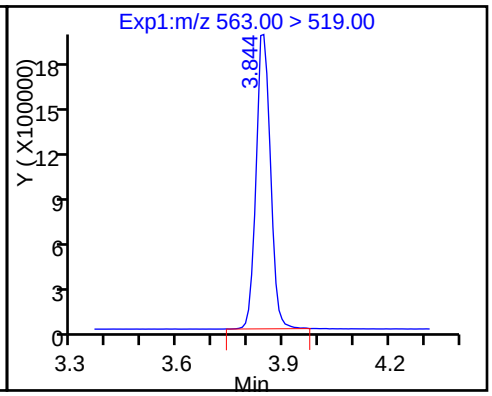
D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid



28 Perfluoroundecanoic acid



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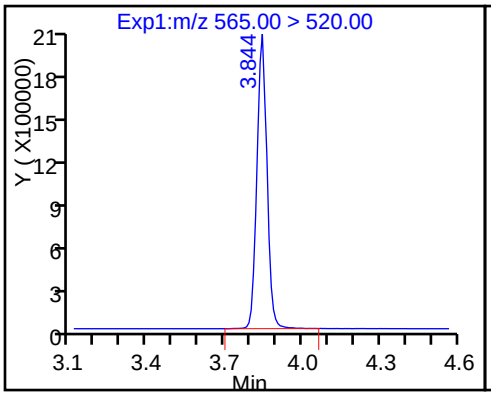

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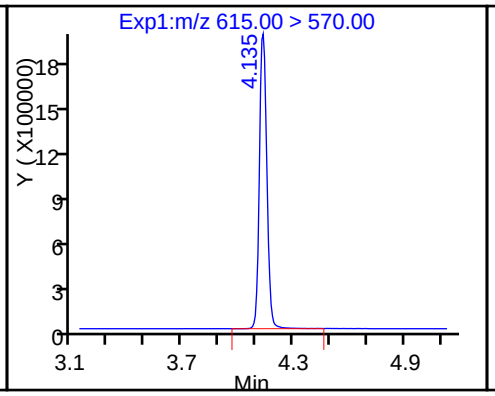
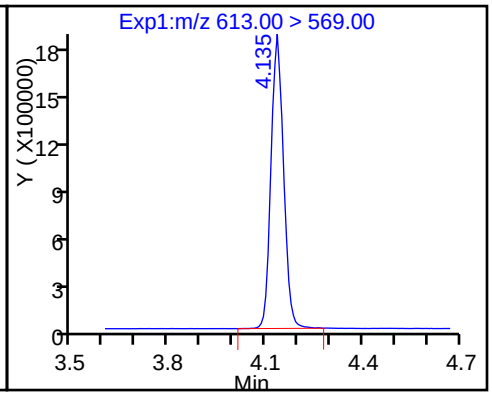
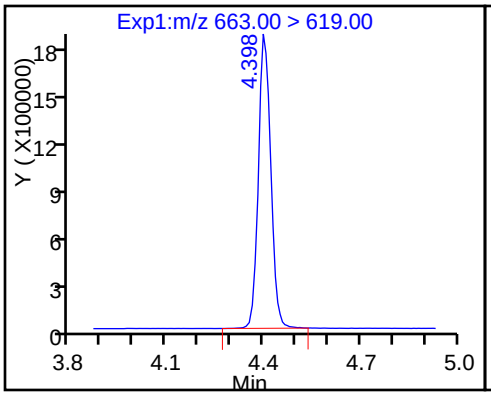


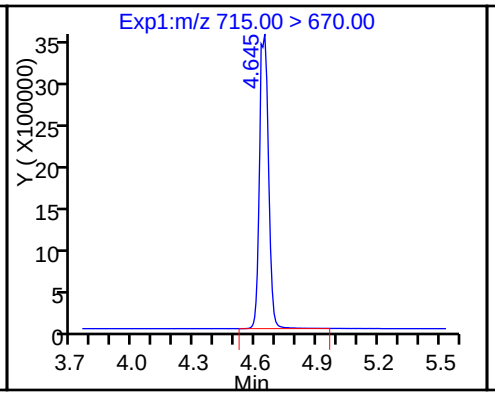
29 Perfluorododecanoic acid



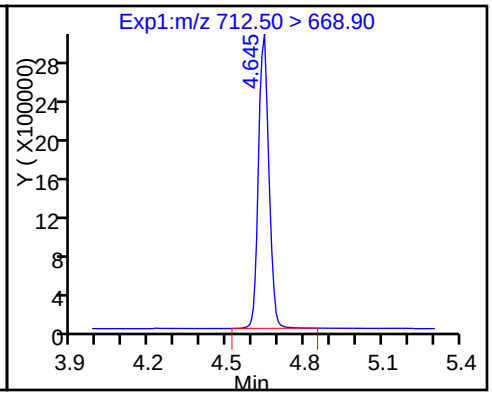
31 Perfluorotridecanoic acid



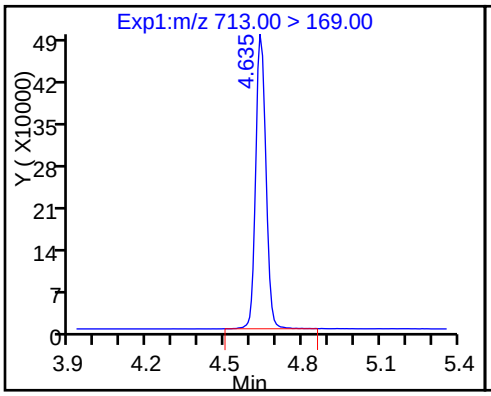
D 32 13C2-PFTeDA



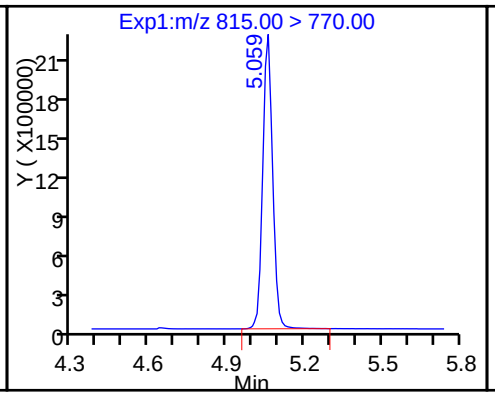
33 Perfluorotetradecanoic acid



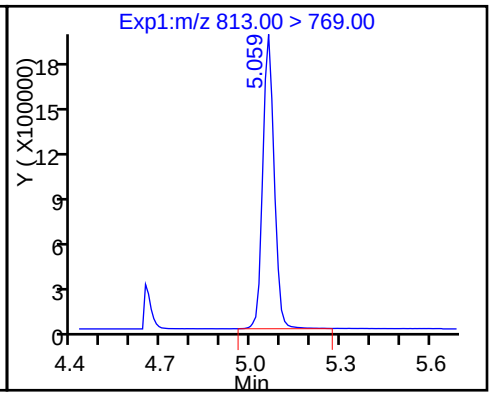
33 Perfluorotetradecanoic acid



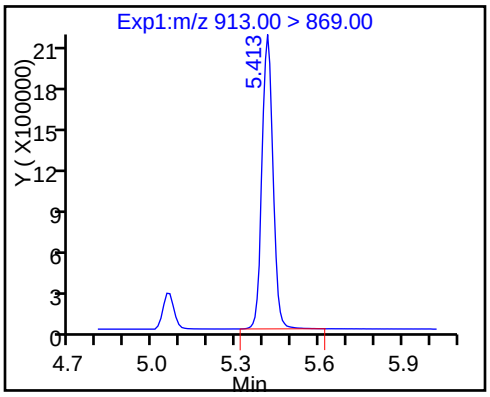
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 15-Dec-2016 13:06:46 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:27 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:51:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.537	1.534	0.003		14961055	43.0		86.0	920014	
1 Perfluorobutyric acid										
212.90 > 169.00	1.537	1.535	0.002	1.000	42763611	167.4		83.7	246189	
D 4 13C5-PFPeA										
267.90 > 223.00	1.813	1.810	0.003		10898820	41.0		81.9	1007026	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.813	1.810	0.003	1.000	34291076	159.4		79.7	297823	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.848	0.004	1.000	50724469	130.5		73.8		
298.90 > 99.00	1.842	1.848	-0.006	0.995	28243355		1.80(0.00-0.00)	73.8		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.096	2.096	0.0	1.000	33223923	172.9		86.4	549724	
D 6 13C2 PFHxA										
315.00 > 270.00	2.096	2.097	-0.001		10345480	42.2		84.4	508201	
D 11 13C4-PFHpA										
367.00 > 322.00	2.426	2.426	0.0		8564025	37.8		75.7	487796	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.426	2.428	-0.002	1.000	30234194	180.3		90.2	213534	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.444	2.431	0.013	1.000	46223186	163.6		89.9		
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.446	-0.002		12974829	39.7		83.9	628886	
D 14 13C4 PFOA										
417.00 > 372.00	2.783	2.783	0.0		8380251	36.4		72.8	402245	

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	2.783	2.783	0.0	1.000	30784387	183.1		91.5	229181	
413.00 > 169.00	2.783	2.783	0.0	1.000	20338648		1.51(0.90-1.10)	91.5	70063	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.791	2.790	0.001	1.000	38459925	166.5		87.5		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.977	3.118	-0.141	1.000	40073141	192.2		104	5896	
499.00 > 99.00	3.152	3.118	0.034	1.059	9632026		4.16(0.90-1.10)	104	407968	
D 17 13C4 PFOS										
503.00 > 80.00	3.152	3.151	0.001		10019454	40.3		84.2	105595	
D 19 13C5 PFNA										
468.00 > 423.00	3.152	3.153	-0.001		6718354	37.8		75.6	515582	
20 Perfluorononanoic acid										
463.00 > 419.00	3.160	3.155	0.005	1.000	24793148	193.9		96.9	307568	
D 21 13C8 FOSA										
506.00 > 78.00	3.491	3.488	0.003		16105707	41.9		83.9	486146	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.491	3.491	0.0	1.000	47803717	159.1		79.6	542400	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.516	3.510	0.006	1.000	22616781	191.8		95.9	376094	
D 23 13C2 PFDA										
515.00 > 470.00	3.508	3.513	-0.005		6246112	39.7		79.4	243806	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.819	3.822	-0.004	1.000	23952412	195.7		101		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.845	3.839	0.006	1.000	16852945	197.7		98.9	570796	
D 27 13C2 PFUnA										
565.00 > 520.00	3.845	3.842	0.003		4456593	38.0		76.0	208308	
D 30 13C2 PFDoA										
615.00 > 570.00	4.129	4.132	-0.003		4649092	41.9		83.8	168499	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.136	4.136	0.0	1.000	17425873	204.2		102	228085	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.407	4.400	0.007	1.000	16038809	190.2		95.1	237459	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.635	4.641	-0.006		9520749	41.9		83.7	374846	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.635	4.642	-0.007	1.000	27310864	185.3		92.7	329988	
713.00 > 169.00	4.635	4.642	-0.007	1.000	4963804		5.50(0.00-0.00)	92.7	195544	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.060	5.057	0.003		5190172	41.7		83.3	150380	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.060	5.059	0.001	1.000	17754908	199.3		99.6	19037	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.414	0.0	1.000	18392980	192.0		96.0	19845	

Reagents:

LCPFC-L6_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:28 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_009.d

Injection Date: 15-Dec-2016 13:06:46 Instrument ID: A8_N

Lims ID: IC L6

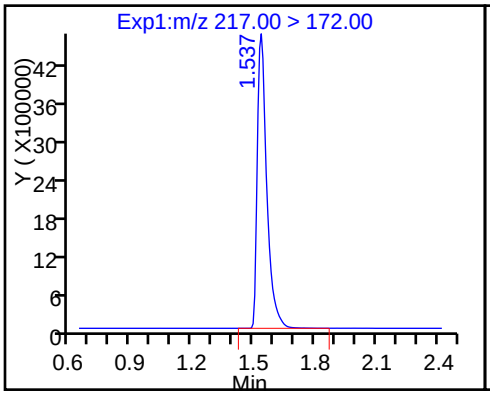
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9

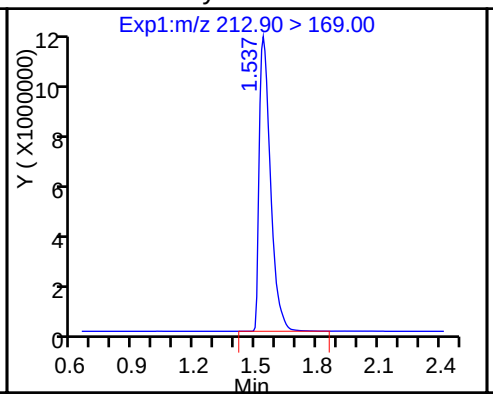
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

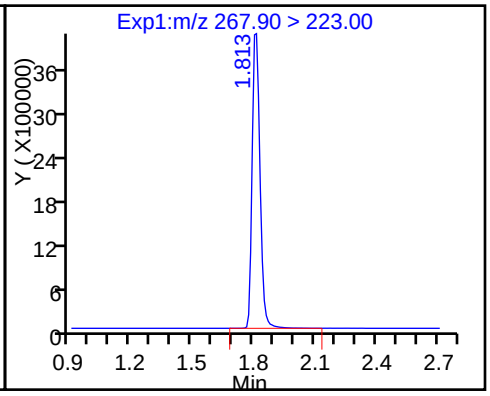
D 2 13C4 PFBA



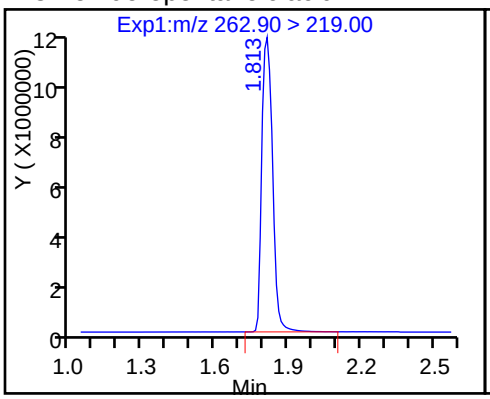
1 Perfluorobutyric acid



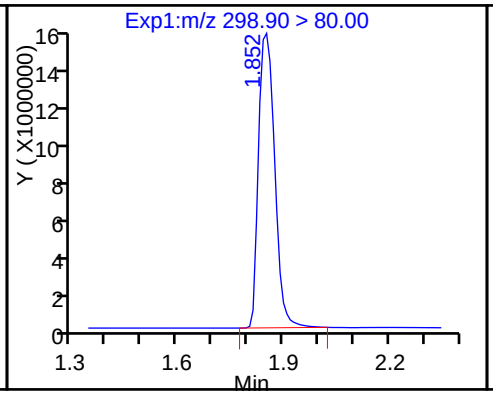
D 4 13C5-PFPeA



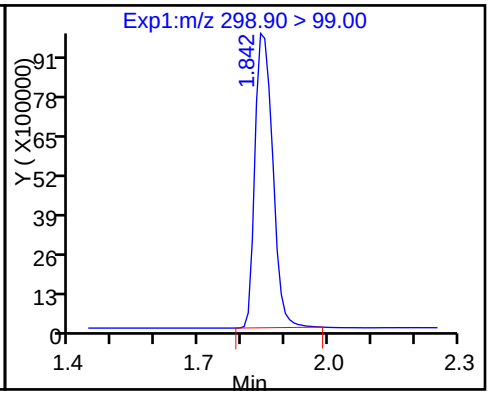
3 Perfluoropentanoic acid



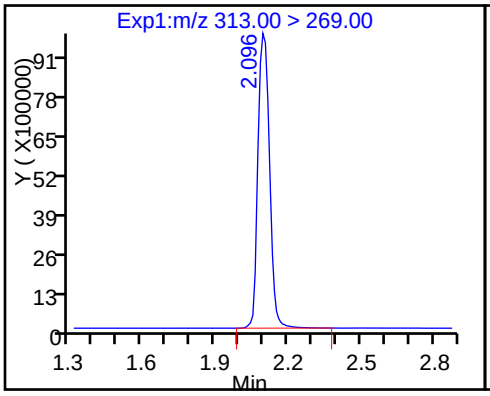
5 Perfluorobutanesulfonic acid



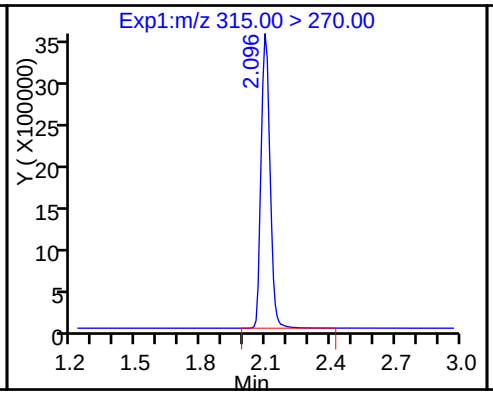
5 Perfluorobutanesulfonic acid



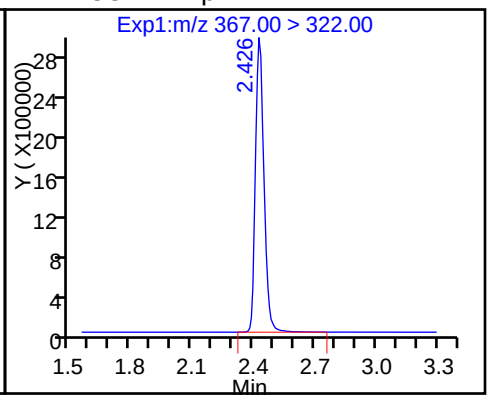
7 Perfluorohexanoic acid



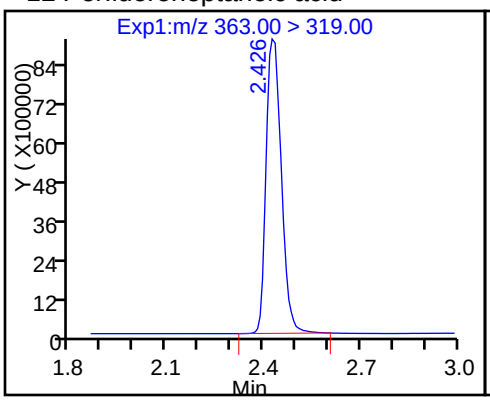
D 6 13C2 PFHxA



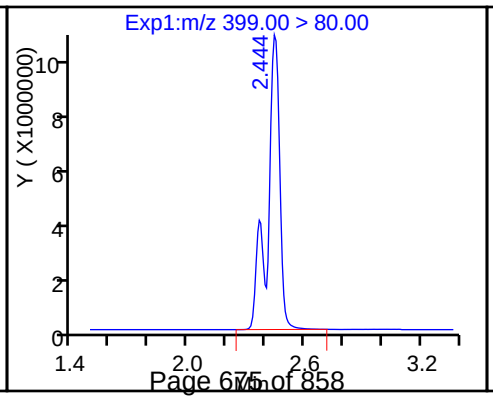
D 11 13C4-PFHpA



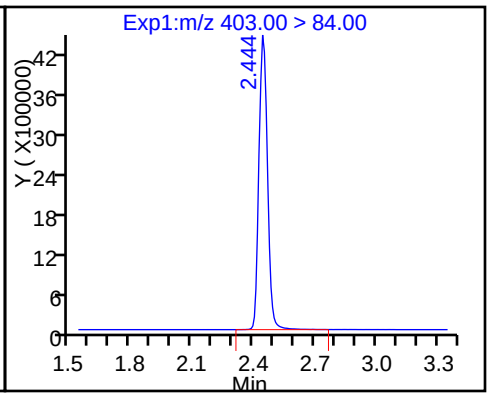
12 Perfluoroheptanoic acid



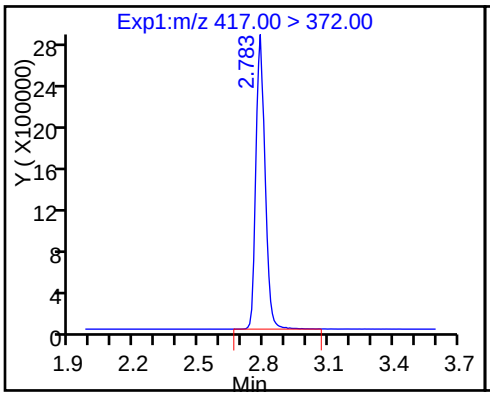
9 Perfluorohexanesulfonic acid



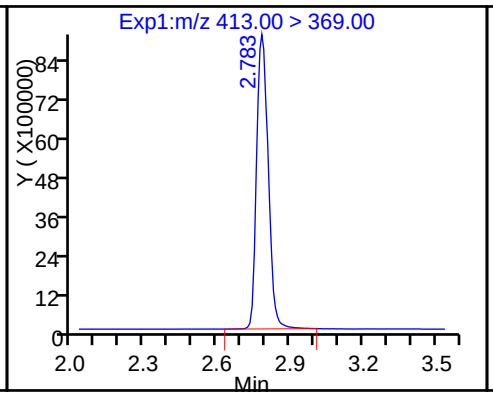
D 10 18O2 PFHxS



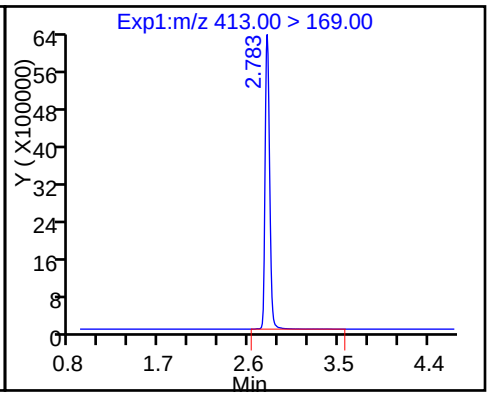
D 14 13C4 PFOA



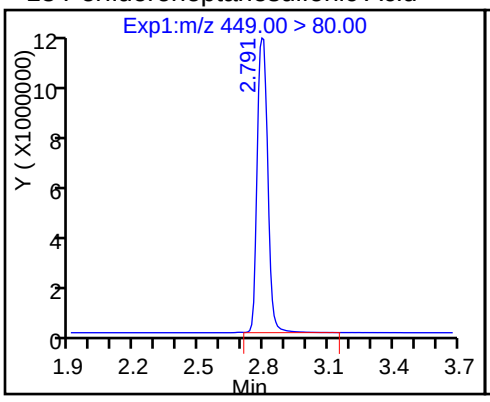
15 Perfluorooctanoic acid



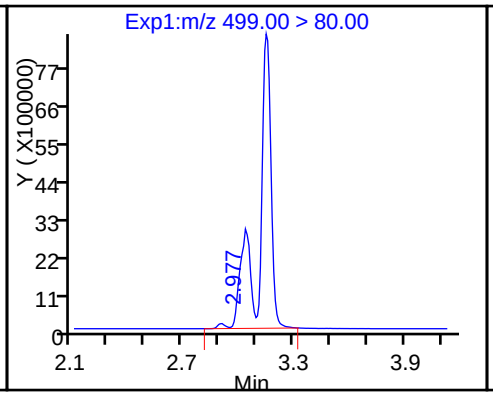
15 Perfluorooctanoic acid



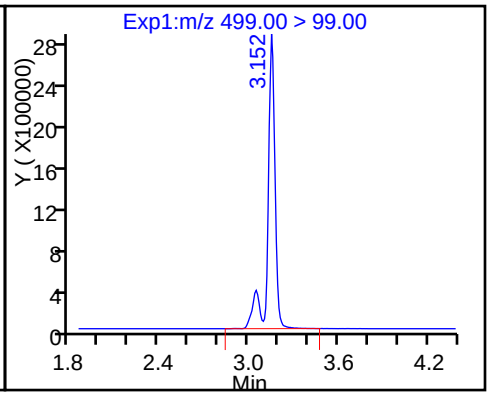
13 Perfluoroheptanesulfonic Acid



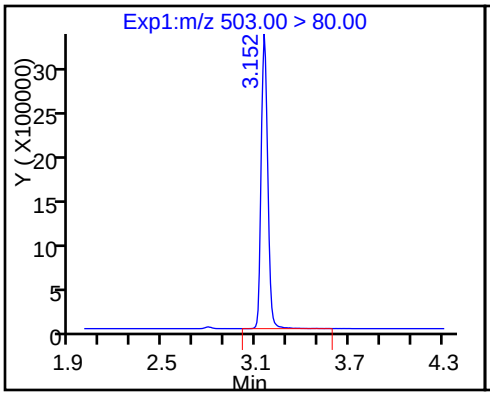
18 Perfluorooctane sulfonic acid



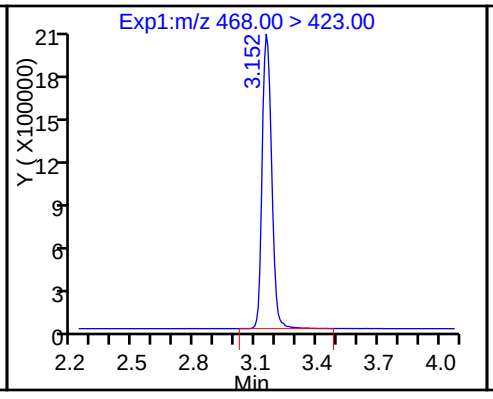
18 Perfluorooctane sulfonic acid



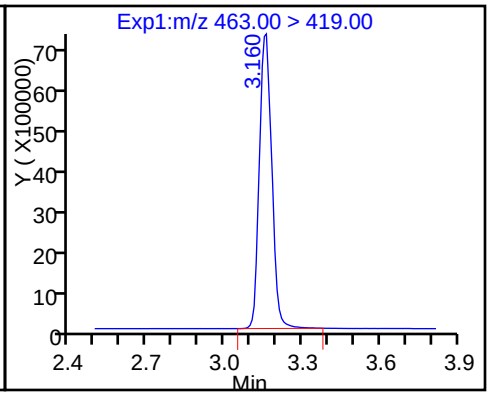
D 17 13C4 PFOS



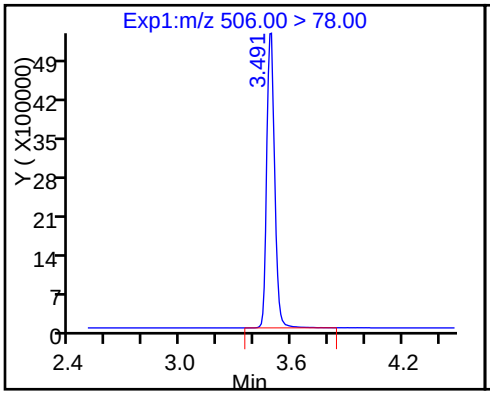
D 19 13C5 PFNA



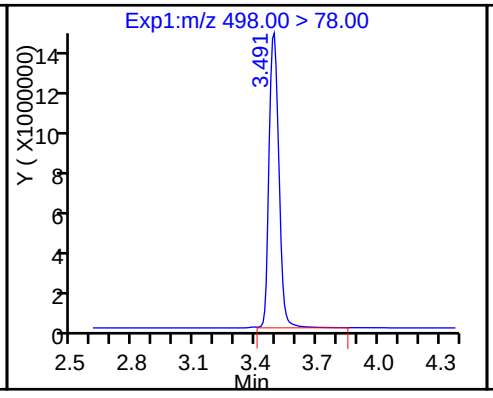
20 Perfluorononanoic acid



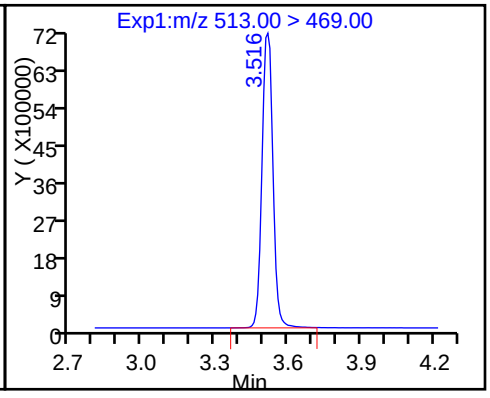
D 21 13C8 FOSA



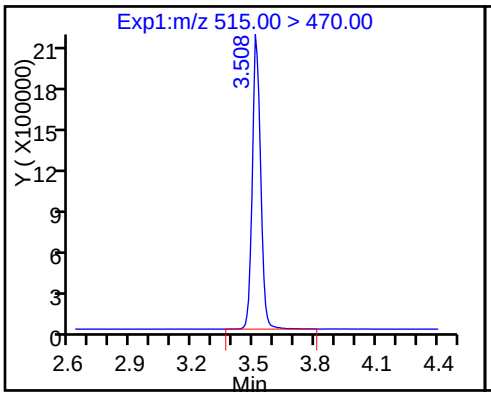
22 Perfluorooctane Sulfonamide



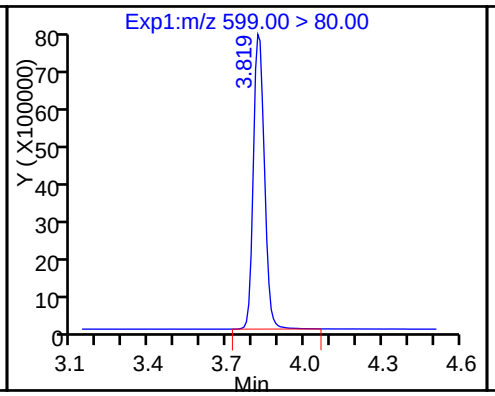
24 Perfluorodecanoic acid



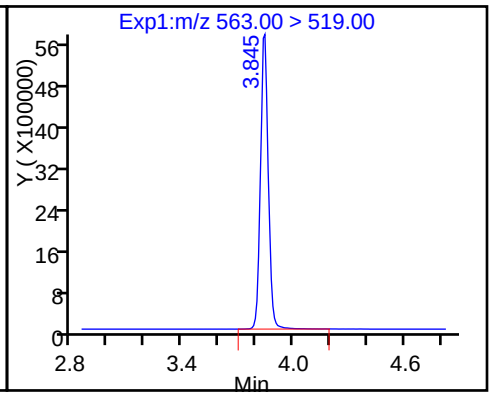
D 23 13C2 PFDA



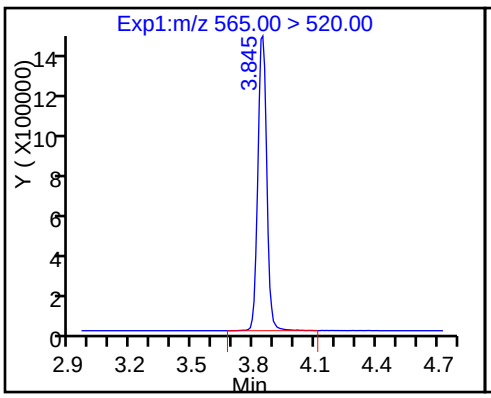
26 Perfluorodecane Sulfonic acid



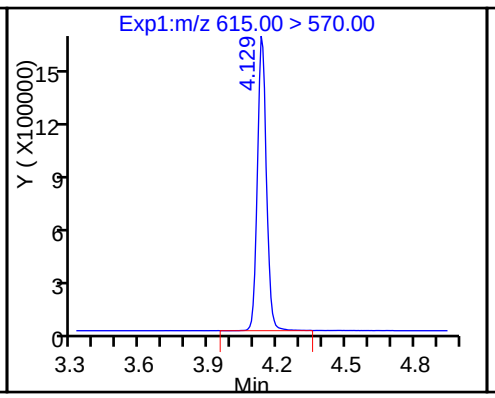
28 Perfluoroundecanoic acid



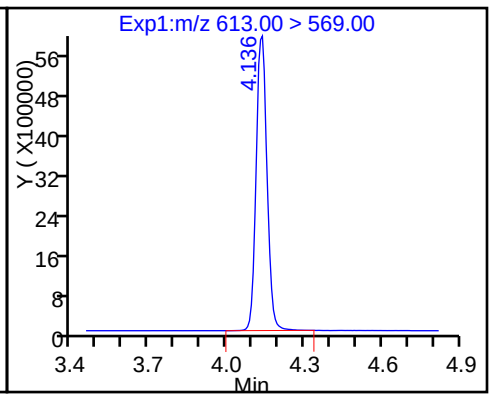
D 27 13C2 PFUnA



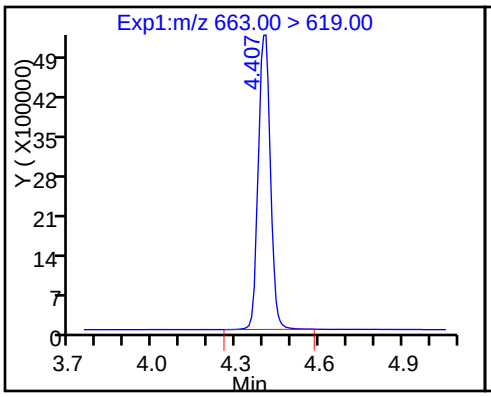
D 30 13C2 PFDoA



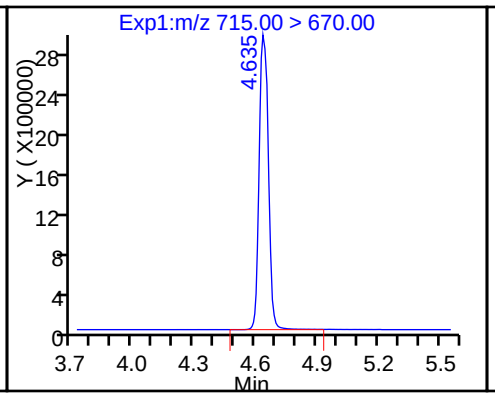
29 Perfluorododecanoic acid



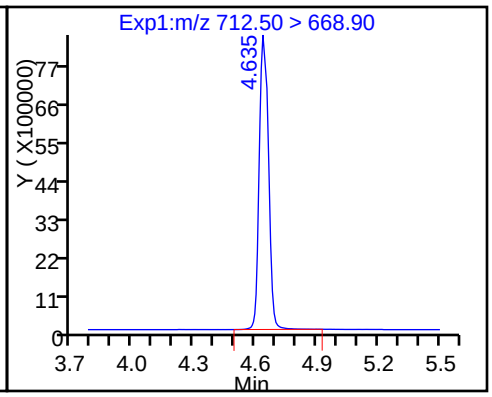
31 Perfluorotridecanoic acid



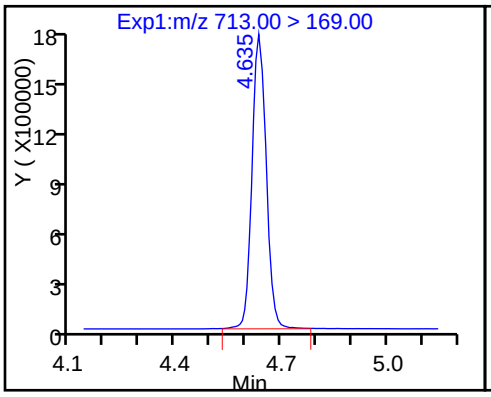
D 32 13C2-PFTeDA



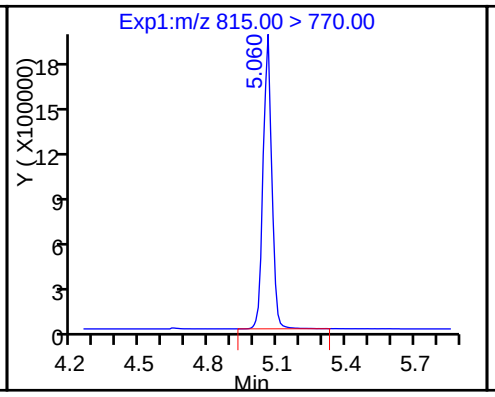
33 Perfluorotetradecanoic acid



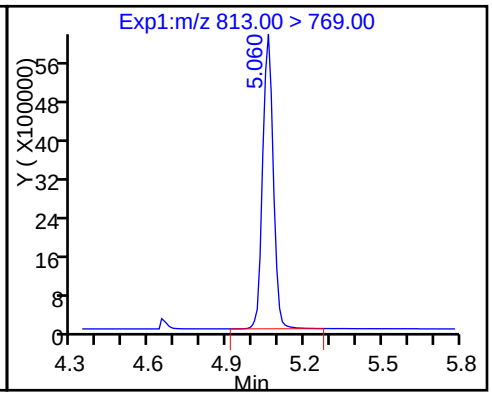
33 Perfluorotetradecanoic acid



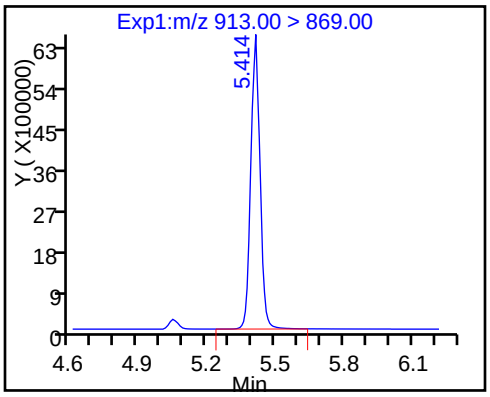
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016BB_013.d
Lims ID: IC L1 Add-on
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 15-Dec-2016 13:41:05 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:44 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:37:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.760	2.767	-0.007		5352965	45.8		96.3		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.776	2.768	0.008	1.000	48011	0.4779		101		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.511	3.511	0.0	1.000	39808	0.4671		97.5		
D 42 M2-8:2FTS										
529.00 > 509.00	3.511	3.513	-0.002		4817997	44.8		93.6		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.684	3.676	0.008		3634985	48.3		96.5		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.684	3.681	0.003	1.000	29823	0.4637		92.7		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.848	3.842	0.006		3889792	49.6		99.3		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.865	3.854	0.011	1.005	29965	0.4858		97.2		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.988	3.992	-0.004		4325034	45.5		91.0		
54 MeFOSA										
512.00 > 169.00	3.998	3.999	-0.001	1.000	36069	0.4978		99.6		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.180	4.180	0.0		3792851	44.2		88.4		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.187	4.187	0.0	1.000	30993	0.4729		94.6		

Reagents:

LCPFC2-L1_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:45 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016BB_013.d

Injection Date: 15-Dec-2016 13:41:05 Instrument ID: A8_N

Lims ID: IC L1 Add-on

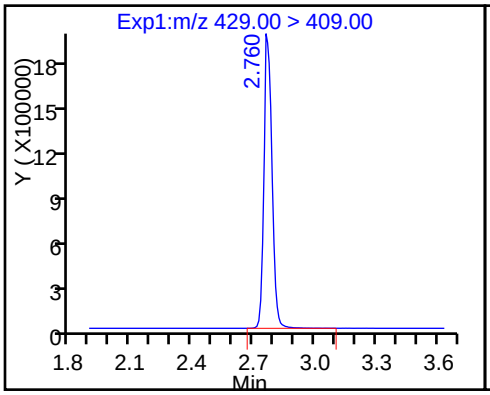
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 46 Worklist Smp#: 13

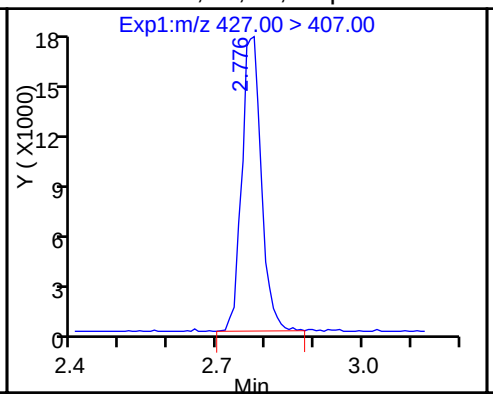
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

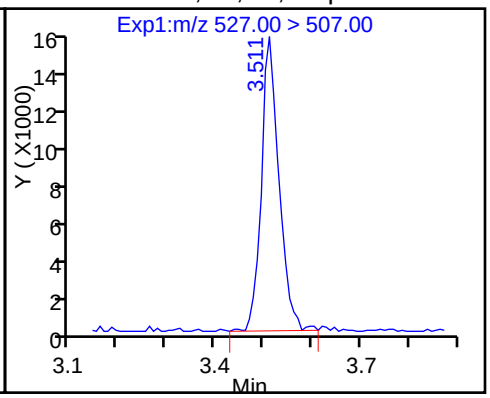
D 47 M2-6:2FTS



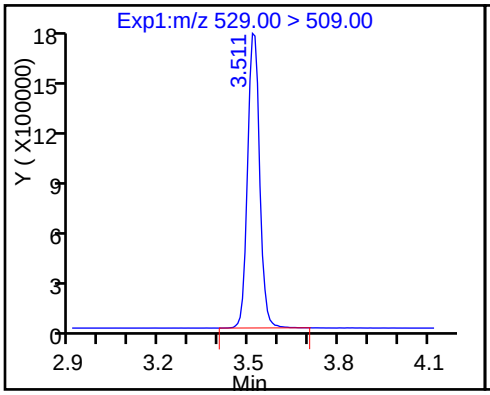
48 Sodium 1H,1H,2H,2H-perfluorooctane



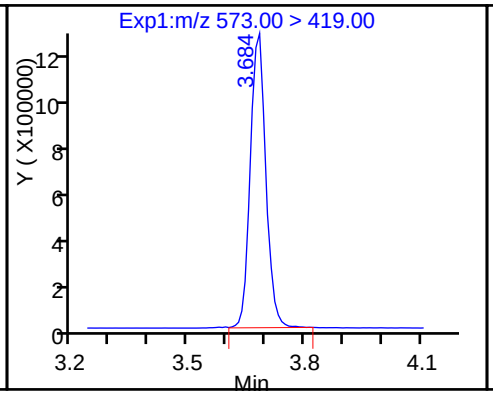
43 Sodium 1H,1H,2H,2H-perfluorooctane



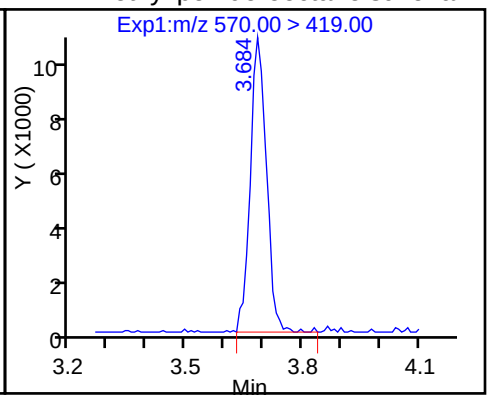
D 42 M2-8:2FTS



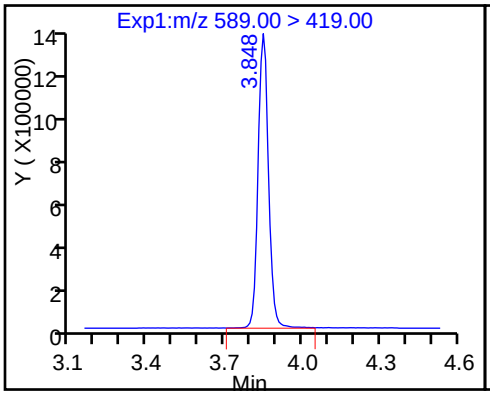
D 45 d3-NMeFOSAA



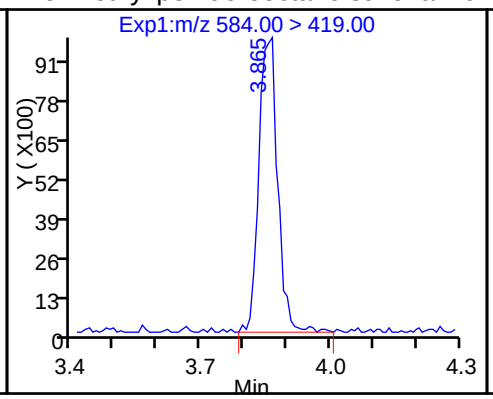
44 N-methyl perfluorooctane sulfonami



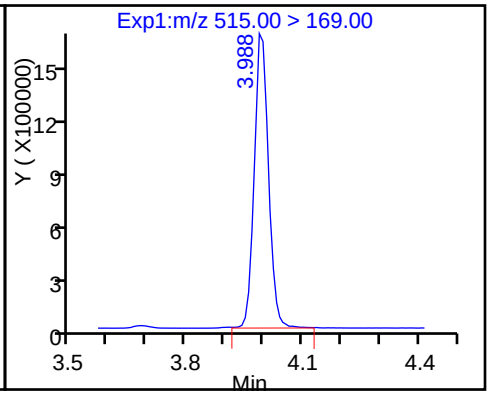
D 46 d5-NEtFOSAA



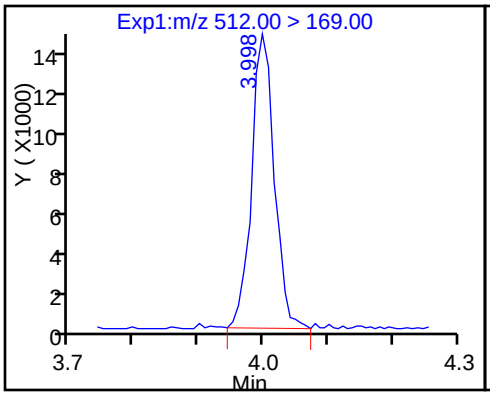
49 N-ethyl perfluorooctane sulfonamid



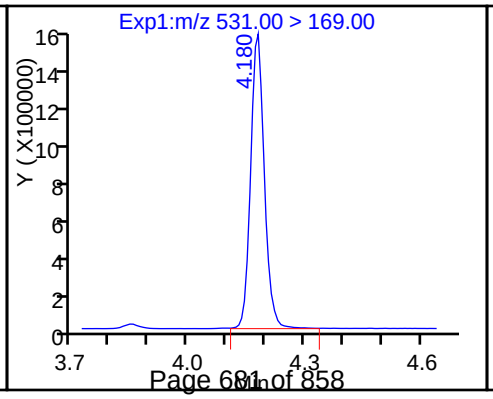
D 52 d-N-MeFOSA-M



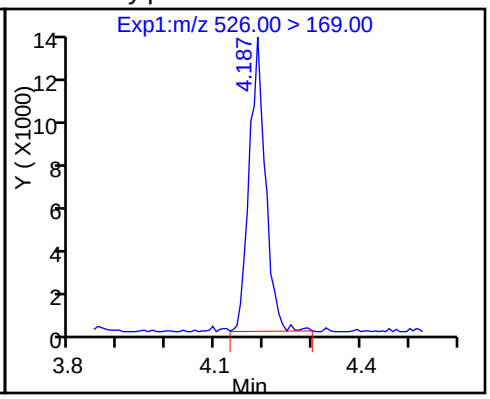
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_014.d
Lims ID: IC L2 Add-on
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 15-Dec-2016 13:48:34 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:46 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:38:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.761	2.767	-0.006		5108306	43.7		91.9		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.761	2.768	-0.007	1.000	106947	1.12		118		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.502	3.511	-0.009	0.998	75731	0.9308		97.2		
D 42 M2-8:2FTS										
529.00 > 509.00	3.511	3.513	-0.002		4599569	42.8		89.4		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.673	3.676	-0.003		3559083	47.2		94.5		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.673	3.681	-0.008	1.000	57389	0.9114		91.1		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.838	3.842	-0.004		3757014	48.0		95.9		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.855	3.854	0.001	1.005	53623	0.9000		90.0		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.987	3.992	-0.005		4639527	48.8		97.6		
54 MeFOSA										
512.00 > 169.00	3.997	3.999	-0.002	1.000	70049	0.9013		90.1		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.172	4.180	-0.008		4109875	47.9		95.8		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.179	4.187	-0.008	1.000	62962	0.8865		88.7		

Reagents:

LCPFC2-L2_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:47 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_014.d

Injection Date: 15-Dec-2016 13:48:34 Instrument ID: A8_N

Lims ID: IC L2 Add-on

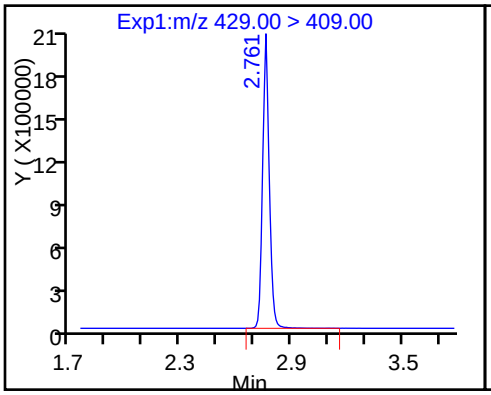
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 47 Worklist Smp#: 14

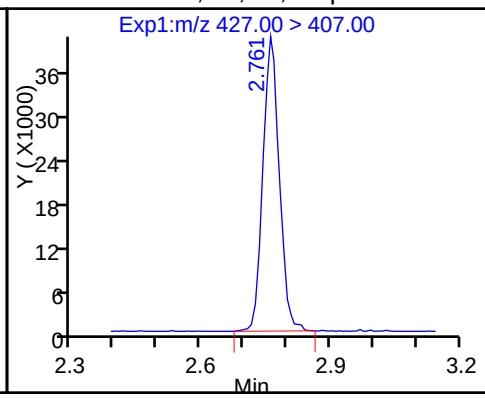
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

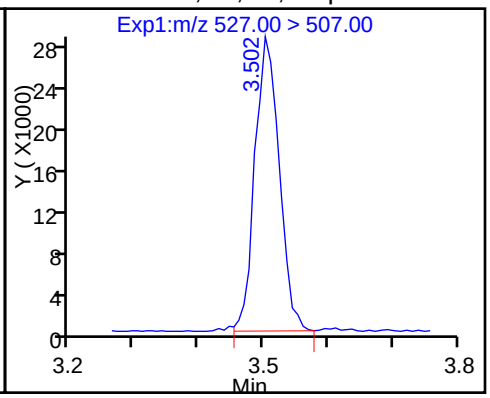
D 47 M2-6:2FTS



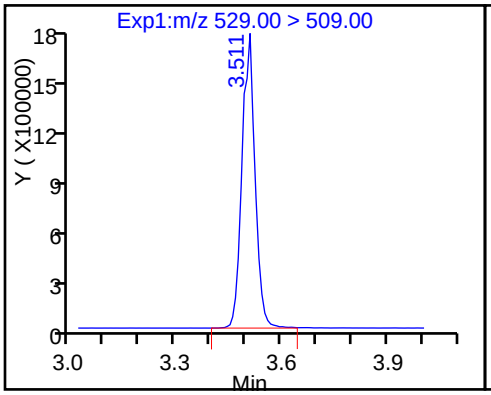
48 Sodium 1H,1H,2H,2H-perfluorooctane



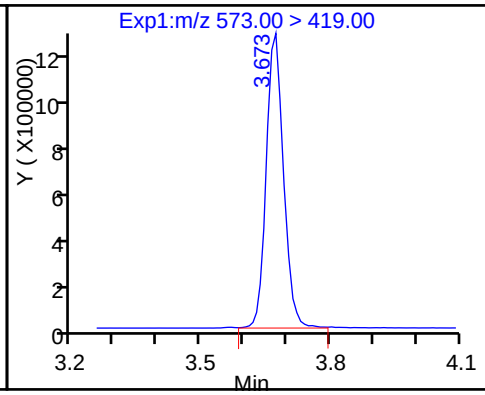
43 Sodium 1H,1H,2H,2H-perfluorooctane



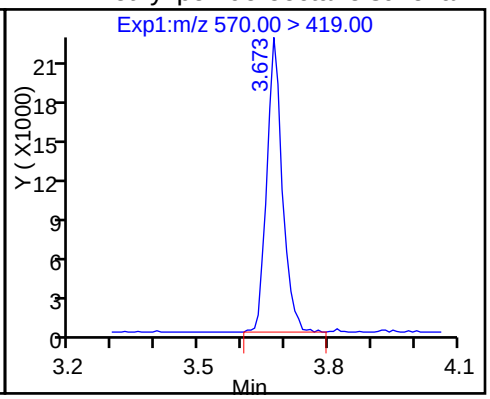
D 42 M2-8:2FTS



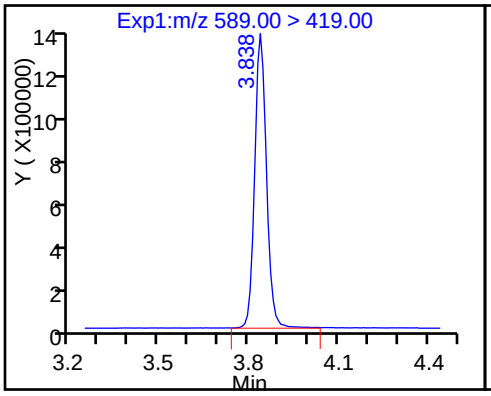
D 45 d3-NMeFOSAA



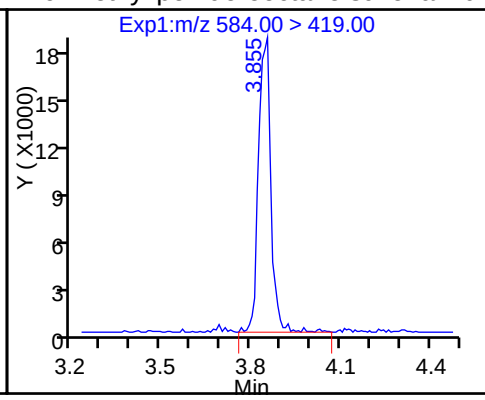
44 N-methyl perfluorooctane sulfonami



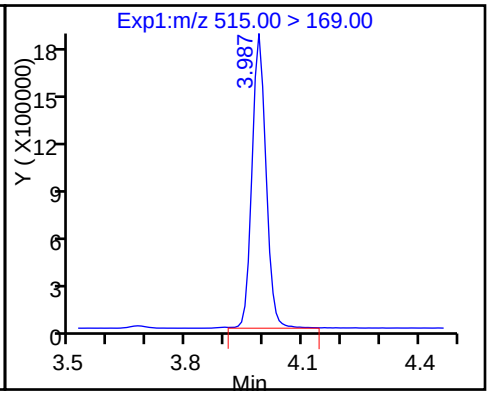
D 46 d5-NEtFOSAA



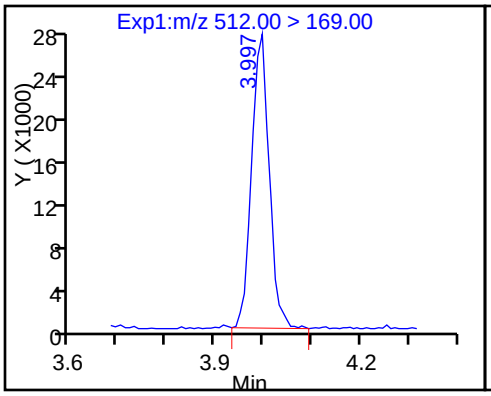
49 N-ethyl perfluorooctane sulfonamid



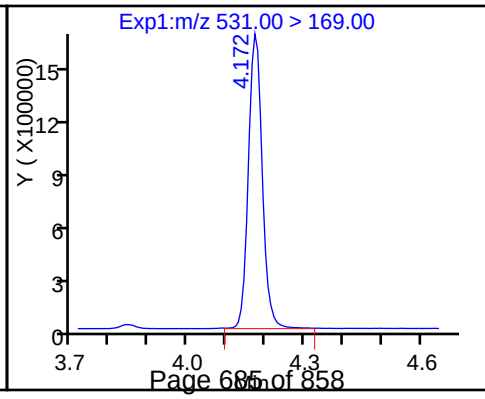
D 52 d-N-MeFOSA-M



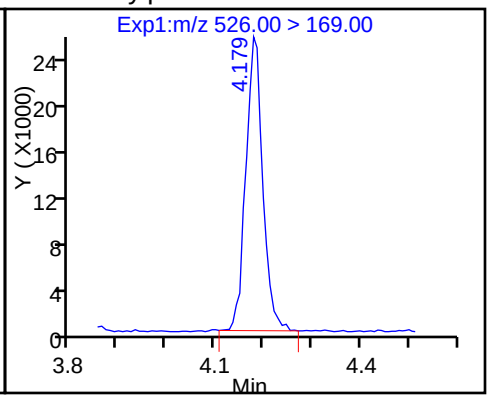
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_015.d
Lims ID: IC L3 Add-on
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 15-Dec-2016 13:56:03 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:48 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:38:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.768	2.767	0.001		5570739	47.6		100		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.768	2.768	0.0	1.000	405060	3.87		81.7		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.511	3.511	0.0	1.000	398457	4.22		88.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.511	3.513	-0.002		5342826	49.7		104		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.673	3.676	-0.003		4014623	53.3		107		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.683	3.681	0.002	1.003	285665	4.02		80.4		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.838	3.842	-0.004		4235352	54.1		108		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.847	3.854	-0.007	1.002	267721	3.99		79.7		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.987	3.992	-0.005		5121953	53.9		108		
54 MeFOSA										
512.00 > 169.00	3.997	3.999	-0.002	1.000	343493	4.00		80.1		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.179	4.180	-0.001		4561882	53.2		106		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.186	4.187	-0.001	1.000	326877	4.15		82.9		

Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:48 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_015.d

Injection Date: 15-Dec-2016 13:56:03 Instrument ID: A8_N

Lims ID: IC L3 Add-on

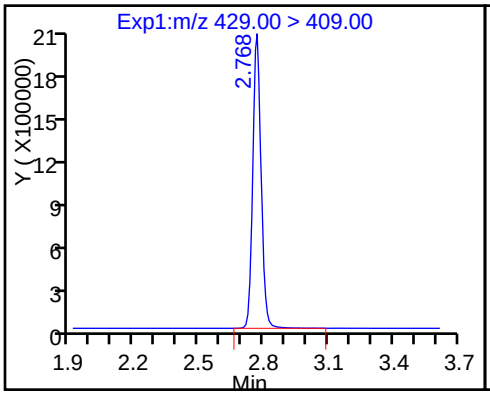
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 48 Worklist Smp#: 15

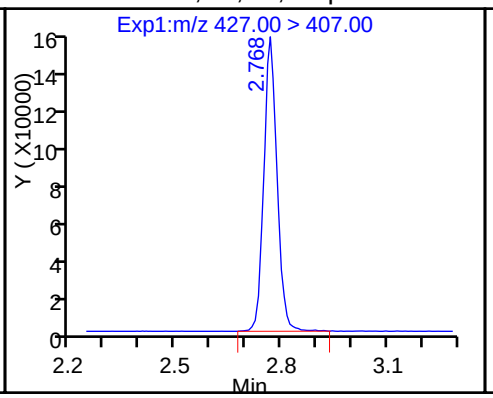
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

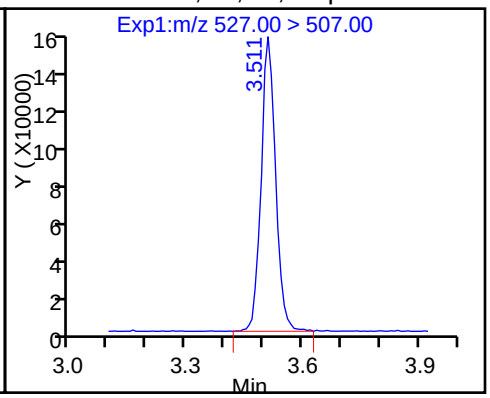
D 47 M2-6:2FTS



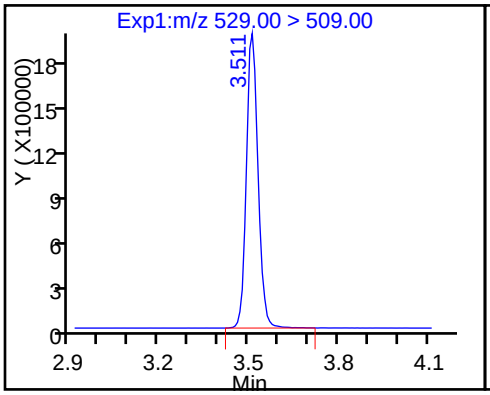
48 Sodium 1H,1H,2H,2H-perfluorooctane



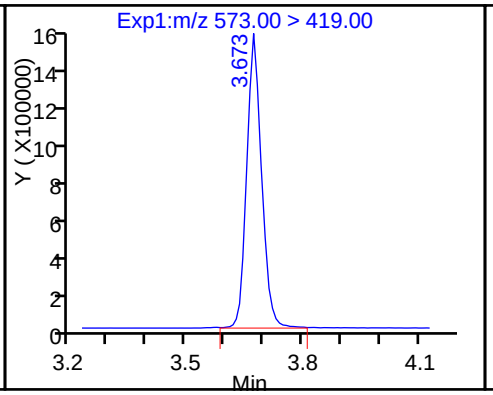
43 Sodium 1H,1H,2H,2H-perfluorooctane



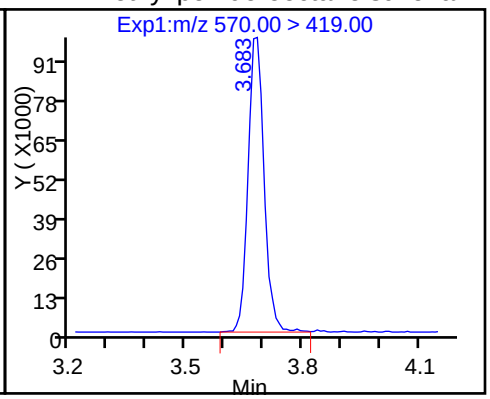
D 42 M2-8:2FTS



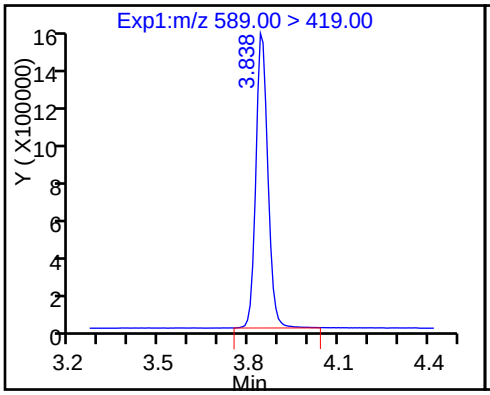
D 45 d3-NMeFOSAA



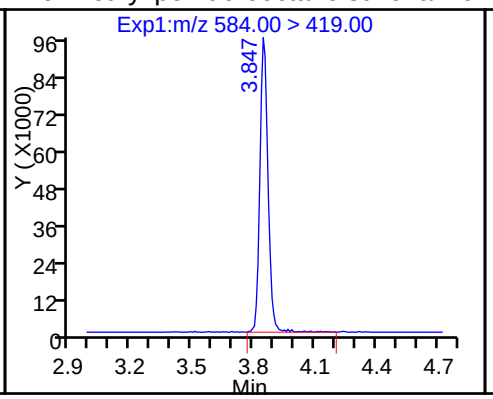
44 N-methyl perfluorooctane sulfonami



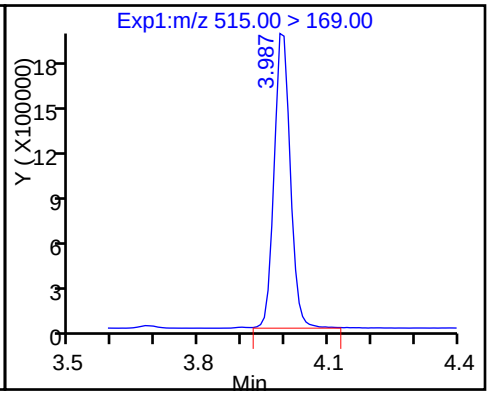
D 46 d5-NEtFOSAA



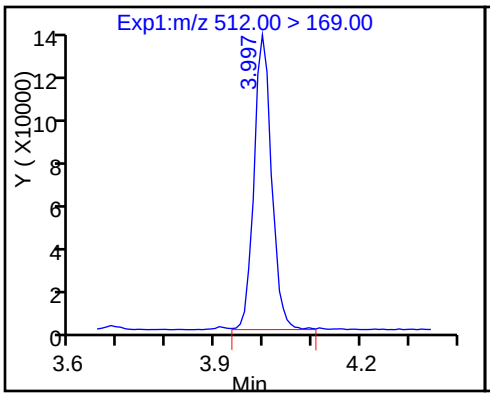
49 N-ethyl perfluorooctane sulfonamid



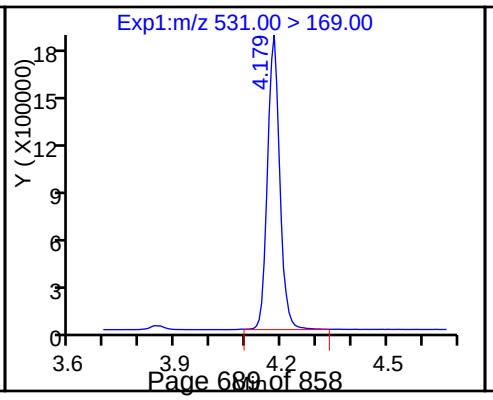
D 52 d-N-MeFOSA-M



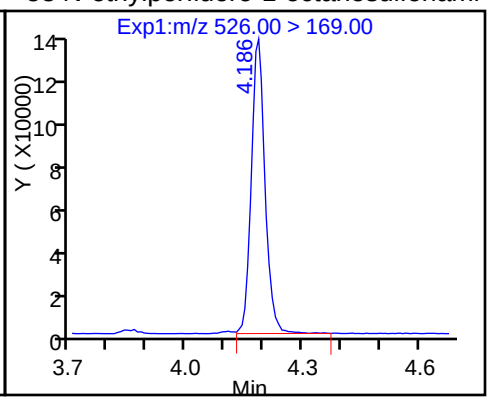
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_016.d
Lims ID: IC L4 Add-on
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 15-Dec-2016 14:03:33 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:49 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:37:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.767	2.767	0.0		6471813	55.3		116		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.767	2.768	-0.001	1.000	2416384	19.9		105		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.511	3.511	0.0	1.000	2224381	21.0		110		
D 42 M2-8:2FTS										
529.00 > 509.00	3.511	3.513	-0.002		5984276	55.7		116		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.673	3.676	-0.003		4379131	58.1		116		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.683	3.681	0.002	1.003	1708231	22.0		110		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.838	3.842	-0.004		4410456	56.3		113		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.847	3.854	-0.007	1.002	1518918	21.7		109		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.997	3.992	0.005		5263980	55.4		111		
54 MeFOSA										
512.00 > 169.00	3.997	3.999	-0.002	1.000	1946985	22.1		110		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.179	4.180	-0.001		4672820	54.5		109		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.186	4.187	-0.001	1.000	1813178	22.5		112		

Reagents:

LCPFC2-L4_00003 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:50 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_016.d

Injection Date: 15-Dec-2016 14:03:33 Instrument ID: A8_N

Lims ID: IC L4 Add-on

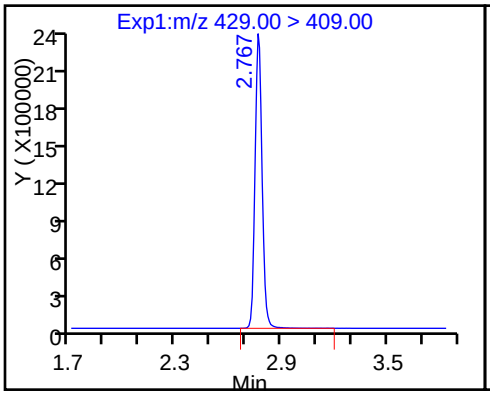
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 49 Worklist Smp#: 16

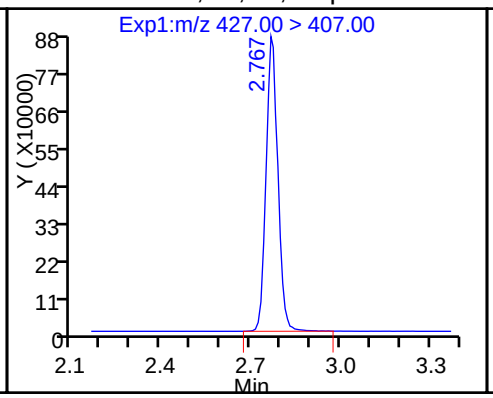
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

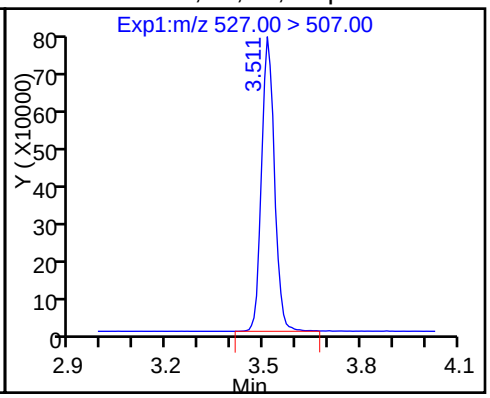
D 47 M2-6:2FTS



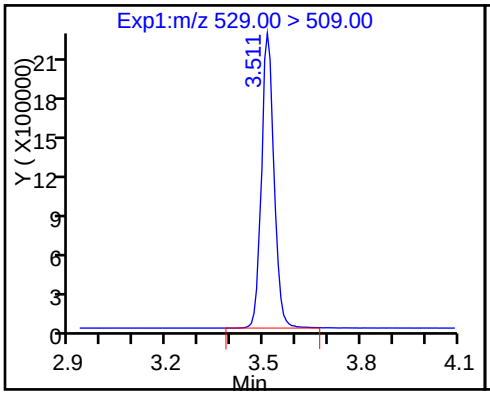
48 Sodium 1H,1H,2H,2H-perfluorooctane



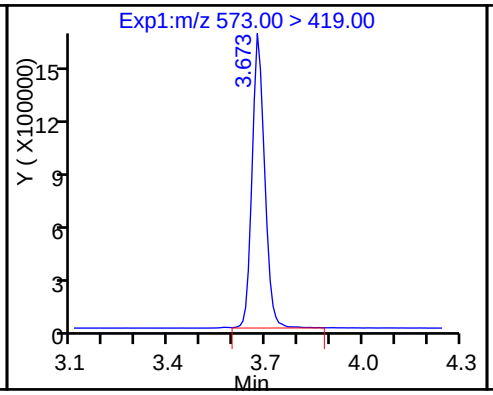
43 Sodium 1H,1H,2H,2H-perfluorooctane



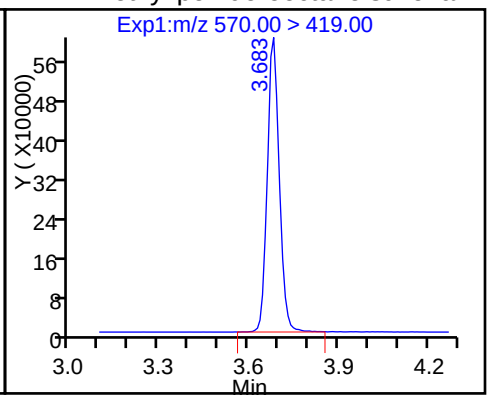
D 42 M2-8:2FTS



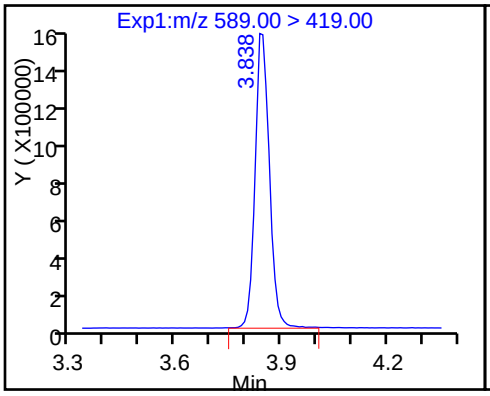
D 45 d3-NMeFOSAA



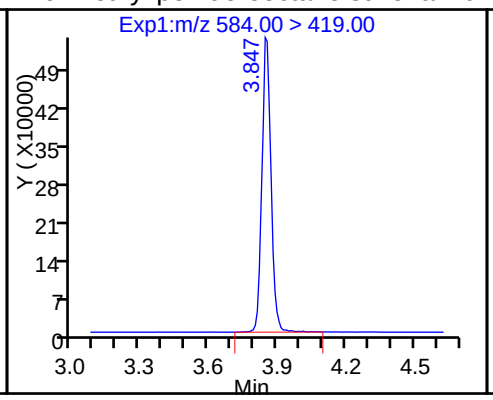
44 N-methyl perfluorooctane sulfonami



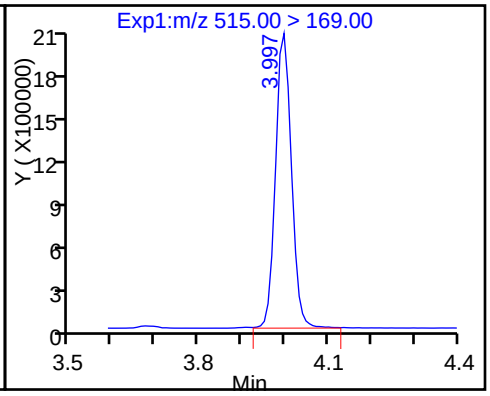
D 46 d5-NEtFOSAA



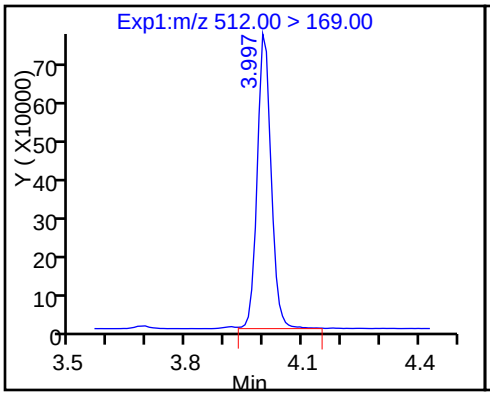
49 N-ethyl perfluorooctane sulfonamid



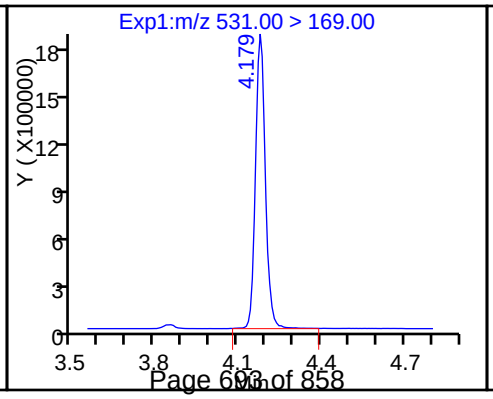
D 52 d-N-MeFOSA-M



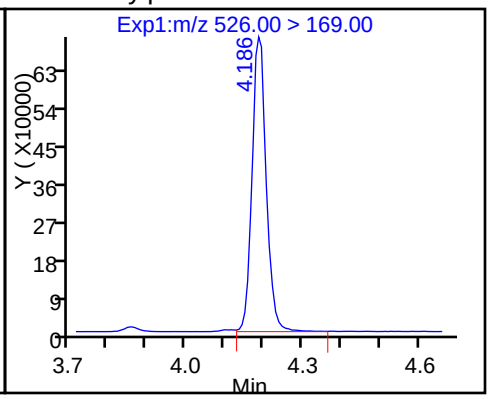
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_017.d
Lims ID: IC L5 Add-on
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 15-Dec-2016 14:11:03 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:51 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:38:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.767	2.767	0.0		5259120	45.0		94.6		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.767	2.768	-0.001	1.000	5166665	52.3		110		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.512	3.511	0.001	0.998	4815680	56.9		119		
D 42 M2-8:2FTS										
529.00 > 509.00	3.520	3.513	0.007		4786038	44.5		93.0		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.675	3.676	-0.001		3422485	45.4		90.9		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.684	3.681	0.003	1.003	3741936	61.8		124		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.848	3.842	0.006		3486329	44.5		89.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.857	3.854	0.003	1.002	3414301	61.8		124		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.999	3.992	0.007		4512300	47.5		94.9		
54 MeFOSA										
512.00 > 169.00	3.999	3.999	0.0	1.000	4407328	58.3		117		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.182	4.180	0.002		4149228	48.4		96.7		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.189	4.187	0.002	1.000	4264314	59.5		119		

Reagents:

LCPFC2-L5_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:51 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_017.d

Injection Date: 15-Dec-2016 14:11:03 Instrument ID: A8_N

Lims ID: IC L5 Add-on

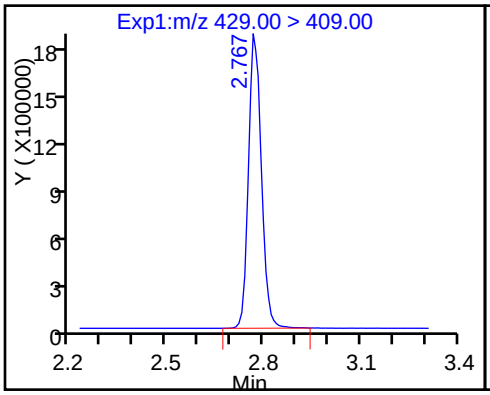
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 50 Worklist Smp#: 17

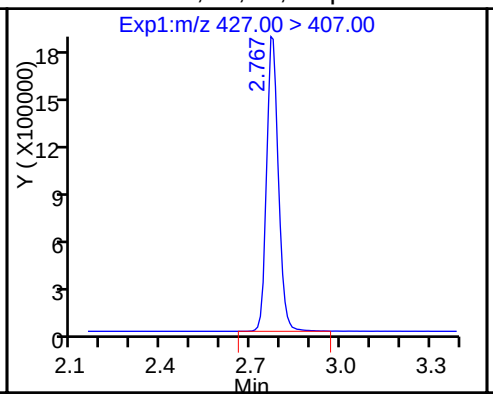
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

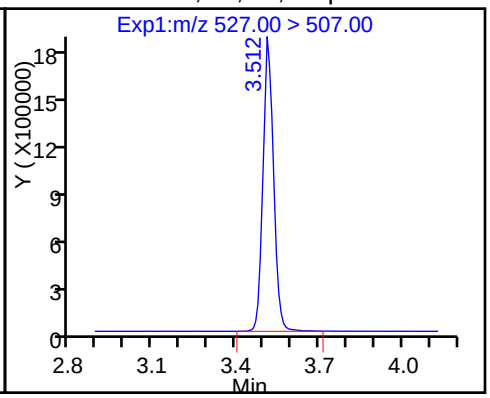
D 47 M2-6:2FTS



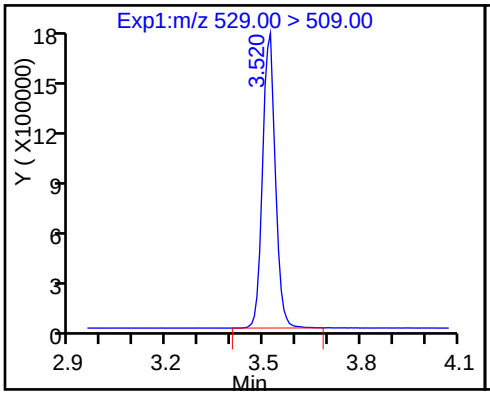
48 Sodium 1H,1H,2H,2H-perfluorooctane



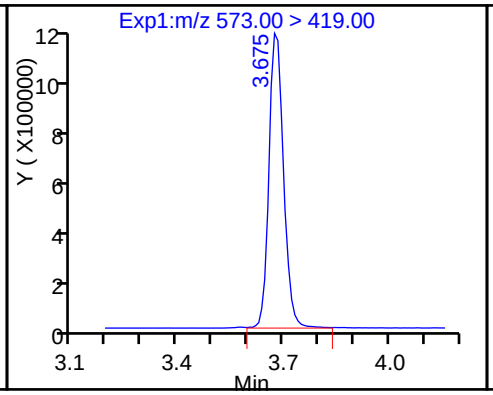
43 Sodium 1H,1H,2H,2H-perfluorooctane



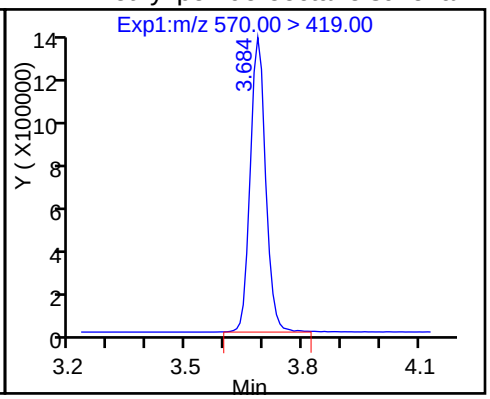
D 42 M2-8:2FTS



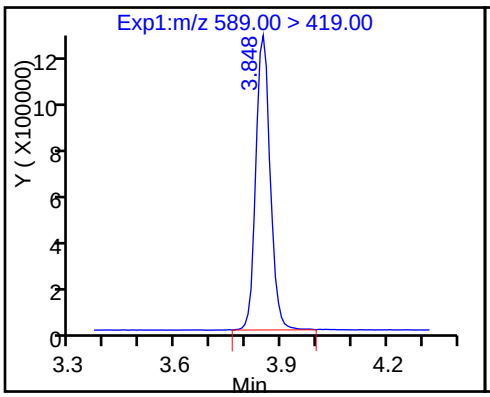
D 45 d3-NMeFOSAA



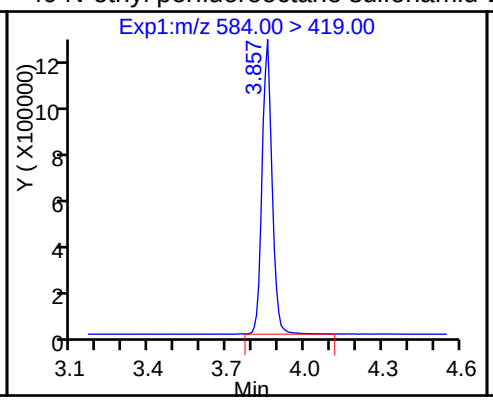
44 N-methyl perfluorooctane sulfonami



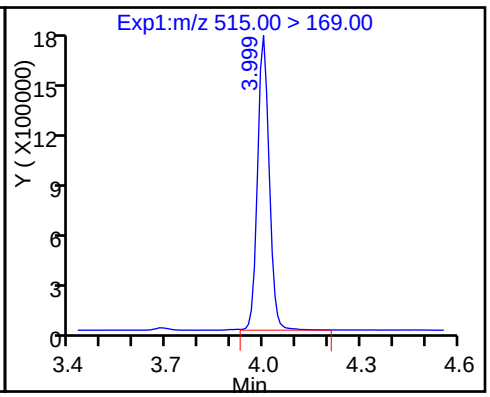
D 46 d5-NEtFOSAA



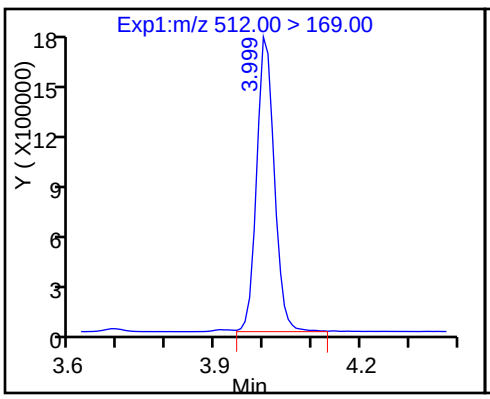
49 N-ethyl perfluorooctane sulfonamid



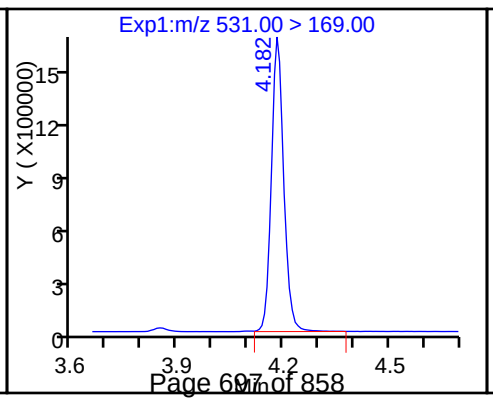
D 52 d-N-MeFOSA-M



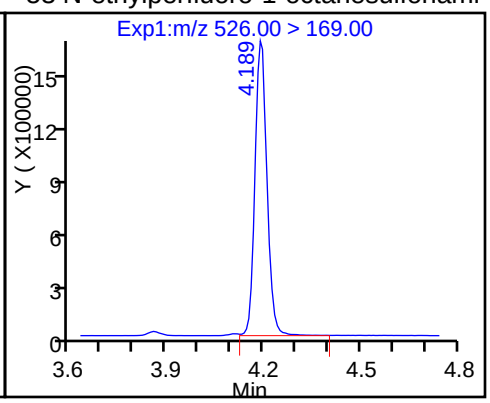
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
Lims ID: IC L6 Add-on
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 15-Dec-2016 14:18:33 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*sub6

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:34:52 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 16:38:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.776	2.767	0.009		5576967	47.7		100		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.769	2.768	0.001	1.000	16907459	161.5		85.2		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.516	3.511	0.005	1.000	16111959	170.3		88.9		
D 42 M2-8:2FTS										
529.00 > 509.00	3.516	3.513	0.003		5348797	49.8		104		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.680	3.676	0.004		3587176	47.6		95.2		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.680	3.681	-0.001	1.000	12924122	203.6		102		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.845	3.842	0.003		3725902	47.6		95.1		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.853	3.854	-0.001	1.002	11938061	202.0		101		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.995	3.992	0.003		4658153	49.0		98.0		
54 MeFOSA										
512.00 > 169.00	4.004	3.999	0.005	1.000	16114020	206.5		103		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.186	4.180	0.006		4448546	51.9		104		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.193	4.187	0.006	1.000	15780196	205.3		103		

Reagents:

LCPFC2-L6_00002 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:34:53 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Injection Date: 15-Dec-2016 14:18:33 Instrument ID: A8_N

Lims ID: IC L6 Add-on

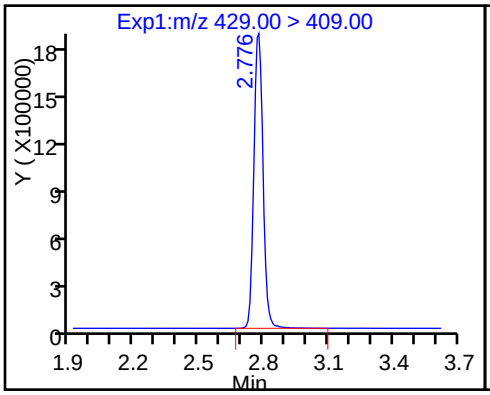
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 18

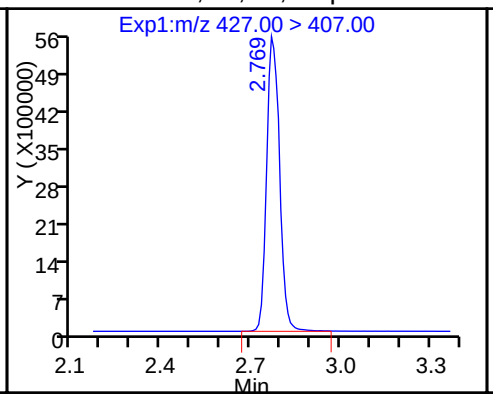
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

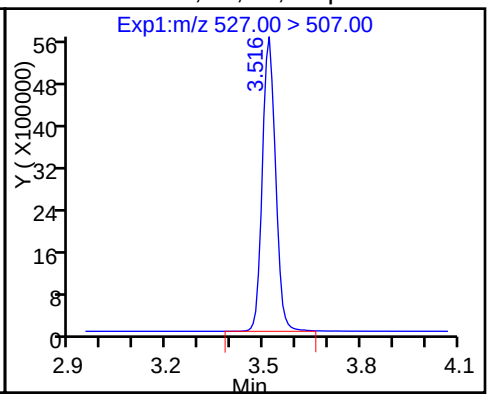
D 47 M2-6:2FTS



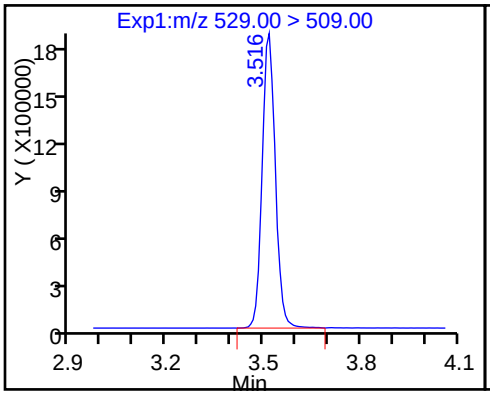
48 Sodium 1H,1H,2H,2H-perfluorooctane



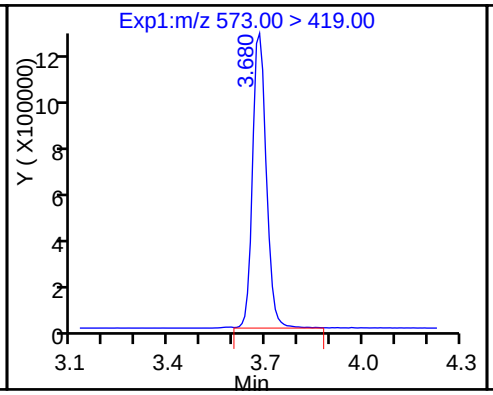
43 Sodium 1H,1H,2H,2H-perfluorooctane



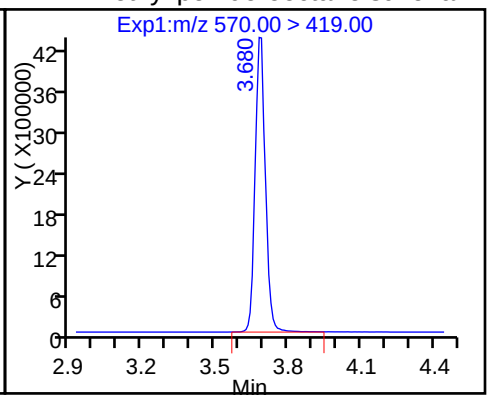
D 42 M2-8:2FTS



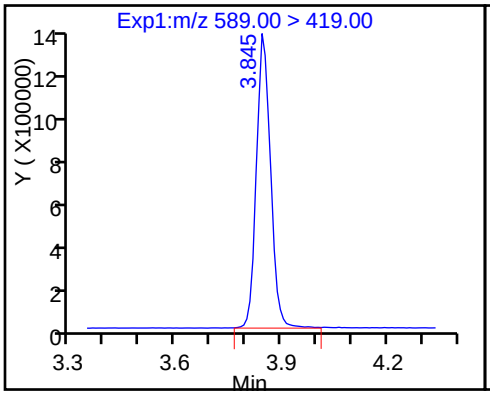
D 45 d3-NMeFOSAA



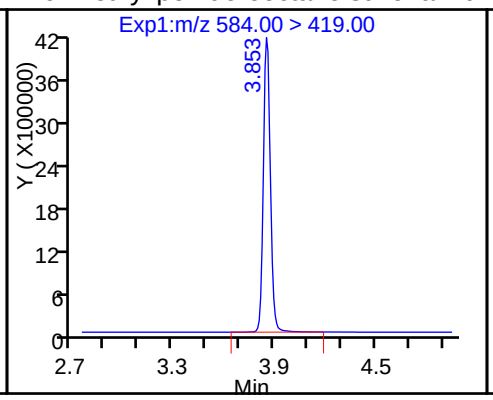
44 N-methyl perfluorooctane sulfonami



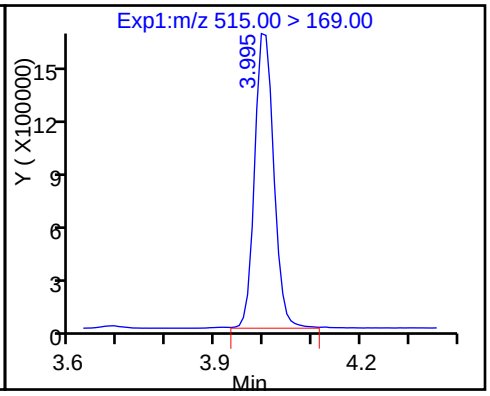
D 46 d5-NEtFOSAA



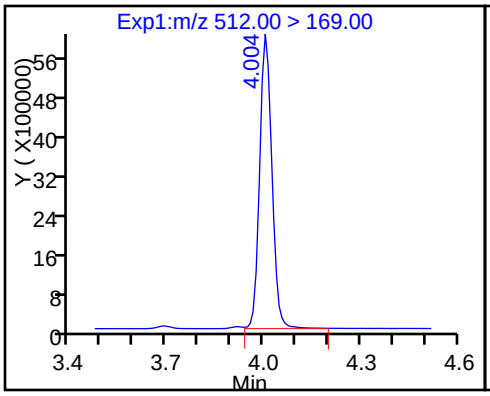
49 N-ethyl perfluorooctane sulfonamid



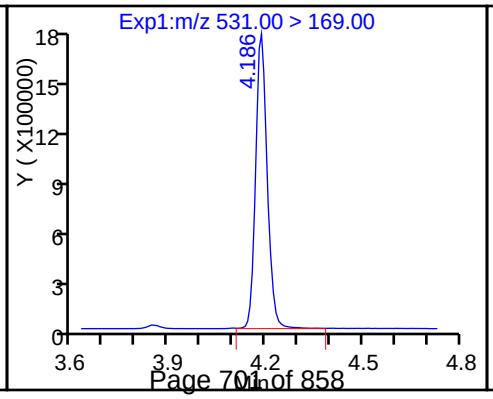
D 52 d-N-MeFOSA-M



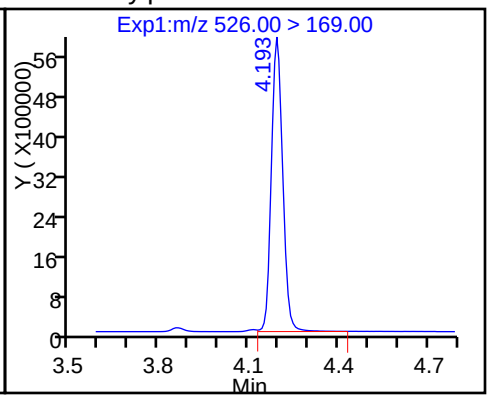
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: ICV 320-142082/11 Calibration Date: 12/14/2016 09:46

Instrument ID: A8_N Calib Start Date: 12/14/2016 08:54

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/14/2016 10:39

Lab File ID: 14DEC2016A_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	0.8887	0.8650		48.7	50.0	-2.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.028	0.9405		45.7	50.0	-8.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.499	1.487		43.9	44.3	-0.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9637	0.9123		47.3	50.0	-5.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.007	0.9609		47.7	50.0	-4.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.070	0.9657		42.6	47.3	-9.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.035	0.9566		46.2	50.0	-7.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.182	1.189		47.9	47.6	0.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9902	0.9423		47.6	50.0	-4.8	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.067	0.9104		40.8	47.8	-14.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9162	0.9043		49.4	50.0	-1.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9463	0.8935		47.2	50.0	-5.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6119	0.6117		48.2	48.3	-0.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.070	0.9598		44.8	50.0	-10.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9534	0.8831		46.3	50.0	-7.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9380	0.8719		46.5	50.0	-7.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.734	1.622		46.8	50.0	-6.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9511		48.4	50.0	-3.2	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8226	0.8298		50.4	50.0	0.9	25.0
13C4 PFBA	Ave	325599	322732		49.6	50.0	-0.9	50.0
13C5-PFPeA	Ave	255279	253664		49.7	50.0	-0.6	50.0
13C2 PFHxA	Ave	246953	246929		50.0	50.0	-0.0	50.0
13C4-PFHpA	Ave	207616	197531		47.6	50.0	-4.9	50.0
18O2 PFHxS	Ave	314997	320005		48.1	47.3	1.6	50.0
13C4 PFOA	Ave	214796	204797		47.7	50.0	-4.7	50.0
13C4 PFOS	Ave	228634	235857		49.3	47.8	3.2	50.0
13C5 PFNA	Ave	160661	154804		48.2	50.0	-3.6	50.0
13C8 FOSA	Ave	366644	377650		51.5	50.0	3.0	50.0
13C2 PFDA	Ave	145179	140092		48.2	50.0	-3.5	50.0
13C2 PFUnA	Ave	110482	106911		48.4	50.0	-3.2	50.0
13C2 PFDoA	Ave	101960	103633		50.8	50.0	1.6	50.0
13C2-PFTeDA	Ave	207924	214133		51.5	50.0	3.0	50.0
13C2-PFHxDA	Ave	113637	115289		50.7	50.0	1.5	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_011.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 14-Dec-2016 09:46:37 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\20161214-37828.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:08:24 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:56:44

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	1.518	1.522	-0.004		16136604	49.6		99.1	851053	
1 Perfluorobutyric acid										
212.90 > 169.00	1.518	1.525	-0.007	1.000	13957373	48.7			80366	
D 4 13C5-PFPeA										
267.90 > 223.00	1.792	1.796	-0.004		12683209	49.7		99.4	1181702	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.792	1.798	-0.006	1.000	11928002	45.7			101928	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.830	1.833	-0.003	1.000	21052619	43.9				
298.90 > 99.00	1.830	1.833	-0.003	1.000	9778496		2.15(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.076	2.079	-0.003		12346445	50.0		100	608775	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.069	2.080	-0.011	1.000	11263618	47.3			280663	
D 11 13C4-PFHpA										
367.00 > 322.00	2.402	2.407	-0.005		9876541	47.6		95.1	441748	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.407	2.410	-0.003	1.000	9490572	47.7			79538	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.423	2.421	0.002	1.000	14601023	42.6				
D 10 18O2 PFHxS										
403.00 > 84.00	2.417	2.425	-0.008		15136222	48.1		102	1306998	
D 14 13C4 PFOA										
417.00 > 372.00	2.759	2.763	-0.004		10239858	47.7		95.3	439142	

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	2.759	2.763	-0.004	1.000	9795328	46.2			90282	
413.00 > 169.00	2.767	2.763	0.004	1.003	6158924		1.59(0.90-1.10)		254784	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.767	2.772	-0.005	1.000	13349575	47.9				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.135	3.128	0.007	1.000	10253158	40.8			355360	
499.00 > 99.00	3.127	3.128	-0.001	0.997	2430122		4.22(0.90-1.10)		109052	
D 19 13C5 PFNA										
468.00 > 423.00	3.135	3.132	0.003		7740200	48.2		96.4	332453	
D 17 13C4 PFOS										
503.00 > 80.00	3.127	3.134	-0.007		11273958	49.3		103	218163	
20 Perfluorononanoic acid										
463.00 > 419.00	3.127	3.134	-0.007	1.000	7293631	47.6			94176	
D 21 13C8 FOSA										
506.00 > 78.00	3.473	3.472	0.001		18882497	51.5		103	707588	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.466	3.473	-0.007	1.000	17075221	49.4			590636	
D 23 13C2 PFDA										
515.00 > 470.00	3.490	3.492	-0.002		7004583	48.2		96.5	313455	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.490	3.494	-0.004	1.000	6258488	47.2			239866	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.795	3.806	-0.011	1.000	6961123	48.2				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.821	3.822	-0.001	1.000	5130814	44.8			93087	
D 27 13C2 PFUnA										
565.00 > 520.00	3.821	3.822	-0.001		5345547	48.4		96.8	317465	
D 30 13C2 PFDoA										
615.00 > 570.00	4.108	4.112	-0.004		5181656	50.8		102	193949	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.116	4.113	0.003	1.000	4576002	46.3			102737	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.384	4.380	0.004	1.000	4518055	46.5			88064	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.615	4.615	0.0		10706630	51.5		103	986269	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.622	4.617	0.005	1.000	8405167	46.8			109970	
713.00 > 169.00	4.615	4.617	-0.002	0.999	1346420		6.24(0.00-0.00)		102510	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.039	5.033	0.006		5764425	50.7		101	157120	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.039	5.034	0.005	1.000	4928134	48.4			21310	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.385	5.388	-0.003	1.000	4299633	50.4			5992	

Reagents:

LCPFCIC_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:08:24 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_011.d

Injection Date: 14-Dec-2016 09:46:37 Instrument ID: A8_N

Lims ID: ICV

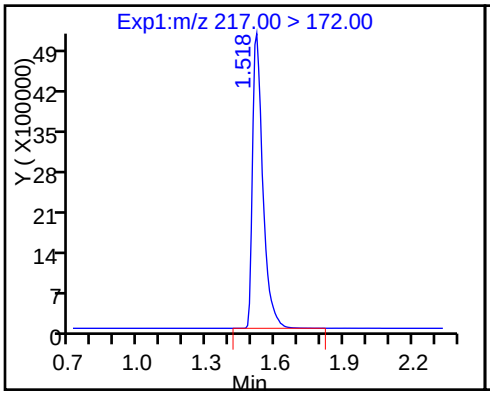
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 11

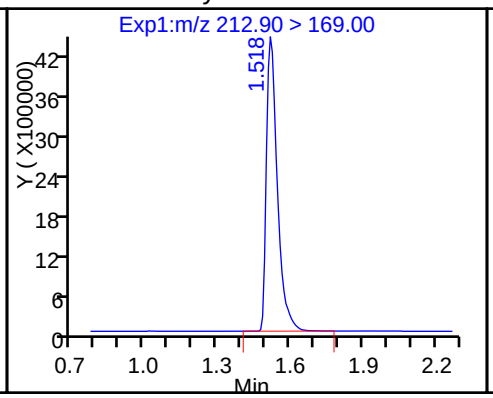
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

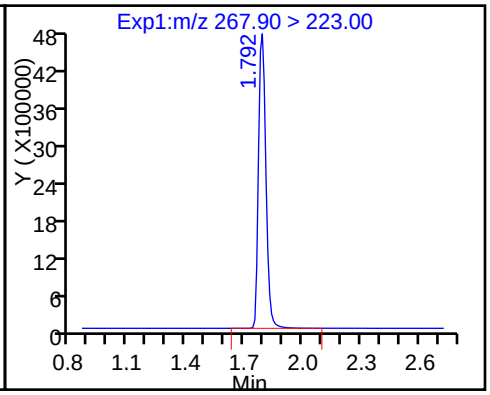
D 2 13C4 PFBA



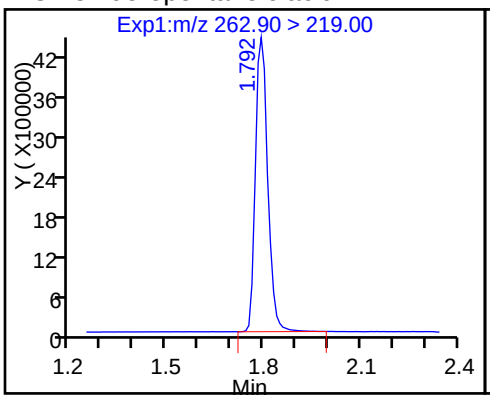
1 Perfluorobutyric acid



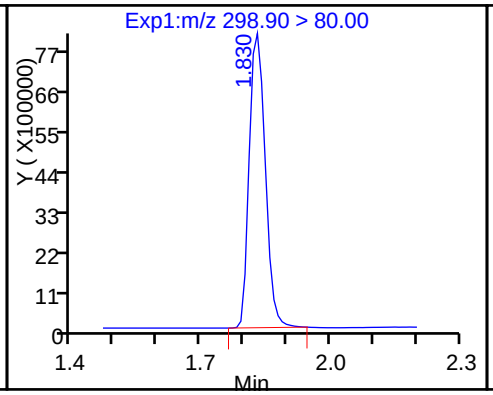
D 4 13C5-PFPeA



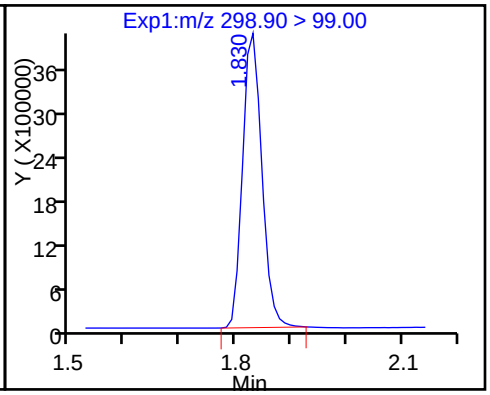
3 Perfluoropentanoic acid



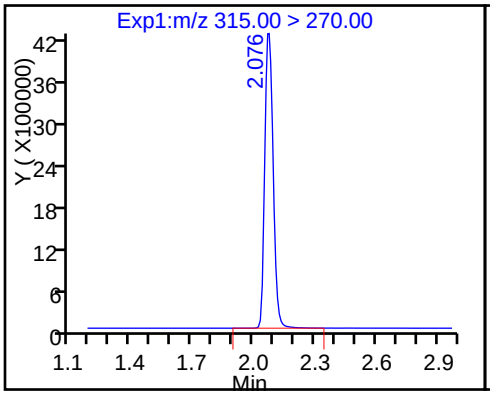
5 Perfluorobutanesulfonic acid



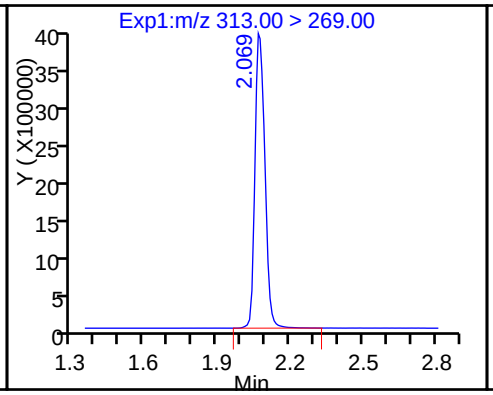
5 Perfluorobutanesulfonic acid



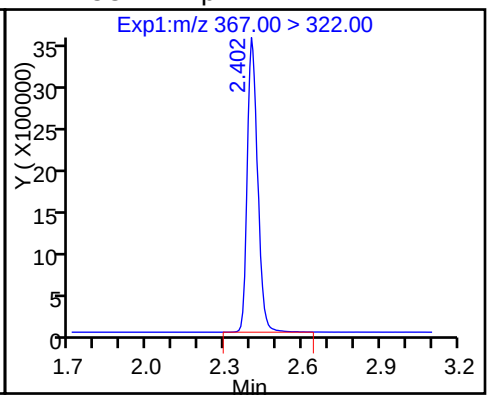
D 6 13C2 PFHxA



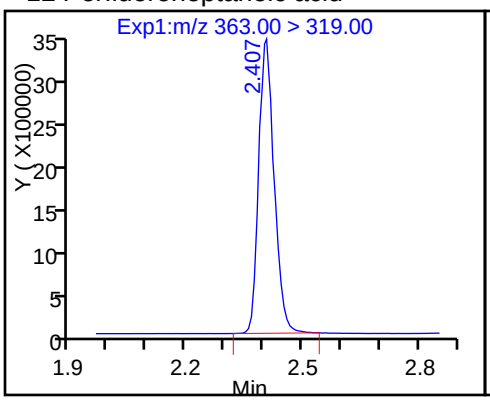
7 Perfluorohexanoic acid



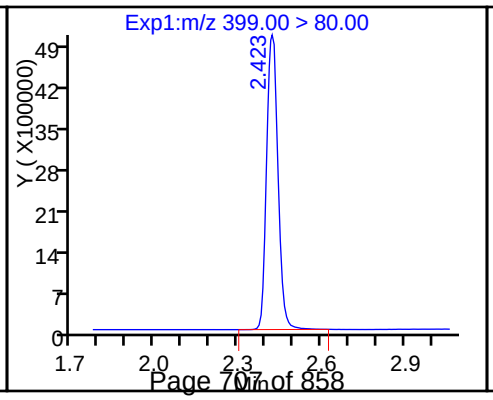
D 11 13C4-PFHpA



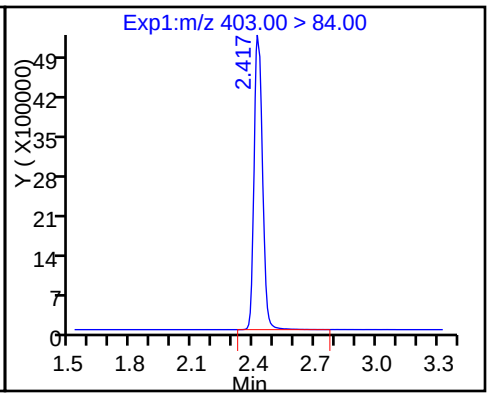
12 Perfluoroheptanoic acid



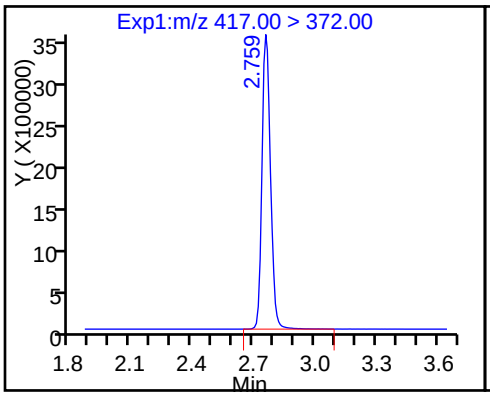
9 Perfluorohexanesulfonic acid



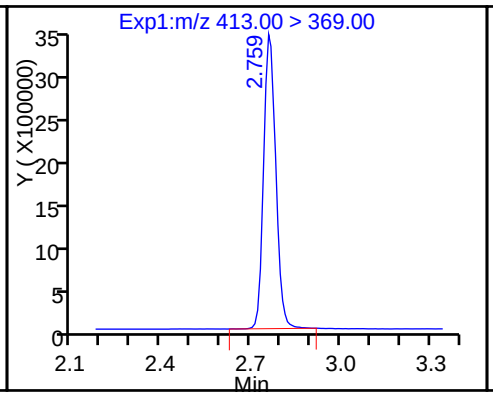
D 10 18O2 PFHxS



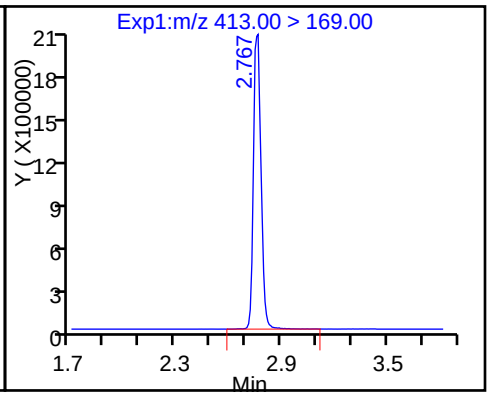
D 14 13C4 PFOA



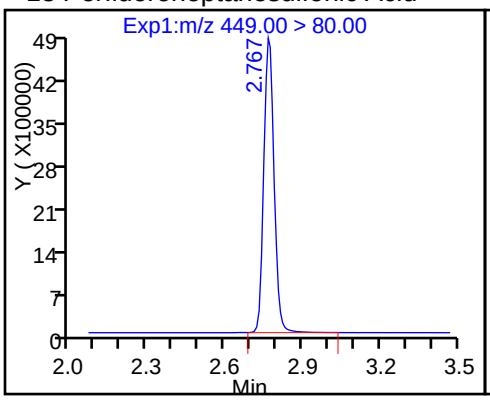
15 Perfluorooctanoic acid



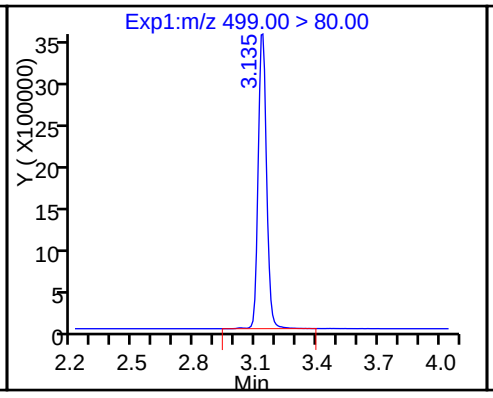
15 Perfluorooctanoic acid



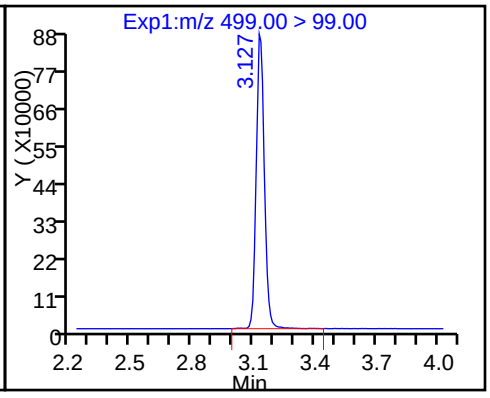
13 Perfluoroheptanesulfonic Acid



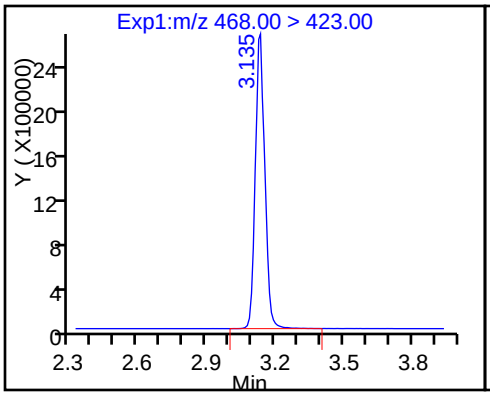
18 Perfluorooctane sulfonic acid



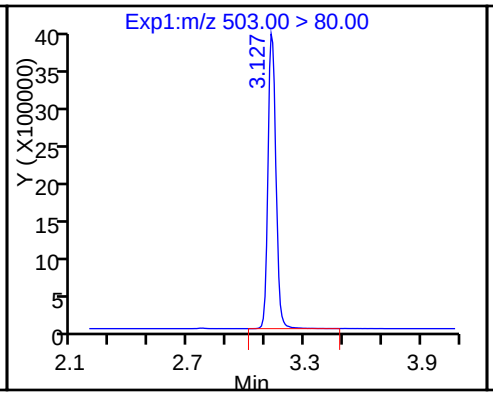
18 Perfluorooctane sulfonic acid



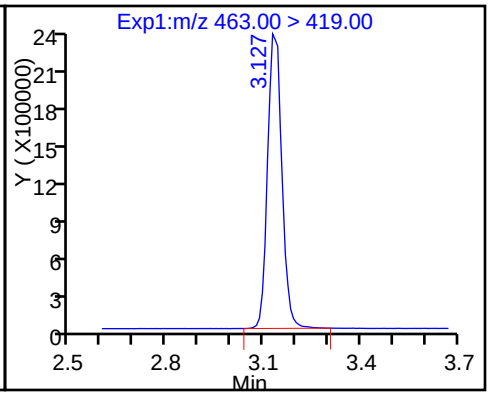
D 19 13C5 PFNA



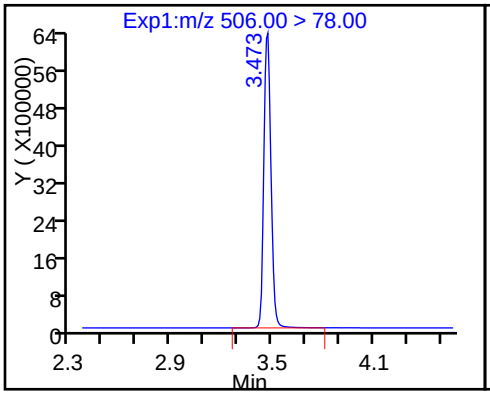
D 17 13C4 PFOS



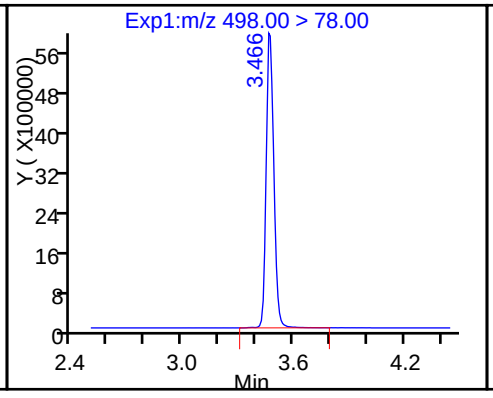
20 Perfluorononanoic acid



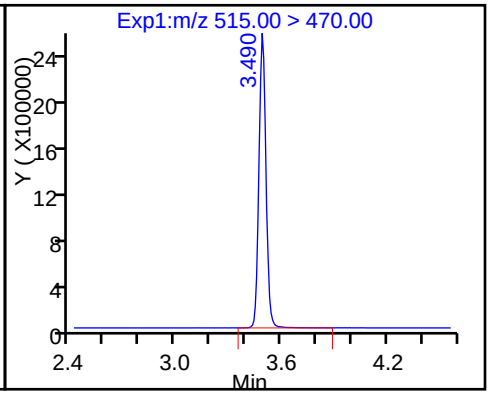
D 21 13C8 FOSA



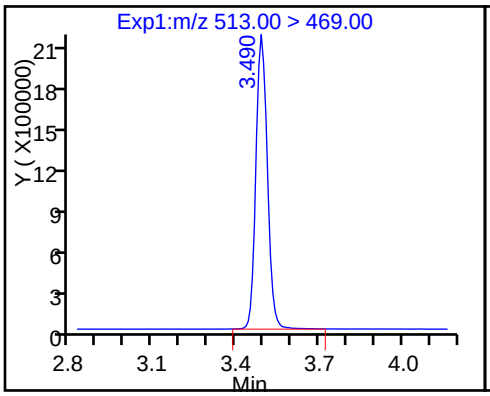
22 Perfluorooctane Sulfonamide



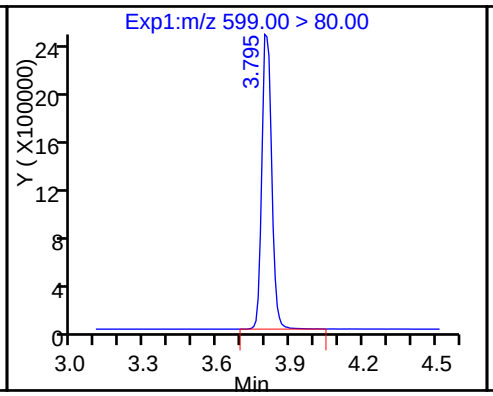
D 23 13C2 PFDA



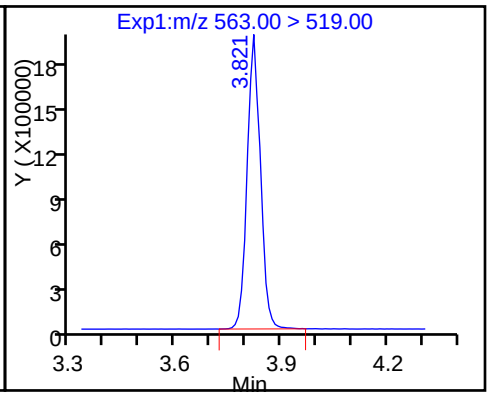
24 Perfluorodecanoic acid



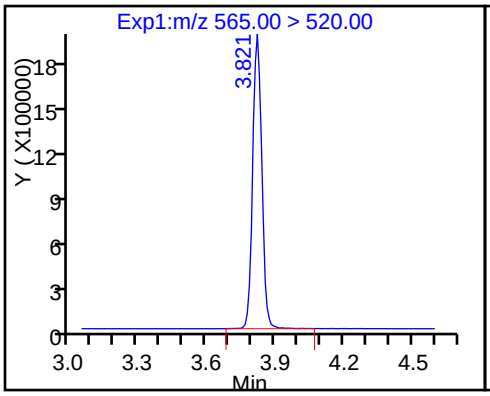
26 Perfluorodecane Sulfonic acid



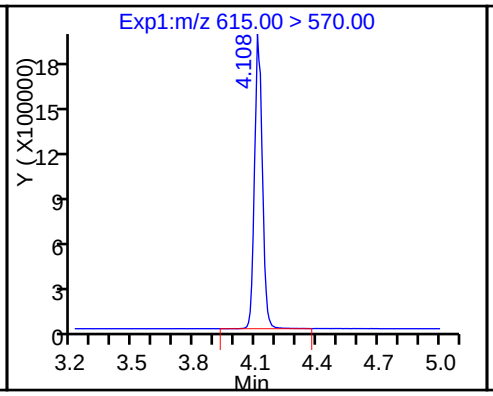
28 Perfluoroundecanoic acid



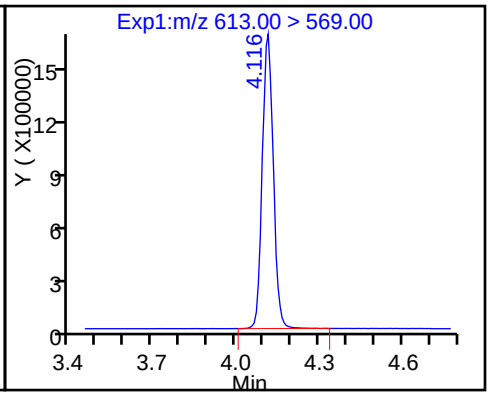
D 27 13C2 PFUnA



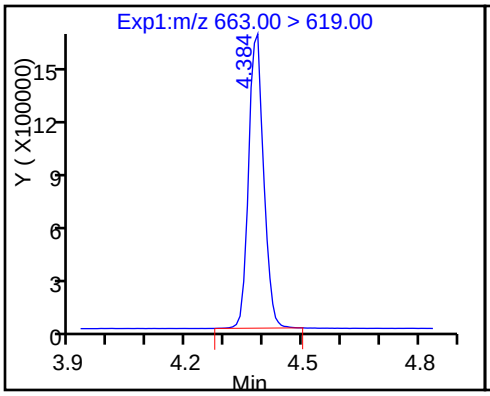
D 30 13C2 PFDoA



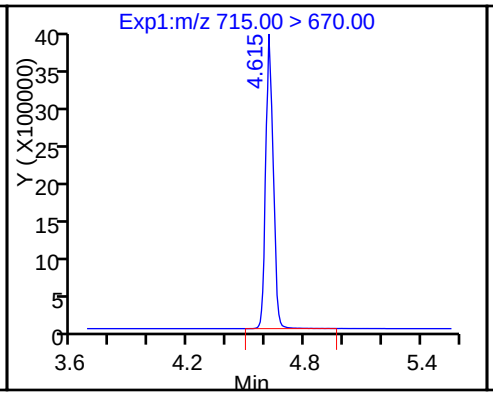
29 Perfluorododecanoic acid



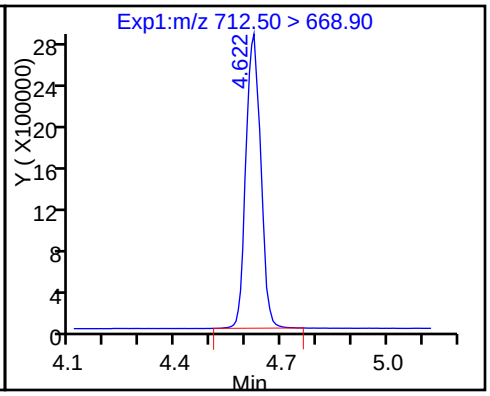
31 Perfluorotridecanoic acid



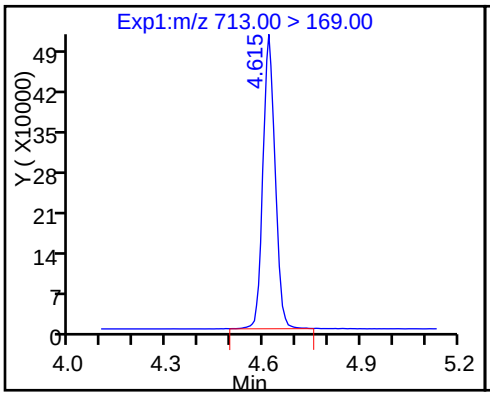
D 32 13C2-PFTeDA



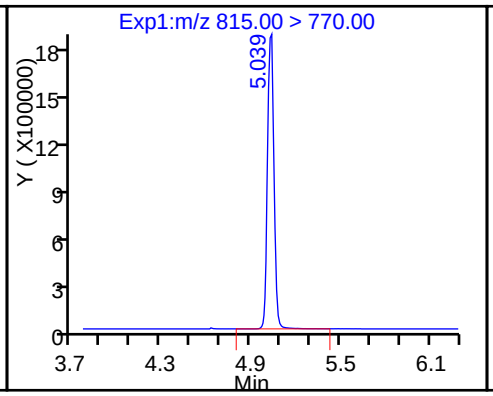
33 Perfluorotetradecanoic acid



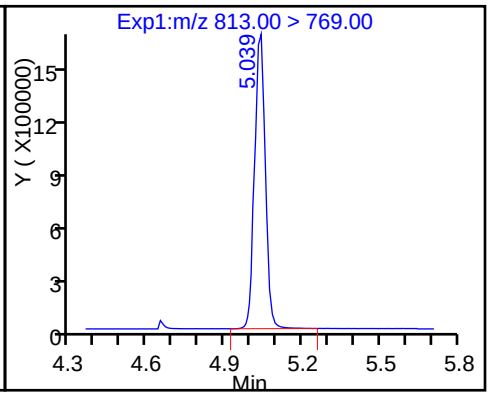
33 Perfluorotetradecanoic acid



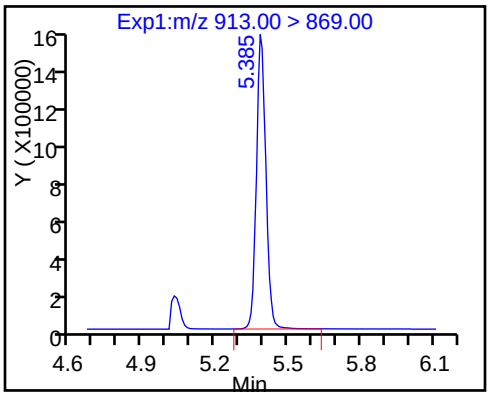
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142338/2 Calibration Date: 12/14/2016 17:16

Instrument ID: A8_N Calib Start Date: 12/14/2016 08:54

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/14/2016 10:39

Lab File ID: 14DEC2016C_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	0.8887	0.8944		50.3	50.0	0.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.028	0.9935		48.3	50.0	-3.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.499	1.576		46.5	44.2	5.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9637	0.9528		49.4	50.0	-1.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.007	1.017		50.5	50.0	1.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.070	1.057		45.0	45.5	-1.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.182	1.188		47.8	47.6	0.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.035	1.024		49.5	50.0	-1.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9902	0.9758		49.3	50.0	-1.4	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.067	1.080		47.0	46.4	1.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9162	0.9096		49.6	50.0	-0.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9463	0.9312		49.2	50.0	-1.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6119	0.6226		49.0	48.2	1.7	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.070	0.9879		46.2	50.0	-7.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9534	0.9287		48.7	50.0	-2.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9380	0.9372		50.0	50.0	-0.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.734	1.629		47.0	50.0	-6.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9713		49.4	50.0	-1.2	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8226	0.7562		46.0	50.0	-8.1	25.0
13C4 PFBA	Ave	325599	321756		49.4	50.0	-1.2	50.0
13C5-PFPeA	Ave	255279	250463		49.1	50.0	-1.9	50.0
13C2 PFHxA	Ave	246953	248439		50.3	50.0	0.6	50.0
13C4-PFHpA	Ave	207616	199164		48.0	50.0	-4.1	50.0
18O2 PFHxS	Ave	314997	309629		46.5	47.3	-1.7	50.0
13C4 PFOA	Ave	214796	202132		47.1	50.0	-5.9	50.0
13C4 PFOS	Ave	228634	230210		48.1	47.8	0.7	50.0
13C5 PFNA	Ave	160661	156062		48.6	50.0	-2.9	50.0
13C8 FOSA	Ave	366644	373659		51.0	50.0	1.9	50.0
13C2 PFDA	Ave	145179	142202		49.0	50.0	-2.1	50.0
13C2 PFUnA	Ave	110482	105100		47.6	50.0	-4.9	50.0
13C2 PFDoA	Ave	101960	98026		48.1	50.0	-3.9	50.0
13C2-PFTeDA	Ave	207924	197129		47.4	50.0	-5.2	50.0
13C2-PFHxDA	Ave	113637	104958		46.2	50.0	-7.6	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_002.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 14-Dec-2016 17:16:22 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\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:55 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:38:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.517	1.517	0.0	1.000	14389108	50.3		101	78275	
D 2 13C4 PFBA										
217.00 > 172.00	1.517	1.517	0.0		16087799	49.4		98.8	869400	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.791	1.791	0.0	1.000	12442211	48.3		96.7	142784	
D 4 13C5-PFPeA										
267.90 > 223.00	1.791	1.791	0.0		12523161	49.1		98.1	1224590	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.829	1.829	0.0	1.000	21570258	46.5		105		
298.90 > 99.00	1.829	1.829	0.0	1.000	10037994		2.15(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.074	2.074	0.0	1.000	11835573	49.4		98.9	260694	
D 6 13C2 PFHxA										
315.00 > 270.00	2.074	2.074	0.0		12421948	50.3		101	771247	
D 11 13C4-PFHpA										
367.00 > 322.00	2.403	2.403	0.0		9958213	48.0		95.9	500314	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.403	2.403	0.0	1.000	10126537	50.5		101	97098	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.424	2.424	0.0	1.000	14892050	45.0		98.8		M
D 10 18O2 PFHxS										
403.00 > 84.00	2.424	2.424	0.0		14645437	46.5		98.3	1252478	
D 14 13C4 PFOA										
417.00 > 372.00	2.759	2.759	0.0		10106616	47.1		94.1	1712311	

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	2.767	2.767	0.0	1.000	10348240	49.5		98.9	87069	
413.00 > 169.00	2.759	2.767	-0.008	0.997	6145526		1.68(0.90-1.10)		235665	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.767	2.767	0.0	1.000	13018720	47.8		100		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.135	3.135	0.0	1.000	11539747	47.0		101	447207	
499.00 > 99.00	3.135	3.135	0.0	1.000	2442457		4.72(0.90-1.10)		193597	
20 Perfluorononanoic acid										
463.00 > 419.00	3.135	3.135	0.0	1.000	7614435	49.3		98.6	141303	
D 17 13C4 PFOS										
503.00 > 80.00	3.135	3.135	0.0		11004016	48.1		101	274827	
D 19 13C5 PFNA										
468.00 > 423.00	3.135	3.135	0.0		7803111	48.6		97.1	376642	
D 21 13C8 FOSA										
506.00 > 78.00	3.466	3.466	0.0		18682961	51.0		102	1043030	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.466	3.466	0.0	1.000	16993392	49.6		99.3	527397	
D 23 13C2 PFDA										
515.00 > 470.00	3.490	3.490	0.0		7110097	49.0		97.9	296252	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.490	3.490	0.0	1.000	6621112	49.2		98.4	185381	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.809	3.809	0.0	1.000	6908336	49.0		102		
D 27 13C2 PFUnA										
565.00 > 520.00	3.826	3.826	0.0		5254990	47.6		95.1	304623	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.826	3.826	0.0	1.000	5191309	46.2		92.3	134821	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.112	4.112	0.0	1.000	4551568	48.7		97.4	108958	
D 30 13C2 PFDoA										
615.00 > 570.00	4.120	4.120	0.0		4901284	48.1		96.1	198086	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.379	4.379	0.0	1.000	4593464	50.0		99.9	93227	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.625	4.625	0.0	1.000	7984600	47.0		93.9	132450	
713.00 > 169.00	4.618	4.625	-0.007	0.999	1268633		6.29(0.00-0.00)		93297	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.618	4.618	0.0		9856441	47.4		94.8	381425	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.036	5.036	0.0	1.000	4760495	49.4		98.8	11170	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.036	5.036	0.0		5247903	46.2		92.4	230880	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.390	5.390	0.0	1.000	3706554	46.0		91.9	5996	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 15-Dec-2016 14:54:56 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_002.d

Injection Date: 14-Dec-2016 17:16:22 Instrument ID: A8_N

Lims ID: CCV L5

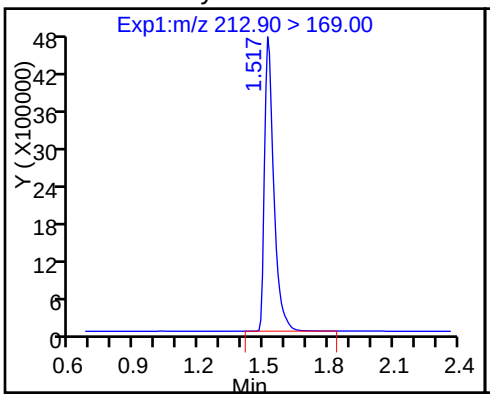
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2

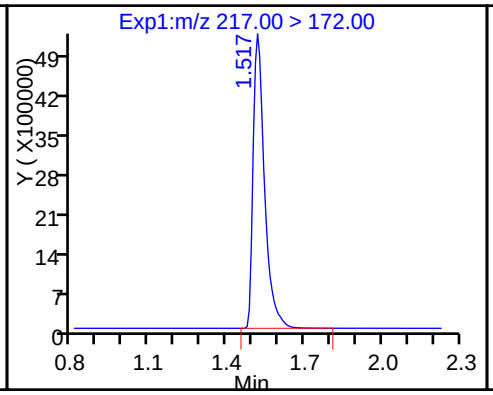
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

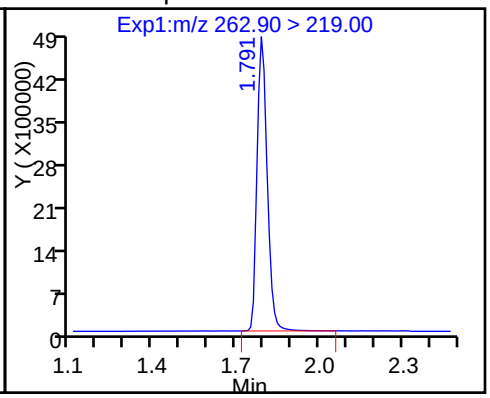
1 Perfluorobutyric acid



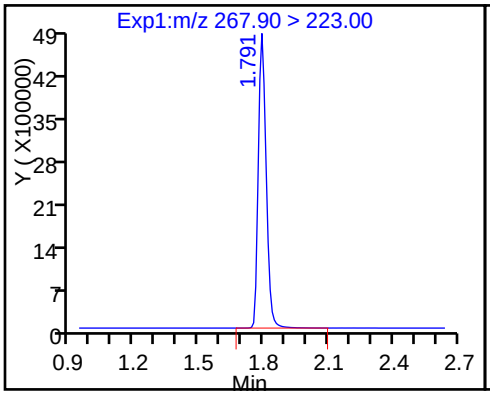
D 2 13C4 PFBA



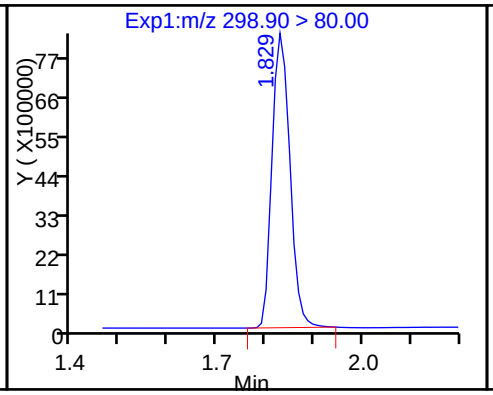
3 Perfluoropentanoic acid



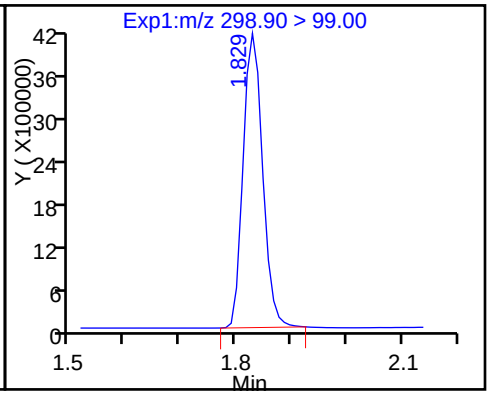
D 4 13C5-PFPeA



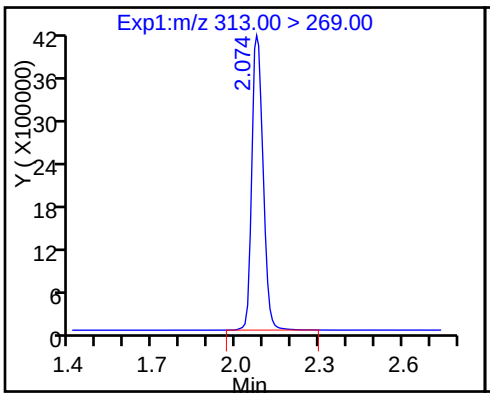
5 Perfluorobutanesulfonic acid



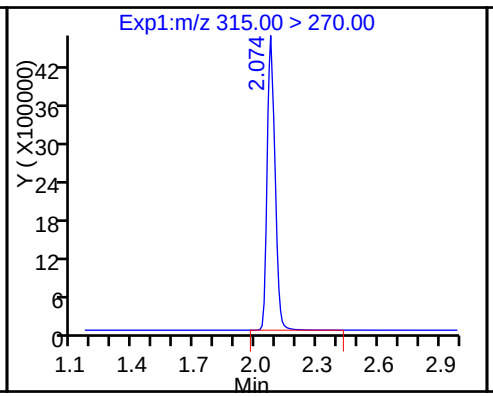
5 Perfluorobutanesulfonic acid



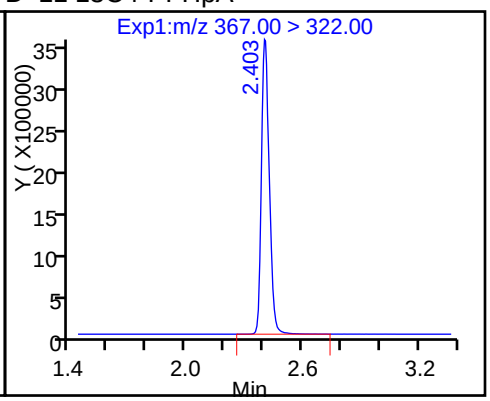
7 Perfluorohexanoic acid



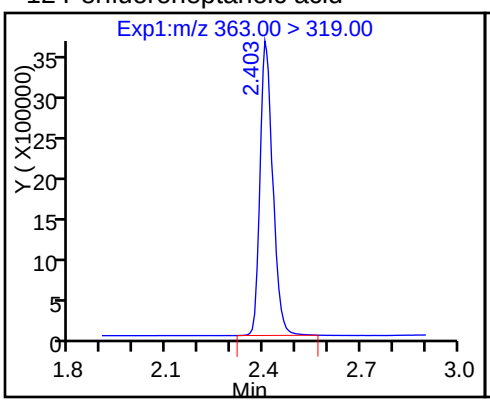
D 6 13C2 PFHxA



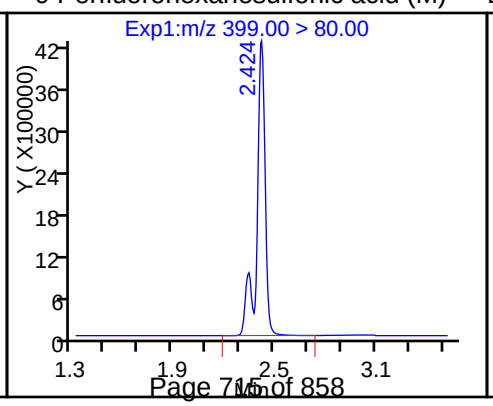
D 11 13C4-PFHpA



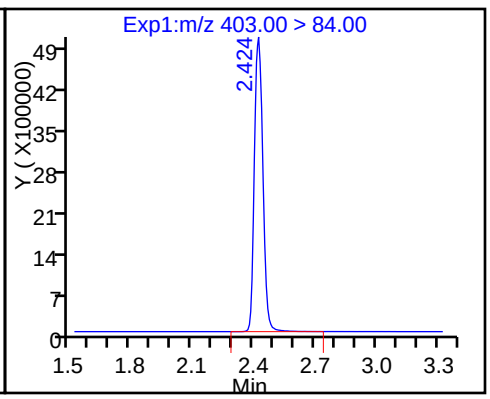
12 Perfluoroheptanoic acid



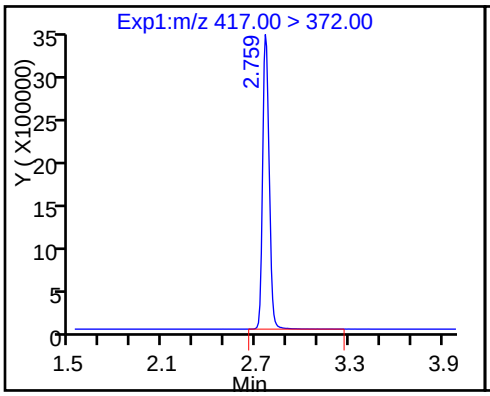
9 Perfluorohexanesulfonic acid (M)



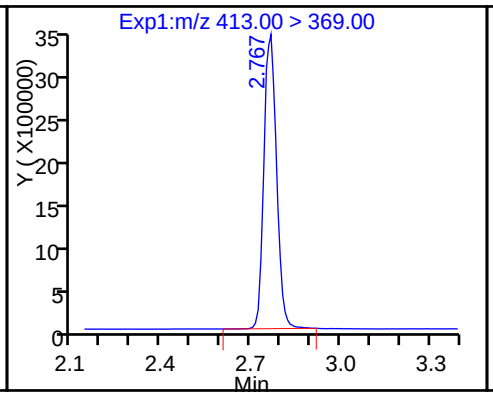
D 10 18O2 PFHxS



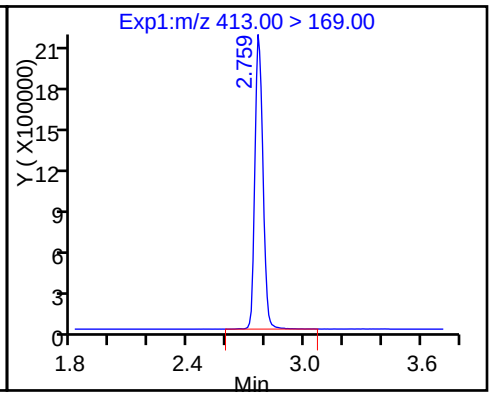
D 14 13C4 PFOA



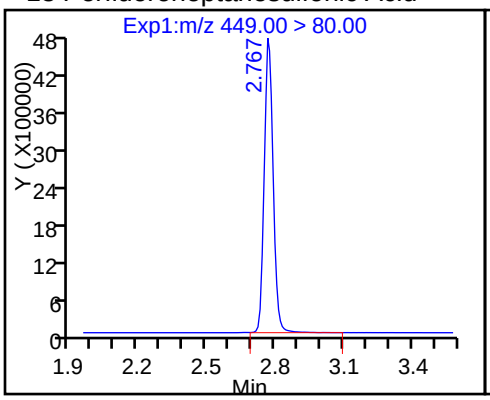
15 Perfluorooctanoic acid



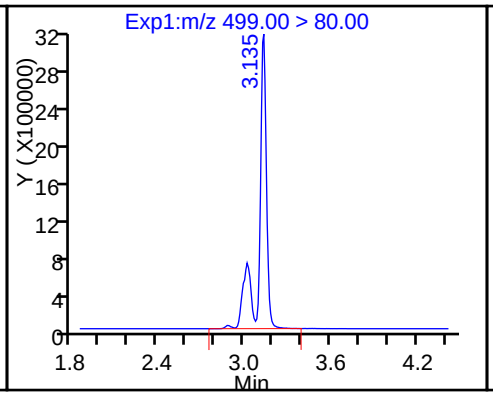
15 Perfluorooctanoic acid



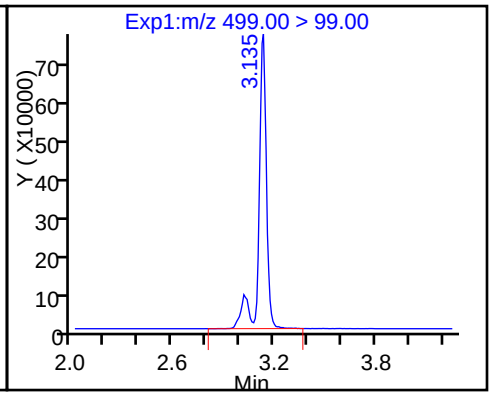
13 Perfluoroheptanesulfonic Acid



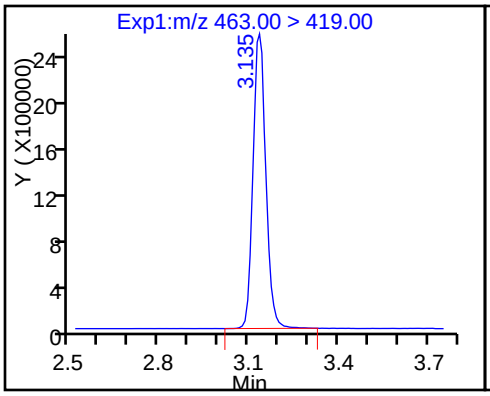
18 Perfluorooctane sulfonic acid



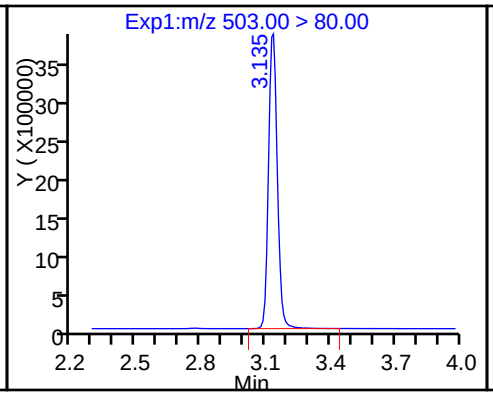
18 Perfluorooctane sulfonic acid



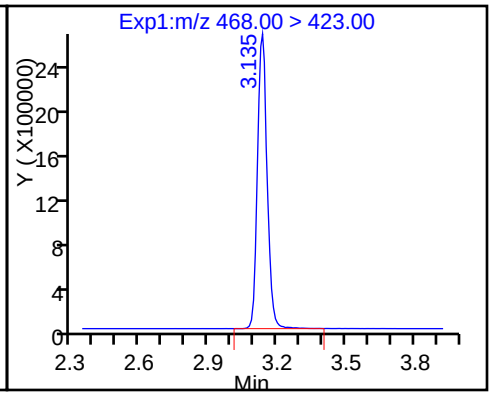
20 Perfluorononanoic acid



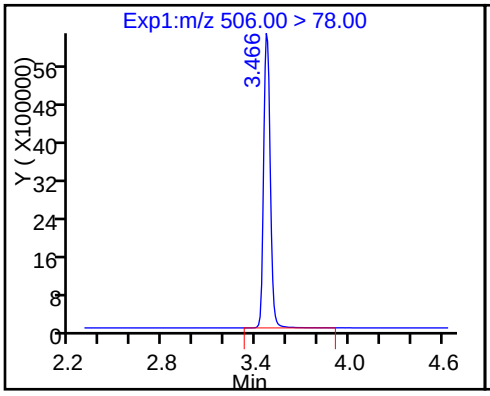
D 17 13C4 PFOS



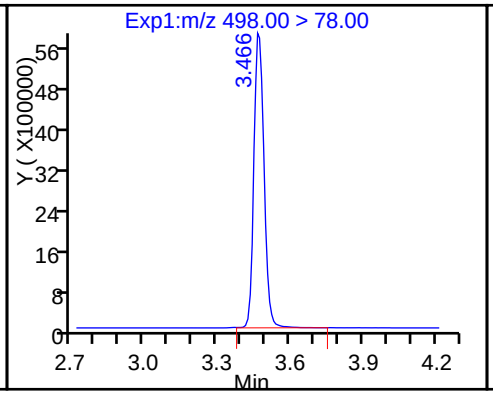
D 19 13C5 PFNA



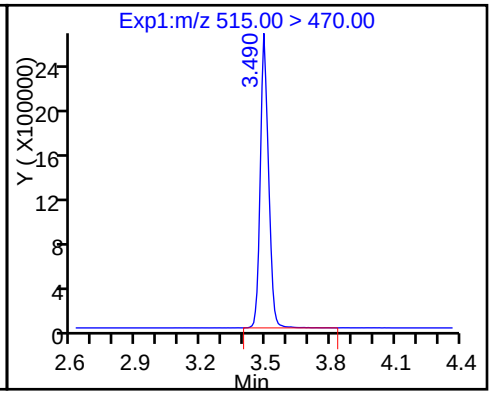
D 21 13C8 FOSA



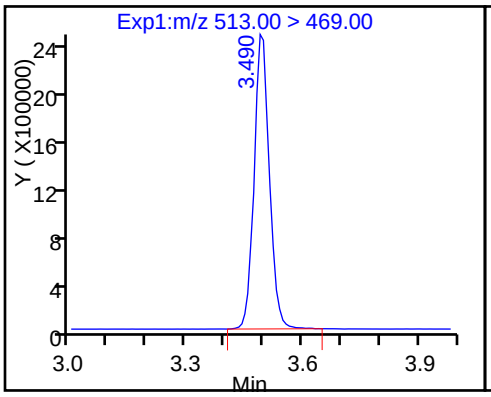
22 Perfluorooctane Sulfonamide



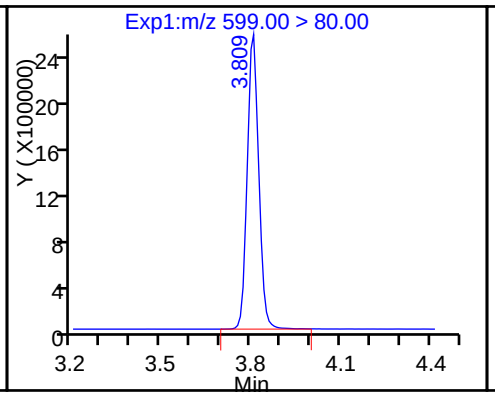
D 23 13C2 PFDA



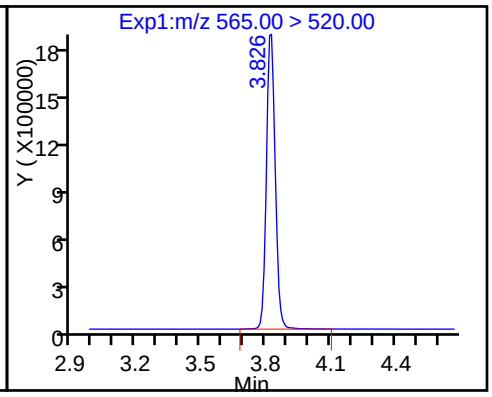
24 Perfluorodecanoic acid



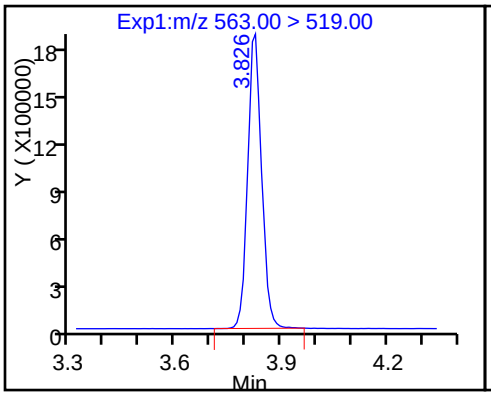
26 Perfluorodecane Sulfonic acid



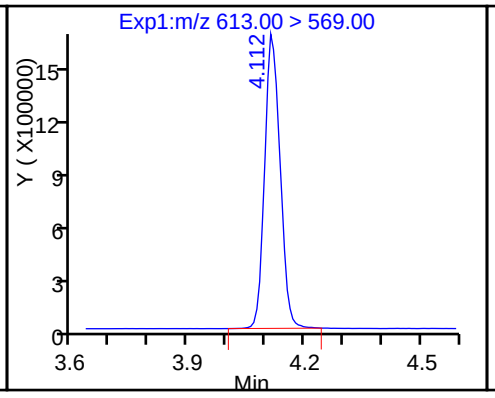
D 27 13C2 PFUnA



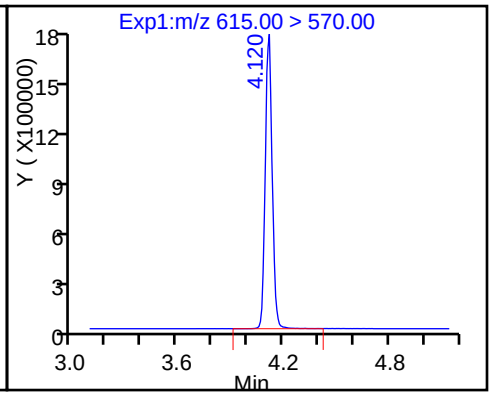
28 Perfluoroundecanoic acid



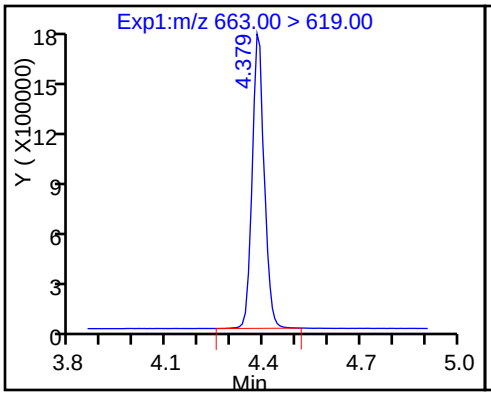
29 Perfluorododecanoic acid



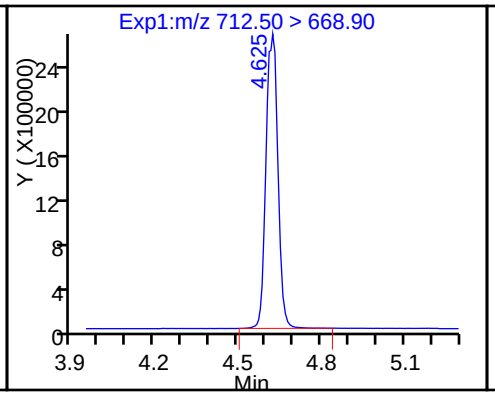
D 30 13C2 PFDoA



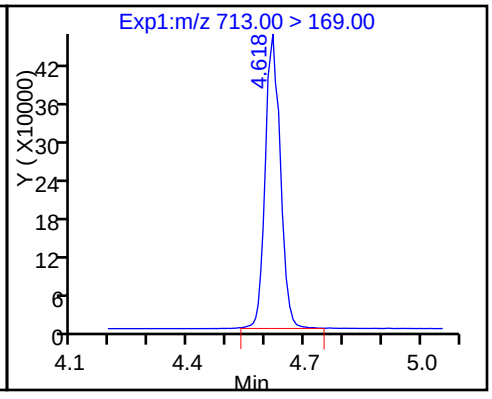
31 Perfluorotridecanoic acid



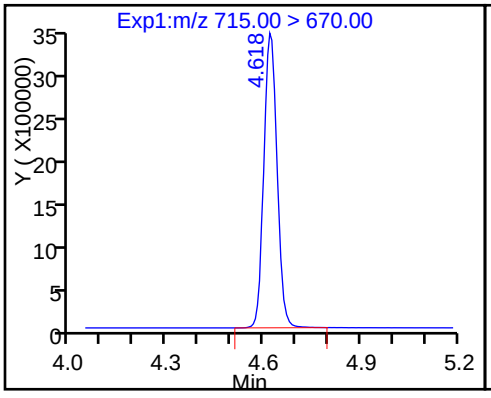
33 Perfluorotetradecanoic acid



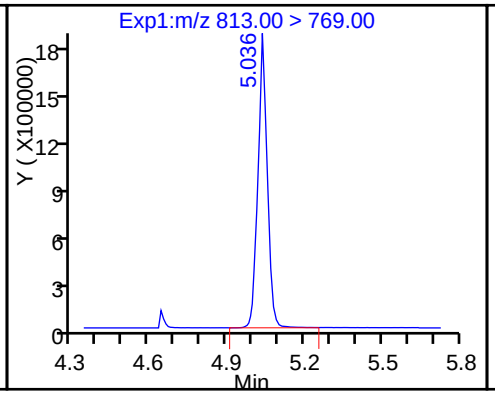
33 Perfluorotetradecanoic acid



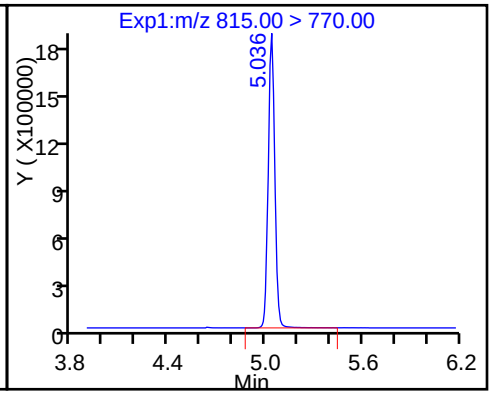
D 32 13C2-PFTeDA



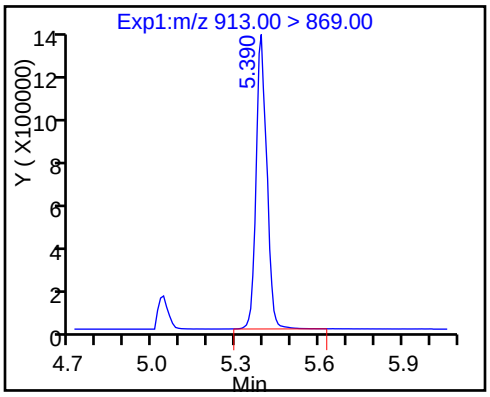
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

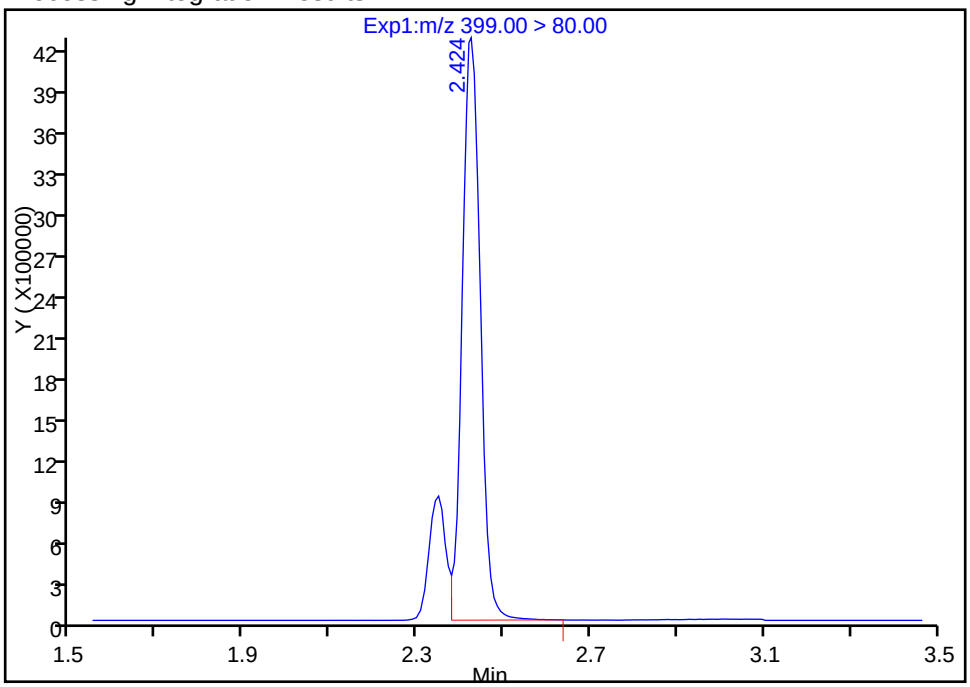
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_002.d
Injection Date: 14-Dec-2016 17:16:22 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

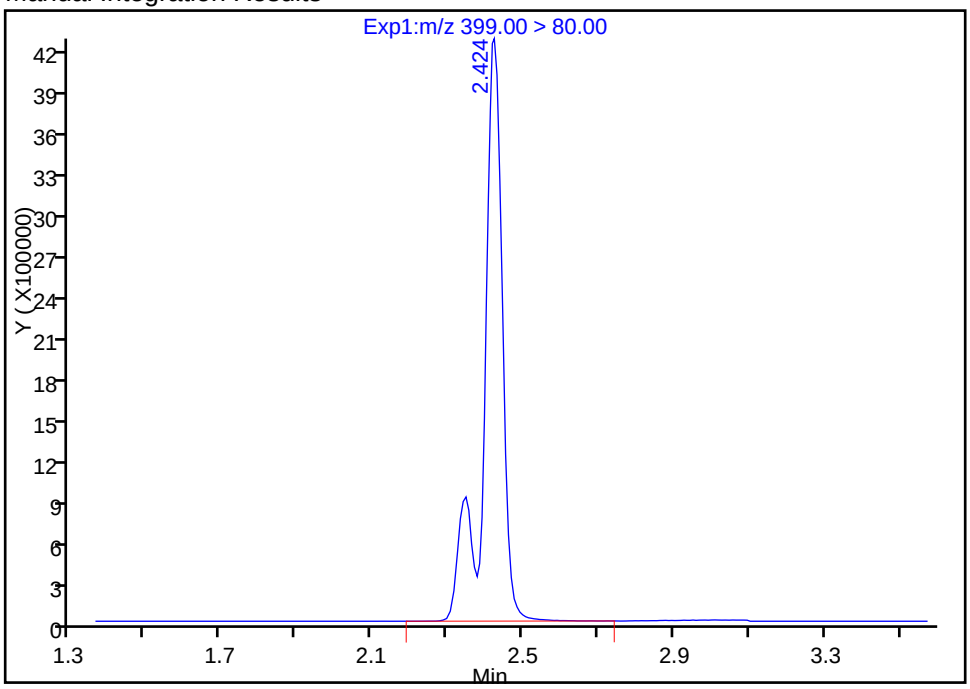
Processing Integration Results

RT: 2.42
Area: 12409665
Amount: 37.459304
Amount Units: ng/ml



Manual Integration Results

RT: 2.42
Area: 14892050
Amount: 44.952529
Amount Units: ng/ml



Reviewer: westendorfc, 15-Dec-2016 14:38:12
Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142338/15 Calibration Date: 12/14/2016 18:53

Instrument ID: A8_N Calib Start Date: 12/14/2016 08:54

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/14/2016 10:39

Lab File ID: 14DEC2016C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8887	0.9463		21.3	20.0	6.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.028	1.071		20.8	20.0	4.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.499	1.670		19.7	17.7	11.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9637	1.002		20.8	20.0	3.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.007	1.086		21.6	20.0	7.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.070	1.108		18.8	18.2	3.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.035	1.094		21.1	20.0	5.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.182	1.248		20.1	19.0	5.5	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.067	1.136		19.8	18.6	6.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9902	1.051		21.2	20.0	6.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9162	1.010		22.1	20.0	10.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9463	1.006		21.3	20.0	6.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6119	0.6476		20.4	19.3	5.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.070	1.008		18.8	20.0	-5.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9534	0.9801		20.6	20.0	2.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9380	1.045		22.3	20.0	11.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.734	1.704		19.7	20.0	-1.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.010		20.2	20.0	0.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8226	0.7654		18.6	20.0	-7.0	25.0
13C4 PFBA	Ave	325599	336862		51.7	50.0	3.5	50.0
13C5-PFPeA	Ave	255279	259070		50.7	50.0	1.5	50.0
13C2 PFHxA	Ave	246953	243236		49.2	50.0	-1.5	50.0
13C4-PFHpA	Ave	207616	211420		50.9	50.0	1.8	50.0
18O2 PFHxS	Ave	314997	332259		49.9	47.3	5.5	50.0
13C4 PFOA	Ave	214796	218771		50.9	50.0	1.9	50.0
13C4 PFOS	Ave	228634	248513		52.0	47.8	8.7	50.0
13C5 PFNA	Ave	160661	164496		51.2	50.0	2.4	50.0
13C8 FOSA	Ave	366644	395213		53.9	50.0	7.8	50.0
13C2 PFDA	Ave	145179	149600		51.5	50.0	3.0	50.0
13C2 PFUnA	Ave	110482	113137		51.2	50.0	2.4	50.0
13C2 PFDoA	Ave	101960	102142		50.1	50.0	0.2	50.0
13C2-PFTeDA	Ave	207924	208774		50.2	50.0	0.4	50.0
13C2-PFHxDA	Ave	113637	109952		48.4	50.0	-3.2	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_015.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 14-Dec-2016 18:53:48 ALS Bottle#: 40 Worklist Smp#: 15
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\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:55:14 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:50:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.529	1.529	0.0	1.000	6375373	21.3		106	39654	
D 2 13C4 PFBA										
217.00 > 172.00	1.529	1.529	0.0		16843085	51.7		103	944404	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.804	1.804	0.0	1.000	5548909	20.8		104	61867	
D 4 13C5-PFPeA										
267.90 > 223.00	1.804	1.804	0.0		12953492	50.7		101	1220322	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.833	1.833	0.0	1.000	9808645	19.7		111		
298.90 > 99.00	1.833	1.833	0.0	1.000	4216960		2.33(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.085	2.085	0.0	1.000	4872638	20.8		104	133001	
D 6 13C2 PFHxA										
315.00 > 270.00	2.085	2.085	0.0		12161817	49.2		98.5	847910	
D 11 13C4-PFHpA										
367.00 > 322.00	2.412	2.412	0.0		10571010	50.9		102	623102	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.412	2.412	0.0	1.000	4591901	21.6		108	52821	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.430	2.430	0.0	1.000	6698019	18.8		104		
D 10 18O2 PFHxS										
403.00 > 84.00	2.430	2.430	0.0		15715841	49.9		105	928440	
D 14 13C4 PFOA										
417.00 > 372.00	2.765	2.765	0.0		10938574	50.9		102	666009	

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	2.765	2.765	0.0	1.000	4785736	21.1		106	39240	
413.00 > 169.00	2.765	2.765	0.0	1.000	2855662		1.68(0.90-1.10)		112707	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.781	2.781	0.0	1.000	5904269	20.1		106		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.117	3.117	0.0	1.000	5241136	19.8		107	67113	
499.00 > 99.00	3.140	3.117	0.023	1.008	1148090		4.57(0.90-1.10)		44811	
20 Perfluorononanoic acid										
463.00 > 419.00	3.140	3.140	0.0	1.000	3458126	21.2		106	59619	
D 17 13C4 PFOS										
503.00 > 80.00	3.140	3.140	0.0		11878902	52.0		109	297856	
D 19 13C5 PFNA										
468.00 > 423.00	3.140	3.140	0.0		8224823	51.2		102	396231	
D 21 13C8 FOSA										
506.00 > 78.00	3.470	3.470	0.0		19760664	53.9		108	615985	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.478	3.478	0.0	1.000	7986817	22.1		110	324899	
D 23 13C2 PFDA										
515.00 > 470.00	3.504	3.504	0.0		7480011	51.5		103	338833	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.504	3.504	0.0	1.000	3009309	21.3		106	99322	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.814	3.814	0.0	1.000	3102882	20.4		106		
D 27 13C2 PFUnA										
565.00 > 520.00	3.831	3.831	0.0		5656837	51.2		102	306599	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.831	3.831	0.0	1.000	2280519	18.8		94.2	68470	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.124	4.124	0.0	1.000	2002249	20.6		103	47355	
D 30 13C2 PFDoA										
615.00 > 570.00	4.124	4.124	0.0		5107088	50.1		100	203448	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.386	4.386	0.0	1.000	2135366	22.3		111	48284	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.632	4.632	0.0		10438687	50.2		100	433252	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.624	4.624	0.0	1.000	3480789	19.7		98.3	56588	
713.00 > 169.00	4.632	4.624	0.008	1.002	551960		6.31(0.00-0.00)		67726	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.046	5.046	0.0	1.000	2063869	20.2		101	2941	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.046	5.046	0.0		5497589	48.4		96.8	158931	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.398	5.398	0.0	1.000	1563594	18.6		93.0	2282	

Reagents:

LCPFC-L4_00023 Amount Added: 1.00 Units: mL

Report Date: 15-Dec-2016 14:55:14 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_015.d

Injection Date: 14-Dec-2016 18:53:48 Instrument ID: A8_N

Lims ID: CCV L4

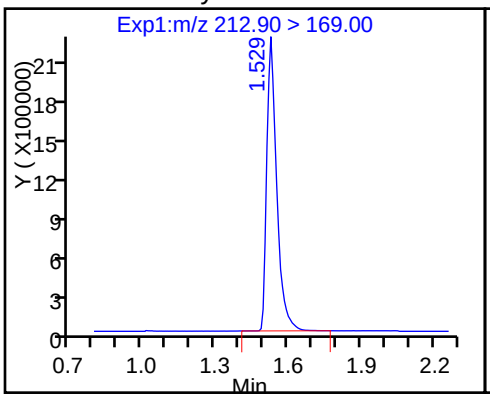
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 15

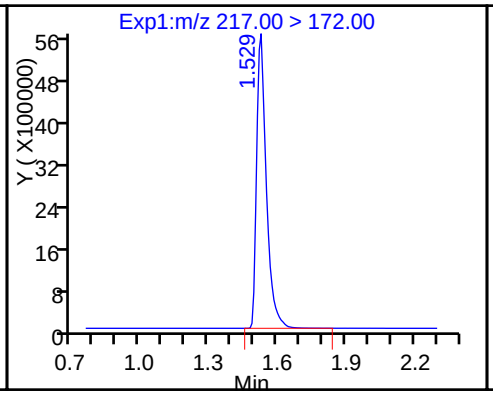
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

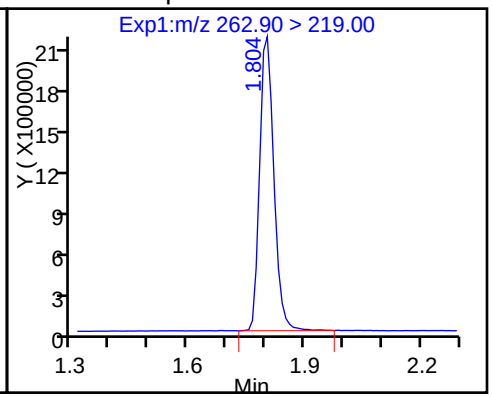
1 Perfluorobutyric acid



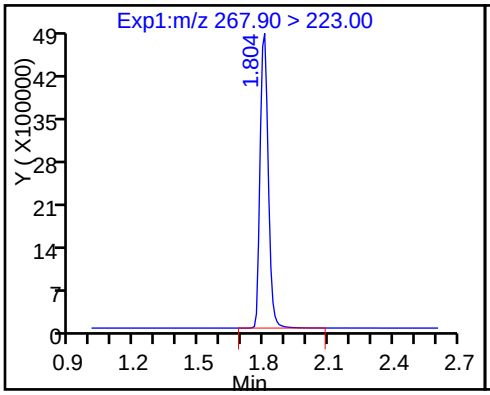
D 2 13C4 PFBA



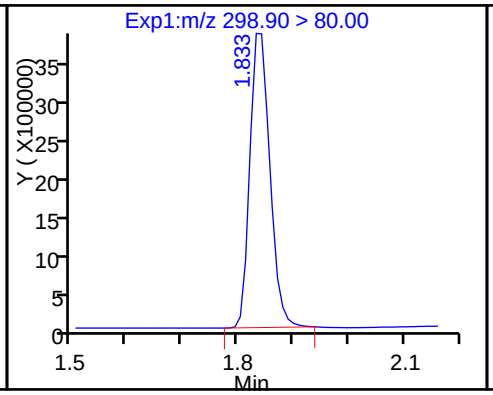
3 Perfluoropentanoic acid



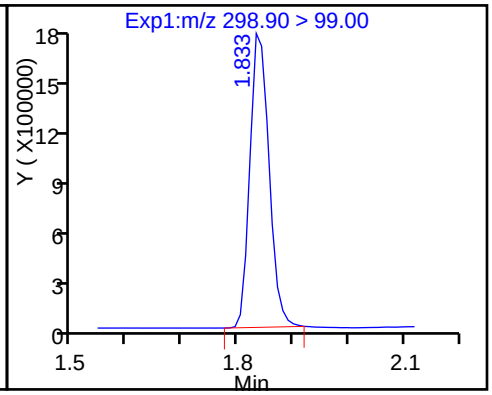
D 4 13C5-PFPeA



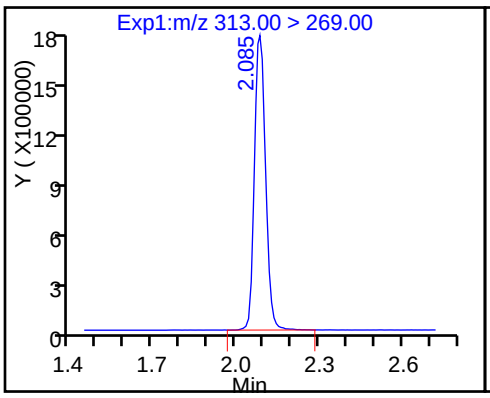
5 Perfluorobutanesulfonic acid



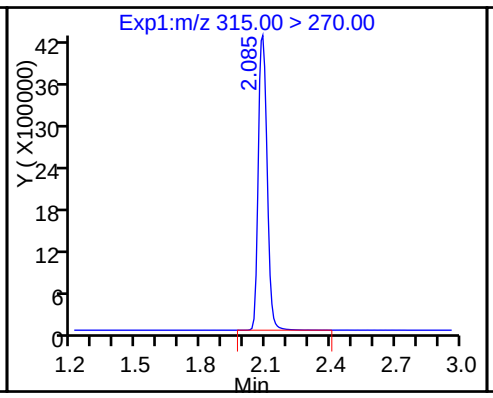
5 Perfluorobutanesulfonic acid



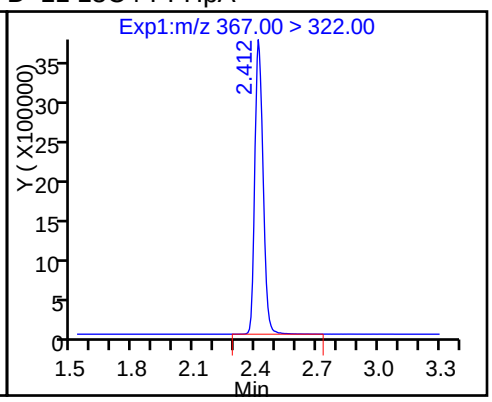
7 Perfluorohexanoic acid



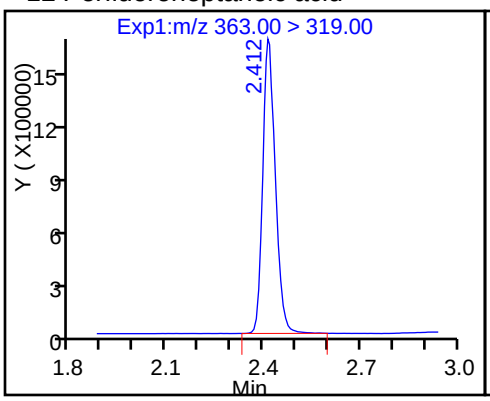
D 6 13C2 PFHxA



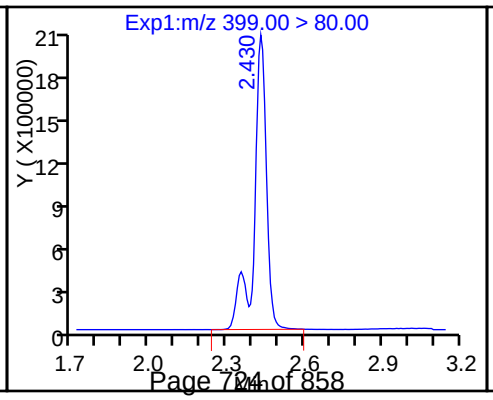
D 11 13C4-PFHpA



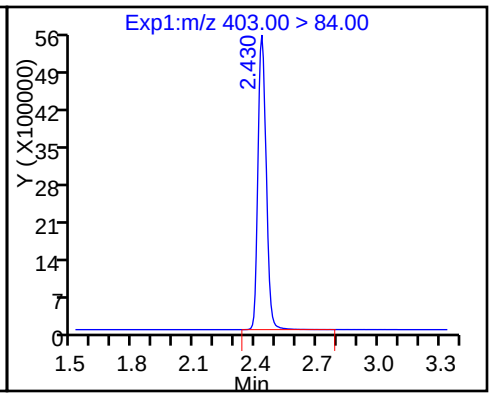
12 Perfluoroheptanoic acid



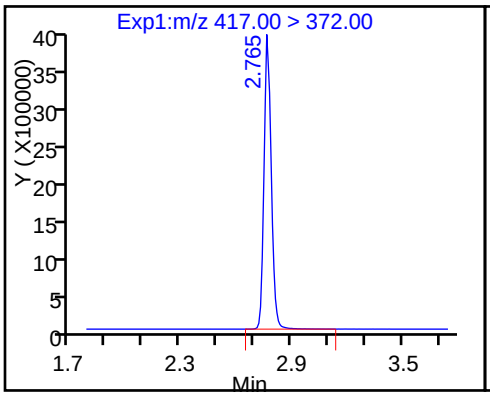
9 Perfluorohexanesulfonic acid



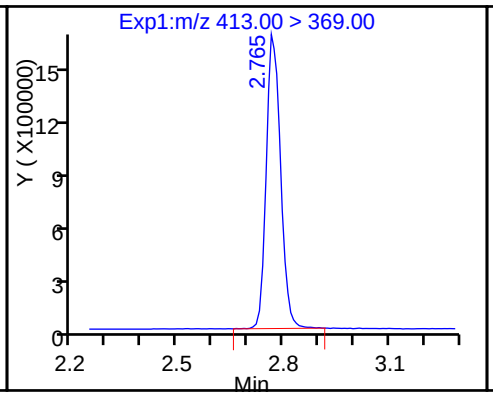
D 10 18O2 PFHxS



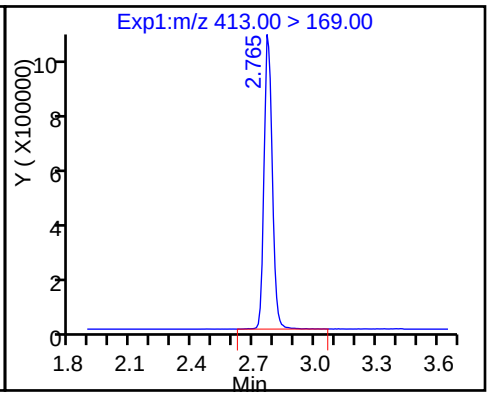
D 14 13C4 PFOA



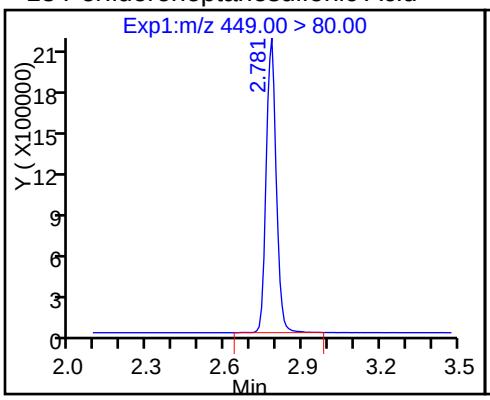
15 Perfluorooctanoic acid



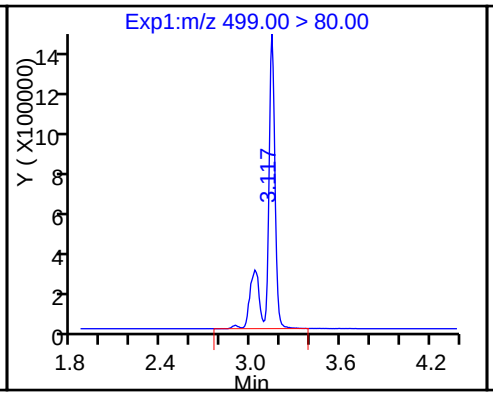
15 Perfluorooctanoic acid



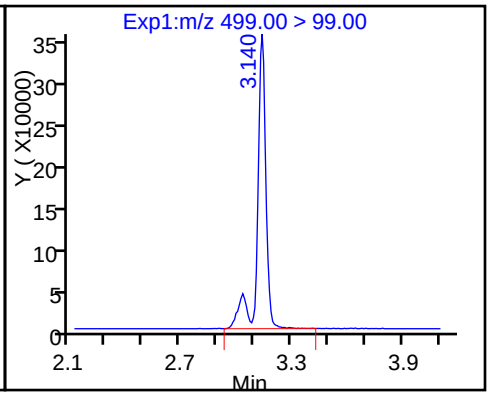
13 Perfluoroheptanesulfonic Acid



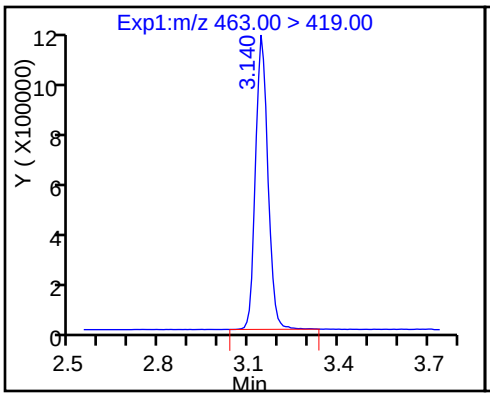
18 Perfluorooctane sulfonic acid



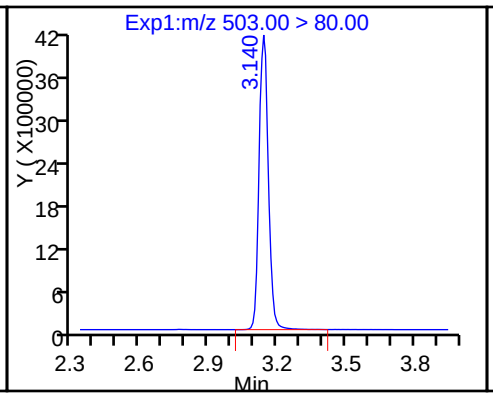
18 Perfluorooctane sulfonic acid



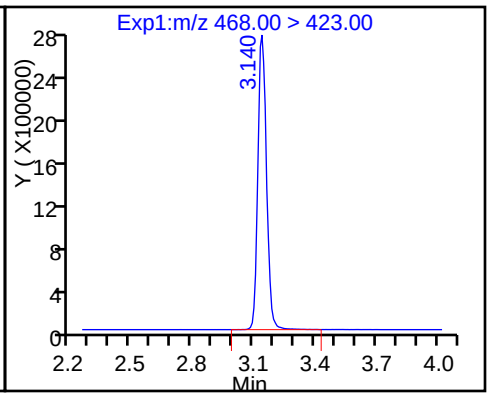
20 Perfluorononanoic acid



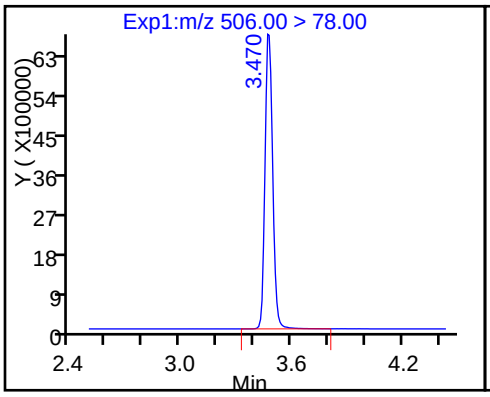
D 17 13C4 PFOS



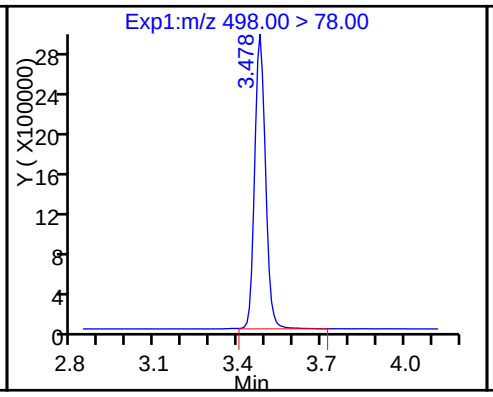
D 19 13C5 PFNA



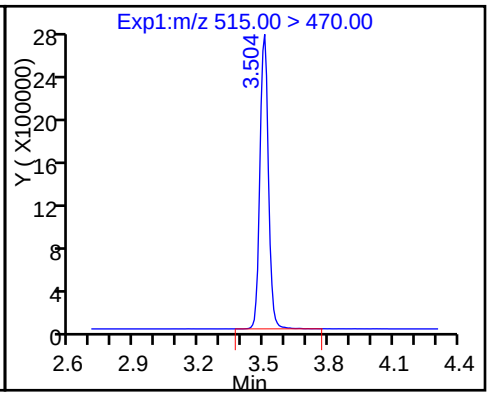
D 21 13C8 FOSA



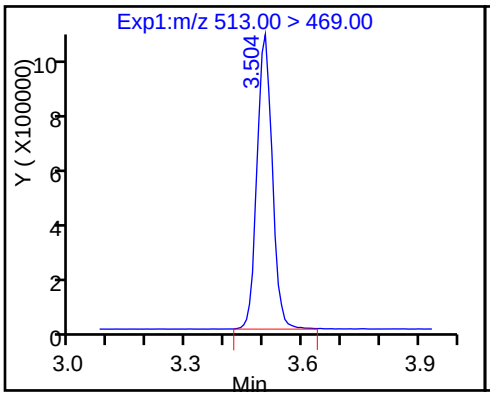
22 Perfluorooctane Sulfonamide



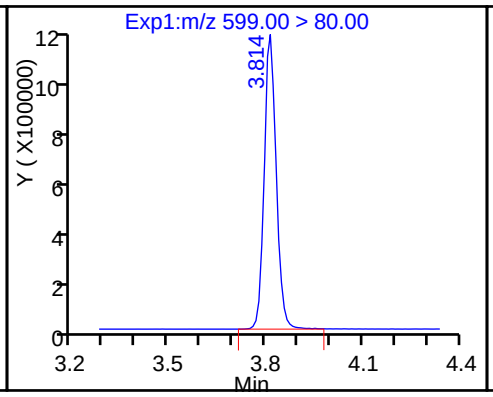
D 23 13C2 PFDA



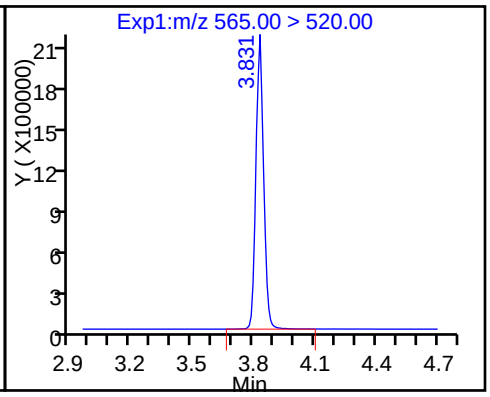
24 Perfluorodecanoic acid



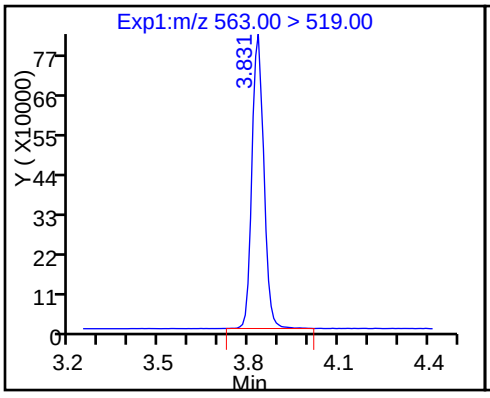
26 Perfluorodecane Sulfonic acid



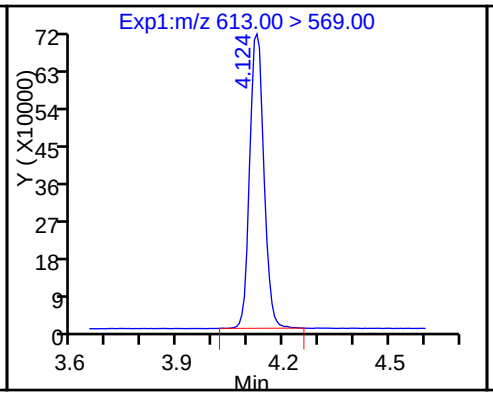
D 27 13C2 PFUnA



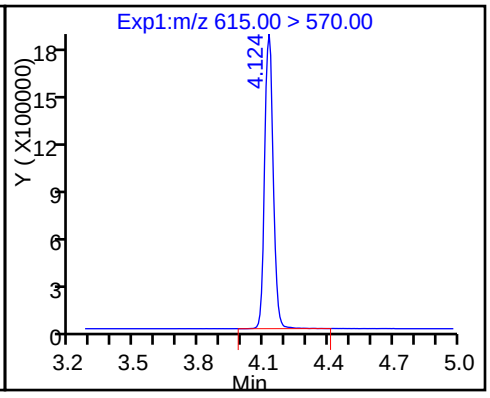
28 Perfluoroundecanoic acid



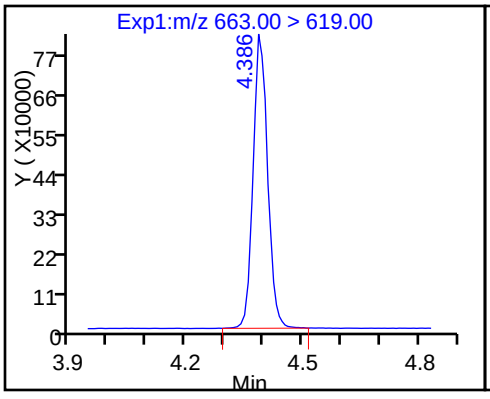
29 Perfluorododecanoic acid



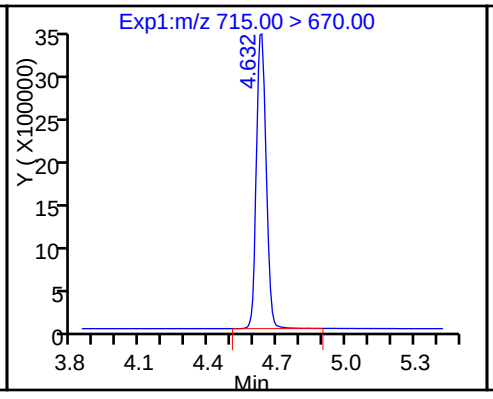
D 30 13C2 PFDoA



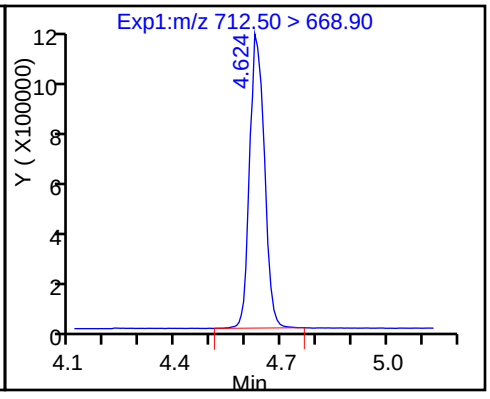
31 Perfluorotridecanoic acid



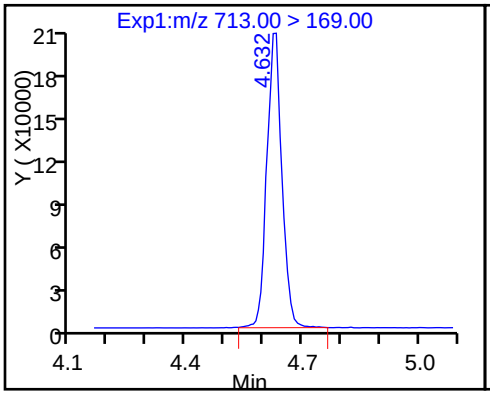
D 32 13C2-PFTeDA



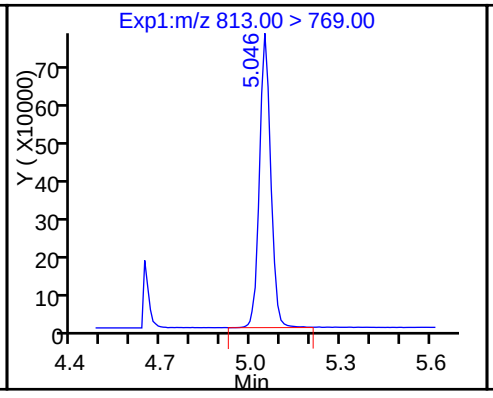
33 Perfluorotetradecanoic acid



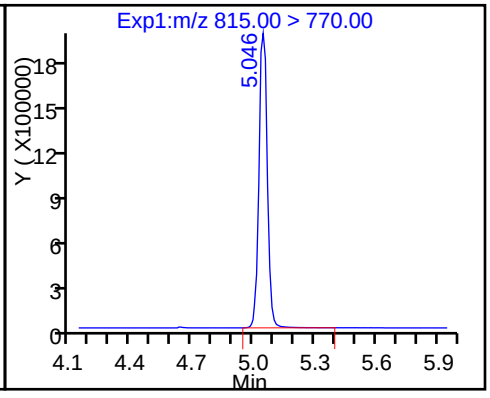
33 Perfluorotetradecanoic acid



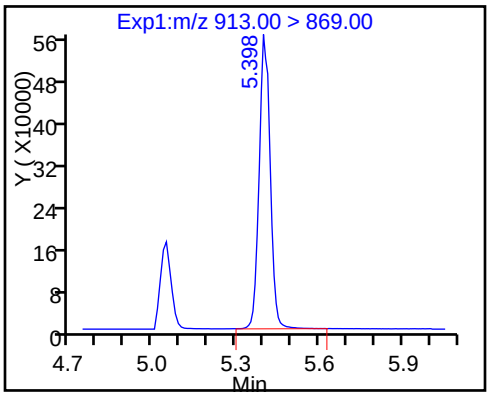
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142338/23 Calibration Date: 12/14/2016 19:53

Instrument ID: A8_N Calib Start Date: 12/14/2016 08:54

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/14/2016 10:39

Lab File ID: 14DEC2016C_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8887	0.8751		49.2	50.0	-1.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.028	0.9929		48.3	50.0	-3.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.499	1.531		45.1	44.2	2.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9637	0.9401		48.8	50.0	-2.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.007	1.009		50.1	50.0	0.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.070	1.033		43.9	45.5	-3.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.035	1.012		48.9	50.0	-2.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.182	1.160		46.7	47.6	-1.9	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.067	1.078		46.9	46.4	1.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9902	1.004		50.7	50.0	1.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9162	0.9128		49.8	50.0	-0.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9463	0.9400		49.7	50.0	-0.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6119	0.6199		48.8	48.2	1.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.070	1.031		48.2	50.0	-3.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9534	0.9201		48.3	50.0	-3.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9380	0.8887		47.4	50.0	-5.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.734	1.626		46.9	50.0	-6.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9496		48.3	50.0	-3.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8226	0.8061		49.0	50.0	-2.0	25.0
13C4 PFBA	Ave	325599	321476		49.4	50.0	-1.3	50.0
13C5-PFPeA	Ave	255279	244816		48.0	50.0	-4.1	50.0
13C2 PFHxA	Ave	246953	232613		47.1	50.0	-5.8	50.0
13C4-PFHpA	Ave	207616	190408		45.9	50.0	-8.3	50.0
18O2 PFHxS	Ave	314997	305332		45.8	47.3	-3.1	50.0
13C4 PFOA	Ave	214796	194916		45.4	50.0	-9.3	50.0
13C4 PFOS	Ave	228634	225925		47.2	47.8	-1.2	50.0
13C5 PFNA	Ave	160661	147386		45.9	50.0	-8.3	50.0
13C8 FOSA	Ave	366644	363737		49.6	50.0	-0.8	50.0
13C2 PFDA	Ave	145179	135178		46.6	50.0	-6.9	50.0
13C2 PFUnA	Ave	110482	95488		43.2	50.0	-13.6	50.0
13C2 PFDoA	Ave	101960	95750		47.0	50.0	-6.1	50.0
13C2-PFTeDA	Ave	207924	197984		47.6	50.0	-4.8	50.0
13C2-PFHxDA	Ave	113637	102870		45.3	50.0	-9.5	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_023.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 14-Dec-2016 19:53:47 ALS Bottle#: 41 Worklist Smp#: 23
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\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:55:25 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:54:24

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	1.520	1.520	0.0	1.000	14066584	49.2		98.5	84730	
D 2 13C4 PFBA										
217.00 > 172.00	1.520	1.520	0.0		16073800	49.4		98.7	664425	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.794	1.794	0.0	1.000	12154376	48.3		96.6	122874	
D 4 13C5-PFPeA										
267.90 > 223.00	1.794	1.794	0.0		12240823	48.0		95.9	1229842	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.832	1.832	0.0	1.000	20657932	45.1		102		
298.90 > 99.00	1.832	1.832	0.0	1.000	9522805		2.17(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.080	2.080	0.0	1.000	10933901	48.8		97.6	271988	
D 6 13C2 PFHxA										
315.00 > 270.00	2.087	2.087	0.0		11630643	47.1		94.2	800160	
D 11 13C4-PFHpA										
367.00 > 322.00	2.409	2.409	0.0		9520413	45.9		91.7	575991	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.414	2.414	0.0	1.000	9601920	50.1		100	73269	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.432	2.432	0.0	1.000	14349199	43.9		96.5		
D 10 18O2 PFHxS										
403.00 > 84.00	2.432	2.432	0.0		14442224	45.8		96.9	748206	
D 14 13C4 PFOA										
417.00 > 372.00	2.768	2.768	0.0		9745808	45.4		90.7	482058	

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	2.768	2.768	0.0	1.000	9866980	48.9		97.8	76600	
413.00 > 169.00	2.768	2.768	0.0	1.000	6034746		1.64(0.90-1.10)		196778	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.775	2.775	0.0	1.000	12470662	46.7		98.1		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.120	3.120	0.0	1.000	11304857	46.9		101	205158	
499.00 > 99.00	3.144	3.120	0.024	1.008	2371617		4.77(0.90-1.10)		144341	
20 Perfluorononanoic acid										
463.00 > 419.00	3.136	3.136	0.0	1.000	7401990	50.7		101	132139	
D 17 13C4 PFOS										
503.00 > 80.00	3.136	3.136	0.0		10799236	47.2		98.8	242332	
D 19 13C5 PFNA										
468.00 > 423.00	3.136	3.136	0.0		7369301	45.9		91.7	310098	
D 21 13C8 FOSA										
506.00 > 78.00	3.474	3.474	0.0		18186849	49.6		99.2	1046202	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.474	3.474	0.0	1.000	16601630	49.8		99.6	411554	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0		6758891	46.6		93.1	286434	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	6353597	49.7		99.3	166524	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.810	3.810	0.0	1.000	6750822	48.8		101		
D 27 13C2 PFUnA										
565.00 > 520.00	3.827	3.827	0.0		4774407	43.2		86.4	538966	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.836	3.836	0.0	1.000	4922595	48.2		96.3	122253	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.120	4.120	0.0	1.000	4405057	48.3		96.5	109535	
D 30 13C2 PFDoA										
615.00 > 570.00	4.120	4.120	0.0		4787517	47.0		93.9	150397	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.389	4.389	0.0	1.000	4254589	47.4		94.7	101470	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.626	4.626	0.0	1.000	7782090	46.9		93.7	134870	
713.00 > 169.00	4.626	4.626	0.0	1.000	1259981		6.18(0.00-0.00)		166234	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.626	4.626	0.0		9899186	47.6		95.2	668482	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.048	5.048	0.0	1.000	4545963	48.3		96.6	7447	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.048	5.048	0.0		5143489	45.3		90.5	169588	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.405	5.405	0.0	1.000	3858959	49.0		98.0	6574	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 15-Dec-2016 14:55:26 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_023.d

Injection Date: 14-Dec-2016 19:53:47 Instrument ID: A8_N

Lims ID: CCV L5

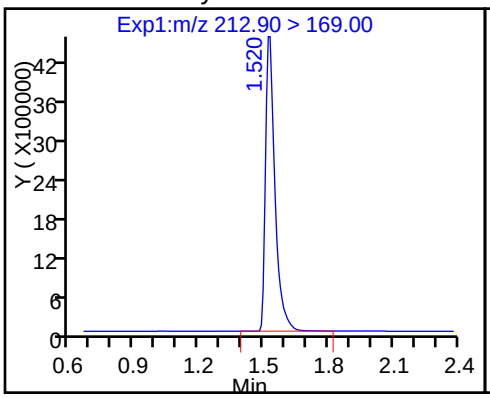
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 23

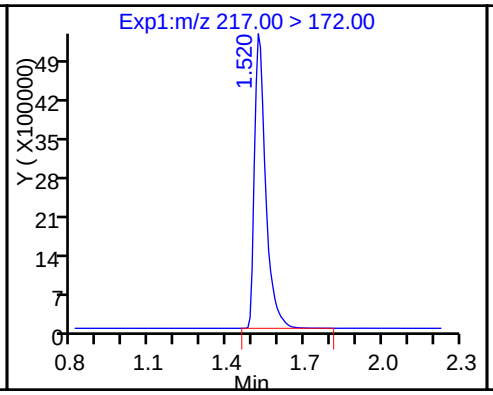
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

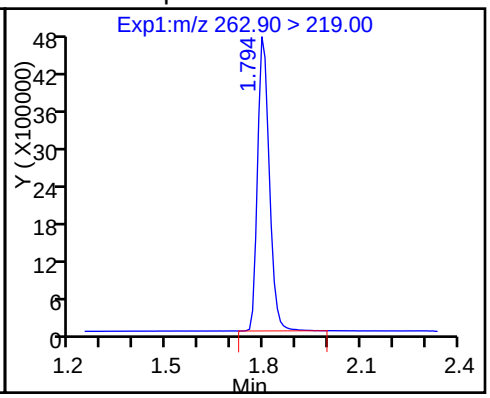
1 Perfluorobutyric acid



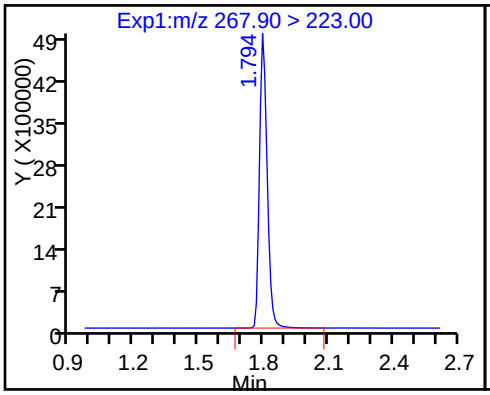
D 2 13C4 PFBA



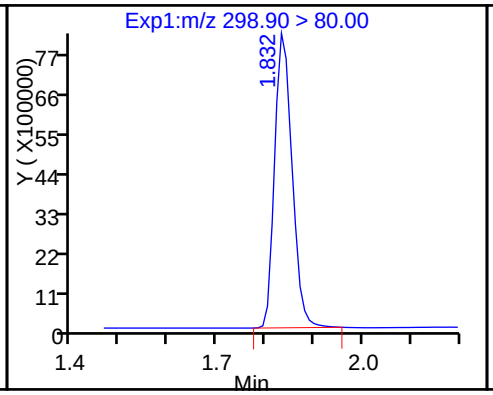
3 Perfluoropentanoic acid



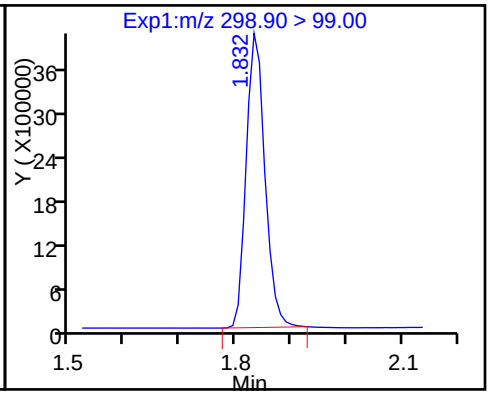
D 4 13C5-PFPeA



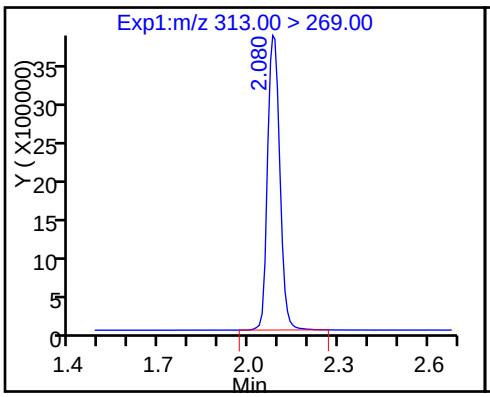
5 Perfluorobutanesulfonic acid



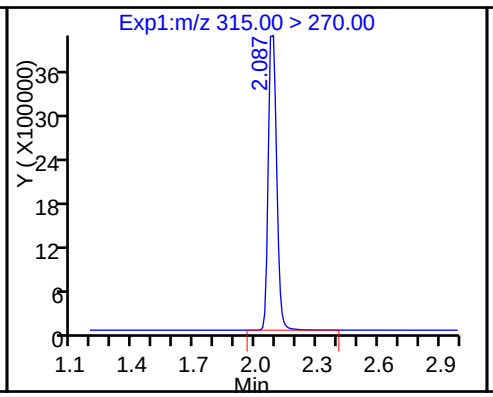
5 Perfluorobutanesulfonic acid



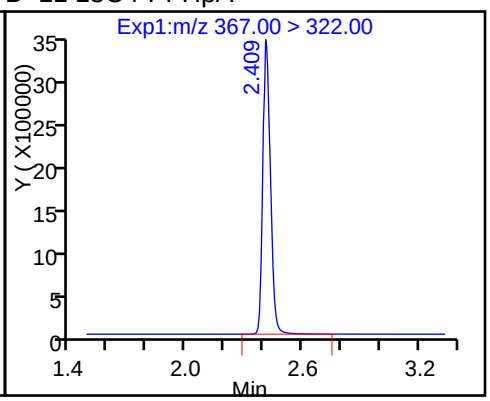
7 Perfluorohexanoic acid



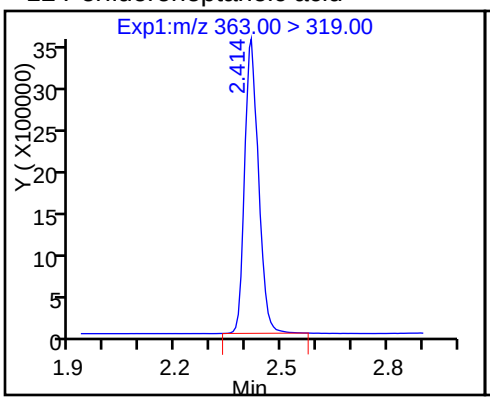
D 6 13C2 PFHxA



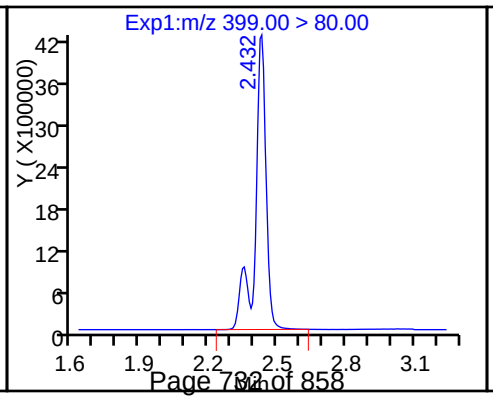
D 11 13C4-PFHpA



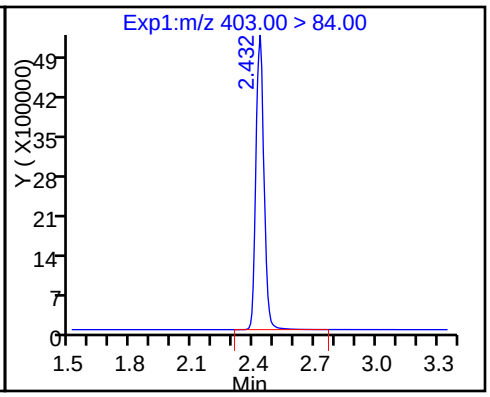
12 Perfluoroheptanoic acid



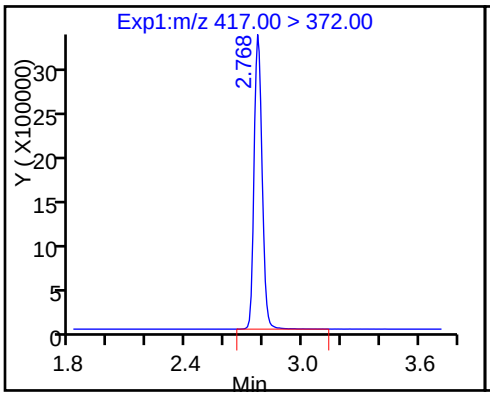
9 Perfluorohexanesulfonic acid



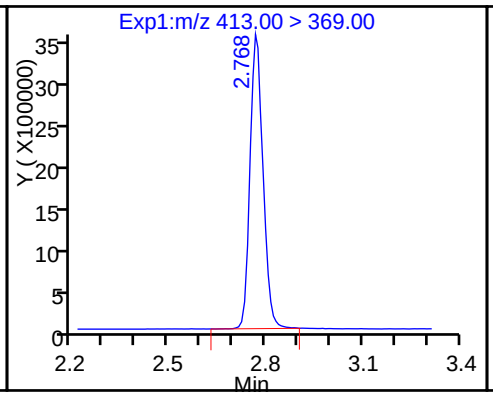
D 10 18O2 PFHxS



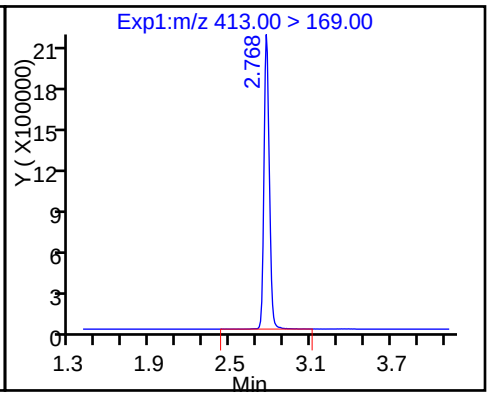
D 14 13C4 PFOA



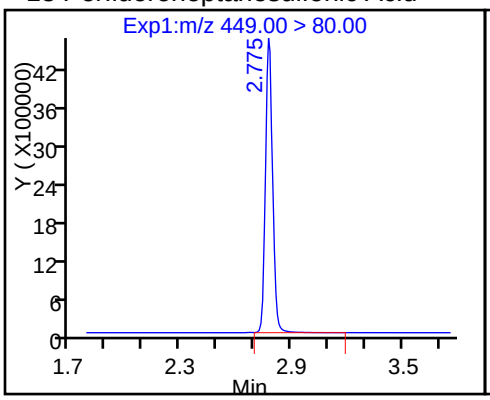
15 Perfluorooctanoic acid



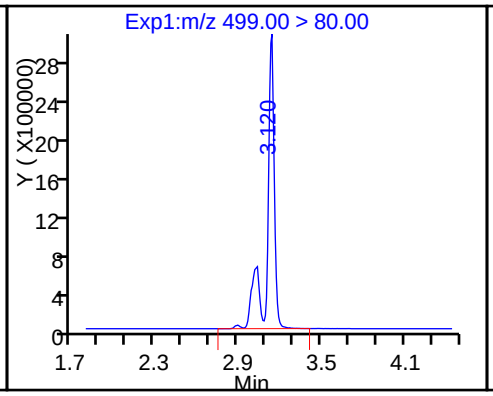
15 Perfluorooctanoic acid



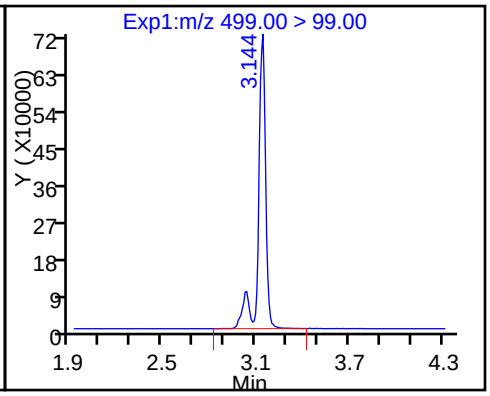
13 Perfluoroheptanesulfonic Acid



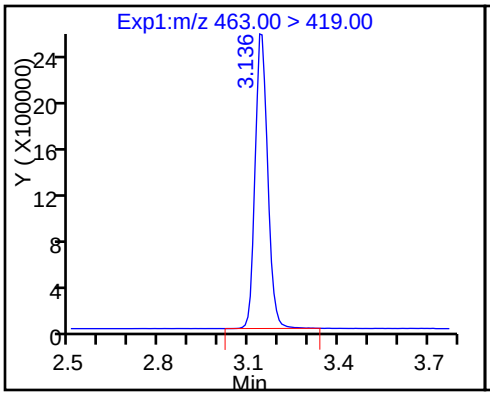
18 Perfluorooctane sulfonic acid



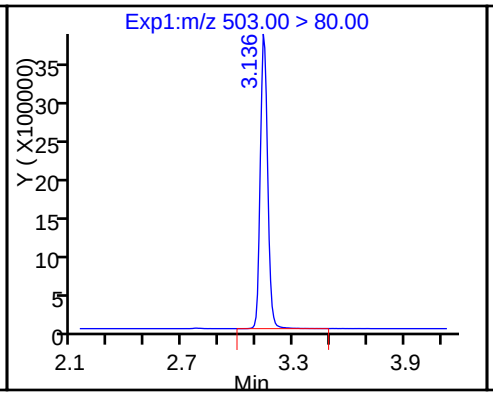
18 Perfluorooctane sulfonic acid



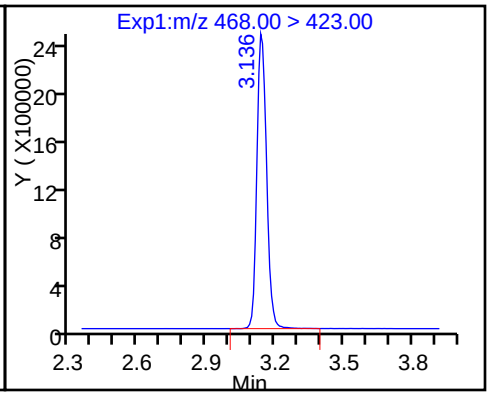
20 Perfluorononanoic acid



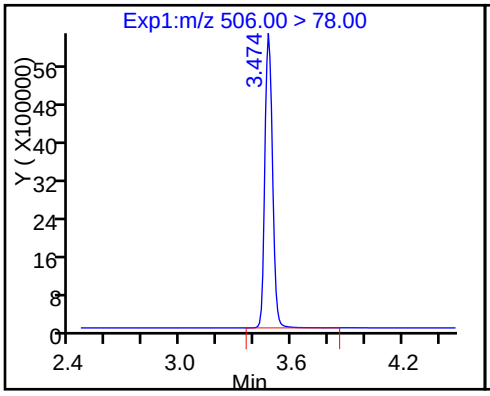
D 17 13C4 PFOS



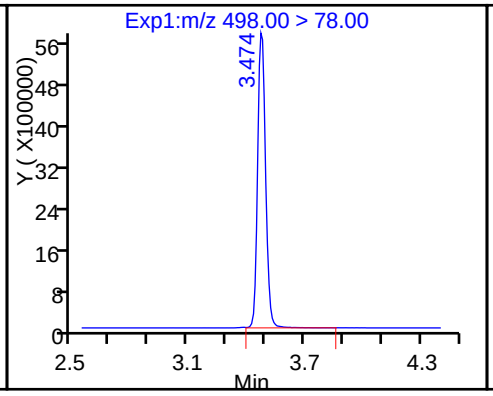
D 19 13C5 PFNA



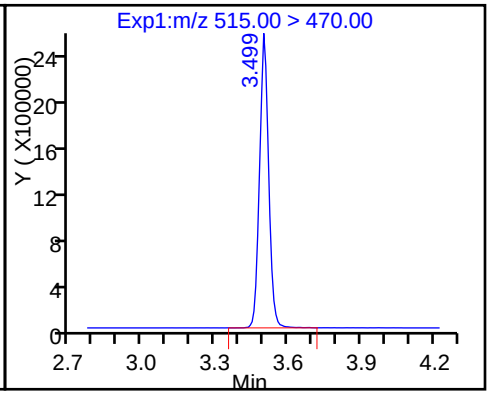
D 21 13C8 FOSA



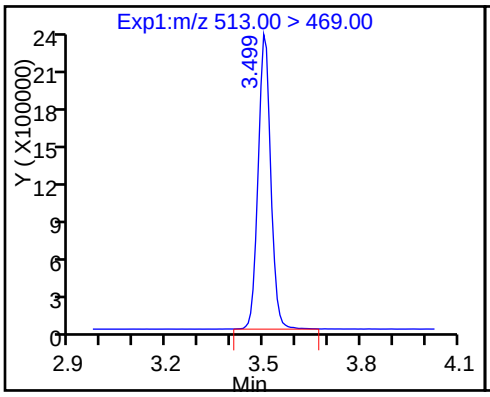
22 Perfluorooctane Sulfonamide



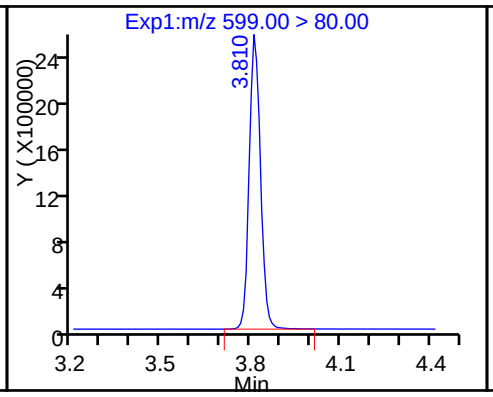
D 23 13C2 PFDA



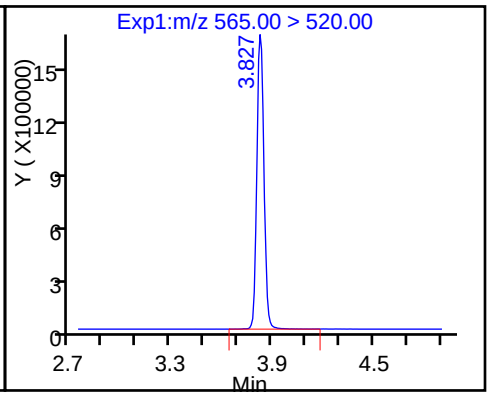
24 Perfluorodecanoic acid



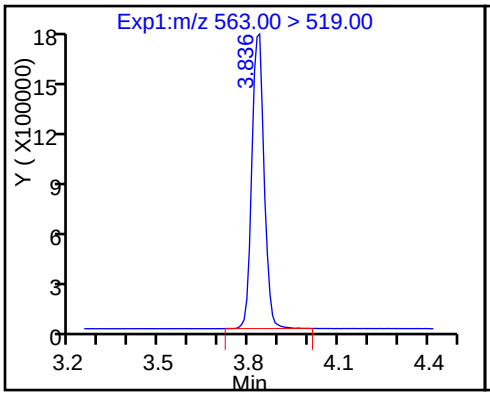
26 Perfluorodecane Sulfonic acid



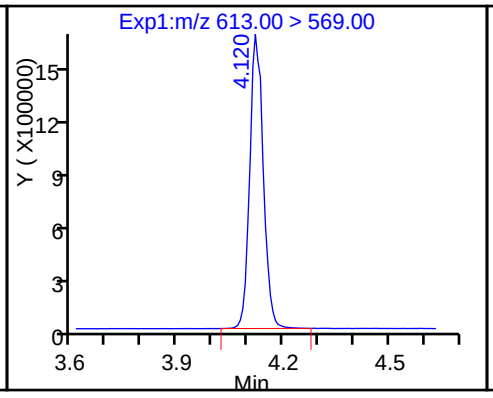
D 27 13C2 PFUnA



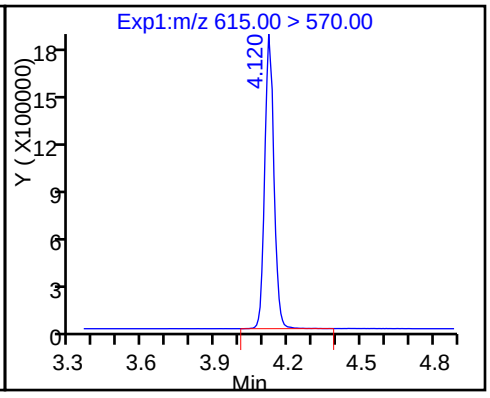
28 Perfluoroundecanoic acid



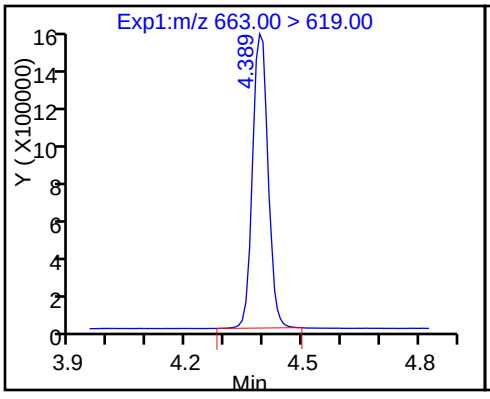
29 Perfluorododecanoic acid



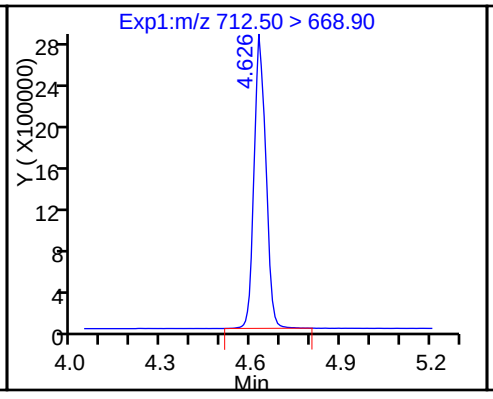
D 30 13C2 PFDoA



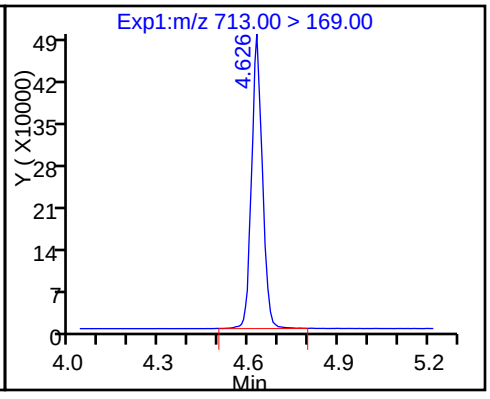
31 Perfluorotridecanoic acid



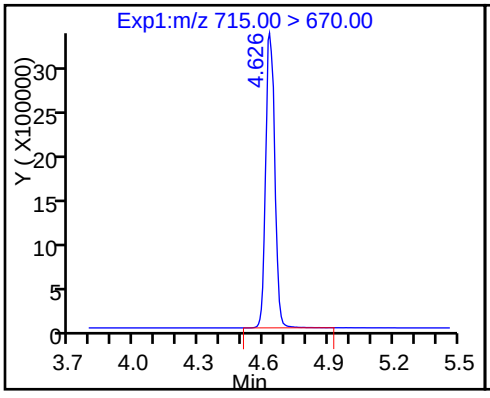
33 Perfluorotetradecanoic acid



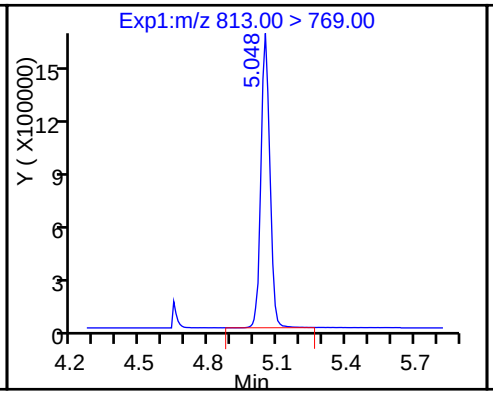
33 Perfluorotetradecanoic acid



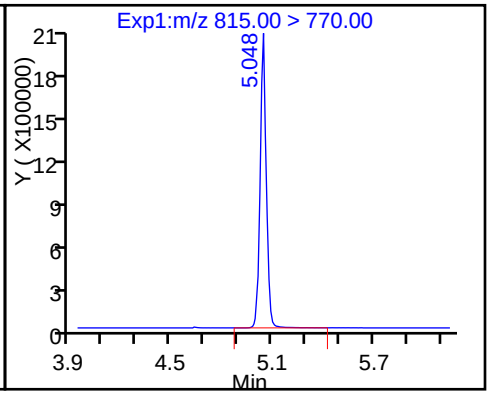
D 32 13C2-PFTeDA



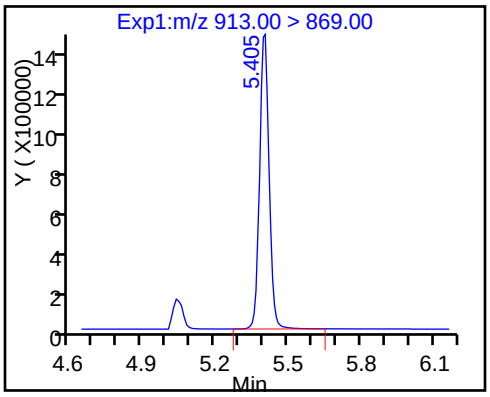
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: ICV 320-142379/11 Calibration Date: 12/15/2016 13:21

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 15DEC2016B_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	0.8537	0.8479		49.7	50.0	-0.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.9654		48.9	50.0	-2.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.478		46.2	44.3	4.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9123		49.1	50.0	-1.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9679		49.4	50.0	-1.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	0.9556		43.8	47.3	-7.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.000		49.9	50.0	-0.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.160		50.1	47.6	5.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9360		49.2	50.0	-1.7	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	0.9040		43.4	47.8	-9.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9182		49.2	50.0	-1.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9109		48.3	50.0	-3.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5921		48.9	48.3	1.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9285		48.5	50.0	-2.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8958		48.8	50.0	-2.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9189		50.7	50.0	1.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.555		49.1	50.0	-1.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9309		48.2	50.0	-3.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8547		41.5	50.0	-17.0	25.0
13C4 PFBA	Ave	347743	335296		48.2	50.0	-3.6	50.0
13C5-PFPeA	Ave	266072	251719		47.3	50.0	-5.4	50.0
13C2 PFHxA	Ave	245110	240514		49.1	50.0	-1.9	50.0
13C4-PFHpA	Ave	226344	215455		47.6	50.0	-4.8	50.0
18O2 PFHxS	Ave	326976	320282		46.3	47.3	-2.0	50.0
13C4 PFOA	Ave	230362	219488		47.6	50.0	-4.7	50.0
13C4 PFOS	Ave	248847	244549		47.0	47.8	-1.7	50.0
13C5 PFNA	Ave	177687	171464		48.2	50.0	-3.5	50.0
13C8 FOSA	Ave	384141	381142		49.6	50.0	-0.8	50.0
13C2 PFDA	Ave	157302	151370		48.1	50.0	-3.8	50.0
13C2 PFUnA	Ave	117250	116265		49.6	50.0	-0.8	50.0
13C2 PFDoA	Ave	110957	105818		47.7	50.0	-4.6	50.0
13C2-PFTeDA	Ave	227387	214066		47.1	50.0	-5.9	50.0
13C2-PFHxDA	Ave	124568	118207		47.4	50.0	-5.1	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_011.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 15-Dec-2016 13:21:44 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\20161215-37881.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 14:41:15 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 15-Dec-2016 13:56:27

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	1.533	1.534	-0.001		16764776	48.2		96.4	1068457	
1 Perfluorobutyric acid										
212.90 > 169.00	1.541	1.535	0.006	1.000	14214515	49.7			107570	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		12585925	47.3		94.6	1186150	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	12149802	48.9			115067	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.848	0.0	1.000	20951066	46.2				
298.90 > 99.00	1.848	1.848	0.0	1.000	9653760		2.17(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.100	2.096	0.004	1.000	10971106	49.1			243419	
D 6 13C2 PFHxA										
315.00 > 270.00	2.100	2.097	0.003		12025693	49.1		98.1	480449	
D 11 13C4-PFHpA										
367.00 > 322.00	2.425	2.426	-0.001		10772772	47.6		95.2	728689	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.433	2.428	0.005	1.000	10426957	49.4			97176	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.449	2.431	0.018	1.000	14462013	43.8				
D 10 18O2 PFHxS										
403.00 > 84.00	2.449	2.446	0.003		15149334	46.3		98.0	878432	
D 14 13C4 PFOA										
417.00 > 372.00	2.785	2.783	0.002		10974392	47.6		95.3	756643	

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	2.785	2.783	0.002	1.000	10976634	49.9			90975	
413.00 > 169.00	2.793	2.783	0.010	1.003	6473539		1.70(0.90-1.10)		241007	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.793	2.790	0.003	1.000	13497259	50.1				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.162	3.118	0.044	1.000	10556247	43.4			368282	
499.00 > 99.00	3.154	3.118	0.036	0.997	2582918		4.09(0.90-1.10)		118191	
D 17 13C4 PFOS										
503.00 > 80.00	3.162	3.151	0.011		11689450	47.0		98.3	325285	
D 19 13C5 PFNA										
468.00 > 423.00	3.162	3.153	0.009		8573219	48.2		96.5	485749	
20 Perfluorononanoic acid										
463.00 > 419.00	3.162	3.155	0.007	1.000	8024621	49.2			123355	
D 21 13C8 FOSA										
506.00 > 78.00	3.495	3.488	0.007		19057117	49.6		99.2	610709	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.495	3.491	0.004	1.000	17498900	49.2			383568	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.520	3.510	0.010	1.000	6894043	48.3			189508	
D 23 13C2 PFDA										
515.00 > 470.00	3.520	3.513	0.007		7568491	48.1		96.2	377092	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.830	3.822	0.008	1.000	6986242	48.9				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.848	3.839	0.009	1.000	5397748	48.5			115044	
D 27 13C2 PFUnA										
565.00 > 520.00	3.848	3.842	0.006		5813248	49.6		99.2	413801	
D 30 13C2 PFDoA										
615.00 > 570.00	4.139	4.132	0.007		5290885	47.7		95.4	272661	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.139	4.136	0.003	1.000	4739775	48.8			99907	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.411	4.400	0.011	1.000	4861713	50.7			113110	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.642	4.641	0.001		10703301	47.1		94.1	614243	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.642	0.010	1.000	8229099	49.1			142471	
713.00 > 169.00	4.642	4.642	0.0	0.998	1339943		6.14(0.00-0.00)		99778	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.057	0.001		5910325	47.4		94.9	128290	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	4925242	48.2			4012	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.421	5.414	0.007	1.000	4522136	41.5			4448	

Reagents:

LCPFCIC_00020 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 14:41:15 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_011.d

Injection Date: 15-Dec-2016 13:21:44 Instrument ID: A8_N

Lims ID: ICV

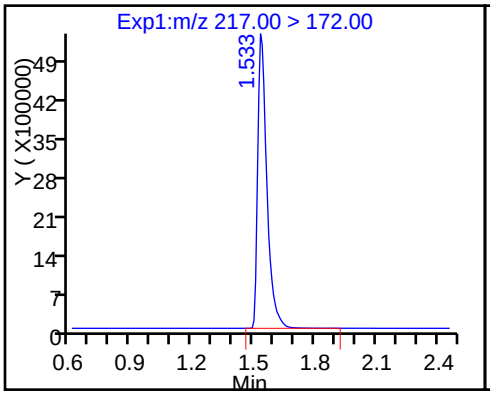
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 11

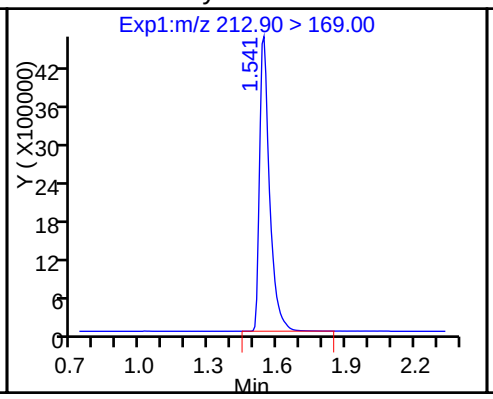
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

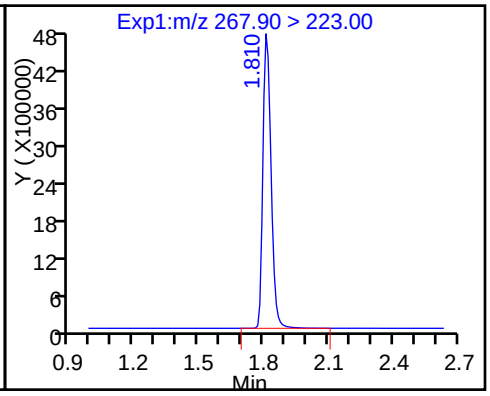
D 2 13C4 PFBA



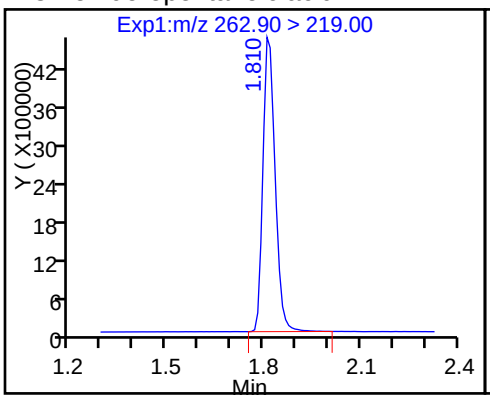
1 Perfluorobutyric acid



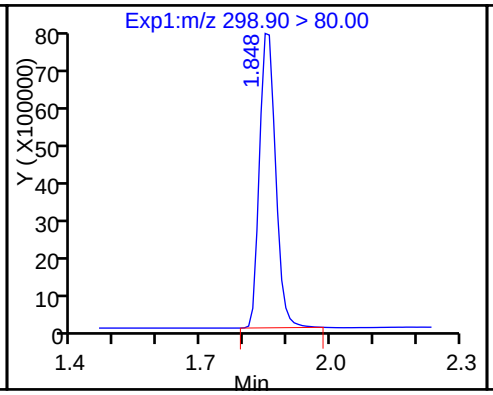
D 4 13C5-PFPeA



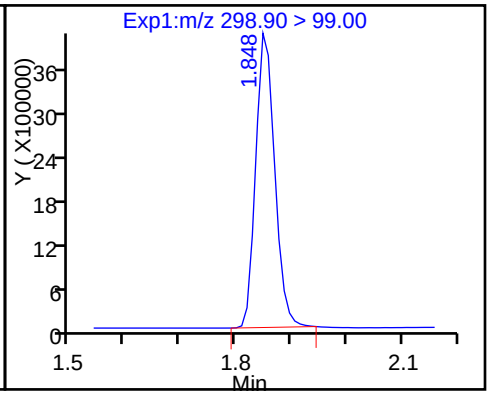
3 Perfluoropentanoic acid



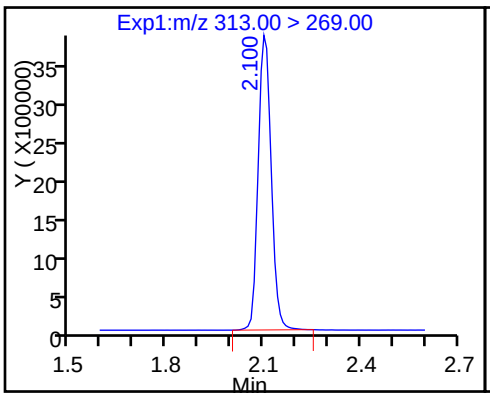
5 Perfluorobutanesulfonic acid



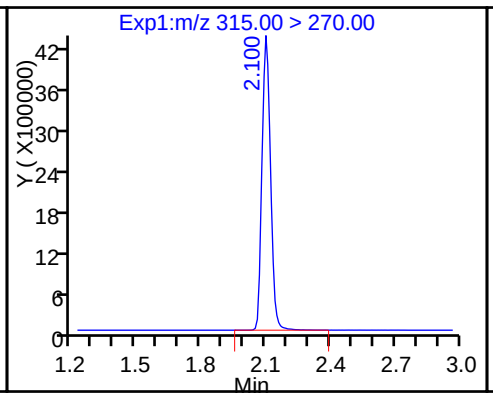
5 Perfluorobutanesulfonic acid



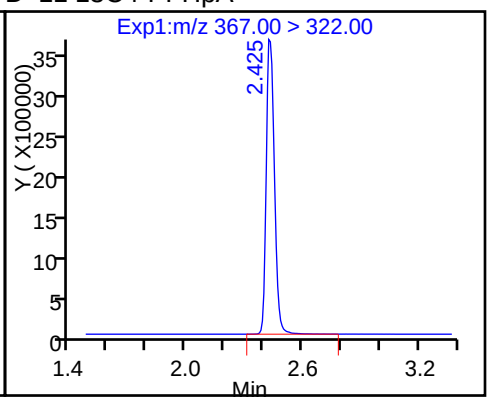
7 Perfluorohexanoic acid



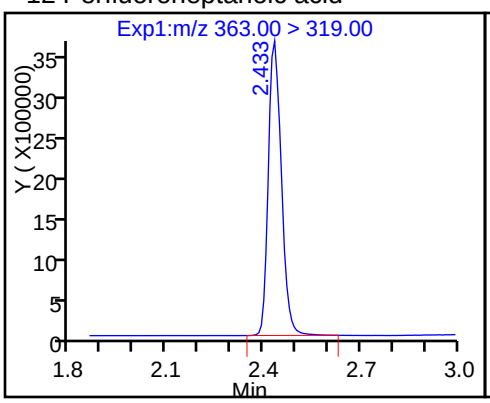
D 6 13C2 PFHxA



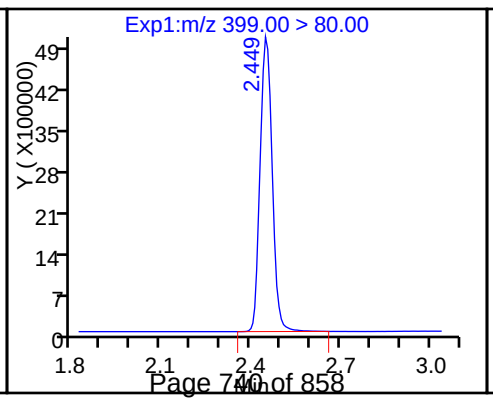
D 11 13C4-PFHpA



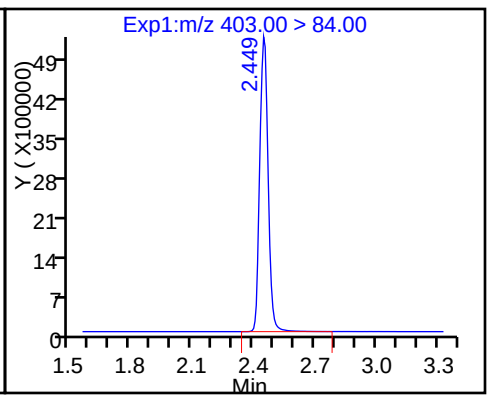
12 Perfluoroheptanoic acid



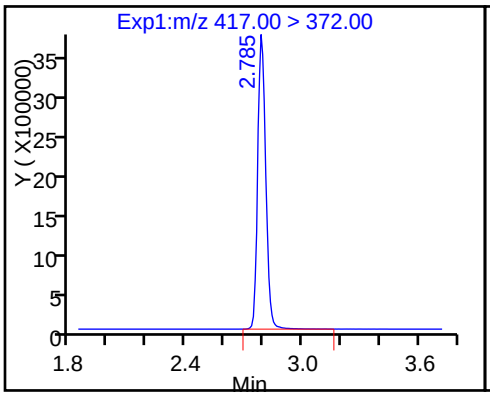
9 Perfluorohexanesulfonic acid



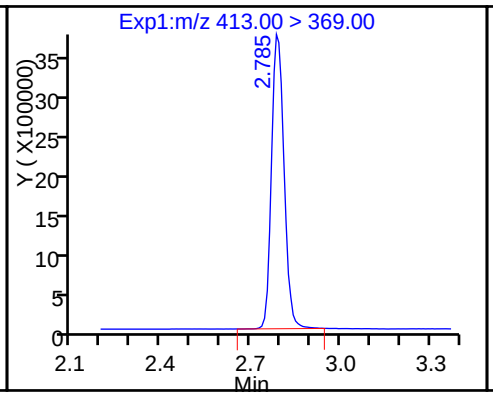
D 10 18O2 PFHxS



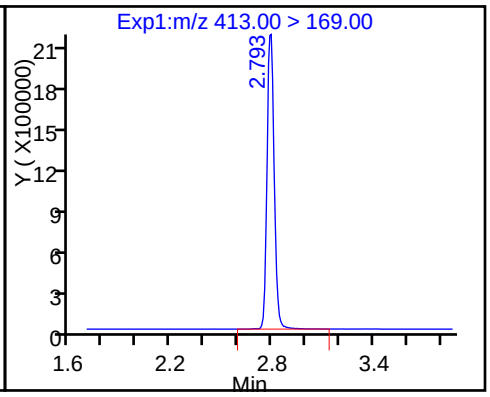
D 14 13C4 PFOA



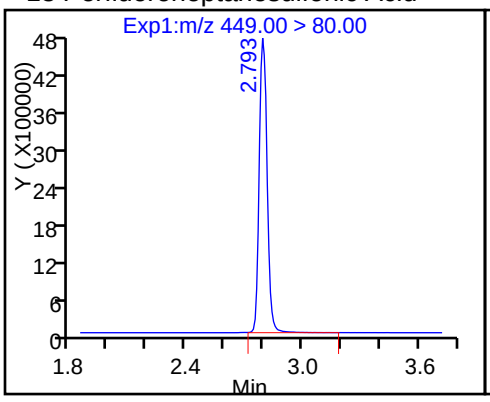
15 Perfluorooctanoic acid



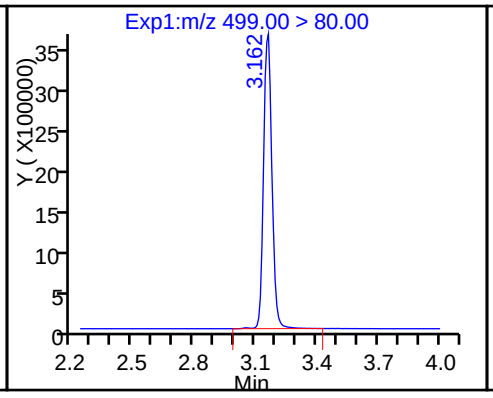
15 Perfluorooctanoic acid



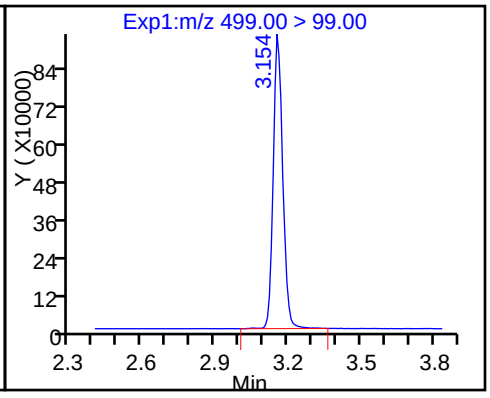
13 Perfluoroheptanesulfonic Acid



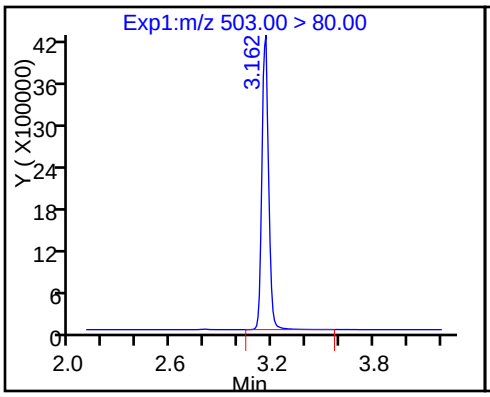
18 Perfluorooctane sulfonic acid



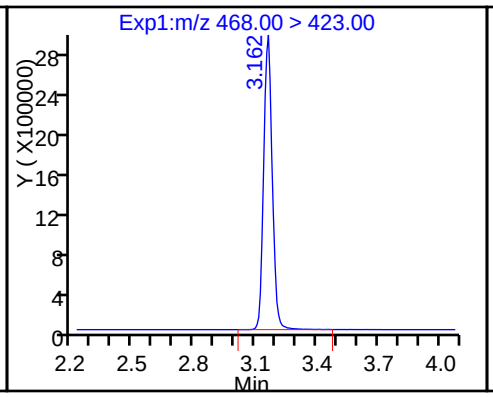
18 Perfluorooctane sulfonic acid



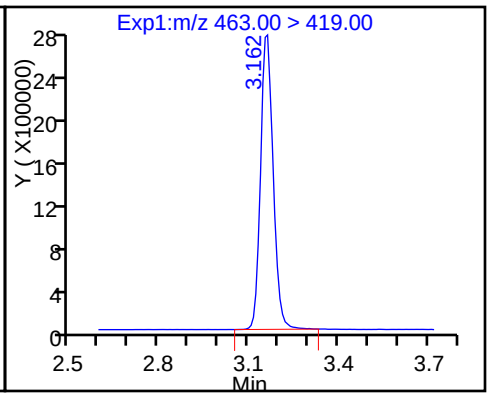
D 17 13C4 PFOS



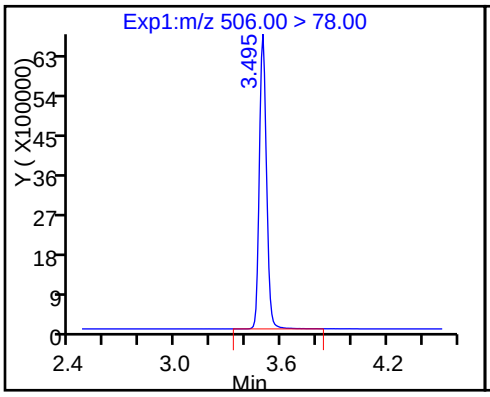
D 19 13C5 PFNA



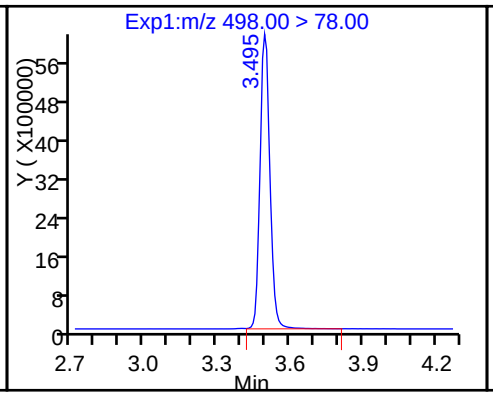
20 Perfluorononanoic acid



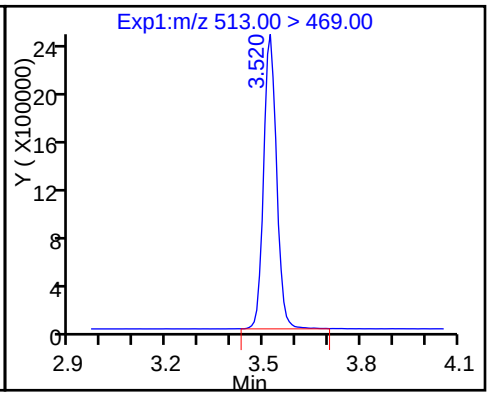
D 21 13C8 FOSA



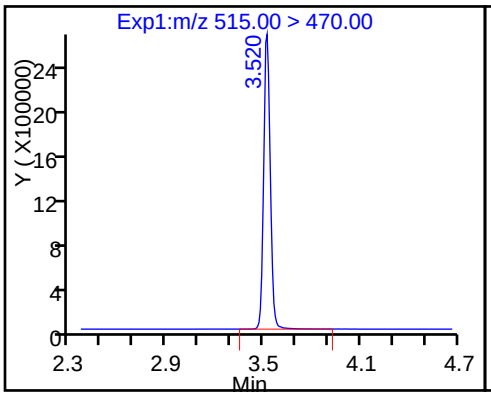
22 Perfluorooctane Sulfonamide



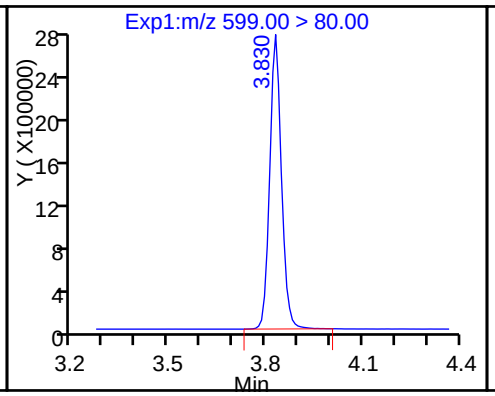
24 Perfluorodecanoic acid



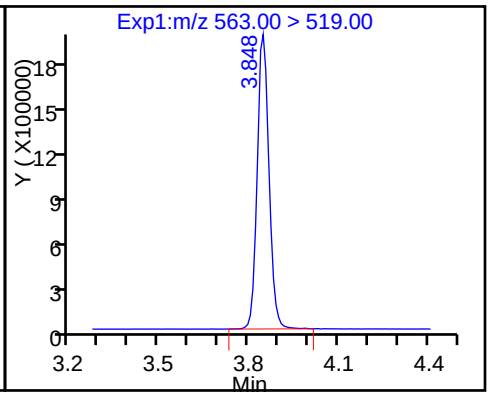
D 23 13C2 PFDA



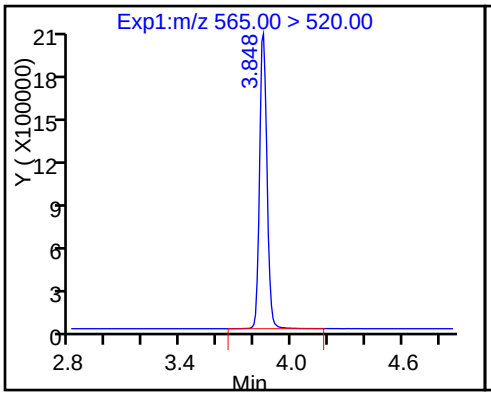
26 Perfluorodecane Sulfonic acid



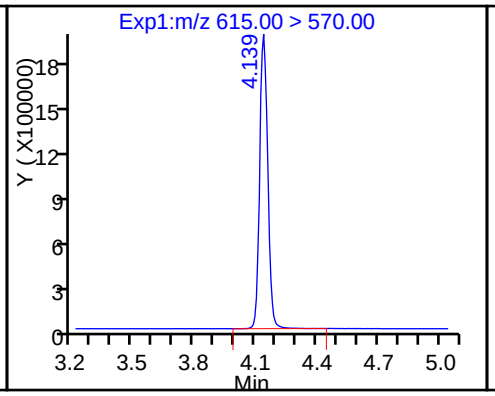
28 Perfluoroundecanoic acid



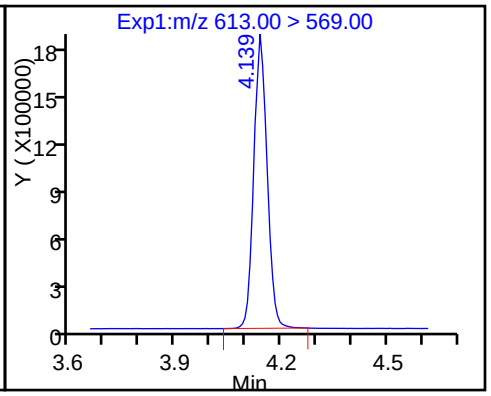
D 27 13C2 PFUnA



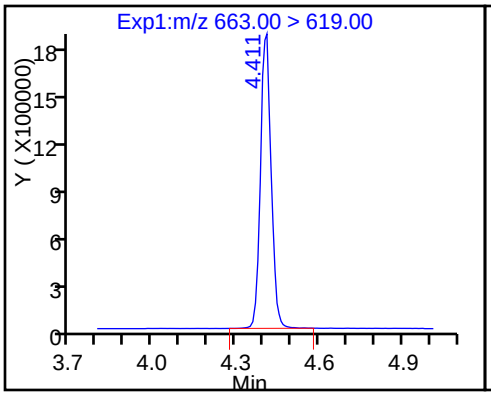
D 30 13C2 PFDoA



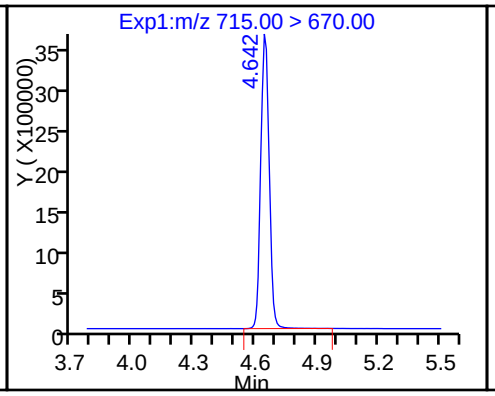
29 Perfluorododecanoic acid



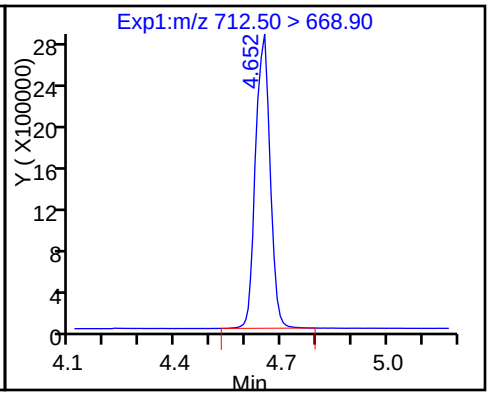
31 Perfluorotridecanoic acid



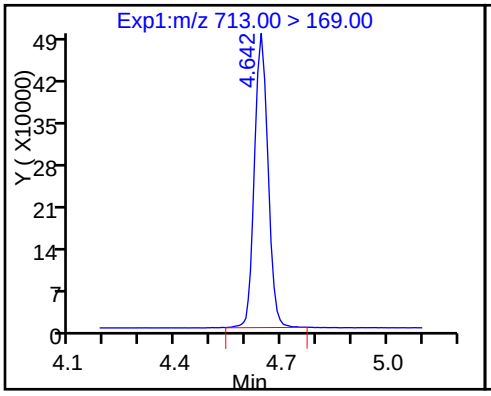
D 32 13C2-PFTeDA



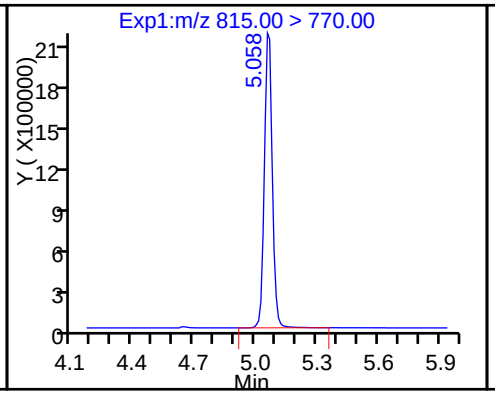
33 Perfluorotetradecanoic acid



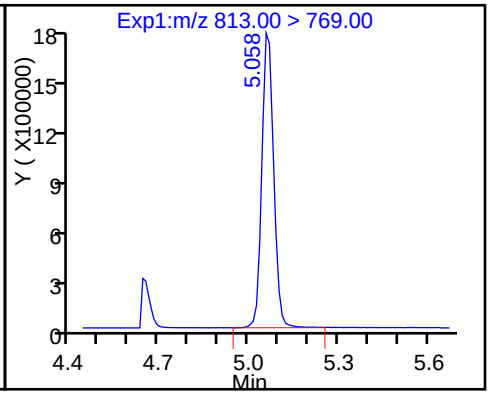
33 Perfluorotetradecanoic acid



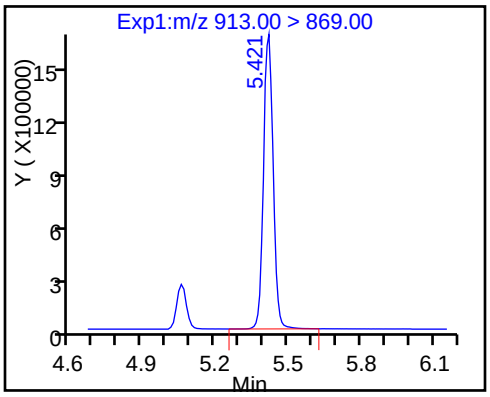
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142571/4 Calibration Date: 12/16/2016 10:23

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 16DEC2016A_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	0.8537	0.8622		1.01	1.00	1.0	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.049		1.06	1.00	6.3	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.423		0.888	0.884	0.5	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9078		0.977	1.00	-2.3	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9636		0.984	1.00	-1.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.116		0.986	0.910	8.4	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.053		0.909	0.952	-4.5	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.073		1.07	1.00	7.0	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9456		0.994	1.00	-0.6	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	0.9280		0.866	0.928	-6.7	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9465		1.01	1.00	1.5	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9040		0.958	1.00	-4.2	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6119		1.01	0.964	4.8	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9903		1.04	1.00	3.6	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8819		0.961	1.00	-3.9	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.7992		0.881	1.00	-11.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.924		1.21	1.00	21.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.721		1.20	1.00	20.3	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	1.124		1.09	1.00	9.1	50.0
13C4 PFBA	Ave	347743	351306		50.5	50.0	1.0	50.0
13C5-PFPeA	Ave	266072	280609		52.7	50.0	5.5	50.0
13C2 PFHxA	Ave	245110	256291		52.3	50.0	4.6	50.0
13C4-PFHpA	Ave	226344	231480		51.1	50.0	2.3	50.0
18O2 PFHxS	Ave	326976	312827		45.3	47.3	-4.3	50.0
13C4 PFOA	Ave	230362	240945		52.3	50.0	4.6	50.0
13C4 PFOS	Ave	248847	245399		47.1	47.8	-1.4	50.0
13C5 PFNA	Ave	177687	174548		49.1	50.0	-1.8	50.0
13C8 FOSA	Ave	384141	416037		54.2	50.0	8.3	50.0
13C2 PFDA	Ave	157302	168574		53.6	50.0	7.2	50.0
13C2 PFUnA	Ave	117250	124386		53.0	50.0	6.1	50.0
13C2 PFDoA	Ave	110957	116679		52.6	50.0	5.2	50.0
13C2-PFTeDA	Ave	227387	254344		55.9	50.0	11.9	50.0
13C2-PFHxDA	Ave	124568	149310		59.9	50.0	19.9	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37932.b\16DEC2016A_002.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 16-Dec-2016 10:23:18 ALS Bottle#: 38 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37932.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 16-Dec-2016 15:49:37 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 16-Dec-2016 14:29:50

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	1.607	1.606	0.001	1.000	302902	1.01		101	2474	
D 2 13C4 PFBA										
217.00 > 172.00	1.599	1.606	-0.007		17565315	50.5		101	866076	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.897	1.897	0.0	1.000	294297	1.06		106	2755	
D 4 13C5-PFPeA										
267.90 > 223.00	1.888	1.897	-0.009		14030435	52.7		105	1255780	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.926	1.935	-0.009	1.000	393624	0.8880		100		
298.90 > 99.00	1.926	1.935	-0.009	1.000	165281		2.38(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.195	2.198	-0.003		12814553	52.3		105	782638	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.195	2.198	-0.003	1.000	232669	0.9774		97.7	8322	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.559	2.483	0.076	1.000	317736	0.9861		108		
D 11 13C4-PFHpA										
367.00 > 322.00	2.536	2.541	-0.004		11574024	51.1		102	991176	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.544	2.541	0.004	1.000	223051	0.9844		98.4	3086	
D 10 18O2 PFHxS										
403.00 > 84.00	2.559	2.556	0.003		14796729	45.3		95.7	2677196	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.918	2.908	0.010	1.000	258512	1.07		107	1784	
413.00 > 169.00	2.910	2.908	0.002	0.997	154761		1.67(0.90-1.10)		8352	
D 14 13C4 PFOA										
417.00 > 372.00	2.910	2.908	0.002		12047249	52.3		105	1428755	

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	2.910	2.916	-0.006	1.000	245887	0.9093		95.5		
D 17 13C4 PFOS										
503.00 > 80.00	3.283	3.280	0.002		11730050	47.1		98.6	501134	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.290	3.280	0.010	1.000	211342	0.8660		93.3	18713	M
499.00 > 99.00	3.283	3.280	0.002	0.998	49645		4.26(0.90-1.10)		3734	M
D 19 13C5 PFNA										
468.00 > 423.00	3.290	3.288	0.002		8727391	49.1		98.2	599988	
20 Perfluorononanoic acid										
463.00 > 419.00	3.290	3.288	0.002	1.000	165059	0.99		99.4	3619	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.599	3.598	0.001	1.000	393764	1.01		101	35223	
D 21 13C8 FOSA										
506.00 > 78.00	3.591	3.598	-0.007		20801841	54.2		108	471659	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.641	3.648	-0.007	1.000	152391	0.9578		95.8	5207	
D 23 13C2 PFDA										
515.00 > 470.00	3.650	3.648	0.002		8428699	53.6		107	260747	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.955	3.951	0.004	1.000	144764	1.01		105		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.973	3.969	0.004	1.000	123173	1.04		104	2615	
D 27 13C2 PFUnA										
565.00 > 520.00	3.973	3.978	-0.005		6219308	53.0		106	243473	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.271	4.271	0.0	1.000	102894	0.9606		96.1	1129	
D 30 13C2 PFDoA										
615.00 > 570.00	4.271	4.262	0.009		5833967	52.6		105	216296	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.536	4.530	0.006	1.000	93253	0.8813		88.1	130	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.780	4.768	0.012	1.000	224469	1.21		121	110	
713.00 > 169.00	4.780	4.768	0.012	1.000	39049		5.75(0.00-0.00)		7170	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.780	4.768	0.012		12717194	55.9		112	786052	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.209	5.191	0.018	1.000	200813	1.20		120	323	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.198	5.191	0.007		7465499	59.9		120	169315	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.576	5.561	0.015	1.000	131139	1.09		109	338	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023 Amount Added: 1.00 Units: mL

Report Date: 16-Dec-2016 15:49:37 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37932.b\16DEC2016A_002.d

Injection Date: 16-Dec-2016 10:23:18 Instrument ID: A8_N

Lims ID: CCV L2

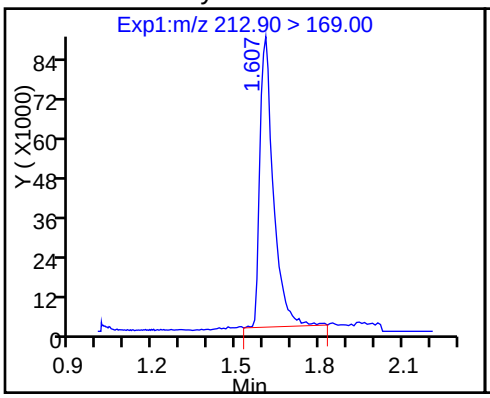
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 4

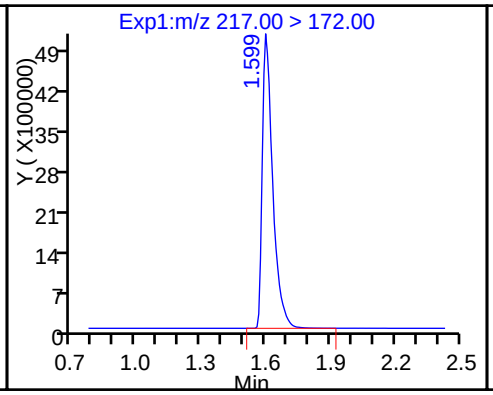
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

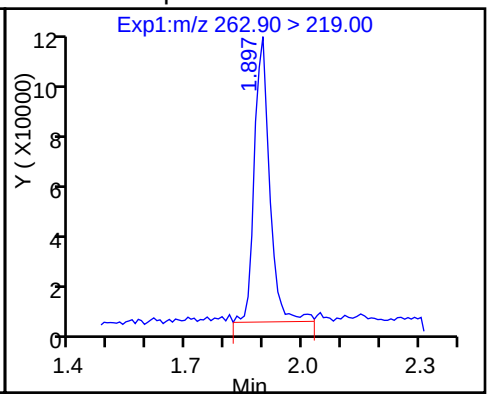
1 Perfluorobutyric acid



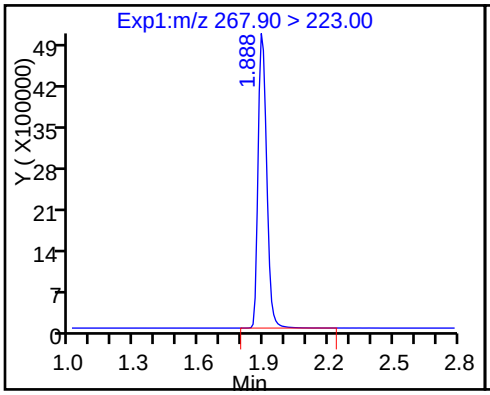
D 2 13C4 PFBA



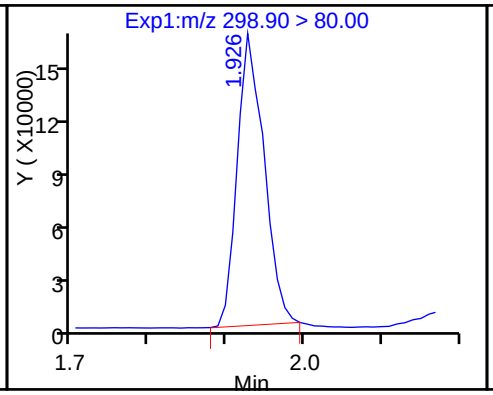
3 Perfluoropentanoic acid



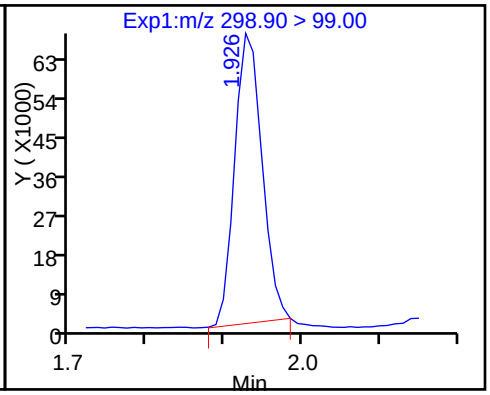
D 4 13C5-PFPeA



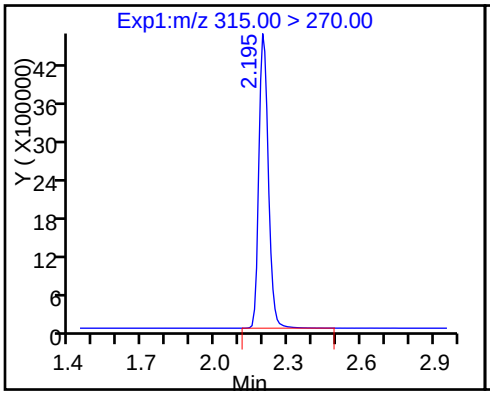
5 Perfluorobutanesulfonic acid



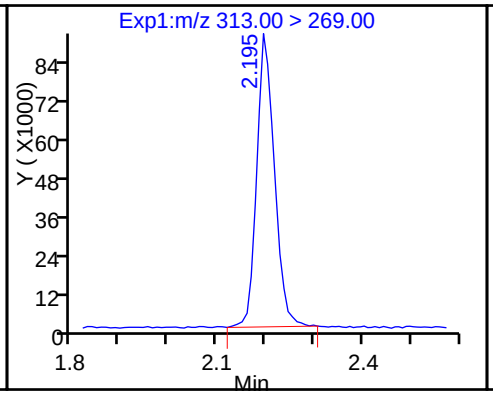
5 Perfluorobutanesulfonic acid



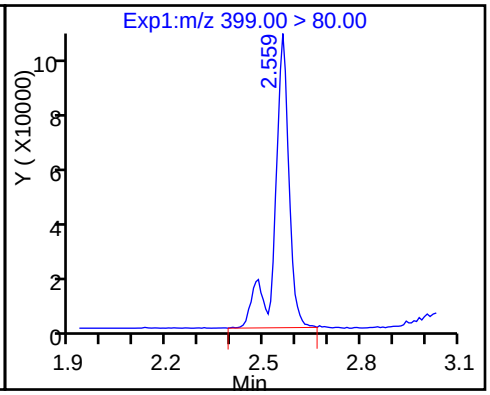
D 6 13C2 PFHxA



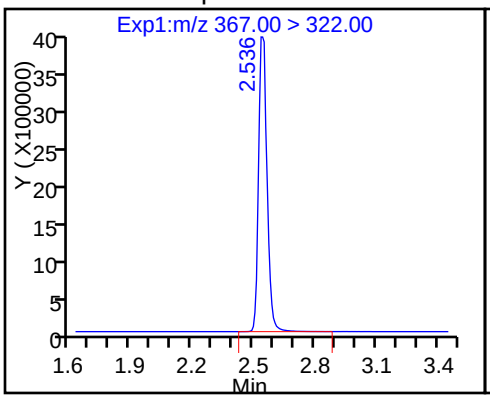
7 Perfluorohexanoic acid



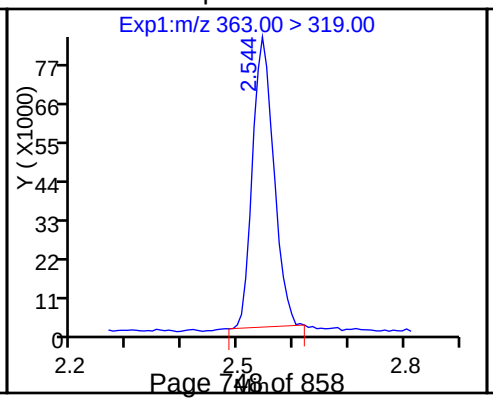
9 Perfluorohexanesulfonic acid



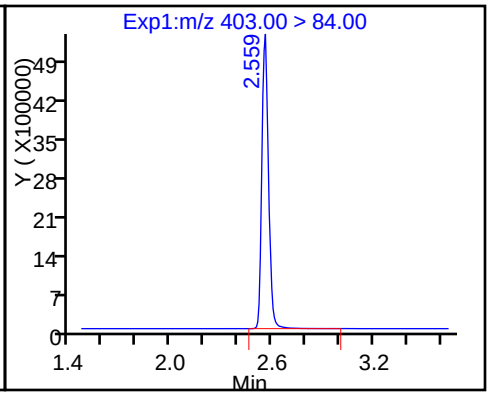
D 11 13C4-PFHpA



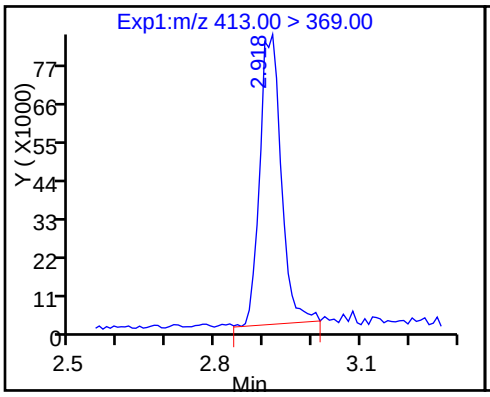
12 Perfluoroheptanoic acid



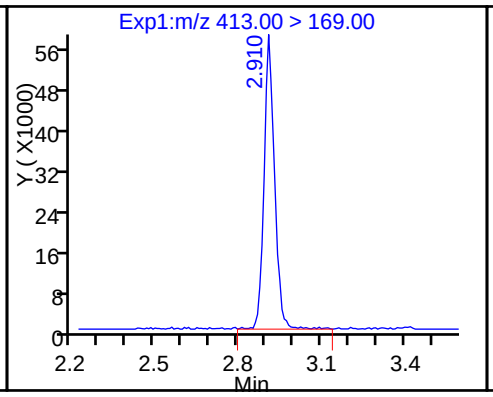
D 10 18O2 PFHxS



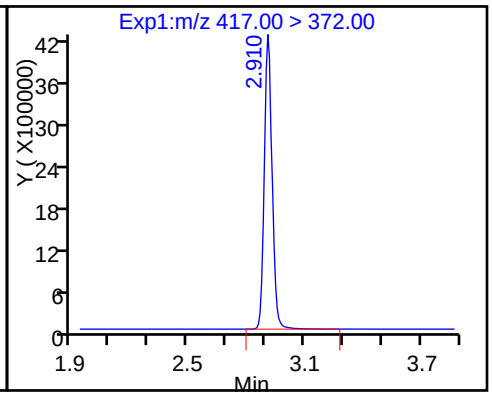
15 Perfluorooctanoic acid



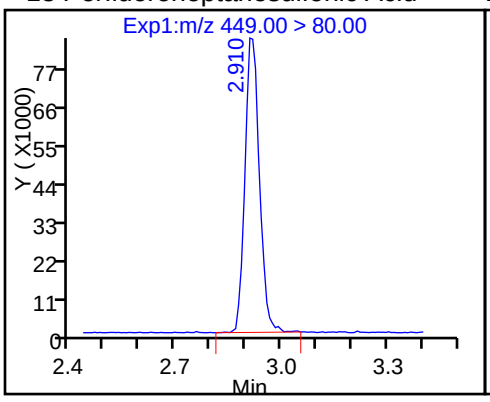
15 Perfluorooctanoic acid



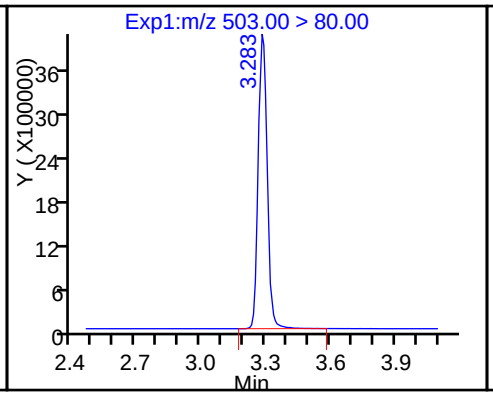
D 14 13C4 PFOA



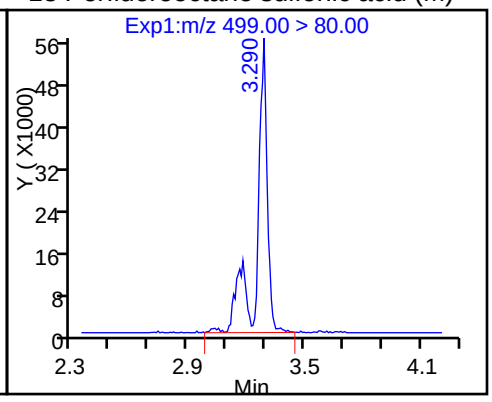
13 Perfluoroheptanesulfonic Acid



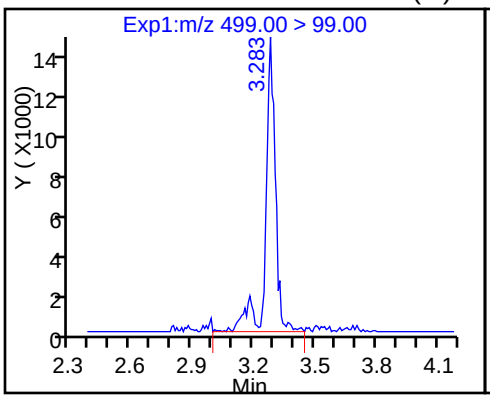
D 17 13C4 PFOS



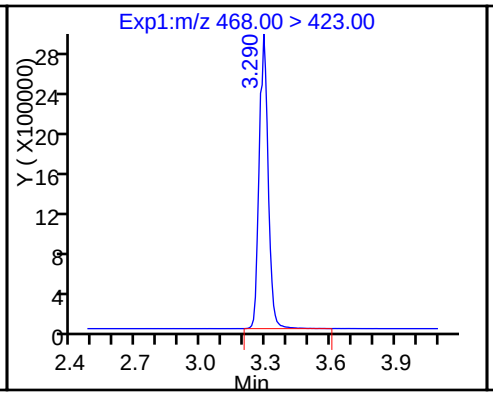
18 Perfluorooctane sulfonic acid (M)



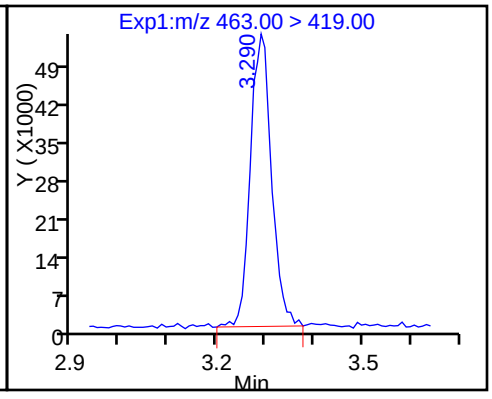
18 Perfluorooctane sulfonic acid (M)



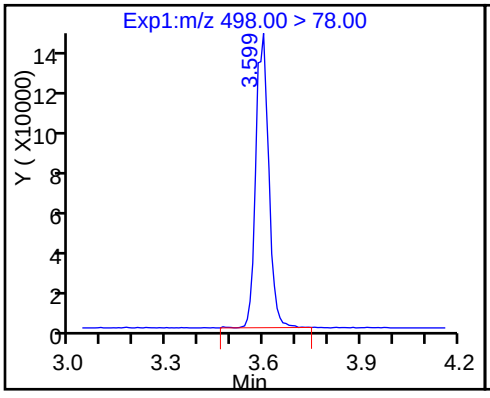
D 19 13C5 PFNA



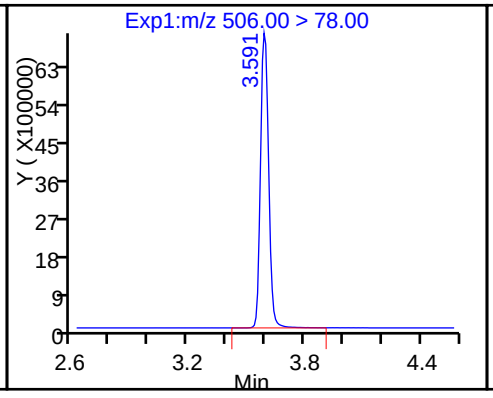
20 Perfluorononanoic acid



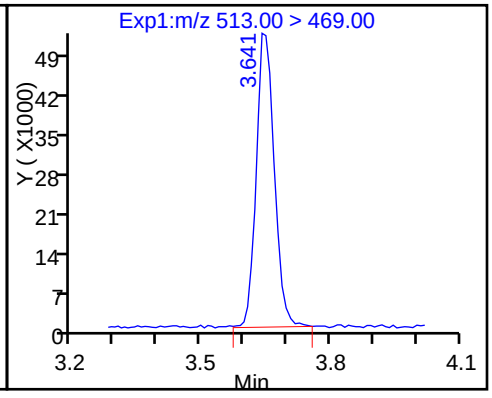
22 Perfluorooctane Sulfonamide



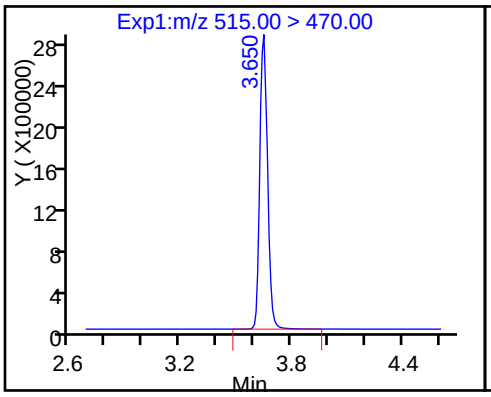
D 21 13C8 FOSA



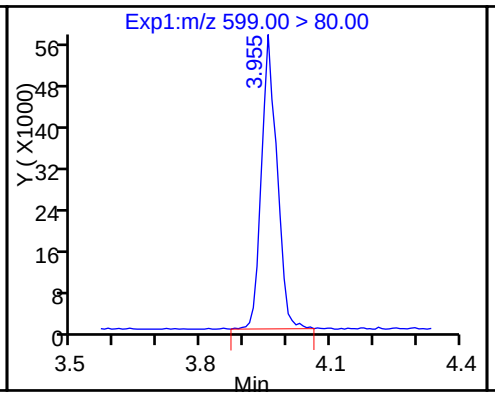
24 Perfluorodecanoic acid



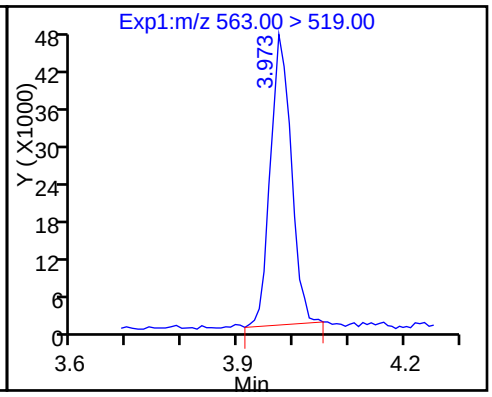
D 23 13C2 PFDA



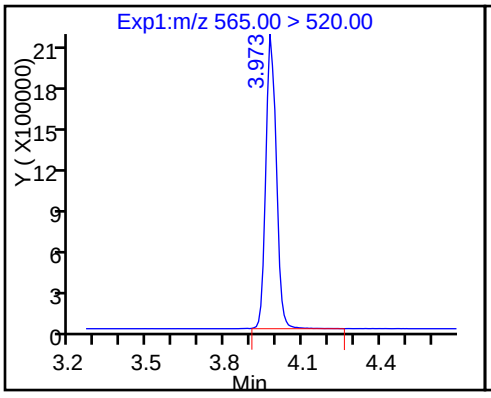
26 Perfluorodecane Sulfonic acid



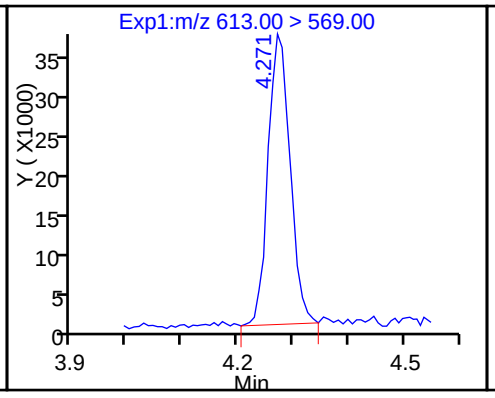
28 Perfluoroundecanoic acid



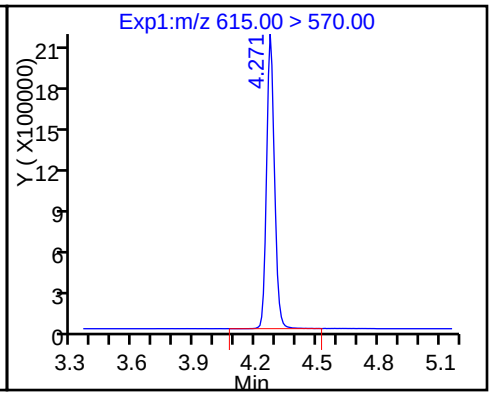
D 27 13C2 PFUnA



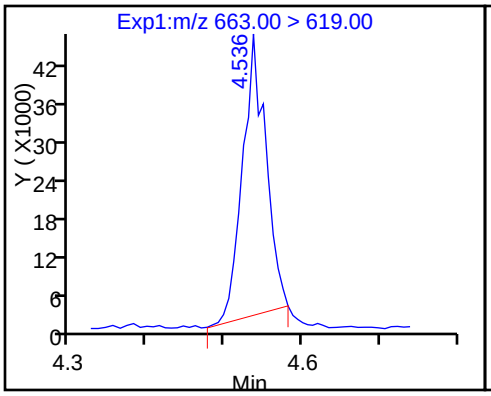
29 Perfluorododecanoic acid



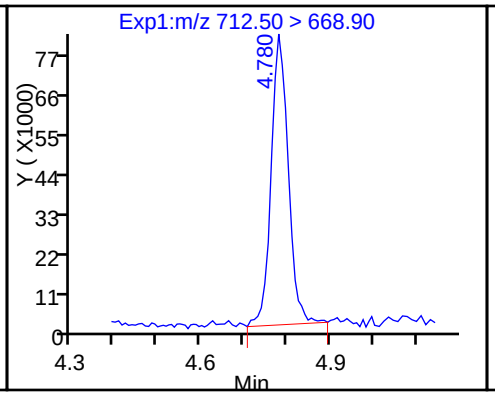
D 30 13C2 PFDoA



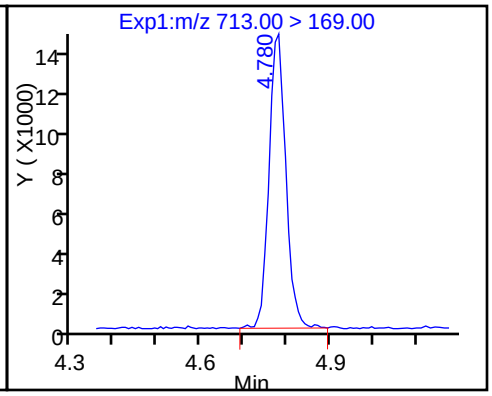
31 Perfluorotridecanoic acid



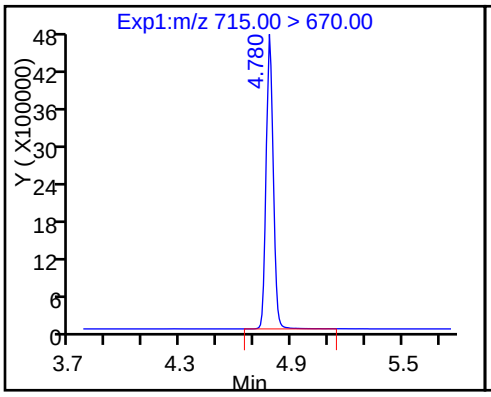
33 Perfluorotetradecanoic acid



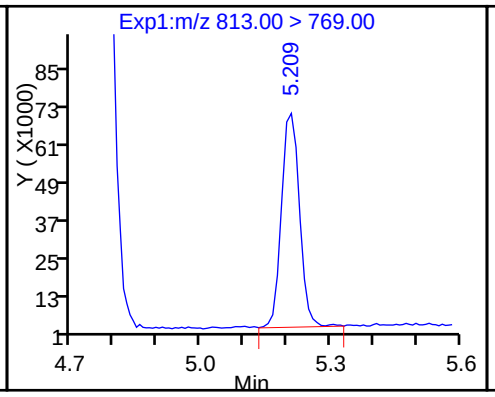
33 Perfluorotetradecanoic acid



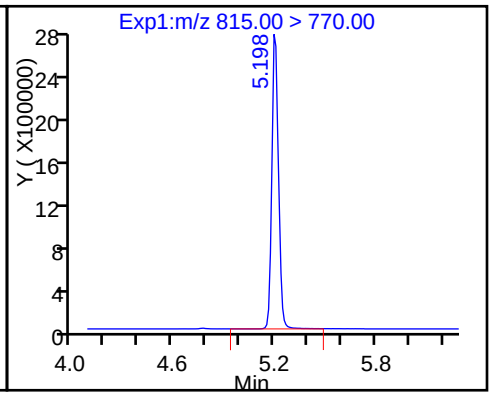
D 32 13C2-PFTeDA



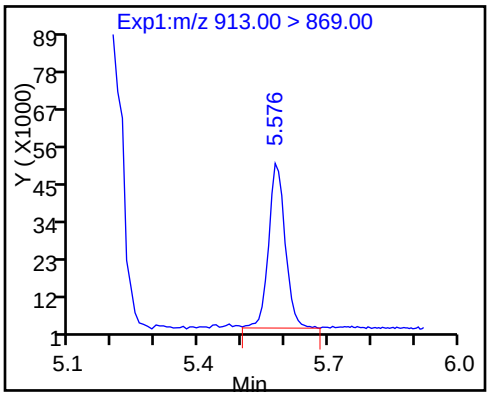
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

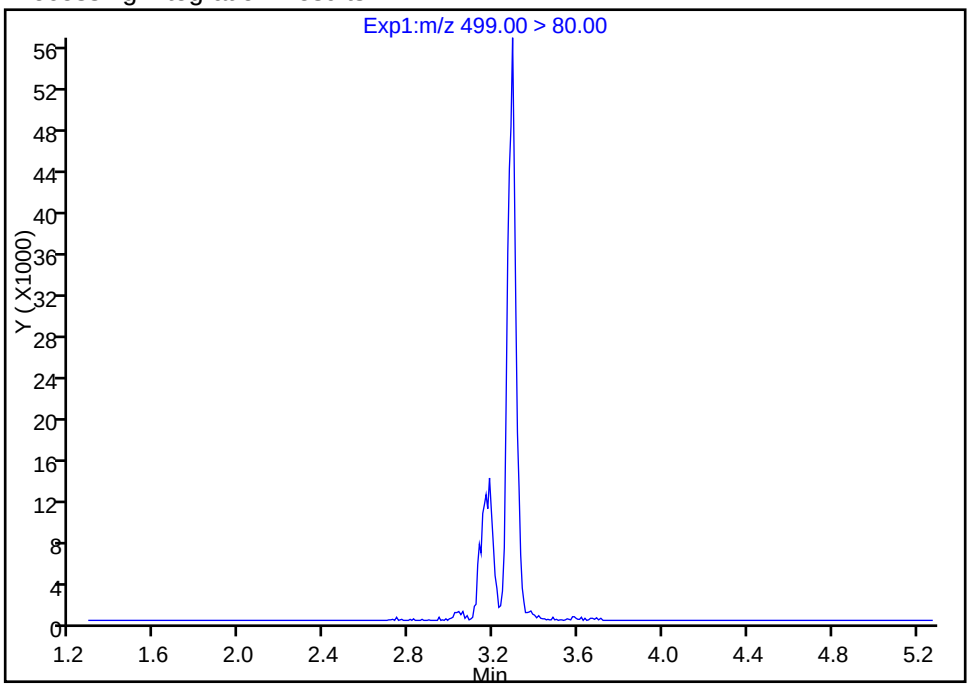
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37932.b\16DEC2016A_002.d
Injection Date: 16-Dec-2016 10:23:18 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

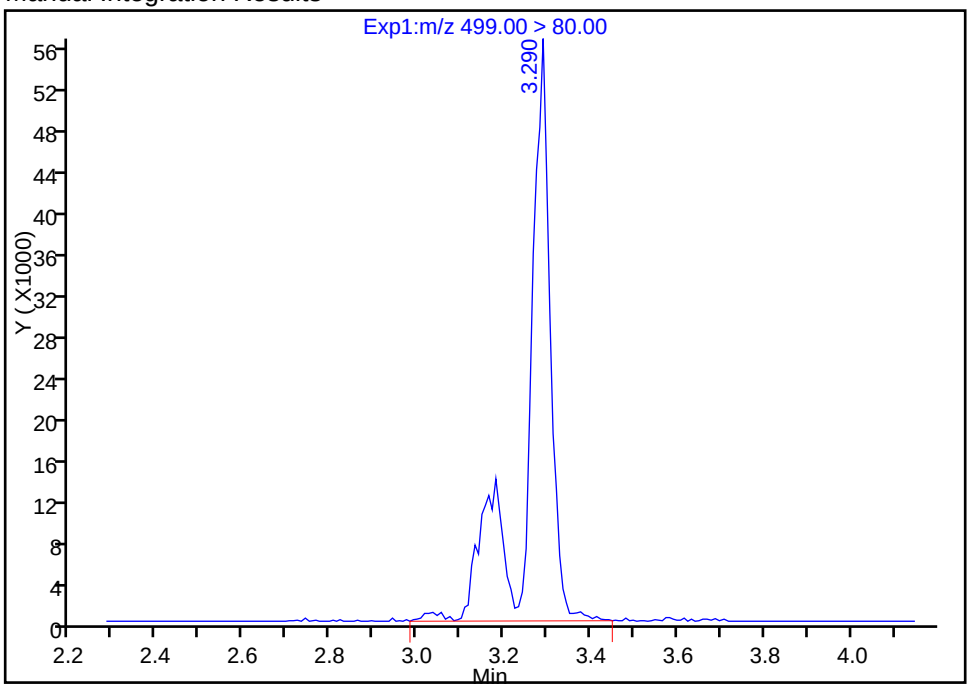
Processing Integration Results

Not Detected
Expected RT: 3.28



Manual Integration Results

RT: 3.29
Area: 211342
Amount: 0.866023
Amount Units: ng/ml



Reviewer: chandrasenas, 16-Dec-2016 14:29:50
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

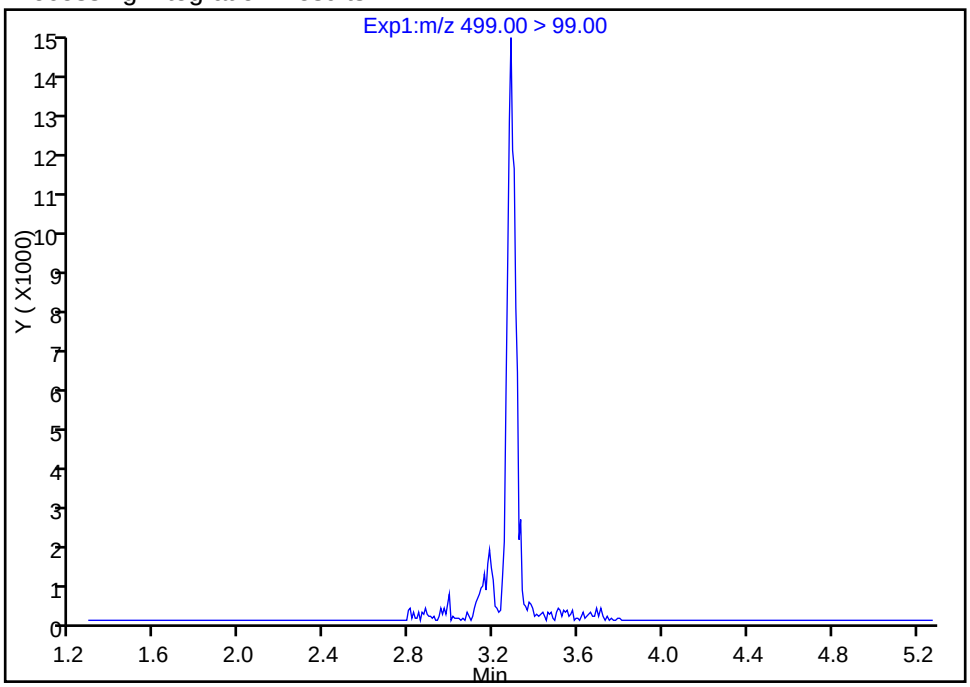
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37932.b\16DEC2016A_002.d
Injection Date: 16-Dec-2016 10:23:18 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

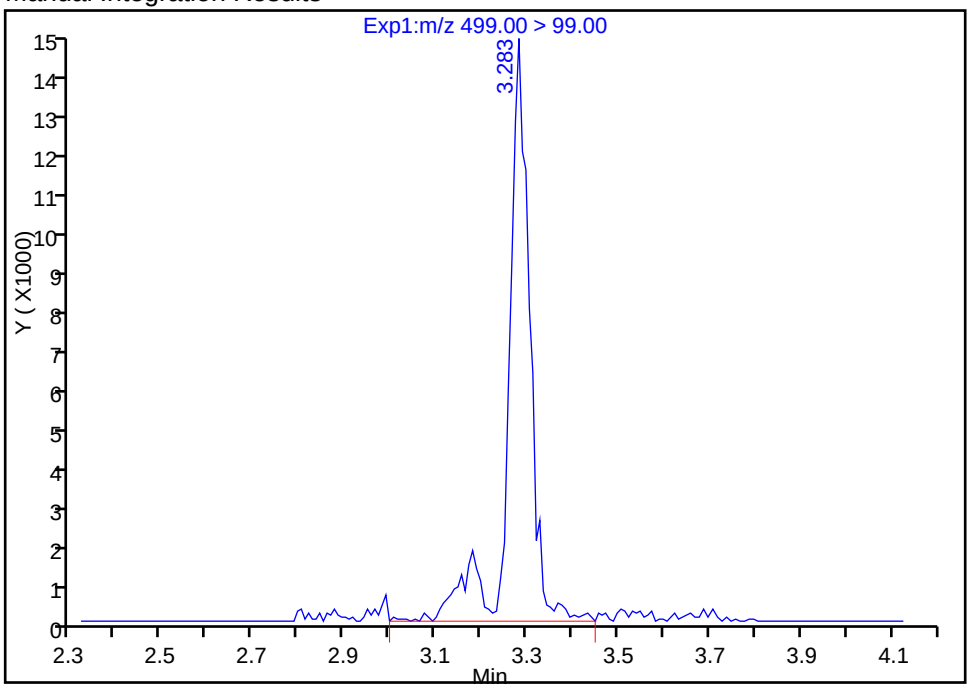
Processing Integration Results

Not Detected
Expected RT: 3.28



Manual Integration Results

RT: 3.28
Area: 49645
Amount: 0.866023
Amount Units: ng/ml



Reviewer: chandrasenas, 16-Dec-2016 14:29:50
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142598/3 Calibration Date: 12/16/2016 12:15

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 16DEC2016A_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	0.8537	0.8949		52.4	50.0	4.8	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.9911		50.2	50.0	0.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.623		50.6	44.2	14.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9369		50.4	50.0	0.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9768		49.9	50.0	-0.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.036		45.8	45.5	0.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.013		50.5	50.0	1.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.210		52.3	47.6	9.8	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.030		48.0	46.4	3.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9503		49.9	50.0	-0.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9390		50.3	50.0	0.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9305		49.3	50.0	-1.4	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6234		51.5	48.2	6.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9659		50.5	50.0	1.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9273		50.5	50.0	1.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8841		48.7	50.0	-2.5	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.694		53.4	50.0	6.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9787		50.7	50.0	1.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	1.055		51.2	50.0	2.4	25.0
13C4 PFBA	Ave	347743	318523		45.8	50.0	-8.4	50.0
13C5-PFPeA	Ave	266072	251073		47.2	50.0	-5.6	50.0
13C2 PFHxA	Ave	245110	224442		45.8	50.0	-8.4	50.0
13C4-PFHpA	Ave	226344	195274		43.1	50.0	-13.7	50.0
18O2 PFHxS	Ave	326976	292201		42.3	47.3	-10.6	50.0
13C4 PFOA	Ave	230362	202038		43.9	50.0	-12.3	50.0
13C4 PFOS	Ave	248847	222523		42.7	47.8	-10.6	50.0
13C5 PFNA	Ave	177687	150112		42.2	50.0	-15.5	50.0
13C8 FOSA	Ave	384141	363713		47.3	50.0	-5.3	50.0
13C2 PFDA	Ave	157302	135719		43.1	50.0	-13.7	50.0
13C2 PFUnA	Ave	117250	101374		43.2	50.0	-13.5	50.0
13C2 PFDoA	Ave	110957	97436		43.9	50.0	-12.2	50.0
13C2-PFTeDA	Ave	227387	191948		42.2	50.0	-15.6	50.0
13C2-PFHxDA	Ave	124568	106122		42.6	50.0	-14.8	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016A_014.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 16-Dec-2016 12:15:16 ALS Bottle#: 41 Worklist Smp#: 3
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\20161216-37939.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 18-Dec-2016 16:42:36 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 16-Dec-2016 15:53:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.582	1.582	0.0		15926134	45.8		91.6	2410551	
1 Perfluorobutyric acid										
212.90 > 169.00	1.582	1.582	0.0	1.000	14251771	52.4		105	176756	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.858	1.858	0.0	1.000	12442048	50.2		100	117841	
D 4 13C5-PFPeA										
267.90 > 223.00	1.858	1.858	0.0		12553648	47.2		94.4	1152766	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.906	1.906	0.0	1.000	20960431	50.6		115		
298.90 > 99.00	1.906	1.906	0.0	1.000	9581074		2.19(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.163	2.163	0.0	1.000	10514291	50.4		101	342601	
D 6 13C2 PFHxA										
315.00 > 270.00	2.163	2.163	0.0		11222095	45.8		91.6	799513	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.495	2.495	0.0	1.000	9537248	49.9		99.8	103423	
D 11 13C4-PFHpA										
367.00 > 322.00	2.503	2.503	0.0		9763690	43.1		86.3	1123303	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.518	2.518	0.0	1.000	13772155	45.8		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.518	2.518	0.0		13821097	42.3		89.4	994466	
D 14 13C4 PFOA										
417.00 > 372.00	2.860	2.860	0.0		10101922	43.9		87.7	827832	

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	2.860	2.860	0.0	1.000	10232011	50.5		101	87883	
413.00 > 169.00	2.860	2.860	0.0	1.000	6276995		1.63(0.90-1.10)		224144	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.868	2.868	0.0	1.000	12814036	52.3		110		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.123	3.123	0.0	1.000	10632031	48.0		104	100494	
499.00 > 99.00	3.231	3.123	0.108	1.035	2358817		4.51(0.90-1.10)		180361	
D 17 13C4 PFOS										
503.00 > 80.00	3.231	3.231	0.0		10636620	42.7		89.4	243044	
20 Perfluorononanoic acid										
463.00 > 419.00	3.240	3.240	0.0	1.000	7132222	49.9		99.8	134320	
D 19 13C5 PFNA										
468.00 > 423.00	3.240	3.240	0.0		7505613	42.2		84.5	464410	
D 21 13C8 FOSA										
506.00 > 78.00	3.562	3.562	0.0		18185662	47.3		94.7	520114	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.562	3.562	0.0	1.000	17075624	50.3		101	473540	
D 23 13C2 PFDA										
515.00 > 470.00	3.596	3.596	0.0		6785926	43.1		86.3	293153	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.596	3.596	0.0	1.000	6314037	49.3		98.6	177166	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.898	3.898	0.0	1.000	6686726	51.5		107		
D 27 13C2 PFUnA										
565.00 > 520.00	3.916	3.916	0.0		5068677	43.2		86.5	253025	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.924	3.924	0.0	1.000	4895644	50.5		101	104689	
D 30 13C2 PFDoA										
615.00 > 570.00	4.203	4.203	0.0		4871823	43.9		87.8	156896	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.210	4.210	0.0	1.000	4517409	50.5		101	86523	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.475	4.475	0.0	1.000	4307228	48.7		97.5	78607	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.711	4.711	0.0	1.000	8253037	53.4		107	6008	
713.00 > 169.00	4.711	4.711	0.0	1.000	1288986		6.40(0.00-0.00)		227093	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.711	4.711	0.0		9597421	42.2		84.4	320399	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.125	5.125	0.0		5306089	42.6		85.2	119956	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.125	5.125	0.0	1.000	4768090	50.7		101	6736	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.488	5.488	0.0	1.000	5139787	51.2		102	9707	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 18-Dec-2016 16:42:37 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016A_014.d

Injection Date: 16-Dec-2016 12:15:16 Instrument ID: A8_N

Lims ID: CCV L5

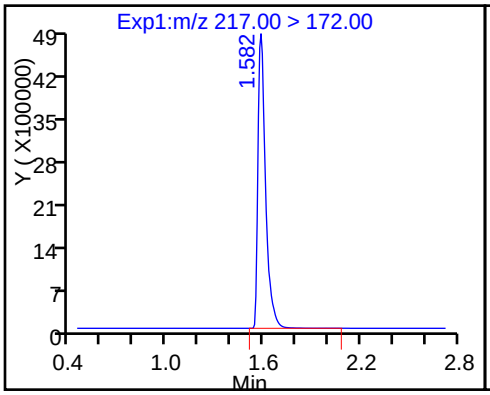
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 3

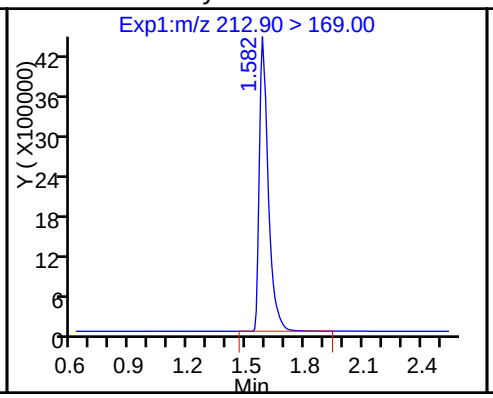
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

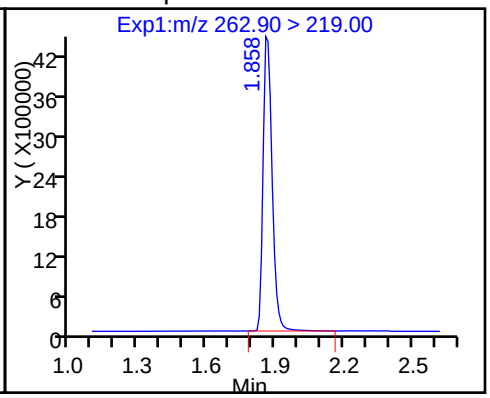
D 2 13C4 PFBA



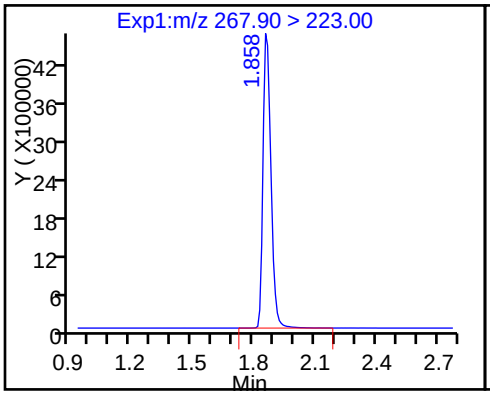
1 Perfluorobutyric acid



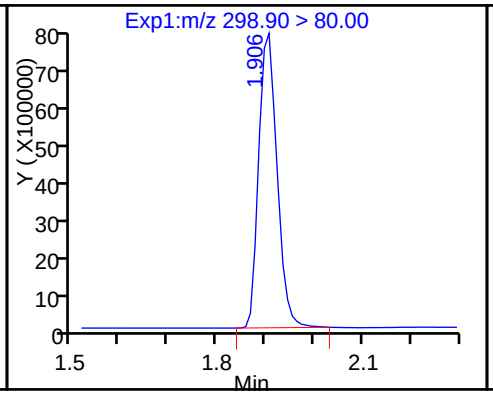
3 Perfluoropentanoic acid



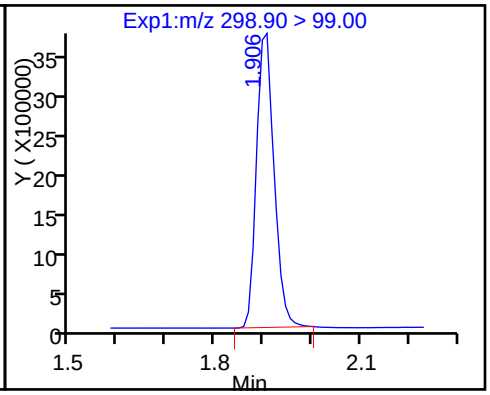
D 4 13C5-PFPeA



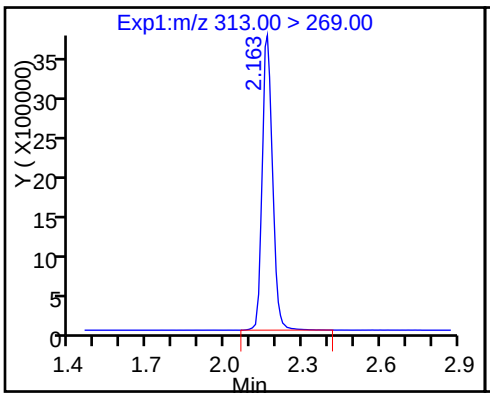
5 Perfluorobutanesulfonic acid



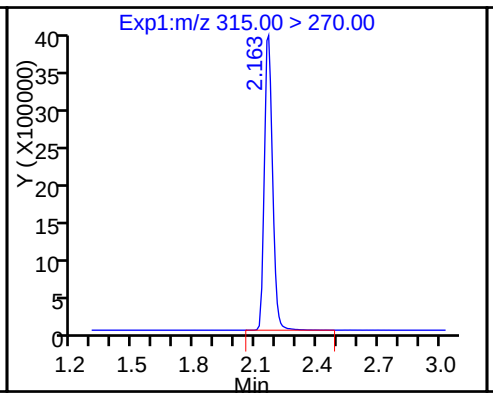
5 Perfluorobutanesulfonic acid



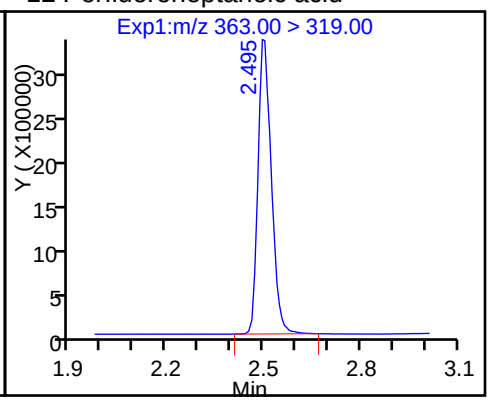
7 Perfluorohexanoic acid



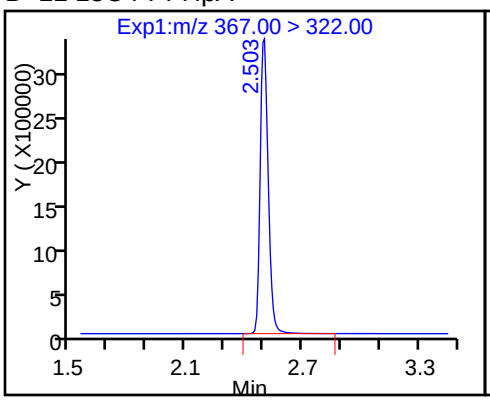
D 6 13C2 PFHxA



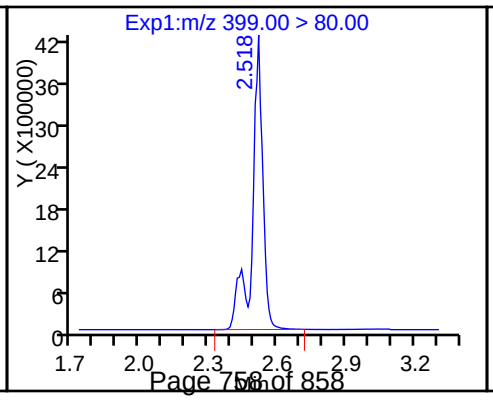
12 Perfluoroheptanoic acid



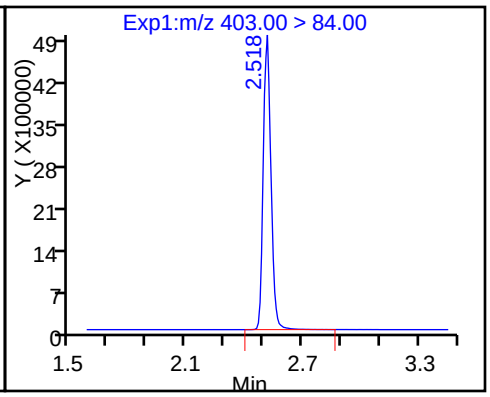
D 11 13C4-PFHpA



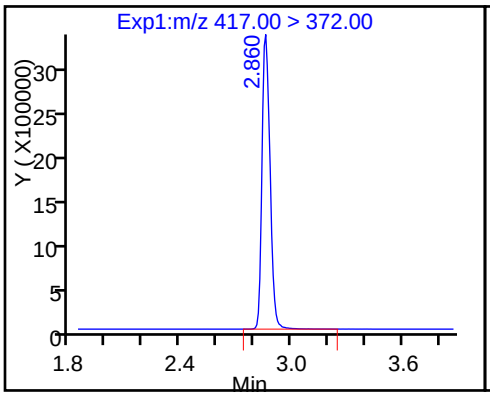
9 Perfluorohexanesulfonic acid



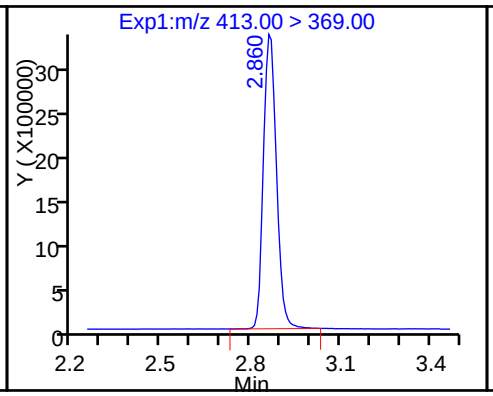
D 10 18O2 PFHxS



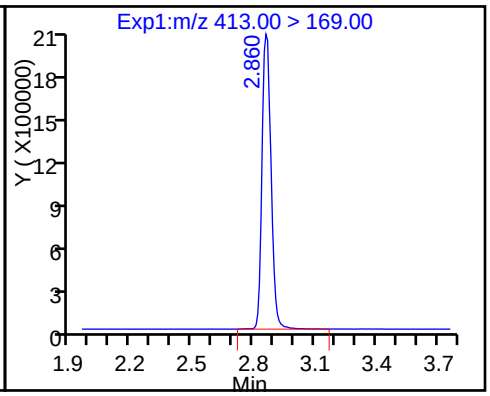
D 14 13C4 PFOA



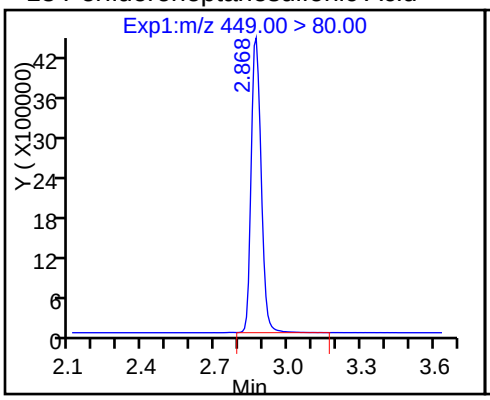
15 Perfluorooctanoic acid



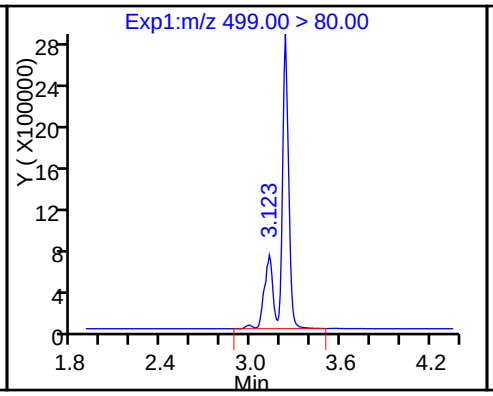
15 Perfluorooctanoic acid



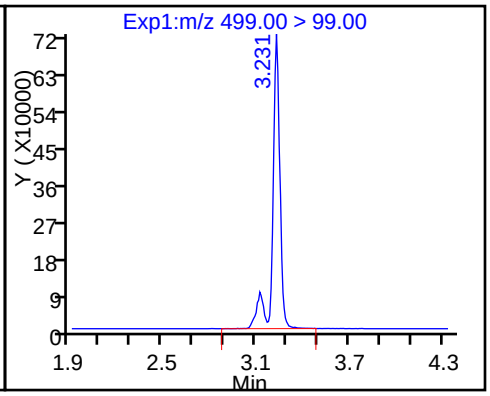
13 Perfluoroheptanesulfonic Acid



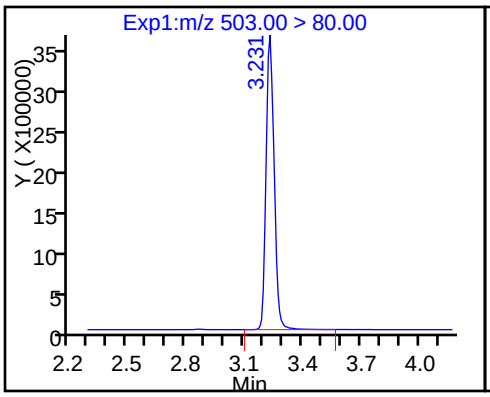
18 Perfluorooctane sulfonic acid



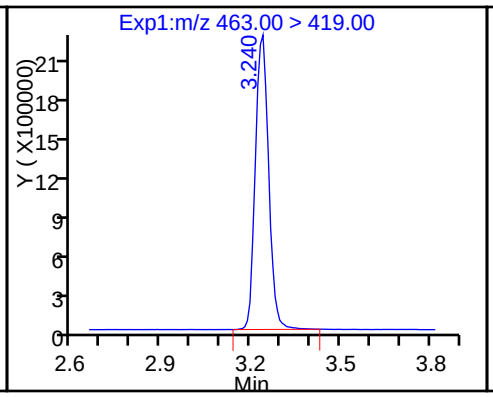
18 Perfluorooctane sulfonic acid



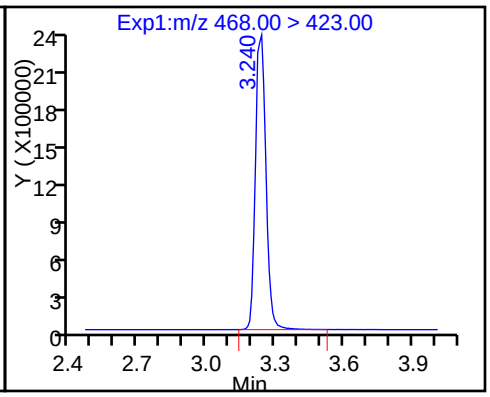
D 17 13C4 PFOS



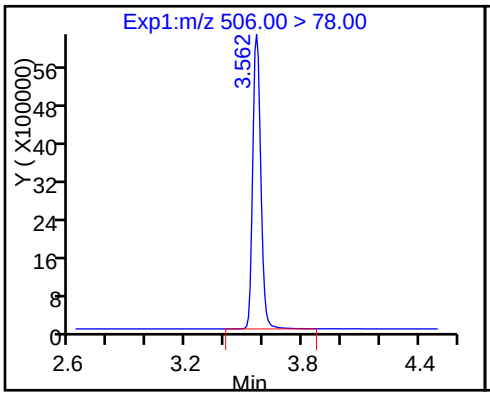
20 Perfluorononanoic acid



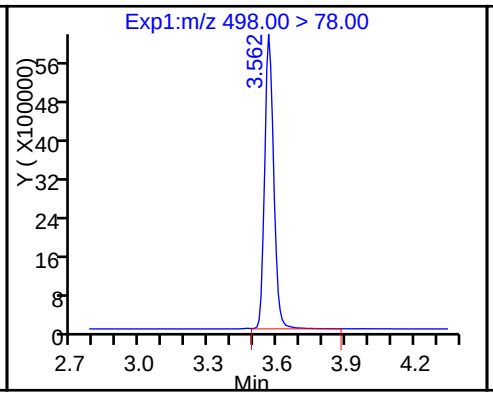
D 19 13C5 PFNA



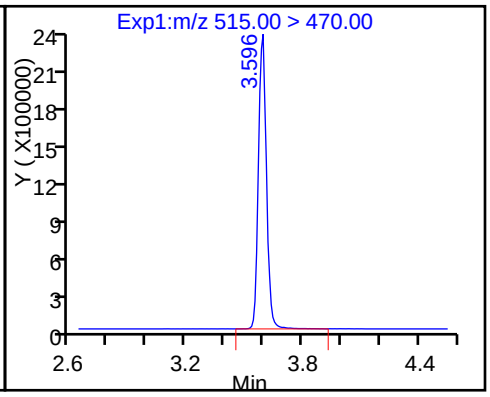
D 21 13C8 FOSA



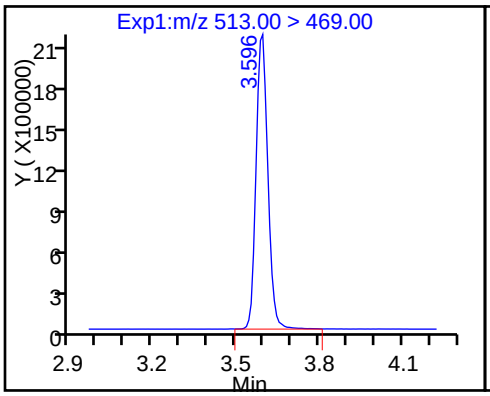
22 Perfluorooctane Sulfonamide



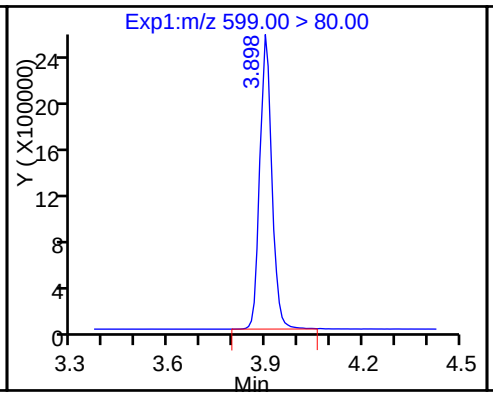
D 23 13C2 PFDA



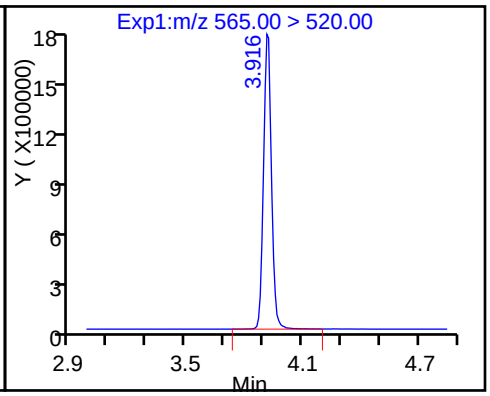
24 Perfluorodecanoic acid



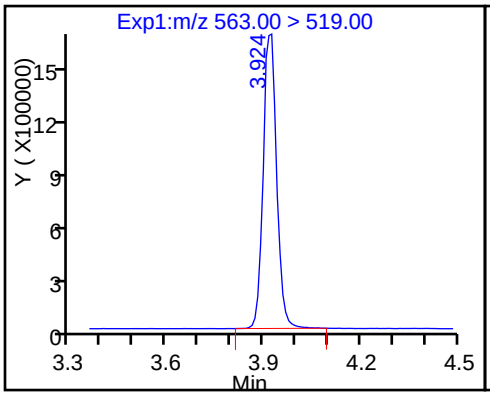
26 Perfluorodecane Sulfonic acid



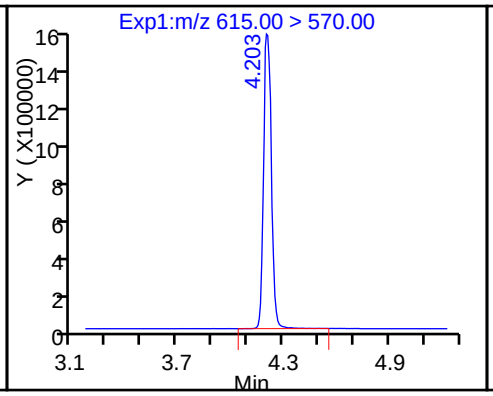
D 27 13C2 PFUnA



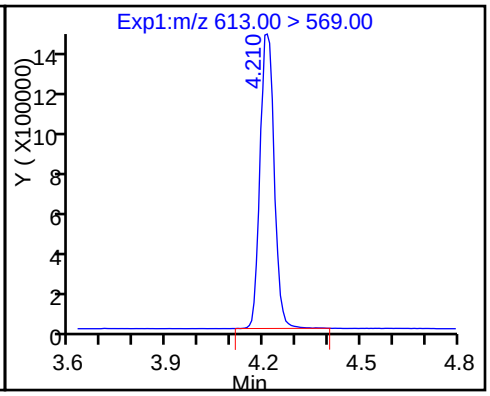
28 Perfluoroundecanoic acid



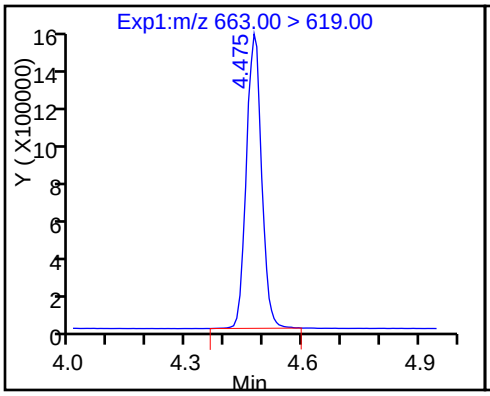
D 30 13C2 PFDoA



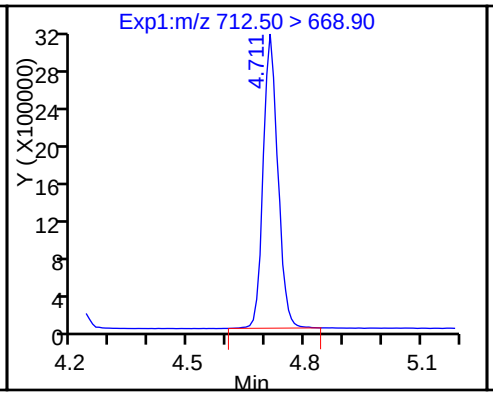
29 Perfluorododecanoic acid



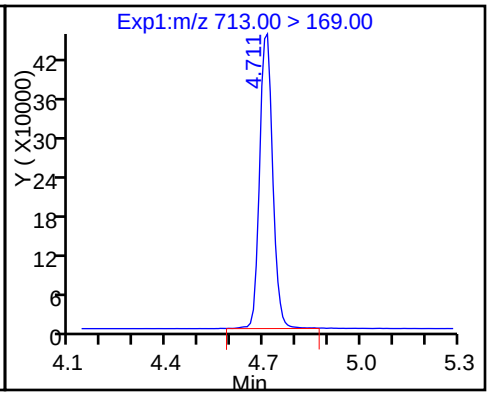
31 Perfluorotridecanoic acid



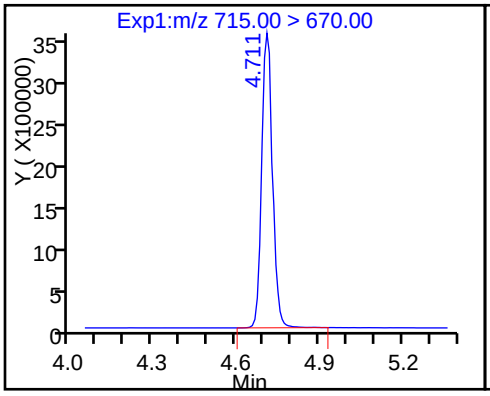
33 Perfluorotetradecanoic acid



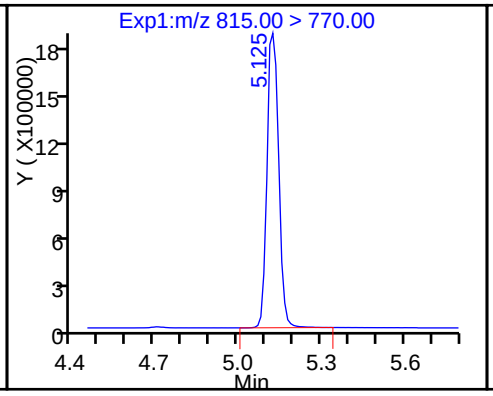
33 Perfluorotetradecanoic acid



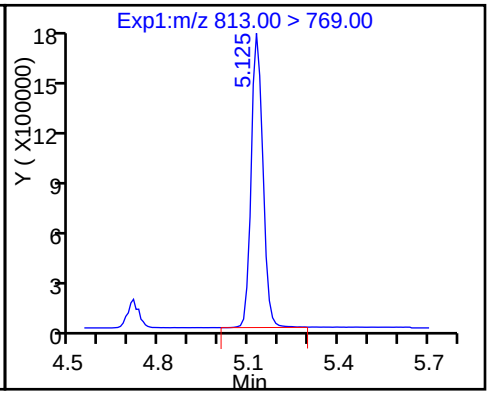
D 32 13C2-PFTeDA



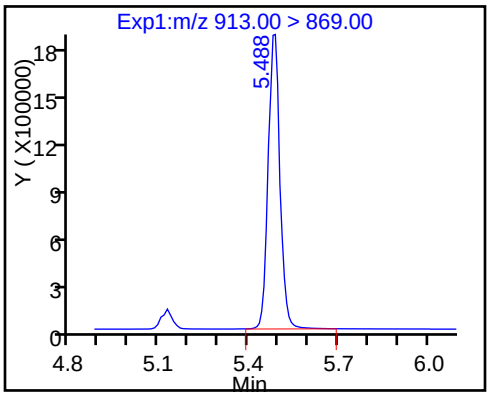
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142598/18 Calibration Date: 12/16/2016 14:07

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 16DEC2016B_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	0.8537	0.9672		22.7	20.0	13.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.049		21.3	20.0	6.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.908		23.8	17.7	34.7*	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9819		21.1	20.0	5.7	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.003		20.5	20.0	2.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.101		19.5	18.2	6.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.070		21.3	20.0	6.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.240		21.4	19.0	12.5	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.050		19.6	18.6	5.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9710		20.4	20.0	2.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9919		21.3	20.0	6.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9516		20.2	20.0	0.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6513		21.5	19.3	11.5	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9567		20.0	20.0	0.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9707		21.1	20.0	5.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9058		20.0	20.0	-0.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.658		20.9	20.0	4.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9366		19.0	20.0	-4.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.9008		17.5	20.0	-12.6	25.0
13C4 PFBA	Ave	347743	361988		52.0	50.0	4.1	50.0
13C5-PFPeA	Ave	266072	317957		59.8	50.0	19.5	50.0
13C2 PFHxA	Ave	245110	246806		50.3	50.0	0.7	50.0
13C4-PFHpA	Ave	226344	221381		48.9	50.0	-2.2	50.0
18O2 PFHxS	Ave	326976	322636		46.7	47.3	-1.3	50.0
13C4 PFOA	Ave	230362	230383		50.0	50.0	0.0	50.0
13C4 PFOS	Ave	248847	248636		47.8	47.8	-0.0	50.0
13C5 PFNA	Ave	177687	176641		49.7	50.0	-0.6	50.0
13C8 FOSA	Ave	384141	399033		51.9	50.0	3.9	50.0
13C2 PFDA	Ave	157302	157138		49.9	50.0	-0.1	50.0
13C2 PFUnA	Ave	117250	119863		51.1	50.0	2.2	50.0
13C2 PFDoA	Ave	110957	110891		50.0	50.0	-0.0	50.0
13C2-PFTeDA	Ave	227387	208651		45.9	50.0	-8.2	50.0
13C2-PFHxDA	Ave	124568	117546		47.2	50.0	-5.6	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_012.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 16-Dec-2016 14:07:48 ALS Bottle#: 40 Worklist Smp#: 18
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\20161216-37939.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 18-Dec-2016 16:46:41 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 18-Dec-2016 16:37:04

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	1.566	0.0		18099396	52.0		104	1093803	
1 Perfluorobutyric acid										
212.90 > 169.00	1.574	1.574	0.0	1.000	7002245	22.7		113	58482	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.858	1.858	0.0	1.000	6668838	21.3		106	61332	
D 4 13C5-PFPeA										
267.90 > 223.00	1.858	1.858	0.0		15897859	59.8		120	1436110	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.887	1.887	0.0	1.000	10883972	23.8		135		
298.90 > 99.00	1.887	1.887	0.0	1.000	4644368		2.34(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.150	2.150	0.0	1.000	4846961	21.1		106	140688	
D 6 13C2 PFHxA										
315.00 > 270.00	2.150	2.150	0.0		12340295	50.3		101	552079	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.491	2.491	0.0	1.000	4442059	20.5		102	45475	
D 11 13C4-PFHpA										
367.00 > 322.00	2.491	2.491	0.0		11069037	48.9		97.8	788724	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.506	2.506	0.0	1.000	6464771	19.5		107		
D 10 18O2 PFHxS										
403.00 > 84.00	2.506	2.506	0.0		15260698	46.7		98.7	1108884	
D 14 13C4 PFOA										
417.00 > 372.00	2.846	2.846	0.0		11519130	50.0		100	788625	

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	2.854	2.854	0.0	1.000	4928790	21.3		107	39305	
413.00 > 169.00	2.854	2.854	0.0	1.000	2986366		1.65(0.90-1.10)		119973	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.862	2.862	0.0	1.000	5870406	21.4		113		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.110	3.110	0.0	1.000	4847158	19.6		106	31910	
499.00 > 99.00	3.226	3.110	0.116	1.037	1042635		4.65(0.90-1.10)		62511	
D 17 13C4 PFOS										
503.00 > 80.00	3.226	3.226	0.0		11884818	47.8		99.9	411345	
20 Perfluorononanoic acid										
463.00 > 419.00	3.226	3.226	0.0	1.000	3430260	20.4		102	46912	
D 19 13C5 PFNA										
468.00 > 423.00	3.226	3.226	0.0		8832060	49.7		99.4	732606	
D 21 13C8 FOSA										
506.00 > 78.00	3.548	3.548	0.0		19951670	51.9		104	1002460	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.557	3.557	0.0	1.000	7915959	21.3		106	593476	
D 23 13C2 PFDA										
515.00 > 470.00	3.582	3.582	0.0		7856916	49.9		99.9	169078	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.582	3.582	0.0	1.000	2990698	20.2		101	95736	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.890	3.890	0.0	1.000	3122351	21.5		112		
D 27 13C2 PFUnA										
565.00 > 520.00	3.899	3.899	0.0		5993155	51.1		102	348378	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.899	3.899	0.0	1.000	2293515	20.0		100	47931	
D 30 13C2 PFDoA										
615.00 > 570.00	4.195	4.195	0.0		5544551	50.0		99.9	136144	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.195	4.195	0.0	1.000	2152761	21.1		106	45896	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.463	4.463	0.0	1.000	2008915	20.0		99.9	40289	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.697	4.697	0.0	1.000	3677612	20.9		105	4600	
713.00 > 169.00	4.697	4.697	0.0	1.000	595145		6.18(0.00-0.00)		77740	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.697	4.697	0.0		10432549	45.9		91.8	679251	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.112	5.112	0.0		5877281	47.2		94.4	128340	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.112	5.112	0.0	1.000	2077191	19.0		95.1	2552	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.468	5.468	0.0	1.000	1997901	17.5		87.4	4168	

Reagents:

LCPFC-L4_00023 Amount Added: 1.00 Units: mL

Report Date: 18-Dec-2016 16:46:42 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b\16DEC2016B_012.d

Injection Date: 16-Dec-2016 14:07:48 Instrument ID: A8_N

Lims ID: CCV L4

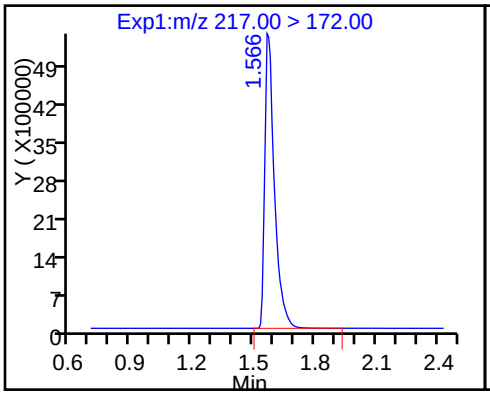
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 18

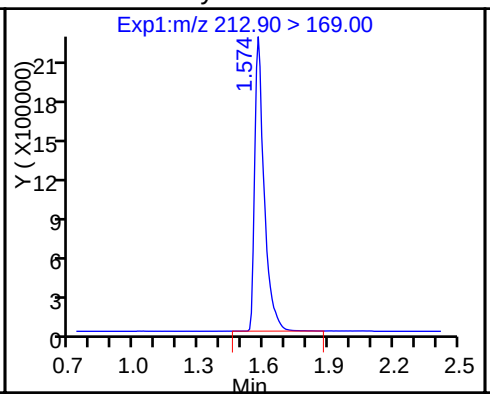
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

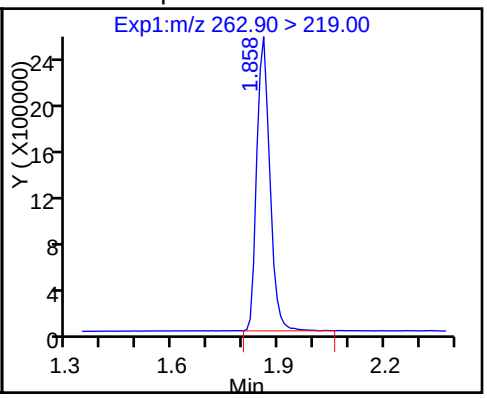
D 2 13C4 PFBA



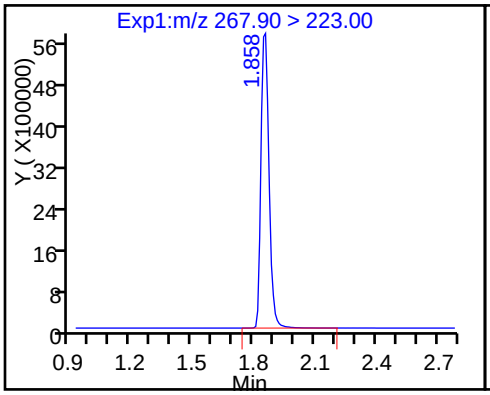
1 Perfluorobutyric acid



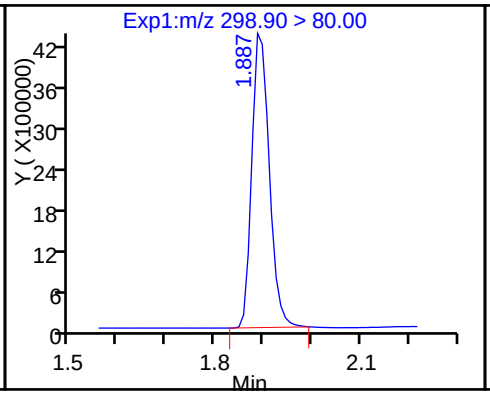
3 Perfluoropentanoic acid



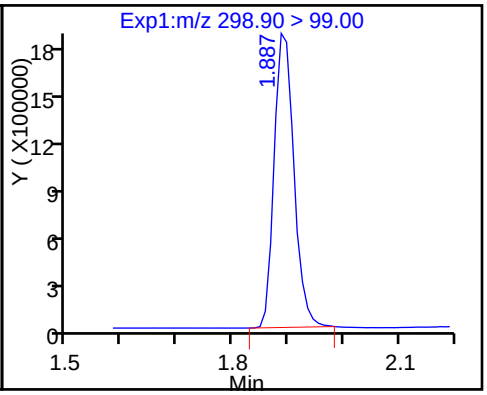
D 4 13C5-PFPeA



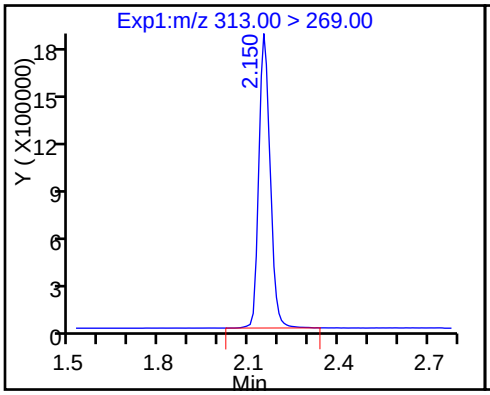
5 Perfluorobutanesulfonic acid



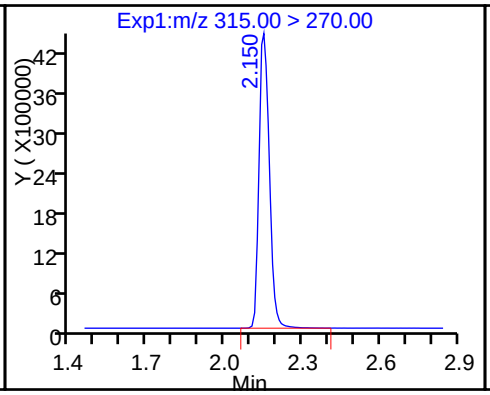
5 Perfluorobutanesulfonic acid



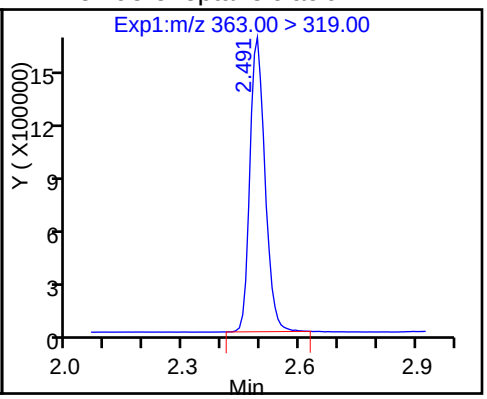
7 Perfluorohexanoic acid



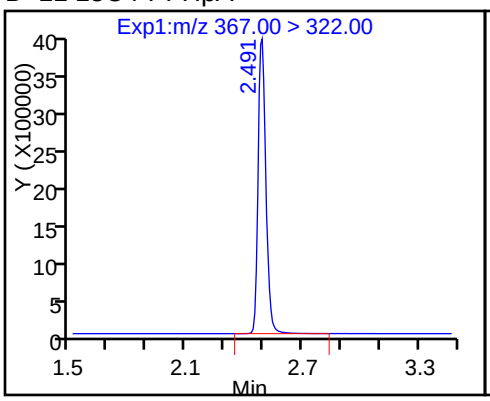
D 6 13C2 PFHxA



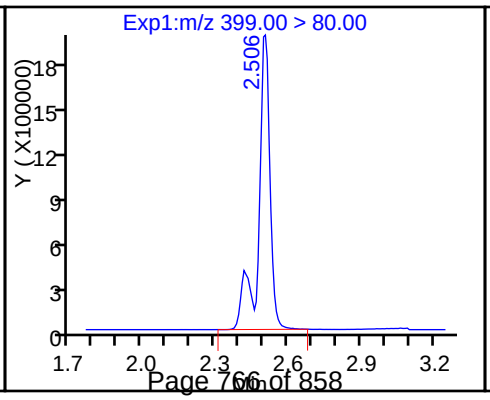
12 Perfluoroheptanoic acid



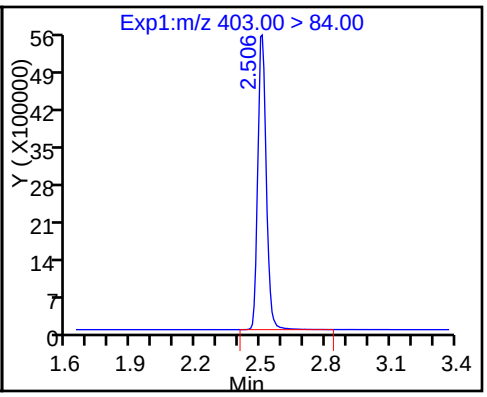
D 11 13C4-PFHpA



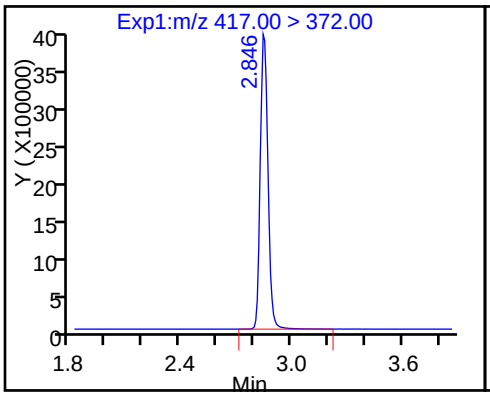
9 Perfluorohexanesulfonic acid



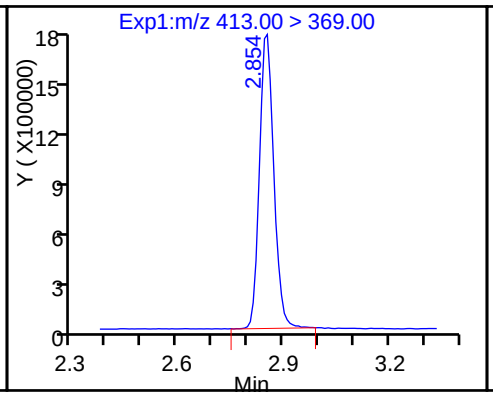
D 10 18O2 PFHxS



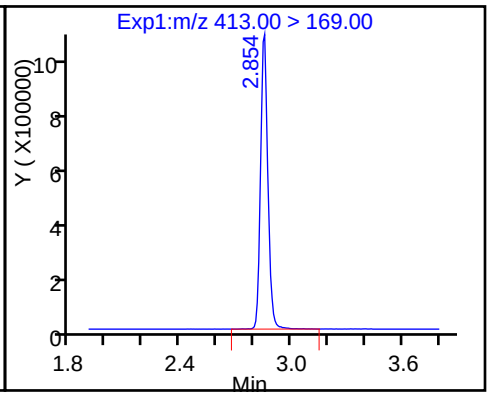
D 14 13C4 PFOA



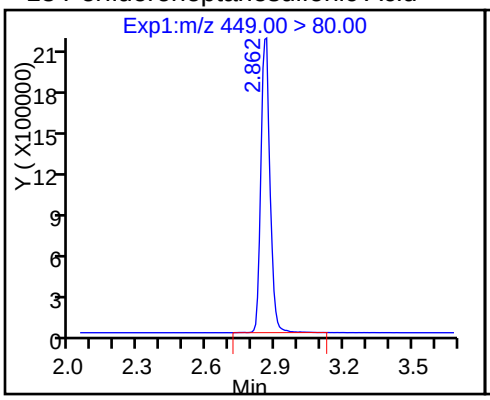
15 Perfluorooctanoic acid



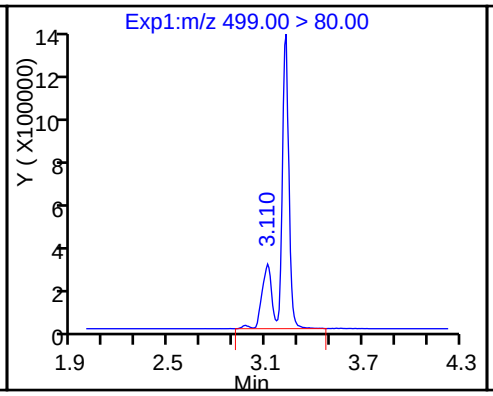
15 Perfluorooctanoic acid



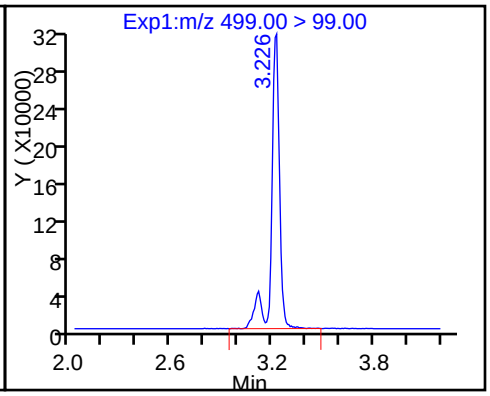
13 Perfluoroheptanesulfonic Acid



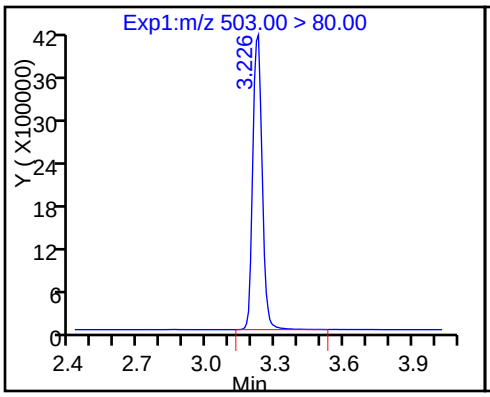
18 Perfluorooctane sulfonic acid



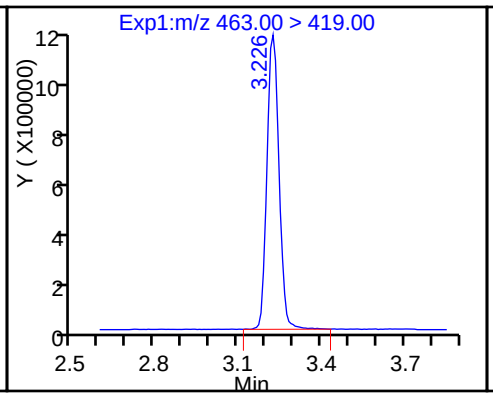
18 Perfluorooctane sulfonic acid



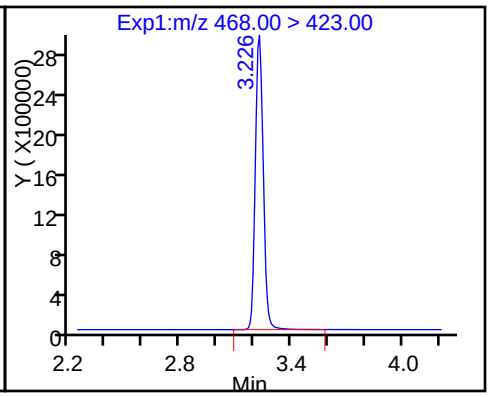
D 17 13C4 PFOS



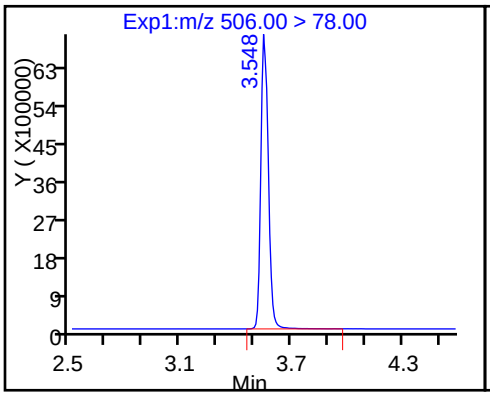
20 Perfluorononanoic acid



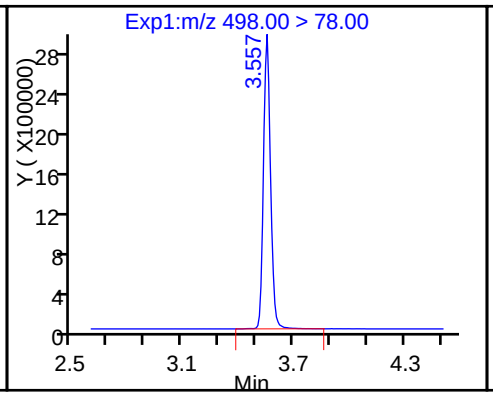
D 19 13C5 PFNA



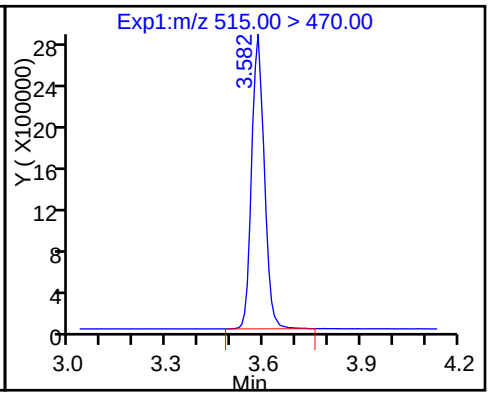
D 21 13C8 FOSA



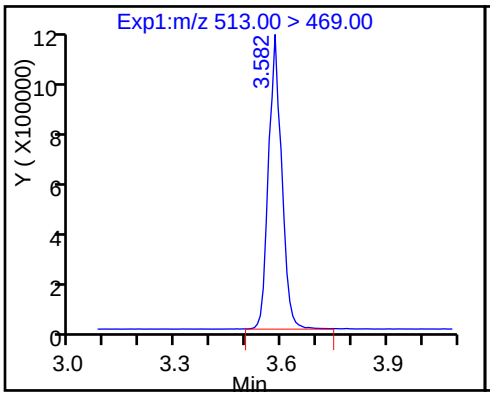
22 Perfluorooctane Sulfonamide



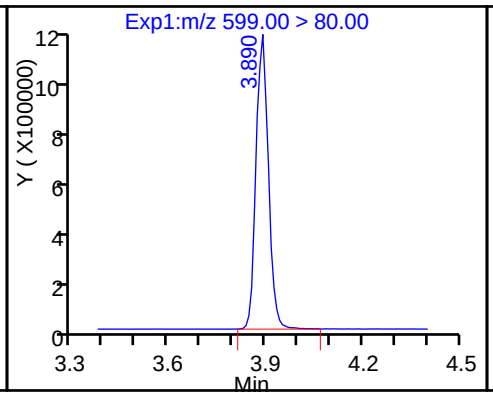
D 23 13C2 PFDA



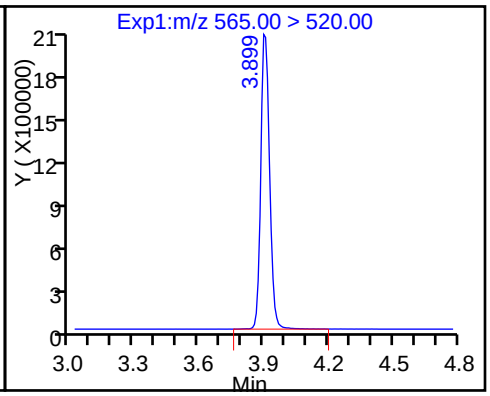
24 Perfluorodecanoic acid



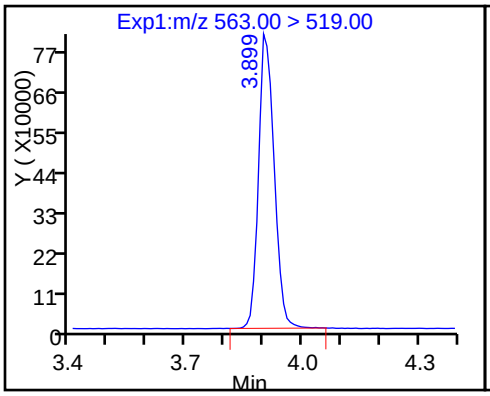
26 Perfluorodecane Sulfonic acid



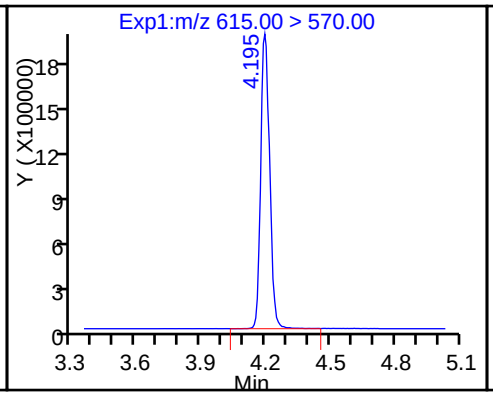
D 27 13C2 PFUnA



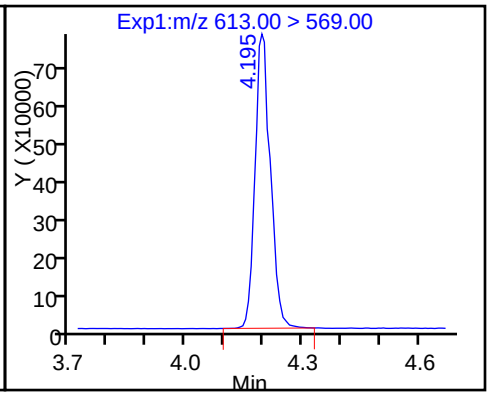
28 Perfluoroundecanoic acid



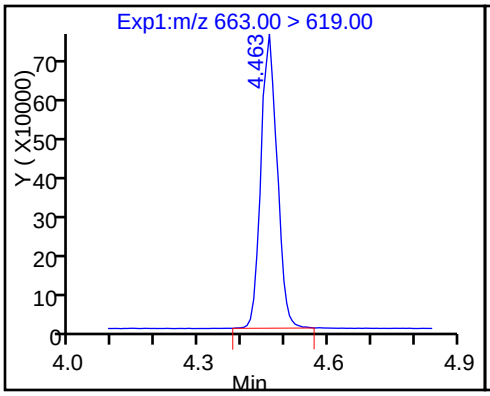
D 30 13C2 PFDoA



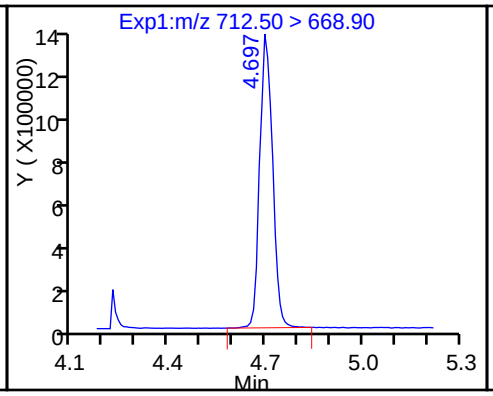
29 Perfluorododecanoic acid



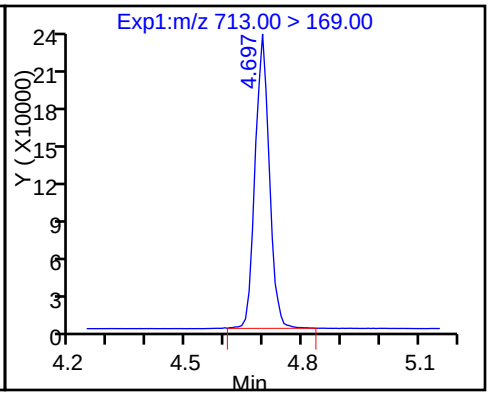
31 Perfluorotridecanoic acid



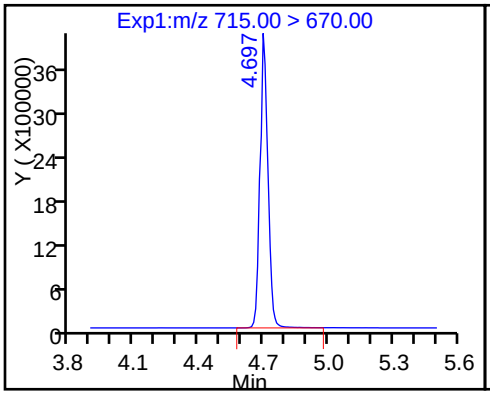
33 Perfluorotetradecanoic acid



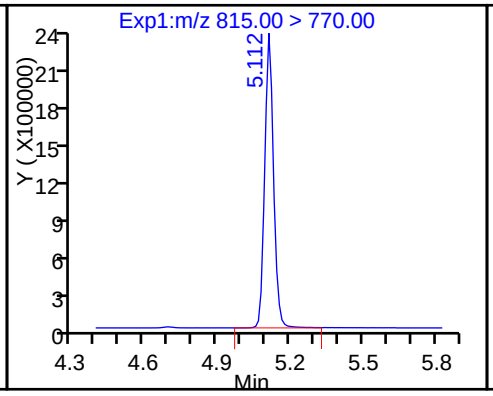
33 Perfluorotetradecanoic acid



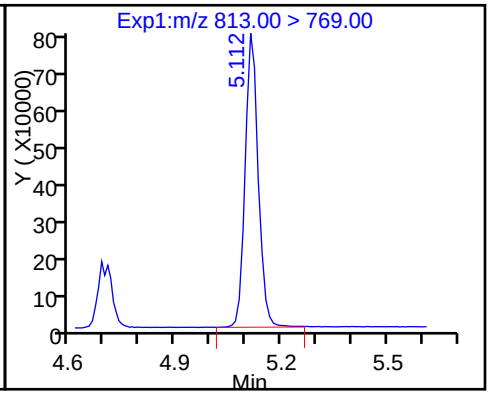
D 32 13C2-PFTeDA



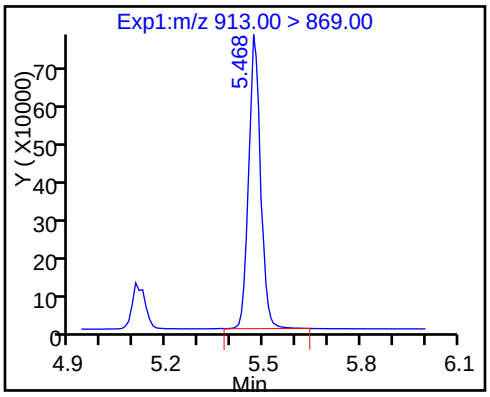
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142815/2 Calibration Date: 12/18/2016 19:19

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 18DEC2016A_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	0.8537	0.8203		0.961	1.00	-3.9	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.018		1.03	1.00	3.2	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.625		1.01	0.884	14.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9469		1.02	1.00	2.0	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.010		1.03	1.00	3.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.161		1.03	0.910	12.7	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.033		1.03	1.00	3.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.035		0.895	0.952	-6.0	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	0.9262		0.864	0.928	-6.9	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9522		1.00	1.00	0.0	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9619		1.03	1.00	3.1	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9172		0.972	1.00	-2.8	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5710		0.943	0.964	-2.2	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9318		0.974	1.00	-2.6	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8669		0.944	1.00	-5.6	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.7996		0.882	1.00	-11.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.764		1.11	1.00	11.3	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.472		0.942	1.00	-5.8	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8924		0.866	1.00	-13.4	50.0
13C4 PFBA	Ave	347743	391346		56.3	50.0	12.5	50.0
13C5-PFPeA	Ave	266072	303352		57.0	50.0	14.0	50.0
13C2 PFHxA	Ave	245110	265598		54.2	50.0	8.4	50.0
13C4-PFHpA	Ave	226344	241109		53.3	50.0	6.5	50.0
18O2 PFHxS	Ave	326976	347093		50.2	47.3	6.2	50.0
13C4 PFOA	Ave	230362	261586		56.8	50.0	13.6	50.0
13C4 PFOS	Ave	248847	282112		54.2	47.8	13.4	50.0
13C5 PFNA	Ave	177687	191123		53.8	50.0	7.6	50.0
13C8 FOSA	Ave	384141	422404		55.0	50.0	10.0	50.0
13C2 PFDA	Ave	157302	179224		57.0	50.0	13.9	50.0
13C2 PFUnA	Ave	117250	134026		57.2	50.0	14.3	50.0
13C2 PFDoA	Ave	110957	115222		51.9	50.0	3.8	50.0
13C2-PFTeDA	Ave	227387	222457		48.9	50.0	-2.2	50.0
13C2-PFHxDA	Ave	124568	118696		47.6	50.0	-4.7	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37984.b\18DEC2016A_002.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 18-Dec-2016 19:19:18 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37984.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 19-Dec-2016 10:03:51 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 19-Dec-2016 09:43:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.590	1.590	0.0		19567277	56.3		113	835851	
1 Perfluorobutyric acid										
212.90 > 169.00	1.598	1.590	0.008	1.000	321001	0.9608		96.1	3362	
D 4 13C5-PFPeA										
267.90 > 223.00	1.887	1.887	0.0		15167594	57.0		114	960151	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.887	1.887	0.0	1.000	308784	1.03		103	3019	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.926	1.926	0.0	1.000	498705	1.01		115		
298.90 > 99.00	1.926	1.926	0.0	1.000	197389		2.53(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.208	2.193	0.015		13279908	54.2		108	1596107	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.208	2.193	0.015	1.000	251505	1.02		102	7686	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.578	2.564	0.014	1.000	366756	1.03		113		
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.563	2.549	0.014	1.000	243627	1.03		103	4047	
D 11 13C4-PFHpA										
367.00 > 322.00	2.563	2.549	0.014		12055458	53.3		107	852850	
D 10 18O2 PFHxS										
403.00 > 84.00	2.570	2.564	0.006		16417509	50.2		106	1443107	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.947	2.992	-0.045	1.000	278074	0.8945		94.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.939	2.917	0.022		13079314	56.8		114	1138346	

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	2.939	2.917	0.022	1.000	270328	1.03		103	2435	
413.00 > 169.00	2.939	2.917	0.022	1.000	166810		1.62(0.90-1.10)		9916	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.320	3.189	0.131	1.000	242481	0.8643		93.1	348	M
499.00 > 99.00	3.312	3.189	0.123	0.998	55853		4.34(0.90-1.10)		0.0	M
D 17 13C4 PFOS										
503.00 > 80.00	3.320	3.298	0.022		13484955	54.2		113	784350	
D 19 13C5 PFNA										
468.00 > 423.00	3.328	3.305	0.023		9556131	53.8		108	819335	
20 Perfluorononanoic acid										
463.00 > 419.00	3.328	3.313	0.015	1.000	181980	1.00		100	4117	
D 21 13C8 FOSA										
506.00 > 78.00	3.574	3.674	-0.100		21120183	55.0		110	526111	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.574	3.684	-0.110	1.000	406325	1.03		103	37326	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.697	3.726	-0.029	1.000	164379	0.9718		97.2	5048	
D 23 13C2 PFDA										
515.00 > 470.00	3.697	3.671	0.026		8961209	57.0		114	178376	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.014	3.986	0.028	1.000	155292	0.9426		97.8		
D 27 13C2 PFUnA										
565.00 > 520.00	4.032	4.005	0.027		6701323	57.2		114	363060	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.032	4.005	0.027	1.000	124888	0.9744		97.4	3913	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.333	4.296	0.037	1.000	99885	0.9444		94.4	135	
D 30 13C2 PFDoA										
615.00 > 570.00	4.333	4.305	0.028		5761095	51.9		104	135332	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.608	4.579	0.029	1.000	92135	0.8817		88.2	101	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.856	4.826	0.030		11122848	48.9		97.8	552314	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.863	4.833	0.030	1.000	203276	1.11		111	107	
713.00 > 169.00	4.856	4.833	0.023	0.998	35355		5.75(0.00-0.00)		3320	
35 Perfluorohexadecanoic acid										M
813.00 > 769.00	5.307	5.276	0.031	1.000	169592	0.9420		94.2	230	M
D 34 13C2-PFHxDA										
815.00 > 770.00	5.307	5.274	0.033		5934804	47.6		95.3	112925	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.723	5.660	0.063	1.000	102824	0.8661		86.6	146	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023 Amount Added: 1.00 Units: mL

Report Date: 19-Dec-2016 10:03:52 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37984.b\18DEC2016A_002.d

Injection Date: 18-Dec-2016 19:19:18 Instrument ID: A8_N

Lims ID: CCV L2

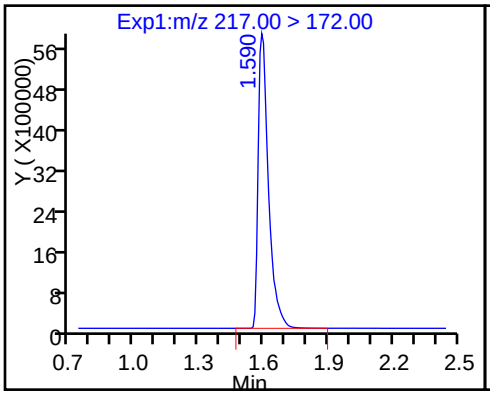
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2

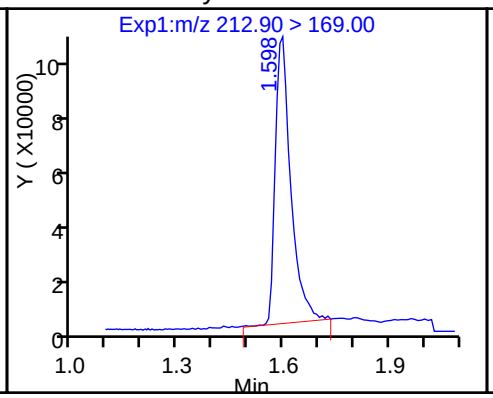
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

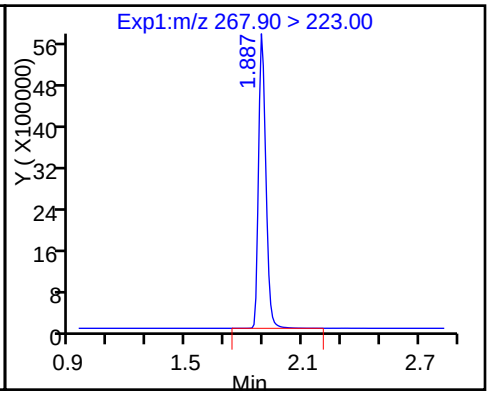
D 2 13C4 PFBA



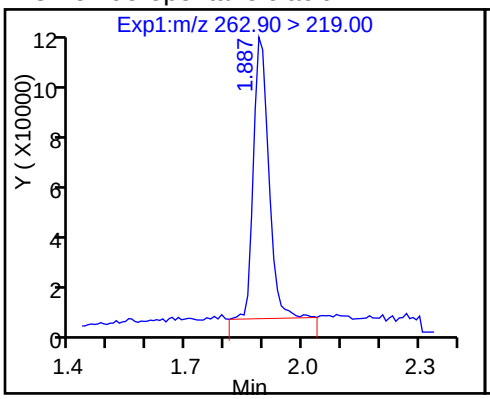
1 Perfluorobutyric acid



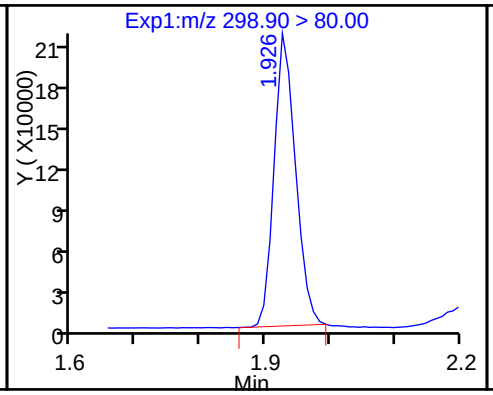
D 4 13C5-PFPeA



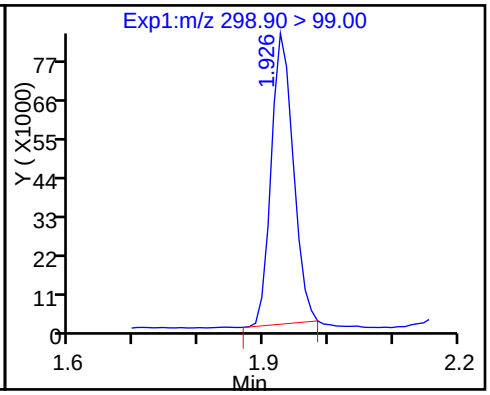
3 Perfluoropentanoic acid



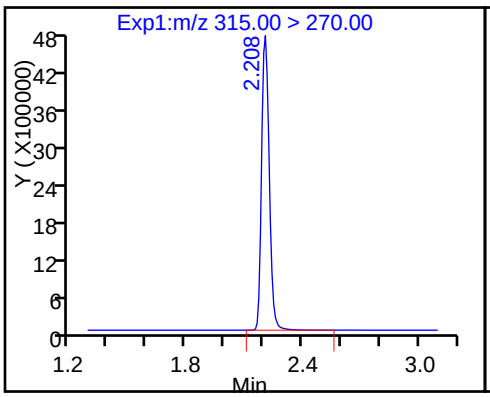
5 Perfluorobutanesulfonic acid



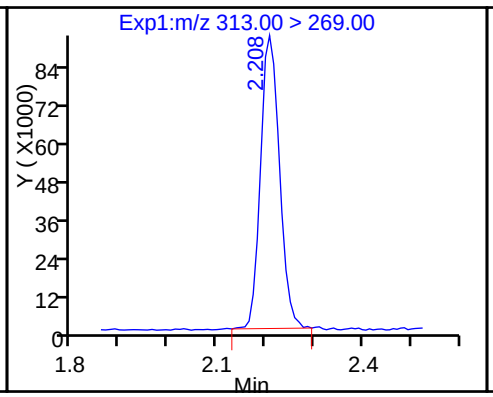
5 Perfluorobutanesulfonic acid



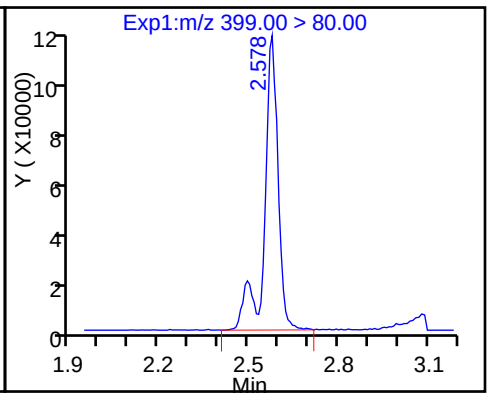
D 6 13C2 PFHxA



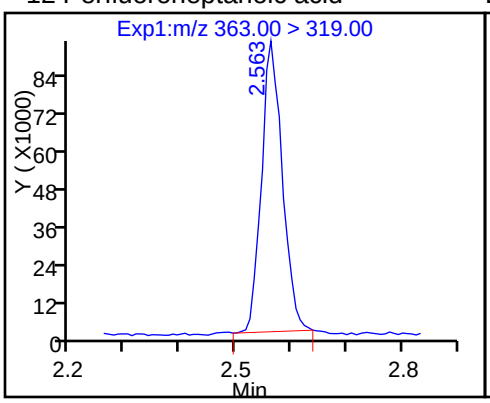
7 Perfluorohexanoic acid



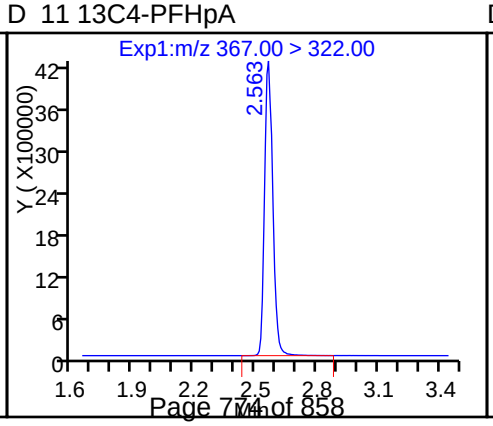
9 Perfluorohexanesulfonic acid



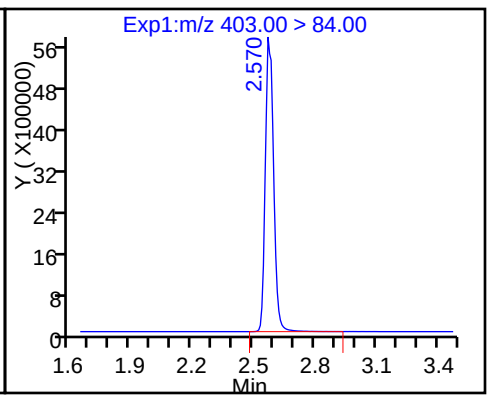
12 Perfluoroheptanoic acid



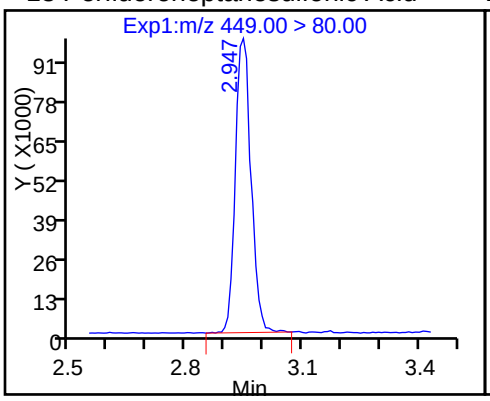
D 11 13C4-PFHpA



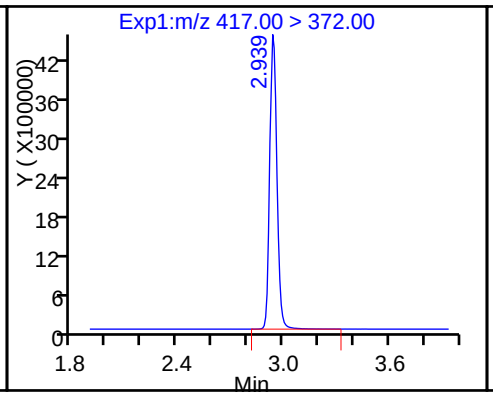
D 10 18O2 PFHxS



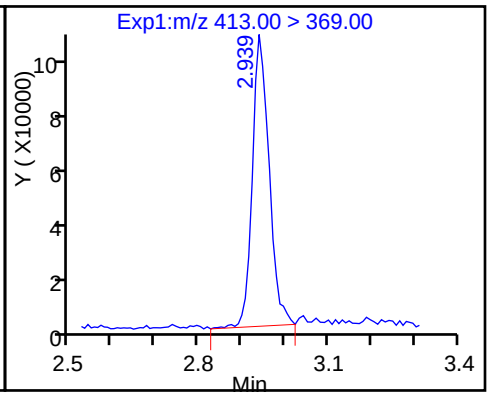
13 Perfluoroheptanesulfonic Acid



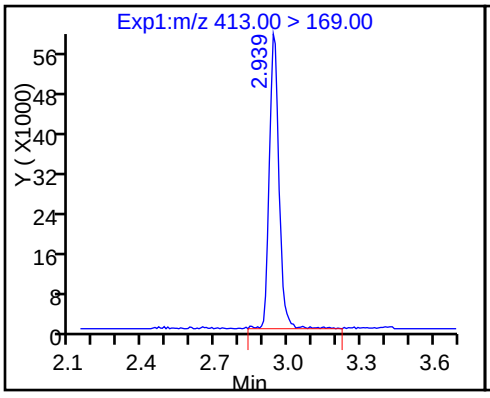
D 14 13C4 PFOA



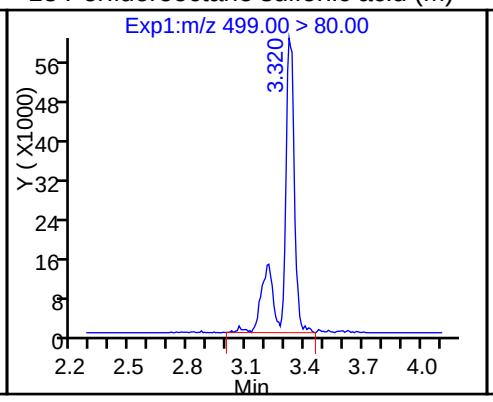
15 Perfluorooctanoic acid



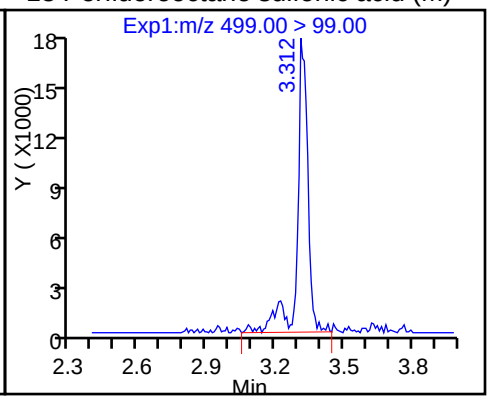
15 Perfluorooctanoic acid



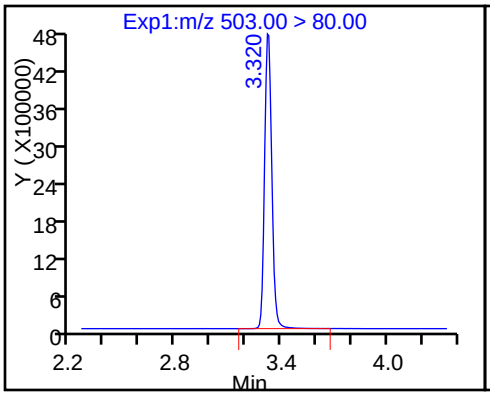
18 Perfluorooctane sulfonic acid (M)



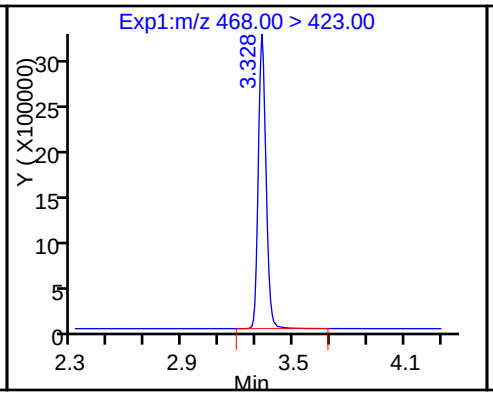
18 Perfluorooctane sulfonic acid (M)



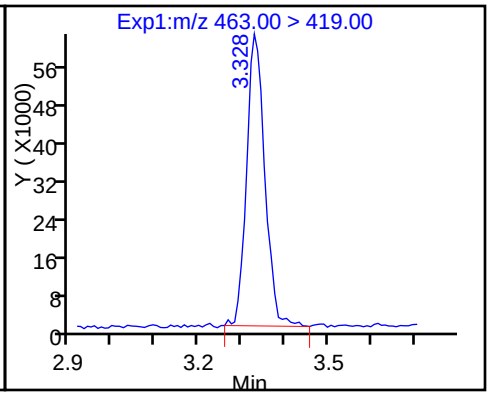
D 17 13C4 PFOS



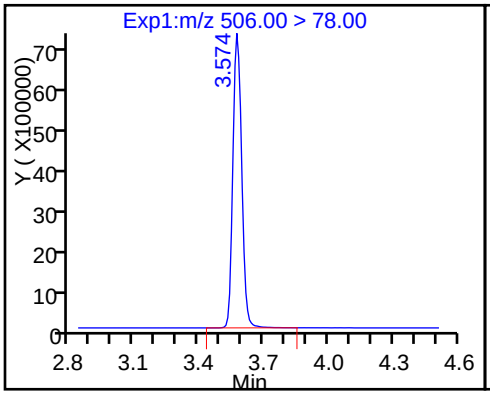
D 19 13C5 PFNA



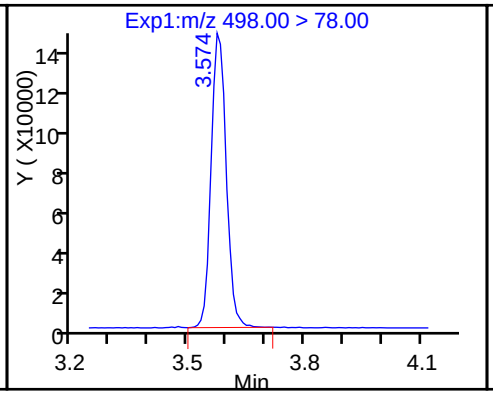
20 Perfluorononanoic acid



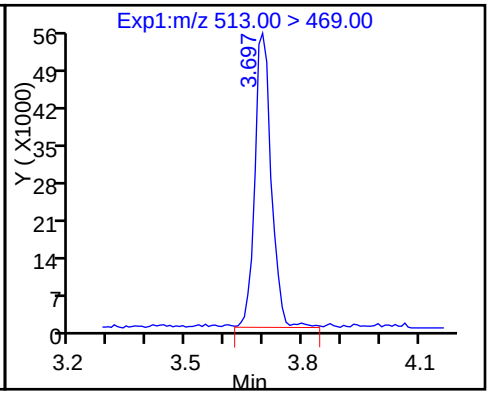
D 21 13C8 FOSA



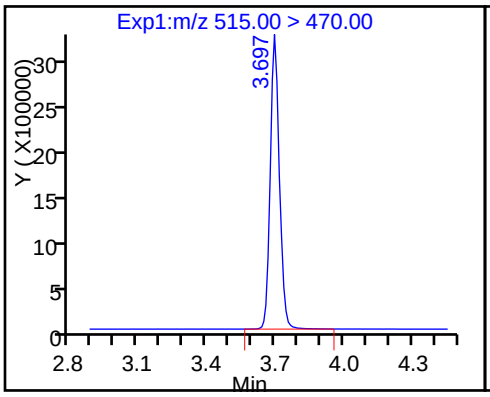
22 Perfluorooctane Sulfonamide



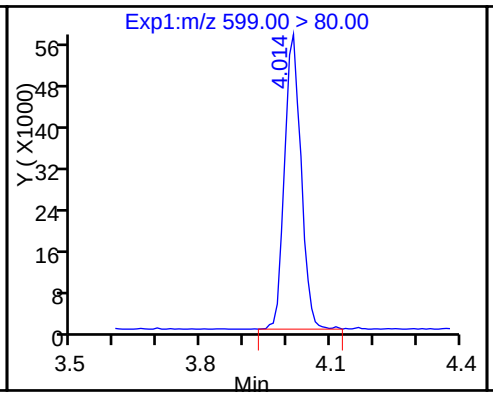
24 Perfluorodecanoic acid



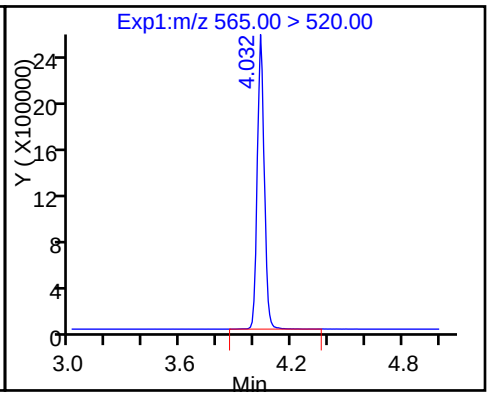
D 23 13C2 PFDA



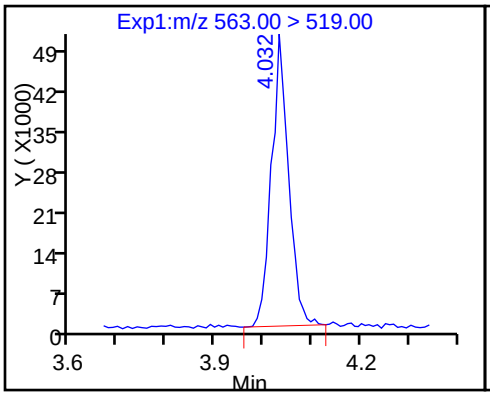
26 Perfluorodecane Sulfonic acid



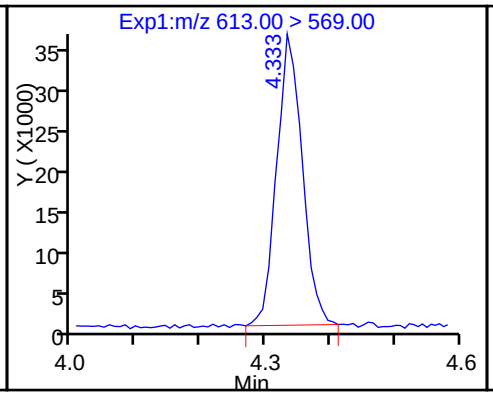
D 27 13C2 PFUnA



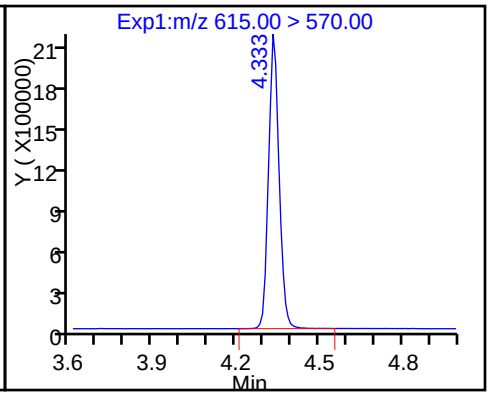
28 Perfluoroundecanoic acid



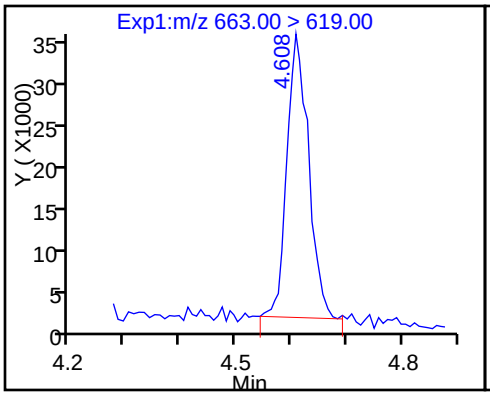
29 Perfluorododecanoic acid



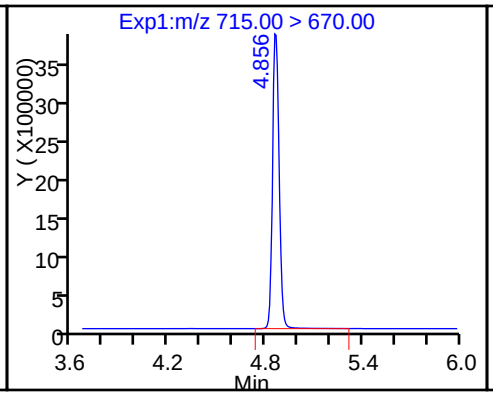
D 30 13C2 PFDoA



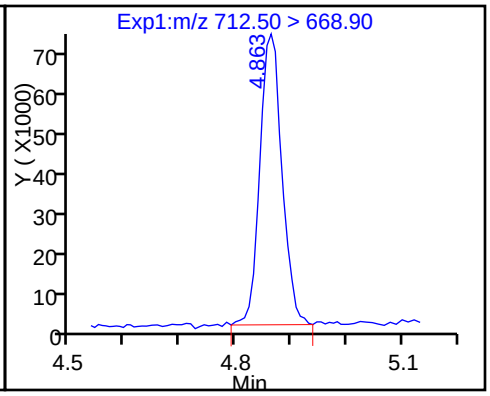
31 Perfluorotridecanoic acid



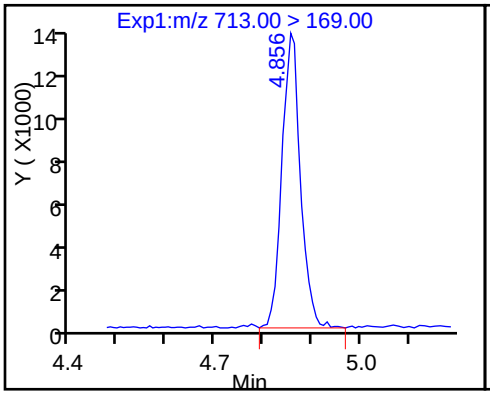
D 32 13C2-PFTeDA



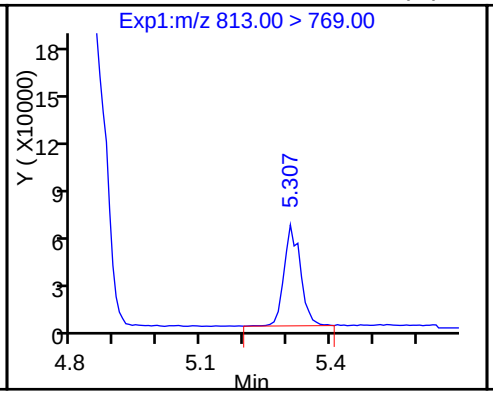
33 Perfluorotetradecanoic acid



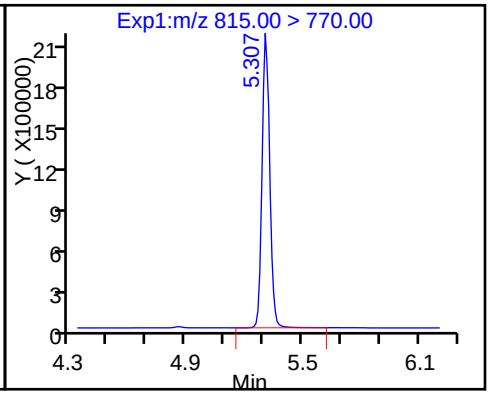
33 Perfluorotetradecanoic acid



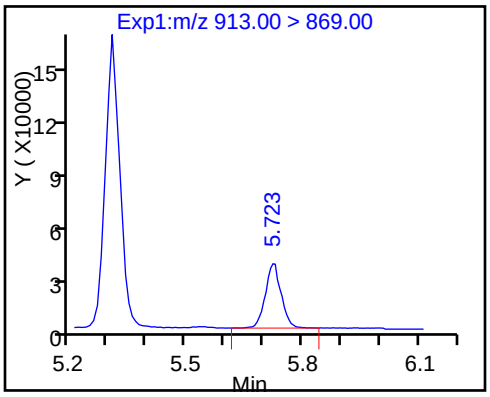
35 Perfluorohexadecanoic acid (M)



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

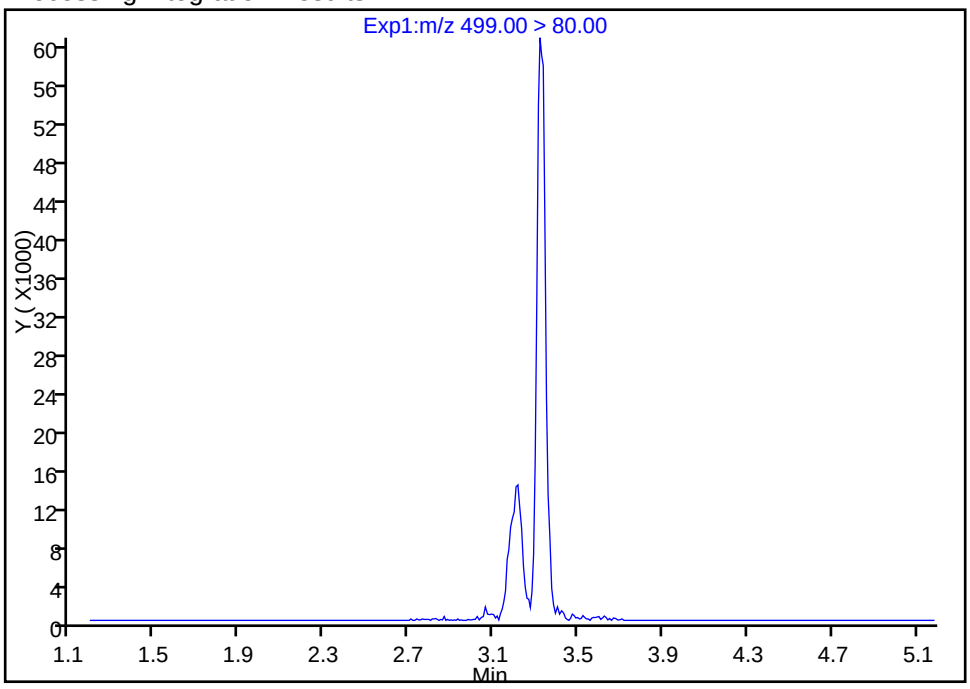
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37984.b\18DEC2016A_002.d
Injection Date: 18-Dec-2016 19:19:18 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 1

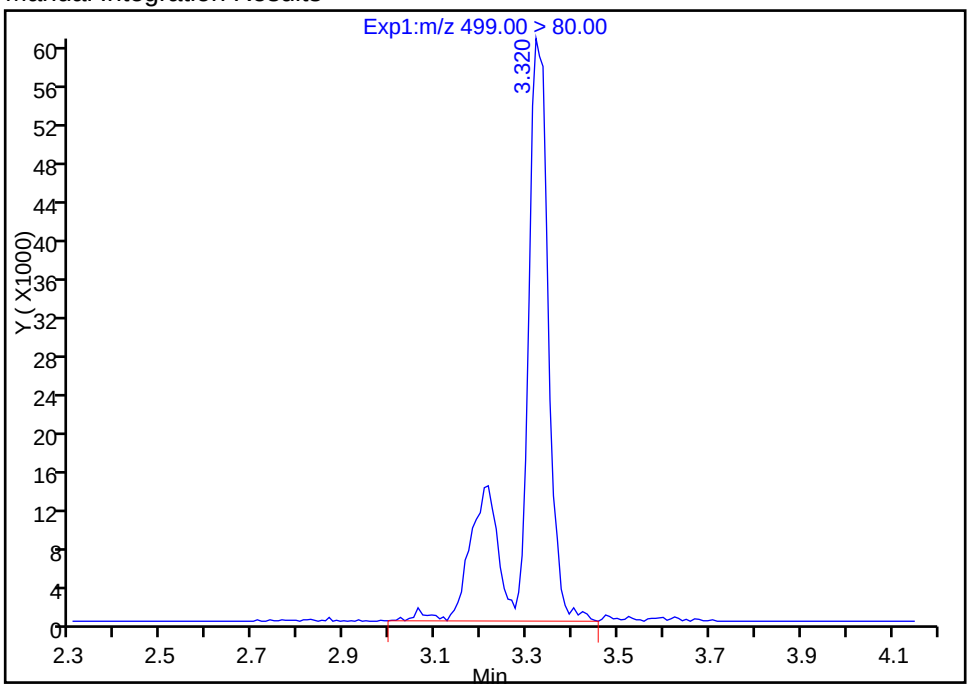
Processing Integration Results

Not Detected
Expected RT: 3.19



Manual Integration Results

RT: 3.32
Area: 242481
Amount: 0.864315
Amount Units: ng/ml



Reviewer: chandrasenas, 19-Dec-2016 09:47:58
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

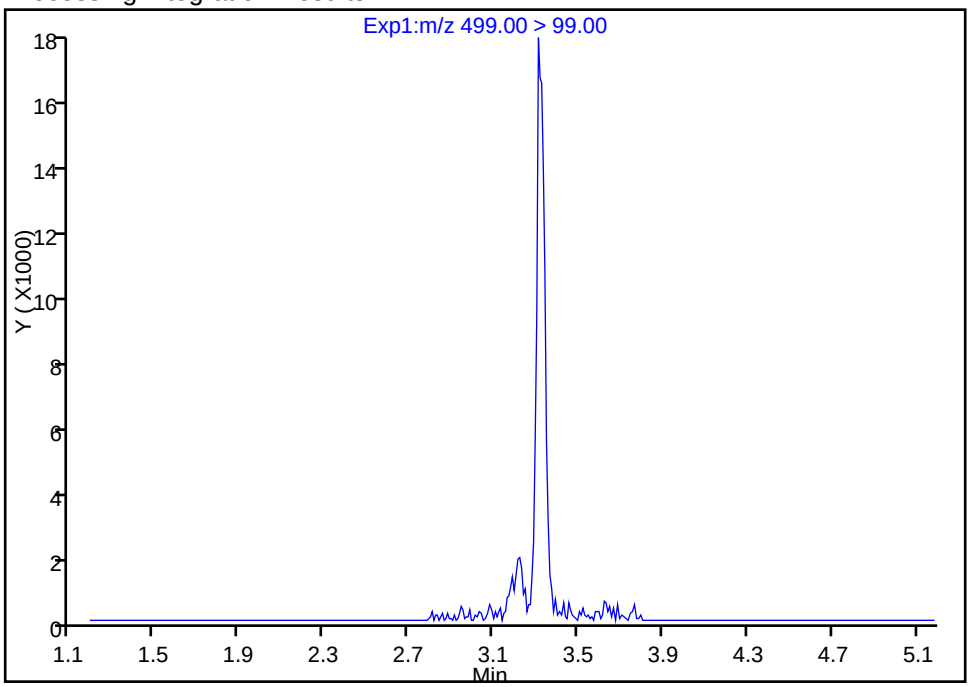
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37984.b\18DEC2016A_002.d
Injection Date: 18-Dec-2016 19:19:18 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

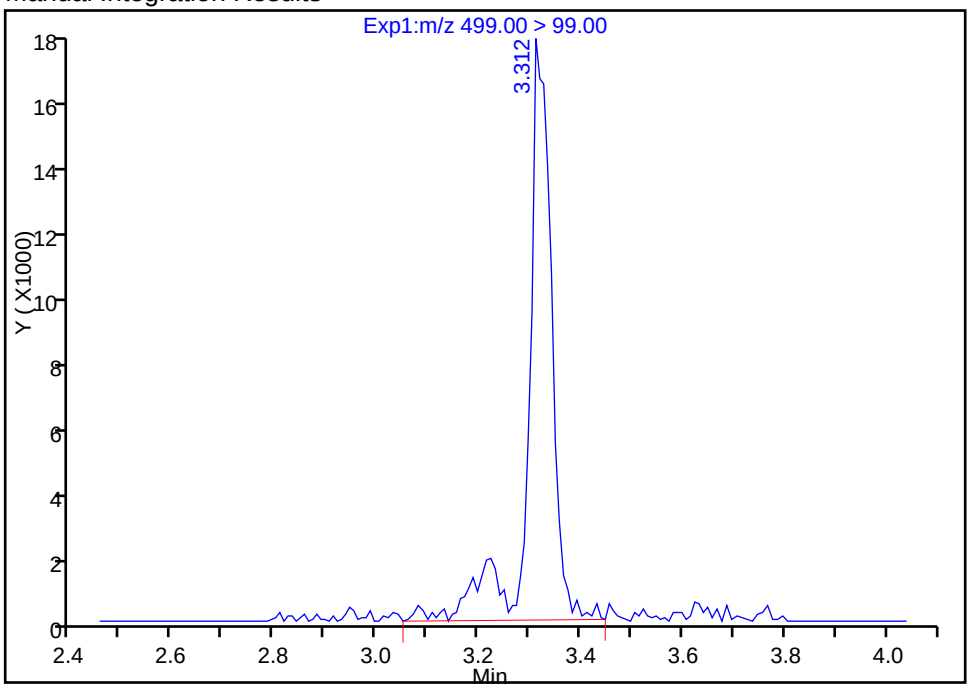
Processing Integration Results

Not Detected
Expected RT: 3.19



Manual Integration Results

RT: 3.31
Area: 55853
Amount: 0.864315
Amount Units: ng/ml



Reviewer: chandrasenas, 19-Dec-2016 09:47:58
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

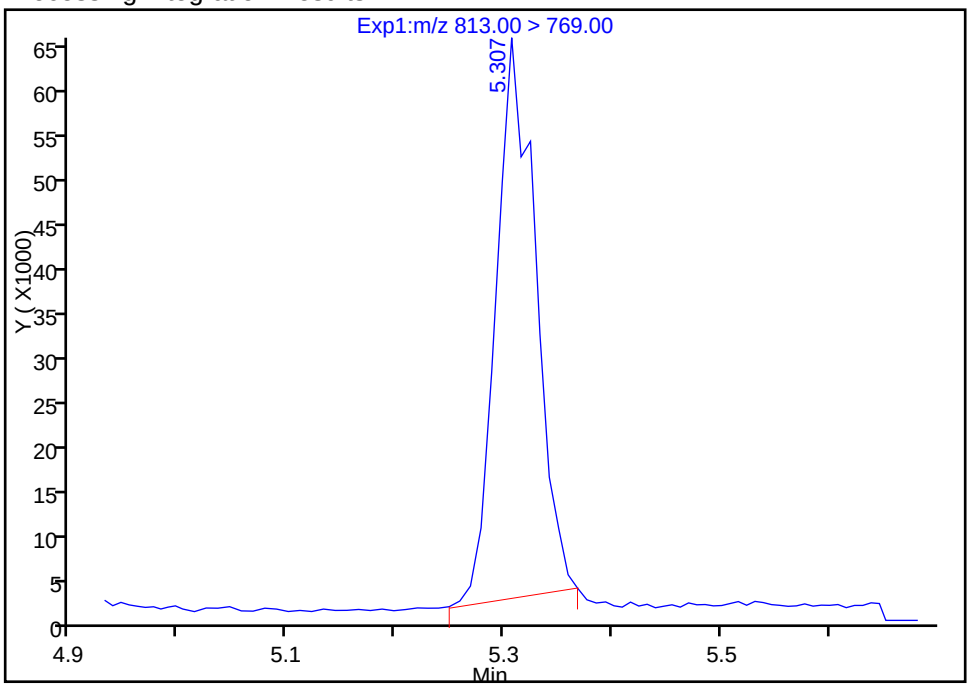
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37984.b\18DEC2016A_002.d
Injection Date: 18-Dec-2016 19:19:18 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

35 Perfluorohexadecanoic acid, CAS: 67905-19-5

Signal: 1

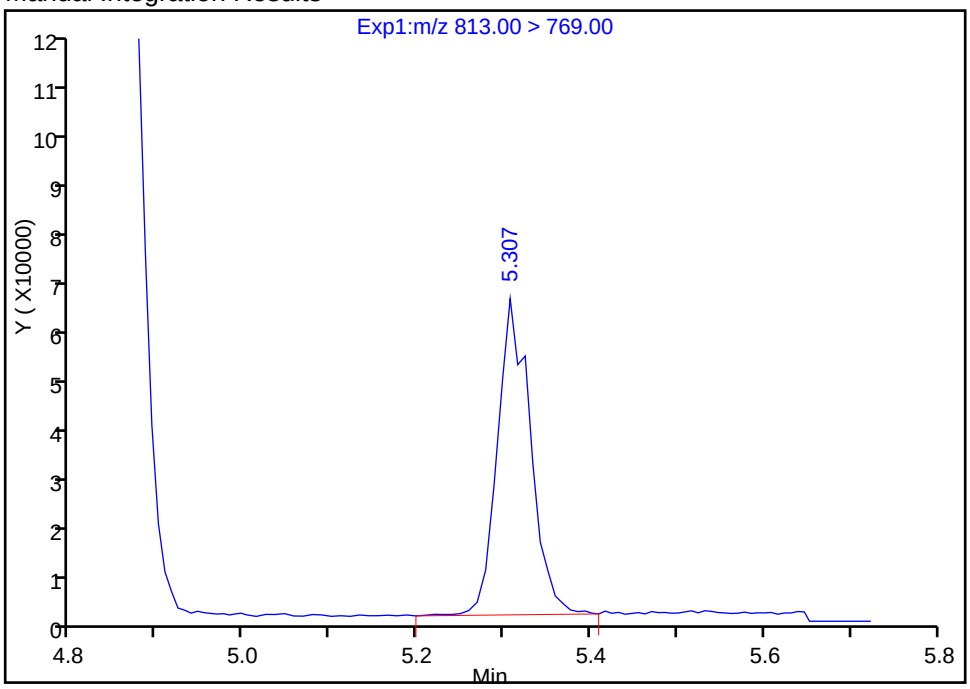
Processing Integration Results

RT: 5.31
Area: 158806
Amount: 0.843978
Amount Units: ng/ml



Manual Integration Results

RT: 5.31
Area: 169592
Amount: 0.942032
Amount Units: ng/ml



Reviewer: chandrasenas, 19-Dec-2016 09:47:58
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142819/2 Calibration Date: 12/18/2016 22:56

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 18DEC2016B_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	0.8537	0.8958		52.5	50.0	4.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.000		50.7	50.0	1.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.644		51.3	44.2	16.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9241		49.7	50.0	-0.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.040		45.9	45.5	0.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9673		49.4	50.0	-1.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.141		49.3	47.6	3.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.043		52.0	50.0	4.0	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.014		47.3	46.4	1.9	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9603		50.4	50.0	0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9525		51.1	50.0	2.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9618		51.0	50.0	1.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6354		52.4	48.2	8.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9385		49.1	50.0	-1.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9659		52.6	50.0	5.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9575		52.8	50.0	5.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.730		54.6	50.0	9.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9523		49.3	50.0	-1.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8892		43.1	50.0	-13.7	25.0
13C4 PFBA	Ave	347743	326092		46.9	50.0	-6.2	50.0
13C5-PFPeA	Ave	266072	254678		47.9	50.0	-4.3	50.0
13C2 PFHxA	Ave	245110	218352		44.5	50.0	-10.9	50.0
13C4-PFHpA	Ave	226344	190661		42.1	50.0	-15.8	50.0
18O2 PFHxS	Ave	326976	299241		43.3	47.3	-8.5	50.0
13C4 PFOA	Ave	230362	205782		44.7	50.0	-10.7	50.0
13C4 PFOS	Ave	248847	246392		47.3	47.8	-1.0	50.0
13C5 PFNA	Ave	177687	155692		43.8	50.0	-12.4	50.0
13C8 FOSA	Ave	384141	384009		50.0	50.0	-0.0	50.0
13C2 PFDA	Ave	157302	142206		45.2	50.0	-9.6	50.0
13C2 PFUnA	Ave	117250	105244		44.9	50.0	-10.2	50.0
13C2 PFDoA	Ave	110957	98179		44.2	50.0	-11.5	50.0
13C2-PFTeDA	Ave	227387	197537		43.4	50.0	-13.1	50.0
13C2-PFHxDA	Ave	124568	109143		43.8	50.0	-12.4	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_002.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 18-Dec-2016 22:56:44 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*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 19-Dec-2016 11:17:28 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 19-Dec-2016 10:07:06

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	1.646	1.646	0.0		16304592	46.9		93.8	961028	
1 Perfluorobutyric acid										
212.90 > 169.00	1.646	1.646	0.0	1.000	14604803	52.5		105	120636	
D 4 13C5-PFPeA										
267.90 > 223.00	1.945	1.945	0.0		12733924	47.9		95.7	1504355	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.945	1.945	0.0	1.000	12729571	50.7		101	106688	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.983	1.983	0.0	1.000	21741636	51.3		116		
298.90 > 99.00	1.983	1.983	0.0	1.000	9835211		2.21(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.262	2.262	0.0		10917587	44.5		89.1	1194280	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.262	2.262	0.0	1.000	10089372	49.7		99.5	235770	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.543	2.543	0.0	1.000	14155504	45.9		101		
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.614	2.614	0.0	1.000	9220932	49.4		98.8	115926	
D 11 13C4-PFHpA										
367.00 > 322.00	2.614	2.614	0.0		9533063	42.1		84.2	777042	
D 10 18O2 PFHxS										
403.00 > 84.00	2.621	2.621	0.0		14154082	43.3		91.5	2392253	
D 14 13C4 PFOA										
417.00 > 372.00	2.976	2.976	0.0		10289106	44.7		89.3	795630	

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	2.984	2.984	0.0	1.000	10732571	52.0		104	117379	
413.00 > 169.00	2.984	2.984	0.0	1.000	6433264		1.67(0.90-1.10)		255859	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.984	2.984	0.0	1.000	13382241	49.3		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.244	3.244	0.0	1.000	11590222	47.3		102	73515	
499.00 > 99.00	3.253	3.244	0.009	1.003	2626079		4.41(0.90-1.10)		44321	
D 17 13C4 PFOS										
503.00 > 80.00	3.361	3.361	0.0		11777521	47.3		99.0	237856	
D 19 13C5 PFNA										
468.00 > 423.00	3.361	3.361	0.0		7784581	43.8		87.6	778873	
20 Perfluorononanoic acid										
463.00 > 419.00	3.361	3.361	0.0	1.000	7475487	50.4		101	101314	
D 21 13C8 FOSA										
506.00 > 78.00	3.668	3.668	0.0		19200464	50.0		100.0	510953	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.677	3.677	0.0	1.000	18287931	51.1		102	669168	
D 23 13C2 PFDA										
515.00 > 470.00	3.718	3.718	0.0		7110300	45.2		90.4	130906	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.718	3.718	0.0	1.000	6838441	51.0		102	143056	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.031	4.031	0.0	1.000	7545813	52.4		109		
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.049	4.049	0.0	1.000	4938788	49.1		98.1	99211	
D 27 13C2 PFUnA										
565.00 > 520.00	4.049	4.049	0.0		5262175	44.9		89.8	373199	
D 30 13C2 PFDoA										
615.00 > 570.00	4.341	4.341	0.0		4908952	44.2		88.5	110552	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.341	4.341	0.0	1.000	4741612	52.6		105	4674	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.604	4.604	0.0	1.000	4700090	52.8		106	5624	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.835	4.835	0.0	1.000	8494891	54.6		109	3607	
713.00 > 169.00	4.835	4.835	0.0	1.000	1358213		6.25(0.00-0.00)		96276	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.843	4.843	0.0		9876826	43.4		86.9	566742	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.262	5.262	0.0		5457131	43.8		87.6	84560	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.262	5.262	0.0	1.000	4674634	49.3		98.5	3869	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.633	5.633	0.0	1.000	4364784	43.1		86.3	5695	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 19-Dec-2016 11:17:29 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_002.d

Injection Date: 18-Dec-2016 22:56:44 Instrument ID: A8_N

Lims ID: CCV L5

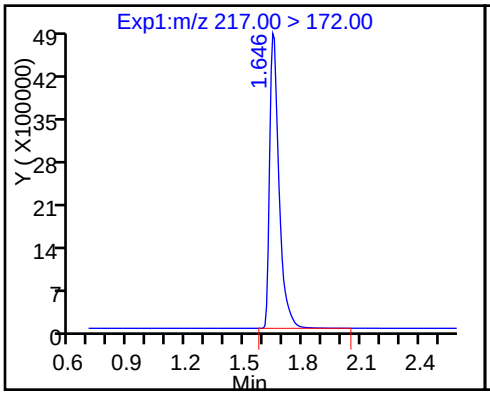
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2

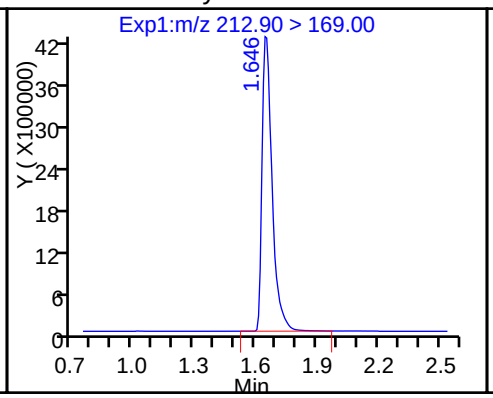
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

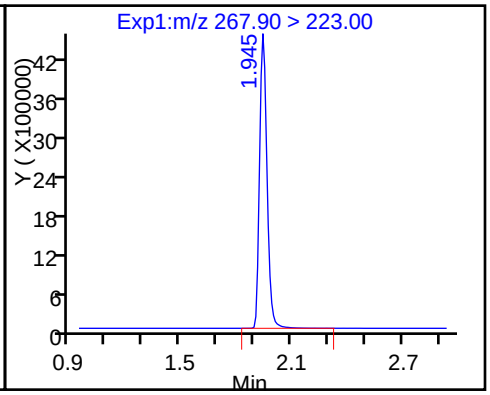
D 2 13C4 PFBA



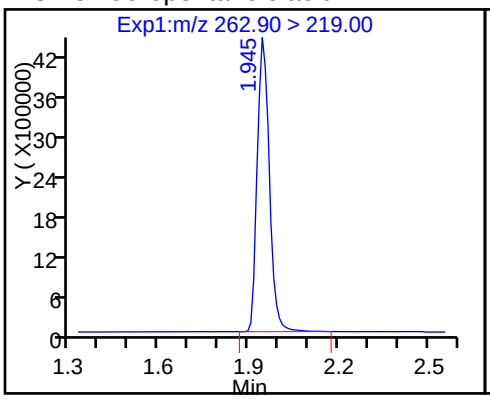
1 Perfluorobutyric acid



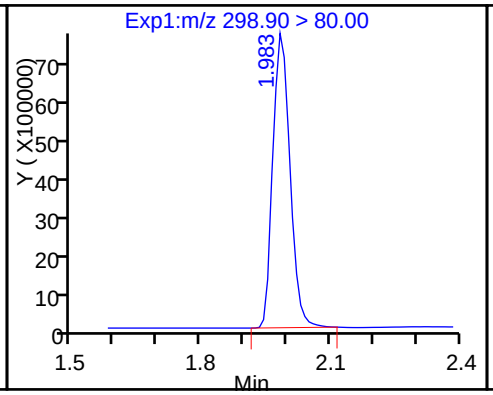
D 4 13C5-PFPeA



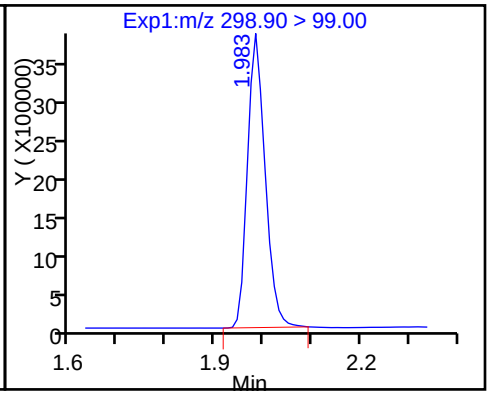
3 Perfluoropentanoic acid



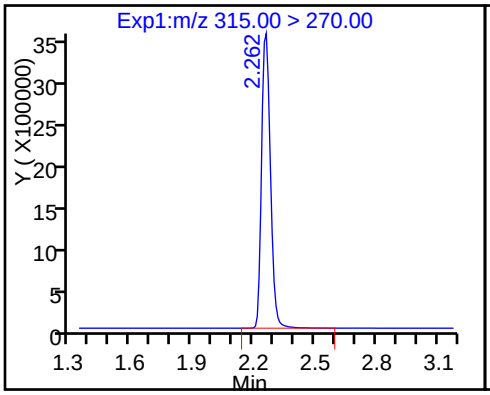
5 Perfluorobutanesulfonic acid



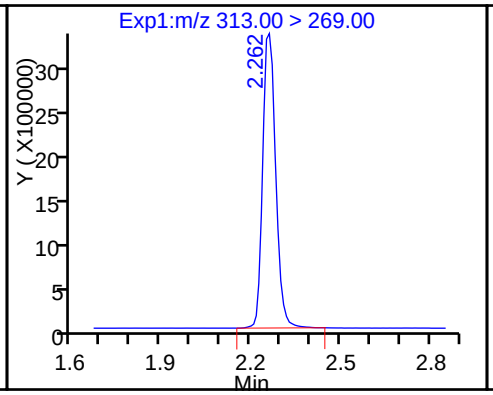
5 Perfluorobutanesulfonic acid



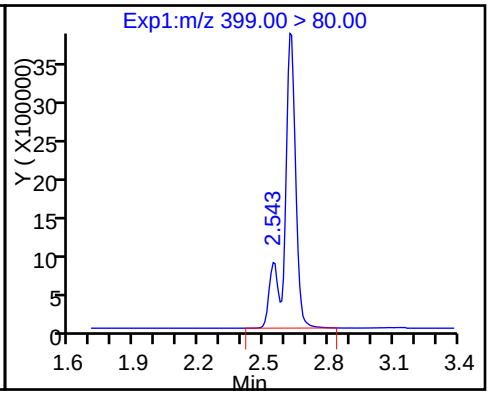
D 6 13C2 PFHxA



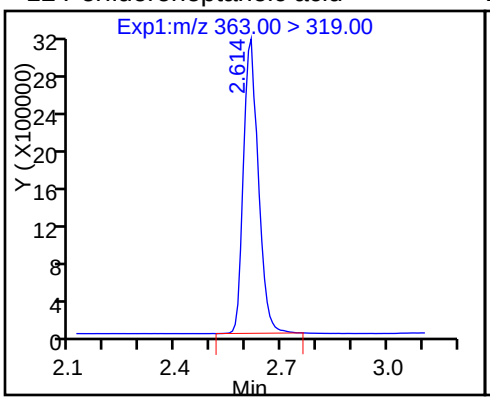
7 Perfluorohexanoic acid



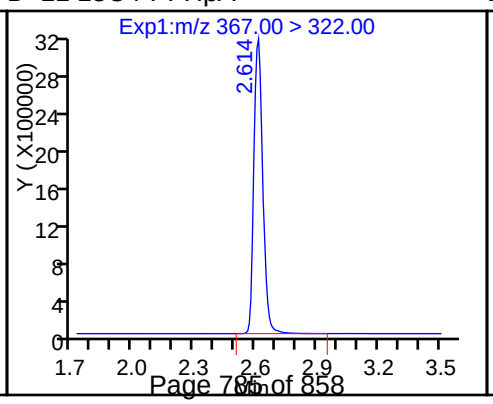
9 Perfluorohexanesulfonic acid



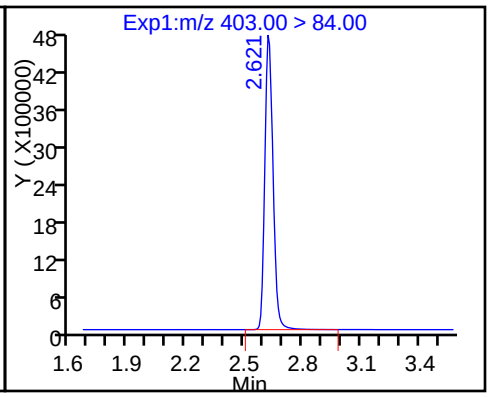
12 Perfluoroheptanoic acid



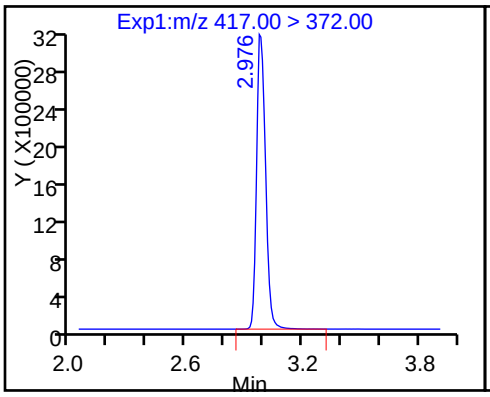
D 11 13C4-PFHpA



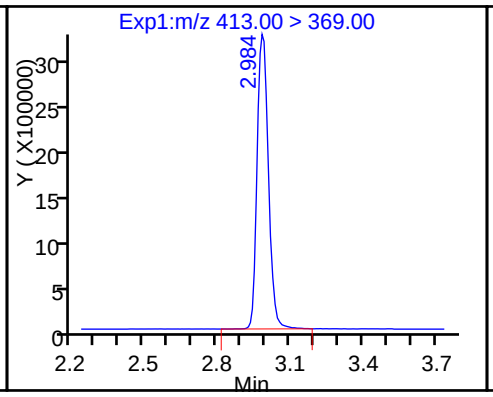
D 10 18O2 PFHxS



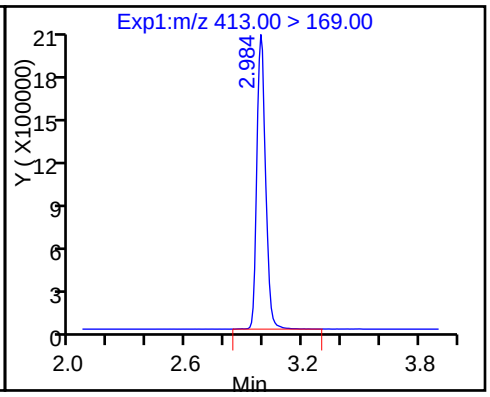
D 14 13C4 PFOA



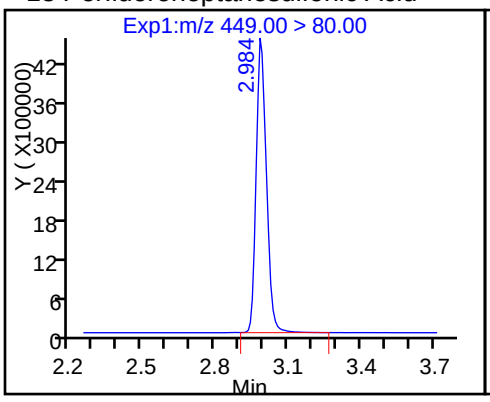
15 Perfluorooctanoic acid



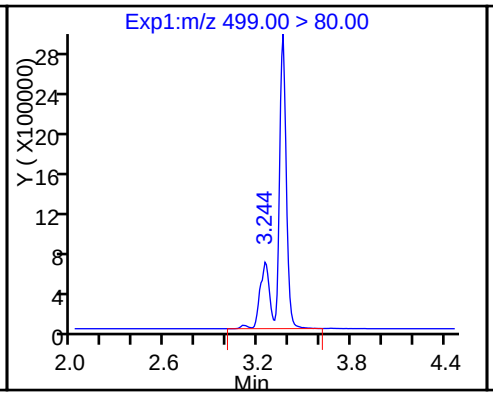
15 Perfluorooctanoic acid



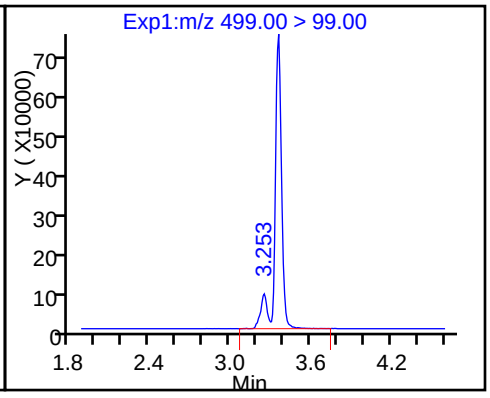
13 Perfluoroheptanesulfonic Acid



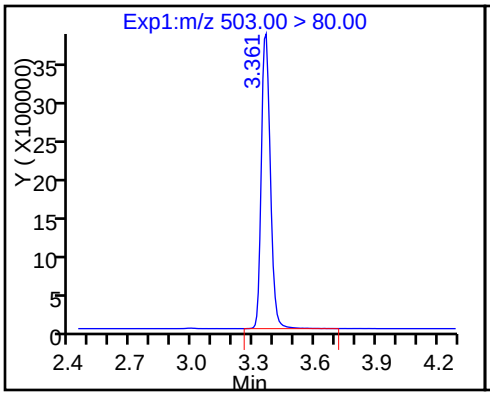
18 Perfluorooctane sulfonic acid



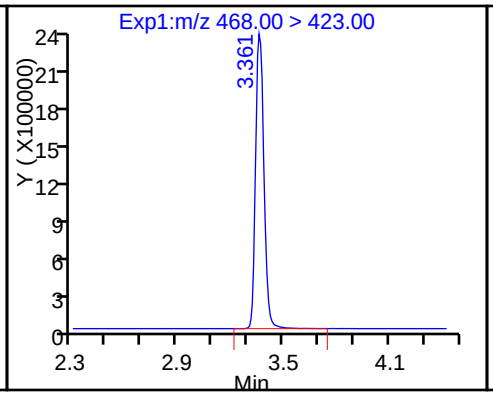
18 Perfluorooctane sulfonic acid



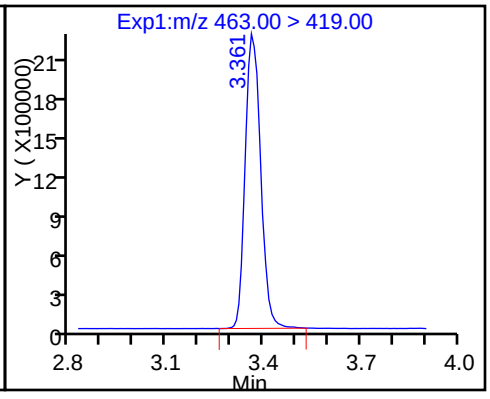
D 17 13C4 PFOS



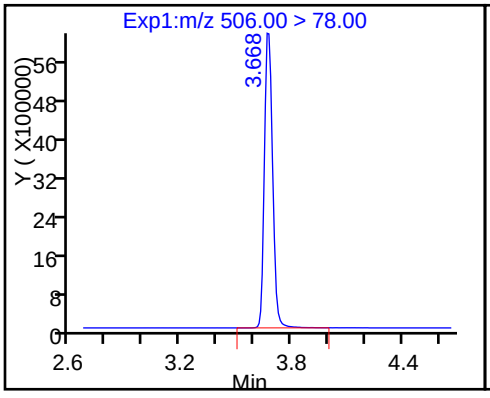
D 19 13C5 PFNA



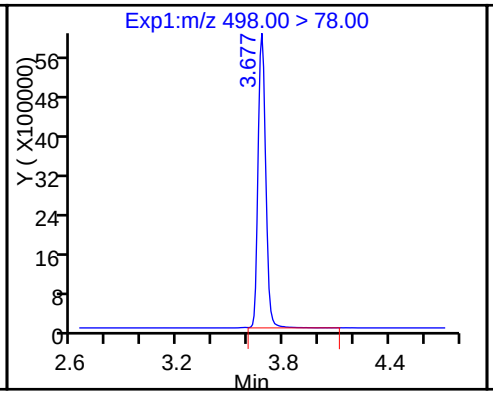
20 Perfluorononanoic acid



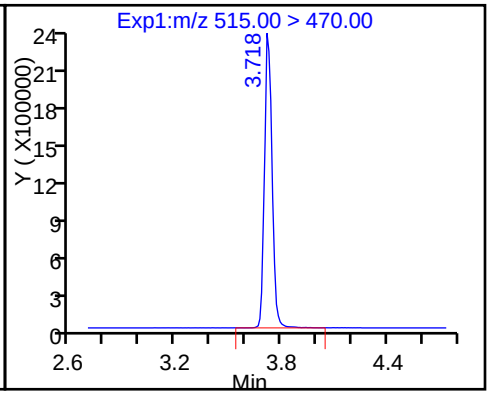
D 21 13C8 FOSA



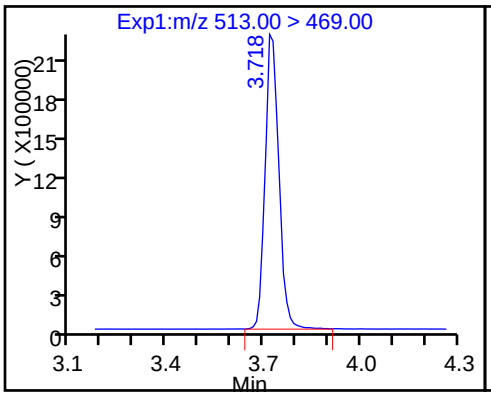
22 Perfluorooctane Sulfonamide



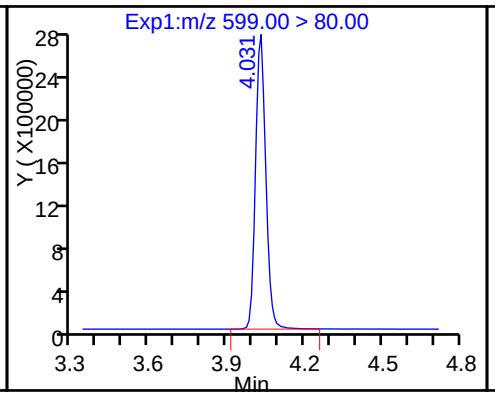
D 23 13C2 PFDA



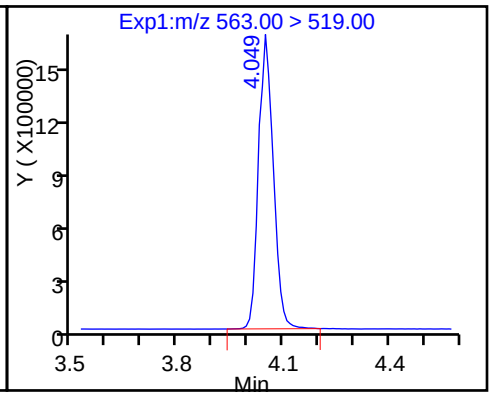
24 Perfluorodecanoic acid



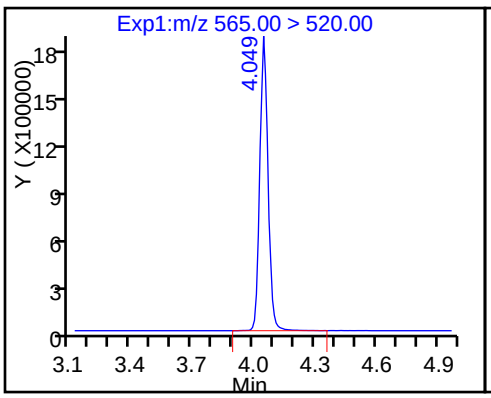
26 Perfluorodecane Sulfonic acid



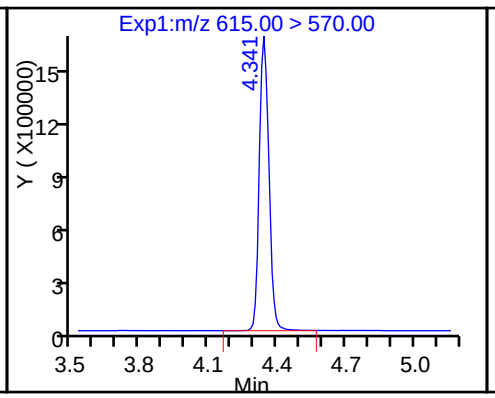
28 Perfluoroundecanoic acid



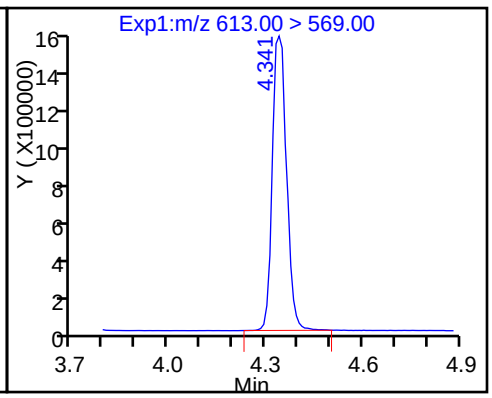
D 27 13C2 PFUnA



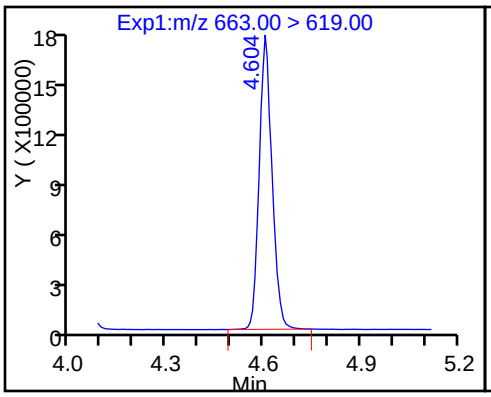
D 30 13C2 PFDoA



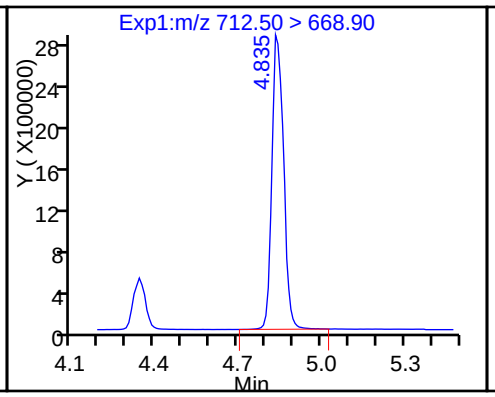
29 Perfluorododecanoic acid



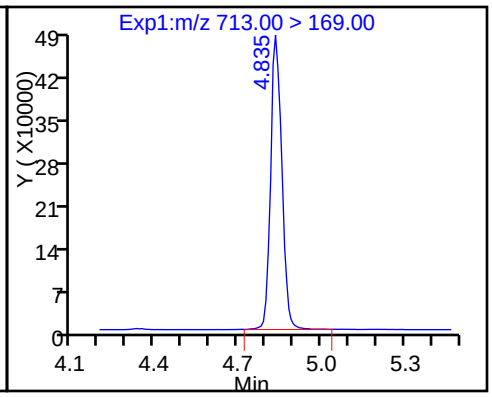
31 Perfluorotridecanoic acid



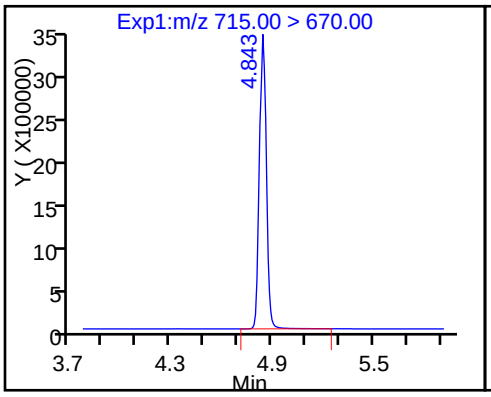
33 Perfluorotetradecanoic acid



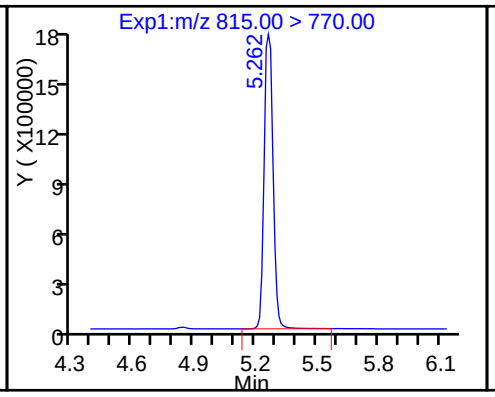
33 Perfluorotetradecanoic acid



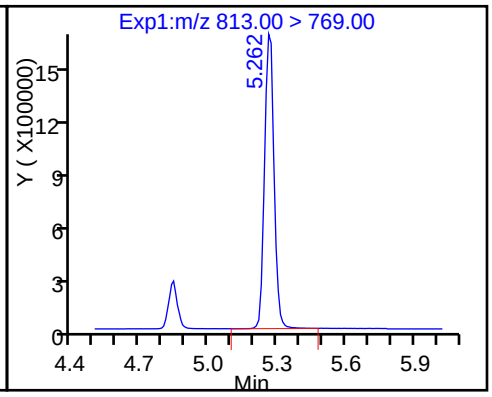
D 32 13C2-PFTeDA



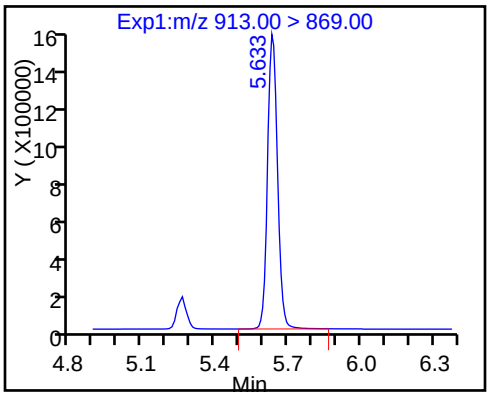
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Lab Sample ID: CCV 320-142819/12 Calibration Date: 12/19/2016 00:11

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 18DEC2016B_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	0.8537	0.8995		52.7	50.0	5.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.003		50.8	50.0	1.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.665		51.9	44.2	17.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9428		50.8	50.0	1.5	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9923		50.7	50.0	1.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.039		45.9	45.5	0.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.003		50.0	50.0	0.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.160		50.1	47.6	5.2	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.026		47.9	46.4	3.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9635		50.6	50.0	1.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9493		50.9	50.0	1.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9325		49.4	50.0	-1.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6439		53.1	48.2	10.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9014		47.1	50.0	-5.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9333		50.8	50.0	1.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.7902		43.6	50.0	-12.9	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.693		53.4	50.0	6.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9722		50.3	50.0	0.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.9064		44.0	50.0	-12.0	25.0
13C4 PFBA	Ave	347743	318414		45.8	50.0	-8.4	50.0
13C5-PFPeA	Ave	266072	252413		47.4	50.0	-5.1	50.0
13C2 PFHxA	Ave	245110	210680		43.0	50.0	-14.0	50.0
13C4-PFHpA	Ave	226344	185569		41.0	50.0	-18.0	50.0
18O2 PFHxS	Ave	326976	291075		42.1	47.3	-11.0	50.0
13C4 PFOA	Ave	230362	197072		42.8	50.0	-14.5	50.0
13C4 PFOS	Ave	248847	232650		44.7	47.8	-6.5	50.0
13C5 PFNA	Ave	177687	152132		42.8	50.0	-14.4	50.0
13C8 FOSA	Ave	384141	372588		48.5	50.0	-3.0	50.0
13C2 PFDA	Ave	157302	149793		47.6	50.0	-4.8	50.0
13C2 PFUnA	Ave	117250	101045		43.1	50.0	-13.8	50.0
13C2 PFDoA	Ave	110957	96237		43.4	50.0	-13.3	50.0
13C2-PFTeDA	Ave	227387	187620		41.3	50.0	-17.5	50.0
13C2-PFHxDA	Ave	124568	105790		42.5	50.0	-15.1	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_012.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 19-Dec-2016 00:11:42 ALS Bottle#: 41 Worklist Smp#: 12
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*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 19-Dec-2016 11:18:00 Calib Date: 15-Dec-2016 14:18:33
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 19-Dec-2016 11:16:32

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	1.630	1.630	0.0		15920696	45.8		91.6	792591	
1 Perfluorobutyric acid										
212.90 > 169.00	1.630	1.630	0.0	1.000	14320393	52.7		105	94739	
D 4 13C5-PFPeA										
267.90 > 223.00	1.916	1.916	0.0		12620672	47.4		94.9	1466635	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.926	1.926	0.0	1.000	12661677	50.8		102	107844	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.964	1.964	0.0	1.000	21419797	51.9		117		
298.90 > 99.00	1.954	1.964	-0.010	0.995	9706020		2.21(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.227	2.227	0.0		10533993	43.0		86.0	882652	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.227	2.227	0.0	1.000	9930936	50.8		102	239006	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.591	2.591	0.0	1.000	13762606	45.9		101		
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.584	2.584	0.0	1.000	9206898	50.7		101	125897	
D 11 13C4-PFHpA										
367.00 > 322.00	2.576	2.576	0.0		9278433	41.0		82.0	1063924	
D 10 18O2 PFHxS										
403.00 > 84.00	2.591	2.591	0.0		13767865	42.1		89.0	1579496	
D 14 13C4 PFOA										
417.00 > 372.00	2.948	2.948	0.0		9853584	42.8		85.5	512243	

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	2.948	2.948	0.0	1.000	9884773	50.0		100	83295	
413.00 > 169.00	2.948	2.948	0.0	1.000	6240923		1.58(0.90-1.10)		355261	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.956	2.956	0.0	1.000	12840460	50.1		105		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.214	3.214	0.0	1.000	11075269	47.9		103	54273	
499.00 > 99.00	3.214	3.214	0.0	1.000	2462552		4.50(0.90-1.10)		44087	
D 17 13C4 PFOS										
503.00 > 80.00	3.327	3.327	0.0		11120690	44.7		93.5	232896	
D 19 13C5 PFNA										
468.00 > 423.00	3.327	3.327	0.0		7606587	42.8		85.6	410660	
20 Perfluorononanoic acid										
463.00 > 419.00	3.335	3.335	0.0	1.000	7328922	50.6		101	130199	
D 21 13C8 FOSA										
506.00 > 78.00	3.640	3.640	0.0		18629390	48.5		97.0	472328	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.648	3.648	0.0	1.000	17684582	50.9		102	965898	
D 23 13C2 PFDA										
515.00 > 470.00	3.686	3.686	0.0		7489652	47.6		95.2	165800	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.686	3.686	0.0	1.000	6983974	49.4		98.8	166595	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.995	3.995	0.0	1.000	7220667	53.1		110		
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.005	4.005	0.0	1.000	4554218	47.1		94.3	61624	
D 27 13C2 PFUnA										
565.00 > 520.00	4.014	4.014	0.0		5052253	43.1		86.2	297355	
D 30 13C2 PFDoA										
615.00 > 570.00	4.306	4.306	0.0		4811843	43.4		86.7	133163	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.306	4.306	0.0	1.000	4490717	50.8		102	8018	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.568	4.568	0.0	1.000	3802372	43.6		87.1	4786	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.811	4.811	0.0	1.000	8148767	53.4		107	3593	
713.00 > 169.00	4.803	4.811	-0.008	0.998	1302956		6.25(0.00-0.00)		75678	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.811	4.811	0.0		9380982	41.3		82.5	418291	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.236	5.236	0.0		5289477	42.5		84.9	73742	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.236	5.236	0.0	1.000	4677822	50.3		101	4155	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.600	5.600	0.0	1.000	4361540	44.0		88.0	6024	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 19-Dec-2016 11:18:01 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b\18DEC2016B_012.d

Injection Date: 19-Dec-2016 00:11:42 Instrument ID: A8_N

Lims ID: CCV L5

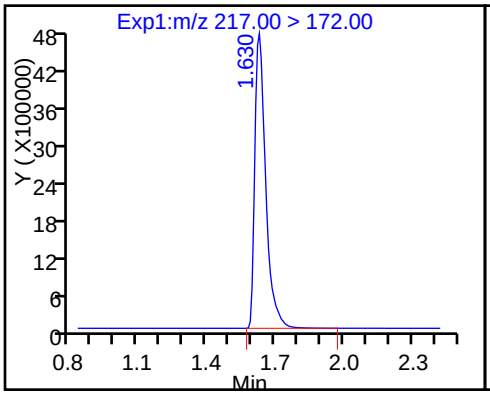
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 12

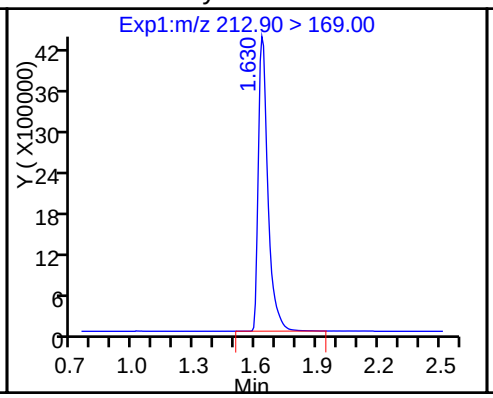
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

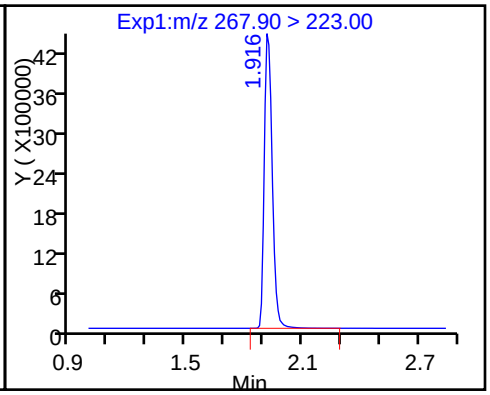
D 2 13C4 PFBA



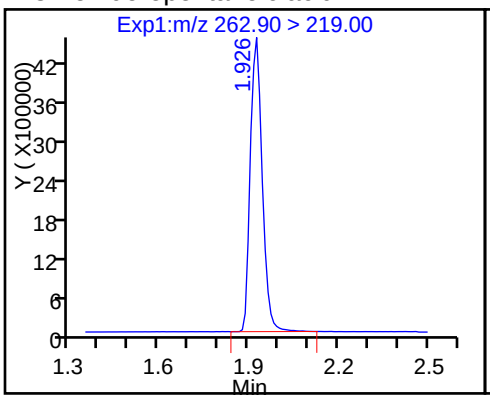
1 Perfluorobutyric acid



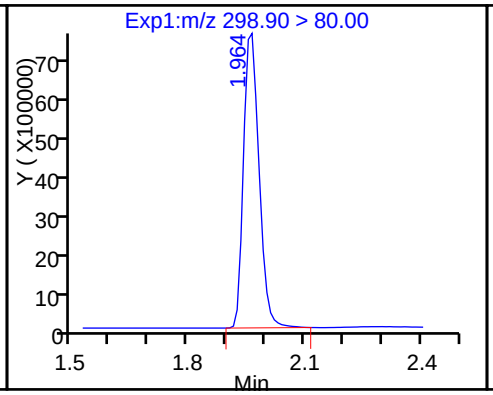
D 4 13C5-PFPeA



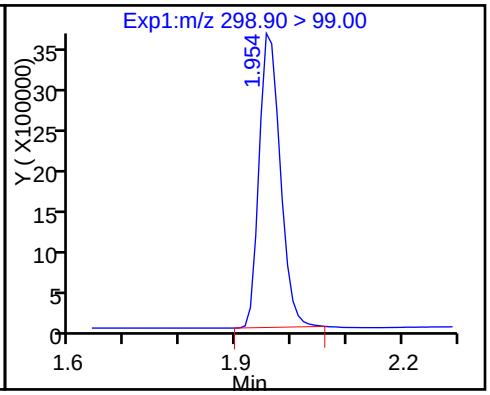
3 Perfluoropentanoic acid



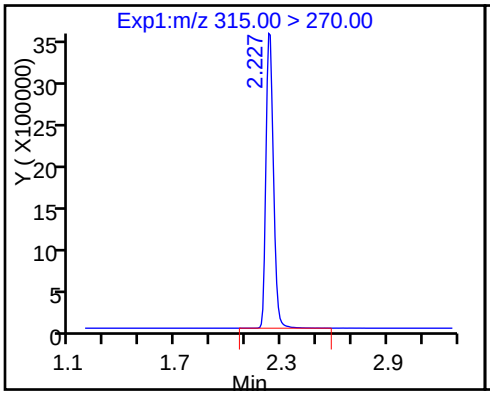
5 Perfluorobutanesulfonic acid



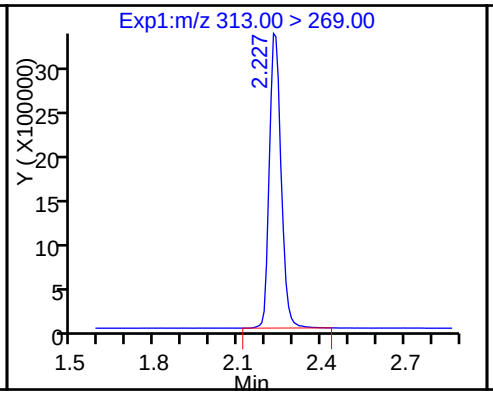
5 Perfluorobutanesulfonic acid



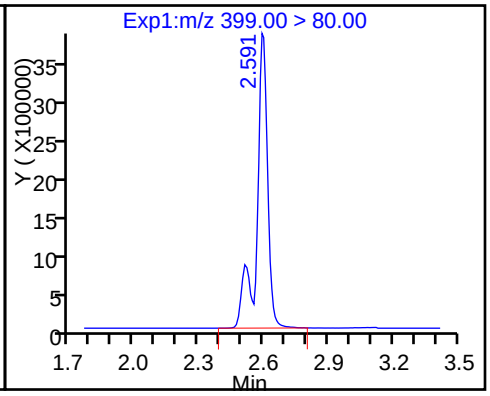
D 6 13C2 PFHxA



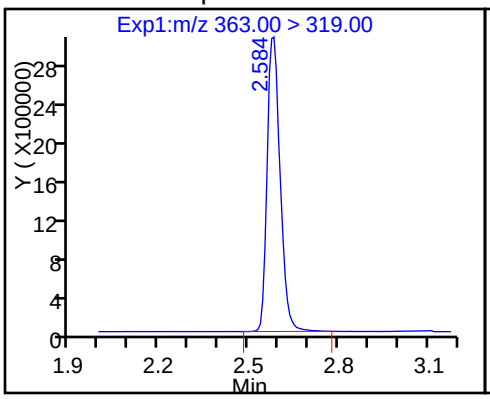
7 Perfluorohexanoic acid



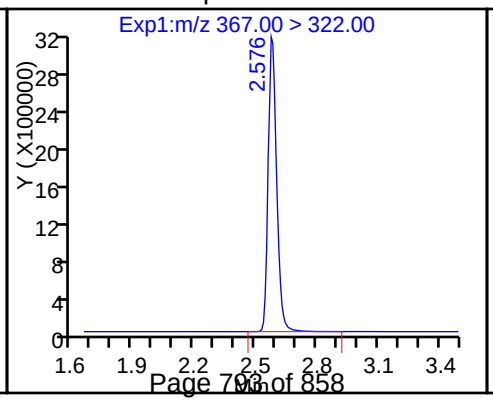
9 Perfluorohexanesulfonic acid



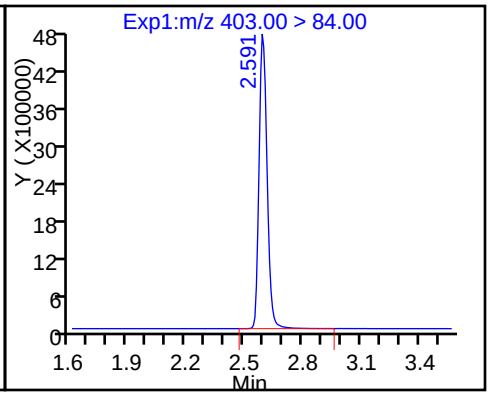
12 Perfluoroheptanoic acid



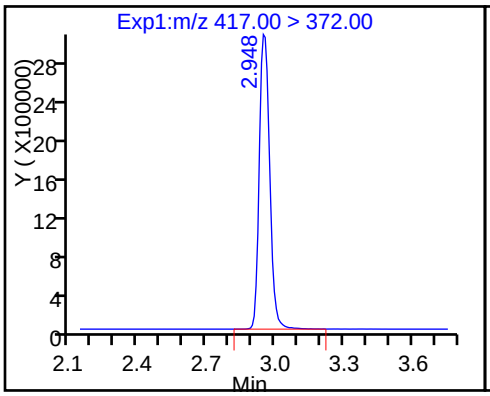
D 11 13C4-PFHpA



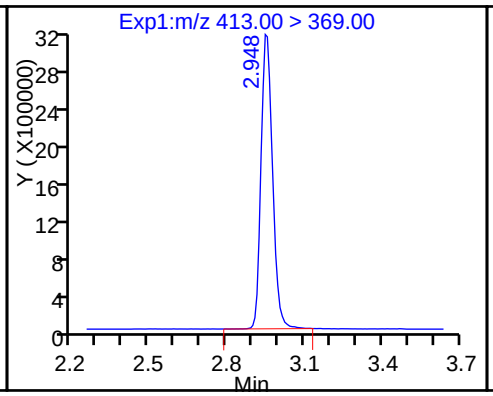
D 10 18O2 PFHxS



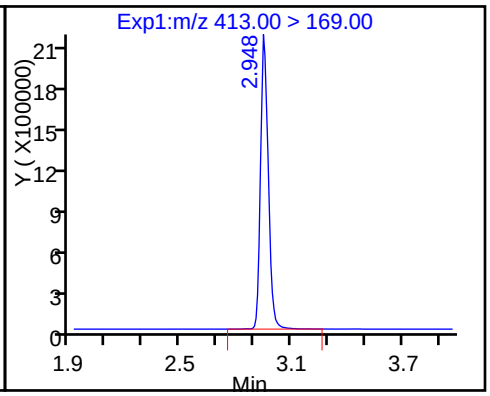
D 14 13C4 PFOA



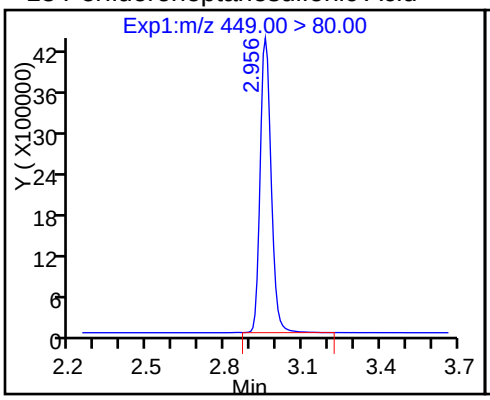
15 Perfluorooctanoic acid



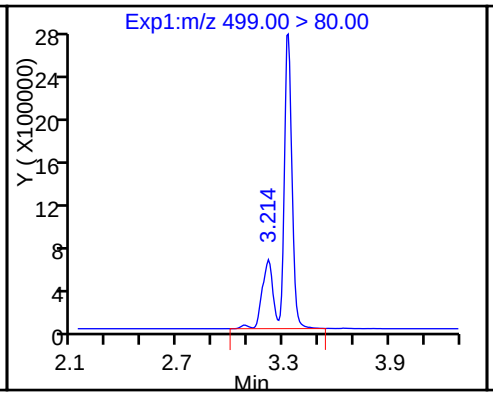
15 Perfluorooctanoic acid



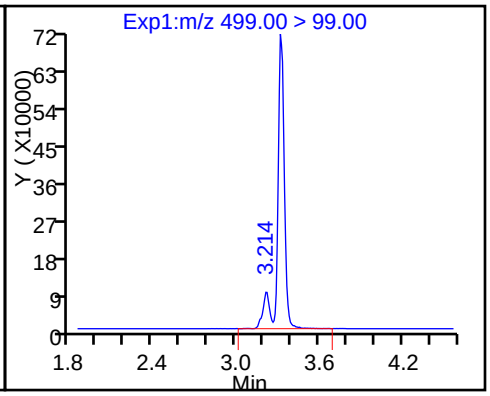
13 Perfluoroheptanesulfonic Acid



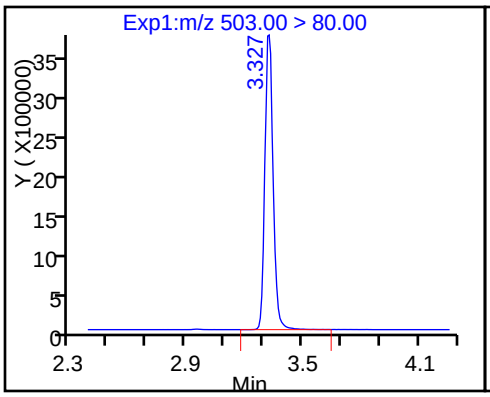
18 Perfluorooctane sulfonic acid



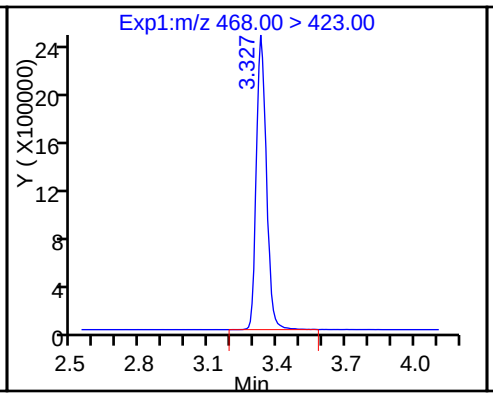
18 Perfluorooctane sulfonic acid



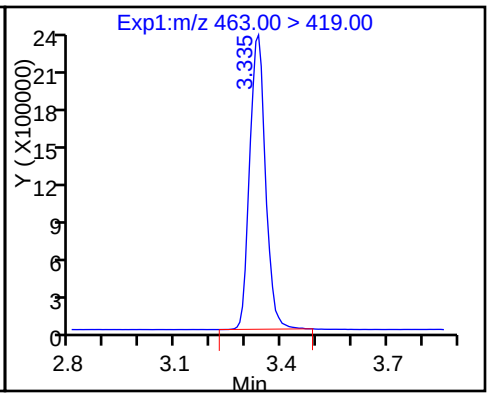
D 17 13C4 PFOS



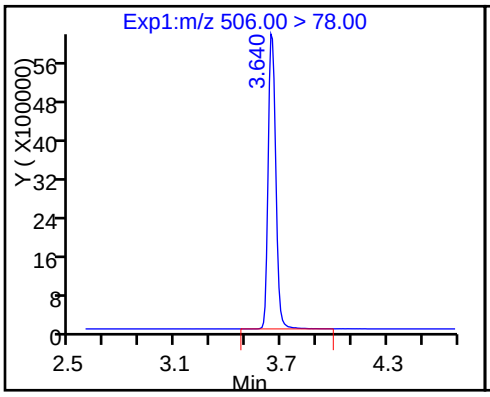
D 19 13C5 PFNA



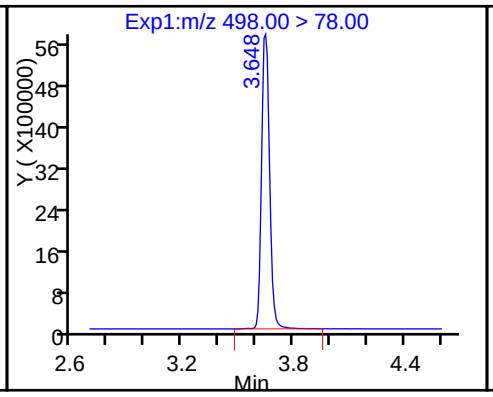
20 Perfluorononanoic acid



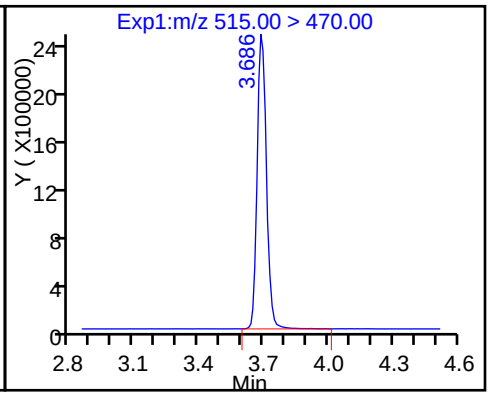
D 21 13C8 FOSA



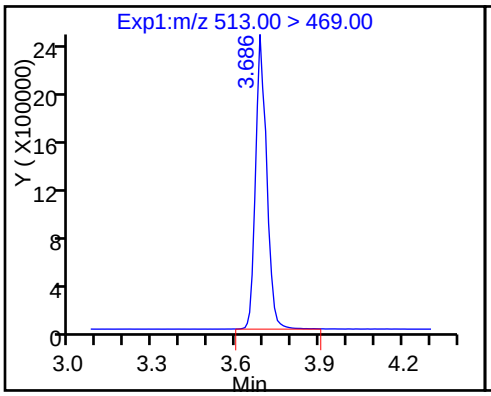
22 Perfluorooctane Sulfonamide



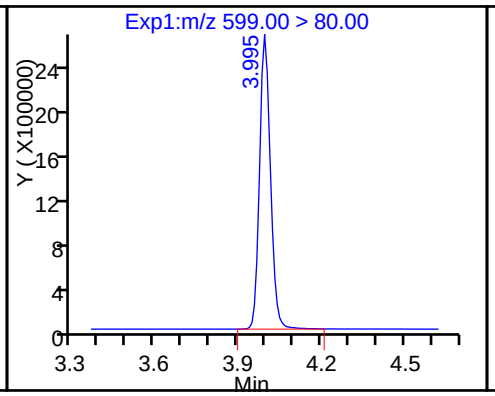
D 23 13C2 PFDA



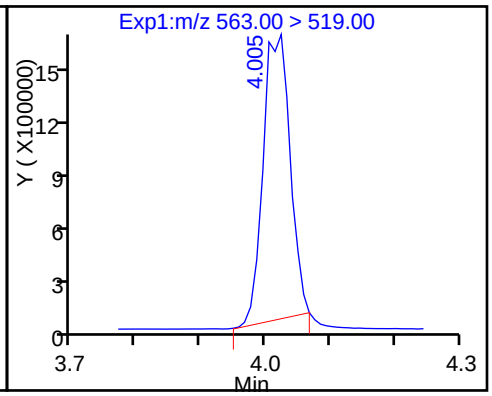
24 Perfluorodecanoic acid



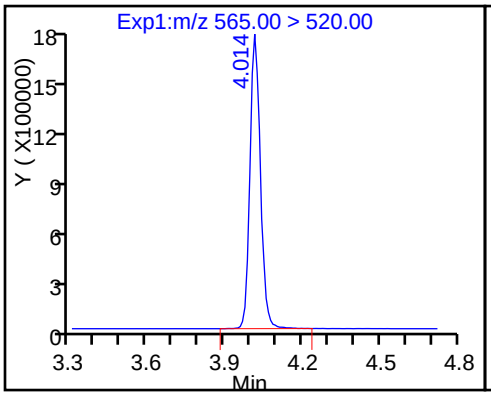
26 Perfluorodecane Sulfonic acid



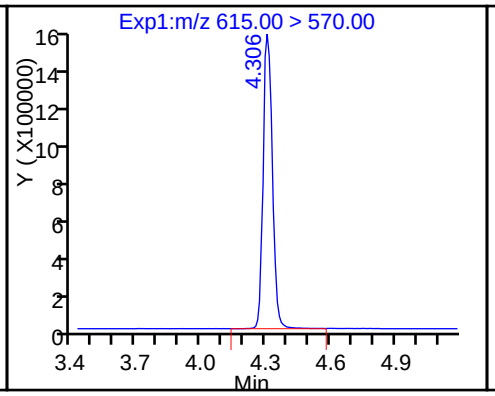
28 Perfluoroundecanoic acid



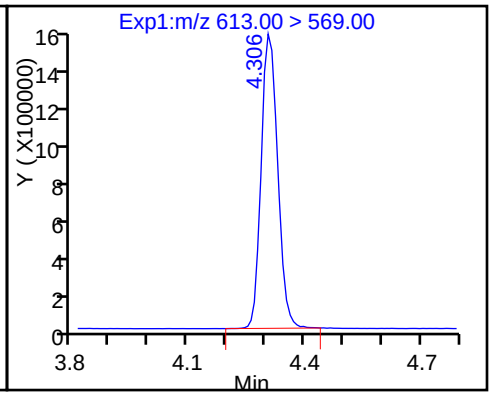
D 27 13C2 PFUnA



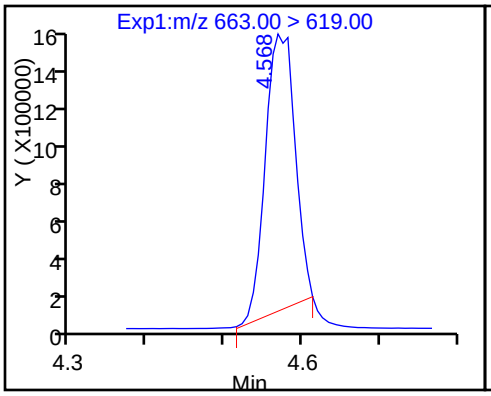
D 30 13C2 PFDoA



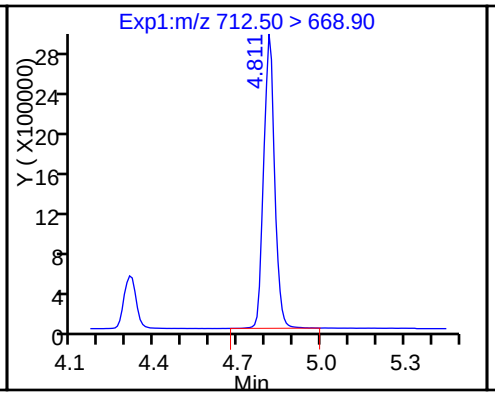
29 Perfluorododecanoic acid



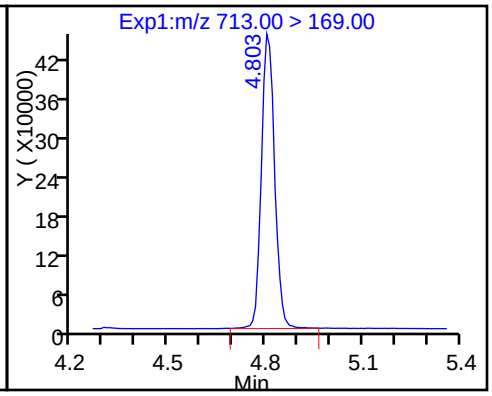
31 Perfluorotridecanoic acid



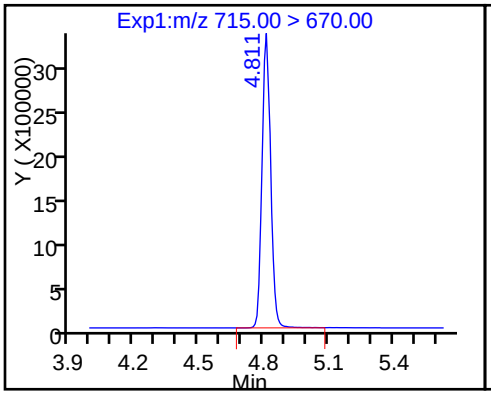
33 Perfluorotetradecanoic acid



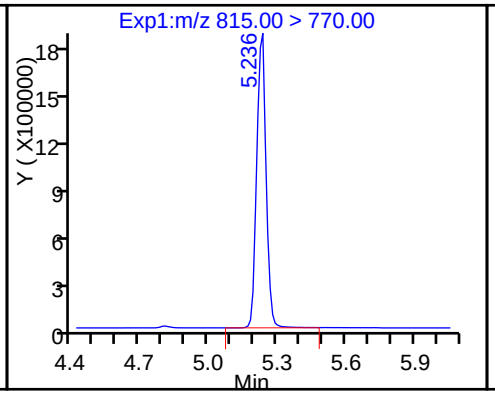
33 Perfluorotetradecanoic acid



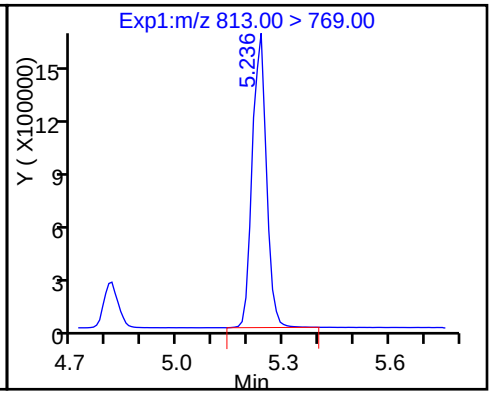
D 32 13C2-PFTeDA



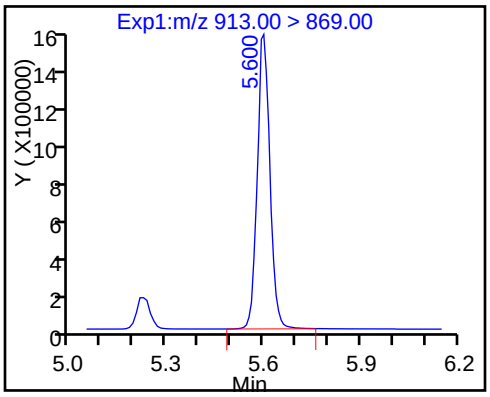
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-140271/1-A

Matrix: Water Lab File ID: 14DEC2016C_005.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 250.00(mL) Date Analyzed: 12/14/2016 17:38

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.: 142338 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	123		25-150
STL00991	13C4 PFOS	115		25-150
STL00994	18O2 PFHxS	117		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_005.d
Lims ID: MB 320-140271/1-A
Client ID:
Sample Type: MB
Inject. Date: 14-Dec-2016 17:38:50 ALS Bottle#: 12 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-140271/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:39:04

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	1.553	1.517	0.036	1.000	13940	0.0408			53.3	
D 2 13C4 PFBA										
217.00 > 172.00	1.521	1.517	0.004		19227441	59.1		118	1252703	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.803	1.791	0.012	1.000	27814	0.0893			235	
D 4 13C5-PFPeA										
267.90 > 223.00	1.794	1.791	0.003		15154310	59.4		119	792910	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.080	2.074	0.006	1.000	14176	0.0534			250	
D 6 13C2 PFHxA										
315.00 > 270.00	2.080	2.074	0.006		13762370	55.7		111	629704	
D 11 13C4-PFHpA										
367.00 > 322.00	2.407	2.403	0.004		12896149	62.1		124	911509	
D 10 18O2 PFHxS										
403.00 > 84.00	2.423	2.424	-0.001		17487364	55.5		117	1004997	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.732	2.732	0.0	1.000	1894	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.750	2.741	0.009		1729	0.0168		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.766	2.759	0.007		13160962	61.3		123	788642	
D 17 13C4 PFOS										
503.00 > 80.00	3.133	3.135	-0.002		12590492	55.1		115	786129	
D 19 13C5 PFNA										
468.00 > 423.00	3.133	3.135	-0.002		9608340	59.8		120	553515	
D 21 13C8 FOSA										
506.00 > 78.00	3.472	3.466	0.006		11154684	30.4		60.8	396013	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 42 M2-8:2FTS										
529.00 > 509.00	3.472	3.481	-0.009		1109	0.0122		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.497	3.490	0.007		8337703	57.4		115	285599	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.497	3.490	0.007	1.000	4667	0.0296			128	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.640	3.641	-0.001		5443	0.0802		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.649	3.641	0.008	1.002	1142	NR				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.816	3.807	0.009		14183	0.1958		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.825	3.809	0.015	1.000	538	0.003338				
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.816	3.816	0.0	1.000	1867	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.825	3.826	-0.002		5939896	53.8		108	601632	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.833	3.826	0.007	1.000	13318	0.1048			374	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.973	3.964	0.009		1979	0.0202		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.118	4.120	-0.002		4911419	48.2		96.3	295929	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.154	4.154	0.0		2187	0.0246		0.0		
D 32 13C2-PFTeDA										
715.00 > 670.00	4.624	4.618	0.006		11899420	57.2		114	997100	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.642	4.625	0.017	1.000	20715	0.1216			320	
713.00 > 169.00	4.605	4.625	-0.020	0.992	2427		8.54(0.00-0.00)		864	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.036	5.036	0.0	1.000	55952	-0.0935			185	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.036	5.036	0.0		5131721	45.2		90.3	190876	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.398	5.390	0.008	1.000	2544	0.0315			3.5	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 15-Dec-2016 14:55:01 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_005.d

Injection Date: 14-Dec-2016 17:38:50 Instrument ID: A8_N

Lims ID: MB 320-140271/1-A

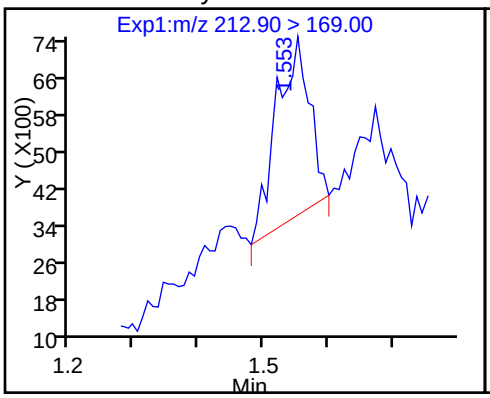
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 12 Worklist Smp#: 5

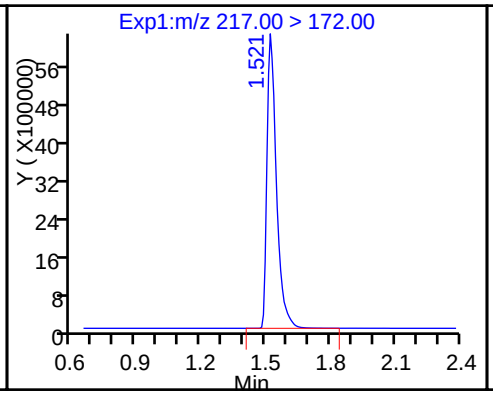
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

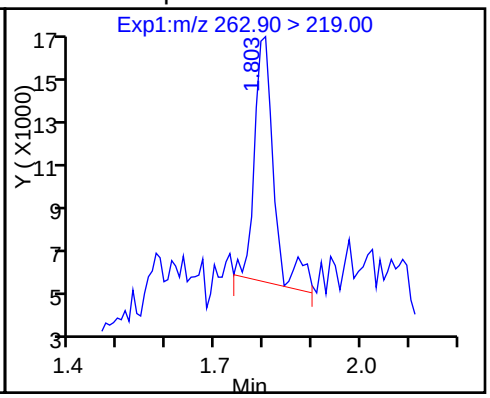
1 Perfluorobutyric acid



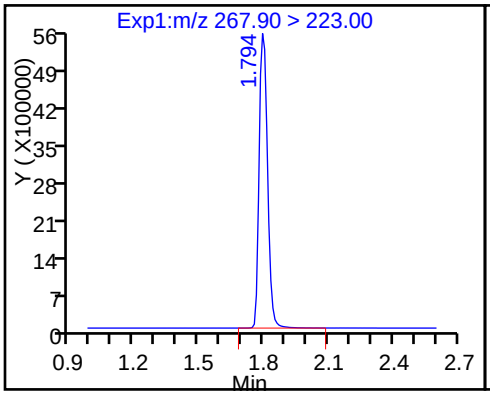
D 2 13C4 PFBA



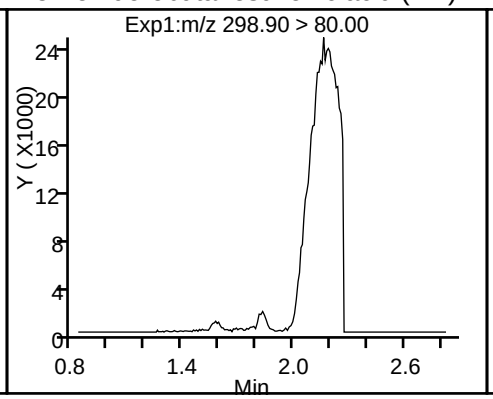
3 Perfluoropentanoic acid



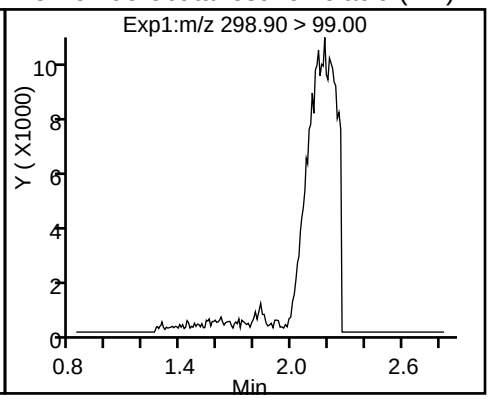
D 4 13C5-PFPeA



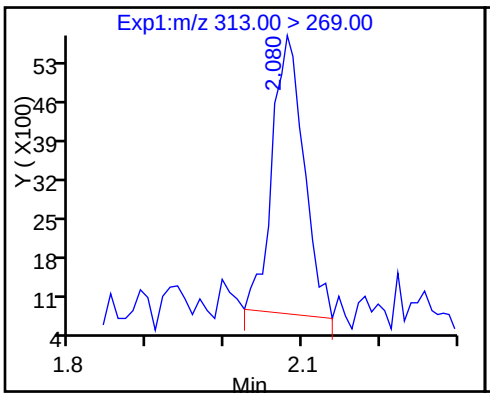
5 Perfluorobutanesulfonic acid (ND)



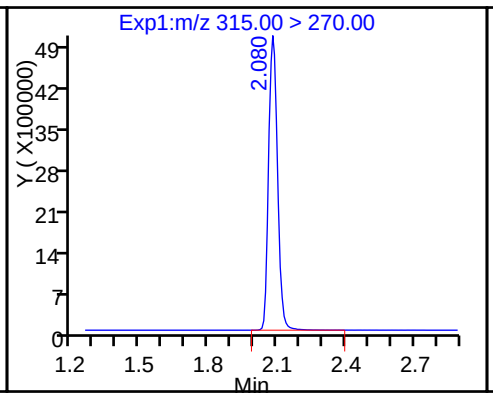
5 Perfluorobutanesulfonic acid (ND)



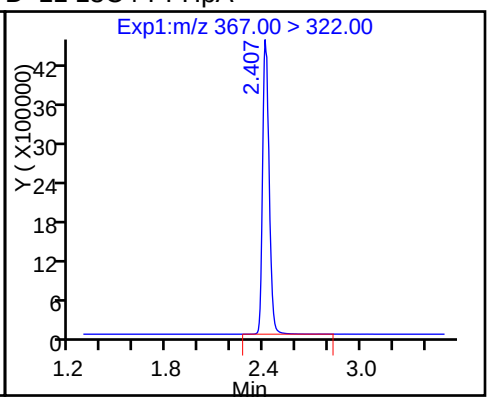
7 Perfluorohexanoic acid



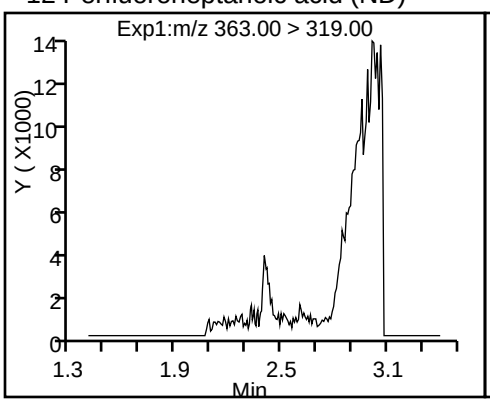
D 6 13C2 PFHxA



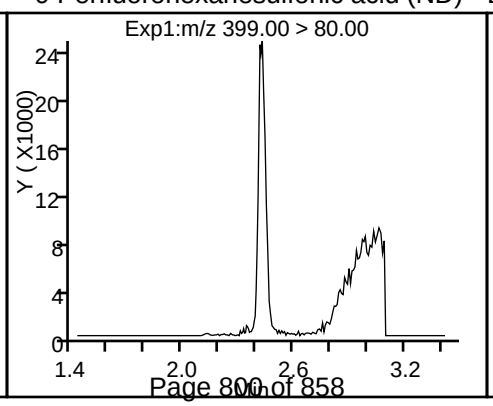
D 11 13C4-PFHpA



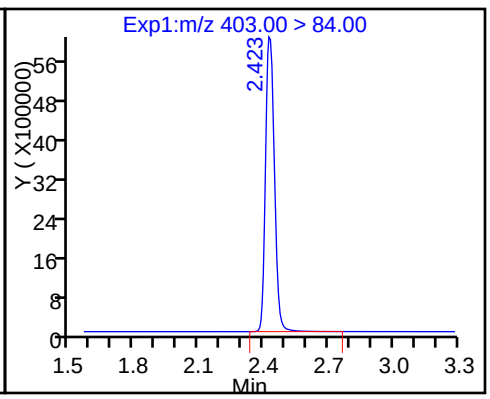
12 Perfluoroheptanoic acid (ND)



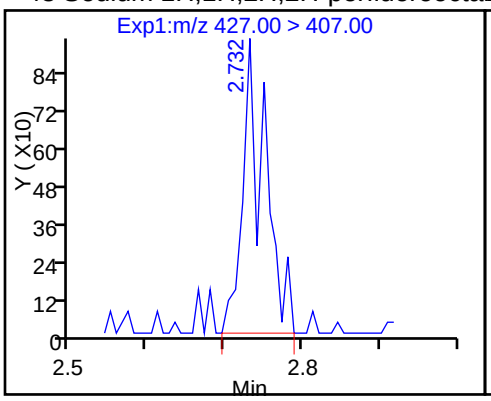
9 Perfluorohexanesulfonic acid (ND)



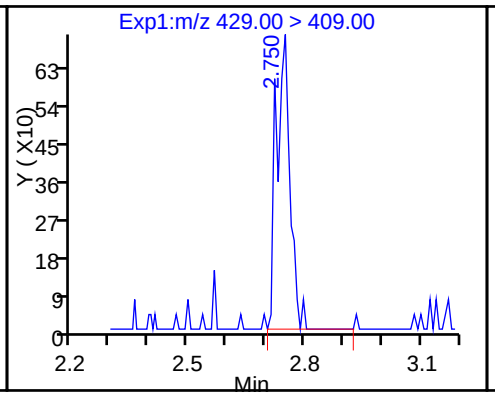
D 10 18O2 PFHxS



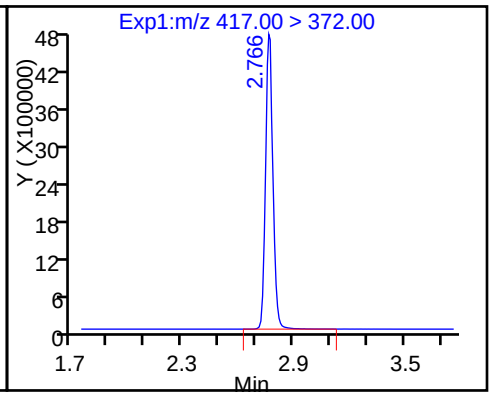
48 Sodium 1H,1H,2H,2H-perfluorooctane



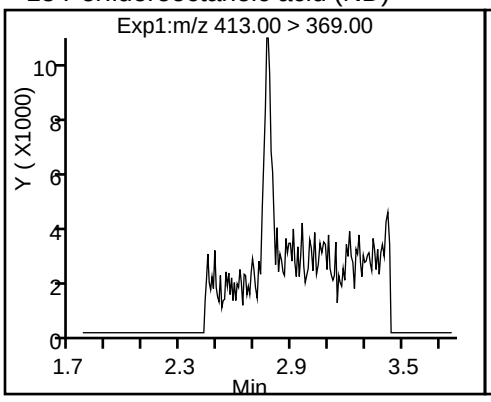
D 47 M2-6:2FTS



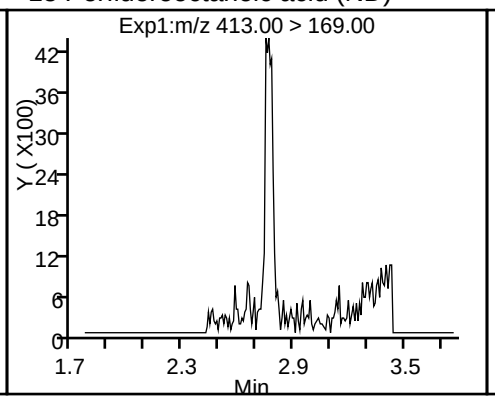
D 14 13C4 PFOA



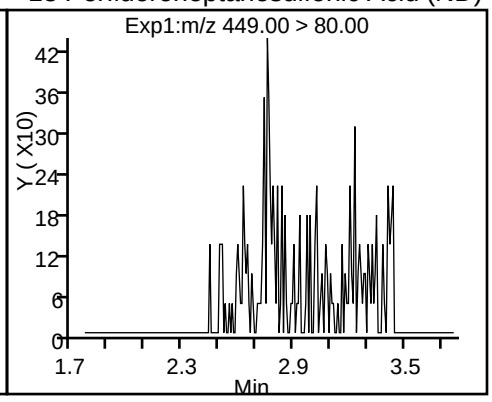
15 Perfluorooctanoic acid (ND)



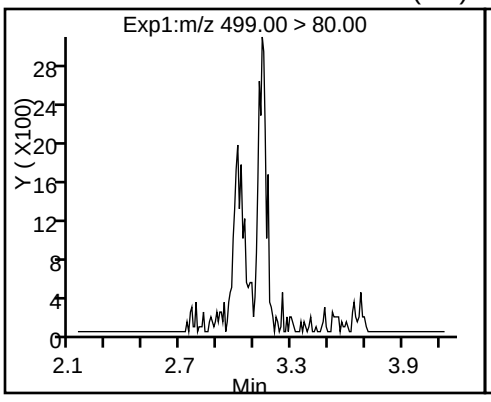
15 Perfluorooctanoic acid (ND)



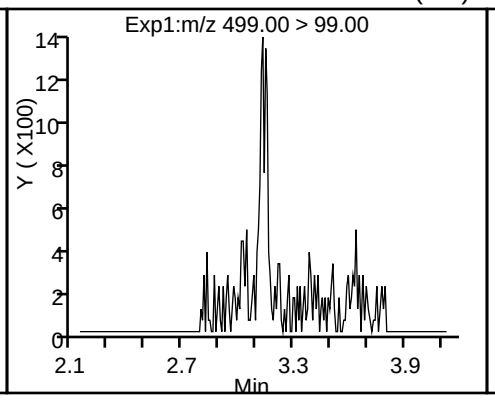
13 Perfluoroheptanesulfonic Acid (ND)



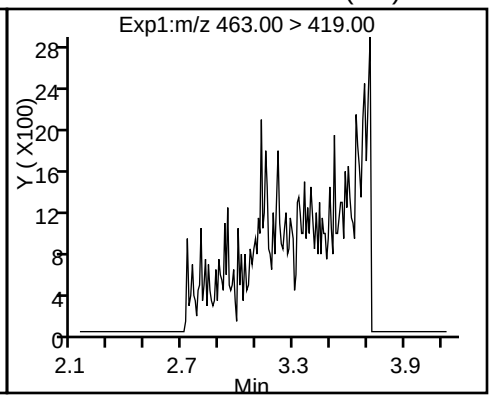
18 Perfluorooctane sulfonic acid (ND)



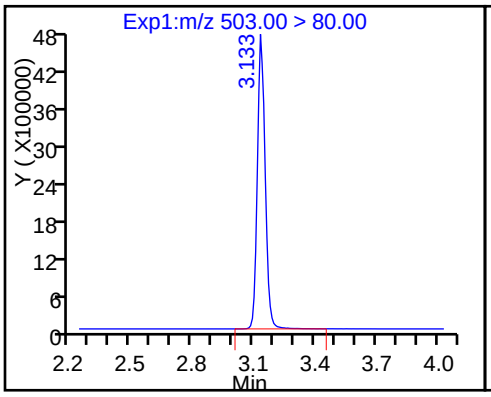
18 Perfluorooctane sulfonic acid (ND)



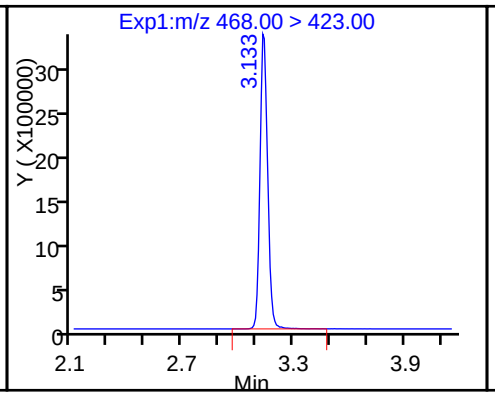
20 Perfluorononanoic acid (ND)



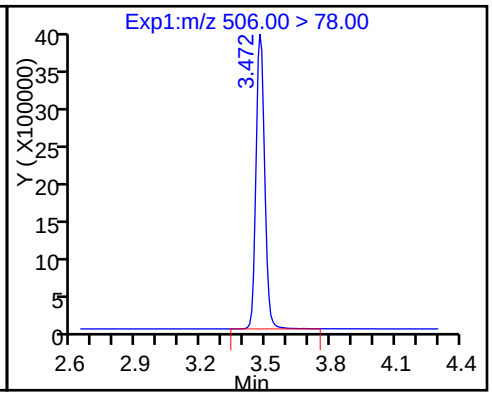
D 17 13C4 PFOS



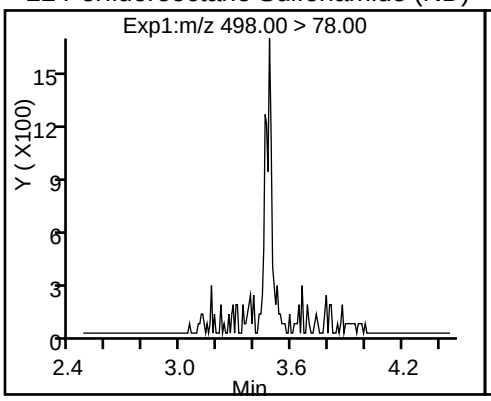
D 19 13C5 PFNA



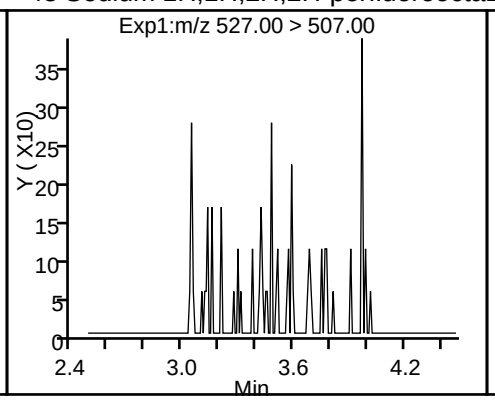
D 21 13C8 FOSA



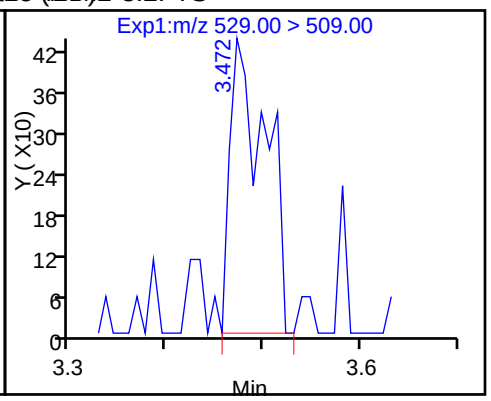
22 Perfluorooctane Sulfonamide (ND)



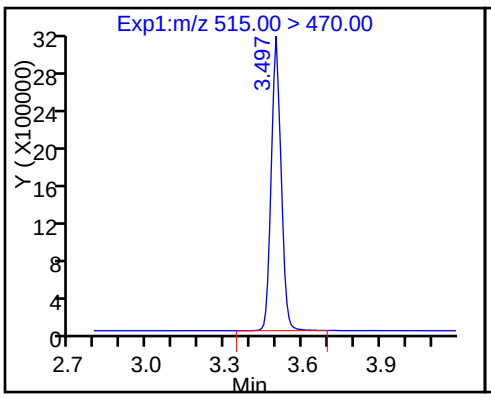
43 Sodium 1H,1H,2H,2H-perfluorooctane (ND)



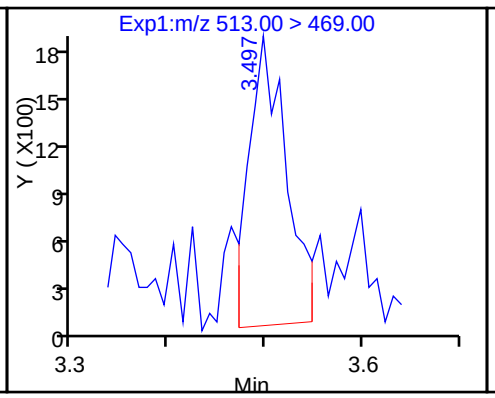
D 42 M2-8:2FTS



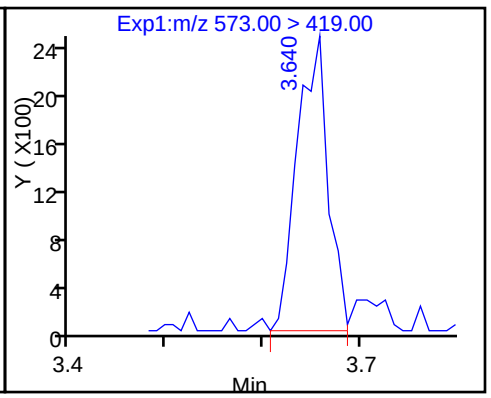
D 23 13C2 PFDA



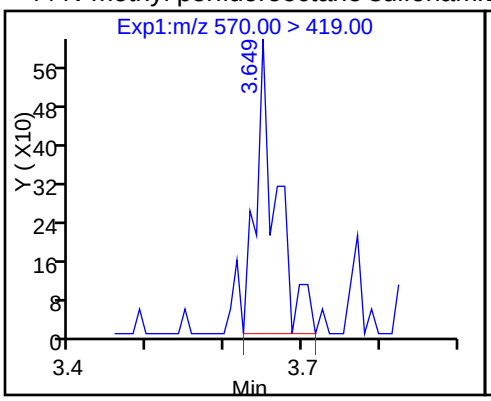
24 Perfluorodecanoic acid



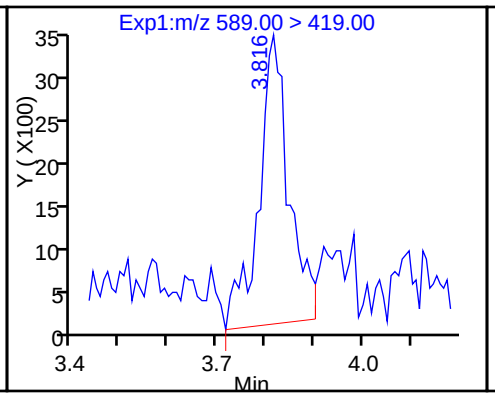
D 45 d3-NMeFOSAA



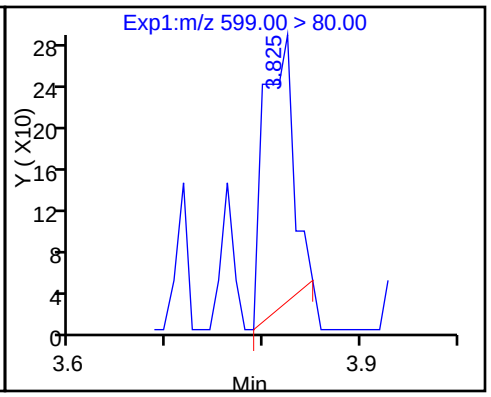
44 N-methyl perfluorooctane sulfonami



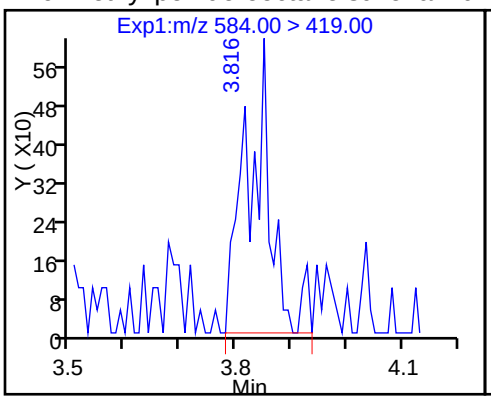
D 46 d5-NEtFOSAA



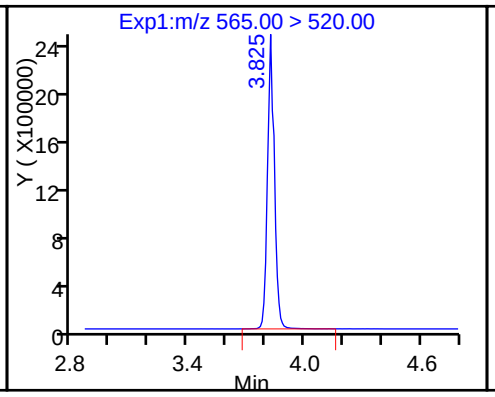
26 Perfluorodecane Sulfonic acid



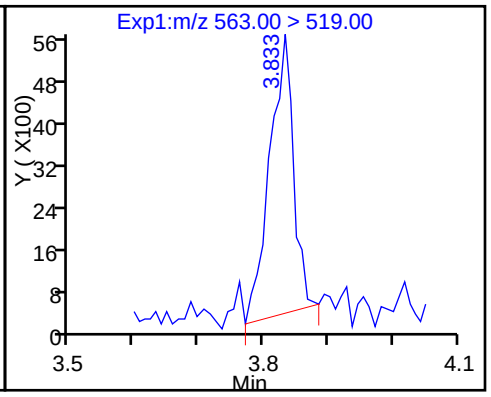
49 N-ethyl perfluorooctane sulfonamid



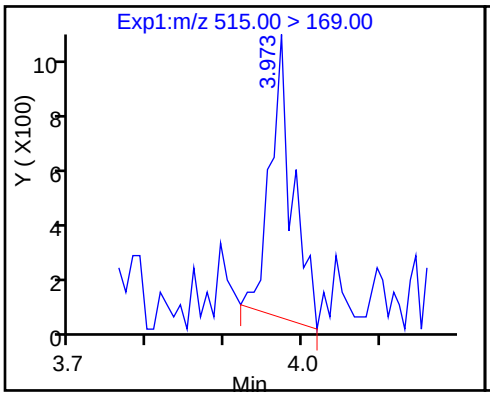
D 27 13C2 PFUnA



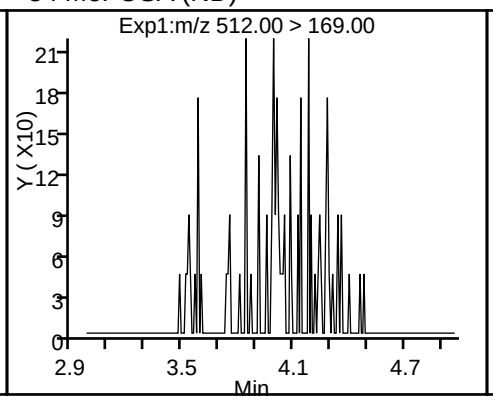
28 Perfluoroundecanoic acid



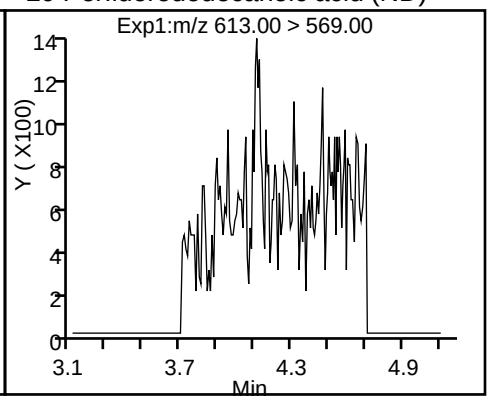
D 52 d-N-MeFOSA-M



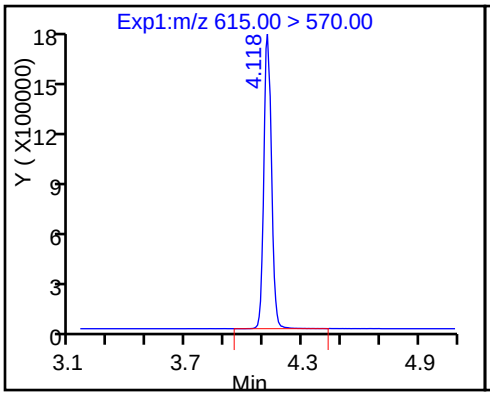
54 MeFOSA (ND)



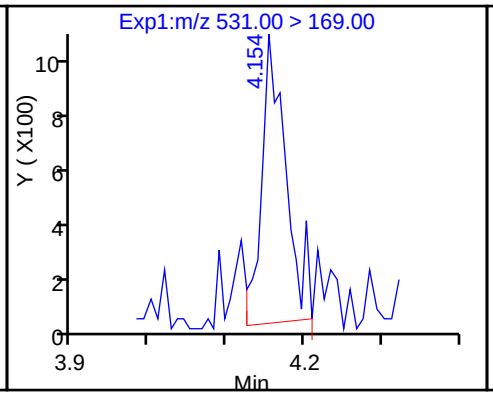
29 Perfluorododecanoic acid (ND)



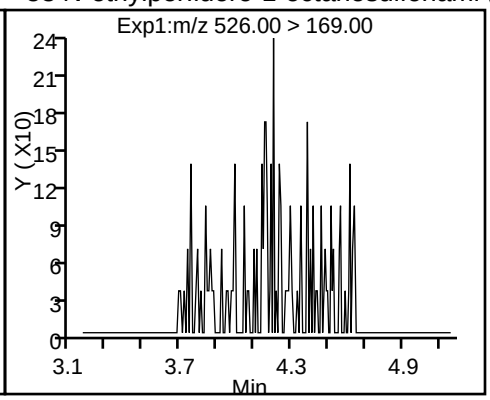
D 30 13C2 PFDoA



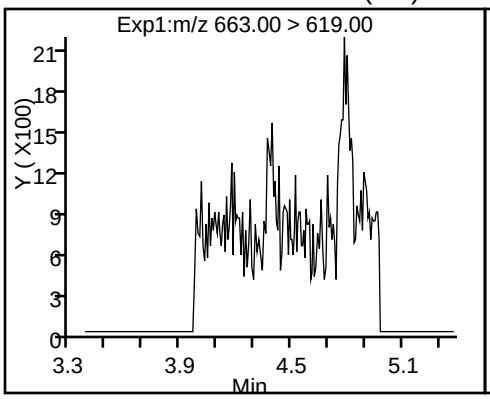
D 51 d-N-EtFOSA-M



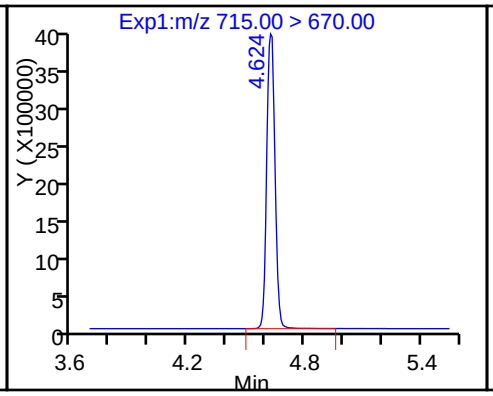
53 N-ethylperfluoro-1-octanesulfonami (ND)



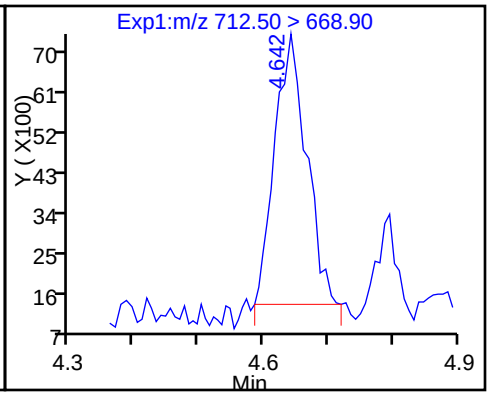
31 Perfluorotridecanoic acid (ND)



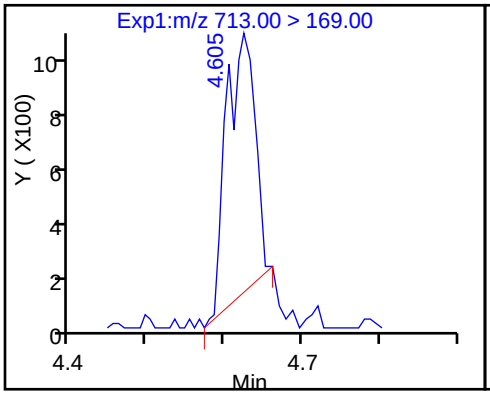
D 32 13C2-PFTeDA



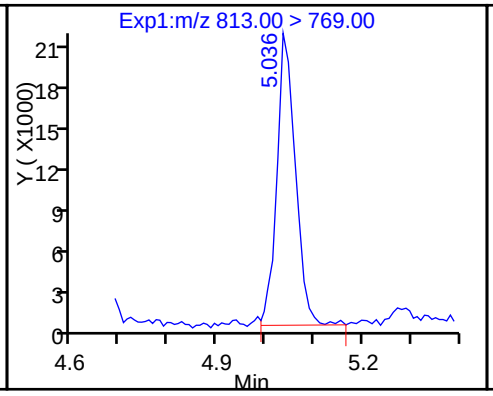
33 Perfluorotetradecanoic acid



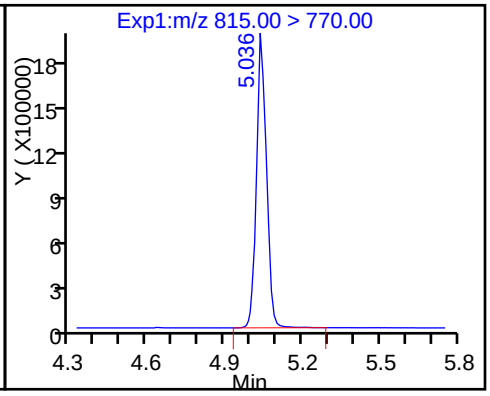
33 Perfluorotetradecanoic acid



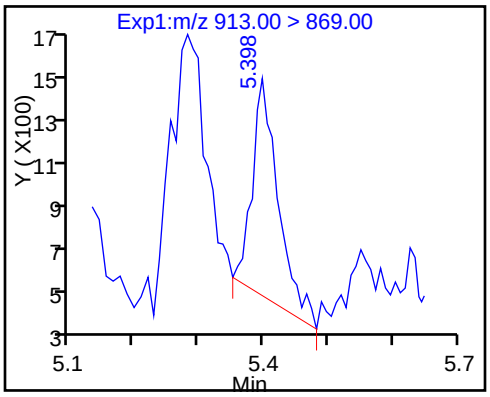
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-140271/2-A

Matrix: Water Lab File ID: 14DEC2016C_006.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 250.00(mL) Date Analyzed: 12/14/2016 17:46

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0384		0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0355		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0373		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	112		25-150
STL00991	13C4 PFOS	109		25-150
STL00994	18O2 PFHxS	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_006.d
Lims ID: LCS 320-140271/2-A
Client ID:
Sample Type: LCS
Inject. Date: 14-Dec-2016 17:46:20 ALS Bottle#: 13 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-140271/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:39:34

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	1.525	1.517	0.008	1.000	6432693	19.9		99.4	33366	
D 2 13C4 PFBA										
217.00 > 172.00	1.525	1.517	0.008		18199698	55.9		112	948186	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.800	1.791	0.009	1.000	5569035	19.4		96.9	66273	
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.791	0.009		13975699	54.7		109	910991	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.838	1.829	0.009	1.000	9644638	18.7		106		
298.90 > 99.00	1.838	1.829	0.009	1.000	4117363		2.34(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.091	2.074	0.017	1.000	4947543	19.8		99.1	126477	
D 6 13C2 PFHxA										
315.00 > 270.00	2.082	2.074	0.008		12951870	52.4		105	574243	
D 11 13C4-PFHpA										
367.00 > 322.00	2.414	2.403	0.011		11822723	56.9		114	687135	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.414	2.403	0.011	1.000	4792891	20.1		101	50380	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.432	2.424	0.008	1.000	6295414	17.1		93.8		
D 10 18O2 PFHxS										
403.00 > 84.00	2.439	2.424	0.015		16295029	51.7		109	808029	
D 14 13C4 PFOA										
417.00 > 372.00	2.768	2.759	0.009		11989113	55.8		112	843185	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.768	2.767	0.001	1.000	4760127	19.2		95.9	46780	
413.00 > 169.00	2.768	2.767	0.001	1.000	2798790		1.70(0.90-1.10)		122297	

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	2.775	2.767	0.008	1.000	5604719	19.0		100		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.121	3.135	-0.014	1.000	4719075	17.8		95.8	94531	
499.00 > 99.00	3.137	3.135	0.002	1.005	990164		4.77(0.90-1.10)		39213	
20 Perfluorononanoic acid										
463.00 > 419.00	3.145	3.135	0.010	1.000	3482987	19.5		97.5	52559	
D 17 13C4 PFOS										
503.00 > 80.00	3.137	3.135	0.002		11898402	52.0		109	332641	
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.135	0.002		9019635	56.1		112	435107	
D 21 13C8 FOSA										
506.00 > 78.00	3.475	3.466	0.009		12131947	33.1		66.2	557382	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.475	3.466	0.009	1.000	4745933	21.3		107	284274	
D 23 13C2 PFDA										
515.00 > 470.00	3.501	3.490	0.011		8164097	56.2		112	358519	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.501	3.490	0.011	1.000	3026005	19.6		97.9	88394	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.811	3.809	0.002	1.000	2777322	18.2		94.6		
D 27 13C2 PFUnA										
565.00 > 520.00	3.828	3.826	0.002		6030546	54.6		109	431489	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.828	3.826	0.002	1.000	2142040	16.6		83.0	49395	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.120	4.112	0.008	1.000	2012337	19.4		97.0	52271	
D 30 13C2 PFDoA										
615.00 > 570.00	4.120	4.120	0.0		5438693	53.3		107	213194	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.380	4.379	0.001	1.000	2093295	20.5		103	37103	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.626	4.618	0.008		13468260	64.8		130	682660	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.626	4.625	0.001	1.000	4195530	22.2		111	58078	
713.00 > 169.00	4.626	4.625	0.001	1.000	646834		6.49(0.00-0.00)		129236	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.048	5.036	0.012	1.000	1942239	17.7		88.7	4484	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.048	5.036	0.012		5794280	51.0		102	279306	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.398	5.390	0.008	1.000	2004880	22.4		112	2664	

Report Date: 15-Dec-2016 14:55:02 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_006.d

Injection Date: 14-Dec-2016 17:46:20 Instrument ID: A8_N

Lims ID: LCS 320-140271/2-A

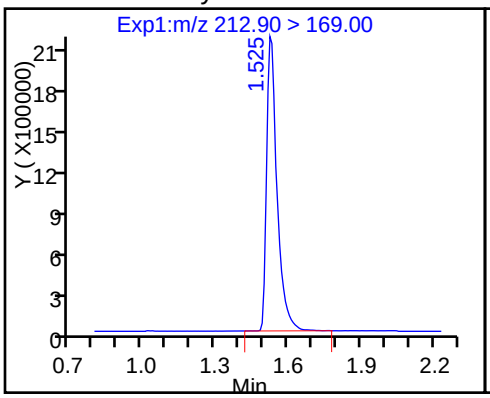
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 13 Worklist Smp#: 6

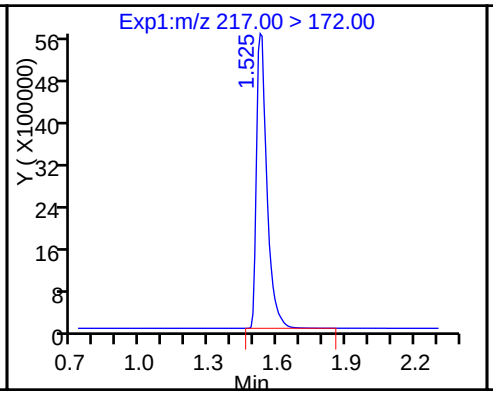
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

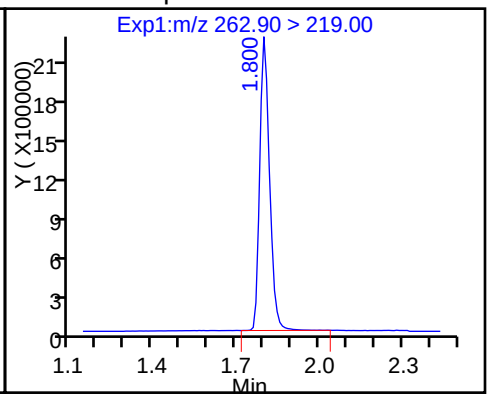
1 Perfluorobutyric acid



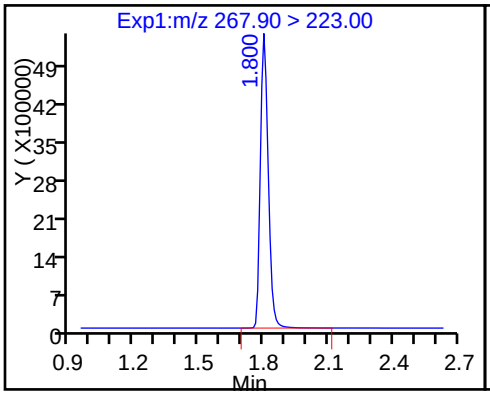
D 2 13C4 PFBA



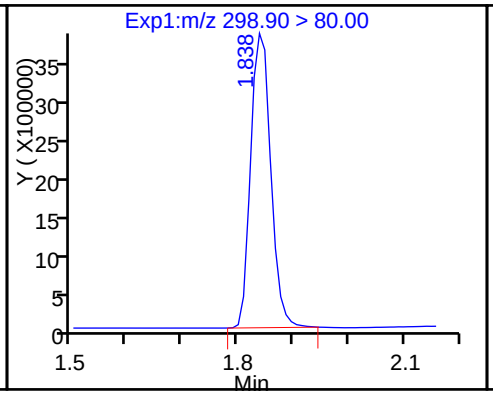
3 Perfluoropentanoic acid



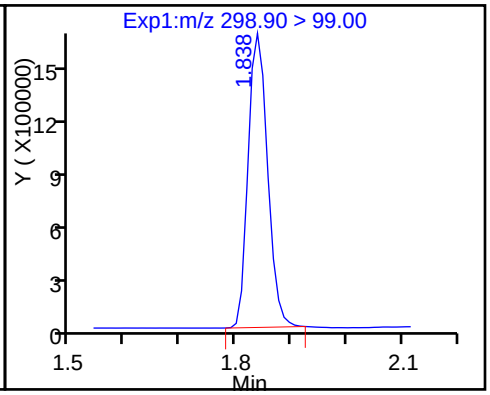
D 4 13C5-PFPeA



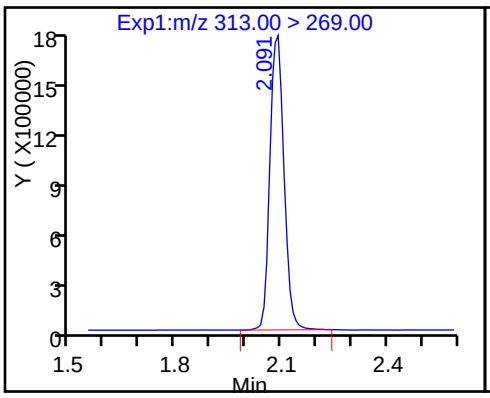
5 Perfluorobutanesulfonic acid



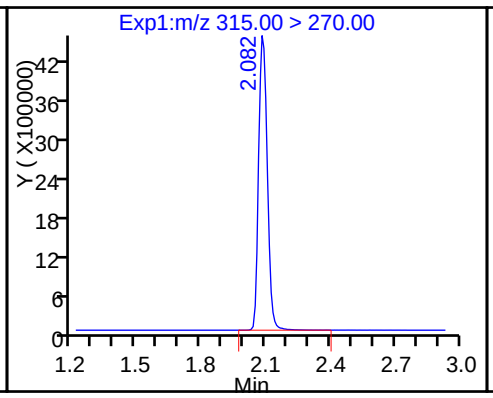
5 Perfluorobutanesulfonic acid



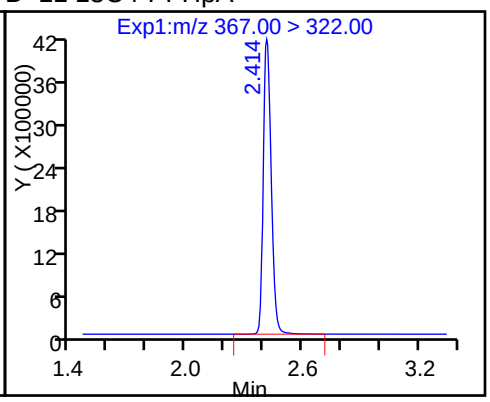
7 Perfluorohexanoic acid



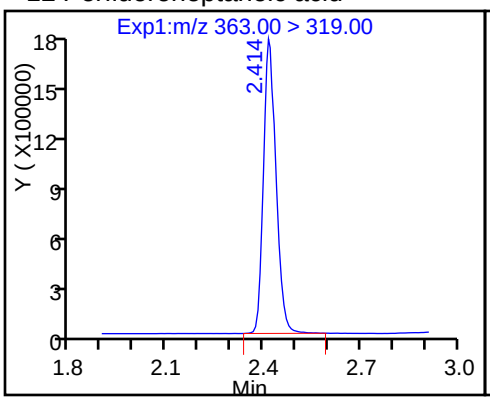
D 6 13C2 PFHxA



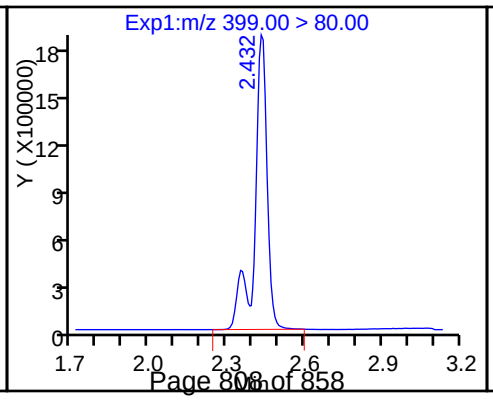
D 11 13C4-PFHpA



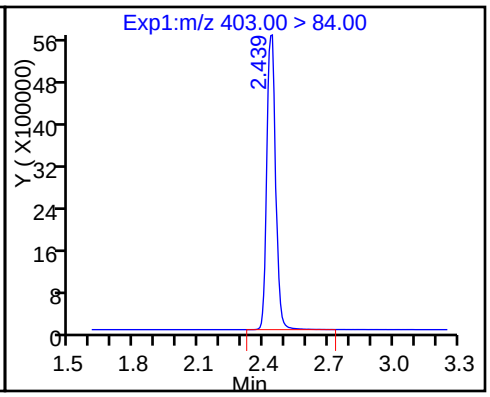
12 Perfluoroheptanoic acid



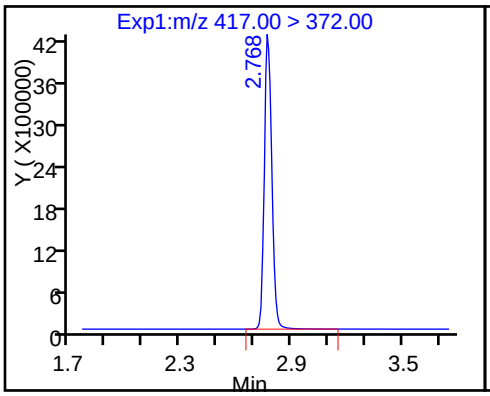
9 Perfluorohexanesulfonic acid



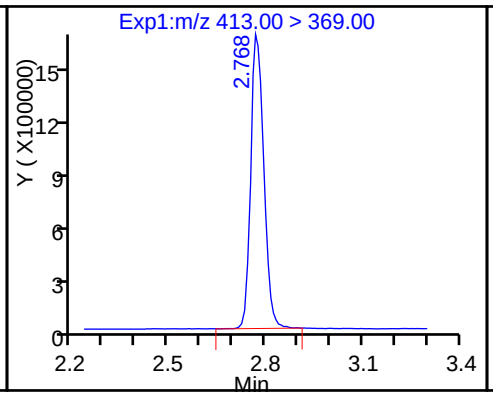
D 10 18O2 PFHxS



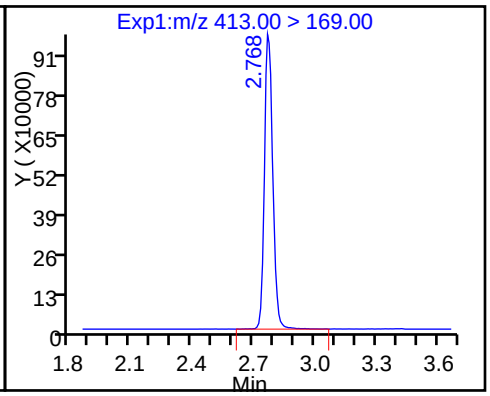
D 14 13C4 PFOA



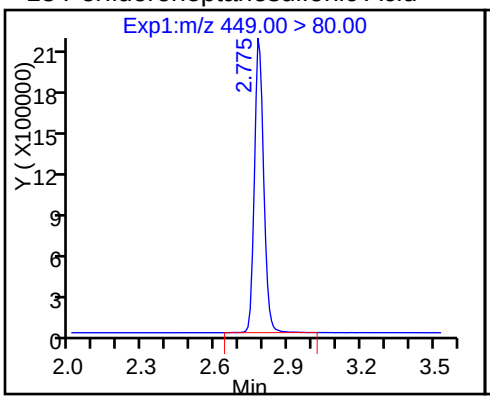
15 Perfluorooctanoic acid



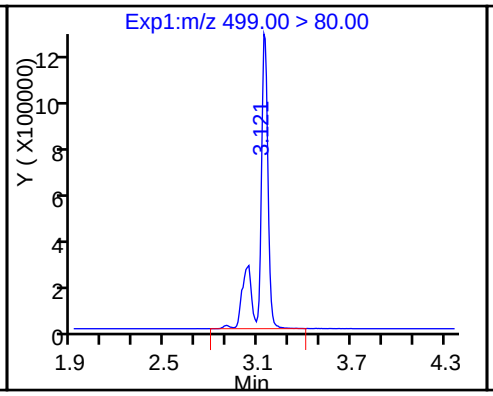
15 Perfluorooctanoic acid



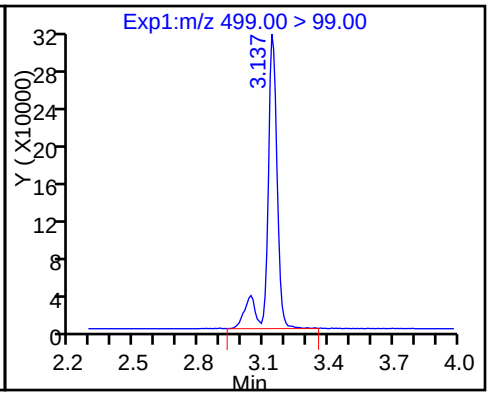
13 Perfluoroheptanesulfonic Acid



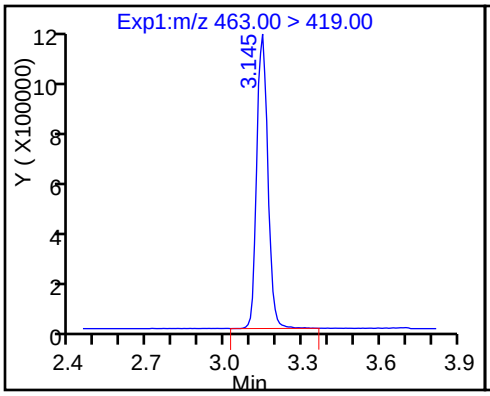
18 Perfluorooctane sulfonic acid



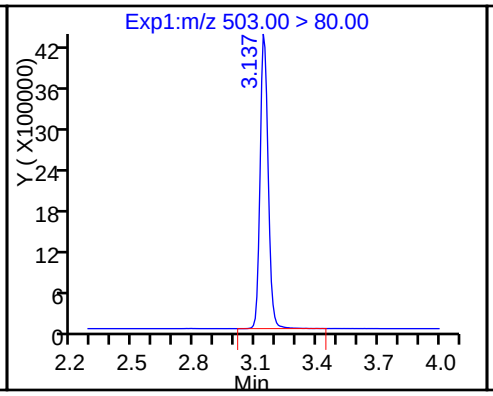
18 Perfluorooctane sulfonic acid



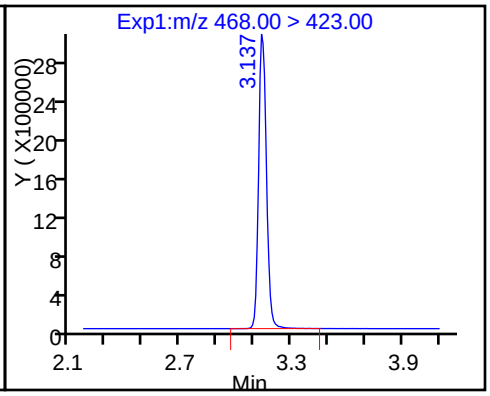
20 Perfluorononanoic acid



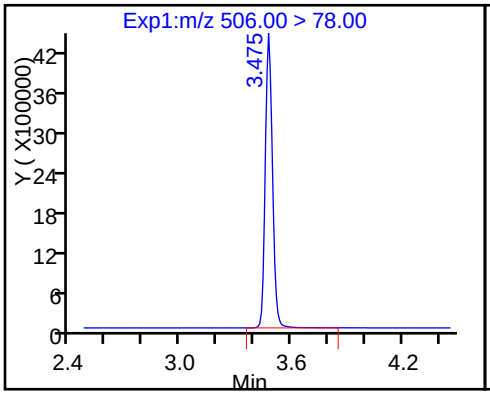
D 17 13C4 PFOS



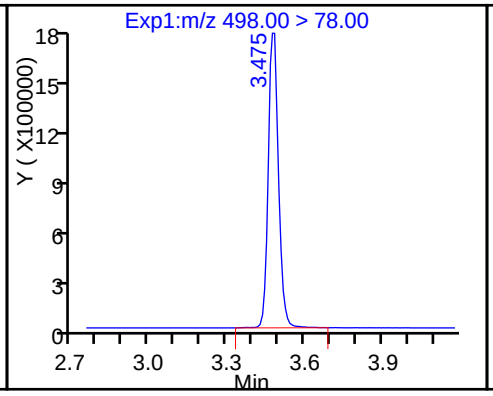
D 19 13C5 PFNA



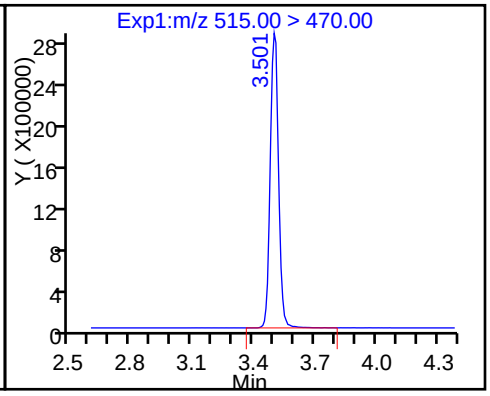
D 21 13C8 FOSA



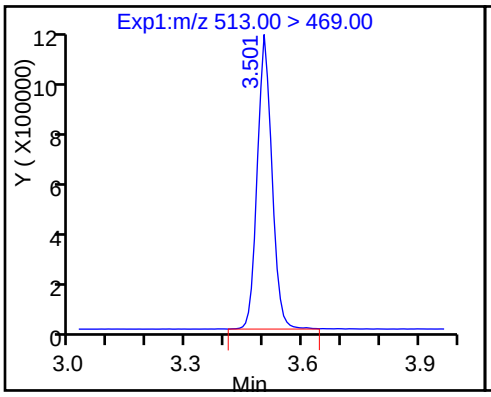
22 Perfluorooctane Sulfonamide



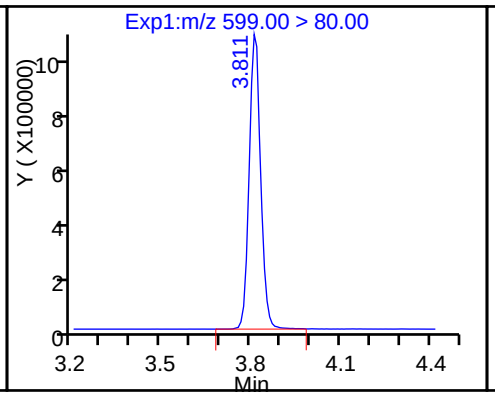
D 23 13C2 PFDA



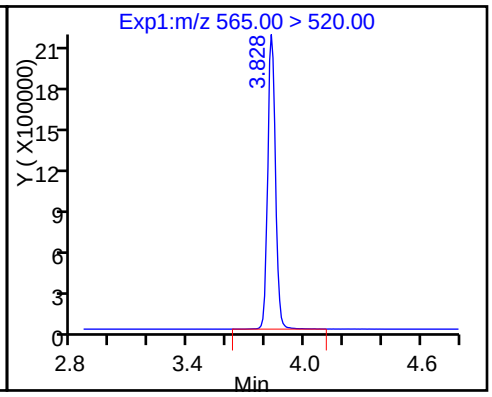
24 Perfluorodecanoic acid



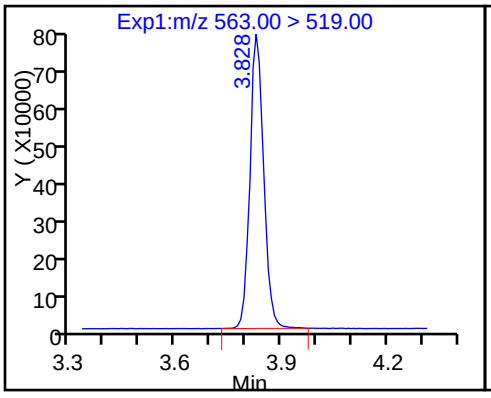
26 Perfluorodecane Sulfonic acid



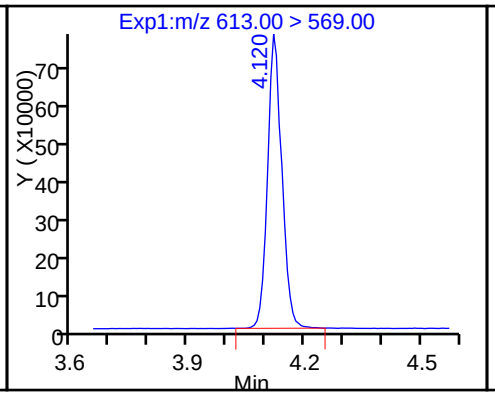
D 27 13C2 PFUnA



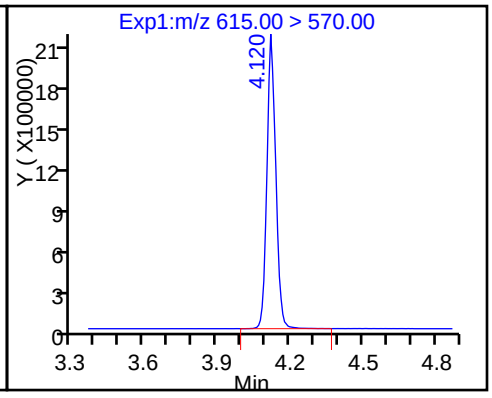
28 Perfluoroundecanoic acid



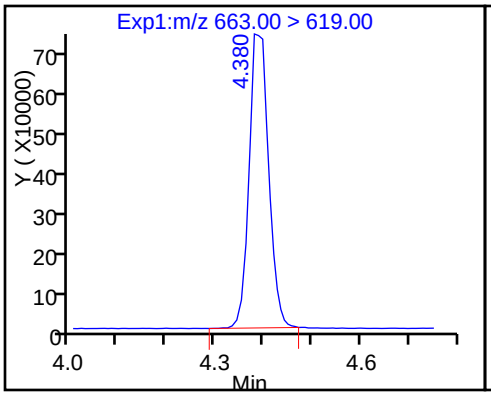
29 Perfluorododecanoic acid



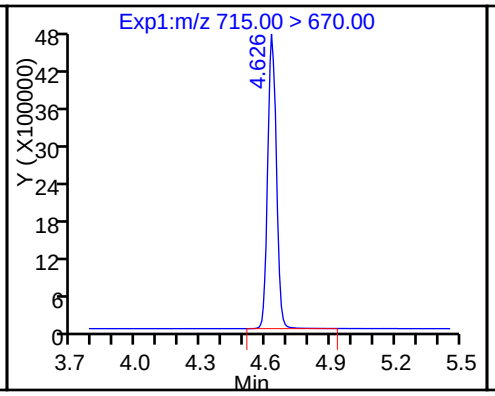
D 30 13C2 PFDoA



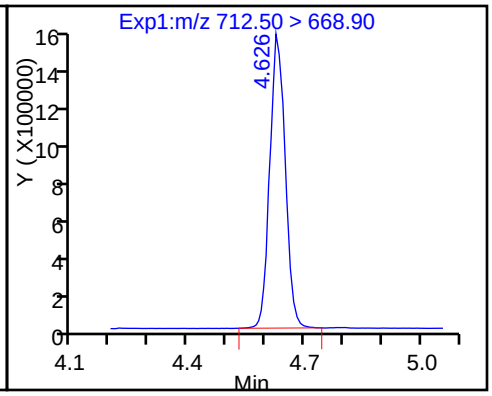
31 Perfluorotridecanoic acid



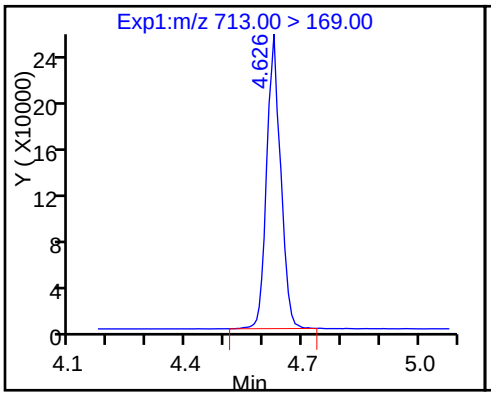
D 32 13C2-PFTeDA



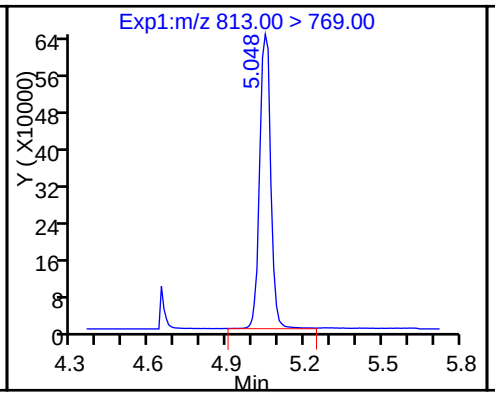
33 Perfluorotetradecanoic acid



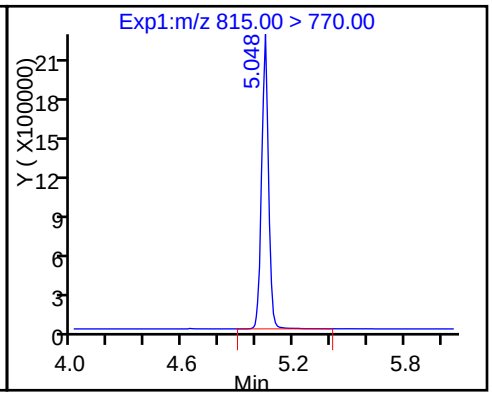
33 Perfluorotetradecanoic acid



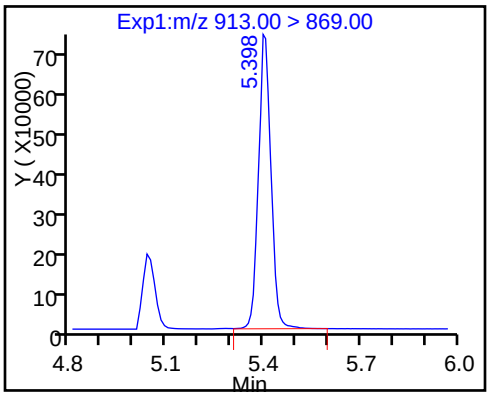
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-140271/3-A

Matrix: Water Lab File ID: 14DEC2016C_007.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 12/01/2016 19:42

Sample wt/vol: 250.00(mL) Date Analyzed: 12/14/2016 17:53

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.: 142338 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0374		0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0341		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0367		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	116		25-150
STL00991	13C4 PFOS	115		25-150
STL00994	18O2 PFHxS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_007.d
Lims ID: LCSD 320-140271/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 14-Dec-2016 17:53:52 ALS Bottle#: 14 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-140271/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 15-Dec-2016 14:54:58 Calib Date: 14-Dec-2016 10:39:03
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161214-37828.b\14DEC2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK002

First Level Reviewer: westendorfc Date: 15-Dec-2016 14:40:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.525	1.517	0.008	1.000	6517468	19.5		97.6	38302	
D 2 13C4 PFBA										
217.00 > 172.00	1.525	1.517	0.008		18787854	57.7		115	1010402	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.790	1.791	-0.001	1.000	5630752	18.7		93.5	55888	
D 4 13C5-PFPeA										
267.90 > 223.00	1.790	1.791	-0.001		14645169	57.4		115	895305	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.829	1.829	0.0	1.000	9913735	18.4		104		
298.90 > 99.00	1.829	1.829	0.0	1.000	4265790		2.32(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.080	2.074	0.006	1.000	5180629	19.4		96.9	114737	
D 6 13C2 PFHxA										
315.00 > 270.00	2.080	2.074	0.006		13875760	56.2		112	821794	
D 11 13C4-PFHpA										
367.00 > 322.00	2.410	2.403	0.007		12477336	60.1		120	1513088	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.410	2.403	0.007	1.000	4860559	19.3		96.7	47730	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.428	2.424	0.004	1.000	6383203	16.6		91.1		
D 10 18O2 PFHxS										
403.00 > 84.00	2.428	2.424	0.004		17023362	54.0		114	855563	
D 14 13C4 PFOA										
417.00 > 372.00	2.765	2.759	0.006		12429067	57.9		116	575147	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.765	2.767	-0.002	1.000	4808665	18.7		93.4	46135	
413.00 > 169.00	2.765	2.767	-0.002	1.000	2847233		1.69(0.90-1.10)		107121	

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	2.773	2.767	0.006	1.000	5643485	18.2		95.7		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.116	3.135	-0.019	1.000	4759112	17.0		91.8	101779	
499.00 > 99.00	3.140	3.135	0.005	1.008	1029891		4.62(0.90-1.10)		68004	
20 Perfluorononanoic acid										
463.00 > 419.00	3.132	3.135	-0.003	1.000	3447785	18.6		93.2	56432	
D 17 13C4 PFOS										
503.00 > 80.00	3.140	3.135	0.005		12523028	54.8		115	410223	
D 19 13C5 PFNA										
468.00 > 423.00	3.140	3.135	0.005		9335914	58.1		116	383434	
D 21 13C8 FOSA										
506.00 > 78.00	3.471	3.466	0.005		13291701	36.3		72.5	964231	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.471	3.466	0.005	1.000	4909391	20.2		101	228055	
D 23 13C2 PFDA										
515.00 > 470.00	3.495	3.490	0.005		8631487	59.5		119	408751	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.495	3.490	0.005	1.000	3117732	19.1		95.4	115082	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.814	3.809	0.005	1.000	2754499	17.2		89.1		
D 27 13C2 PFUnA										
565.00 > 520.00	3.822	3.826	-0.004		6149846	55.7		111	336112	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.822	3.826	-0.004	1.000	2128716	16.2		80.9	54452	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.117	4.112	0.005	1.000	1872525	18.4		92.0	56170	
D 30 13C2 PFDoA										
615.00 > 570.00	4.117	4.120	-0.003		5335044	52.3		105	346213	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.386	4.379	0.007	1.000	2113419	21.1		106	57525	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.617	4.618	-0.001		13120294	63.1		126	579266	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.624	4.625	-0.001	1.000	4080408	22.1		110	63592	
713.00 > 169.00	4.624	4.625	-0.001	1.000	640312		6.37(0.00-0.00)		60448	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.035	5.036	-0.001	1.000	2148906	20.1		100	6195	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.035	5.036	-0.001		6208133	54.6		109	381260	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.398	5.390	0.008	1.000	2050303	23.4		117	2921	

Report Date: 15-Dec-2016 14:55:04 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b\14DEC2016C_007.d

Injection Date: 14-Dec-2016 17:53:52 Instrument ID: A8_N

Lims ID: LCSD 320-140271/3-A

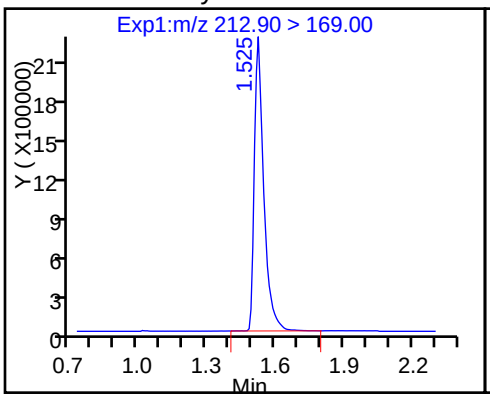
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 14 Worklist Smp#: 7

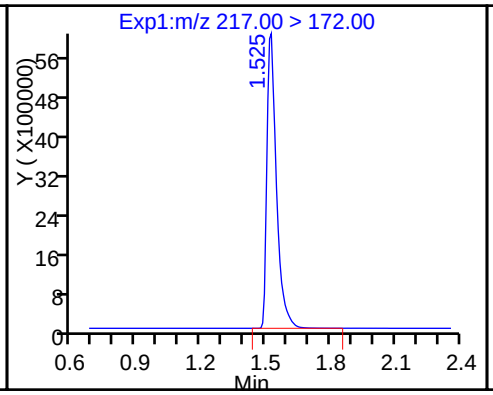
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

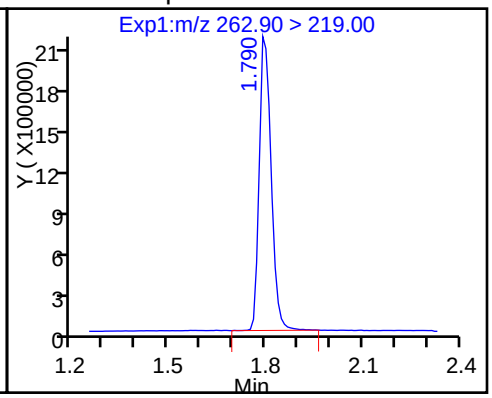
1 Perfluorobutyric acid



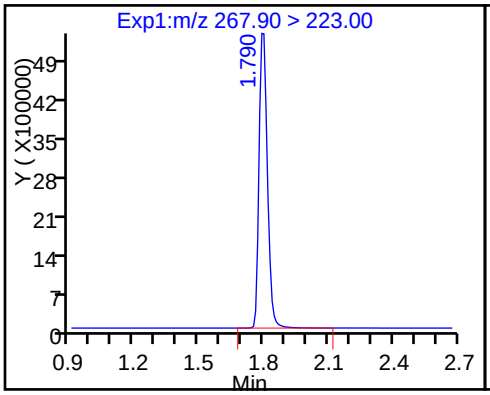
D 2 13C4 PFBA



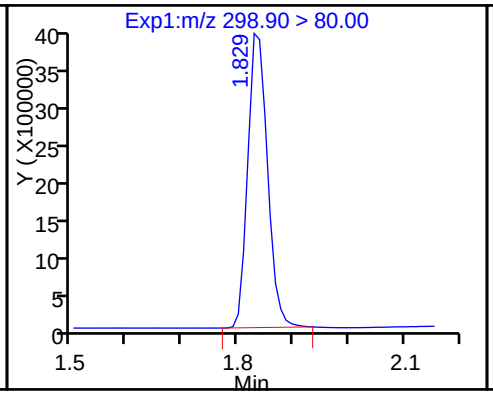
3 Perfluoropentanoic acid



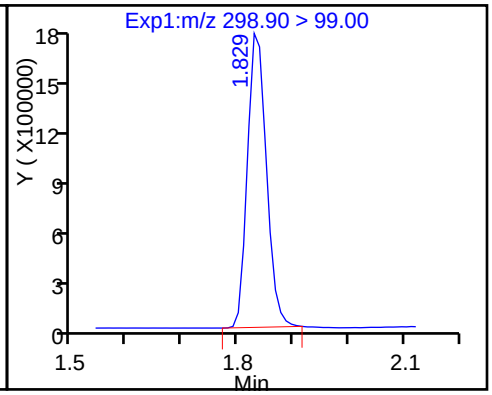
D 4 13C5-PFPeA



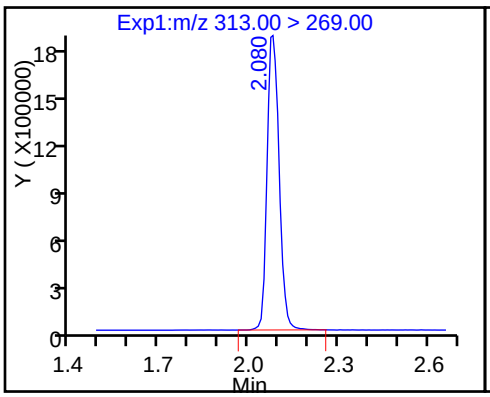
5 Perfluorobutanesulfonic acid



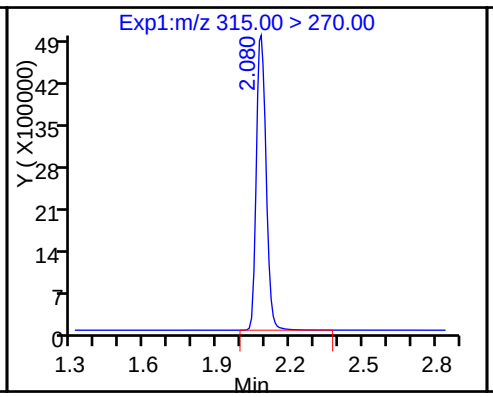
5 Perfluorobutanesulfonic acid



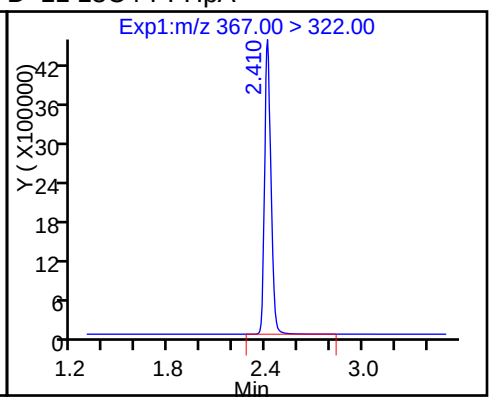
7 Perfluorohexanoic acid



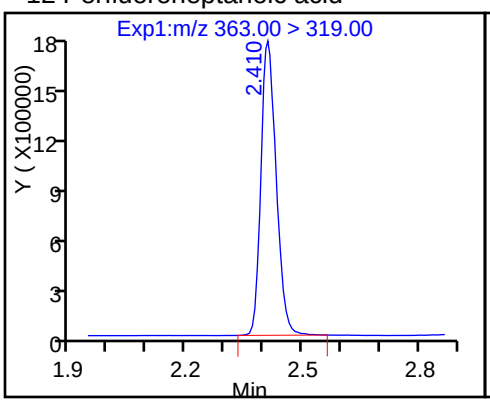
D 6 13C2 PFHxA



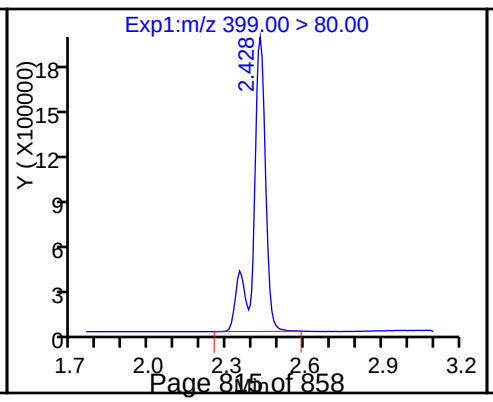
D 11 13C4-PFHpA



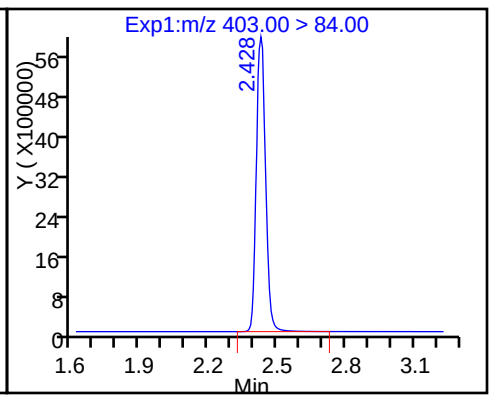
12 Perfluoroheptanoic acid



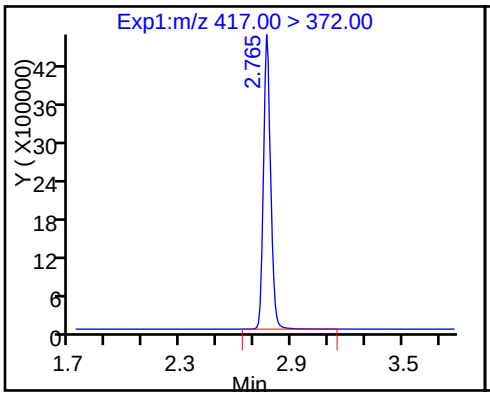
9 Perfluorohexanesulfonic acid



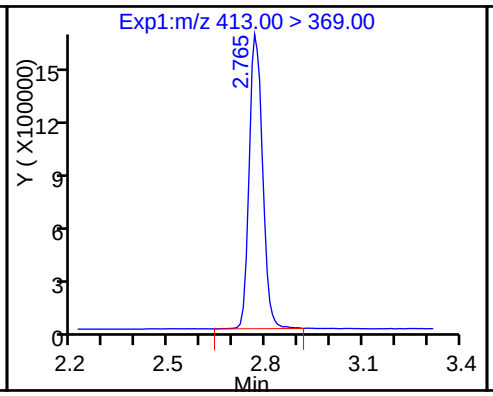
D 10 18O2 PFHxS



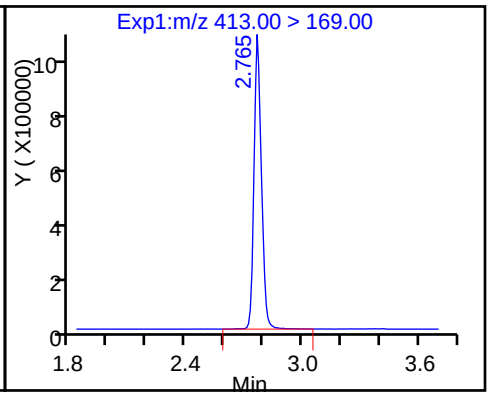
D 14 13C4 PFOA



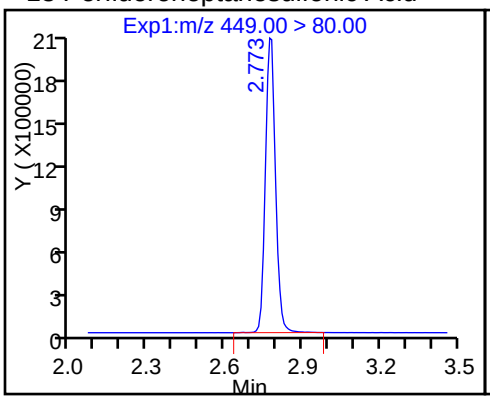
15 Perfluorooctanoic acid



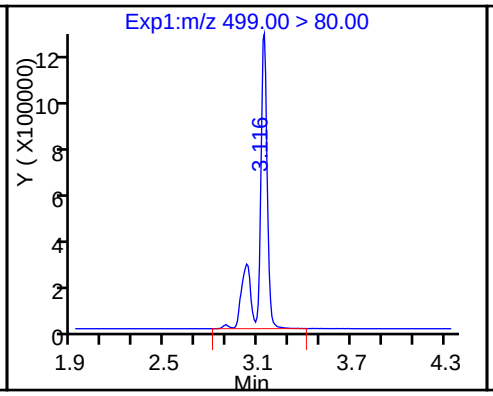
15 Perfluorooctanoic acid



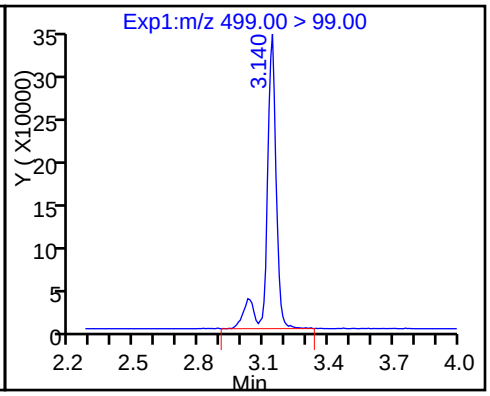
13 Perfluoroheptanesulfonic Acid



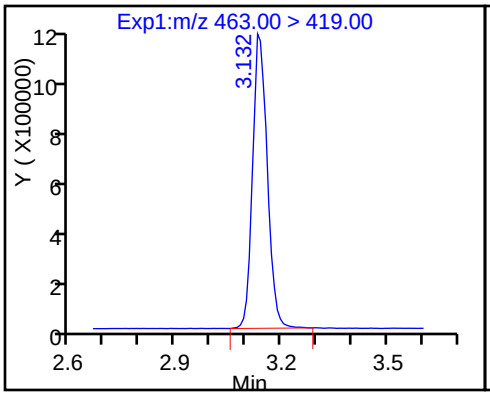
18 Perfluorooctane sulfonic acid



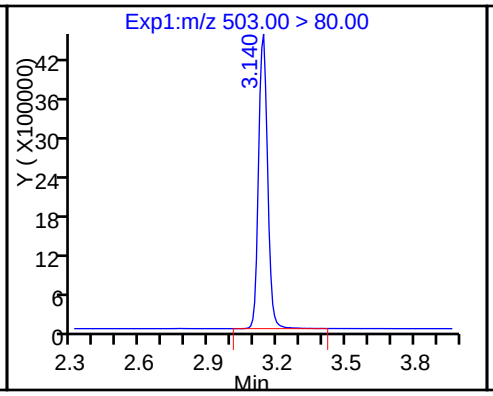
18 Perfluorooctane sulfonic acid



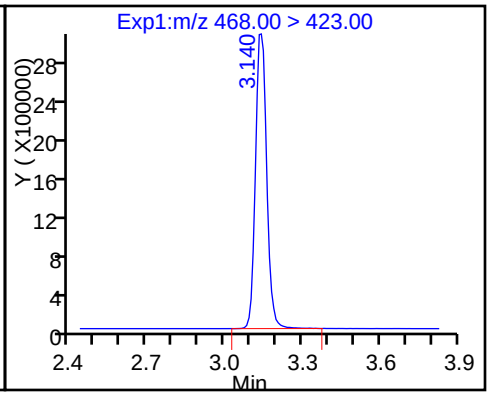
20 Perfluorononanoic acid



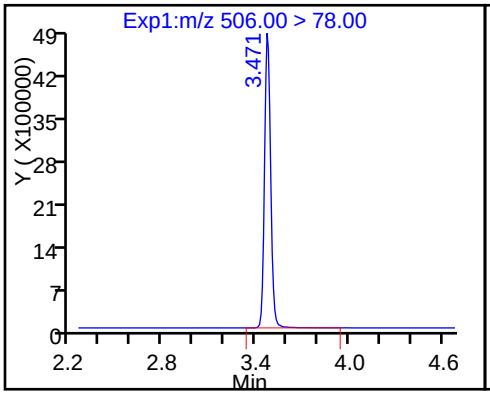
D 17 13C4 PFOS



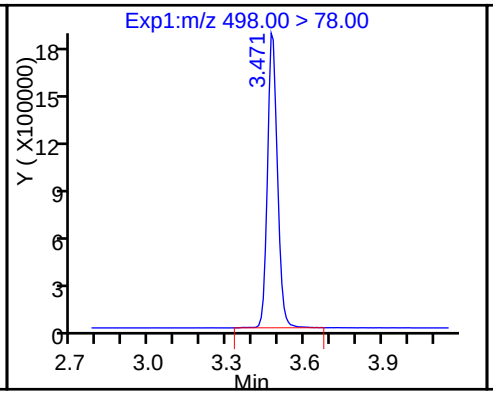
D 19 13C5 PFNA



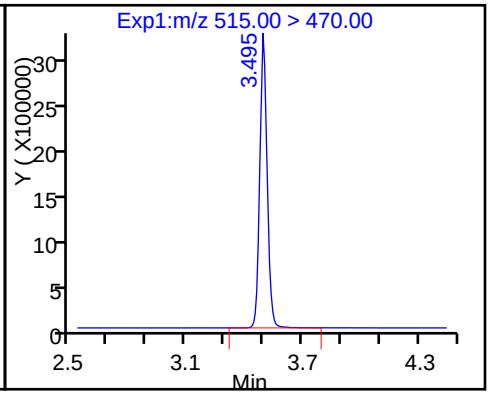
D 21 13C8 FOSA



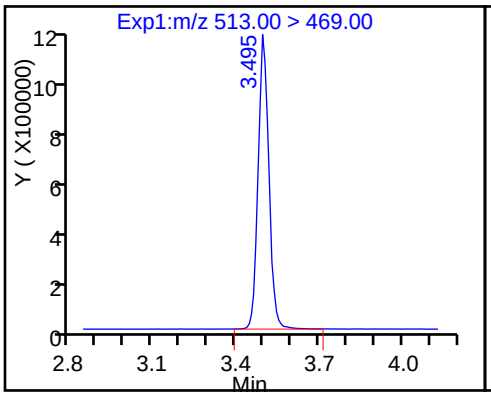
22 Perfluorooctane Sulfonamide



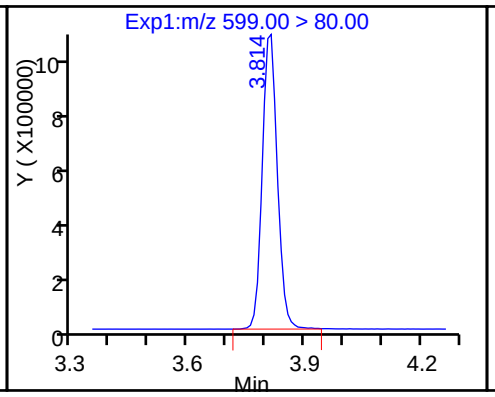
D 23 13C2 PFDA



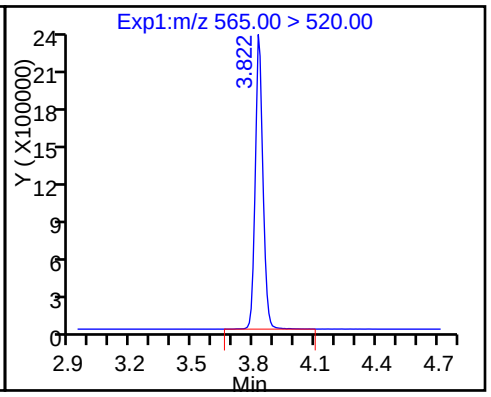
24 Perfluorodecanoic acid



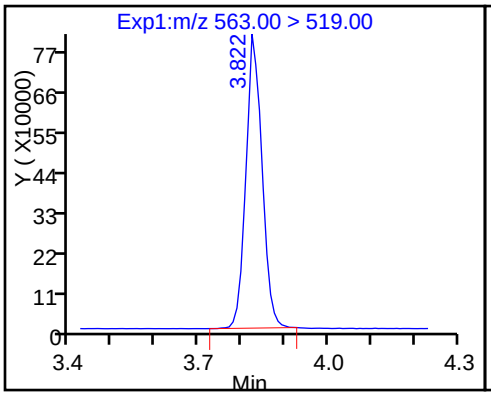
26 Perfluorodecane Sulfonic acid



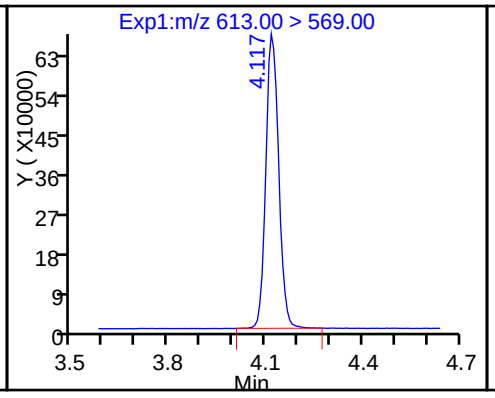
D 27 13C2 PFUnA



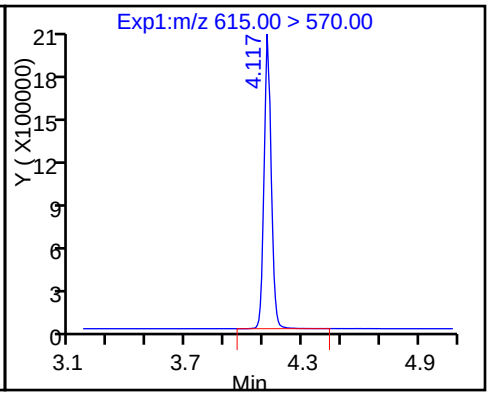
28 Perfluoroundecanoic acid



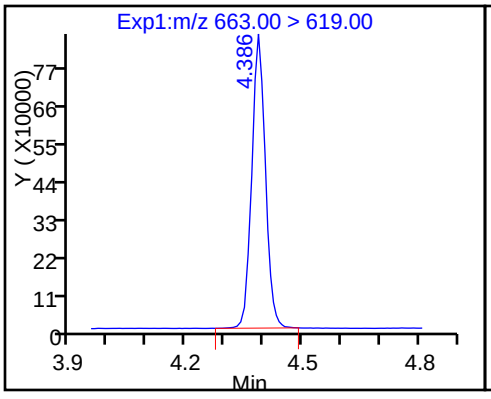
29 Perfluorododecanoic acid



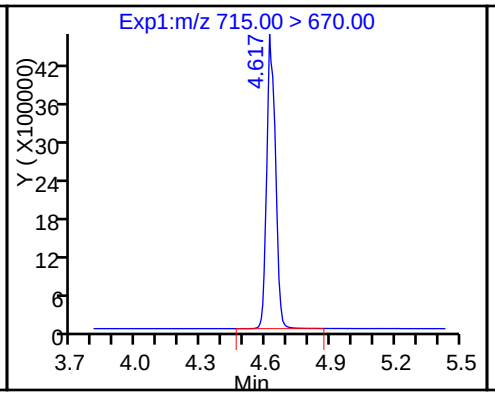
D 30 13C2 PFDoA



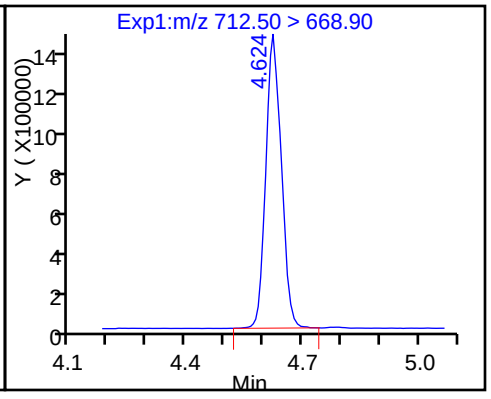
31 Perfluorotridecanoic acid



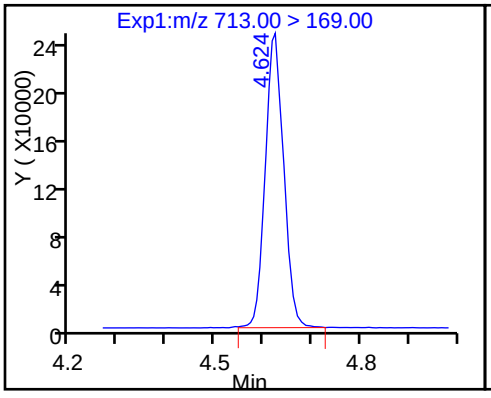
D 32 13C2-PFTeDA



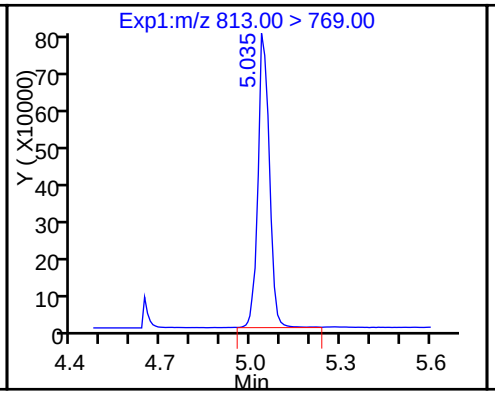
33 Perfluorotetradecanoic acid



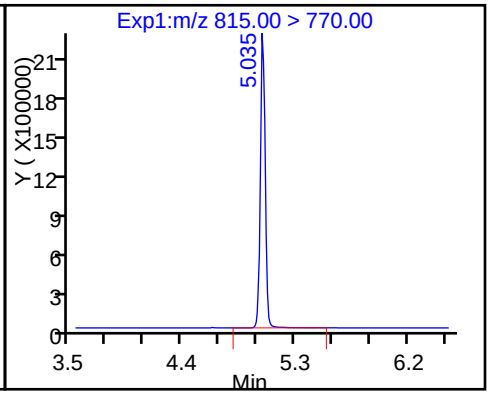
33 Perfluorotetradecanoic acid



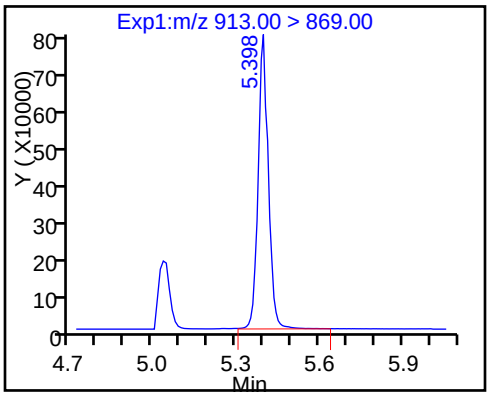
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Start Date: 12/14/2016 08:31

Analysis Batch Number: 142082 End Date: 12/14/2016 11:01

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-142082/1 CCB		12/14/2016 08:31	1		Acquity 2.1(mm)
RB 320-142082/2 CCB		12/14/2016 08:39	1		Acquity 2.1(mm)
RB 320-142082/3 CCB		12/14/2016 08:46	1		Acquity 2.1(mm)
IC 320-142082/4		12/14/2016 08:54	1	14DEC2016A_004.d	Acquity 2.1(mm)
IC 320-142082/5		12/14/2016 09:01	1	14DEC2016A_005.d	Acquity 2.1(mm)
IC 320-142082/6		12/14/2016 09:09	1	14DEC2016A_006.d	Acquity 2.1(mm)
IC 320-142082/7		12/14/2016 09:16	1	14DEC2016A_007.d	Acquity 2.1(mm)
IC 320-142082/8		12/14/2016 09:24	1	14DEC2016A_008.d	Acquity 2.1(mm)
IC 320-142082/9		12/14/2016 09:31	1	14DEC2016A_009.d	Acquity 2.1(mm)
ICB 320-142082/10		12/14/2016 09:39	1		Acquity 2.1(mm)
ICV 320-142082/11		12/14/2016 09:46	1	14DEC2016A_011.d	Acquity 2.1(mm)
RB 320-142082/12 CCB		12/14/2016 09:54	1		Acquity 2.1(mm)
IC 320-142082/13		12/14/2016 10:01	1	14DEC2016A_013.d	Acquity 2.1(mm)
IC 320-142082/14		12/14/2016 10:09	1	14DEC2016A_014.d	Acquity 2.1(mm)
IC 320-142082/15		12/14/2016 10:16	1	14DEC2016A_015.d	Acquity 2.1(mm)
IC 320-142082/16		12/14/2016 10:24	1	14DEC2016A_016.d	Acquity 2.1(mm)
IC 320-142082/17		12/14/2016 10:31	1	14DEC2016A_017.d	Acquity 2.1(mm)
IC 320-142082/18		12/14/2016 10:39	1	14DEC2016A_018.d	Acquity 2.1(mm)
ICB 320-142082/19		12/14/2016 10:46	1		Acquity 2.1(mm)
ICV 320-142082/20		12/14/2016 10:54	1		Acquity 2.1(mm)
RB 320-142082/21 CCB		12/14/2016 11:01	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Start Date: 12/14/2016 17:16

Analysis Batch Number: 142338 End Date: 12/14/2016 20:08

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-142338/2		12/14/2016 17:16	1	14DEC2016C_002.d	Acquity 2.1(mm)
CCV 320-142338/3		12/14/2016 17:23	1		Acquity 2.1(mm)
RB 320-142338/4 CCB		12/14/2016 17:31	1		Acquity 2.1(mm)
MB 320-140271/1-A		12/14/2016 17:38	1	14DEC2016C_005.d	Acquity 2.1(mm)
LCS 320-140271/2-A		12/14/2016 17:46	1	14DEC2016C_006.d	Acquity 2.1(mm)
LCSD 320-140271/3-A		12/14/2016 17:53	1	14DEC2016C_007.d	Acquity 2.1(mm)
320-23890-1		12/14/2016 18:01	1	14DEC2016C_008.d	Acquity 2.1(mm)
320-23890-2		12/14/2016 18:08	1	14DEC2016C_009.d	Acquity 2.1(mm)
320-23890-3		12/14/2016 18:16	1	14DEC2016C_010.d	Acquity 2.1(mm)
320-23890-4		12/14/2016 18:23	1	14DEC2016C_011.d	Acquity 2.1(mm)
320-23890-5		12/14/2016 18:31	1	14DEC2016C_012.d	Acquity 2.1(mm)
320-23890-6		12/14/2016 18:38	1	14DEC2016C_013.d	Acquity 2.1(mm)
RB 320-142338/14 CCB		12/14/2016 18:46	1		Acquity 2.1(mm)
CCV 320-142338/15		12/14/2016 18:53	1	14DEC2016C_015.d	Acquity 2.1(mm)
CCV 320-142338/16		12/14/2016 19:01	1		Acquity 2.1(mm)
RB 320-142338/17 CCB		12/14/2016 19:08	1		Acquity 2.1(mm)
320-23890-7		12/14/2016 19:16	1	14DEC2016C_018.d	Acquity 2.1(mm)
320-23890-8		12/14/2016 19:23	1	14DEC2016C_019.d	Acquity 2.1(mm)
320-23890-9		12/14/2016 19:31	1	14DEC2016C_020.d	Acquity 2.1(mm)
320-23890-10		12/14/2016 19:38	1	14DEC2016C_021.d	Acquity 2.1(mm)
RB 320-142338/22 CCB		12/14/2016 19:46	1		Acquity 2.1(mm)
CCV 320-142338/23		12/14/2016 19:53	1	14DEC2016C_023.d	Acquity 2.1(mm)
CCV 320-142338/24		12/14/2016 20:01	1		Acquity 2.1(mm)
RB 320-142338/25 CCB		12/14/2016 20:08	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Start Date: 12/15/2016 12:06

Analysis Batch Number: 142379 End Date: 12/15/2016 19:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-142379/1 CCB		12/15/2016 12:06	1		Acquity 2.1(mm)
RB 320-142379/2 CCB		12/15/2016 12:14	1		Acquity 2.1(mm)
RB 320-142379/3 CCB		12/15/2016 12:21	1		Acquity 2.1(mm)
IC 320-142379/4		12/15/2016 12:29	1	15DEC2016B_004.d	Acquity 2.1(mm)
IC 320-142379/5		12/15/2016 12:36	1	15DEC2016B_005.d	Acquity 2.1(mm)
IC 320-142379/6		12/15/2016 12:44	1	15DEC2016B_006.d	Acquity 2.1(mm)
IC 320-142379/7		12/15/2016 12:51	1	15DEC2016B_007.d	Acquity 2.1(mm)
IC 320-142379/8		12/15/2016 12:59	1	15DEC2016B_008.d	Acquity 2.1(mm)
IC 320-142379/9		12/15/2016 13:06	1	15DEC2016B_009.d	Acquity 2.1(mm)
ICB 320-142379/10		12/15/2016 13:14	1		Acquity 2.1(mm)
ICV 320-142379/11		12/15/2016 13:21	1	15DEC2016B_011.d	Acquity 2.1(mm)
IC 320-142379/13		12/15/2016 13:41	1	15DEC2016BB_013.d	Acquity 2.1(mm)
IC 320-142379/14		12/15/2016 13:48	1	15DEC2016B_014.d	Acquity 2.1(mm)
IC 320-142379/15		12/15/2016 13:56	1	15DEC2016B_015.d	Acquity 2.1(mm)
IC 320-142379/16		12/15/2016 14:03	1	15DEC2016B_016.d	Acquity 2.1(mm)
IC 320-142379/17		12/15/2016 14:11	1	15DEC2016B_017.d	Acquity 2.1(mm)
IC 320-142379/18		12/15/2016 14:18	1	15DEC2016B_018.d	Acquity 2.1(mm)
ICB 320-142379/19		12/15/2016 14:26	1		Acquity 2.1(mm)
ICV 320-142379/20		12/15/2016 14:33	1		Acquity 2.1(mm)
RB 320-142379/21 CCB		12/15/2016 14:41	1		Acquity 2.1(mm)
CCV 320-142379/24		12/15/2016 15:46	1		Acquity 2.1(mm)
RB 320-142379/25 CCB		12/15/2016 15:54	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:01	1		Acquity 2.1(mm)
CCV 320-142379/27		12/15/2016 16:09	1		Acquity 2.1(mm)
RB 320-142379/28 CCB		12/15/2016 16:16	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:24	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:31	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:39	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:46	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 16:54	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 17:01	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 17:09	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 17:16	1		Acquity 2.1(mm)
ZZZZZ		12/15/2016 17:24	1		Acquity 2.1(mm)
RB 320-142379/44 CCB		12/15/2016 19:47	1		Acquity 2.1(mm)
CCV 320-142379/42		12/15/2016 19:54	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Start Date: 12/16/2016 10:15

Analysis Batch Number: 142571 End Date: 12/16/2016 10:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-142571/3 CCB		12/16/2016 10:15	1		Acquity 2.1(mm)
CCV 320-142571/4 CCVL		12/16/2016 10:23	1	16DEC2016A_002.d	Acquity 2.1(mm)
CCV 320-142571/5 CCVL		12/16/2016 10:30	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Start Date: 12/16/2016 12:00

Analysis Batch Number: 142598 End Date: 12/16/2016 15:15

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-142598/1 CCB		12/16/2016 12:00	1		Acquity 2.1(mm)
RB 320-142598/2 CCB		12/16/2016 12:07	1		Acquity 2.1(mm)
CCV 320-142598/3		12/16/2016 12:15	1	16DEC2016A_014.d	Acquity 2.1(mm)
CCV 320-142598/4		12/16/2016 12:22	1		Acquity 2.1(mm)
RB 320-142598/5 CCB		12/16/2016 12:30	1		Acquity 2.1(mm)
ZZZZZ		12/16/2016 12:37	1		Acquity 2.1(mm)
ZZZZZ		12/16/2016 12:45	25		Acquity 2.1(mm)
320-23890-2 DL		12/16/2016 12:52	25	16DEC2016B_002.d	Acquity 2.1(mm)
320-23890-3 DL		12/16/2016 13:00	25	16DEC2016B_003.d	Acquity 2.1(mm)
320-23890-4 DL		12/16/2016 13:07	10	16DEC2016B_004.d	Acquity 2.1(mm)
ZZZZZ		12/16/2016 13:15	25		Acquity 2.1(mm)
320-23890-6 DL		12/16/2016 13:22	10	16DEC2016B_006.d	Acquity 2.1(mm)
ZZZZZ		12/16/2016 13:30	50		Acquity 2.1(mm)
320-23890-8 DL		12/16/2016 13:37	10	16DEC2016B_008.d	Acquity 2.1(mm)
320-23890-9 DL		12/16/2016 13:45	10	16DEC2016B_009.d	Acquity 2.1(mm)
ZZZZZ		12/16/2016 13:52	25		Acquity 2.1(mm)
RB 320-142598/17 CCB		12/16/2016 14:00	1		Acquity 2.1(mm)
CCV 320-142598/18		12/16/2016 14:07	1	16DEC2016B_012.d	Acquity 2.1(mm)
CCV 320-142598/19		12/16/2016 14:15	1		Acquity 2.1(mm)
RB 320-142598/20 CCB		12/16/2016 14:22	1		Acquity 2.1(mm)
ZZZZZ		12/16/2016 14:30	1		Acquity 2.1(mm)
RB 320-142598/22 CCB		12/16/2016 14:37	1		Acquity 2.1(mm)
ZZZZZ		12/16/2016 14:45	1		Acquity 2.1(mm)
RB 320-142598/24 CCB		12/16/2016 14:52	1		Acquity 2.1(mm)
CCV 320-142598/25		12/16/2016 15:00	1		Acquity 2.1(mm)
CCV 320-142598/26		12/16/2016 15:07	1		Acquity 2.1(mm)
RB 320-142598/27 CCB		12/16/2016 15:15	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Start Date: 12/18/2016 19:11

Analysis Batch Number: 142815 End Date: 12/18/2016 22:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-142815/1 CCB		12/18/2016 19:11	1		Acquity 2.1(mm)
CCV 320-142815/2 CCVL		12/18/2016 19:19	1	18DEC2016A_002.d	Acquity 2.1(mm)
CCV 320-142815/3 CCVL		12/18/2016 19:26	1		Acquity 2.1(mm)
CCV 320-142815/4		12/18/2016 19:34	1		Acquity 2.1(mm)
CCV 320-142815/5		12/18/2016 19:41	1		Acquity 2.1(mm)
RB 320-142815/6 CCB		12/18/2016 19:49	1		Acquity 2.1(mm)
ZZZZZ		12/18/2016 19:56	1		Acquity 2.1(mm)
ZZZZZ		12/18/2016 20:04	1		Acquity 2.1(mm)
ZZZZZ		12/18/2016 20:11	1		Acquity 2.1(mm)
ZZZZZ		12/18/2016 20:19	1		Acquity 2.1(mm)
ZZZZZ		12/18/2016 20:26	1		Acquity 2.1(mm)
ZZZZZ		12/18/2016 20:34	1		Acquity 2.1(mm)
ZZZZZ		12/18/2016 20:41	1		Acquity 2.1(mm)
ZZZZZ		12/18/2016 20:49	1		Acquity 2.1(mm)
RB 320-142815/15 CCB		12/18/2016 20:56	1		Acquity 2.1(mm)
CCV 320-142815/16		12/18/2016 21:04	1		Acquity 2.1(mm)
CCV 320-142815/17		12/18/2016 21:11	1		Acquity 2.1(mm)
RB 320-142815/18 CCB		12/18/2016 21:19	1		Acquity 2.1(mm)
RB 320-142815/26 CCB		12/18/2016 22:19	1		Acquity 2.1(mm)
CCV 320-142815/27		12/18/2016 22:26	1		Acquity 2.1(mm)
CCV 320-142815/28		12/18/2016 22:34	1		Acquity 2.1(mm)
RB 320-142815/29 CCB		12/18/2016 22:41	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Instrument ID: A8_N Start Date: 12/18/2016 22:49

Analysis Batch Number: 142819 End Date: 12/19/2016 03:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-142819/1 CCB		12/18/2016 22:49	1		Acquity 2.1(mm)
CCV 320-142819/2		12/18/2016 22:56	1	18DEC2016B_002.d	Acquity 2.1(mm)
CCV 320-142819/3		12/18/2016 23:04	1		Acquity 2.1(mm)
RB 320-142819/4 CCB		12/18/2016 23:11	1		Acquity 2.1(mm)
320-23890-7 DL		12/18/2016 23:19	100	18DEC2016B_005.d	Acquity 2.1(mm)
320-23890-1 DL		12/18/2016 23:26	50	18DEC2016B_006.d	Acquity 2.1(mm)
320-23890-5 DL		12/18/2016 23:34	50	18DEC2016B_007.d	Acquity 2.1(mm)
320-23890-10 DL		12/18/2016 23:41	50	18DEC2016B_008.d	Acquity 2.1(mm)
ZZZZZ		12/18/2016 23:49	10		Acquity 2.1(mm)
RB 320-142819/10 CCB		12/18/2016 23:56	1		Acquity 2.1(mm)
RB 320-142819/11 CCB		12/19/2016 00:04	1		Acquity 2.1(mm)
CCV 320-142819/12		12/19/2016 00:11	1	18DEC2016B_012.d	Acquity 2.1(mm)
CCV 320-142819/13		12/19/2016 00:19	1		Acquity 2.1(mm)
RB 320-142819/14 CCB		12/19/2016 00:26	1		Acquity 2.1(mm)
RB 320-142819/25 CCB		12/19/2016 01:49	1		Acquity 2.1(mm)
CCV 320-142819/26		12/19/2016 01:56	1		Acquity 2.1(mm)
CCV 320-142819/27		12/19/2016 02:04	1		Acquity 2.1(mm)
RB 320-142819/28 CCB		12/19/2016 02:11	1		Acquity 2.1(mm)
RB 320-142819/38 CCB		12/19/2016 03:26	1		Acquity 2.1(mm)
CCV 320-142819/39		12/19/2016 03:34	1		Acquity 2.1(mm)
CCV 320-142819/40		12/19/2016 03:41	1		Acquity 2.1(mm)
RB 320-142819/41 CCB		12/19/2016 03:49	1		Acquity 2.1(mm)

537 (Modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23890-1

SDG No.:

Batch Number: 140271 Batch Start Date: 12/01/16 19:42 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 12/02/16 15:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00070
MB 320-140271/1		3535, 537 (Modified)				250.00 mL	0.5 mL	25 uL	
LCS 320-140271/2		3535, 537 (Modified)				250.00 mL	0.5 mL	25 uL	20 uL
LCSD 320-140271/3		3535, 537 (Modified)				250.00 mL	0.5 mL	25 uL	20 uL
320-23890-A-1	DPT-16-30-GW-31-35	3535, 537 (Modified)	T	274.95 g	26.50 g	248.5 mL	0.5 mL	25 uL	
320-23890-A-2	DPT-16-30-GW-18-22	3535, 537 (Modified)	T	268.40 g	26.89 g	241.5 mL	0.5 mL	25 uL	
320-23890-A-3	DPT-16-32-GW-19-23	3535, 537 (Modified)	T	273.89 g	27.08 g	246.8 mL	0.5 mL	25 uL	
320-23890-A-4	DPT-16-32-GW-31-35	3535, 537 (Modified)	T	271.09 g	26.64 g	244.5 mL	0.5 mL	25 uL	
320-23890-A-5	DPT-16-21-GW-19-23	3535, 537 (Modified)	T	273.80 g	26.96 g	246.8 mL	0.5 mL	25 uL	
320-23890-A-6	DPT-16-21-GW-31-35	3535, 537 (Modified)	T	271.97 g	26.51 g	245.5 mL	0.5 mL	25 uL	
320-23890-A-7	DPT-16-31-GW-19-23	3535, 537 (Modified)	T	277.73 g	26.93 g	250.8 mL	0.5 mL	25 uL	
320-23890-A-8	DPT-16-31-GW-31-35	3535, 537 (Modified)	T	270.10 g	26.62 g	243.5 mL	0.5 mL	25 uL	
320-23890-A-9	DPT-16-13-GW-31-35	3535, 537 (Modified)	T	272.45 g	26.74 g	245.7 mL	0.5 mL	25 uL	
320-23890-A-10	DPT-16-13-GW-18-22	3535, 537 (Modified)	T	278.68 g	26.59 g	252.1 mL	0.5 mL	25 uL	

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.: 320-23890-1

SDG No.:

Batch Number: 140271 Batch Start Date: 12/01/16 19:42 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 12/02/16 15:15

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O: 794893
H2O ID	11/29/16
Hexane ID	0000146278
Manifold ID	5, 6
Methanol ID	789820
Pipette ID	MD05306
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	NSH
Solvent Lot #	794501
Solvent Name	0.3% NH4OH/MeOH
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.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 23890 Work List ID(s): 37879; 37939

Extraction Batch: 140271 Analysis Batch(es): 142338; 142598

Delivery Rank 4 Due Date: 12/14/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 142082; 142571	✓	✓	
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): [signature] Date: 12/18/16

2nd Level Reviewer: McWay Date: 12/20/2016

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 14DEC2016C_PFC Worklist Number: 37879
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37879.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 142338	LC PFC ICAL Raw Batch: 142339	LC PFAS ICAL Raw Batch: 142340
# 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 320-140271/1-A	# 5 MB 320-140271/1-A		
# 6 LCS 320-140271/2-A	# 6 LCS 320-140271/2-A		
# 7 LCSD 320-140271/3-A	# 7 LCSD 320-140271/3-A		
# 8 320-23890-A-1-A	# 8 320-23890-A-1-A 25x		
# 9 320-23890-A-2-A	# 9 320-23890-A-2-A 25x		
#10 320-23890-A-3-A	#10 320-23890-A-3-A 25x		
#11 320-23890-A-4-A	#11 320-23890-A-4-A 10x		
#12 320-23890-A-5-A	#12 320-23890-A-5-A 25x		
#13 320-23890-A-6-A	#13 320-23890-A-6-A 10x, RA		
#14 RB	#14 RB	#14 RB	#14 RB
#15 CCV L4	#15 CCV L4	#15 CCV L4	#15 CCV L4
#16 CCV L4 Add-on	#16 CCV L4 Add-on	#16 CCV L4 Add-on	#16 CCV L4 Add-on
#17 RB	#17 RB	#17 RB	#17 RB
#18 320-23890-A-7-A	#18 320-23890-A-7-A 50x		
#19 320-23890-A-8-A	#19 320-23890-A-8-A 10x, RA		
#20 320-23890-A-9-A	#20 320-23890-A-9-A 10x		
#21 320-23890-A-10-A	#21 320-23890-A-10-A 25x		
#22 RB	#22 RB	#22 RB	#22 RB
#23 CCV L5	#23 CCV L5	#23 CCV L5	#23 CCV L5
#24 CCV L5 Add-on	#24 CCV L5 Add-on	#24 CCV L5 Add-on	#24 CCV L5 Add-on
#25 RB	#25 RB	#25 RB	#25 RB

ICV 142082

NCM 10x 20w 73265

Tune NCM 73266

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16DEC2016B_PFC Worklist Number: 37939
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b
QC Batching: Disabled Limit Group Batching: Enabled

DLs

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 142598	LC PFC ICAL Raw Batch: 142599	LC PFAS ICAL Raw Batch: 142600
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 RB	# 2 RB	# 2 RB	# 2 RB
# 3 CCV L5	# 3 CCV L5	# 3 CCV L5	# 3 CCV L5
# 4 CCV L5 Add-on	# 4 CCV L5 Add-on	# 4 CCV L5 Add-on	# 4 CCV L5 Add-on
# 5 RB	# 5 RB	# 5 RB	# 5 RB
# 6 QC PFCSUR 46 2/2	# 6 QC PFCSUR 46 2/2	# 6 QC PFCSUR 46 2/2	# 6 QC PFCSUR 46 2/2
# 7 320-23890-A-1-A E PFOS	# 7 320-23890-A-1-A 50x PFOS		
# 8 320-23890-A-2-A	# 8 320-23890-A-2-A		
# 9 320-23890-A-3-A	# 9 320-23890-A-3-A		
#10 320-23890-A-4-A	#10 320-23890-A-4-A		
#11 320-23890-A-5-A E	#11 320-23890-A-5-A 50x PFOS/PFOA ;		
#12 320-23890-A-6-A	#12 320-23890-A-6-A		
#13 320-23890-A-7-A	#13 320-23890-A-7-A 100x PFOS/PFOA ; 10x PFBS		
#14 320-23890-A-8-A	#14 320-23890-A-8-A		
#15 320-23890-A-9-A	#15 320-23890-A-9-A		
#16 320-23890-A-10-A	#16 320-23890-A-10-A 50x PFOS		
#17 RB	#17 RB	#17 RB	#17 RB
#18 CCV L4 high PFBS	#18 CCV L4	#18 CCV L4	#18 CCV L4
#19 CCV L4 Add-on	#19 CCV L4 Add-on	#19 CCV L4 Add-on	#19 CCV L4 Add-on
#20 RB	#20 RB	#20 RB	#20 RB
#21 320-23890-A-6-A	#21 320-23890-A-6-A		
#22 RB	#22 RB	#22 RB	#22 RB
#23 320-23890-A-8-A	#23 320-23890-A-8-A		
#24 RB	#24 RB	#24 RB	#24 RB
#25 CCV L5	#25 CCV L5	#25 CCV L5	#25 CCV L5
#26 CCV L5 Add-on	#26 CCV L5 Add-on	#26 CCV L5 Add-on	#26 CCV L5 Add-on
#27 RB	#27 RB	#27 RB	#27 RB

CCV L2 142571
ICV 142379

Time NCM 73213

12

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Batch End: 12/2/16 15:15

AS 12/13/16

ASDL 12/15/16

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-320-140271/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		MB 320-140271/1-A
				0.5 mL								
2	LCS-320-140271/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCS 320-140271/2-A
				0.5 mL								
3	LCSD-320-140271/3 N/A	N/A		250.00 mL				N/A	N/A	N/A		LCSD 320-140271/3-A
				0.5 mL								
4	320-23890-A-1 (PFC_IDA_DOD5)	N/A (320-23890-1)	274.95 g	248.5 mL				12/4/16	16_Days 50x	4	See NCM 25x Sediment. VDM 12-02-16	320-23890-A-1-A
			26.50 g	0.5 mL								
5	320-23890-A-2 (PFC_IDA_DOD5)	N/A (320-23890-1)	268.40 g	241.5 mL				12/4/16	16_Days	4	25x	320-23890-A-2-A
			26.89 g	0.5 mL								
6	320-23890-A-3 (PFC_IDA_DOD5)	N/A (320-23890-1)	273.89 g	246.8 mL				12/4/16	16_Days	4	25x	320-23890-A-3-A
			27.08 g	0.5 mL								
7	320-23890-A-4 (PFC_IDA_DOD5)	N/A (320-23890-1)	271.09 g	244.5 mL				12/4/16	16_Days	4	10x	320-23890-A-4-A
			26.64 g	0.5 mL								
8	320-23890-A-5 (PFC_IDA_DOD5)	N/A (320-23890-1)	273.80 g	246.8 mL				12/4/16	16_Days 50x	4	25x	320-23890-A-5-A
			26.96 g	0.5 mL								
9	320-23890-A-6 (PFC_IDA_DOD5)	N/A (320-23890-1)	271.97 g	245.5 mL				12/4/16	16_Days	4	10x, RA	320-23890-A-6-A
			26.51 g	0.5 mL								
10	320-23890-A-7 (PFC_IDA_DOD5)	N/A (320-23890-1)	277.73 g	250.8 mL				12/4/16	16_Days 100x, 10x	4	50x	320-23890-A-7-A
			26.93 g	0.5 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-23890-A-8 (PFC_IDA_DOD5)	N/A (320-23890-1)	270.10 g 26.62 g	243.5 mL 0.5 mL				12/4/16	16_Days	4	10x, RA
12	320-23890-A-9 (PFC_IDA_DOD5)	N/A (320-23890-1)	272.45 g 26.74 g	245.7 mL 0.5 mL				12/4/16	16_Days	4	10X
13	320-23890-A-10 (PFC_IDA_DOD5)	N/A (320-23890-1)	278.68 g 26.59 g	252.1 mL 0.5 mL				12/4/16	~~16_Days~~ 50X	4	25x

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Batch End:

Batch Notes

Manifold ID	5, 6
Methanol ID	789820
Hexane ID	0000146278
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	11/29/16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	794501
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	NSH
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: 320-140271

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1N NaOH/H2O: 794893

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-140271/1	LCMPFCSU_00046	25 uL	0.5 mL	12/01/16	NSH 12-1-16
LCS 320-140271/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-140271/2	LCPFCSP_00070	20 uL	0.5 mL		
LCSD 320-140271/3	LCMPFCSU_00046	25 uL	0.5 mL		
LCSD 320-140271/3	LCPFCSP_00070	20 uL	0.5 mL		
320-23890-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-5	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-6	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-7	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-8	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-9	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-10	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

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): 1402 71 Test: PFC-IDA-DOD5 (L)

Earliest Holding Time: 12/05/16

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: [signature] Date: 12/02/16

2nd Level Reviewer: VDM Date: 12/02/16

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 23890; 23990 Work List ID(s): 37986

Extraction Batch: _____ Analysis Batch(es): 142819; 142820, 142598

Delivery Rank _____ Due Date: 12/4/16; 12/6/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 142379; 142380	✓	✓	
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# 73213, 73301	✓	✓	
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: 12/19/16

2nd Level Reviewer: _____ Date: 12/20/2016

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 18DEC2016B_PFC Worklist Number: 37986
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161219-37986.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 142819	LC PFC ICAL Raw Batch: 142820	LC PFAS ICAL Raw Batch: 142821
# 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
# 5 320-23890-A-7-A	# 5 320-23890-A-7-A 100x E flag PFOS NCM 73307		
# 6 320-23890-A-1-A	# 6 320-23890-A-1-A		
# 7 320-23890-A-5-A	# 7 320-23890-A-5-A		
# 8 320-23890-A-10-A	# 8 320-23890-A-10-A		
# 9 320-23890-A-7-A	# 9 320-23890-A-7-A		
#10 RB	#10 RB	#10 RB	#10 RB
#11 CCV L5	#11 CCV L5	#11 CCV L5	#11 CCV L5
#12 CCV L5 Add-on	#12 CCV L5 Add-on	#12 CCV L5 Add-on	#12 CCV L5 Add-on
#13 RB	#13 RB	#13 RB	#13 RB
#14 MB 320-140852/1-A		#14 MB 320-140852/1-A	#14 MB 320-140852/1-A
#15 LCS 320-140852/2-A		#15 LCS 320-140852/2-A	#15 LCS 320-140852/2-A
#16 LCSD 320-140852/3-A		#16 LCSD 320-140852/3-A	#16 LCSD 320-140852/3-A
#17 320-23990-A-1-A 100x PFOS		#17 320-23990-A-1-A	#17 320-23990-A-1-A 100x PFOS
#18 320-23990-A-2-A 100, 10x		#18 320-23990-A-2-A	#18 320-23990-A-2-A 100x All but PFBS
#19 320-23990-A-3-A 100x, 10x, RA		#19 320-23990-A-3-A RA	#19 320-23990-A-3-A 10x PFOS
#20 320-23990-A-4-A 100x, 10x		#20 320-23990-A-4-A	#20 320-23990-A-4-A 100x
#21 320-23990-A-5-A 100x, 10x RA		#21 320-23990-A-5-A RA	#21 320-23990-A-5-A 100x, RA
#22 320-23990-A-6-A 100x, 10x		#22 320-23990-A-6-A	#22 320-23990-A-6-A 100x, all but PFBS
#23 320-23990-A-7-A 100x, 10x		#23 320-23990-A-7-A	#23 320-23990-A-7-A 100x
#24 RB	#24 RB	#24 RB	#24 RB
#25 CCV L5	#25 CCV L5	#25 CCV L5	#25 CCV L5
#26 CCV L5 Add-on	#26 CCV L5 Add-on	#26 CCV L5 Add-on	#26 CCV L5 Add-on
#27 RB	#27 RB	#27 RB	#27 RB
#28 320-23990-A-8-A 100x, 10x		#28 320-23990-A-8-A	#28 320-23990-A-8-A 100x
#29 320-23990-A-9-A 100x, 10x, RA		#29 320-23990-A-9-A	#29 320-23990-A-9-A 100x, 10x, RA
#30 320-23990-A-10-A RA		#30 320-23990-A-10-A	#30 320-23990-A-10-A RA
#31 320-23990-A-11-A		#31 320-23990-A-11-A	#31 320-23990-A-11-A
#32 320-23990-A-12-A		#32 320-23990-A-12-A	#32 320-23990-A-12-A
#33 320-23990-A-13-A 100x, 10x		#33 320-23990-A-13-A	#33 320-23990-A-13-A 100x, 10x
#34 320-23990-A-14-A 10x, RA		#34 320-23990-A-14-A	#34 320-23990-A-14-A 10x, RA
#35 320-23990-A-15-A 100x, 10x		#35 320-23990-A-15-A	#35 320-23990-A-15-A 100x, 10x
#36 320-23990-A-16-A 100x, 10x		#36 320-23990-A-16-A	#36 320-23990-A-16-A 100x, 10x
#37 RB	#37 RB	#37 RB	#37 RB
#38 CCV L5	#38 CCV L5	#38 CCV L5	#38 CCV L5
#39 CCV L5 Add-on	#39 CCV L5 Add-on	#39 CCV L5 Add-on	#39 CCV L5 Add-on
#40 RB	#40 RB	#40 RB	#40 RB

CCV L2 142815 142816
ICV 142379 142380

Tune NCM 73213

12

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Batch End: 12/2/16 15:15

AD 12/18/16

ASD VM 12/15/16

DL2 12/18/16

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-320-140271/1 N/A	N/A		250.00 mL 0.5 mL				N/A	N/A	N/A		MB 320-140271/1-A
2	LCS-320-140271/2 N/A	N/A		250.00 mL 0.5 mL				N/A	N/A	N/A		LCS 320-140271/2-A
3	LCSD-320-140271/3 N/A	N/A		250.00 mL 0.5 mL				N/A	N/A	N/A		LCSD 320-140271/3-A
4	320-23890-A-1 (PFC_IDA_DOD5)	N/A (320-23890-1)	274.95 g 26.50 g	248.5 mL 0.5 mL				12/4/16	16_Days 50x	4	See NCM 25x Sediment. VDM 12-02-16	320-23890-A-1-A
5	320-23890-A-2 (PFC_IDA_DOD5)	N/A (320-23890-1)	268.40 g 26.89 g	241.5 mL 0.5 mL				12/4/16	16_Days	4	25x	320-23890-A-2-A
6	320-23890-A-3 (PFC_IDA_DOD5)	N/A (320-23890-1)	273.89 g 27.08 g	246.8 mL 0.5 mL				12/4/16	16_Days	4	25x	320-23890-A-3-A
7	320-23890-A-4 (PFC_IDA_DOD5)	N/A (320-23890-1)	271.09 g 26.64 g	244.5 mL 0.5 mL				12/4/16	16_Days	4	10x	320-23890-A-4-A
8	320-23890-A-5 (PFC_IDA_DOD5)	N/A (320-23890-1)	273.80 g 26.96 g	246.8 mL 0.5 mL				12/4/16	16_Days 50x	4	25x	320-23890-A-5-A
9	320-23890-A-6 (PFC_IDA_DOD5)	N/A (320-23890-1)	271.97 g 26.51 g	245.5 mL 0.5 mL				12/4/16	16_Days	4	10X, RA	320-23890-A-6-A
10	320-23890-A-7 (PFC_IDA_DOD5)	N/A (320-23890-1)	277.73 g 26.93 g	250.8 mL 0.5 mL				12/4/16	16_Days 100x, 10x	4	50x	320-23890-A-7-A

case 3 16-20

Printed : 12/1/2016

TestAmerica Sacramento

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-23890-A-8 (PFC_IDA_DOD5)	N/A (320-23890-1)	270.10 g / 26.62 g	243.5 mL / 0.5 mL				12/4/16	16_Days	4	10x, RA
12	320-23890-A-9 (PFC_IDA_DOD5)	N/A (320-23890-1)	272.45 g / 26.74 g	245.7 mL / 0.5 mL				12/4/16	16_Days	4	10X
13	320-23890-A-10 (PFC_IDA_DOD5)	N/A (320-23890-1)	278.68 g / 26.59 g	252.1 mL / 0.5 mL				12/4/16	16_Days 50X	4	25x

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Batch End:

Batch Notes

Manifold ID	5, 6
Methanol ID	789820
Hexane ID	0000146278
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	11/29/16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	794501
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	NSH
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: 320-140271

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number	WS-LC-0025
Batch Comment	0.1N NaOH/H2O: 794893

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-140271/1	LCMPFCSU_00046	25 uL	0.5 mL	12/01/16	NSH 12-1-16
LCS 320-140271/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-140271/2	LCPFCSP_00070	20 uL	0.5 mL		
LCSD 320-140271/3	LCMPFCSU_00046	25 uL	0.5 mL		
LCSD 320-140271/3	LCPFCSP_00070	20 uL	0.5 mL		
320-23890-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-5	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-6	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-7	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-8	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-9	LCMPFCSU_00046	25 uL	0.5 mL		
320-23890-A-10	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140271

Analyst: Reed, Jonathan E

Batch Open: 12/1/2016 7:42:00PM

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): 141021, 71 Test: PFC_IDA_DOD5 (L)
Earliest Holding Time: 12/05/16

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: _____ Date: 12/02/16
2nd Level Reviewer: VDM Date: 12/02/16
Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16DEC2016B_PFC Worklist Number: 37939
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161216-37939.b
QC Batching: Disabled Limit Group Batching: Enabled

DLs

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 142598	LC PFC ICAL Raw Batch: 142599	LC PFAS ICAL Raw Batch: 142600
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 RB	# 2 RB	# 2 RB	# 2 RB
# 3 CCV L5	# 3 CCV L5	# 3 CCV L5	# 3 CCV L5
# 4 CCV L5 Add-on	# 4 CCV L5 Add-on	# 4 CCV L5 Add-on	# 4 CCV L5 Add-on
# 5 RB	# 5 RB	# 5 RB	# 5 RB
# 6 QC PFCSUR 46 2/2	# 6 QC PFCSUR 46 2/2	# 6 QC PFCSUR 46 2/2	# 6 QC PFCSUR 46 2/2
# 7 320-23890-A-1-A E PFOS	# 7 320-23890-A-1-A 50x PFOS		
# 8 320-23890-A-2-A	# 8 320-23890-A-2-A		
# 9 320-23890-A-3-A	# 9 320-23890-A-3-A		
#10 320-23890-A-4-A	#10 320-23890-A-4-A		
#11 320-23890-A-5-A E	#11 320-23890-A-5-A 50x PFOS/PFOA ;		
#12 320-23890-A-6-A	#12 320-23890-A-6-A		
#13 320-23890-A-7-A	#13 320-23890-A-7-A 100x PFOS/PFOA ; 10x PFBS		
#14 320-23890-A-8-A	#14 320-23890-A-8-A		
#15 320-23890-A-9-A	#15 320-23890-A-9-A		
#16 320-23890-A-10-A	#16 320-23890-A-10-A 50x PFOS		
#17 RB	#17 RB	#17 RB	#17 RB
#18 CCV L4 high PFBS	#18 CCV L4	#18 CCV L4	#18 CCV L4
#19 CCV L4 Add-on	#19 CCV L4 Add-on	#19 CCV L4 Add-on	#19 CCV L4 Add-on
#20 RB	#20 RB	#20 RB	#20 RB
#21 320-23890-A-6-A	#21 320-23890-A-6-A		
#22 RB	#22 RB	#22 RB	#22 RB
#23 320-23890-A-8-A	#23 320-23890-A-8-A		
#24 RB	#24 RB	#24 RB	#24 RB
#25 CCV L5	#25 CCV L5	#25 CCV L5	#25 CCV L5
#26 CCV L5 Add-on	#26 CCV L5 Add-on	#26 CCV L5 Add-on	#26 CCV L5 Add-on
#27 RB	#27 RB	#27 RB	#27 RB

CCV L2 142571
ICV 142379

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC-IDA_DoD5 **Job #** 23890

Analyst (Print Name) Shyhara Chandrasena **Analyst Initials** SBC

Date 12/18/16

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
7	500	100	1000	10X
7		100	1000	100X
1		40	2000	50X
5				
10				

Comments:

C:\Users\phomsophat\AppData\Local\Microsoft\Windows\Temporary Internet Files\OLK708B\QA-747_SampleDilutionRecord.doc
10/20/16 RBH

18

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140852

Method Code: 320-3535_IVWT-320

Analyst: Winchester, Ethan R

Batch Open: 12/6/2016 3:23:00PM

Batch End: 12:00 12/7/16

AB 12/18/16

Solid-Phase Extraction (SPE)

Case 3 21-39

	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-320-140852/1 N/A	N/A		250 mL				N/A	N/A	N/A		MB 320-140852/1-A
				0.5 mL								
2	LCS-320-140852/2 N/A	N/A		250 mL				N/A	N/A	N/A		LCS 320-140852/2-A
				0.5 mL								
3	LCSD-320-140852/3 N/A	N/A		250 mL				N/A	N/A	N/A		LCSD 320-140852/3-A
				0.5 mL								
4	320-23990-A-1 (PFC_IDA)	N/A (320-23990-1)	312.46 g	285.1 mL				12/6/16	8_Days	4	100x PFOS	320-23990-A-1-A
			27.35 g	0.5 mL								
5	320-23990-A-2 (PFC_IDA)	N/A (320-23990-1)	293.21 g	265.2 mL				12/6/16	8_Days	4	Observations brown vpm 12/07/16 100x, 10x	320-23990-A-2-A
			28.06 g	0.5 mL								
6	320-23990-A-3 (PFC_IDA)	N/A (320-23990-1)	269.51 g	242.9 mL				12/6/16	8_Days	4	10x PFOS RA	320-23990-A-3-A
			26.57 g	0.5 mL								
7	320-23990-A-4 (PFC_IDA)	N/A (320-23990-1)	282.00 g	253.6 mL				12/6/16	8_Days	4	100x, 10x yellow	320-23990-A-4-A
			28.44 g	0.5 mL								
8	320-23990-A-5 (PFC_IDA)	N/A (320-23990-1)	281.36 g	254.9 mL				12/6/16	8_Days	4	100x, 10x RA (PFNA)	320-23990-A-5-A
			26.47 g	0.5 mL								
9	320-23990-A-6 (PFC_IDA)	N/A (320-23990-1)	278.20 g	250.2 mL				12/6/16	8_Days	4	yellow 100x, 10x	320-23990-A-6-A
			28.00 g	0.5 mL								
10	320-23990-A-7 (PFC_IDA)	N/A (320-23990-1)	286.51 g	258.9 mL				12/6/16	8_Days	4	brown 100x, 10x	320-23990-A-7-A
			27.66 g	0.5 mL								

Printed : 12/6/2016

TestAmerica Sacramento

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140852

Analyst: Winchester, Ethan R

Batch Open: 12/6/2016 3:23:00PM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-23990-A-8 (PFC_IDA)	N/A (320-23990-1)	295.26 g 28.12 g	267.1 mL 0.5 mL				12/6/16	8_Days	4	yellow 100x, 10x
12	320-23990-A-9 (PFC_IDA)	N/A (320-23990-1)	296.37 g 27.15 g	269.2 mL 0.5 mL				12/6/16	8_Days	4	100x, 10x, RA
13	320-23990-A-10 (PFC_IDA)	N/A (320-23990-1)	284.61 g 26.65 g	258 mL 0.5 mL				12/6/16	8_Days	4	RA
14	320-23990-A-11 (PFC_IDA)	N/A (320-23990-1)	296.92 g 26.92 g	270 mL 0.5 mL				12/6/16	8_Days	4	
15	320-23990-A-12 (PFC_IDA)	N/A (320-23990-1)	315.87 g 27.07 g	288.8 mL 0.5 mL				12/6/16	8_Days	4	
16	320-23990-A-13 (PFC_IDA)	N/A (320-23990-1)	292.66 g 26.43 g	266.2 mL 0.5 mL				12/6/16	8_Days	4	100x, 10x
17	320-23990-A-14 (PFC_IDA)	N/A (320-23990-1)	291.16 g 26.84 g	264.3 mL 0.5 mL				12/6/16	8_Days	4	10x, RA
18	320-23990-A-15 (PFC_IDA)	N/A (320-23990-1)	272.66 g 27.16 g	245.5 mL 0.5 mL				12/6/16	8_Days	4	100x, 10x
19	320-23990-A-16 (PFC_IDA)	N/A (320-23990-1)	293.96 g 27.17 g	266.8 mL 0.5 mL				12/6/16	8_Days	4	100x, 10x

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140852

Method Code: 320-3535_IVWT-320

Analyst: Winchester, Ethan R

Batch Open: 12/6/2016 3:23:00PM

Batch End:

Batch Notes

Manifold ID	5,6
Methanol ID	789820
Hexane ID	00001462
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	002836112
H2O ID	12/05/16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	794501
Analyst ID - Reagent Drop	ERW
Analyst ID - SU Reagent Drop	ERW
Analyst ID - SU Reagent Drop Witness	NSH
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: 320-140852

Analyst: Winchester, Ethan R

Batch Open: 12/6/2016 3:23:00PM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1N NaOH/H2O: 794893

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140852

Method Code: 320-3535_IVWT-320

Analyst: Winchester, Ethan R

Batch Open: 12/6/2016 3:23:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-140852/1	LCMPFCSU_00046	25 uL	0.5 mL	ERW 12/6/16	NSH 12-6-16
LCS 320-140852/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-140852/2	LCPFCSP_00070	20 uL	0.5 mL		
LCSD 320-140852/3	LCMPFCSU_00046	25 uL	0.5 mL		
LCSD 320-140852/3	LCPFCSP_00070	20 uL	0.5 mL		
320-23990-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-5	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-6	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-7	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-8	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-9	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-10	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-11	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-12	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-13	LCMPFCSU_00046	25 uL	0.5 mL		

Printed : 12/6/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140852

Analyst: Winchester, Ethan R

Batch Open: 12/6/2016 3:23:00PM

Method Code: 320-3535_IVWT-320

Batch End:

320-23990-A-14	LCMPFCSU_00046	25 uL	0.5 mL	ERU 12/6/16	NSH 12-6-16
320-23990-A-15	LCMPFCSU_00046	25 uL	0.5 mL		
320-23990-A-16	LCMPFCSU_00046	25 uL	0.5 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
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Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 140852 Test: PFC-IDA (LL)

Earliest Holding Time: 12/07/16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA ✓	✓
Method/sample/login/QAS checked and correct VPM 12/07/16	✓	✓
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: 12/07/16

2nd Level Reviewer: NSH Date: 12-7-16

Comments:

Shipping and Receiving Documents

Chain of Custody Record

Temperature on Receipt 1.4°C

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM Technical Services Inc.	Kurt VanGelder	11/29/16	295761
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 1
3101 Wilson Blvd	703-682-9041		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Arlington / VA / 22201	Anay Shah	Jill K.	
Project Name and Location (State)	**Carrier/Waybill Number**		
Former Bay Head Rd Annex	FEDEX		
Contract/Purchase Order/Quote No.			
320074449 / 60444465			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	PFOA	PFOS	PFBS
DPT-16-30-GW-31-35	11/29/16	0940		✓			2						✓	✓	✓
DPT-16-30-GW-18-22	11/29/16	1000		✓			2						✓	✓	✓
DPT-16-32-GW-19-23	11/28/16	1000		✓			2						✓	✓	✓
DPT-16-32-GW-31-35	11/28/16	1045		✓			2						✓	✓	✓
DPT-16-21-GW-19-23	11/28/16	1220		✓			2						✓	✓	✓
DPT-16-21-GW-31-35	11/28/16	1255		✓			2						✓	✓	✓
~~DPT-16-~~-AS															
DPT-16-31-GW-19-23	11/23/16	1330		✓			2						✓	✓	✓
DPT-16-31-GW-31-35	11/28/16	1415		✓			2						✓	✓	✓
DPT-16-13-GW-31-35	11/29/16	1040		✓			2						✓	✓	✓
DPT-16-13-GW-18-22	11/29/16	1110		✓			2						✓	✓	✓

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

320-23890 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	Date	Time	1. Received By	Date	Time
/AECOM	11/29/16	1300	Troy G Tumpen JTAS	11/30/16	0930
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments
1.4°C rec
* labeled DPT-16-32-GW-19-22 at 11-30-16

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

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-23890-1

Login Number: 23890 **List Source: TestAmerica Sacramento**
List Number: 1
Creator: Hytrek, Cheryl

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	False	IDs on containers do not match the COC. Logged in per COC.
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-16-13-GW-18-22","537","12/14/16","19:38","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","3.7","","TRG","No","Y","EM","Y","0.00074","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","",""
"DPT-16-13-GW-18-22","537","12/14/16","19:38","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","1.2","","TRG","No","Y","E","Y","0.00091","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","",""
"DPT-16-13-GW-18-22","537","12/14/16","19:38","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","6.8","","TRG","No","Y","EM","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","",""
"DPT-16-13-GW-18-22","537","12/18/16","23:41","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.91","","TRG","Yes","Y","D","Y","0.046","0.099","0.12","UG_L","UG_L","","","0","","","","0","","","","",""
"DPT-16-13-GW-18-22","537","12/18/16","23:41","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","14","","TRG","Yes","Y","D","Y","0.063","0.15","0.20","UG_L","UG_L","","","0","","","","0","","","","","",""
"DPT-16-13-GW-18-22","537","12/18/16","23:41","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","7.0","","TRG","Yes","Y","D","Y","0.037","0.099","0.12","UG_L","UG_L","","","0","","","","0","","","","","",""
"DPT-16-13-GW-31-35","537","12/14/16","19:31","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.060","","TRG","Yes","Y","","Y","0.00093","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-13-GW-31-35","537","12/14/16","19:31","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.52","","TRG","No","Y","E","Y","0.0013","0.0031","0.0041","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-13-GW-31-35","537","12/14/16","19:31","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.31","","TRG","Yes","Y","M","Y","0.00076","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-13-GW-31-35","537","12/16/16","13:45","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.62","","TRG","Yes","Y","D","Y","0.013","0.031","0.041","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-13-GW-31-35","537","12/16/16","13:45","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","0.34","","TRG","No","Y","DM","Y","0.0076","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-21-GW-19-23","537","12/14/16","18:31","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","1.7","","TRG","No","Y","EM","Y","0.00093","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-21-GW-19-23","537","12/14/16","18:31","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","5.9","","TRG","No","Y","EM","Y","0.00076","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-21-GW-19-23","537","12/14/16","18:31","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","6.1","","TRG","No","Y","EM","Y","0.0013","0.0030","0.0041","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-21-GW-19-23","537","12/18/16","23:34","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","12","","TRG","Yes","Y","D","Y","0.065","0.15","0.20","UG_L","UG_L","","","0","","","","0","","","","","",""
"DPT-16-21-GW-19-23","537","12/18/16","23:34","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","15","","TRG","Yes","Y","DM","Y","0.038","0.10","0.13","UG_L","UG_L","","","0","","","","0","","","","","",""
"DPT-16-21-GW-19-23","537","12/18/16","23:34","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","1.1","","TRG","Yes","Y","D","Y","0.046","0.10","0.13","UG_L","UG_L","","","0","","","","0","","","",""
"DPT-16-21-GW-31-35","537","12/14/16","18:38","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.16","","TRG","Yes","Y","","Y","0.00093","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","

","","","

","","","

"","","","","","","","","","","","","
"LCS 320-140271/2-A","537","12/14/16","17:46","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.0373","","SC","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","0.0354","0.0373","106","0","","","","","50","150","","","","","","","","
"LCS 320-140271/2-A","537","12/14/16","17:46","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.0355","","SC","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","0.0371","0.0355","96","0","","","","","60","140","","","","","","","","
"LCS 320-140271/2-A","537","12/14/16","17:46","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.0384","","SC","Yes","Y","","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","0.0400","0.0384","96","0","","","","","60","140","","","","","","","","
"LCSD 320-140271/3-A","537","12/14/16","17:53","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.0367","","SC","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","0.0354","0.0367","104","2","50","150","30","","","","","","","
"LCSD 320-140271/3-A","537","12/14/16","17:53","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.0341","","SC","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","0.0371","0.0341","92","4","60","140","30","","","","","","","
"LCSD 320-140271/3-A","537","12/14/16","17:53","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.0374","","SC","Yes","Y","","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","0.0400","0.0374","93","3","60","140","30","","","","","","","
"MB 320-140271/1-A","537","12/14/16","17:38","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 320-140271/1-A","537","12/14/16","17:38","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 320-140271/1-A","537","12/14/16","17:38","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","","","","","","","","","","","","","","

Resolution Consultants
250 Apollo Drive
Chelmsford, MA 01824

978.905.2100 tel
978.905.2101 fax

Data Validation Report

Project:	Former Bay Head Road Annex- Annapolis, MD
Laboratory:	TestAmerica-West Sacramento, CA
Job Number:	320-23890-1
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: 12/22/16
Reviewed by:	Robert Kennedy/Resolution Consultants Completed on: 12/22/16
File Name: J23890-1_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 28-29, 2016.

Sample ID	Matrix/Sample Type
DPT-16-13-GW-18-22	Groundwater
DPT-16-13-GW-31-35	Groundwater
DPT-16-21-GW-19-23	Groundwater
DPT-16-21-GW-31-35	Groundwater
DPT-16-30-GW-18-22	Groundwater
DPT-16-30-GW-31-35	Groundwater
DPT-16-31-GW-19-23	Groundwater
DPT-16-31-GW-31-35	Groundwater
DPT-16-32-GW-19-23	Groundwater
DPT-16-32-GW-31-35	Groundwater

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
NA	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. Select data points were qualified as estimated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness (chain-of-custody (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

The laboratory noted in the case narrative that all groundwater samples were decanted to new bottles prior to spiking and extraction because of the excessive amounts of sediment present in the sample bottles. In these cases, the sample bottles are not rinsed as required by the method. Consequently, professional judgment was applied to qualify the positive results for all target compounds in these samples as estimated

(J-) indicating a potential loss of target compounds that may have remained in the original sample bottle. Qualified sample results are presented in Table 1.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Initial Calibration/Initial and Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD) or correlation coefficient (r) or coefficient of determination (r^2) method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met; and
- the continuing calibration verification standard (CCV) frequency and method percent difference or percent drift (%D) criteria were met.

All QC acceptance criteria were met or qualification of the data was not required.

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

MS/MSD analyses were not performed on a sample from this data set. The data were not qualified on this basis.

LCS/LCSD Results

The LCS/LCSD percent recoveries (%Rs) and relative percent differences (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 except for the labeled compound results summarized below.

Sample ID	Labeled Compound	% Recovery	QC Limits
DPT-16-30-GW-31-35 DL	$13C_4$-PFOA	163	25-150
DPt-16-31-GW-19-23 DL	18O2-PFHxS	154	25-150

Samples were qualified as follows:

Actions: (Based on NFG 2011)

Criteria	Actions	
	Detected	**Not detected**
%R > Upper Acceptance Limit	J	UJ
%R >10% but < Lower Acceptance Limit	J	UJ
%R <10%	See below	
<10% and S/N >10:1	J	R
<10% and S/N <10:1	R	R

Qualified sample results are presented in Table 1.

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.

Sample DPT-16-31-GW-19-23 was analyzed at a 100x dilution; however, PFOS still exceeded the calibration range. The PFOS in this sample did not saturate the instrument detector, therefore, the result was reported from the 100x dilution and was qualified as estimated (J) since the calibration range was exceeded. Qualified sample results are presented in Table 1.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Qualifier Codes and Explanations

Attachment B: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
DPT-16-13-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	14	0.15	0.20	µg/L	J-	si
DPT-16-13-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	7.0	0.099	0.12	µg/L	J-	si
DPT-16-13-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)	0.91	0.099	0.12	µg/L	J-	si
DPT-16-13-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.31	0.0020	0.0025	µg/L	J-	si
DPT-16-13-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.060	0.0020	0.0025	µg/L	J-	si
DPT-16-13-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	0.62	0.031	0.041	µg/L	J-	si
DPT-16-21-GW-19-23	WG	Perfluorooctanesulfonic Acid (PFOS)	12	0.15	0.20	µg/L	J-	si
DPT-16-21-GW-19-23	WG	Perfluorooctanoic Acid (PFOA)	15	0.10	0.13	µg/L	J-	si
DPT-16-21-GW-19-23	WG	Perfluorobutanesulfonic Acid (PFBS)	1.1	0.10	0.13	µg/L	J-	si
DPT-16-21-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.16	0.0020	0.0025	µg/L	J-	si
DPT-16-21-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	3.2	0.031	0.041	µg/L	J-	si
DPT-16-21-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.74	0.020	0.025	µg/L	J-	si
DPT-16-30-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)	0.21	0.0021	0.0026	µg/L	J-	si
DPT-16-30-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	6.6	0.078	0.10	µg/L	J-	si
DPT-16-30-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	1.4	0.052	0.065	µg/L	J-	si
DPT-16-30-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.31	0.0020	0.0025	µg/L	J-	si
DPT-16-30-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	11	0.15	0.20	µg/L	J-	si
DPT-16-30-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	1.4	0.10	0.13	µg/L	J	lc,si
DPT-16-31-GW-19-23	WG	Perfluorooctanesulfonic Acid (PFOS)	42	0.30	0.40	µg/L	J	si,q
DPT-16-31-GW-19-23	WG	Perfluorooctanoic Acid (PFOA)	28	0.20	0.25	µg/L	J-	si
DPT-16-31-GW-19-23	WG	Perfluorobutanesulfonic Acid (PFBS)	1.1	0.20	0.25	µg/L	J	lc,si
DPT-16-31-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.34	0.0021	0.0026	µg/L	J-	si
DPT-16-31-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.086	0.0021	0.0026	µg/L	J-	si
DPT-16-31-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	2.0	0.031	0.041	µg/L	J-	si
DPT-16-32-GW-19-23	WG	Perfluorobutanesulfonic Acid (PFBS)	0.14	0.0020	0.0025	µg/L	J-	si
DPT-16-32-GW-19-23	WG	Perfluorooctanesulfonic Acid (PFOS)	9.2	0.076	0.10	µg/L	J-	si
DPT-16-32-GW-19-23	WG	Perfluorooctanoic Acid (PFOA)	0.68	0.051	0.063	µg/L	J-	si
DPT-16-32-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.12	0.0020	0.0026	µg/L	J-	si
DPT-16-32-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	2.1	0.031	0.041	µg/L	J-	si
DPT-16-32-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.65	0.020	0.026	µg/L	J-	si

Attachment A

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample and is potentially biased high.
J-	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample and is potentially biased low.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment B

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
si	Sample integrity issue
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	SAMPLE_NAME	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
DAVID_TAYLOR_RC	SITE 00003	DPT-16-13	Direct Push/Geoprobe	1474470	496440	DPT-16-13-GW-18-22	Ground water	11/29/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-13	Direct Push/Geoprobe	1474470	496440	DPT-16-13-GW-31-35	Ground water	11/29/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-21	Direct Push/Geoprobe	1474470	496317	DPT-16-21-GW-19-23	Ground water	11/28/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-21	Direct Push/Geoprobe	1474470	496317	DPT-16-21-GW-31-35	Ground water	11/28/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-30	Direct Push/Geoprobe	1474510	496373	DPT-16-30-GW-18-22	Ground water	11/29/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-30	Direct Push/Geoprobe	1474510	496373	DPT-16-30-GW-31-35	Ground water	11/29/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-31	Direct Push/Geoprobe	1474490	496368	DPT-16-31-GW-19-23	Ground water	11/28/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-31	Direct Push/Geoprobe	1474490	496368	DPT-16-31-GW-31-35	Ground water	11/28/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-32	Direct Push/Geoprobe	1474470	496339	DPT-16-32-GW-19-23	Ground water	11/28/2016	Perfluoroalkyl Compounds	320-23890-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-32	Direct Push/Geoprobe	1474470	496339	DPT-16-32-GW-31-35	Ground water	11/28/2016	Perfluoroalkyl Compounds	320-23890-1