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 J239981

Bay Head Road Annex
NSWC Annapolis
Maryland

December 2020

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-23998-1

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

For:

AECOM Technical Services Inc.
3101 Wilson Blvd.
Suite 900
Arlington, Virginia 22201

Attn: Devon Chicoine

Authorized for release by:
12/23/2016 3:45:53 PM
David Alltucker, Project Manager I
(916)374-4383
david.alltucker@testamericainc.com

Designee for

Jill Kellmann, Manager of Project Management
(916)374-4402
jill.kellmann@testamericainc.com

Table of Contents

Definitions/Glossary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23998-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Qualifiers

LCMS

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

Glossary

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

Job ID: 320-23998-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: AECOM Technical Services Inc.

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

Report Number: 320-23998-1

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 12/02/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.9 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.

Due to the high concentration of Perfluorooctanoic acid (PFOA), Perfluorobutanesulfonic acid (PFBS) and Perfluorooctane Sulfonate (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-140788 and analytical batch 320-143502 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Job ID: 320-23998-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: DPT-16-07-GW-31-35 (320-23998-11), DPT-16-07-GW-18-22 (320-23998-12), DPT-16-06-GW-31-35 (320-23998-13), DPT-16-06-GW-31-35-MS (320-23998-13[MS]), DPT-16-06-GW-31-35-MSD (320-23998-13[MSD]), DPT-16-06-GW-18-22 (320-23998-14), DPT-16-11-GW-31-35 (320-23998-15), DPT-16-11-GW-31-35-DUP (320-23998-16) and DPT-16-11-GW-18-22 (320-23998-17). These samples have been run at dilution and both sets of data are reported.

The following samples were diluted to bring the concentration of target analytes within the calibration range: DPT-16-07-GW-31-35 (320-23998-11), DPT-16-07-GW-18-22 (320-23998-12), DPT-16-06-GW-31-35 (320-23998-13), DPT-16-06-GW-31-35-MS (320-23998-13[MS]), DPT-16-06-GW-31-35-MSD (320-23998-13[MSD]), DPT-16-06-GW-18-22 (320-23998-14), DPT-16-11-GW-31-35 (320-23998-15), DPT-16-11-GW-31-35-DUP (320-23998-16) and DPT-16-11-GW-18-22 (320-23998-17). Elevated reporting limits (RLs) are provided.

Due to the excessive amount of sediment in the sample bottles, the aqueous portion of these samples was decanted to new bottles prior to spiking and the extraction. DPT-16-03-GW-31-35 (320-23998-1), DPT-16-03-GW-18-22 (320-23998-2), DPT-16-04-GW-31-35 (320-23998-3), DPT-16-04-GW-31-35-MS (320-23998-3[MS]), DPT-16-04-GW-31-35-MSD (320-23998-3[MSD]), DPT-16-04-GW-18-22 (320-23998-4), DPT-16-10-GW-31-35 (320-23998-5), DPT-16-10-GW-18-22 (320-23998-6), DPT-16-09-GW-31-35 (320-23998-7), DPT-16-09-GW-18-22 (320-23998-8), DPT-16-08-GW-31-35 (320-23998-9), DPT-16-08-GW-31-35-MS (320-23998-9[MS]), DPT-16-08-GW-31-35-MSD (320-23998-9[MSD]), DPT-16-08-GW-18-22 (320-23998-10), DPT-16-07-GW-31-35 (320-23998-11), DPT-16-07-GW-18-22 (320-23998-12), DPT-16-06-GW-31-35 (320-23998-13), DPT-16-06-GW-31-35-MS (320-23998-13[MS]), DPT-16-06-GW-31-35-MSD (320-23998-13[MSD]), DPT-16-06-GW-18-22 (320-23998-14), DPT-16-11-GW-31-35 (320-23998-15), DPT-16-11-GW-31-35-DUP (320-23998-16) and DPT-16-11-GW-18-22 (320-23998-17)

No additional 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: 320-23998-1

Client Sample ID: DPT-16-03-GW-31-35 — Lab Sample ID: 320-23998-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.019	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.13		0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-03-GW-18-22 — Lab Sample ID: 320-23998-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.00092	J	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.0071		0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-04-GW-31-35 — Lab Sample ID: 320-23998-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctane Sulfonate (PFOS)	0.0016	J M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-04-GW-18-22 — Lab Sample ID: 320-23998-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0027	M	0.0025	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.027		0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-10-GW-31-35 — Lab Sample ID: 320-23998-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.014	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.11		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-10-GW-18-22 — Lab Sample ID: 320-23998-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0062		0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.030		0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.010		0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-09-GW-31-35 — Lab Sample ID: 320-23998-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0021	J M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.017		0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0027		0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-09-GW-18-22 — Lab Sample ID: 320-23998-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.019		0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0043		0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-08-GW-31-35 — Lab Sample ID: 320-23998-9

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-08-GW-31-35 (Continued) — Lab Sample ID: 320-23998-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.022		0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-08-GW-18-22 — Lab Sample ID: 320-23998-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0075	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.038		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0030	M	0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-07-GW-31-35 — Lab Sample ID: 320-23998-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.88	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.3	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.18		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.2	D M	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	3.1	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.11	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-07-GW-18-22 — Lab Sample ID: 320-23998-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.37	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.17		0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.40	D M	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.9	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.084	D	0.025	0.0091	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-06-GW-31-35 — Lab Sample ID: 320-23998-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.2	E M J	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2	E J	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.42	E J	0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.6	D M J	0.026	0.0077	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.7	D J	0.041	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.28	D	0.026	0.0094	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-06-GW-18-22 — Lab Sample ID: 320-23998-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.3	E M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2	E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-06-GW-18-22 (Continued) — Lab Sample ID: 320-23998-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.20		0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.9	D M	0.024	0.0072	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.8	D	0.039	0.012	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.12	D	0.024	0.0088	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-11-GW-31-35 — Lab Sample ID: 320-23998-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.77	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.080		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.36	D M	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.86	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.050	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-11-GW-31-35-DUP — Lab Sample ID: 320-23998-16

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.78	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.076		0.0025	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.35	D M	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.88	D	0.039	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.052	D	0.025	0.0090	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-11-GW-18-22 — Lab Sample ID: 320-23998-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.4	E M	0.0024	0.00071	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	4.0	E	0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.18		0.0024	0.00087	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	2.0	D M	0.24	0.071	ug/L	100		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	6.0	D	0.38	0.12	ug/L	100		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-03-GW-31-35 — Lab Sample ID: 320-23998-1

Date Collected: 11/30/16 09:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**0.019**	**M**	0.0025	0.00074	ug/L		12/06/16 11:39	12/21/16 13:34	1
Perfluorooctane Sulfonate (PFOS)	**0.13**		0.0039	0.0013	ug/L		12/06/16 11:39	12/21/16 13:34	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00090	ug/L		12/06/16 11:39	12/21/16 13:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*53*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:34*	*1*
13C4 PFOS	*107*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:34*	*1*
18O2 PFHxS	*102*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:34*	*1*

Client Sample ID: DPT-16-03-GW-18-22 — Lab Sample ID: 320-23998-2

Date Collected: 11/30/16 10:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**0.00092**	**J**	0.0024	0.00073	ug/L		12/06/16 11:39	12/21/16 13:42	1
Perfluorooctane Sulfonate (PFOS)	**0.0071**		0.0039	0.0012	ug/L		12/06/16 11:39	12/21/16 13:42	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00089	ug/L		12/06/16 11:39	12/21/16 13:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*63*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:42*	*1*
13C4 PFOS	*112*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:42*	*1*
18O2 PFHxS	*108*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:42*	*1*

Client Sample ID: DPT-16-04-GW-31-35 — Lab Sample ID: 320-23998-3

Date Collected: 11/30/16 10:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00076	ug/L		12/06/16 11:39	12/21/16 13:49	1
Perfluorooctane Sulfonate (PFOS)	**0.0016**	**J M**	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 13:49	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00093	ug/L		12/06/16 11:39	12/21/16 13:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*44*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:49*	*1*
13C4 PFOS	*116*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:49*	*1*
18O2 PFHxS	*113*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:49*	*1*

Client Sample ID: DPT-16-04-GW-18-22 — Lab Sample ID: 320-23998-4

Date Collected: 11/30/16 11:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**0.0027**	**M**	0.0025	0.00073	ug/L		12/06/16 11:39	12/21/16 14:12	1
Perfluorooctane Sulfonate (PFOS)	**0.027**		0.0039	0.0013	ug/L		12/06/16 11:39	12/21/16 14:12	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00090	ug/L		12/06/16 11:39	12/21/16 14:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*57*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:12*	*1*
13C4 PFOS	*112*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:12*	*1*
18O2 PFHxS	*110*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:12*	*1*

Client Sample ID: DPT-16-10-GW-31-35 — Lab Sample ID: 320-23998-5

Date Collected: 11/30/16 13:00 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.014	M	0.0025	0.00075	ug/L		12/06/16 11:39	12/21/16 14:19	1
Perfluorooctane Sulfonate (PFOS)	0.11		0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 14:19	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/06/16 11:39	12/21/16 14:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*47*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:19*	*1*
13C4 PFOS	*103*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:19*	*1*
18O2 PFHxS	*101*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:19*	*1*

Client Sample ID: DPT-16-10-GW-18-22 — Lab Sample ID: 320-23998-6

Date Collected: 11/30/16 13:20 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0062		0.0024	0.00072	ug/L		12/06/16 11:39	12/21/16 14:27	1
Perfluorooctane Sulfonate (PFOS)	0.030		0.0038	0.0012	ug/L		12/06/16 11:39	12/21/16 14:27	1
Perfluorobutanesulfonic acid (PFBS)	0.010		0.0024	0.00088	ug/L		12/06/16 11:39	12/21/16 14:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*58*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:27*	*1*
13C4 PFOS	*115*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:27*	*1*
18O2 PFHxS	*107*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:27*	*1*

Client Sample ID: DPT-16-09-GW-31-35 — Lab Sample ID: 320-23998-7

Date Collected: 11/30/16 14:10 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0021	J M	0.0024	0.00072	ug/L		12/06/16 11:39	12/21/16 16:35	1
Perfluorooctane Sulfonate (PFOS)	0.017		0.0038	0.0012	ug/L		12/06/16 11:39	12/21/16 16:35	1
Perfluorobutanesulfonic acid (PFBS)	0.0027		0.0024	0.00088	ug/L		12/06/16 11:39	12/21/16 16:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*50*		*25 - 150*	*12/06/16 11:39*	*12/21/16 16:35*	*1*
13C4 PFOS	*115*		*25 - 150*	*12/06/16 11:39*	*12/21/16 16:35*	*1*
18O2 PFHxS	*109*		*25 - 150*	*12/06/16 11:39*	*12/21/16 16:35*	*1*

Client Sample ID: DPT-16-09-GW-18-22 — Lab Sample ID: 320-23998-8

Date Collected: 11/30/16 14:40 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.00072	ug/L		12/06/16 11:39	12/21/16 16:43	1
Perfluorooctane Sulfonate (PFOS)	0.019		0.0039	0.0012	ug/L		12/06/16 11:39	12/21/16 16:43	1
Perfluorobutanesulfonic acid (PFBS)	0.0043		0.0024	0.00089	ug/L		12/06/16 11:39	12/21/16 16:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*65*		*25 - 150*	*12/06/16 11:39*	*12/21/16 16:43*	*1*

Client Sample ID: DPT-16-09-GW-18-22 — Lab Sample ID: 320-23998-8

Date Collected: 11/30/16 14:40 — **Matrix: Water**
Date Received: 12/02/16 09:40

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	114		25 - 150	12/06/16 11:39	12/21/16 16:43	1
18O2 PFHxS	109		25 - 150	12/06/16 11:39	12/21/16 16:43	1

Client Sample ID: DPT-16-08-GW-31-35 — Lab Sample ID: 320-23998-9

Date Collected: 12/01/16 10:00 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.00073	ug/L		12/06/16 11:39	12/21/16 16:50	1
Perfluorooctane Sulfonate (PFOS)	0.022		0.0039	0.0012	ug/L		12/06/16 11:39	12/21/16 16:50	1
Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0024	0.00089	ug/L		12/06/16 11:39	12/21/16 16:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	57		25 - 150	12/06/16 11:39	12/21/16 16:50	1
13C4 PFOS	117		25 - 150	12/06/16 11:39	12/21/16 16:50	1
18O2 PFHxS	111		25 - 150	12/06/16 11:39	12/21/16 16:50	1

Client Sample ID: DPT-16-08-GW-18-22 — Lab Sample ID: 320-23998-10

Date Collected: 12/01/16 10:10 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0075	M	0.0025	0.00075	ug/L		12/06/16 11:39	12/21/16 17:13	1
Perfluorooctane Sulfonate (PFOS)	0.038		0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 17:13	1
Perfluorobutanesulfonic acid (PFBS)	0.0030	M	0.0025	0.00093	ug/L		12/06/16 11:39	12/21/16 17:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	45		25 - 150	12/06/16 11:39	12/21/16 17:13	1
13C4 PFOS	113		25 - 150	12/06/16 11:39	12/21/16 17:13	1
18O2 PFHxS	102		25 - 150	12/06/16 11:39	12/21/16 17:13	1

Client Sample ID: DPT-16-07-GW-31-35 — Lab Sample ID: 320-23998-11

Date Collected: 12/01/16 10:50 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.88	E M	0.0025	0.00075	ug/L		12/06/16 11:39	12/21/16 17:20	1
Perfluorooctane Sulfonate (PFOS)	2.3	E	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 17:20	1
Perfluorobutanesulfonic acid (PFBS)	0.18		0.0025	0.00092	ug/L		12/06/16 11:39	12/21/16 17:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	66		25 - 150	12/06/16 11:39	12/21/16 17:20	1
13C4 PFOS	57		25 - 150	12/06/16 11:39	12/21/16 17:20	1
18O2 PFHxS	48		25 - 150	12/06/16 11:39	12/21/16 17:20	1

Client Sample ID: DPT-16-07-GW-31-35 — Lab Sample ID: 320-23998-11

Date Collected: 12/01/16 10:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.2	D M	0.025	0.0075	ug/L		12/06/16 11:39	12/22/16 17:20	10
Perfluorooctane Sulfonate (PFOS)	3.1	D	0.040	0.013	ug/L		12/06/16 11:39	12/22/16 17:20	10
Perfluorobutanesulfonic acid (PFBS)	0.11	D	0.025	0.0092	ug/L		12/06/16 11:39	12/22/16 17:20	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*112*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:20*	*10*
13C4 PFOS	*121*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:20*	*10*
18O2 PFHxS	*117*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:20*	*10*

Client Sample ID: DPT-16-07-GW-18-22 — Lab Sample ID: 320-23998-12

Date Collected: 12/01/16 11:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.37	M	0.0025	0.00074	ug/L		12/06/16 11:39	12/21/16 17:28	1
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 17:28	1
Perfluorobutanesulfonic acid (PFBS)	0.17		0.0025	0.00091	ug/L		12/06/16 11:39	12/21/16 17:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*71*		*25 - 150*	*12/06/16 11:39*	*12/21/16 17:28*	*1*
13C4 PFOS	*74*		*25 - 150*	*12/06/16 11:39*	*12/21/16 17:28*	*1*
18O2 PFHxS	*39*		*25 - 150*	*12/06/16 11:39*	*12/21/16 17:28*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.40	D M	0.025	0.0074	ug/L		12/06/16 11:39	12/22/16 17:27	10
Perfluorooctane Sulfonate (PFOS)	1.9	D	0.040	0.013	ug/L		12/06/16 11:39	12/22/16 17:27	10
Perfluorobutanesulfonic acid (PFBS)	0.084	D	0.025	0.0091	ug/L		12/06/16 11:39	12/22/16 17:27	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*99*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:27*	*10*
13C4 PFOS	*127*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:27*	*10*
18O2 PFHxS	*101*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:27*	*10*

Client Sample ID: DPT-16-06-GW-31-35 — Lab Sample ID: 320-23998-13

Date Collected: 12/01/16 12:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.2	E M J	0.0026	0.00077	ug/L		12/06/16 11:39	12/21/16 18:05	1
Perfluorooctane Sulfonate (PFOS)	2.2	E J	0.0041	0.0013	ug/L		12/06/16 11:39	12/21/16 18:05	1
Perfluorobutanesulfonic acid (PFBS)	0.42	E J	0.0026	0.00094	ug/L		12/06/16 11:39	12/21/16 18:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*55*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:05*	*1*
13C4 PFOS	*61*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:05*	*1*
18O2 PFHxS	*35*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:05*	*1*

Client Sample ID: DPT-16-06-GW-31-35 — Lab Sample ID: 320-23998-13

Date Collected: 12/01/16 12:50 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.6	D M J	0.026	0.0077	ug/L		12/06/16 11:39	12/22/16 17:35	10
Perfluorooctane Sulfonate (PFOS)	2.7	D J	0.041	0.013	ug/L		12/06/16 11:39	12/22/16 17:35	10
Perfluorobutanesulfonic acid (PFBS)	0.28	D	0.026	0.0094	ug/L		12/06/16 11:39	12/22/16 17:35	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*111*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:35*	*10*
13C4 PFOS	*138*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:35*	*10*
18O2 PFHxS	*104*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:35*	*10*

Client Sample ID: DPT-16-06-GW-18-22 — Lab Sample ID: 320-23998-14

Date Collected: 12/01/16 13:00 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.3	E M	0.0024	0.00072	ug/L		12/06/16 11:39	12/21/16 18:28	1
Perfluorooctane Sulfonate (PFOS)	2.2	E	0.0039	0.0012	ug/L		12/06/16 11:39	12/21/16 18:28	1
Perfluorobutanesulfonic acid (PFBS)	0.20		0.0024	0.00088	ug/L		12/06/16 11:39	12/21/16 18:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*54*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:28*	*1*
13C4 PFOS	*59*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:28*	*1*
18O2 PFHxS	*46*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:28*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	D M	0.024	0.0072	ug/L		12/06/16 11:39	12/22/16 17:57	10
Perfluorooctane Sulfonate (PFOS)	2.8	D	0.039	0.012	ug/L		12/06/16 11:39	12/22/16 17:57	10
Perfluorobutanesulfonic acid (PFBS)	0.12	D	0.024	0.0088	ug/L		12/06/16 11:39	12/22/16 17:57	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*108*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:57*	*10*
13C4 PFOS	*126*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:57*	*10*
18O2 PFHxS	*116*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:57*	*10*

Client Sample ID: DPT-16-11-GW-31-35 — Lab Sample ID: 320-23998-15

Date Collected: 12/01/16 14:00 — **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.00075	ug/L		12/06/16 11:39	12/21/16 18:35	1
Perfluorooctane Sulfonate (PFOS)	0.77	E	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 18:35	1
Perfluorobutanesulfonic acid (PFBS)	0.080		0.0025	0.00092	ug/L		12/06/16 11:39	12/21/16 18:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*73*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:35*	*1*
13C4 PFOS	*90*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:35*	*1*
18O2 PFHxS	*64*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:35*	*1*

Client Sample ID: DPT-16-11-GW-31-35 — Lab Sample ID: 320-23998-15

Date Collected: 12/01/16 14:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.36	D M	0.025	0.0075	ug/L		12/06/16 11:39	12/22/16 18:05	10
Perfluorooctane Sulfonate (PFOS)	0.86	D	0.040	0.013	ug/L		12/06/16 11:39	12/22/16 18:05	10
Perfluorobutanesulfonic acid (PFBS)	0.050	D	0.025	0.0092	ug/L		12/06/16 11:39	12/22/16 18:05	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*106*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:05*	*10*
13C4 PFOS	*134*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:05*	*10*
18O2 PFHxS	*126*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:05*	*10*

Client Sample ID: DPT-16-11-GW-31-35-DUP — Lab Sample ID: 320-23998-16

Date Collected: 12/01/16 14:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.00074	ug/L		12/06/16 11:39	12/21/16 18:43	1
Perfluorooctane Sulfonate (PFOS)	0.78	E	0.0039	0.0013	ug/L		12/06/16 11:39	12/21/16 18:43	1
Perfluorobutanesulfonic acid (PFBS)	0.076		0.0025	0.00090	ug/L		12/06/16 11:39	12/21/16 18:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*67*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:43*	*1*
13C4 PFOS	*87*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:43*	*1*
18O2 PFHxS	*65*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:43*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.35	D M	0.025	0.0074	ug/L		12/06/16 11:39	12/22/16 18:12	10
Perfluorooctane Sulfonate (PFOS)	0.88	D	0.039	0.013	ug/L		12/06/16 11:39	12/22/16 18:12	10
Perfluorobutanesulfonic acid (PFBS)	0.052	D	0.025	0.0090	ug/L		12/06/16 11:39	12/22/16 18:12	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*112*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:12*	*10*
13C4 PFOS	*144*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:12*	*10*
18O2 PFHxS	*139*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:12*	*10*

Client Sample ID: DPT-16-11-GW-18-22 — Lab Sample ID: 320-23998-17

Date Collected: 12/01/16 14:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.4	E M	0.0024	0.00071	ug/L		12/06/16 11:39	12/21/16 18:50	1
Perfluorooctane Sulfonate (PFOS)	4.0	E	0.0038	0.0012	ug/L		12/06/16 11:39	12/21/16 18:50	1
Perfluorobutanesulfonic acid (PFBS)	0.18		0.0024	0.00087	ug/L		12/06/16 11:39	12/21/16 18:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*48*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:50*	*1*
13C4 PFOS	*42*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:50*	*1*
18O2 PFHxS	*44*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:50*	*1*

Client Sample ID: DPT-16-11-GW-18-22 **Lab Sample ID: 320-23998-17**
Date Collected: 12/01/16 14:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**2.0**	**D M**	0.24	0.071	ug/L		12/06/16 11:39	12/22/16 17:12	100
Perfluorooctane Sulfonate (PFOS)	**6.0**	**D**	0.38	0.12	ug/L		12/06/16 11:39	12/22/16 17:12	100
Perfluorobutanesulfonic acid (PFBS)	0.19	U	0.24	0.087	ug/L		12/06/16 11:39	12/22/16 17:12	100

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*147*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:12*	*100*
13C4 PFOS	*150*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:12*	*100*
18O2 PFHxS	*159*	*Q*	*25 - 150*	*12/06/16 11:39*	*12/22/16 17:12*	*100*

Isotope Dilution Summary

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

TestAmerica Job ID: 320-23998-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	3C4 PFOA (25-150)	3C4 PFOS (25-150)	3O2 PFHx (25-150)						
320-23998-1	DPT-16-03-GW-31-35	53	107	102						
320-23998-2	DPT-16-03-GW-18-22	63	112	108						
320-23998-3	DPT-16-04-GW-31-35	44	116	113						
320-23998-3 MS	DPT-16-04-GW-31-35-MS	47	111	107						
320-23998-3 MSD	DPT-16-04-GW-31-35-MSD	49	114	110						
320-23998-4	DPT-16-04-GW-18-22	57	112	110						
320-23998-5	DPT-16-10-GW-31-35	47	103	101						
320-23998-6	DPT-16-10-GW-18-22	58	115	107						
320-23998-7	DPT-16-09-GW-31-35	50	115	109						
320-23998-8	DPT-16-09-GW-18-22	65	114	109						
320-23998-9	DPT-16-08-GW-31-35	57	117	111						
320-23998-9 MS	DPT-16-08-GW-31-35-MS	50	113	104						
320-23998-9 MSD	DPT-16-08-GW-31-35-MSD	64	118	107						
320-23998-10	DPT-16-08-GW-18-22	45	113	102						
320-23998-11	DPT-16-07-GW-31-35	66	57	48						
320-23998-11 - DL	DPT-16-07-GW-31-35	112	121	117						
320-23998-12	DPT-16-07-GW-18-22	71	74	39						
320-23998-12 - DL	DPT-16-07-GW-18-22	99	127	101						
320-23998-13	DPT-16-06-GW-31-35	55	61	35						
320-23998-13 - DL	DPT-16-06-GW-31-35	111	138	104						
320-23998-13 MS	DPT-16-06-GW-31-35-MS	55	61	33						
320-23998-13 MS - DL	DPT-16-06-GW-31-35-MS	101	121	95						
320-23998-13 MSD	DPT-16-06-GW-31-35-MSD	56	61	33						
320-23998-13 MSD - DL	DPT-16-06-GW-31-35-MSD	112	137	101						
320-23998-14	DPT-16-06-GW-18-22	54	59	46						
320-23998-14 - DL	DPT-16-06-GW-18-22	108	126	116						
320-23998-15	DPT-16-11-GW-31-35	73	90	64						
320-23998-15 - DL	DPT-16-11-GW-31-35	106	134	126						
320-23998-16	DPT-16-11-GW-31-35-DUP	67	87	65						
320-23998-16 - DL	DPT-16-11-GW-31-35-DUP	112	144	139						
320-23998-17	DPT-16-11-GW-18-22	48	42	44						
320-23998-17 - DL	DPT-16-11-GW-18-22	147	150	159 Q						
LCS 320-140788/2-A	Lab Control Sample	106	111	106						
MB 320-140788/1-A	Method Blank	113	108	109						

Surrogate Legend

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

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-140788/1-A
Matrix: Water
Analysis Batch: 143502

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 140788

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		12/06/16 11:39	12/21/16 13:19	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 13:19	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/06/16 11:39	12/21/16 13:19	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*113*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:19*	*1*
13C4 PFOS	*108*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:19*	*1*
18O2 PFHxS	*109*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:19*	*1*

Lab Sample ID: LCS 320-140788/2-A
Matrix: Water
Analysis Batch: 143502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 140788

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0346		ug/L		87	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0345		ug/L		93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0368		ug/L		104	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*106*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
18O2 PFHxS	*106*		*25 - 150*

Lab Sample ID: 320-23998-3 MS
Matrix: Water
Analysis Batch: 143502

Client Sample ID: DPT-16-04-GW-31-35-MS
Prep Type: Total/NA
Prep Batch: 140788

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0389	0.0356		ug/L		92	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0016	J M	0.0361	0.0390		ug/L		104	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0343	0.0401		ug/L		117	50 - 150

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA	*47*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
18O2 PFHxS	*107*		*25 - 150*

Lab Sample ID: 320-23998-3 MSD
Matrix: Water
Analysis Batch: 143502

Client Sample ID: DPT-16-04-GW-31-35-MSD
Prep Type: Total/NA
Prep Batch: 140788

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0394	0.0368		ug/L		93	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS)	0.0016	J M	0.0366	0.0389		ug/L		102	60 - 140	0	30

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

Lab Sample ID: 320-23998-3 MSD — **Client Sample ID: DPT-16-04-GW-31-35-MSD**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 143502 — **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0348	0.0403		ug/L		116	50 - 150	1	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA	*49*		*25 - 150*
13C4 PFOS	*114*		*25 - 150*
18O2 PFHxS	*110*		*25 - 150*

Lab Sample ID: 320-23998-9 MS — **Client Sample ID: DPT-16-08-GW-31-35-MS**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 143502 — **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0392	0.0420	M	ug/L		96	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.022		0.0364	0.0625		ug/L		112	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0347	0.0466		ug/L		118	50 - 150

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA	*50*		*25 - 150*
13C4 PFOS	*113*		*25 - 150*
18O2 PFHxS	*104*		*25 - 150*

Lab Sample ID: 320-23998-9 MSD — **Client Sample ID: DPT-16-08-GW-31-35-MSD**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 143502 — **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0395	0.0435	M	ug/L		99	60 - 140	4	30
Perfluorooctane Sulfonate (PFOS)	0.022		0.0366	0.0610		ug/L		107	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0349	0.0455		ug/L		115	50 - 150	2	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA	*64*		*25 - 150*
13C4 PFOS	*118*		*25 - 150*
18O2 PFHxS	*107*		*25 - 150*

Lab Sample ID: 320-23998-13 MS — **Client Sample ID: DPT-16-06-GW-31-35-MS**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 143502 — **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	1.2	E M J	0.0400	1.15	E M 4	ug/L		-52	60 - 140
Perfluorooctane Sulfonate (PFOS)	2.2	E J	0.0371	2.16	E 4	ug/L		-160	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.42	E J	0.0353	0.485	E 4	ug/L		192	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA	55		25 - 150
13C4 PFOS	61		25 - 150
18O2 PFHxS	33		25 - 150

Lab Sample ID: 320-23998-13 MSD **Client Sample ID: DPT-16-06-GW-31-35-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	1.2	E M J	0.0396	1.14	E M 4	ug/L		-67	60 - 140	0	30
Perfluorooctane Sulfonate (PFOS)	2.2	E J	0.0367	2.15	E 4	ug/L		-180	60 - 140	0	30
Perfluorobutanesulfonic acid (PFBS)	0.42	E J	0.0350	0.479	E 4	ug/L		177	50 - 150	1	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA	56		25 - 150
13C4 PFOS	61		25 - 150
18O2 PFHxS	33		25 - 150

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Lab Sample ID: 320-23998-13 MS **Client Sample ID: DPT-16-06-GW-31-35-MS**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143644 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA) - DL	1.6	D M J	0.0400	1.69	D M 4	ug/L		160	60 - 140
Perfluorooctane Sulfonate (PFOS) - DL	2.7	D J	0.0371	2.74	D 4	ug/L		102	60 - 140
Perfluorobutanesulfonic acid (PFBS) - DL	0.28	D	0.0353	0.325	D 4	ug/L		123	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA - DL	101		25 - 150
13C4 PFOS - DL	121		25 - 150
18O2 PFHxS - DL	95		25 - 150

Lab Sample ID: 320-23998-13 MSD **Client Sample ID: DPT-16-06-GW-31-35-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143644 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA) - DL	1.6	D M J	0.0396	1.67	D M 4	ug/L		119	60 - 140	1	30
Perfluorooctane Sulfonate (PFOS) - DL	2.7	D J	0.0367	2.62	D 4	ug/L		-203	60 - 140	4	30
Perfluorobutanesulfonic acid (PFBS) - DL	0.28	D	0.0350	0.332	D 4	ug/L		143	50 - 150	2	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA - DL	112		25 - 150
13C4 PFOS - DL	137		25 - 150
18O2 PFHxS - DL	101		25 - 150

LCMS

Prep Batch: 140788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23998-1	DPT-16-03-GW-31-35	Total/NA	Water	3535	
320-23998-2	DPT-16-03-GW-18-22	Total/NA	Water	3535	
320-23998-3	DPT-16-04-GW-31-35	Total/NA	Water	3535	
320-23998-4	DPT-16-04-GW-18-22	Total/NA	Water	3535	
320-23998-5	DPT-16-10-GW-31-35	Total/NA	Water	3535	
320-23998-6	DPT-16-10-GW-18-22	Total/NA	Water	3535	
320-23998-7	DPT-16-09-GW-31-35	Total/NA	Water	3535	
320-23998-8	DPT-16-09-GW-18-22	Total/NA	Water	3535	
320-23998-9	DPT-16-08-GW-31-35	Total/NA	Water	3535	
320-23998-10	DPT-16-08-GW-18-22	Total/NA	Water	3535	
320-23998-11	DPT-16-07-GW-31-35	Total/NA	Water	3535	
320-23998-11 - DL	DPT-16-07-GW-31-35	Total/NA	Water	3535	
320-23998-12	DPT-16-07-GW-18-22	Total/NA	Water	3535	
320-23998-12 - DL	DPT-16-07-GW-18-22	Total/NA	Water	3535	
320-23998-13	DPT-16-06-GW-31-35	Total/NA	Water	3535	
320-23998-13 - DL	DPT-16-06-GW-31-35	Total/NA	Water	3535	
320-23998-14 - DL	DPT-16-06-GW-18-22	Total/NA	Water	3535	
320-23998-14	DPT-16-06-GW-18-22	Total/NA	Water	3535	
320-23998-15 - DL	DPT-16-11-GW-31-35	Total/NA	Water	3535	
320-23998-15	DPT-16-11-GW-31-35	Total/NA	Water	3535	
320-23998-16	DPT-16-11-GW-31-35-DUP	Total/NA	Water	3535	
320-23998-16 - DL	DPT-16-11-GW-31-35-DUP	Total/NA	Water	3535	
320-23998-17	DPT-16-11-GW-18-22	Total/NA	Water	3535	
320-23998-17 - DL	DPT-16-11-GW-18-22	Total/NA	Water	3535	
MB 320-140788/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-140788/2-A	Lab Control Sample	Total/NA	Water	3535	
320-23998-3 MS	DPT-16-04-GW-31-35-MS	Total/NA	Water	3535	
320-23998-3 MSD	DPT-16-04-GW-31-35-MSD	Total/NA	Water	3535	
320-23998-9 MS	DPT-16-08-GW-31-35-MS	Total/NA	Water	3535	
320-23998-9 MSD	DPT-16-08-GW-31-35-MSD	Total/NA	Water	3535	
320-23998-13 MS - DL	DPT-16-06-GW-31-35-MS	Total/NA	Water	3535	
320-23998-13 MS	DPT-16-06-GW-31-35-MS	Total/NA	Water	3535	
320-23998-13 MSD - DL	DPT-16-06-GW-31-35-MSD	Total/NA	Water	3535	
320-23998-13 MSD	DPT-16-06-GW-31-35-MSD	Total/NA	Water	3535	

Analysis Batch: 143502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23998-1	DPT-16-03-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-2	DPT-16-03-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-3	DPT-16-04-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-4	DPT-16-04-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-5	DPT-16-10-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-6	DPT-16-10-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-7	DPT-16-09-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-8	DPT-16-09-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-9	DPT-16-08-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-10	DPT-16-08-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-11	DPT-16-07-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-12	DPT-16-07-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-13	DPT-16-06-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-14	DPT-16-06-GW-18-22	Total/NA	Water	537 (Modified)	140788

LCMS (Continued)

Analysis Batch: 143502 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23998-15	DPT-16-11-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-16	DPT-16-11-GW-31-35-DUP	Total/NA	Water	537 (Modified)	140788
320-23998-17	DPT-16-11-GW-18-22	Total/NA	Water	537 (Modified)	140788
MB 320-140788/1-A	Method Blank	Total/NA	Water	537 (Modified)	140788
LCS 320-140788/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	140788
320-23998-3 MS	DPT-16-04-GW-31-35-MS	Total/NA	Water	537 (Modified)	140788
320-23998-3 MSD	DPT-16-04-GW-31-35-MSD	Total/NA	Water	537 (Modified)	140788
320-23998-9 MS	DPT-16-08-GW-31-35-MS	Total/NA	Water	537 (Modified)	140788
320-23998-9 MSD	DPT-16-08-GW-31-35-MSD	Total/NA	Water	537 (Modified)	140788
320-23998-13 MS	DPT-16-06-GW-31-35-MS	Total/NA	Water	537 (Modified)	140788
320-23998-13 MSD	DPT-16-06-GW-31-35-MSD	Total/NA	Water	537 (Modified)	140788

Analysis Batch: 143644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23998-11 - DL	DPT-16-07-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-12 - DL	DPT-16-07-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-13 - DL	DPT-16-06-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-14 - DL	DPT-16-06-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-15 - DL	DPT-16-11-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-16 - DL	DPT-16-11-GW-31-35-DUP	Total/NA	Water	537 (Modified)	140788
320-23998-17 - DL	DPT-16-11-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-13 MS - DL	DPT-16-06-GW-31-35-MS	Total/NA	Water	537 (Modified)	140788
320-23998-13 MSD - DL	DPT-16-06-GW-31-35-MSD	Total/NA	Water	537 (Modified)	140788

Lab Chronicle

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

TestAmerica Job ID: 320-23998-1

Client Sample ID: DPT-16-03-GW-31-35
Lab Sample ID: 320-23998-1
Date Collected: 11/30/16 09:50
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 13:34	SBC	TAL SAC

Client Sample ID: DPT-16-03-GW-18-22
Lab Sample ID: 320-23998-2
Date Collected: 11/30/16 10:10
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.1 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 13:42	SBC	TAL SAC

Client Sample ID: DPT-16-04-GW-31-35
Lab Sample ID: 320-23998-3
Date Collected: 11/30/16 10:50
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			247.2 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 13:49	SBC	TAL SAC

Client Sample ID: DPT-16-04-GW-18-22
Lab Sample ID: 320-23998-4
Date Collected: 11/30/16 11:10
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.5 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 14:12	SBC	TAL SAC

Client Sample ID: DPT-16-10-GW-31-35
Lab Sample ID: 320-23998-5
Date Collected: 11/30/16 13:00
Matrix: Water
Date Received: 12/02/16 09:40

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 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 14:19	SBC	TAL SAC

Client Sample ID: DPT-16-10-GW-18-22
Lab Sample ID: 320-23998-6
Date Collected: 11/30/16 13:20
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.1 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 14:27	SBC	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-23998-1

Client Sample ID: DPT-16-09-GW-31-35
Date Collected: 11/30/16 14:10
Date Received: 12/02/16 09:40

Lab Sample ID: 320-23998-7
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			260 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 16:35	SBC	TAL SAC

Client Sample ID: DPT-16-09-GW-18-22
Date Collected: 11/30/16 14:40
Date Received: 12/02/16 09:40

Lab Sample ID: 320-23998-8
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			259.2 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 16:43	SBC	TAL SAC

Client Sample ID: DPT-16-08-GW-31-35
Date Collected: 12/01/16 10:00
Date Received: 12/02/16 09:40

Lab Sample ID: 320-23998-9
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			257.6 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 16:50	SBC	TAL SAC

Client Sample ID: DPT-16-08-GW-18-22
Date Collected: 12/01/16 10:10
Date Received: 12/02/16 09:40

Lab Sample ID: 320-23998-10
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			247.9 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 17:13	SBC	TAL SAC

Client Sample ID: DPT-16-07-GW-31-35
Date Collected: 12/01/16 10:50
Date Received: 12/02/16 09:40

Lab Sample ID: 320-23998-11
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			249.9 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 17:20	SBC	TAL SAC
Total/NA	Prep	3535	DL		249.9 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			143644	12/22/16 17:20	SBC	TAL SAC

Client Sample ID: DPT-16-07-GW-18-22
Date Collected: 12/01/16 11:10
Date Received: 12/02/16 09:40

Lab Sample ID: 320-23998-12
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			251.7 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-23998-1

Client Sample ID: DPT-16-07-GW-18-22

Lab Sample ID: 320-23998-12
Date Collected: 12/01/16 11:10
Matrix: Water
Date Received: 12/02/16 09:40

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)		1			143502	12/21/16 17:28	SBC	TAL SAC
Total/NA	Prep	3535	DL		251.7 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			143644	12/22/16 17:27	SBC	TAL SAC

Client Sample ID: DPT-16-06-GW-31-35

Lab Sample ID: 320-23998-13
Date Collected: 12/01/16 12:50
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			243.6 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 18:05	SBC	TAL SAC
Total/NA	Prep	3535	DL		243.6 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			143644	12/22/16 17:35	SBC	TAL SAC

Client Sample ID: DPT-16-06-GW-18-22

Lab Sample ID: 320-23998-14
Date Collected: 12/01/16 13:00
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.5 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 18:28	SBC	TAL SAC
Total/NA	Prep	3535	DL		259.5 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			143644	12/22/16 17:57	SBC	TAL SAC

Client Sample ID: DPT-16-11-GW-31-35

Lab Sample ID: 320-23998-15
Date Collected: 12/01/16 14:00
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			248.9 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 18:35	SBC	TAL SAC
Total/NA	Prep	3535	DL		248.9 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			143644	12/22/16 18:05	SBC	TAL SAC

Client Sample ID: DPT-16-11-GW-31-35-DUP

Lab Sample ID: 320-23998-16
Date Collected: 12/01/16 14:00
Matrix: Water
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.4 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 18:43	SBC	TAL SAC
Total/NA	Prep	3535	DL		254.4 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			143644	12/22/16 18:12	SBC	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-23998-1

Client Sample ID: DPT-16-11-GW-18-22

Lab Sample ID: 320-23998-17

Date Collected: 12/01/16 14:10

Matrix: Water

Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.6 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			143502	12/21/16 18:50	SBC	TAL SAC
Total/NA	Prep	3535	DL		262.6 mL	0.5 mL	140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100			143644	12/22/16 17:12	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: 320-23998-1
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: 320-23998-1

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: 320-23998-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23998-1	DPT-16-03-GW-31-35	Water	11/30/16 09:50	12/02/16 09:40
320-23998-2	DPT-16-03-GW-18-22	Water	11/30/16 10:10	12/02/16 09:40
320-23998-3	DPT-16-04-GW-31-35	Water	11/30/16 10:50	12/02/16 09:40
320-23998-4	DPT-16-04-GW-18-22	Water	11/30/16 11:10	12/02/16 09:40
320-23998-5	DPT-16-10-GW-31-35	Water	11/30/16 13:00	12/02/16 09:40
320-23998-6	DPT-16-10-GW-18-22	Water	11/30/16 13:20	12/02/16 09:40
320-23998-7	DPT-16-09-GW-31-35	Water	11/30/16 14:10	12/02/16 09:40
320-23998-8	DPT-16-09-GW-18-22	Water	11/30/16 14:40	12/02/16 09:40
320-23998-9	DPT-16-08-GW-31-35	Water	12/01/16 10:00	12/02/16 09:40
320-23998-10	DPT-16-08-GW-18-22	Water	12/01/16 10:10	12/02/16 09:40
320-23998-11	DPT-16-07-GW-31-35	Water	12/01/16 10:50	12/02/16 09:40
320-23998-12	DPT-16-07-GW-18-22	Water	12/01/16 11:10	12/02/16 09:40
320-23998-13	DPT-16-06-GW-31-35	Water	12/01/16 12:50	12/02/16 09:40
320-23998-14	DPT-16-06-GW-18-22	Water	12/01/16 13:00	12/02/16 09:40
320-23998-15	DPT-16-11-GW-31-35	Water	12/01/16 14:00	12/02/16 09:40
320-23998-16	DPT-16-11-GW-31-35-DUP	Water	12/01/16 14:00	12/02/16 09:40
320-23998-17	DPT-16-11-GW-18-22	Water	12/01/16 14:10	12/02/16 09:40

Chain of Custody Record

Temperature on Receipt 2.9°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	12/1/16	295760
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 2
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 Row Annex	FEDEX		
Contract/Purchase Order/Quote No.			
32007449 / 60444465			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: PFOA	PFOS	PFBS	Special Instructions/ Conditions of Receipt
DPT-16-03-GW-31-35	11/30/16	0950		✓			2						✓	✓	✓	
* DPT-16-03-GW-18-22	11/30/16	1010		✓			2						✓	✓	✓	
DPT-16-04-GW-31-35	11/30/16	1050		✓			2						✓	✓	✓	
DPT-16-04-GW-31-35-MS	11/30/16	1050		✓			1						✓	✓	✓	
DPT-16-04-GW-31-35-MSD	11/30/16	1050		✓			1						✓	✓	✓	
DPT-16-04-GW-18-22	11/30/16	1110		✓			2						✓	✓	✓	
DPT-16-10-GW-31-35	11/30/16	1300		✓			2						✓	✓	✓	
DPT-16-10-GW-18-22	11/30/16	1320		✓			2						✓	✓	✓	
DPT-16-[illegible]-GW-31-35	11/30/16	1410		✓			2						✓	✓	✓	
DPT-16-09-GW-18-22	11/30/16	1440		✓			2						✓	✓	✓	
DPT-16-08-GW-31-35	12/1/16	1000		✓			2						✓	✓	✓	
DPT-16-08-GW-31-35-MS	12/1/16	1000		✓			1						✓	✓	✓	

320-23998 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
			[signature]	12/2/16	0940
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments
2.9°C

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

* lab time 1112 PM 12/3/16

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM Technical Services	Kurt VanHelder	12/1/16	295753
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 2**
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 Annex Road	FEDEX		
Contract/Purchase Order/Quote No.			
32007449 / 60444465			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: PFOA	PFAs	PFBs	Special Instructions/ Conditions of Receipt
DPT-16-08-GW-31-35-MSD	12/1/16	1000		✓			1						✓	✓	✓	
DPT-16-08-GW-18-22	12/1/16	1010		✓			2						✓	✓	✓	
DPT-16-07-GW-31-35	12/1/16	1050		✓			2						✓	✓	✓	
DPT-16-07-GW-18-22	12/1/16	1110		✓			2						✓	✓	✓	
DPT-16-06-GW-31-35	12/1/16	1250		✓			2						✓	✓	✓	
DPT-16-06-GW-18-22	12/1/16	1300		✓			2						✓	✓	✓	
DPT-16-06-GW-31-35-MS	12/1/16	1250		✓			1						✓	✓	✓	
DPT-16-06-GW-31-35-MSD	12/1/16	1250		✓			1						✓	✓	✓	
DPT-16-11-GW-31-35	12/1/16	1400		✓			2						✓	✓	✓	
DPT-16-11-GW-31-35-DUP	12/1/16	1400		✓			2						✓	✓	✓	
DPT-16-11-GW-18-22	12/1/16	1410		✓			2						✓	✓	✓	

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

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

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

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: AECOM	12/1/16	1500	1. Received By: [signature]	12/2/16	0940
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: 29°C

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

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-23998-1

Login Number: 23998 **List Source: TestAmerica Sacramento**
List Number: 1
Creator: Edman, Connor M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	COC not relinquished.
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: 320-23998-1

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.
Jill Kellmann
Manager of Project Management
1/6/2017 11:23 AM

Jill Kellmann, Manager of Project Management
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4402
jill.kellmann@testamericainc.com
01/06/2017
Revision: 1

Table of Contents

Table of Contents

Qualifiers

LCMS

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

Glossary

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

CASE NARRATIVE

Client: AECOM Technical Services Inc.

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

Report Number: 320-23998-1

Revision - January 6, 2017
Revision created to include a low leve CCV which was missing from the initial data package.

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 12/02/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.9 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.

Due to the high concentration of Perfluorooctanoic acid (PFOA), Perfluorobutanesulfonic acid (PFBS) and Perfluorooctane Sulfonate (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-140788 and analytical batch 320-143502 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: DPT-16-07-GW-31-35 (320-23998-11), DPT-16-07-GW-18-22 (320-23998-12), DPT-16-06-GW-31-35 (320-23998-13), DPT-16-06-GW-31-35-MS (320-23998-13[MS]), DPT-16-06-GW-31-35-MSD (320-23998-13[MSD]), DPT-16-06-GW-18-22 (320-23998-14), DPT-16-11-GW-31-35 (320-23998-15), DPT-16-11-GW-31-35-DUP (320-23998-16) and DPT-16-11-GW-18-22 (320-23998-17). These samples have been run at dilution and both sets of data are reported.

The following samples were diluted to bring the concentration of target analytes within the calibration range: DPT-16-07-GW-31-35 (320-23998-11), DPT-16-07-GW-18-22 (320-23998-12), DPT-16-06-GW-31-35 (320-23998-13), DPT-16-06-GW-31-35-MS (320-23998-13[MS]), DPT-16-06-GW-31-35-MSD (320-23998-13[MSD]), DPT-16-06-GW-18-22 (320-23998-14), DPT-16-11-GW-31-35 (320-23998-15), DPT-16-11-GW-31-35-DUP (320-23998-16) and DPT-16-11-GW-18-22 (320-23998-17). Elevated reporting limits (RLs)

are provided.

Due to the excessive amount of sediment in the sample bottles, the aqueous portion of these samples was decanted to new bottles prior to spiking and the extraction. DPT-16-03-GW-31-35 (320-23998-1), DPT-16-03-GW-18-22 (320-23998-2), DPT-16-04-GW-31-35 (320-23998-3), DPT-16-04-GW-31-35-MS (320-23998-3[MS]), DPT-16-04-GW-31-35-MSD (320-23998-3[MSD]), DPT-16-04-GW-18-22 (320-23998-4), DPT-16-10-GW-31-35 (320-23998-5), DPT-16-10-GW-18-22 (320-23998-6), DPT-16-09-GW-31-35 (320-23998-7), DPT-16-09-GW-18-22 (320-23998-8), DPT-16-08-GW-31-35 (320-23998-9), DPT-16-08-GW-31-35-MS (320-23998-9[MS]), DPT-16-08-GW-31-35-MSD (320-23998-9[MSD]), DPT-16-08-GW-18-22 (320-23998-10), DPT-16-07-GW-31-35 (320-23998-11), DPT-16-07-GW-18-22 (320-23998-12), DPT-16-06-GW-31-35 (320-23998-13), DPT-16-06-GW-31-35-MS (320-23998-13[MS]), DPT-16-06-GW-31-35-MSD (320-23998-13[MSD]), DPT-16-06-GW-18-22 (320-23998-14), DPT-16-11-GW-31-35 (320-23998-15), DPT-16-11-GW-31-35-DUP (320-23998-16) and DPT-16-11-GW-18-22 (320-23998-17)

No additional 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: 320-23998-1

Client Sample ID: DPT-16-03-GW-31-35 — Lab Sample ID: 320-23998-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.019	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.13		0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-03-GW-18-22 — Lab Sample ID: 320-23998-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.00092	J	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.0071		0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-04-GW-31-35 — Lab Sample ID: 320-23998-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctane Sulfonate (PFOS)	0.0016	J M	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-04-GW-18-22 — Lab Sample ID: 320-23998-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0027	M	0.0025	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.027		0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-10-GW-31-35 — Lab Sample ID: 320-23998-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.014	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.11		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-10-GW-18-22 — Lab Sample ID: 320-23998-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0062		0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.030		0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.010		0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-09-GW-31-35 — Lab Sample ID: 320-23998-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0021	J M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.017		0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0027		0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-09-GW-18-22 — Lab Sample ID: 320-23998-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.019		0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0043		0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-08-GW-31-35 — Lab Sample ID: 320-23998-9

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-08-GW-31-35 (Continued) — Lab Sample ID: 320-23998-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.022		0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-08-GW-18-22 — Lab Sample ID: 320-23998-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0075	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.038		0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0030	M	0.0025	0.00093	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: DPT-16-07-GW-31-35 — Lab Sample ID: 320-23998-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.88	E M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.3	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.18		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.2	D M	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	3.1	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.11	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-07-GW-18-22 — Lab Sample ID: 320-23998-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.37	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.17		0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.40	D M	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.9	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.084	D	0.025	0.0091	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-06-GW-31-35 — Lab Sample ID: 320-23998-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.2	E M J	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2	E J	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.42	E J	0.0026	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.6	D M J	0.026	0.0077	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.7	D J	0.041	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.28	D	0.026	0.0094	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-06-GW-18-22 — Lab Sample ID: 320-23998-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.3	E M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2	E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-06-GW-18-22 (Continued) Lab Sample ID: 320-23998-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.20		0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.9	D M	0.024	0.0072	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.8	D	0.039	0.012	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.12	D	0.024	0.0088	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-11-GW-31-35 Lab Sample ID: 320-23998-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.77	E	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.080		0.0025	0.00092	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.36	D M	0.025	0.0075	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.86	D	0.040	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.050	D	0.025	0.0092	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-11-GW-31-35-DUP Lab Sample ID: 320-23998-16

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.78	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.076		0.0025	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.35	D M	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.88	D	0.039	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.052	D	0.025	0.0090	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-11-GW-18-22 Lab Sample ID: 320-23998-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.4	E M	0.0024	0.00071	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	4.0	E	0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.18		0.0024	0.00087	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	2.0	D M	0.24	0.071	ug/L	100		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	6.0	D	0.38	0.12	ug/L	100		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-03-GW-31-35 — Lab Sample ID: 320-23998-1

Date Collected: 11/30/16 09:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**0.019**	**M**	0.0025	0.00074	ug/L		12/06/16 11:39	12/21/16 13:34	1
Perfluorooctane Sulfonate (PFOS)	**0.13**		0.0039	0.0013	ug/L		12/06/16 11:39	12/21/16 13:34	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00090	ug/L		12/06/16 11:39	12/21/16 13:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*53*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:34*	*1*
13C4 PFOS	*107*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:34*	*1*
18O2 PFHxS	*102*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:34*	*1*

Client Sample ID: DPT-16-03-GW-18-22 — Lab Sample ID: 320-23998-2

Date Collected: 11/30/16 10:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**0.00092**	**J**	0.0024	0.00073	ug/L		12/06/16 11:39	12/21/16 13:42	1
Perfluorooctane Sulfonate (PFOS)	**0.0071**		0.0039	0.0012	ug/L		12/06/16 11:39	12/21/16 13:42	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00089	ug/L		12/06/16 11:39	12/21/16 13:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*63*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:42*	*1*
13C4 PFOS	*112*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:42*	*1*
18O2 PFHxS	*108*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:42*	*1*

Client Sample ID: DPT-16-04-GW-31-35 — Lab Sample ID: 320-23998-3

Date Collected: 11/30/16 10:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00076	ug/L		12/06/16 11:39	12/21/16 13:49	1
Perfluorooctane Sulfonate (PFOS)	**0.0016**	**J M**	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 13:49	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00093	ug/L		12/06/16 11:39	12/21/16 13:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*44*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:49*	*1*
13C4 PFOS	*116*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:49*	*1*
18O2 PFHxS	*113*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:49*	*1*

Client Sample ID: DPT-16-04-GW-18-22 — Lab Sample ID: 320-23998-4

Date Collected: 11/30/16 11:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**0.0027**	**M**	0.0025	0.00073	ug/L		12/06/16 11:39	12/21/16 14:12	1
Perfluorooctane Sulfonate (PFOS)	**0.027**		0.0039	0.0013	ug/L		12/06/16 11:39	12/21/16 14:12	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00090	ug/L		12/06/16 11:39	12/21/16 14:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*57*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:12*	*1*
13C4 PFOS	*112*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:12*	*1*
18O2 PFHxS	*110*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:12*	*1*

Client Sample ID: DPT-16-10-GW-31-35 — Lab Sample ID: 320-23998-5

Date Collected: 11/30/16 13:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.014	M	0.0025	0.00075	ug/L		12/06/16 11:39	12/21/16 14:19	1
Perfluorooctane Sulfonate (PFOS)	0.11		0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 14:19	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/06/16 11:39	12/21/16 14:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*47*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:19*	*1*
13C4 PFOS	*103*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:19*	*1*
18O2 PFHxS	*101*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:19*	*1*

Client Sample ID: DPT-16-10-GW-18-22 — Lab Sample ID: 320-23998-6

Date Collected: 11/30/16 13:20 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0062		0.0024	0.00072	ug/L		12/06/16 11:39	12/21/16 14:27	1
Perfluorooctane Sulfonate (PFOS)	0.030		0.0038	0.0012	ug/L		12/06/16 11:39	12/21/16 14:27	1
Perfluorobutanesulfonic acid (PFBS)	0.010		0.0024	0.00088	ug/L		12/06/16 11:39	12/21/16 14:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*58*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:27*	*1*
13C4 PFOS	*115*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:27*	*1*
18O2 PFHxS	*107*		*25 - 150*	*12/06/16 11:39*	*12/21/16 14:27*	*1*

Client Sample ID: DPT-16-09-GW-31-35 — Lab Sample ID: 320-23998-7

Date Collected: 11/30/16 14:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0021	J M	0.0024	0.00072	ug/L		12/06/16 11:39	12/21/16 16:35	1
Perfluorooctane Sulfonate (PFOS)	0.017		0.0038	0.0012	ug/L		12/06/16 11:39	12/21/16 16:35	1
Perfluorobutanesulfonic acid (PFBS)	0.0027		0.0024	0.00088	ug/L		12/06/16 11:39	12/21/16 16:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*50*		*25 - 150*	*12/06/16 11:39*	*12/21/16 16:35*	*1*
13C4 PFOS	*115*		*25 - 150*	*12/06/16 11:39*	*12/21/16 16:35*	*1*
18O2 PFHxS	*109*		*25 - 150*	*12/06/16 11:39*	*12/21/16 16:35*	*1*

Client Sample ID: DPT-16-09-GW-18-22 — Lab Sample ID: 320-23998-8

Date Collected: 11/30/16 14:40 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.00072	ug/L		12/06/16 11:39	12/21/16 16:43	1
Perfluorooctane Sulfonate (PFOS)	0.019		0.0039	0.0012	ug/L		12/06/16 11:39	12/21/16 16:43	1
Perfluorobutanesulfonic acid (PFBS)	0.0043		0.0024	0.00089	ug/L		12/06/16 11:39	12/21/16 16:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*65*		*25 - 150*	*12/06/16 11:39*	*12/21/16 16:43*	*1*

Client Sample ID: DPT-16-09-GW-18-22 — Lab Sample ID: 320-23998-8

Date Collected: 11/30/16 14:40 **Matrix: Water**
Date Received: 12/02/16 09:40

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	114		25 - 150	12/06/16 11:39	12/21/16 16:43	1
18O2 PFHxS	109		25 - 150	12/06/16 11:39	12/21/16 16:43	1

Client Sample ID: DPT-16-08-GW-31-35 — Lab Sample ID: 320-23998-9

Date Collected: 12/01/16 10:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.00073	ug/L		12/06/16 11:39	12/21/16 16:50	1
Perfluorooctane Sulfonate (PFOS)	0.022		0.0039	0.0012	ug/L		12/06/16 11:39	12/21/16 16:50	1
Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0024	0.00089	ug/L		12/06/16 11:39	12/21/16 16:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	57		25 - 150	12/06/16 11:39	12/21/16 16:50	1
13C4 PFOS	117		25 - 150	12/06/16 11:39	12/21/16 16:50	1
18O2 PFHxS	111		25 - 150	12/06/16 11:39	12/21/16 16:50	1

Client Sample ID: DPT-16-08-GW-18-22 — Lab Sample ID: 320-23998-10

Date Collected: 12/01/16 10:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0075	M	0.0025	0.00075	ug/L		12/06/16 11:39	12/21/16 17:13	1
Perfluorooctane Sulfonate (PFOS)	0.038		0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 17:13	1
Perfluorobutanesulfonic acid (PFBS)	0.0030	M	0.0025	0.00093	ug/L		12/06/16 11:39	12/21/16 17:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	45		25 - 150	12/06/16 11:39	12/21/16 17:13	1
13C4 PFOS	113		25 - 150	12/06/16 11:39	12/21/16 17:13	1
18O2 PFHxS	102		25 - 150	12/06/16 11:39	12/21/16 17:13	1

Client Sample ID: DPT-16-07-GW-31-35 — Lab Sample ID: 320-23998-11

Date Collected: 12/01/16 10:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.88	E M	0.0025	0.00075	ug/L		12/06/16 11:39	12/21/16 17:20	1
Perfluorooctane Sulfonate (PFOS)	2.3	E	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 17:20	1
Perfluorobutanesulfonic acid (PFBS)	0.18		0.0025	0.00092	ug/L		12/06/16 11:39	12/21/16 17:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	66		25 - 150	12/06/16 11:39	12/21/16 17:20	1
13C4 PFOS	57		25 - 150	12/06/16 11:39	12/21/16 17:20	1
18O2 PFHxS	48		25 - 150	12/06/16 11:39	12/21/16 17:20	1

Client Sample ID: DPT-16-07-GW-31-35 — Lab Sample ID: 320-23998-11

Date Collected: 12/01/16 10:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.2	D M	0.025	0.0075	ug/L		12/06/16 11:39	12/22/16 17:20	10
Perfluorooctane Sulfonate (PFOS)	3.1	D	0.040	0.013	ug/L		12/06/16 11:39	12/22/16 17:20	10
Perfluorobutanesulfonic acid (PFBS)	0.11	D	0.025	0.0092	ug/L		12/06/16 11:39	12/22/16 17:20	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*112*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:20*	*10*
13C4 PFOS	*121*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:20*	*10*
18O2 PFHxS	*117*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:20*	*10*

Client Sample ID: DPT-16-07-GW-18-22 — Lab Sample ID: 320-23998-12

Date Collected: 12/01/16 11:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.37	M	0.0025	0.00074	ug/L		12/06/16 11:39	12/21/16 17:28	1
Perfluorooctane Sulfonate (PFOS)	1.6	E	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 17:28	1
Perfluorobutanesulfonic acid (PFBS)	0.17		0.0025	0.00091	ug/L		12/06/16 11:39	12/21/16 17:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*71*		*25 - 150*	*12/06/16 11:39*	*12/21/16 17:28*	*1*
13C4 PFOS	*74*		*25 - 150*	*12/06/16 11:39*	*12/21/16 17:28*	*1*
18O2 PFHxS	*39*		*25 - 150*	*12/06/16 11:39*	*12/21/16 17:28*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.40	D M	0.025	0.0074	ug/L		12/06/16 11:39	12/22/16 17:27	10
Perfluorooctane Sulfonate (PFOS)	1.9	D	0.040	0.013	ug/L		12/06/16 11:39	12/22/16 17:27	10
Perfluorobutanesulfonic acid (PFBS)	0.084	D	0.025	0.0091	ug/L		12/06/16 11:39	12/22/16 17:27	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*99*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:27*	*10*
13C4 PFOS	*127*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:27*	*10*
18O2 PFHxS	*101*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:27*	*10*

Client Sample ID: DPT-16-06-GW-31-35 — Lab Sample ID: 320-23998-13

Date Collected: 12/01/16 12:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.2	E M J	0.0026	0.00077	ug/L		12/06/16 11:39	12/21/16 18:05	1
Perfluorooctane Sulfonate (PFOS)	2.2	E J	0.0041	0.0013	ug/L		12/06/16 11:39	12/21/16 18:05	1
Perfluorobutanesulfonic acid (PFBS)	0.42	E J	0.0026	0.00094	ug/L		12/06/16 11:39	12/21/16 18:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*55*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:05*	*1*
13C4 PFOS	*61*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:05*	*1*
18O2 PFHxS	*35*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:05*	*1*

Client Sample ID: DPT-16-06-GW-31-35 — Lab Sample ID: 320-23998-13

Date Collected: 12/01/16 12:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.6	D M J	0.026	0.0077	ug/L		12/06/16 11:39	12/22/16 17:35	10
Perfluorooctane Sulfonate (PFOS)	2.7	D J	0.041	0.013	ug/L		12/06/16 11:39	12/22/16 17:35	10
Perfluorobutanesulfonic acid (PFBS)	0.28	D	0.026	0.0094	ug/L		12/06/16 11:39	12/22/16 17:35	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*111*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:35*	*10*
13C4 PFOS	*138*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:35*	*10*
18O2 PFHxS	*104*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:35*	*10*

Client Sample ID: DPT-16-06-GW-18-22 — Lab Sample ID: 320-23998-14

Date Collected: 12/01/16 13:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.3	E M	0.0024	0.00072	ug/L		12/06/16 11:39	12/21/16 18:28	1
Perfluorooctane Sulfonate (PFOS)	2.2	E	0.0039	0.0012	ug/L		12/06/16 11:39	12/21/16 18:28	1
Perfluorobutanesulfonic acid (PFBS)	0.20		0.0024	0.00088	ug/L		12/06/16 11:39	12/21/16 18:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*54*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:28*	*1*
13C4 PFOS	*59*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:28*	*1*
18O2 PFHxS	*46*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:28*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	D M	0.024	0.0072	ug/L		12/06/16 11:39	12/22/16 17:57	10
Perfluorooctane Sulfonate (PFOS)	2.8	D	0.039	0.012	ug/L		12/06/16 11:39	12/22/16 17:57	10
Perfluorobutanesulfonic acid (PFBS)	0.12	D	0.024	0.0088	ug/L		12/06/16 11:39	12/22/16 17:57	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*108*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:57*	*10*
13C4 PFOS	*126*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:57*	*10*
18O2 PFHxS	*116*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:57*	*10*

Client Sample ID: DPT-16-11-GW-31-35 — Lab Sample ID: 320-23998-15

Date Collected: 12/01/16 14:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.00075	ug/L		12/06/16 11:39	12/21/16 18:35	1
Perfluorooctane Sulfonate (PFOS)	0.77	E	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 18:35	1
Perfluorobutanesulfonic acid (PFBS)	0.080		0.0025	0.00092	ug/L		12/06/16 11:39	12/21/16 18:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*73*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:35*	*1*
13C4 PFOS	*90*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:35*	*1*
18O2 PFHxS	*64*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:35*	*1*

Client Sample ID: DPT-16-11-GW-31-35 — Lab Sample ID: 320-23998-15

Date Collected: 12/01/16 14:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.36	D M	0.025	0.0075	ug/L		12/06/16 11:39	12/22/16 18:05	10
Perfluorooctane Sulfonate (PFOS)	0.86	D	0.040	0.013	ug/L		12/06/16 11:39	12/22/16 18:05	10
Perfluorobutanesulfonic acid (PFBS)	0.050	D	0.025	0.0092	ug/L		12/06/16 11:39	12/22/16 18:05	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*106*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:05*	*10*
13C4 PFOS	*134*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:05*	*10*
18O2 PFHxS	*126*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:05*	*10*

Client Sample ID: DPT-16-11-GW-31-35-DUP — Lab Sample ID: 320-23998-16

Date Collected: 12/01/16 14:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.00074	ug/L		12/06/16 11:39	12/21/16 18:43	1
Perfluorooctane Sulfonate (PFOS)	0.78	E	0.0039	0.0013	ug/L		12/06/16 11:39	12/21/16 18:43	1
Perfluorobutanesulfonic acid (PFBS)	0.076		0.0025	0.00090	ug/L		12/06/16 11:39	12/21/16 18:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*67*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:43*	*1*
13C4 PFOS	*87*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:43*	*1*
18O2 PFHxS	*65*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:43*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.35	D M	0.025	0.0074	ug/L		12/06/16 11:39	12/22/16 18:12	10
Perfluorooctane Sulfonate (PFOS)	0.88	D	0.039	0.013	ug/L		12/06/16 11:39	12/22/16 18:12	10
Perfluorobutanesulfonic acid (PFBS)	0.052	D	0.025	0.0090	ug/L		12/06/16 11:39	12/22/16 18:12	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*112*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:12*	*10*
13C4 PFOS	*144*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:12*	*10*
18O2 PFHxS	*139*		*25 - 150*	*12/06/16 11:39*	*12/22/16 18:12*	*10*

Client Sample ID: DPT-16-11-GW-18-22 — Lab Sample ID: 320-23998-17

Date Collected: 12/01/16 14:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.4	E M	0.0024	0.00071	ug/L		12/06/16 11:39	12/21/16 18:50	1
Perfluorooctane Sulfonate (PFOS)	4.0	E	0.0038	0.0012	ug/L		12/06/16 11:39	12/21/16 18:50	1
Perfluorobutanesulfonic acid (PFBS)	0.18		0.0024	0.00087	ug/L		12/06/16 11:39	12/21/16 18:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*48*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:50*	*1*
13C4 PFOS	*42*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:50*	*1*
18O2 PFHxS	*44*		*25 - 150*	*12/06/16 11:39*	*12/21/16 18:50*	*1*

Client Sample ID: DPT-16-11-GW-18-22 **Lab Sample ID: 320-23998-17**
Date Collected: 12/01/16 14:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**2.0**	**D M**	0.24	0.071	ug/L		12/06/16 11:39	12/22/16 17:12	100
Perfluorooctane Sulfonate (PFOS)	**6.0**	**D**	0.38	0.12	ug/L		12/06/16 11:39	12/22/16 17:12	100
Perfluorobutanesulfonic acid (PFBS)	0.19	U	0.24	0.087	ug/L		12/06/16 11:39	12/22/16 17:12	100

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*147*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:12*	*100*
13C4 PFOS	*150*		*25 - 150*	*12/06/16 11:39*	*12/22/16 17:12*	*100*
18O2 PFHxS	*159*	*Q*	*25 - 150*	*12/06/16 11:39*	*12/22/16 17:12*	*100*

Default Detection Limits

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

TestAmerica Job ID: 320-23998-1

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: 320-23998-1
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)
320-23998-1	DPT-16-03-GW-31-35	53	107	102
320-23998-2	DPT-16-03-GW-18-22	63	112	108
320-23998-3	DPT-16-04-GW-31-35	44	116	113
320-23998-3 MS	DPT-16-04-GW-31-35-MS	47	111	107
320-23998-3 MSD	DPT-16-04-GW-31-35-MSD	49	114	110
320-23998-4	DPT-16-04-GW-18-22	57	112	110
320-23998-5	DPT-16-10-GW-31-35	47	103	101
320-23998-6	DPT-16-10-GW-18-22	58	115	107
320-23998-7	DPT-16-09-GW-31-35	50	115	109
320-23998-8	DPT-16-09-GW-18-22	65	114	109
320-23998-9	DPT-16-08-GW-31-35	57	117	111
320-23998-9 MS	DPT-16-08-GW-31-35-MS	50	113	104
320-23998-9 MSD	DPT-16-08-GW-31-35-MSD	64	118	107
320-23998-10	DPT-16-08-GW-18-22	45	113	102
320-23998-11	DPT-16-07-GW-31-35	66	57	48
320-23998-11 - DL	DPT-16-07-GW-31-35	112	121	117
320-23998-12	DPT-16-07-GW-18-22	71	74	39
320-23998-12 - DL	DPT-16-07-GW-18-22	99	127	101
320-23998-13	DPT-16-06-GW-31-35	55	61	35
320-23998-13 - DL	DPT-16-06-GW-31-35	111	138	104
320-23998-13 MS	DPT-16-06-GW-31-35-MS	55	61	33
320-23998-13 MS - DL	DPT-16-06-GW-31-35-MS	101	121	95
320-23998-13 MSD	DPT-16-06-GW-31-35-MSD	56	61	33
320-23998-13 MSD - DL	DPT-16-06-GW-31-35-MSD	112	137	101
320-23998-14	DPT-16-06-GW-18-22	54	59	46
320-23998-14 - DL	DPT-16-06-GW-18-22	108	126	116
320-23998-15	DPT-16-11-GW-31-35	73	90	64
320-23998-15 - DL	DPT-16-11-GW-31-35	106	134	126
320-23998-16	DPT-16-11-GW-31-35-DUP	67	87	65
320-23998-16 - DL	DPT-16-11-GW-31-35-DUP	112	144	139
320-23998-17	DPT-16-11-GW-18-22	48	42	44
320-23998-17 - DL	DPT-16-11-GW-18-22	147	150	159 Q
LCS 320-140788/2-A	Lab Control Sample	106	111	106
MB 320-140788/1-A	Method Blank	113	108	109

Surrogate Legend

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

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-140788/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

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		12/06/16 11:39	12/21/16 13:19	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/06/16 11:39	12/21/16 13:19	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/06/16 11:39	12/21/16 13:19	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*113*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:19*	*1*
13C4 PFOS	*108*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:19*	*1*
18O2 PFHxS	*109*		*25 - 150*	*12/06/16 11:39*	*12/21/16 13:19*	*1*

Lab Sample ID: LCS 320-140788/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0346		ug/L		87	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0345		ug/L		93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0368		ug/L		104	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*106*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
18O2 PFHxS	*106*		*25 - 150*

Lab Sample ID: 320-23998-3 MS **Client Sample ID: DPT-16-04-GW-31-35-MS**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0389	0.0356		ug/L		92	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0016	J M	0.0361	0.0390		ug/L		104	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0343	0.0401		ug/L		117	50 - 150

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA	*47*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
18O2 PFHxS	*107*		*25 - 150*

Lab Sample ID: 320-23998-3 MSD **Client Sample ID: DPT-16-04-GW-31-35-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0394	0.0368		ug/L		93	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS)	0.0016	J M	0.0366	0.0389		ug/L		102	60 - 140	0	30

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

Lab Sample ID: 320-23998-3 MSD **Client Sample ID: DPT-16-04-GW-31-35-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0348	0.0403		ug/L		116	50 - 150	1	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA	*49*		*25 - 150*
13C4 PFOS	*114*		*25 - 150*
18O2 PFHxS	*110*		*25 - 150*

Lab Sample ID: 320-23998-9 MS **Client Sample ID: DPT-16-08-GW-31-35-MS**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0392	0.0420	M	ug/L		96	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.022		0.0364	0.0625		ug/L		112	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0347	0.0466		ug/L		118	50 - 150

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA	*50*		*25 - 150*
13C4 PFOS	*113*		*25 - 150*
18O2 PFHxS	*104*		*25 - 150*

Lab Sample ID: 320-23998-9 MSD **Client Sample ID: DPT-16-08-GW-31-35-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0045	M	0.0395	0.0435	M	ug/L		99	60 - 140	4	30
Perfluorooctane Sulfonate (PFOS)	0.022		0.0366	0.0610		ug/L		107	60 - 140	2	30
Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0349	0.0455		ug/L		115	50 - 150	2	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA	*64*		*25 - 150*
13C4 PFOS	*118*		*25 - 150*
18O2 PFHxS	*107*		*25 - 150*

Lab Sample ID: 320-23998-13 MS **Client Sample ID: DPT-16-06-GW-31-35-MS**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	1.2	E M J	0.0400	1.15	E M 4	ug/L		-52	60 - 140
Perfluorooctane Sulfonate (PFOS)	2.2	E J	0.0371	2.16	E 4	ug/L		-160	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.42	E J	0.0353	0.485	E 4	ug/L		192	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA	55		25 - 150
13C4 PFOS	61		25 - 150
18O2 PFHxS	33		25 - 150

Lab Sample ID: 320-23998-13 MSD **Client Sample ID: DPT-16-06-GW-31-35-MSD**

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

Analysis Batch: 143502 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	1.2	E M J	0.0396	1.14	E M 4	ug/L		-67	60 - 140	0	30
Perfluorooctane Sulfonate (PFOS)	2.2	E J	0.0367	2.15	E 4	ug/L		-180	60 - 140	0	30
Perfluorobutanesulfonic acid (PFBS)	0.42	E J	0.0350	0.479	E 4	ug/L		177	50 - 150	1	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA	56		25 - 150
13C4 PFOS	61		25 - 150
18O2 PFHxS	33		25 - 150

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Lab Sample ID: 320-23998-13 MS **Client Sample ID: DPT-16-06-GW-31-35-MS**

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

Analysis Batch: 143644 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA) - DL	1.6	D M J	0.0400	1.69	D M 4	ug/L		160	60 - 140
Perfluorooctane Sulfonate (PFOS) - DL	2.7	D J	0.0371	2.74	D 4	ug/L		102	60 - 140
Perfluorobutanesulfonic acid (PFBS) - DL	0.28	D	0.0353	0.325	D 4	ug/L		123	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA - DL	101		25 - 150
13C4 PFOS - DL	121		25 - 150
18O2 PFHxS - DL	95		25 - 150

Lab Sample ID: 320-23998-13 MSD **Client Sample ID: DPT-16-06-GW-31-35-MSD**

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

Analysis Batch: 143644 **Prep Batch: 140788**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA) - DL	1.6	D M J	0.0396	1.67	D M 4	ug/L		119	60 - 140	1	30
Perfluorooctane Sulfonate (PFOS) - DL	2.7	D J	0.0367	2.62	D 4	ug/L		-203	60 - 140	4	30
Perfluorobutanesulfonic acid (PFBS) - DL	0.28	D	0.0350	0.332	D 4	ug/L		143	50 - 150	2	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA - DL	112		25 - 150
13C4 PFOS - DL	137		25 - 150
18O2 PFHxS - DL	101		25 - 150

LCMS

Prep Batch: 140788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23998-1	DPT-16-03-GW-31-35	Total/NA	Water	3535	
320-23998-2	DPT-16-03-GW-18-22	Total/NA	Water	3535	
320-23998-3	DPT-16-04-GW-31-35	Total/NA	Water	3535	
320-23998-4	DPT-16-04-GW-18-22	Total/NA	Water	3535	
320-23998-5	DPT-16-10-GW-31-35	Total/NA	Water	3535	
320-23998-6	DPT-16-10-GW-18-22	Total/NA	Water	3535	
320-23998-7	DPT-16-09-GW-31-35	Total/NA	Water	3535	
320-23998-8	DPT-16-09-GW-18-22	Total/NA	Water	3535	
320-23998-9	DPT-16-08-GW-31-35	Total/NA	Water	3535	
320-23998-10	DPT-16-08-GW-18-22	Total/NA	Water	3535	
320-23998-11	DPT-16-07-GW-31-35	Total/NA	Water	3535	
320-23998-11 - DL	DPT-16-07-GW-31-35	Total/NA	Water	3535	
320-23998-12	DPT-16-07-GW-18-22	Total/NA	Water	3535	
320-23998-12 - DL	DPT-16-07-GW-18-22	Total/NA	Water	3535	
320-23998-13 - DL	DPT-16-06-GW-31-35	Total/NA	Water	3535	
320-23998-13	DPT-16-06-GW-31-35	Total/NA	Water	3535	
320-23998-14	DPT-16-06-GW-18-22	Total/NA	Water	3535	
320-23998-14 - DL	DPT-16-06-GW-18-22	Total/NA	Water	3535	
320-23998-15 - DL	DPT-16-11-GW-31-35	Total/NA	Water	3535	
320-23998-15	DPT-16-11-GW-31-35	Total/NA	Water	3535	
320-23998-16 - DL	DPT-16-11-GW-31-35-DUP	Total/NA	Water	3535	
320-23998-16	DPT-16-11-GW-31-35-DUP	Total/NA	Water	3535	
320-23998-17	DPT-16-11-GW-18-22	Total/NA	Water	3535	
320-23998-17 - DL	DPT-16-11-GW-18-22	Total/NA	Water	3535	
MB 320-140788/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-140788/2-A	Lab Control Sample	Total/NA	Water	3535	
320-23998-3 MS	DPT-16-04-GW-31-35-MS	Total/NA	Water	3535	
320-23998-3 MSD	DPT-16-04-GW-31-35-MSD	Total/NA	Water	3535	
320-23998-9 MS	DPT-16-08-GW-31-35-MS	Total/NA	Water	3535	
320-23998-9 MSD	DPT-16-08-GW-31-35-MSD	Total/NA	Water	3535	
320-23998-13 MS	DPT-16-06-GW-31-35-MS	Total/NA	Water	3535	
320-23998-13 MS - DL	DPT-16-06-GW-31-35-MS	Total/NA	Water	3535	
320-23998-13 MSD	DPT-16-06-GW-31-35-MSD	Total/NA	Water	3535	
320-23998-13 MSD - DL	DPT-16-06-GW-31-35-MSD	Total/NA	Water	3535	

Analysis Batch: 143502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23998-1	DPT-16-03-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-2	DPT-16-03-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-3	DPT-16-04-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-4	DPT-16-04-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-5	DPT-16-10-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-6	DPT-16-10-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-7	DPT-16-09-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-8	DPT-16-09-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-9	DPT-16-08-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-10	DPT-16-08-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-11	DPT-16-07-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-12	DPT-16-07-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-13	DPT-16-06-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-14	DPT-16-06-GW-18-22	Total/NA	Water	537 (Modified)	140788

LCMS (Continued)

Analysis Batch: 143502 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23998-15	DPT-16-11-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-16	DPT-16-11-GW-31-35-DUP	Total/NA	Water	537 (Modified)	140788
320-23998-17	DPT-16-11-GW-18-22	Total/NA	Water	537 (Modified)	140788
MB 320-140788/1-A	Method Blank	Total/NA	Water	537 (Modified)	140788
LCS 320-140788/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	140788
320-23998-3 MS	DPT-16-04-GW-31-35-MS	Total/NA	Water	537 (Modified)	140788
320-23998-3 MSD	DPT-16-04-GW-31-35-MSD	Total/NA	Water	537 (Modified)	140788
320-23998-9 MS	DPT-16-08-GW-31-35-MS	Total/NA	Water	537 (Modified)	140788
320-23998-9 MSD	DPT-16-08-GW-31-35-MSD	Total/NA	Water	537 (Modified)	140788
320-23998-13 MS	DPT-16-06-GW-31-35-MS	Total/NA	Water	537 (Modified)	140788
320-23998-13 MSD	DPT-16-06-GW-31-35-MSD	Total/NA	Water	537 (Modified)	140788

Analysis Batch: 143644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23998-11 - DL	DPT-16-07-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-12 - DL	DPT-16-07-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-13 - DL	DPT-16-06-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-14 - DL	DPT-16-06-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-15 - DL	DPT-16-11-GW-31-35	Total/NA	Water	537 (Modified)	140788
320-23998-16 - DL	DPT-16-11-GW-31-35-DUP	Total/NA	Water	537 (Modified)	140788
320-23998-17 - DL	DPT-16-11-GW-18-22	Total/NA	Water	537 (Modified)	140788
320-23998-13 MS - DL	DPT-16-06-GW-31-35-MS	Total/NA	Water	537 (Modified)	140788
320-23998-13 MSD - DL	DPT-16-06-GW-31-35-MSD	Total/NA	Water	537 (Modified)	140788

Client Sample ID: DPT-16-03-GW-31-35 — Lab Sample ID: 320-23998-1

Date Collected: 11/30/16 09:50 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 13:34	SBC	TAL SAC

Client Sample ID: DPT-16-03-GW-18-22 — Lab Sample ID: 320-23998-2

Date Collected: 11/30/16 10:10 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 13:42	SBC	TAL SAC

Client Sample ID: DPT-16-04-GW-31-35 — Lab Sample ID: 320-23998-3

Date Collected: 11/30/16 10:50 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 13:49	SBC	TAL SAC

Client Sample ID: DPT-16-04-GW-18-22 — Lab Sample ID: 320-23998-4

Date Collected: 11/30/16 11:10 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 14:12	SBC	TAL SAC

Client Sample ID: DPT-16-10-GW-31-35 — Lab Sample ID: 320-23998-5

Date Collected: 11/30/16 13:00 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 14:19	SBC	TAL SAC

Client Sample ID: DPT-16-10-GW-18-22 — Lab Sample ID: 320-23998-6

Date Collected: 11/30/16 13:20 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 14:27	SBC	TAL SAC

Client Sample ID: DPT-16-09-GW-31-35 — Lab Sample ID: 320-23998-7

Date Collected: 11/30/16 14:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 16:35	SBC	TAL SAC

Client Sample ID: DPT-16-09-GW-18-22 — Lab Sample ID: 320-23998-8

Date Collected: 11/30/16 14:40 **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 16:43	SBC	TAL SAC

Client Sample ID: DPT-16-08-GW-31-35 — Lab Sample ID: 320-23998-9

Date Collected: 12/01/16 10:00 **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 16:50	SBC	TAL SAC

Client Sample ID: DPT-16-08-GW-18-22 — Lab Sample ID: 320-23998-10

Date Collected: 12/01/16 10:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 17:13	SBC	TAL SAC

Client Sample ID: DPT-16-07-GW-31-35 — Lab Sample ID: 320-23998-11

Date Collected: 12/01/16 10:50 **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 17:20	SBC	TAL SAC
Total/NA	Prep	3535	DL		140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	143644	12/22/16 17:20	SBC	TAL SAC

Client Sample ID: DPT-16-07-GW-18-22 — Lab Sample ID: 320-23998-12

Date Collected: 12/01/16 11:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC

Client Sample ID: DPT-16-07-GW-18-22 — Lab Sample ID: 320-23998-12

Date Collected: 12/01/16 11:10 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 17:28	SBC	TAL SAC
Total/NA	Prep	3535	DL		140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	143644	12/22/16 17:27	SBC	TAL SAC

Client Sample ID: DPT-16-06-GW-31-35 — Lab Sample ID: 320-23998-13

Date Collected: 12/01/16 12:50 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 18:05	SBC	TAL SAC
Total/NA	Prep	3535	DL		140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	143644	12/22/16 17:35	SBC	TAL SAC

Client Sample ID: DPT-16-06-GW-18-22 — Lab Sample ID: 320-23998-14

Date Collected: 12/01/16 13:00 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 18:28	SBC	TAL SAC
Total/NA	Prep	3535	DL		140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	143644	12/22/16 17:57	SBC	TAL SAC

Client Sample ID: DPT-16-11-GW-31-35 — Lab Sample ID: 320-23998-15

Date Collected: 12/01/16 14:00 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 18:35	SBC	TAL SAC
Total/NA	Prep	3535	DL		140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	143644	12/22/16 18:05	SBC	TAL SAC

Client Sample ID: DPT-16-11-GW-31-35-DUP — Lab Sample ID: 320-23998-16

Date Collected: 12/01/16 14:00 — **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 18:43	SBC	TAL SAC
Total/NA	Prep	3535	DL		140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	143644	12/22/16 18:12	SBC	TAL SAC

Client Sample ID: DPT-16-11-GW-18-22 Lab Sample ID: 320-23998-17

Date Collected: 12/01/16 14:10 **Matrix: Water**
Date Received: 12/02/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	143502	12/21/16 18:50	SBC	TAL SAC
Total/NA	Prep	3535	DL		140788	12/06/16 11:39	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100	143644	12/22/16 17:12	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: 320-23998-1
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: 320-23998-1
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: 320-23998-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23998-1	DPT-16-03-GW-31-35	Water	11/30/16 09:50	12/02/16 09:40
320-23998-2	DPT-16-03-GW-18-22	Water	11/30/16 10:10	12/02/16 09:40
320-23998-3	DPT-16-04-GW-31-35	Water	11/30/16 10:50	12/02/16 09:40
320-23998-4	DPT-16-04-GW-18-22	Water	11/30/16 11:10	12/02/16 09:40
320-23998-5	DPT-16-10-GW-31-35	Water	11/30/16 13:00	12/02/16 09:40
320-23998-6	DPT-16-10-GW-18-22	Water	11/30/16 13:20	12/02/16 09:40
320-23998-7	DPT-16-09-GW-31-35	Water	11/30/16 14:10	12/02/16 09:40
320-23998-8	DPT-16-09-GW-18-22	Water	11/30/16 14:40	12/02/16 09:40
320-23998-9	DPT-16-08-GW-31-35	Water	12/01/16 10:00	12/02/16 09:40
320-23998-10	DPT-16-08-GW-18-22	Water	12/01/16 10:10	12/02/16 09:40
320-23998-11	DPT-16-07-GW-31-35	Water	12/01/16 10:50	12/02/16 09:40
320-23998-12	DPT-16-07-GW-18-22	Water	12/01/16 11:10	12/02/16 09:40
320-23998-13	DPT-16-06-GW-31-35	Water	12/01/16 12:50	12/02/16 09:40
320-23998-14	DPT-16-06-GW-18-22	Water	12/01/16 13:00	12/02/16 09:40
320-23998-15	DPT-16-11-GW-31-35	Water	12/01/16 14:00	12/02/16 09:40
320-23998-16	DPT-16-11-GW-31-35-DUP	Water	12/01/16 14:00	12/02/16 09:40
320-23998-17	DPT-16-11-GW-18-22	Water	12/01/16 14:10	12/02/16 09:40

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143344

Lab Sample ID: CCV 320-143344/2 CCVL Client Sample ID:

Date Analyzed: 12/21/16 12:11 Lab File ID: 21DEC2016_002.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.54	Assign Peak	chandrasenas	12/21/16 13:27
Perfluorooctane Sulfonate (PFOS)	3.28	Assign Peak	chandrasenas	12/21/16 13:27

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143502

Lab Sample ID: 320-23998-1 Client Sample ID: DPT-16-03-GW-31-35

Date Analyzed: 12/21/16 13:34 Lab File ID: 21DEC2016A_013.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.83	Isomers	chandrasenas	12/22/16 10:14

Lab Sample ID: 320-23998-3 Client Sample ID: DPT-16-04-GW-31-35

Date Analyzed: 12/21/16 13:49 Lab File ID: 21DEC2016A_015.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.21	Assign Peak	chandrasenas	12/22/16 10:15

Lab Sample ID: 320-23998-4 Client Sample ID: DPT-16-04-GW-18-22

Date Analyzed: 12/21/16 14:12 Lab File ID: 21DEC2016A_018.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Baseline	chandrasenas	12/22/16 10:16

Lab Sample ID: 320-23998-5 Client Sample ID: DPT-16-10-GW-31-35

Date Analyzed: 12/21/16 14:19 Lab File ID: 21DEC2016A_019.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Baseline	chandrasenas	12/23/16 14:34

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143502

Lab Sample ID: 320-23998-7 Client Sample ID: DPT-16-09-GW-31-35

Date Analyzed: 12/21/16 16:35 Lab File ID: 21DEC2016A_029.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.81	Assign Peak	chandrasenas	12/22/16 10:20

Lab Sample ID: 320-23998-8 Client Sample ID: DPT-16-09-GW-18-22

Date Analyzed: 12/21/16 16:43 Lab File ID: 21DEC2016A_030.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.81	Isomers	chandrasenas	12/22/16 10:21

Lab Sample ID: 320-23998-9 Client Sample ID: DPT-16-08-GW-31-35

Date Analyzed: 12/21/16 16:50 Lab File ID: 21DEC2016A_031.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.81	Isomers	chandrasenas	12/22/16 10:22

Lab Sample ID: 320-23998-9 MS Client Sample ID: DPT-16-08-GW-31-35-MS MS

Date Analyzed: 12/21/16 16:58 Lab File ID: 21DEC2016A_032.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/22/16 10:22

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143502

Lab Sample ID: 320-23998-9 MSD Client Sample ID: DPT-16-08-GW-31-35-MSD MSD

Date Analyzed: 12/21/16 17:05 Lab File ID: 21DEC2016A_033.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/22/16 10:23

Lab Sample ID: 320-23998-10 Client Sample ID: DPT-16-08-GW-18-22

Date Analyzed: 12/21/16 17:13 Lab File ID: 21DEC2016A_034.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.87	Baseline	chandrasenas	12/22/16 10:23
Perfluorooctanoic acid (PFOA)	2.72	Baseline	chandrasenas	12/22/16 10:23

Lab Sample ID: 320-23998-11 Client Sample ID: DPT-16-07-GW-31-35

Date Analyzed: 12/21/16 17:20 Lab File ID: 21DEC2016A_035.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.81	Isomers	chandrasenas	12/22/16 10:26

Lab Sample ID: 320-23998-12 Client Sample ID: DPT-16-07-GW-18-22

Date Analyzed: 12/21/16 17:28 Lab File ID: 21DEC2016A_036.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/22/16 10:26

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143502

Lab Sample ID: 320-23998-13 Client Sample ID: DPT-16-06-GW-31-35

Date Analyzed: 12/21/16 18:05 Lab File ID: 21DEC2016A_041.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.81	Isomers	chandrasenas	12/22/16 10:28

Lab Sample ID: 320-23998-13 MS Client Sample ID: DPT-16-06-GW-31-35-MS MS

Date Analyzed: 12/21/16 18:13 Lab File ID: 21DEC2016A_042.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/22/16 10:30

Lab Sample ID: 320-23998-13 MSD Client Sample ID: DPT-16-06-GW-31-35-MSD MSD

Date Analyzed: 12/21/16 18:20 Lab File ID: 21DEC2016A_043.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/22/16 10:31

Lab Sample ID: 320-23998-14 Client Sample ID: DPT-16-06-GW-18-22

Date Analyzed: 12/21/16 18:28 Lab File ID: 21DEC2016A_044.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/22/16 10:32

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143502

Lab Sample ID: 320-23998-15 Client Sample ID: DPT-16-11-GW-31-35

Date Analyzed: 12/21/16 18:35 Lab File ID: 21DEC2016A_045.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/22/16 10:33

Lab Sample ID: 320-23998-16 Client Sample ID: DPT-16-11-GW-31-35-DUP

Date Analyzed: 12/21/16 18:43 Lab File ID: 21DEC2016A_046.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/22/16 10:33

Lab Sample ID: 320-23998-17 Client Sample ID: DPT-16-11-GW-18-22

Date Analyzed: 12/21/16 18:50 Lab File ID: 21DEC2016A_047.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.81	Isomers	chandrasenas	12/22/16 10:34

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143550

Lab Sample ID: CCV 320-143550/2 CCVL Client Sample ID:

Date Analyzed: 12/22/16 09:16 Lab File ID: 22DEC2016A_002.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.20	Assign Peak	chandrasenas	12/22/16 13:57

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143644

Lab Sample ID: 320-23998-17 DL Client Sample ID: DPT-16-11-GW-18-22 DL

Date Analyzed: 12/22/16 17:12 Lab File ID: 22DEC2016BB_012.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.83	Isomers	chandrasenas	12/23/16 08:00

Lab Sample ID: 320-23998-11 DL Client Sample ID: DPT-16-07-GW-31-35 DL

Date Analyzed: 12/22/16 17:20 Lab File ID: 22DEC2016BB_013.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/23/16 08:00

Lab Sample ID: 320-23998-12 DL Client Sample ID: DPT-16-07-GW-18-22 DL

Date Analyzed: 12/22/16 17:27 Lab File ID: 22DEC2016BB_014.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.82	Isomers	chandrasenas	12/23/16 08:00

Lab Sample ID: 320-23998-13 DL Client Sample ID: DPT-16-06-GW-31-35 DL

Date Analyzed: 12/22/16 17:35 Lab File ID: 22DEC2016BB_015.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/23/16 08:02

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143644

Lab Sample ID: 320-23998-13 MS DL Client Sample ID: DPT-16-06-GW-31-35-MS MS DL

Date Analyzed: 12/22/16 17:42 Lab File ID: 22DEC2016BB_016.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/23/16 08:02

Lab Sample ID: 320-23998-13 MSD DL Client Sample ID: DPT-16-06-GW-31-35-MSD MSD DL

Date Analyzed: 12/22/16 17:50 Lab File ID: 22DEC2016BB_017.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/23/16 08:03

Lab Sample ID: 320-23998-14 DL Client Sample ID: DPT-16-06-GW-18-22 DL

Date Analyzed: 12/22/16 17:57 Lab File ID: 22DEC2016BB_018.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.81	Isomers	chandrasenas	12/23/16 08:03

Lab Sample ID: 320-23998-15 DL Client Sample ID: DPT-16-11-GW-31-35 DL

Date Analyzed: 12/22/16 18:05 Lab File ID: 22DEC2016BB_019.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Isomers	chandrasenas	12/23/16 08:04

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 143644

Lab Sample ID: 320-23998-16 DL Client Sample ID: DPT-16-11-GW-31-35-DUP DL

Date Analyzed: 12/22/16 18:12 Lab File ID: 22DEC2016BB_020.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.81	Isomers	chandrasenas	12/23/16 08:05

537 (Modified)

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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_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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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_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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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_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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...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_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
							Perfluoroheptanoic acid	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid	0.91 ng/mL
							Perfluorononanoic acid	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctadecanoic acid	1 ng/mL
							Perfluorooctane Sulfonate (PFOS)	0.928 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_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.: 320-23998-1

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-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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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_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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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_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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS-br_00002	100 uL	Perfluorooctane Sulfonate (PFOS)	0.464 ug/mL
					LCPFOSA_00006	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUdA_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_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
							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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid	18.2 ng/mL
							Perfluorononanoic acid	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL
							Perfluorooctane Sulfonate (PFOS)	18.56 ng/mL
							Perfluorooctane Sulfonamide	20 ng/mL
							Perfluoropentanoic acid	20 ng/mL
							Perfluorotetradecanoic acid	20 ng/mL
							Perfluorotridecanoic acid	20 ng/mL
							Perfluoroundecanoic acid	20 ng/mL
.LCMPFCSU_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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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_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
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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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	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_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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L3_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	4.74 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	4.79 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							MeFOSA	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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-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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd-NMeFOSA-M_00002	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00002	01/20/21		WELLINGTON, Lot d3NMeFOSAA0116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00002	12/07/20		WELLINGTON, Lot d5NEtFOSAA1115		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00002	01/08/21		WELLINGTON, Lot M262FTS0116		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00002	01/08/21		WELLINGTON, Lot M282FTS0116		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00017	03/02/17	09/02/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ug/mL
					LC8:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ug/mL
					LCN-EtFOSA-M_00003	100 uL	N-ethylperfluoro-1-octanesulfonamide	0.5 ug/mL
					LCN-EtFOSAA_00002	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCN-MeFOSA-M_00002	100 uL	MeFOSA	0.5 ug/mL
					LCN-MeFOSAA_00003	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
..LC6:2FTS_00002	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00002	10/23/20		WELLINGTON, Lot 82FTS1015		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00003	05/24/21		WELLINGTON, Lot NEtFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NEtFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00002	05/24/21		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L5_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	191.6 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	200 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
							MeFOSA	200 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

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

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.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_00073	05/28/17	11/28/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutyric acid	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutane Sulfonate	0.442 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecane Sulfonate	0.482 ug/mL
							Perfluorodecane Sulfonic acid	0.482 ug/mL
					LCPFHpA_00006	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_00005	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_00006	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00006	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00002	100 uL	Perfluorooctane Sulfonate (PFOS)	0.464 ug/mL
					LCPFOSA_00008	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00005	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00005	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_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)		Perfluoroheptane Sulfonate	47.6 ug/mL
							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)		Perfluorohexane Sulfonate	45.5 ug/mL
							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.: 320-23998-1

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

Reagent

LC6:2FTS_00001

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

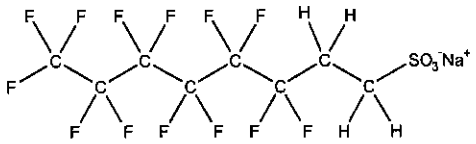
WELLINGTON LABORATORIES

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

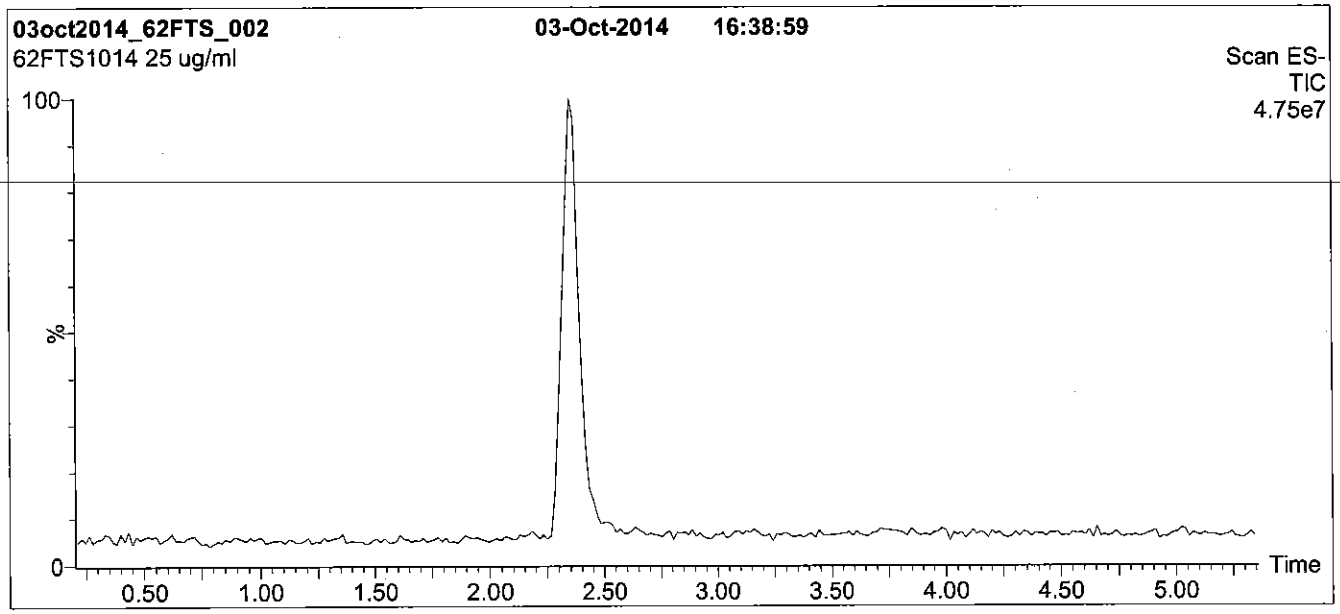
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

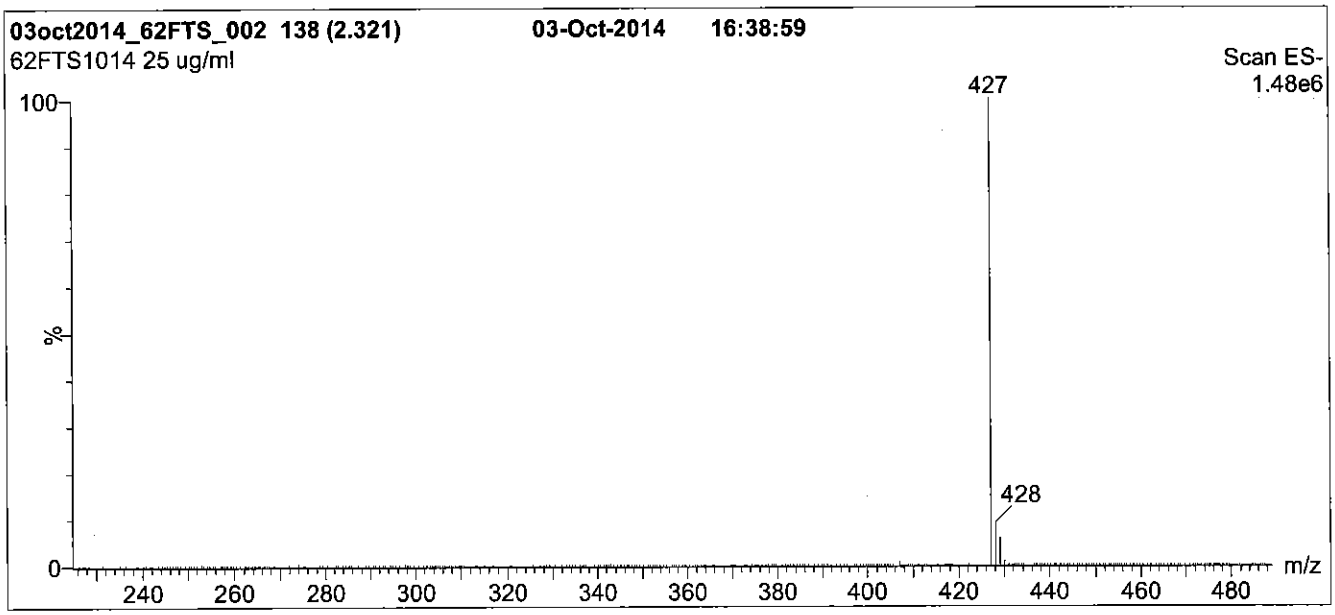
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO Guide 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

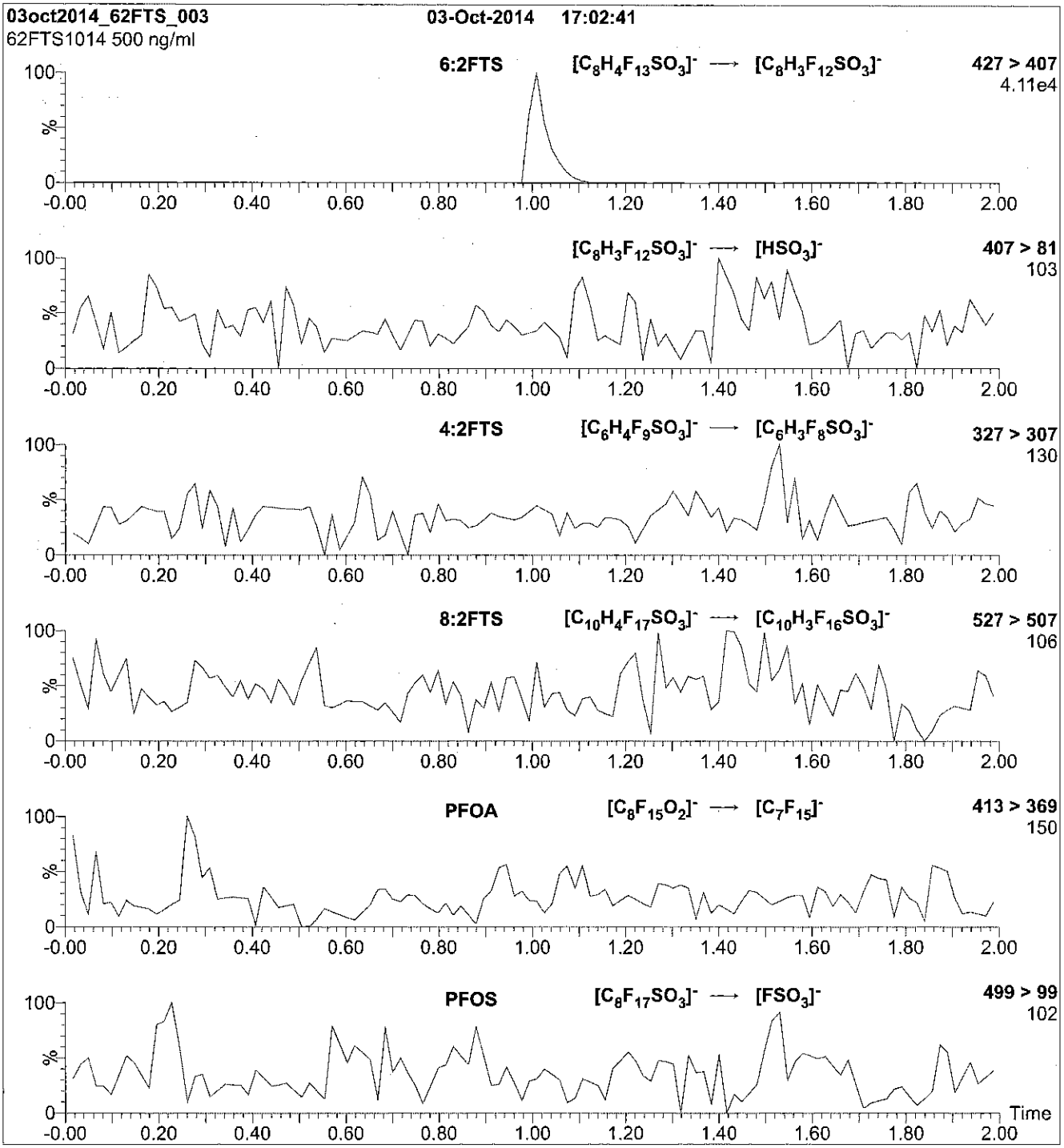
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LC6:2FTS_00002

R: 8/23/16 SBC

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

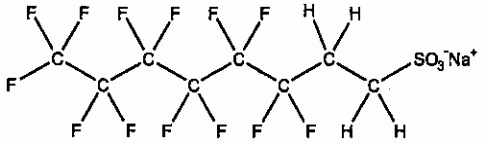
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

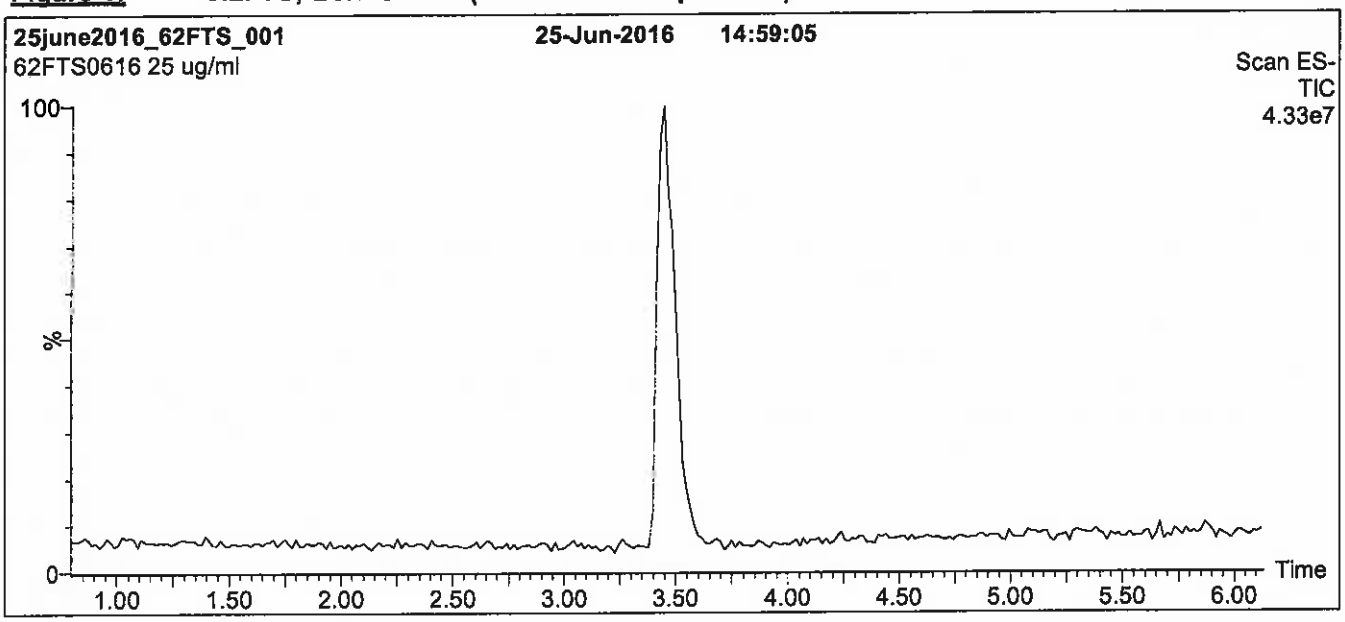
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

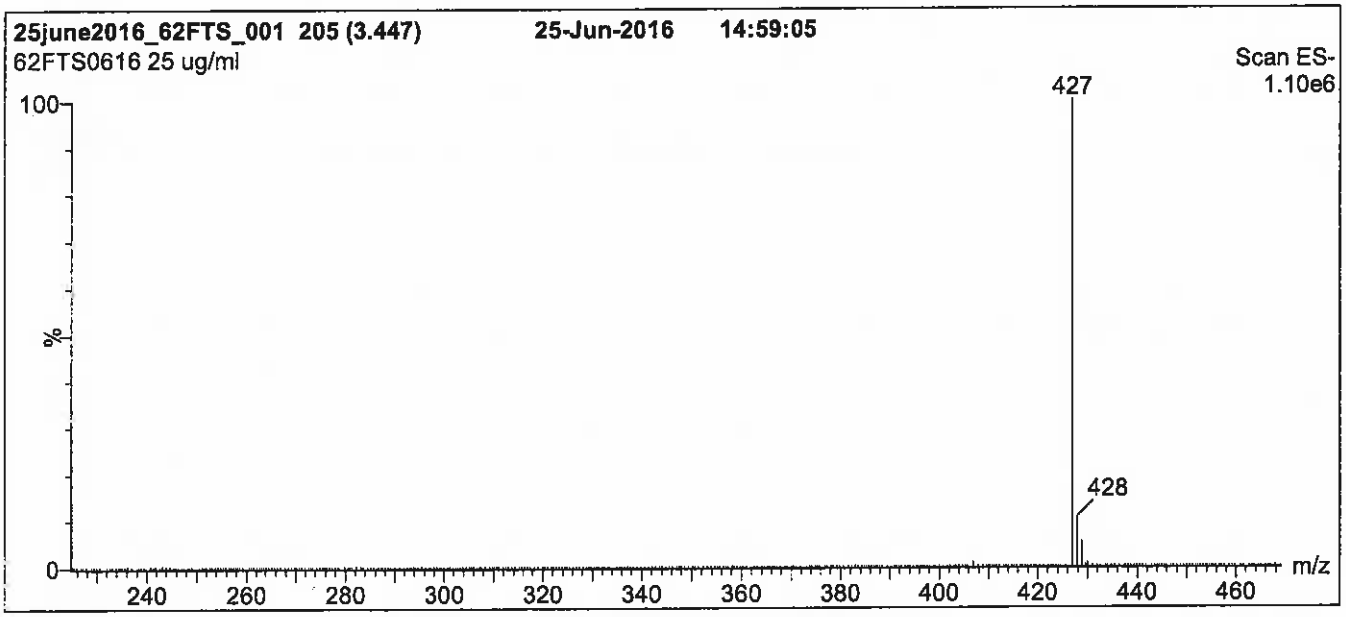
CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

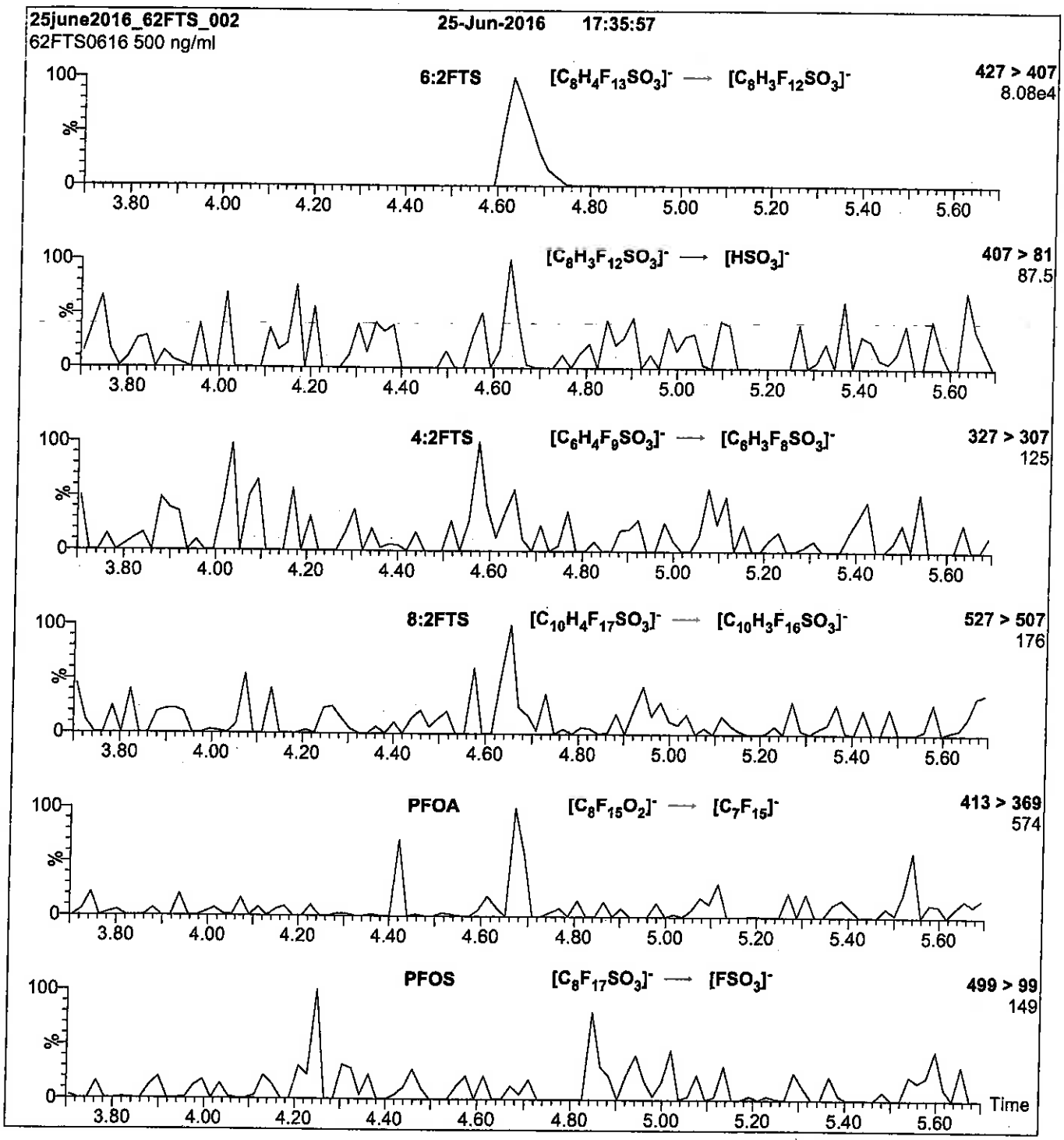
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 25

Reagent

LC8:2FTS_00001

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

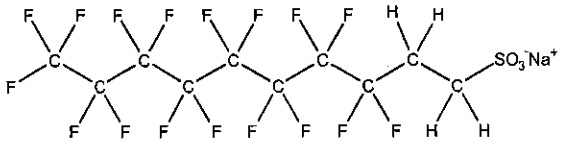
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{10}H_4F_{17}SO_3Na$		**MOLECULAR WEIGHT:**	550.16
CONCENTRATION:	50.0 ± 2.5 µg/ml	(Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml	(8:2FTS anion)		
CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	10/03/2014			
EXPIRY DATE: (mm/dd/yyyy)	10/03/2017			
RECOMMENDED STORAGE:	Refrigerate ampoule			

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 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:

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:

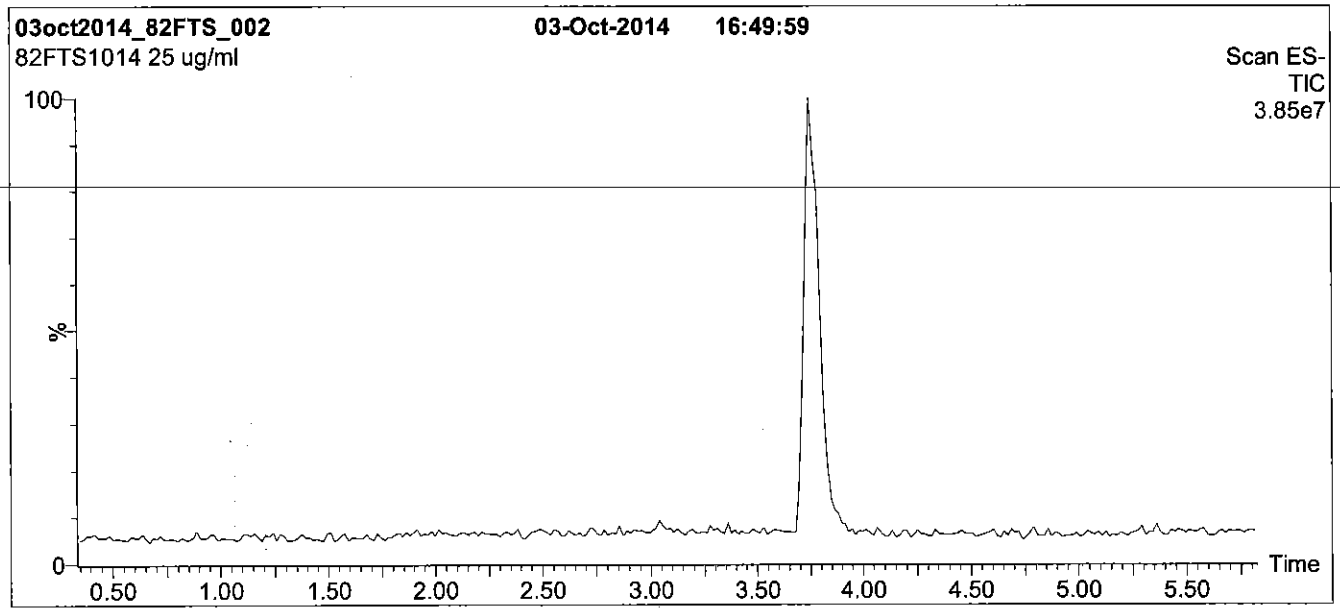
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

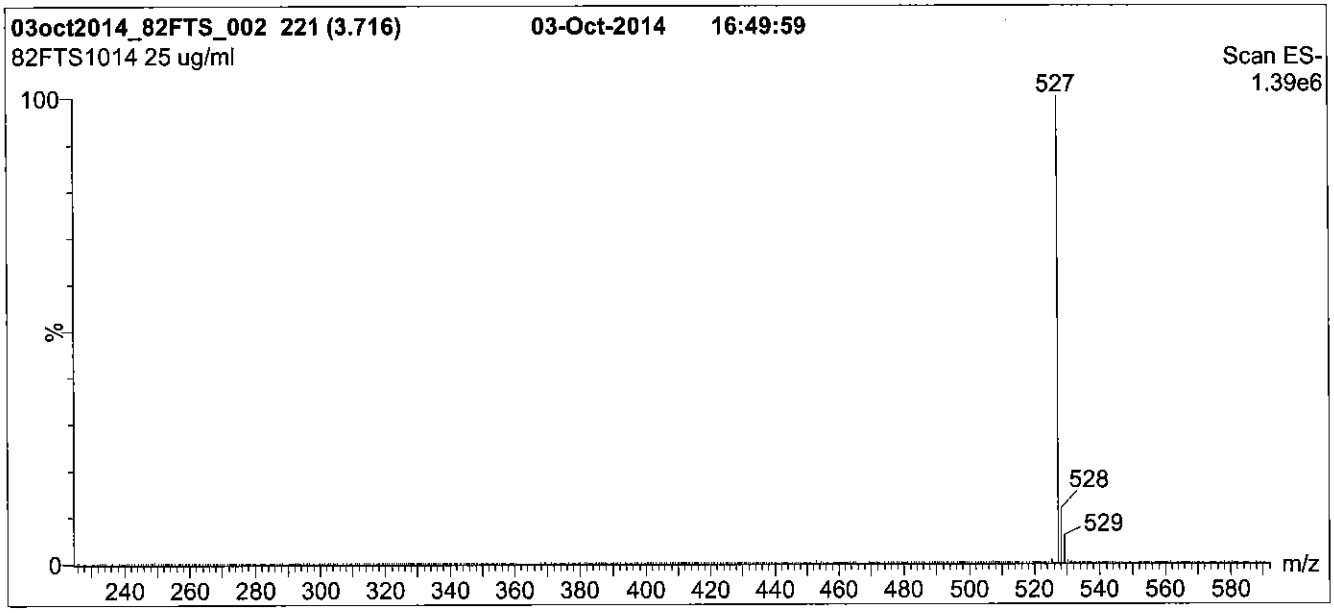
CALA Testing Accreditation No. A 1226

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

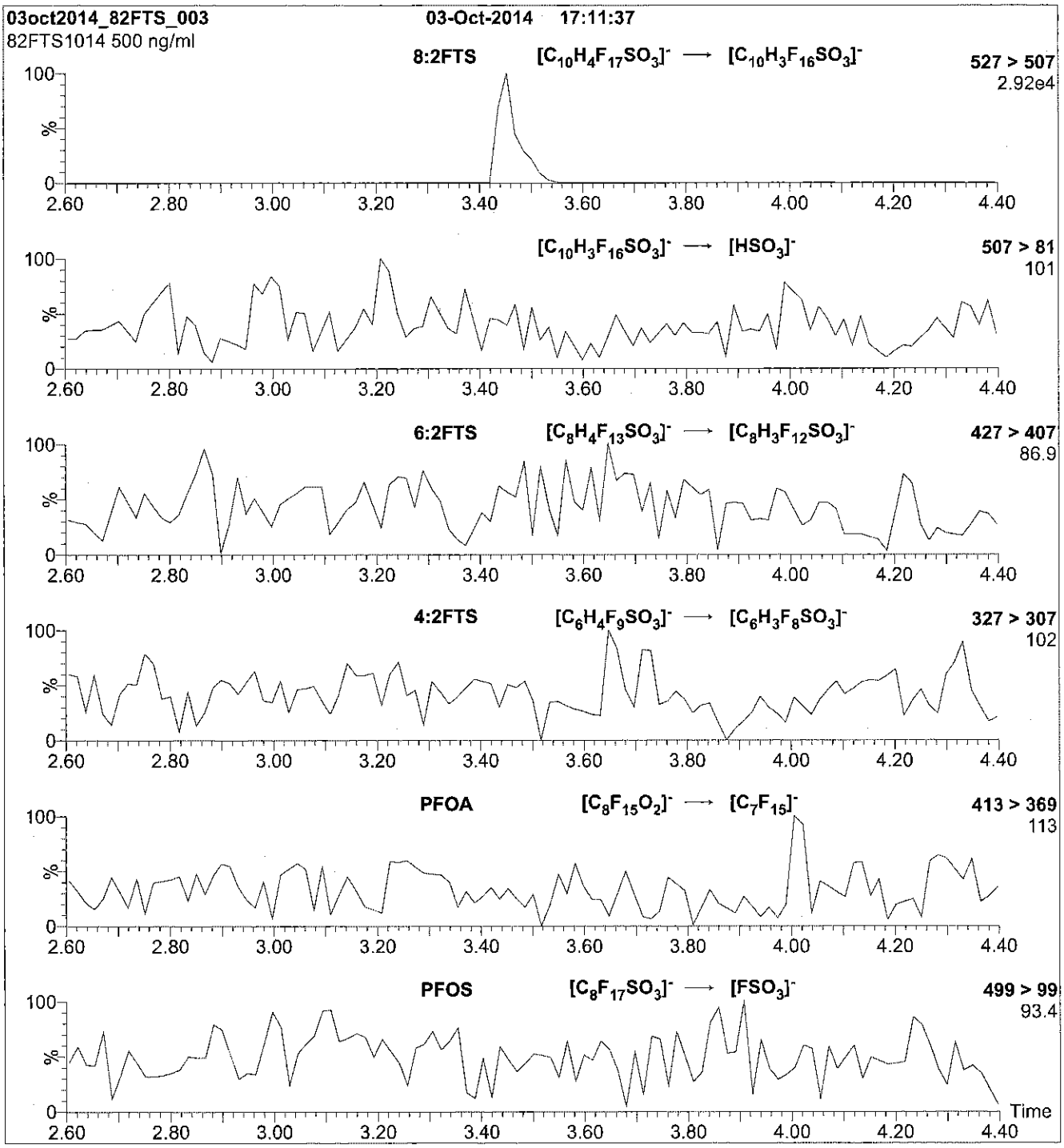
Flow: 300 µl/min

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

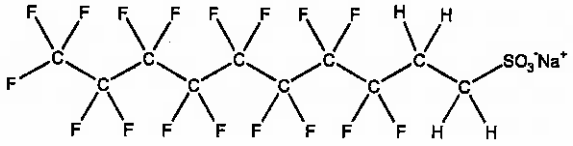
WELLINGTON LABORATORIES

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

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:

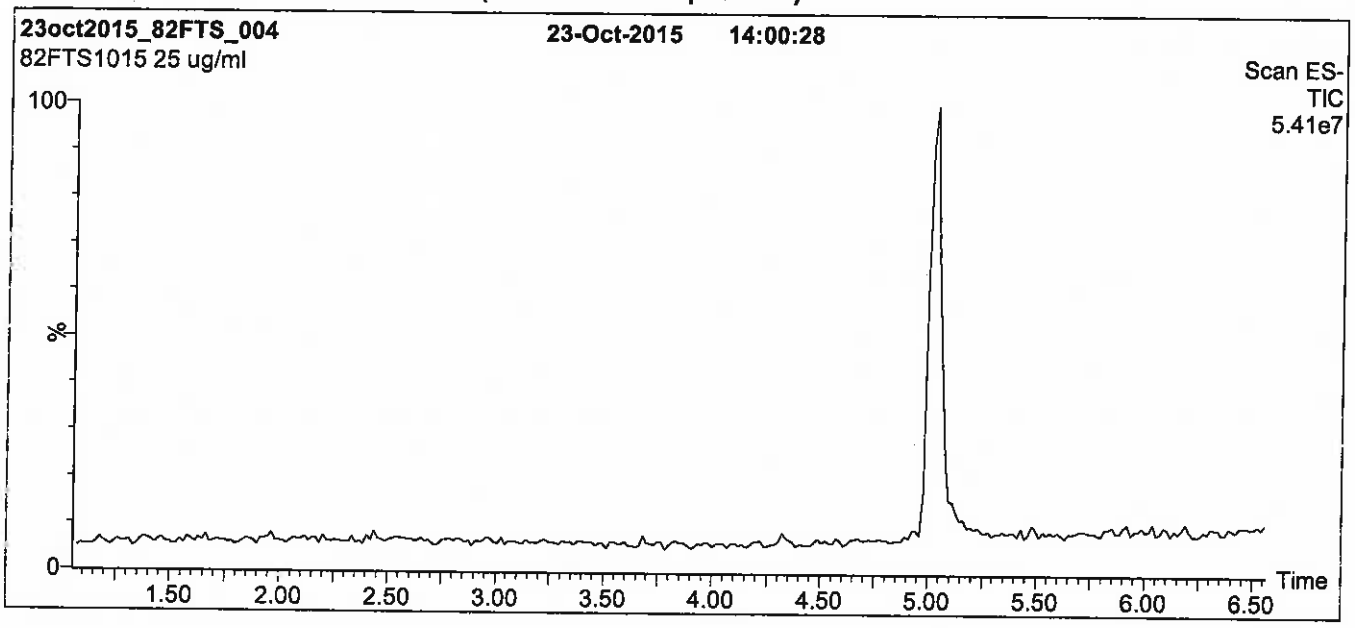
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

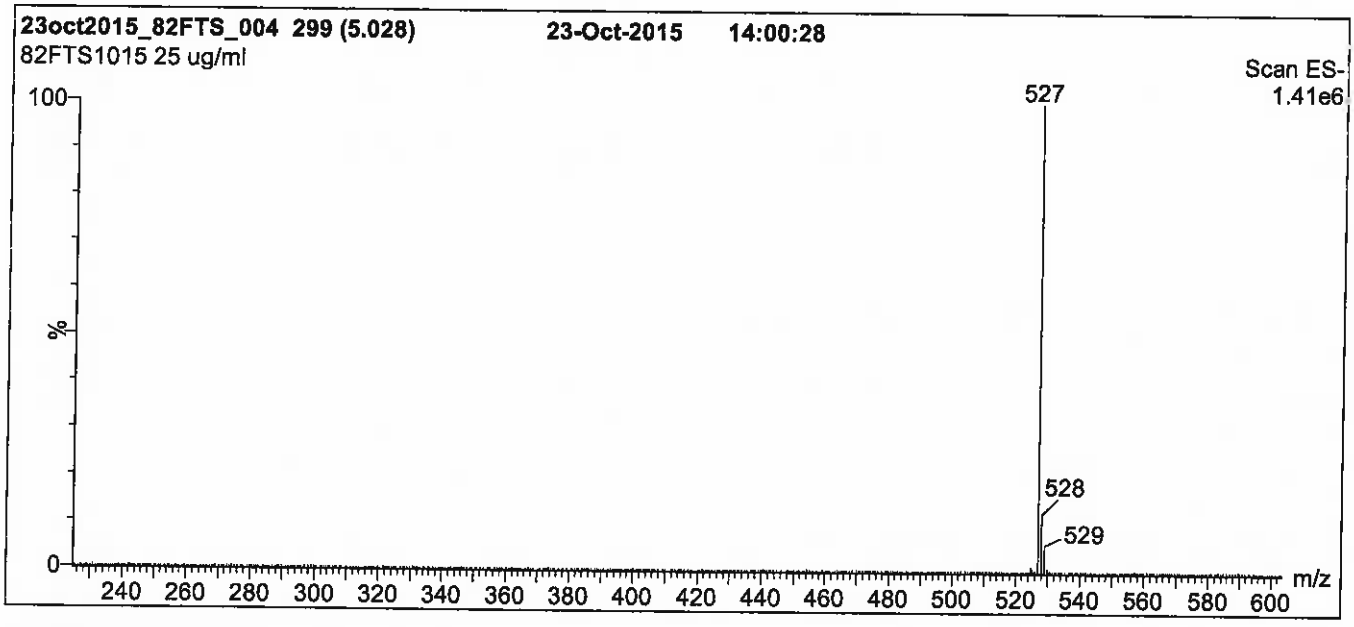
CALA

ANAB ACCREDITED 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: **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

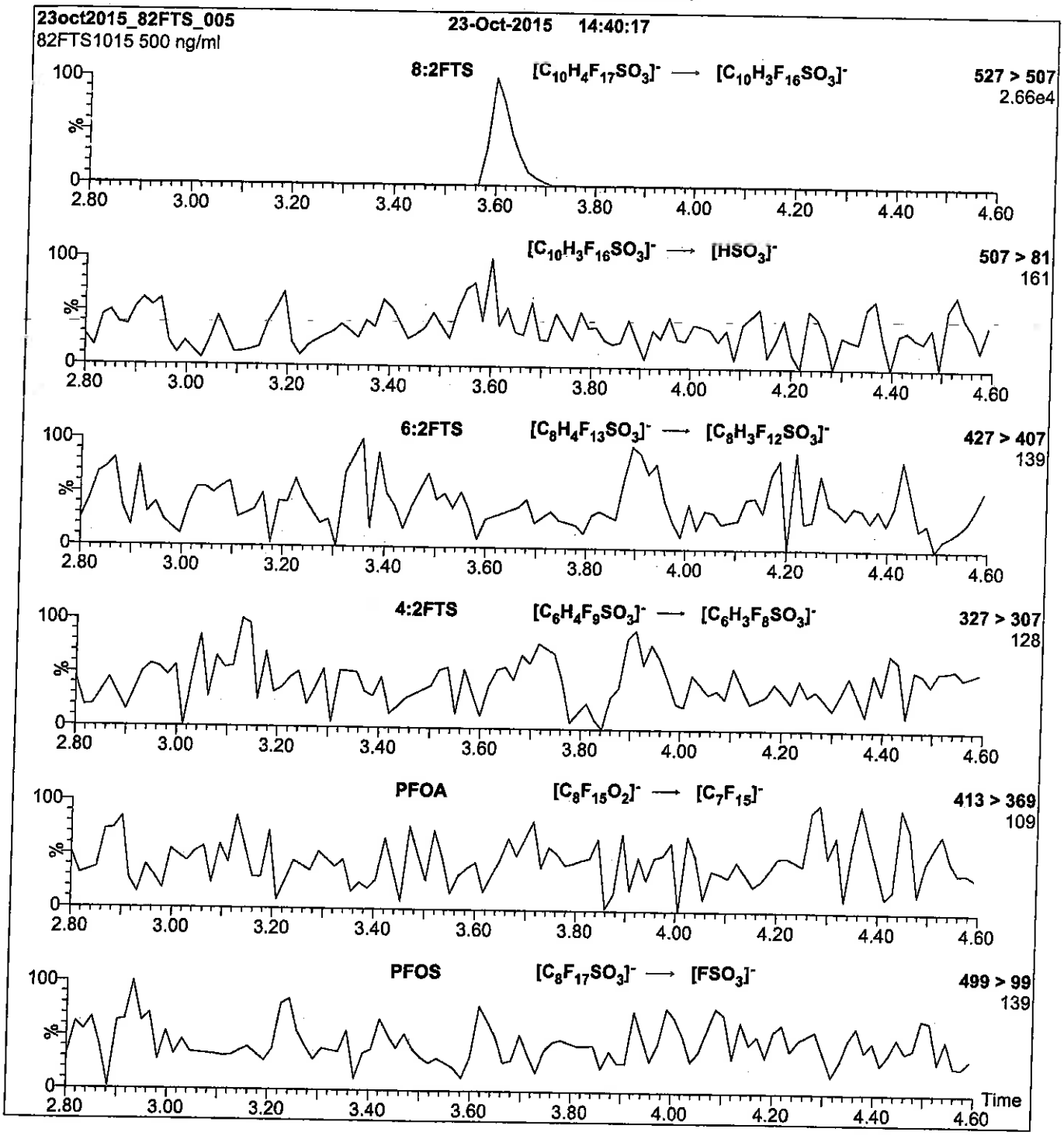
Flow: 300 µl/min

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

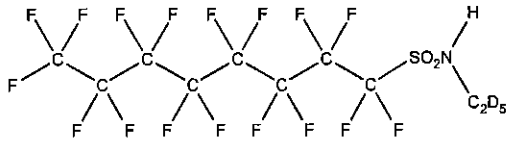
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

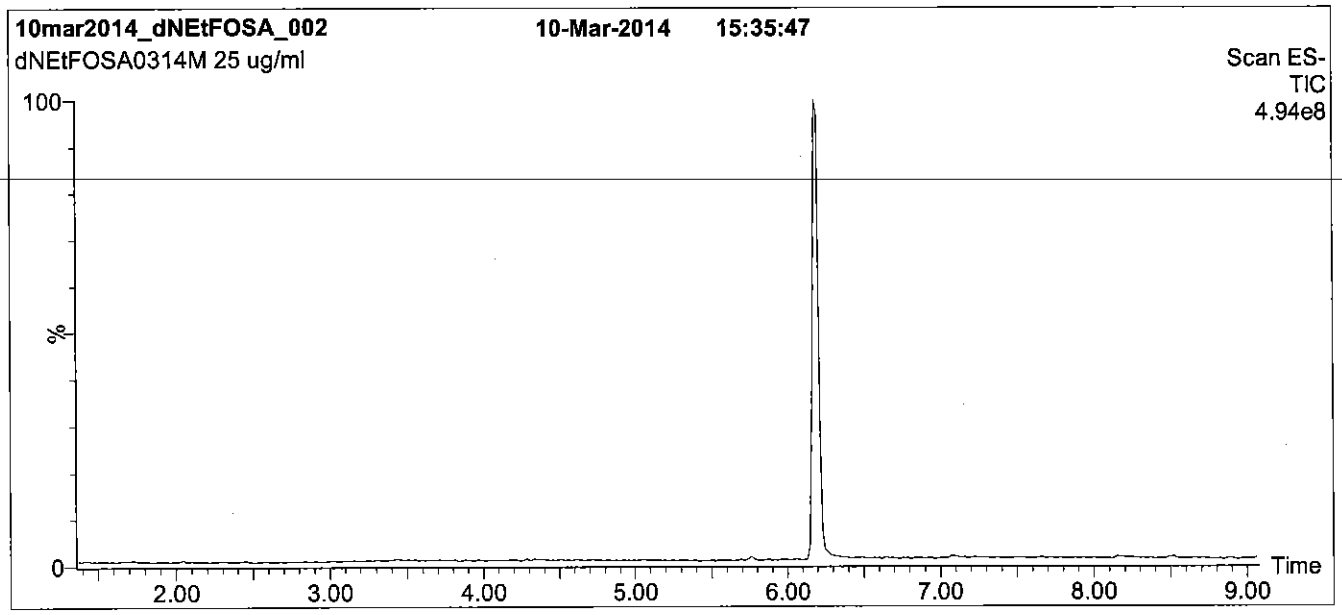
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

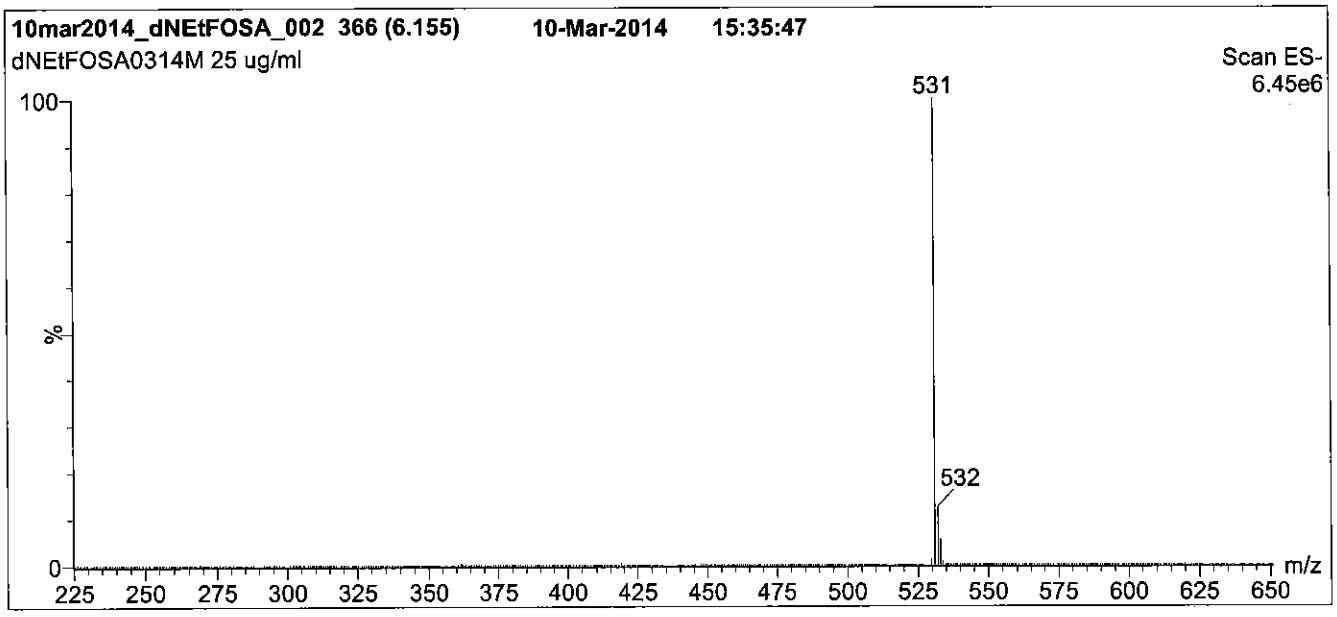
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

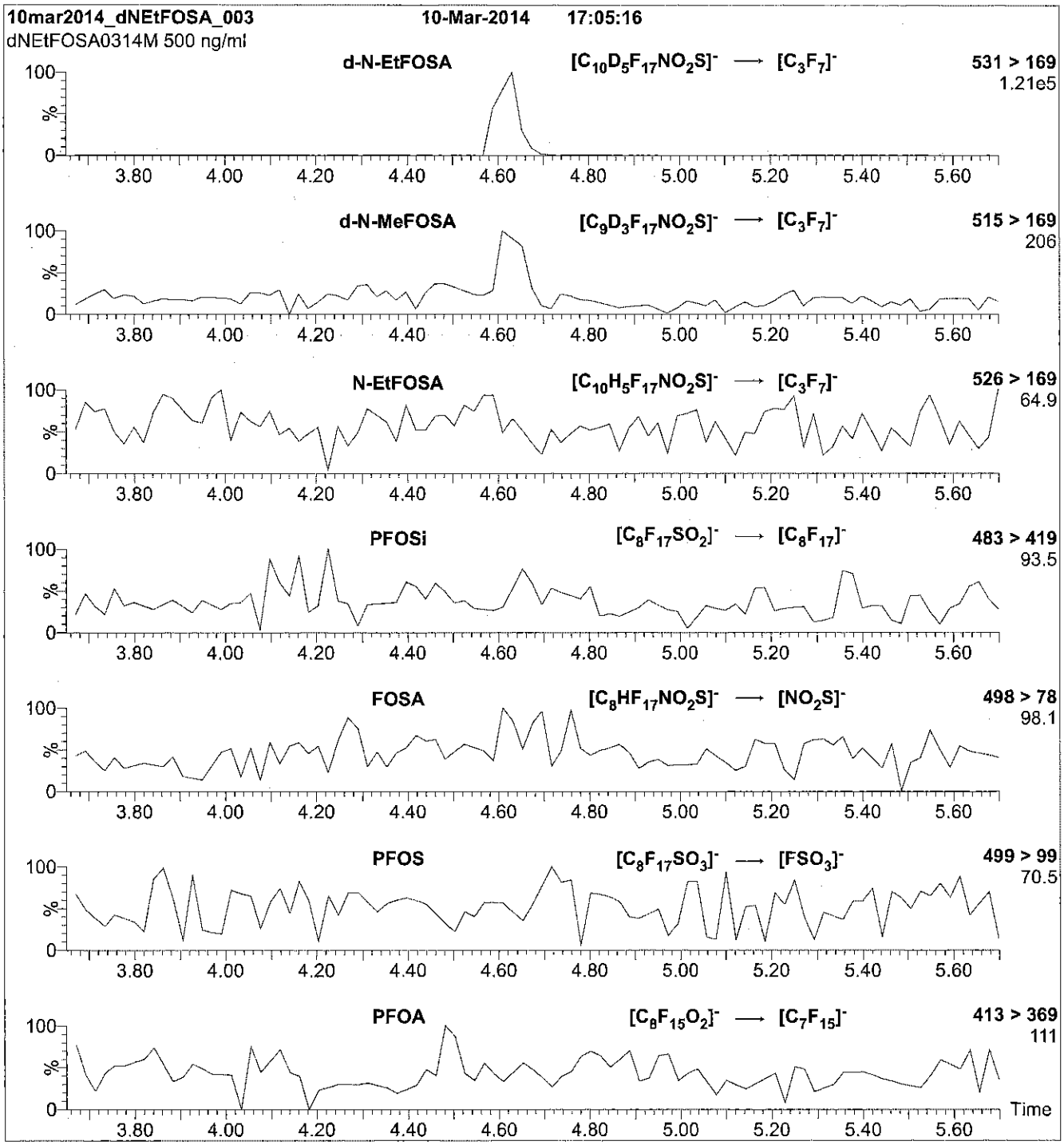
Flow: 300 µl/min

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

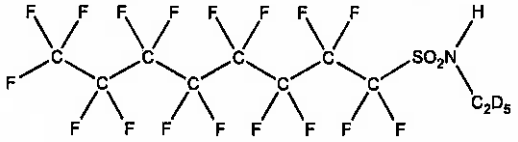
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
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: 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.

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:

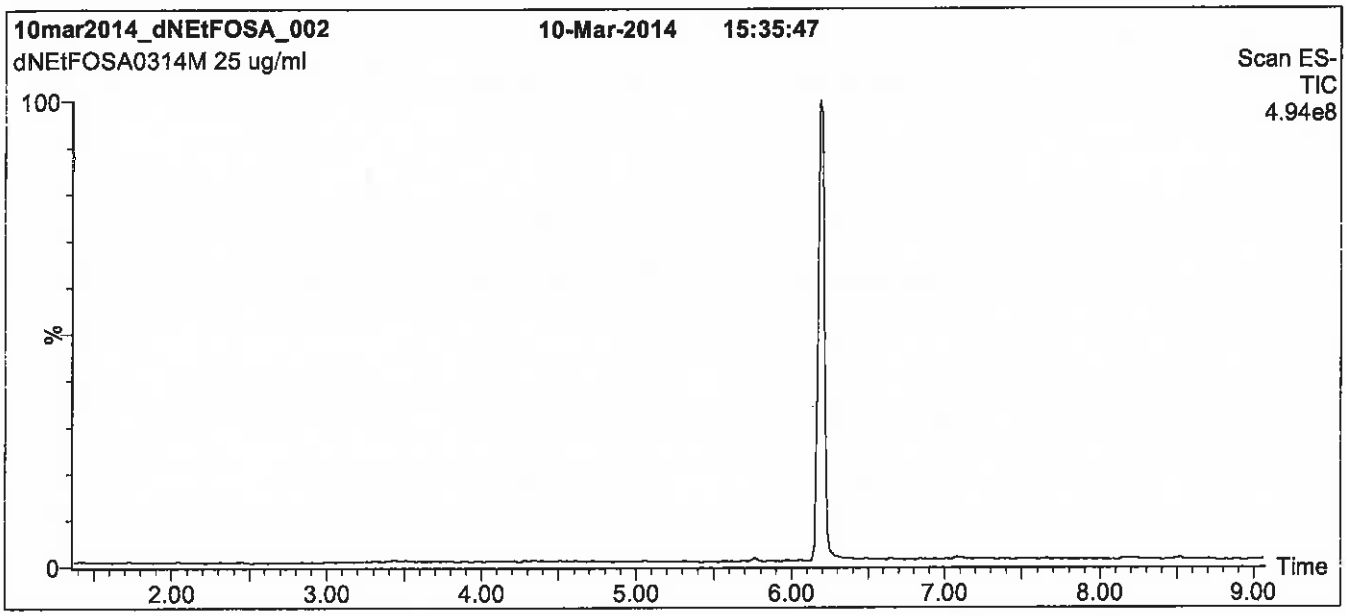
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

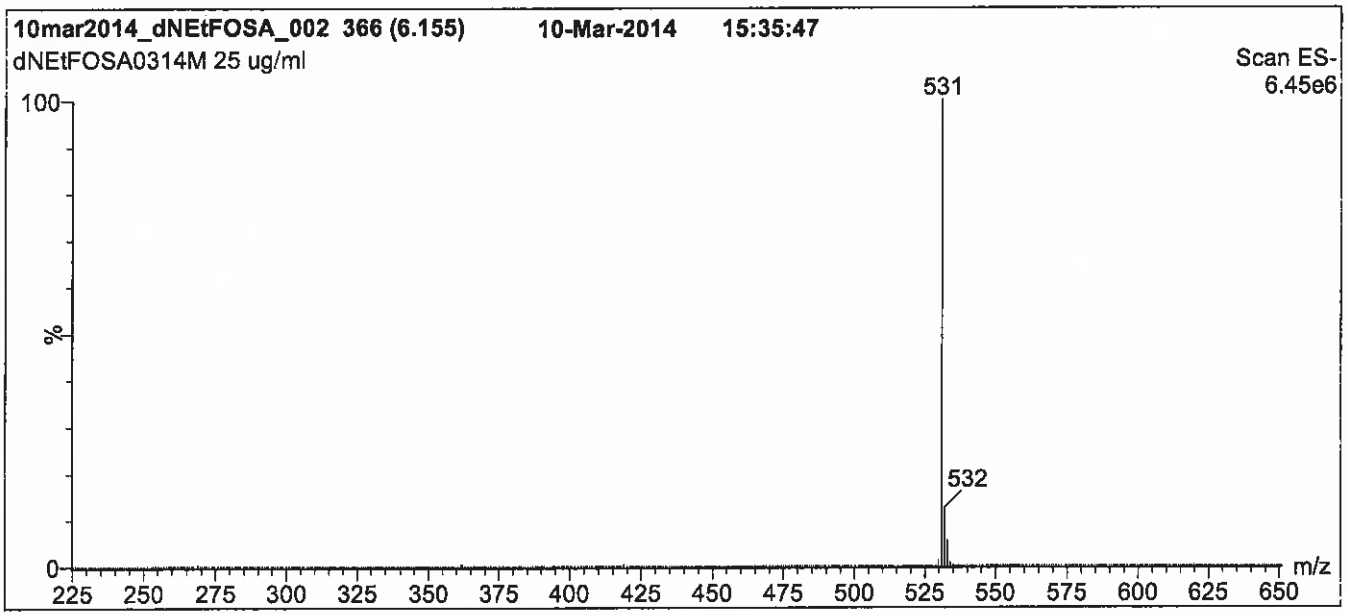
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

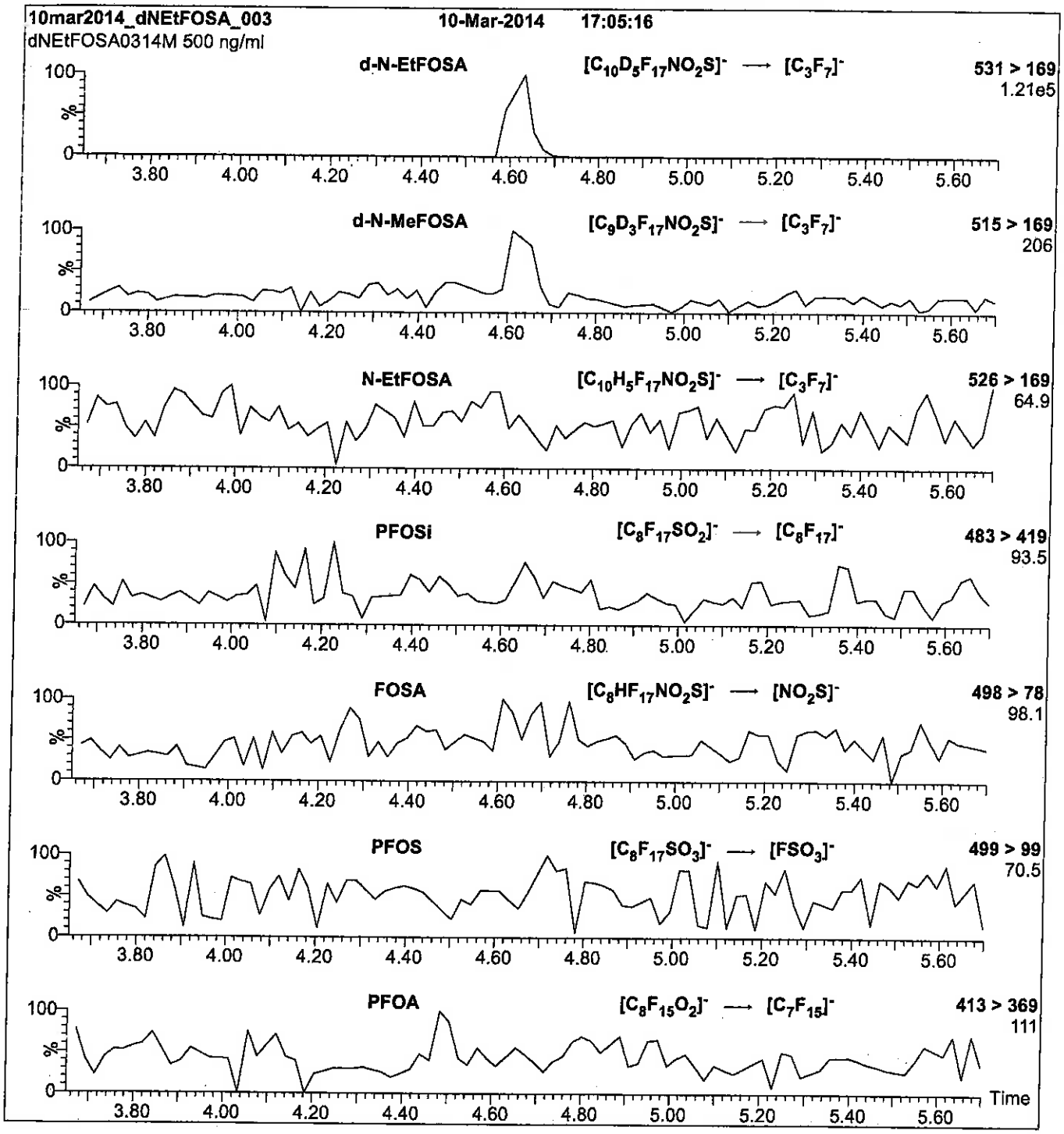
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NMeFOSA-M_00001

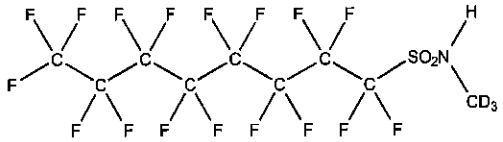
R: 7/16/15 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

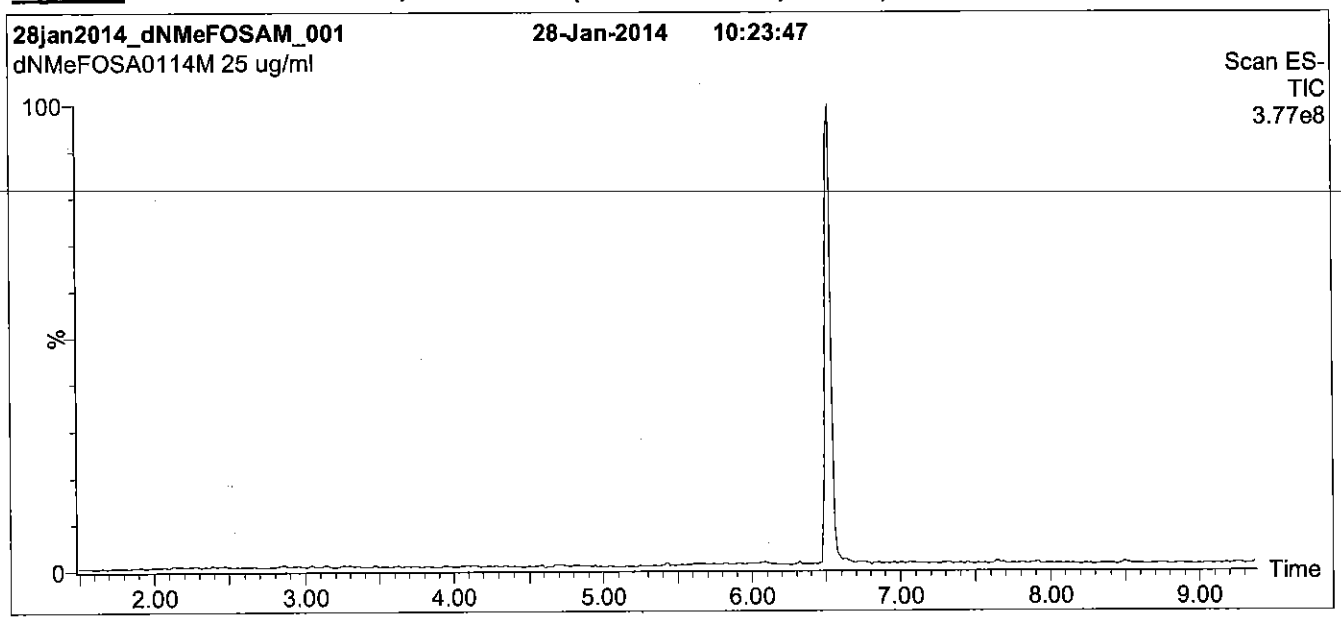
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

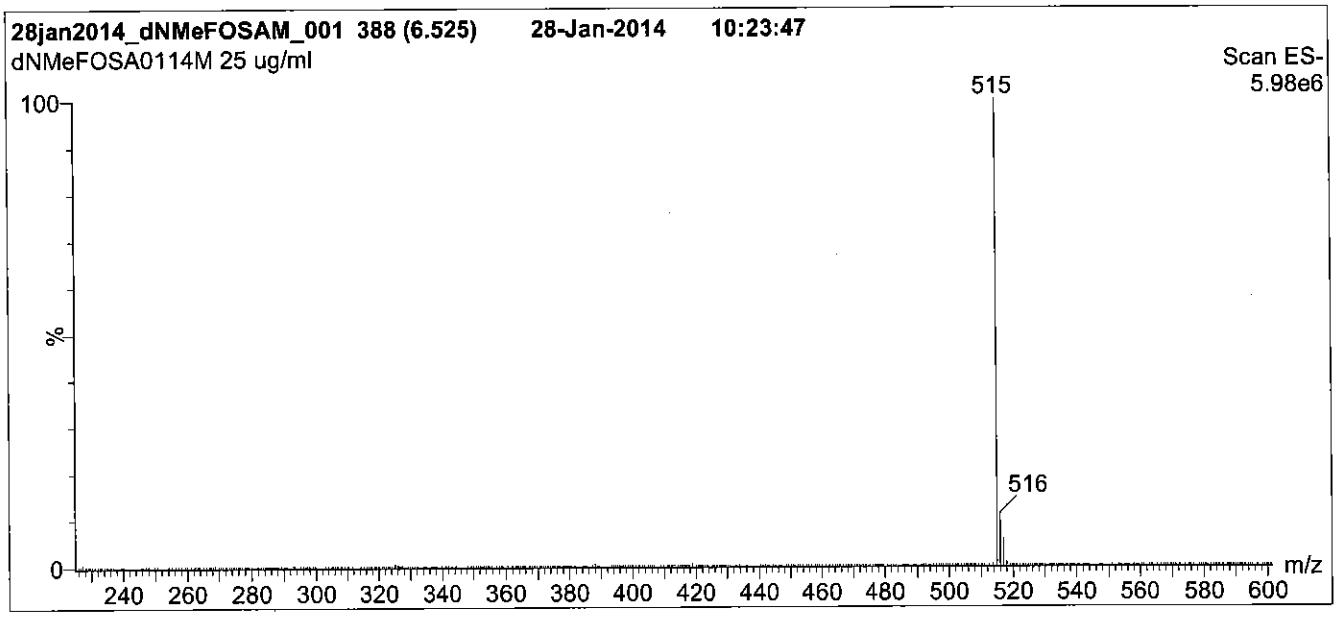
CALA Testing Accreditation No. A1226

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

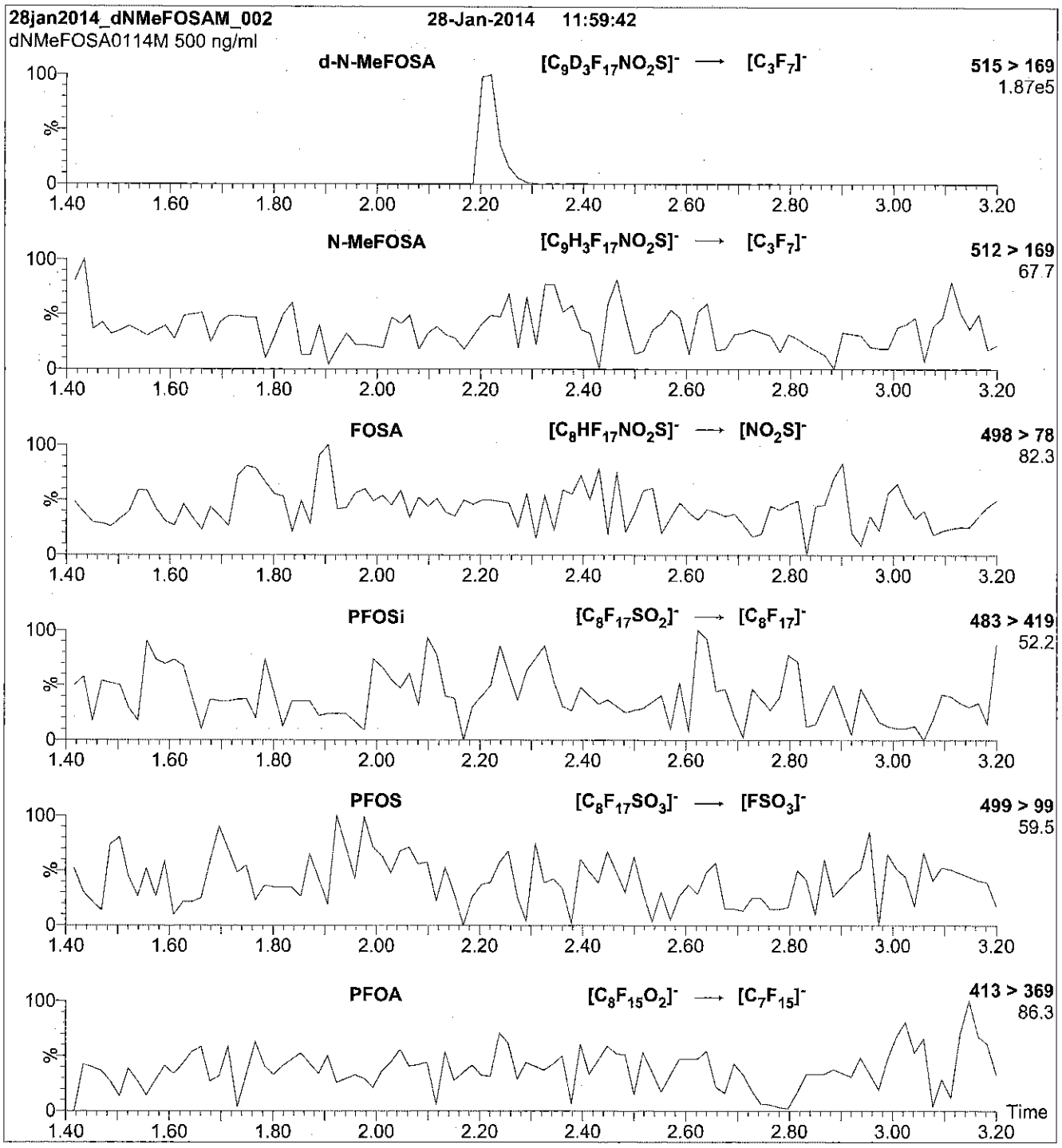
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NMeFOSA-M_00002

R: 7/6/16 CBW

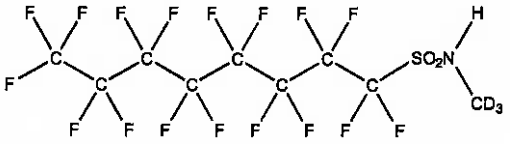
671625
ID: LCd-NMeFOSA-M_00002
Exp: 06/13/21 Prpd: CBW
d-N-MeFOSA-M

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
LOT NUMBER: dNMeFOSA0616M
COMPOUND: N-methyl-d_3-perfluoro-1-octanesulfonamide

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA:	$C_9D_3HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	516.19
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	06/10/2016		
EXPIRY DATE: (mm/dd/yyyy)	06/10/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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:

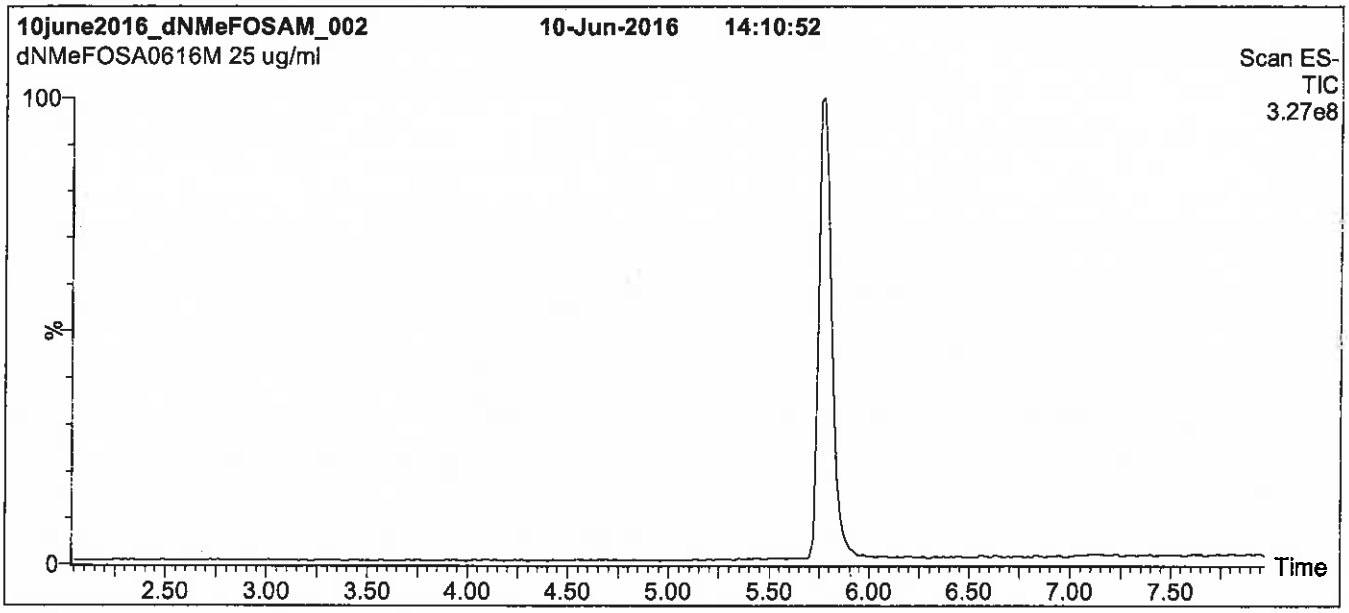
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

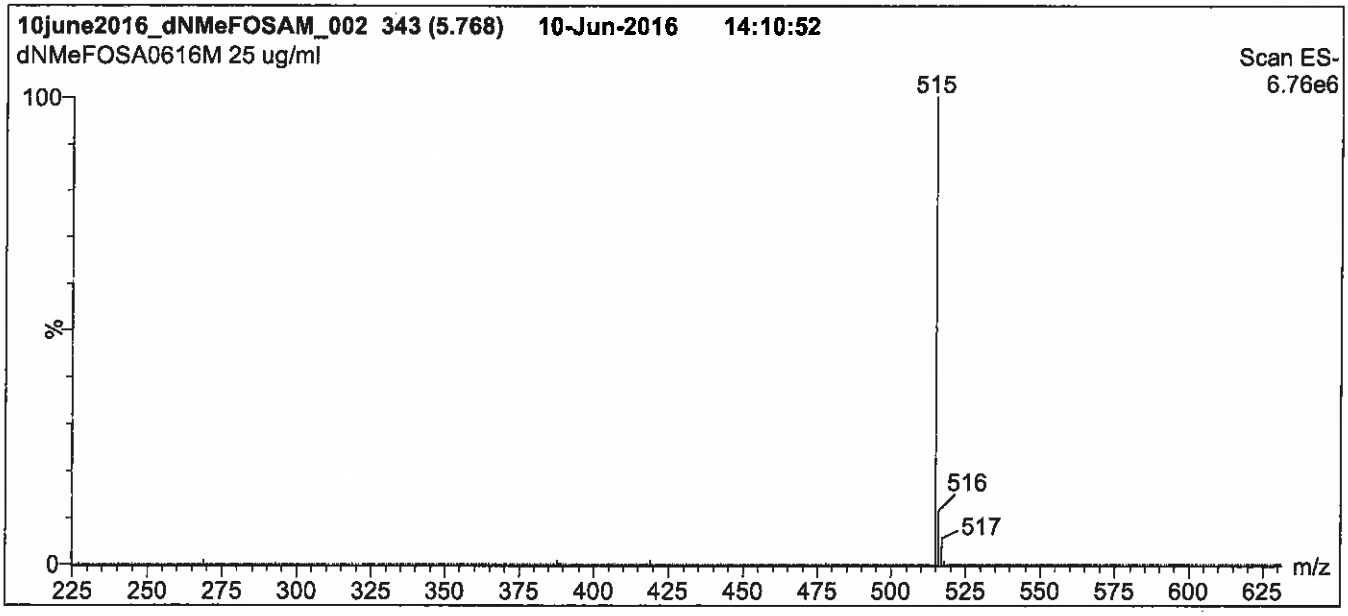
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

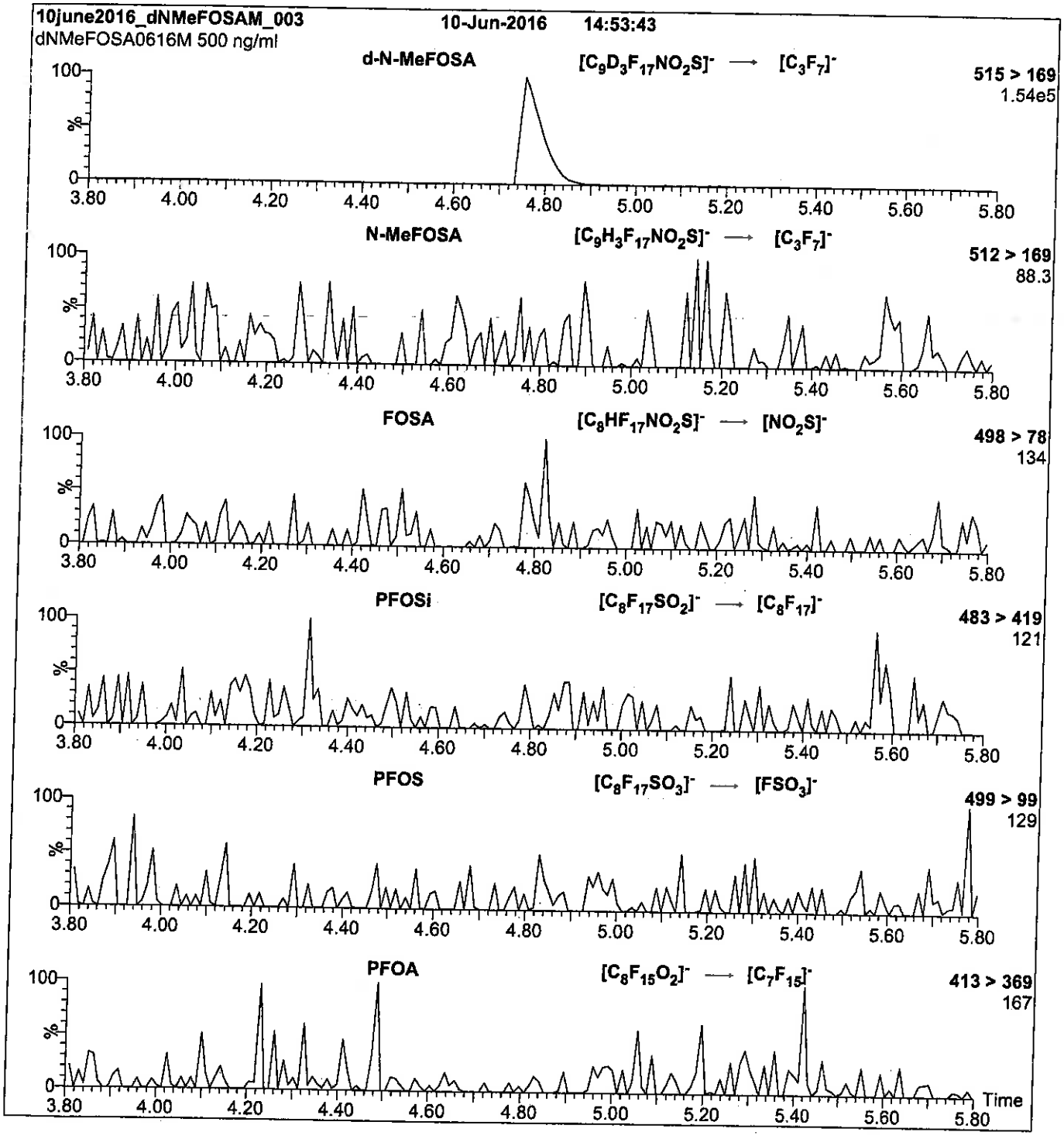
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCd3-NMeFOSAA_00001

r: 7/16/15 SKV

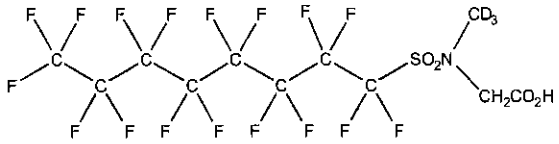
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_3H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	01/31/2013		
EXPIRY DATE: (mm/dd/yyyy)	01/31/2018		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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:

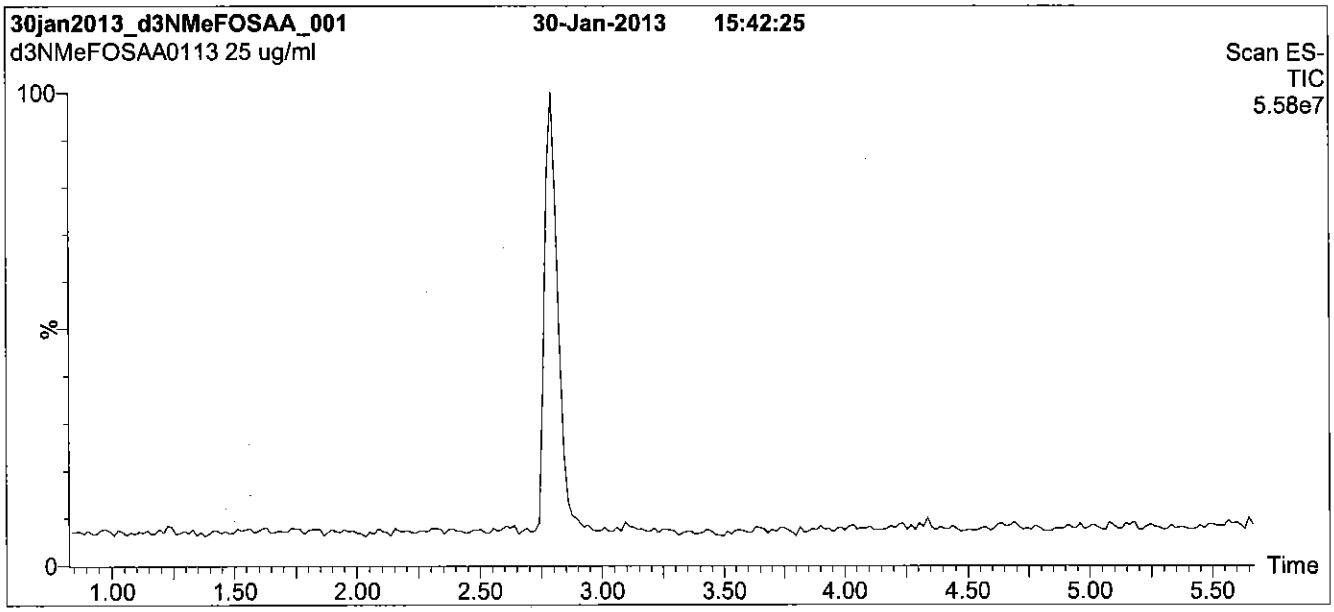
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

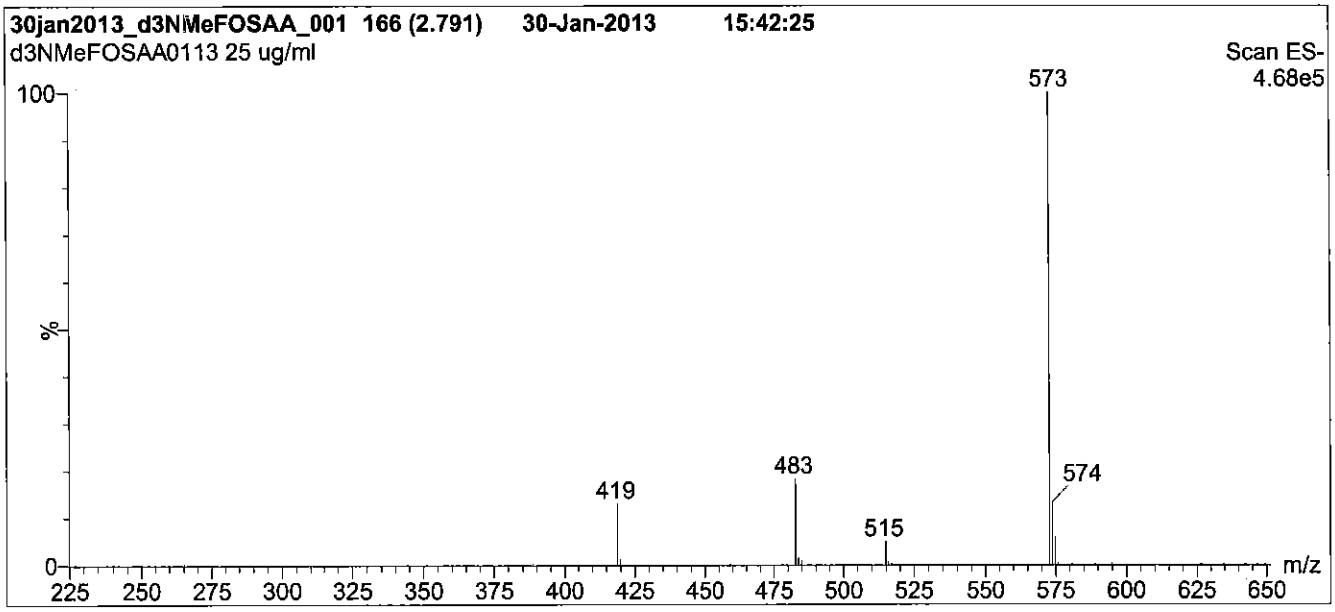
CALA Testing Accreditation No. A1226

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

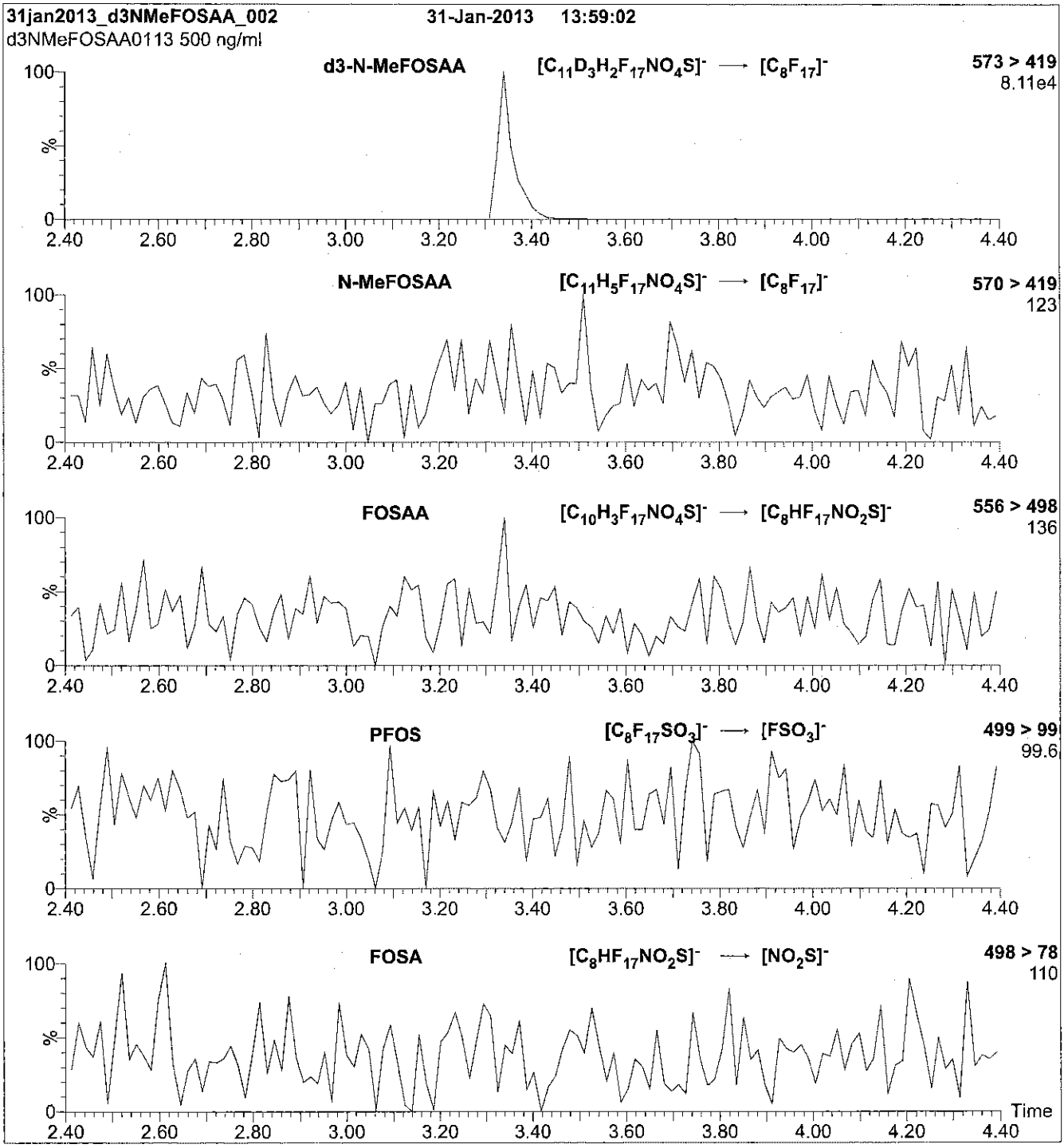
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd3-NMeFOSAA_00002

R: 7/6/16 CBW

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

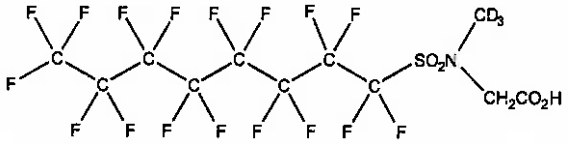
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_3H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	01/20/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/20/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/25/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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:

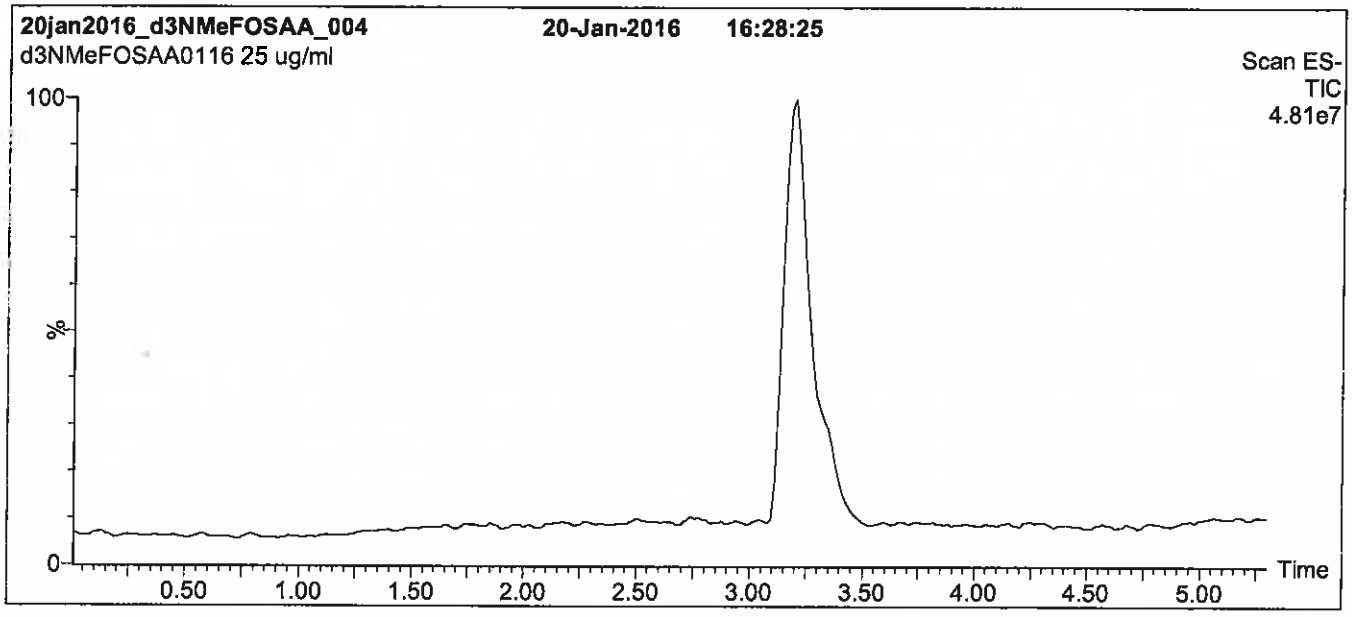
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

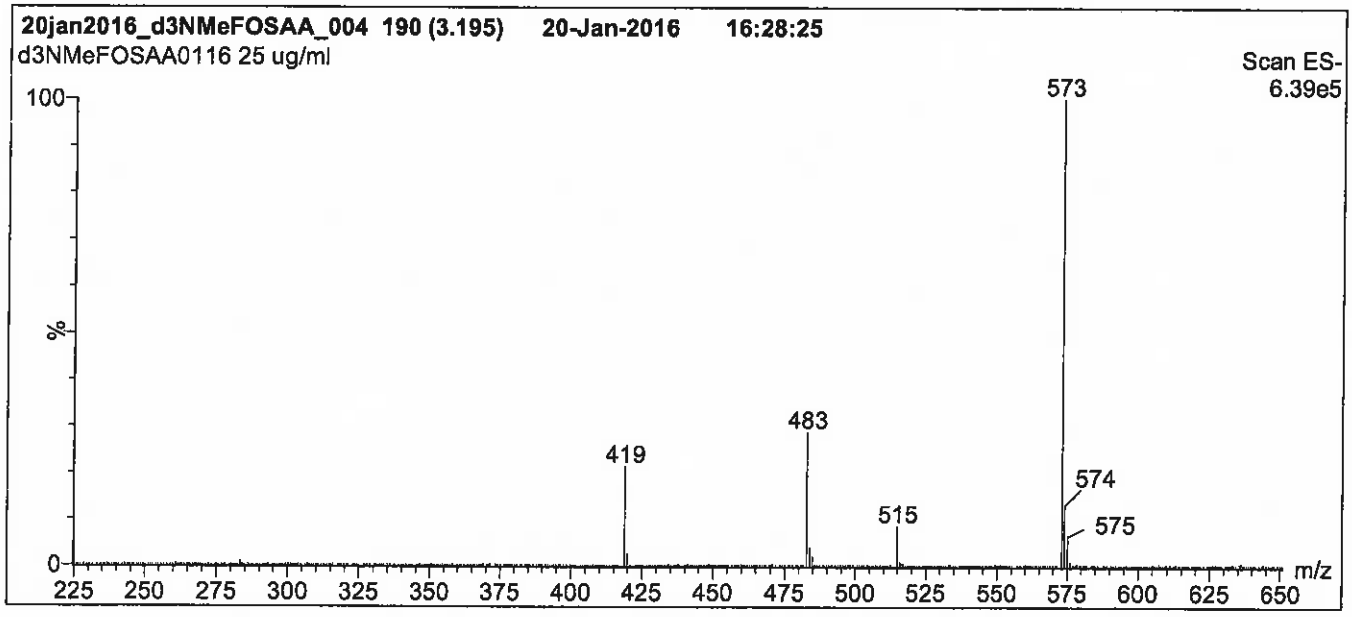
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

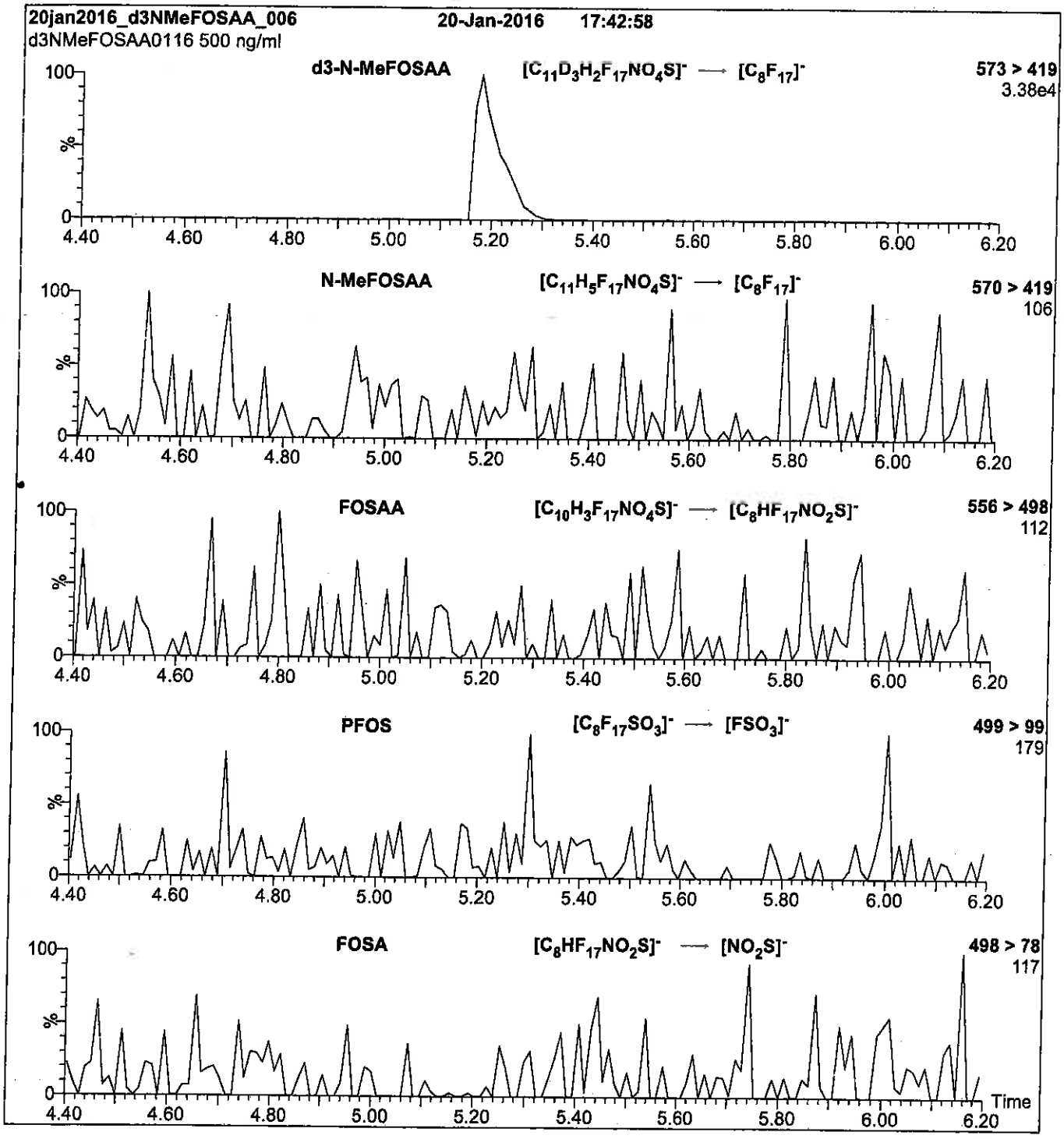
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd5-NEtFOSAA_00001

P: 7/10/15 SW

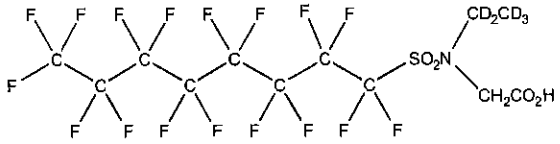
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



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

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

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

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

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

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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:

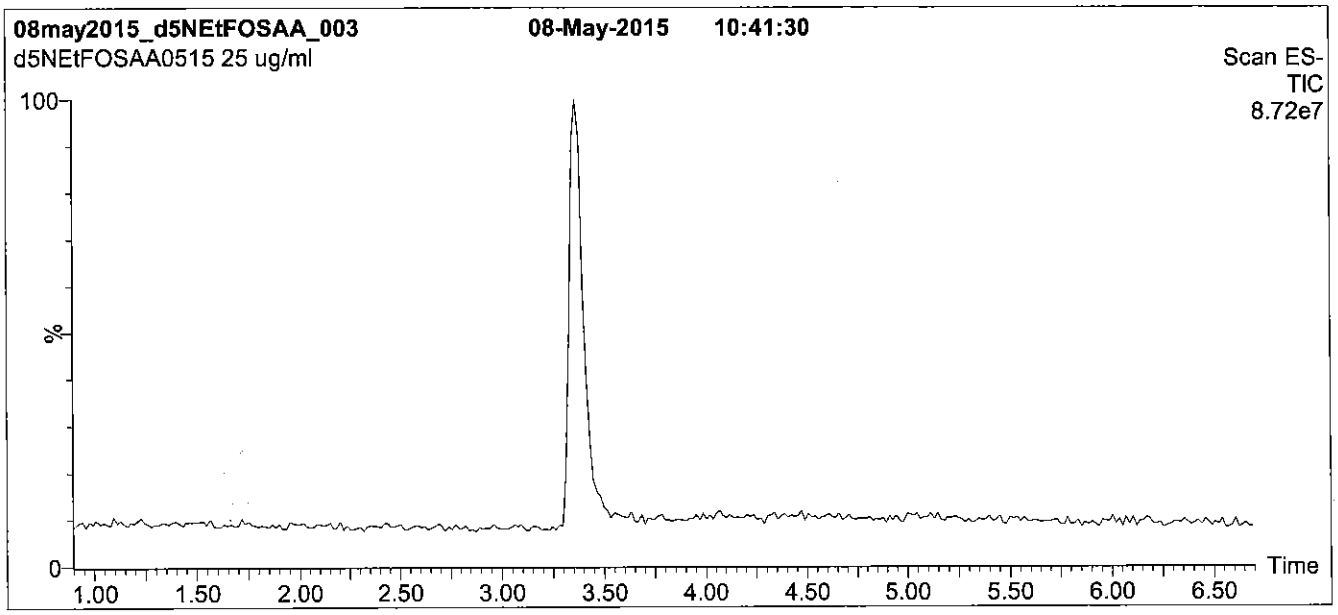
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

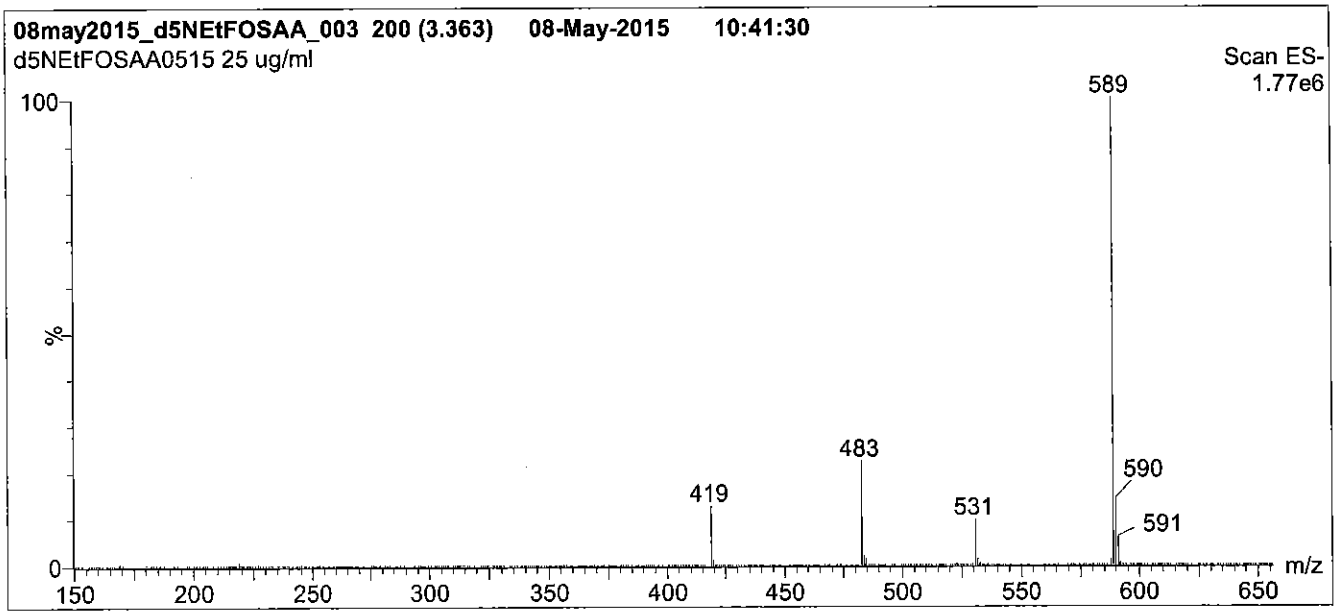
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED 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: **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

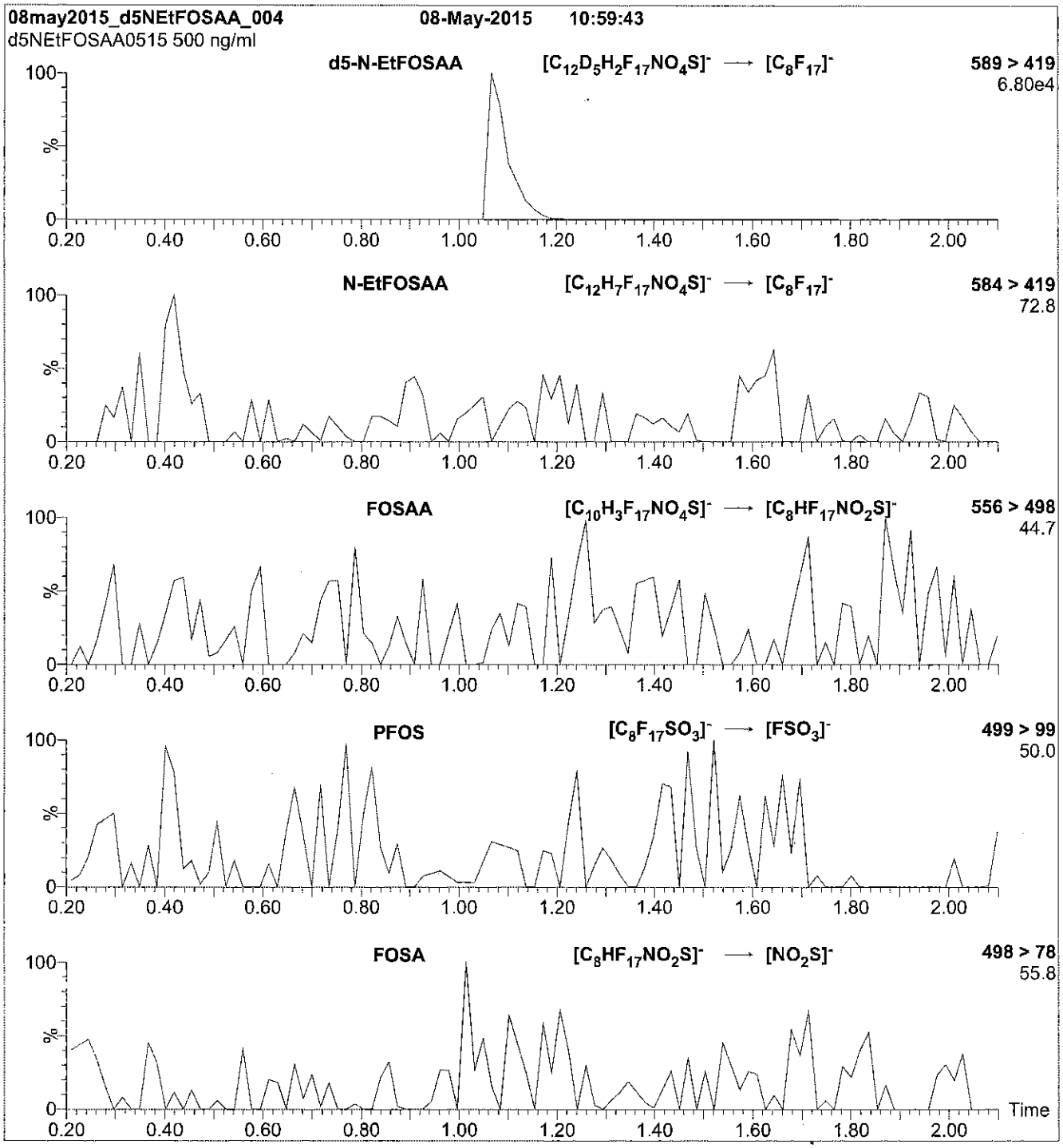
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd5-NEtFOSAA_00002

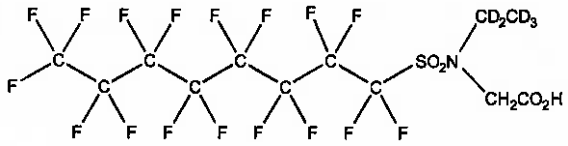
R: 7/6/16 CBW

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	d5-N-EtFOSAA	**LOT NUMBER:**	d5NEtFOSAA1115
COMPOUND:	N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid		
STRUCTURE:		**CAS #:**	Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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:

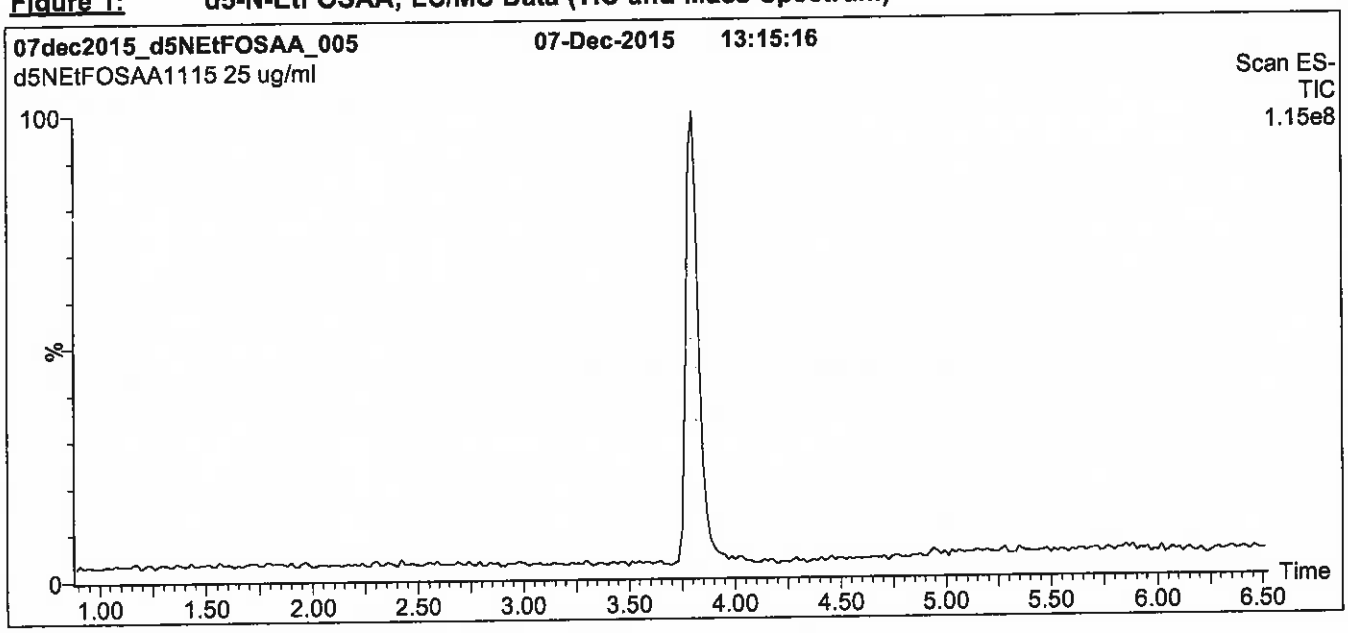
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

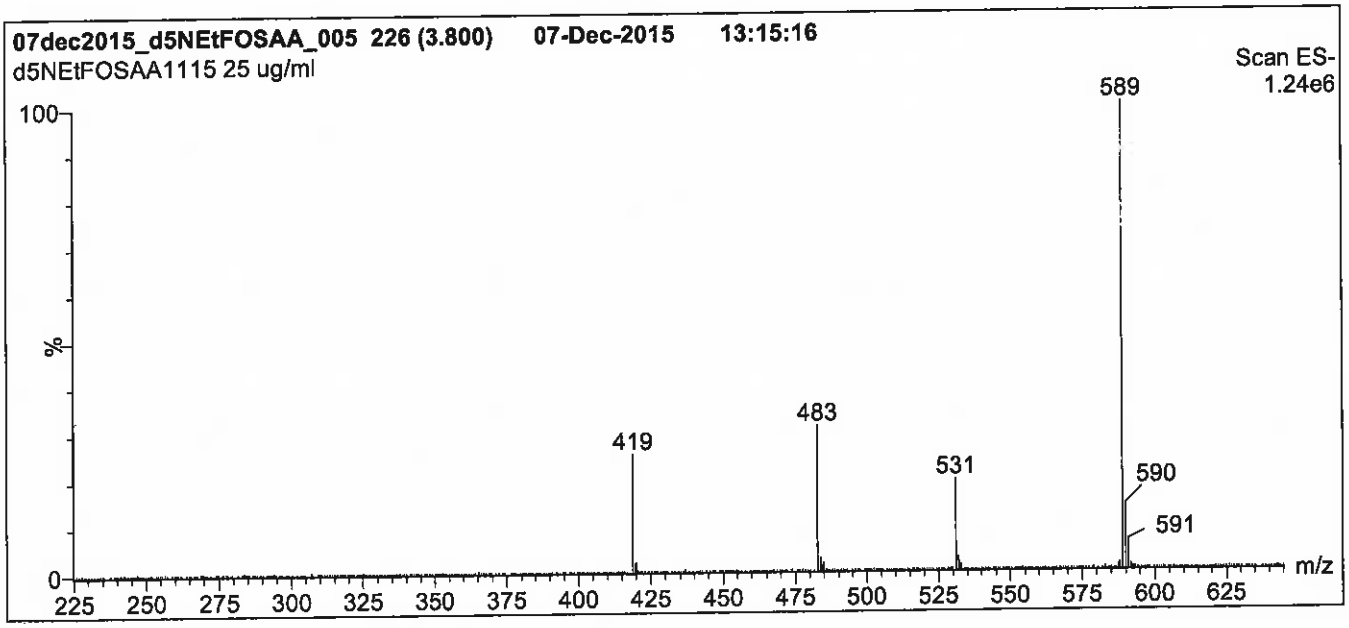
CALA

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: **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

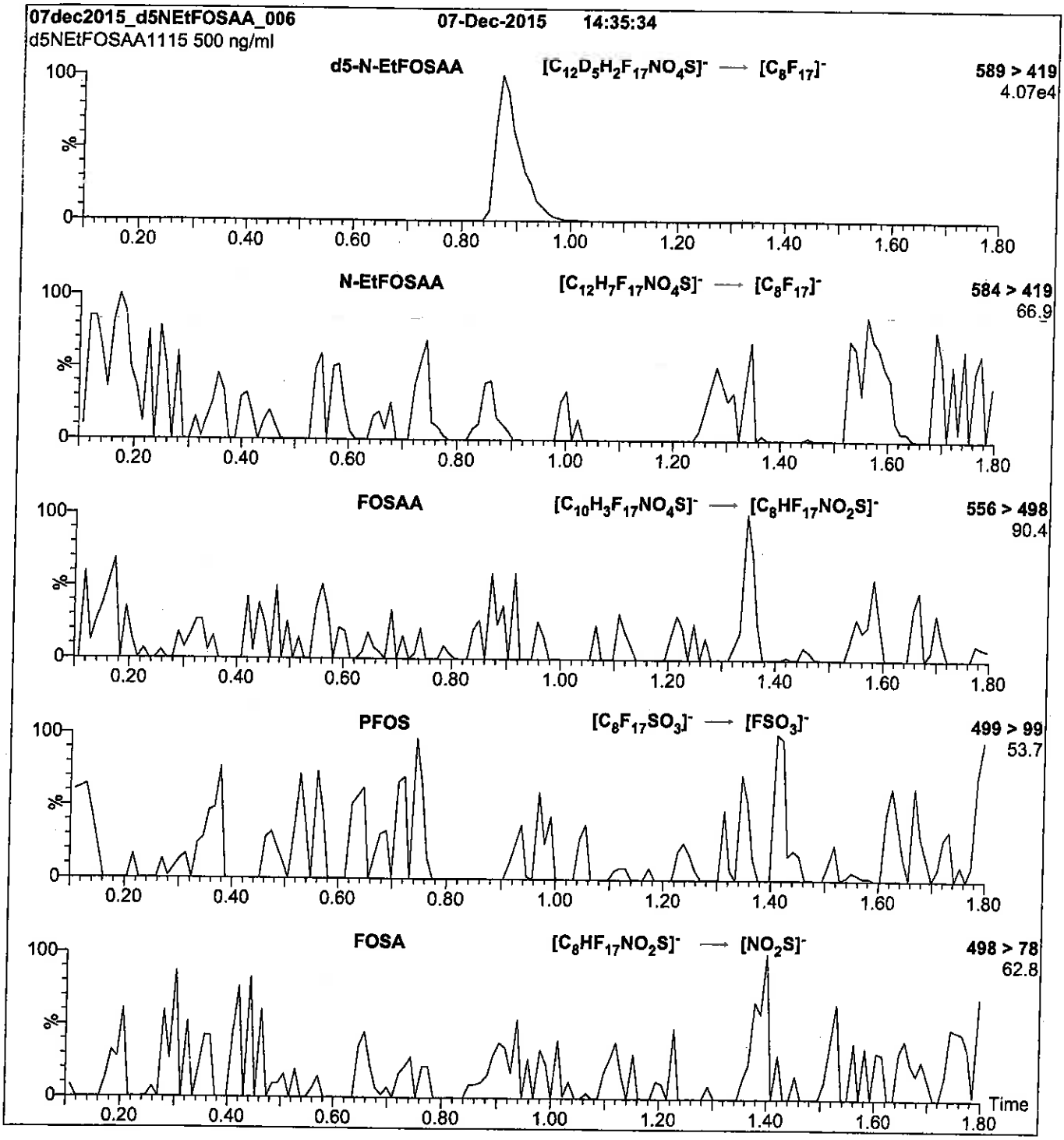
Flow: 300 µl/min

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

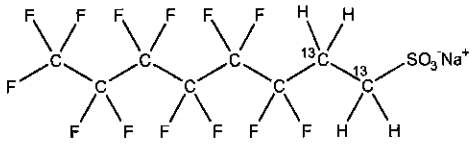
WELLINGTON LABORATORIES

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: _____ **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:

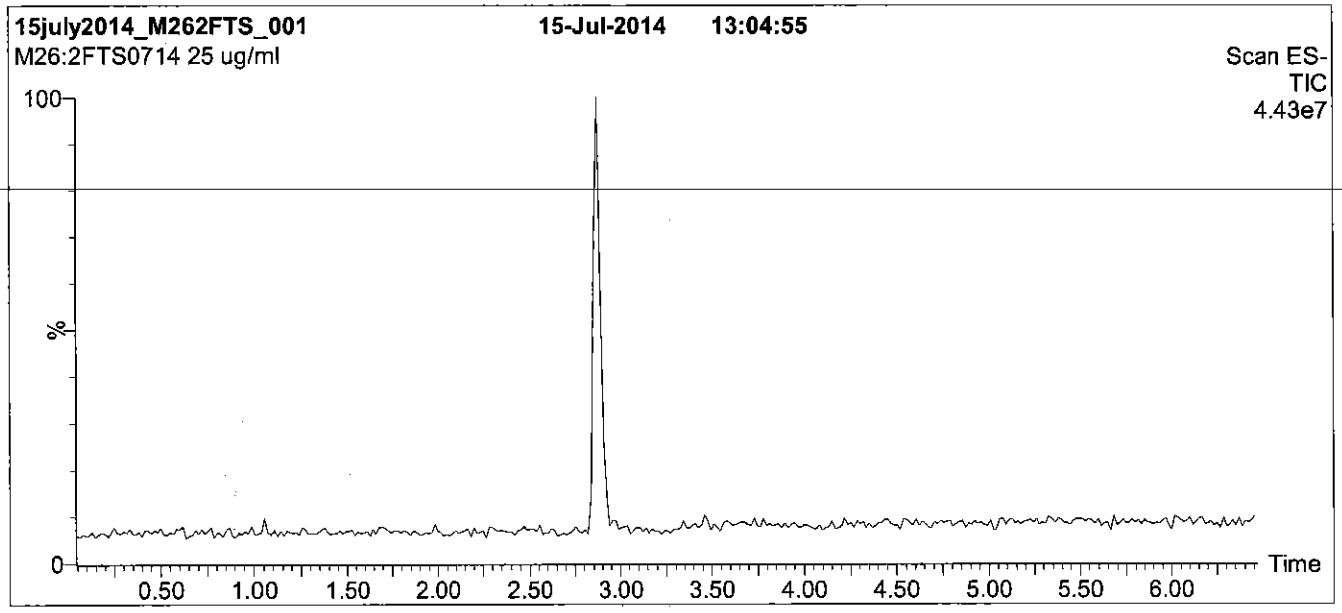
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

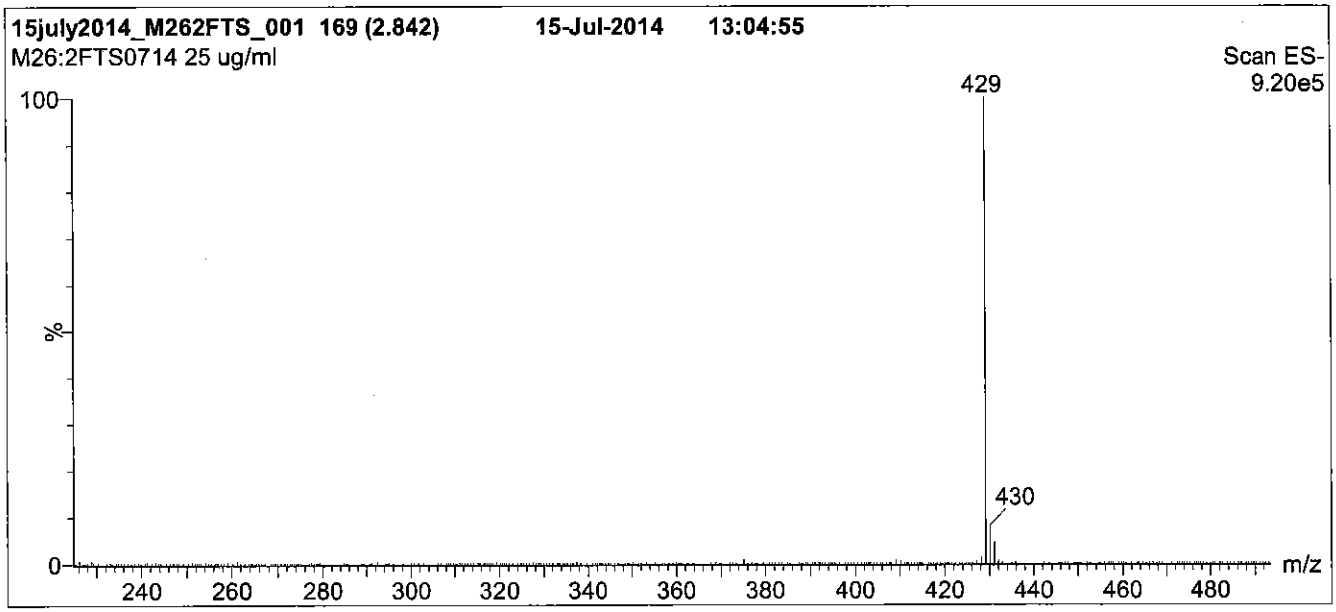
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

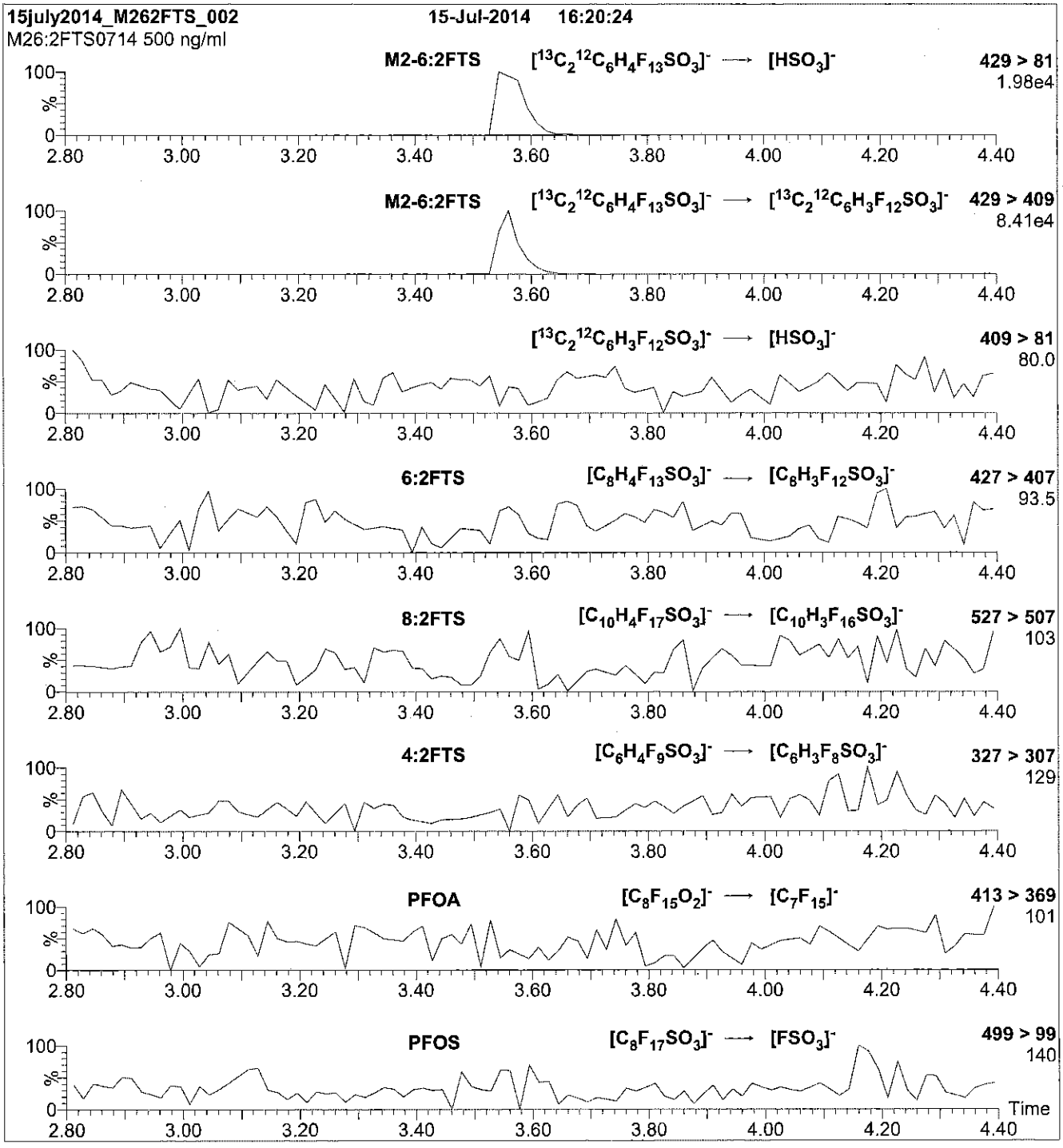
Flow: 300 µl/min

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

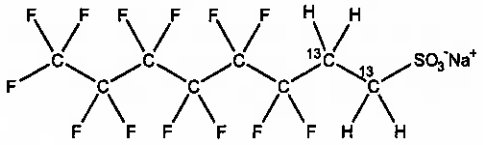
WELLINGTON LABORATORIES

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

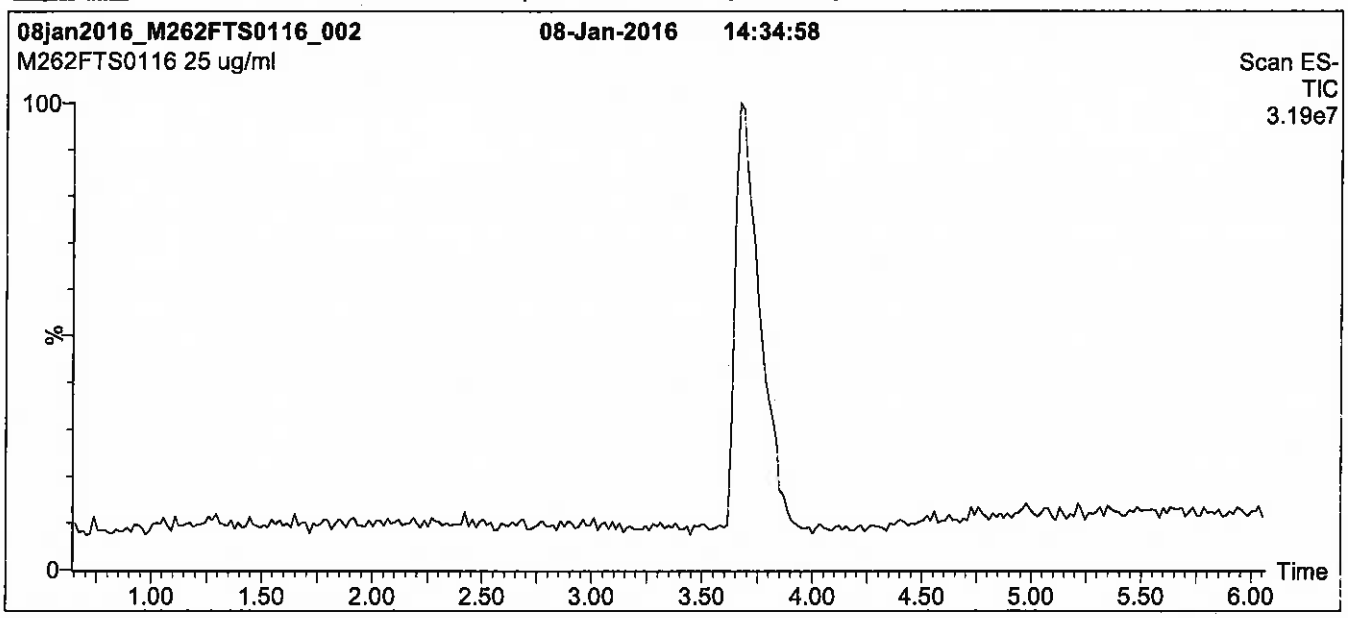
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

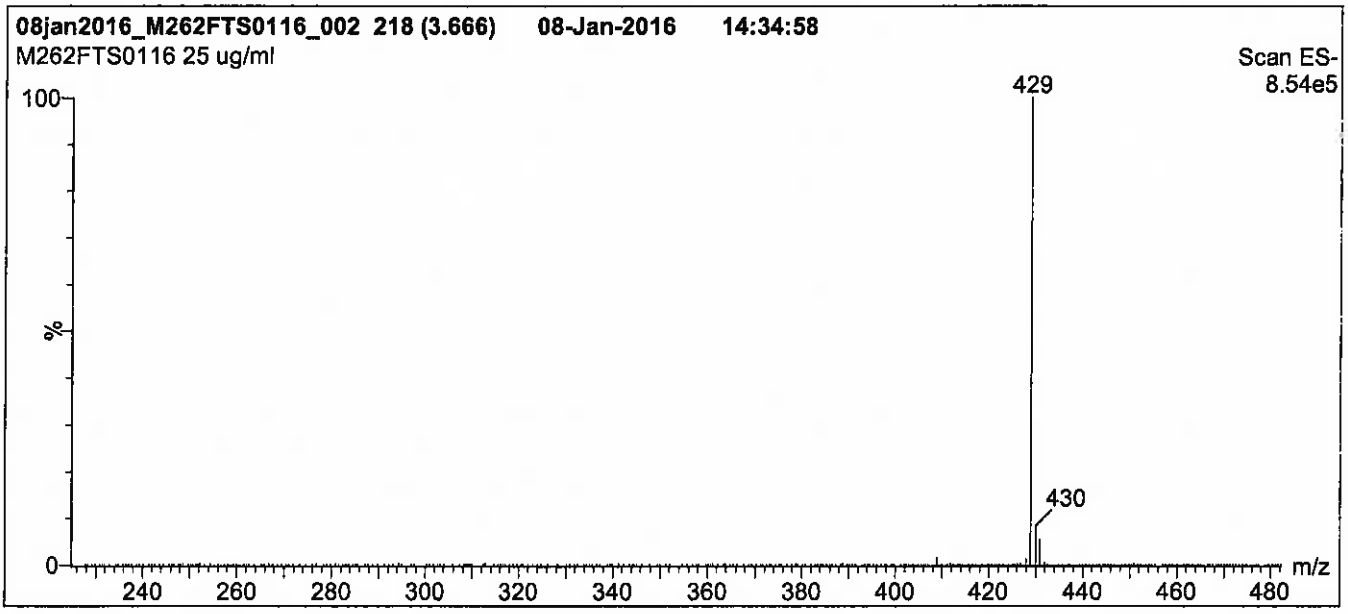
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

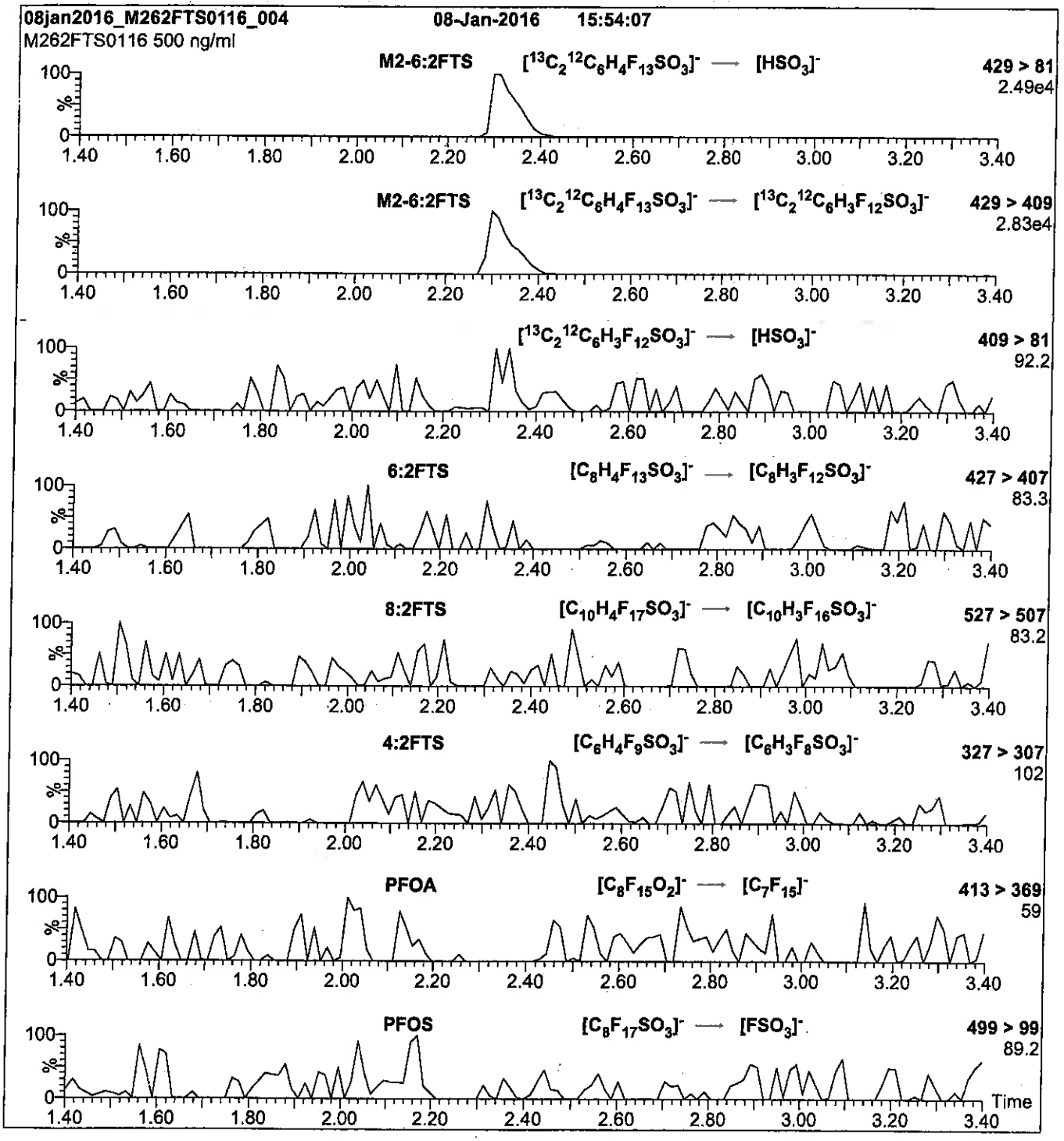
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-6:2FTS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 25

Reagent

LCM2-8:2FTS_00001

r: 7/16/15 BV
s: 7/22/15 STV

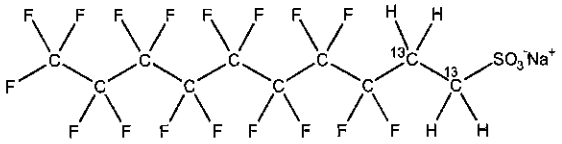
WELLINGTON LABORATORIES

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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:

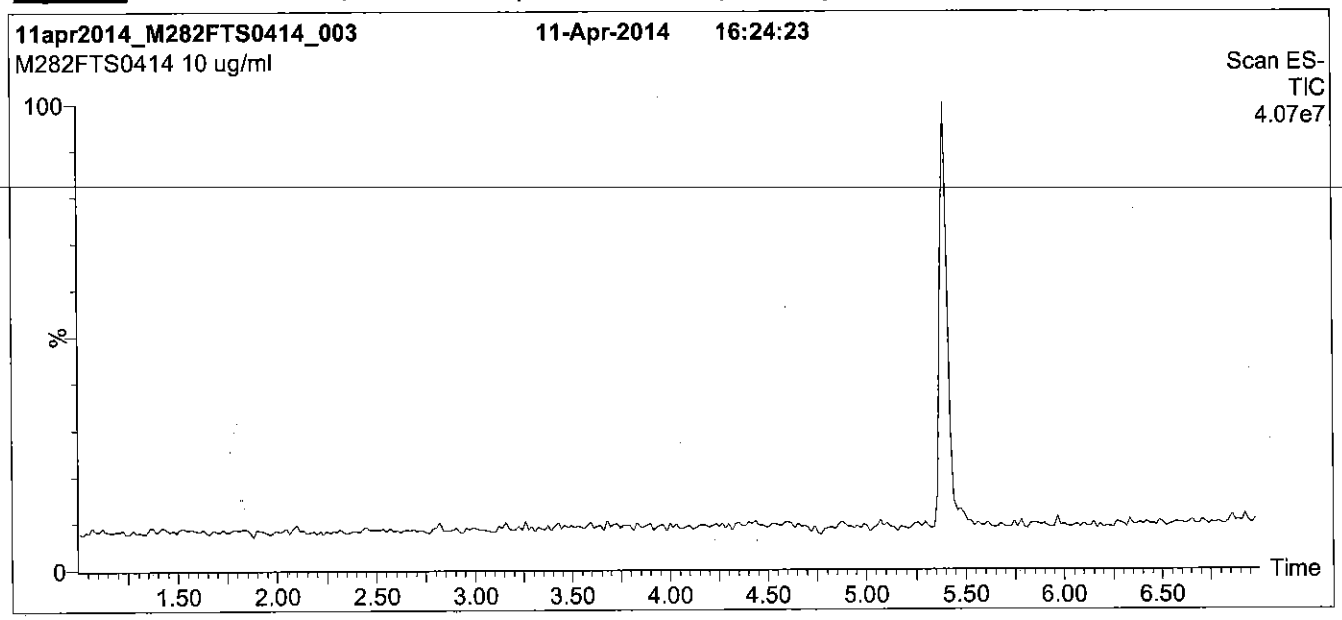
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

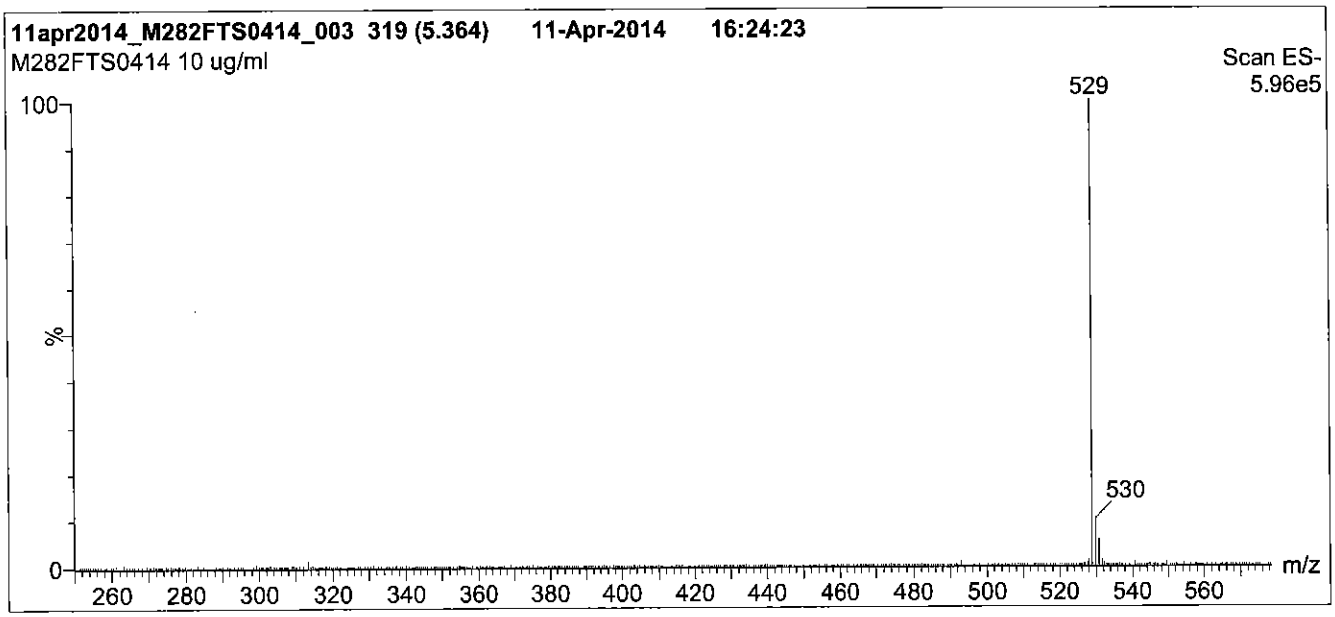
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

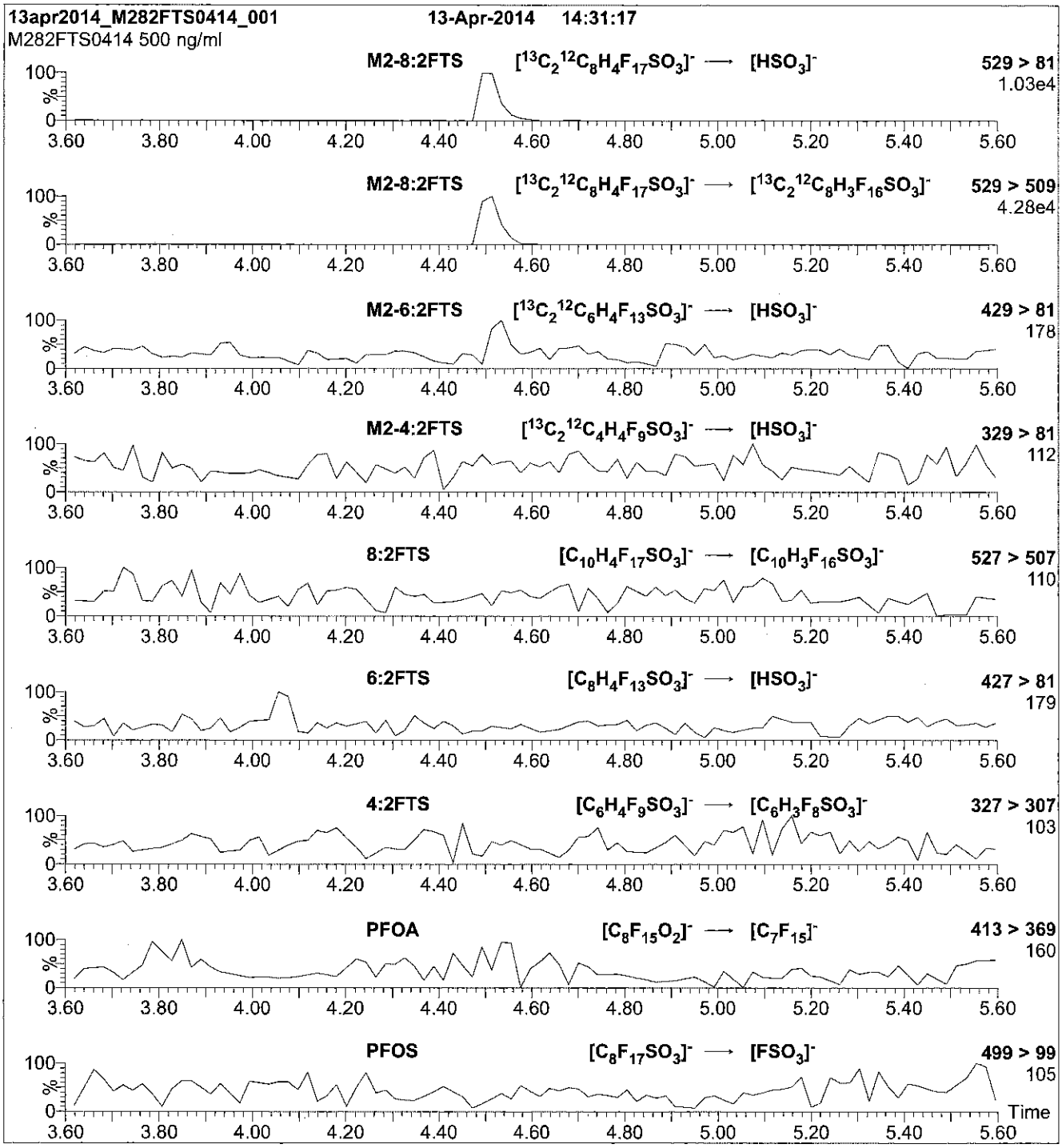
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM2-8:2FTS_00002

R: 7/6/16 cw

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

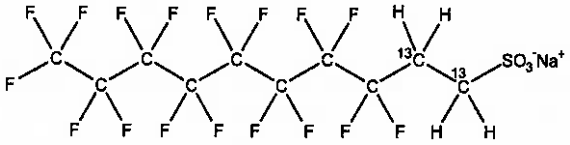
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**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.

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:

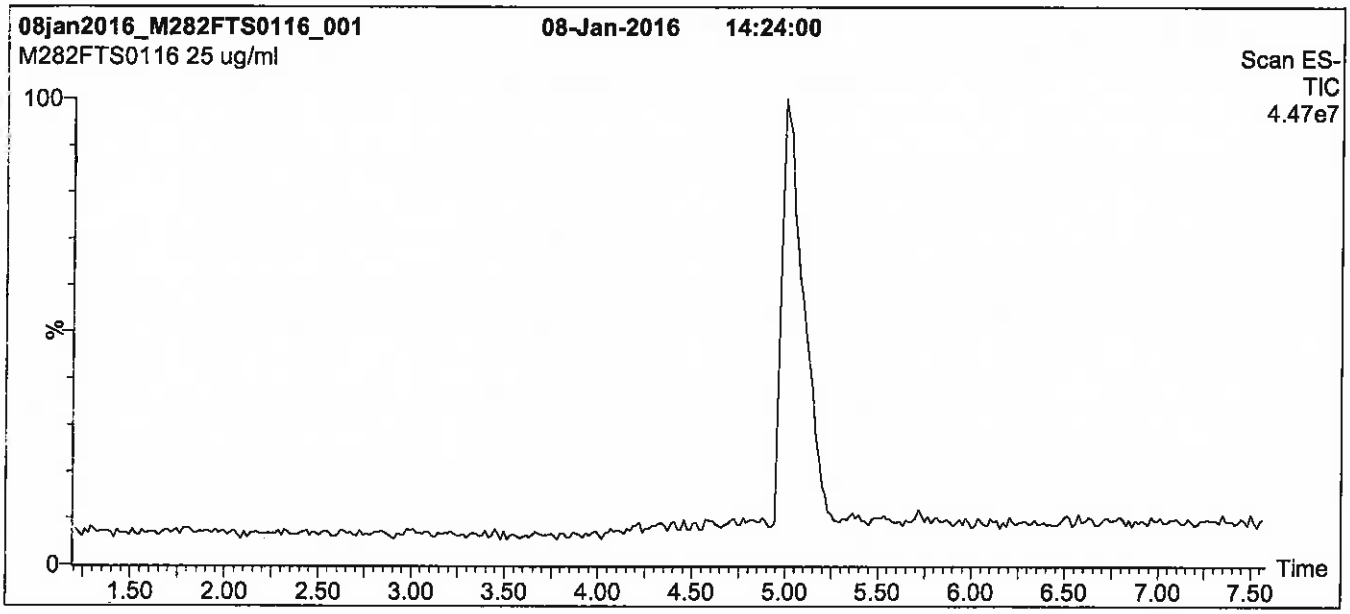
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

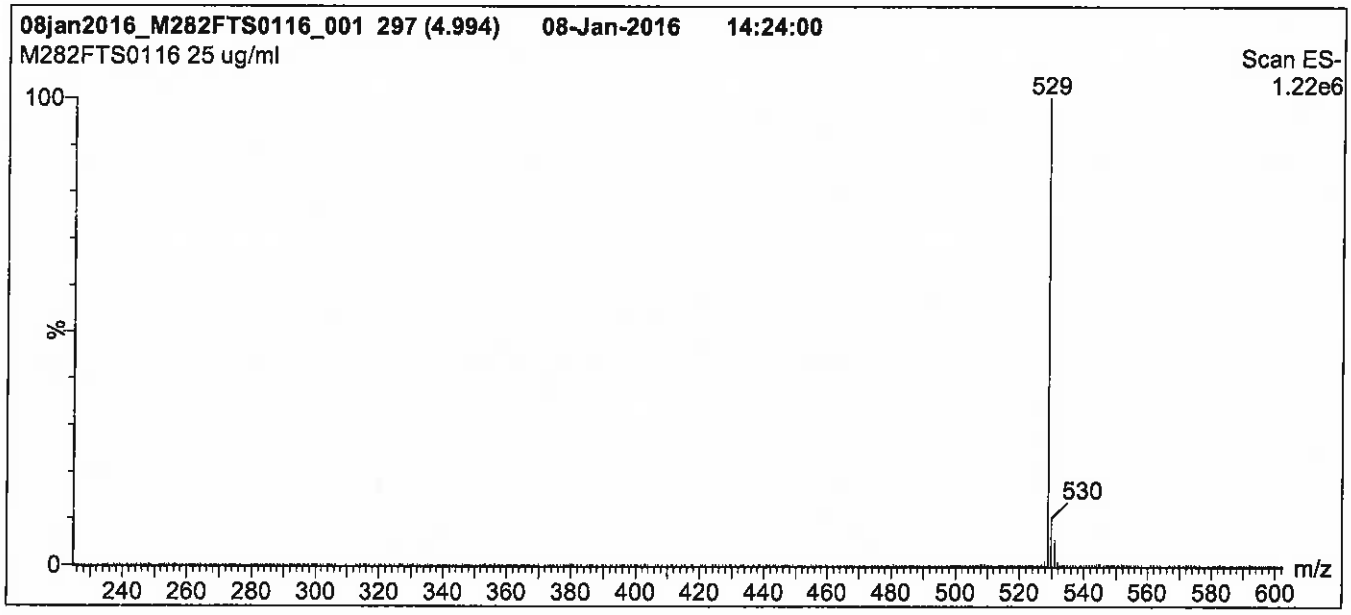
CALA

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: **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

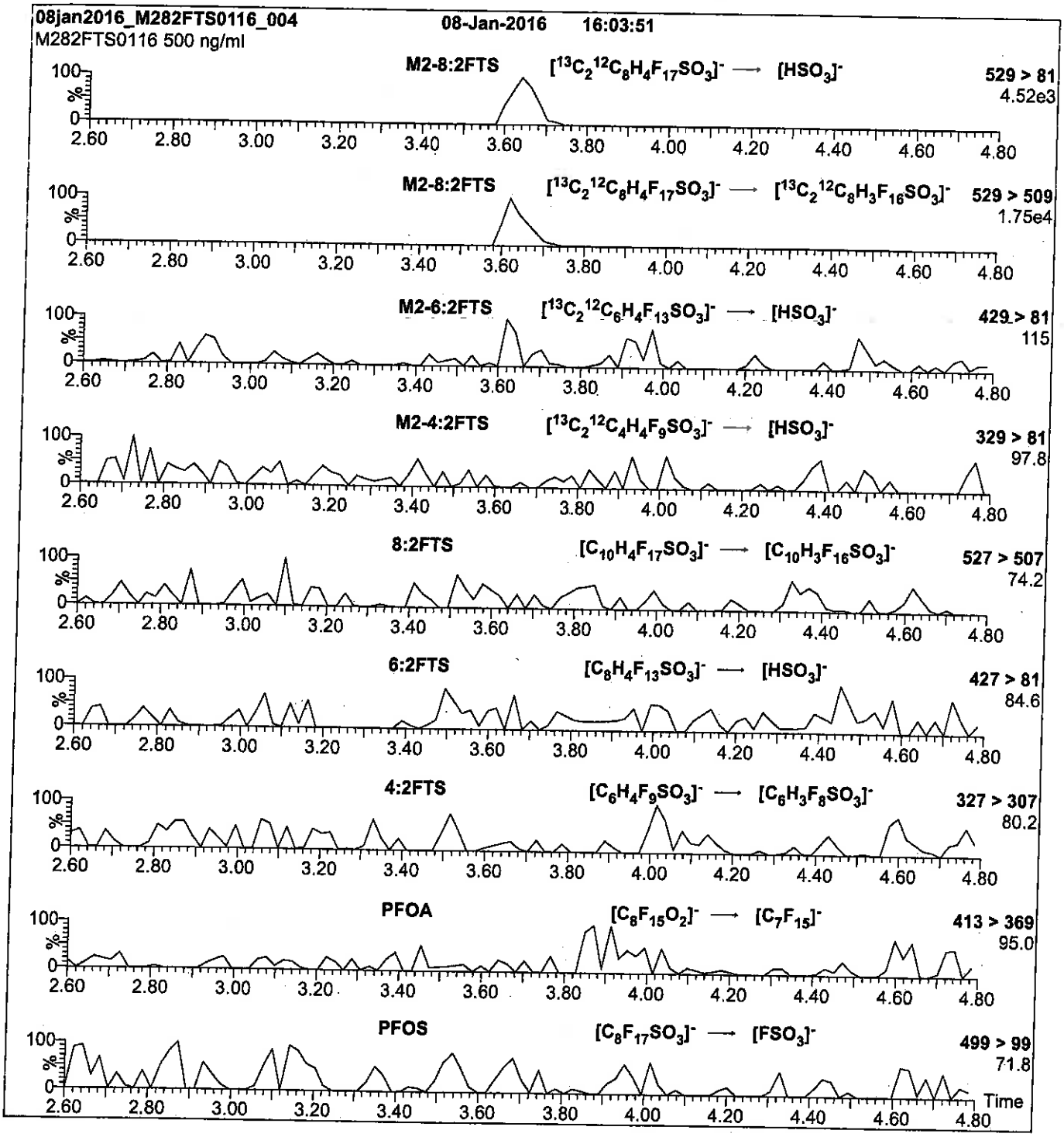
Flow: 300 µl/min

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

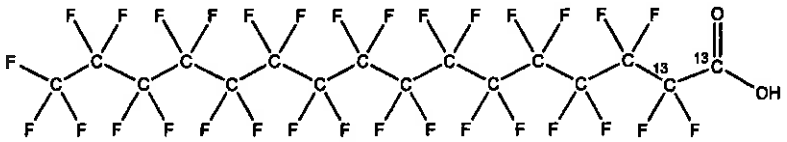
R: SBC 9/22/16

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-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/07/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/07/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

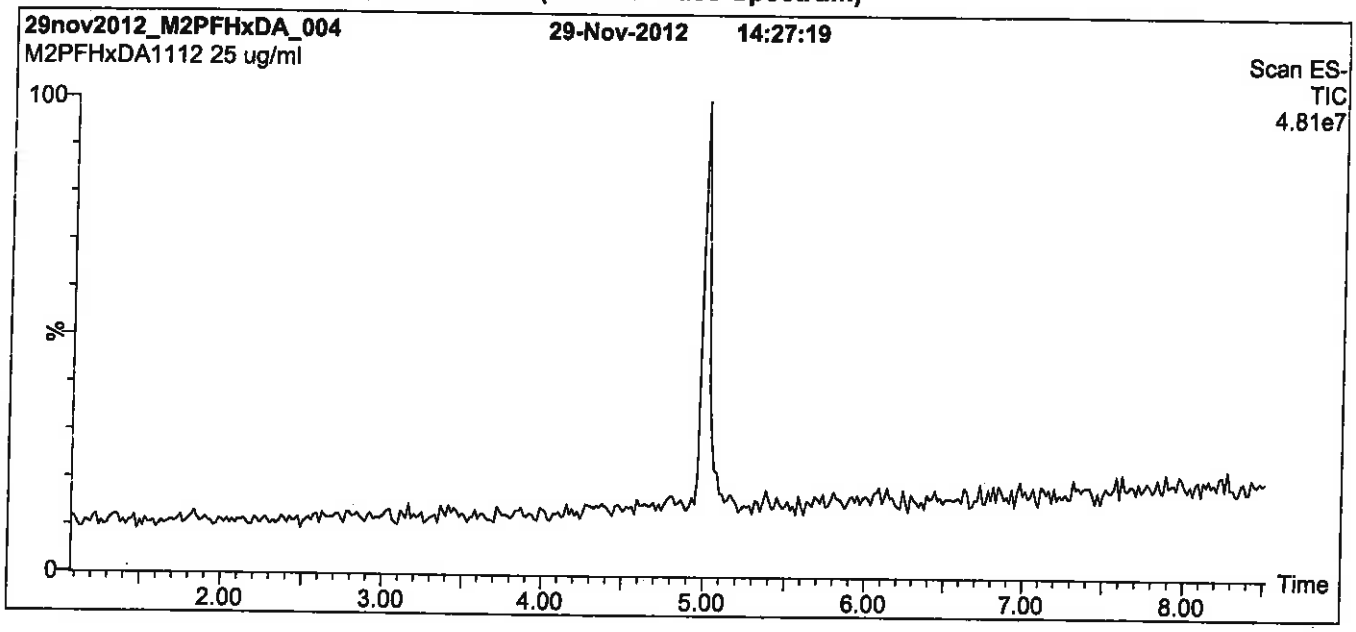
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

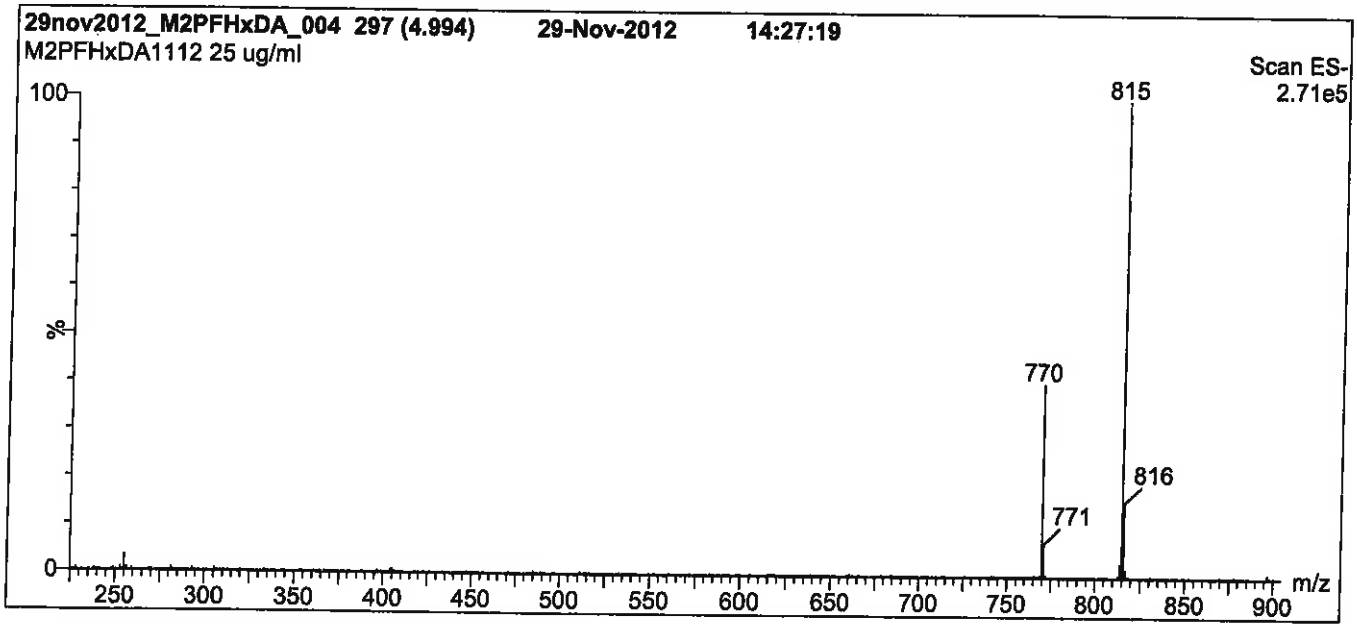
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

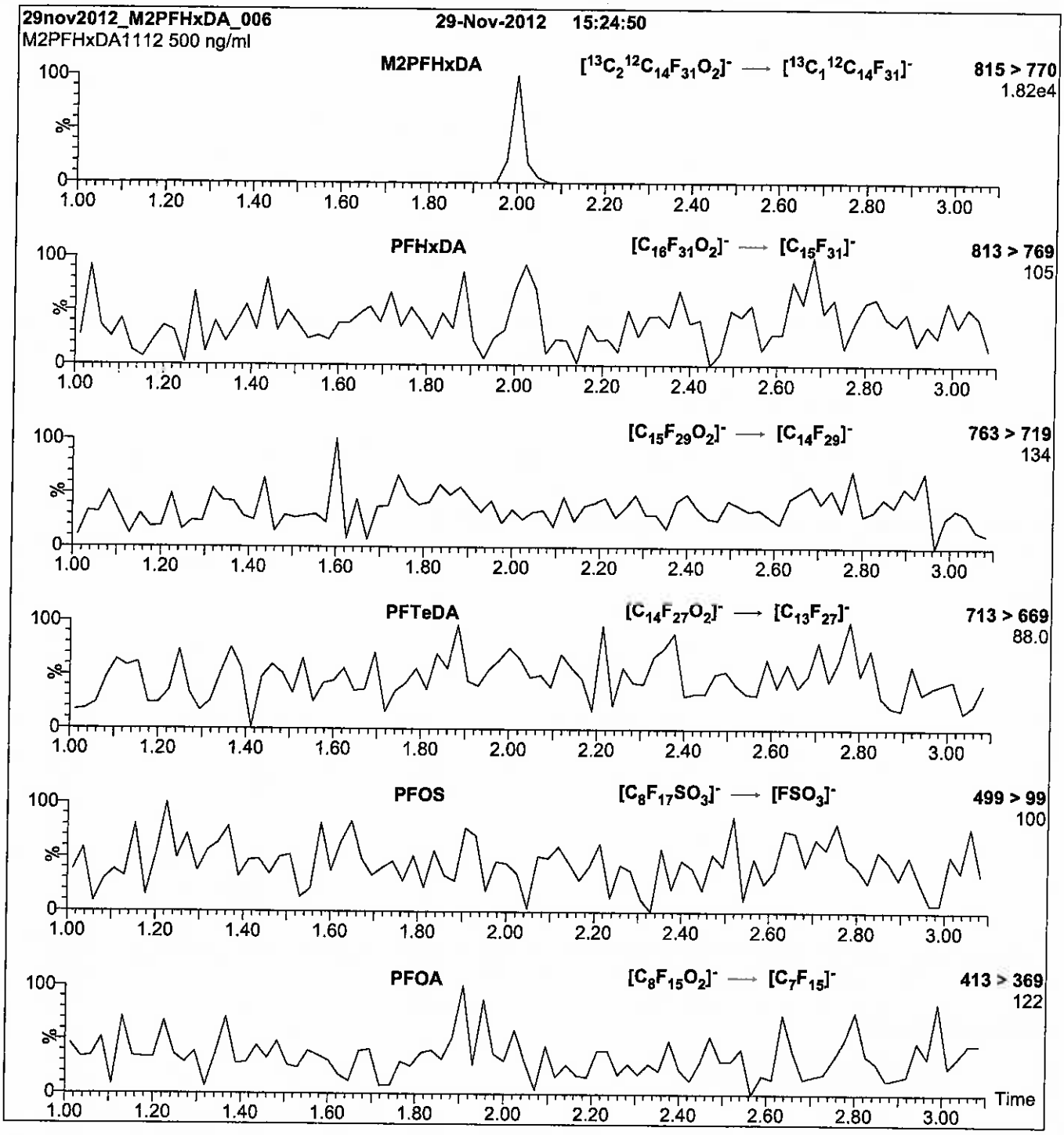
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCM2PFTeDA_00007

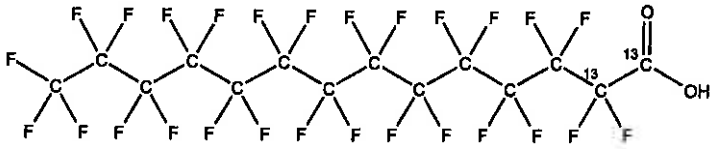
Scanned 10/14/16 R: SBC 9/22/16

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFTeDA	**LOT NUMBER:**	M2PFTeDA1115
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid		
STRUCTURE:		**CAS #:**	Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/08/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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:

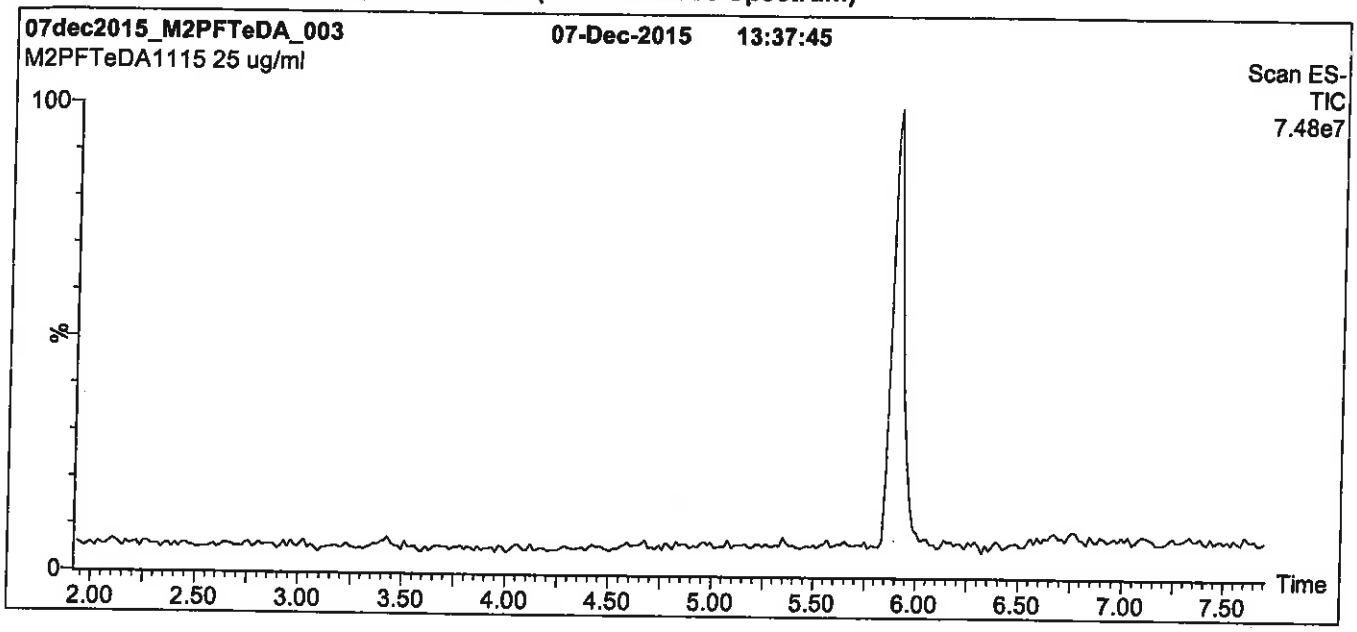
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

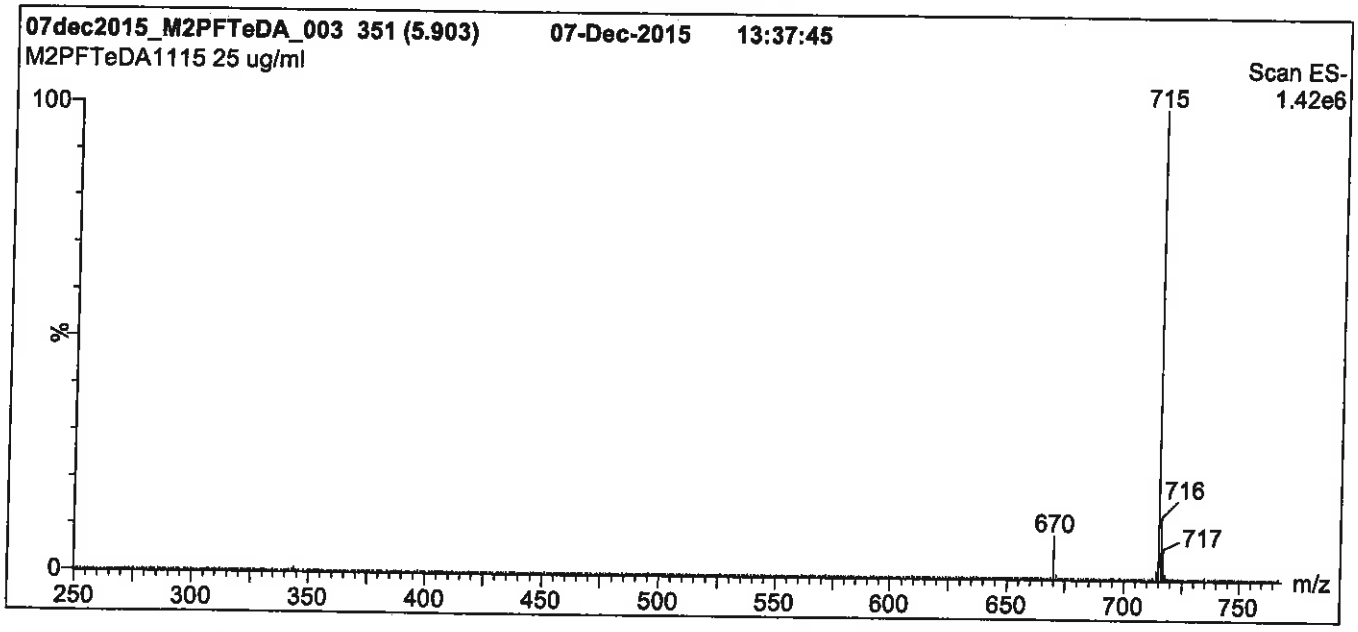
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

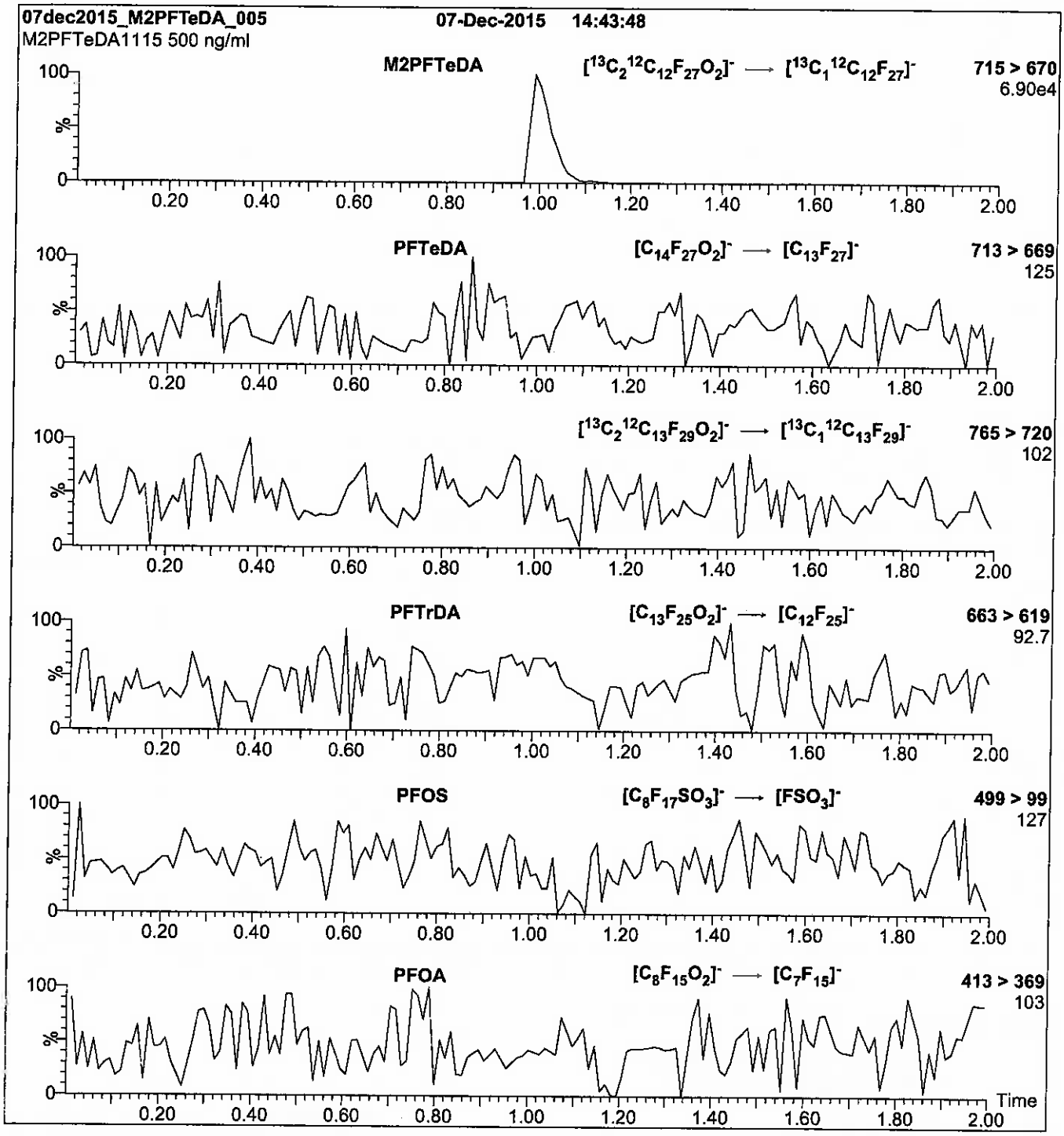
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM4PFHPA_00007

R: SBC 9/22/16

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

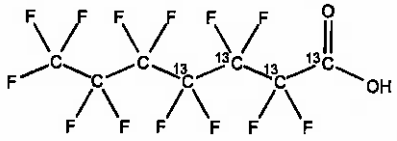
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS

DOCUMENTATION

Scanned 10/14/16 SBC

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

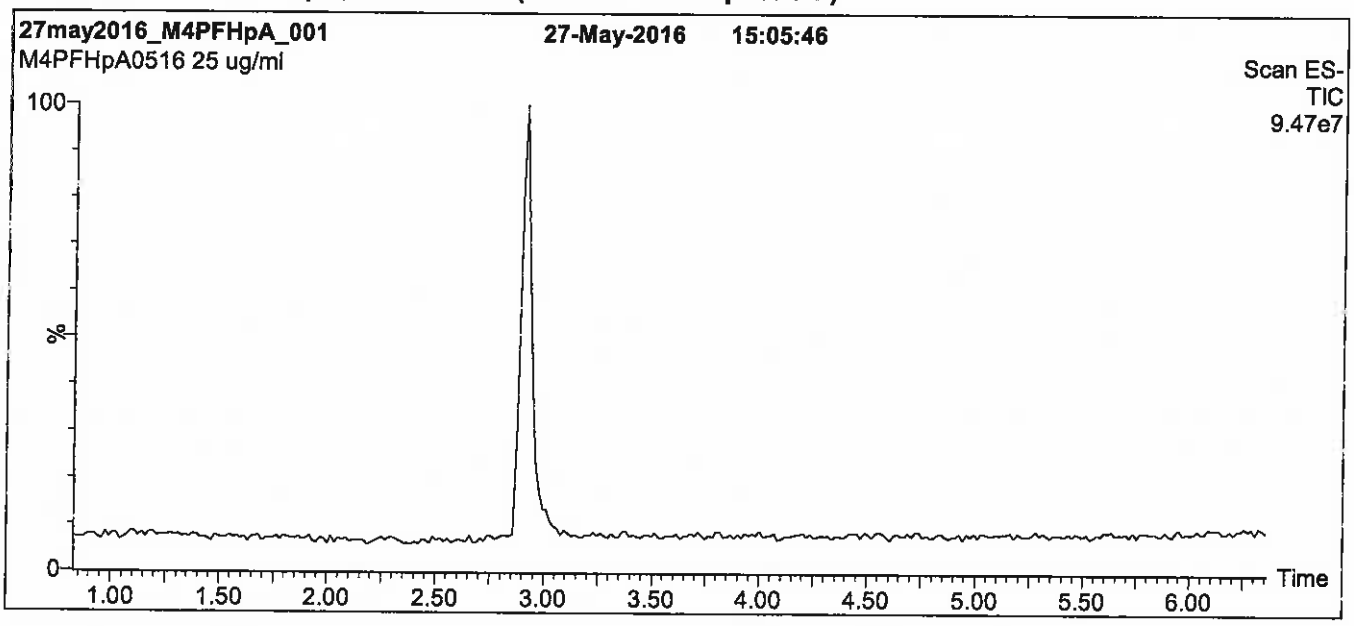
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

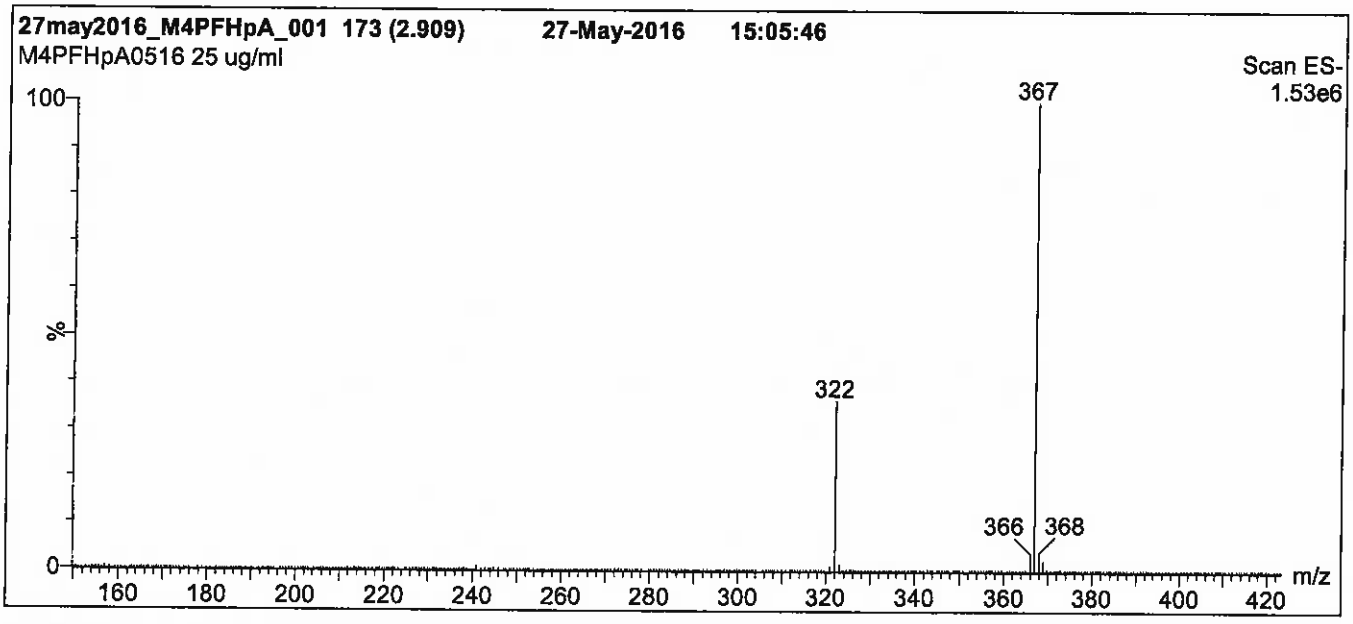
CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

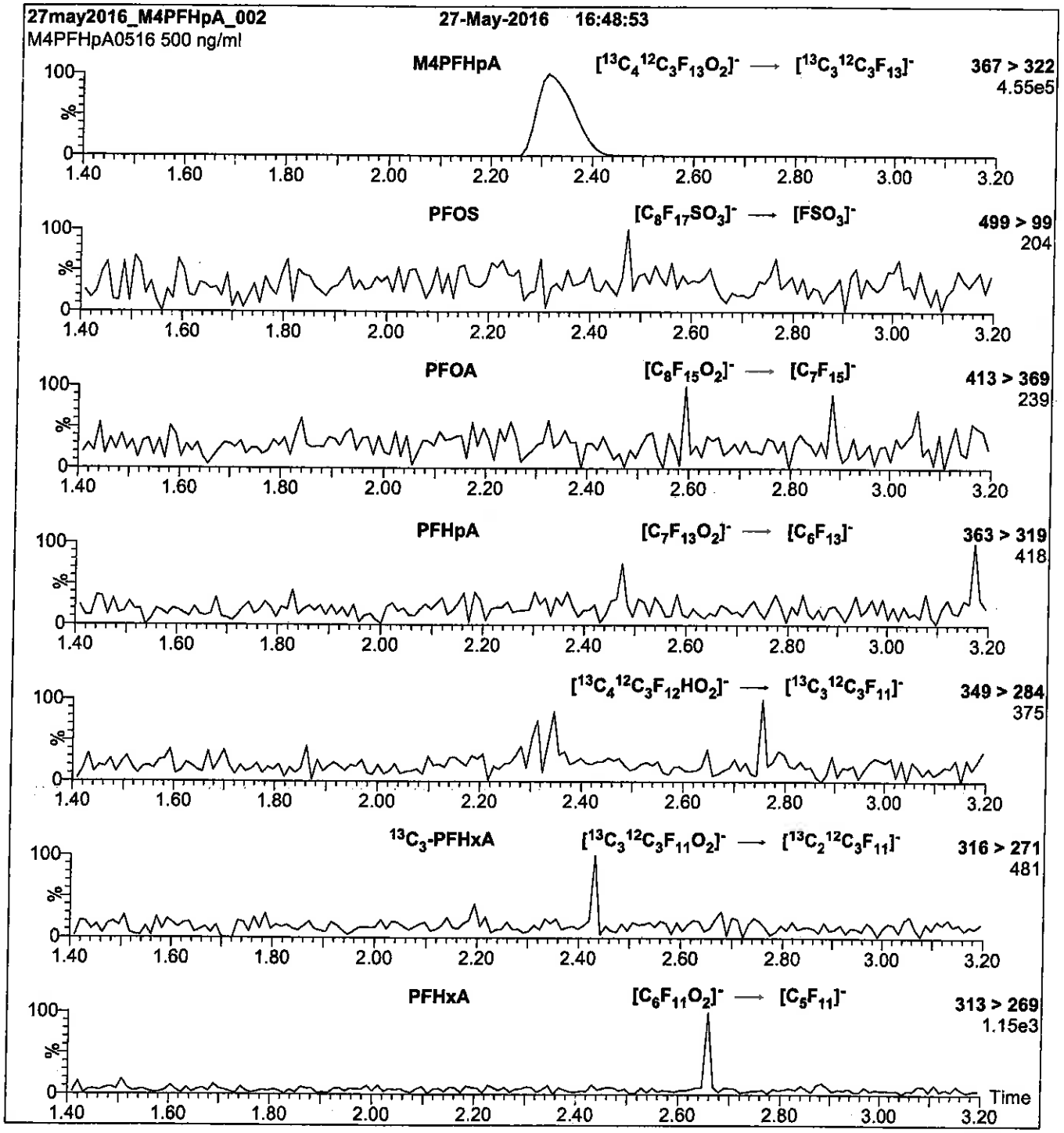
Flow: 300 µl/min

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

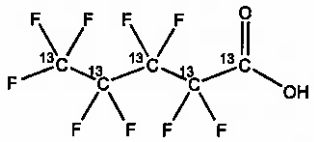
739590
ID: LCM5PFPEA_00008
Exp: 05/22/20 Prpd: SBC
13C5-Perfluoropentanoic a

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.

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

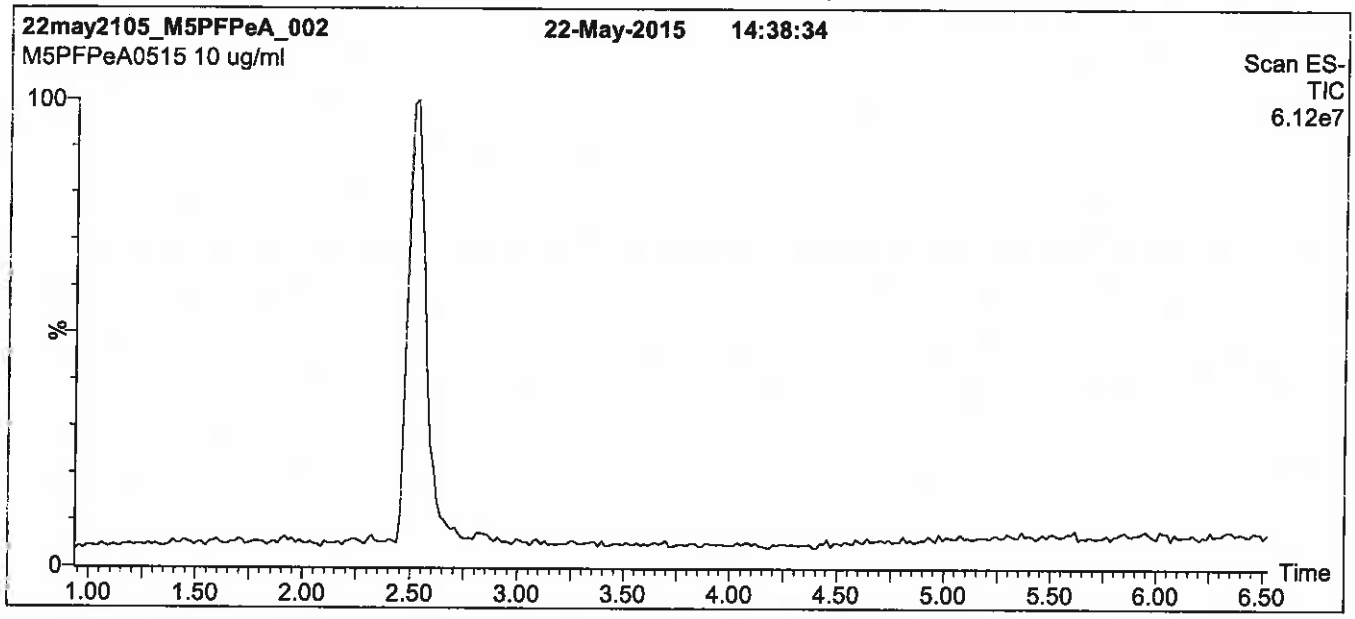
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

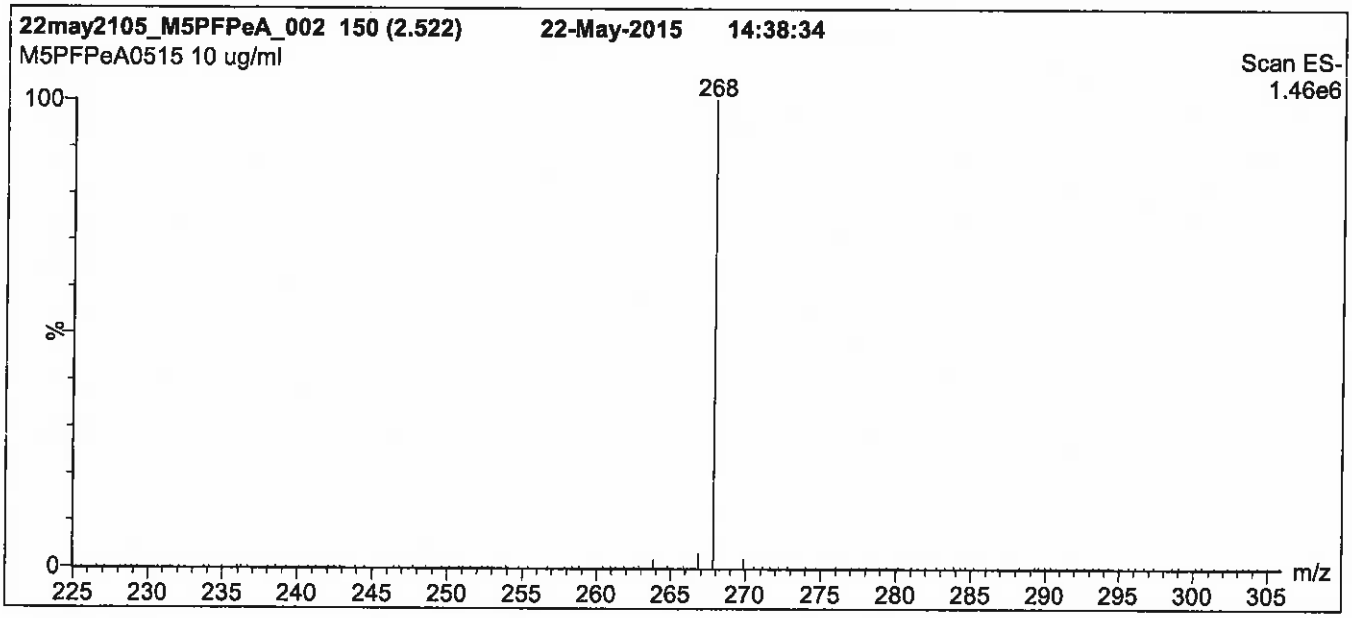
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

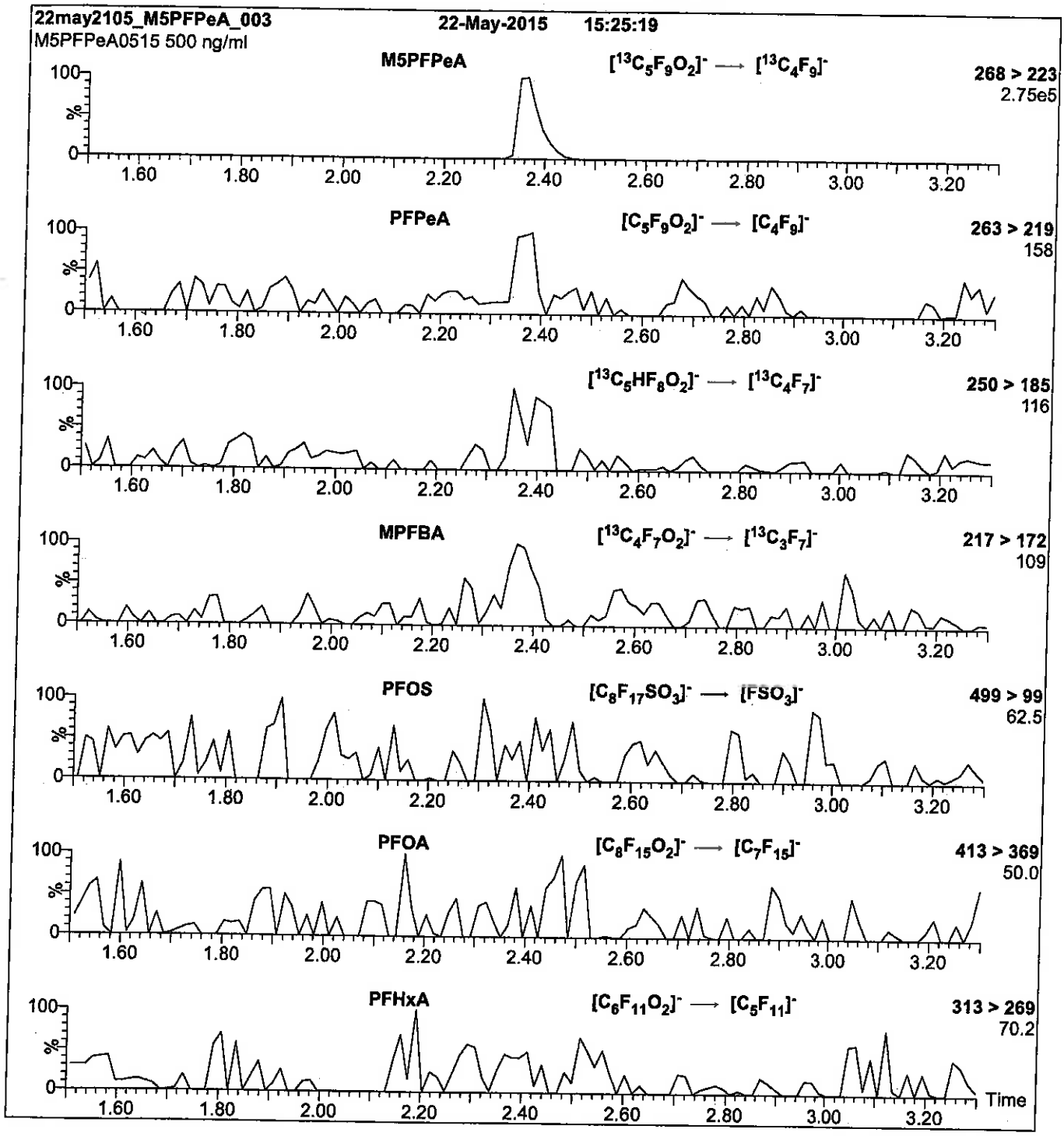
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCM8FOSA_00011

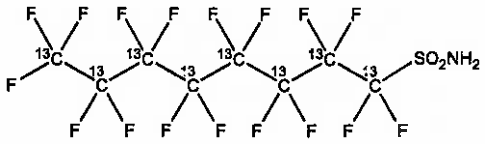
R: SBC 9/22/16
Scanned 10/14/16 SBC

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

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:

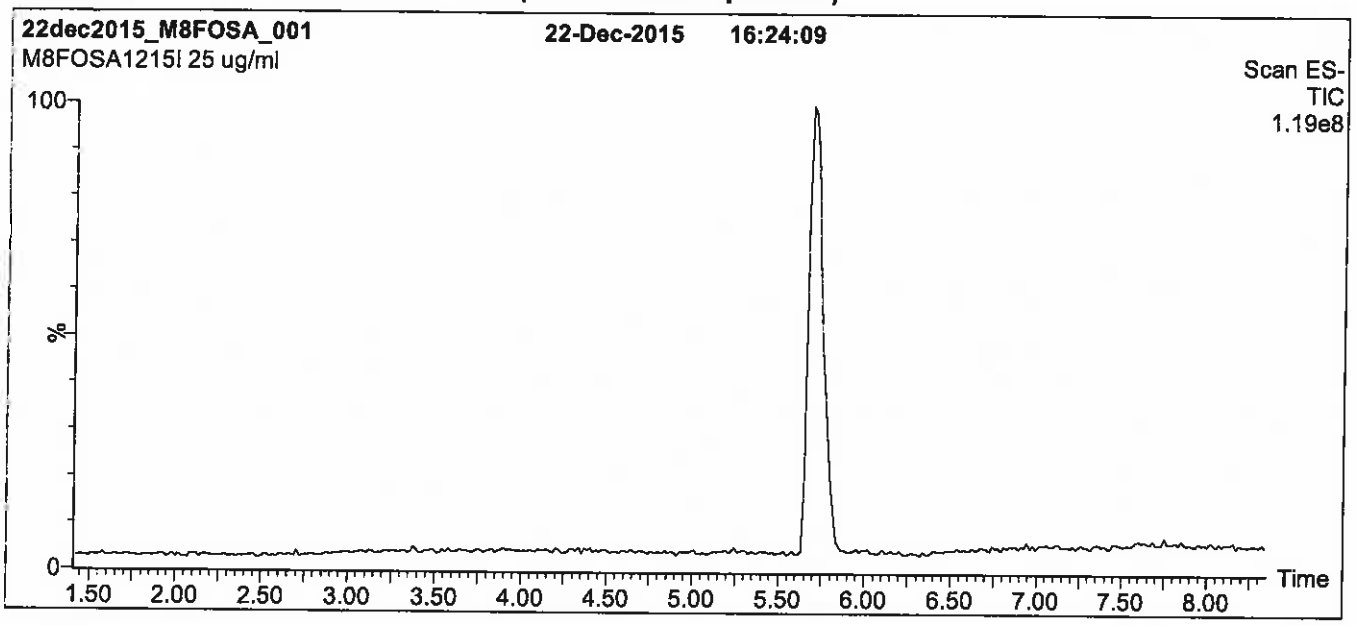
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

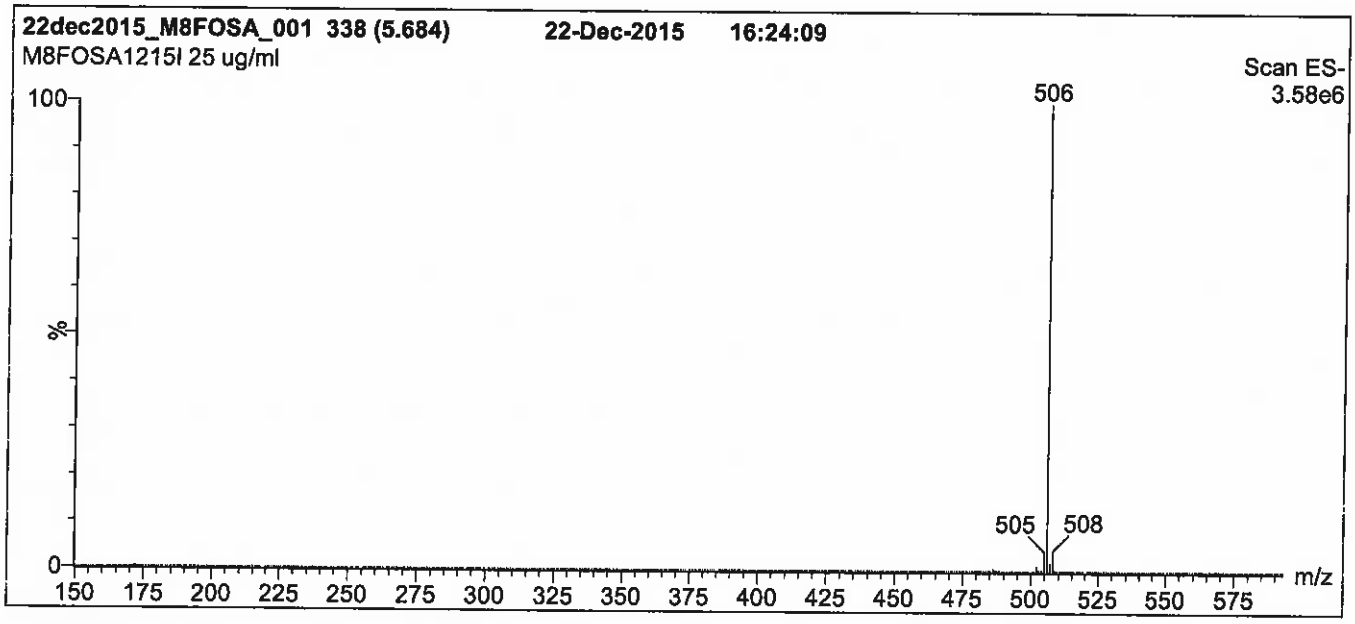
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

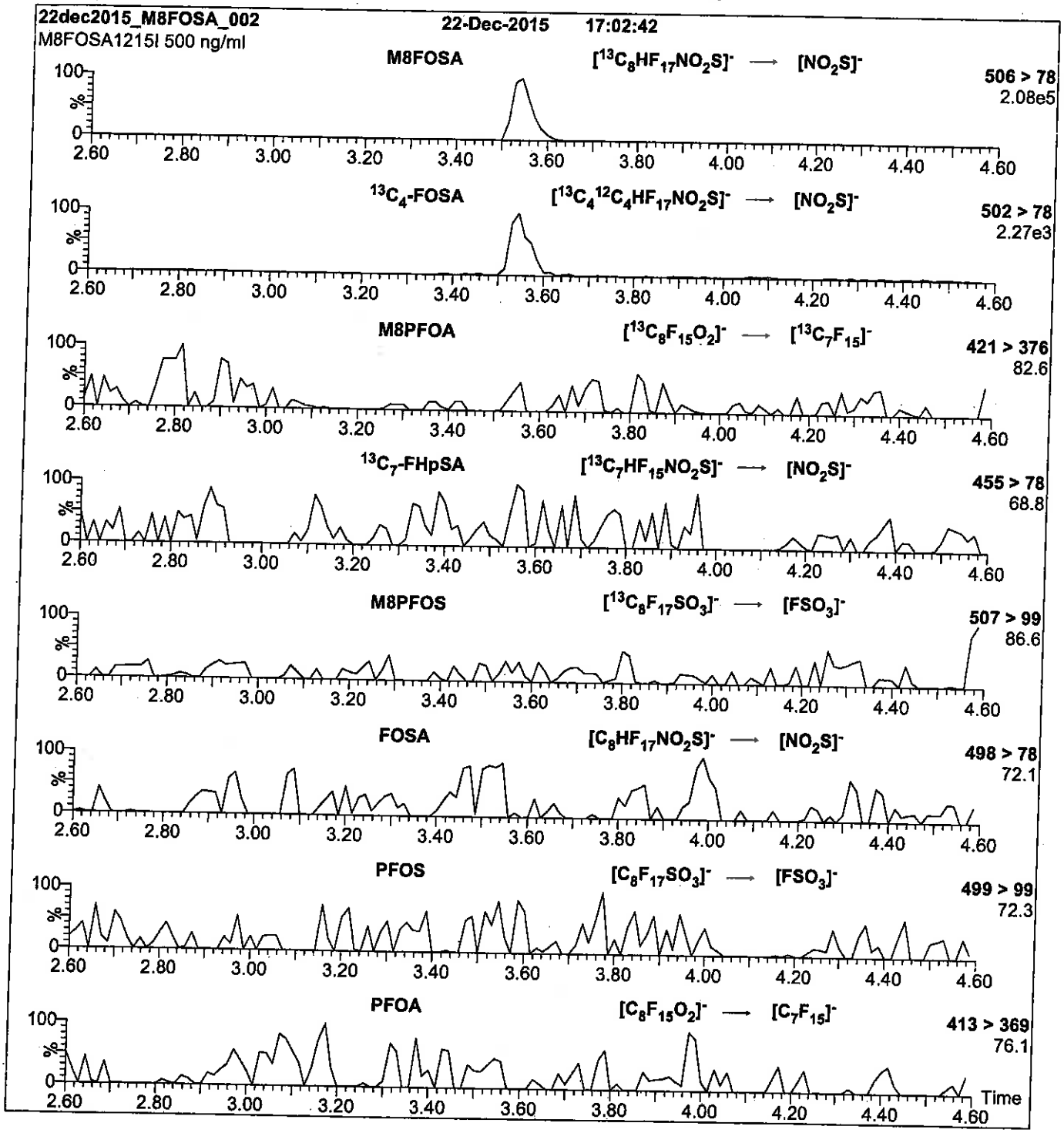
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCMPFBA_00008

R: SBC 9/22/16

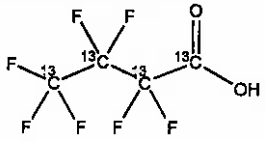
739593
ID: LCMPFBA_00008
Exp: 05/24/21 Prpd: SBC
13C4-Perfluorobutanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

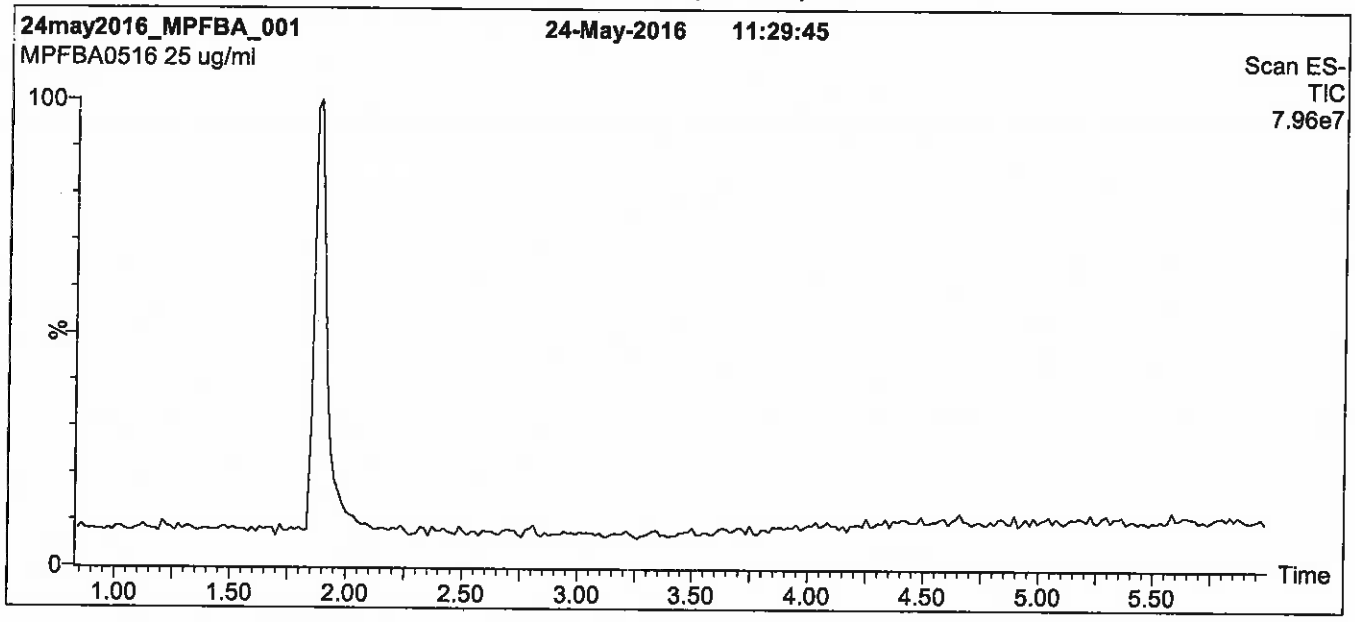
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

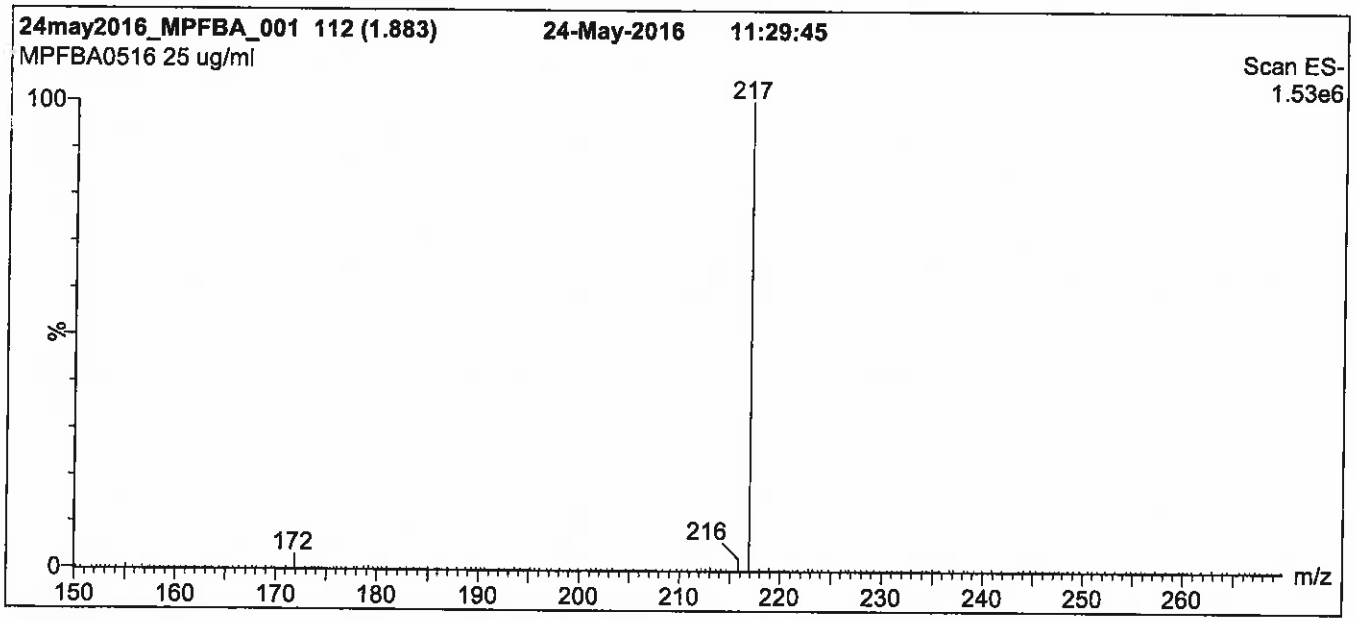
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

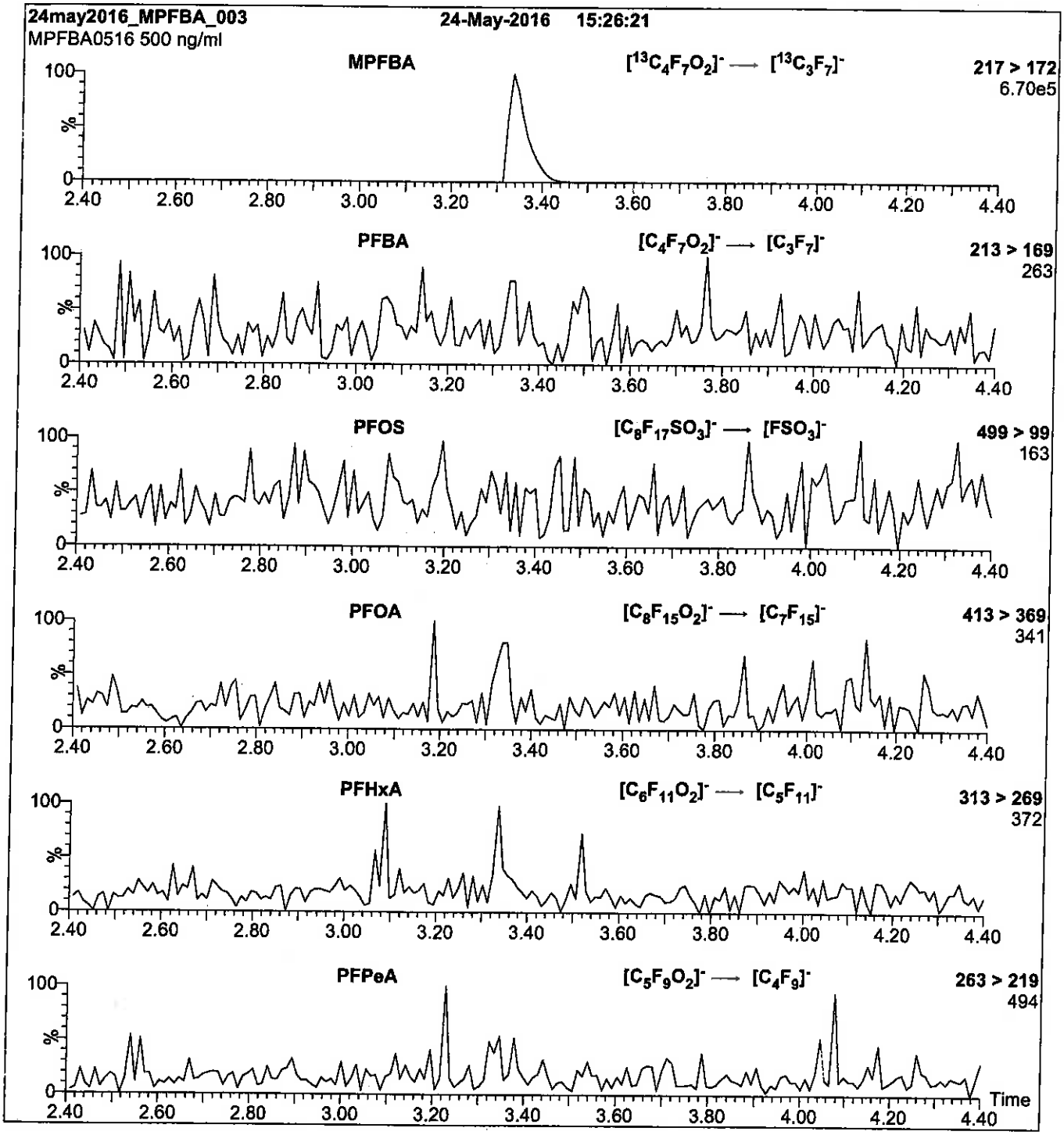
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFDA_00011

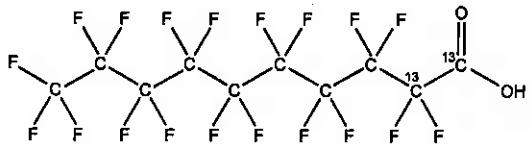
Scanned 10/14/16 R: SBC 9/22/16

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

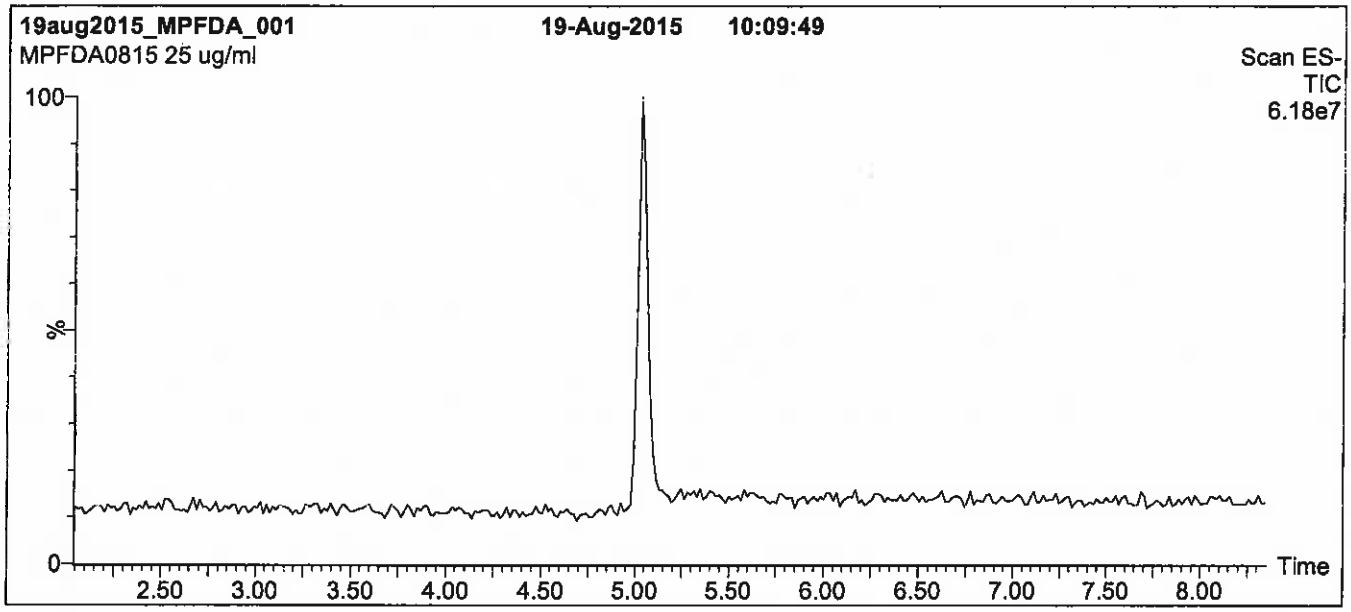
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

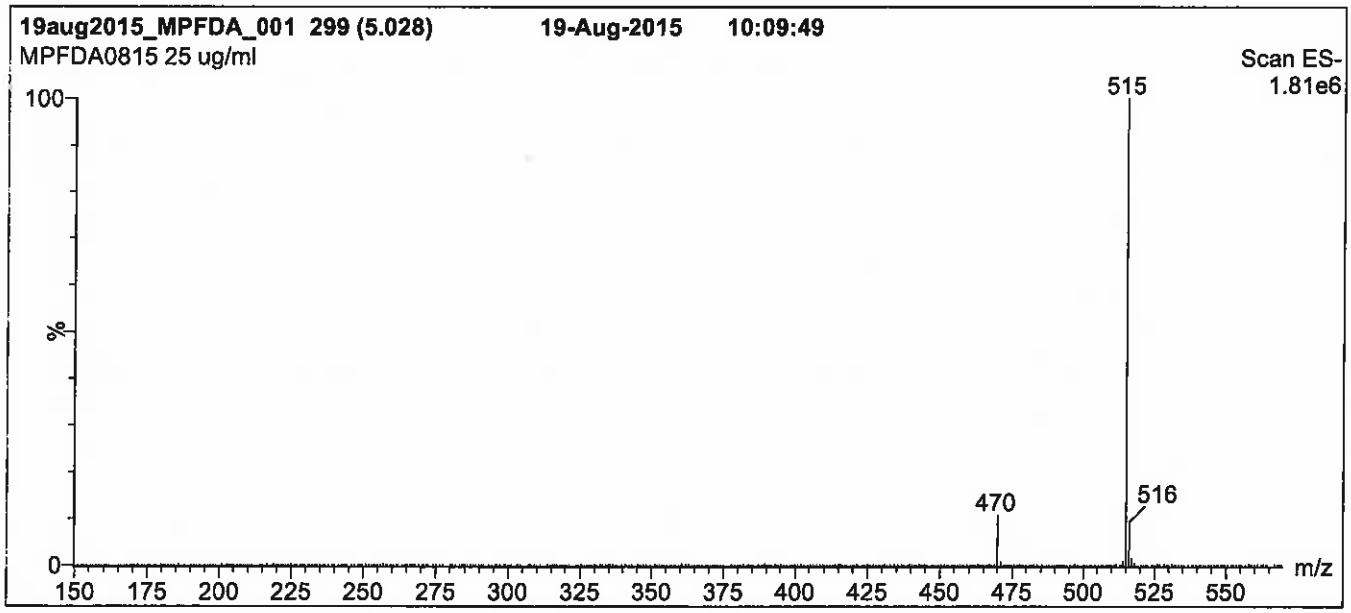
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

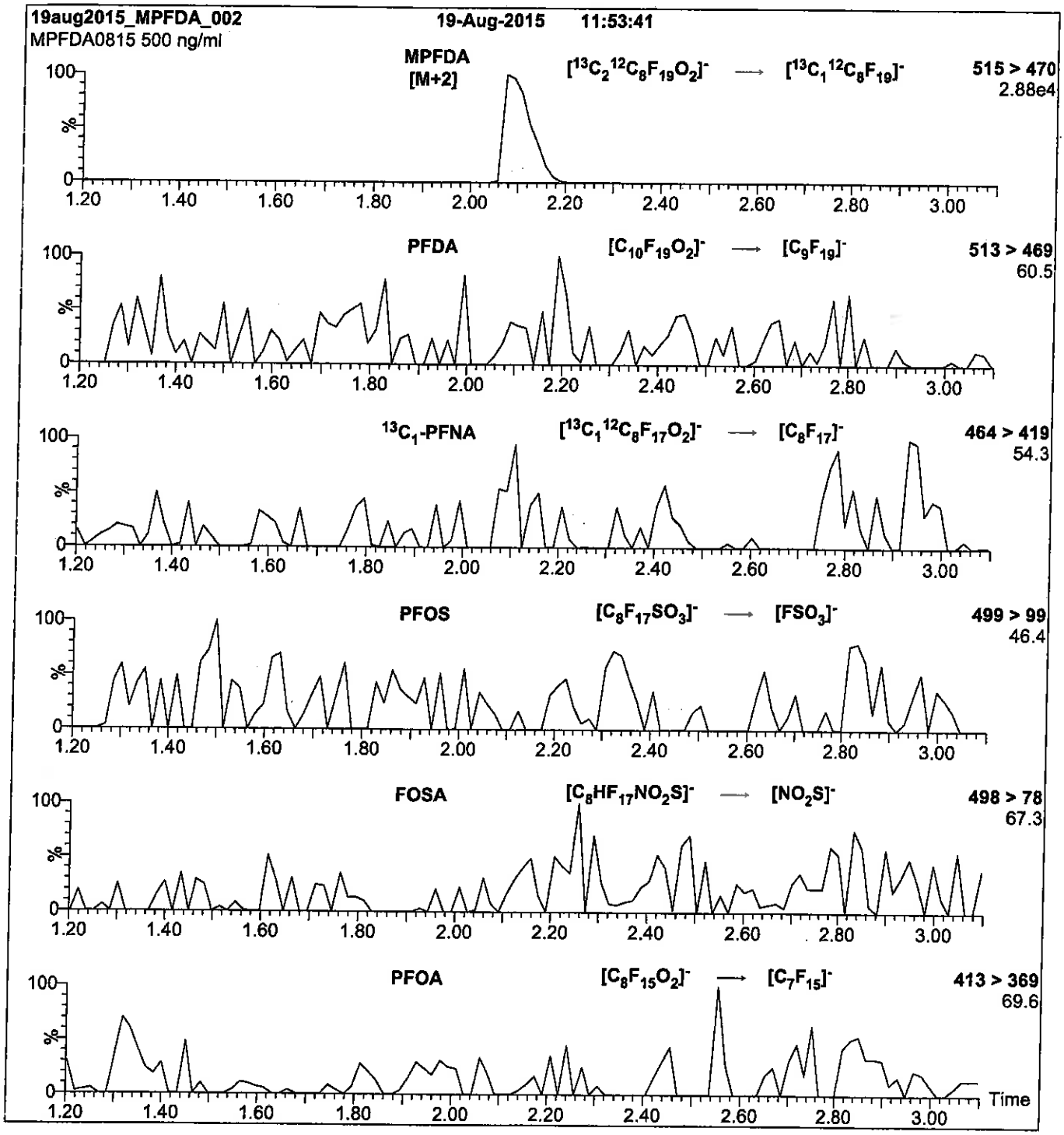
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 13

Reagent

LCMPFDoA_00008

R: SBC 9/22/16

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

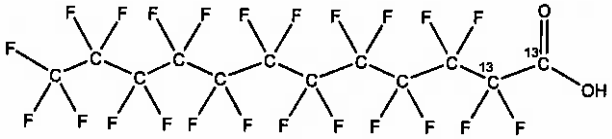
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SR

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

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/15/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

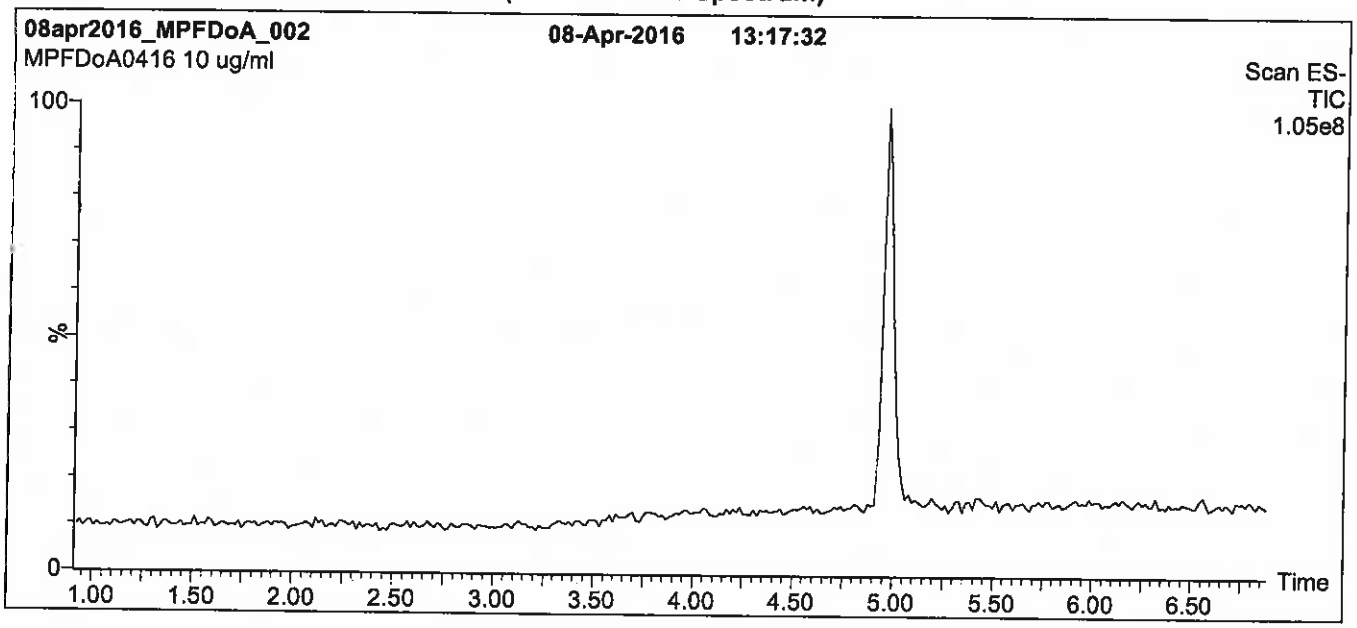
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

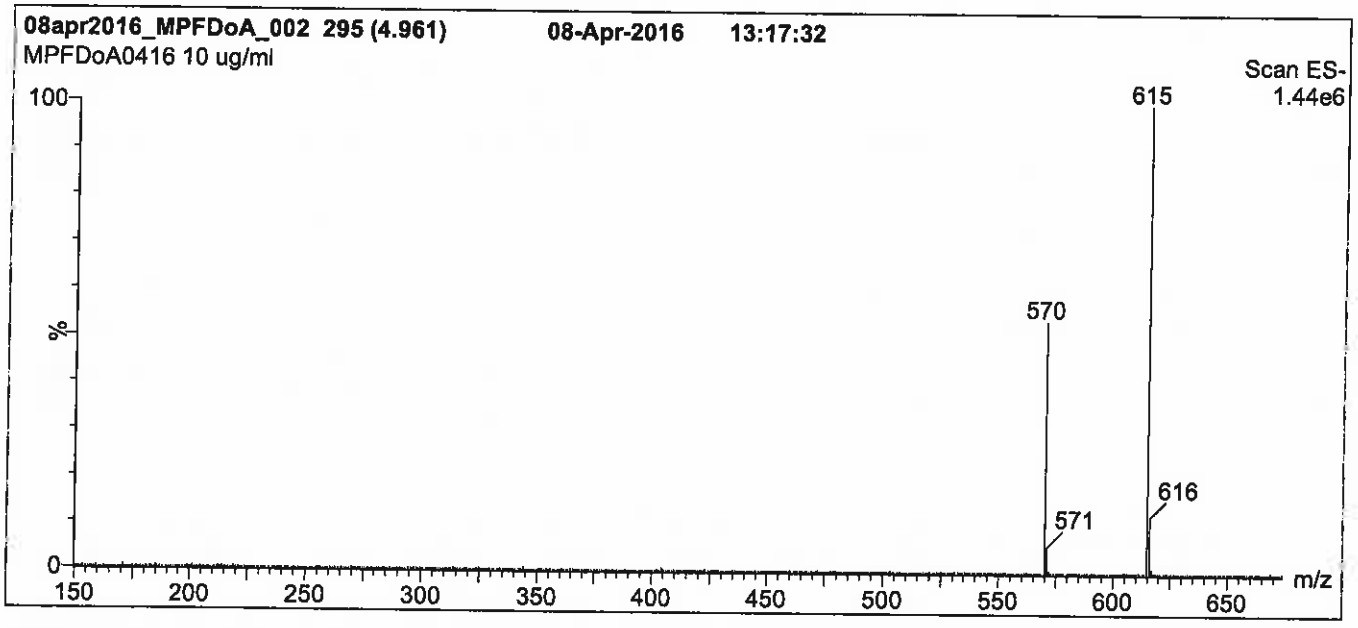
QUALITY MANAGEMENT:

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

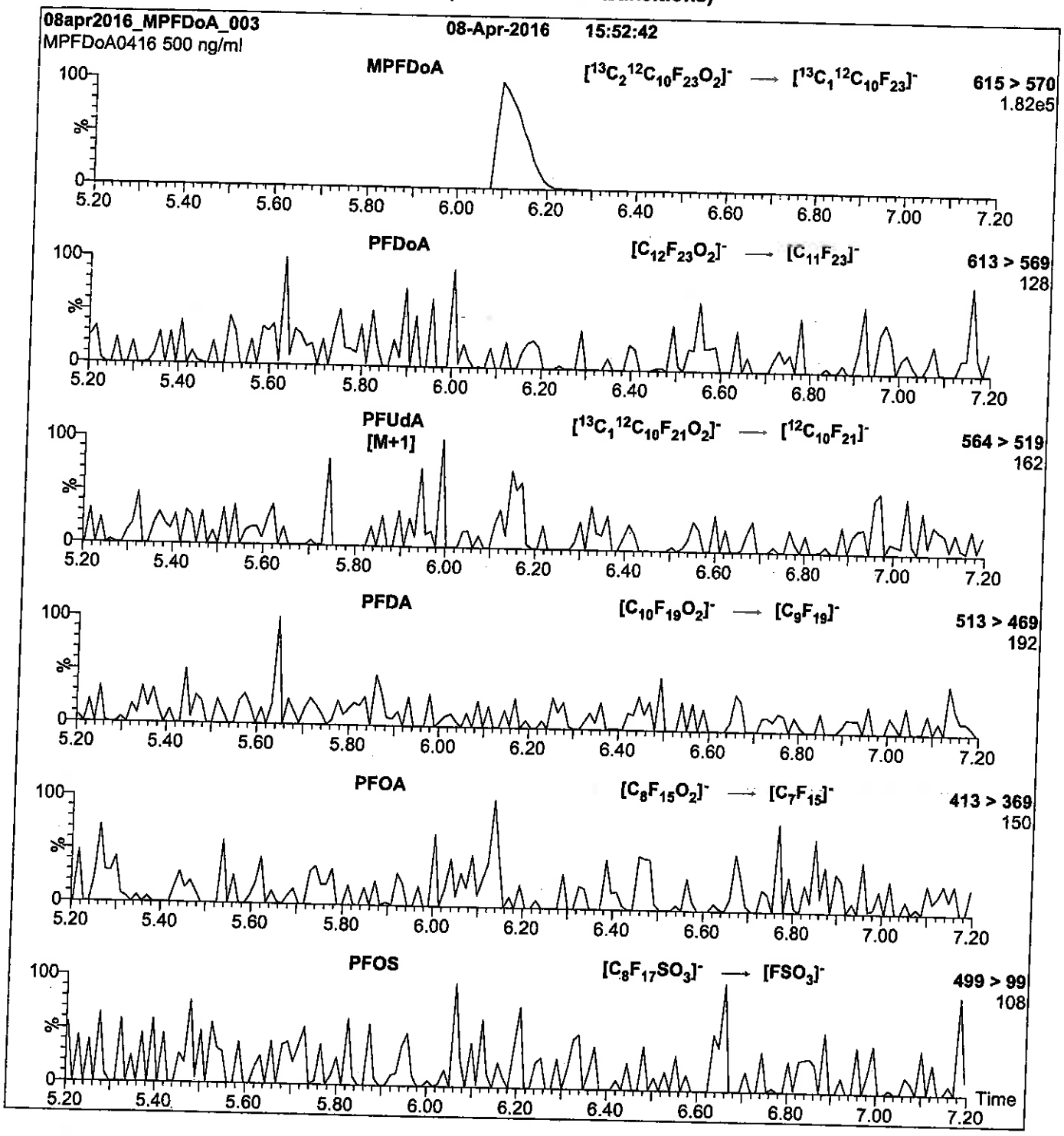
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCMPFHxA_00012

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

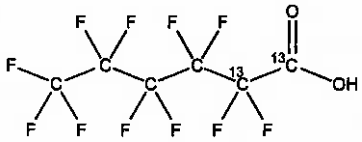
739612
ID: LCMPFHxA_00012
Exp: 04/08/21 Prpd: SBC
13C2-Perfluorohexanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFHxA
LOT NUMBER: MPFHxA0416
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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:

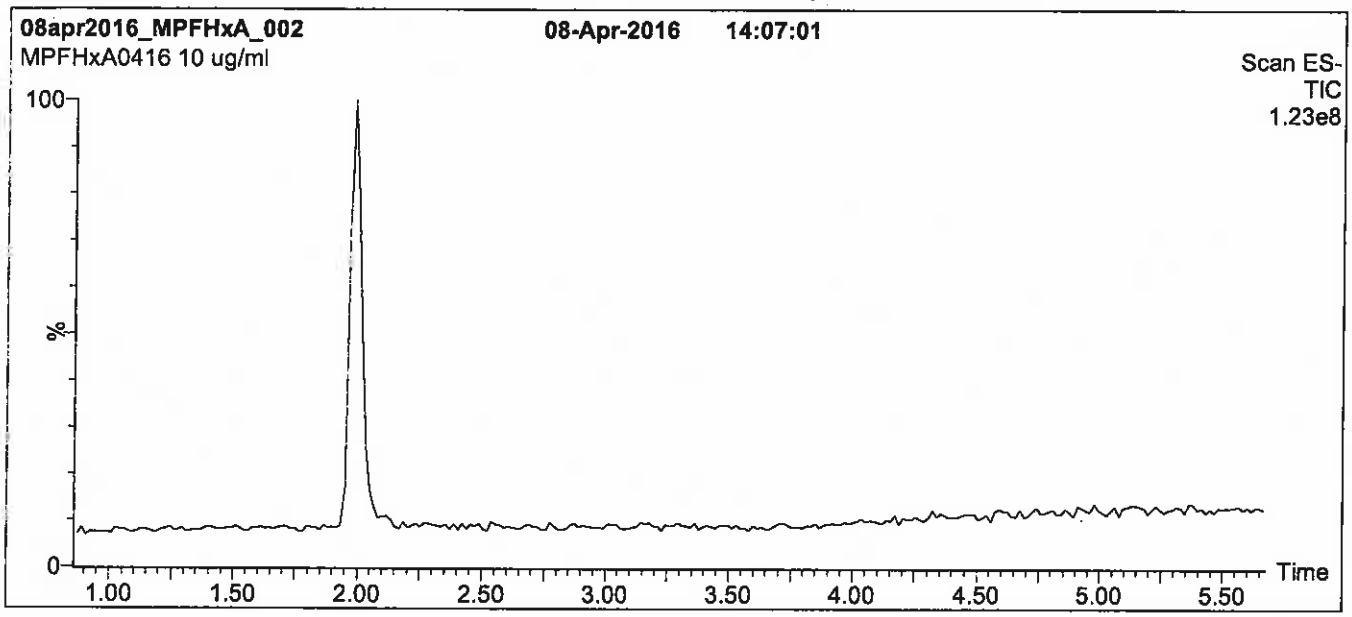
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

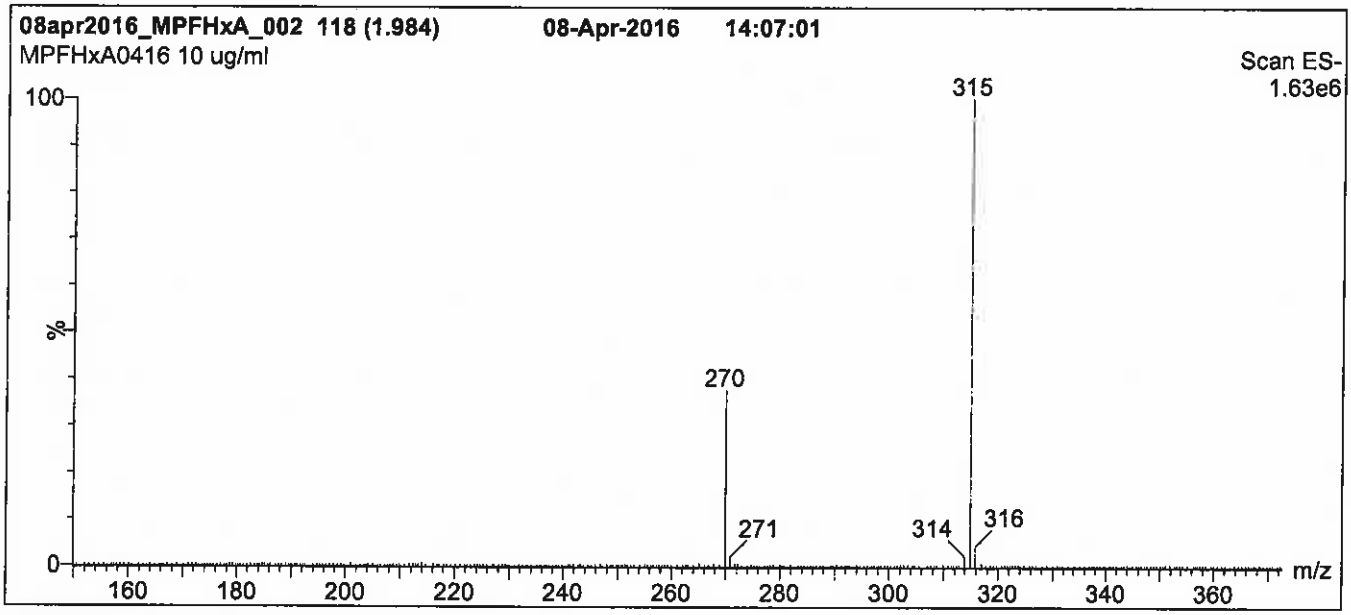
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

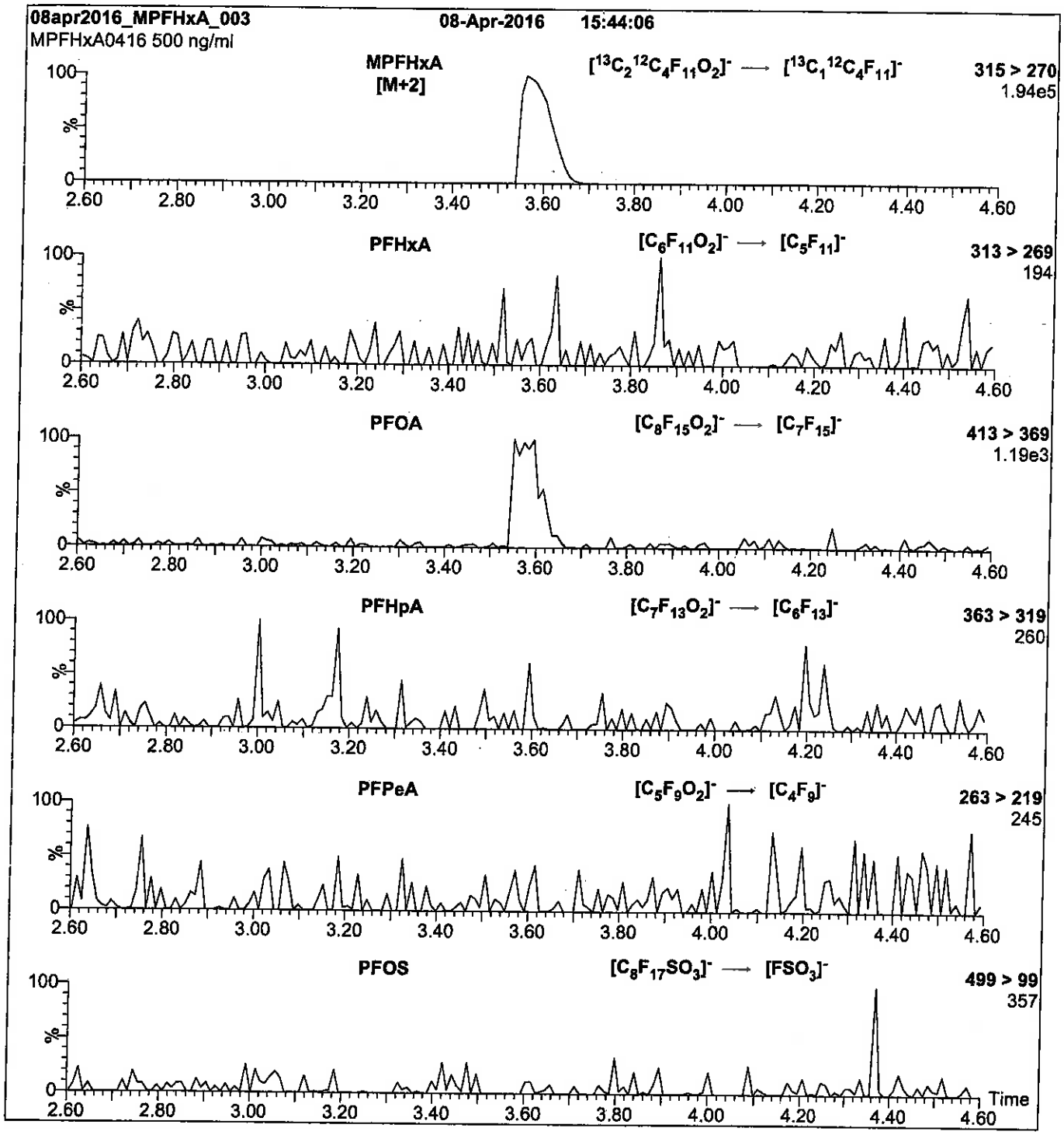
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFHxS_00008

R: SBC 9/22/16

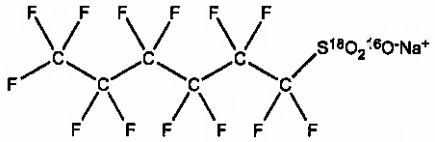
739601
ID: LCMPFHxS_00008
Exp: 10/23/20 Prpd: SBC
18O2-Perfluorohexanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

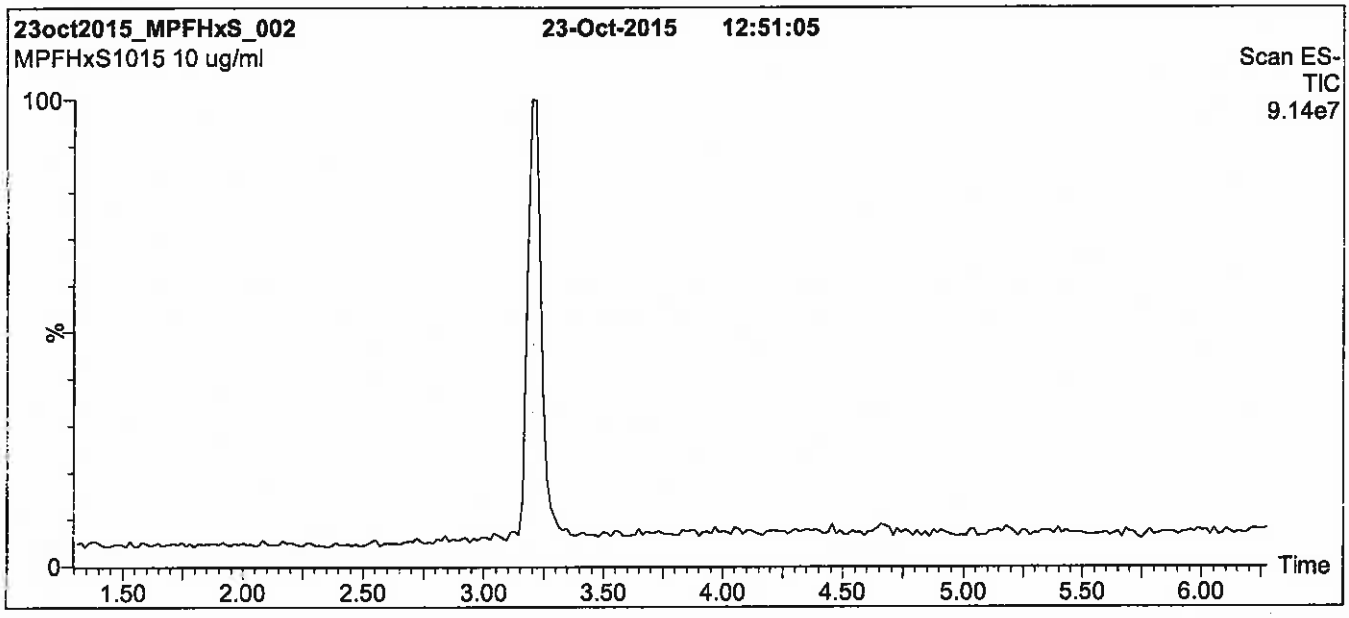
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

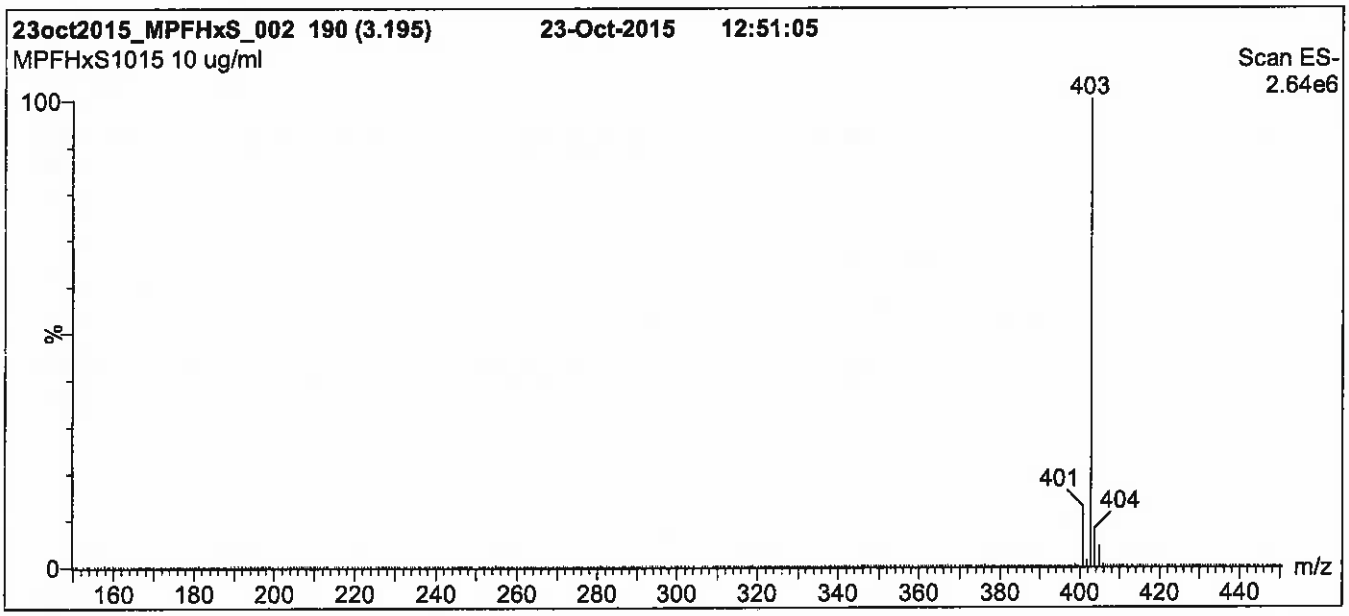
QUALITY MANAGEMENT:

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

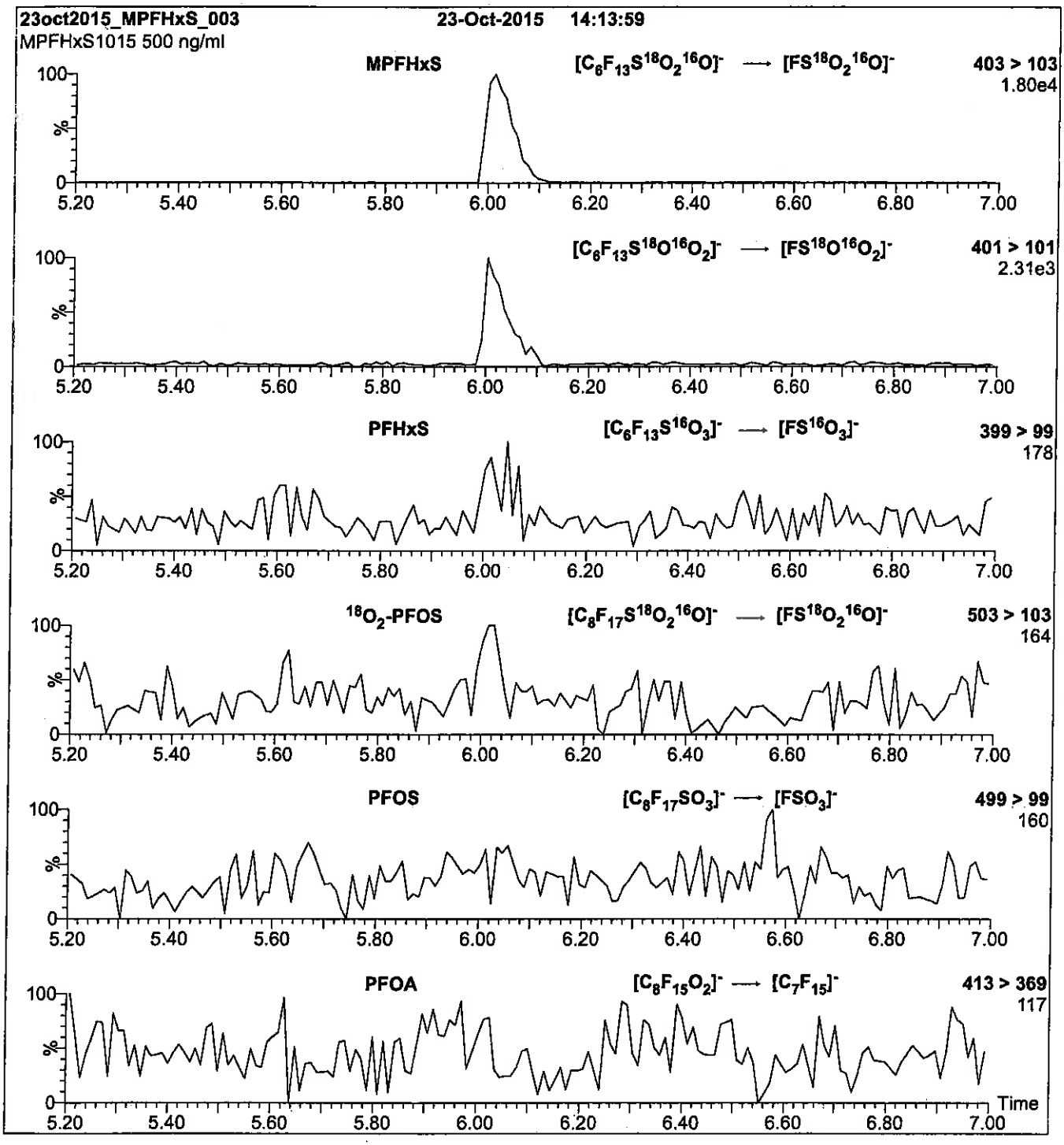
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Reagent

LCMPFNA_00008

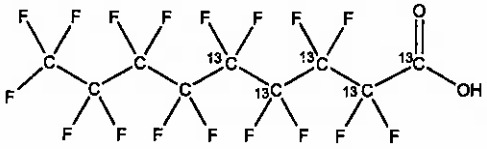
Scanned 10/14/16 R: SBC 9/22/16

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_4HF_{17}O_2$	**MOLECULAR WEIGHT:**	469.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5-$^{13}C_5$)
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:

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:

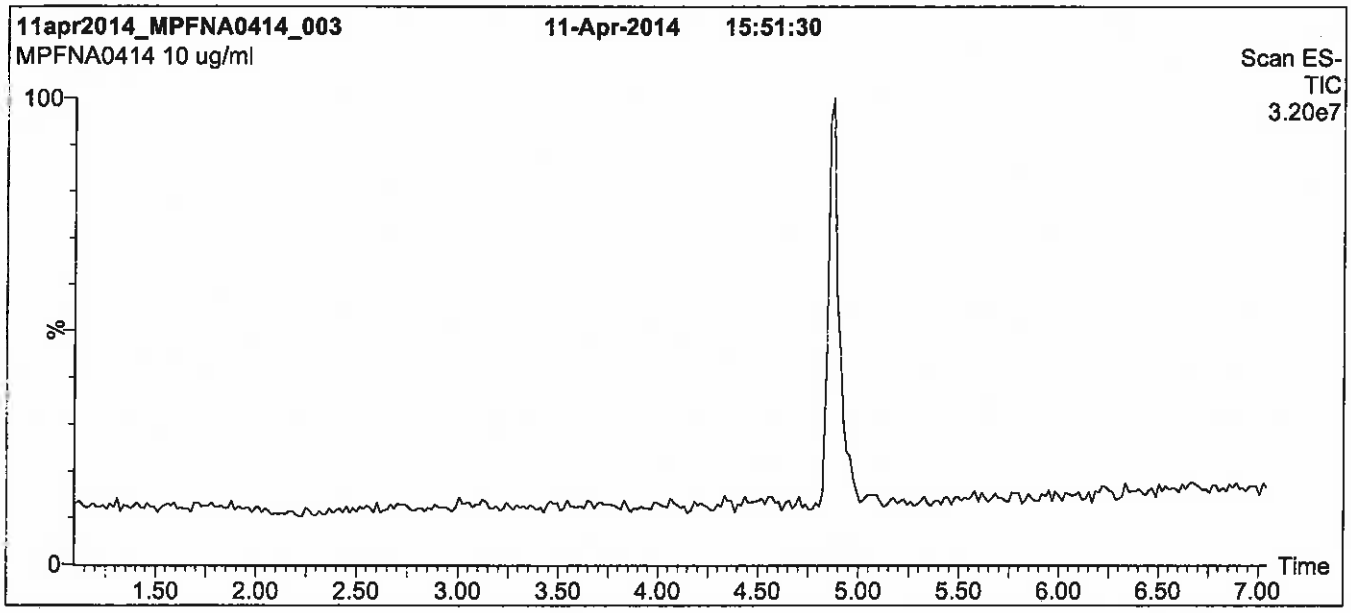
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

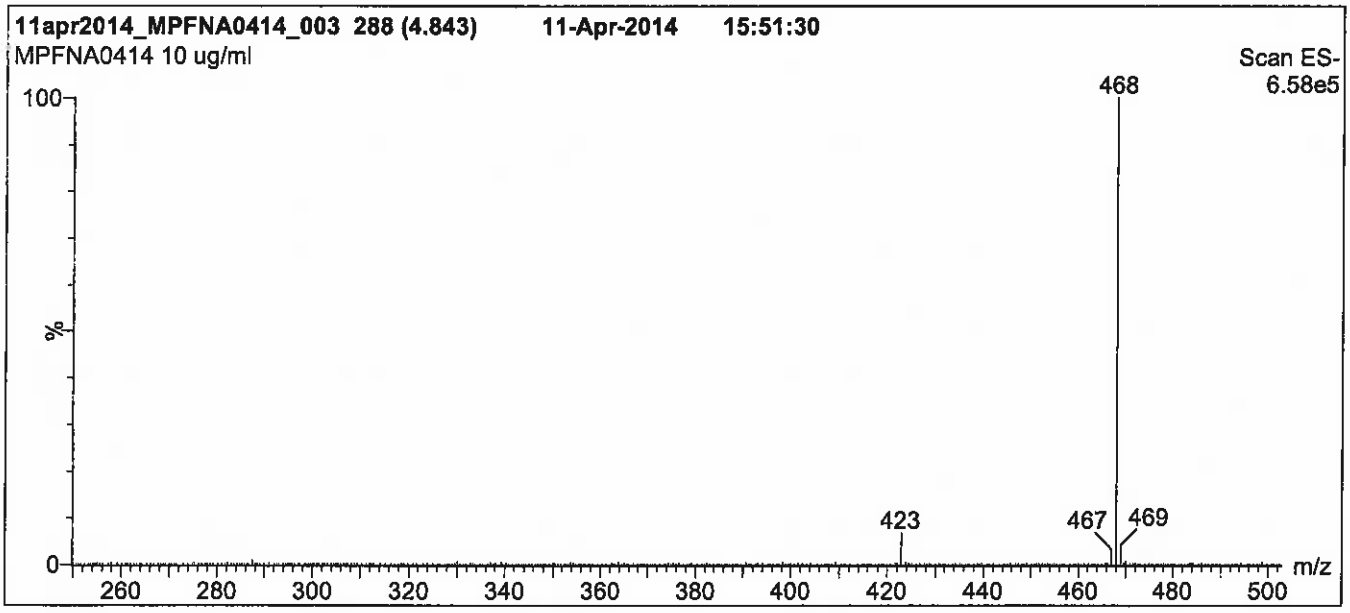
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

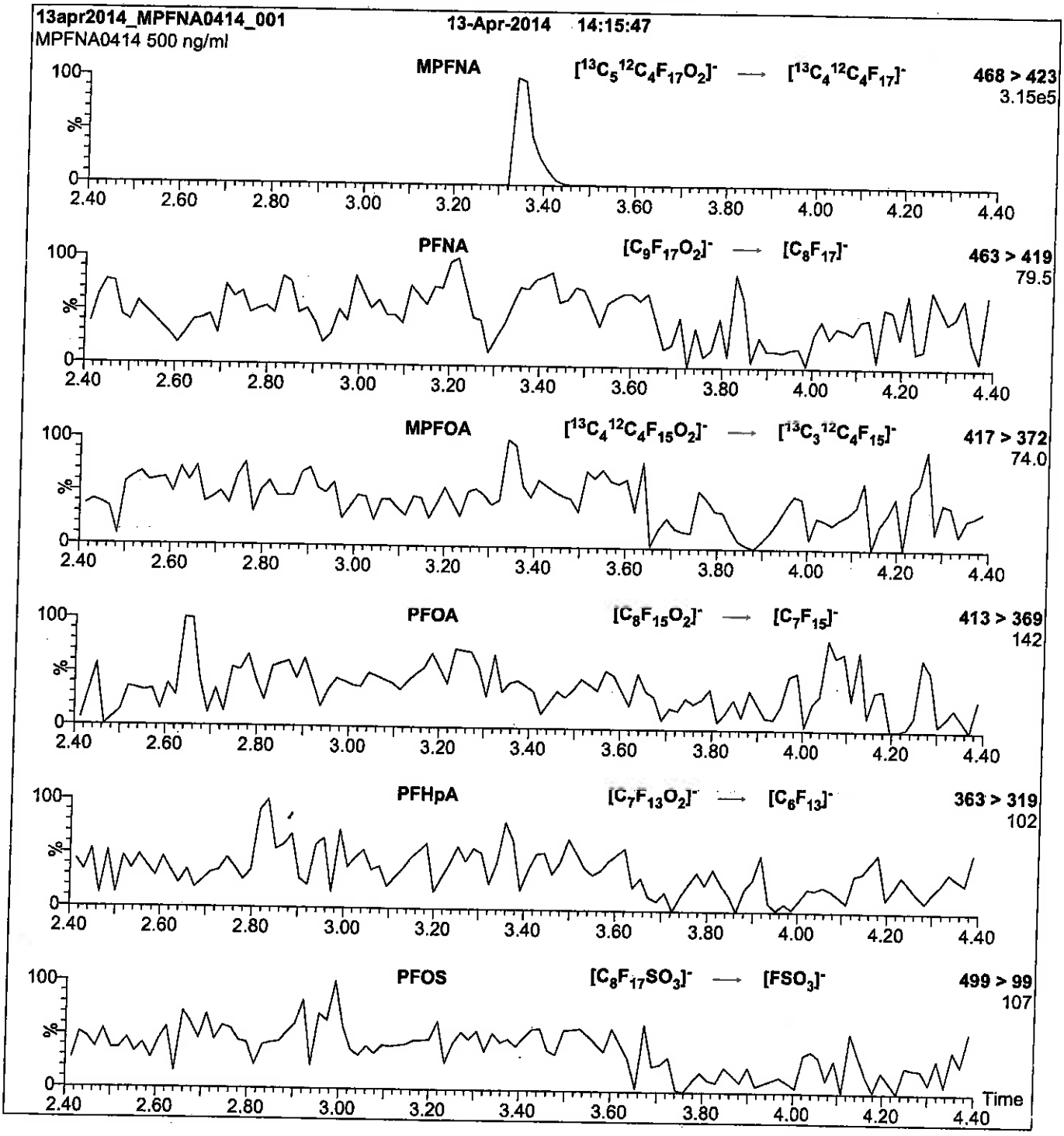
Flow: 300 µl/min

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

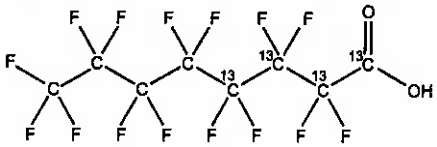
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFOA0116

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_4HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)

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

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:

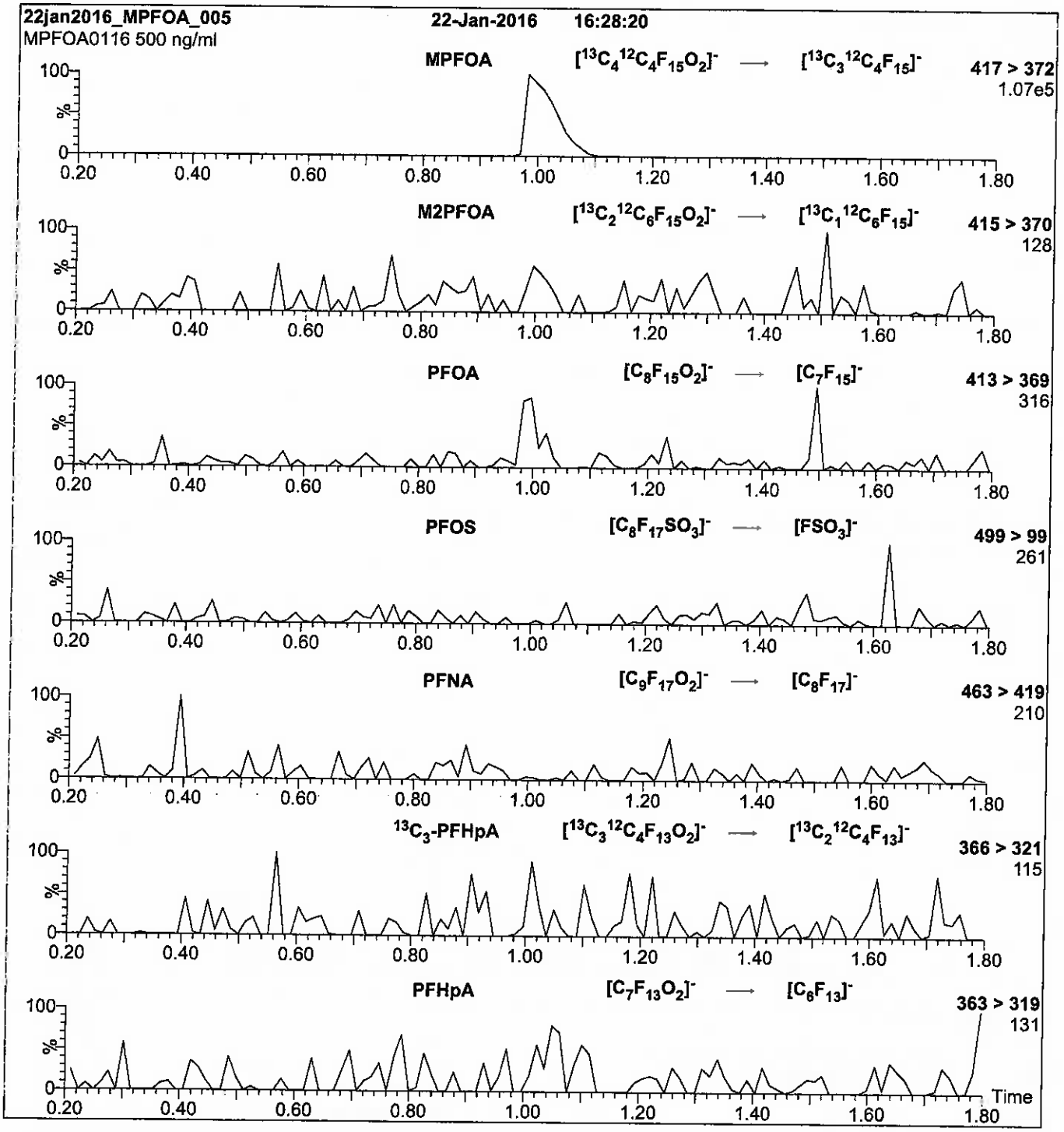
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

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



Conditions for Figure 2:

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

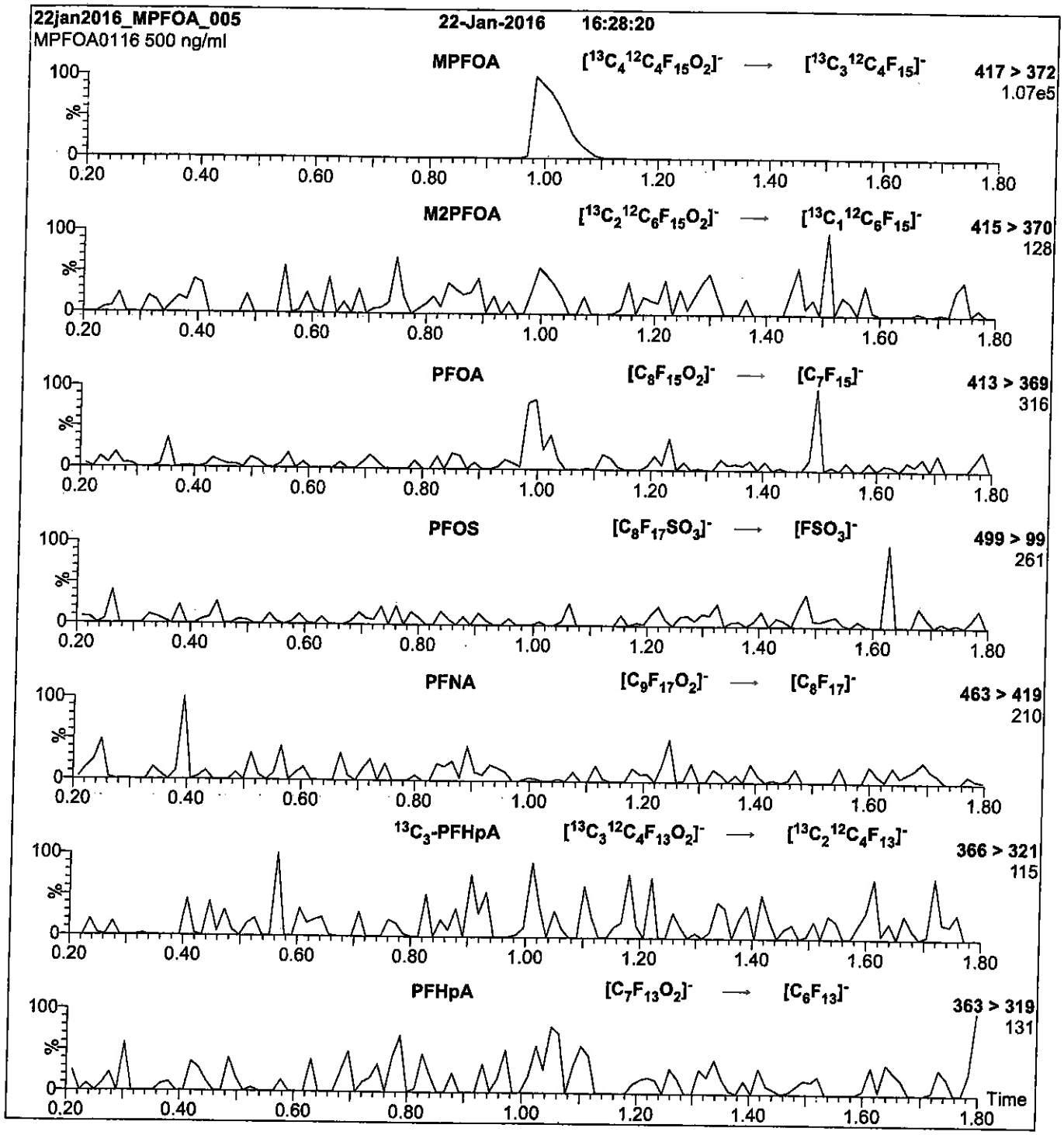
Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

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

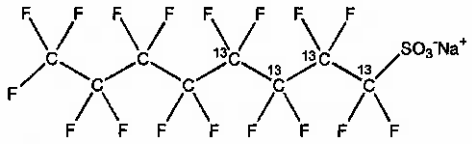
R: 9/9/16 SBC

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:

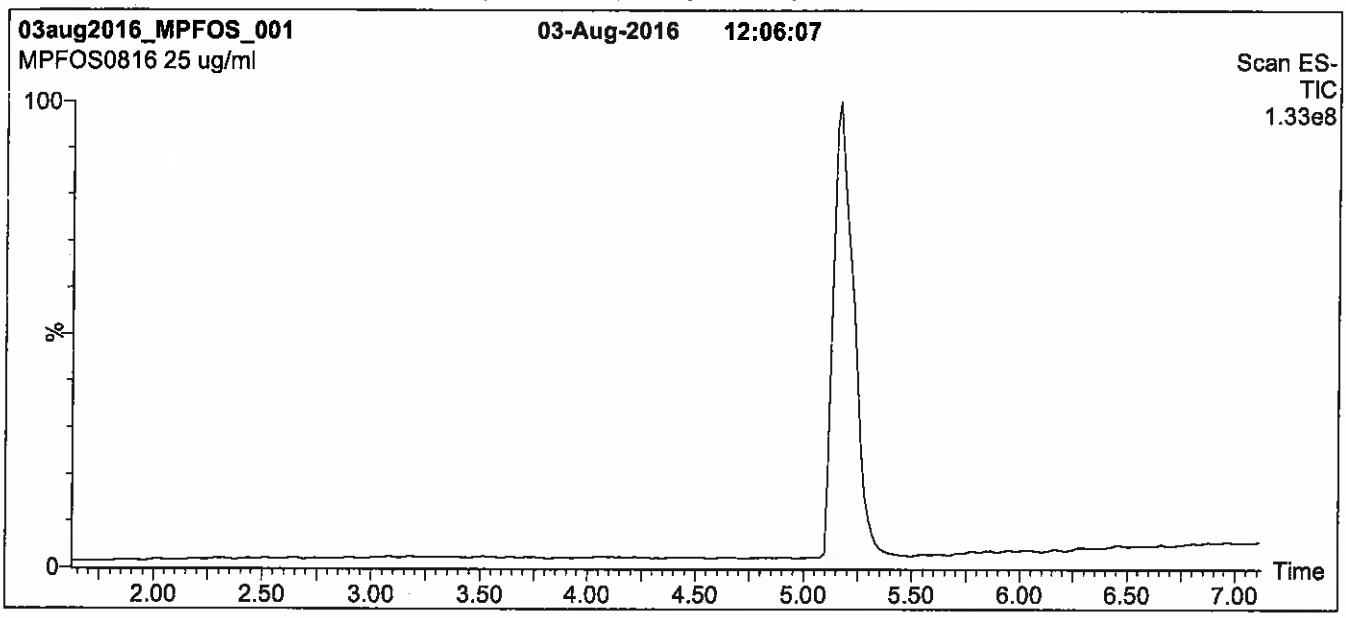
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

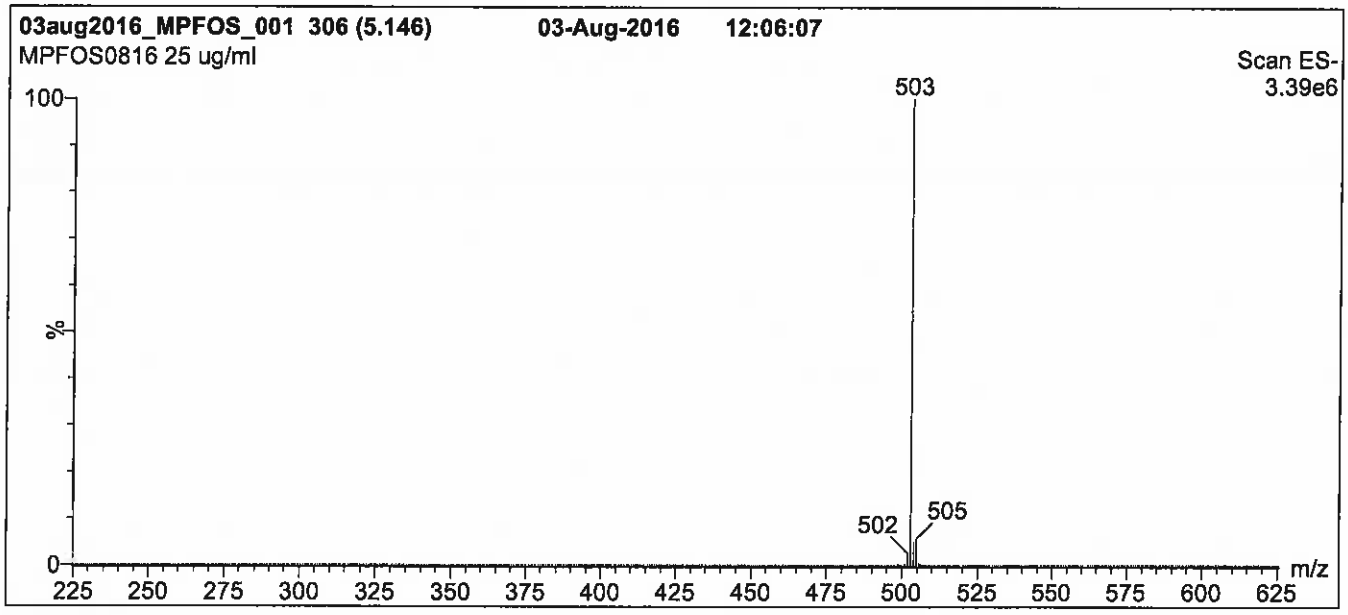
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

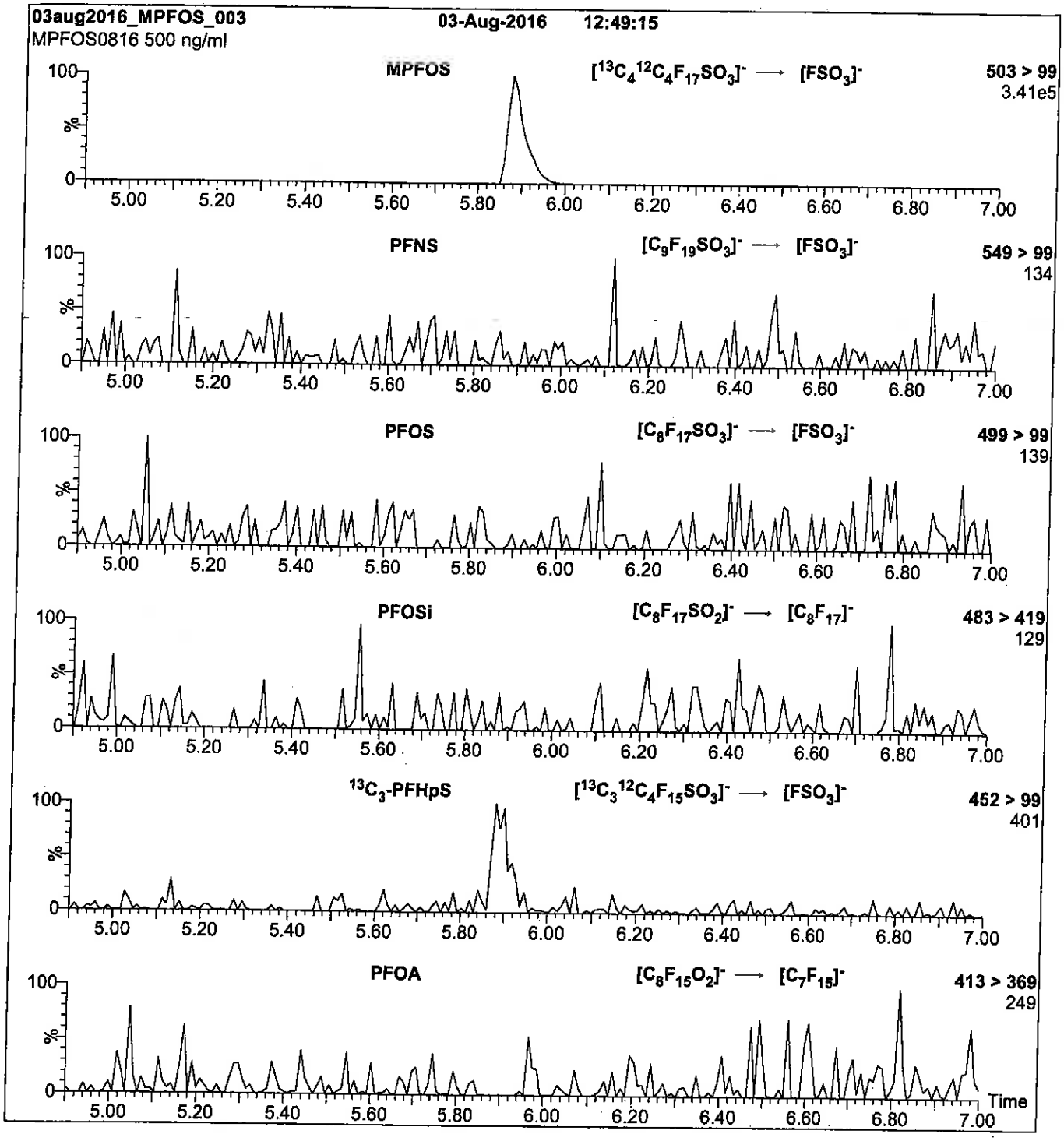
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFUdA_00009

R: SBC 9/22/16

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

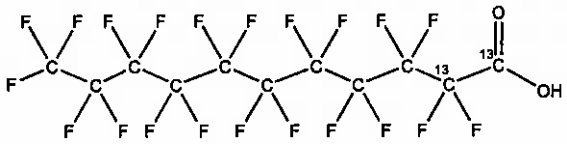
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SBC

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

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

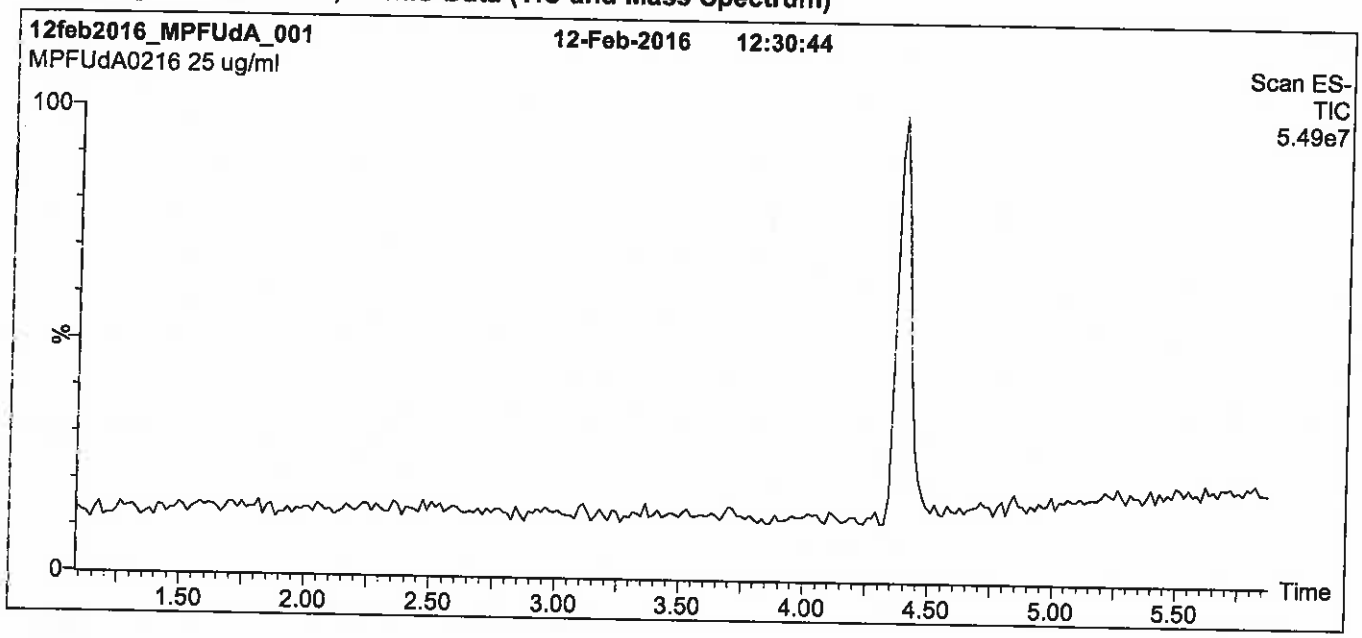
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

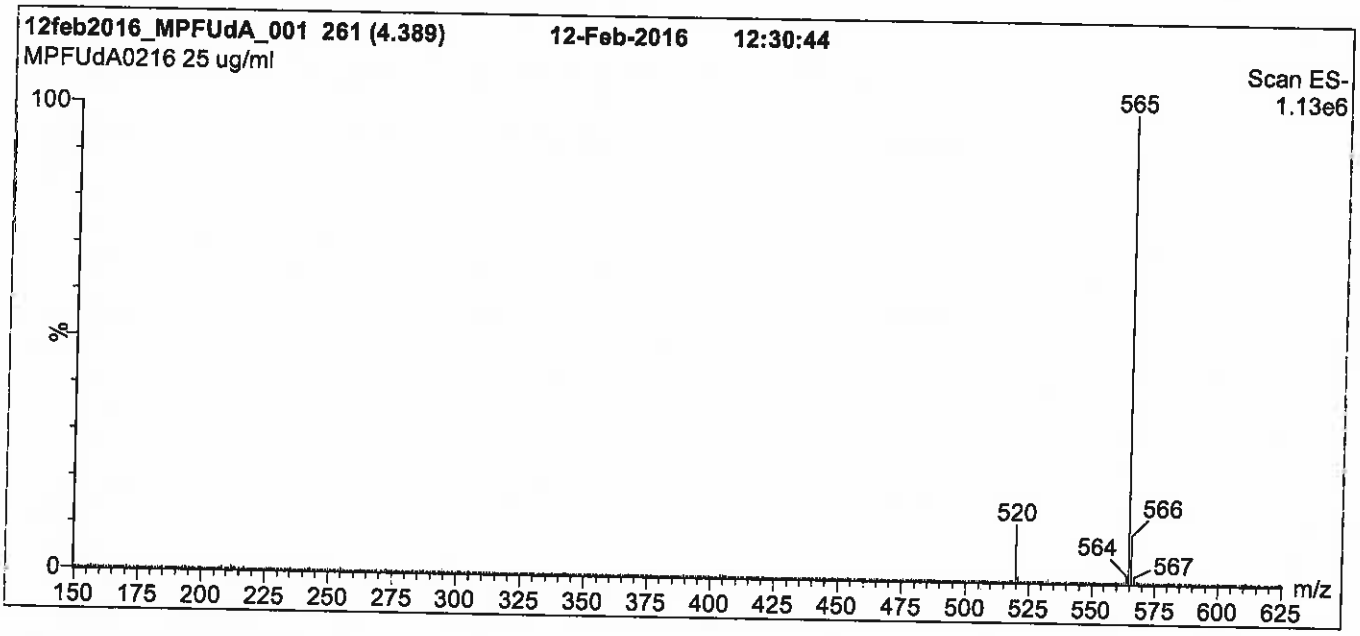
CALA testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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: **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

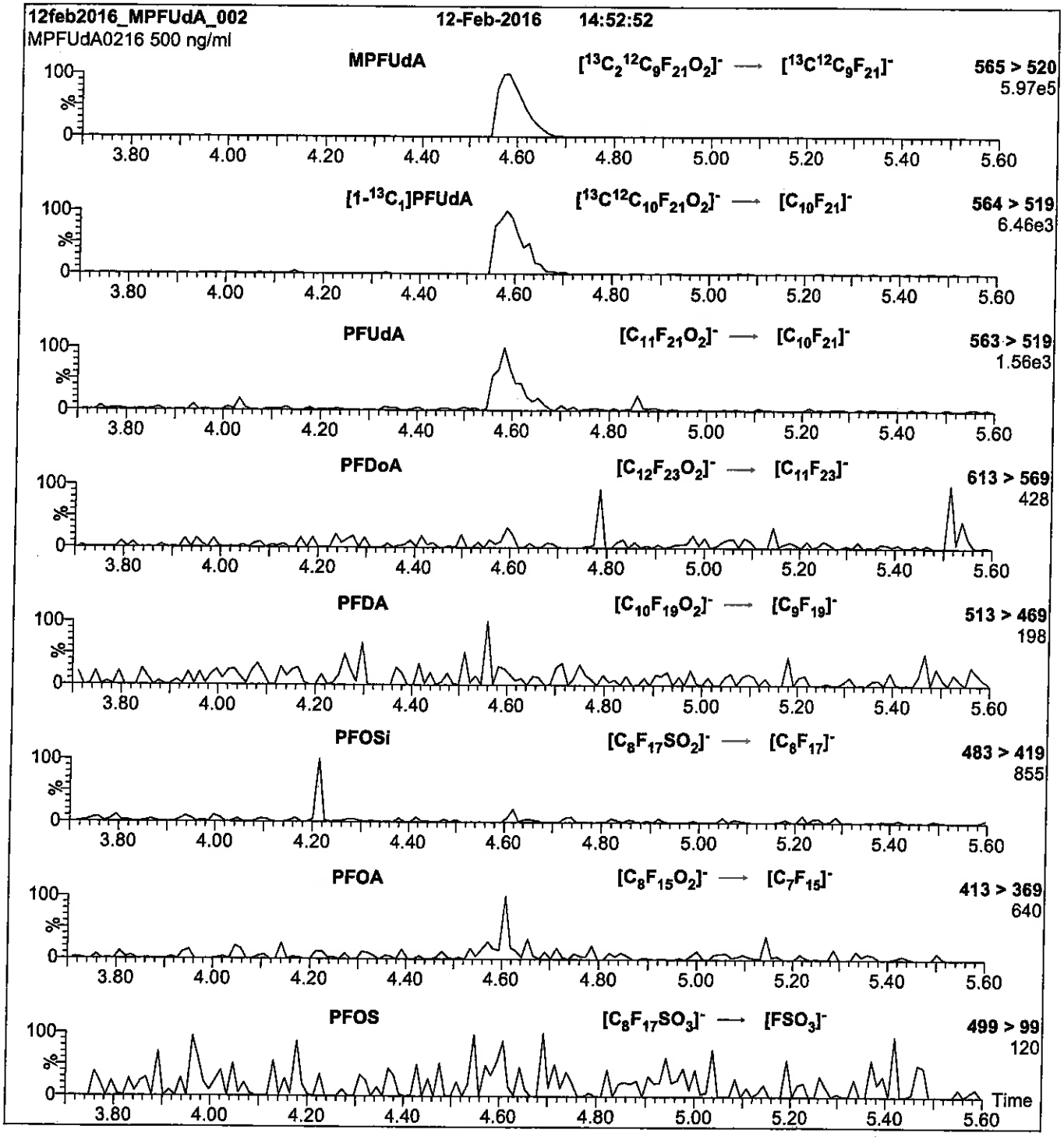
Flow: 300 µl/min

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

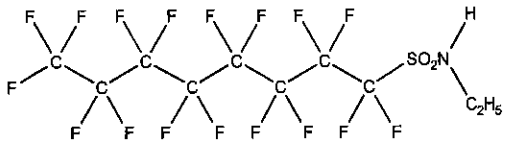
R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: 4151-50-2



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

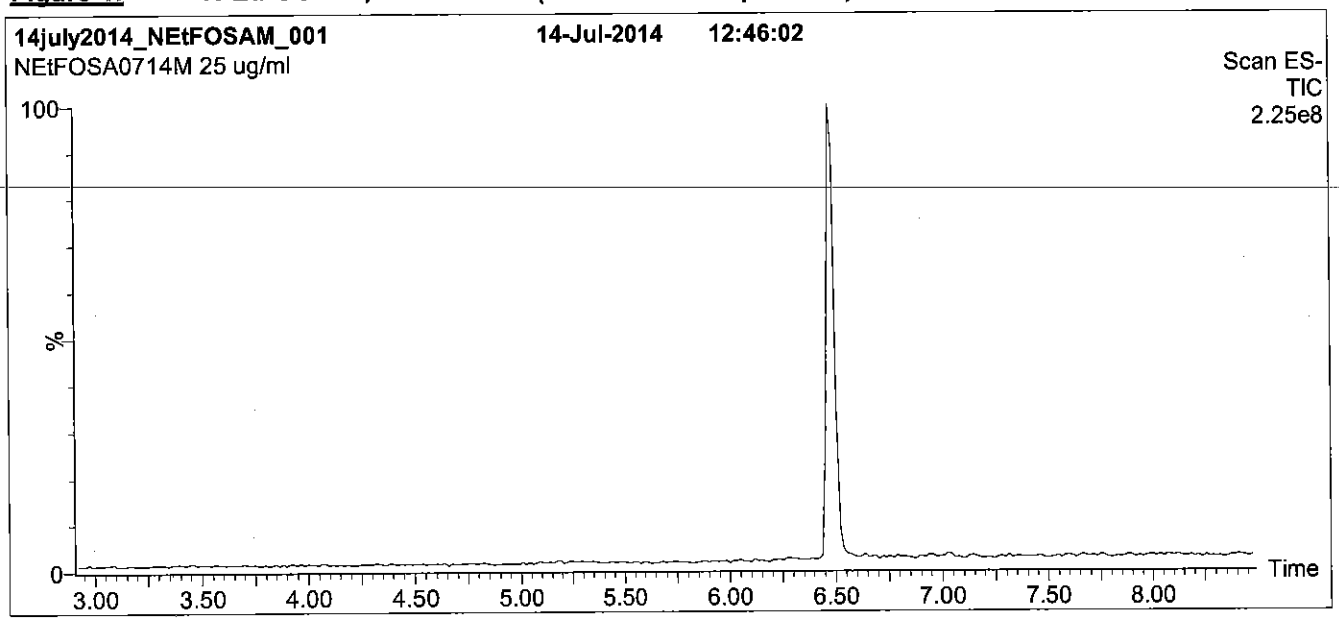
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

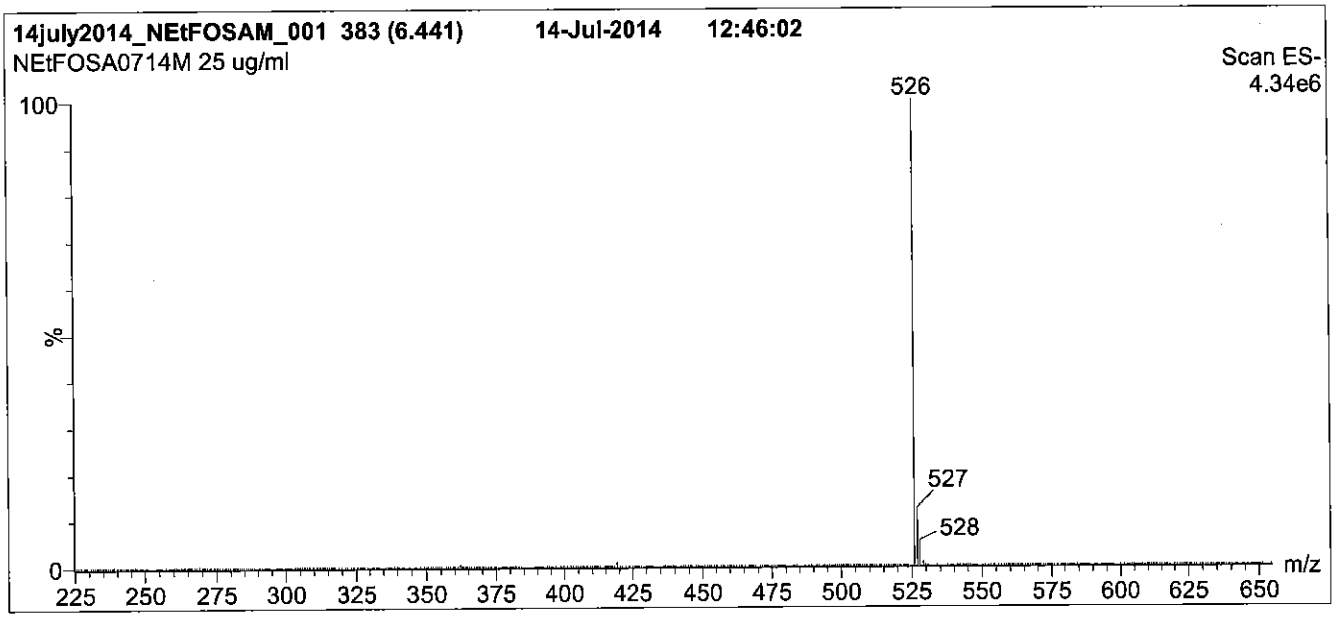
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 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

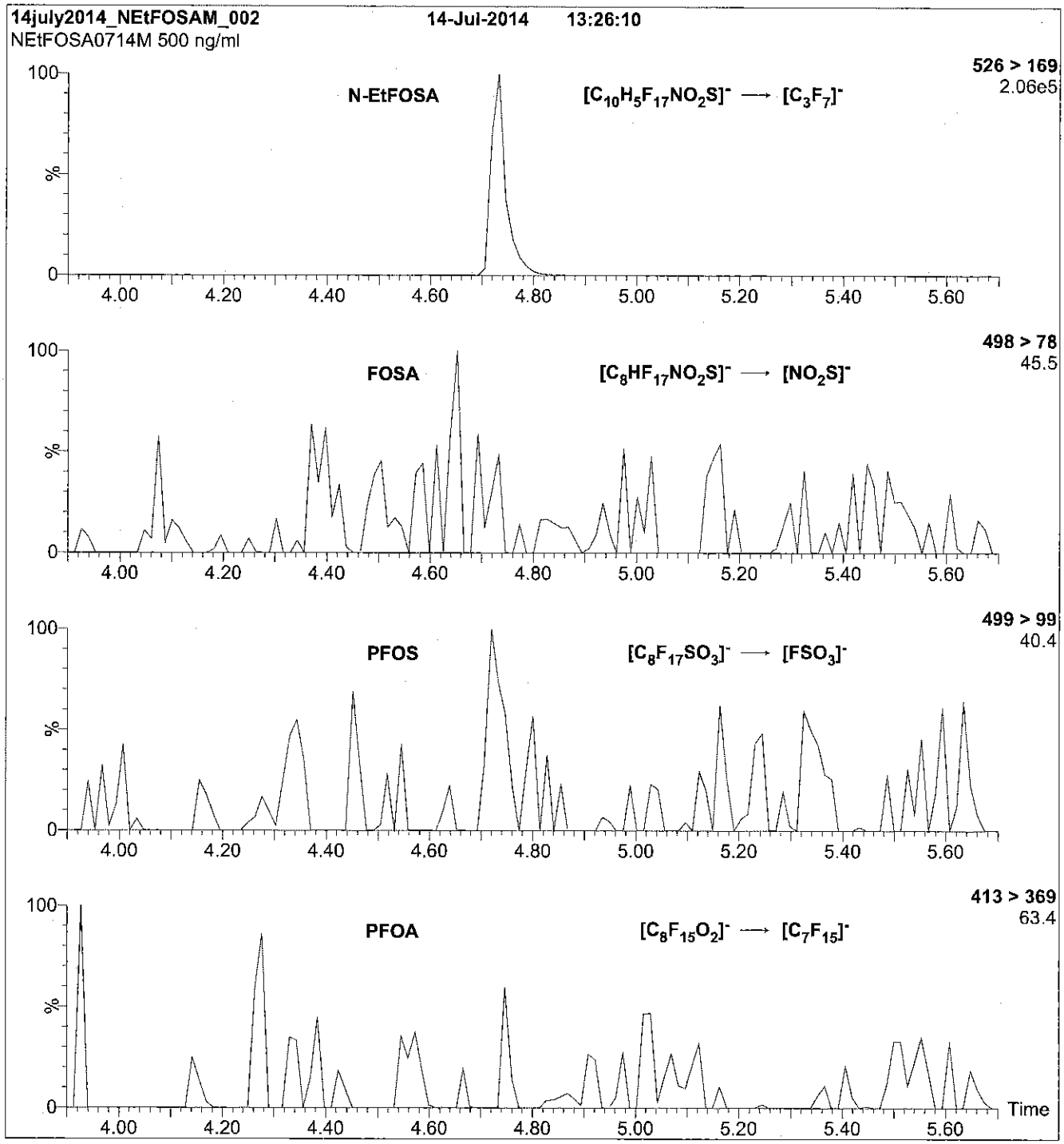
Flow: 300 µl/min

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

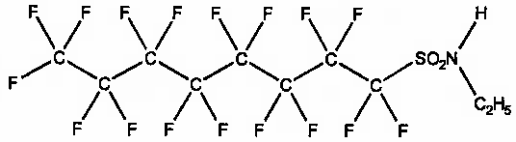
R: 8/23/16 SBC

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	**LOT NUMBER:**	NEtFOSA0516M
COMPOUND:	N-ethylperfluoro-1-octanesulfonamide		
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:

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:

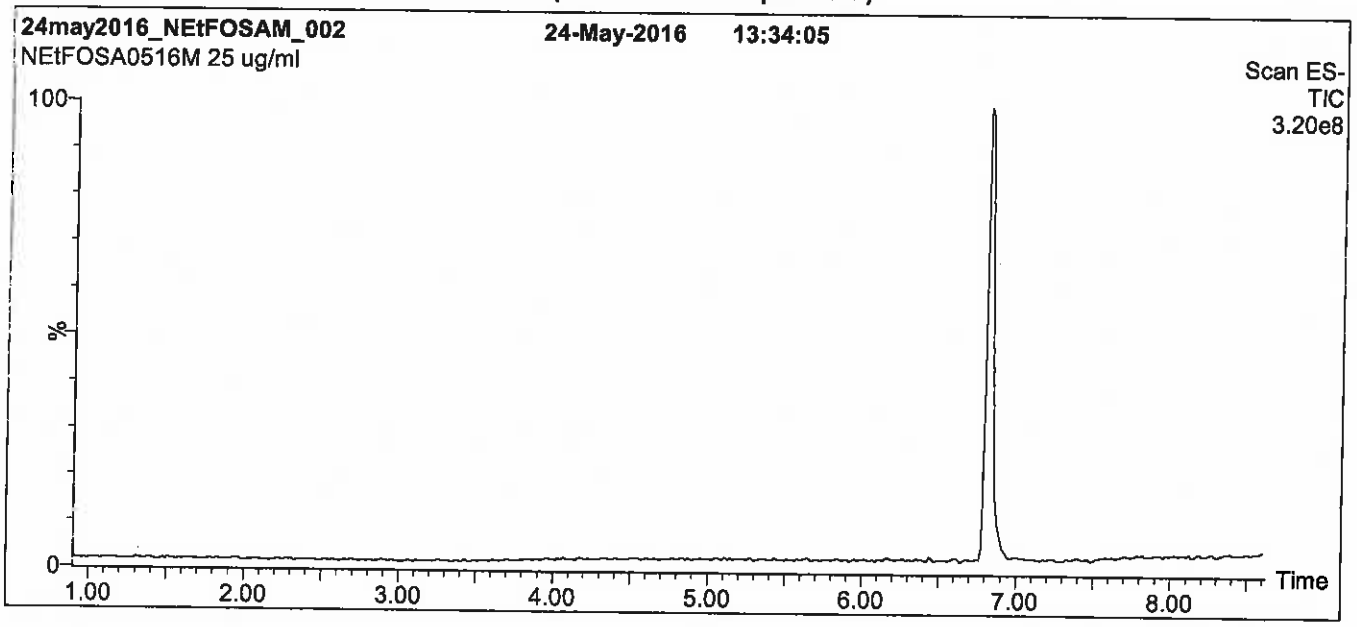
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

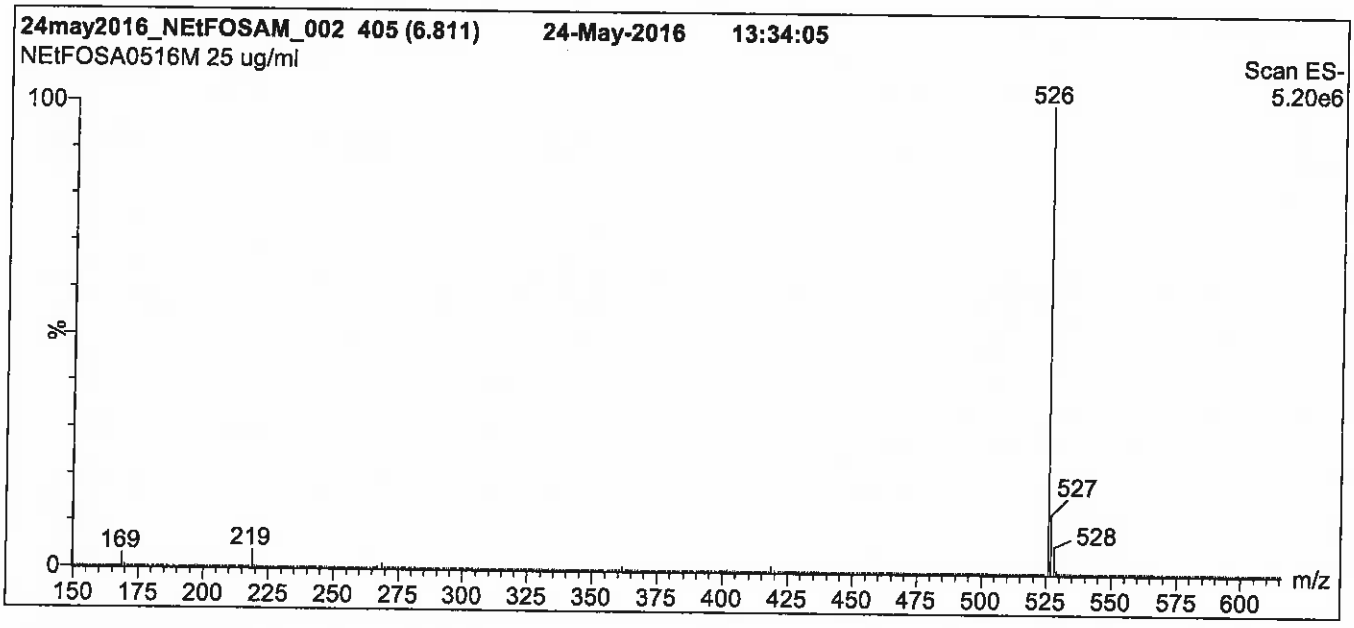
CALA Testing

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: **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

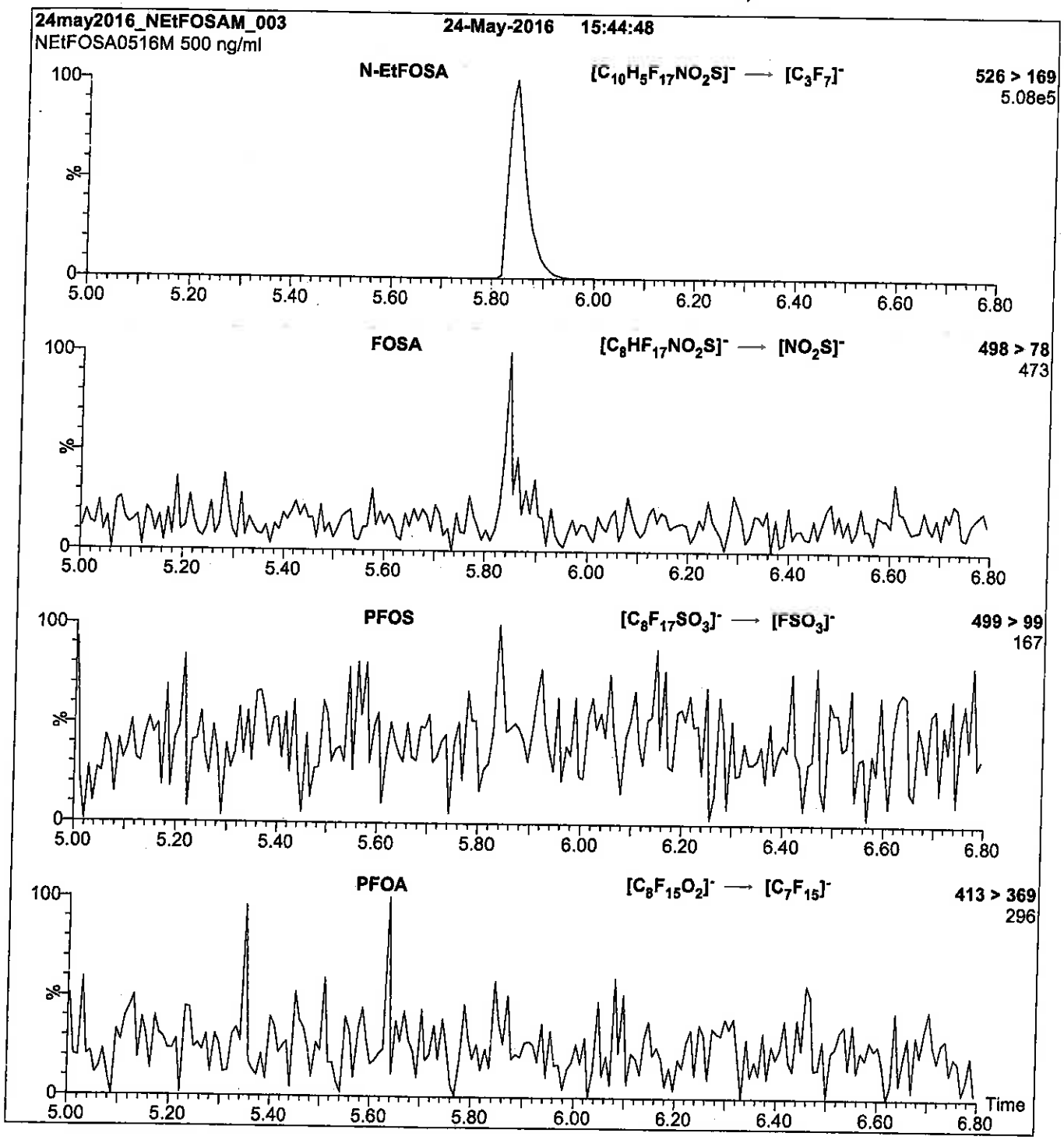
Flow: 300 µl/min

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

V: 7/11/15 SKV

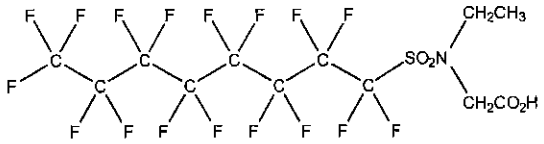
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

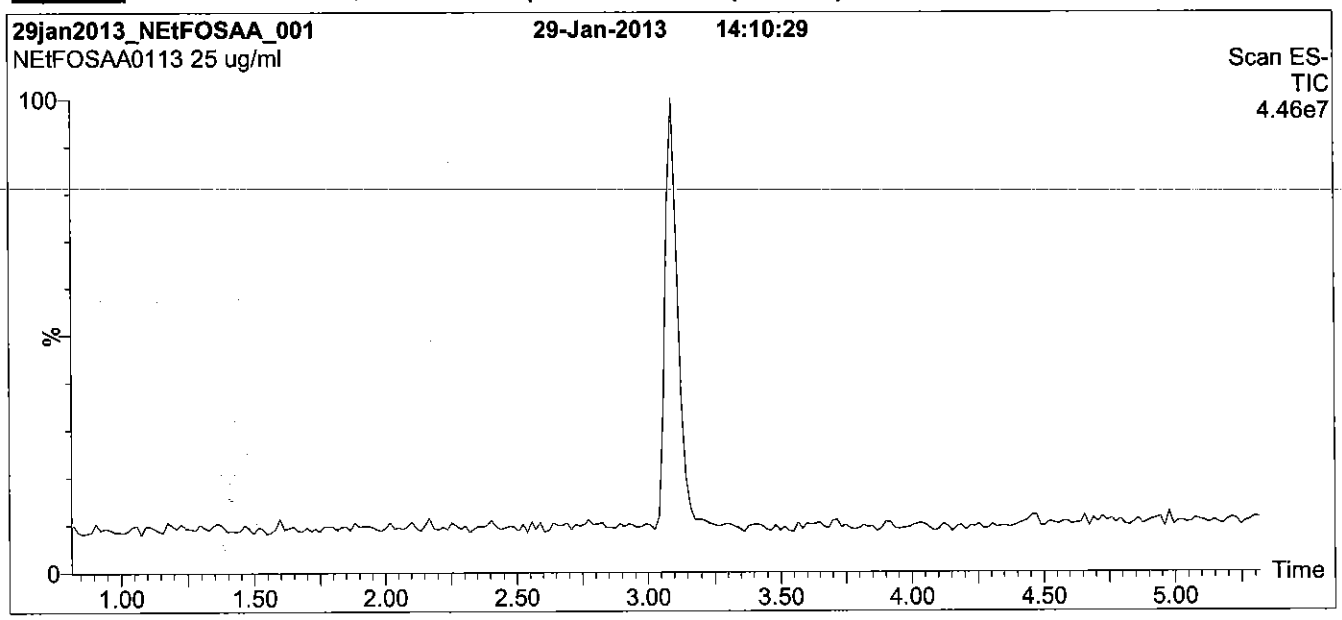
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

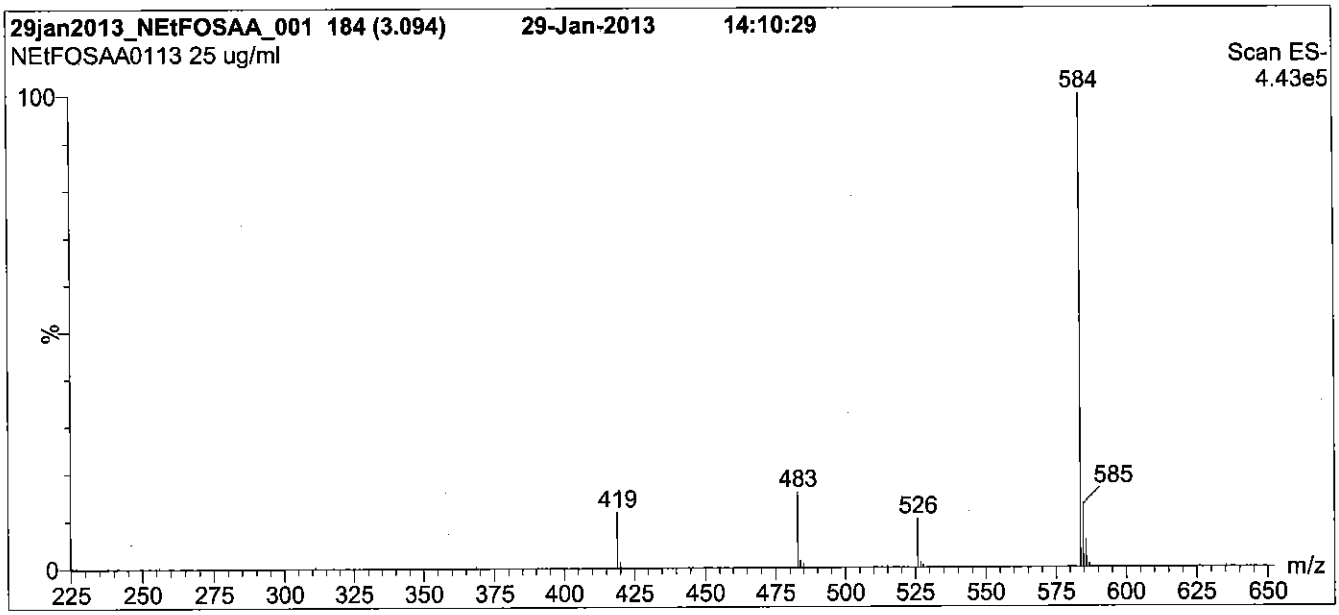
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

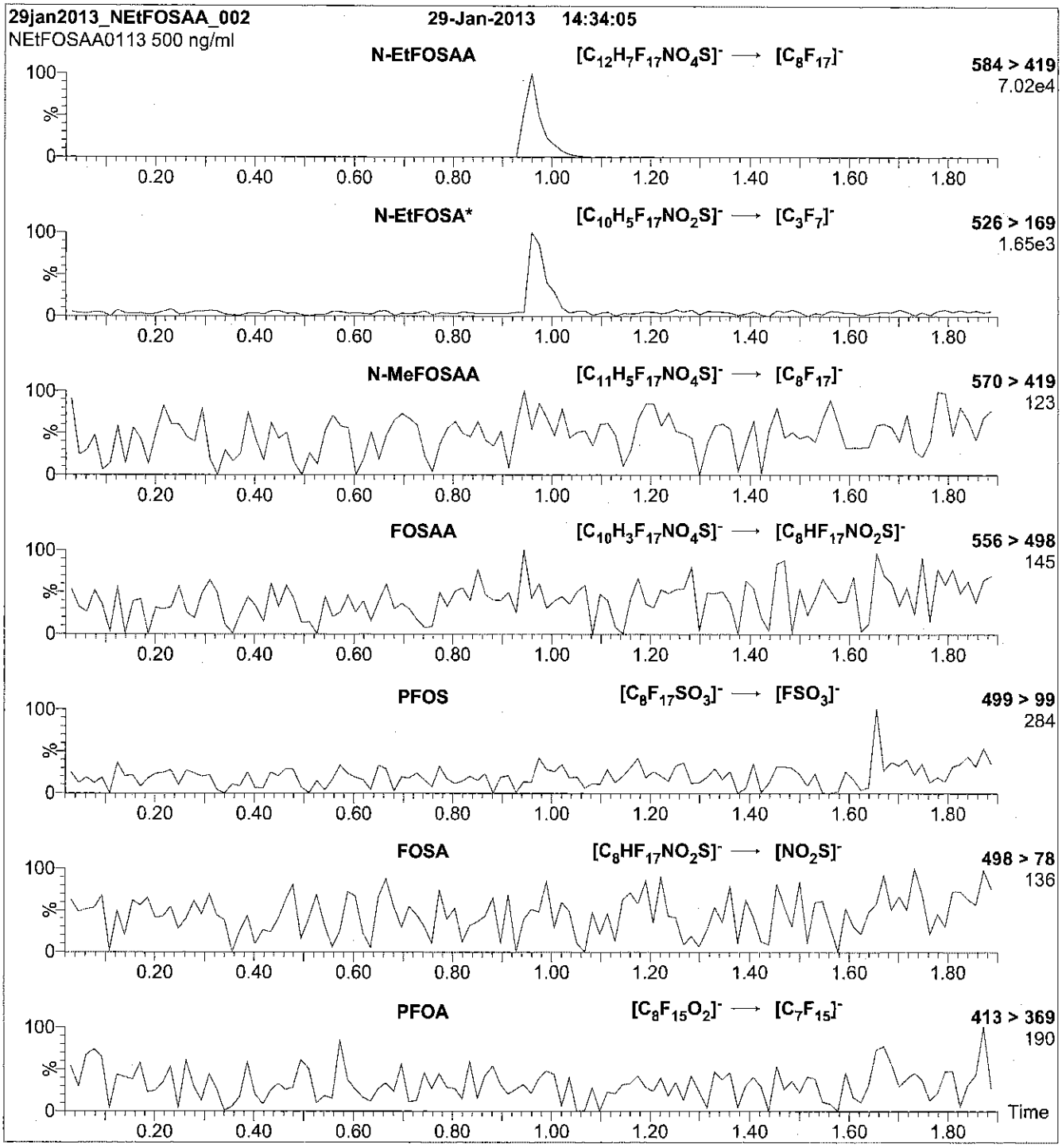
Flow: 300 µl/min

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

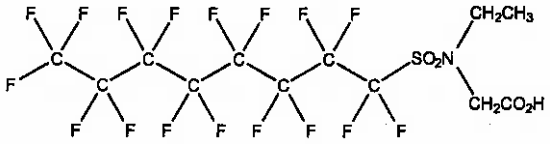
715561
ID: LCN-EtFOSAA_00002
Exp: 01/20/21 Prpd: SBC
N-EtFOSAA

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0116
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

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



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/20/2016
EXPIRY DATE: (mm/dd/yyyy) 01/20/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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:

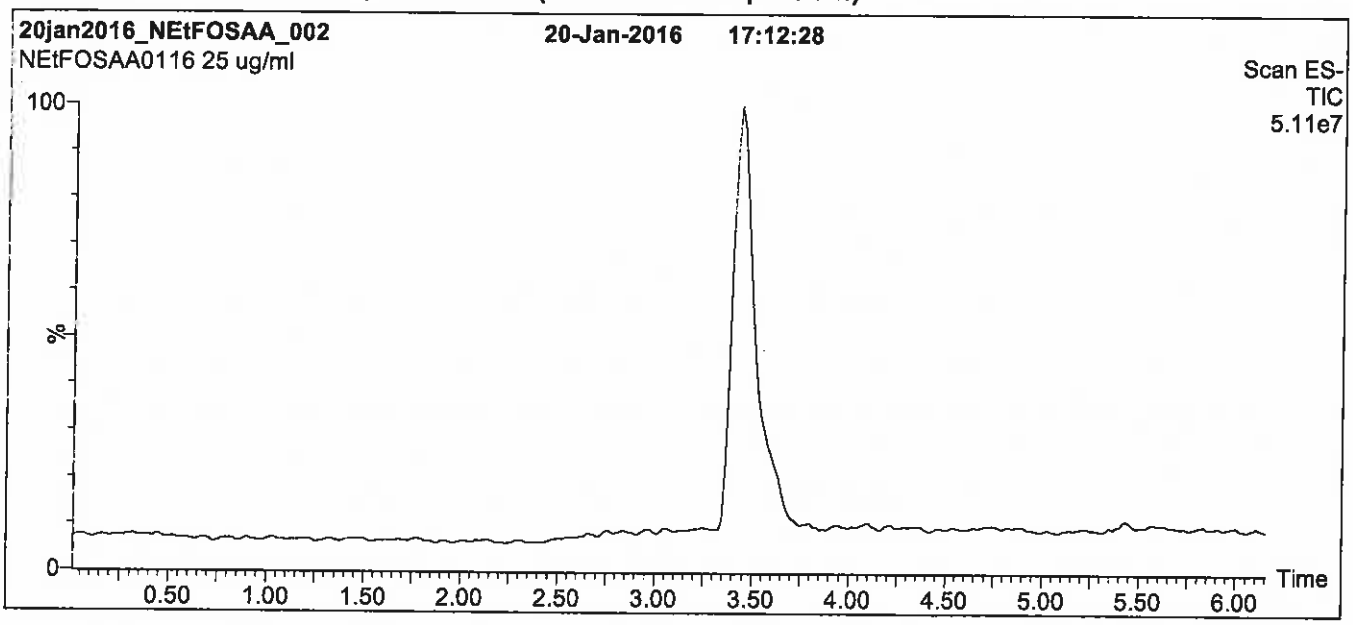
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

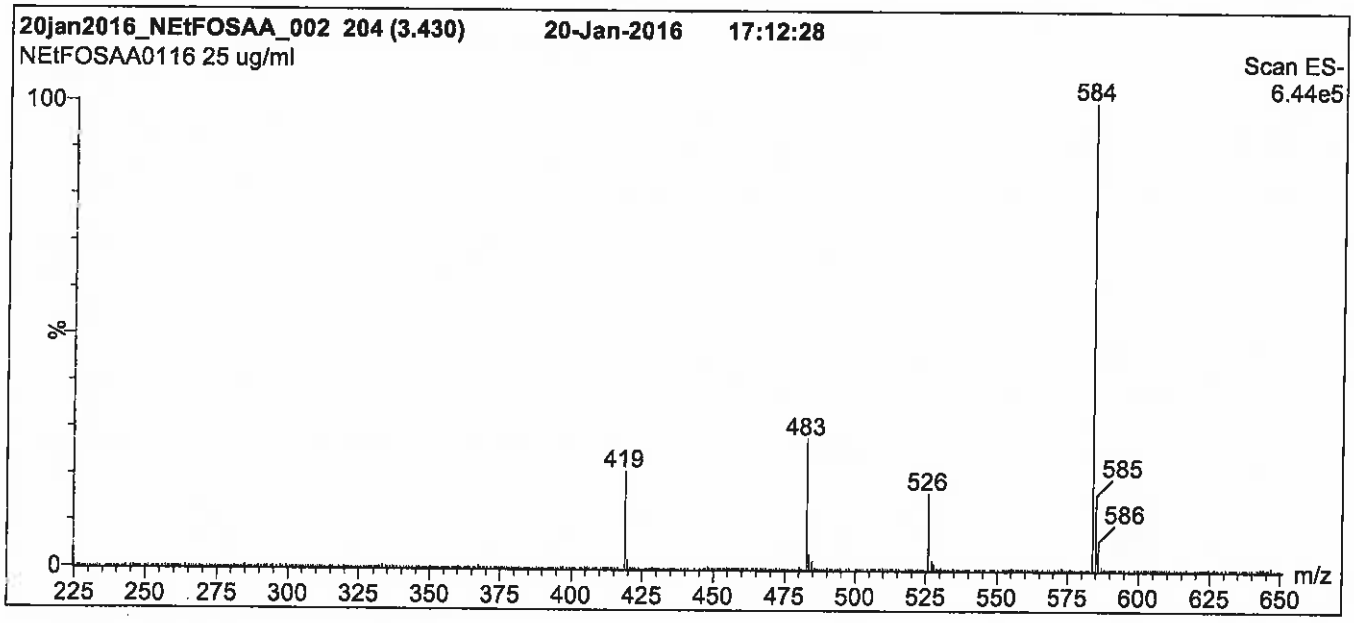
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

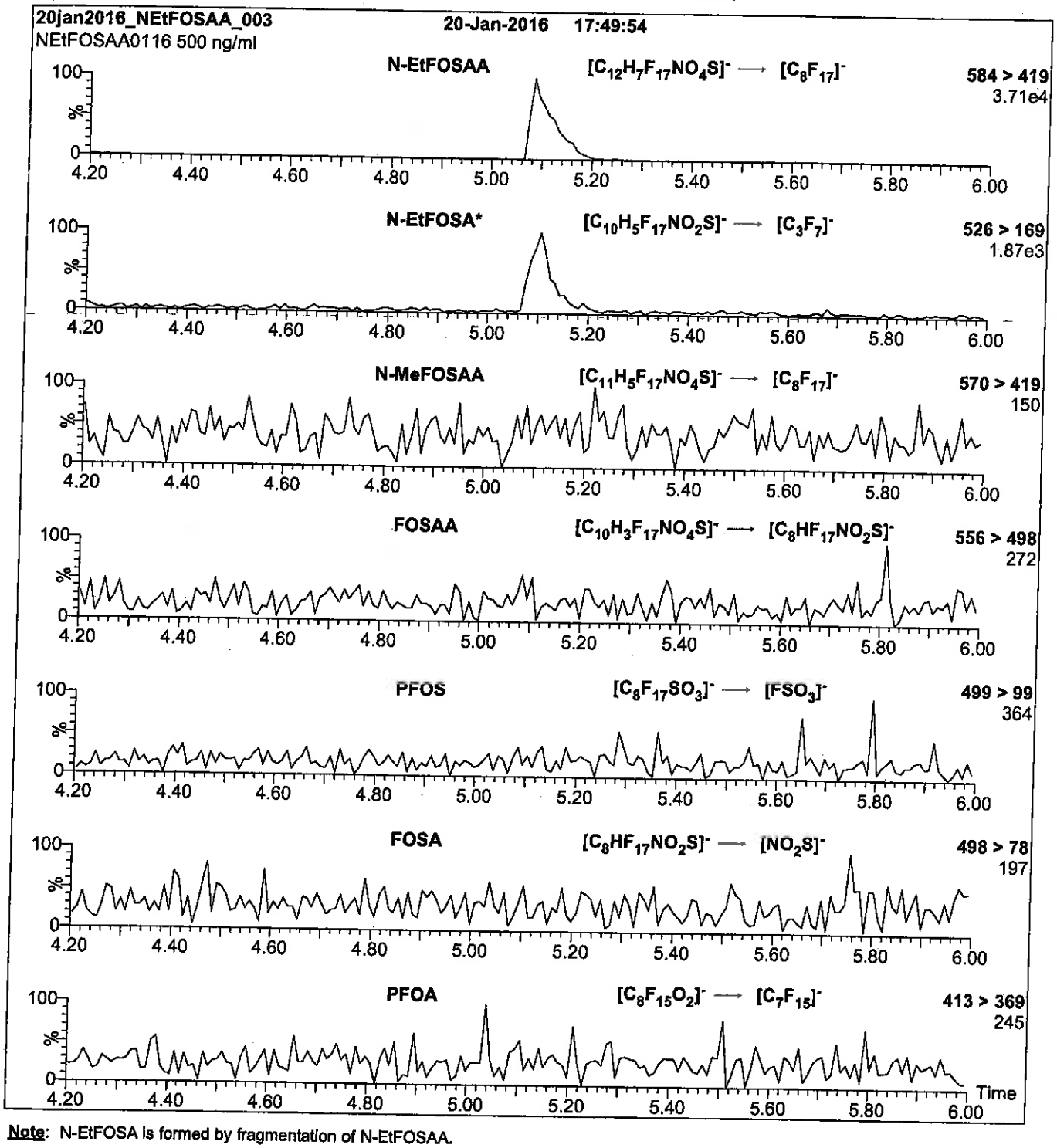
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



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

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-MeFOSA-M_00001

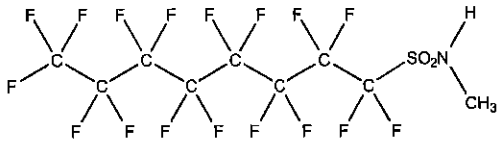
R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: 31506-32-8



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

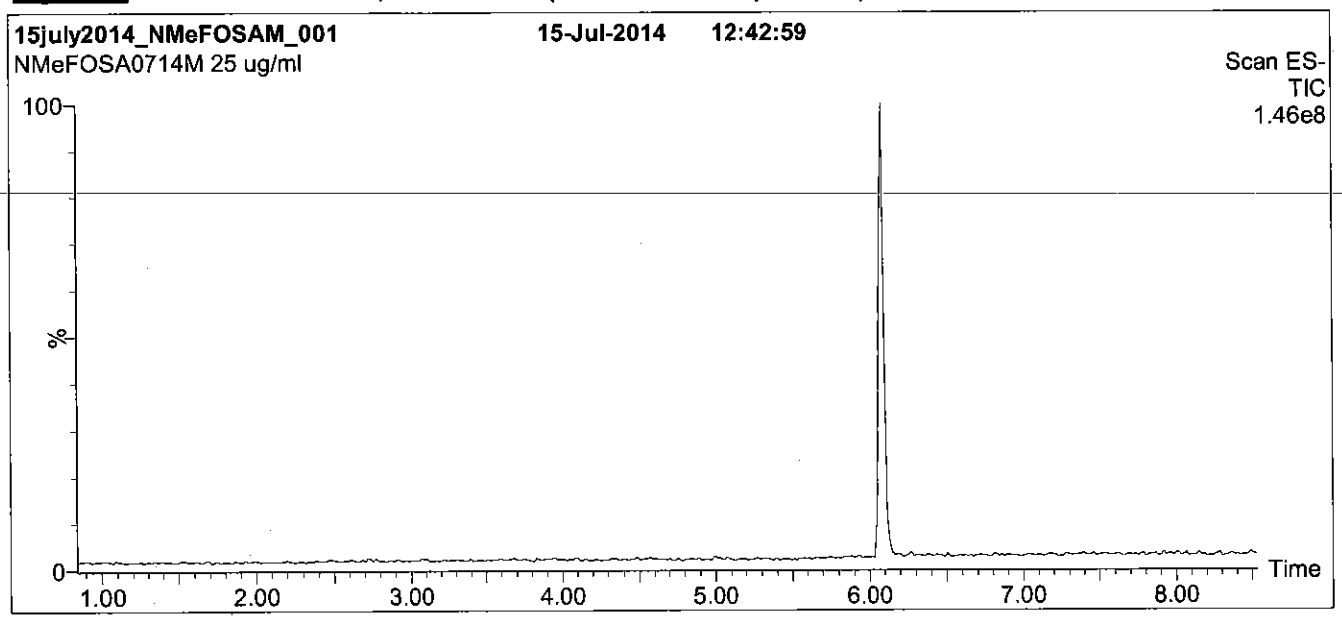
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

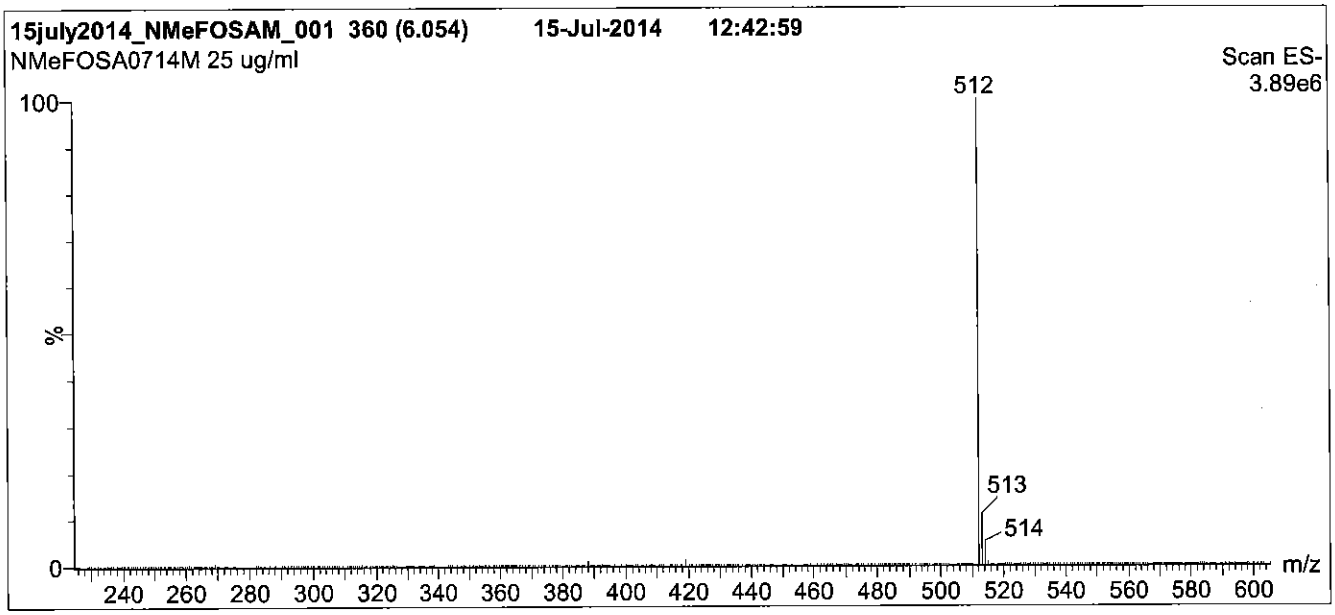
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED 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

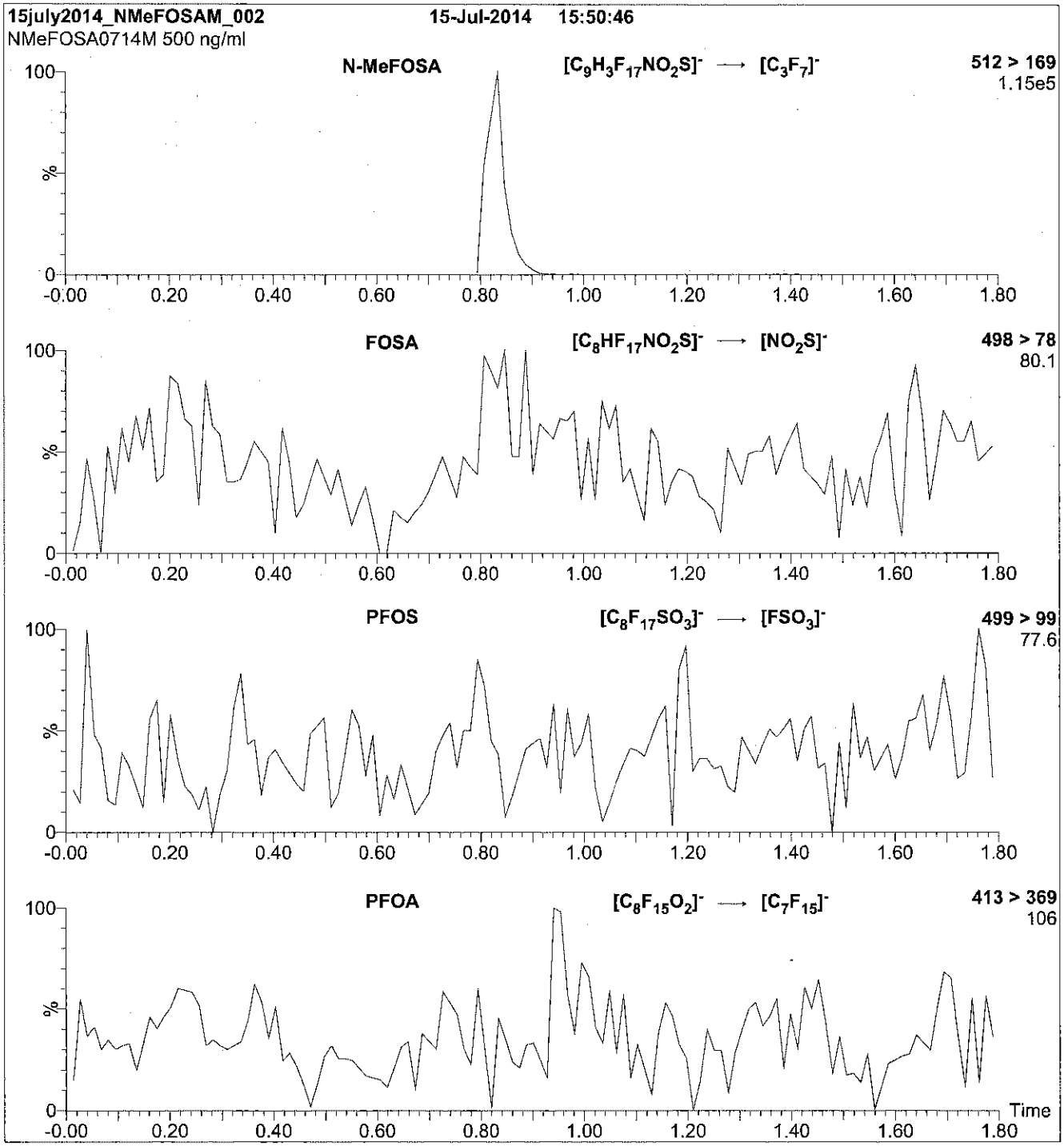
Flow: 300 µl/min

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

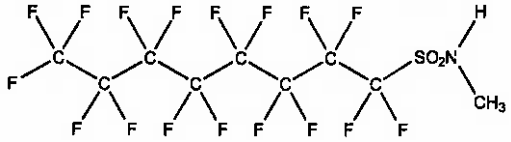
R: 8/23/16 SBC

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:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

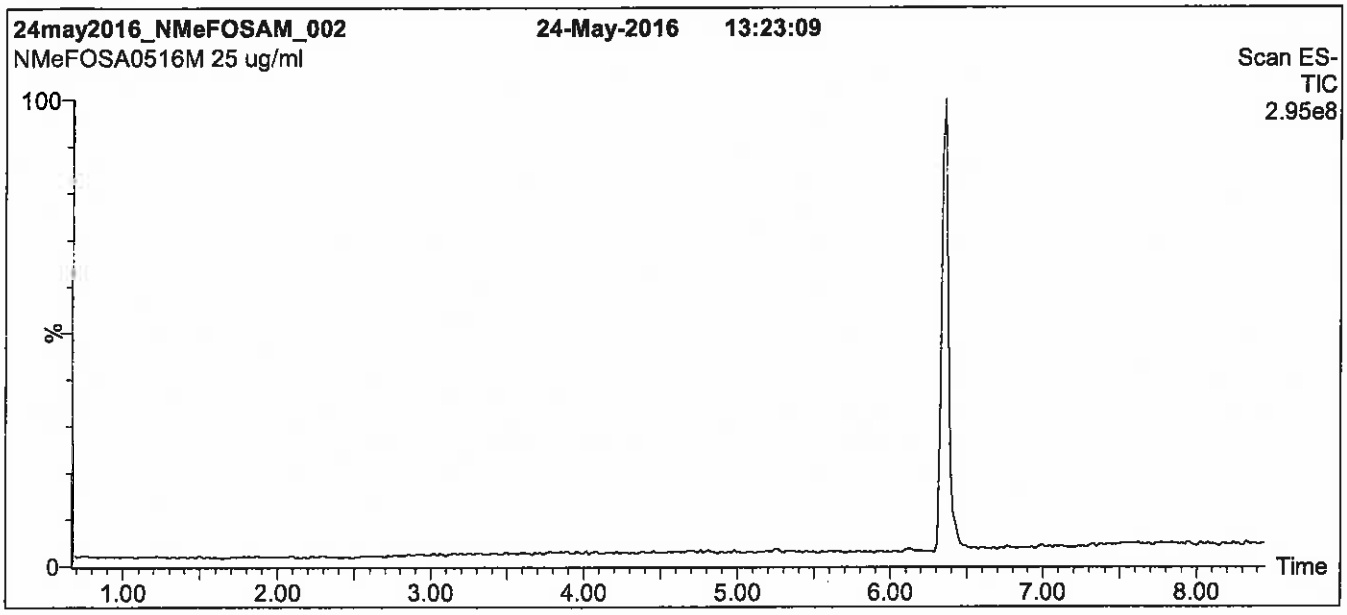
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

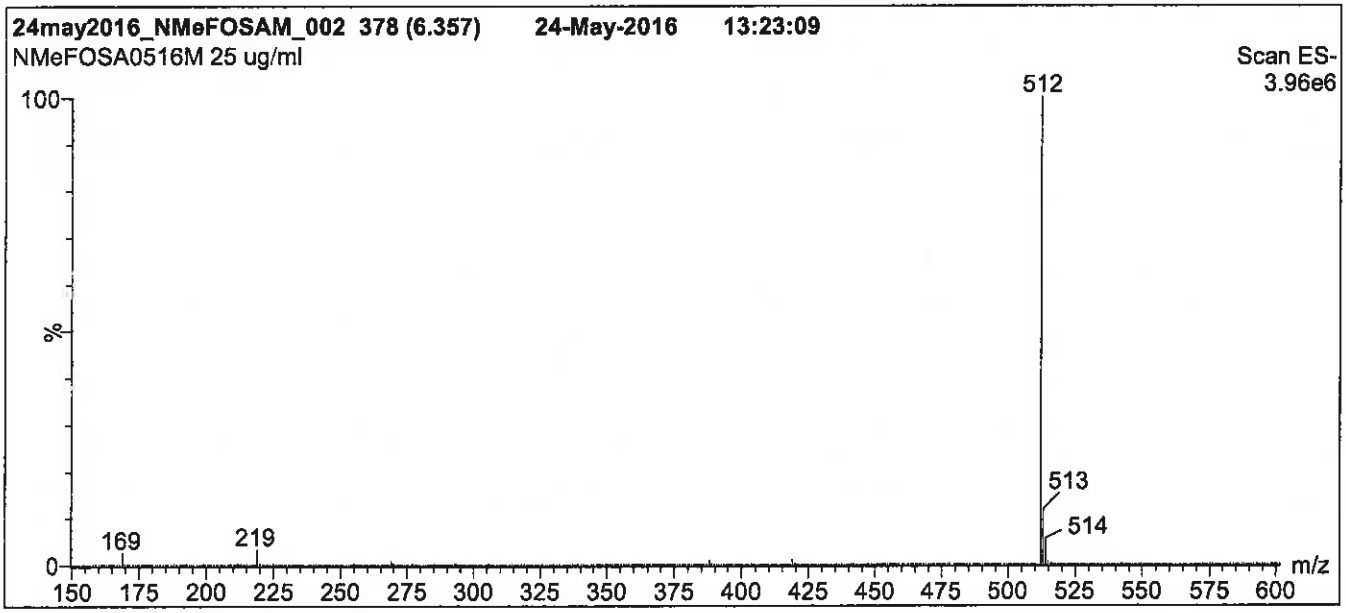
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

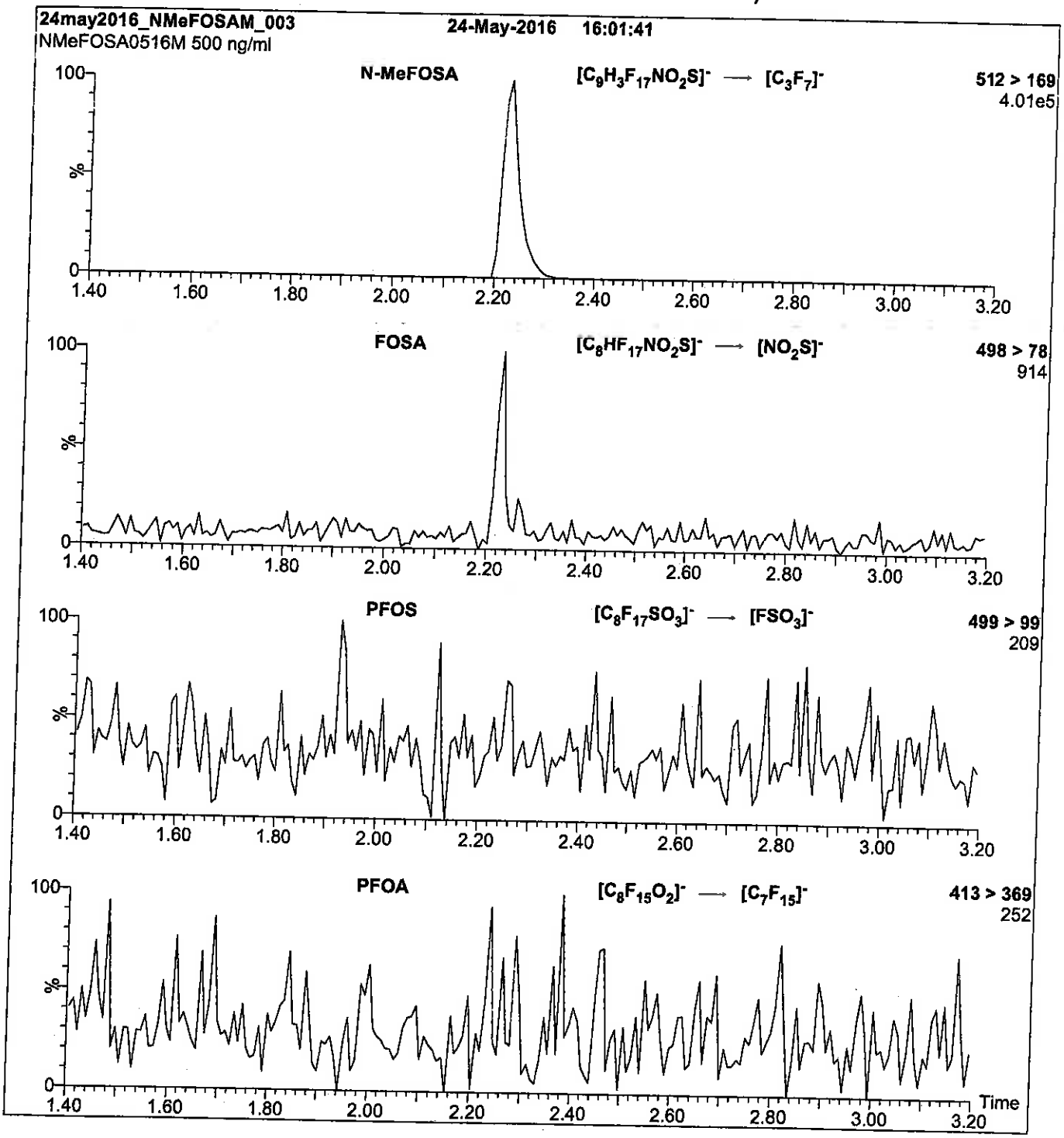
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCN-MeFOSAA_00001

P: 7/10/15 SEV

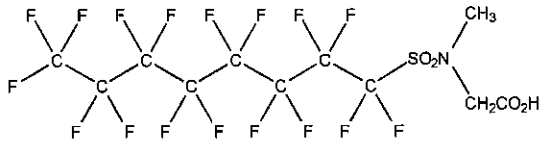
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

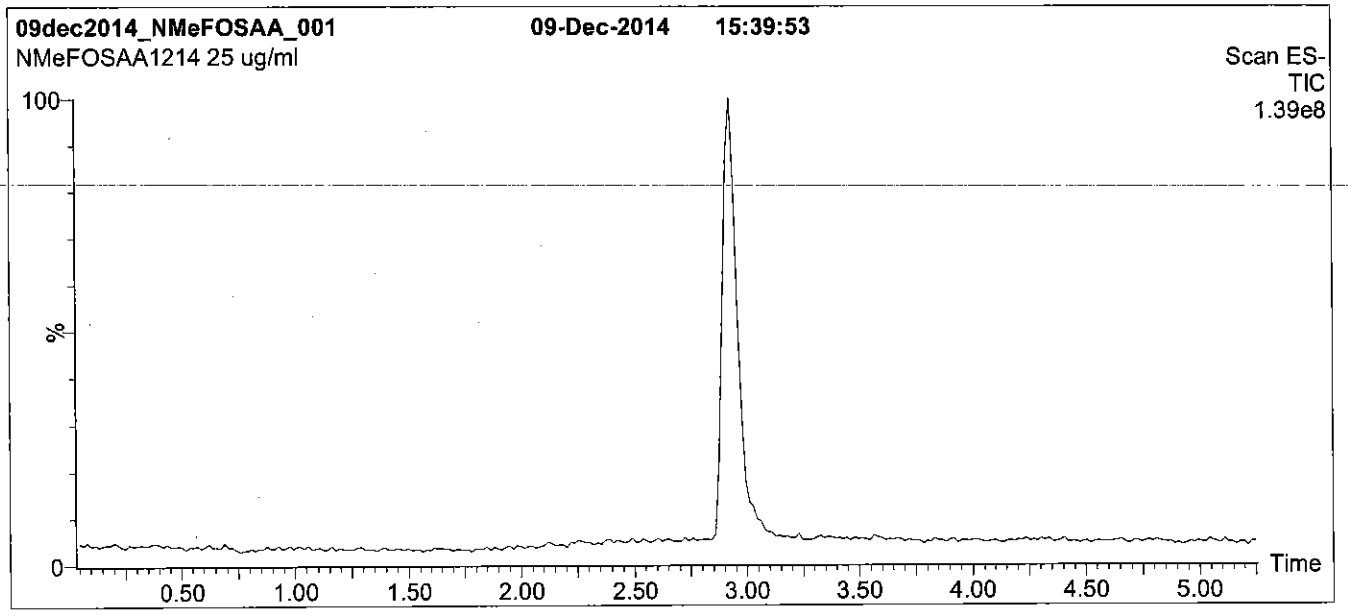
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

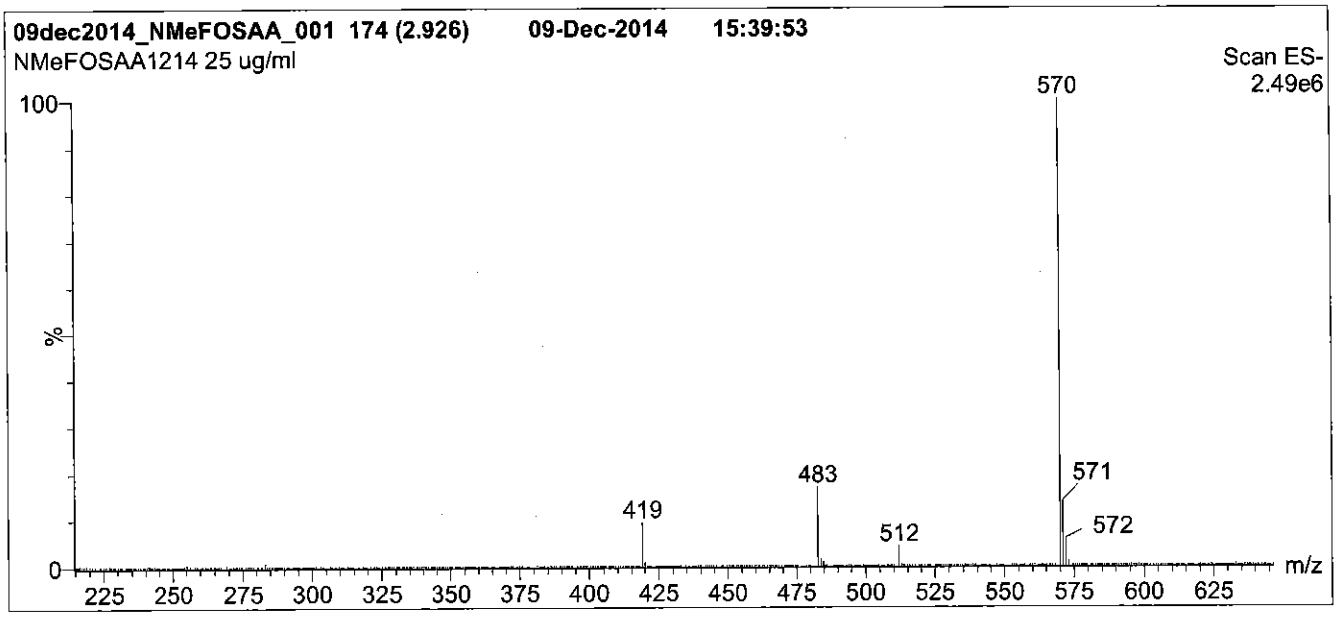
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

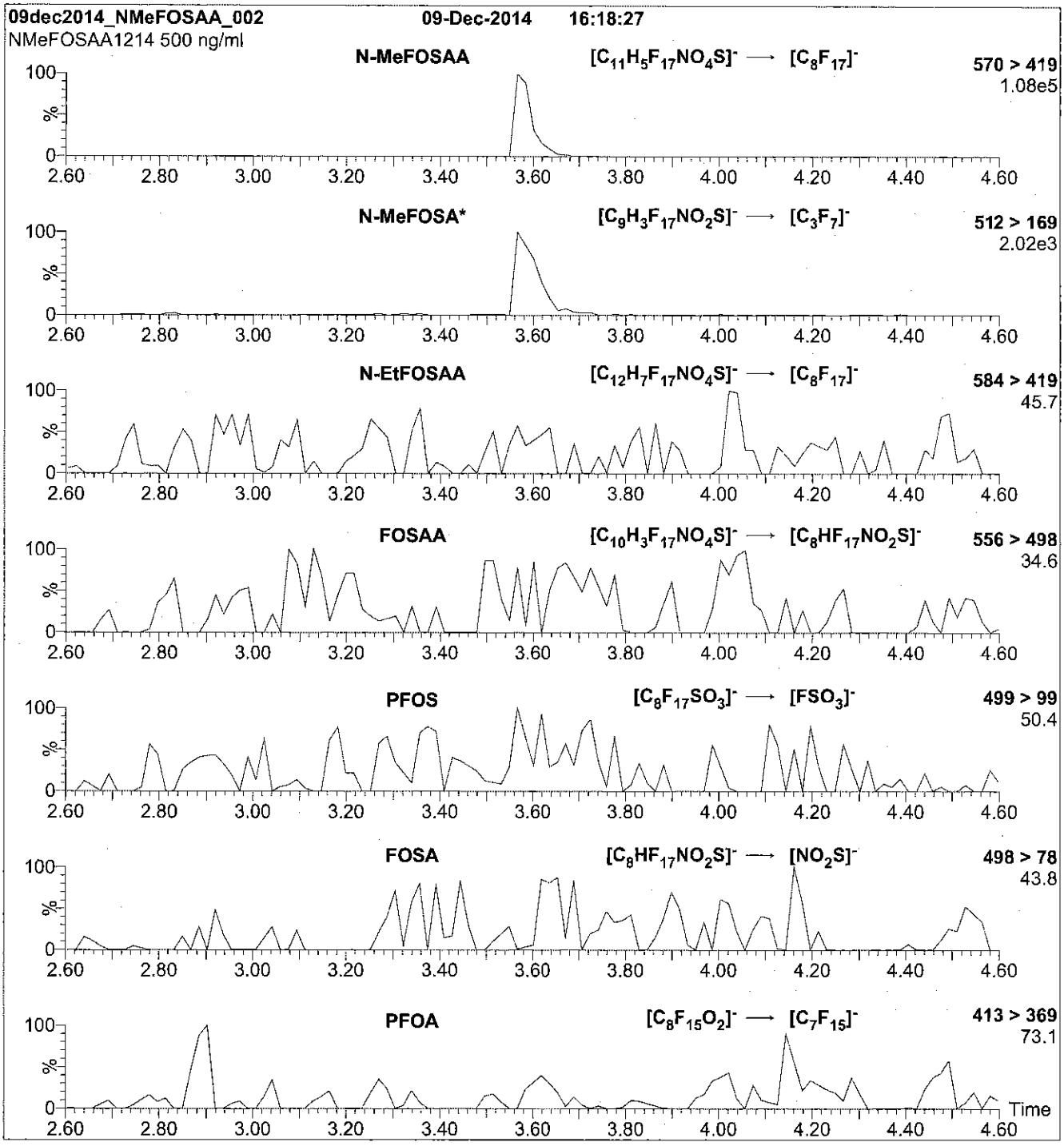
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

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

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



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

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-MeFOSAA_00003

R: 8/23/16 SBC

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

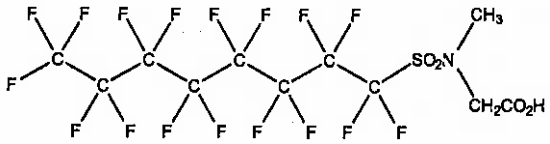
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

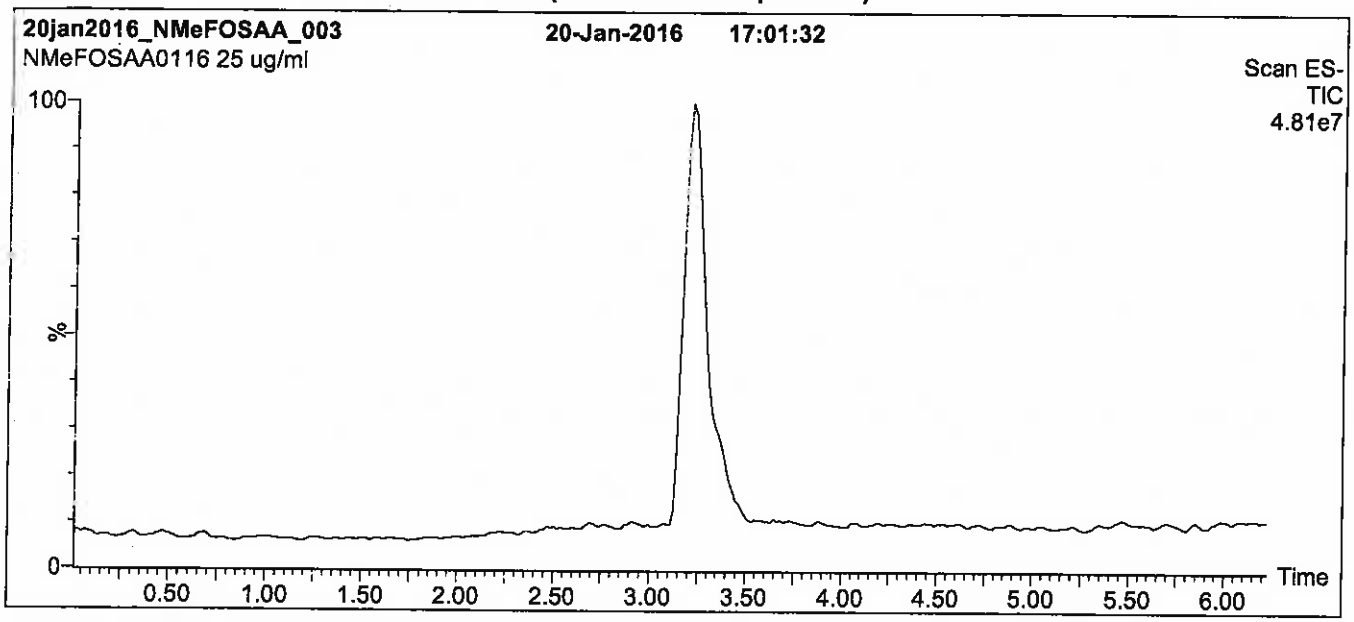
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

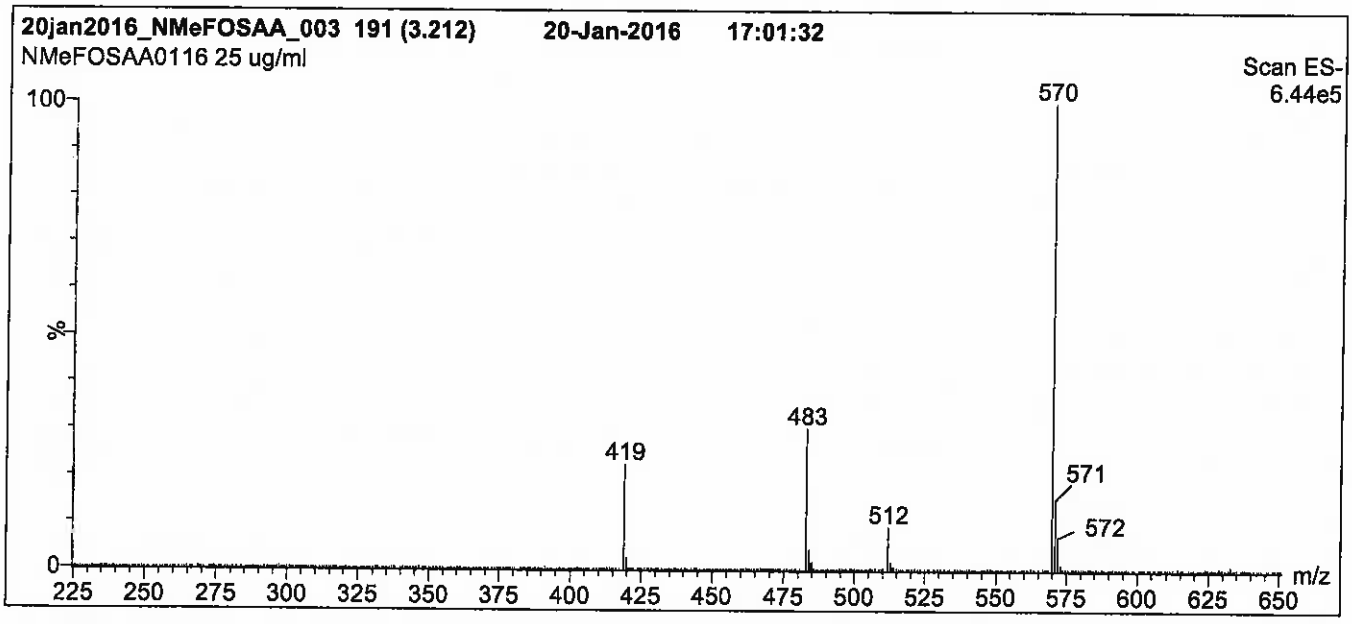
CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

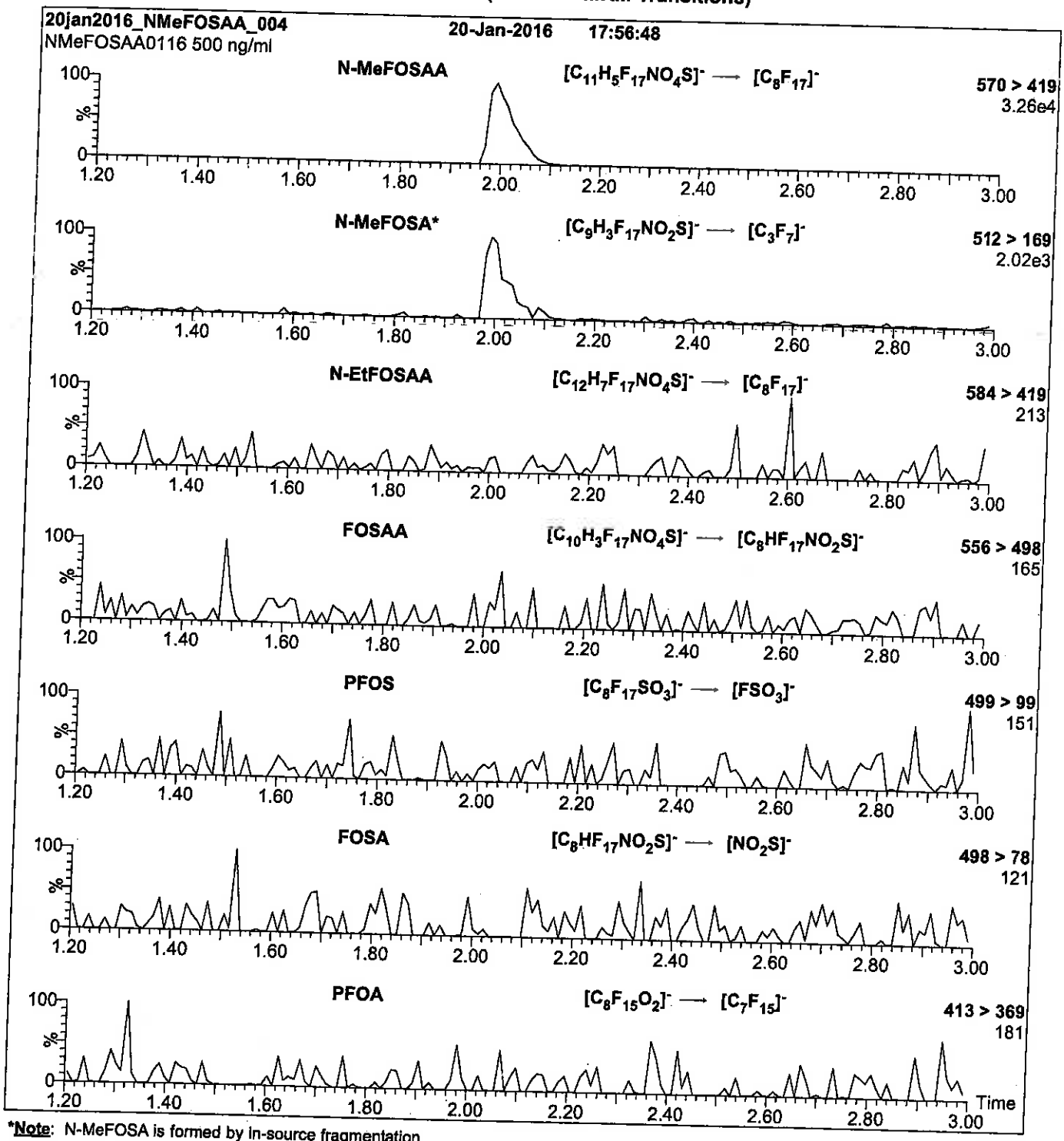
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



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

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFACMXB_00007

P: 12/30/15 CW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXB

Solution/Mixture of Native Perfluoroalkylcarboxylic Acids and Native Perfluoroalkylsulfonates

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

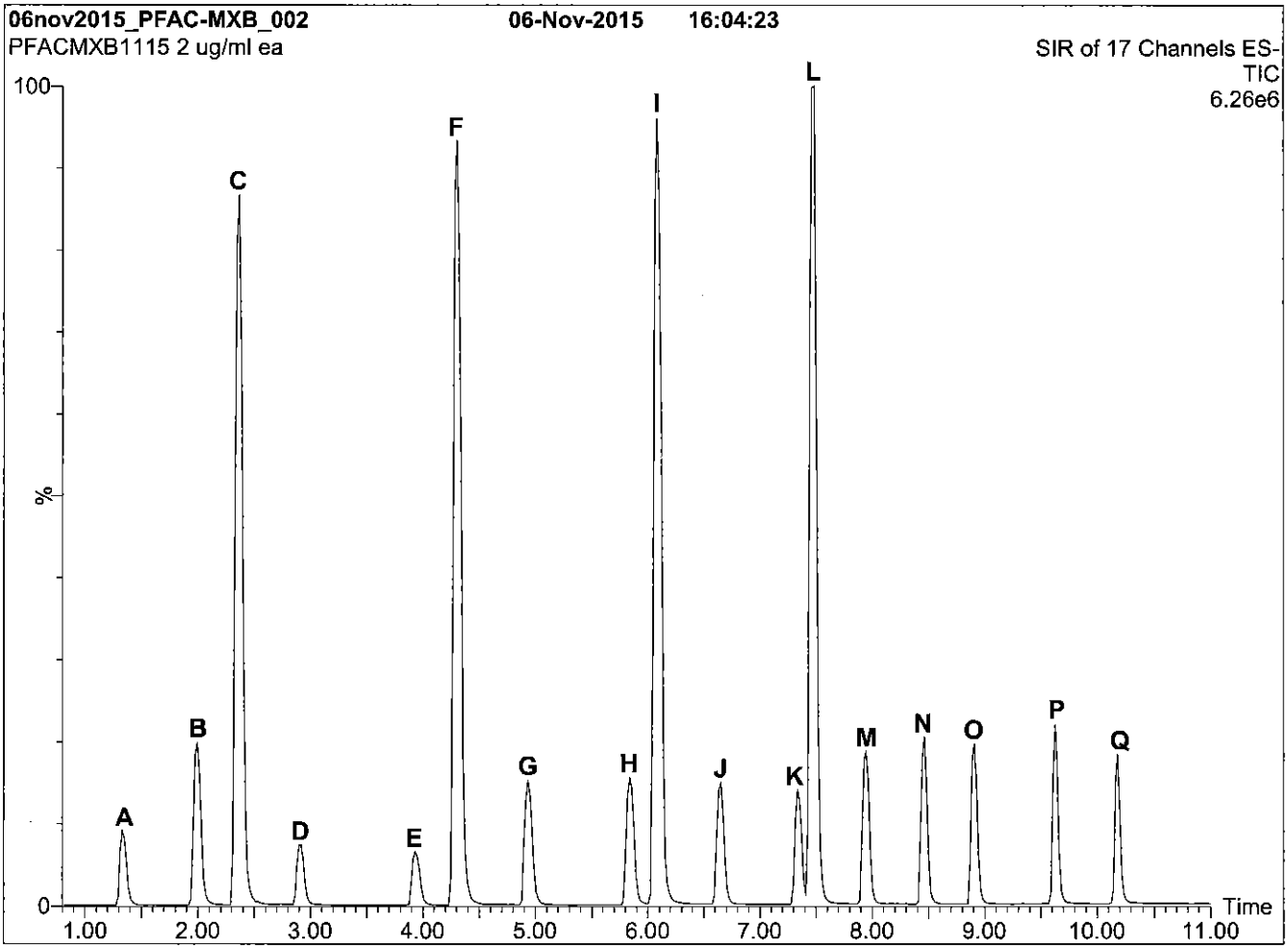
Table A: **PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))**

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)**

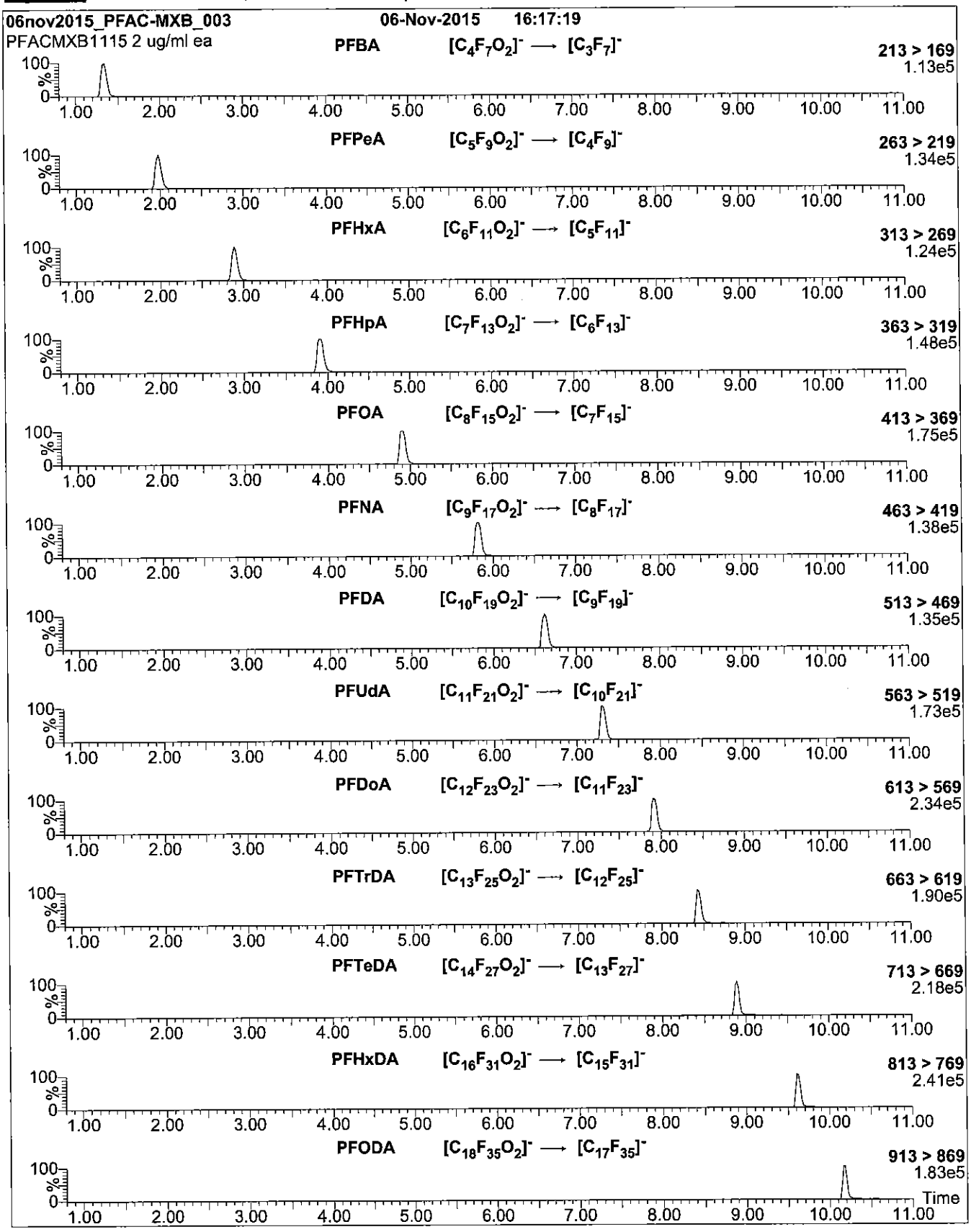
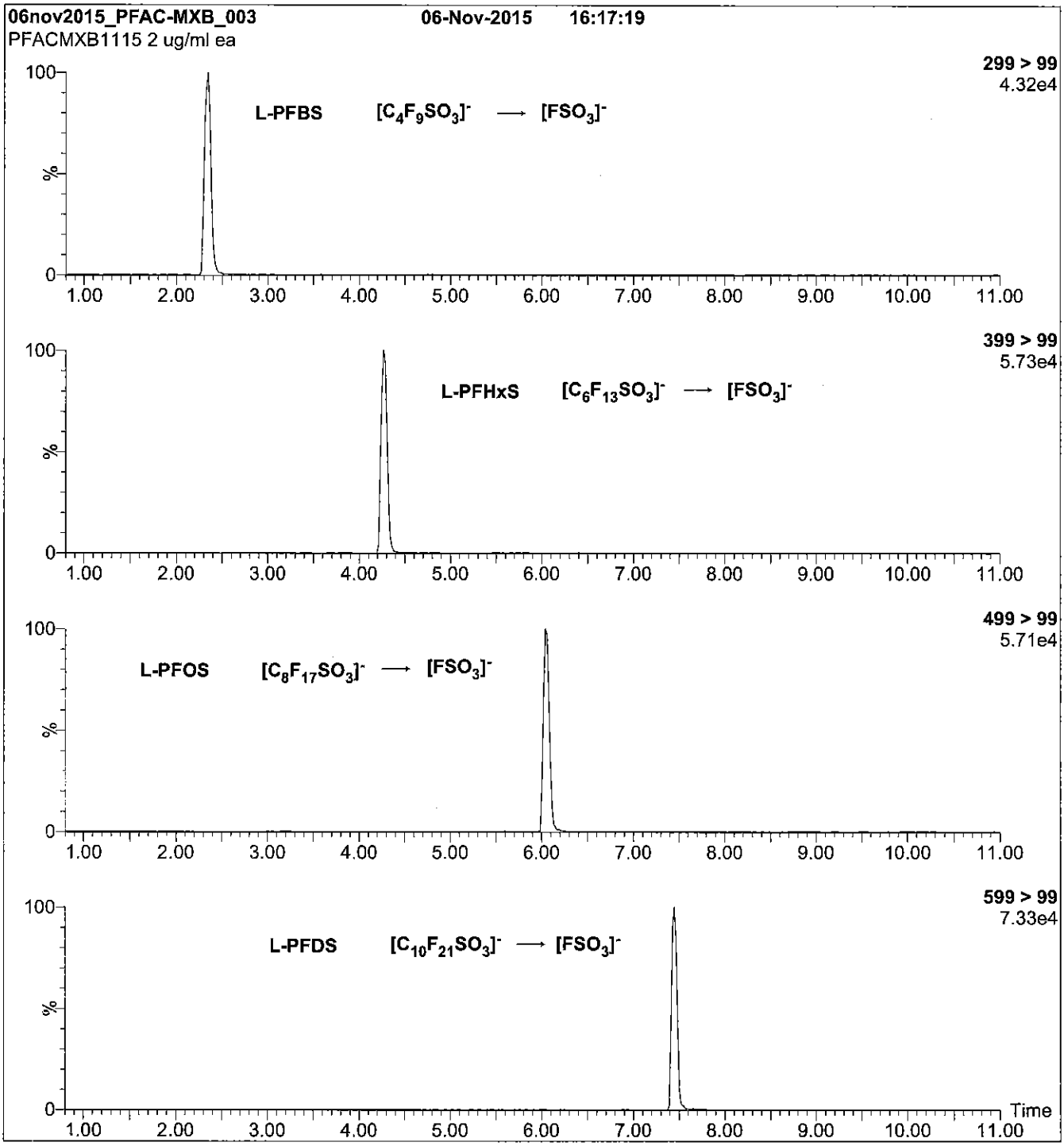


Figure 3: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



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_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

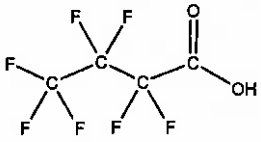
CERTIFICATE OF ANALYSIS DOCUMENTATION

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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:

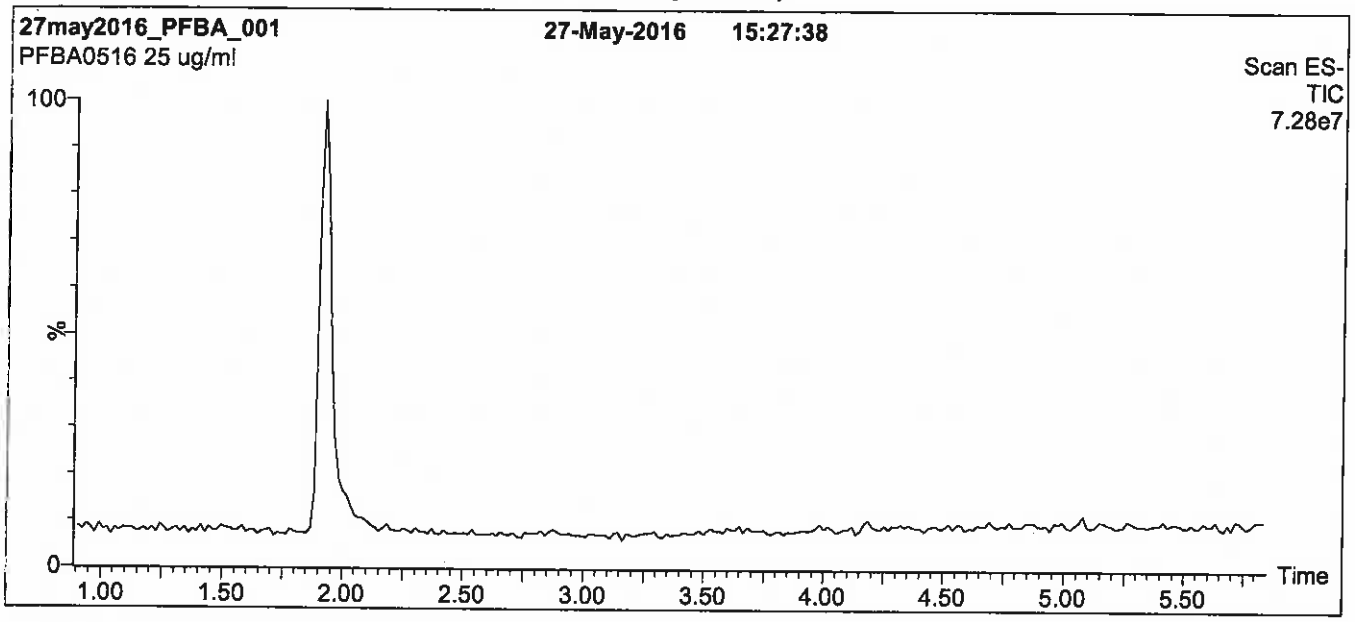
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

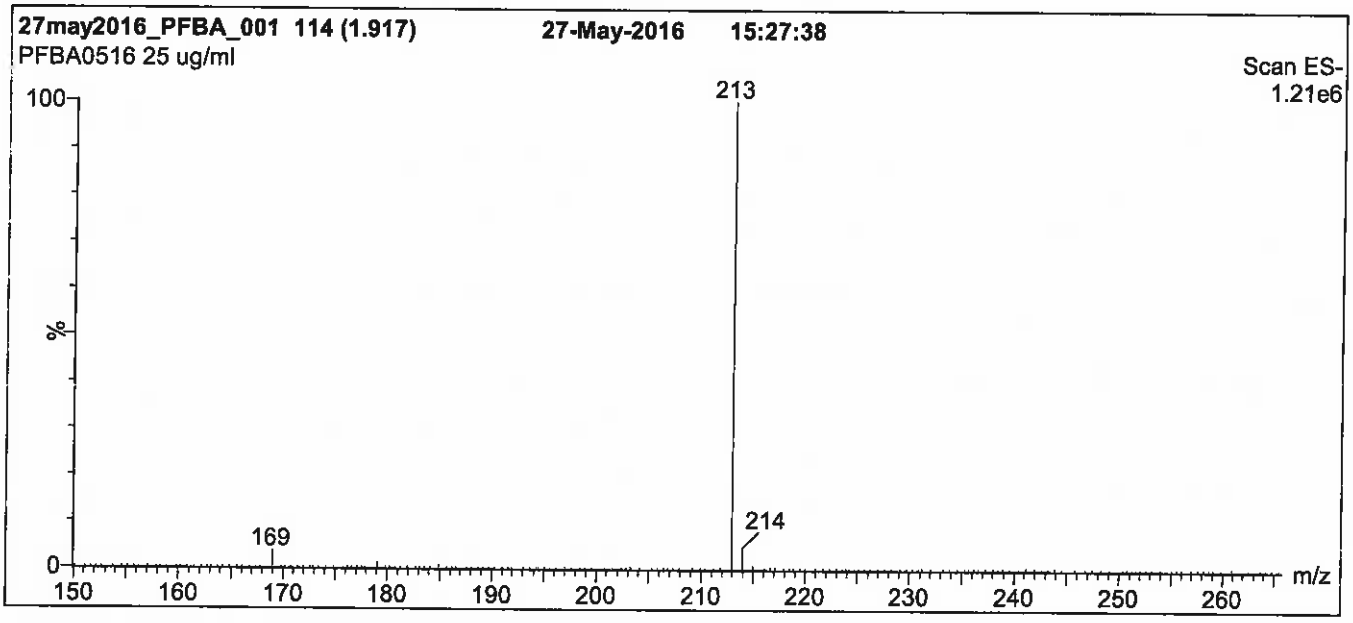
CALA

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: **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

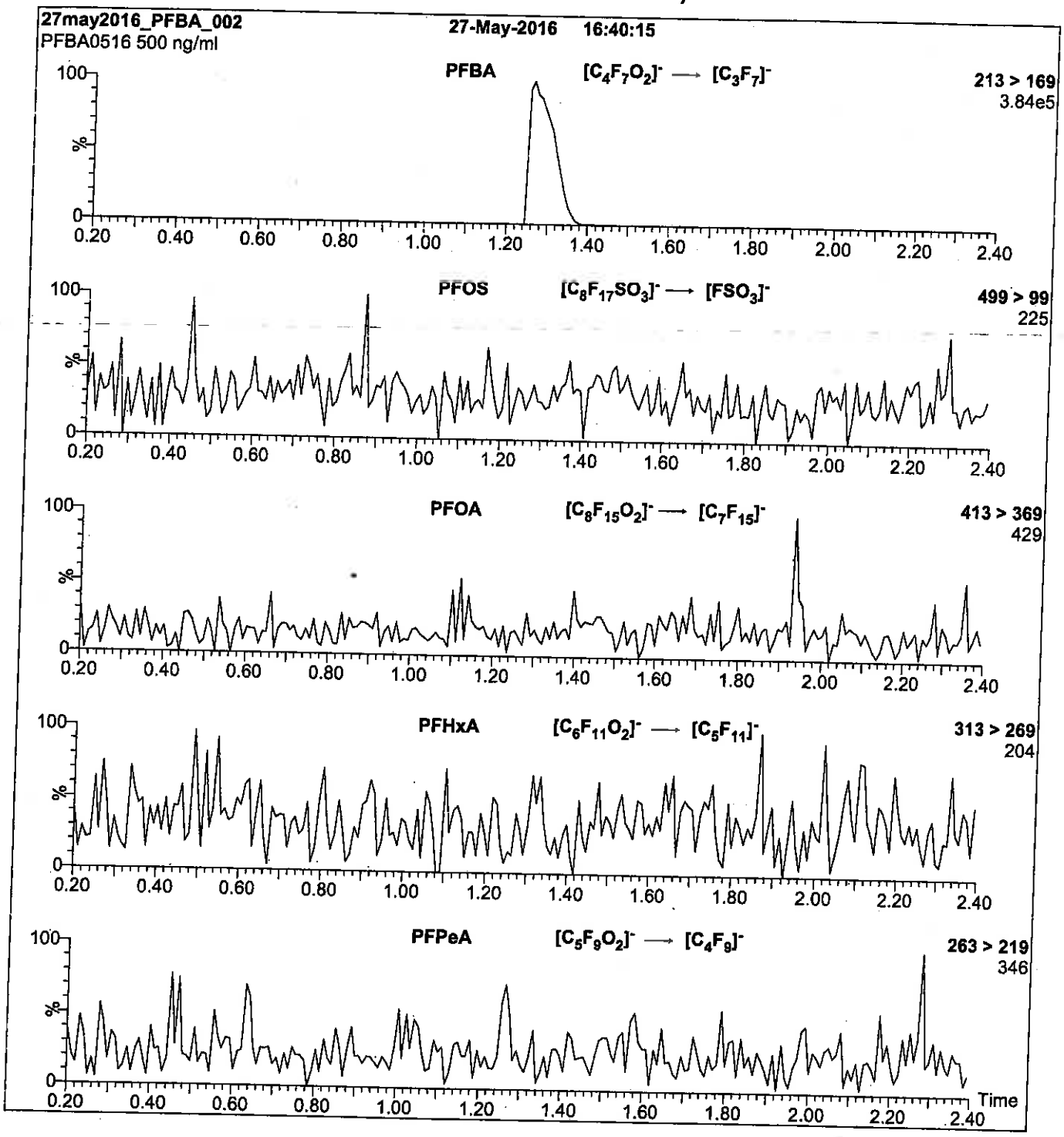
Flow: 300 µl/min

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_00005

R: 9/9/16 SBC

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

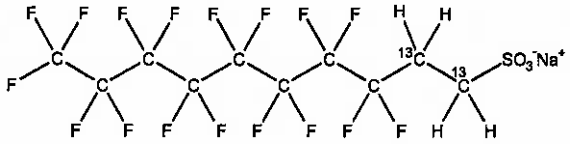
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/08/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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:

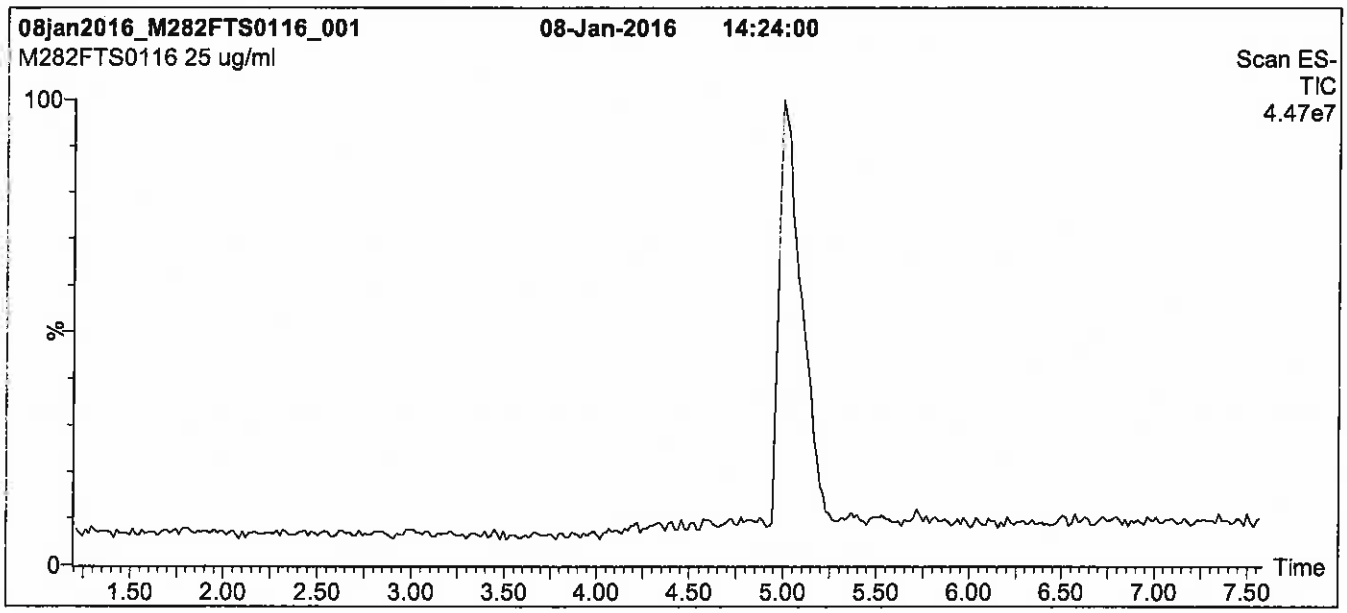
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

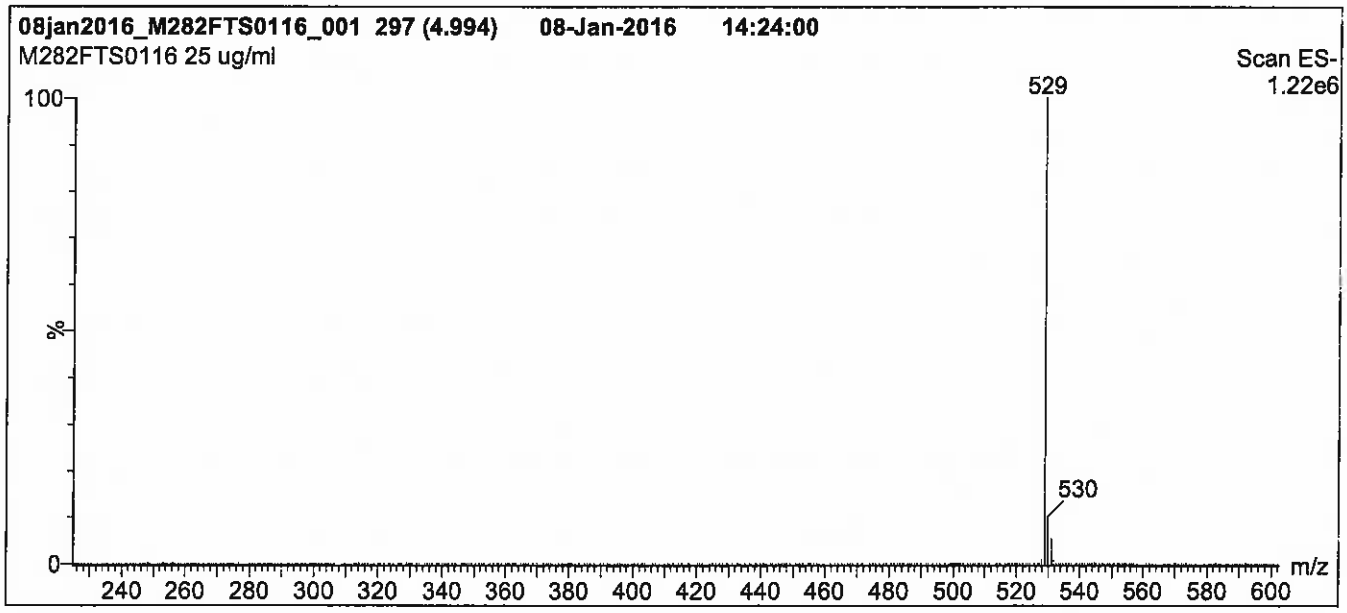
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

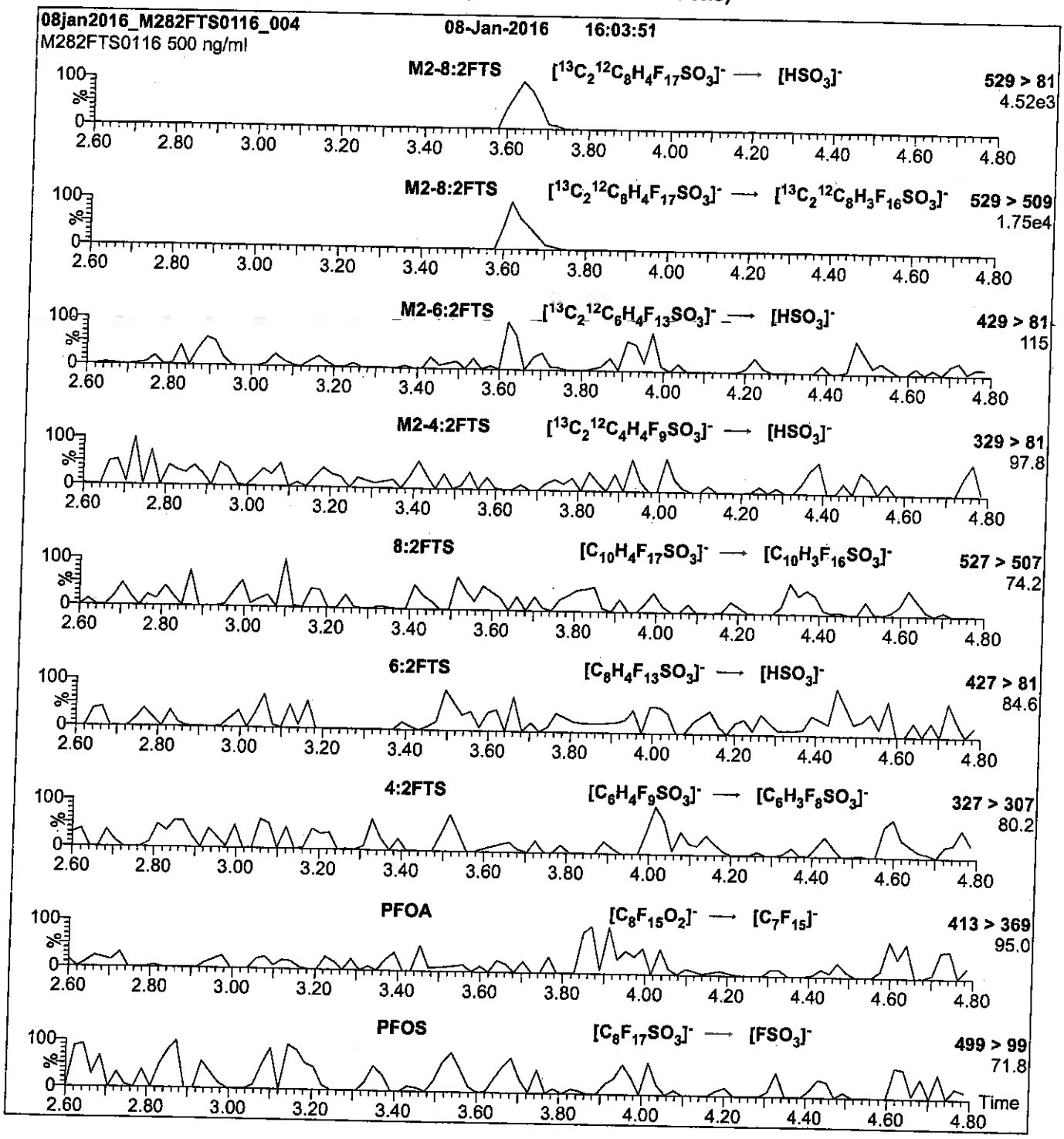
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

R: SBC 9/13/16

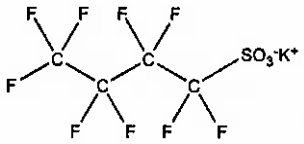
730511
ID: LCPFBS_00005
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS0316
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE:
CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$
MOLECULAR WEIGHT: 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/15/2016
EXPIRY DATE: (mm/dd/yyyy) 03/15/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

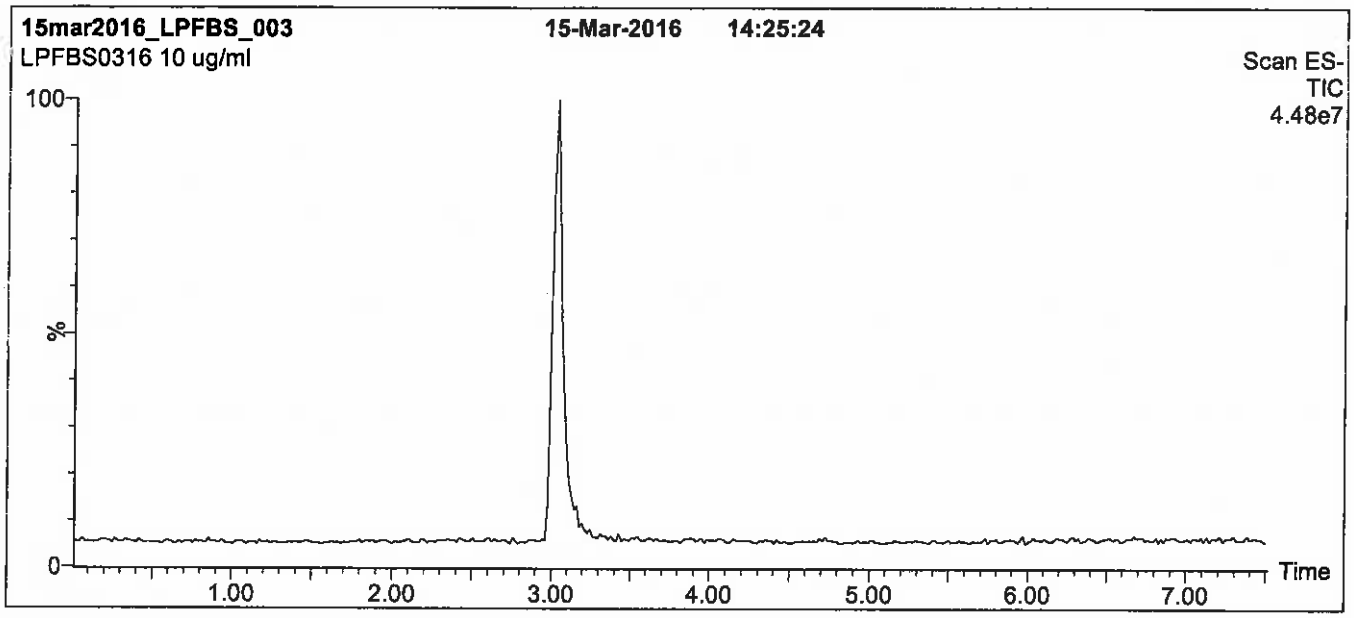
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

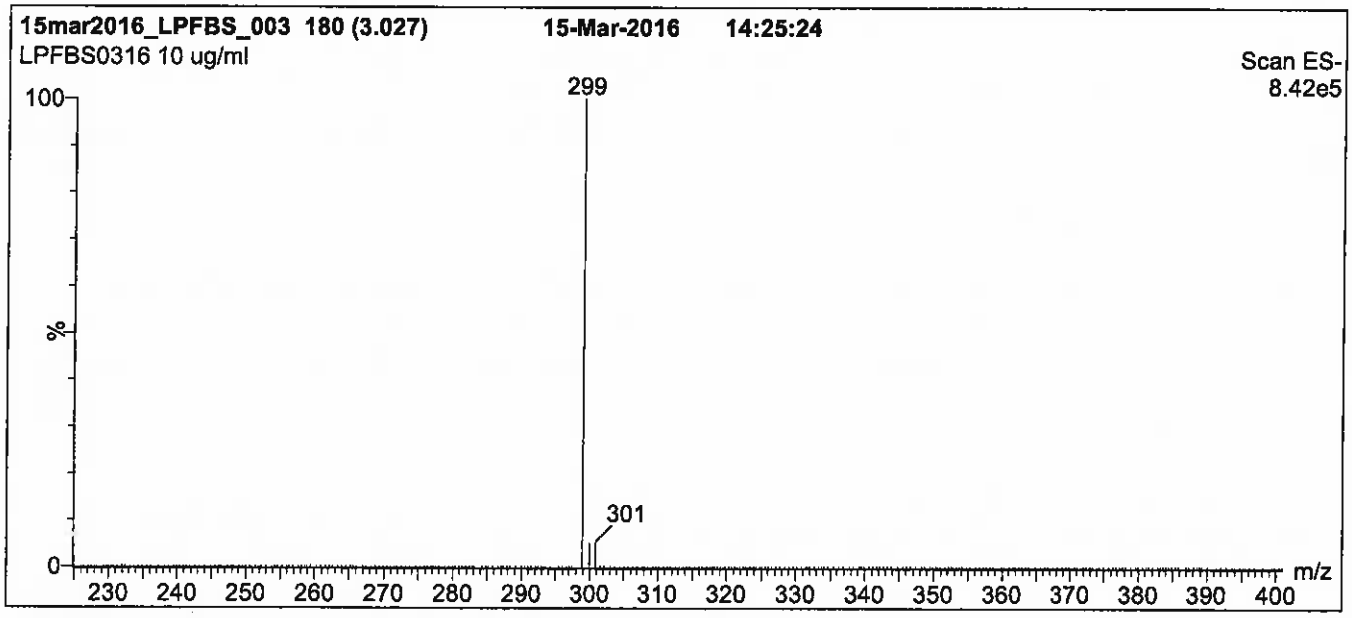
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

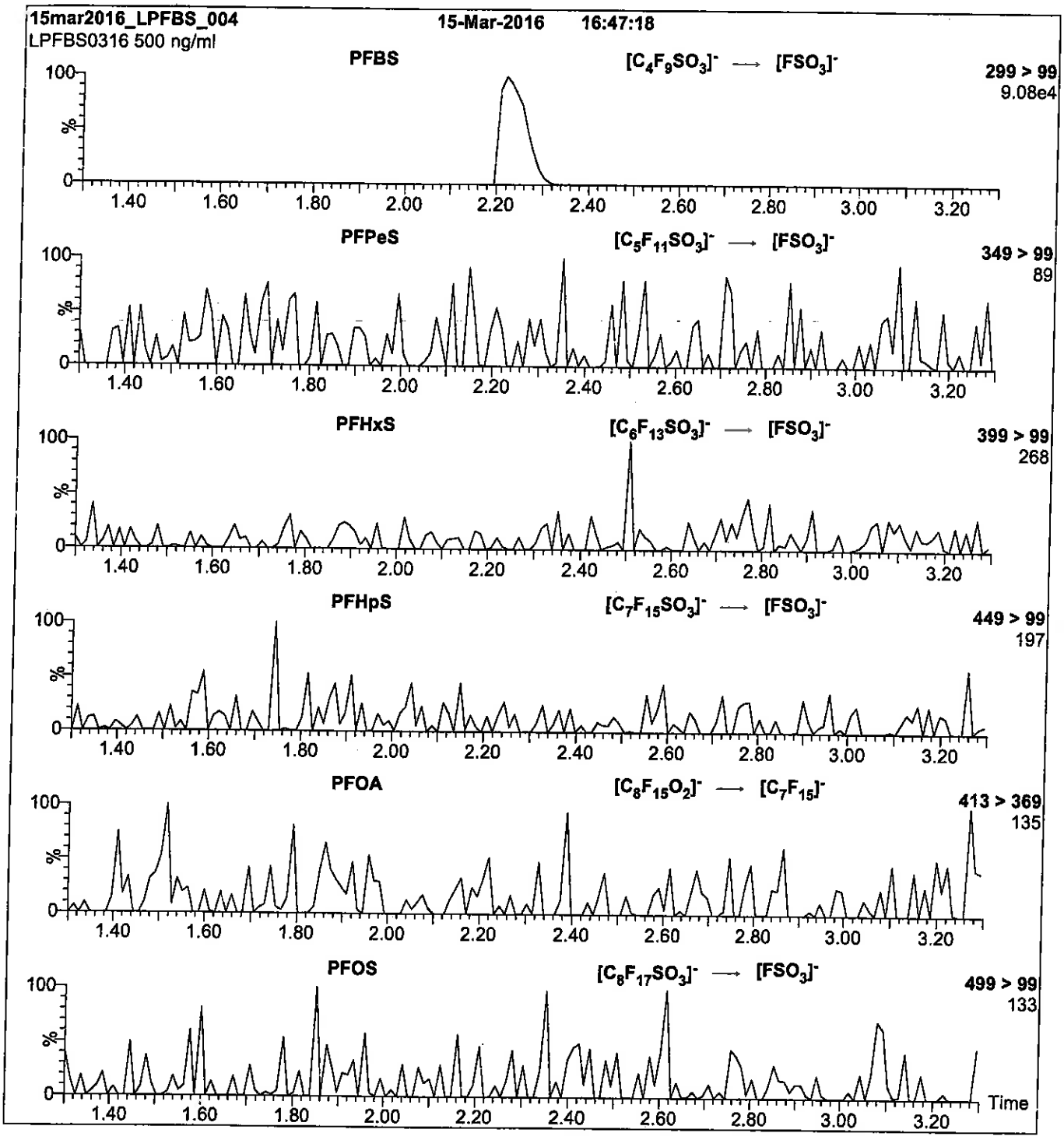
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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

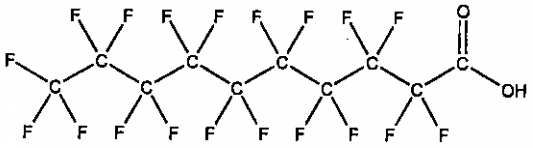
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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:

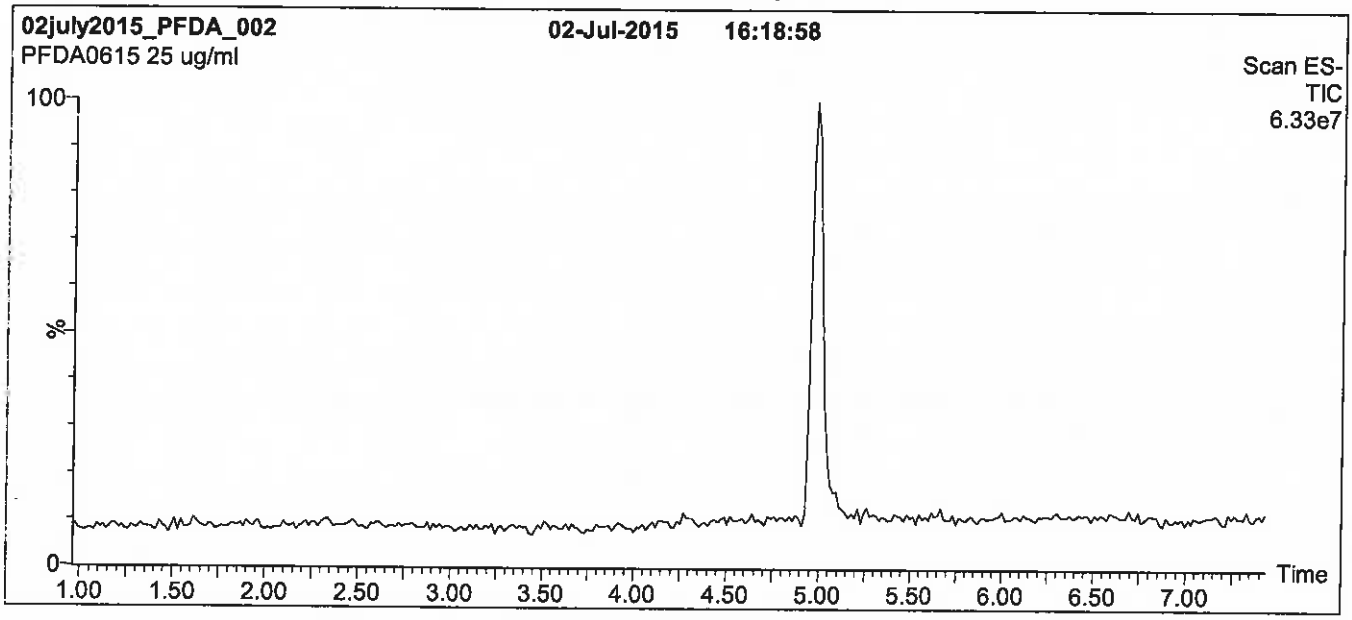
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

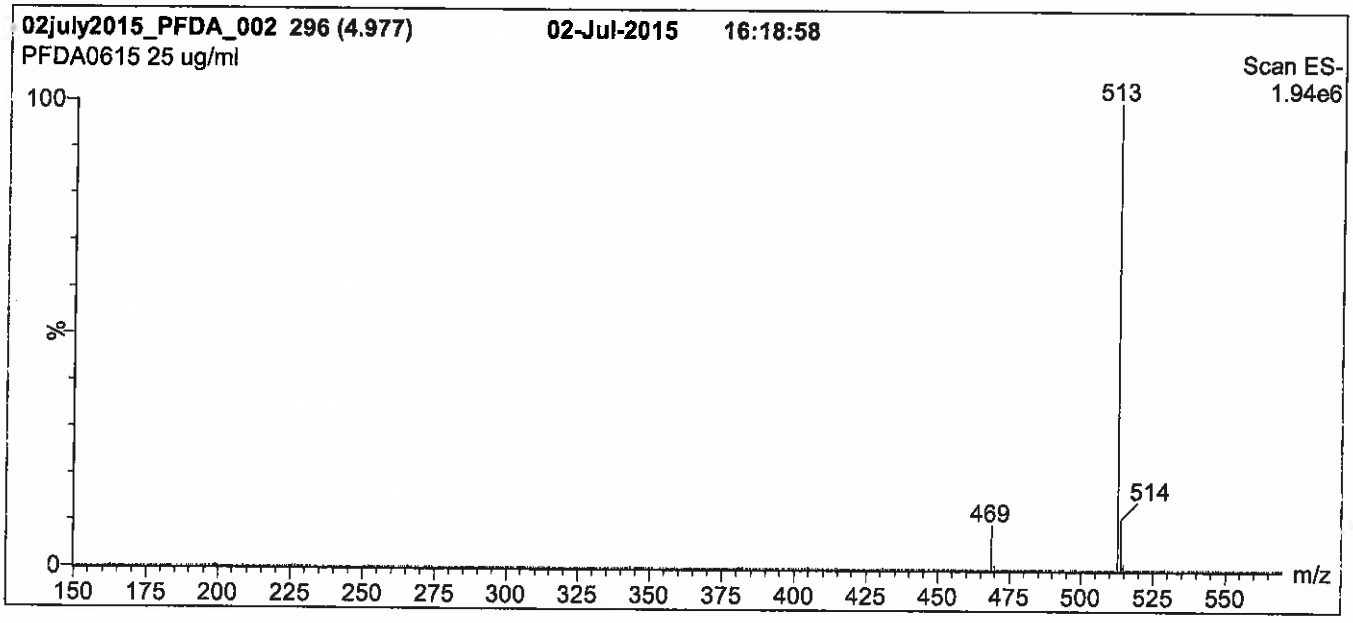
CALA

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

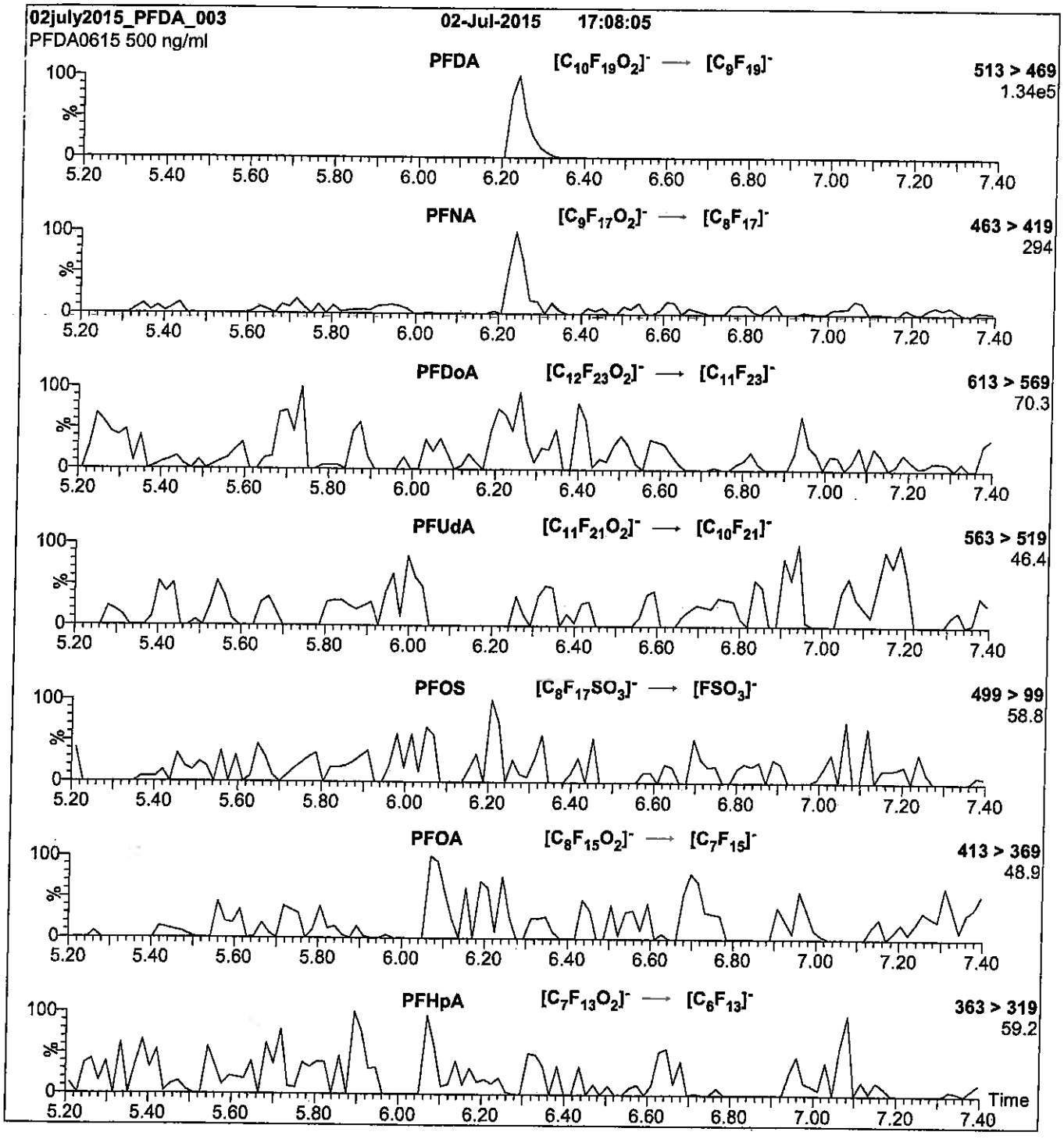
Flow: 300 µl/min

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

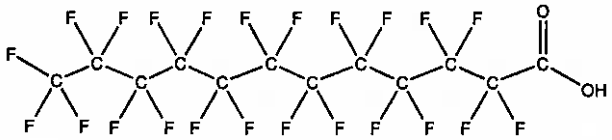
R: 7/6/16 cw

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



MOLECULAR FORMULA:	$C_{12}HF_{23}O_2$	**MOLECULAR WEIGHT:**	614.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/30/2015		
EXPIRY DATE: (mm/dd/yyyy)	01/30/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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:

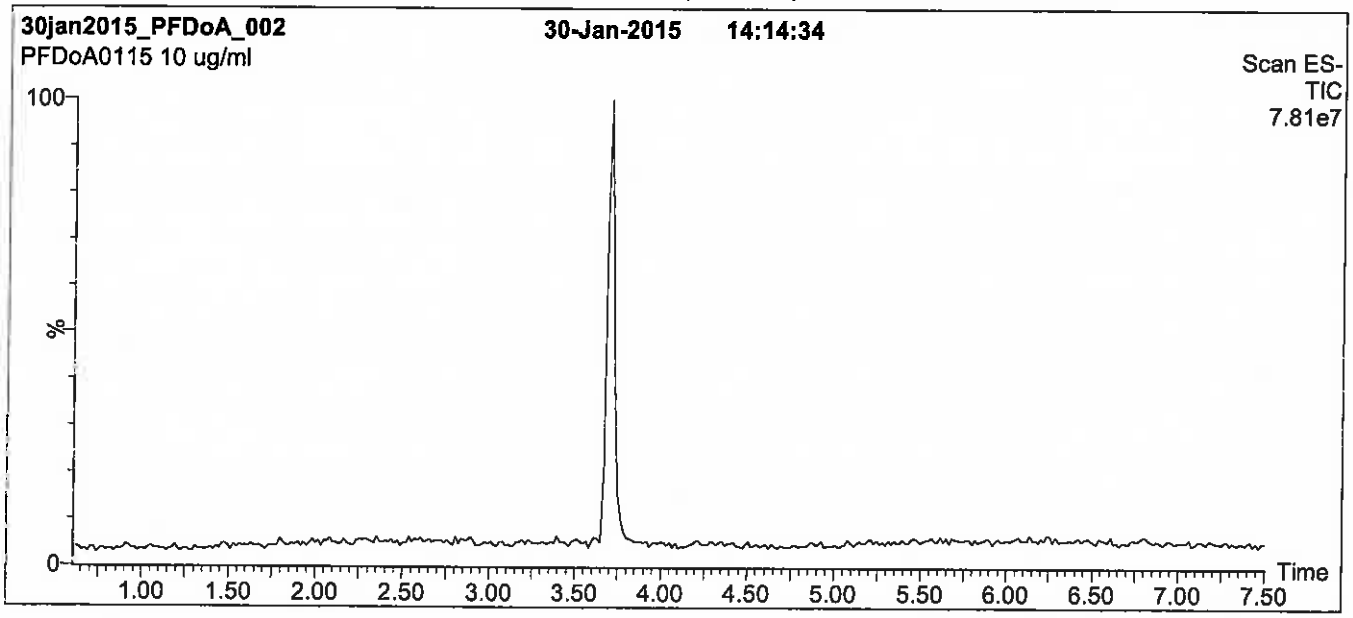
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

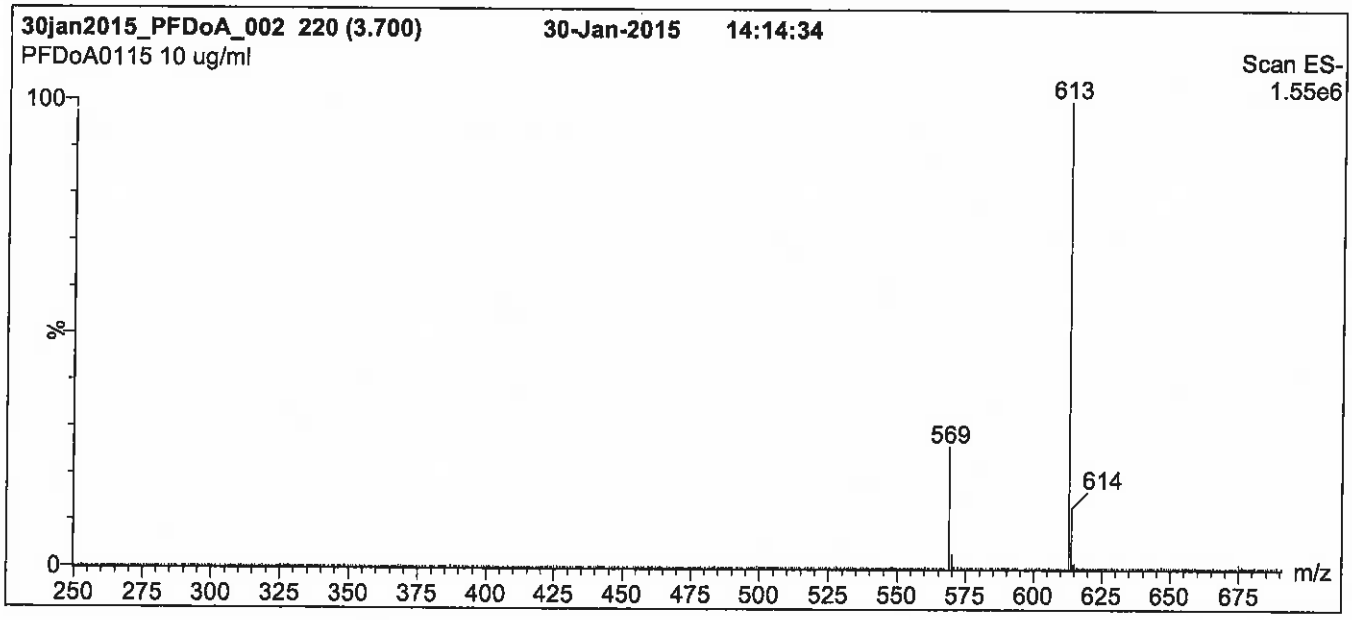
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

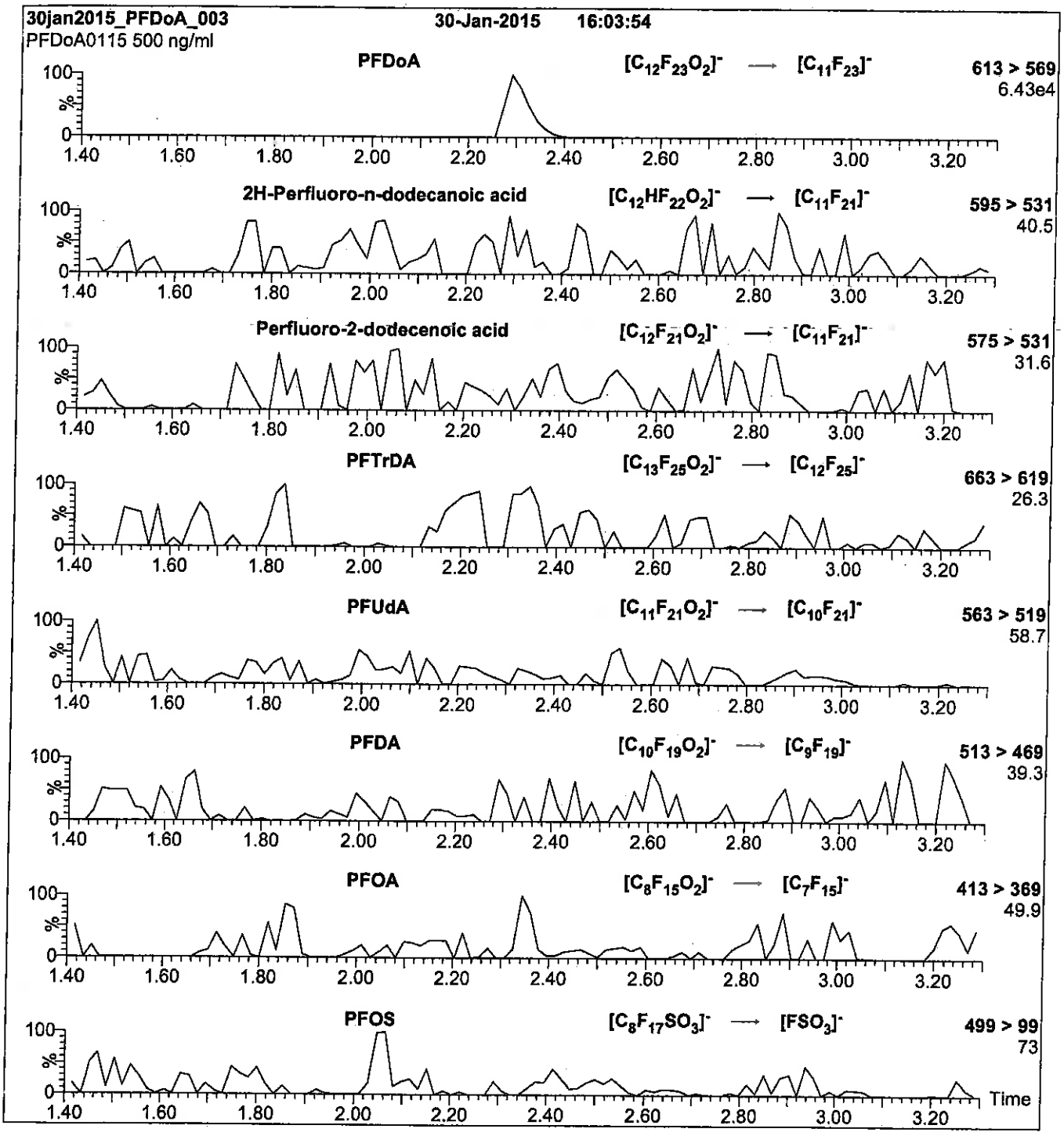
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFDoA)	**MS Parameters**	
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.28e-3 Collision Energy (eV) = 13	
Flow:	300 µl/min		

Reagent

LCPFHpA_00005

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

R: 4/7/16 CBW

WELLINGTON LABORATORIES

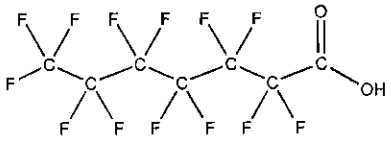
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



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

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

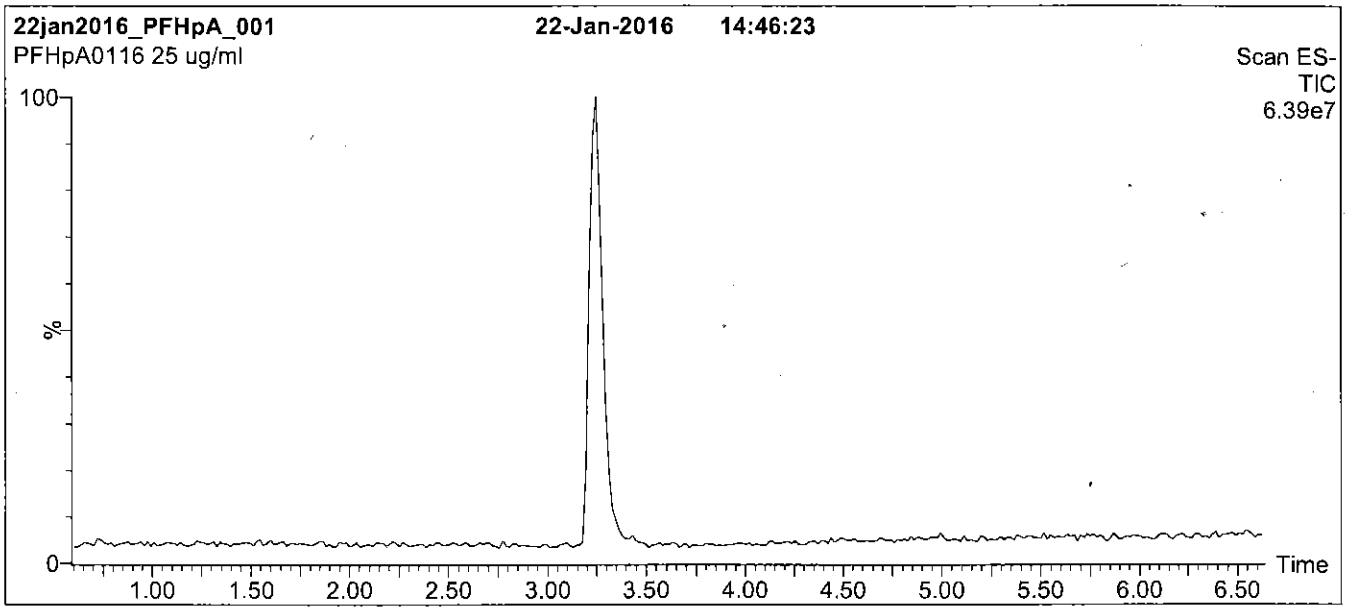
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

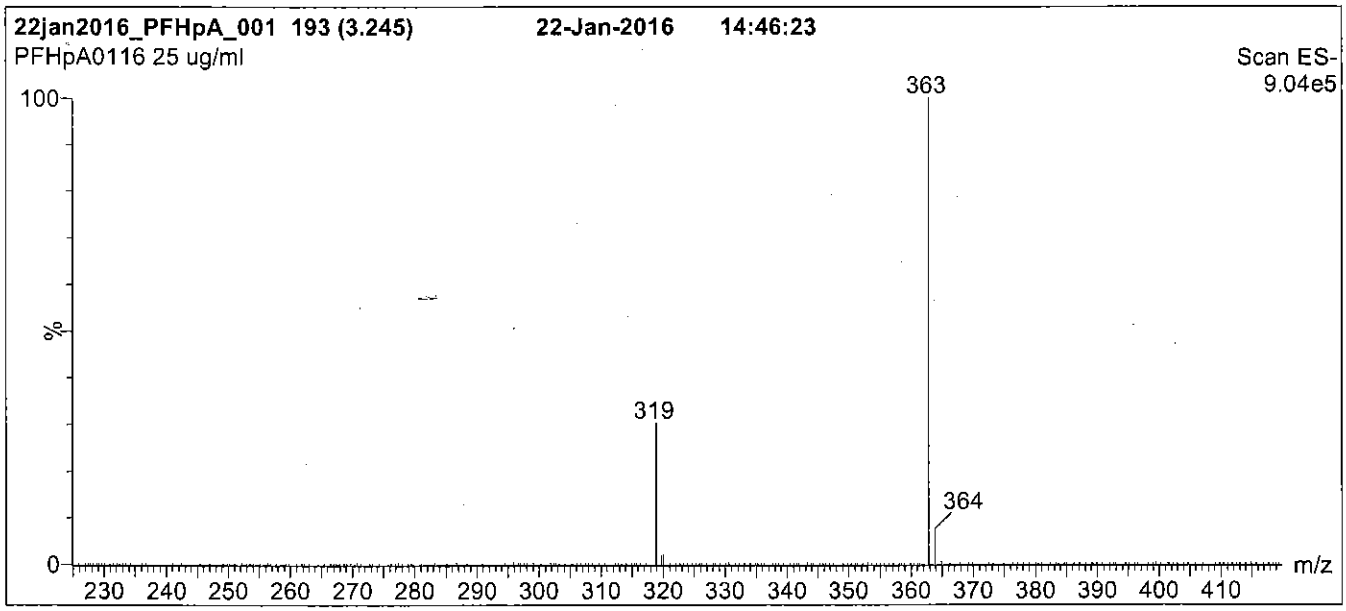
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

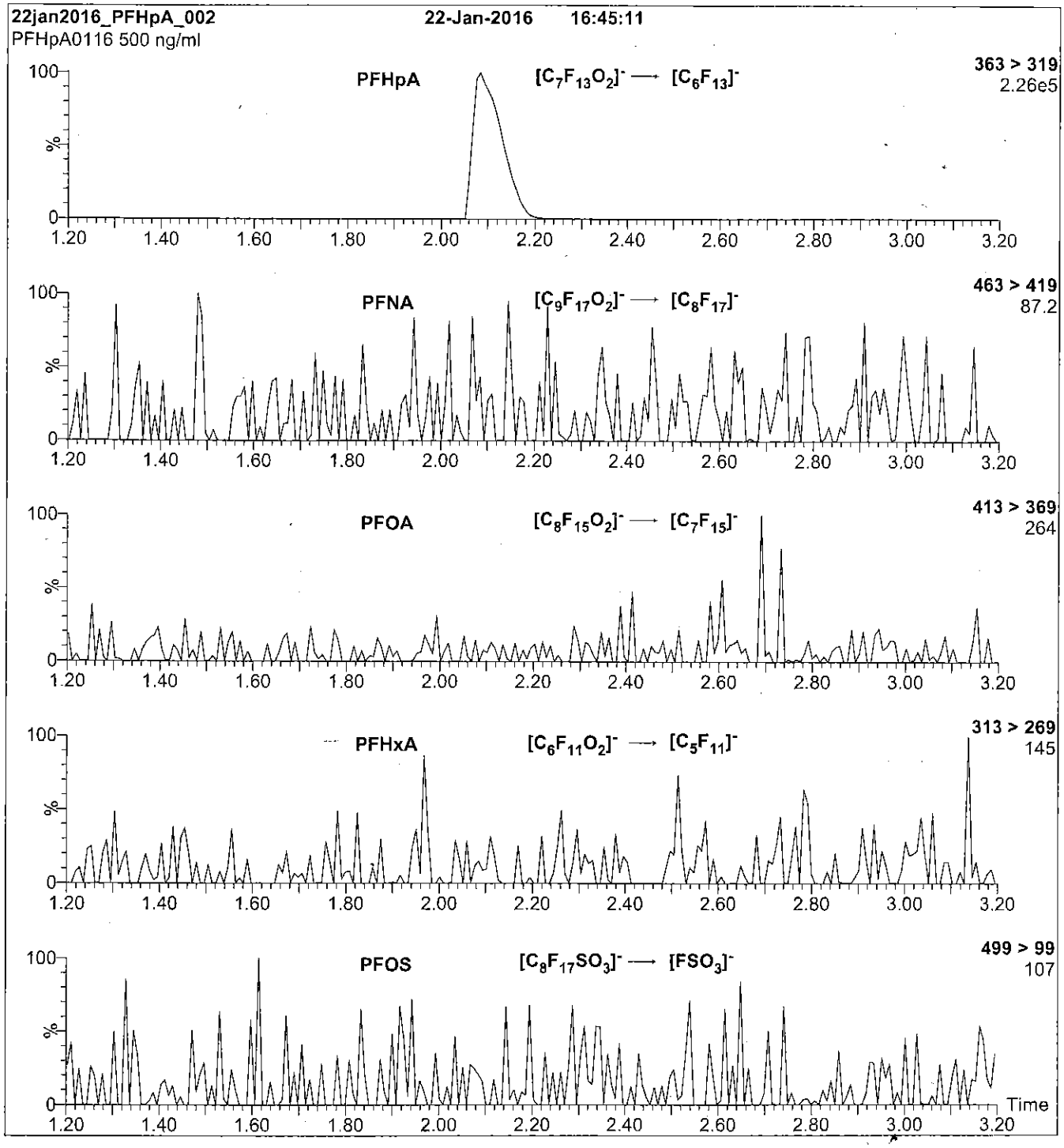
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

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

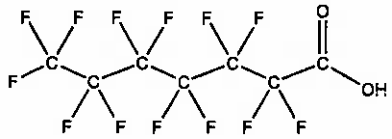
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



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

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

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

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/02/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2,...x_n$ 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:

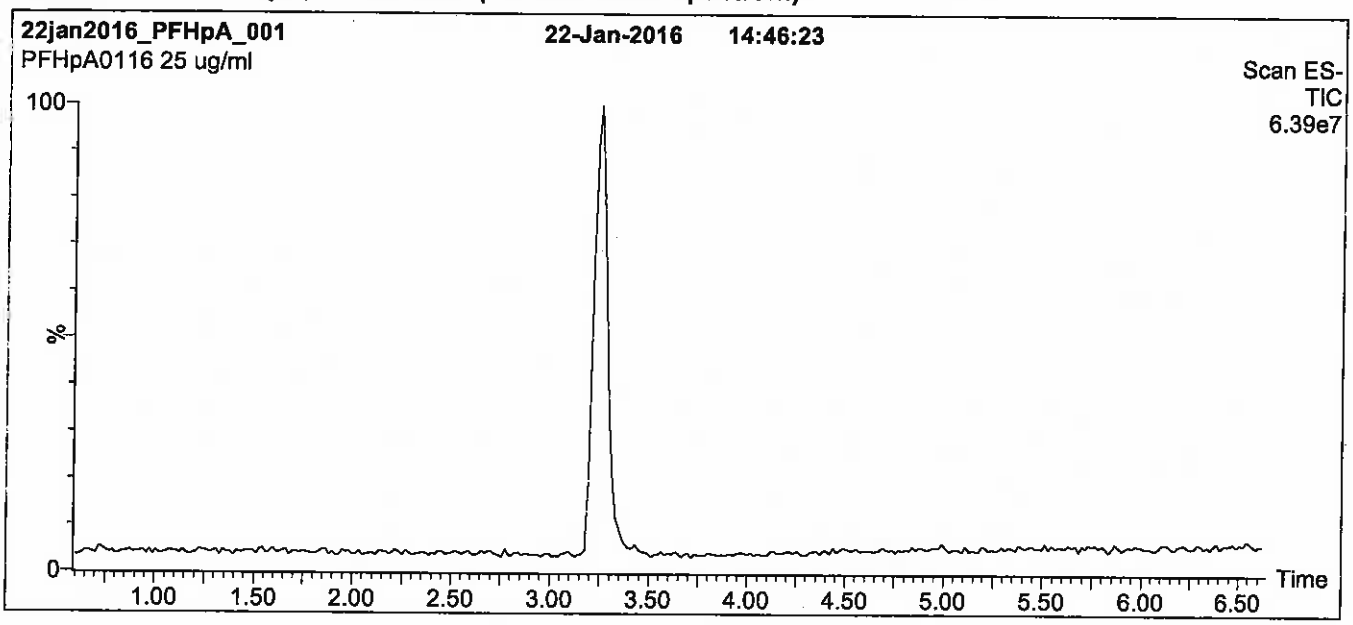
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

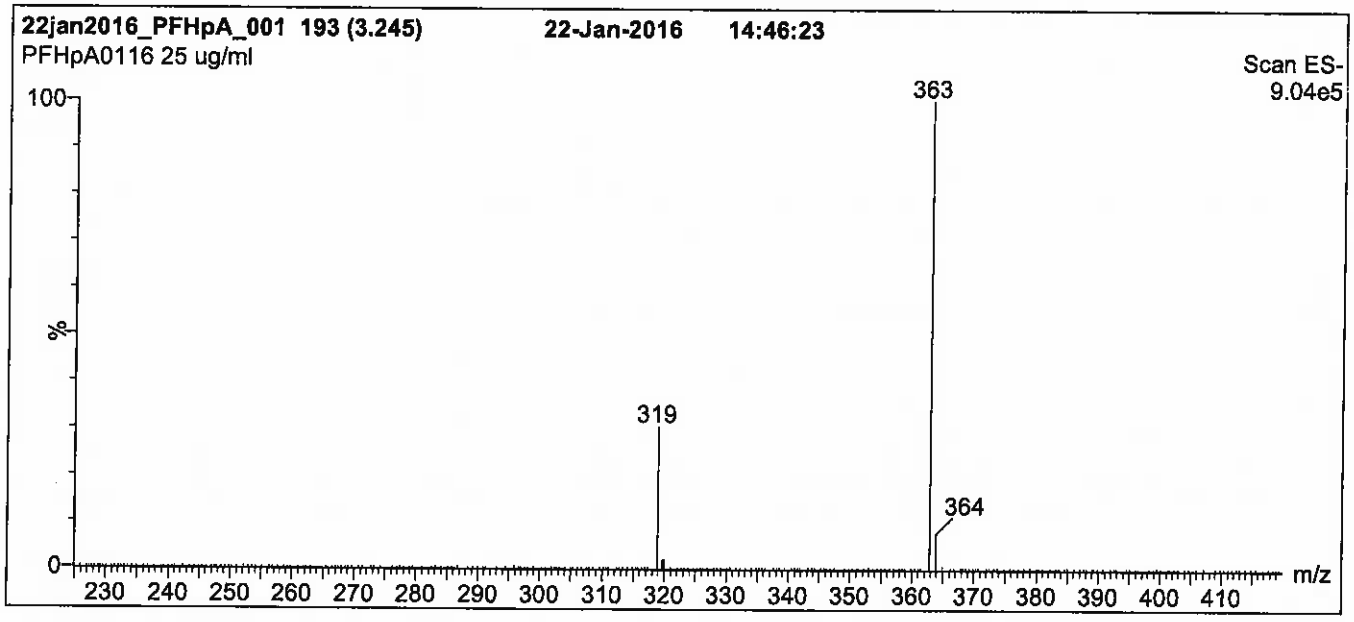
CALA

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: **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

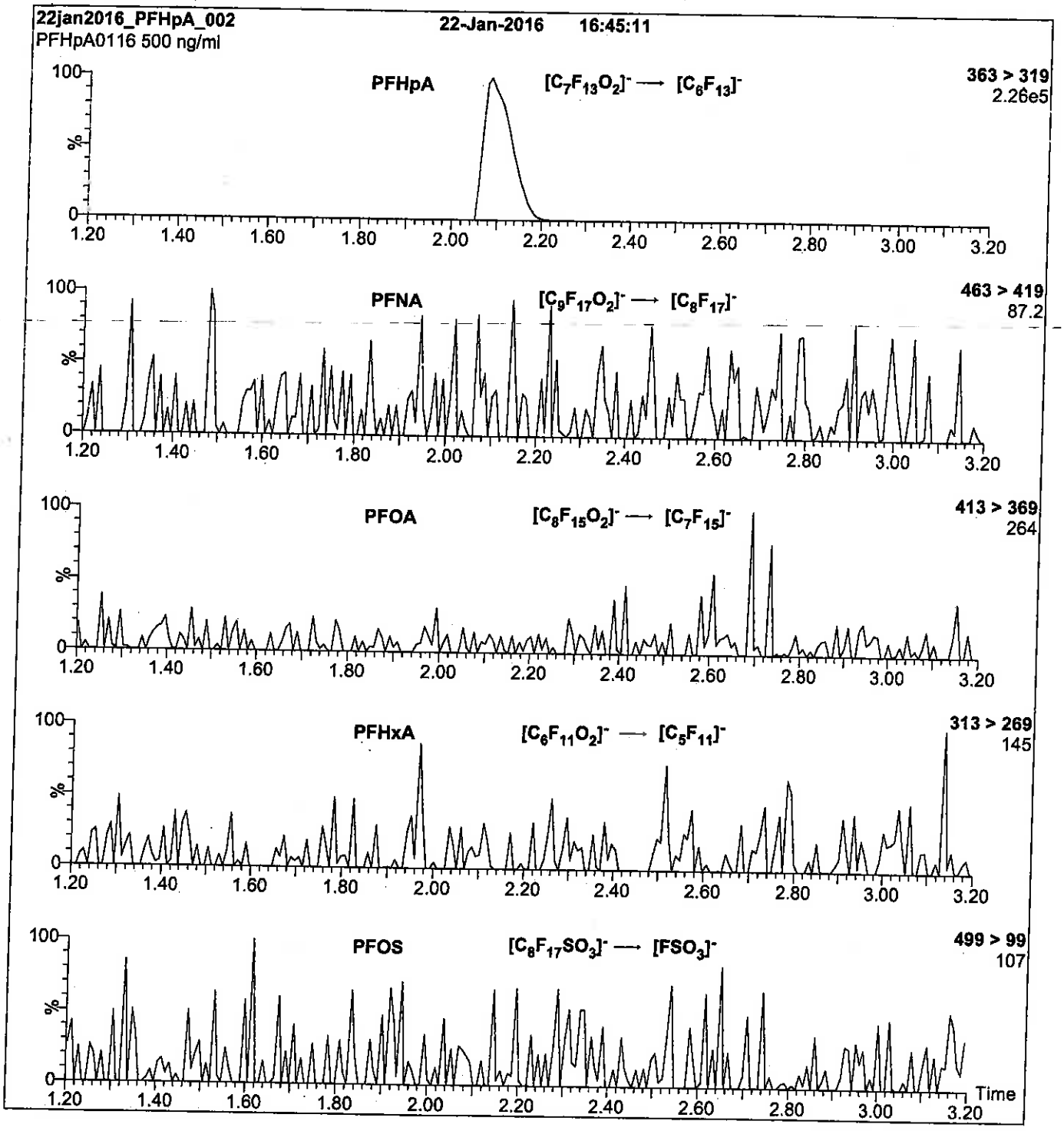
Flow: 300 µl/min

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_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

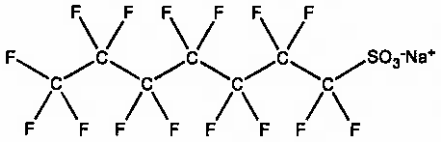
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/06/2015		
EXPIRY DATE: (mm/dd/yyyy)	11/06/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.1% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.2% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 11/09/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

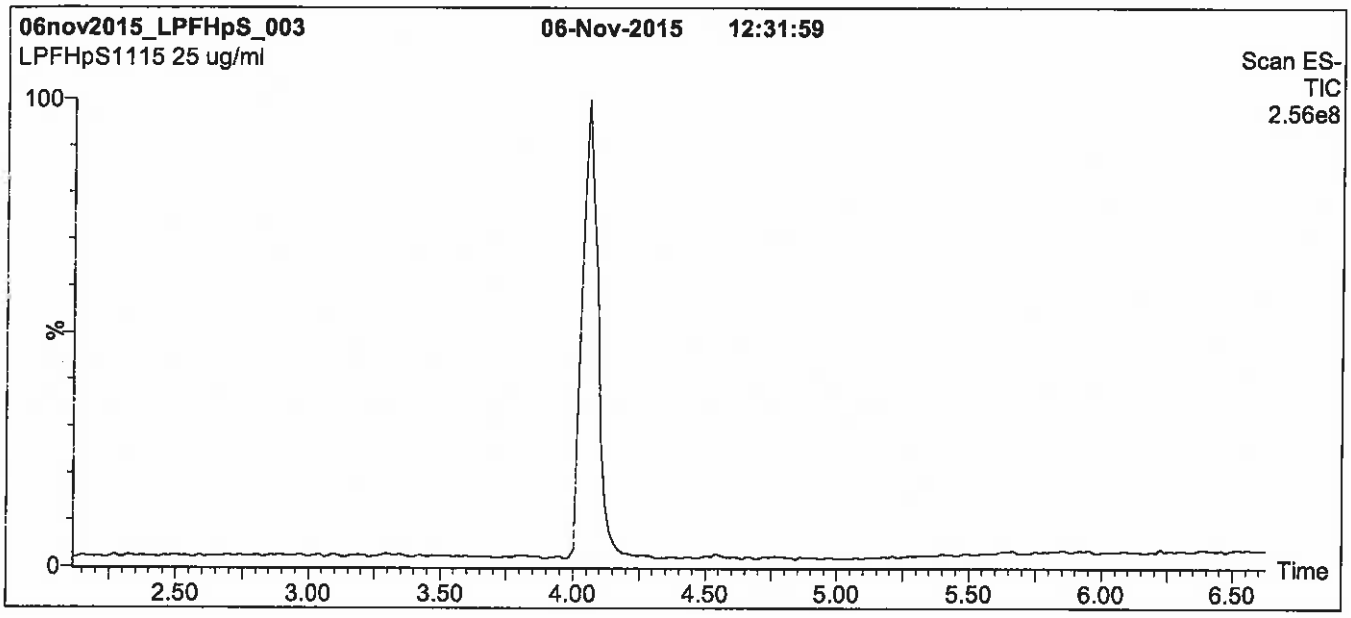
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

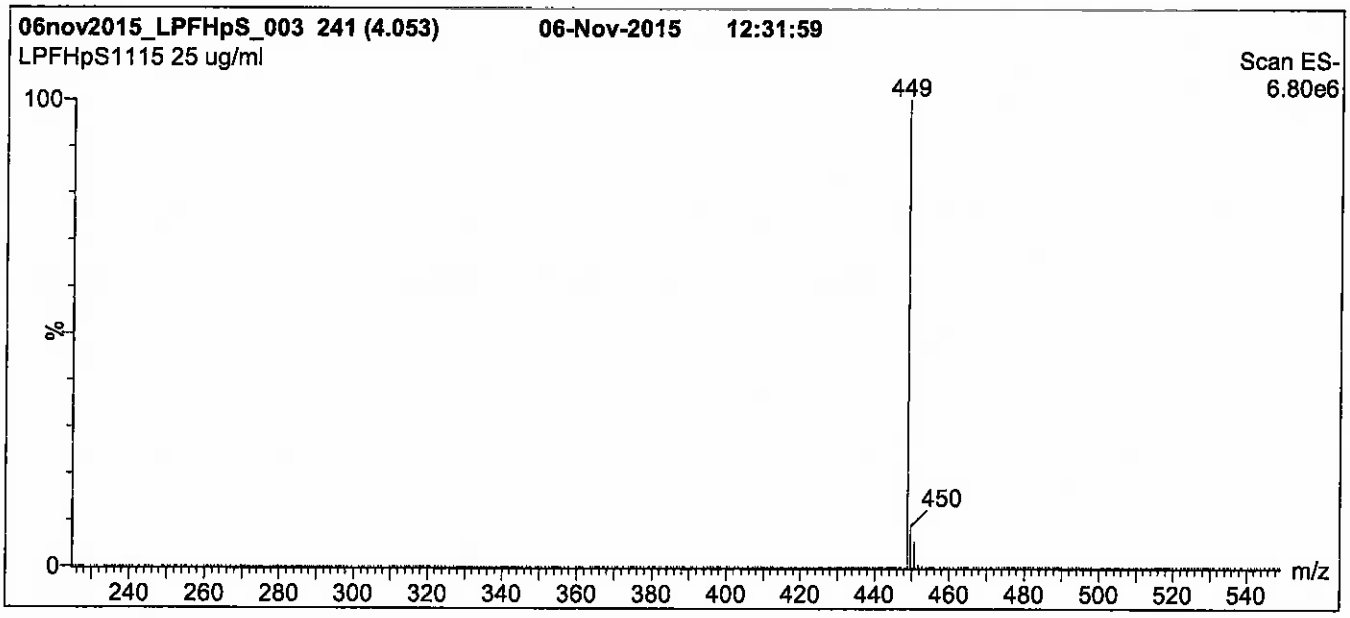
CALA

ANAB ACCREDITED

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

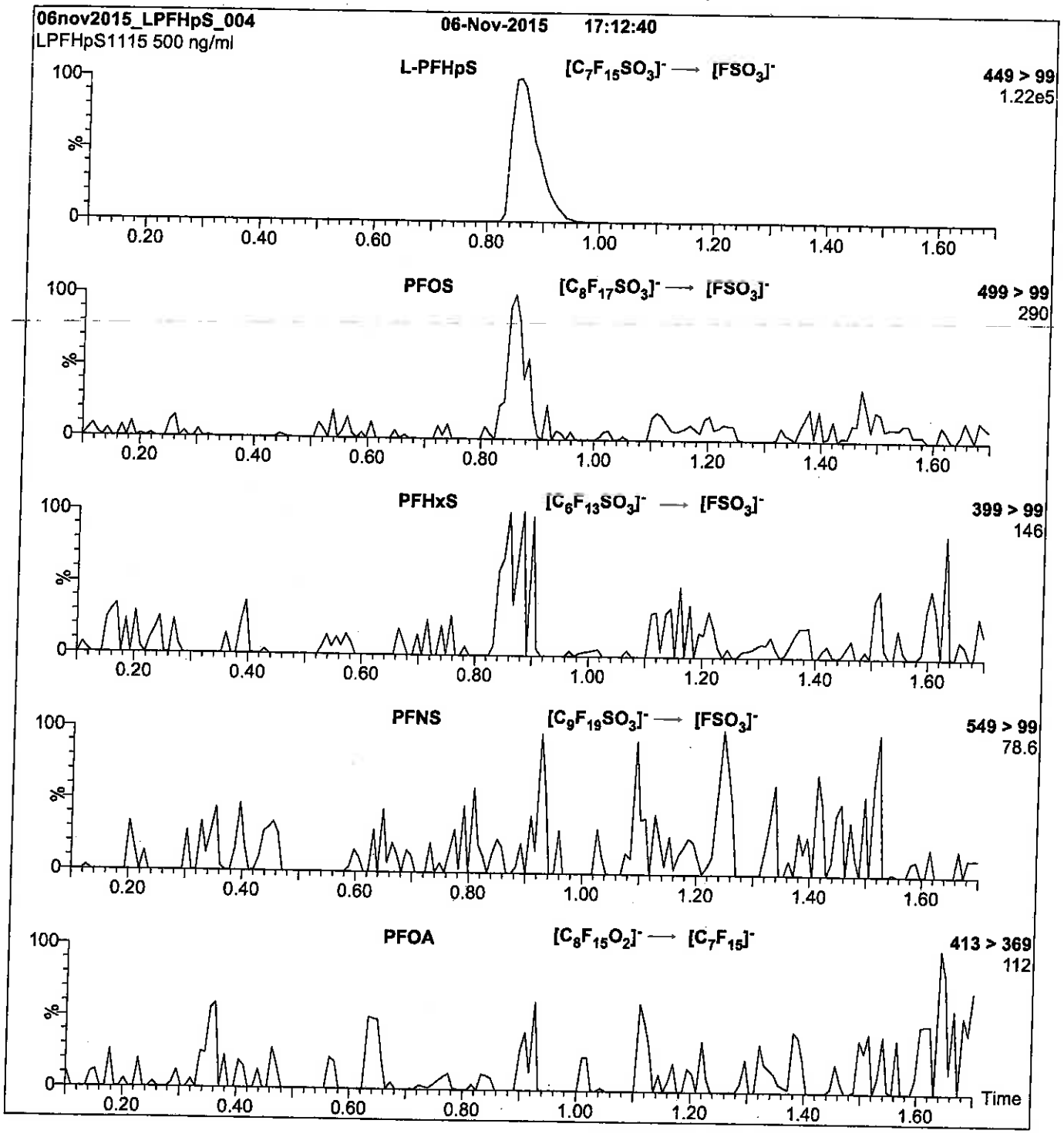
Flow: 300 µl/min

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

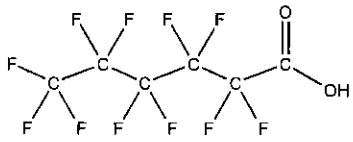
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

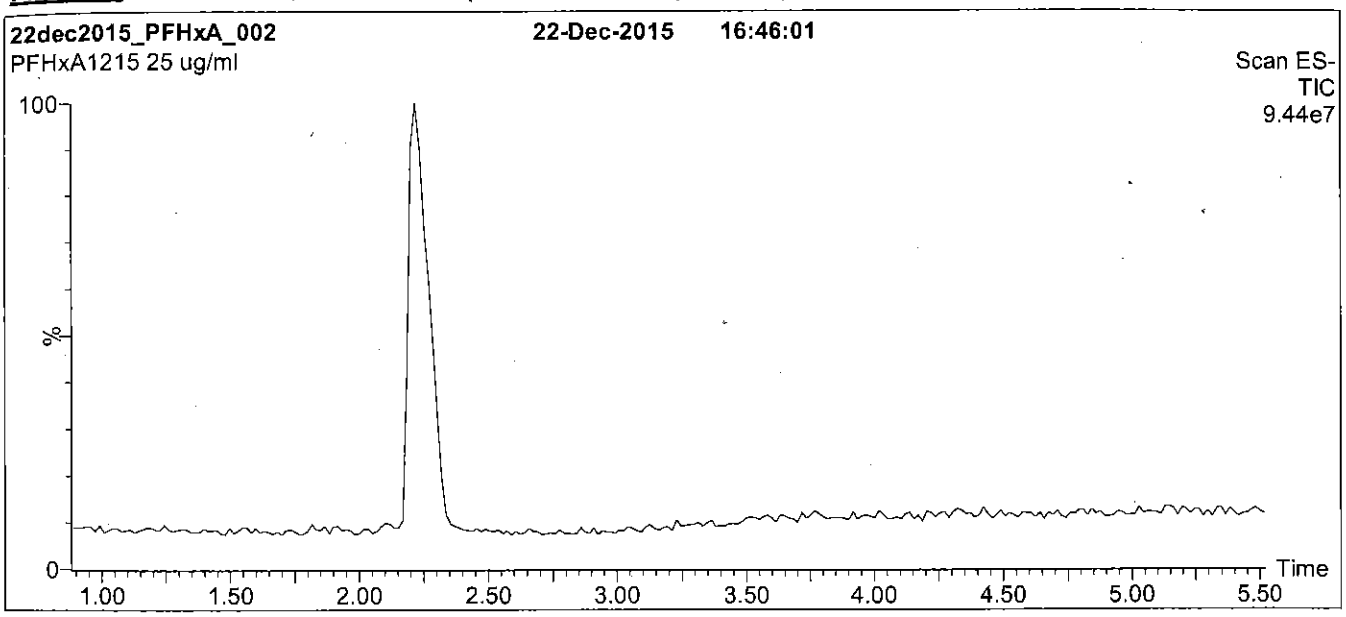
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

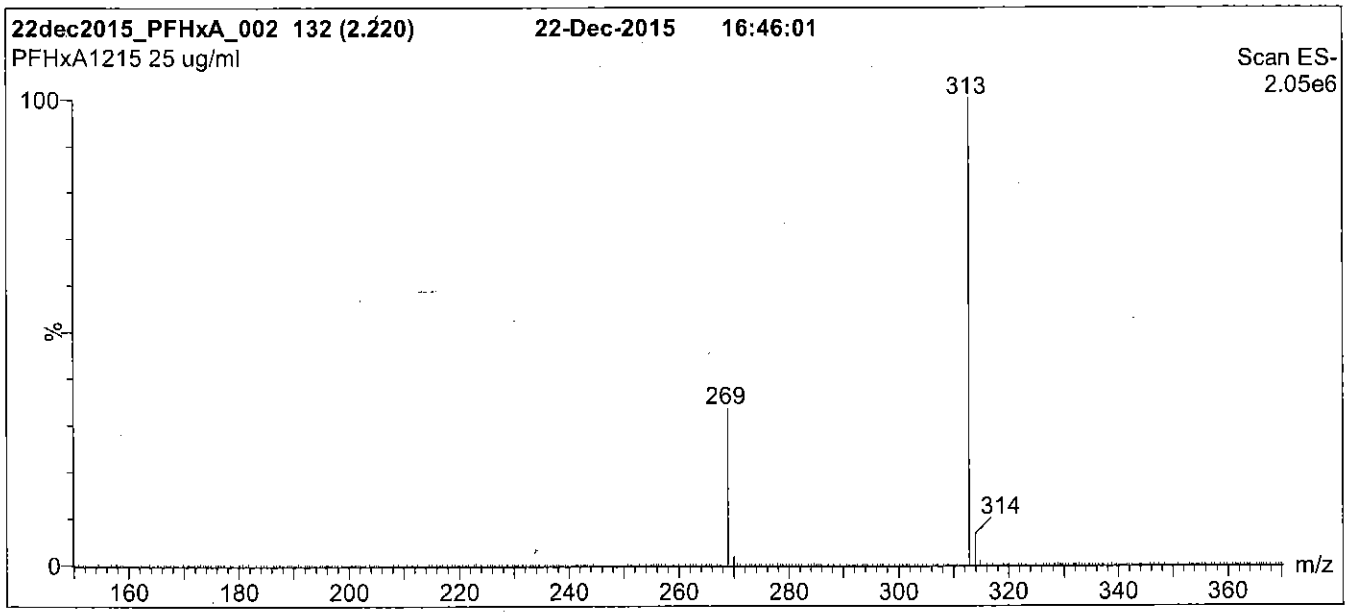
CALA Testing

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

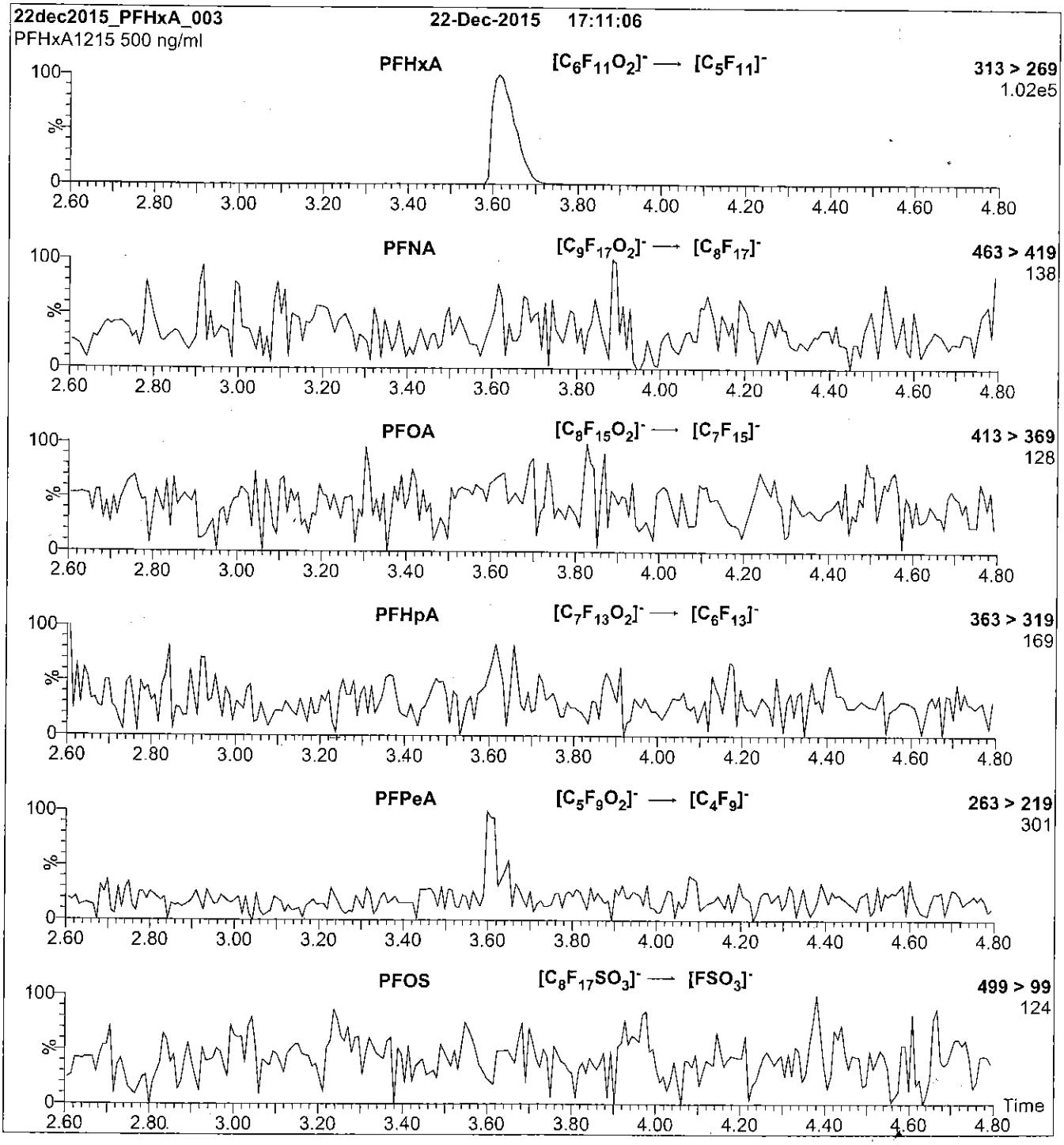
Flow: 300 µl/min

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

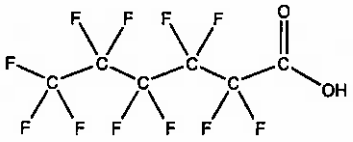
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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:

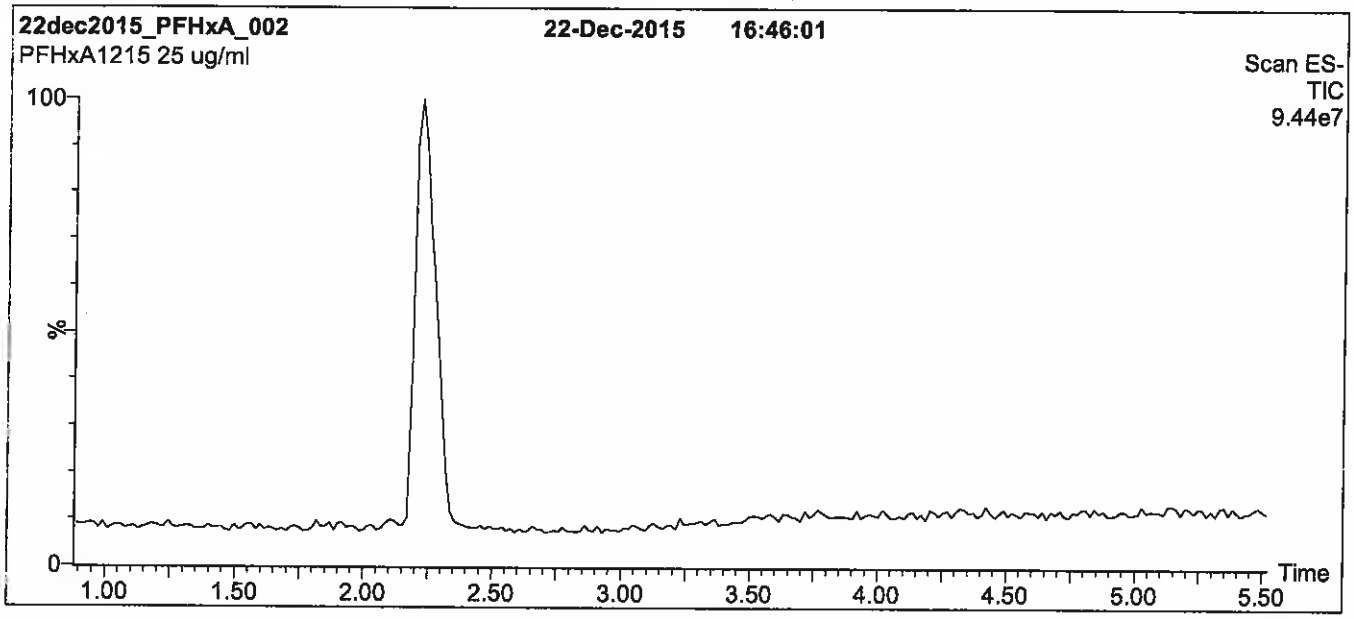
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

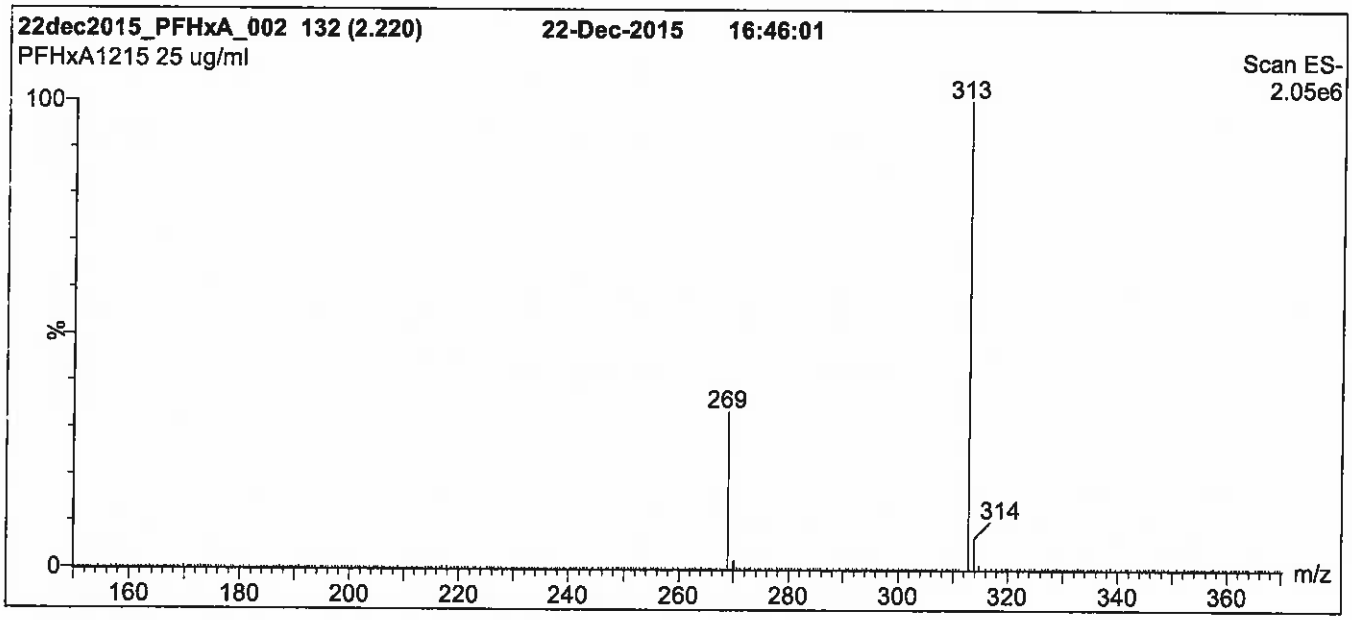
CALA

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: **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

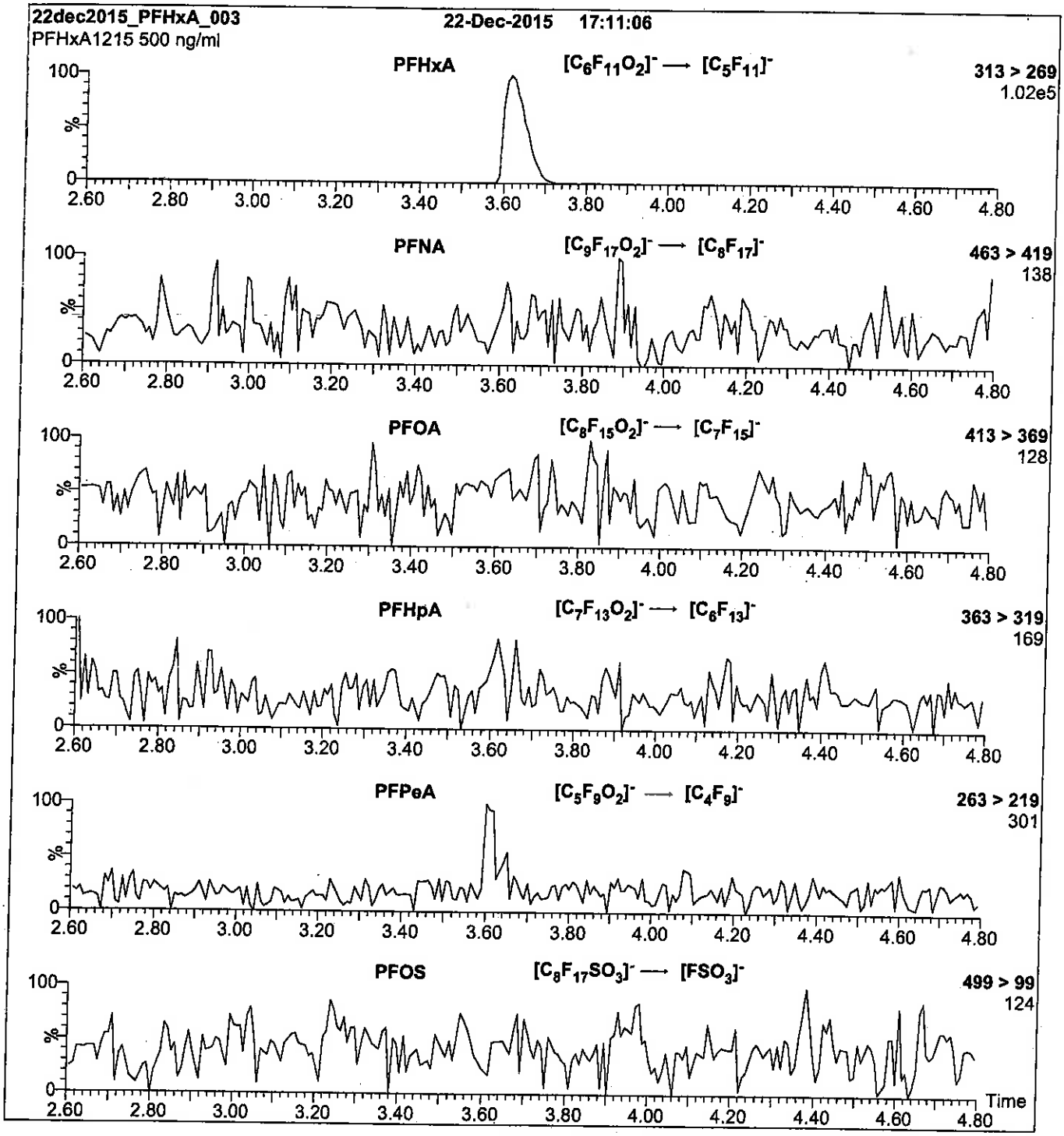
Flow: 300 µl/min

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

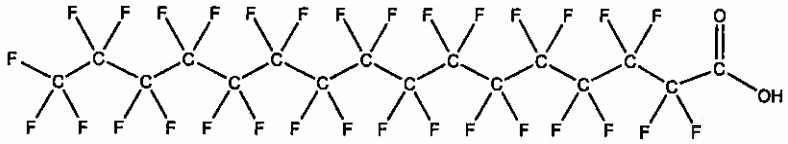
730630
ID: LCPFHxDA_00006
Exp: 05/25/21 Prpd: SBC
PFHxDA stock 50ug/mL

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)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

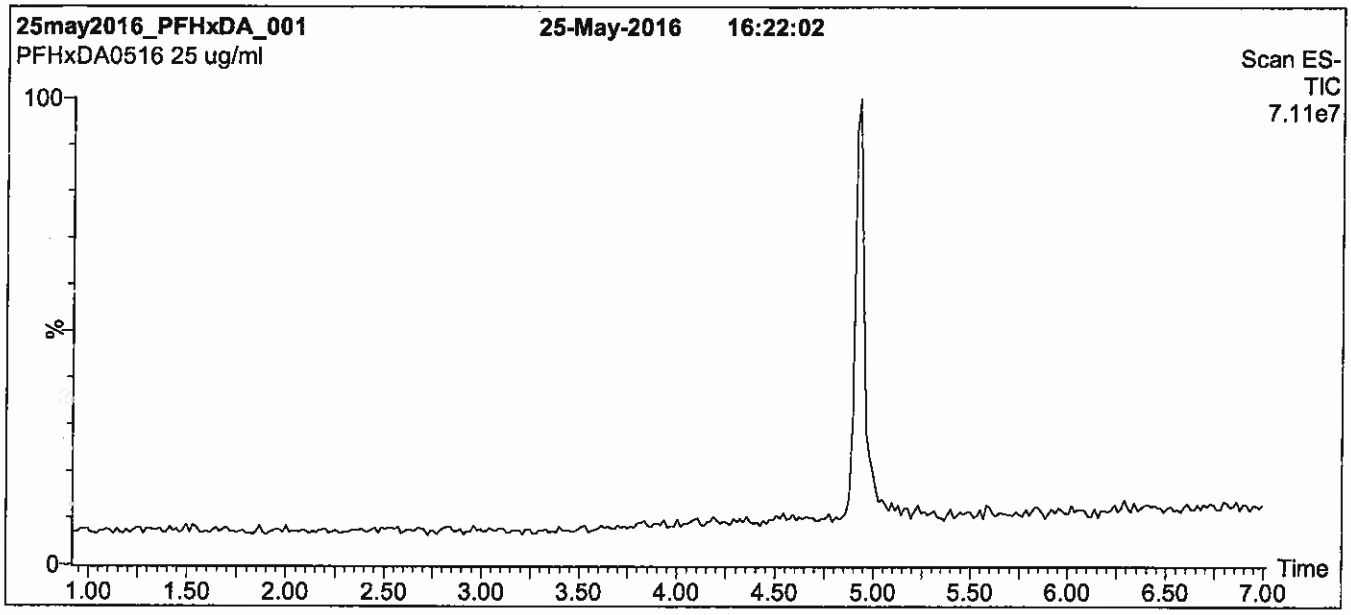
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

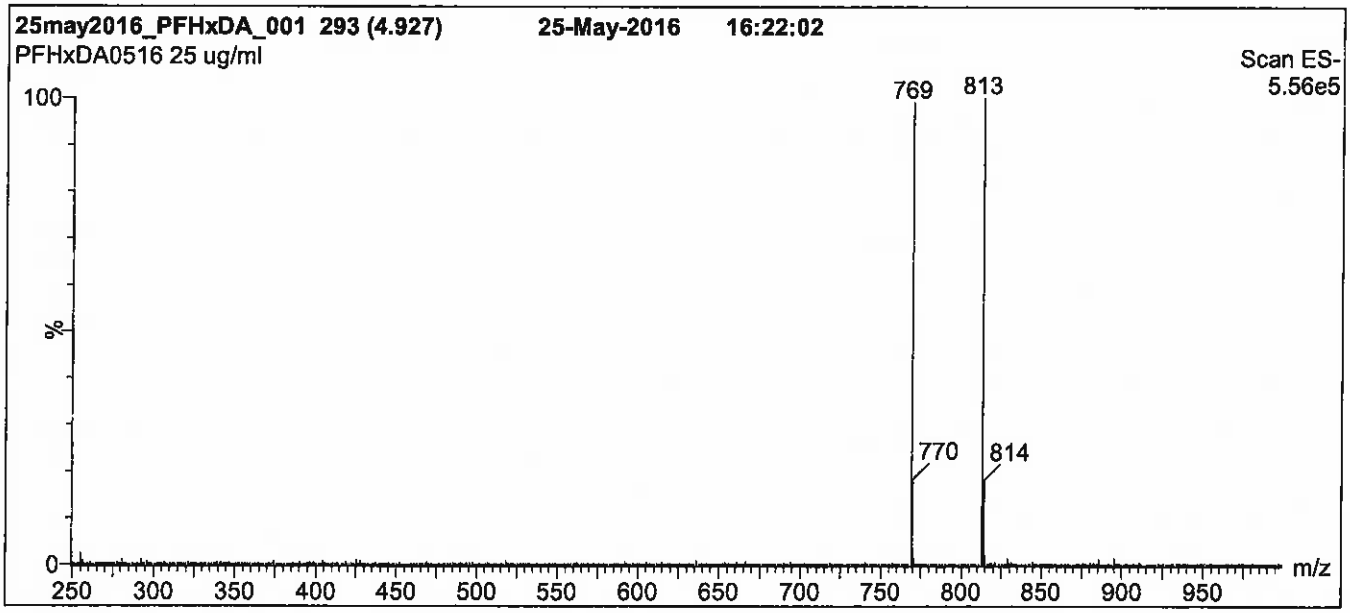
CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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: **PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 6 min and hold for 2.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

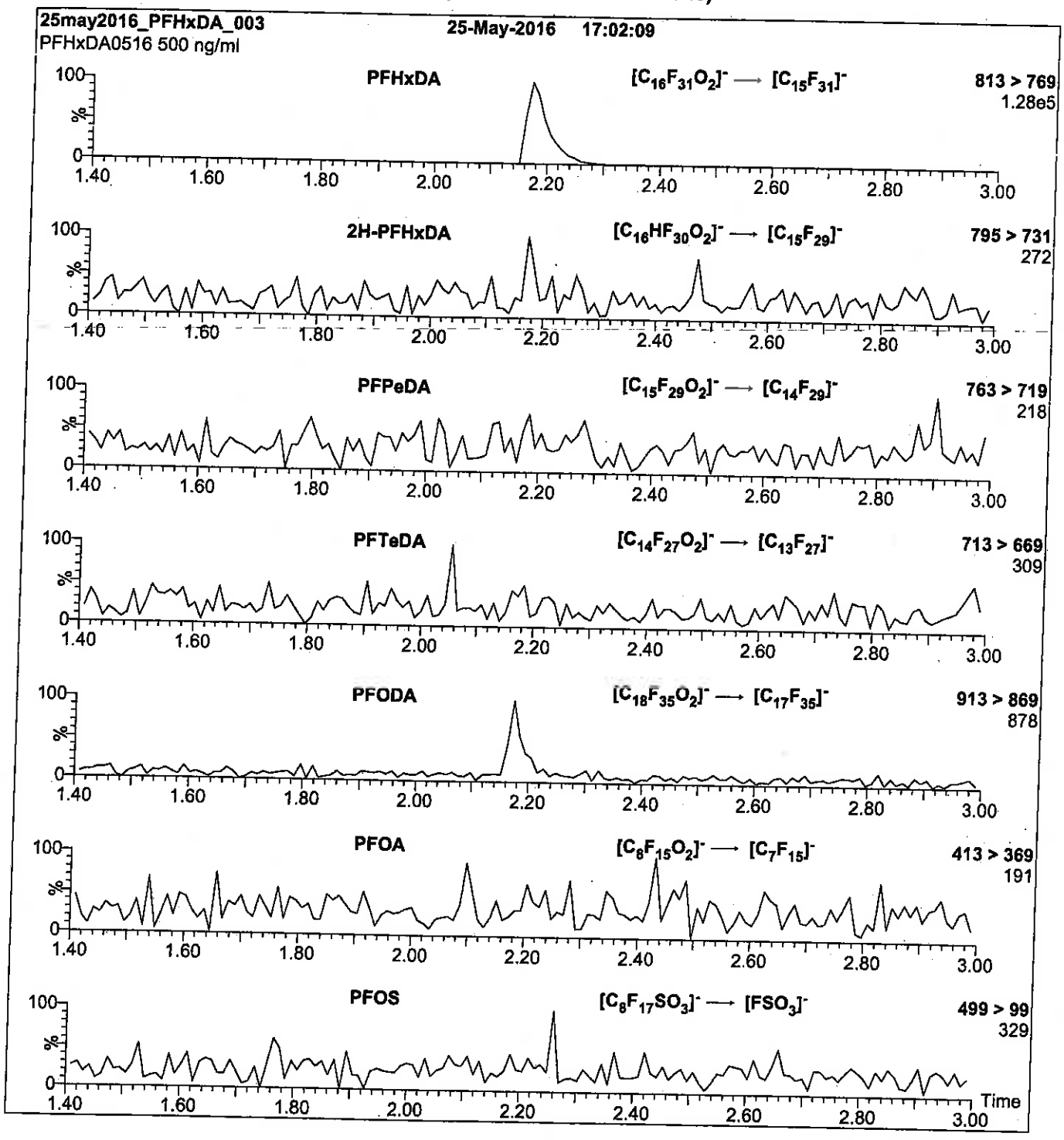
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFHxDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 15

Reagent

LCPFHxS-br_00002

SBC
R: 9/13/16

730513
ID: LCPFHxS-br_00002
Exp: 07/03/20 Prpd: SBC
Potassium Perfluorohexane

730514
ID: LCPFHxS-br_00003
Exp: 07/03/20 Prpd: SBC
Potassium Perfluorohexane

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0615
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	06/29/2015
LAST TESTED: (mm/dd/yyyy)	07/03/2015
EXPIRY DATE: (mm/dd/yyyy)	07/03/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

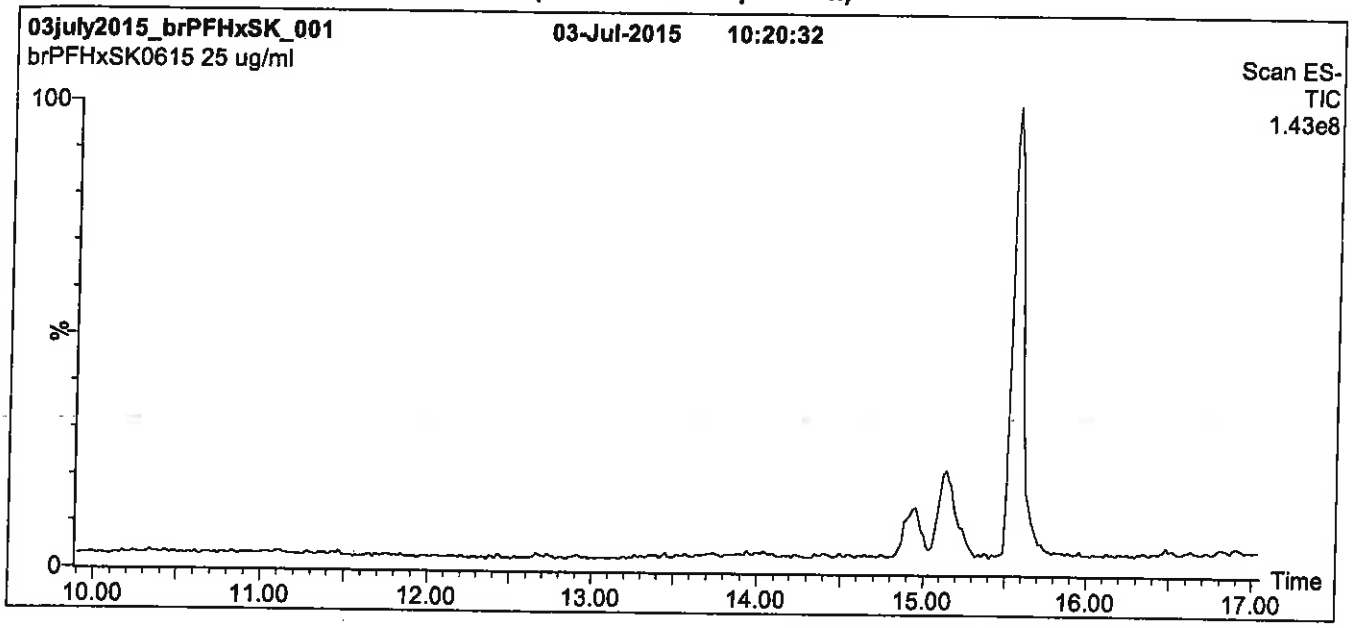
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

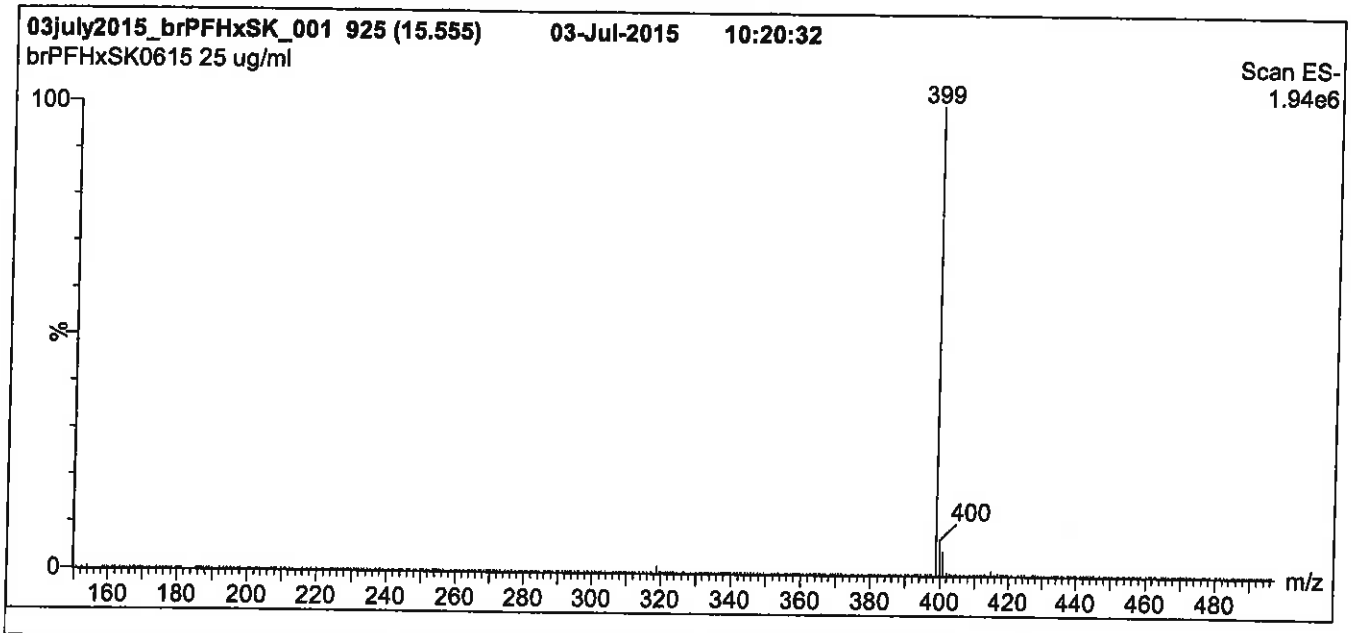
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 07/15/2015 (mm/dd/yyyy)

Figure 1: **br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

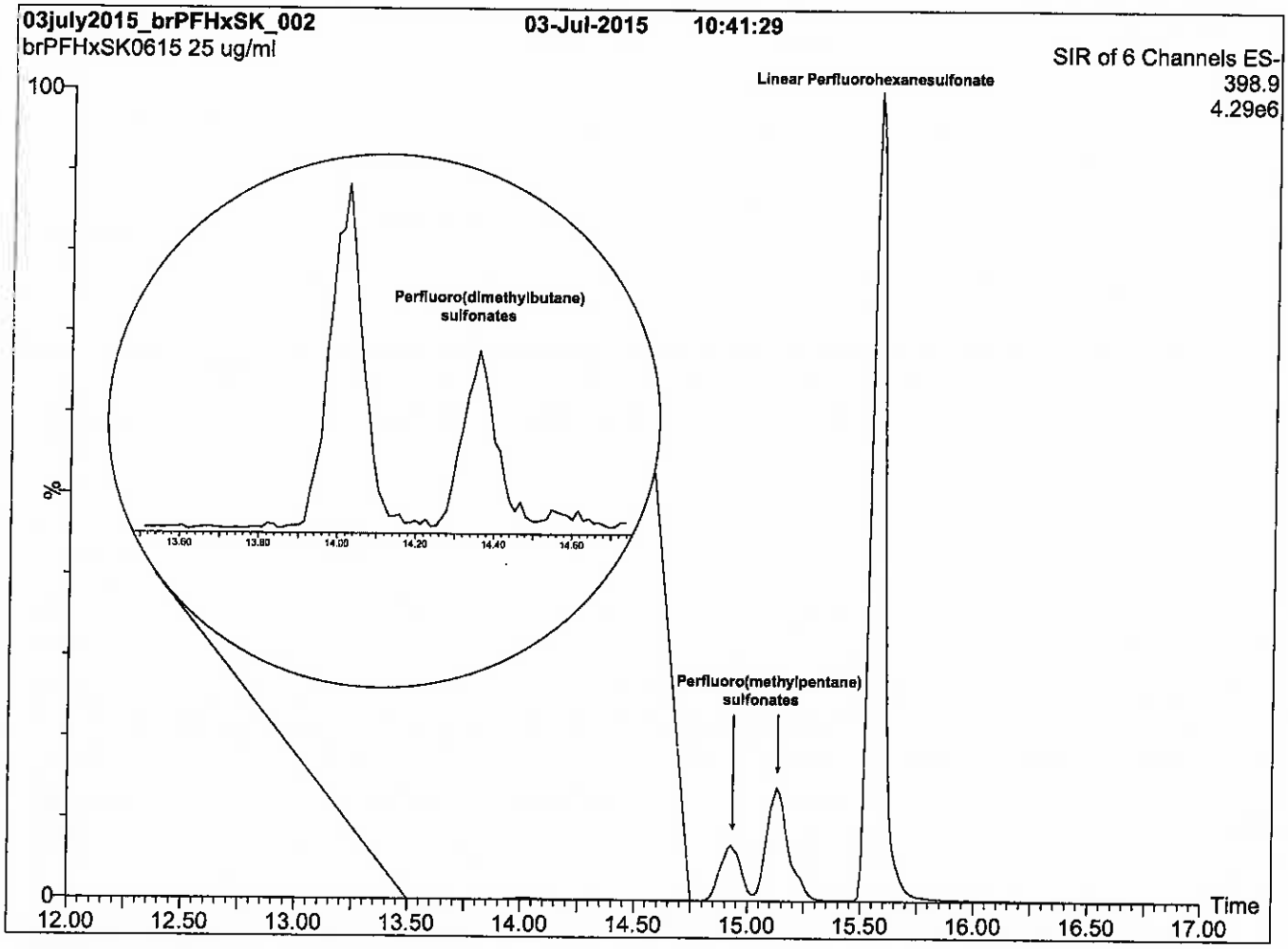
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFHxSK; LC/MS Data**



Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

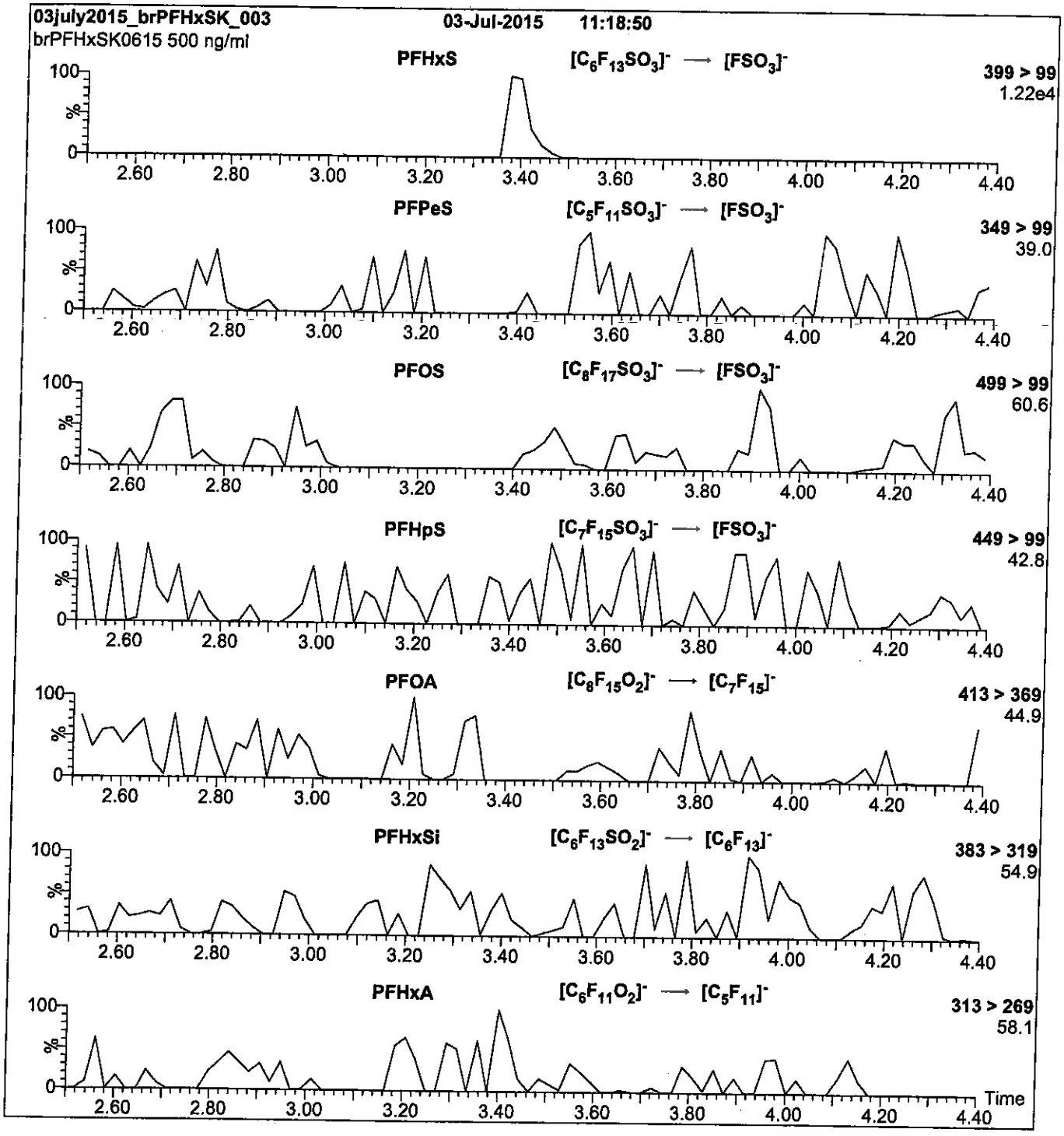
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: **br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00005

609703
ID: LCPFNA_00005
Exp: 10/23/20 Prpd: CBW
PF-n-nonanoic acid

R·4/7/16 CBW

WELLINGTON LABORATORIES

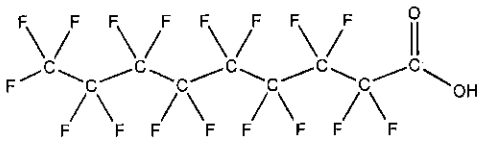
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA1015

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA) and < 0.1% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/30/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

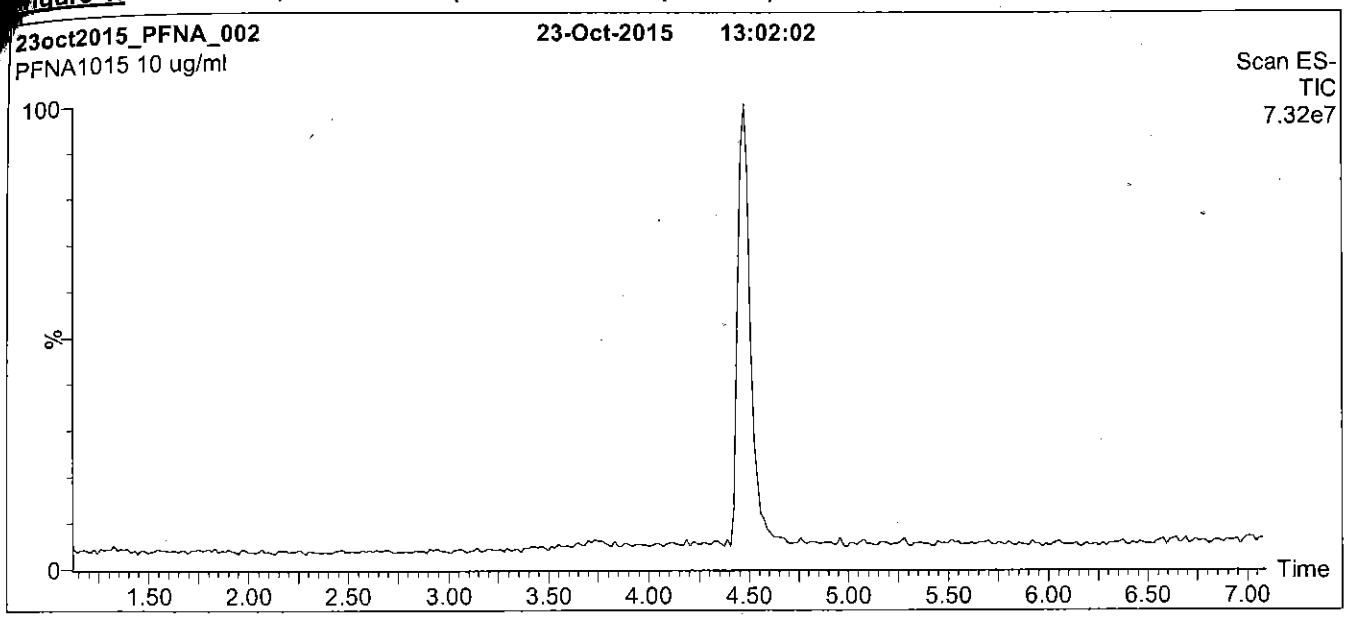
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

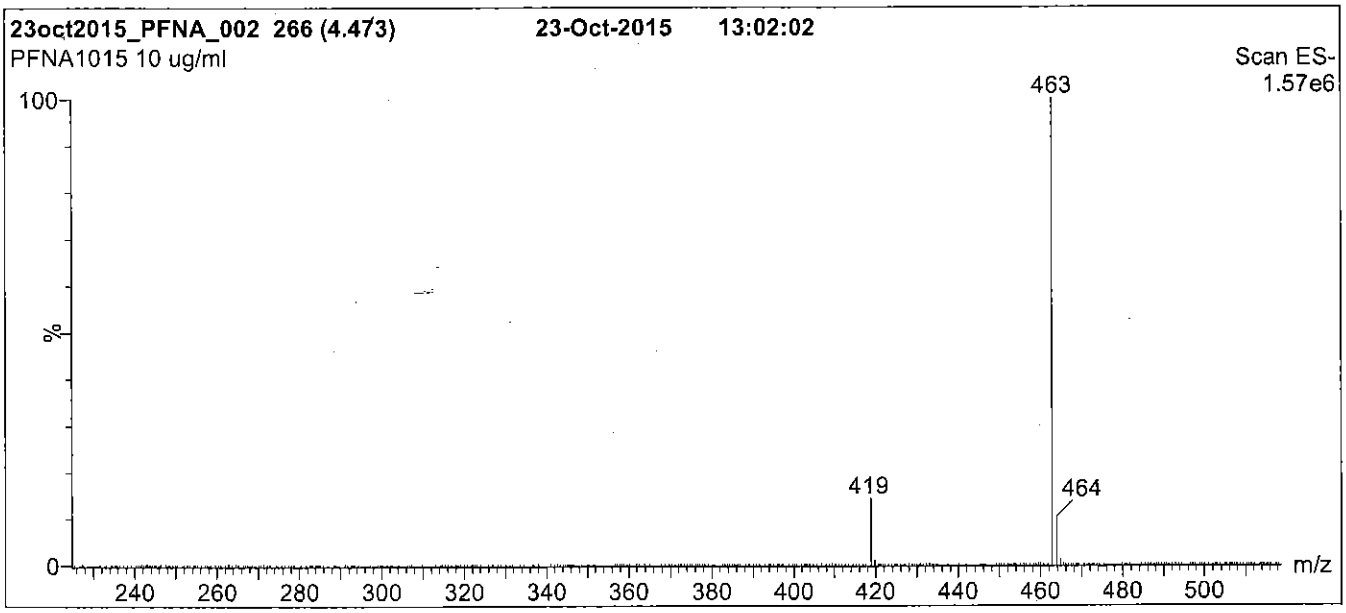
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 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

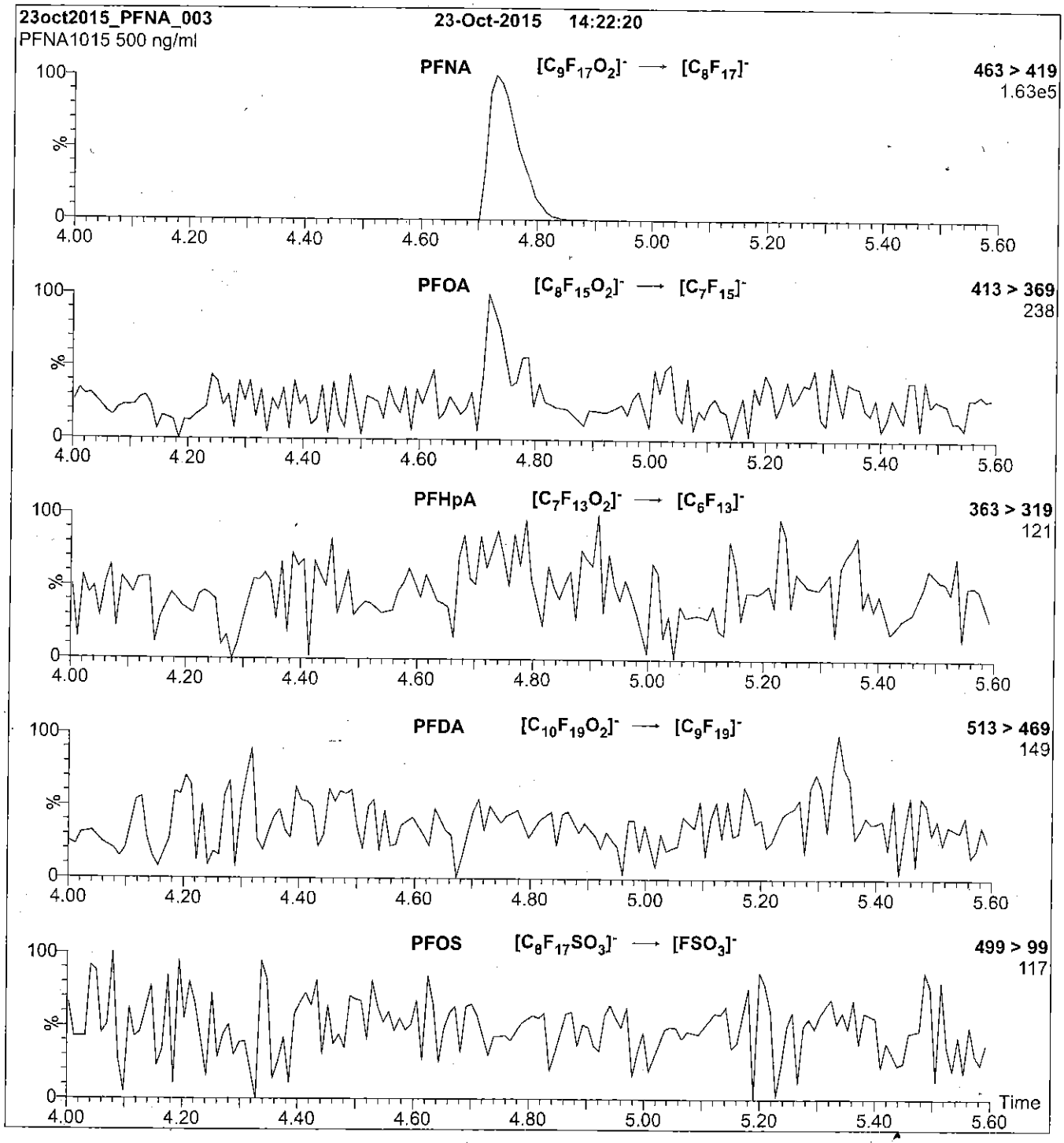
Flow: 300 µl/min

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

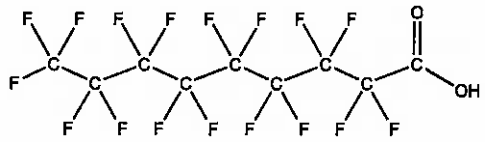
730559
ID: LCPFNA_00006
Exp: 10/23/20 Prpd: SBC
PF-n-nonanoic acid

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:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

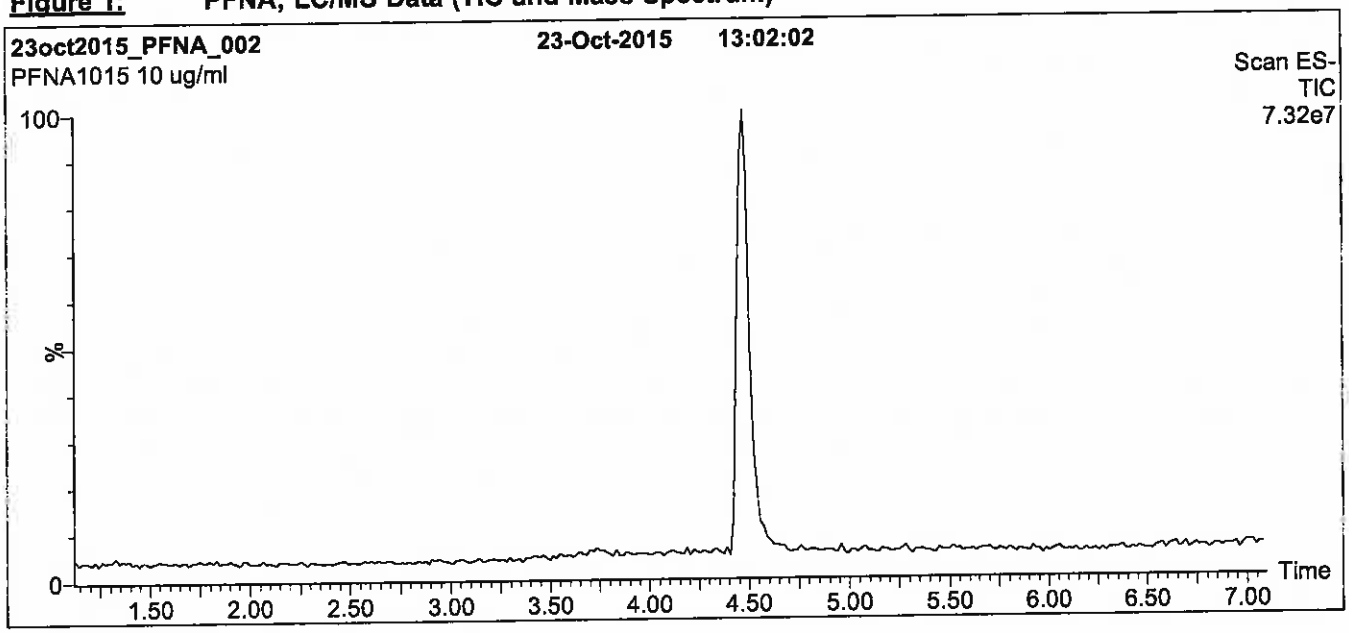
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

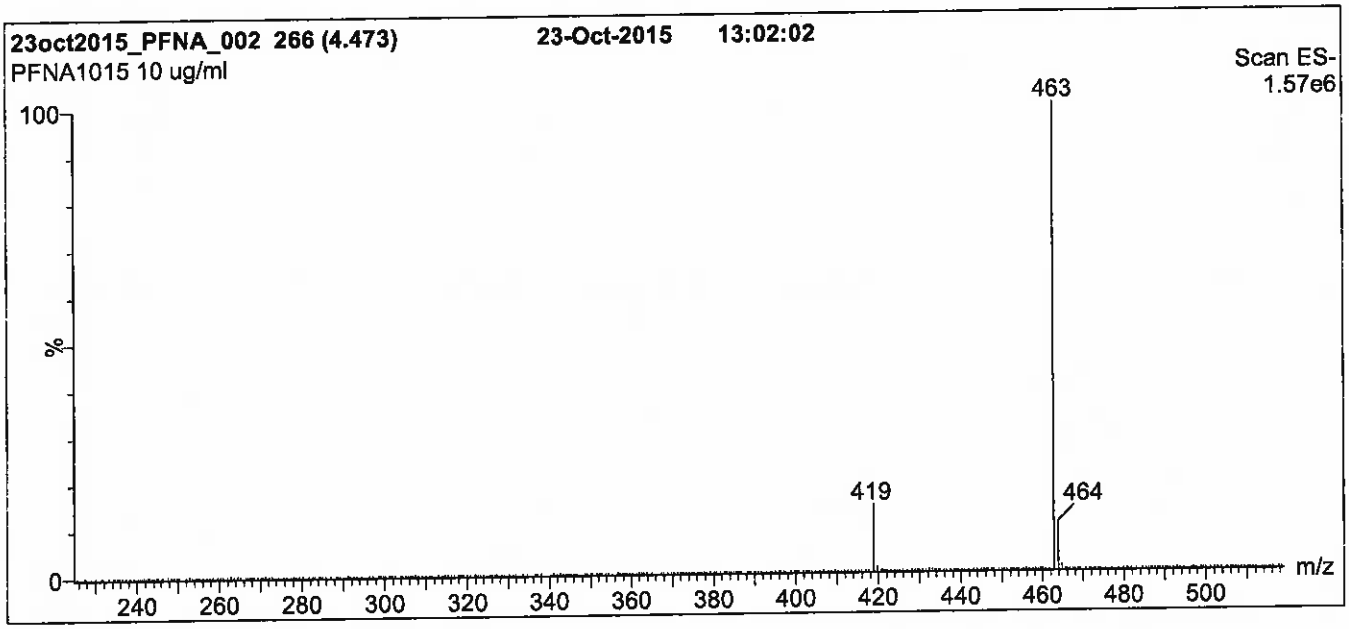
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **PFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

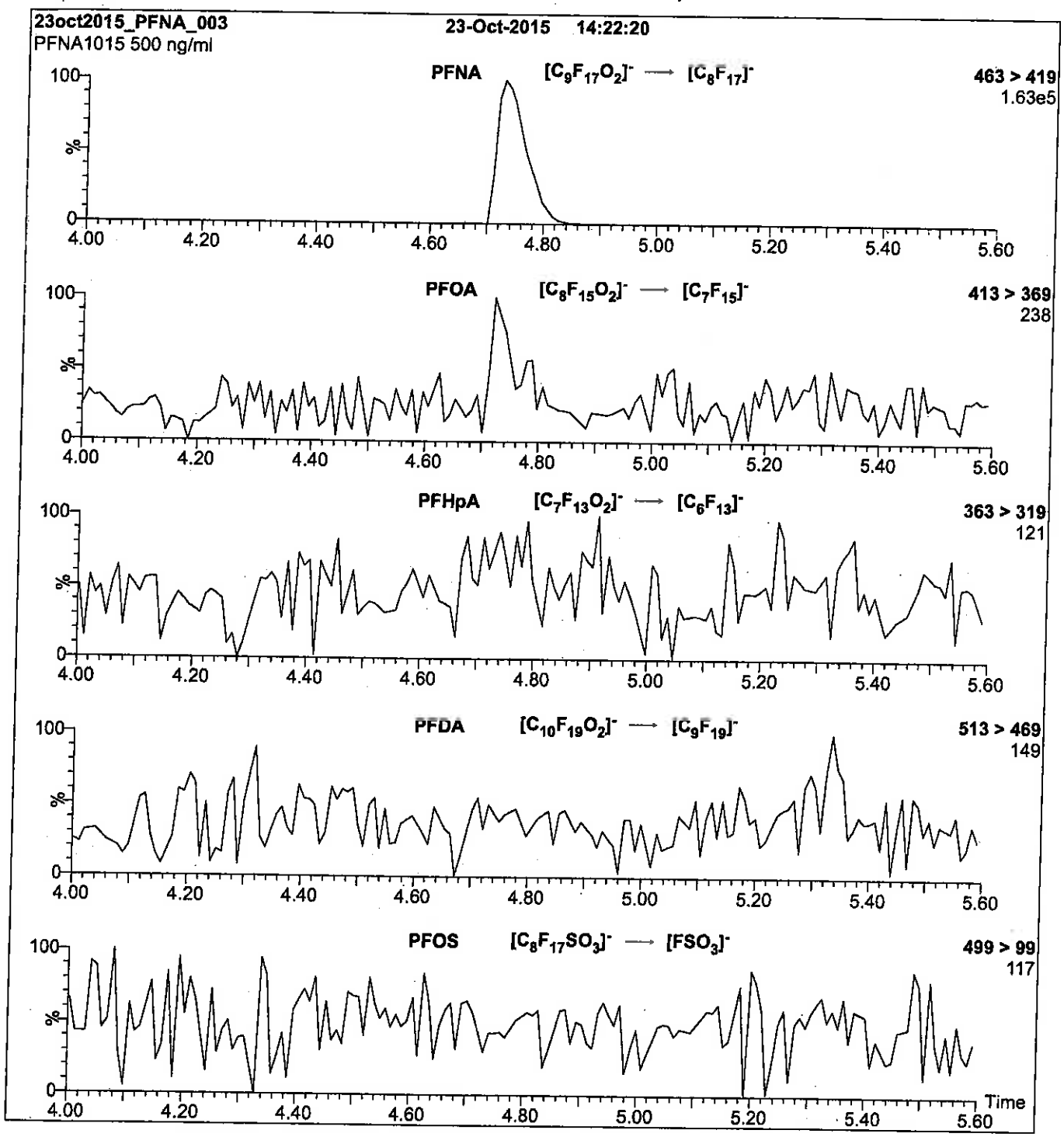
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFNA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCPFOA_00006

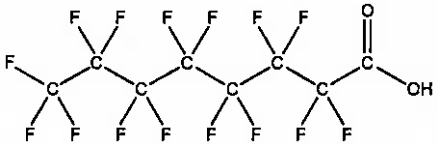
R-7/6/16 CBW

671577
ID: LCPFOA_00006
Exp: 11/06/20 Prpd: CBW
PF-n-octanoic acid

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

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:

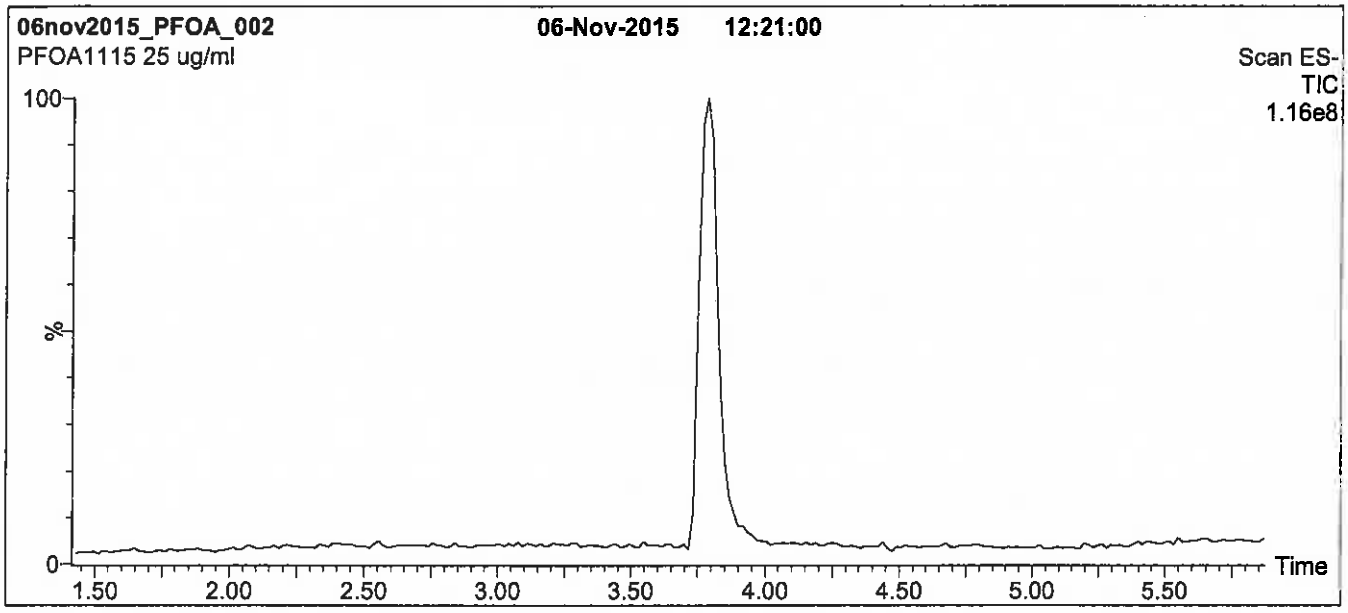
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

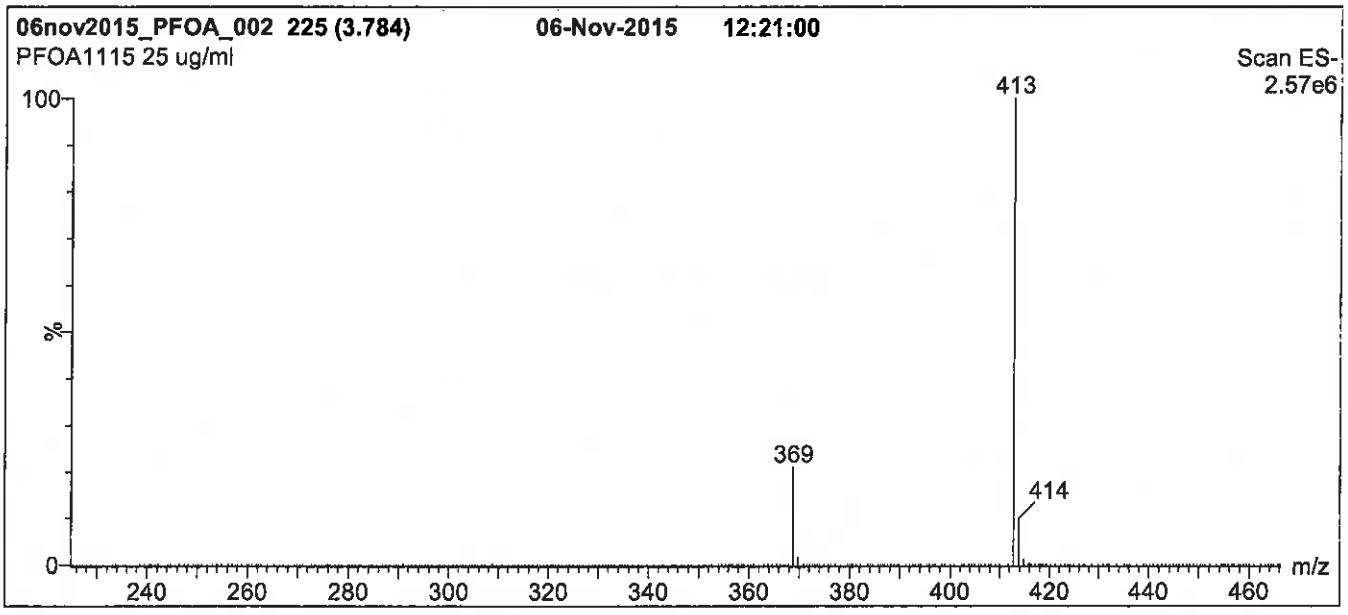
CALA

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: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

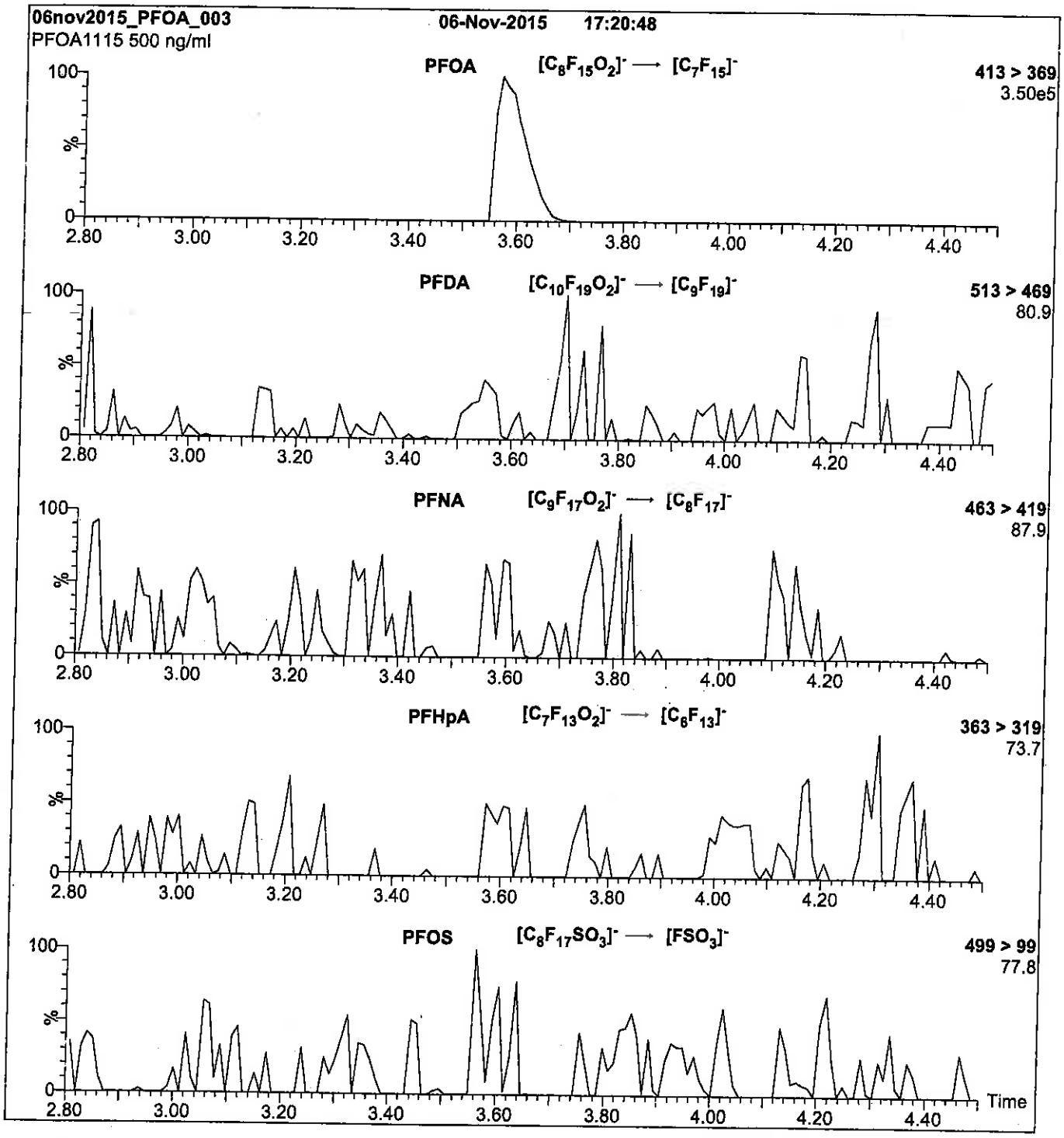
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 10

Reagent

LCPFODA_00005

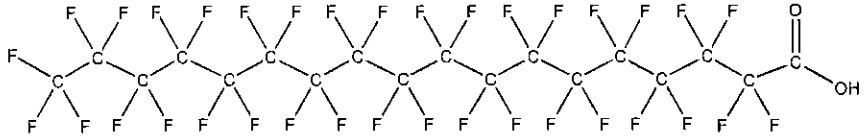
Rec. 3/29/16 JRB

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFODA
LOT NUMBER: PFODA0115
COMPOUND: Perfluoro-n-octadecanoic acid

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

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/25/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

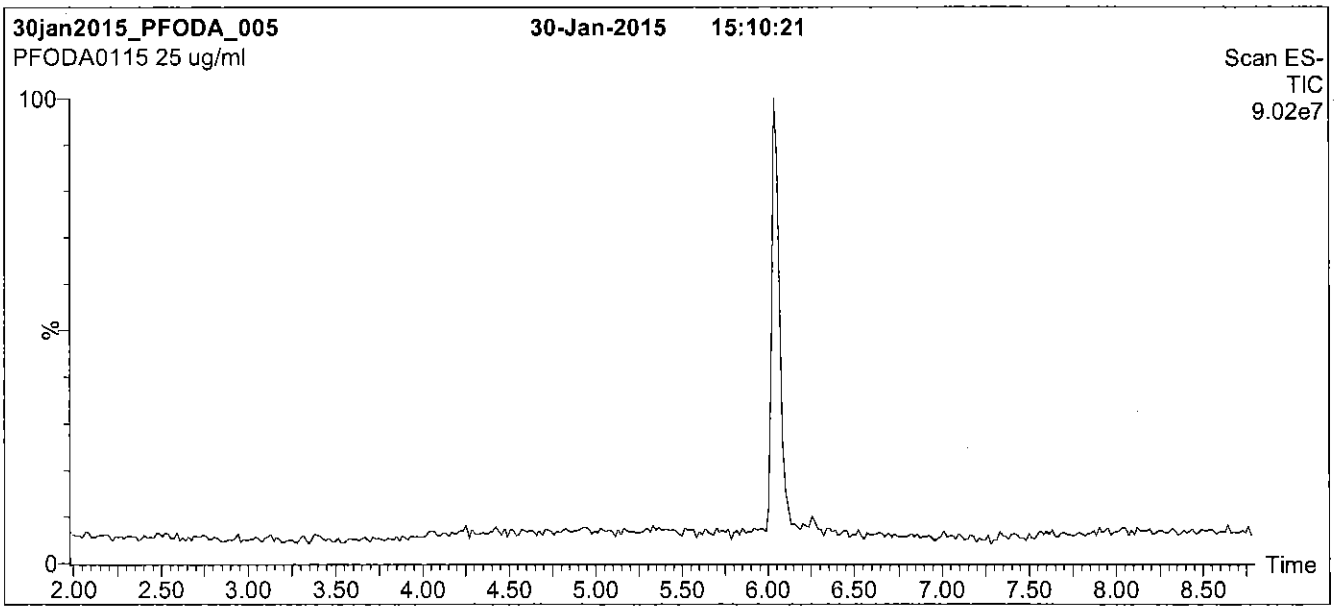
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

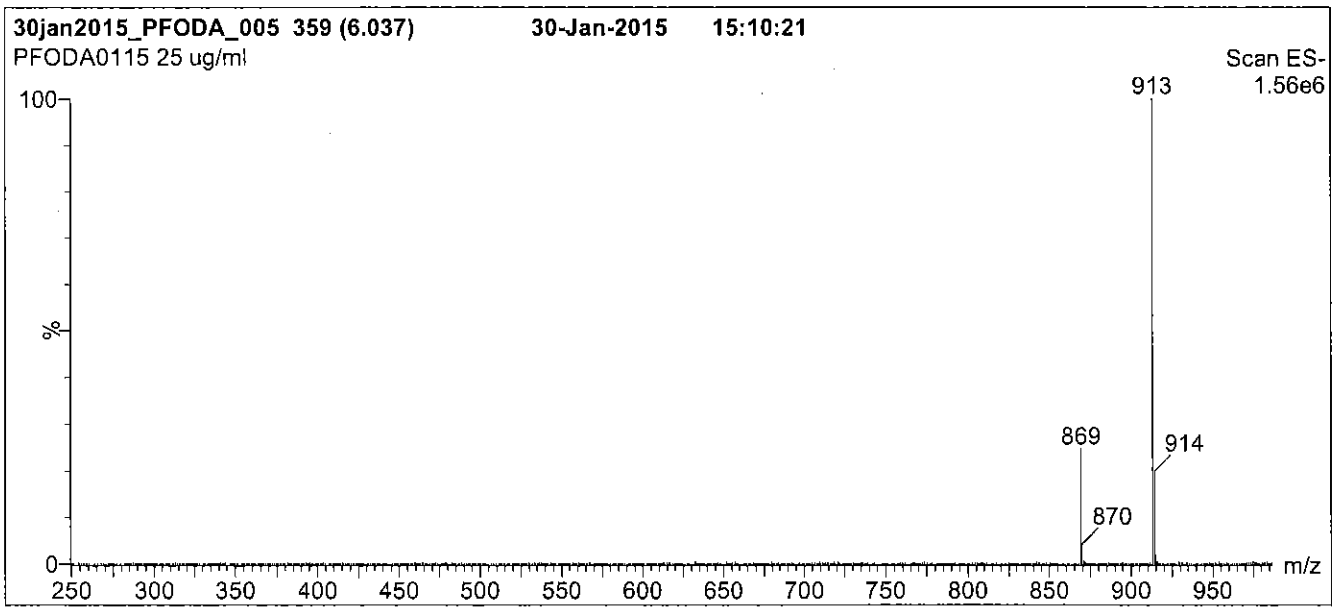
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **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

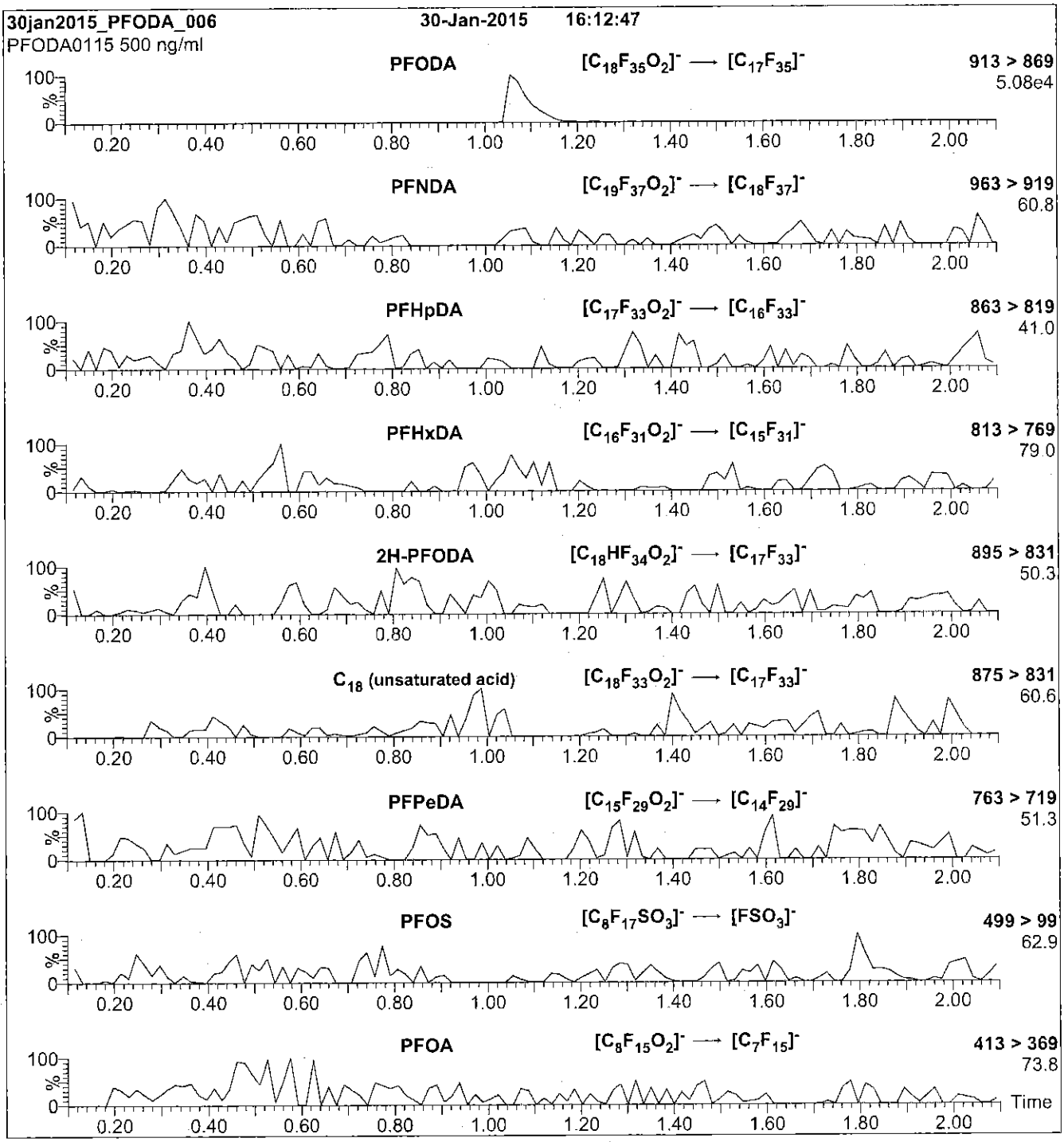
Flow: 300 µl/min

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

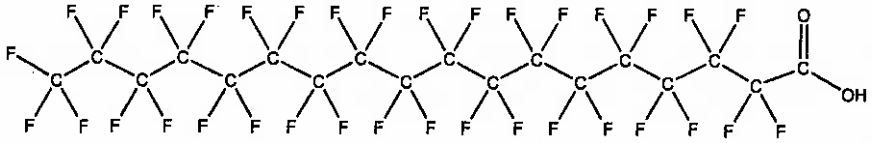
CERTIFICATE OF ANALYSIS DOCUMENTATION

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:

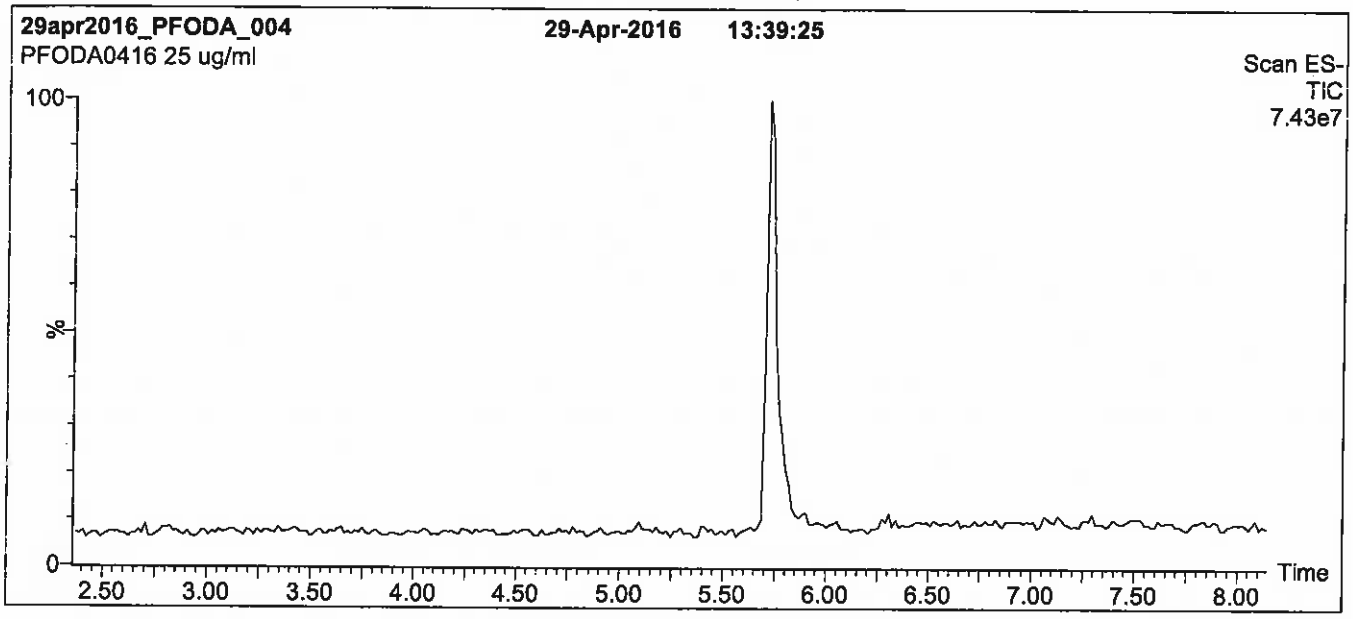
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

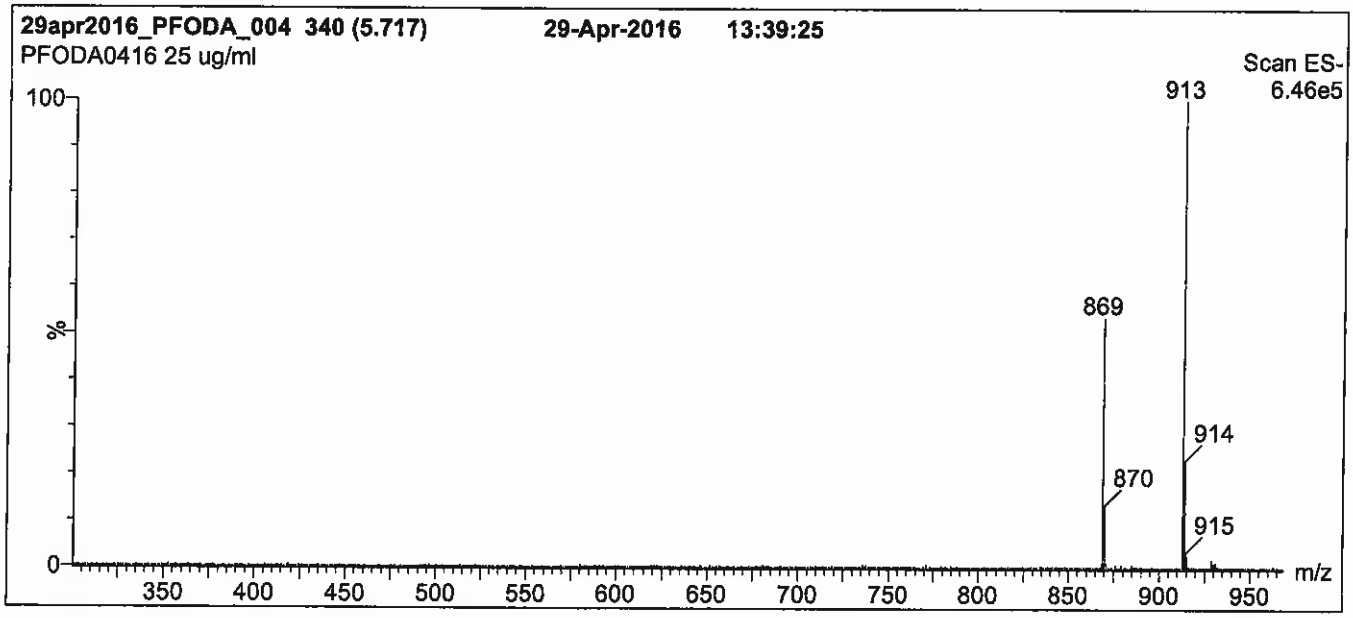
CALA Testing A1226

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

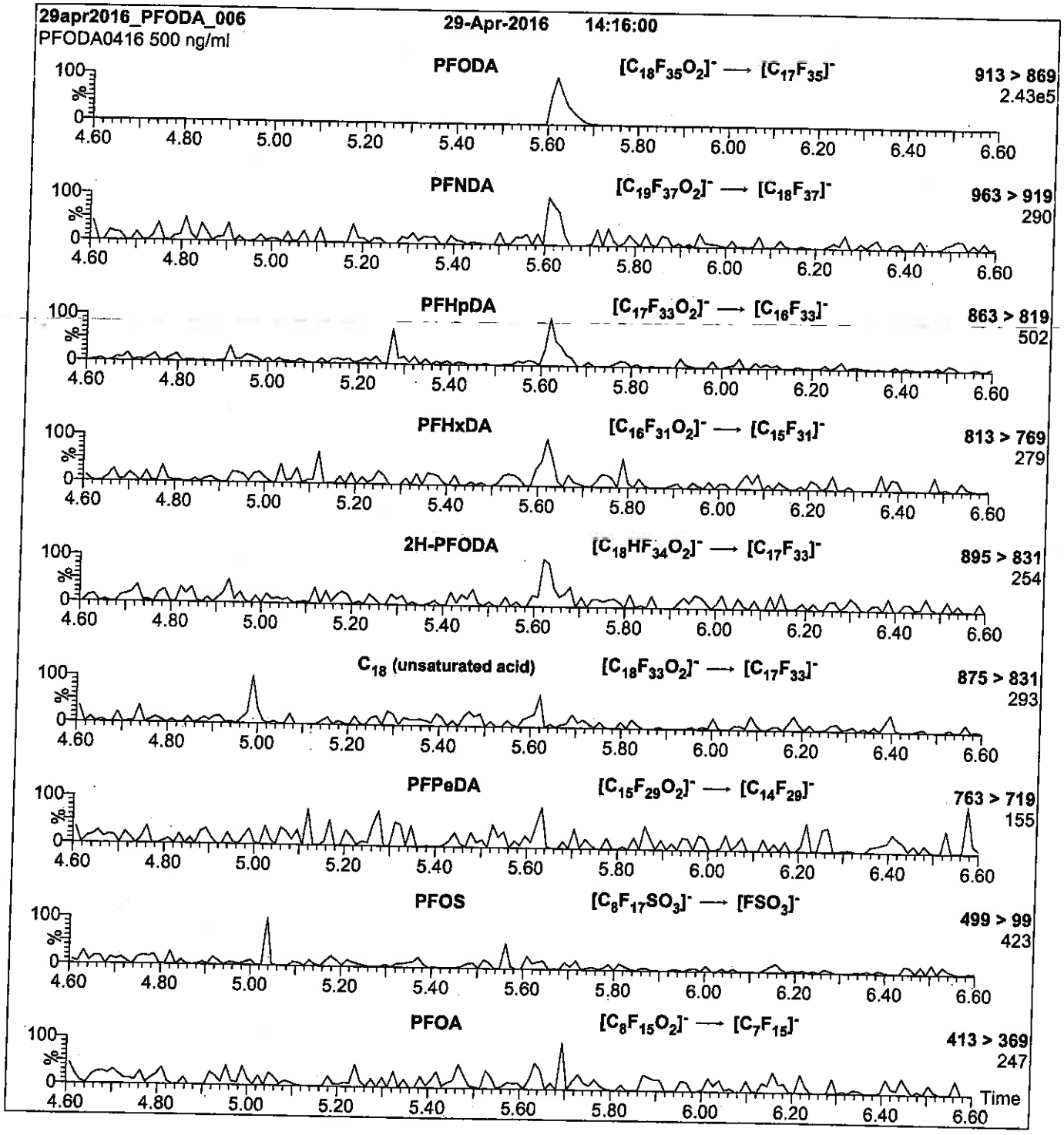
Flow: 300 µl/min

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_00002

Scanned 10/14/16 SC

R: SBC 9/13/16

730515
ID: LCPFOS-br_00002
Exp: 10/14/20 Prpd: SBC
Potassium Perfluorooctane

730516
ID: LCPFOS-br_00003
Exp: 10/14/20 Prpd: SBC
Potassium Perfluorooctane

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK1015
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	10/13/2015
LAST TESTED: (mm/dd/yyyy)	10/14/2015
EXPIRY DATE: (mm/dd/yyyy)	10/14/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

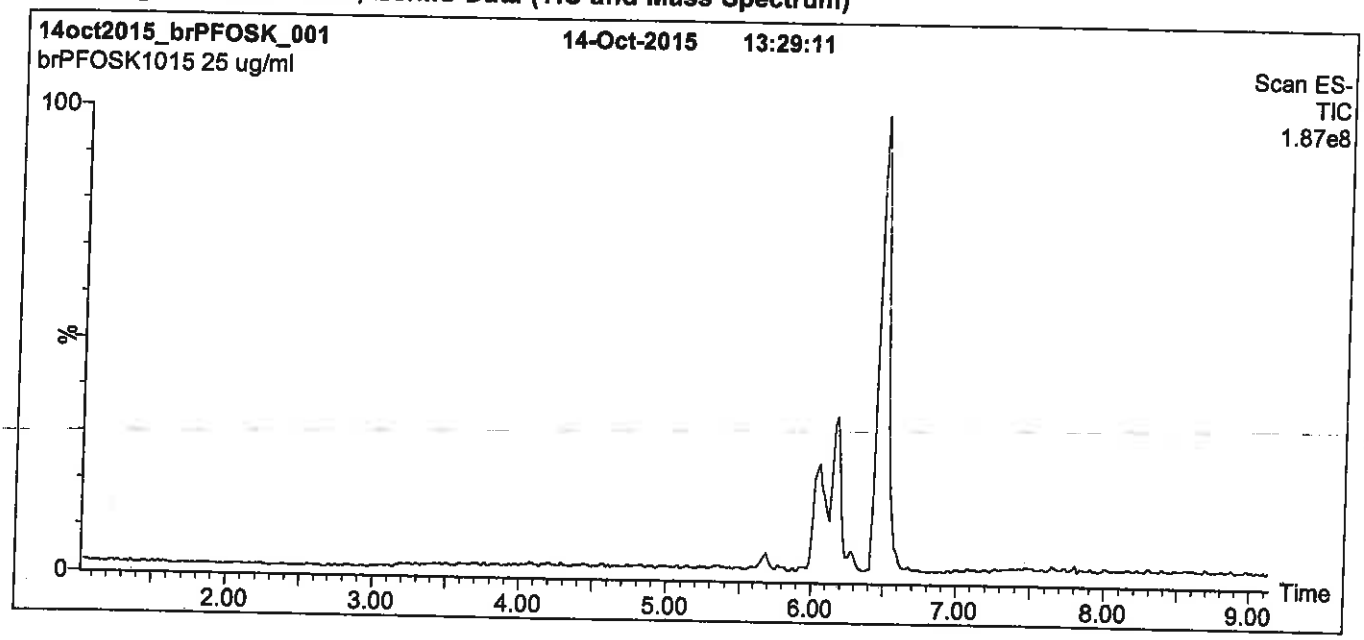
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

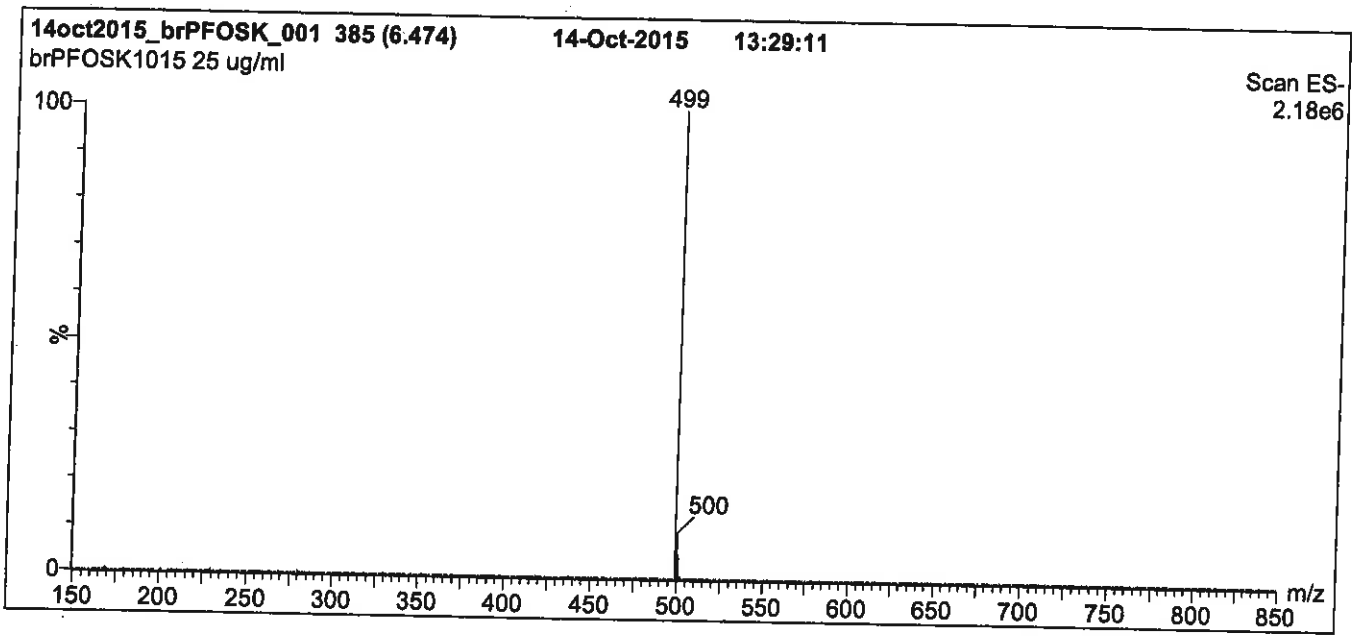
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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	$CF_3-C(CF_3)_2CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)_2-CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3^-K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: _____ **Date:** 10/15/2015
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

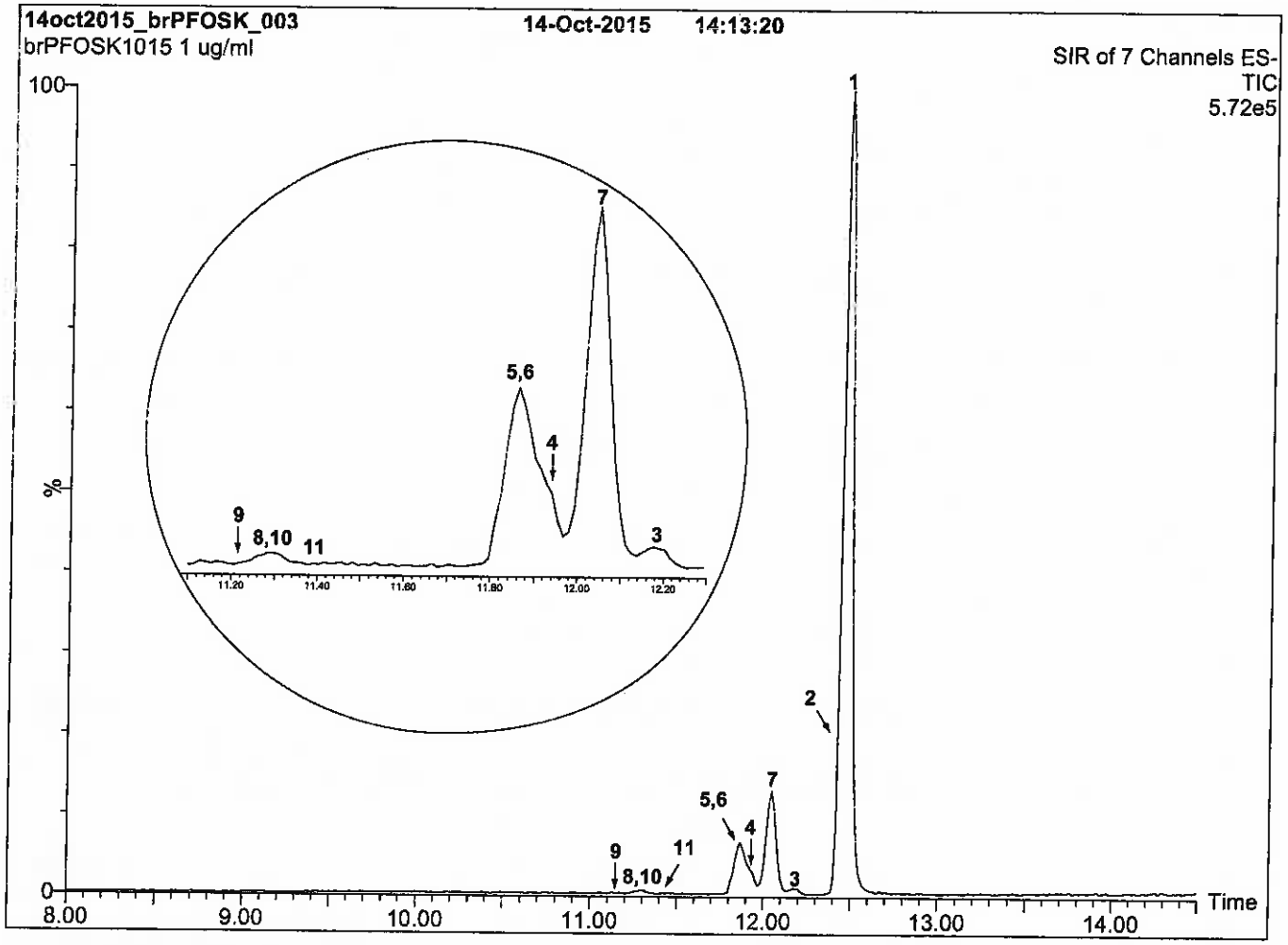
Flow: 300 µl/min

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

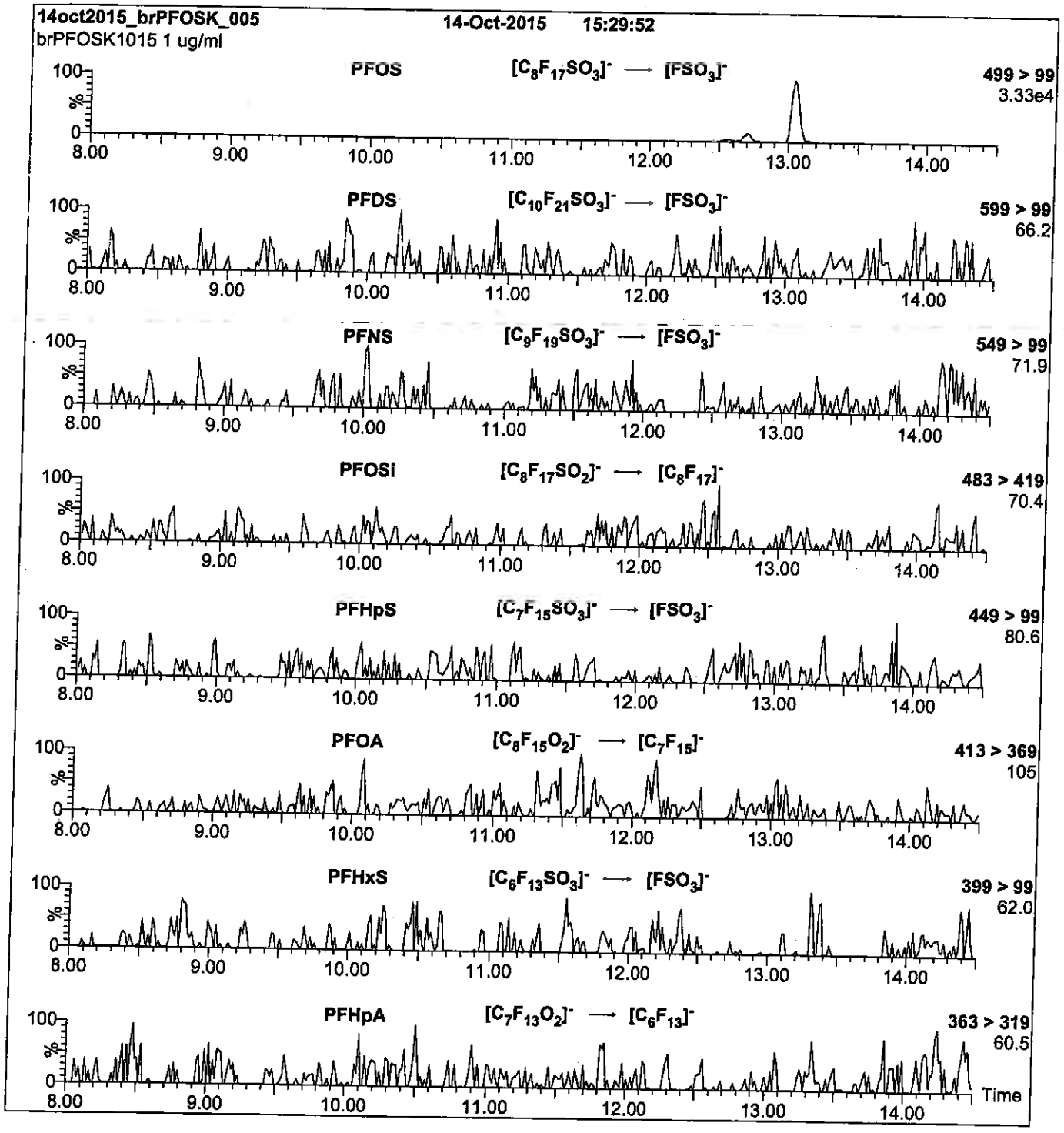
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

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

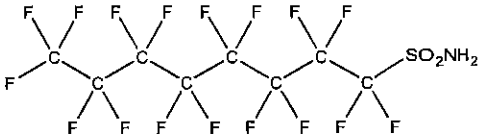
WELLINGTON LABORATORIES

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:

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:

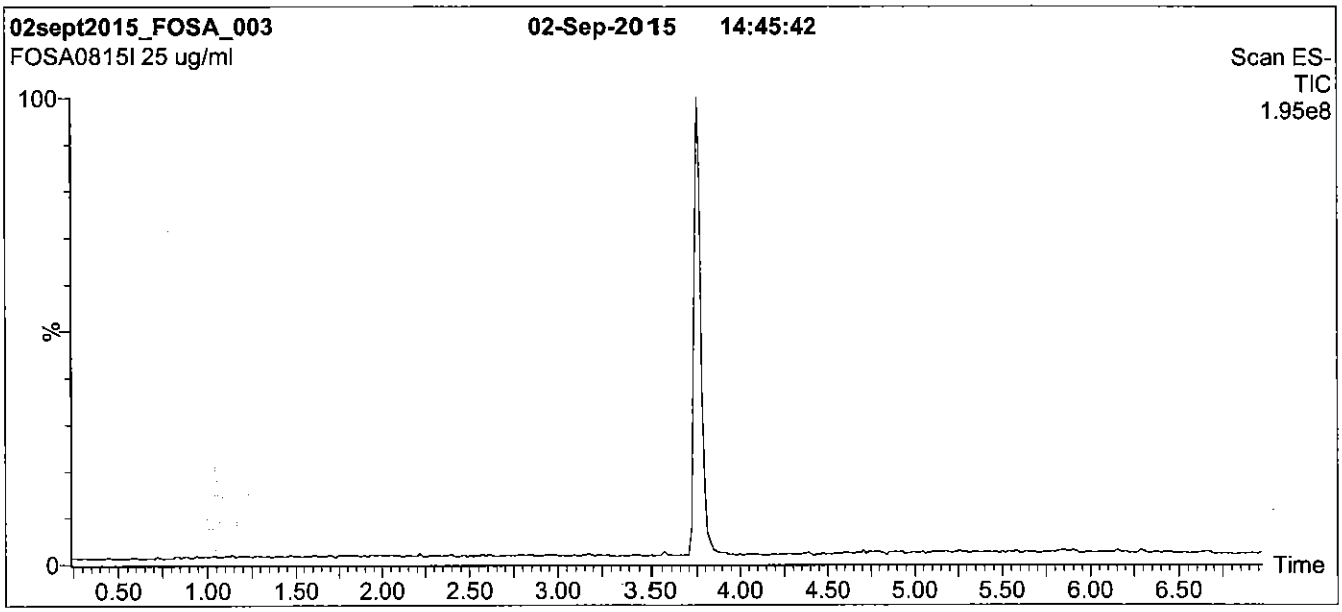
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

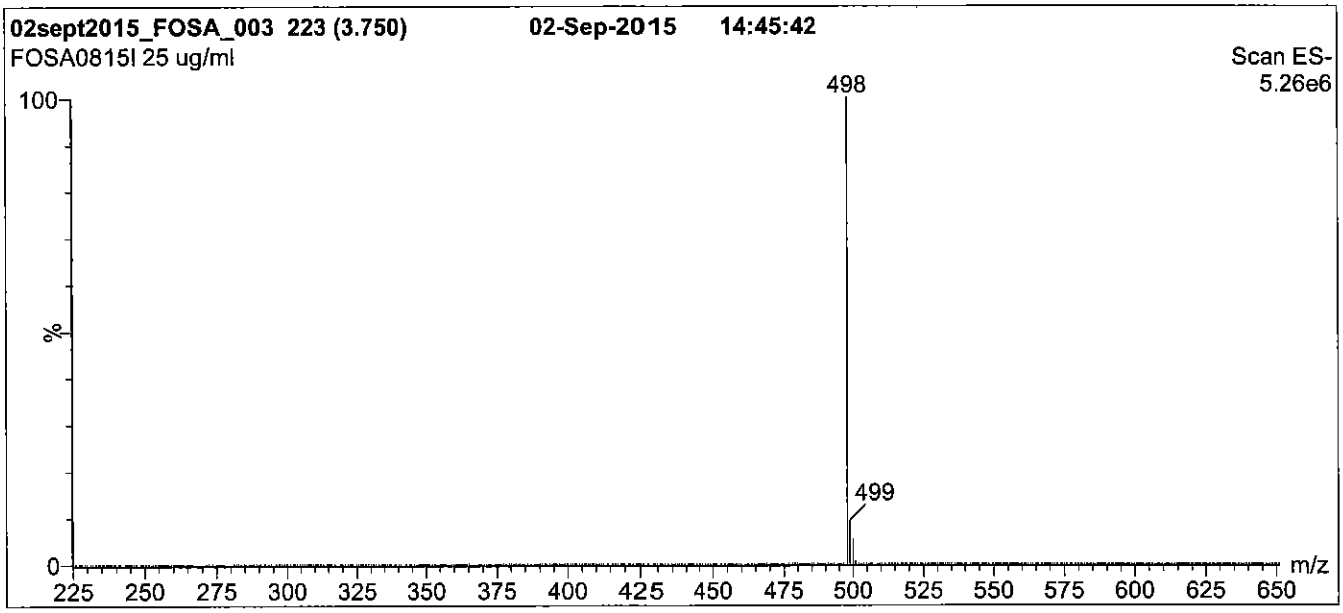
CALA Testing Accreditation No. A1226

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: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

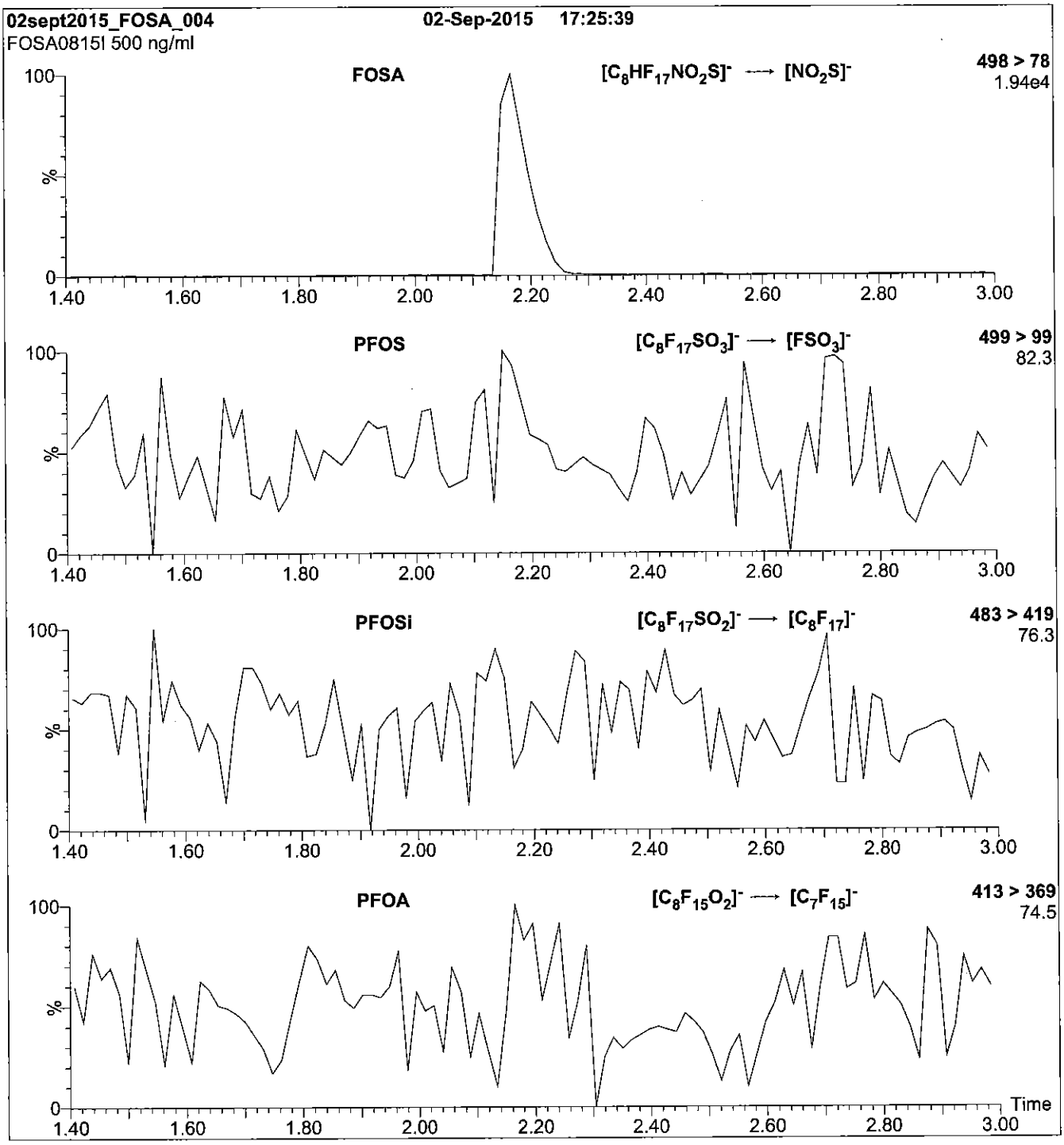
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFOSA_00008

Scanned 10/14/16

R: SBC 9/13/16

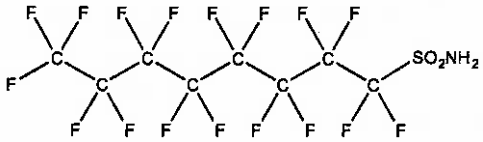
730534
ID: LCPFOSA_00009
Exp: 09/02/17 Prpd: SBC
PF-1-octanesulfonamide

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.

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:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

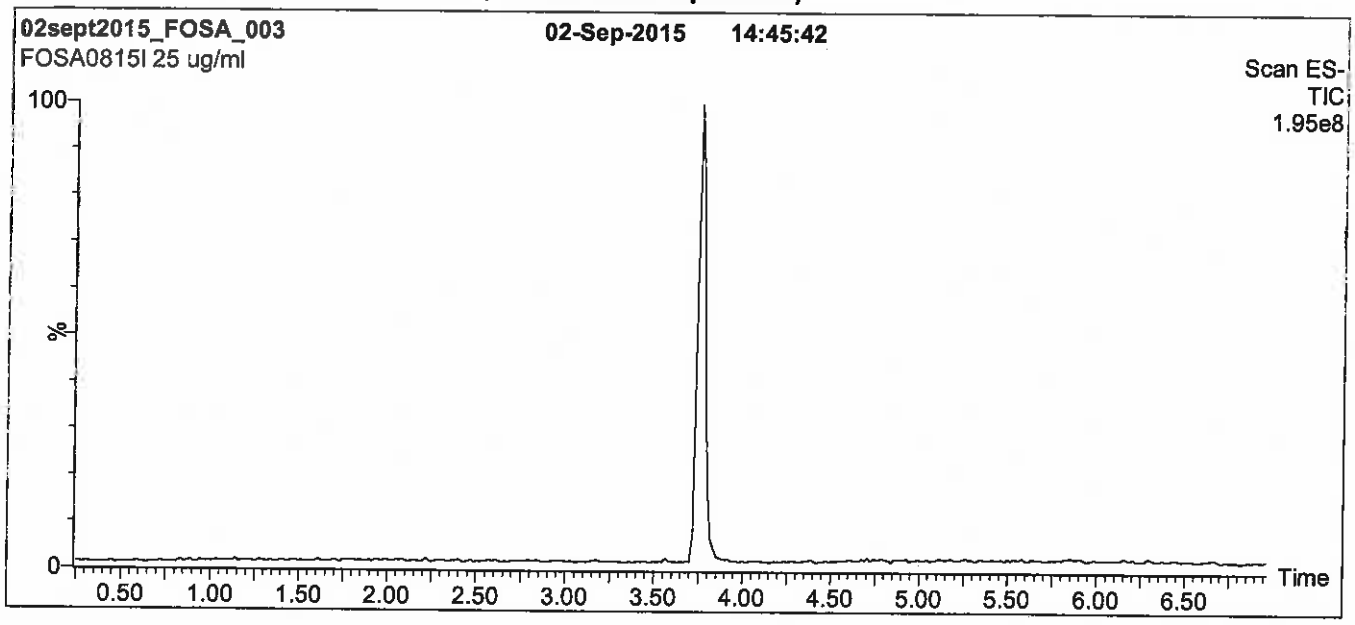
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

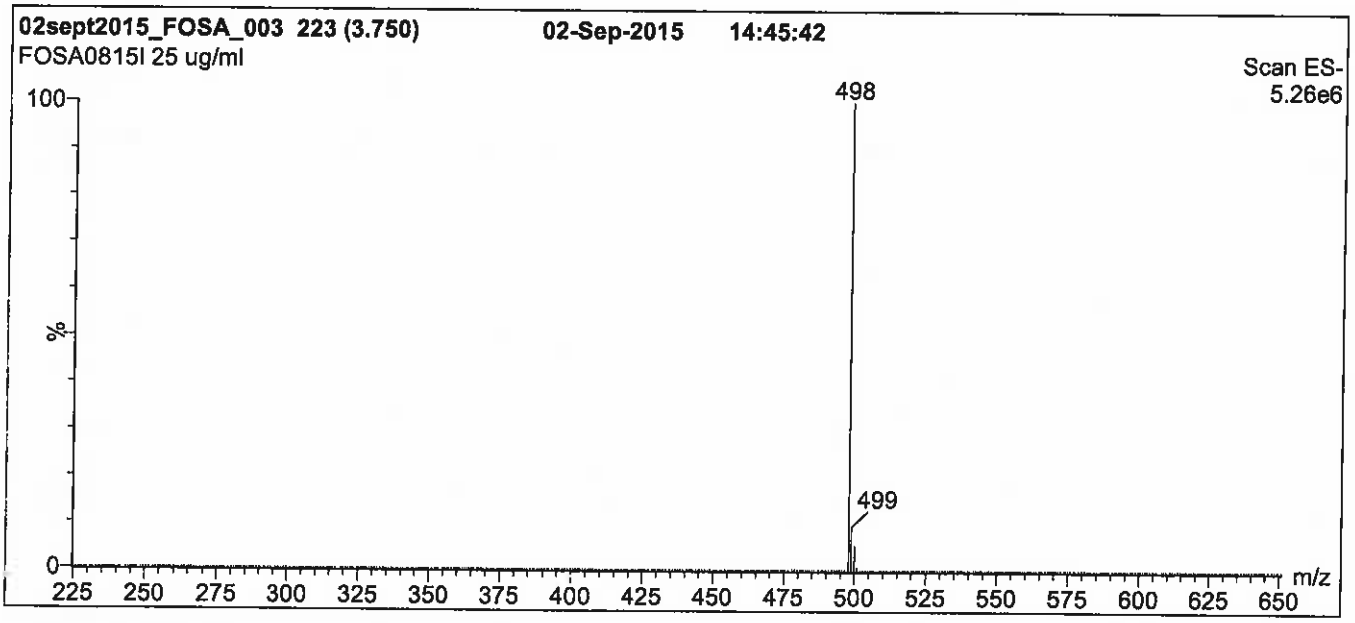
CALA Testing

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

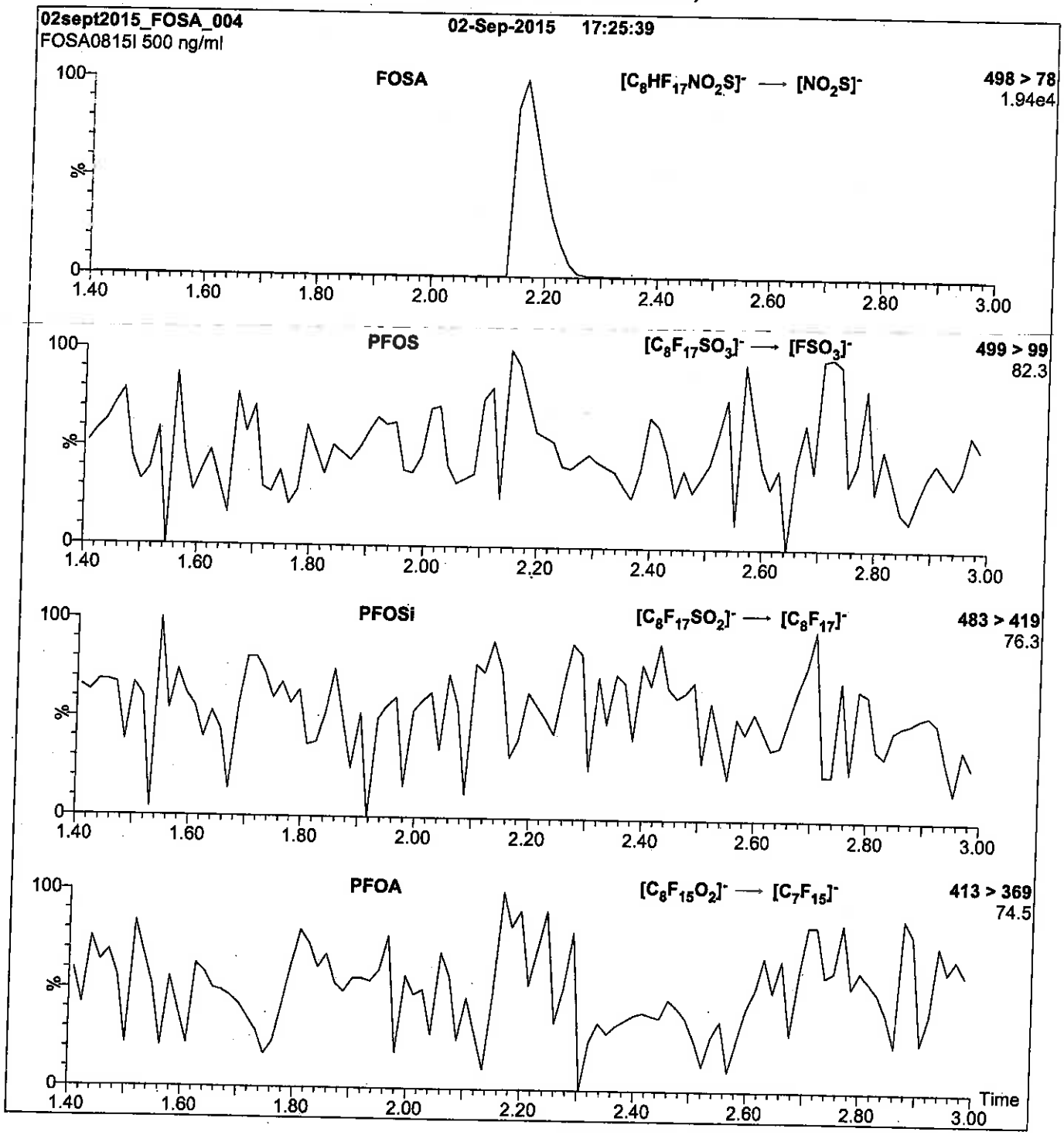
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFPeA_00005

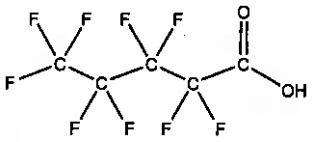
R: 7/6/16 CBW

671579
ID: LCPFPeA_00005
Exp: 01/30/20 Prpd: CBW
PF-n-pentanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFPeA	**LOT NUMBER:**	PFPeA0115
COMPOUND:	Perfluoro-n-pentanoic acid		
STRUCTURE:		**CAS #:**	2706-90-3



MOLECULAR FORMULA:	$C_5HF_9O_2$	**MOLECULAR WEIGHT:**	264.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/30/2015		
EXPIRY DATE: (mm/dd/yyyy)	01/30/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/26/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

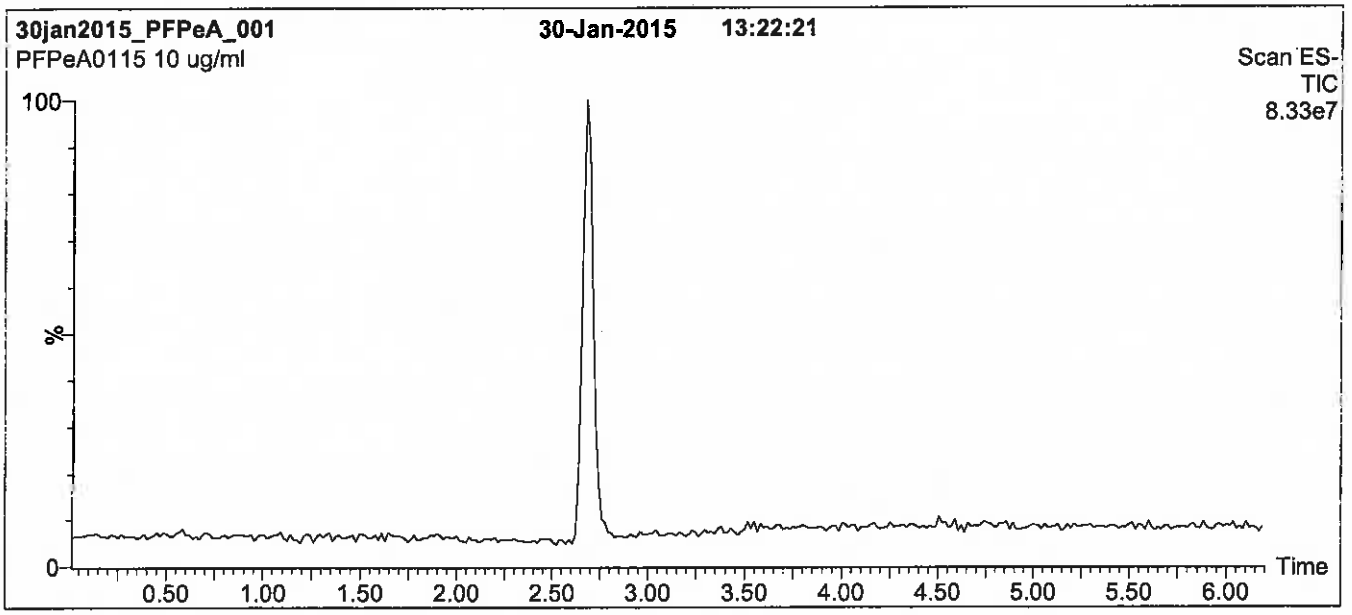
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

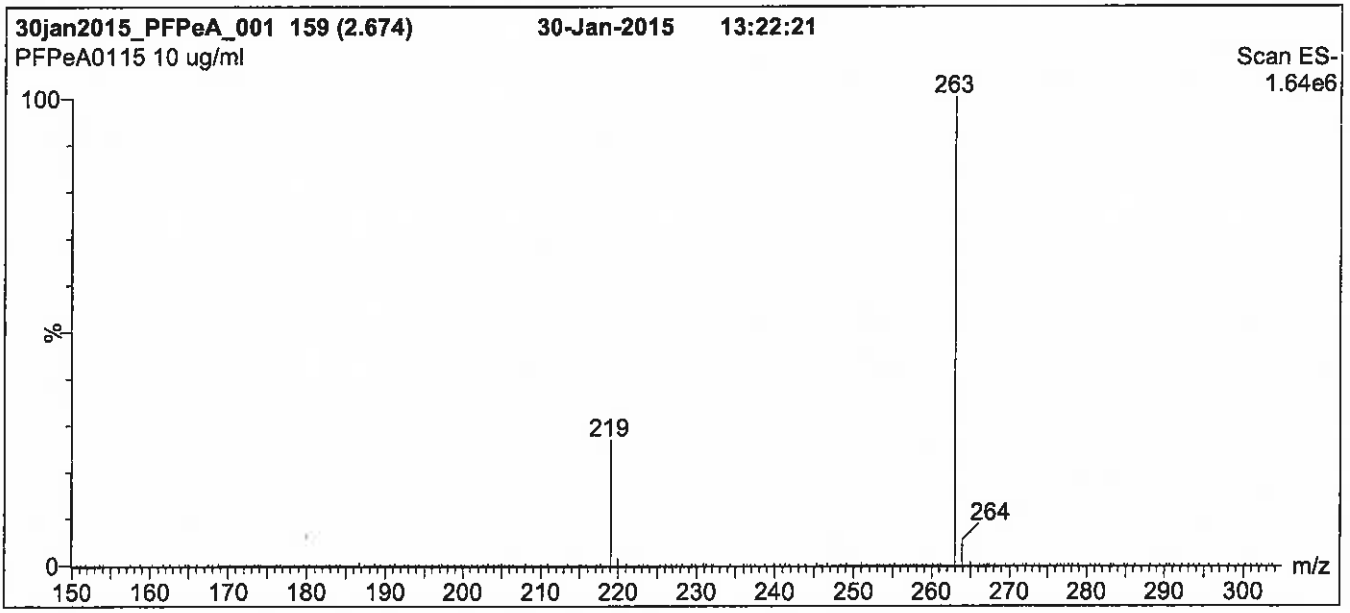
CALA

ANAB ACCREDITED

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

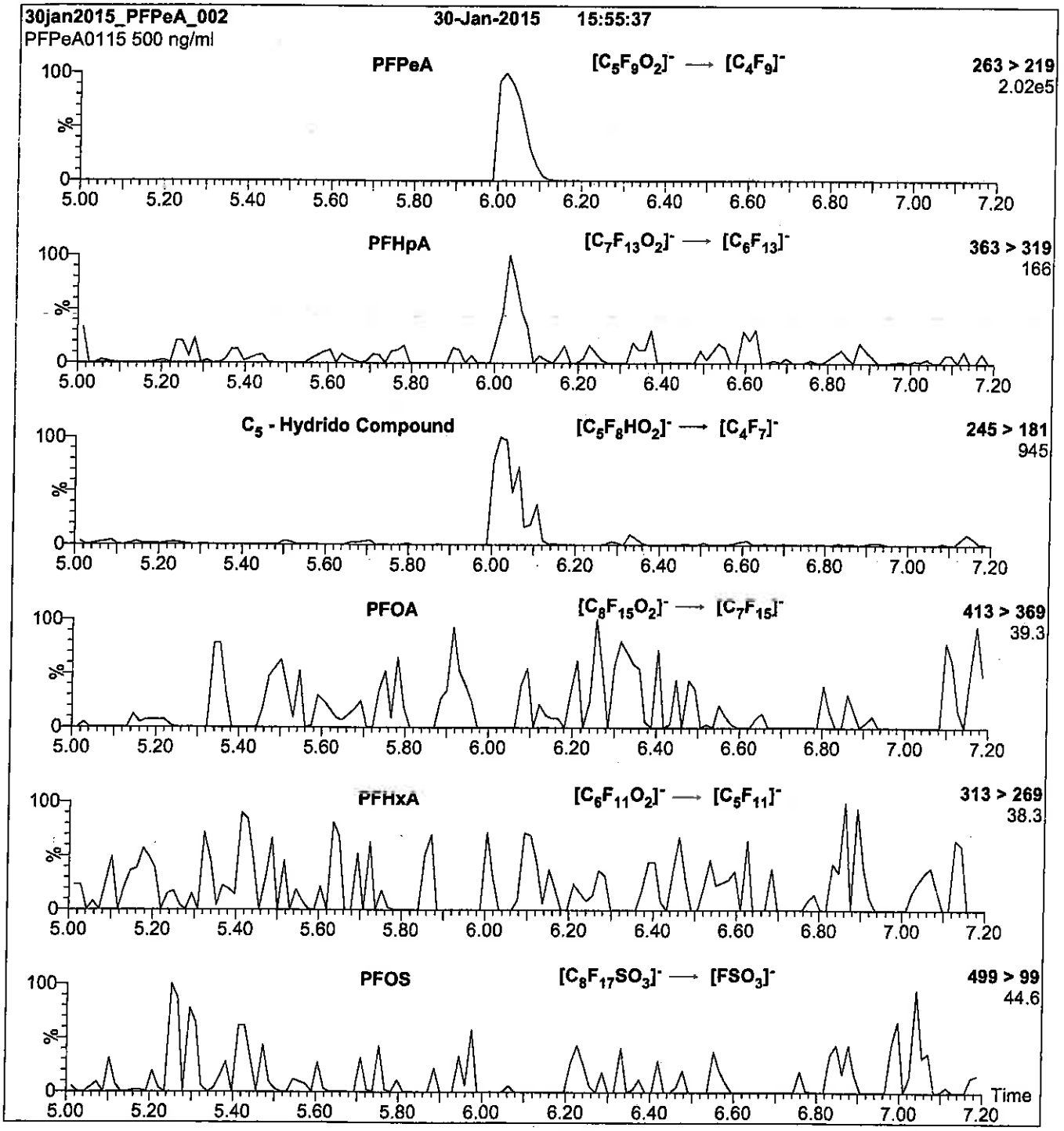
Flow: 300 µl/min

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 Rpd: CBW
PF-n-tetradecanoic acid

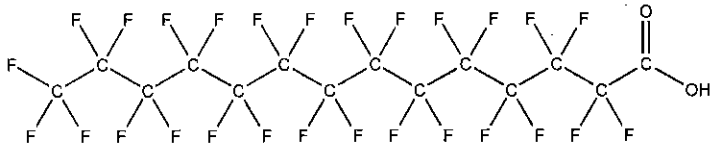
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA1215
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
EXPIRY DATE: (mm/dd/yyyy) 12/09/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/09/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

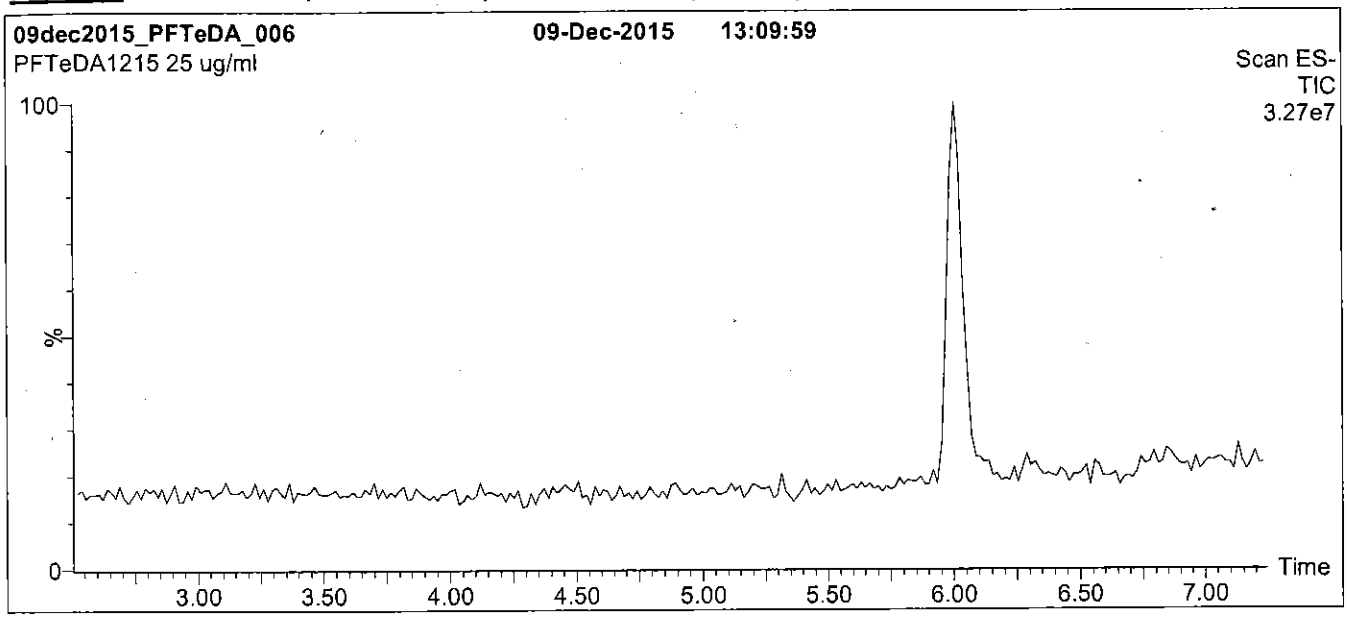
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

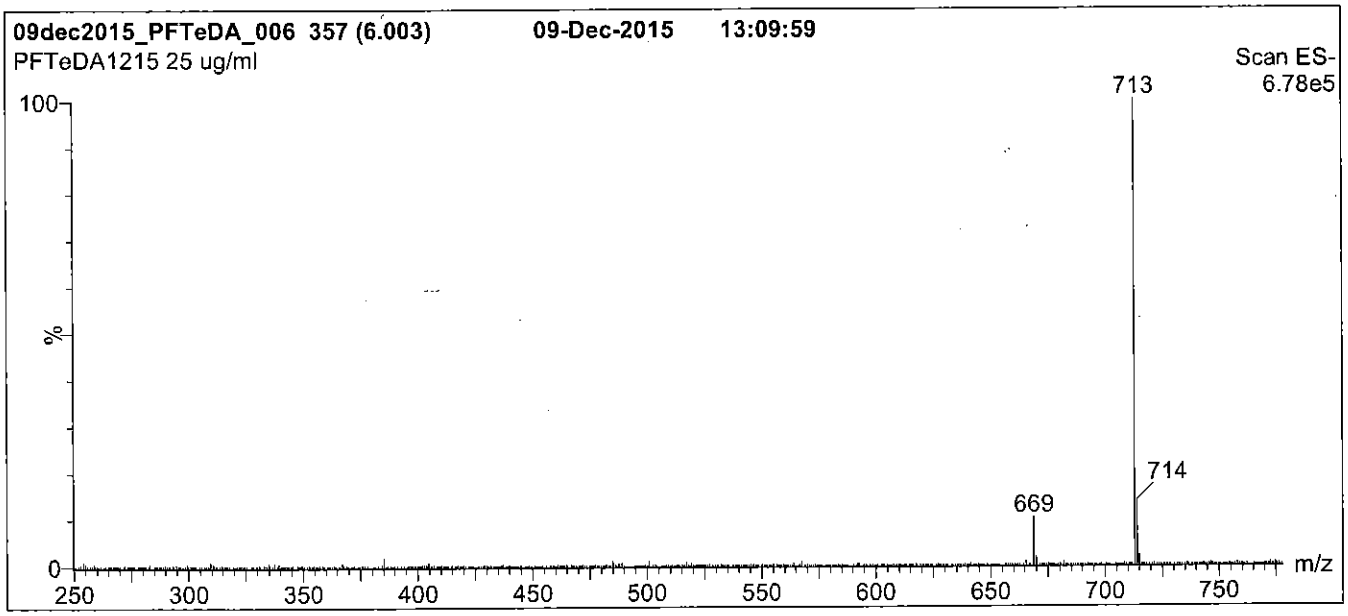
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

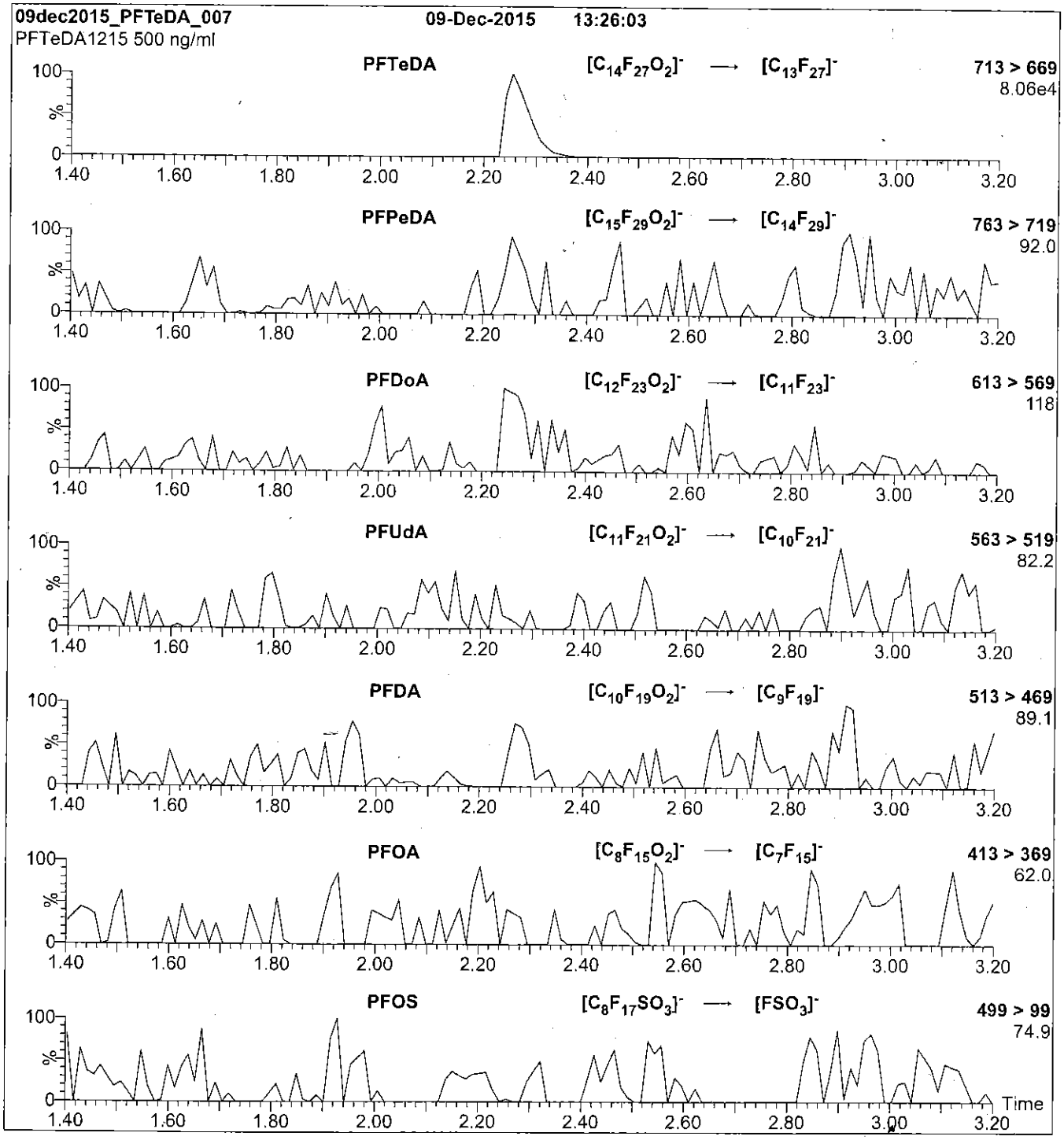
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

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

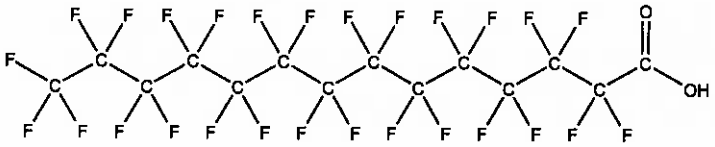
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

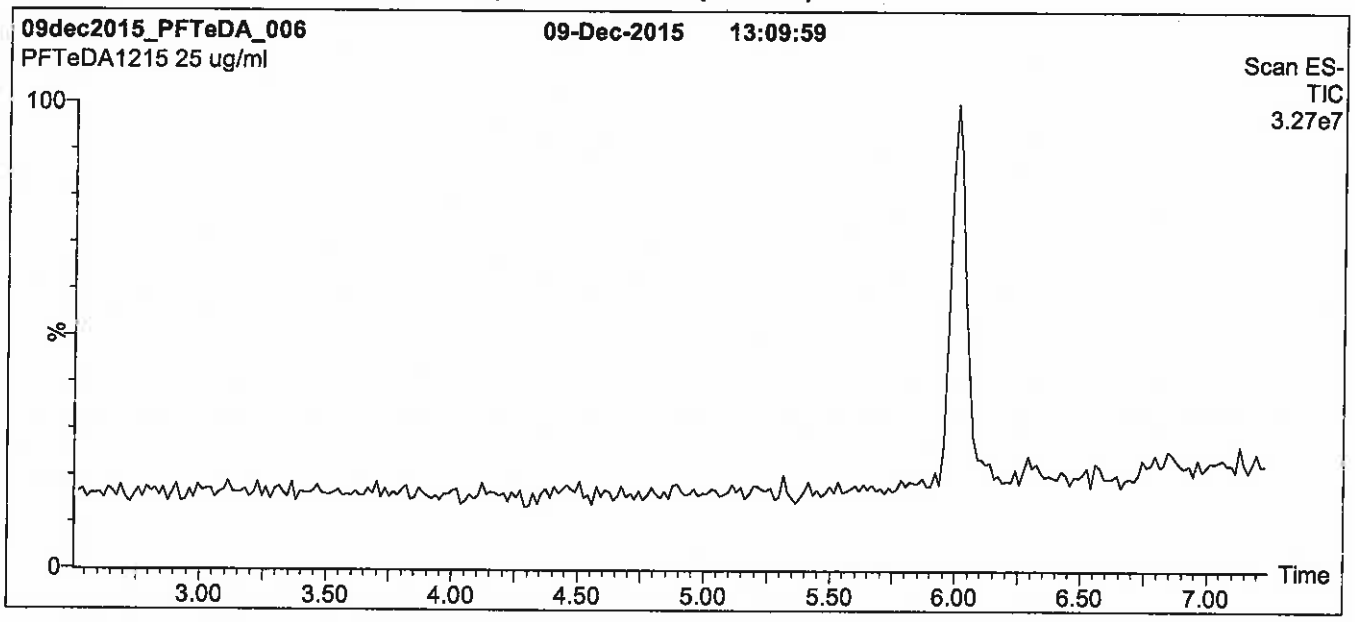
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

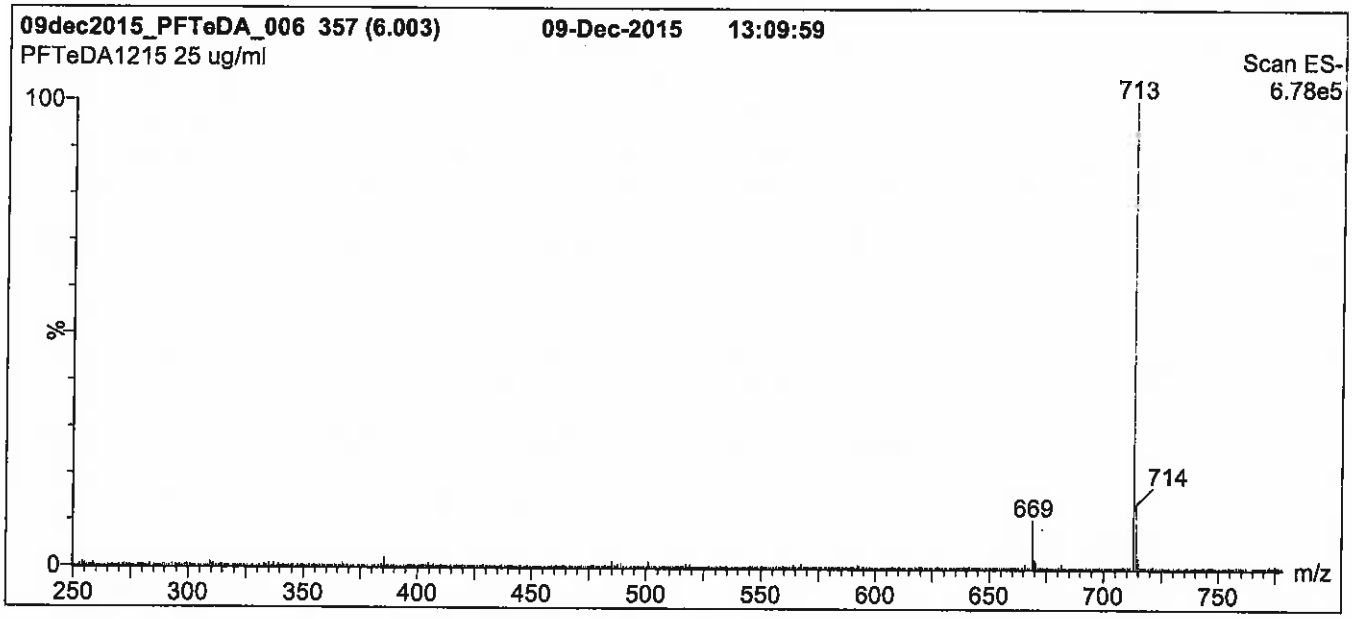
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

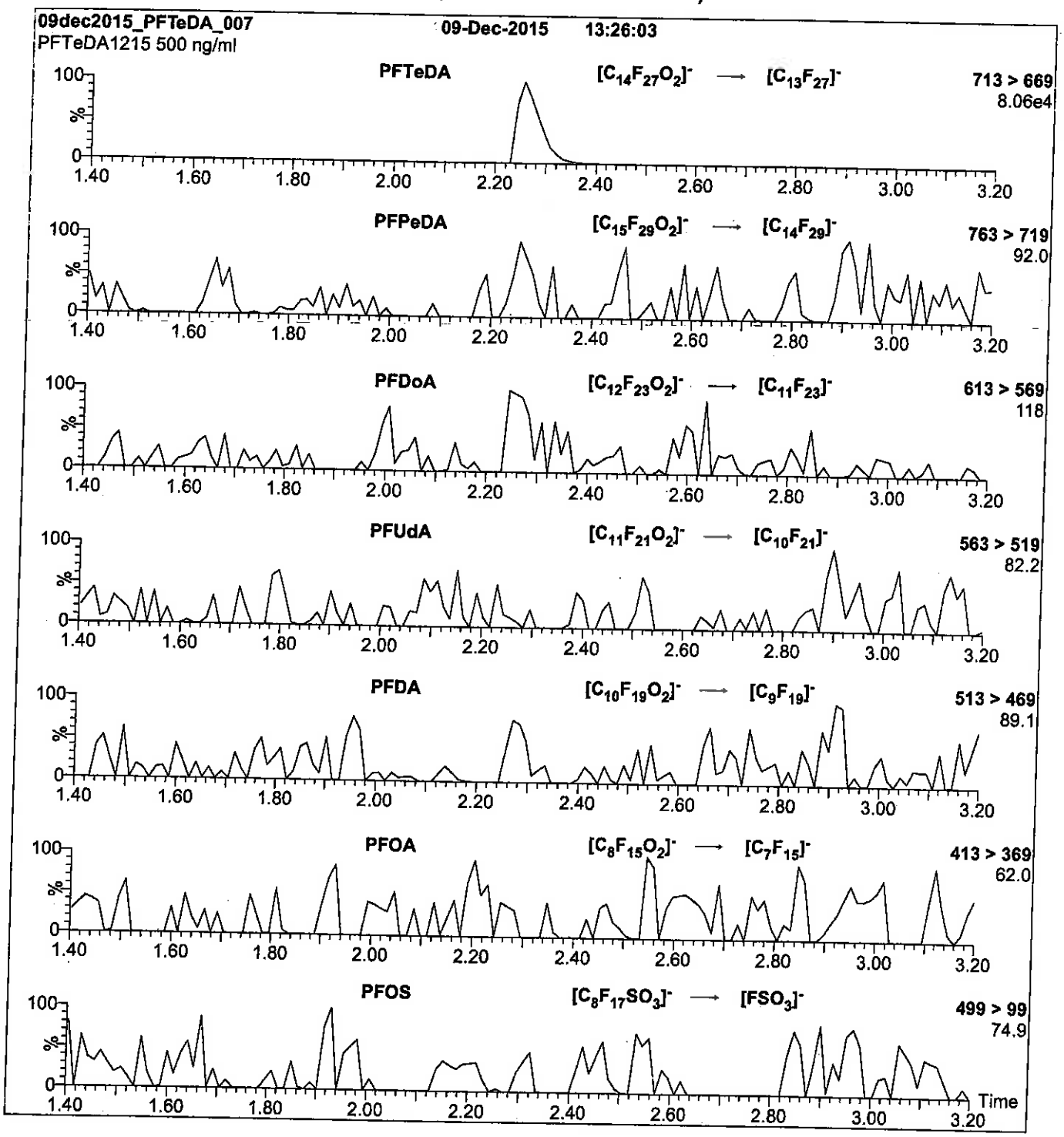
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFTrDA_00004

609697
ID: LCPFTrDA_00004
Exp: 12/10/18 Prpd: CBW
PF-n-tridecanoic acid

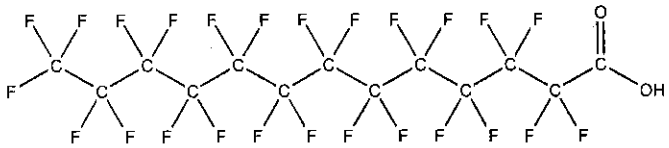
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
LOT NUMBER: PFTrDA1213
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE:
CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
MOLECULAR WEIGHT: 664.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/10/2013
EXPIRY DATE: (mm/dd/yyyy) 12/10/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$); ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/25/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON 'N1G 3M5 CANADA
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:

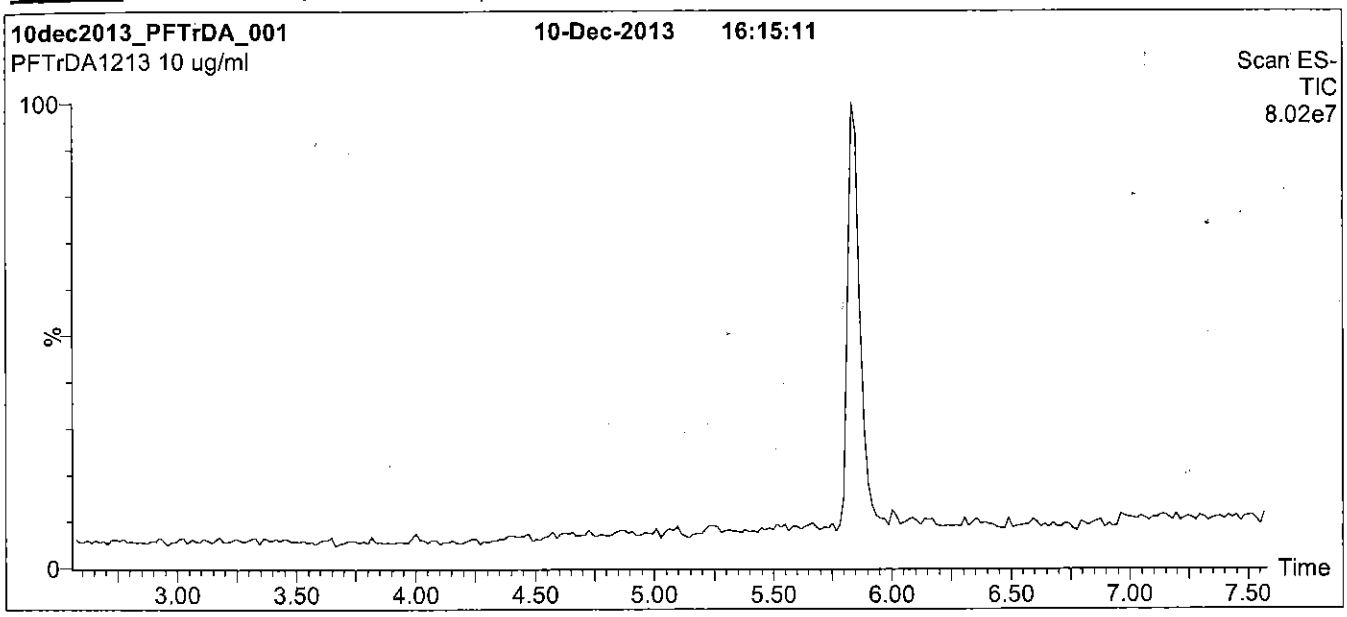
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

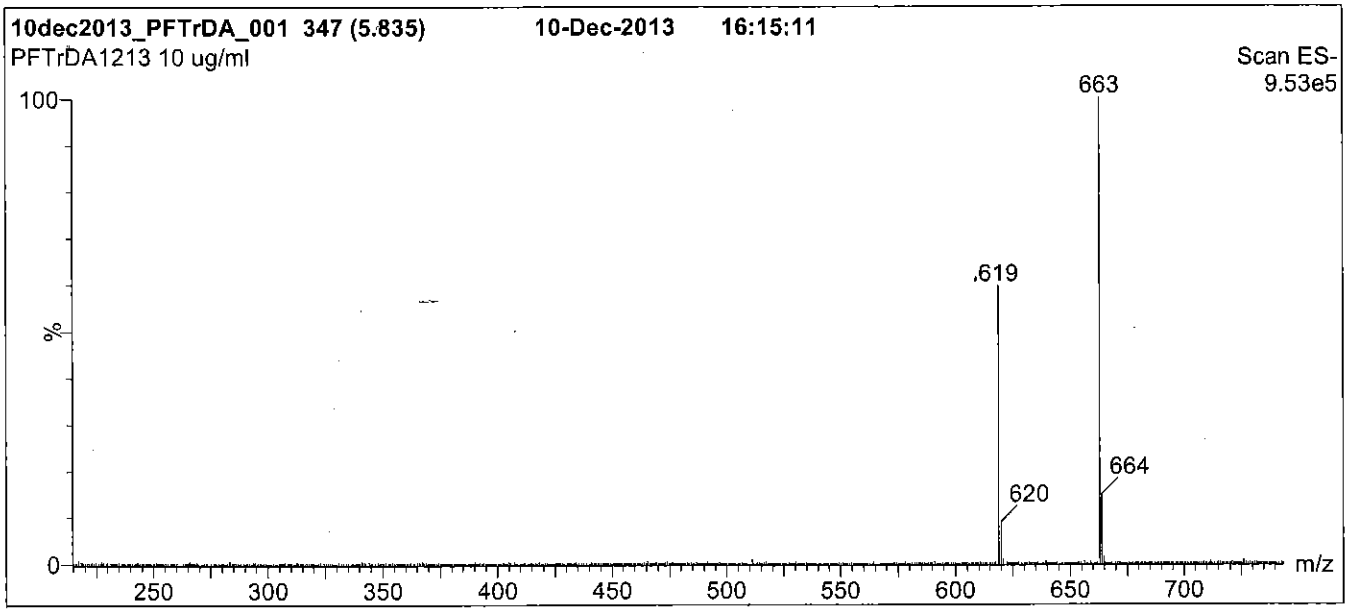
CALA Member Accreditation No. A1226

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: **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

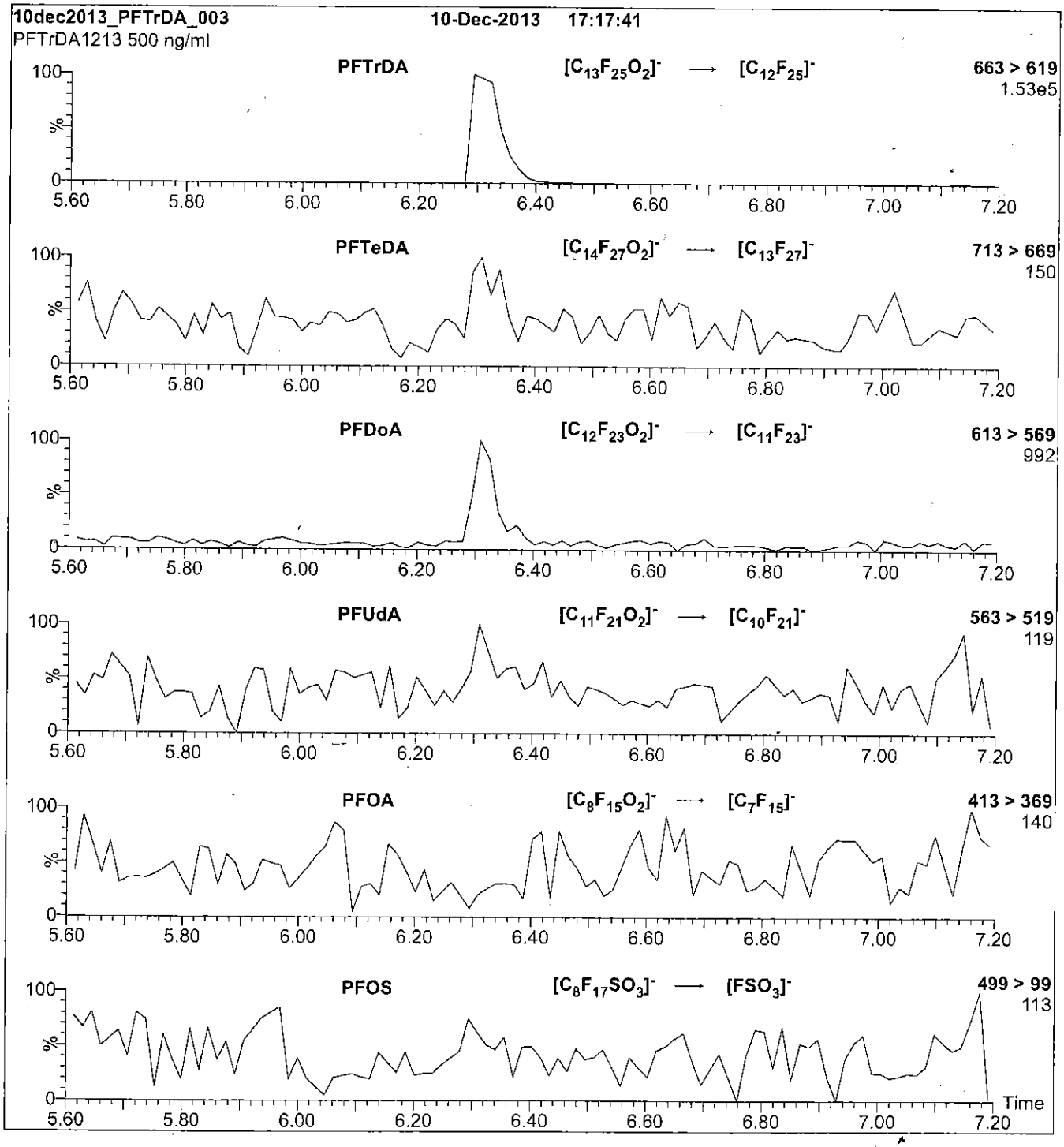
Flow: 300 µl/min

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

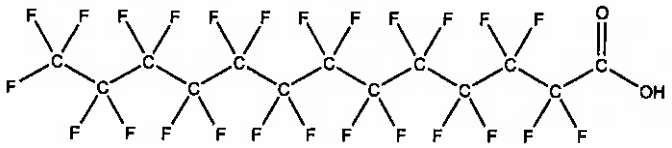
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

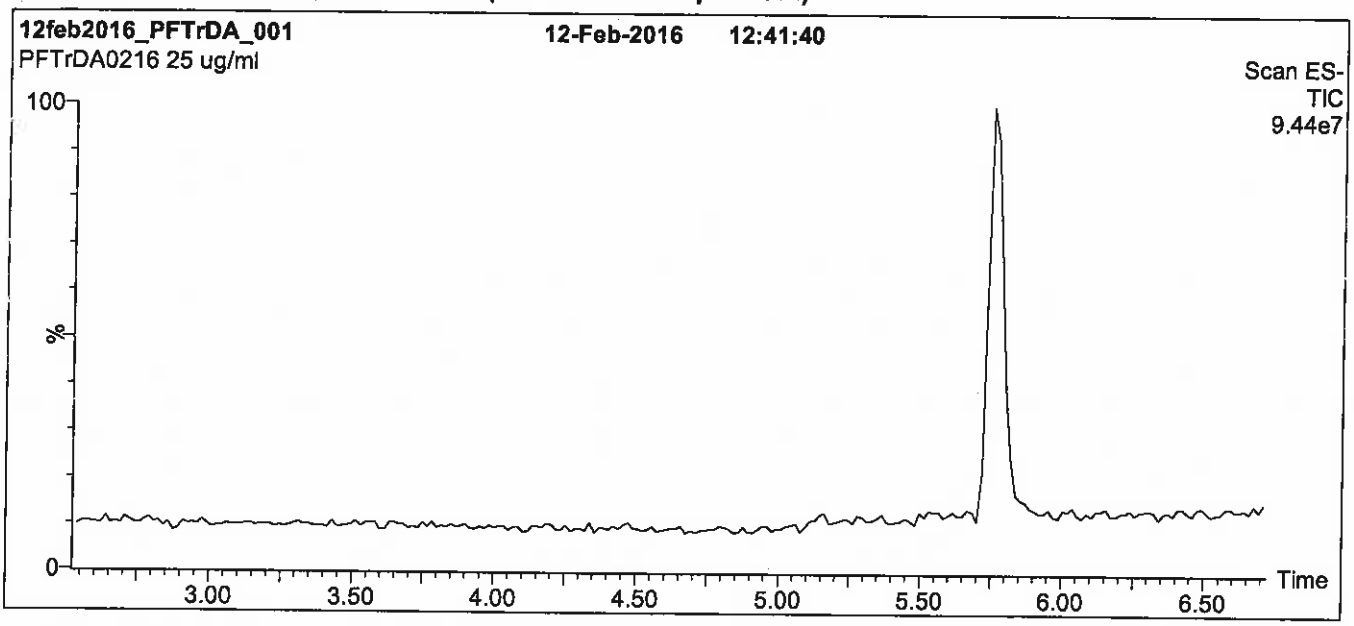
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

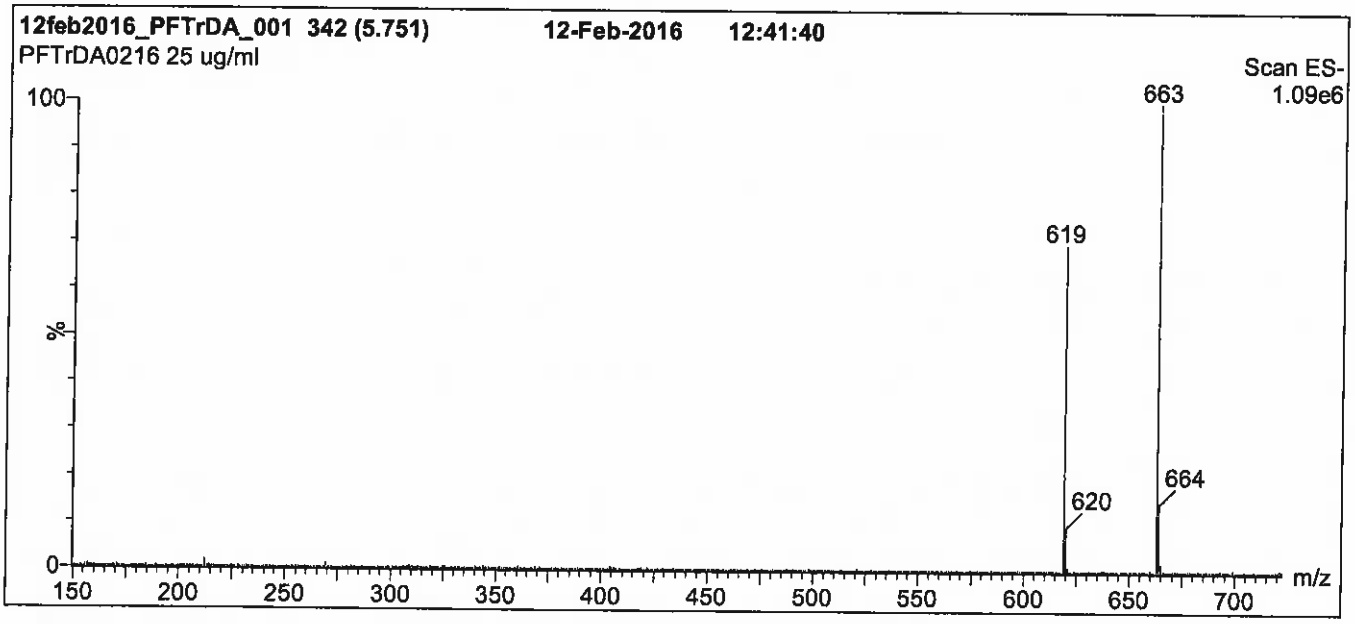
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **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

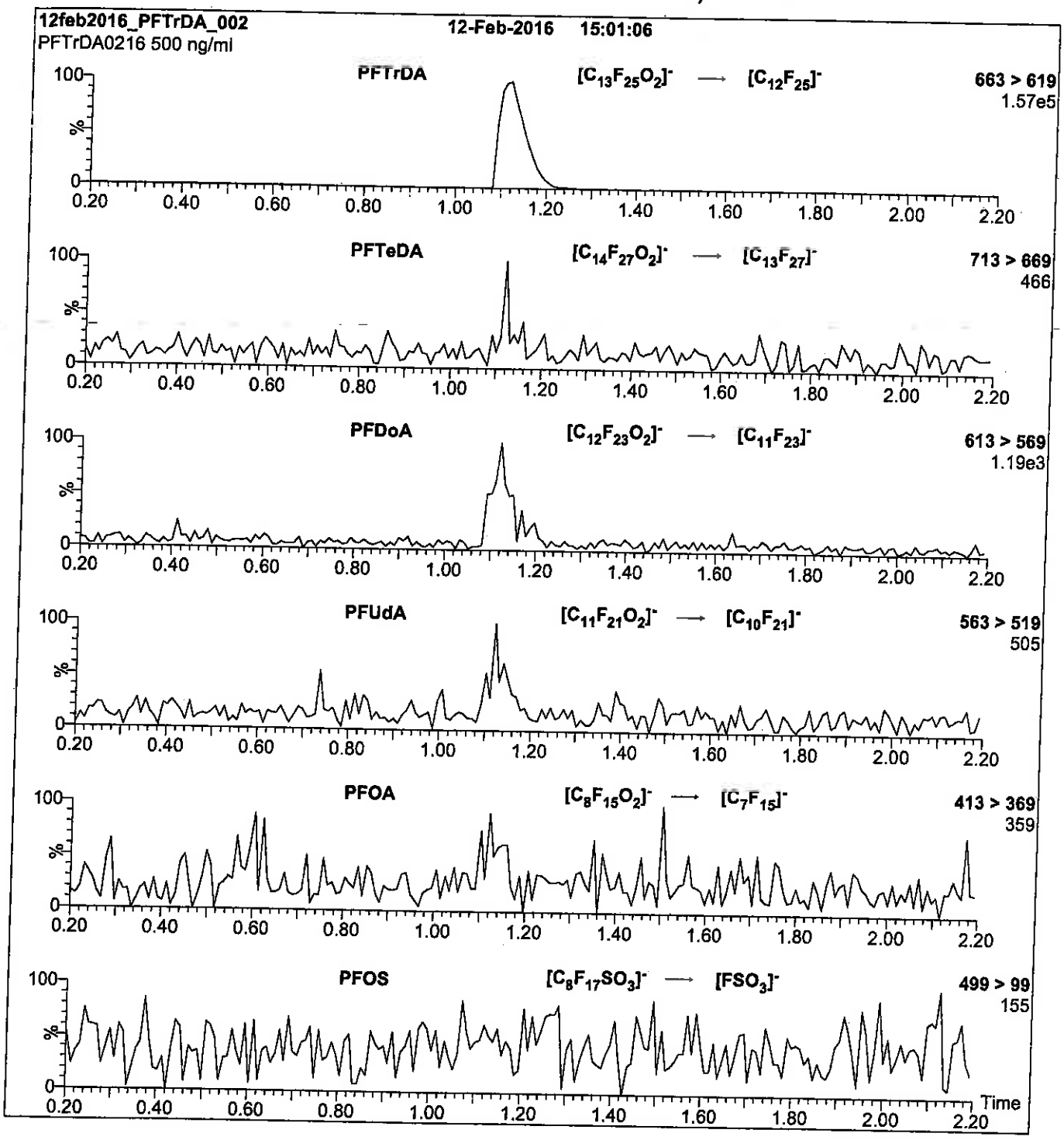
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 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% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

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

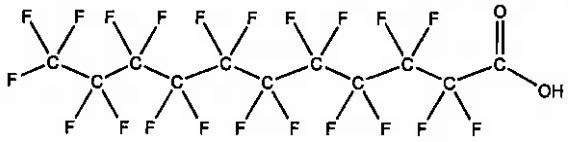
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
LOT NUMBER: PFUdA0815
COMPOUND: Perfluoro-n-undecanoic acid

STRUCTURE:

CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
MOLECULAR WEIGHT: 564.09
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/19/2015
EXPIRY DATE: (mm/dd/yyyy) 08/19/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/21/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

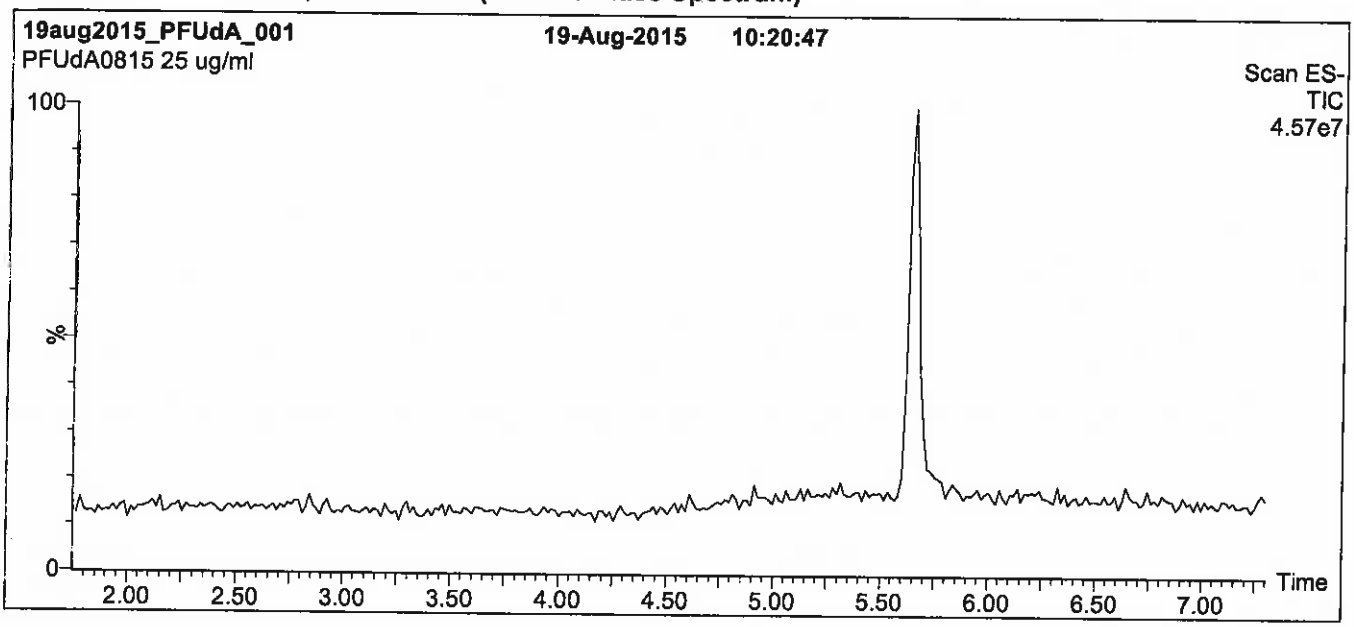
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

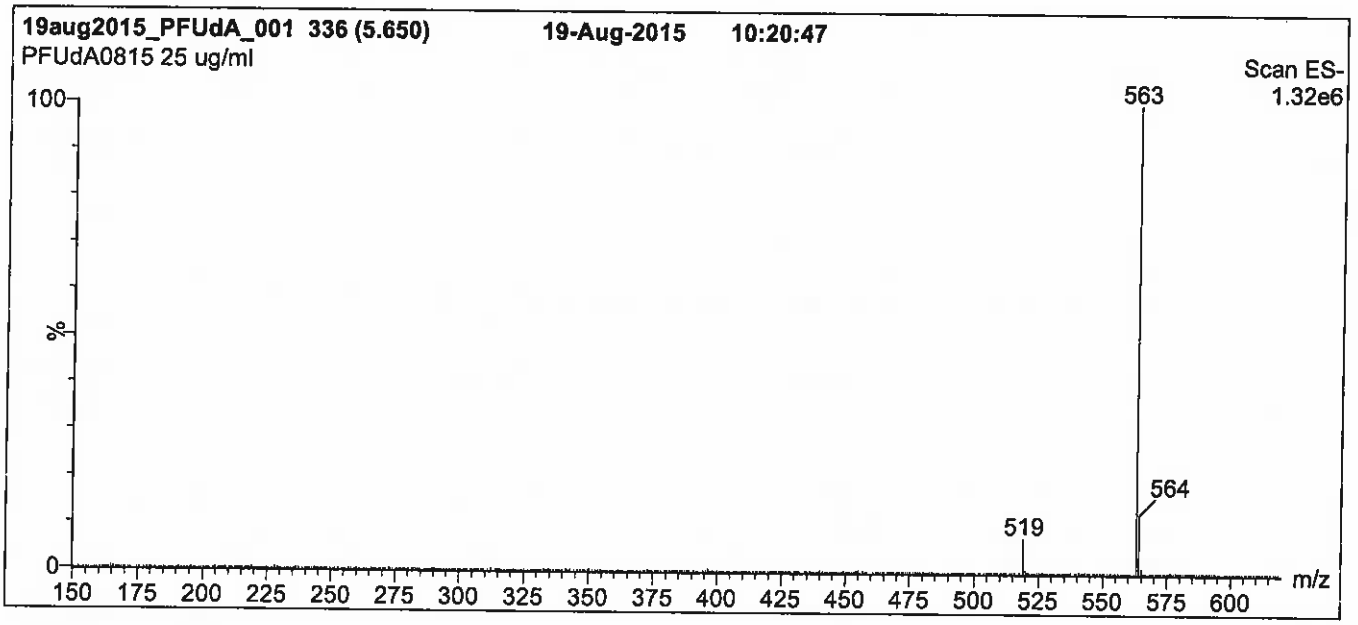
CALA

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: **PFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

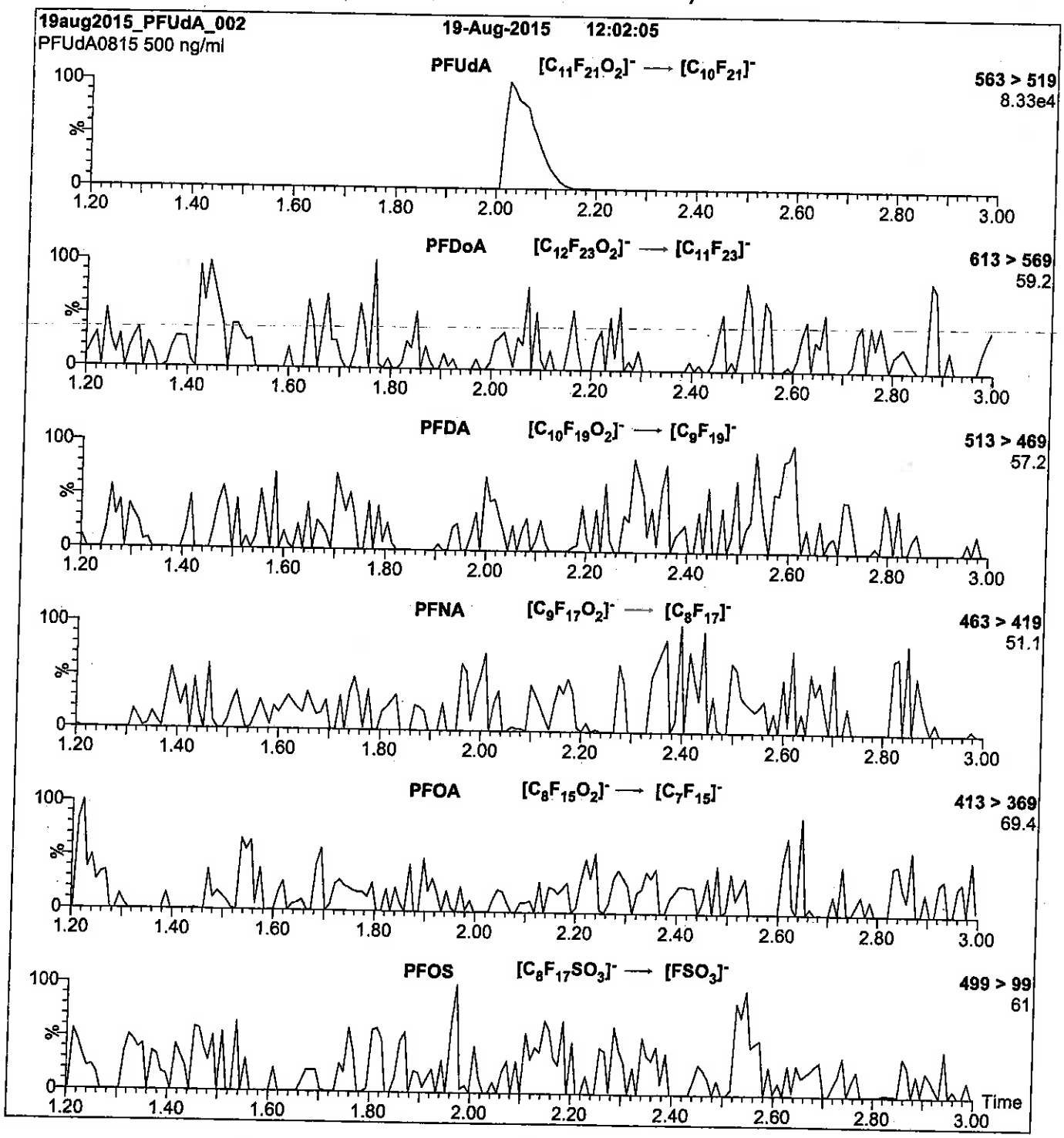
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFUdA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS) by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
DPT-16-03-GW-31-35	320-23998-1	102	53	107
DPT-16-03-GW-18-22	320-23998-2	108	63	112
DPT-16-04-GW-31-35	320-23998-3	113	44	116
DPT-16-04-GW-18-22	320-23998-4	110	57	112
DPT-16-10-GW-31-35	320-23998-5	101	47	103
DPT-16-10-GW-18-22	320-23998-6	107	58	115
DPT-16-09-GW-31-35	320-23998-7	109	50	115
DPT-16-09-GW-18-22	320-23998-8	109	65	114
DPT-16-08-GW-31-35	320-23998-9	111	57	117
DPT-16-08-GW-18-22	320-23998-10	102	45	113
DPT-16-07-GW-31-35	320-23998-11	48	66	57
DPT-16-07-GW-31-35 DL	320-23998-11 DL	117	112	121
DPT-16-07-GW-18-22	320-23998-12	39	71	74
DPT-16-07-GW-18-22 DL	320-23998-12 DL	101	99	127
DPT-16-06-GW-31-35	320-23998-13	35	55	61
DPT-16-06-GW-31-35 DL	320-23998-13 DL	104	111	138
DPT-16-06-GW-18-22	320-23998-14	46	54	59
DPT-16-06-GW-18-22 DL	320-23998-14 DL	116	108	126
DPT-16-11-GW-31-35	320-23998-15	64	73	90
DPT-16-11-GW-31-35 DL	320-23998-15 DL	126	106	134
DPT-16-11-GW-31-35 -DUP	320-23998-16	65	67	87
DPT-16-11-GW-31-35 -DUP DL	320-23998-16 DL	139	112	144
DPT-16-11-GW-18-22	320-23998-17	44	48	42
DPT-16-11-GW-18-22 DL	320-23998-17 DL	159 Q	147	150
	MB 320-140788/1-A	109	113	108
	LCS 320-140788/2-A	106	106	111
DPT-16-04-GW-31-35 -MS MS	320-23998-3 MS	107	47	111
DPT-16-08-GW-31-35 -MS MS	320-23998-9 MS	104	50	113
DPT-16-06-GW-31-35 -MS MS	320-23998-13 MS	33	55	61

	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.: 320-23998-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
DPT-16-06-GW-31-35-MS MS DL	320-23998-13 MS DL	95	101	121
DPT-16-04-GW-31-35-MSD MSD	320-23998-3 MSD	110	49	114
DPT-16-08-GW-31-35-MSD MSD	320-23998-9 MSD	107	64	118
DPT-16-06-GW-31-35-MSD MSD	320-23998-13 MSD	33	56	61
DPT-16-06-GW-31-35-MSD MSD DL	320-23998-13 MSD DL	101	112	137

	QC LIMITS
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21DEC2016A_012.d

Lab ID: LCS 320-140788/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	0.0346	87	60-140	
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0345	93	60-140	
13C4 PFOA	0.100	0.106	106	25-150	
13C4 PFOS	0.0956	0.106	111	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0368	104	50-150	
18O2 PFHxS	0.0946	0.101	106	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21DEC2016A_016.d

Lab ID: 320-23998-3 MS Client ID: DPT-16-04-GW-31-35-MS MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0389	0.0020 U	0.0356	92	60-140	
Perfluorooctane Sulfonate (PFOS)	0.0361	0.0016 J	0.0390	104	60-140	
13C4 PFOA	0.0971	0.045	0.0461	47	25-150	
13C4 PFOS	0.0929	0.11	0.103	111	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0343	0.0020 U	0.0401	117	50-150	
18O2 PFHxS	0.0919	0.11	0.0984	107	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21DEC2016A_032.d

Lab ID: 320-23998-9 MS Client ID: DPT-16-08-GW-31-35-MS MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0392	0.0045	0.0420	96	60-140	M
Perfluorooctane Sulfonate (PFOS)	0.0364	0.022	0.0625	112	60-140	
13C4 PFOA	0.0981	0.055	0.0489	50	25-150	
13C4 PFOS	0.0938	0.11	0.106	113	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0347	0.0056	0.0466	118	50-150	
18O2 PFHxS	0.0928	0.10	0.0967	104	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21DEC2016A_042.d

Lab ID: 320-23998-13 MS Client ID: DPT-16-06-GW-31-35-MS MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	1.2	1.15	-52	60-140	E M 4
Perfluorooctane Sulfonate (PFOS)	0.0371	2.2	2.16	-160	60-140	E 4
13C4 PFOA	0.0999	0.056	0.0554	55	25-150	
13C4 PFOS	0.0955	0.060	0.0582	61	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0353	0.42	0.485	192	50-150	E 4
18O2 PFHxS	0.0945	0.034	0.0313	33	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 22DEC2016BB_016.d

Lab ID: 320-23998-13 MS DL Client ID: DPT-16-06-GW-31-35-MS MS DL

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	1.6	1.69	160	60-140	D M 4
Perfluorooctane Sulfonate (PFOS)	0.0371	2.7	2.74	102	60-140	D 4
13C4 PFOA	0.0999	0.11	0.101	101	25-150	
13C4 PFOS	0.0955	0.14	0.116	121	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0353	0.28	0.325	123	50-150	D 4
18O2 PFHxS	0.0945	0.10	0.0902	95	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21DEC2016A_017.d

Lab ID: 320-23998-3 MSD Client ID: DPT-16-04-GW-31-35-MSD MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0394	0.0368	93	3	30	60-140	
Perfluorooctane Sulfonate (PFOS)	0.0366	0.0389	102	0	30	60-140	
13C4 PFOA	0.0985	0.0483	49			25-150	
13C4 PFOS	0.0942	0.107	114			25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0348	0.0403	116	1	30	50-150	
18O2 PFHxS	0.0932	0.103	110			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21DEC2016A_033.d

Lab ID: 320-23998-9 MSD Client ID: DPT-16-08-GW-31-35-MSD MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0395	0.0435	99	4	30	60-140	M
Perfluorooctane Sulfonate (PFOS)	0.0366	0.0610	107	2	30	60-140	
13C4 PFOA	0.0987	0.0627	64			25-150	
13C4 PFOS	0.0943	0.112	118			25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0349	0.0455	115	2	30	50-150	
18O2 PFHxS	0.0933	0.100	107			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21DEC2016A_043.d

Lab ID: 320-23998-13 MSD Client ID: DPT-16-06-GW-31-35-MSD MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0396	1.14	-67	0	30	60-140	E M 4
Perfluorooctane Sulfonate (PFOS)	0.0367	2.15	-180	0	30	60-140	E 4
13C4 PFOA	0.0990	0.0559	56			25-150	
13C4 PFOS	0.0946	0.0576	61			25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0350	0.479	177	1	30	50-150	E 4
18O2 PFHxS	0.0936	0.0313	33			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 22DEC2016BB_017.d

Lab ID: 320-23998-13 MSD DL Client ID: DPT-16-06-GW-31-35-MSD MSD DL

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0396	1.67	119	1	30	60-140	D M 4
Perfluorooctane Sulfonate (PFOS)	0.0367	2.62	-203	4	30	60-140	D 4
13C4 PFOA	0.0990	0.111	112			25-150	
13C4 PFOS	0.0946	0.129	137			25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0350	0.332	143	2	30	50-150	D 4
18O2 PFHxS	0.0936	0.0950	101			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.: 320-23998-1

SDG No.:

Lab File ID: 21DEC2016A_011.d Lab Sample ID: MB 320-140788/1-A

Matrix: Water Date Extracted: 12/06/2016 11:39

Instrument ID: A8_N Date Analyzed: 12/21/2016 13:19

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-140788/2-A	21DEC2016A_012.d	12/21/2016 13:26
DPT-16-03-GW-31-35	320-23998-1	21DEC2016A_013.d	12/21/2016 13:34
DPT-16-03-GW-18-22	320-23998-2	21DEC2016A_014.d	12/21/2016 13:42
DPT-16-04-GW-31-35	320-23998-3	21DEC2016A_015.d	12/21/2016 13:49
DPT-16-04-GW-31-35-MS MS	320-23998-3 MS	21DEC2016A_016.d	12/21/2016 13:57
DPT-16-04-GW-31-35-MSD MSD	320-23998-3 MSD	21DEC2016A_017.d	12/21/2016 14:04
DPT-16-04-GW-18-22	320-23998-4	21DEC2016A_018.d	12/21/2016 14:12
DPT-16-10-GW-31-35	320-23998-5	21DEC2016A_019.d	12/21/2016 14:19
DPT-16-10-GW-18-22	320-23998-6	21DEC2016A_020.d	12/21/2016 14:27
DPT-16-09-GW-31-35	320-23998-7	21DEC2016A_029.d	12/21/2016 16:35
DPT-16-09-GW-18-22	320-23998-8	21DEC2016A_030.d	12/21/2016 16:43
DPT-16-08-GW-31-35	320-23998-9	21DEC2016A_031.d	12/21/2016 16:50
DPT-16-08-GW-31-35-MS MS	320-23998-9 MS	21DEC2016A_032.d	12/21/2016 16:58
DPT-16-08-GW-31-35-MSD MSD	320-23998-9 MSD	21DEC2016A_033.d	12/21/2016 17:05
DPT-16-08-GW-18-22	320-23998-10	21DEC2016A_034.d	12/21/2016 17:13
DPT-16-07-GW-31-35	320-23998-11	21DEC2016A_035.d	12/21/2016 17:20
DPT-16-07-GW-18-22	320-23998-12	21DEC2016A_036.d	12/21/2016 17:28
DPT-16-06-GW-31-35	320-23998-13	21DEC2016A_041.d	12/21/2016 18:05
DPT-16-06-GW-31-35-MS MS	320-23998-13 MS	21DEC2016A_042.d	12/21/2016 18:13
DPT-16-06-GW-31-35-MSD MSD	320-23998-13 MSD	21DEC2016A_043.d	12/21/2016 18:20
DPT-16-06-GW-18-22	320-23998-14	21DEC2016A_044.d	12/21/2016 18:28
DPT-16-11-GW-31-35	320-23998-15	21DEC2016A_045.d	12/21/2016 18:35

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab File ID: 21DEC2016A_011.d Lab Sample ID: MB 320-140788/1-A

Matrix: Water Date Extracted: 12/06/2016 11:39

Instrument ID: A8_N Date Analyzed: 12/21/2016 13:19

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
DPT-16-11-GW-31-35-DUP	320-23998-16	21DEC2016A_046.d	12/21/2016 18:43
DPT-16-11-GW-18-22	320-23998-17	21DEC2016A_047.d	12/21/2016 18:50
DPT-16-11-GW-18-22 DL	320-23998-17 DL	22DEC2016BB_012.d	12/22/2016 17:12
DPT-16-07-GW-31-35 DL	320-23998-11 DL	22DEC2016BB_013.d	12/22/2016 17:20
DPT-16-07-GW-18-22 DL	320-23998-12 DL	22DEC2016BB_014.d	12/22/2016 17:27
DPT-16-06-GW-31-35 DL	320-23998-13 DL	22DEC2016BB_015.d	12/22/2016 17:35
DPT-16-06-GW-31-35-MS MS DL	320-23998-13 MS DL	22DEC2016BB_016.d	12/22/2016 17:42
DPT-16-06-GW-31-35-MSD MSD DL	320-23998-13 MSD DL	22DEC2016BB_017.d	12/22/2016 17:50
DPT-16-06-GW-18-22 DL	320-23998-14 DL	22DEC2016BB_018.d	12/22/2016 17:57
DPT-16-11-GW-31-35 DL	320-23998-15 DL	22DEC2016BB_019.d	12/22/2016 18:05
DPT-16-11-GW-31-35-DUP DL	320-23998-16 DL	22DEC2016BB_020.d	12/22/2016 18:12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-03-GW-31-35 Lab Sample ID: 320-23998-1

Matrix: Water Lab File ID: 21DEC2016A_013.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 09:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 254(mL) Date Analyzed: 12/21/2016 13:34

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.019	M	0.0025	0.0020	0.00074
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.13		0.0039	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	53		25-150
STL00991	13C4 PFOS	107		25-150
STL00994	18O2 PFHxS	102		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_013.d
Lims ID: 320-23998-A-1-A
Client ID: DPT-16-03-GW-31-35
Sample Type: Client
Inject. Date: 21-Dec-2016 13:34:30 ALS Bottle#: 3 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:14:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 10 18O2 PFHxS										
403.00 > 84.00	2.478	2.488	-0.010		15701258	48.0		102	376239	
D 14 13C4 PFOA										
417.00 > 372.00	2.825	2.828	-0.003		6070216	26.4		52.7	437745	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.825	2.836	-0.011	1.000	1147729	9.42			7841	M
413.00 > 169.00	2.825	2.836	-0.011	1.000	819491		1.40(0.90-1.10)		4270	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.204	3.100	0.104	1.000	17165487	65.1			291866	
499.00 > 99.00	3.204	3.100	0.104	1.000	3616794		4.75(0.90-1.10)		141970	
D 17 13C4 PFOS										
503.00 > 80.00	3.204	3.206	-0.002		12672264	50.9		107	347469	

QC Flag Legend

Review Flags
M - Manually Integrated

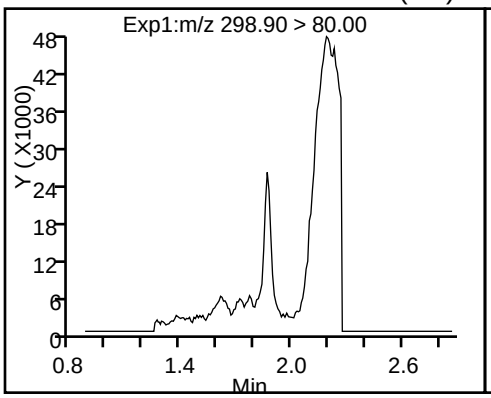
Report Date: 22-Dec-2016 10:26:32 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

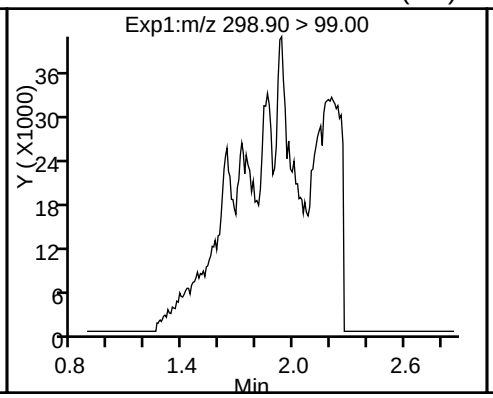
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_013.d

Injection Date:	21-Dec-2016 13:34:30	Instrument ID:	A8_N		
Lims ID:	320-23998-A-1-A	Lab Sample ID:	320-23998-1		
Client ID:	DPT-16-03-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	3	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

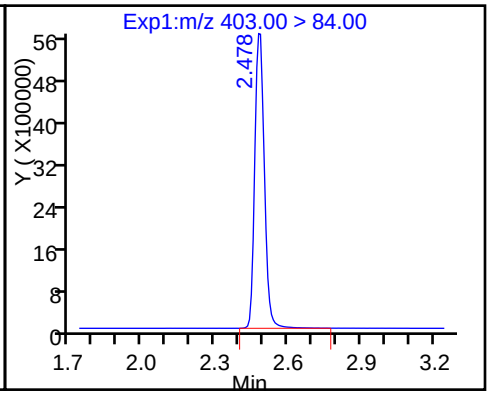
5 Perfluorobutanesulfonic acid (ND)



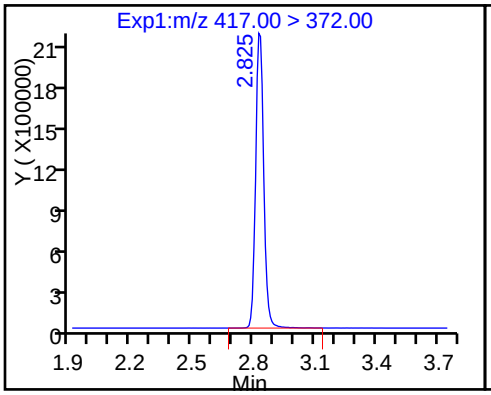
5 Perfluorobutanesulfonic acid (ND)



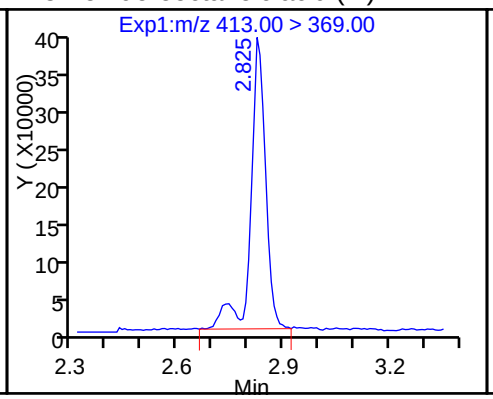
D 10 18O2 PFHxS



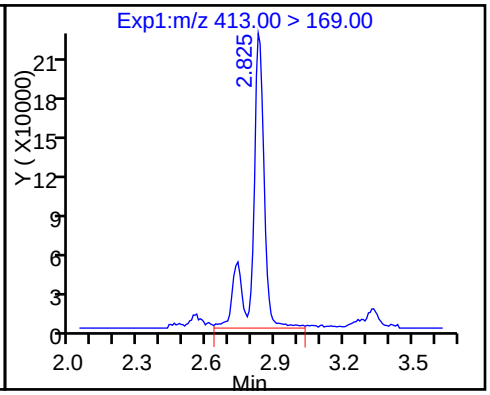
D 14 13C4 PFOA



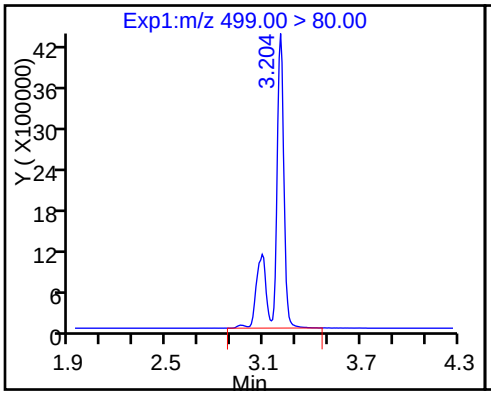
15 Perfluorooctanoic acid (M)



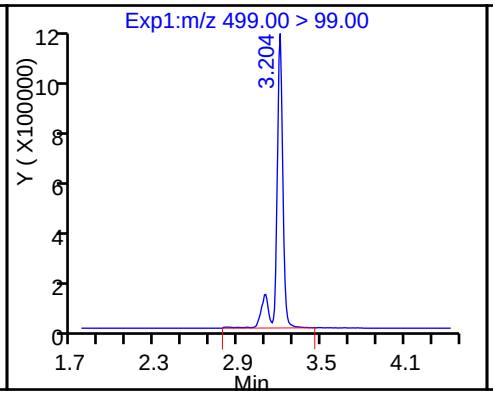
15 Perfluorooctanoic acid



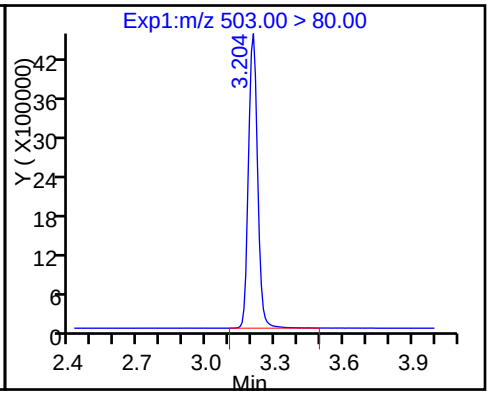
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

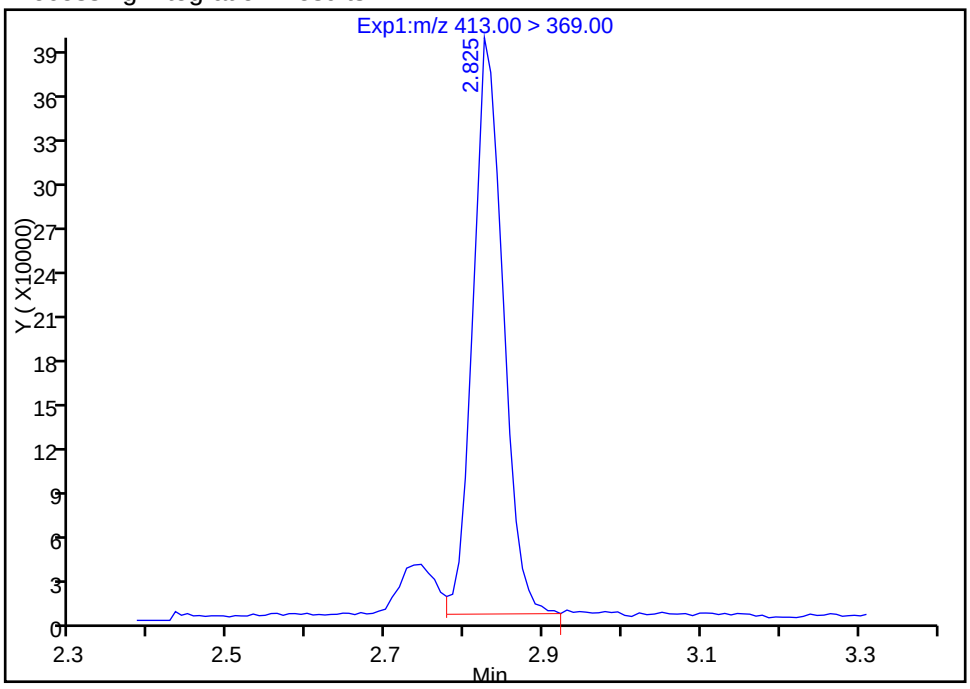
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_013.d				
Injection Date:	21-Dec-2016 13:34:30	Instrument ID:	A8_N		
Lims ID:	320-23998-A-1-A	Lab Sample ID:	320-23998-1		
Client ID:	DPT-16-03-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	3	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

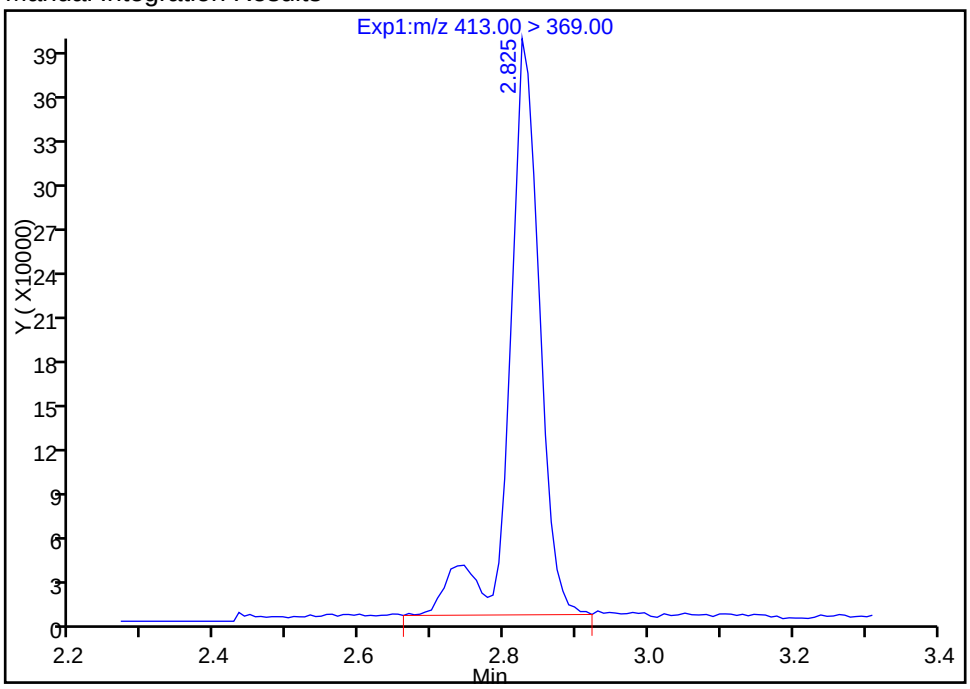
Processing Integration Results

RT: 2.82
Area: 1037847
Amount: 8.521895
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 1147729
Amount: 9.424150
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:14:02

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-03-GW-18-22 Lab Sample ID: 320-23998-2

Matrix: Water Lab File ID: 21DEC2016A_014.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 10:10

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 257.1(mL) Date Analyzed: 12/21/2016 13:42

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.00092	J	0.0024	0.0019	0.00073
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0071		0.0039	0.0029	0.0012
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.0019	0.00089

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	63		25-150
STL00991	13C4 PFOS	112		25-150
STL00994	18O2 PFHxS	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_014.d
Lims ID: 320-23998-A-2-A
Client ID: DPT-16-03-GW-18-22
Sample Type: Client
Inject. Date: 21-Dec-2016 13:42:02 ALS Bottle#: 4 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:14:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 10 18O2 PFHxS										
403.00 > 84.00	2.478	2.488	-0.010		16672316	51.0		108	861639	
D 14 13C4 PFOA										
417.00 > 372.00	2.825	2.828	-0.003		7312837	31.7		63.5	398999	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.833	2.836	-0.003	1.000	69762	0.4755			533	
413.00 > 169.00	2.833	2.836	-0.003	1.000	39413		1.77(0.90-1.10)		1669	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.203	3.100	0.103	1.000	1010556	3.65			43918	
499.00 > 99.00	3.203	3.100	0.103	1.000	213958		4.72(0.90-1.10)		11150	
D 17 13C4 PFOS										
503.00 > 80.00	3.203	3.206	-0.003		13306382	53.5		112	670124	

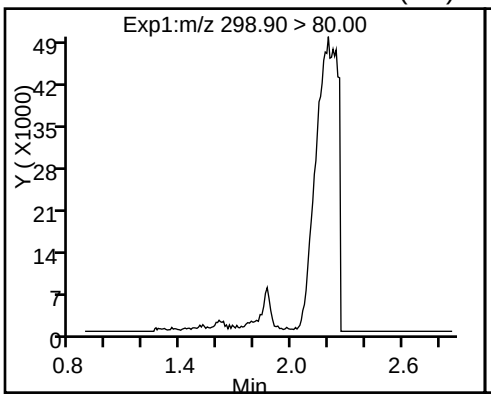
Report Date: 22-Dec-2016 10:26:33 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

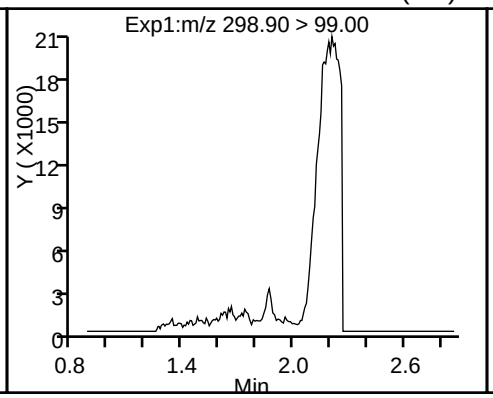
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_014.d

Injection Date:	21-Dec-2016 13:42:02	Instrument ID:	A8_N		
Lims ID:	320-23998-A-2-A	Lab Sample ID:	320-23998-2		
Client ID:	DPT-16-03-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	4	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

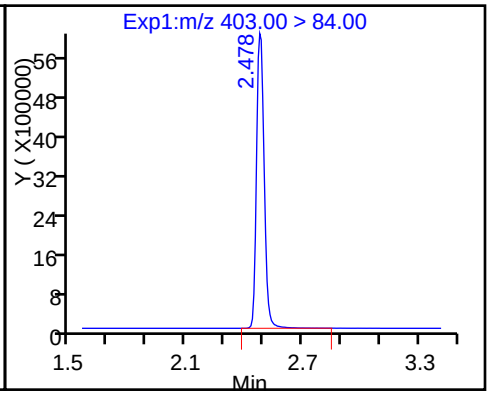
5 Perfluorobutanesulfonic acid (ND)



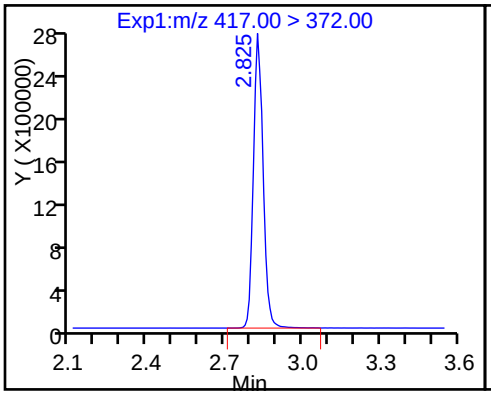
5 Perfluorobutanesulfonic acid (ND)



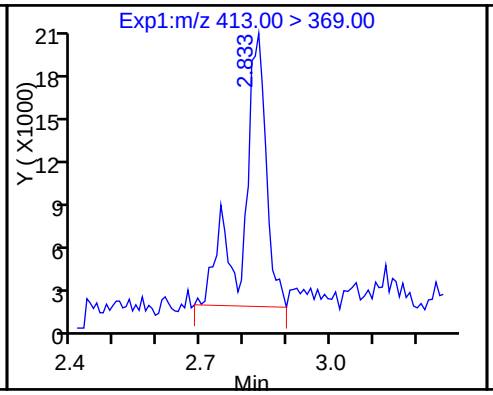
D 10 18O2 PFHxS



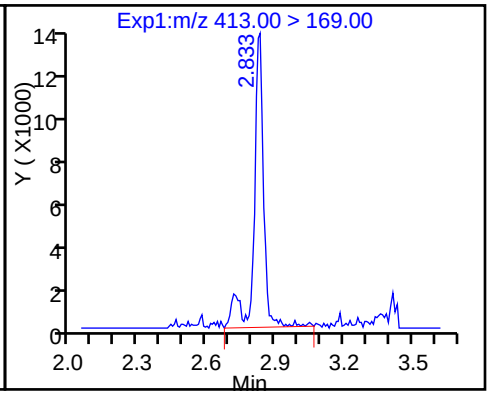
D 14 13C4 PFOA



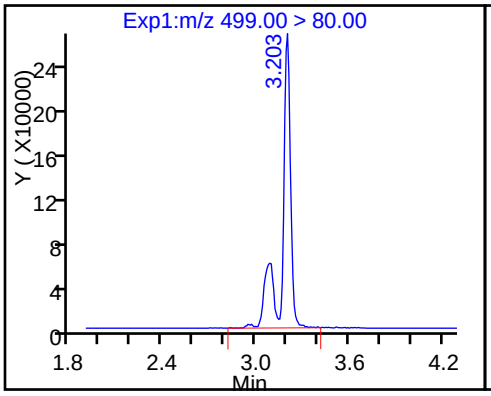
15 Perfluorooctanoic acid



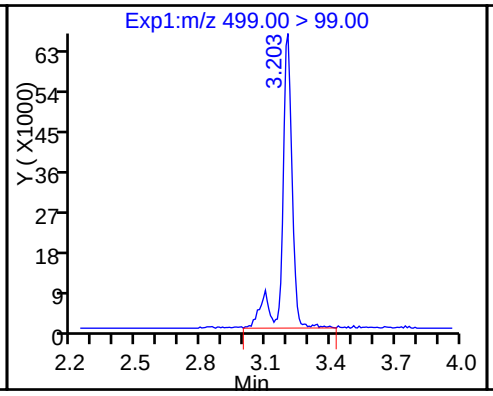
15 Perfluorooctanoic acid



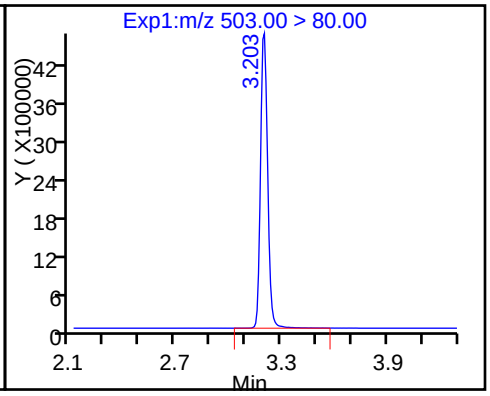
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-04-GW-31-35 Lab Sample ID: 320-23998-3

Matrix: Water Lab File ID: 21DEC2016A_015.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 10:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 247.2(mL) Date Analyzed: 12/21/2016 13:49

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.: 143502 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	0.00076
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0016	J M	0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00093

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	44		25-150
STL00991	13C4 PFOS	116		25-150
STL00994	18O2 PFHxS	113		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_015.d
Lims ID: 320-23998-A-3-A
Client ID: DPT-16-04-GW-31-35
Sample Type: Client
Inject. Date: 21-Dec-2016 13:49:31 ALS Bottle#: 5 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:15:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.558	1.550	0.008		8616518	24.8		49.6	1447517	
1 Perfluorobutyric acid										
212.90 > 169.00	1.558	1.550	0.008	1.000	24957	0.1696			69.9	
D 4 13C5-PFPeA										
267.90 > 223.00	1.839	1.829	0.010		6682712	25.1		50.2	678136	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.839	1.839	0.0	1.000	17567	0.1332			134	
D 6 13C2 PFHxA										
315.00 > 270.00	2.131	2.129	0.002		5170373	21.1		42.2	416780	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.122	2.129	-0.007	1.000	13168	0.1371			289	
D 11 13C4-PFHpA										
367.00 > 322.00	2.471	2.473	-0.002		4855812	21.5		42.9	464712	
D 10 18O2 PFHxS										
403.00 > 84.00	2.486	2.488	-0.002		17439720	53.3		113	931779	
D 47 M2-6:2FTS										
429.00 > 409.00	2.809	2.805	0.004		580	0.004958		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.809	2.805	0.004	1.000	2747	NR				
D 14 13C4 PFOA										
417.00 > 372.00	2.833	2.828	0.005		5072359	22.0		44.0	320885	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.212	3.100	0.112	1.000	219865	0.7691			11771	M
499.00 > 99.00	3.204	3.100	0.104	0.997	52095		4.22(0.90-1.10)		2507	M
D 19 13C5 PFNA										
468.00 > 423.00	3.204	3.206	-0.002		3377019	19.0		38.0	408976	
D 17 13C4 PFOS										
503.00 > 80.00	3.204	3.206	-0.002		13740142	55.2		116	850115	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.528	3.521	0.007		267431	0.6962		1.4	32597	
D 42 M2-8:2FTS										
529.00 > 509.00	3.553	3.557	-0.004		1127	0.0105		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.545	3.557	-0.012	0.998	2583	NR				
D 23 13C2 PFDA										
515.00 > 470.00	3.562	3.571	-0.009		2796203	17.8		35.6	94734	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.553	3.571	-0.018	1.000	2273	0.0431			47.2	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.814	3.727	0.087		428	0.005682		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.714	3.727	-0.013	0.974	530	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.875	3.887	-0.012	1.000	829	0.004939				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.883	3.895	-0.012		5295	0.0676		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.901	3.904	-0.003	1.004	1045	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.901	3.904	-0.003		2420223	20.6		41.3	178919	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.892	3.904	-0.012	1.000	5236	0.1131			170	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.018	4.011	0.007		595	0.006259		0.0		
54 MeFOSA										
512.00 > 169.00	4.018	4.011	0.007	1.000	440	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.188	4.196	-0.008		3229772	29.1		58.2	148142	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.696	4.710	-0.014	1.000	61853	0.6042			199	
713.00 > 169.00	4.696	4.710	-0.014	1.000	5554		11.14(0.00-0.00)		2185	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.696	4.710	-0.014		12614019	55.5		111	836087	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.119	5.133	-0.013	1.000	53122	0.2617			142	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.119	5.133	-0.013		4200397	33.7		67.4	155726	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.482	5.509	-0.027	1.000	1770	0.0266			3.2	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Report Date: 22-Dec-2016 10:26:34 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_015.d

Injection Date: 21-Dec-2016 13:49:31 Instrument ID: A8_N

Lims ID: 320-23998-A-3-A Lab Sample ID: 320-23998-3

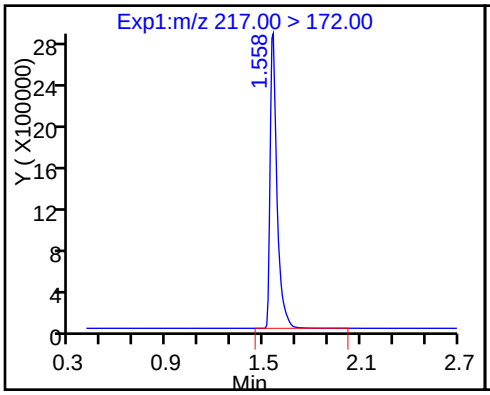
Client ID: DPT-16-04-GW-31-35

Operator ID: A8-PC\A8 ALS Bottle#: 5 Worklist Smp#: 9

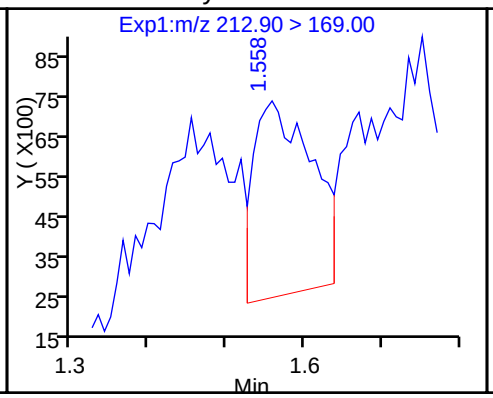
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

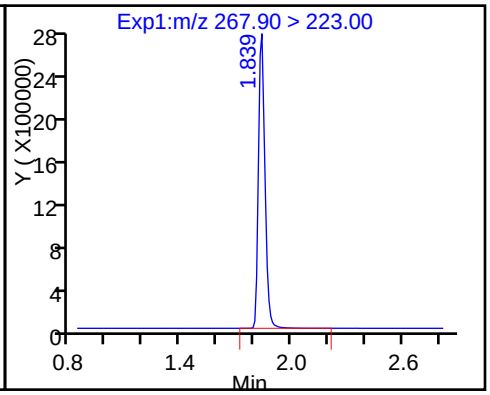
D 2 13C4 PFBA



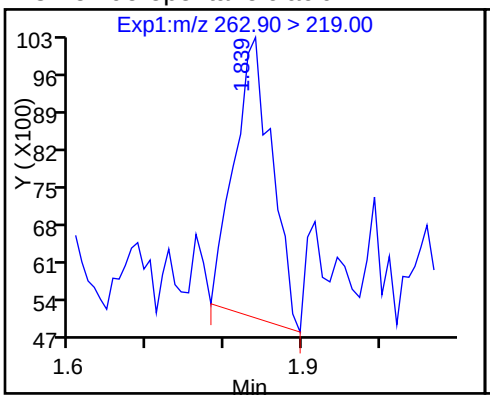
1 Perfluorobutyric acid



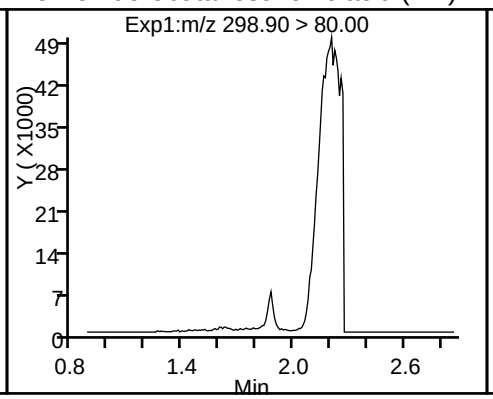
D 4 13C5-PFPeA



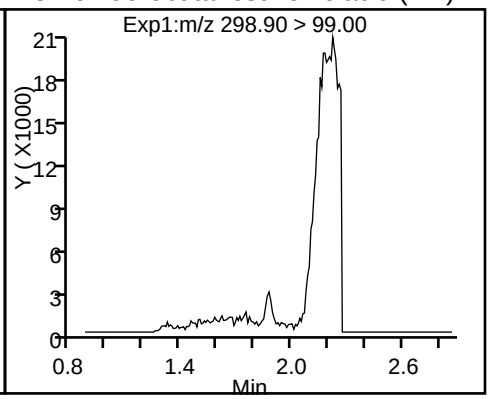
3 Perfluoropentanoic acid



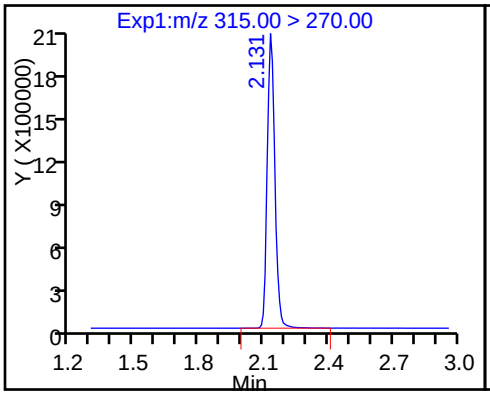
5 Perfluorobutanesulfonic acid (ND)



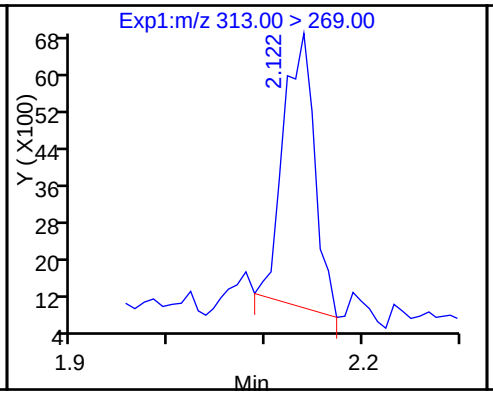
5 Perfluorobutanesulfonic acid (ND)



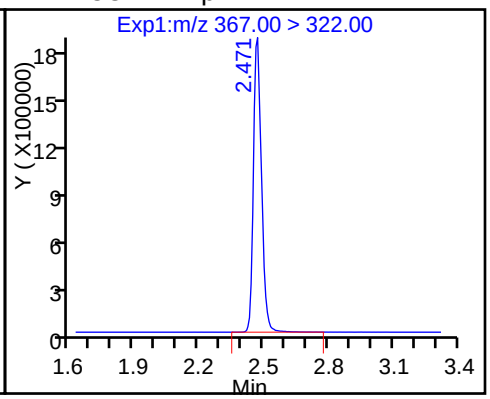
D 6 13C2 PFHxA



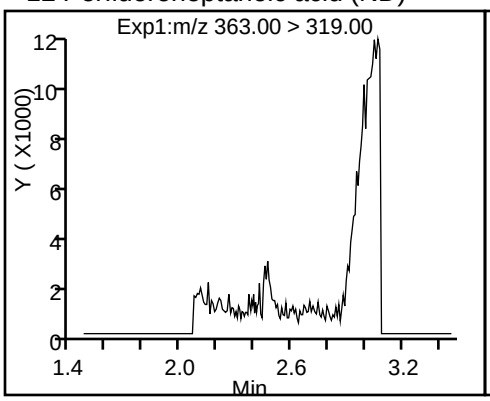
7 Perfluorohexanoic acid



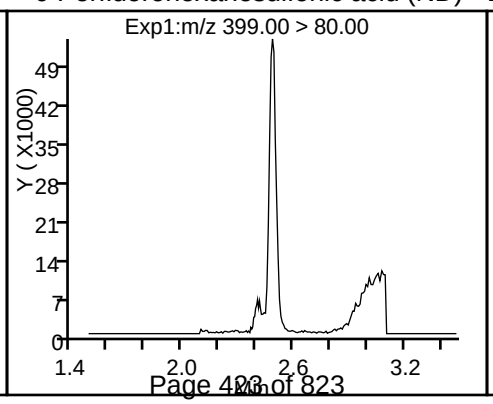
D 11 13C4-PFHpA



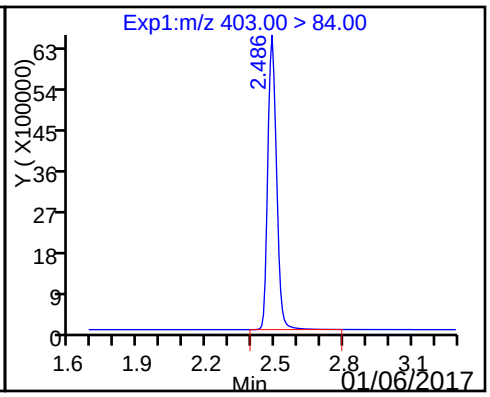
12 Perfluoroheptanoic acid (ND)



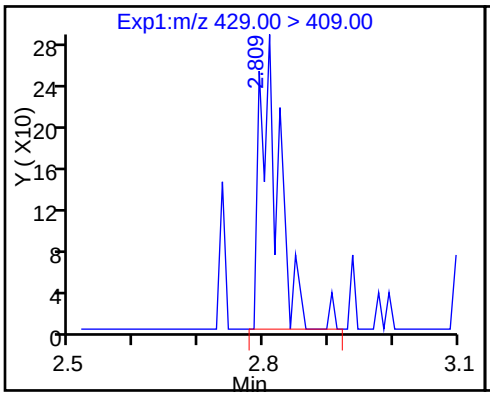
9 Perfluorohexanesulfonic acid (ND)



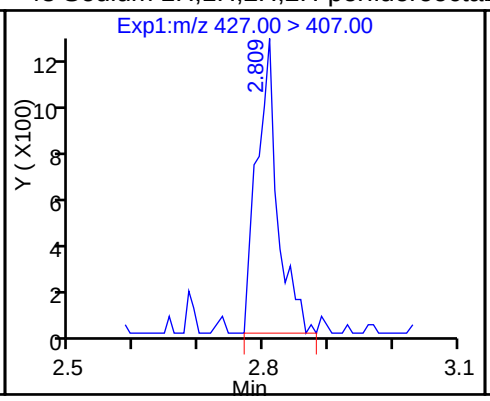
D 10 18O2 PFHxS



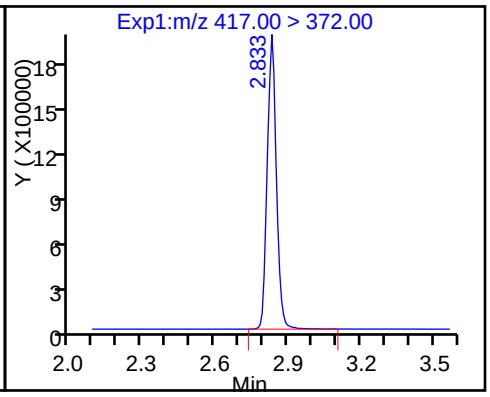
D 47 M2-6:2FTS



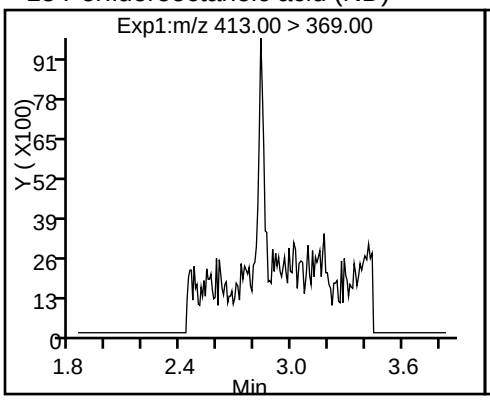
48 Sodium 1H,1H,2H,2H-perfluorooctane



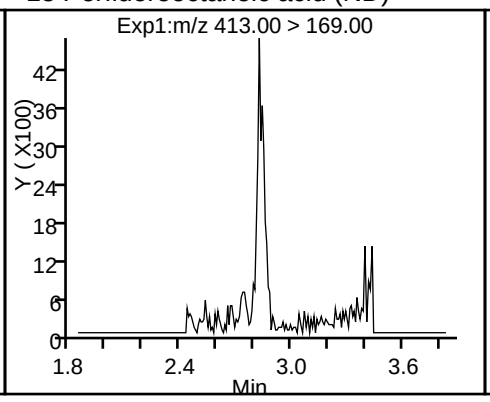
D 14 13C4 PFOA



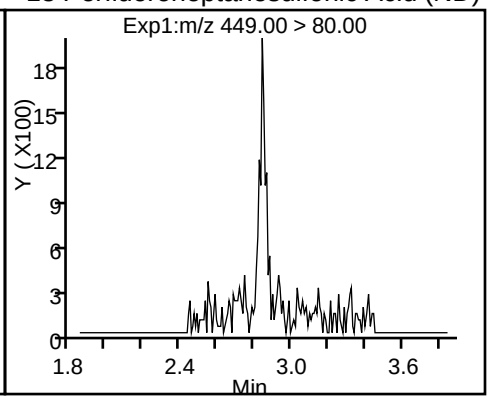
15 Perfluorooctanoic acid (ND)



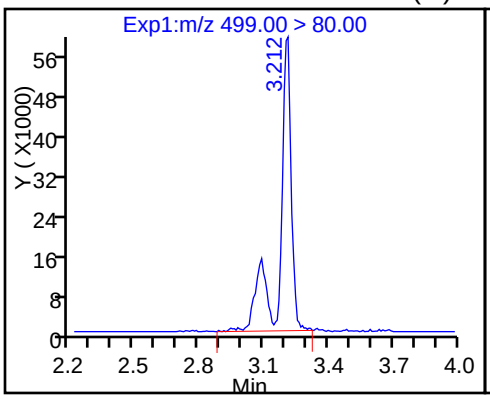
15 Perfluorooctanoic acid (ND)



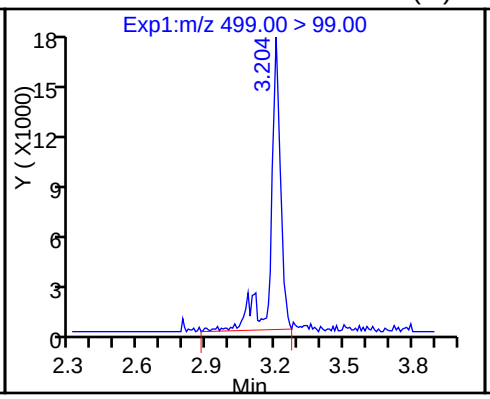
13 Perfluoroheptanesulfonic Acid (ND)



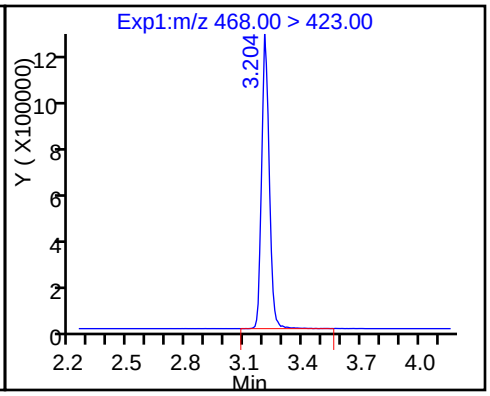
18 Perfluorooctane sulfonic acid (M)



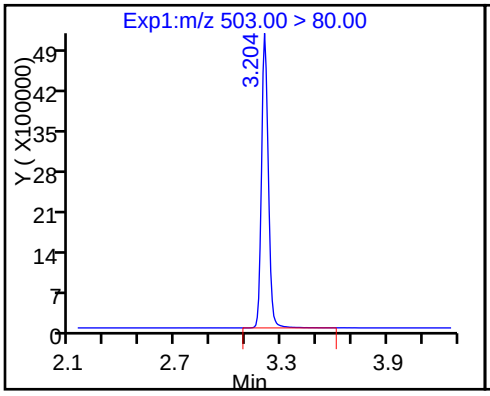
18 Perfluorooctane sulfonic acid (M)



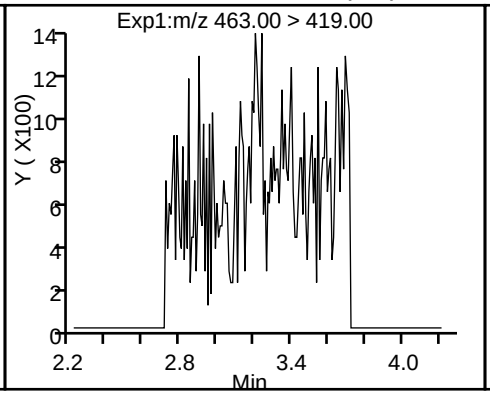
D 19 13C5 PFNA



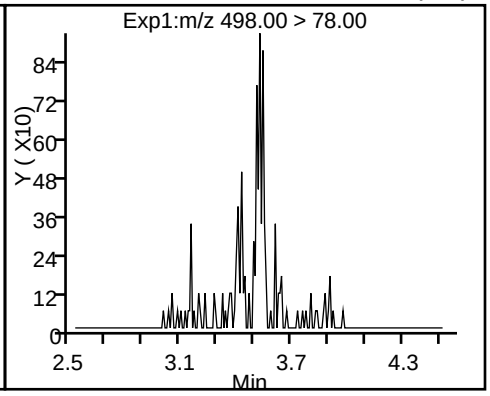
D 17 13C4 PFOS



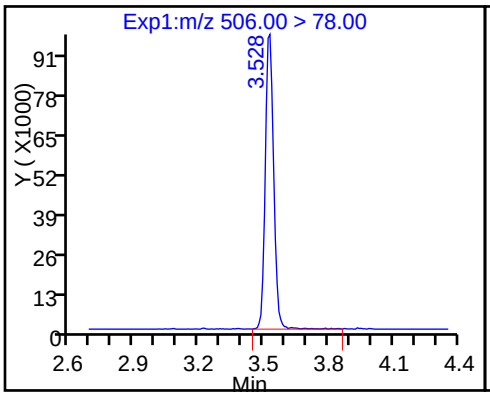
20 Perfluorononanoic acid (ND)



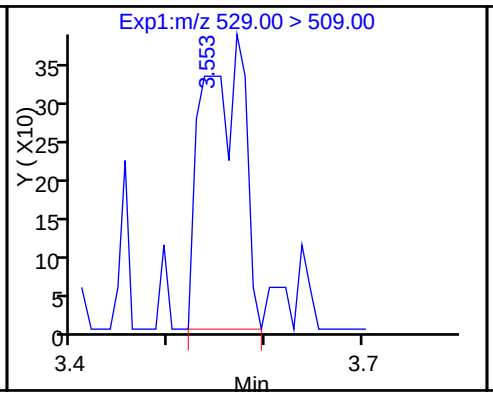
22 Perfluorooctane Sulfonamide (ND)



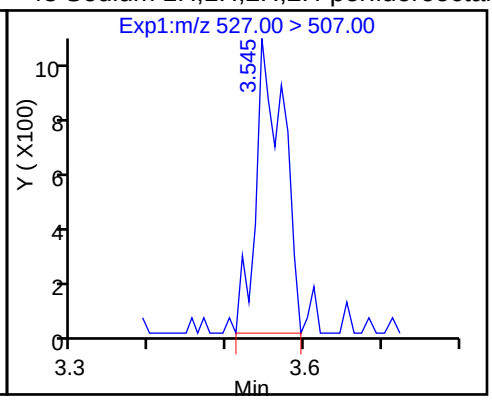
D 21 13C8 FOSA



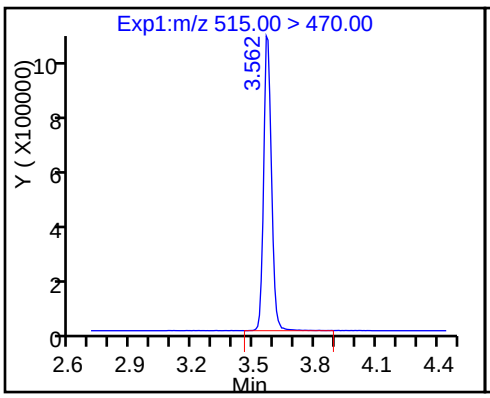
D 42 M2-8:2FTS



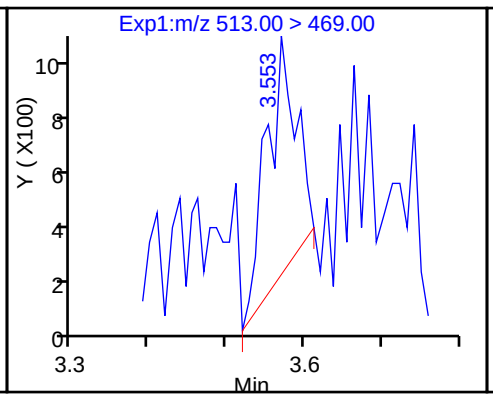
43 Sodium 1H,1H,2H,2H-perfluorooctane



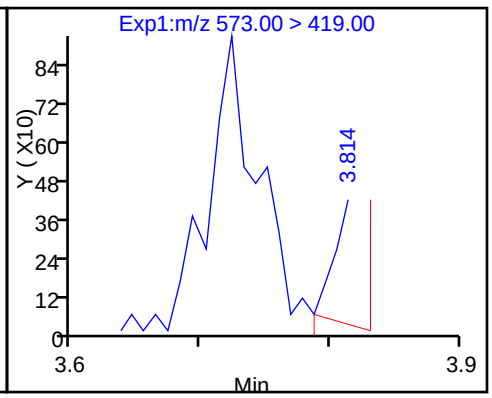
D 23 13C2 PFDA



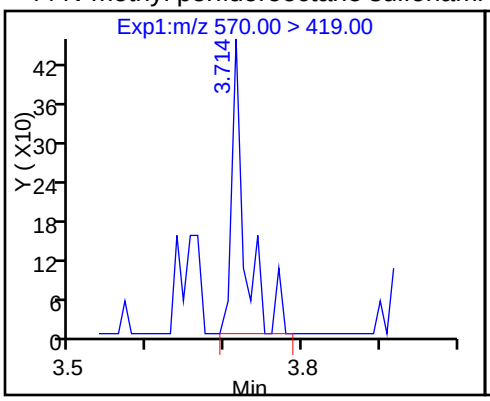
24 Perfluorodecanoic acid



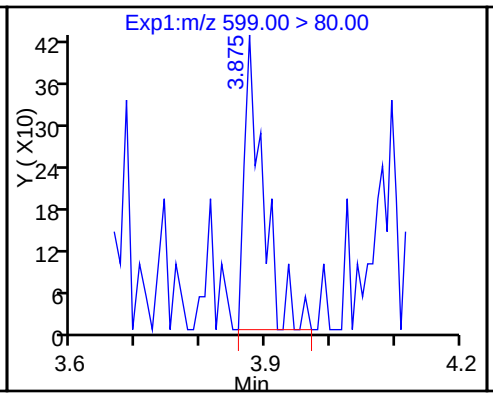
D 45 d3-NMeFOSAA



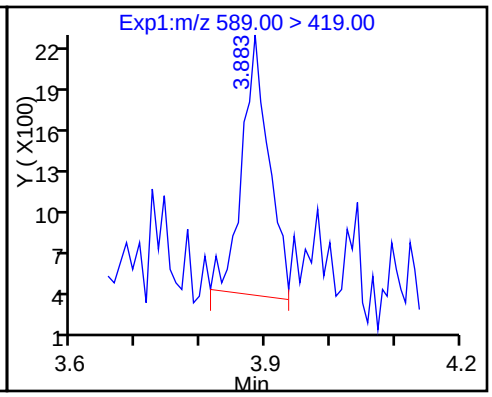
44 N-methyl perfluorooctane sulfonami



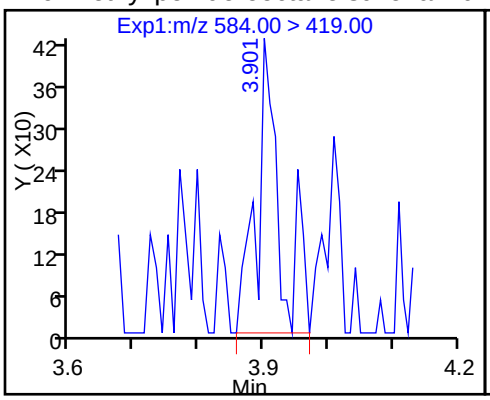
26 Perfluorodecane Sulfonic acid



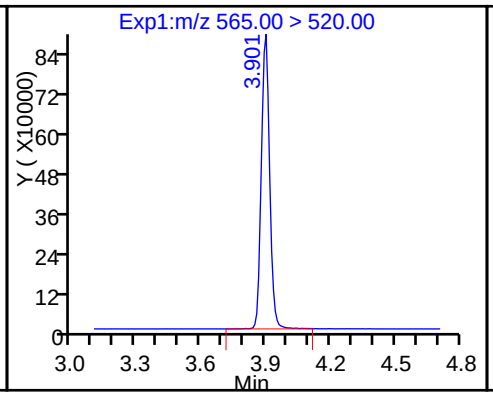
D 46 d5-NEtFOSAA



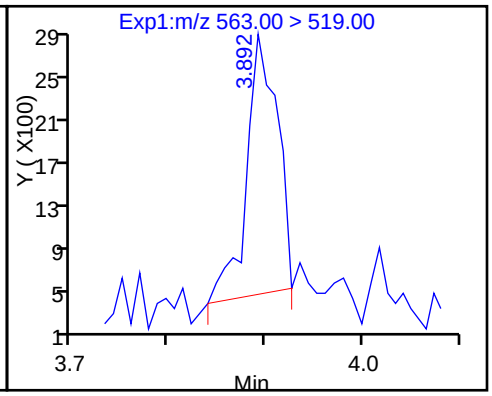
49 N-ethyl perfluorooctane sulfonamid



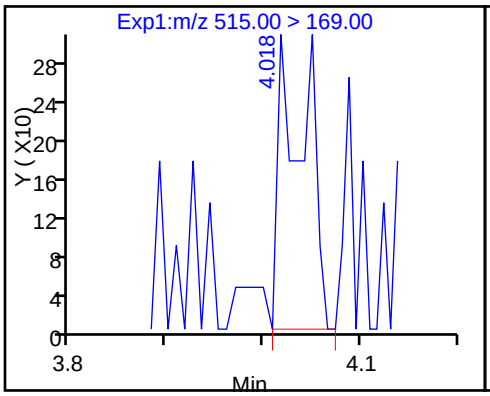
D 27 13C2 PFUnA



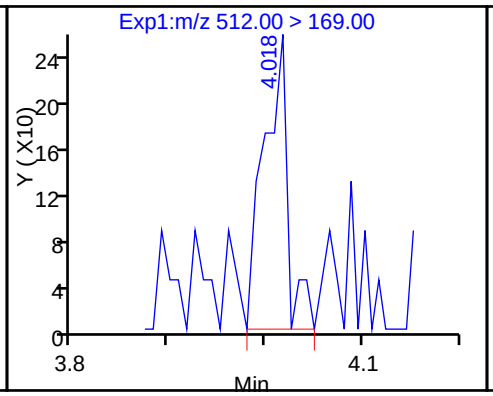
28 Perfluoroundecanoic acid



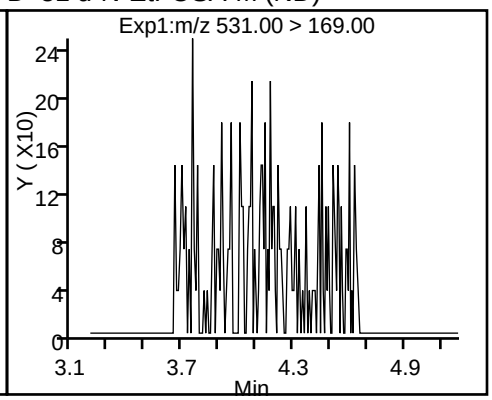
D 52 d-N-MeFOSA-M



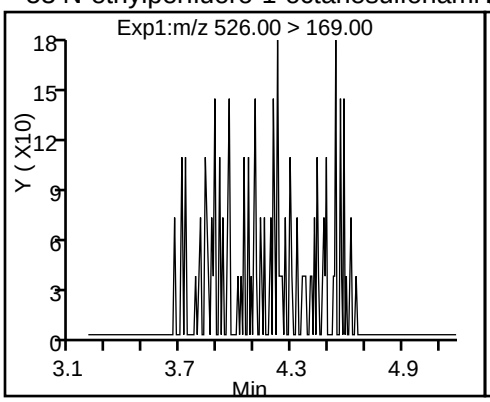
54 MeFOSA



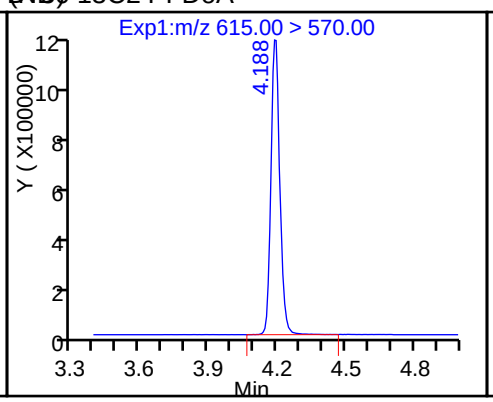
D 51 d-N-EtFOSA-M (ND)



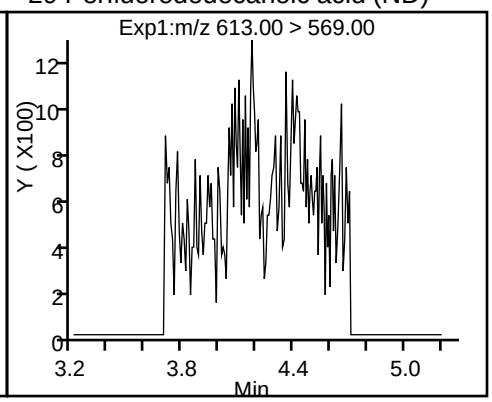
53 N-ethylperfluoro-1-octanesulfonami (ND)



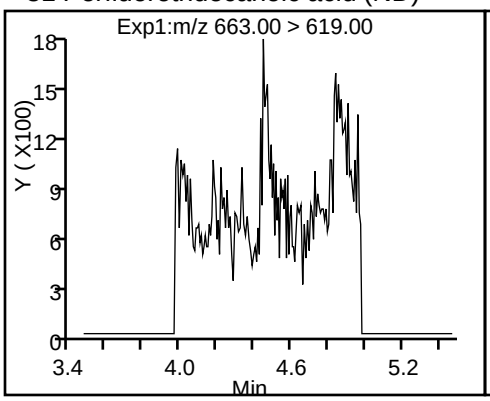
D 30 13C2 PFDoA



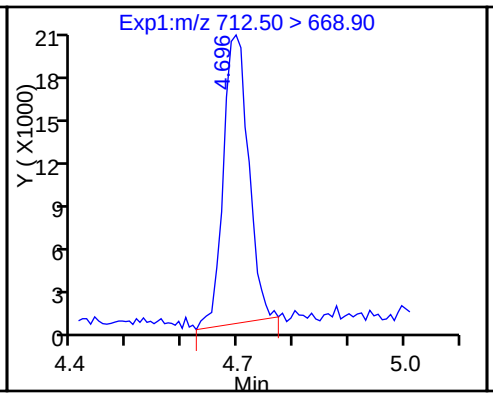
29 Perfluorododecanoic acid (ND)



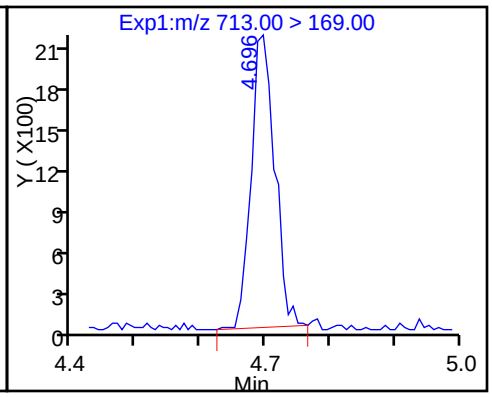
31 Perfluorotridecanoic acid (ND)



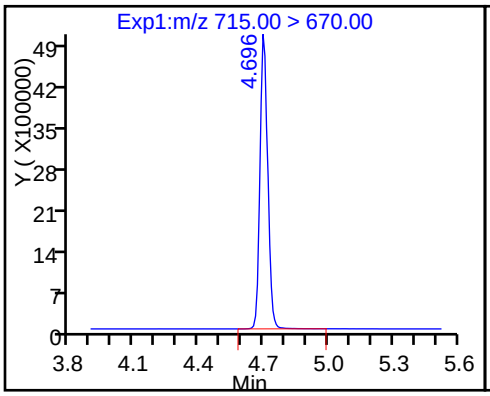
33 Perfluorotetradecanoic acid



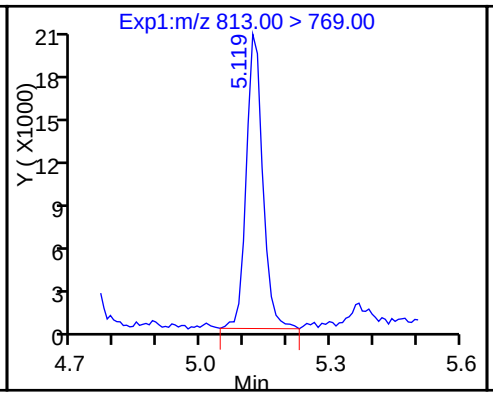
33 Perfluorotetradecanoic acid



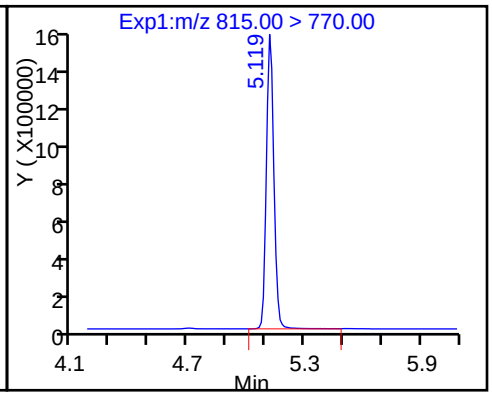
D 32 13C2-PFTeDA



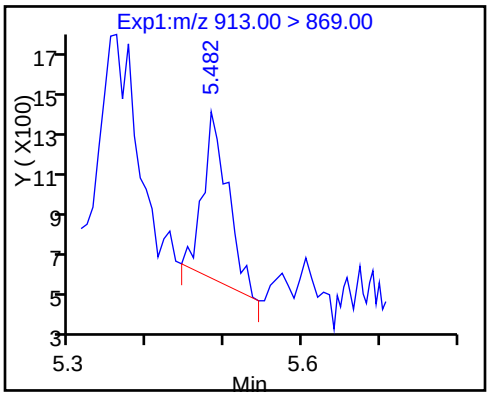
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

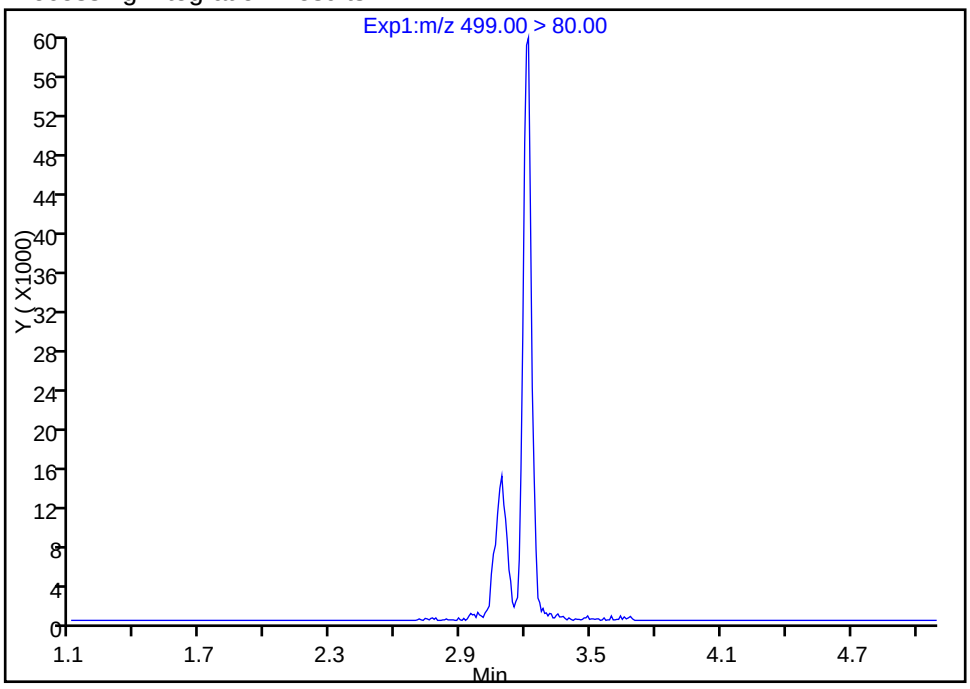
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_015.d				
Injection Date:	21-Dec-2016 13:49:31	Instrument ID:	A8_N		
Lims ID:	320-23998-A-3-A	Lab Sample ID:	320-23998-3		
Client ID:	DPT-16-04-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	5	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

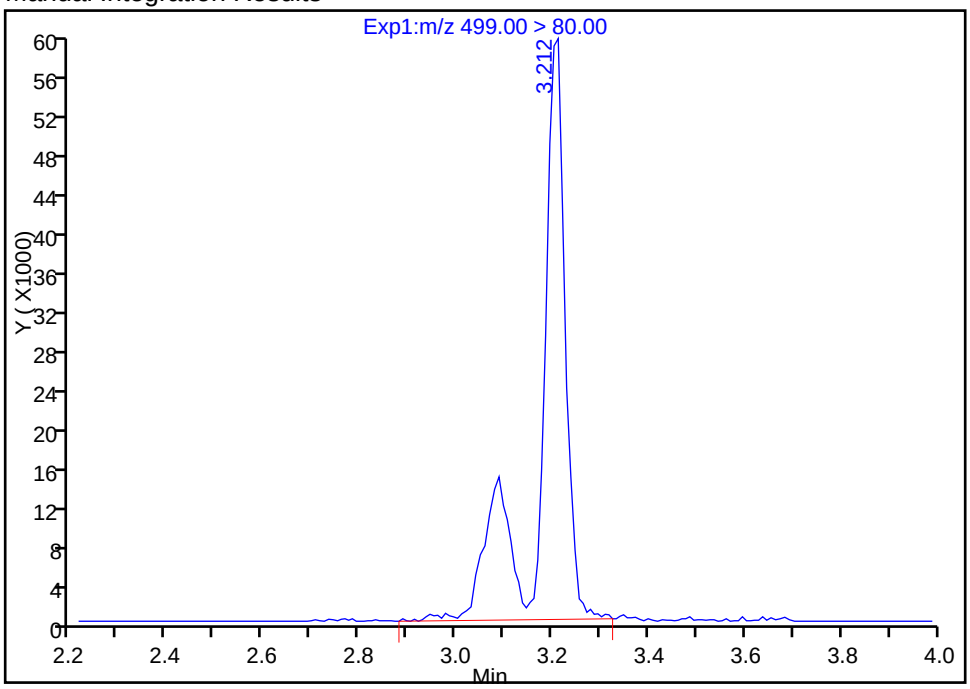
Processing Integration Results

Not Detected
Expected RT: 3.10



Manual Integration Results

RT: 3.21
Area: 219865
Amount: 0.769146
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:15:48
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

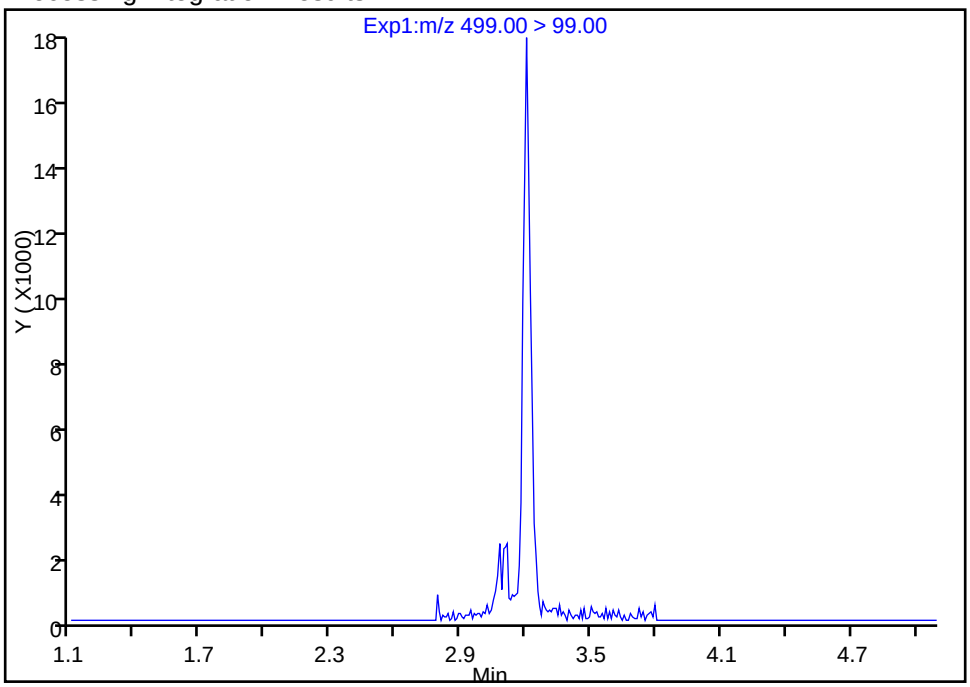
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_015.d				
Injection Date:	21-Dec-2016 13:49:31	Instrument ID:	A8_N		
Lims ID:	320-23998-A-3-A	Lab Sample ID:	320-23998-3		
Client ID:	DPT-16-04-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	5	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

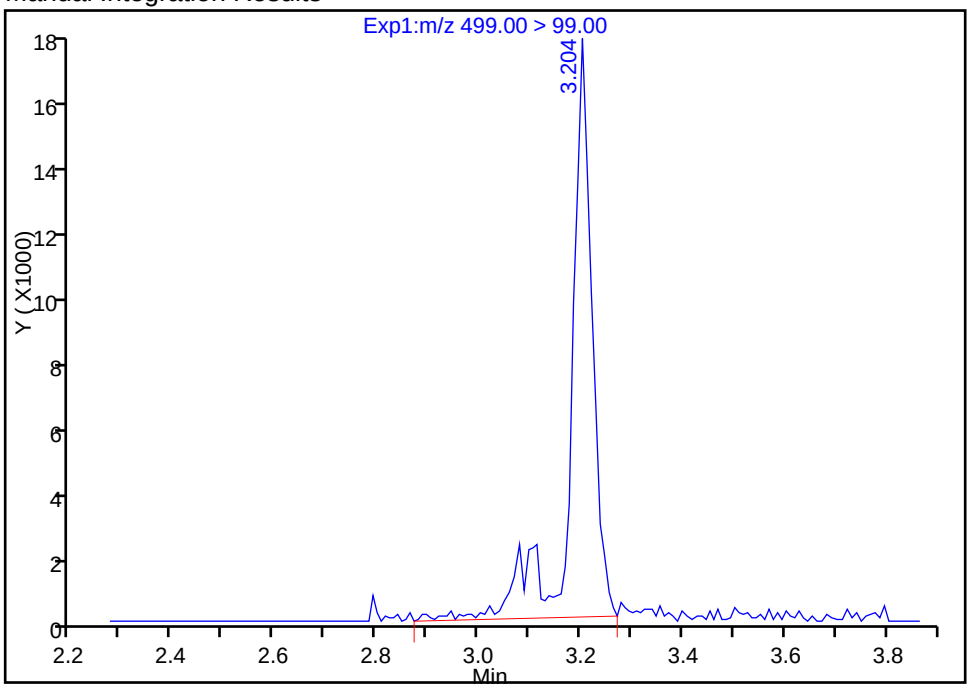
Processing Integration Results

Not Detected
Expected RT: 3.10



Manual Integration Results

RT: 3.20
Area: 52095
Amount: 0.769146
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:15:48
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-04-GW-18-22 Lab Sample ID: 320-23998-4

Matrix: Water Lab File ID: 21DEC2016A_018.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 11:10

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 254.5(mL) Date Analyzed: 12/21/2016 14:12

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0027	M	0.0025	0.0020	0.00073
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.027		0.0039	0.0029	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	57		25-150
STL00991	13C4 PFOS	112		25-150
STL00994	18O2 PFHxS	110		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_018.d
Lims ID: 320-23998-A-4-A
Client ID: DPT-16-04-GW-18-22
Sample Type: Client
Inject. Date: 21-Dec-2016 14:12:00 ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:16:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 10 18O2 PFHxS										
403.00 > 84.00	2.471	2.488	-0.017		17074269	52.2		110	775558	
D 14 13C4 PFOA										
417.00 > 372.00	2.817	2.828	-0.011		6538402	28.4		56.8	401252	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.817	2.836	-0.019	1.000	177244	1.35			1381	
413.00 > 169.00	2.817	2.836	-0.019	1.000	103029		1.72(0.90-1.10)		1059	M
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.162	3.100	0.062	1.000	3748505	13.5			35434	
499.00 > 99.00	3.195	3.100	0.095	1.010	835368		4.49(0.90-1.10)		37558	
D 17 13C4 PFOS										
503.00 > 80.00	3.186	3.206	-0.020		13324322	53.5		112	577022	

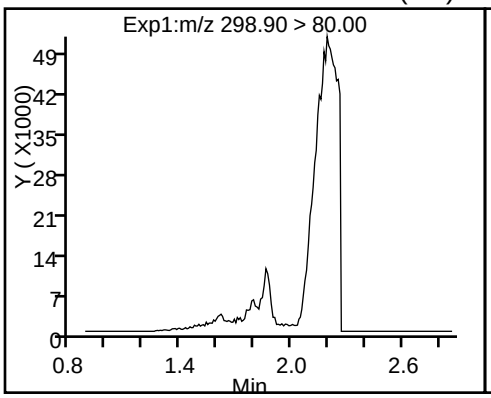
QC Flag Legend

Review Flags
M - Manually Integrated

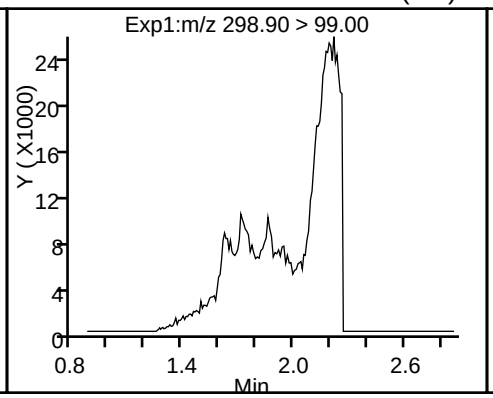
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_018.d
Injection Date: 21-Dec-2016 14:12:00 Instrument ID: A8_N
Lims ID: 320-23998-A-4-A Lab Sample ID: 320-23998-4
Client ID: DPT-16-04-GW-18-22
Operator ID: A8-PC\A8 ALS Bottle#: 8 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

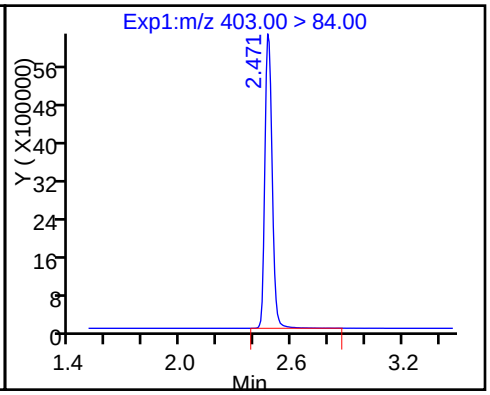
5 Perfluorobutanesulfonic acid (ND)



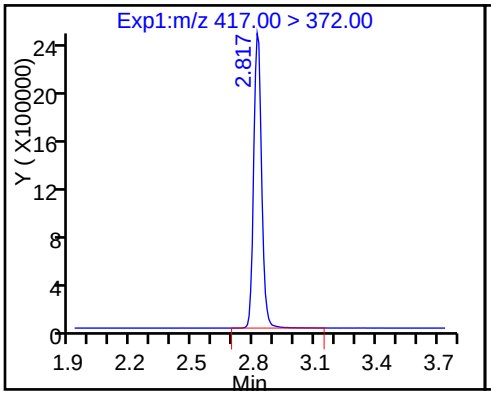
5 Perfluorobutanesulfonic acid (ND)



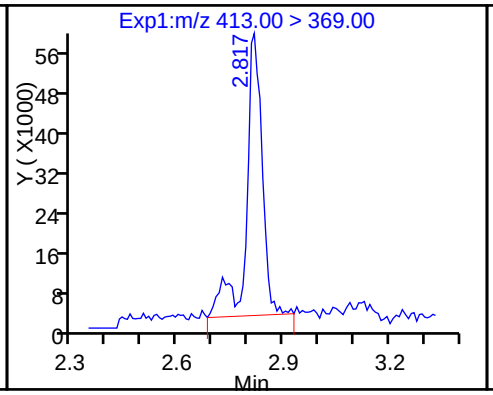
D 10 18O2 PFHxS



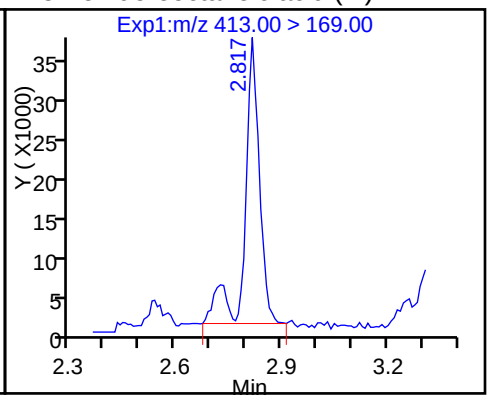
D 14 13C4 PFOA



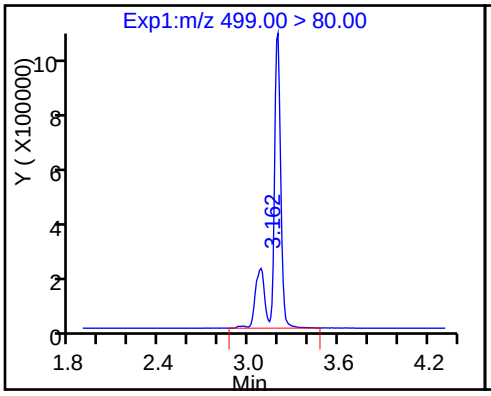
15 Perfluorooctanoic acid



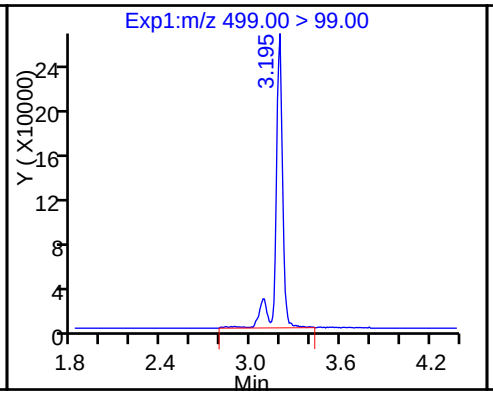
15 Perfluorooctanoic acid (M)



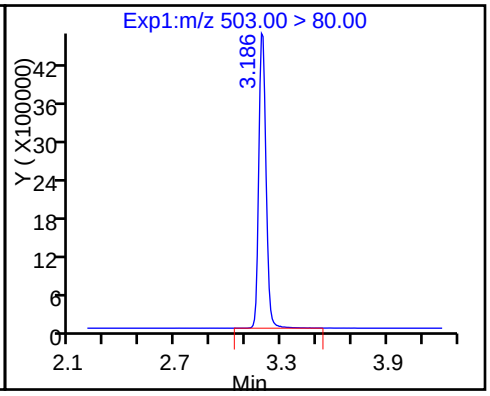
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

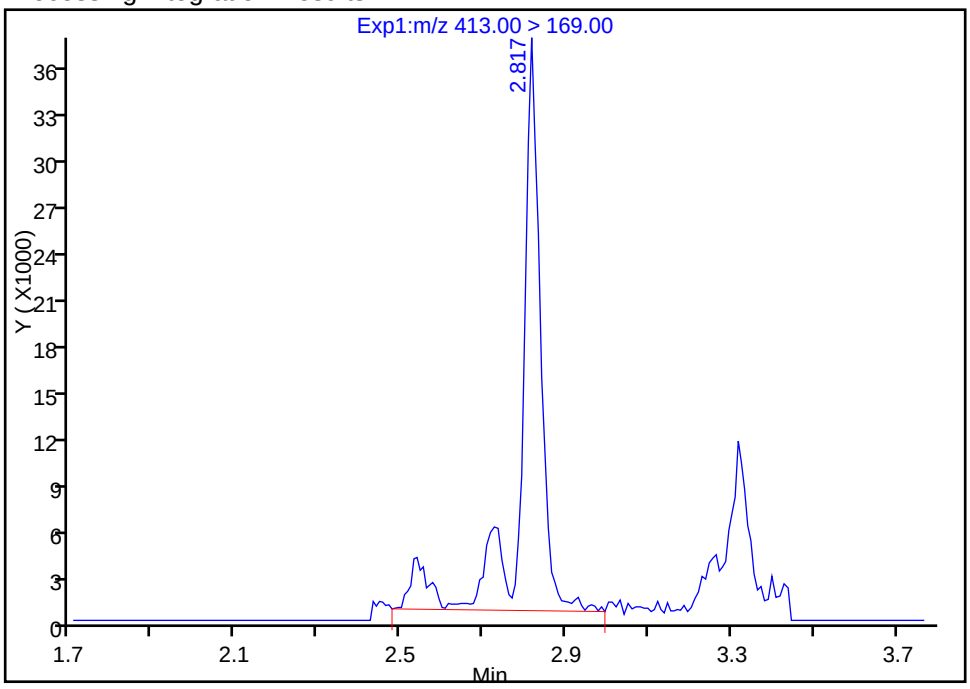
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_018.d				
Injection Date:	21-Dec-2016 14:12:00	Instrument ID:	A8_N		
Lims ID:	320-23998-A-4-A	Lab Sample ID:	320-23998-4		
Client ID:	DPT-16-04-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	8	Worklist Smp#:	12
Injection Vol:	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: 2

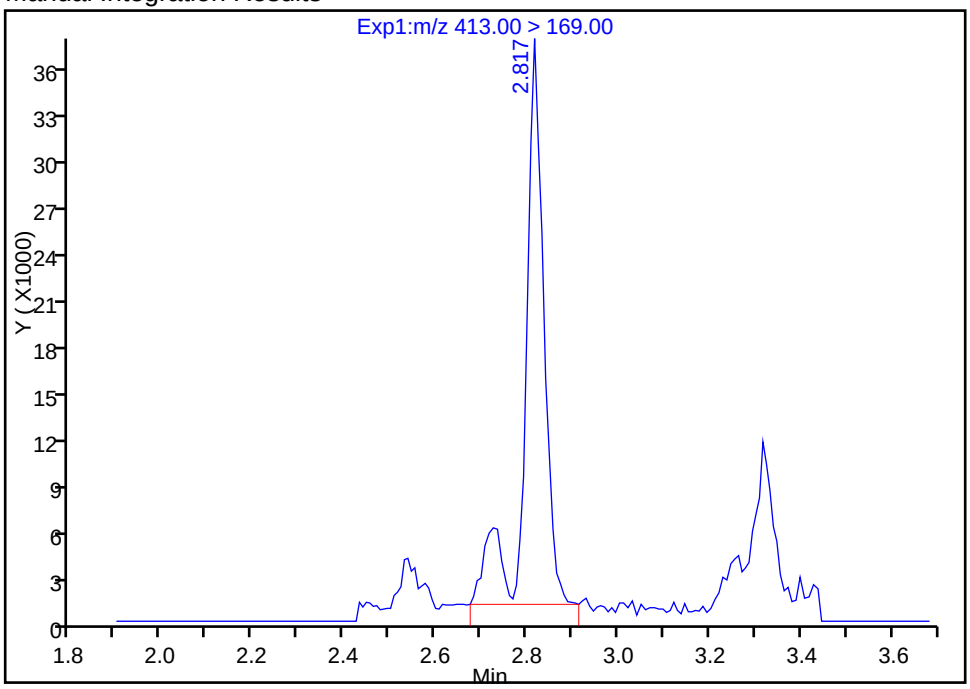
Processing Integration Results

RT: 2.82
Area: 122885
Amount: 1.351160
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 103029
Amount: 1.351160
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:16:44

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-10-GW-31-35 Lab Sample ID: 320-23998-5

Matrix: Water Lab File ID: 21DEC2016A_019.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 13:00

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 250(mL) Date Analyzed: 12/21/2016 14:19

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.014	M	0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.11		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	47		25-150
STL00991	13C4 PFOS	103		25-150
STL00994	18O2 PFHxS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_019.d
Lims ID: 320-23998-A-5-A
Client ID: DPT-16-10-GW-31-35
Sample Type: Client
Inject. Date: 21-Dec-2016 14:19:30 ALS Bottle#: 9 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 14:34:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 14:34:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 10 18O2 PFHxS										
403.00 > 84.00	2.471	2.488	-0.017		15673090	47.9		101	380063	
D 14 13C4 PFOA										
417.00 > 372.00	2.809	2.828	-0.019		5454100	23.7		47.4	254164	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.817	2.836	-0.019	1.000	787779	7.20			3649	M
413.00 > 169.00	2.809	2.836	-0.027	0.997	455902		1.73(0.90-1.10)		3190	M
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.185	3.100	0.085	1.000	13751082	54.1			190088	
499.00 > 99.00	3.185	3.100	0.085	1.000	3108946		4.42(0.90-1.10)		84332	
D 17 13C4 PFOS										
503.00 > 80.00	3.185	3.206	-0.021		12206333	49.1		103	180942	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 23-Dec-2016 14:34:20 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_019.d

Injection Date: 21-Dec-2016 14:19:30 Instrument ID: A8_N

Lims ID: 320-23998-A-5-A Lab Sample ID: 320-23998-5

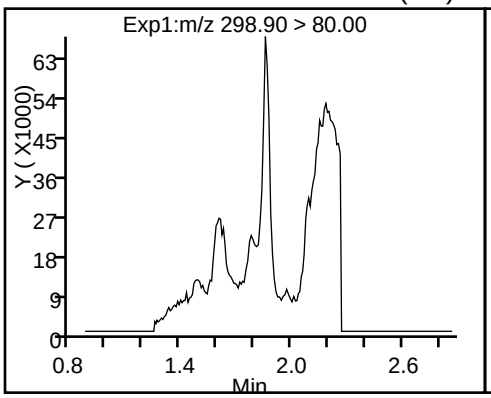
Client ID: DPT-16-10-GW-31-35

Operator ID: A8-PC\A8 ALS Bottle#: 9 Worklist Smp#: 13

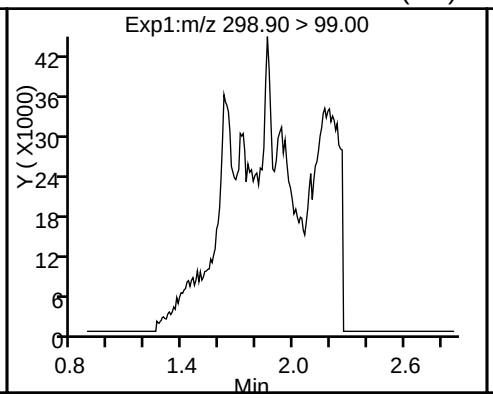
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

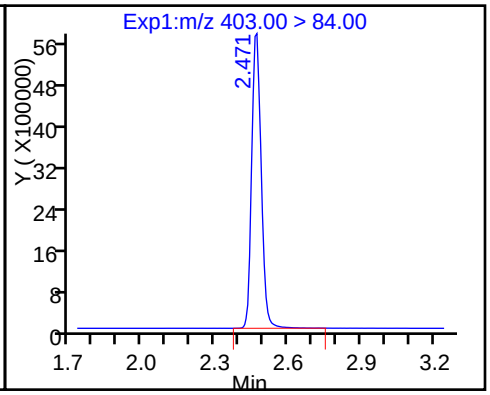
5 Perfluorobutanesulfonic acid (ND)



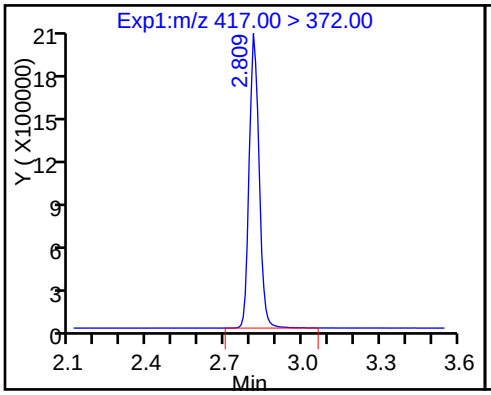
5 Perfluorobutanesulfonic acid (ND)



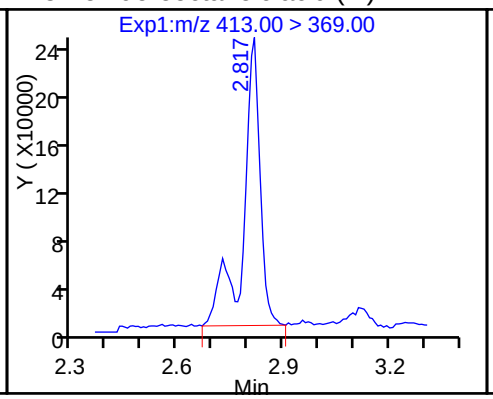
D 10 18O2 PFHxS



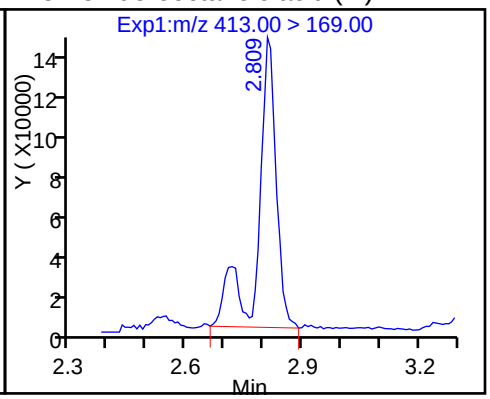
D 14 13C4 PFOA



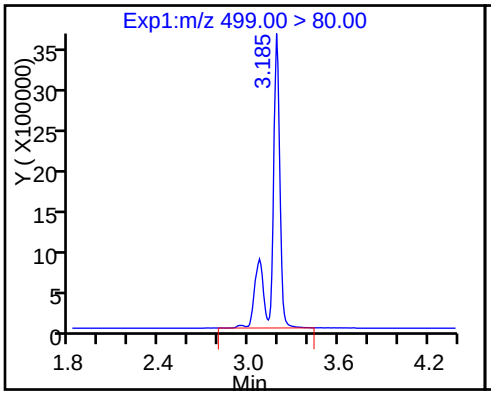
15 Perfluorooctanoic acid (M)



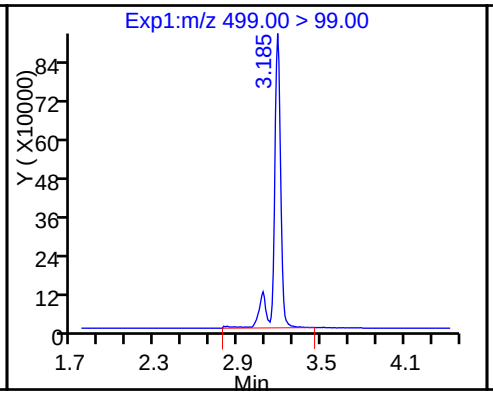
15 Perfluorooctanoic acid (M)



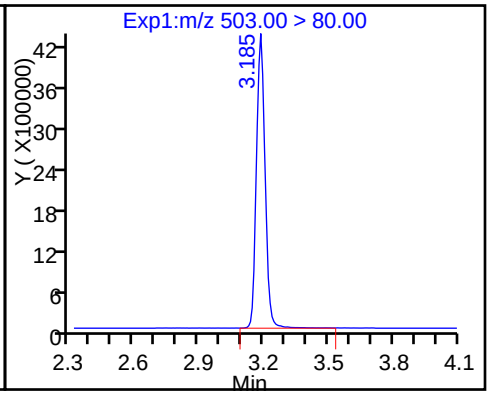
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

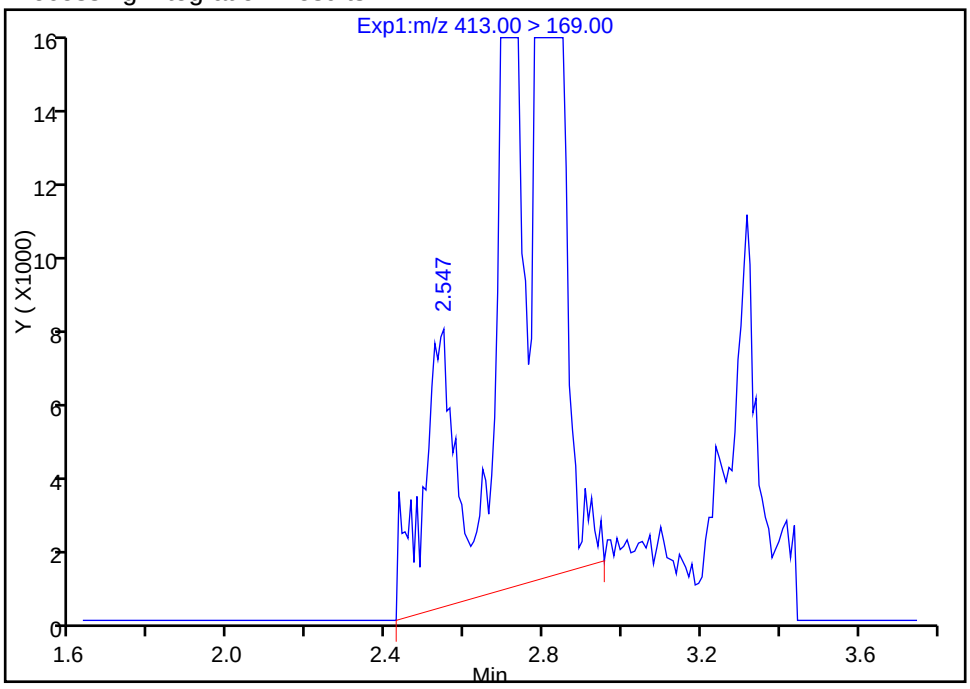
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_019.d				
Injection Date:	21-Dec-2016 14:19:30	Instrument ID:	A8_N		
Lims ID:	320-23998-A-5-A	Lab Sample ID:	320-23998-5		
Client ID:	DPT-16-10-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	9	Worklist Smp#:	13
Injection Vol:	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: 2

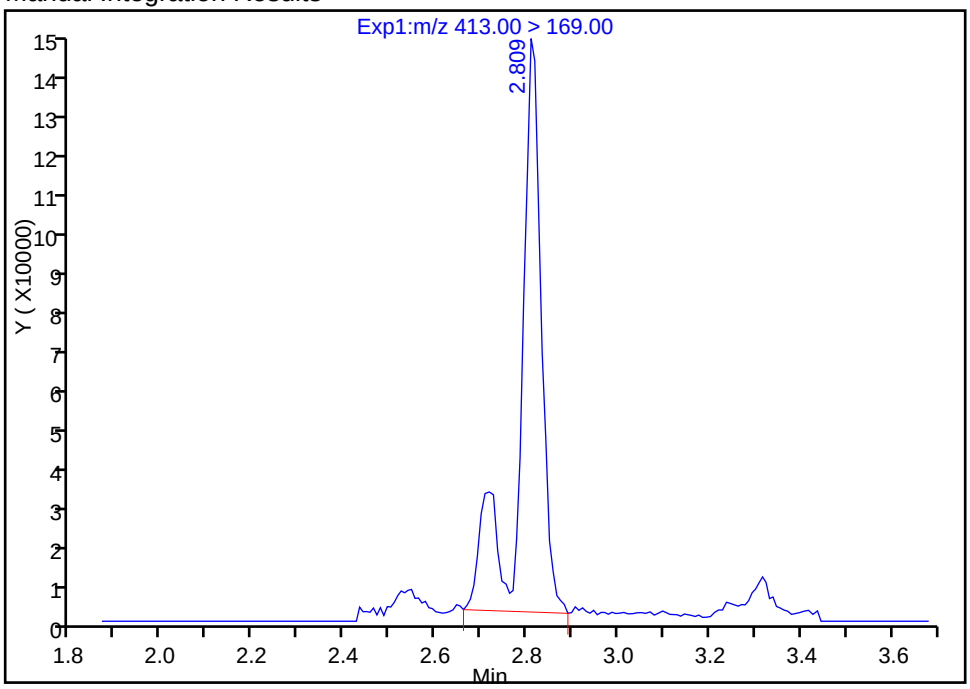
Processing Integration Results

RT: 2.55
Area: 526844
Amount: 5.723616
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 455902
Amount: 7.199267
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:17:34

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

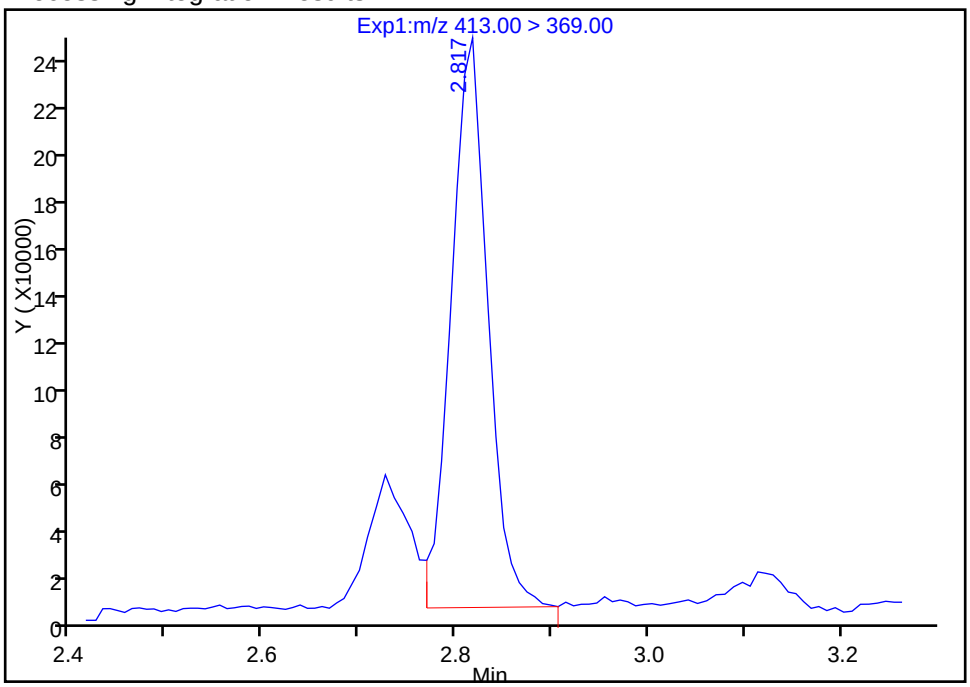
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_019.d				
Injection Date:	21-Dec-2016 14:19:30	Instrument ID:	A8_N		
Lims ID:	320-23998-A-5-A	Lab Sample ID:	320-23998-5		
Client ID:	DPT-16-10-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	9	Worklist Smp#:	13
Injection Vol:	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

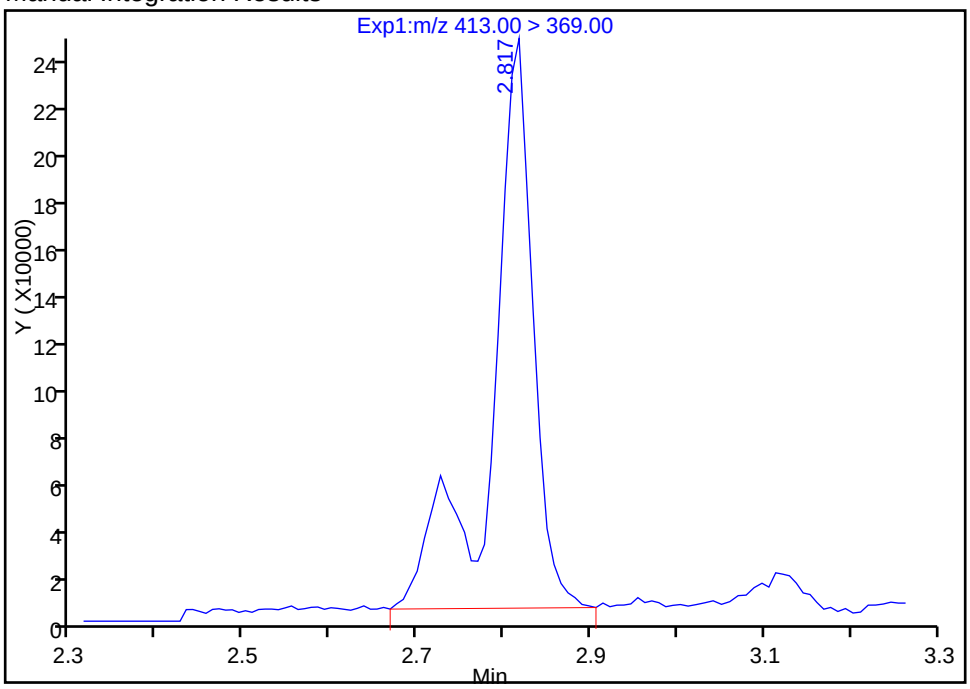
Processing Integration Results

RT: 2.82
Area: 626306
Amount: 5.723616
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 787779
Amount: 7.199267
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 14:34:19

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-10-GW-18-22 Lab Sample ID: 320-23998-6

Matrix: Water Lab File ID: 21DEC2016A_020.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 13:20

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 260.1(mL) Date Analyzed: 12/21/2016 14:27

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0062		0.0024	0.0019	0.00072
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.030		0.0038	0.0029	0.0012
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.010		0.0024	0.0019	0.00088

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	58		25-150
STL00991	13C4 PFOS	115		25-150
STL00994	18O2 PFHxS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_020.d
Lims ID: 320-23998-A-6-A
Client ID: DPT-16-10-GW-18-22
Sample Type: Client
Inject. Date: 21-Dec-2016 14:27:00 ALS Bottle#: 10 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:17:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.877	-0.009	1.000	2624256	5.31				
298.90 > 99.00	1.868	1.877	-0.009	1.000	1066788		2.46(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.473	2.488	-0.015		16510156	50.5		107	735325	
D 14 13C4 PFOA										
417.00 > 372.00	2.820	2.828	-0.008		6688775	29.0		58.1	632566	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.730	2.836	-0.106	1.000	431356	3.21			2717	
413.00 > 169.00	2.721	2.836	-0.115	0.997	441473		0.98(0.90-1.10)		20687	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.074	3.100	-0.026	1.000	4507827	15.8			173532	
499.00 > 99.00	3.083	3.100	-0.017	1.003	587171		7.68(0.90-1.10)		26172	
D 17 13C4 PFOS										
503.00 > 80.00	3.188	3.206	-0.018		13738010	55.2		115	359682	

Report Date: 22-Dec-2016 10:26:40 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_020.d

Injection Date: 21-Dec-2016 14:27:00 Instrument ID: A8_N

Lims ID: 320-23998-A-6-A Lab Sample ID: 320-23998-6

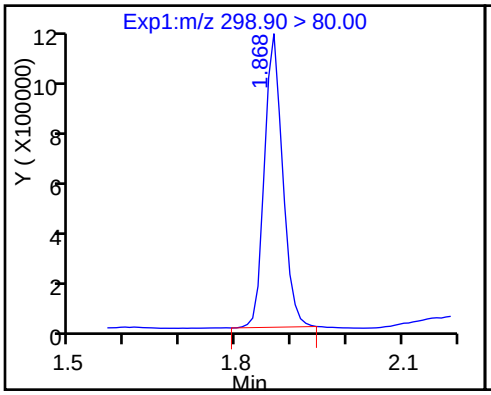
Client ID: DPT-16-10-GW-18-22

Operator ID: A8-PC\A8 ALS Bottle#: 10 Worklist Smp#: 14

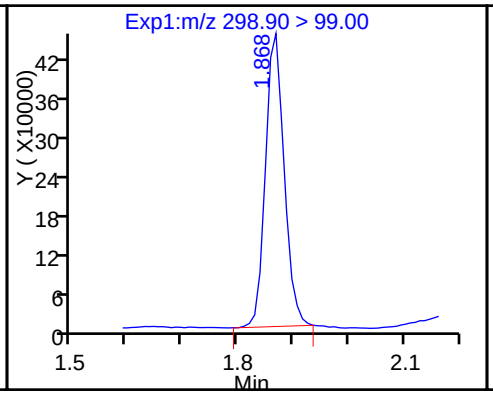
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

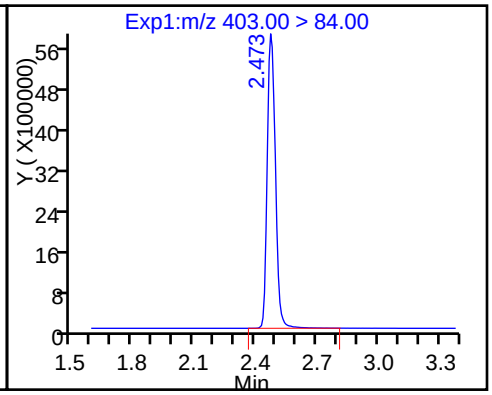
5 Perfluorobutanesulfonic acid



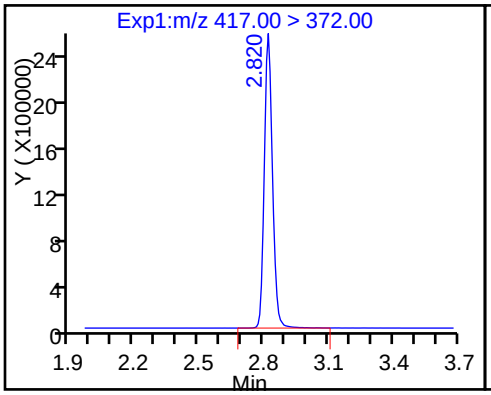
5 Perfluorobutanesulfonic acid



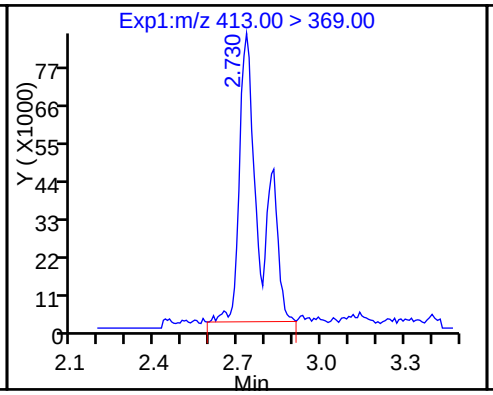
D 10 18O2 PFHxS



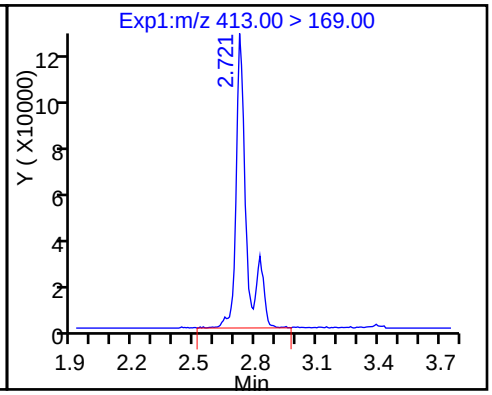
D 14 13C4 PFOA



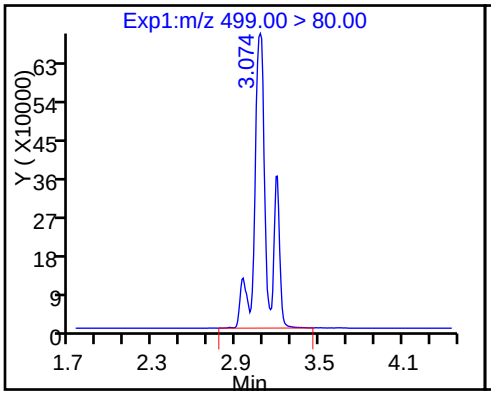
15 Perfluorooctanoic acid



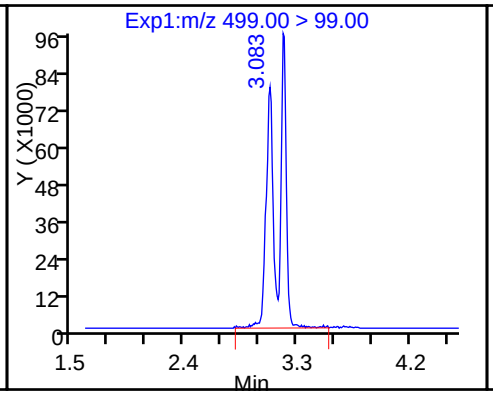
15 Perfluorooctanoic acid



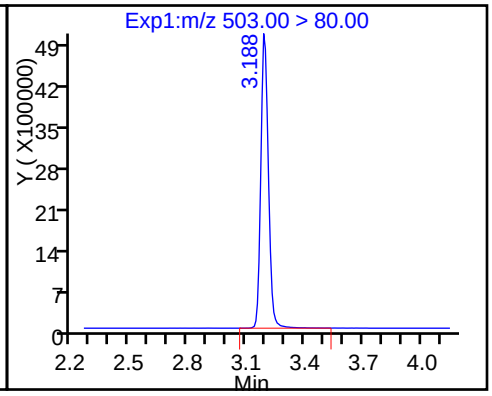
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-09-GW-31-35 | Lab Sample ID: 320-23998-7

Matrix: Water | Lab File ID: 21DEC2016A_029.d

Analysis Method: 537 (Modified) | Date Collected: 11/30/2016 14:10

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 260(mL) | Date Analyzed: 12/21/2016 16:35

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.: 143502 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0021	J M	0.0024	0.0019	0.00072
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.017		0.0038	0.0029	0.0012
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0027		0.0024	0.0019	0.00088

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	50		25-150
STL00991	13C4 PFOS	115		25-150
STL00994	18O2 PFHxS	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_029.d
Lims ID: 320-23998-A-7-A
Client ID: DPT-16-09-GW-31-35
Sample Type: Client
Inject. Date: 21-Dec-2016 16:35:58 ALS Bottle#: 11 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:28:50 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:20:07

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	1.868	1.868	0.0	1.000	713918	1.41				
298.90 > 99.00	1.868	1.868	0.0	1.000	282010		2.53(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.469	2.475	-0.006		16870580	51.6		109	867338	
D 14 13C4 PFOA										
417.00 > 372.00	2.807	2.821	-0.014		5762515	25.0		50.0	734603	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.807	2.821	-0.014	1.000	125837	1.09			874	M
413.00 > 169.00	2.807	2.821	-0.014	1.000	76071		1.65(0.90-1.10)		872	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.175	3.084	0.091	1.000	2566995	9.04			83873	
499.00 > 99.00	3.184	3.084	0.100	1.003	517305		4.96(0.90-1.10)		19950	
D 17 13C4 PFOS										
503.00 > 80.00	3.175	3.190	-0.015		13655295	54.9		115	615142	

QC Flag Legend

Review Flags
M - Manually Integrated

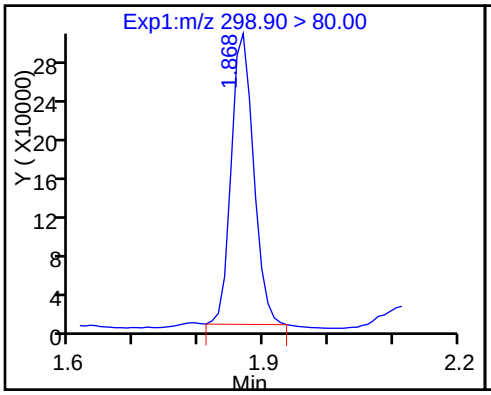
Report Date: 22-Dec-2016 10:28:54 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

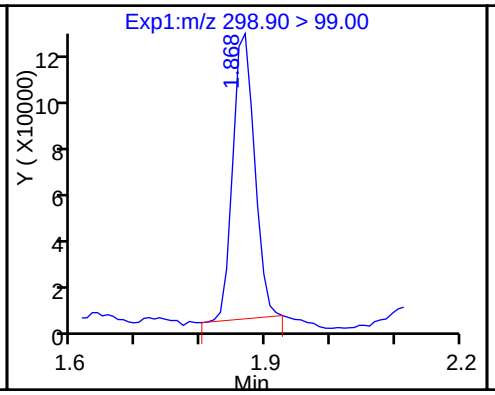
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_029.d

Injection Date:	21-Dec-2016 16:35:58	Instrument ID:	A8_N		
Lims ID:	320-23998-A-7-A	Lab Sample ID:	320-23998-7		
Client ID:	DPT-16-09-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	11	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

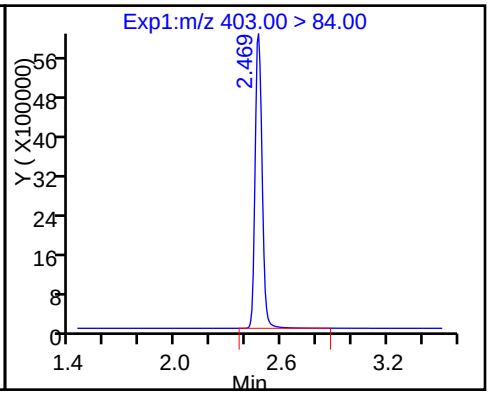
5 Perfluorobutanesulfonic acid



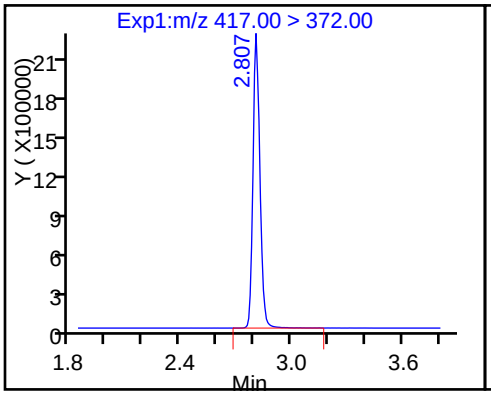
5 Perfluorobutanesulfonic acid



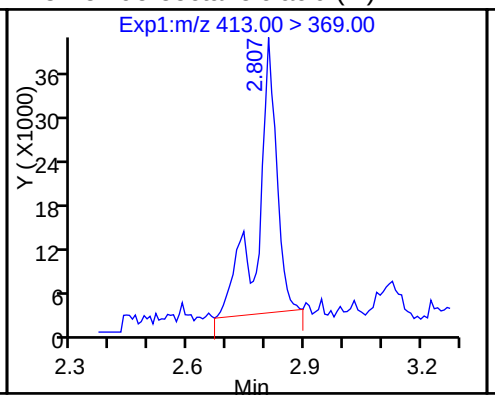
D 10 18O2 PFHxS



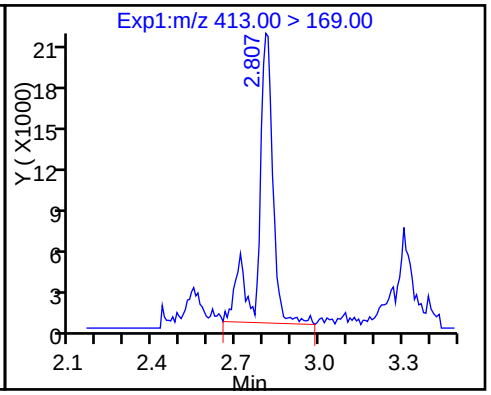
D 14 13C4 PFOA



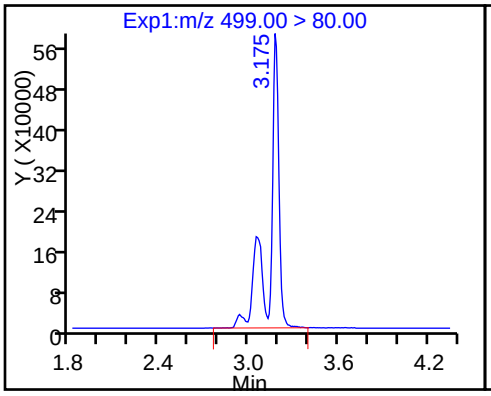
15 Perfluorooctanoic acid (M)



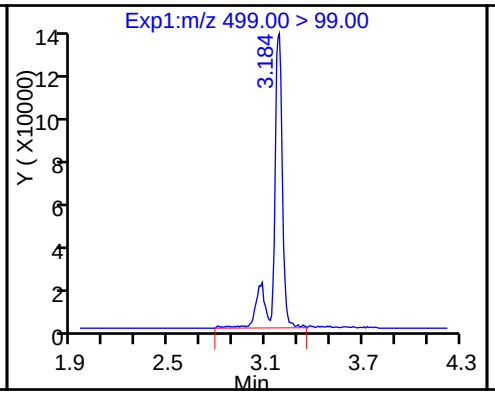
15 Perfluorooctanoic acid



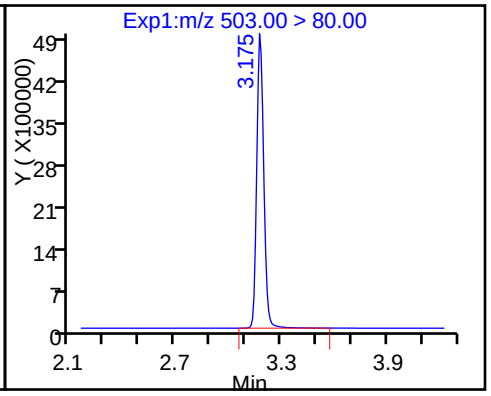
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

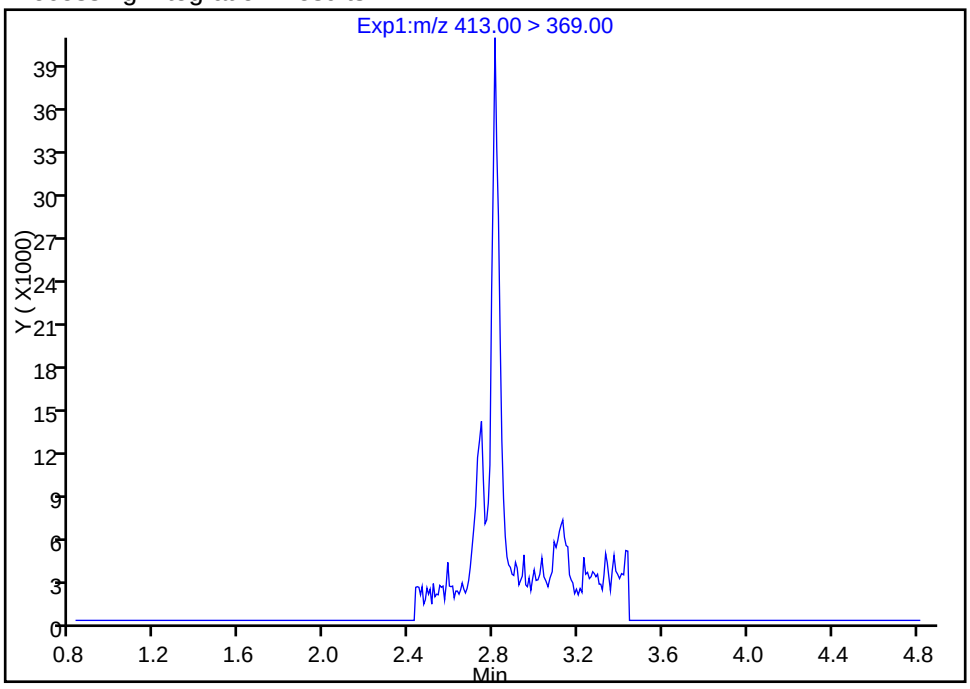
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_029.d				
Injection Date:	21-Dec-2016 16:35:58	Instrument ID:	A8_N		
Lims ID:	320-23998-A-7-A	Lab Sample ID:	320-23998-7		
Client ID:	DPT-16-09-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	11	Worklist Smp#:	19
Injection Vol:	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

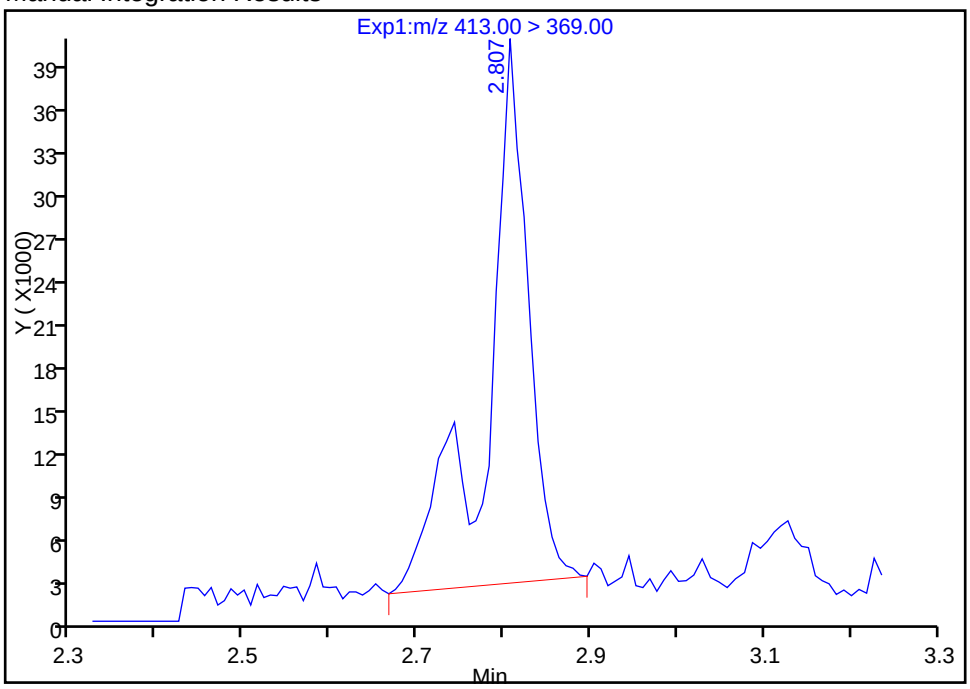
Not Detected
Expected RT: 2.82

Processing Integration Results



Manual Integration Results

RT: 2.81
Area: 125837
Amount: 1.088437
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:20:07
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-09-GW-18-22 Lab Sample ID: 320-23998-8

Matrix: Water Lab File ID: 21DEC2016A_030.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 14:40

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 259.2(mL) Date Analyzed: 12/21/2016 16:43

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.0019	0.00072
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.019		0.0039	0.0029	0.0012
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0043		0.0024	0.0019	0.00089

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	65		25-150
STL00991	13C4 PFOS	114		25-150
STL00994	18O2 PFHxS	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_030.d
Lims ID: 320-23998-A-8-A
Client ID: DPT-16-09-GW-18-22
Sample Type: Client
Inject. Date: 21-Dec-2016 16:43:29 ALS Bottle#: 12 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:28:50 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:21:38

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	1.868	1.868	0.0	1.000	1123631	2.23				
298.90 > 99.00	1.868	1.868	0.0	1.000	455312		2.47(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.470	2.475	-0.005		16790508	51.4		109	2044360	
D 14 13C4 PFOA										
417.00 > 372.00	2.808	2.821	-0.013		7441947	32.3		64.6	685233	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.808	2.821	-0.013	1.000	351952	2.36			2129	M
413.00 > 169.00	2.716	2.821	-0.105	0.967	279388		1.26(0.90-1.10)		8359	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.173	3.084	0.089	1.000	2724183	9.62			139677	
499.00 > 99.00	3.181	3.084	0.097	1.003	461589		5.90(0.90-1.10)		24851	
D 17 13C4 PFOS										
503.00 > 80.00	3.173	3.190	-0.017		13606306	54.7		114	598874	

QC Flag Legend

Review Flags
M - Manually Integrated

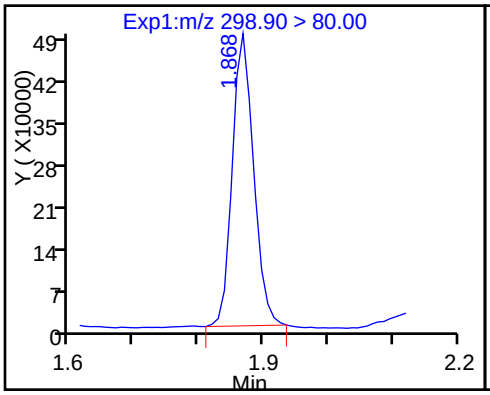
Report Date: 22-Dec-2016 10:28:55 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

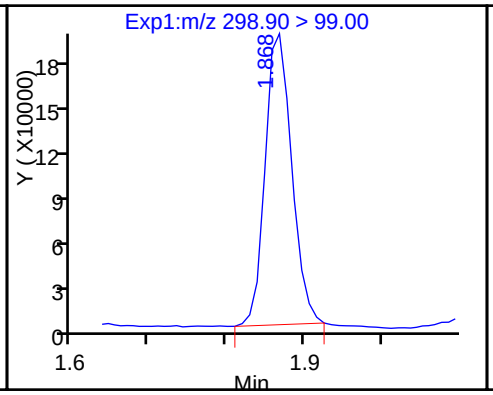
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_030.d

Injection Date:	21-Dec-2016 16:43:29	Instrument ID:	A8_N
Lims ID:	320-23998-A-8-A	Lab Sample ID:	320-23998-8
Client ID:	DPT-16-09-GW-18-22		
Operator ID:	A8-PC\A8	ALS Bottle#:	12 Worklist Smp#: 20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL

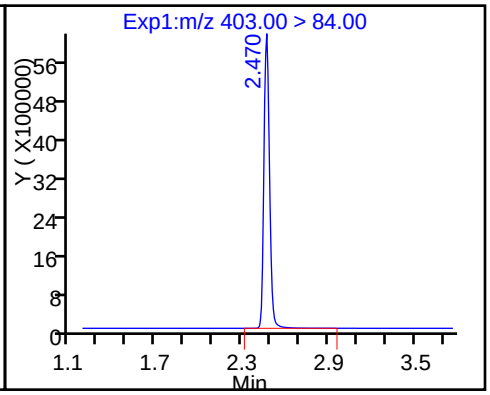
5 Perfluorobutanesulfonic acid



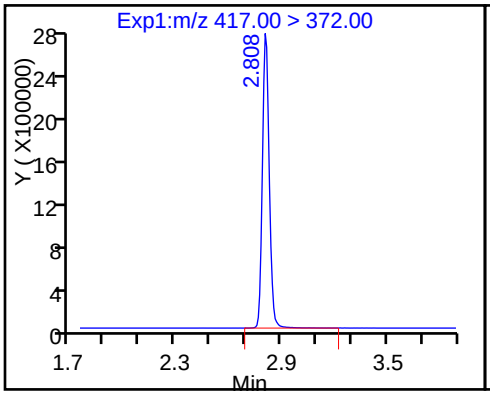
5 Perfluorobutanesulfonic acid



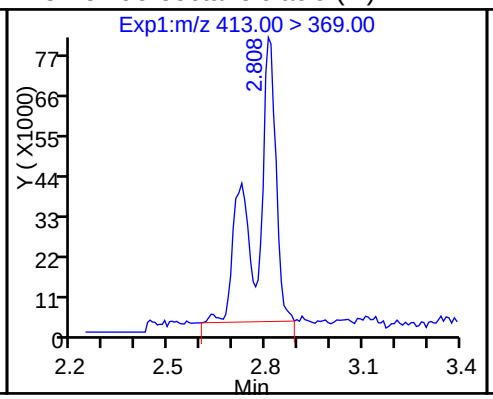
D 10 18O2 PFHxS



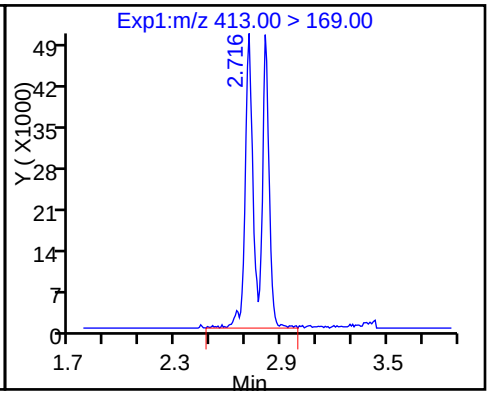
D 14 13C4 PFOA



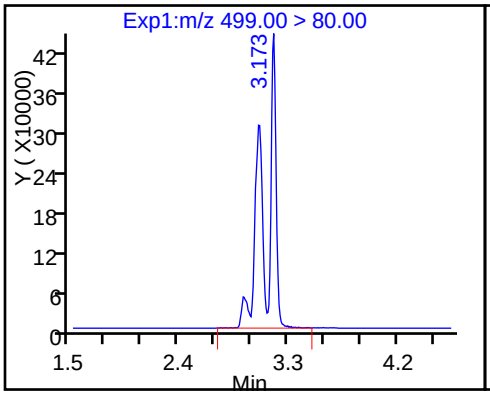
15 Perfluorooctanoic acid (M)



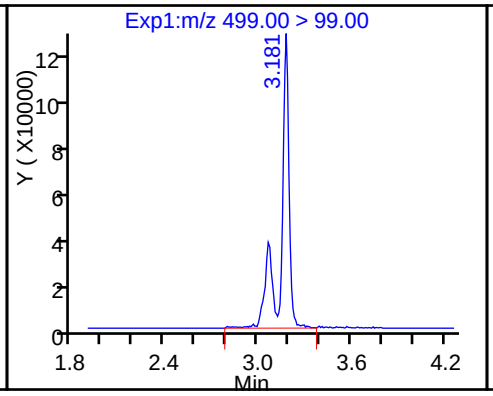
15 Perfluorooctanoic acid



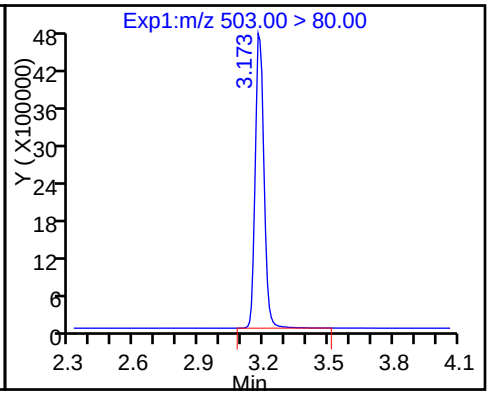
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

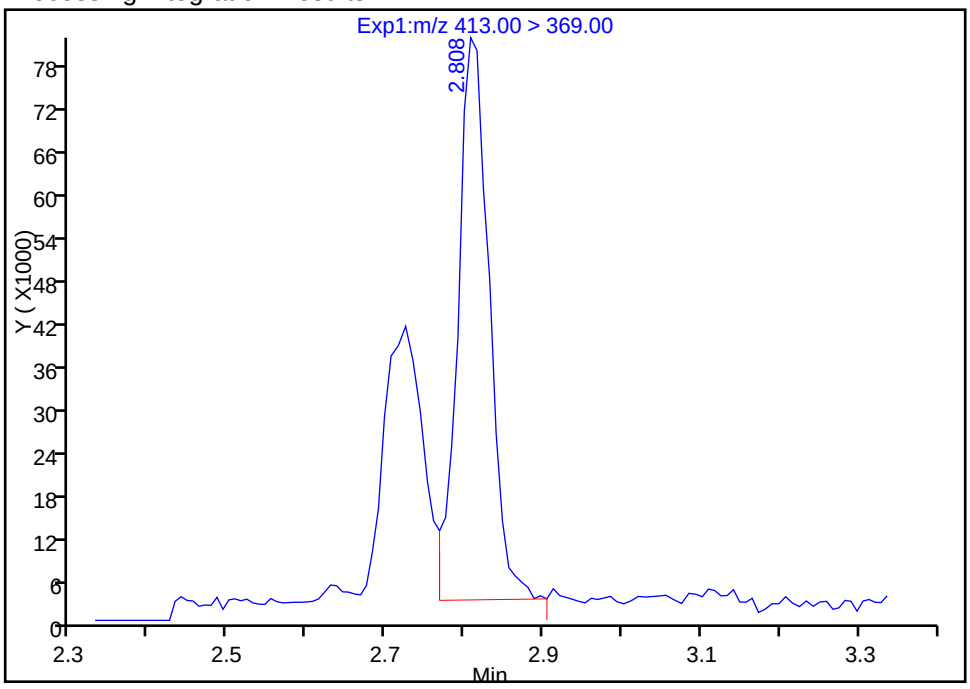
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_030.d				
Injection Date:	21-Dec-2016 16:43:29	Instrument ID:	A8_N		
Lims ID:	320-23998-A-8-A	Lab Sample ID:	320-23998-8		
Client ID:	DPT-16-09-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	12	Worklist Smp#:	20
Injection Vol:	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

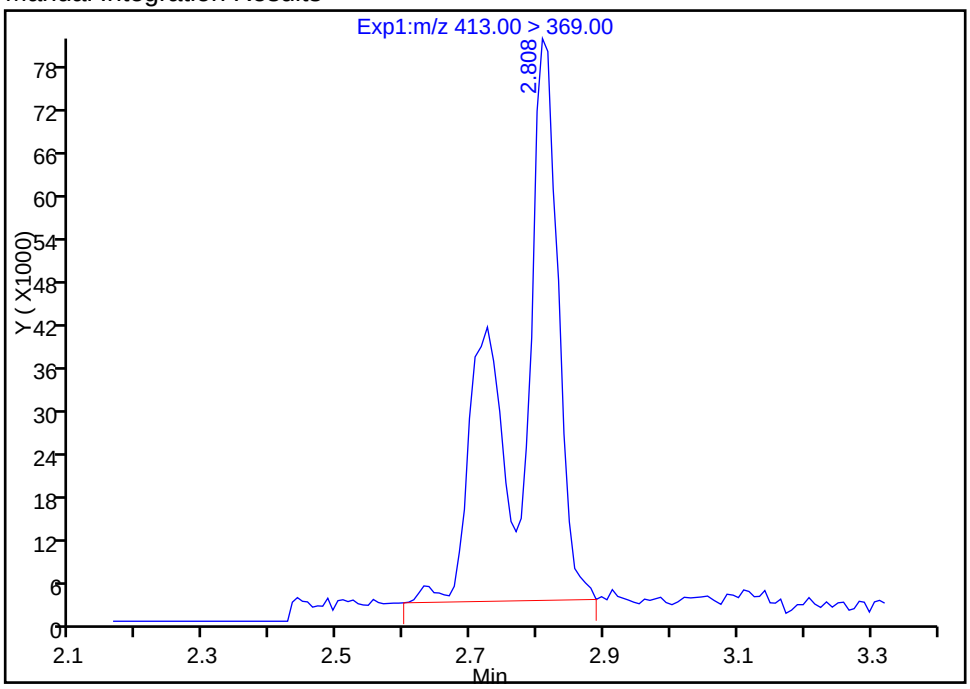
Processing Integration Results

RT: 2.81
Area: 216574
Amount: 1.450530
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 351952
Amount: 2.357240
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:21:38

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-08-GW-31-35 | Lab Sample ID: 320-23998-9

Matrix: Water | Lab File ID: 21DEC2016A_031.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 10:00

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 257.6(mL) | Date Analyzed: 12/21/2016 16:50

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.: 143502 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0045	M	0.0024	0.0019	0.00073
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.022		0.0039	0.0029	0.0012
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0056		0.0024	0.0019	0.00089

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	57		25-150
STL00991	13C4 PFOS	117		25-150
STL00994	18O2 PFHxS	111		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_031.d
Lims ID: 320-23998-A-9-A
Client ID: DPT-16-08-GW-31-35
Sample Type: Client
Inject. Date: 21-Dec-2016 16:50:58 ALS Bottle#: 13 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:28:50 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:22:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		9326195	26.8		53.6	777149	
1 Perfluorobutyric acid										
212.90 > 169.00	1.541	1.550	-0.009	1.000	62666	0.3935			142	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		9504541	35.7		71.4	977356	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.829	0.0	1.000	50918	0.2714			467	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.868	0.0	1.000	1477369	2.87				
298.90 > 99.00	1.858	1.868	-0.010	0.995	603036		2.45(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.121	2.117	0.004		7457391	30.4		60.8	737696	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.112	2.126	-0.014	1.000	113626	0.8202			607	
D 11 13C4-PFHpA										
367.00 > 322.00	2.446	2.460	-0.014		6662291	29.4		58.9	620786	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.439	2.475	-0.036	1.000	15509340	41.4				
D 10 18O2 PFHxS										
403.00 > 84.00	2.462	2.475	-0.013		17204673	52.6		111	865465	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.775	2.789	-0.014	1.000	7230	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.782	2.797	-0.015		1560	0.0133		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.807	2.821	-0.014		6541846	28.4		56.8	493234	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.807	2.821	-0.014	1.000	305091	2.32			1701	M
413.00 > 169.00	2.705	2.821	-0.116	0.964	218618		1.40(0.90-1.10)		4361	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.807	2.821	-0.014	1.000	129218	0.4012				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.167	3.084	0.083	1.000	3237895	11.1			151836	
499.00 > 99.00	3.175	3.084	0.091	1.002	551383		5.87(0.90-1.10)		24257	
D 17 13C4 PFOS										
503.00 > 80.00	3.175	3.190	-0.015		13972184	56.1		117	447955	
D 19 13C5 PFNA										
468.00 > 423.00	3.175	3.190	-0.015		3821520	21.5		43.0	341359	
20 Perfluorononanoic acid										
463.00 > 419.00	3.067	3.198	-0.131	1.000	5468	0.0752			73.8	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.507	3.514	-0.007	1.000	22578	2.63			1670	
D 21 13C8 FOSA										
506.00 > 78.00	3.507	3.514	-0.007		460488	1.20		2.4	43124	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.524	3.540	-0.016	0.998	4838	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.532	3.548	-0.016		1511	0.0141		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.541	3.556	-0.015		2645526	16.8		33.6	107112	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.549	3.556	-0.007	1.000	4745	0.0950			113	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.688	3.707	-0.019		2714	0.0360		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.688	3.707	-0.019	1.000	681	NR				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.852	3.868	-0.016		8246	0.1052		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.835	3.868	-0.033	1.000	26340	0.1543				
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.870	3.885	-0.015	1.004	1614	NR				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.861	3.886	-0.025	1.000	9802	0.2593			203	
D 27 13C2 PFUnA										
565.00 > 520.00	3.861	3.886	-0.025		1976138	16.9		33.7	183136	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.060	4.010	0.050		381	0.004008		0.0		
54 MeFOSA										
512.00 > 169.00	4.012	4.010	0.002	1.000	991	NR				
29 Perfluorododecanoic acid										
613.00 > 569.00	4.155	4.172	-0.017	1.000	9641	0.2256			246	
D 30 13C2 PFDoA										
615.00 > 570.00	4.155	4.172	-0.017		2327883	21.0		42.0	131233	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.190	4.199	-0.009	1.000	813	NR				
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.426	4.444	-0.018	1.000	17000	0.4026			394	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.670	4.690	-0.020	1.000	99724	1.35			1475	
713.00 > 169.00	4.662	4.690	-0.028	0.998	10662		9.35(0.00-0.00)		4214	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.670	4.690	-0.020		12463275	54.8		110	517350	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.079	5.103	-0.024	1.000	80737	1.22			190	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.079	5.103	-0.024		6092828	48.9		97.8	231019	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.436	5.461	-0.025	1.000	9352	0.1950			8.6	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Report Date: 22-Dec-2016 10:28:57 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_031.d

Injection Date: 21-Dec-2016 16:50:58 Instrument ID: A8_N

Lims ID: 320-23998-A-9-A Lab Sample ID: 320-23998-9

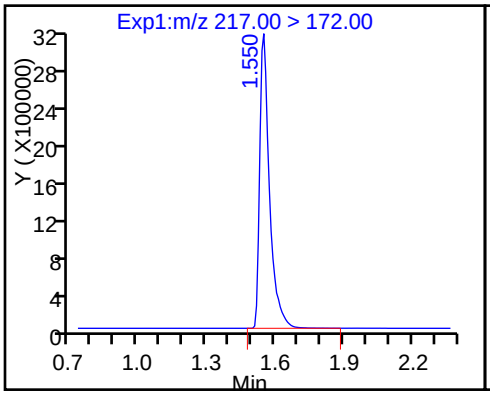
Client ID: DPT-16-08-GW-31-35

Operator ID: A8-PC\A8 ALS Bottle#: 13 Worklist Smp#: 21

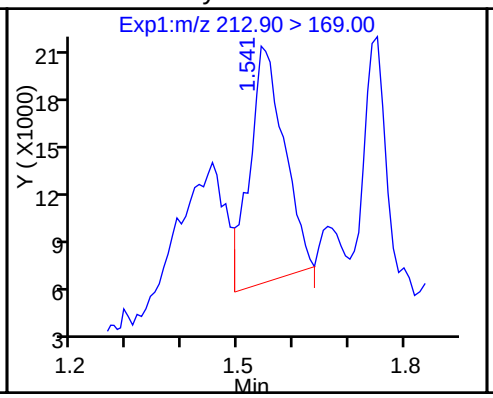
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

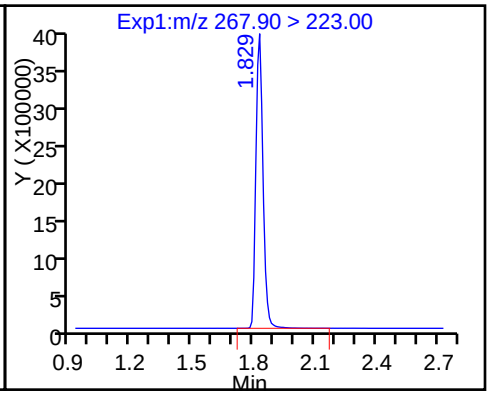
D 2 13C4 PFBA



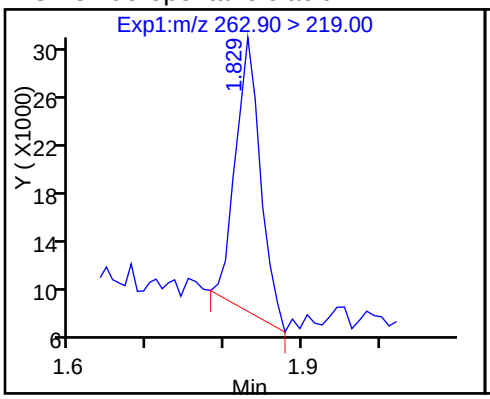
1 Perfluorobutyric acid



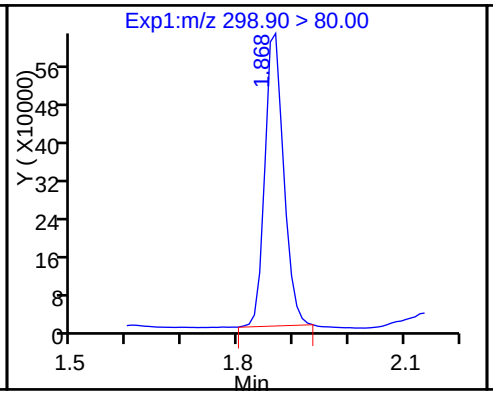
D 4 13C5-PFPeA



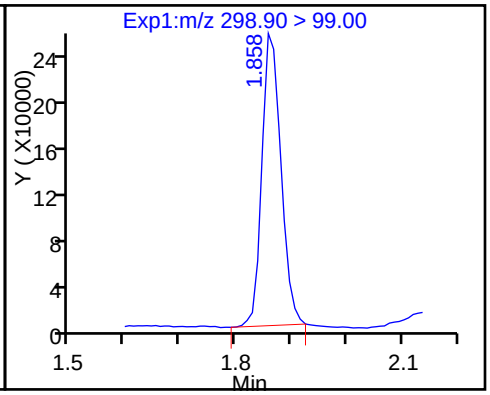
3 Perfluoropentanoic acid



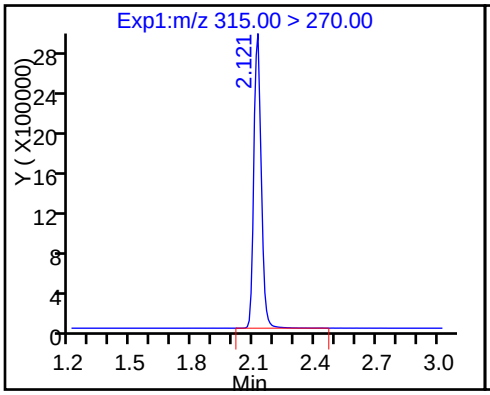
5 Perfluorobutanesulfonic acid



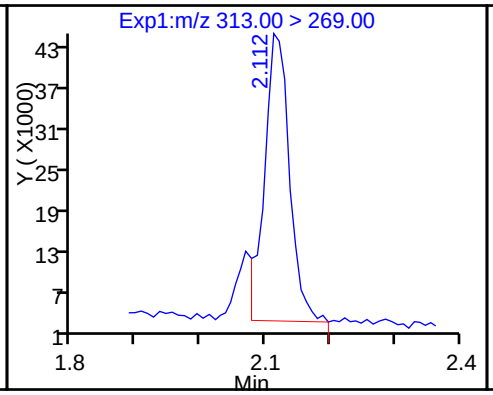
5 Perfluorobutanesulfonic acid



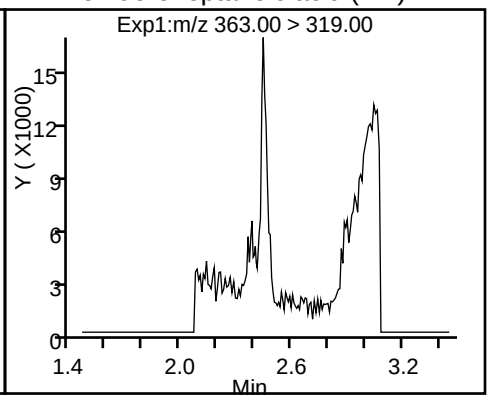
D 6 13C2 PFHxA



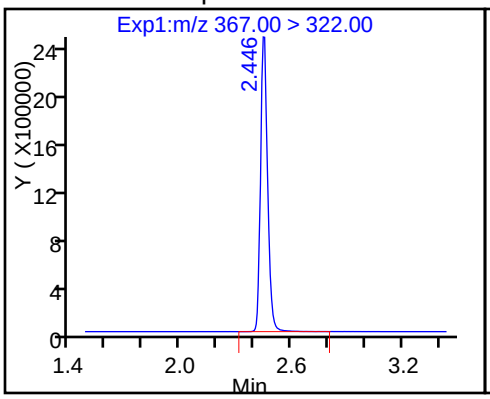
7 Perfluorohexanoic acid



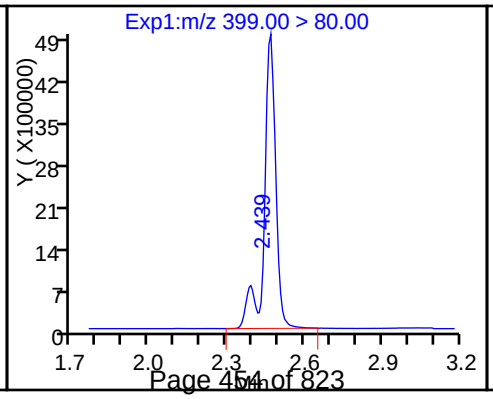
12 Perfluoroheptanoic acid (ND)



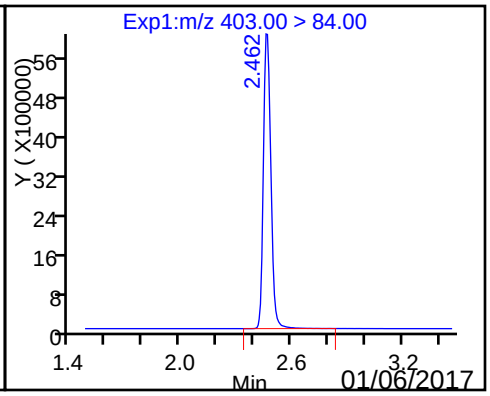
D 11 13C4-PFHpA



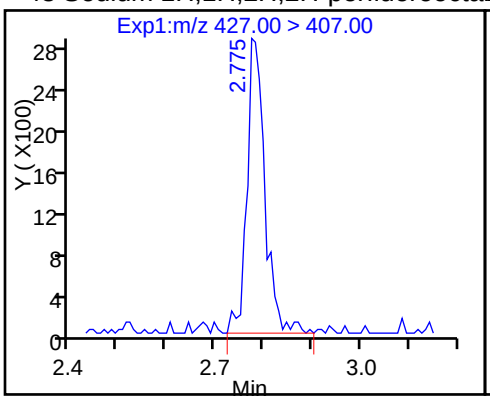
9 Perfluorohexanesulfonic acid



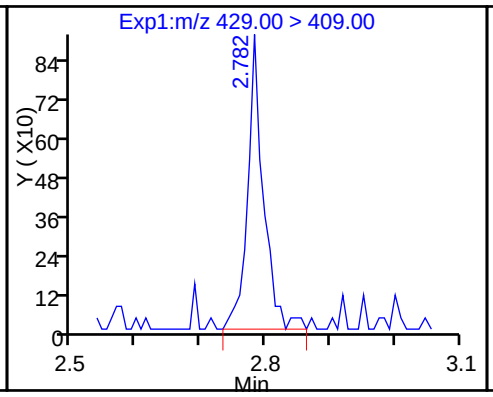
D 10 18O2 PFHxS



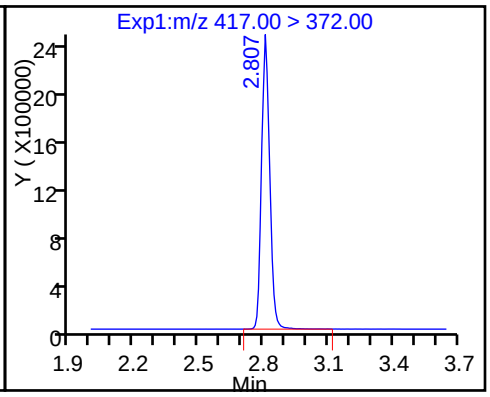
48 Sodium 1H,1H,2H,2H-perfluorooctane



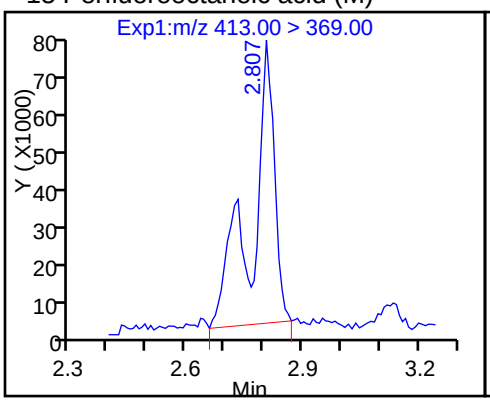
D 47 M2-6:2FTS



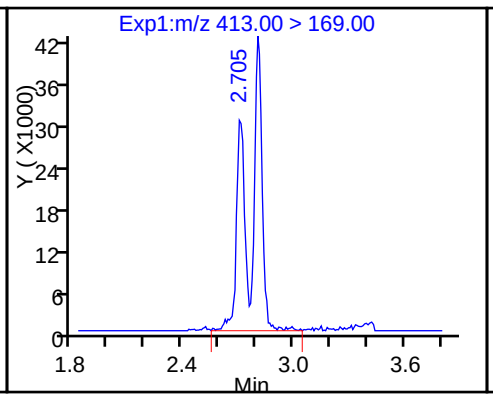
D 14 13C4 PFOA



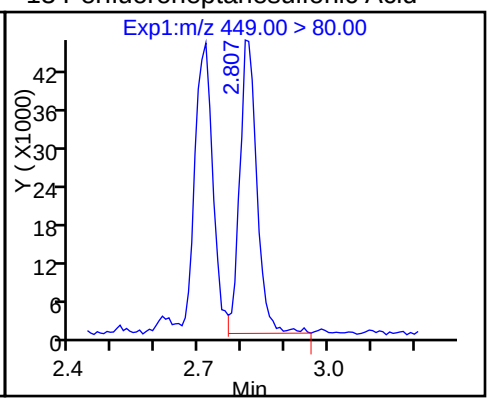
15 Perfluorooctanoic acid (M)



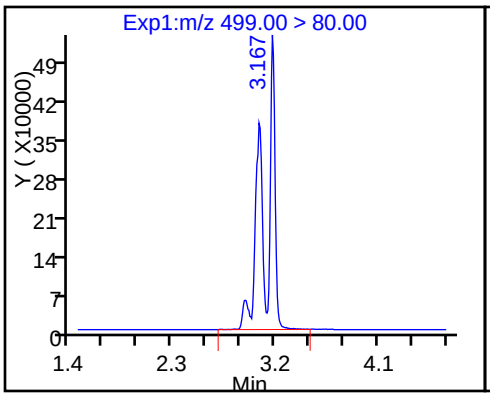
15 Perfluorooctanoic acid



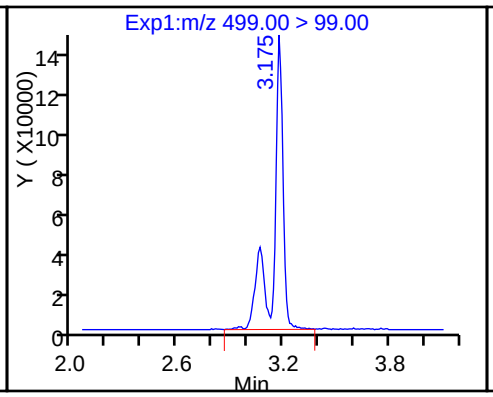
13 Perfluoroheptanesulfonic Acid



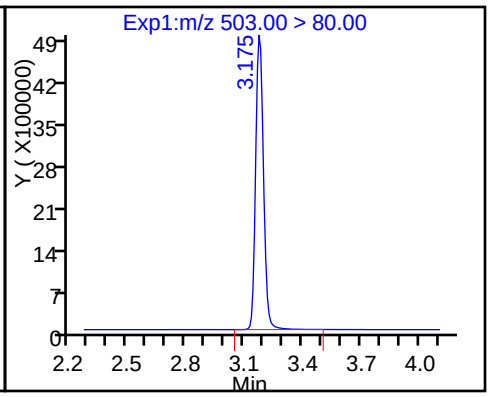
18 Perfluorooctane sulfonic acid



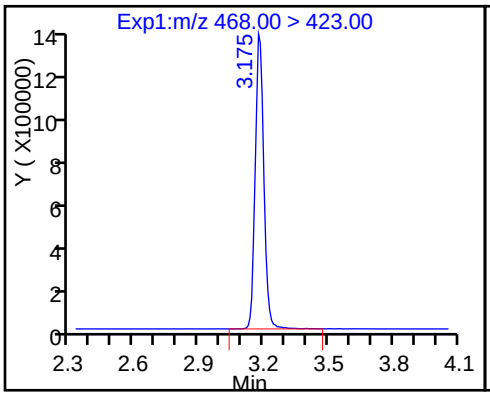
18 Perfluorooctane sulfonic acid



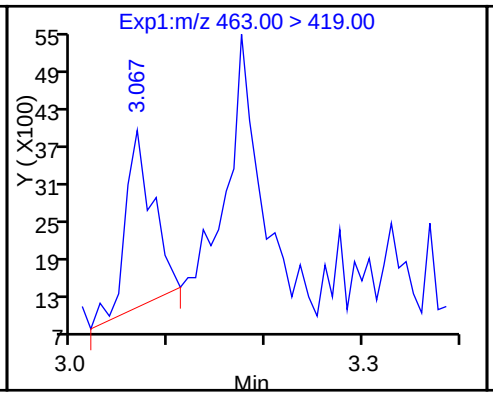
D 17 13C4 PFOS



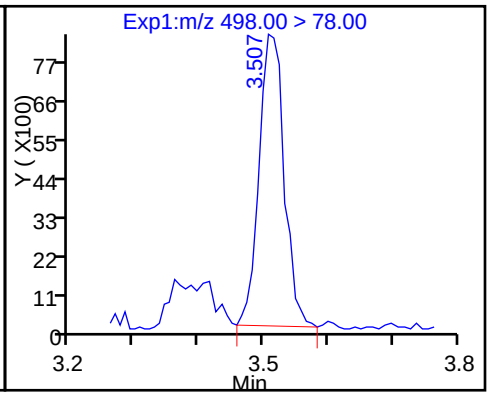
D 19 13C5 PFNA



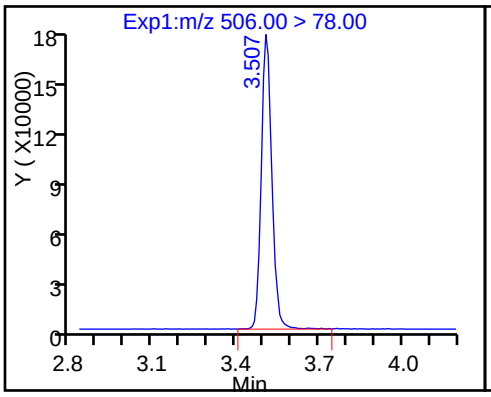
20 Perfluorononanoic acid



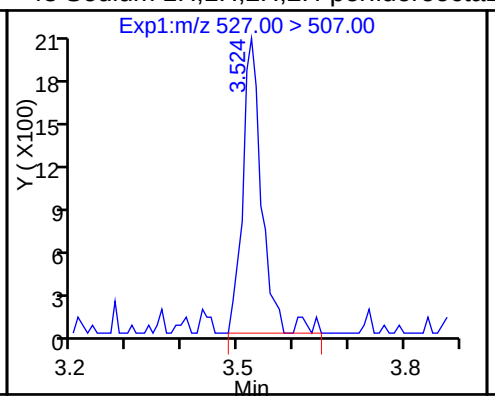
22 Perfluorooctane Sulfonamide



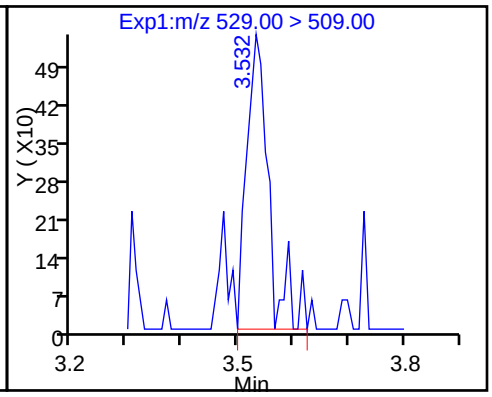
D 21 13C8 FOSA



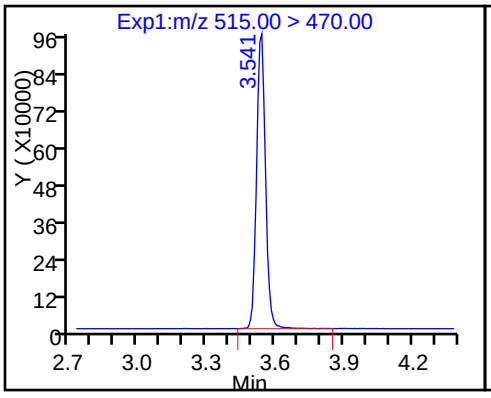
43 Sodium 1H,1H,2H,2H-perfluorooctane



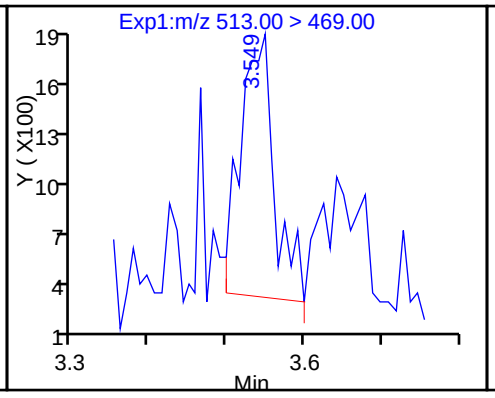
D 42 M2-8:2FTS



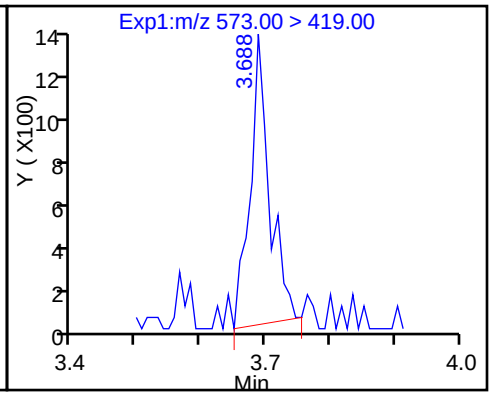
D 23 13C2 PFDA



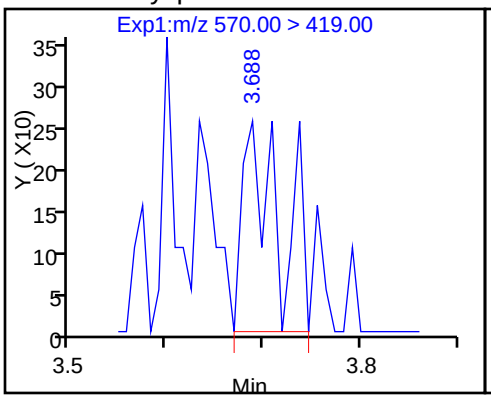
24 Perfluorodecanoic acid



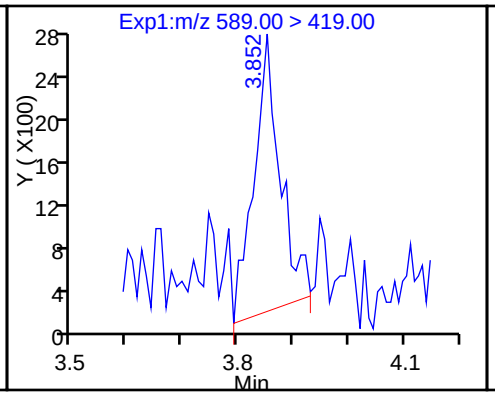
D 45 d3-NMeFOSAA



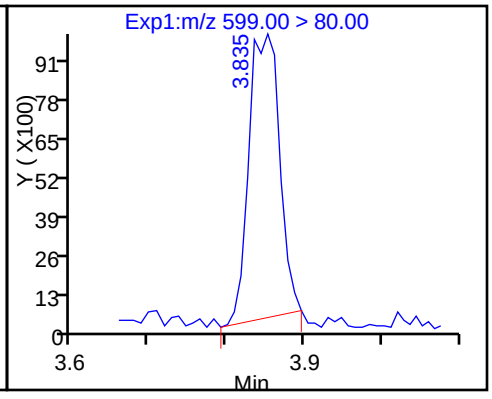
44 N-methyl perfluorooctane sulfonami



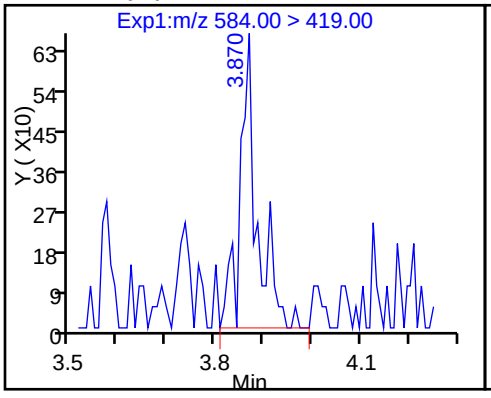
D 46 d5-NEtFOSAA



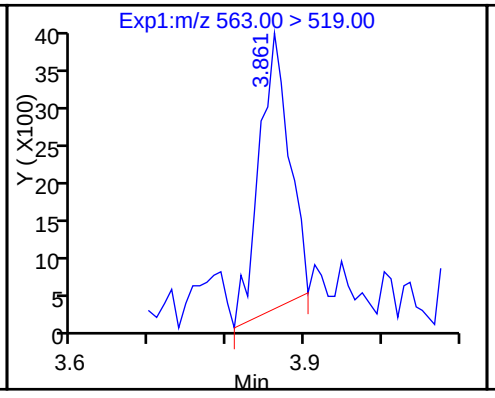
26 Perfluorodecane Sulfonic acid



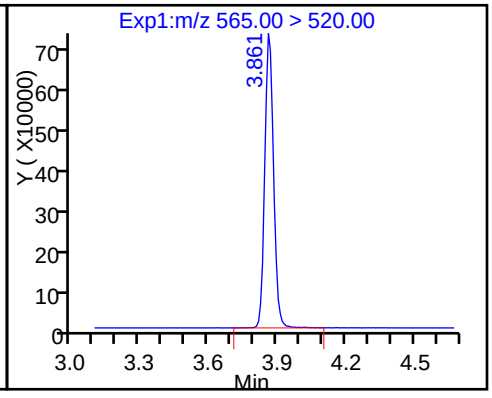
49 N-ethyl perfluorooctane sulfonamid



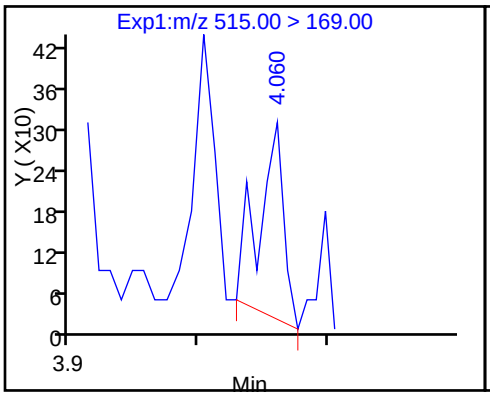
28 Perfluoroundecanoic acid



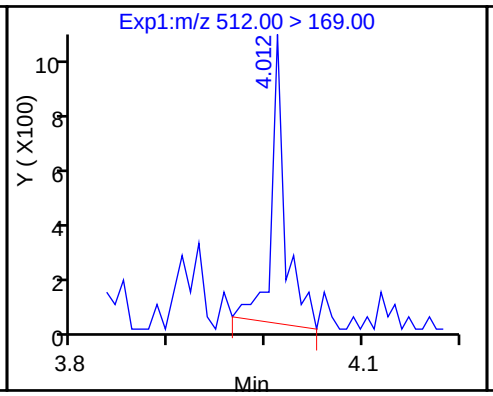
D 27 13C2 PFUnA



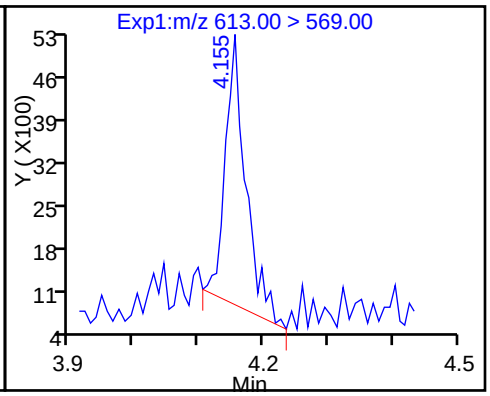
D 52 d-N-MeFOSA-M



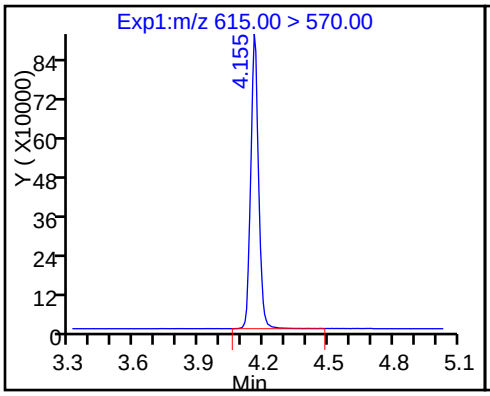
54 MeFOSA



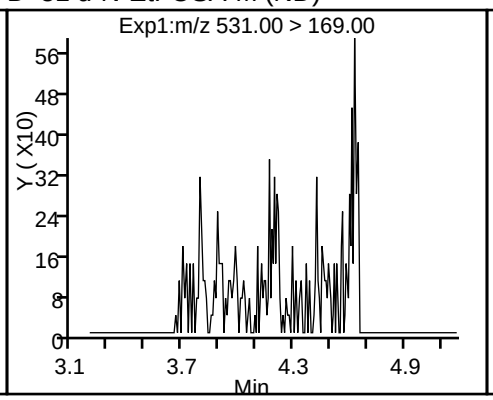
29 Perfluorododecanoic acid



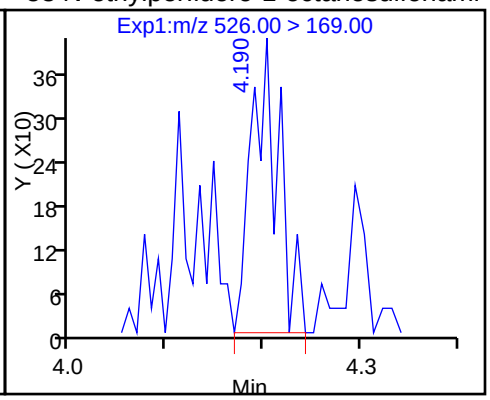
D 30 13C2 PFDoA



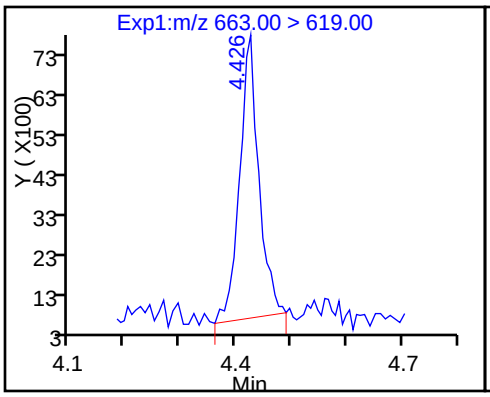
D 51 d-N-EtFOSA-M (ND)



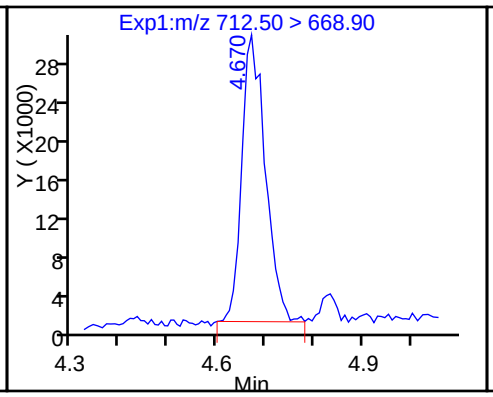
53 N-ethylperfluoro-1-octanesulfonami



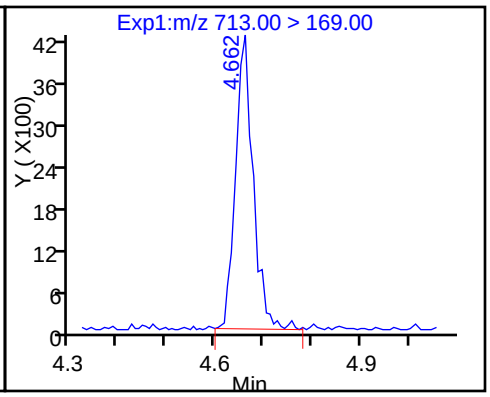
31 Perfluorotridecanoic acid



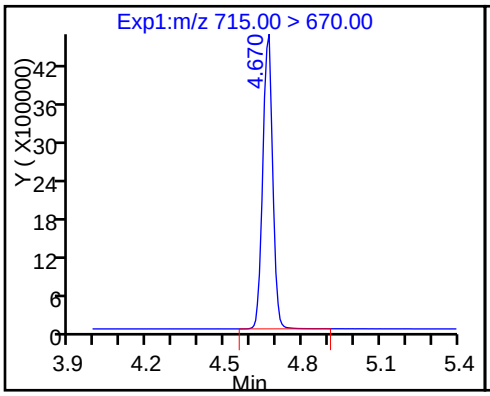
33 Perfluorotetradecanoic acid



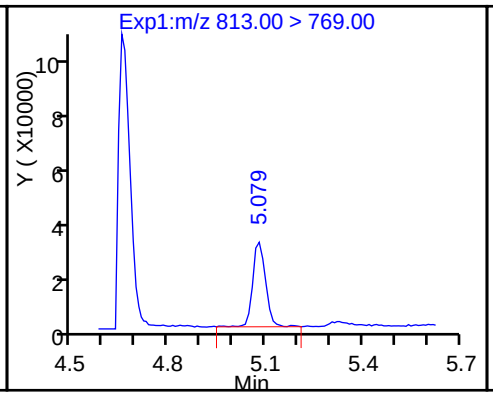
33 Perfluorotetradecanoic acid



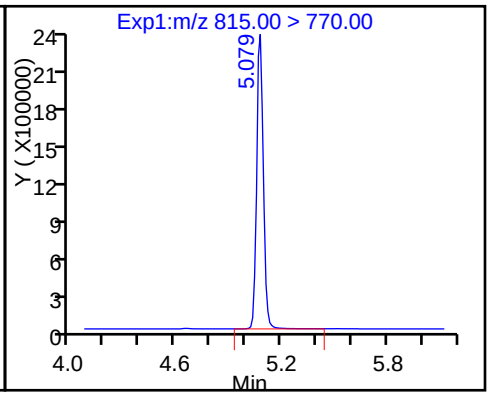
D 32 13C2-PFTeDA



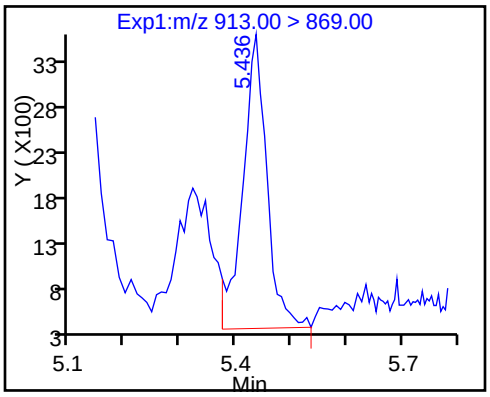
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

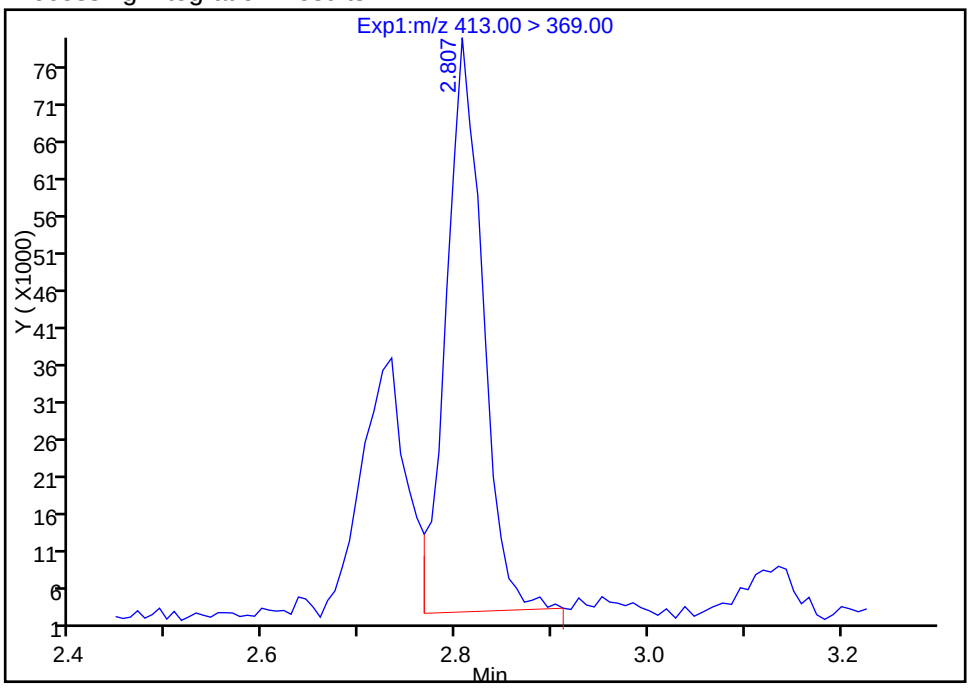
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_031.d				
Injection Date:	21-Dec-2016 16:50:58	Instrument ID:	A8_N		
Lims ID:	320-23998-A-9-A	Lab Sample ID:	320-23998-9		
Client ID:	DPT-16-08-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	13	Worklist Smp#:	21
Injection Vol:	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

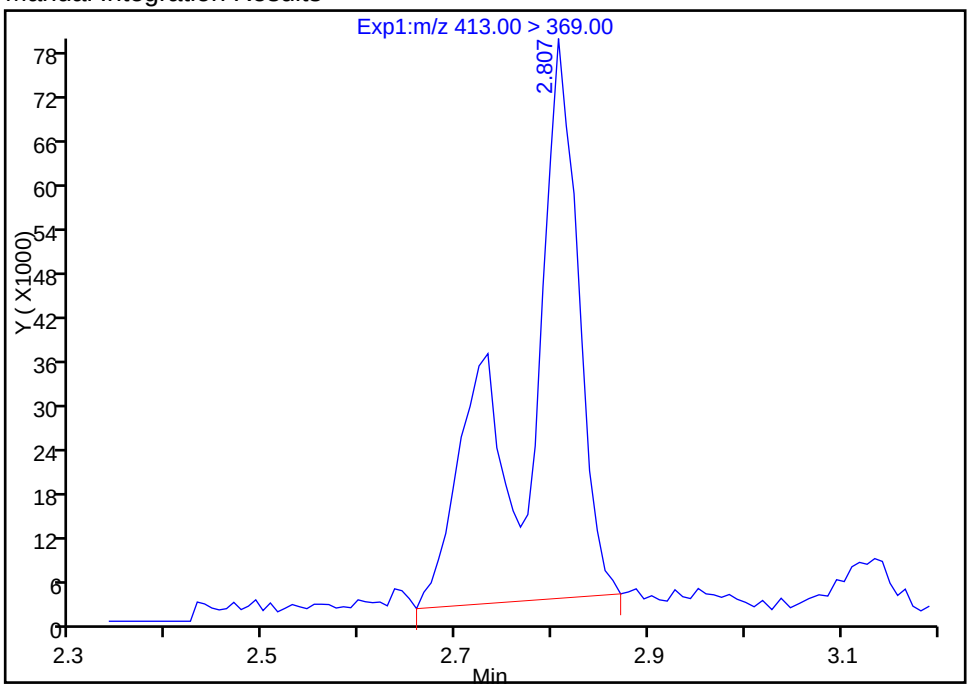
Processing Integration Results

RT: 2.81
Area: 201774
Amount: 1.537347
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 305091
Amount: 2.324535
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:22:01

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-08-GW-18-22 Lab Sample ID: 320-23998-10

Matrix: Water Lab File ID: 21DEC2016A_034.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 10:10

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 247.9(mL) Date Analyzed: 12/21/2016 17:13

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0075	M	0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.038		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0030	M	0.0025	0.0020	0.00093

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	45		25-150
STL00991	13C4 PFOS	113		25-150
STL00994	18O2 PFHxS	102		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_034.d
Lims ID: 320-23998-A-10-A
Client ID: DPT-16-08-GW-18-22
Sample Type: Client
Inject. Date: 21-Dec-2016 17:13:26 ALS Bottle#: 16 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:28:50 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:23:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.868	1.868	0.0	1.000	709141	1.50				
298.90 > 99.00	1.858	1.868	-0.010	0.995	298376		2.38(0.00-0.00)			M
D 10 18O2 PFHxS										
403.00 > 84.00	2.470	2.475	-0.005		15802690	48.3		102	567138	
D 14 13C4 PFOA										
417.00 > 372.00	2.808	2.821	-0.013		5165113	22.4		44.8	464481	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.716	2.821	-0.105	1.000	385213	3.72			514	
413.00 > 169.00	2.808	2.821	-0.013	1.034	258031		1.49(0.90-1.10)		1367	M
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.161	3.084	0.077	1.000	5216864	18.7			148014	
499.00 > 99.00	3.185	3.084	0.101	1.008	1109309		4.70(0.90-1.10)		34075	
D 17 13C4 PFOS										
503.00 > 80.00	3.177	3.190	-0.013		13412287	53.9		113	394142	

QC Flag Legend

Review Flags
M - Manually Integrated

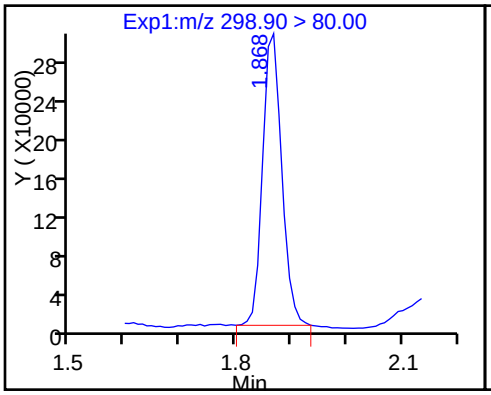
Report Date: 22-Dec-2016 10:29:00 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

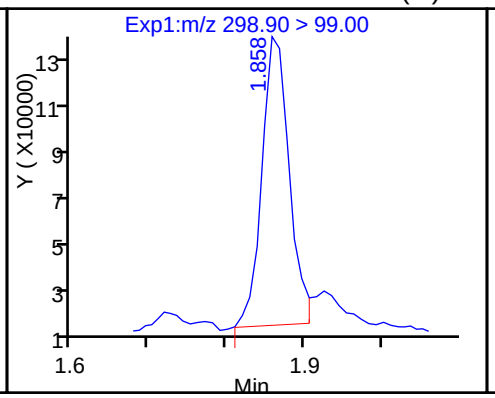
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_034.d

Injection Date:	21-Dec-2016 17:13:26	Instrument ID:	A8_N		
Lims ID:	320-23998-A-10-A	Lab Sample ID:	320-23998-10		
Client ID:	DPT-16-08-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	16	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

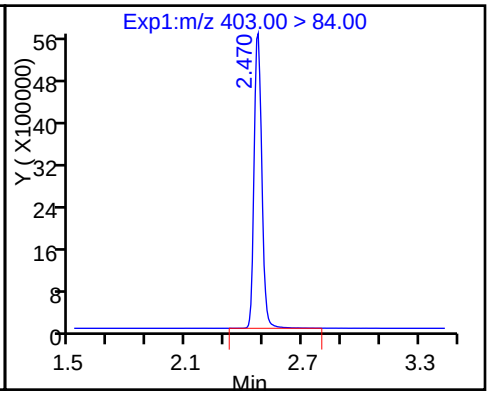
5 Perfluorobutanesulfonic acid



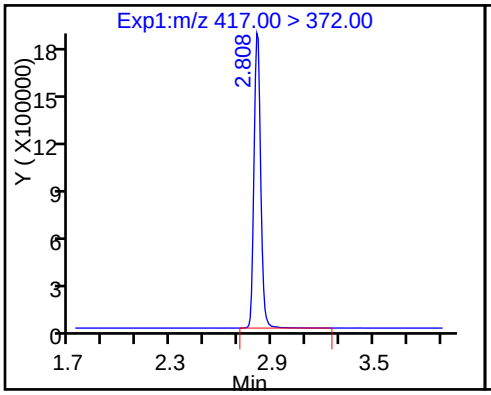
5 Perfluorobutanesulfonic acid (M)



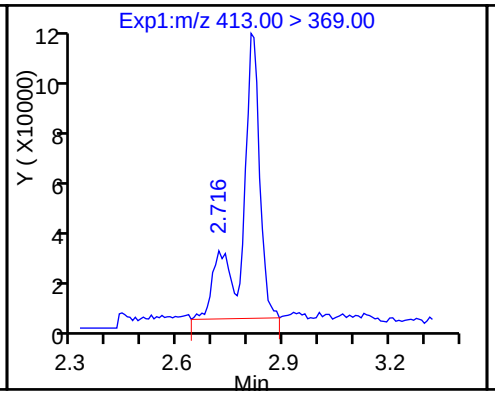
D 10 18O2 PFHxS



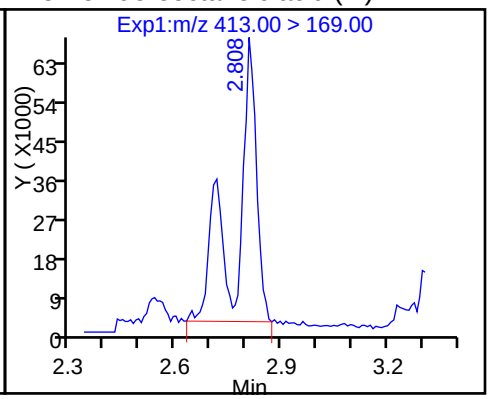
D 14 13C4 PFOA



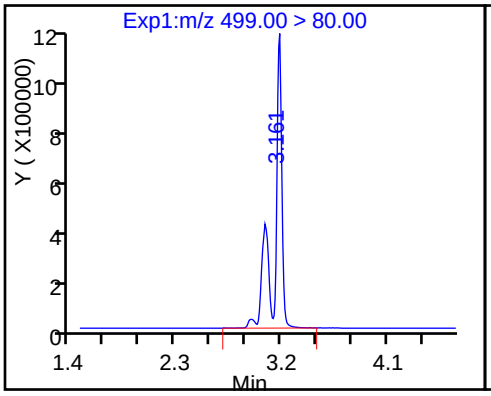
15 Perfluorooctanoic acid



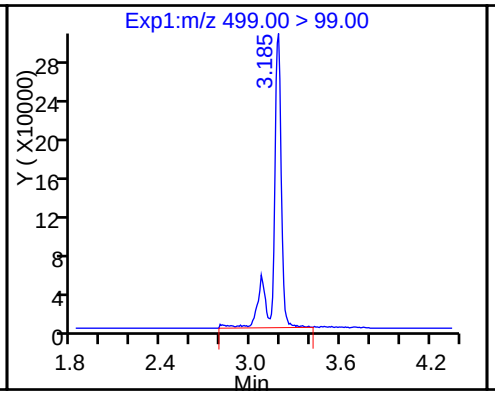
15 Perfluorooctanoic acid (M)



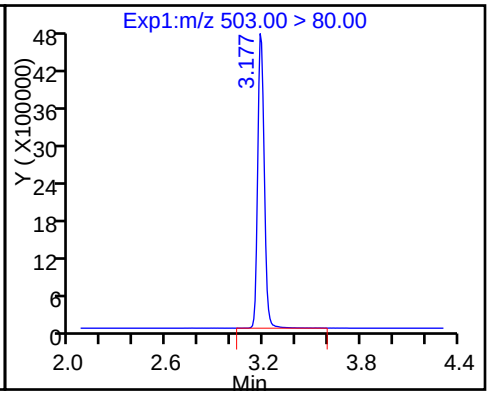
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



TestAmerica Sacramento

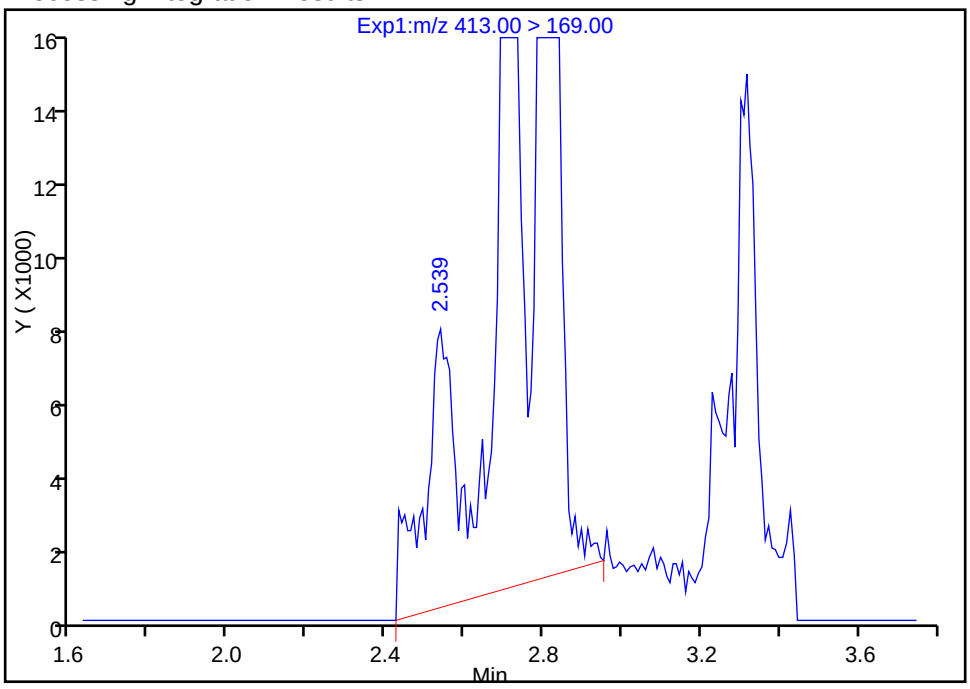
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_034.d				
Injection Date:	21-Dec-2016 17:13:26	Instrument ID:	A8_N		
Lims ID:	320-23998-A-10-A	Lab Sample ID:	320-23998-10		
Client ID:	DPT-16-08-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	16	Worklist Smp#:	24
Injection Vol:	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

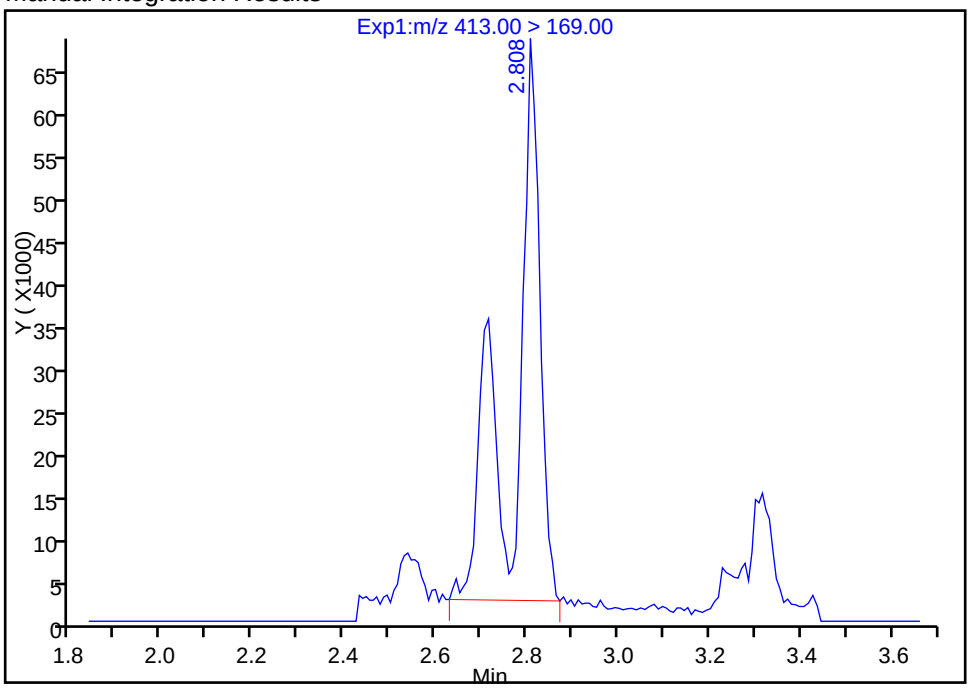
Processing Integration Results

RT: 2.54
Area: 326566
Amount: 3.717304
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 258031
Amount: 3.717304
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:23:53
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento

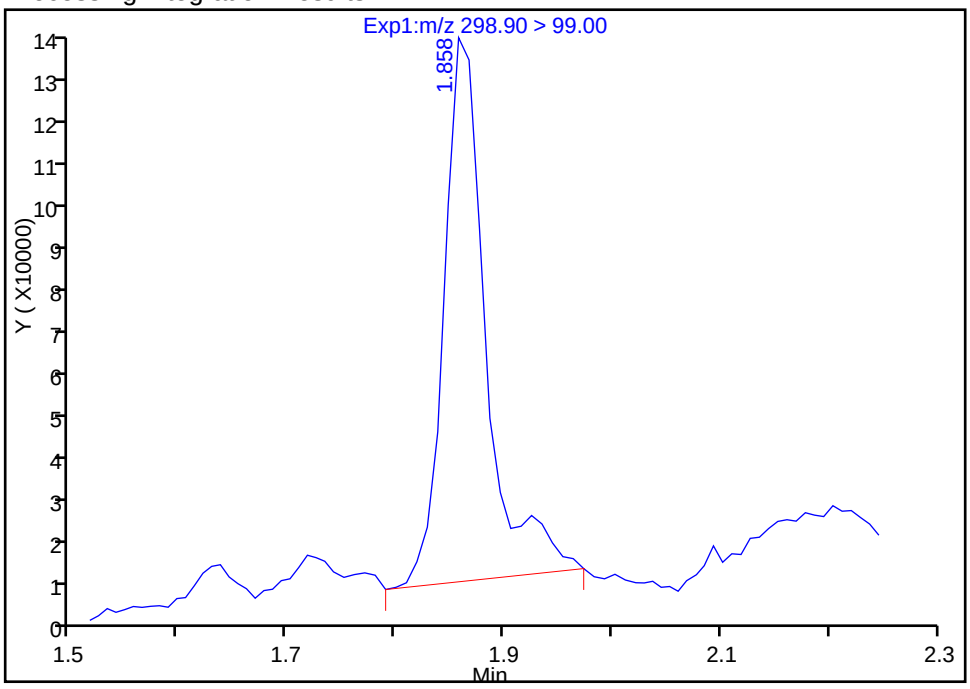
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_034.d		
Injection Date:	21-Dec-2016 17:13:26	Instrument ID:	A8_N
Lims ID:	320-23998-A-10-A	Lab Sample ID:	320-23998-10
Client ID:	DPT-16-08-GW-18-22		
Operator ID:	A8-PC\A8	ALS Bottle#:	16 Worklist Smp#: 24
Injection Vol:	2.0 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: 2

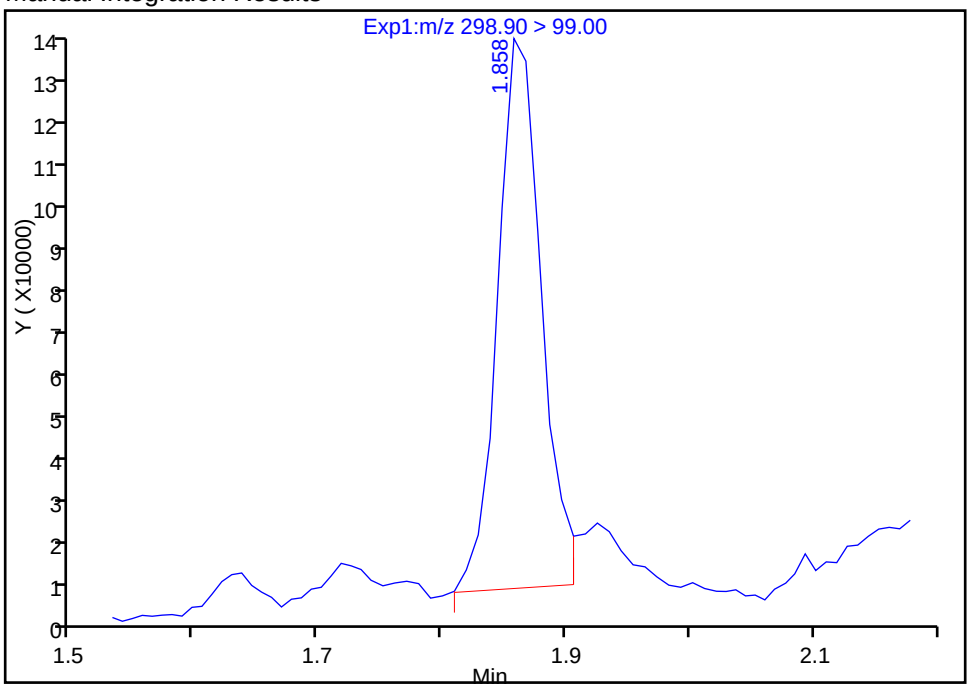
Processing Integration Results

RT: 1.86
Area: 331855
Amount: 1.497983
Amount Units: ng/ml



Manual Integration Results

RT: 1.86
Area: 298376
Amount: 1.497983
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:23:53
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-07-GW-31-35 | Lab Sample ID: 320-23998-11

Matrix: Water | Lab File ID: 21DEC2016A_035.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 10:50

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 249.9(mL) | Date Analyzed: 12/21/2016 17:20

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.: 143502 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.88*	*E M*	*0.0025*	0.0020	*0.00075*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.3*	*E*	*0.0040*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.18		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	66		25-150
STL00991	13C4 PFOS	57		25-150
STL00994	18O2 PFHxS	48		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_035.d
Lims ID: 320-23998-A-11-A
Client ID: DPT-16-07-GW-31-35
Sample Type: Client
Inject. Date: 21-Dec-2016 17:20:56 ALS Bottle#: 17 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-11-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:28:50 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:26:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.868	-0.010	1.000	19951398	90.6				
298.90 > 99.00	1.858	1.868	-0.010	1.000	9128288		2.19(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.464	2.475	-0.011		7353430	22.5		47.5	163728	
D 14 13C4 PFOA										
417.00 > 372.00	2.803	2.821	-0.018		7573030	32.9		65.7	505171	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.811	2.821	-0.010	1.000	67149637	442.0			233976	EM
413.00 > 169.00	2.803	2.821	-0.018	0.997	55638023		1.21(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.062	3.084	-0.022	1.000	160965325	1148.4			212561	E
499.00 > 99.00	3.178	3.084	0.094	1.038	49721929		3.24(0.90-1.10)		619245	
D 17 13C4 PFOS										
503.00 > 80.00	3.178	3.190	-0.012		6737214	27.1		56.6	118503	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

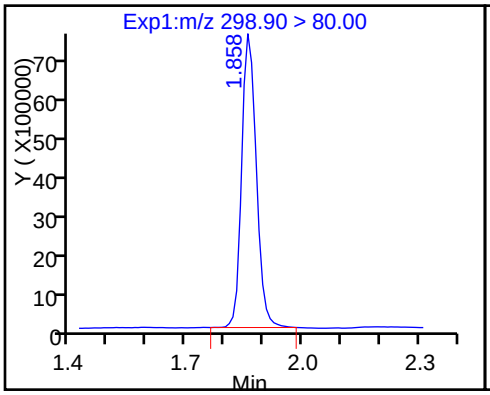
Report Date: 22-Dec-2016 10:29:01 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

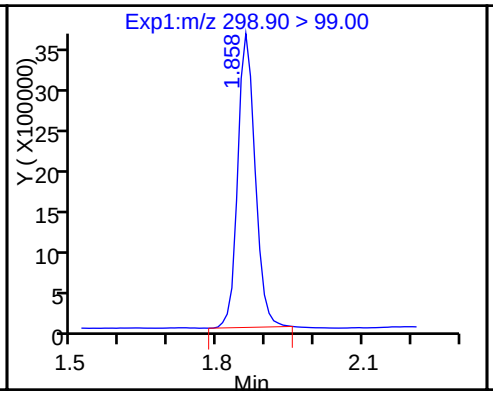
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_035.d

Injection Date:	21-Dec-2016 17:20:56	Instrument ID:	A8_N
Lims ID:	320-23998-A-11-A	Lab Sample ID:	320-23998-11
Client ID:	DPT-16-07-GW-31-35		
Operator ID:	A8-PC\A8	ALS Bottle#:	17 Worklist Smp#: 25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL

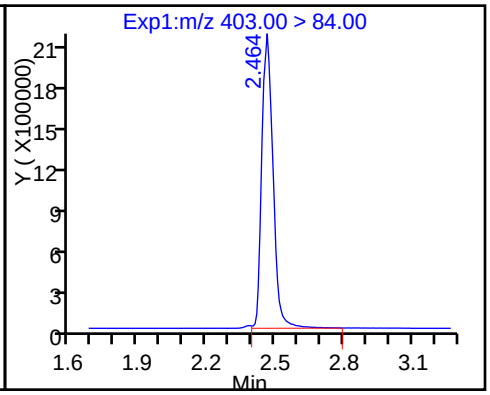
5 Perfluorobutanesulfonic acid



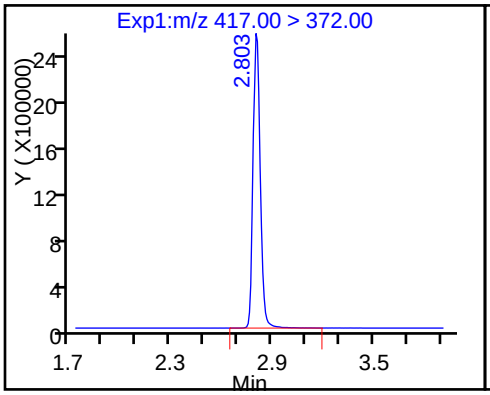
5 Perfluorobutanesulfonic acid



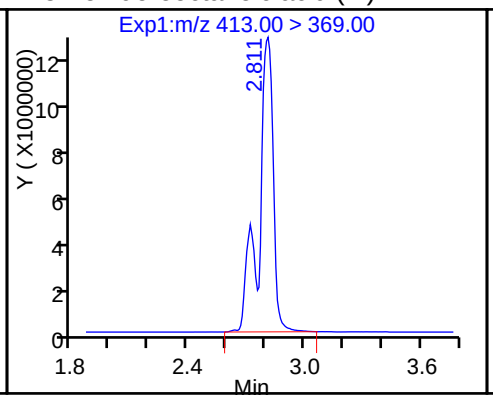
D 10 18O2 PFHxS



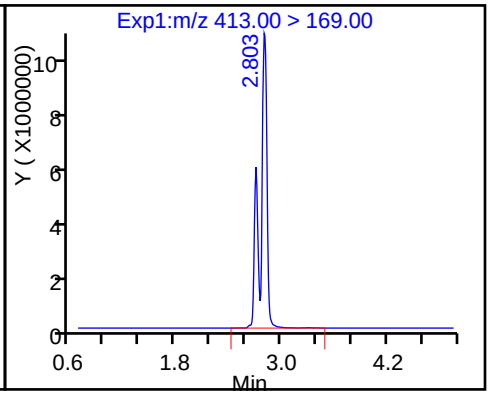
D 14 13C4 PFOA



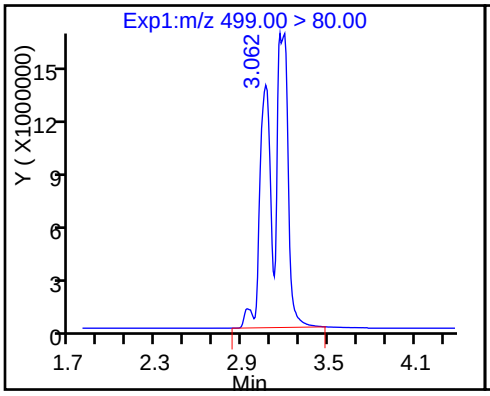
15 Perfluorooctanoic acid (M)



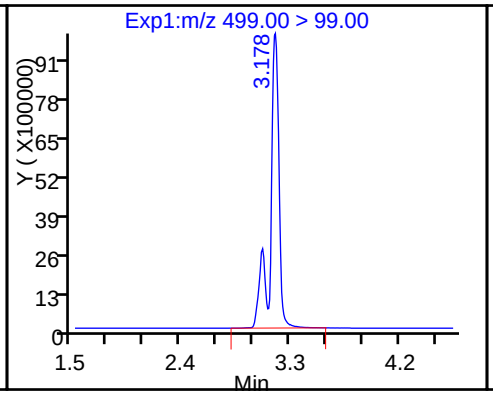
15 Perfluorooctanoic acid



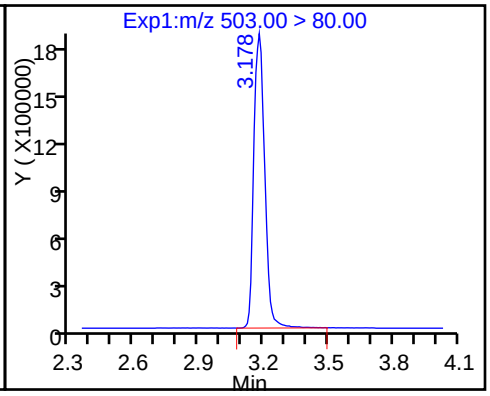
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

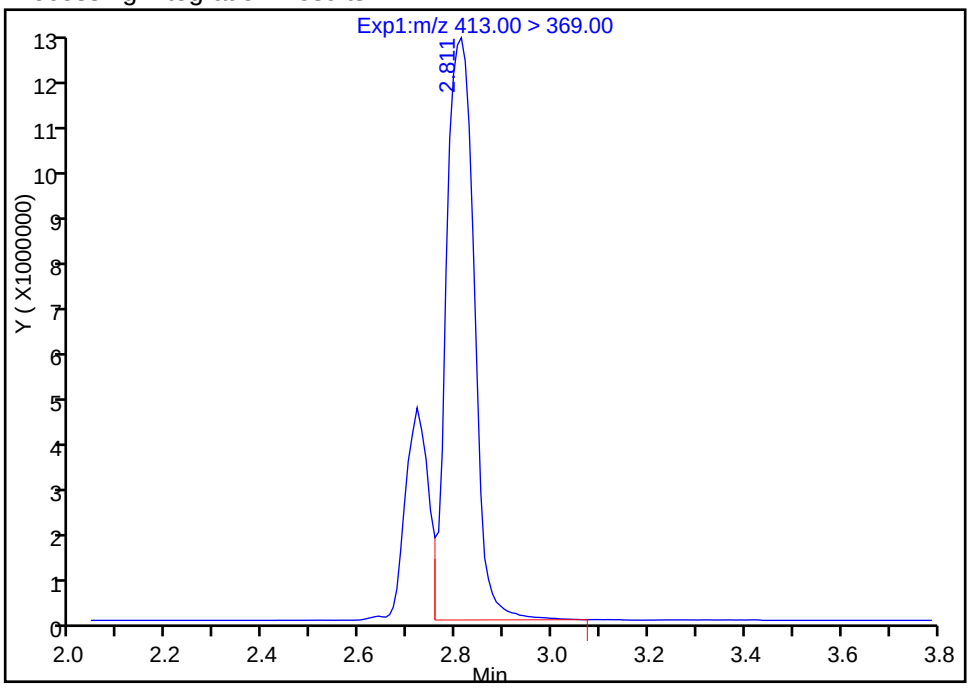
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_035.d				
Injection Date:	21-Dec-2016 17:20:56	Instrument ID:	A8_N		
Lims ID:	320-23998-A-11-A	Lab Sample ID:	320-23998-11		
Client ID:	DPT-16-07-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	17	Worklist Smp#:	25
Injection Vol:	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

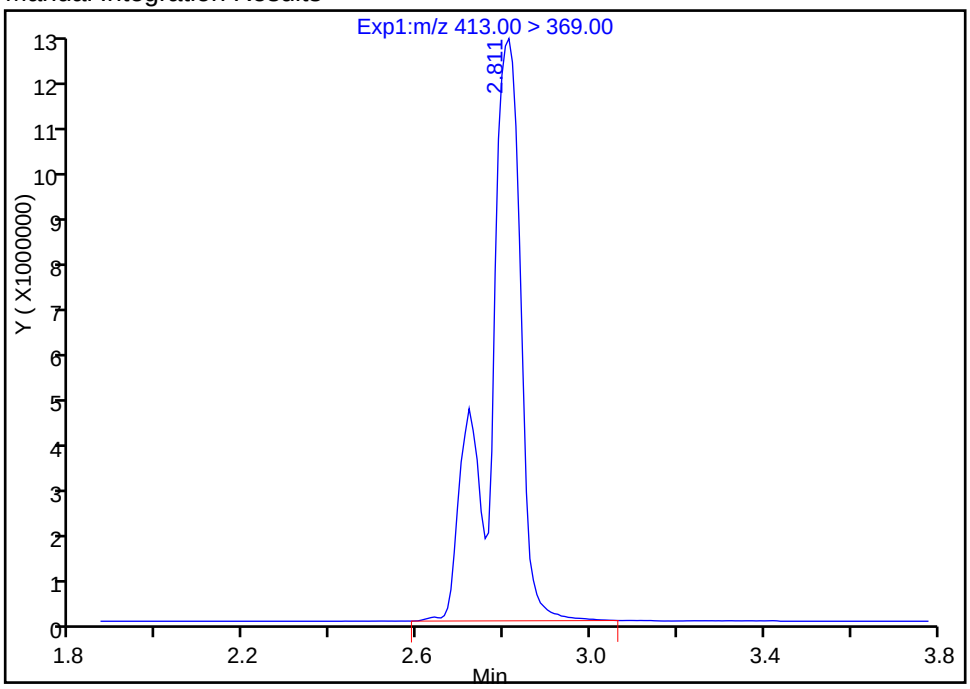
Processing Integration Results

RT: 2.81
Area: 51693538
Amount: 340.2308
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 67149637
Amount: 441.9580
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:26:13

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-07-GW-31-35 DL | Lab Sample ID: 320-23998-11 DL

Matrix: Water | Lab File ID: 22DEC2016BB_013.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 10:50

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 249.9(mL) | Date Analyzed: 12/22/2016 17:20

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.: 143644 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.2	D M	0.025	0.020	0.0075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	3.1	D	0.040	0.030	0.013
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.11*	*D*	*0.025*	0.020	*0.0092*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	112		25-150
STL00991	13C4 PFOS	121		25-150
STL00994	18O2 PFHxS	117		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_013.d
Lims ID: 320-23998-A-11-A
Client ID: DPT-16-07-GW-31-35
Sample Type: Client
Inject. Date: 22-Dec-2016 17:20:16 ALS Bottle#: 31 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23998-a-11-a 10X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:00:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.871	1.871	0.0	1.000	3070988	5.65				
298.90 > 99.00	1.871	1.871	0.0	1.000	1263254		2.43(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.475	2.472	0.003		1815131	5.55		11.7	213440	
D 14 13C4 PFOA										
417.00 > 372.00	2.829	2.811	0.018		1287608	5.59		11.2	158445	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.821	2.819	0.002	1.000	15909085	61.6			128384	M
413.00 > 169.00	2.805	2.819	-0.014	0.994	10872908		1.46(0.90-1.10)		134510	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.084	3.073	0.011	1.000	46659764	155.5			234283	
499.00 > 99.00	3.093	3.073	0.020	1.003	10815165		4.31(0.90-1.10)		37196	
D 17 13C4 PFOS										
503.00 > 80.00	3.198	3.187	0.011		1442508	5.80		12.1	81502	

QC Flag Legend

Review Flags
M - Manually Integrated

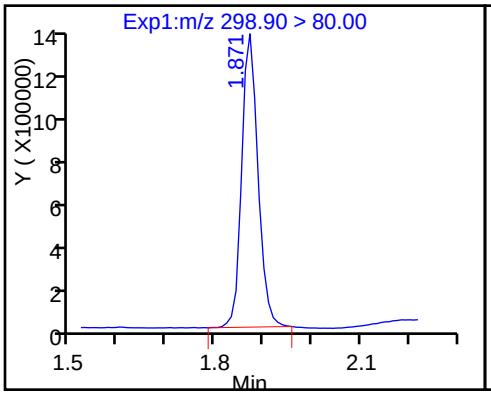
Report Date: 23-Dec-2016 09:21:08 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

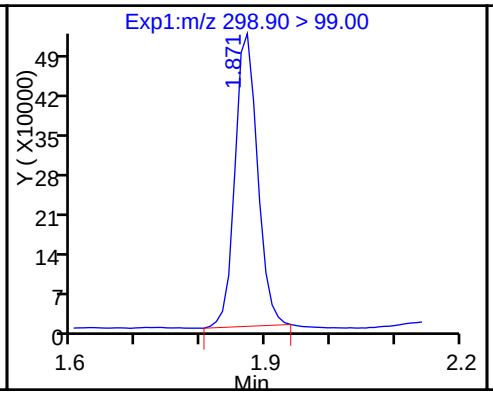
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_013.d

Injection Date:	22-Dec-2016 17:20:16	Instrument ID:	A8_N		
Lims ID:	320-23998-A-11-A	Lab Sample ID:	320-23998-11		
Client ID:	DPT-16-07-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	31	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

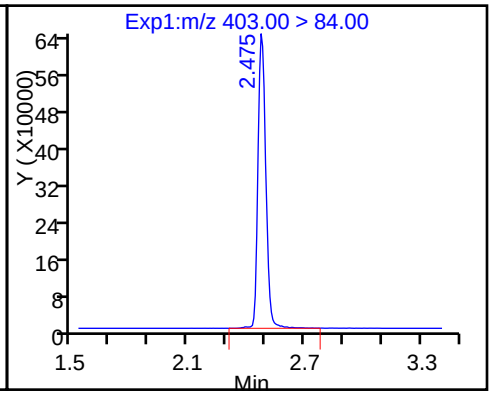
5 Perfluorobutanesulfonic acid



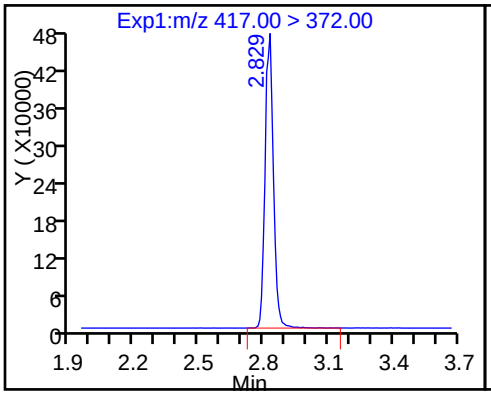
5 Perfluorobutanesulfonic acid



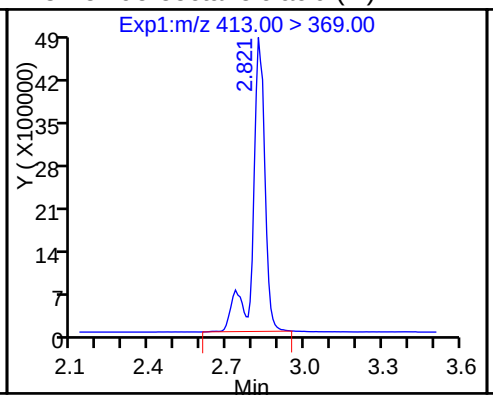
D 10 18O2 PFHxS



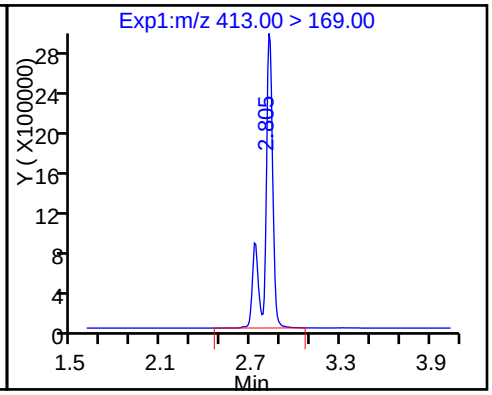
D 14 13C4 PFOA



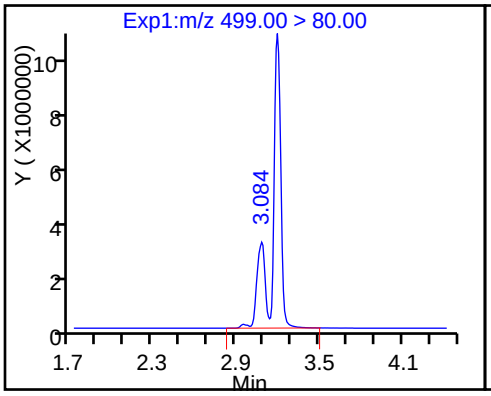
15 Perfluorooctanoic acid (M)



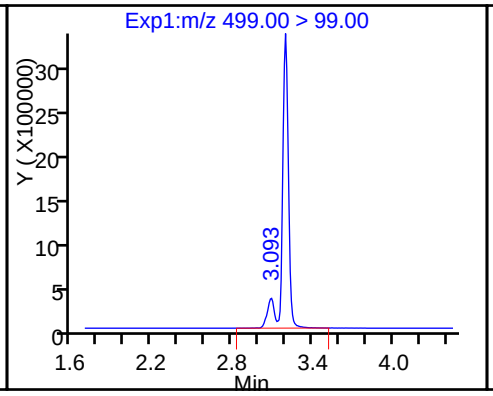
15 Perfluorooctanoic acid



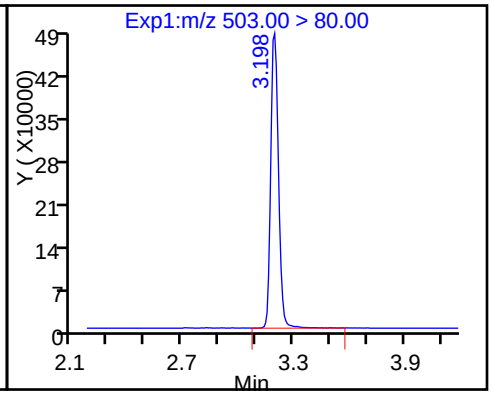
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

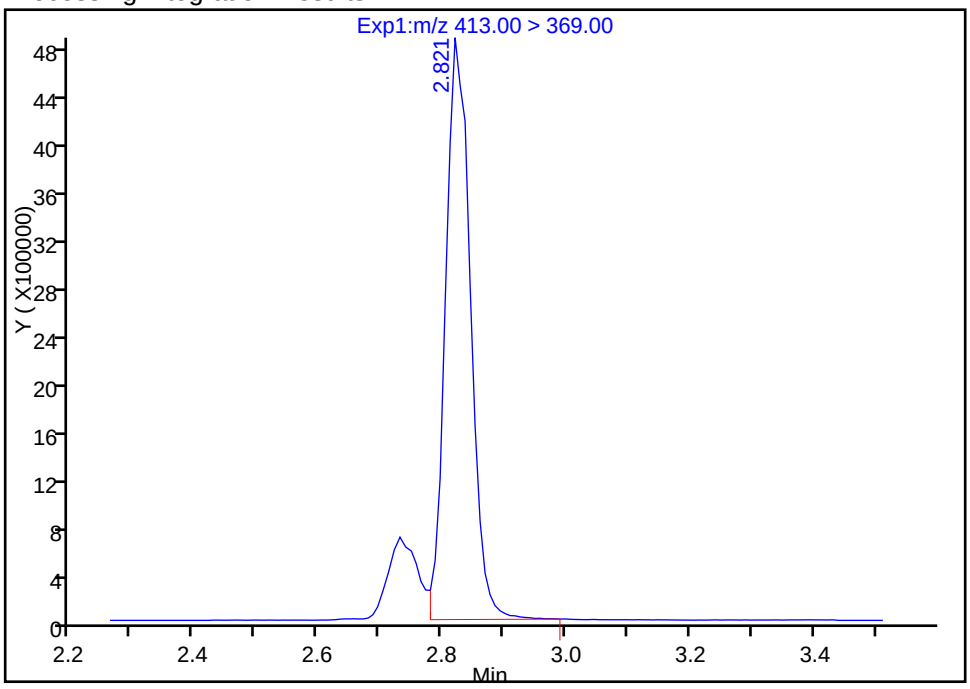
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_013.d				
Injection Date:	22-Dec-2016 17:20:16	Instrument ID:	A8_N		
Lims ID:	320-23998-A-11-A	Lab Sample ID:	320-23998-11		
Client ID:	DPT-16-07-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	31	Worklist Smp#:	13
Injection 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

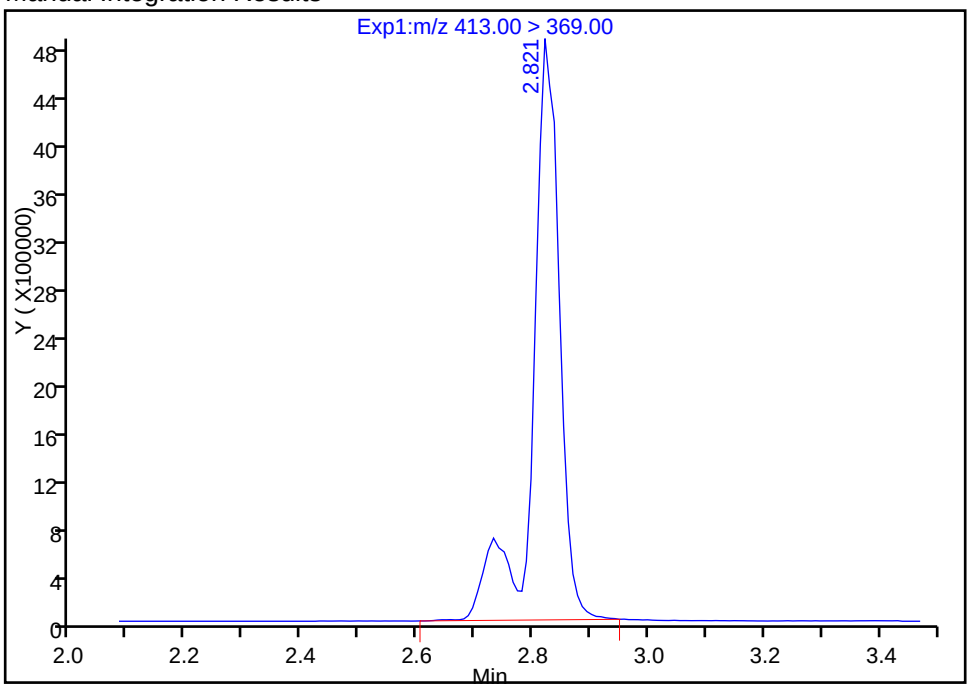
Processing Integration Results

RT: 2.82
Area: 13659068
Amount: 52.874272
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 15909085
Amount: 61.584091
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:00:21

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-07-GW-18-22 | Lab Sample ID: 320-23998-12

Matrix: Water | Lab File ID: 21DEC2016A_036.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 11:10

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 251.7(mL) | Date Analyzed: 12/21/2016 17:28

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.: 143502 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.37	M	0.0025	0.0020	0.00074
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1.6*	*E*	*0.0040*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.17		0.0025	0.0020	0.00091

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	71		25-150
STL00991	13C4 PFOS	74		25-150
STL00994	18O2 PFHxS	39		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_036.d
Lims ID: 320-23998-A-12-A
Client ID: DPT-16-07-GW-18-22
Sample Type: Client
Inject. Date: 21-Dec-2016 17:28:25 ALS Bottle#: 18 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-12-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:35:50 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:36:00

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	1.868	1.868	0.0	1.000	15722912	86.8				
298.90 > 99.00	1.868	1.868	0.0	1.000	6834923		2.30(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.469	2.475	-0.006		6049021	18.5		39.1	94669	
D 14 13C4 PFOA										
417.00 > 372.00	2.815	2.821	-0.006		8136541	35.3		70.6	571340	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.815	2.821	-0.006	1.000	30772161	188.5			5154	M
413.00 > 169.00	2.815	2.821	-0.006	1.000	23295368		1.32(0.90-1.10)		476542	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.067	3.084	-0.017	1.000	144898255	786.7			347806	E
499.00 > 99.00	3.077	3.084	-0.007	1.003	36402431		3.98(0.90-1.10)		137766	
D 17 13C4 PFOS										
503.00 > 80.00	3.185	3.190	-0.005		8852801	35.6		74.4	190317	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

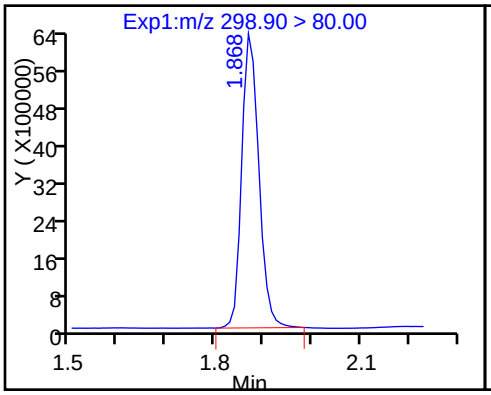
Report Date: 22-Dec-2016 10:36:01 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

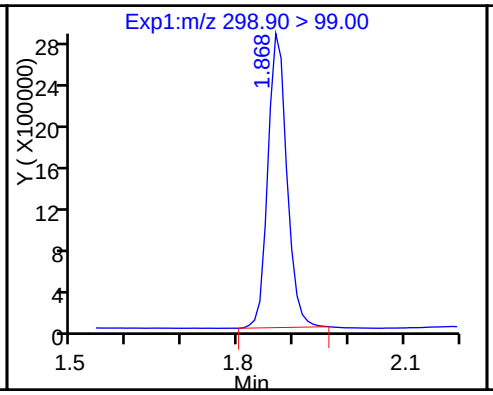
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_036.d

Injection Date:	21-Dec-2016 17:28:25	Instrument ID:	A8_N		
Lims ID:	320-23998-A-12-A	Lab Sample ID:	320-23998-12		
Client ID:	DPT-16-07-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	18	Worklist Smp#:	26
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

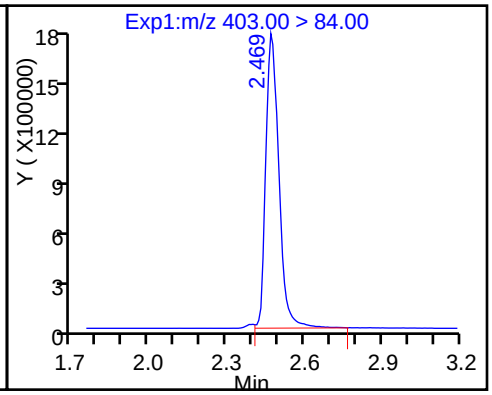
5 Perfluorobutanesulfonic acid



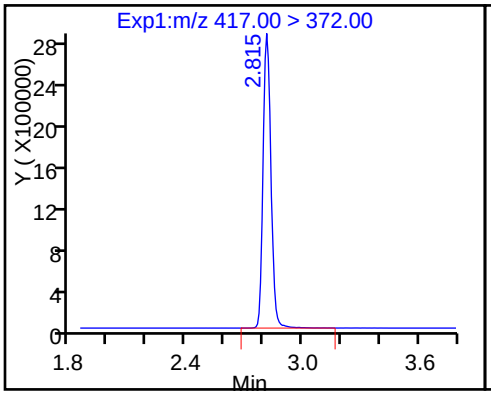
5 Perfluorobutanesulfonic acid



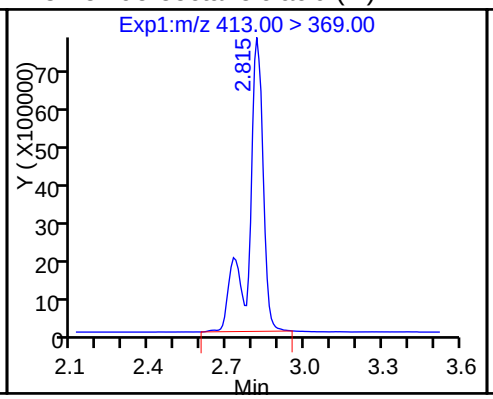
D 10 18O2 PFHxS



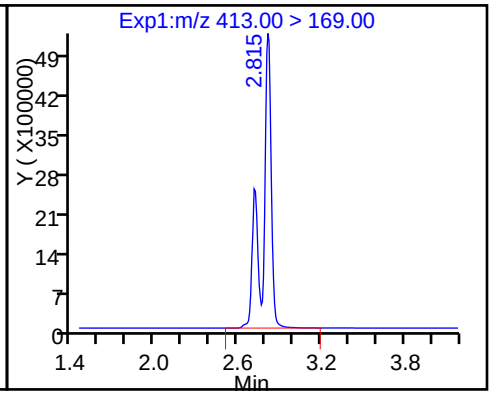
D 14 13C4 PFOA



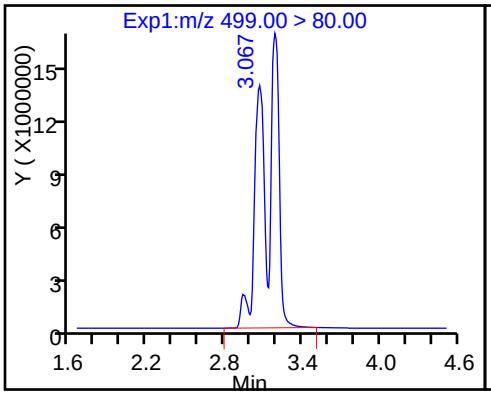
15 Perfluorooctanoic acid (M)



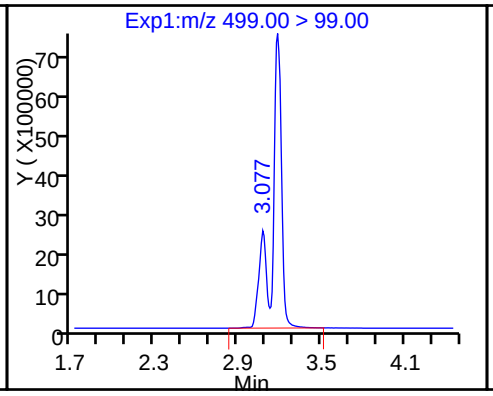
15 Perfluorooctanoic acid



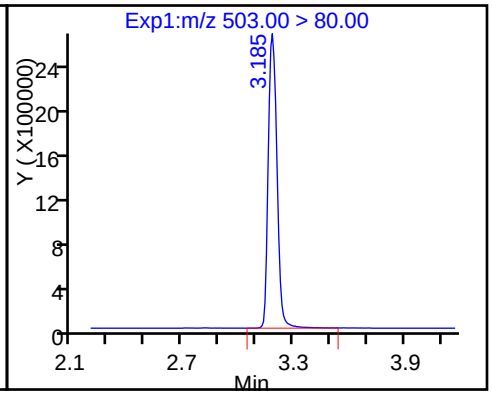
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

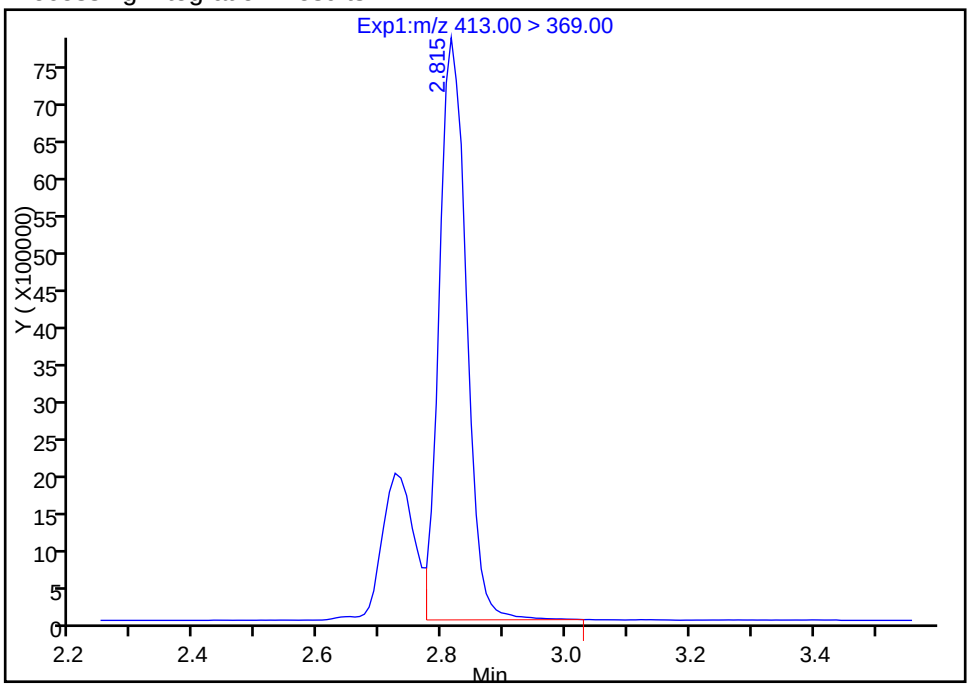
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_036.d				
Injection Date:	21-Dec-2016 17:28:25	Instrument ID:	A8_N		
Lims ID:	320-23998-A-12-A	Lab Sample ID:	320-23998-12		
Client ID:	DPT-16-07-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	18	Worklist Smp#:	26
Injection Vol:	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

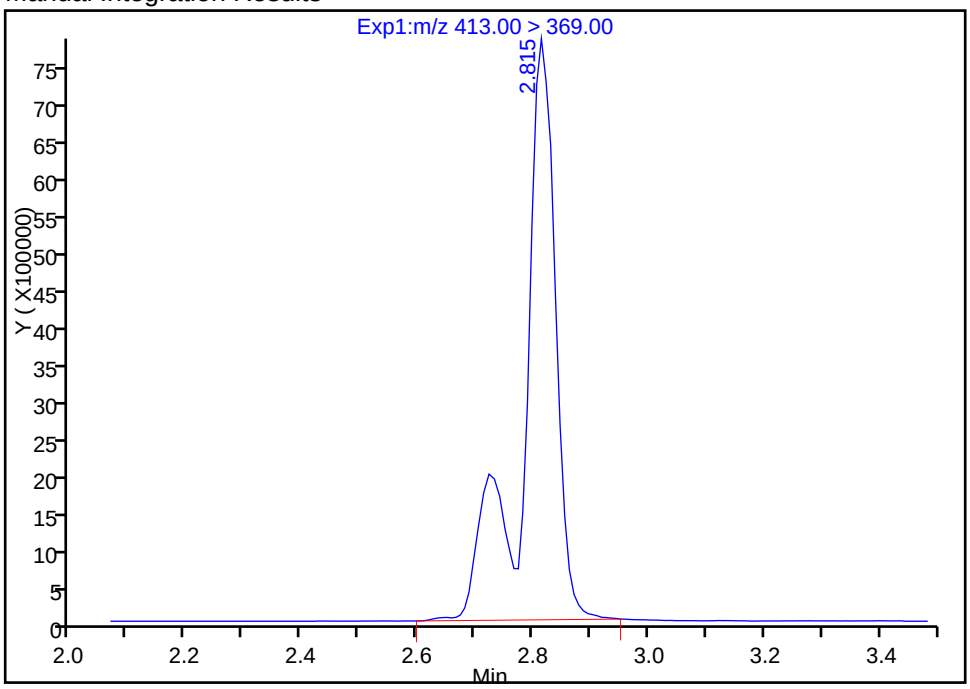
Processing Integration Results

RT: 2.81
Area: 23925348
Amount: 146.5634
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 30772161
Amount: 188.5060
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:26:22

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-07-GW-18-22 DL Lab Sample ID: 320-23998-12 DL

Matrix: Water Lab File ID: 22DEC2016BB_014.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 11:10

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 251.7(mL) Date Analyzed: 12/22/2016 17:27

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.: 143644 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.40*	*D M*	*0.025*	0.020	*0.0074*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.9	D	0.040	0.030	0.013
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.084*	*D*	*0.025*	0.020	*0.0091*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	99		25-150
STL00991	13C4 PFOS	127		25-150
STL00994	18O2 PFHxS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_014.d
Lims ID: 320-23998-A-12-A
Client ID: DPT-16-07-GW-18-22
Sample Type: Client
Inject. Date: 22-Dec-2016 17:27:47 ALS Bottle#: 32 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23998-a-12-a 10X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:00:50

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	1.867	1.871	-0.004	1.000	1979770	4.22				
298.90 > 99.00	1.867	1.871	-0.004	1.000	825058		2.40(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.473	2.472	0.001		1564508	4.78		10.1	135375	
D 14 13C4 PFOA										
417.00 > 372.00	2.820	2.811	0.009		1145525	4.97		9.9	68205	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.820	2.819	0.001	1.000	4665325	20.3			42380	M
413.00 > 169.00	2.804	2.819	-0.015	0.994	3309187		1.41(0.90-1.10)		68856	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.083	3.073	0.010	1.000	30349325	96.3			225693	
499.00 > 99.00	3.092	3.073	0.019	1.003	5743593		5.28(0.90-1.10)		61377	
D 17 13C4 PFOS										
503.00 > 80.00	3.188	3.187	0.001		1515487	6.09		12.7	78770	

QC Flag Legend

Review Flags
M - Manually Integrated

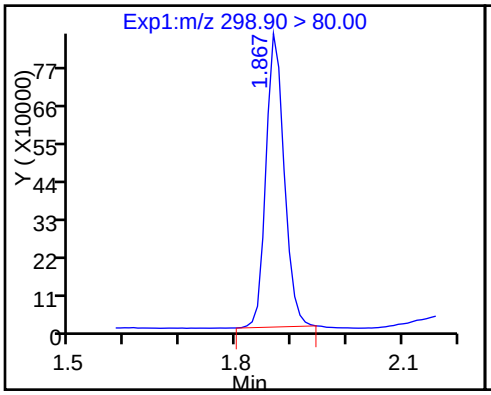
Report Date: 23-Dec-2016 09:21:09 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

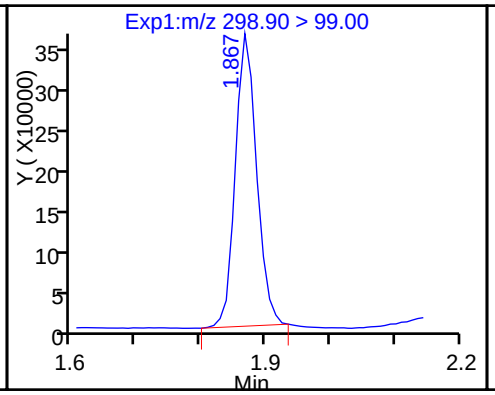
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_014.d

Injection Date:	22-Dec-2016 17:27:47	Instrument ID:	A8_N		
Lims ID:	320-23998-A-12-A	Lab Sample ID:	320-23998-12		
Client ID:	DPT-16-07-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	32	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

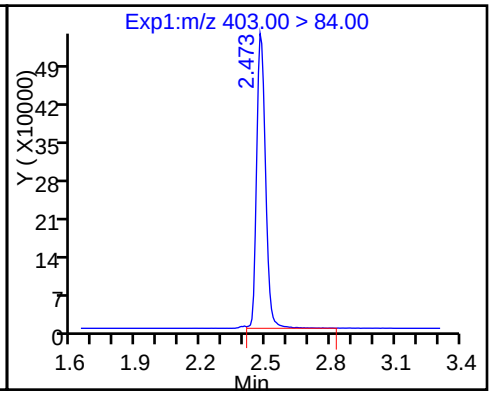
5 Perfluorobutanesulfonic acid



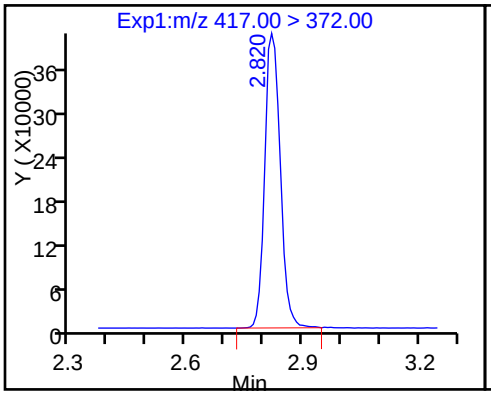
5 Perfluorobutanesulfonic acid



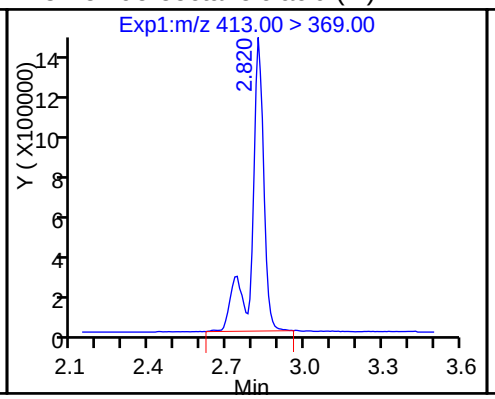
D 10 18O2 PFHxS



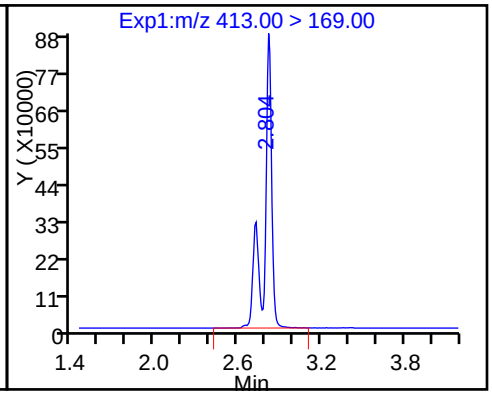
D 14 13C4 PFOA



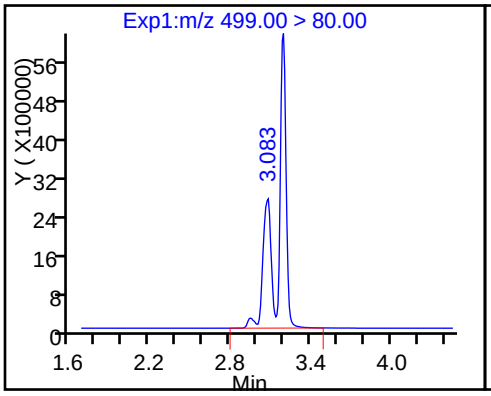
15 Perfluorooctanoic acid (M)



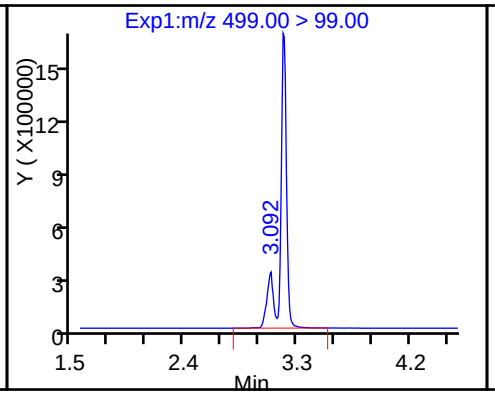
15 Perfluorooctanoic acid



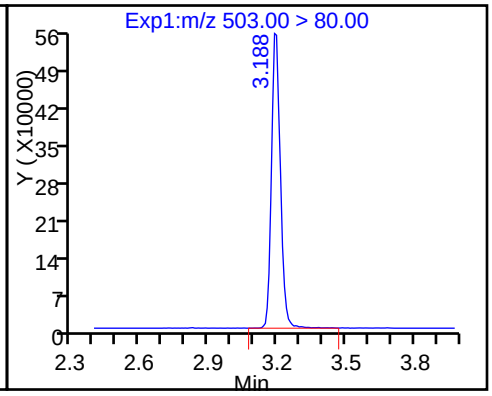
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

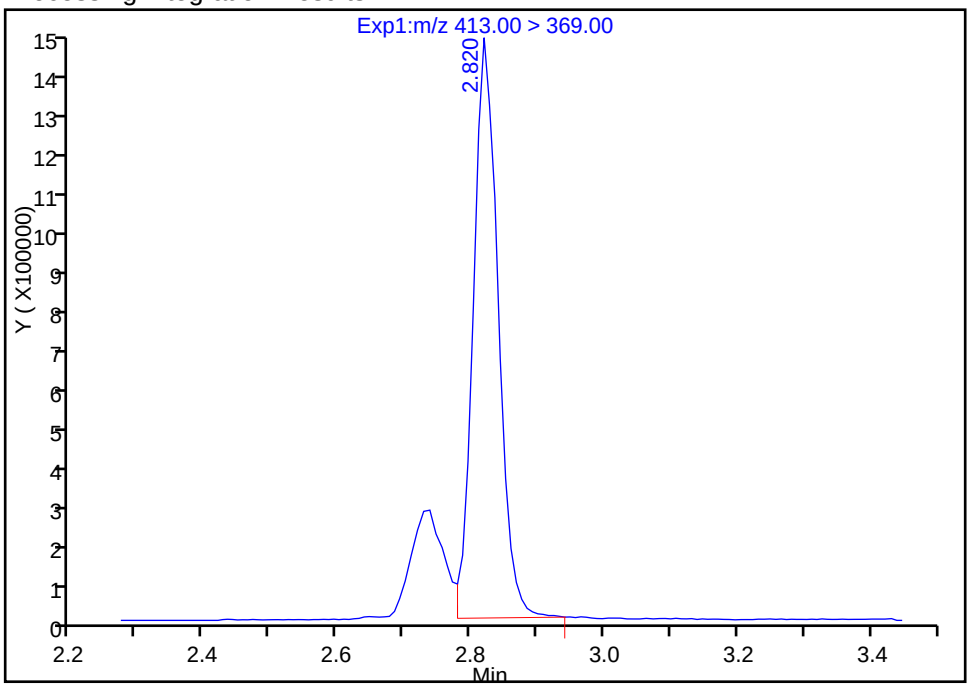
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_014.d				
Injection Date:	22-Dec-2016 17:27:47	Instrument ID:	A8_N		
Lims ID:	320-23998-A-12-A	Lab Sample ID:	320-23998-12		
Client ID:	DPT-16-07-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	32	Worklist Smp#:	14
Injection 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

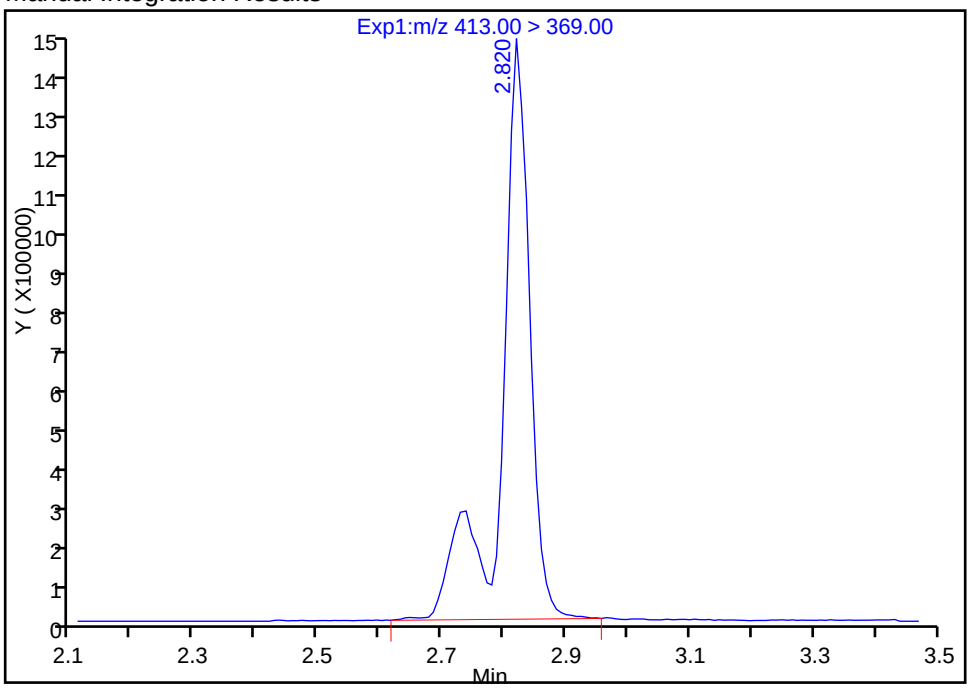
Processing Integration Results

RT: 2.82
Area: 3716894
Amount: 16.172703
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 4665325
Amount: 20.299453
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:00:50

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-06-GW-31-35 | Lab Sample ID: 320-23998-13

Matrix: Water | Lab File ID: 21DEC2016A_041.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 12:50

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 243.6(mL) | Date Analyzed: 12/21/2016 18:05

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.: 143502 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.2*	*E M J*	*0.0026*	0.0021	*0.00077*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.2*	*E J*	*0.0041*	0.0031	*0.0013*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.42*	*E J*	*0.0026*	0.0021	*0.00094*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	55		25-150
STL00991	13C4 PFOS	61		25-150
STL00994	18O2 PFHxS	35		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_041.d
Lims ID: 320-23998-A-13-A
Client ID: DPT-16-06-GW-31-35
Sample Type: Client
Inject. Date: 21-Dec-2016 18:05:54 ALS Bottle#: 19 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-13-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:07 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:28:44

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	1.542	1.550	-0.008		8475438	24.4		48.7	552368	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.550	-0.008	1.000	8510137	58.8			36977	
D 4 13C5-PFPeA										
267.90 > 223.00	1.820	1.829	-0.009		10366926	39.0		77.9	348794	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.829	-0.009	1.000	25399438	124.1			62483	
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.858	1.868	-0.010	1.000	33241003	203.2				E
298.90 > 99.00	1.858	1.868	-0.010	1.000	16503592		2.01(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.114	2.122	-0.008		7790279	31.8		63.6	380888	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.114	2.122	-0.008	1.000	51953633	359.0			47241	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.408	2.395	0.013	1.000	166665477	1401.9				E
D 11 13C4-PFHpA										
367.00 > 322.00	2.442	2.459	-0.017		3614512	16.0		31.9	309855	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.442	2.459	-0.017	1.000	4733432	66.9			3950	
D 10 18O2 PFHxS										
403.00 > 84.00	2.468	2.474	-0.006		5459710	16.7		35.3	175599	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.781	2.789	-0.008	1.000	5799212	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.781	2.789	-0.008		308198	2.63		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.813	2.814	-0.001		6332668	27.5		55.0	337274	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.813	2.814	-0.001	1.000	72510814	570.7			4229	EM
413.00 > 169.00	2.813	2.814	-0.001	1.000	60988644		1.19(0.90-1.10)		0.0	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.821	2.822	-0.001	1.000	7560271	44.9				
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.075	3.076	-0.001	1.000	163828102	1079.0			258942	E
499.00 > 99.00	3.075	3.076	-0.001	1.000	44073839		3.72(0.90-1.10)		131598	
D 17 13C4 PFOS										
503.00 > 80.00	3.176	3.182	-0.006		7298208	29.3		61.4	156897	
D 19 13C5 PFNA										
468.00 > 423.00	3.184	3.191	-0.007		3391176	19.1		38.2	172483	
20 Perfluorononanoic acid										
463.00 > 419.00	3.176	3.191	-0.015	1.000	829824	12.9			276	
D 21 13C8 FOSA										
506.00 > 78.00	3.511	3.523	-0.012		251233	0.6540		1.3	23958	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.536	3.529	0.007	1.002	357519	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.528	3.529	-0.001		22256	0.2071		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.545	3.548	-0.003		4433661	28.2		56.4	180587	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.536	3.548	-0.012	1.000	135041	1.61			549	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.704	3.694	0.010		12818	0.1702		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.674	3.705	-0.031	0.992	1384	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.842	3.860	-0.018	1.000	1535	0.0172				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.859	3.866	-0.007		18402	0.2349		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.859	3.875	-0.016	1.000	3077	NR				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.868	3.877	-0.009	1.000	3460	0.0709			90.0	
D 27 13C2 PFUnA										
565.00 > 520.00	3.868	3.877	-0.009		2551810	21.8		43.5	110210	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.973	4.009	-0.036		2504	0.0263		0.0		
54 MeFOSA										
512.00 > 169.00	4.019	4.018	0.001	1.000	683	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.161	4.166	-0.005		2517932	22.7		45.4	109287	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.175	4.191	-0.016		2285	0.0266		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.196	4.206	-0.010	1.000	472	NR				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.670	4.676	-0.006	1.000	69021	0.8648			811	
713.00 > 169.00	4.661	4.676	-0.015	0.998	5338		12.93(0.00-0.00)		2068	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.670	4.676	-0.006		11261789	49.5		99.1	631889	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.079	5.094	-0.015	1.000	65782	0.7686			178	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.079	5.094	-0.015		5274267	42.3		84.7	208270	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.436	5.446	-0.010	1.000	5197	0.1002			4.3	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 22-Dec-2016 10:36:11 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_041.d

Injection Date: 21-Dec-2016 18:05:54 Instrument ID: A8_N

Lims ID: 320-23998-A-13-A Lab Sample ID: 320-23998-13

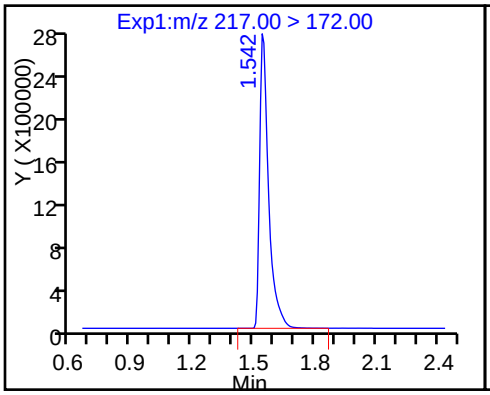
Client ID: DPT-16-06-GW-31-35

Operator ID: A8-PC\A8 ALS Bottle#: 19 Worklist Smp#: 31

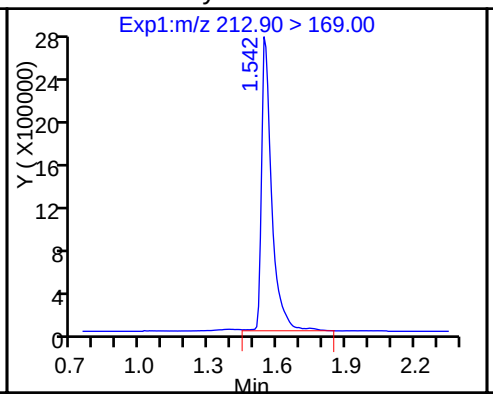
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

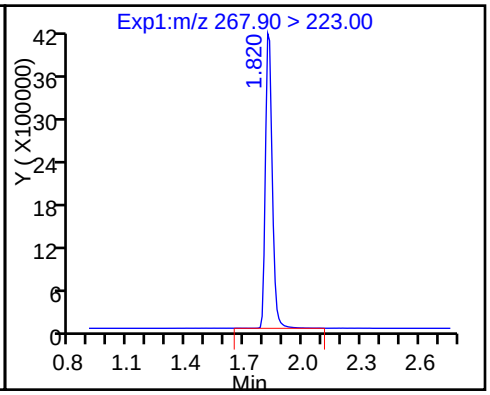
D 2 13C4 PFBA



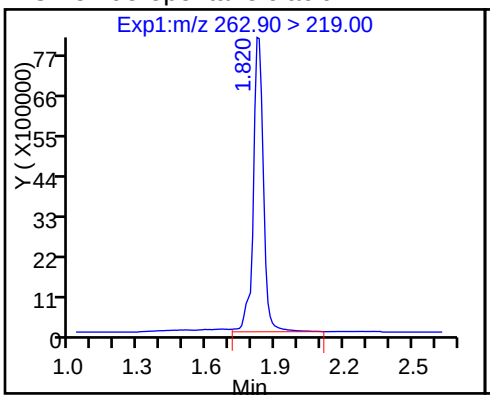
1 Perfluorobutyric acid



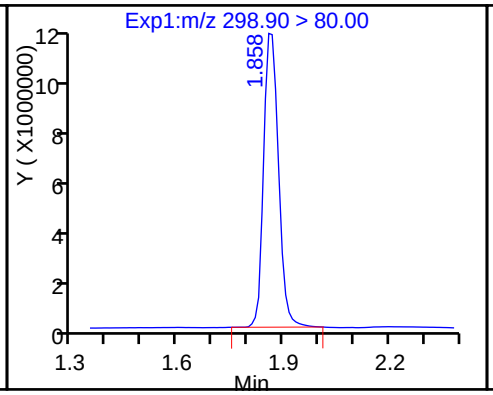
D 4 13C5-PFPeA



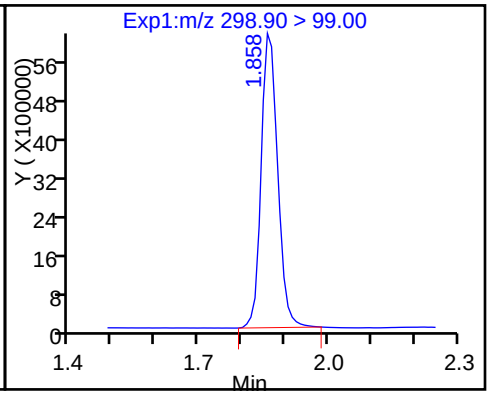
3 Perfluoropentanoic acid



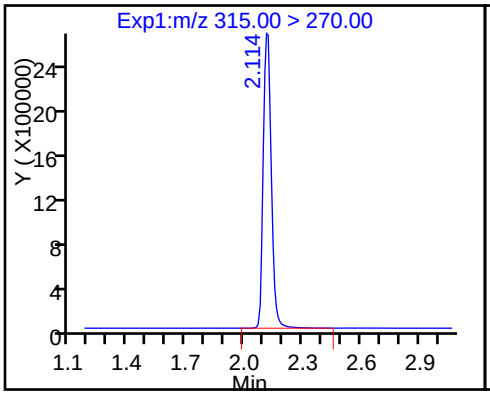
5 Perfluorobutanesulfonic acid



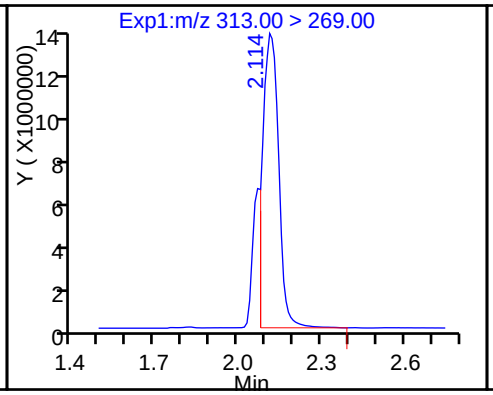
5 Perfluorobutanesulfonic acid



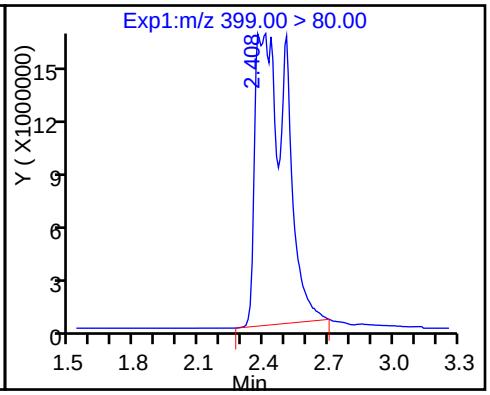
D 6 13C2 PFHxA



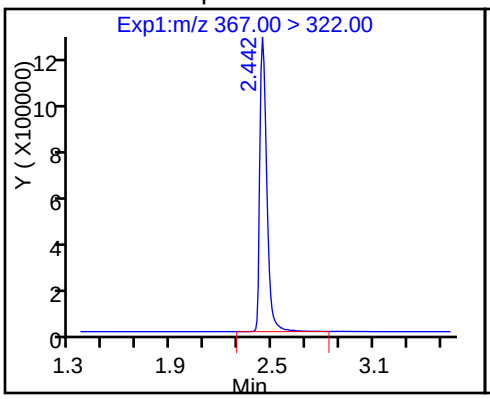
7 Perfluorohexanoic acid



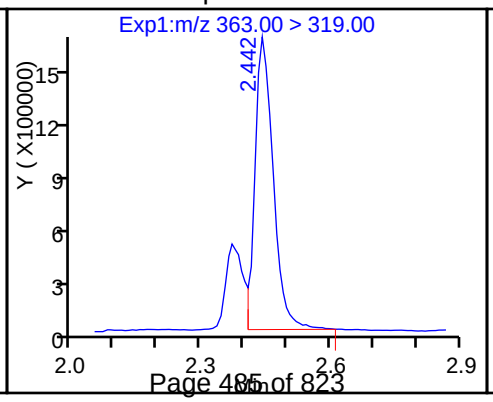
9 Perfluorohexanesulfonic acid



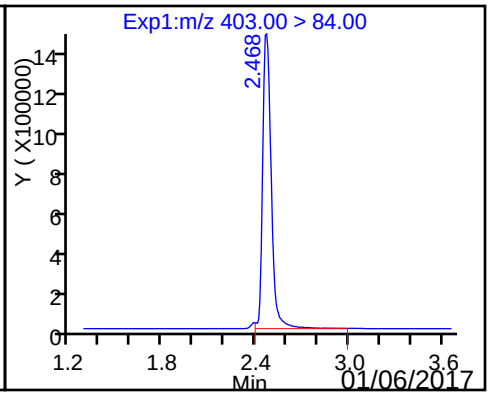
D 11 13C4-PFHpA



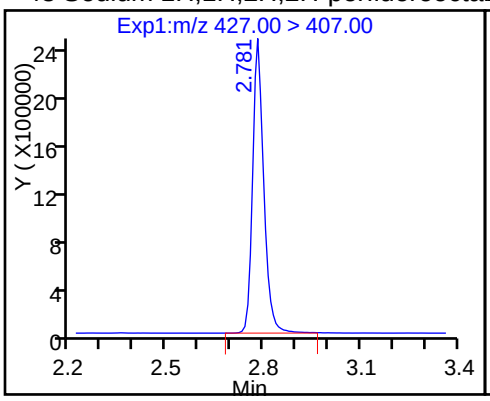
12 Perfluoroheptanoic acid



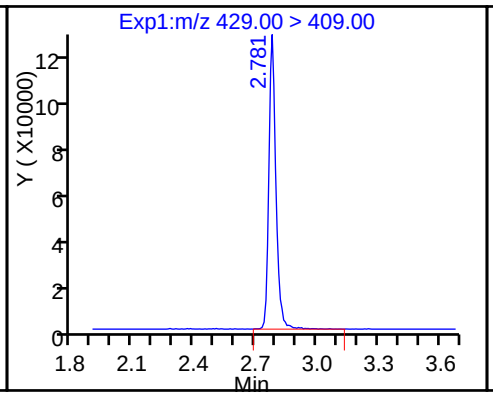
D 10 18O2 PFHxS



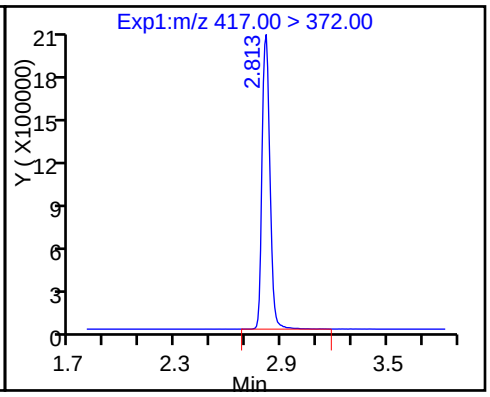
48 Sodium 1H,1H,2H,2H-perfluorooctane



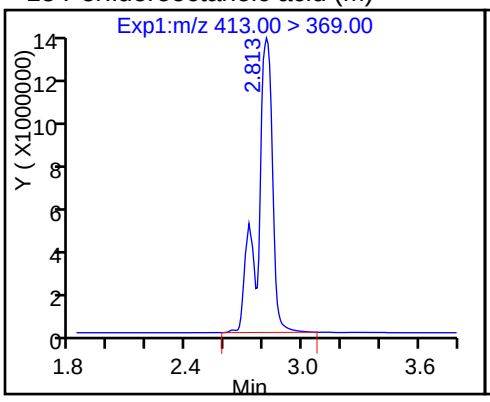
D 47 M2-6:2FTS



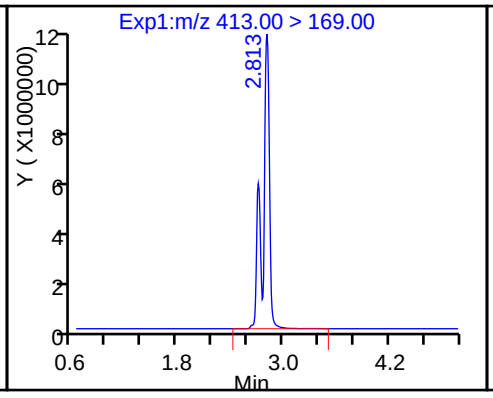
D 14 13C4 PFOA



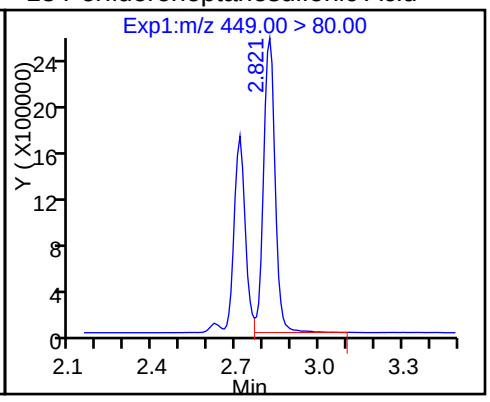
15 Perfluorooctanoic acid (M)



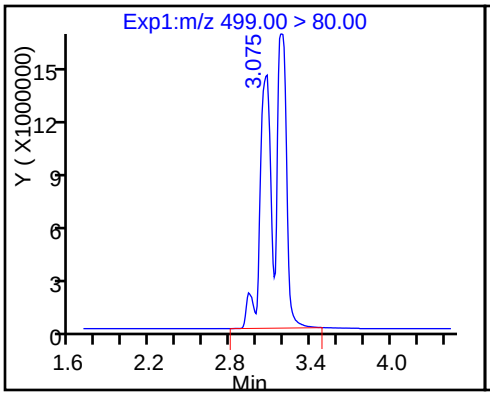
15 Perfluorooctanoic acid



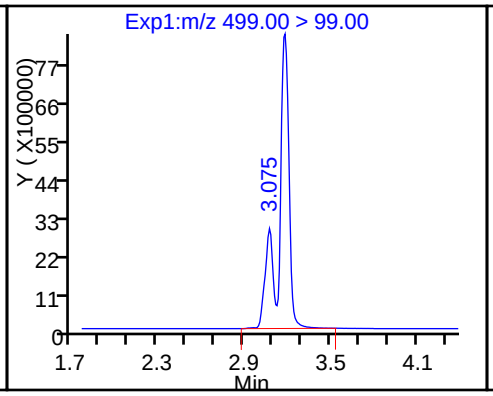
13 Perfluoroheptanesulfonic Acid



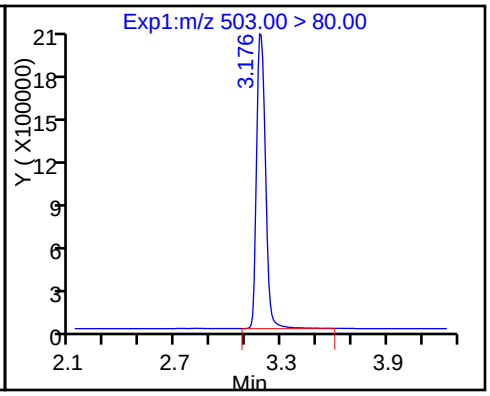
18 Perfluorooctane sulfonic acid



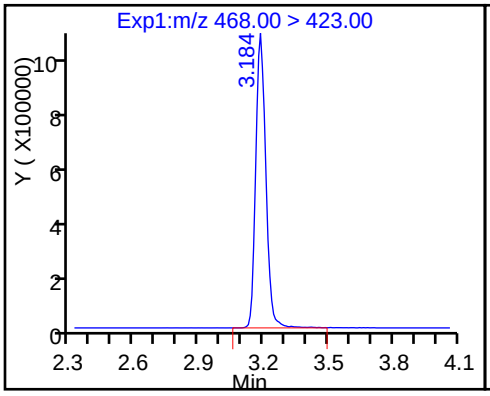
18 Perfluorooctane sulfonic acid



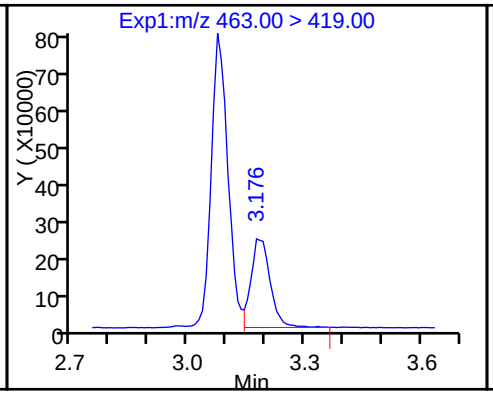
D 17 13C4 PFOS



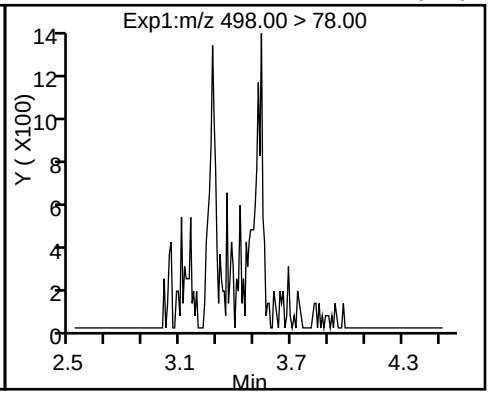
D 19 13C5 PFNA



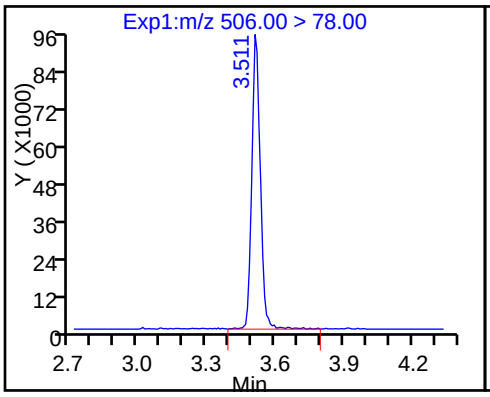
20 Perfluorononanoic acid



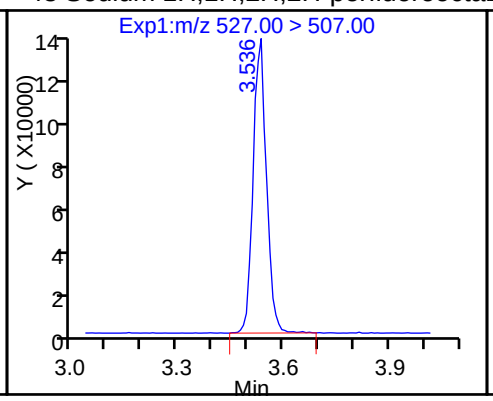
22 Perfluorooctane Sulfonamide (ND)



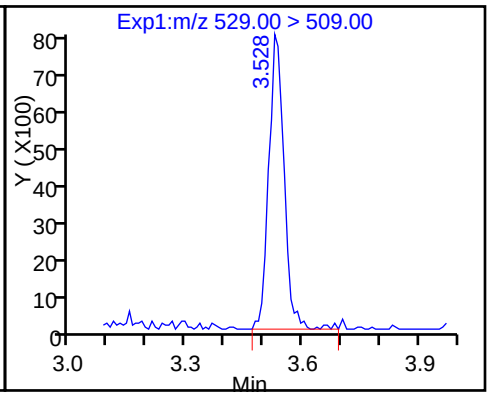
D 21 13C8 FOSA



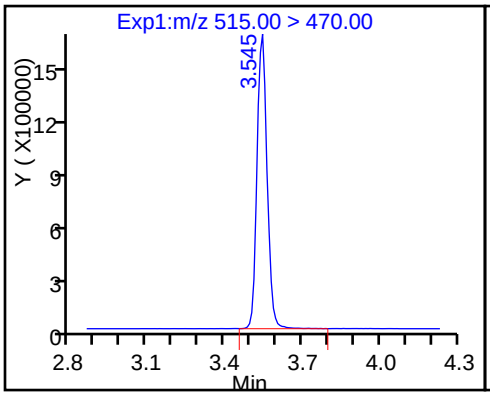
43 Sodium 1H,1H,2H,2H-perfluorooctane



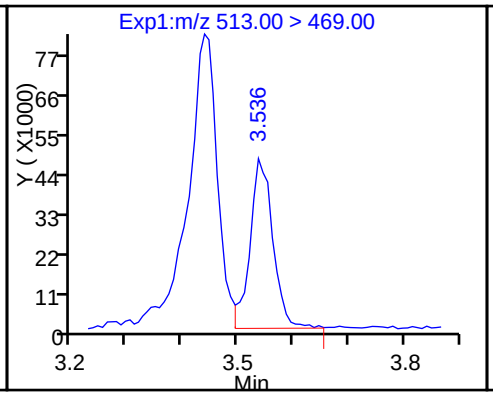
D 42 M2-8:2FTS



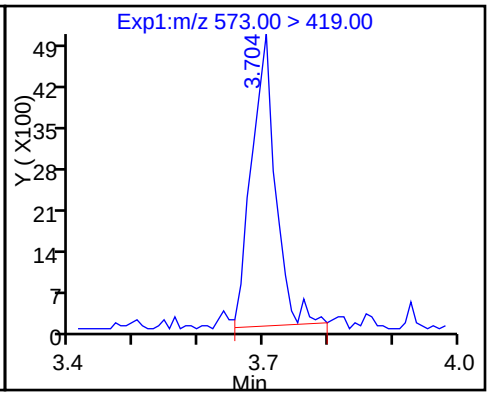
D 23 13C2 PFDA



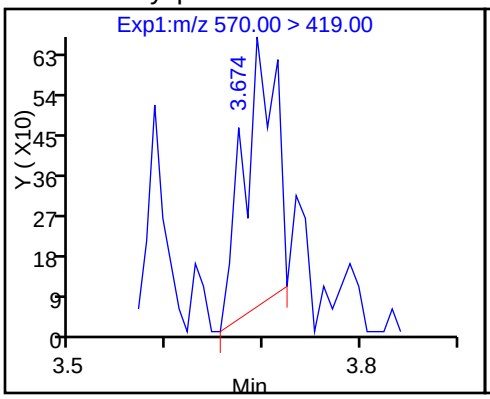
24 Perfluorodecanoic acid



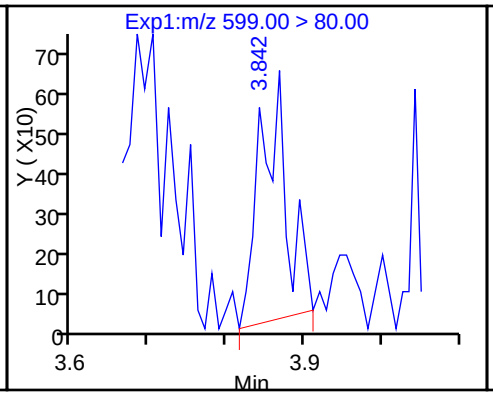
D 45 d3-NMeFOSAA



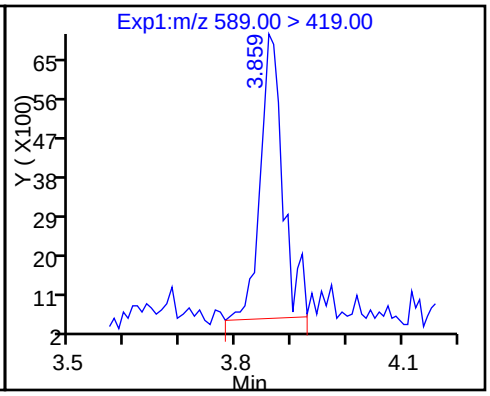
44 N-methyl perfluorooctane sulfonami



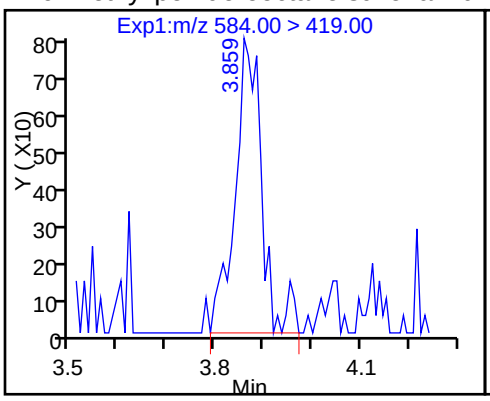
26 Perfluorodecane Sulfonic acid



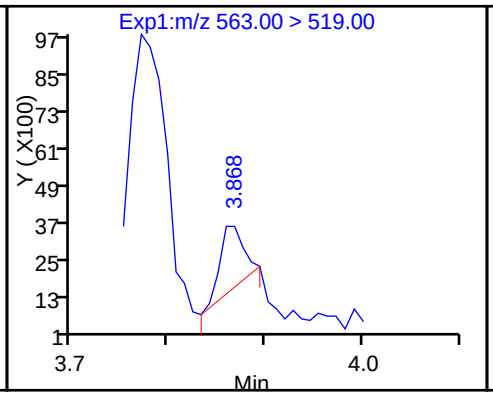
D 46 d5-NEtFOSAA



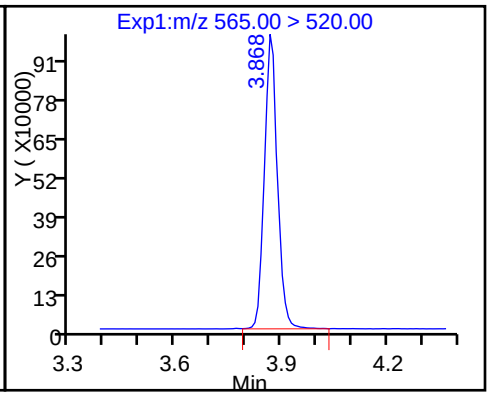
49 N-ethyl perfluorooctane sulfonamid



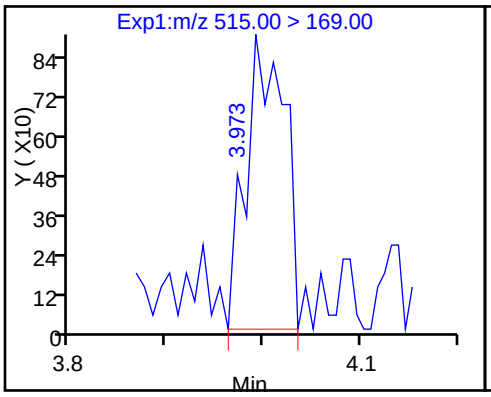
28 Perfluoroundecanoic acid



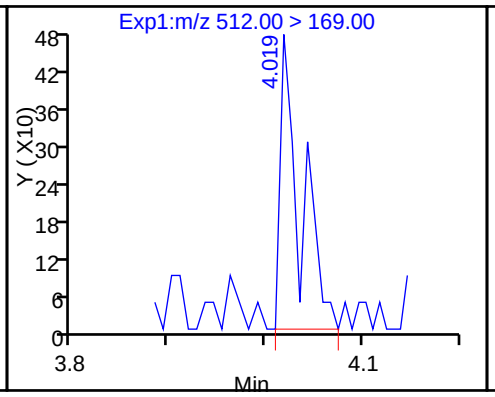
D 27 13C2 PFUnA



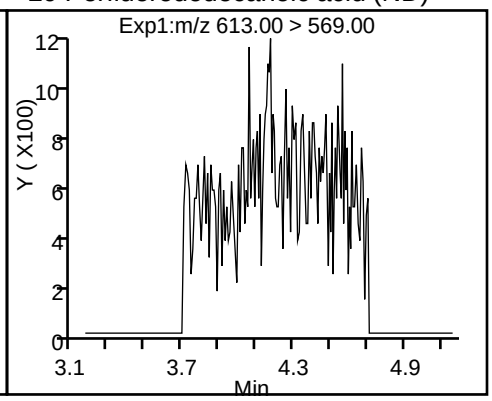
D 52 d-N-MeFOSA-M



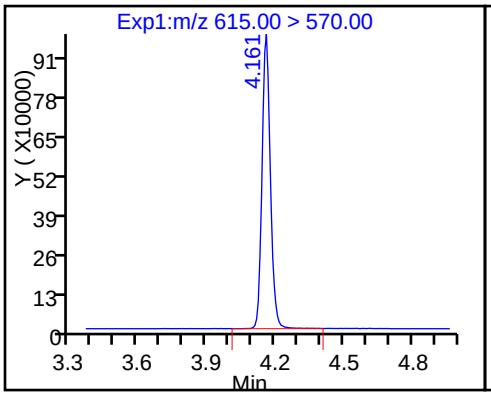
54 MeFOSA



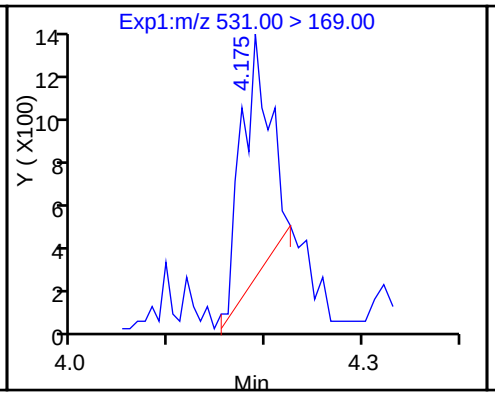
29 Perfluorododecanoic acid (ND)



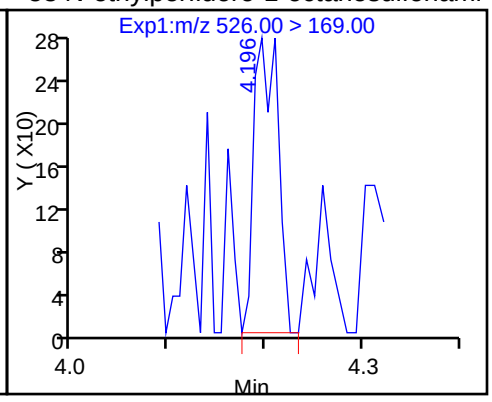
D 30 13C2 PFDoA



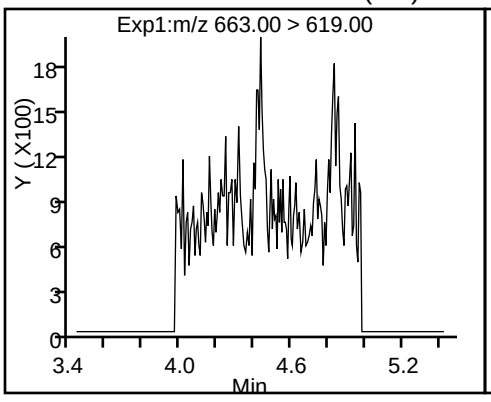
D 51 d-N-EtFOSA-M



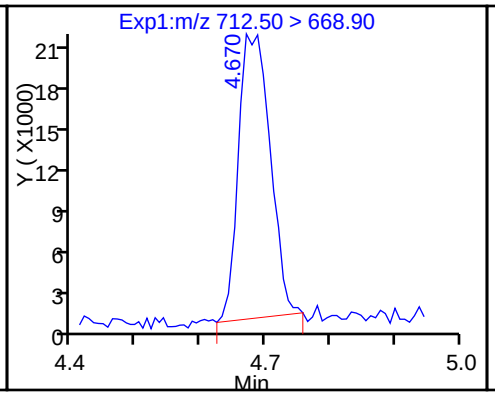
53 N-ethylperfluoro-1-octanesulfonami



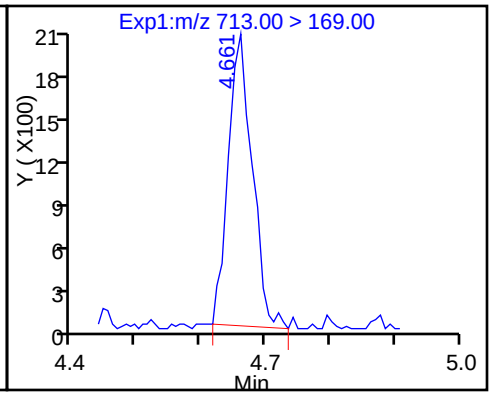
31 Perfluorotridecanoic acid (ND)



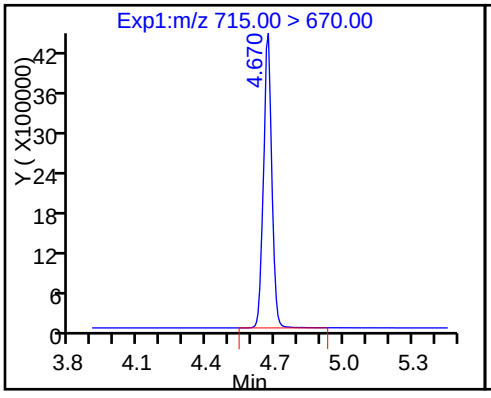
33 Perfluorotetradecanoic acid



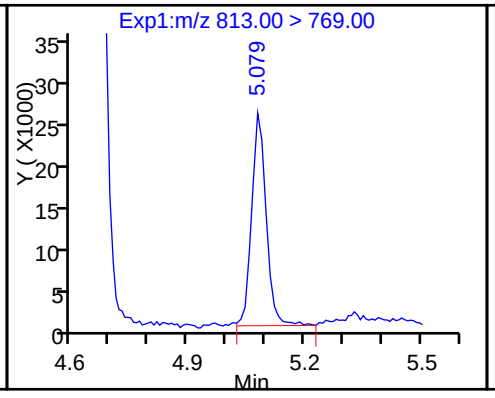
33 Perfluorotetradecanoic acid



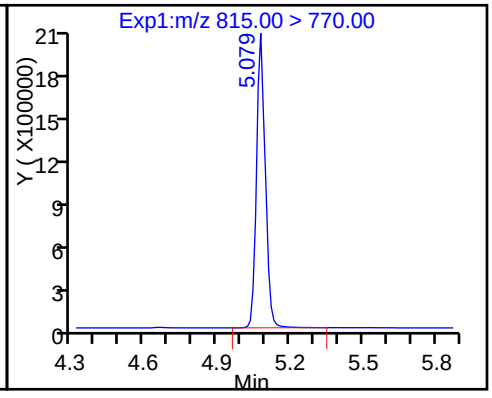
D 32 13C2-PFTeDA



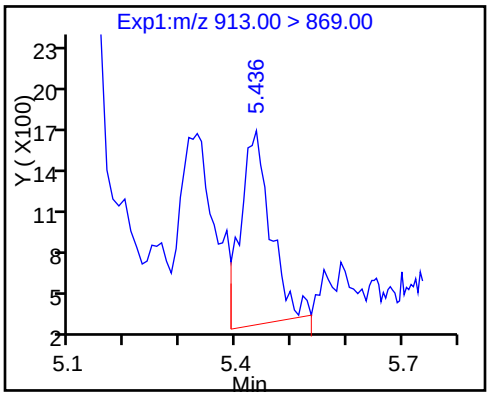
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

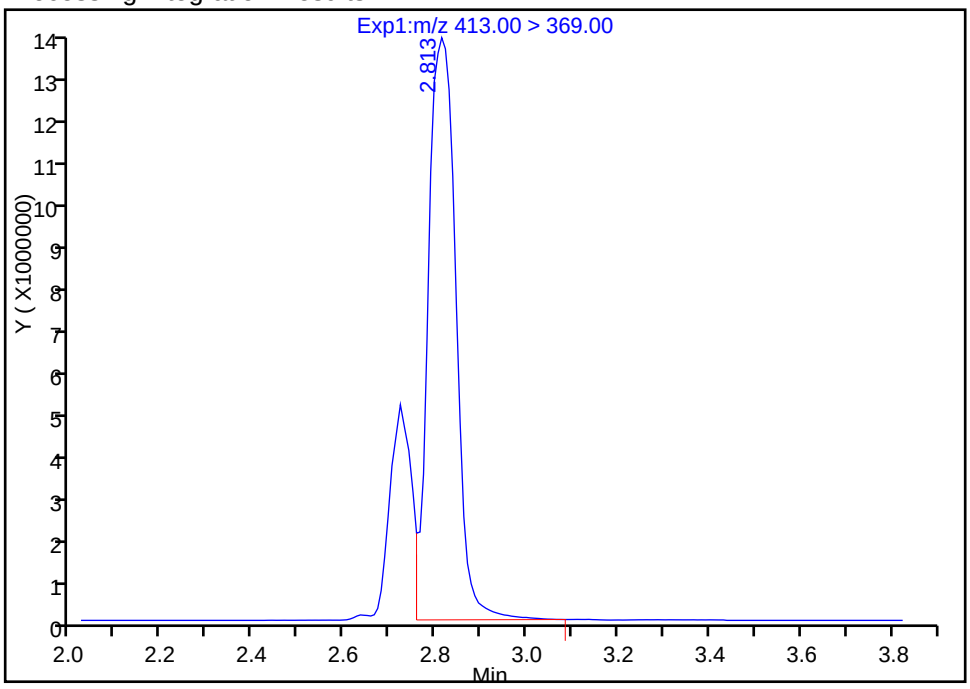
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_041.d		
Injection Date:	21-Dec-2016 18:05:54	Instrument ID:	A8_N
Lims ID:	320-23998-A-13-A	Lab Sample ID:	320-23998-13
Client ID:	DPT-16-06-GW-31-35		
Operator ID:	A8-PC\A8	ALS Bottle#:	19 Worklist Smp#: 31
Injection Vol:	2.0 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

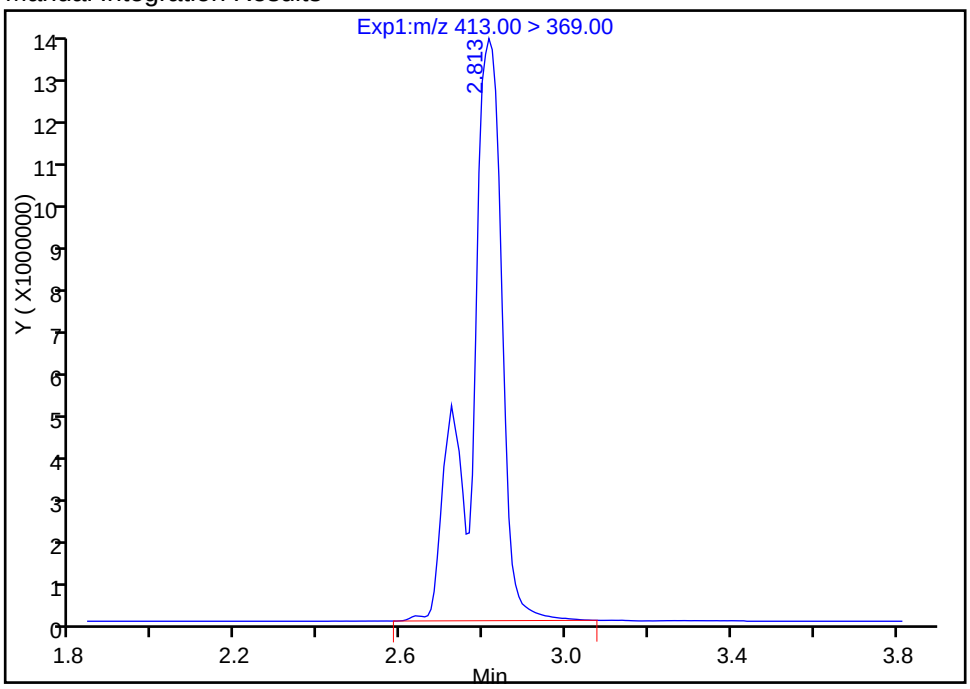
Processing Integration Results

RT: 2.81
Area: 56378480
Amount: 443.7452
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 72510814
Amount: 570.7200
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:28:44

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-06-GW-31-35 DL Lab Sample ID: 320-23998-13 DL

Matrix: Water Lab File ID: 22DEC2016BB_015.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 12:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 243.6(mL) Date Analyzed: 12/22/2016 17:35

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.: 143644 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.6	D M J	0.026	0.021	0.0077
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.7	D J	0.041	0.031	0.013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.28	D	0.026	0.021	0.0094

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	111		25-150
STL00991	13C4 PFOS	138		25-150
STL00994	18O2 PFHxS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_015.d
Lims ID: 320-23998-A-13-A
Client ID: DPT-16-06-GW-31-35
Sample Type: Client
Inject. Date: 22-Dec-2016 17:35:18 ALS Bottle#: 33 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23998-a-13-a 10X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:02:00

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	1.545	-0.008		1732297	4.98		10.0	194015	
1 Perfluorobutyric acid										
212.90 > 169.00	1.545	1.553	-0.008	1.000	1757258	5.94			10077	
D 4 13C5-PFPeA										
267.90 > 223.00	1.823	1.823	0.0		1754605	6.59		13.2	183755	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.813	1.833	-0.020	1.000	4749037	13.7			27199	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.852	1.871	-0.019	1.000	6613403	13.7				
298.90 > 99.00	1.852	1.871	-0.019	1.000	2777930		2.38(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.108	2.123	-0.015		1348966	5.50		11.0	128597	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.108	2.123	-0.015	1.000	14846603	59.2			21776	
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.380	2.395	-0.015	1.000	97583692	278.4				E
D 11 13C4-PFHpA										
367.00 > 322.00	2.437	2.457	-0.020		898873	3.97		7.9	163436	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.437	2.457	-0.020	1.000	1190020	6.76			3430	
D 10 18O2 PFHxS										
403.00 > 84.00	2.460	2.472	-0.012		1609477	4.92		10.4	104027	
D 47 M2-6:2FTS										
429.00 > 409.00	2.773	2.782	-0.009		61824	0.5285		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.773	2.782	-0.009	1.000	1180116	NR				
D 14 13C4 PFOA										
417.00 > 372.00	2.796	2.811	-0.015		1278860	5.55		11.1	114206	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.804	2.819	-0.015	1.000	20317515	79.2			148994	M
413.00 > 169.00	2.713	2.819	-0.106	0.967	14261419		1.42(0.90-1.10)		76480	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.804	2.819	-0.015	1.000	1148229	3.04				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.156	3.073	0.083	1.000	44889144	131.5			429064	
499.00 > 99.00	3.172	3.073	0.099	1.005	9523250		4.71(0.90-1.10)		300531	
D 17 13C4 PFOS										
503.00 > 80.00	3.172	3.187	-0.015		1640917	6.59		13.8	74606	
D 19 13C5 PFNA										
468.00 > 423.00	3.180	3.187	-0.007		778629	4.38		8.8	60728	
20 Perfluorononanoic acid										
463.00 > 419.00	3.180	3.187	-0.007	1.000	191523	1.29			340	
D 21 13C8 FOSA										
506.00 > 78.00	3.495	3.511	-0.016		33313	0.0867		0.2	6803	
D 42 M2-8:2FTS										
529.00 > 509.00	3.520	3.522	-0.002		2226	0.0207		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.520	3.530	-0.010	1.000	43722	NR				
24 Perfluorodecanoic acid										
513.00 > 469.00	3.520	3.545	-0.025	1.000	18866	0.1684			301	
D 23 13C2 PFDA										
515.00 > 470.00	3.537	3.545	-0.008		593635	3.77		7.5	21767	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.675	3.686	-0.011		1462	0.0194		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.447	3.695	-0.248	0.938	830	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.684	3.857	-0.173	1.000	433	0.002160				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.892	3.858	0.034		3758	0.0480		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.866	3.874	-0.008		315352	2.69		5.4	58050	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.000	4.000	0.0		365	0.003839		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.153	4.170	-0.017		316649	2.85		5.7	13312	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.661	4.671	-0.010		1272389	5.60		11.2	120573	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.068	5.091	-0.023		712126	5.72		11.4	55479	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.068	5.091	-0.023	1.000	10189	-0.4312			97.4	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.306	5.444	-0.138	1.000	481	0.007371			5.6	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

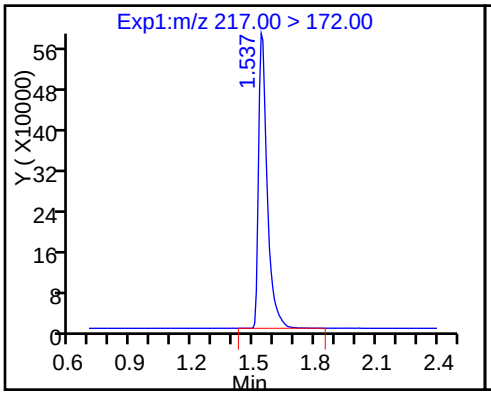
Report Date: 23-Dec-2016 09:21:11 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

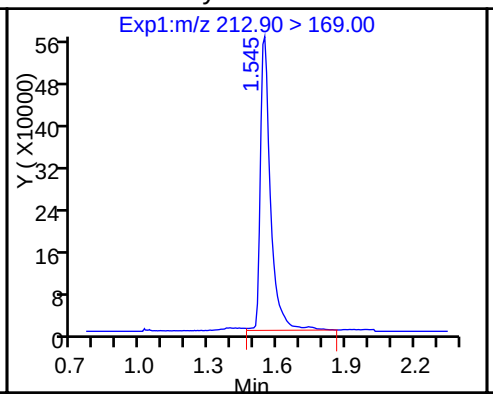
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_015.d

Injection Date:	22-Dec-2016 17:35:18	Instrument ID:	A8_N		
Lims ID:	320-23998-A-13-A	Lab Sample ID:	320-23998-13		
Client ID:	DPT-16-06-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

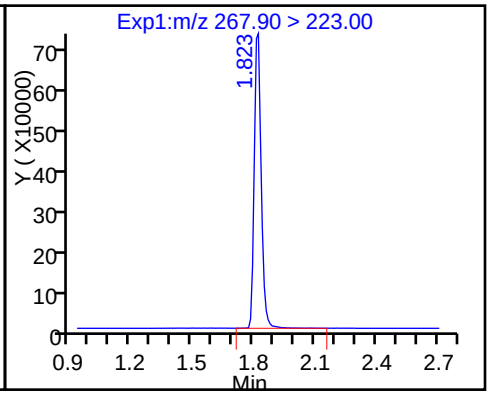
D 2 13C4 PFBA



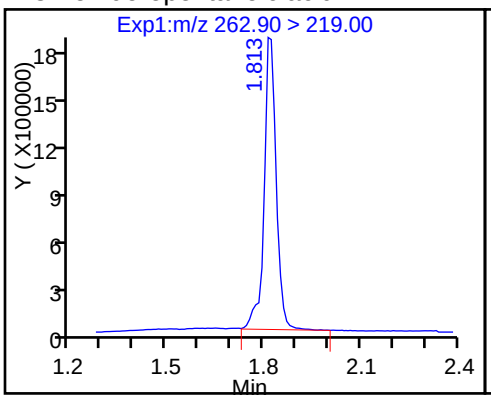
1 Perfluorobutyric acid



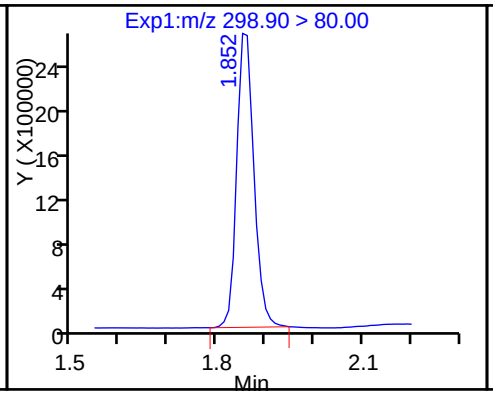
D 4 13C5-PFPeA



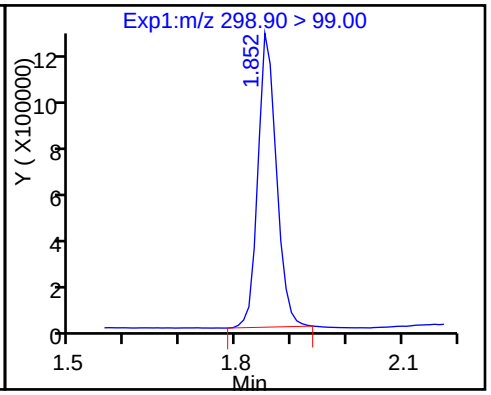
3 Perfluoropentanoic acid



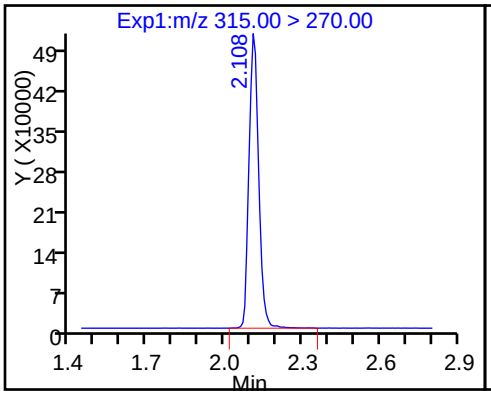
5 Perfluorobutanesulfonic acid



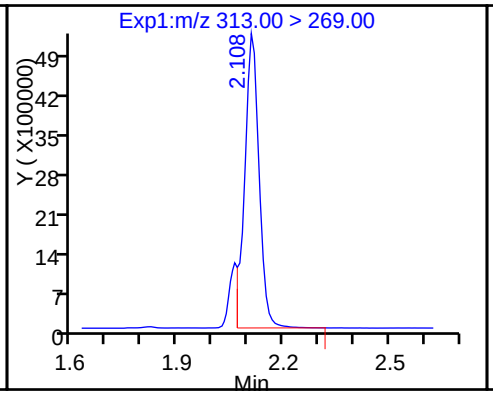
5 Perfluorobutanesulfonic acid



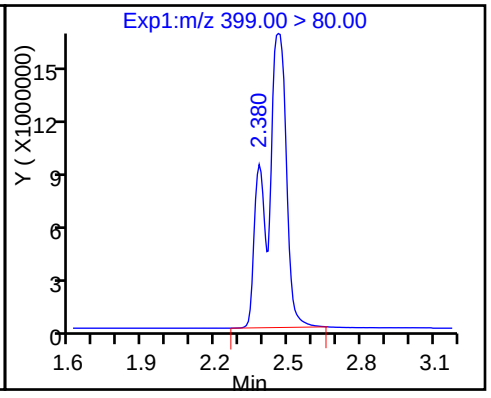
D 6 13C2 PFHxA



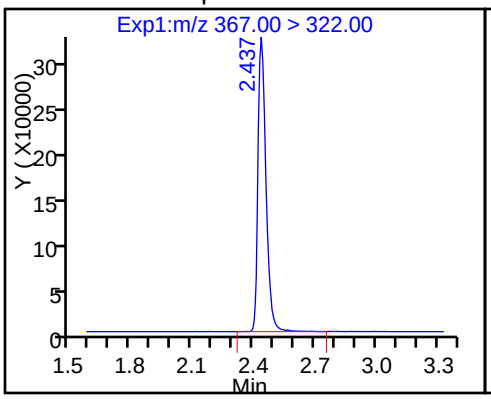
7 Perfluorohexanoic acid



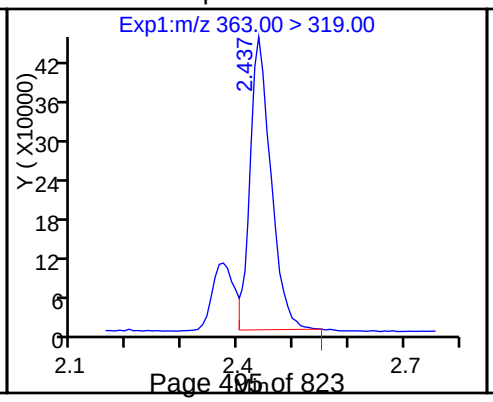
9 Perfluorohexanesulfonic acid



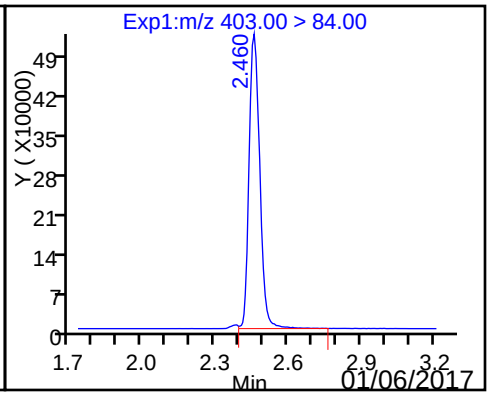
D 11 13C4-PFHpA



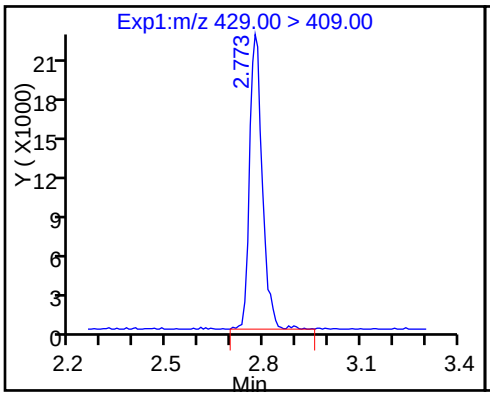
12 Perfluoroheptanoic acid



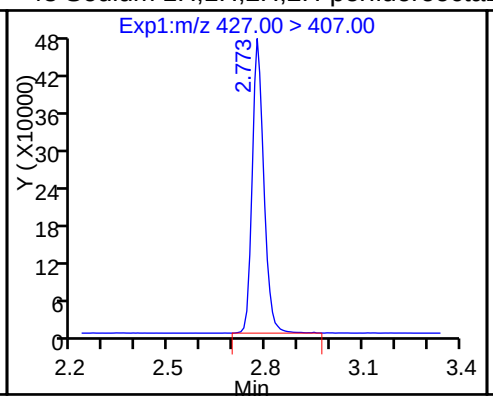
D 10 18O2 PFHxS



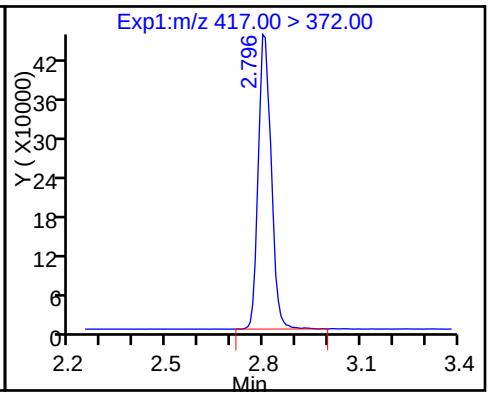
D 47 M2-6:2FTS



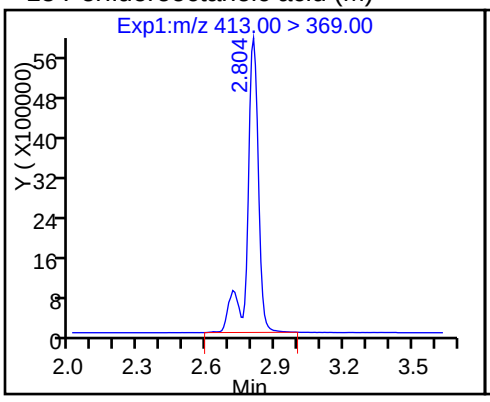
48 Sodium 1H,1H,2H,2H-perfluorooctane



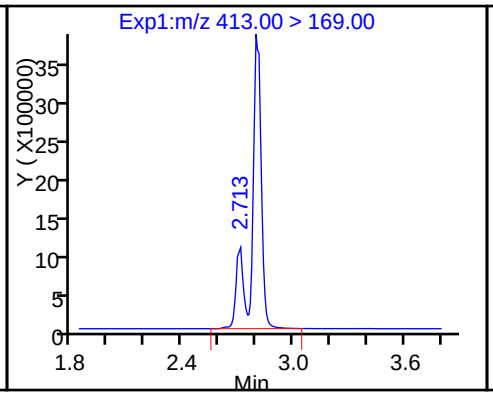
D 14 13C4 PFOA



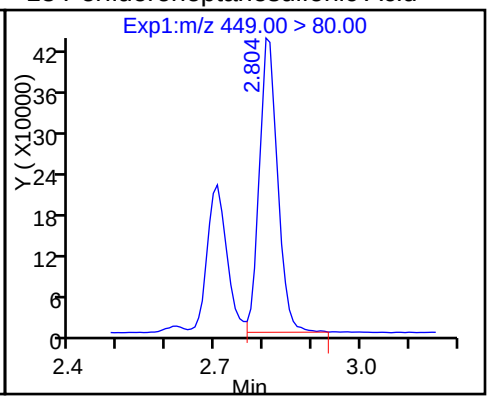
15 Perfluorooctanoic acid (M)



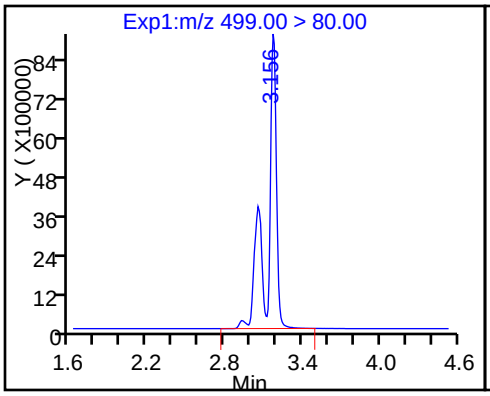
15 Perfluorooctanoic acid



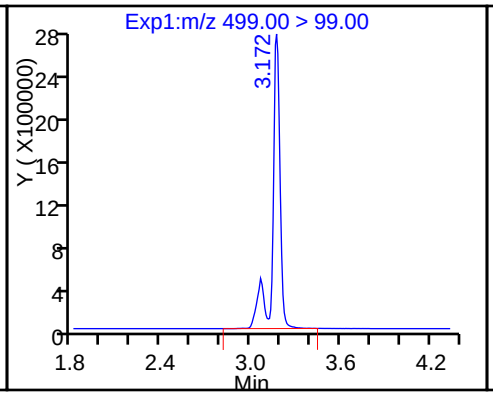
13 Perfluoroheptanesulfonic Acid



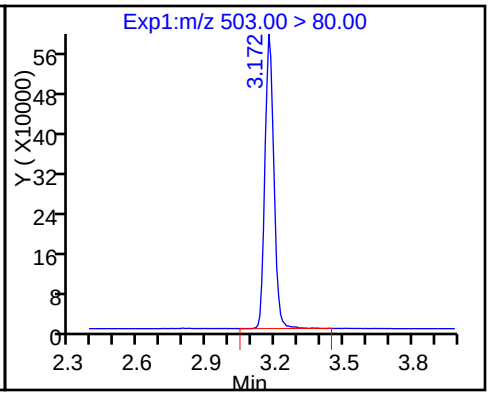
18 Perfluorooctane sulfonic acid



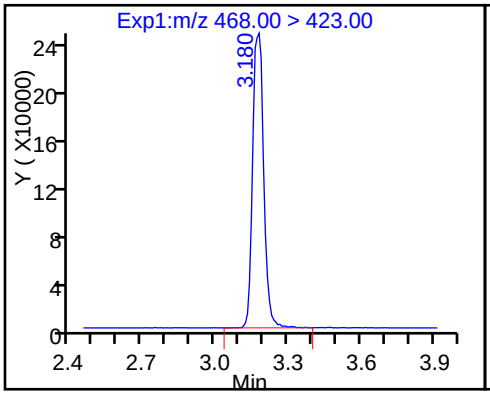
18 Perfluorooctane sulfonic acid



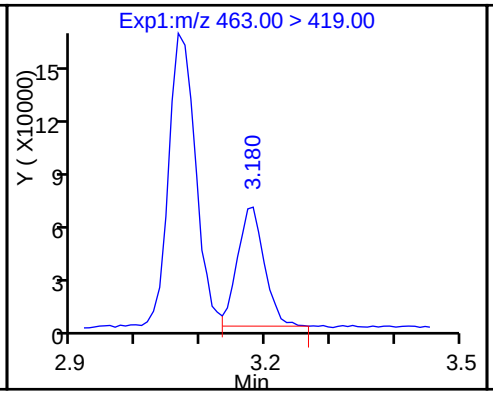
D 17 13C4 PFOS



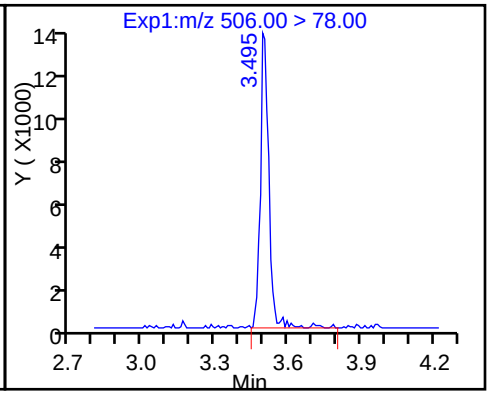
D 19 13C5 PFNA



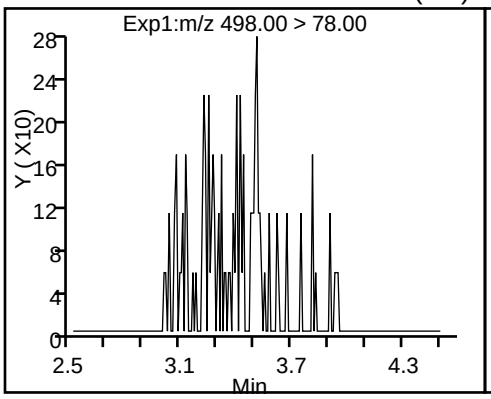
20 Perfluorononanoic acid



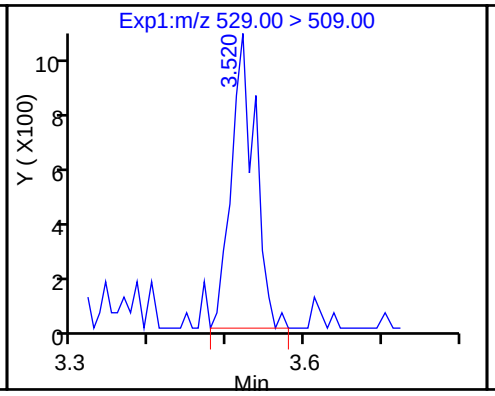
D 21 13C8 FOSA



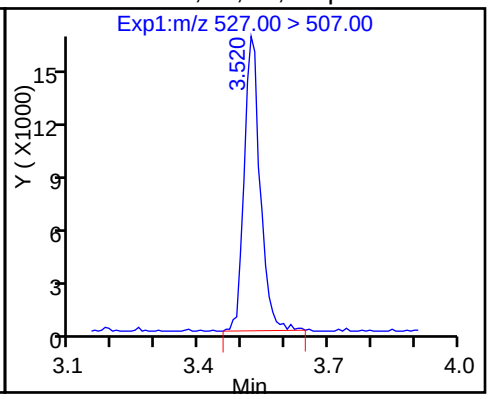
22 Perfluorooctane Sulfonamide (ND)



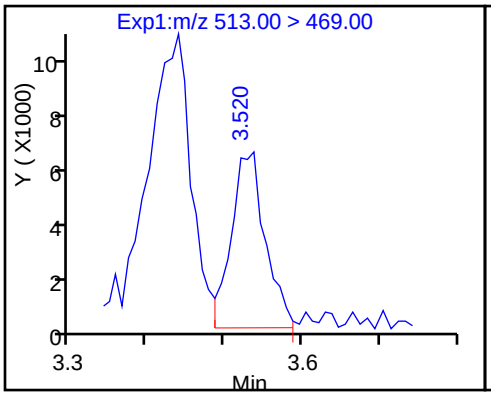
D 42 M2-8:2FTS



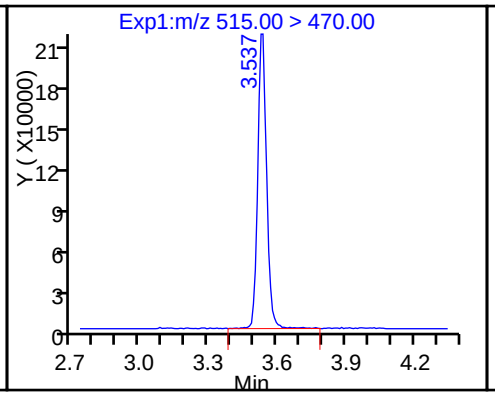
43 Sodium 1H,1H,2H,2H-perfluorooctane



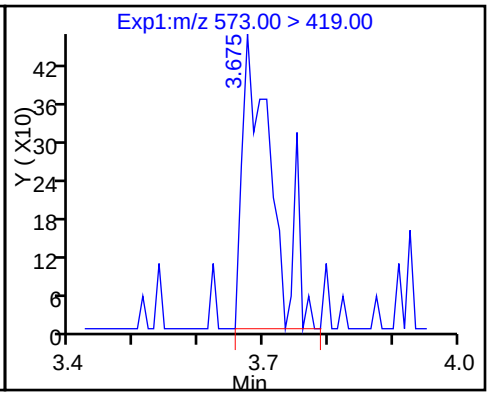
24 Perfluorodecanoic acid



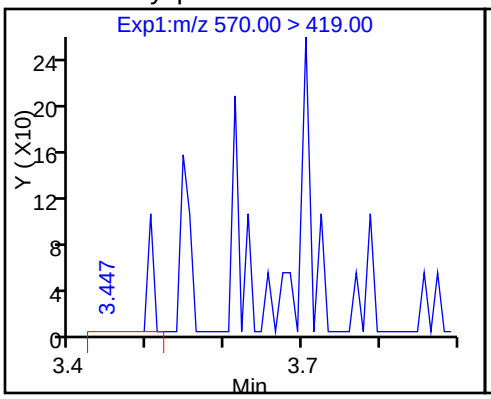
D 23 13C2 PFDA



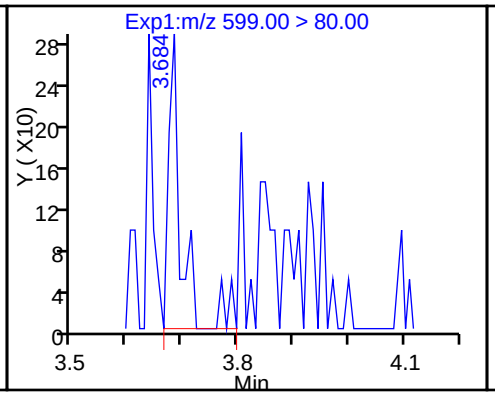
D 45 d3-NMeFOSAA



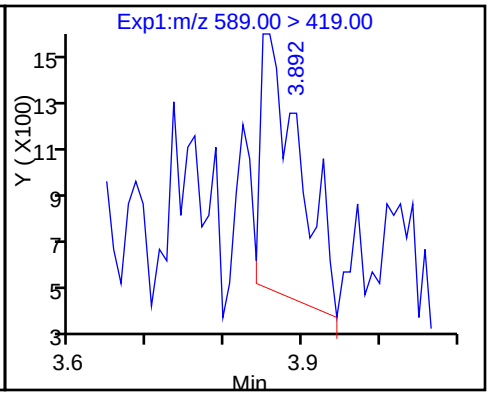
44 N-methyl perfluorooctane sulfonami



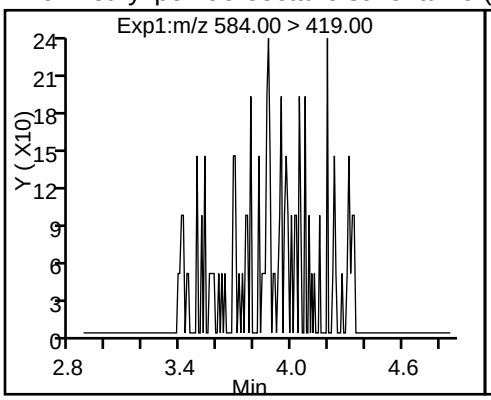
26 Perfluorodecane Sulfonic acid



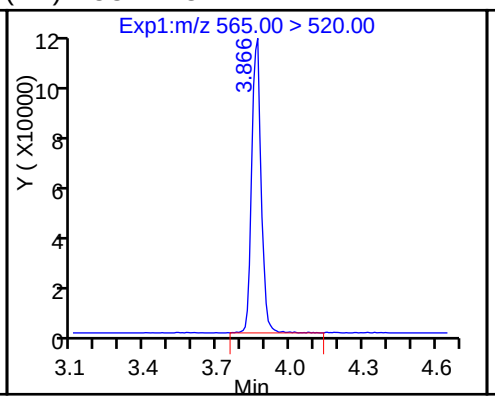
D 46 d5-NEtFOSAA



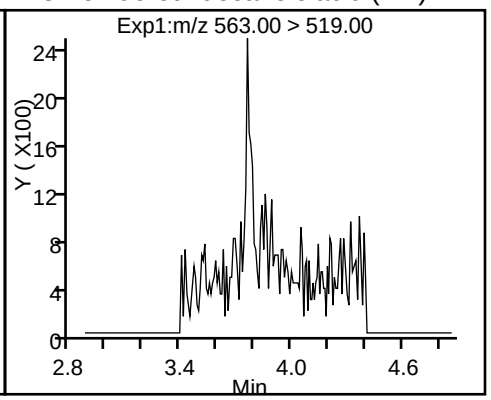
49 N-ethyl perfluorooctane sulfonamid (ND)



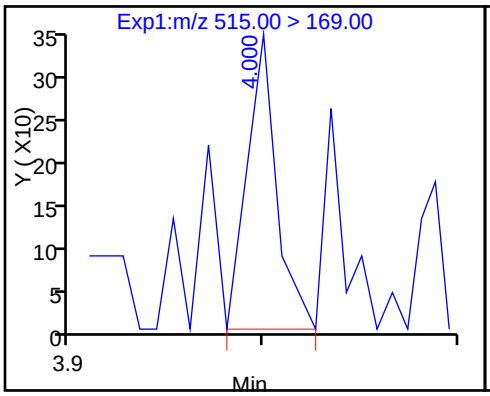
D 27 13C2 PFUnA



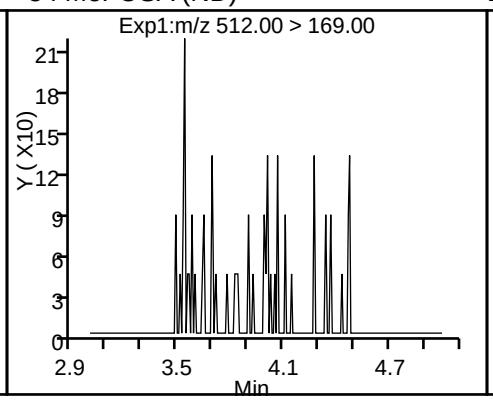
28 Perfluoroundecanoic acid (ND)



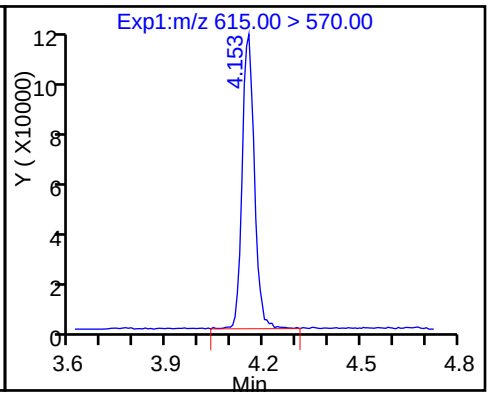
D 52 d-N-MeFOSA-M



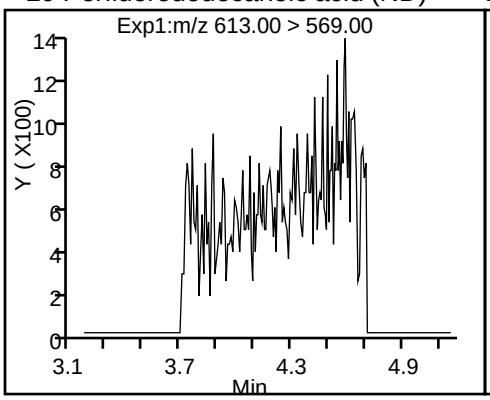
54 MeFOSA (ND)



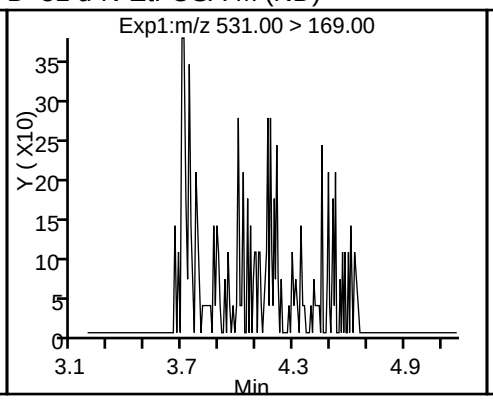
D 30 13C2 PFDoA



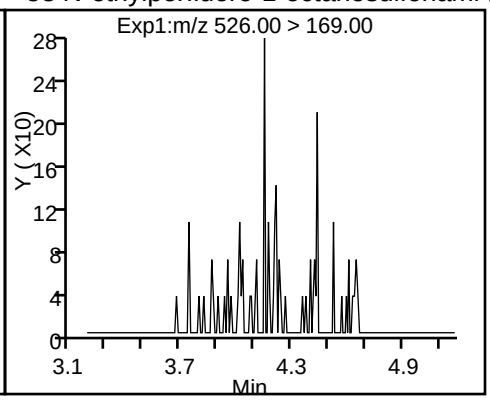
29 Perfluorododecanoic acid (ND)



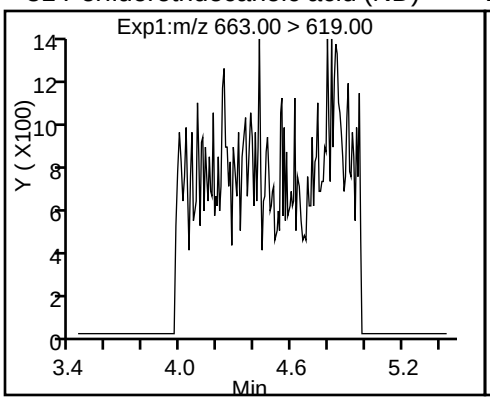
D 51 d-N-EtFOSA-M (ND)



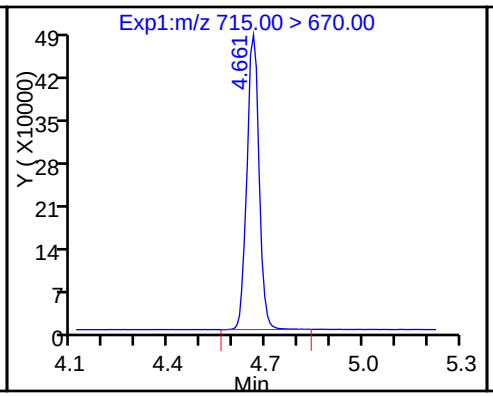
53 N-ethylperfluoro-1-octanesulfonami (ND)



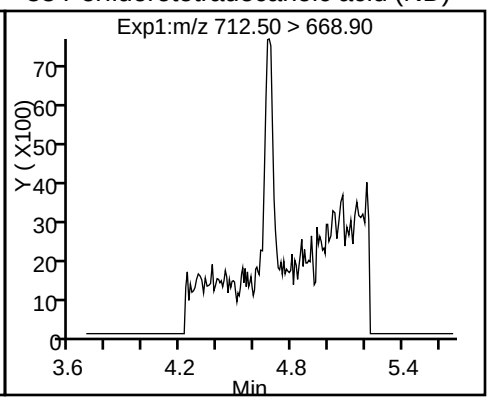
31 Perfluorotridecanoic acid (ND)



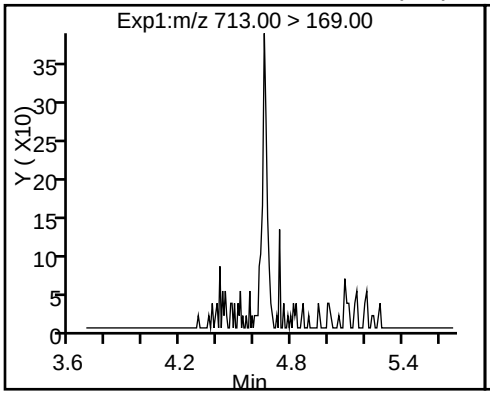
D 32 13C2-PFTeDA



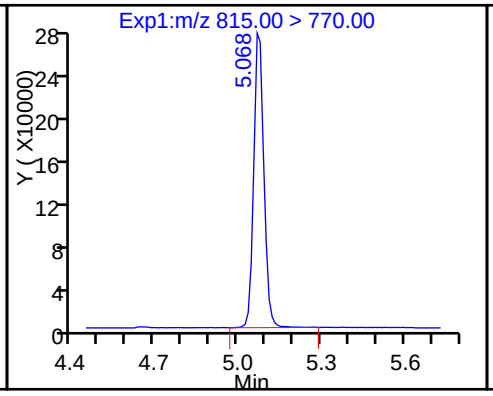
33 Perfluorotetradecanoic acid (ND)



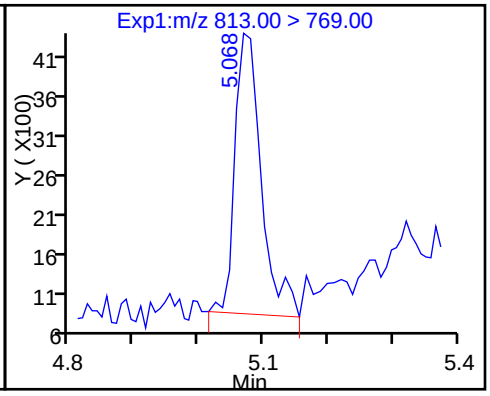
33 Perfluorotetradecanoic acid (ND)



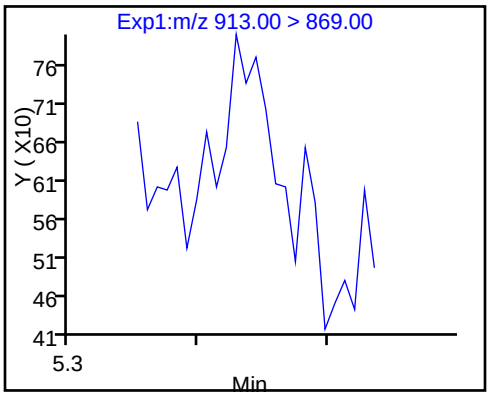
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

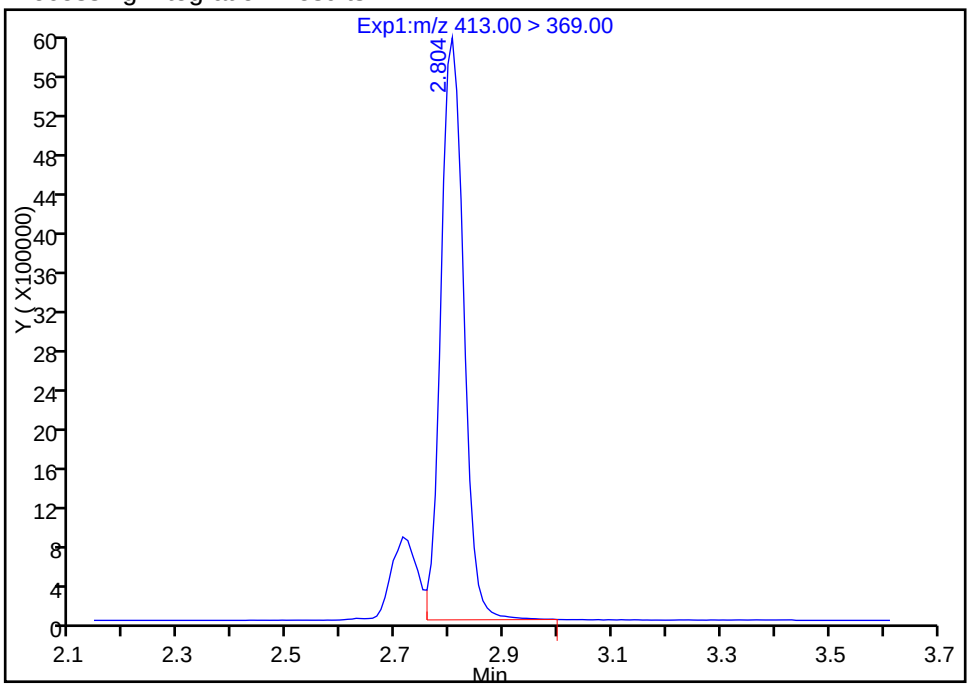
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_015.d				
Injection Date:	22-Dec-2016 17:35:18	Instrument ID:	A8_N		
Lims ID:	320-23998-A-13-A	Lab Sample ID:	320-23998-13		
Client ID:	DPT-16-06-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	33	Worklist Smp#:	15
Injection 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

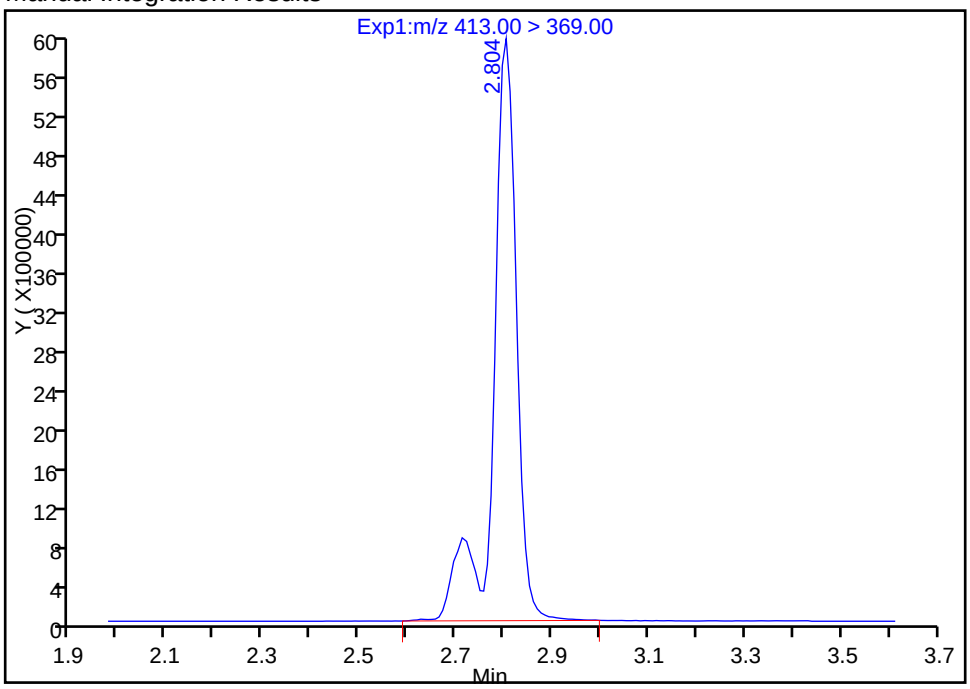
Processing Integration Results

RT: 2.80
Area: 17451376
Amount: 68.011087
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 20317515
Amount: 79.180935
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:02:00

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-06-GW-18-22 | Lab Sample ID: 320-23998-14

Matrix: Water | Lab File ID: 21DEC2016A_044.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 13:00

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 259.5(mL) | Date Analyzed: 12/21/2016 18:28

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.: 143502 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.3*	*E M*	*0.0024*	0.0019	*0.00072*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.2*	*E*	*0.0039*	0.0029	*0.0012*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.20		0.0024	0.0019	0.00088

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	54		25-150
STL00991	13C4 PFOS	59		25-150
STL00994	18O2 PFHxS	46		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_044.d
Lims ID: 320-23998-A-14-A
Client ID: DPT-16-06-GW-18-22
Sample Type: Client
Inject. Date: 21-Dec-2016 18:28:25 ALS Bottle#: 22 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-14-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:07 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:32:13

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	1.868	1.868	0.0	1.000	21622715	101.8				
298.90 > 99.00	1.868	1.868	0.0	1.000	9979183		2.17(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.468	2.474	-0.006		7087464	21.7		45.8	251333	
D 14 13C4 PFOA										
417.00 > 372.00	2.813	2.814	-0.001		6248287	27.1		54.2	398818	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.821	2.814	0.007	1.000	82708789	659.8			219078	EM
413.00 > 169.00	2.813	2.814	-0.001	0.997	70723186		1.17(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.074	3.076	-0.002	1.000	165445658	1139.8			279130	E
499.00 > 99.00	3.189	3.076	0.113	1.037	46022569		3.59(0.90-1.10)		547797	
D 17 13C4 PFOS										
503.00 > 80.00	3.180	3.182	-0.002		6977156	28.0		58.7	144289	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

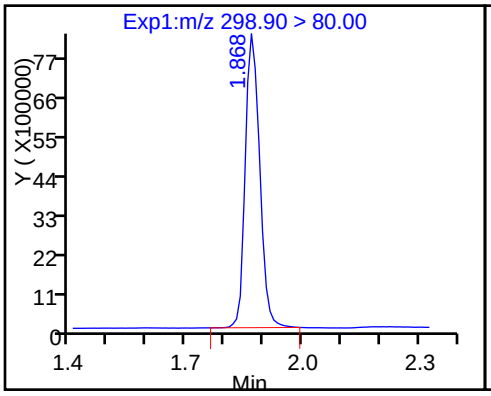
Report Date: 22-Dec-2016 10:36:16 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

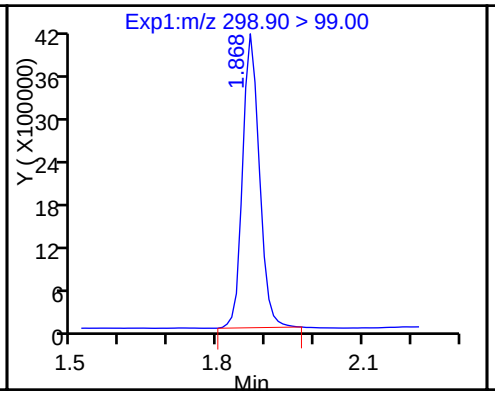
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_044.d

Injection Date:	21-Dec-2016 18:28:25	Instrument ID:	A8_N		
Lims ID:	320-23998-A-14-A	Lab Sample ID:	320-23998-14		
Client ID:	DPT-16-06-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	34
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

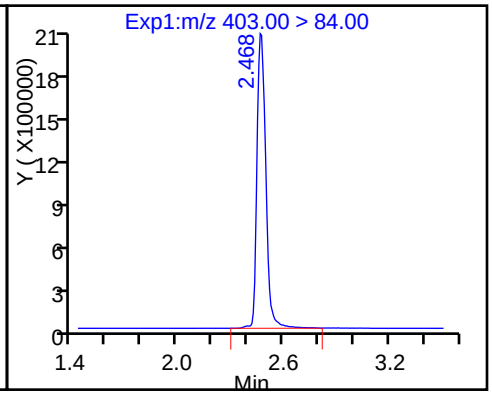
5 Perfluorobutanesulfonic acid



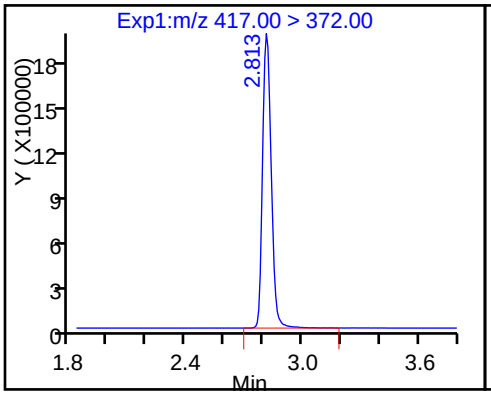
5 Perfluorobutanesulfonic acid



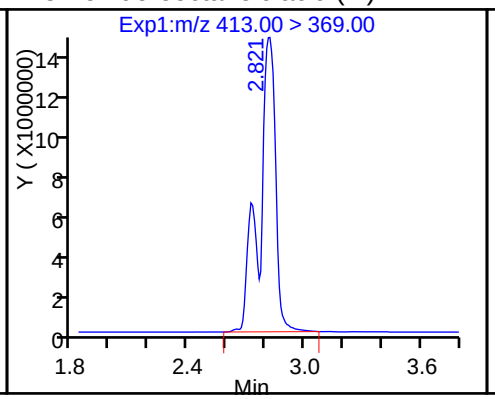
D 10 18O2 PFHxS



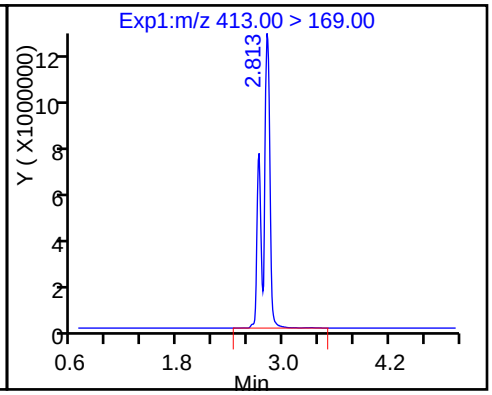
D 14 13C4 PFOA



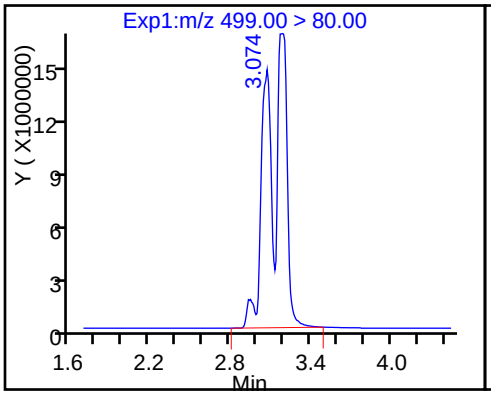
15 Perfluorooctanoic acid (M)



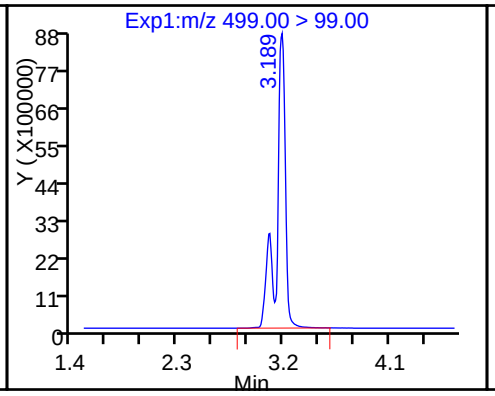
15 Perfluorooctanoic acid



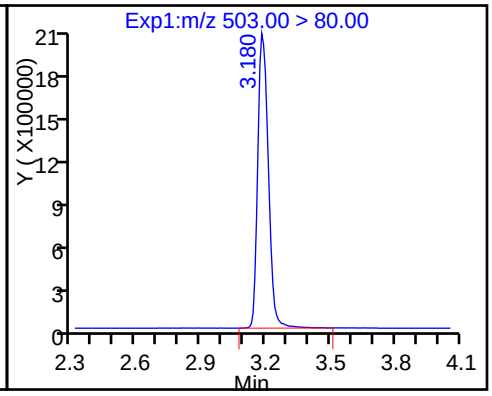
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

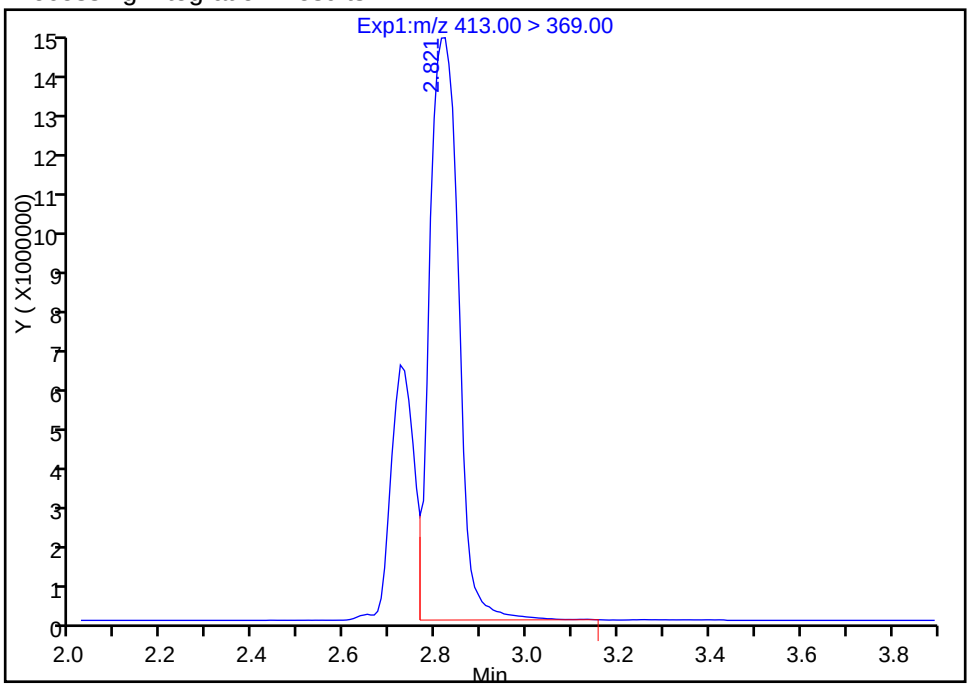
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_044.d				
Injection Date:	21-Dec-2016 18:28:25	Instrument ID:	A8_N		
Lims ID:	320-23998-A-14-A	Lab Sample ID:	320-23998-14		
Client ID:	DPT-16-06-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	34
Injection Vol:	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

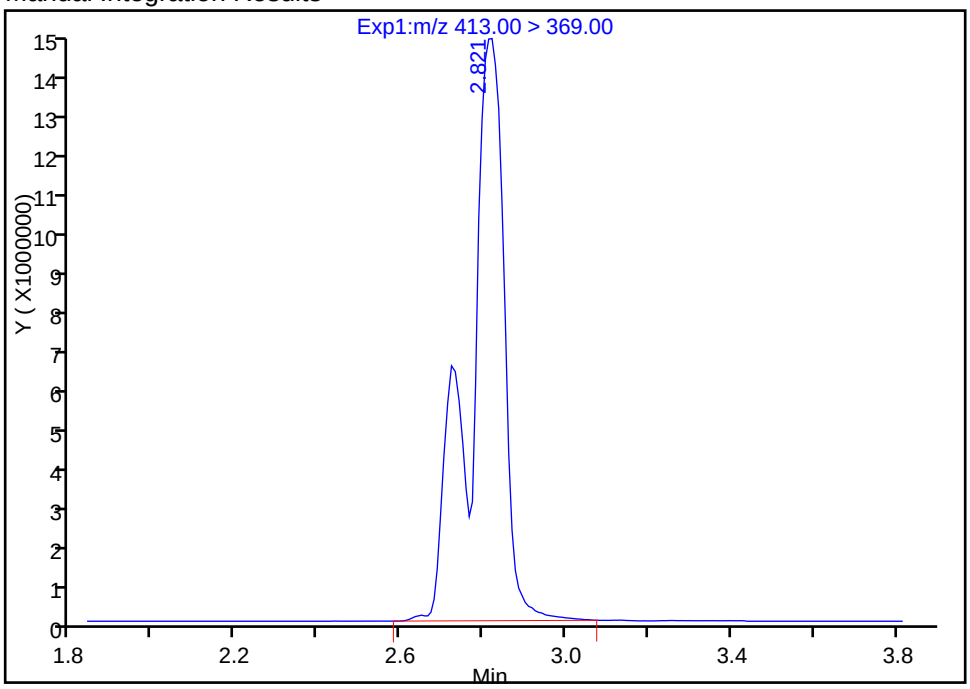
Processing Integration Results

RT: 2.82
Area: 61548869
Amount: 490.9826
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 82708789
Amount: 659.7778
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:32:13

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-06-GW-18-22 DL Lab Sample ID: 320-23998-14 DL

Matrix: Water Lab File ID: 22DEC2016BB_018.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 13:00

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 259.5(mL) Date Analyzed: 12/22/2016 17:57

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.: 143644 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	D M	0.024	0.019	0.0072
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.8	D	0.039	0.029	0.012
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.12*	*D*	*0.024*	0.019	*0.0088*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	108		25-150
STL00991	13C4 PFOS	126		25-150
STL00994	18O2 PFHxS	116		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_018.d
Lims ID: 320-23998-A-14-A
Client ID: DPT-16-06-GW-18-22
Sample Type: Client
Inject. Date: 22-Dec-2016 17:57:49 ALS Bottle#: 36 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23998-a-14-a 10X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:03:42

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	1.861	1.871	-0.010	1.000	3243043	6.05				
298.90 > 99.00	1.861	1.871	-0.010	1.000	1359528		2.39(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.458	2.472	-0.014		1789644	5.47		11.6	159263	
D 14 13C4 PFOA										
417.00 > 372.00	2.805	2.811	-0.006		1245549	5.41		10.8	148773	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.805	2.819	-0.014	1.000	24115853	96.5			160067	M
413.00 > 169.00	2.805	2.819	-0.014	1.000	16775389		1.44(0.90-1.10)		567694	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.157	3.073	0.084	1.000	45830509	147.0			544344	
499.00 > 99.00	3.173	3.073	0.100	1.005	10135005		4.52(0.90-1.10)		431706	
D 17 13C4 PFOS										
503.00 > 80.00	3.173	3.187	-0.014		1498659	6.02		12.6	136007	

QC Flag Legend

Review Flags
M - Manually Integrated

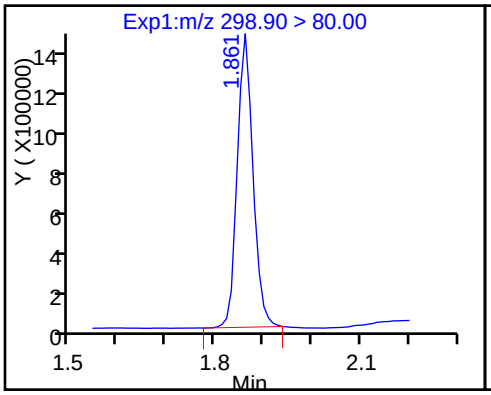
Report Date: 23-Dec-2016 09:21:14 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

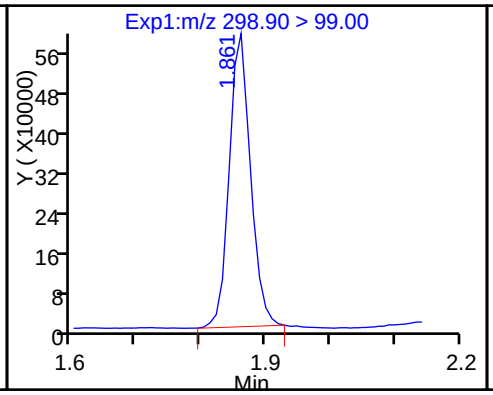
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_018.d

Injection Date:	22-Dec-2016 17:57:49	Instrument ID:	A8_N		
Lims ID:	320-23998-A-14-A	Lab Sample ID:	320-23998-14		
Client ID:	DPT-16-06-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	36	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

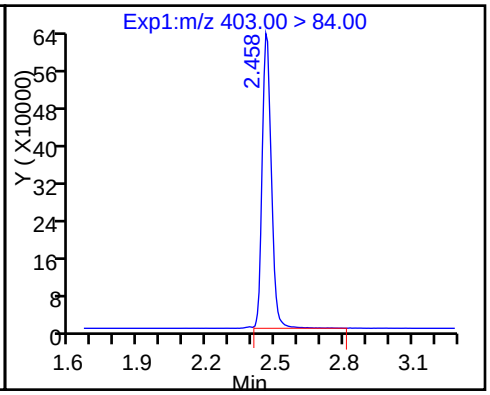
5 Perfluorobutanesulfonic acid



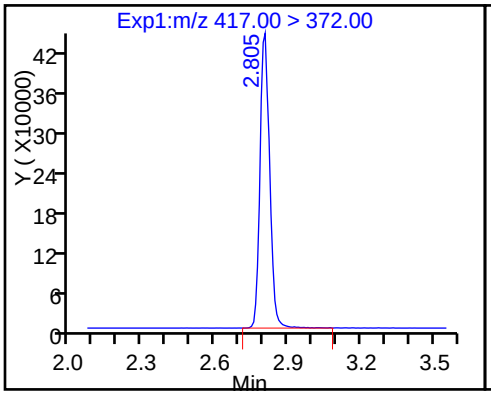
5 Perfluorobutanesulfonic acid



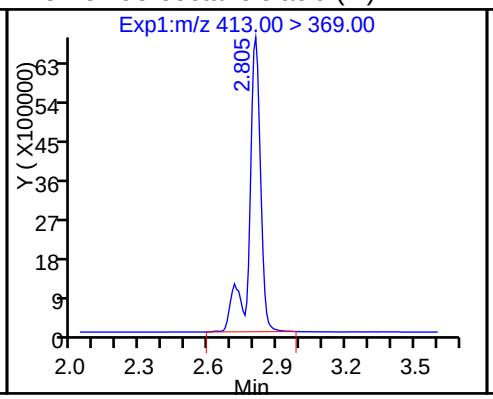
D 10 18O2 PFHxS



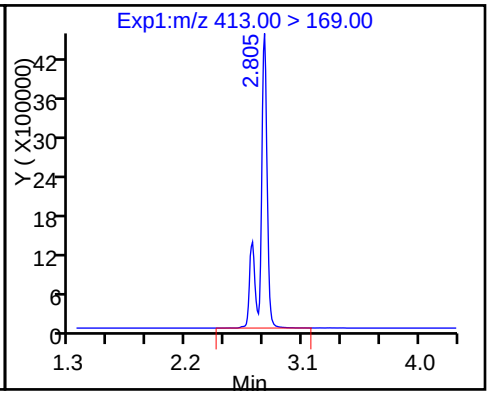
D 14 13C4 PFOA



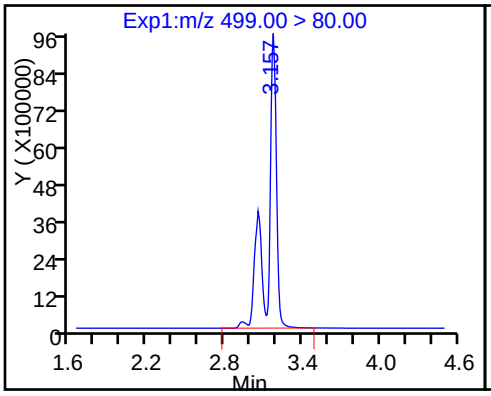
15 Perfluorooctanoic acid (M)



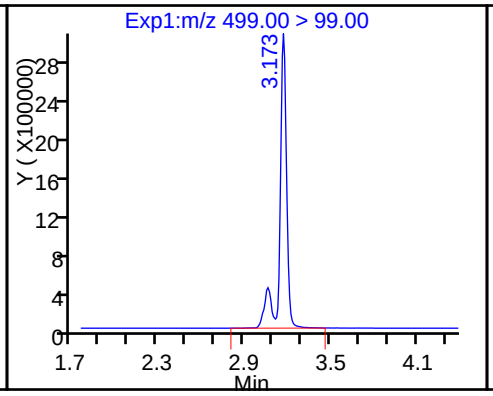
15 Perfluorooctanoic acid



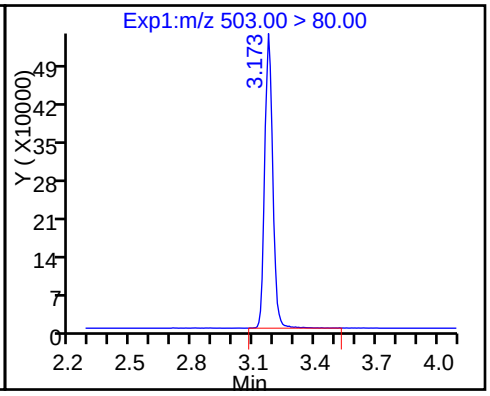
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

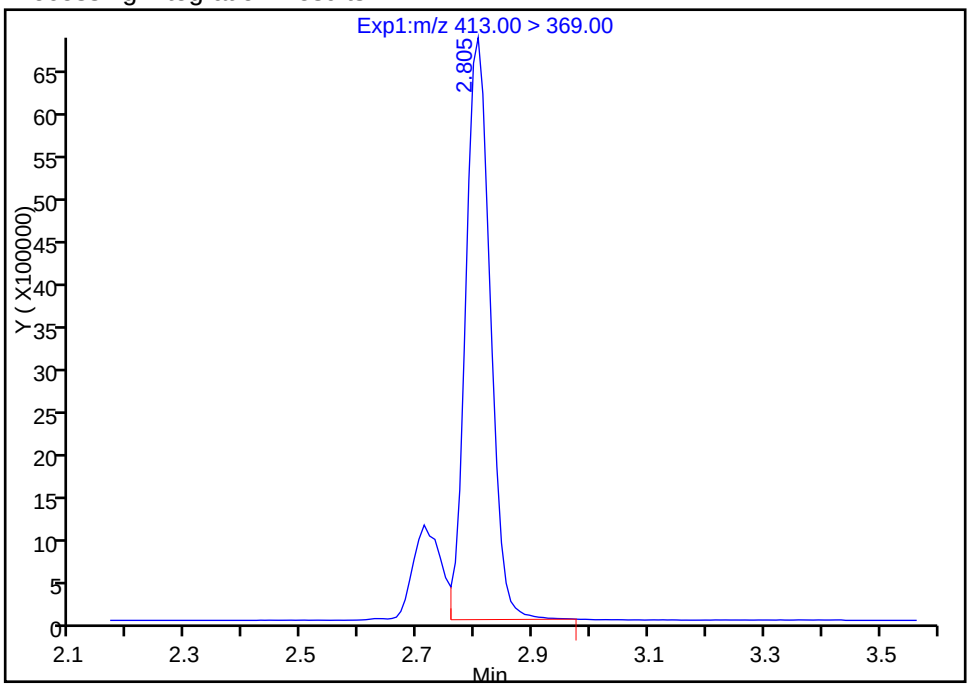
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_018.d				
Injection Date:	22-Dec-2016 17:57:49	Instrument ID:	A8_N		
Lims ID:	320-23998-A-14-A	Lab Sample ID:	320-23998-14		
Client ID:	DPT-16-06-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	36	Worklist Smp#:	18
Injection 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

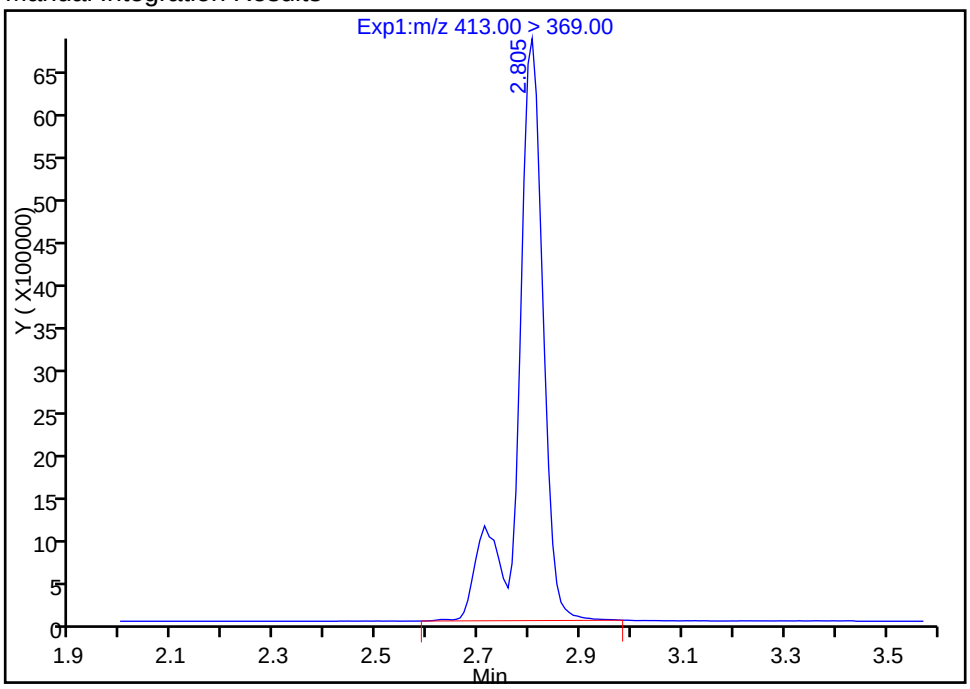
Processing Integration Results

RT: 2.81
Area: 20326476
Amount: 81.340769
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 24115853
Amount: 96.504777
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:03:42

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-11-GW-31-35 | Lab Sample ID: 320-23998-15

Matrix: Water | Lab File ID: 21DEC2016A_045.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 14:00

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 248.9(mL) | Date Analyzed: 12/21/2016 18:35

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.: 143502 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.0020	0.00075
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.77*	*E*	*0.0040*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.080		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	73		25-150
STL00991	13C4 PFOS	90		25-150
STL00994	18O2 PFHxS	64		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_045.d
Lims ID: 320-23998-A-15-A
Client ID: DPT-16-11-GW-31-35
Sample Type: Client
Inject. Date: 21-Dec-2016 18:35:54 ALS Bottle#: 23 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-15-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:07 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:33:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.868	0.0	1.000	11795576	39.7				
298.90 > 99.00	1.868	1.868	0.0	1.000	4968852		2.37(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.471	2.474	-0.003		9905886	30.3		64.0	257823	
D 14 13C4 PFOA										
417.00 > 372.00	2.809	2.814	-0.005		8457805	36.7		73.4	288896	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.818	2.814	0.004	1.000	27602477	162.7			153833	M
413.00 > 169.00	2.818	2.814	0.004	1.000	20101135		1.37(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.070	3.076	-0.006	1.000	85131151	382.3			350957	E
499.00 > 99.00	3.186	3.076	0.110	1.037	22424376		3.80(0.90-1.10)		622440	
D 17 13C4 PFOS										
503.00 > 80.00	3.186	3.182	0.004		10704692	43.0		90.0	180516	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

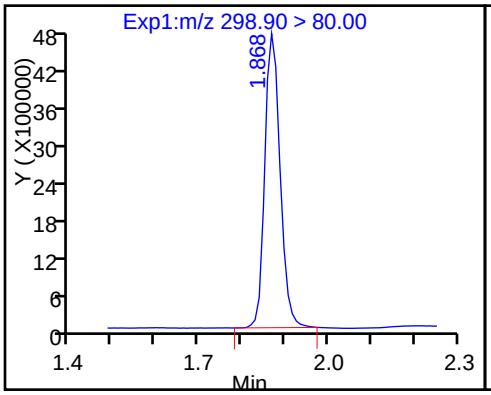
Report Date: 22-Dec-2016 10:36:17 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

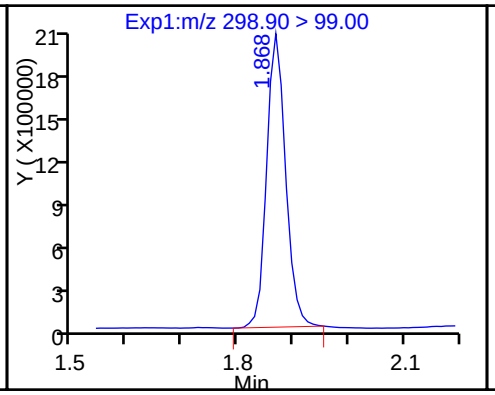
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_045.d

Injection Date:	21-Dec-2016 18:35:54	Instrument ID:	A8_N		
Lims ID:	320-23998-A-15-A	Lab Sample ID:	320-23998-15		
Client ID:	DPT-16-11-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	23	Worklist Smp#:	35
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

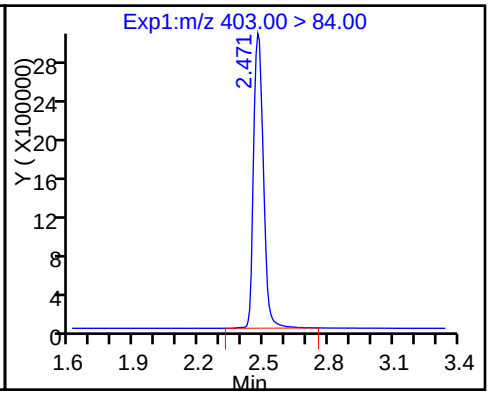
5 Perfluorobutanesulfonic acid



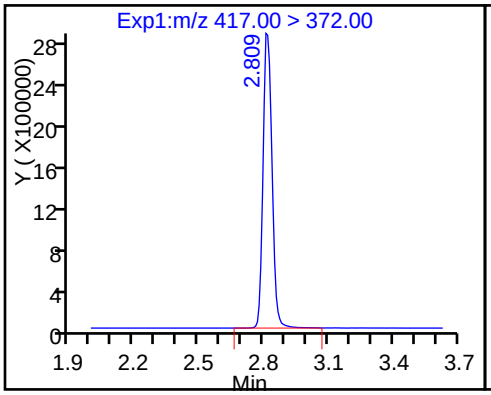
5 Perfluorobutanesulfonic acid



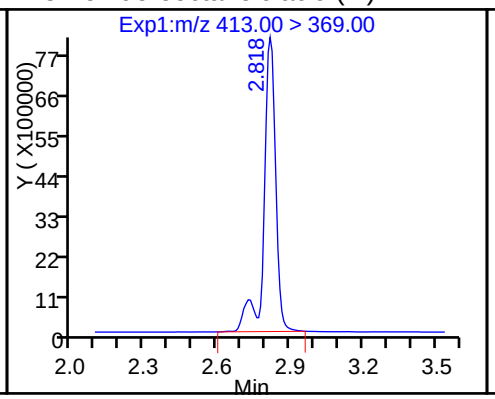
D 10 18O2 PFHxS



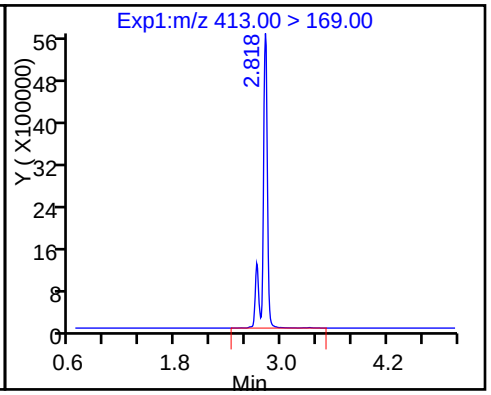
D 14 13C4 PFOA



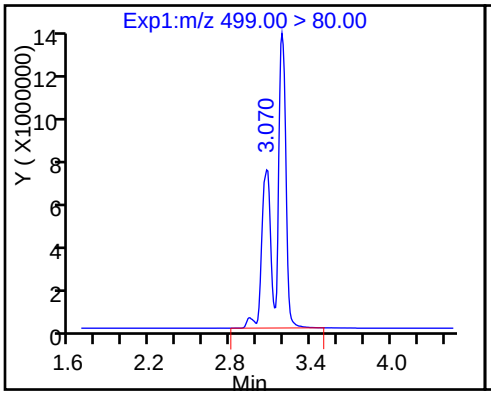
15 Perfluorooctanoic acid (M)



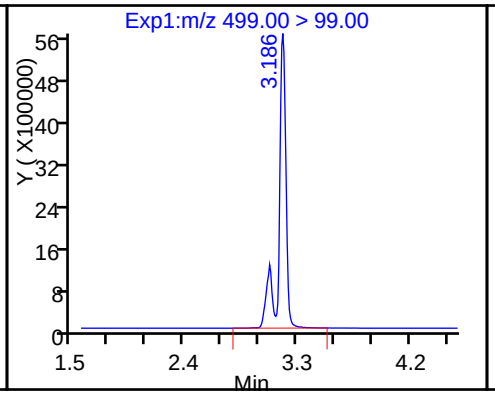
15 Perfluorooctanoic acid



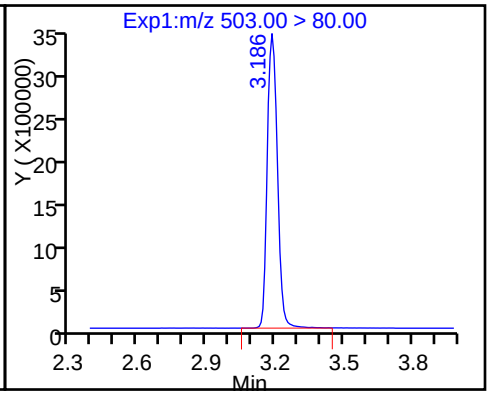
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



TestAmerica Sacramento

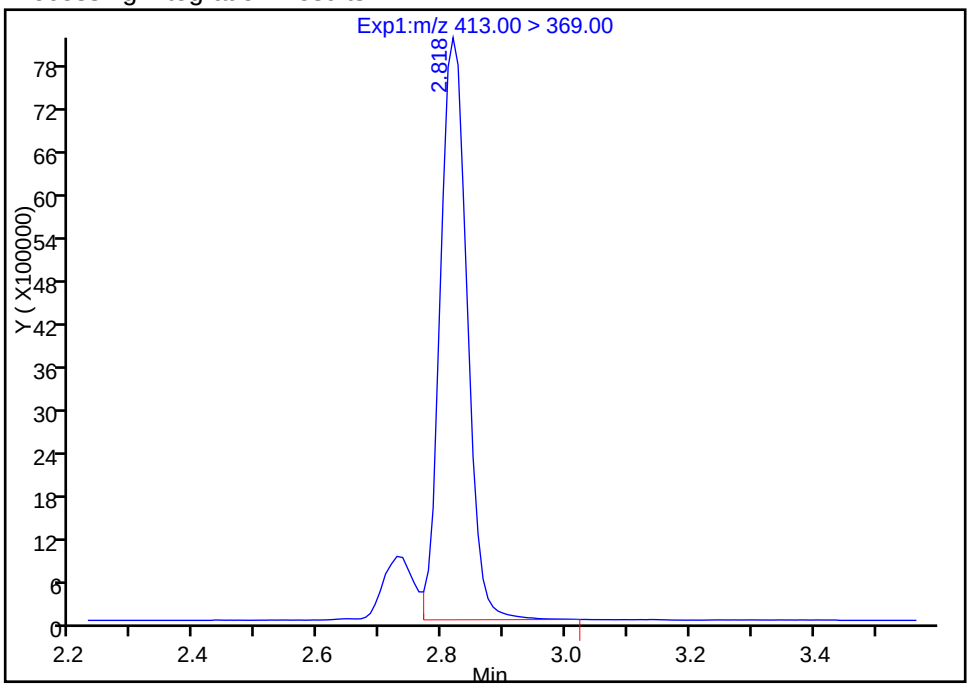
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_045.d		
Injection Date:	21-Dec-2016 18:35:54	Instrument ID:	A8_N
Lims ID:	320-23998-A-15-A	Lab Sample ID:	320-23998-15
Client ID:	DPT-16-11-GW-31-35		
Operator ID:	A8-PC\A8	ALS Bottle#:	23 Worklist Smp#: 35
Injection Vol:	2.0 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

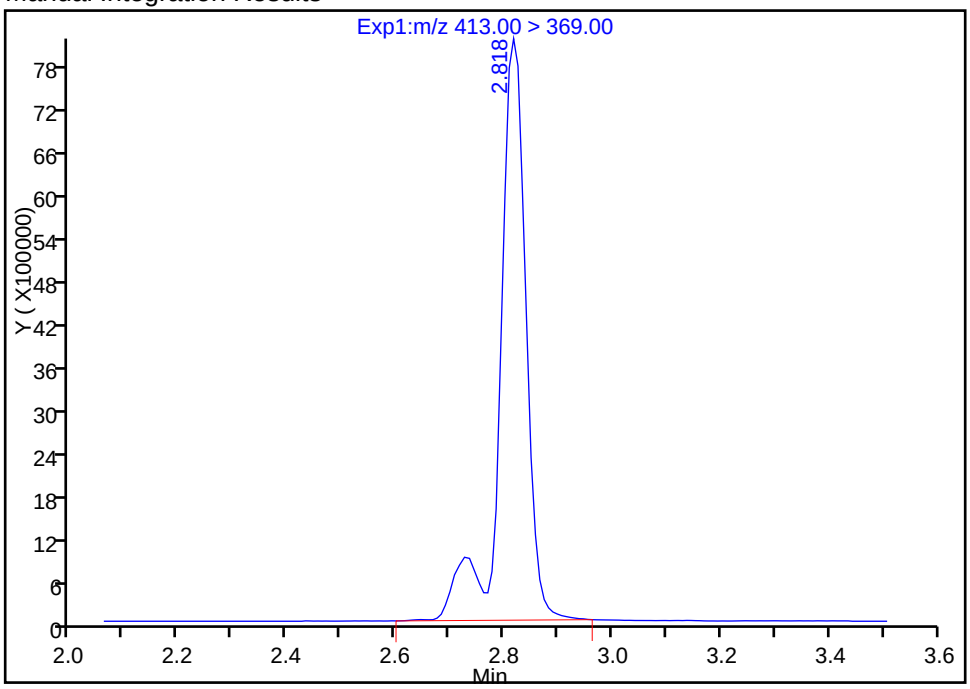
Processing Integration Results

RT: 2.82
Area: 24654373
Amount: 145.2925
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 27602477
Amount: 162.6662
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:33:08
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-11-GW-31-35 DL | Lab Sample ID: 320-23998-15 DL

Matrix: Water | Lab File ID: 22DEC2016BB_019.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 14:00

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 248.9(mL) | Date Analyzed: 12/22/2016 18:05

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.: 143644 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.36*	*D M*	*0.025*	0.020	*0.0075*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.86	D	0.040	0.030	0.013
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.050*	*D*	*0.025*	0.020	*0.0092*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	106		25-150
STL00991	13C4 PFOS	134		25-150
STL00994	18O2 PFHxS	126		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_019.d
Lims ID: 320-23998-A-15-A
Client ID: DPT-16-11-GW-31-35
Sample Type: Client
Inject. Date: 22-Dec-2016 18:05:20 ALS Bottle#: 37 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23998-a-15-a 10X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:04:58

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	1.852	1.871	-0.019	1.000	1452916	2.48				
298.90 > 99.00	1.852	1.871	-0.019	1.000	595898		2.44(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.458	2.472	-0.014		1951764	5.97		12.6	185004	
D 14 13C4 PFOA										
417.00 > 372.00	2.804	2.811	-0.007		1216994	5.28		10.6	150730	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.804	2.819	-0.015	1.000	4408150	18.1			43628	M
413.00 > 169.00	2.804	2.819	-0.015	1.000	2809700		1.57(0.90-1.10)		101528	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.148	3.073	0.075	1.000	14116090	42.7			121329	
499.00 > 99.00	3.172	3.073	0.099	1.008	3038381		4.65(0.90-1.10)		150282	
D 17 13C4 PFOS										
503.00 > 80.00	3.172	3.187	-0.015		1588800	6.38		13.4	65521	

QC Flag Legend

Review Flags
M - Manually Integrated

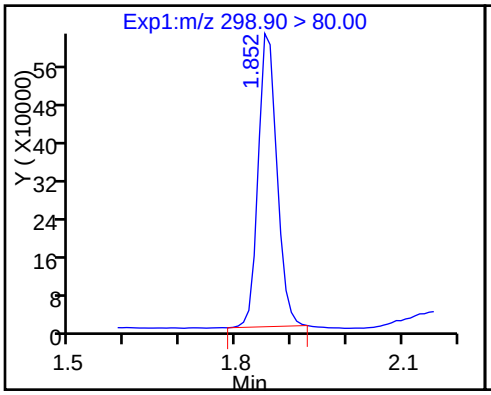
Report Date: 23-Dec-2016 09:21:16 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

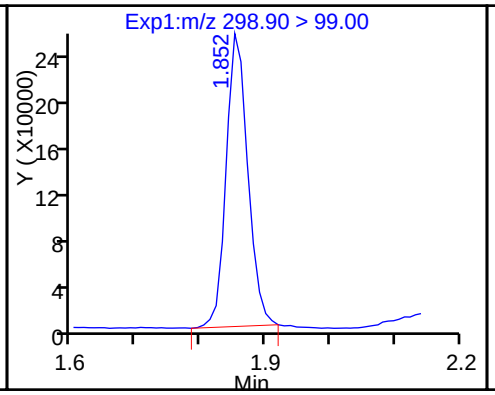
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_019.d

Injection Date:	22-Dec-2016 18:05:20	Instrument ID:	A8_N		
Lims ID:	320-23998-A-15-A	Lab Sample ID:	320-23998-15		
Client ID:	DPT-16-11-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	37	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

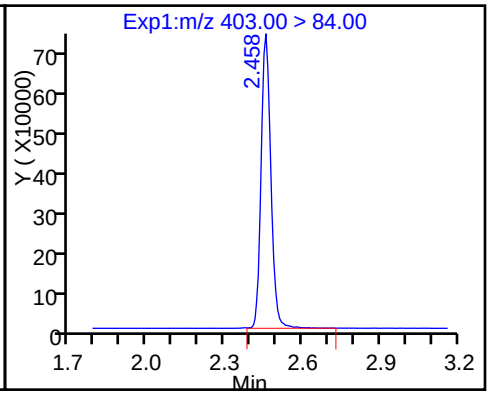
5 Perfluorobutanesulfonic acid



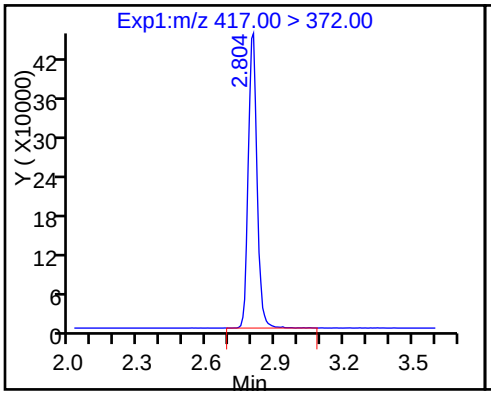
5 Perfluorobutanesulfonic acid



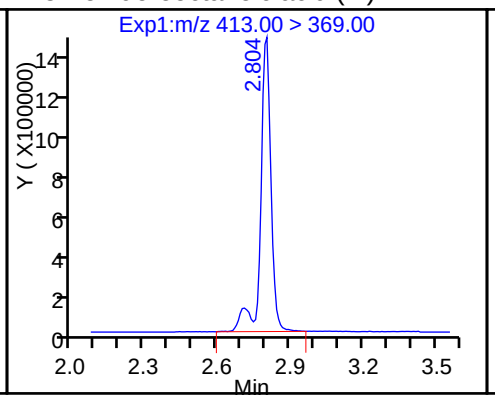
D 10 18O2 PFHxS



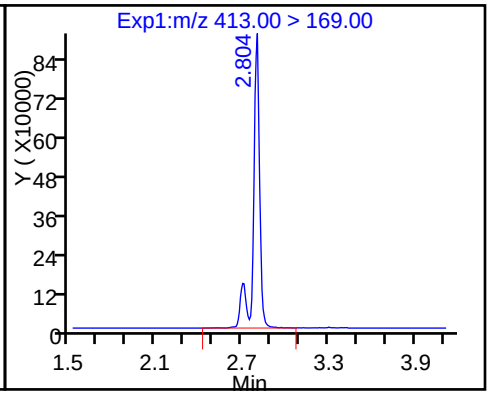
D 14 13C4 PFOA



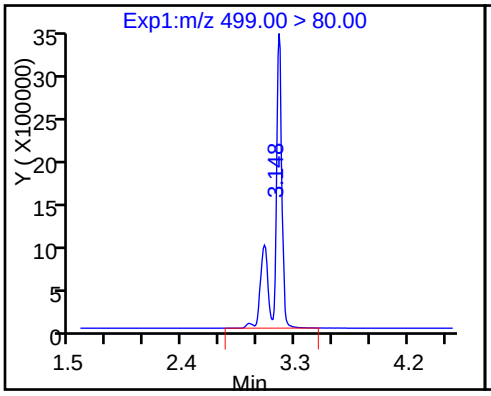
15 Perfluorooctanoic acid (M)



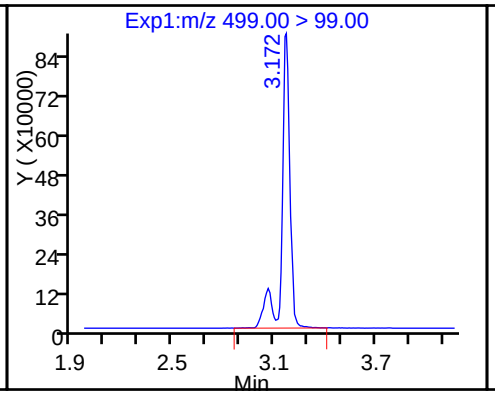
15 Perfluorooctanoic acid



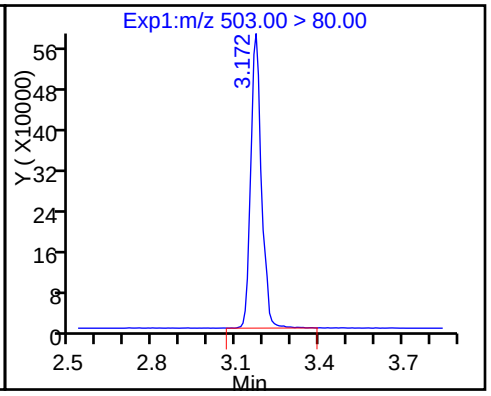
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

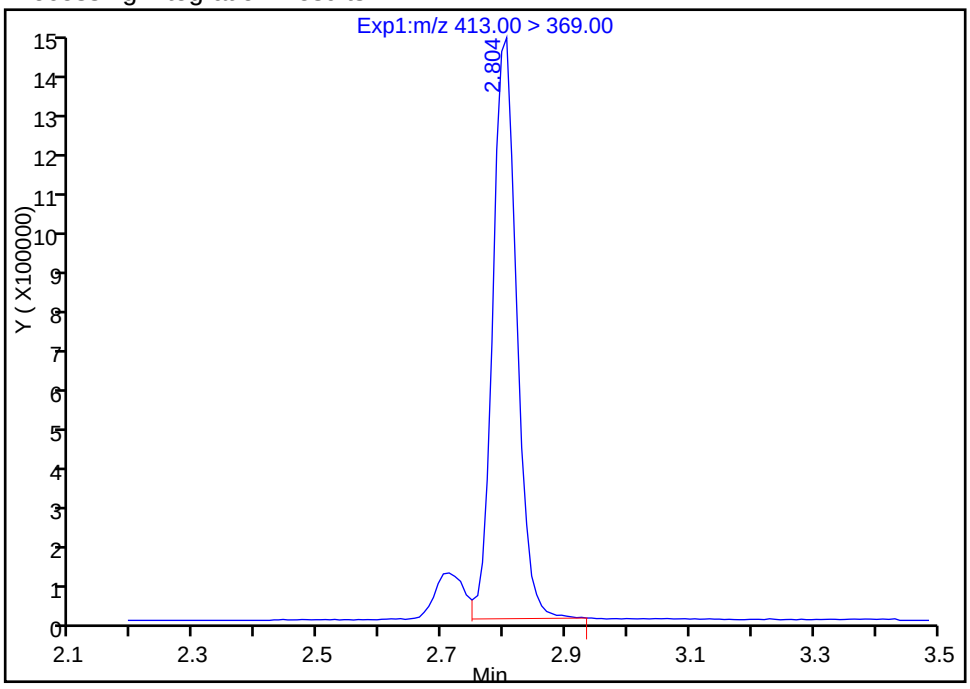
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_019.d				
Injection Date:	22-Dec-2016 18:05:20	Instrument ID:	A8_N		
Lims ID:	320-23998-A-15-A	Lab Sample ID:	320-23998-15		
Client ID:	DPT-16-11-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	37	Worklist Smp#:	19
Injection 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

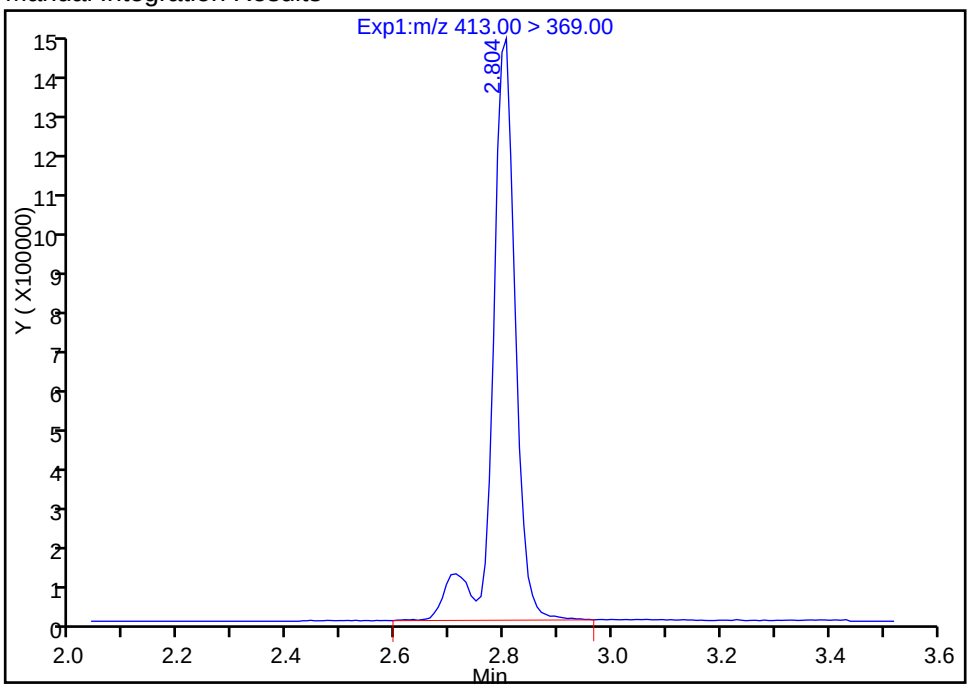
Processing Integration Results

RT: 2.80
Area: 3988637
Amount: 16.335900
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 4408150
Amount: 18.054062
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:04:58

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-11-GW-31-35-DUP Lab Sample ID: 320-23998-16

Matrix: Water Lab File ID: 21DEC2016A_046.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 14:00

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 254.4(mL) Date Analyzed: 12/21/2016 18:43

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.33	M	0.0025	0.0020	0.00074
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.78*	*E*	*0.0039*	0.0029	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.076		0.0025	0.0020	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	67		25-150
STL00991	13C4 PFOS	87		25-150
STL00994	18O2 PFHxS	65		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_046.d
Lims ID: 320-23998-A-16-A
Client ID: DPT-16-11-GW-31-35-DUP
Sample Type: Client
Inject. Date: 21-Dec-2016 18:43:25 ALS Bottle#: 24 Worklist Smp#: 36
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-16-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:07 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:33:47

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	1.868	1.868	0.0	1.000	11603380	38.6				
298.90 > 99.00	1.868	1.868	0.0	1.000	4987603		2.33(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.470	2.474	-0.004		10035724	30.7		64.9	1023650	
D 14 13C4 PFOA										
417.00 > 372.00	2.808	2.814	-0.006		7690411	33.4		66.8	461130	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.816	2.814	0.002	1.000	25607443	166.0			149384	M
413.00 > 169.00	2.816	2.814	0.002	1.000	17902174		1.43(0.90-1.10)		0.0	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.069	3.076	-0.007	1.000	85034793	395.3			280360	E
499.00 > 99.00	3.177	3.076	0.101	1.035	21513420		3.95(0.90-1.10)		597638	
D 17 13C4 PFOS										
503.00 > 80.00	3.177	3.182	-0.005		10338765	41.5		86.9	138601	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_046.d

Injection Date: 21-Dec-2016 18:43:25 Instrument ID: A8_N

Lims ID: 320-23998-A-16-A Lab Sample ID: 320-23998-16

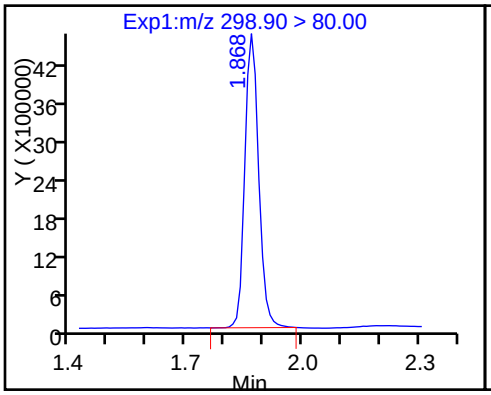
Client ID: DPT-16-11-GW-31-35-DUP

Operator ID: A8-PC\A8 ALS Bottle#: 24 Worklist Smp#: 36

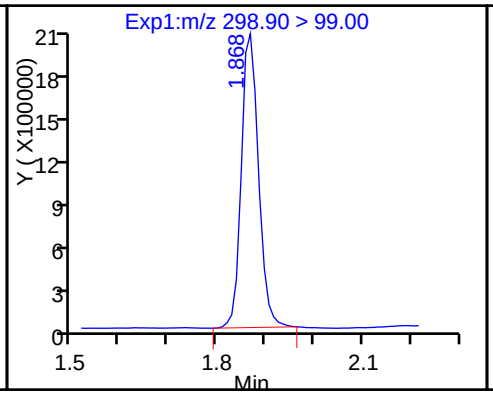
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

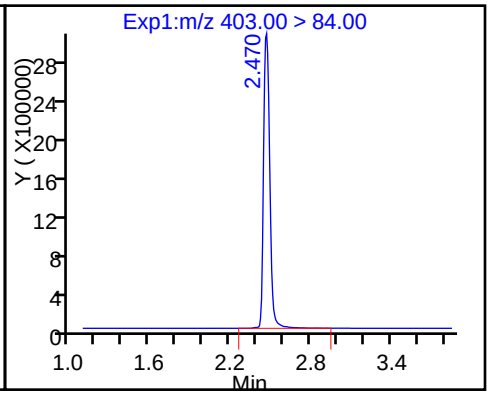
5 Perfluorobutanesulfonic acid



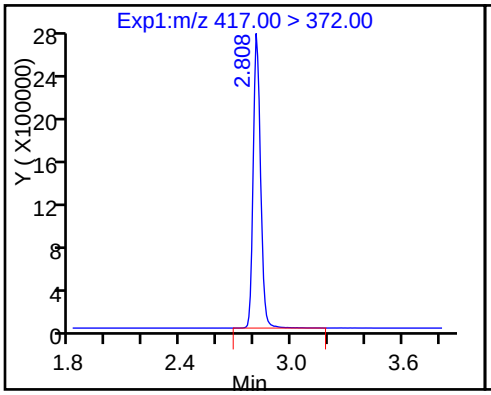
5 Perfluorobutanesulfonic acid



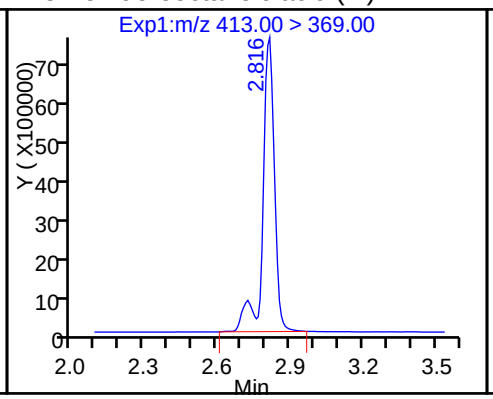
D 10 18O2 PFHxS



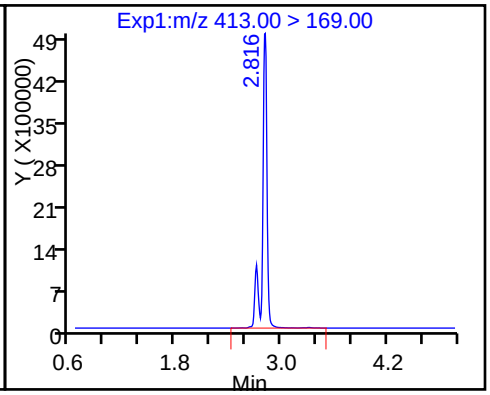
D 14 13C4 PFOA



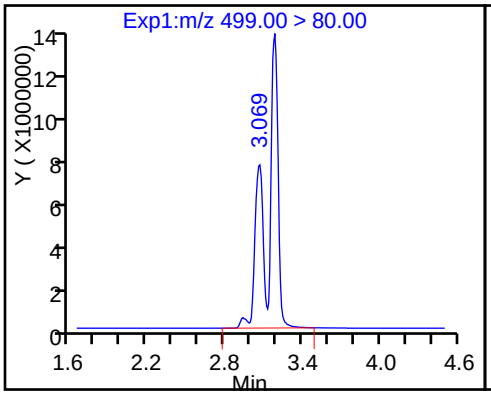
15 Perfluorooctanoic acid (M)



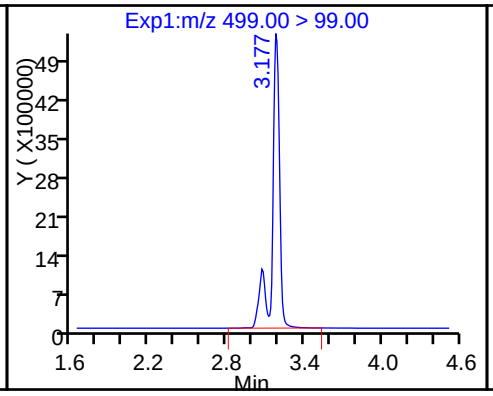
15 Perfluorooctanoic acid



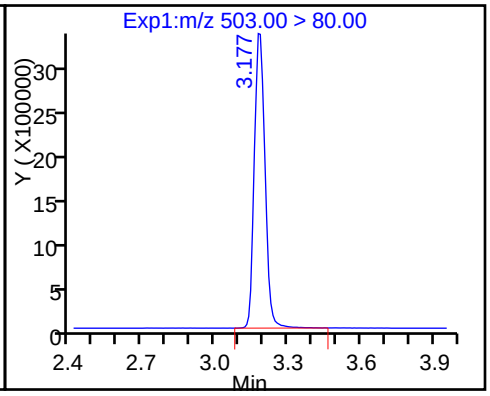
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

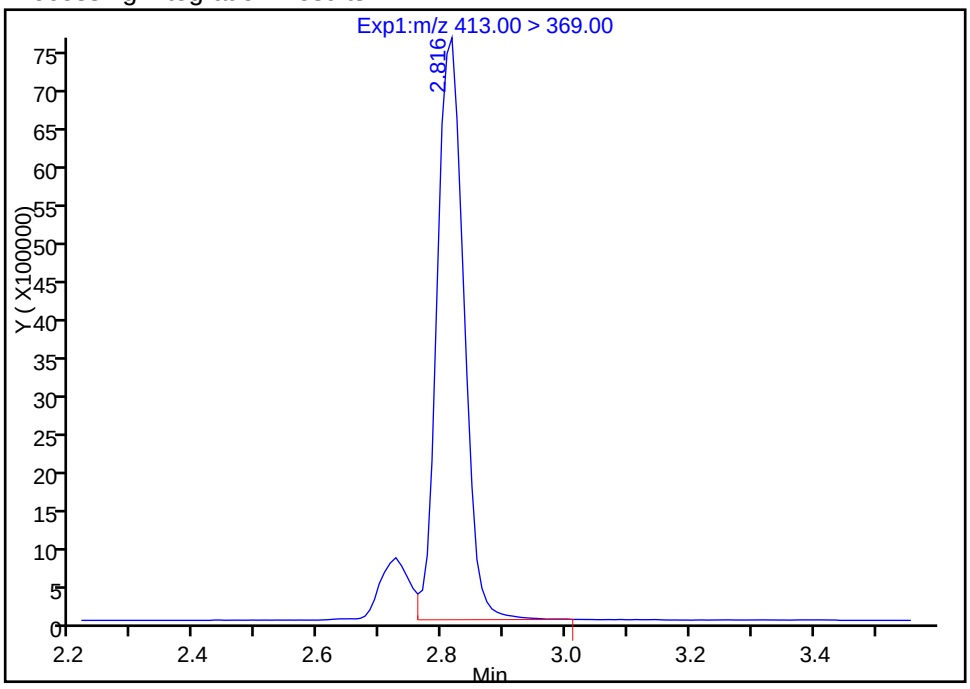
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_046.d				
Injection Date:	21-Dec-2016 18:43:25	Instrument ID:	A8_N		
Lims ID:	320-23998-A-16-A	Lab Sample ID:	320-23998-16		
Client ID:	DPT-16-11-GW-31-35-DUP				
Operator ID:	A8-PC\A8	ALS Bottle#:	24	Worklist Smp#:	36
Injection 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

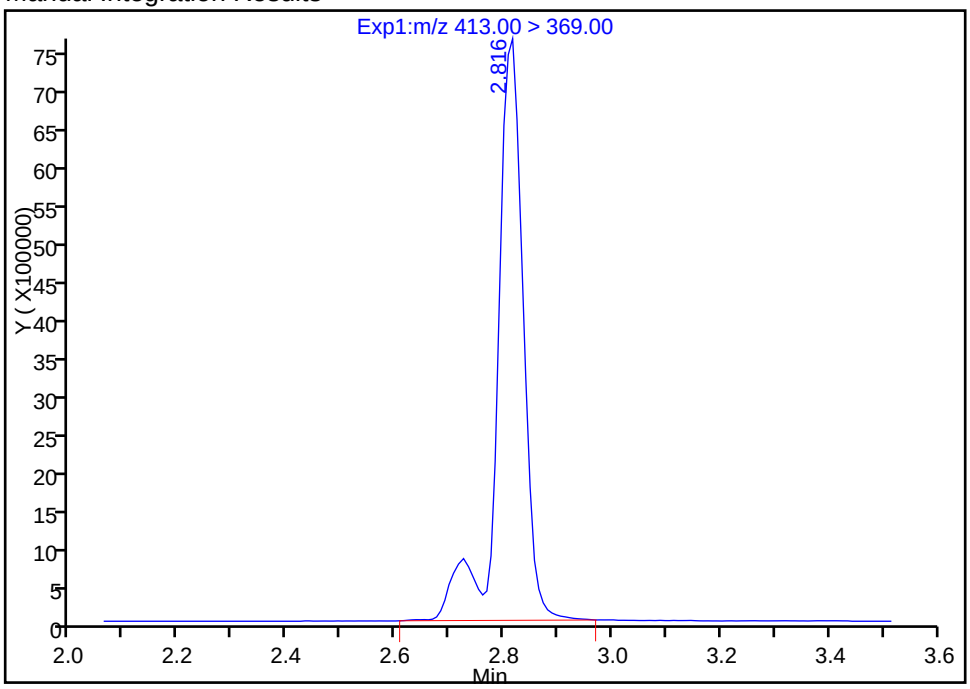
Processing Integration Results

RT: 2.82
Area: 23029881
Amount: 149.2620
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 25607443
Amount: 165.9677
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:33:47

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-11-GW-31-35-DUP DL Lab Sample ID: 320-23998-16 DL

Matrix: Water Lab File ID: 22DEC2016BB_020.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 14:00

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 254.4(mL) Date Analyzed: 12/22/2016 18:12

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.: 143644 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.35*	*D M*	*0.025*	0.020	*0.0074*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.88	D	0.039	0.029	0.013
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.052*	*D*	*0.025*	0.020	*0.0090*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	112		25-150
STL00991	13C4 PFOS	144		25-150
STL00994	18O2 PFHxS	139		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_020.d
Lims ID: 320-23998-A-16-A
Client ID: DPT-16-11-GW-31-35-DUP
Sample Type: Client
Inject. Date: 22-Dec-2016 18:12:51 ALS Bottle#: 38 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23998-a-16-a 10X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:05:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.871	-0.013	1.000	1695493	2.63				
298.90 > 99.00	1.858	1.871	-0.013	1.000	710929		2.38(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.462	2.472	-0.010		2149548	6.57		13.9	200827	
D 14 13C4 PFOA										
417.00 > 372.00	2.808	2.811	-0.003		1288353	5.59		11.2	116862	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.808	2.819	-0.011	1.000	4592096	17.8			63808	M
413.00 > 169.00	2.808	2.819	-0.011	1.000	2957603		1.55(0.90-1.10)		120667	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.153	3.073	0.080	1.000	15952309	44.8			210076	
499.00 > 99.00	3.169	3.073	0.096	1.005	3531788		4.52(0.90-1.10)		180723	
D 17 13C4 PFOS										
503.00 > 80.00	3.177	3.187	-0.010		1712904	6.88		14.4	108469	

QC Flag Legend

Review Flags
M - Manually Integrated

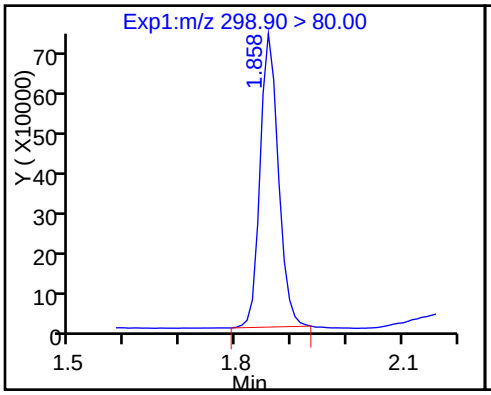
Report Date: 23-Dec-2016 09:21:17 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

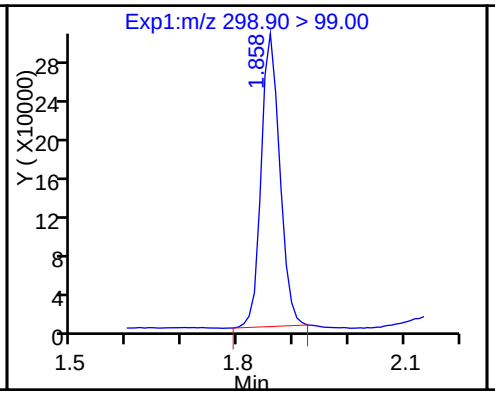
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_020.d

Injection Date:	22-Dec-2016 18:12:51	Instrument ID:	A8_N		
Lims ID:	320-23998-A-16-A	Lab Sample ID:	320-23998-16		
Client ID:	DPT-16-11-GW-31-35-DUP				
Operator ID:	A8-PC\A8	ALS Bottle#:	38	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

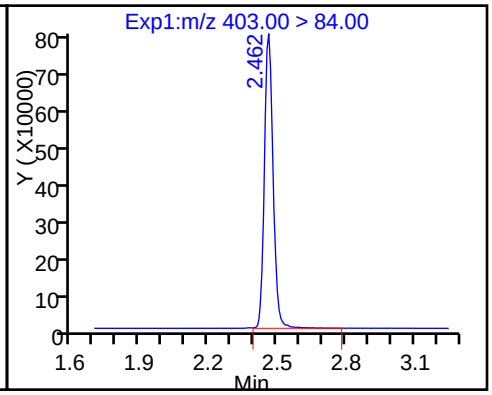
5 Perfluorobutanesulfonic acid



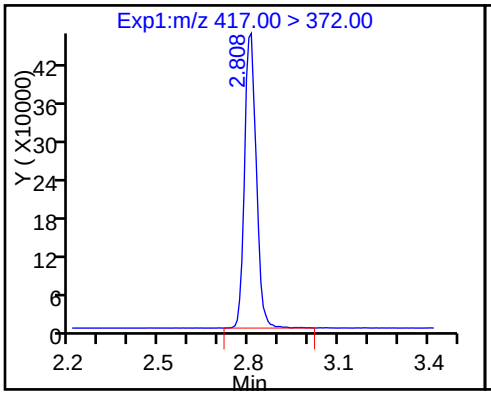
5 Perfluorobutanesulfonic acid



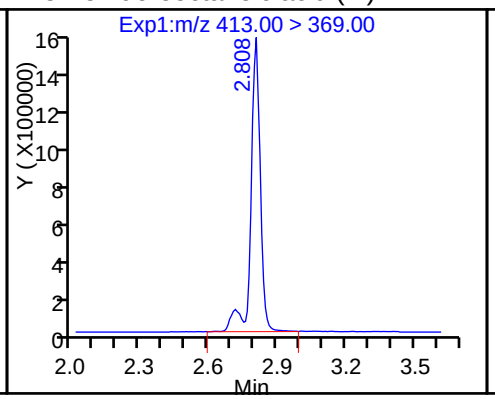
D 10 18O2 PFHxS



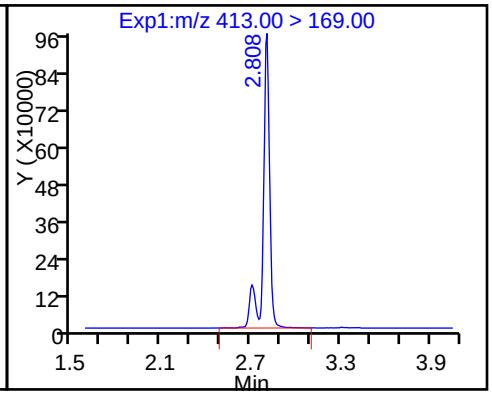
D 14 13C4 PFOA



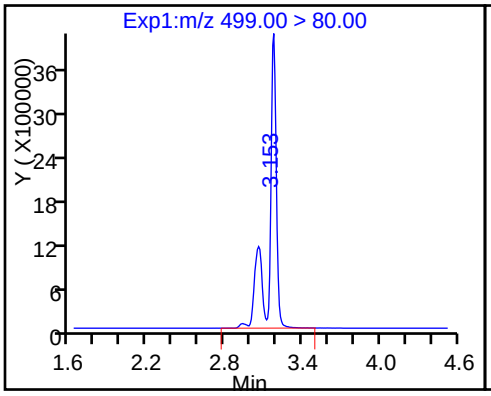
15 Perfluorooctanoic acid (M)



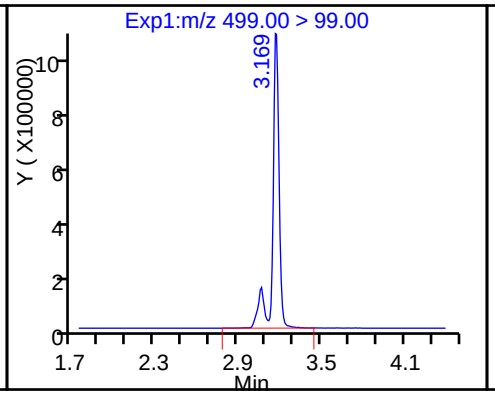
15 Perfluorooctanoic acid



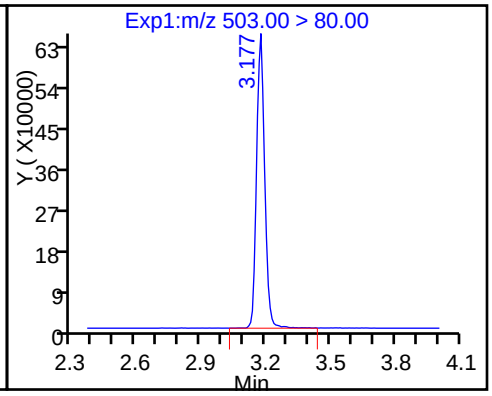
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

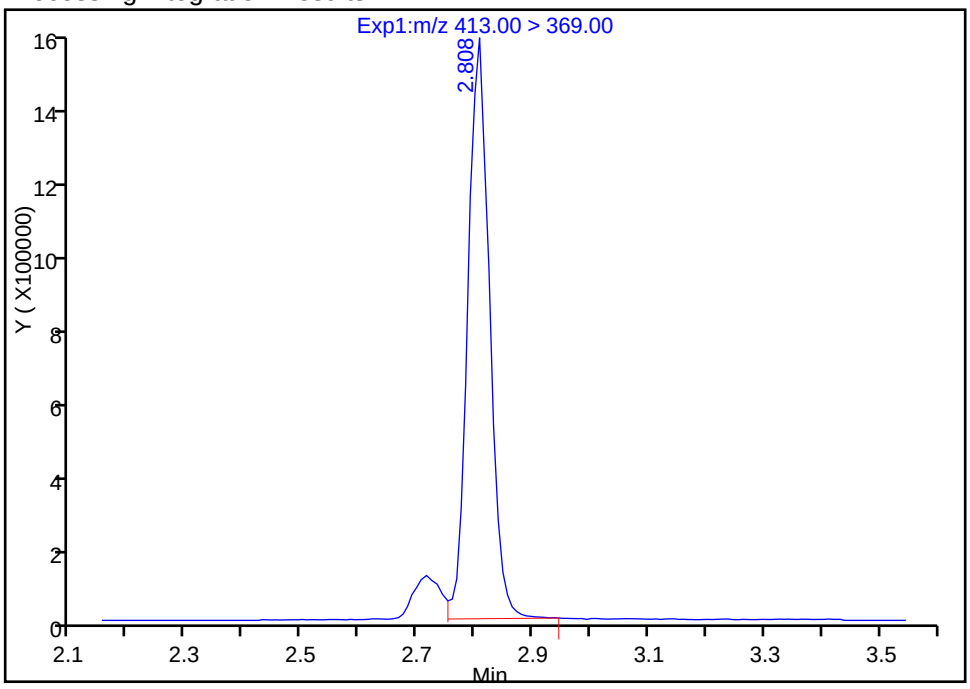
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_020.d				
Injection Date:	22-Dec-2016 18:12:51	Instrument ID:	A8_N		
Lims ID:	320-23998-A-16-A	Lab Sample ID:	320-23998-16		
Client ID:	DPT-16-11-GW-31-35-DUP				
Operator ID:	A8-PC\A8	ALS Bottle#:	38	Worklist Smp#:	20
Injection 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

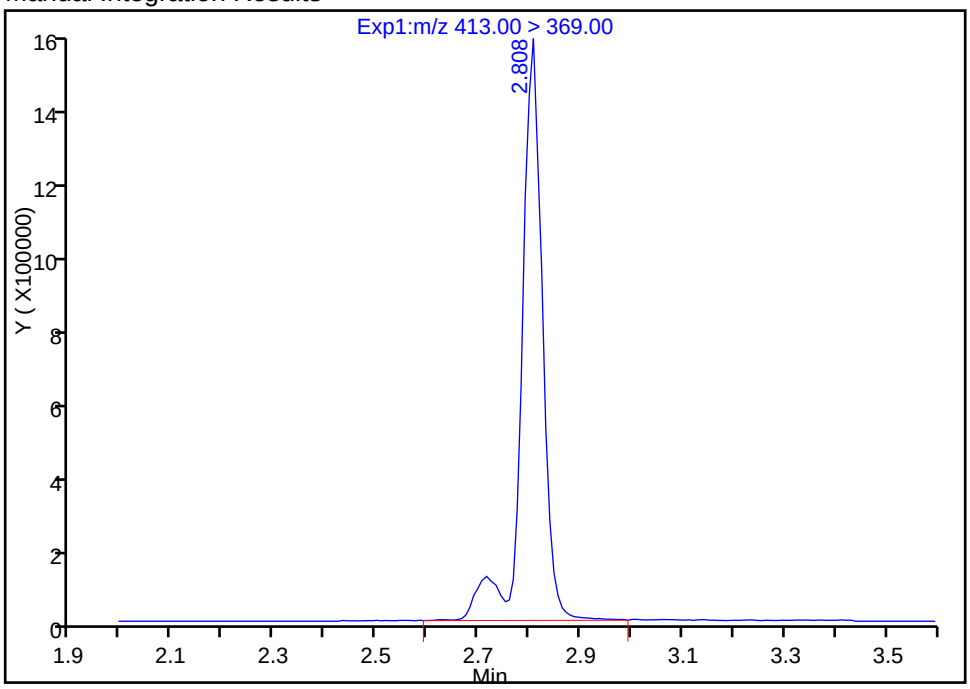
Processing Integration Results

RT: 2.81
Area: 4159887
Amount: 16.093617
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 4592096
Amount: 17.765731
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:05:57

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-11-GW-18-22 | Lab Sample ID: 320-23998-17

Matrix: Water | Lab File ID: 21DEC2016A_047.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 14:10

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 262.6(mL) | Date Analyzed: 12/21/2016 18:50

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.: 143502 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.4*	*E M*	*0.0024*	0.0019	*0.00071*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*4.0*	*E*	*0.0038*	0.0029	*0.0012*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.18		0.0024	0.0019	0.00087

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	48		25-150
STL00991	13C4 PFOS	42		25-150
STL00994	18O2 PFHxS	44		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_047.d
Lims ID: 320-23998-A-17-A
Client ID: DPT-16-11-GW-18-22
Sample Type: Client
Inject. Date: 21-Dec-2016 18:50:55 ALS Bottle#: 25 Worklist Smp#: 37
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-17-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:07 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:34:52

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	1.868	1.868	0.0	1.000	19072949	93.7				
298.90 > 99.00	1.868	1.868	0.0	1.000	8561592		2.23(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.470	2.474	-0.004		6797563	20.8		44.0	286466	
D 14 13C4 PFOA										
417.00 > 372.00	2.808	2.814	-0.006		5517126	23.9		47.9	215037	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.808	2.814	-0.006	1.000	83738249	756.5			224161	EM
413.00 > 169.00	2.808	2.814	-0.006	1.000	72009340		1.16(0.90-1.10)		52939	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.050	3.076	-0.026	1.000	218055637	2099.5			172284	E
499.00 > 99.00	3.177	3.076	0.101	1.042	64909493		3.36(0.90-1.10)		507257	
D 17 13C4 PFOS										
503.00 > 80.00	3.177	3.182	-0.005		4992176	20.1		42.0	75447	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

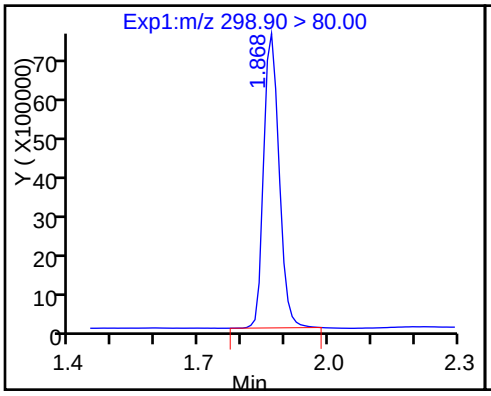
Report Date: 22-Dec-2016 10:36:19 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

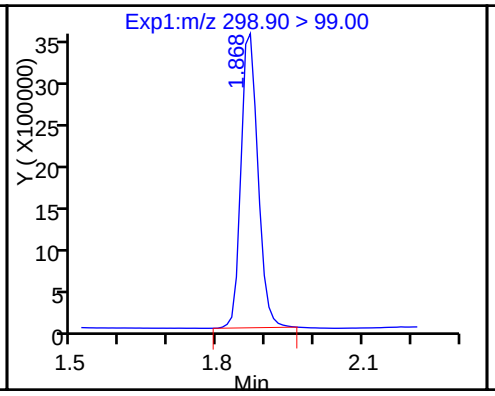
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_047.d

Injection Date:	21-Dec-2016 18:50:55	Instrument ID:	A8_N		
Lims ID:	320-23998-A-17-A	Lab Sample ID:	320-23998-17		
Client ID:	DPT-16-11-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	25	Worklist Smp#:	37
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

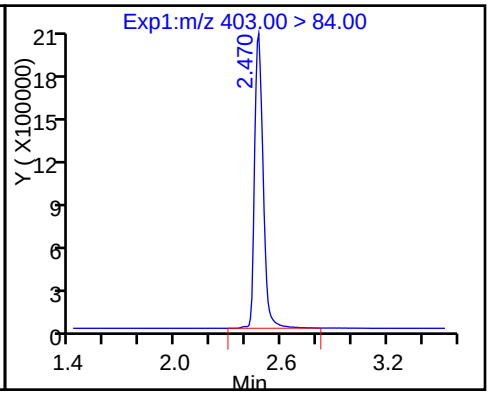
5 Perfluorobutanesulfonic acid



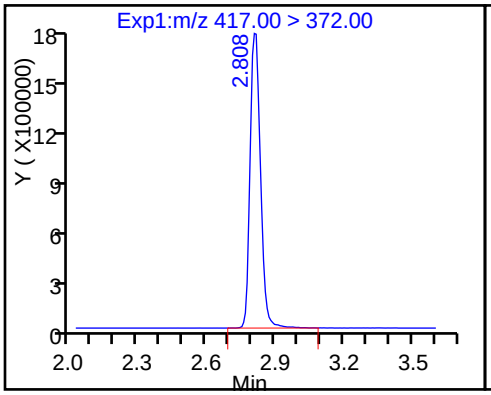
5 Perfluorobutanesulfonic acid



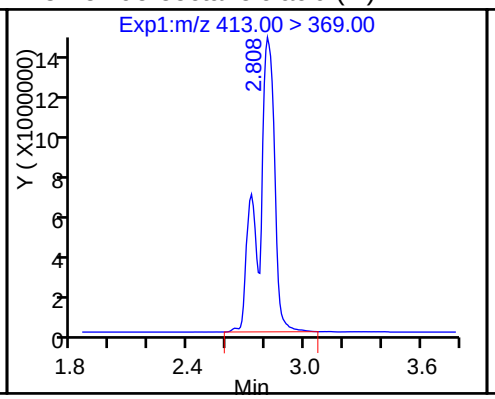
D 10 18O2 PFHxS



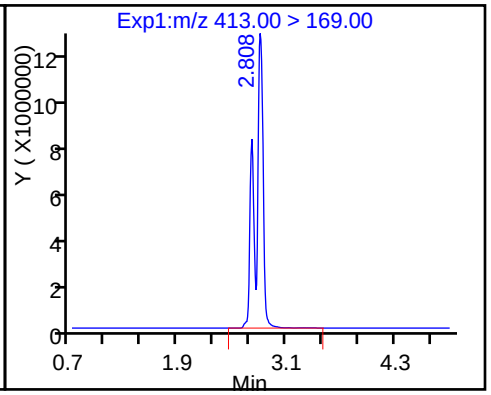
D 14 13C4 PFOA



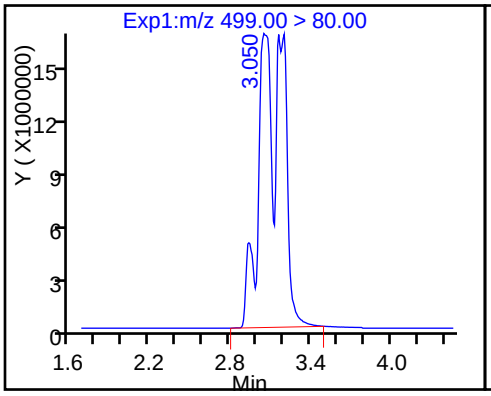
15 Perfluorooctanoic acid (M)



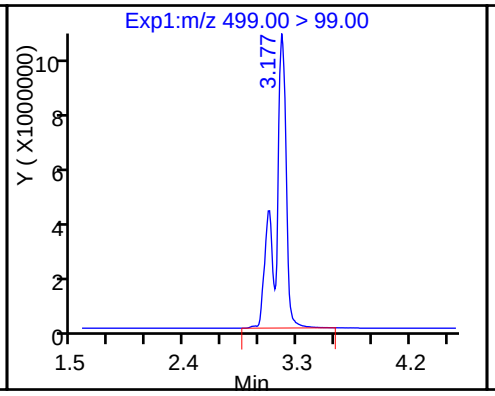
15 Perfluorooctanoic acid



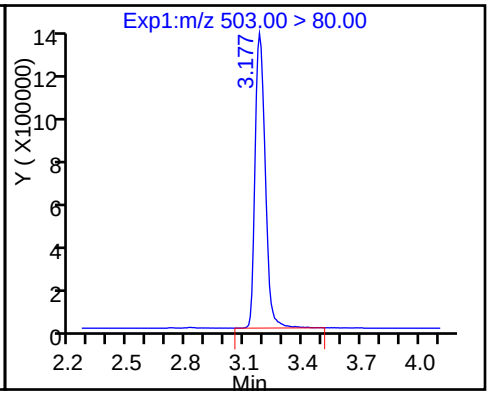
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

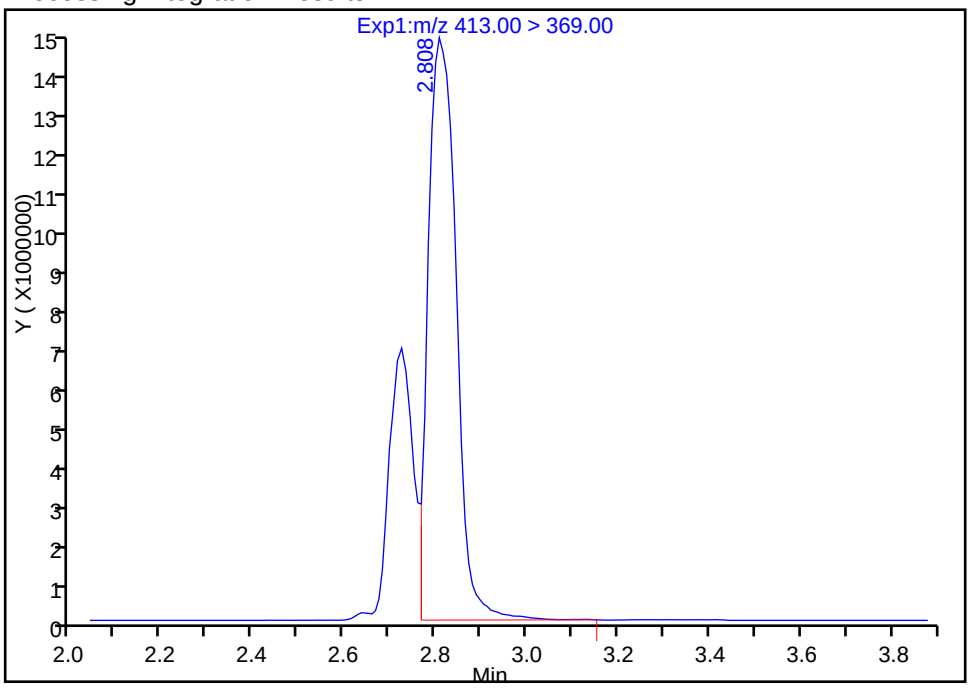
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_047.d				
Injection Date:	21-Dec-2016 18:50:55	Instrument ID:	A8_N		
Lims ID:	320-23998-A-17-A	Lab Sample ID:	320-23998-17		
Client ID:	DPT-16-11-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	25	Worklist Smp#:	37
Injection Vol:	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

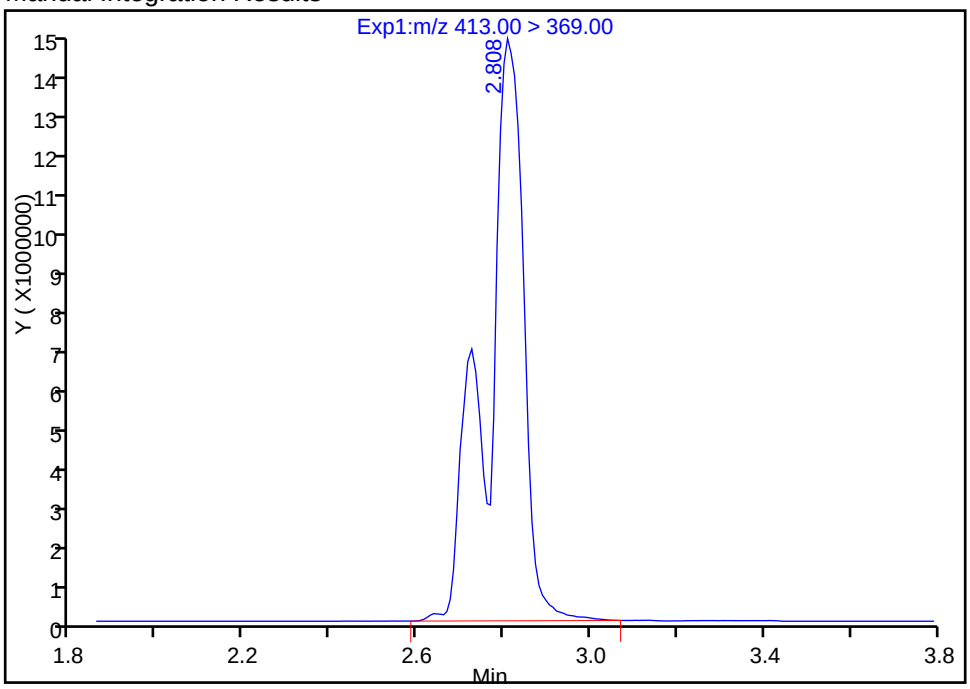
Processing Integration Results

RT: 2.81
Area: 59631181
Amount: 538.7255
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 83738249
Amount: 756.5157
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:34:52

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-11-GW-18-22 DL | Lab Sample ID: 320-23998-17 DL

Matrix: Water | Lab File ID: 22DEC2016BB_012.d

Analysis Method: 537 (Modified) | Date Collected: 12/01/2016 14:10

Extraction Method: 3535 | Date Extracted: 12/06/2016 11:39

Sample wt/vol: 262.6(mL) | Date Analyzed: 12/22/2016 17:12

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.: 143644 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	D M	0.24	0.19	0.071
1763-23-1	Perfluorooctane Sulfonate (PFOS)	6.0	D	0.38	0.29	0.12
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.19*	*U*	*0.24*	0.19	*0.087*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	147		25-150
STL00991	13C4 PFOS	150		25-150
STL00994	18O2 PFHxS	159	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_012.d
Lims ID: 320-23998-A-17-A
Client ID: DPT-16-11-GW-18-22
Sample Type: Client
Inject. Date: 22-Dec-2016 17:12:45 ALS Bottle#: 30 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 100.0000
Sample Info: 320-23998-a-17-a 100X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:00:00

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	1.865	1.871	-0.006	1.000	240888	0.3269				
298.90 > 99.00	1.865	1.871	-0.006	1.000	98305		2.45(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.475	2.472	0.003		245986	0.7523		1.6	49254	
D 14 13C4 PFOA										
417.00 > 372.00	2.830	2.811	0.019		169549	0.7360		1.5	32052	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.830	2.819	0.011	1.000	3657148	10.8			38790	M
413.00 > 169.00	2.731	2.819	-0.088	0.965	2459207		1.49(0.90-1.10)		24121	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.200	3.073	0.127	1.000	11633986	31.3			366611	
499.00 > 99.00	3.200	3.073	0.127	1.000	2317985		5.02(0.90-1.10)		145221	
D 17 13C4 PFOS										
503.00 > 80.00	3.200	3.187	0.013		178539	0.7175		1.5	13930	

QC Flag Legend

Review Flags
M - Manually Integrated

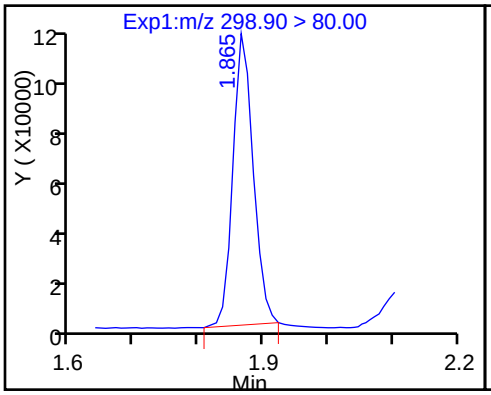
Report Date: 23-Dec-2016 09:21:07 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

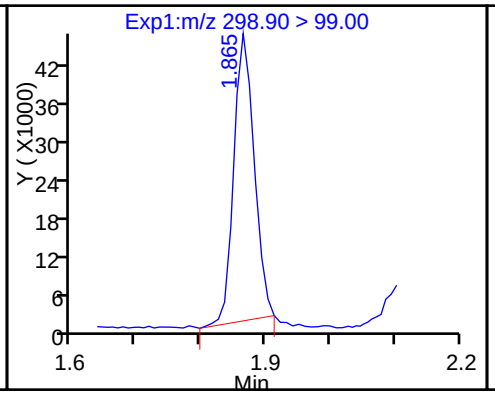
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_012.d

Injection Date:	22-Dec-2016 17:12:45	Instrument ID:	A8_N		
Lims ID:	320-23998-A-17-A	Lab Sample ID:	320-23998-17		
Client ID:	DPT-16-11-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	30	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	100.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

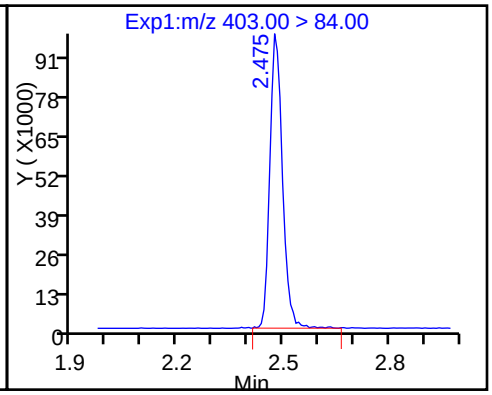
5 Perfluorobutanesulfonic acid



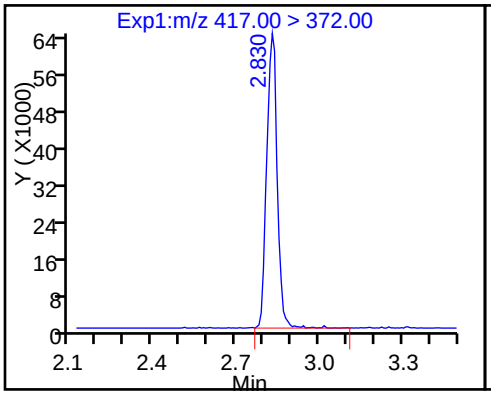
5 Perfluorobutanesulfonic acid



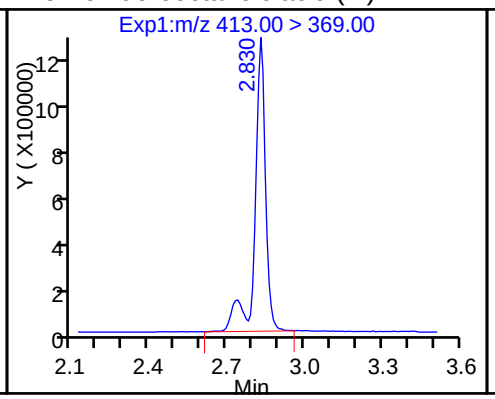
D 10 18O2 PFHxS



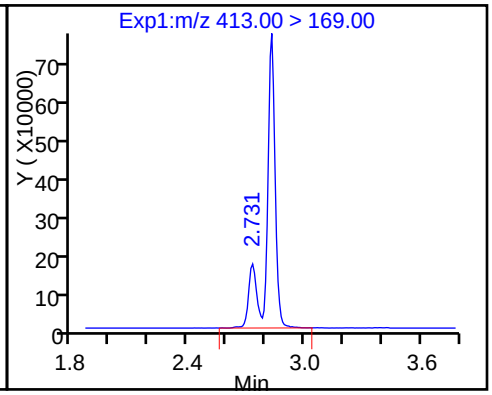
D 14 13C4 PFOA



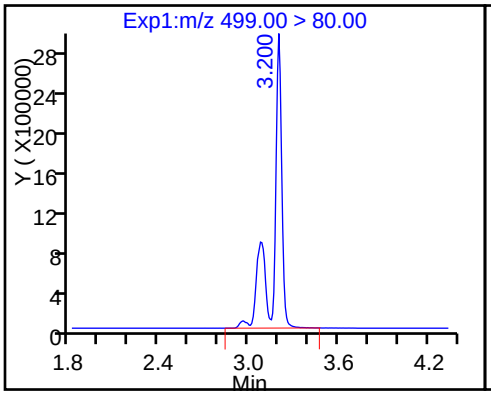
15 Perfluorooctanoic acid (M)



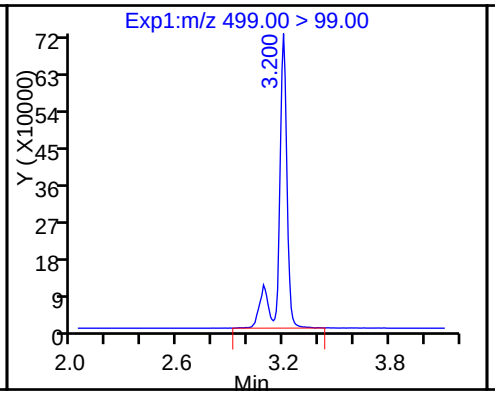
15 Perfluorooctanoic acid



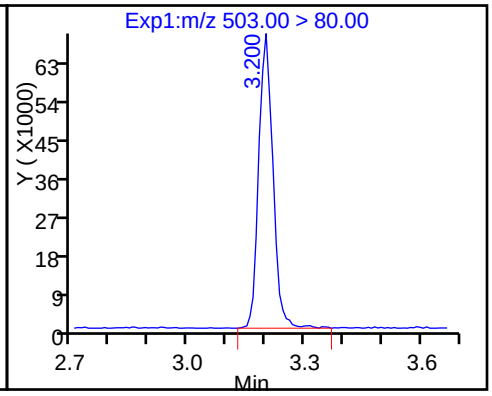
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

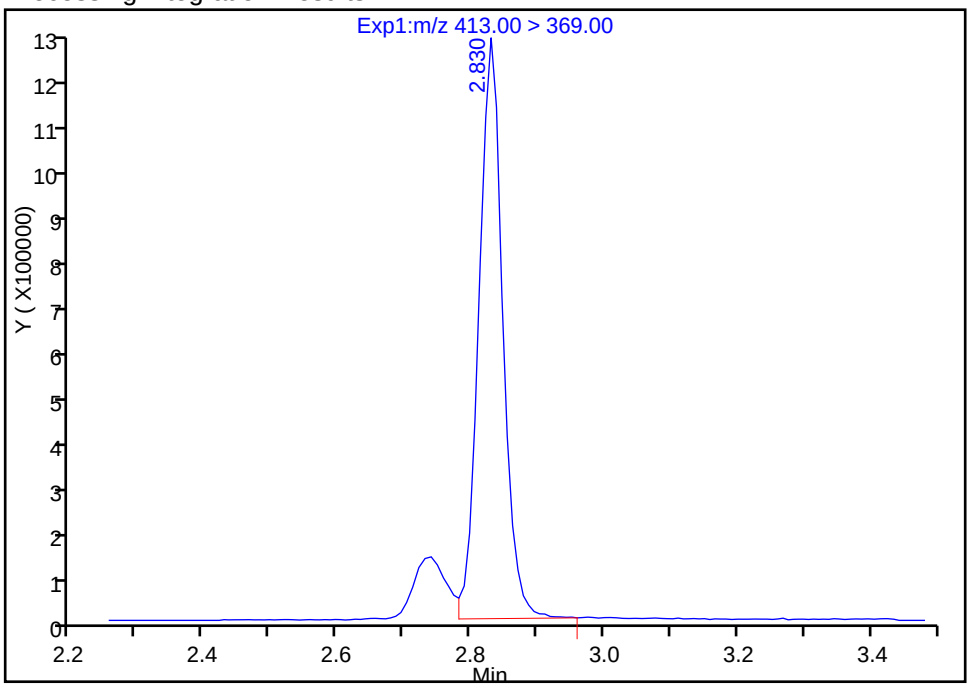
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_012.d				
Injection Date:	22-Dec-2016 17:12:45	Instrument ID:	A8_N		
Lims ID:	320-23998-A-17-A	Lab Sample ID:	320-23998-17		
Client ID:	DPT-16-11-GW-18-22				
Operator ID:	A8-PC\A8	ALS Bottle#:	30	Worklist Smp#:	12
Injection 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

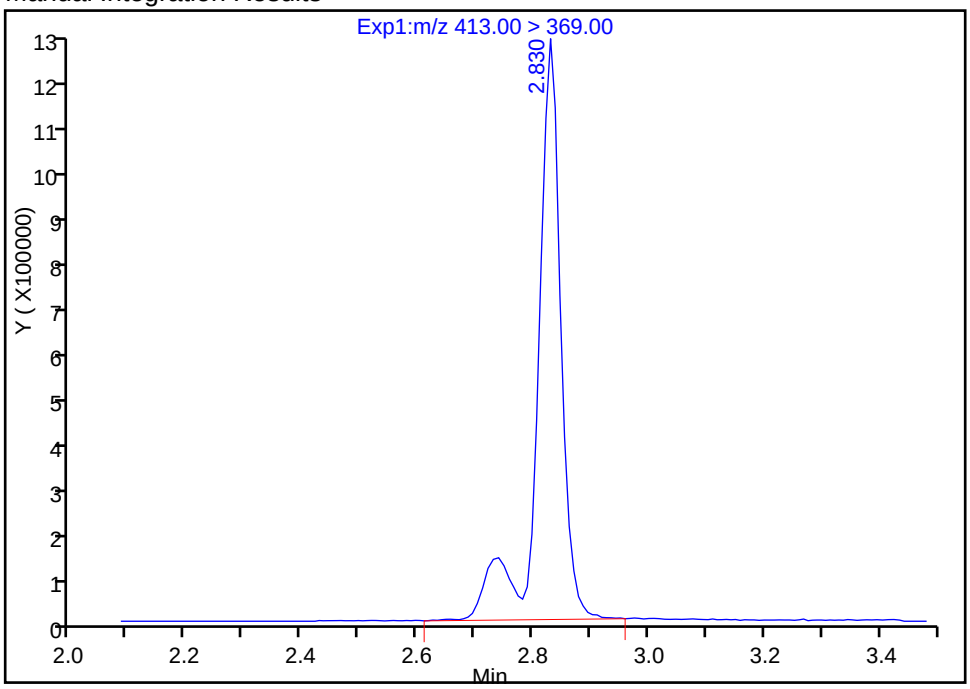
Processing Integration Results

RT: 2.83
Area: 3184561
Amount: 9.361843
Amount Units: ng/ml



Manual Integration Results

RT: 2.83
Area: 3657148
Amount: 10.751135
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:00:00

Audit Action: Manually Integrated Audit Reason: Isomers

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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.: 320-23998-1 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

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1 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

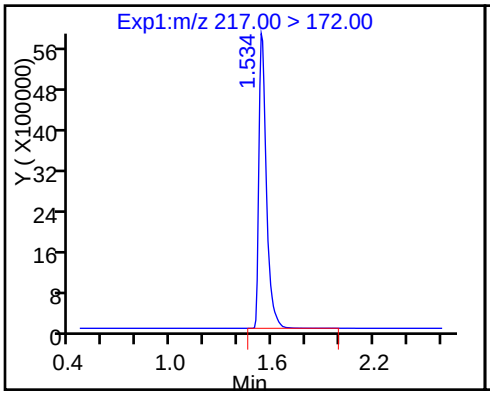
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

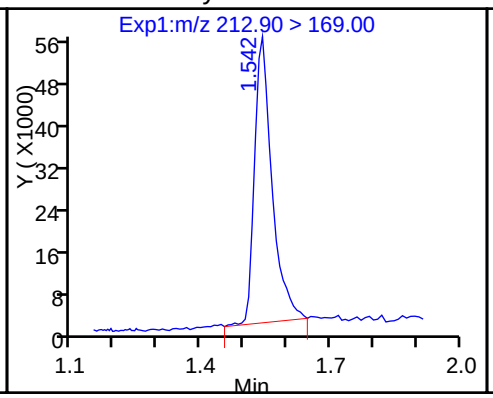
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

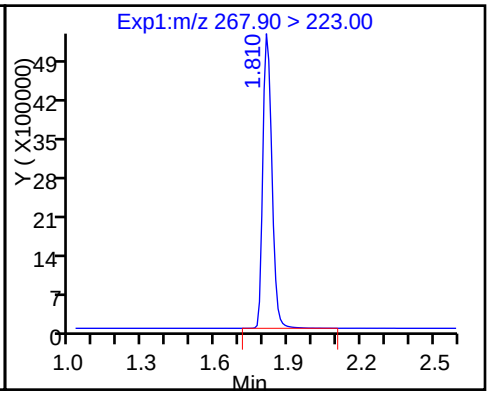
D 2 13C4 PFBA



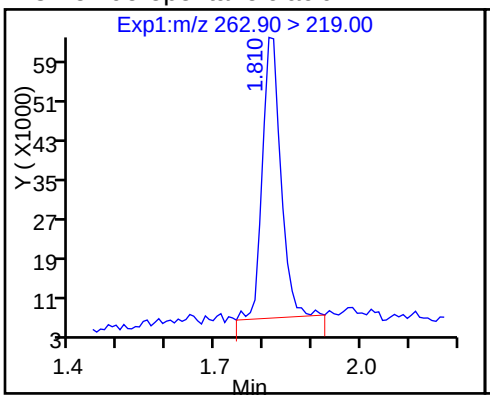
1 Perfluorobutyric acid



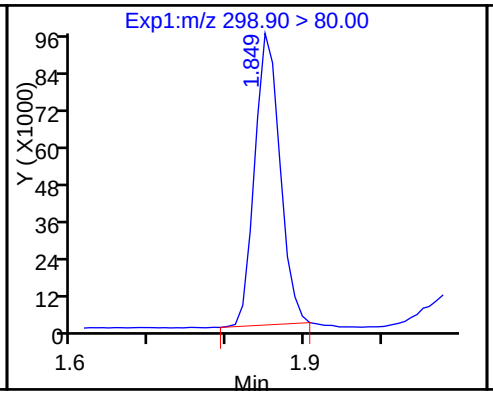
D 4 13C5-PFPeA



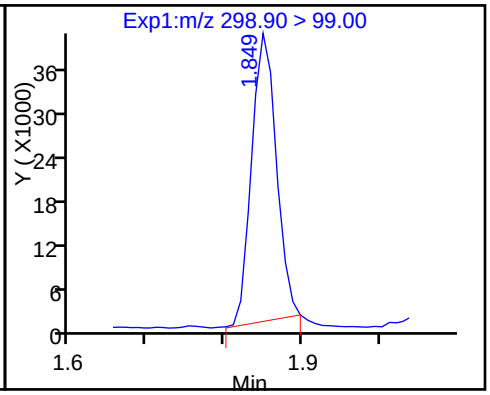
3 Perfluoropentanoic acid



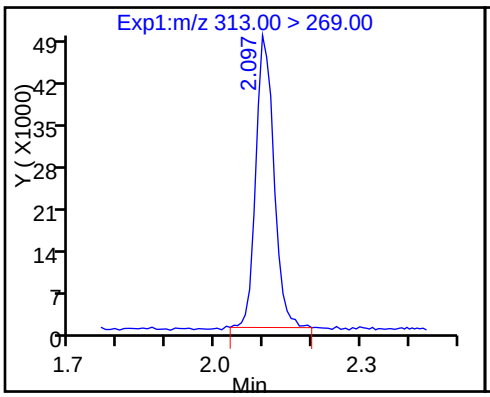
5 Perfluorobutanesulfonic acid



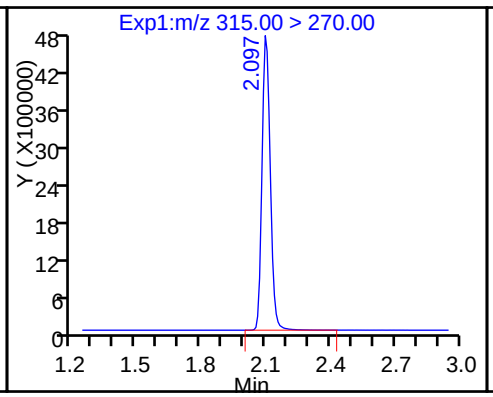
5 Perfluorobutanesulfonic acid



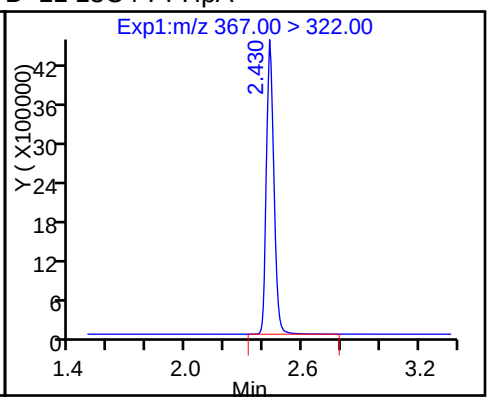
7 Perfluorohexanoic acid



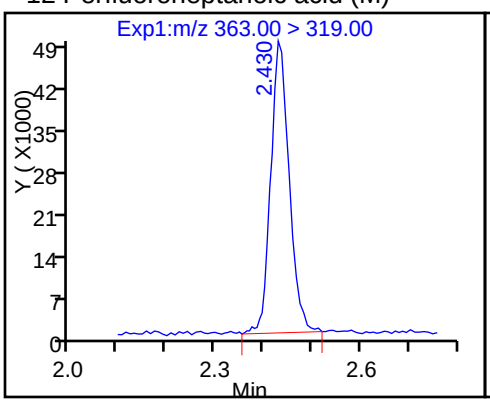
D 6 13C2 PFHxA



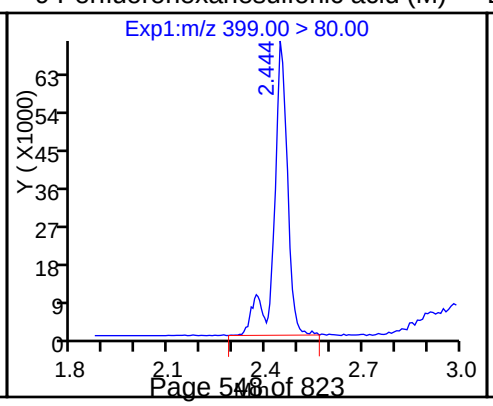
D 11 13C4-PFHpA



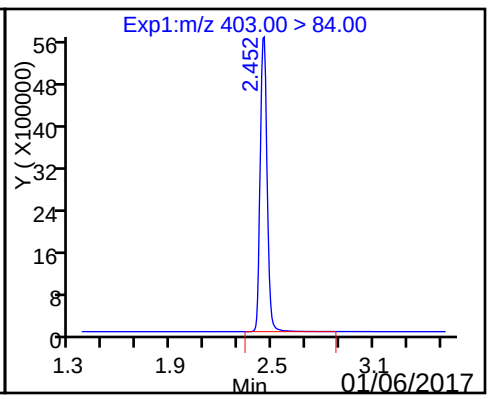
12 Perfluoroheptanoic acid (M)



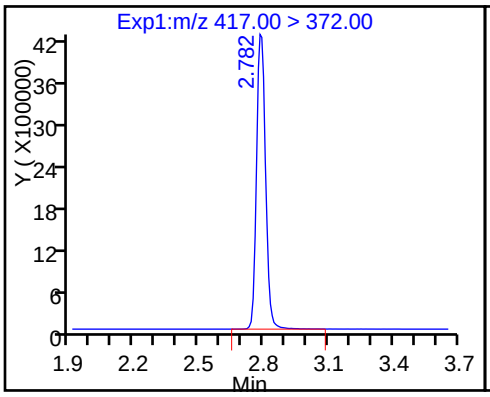
9 Perfluorohexanesulfonic acid (M)



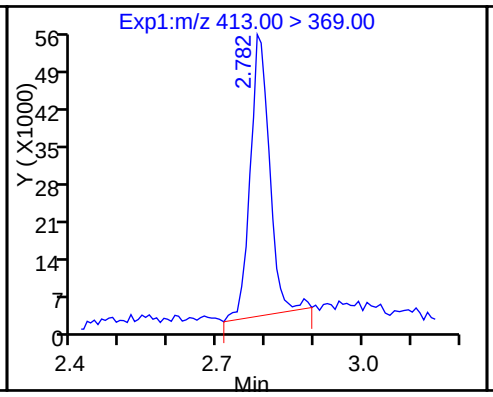
D 10 18O2 PFHxS



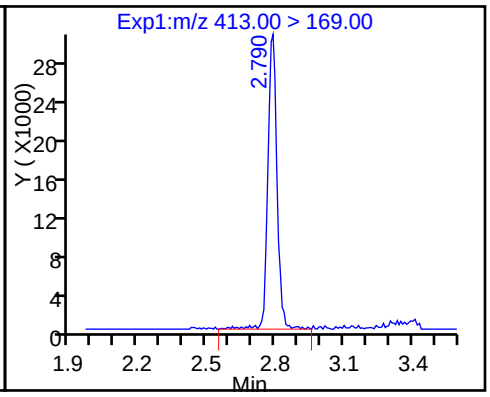
D 14 13C4 PFOA



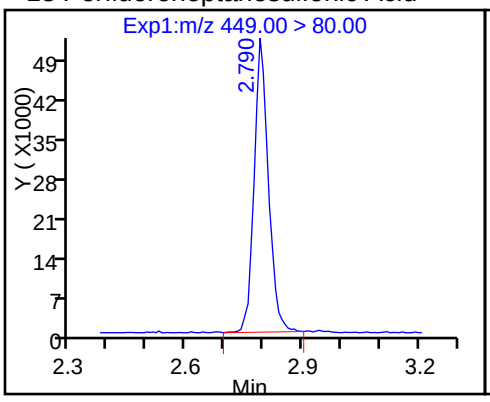
15 Perfluorooctanoic acid



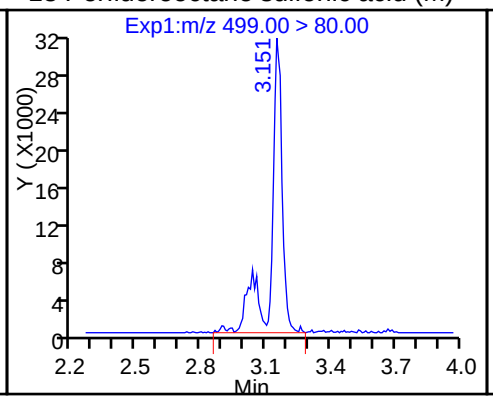
15 Perfluorooctanoic acid



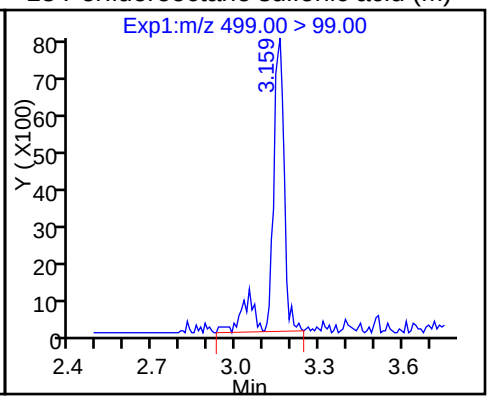
13 Perfluoroheptanesulfonic Acid



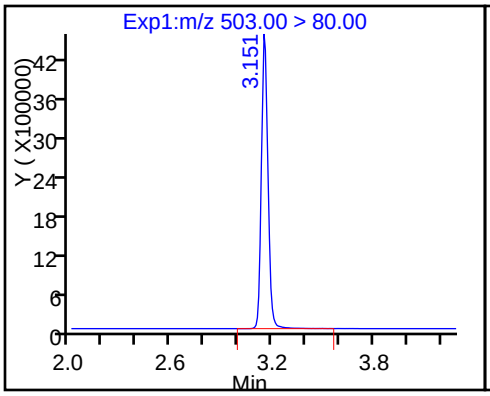
18 Perfluorooctane sulfonic acid (M)



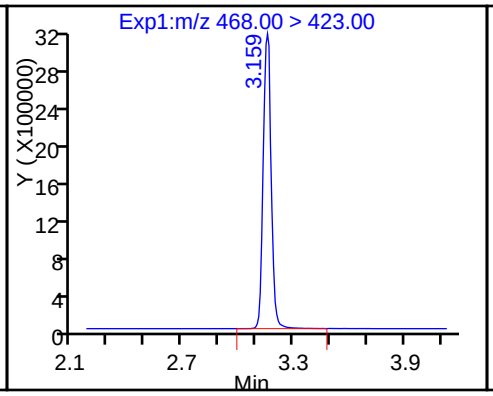
18 Perfluorooctane sulfonic acid (M)



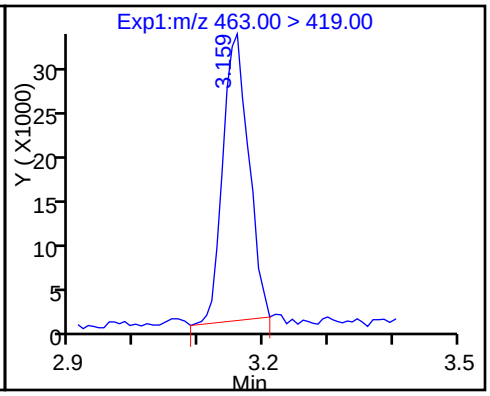
D 17 13C4 PFOS



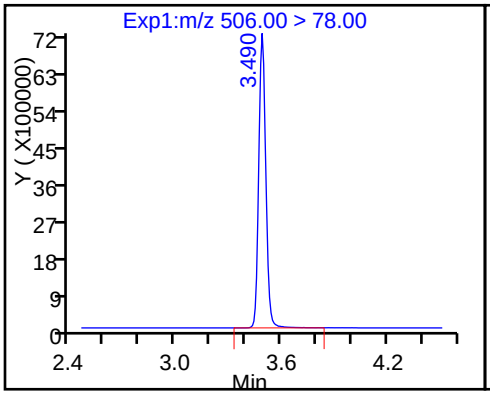
D 19 13C5 PFNA



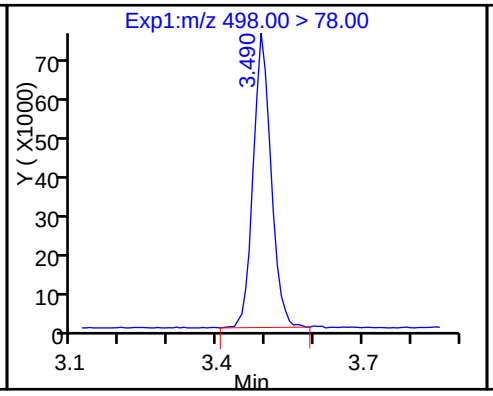
20 Perfluorononanoic acid



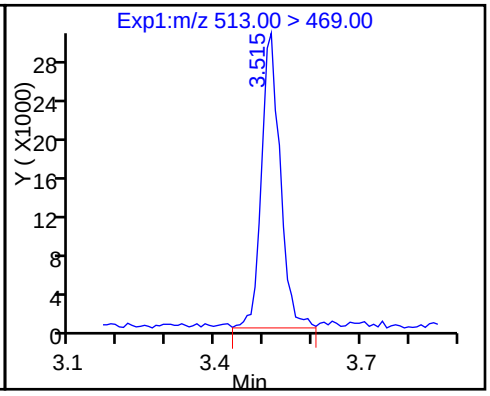
D 21 13C8 FOSA



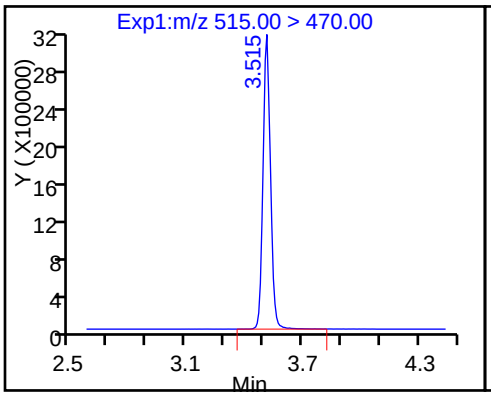
22 Perfluorooctane Sulfonamide



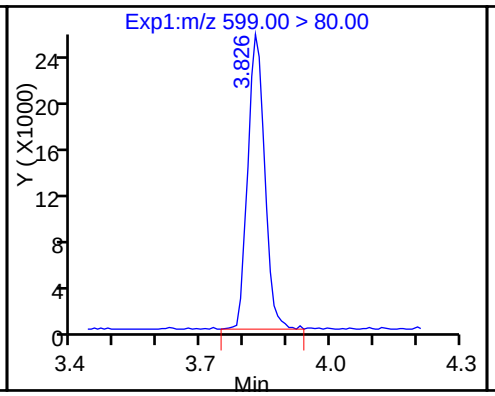
24 Perfluorodecanoic acid



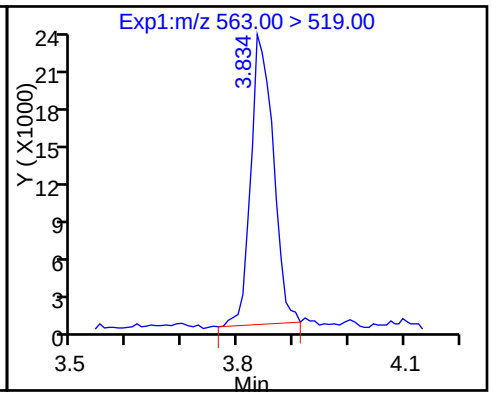
D 23 13C2 PFDA



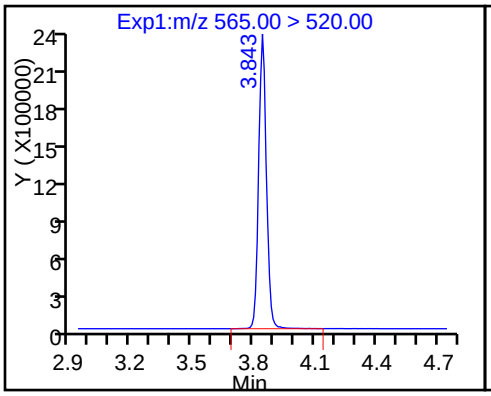
26 Perfluorodecane Sulfonic acid



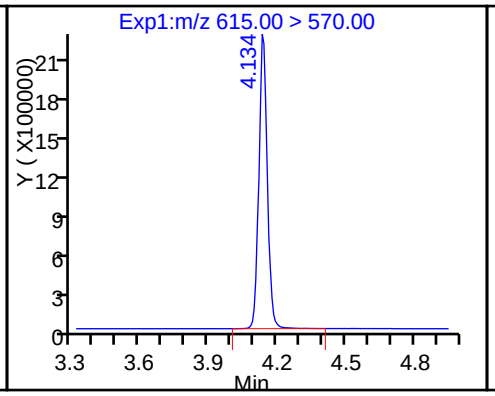
28 Perfluoroundecanoic acid



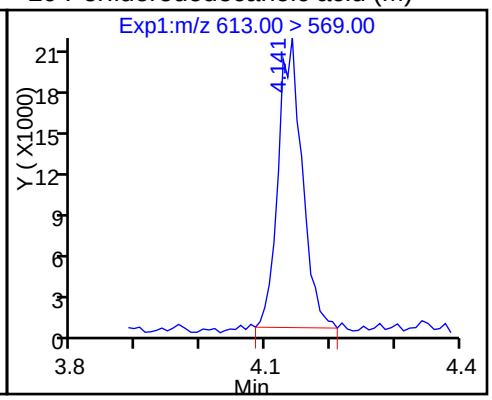
D 27 13C2 PFUnA



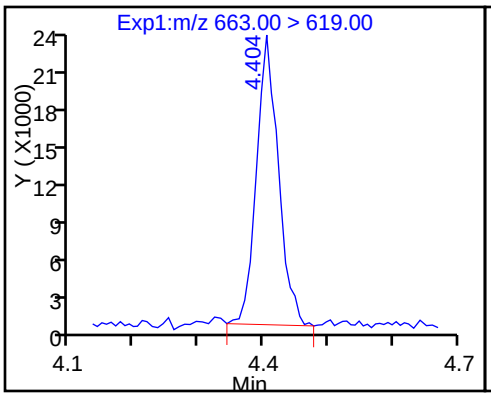
D 30 13C2 PFDoA



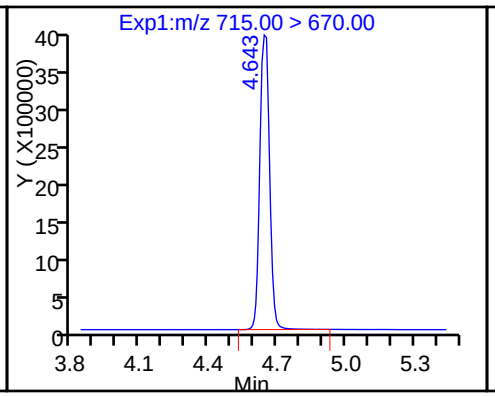
29 Perfluorododecanoic acid (M)



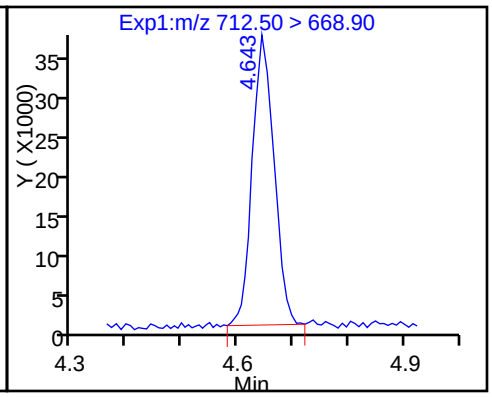
31 Perfluorotridecanoic acid



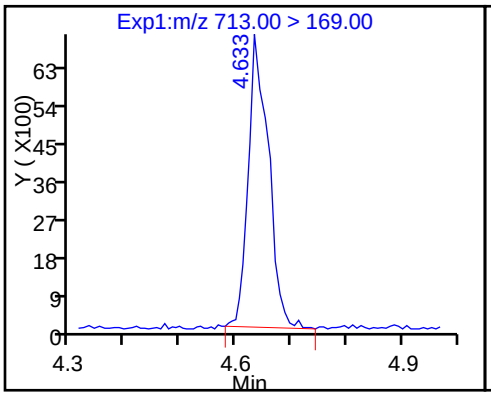
D 32 13C2-PFTeDA



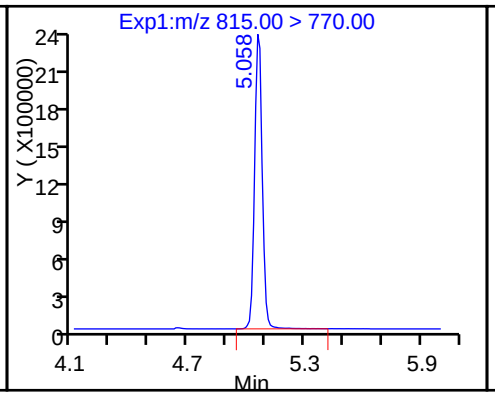
33 Perfluorotetradecanoic acid



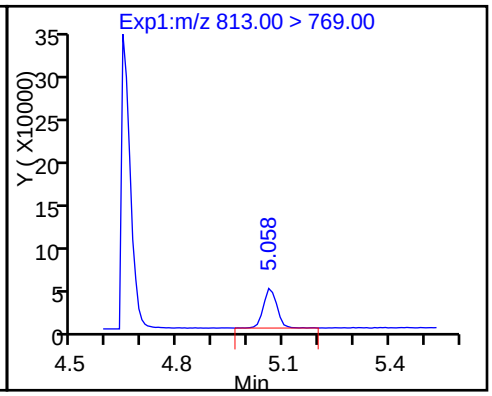
33 Perfluorotetradecanoic acid



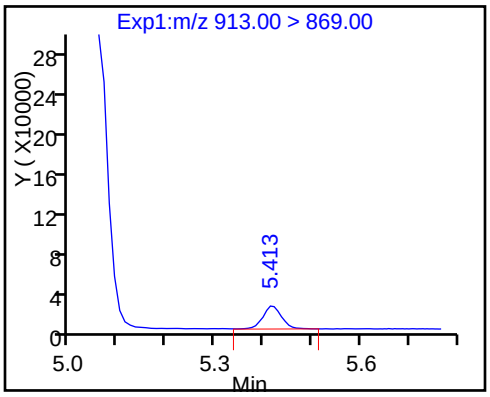
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

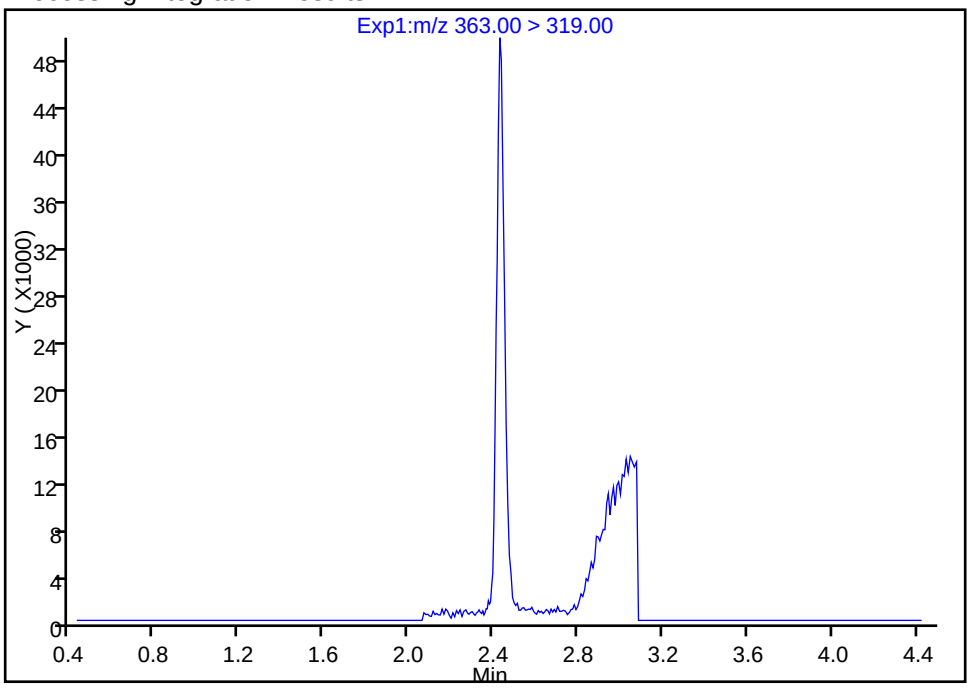
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

12 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

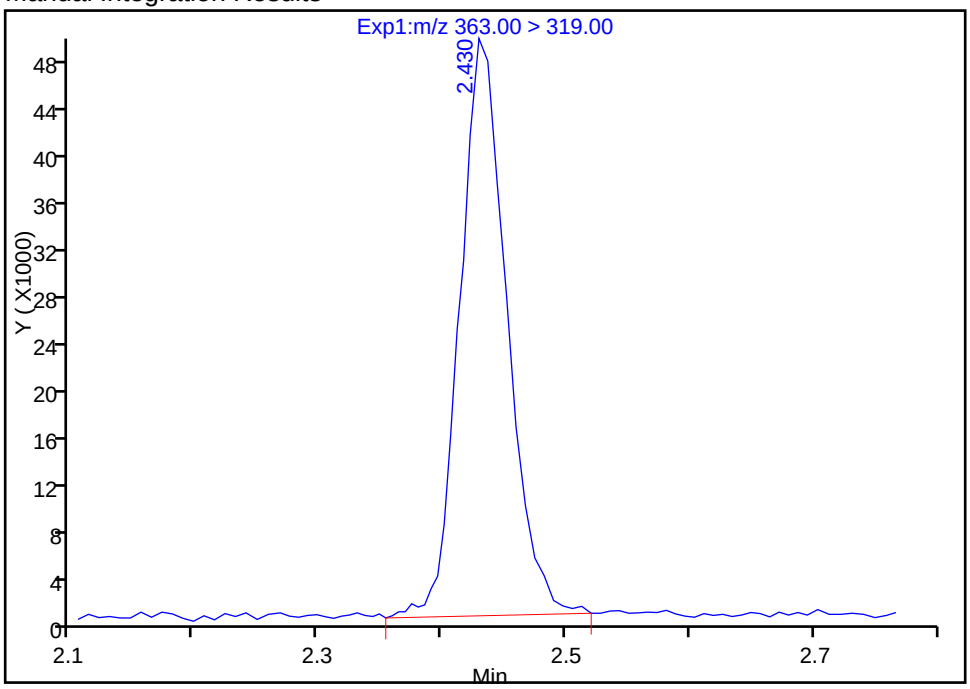
Not Detected
Expected RT: 2.43

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

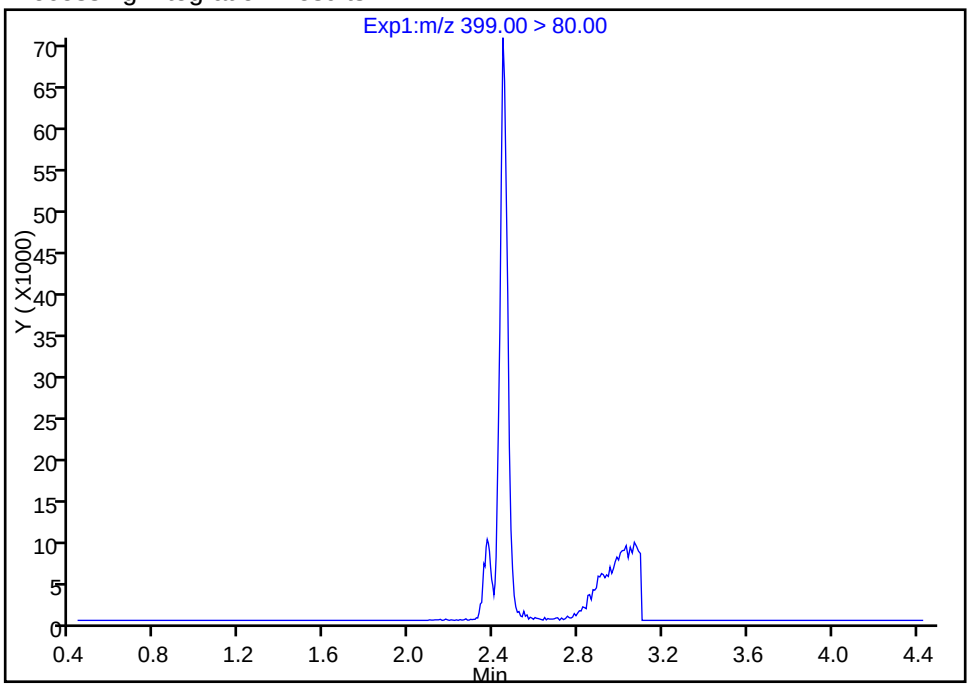
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

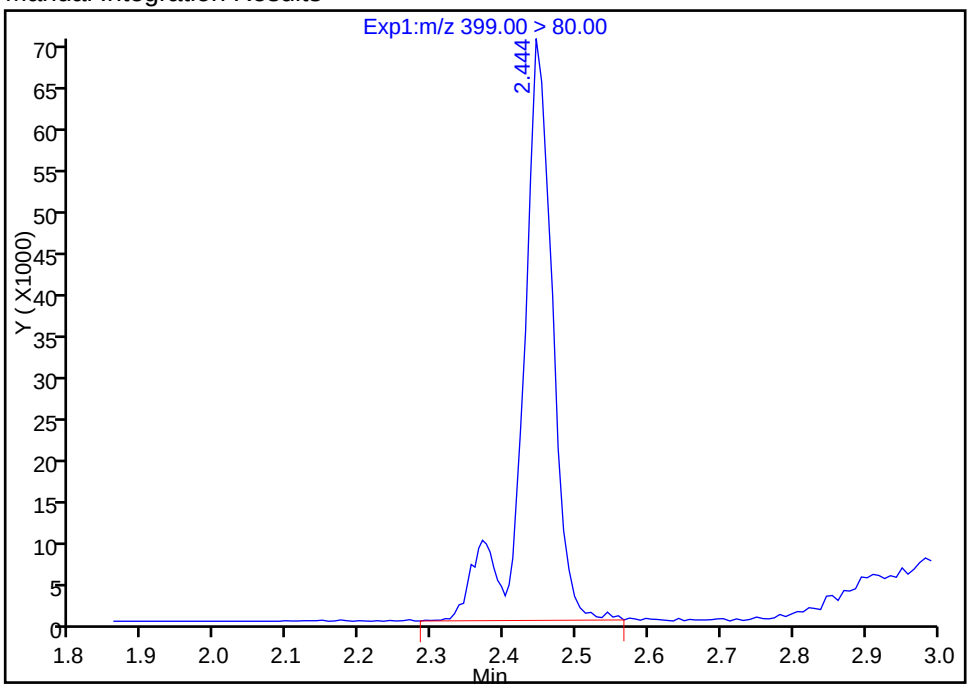
Not Detected
Expected RT: 2.43

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

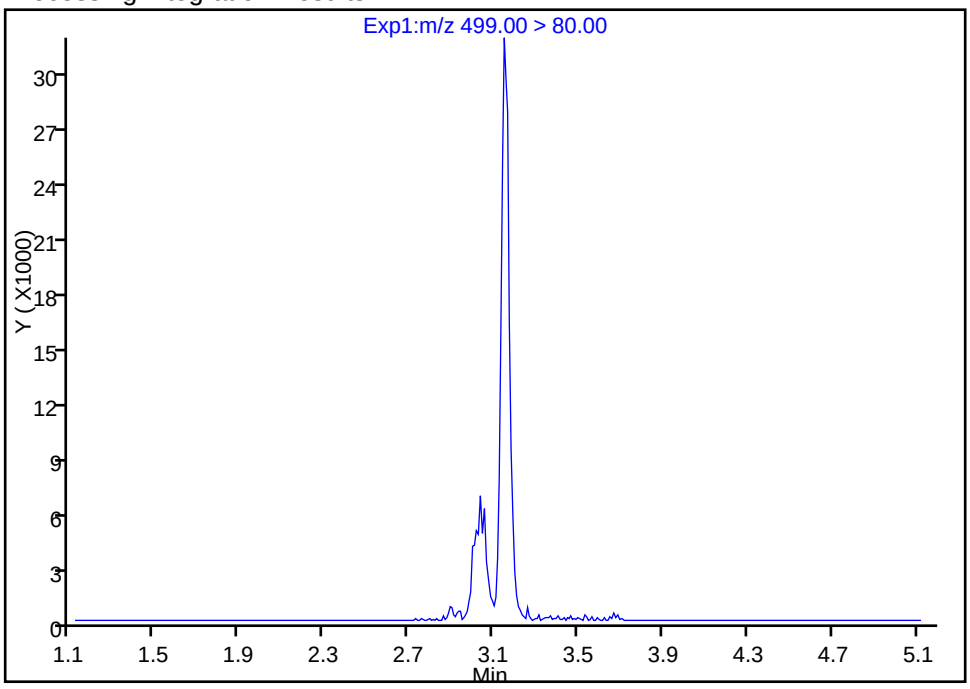
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d				
Injection Date:	15-Dec-2016 12:29:18	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	A8-PC\A8	ALS Bottle#:	37	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

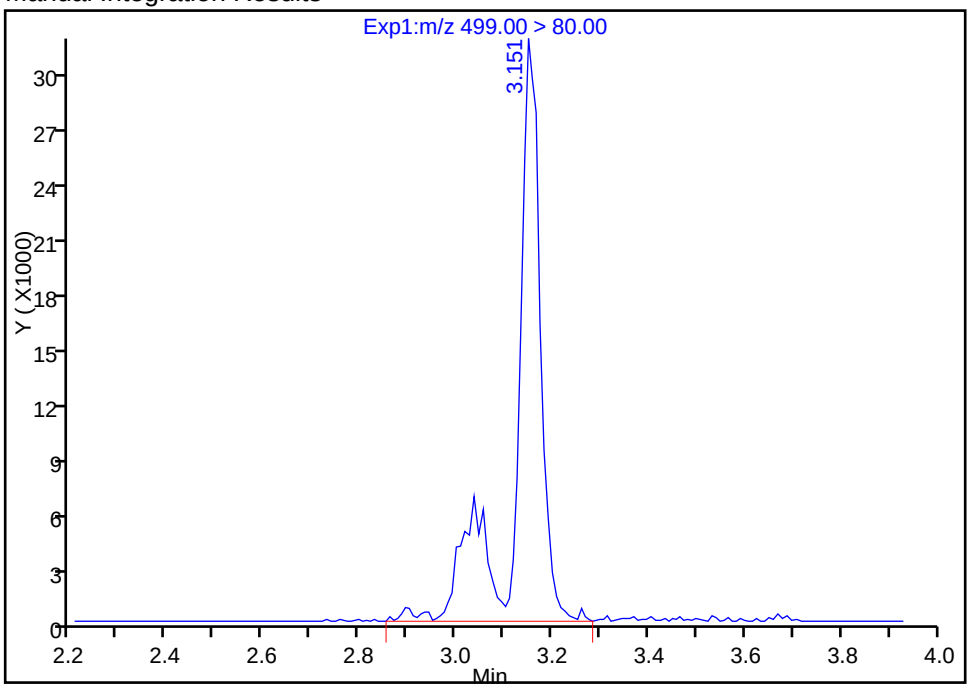
Processing Integration Results

Not Detected
Expected RT: 3.12



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

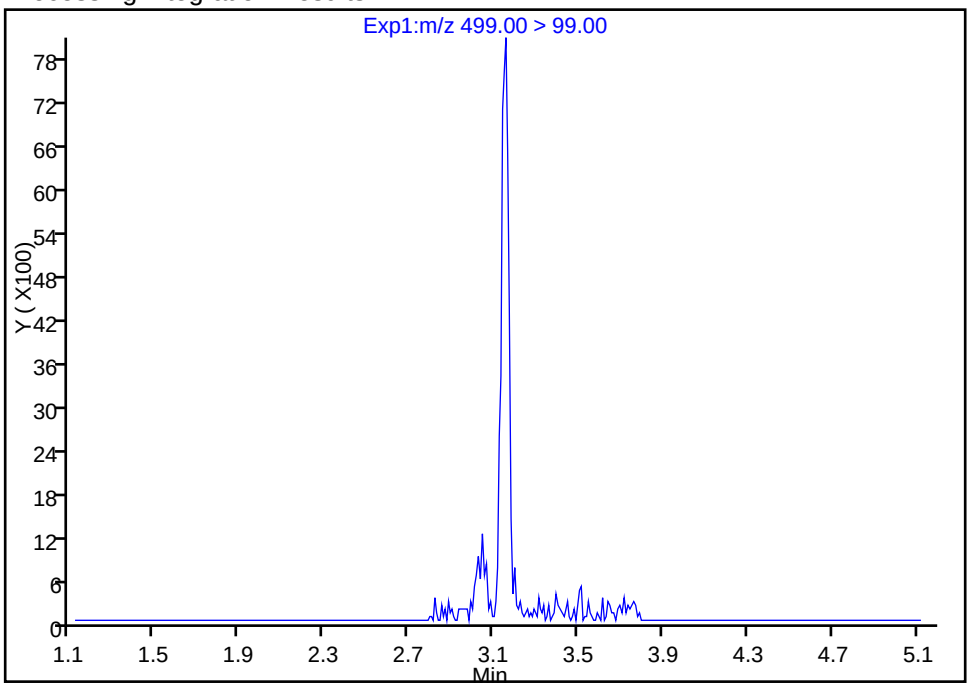
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

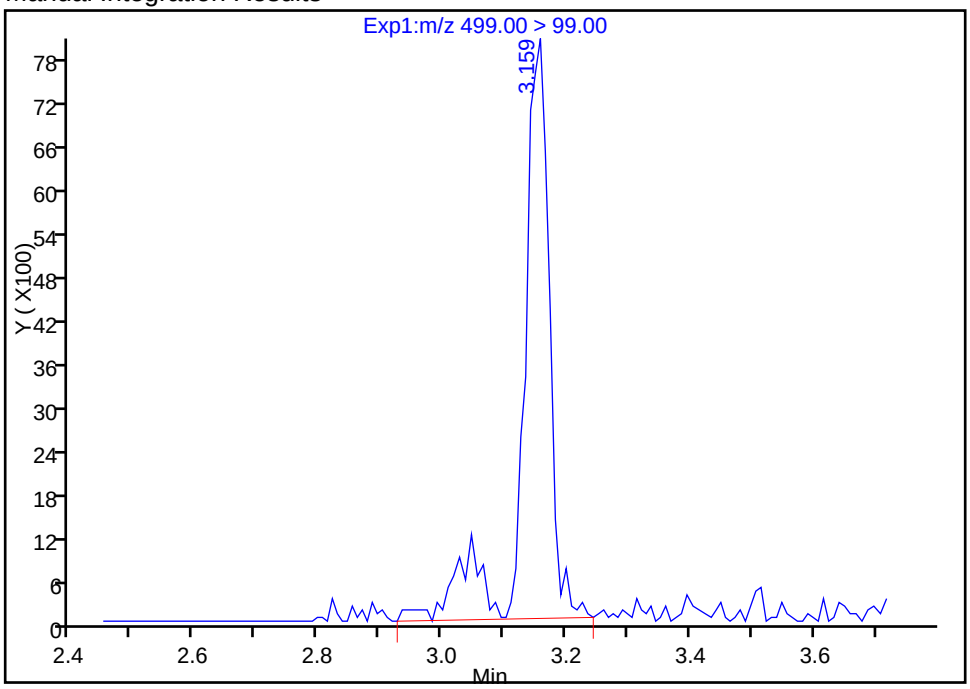
Processing Integration Results

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

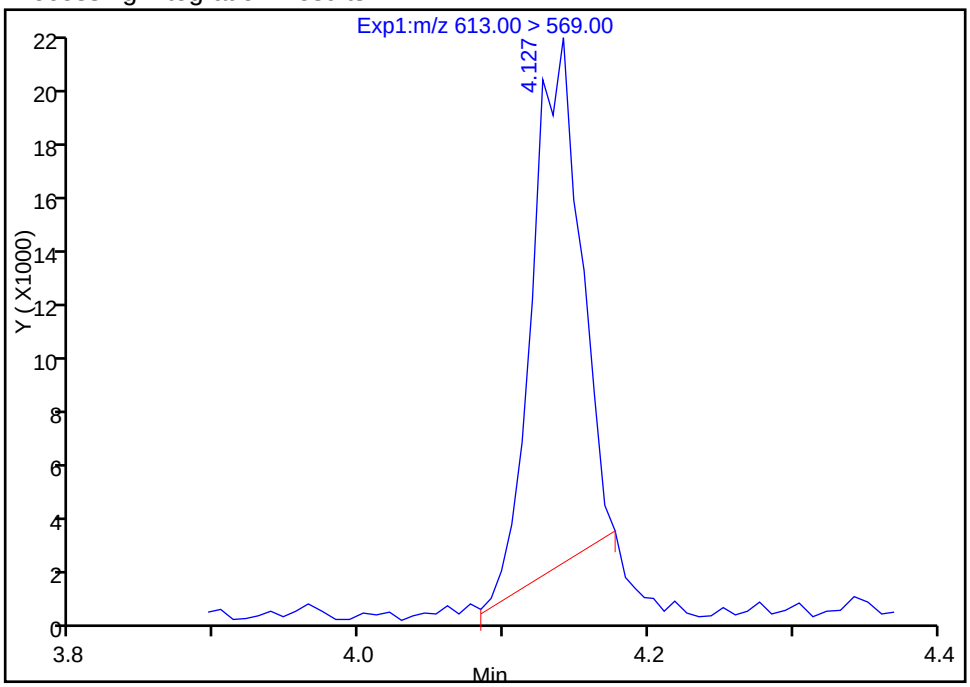
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

29 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 1

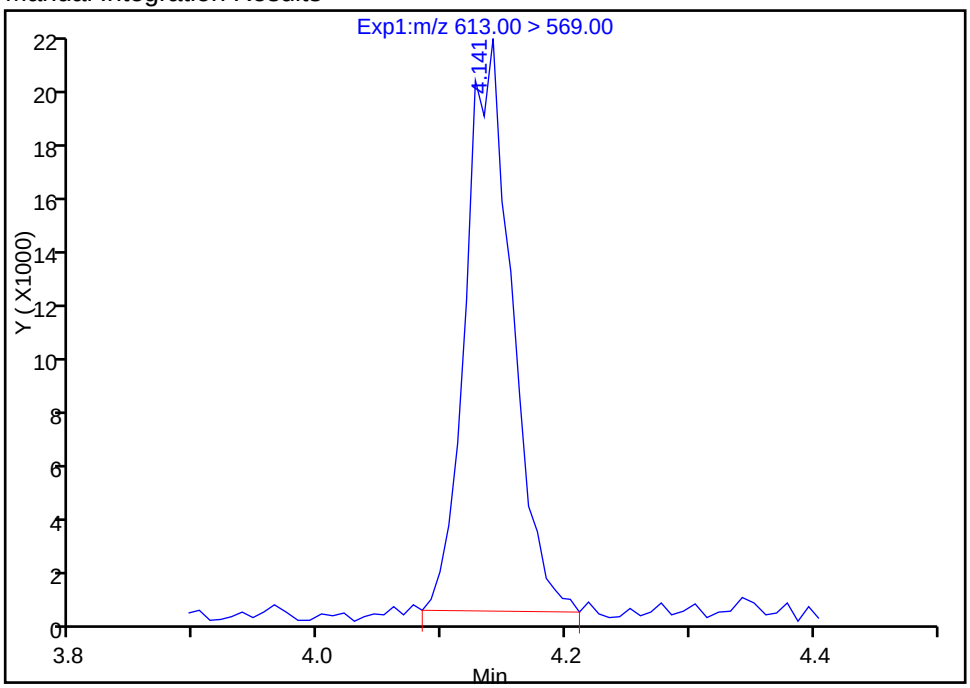
Processing Integration Results

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

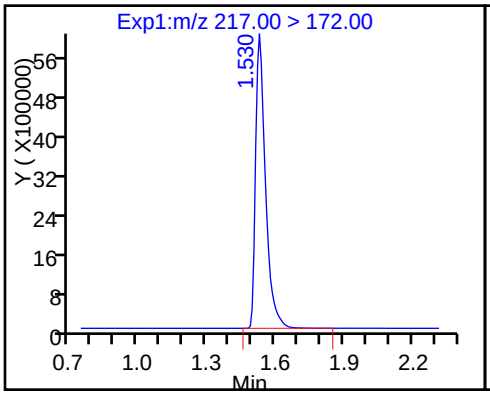
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

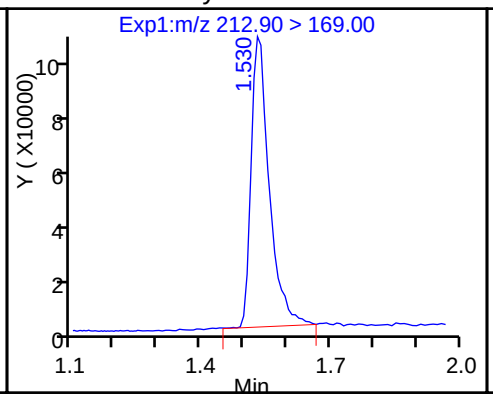
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

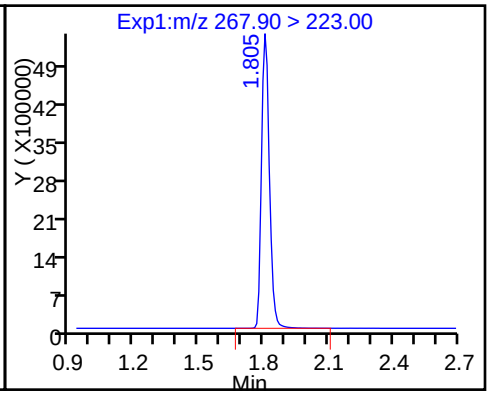
D 2 13C4 PFBA



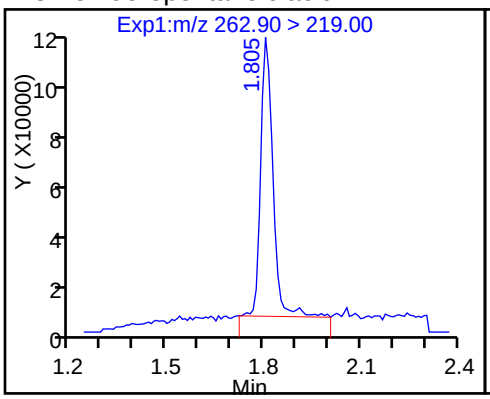
1 Perfluorobutyric acid



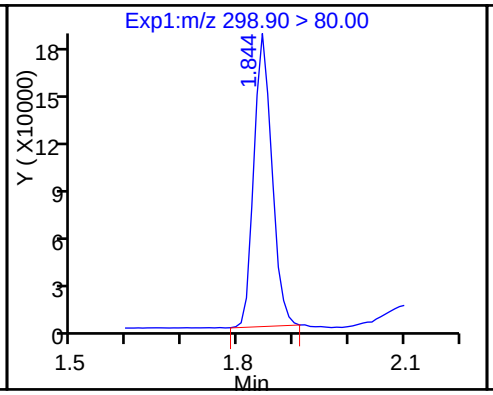
D 4 13C5-PFPeA



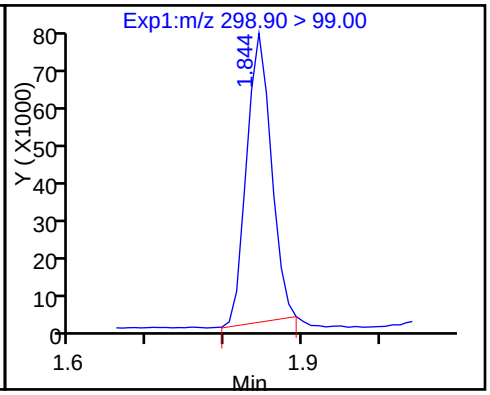
3 Perfluoropentanoic acid



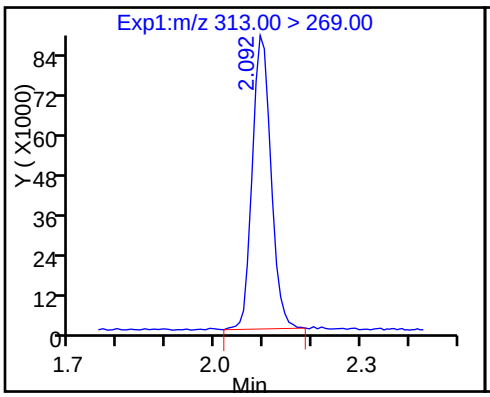
5 Perfluorobutanesulfonic acid



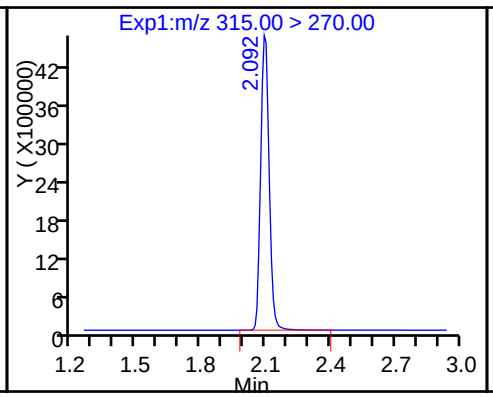
5 Perfluorobutanesulfonic acid



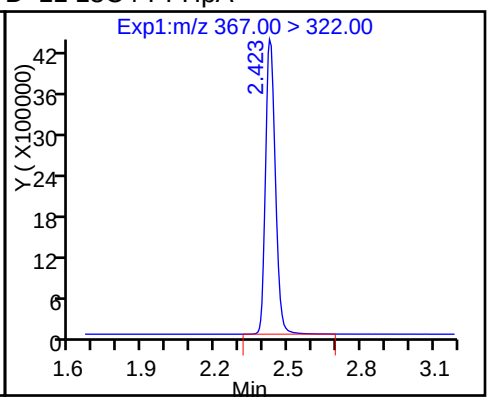
7 Perfluorohexanoic acid



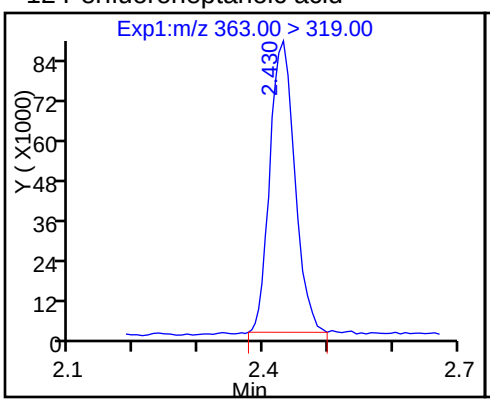
D 6 13C2 PFHxA



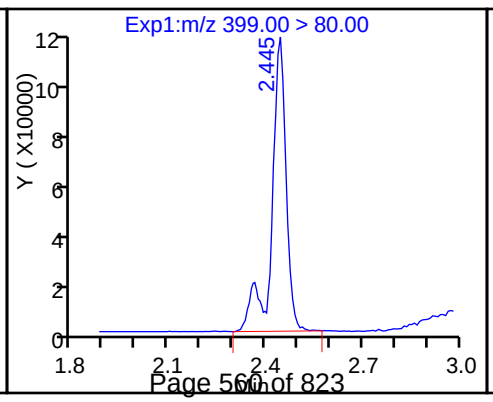
D 11 13C4-PFHpA



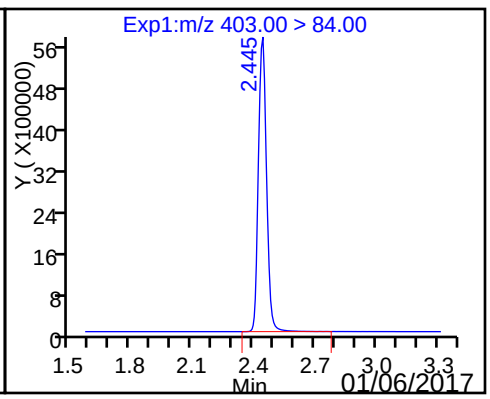
12 Perfluoroheptanoic acid



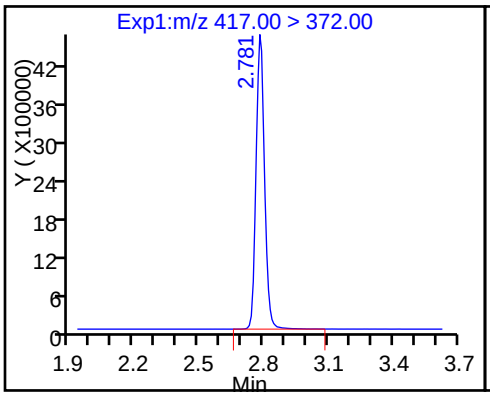
9 Perfluorohexanesulfonic acid



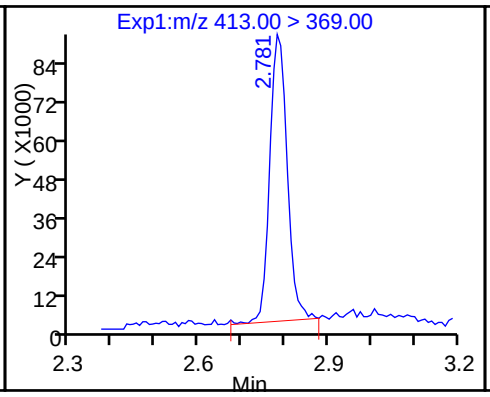
D 10 18O2 PFHxS



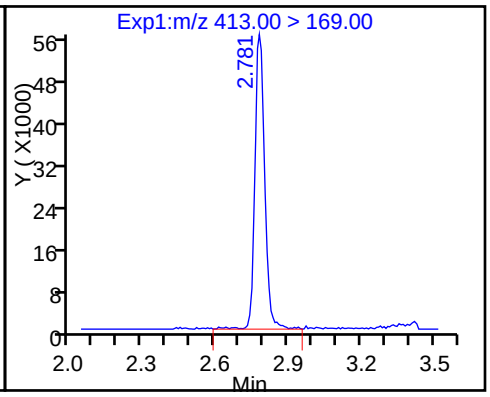
D 14 13C4 PFOA



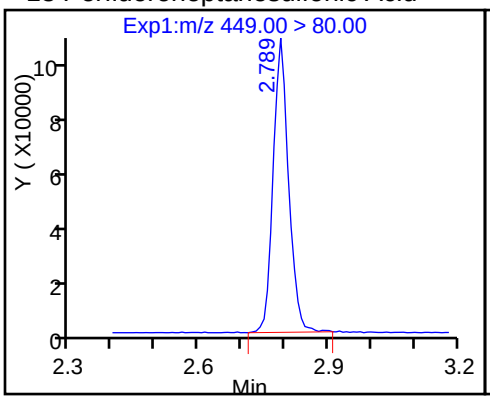
15 Perfluorooctanoic acid



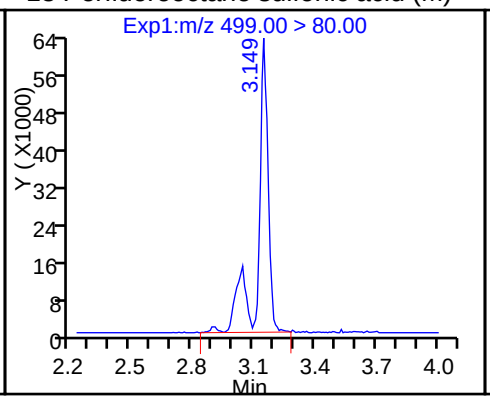
15 Perfluorooctanoic acid



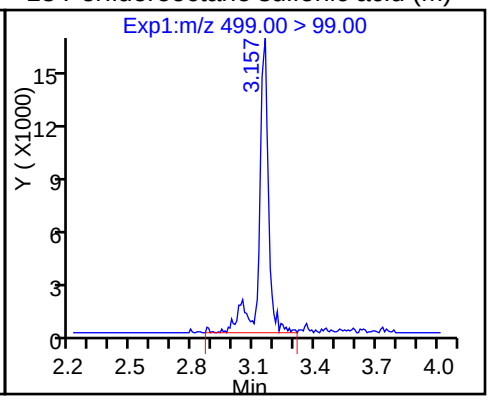
13 Perfluoroheptanesulfonic Acid



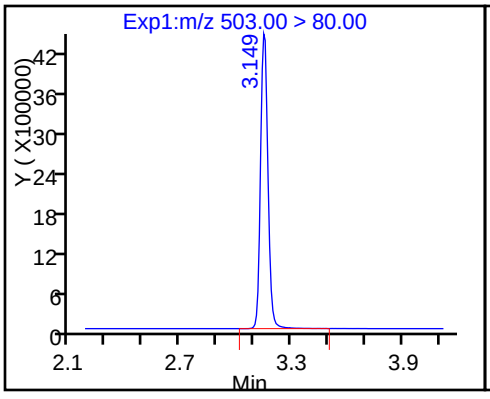
18 Perfluorooctane sulfonic acid (M)



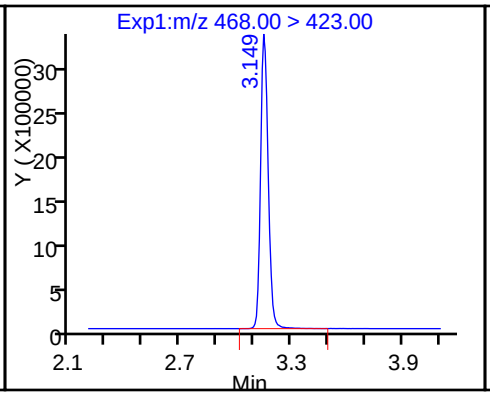
18 Perfluorooctane sulfonic acid (M)



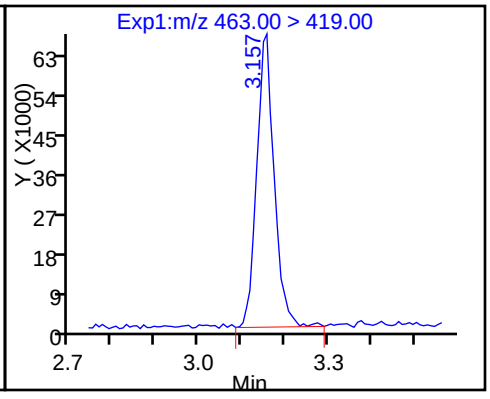
D 17 13C4 PFOS



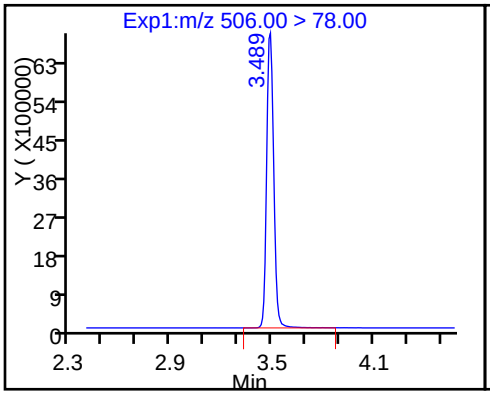
D 19 13C5 PFNA



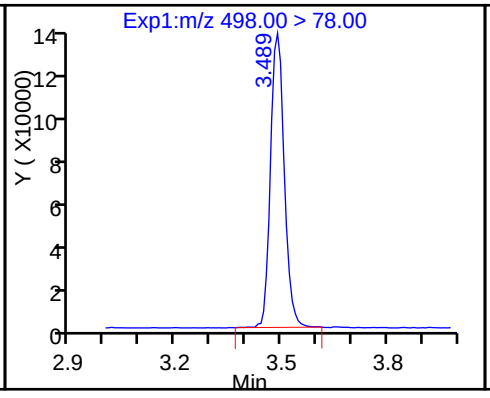
20 Perfluorononanoic acid



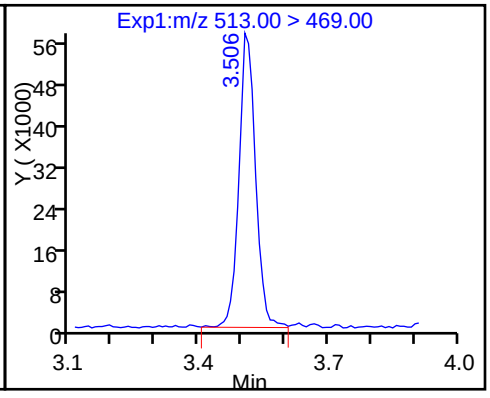
D 21 13C8 FOSA



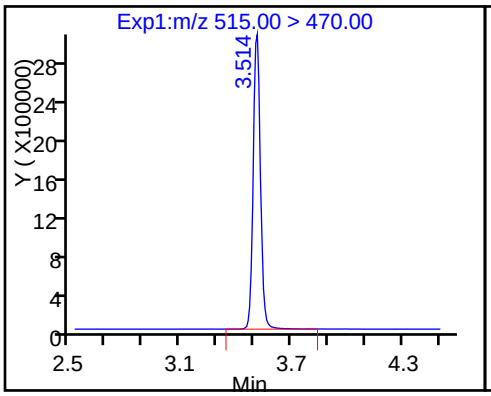
22 Perfluorooctane Sulfonamide



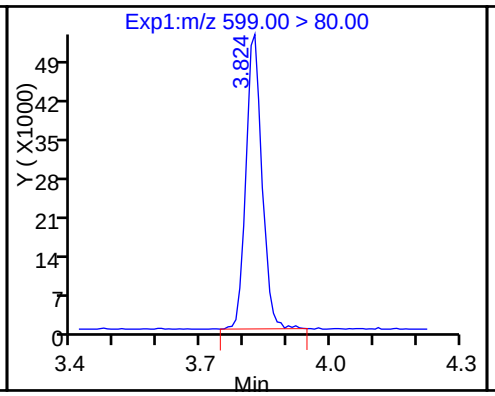
24 Perfluorodecanoic acid



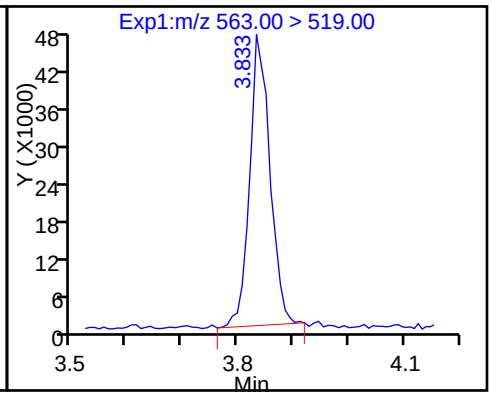
D 23 13C2 PFDA



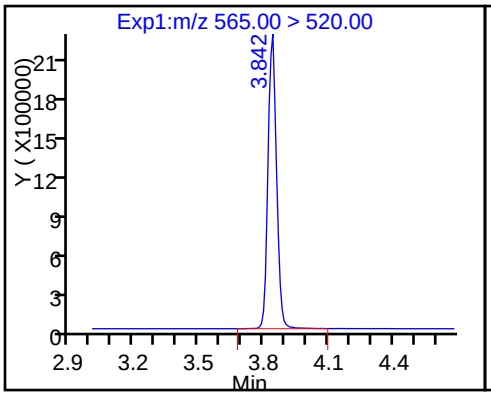
26 Perfluorodecane Sulfonic acid



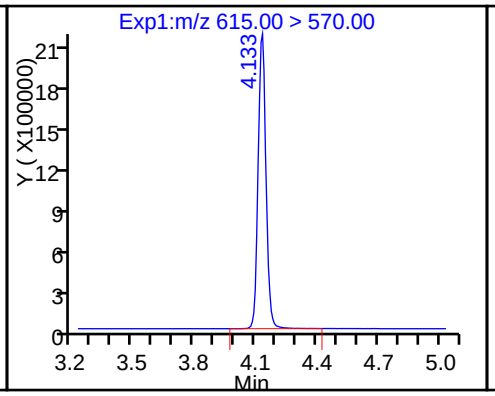
28 Perfluoroundecanoic acid



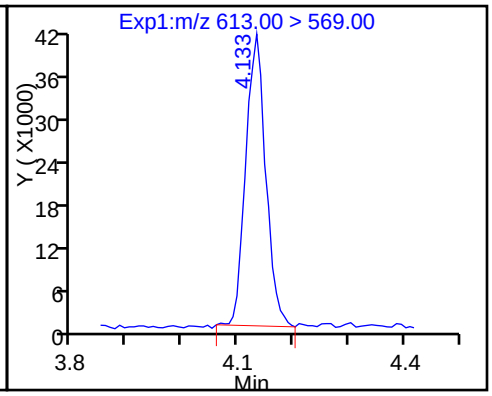
D 27 13C2 PFUnA



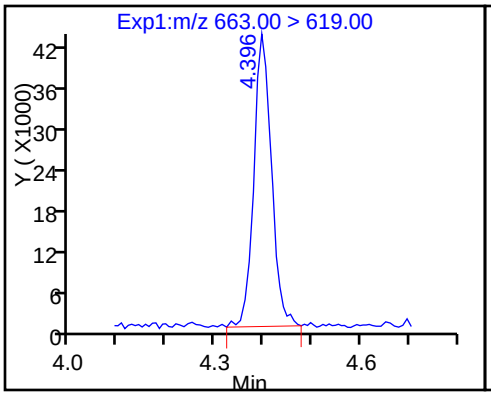
D 30 13C2 PFDoA



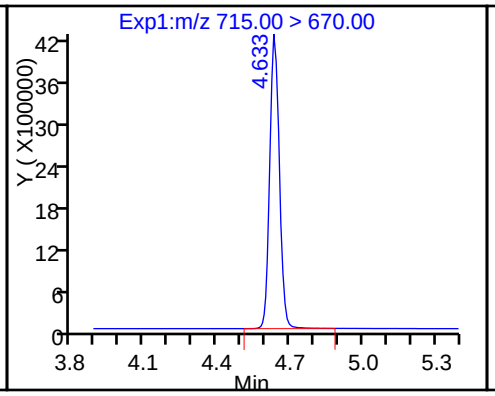
29 Perfluorododecanoic acid



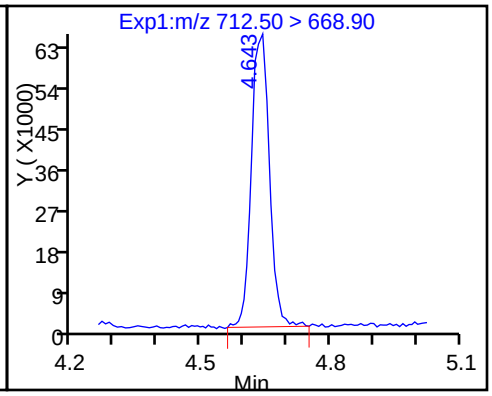
31 Perfluorotridecanoic acid



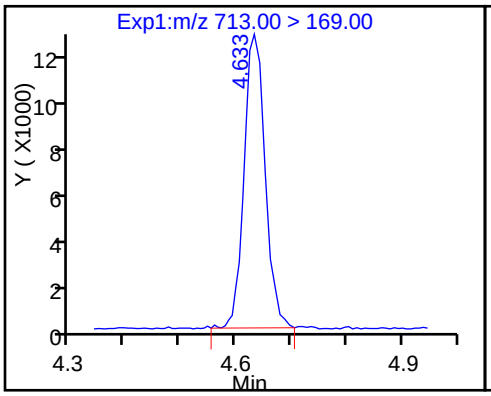
D 32 13C2-PFTeDA



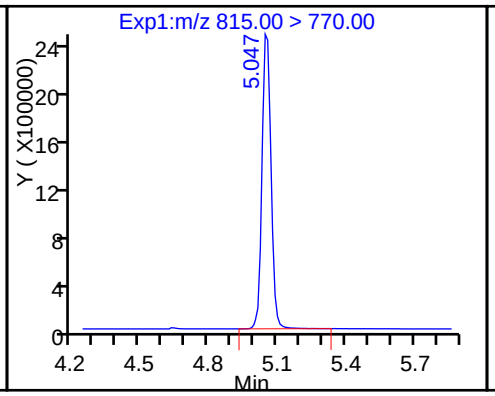
33 Perfluorotetradecanoic acid



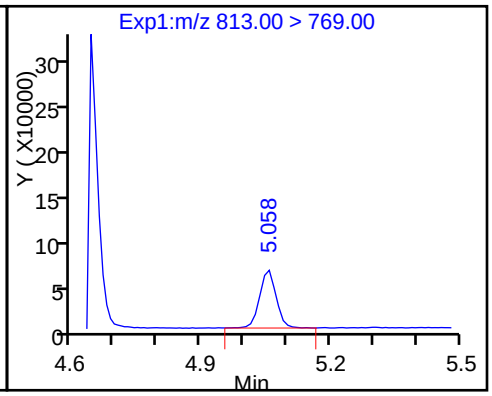
33 Perfluorotetradecanoic acid



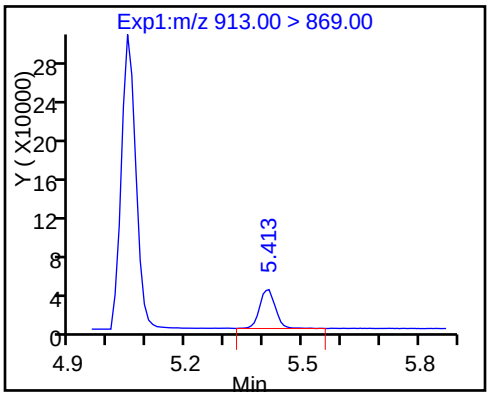
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

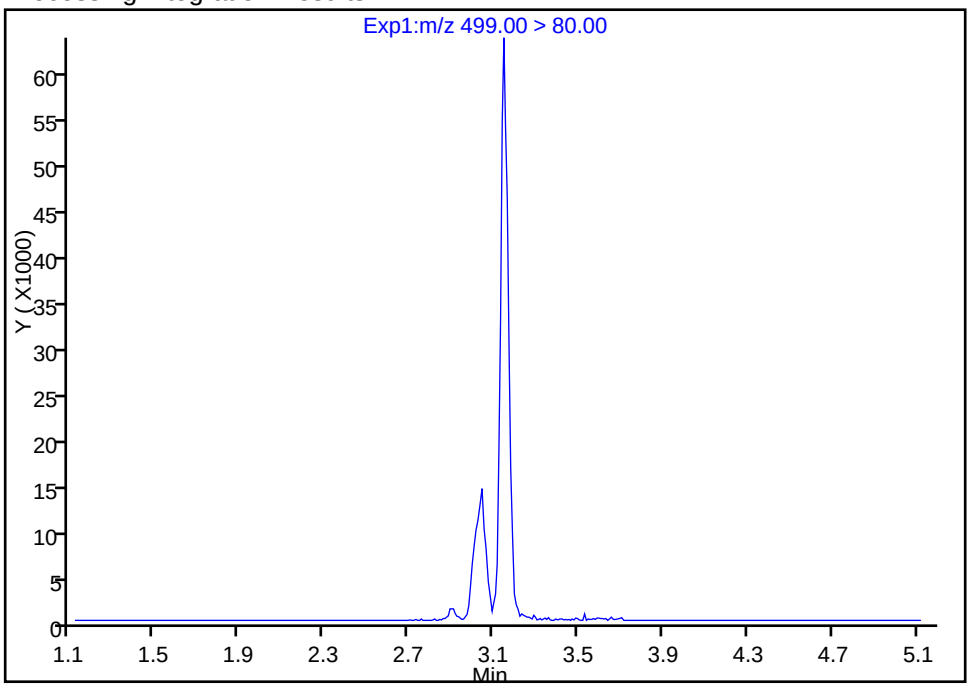
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

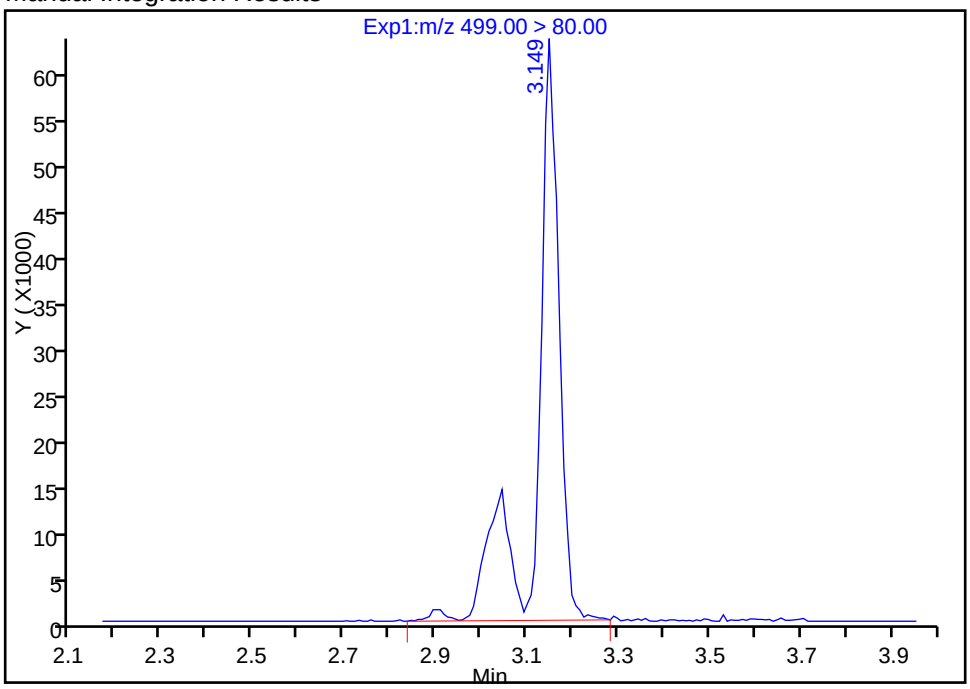
Not Detected
Expected RT: 3.12

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

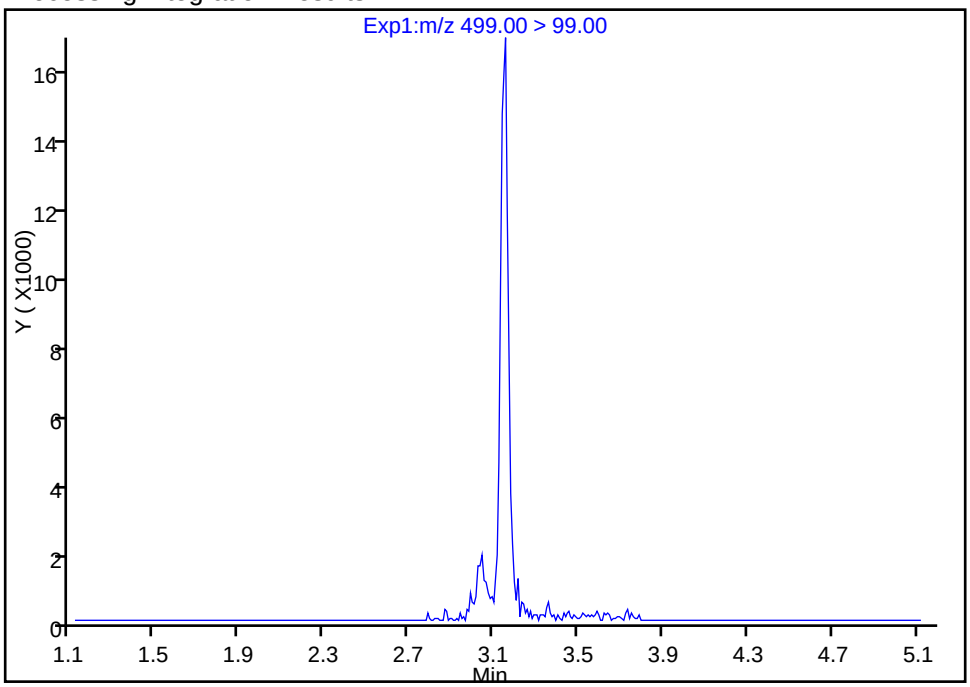
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

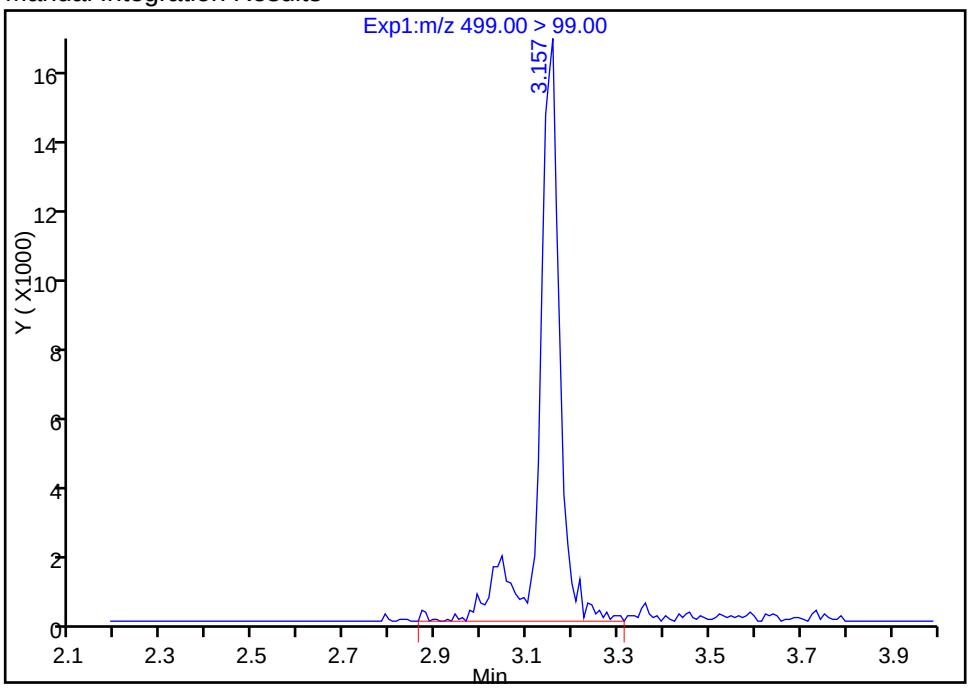
Not Detected
Expected RT: 3.12

Processing Integration Results



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

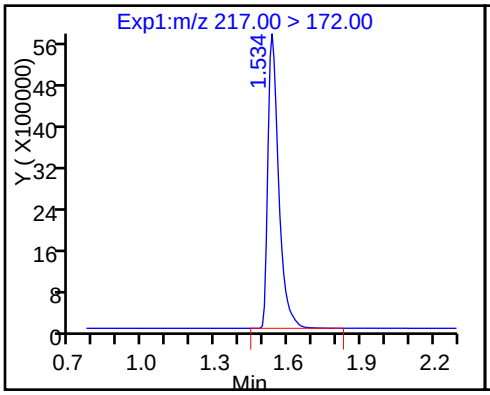
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

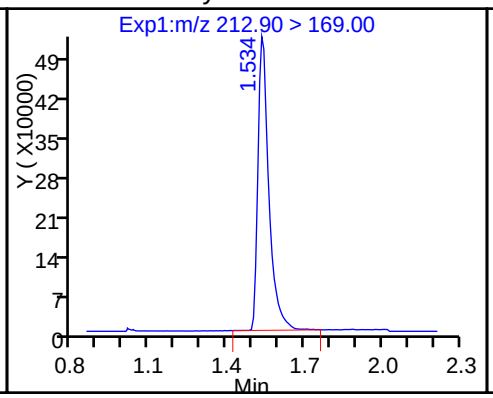
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

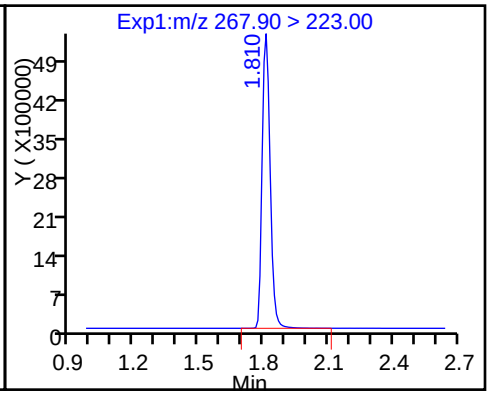
D 2 13C4 PFBA



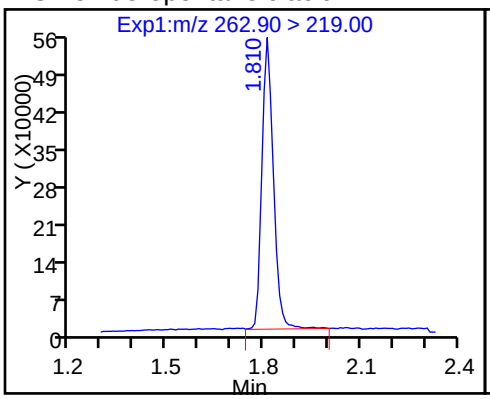
1 Perfluorobutyric acid



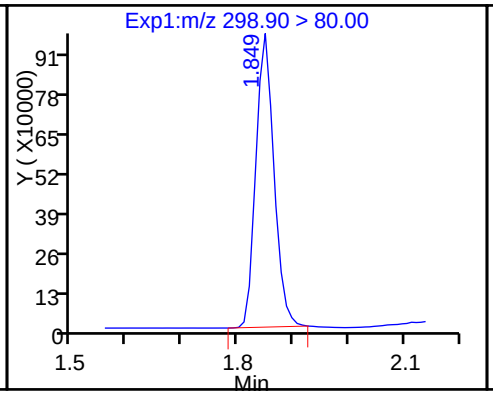
D 4 13C5-PFPeA



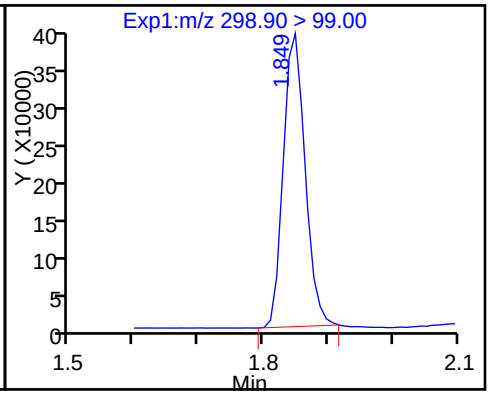
3 Perfluoropentanoic acid



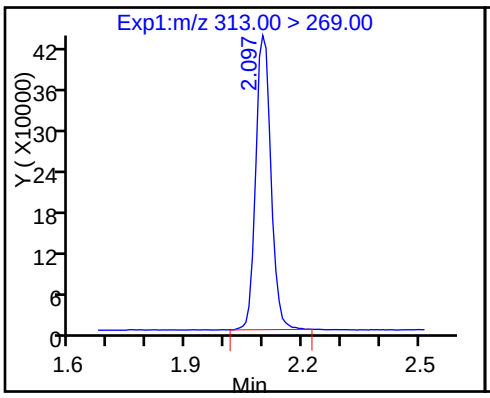
5 Perfluorobutanesulfonic acid



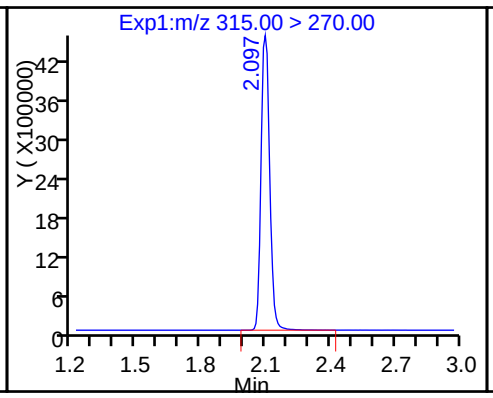
5 Perfluorobutanesulfonic acid



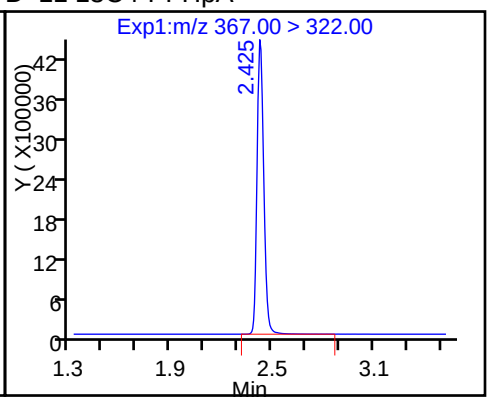
7 Perfluorohexanoic acid



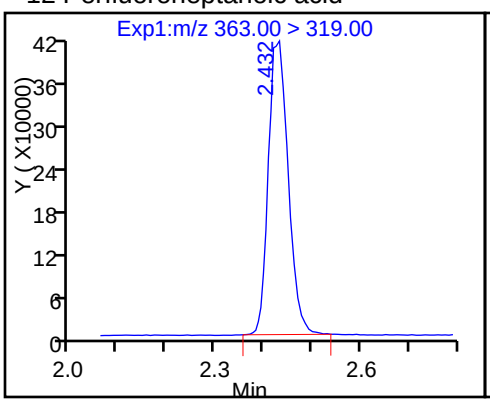
D 6 13C2 PFHxA



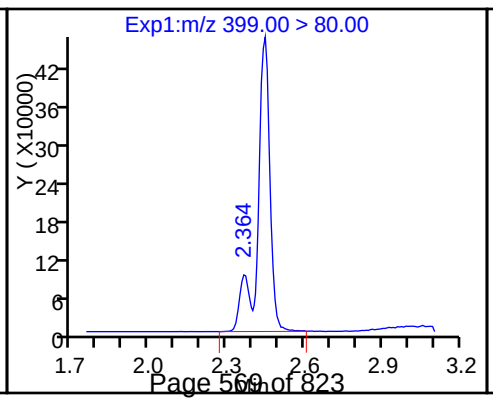
D 11 13C4-PFHpA



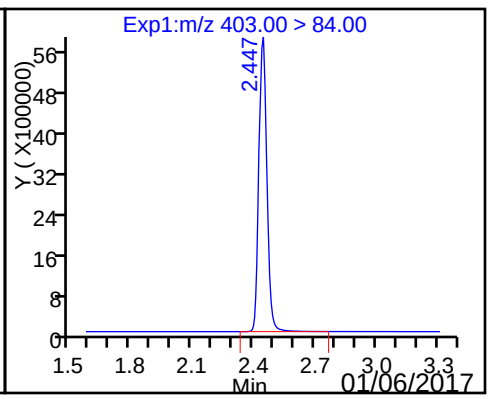
12 Perfluoroheptanoic acid



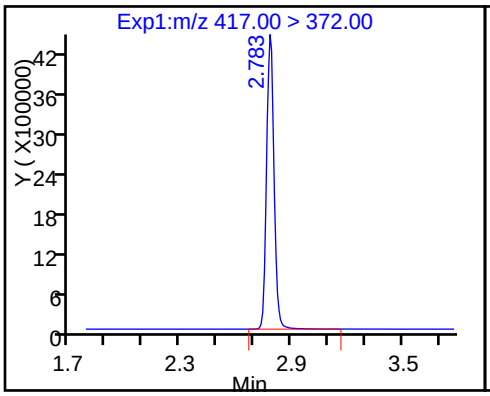
9 Perfluorohexanesulfonic acid



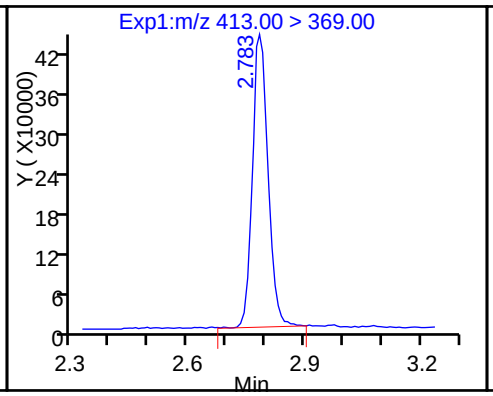
D 10 18O2 PFHxS



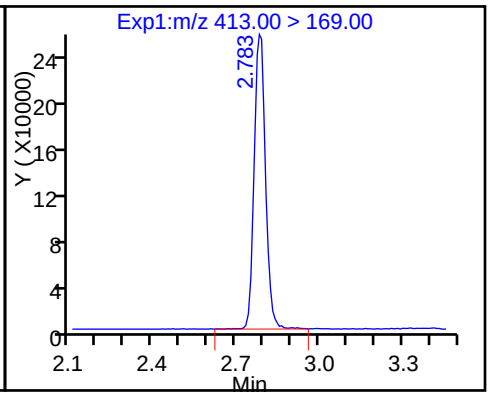
D 14 13C4 PFOA



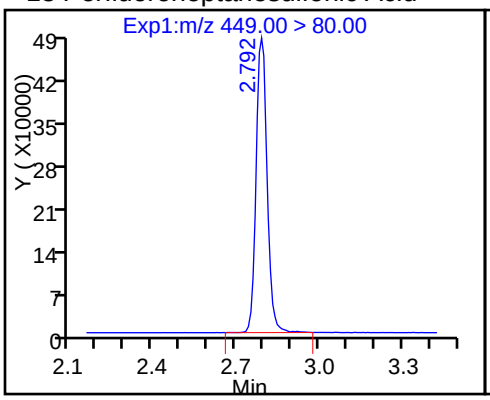
15 Perfluorooctanoic acid



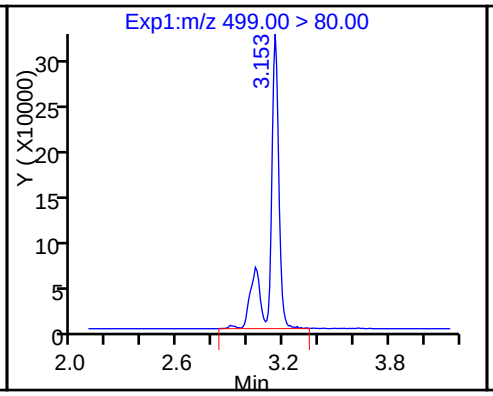
15 Perfluorooctanoic acid



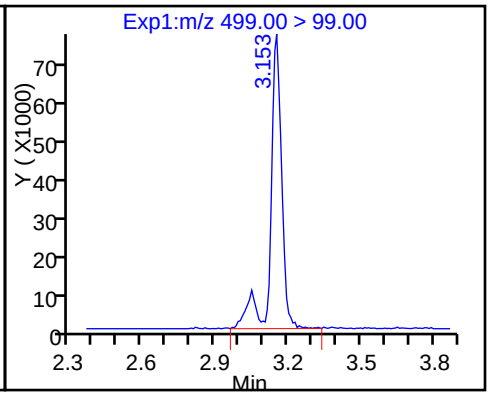
13 Perfluoroheptanesulfonic Acid



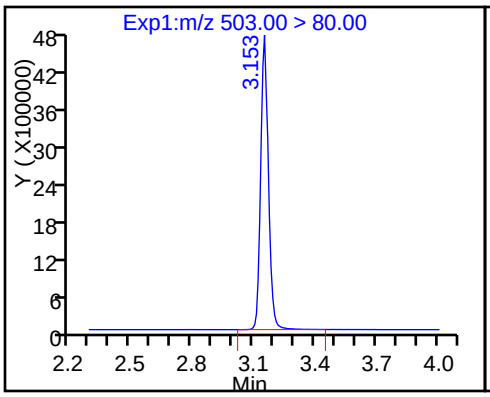
18 Perfluorooctane sulfonic acid



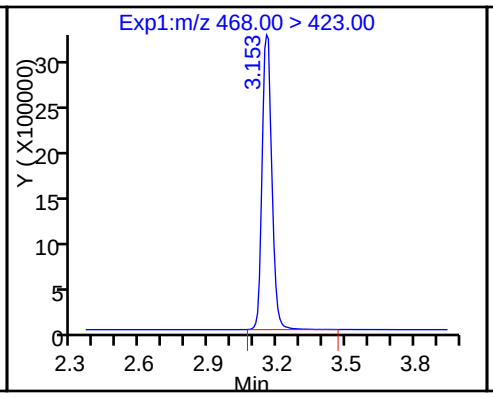
18 Perfluorooctane sulfonic acid



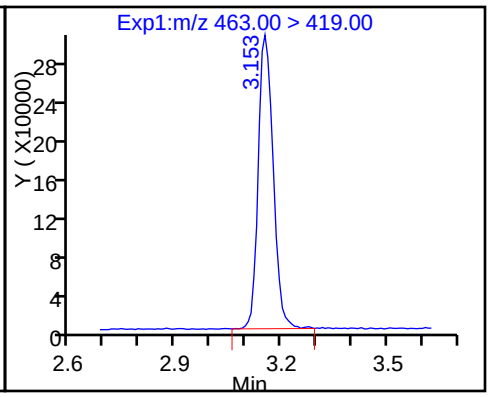
D 17 13C4 PFOS



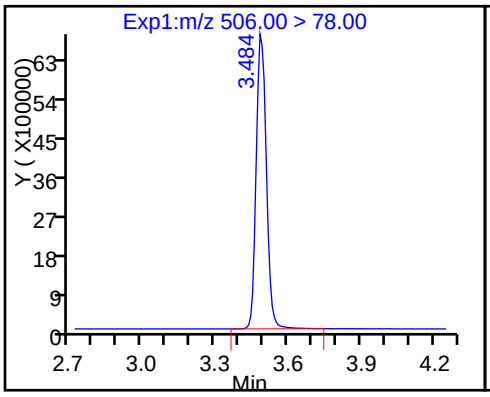
D 19 13C5 PFNA



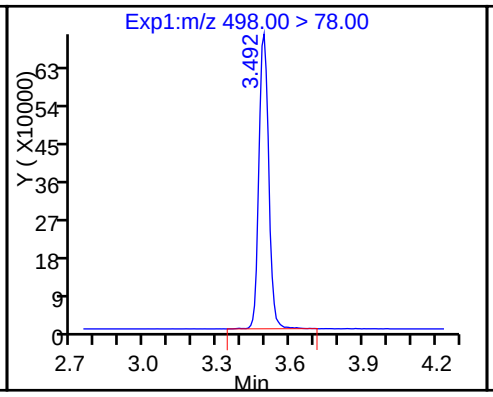
20 Perfluorononanoic acid



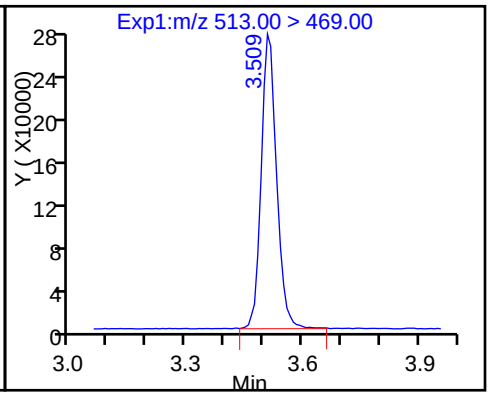
D 21 13C8 FOSA



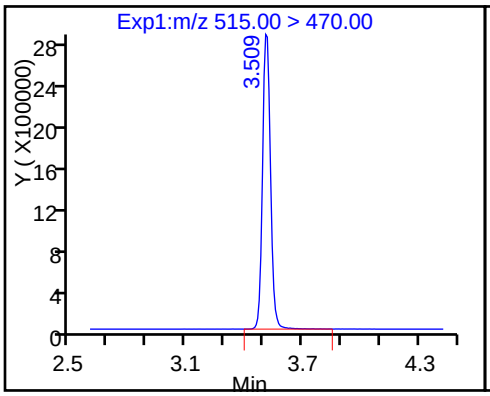
22 Perfluorooctane Sulfonamide



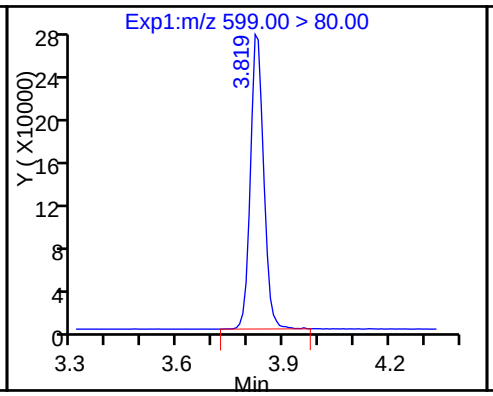
24 Perfluorodecanoic acid



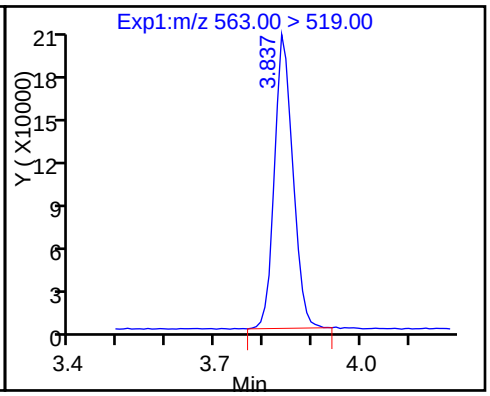
D 23 13C2 PFDA



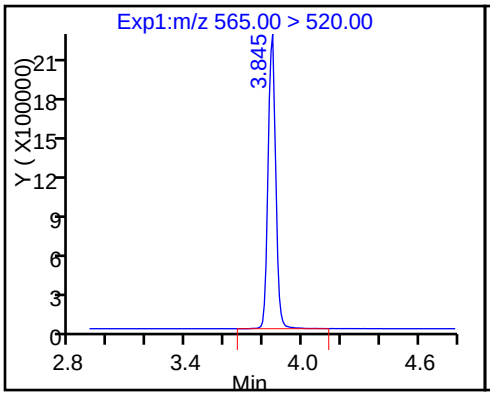
26 Perfluorodecane Sulfonic acid



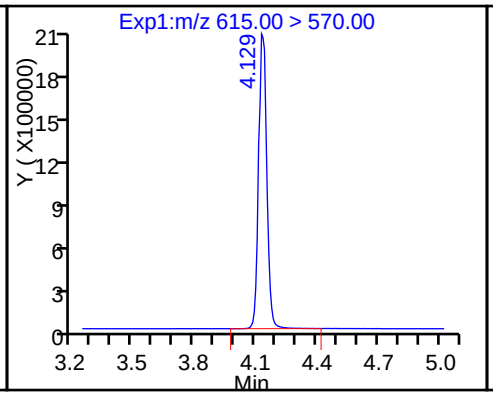
28 Perfluoroundecanoic acid



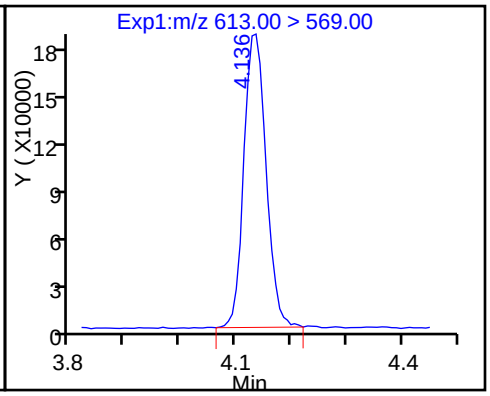
D 27 13C2 PFUnA



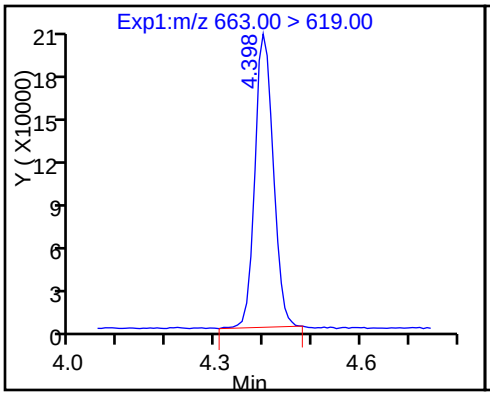
D 30 13C2 PFDoA



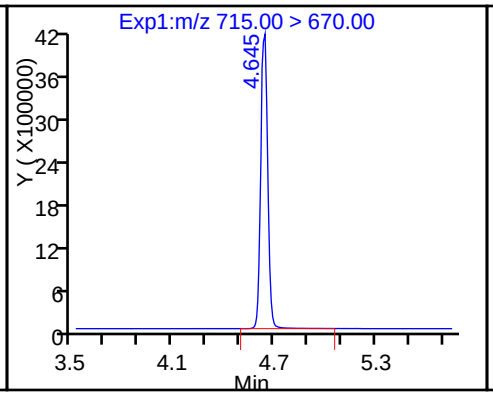
29 Perfluorododecanoic acid



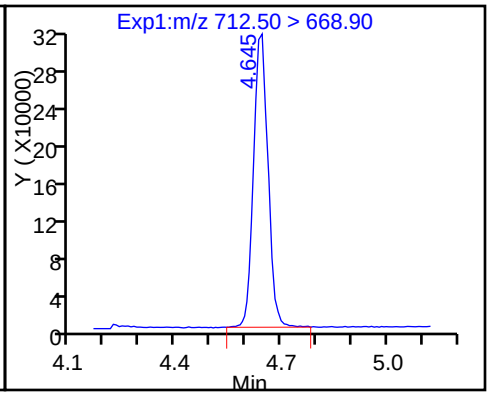
31 Perfluorotridecanoic acid



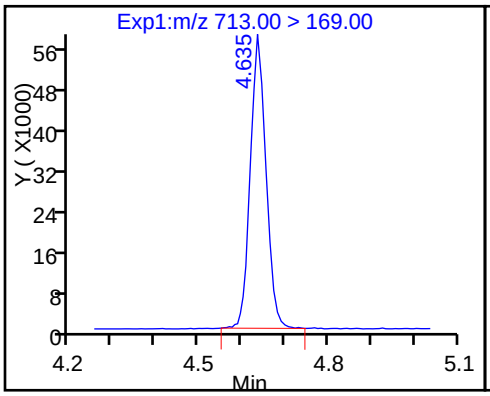
D 32 13C2-PFTeDA



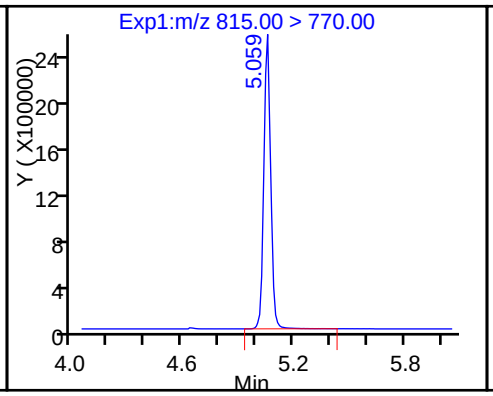
33 Perfluorotetradecanoic acid



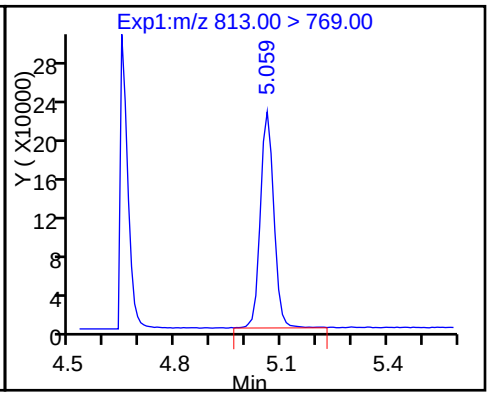
33 Perfluorotetradecanoic acid



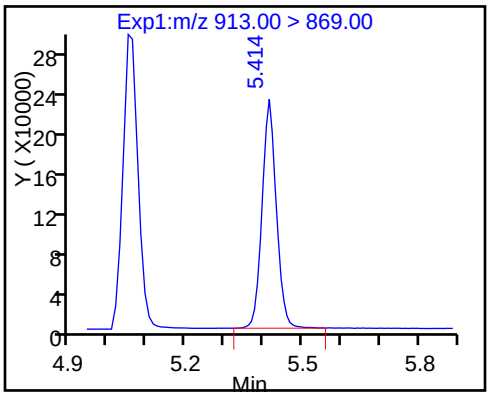
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_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

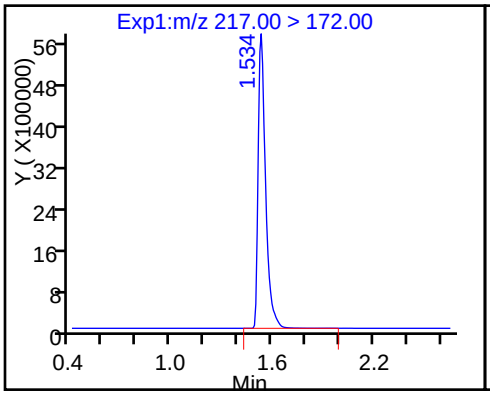
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7

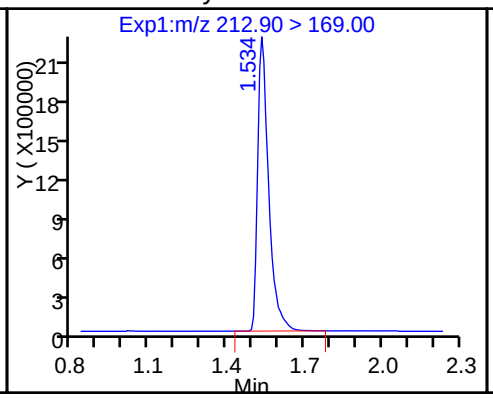
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

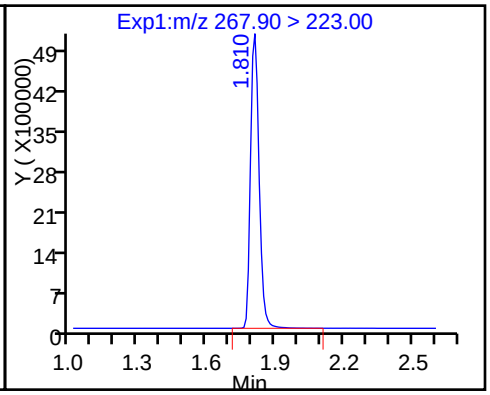
D 2 13C4 PFBA



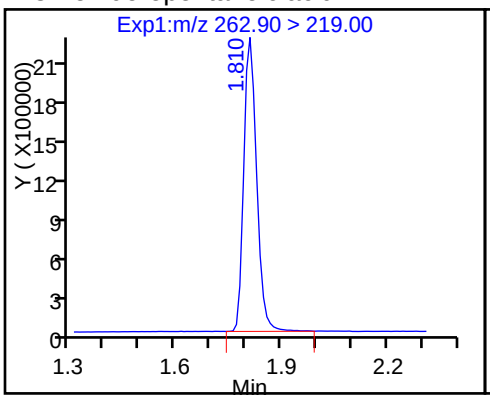
1 Perfluorobutyric acid



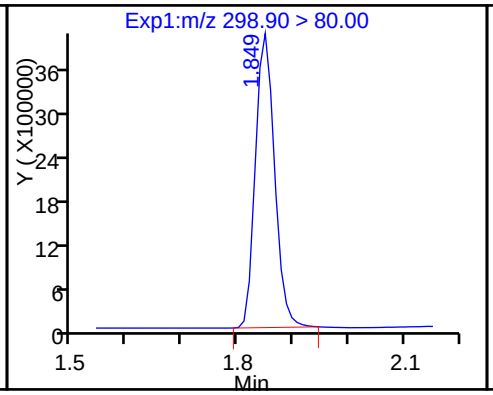
D 4 13C5-PFPeA



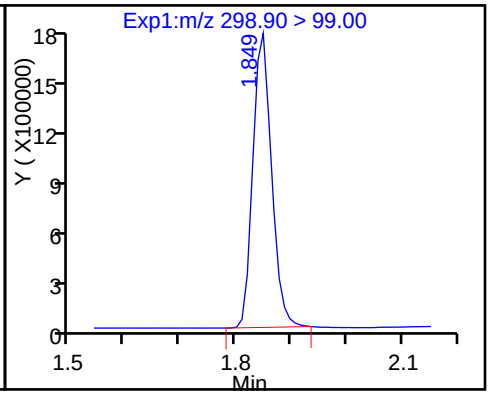
3 Perfluoropentanoic acid



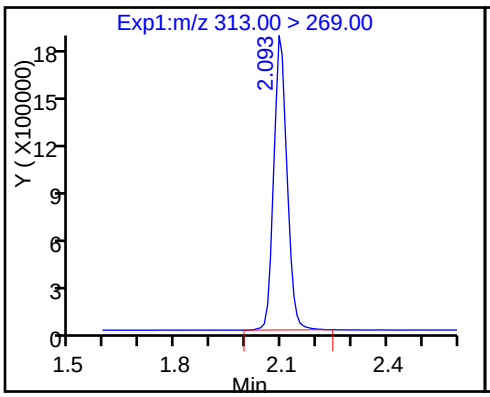
5 Perfluorobutanesulfonic acid



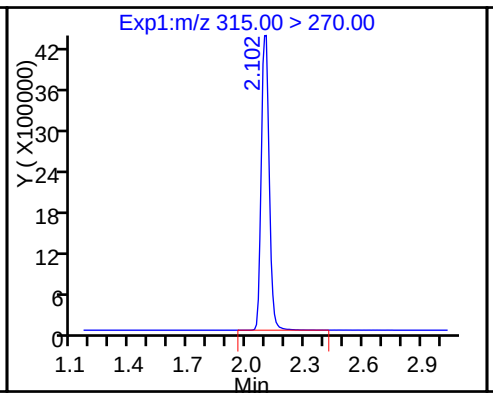
5 Perfluorobutanesulfonic acid



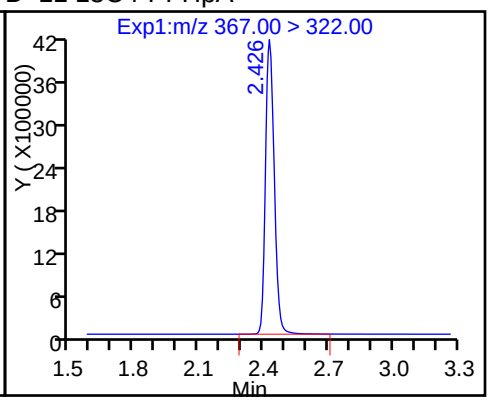
7 Perfluorohexanoic acid



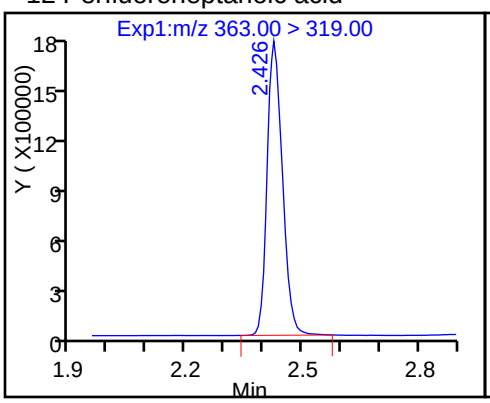
D 6 13C2 PFHxA



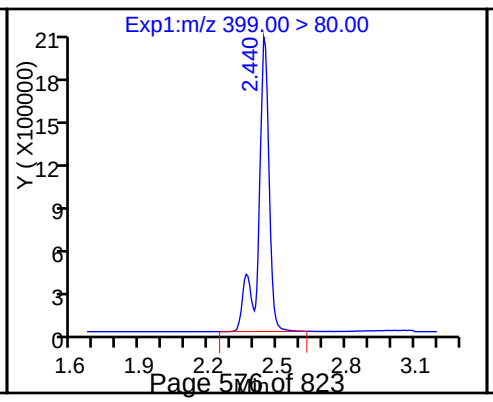
D 11 13C4-PFHpA



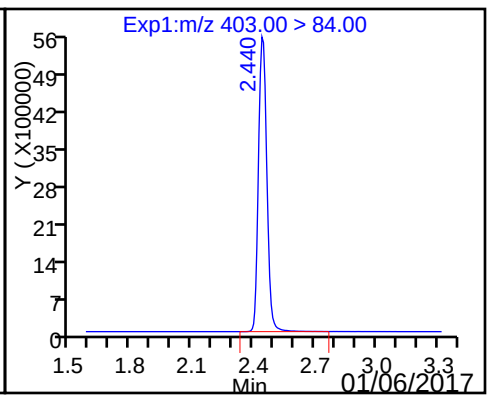
12 Perfluoroheptanoic acid



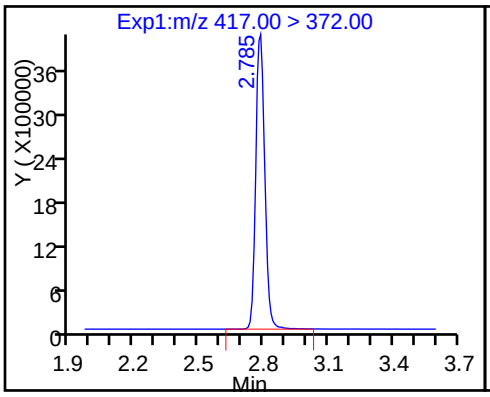
9 Perfluorohexanesulfonic acid



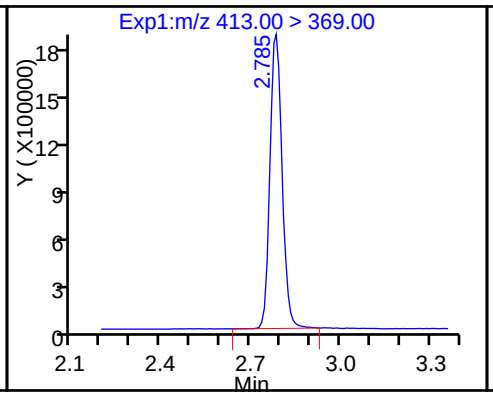
D 10 18O2 PFHxS



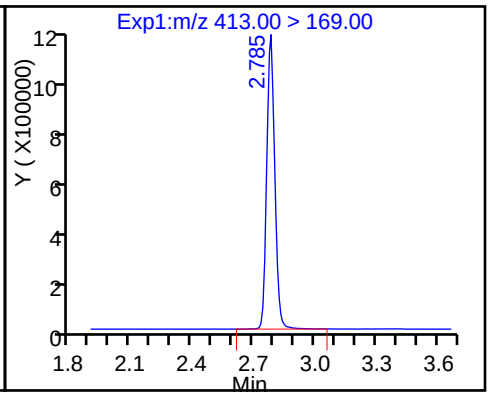
D 14 13C4 PFOA



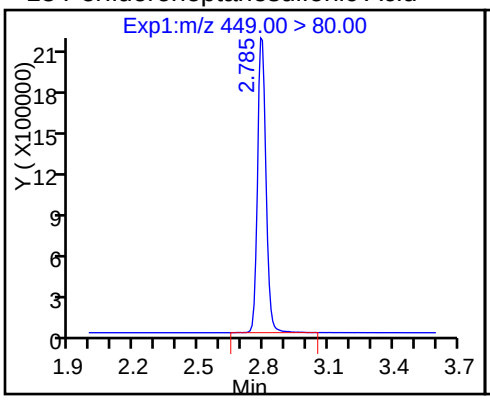
15 Perfluorooctanoic acid



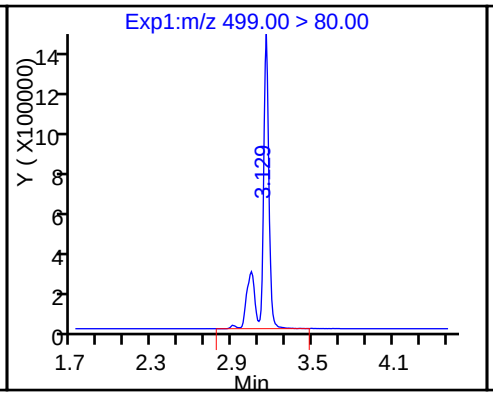
15 Perfluorooctanoic acid



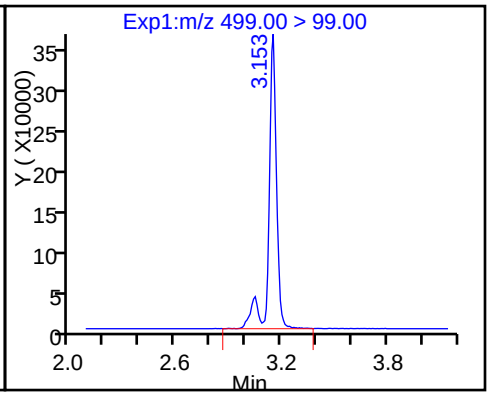
13 Perfluoroheptanesulfonic Acid



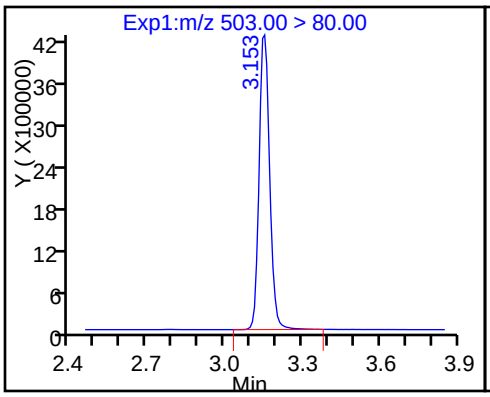
18 Perfluorooctane sulfonic acid



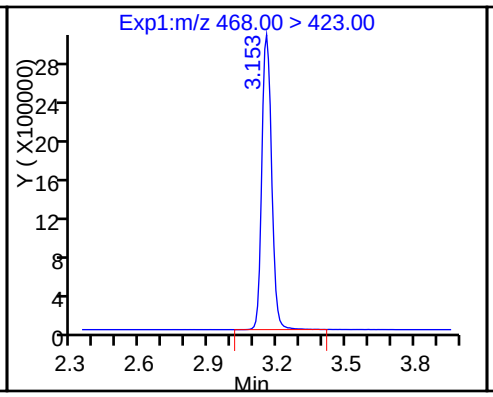
18 Perfluorooctane sulfonic acid



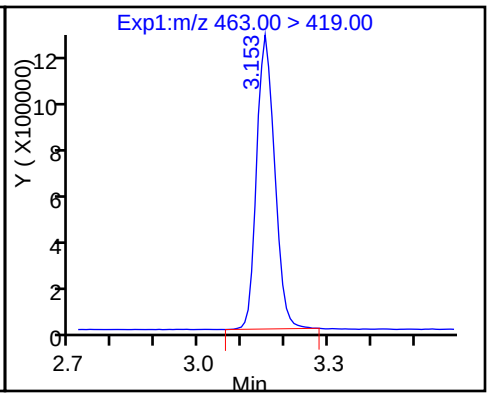
D 17 13C4 PFOS



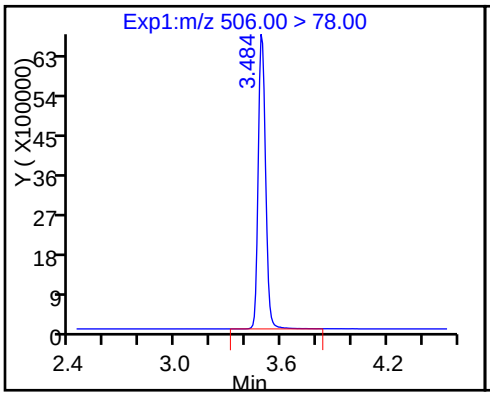
D 19 13C5 PFNA



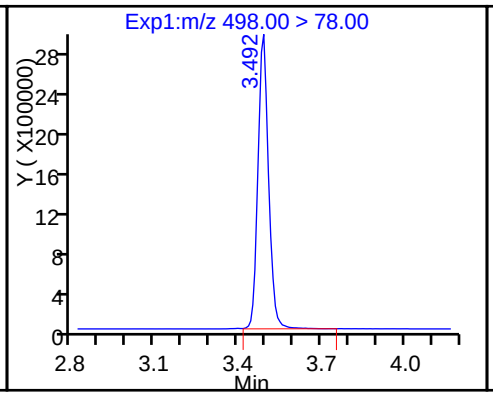
20 Perfluorononanoic acid



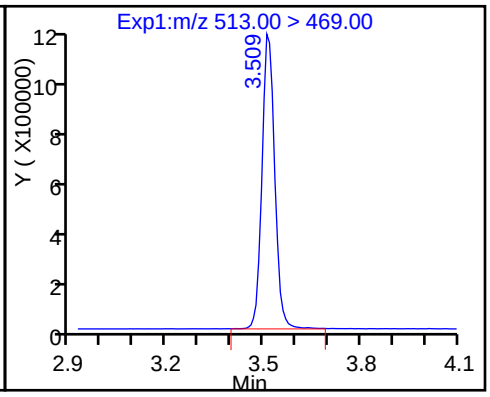
D 21 13C8 FOSA



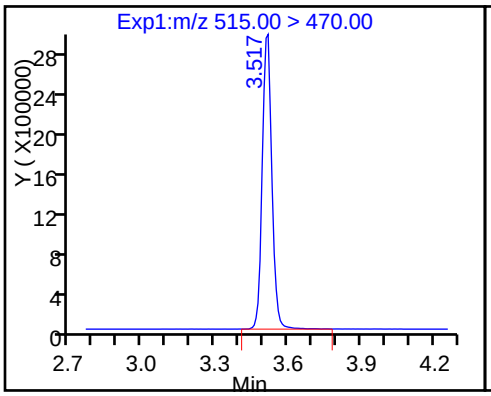
22 Perfluorooctane Sulfonamide



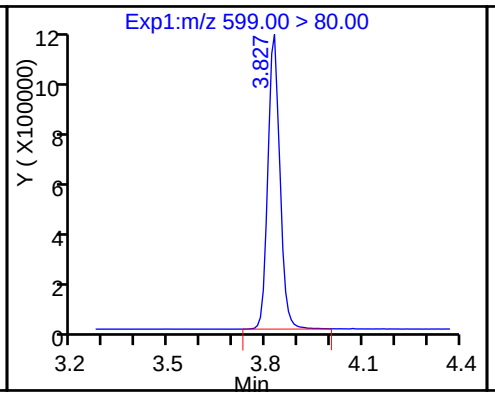
24 Perfluorodecanoic acid



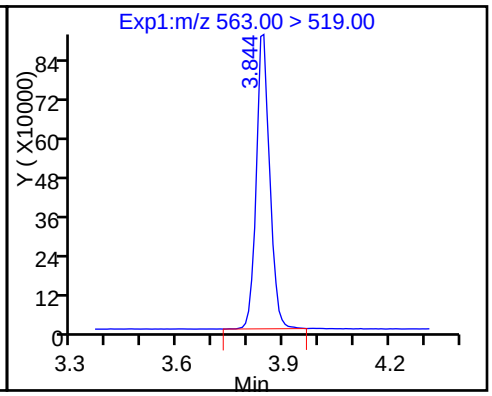
D 23 13C2 PFDA



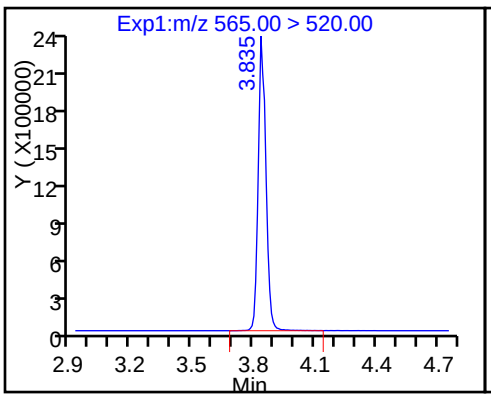
26 Perfluorodecane Sulfonic acid



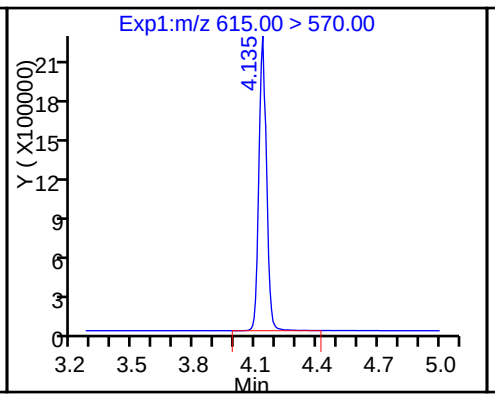
28 Perfluoroundecanoic acid



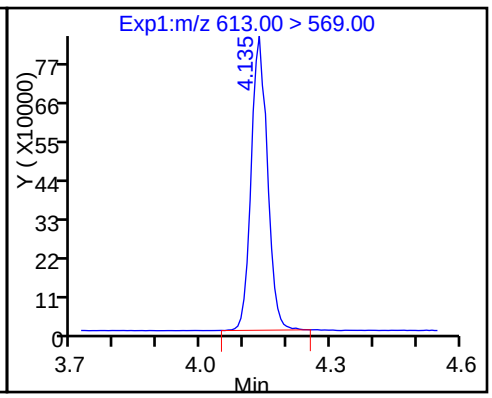
D 27 13C2 PFUnA



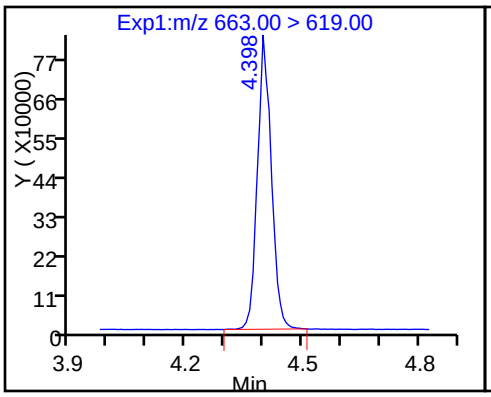
D 30 13C2 PFDoA



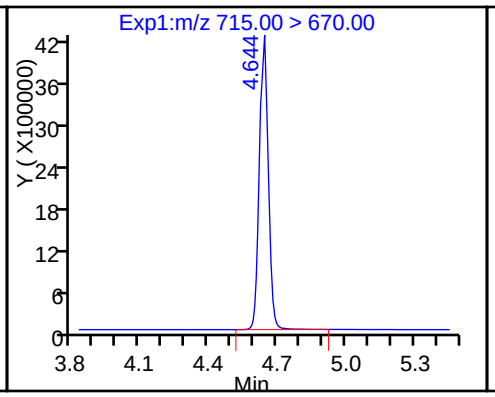
29 Perfluorododecanoic acid



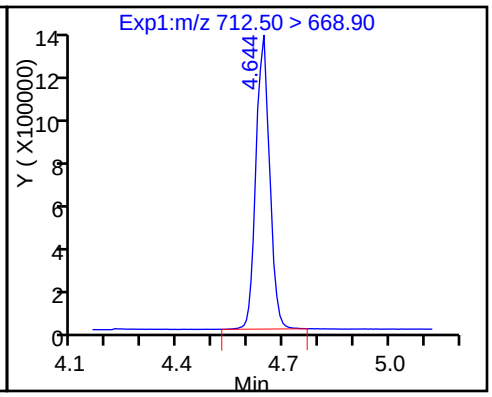
31 Perfluorotridecanoic acid



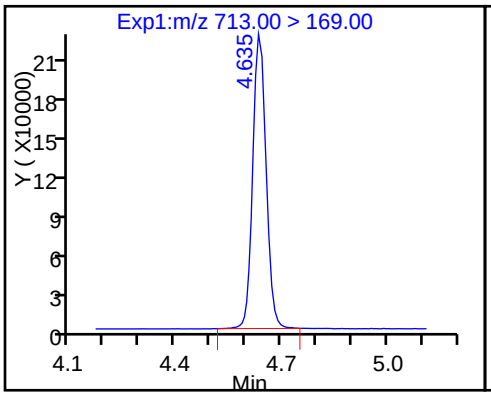
D 32 13C2-PFTeDA



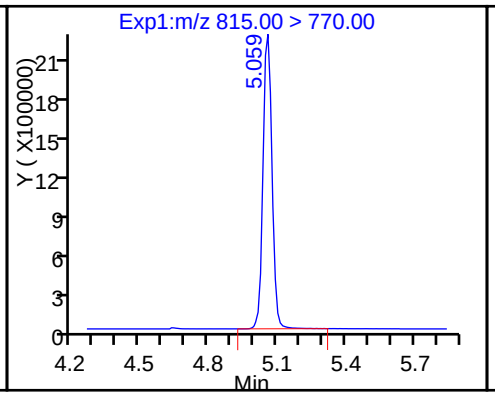
33 Perfluorotetradecanoic acid



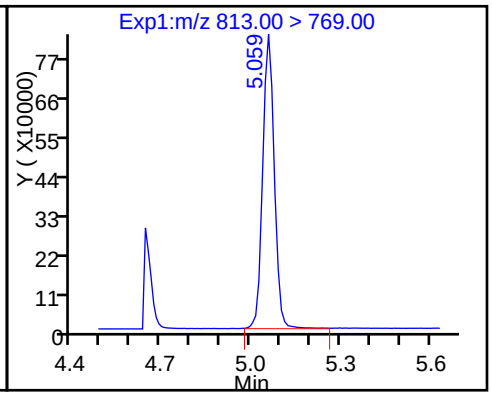
33 Perfluorotetradecanoic acid



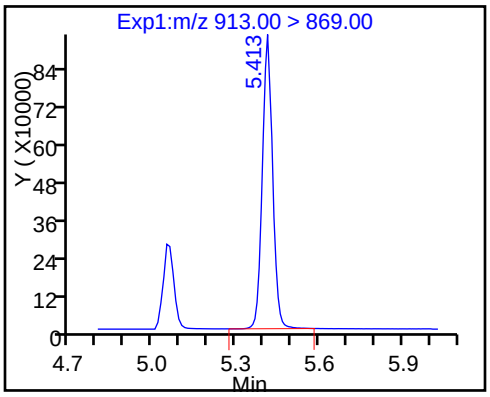
D 34 13C2-PFHxDA



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

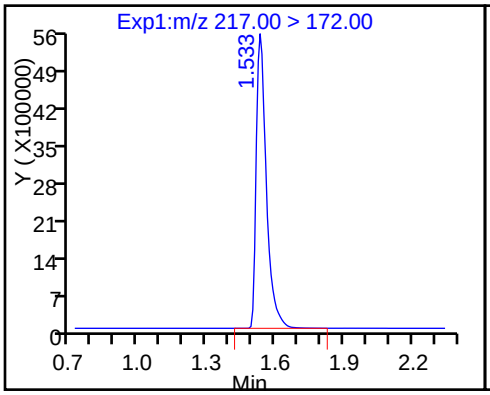
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 8

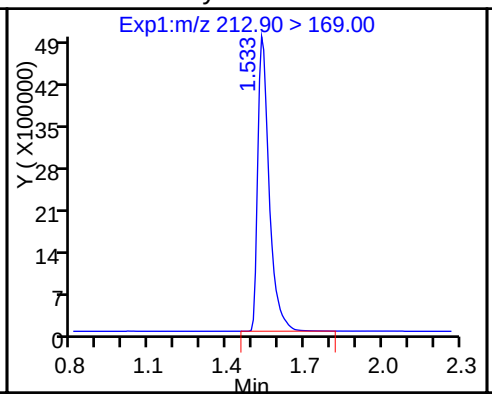
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

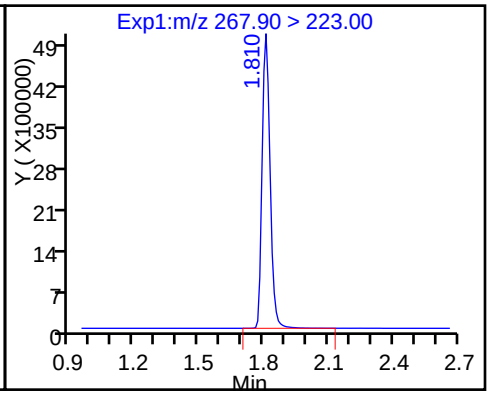
D 2 13C4 PFBA



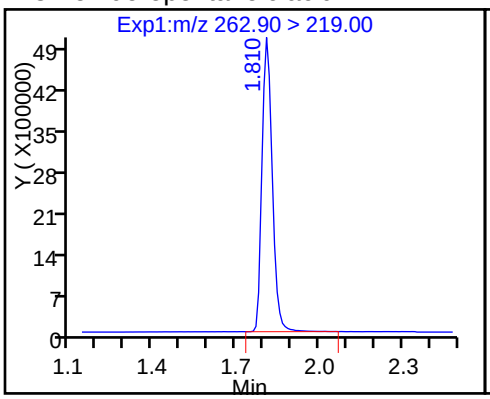
1 Perfluorobutyric acid



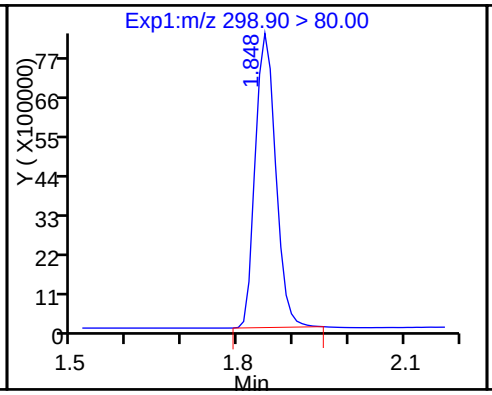
D 4 13C5-PFPeA



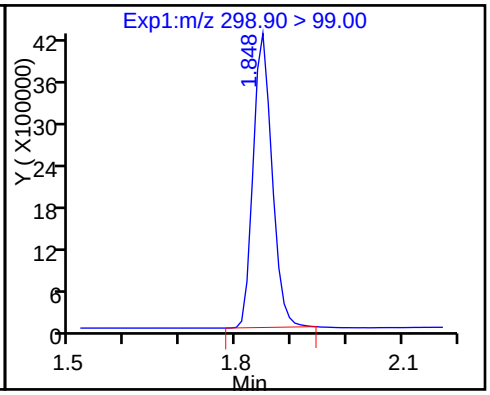
3 Perfluoropentanoic acid



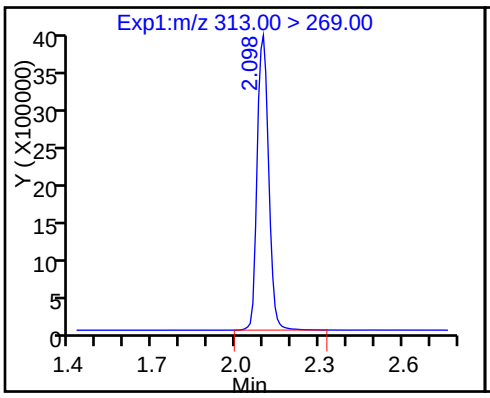
5 Perfluorobutanesulfonic acid



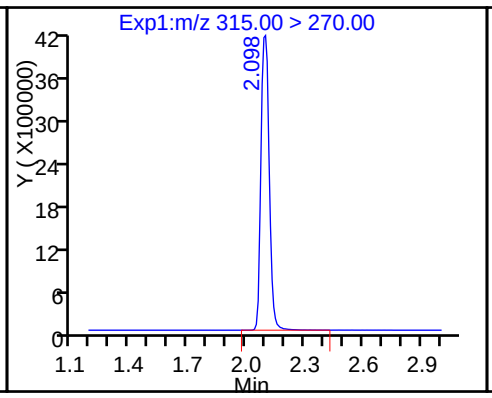
5 Perfluorobutanesulfonic acid



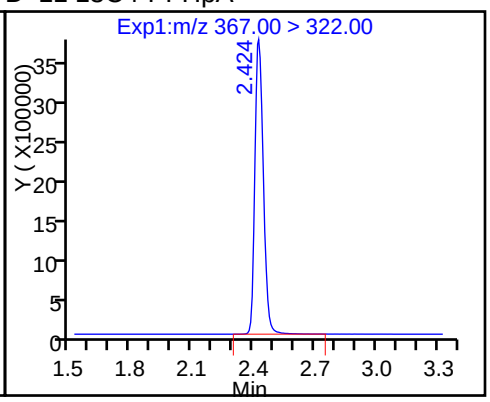
7 Perfluorohexanoic acid



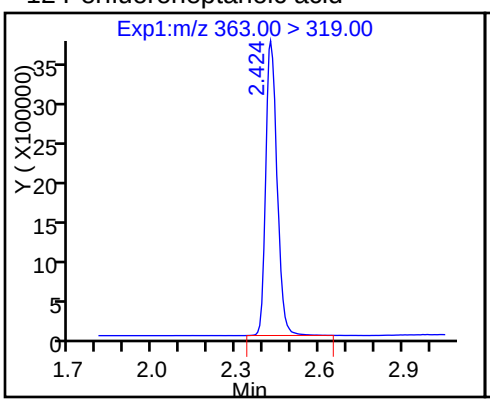
D 6 13C2 PFHxA



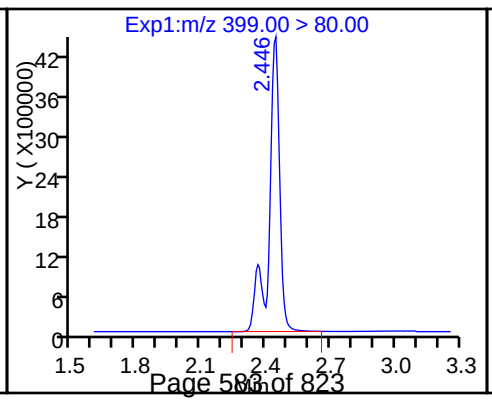
D 11 13C4-PFHpA



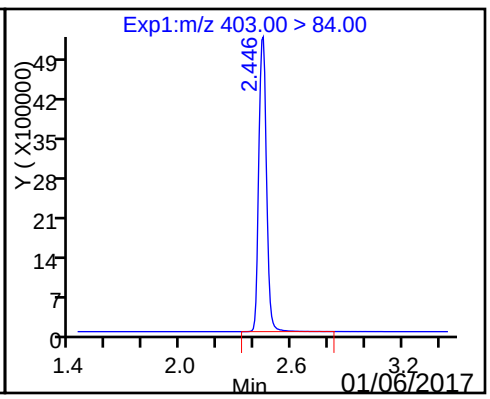
12 Perfluoroheptanoic acid



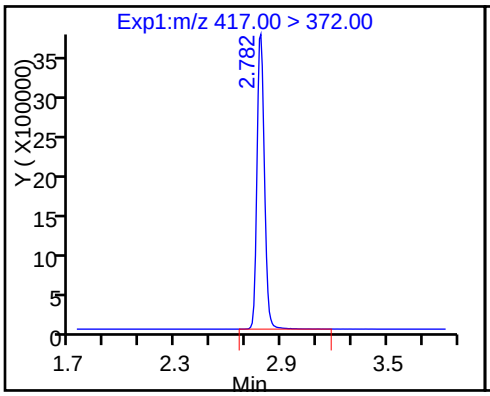
9 Perfluorohexanesulfonic acid



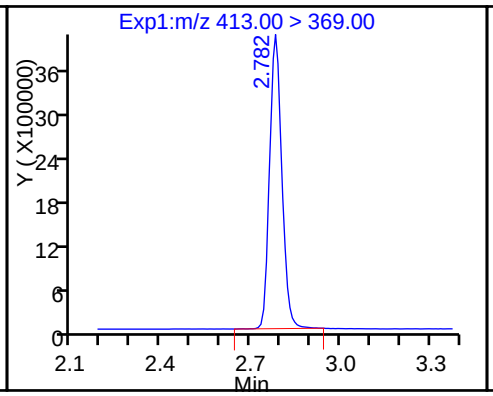
D 10 18O2 PFHxS



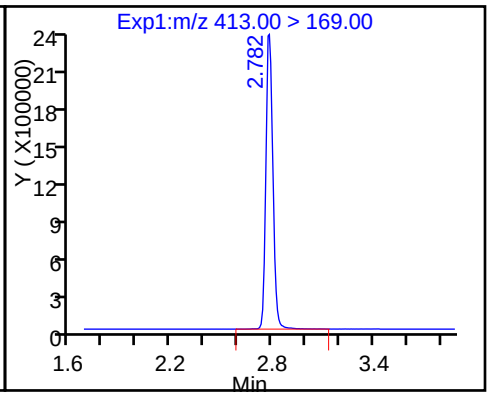
D 14 13C4 PFOA



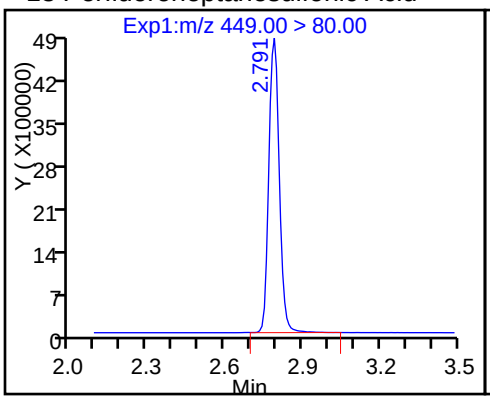
15 Perfluorooctanoic acid



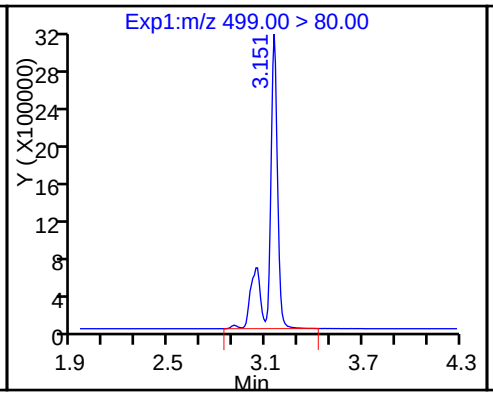
15 Perfluorooctanoic acid



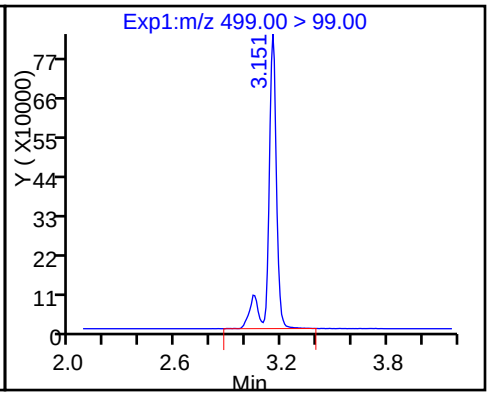
13 Perfluoroheptanesulfonic Acid



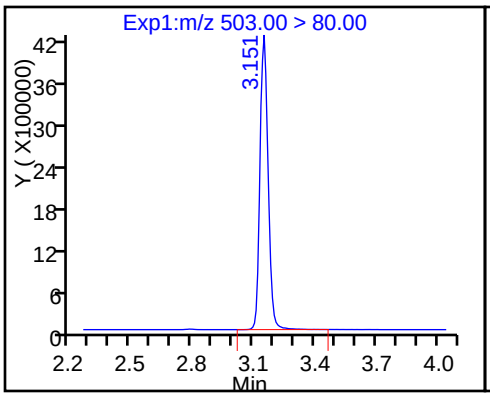
18 Perfluorooctane sulfonic acid



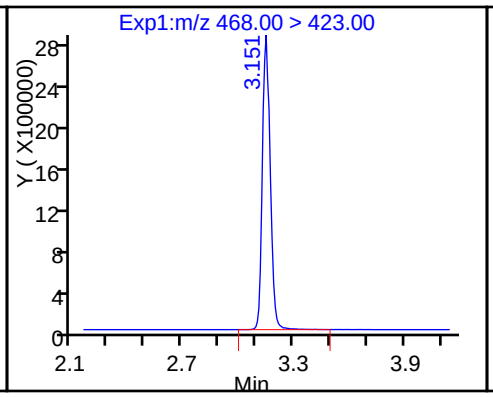
18 Perfluorooctane sulfonic acid



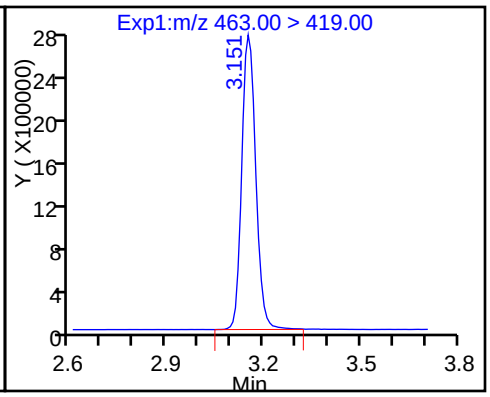
D 17 13C4 PFOS



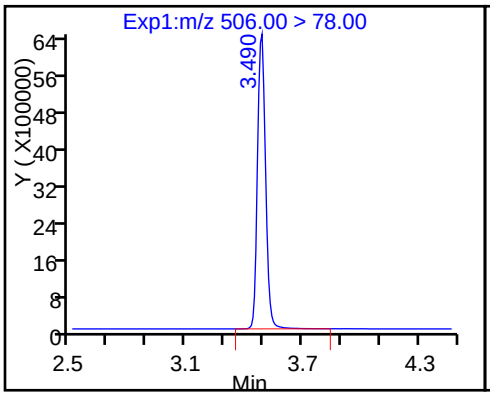
D 19 13C5 PFNA



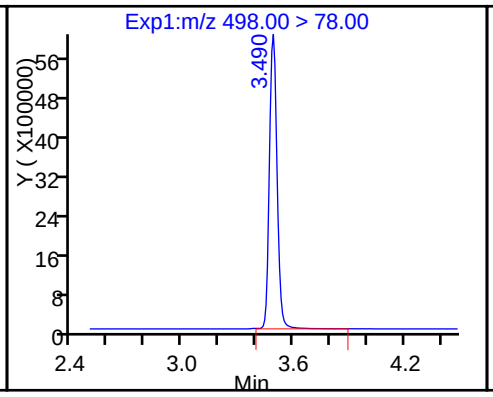
20 Perfluorononanoic acid



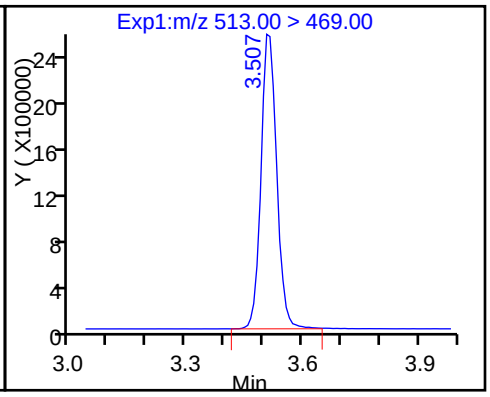
D 21 13C8 FOSA



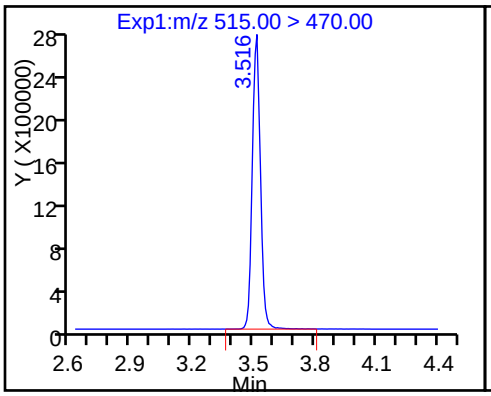
22 Perfluorooctane Sulfonamide



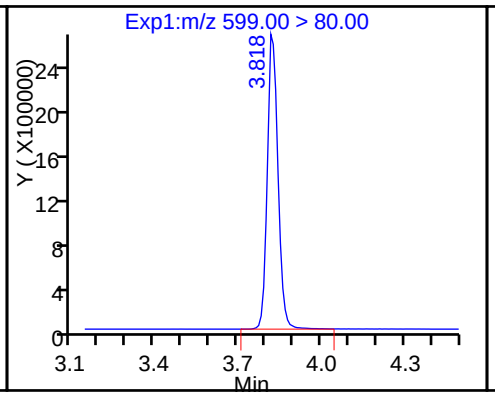
24 Perfluorodecanoic acid



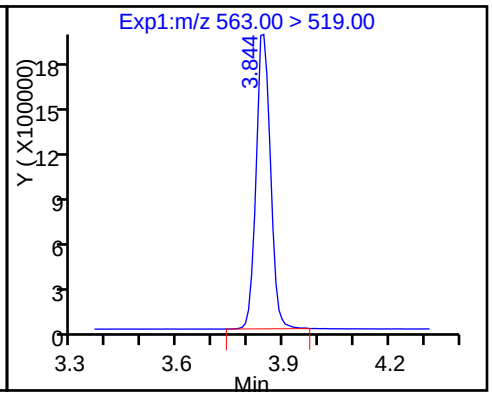
D 23 13C2 PFDA



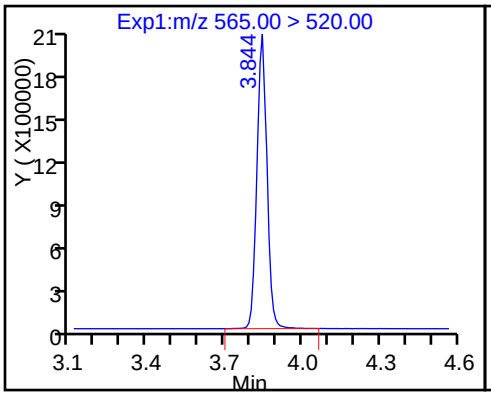
26 Perfluorodecane Sulfonic acid



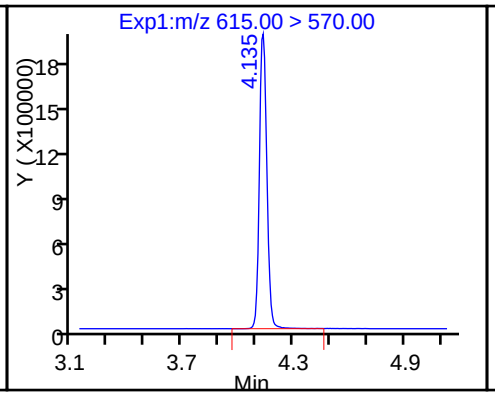
28 Perfluoroundecanoic acid



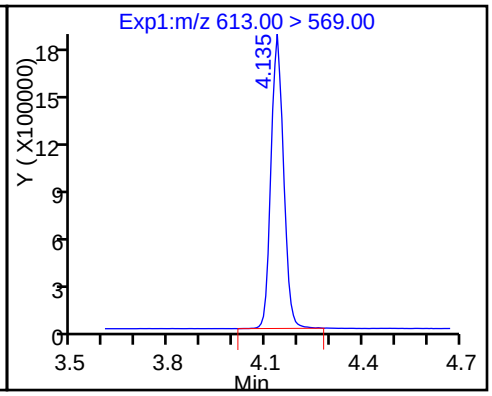
D 27 13C2 PFUnA



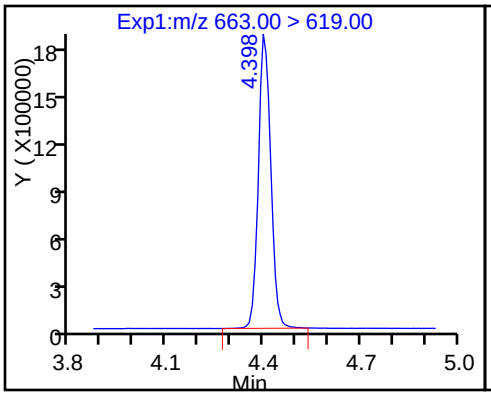
D 30 13C2 PFDoA



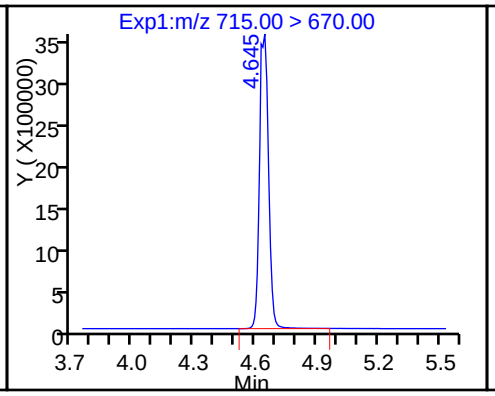
29 Perfluorododecanoic acid



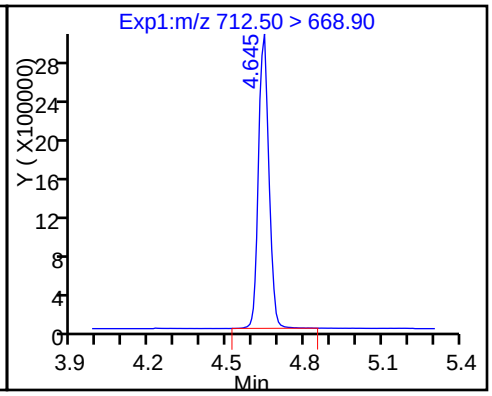
31 Perfluorotridecanoic acid



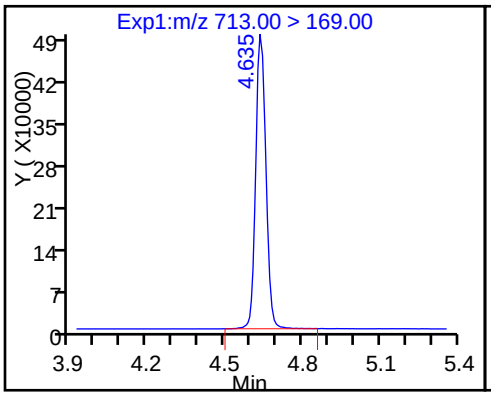
D 32 13C2-PFTeDA



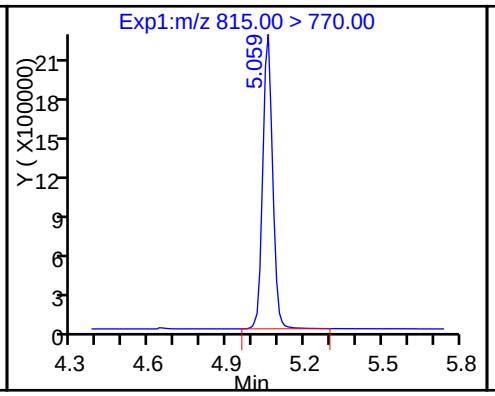
33 Perfluorotetradecanoic acid



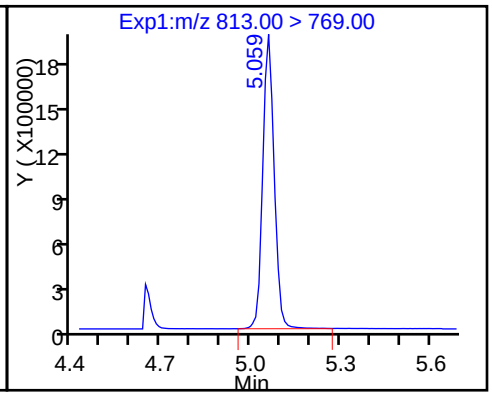
33 Perfluorotetradecanoic acid



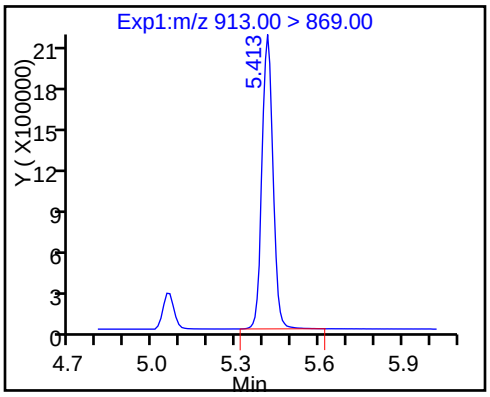
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_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

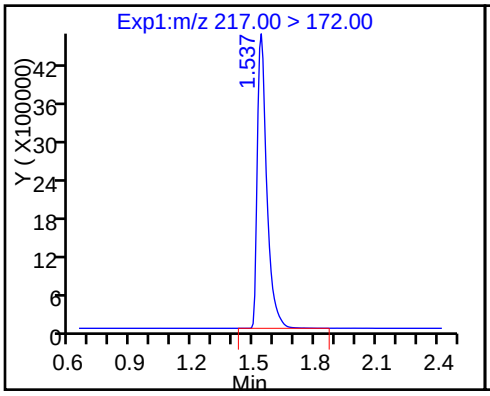
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9

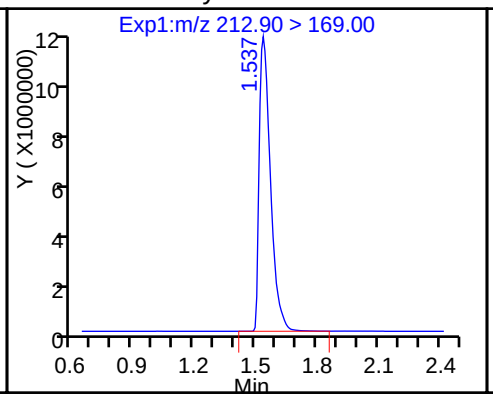
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

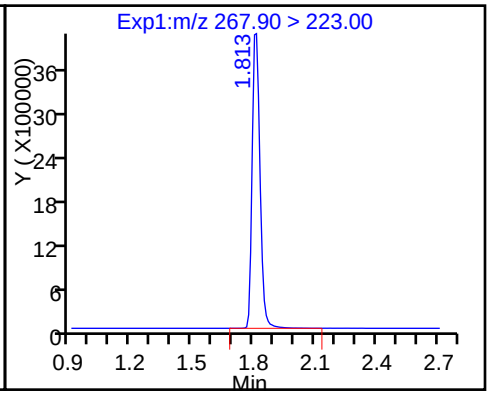
D 2 13C4 PFBA



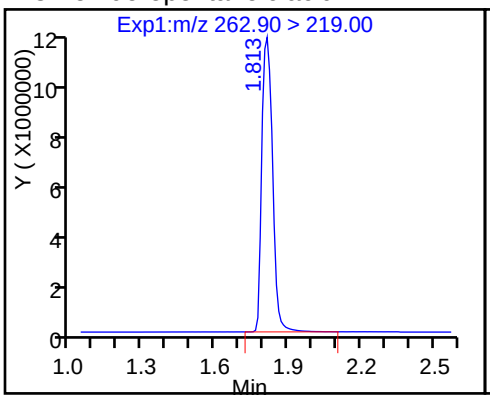
1 Perfluorobutyric acid



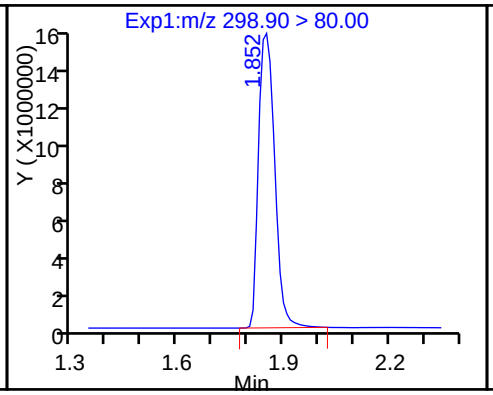
D 4 13C5-PFPeA



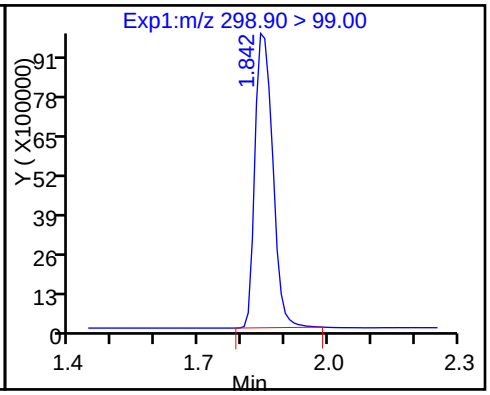
3 Perfluoropentanoic acid



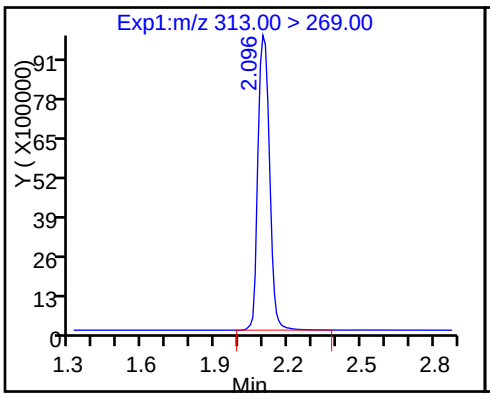
5 Perfluorobutanesulfonic acid



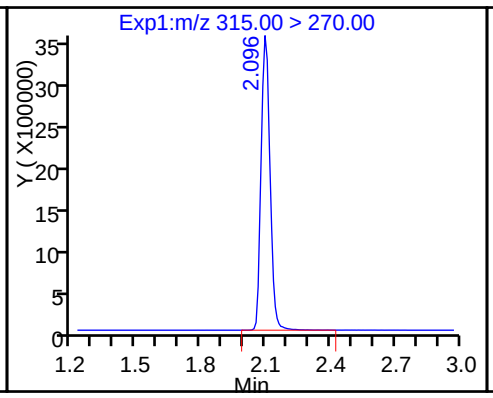
5 Perfluorobutanesulfonic acid



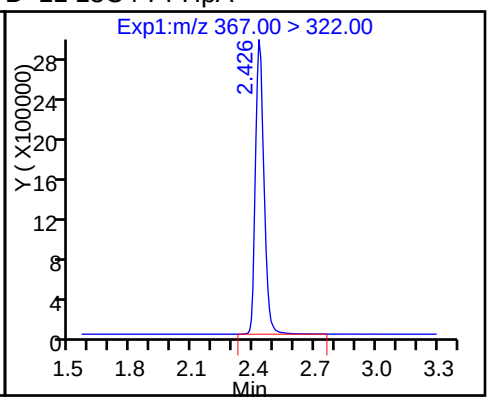
7 Perfluorohexanoic acid



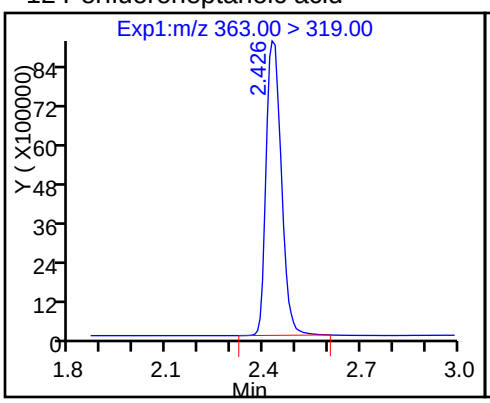
D 6 13C2 PFHxA



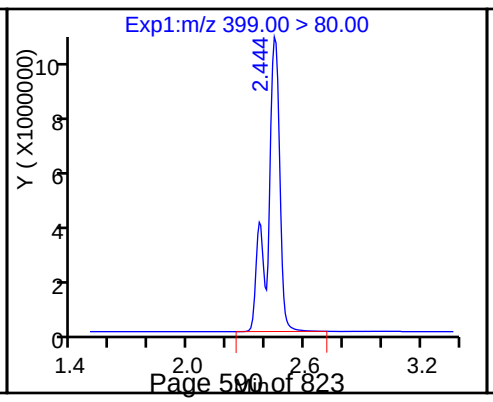
D 11 13C4-PFHpA



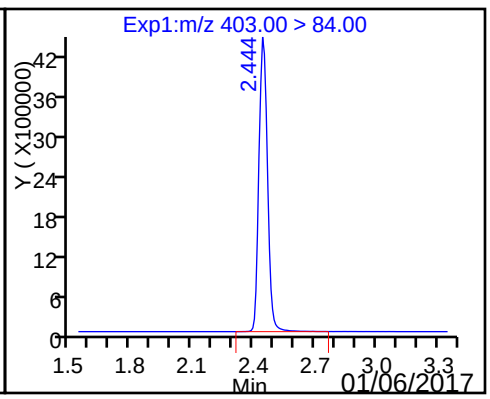
12 Perfluoroheptanoic acid



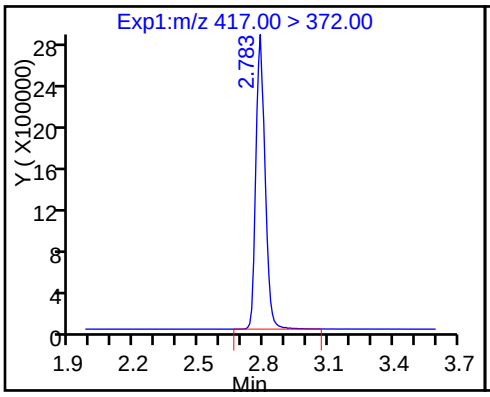
9 Perfluorohexanesulfonic acid



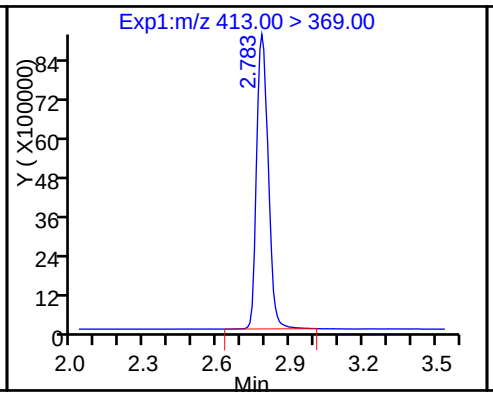
D 10 18O2 PFHxS



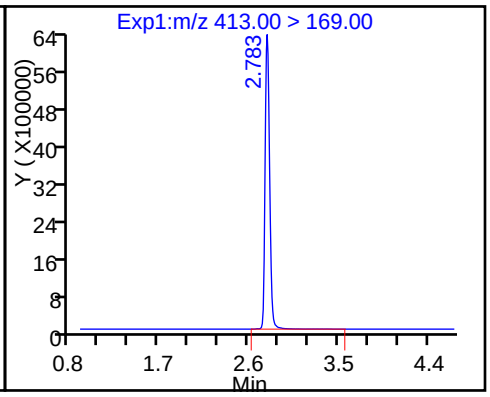
D 14 13C4 PFOA



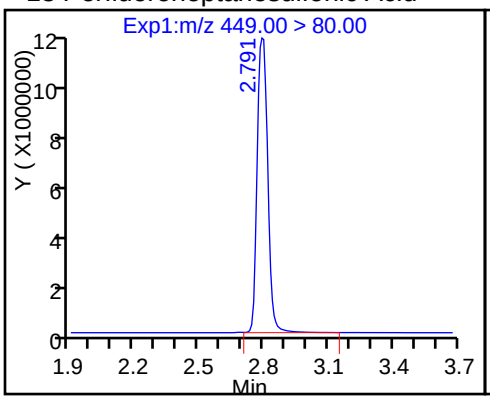
15 Perfluorooctanoic acid



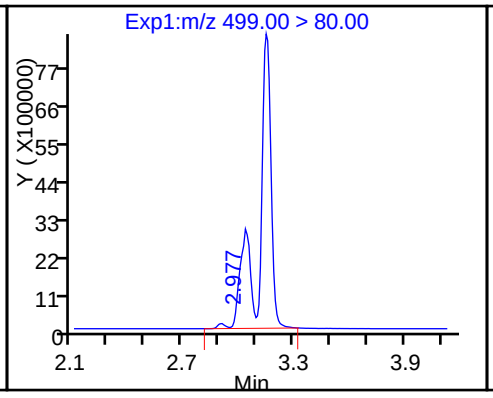
15 Perfluorooctanoic acid



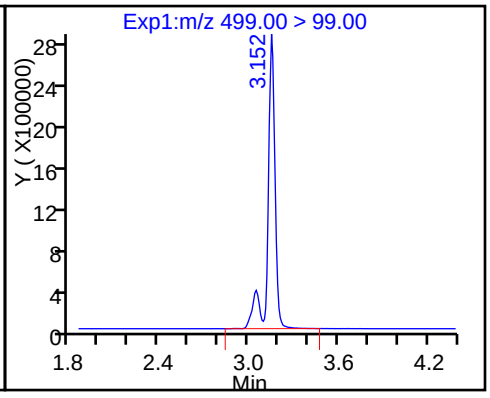
13 Perfluoroheptanesulfonic Acid



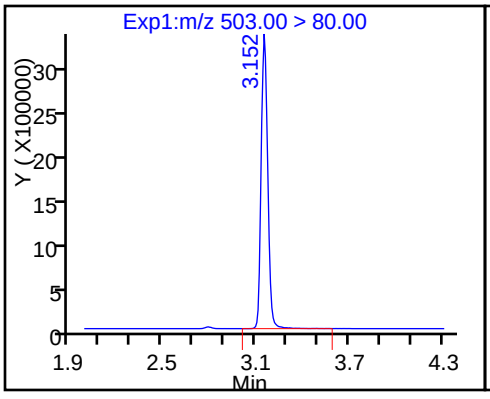
18 Perfluorooctane sulfonic acid



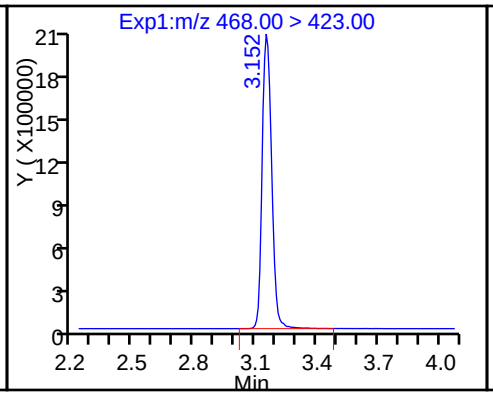
18 Perfluorooctane sulfonic acid



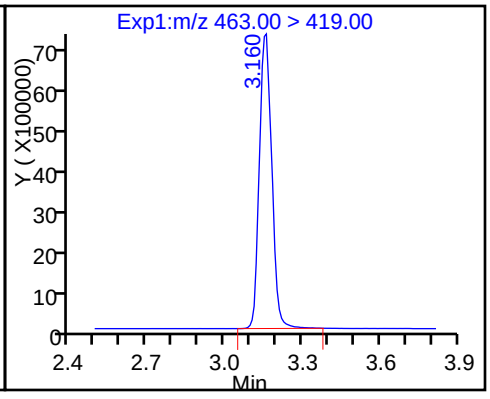
D 17 13C4 PFOS



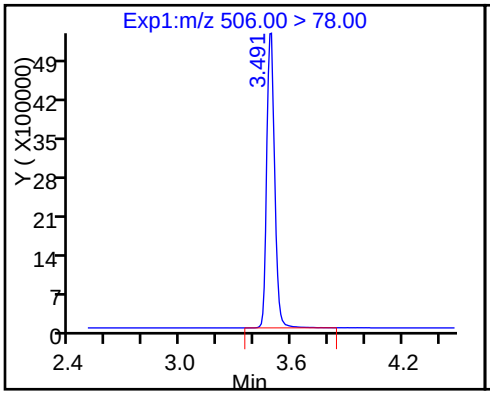
D 19 13C5 PFNA



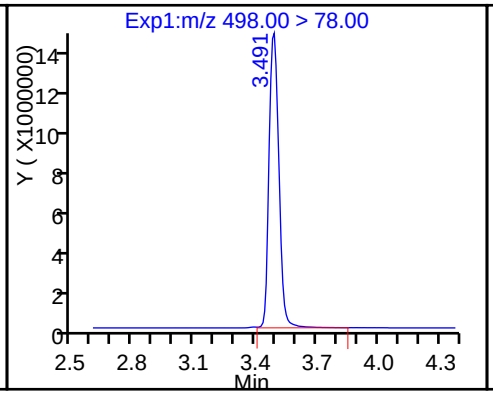
20 Perfluorononanoic acid



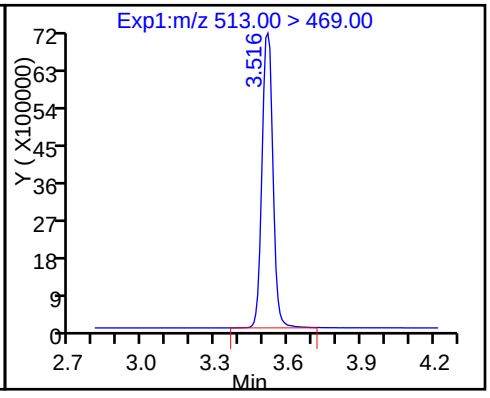
D 21 13C8 FOSA



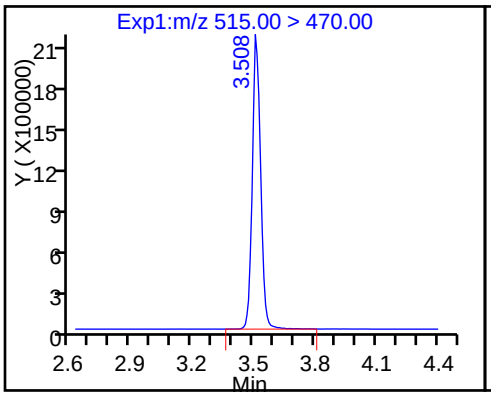
22 Perfluorooctane Sulfonamide



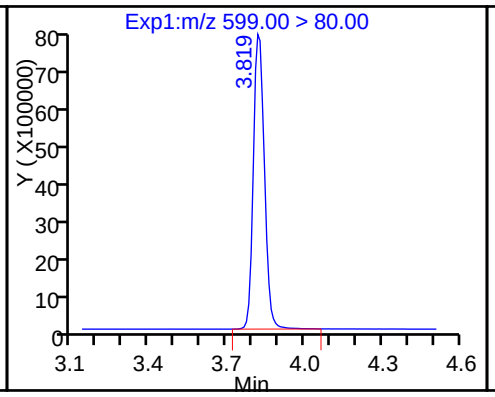
24 Perfluorodecanoic acid



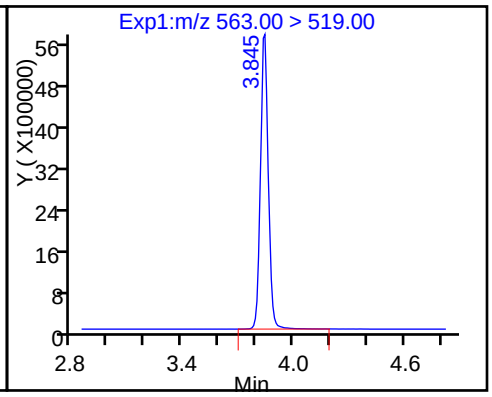
D 23 13C2 PFDA



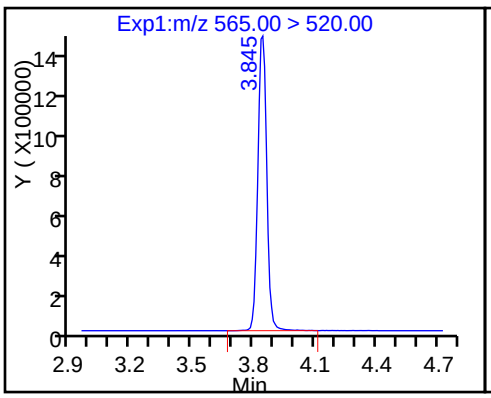
26 Perfluorodecane Sulfonic acid



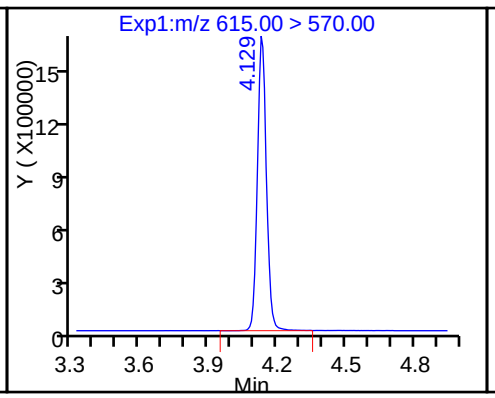
28 Perfluoroundecanoic acid



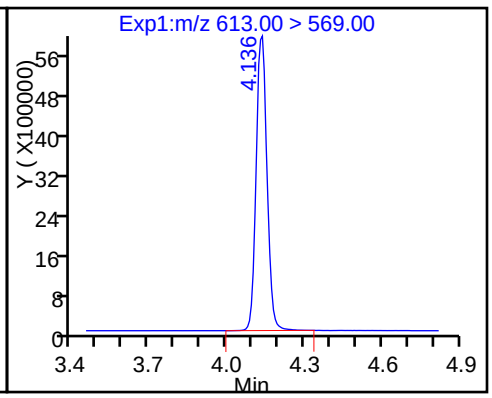
D 27 13C2 PFUnA



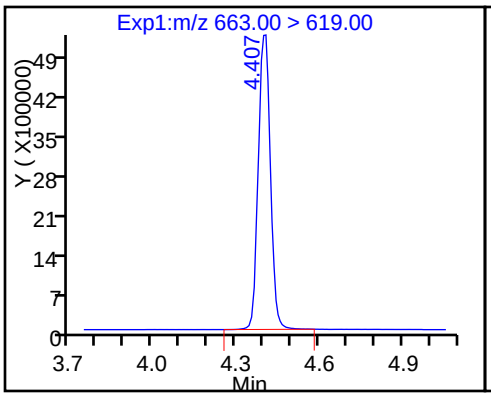
D 30 13C2 PFDoA



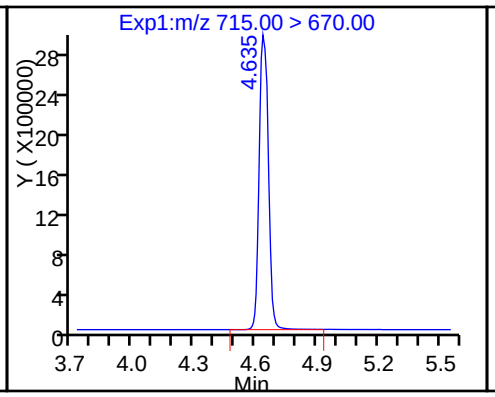
29 Perfluorododecanoic acid



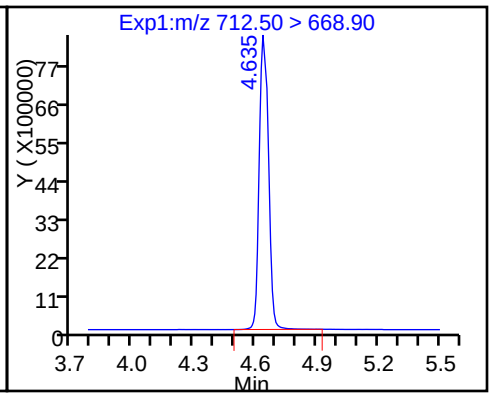
31 Perfluorotridecanoic acid



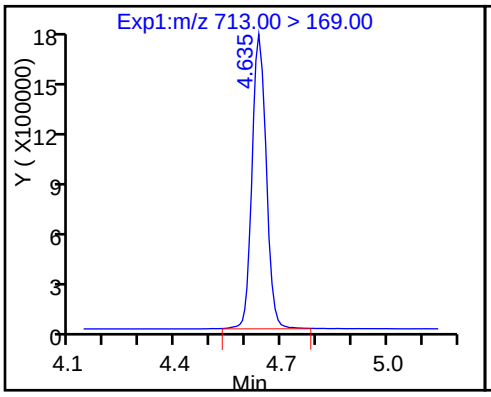
D 32 13C2-PFTeDA



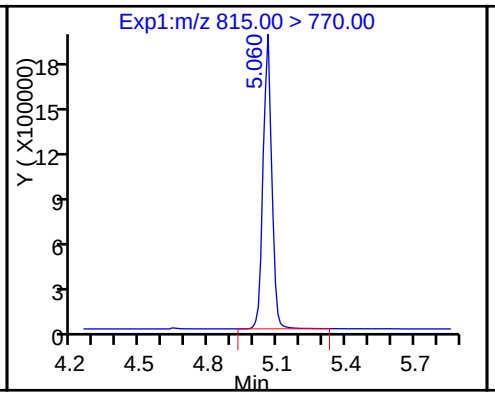
33 Perfluorotetradecanoic acid



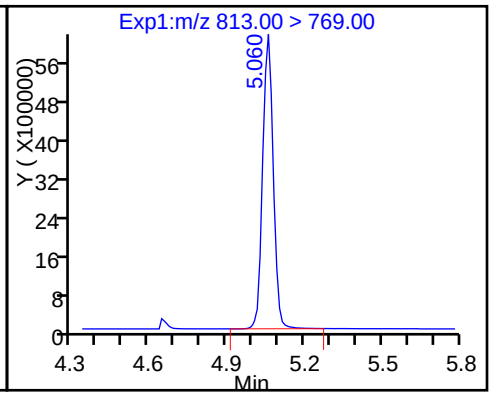
33 Perfluorotetradecanoic acid



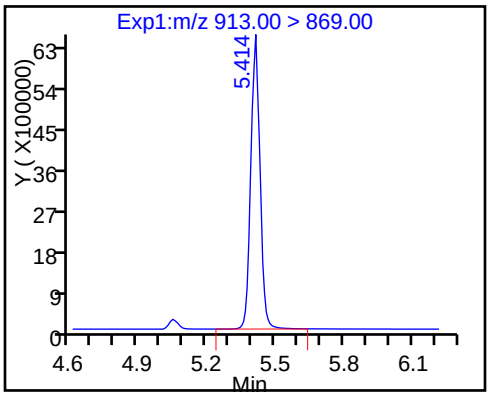
D 34 13C2-PFHxDA



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

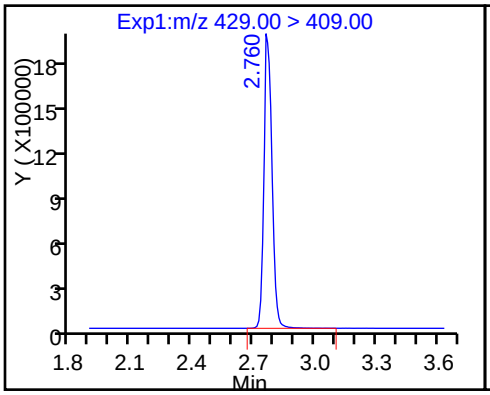
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 46 Worklist Smp#: 13

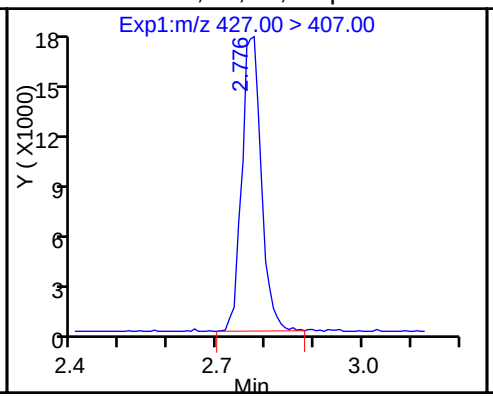
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

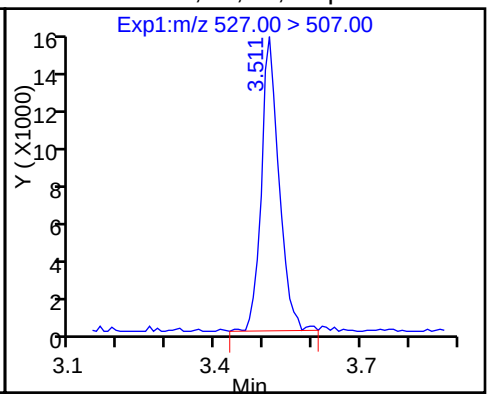
D 47 M2-6:2FTS



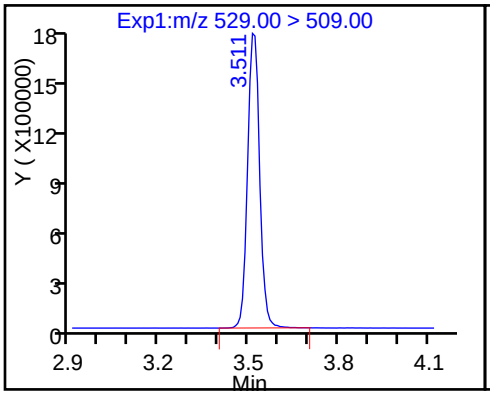
48 Sodium 1H,1H,2H,2H-perfluorooctane



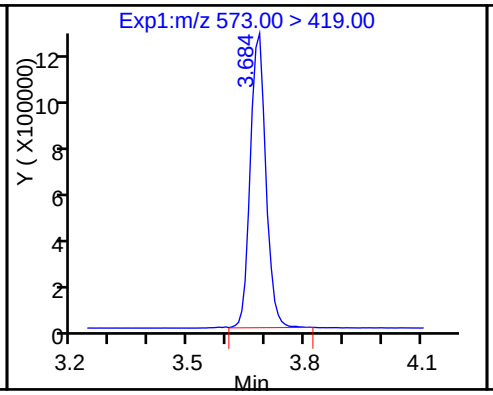
43 Sodium 1H,1H,2H,2H-perfluorooctane



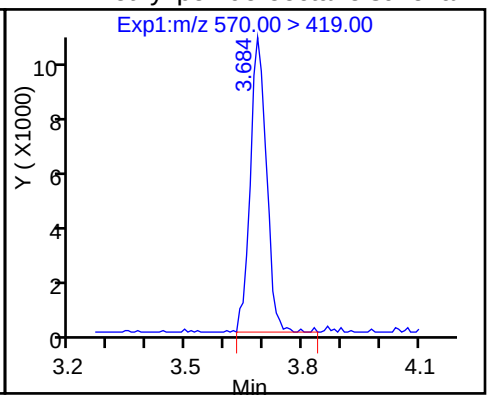
D 42 M2-8:2FTS



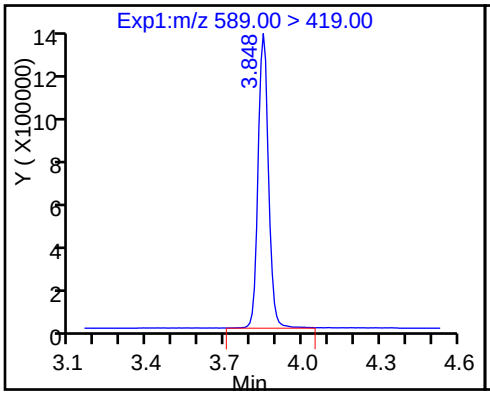
D 45 d3-NMeFOSAA



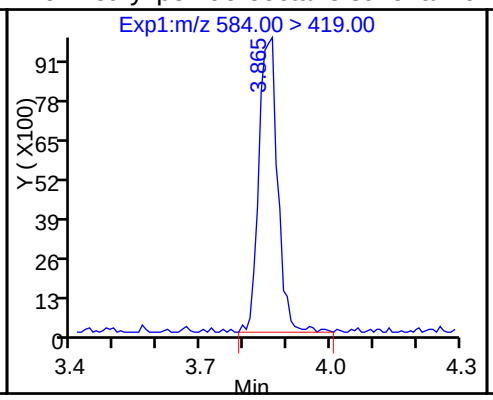
44 N-methyl perfluorooctane sulfonami



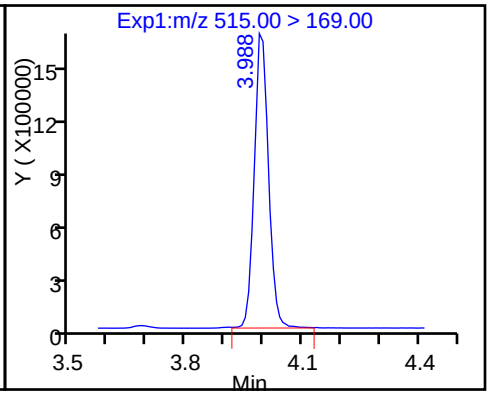
D 46 d5-NEtFOSAA



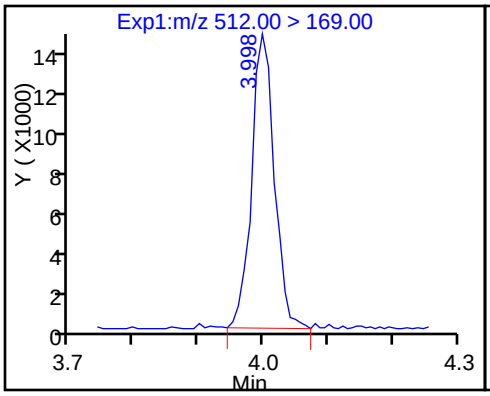
49 N-ethyl perfluorooctane sulfonamid



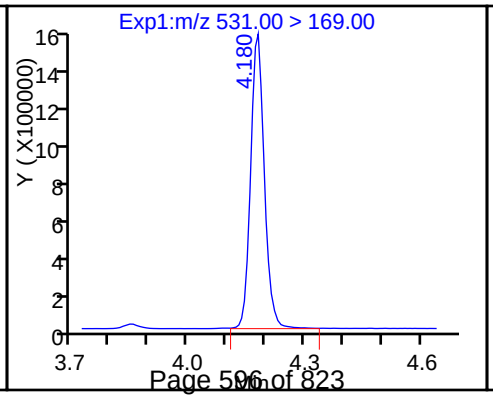
D 52 d-N-MeFOSA-M



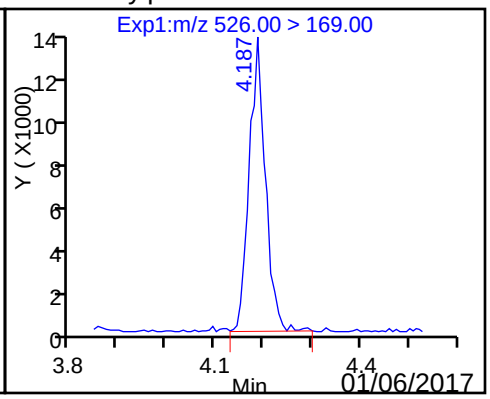
54 MeFOSA



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

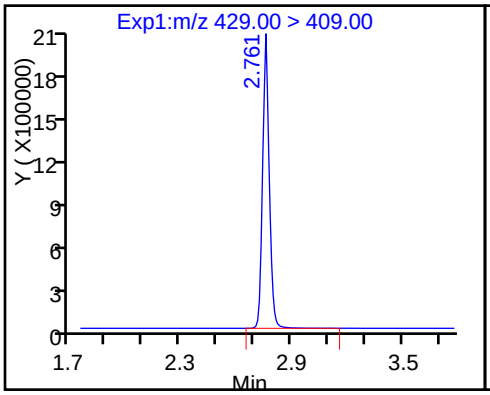
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 47 Worklist Smp#: 14

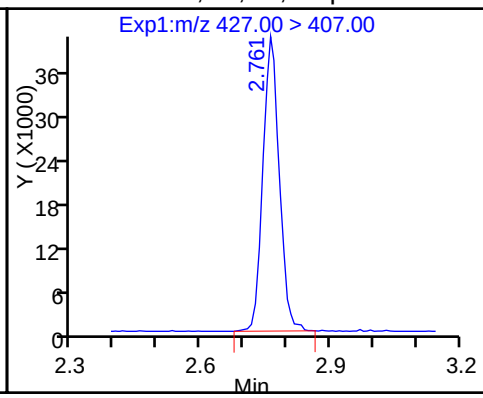
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

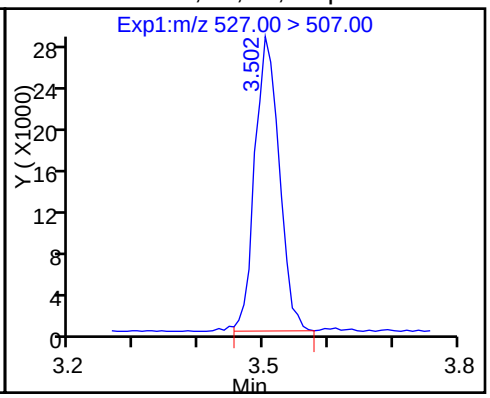
D 47 M2-6:2FTS



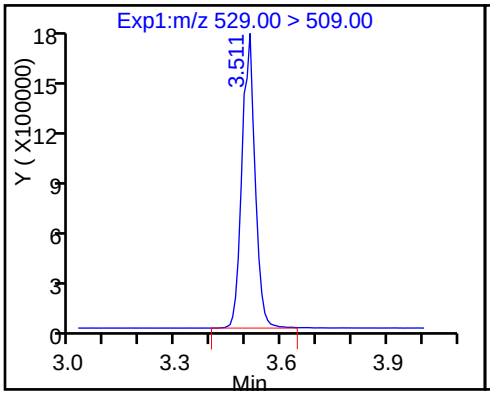
48 Sodium 1H,1H,2H,2H-perfluorooctane



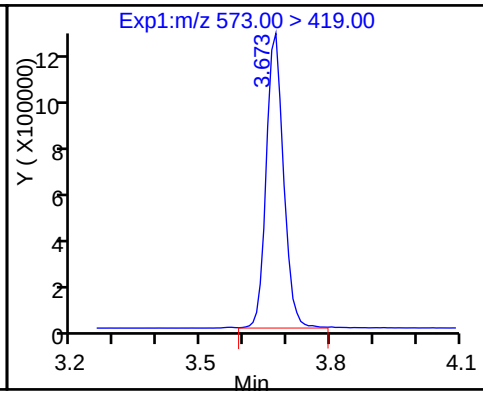
43 Sodium 1H,1H,2H,2H-perfluorooctane



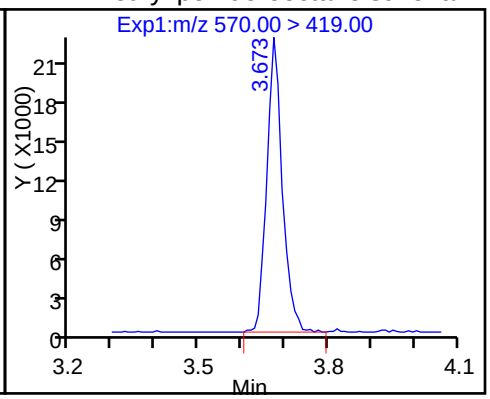
D 42 M2-8:2FTS



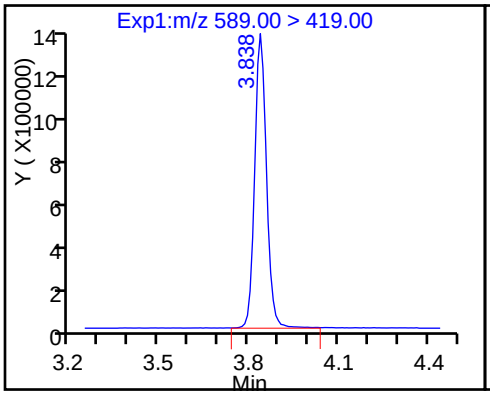
D 45 d3-NMeFOSAA



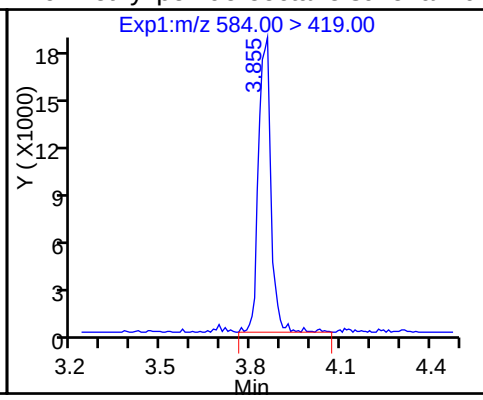
44 N-methyl perfluorooctane sulfonami



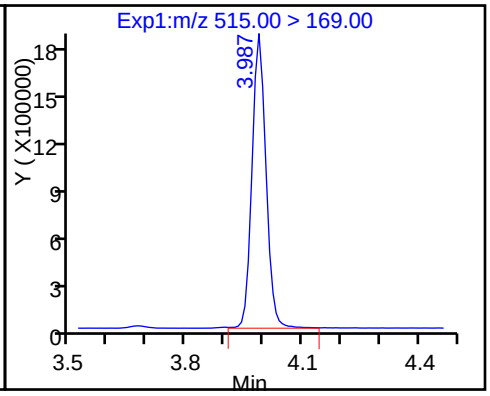
D 46 d5-NEtFOSAA



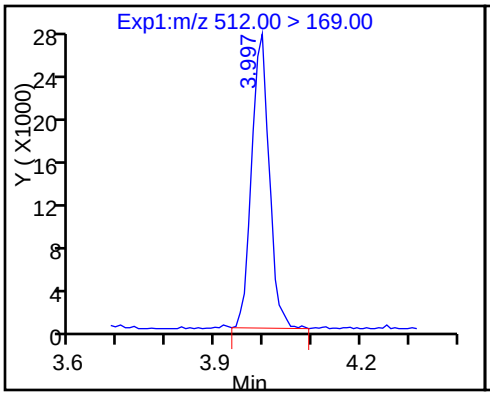
49 N-ethyl perfluorooctane sulfonamid



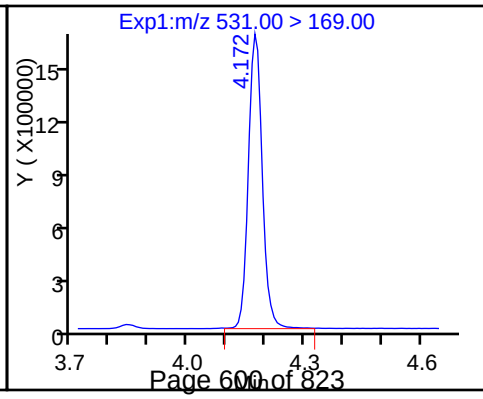
D 52 d-N-MeFOSA-M



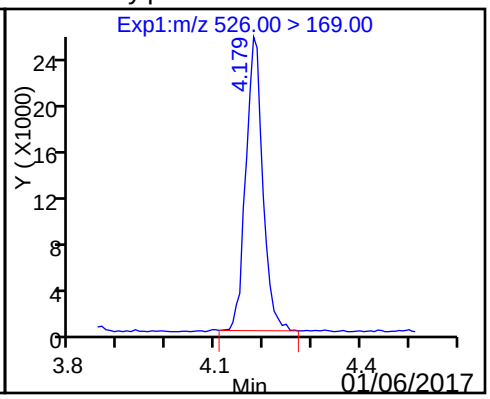
54 MeFOSA



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

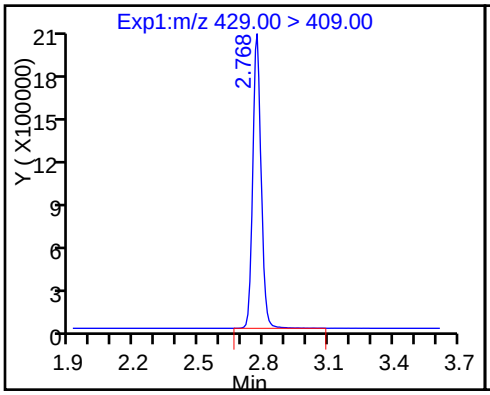
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 48 Worklist Smp#: 15

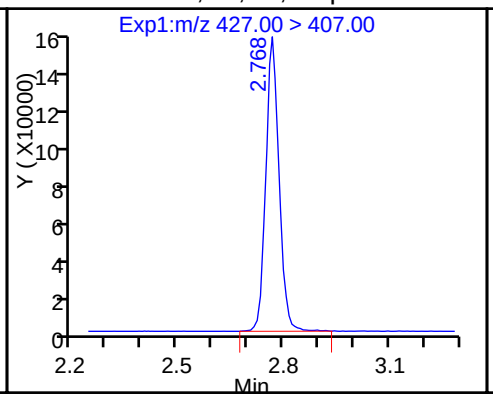
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

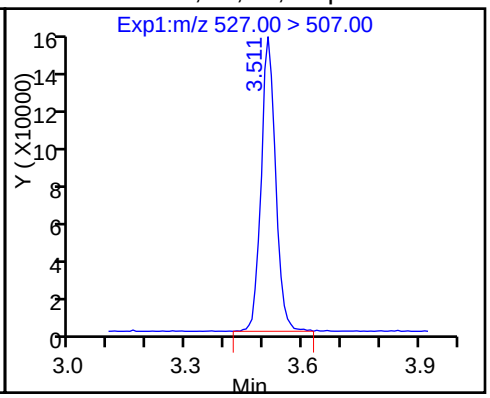
D 47 M2-6:2FTS



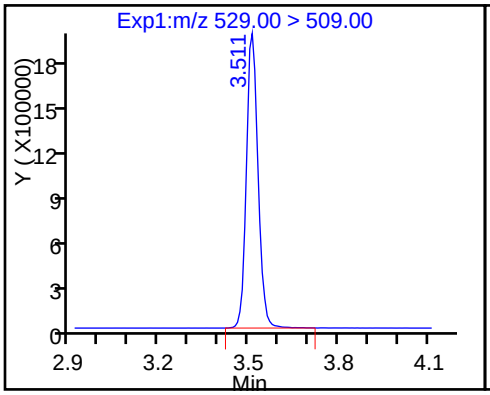
48 Sodium 1H,1H,2H,2H-perfluorooctane



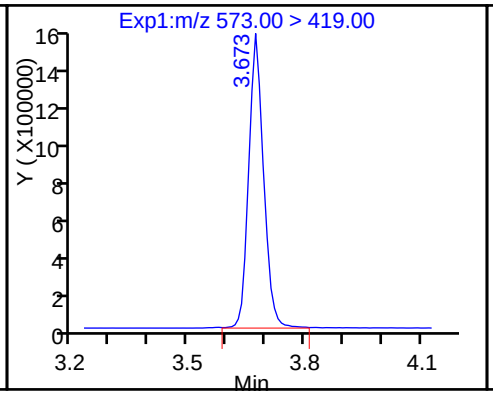
43 Sodium 1H,1H,2H,2H-perfluorooctane



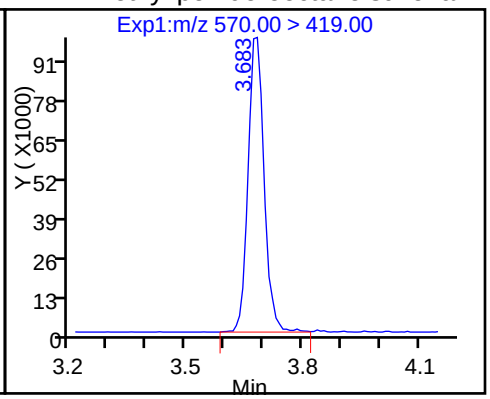
D 42 M2-8:2FTS



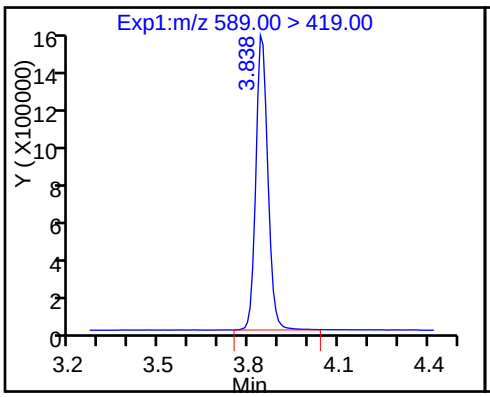
D 45 d3-NMeFOSAA



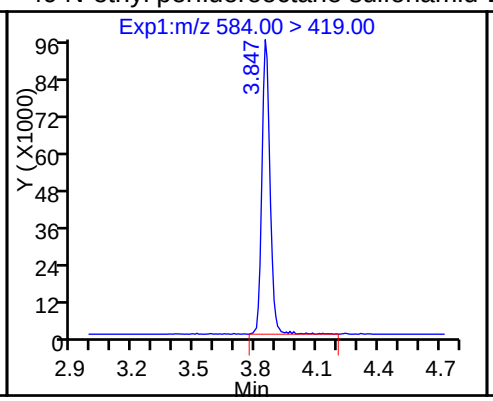
44 N-methyl perfluorooctane sulfonami



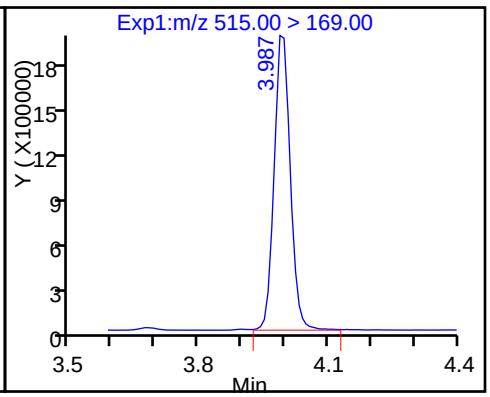
D 46 d5-NEtFOSAA



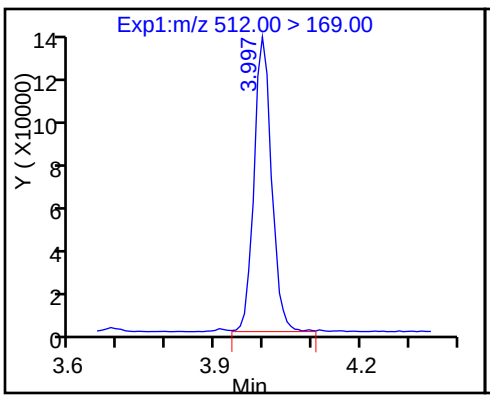
49 N-ethyl perfluorooctane sulfonamid



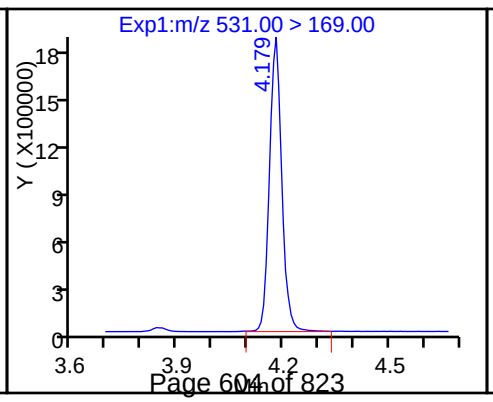
D 52 d-N-MeFOSA-M



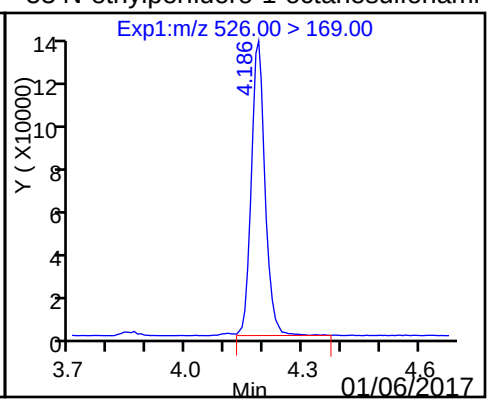
54 MeFOSA



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

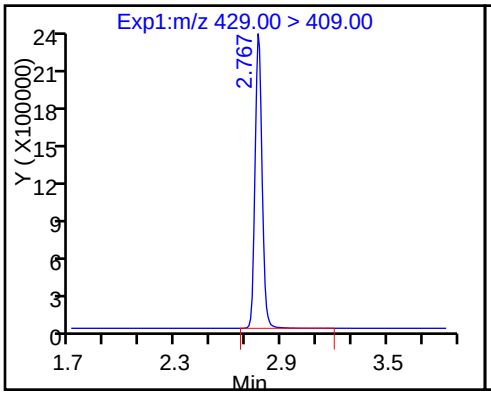
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 49 Worklist Smp#: 16

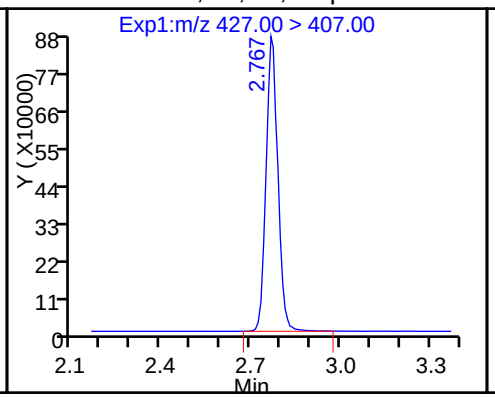
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

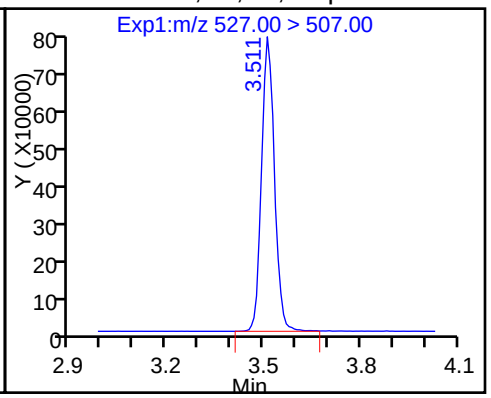
D 47 M2-6:2FTS



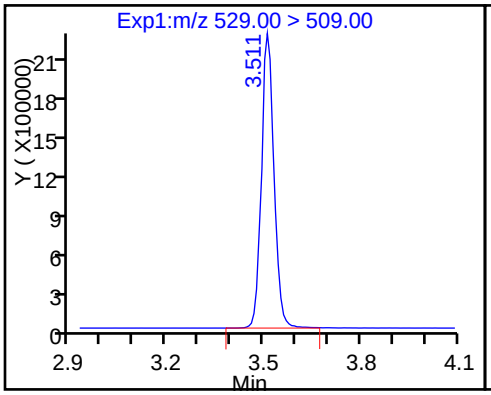
48 Sodium 1H,1H,2H,2H-perfluorooctane



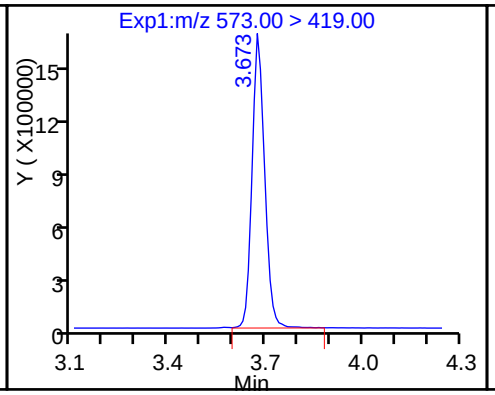
43 Sodium 1H,1H,2H,2H-perfluorooctane



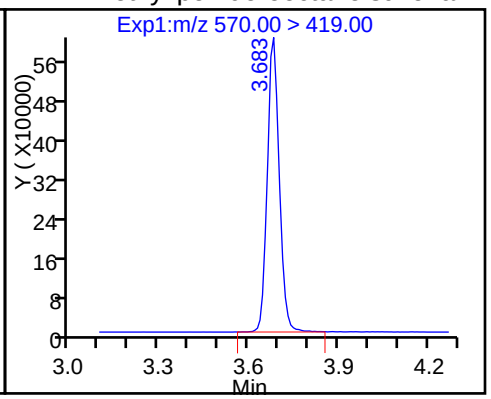
D 42 M2-8:2FTS



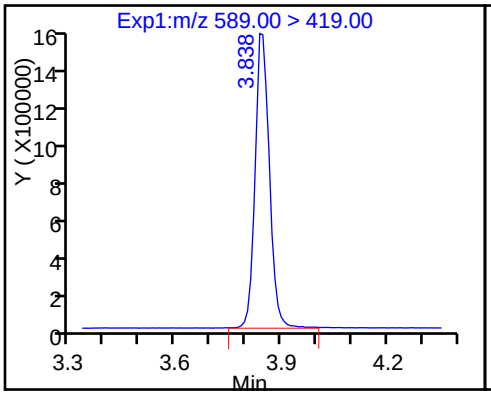
D 45 d3-NMeFOSAA



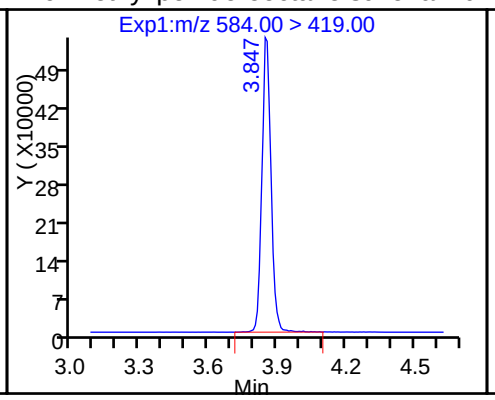
44 N-methyl perfluorooctane sulfonami



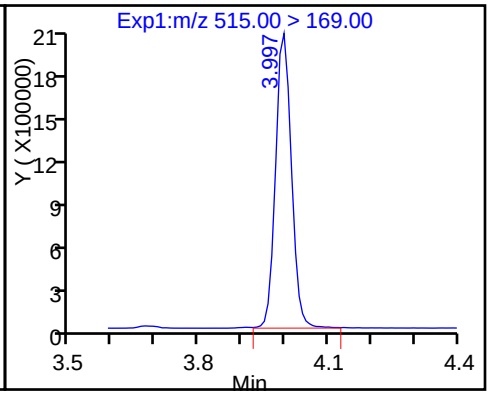
D 46 d5-NEtFOSAA



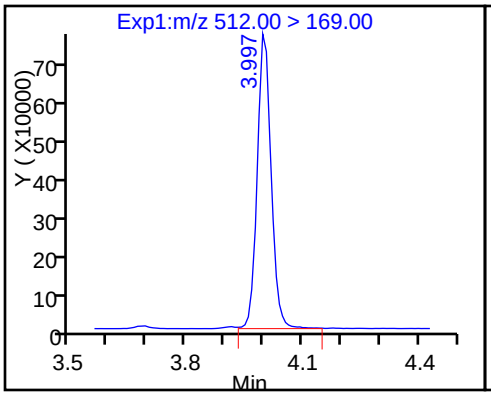
49 N-ethyl perfluorooctane sulfonamid



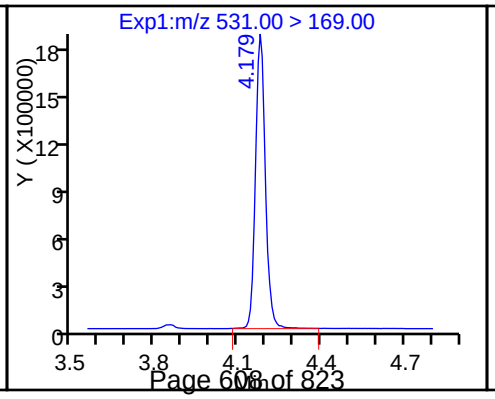
D 52 d-N-MeFOSA-M



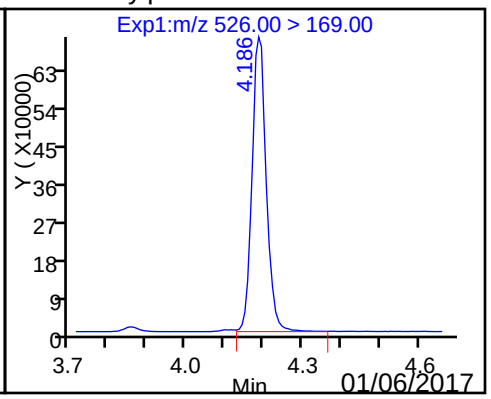
54 MeFOSA



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

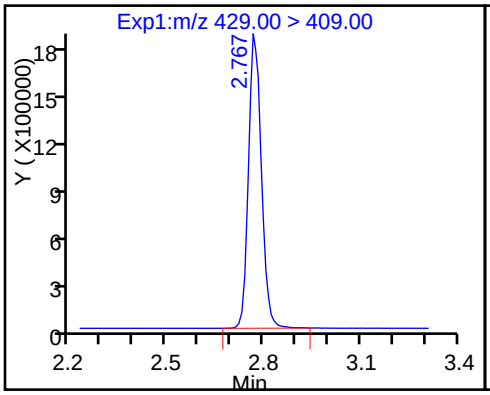
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 50 Worklist Smp#: 17

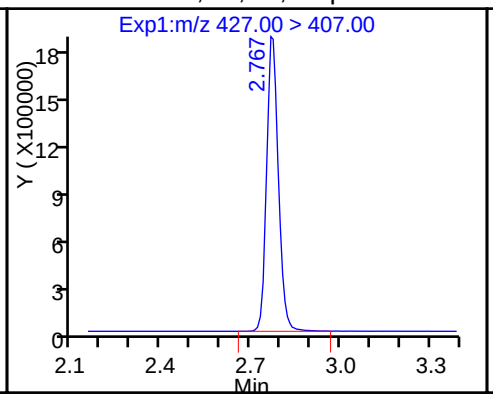
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

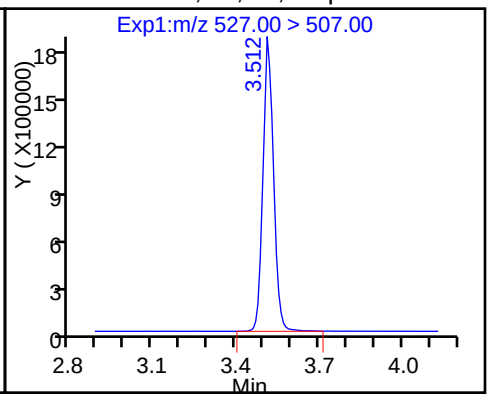
D 47 M2-6:2FTS



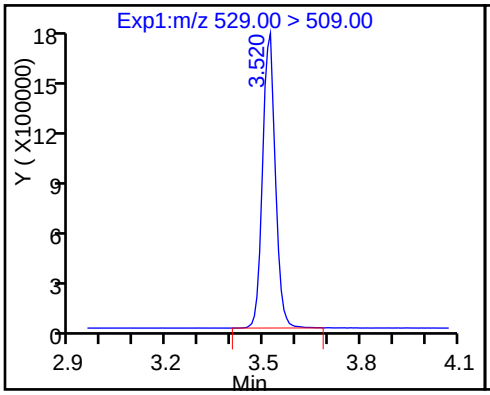
48 Sodium 1H,1H,2H,2H-perfluorooctane



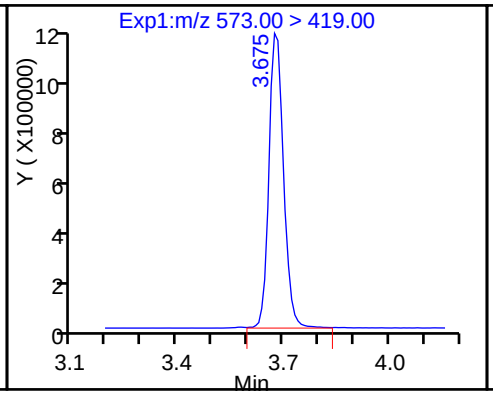
43 Sodium 1H,1H,2H,2H-perfluorooctane



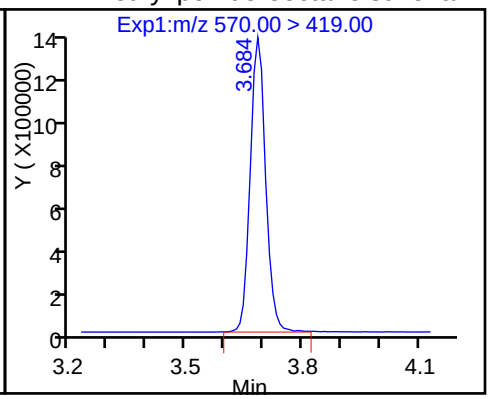
D 42 M2-8:2FTS



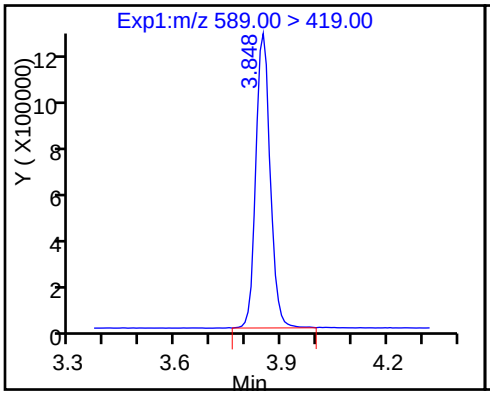
D 45 d3-NMeFOSAA



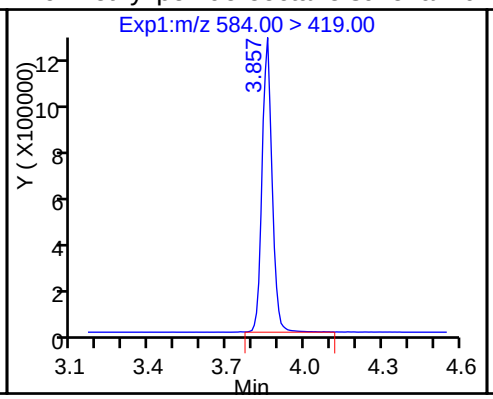
44 N-methyl perfluorooctane sulfonami



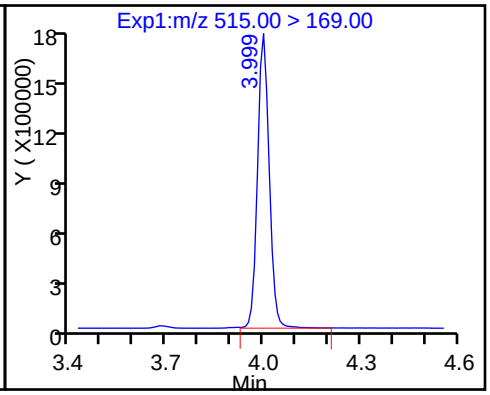
D 46 d5-NEtFOSAA



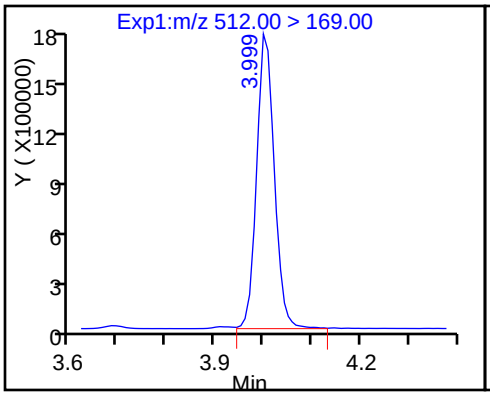
49 N-ethyl perfluorooctane sulfonamid



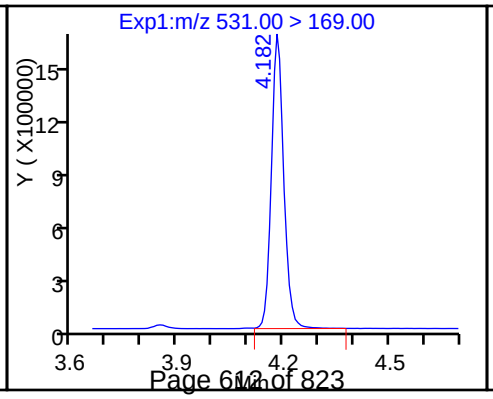
D 52 d-N-MeFOSA-M



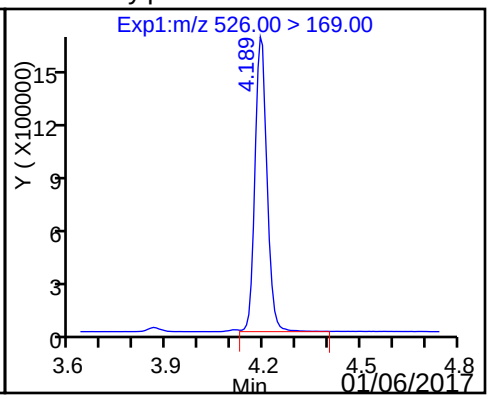
54 MeFOSA



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

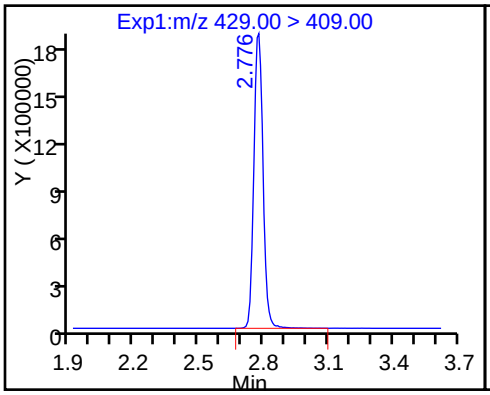
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 18

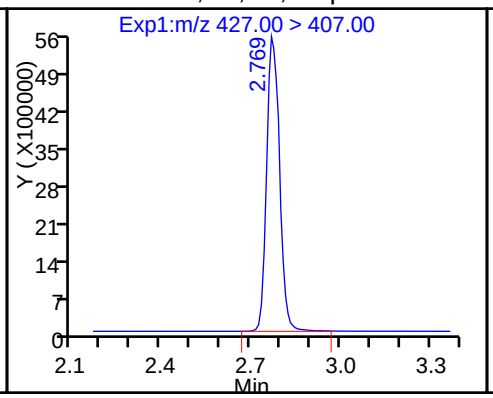
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

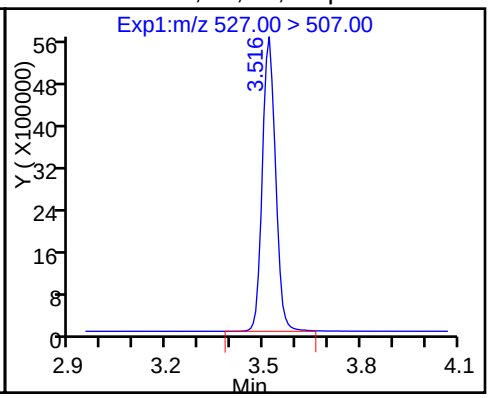
D 47 M2-6:2FTS



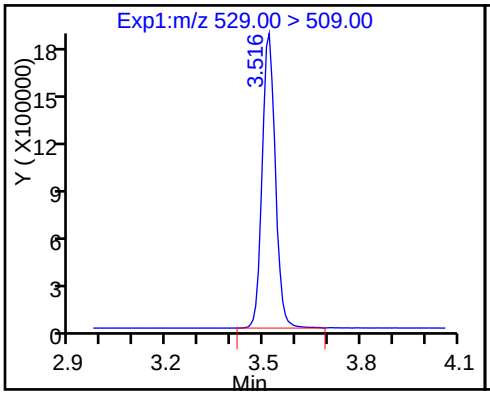
48 Sodium 1H,1H,2H,2H-perfluorooctane



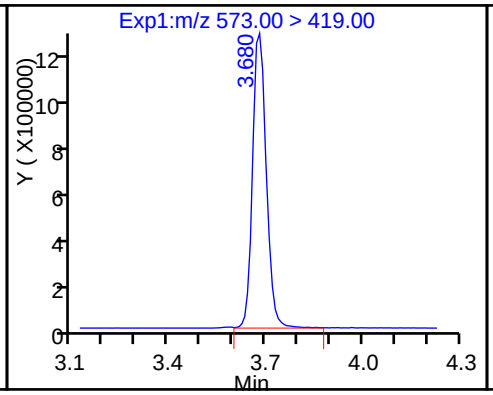
43 Sodium 1H,1H,2H,2H-perfluorooctane



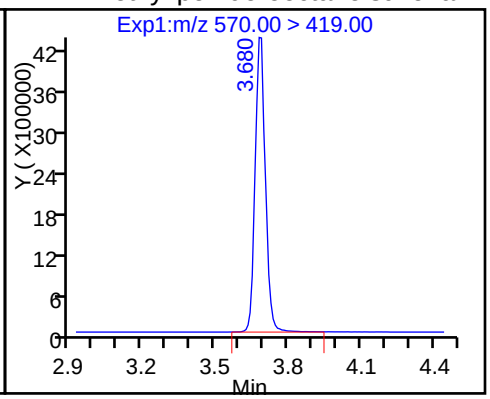
D 42 M2-8:2FTS



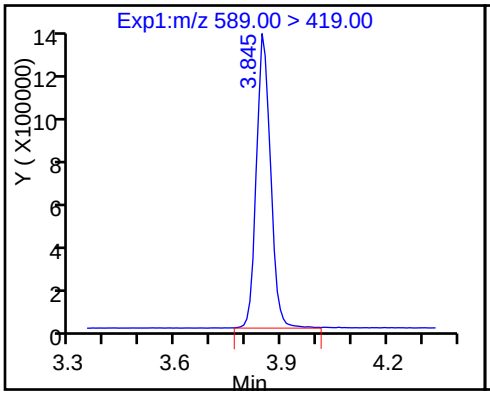
D 45 d3-NMeFOSAA



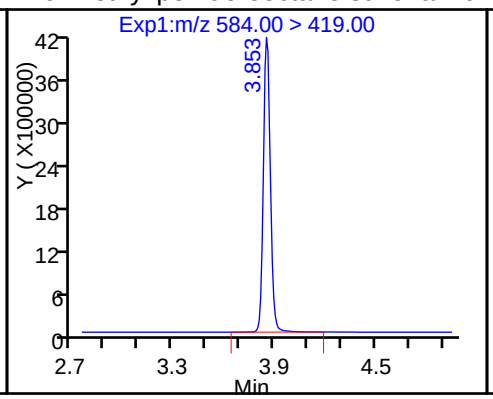
44 N-methyl perfluorooctane sulfonami



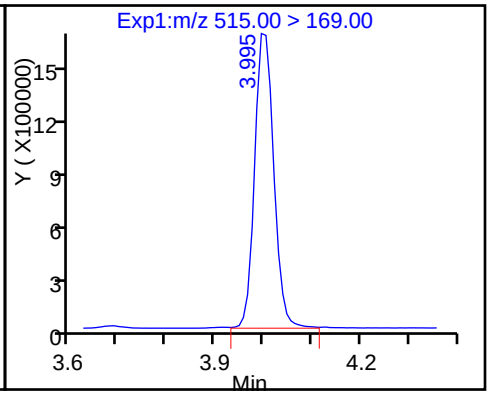
D 46 d5-NEtFOSAA



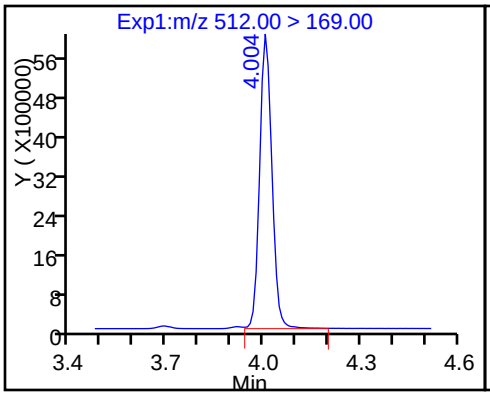
49 N-ethyl perfluorooctane sulfonamid



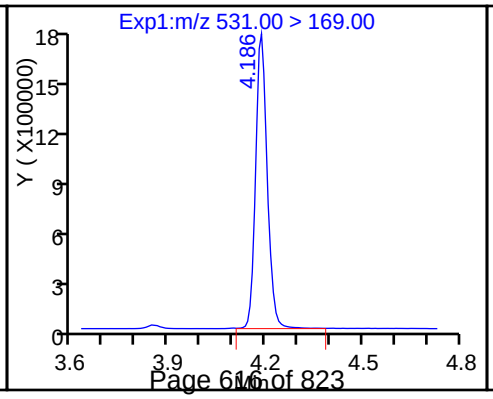
D 52 d-N-MeFOSA-M



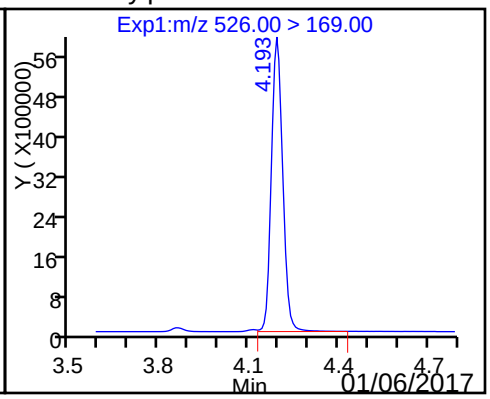
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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

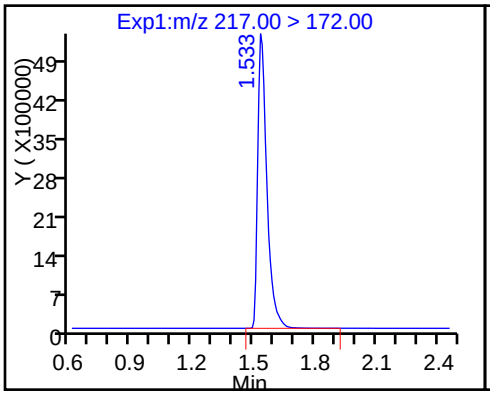
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 11

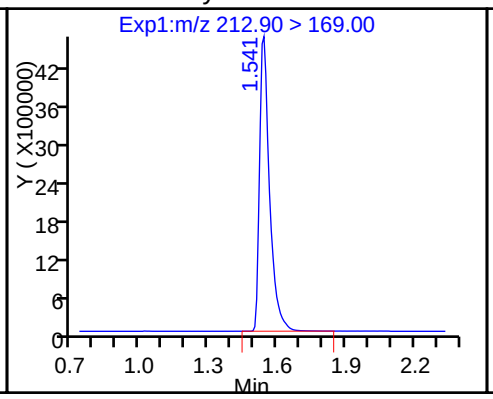
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

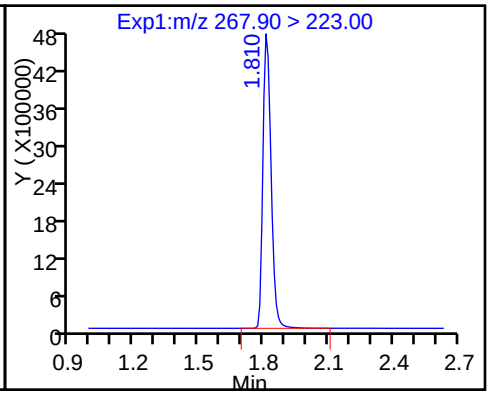
D 2 13C4 PFBA



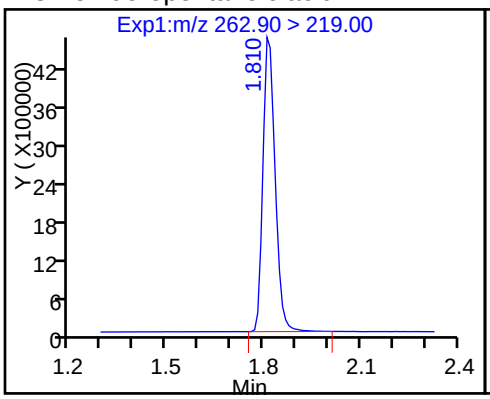
1 Perfluorobutyric acid



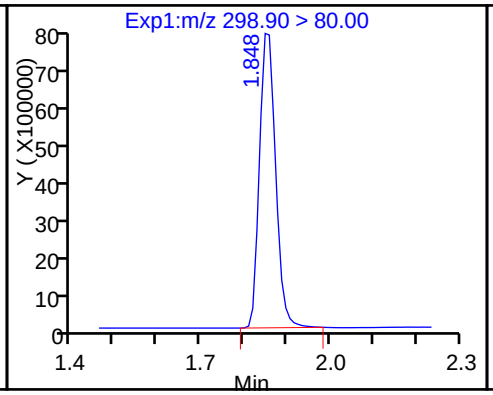
D 4 13C5-PFPeA



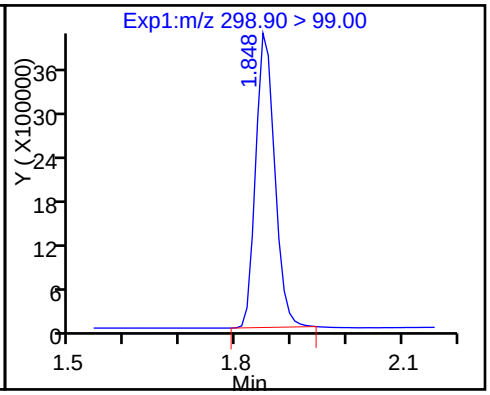
3 Perfluoropentanoic acid



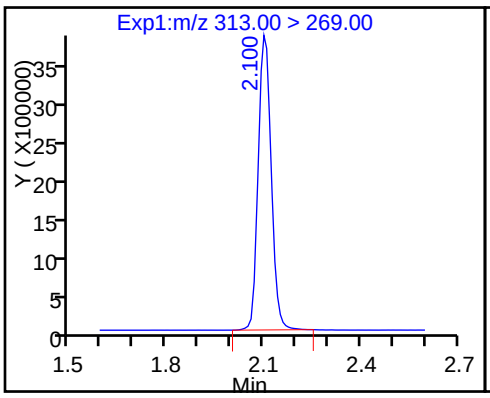
5 Perfluorobutanesulfonic acid



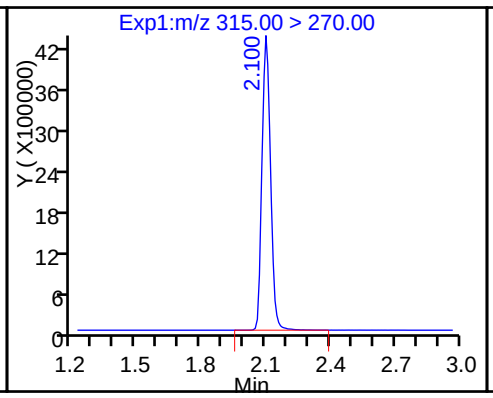
5 Perfluorobutanesulfonic acid



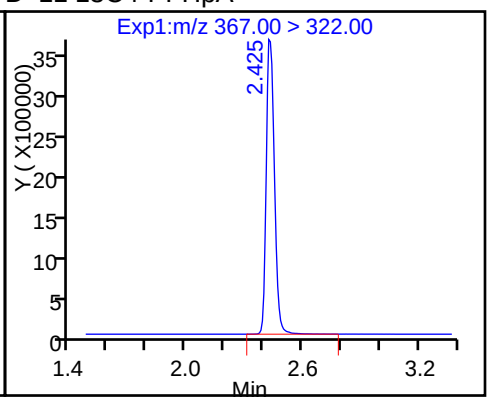
7 Perfluorohexanoic acid



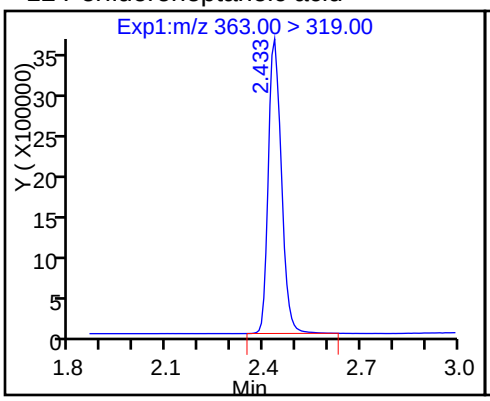
D 6 13C2 PFHxA



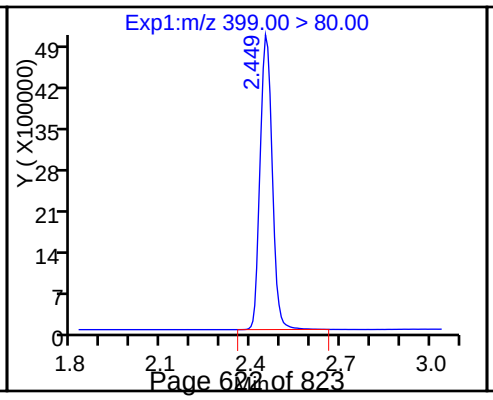
D 11 13C4-PFHpA



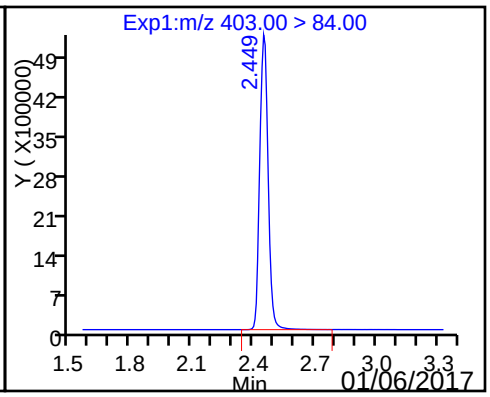
12 Perfluoroheptanoic acid



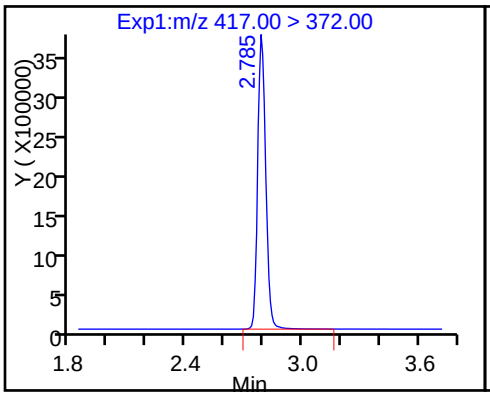
9 Perfluorohexanesulfonic acid



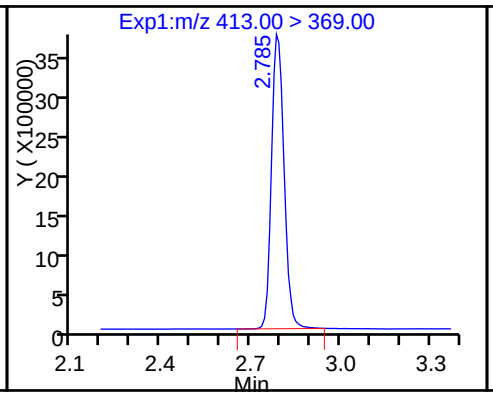
D 10 18O2 PFHxS



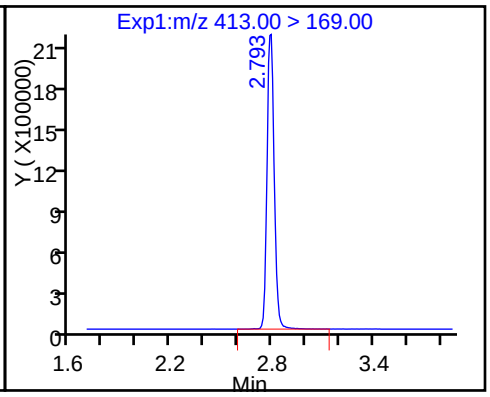
D 14 13C4 PFOA



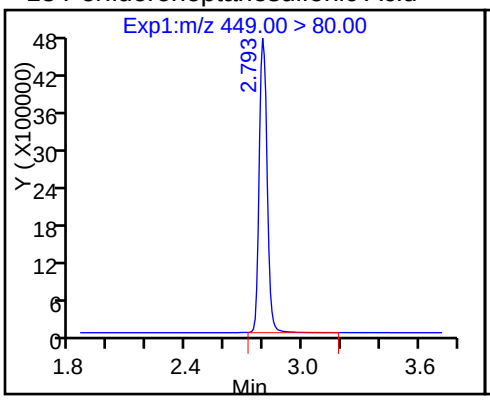
15 Perfluorooctanoic acid



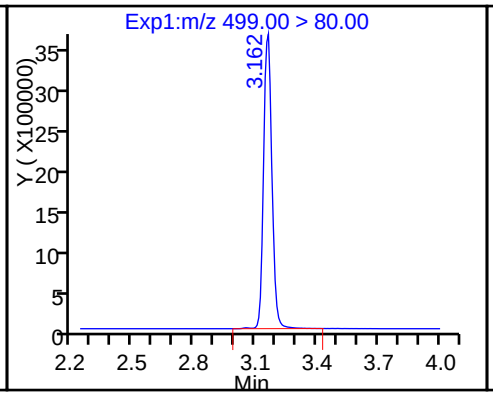
15 Perfluorooctanoic acid



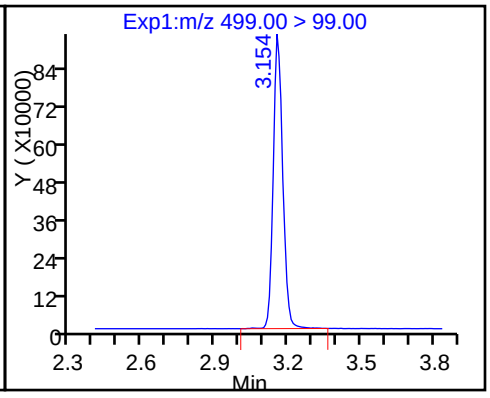
13 Perfluoroheptanesulfonic Acid



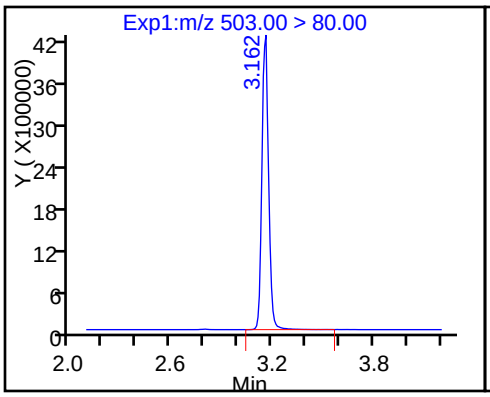
18 Perfluorooctane sulfonic acid



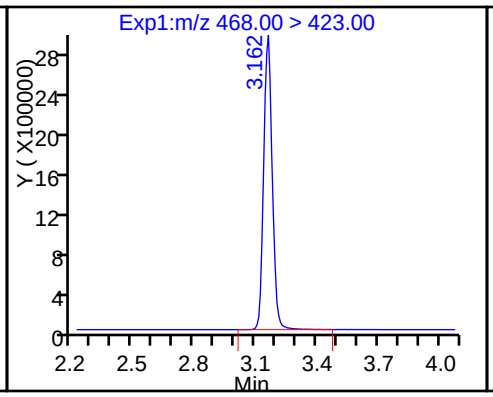
18 Perfluorooctane sulfonic acid



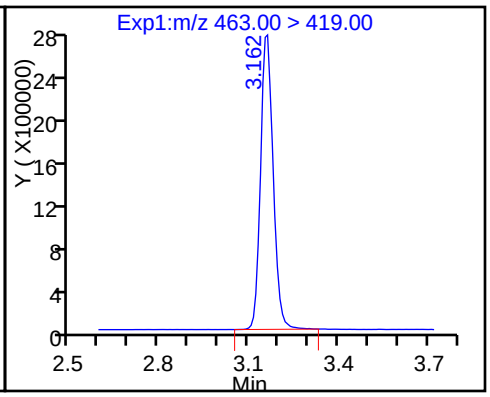
D 17 13C4 PFOS



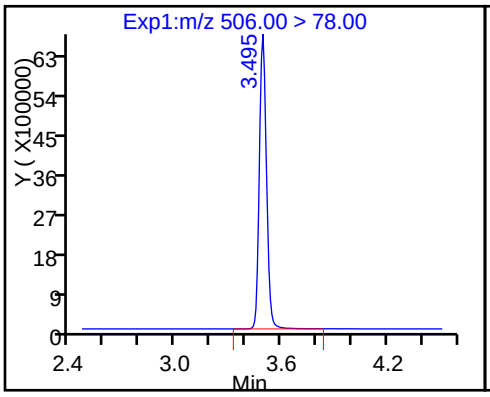
D 19 13C5 PFNA



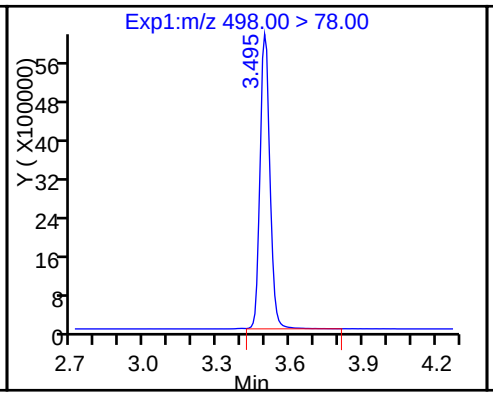
20 Perfluorononanoic acid



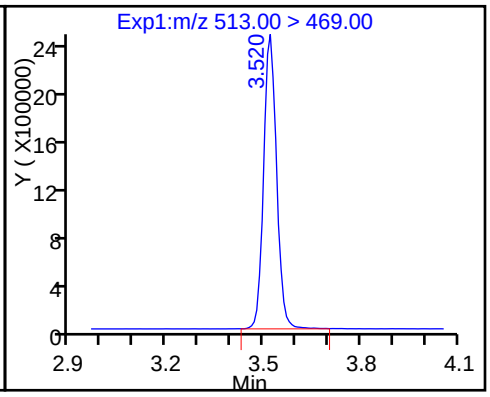
D 21 13C8 FOSA



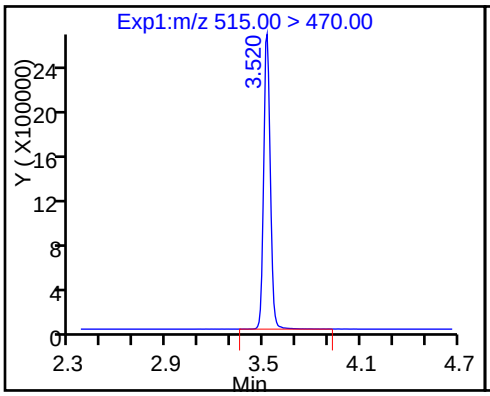
22 Perfluorooctane Sulfonamide



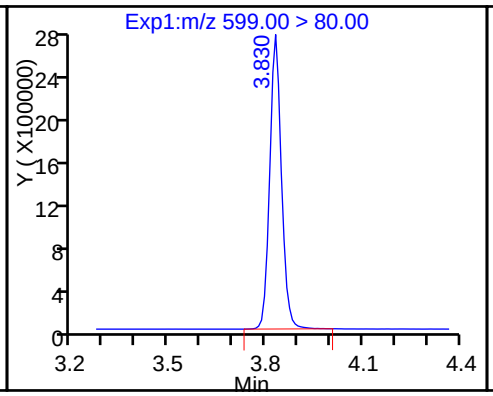
24 Perfluorodecanoic acid



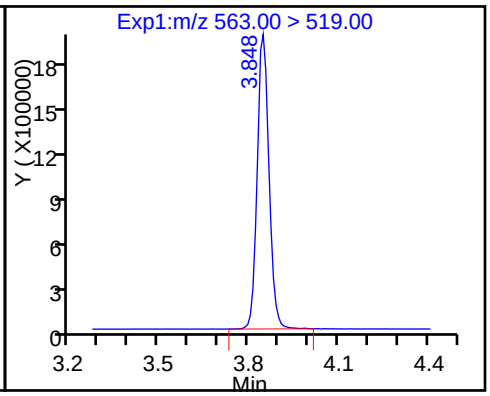
D 23 13C2 PFDA



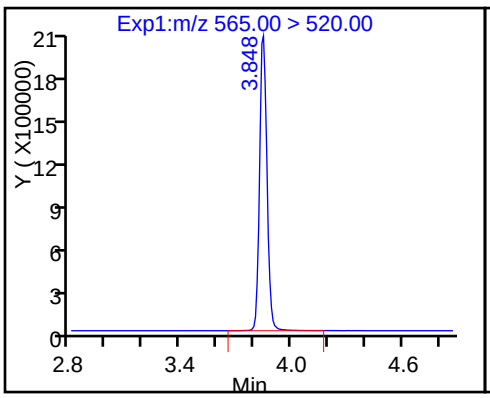
26 Perfluorodecane Sulfonic acid



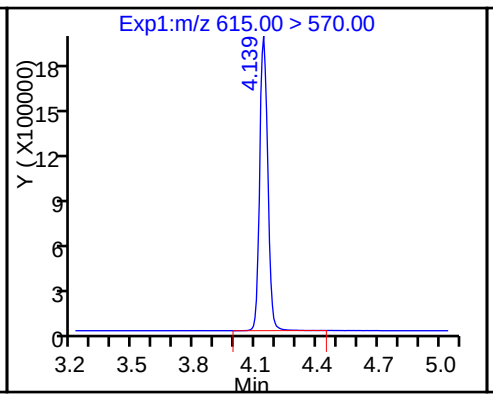
28 Perfluoroundecanoic acid



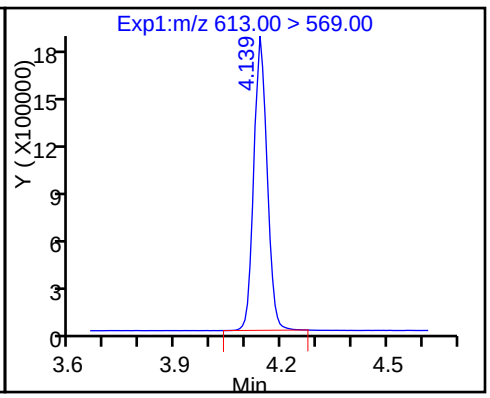
D 27 13C2 PFUnA



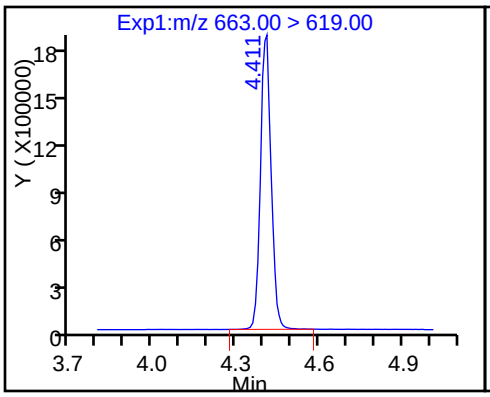
D 30 13C2 PFDoA



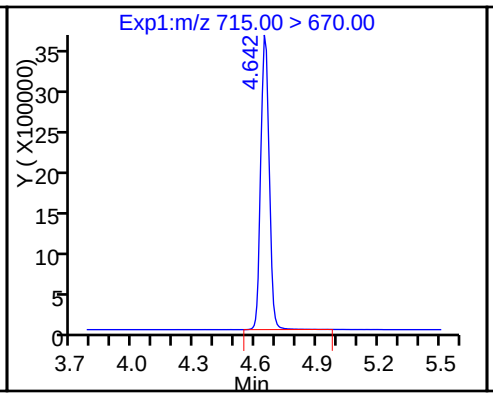
29 Perfluorododecanoic acid



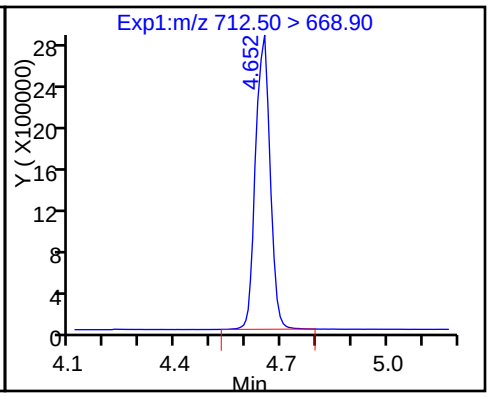
31 Perfluorotridecanoic acid



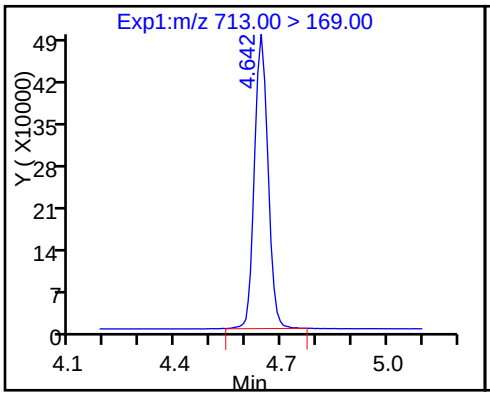
D 32 13C2-PFTeDA



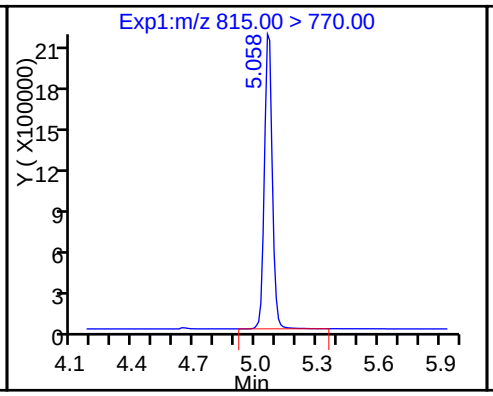
33 Perfluorotetradecanoic acid



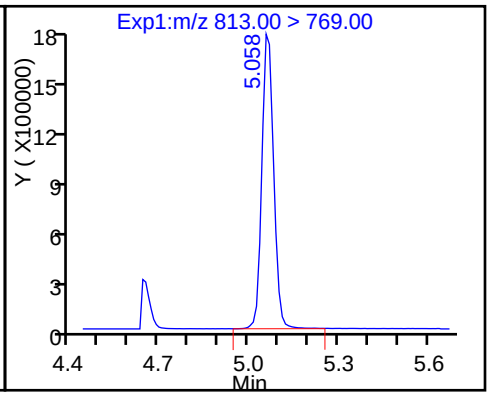
33 Perfluorotetradecanoic acid



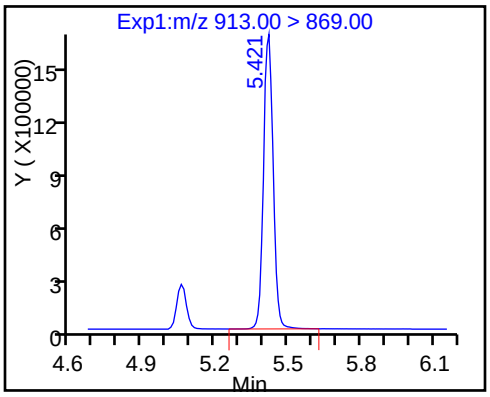
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab Sample ID: CCV 320-143344/2 Calibration Date: 12/21/2016 12:11

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: 21DEC2016_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	0.8258		0.967	1.00	-3.3	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.9642		0.977	1.00	-2.3	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.479		0.923	0.884	4.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9363		1.01	1.00	0.8	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9775		0.999	1.00	-0.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.136		1.00	0.910	10.3	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.039		0.897	0.952	-5.7	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.029		1.03	1.00	2.6	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9650		1.01	1.00	1.4	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	0.9250		0.863	0.928	-7.0	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9575		1.03	1.00	2.7	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9181		0.973	1.00	-2.7	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5808		0.959	0.964	-0.5	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9444		0.988	1.00	-1.2	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8917		0.971	1.00	-2.9	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8204		0.905	1.00	-9.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.654		1.04	1.00	4.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.498		0.969	1.00	-3.1	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8206		0.796	1.00	-20.4	50.0
13C4 PFBA	Ave	347743	359218		51.6	50.0	3.3	50.0
13C5-PFPeA	Ave	266072	270805		50.9	50.0	1.8	50.0
13C2 PFHxA	Ave	245110	238806		48.7	50.0	-2.6	50.0
13C4-PFHpA	Ave	226344	218292		48.2	50.0	-3.6	50.0
18O2 PFHxS	Ave	326976	339714		49.1	47.3	3.9	50.0
13C4 PFOA	Ave	230362	231934		50.3	50.0	0.7	50.0
13C4 PFOS	Ave	248847	270781		52.0	47.8	8.8	50.0
13C5 PFNA	Ave	177687	177407		49.9	50.0	-0.2	50.0
13C8 FOSA	Ave	384141	405806		52.8	50.0	5.6	50.0
13C2 PFDA	Ave	157302	165253		52.5	50.0	5.1	50.0
13C2 PFUnA	Ave	117250	124463		53.1	50.0	6.2	50.0
13C2 PFDoA	Ave	110957	113532		51.2	50.0	2.3	50.0
13C2-PFTeDA	Ave	227387	214738		47.2	50.0	-5.6	50.0
13C2-PFHxDA	Ave	124568	118224		47.5	50.0	-5.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161221-38097.b\21DEC2016_002.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 21-Dec-2016 12:11:52 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\20161221-38097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:45:11 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: XAWRK020

First Level Reviewer: chandrasenas Date: 21-Dec-2016 13:27:17

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	1.574	1.558	0.016	1.000	296634	0.9673		96.7	1477	
D 2 13C4 PFBA										
217.00 > 172.00	1.566	1.558	0.008		17960896	51.6		103	1117841	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.839	0.029	1.000	261109	0.9771		97.7	2781	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.839	0.029		13540267	50.9		102	843105	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.897	1.887	0.010	1.000	444211	0.9228		104		
298.90 > 99.00	1.906	1.887	0.019	1.005	181252		2.45(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.173	2.141	0.032		11940288	48.7		97.4	499593	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.173	2.149	0.024	1.000	223599	1.01		101	7109	
D 11 13C4-PFHpA										
367.00 > 322.00	2.514	2.482	0.032		10914604	48.2		96.4	783202	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.522	2.490	0.032	1.000	213376	1.00		99.9	2822	
D 10 18O2 PFHxS										
403.00 > 84.00	2.537	2.505	0.032		16068482	49.1		104	824762	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.537	2.505	0.032	1.000	351124	1.00		110		M
D 14 13C4 PFOA										
417.00 > 372.00	2.895	2.852	0.043		11596679	50.3		101	998775	

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	2.895	2.852	0.043	1.000	238718	1.03		103	2522	
413.00 > 169.00	2.895	2.852	0.043	1.000	153106		1.56(0.90-1.10)		9134	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.895	2.860	0.035	1.000	267784	0.8975		94.3		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.276	3.123	0.153	1.000	232446	0.8632		93.0	19819	M
499.00 > 99.00	3.269	3.123	0.146	0.998	55600		4.18(0.90-1.10)		3421	M
D 17 13C4 PFOS										
503.00 > 80.00	3.276	3.231	0.045		12943348	52.0		109	779043	
D 19 13C5 PFNA										
468.00 > 423.00	3.276	3.240	0.036		8870373	49.9		99.8	753593	
20 Perfluorononanoic acid										
463.00 > 419.00	3.276	3.240	0.036	1.000	171198	1.01		101	5377	
D 21 13C8 FOSA										
506.00 > 78.00	3.557	3.528	0.029		20290324	52.8		106	851683	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.557	3.528	0.029	1.000	388572	1.03		103	36531	
D 23 13C2 PFDA										
515.00 > 470.00	3.642	3.595	0.047		8262655	52.5		105	273618	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.642	3.595	0.047	1.000	151719	0.9728		97.3	5113	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.955	3.908	0.047	1.000	151608	0.9588		99.5		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.973	3.925	0.048	1.000	117546	0.9876		98.8	3872	
D 27 13C2 PFUnA										
565.00 > 520.00	3.973	3.934	0.039		6223127	53.1		106	266713	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.270	4.225	0.045	1.000	101237	0.9714		97.1	2181	
D 30 13C2 PFDoA										
615.00 > 570.00	4.270	4.234	0.036		5676603	51.2		102	174129	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.535	4.495	0.040	1.000	93142	0.9046		90.5	117	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.787	4.739	0.048		10736912	47.2		94.4	406431	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.787	4.739	0.048	1.000	187766	1.04		104	106	
713.00 > 169.00	4.787	4.739	0.048	1.000	33972		5.53(0.00-0.00)		6340	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.219	5.167	0.052	1.000	170029	0.9690		96.9	178	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.219	5.167	0.052		5911209	47.5		94.9	102927	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.601	5.538	0.063	1.000	93168	0.7965		79.6	117	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023 Amount Added: 1.00 Units: mL

Report Date: 22-Dec-2016 10:45:12 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161221-38097.b\21DEC2016_002.d

Injection Date: 21-Dec-2016 12:11:52 Instrument ID: A8_N

Lims ID: CCV L2

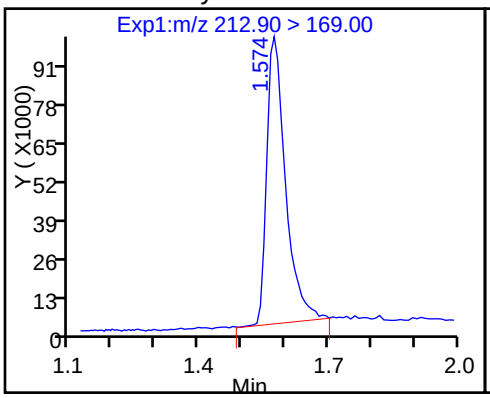
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2

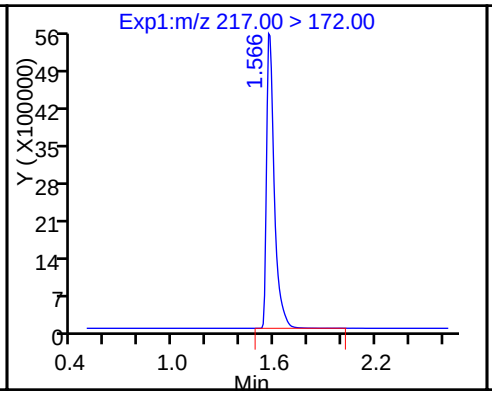
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

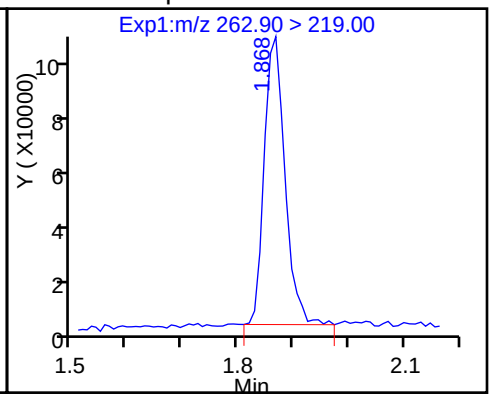
1 Perfluorobutyric acid



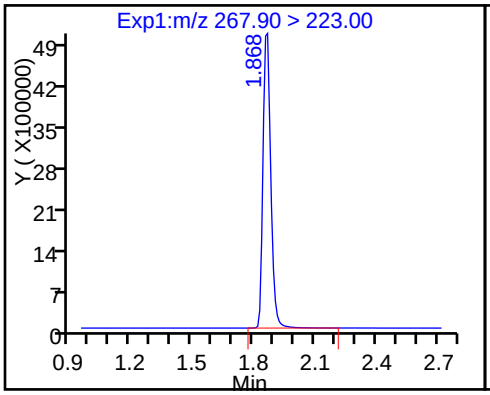
D 2 13C4 PFBA



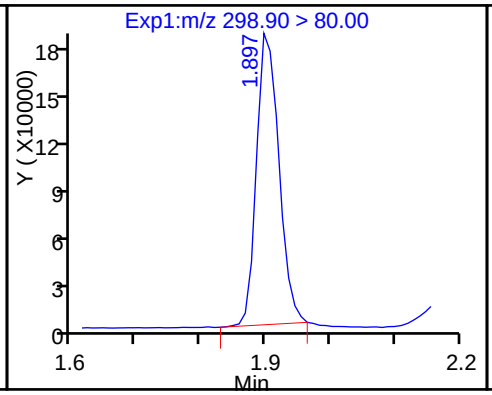
3 Perfluoropentanoic acid



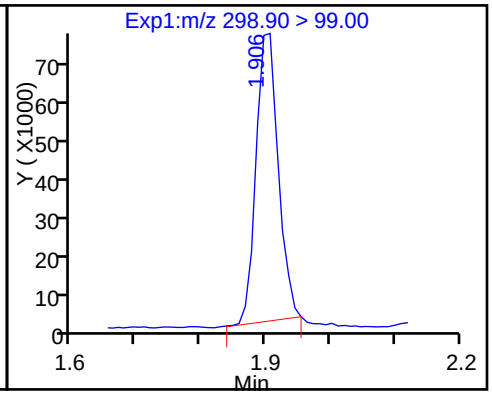
D 4 13C5-PFPeA



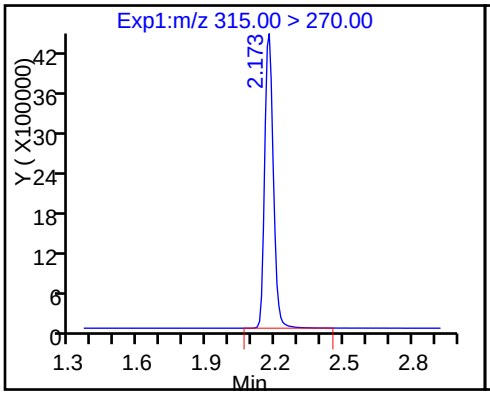
5 Perfluorobutanesulfonic acid



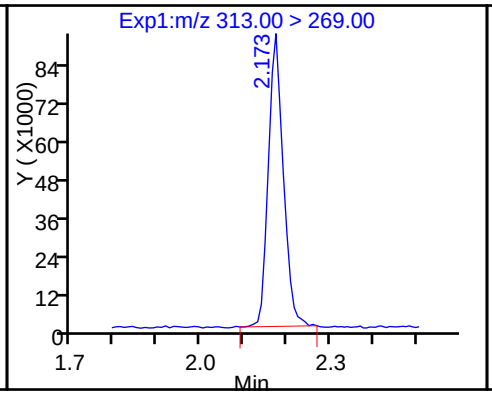
5 Perfluorobutanesulfonic acid



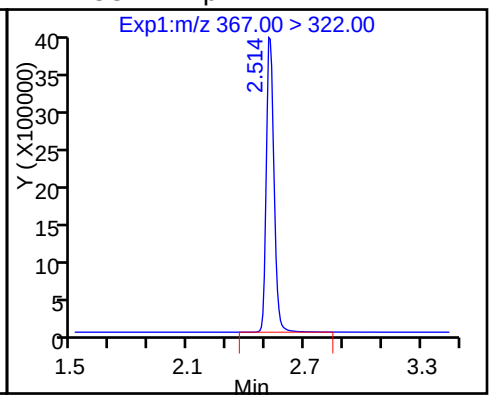
D 6 13C2 PFHxA



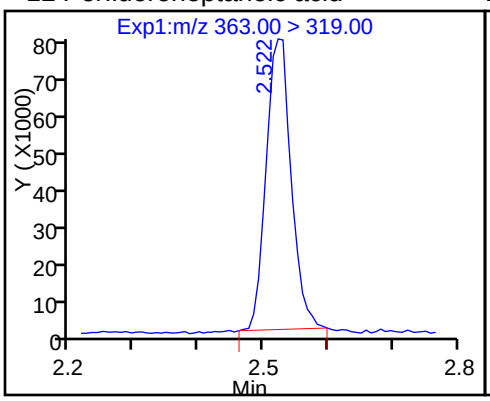
7 Perfluorohexanoic acid



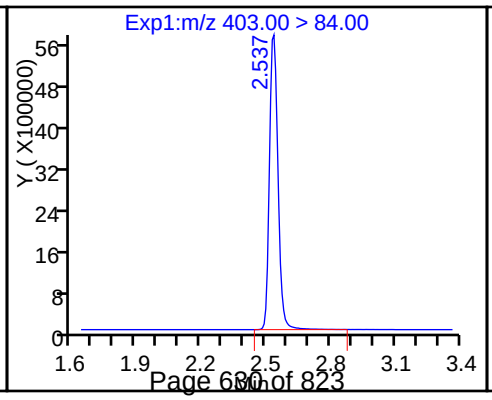
D 11 13C4-PFHpA



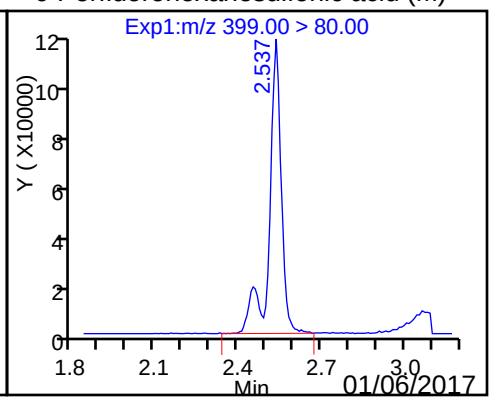
12 Perfluoroheptanoic acid



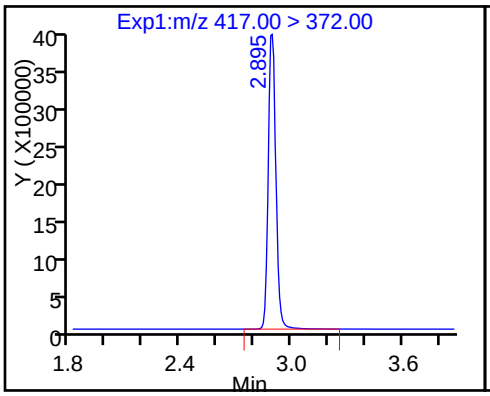
D 10 18O2 PFHxS



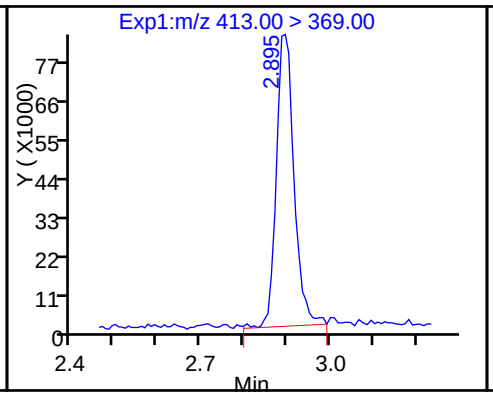
9 Perfluorohexanesulfonic acid (M)



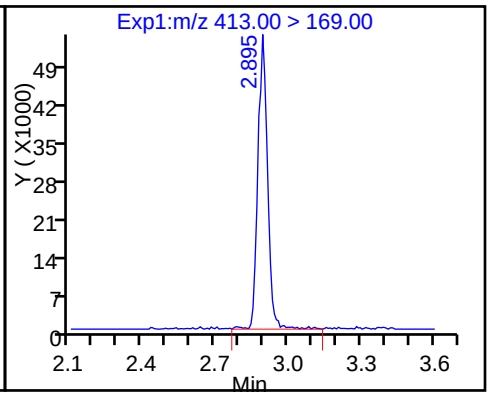
D 14 13C4 PFOA



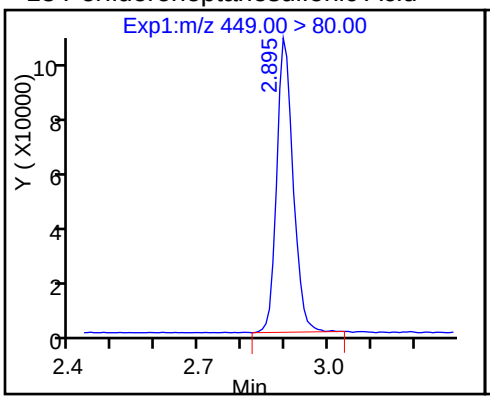
15 Perfluorooctanoic acid



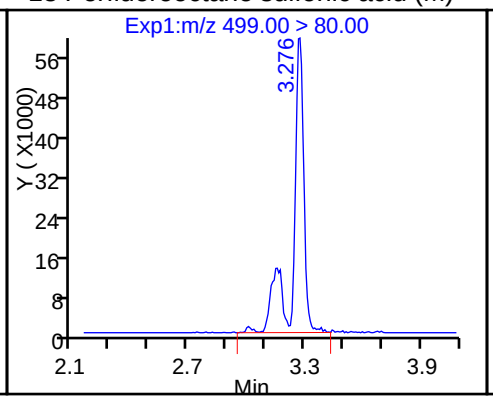
15 Perfluorooctanoic acid



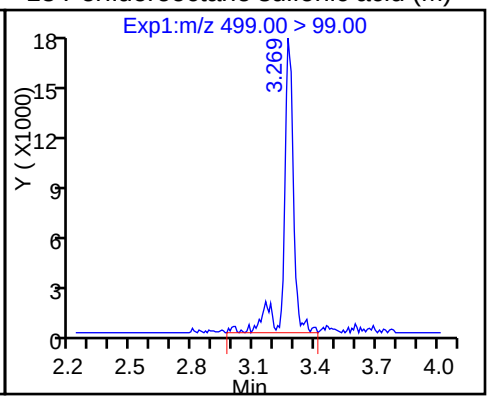
13 Perfluoroheptanesulfonic Acid



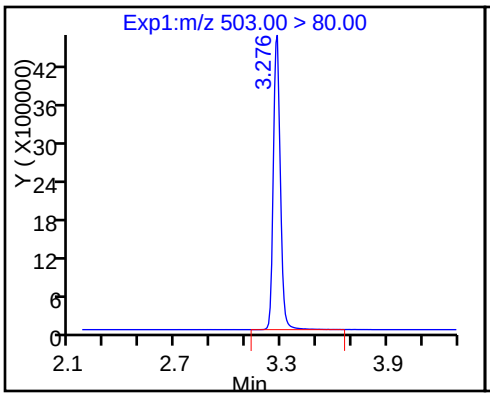
18 Perfluorooctane sulfonic acid (M)



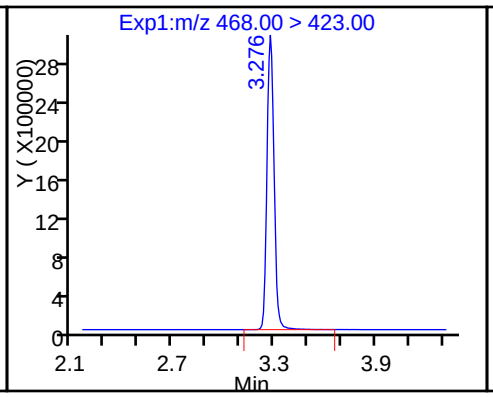
18 Perfluorooctane sulfonic acid (M)



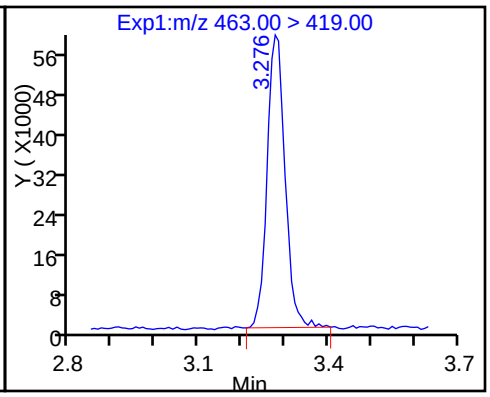
D 17 13C4 PFOS



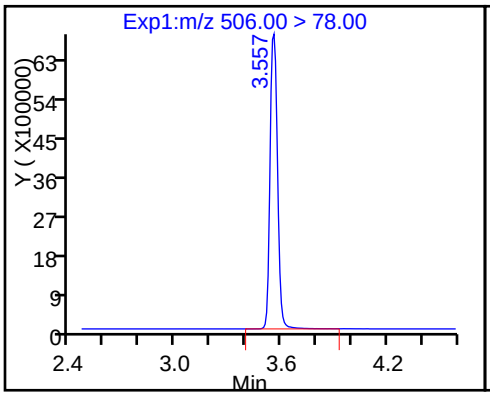
D 19 13C5 PFNA



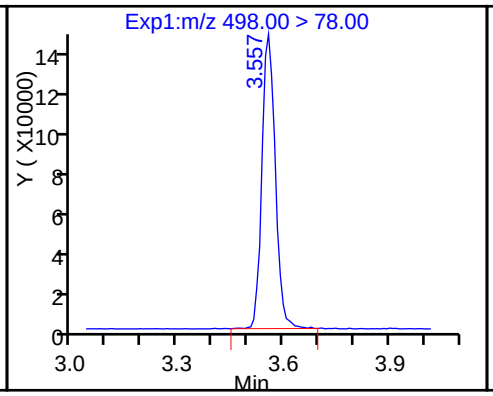
20 Perfluorononanoic acid



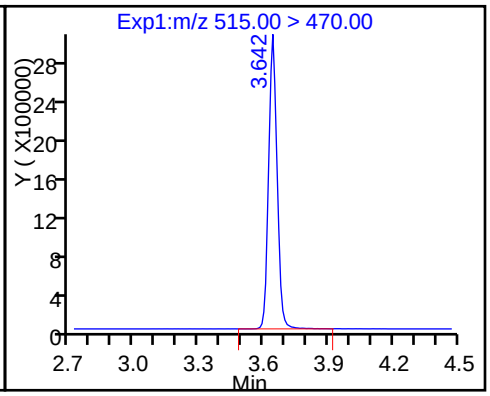
D 21 13C8 FOSA



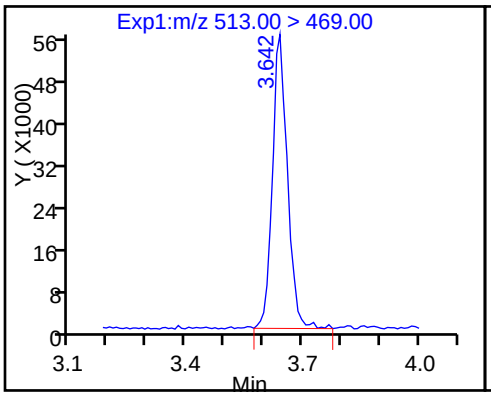
22 Perfluorooctane Sulfonamide



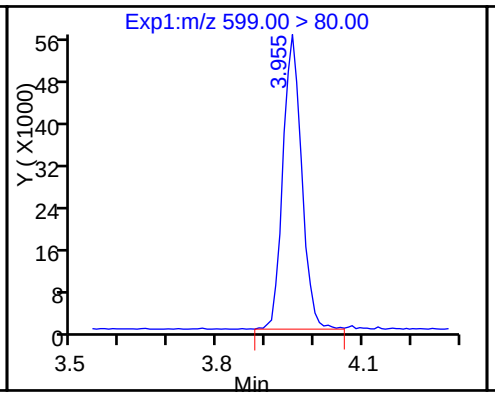
D 23 13C2 PFDA



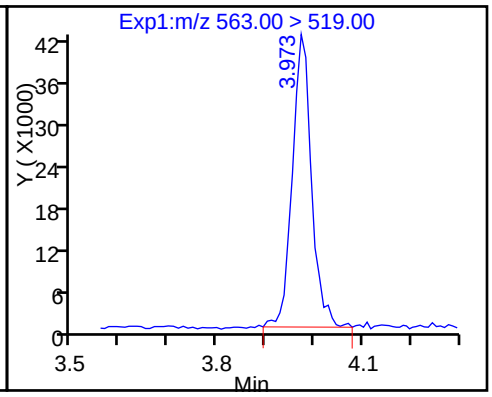
24 Perfluorodecanoic acid



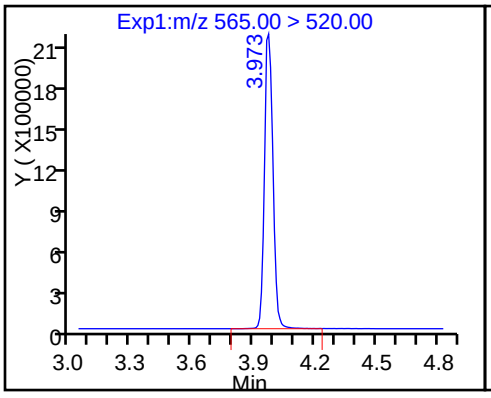
26 Perfluorodecane Sulfonic acid



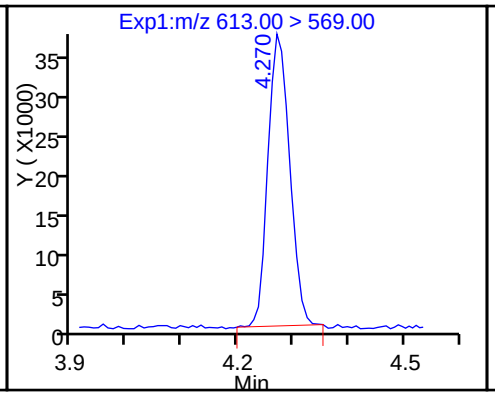
28 Perfluoroundecanoic acid



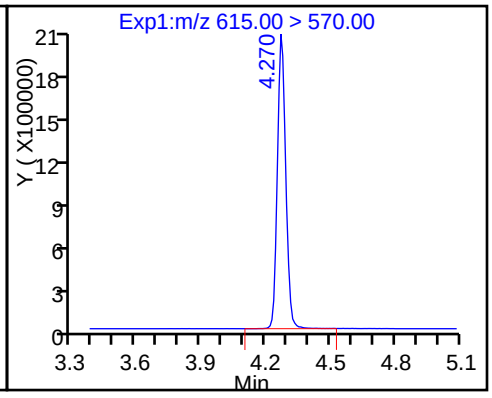
D 27 13C2 PFUnA



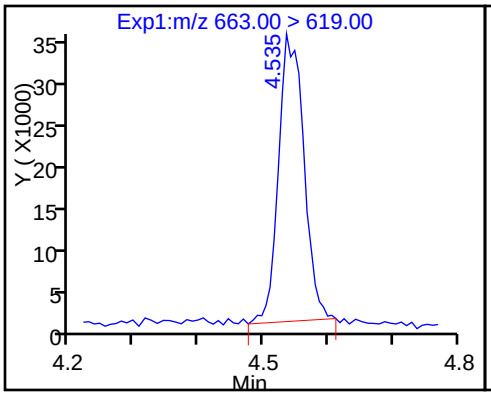
29 Perfluorododecanoic acid



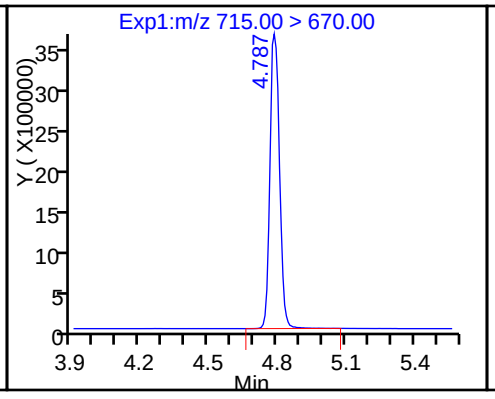
D 30 13C2 PFDoA



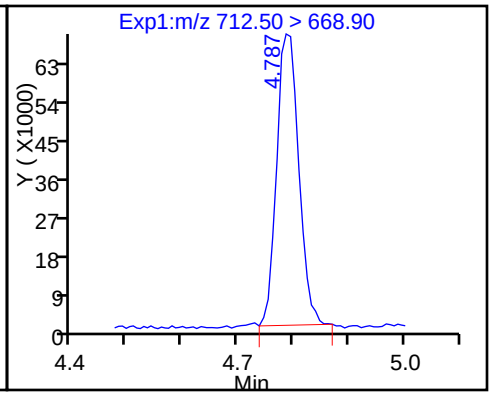
31 Perfluorotridecanoic acid



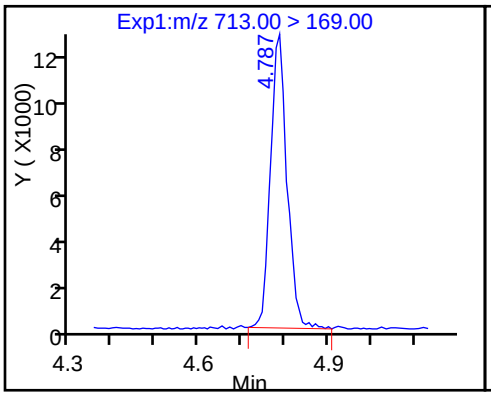
D 32 13C2-PFTeDA



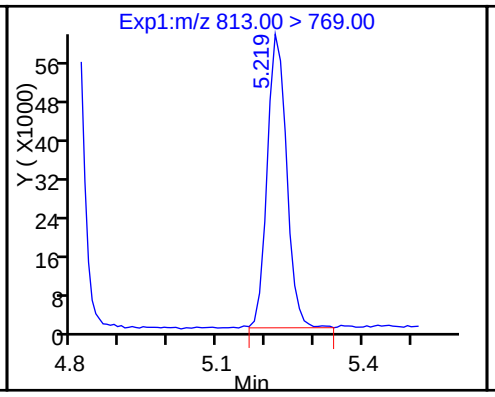
33 Perfluorotetradecanoic acid



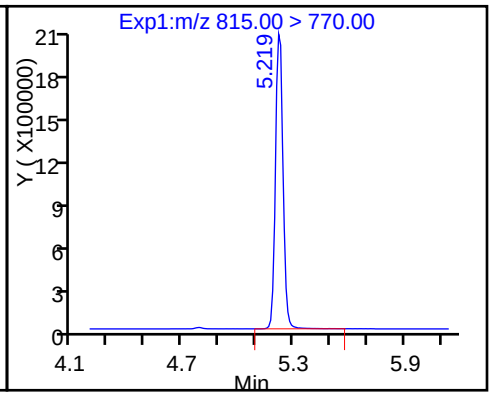
33 Perfluorotetradecanoic acid



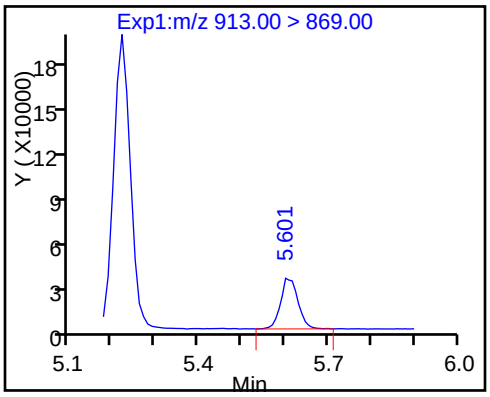
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

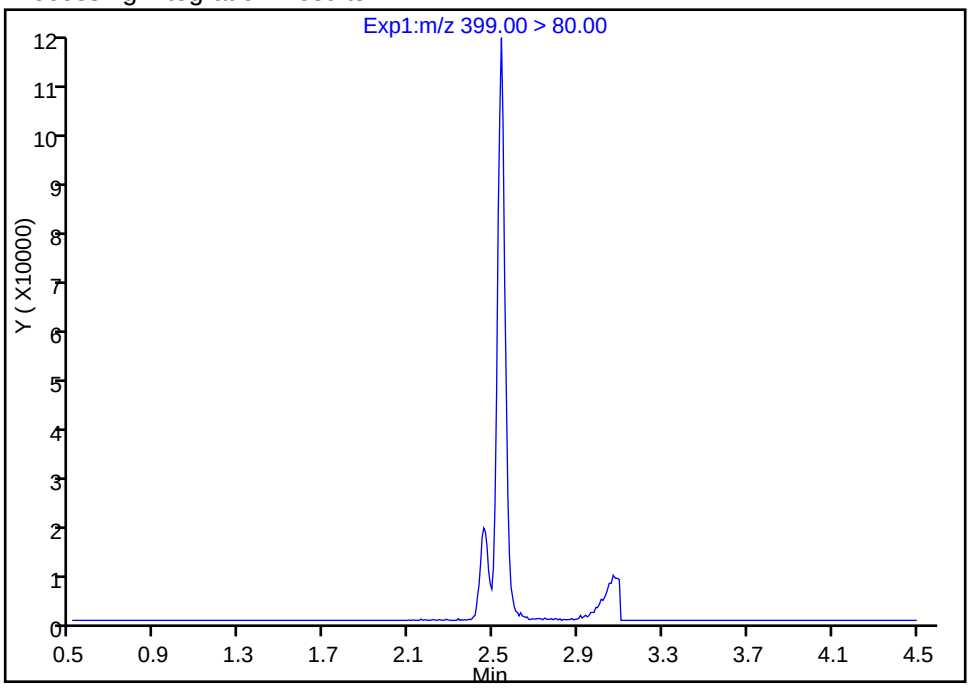
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161221-38097.b\21DEC2016_002.d
Injection Date: 21-Dec-2016 12:11:52 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

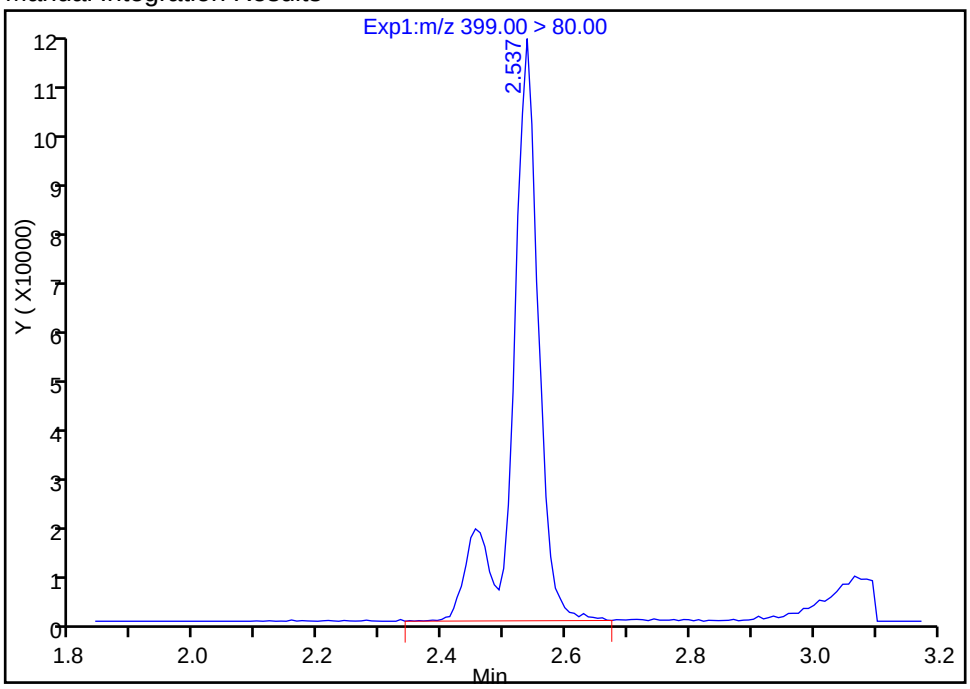
Not Detected
Expected RT: 2.50

Processing Integration Results



Manual Integration Results

RT: 2.54
Area: 351124
Amount: 1.003513
Amount Units: ng/ml



Reviewer: chandrasenas, 21-Dec-2016 13:27:17
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

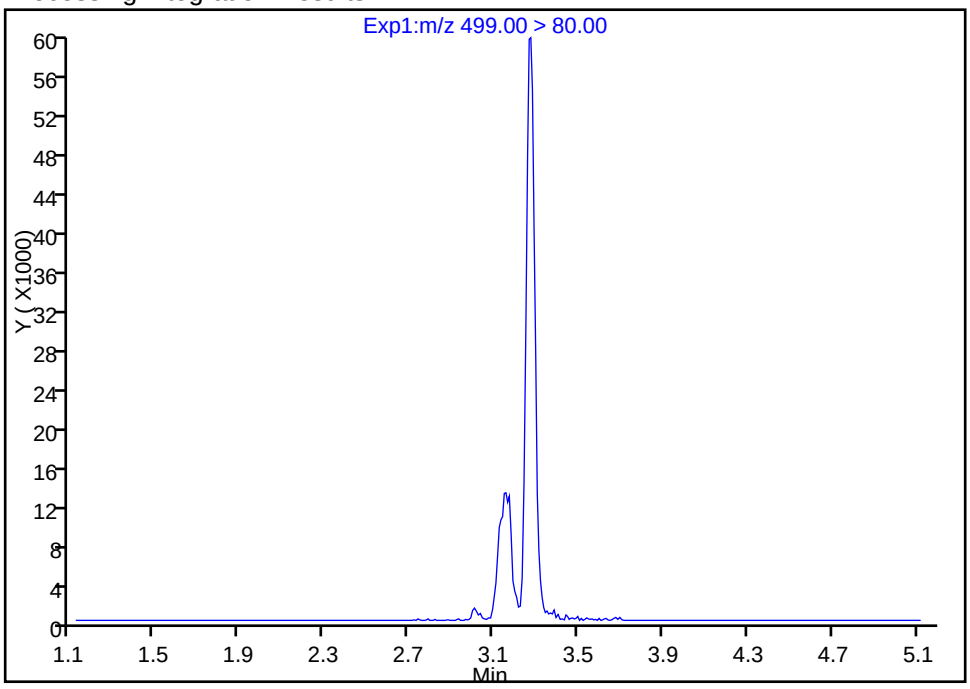
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161221-38097.b\21DEC2016_002.d
Injection Date: 21-Dec-2016 12:11:52 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

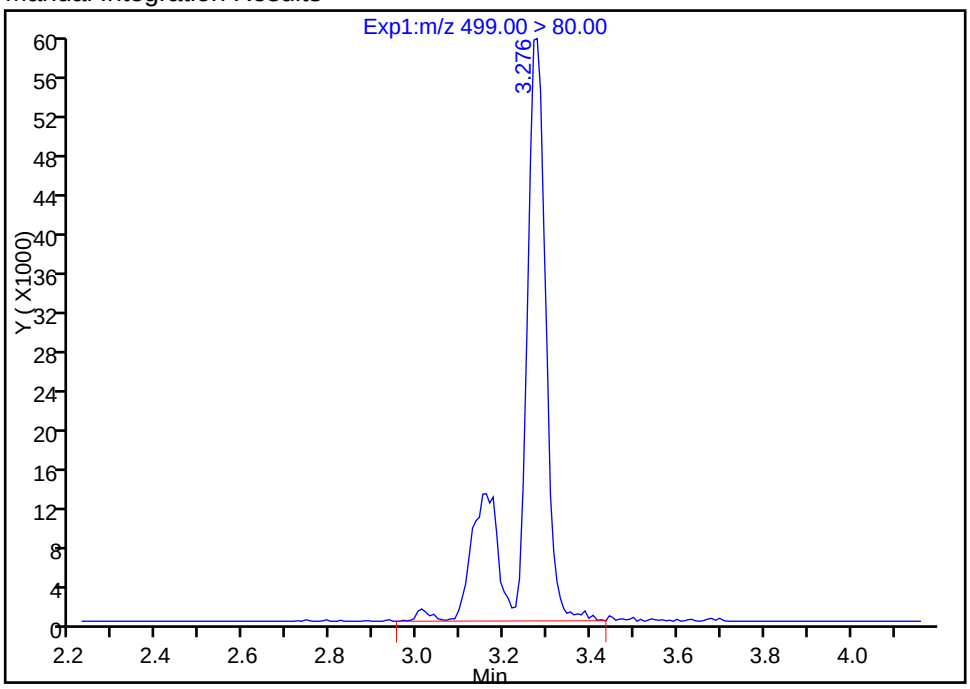
Not Detected
Expected RT: 3.12

Processing Integration Results



RT: 3.28
Area: 232446
Amount: 0.863215
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 21-Dec-2016 13:27:17
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

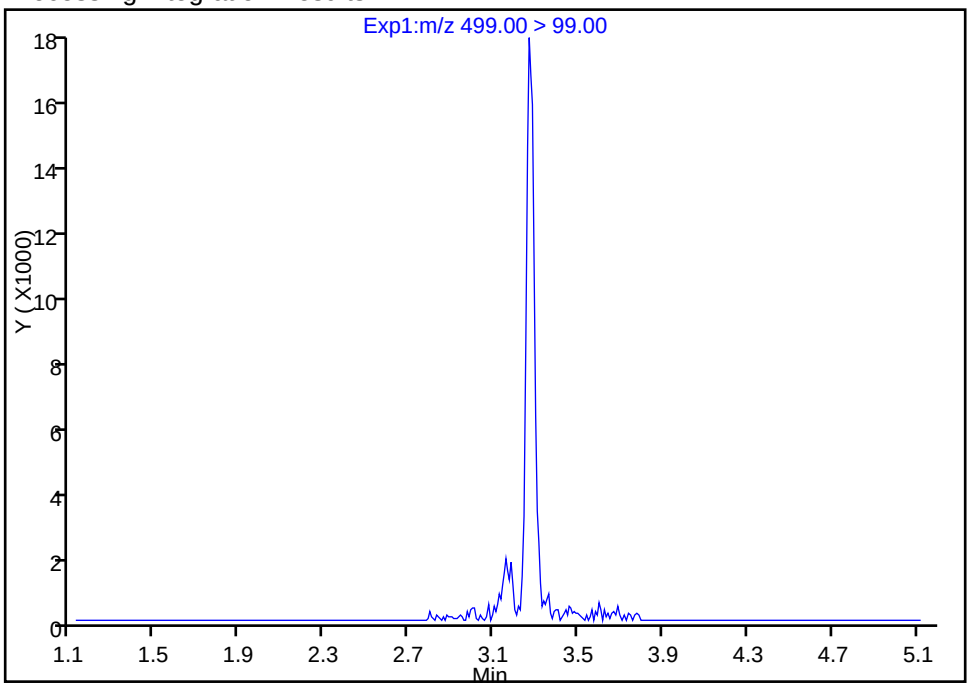
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161221-38097.b\21DEC2016_002.d
Injection Date: 21-Dec-2016 12:11:52 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

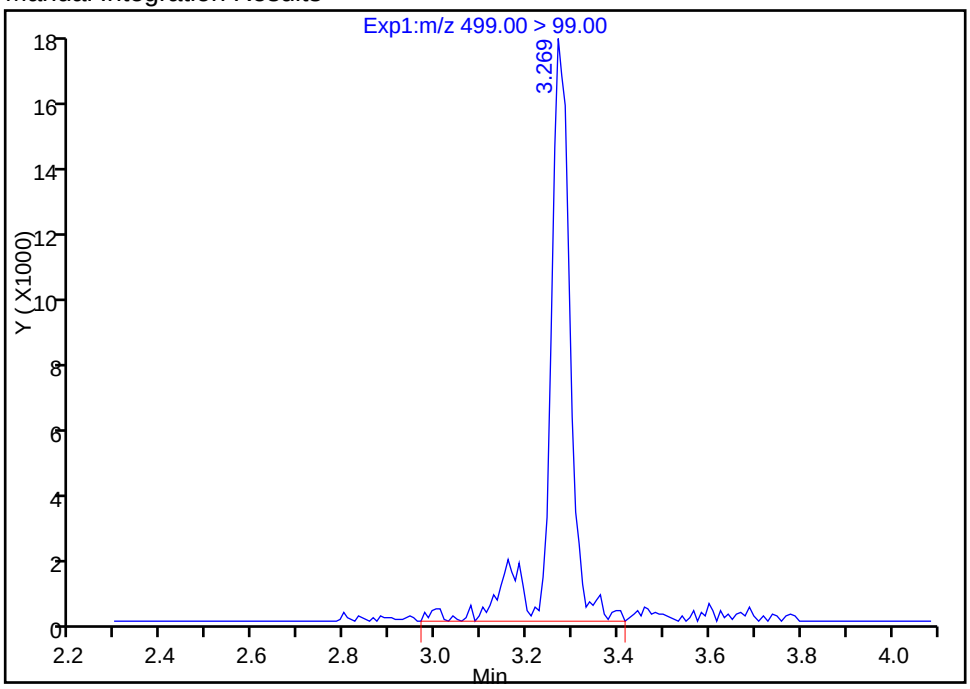
Processing Integration Results

Not Detected
Expected RT: 3.12



Manual Integration Results

RT: 3.27
Area: 55600
Amount: 0.863215
Amount Units: ng/ml



Reviewer: chandrasenas, 21-Dec-2016 13:27:17
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab Sample ID: CCV 320-143502/2 Calibration Date: 12/21/2016 12:56

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: 21DEC2016A_008.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	0.9179		53.8	50.0	7.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.000		50.7	50.0	1.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.564		48.8	44.2	10.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9420		50.7	50.0	1.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9680		49.4	50.0	-1.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.041		46.0	45.5	1.1	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.021		50.9	50.0	1.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.124		48.6	47.6	2.0	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.013		47.3	46.4	1.9	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9678		50.8	50.0	1.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9502		50.9	50.0	1.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9605		50.9	50.0	1.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6095		50.3	48.2	4.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9275		48.5	50.0	-3.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9381		51.1	50.0	2.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8681		47.9	50.0	-4.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.683		53.1	50.0	6.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8778		45.4	50.0	-9.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8775		42.6	50.0	-14.8	25.0
13C4 PFBA	Ave	347743	332043		47.7	50.0	-4.5	50.0
13C5-PFPeA	Ave	266072	247500		46.5	50.0	-7.0	50.0
13C2 PFHxA	Ave	245110	214249		43.7	50.0	-12.6	50.0
13C4-PFHpA	Ave	226344	191484		42.3	50.0	-15.4	50.0
18O2 PFHxS	Ave	326976	305900		44.3	47.3	-6.4	50.0
13C4 PFOA	Ave	230362	198865		43.2	50.0	-13.7	50.0
13C4 PFOS	Ave	248847	247854		47.6	47.8	-0.4	50.0
13C5 PFNA	Ave	177687	155659		43.8	50.0	-12.4	50.0
13C8 FOSA	Ave	384141	375057		48.8	50.0	-2.4	50.0
13C2 PFDA	Ave	157302	147532		46.9	50.0	-6.2	50.0
13C2 PFUnA	Ave	117250	104802		44.7	50.0	-10.6	50.0
13C2 PFDoA	Ave	110957	103447		46.6	50.0	-6.8	50.0
13C2-PFTeDA	Ave	227387	200434		44.1	50.0	-11.9	50.0
13C2-PFHxDA	Ave	124568	101218		40.6	50.0	-18.7	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_008.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 21-Dec-2016 12:56:58 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\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:23 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:12:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		16602125	47.7		95.5	872599	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	15239612	53.8		108	85452	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		12374981	46.5		93.0	1563448	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.839	1.839	0.0	1.000	12380457	50.7		101	131951	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.877	1.877	0.0	1.000	21141795	48.8		110		
298.90 > 99.00	1.868	1.877	-0.009	0.995	9842262		2.15(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.129	2.129	0.0		10712443	43.7		87.4	561187	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.129	2.129	0.0	1.000	10090782	50.7		101	266584	
D 11 13C4-PFHpA										
367.00 > 322.00	2.473	2.473	0.0		9574183	42.3		84.6	498252	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.473	2.473	0.0	1.000	9267344	49.4		98.9	105471	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.488	2.488	0.0	1.000	14491217	46.0		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.488	2.488	0.0		14469051	44.3		93.6	874231	
D 14 13C4 PFOA										
417.00 > 372.00	2.828	2.828	0.0		9943237	43.2		86.3	555685	

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	2.836	2.836	0.0	1.000	10148785	50.9		102	104605	
413.00 > 169.00	2.828	2.836	-0.008	0.997	6278020		1.62(0.90-1.10)		281411	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.844	2.844	0.0	1.000	13265307	48.6		102		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.100	3.100	0.0	1.000	11652130	47.3		102	91536	
499.00 > 99.00	3.215	3.100	0.115	1.037	2517432		4.63(0.90-1.10)		126143	
D 19 13C5 PFNA										
468.00 > 423.00	3.206	3.206	0.0		7782950	43.8		87.6	512601	
D 17 13C4 PFOS										
503.00 > 80.00	3.206	3.206	0.0		11847423	47.6		99.6	296869	
20 Perfluorononanoic acid										
463.00 > 419.00	3.215	3.215	0.0	1.000	7532163	50.8		102	115674	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.521	3.521	0.0	1.000	17818476	50.9		102	580951	
D 21 13C8 FOSA										
506.00 > 78.00	3.521	3.521	0.0		18752837	48.8		97.6	821715	
D 23 13C2 PFDA										
515.00 > 470.00	3.571	3.571	0.0		7376590	46.9		93.8	222532	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.571	3.571	0.0	1.000	7085059	50.9		102	181018	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.887	3.887	0.0	1.000	7281830	50.3		104		
D 27 13C2 PFUnA										
565.00 > 520.00	3.904	3.904	0.0		5240093	44.7		89.4	276733	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.904	3.904	0.0	1.000	4860371	48.5		97.0	95564	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.202	4.202	0.0	1.000	4852327	51.1		102	114916	
D 30 13C2 PFDoA										
615.00 > 570.00	4.196	4.196	0.0		5172369	46.6		93.2	187684	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.473	4.473	0.0	1.000	4489883	47.9		95.7	95879	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.710	4.710	0.0	1.000	8704696	53.1		106	11685	
713.00 > 169.00	4.710	4.710	0.0	1.000	1317741		6.61(0.00-0.00)		115722	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.710	4.710	0.0		10021684	44.1		88.1	449958	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.133	5.133	0.0	1.000	4540218	45.4		90.7	4599	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.133	5.133	0.0		5060877	40.6		81.3	90429	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.509	5.509	0.0	1.000	4538967	42.6		85.2	4665	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 22-Dec-2016 10:26:24 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_008.d

Injection Date: 21-Dec-2016 12:56:58 Instrument ID: A8_N

Lims ID: CCV L5

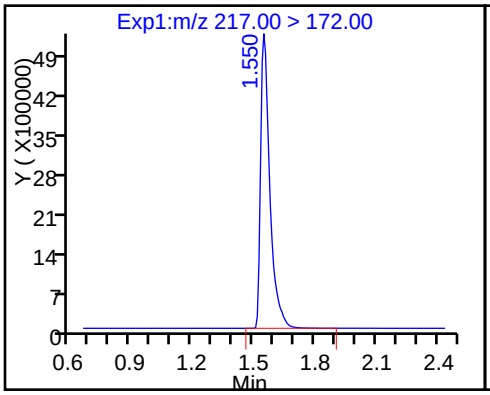
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2

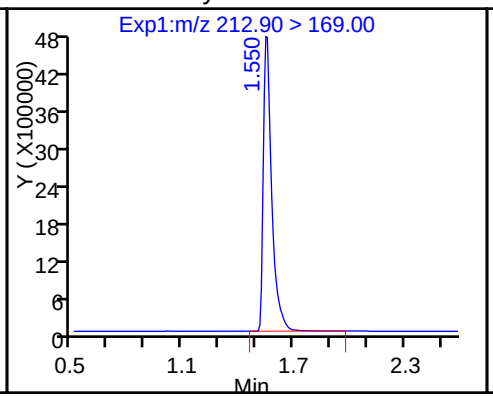
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

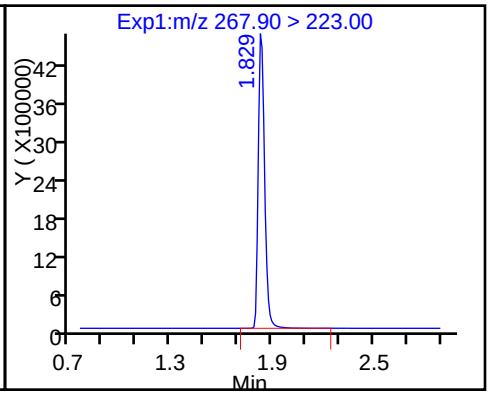
D 2 13C4 PFBA



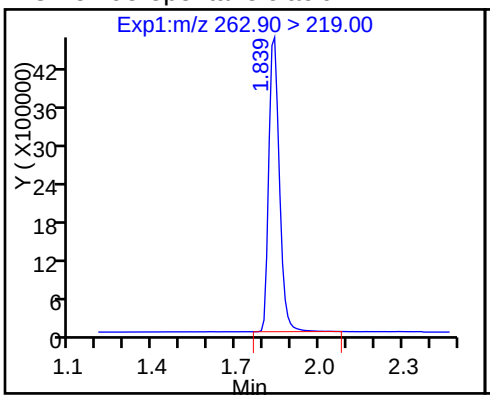
1 Perfluorobutyric acid



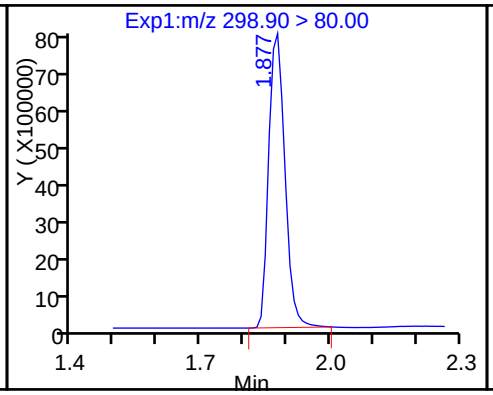
D 4 13C5-PFPeA



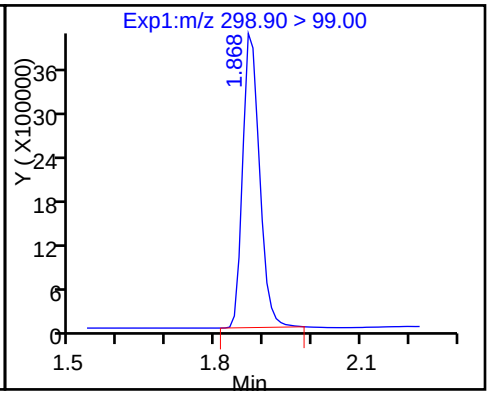
3 Perfluoropentanoic acid



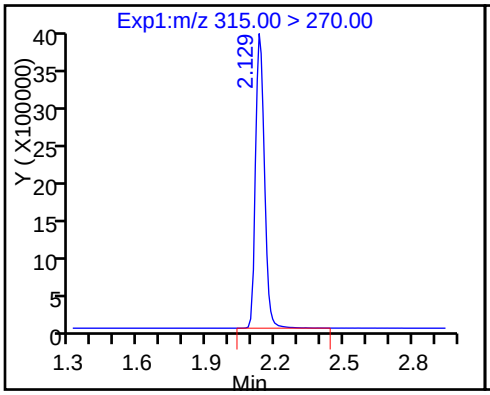
5 Perfluorobutanesulfonic acid



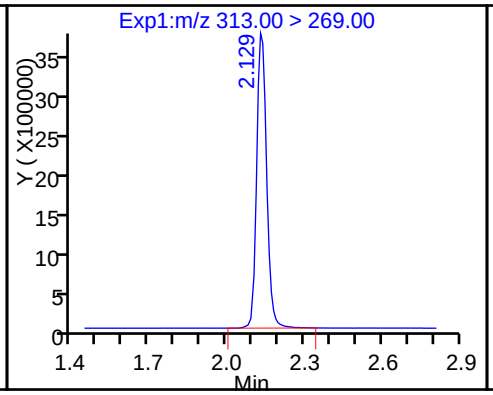
5 Perfluorobutanesulfonic acid



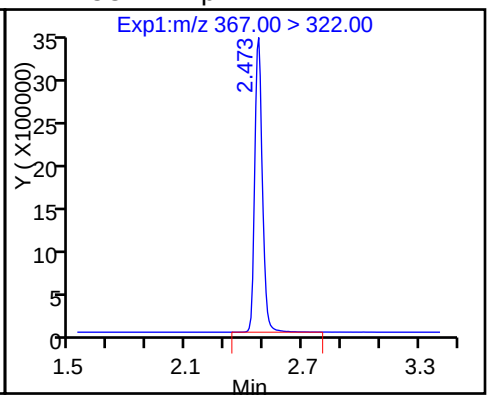
D 6 13C2 PFHxA



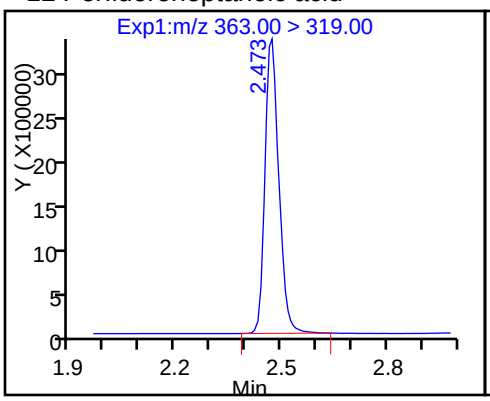
7 Perfluorohexanoic acid



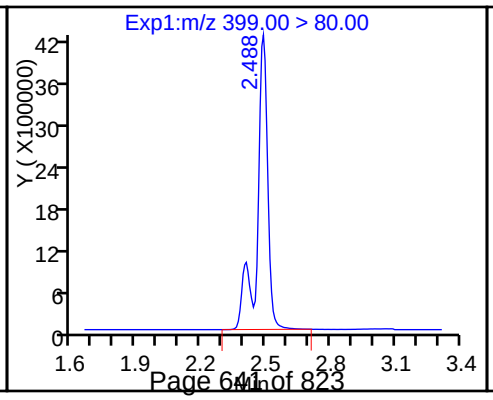
D 11 13C4-PFHpA



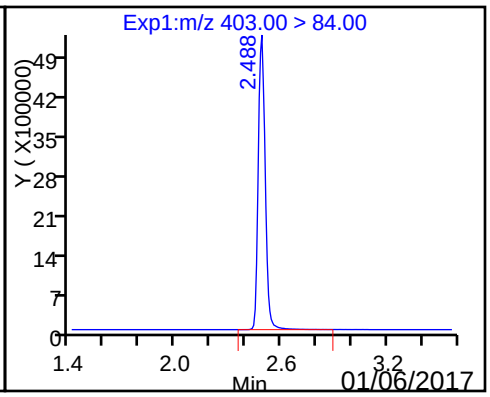
12 Perfluoroheptanoic acid



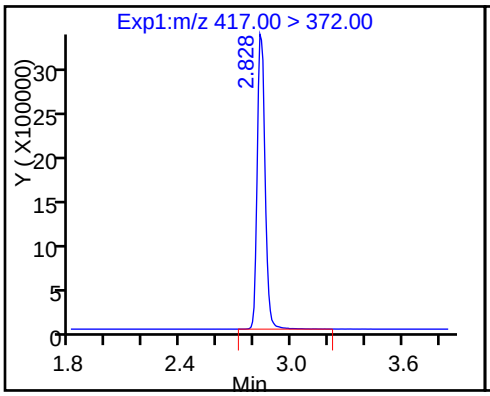
9 Perfluorohexanesulfonic acid



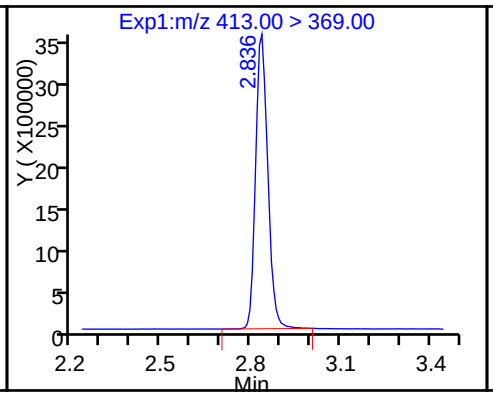
D 10 18O2 PFHxS



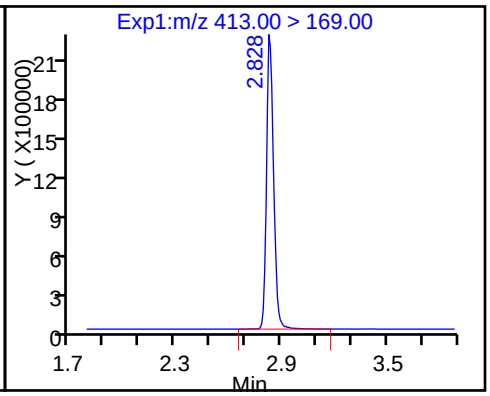
D 14 13C4 PFOA



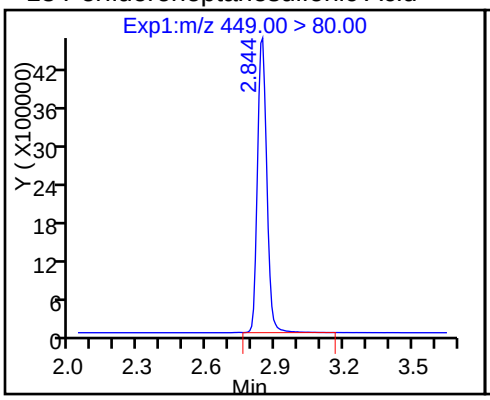
15 Perfluorooctanoic acid



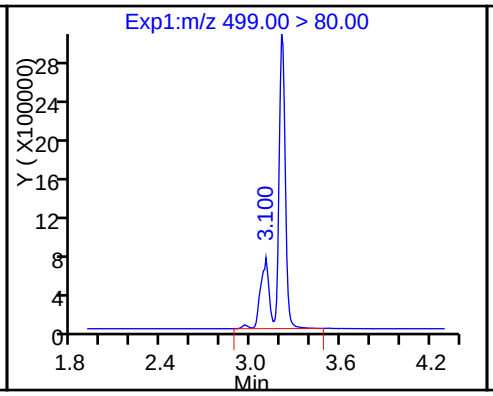
15 Perfluorooctanoic acid



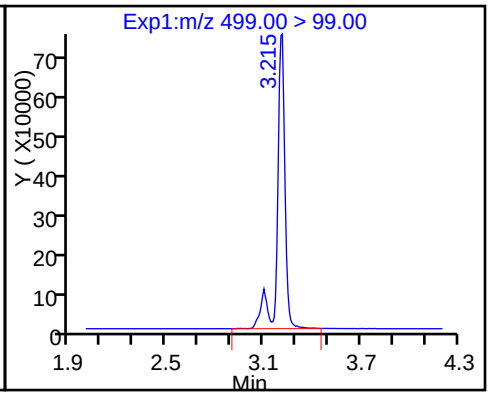
13 Perfluoroheptanesulfonic Acid



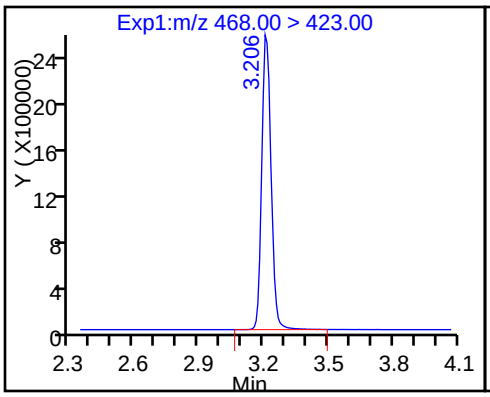
18 Perfluorooctane sulfonic acid



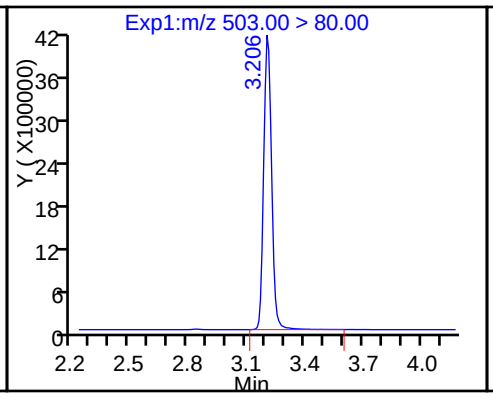
18 Perfluorooctane sulfonic acid



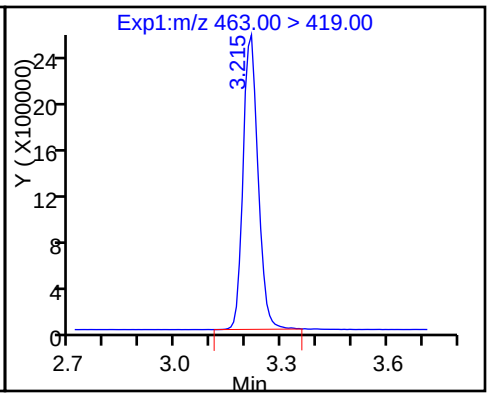
D 19 13C5 PFNA



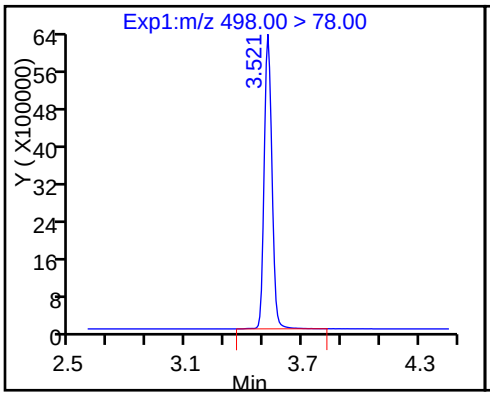
D 17 13C4 PFOS



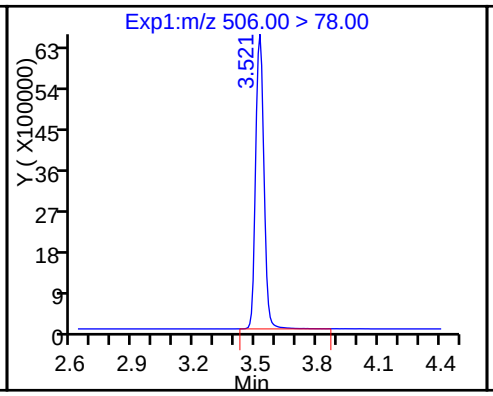
20 Perfluorononanoic acid



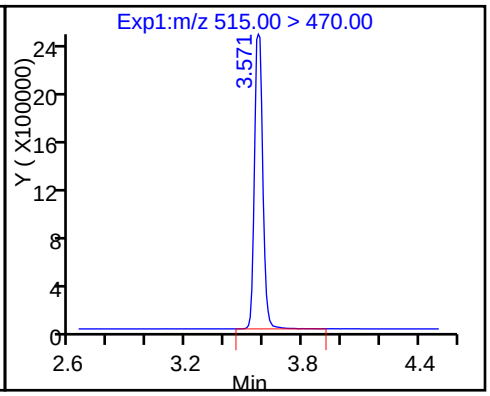
22 Perfluorooctane Sulfonamide



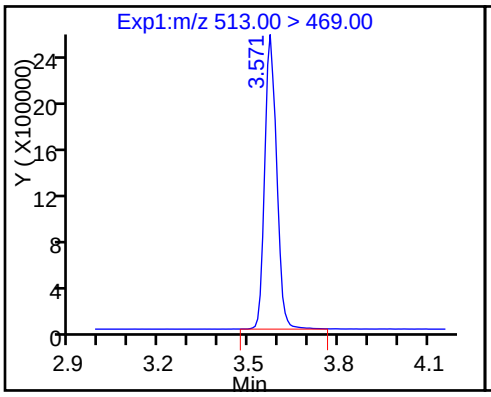
D 21 13C8 FOSA



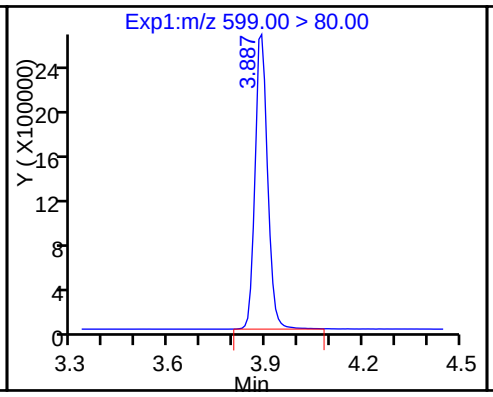
D 23 13C2 PFDA



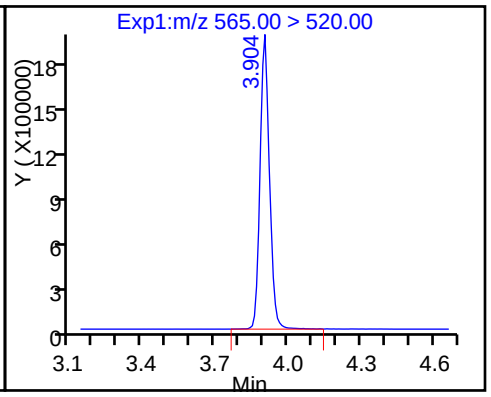
24 Perfluorodecanoic acid



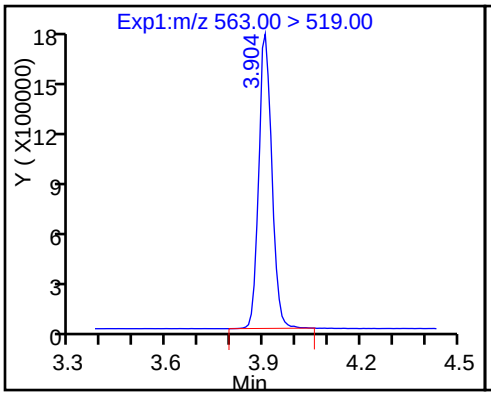
26 Perfluorodecane Sulfonic acid



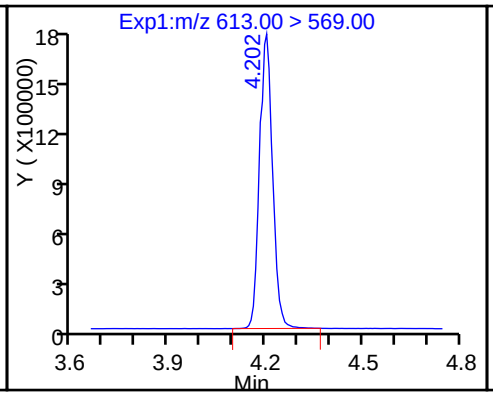
D 27 13C2 PFUnA



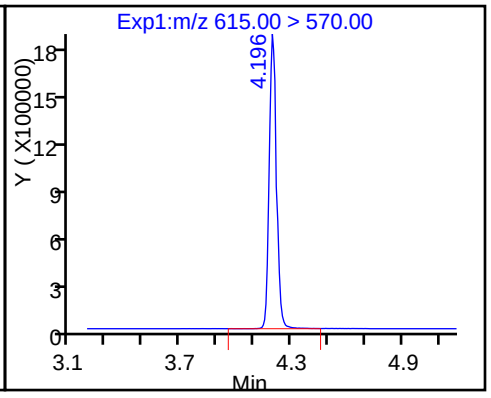
28 Perfluoroundecanoic acid



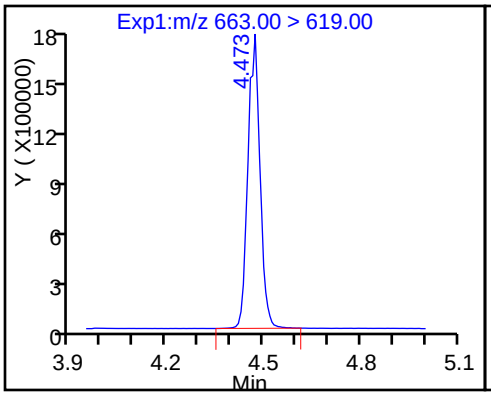
29 Perfluorododecanoic acid



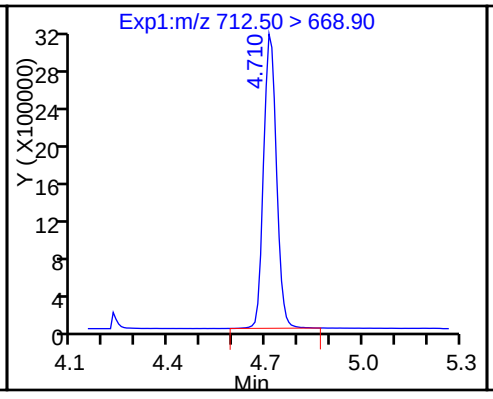
D 30 13C2 PFDoA



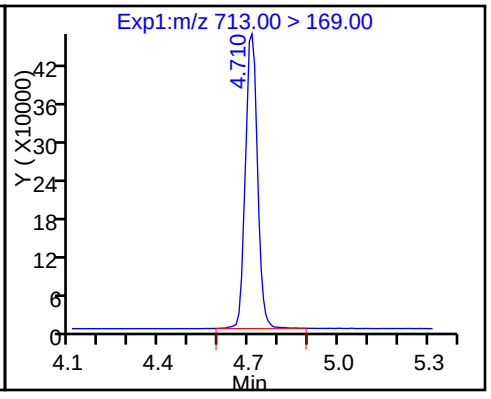
31 Perfluorotridecanoic acid



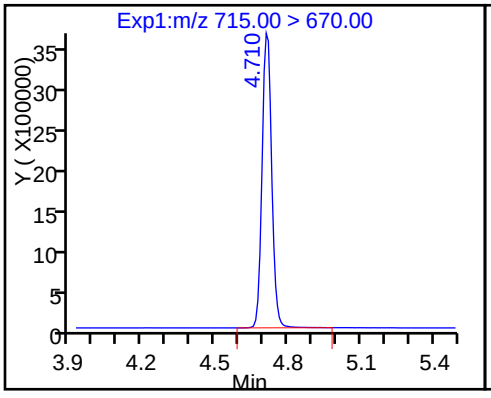
33 Perfluorotetradecanoic acid



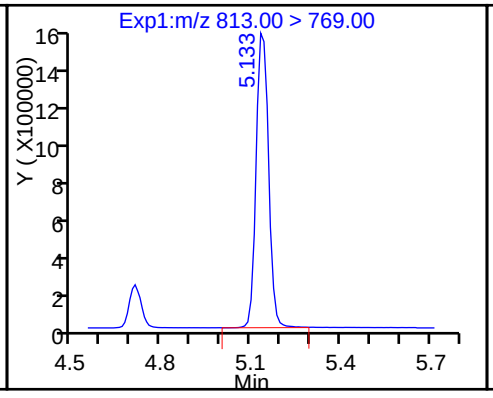
33 Perfluorotetradecanoic acid



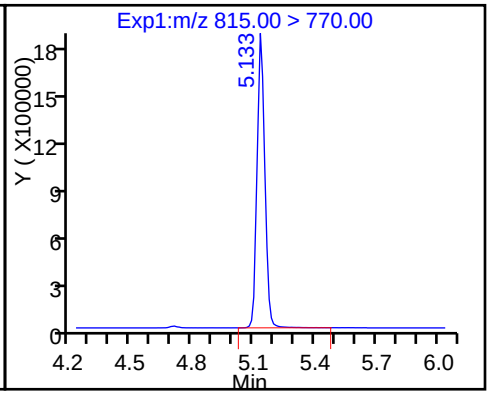
D 32 13C2-PFTeDA



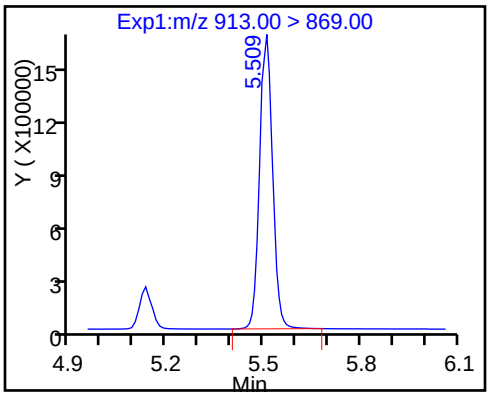
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab Sample ID: CCV 320-143502/16 Calibration Date: 12/21/2016 14:41

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: 21DEC2016A_022.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9720		22.8	20.0	13.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.045		21.2	20.0	5.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.667		20.8	17.7	17.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9531		20.5	20.0	2.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.012		20.7	20.0	3.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	0.8952		15.8	18.2	-13.1	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.221		21.1	19.0	10.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.057		21.1	20.0	5.3	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.046		19.5	18.6	5.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.999		21.0	20.0	5.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.026		22.0	20.0	10.0	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9548		20.2	20.0	1.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6271		20.7	19.3	7.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9763		20.4	20.0	2.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9400		20.5	20.0	2.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9317		20.5	20.0	2.7	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.740		22.0	20.0	9.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8918		18.1	20.0	-9.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7999		15.5	20.0	-22.4	25.0
13C4 PFBA	Ave	347743	349233		50.2	50.0	0.4	50.0
13C5-PFPeA	Ave	266072	266598		50.1	50.0	0.2	50.0
13C2 PFHxA	Ave	245110	233793		47.7	50.0	-4.6	50.0
13C4-PFHpA	Ave	226344	212945		47.0	50.0	-5.9	50.0
18O2 PFHxS	Ave	326976	331216		47.9	47.3	1.3	50.0
13C4 PFOA	Ave	230362	227276		49.3	50.0	-1.3	50.0
13C4 PFOS	Ave	248847	261315		50.2	47.8	5.0	50.0
13C5 PFNA	Ave	177687	171834		48.4	50.0	-3.3	50.0
13C8 FOSA	Ave	384141	387411		50.4	50.0	0.9	50.0
13C2 PFDA	Ave	157302	157326		50.0	50.0	0.0	50.0
13C2 PFUnA	Ave	117250	114299		48.7	50.0	-2.5	50.0
13C2 PFDoA	Ave	110957	104369		47.0	50.0	-5.9	50.0
13C2-PFTeDA	Ave	227387	205206		45.1	50.0	-9.8	50.0
13C2-PFHxDA	Ave	124568	106644		42.8	50.0	-14.4	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_022.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 21-Dec-2016 14:41:58 ALS Bottle#: 40 Worklist Smp#: 16
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*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:28:48 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:18:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		17461671	50.2		100	1390338	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	6788791	22.8		114	38259	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		13329913	50.1		100	1292205	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.829	0.0	1.000	5571681	21.2		106	71580	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.868	0.0	1.000	9759779	20.8		118		
298.90 > 99.00	1.868	1.868	0.0	1.000	4165487		2.34(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.117	2.117	0.0		11689631	47.7		95.4	1084042	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.126	2.126	0.0	1.000	4456485	20.5		103	118957	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.475	2.475	0.0	1.000	5396315	15.8		86.9		
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.460	2.460	0.0	1.000	4311939	20.7		103	44750	
D 11 13C4-PFHpA										
367.00 > 322.00	2.460	2.460	0.0		10647262	47.0		94.1	642375	
D 10 18O2 PFHxS										
403.00 > 84.00	2.475	2.475	0.0		15666540	47.9		101	946856	
D 14 13C4 PFOA										
417.00 > 372.00	2.821	2.821	0.0		11363815	49.3		98.7	434672	

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	2.821	2.821	0.0	1.000	4803364	21.1		105	44908	
413.00 > 169.00	2.821	2.821	0.0	1.000	2907739		1.65(0.90-1.10)		116052	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.821	2.821	0.0	1.000	6073548	21.1		111		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.084	3.084	0.0	1.000	5073528	19.5		105	69485	
499.00 > 99.00	3.190	3.084	0.106	1.034	1156943		4.39(0.90-1.10)		59030	
D 17 13C4 PFOS										
503.00 > 80.00	3.190	3.190	0.0		12490854	50.2		105	501955	
D 19 13C5 PFNA										
468.00 > 423.00	3.190	3.190	0.0		8591712	48.4		96.7	563450	
20 Perfluorononanoic acid										
463.00 > 419.00	3.198	3.198	0.0	1.000	3433984	21.0		105	63936	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.514	3.514	0.0	1.000	7952386	22.0		110	415762	
D 21 13C8 FOSA										
506.00 > 78.00	3.514	3.514	0.0		19370571	50.4		101	1131550	
D 23 13C2 PFDA										
515.00 > 470.00	3.556	3.556	0.0		7866317	50.0		100	313834	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.556	3.556	0.0	1.000	3004310	20.2		101	80573	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.868	3.868	0.0	1.000	3159577	20.7		107		
D 27 13C2 PFUnA										
565.00 > 520.00	3.886	3.886	0.0		5714951	48.7		97.5	438155	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.886	3.886	0.0	1.000	2231728	20.4		102	62676	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.172	4.172	0.0	1.000	1962210	20.5		102	46712	
D 30 13C2 PFDoA										
615.00 > 570.00	4.172	4.172	0.0		5218468	47.0		94.1	148446	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.444	4.444	0.0	1.000	1944803	20.5		103	44001	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.690	4.690	0.0	1.000	3631171	22.0		110	15997	
713.00 > 169.00	4.682	4.690	-0.008	0.998	564985		6.43(0.00-0.00)		69342	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.690	4.690	0.0		10260294	45.1		90.2	523298	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.103	5.103	0.0	1.000	1861517	18.1		90.4	1685	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.103	5.103	0.0		5332218	42.8		85.6	84907	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.461	5.461	0.0	1.000	1669780	15.5		77.6	1673	

Reagents:

LCPFC-L4_00024 Amount Added: 1.00 Units: mL

Report Date: 22-Dec-2016 10:28:49 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_022.d

Injection Date: 21-Dec-2016 14:41:58 Instrument ID: A8_N

Lims ID: CCV L4

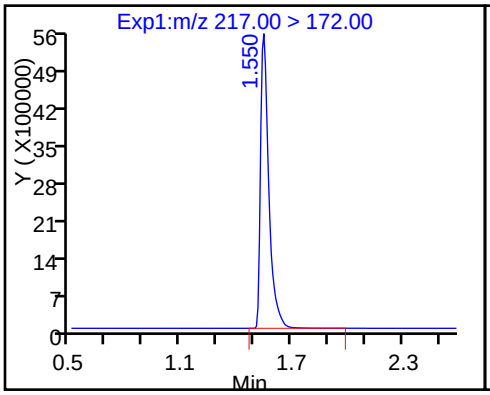
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 16

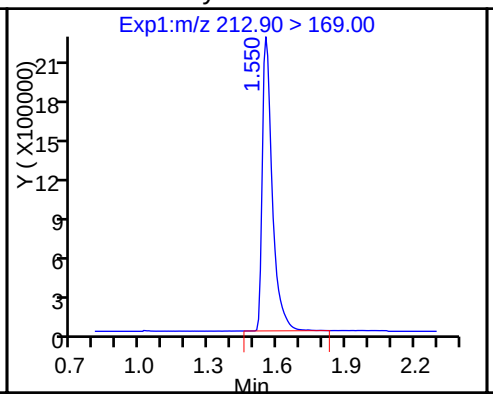
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

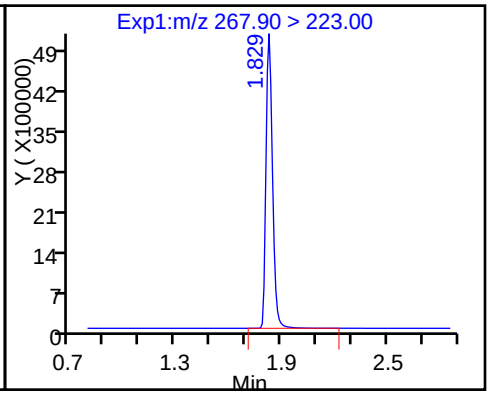
D 2 13C4 PFBA



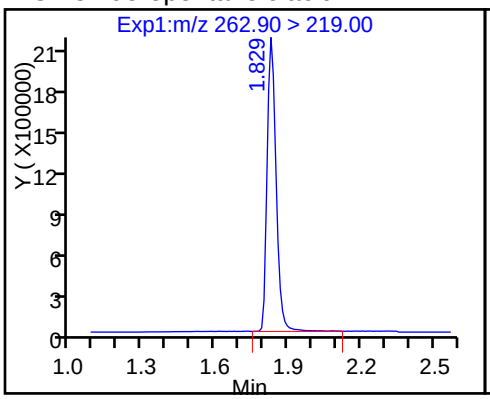
1 Perfluorobutyric acid



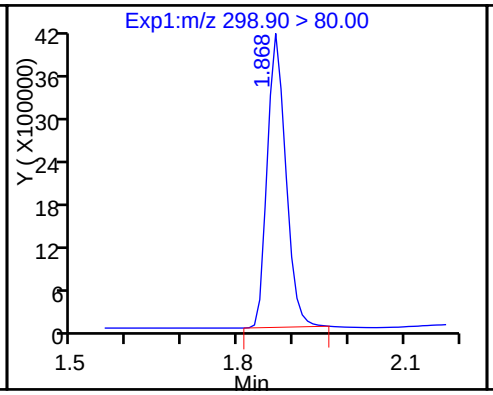
D 4 13C5-PFPeA



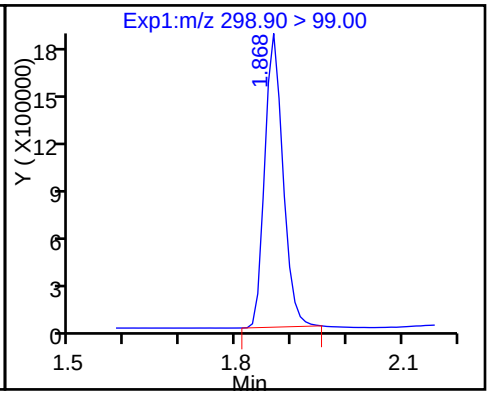
3 Perfluoropentanoic acid



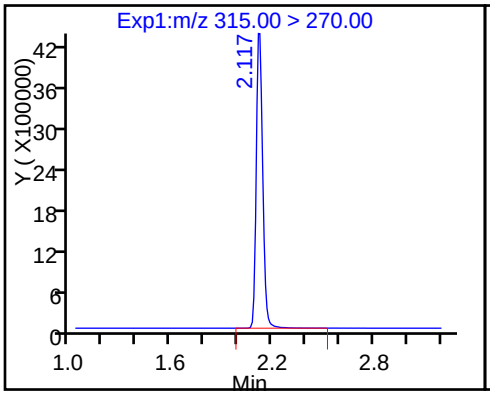
5 Perfluorobutanesulfonic acid



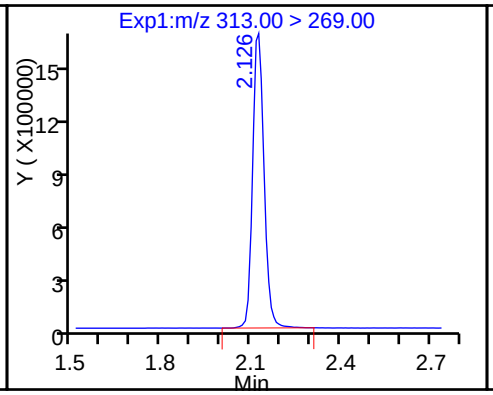
5 Perfluorobutanesulfonic acid



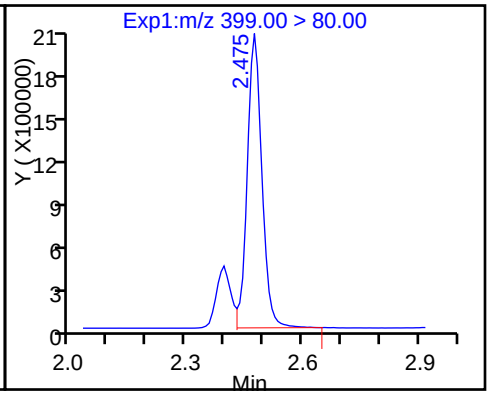
D 6 13C2 PFHxA



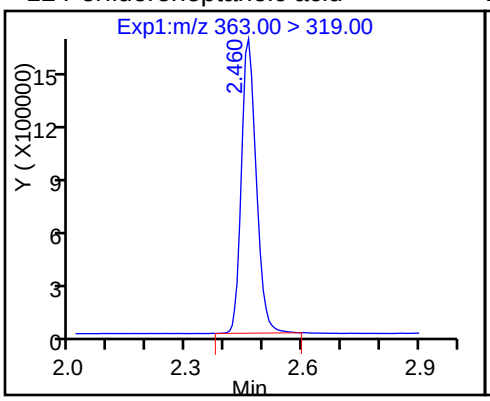
7 Perfluorohexanoic acid



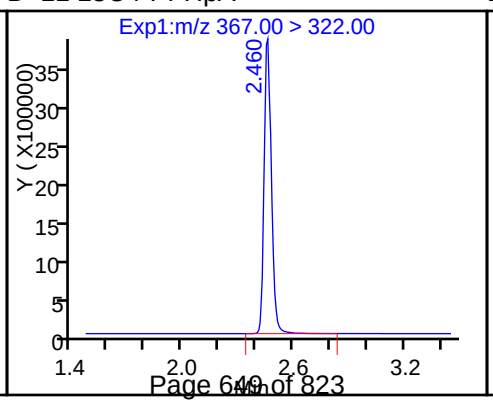
9 Perfluorohexanesulfonic acid



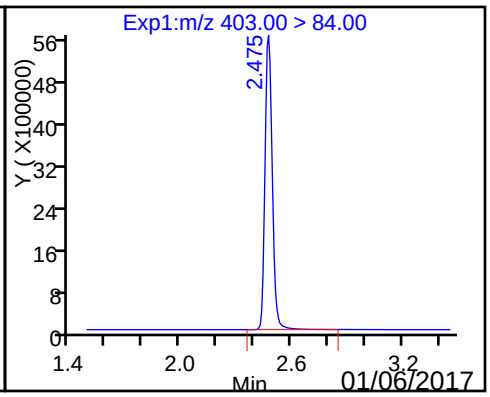
12 Perfluoroheptanoic acid



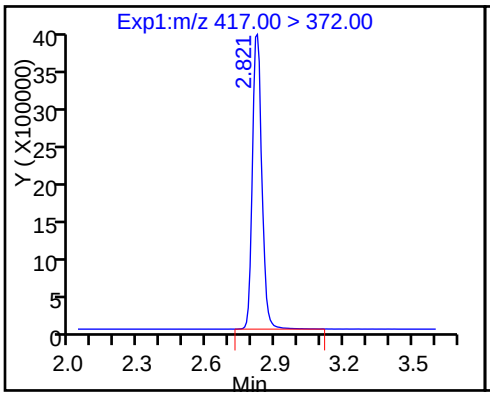
D 11 13C4-PFHpA



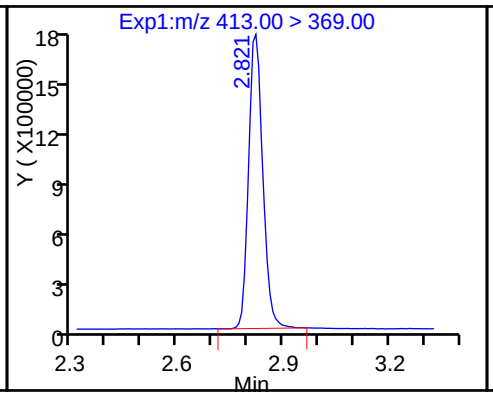
D 10 18O2 PFHxS



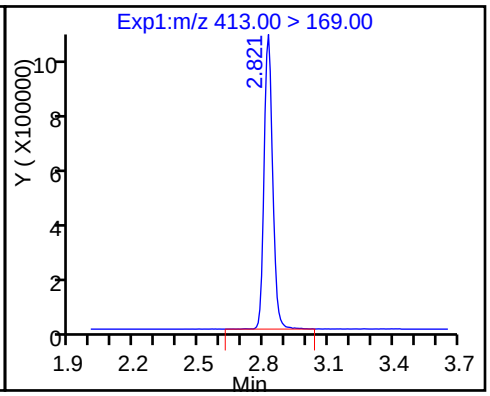
D 14 13C4 PFOA



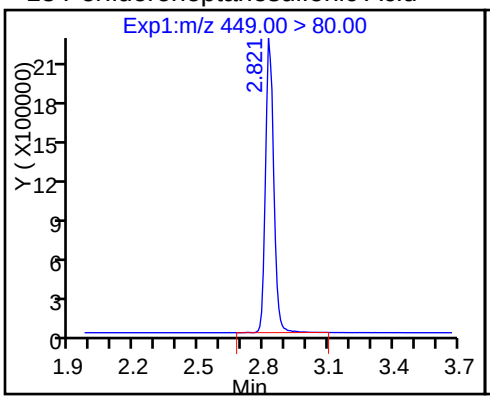
15 Perfluorooctanoic acid



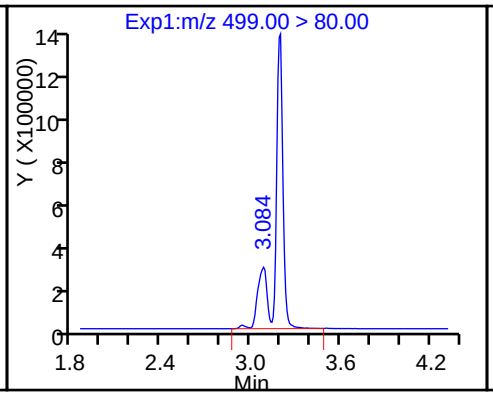
15 Perfluorooctanoic acid



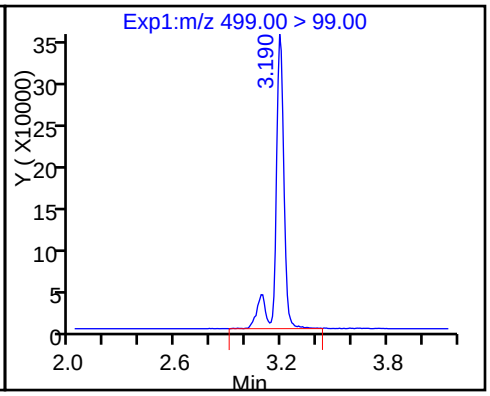
13 Perfluoroheptanesulfonic Acid



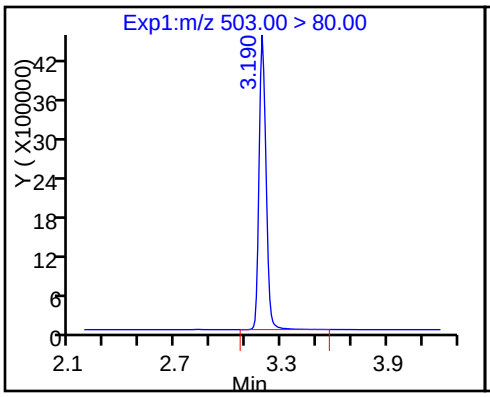
18 Perfluorooctane sulfonic acid



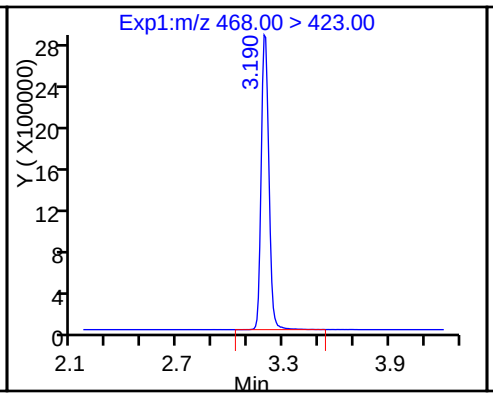
18 Perfluorooctane sulfonic acid



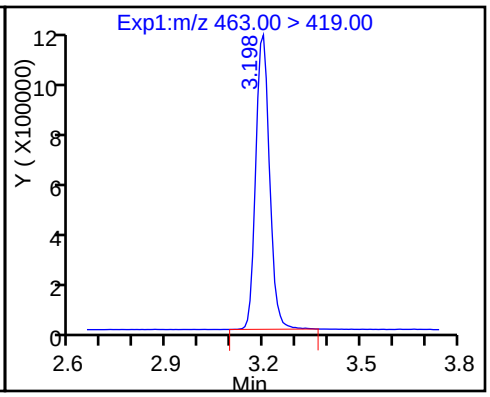
D 17 13C4 PFOS



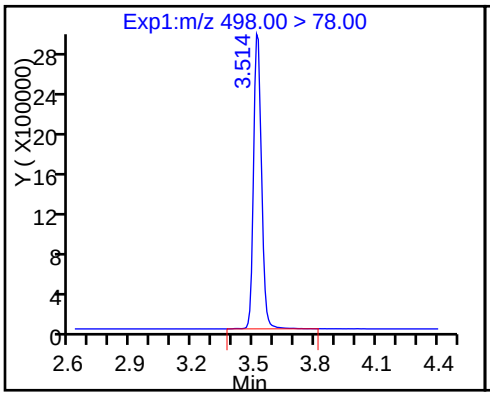
D 19 13C5 PFNA



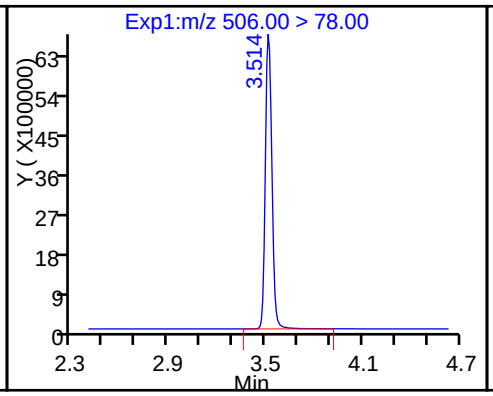
20 Perfluorononanoic acid



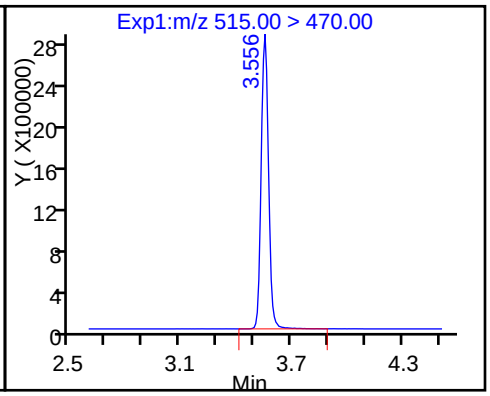
22 Perfluorooctane Sulfonamide



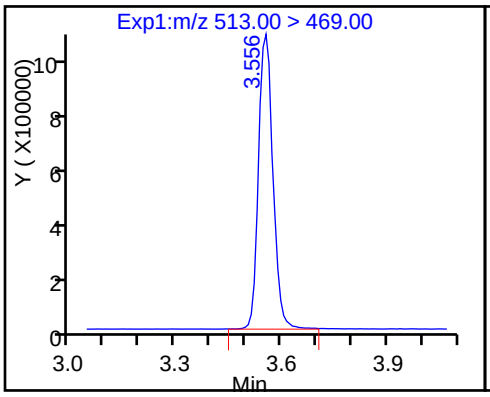
D 21 13C8 FOSA



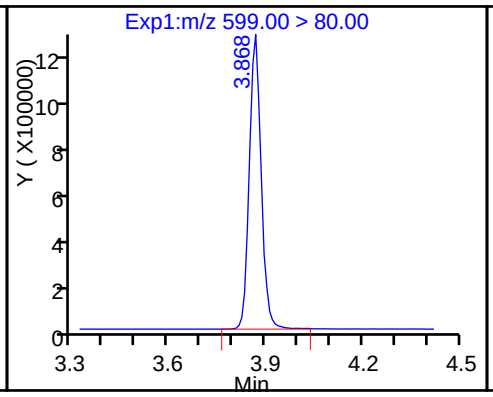
D 23 13C2 PFDA



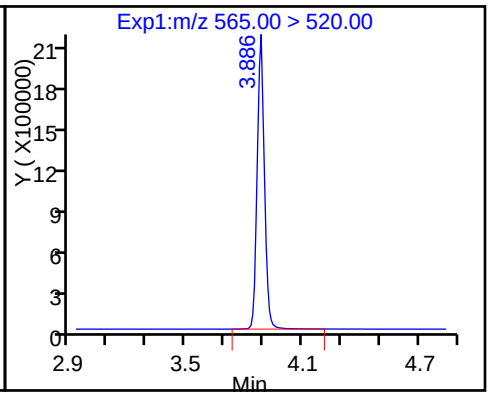
24 Perfluorodecanoic acid



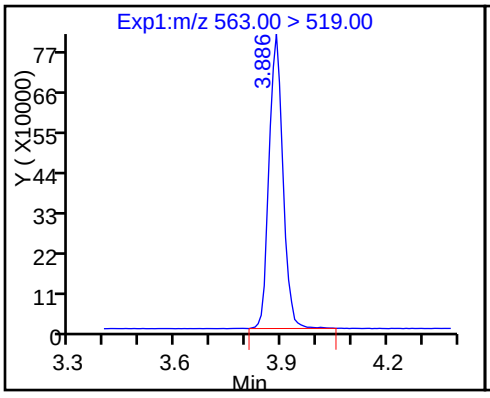
26 Perfluorodecane Sulfonic acid



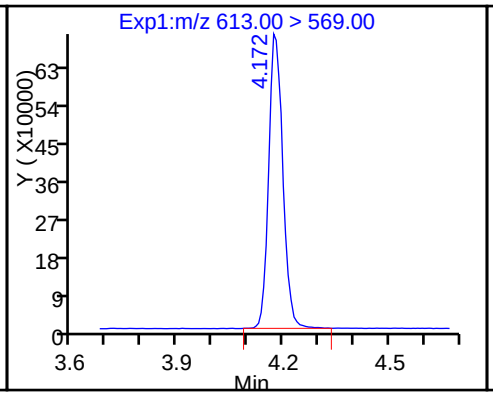
D 27 13C2 PFUnA



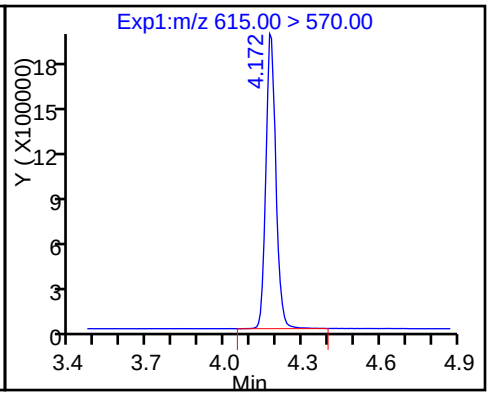
28 Perfluoroundecanoic acid



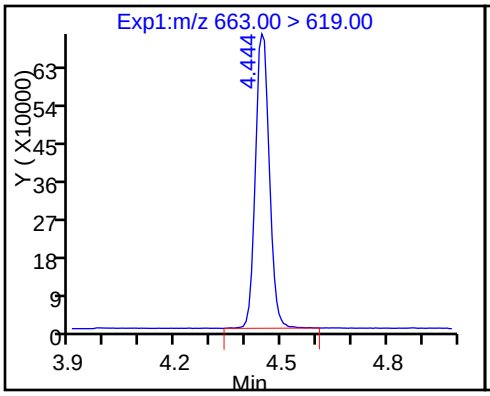
29 Perfluorododecanoic acid



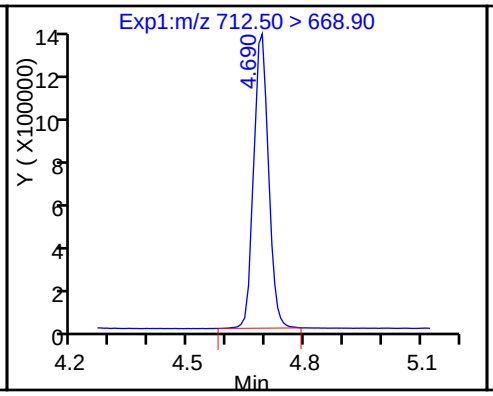
D 30 13C2 PFDoA



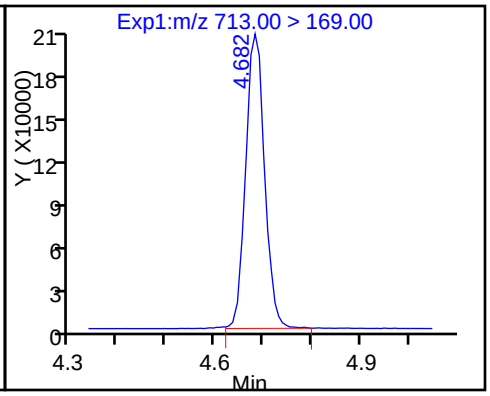
31 Perfluorotridecanoic acid



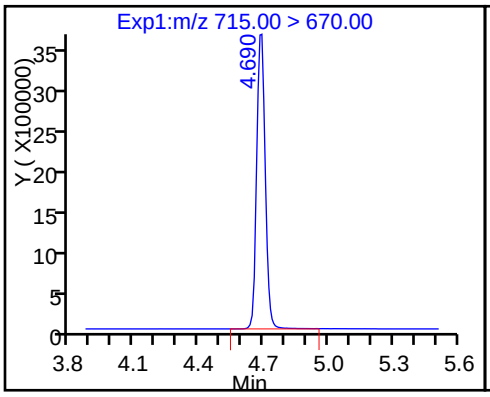
33 Perfluorotetradecanoic acid



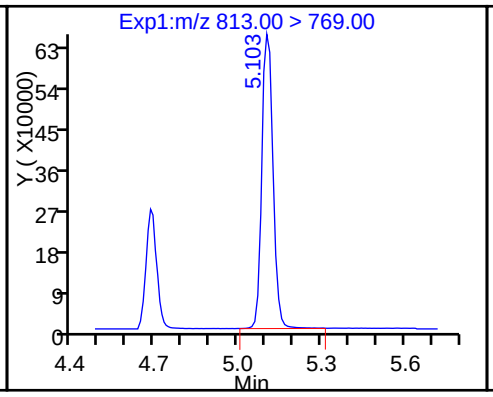
33 Perfluorotetradecanoic acid



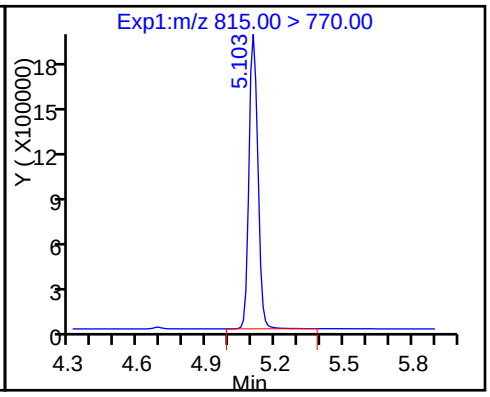
D 32 13C2-PFTeDA



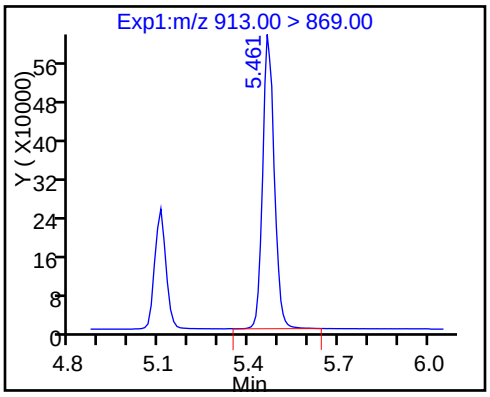
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab Sample ID: CCV 320-143502/28 Calibration Date: 12/21/2016 17:43

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: 21DEC2016A_038.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	0.9026		52.9	50.0	5.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.020		51.7	50.0	3.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.591		49.6	44.2	12.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9249		49.8	50.0	-0.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.039		45.9	45.5	0.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9697		49.5	50.0	-0.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.011		50.4	50.0	0.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.149		49.6	47.6	4.3	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.062		49.5	46.4	6.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9804		51.5	50.0	3.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9402		50.4	50.0	0.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9728		51.5	50.0	3.1	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6349		52.4	48.2	8.7	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9700		50.7	50.0	1.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9091		49.5	50.0	-1.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9054		49.9	50.0	-0.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.676		52.9	50.0	5.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8915		46.1	50.0	-7.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7990		38.8	50.0	-22.5	25.0
13C4 PFBA	Ave	347743	359973		51.8	50.0	3.5	50.0
13C5-PFPeA	Ave	266072	272656		51.2	50.0	2.5	50.0
13C2 PFHxA	Ave	245110	227314		46.4	50.0	-7.3	50.0
13C4-PFHpA	Ave	226344	206638		45.6	50.0	-8.7	50.0
18O2 PFHxS	Ave	326976	322031		46.6	47.3	-1.5	50.0
13C4 PFOA	Ave	230362	212866		46.2	50.0	-7.6	50.0
13C4 PFOS	Ave	248847	255770		49.1	47.8	2.8	50.0
13C5 PFNA	Ave	177687	165414		46.5	50.0	-6.9	50.0
13C8 FOSA	Ave	384141	381630		49.7	50.0	-0.7	50.0
13C2 PFDA	Ave	157302	148443		47.2	50.0	-5.6	50.0
13C2 PFUnA	Ave	117250	113017		48.2	50.0	-3.6	50.0
13C2 PFDoA	Ave	110957	104782		47.2	50.0	-5.6	50.0
13C2-PFTeDA	Ave	227387	202479		44.5	50.0	-11.0	50.0
13C2-PFHxDA	Ave	124568	103562		41.6	50.0	-16.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_038.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 21-Dec-2016 17:43:25 ALS Bottle#: 41 Worklist Smp#: 28
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\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:04 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:28:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		17998645	51.8		104	930676	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	16245670	52.9		106	83713	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		13632809	51.2		102	1031824	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.829	0.0	1.000	13908845	51.7		103	151359	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.868	0.0	1.000	22641057	49.6		112		
298.90 > 99.00	1.868	1.868	0.0	1.000	10418053		2.17(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.122	2.122	0.0		11365707	46.4		92.7	735157	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.122	2.122	0.0	1.000	10512124	49.8		99.6	263757	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.395	2.395	0.0	1.000	15226146	45.9		101		
D 11 13C4-PFHpA										
367.00 > 322.00	2.459	2.459	0.0		10331895	45.6		91.3	621533	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.459	2.459	0.0	1.000	10018358	49.5		99.1	107975	
D 10 18O2 PFHxS										
403.00 > 84.00	2.474	2.474	0.0		15232044	46.6		98.5	914480	
D 14 13C4 PFOA										
417.00 > 372.00	2.814	2.814	0.0		10643277	46.2		92.4	1252893	

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	2.814	2.814	0.0	1.000	10765447	50.4		101	107955	
413.00 > 169.00	2.814	2.814	0.0	1.000	6845893		1.57(0.90-1.10)		350117	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.822	2.822	0.0	1.000	13988196	49.6		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.076	3.076	0.0	1.000	12598742	49.5		107	84616	
499.00 > 99.00	3.085	3.076	0.009	1.003	2901958		4.34(0.90-1.10)		25720	
D 19 13C5 PFNA										
468.00 > 423.00	3.191	3.191	0.0		8270722	46.5		93.1	394939	
D 17 13C4 PFOS										
503.00 > 80.00	3.182	3.182	0.0		12225809	49.1		103	236962	
20 Perfluorononanoic acid										
463.00 > 419.00	3.191	3.191	0.0	1.000	8108526	51.5		103	149034	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.523	3.523	0.0	1.000	17940592	50.4		101	584471	
D 21 13C8 FOSA										
506.00 > 78.00	3.523	3.523	0.0		19081523	49.7		99.3	511261	
D 23 13C2 PFDA										
515.00 > 470.00	3.548	3.548	0.0		7422172	47.2		94.4	214065	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.548	3.548	0.0	1.000	7220461	51.5		103	239299	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.860	3.860	0.0	1.000	7827213	52.4		109		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.877	3.877	0.0	1.000	5481065	50.7		101	126156	
D 27 13C2 PFUnA										
565.00 > 520.00	3.877	3.877	0.0		5650869	48.2		96.4	255311	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.166	4.166	0.0	1.000	4762681	49.5		99.0	106915	
D 30 13C2 PFDoA										
615.00 > 570.00	4.166	4.166	0.0		5239103	47.2		94.4	194878	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.430	4.430	0.0	1.000	4743582	49.9		99.8	90377	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.676	4.676	0.0	1.000	8781911	52.9		106	62063	
713.00 > 169.00	4.676	4.676	0.0	1.000	1410046		6.23(0.00-0.00)		169556	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.676	4.676	0.0		10123941	44.5		89.0	475518	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.094	5.094	0.0	1.000	4670452	46.1		92.2	4609	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.094	5.094	0.0		5178082	41.6		83.1	89394	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.446	5.446	0.0	1.000	4186168	38.8		77.5	4431	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 22-Dec-2016 10:36:05 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_038.d

Injection Date: 21-Dec-2016 17:43:25 Instrument ID: A8_N

Lims ID: CCV L5

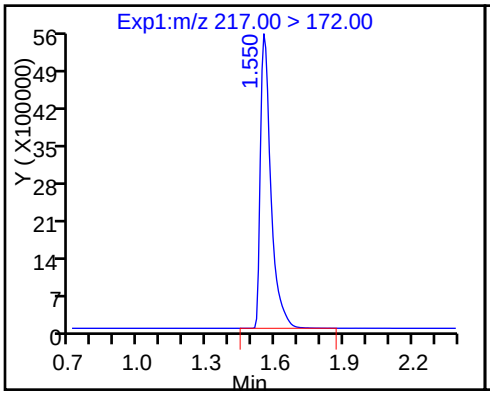
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 28

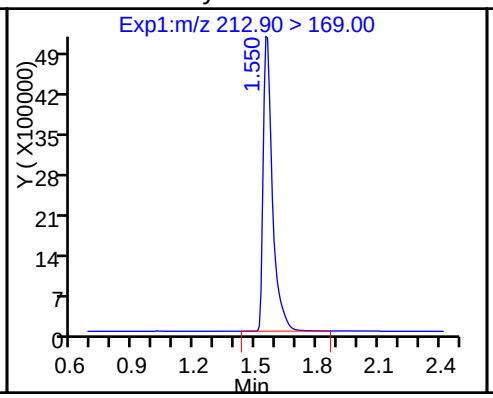
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

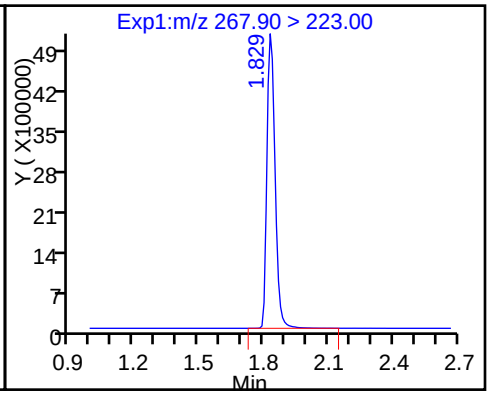
D 2 13C4 PFBA



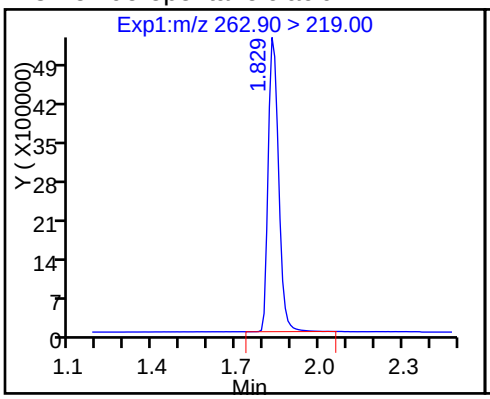
1 Perfluorobutyric acid



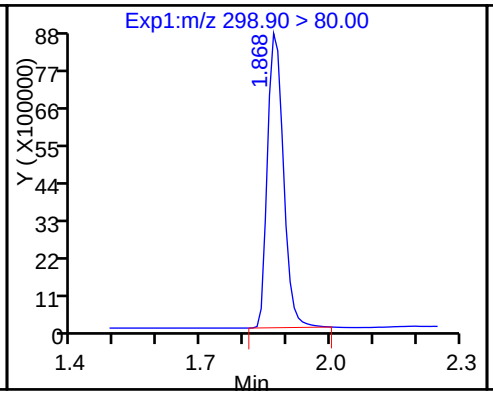
D 4 13C5-PFPeA



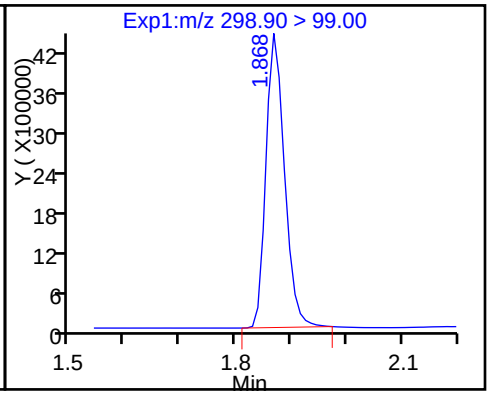
3 Perfluoropentanoic acid



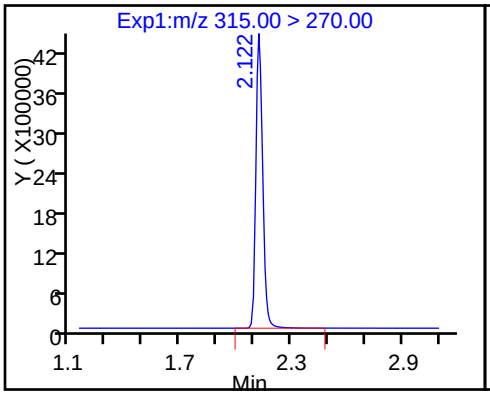
5 Perfluorobutanesulfonic acid



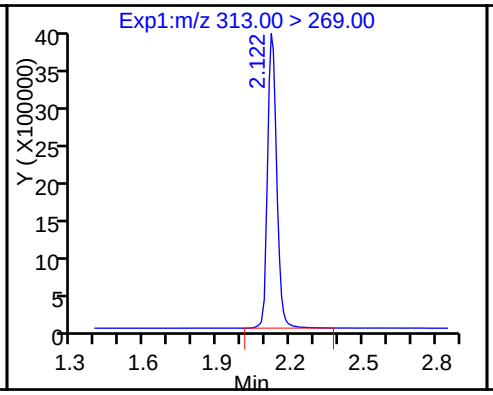
5 Perfluorobutanesulfonic acid



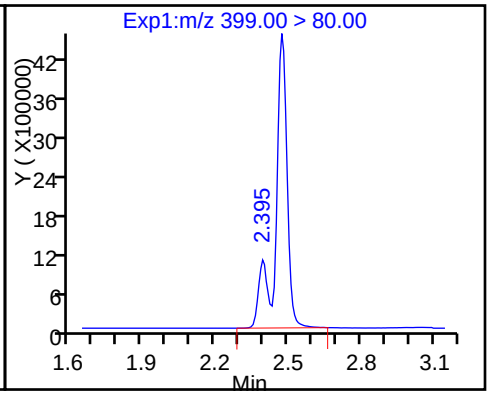
D 6 13C2 PFHxA



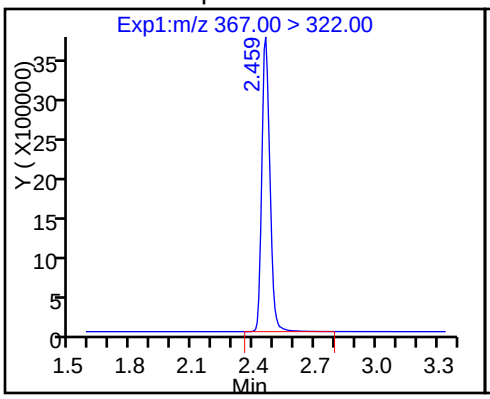
7 Perfluorohexanoic acid



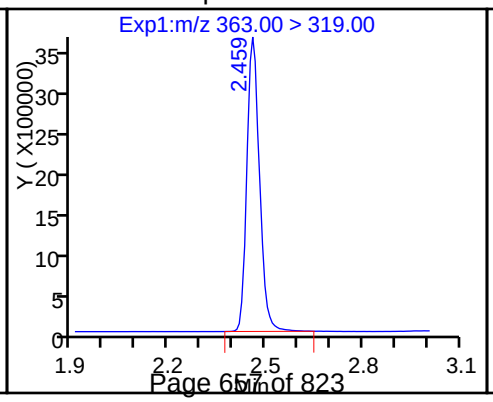
9 Perfluorohexanesulfonic acid



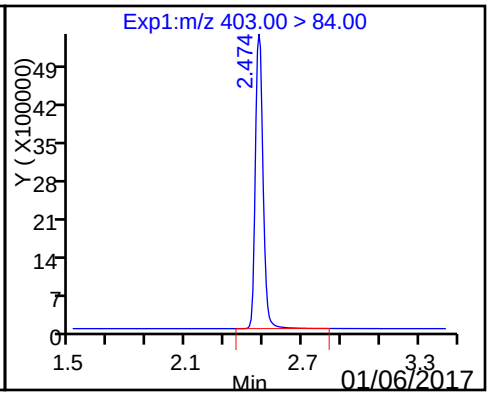
D 11 13C4-PFHpA



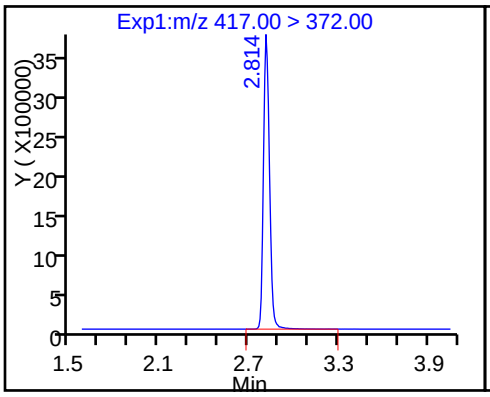
12 Perfluoroheptanoic acid



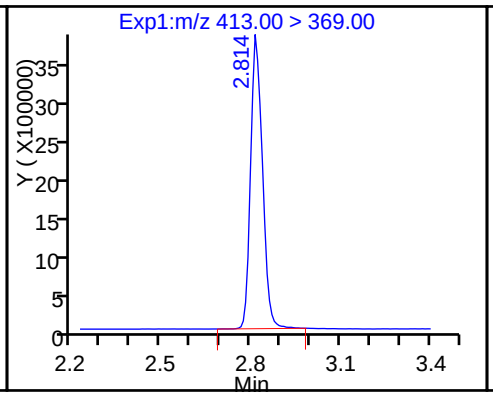
D 10 18O2 PFHxS



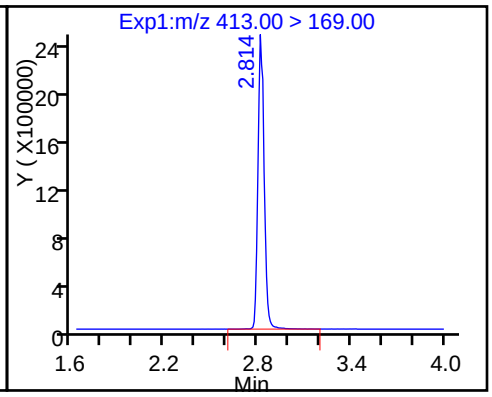
D 14 13C4 PFOA



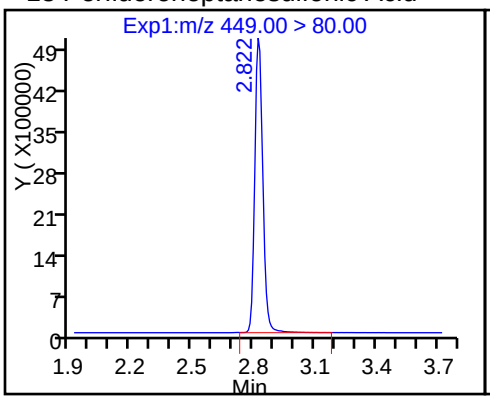
15 Perfluorooctanoic acid



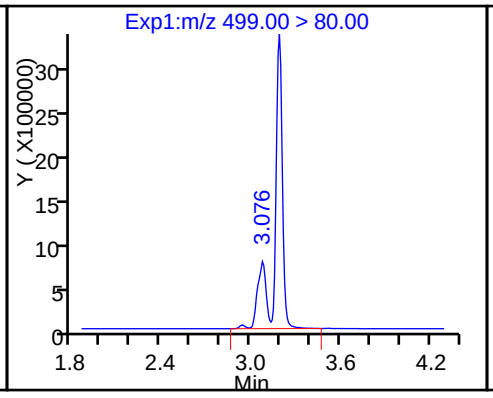
15 Perfluorooctanoic acid



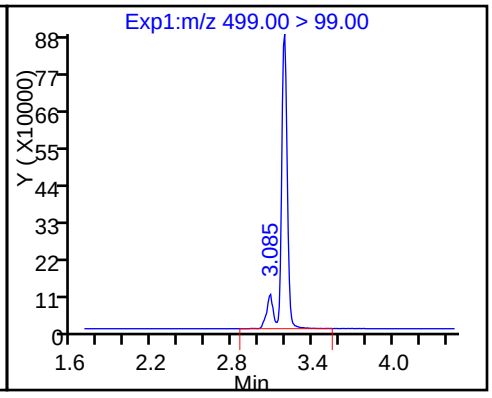
13 Perfluoroheptanesulfonic Acid



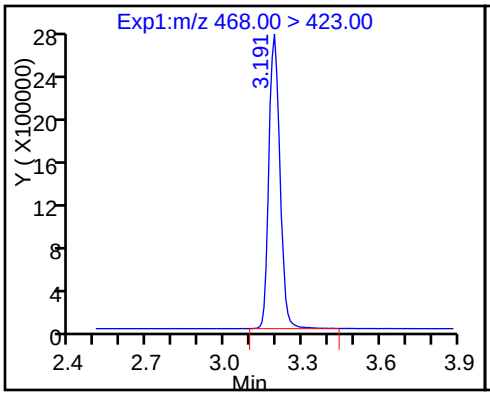
18 Perfluorooctane sulfonic acid



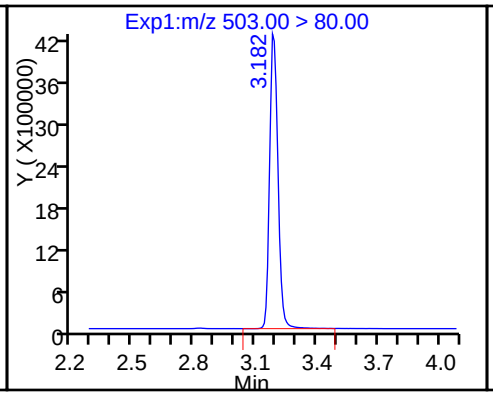
18 Perfluorooctane sulfonic acid



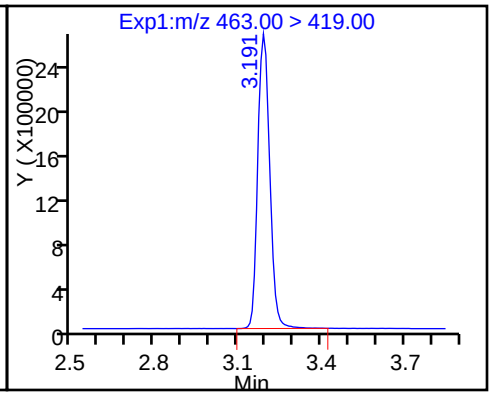
D 19 13C5 PFNA



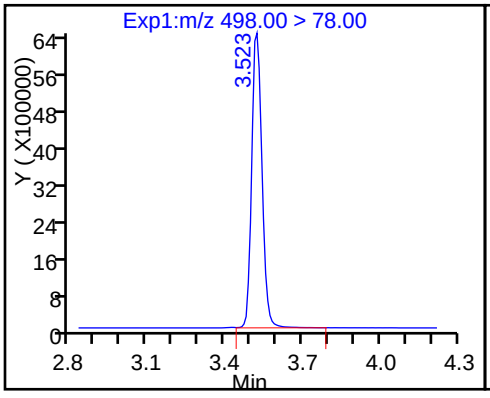
D 17 13C4 PFOS



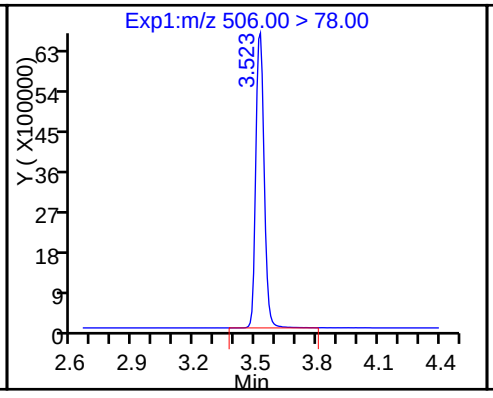
20 Perfluorononanoic acid



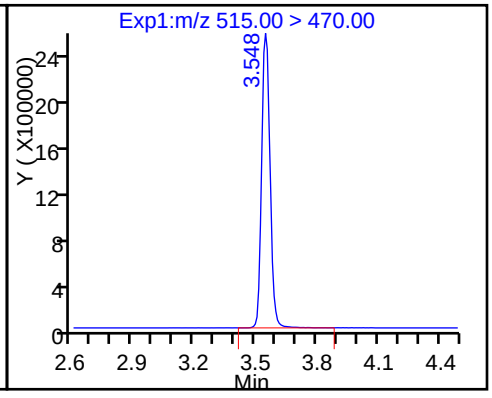
22 Perfluorooctane Sulfonamide



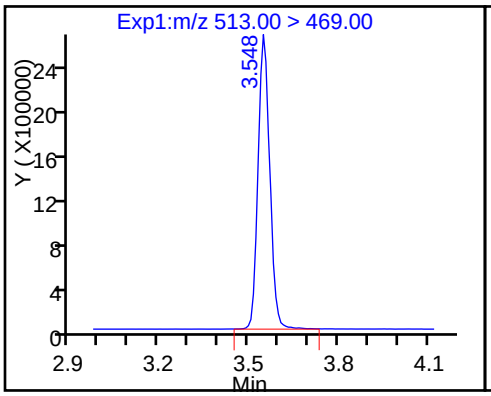
D 21 13C8 FOSA



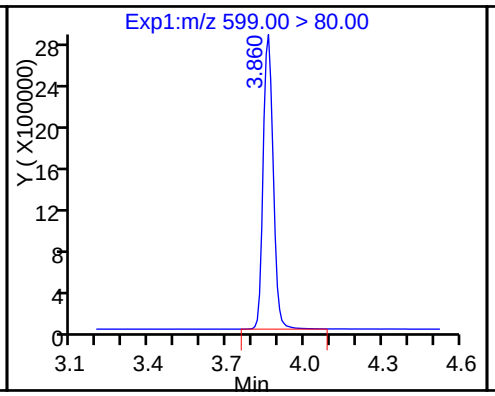
D 23 13C2 PFDA



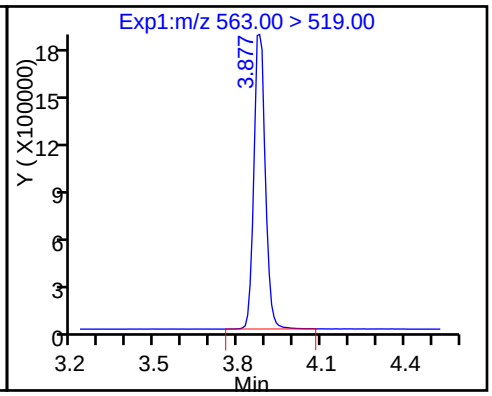
24 Perfluorodecanoic acid



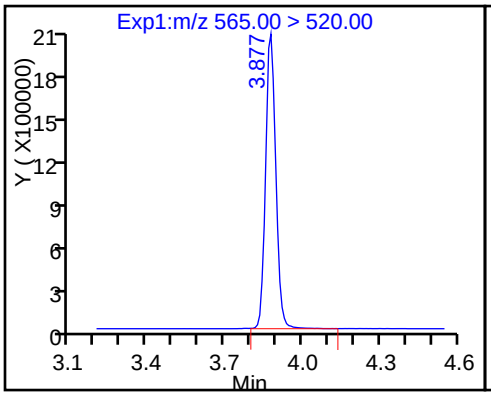
26 Perfluorodecane Sulfonic acid



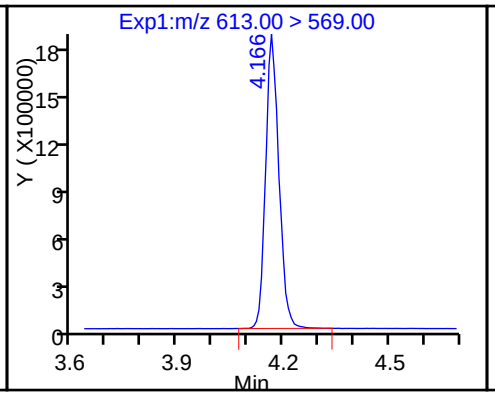
28 Perfluoroundecanoic acid



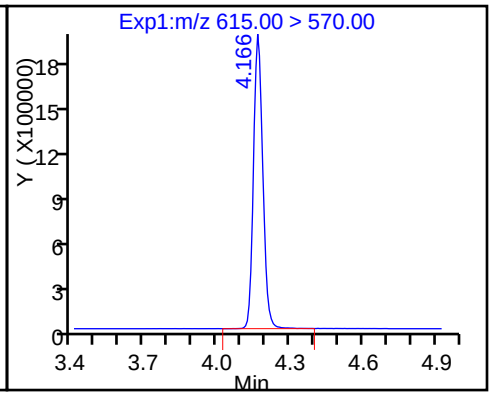
D 27 13C2 PFUnA



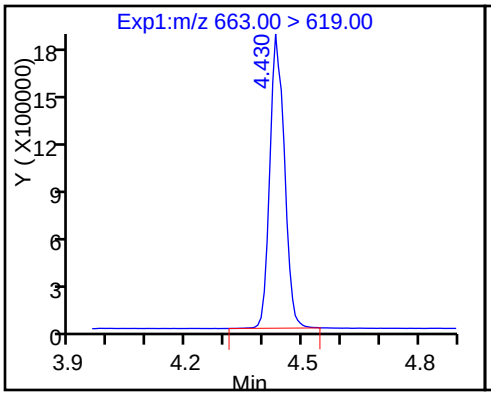
29 Perfluorododecanoic acid



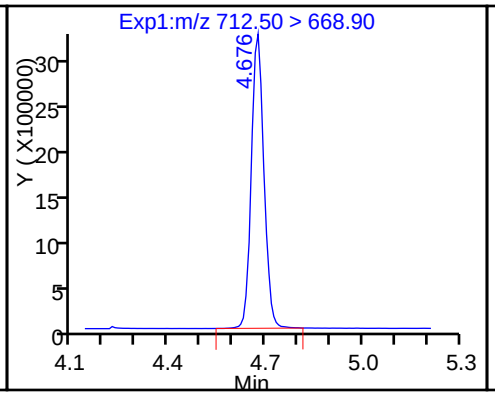
D 30 13C2 PFDoA



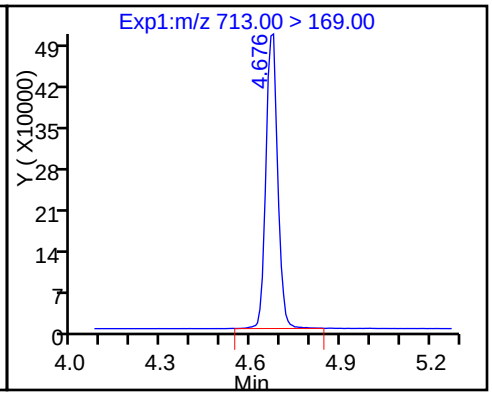
31 Perfluorotridecanoic acid



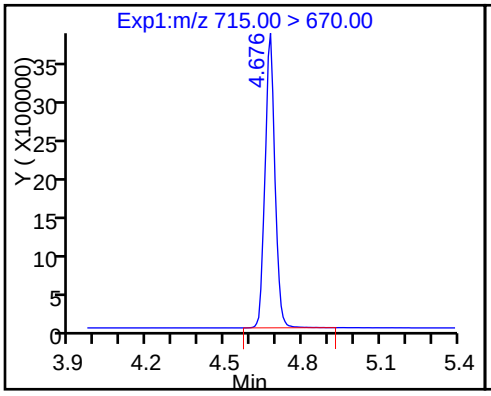
33 Perfluorotetradecanoic acid



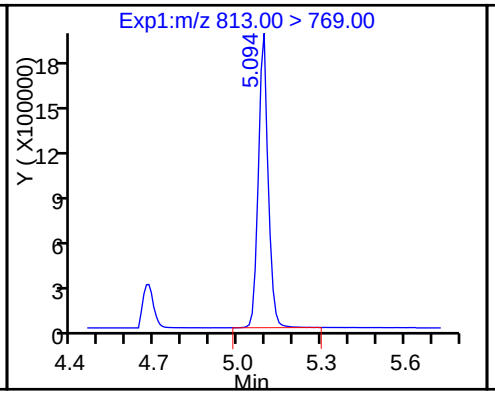
33 Perfluorotetradecanoic acid



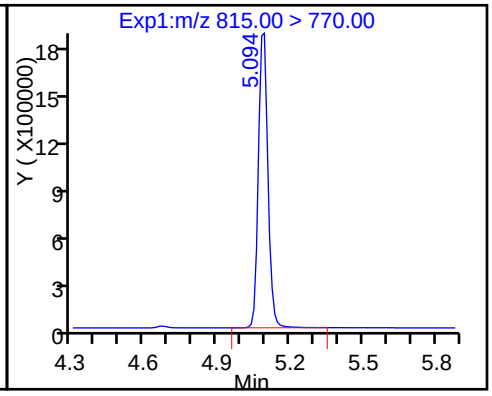
D 32 13C2-PFTeDA



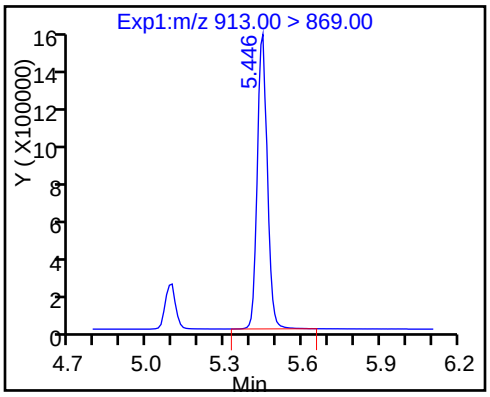
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab Sample ID: CCV 320-143502/39 Calibration Date: 12/21/2016 19:05

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: 21DEC2016A_049.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	0.9742		22.8	20.0	14.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.051		21.3	20.0	6.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.733		21.6	17.7	22.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9366		20.2	20.0	0.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.078		19.0	18.2	4.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.013		20.7	20.0	3.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.083		21.6	20.0	7.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.229		21.2	19.0	11.6	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.030		19.2	18.6	3.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	1.010		21.2	20.0	6.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.008		21.6	20.0	8.0	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	1.000		21.2	20.0	6.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5965		19.7	19.3	2.1	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	1.013		21.2	20.0	5.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8625		18.8	20.0	-6.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9136		20.1	20.0	0.7	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.733		21.9	20.0	9.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9123		18.5	20.0	-7.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8356		16.2	20.0	-18.9	25.0
13C4 PFBA	Ave	347743	343554		49.4	50.0	-1.2	50.0
13C5-PFPeA	Ave	266072	261394		49.1	50.0	-1.8	50.0
13C2 PFHxA	Ave	245110	226080		46.1	50.0	-7.8	50.0
13C4-PFHpA	Ave	226344	206130		45.5	50.0	-8.9	50.0
18O2 PFHxS	Ave	326976	304146		44.0	47.3	-7.0	50.0
13C4 PFOA	Ave	230362	213577		46.4	50.0	-7.3	50.0
13C5 PFNA	Ave	177687	159635		44.9	50.0	-10.2	50.0
13C4 PFOS	Ave	248847	235515		45.2	47.8	-5.4	50.0
13C8 FOSA	Ave	384141	355567		46.3	50.0	-7.4	50.0
13C2 PFDA	Ave	157302	142938		45.4	50.0	-9.1	50.0
13C2 PFUnA	Ave	117250	104318		44.5	50.0	-11.0	50.0
13C2 PFDoA	Ave	110957	96654		43.6	50.0	-12.9	50.0
13C2-PFTeDA	Ave	227387	193359		42.5	50.0	-15.0	50.0
13C2-PFHxDA	Ave	124568	99632		40.0	50.0	-20.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_049.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 21-Dec-2016 19:05:53 ALS Bottle#: 40 Worklist Smp#: 39
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*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:22 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:35:28

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	1.542	1.542	0.0		17177677	49.4		98.8	1118727	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	6693439	22.8		114	40915	
D 4 13C5-PFPeA										
267.90 > 223.00	1.830	1.830	0.0		13069694	49.1		98.2	834140	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.830	1.830	0.0	1.000	5496209	21.3		107	55869	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.868	0.0	1.000	9316960	21.6		122		
298.90 > 99.00	1.859	1.868	-0.009	0.995	3926974		2.37(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.118	2.118	0.0		11304005	46.1		92.2	854958	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.118	2.118	0.0	1.000	4234855	20.2		101	135703	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.389	2.389	0.0	1.000	5964913	19.0		105		
D 11 13C4-PFHpA										
367.00 > 322.00	2.445	2.445	0.0		10306489	45.5		91.1	522481	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.453	2.453	0.0	1.000	4175583	20.7		103	45512	
D 10 18O2 PFHxS										
403.00 > 84.00	2.468	2.468	0.0		14386105	44.0		93.0	741041	
D 14 13C4 PFOA										
417.00 > 372.00	2.805	2.805	0.0		10678851	46.4		92.7	552956	

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	2.805	2.805	0.0	1.000	4625469	21.6		108	43631	
413.00 > 169.00	2.805	2.805	0.0	1.000	2856881		1.62(0.90-1.10)		117420	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.814	2.814	0.0	1.000	5513031	21.2		112		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.066	3.066	0.0	1.000	4503837	19.2		104	29281	
499.00 > 99.00	3.182	3.066	0.116	1.038	986048		4.57(0.90-1.10)		80102	
D 17 13C4 PFOS										
503.00 > 80.00	3.182	3.182	0.0		11257615	45.2		94.6	306086	
D 19 13C5 PFNA										
468.00 > 423.00	3.174	3.174	0.0		7981772	44.9		89.8	372008	
20 Perfluorononanoic acid										
463.00 > 419.00	3.182	3.182	0.0	1.000	3225427	21.2		106	63449	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.514	3.514	0.0	1.000	7165181	21.6		108	375109	
D 21 13C8 FOSA										
506.00 > 78.00	3.514	3.514	0.0		17778359	46.3		92.6	654213	
D 23 13C2 PFDA										
515.00 > 470.00	3.540	3.540	0.0		7146876	45.4		90.9	302380	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.540	3.540	0.0	1.000	2859136	21.2		106	83020	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.851	3.851	0.0	1.000	2708570	19.7		102		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.868	3.868	0.0	1.000	2112497	21.2		106	63096	
D 27 13C2 PFUnA										
565.00 > 520.00	3.868	3.868	0.0		5215887	44.5		89.0	504641	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.156	4.156	0.0	1.000	1667244	18.8		94.0	40531	
D 30 13C2 PFDoA										
615.00 > 570.00	4.156	4.156	0.0		4832705	43.6		87.1	179753	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.428	4.428	0.0	1.000	1765993	20.1		101	41681	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.664	4.664	0.0	1.000	3349403	21.9		109	34099	
713.00 > 169.00	4.654	4.664	-0.010	0.998	519170		6.45(0.00-0.00)		65456	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.673	4.673	0.0		9667957	42.5		85.0	433398	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.081	5.081	0.0	1.000	1763546	18.5		92.6	1518	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.081	5.081	0.0		4981578	40.0		80.0	85695	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.429	5.429	0.0	1.000	1615355	16.2		81.1	1689	

Reagents:

LCPFC-L4_00024 Amount Added: 1.00 Units: mL

Report Date: 22-Dec-2016 10:36:22 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_049.d

Injection Date: 21-Dec-2016 19:05:53 Instrument ID: A8_N

Lims ID: CCV L4

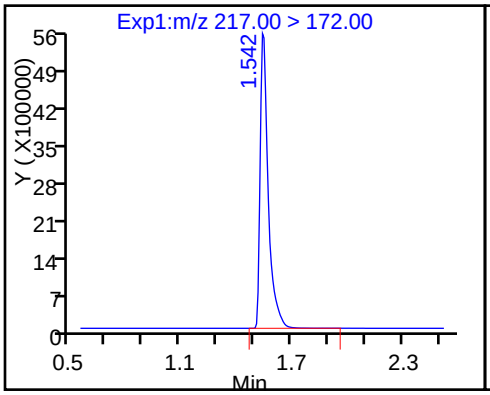
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 39

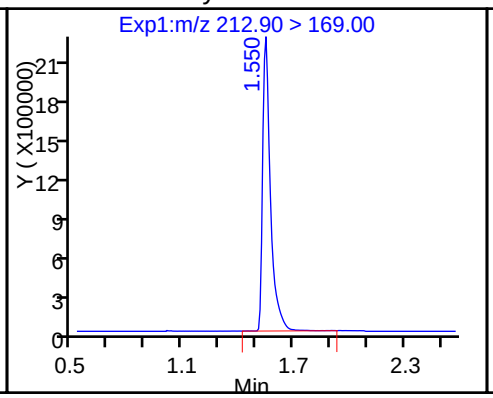
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

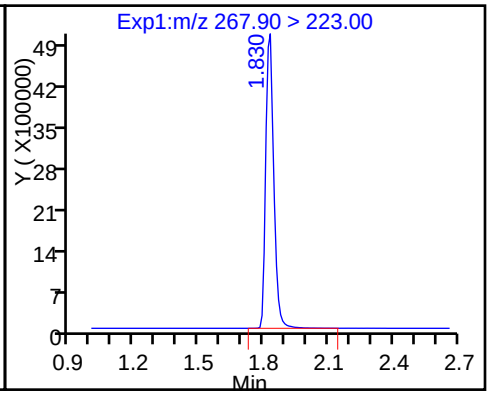
D 2 13C4 PFBA



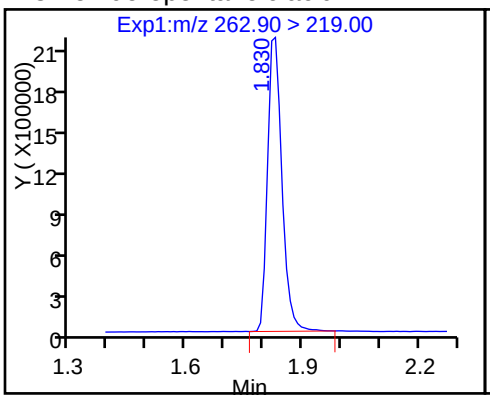
1 Perfluorobutyric acid



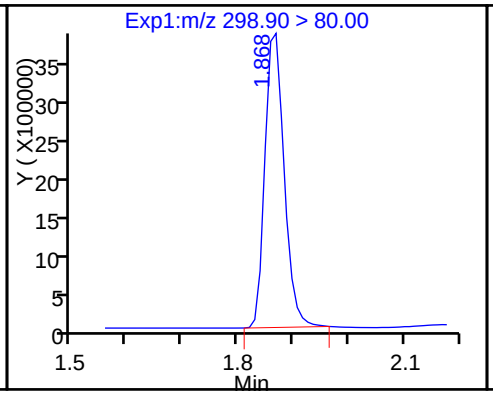
D 4 13C5-PFPeA



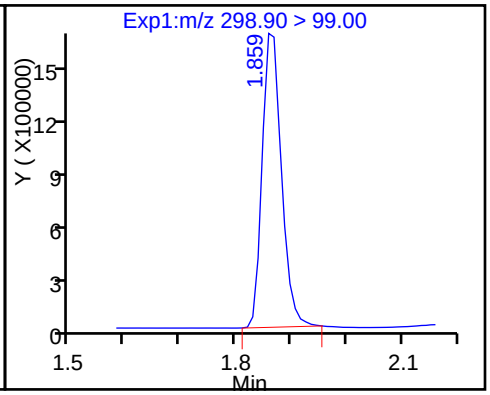
3 Perfluoropentanoic acid



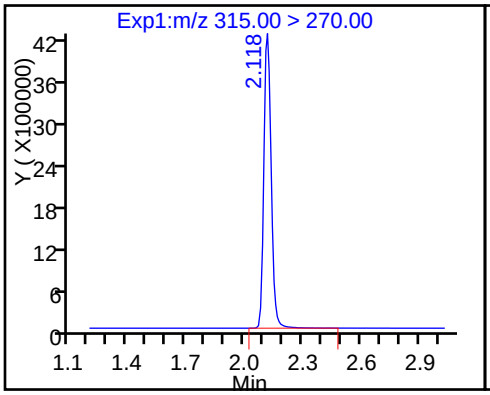
5 Perfluorobutanesulfonic acid



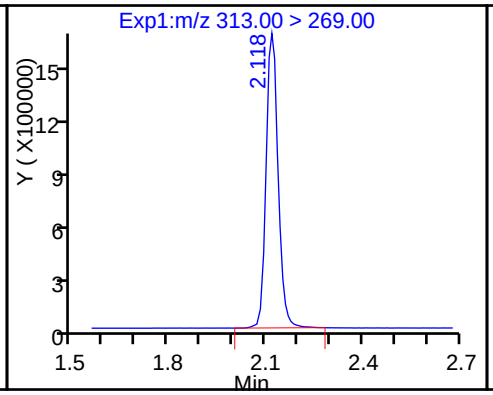
5 Perfluorobutanesulfonic acid



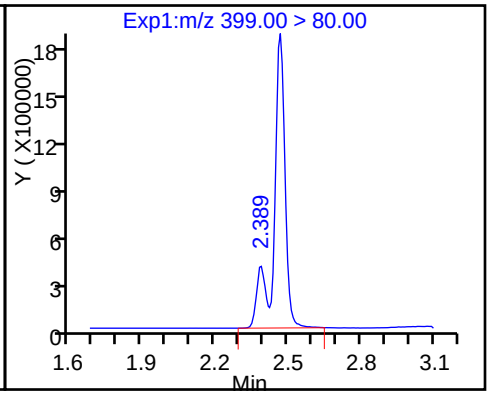
D 6 13C2 PFHxA



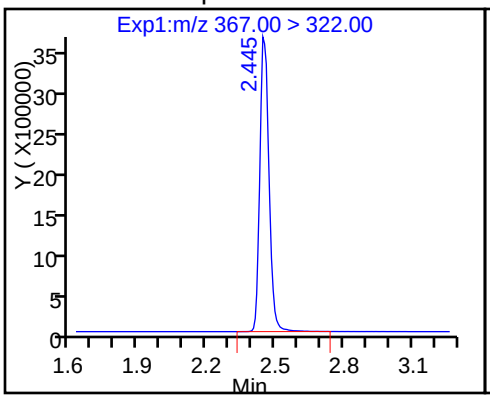
7 Perfluorohexanoic acid



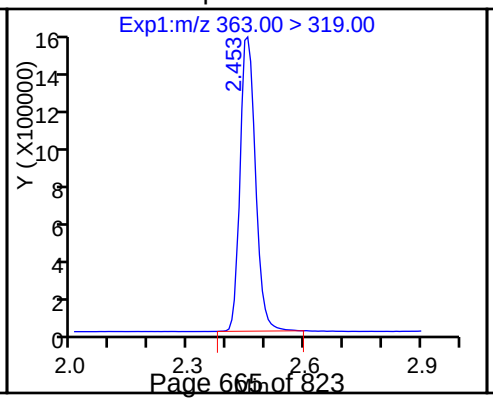
9 Perfluorohexanesulfonic acid



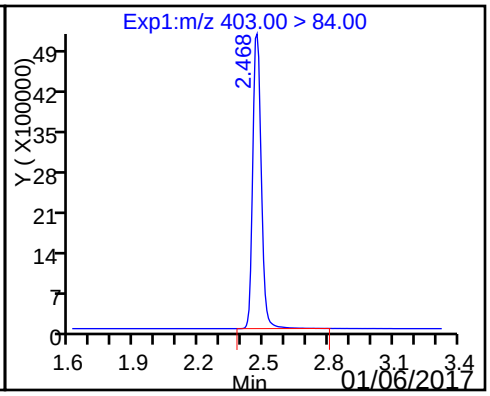
D 11 13C4-PFHpA



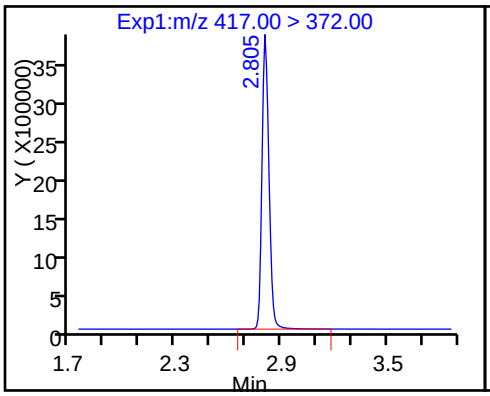
12 Perfluoroheptanoic acid



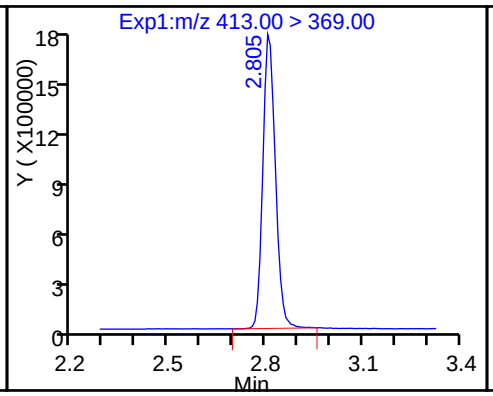
D 10 18O2 PFHxS



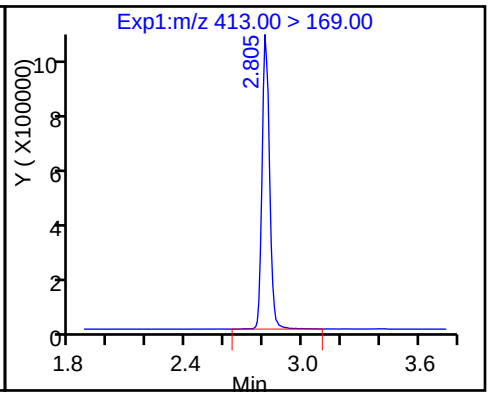
D 14 13C4 PFOA



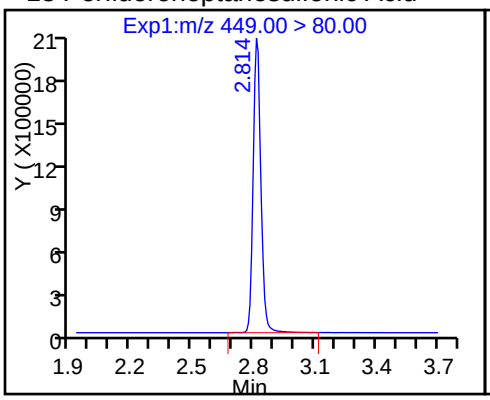
15 Perfluorooctanoic acid



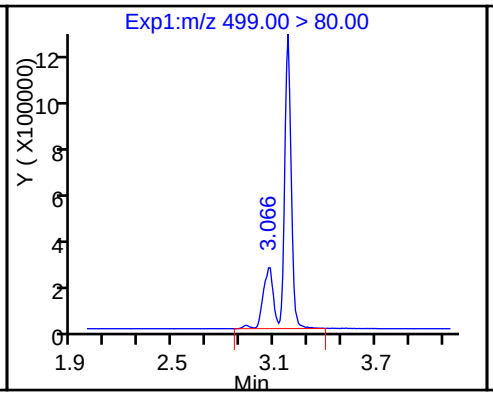
15 Perfluorooctanoic acid



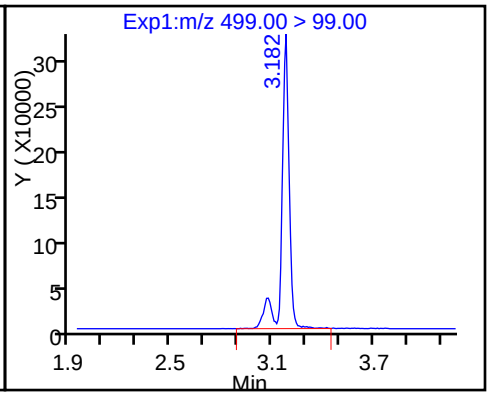
13 Perfluoroheptanesulfonic Acid



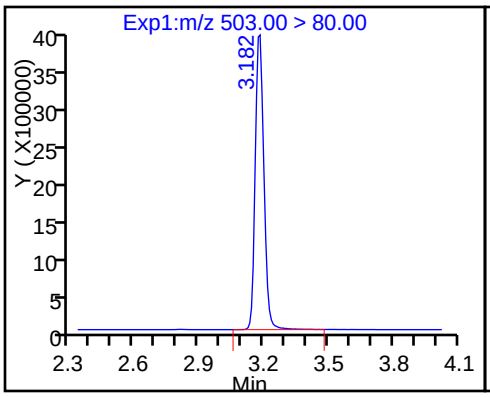
18 Perfluorooctane sulfonic acid



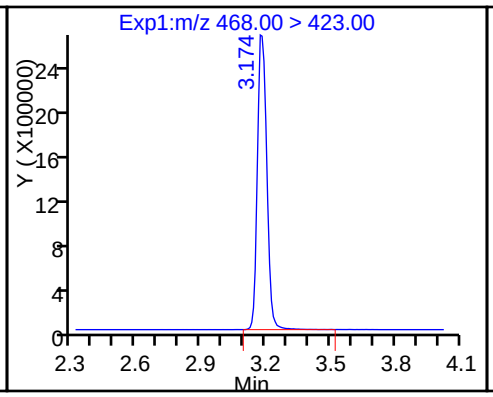
18 Perfluorooctane sulfonic acid



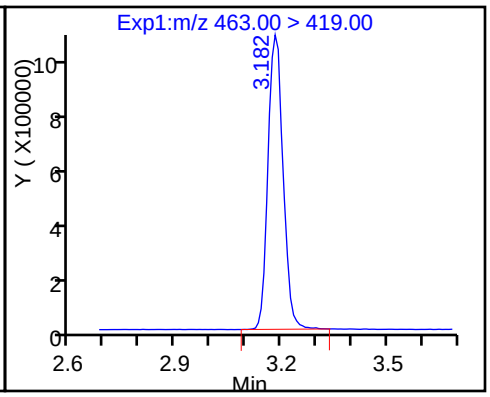
D 17 13C4 PFOS



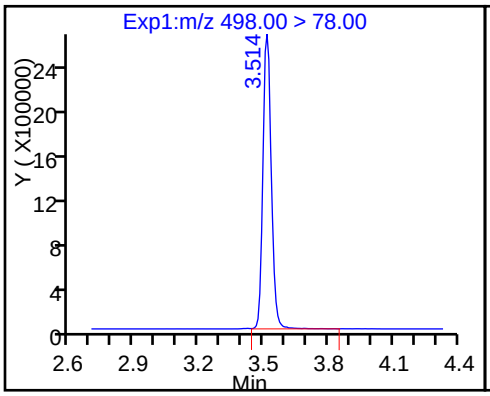
D 19 13C5 PFNA



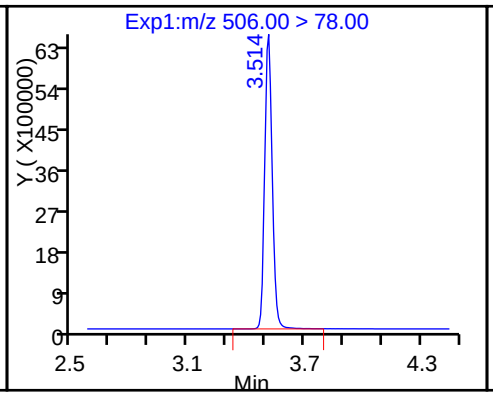
20 Perfluorononanoic acid



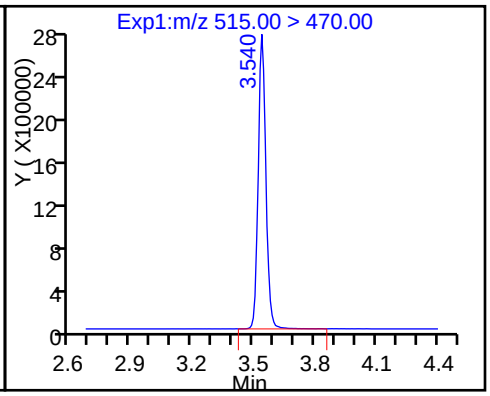
22 Perfluorooctane Sulfonamide



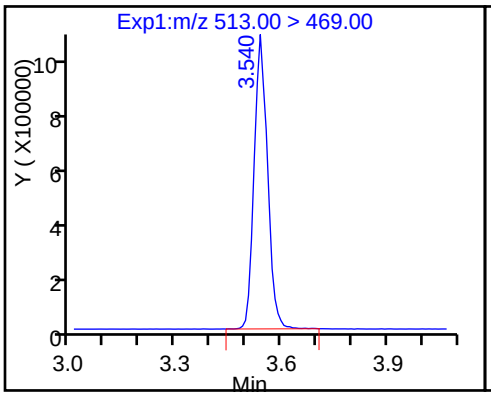
D 21 13C8 FOSA



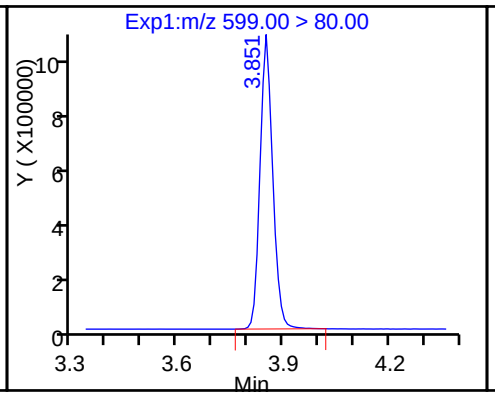
D 23 13C2 PFDA



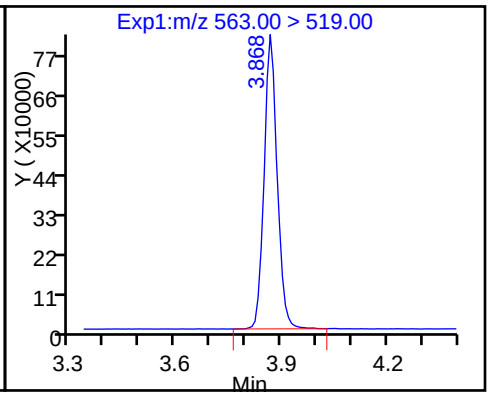
24 Perfluorodecanoic acid



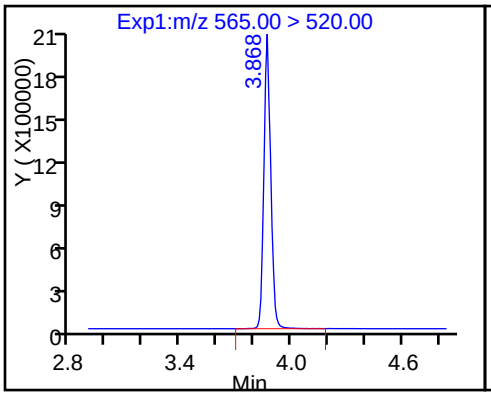
26 Perfluorodecane Sulfonic acid



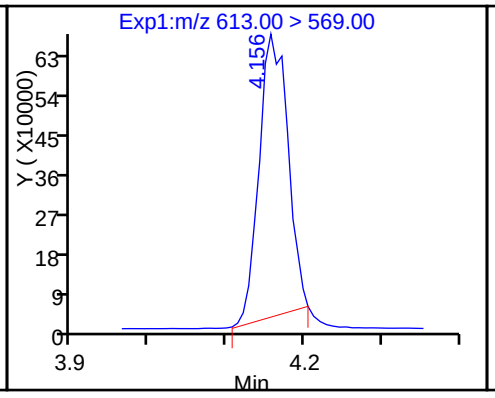
28 Perfluoroundecanoic acid



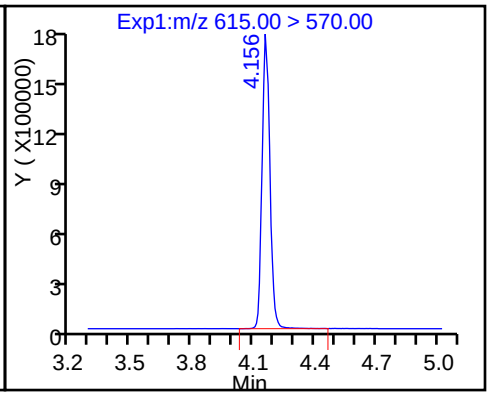
D 27 13C2 PFUnA



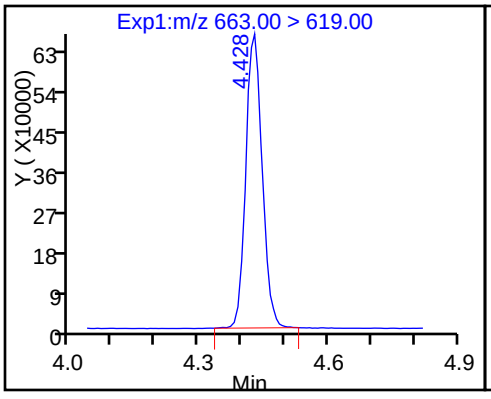
29 Perfluorododecanoic acid



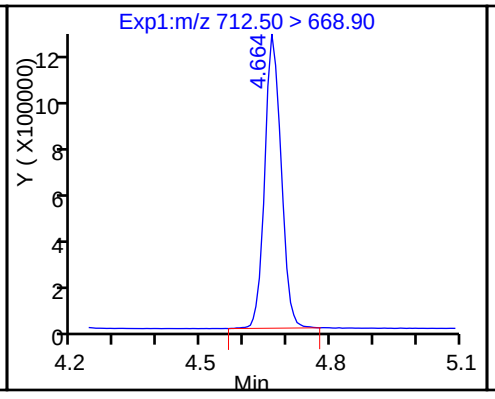
D 30 13C2 PFDoA



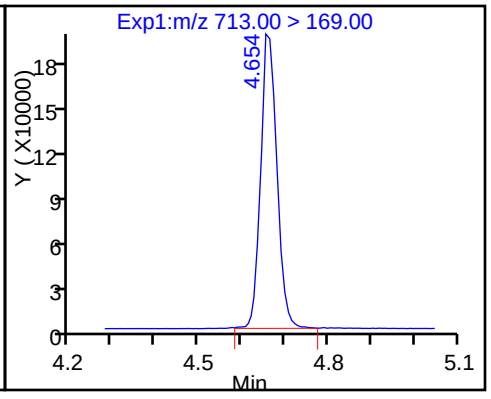
31 Perfluorotridecanoic acid



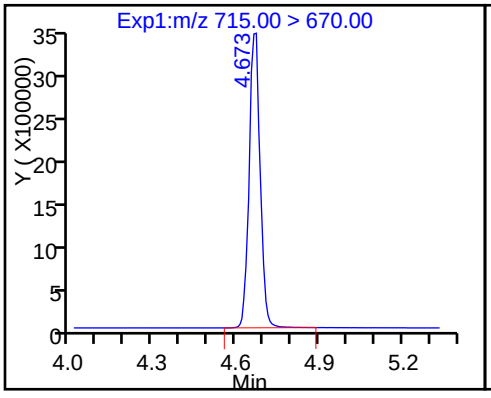
33 Perfluorotetradecanoic acid



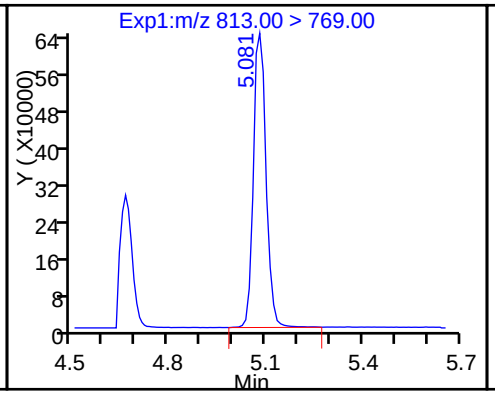
33 Perfluorotetradecanoic acid



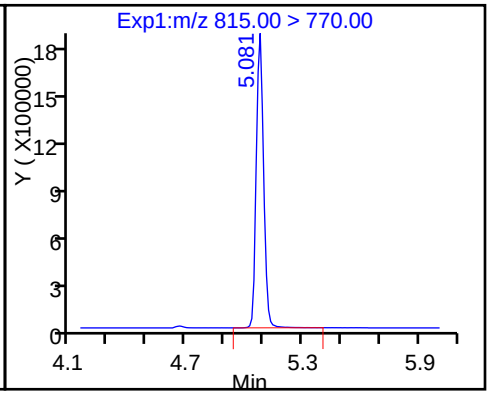
D 32 13C2-PFTeDA



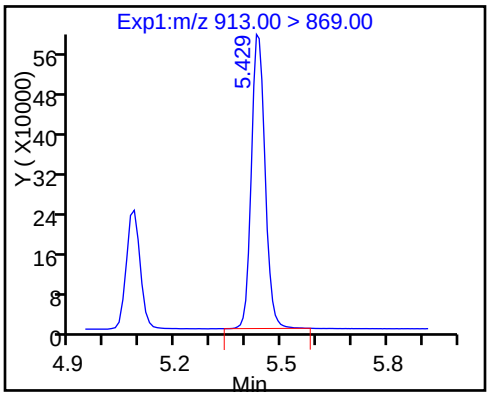
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab Sample ID: CCV 320-143550/2 Calibration Date: 12/22/2016 09:16

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: 22DEC2016A_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	0.8955		1.05	1.00	4.9	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.996		1.01	1.00	0.9	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.442		0.899	0.884	1.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9326		1.00	1.00	0.4	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.007		1.03	1.00	2.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.138		1.01	0.910	10.5	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.035		0.894	0.952	-6.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.002		0.999	1.00	-0.0	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.8857		0.931	1.00	-6.9	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	0.9500		0.886	0.928	-4.5	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9613		1.03	1.00	3.1	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9131		0.968	1.00	-3.2	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5789		0.956	0.964	-0.9	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9493		0.993	1.00	-0.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9052		0.986	1.00	-1.4	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8860		0.977	1.00	-2.3	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.807		1.14	1.00	14.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.561		1.04	1.00	3.6	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8474		0.822	1.00	-17.8	50.0
13C4 PFBA	Ave	347743	342594		49.3	50.0	-1.5	50.0
13C5-PFPeA	Ave	266072	260457		48.9	50.0	-2.1	50.0
13C2 PFHxA	Ave	245110	223569		45.6	50.0	-8.8	50.0
13C4-PFHpA	Ave	226344	208747		46.1	50.0	-7.8	50.0
18O2 PFHxS	Ave	326976	319018		46.1	47.3	-2.4	50.0
13C4 PFOA	Ave	230362	232515		50.5	50.0	0.9	50.0
13C4 PFOS	Ave	248847	258989		49.7	47.8	4.1	50.0
13C5 PFNA	Ave	177687	179169		50.4	50.0	0.8	50.0
13C8 FOSA	Ave	384141	394092		51.3	50.0	2.6	50.0
13C2 PFDA	Ave	157302	164788		52.4	50.0	4.8	50.0
13C2 PFUnA	Ave	117250	127524		54.4	50.0	8.8	50.0
13C2 PFDoA	Ave	110957	109658		49.4	50.0	-1.2	50.0
13C2-PFTeDA	Ave	227387	228037		50.1	50.0	0.3	50.0
13C2-PFHxDA	Ave	124568	123545		49.6	50.0	-0.8	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38144.b\22DEC2016A_002.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 22-Dec-2016 09:16:22 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\20161222-38144.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 07:56:41 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: XAWRK027

First Level Reviewer: chandrasenas Date: 22-Dec-2016 13:56:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.545	1.553	-0.008		17129721	49.3		98.5	703920	
1 Perfluorobutyric acid										
212.90 > 169.00	1.553	1.553	0.0	1.000	306793	1.05		105	1915	
D 4 13C5-PFPeA										
267.90 > 223.00	1.832	1.833	-0.001		13022833	48.9		97.9	828746	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.832	1.833	-0.001	1.000	259288	1.01		101	3633	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.871	1.871	0.0	1.000	406522	0.8993		102		
298.90 > 99.00	1.861	1.871	-0.010	0.995	166636		2.44(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.128	2.132	-0.004		11178443	45.6		91.2	617607	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.128	2.132	-0.004	1.000	208510	1.00		100	5911	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.483	2.404	0.079	1.000	330359	1.01		110		
D 11 13C4-PFHpA										
367.00 > 322.00	2.468	2.468	0.0		10437354	46.1		92.2	640063	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.468	2.468	0.0	1.000	210287	1.03		103	2153	
D 10 18O2 PFHxS										
403.00 > 84.00	2.483	2.483	0.0		15089546	46.1		97.6	1406788	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.830	2.830	0.0	1.000	233041	1.00		99.9	2445	
413.00 > 169.00	2.822	2.830	-0.008	0.997	146308		1.59(0.90-1.10)		7539	
D 14 13C4 PFOA										
417.00 > 372.00	2.822	2.830	-0.008		11625773	50.5		101	1436014	

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	2.830	2.838	-0.008	1.000	255247	0.8944		93.9		
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.200	3.085	0.115	1.000	228312	0.8865		95.5	16386	M
499.00 > 99.00	3.191	3.085	0.106	0.997	51345		4.45(0.90-1.10)		2832	M
D 17 13C4 PFOS										
503.00 > 80.00	3.191	3.200	-0.009		12379659	49.7		104	561108	
D 19 13C5 PFNA										
468.00 > 423.00	3.200	3.200	0.0		8958438	50.4		101	765777	
20 Perfluorononanoic acid										
463.00 > 419.00	3.200	3.200	0.0	1.000	158689	0.9305		93.1	2932	
D 21 13C8 FOSA										
506.00 > 78.00	3.523	3.523	0.0		19704602	51.3		103	1000647	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.523	3.523	0.0	1.000	378858	1.03		103	36480	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.557	3.557	0.0	1.000	150475	0.9675		96.8	5519	
D 23 13C2 PFDA										
515.00 > 470.00	3.557	3.557	0.0		8239415	52.4		105	277721	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.861	3.861	0.0	1.000	144530	0.9556		99.1		
D 27 13C2 PFUnA										
565.00 > 520.00	3.887	3.887	0.0		6376205	54.4		109	289587	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.878	3.879	-0.001	1.000	121064	0.99		99.3	3216	
D 30 13C2 PFDoA										
615.00 > 570.00	4.172	4.168	0.004		5482914	49.4		98.8	142532	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.172	4.168	0.004	1.000	99263	0.9861		98.6	2629	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.436	4.433	0.003	1.000	97157	0.9770		97.7	2077	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.673	4.670	0.003		11401850	50.1		100	686623	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.682	4.670	0.012	1.000	198201	1.14		114	1200	
713.00 > 169.00	4.673	4.670	0.003	0.998	32842		6.03(0.00-0.00)		12066	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.092	5.079	0.013	1.000	171203	1.04		104	138	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.092	5.079	0.013		6177240	49.6		99.2	93685	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.445	5.436	0.009	1.000	92928	0.8225		82.2	75.2	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023 Amount Added: 1.00 Units: mL

Report Date: 23-Dec-2016 07:56:42 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38144.b\22DEC2016A_002.d

Injection Date: 22-Dec-2016 09:16:22 Instrument ID: A8_N

Lims ID: CCV L2

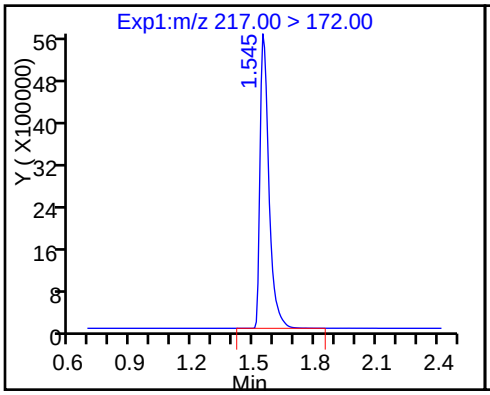
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2

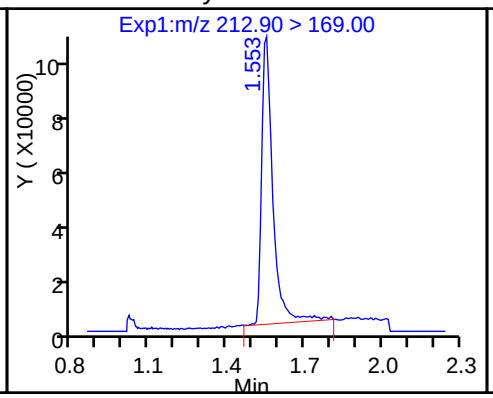
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

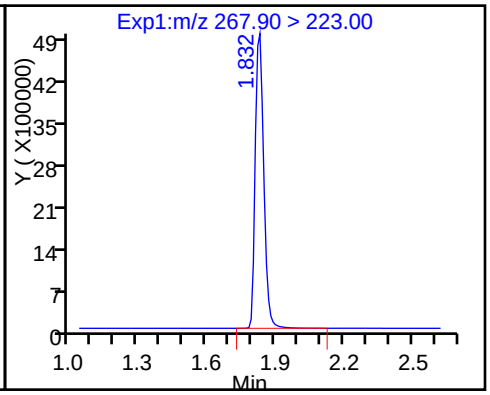
D 2 13C4 PFBA



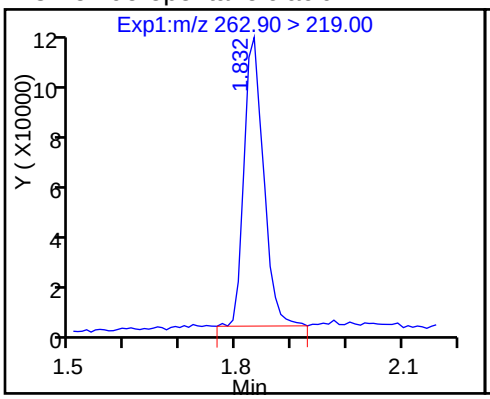
1 Perfluorobutyric acid



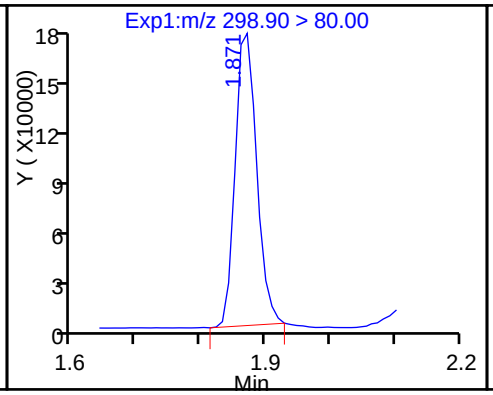
D 4 13C5-PFPeA



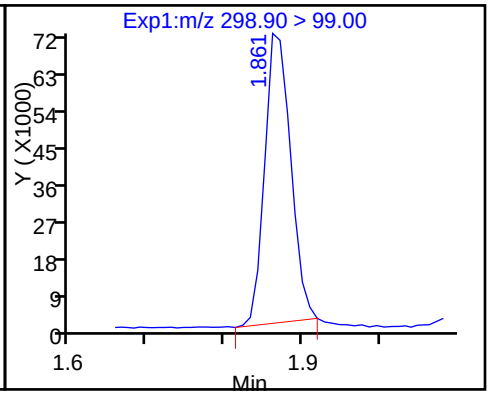
3 Perfluoropentanoic acid



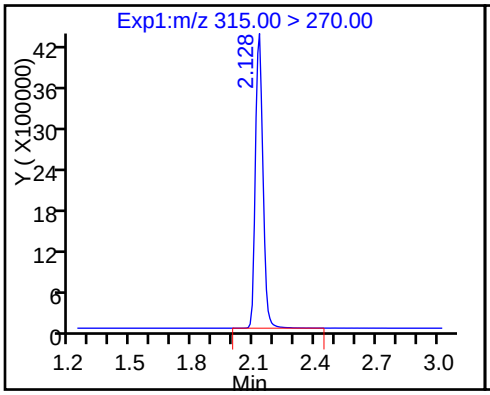
5 Perfluorobutanesulfonic acid



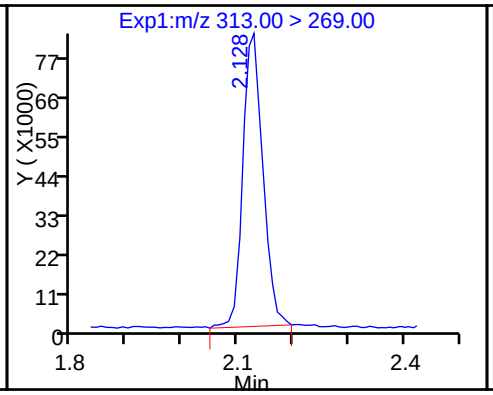
5 Perfluorobutanesulfonic acid



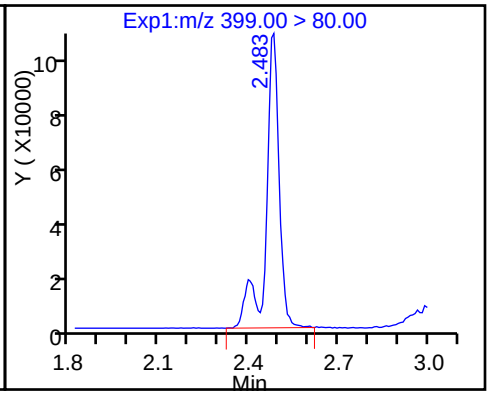
D 6 13C2 PFHxA



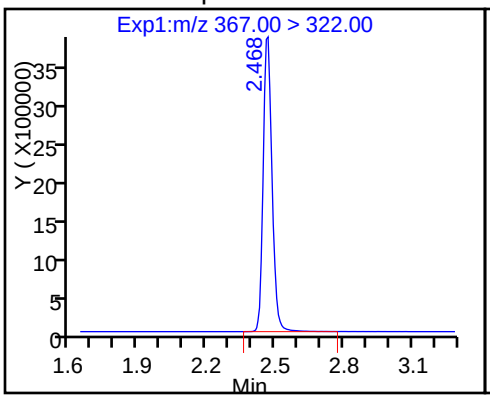
7 Perfluorohexanoic acid



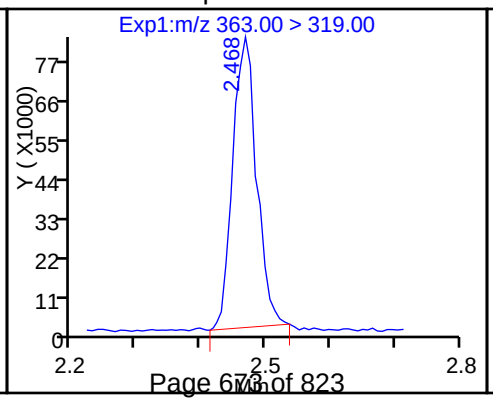
9 Perfluorohexanesulfonic acid



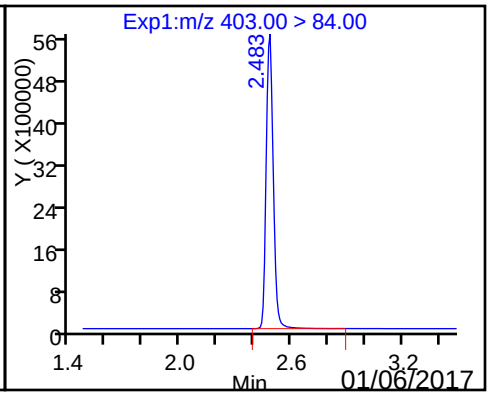
D 11 13C4-PFHpA



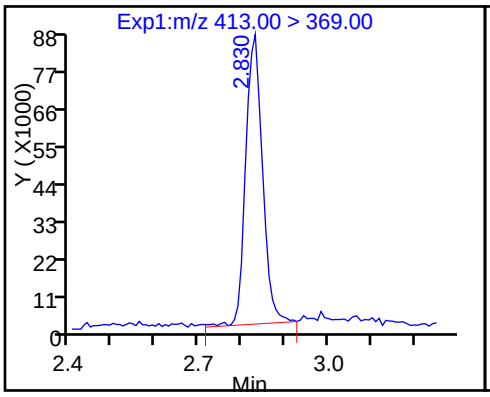
12 Perfluoroheptanoic acid



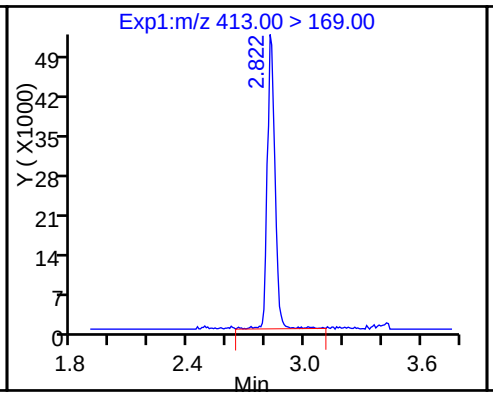
D 10 18O2 PFHxS



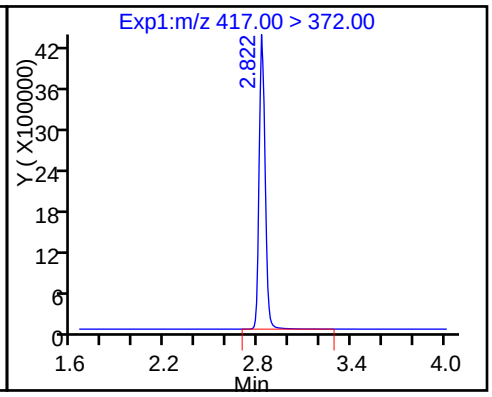
15 Perfluorooctanoic acid



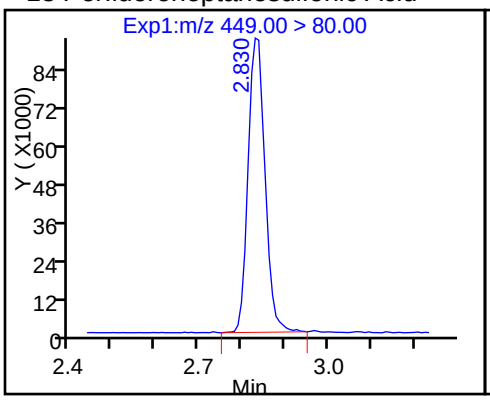
15 Perfluorooctanoic acid



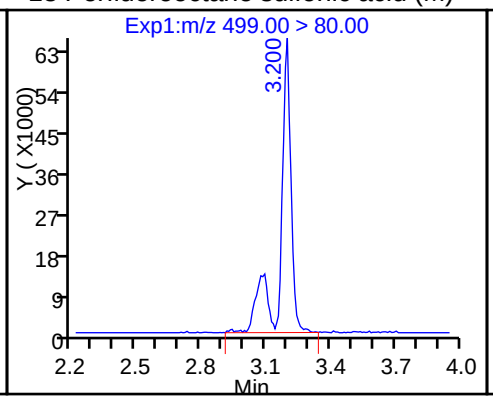
D 14 13C4 PFOA



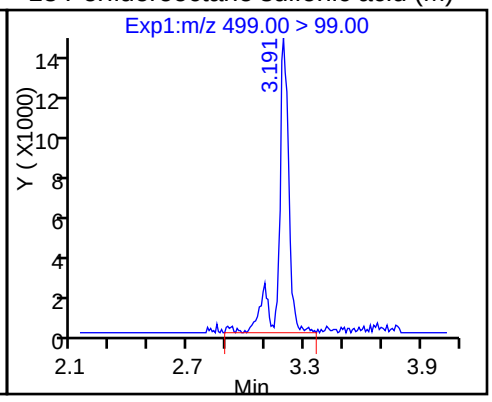
13 Perfluoroheptanesulfonic Acid



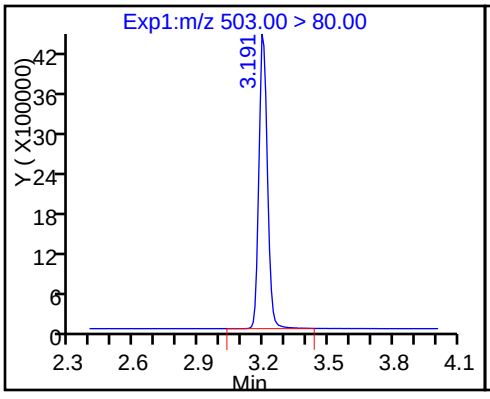
18 Perfluorooctane sulfonic acid (M)



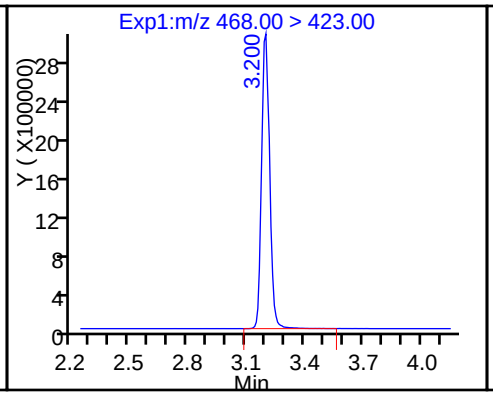
18 Perfluorooctane sulfonic acid (M)



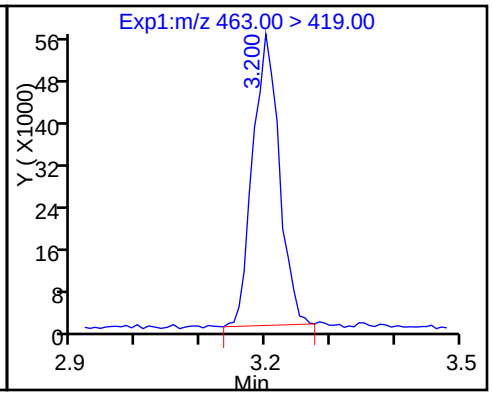
D 17 13C4 PFOS



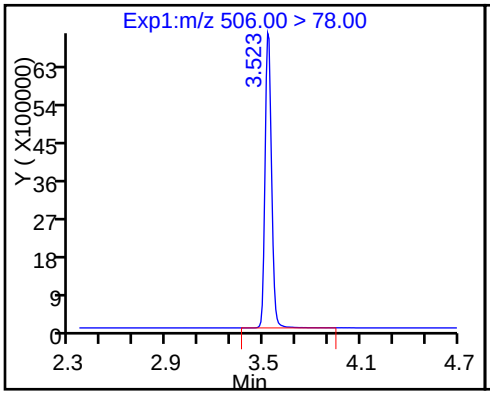
D 19 13C5 PFNA



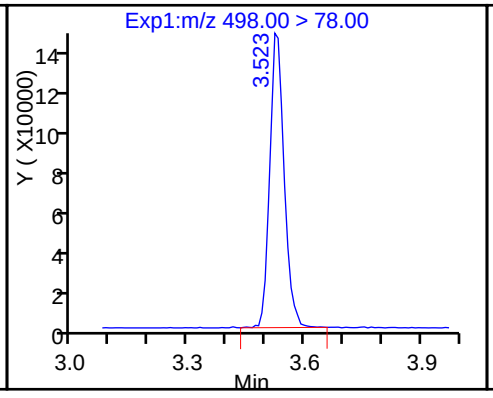
20 Perfluorononanoic acid



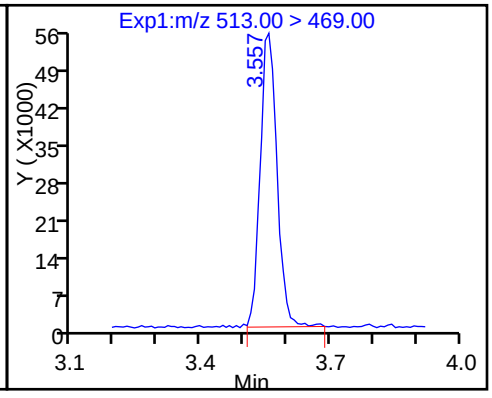
D 21 13C8 FOSA



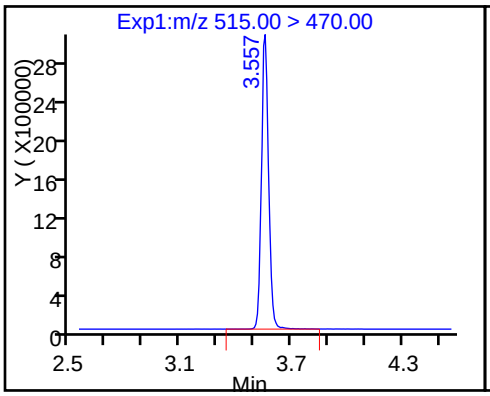
22 Perfluorooctane Sulfonamide



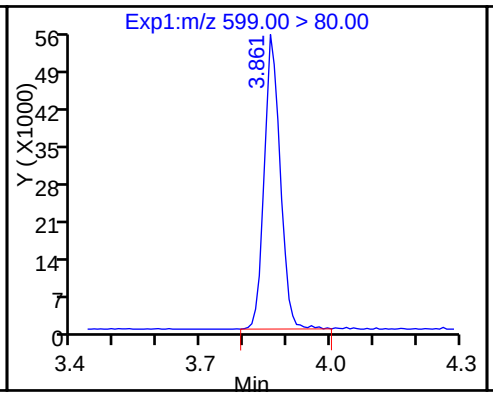
24 Perfluorodecanoic acid



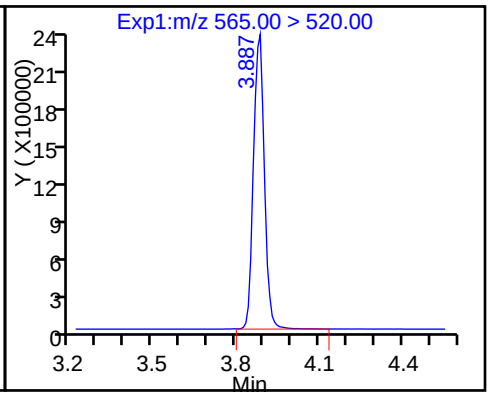
D 23 13C2 PFDA



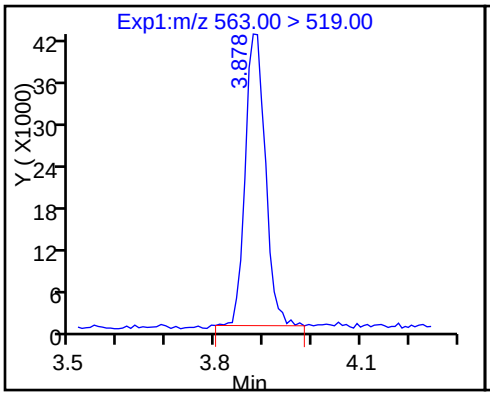
26 Perfluorodecane Sulfonic acid



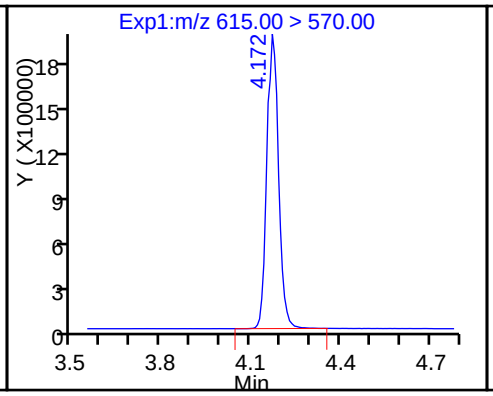
D 27 13C2 PFUnA



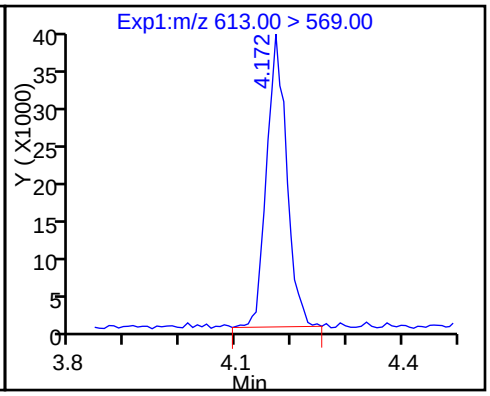
28 Perfluoroundecanoic acid



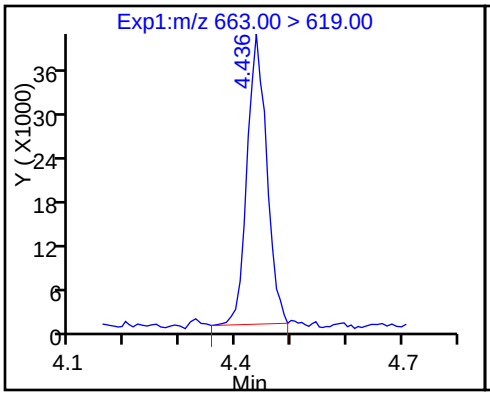
D 30 13C2 PFDoA



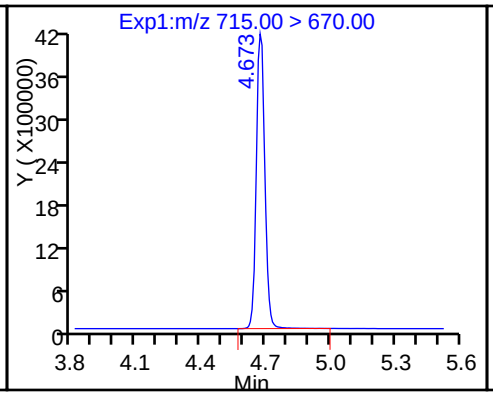
29 Perfluorododecanoic acid



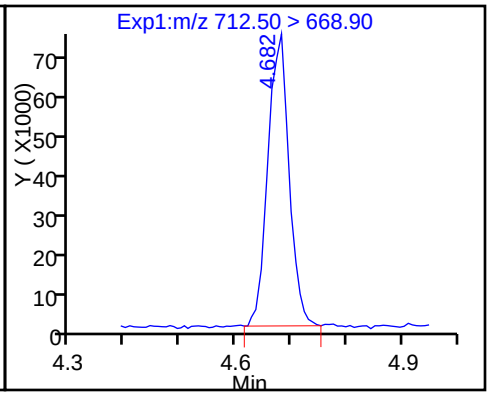
31 Perfluorotridecanoic acid



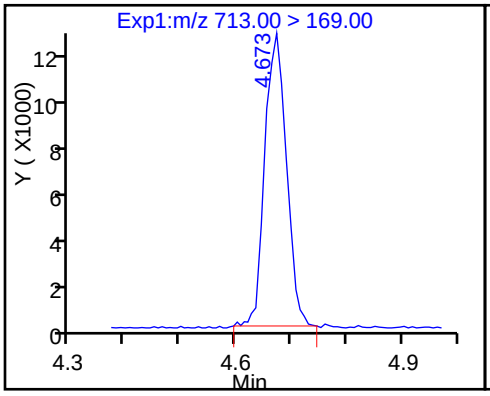
D 32 13C2-PFTeDA



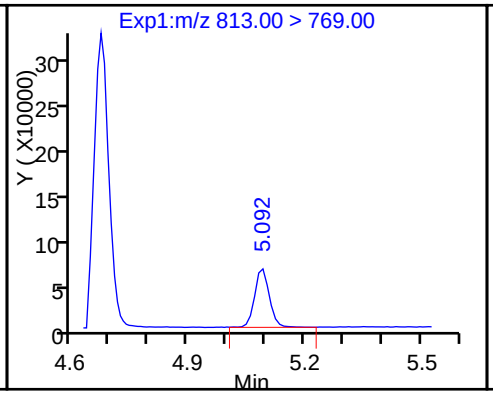
33 Perfluorotetradecanoic acid



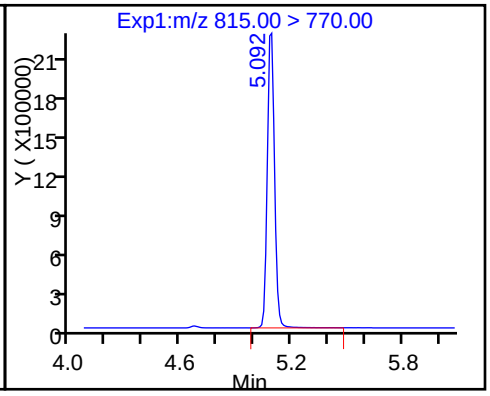
33 Perfluorotetradecanoic acid



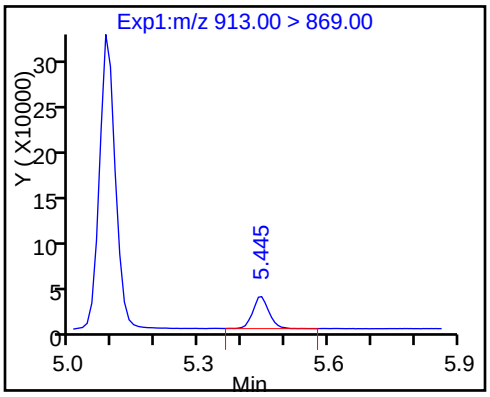
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

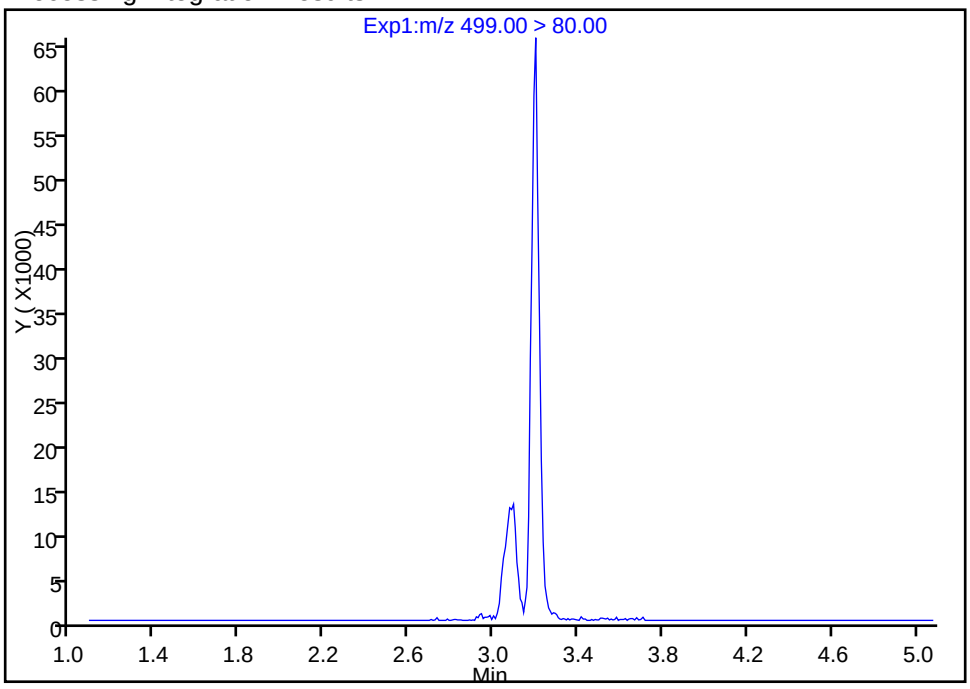
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38144.b\22DEC2016A_002.d
Injection Date: 22-Dec-2016 09:16:22 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

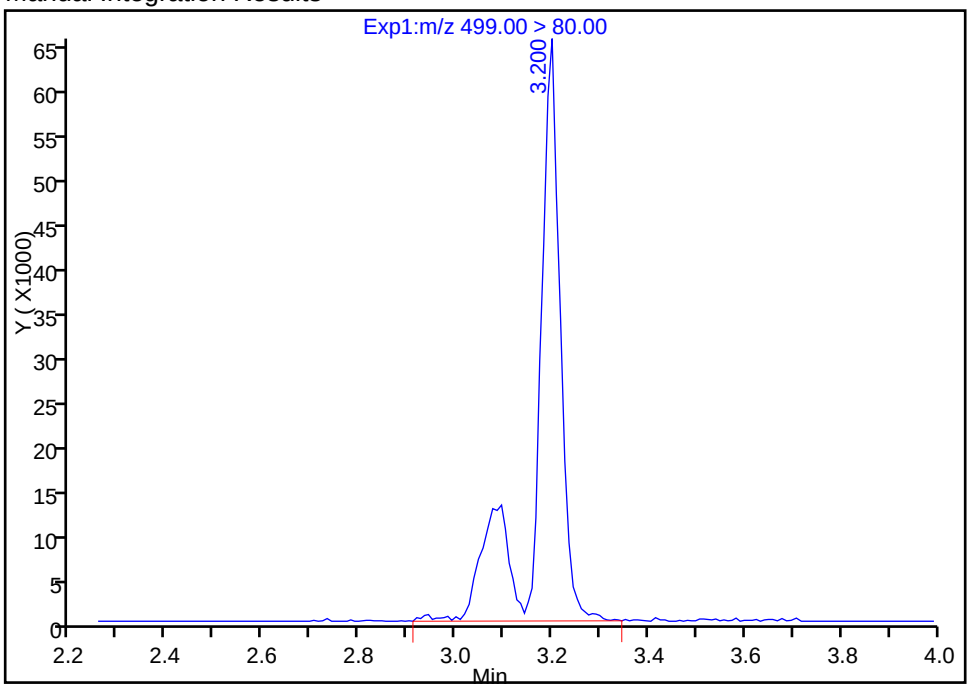
Not Detected
Expected RT: 3.09

Processing Integration Results



Manual Integration Results

RT: 3.20
Area: 228312
Amount: 0.886469
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 13:57:50
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

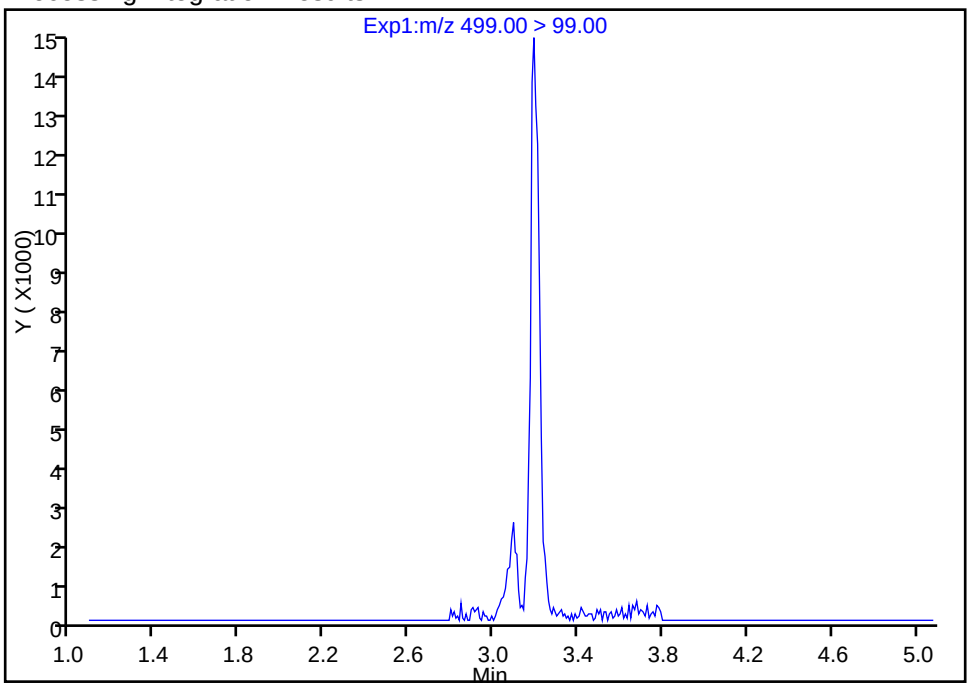
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38144.b\22DEC2016A_002.d
Injection Date: 22-Dec-2016 09:16:22 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

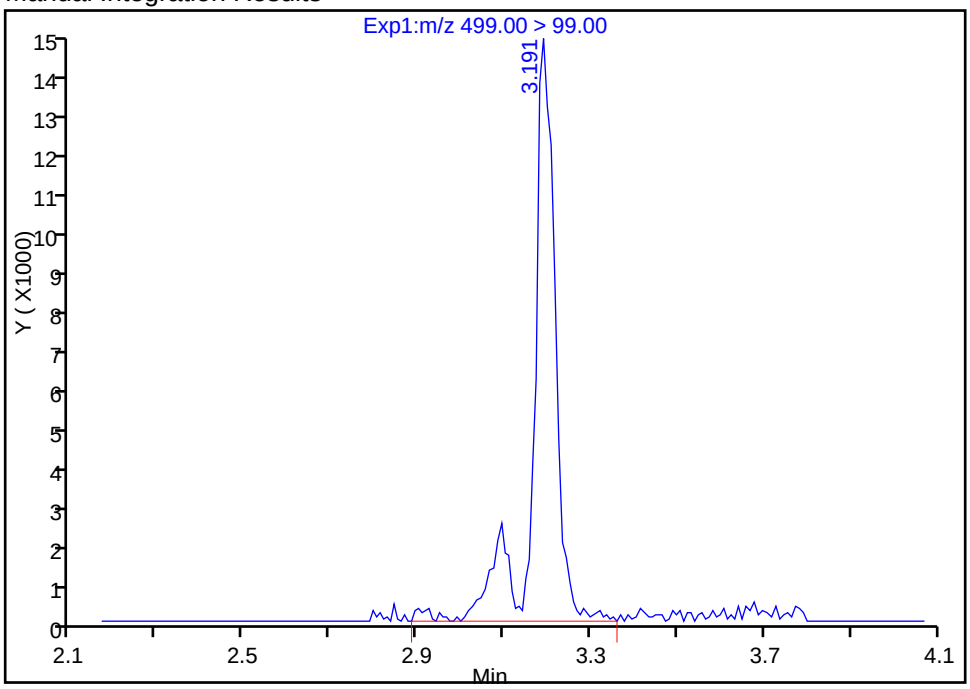
Processing Integration Results

Not Detected
Expected RT: 3.09



Manual Integration Results

RT: 3.19
Area: 51345
Amount: 0.886469
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 13:57:50
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab Sample ID: CCV 320-143644/9 Calibration Date: 12/22/2016 16:50

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: 22DEC2016BB_009.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	0.9088		53.2	50.0	6.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.999		50.6	50.0	1.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.551		48.4	44.2	9.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9397		50.6	50.0	1.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.045		46.2	45.5	1.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9707		49.6	50.0	-0.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.139		49.2	47.6	3.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.015		50.6	50.0	1.1	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.031		48.1	46.4	3.7	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9646		50.7	50.0	1.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9356		50.2	50.0	0.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9450		50.1	50.0	0.1	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6155		50.8	48.2	5.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9378		49.0	50.0	-1.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9430		51.4	50.0	2.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9071		50.0	50.0	0.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.704		53.8	50.0	7.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8704		45.0	50.0	-10.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8069		39.2	50.0	-21.7	25.0
13C4 PFBA	Ave	347743	349731		50.3	50.0	0.6	50.0
13C5-PFPeA	Ave	266072	258287		48.5	50.0	-2.9	50.0
13C2 PFHxA	Ave	245110	232679		47.5	50.0	-5.1	50.0
13C4-PFHpA	Ave	226344	210543		46.5	50.0	-7.0	50.0
18O2 PFHxS	Ave	326976	313985		45.4	47.3	-4.0	50.0
13C4 PFOA	Ave	230362	223588		48.5	50.0	-2.9	50.0
13C4 PFOS	Ave	248847	255444		49.1	47.8	2.7	50.0
13C5 PFNA	Ave	177687	178467		50.2	50.0	0.4	50.0
13C8 FOSA	Ave	384141	394239		51.3	50.0	2.6	50.0
13C2 PFDA	Ave	157302	165787		52.7	50.0	5.4	50.0
13C2 PFUnA	Ave	117250	123659		52.7	50.0	5.5	50.0
13C2 PFDoA	Ave	110957	113288		51.1	50.0	2.1	50.0
13C2-PFTeDA	Ave	227387	226972		49.9	50.0	-0.2	50.0
13C2-PFHxDA	Ave	124568	111824		44.9	50.0	-10.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_009.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 22-Dec-2016 16:50:16 ALS Bottle#: 41 Worklist Smp#: 9
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\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:21:51 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 07:58:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.545	1.545	0.0		17486545	50.3		101	782911	
1 Perfluorobutyric acid										
212.90 > 169.00	1.553	1.553	0.0	1.000	15891555	53.2		106	101310	
D 4 13C5-PFPeA										
267.90 > 223.00	1.823	1.823	0.0		12914370	48.5		97.1	1267598	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.833	1.833	0.0	1.000	12902743	50.6		101	124082	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.871	1.871	0.0	1.000	21525134	48.4		109		
298.90 > 99.00	1.861	1.871	-0.010	0.995	10053382		2.14(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.123	2.123	0.0		11633966	47.5		94.9	641983	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.123	2.123	0.0	1.000	10932699	50.6		101	385185	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.395	2.395	0.0	1.000	14926033	46.2		101		
D 11 13C4-PFHpA										
367.00 > 322.00	2.457	2.457	0.0		10527150	46.5		93.0	641221	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.457	2.457	0.0	1.000	10218565	49.6		99.2	106583	
D 10 18O2 PFHxS										
403.00 > 84.00	2.472	2.472	0.0		14851482	45.4		96.0	913281	
D 14 13C4 PFOA										
417.00 > 372.00	2.811	2.811	0.0		11179376	48.5		97.1	536313	

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	2.819	2.819	0.0	1.000	11342955	50.6		101	91851	
413.00 > 169.00	2.811	2.819	-0.008	0.997	7014779		1.62(0.90-1.10)		252938	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.819	2.819	0.0	1.000	13855103	49.2		103		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.073	3.073	0.0	1.000	12223763	48.1		104	83556	
499.00 > 99.00	3.082	3.073	0.009	1.003	2610215		4.68(0.90-1.10)		16088	
D 17 13C4 PFOS										
503.00 > 80.00	3.187	3.187	0.0		12210212	49.1		103	219129	
D 19 13C5 PFNA										
468.00 > 423.00	3.187	3.187	0.0		8923342	50.2		100	582205	
20 Perfluorononanoic acid										
463.00 > 419.00	3.187	3.187	0.0	1.000	8607719	50.7		101	124331	
D 21 13C8 FOSA										
506.00 > 78.00	3.511	3.511	0.0		19711969	51.3		103	1167566	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.511	3.511	0.0	1.000	18442343	50.2		100	509817	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.545	3.545	0.0	1.000	7833261	50.1		100	243551	
D 23 13C2 PFDA										
515.00 > 470.00	3.545	3.545	0.0		8289338	52.7		105	311017	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.857	3.857	0.0	1.000	7578099	50.8		105		
D 27 13C2 PFUnA										
565.00 > 520.00	3.874	3.874	0.0		6182971	52.7		105	444316	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.874	3.874	0.0	1.000	5798297	49.0		98.1	130531	
D 30 13C2 PFDoA										
615.00 > 570.00	4.170	4.170	0.0		5664375	51.1		102	192253	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.170	4.170	0.0	1.000	5341259	51.4		103	146091	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.441	4.441	0.0	1.000	5138361	50.0		100	103480	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.671	4.671	0.0		11348594	49.9		99.8	697905	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.679	4.679	0.0	1.000	9652427	53.8		108	74302	
713.00 > 169.00	4.671	4.679	-0.008	0.998	1533026		6.30(0.00-0.00)		142987	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.091	5.091	0.0		5591208	44.9		89.8	91274	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.091	5.091	0.0	1.000	4930176	45.0		90.0	4385	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.444	5.444	0.0	1.000	4570505	39.2		78.3	4468	

Reagents:

LCPFC-L5_00022 Amount Added: 1.00 Units: mL

Report Date: 23-Dec-2016 08:21:51 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_009.d

Injection Date: 22-Dec-2016 16:50:16 Instrument ID: A8_N

Lims ID: CCV L5

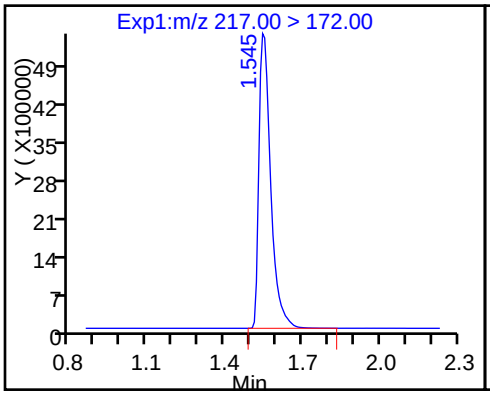
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 9

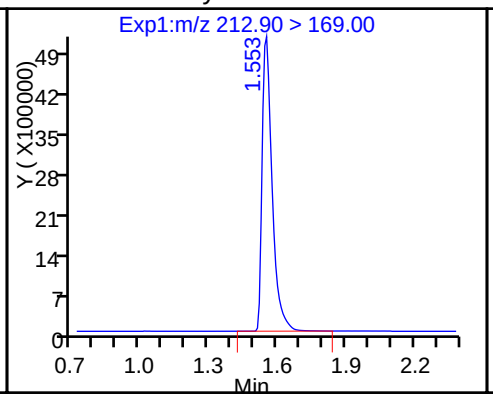
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

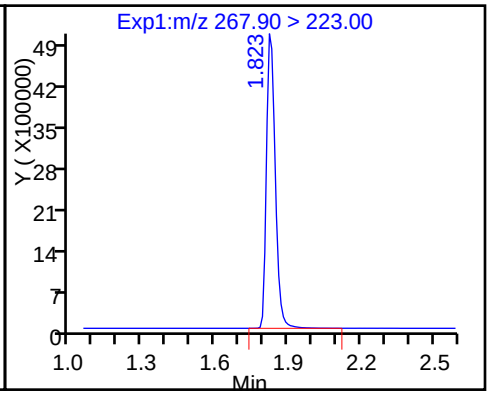
D 2 13C4 PFBA



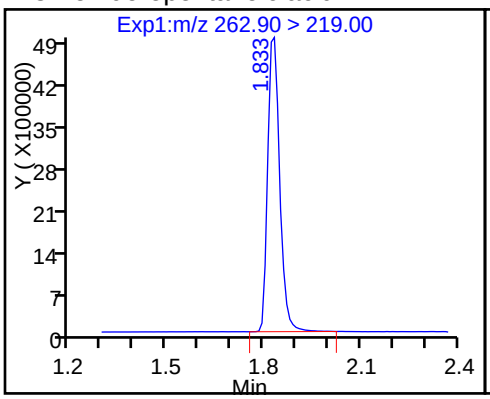
1 Perfluorobutyric acid



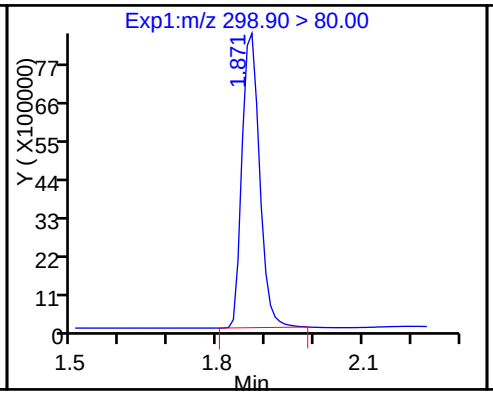
D 4 13C5-PFPeA



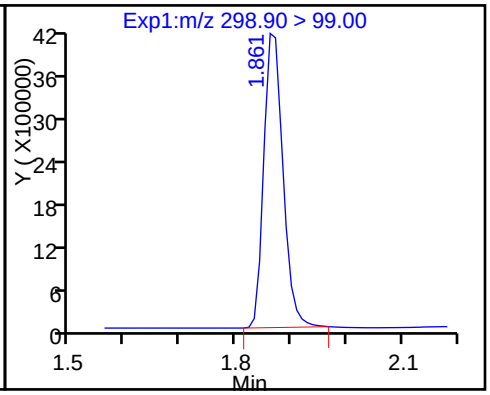
3 Perfluoropentanoic acid



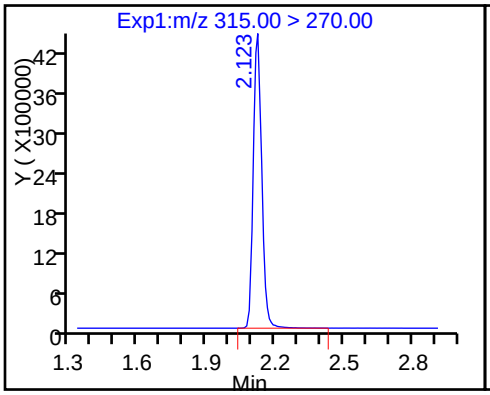
5 Perfluorobutanesulfonic acid



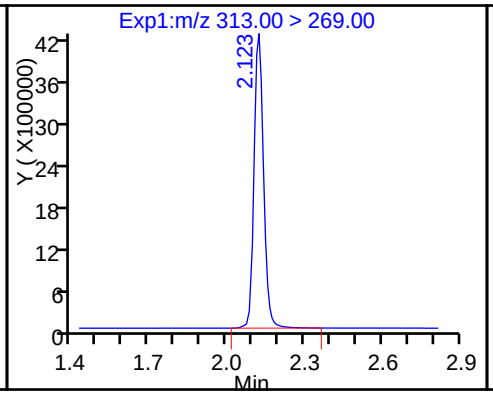
5 Perfluorobutanesulfonic acid



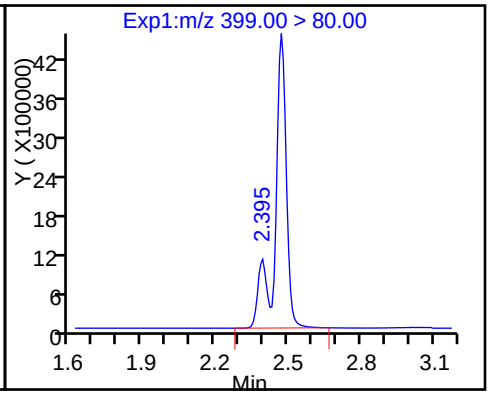
D 6 13C2 PFHxA



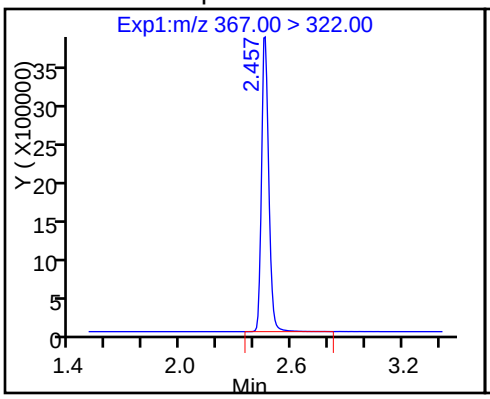
7 Perfluorohexanoic acid



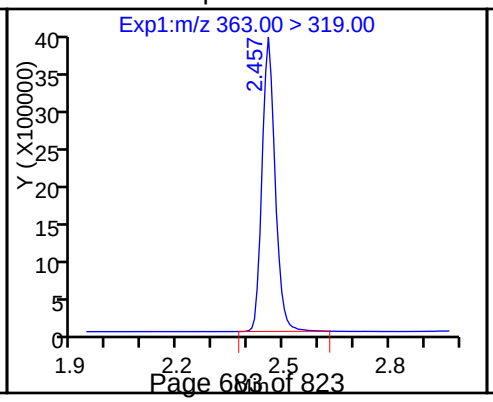
9 Perfluorohexanesulfonic acid



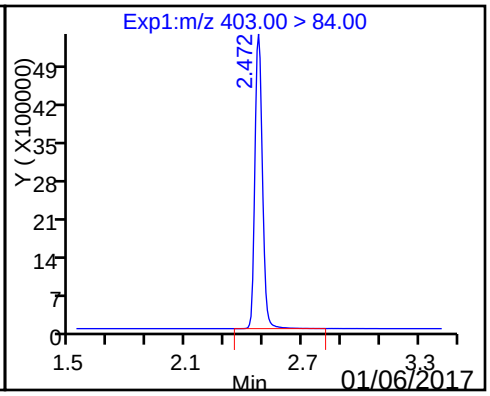
D 11 13C4-PFHpA



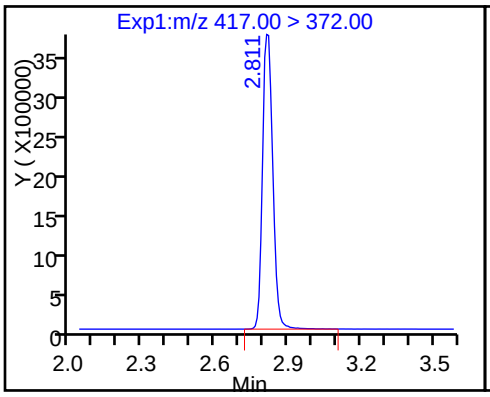
12 Perfluoroheptanoic acid



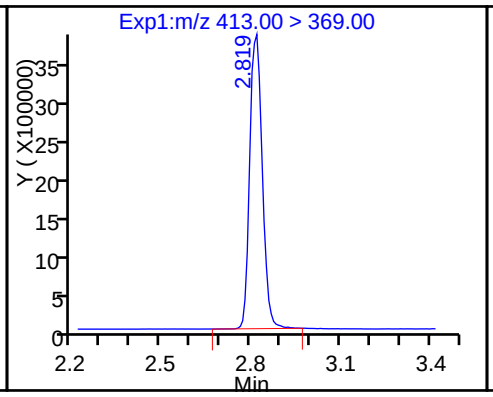
D 10 18O2 PFHxS



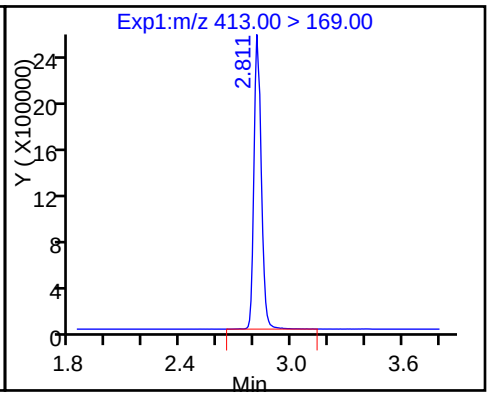
D 14 13C4 PFOA



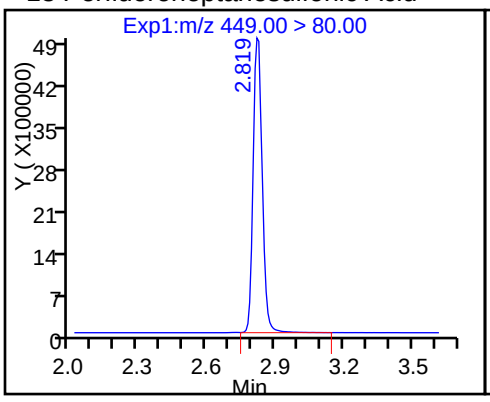
15 Perfluorooctanoic acid



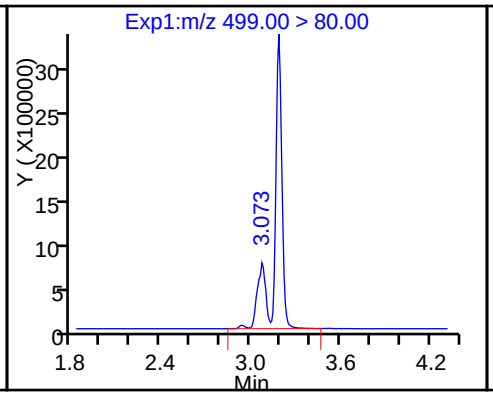
15 Perfluorooctanoic acid



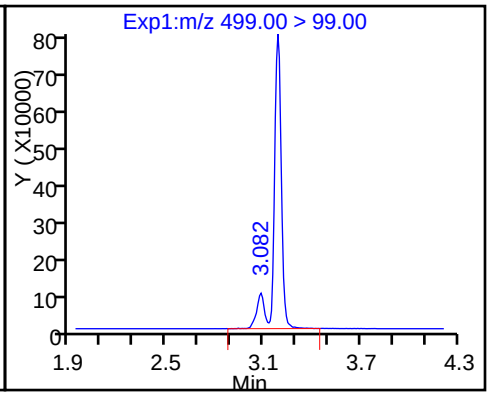
13 Perfluoroheptanesulfonic Acid



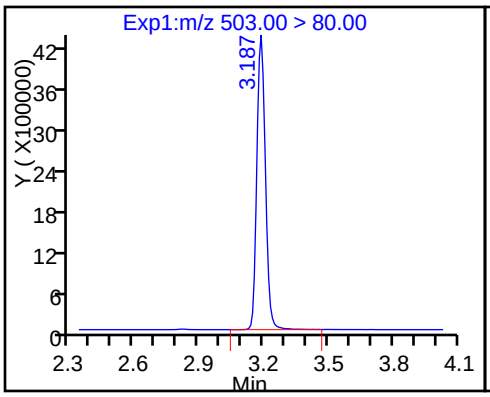
18 Perfluorooctane sulfonic acid



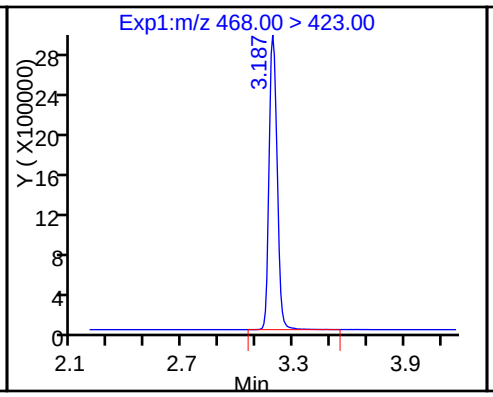
18 Perfluorooctane sulfonic acid



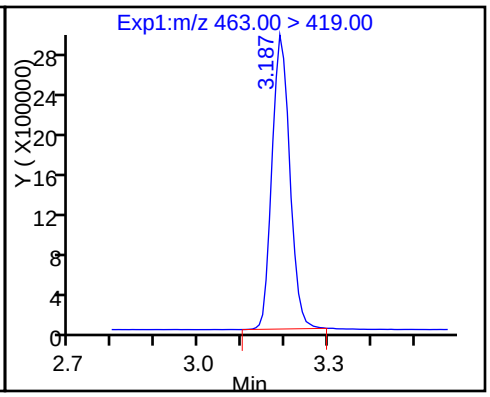
D 17 13C4 PFOS



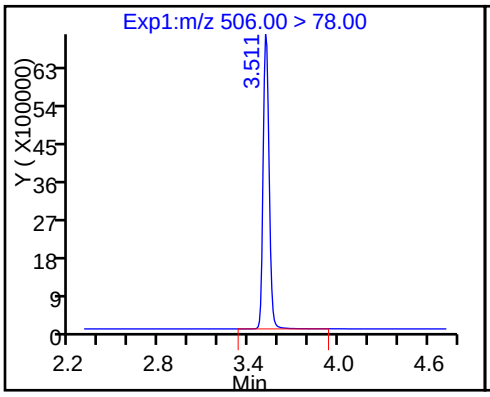
D 19 13C5 PFNA



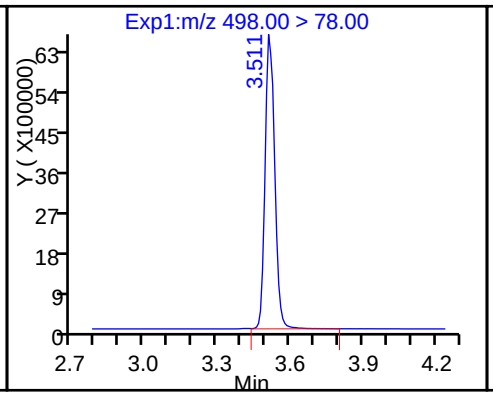
20 Perfluorononanoic acid



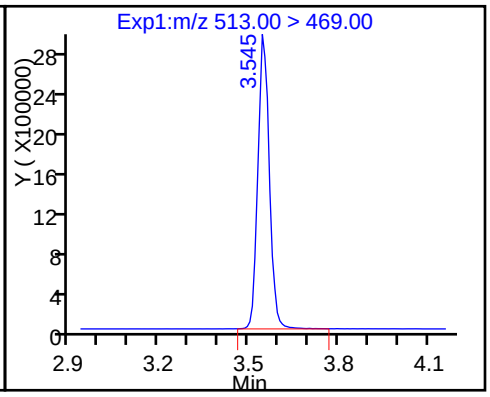
D 21 13C8 FOSA



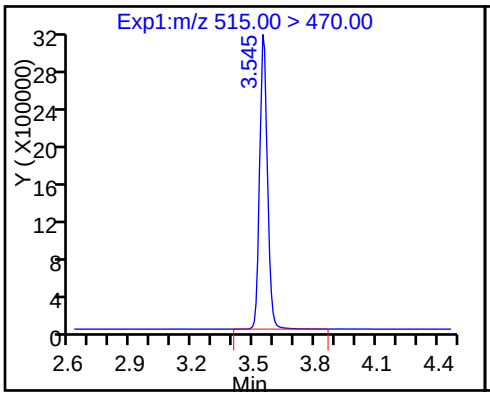
22 Perfluorooctane Sulfonamide



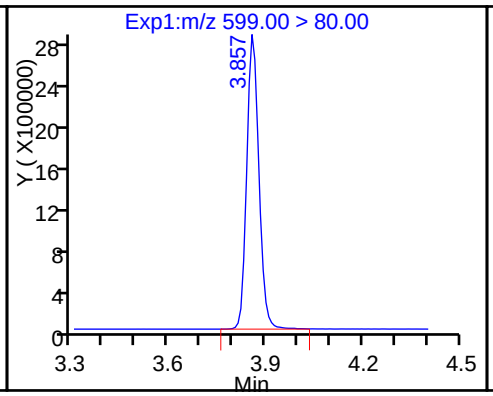
24 Perfluorodecanoic acid



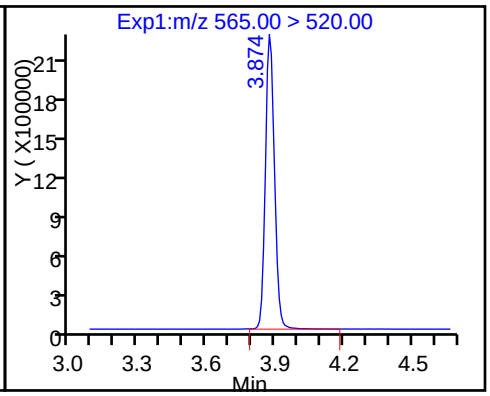
D 23 13C2 PFDA



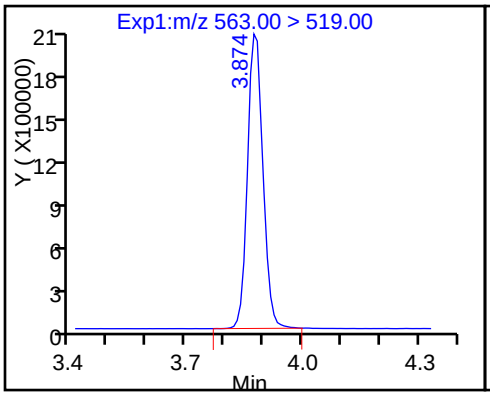
26 Perfluorodecane Sulfonic acid



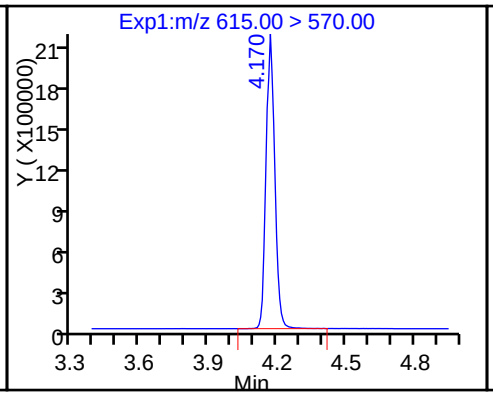
D 27 13C2 PFUnA



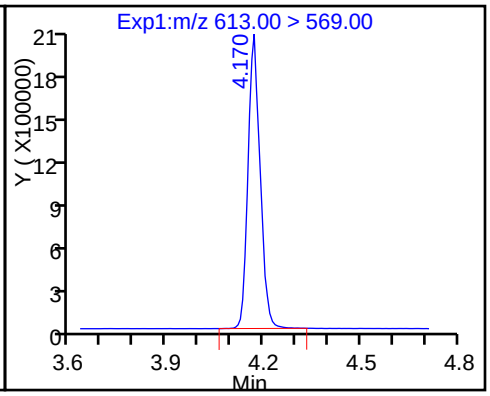
28 Perfluoroundecanoic acid



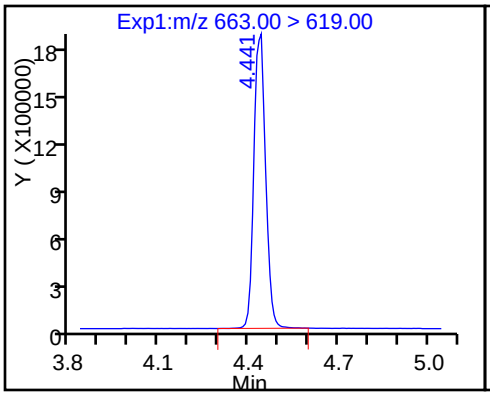
D 30 13C2 PFDoA



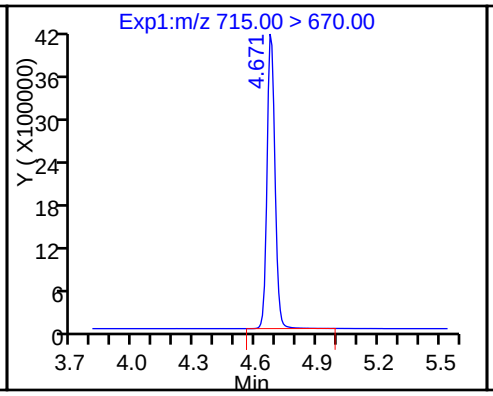
29 Perfluorododecanoic acid



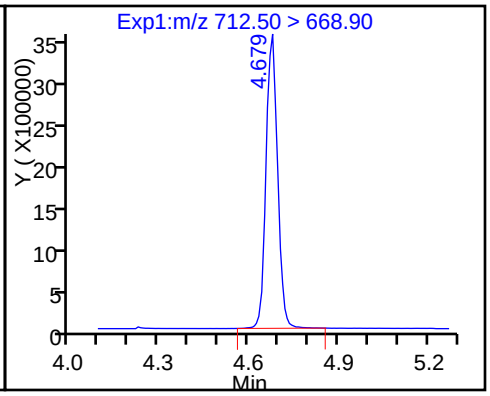
31 Perfluorotridecanoic acid



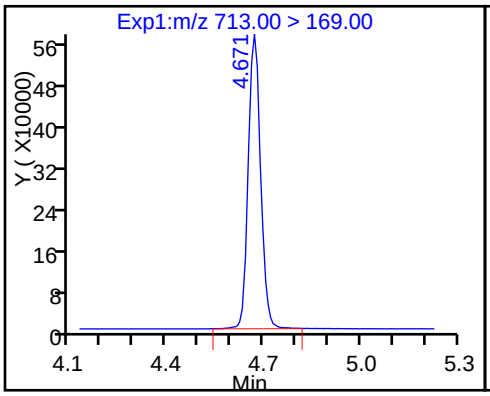
D 32 13C2-PFTeDA



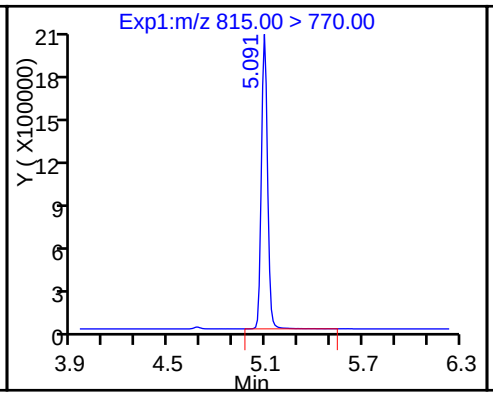
33 Perfluorotetradecanoic acid



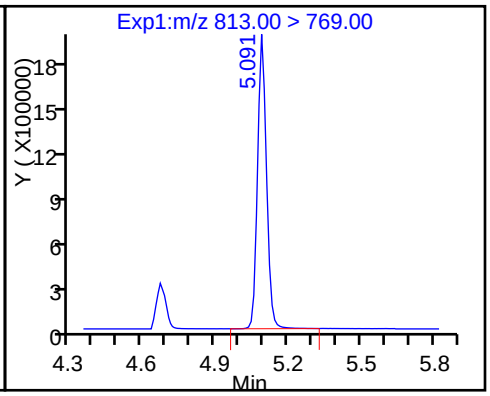
33 Perfluorotetradecanoic acid



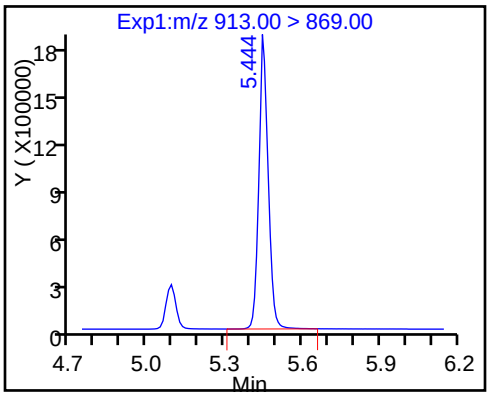
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Lab Sample ID: CCV 320-143644/23 Calibration Date: 12/22/2016 18:35

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: 22DEC2016BB_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	0.8537	0.9558		22.4	20.0	12.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.068		21.6	20.0	8.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.740		21.7	17.7	22.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9650		20.8	20.0	3.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.067		18.8	18.2	3.5	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.008		20.6	20.0	2.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.061		21.2	20.0	5.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.253		21.7	19.0	13.8	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9945	1.046		19.5	18.6	5.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9797		20.6	20.0	2.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.012		21.7	20.0	8.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9658		20.5	20.0	2.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6202		20.5	19.3	6.2	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9803		20.5	20.0	2.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9731		21.2	20.0	6.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9284		20.5	20.0	2.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.757		22.2	20.0	10.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9195		18.7	20.0	-6.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8085		15.7	20.0	-21.5	25.0
13C4 PFBA	Ave	347743	337146		48.5	50.0	-3.0	50.0
13C5-PFPeA	Ave	266072	266283		50.0	50.0	0.0	50.0
13C2 PFHxA	Ave	245110	240834		49.1	50.0	-1.7	50.0
13C4-PFHpA	Ave	226344	218377		48.2	50.0	-3.5	50.0
18O2 PFHxS	Ave	326976	316069		45.7	47.3	-3.3	50.0
13C4 PFOA	Ave	230362	226746		49.2	50.0	-1.6	50.0
13C4 PFOS	Ave	248847	238013		45.7	47.8	-4.4	50.0
13C5 PFNA	Ave	177687	166633		46.9	50.0	-6.2	50.0
13C8 FOSA	Ave	384141	368453		48.0	50.0	-4.1	50.0
13C2 PFDA	Ave	157302	148415		47.2	50.0	-5.6	50.0
13C2 PFUnA	Ave	117250	109957		46.9	50.0	-6.2	50.0
13C2 PFDoA	Ave	110957	99723		44.9	50.0	-10.1	50.0
13C2-PFTeDA	Ave	227387	200363		44.1	50.0	-11.9	50.0
13C2-PFHxDA	Ave	124568	102808		41.3	50.0	-17.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_023.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 22-Dec-2016 18:35:23 ALS Bottle#: 40 Worklist Smp#: 23
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*sub5

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 09:24:45 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:07:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.541	1.541	0.0		16857299	48.5		97.0	796136	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	6444815	22.4		112	43655	
D 4 13C5-PFPeA										
267.90 > 223.00	1.819	1.819	0.0		13314136	50.0		100	1037400	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.819	1.819	0.0	1.000	5687813	21.6		108	59998	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.858	0.0	1.000	9721178	21.7		123		
298.90 > 99.00	1.858	1.858	0.0	1.000	4100938		2.37(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.115	2.115	0.0		12041709	49.1		98.3	769263	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.115	2.115	0.0	1.000	4648154	20.8		104	163187	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.386	2.386	0.0	1.000	6135014	18.8		104		
D 11 13C4-PFHpA										
367.00 > 322.00	2.448	2.448	0.0		10918835	48.2		96.5	971954	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.448	2.448	0.0	1.000	4400612	20.6		103	35200	
D 10 18O2 PFHxS										
403.00 > 84.00	2.463	2.463	0.0		14950055	45.7		96.7	1393379	
D 14 13C4 PFOA										
417.00 > 372.00	2.808	2.808	0.0		11337302	49.2		98.4	515401	

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	2.808	2.808	0.0	1.000	4811102	21.2		106	55211	
413.00 > 169.00	2.808	2.808	0.0	1.000	2893335		1.66(0.90-1.10)		184723	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.816	2.816	0.0	1.000	5680496	21.7		114		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.177	3.177	0.0	1.000	4621007	19.5		105	178939	
499.00 > 99.00	3.185	3.177	0.008	1.003	1001080		4.62(0.90-1.10)		63527	
D 17 13C4 PFOS										
503.00 > 80.00	3.185	3.185	0.0		11377008	45.7		95.6	584376	
D 19 13C5 PFNA										
468.00 > 423.00	3.185	3.185	0.0		8331630	46.9		93.8	474438	
20 Perfluorononanoic acid										
463.00 > 419.00	3.185	3.185	0.0	1.000	3265036	20.6		103	60060	
D 21 13C8 FOSA										
506.00 > 78.00	3.509	3.509	0.0		18422667	48.0		95.9	1295513	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.518	3.518	0.0	1.000	7458389	21.7		109	311719	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.543	3.543	0.0	1.000	2866795	20.5		102	113547	
D 23 13C2 PFDA										
515.00 > 470.00	3.543	3.543	0.0		7420744	47.2		94.4	256523	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.855	3.855	0.0	1.000	2846132	20.5		106		
D 27 13C2 PFUnA										
565.00 > 520.00	3.872	3.872	0.0		5497825	46.9		93.8	339395	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.872	3.872	0.0	1.000	2155851	20.5		103	52089	
D 30 13C2 PFDoA										
615.00 > 570.00	4.168	4.168	0.0		4986153	44.9		89.9	161224	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.168	4.168	0.0	1.000	1940786	21.2		106	51960	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.433	4.433	0.0	1.000	1851718	20.5		102	48792	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.670	4.670	0.0		10018170	44.1		88.1	966639	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.670	4.670	0.0	1.000	3504209	22.2		111	37857	
713.00 > 169.00	4.662	4.670	-0.008	0.998	540058		6.49(0.00-0.00)		102433	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.079	5.079	0.0		5140392	41.3		82.5	107459	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.079	5.079	0.0	1.000	1833857	18.7		93.3	1964	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.436	5.436	0.0	1.000	1612541	15.7		78.5	2332	

Reagents:

LCPFC-L4_00024 Amount Added: 1.00 Units: mL

Report Date: 23-Dec-2016 09:24:46 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_023.d

Injection Date: 22-Dec-2016 18:35:23 Instrument ID: A8_N

Lims ID: CCV L4

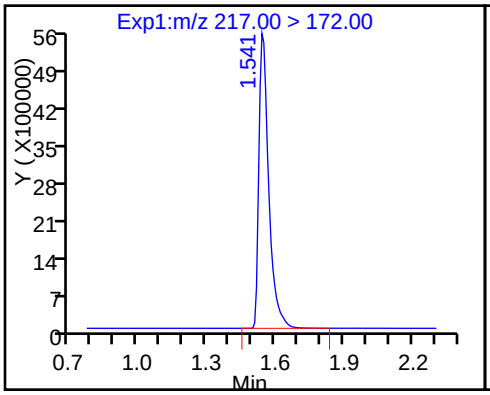
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 23

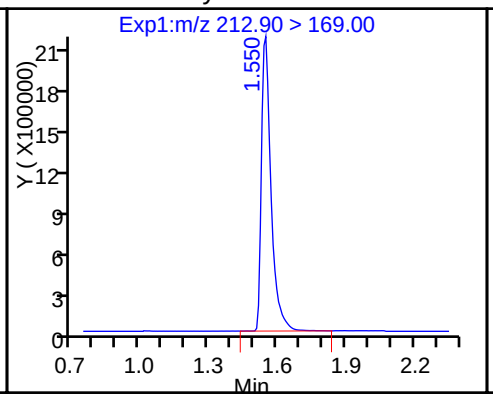
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

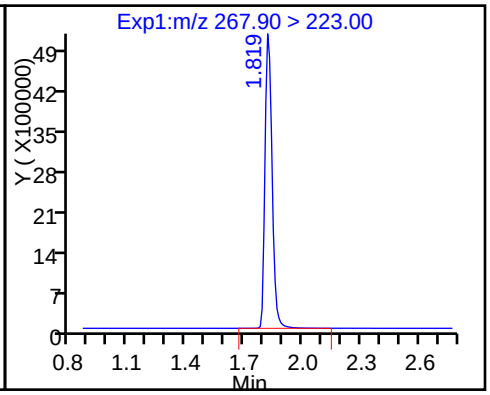
D 2 13C4 PFBA



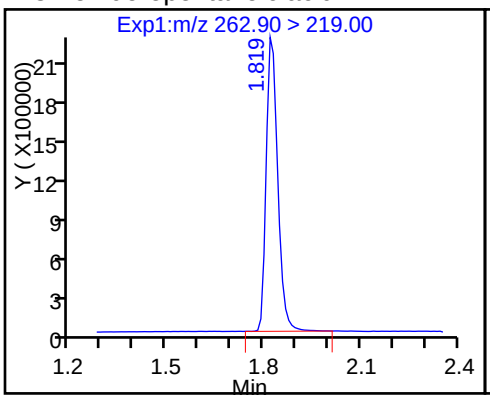
1 Perfluorobutyric acid



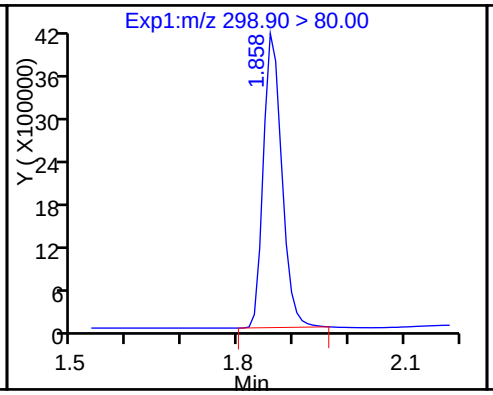
D 4 13C5-PFPeA



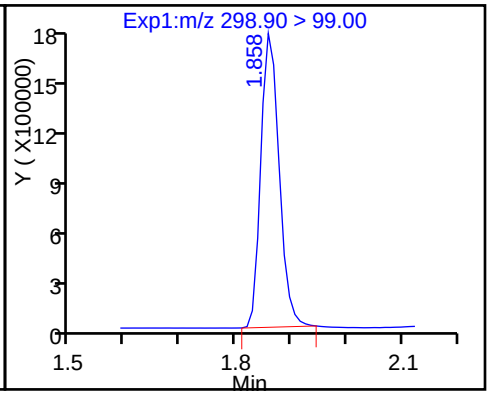
3 Perfluoropentanoic acid



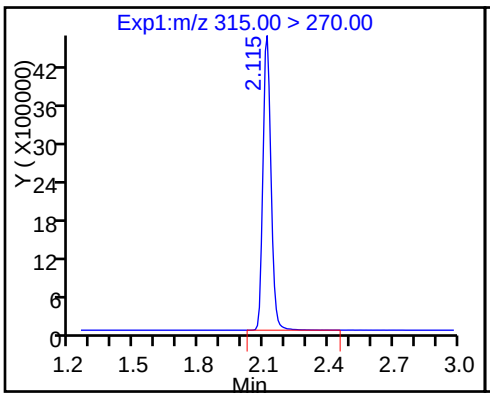
5 Perfluorobutanesulfonic acid



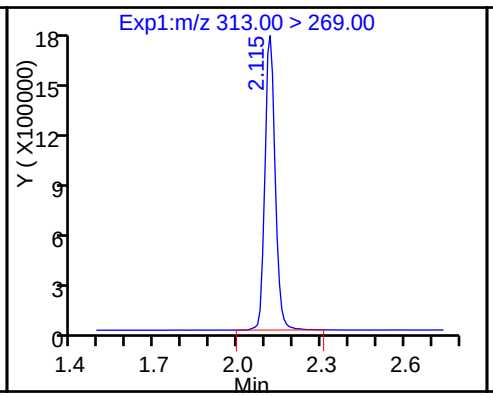
5 Perfluorobutanesulfonic acid



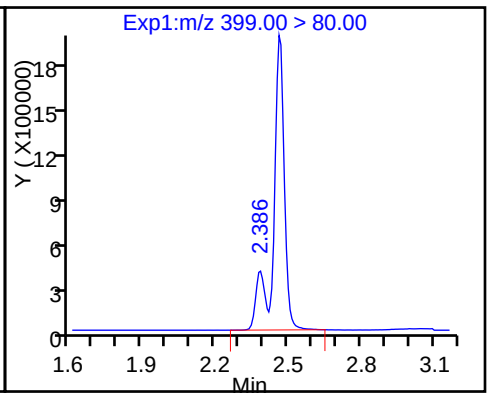
D 6 13C2 PFHxA



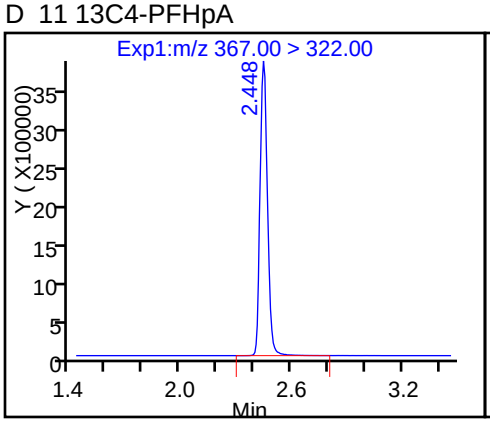
7 Perfluorohexanoic acid



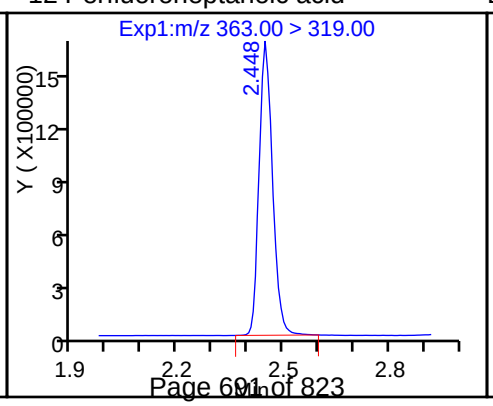
9 Perfluorohexanesulfonic acid



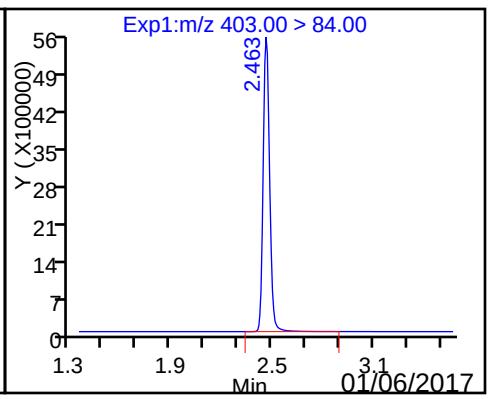
D 11 13C4-PFHpA



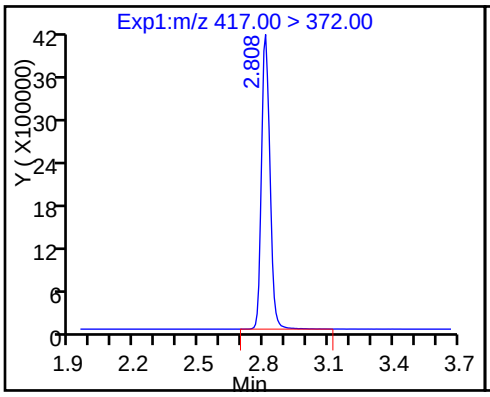
12 Perfluoroheptanoic acid



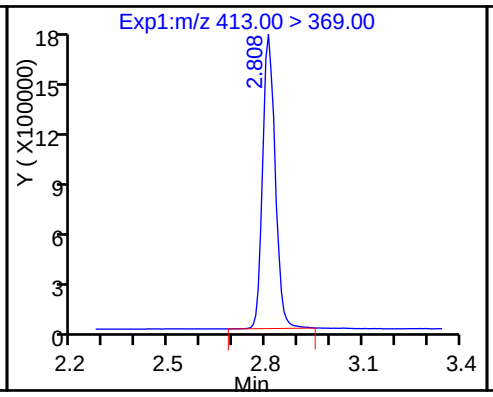
D 10 18O2 PFHxS



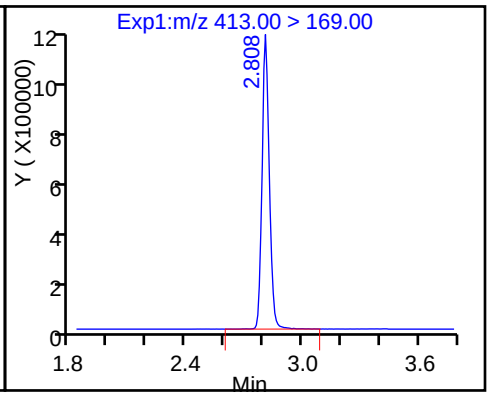
D 14 13C4 PFOA



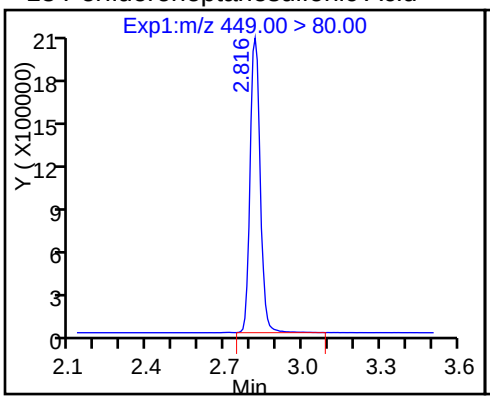
15 Perfluorooctanoic acid



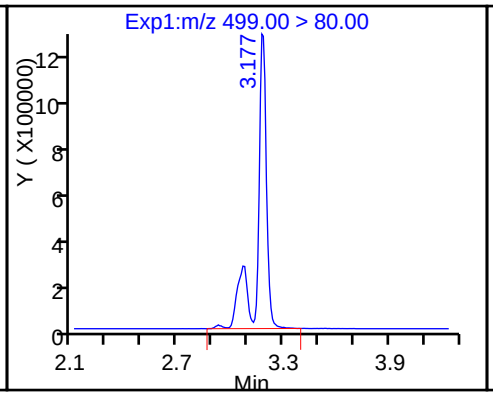
15 Perfluorooctanoic acid



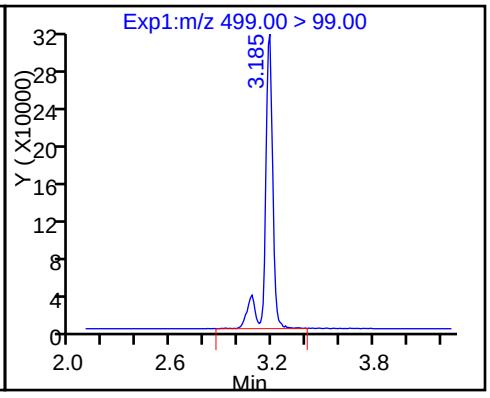
13 Perfluoroheptanesulfonic Acid



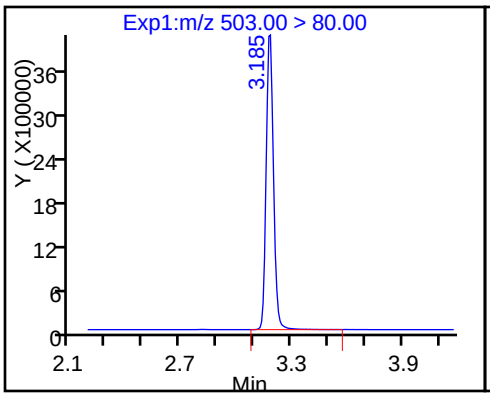
18 Perfluorooctane sulfonic acid



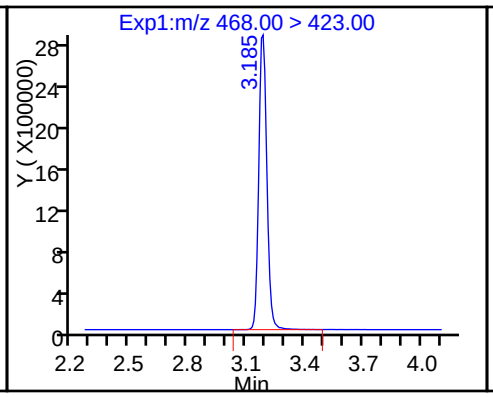
18 Perfluorooctane sulfonic acid



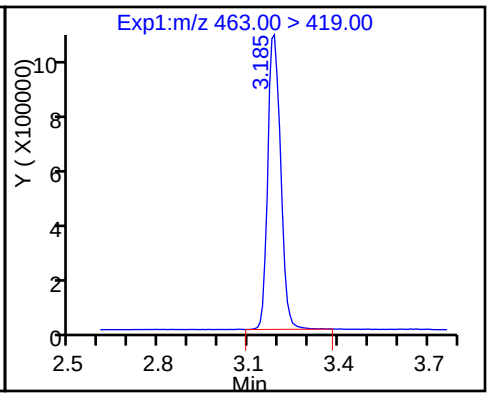
D 17 13C4 PFOS



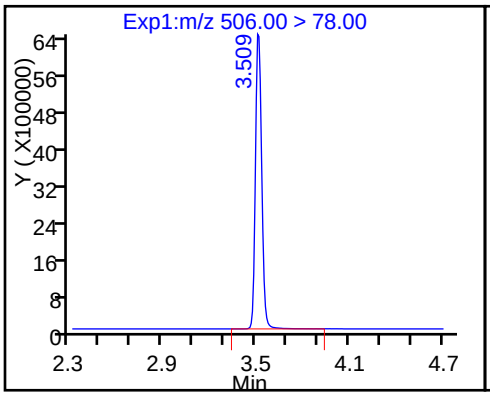
D 19 13C5 PFNA



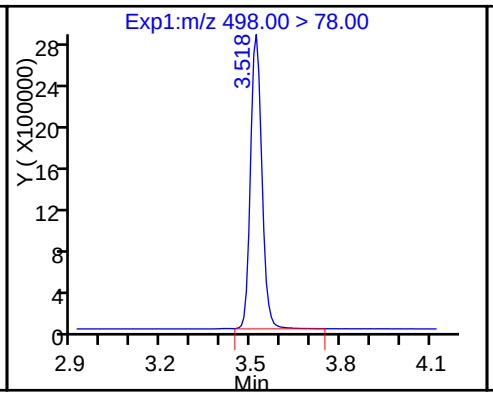
20 Perfluorononanoic acid



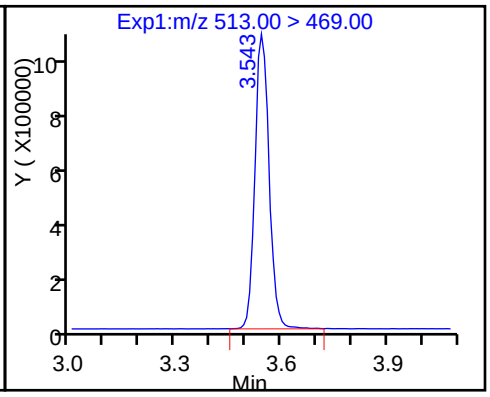
D 21 13C8 FOSA



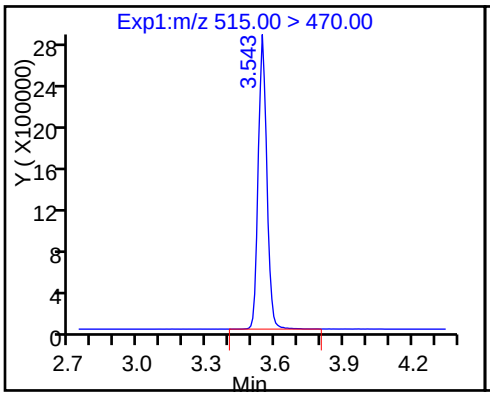
22 Perfluorooctane Sulfonamide



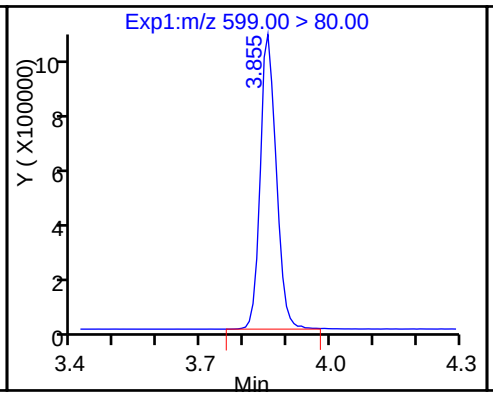
24 Perfluorodecanoic acid



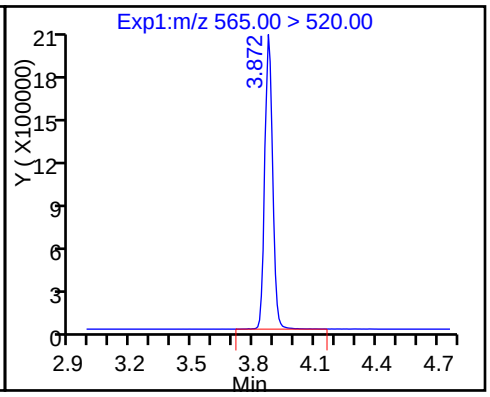
D 23 13C2 PFDA



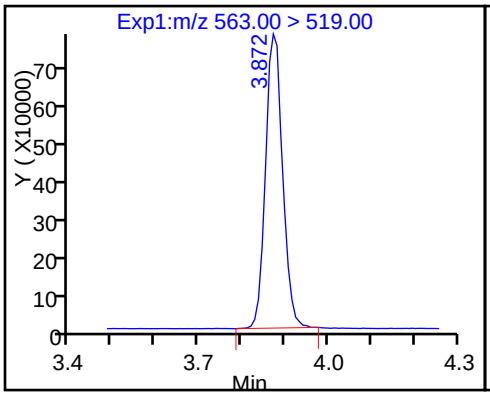
26 Perfluorodecane Sulfonic acid



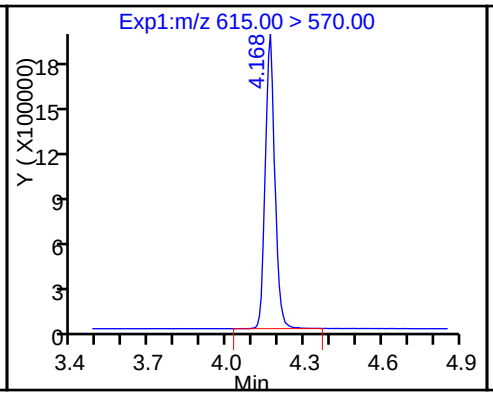
D 27 13C2 PFUnA



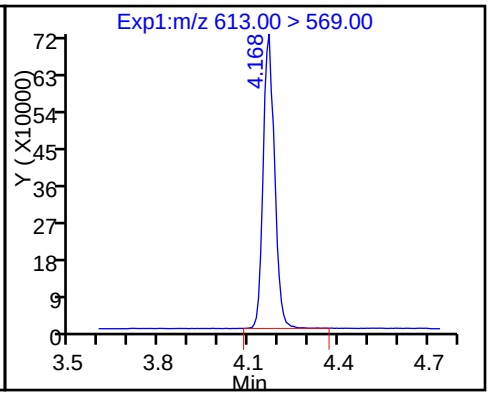
28 Perfluoroundecanoic acid



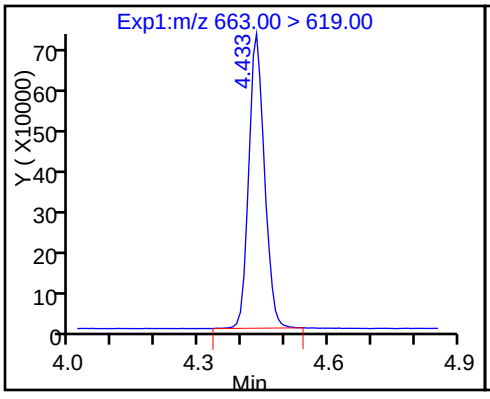
D 30 13C2 PFDoA



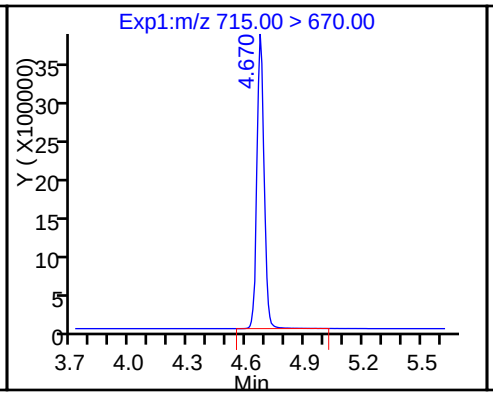
29 Perfluorododecanoic acid



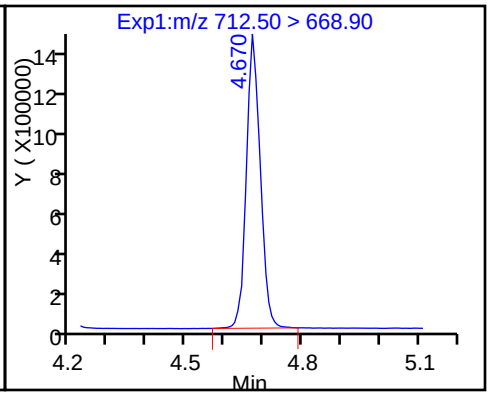
31 Perfluorotridecanoic acid



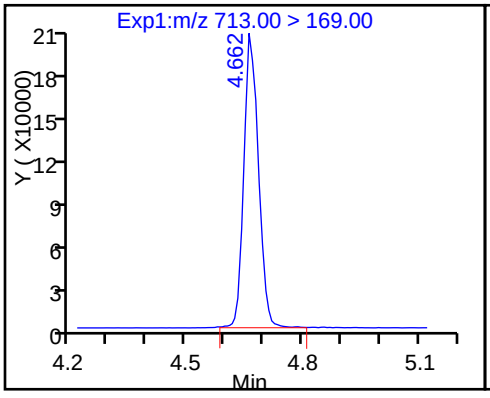
D 32 13C2-PFTeDA



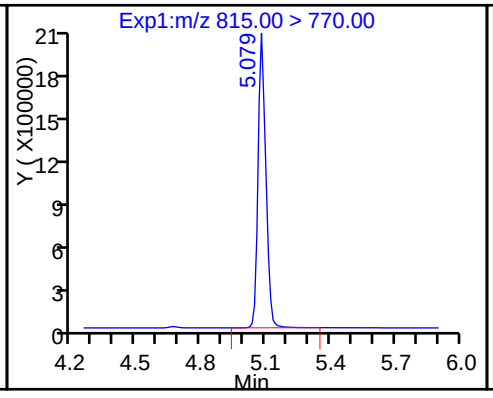
33 Perfluorotetradecanoic acid



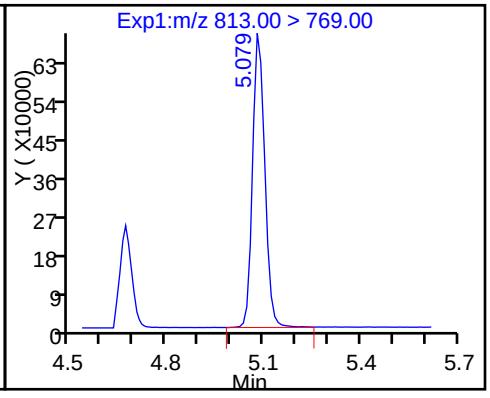
33 Perfluorotetradecanoic acid



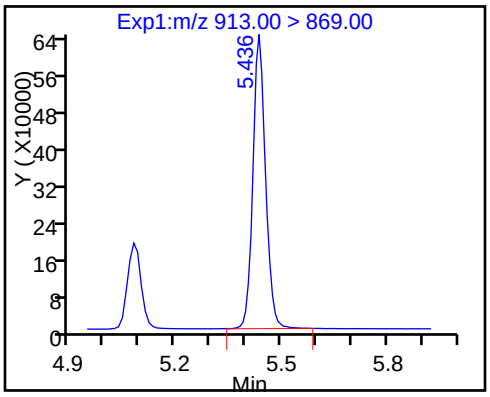
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-140788/1-A

Matrix: Water Lab File ID: 21DEC2016A_011.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 250(mL) Date Analyzed: 12/21/2016 13:19

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.: 143502 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	113		25-150
STL00991	13C4 PFOS	108		25-150
STL00994	18O2 PFHxS	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_011.d
Lims ID: MB 320-140788/1-A
Client ID:
Sample Type: MB
Inject. Date: 21-Dec-2016 13:19:28 ALS Bottle#: 1 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-140788/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:13:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		19323612	55.6		111	1003269	
1 Perfluorobutyric acid										
212.90 > 169.00	1.582	1.550	0.032	1.000	21068	0.0639			90.3	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		14801495	55.6		111	937059	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.839	1.839	0.0	1.000	22794	0.0780			243	
D 6 13C2 PFHxA										
315.00 > 270.00	2.124	2.129	-0.005		12469733	50.9		102	588743	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.132	2.129	0.003	1.000	8121	0.0351			280	
D 11 13C4-PFHpA										
367.00 > 322.00	2.463	2.473	-0.010		11849402	52.4		105	875945	
D 10 18O2 PFHxS										
403.00 > 84.00	2.486	2.488	-0.002		16800363	51.4		109	879106	
D 47 M2-6:2FTS										
429.00 > 409.00	2.809	2.805	0.004		1984	0.0170		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.793	2.805	-0.012	1.000	2449	NR				
D 14 13C4 PFOA										
417.00 > 372.00	2.833	2.828	0.005		13013829	56.5		113	914834	
D 19 13C5 PFNA										
468.00 > 423.00	3.204	3.206	-0.002		9775394	55.0		110	718121	
D 17 13C4 PFOS										
503.00 > 80.00	3.204	3.206	-0.002		12884670	51.8		108	785064	
D 21 13C8 FOSA										
506.00 > 78.00	3.519	3.521	-0.002		3464041	9.02		18.0	262227	

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	3.545	3.557	-0.012		2021	0.0188		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.561	3.571	-0.010		8839350	56.2		112	318262	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.553	3.571	-0.018	1.000	5464	0.0327			194	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.714	3.727	-0.013		20713	0.2750		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.714	3.727	-0.013	1.000	2169	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.875	3.887	-0.012	1.000	1466	0.009313				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.875	3.895	-0.020		28471	0.3634		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.910	3.904	0.006	1.009	3209	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.893	3.904	-0.011		6492898	55.4		111	321036	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.893	3.904	-0.011	1.000	18806	0.1514			520	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.009	4.011	-0.002		2492	0.0262		0.0		
54 MeFOSA										
512.00 > 169.00	4.028	4.011	0.017	1.000	397	NR				
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.184	4.195	-0.011		3448	0.0402		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.218	4.195	0.023	1.000	208	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.191	4.196	-0.006		5843050	52.7		105	215619	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.689	4.710	-0.021	1.000	58174	0.3141			116	
713.00 > 169.00	4.689	4.710	-0.021	1.000	6386		9.11(0.00-0.00)		2667	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.697	4.710	-0.013		14051940	61.8		124	704510	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.123	5.133	-0.009	1.000	72292	0.0483			132	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.123	5.133	-0.009		5713880	45.9		91.7	170231	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.499	5.509	-0.010	1.000	4192	0.0348			4.8	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 22-Dec-2016 10:26:29 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_011.d

Injection Date: 21-Dec-2016 13:19:28 Instrument ID: A8_N

Lims ID: MB 320-140788/1-A

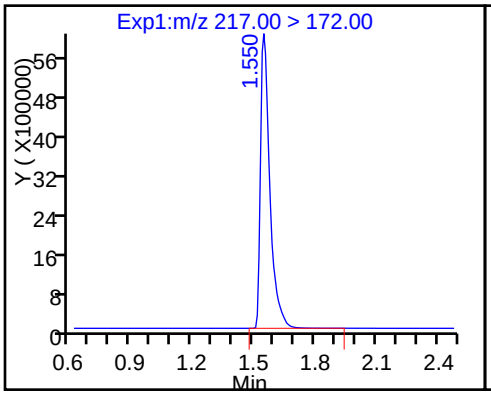
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 1 Worklist Smp#: 5

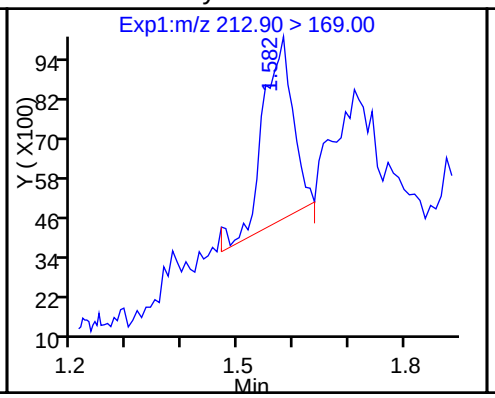
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

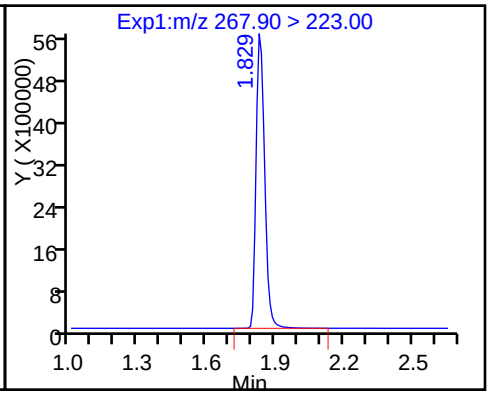
D 2 13C4 PFBA



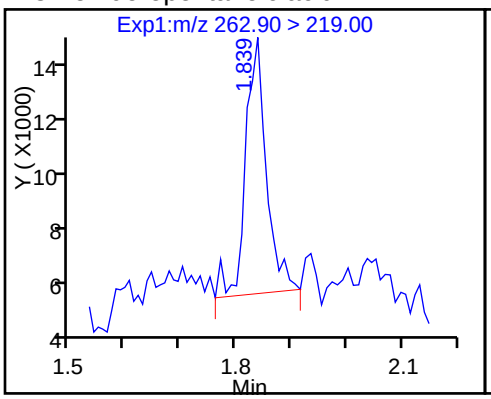
1 Perfluorobutyric acid



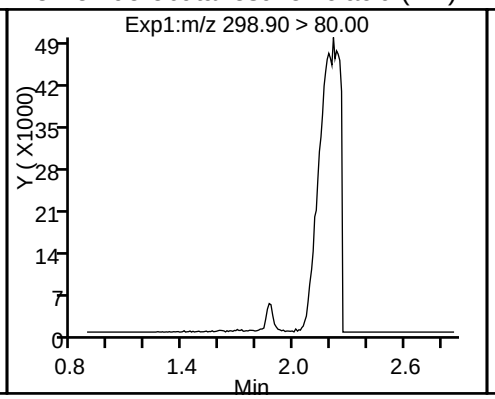
D 4 13C5-PFPeA



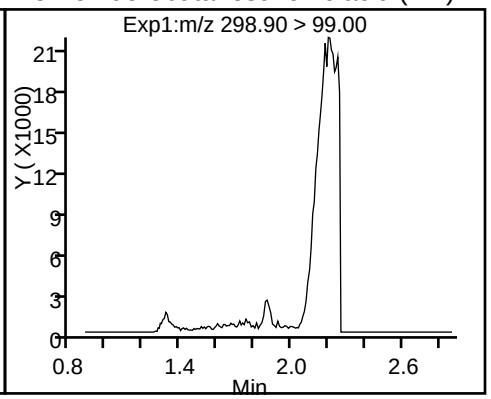
3 Perfluoropentanoic acid



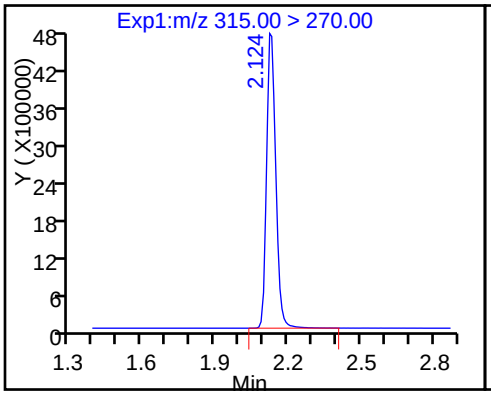
5 Perfluorobutanesulfonic acid (ND)



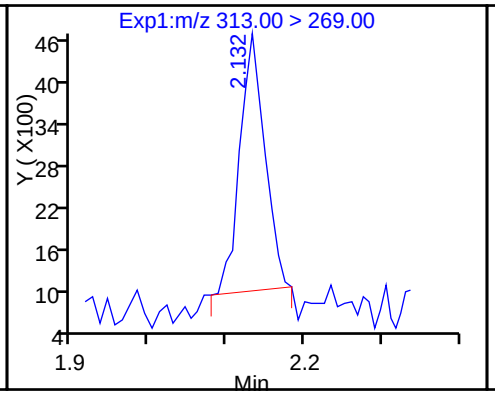
5 Perfluorobutanesulfonic acid (ND)



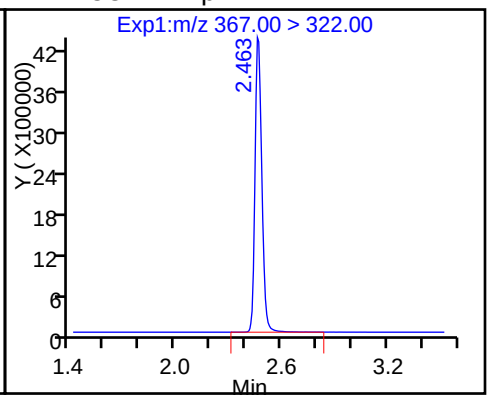
D 6 13C2 PFHxA



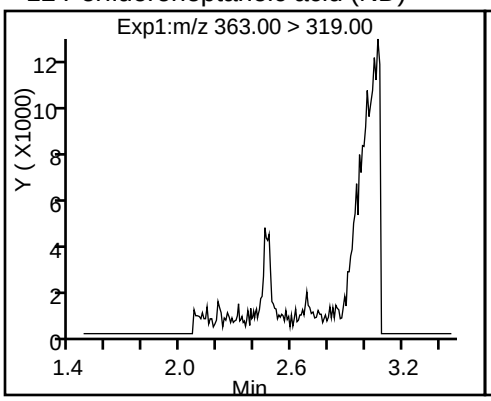
7 Perfluorohexanoic acid



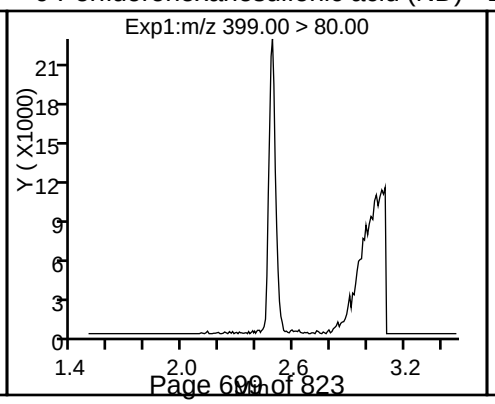
D 11 13C4-PFHpA



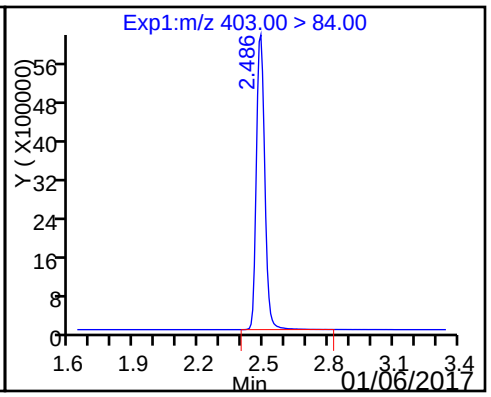
12 Perfluoroheptanoic acid (ND)



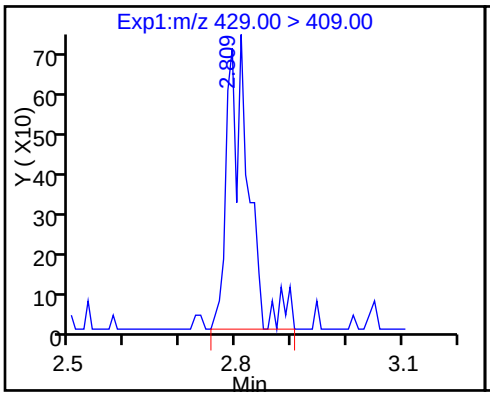
9 Perfluorohexanesulfonic acid (ND)



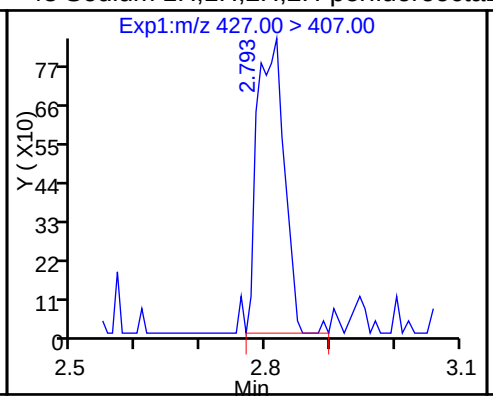
D 10 18O2 PFHxS



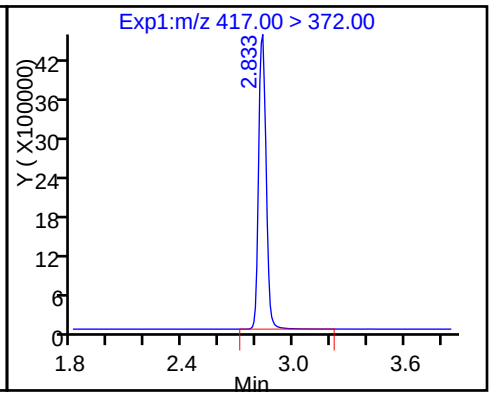
D 47 M2-6:2FTS



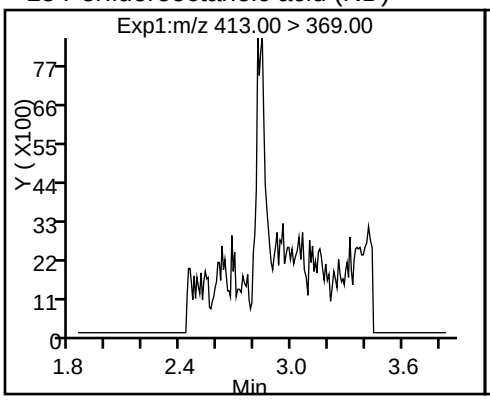
48 Sodium 1H,1H,2H,2H-perfluorooctane



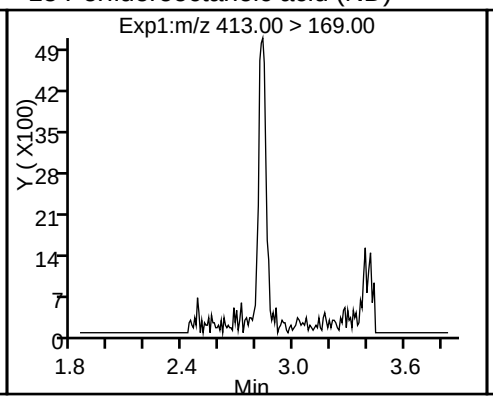
D 14 13C4 PFOA



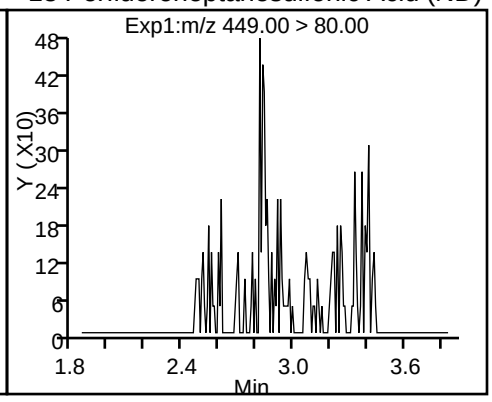
15 Perfluorooctanoic acid (ND)



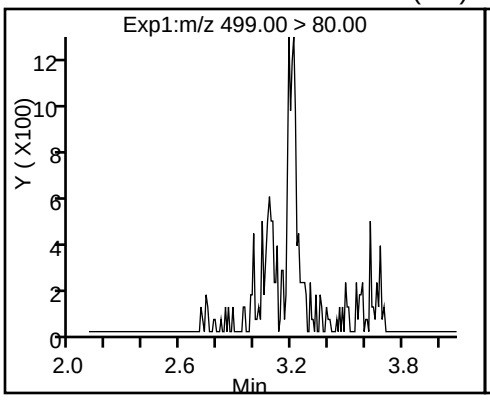
15 Perfluorooctanoic acid (ND)



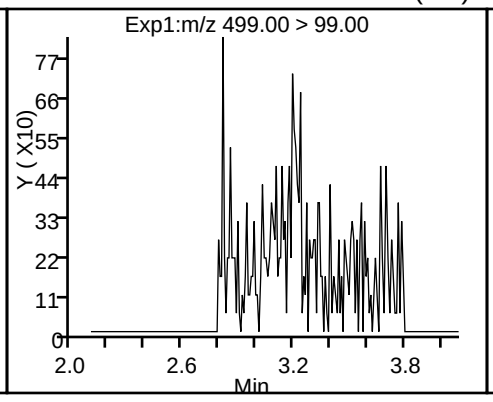
13 Perfluoroheptanesulfonic Acid (ND)



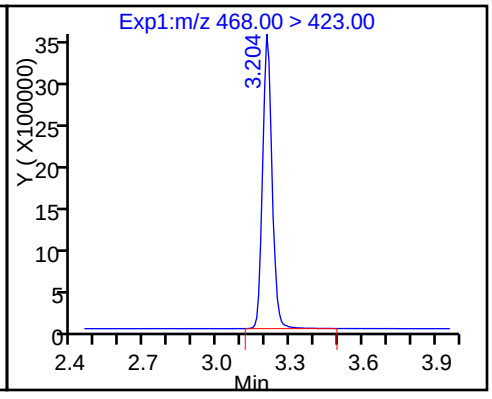
18 Perfluorooctane sulfonic acid (ND)



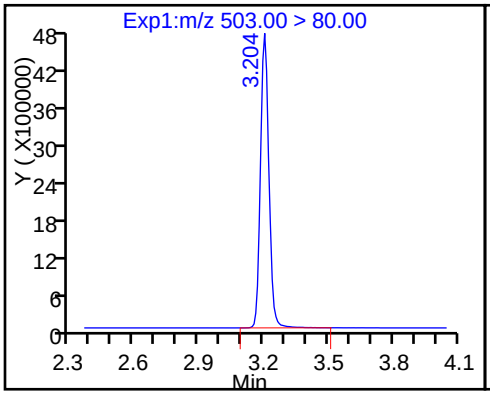
18 Perfluorooctane sulfonic acid (ND)



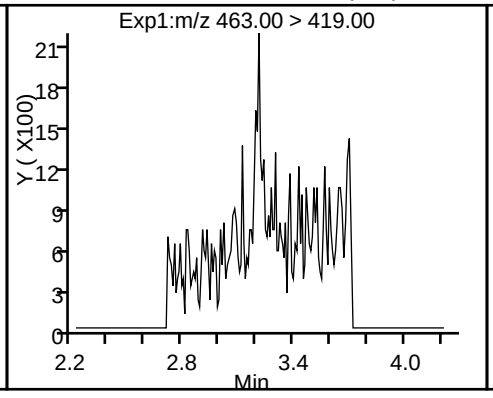
D 19 13C5 PFNA



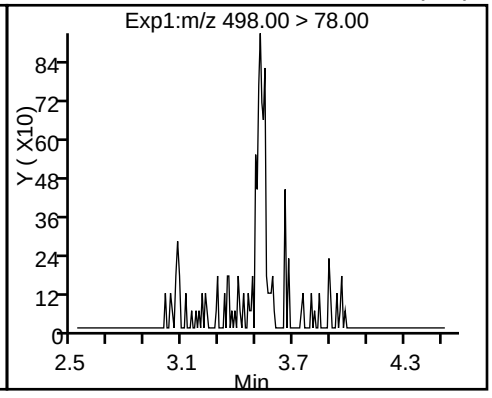
D 17 13C4 PFOS



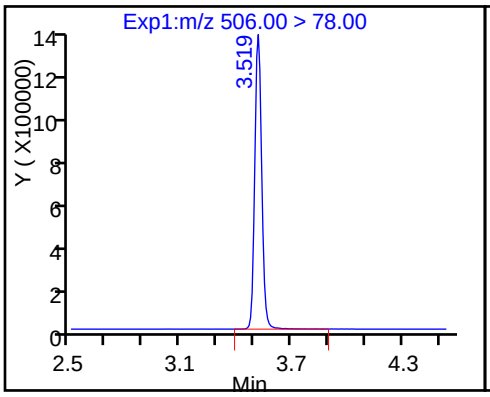
20 Perfluorononanoic acid (ND)



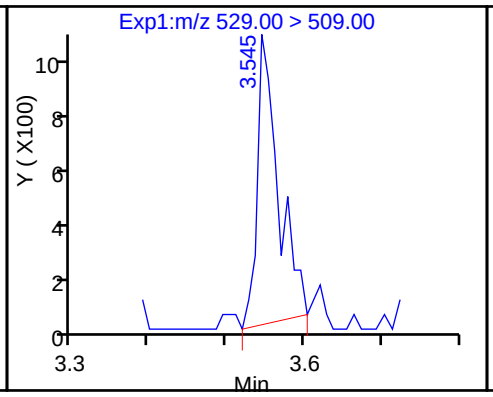
22 Perfluorooctane Sulfonamide (ND)



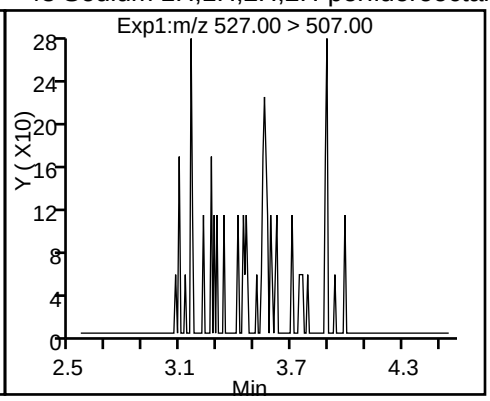
D 21 13C8 FOSA



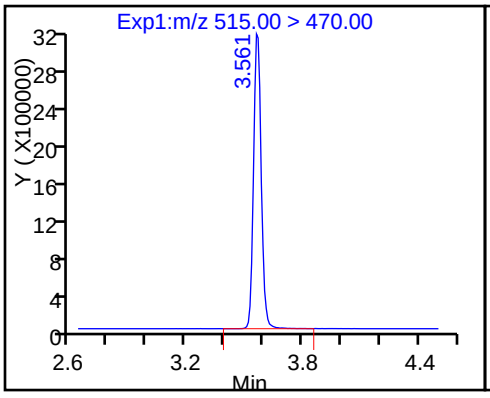
D 42 M2-8:2FTS



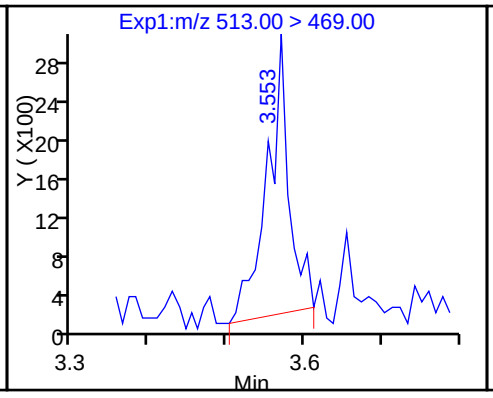
43 Sodium 1H,1H,2H,2H-perfluorooctane (ND)



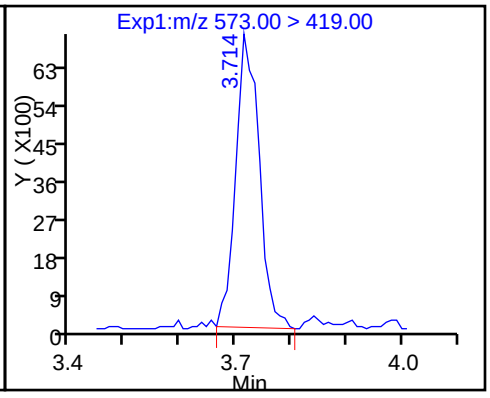
D 23 13C2 PFDA



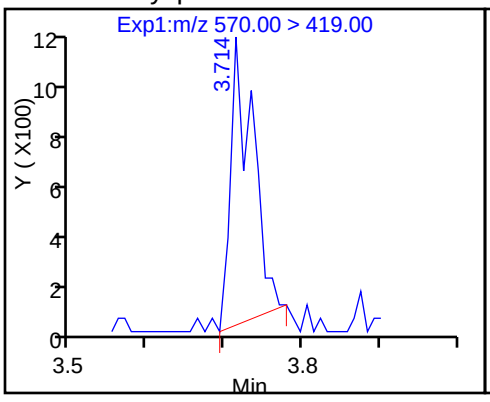
24 Perfluorodecanoic acid



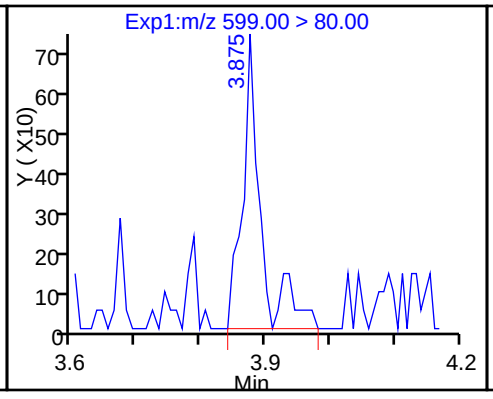
D 45 d3-NMeFOSAA



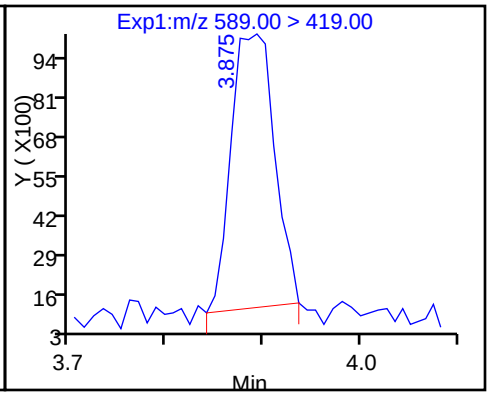
44 N-methyl perfluorooctane sulfonami



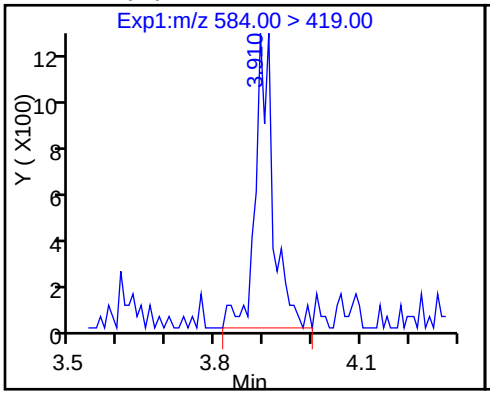
26 Perfluorodecane Sulfonic acid



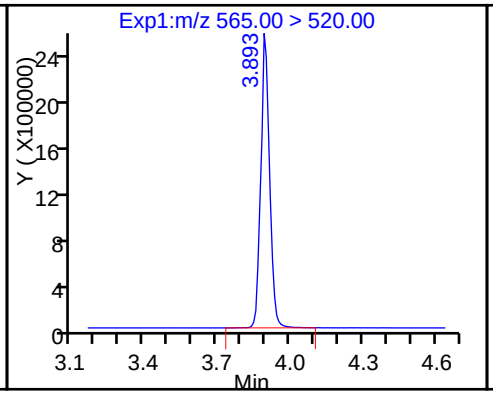
D 46 d5-NEtFOSAA



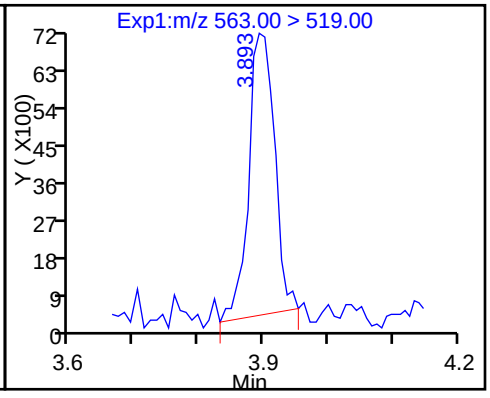
49 N-ethyl perfluorooctane sulfonamid



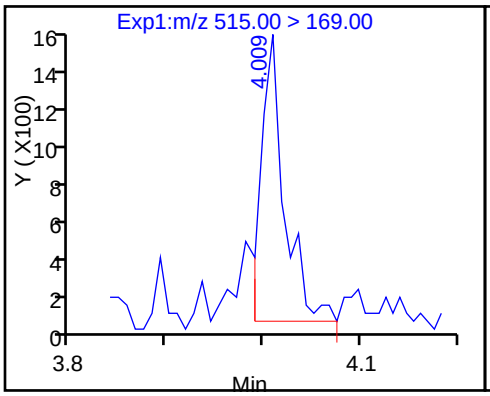
D 27 13C2 PFUnA



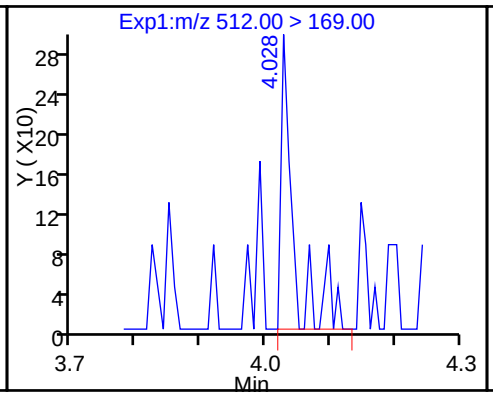
28 Perfluoroundecanoic acid



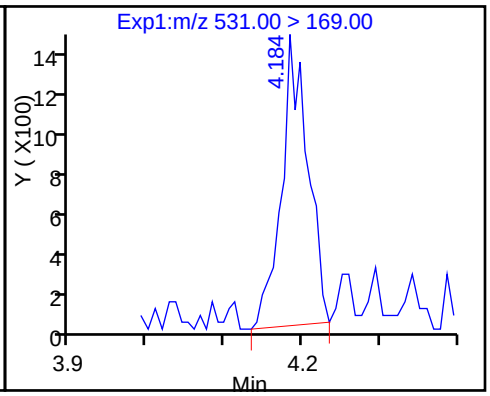
D 52 d-N-MeFOSA-M



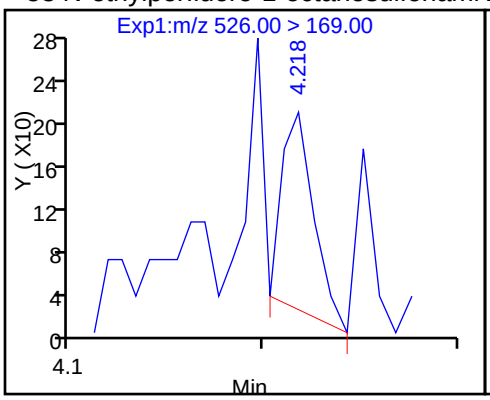
54 MeFOSA



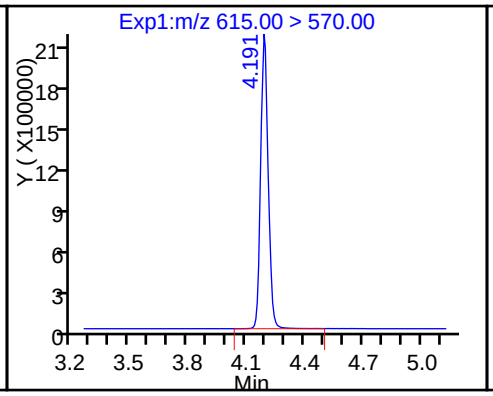
D 51 d-N-EtFOSA-M



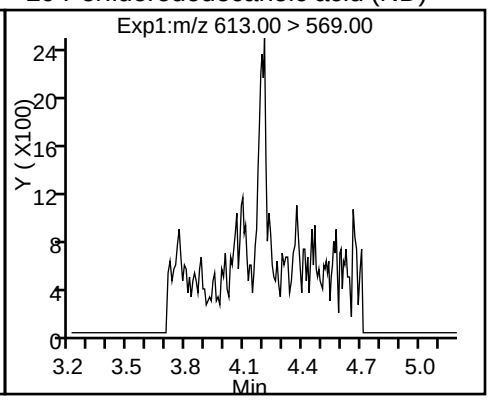
53 N-ethylperfluoro-1-octanesulfonami



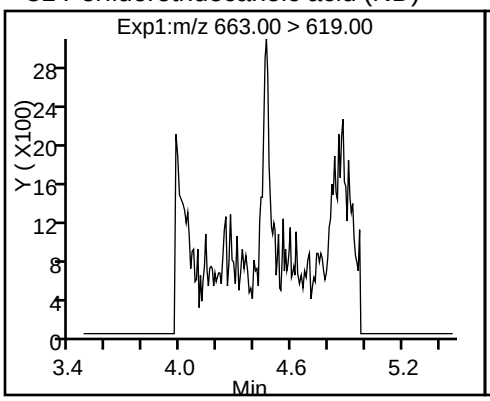
D 30 13C2 PFDoA



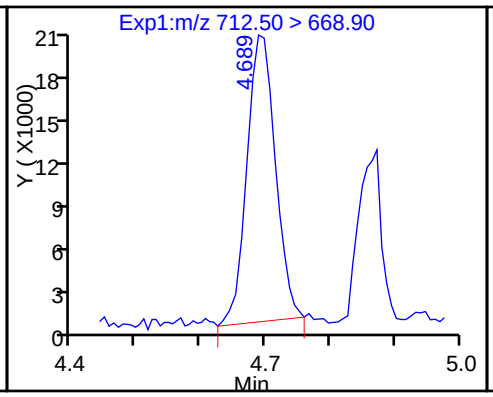
29 Perfluorododecanoic acid (ND)



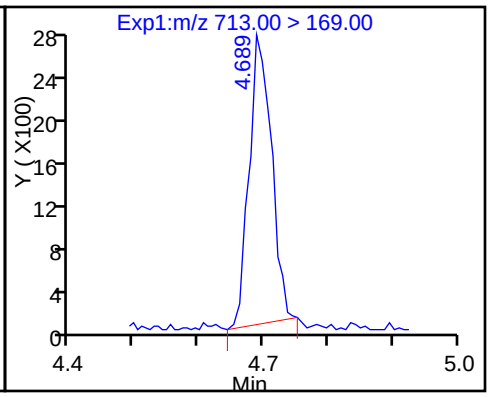
31 Perfluorotridecanoic acid (ND)



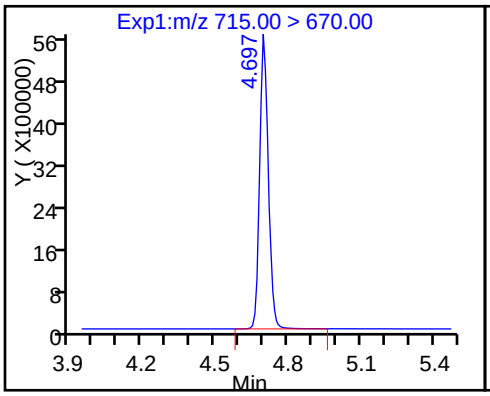
33 Perfluorotetradecanoic acid



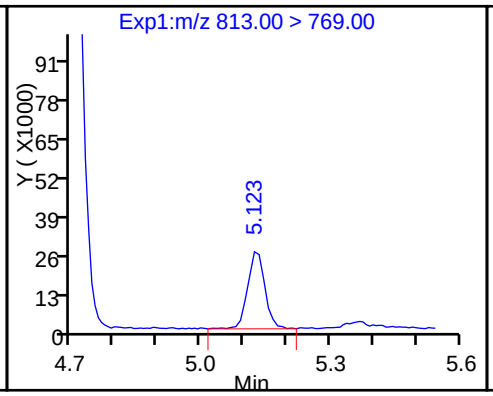
33 Perfluorotetradecanoic acid



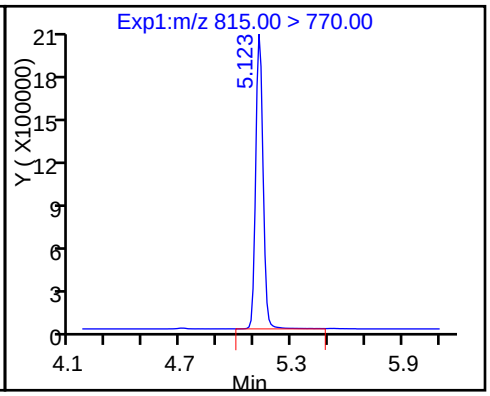
D 32 13C2-PFTeDA



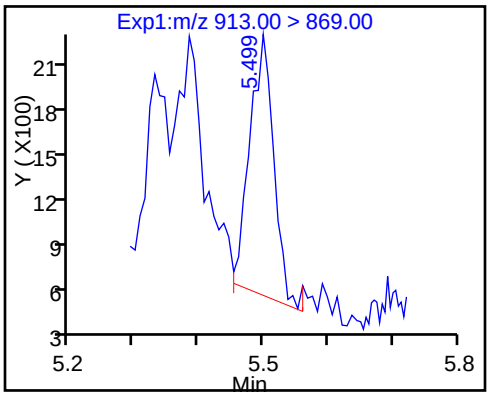
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-140788/2-A

Matrix: Water Lab File ID: 21DEC2016A_012.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 250(mL) Date Analyzed: 12/21/2016 13:26

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0346		0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0345		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0368		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	106		25-150
STL00991	13C4 PFOS	111		25-150
STL00994	18O2 PFHxS	106		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_012.d
Lims ID: LCS 320-140788/2-A
Client ID:
Sample Type: LCS
Inject. Date: 21-Dec-2016 13:26:58 ALS Bottle#: 2 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-140788/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:13:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.542	1.550	-0.008		19575860	56.3		113	869979	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	6212919	18.6		92.9	35062	
D 4 13C5-PFPeA										
267.90 > 223.00	1.830	1.829	0.001		15178123	57.0		114	966443	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.830	1.839	-0.009	1.000	5259886	17.6		87.8	57219	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.877	-0.009	1.000	9064417	18.4		104		
298.90 > 99.00	1.868	1.877	-0.009	1.000	3884255		2.33(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.124	2.129	-0.005		12486891	50.9		102	789977	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.124	2.129	-0.005	1.000	3991529	17.2		86.0	122815	
D 11 13C4-PFHpA										
367.00 > 322.00	2.460	2.473	-0.013		11840947	52.3		105	636116	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.460	2.473	-0.013	1.000	4183924	18.0		90.2	44338	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.475	2.488	-0.013	1.000	6037454	16.9		92.7		
D 10 18O2 PFHxS										
403.00 > 84.00	2.483	2.488	-0.005		16435995	50.3		106	992855	
D 14 13C4 PFOA										
417.00 > 372.00	2.829	2.828	0.001		12192909	52.9		106	562405	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.829	2.836	-0.007	1.000	4232008	17.3		86.5	51539	
413.00 > 169.00	2.829	2.836	-0.007	1.000	2666263		1.59(0.90-1.10)		120278	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.829	2.844	-0.015	1.000	5303771	17.4		91.6		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.172	3.100	0.072	1.000	4737275	17.3		93.1	46214	
499.00 > 99.00	3.197	3.100	0.097	1.008	1032198		4.59(0.90-1.10)		54848	
D 19 13C5 PFNA										
468.00 > 423.00	3.206	3.206	0.0		9513386	53.5		107	650786	
D 17 13C4 PFOS										
503.00 > 80.00	3.197	3.206	-0.009		13184681	53.0		111	664303	
20 Perfluorononanoic acid										
463.00 > 419.00	3.206	3.215	-0.009	1.000	2980642	16.5		82.3	45589	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.520	3.521	-0.001	1.000	1047752	16.4		82.0	133307	
D 21 13C8 FOSA										
506.00 > 78.00	3.512	3.521	-0.009		3426745	8.92		17.8	186430	
D 23 13C2 PFDA										
515.00 > 470.00	3.562	3.571	-0.009		8697414	55.3		111	316636	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.562	3.571	-0.009	1.000	2859565	17.4		87.1	71764	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.877	3.887	-0.010	1.000	2747159	17.1		88.5		
D 27 13C2 PFUnA										
565.00 > 520.00	3.894	3.904	-0.010		6790190	57.9		116	848135	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.894	3.904	-0.010	1.000	2168033	16.7		83.5	50316	
D 30 13C2 PFDoA										
615.00 > 570.00	4.185	4.196	-0.011		5892816	53.1		106	162920	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.185	4.202	-0.017	1.000	1831177	16.9		84.6	46201	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.451	4.473	-0.022	1.000	1790184	16.7		83.7	34645	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.691	4.710	-0.019	1.000	4227378	22.6		113	9266	
713.00 > 169.00	4.691	4.710	-0.019	1.000	668116		6.33(0.00-0.00)		89829	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.691	4.710	-0.019		14405757	63.4		127	945198	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.114	5.133	-0.018	1.000	1685958	14.4		71.9	3488	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.114	5.133	-0.018		5902563	47.4		94.8	152939	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.493	5.509	-0.016	1.000	2556639	21.1		105	2529	

Report Date: 22-Dec-2016 10:26:30 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_012.d

Injection Date: 21-Dec-2016 13:26:58 Instrument ID: A8_N

Lims ID: LCS 320-140788/2-A

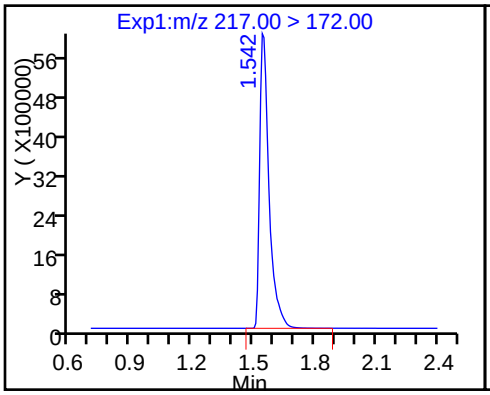
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 2 Worklist Smp#: 6

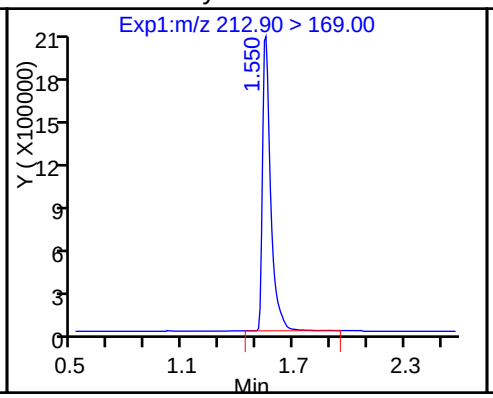
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

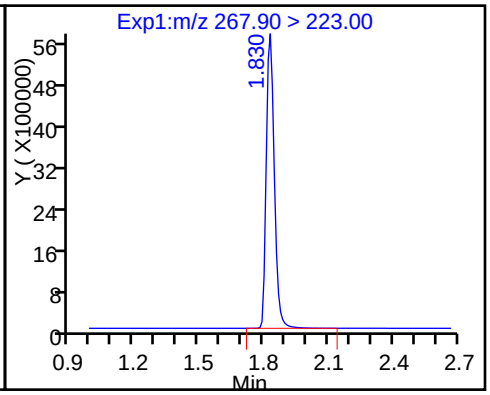
D 2 13C4 PFBA



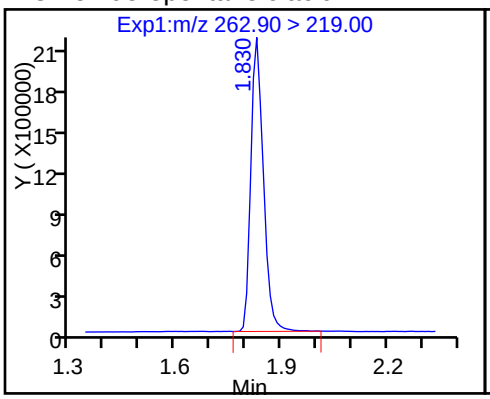
1 Perfluorobutyric acid



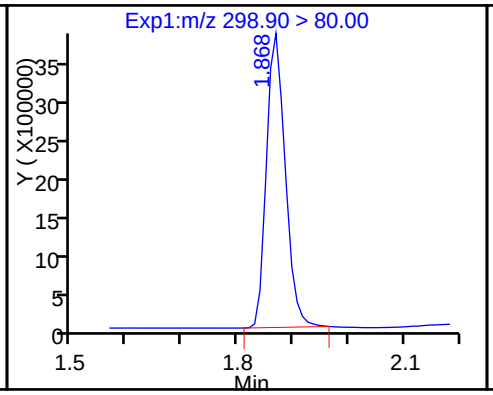
D 4 13C5-PFPeA



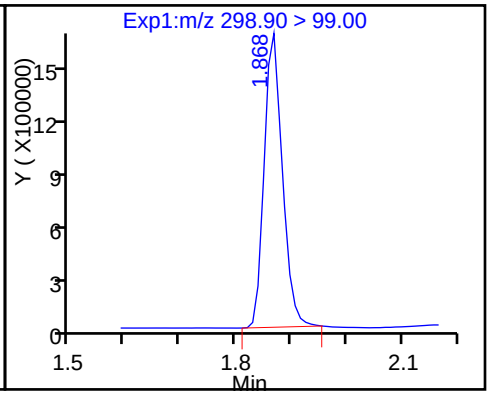
3 Perfluoropentanoic acid



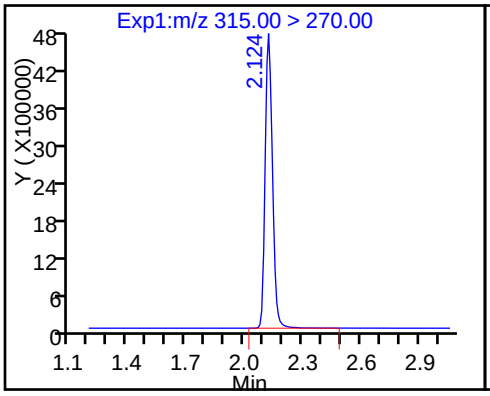
5 Perfluorobutanesulfonic acid



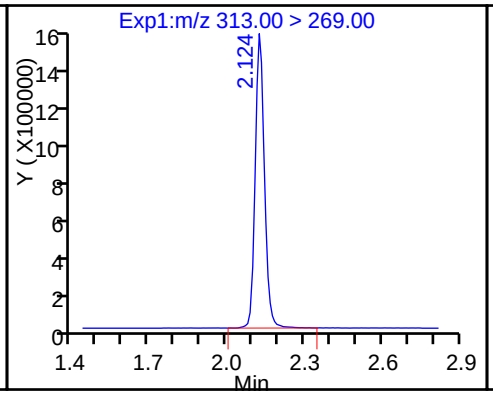
5 Perfluorobutanesulfonic acid



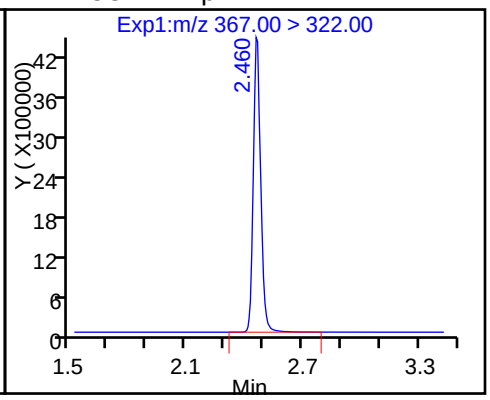
D 6 13C2 PFHxA



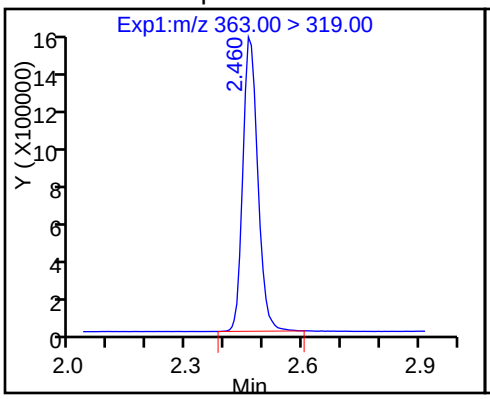
7 Perfluorohexanoic acid



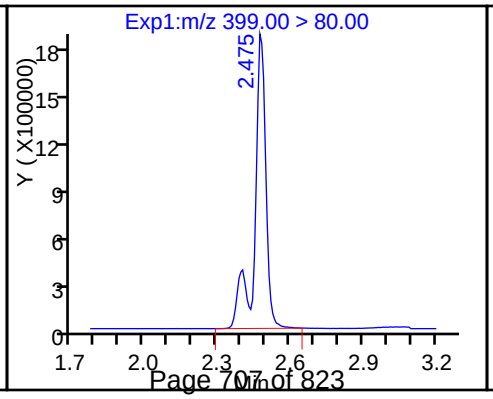
D 11 13C4-PFHpA



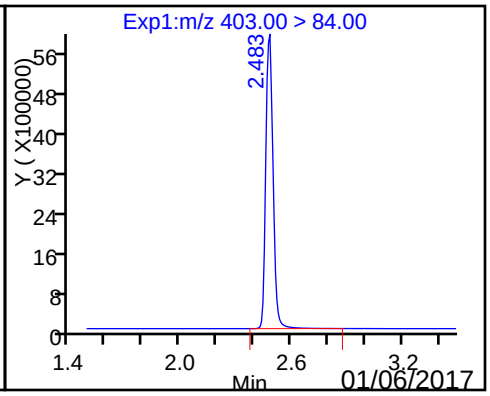
12 Perfluoroheptanoic acid



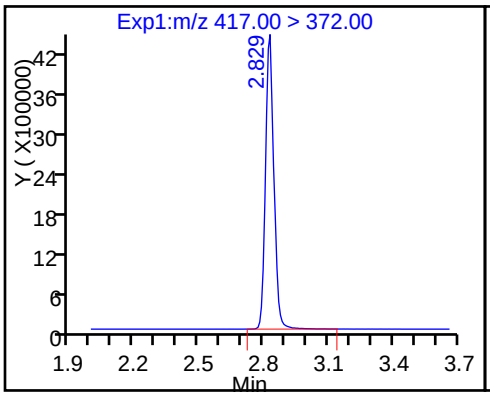
9 Perfluorohexanesulfonic acid



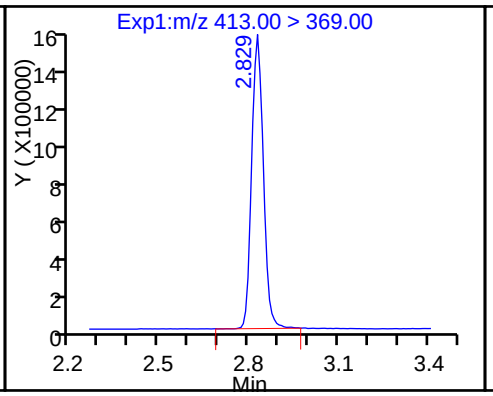
D 10 18O2 PFHxS



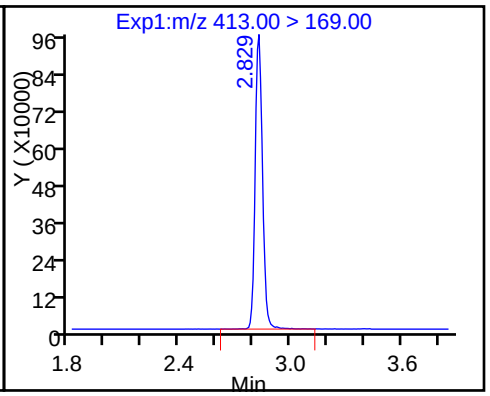
D 14 13C4 PFOA



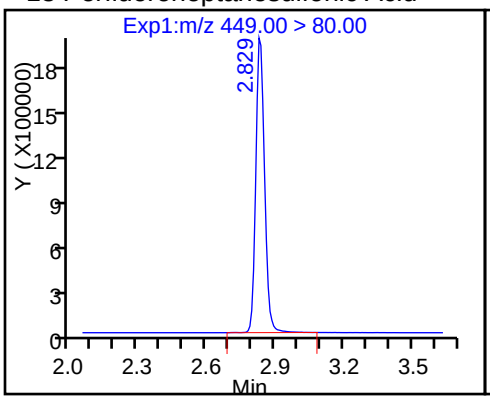
15 Perfluorooctanoic acid



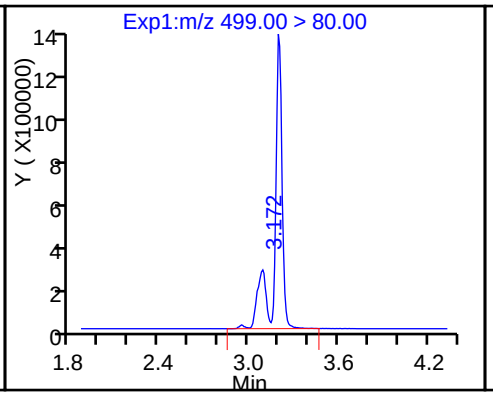
15 Perfluorooctanoic acid



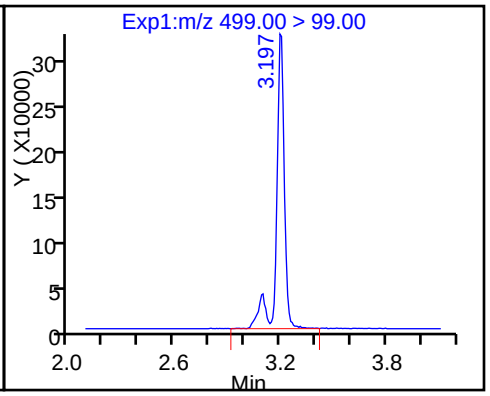
13 Perfluoroheptanesulfonic Acid



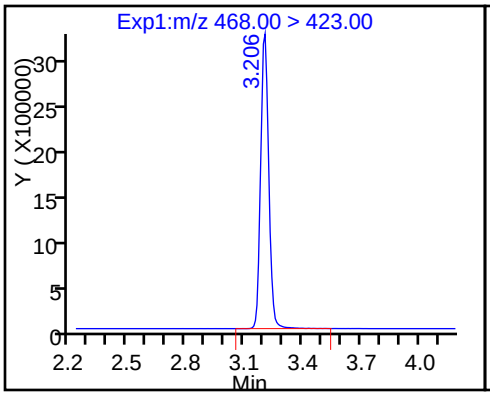
18 Perfluorooctane sulfonic acid



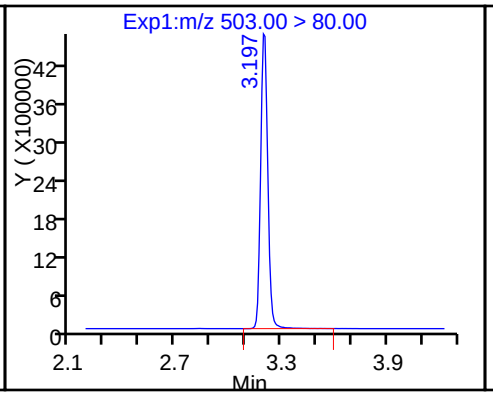
18 Perfluorooctane sulfonic acid



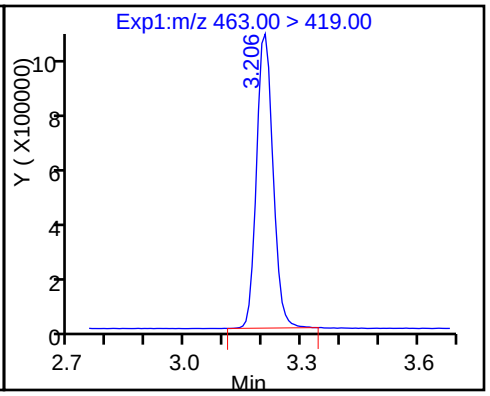
D 19 13C5 PFNA



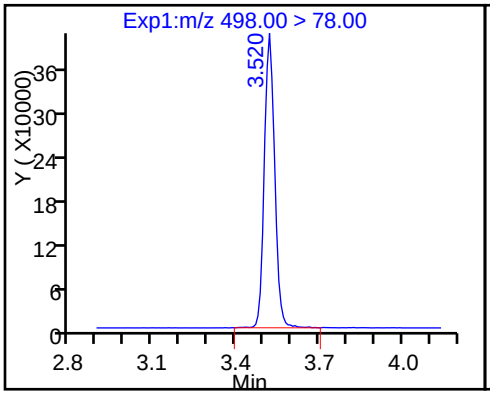
D 17 13C4 PFOS



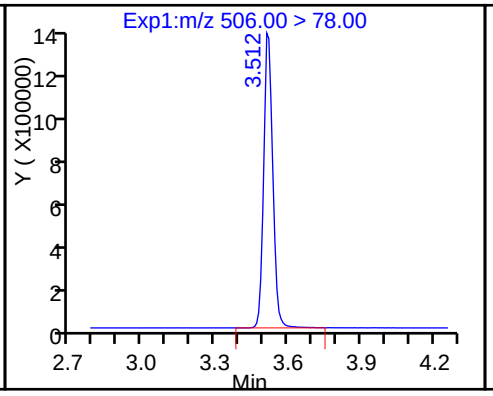
20 Perfluorononanoic acid



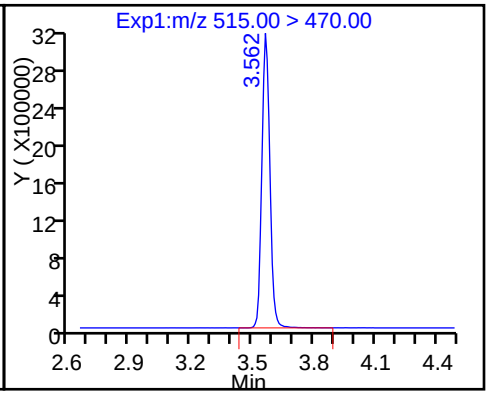
22 Perfluorooctane Sulfonamide



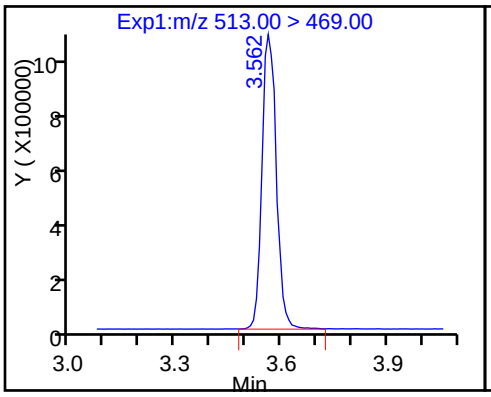
D 21 13C8 FOSA



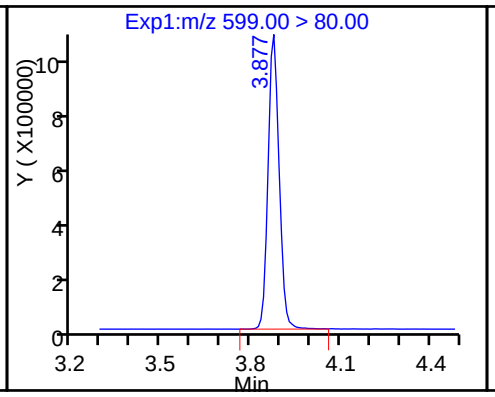
D 23 13C2 PFDA



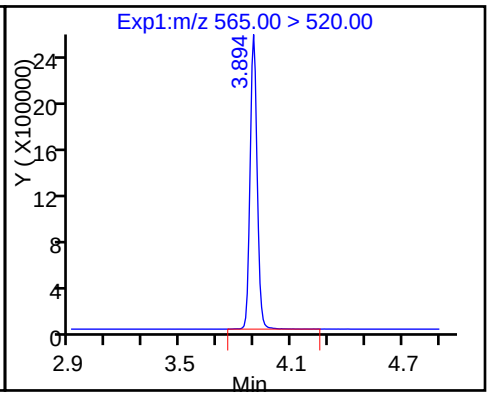
24 Perfluorodecanoic acid



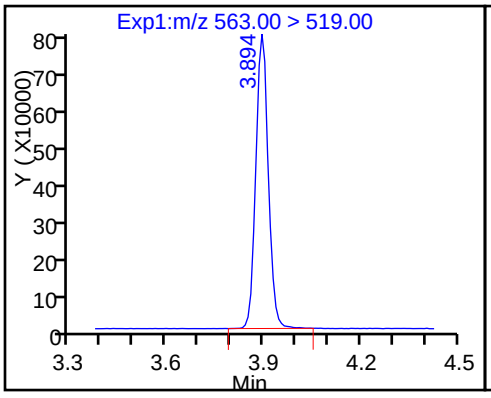
26 Perfluorodecane Sulfonic acid



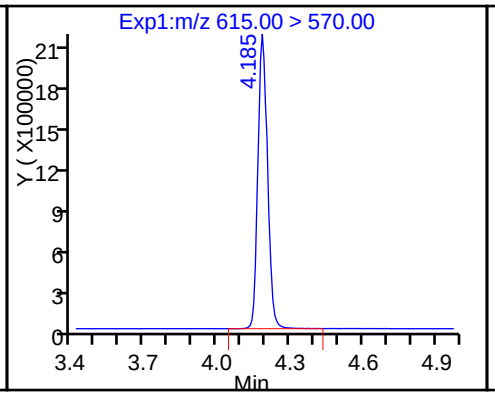
D 27 13C2 PFUnA



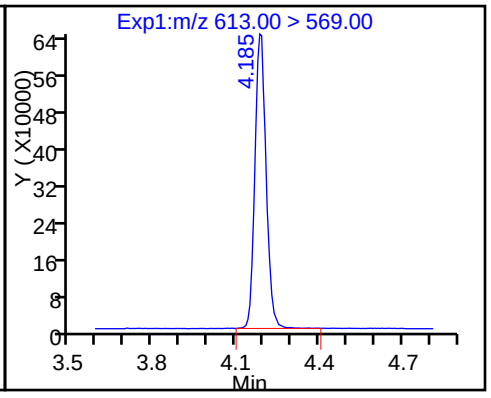
28 Perfluoroundecanoic acid



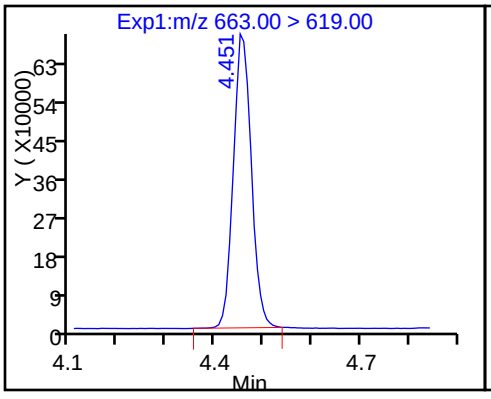
D 30 13C2 PFDoA



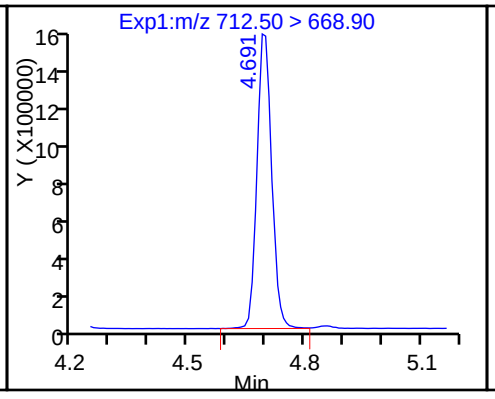
29 Perfluorododecanoic acid



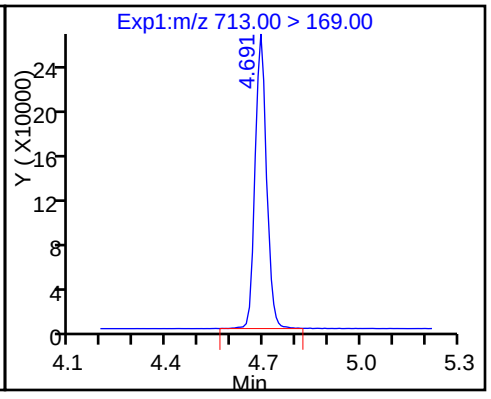
31 Perfluorotridecanoic acid



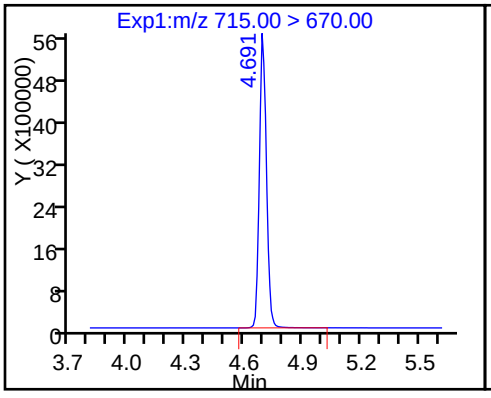
33 Perfluorotetradecanoic acid



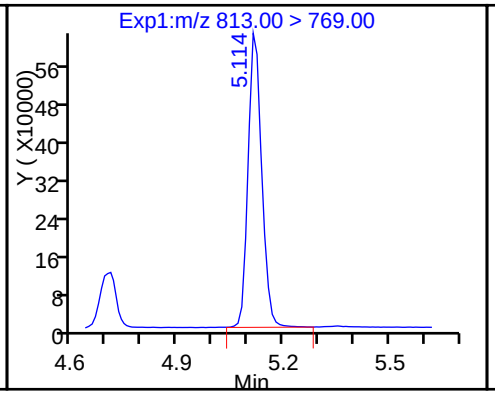
33 Perfluorotetradecanoic acid



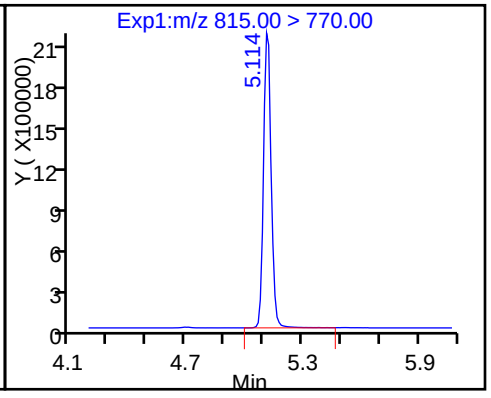
D 32 13C2-PFTeDA



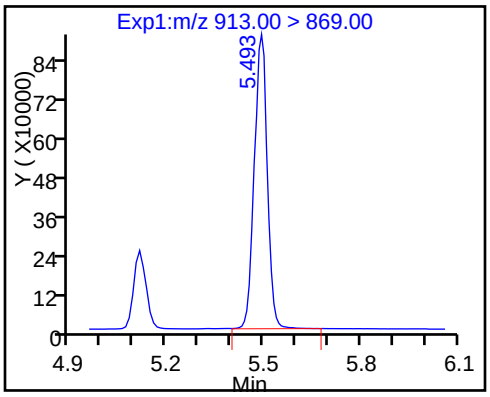
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-04-GW-31-35-MS MS Lab Sample ID: 320-23998-3 MS

Matrix: Water Lab File ID: 21DEC2016A_016.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 10:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 257.4(mL) Date Analyzed: 12/21/2016 13:57

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0356		0.0024	0.0019	0.00073
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0390		0.0039	0.0029	0.0012
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0401		0.0024	0.0019	0.00089

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	47		25-150
STL00991	13C4 PFOS	111		25-150
STL00994	18O2 PFHxS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_016.d
Lims ID: 320-23998-A-3-B MS
Client ID: DPT-16-04-GW-31-35-MS
Sample Type: MS
Inject. Date: 21-Dec-2016 13:57:01 ALS Bottle#: 6 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-3-b ms
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:16:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		11019750	31.7		63.4	1216234	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	3666640	19.5		97.4	18225	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		9501193	35.7		71.4	785804	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.839	-0.010	1.000	3418151	18.2		91.1	36392	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.877	-0.009	1.000	10232014	20.6		117		
298.90 > 99.00	1.868	1.877	-0.009	1.000	4408443		2.32(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.120	2.129	-0.009		6474352	26.4		52.8	426282	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.129	2.129	0.0	1.000	2246091	18.7		93.4	39774	
D 11 13C4-PFHpA										
367.00 > 322.00	2.462	2.473	-0.011		5620345	24.8		49.7	353092	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.462	2.473	-0.011	1.000	2091024	19.0		95.0	19637	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.477	2.488	-0.011	1.000	6832615	18.9		104		
D 10 18O2 PFHxS										
403.00 > 84.00	2.477	2.488	-0.011		16562568	50.7		107	1567952	
D 47 M2-6:2FTS										
429.00 > 409.00	2.807	2.805	0.002		1596	0.0136		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.799	2.805	-0.006	1.000	9800	NR		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.823	2.828	-0.005		5469868	23.7		47.5	395349	

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	2.823	2.836	-0.013	1.000	2011052	18.3		91.6	23817	
413.00 > 169.00	2.823	2.836	-0.013	1.000	1240831		1.62(0.90-1.10)		50775	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.831	2.844	-0.013	1.000	5733632	18.9		99.3		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.201	3.100	0.101	1.000	5485444	20.1		108	146505	
499.00 > 99.00	3.201	3.100	0.101	1.000	1200999		4.57(0.90-1.10)		61375	
D 19 13C5 PFNA										
468.00 > 423.00	3.201	3.206	-0.005		3991541	22.5		44.9	350396	
D 17 13C4 PFOS										
503.00 > 80.00	3.201	3.206	-0.005		13148732	52.8		111	567788	
20 Perfluorononanoic acid										
463.00 > 419.00	3.201	3.215	-0.014	1.000	1359483	17.9		89.5	22576	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.524	3.521	0.003	1.000	134638	19.2		95.8	12802	
D 21 13C8 FOSA										
506.00 > 78.00	3.516	3.521	-0.005		376771	0.9808		2.0	36216	
D 42 M2-8:2FTS										
529.00 > 509.00	3.516	3.557	-0.041		729	0.006785		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.541	3.557	-0.016	1.007	3299	NR		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.566	3.571	-0.005		3714443	23.6		47.2	197042	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.558	3.571	-0.013	1.000	1313374	18.7		93.7	41857	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.730	3.727	0.003		2095	0.0278		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.642	3.727	-0.085	0.976	212	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.871	3.887	-0.016	1.000	2859037	17.8		92.3		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.880	3.895	-0.015		4637	0.0592		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.889	3.904	-0.015		3235374	27.6		55.2	293102	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.889	3.904	-0.015	1.000	1146424	18.5		92.6	28511	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.897	4.011	-0.114		674	0.007090		0.0		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.354	4.195	0.159		479	0.005584		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.185	4.196	-0.011		3798304	34.2		68.5	161104	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.185	4.202	-0.017	1.000	1331870	19.1		95.5	39338	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.451	4.473	-0.022	1.000	1494987	21.7		109	39273	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.690	4.710	-0.020	1.000	3963546	32.9		165	17760	
713.00 > 169.00	4.690	4.710	-0.020	1.000	611378		6.48(0.00-0.00)		121601	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.690	4.710	-0.020		12252614	53.9		108	957749	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.113	5.133	-0.019	1.000	1303585	17.4		86.9	3782	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.113	5.133	-0.019		4222333	33.9		67.8	133359	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.476	5.509	-0.033	1.000	1409283	18.0		90.0	1812	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 22-Dec-2016 10:26:35 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_016.d

Injection Date: 21-Dec-2016 13:57:01 Instrument ID: A8_N

Lims ID: 320-23998-A-3-B MS

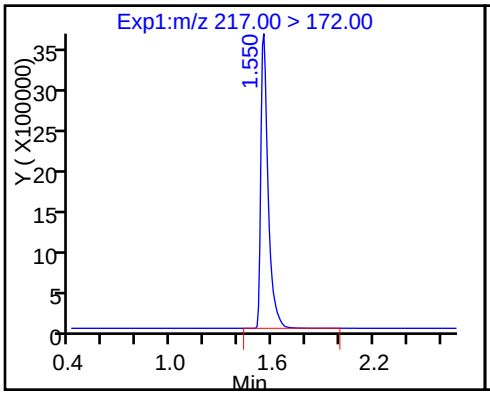
Client ID: DPT-16-04-GW-31-35-MS

Operator ID: A8-PC\A8 ALS Bottle#: 6 Worklist Smp#: 10

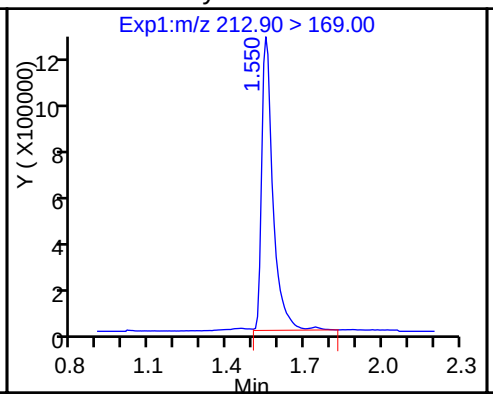
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

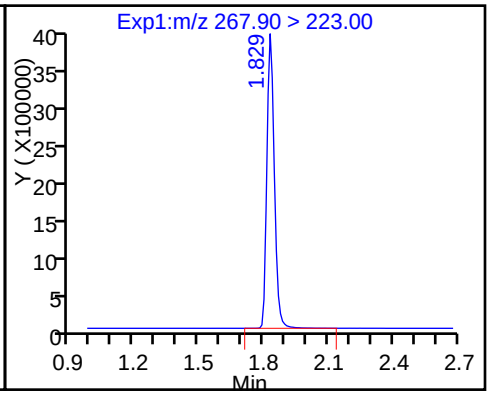
D 2 13C4 PFBA



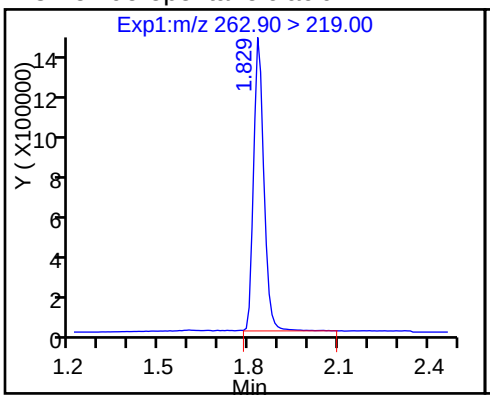
1 Perfluorobutyric acid



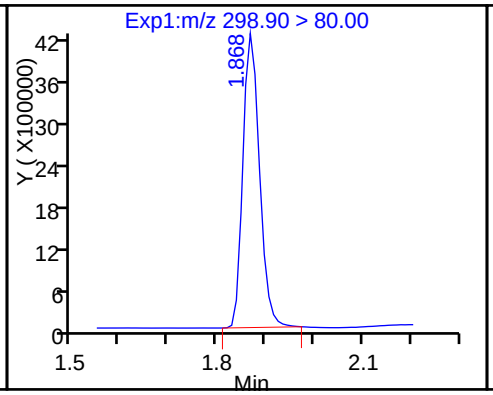
D 4 13C5-PFPeA



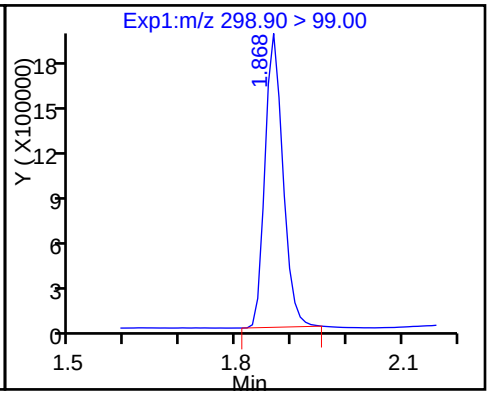
3 Perfluoropentanoic acid



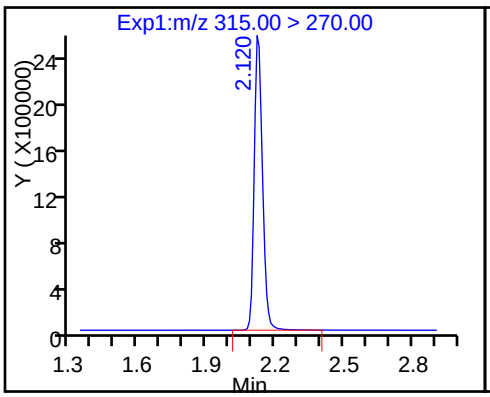
5 Perfluorobutanesulfonic acid



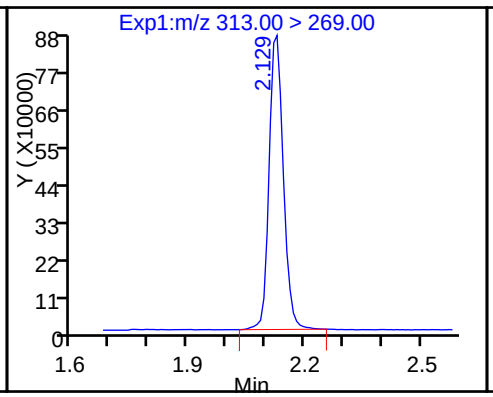
5 Perfluorobutanesulfonic acid



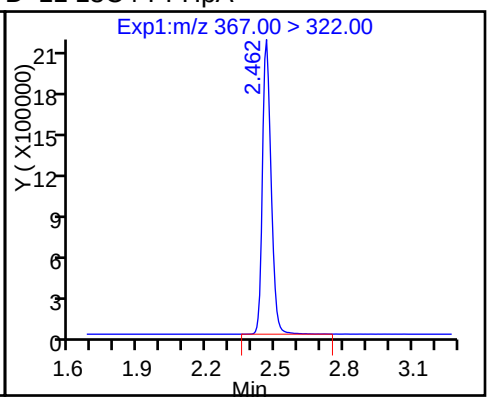
D 6 13C2 PFHxA



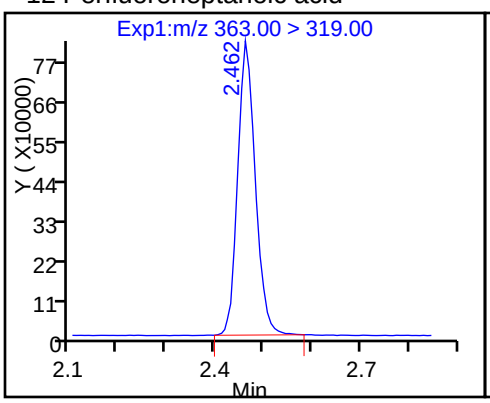
7 Perfluorohexanoic acid



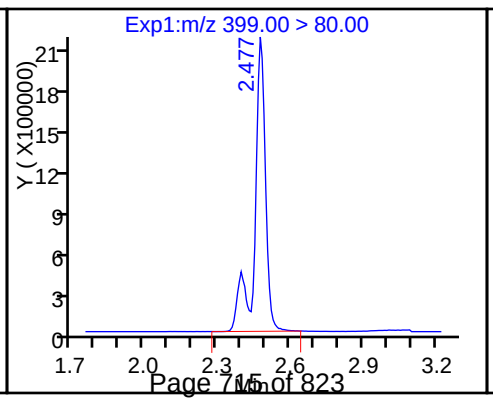
D 11 13C4-PFHpA



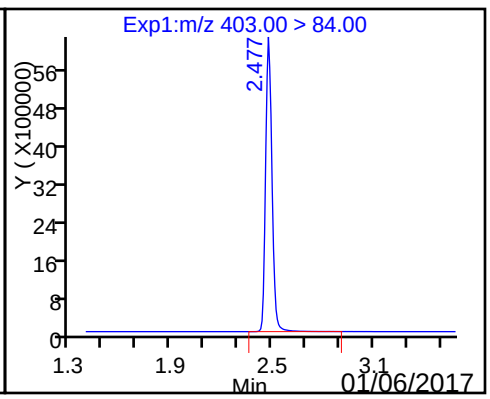
12 Perfluoroheptanoic acid



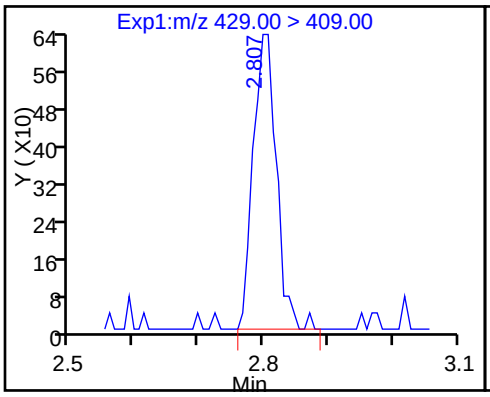
9 Perfluorohexanesulfonic acid



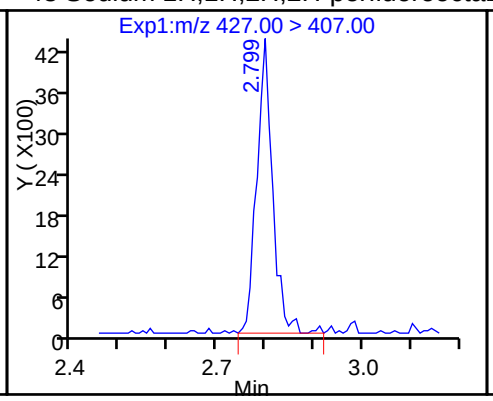
D 10 18O2 PFHxS



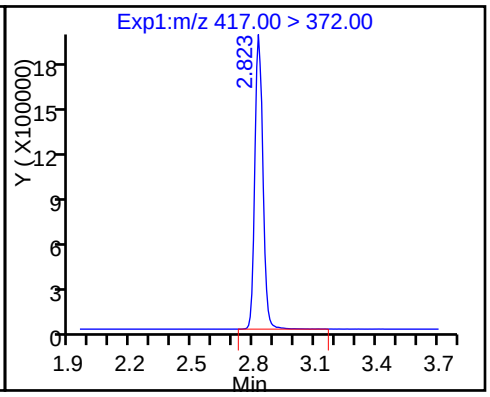
D 47 M2-6:2FTS



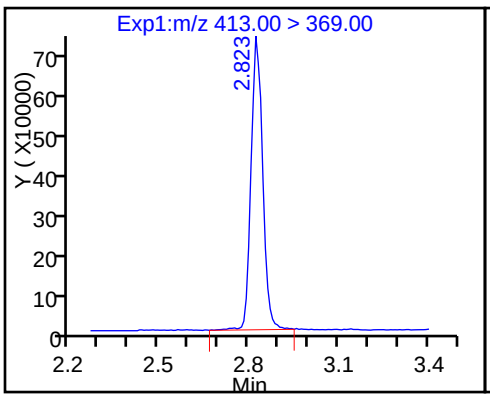
48 Sodium 1H,1H,2H,2H-perfluorooctane



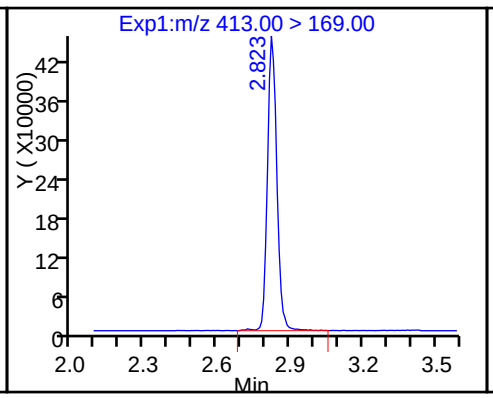
D 14 13C4 PFOA



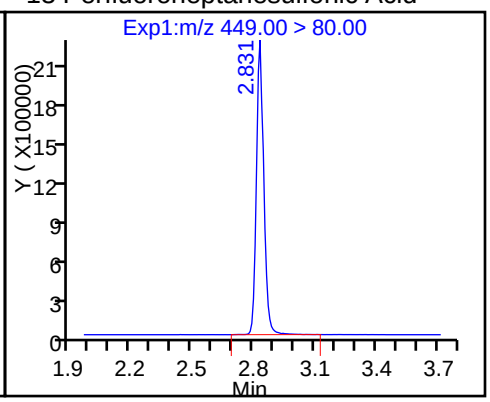
15 Perfluorooctanoic acid



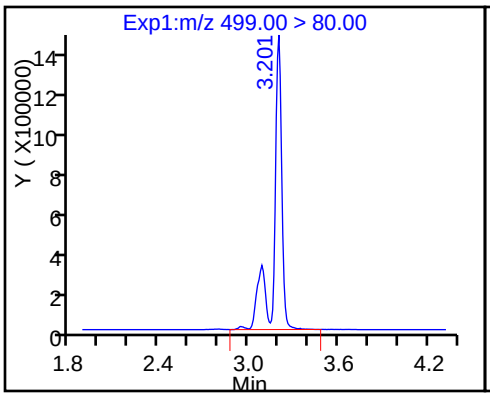
15 Perfluorooctanoic acid



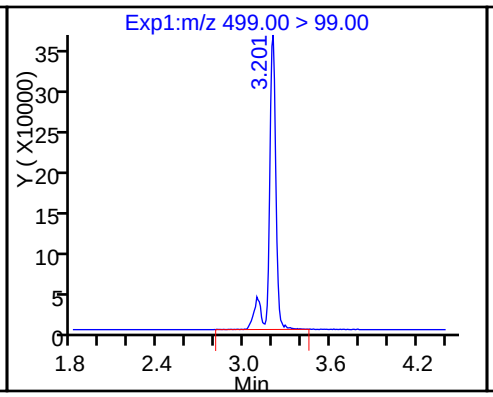
13 Perfluoroheptanesulfonic Acid



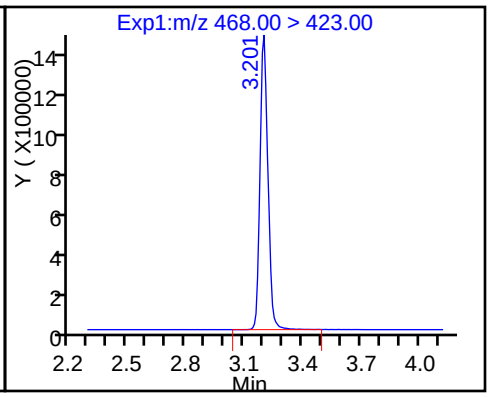
18 Perfluorooctane sulfonic acid



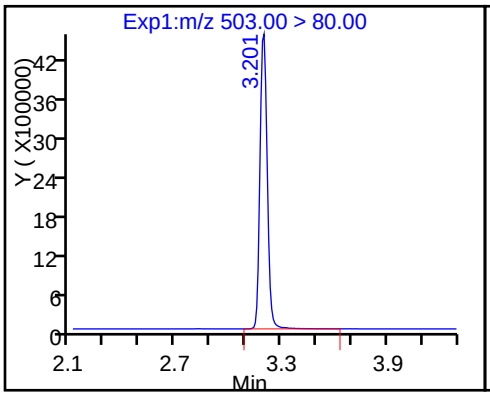
18 Perfluorooctane sulfonic acid



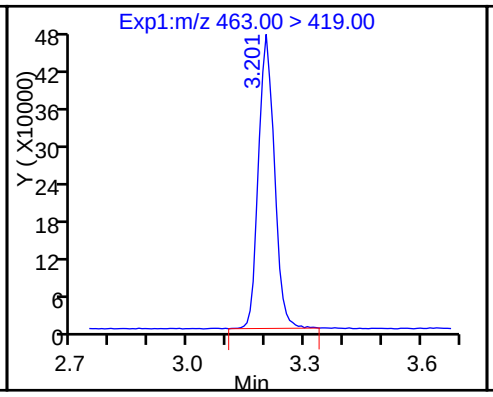
D 19 13C5 PFNA



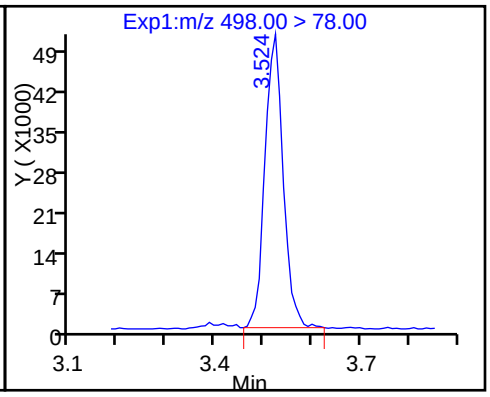
D 17 13C4 PFOS



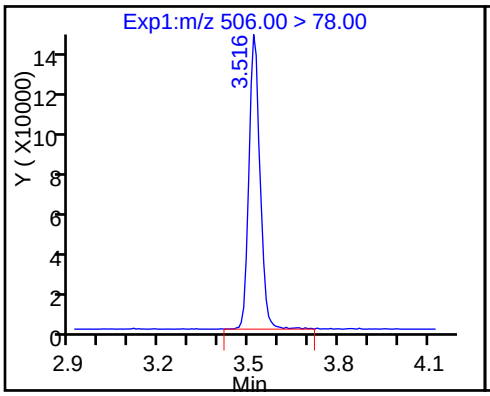
20 Perfluorononanoic acid



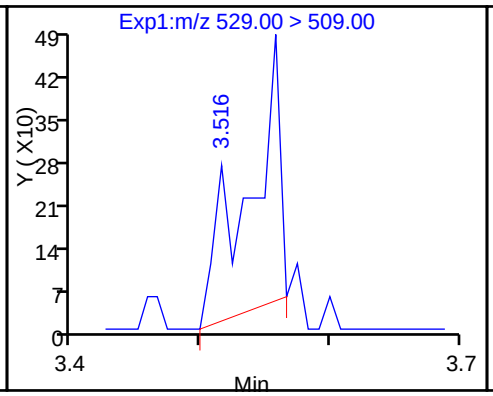
22 Perfluorooctane Sulfonamide



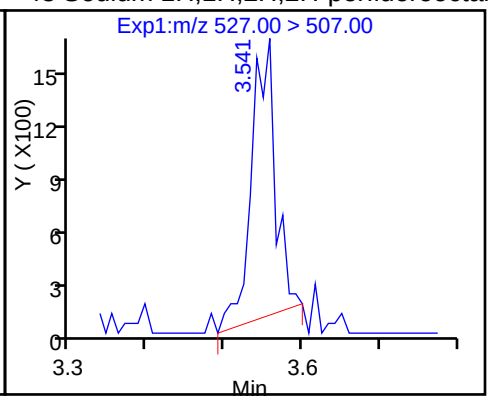
D 21 13C8 FOSA



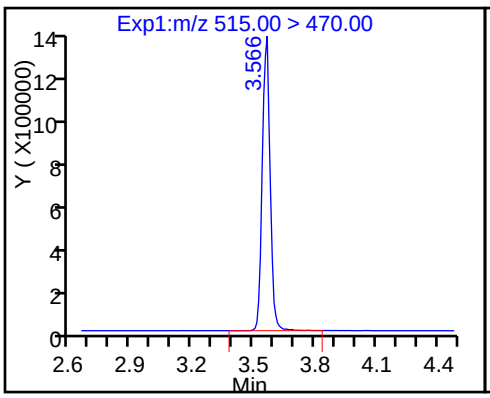
D 42 M2-8:2FTS



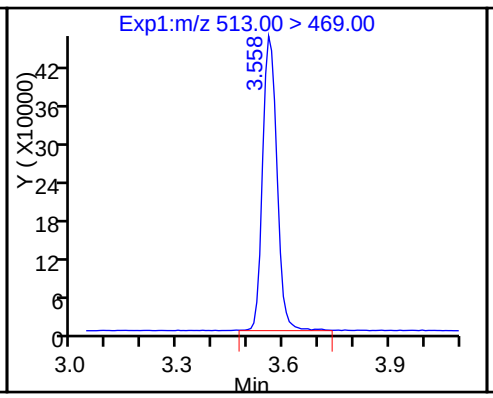
43 Sodium 1H,1H,2H,2H-perfluorooctane



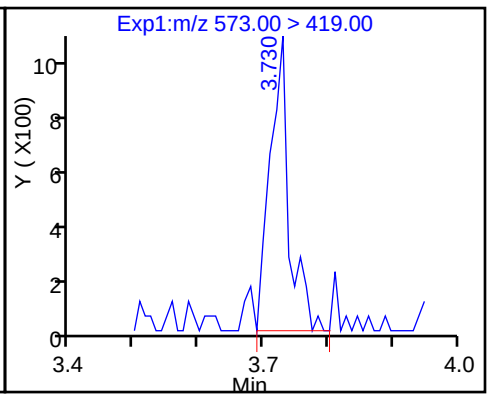
D 23 13C2 PFDA



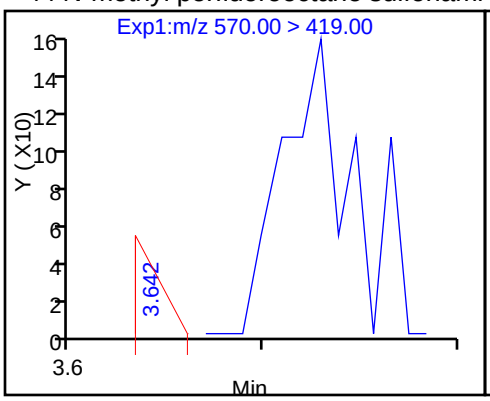
24 Perfluorodecanoic acid



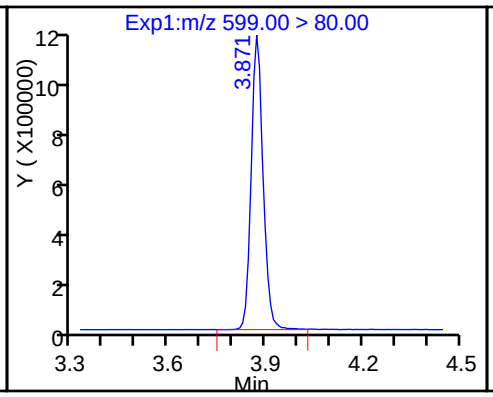
D 45 d3-NMeFOSAA



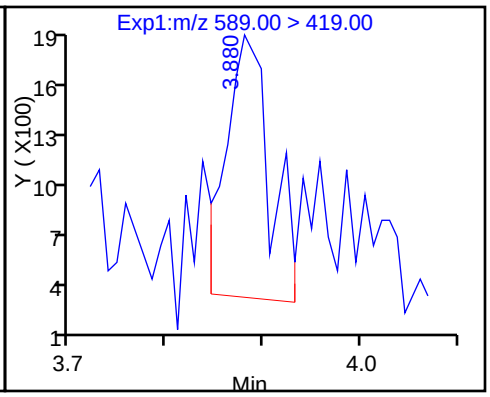
44 N-methyl perfluorooctane sulfonami



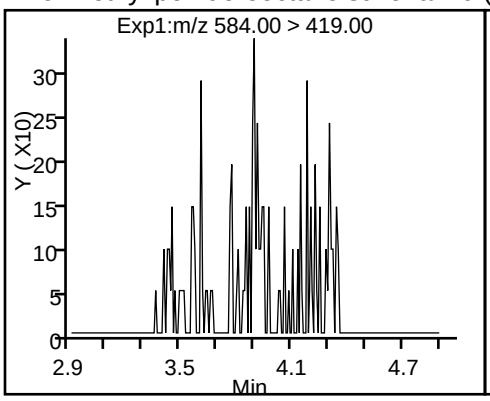
26 Perfluorodecane Sulfonic acid



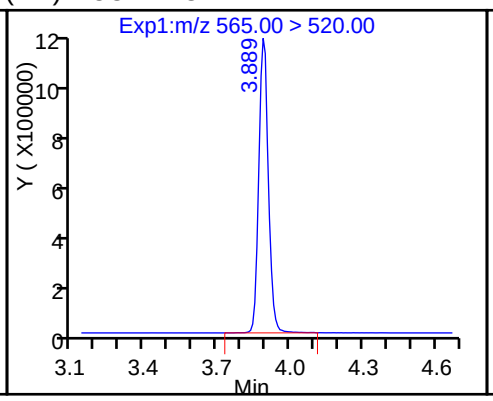
D 46 d5-NEtFOSAA



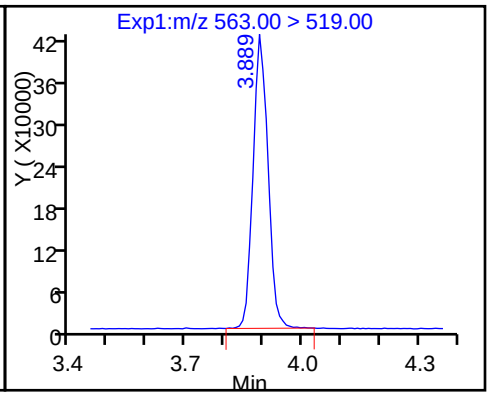
49 N-ethyl perfluorooctane sulfonamid



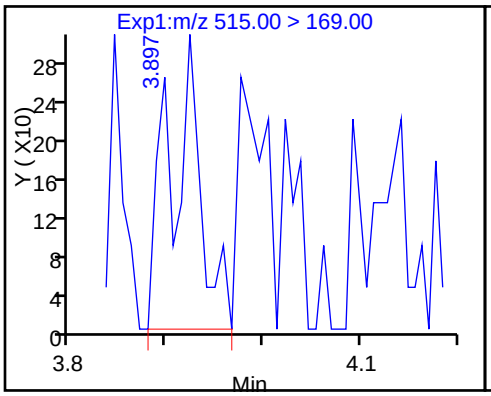
D 27 13C2 PFUnA



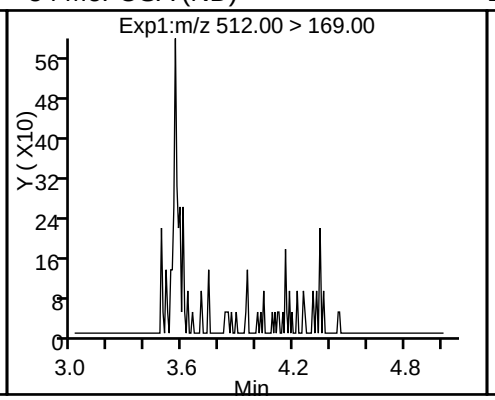
28 Perfluoroundecanoic acid



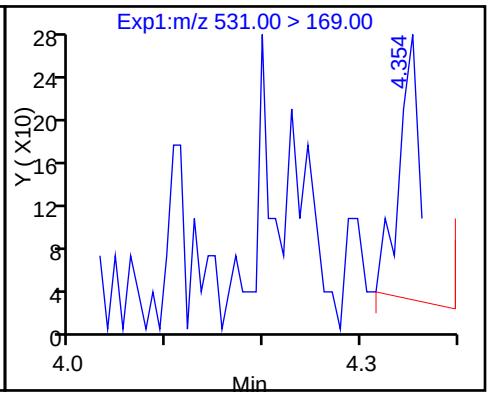
D 52 d-N-MeFOSA-M



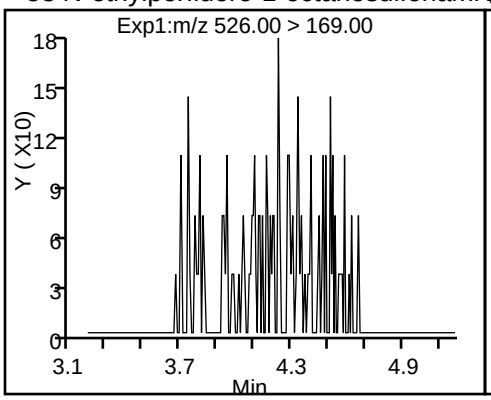
54 MeFOSA (ND)



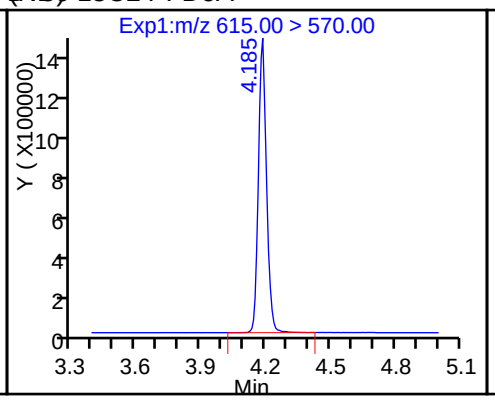
D 51 d-N-EtFOSA-M



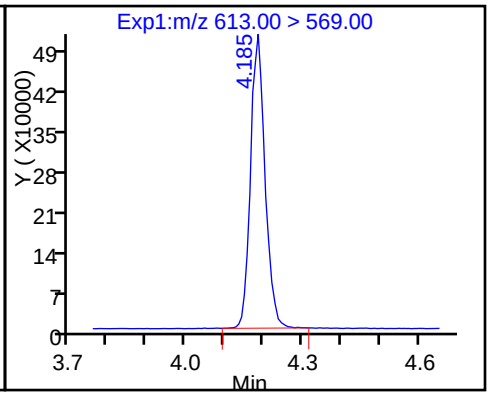
53 N-ethylperfluoro-1-octanesulfonami (ND)



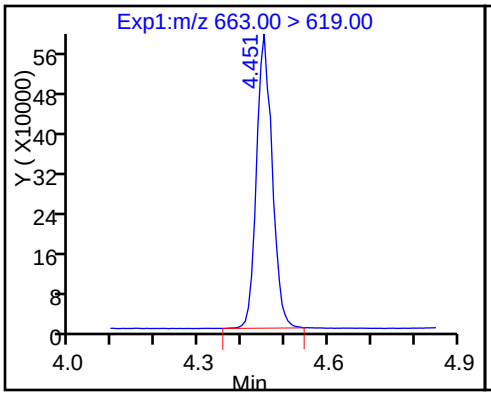
D 30 13C2 PFDoA



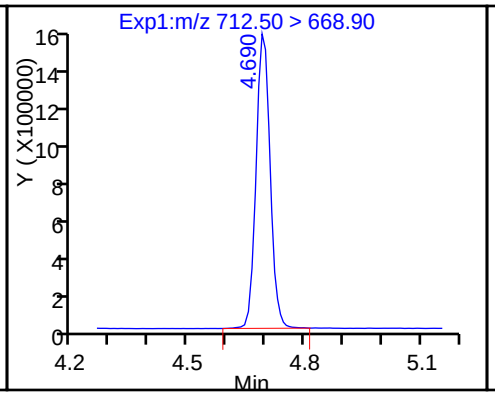
29 Perfluorododecanoic acid



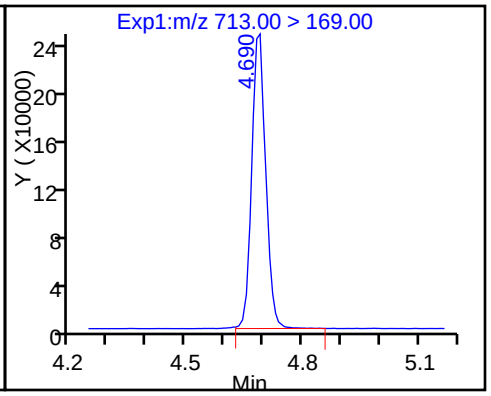
31 Perfluorotridecanoic acid



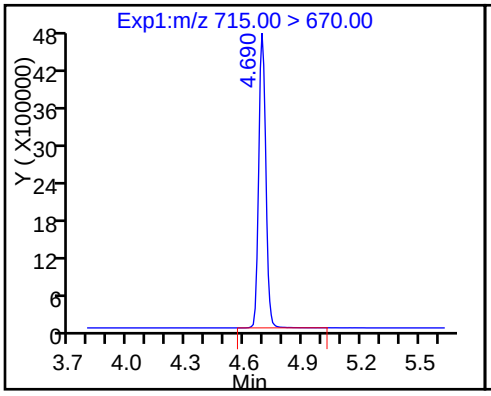
33 Perfluorotetradecanoic acid



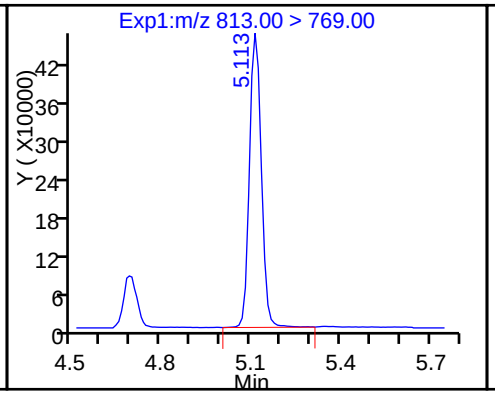
33 Perfluorotetradecanoic acid



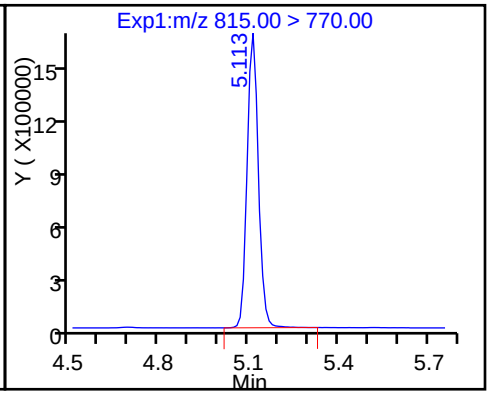
D 32 13C2-PFTeDA



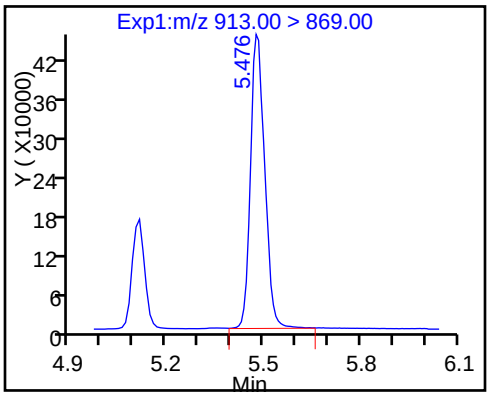
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-08-GW-31-35-MS MS Lab Sample ID: 320-23998-9 MS

Matrix: Water Lab File ID: 21DEC2016A_032.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 10:00

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 254.9(mL) Date Analyzed: 12/21/2016 16:58

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0420	M	0.0025	0.0020	0.00073
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0625		0.0039	0.0029	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0466		0.0025	0.0020	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	50		25-150
STL00991	13C4 PFOS	113		25-150
STL00994	18O2 PFHxS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_032.d
Lims ID: 320-23998-A-9-B MS
Client ID: DPT-16-08-GW-31-35-MS
Sample Type: MS
Inject. Date: 21-Dec-2016 16:58:27 ALS Bottle#: 14 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-9-b ms
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:28:50 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:22:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.549	1.550	-0.001		10594112	30.5		60.9	872552	
1 Perfluorobutyric acid										
212.90 > 169.00	1.549	1.550	-0.001	1.000	3694694	20.4		102	12146	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		11340015	42.6		85.2	775680	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.829	0.0	1.000	4221830	18.9		94.3	39263	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.868	0.0	1.000	11468849	23.8		134		
298.90 > 99.00	1.868	1.868	0.0	1.000	4762884		2.41(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.120	2.117	0.003		8712124	35.5		71.1	582165	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.129	2.126	0.003	1.000	3141905	19.4		97.1	16677	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.456	2.460	-0.004	1.000	2674699	19.2		96.0	22721	
D 11 13C4-PFHpA										
367.00 > 322.00	2.456	2.460	-0.004		7115424	31.4		62.9	553420	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.471	2.475	-0.004	1.000	20931357	59.7		328		
D 10 18O2 PFHxS										
403.00 > 84.00	2.471	2.475	-0.004		16113009	49.3		104	578358	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.785	2.789	-0.004	1.000	11230	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.801	2.797	0.004		1270	0.0109		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.809	2.821	-0.012		5741108	24.9		49.8	310009	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.817	2.821	-0.004	1.000	2465846	21.4		107	23330	M
413.00 > 169.00	2.817	2.821	-0.004	1.000	1514192		1.63(0.90-1.10)		89818	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.826	2.821	0.005	1.000	5986841	19.4		102		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.080	3.084	-0.004	1.000	8879448	31.9		172	67880	
499.00 > 99.00	3.186	3.084	0.102	1.034	1817689		4.89(0.90-1.10)		57469	
D 17 13C4 PFOS										
503.00 > 80.00	3.186	3.190	-0.004		13393246	53.8		113	525006	
D 19 13C5 PFNA										
468.00 > 423.00	3.194	3.190	0.004		2728865	15.4		30.7	191782	
20 Perfluorononanoic acid										
463.00 > 419.00	3.194	3.198	-0.004	1.000	1013815	19.5		97.6	13055	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.526	3.514	0.012	1.000	103357	21.2		106	8396	
D 21 13C8 FOSA										
506.00 > 78.00	3.518	3.514	0.004		261974	0.6820		1.4	19675	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.535	3.540	-0.005	1.000	7447	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.535	3.548	-0.013		1018	0.009475		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.543	3.556	-0.013		1905559	12.1		24.2	71017	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.543	3.556	-0.013	1.000	689436	19.2		95.8	20738	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.702	3.707	-0.005		1649	0.0219		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.610	3.707	-0.097	0.975	836	NR		0.0		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.864	3.868	-0.004		2874	0.0367		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.855	3.868	-0.013	1.000	2928123	17.9		92.8		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.864	3.885	-0.021	1.000	1717	NR		0.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.873	3.886	-0.014	1.000	520621	18.8		93.9	14727	
D 27 13C2 PFUnA										
565.00 > 520.00	3.873	3.886	-0.014		1448716	12.4		24.7	185661	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.039	4.010	0.029		391	0.004113		0.0		
54 MeFOSA										
512.00 > 169.00	3.767	4.010	-0.243	1.000	279	NR		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.164	4.172	-0.008	1.000	665850	19.2		96.2	16703	
D 30 13C2 PFDoA										
615.00 > 570.00	4.164	4.172	-0.008		1884457	17.0		34.0	92990	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.373	4.192	0.181		394	0.004593		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.429	4.444	-0.015	1.000	950633	27.8		139	18229	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.673	4.690	-0.017	1.000	3236674	54.2		271	49152	
713.00 > 169.00	4.664	4.690	-0.026	0.998	490910		6.59(0.00-0.00)		62747	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.673	4.690	-0.017		9822565	43.2		86.4	514254	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.081	5.103	-0.022	1.000	970829	26.4		132	2836	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.081	5.103	-0.022		2879783	23.1		46.2	95262	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.444	5.461	-0.017	1.000	291134	7.50		37.5	591	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Report Date: 22-Dec-2016 10:28:58 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_032.d

Injection Date: 21-Dec-2016 16:58:27 Instrument ID: A8_N

Lims ID: 320-23998-A-9-B MS

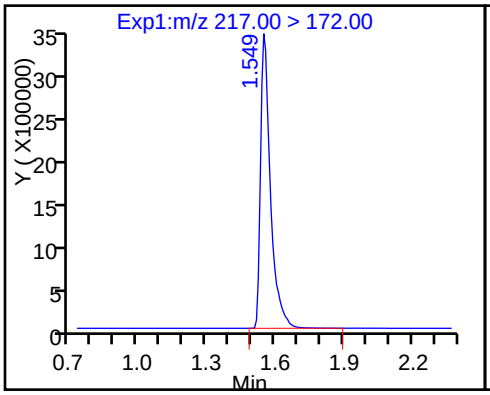
Client ID: DPT-16-08-GW-31-35-MS

Operator ID: A8-PC\A8 ALS Bottle#: 14 Worklist Smp#: 22

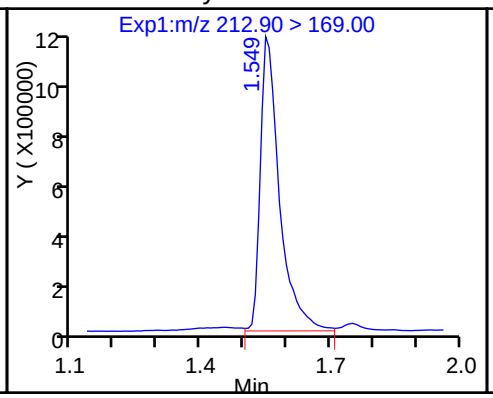
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

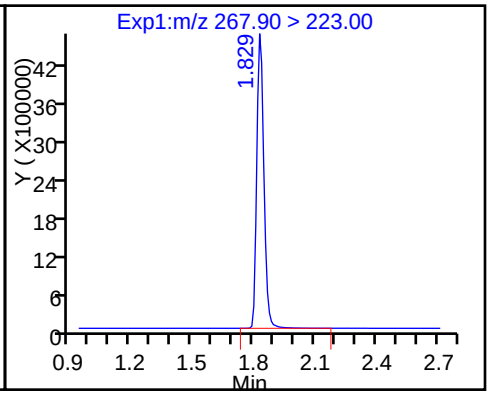
D 2 13C4 PFBA



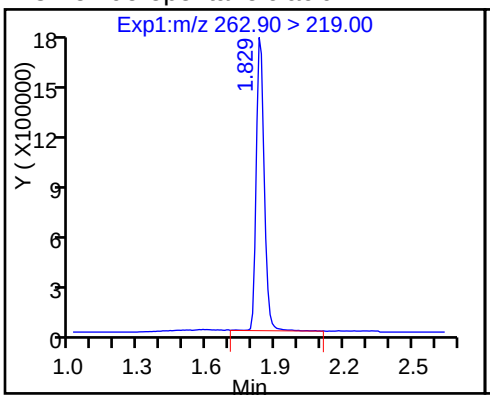
1 Perfluorobutyric acid



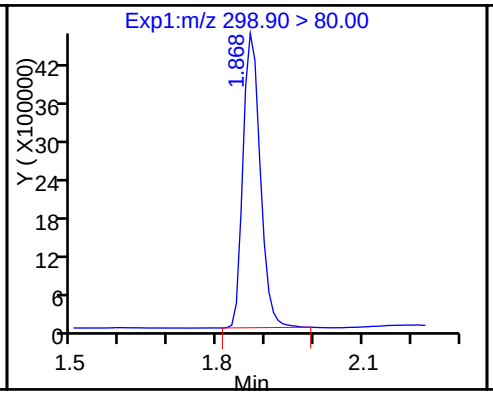
D 4 13C5-PFPeA



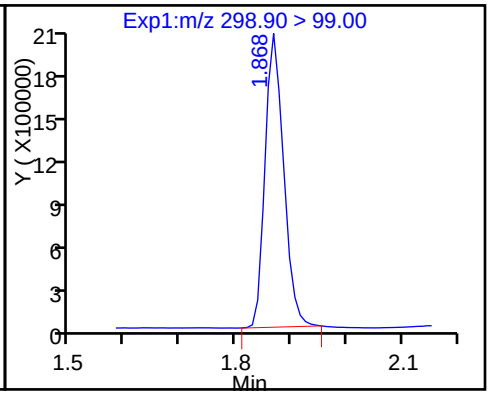
3 Perfluoropentanoic acid



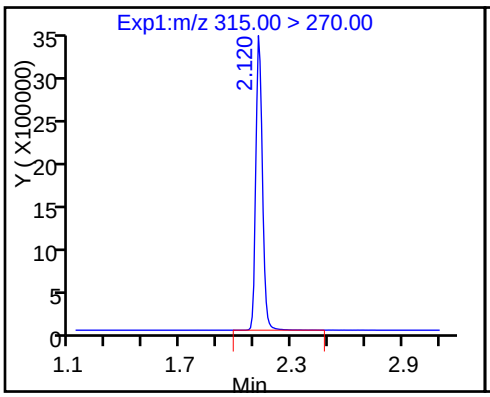
5 Perfluorobutanesulfonic acid



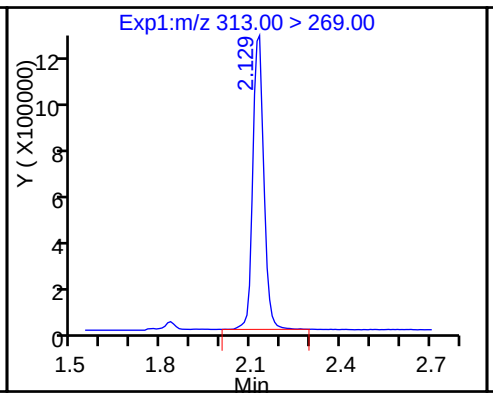
5 Perfluorobutanesulfonic acid



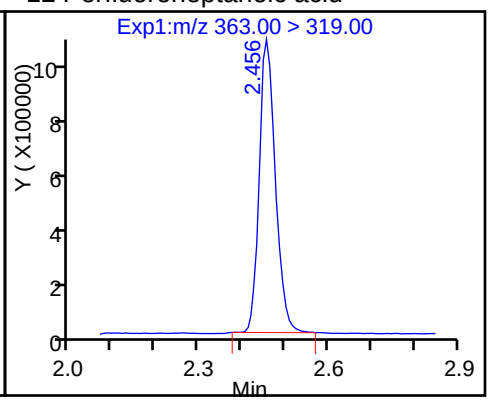
D 6 13C2 PFHxA



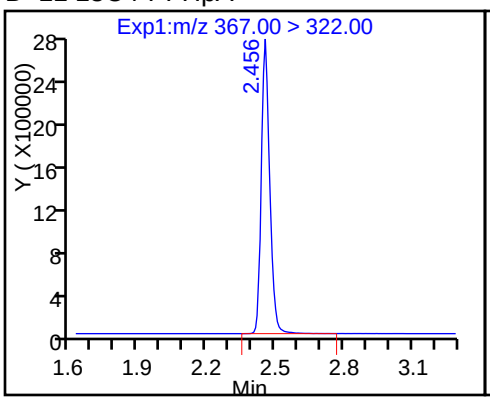
7 Perfluorohexanoic acid



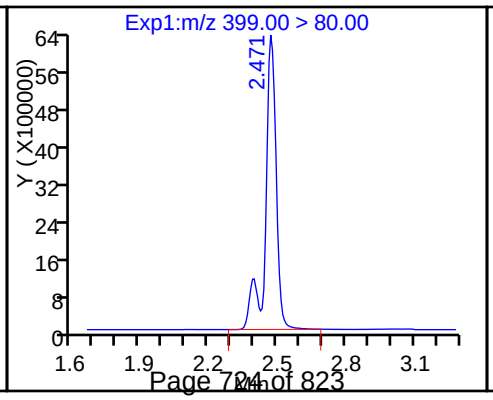
12 Perfluoroheptanoic acid



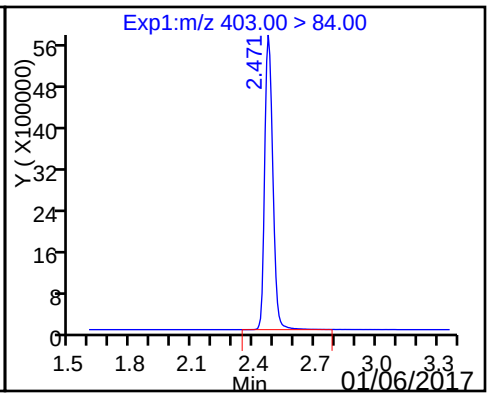
D 11 13C4-PFHpA



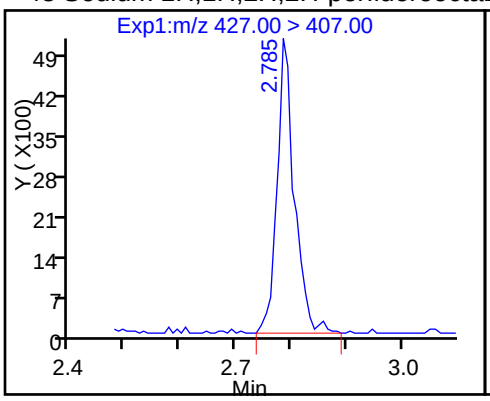
9 Perfluorohexanesulfonic acid



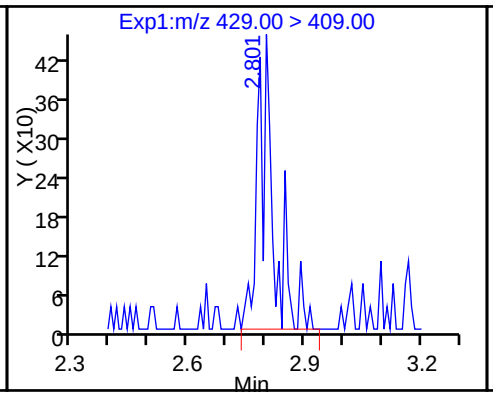
D 10 18O2 PFHxS



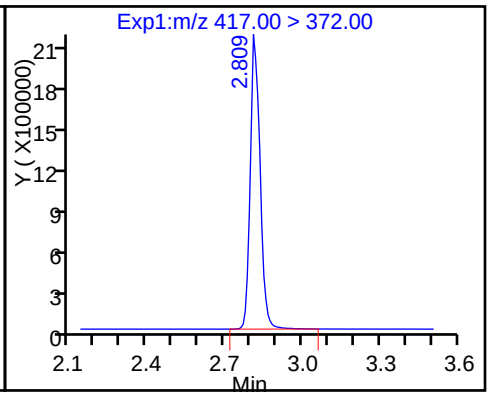
48 Sodium 1H,1H,2H,2H-perfluorooctane



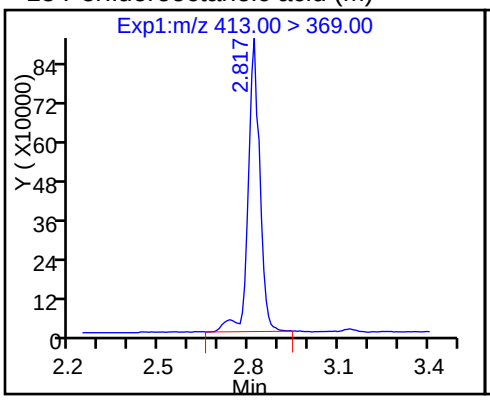
D 47 M2-6:2FTS



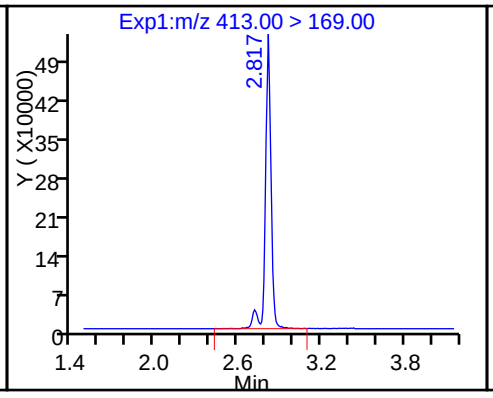
D 14 13C4 PFOA



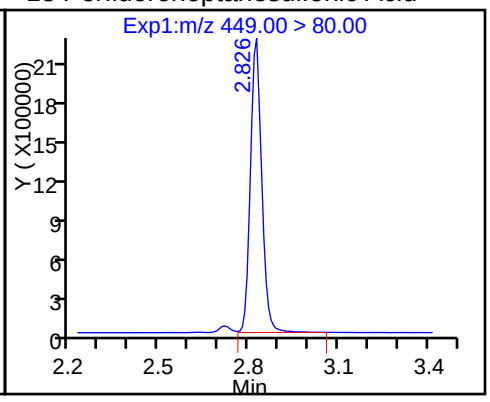
15 Perfluorooctanoic acid (M)



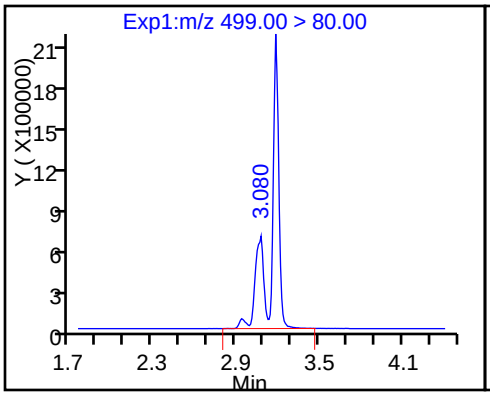
15 Perfluorooctanoic acid



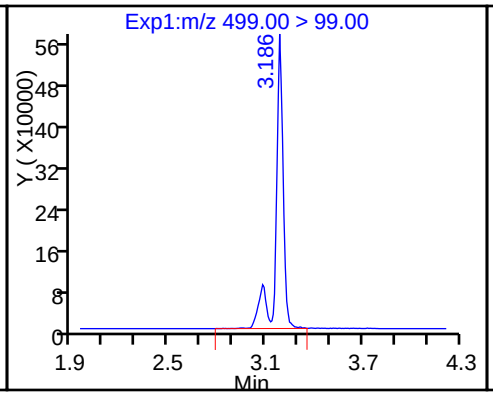
13 Perfluoroheptanesulfonic Acid



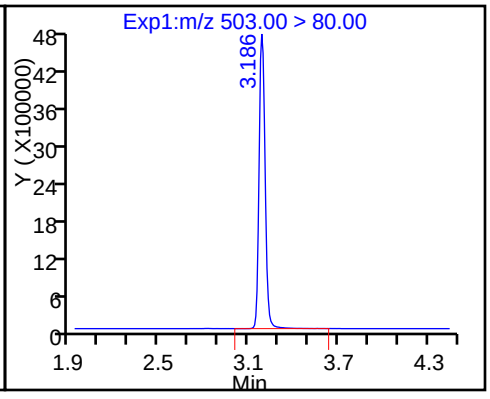
18 Perfluorooctane sulfonic acid



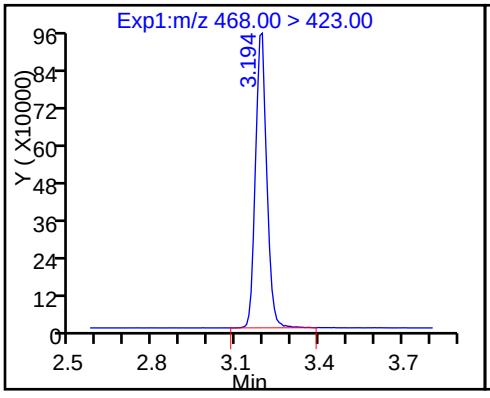
18 Perfluorooctane sulfonic acid



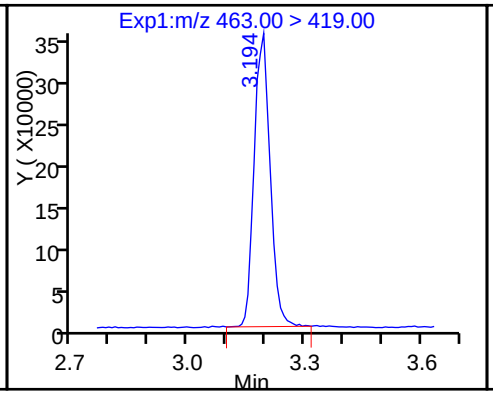
D 17 13C4 PFOS



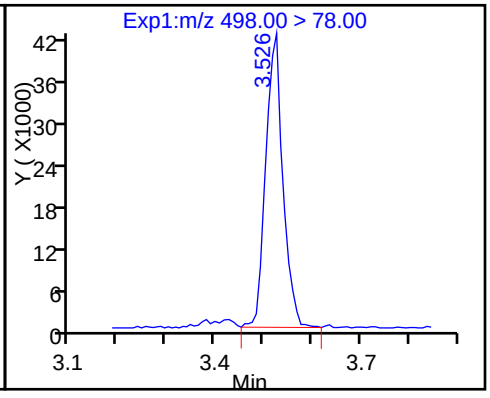
D 19 13C5 PFNA



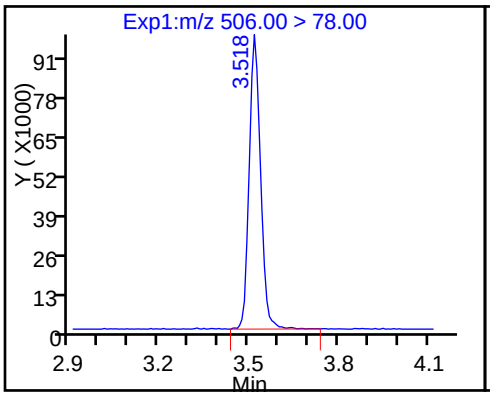
20 Perfluorononanoic acid



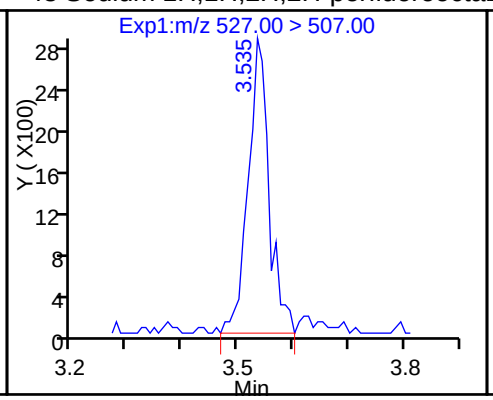
22 Perfluorooctane Sulfonamide



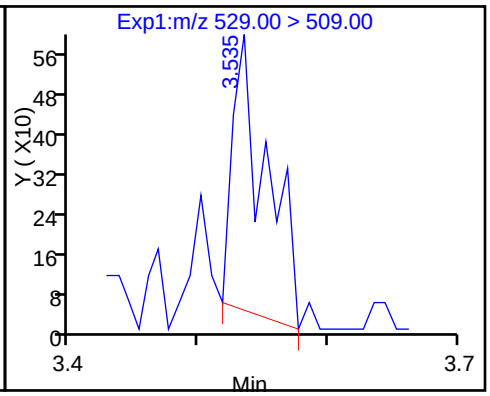
D 21 13C8 FOSA



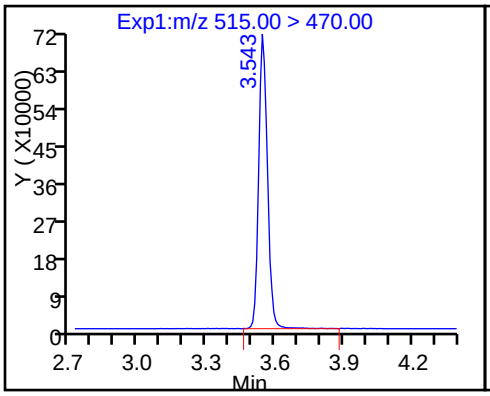
43 Sodium 1H,1H,2H,2H-perfluorooctane



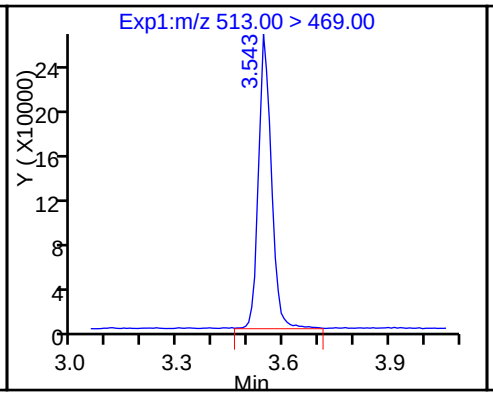
D 42 M2-8:2FTS



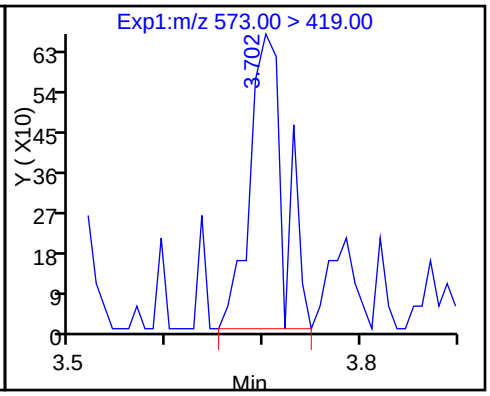
D 23 13C2 PFDA



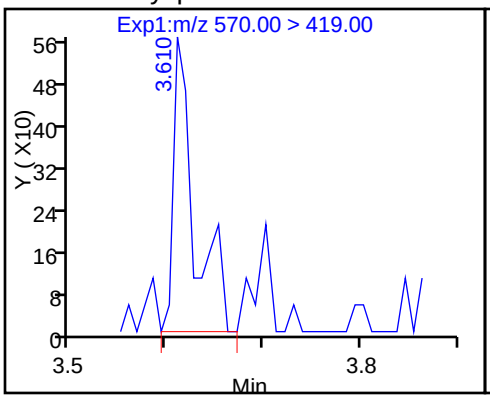
24 Perfluorodecanoic acid



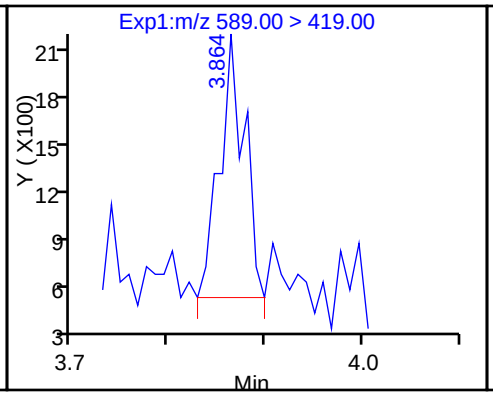
D 45 d3-NMeFOSAA



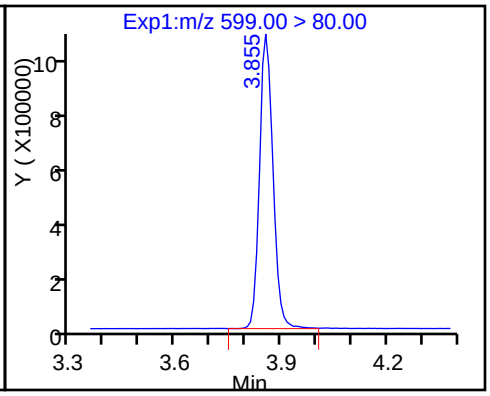
44 N-methyl perfluorooctane sulfonami



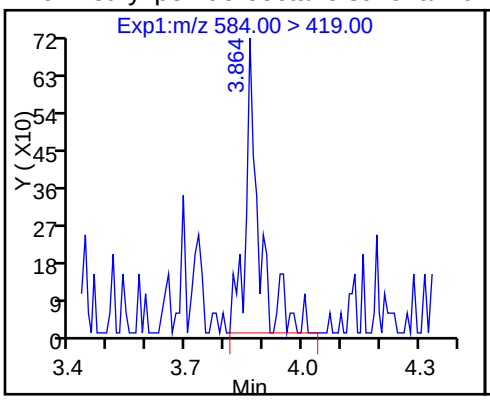
D 46 d5-NEtFOSAA



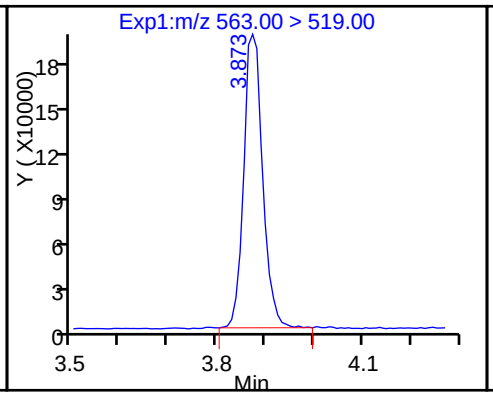
26 Perfluorodecane Sulfonic acid



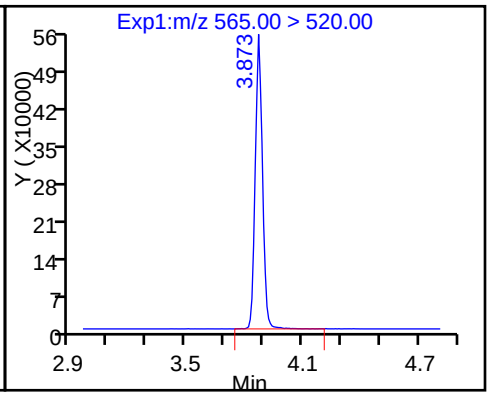
49 N-ethyl perfluorooctane sulfonamid



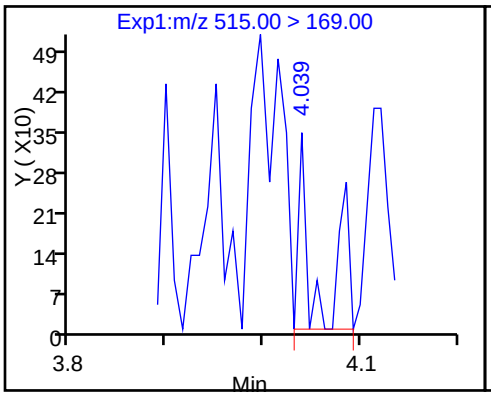
28 Perfluoroundecanoic acid



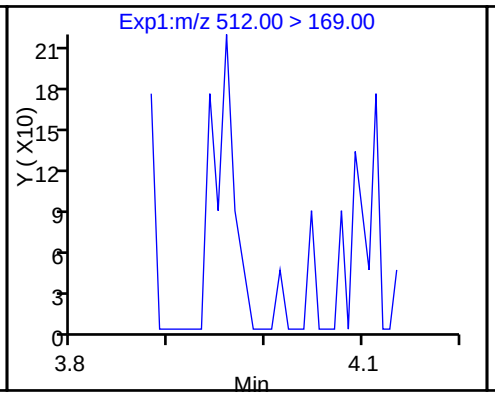
D 27 13C2 PFUnA



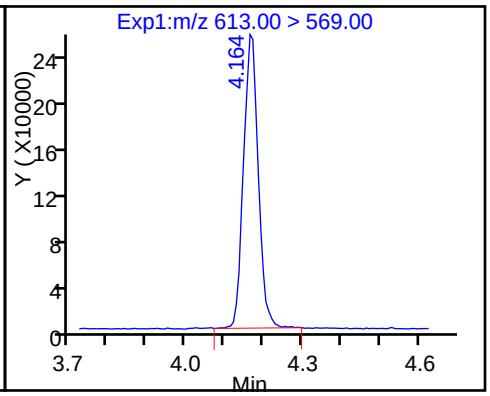
D 52 d-N-MeFOSA-M



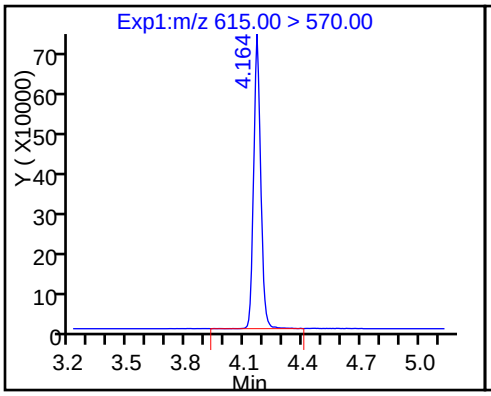
54 MeFOSA



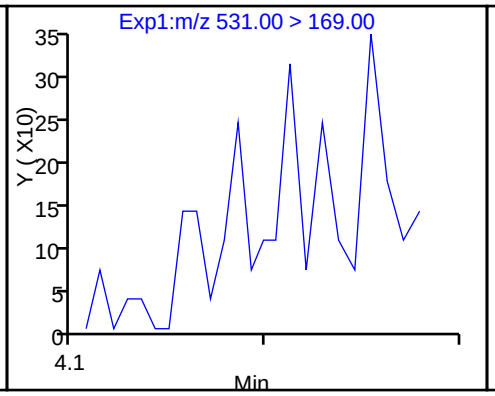
29 Perfluorododecanoic acid



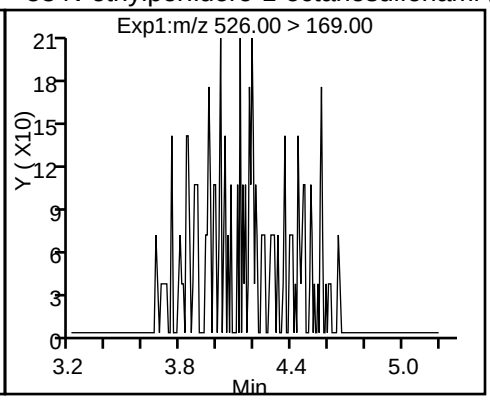
D 30 13C2 PFDoA



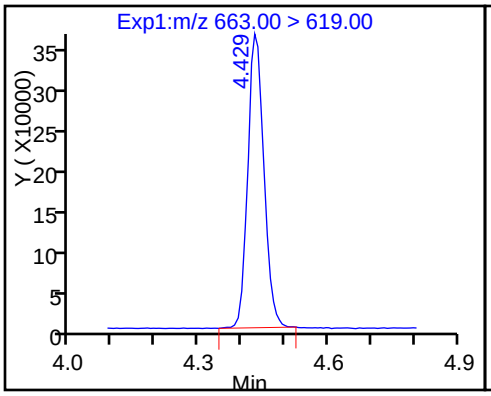
D 51 d-N-EtFOSA-M



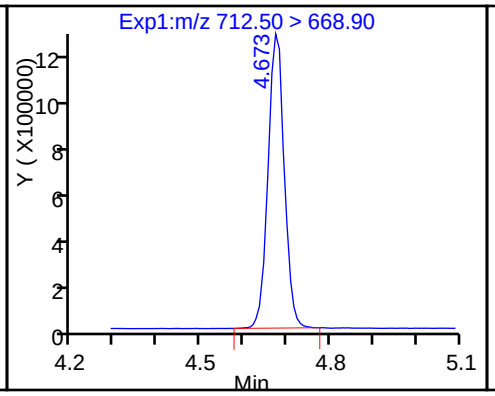
53 N-ethylperfluoro-1-octanesulfonami (ND)



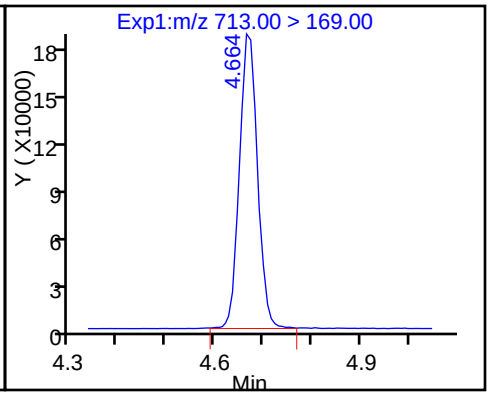
31 Perfluorotridecanoic acid



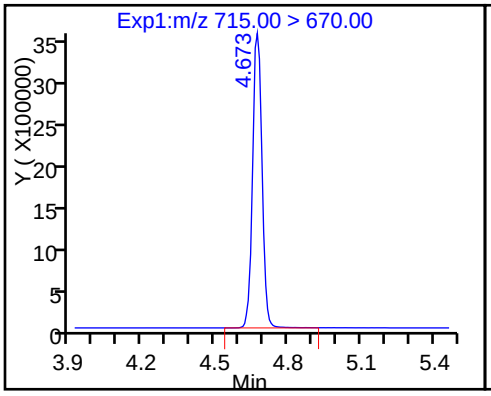
33 Perfluorotetradecanoic acid



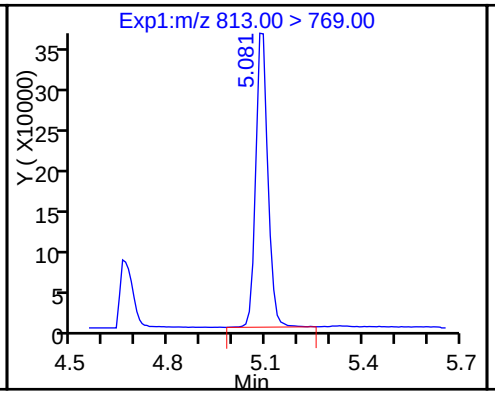
33 Perfluorotetradecanoic acid



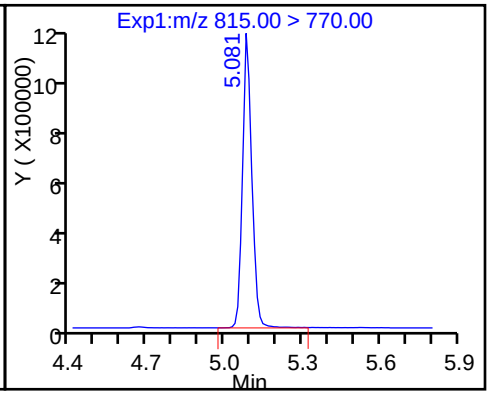
D 32 13C2-PFTeDA



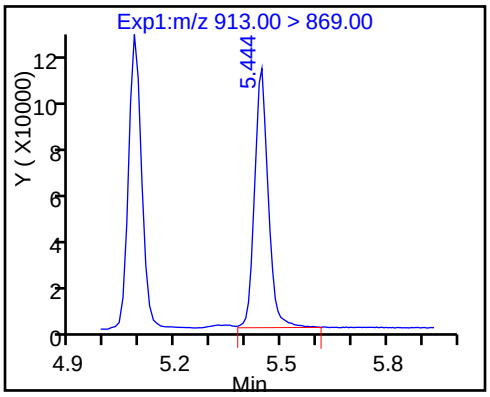
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

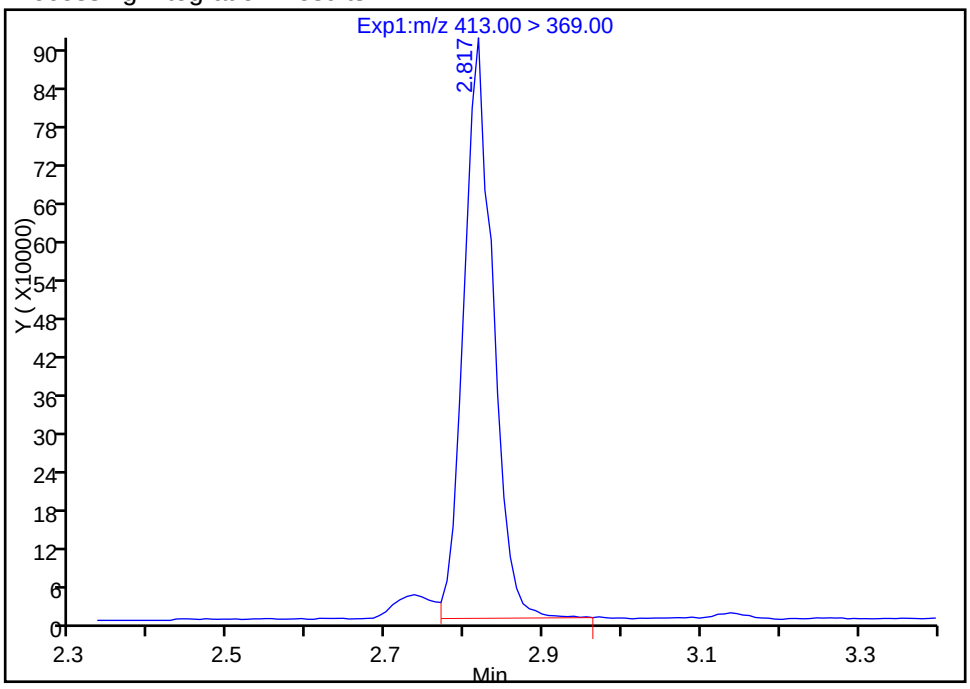
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_032.d				
Injection Date:	21-Dec-2016 16:58:27	Instrument ID:	A8_N		
Lims ID:	320-23998-A-9-B MS				
Client ID:	DPT-16-08-GW-31-35-MS				
Operator ID:	A8-PC\A8	ALS Bottle#:	14	Worklist Smp#:	22
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

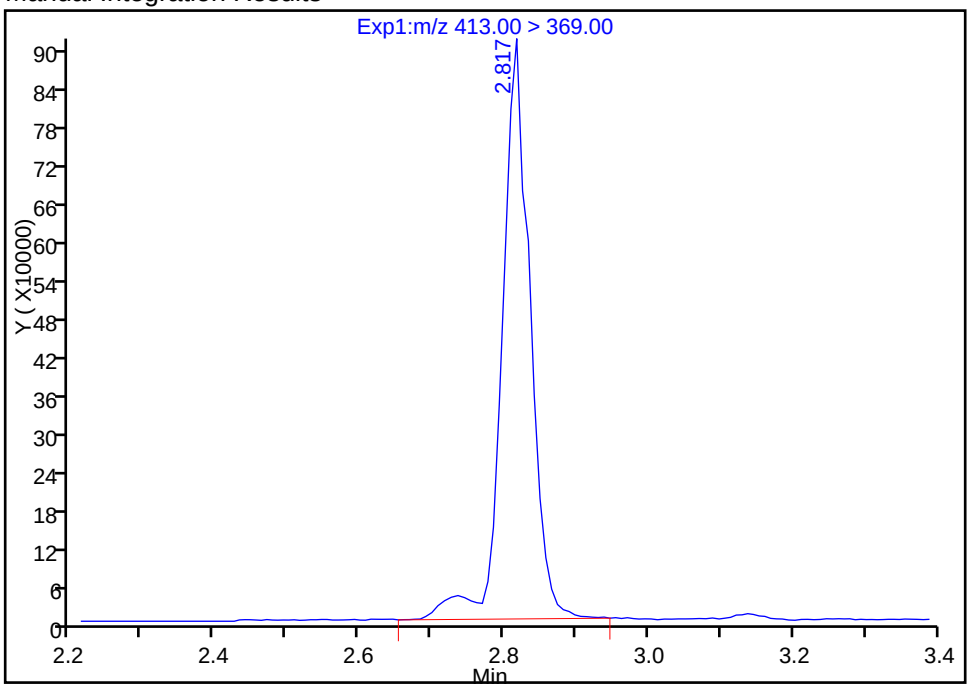
Processing Integration Results

RT: 2.82
Area: 2343236
Amount: 20.343577
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 2465846
Amount: 21.408056
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:22:39

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-06-GW-31-35-MS MS Lab Sample ID: 320-23998-13 MS

Matrix: Water Lab File ID: 21DEC2016A_042.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 12:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 250.3(mL) Date Analyzed: 12/21/2016 18:13

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.15*	*E M 4*	*0.0025*	0.0020	*0.00075*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.16*	*E 4*	*0.0040*	0.0030	*0.0013*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.485*	*E 4*	*0.0025*	0.0020	*0.00092*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	55		25-150
STL00991	13C4 PFOS	61		25-150
STL00994	18O2 PFHxS	33		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_042.d
Lims ID: 320-23998-A-13-B MS
Client ID: DPT-16-06-GW-31-35-MS
Sample Type: MS
Inject. Date: 21-Dec-2016 18:13:25 ALS Bottle#: 20 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-13-b ms
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:07 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:30:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		7816525	22.5		45.0	506504	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	10749435	80.5		403	44175	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		9972493	37.5		75.0	397676	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.829	0.0	1.000	27146058	137.9		690	74270	
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.868	1.868	0.0	1.000	37292324	242.7		1373		E
298.90 > 99.00	1.868	1.868	0.0	1.000	19254011		1.94(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.117	2.122	-0.005		7414329	30.2		60.5	333191	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.117	2.122	-0.005	1.000	64532140	468.6		2343	131326	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.405	2.395	0.010	1.000	167258129	1497.8		8229		E
D 11 13C4-PFHpA										
367.00 > 322.00	2.436	2.459	-0.023		3841306	17.0		33.9	264607	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.436	2.459	-0.023	1.000	6447086	85.7		429	5708	
D 10 18O2 PFHxS										
403.00 > 84.00	2.463	2.474	-0.011		5128426	15.7		33.2	54388	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.780	2.789	-0.009	1.000	5370741	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.780	2.789	-0.009		290169	2.48		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.812	2.814	-0.002		6384523	27.7		55.4	348372	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.820	2.814	0.006	1.000	73783188	576.0		2880	212054	EM
413.00 > 169.00	2.820	2.814	0.006	1.000	61740203		1.20(0.90-1.10)		0.0	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.820	2.822	-0.002	1.000	11329714	67.8		356		
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.159	3.076	0.083	1.000	162779556	1079.0		5814	250538	E
499.00 > 99.00	3.151	3.076	0.075	0.997	43513624		3.74(0.90-1.10)		199084	
D 17 13C4 PFOS										
503.00 > 80.00	3.183	3.182	0.001		7251132	29.1		61.0	146507	
D 19 13C5 PFNA										
468.00 > 423.00	3.175	3.191	-0.016		3709721	20.9		41.8	172689	
20 Perfluorononanoic acid										
463.00 > 419.00	3.175	3.191	-0.016	1.000	2319280	32.8		164	901	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.511	3.523	-0.012	1.000	470750	19.0		95.0	12676	
D 21 13C8 FOSA										
506.00 > 78.00	3.511	3.523	-0.012		1327784	3.46		6.9	89782	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.520	3.529	-0.009	0.998	336147	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.528	3.529	-0.001		21333	0.1985		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.536	3.548	-0.012		5623585	35.8		71.5	177046	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.545	3.548	-0.003	1.000	2202186	20.7		104	8121	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.683	3.694	-0.011		3819	0.0507		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.714	3.705	0.009	1.008	521	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.850	3.860	-0.010	1.000	1337340	15.1		78.3		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.859	3.866	-0.007		3026	0.0386		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.859	3.875	-0.016	1.000	2234	NR		0.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.868	3.877	-0.009	1.000	1394004	19.6		98.1	14279	
D 27 13C2 PFUnA										
565.00 > 520.00	3.868	3.877	-0.009		3714417	31.7		63.4	175695	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.954	4.009	-0.055		238	0.002503		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.161	4.166	-0.005	1.000	1282814	18.6		92.9	30981	
D 30 13C2 PFDoA										
615.00 > 570.00	4.161	4.166	-0.005		3760570	33.9		67.8	133388	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.189	4.191	-0.002		362	0.004220		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.425	4.430	-0.005	1.000	1620673	23.8		119	35325	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.670	4.676	-0.006	1.000	4256258	35.7		179	61912	
713.00 > 169.00	4.670	4.676	-0.006	1.000	676343		6.29(0.00-0.00)		67597	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.670	4.676	-0.006		13135568	57.8		116	1058085	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.079	5.094	-0.015	1.000	1657106	22.5		112	3676	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.090	5.094	-0.004		4726407	37.9		75.9	122538	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.436	5.446	-0.010	1.000	964939	12.5		62.3	1173	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 22-Dec-2016 10:36:13 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_042.d

Injection Date: 21-Dec-2016 18:13:25 Instrument ID: A8_N

Lims ID: 320-23998-A-13-B MS

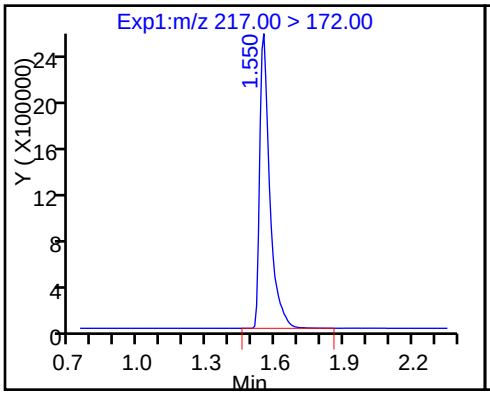
Client ID: DPT-16-06-GW-31-35-MS

Operator ID: A8-PC\A8 ALS Bottle#: 20 Worklist Smp#: 32

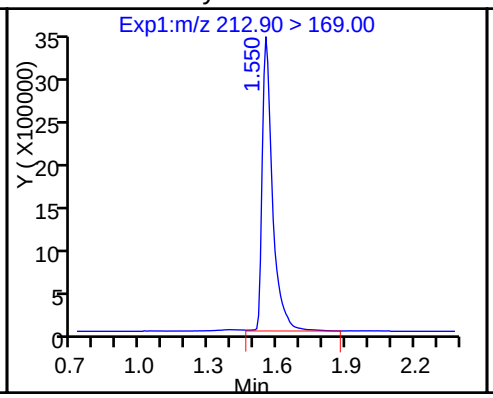
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

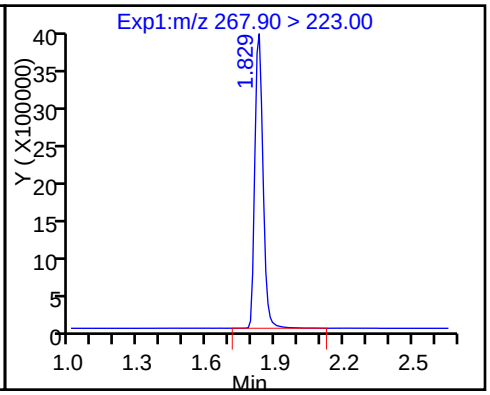
D 2 13C4 PFBA



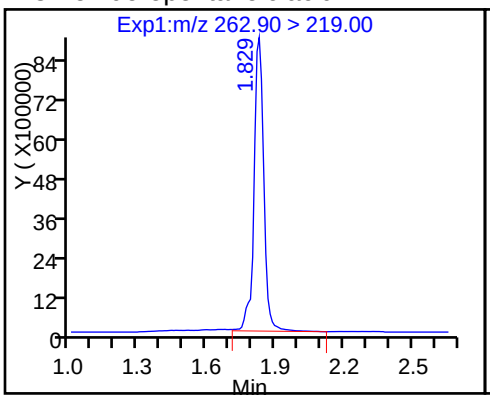
1 Perfluorobutyric acid



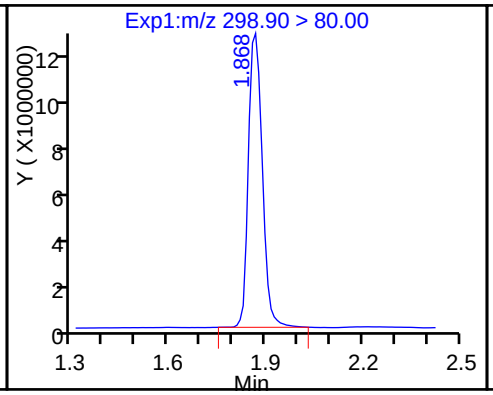
D 4 13C5-PFPeA



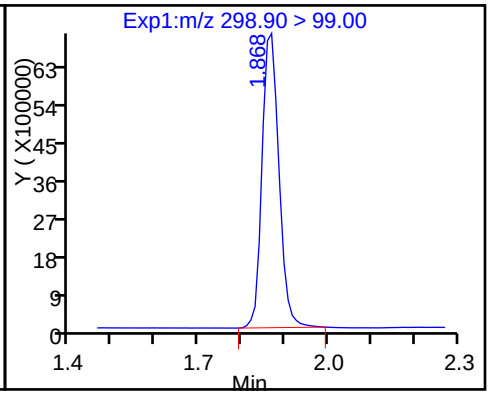
3 Perfluoropentanoic acid



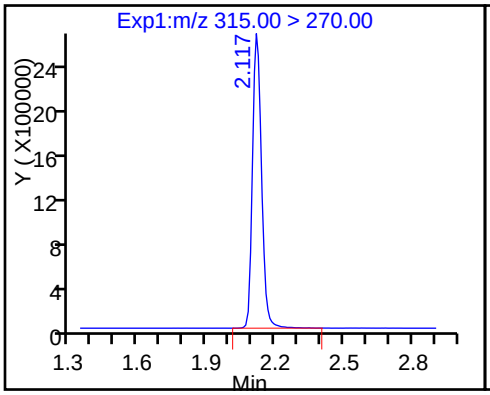
5 Perfluorobutanesulfonic acid



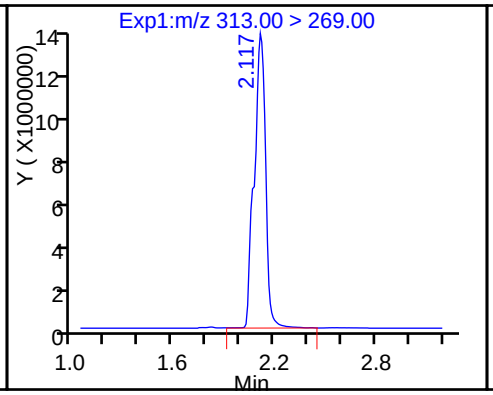
5 Perfluorobutanesulfonic acid



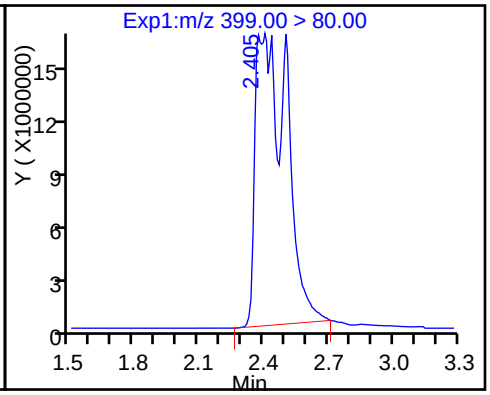
D 6 13C2 PFHxA



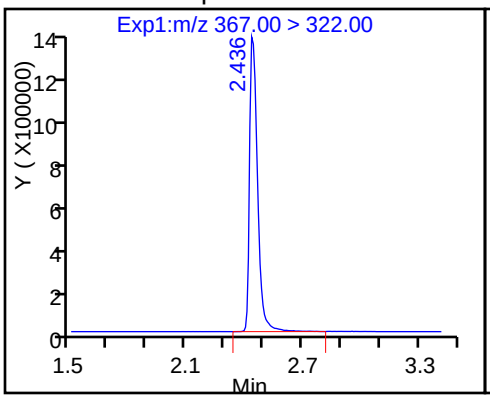
7 Perfluorohexanoic acid



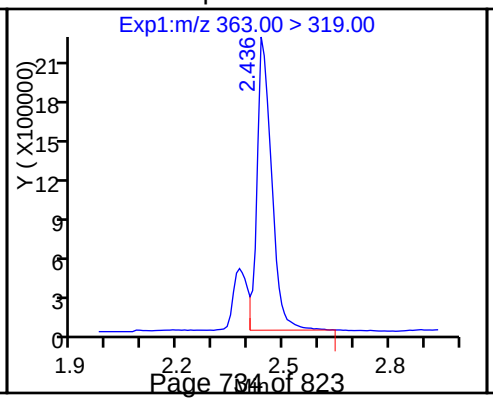
9 Perfluorohexanesulfonic acid



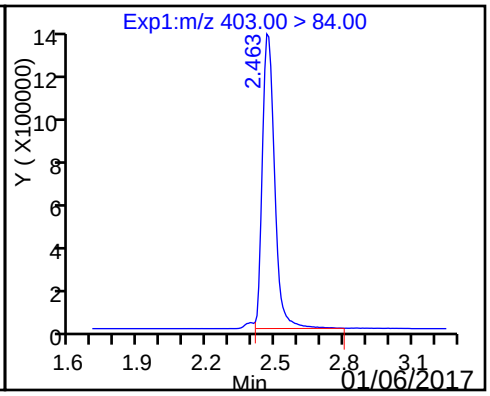
D 11 13C4-PFHpA



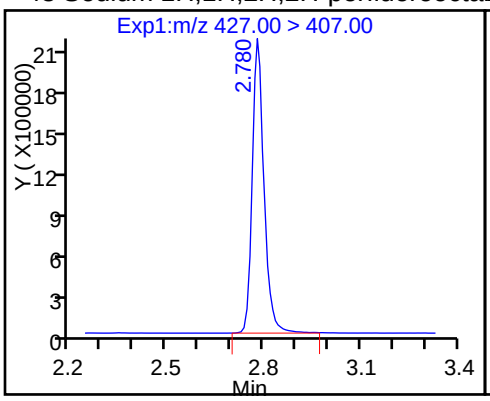
12 Perfluoroheptanoic acid



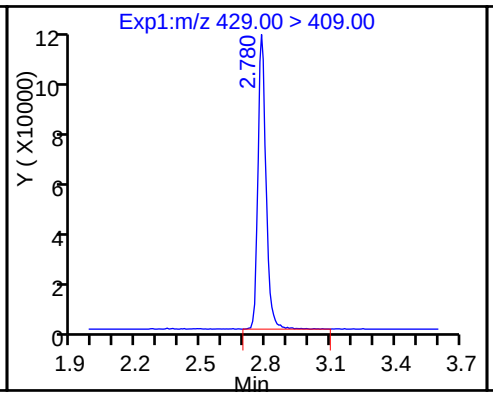
D 10 18O2 PFHxS



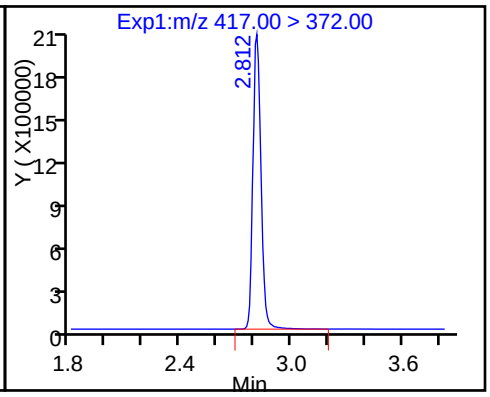
48 Sodium 1H,1H,2H,2H-perfluorooctane



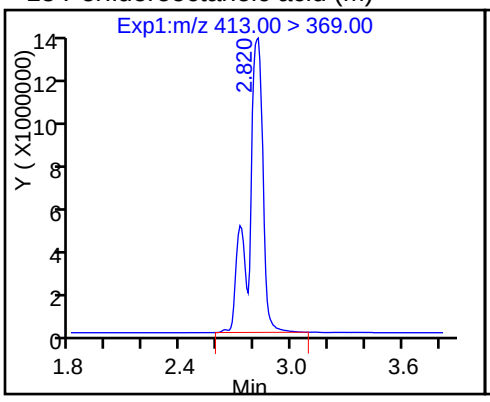
D 47 M2-6:2FTS



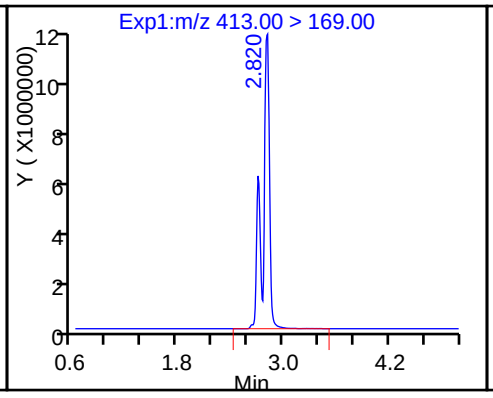
D 14 13C4 PFOA



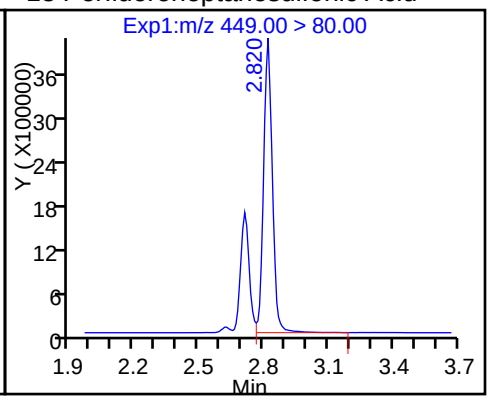
15 Perfluorooctanoic acid (M)



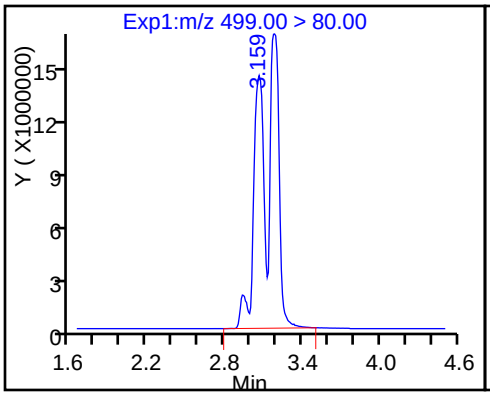
15 Perfluorooctanoic acid



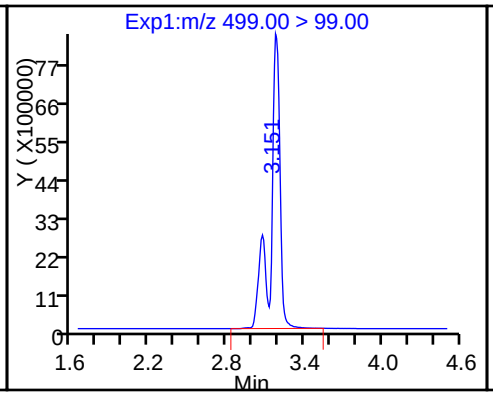
13 Perfluoroheptanesulfonic Acid



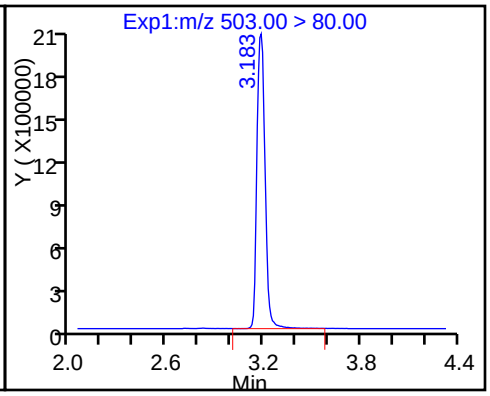
18 Perfluorooctane sulfonic acid



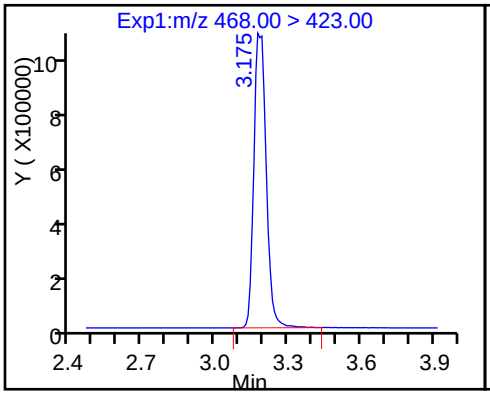
18 Perfluorooctane sulfonic acid



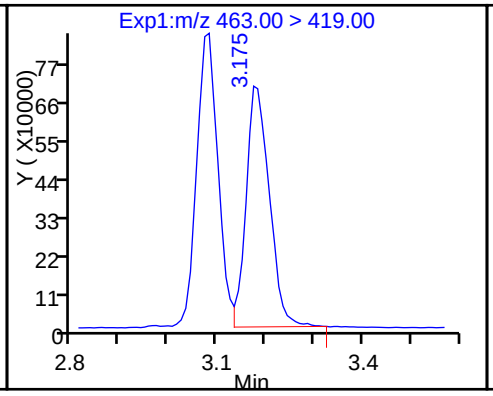
D 17 13C4 PFOS



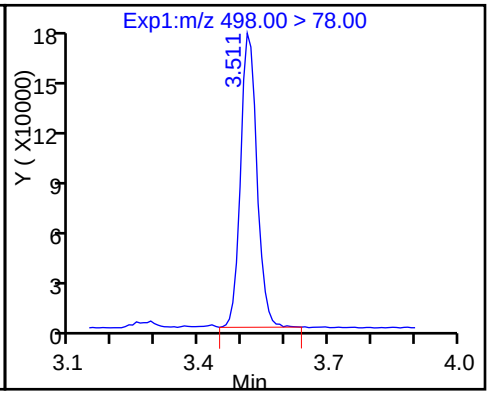
D 19 13C5 PFNA



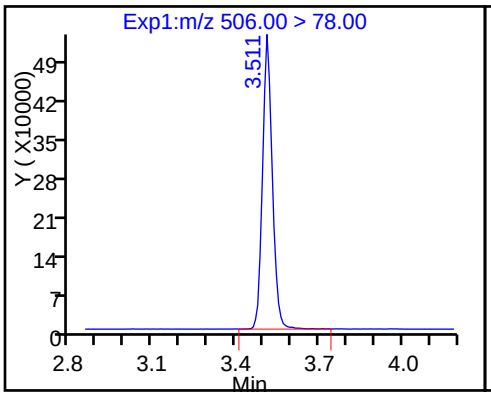
20 Perfluorononanoic acid



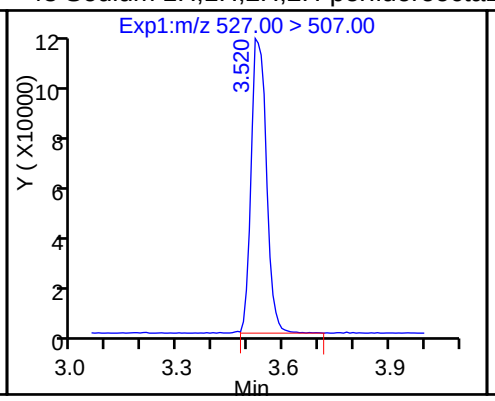
22 Perfluorooctane Sulfonamide



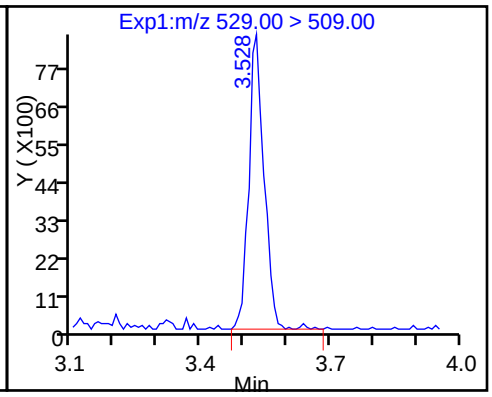
D 21 13C8 FOSA



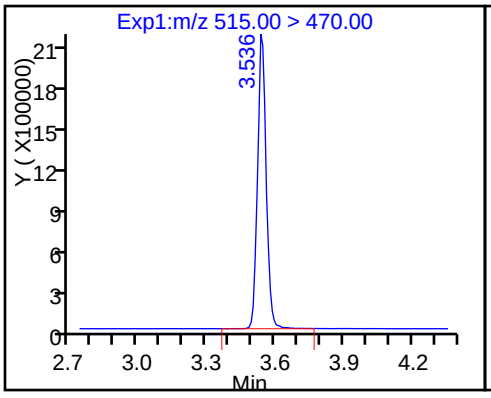
43 Sodium 1H,1H,2H,2H-perfluorooctane



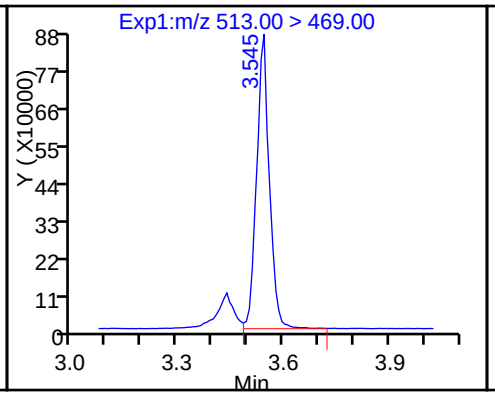
D 42 M2-8:2FTS



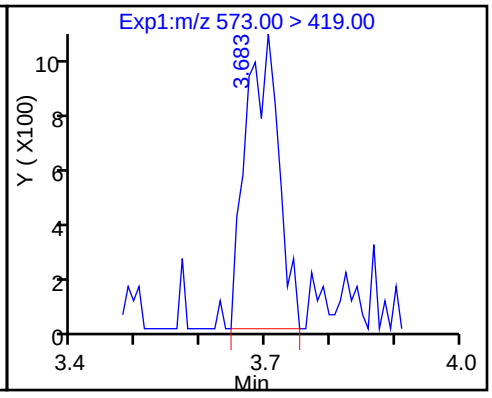
D 23 13C2 PFDA



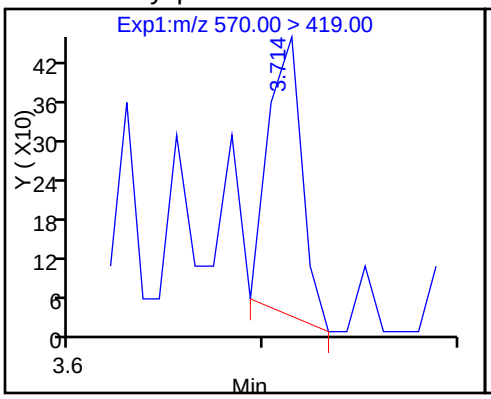
24 Perfluorodecanoic acid



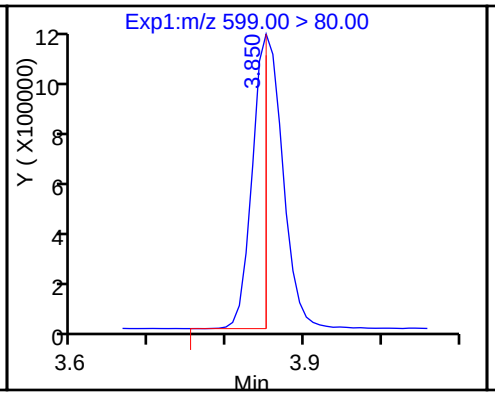
D 45 d3-NMeFOSAA



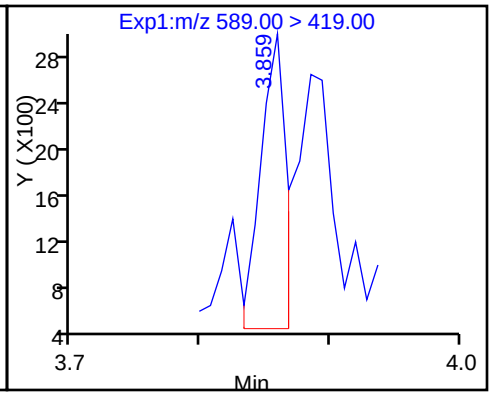
44 N-methyl perfluorooctane sulfonami



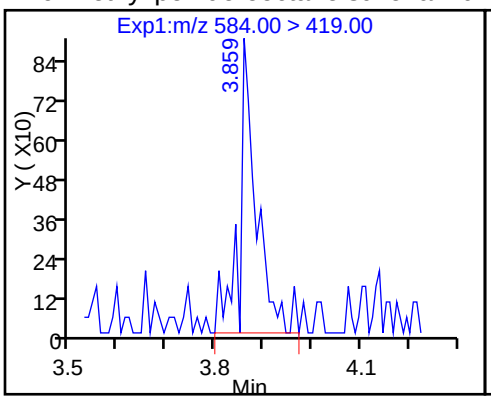
26 Perfluorodecane Sulfonic acid



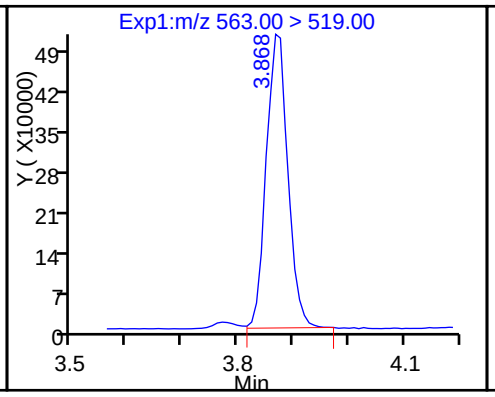
D 46 d5-NEtFOSAA



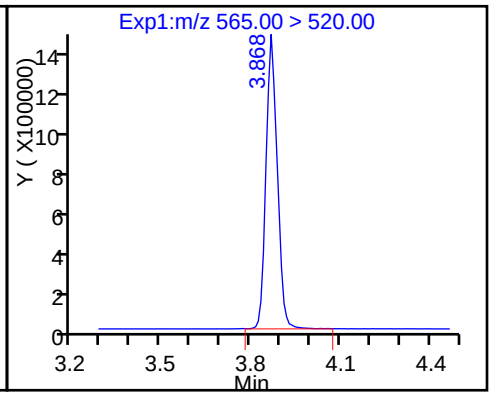
49 N-ethyl perfluorooctane sulfonamid



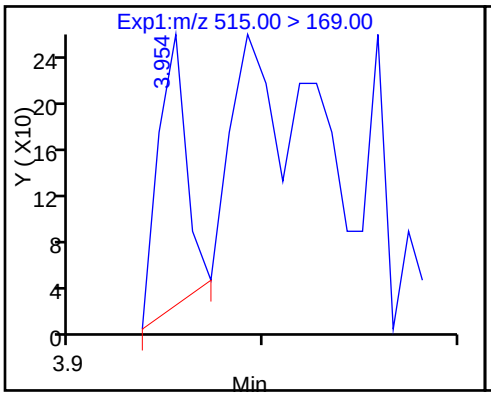
28 Perfluoroundecanoic acid



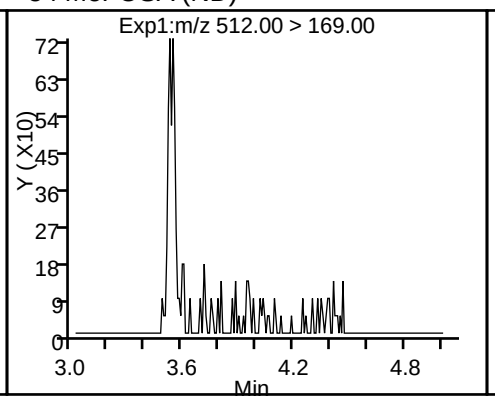
D 27 13C2 PFUnA



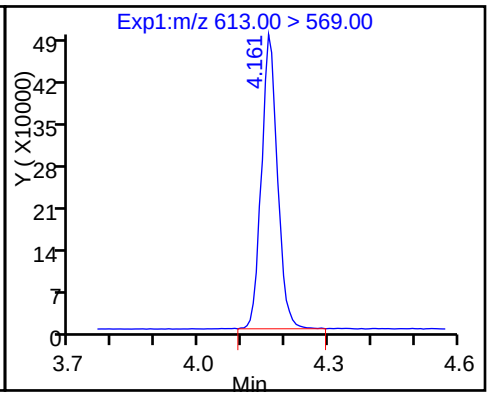
D 52 d-N-MeFOSA-M



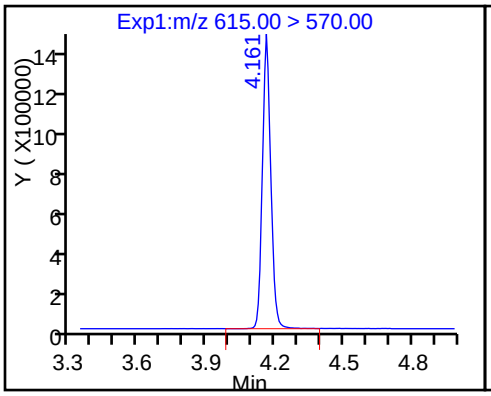
54 MeFOSA (ND)



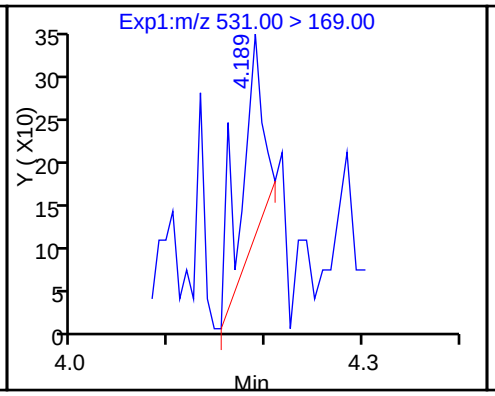
29 Perfluorododecanoic acid



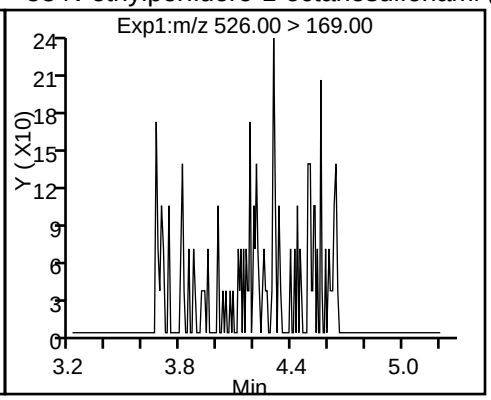
D 30 13C2 PFDoA



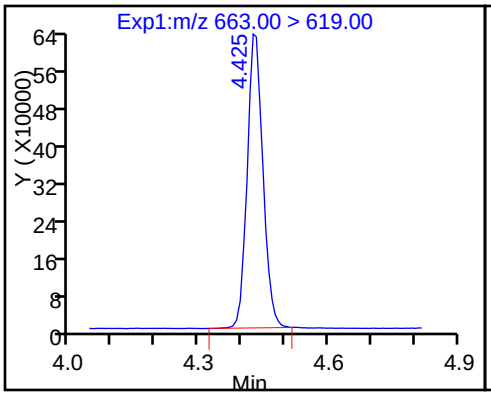
D 51 d-N-EtFOSA-M



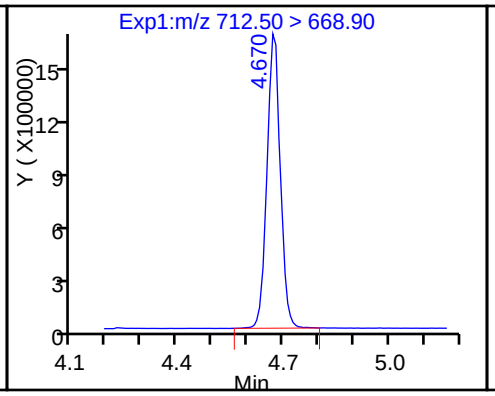
53 N-ethylperfluoro-1-octanesulfonami (ND)



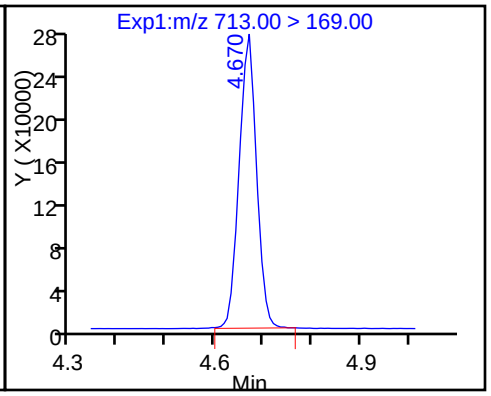
31 Perfluorotridecanoic acid



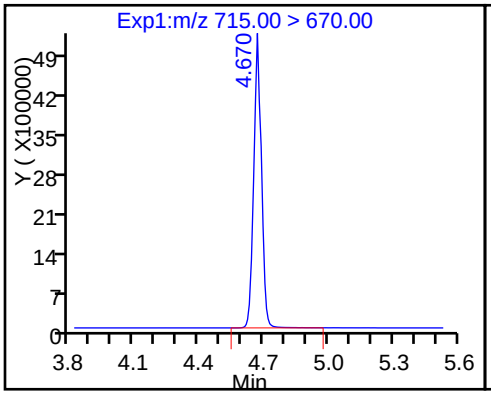
33 Perfluorotetradecanoic acid



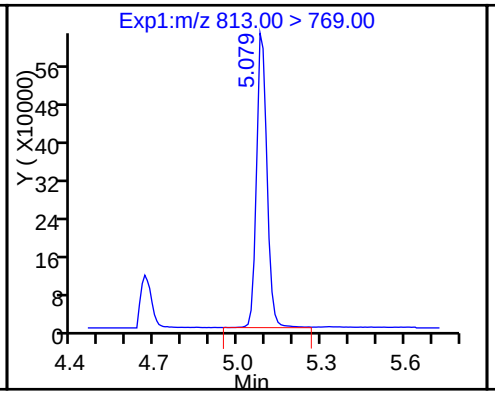
33 Perfluorotetradecanoic acid



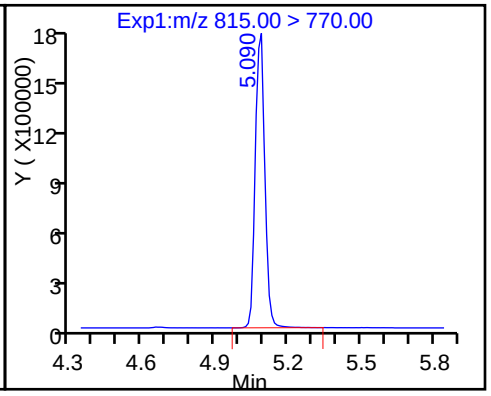
D 32 13C2-PFTeDA



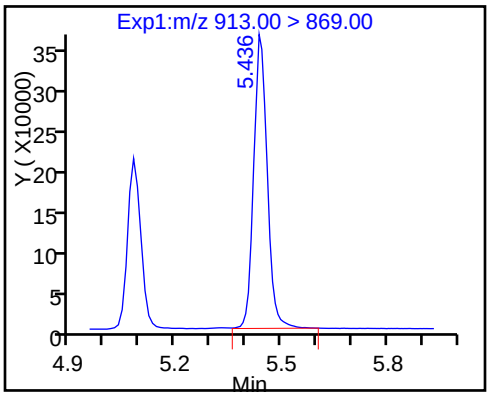
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

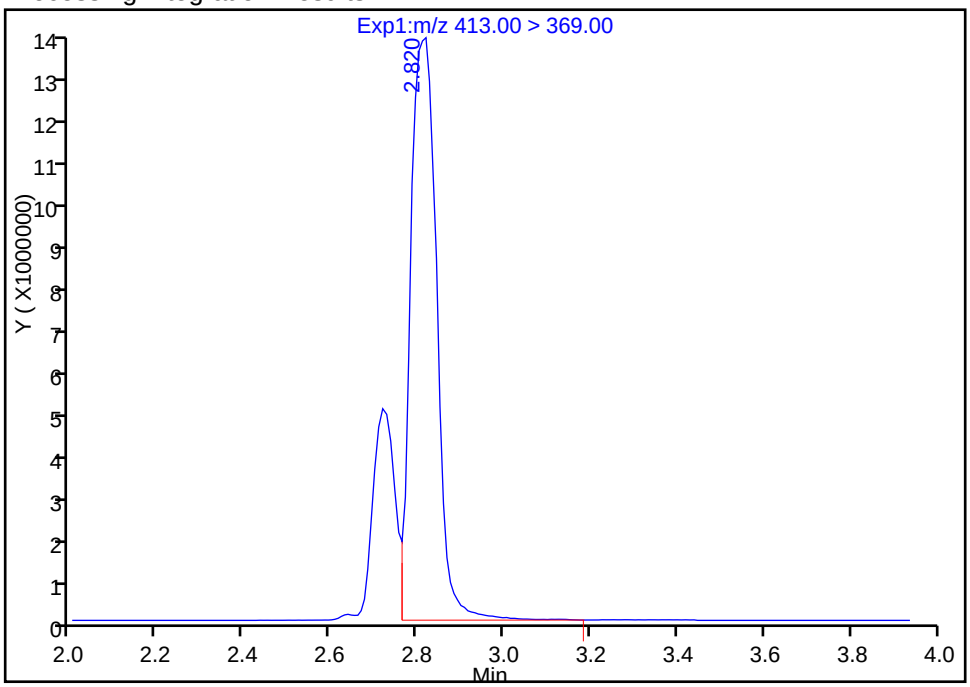
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_042.d				
Injection Date:	21-Dec-2016 18:13:25	Instrument ID:	A8_N		
Lims ID:	320-23998-A-13-B MS				
Client ID:	DPT-16-06-GW-31-35-MS				
Operator ID:	A8-PC\A8	ALS Bottle#:	20	Worklist Smp#:	32
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

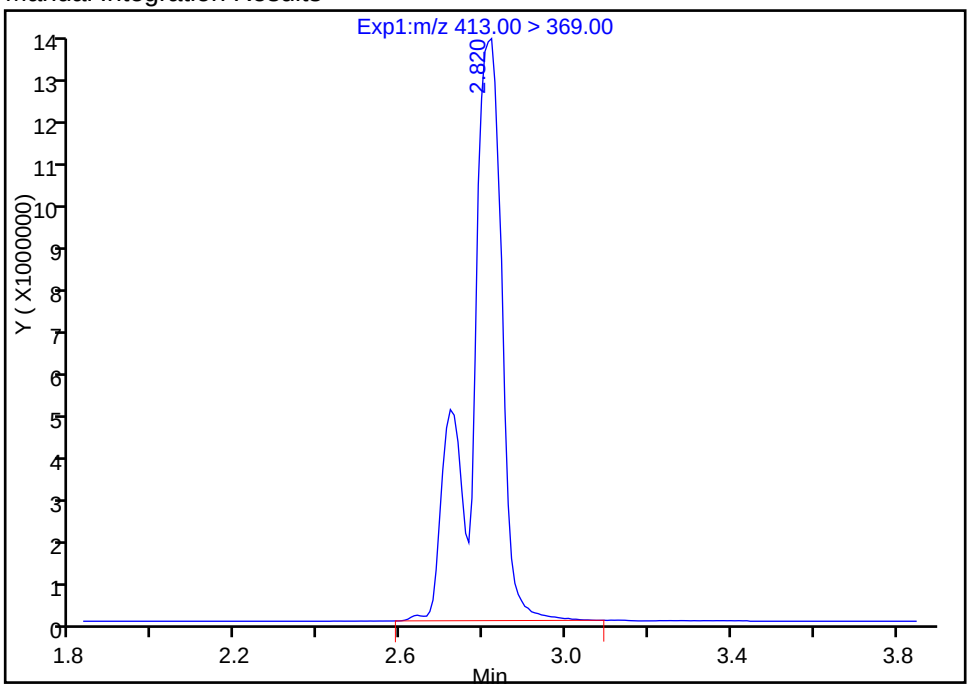
Processing Integration Results

RT: 2.82
Area: 56602602
Amount: 441.8908
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 73783188
Amount: 576.0179
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:30:35

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-06-GW-31-35-MS MS Lab Sample ID: 320-23998-13 MS DL

Matrix: Water Lab File ID: 22DEC2016BB_016.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 12:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 250.3(mL) Date Analyzed: 12/22/2016 17:42

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.: 143644 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.69	D M 4	0.025	0.020	0.0075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.74	D 4	0.040	0.030	0.013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.325	D 4	0.025	0.020	0.0092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	101		25-150
STL00991	13C4 PFOS	121		25-150
STL00994	18O2 PFHxS	95		25-150

Report Date: 23-Dec-2016 09:21:12 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_016.d
Lims ID: 320-23998-A-13-B MS
Client ID: DPT-16-06-GW-31-35-MS
Sample Type: MS
Inject. Date: 22-Dec-2016 17:42:49 ALS Bottle#: 34 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23998-a-13-b ms 10X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:02:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.545	-0.012		1505909	4.33		8.7	170298	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.553	-0.011	1.000	2069917	8.05		403	13420	
D 4 13C5-PFPeA										
267.90 > 223.00	1.820	1.823	-0.003		1547404	5.82		11.6	126679	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.833	-0.013	1.000	4845261	15.9		793	42058	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.871	-0.013	1.000	7192133	16.3		920		
298.90 > 99.00	1.848	1.871	-0.023	0.995	3022215		2.38(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.111	2.123	-0.012		1272945	5.19		10.4	118657	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.111	2.123	-0.012	1.000	14698429	62.2		3108	21809	
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.430	2.395	0.035	1.000	93799461	291.7		16030		E
D 11 13C4-PFHpA										
367.00 > 322.00	2.430	2.457	-0.027		884886	3.91		7.8	81019	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.430	2.457	-0.027	1.000	1493639	8.62		431	4824	
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.472	-0.020		1476486	4.52		9.5	60132	
D 47 M2-6:2FTS										
429.00 > 409.00	2.773	2.782	-0.009		50374	0.4306		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.773	2.782	-0.009	1.000	978204	NR		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.797	2.811	-0.014		1162707	5.05		10.1	82737	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.797	2.819	-0.022	1.000	19726140	84.6		4228	117375	M
413.00 > 169.00	2.704	2.819	-0.115	0.967	13610485		1.45(0.90-1.10)		78631	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.805	2.819	-0.014	1.000	1722177	5.19		273		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.173	3.073	0.100	1.000	41026823	137.0		7381	762050	
499.00 > 99.00	3.165	3.073	0.092	0.997	8463481		4.85(0.90-1.10)		479569	
D 17 13C4 PFOS										
503.00 > 80.00	3.165	3.187	-0.022		1439461	5.78		12.1	57366	
D 19 13C5 PFNA										
468.00 > 423.00	3.173	3.187	-0.014		802243	4.51		9.0	90237	
20 Perfluorononanoic acid										
463.00 > 419.00	3.173	3.187	-0.014	1.000	485751	3.18		159	937	
D 21 13C8 FOSA										
506.00 > 78.00	3.497	3.511	-0.014		153730	0.4002		0.8	28353	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.505	3.511	-0.006	1.000	55479	1.93		96.7	4371	
D 42 M2-8:2FTS										
529.00 > 509.00	3.522	3.522	0.0		2555	0.0238		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.522	3.530	-0.008	1.000	33915	NR		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.531	3.545	-0.014	1.000	265434	2.11		105	4229	
D 23 13C2 PFDA										
515.00 > 470.00	3.539	3.545	-0.006		667895	4.25		8.5	26120	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.667	3.686	-0.019		1004	0.0133		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.456	3.695	-0.239	0.943	512	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.842	3.857	-0.015	1.000	341559	1.94		101		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.816	3.858	-0.042		1465	0.0187		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.859	3.867	-0.008	1.011	1301	NR		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.851	3.874	-0.023		452484	3.86		7.7	82032	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.851	3.874	-0.023	1.000	166838	1.93		96.4	2845	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.946	4.000	-0.054		481	0.005059		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.147	4.170	-0.023		460073	4.15		8.3	22726	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.147	4.170	-0.023	1.000	160498	1.90		95.0	4022	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.010	4.184	-0.174		349	0.004068		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.411	4.441	-0.030	1.000	167455	2.01		100	4584	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.662	4.671	-0.009		1414145	6.22		12.4	109254	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.679	-0.027	1.000	476421	3.27		163	7765	
713.00 > 169.00	4.652	4.679	-0.027	1.000	69059		6.90(0.00-0.00)		26285	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.068	5.091	-0.023		594283	4.77		9.5	46023	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.068	5.091	-0.023	1.000	201876	1.70		84.9	1847	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.428	5.444	-0.016	1.000	108334	1.14		57.1	929	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 23-Dec-2016 09:21:12 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_016.d

Injection Date: 22-Dec-2016 17:42:49 Instrument ID: A8_N

Lims ID: 320-23998-A-13-B MS

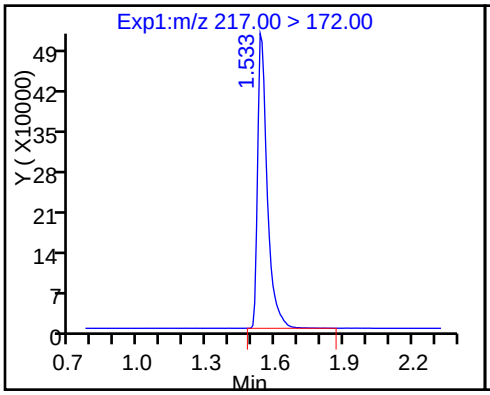
Client ID: DPT-16-06-GW-31-35-MS

Operator ID: A8-PC\A8 ALS Bottle#: 34 Worklist Smp#: 16

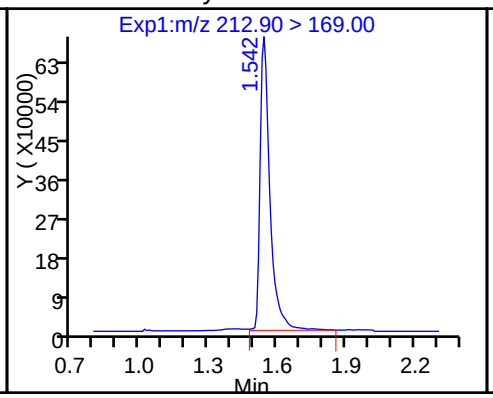
Injection Vol: 2.0 ul Dil. Factor: 10.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

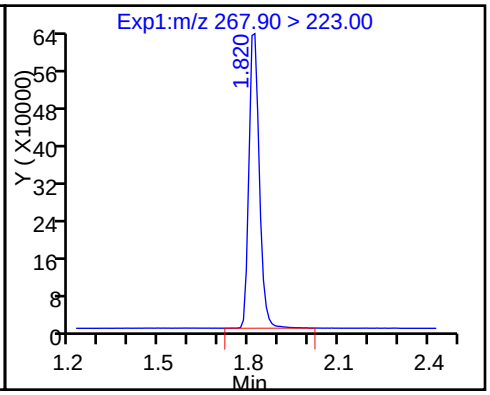
D 2 13C4 PFBA



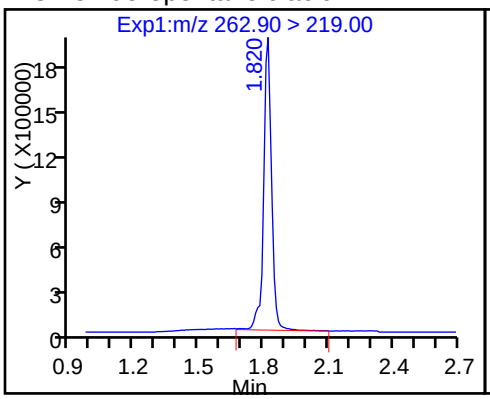
1 Perfluorobutyric acid



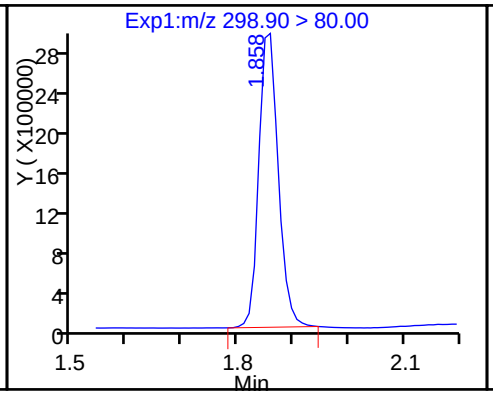
D 4 13C5-PFPeA



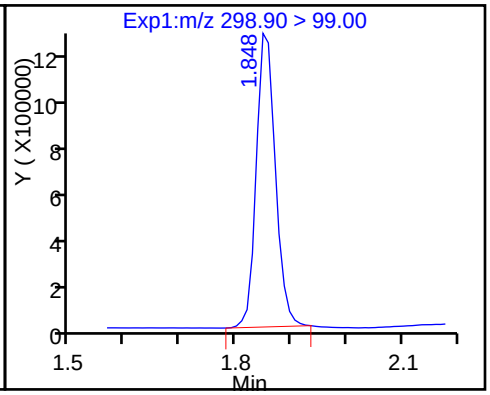
3 Perfluoropentanoic acid



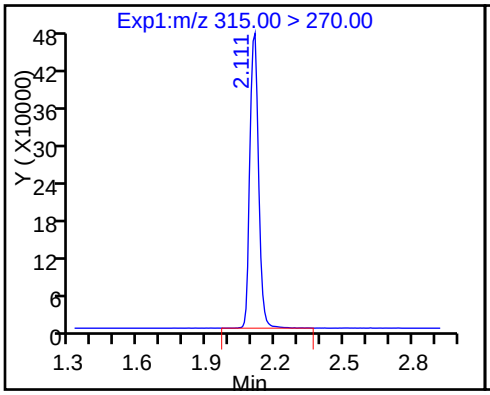
5 Perfluorobutanesulfonic acid



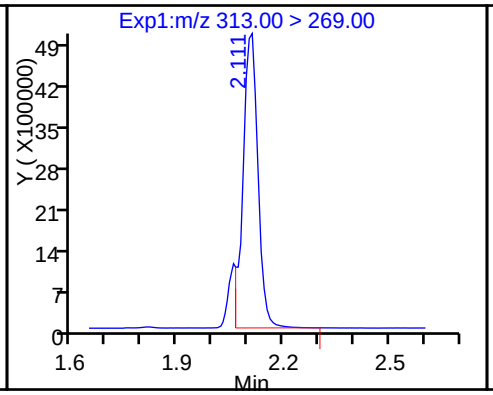
5 Perfluorobutanesulfonic acid



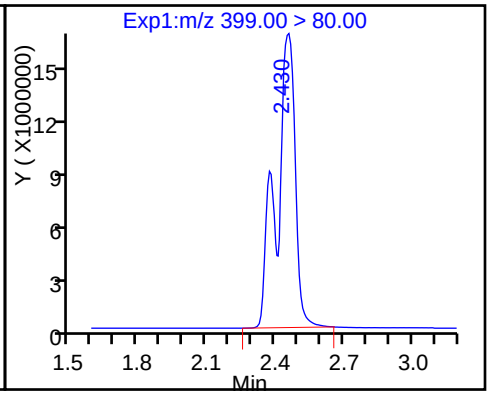
D 6 13C2 PFHxA



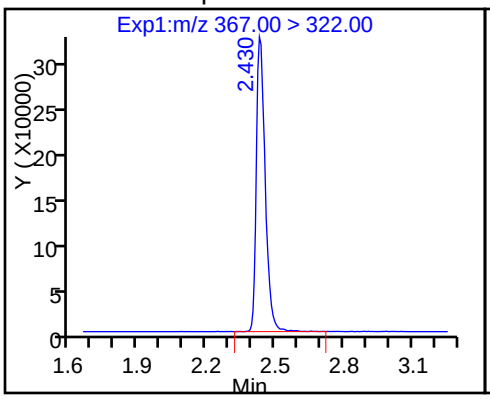
7 Perfluorohexanoic acid



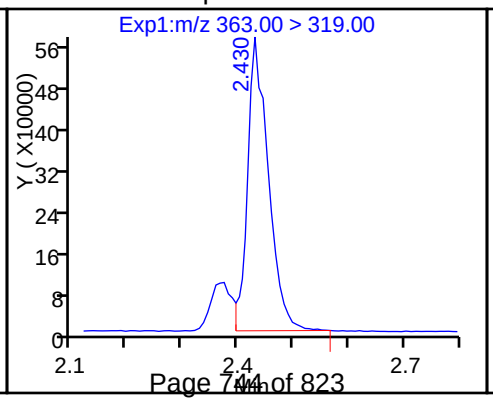
9 Perfluorohexanesulfonic acid



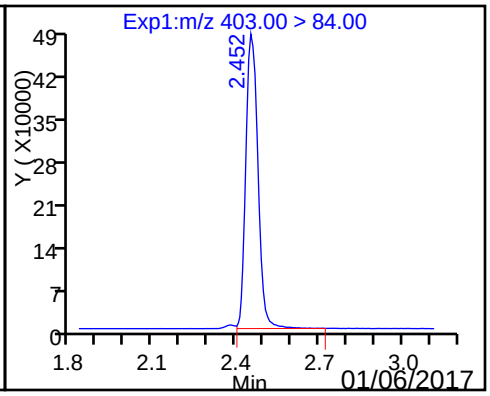
D 11 13C4-PFHpA



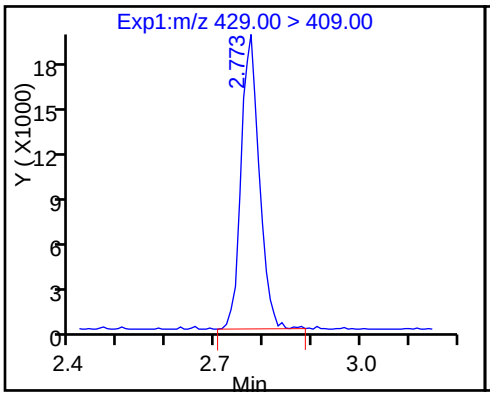
12 Perfluoroheptanoic acid



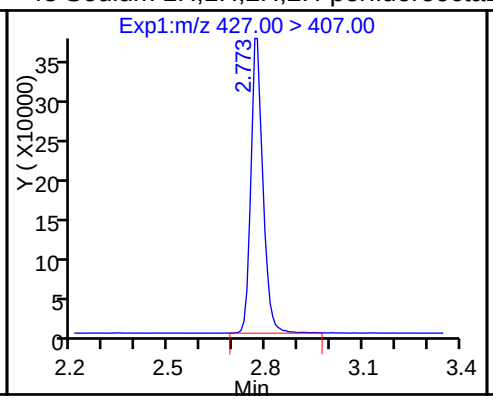
D 10 18O2 PFHxS



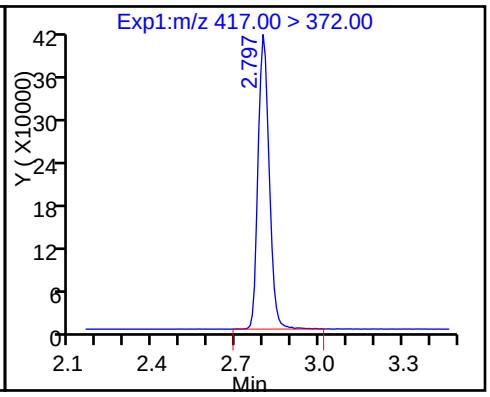
D 47 M2-6:2FTS



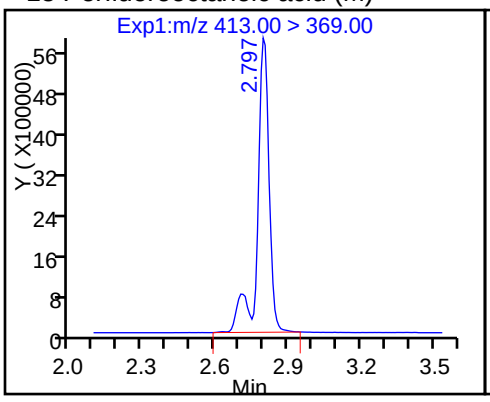
48 Sodium 1H,1H,2H,2H-perfluorooctane



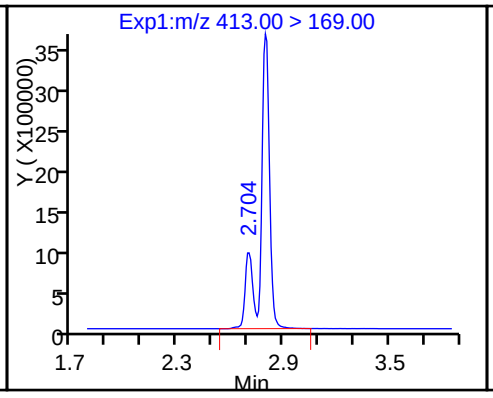
D 14 13C4 PFOA



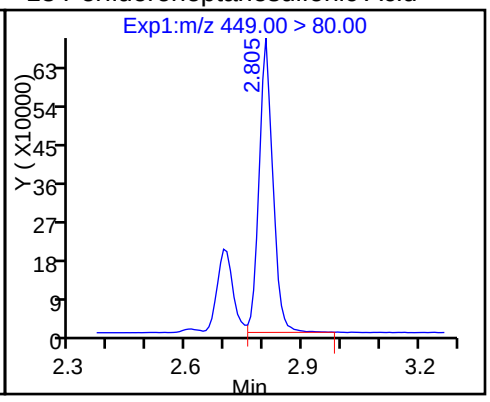
15 Perfluorooctanoic acid (M)



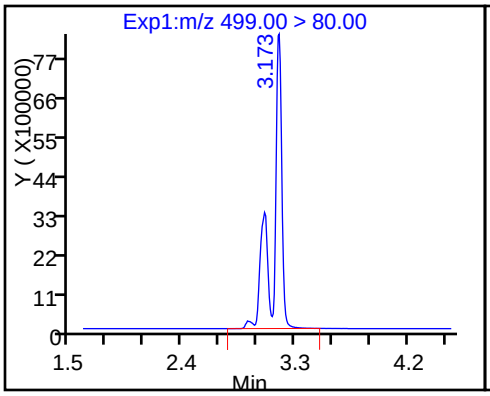
15 Perfluorooctanoic acid



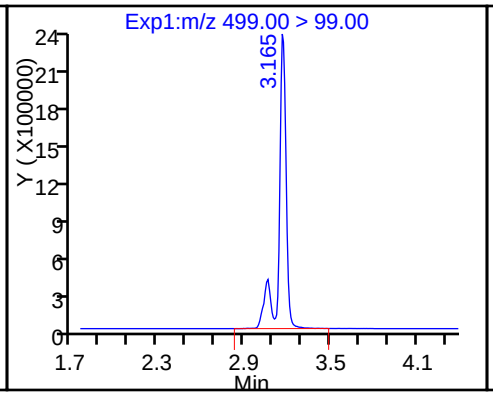
13 Perfluoroheptanesulfonic Acid



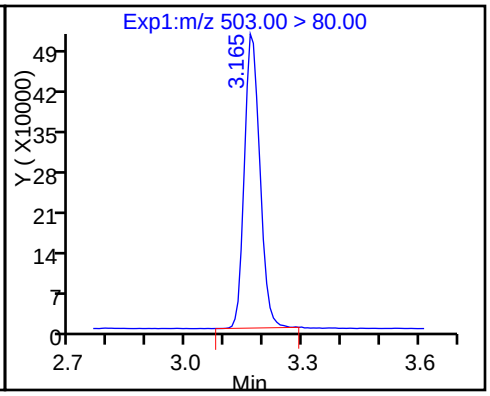
18 Perfluorooctane sulfonic acid



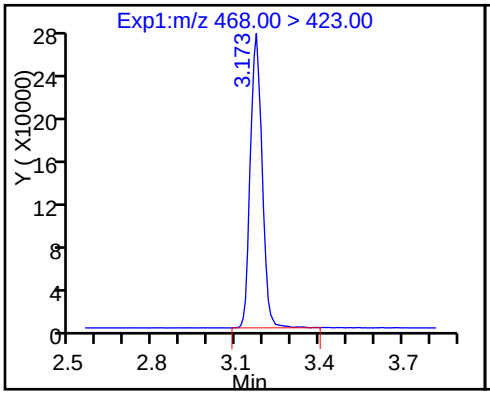
18 Perfluorooctane sulfonic acid



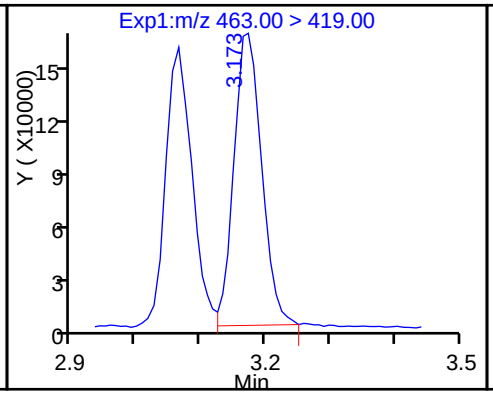
D 17 13C4 PFOS



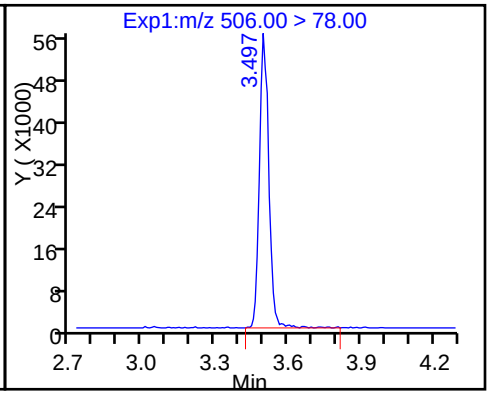
D 19 13C5 PFNA



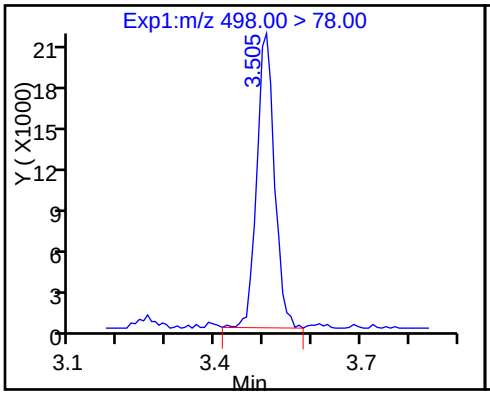
20 Perfluorononanoic acid



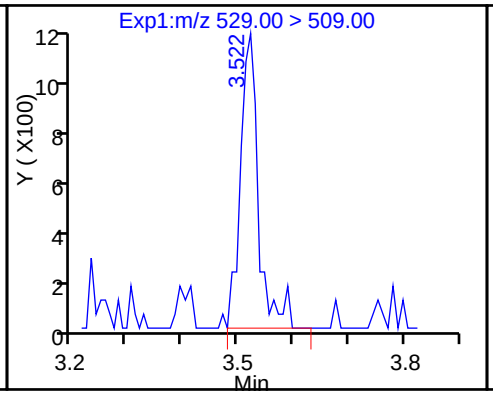
D 21 13C8 FOSA



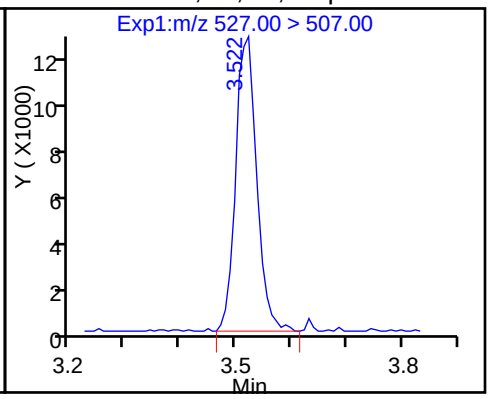
22 Perfluorooctane Sulfonamide



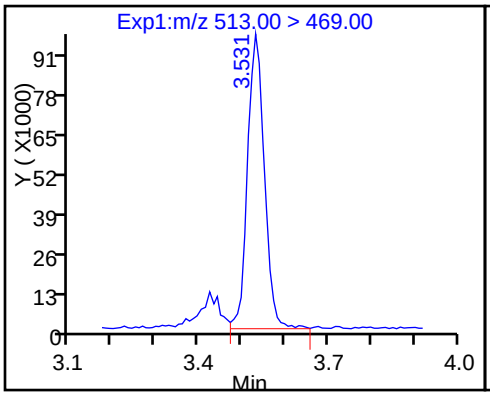
D 42 M2-8:2FTS



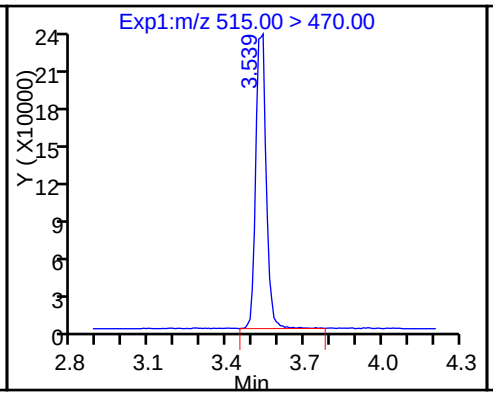
43 Sodium 1H,1H,2H,2H-perfluorooctane



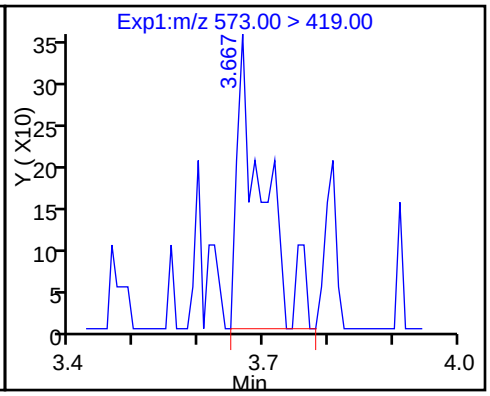
24 Perfluorodecanoic acid



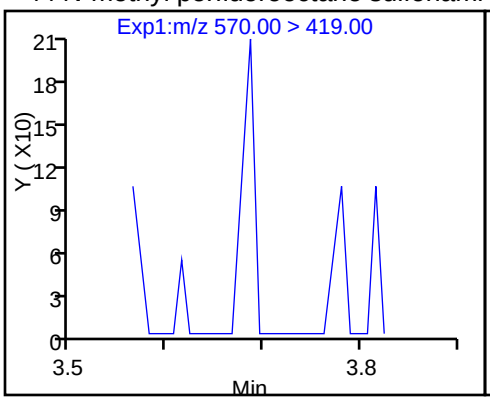
D 23 13C2 PFDA



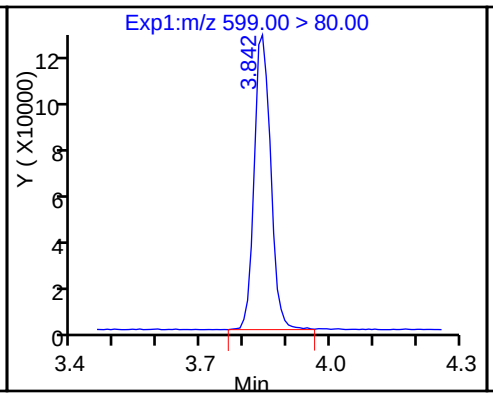
D 45 d3-NMeFOSAA



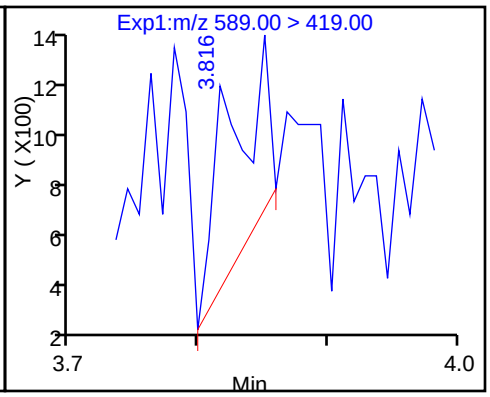
44 N-methyl perfluorooctane sulfonami



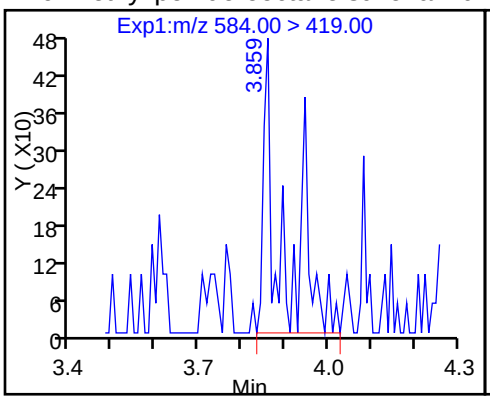
26 Perfluorodecane Sulfonic acid



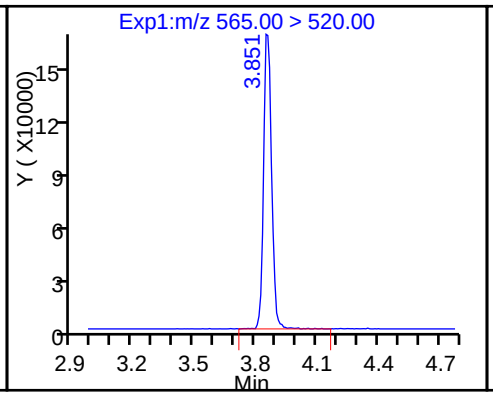
D 46 d5-NEtFOSAA



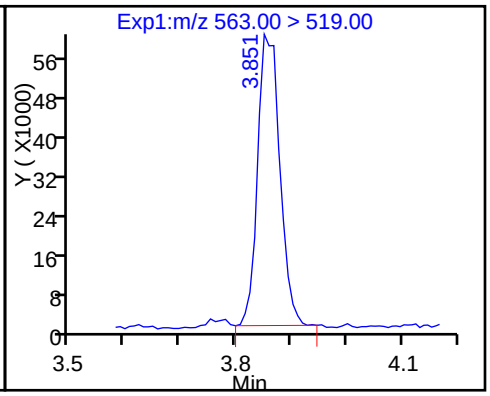
49 N-ethyl perfluorooctane sulfonamid



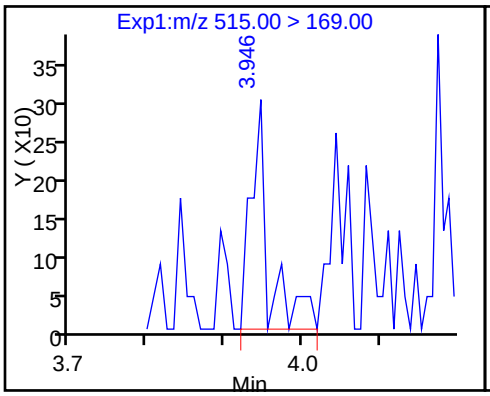
D 27 13C2 PFUnA



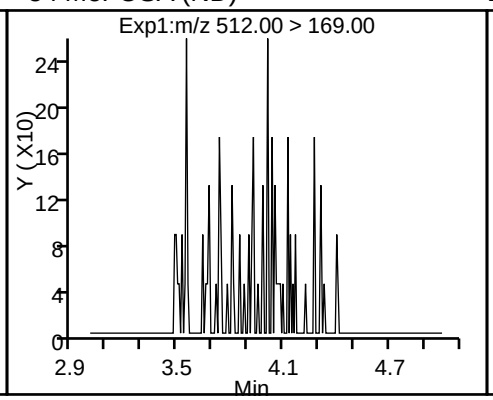
28 Perfluoroundecanoic acid



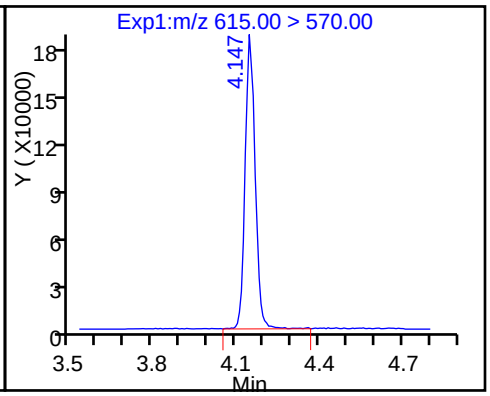
D 52 d-N-MeFOSA-M



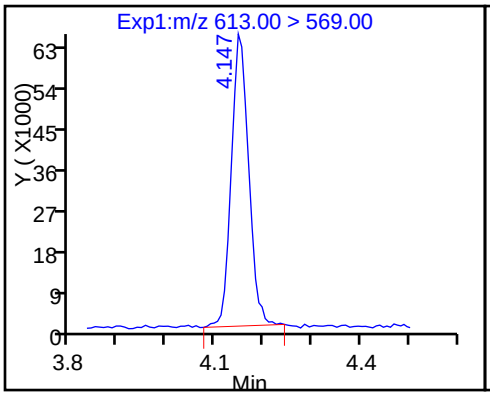
54 MeFOSA (ND)



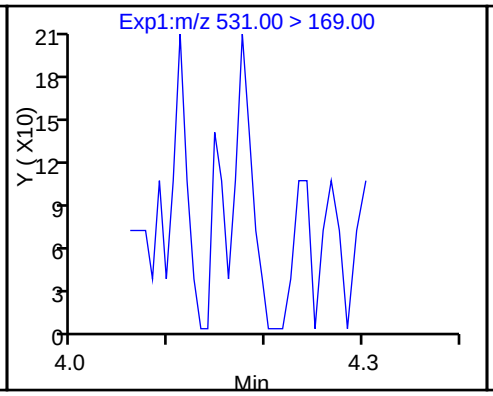
D 30 13C2 PFDoA



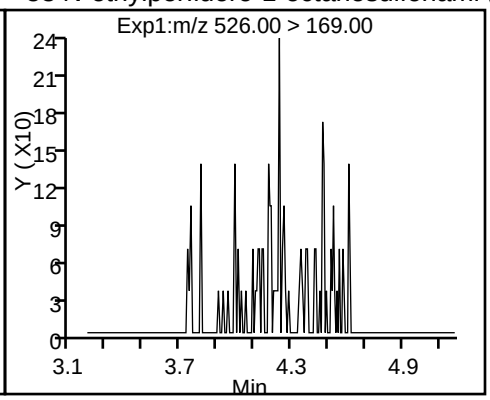
29 Perfluorododecanoic acid



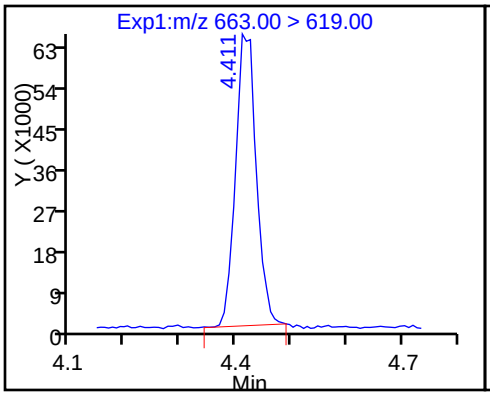
D 51 d-N-EtFOSA-M



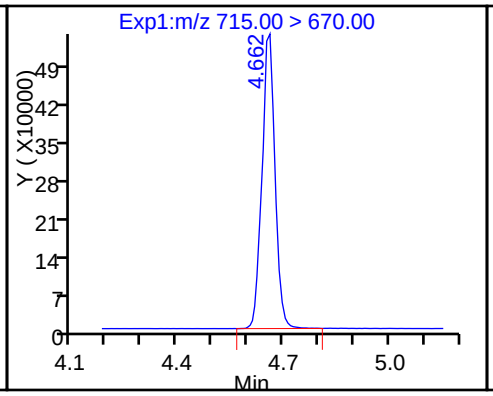
53 N-ethylperfluoro-1-octanesulfonami (ND)



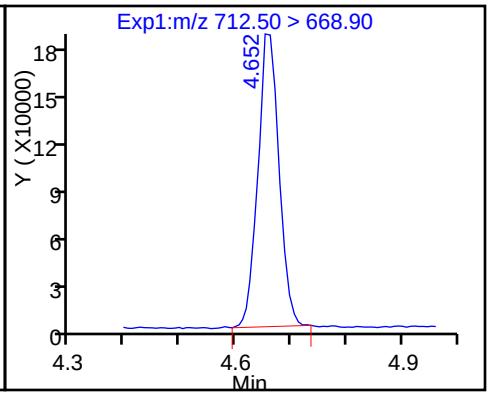
31 Perfluorotridecanoic acid



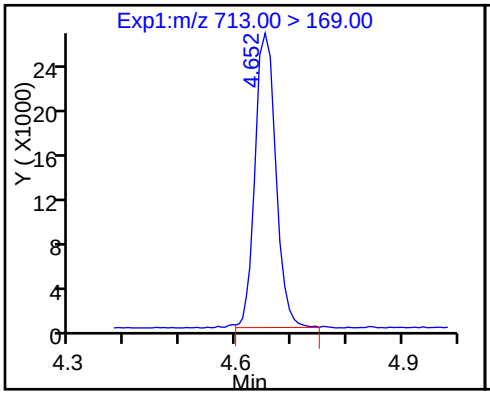
D 32 13C2-PFTeDA



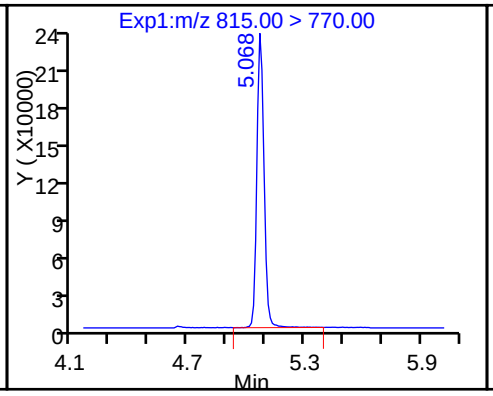
33 Perfluorotetradecanoic acid



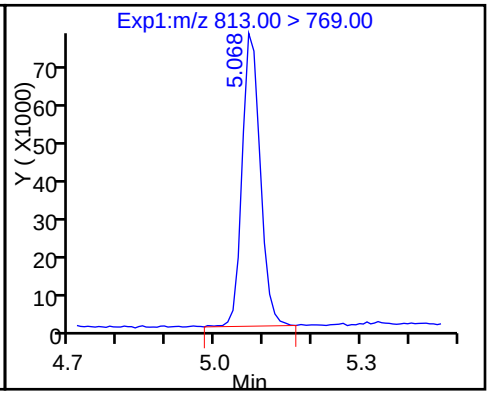
33 Perfluorotetradecanoic acid



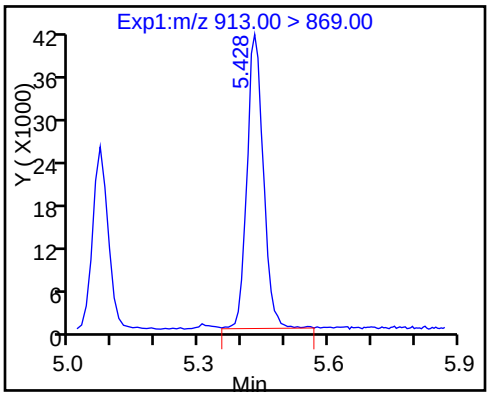
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

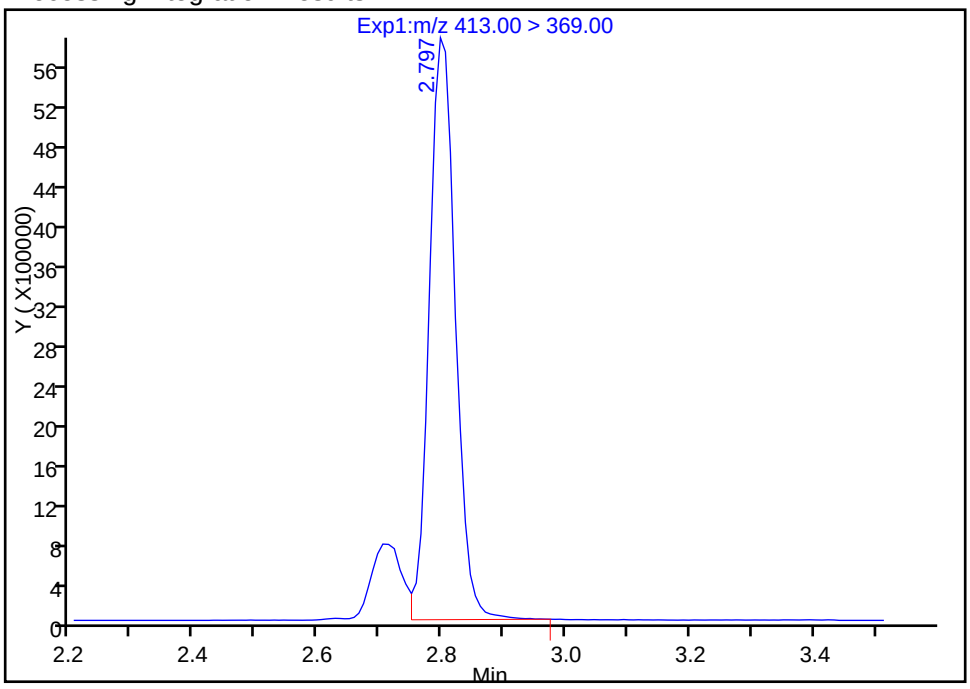
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_016.d				
Injection Date:	22-Dec-2016 17:42:49	Instrument ID:	A8_N		
Lims ID:	320-23998-A-13-B MS				
Client ID:	DPT-16-06-GW-31-35-MS				
Operator ID:	A8-PC\A8	ALS Bottle#:	34	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

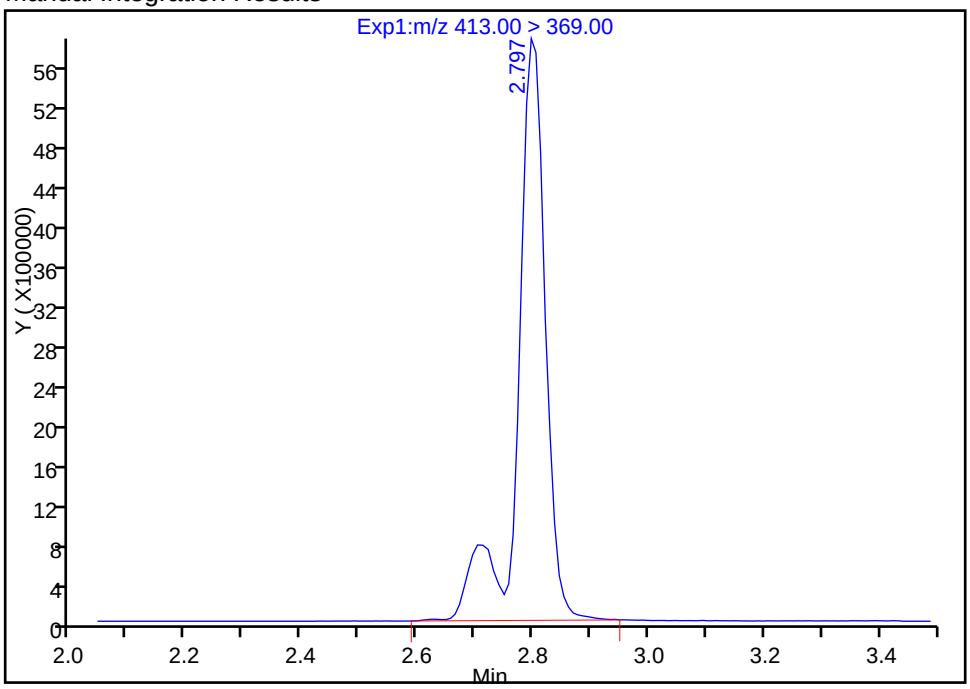
Processing Integration Results

RT: 2.80
Area: 17124393
Amount: 73.409438
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 19726140
Amount: 84.562697
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:02:38
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-04-GW-31-35-MSD Lab Sample ID: 320-23998-3 MSD

Matrix: Water Lab File ID: 21DEC2016A_017.d

Analysis Method: 537 (Modified) Date Collected: 11/30/2016 10:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 253.8(mL) Date Analyzed: 12/21/2016 14:04

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0368		0.0025	0.0020	0.00074
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0389		0.0039	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0403		0.0025	0.0020	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	49		25-150
STL00991	13C4 PFOS	114		25-150
STL00994	18O2 PFHxS	110		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_017.d
Lims ID: 320-23998-A-3-C MSD
Client ID: DPT-16-04-GW-31-35-MSD
Sample Type: MSD
Inject. Date: 21-Dec-2016 14:04:30 ALS Bottle#: 7 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-3-c msd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:26:25 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:16:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		8968249	25.8		51.6	753289	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	3017228	19.7		98.5	17641	
D 4 13C5-PFPeA										
267.90 > 223.00	1.830	1.829	0.001		7707137	29.0		57.9	1050791	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.830	1.839	-0.009	1.000	2770974	18.2		91.1	34312	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.868	1.877	-0.009	1.000	10442455	20.5		116		
298.90 > 99.00	1.868	1.877	-0.009	1.000	4438351		2.35(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.126	2.129	-0.003		5705239	23.3		46.6	369830	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.126	2.129	-0.003	1.000	1972979	18.6		93.1	40239	
D 11 13C4-PFHpA										
367.00 > 322.00	2.458	2.473	-0.015		5496394	24.3		48.6	419201	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.458	2.473	-0.015	1.000	2112484	19.6		98.2	20942	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.481	2.488	-0.007	1.000	6853605	18.5		102		
D 10 18O2 PFHxS										
403.00 > 84.00	2.481	2.488	-0.007		17021791	52.1		110	887719	
D 47 M2-6:2FTS										
429.00 > 409.00	2.788	2.805	-0.017		1043	0.008916		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.773	2.805	-0.032	1.000	2608	NR		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.820	2.828	-0.008		5644833	24.5		49.0	302210	

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	2.820	2.836	-0.016	1.000	2116886	18.7		93.5	31590	
413.00 > 169.00	2.820	2.836	-0.016	1.000	1276036		1.66(0.90-1.10)		66134	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.828	2.844	-0.016	1.000	5808440	18.6		97.6		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.197	3.100	0.097	1.000	5569467	19.7		106	231786	
499.00 > 99.00	3.197	3.100	0.097	1.000	1247735		4.46(0.90-1.10)		66331	
D 19 13C5 PFNA										
468.00 > 423.00	3.197	3.206	-0.009		3839651	21.6		43.2	331585	
D 17 13C4 PFOS										
503.00 > 80.00	3.197	3.206	-0.009		13564401	54.5		114	482277	
20 Perfluorononanoic acid										
463.00 > 419.00	3.197	3.215	-0.018	1.000	1335917	18.3		91.4	22857	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.521	3.521	-0.001	1.000	191120	19.1		95.6	15106	
D 21 13C8 FOSA										
506.00 > 78.00	3.521	3.521	-0.001		536028	1.40		2.8	50787	
D 42 M2-8:2FTS										
529.00 > 509.00	3.537	3.557	-0.020		1209	0.0113		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.529	3.557	-0.028	0.998	2665	NR		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.554	3.571	-0.017		3574910	22.7		45.5	111389	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.563	3.571	-0.008	1.000	1258388	18.6		93.2	37010	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.694	3.727	-0.033		3975	0.0528		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.705	3.727	-0.022	1.003	1364	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.867	3.887	-0.020	1.000	2794140	16.9		87.5		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.867	3.895	-0.028		8074	0.1031		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.893	3.904	-0.011	1.007	1914	NR		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.893	3.904	-0.011		3186818	27.2		54.4	189199	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.893	3.904	-0.011	1.000	1165630	19.1		95.6	27492	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.858	4.011	-0.153		382	0.004018		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.174	4.196	-0.022		3663156	33.0		66.0	119747	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.174	4.202	-0.028	1.000	1081829	16.1		80.4	21647	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.447	4.473	-0.026	1.000	1492119	22.5		112	38985	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.687	4.710	-0.023	1.000	3737155	32.2		161	29067	
713.00 > 169.00	4.687	4.710	-0.023	1.000	583413		6.41(0.00-0.00)		77356	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.687	4.710	-0.023		11363735	50.0		100.0	884266	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.111	5.133	-0.021	1.000	987683	13.5		67.6	2946	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.111	5.133	-0.021		3139141	25.2		50.4	150044	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.474	5.509	-0.035	1.000	502266	6.65		33.3	961	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 22-Dec-2016 10:26:37 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_017.d

Injection Date: 21-Dec-2016 14:04:30 Instrument ID: A8_N

Lims ID: 320-23998-A-3-C MSD

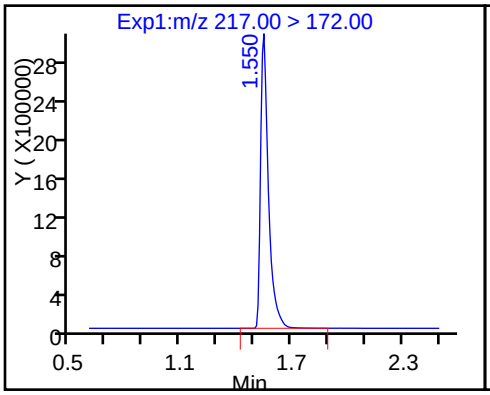
Client ID: DPT-16-04-GW-31-35-MSD

Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 11

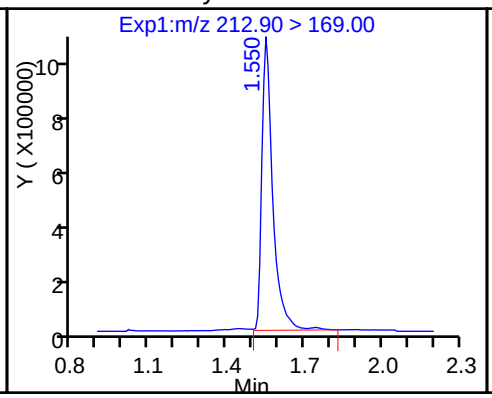
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

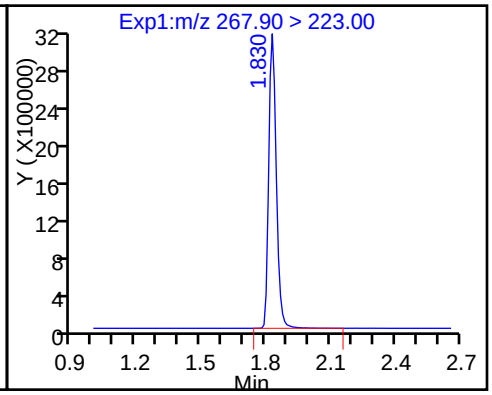
D 2 13C4 PFBA



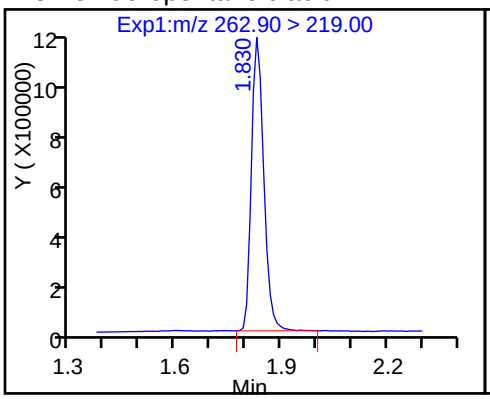
1 Perfluorobutyric acid



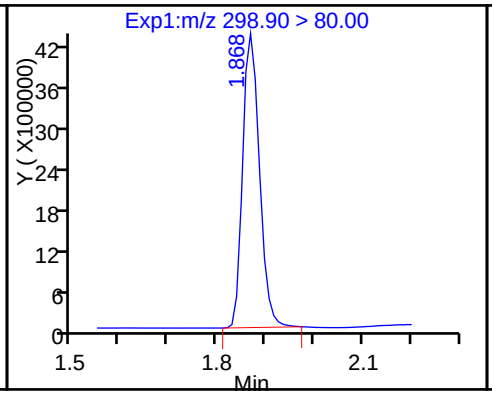
D 4 13C5-PFPeA



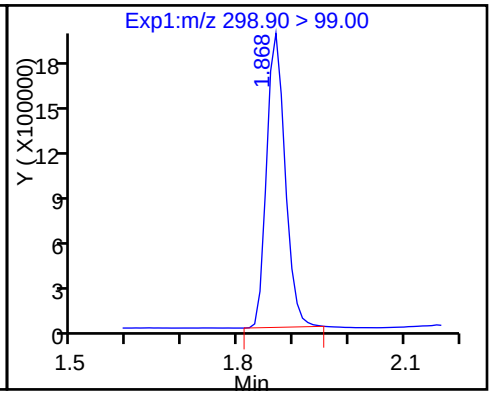
3 Perfluoropentanoic acid



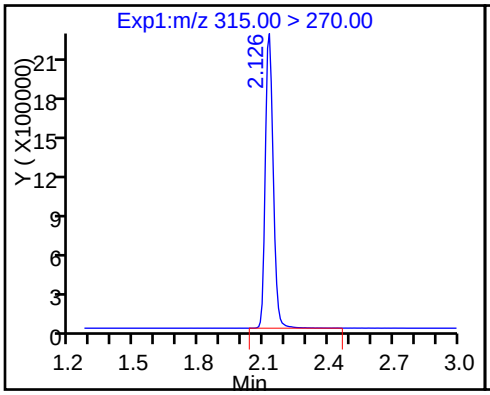
5 Perfluorobutanesulfonic acid



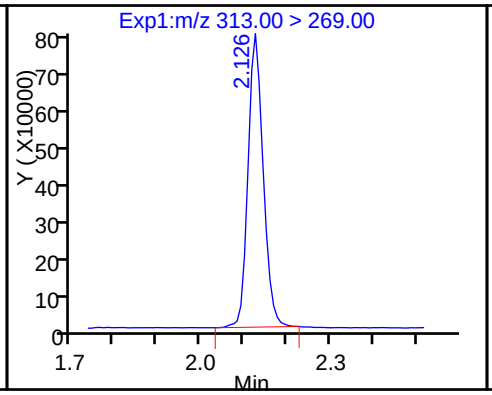
5 Perfluorobutanesulfonic acid



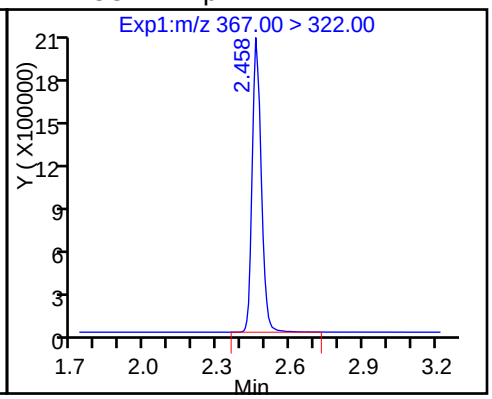
D 6 13C2 PFHxA



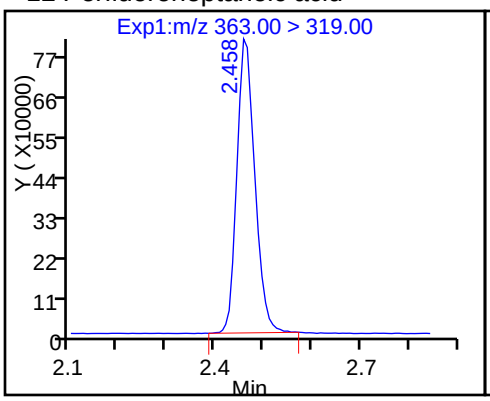
7 Perfluorohexanoic acid



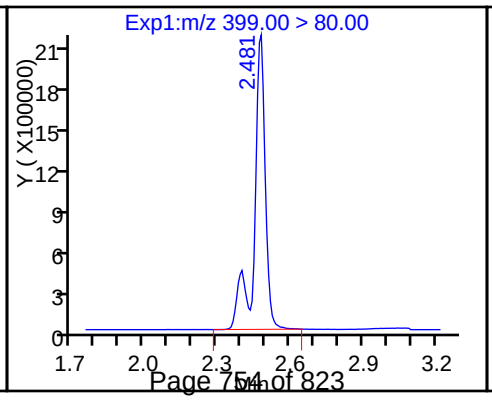
D 11 13C4-PFHpA



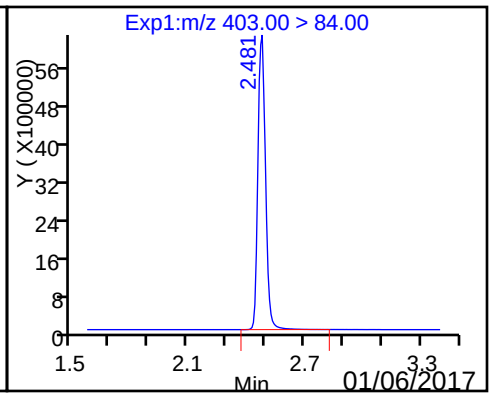
12 Perfluoroheptanoic acid



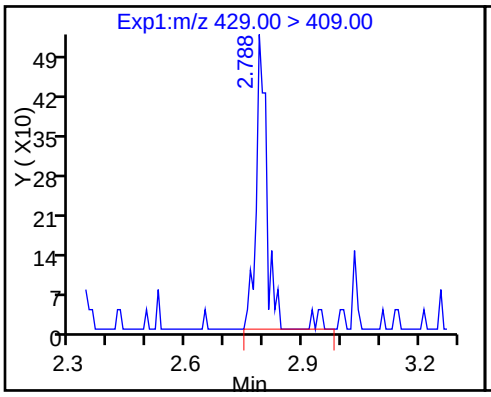
9 Perfluorohexanesulfonic acid



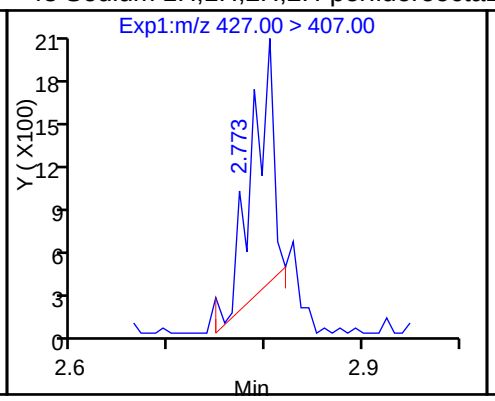
D 10 18O2 PFHxS



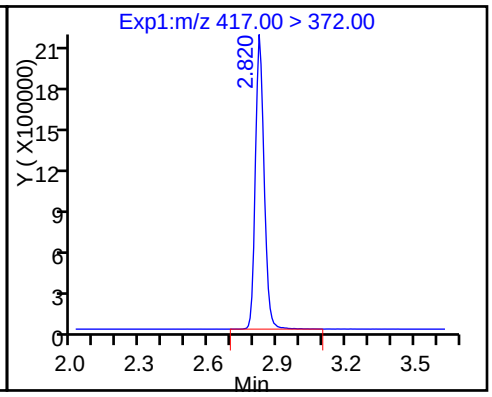
D 47 M2-6:2FTS



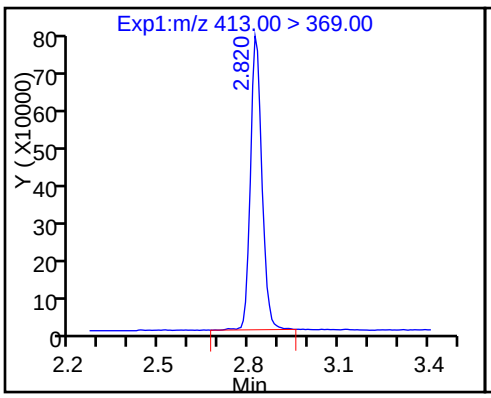
48 Sodium 1H,1H,2H,2H-perfluorooctane



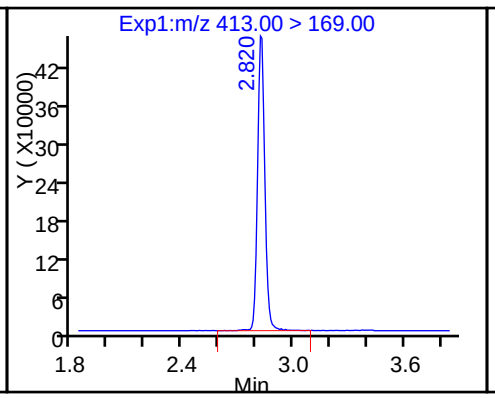
D 14 13C4 PFOA



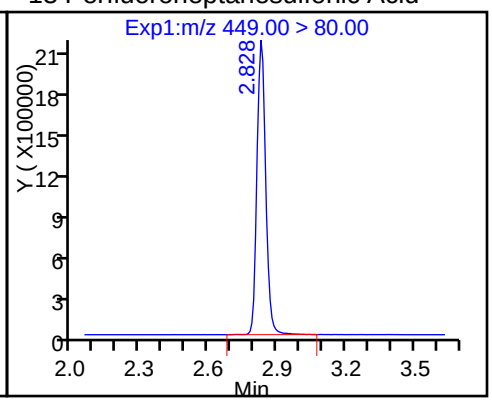
15 Perfluorooctanoic acid



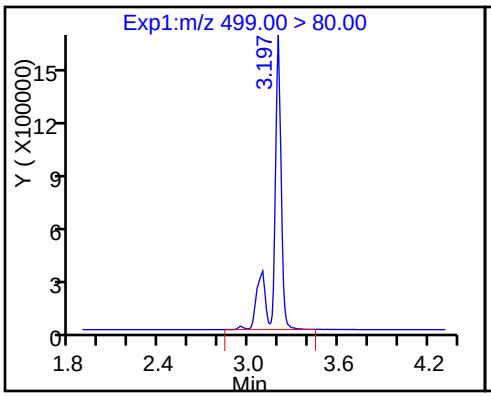
15 Perfluorooctanoic acid



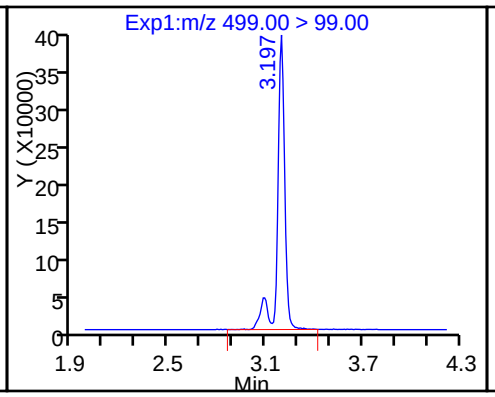
13 Perfluoroheptanesulfonic Acid



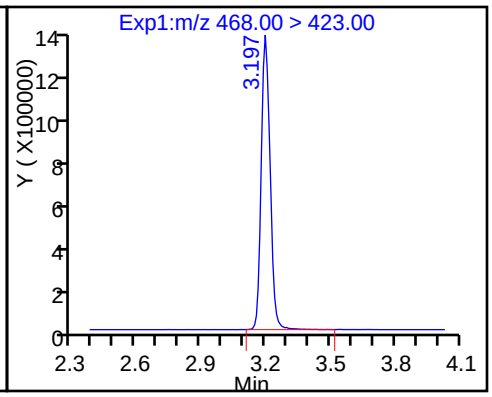
18 Perfluorooctane sulfonic acid



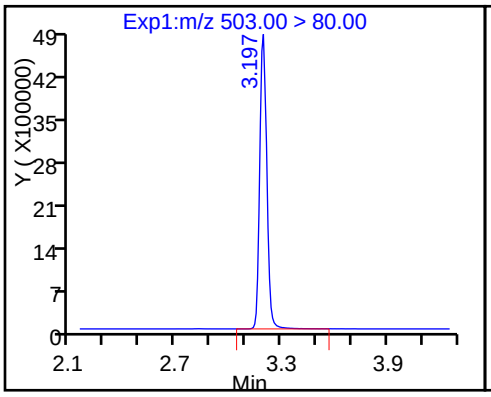
18 Perfluorooctane sulfonic acid



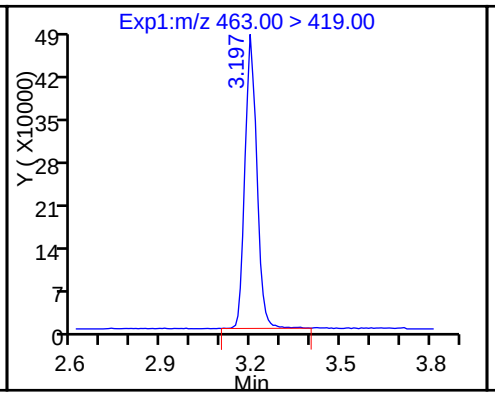
D 19 13C5 PFNA



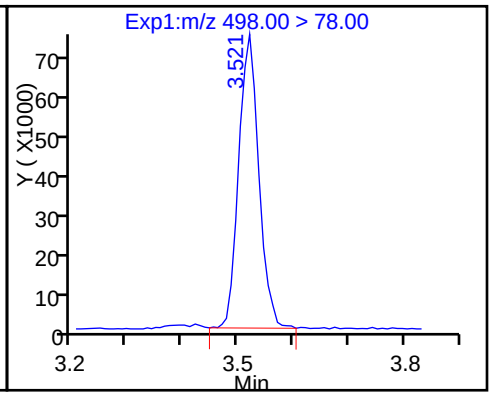
D 17 13C4 PFOS



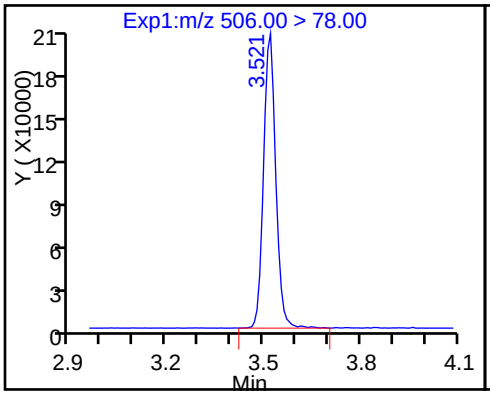
20 Perfluorononanoic acid



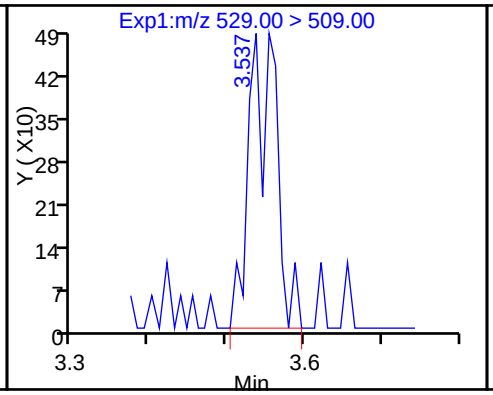
22 Perfluorooctane Sulfonamide



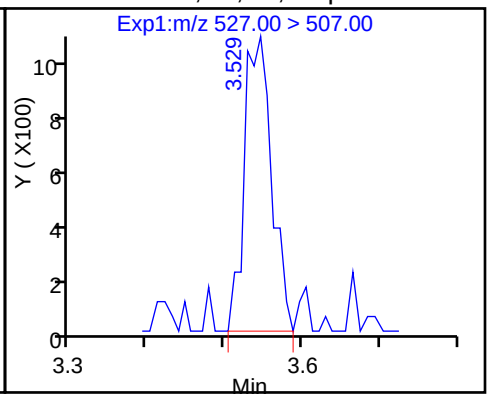
D 21 13C8 FOSA



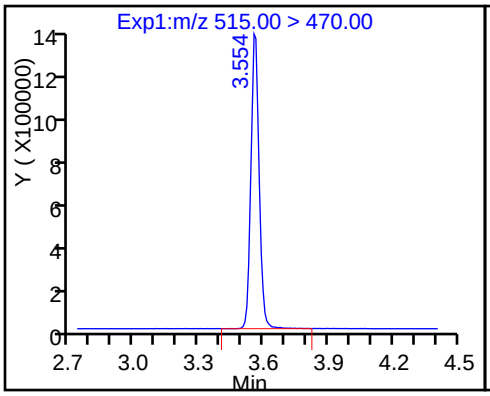
D 42 M2-8:2FTS



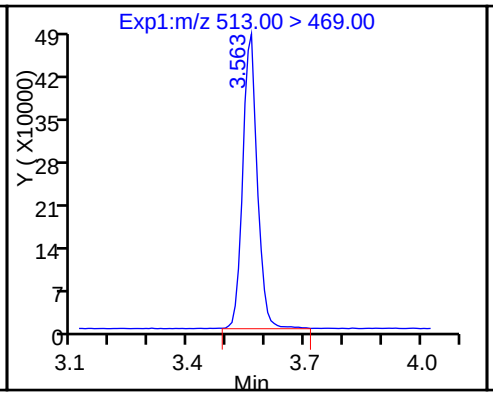
43 Sodium 1H,1H,2H,2H-perfluorooctane



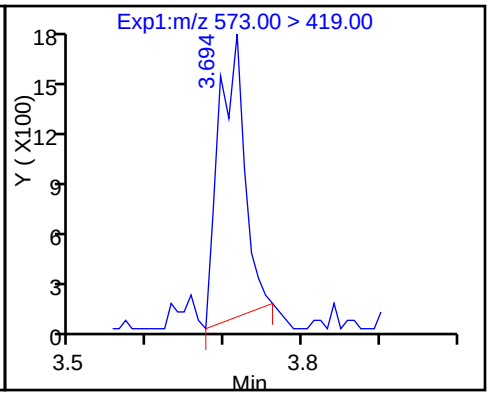
D 23 13C2 PFDA



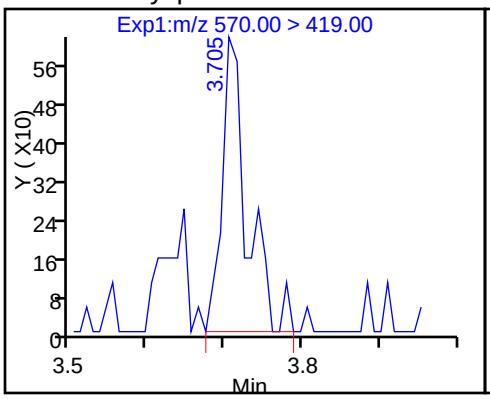
24 Perfluorodecanoic acid



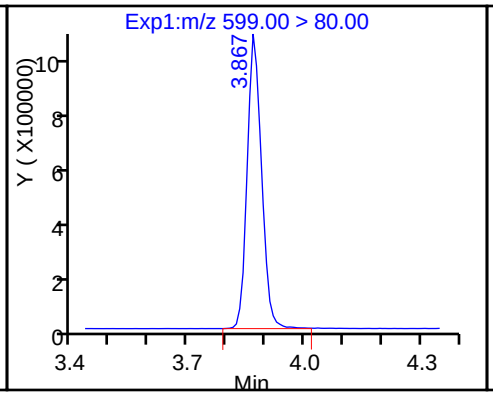
D 45 d3-NMeFOSAA



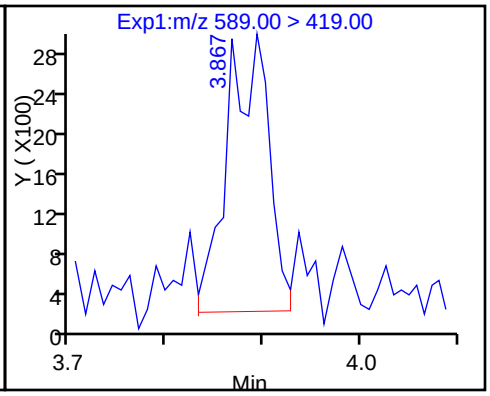
44 N-methyl perfluorooctane sulfonami



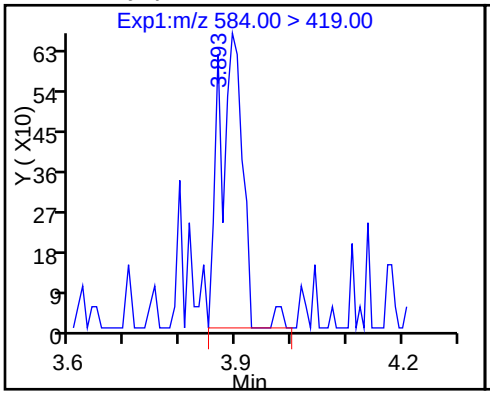
26 Perfluorodecane Sulfonic acid



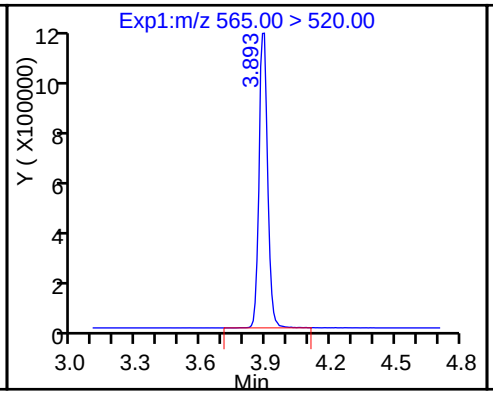
D 46 d5-NEtFOSAA



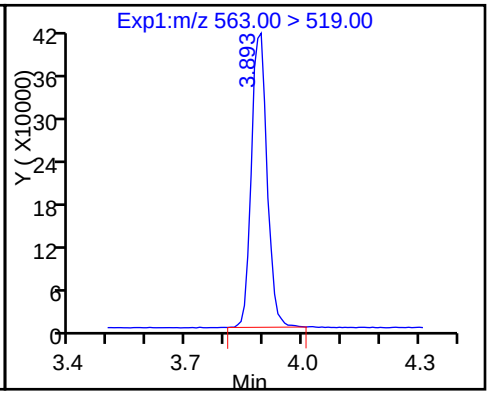
49 N-ethyl perfluorooctane sulfonamid



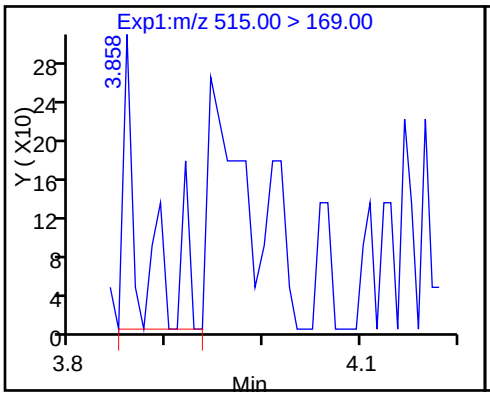
D 27 13C2 PFUnA



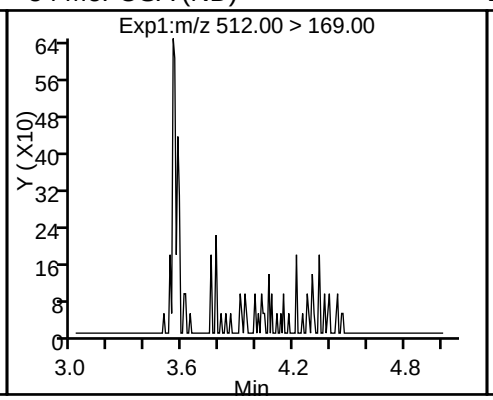
28 Perfluoroundecanoic acid



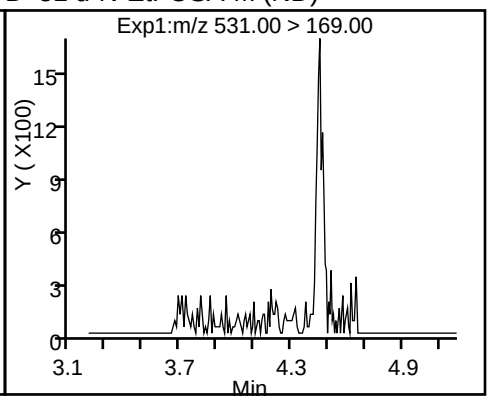
D 52 d-N-MeFOSA-M



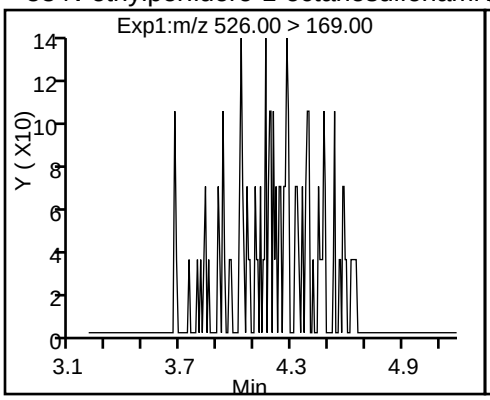
54 MeFOSA (ND)



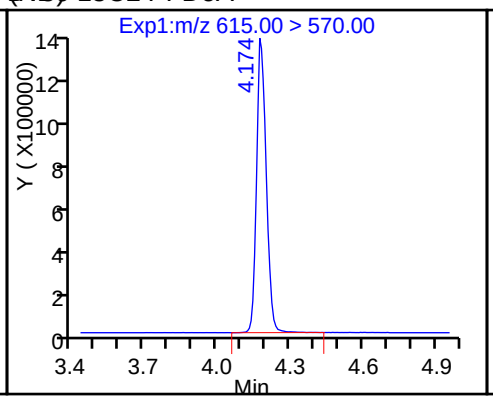
D 51 d-N-EtFOSA-M (ND)



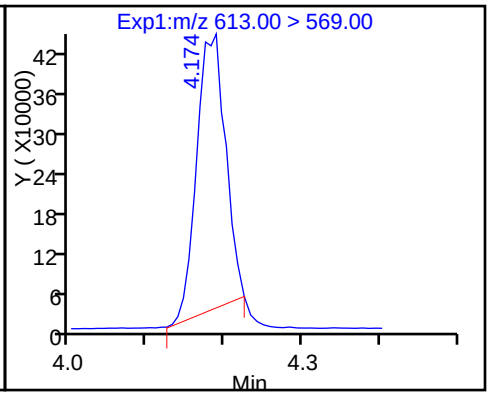
53 N-ethylperfluoro-1-octanesulfonami (ND)



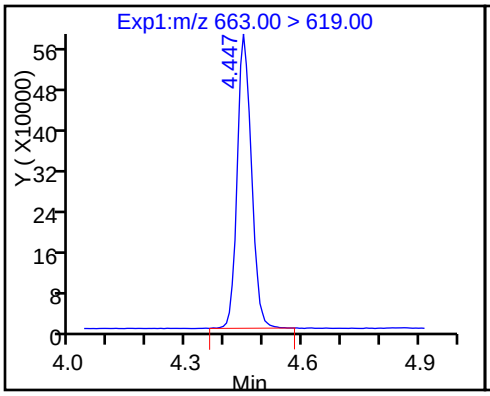
D 30 13C2 PFDoA



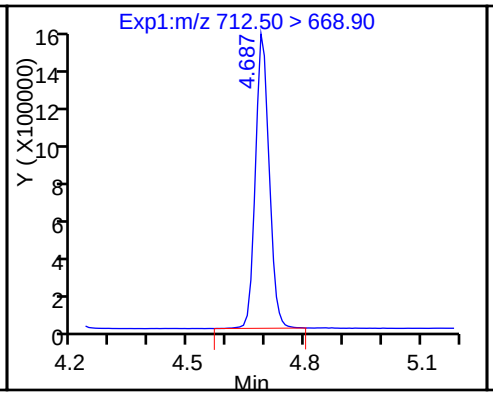
29 Perfluorododecanoic acid



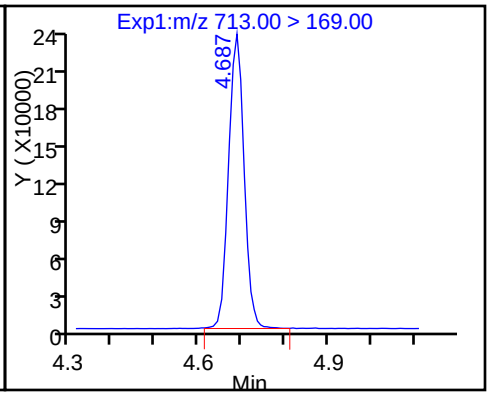
31 Perfluorotridecanoic acid



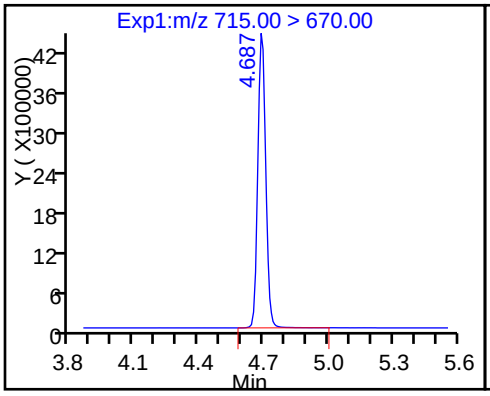
33 Perfluorotetradecanoic acid



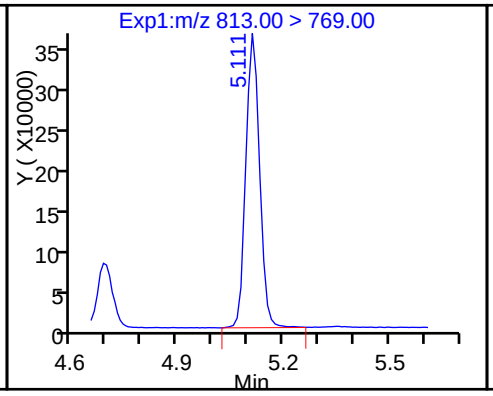
33 Perfluorotetradecanoic acid



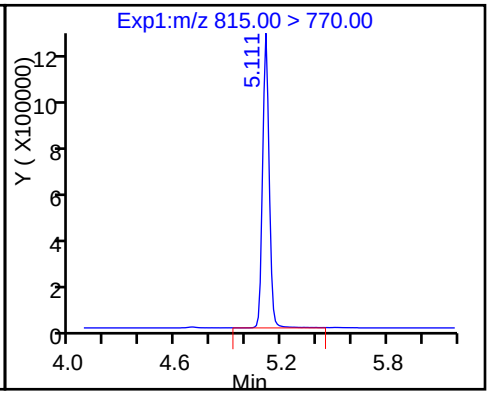
D 32 13C2-PFTeDA



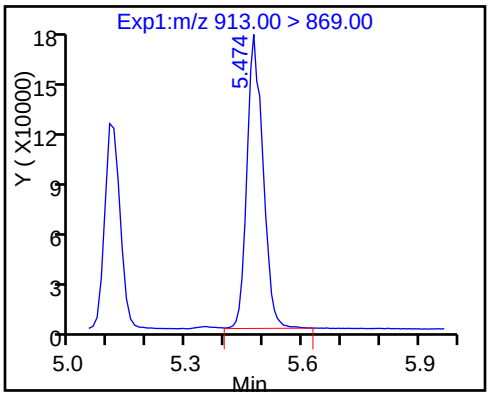
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-08-GW-31-35-MSD Lab Sample ID: 320-23998-9 MSD

Matrix: Water Lab File ID: 21DEC2016A_033.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 10:00

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 253.4(mL) Date Analyzed: 12/21/2016 17:05

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0435	M	0.0025	0.0020	0.00074
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0610		0.0039	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0455		0.0025	0.0020	0.00091

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	64		25-150
STL00991	13C4 PFOS	118		25-150
STL00994	18O2 PFHxS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_033.d
Lims ID: 320-23998-A-9-C MSD
Client ID: DPT-16-08-GW-31-35-MSD
Sample Type: MSD
Inject. Date: 21-Dec-2016 17:05:57 ALS Bottle#: 15 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-9-c msd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 14:35:11 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: XAWRK027

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:23:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.550	1.550	0.0		12237224	35.2		70.4	646958	
1 Perfluorobutyric acid										
212.90 > 169.00	1.550	1.550	0.0	1.000	4125294	19.7		98.7	14548	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		12604699	47.4		94.7	838346	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.829	0.0	1.000	4733548	19.0		95.1	31791	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.868	-0.010	1.000	11478271	23.1		131		
298.90 > 99.00	1.858	1.868	-0.010	1.000	4840319		2.37(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.120	2.117	0.003		9925273	40.5		81.0	778495	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.120	2.126	-0.006	1.000	3615236	19.6		98.0	18828	
D 11 13C4-PFHpA										
367.00 > 322.00	2.446	2.460	-0.014		8328096	36.8		73.6	1051544	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.446	2.460	-0.014	1.000	3192379	19.6		97.9	22985	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.469	2.475	-0.006	1.000	21075515	58.3		320		M
D 10 18O2 PFHxS										
403.00 > 84.00	2.469	2.475	-0.006		16598637	50.8		107	841400	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.782	2.789	-0.007	1.000	13697	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.782	2.797	-0.015		1556	0.0133		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.807	2.821	-0.014		7322607	31.8		63.6	673786	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.815	2.821	-0.006	1.000	3242004	22.1		110	25075	M
413.00 > 169.00	2.807	2.821	-0.014	0.997	1976964		1.64(0.90-1.10)		95842	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.815	2.821	-0.006	1.000	6259707	19.3		101		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.067	3.084	-0.017	1.000	9048134	30.9		166	97946	
499.00 > 99.00	3.183	3.084	0.099	1.038	1858259		4.87(0.90-1.10)		82433	
D 19 13C5 PFNA										
468.00 > 423.00	3.183	3.190	-0.007		3854798	21.7		43.4	267130	
D 17 13C4 PFOS										
503.00 > 80.00	3.183	3.190	-0.007		14075429	56.6		118	455134	
20 Perfluorononanoic acid										
463.00 > 419.00	3.175	3.198	-0.023	1.000	1332809	18.2		90.8	14940	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.516	3.514	0.002	1.000	125851	22.4		112	8201	
D 21 13C8 FOSA										
506.00 > 78.00	3.516	3.514	0.002		301485	0.7848		1.6	28682	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.524	3.540	-0.016	0.986	5786	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.574	3.548	0.026		357	0.003323		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.541	3.556	-0.015		2429558	15.4		30.9	94251	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.541	3.556	-0.015	1.000	858160	18.7		93.6	21889	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.679	3.707	-0.028		2040	0.0271		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.720	3.707	0.013	1.011	302	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.853	3.868	-0.015	1.000	3076867	17.9		92.8		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.853	3.868	-0.015		5356	0.0684		0.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.862	3.886	-0.024	1.000	634390	19.0		94.8	8033	
D 27 13C2 PFUnA										
565.00 > 520.00	3.862	3.886	-0.024		1749804	14.9		29.8	130723	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.948	4.010	-0.062		461	0.004849		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.156	4.199	-0.043	1.000	234	NR		0.0		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.245	4.192	0.053		417	0.004861		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.156	4.172	-0.016		2156134	19.4		38.9	99585	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.148	4.172	-0.024	1.000	615014	15.5		77.7	14744	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.420	4.444	-0.024	1.000	1098423	28.1		140	25547	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.672	4.690	-0.018	1.000	3619848	53.0		265	67529	
713.00 > 169.00	4.663	4.690	-0.027	0.998	535219		6.76(0.00-0.00)		50954	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.663	4.690	-0.027		11277722	49.6		99.2	812712	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.080	5.103	-0.023	1.000	957687	22.7		113	2527	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.080	5.103	-0.023		2932535	23.5		47.1	112673	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.436	5.461	-0.025	1.000	337798	7.60		38.0	657	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Report Date: 23-Dec-2016 14:35:11 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_033.d

Injection Date: 21-Dec-2016 17:05:57 Instrument ID: A8_N

Lims ID: 320-23998-A-9-C MSD

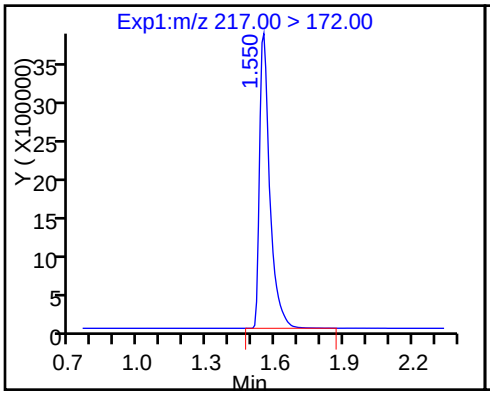
Client ID: DPT-16-08-GW-31-35-MSD

Operator ID: A8-PC\A8 ALS Bottle#: 15 Worklist Smp#: 23

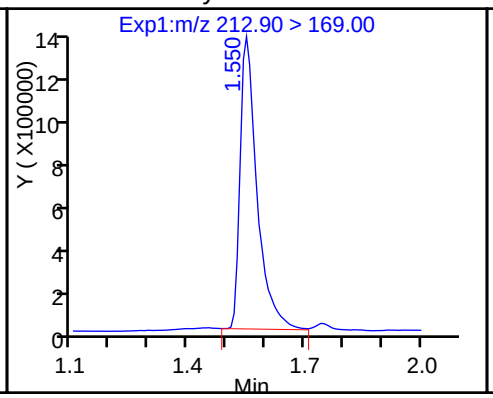
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

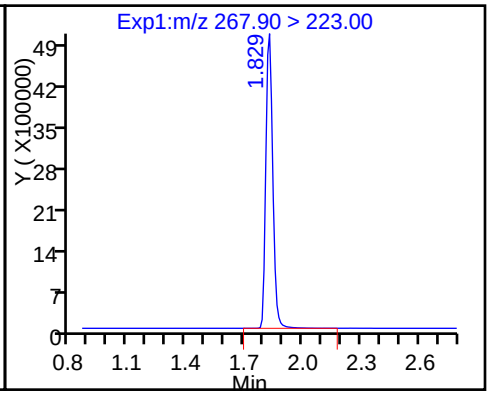
D 2 13C4 PFBA



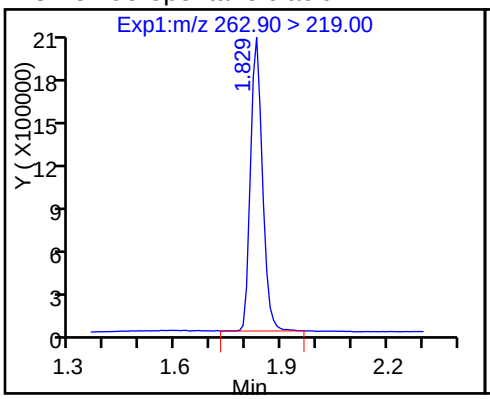
1 Perfluorobutyric acid



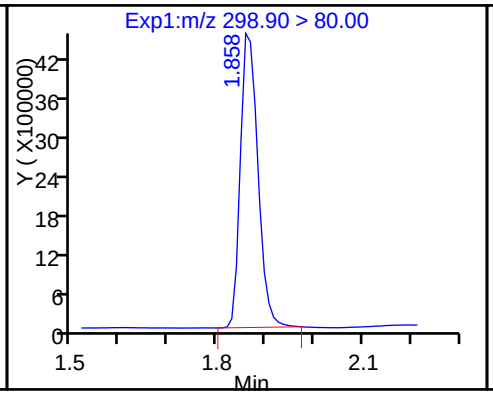
D 4 13C5-PFPeA



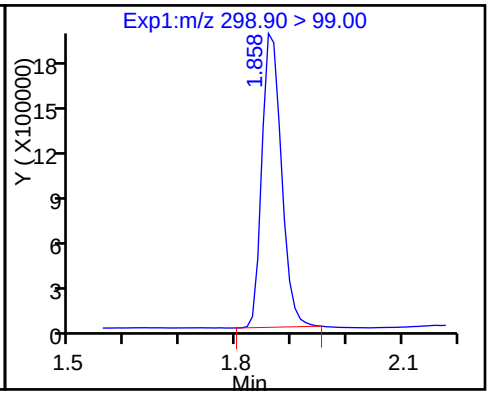
3 Perfluoropentanoic acid



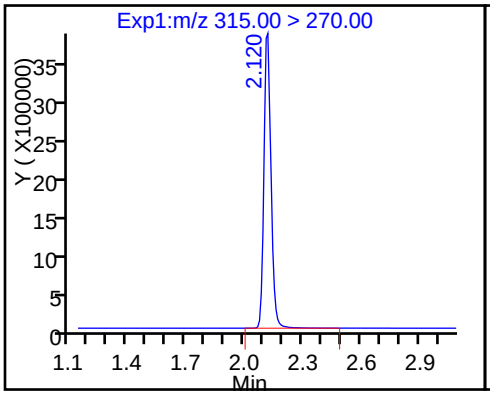
5 Perfluorobutanesulfonic acid



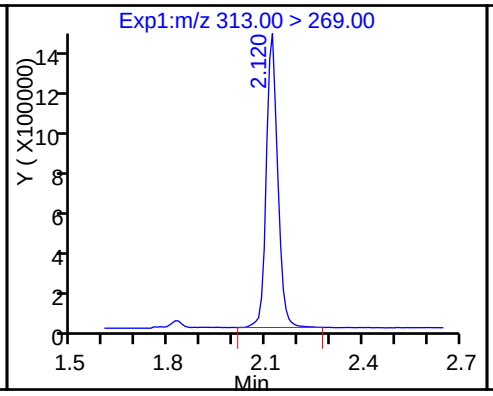
5 Perfluorobutanesulfonic acid



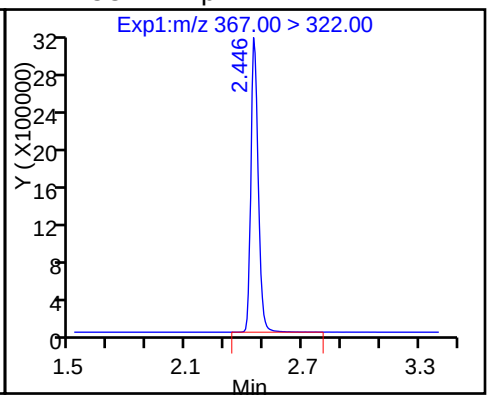
D 6 13C2 PFHxA



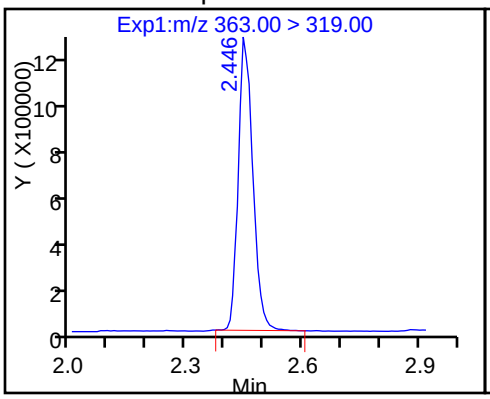
7 Perfluorohexanoic acid



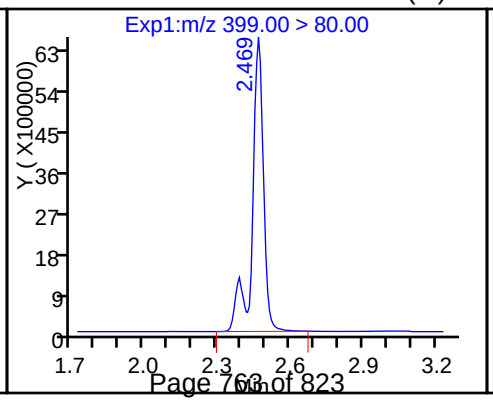
D 11 13C4-PFHpA



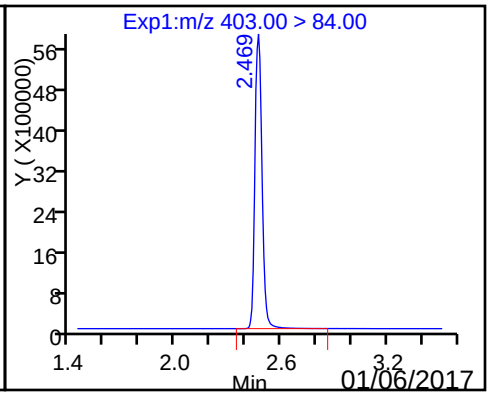
12 Perfluoroheptanoic acid



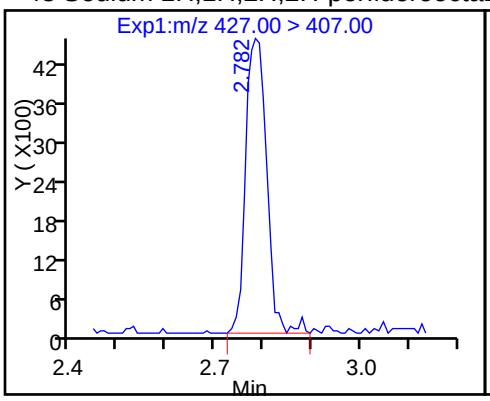
9 Perfluorohexanesulfonic acid (M)



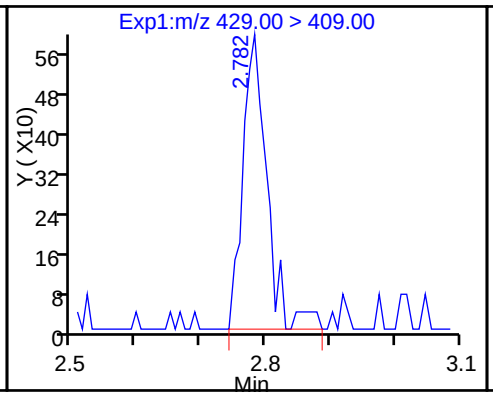
D 10 18O2 PFHxS



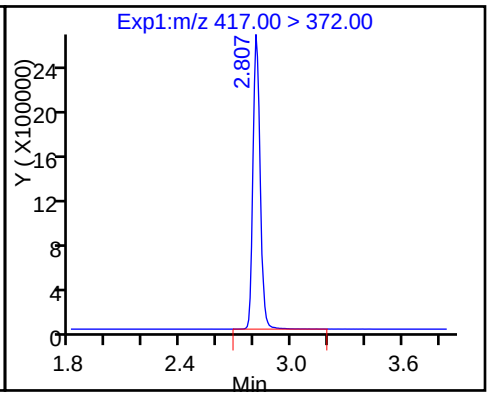
48 Sodium 1H,1H,2H,2H-perfluorooctane



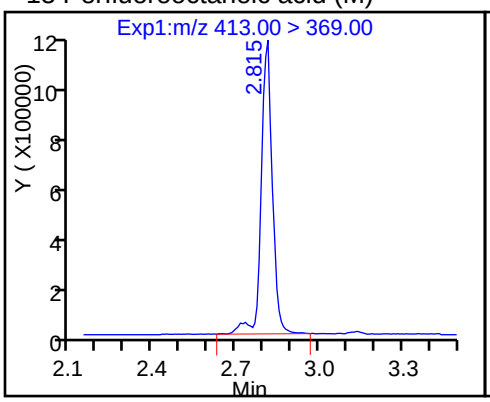
D 47 M2-6:2FTS



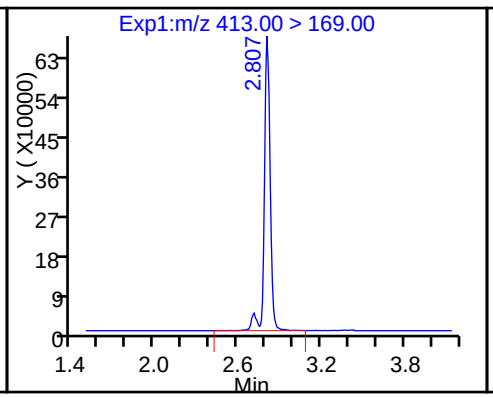
D 14 13C4 PFOA



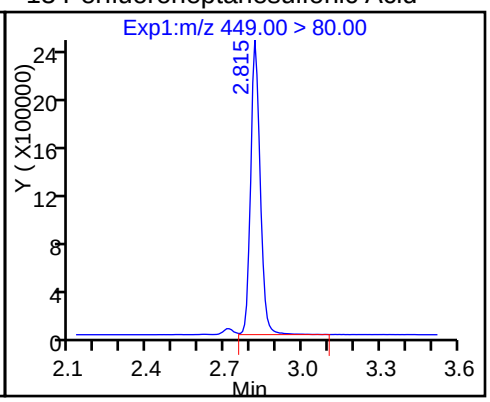
15 Perfluorooctanoic acid (M)



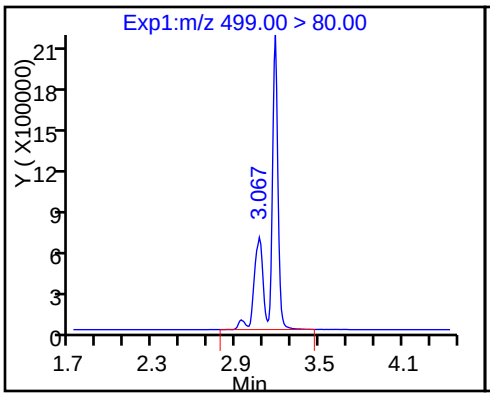
15 Perfluorooctanoic acid



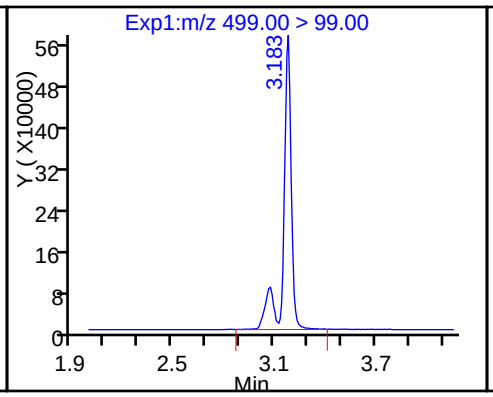
13 Perfluoroheptanesulfonic Acid



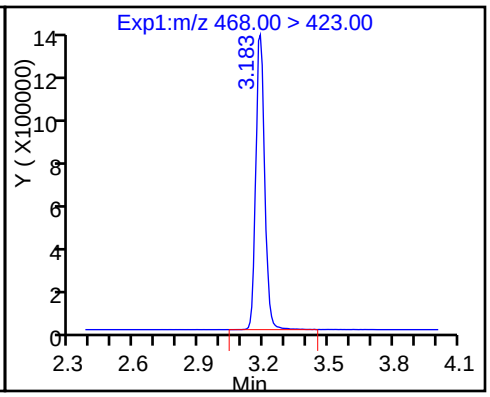
18 Perfluorooctane sulfonic acid



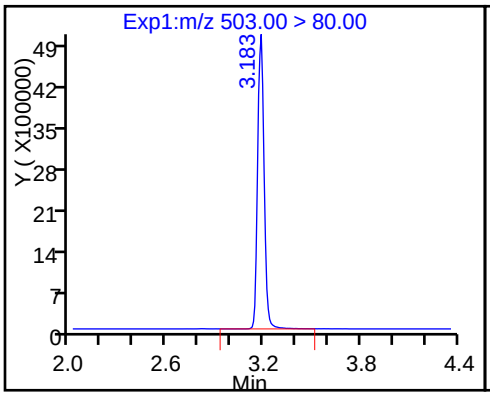
18 Perfluorooctane sulfonic acid



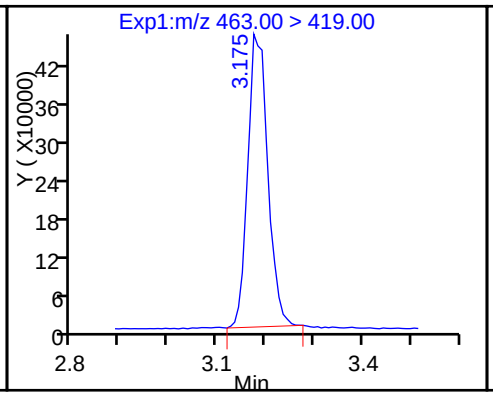
D 19 13C5 PFNA



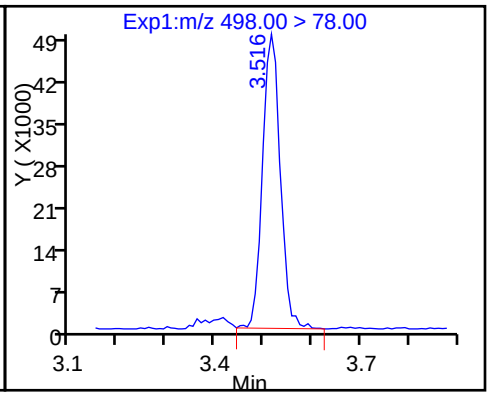
D 17 13C4 PFOS



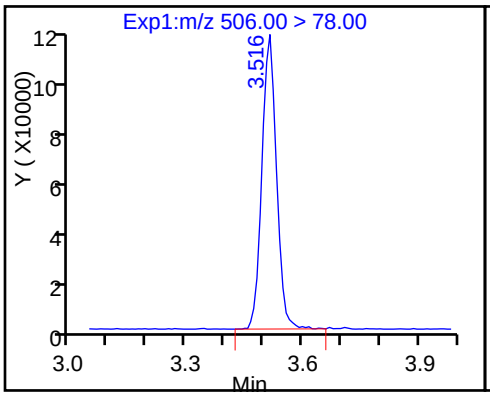
20 Perfluorononanoic acid



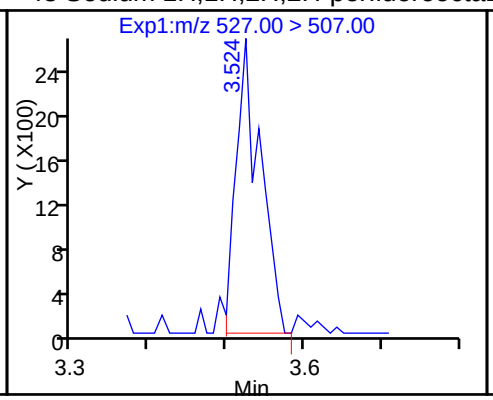
22 Perfluorooctane Sulfonamide



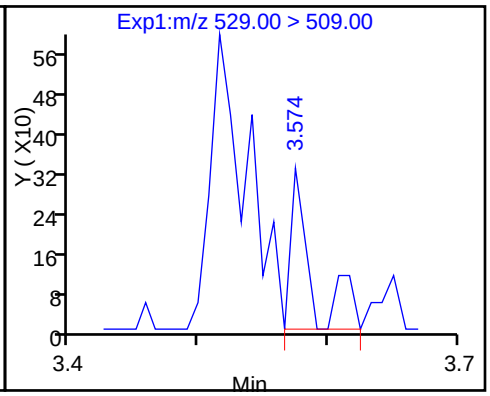
D 21 13C8 FOSA



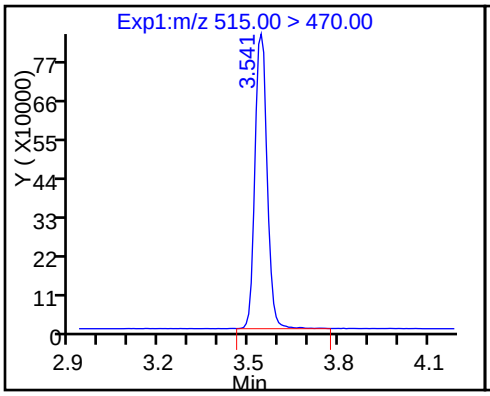
43 Sodium 1H,1H,2H,2H-perfluorooctane



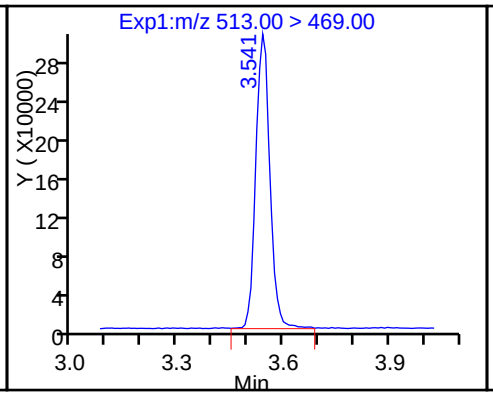
D 42 M2-8:2FTS



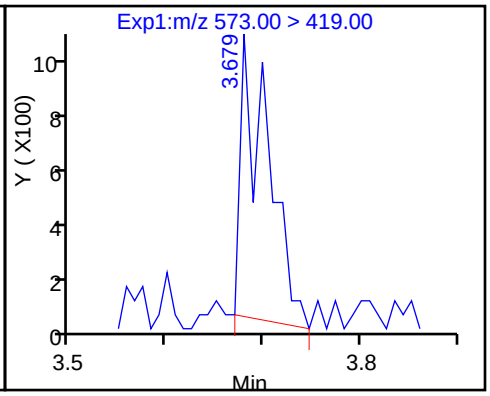
D 23 13C2 PFDA



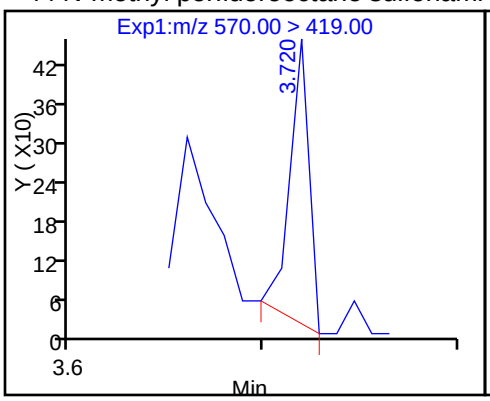
24 Perfluorodecanoic acid



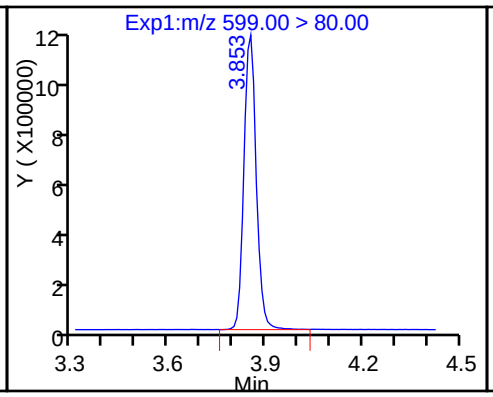
D 45 d3-NMeFOSAA



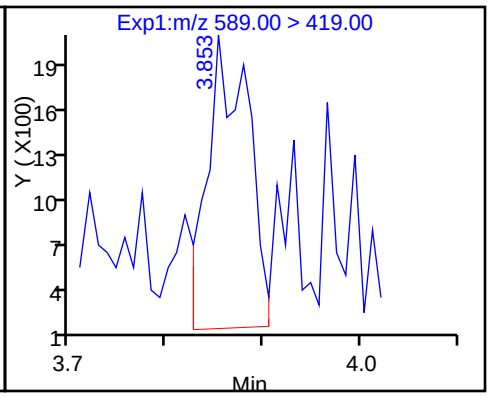
44 N-methyl perfluorooctane sulfonami



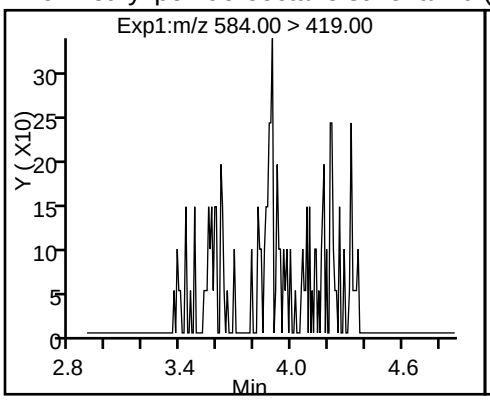
26 Perfluorodecane Sulfonic acid



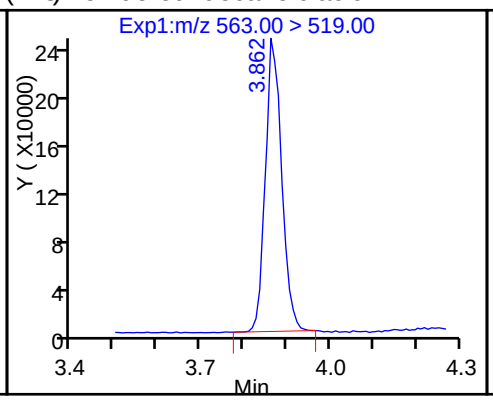
D 46 d5-NEtFOSAA



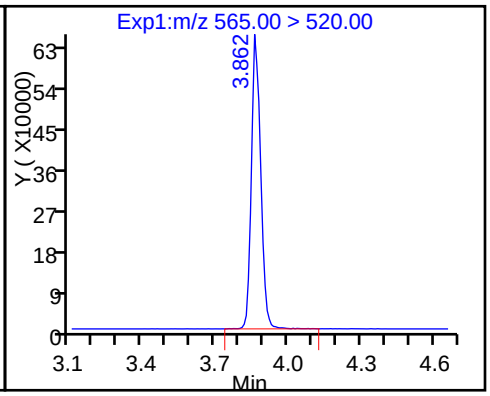
49 N-ethyl perfluorooctane sulfonamid (N



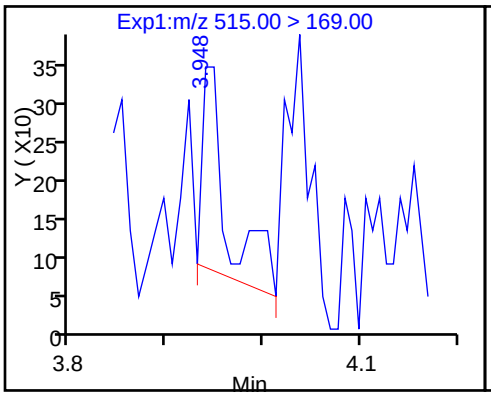
28 Perfluoroundecanoic acid



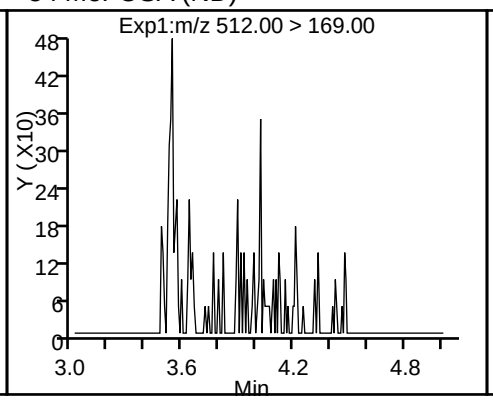
D 27 13C2 PFUnA



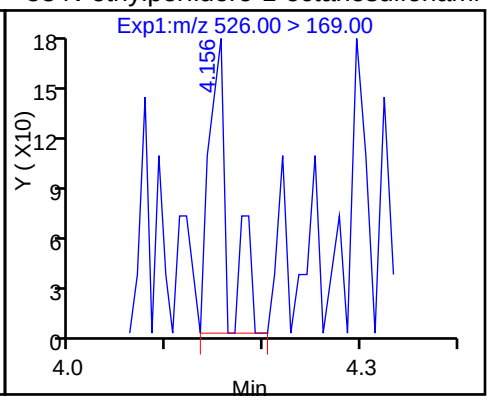
D 52 d-N-MeFOSA-M



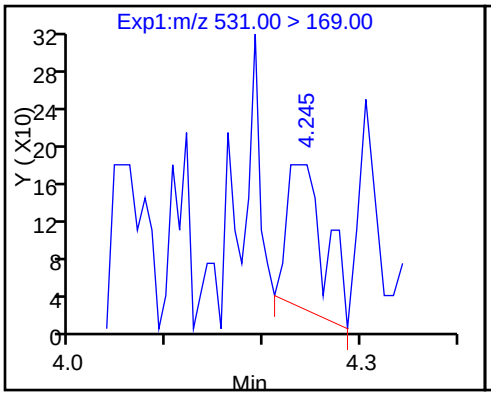
54 MeFOSA (ND)



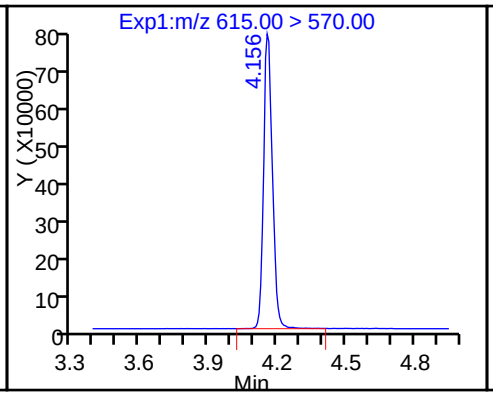
53 N-ethylperfluoro-1-octanesulfonami



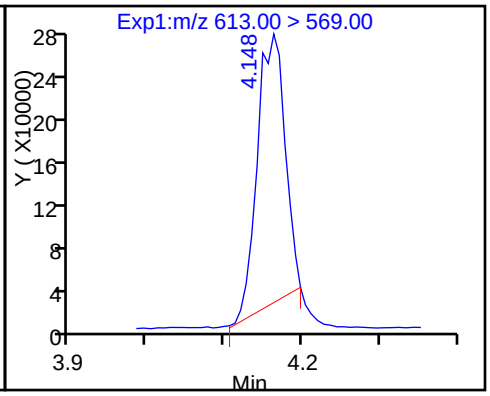
D 51 d-N-EtFOSA-M



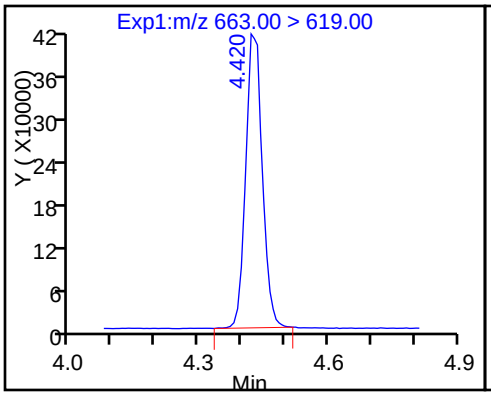
D 30 13C2 PFDoA



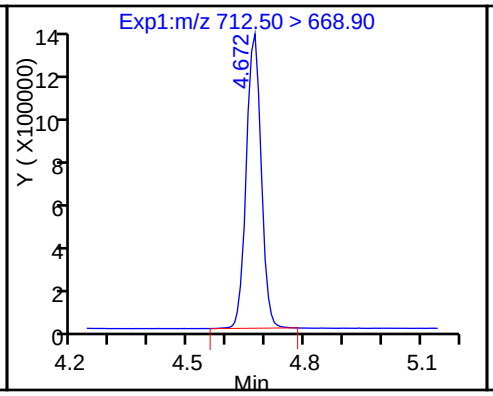
29 Perfluorododecanoic acid



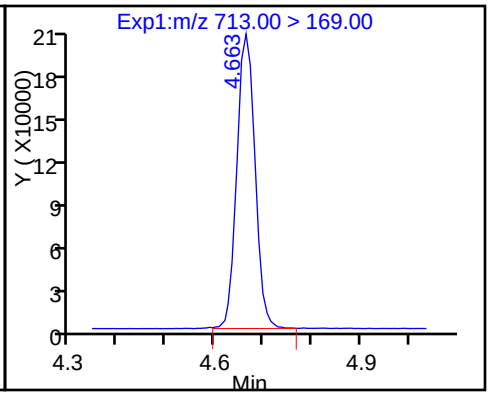
31 Perfluorotridecanoic acid



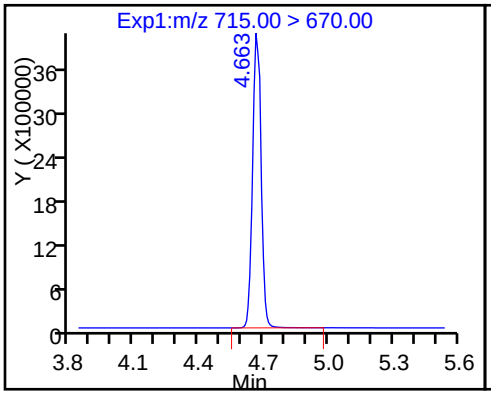
33 Perfluorotetradecanoic acid



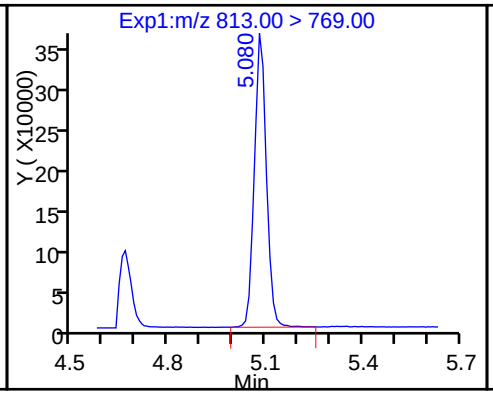
33 Perfluorotetradecanoic acid



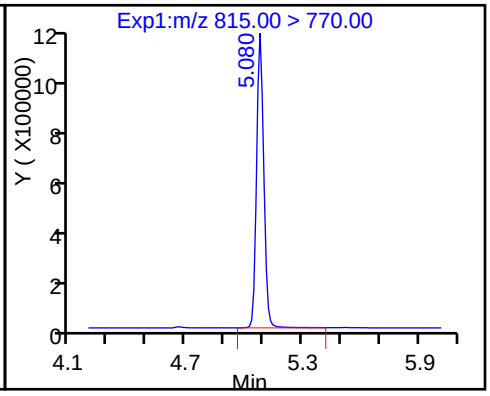
D 32 13C2-PFTeDA



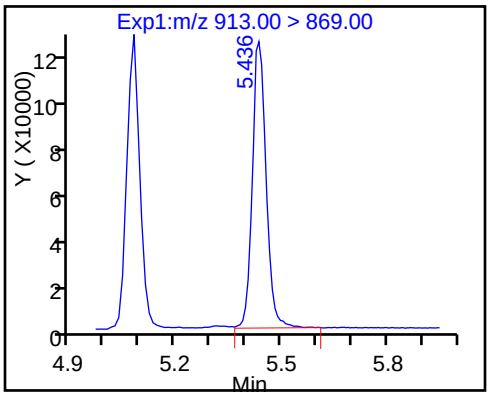
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

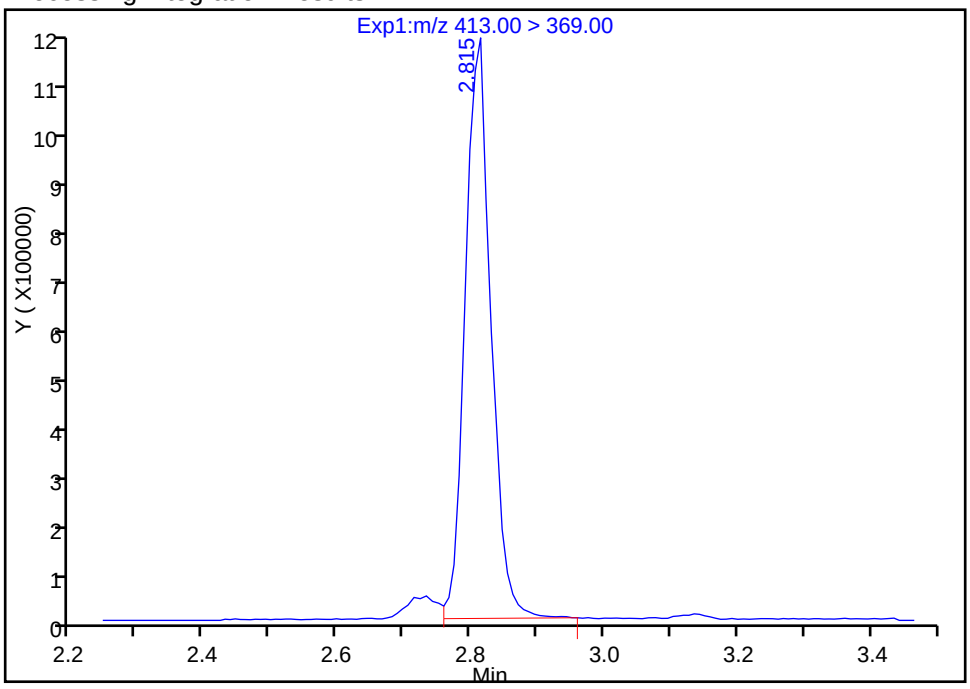
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_033.d
Injection Date: 21-Dec-2016 17:05:57 Instrument ID: A8_N
Lims ID: 320-23998-A-9-C MSD
Client ID: DPT-16-08-GW-31-35-MSD
Operator ID: A8-PC\A8 ALS Bottle#: 15 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

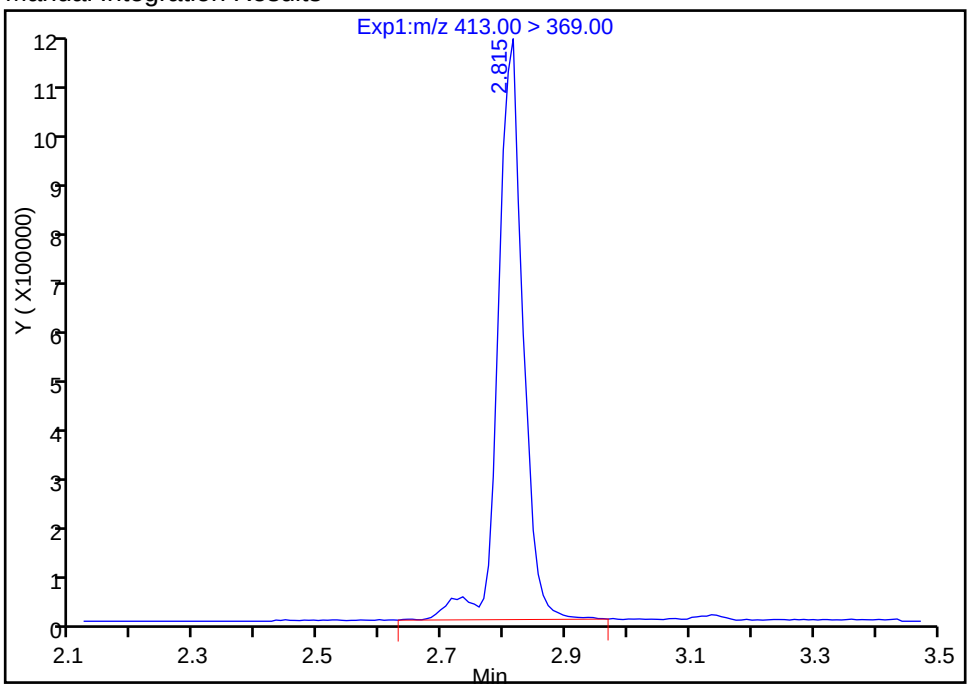
Processing Integration Results

RT: 2.81
Area: 3084843
Amount: 20.997826
Amount Units: ng/ml



Manual Integration Results

RT: 2.81
Area: 3242004
Amount: 22.067586
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:23:09
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-06-GW-31-35-MSD Lab Sample ID: 320-23998-13 MSD

Matrix: Water Lab File ID: 21DEC2016A_043.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 12:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 252.6(mL) Date Analyzed: 12/21/2016 18:20

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.: 143502 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*1.14*	*E M 4*	*0.0025*	0.0020	*0.00074*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.15*	*E 4*	*0.0040*	0.0030	*0.0013*
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.479*	*E 4*	*0.0025*	0.0020	*0.00091*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	56		25-150
STL00991	13C4 PFOS	61		25-150
STL00994	18O2 PFHxS	33		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_043.d
Lims ID: 320-23998-A-13-C MSD
Client ID: DPT-16-06-GW-31-35-MSD
Sample Type: MSD
Inject. Date: 21-Dec-2016 18:20:55 ALS Bottle#: 21 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23998-a-13-c msd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Dec-2016 10:36:07 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: XAWRK020

First Level Reviewer: chandrasenas Date: 22-Dec-2016 10:31:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.549	1.550	-0.001		7933198	22.8		45.6	512970	
1 Perfluorobutyric acid										
212.90 > 169.00	1.549	1.550	-0.001	1.000	10800660	79.7		399	43750	
D 4 13C5-PFPeA										
267.90 > 223.00	1.829	1.829	0.0		10028664	37.7		75.4	365562	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.829	1.829	0.0	1.000	27328621	138.1		690	67694	
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.867	1.868	-0.001	1.000	37438189	242.0		1369		E
298.90 > 99.00	1.867	1.868	-0.001	1.000	19128158		1.96(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.125	2.122	0.003		7674830	31.3		62.6	441360	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.117	2.122	-0.005	1.000	66165256	464.1		2321	117443	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.375	2.395	-0.020	1.000	168145081	1495.1		8215		E
D 11 13C4-PFHpA										
367.00 > 322.00	2.437	2.459	-0.022		3818559	16.9		33.7	212679	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.445	2.459	-0.014	1.000	6592397	88.2		441	5810	
D 10 18O2 PFHxS										
403.00 > 84.00	2.471	2.474	-0.003		5164871	15.8		33.4	72414	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.780	2.789	-0.009	1.000	5826706	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.780	2.789	-0.009		308479	2.64		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.812	2.814	-0.002		6500767	28.2		56.4	343065	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.820	2.814	0.006	1.000	75441376	578.4		2892	193180	EM
413.00 > 169.00	2.812	2.814	-0.002	0.997	63632007		1.19(0.90-1.10)		45136	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.820	2.822	-0.002	1.000	11815962	70.8		372		
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.063	3.076	-0.013	1.000	163512636	1085.5		5848	232015	E
499.00 > 99.00	3.083	3.076	0.007	1.006	43753123		3.74(0.90-1.10)		195595	
D 17 13C4 PFOS										
503.00 > 80.00	3.183	3.182	0.001		7240626	29.1		60.9	113750	
D 19 13C5 PFNA										
468.00 > 423.00	3.183	3.191	-0.008		3586958	20.2		40.4	268652	
20 Perfluorononanoic acid										
463.00 > 419.00	3.183	3.191	-0.008	1.000	2148403	31.5		157	737	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.519	3.523	-0.004	1.000	272196	18.8		94.0	10474	
D 21 13C8 FOSA										
506.00 > 78.00	3.519	3.523	-0.004		776253	2.02		4.0	95525	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.528	3.529	-0.001	1.000	340603	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.528	3.529	-0.001		21286	0.1981		0.0		
D 23 13C2 PFDA										
515.00 > 470.00	3.545	3.548	-0.003		5037551	32.0		64.0	162264	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.545	3.548	-0.003	1.000	1876518	19.7		98.7	6630	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.703	3.694	0.009		6316	0.0839		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.693	3.705	-0.012	0.997	1190	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.859	3.860	-0.001	1.000	3006372	34.0		176		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.868	3.866	0.002		12154	0.1551		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.885	3.875	0.010	1.004	1734	NR		0.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.868	3.877	-0.009	1.000	1149914	17.9		89.3	18417	
D 27 13C2 PFUnA										
565.00 > 520.00	3.868	3.877	-0.009		3367116	28.7		57.4	308196	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.168	4.009	0.159		370	0.003892		0.0		
54 MeFOSA										
512.00 > 169.00	3.992	4.018	-0.026	1.000	262	NR		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.168	4.166	0.002	1.000	1189571	18.2		91.2	29924	
D 30 13C2 PFDoA										
615.00 > 570.00	4.168	4.166	0.002		3552519	32.0		64.0	131216	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.432	4.191	0.241		3808	0.0444		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.432	4.430	0.002	1.000	1611024	25.0		125	38568	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.678	4.676	0.002	1.000	4497684	39.9		200	62884	
713.00 > 169.00	4.670	4.676	-0.006	0.998	710369		6.33(0.00-0.00)		89592	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.670	4.676	-0.006		13949977	61.3		123	813736	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.090	5.094	-0.004	1.000	1350091	19.3		96.5	2863	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.090	5.094	-0.004		4183218	33.6		67.2	113417	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.444	5.446	-0.002	1.000	547709	7.48		37.4	740	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 22-Dec-2016 10:36:14 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_043.d

Injection Date: 21-Dec-2016 18:20:55 Instrument ID: A8_N

Lims ID: 320-23998-A-13-C MSD

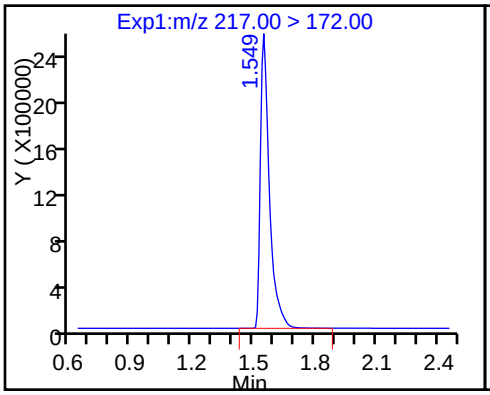
Client ID: DPT-16-06-GW-31-35-MSD

Operator ID: A8-PC\A8 ALS Bottle#: 21 Worklist Smp#: 33

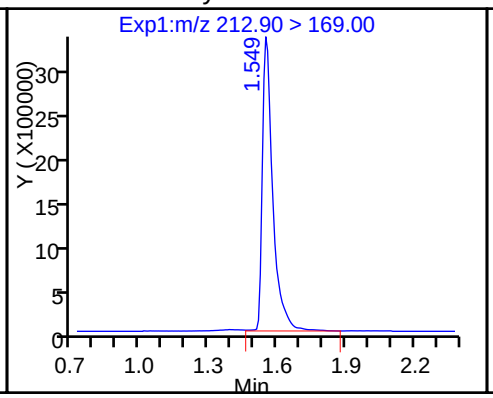
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

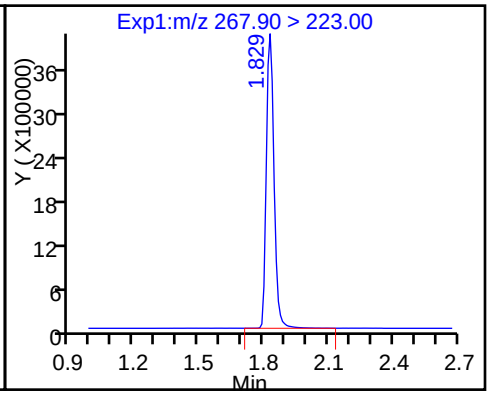
D 2 13C4 PFBA



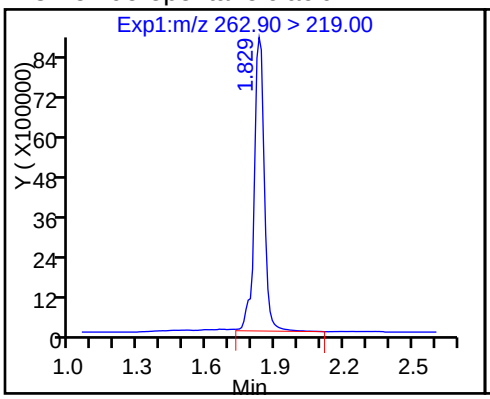
1 Perfluorobutyric acid



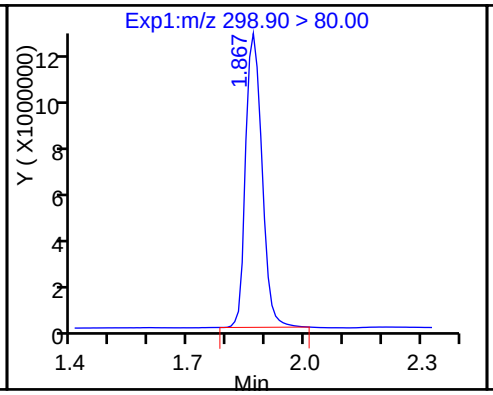
D 4 13C5-PFPeA



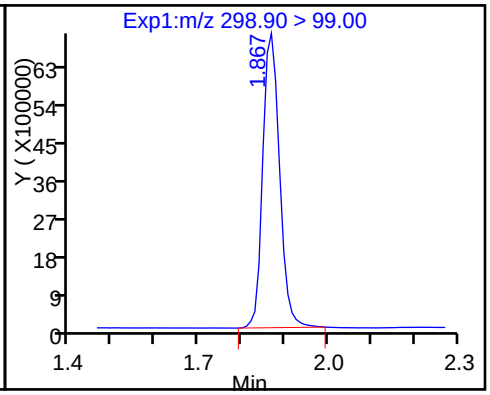
3 Perfluoropentanoic acid



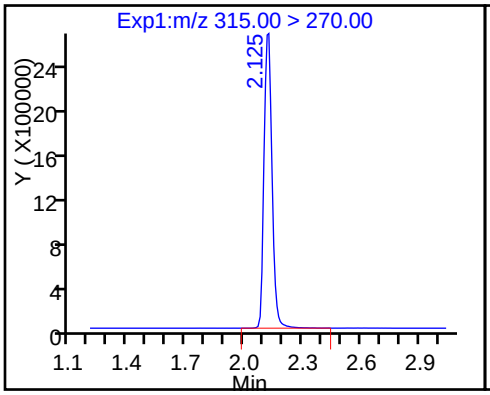
5 Perfluorobutanesulfonic acid



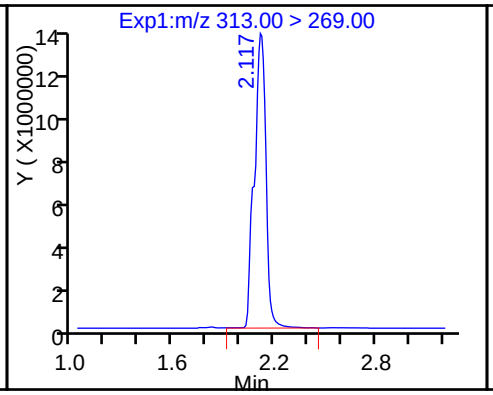
5 Perfluorobutanesulfonic acid



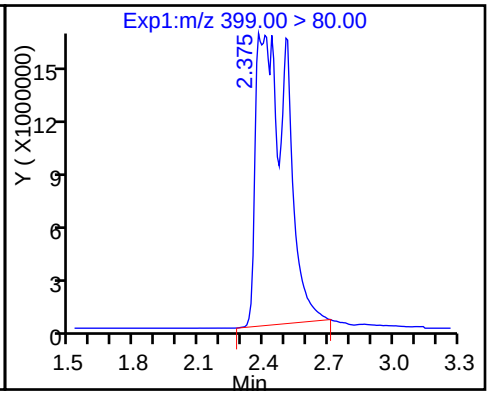
D 6 13C2 PFHxA



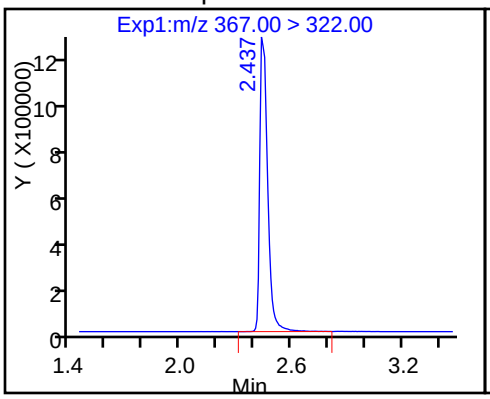
7 Perfluorohexanoic acid



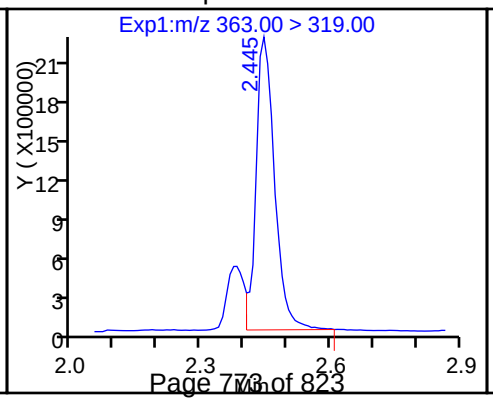
9 Perfluorohexanesulfonic acid



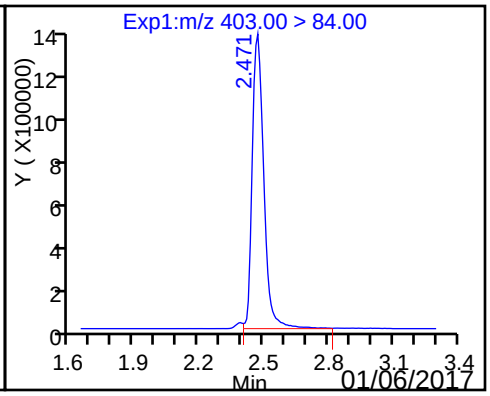
D 11 13C4-PFHpA



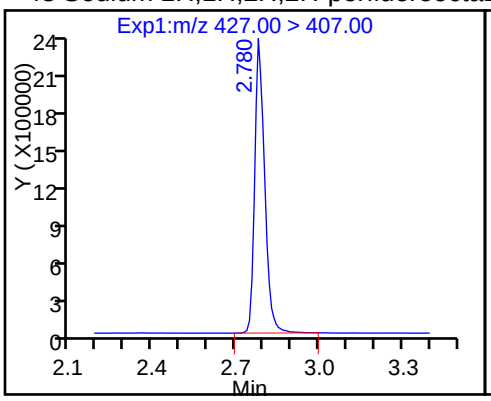
12 Perfluoroheptanoic acid



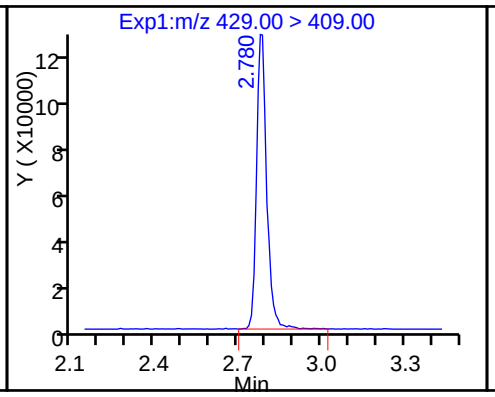
D 10 18O2 PFHxS



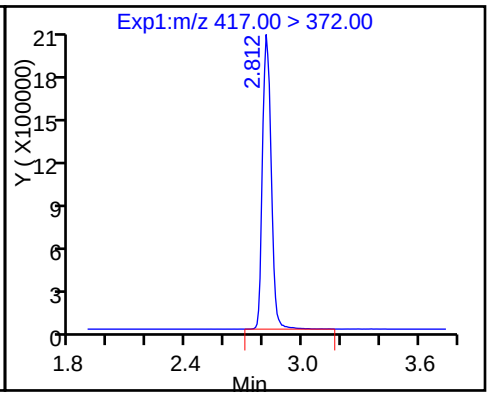
48 Sodium 1H,1H,2H,2H-perfluorooctane



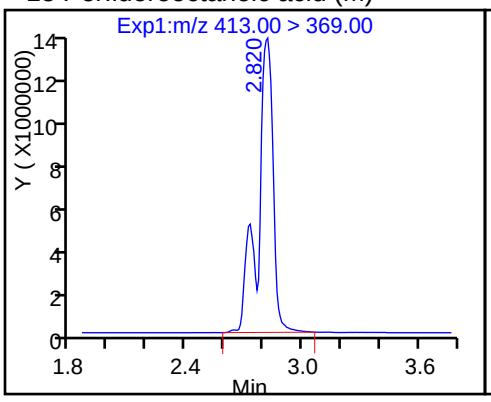
D 47 M2-6:2FTS



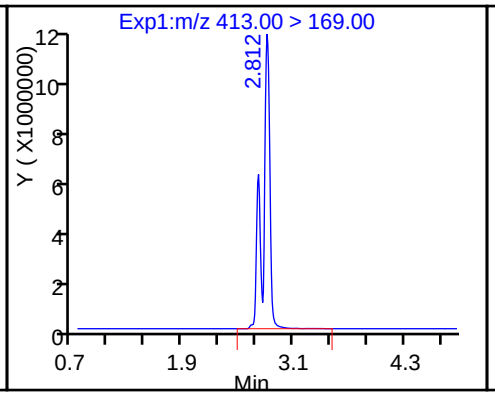
D 14 13C4 PFOA



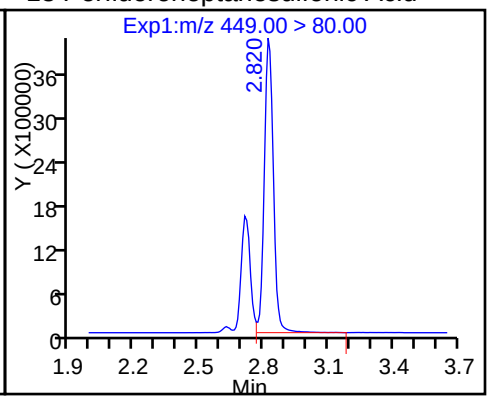
15 Perfluorooctanoic acid (M)



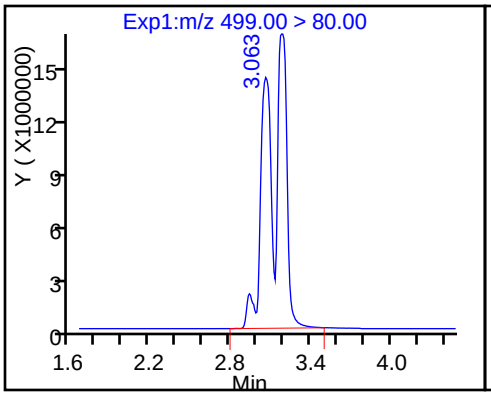
15 Perfluorooctanoic acid



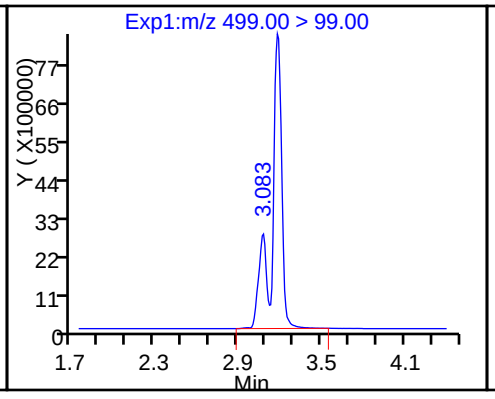
13 Perfluoroheptanesulfonic Acid



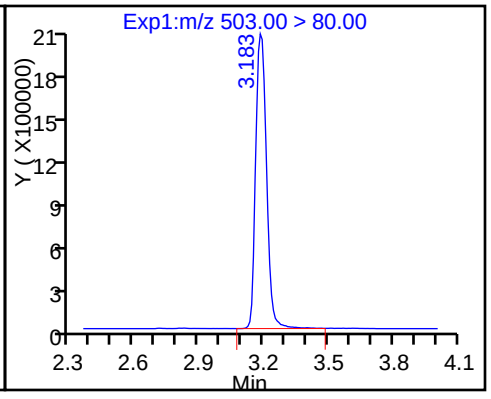
18 Perfluorooctane sulfonic acid



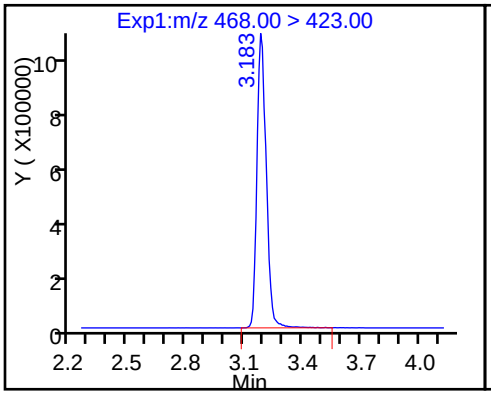
18 Perfluorooctane sulfonic acid



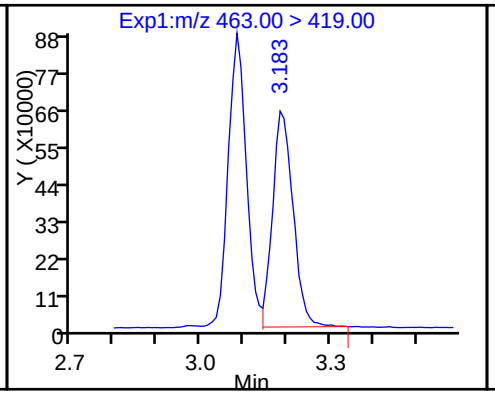
D 17 13C4 PFOS



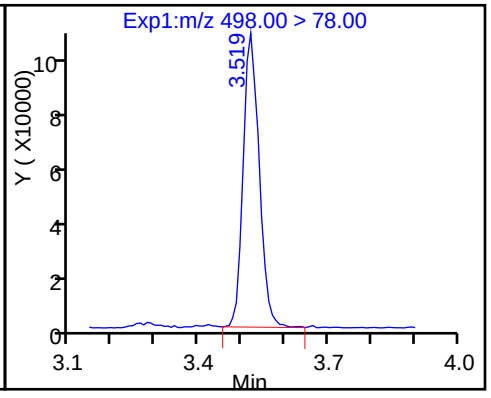
D 19 13C5 PFNA



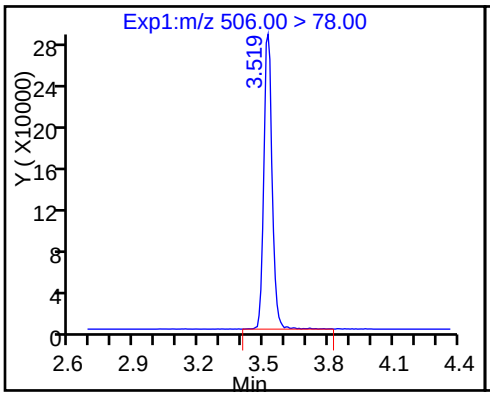
20 Perfluorononanoic acid



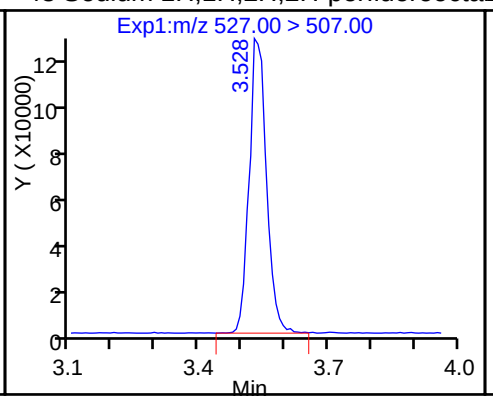
22 Perfluorooctane Sulfonamide



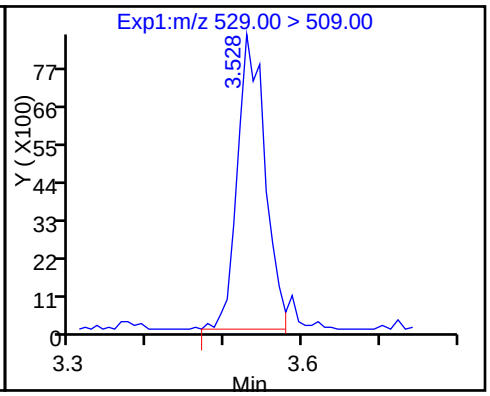
D 21 13C8 FOSA



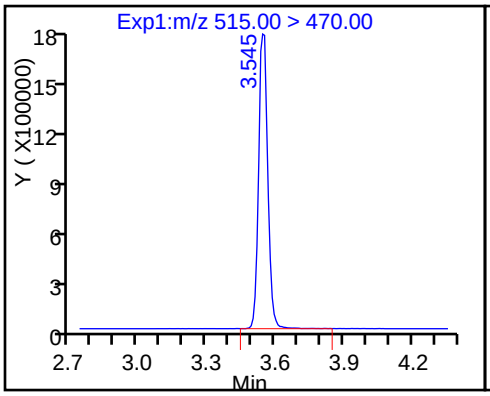
43 Sodium 1H,1H,2H,2H-perfluorooctane



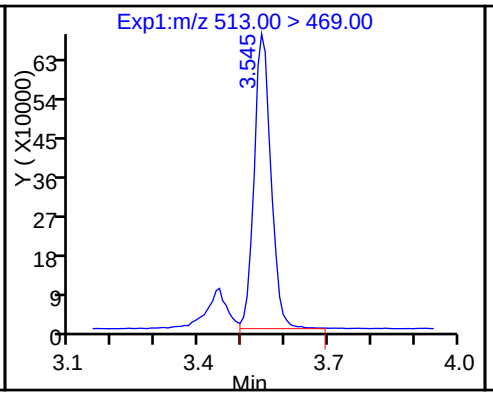
D 42 M2-8:2FTS



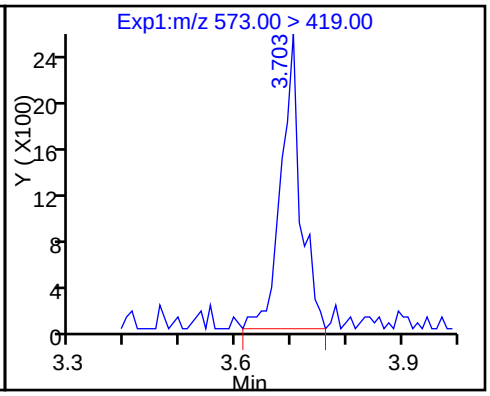
D 23 13C2 PFDA



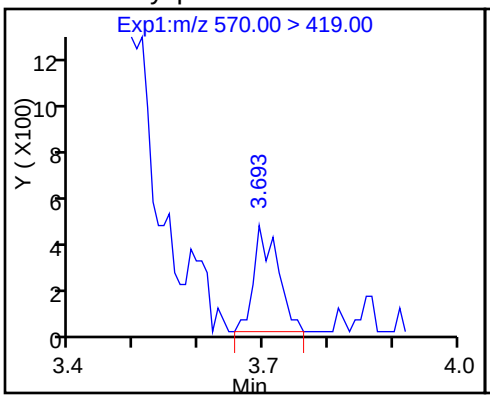
24 Perfluorodecanoic acid



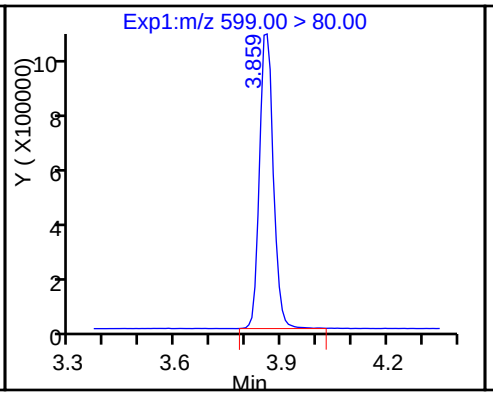
D 45 d3-NMeFOSAA



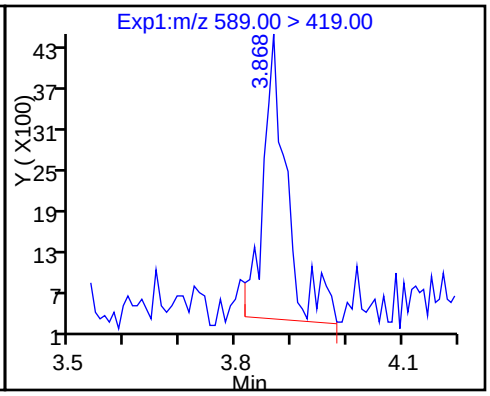
44 N-methyl perfluorooctane sulfonami



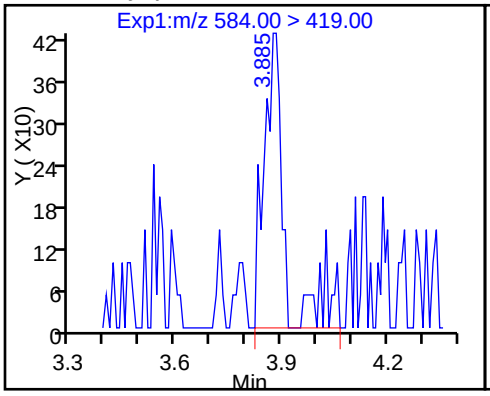
26 Perfluorodecane Sulfonic acid



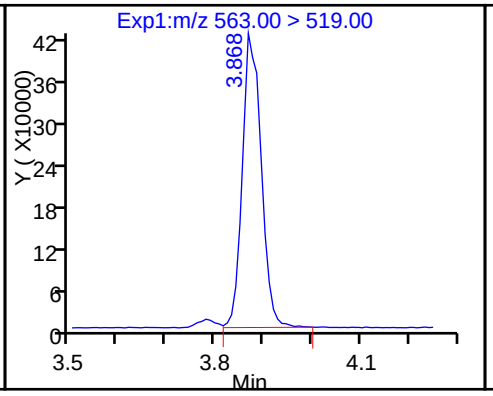
D 46 d5-NEtFOSAA



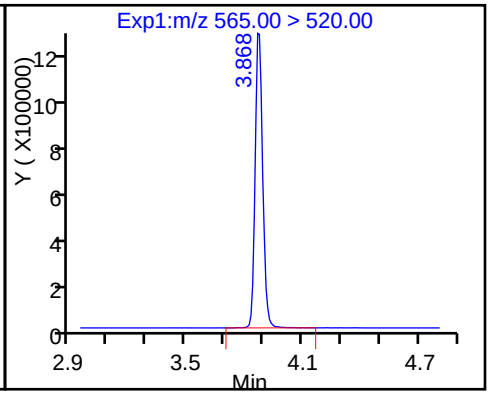
49 N-ethyl perfluorooctane sulfonamid



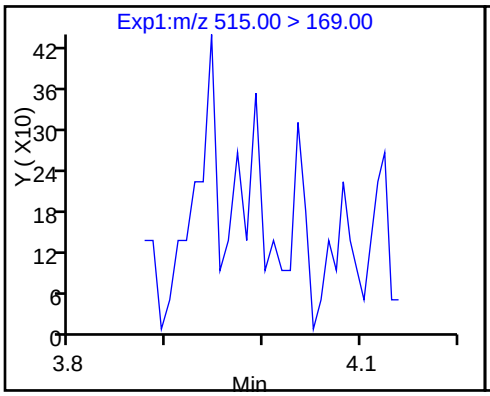
28 Perfluoroundecanoic acid



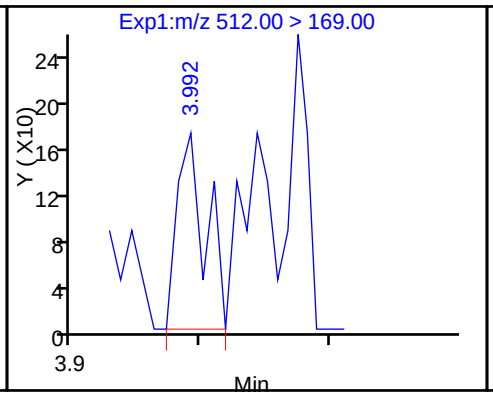
D 27 13C2 PFUnA



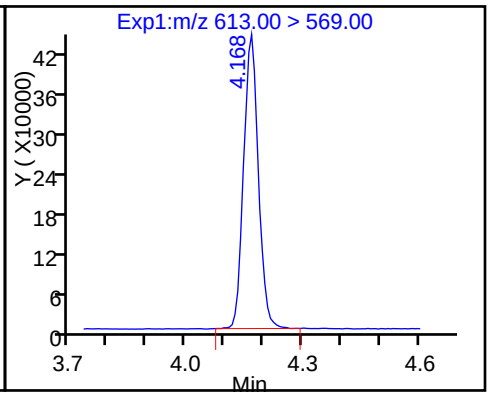
D 52 d-N-MeFOSA-M



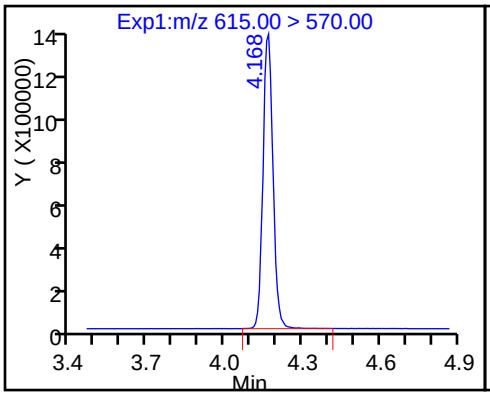
54 MeFOSA



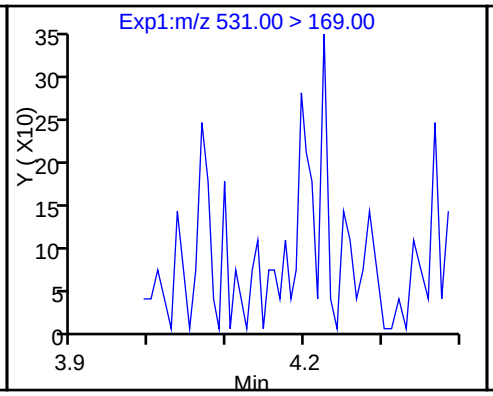
29 Perfluorododecanoic acid



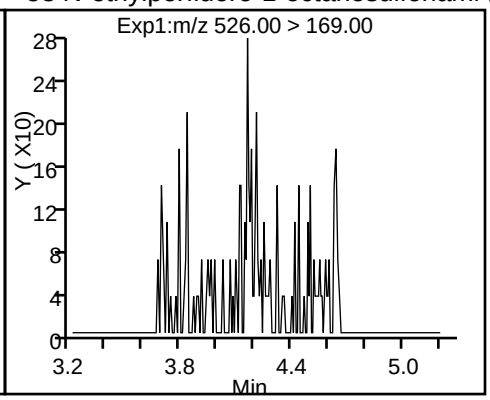
D 30 13C2 PFDoA



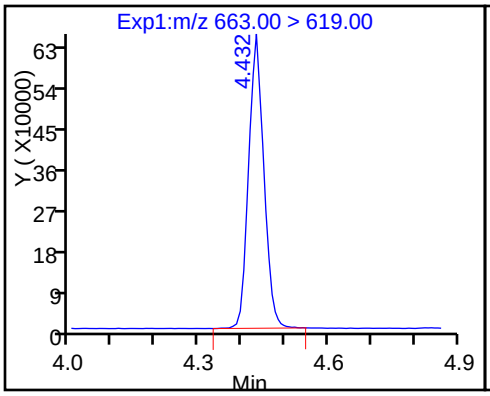
D 51 d-N-EtFOSA-M



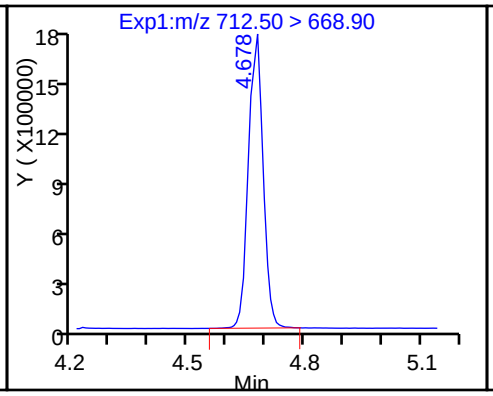
53 N-ethylperfluoro-1-octanesulfonami (ND)



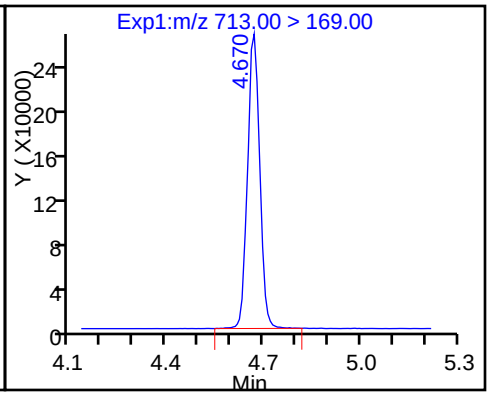
31 Perfluorotridecanoic acid



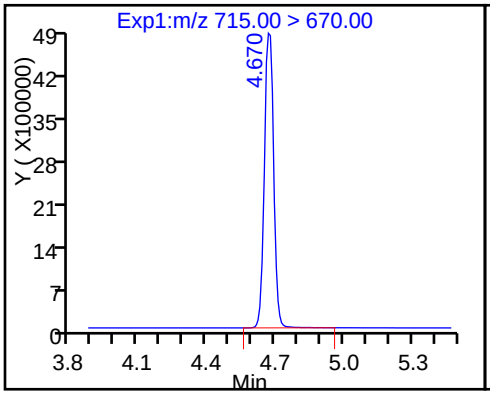
33 Perfluorotetradecanoic acid



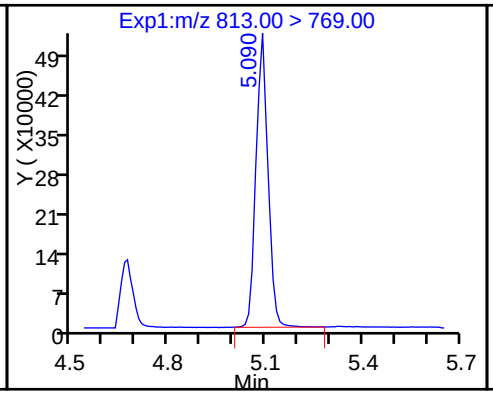
33 Perfluorotetradecanoic acid



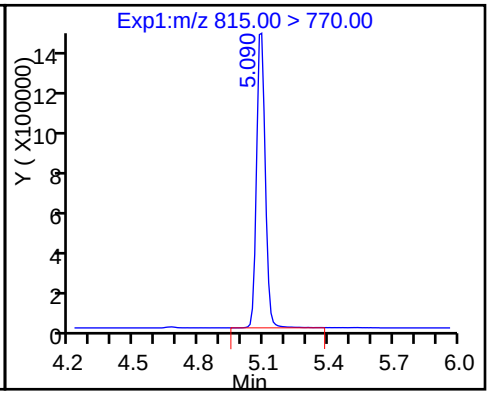
D 32 13C2-PFTeDA



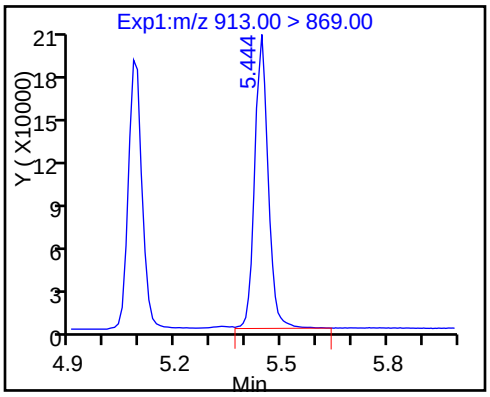
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

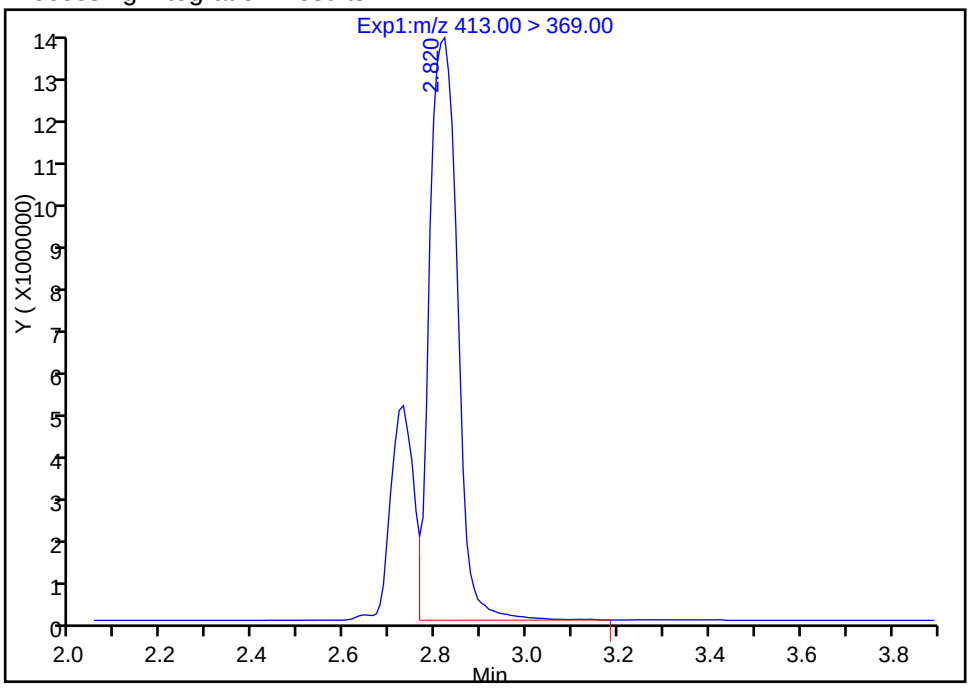
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b\21DEC2016A_043.d
Injection Date: 21-Dec-2016 18:20:55 Instrument ID: A8_N
Lims ID: 320-23998-A-13-C MSD
Client ID: DPT-16-06-GW-31-35-MSD
Operator ID: A8-PC\A8 ALS Bottle#: 21 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

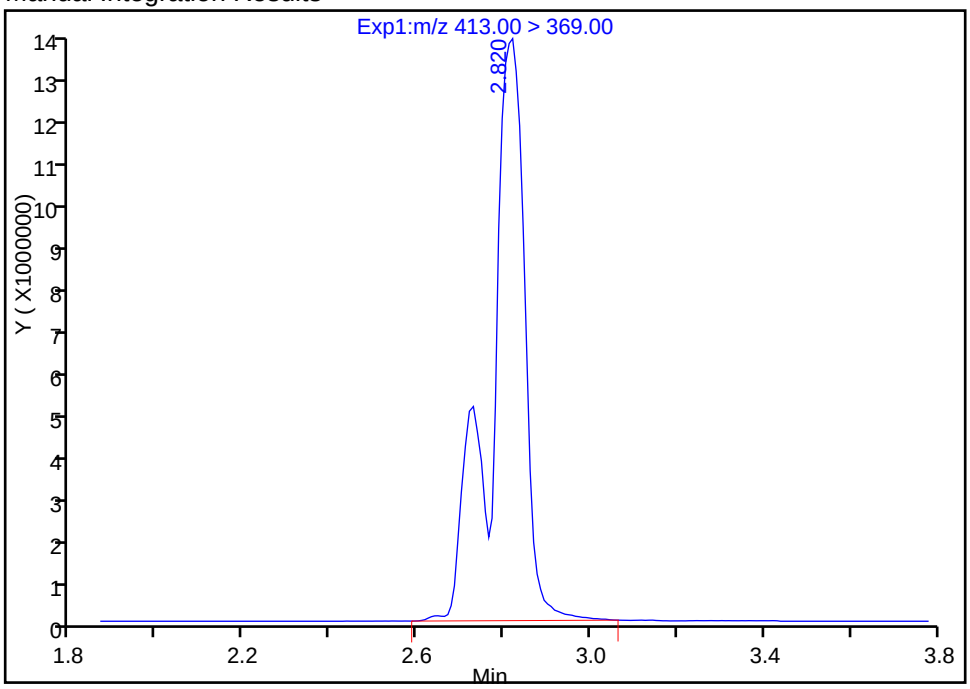
Processing Integration Results

RT: 2.82
Area: 58218799
Amount: 446.3809
Amount Units: ng/ml



Manual Integration Results

RT: 2.82
Area: 75441376
Amount: 578.4316
Amount Units: ng/ml



Reviewer: chandrasenas, 22-Dec-2016 10:31:20
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Client Sample ID: DPT-16-06-GW-31-35-MSD Lab Sample ID: 320-23998-13 MSD DL

Matrix: Water Lab File ID: 22DEC2016BB_017.d

Analysis Method: 537 (Modified) Date Collected: 12/01/2016 12:50

Extraction Method: 3535 Date Extracted: 12/06/2016 11:39

Sample wt/vol: 252.6(mL) Date Analyzed: 12/22/2016 17:50

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.: 143644 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.67	D M 4	0.025	0.020	0.0074
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.62	D 4	0.040	0.030	0.013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.332	D 4	0.025	0.020	0.0091

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	112		25-150
STL00991	13C4 PFOS	137		25-150
STL00994	18O2 PFHxS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_017.d
Lims ID: 320-23998-A-13-C MSD
Client ID: DPT-16-06-GW-31-35-MSD
Sample Type: MSD
Inject. Date: 22-Dec-2016 17:50:19 ALS Bottle#: 35 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23998-a-13-c msd 10X
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Dec-2016 08:23:19 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: XAWRK027

First Level Reviewer: chandrasenas Date: 23-Dec-2016 08:03:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.541	1.545	-0.004		1673888	4.81		9.6	289126	
1 Perfluorobutyric acid										
212.90 > 169.00	1.541	1.553	-0.012	1.000	2208305	7.73		386	14154	
D 4 13C5-PFPeA										
267.90 > 223.00	1.819	1.823	-0.004		1721928	6.47		12.9	188116	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.819	1.833	-0.014	1.000	5444110	16.0		801	36320	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.858	1.871	-0.013	1.000	7876572	16.8		948		
298.90 > 99.00	1.858	1.871	-0.013	1.000	3323576		2.37(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.111	2.123	-0.012		1385287	5.65		11.3	257032	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.111	2.123	-0.012	1.000	15876984	61.7		3085	17681	
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.376	2.395	-0.019	1.000	98795123	289.2		15890		E
D 11 13C4-PFHpA										
367.00 > 322.00	2.436	2.457	-0.021		956651	4.23		8.5	116559	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.436	2.457	-0.021	1.000	1626845	8.69		434	4945	
D 10 18O2 PFHxS										
403.00 > 84.00	2.459	2.472	-0.013		1568821	4.80		10.1	72400	
D 47 M2-6:2FTS										
429.00 > 409.00	2.766	2.782	-0.016		57906	0.4950		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.766	2.782	-0.016	1.000	1096662	NR		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.798	2.811	-0.013		1294818	5.62		11.2	153246	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.798	2.819	-0.021	1.000	21948072	84.5		4224	158563	M
413.00 > 169.00	2.798	2.819	-0.021	1.000	14982863		1.46(0.90-1.10)		683006	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.806	2.819	-0.013	1.000	1933591	5.16		271		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.066	3.073	-0.007	1.000	44834659	132.6		7143	365708	
499.00 > 99.00	3.066	3.073	-0.007	1.000	9586539		4.68(0.90-1.10)		75243	
D 17 13C4 PFOS										
503.00 > 80.00	3.174	3.187	-0.013		1625481	6.53		13.7	93835	
D 19 13C5 PFNA										
468.00 > 423.00	3.174	3.187	-0.013		839279	4.72		9.4	128426	
20 Perfluorononanoic acid										
463.00 > 419.00	3.174	3.187	-0.013	1.000	525265	3.29		164	1125	
D 21 13C8 FOSA										
506.00 > 78.00	3.498	3.511	-0.013		100531	0.2617		0.5	12879	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.498	3.511	-0.013	1.000	32472	1.73		86.6	2975	
D 42 M2-8:2FTS										
529.00 > 509.00	3.506	3.522	-0.016		1404	0.0131		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.523	3.530	-0.007	1.005	42147	NR		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.531	3.545	-0.014	1.000	247221	2.03		102	4273	
D 23 13C2 PFDA										
515.00 > 470.00	3.531	3.545	-0.014		644457	4.10		8.2	26435	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.842	3.857	-0.015	1.000	374526	1.89		97.8		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.851	3.858	-0.007		1921	0.0245		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.868	3.874	-0.006		413340	3.53		7.1	49291	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.860	3.874	-0.014	1.000	149447	1.89		94.5	3191	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.028	4.000	0.028		333	0.003503		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.162	4.170	-0.008		461495	4.16		8.3	21766	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.154	4.170	-0.016	1.000	161287	1.90		95.2	3568	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.418	4.441	-0.023	1.000	183159	2.19		109	5115	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.662	4.671	-0.009		1557047	6.85		13.7	292627	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.662	4.679	-0.017	1.000	522037	3.57		178	7813	
713.00 > 169.00	4.662	4.679	-0.017	1.000	75982		6.87(0.00-0.00)		28947	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 13C2-PFHxDA										
815.00 > 770.00	5.080	5.091	-0.011		579381	4.65		9.3	37036	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.080	5.091	-0.011	1.000	184878	1.50		74.9	1718	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.429	5.444	-0.015	1.000	68733	0.7227		36.1	662	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 23-Dec-2016 09:21:13 Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_017.d

Injection Date: 22-Dec-2016 17:50:19 Instrument ID: A8_N

Lims ID: 320-23998-A-13-C MSD

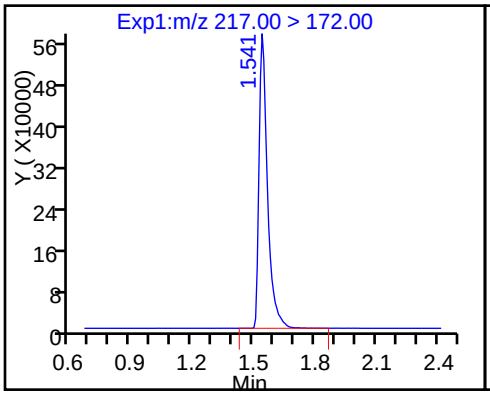
Client ID: DPT-16-06-GW-31-35-MSD

Operator ID: A8-PC\A8 ALS Bottle#: 35 Worklist Smp#: 17

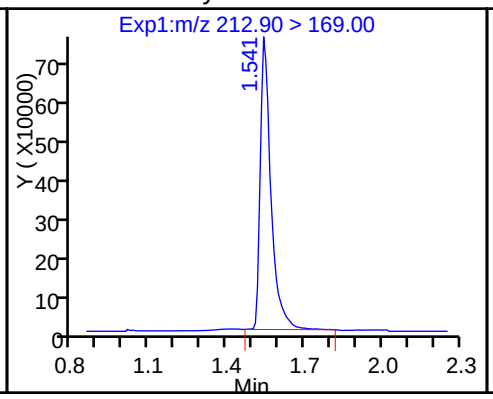
Injection Vol: 2.0 ul Dil. Factor: 10.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

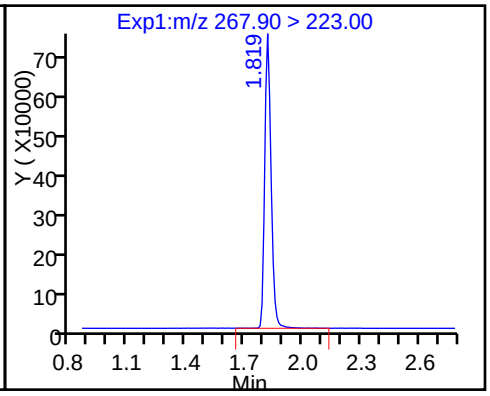
D 2 13C4 PFBA



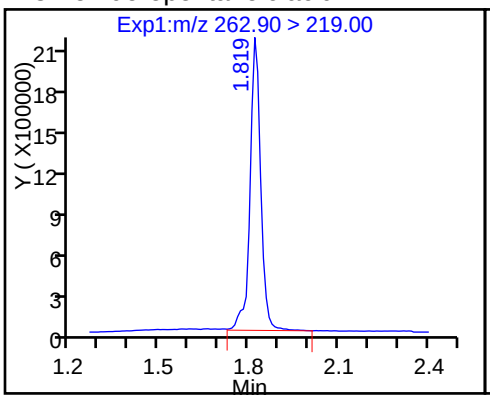
1 Perfluorobutyric acid



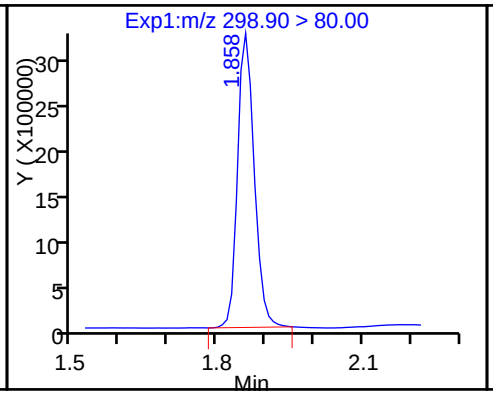
D 4 13C5-PFPeA



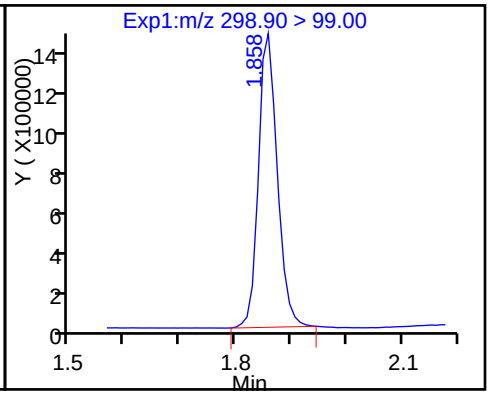
3 Perfluoropentanoic acid



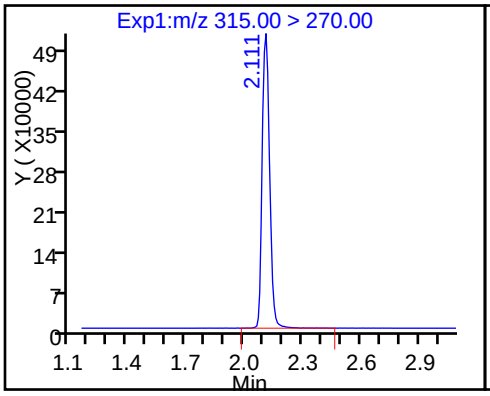
5 Perfluorobutanesulfonic acid



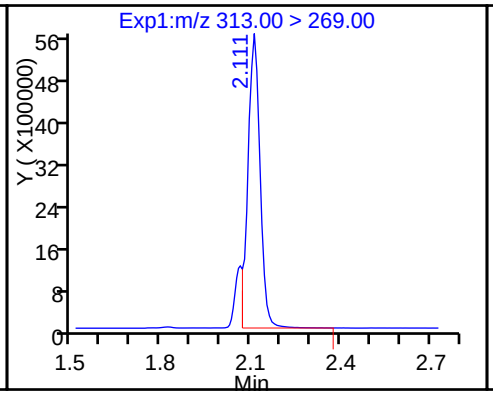
5 Perfluorobutanesulfonic acid



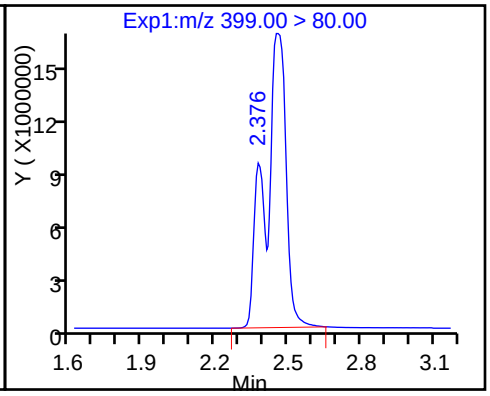
D 6 13C2 PFHxA



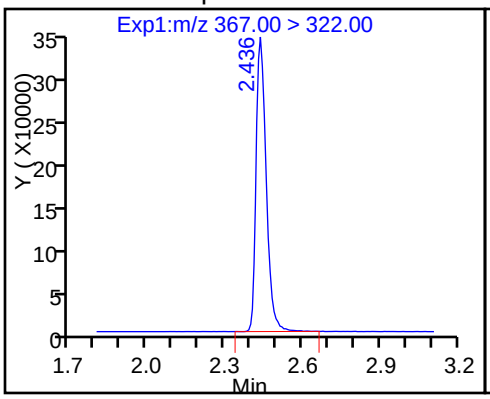
7 Perfluorohexanoic acid



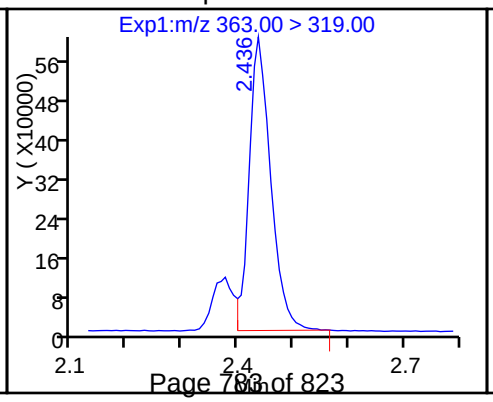
9 Perfluorohexanesulfonic acid



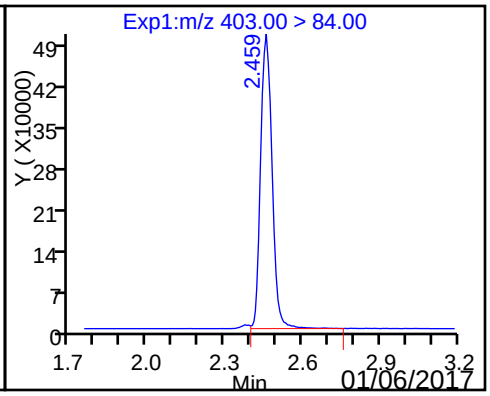
D 11 13C4-PFHpA



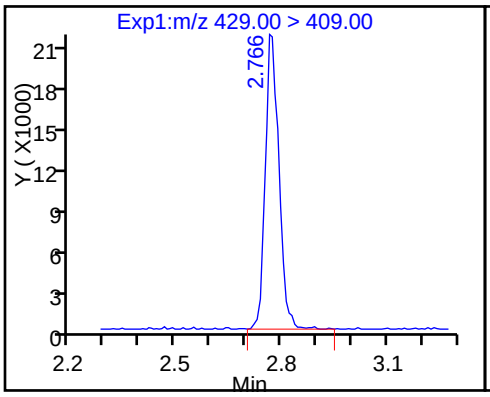
12 Perfluoroheptanoic acid



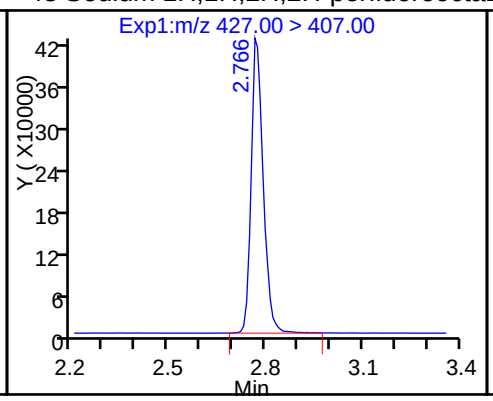
D 10 18O2 PFHxS



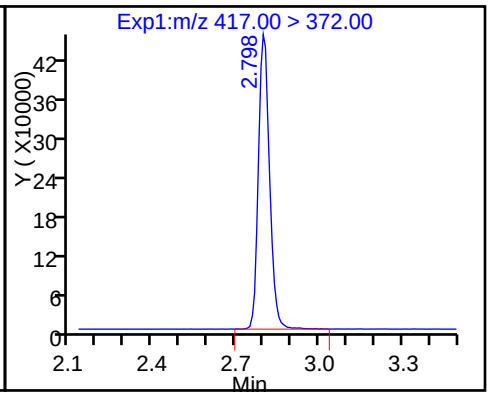
D 47 M2-6:2FTS



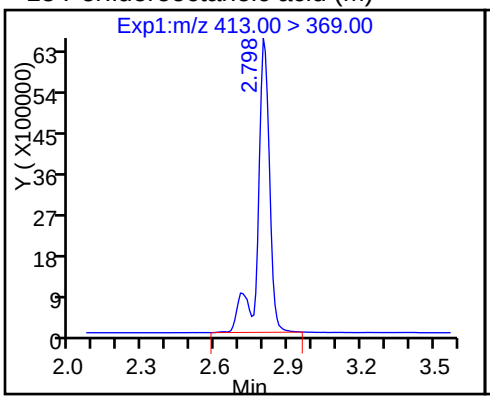
48 Sodium 1H,1H,2H,2H-perfluorooctane



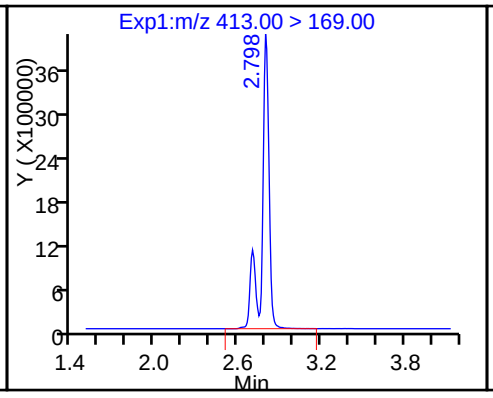
D 14 13C4 PFOA



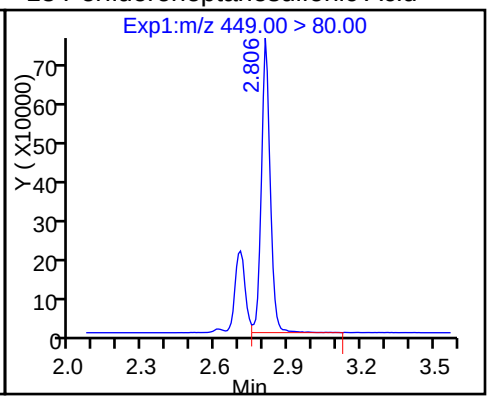
15 Perfluorooctanoic acid (M)



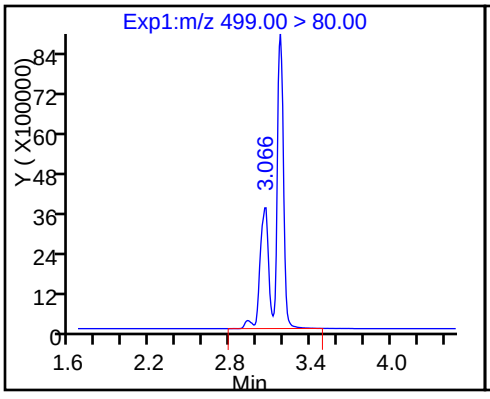
15 Perfluorooctanoic acid



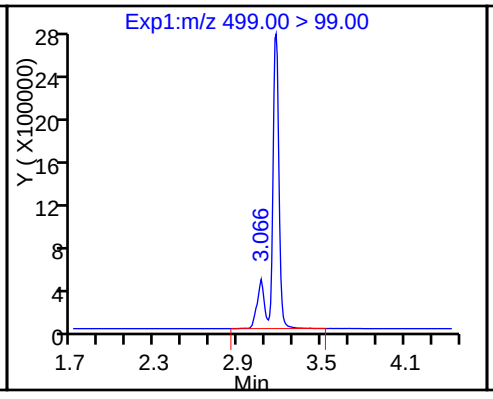
13 Perfluoroheptanesulfonic Acid



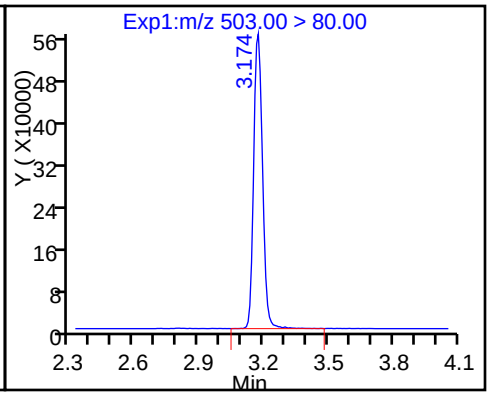
18 Perfluorooctane sulfonic acid



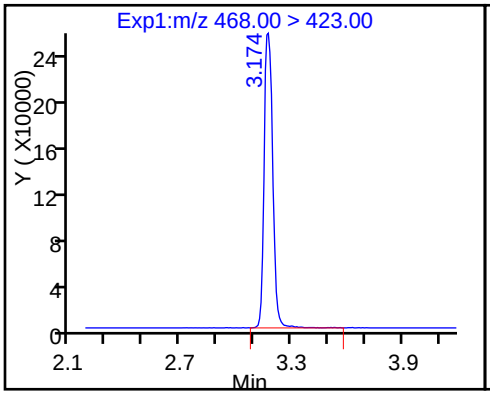
18 Perfluorooctane sulfonic acid



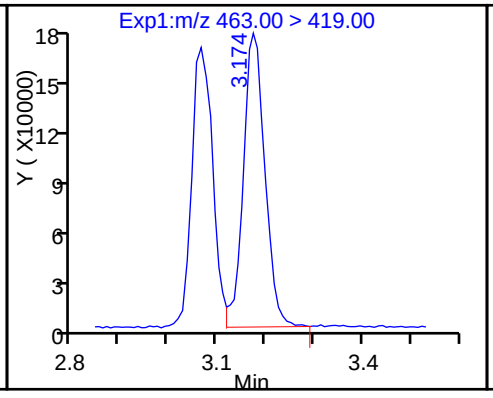
D 17 13C4 PFOS



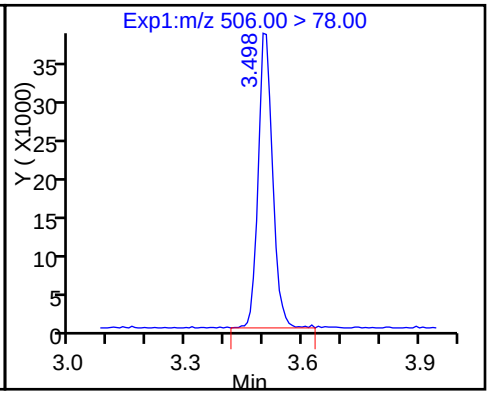
D 19 13C5 PFNA



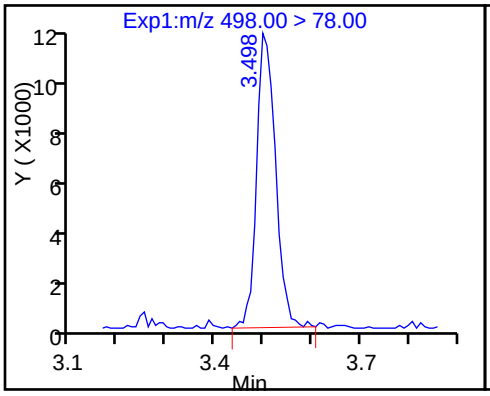
20 Perfluorononanoic acid



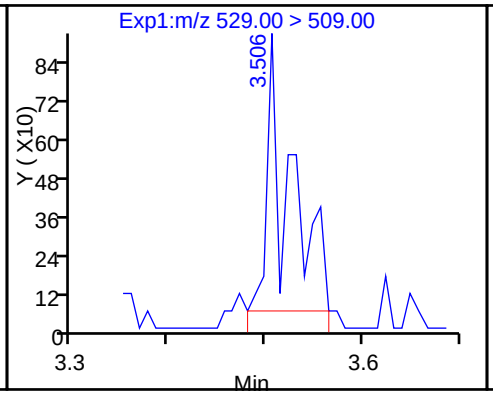
D 21 13C8 FOSA



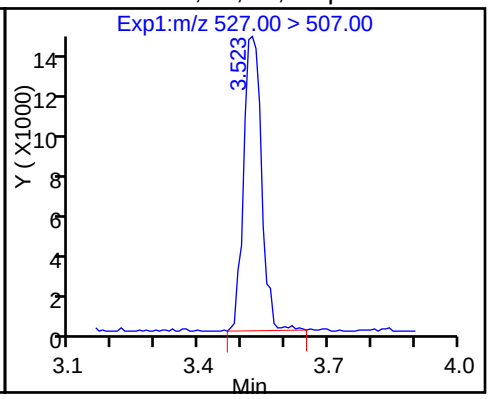
22 Perfluorooctane Sulfonamide



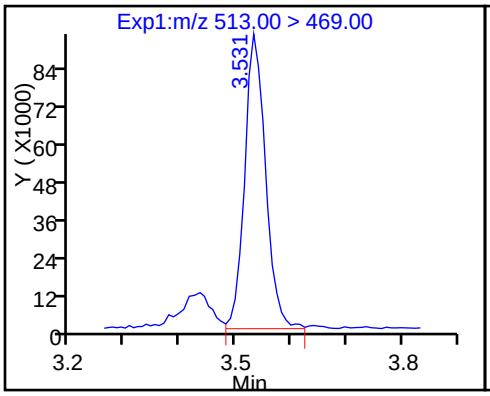
D 42 M2-8:2FTS



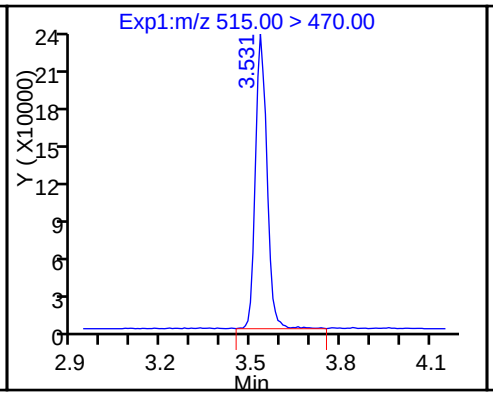
43 Sodium 1H,1H,2H,2H-perfluorooctane



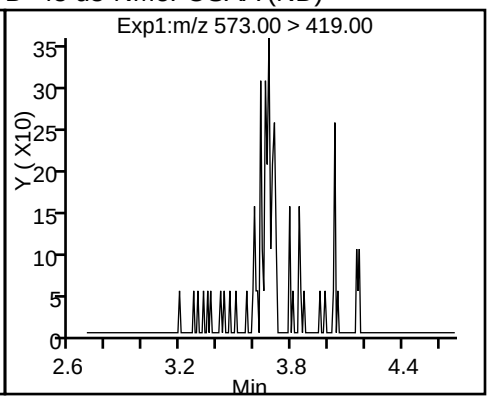
24 Perfluorodecanoic acid



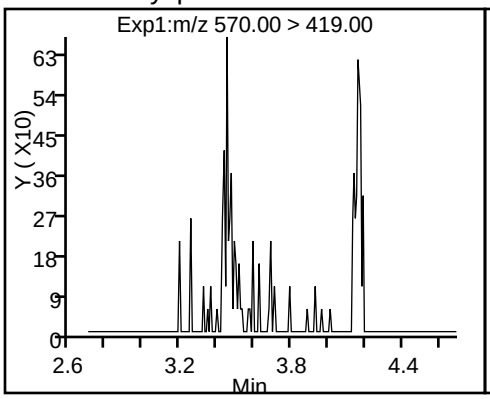
D 23 13C2 PFDA



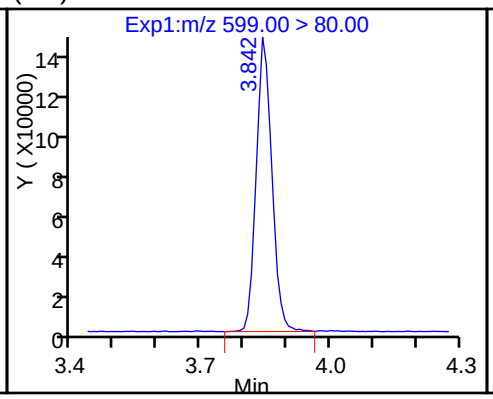
D 45 d3-NMeFOSAA (ND)



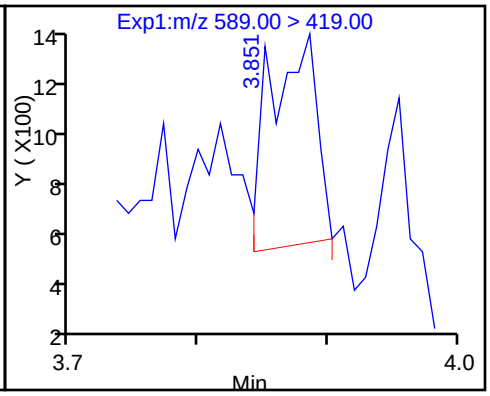
44 N-methyl perfluorooctane sulfonami (ND)



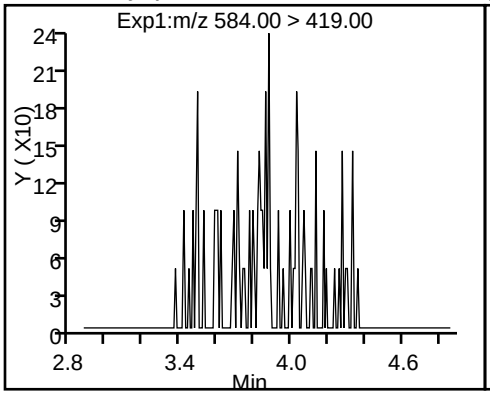
26 Perfluorodecane Sulfonic acid



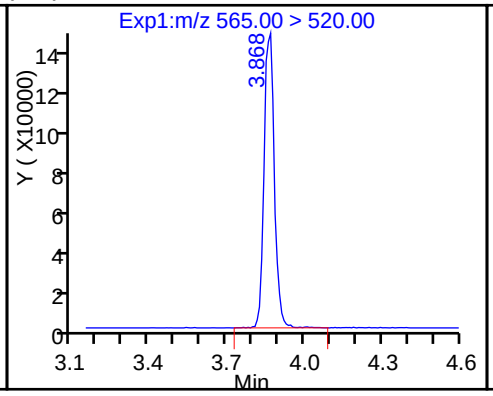
D 46 d5-NEtFOSAA



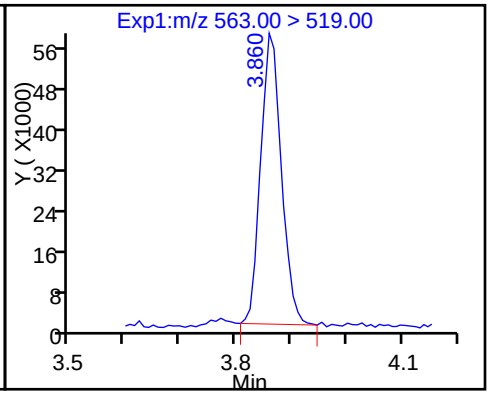
49 N-ethyl perfluorooctane sulfonamid (ND)



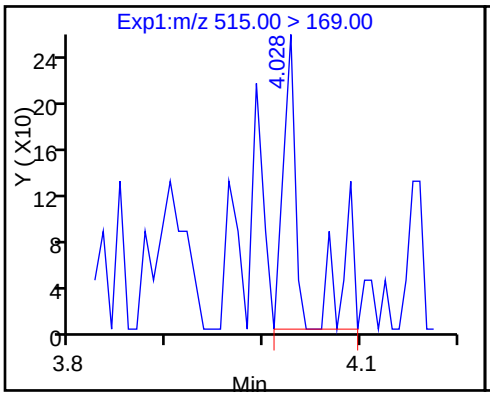
D 27 13C2 PFUnA



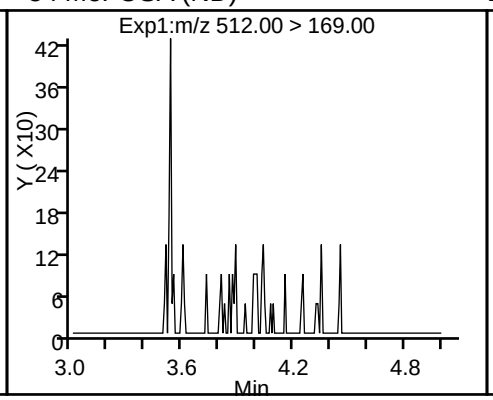
28 Perfluoroundecanoic acid



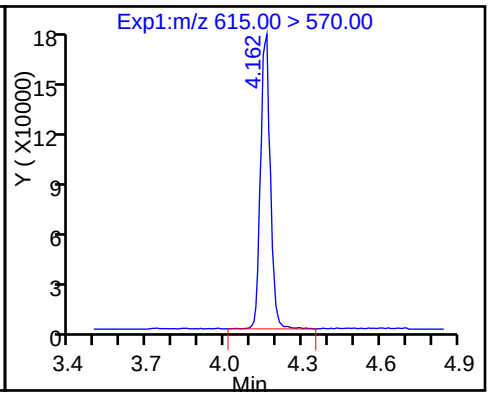
D 52 d-N-MeFOSA-M



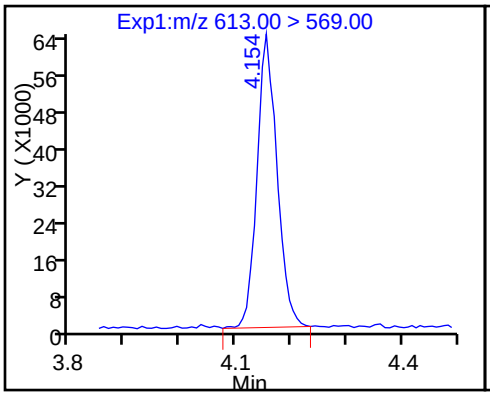
54 MeFOSA (ND)



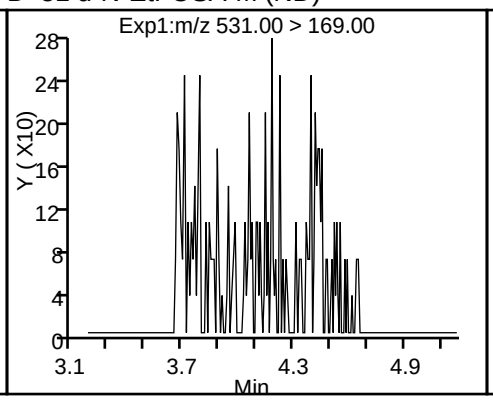
D 30 13C2 PFDoA



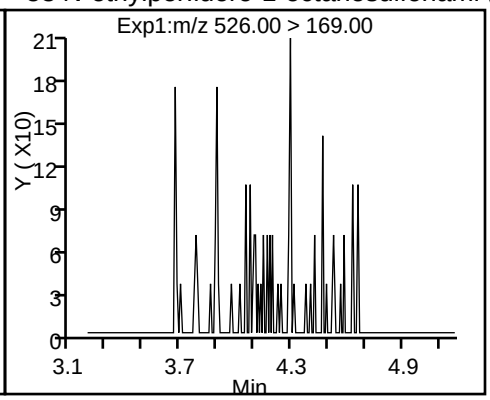
29 Perfluorododecanoic acid



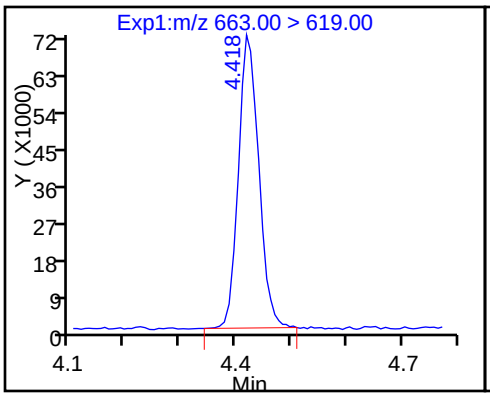
D 51 d-N-EtFOSA-M (ND)



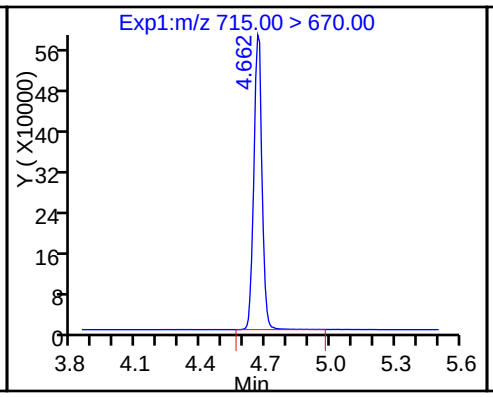
53 N-ethylperfluoro-1-octanesulfonami (ND)



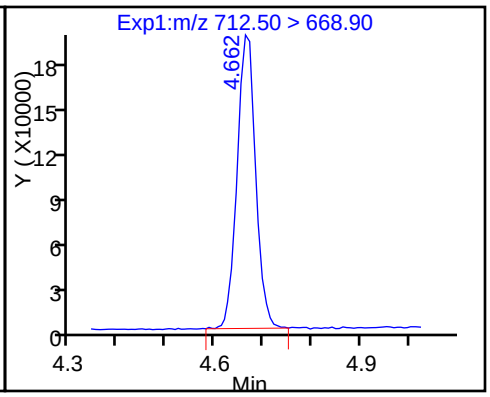
31 Perfluorotridecanoic acid



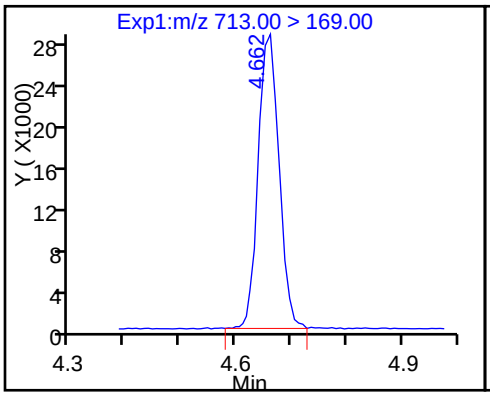
D 32 13C2-PFTeDA



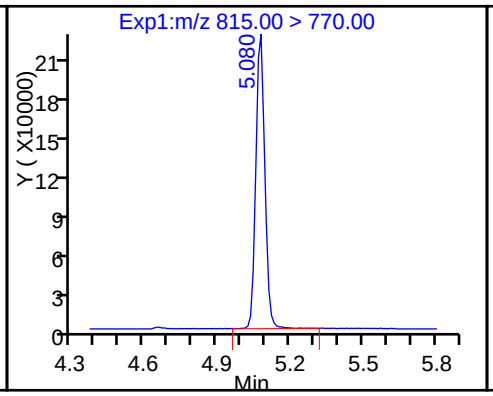
33 Perfluorotetradecanoic acid



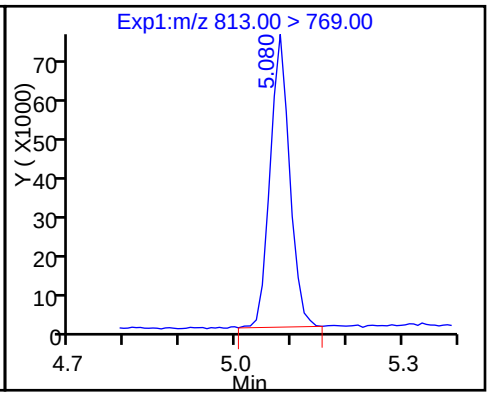
33 Perfluorotetradecanoic acid



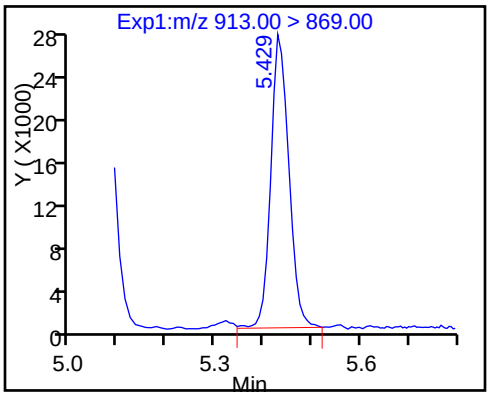
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

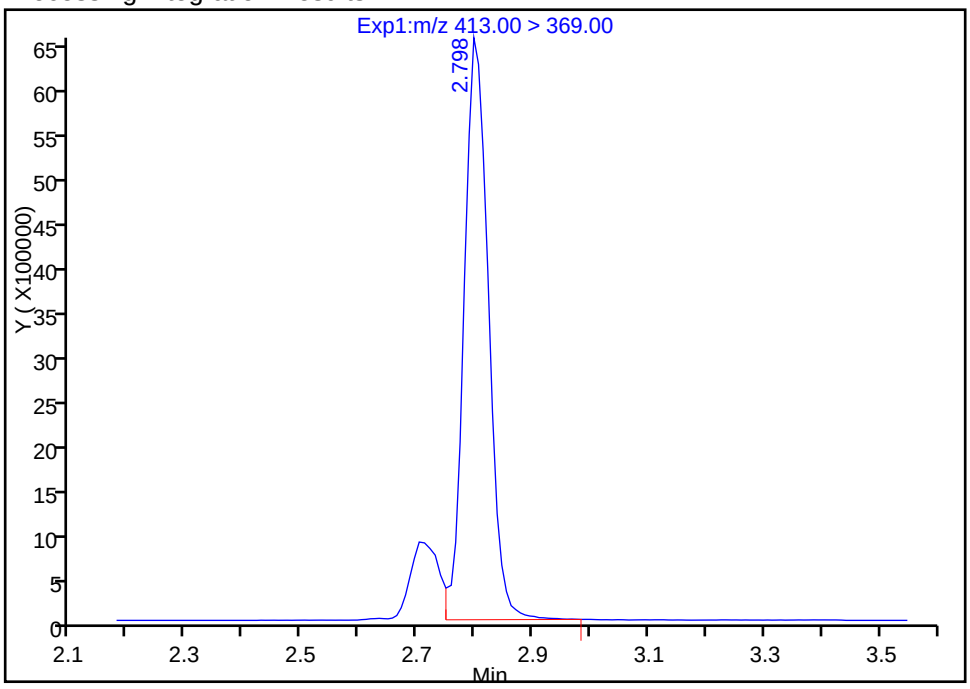
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b\22DEC2016BB_017.d				
Injection Date:	22-Dec-2016 17:50:19	Instrument ID:	A8_N		
Lims ID:	320-23998-A-13-C MSD				
Client ID:	DPT-16-06-GW-31-35-MSD				
Operator ID:	A8-PC\A8	ALS Bottle#:	35	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

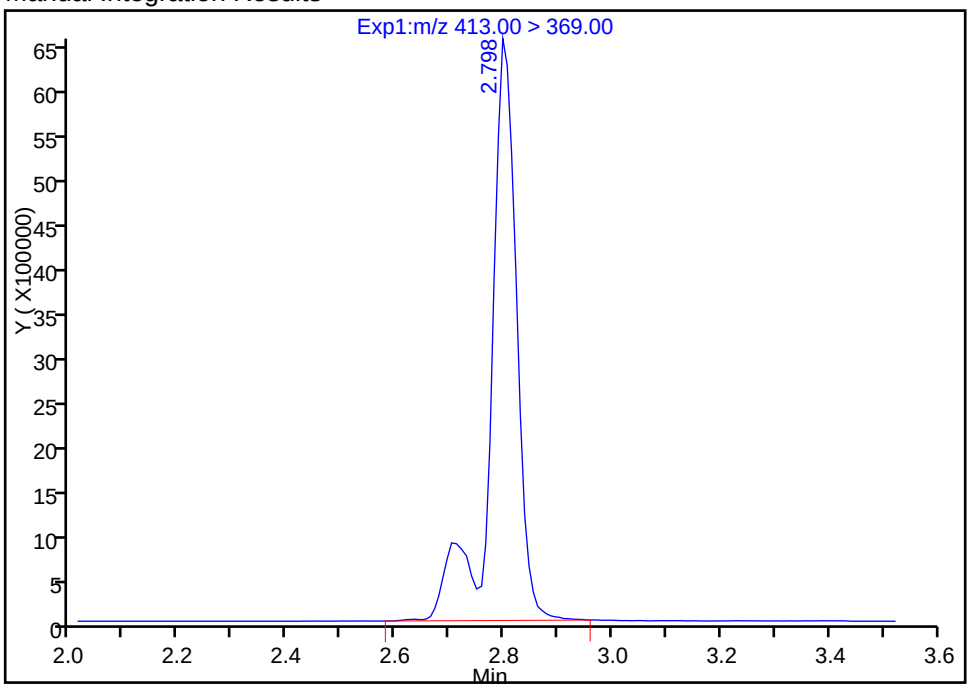
Processing Integration Results

RT: 2.80
Area: 19009455
Amount: 73.175877
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 21948072
Amount: 84.487926
Amount Units: ng/ml



Reviewer: chandrasenas, 23-Dec-2016 08:03:19

Audit Action: Manually Integrated Audit Reason: Isomers

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

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.: 320-23998-1

SDG No.:

Instrument ID: A8_N Start Date: 12/21/2016 12:04

Analysis Batch Number: 143344 End Date: 12/21/2016 12:42

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-143344/1 CCB		12/21/2016 12:04	1		Acquity 2.1(mm)
CCV 320-143344/2 CCVL		12/21/2016 12:11	1	21DEC2016_002.d	Acquity 2.1(mm)
CCV 320-143344/3 CCVL		12/21/2016 12:19	1		Acquity 2.1(mm)
CCV 320-143344/4		12/21/2016 12:26	1		Acquity 2.1(mm)
CCV 320-143344/5		12/21/2016 12:34	1		Acquity 2.1(mm)
RB 320-143344/6 CCB		12/21/2016 12:42	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Start Date: 12/21/2016 12:56

Analysis Batch Number: 143502 End Date: 12/21/2016 19:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-143502/2		12/21/2016 12:56	1	21DEC2016A_008.d	Acquity 2.1(mm)
CCV 320-143502/3		12/21/2016 13:04	1		Acquity 2.1(mm)
RB 320-143502/4 CCB		12/21/2016 13:11	1		Acquity 2.1(mm)
MB 320-140788/1-A		12/21/2016 13:19	1	21DEC2016A_011.d	Acquity 2.1(mm)
LCS 320-140788/2-A		12/21/2016 13:26	1	21DEC2016A_012.d	Acquity 2.1(mm)
320-23998-1		12/21/2016 13:34	1	21DEC2016A_013.d	Acquity 2.1(mm)
320-23998-2		12/21/2016 13:42	1	21DEC2016A_014.d	Acquity 2.1(mm)
320-23998-3		12/21/2016 13:49	1	21DEC2016A_015.d	Acquity 2.1(mm)
320-23998-3 MS		12/21/2016 13:57	1	21DEC2016A_016.d	Acquity 2.1(mm)
320-23998-3 MSD		12/21/2016 14:04	1	21DEC2016A_017.d	Acquity 2.1(mm)
320-23998-4		12/21/2016 14:12	1	21DEC2016A_018.d	Acquity 2.1(mm)
320-23998-5		12/21/2016 14:19	1	21DEC2016A_019.d	Acquity 2.1(mm)
320-23998-6		12/21/2016 14:27	1	21DEC2016A_020.d	Acquity 2.1(mm)
RB 320-143502/15 CCB		12/21/2016 14:34	1		Acquity 2.1(mm)
CCV 320-143502/16		12/21/2016 14:41	1	21DEC2016A_022.d	Acquity 2.1(mm)
CCV 320-143502/17		12/21/2016 14:49	1		Acquity 2.1(mm)
RB 320-143502/18 CCB		12/21/2016 14:57	1		Acquity 2.1(mm)
320-23998-7		12/21/2016 16:35	1	21DEC2016A_029.d	Acquity 2.1(mm)
320-23998-8		12/21/2016 16:43	1	21DEC2016A_030.d	Acquity 2.1(mm)
320-23998-9		12/21/2016 16:50	1	21DEC2016A_031.d	Acquity 2.1(mm)
320-23998-9 MS		12/21/2016 16:58	1	21DEC2016A_032.d	Acquity 2.1(mm)
320-23998-9 MSD		12/21/2016 17:05	1	21DEC2016A_033.d	Acquity 2.1(mm)
320-23998-10		12/21/2016 17:13	1	21DEC2016A_034.d	Acquity 2.1(mm)
320-23998-11		12/21/2016 17:20	1	21DEC2016A_035.d	Acquity 2.1(mm)
320-23998-12		12/21/2016 17:28	1	21DEC2016A_036.d	Acquity 2.1(mm)
RB 320-143502/27 CCB		12/21/2016 17:35	1		Acquity 2.1(mm)
CCV 320-143502/28		12/21/2016 17:43	1	21DEC2016A_038.d	Acquity 2.1(mm)
CCV 320-143502/29		12/21/2016 17:50	1		Acquity 2.1(mm)
RB 320-143502/30 CCB		12/21/2016 17:58	1		Acquity 2.1(mm)
320-23998-13		12/21/2016 18:05	1	21DEC2016A_041.d	Acquity 2.1(mm)
320-23998-13 MS		12/21/2016 18:13	1	21DEC2016A_042.d	Acquity 2.1(mm)
320-23998-13 MSD		12/21/2016 18:20	1	21DEC2016A_043.d	Acquity 2.1(mm)
320-23998-14		12/21/2016 18:28	1	21DEC2016A_044.d	Acquity 2.1(mm)
320-23998-15		12/21/2016 18:35	1	21DEC2016A_045.d	Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Start Date: 12/21/2016 12:56

Analysis Batch Number: 143502 End Date: 12/21/2016 19:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
320-23998-16		12/21/2016 18:43	1	21DEC2016A_046.d	Acquity 2.1(mm)
320-23998-17		12/21/2016 18:50	1	21DEC2016A_047.d	Acquity 2.1(mm)
RB 320-143502/38 CCB		12/21/2016 18:58	1		Acquity 2.1(mm)
CCV 320-143502/39		12/21/2016 19:05	1	21DEC2016A_049.d	Acquity 2.1(mm)
CCV 320-143502/40		12/21/2016 19:13	1		Acquity 2.1(mm)
RB 320-143502/41 CCB		12/21/2016 19:20	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Start Date: 12/22/2016 09:08

Analysis Batch Number: 143550 End Date: 12/22/2016 14:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-143550/1 CCB		12/22/2016 09:08	1		Acquity 2.1(mm)
CCV 320-143550/2 CCVL		12/22/2016 09:16	1	22DEC2016A_002.d	Acquity 2.1(mm)
CCV 320-143550/3 CCVL		12/22/2016 09:23	1		Acquity 2.1(mm)
CCV 320-143550/4		12/22/2016 09:31	1		Acquity 2.1(mm)
CCV 320-143550/5		12/22/2016 09:38	1		Acquity 2.1(mm)
RB 320-143550/6 CCB		12/22/2016 09:46	1		Acquity 2.1(mm)
RB 320-143550/12 CCB		12/22/2016 10:31	1		Acquity 2.1(mm)
CCV 320-143550/13		12/22/2016 10:38	1		Acquity 2.1(mm)
CCV 320-143550/14		12/22/2016 10:46	1		Acquity 2.1(mm)
RB 320-143550/15 CCB		12/22/2016 10:53	1		Acquity 2.1(mm)
RB 320-143550/26 CCB		12/22/2016 12:16	1		Acquity 2.1(mm)
CCV 320-143550/27		12/22/2016 12:23	1		Acquity 2.1(mm)
CCV 320-143550/28		12/22/2016 12:31	1		Acquity 2.1(mm)
RB 320-143550/29 CCB		12/22/2016 12:38	1		Acquity 2.1(mm)
RB 320-143550/31 CCB		12/22/2016 12:53	1		Acquity 2.1(mm)
RB 320-143550/40 CCB		12/22/2016 14:01	1		Acquity 2.1(mm)
CCV 320-143550/41		12/22/2016 14:08	1		Acquity 2.1(mm)
CCV 320-143550/42		12/22/2016 14:16	1		Acquity 2.1(mm)
RB 320-143550/43 CCB		12/22/2016 14:23	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Instrument ID: A8_N Start Date: 12/22/2016 15:50

Analysis Batch Number: 143644 End Date: 12/22/2016 19:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-143644/1 CCB		12/22/2016 15:50	1		Acquity 2.1(mm)
CCV 320-143644/2		12/22/2016 15:57	1		Acquity 2.1(mm)
CCV 320-143644/3		12/22/2016 16:05	1		Acquity 2.1(mm)
RB 320-143644/4 CCB		12/22/2016 16:12	1		Acquity 2.1(mm)
RB 320-143644/8 CCB		12/22/2016 16:42	1		Acquity 2.1(mm)
CCV 320-143644/9		12/22/2016 16:50	1	22DEC2016BB_009.d	Acquity 2.1(mm)
CCV 320-143644/10		12/22/2016 16:57	1		Acquity 2.1(mm)
RB 320-143644/11 CCB		12/22/2016 17:05	1		Acquity 2.1(mm)
320-23998-17 DL		12/22/2016 17:12	100	22DEC2016BB_012.d	Acquity 2.1(mm)
320-23998-11 DL		12/22/2016 17:20	10	22DEC2016BB_013.d	Acquity 2.1(mm)
320-23998-12 DL		12/22/2016 17:27	10	22DEC2016BB_014.d	Acquity 2.1(mm)
320-23998-13 DL		12/22/2016 17:35	10	22DEC2016BB_015.d	Acquity 2.1(mm)
320-23998-13 MS DL		12/22/2016 17:42	10	22DEC2016BB_016.d	Acquity 2.1(mm)
320-23998-13 MSD DL		12/22/2016 17:50	10	22DEC2016BB_017.d	Acquity 2.1(mm)
320-23998-14 DL		12/22/2016 17:57	10	22DEC2016BB_018.d	Acquity 2.1(mm)
320-23998-15 DL		12/22/2016 18:05	10	22DEC2016BB_019.d	Acquity 2.1(mm)
320-23998-16 DL		12/22/2016 18:12	10	22DEC2016BB_020.d	Acquity 2.1(mm)
ZZZZZ		12/22/2016 18:20	1		Acquity 2.1(mm)
RB 320-143644/22 CCB		12/22/2016 18:27	1		Acquity 2.1(mm)
CCV 320-143644/23		12/22/2016 18:35	1	22DEC2016BB_023.d	Acquity 2.1(mm)
CCV 320-143644/24		12/22/2016 18:42	1		Acquity 2.1(mm)
RB 320-143644/25 CCB		12/22/2016 18:50	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 18:57	1		Acquity 2.1(mm)
RB 320-143644/27 CCB		12/22/2016 19:05	1		Acquity 2.1(mm)
CCV 320-143644/28		12/22/2016 19:12	1		Acquity 2.1(mm)
CCV 320-143644/29		12/22/2016 19:20	1		Acquity 2.1(mm)
RB 320-143644/30 CCB		12/22/2016 19:27	1		Acquity 2.1(mm)

537 (Modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23998-1

SDG No.:

Batch Number: 140788 Batch Start Date: 12/06/16 11:38 Batch Analyst: Sharifi, Nooshin

Batch Method: 3535 Batch End Date: 12/07/16 13:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00073
MB 320-140788/1		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	
LCS 320-140788/2		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
320-23998-A-1	DPT-16-03-GW-31-35	3535, 537 (Modified)	T	279.68 g	25.64 g	254 mL	0.5 mL	25 uL	
320-23998-A-2	DPT-16-03-GW-18-22	3535, 537 (Modified)	T	283.02 g	25.93 g	257.1 mL	0.5 mL	25 uL	
320-23998-A-3	DPT-16-04-GW-31-35	3535, 537 (Modified)	T	273.15 g	25.99 g	247.2 mL	0.5 mL	25 uL	
320-23998-A-3 MS	DPT-16-04-GW-31-35-MS	3535, 537 (Modified)	T	283.77 g	26.38 g	257.4 mL	0.5 mL	25 uL	20 uL
320-23998-A-3 MSD	DPT-16-04-GW-31-35-MSD	3535, 537 (Modified)	T	279.44 g	25.66 g	253.8 mL	0.5 mL	25 uL	20 uL
320-23998-A-4	DPT-16-04-GW-18-22	3535, 537 (Modified)	T	280.95 g	26.42 g	254.5 mL	0.5 mL	25 uL	
320-23998-A-5	DPT-16-10-GW-31-35	3535, 537 (Modified)	T	275.96 g	25.95 g	250 mL	0.5 mL	25 uL	
320-23998-A-6	DPT-16-10-GW-18-22	3535, 537 (Modified)	T	285.93 g	25.80 g	260.1 mL	0.5 mL	25 uL	
320-23998-A-7	DPT-16-09-GW-31-35	3535, 537 (Modified)	T	285.85 g	25.84 g	260 mL	0.5 mL	25 uL	
320-23998-A-8	DPT-16-09-GW-18-22	3535, 537 (Modified)	T	285.30 g	26.09 g	259.2 mL	0.5 mL	25 uL	
320-23998-A-9	DPT-16-08-GW-31-35	3535, 537 (Modified)	T	283.50 g	25.87 g	257.6 mL	0.5 mL	25 uL	
320-23998-A-9 MS	DPT-16-08-GW-31-35-MS	3535, 537 (Modified)	T	280.27 g	25.38 g	254.9 mL	0.5 mL	25 uL	20 uL
320-23998-A-9 MSD	DPT-16-08-GW-31-35-MSD	3535, 537 (Modified)	T	279.47 g	26.04 g	253.4 mL	0.5 mL	25 uL	20 uL
320-23998-A-10	DPT-16-08-GW-18-22	3535, 537 (Modified)	T	273.75 g	25.84 g	247.9 mL	0.5 mL	25 uL	
320-23998-A-11	DPT-16-07-GW-31-35	3535, 537 (Modified)	T	276.07 g	26.21 g	249.9 mL	0.5 mL	25 uL	
320-23998-A-12	DPT-16-07-GW-18-22	3535, 537 (Modified)	T	277.86 g	26.13 g	251.7 mL	0.5 mL	25 uL	
320-23998-A-13	DPT-16-06-GW-31-35	3535, 537 (Modified)	T	270.56 g	27.01 g	243.6 mL	0.5 mL	25 uL	
320-23998-A-13 MS	DPT-16-06-GW-31-35-MS	3535, 537 (Modified)	T	276.28 g	25.98 g	250.3 mL	0.5 mL	25 uL	20 uL
320-23998-A-13 MSD	DPT-16-06-GW-31-35-MSD	3535, 537 (Modified)	T	278.99 g	26.36 g	252.6 mL	0.5 mL	25 uL	20 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.: 320-23998-1

SDG No.:

Batch Number: 140788 Batch Start Date: 12/06/16 11:38 Batch Analyst: Sharifi, Nooshin

Batch Method: 3535 Batch End Date: 12/07/16 13:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00073
320-23998-A-14	DPT-16-06-GW-18-22	3535, 537 (Modified)	T	285.38 g	25.91 g	259.5 mL	0.5 mL	25 uL	
320-23998-A-15	DPT-16-11-GW-31-35	3535, 537 (Modified)	T	274.86 g	25.95 g	248.9 mL	0.5 mL	25 uL	
320-23998-A-16	DPT-16-11-GW-31-35-DUP	3535, 537 (Modified)	T	280.33 g	25.92 g	254.4 mL	0.5 mL	25 uL	
320-23998-A-17	DPT-16-11-GW-18-22	3535, 537 (Modified)	T	288.93 g	26.31 g	262.6 mL	0.5 mL	25 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O: 794893
H2O ID	12/05/16
Hexane ID	00001462
Manifold ID	2,4,9
Methanol ID	789820
Pipette ID	MD05306
Analyst ID - Reagent Drop	NSH
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	HJA
Solvent Lot #	794501
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002836112

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): 23998 Work List ID(s): 38131

Extraction Batch: 140788 Analysis Batch(es): 143502 ; 143344 (CCVL2)

Delivery Rank 4 Due Date: 12/6/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 142379	✓	✓	
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: 12/22/16

2nd Level Reviewer: [signature] Date: 12/23/2016

NCMS: 73213; 73659; 73660

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 21DEC2016A_PFC Worklist Number: 38131
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161222-38131.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 143502	LC PFC ICAL Raw Batch: 143503	LC PFAS ICAL Raw Batch: 143504
# 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 320-140788/1-A	# 5 MB 320-140788/1-A		
# 6 LCS 320-140788/2-A	# 6 LCS 320-140788/2-A	ICAL E flag NCM 73659	
# 7 320-23998-A-1-A	# 7 320-23998-A-1-A		
# 8 320-23998-A-2-A	# 8 320-23998-A-2-A		
# 9 320-23998-A-3-A	# 9 320-23998-A-3-A		
#10 320-23998-A-3-B MS	#10 320-23998-A-3-B MS		
#11 320-23998-A-3-C MSD	#11 320-23998-A-3-C MSD		
#12 320-23998-A-4-A	#12 320-23998-A-4-A		
#13 320-23998-A-5-A	#13 320-23998-A-5-A		
#14 320-23998-A-6-A	#14 320-23998-A-6-A		
#15 RB	#15 RB	#15 RB	#15 RB
#16 CCV L4	#16 CCV L4	#16 CCV L4	#16 CCV L4
#17 CCV L4 Add-on	#17 CCV L4 Add-on	#17 CCV L4 Add-on	#17 CCV L4 Add-on
#18 RB	#18 RB	#18 RB	#18 RB
#19 320-23998-A-7-A	#19 320-23998-A-7-A		
#20 320-23998-A-8-A	#20 320-23998-A-8-A		
#21 320-23998-A-9-A	#21 320-23998-A-9-A		
#22 320-23998-A-9-B MS	#22 320-23998-A-9-B MS		
#23 320-23998-A-9-C MSD	#23 320-23998-A-9-C MSD		
#24 320-23998-A-10-A	#24 320-23998-A-10-A		
#25 320-23998-A-11-A	#25 320-23998-A-11-A 10x PFOA/PFOS		
#26 320-23998-A-12-A	#26 320-23998-A-12-A 10x PFOS, RA PFOA		
#27 RB	#27 RB	#27 RB	#27 RB
#28 CCV L5	#28 CCV L5	#28 CCV L5	#28 CCV L5
#29 CCV L5 Add-on	#29 CCV L5 Add-on	#29 CCV L5 Add-on	#29 CCV L5 Add-on
#30 RB	#30 RB	#30 RB	#30 RB
#31 320-23998-A-13-A	#31 320-23998-A-13-A 10x all ↓	MS/MSD high targets NCM 73660	
#32 320-23998-A-13-B MS	#32 320-23998-A-13-B MS		
#33 320-23998-A-13-C MSD	#33 320-23998-A-13-C MSD		
#34 320-23998-A-14-A	#34 320-23998-A-14-A 10x PFOA/PFOS		
#35 320-23998-A-15-A	#35 320-23998-A-15-A 10x PFOS, RA PFOA		
#36 320-23998-A-16-A	#36 320-23998-A-16-A 10x PFOS		
#37 320-23998-A-17-A	#37 320-23998-A-17-A 100x PFOS/PFOA		
#38 RB	#38 RB	#38 RB	#38 RB
#39 CCV L4	#39 CCV L4	#39 CCV L4	#39 CCV L4
#40 CCV L4 Add-on	#40 CCV L4 Add-on	#40 CCV L4 Add-on	#40 CCV L4 Add-on
#41 RB	#41 RB	#41 RB	#41 RB

CCV L2 143344
ICV 142379
Tune NCM 73213

IQ

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

12/21/16
AB 12/20/16

Batch Number: 320-140788

Method Code: 320-3535_IVWT-320

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Batch End: 12/7/16 13:25

Solid-Phase Extraction (SPE)

case2 1-25

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB~320-140788/1 N/A	N/A		250 mL				N/A	N/A	N/A		MB 320-140788/1-A
				0.5 mL								
2	LCS~320-140788/2 N/A	N/A		250 mL				N/A	N/A	N/A		LCS 320-140788/2-A
				0.5 mL								
3	320-23998-A-1 (PFC_IDA_DOD5)	N/A (320-23998-1)	279.68 g	254 mL				12/6/16	16_Days	4		320-23998-A-1-A
			25.64 g	0.5 mL								
4	320-23998-A-2 (PFC_IDA_DOD5)	N/A (320-23998-1)	283.02 g	257.1 mL				12/6/16	16_Days	4		320-23998-A-2-A
			25.93 g	0.5 mL								
5	320-23998-A-3 (PFC_IDA_DOD5)	N/A (320-23998-1)	273.15 g	247.2 mL				12/6/16	16_Days	4		320-23998-A-3-A
			25.99 g	0.5 mL								
6	320-23998-A-3~MS (PFC_IDA_DOD5)	N/A (320-23998-1)	283.77 g	257.4 mL				12/6/16	16_Days	4		320-23998-A-3-B MS
			26.38 g	0.5 mL								
7	320-23998-A-3~MSD (PFC_IDA_DOD5)	N/A (320-23998-1)	279.44 g	253.8 mL				12/6/16	16_Days	4		320-23998-A-3-C MSD
			25.66 g	0.5 mL								
8	320-23998-A-4 (PFC_IDA_DOD5)	N/A (320-23998-1)	280.95 g	254.5 mL				12/6/16	16_Days	4		320-23998-A-4-A
			26.42 g	0.5 mL								
9	320-23998-A-5 (PFC_IDA_DOD5)	N/A (320-23998-1)	275.96 g	250 mL				12/6/16	16_Days	4		320-23998-A-5-A
			25.95 g	0.5 mL								
10	320-23998-A-6 (PFC_IDA_DOD5)	N/A (320-23998-1)	285.93 g	260.1 mL				12/6/16	16_Days	4		320-23998-A-6-A
			25.80 g	0.5 mL								

01/06/2017

Printed : 12/6/2016

TestAmerica Sacramento

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-23998-A-7 (PFC_IDA_DOD5)	N/A (320-23998-1)	285.85 g / 25.84 g	260 mL / 0.5 mL				12/6/16	16_Days	4	
12	320-23998-A-8 (PFC_IDA_DOD5)	N/A (320-23998-1)	285.30 g / 26.09 g	259.2 mL / 0.5 mL				12/6/16	16_Days	4	
13	320-23998-A-9 (PFC_IDA_DOD5)	N/A (320-23998-1)	283.50 g / 25.87 g	257.6 mL / 0.5 mL				12/6/16	16_Days	4	
14	320-23998-A-9~MS (PFC_IDA_DOD5)	N/A (320-23998-1)	280.27 g / 25.38 g	254.9 mL / 0.5 mL				12/6/16	16_Days	4	
15	320-23998-A-9~MSD (PFC_IDA_DOD5)	N/A (320-23998-1)	279.47 g / 26.04 g	253.4 mL / 0.5 mL				12/6/16	16_Days	4	
16	320-23998-A-10 (PFC_IDA_DOD5)	N/A (320-23998-1)	273.75 g / 25.84 g	247.9 mL / 0.5 mL				12/6/16	16_Days	4	
17	320-23998-A-11 (PFC_IDA_DOD5)	N/A (320-23998-1)	276.07 g / 26.21 g	249.9 mL / 0.5 mL				12/6/16	16_Days	4	10x PFOS 1148 PFOA 441
18	320-23998-A-12 (PFC_IDA_DOD5)	N/A (320-23998-1)	277.86 g / 26.13 g	251.7 mL / 0.5 mL				12/6/16	16_Days	4	10x PFOS RA PFOA
19	320-23998-A-13 (PFC_IDA_DOD5)	N/A (320-23998-1)	270.56 g / 27.01 g	243.6 mL / 0.5 mL				12/6/16	16_Days	4	10x PFBS 205 PFOA 570 PFOS 1079
20	320-23998-A-13~MS (PFC_IDA_DOD5)	N/A (320-23998-1)	276.28 g / 25.98 g	250.3 mL / 0.5 mL				12/6/16	16_Days	4	
21	320-23998-A-13~MSD (PFC_IDA_DOD5)	N/A (320-23998-1)	278.99 g / 26.36 g	252.6 mL / 0.5 mL				12/6/16	16_Days	4	
22	320-23998-A-14 (PFC_IDA_DOD5)	N/A (320-23998-1)	285.38 g / 25.91 g	259.5 mL / 0.5 mL				12/6/16	16_Days	4	10x PFOA 659 PFOS 1139

Printed : 12/6/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Method Code: 320-3535_IVWT-320

Batch End:

23	320-23998-A-15 (PFC_IDA_DOD5)	N/A (320-23998-1)	274.86 g 25.95 g	248.9 mL 0.5 mL				12/6/16	16_Days	4	10X PFOS 382 RA PFOA
24	320-23998-A-16 (PFC_IDA_DOD5)	N/A (320-23998-1)	280.33 g 25.92 g	254.4 mL 0.5 mL				12/6/16	16_Days	4	10x PFOS 395
25	320-23998-A-17 (PFC_IDA_DOD5)	N/A (320-23998-1)	288.93 g 26.31 g	262.6 mL 0.5 mL				12/6/16	16_Days	4	100x PFOS 2099 PFOA 756

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Method Code: 320-3535_IVWT-320

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Batch End:

Batch Notes

Manifold ID	2,4,9
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	NSH
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	HJA
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

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: 320-140788

Method Code: 320-3535_IVWT-320

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-140788/1	LCMPFCSU_00046	25 uL	0.5 mL	NSH 12-6-16	HJA 12-6-16
LCS 320-140788/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-140788/2	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-3 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-3 MS	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-3 MSD	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-3 MSD	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-5	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-6	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-7	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-8	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-9	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-9 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-9 MS	LCPFCSP_00073	20 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Method Code: 320-3535_IVWT-320

Batch End:

320-23998-A-9 MSD	LCMPFCSU_00046	25 uL	0.5 mL	NSH 12-6-16	HJA 12-6-16
320-23998-A-9 MSD	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-10	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-11	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-12	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-13	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-13 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-13 MS	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-13 MSD	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-13 MSD	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-14	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-15	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-16	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-17	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Method Code: 320-3535_IVWT-320

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 140788 Test: PFC-IDAD005 (L)

Earliest Holding Time: 12-7-16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	VPM 12/07/16	✓
All necessary NCMs filed (including holding time)	NA	✓
Method/sample/login/QAS checked and correct	✓	✓

Worksheet Tab	1st Level Reviewer	2nd Level Reviewer
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓

Reagents Tab	1st Level Reviewer	2nd Level Reviewer
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓

Batch Information	1st Level Reviewer	2nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: VPM Date: 12/07/16

2nd Level Reviewer: HSN Date: 12-7-16

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 23998 Work List ID(s): 38165

Extraction Batch: 140788 Analysis Batch(es): 143644

Delivery Rank 4 Due Date: 12/6/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 142379	✓	✓	
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: 12/23/16

2nd Level Reviewer: [signature] Date: 12/23/2016

NCMs: 73660; 73773

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 22DEC2016B_PFC Worklist Number: 38165
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161223-38165.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 143644	LC PFC ICAL Raw Batch: 143645	LC PFAS ICAL Raw Batch: 143646
# 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
# 5 320-23933-B-1-A		# 5 320-23933-B-1-A	# 5 320-23933-B-1-A
# 6 320-23933-B-1-B MS		# 6 320-23933-B-1-B MS	# 6 320-23933-B-1-B MS
# 7 320-23933-B-1-C MSD		# 7 320-23933-B-1-C MSD	# 7 320-23933-B-1-C MSD
# 8 RB	# 8 RB	# 8 RB	# 8 RB
# 9 CCV L5	# 9 CCV L5	# 9 CCV L5	# 9 CCV L5
#10 CCV L5 Add-on	#10 CCV L5 Add-on	#10 CCV L5 Add-on	#10 CCV L5 Add-on
#11 RB	#11 RB	#11 RB	#11 RB
#12 320-23998-A-17-A	#12 320-23998-A-17-A		
#13 320-23998-A-11-A	#13 320-23998-A-11-A		
#14 320-23998-A-12-A	#14 320-23998-A-12-A		
#15 320-23998-A-13-A	#15 320-23998-A-13-A		
#16 320-23998-A-13-B MS	#16 320-23998-A-13-B MS		
#17 320-23998-A-13-C MSD	#17 320-23998-A-13-C MSD		
#18 320-23998-A-14-A	#18 320-23998-A-14-A		
#19 320-23998-A-15-A	#19 320-23998-A-15-A		
#20 320-23998-A-16-A	#20 320-23998-A-16-A		
#21 320-23998-A-12-A	#21 320-23998-A-12-A		
#22 RB	#22 RB	#22 RB	#22 RB
#23 CCV L4	#23 CCV L4	#23 CCV L4	#23 CCV L4
#24 CCV L4 Add-on	#24 CCV L4 Add-on	#24 CCV L4 Add-on	#24 CCV L4 Add-on
#25 RB	#25 RB	#25 RB	#25 RB
#26 320-23998-A-15-A	#26 320-23998-A-15-A		
#27 RB	#27 RB	#27 RB	#27 RB
#28 CCV L5	#28 CCV L5	#28 CCV L5	#28 CCV L5
#29 CCV L5 Add-on	#29 CCV L5 Add-on	#29 CCV L5 Add-on	#29 CCV L5 Add-on
#30 RB	#30 RB	#30 RB	#30 RB

~~ICV #~~ BBC 12/23/16

ICV 142379

MS/MSD high targets 73660

RL Dilution NCM 73773

18

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

12/21/16 DL 12/22/16
AB 12/20/16

Batch Number: 320-140788

Method Code: 320-3535_IVWT-320

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Batch End: 12/7/16 13:25

Solid-Phase Extraction (SPE)

case2 1-25

	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~320-140788/1 N/A	N/A		250 mL 0.5 mL				N/A	N/A	N/A		MB 320-140788/1-A
2	LCS~320-140788/2 N/A	N/A		250 mL 0.5 mL				N/A	N/A	N/A		LCS 320-140788/2-A
3	320-23998-A-1 (PFC_IDA_DOD5)	N/A (320-23998-1)	279.68 g 25.64 g	254 mL 0.5 mL				12/6/16	16_Days	4		320-23998-A-1-A
4	320-23998-A-2 (PFC_IDA_DOD5)	N/A (320-23998-1)	283.02 g 25.93 g	257.1 mL 0.5 mL				12/6/16	16_Days	4		320-23998-A-2-A
5	320-23998-A-3 (PFC_IDA_DOD5)	N/A (320-23998-1)	273.15 g 25.99 g	247.2 mL 0.5 mL				12/6/16	16_Days	4		320-23998-A-3-A
6	320-23998-A-3~MS (PFC_IDA_DOD5)	N/A (320-23998-1)	283.77 g 26.38 g	257.4 mL 0.5 mL				12/6/16	16_Days	4		320-23998-A-3-B MS
7	320-23998-A-3~MSD (PFC_IDA_DOD5)	N/A (320-23998-1)	279.44 g 25.66 g	253.8 mL 0.5 mL				12/6/16	16_Days	4		320-23998-A-3-C MSD
8	320-23998-A-4 (PFC_IDA_DOD5)	N/A (320-23998-1)	280.95 g 26.42 g	254.5 mL 0.5 mL				12/6/16	16_Days	4		320-23998-A-4-A
9	320-23998-A-5 (PFC_IDA_DOD5)	N/A (320-23998-1)	275.96 g 25.95 g	250 mL 0.5 mL				12/6/16	16_Days	4		320-23998-A-5-A
10	320-23998-A-6 (PFC_IDA_DOD5)	N/A (320-23998-1)	285.93 g 25.80 g	260.1 mL 0.5 mL				12/6/16	16_Days	4		320-23998-A-6-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-23998-A-7 (PFC_IDA_DOD5)	N/A (320-23998-1)	285.85 g / 25.84 g	260 mL / 0.5 mL				12/6/16	16_Days	4	
12	320-23998-A-8 (PFC_IDA_DOD5)	N/A (320-23998-1)	285.30 g / 26.09 g	259.2 mL / 0.5 mL				12/6/16	16_Days	4	
13	320-23998-A-9 (PFC_IDA_DOD5)	N/A (320-23998-1)	283.50 g / 25.87 g	257.6 mL / 0.5 mL				12/6/16	16_Days	4	
14	320-23998-A-9~MS (PFC_IDA_DOD5)	N/A (320-23998-1)	280.27 g / 25.38 g	254.9 mL / 0.5 mL				12/6/16	16_Days	4	
15	320-23998-A-9~MSD (PFC_IDA_DOD5)	N/A (320-23998-1)	279.47 g / 26.04 g	253.4 mL / 0.5 mL				12/6/16	16_Days	4	
16	320-23998-A-10 (PFC_IDA_DOD5)	N/A (320-23998-1)	273.75 g / 25.84 g	247.9 mL / 0.5 mL				12/6/16	16_Days	4	
17	320-23998-A-11 (PFC_IDA_DOD5)	N/A (320-23998-1)	276.07 g / 26.21 g	249.9 mL / 0.5 mL				12/6/16	16_Days	4	10x PFOS 1148 PFOA 441
18	320-23998-A-12 (PFC_IDA_DOD5)	N/A (320-23998-1)	277.86 g / 26.13 g	251.7 mL / 0.5 mL				12/6/16	16_Days	4	10x PFOS RA PFOA
19	320-23998-A-13 (PFC_IDA_DOD5)	N/A (320-23998-1)	270.56 g / 27.01 g	243.6 mL / 0.5 mL				12/6/16	16_Days	4	10x PFBS 205 PFOA 570 PFOS 1079
20	320-23998-A-13~MS (PFC_IDA_DOD5)	N/A (320-23998-1)	276.28 g / 25.98 g	250.3 mL / 0.5 mL				12/6/16	16_Days	4	
21	320-23998-A-13~MSD (PFC_IDA_DOD5)	N/A (320-23998-1)	278.99 g / 26.36 g	252.6 mL / 0.5 mL				12/6/16	16_Days	4	
22	320-23998-A-14 (PFC_IDA_DOD5)	N/A (320-23998-1)	285.38 g / 25.91 g	259.5 mL / 0.5 mL				12/6/16	16_Days	4	10x PFOA 659 PFOS 1139

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Method Code: 320-3535_IVWT-320

Batch End:

23	320-23998-A-15 (PFC_IDA_DOD5)	N/A (320-23998-1)	274.86 g 25.95 g	248.9 mL 0.5 mL				12/6/16	16_Days	4	10X PFOS 382 RA PFOA
24	320-23998-A-16 (PFC_IDA_DOD5)	N/A (320-23998-1)	280.33 g 25.92 g	254.4 mL 0.5 mL				12/6/16	16_Days	4	10x PFOS 395
25	320-23998-A-17 (PFC_IDA_DOD5)	N/A (320-23998-1)	288.93 g 26.31 g	262.6 mL 0.5 mL				12/6/16	16_Days	4	100x PFOS 2099 PFOA 756

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

Manifold ID	2,4,9
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	NSH
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	HJA
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

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: 320-140788

Method Code: 320-3535_IVWT-320

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-140788/1	LCMPFCSU_00046	25 uL	0.5 mL	NSH 12-6-16	HJA 12-6-16
LCS 320-140788/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-140788/2	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-3 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-3 MS	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-3 MSD	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-3 MSD	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-5	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-6	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-7	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-8	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-9	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-9 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-9 MS	LCPFCSP_00073	20 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Method Code: 320-3535_IVWT-320

Batch End:

320-23998-A-9 MSD	LCMPFCSU_00046	25 uL	0.5 mL	NSH 12-6-16	HSA 12-6-16
320-23998-A-9 MSD	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-10	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-11	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-12	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-13	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-13 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-13 MS	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-13 MSD	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-13 MSD	LCPFCSP_00073	20 uL	0.5 mL		
320-23998-A-14	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-15	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-16	LCMPFCSU_00046	25 uL	0.5 mL		
320-23998-A-17	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-140788

Analyst: Sharifi, Nooshin

Batch Open: 12/6/2016 11:38:00AM

Method Code: 320-3535_IVWT-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 140788 Test: PFC-IDA DOD5 (L)

Earliest Holding Time: 12-7-16

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		

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: VPM Date: 12/07/16

2nd Level Reviewer: HSA Date: 12-7-16

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC_IDA_DoD5 **Job #** 23998

Analyst (Print Name) Shyhara Chandrasena **Analyst Initials** SBC

Date 12/22/16

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
11	500	40	400	10x
12				
13				
13MS				
13MSD				
14				
15				
16				
17				
17		100	1000	100x

Comments:

C:\Users\phomsophat\AppData\Local\Microsoft\Windows\Temporary Internet Files\OLK708B\QA-747_SampleDilutionRecord.doc
10/20/16 RBH

Shipping and Receiving Documents

Chain of Custody Record

Temperature on Receipt 2.9°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	12/1/16	295760
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 2
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 Row Annex	FEDEX		
Contract/Purchase Order/Quote No.			
32007449 / 60444465			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	PFOA	PFOS	PFBS
DPT-16-03-GW-31-35	11/30/16	0950		✓			2						✓	✓	✓
* DPT-16-03-GW-18-22	11/30/16	1010		✓			2						✓	✓	✓
DPT-16-04-GW-31-35	11/30/16	1050		✓			2						✓	✓	✓
DPT-16-04-GW-31-35-MS	11/30/16	1050		✓			1						✓	✓	✓
DPT-16-04-GW-31-35-MSD	11/30/16	1050		✓			1						✓	✓	✓
DPT-16-04-GW-18-22	11/30/16	1110		✓			2						✓	✓	✓
DPT-16-10-GW-31-35	11/30/16	1300		✓			2						✓	✓	✓
DPT-16-10-GW-18-22	11/30/16	1320		✓			2						✓	✓	✓
DPT-16-09-GW-31-35	11/30/16	1410		✓			2						✓	✓	✓
DPT-16-09-GW-18-22	11/30/16	1440		✓			2						✓	✓	✓
DPT-16-08-GW-31-35	12/1/16	1000		✓			2						✓	✓	✓
DPT-16-08-GW-31-35-MS	12/1/16	1000		✓			1						✓	✓	✓

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

320-23998 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
			[signature]	12/2/16	0940
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments
2.9°C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

* label time 1110 MM 12/3/16

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM Technical Services	Kurt VanHelder	12/1/16	295753
Address 3101 Wilson Blvd	**Telephone Number (Area Code)/Fax Number** 703-682-9041	**Lab Number**	**Page** 2 of 2
City Arlington **State** VA **Zip Code** 22201	**Site Contact** Anay Shah	**Lab Contact** J.H.K	
Project Name and Location (State) Former Bay Head Road Annex	**Carrier/Waybill Number** FEDEX		
Contract/Purchase Order/Quote No. 32007449 / 60444465			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: PFOA	PFAs	PFBS	Special Instructions/ Conditions of Receipt
DPT-16-08-GW-31-35-MSD	12/1/16	1000		✓			1						✓	✓	✓	
DPT-16-08-GW-18-22	12/1/16	1010		✓			2						✓	✓	✓	
DPT-16-07-GW-31-35	12/1/16	1050		✓			2						✓	✓	✓	
DPT-16-07-GW-18-22	12/1/16	1110		✓			2						✓	✓	✓	
DPT-16-06-GW-31-35	12/1/16	1250		✓			2						✓	✓	✓	
DPT-16-06-GW-18-22	12/1/16	1300		✓			2						✓	✓	✓	
DPT-16-06-GW-31-35-MS	12/1/16	1250		✓			1						✓	✓	✓	
DPT-16-06-GW-31-35-MSD	12/1/16	1250		✓			1						✓	✓	✓	
DPT-16-11-GW-31-35	12/1/16	1400		✓			2						✓	✓	✓	
DPT-16-11-GW-31-35-DUP	12/1/16	1400		✓			2						✓	✓	✓	
DPT-16-11-GW-18-22	12/1/16	1410		✓			2						✓	✓	✓	

Analysis (Attach list if more space is needed)

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	12/1/16	1500		12/2/16	0940
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments 29°C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

01/06/2017

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-23998-1

Login Number: 23998 **List Source: TestAmerica Sacramento**
List Number: 1
Creator: Edman, Connor M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	COC not relinquished.
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-16-03-GW-18-22","537","12/21/16","13:42","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.00089","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-03-GW-18-22","537","12/21/16","13:42","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.0071","","TRG","Yes","Y","","Y","0.0012","0.0029","0.0039","UG_L","UG_L","","","0","","","","0","","",
"","","","","","","","","","","",""
"DPT-16-03-GW-18-22","537","12/21/16","13:42","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.00092","","TRG","Yes","Y","J","Y","0.00073","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","
","","","","","","","","","","","","",""
"DPT-16-03-GW-31-35","537","12/21/16","13:34","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.13","","TRG","Yes","Y","","Y","0.0013","0.0030","0.0039","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-03-GW-31-35","537","12/21/16","13:34","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.019","","TRG","Yes","Y","M","Y","0.00074","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","",
"","","","","","","","","","","","",""
"DPT-16-03-GW-31-35","537","12/21/16","13:34","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.00090","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-04-GW-18-22","537","12/21/16","14:12","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.00090","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-04-GW-18-22","537","12/21/16","14:12","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.027","","TRG","Yes","Y","","Y","0.0013","0.0029","0.0039","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-04-GW-18-22","537","12/21/16","14:12","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.0027","","TRG","Yes","Y","M","Y","0.00073","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","
","","","","","","","","","","","","",""
"DPT-16-04-GW-31-35","537","12/21/16","13:49","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","","","TRG","Yes","N","U","Y","0.00076","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-04-GW-31-35","537","12/21/16","13:49","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.00093","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-04-GW-31-35","537","12/21/16","13:49","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.0016","","TRG","Yes","Y","JM","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0",""
,"","","","","","","","","","","","",""
"DPT-16-06-GW-18-22","537","12/21/16","18:28","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.20","","TRG","Yes","Y","","Y","0.00088","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-06-GW-18-22","537","12/21/16","18:28","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","2.2","","TRG","No","Y","E","Y","0.0012","0.0029","0.0039","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-06-GW-18-22","537","12/21/16","18:28","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","1.3","","TRG","No","Y","EM","Y","0.00072","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","",""
,"","","","","","","","","","","",""
"DPT-16-06-GW-18-22","537","12/22/16","17:57","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.12","","TRG","No","Y","D","Y","0.0088","0.019","0.024","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-06-GW-18-22","537","12/22/16","17:57","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","2.8","","TRG","Yes","Y","D","Y","0.012","0.029","0.039","UG_L","UG_L","","","0","","","","0","","","","",
"","","","","","","","","",""
"DPT-16-06-GW-18-22","537","12/22/16","17:57","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","1.9","","TRG","Yes","Y","DM","Y","0.0072","0.019","0.024","UG_L","UG_L","","","0","","","","0","","","

","","","","","","","","","","",""
"DPT-16-06-GW-31-35","537","12/21/16","18:05","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","2.2","","TRG","No","Y","EJ","Y","0.0013","0.0031","0.0041","UG_L","UG_L","","","0","","","","0","","",""
,"","","","","","","","","","",""
"DPT-16-06-GW-31-35","537","12/21/16","18:05","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","1.2","","TRG","No","Y","EMJ","Y","0.00077","0.0021","0.0026","UG_L","UG_L","","","0","","","","0","","
","","","","","","","","","","","",""
"DPT-16-06-GW-31-35","537","12/21/16","18:05","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.42","","TRG","No","Y","EJ","Y","0.00094","0.0021","0.0026","UG_L","UG_L","","","0","","","","0","",""
,"","","","","","","","","","","",""
"DPT-16-06-GW-31-35","537","12/22/16","17:35","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.28","","TRG","Yes","Y","D","Y","0.0094","0.021","0.026","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-06-GW-31-35","537","12/22/16","17:35","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","2.7","","TRG","Yes","Y","DJ","Y","0.013","0.031","0.041","UG_L","UG_L","","","0","","","","0","","","",""
,"","","","","","","","","",""
"DPT-16-06-GW-31-35","537","12/22/16","17:35","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","1.6","","TRG","Yes","Y","DMJ","Y","0.0077","0.021","0.026","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-07-GW-18-22","537","12/21/16","17:28","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","1.6","","TRG","No","Y","E","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-07-GW-18-22","537","12/21/16","17:28","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.17","","TRG","Yes","Y","","Y","0.00091","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-07-GW-18-22","537","12/21/16","17:28","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.37","","TRG","Yes","Y","M","Y","0.00074","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","
","","","","","","","","","","","",""
"DPT-16-07-GW-18-22","537","12/22/16","17:27","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","1.9","","TRG","Yes","Y","D","Y","0.013","0.030","0.040","UG_L","UG_L","","","0","","","","0","","","","",
"","","","","","","","","",""
"DPT-16-07-GW-18-22","537","12/22/16","17:27","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.084","","TRG","No","Y","D","Y","0.0091","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-07-GW-18-22","537","12/22/16","17:27","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","0.40","","TRG","No","Y","DM","Y","0.0074","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-07-GW-31-35","537","12/21/16","17:20","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","2.3","","TRG","No","Y","E","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-07-GW-31-35","537","12/21/16","17:20","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.18","","TRG","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-07-GW-31-35","537","12/21/16","17:20","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.88","","TRG","No","Y","EM","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","",
"","","","","","","","","","","","",""
"DPT-16-07-GW-31-35","537","12/22/16","17:20","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.11","","TRG","No","Y","D","Y","0.0092","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-07-GW-31-35","537","12/22/16","17:20","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","1.2","","TRG","Yes","Y","DM","Y","0.0075","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-07-GW-31-35","537","12/22/16","17:20","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","3.1","","TRG","Yes","Y","D","Y","0.013","0.030","0.040","UG_L","UG_L","","","0","","","","0","","","","",

"","","","","","","","","",""
"DPT-16-08-GW-18-22","537","12/21/16","17:13","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.0030","","TRG","Yes","Y","M","Y","0.00093","0.0020","0.0025","UG_L","UG_L","","","0","","","","0",""
,"","","","","","","","","","","","",""
"DPT-16-08-GW-18-22","537","12/21/16","17:13","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0075","","TRG","Yes","Y","M","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","
","","","","","","","","","","","","",""
"DPT-16-08-GW-18-22","537","12/21/16","17:13","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.038","","TRG","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-08-GW-31-35","537","12/21/16","16:50","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.0056","","TRG","Yes","Y","","Y","0.00089","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","
","","","","","","","","","","","","",""
"DPT-16-08-GW-31-35","537","12/21/16","16:50","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.022","","TRG","Yes","Y","","Y","0.0012","0.0029","0.0039","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-08-GW-31-35","537","12/21/16","16:50","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0045","","TRG","Yes","Y","M","Y","0.00073","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","
","","","","","","","","","","","","",""
"DPT-16-09-GW-18-22","537","12/21/16","16:43","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.019","","TRG","Yes","Y","","Y","0.0012","0.0029","0.0039","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-09-GW-18-22","537","12/21/16","16:43","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.0043","","TRG","Yes","Y","","Y","0.00089","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","
","","","","","","","","","","","","",""
"DPT-16-09-GW-18-22","537","12/21/16","16:43","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0045","","TRG","Yes","Y","M","Y","0.00072","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","
","","","","","","","","","","","","",""
"DPT-16-09-GW-31-35","537","12/21/16","16:35","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.017","","TRG","Yes","Y","","Y","0.0012","0.0029","0.0038","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-09-GW-31-35","537","12/21/16","16:35","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.0027","","TRG","Yes","Y","","Y","0.00088","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","
","","","","","","","","","","","","",""
"DPT-16-09-GW-31-35","537","12/21/16","16:35","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0021","","TRG","Yes","Y","JM","Y","0.00072","0.0019","0.0024","UG_L","UG_L","","","0","","","","0",
"","","","","","","","","","","","","",""
"DPT-16-10-GW-18-22","537","12/21/16","14:27","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.030","","TRG","Yes","Y","","Y","0.0012","0.0029","0.0038","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-10-GW-18-22","537","12/21/16","14:27","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0062","","TRG","Yes","Y","","Y","0.00072","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","
","","","","","","","","","","","","",""
"DPT-16-10-GW-18-22","537","12/21/16","14:27","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.010","","TRG","Yes","Y","","Y","0.00088","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","",
"","","","","","","","","","","",""
"DPT-16-10-GW-31-35","537","12/21/16","14:19","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.11","","TRG","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-10-GW-31-35","537","12/21/16","14:19","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.014","","TRG","Yes","Y","M","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","",
"","","","","","","","","","","","","",""
"DPT-16-10-GW-31-35","537","12/21/16","14:19","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","","","",""

","","","","","","","","","","",""
"DPT-16-11-GW-18-22","537","12/21/16","18:50","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.18","","TRG","Yes","Y","","Y","0.00087","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-18-22","537","12/21/16","18:50","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","4.0","","TRG","No","Y","E","Y","0.0012","0.0029","0.0038","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-18-22","537","12/21/16","18:50","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","1.4","","TRG","No","Y","EM","Y","0.00071","0.0019","0.0024","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-18-22","537","12/22/16","17:12","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","No","N","U","Y","0.087","0.19","0.24","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","",""
"DPT-16-11-GW-18-22","537","12/22/16","17:12","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","6.0","","TRG","Yes","Y","D","Y","0.12","0.29","0.38","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","",""
"DPT-16-11-GW-18-22","537","12/22/16","17:12","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","2.0","","TRG","Yes","Y","DM","Y","0.071","0.19","0.24","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35","537","12/21/16","18:35","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.080","","TRG","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35","537","12/21/16","18:35","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.77","","TRG","No","Y","E","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35","537","12/21/16","18:35","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.33","","TRG","Yes","Y","M","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35","537","12/22/16","18:05","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.050","","TRG","No","Y","D","Y","0.0092","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35","537","12/22/16","18:05","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.86","","TRG","Yes","Y","D","Y","0.013","0.030","0.040","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35","537","12/22/16","18:05","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","0.36","","TRG","No","Y","DM","Y","0.0075","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35-DUP","537","12/21/16","18:43","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.78","","TRG","No","Y","E","Y","0.0013","0.0029","0.0039","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35-DUP","537","12/21/16","18:43","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.33","","TRG","Yes","Y","M","Y","0.00074","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35-DUP","537","12/21/16","18:43","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.076","","TRG","Yes","Y","","Y","0.00090","0.0020","0.0025","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35-DUP","537","12/22/16","18:12","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","0.35","","TRG","No","Y","DM","Y","0.0074","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35-DUP","537","12/22/16","18:12","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","0.88","","TRG","Yes","Y","D","Y","0.013","0.029","0.039","UG_L","UG_L","","","0","","","","0","","","","","","","","","","","","","",""
"DPT-16-11-GW-31-35-DUP","537","12/22/16","18:12","T","NA","DILUTION1","375-73-

5","Perfluorobutanesulfonic acid
(PFBS)","0.052","","TRG","No","Y","D","Y","0.0090","0.020","0.025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-04-GW-31-35-MSDSD","537","12/21/16","14:04","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0368","","SC","Yes","Y","","Y","0.00074","0.0020","0.0025","UG_L","UG_L","","","0","","","","0.0020",
"0.0394","0.0368","93","3","60","140","30","","","","","","",""
"DPT-16-04-GW-31-35-MSDSD","537","12/21/16","14:04","T","NA","Initial","375-73-5","Perfluorobutanesulfonic
acid
(PFBS)","0.0403","","SC","Yes","Y","","Y","0.00090","0.0020","0.0025","UG_L","UG_L","","","0","","","","0.0020",
"0.0348","0.0403","116","1","50","150","30","","","","","","",""
"DPT-16-04-GW-31-35-MSDSD","537","12/21/16","14:04","T","NA","Initial","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","0.0389","","SC","Yes","Y","","Y","0.0013","0.0030","0.0039","UG_L","UG_L","","","0","","","","0.0016","
0.0366","0.0389","102","0","60","140","30","","","","","","",""
"DPT-16-04-GW-31-35-MSMS","537","12/21/16","13:57","T","NA","Initial","375-73-5","Perfluorobutanesulfonic
acid
(PFBS)","0.0401","","SC","Yes","Y","","Y","0.00089","0.0019","0.0024","UG_L","UG_L","","","0.0020","0.0343","0.
0401","117","0","","","","","50","150","","","","","","","",""
"DPT-16-04-GW-31-35-MSMS","537","12/21/16","13:57","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0356","","SC","Yes","Y","","Y","0.00073","0.0019","0.0024","UG_L","UG_L","","","0.0020","0.0389","0
.0356","92","0","","","","","60","140","","","","","","","",""
"DPT-16-04-GW-31-35-MSMS","537","12/21/16","13:57","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.0390","","SC","Yes","Y","","Y","0.0012","0.0029","0.0039","UG_L","UG_L","","","0.0016","0.0361","0.0
390","104","0","","","","","60","140","","","","","","","",""
"DPT-16-06-GW-31-35-MSDSD","537","12/21/16","18:20","T","NA","Initial","375-73-5","Perfluorobutanesulfonic
acid
(PFBS)","0.479","","SC","No","Y","E4","Y","0.00091","0.0020","0.0025","UG_L","UG_L","","","0","","","","0.42","0
.0350","0.479","177","1","50","150","30","","*","","","","",""
"DPT-16-06-GW-31-35-MSDSD","537","12/21/16","18:20","T","NA","Initial","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","2.15","","SC","No","Y","E4","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","","","","2.2","0.03
67","2.15","0","0","60","140","30","","*","","","","",""
"DPT-16-06-GW-31-35-MSDSD","537","12/21/16","18:20","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","1.14","","SC","No","Y","EM4","Y","0.00074","0.0020","0.0025","UG_L","UG_L","","","0","","","","1.2","0
.0396","1.14","0","0","60","140","30","","*","","","","",""
"DPT-16-06-GW-31-35-MSDSD","537","12/22/16","17:50","T","NA","DILUTION1","375-73-
5","Perfluorobutanesulfonic acid
(PFBS)","0.332","","SC","Yes","Y","D4","Y","0.0091","0.020","0.025","UG_L","UG_L","","","0","","","","0.28","0.0
350","0.332","143","2","50","150","30","","","","","","",""
"DPT-16-06-GW-31-35-MSDSD","537","12/22/16","17:50","T","NA","DILUTION1","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","2.62","","SC","Yes","Y","D4","Y","0.013","0.030","0.040","UG_L","UG_L","","","0","","","","2.7","0.0367
","2.62","0","4","60","140","30","","*","","","","",""
"DPT-16-06-GW-31-35-MSDSD","537","12/22/16","17:50","T","NA","DILUTION1","335-67-1","Perfluorooctanoic
acid
(PFOA)","1.67","","SC","Yes","Y","DM4","Y","0.0074","0.020","0.025","UG_L","UG_L","","","0","","","","1.6","0.0
396","1.67","119","1","60","140","30","","","","","","",""
"DPT-16-06-GW-31-35-MSMS","537","12/21/16","18:13","T","NA","Initial","375-73-5","Perfluorobutanesulfonic
acid
(PFBS)","0.485","","SC","No","Y","E4","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0.42","0.0353","0.4
85","192","0","","","","","50","150","","*","","","","","",""
"DPT-16-06-GW-31-35-MSMS","537","12/21/16","18:13","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","2.16","","SC","No","Y","E4","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","2.2","0.0371","2.16","
0","0","","","","","60","140","","*","","","","","",""

"DPT-16-06-GW-31-35-MSMS","537","12/21/16","18:13","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","1.15","","SC","No","Y","EM4","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","1.2","0.0400","1.1
5","0","0","","","","","60","140","","*","","","","","",""
"DPT-16-06-GW-31-35-MSMS","537","12/22/16","17:42","T","NA","DILUTION1","375-73-
5","Perfluorobutanesulfonic acid
(PFBS)","0.325","","SC","Yes","Y","D4","Y","0.0092","0.020","0.025","UG_L","UG_L","","","0.28","0.0353","0.325
","123","0","","","","","","50","150","","","","","","","","",""
"DPT-16-06-GW-31-35-MSMS","537","12/22/16","17:42","T","NA","DILUTION1","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","2.74","","SC","Yes","Y","D4","Y","0.013","0.030","0.040","UG_L","UG_L","","","2.7","0.0371","2.74","10
2","0","","","","","","60","140","","","","","","","","",""
"DPT-16-06-GW-31-35-MSMS","537","12/22/16","17:42","T","NA","DILUTION1","335-67-1","Perfluorooctanoic
acid
(PFOA)","1.69","","SC","Yes","Y","DM4","Y","0.0075","0.020","0.025","UG_L","UG_L","","","1.6","0.0400","1.69",
"160","0","","","","","","60","140","","*","","","","","","",""
"DPT-16-08-GW-31-35-MSDSD","537","12/21/16","17:05","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0435","","SC","Yes","Y","M","Y","0.00074","0.0020","0.0025","UG_L","UG_L","","","0","","","","0.004
5","0.0395","0.0435","99","4","60","140","30","","","","","","","",""
"DPT-16-08-GW-31-35-MSDSD","537","12/21/16","17:05","T","NA","Initial","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","0.0610","","SC","Yes","Y","","Y","0.0013","0.0030","0.0039","UG_L","UG_L","","","0","","","","0.022","0.
0366","0.0610","107","2","60","140","30","","","","","","","",""
"DPT-16-08-GW-31-35-MSDSD","537","12/21/16","17:05","T","NA","Initial","375-73-5","Perfluorobutanesulfonic
acid
(PFBS)","0.0455","","SC","Yes","Y","","Y","0.00091","0.0020","0.0025","UG_L","UG_L","","","0","","","","0.0056",
"0.0349","0.0455","115","2","50","150","30","","","","","","","",""
"DPT-16-08-GW-31-35-MSMS","537","12/21/16","16:58","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0420","","SC","Yes","Y","M","Y","0.00073","0.0020","0.0025","UG_L","UG_L","","","0.0045","0.0392",
"0.0420","96","0","","","","","60","140","","","","","","","","",""
"DPT-16-08-GW-31-35-MSMS","537","12/21/16","16:58","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.0625","","SC","Yes","Y","","Y","0.0013","0.0029","0.0039","UG_L","UG_L","","","0.022","0.0364","0.06
25","112","0","","","","","60","140","","","","","","","","",""
"DPT-16-08-GW-31-35-MSMS","537","12/21/16","16:58","T","NA","Initial","375-73-5","Perfluorobutanesulfonic
acid
(PFBS)","0.0466","","SC","Yes","Y","","Y","0.00090","0.0020","0.0025","UG_L","UG_L","","","0.0056","0.0347","0.
0466","118","0","","","","","50","150","","","","","","","","",""
"LCS 320-140788/2-A","537","12/21/16","13:26","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.0368","","SC","Yes","Y","","Y","0.00092","0.0020","0.0025","UG_L","UG_L","","","0","0.0354","0.0368
","104","0","","","","","50","150","","","","","","","","",""
"LCS 320-140788/2-A","537","12/21/16","13:26","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.0345","","SC","Yes","Y","","Y","0.0013","0.0030","0.0040","UG_L","UG_L","","","0","0.0371","0.0345",
"93","0","","","","","60","140","","","","","","","","",""
"LCS 320-140788/2-A","537","12/21/16","13:26","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.0346","","SC","Yes","Y","","Y","0.00075","0.0020","0.0025","UG_L","UG_L","","","0","0.0400","0.0346
","87","0","","","","","60","140","","","","","","","","",""
"MB 320-140788/1-A","537","12/21/16","13:19","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 320-140788/1-A","537","12/21/16","13:19","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 320-140788/1-A","537","12/21/16","13:19","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:	320-23998-1
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: 1/9/2017
Reviewed by:	Robert Kennedy/Resolution Consultants Completed on: 1/9/2017
File Name: J23998-1_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 30, 2016 and December 1, 2016.

Sample ID	Matrix/Sample Type
DPT-16-03-GW-18-22	Groundwater
DPT-16-03-GW-31-35	Groundwater
DPT-16-04-GW-18-22	Groundwater
DPT-16-04-GW-31-35	Groundwater
DPT-16-06-GW-18-22	Groundwater
DPT-16-06-GW-31-35	Groundwater
DPT-16-07-GW-18-22	Groundwater
DPT-16-07-GW-31-35	Groundwater
DPT-16-08-GW-18-22	Groundwater
DPT-16-08-GW-31-35	Groundwater
DPT-16-09-GW-18-22	Groundwater
DPT-16-09-GW-31-35	Groundwater
DPT-16-10-GW-18-22	Groundwater
DPT-16-10-GW-31-35	Groundwater
DPT-16-11-GW-18-22	Groundwater
DPT-16-11-GW-31-35	Groundwater
DPT-16-11-GW-31-35-DUP	Field Duplicate of DPT-16-11-GW-31-35

Data validation activities were conducted with reference to:

- TestAmerica-West Sacramento SOP: Perfluorinated Compounds (PFCs) in Water, Soils, Sediments and Tissues by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS)/Revision 1.4 (August 2015);
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (September 2016);
- USEPA Contract Laboratory Program National Functional Guidelines for High Resolution Superfund Methods Data Review (April 2016)
- Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (DoD, July 2013); and
- the project-specific Sampling and Analysis Plan.

In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following review elements (where applicable to the method):

✗	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times/sample preservation
✓	Initial calibration/initial and continuing calibration verification
✓	Laboratory method blanks/equipment blanks
✓	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓	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 and nondetect results for all target compounds in these samples as estimated (J-/UJ) 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

The MS/MSD percent recoveries (%Rs) and relative percent differences (RPDs) were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met or qualification of the data was not required.

LCS/LCSD Results

The LCS/LCSD %Rs and RPDs were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Field Duplicate Results

Field duplicate RPDs are reviewed for conformance with the RESCON QC acceptance limit of $\leq$ 30% [if results are greater than five times the limit of quantitation (LOQ)] and $\leq$ 2x the LOQ [if results are less than five times the LOQ] for aqueous and solid matrices. All field duplicate precision criteria were met.

Labeled Compound Results

The labeled compound results were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met or qualification of the data was not required.

Sample Results/Reporting Issues

If applicable, compounds detected at concentrations less than the LOQ but greater than the DL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

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-16-03-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	0.0071	0.0029	0.0039	µg/L	J-	si
DPT-16-03-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	0.00092	0.0019	0.0024	µg/L	J-	si
DPT-16-03-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)		0.0019	0.0024	µg/L	UJ	si
DPT-16-03-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	0.13	0.0030	0.0039	µg/L	J-	si
DPT-16-03-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.019	0.0020	0.0025	µg/L	J-	si
DPT-16-03-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)		0.0020	0.0025	µg/L	UJ	si
DPT-16-04-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	0.027	0.0029	0.0039	µg/L	J-	si
DPT-16-04-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	0.0027	0.0020	0.0025	µg/L	J-	si
DPT-16-04-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)		0.0020	0.0025	µg/L	UJ	si
DPT-16-04-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	0.0016	0.0030	0.0040	µg/L	J-	si
DPT-16-04-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)		0.0020	0.0025	µg/L	UJ	si
DPT-16-04-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)		0.0020	0.0025	µg/L	UJ	si
DPT-16-06-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)	0.20	0.0019	0.0024	µg/L	J-	si
DPT-16-06-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	2.8	0.029	0.039	µg/L	J-	si
DPT-16-06-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	1.9	0.019	0.024	µg/L	J-	si
DPT-16-06-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	2.7	0.031	0.041	µg/L	J-	si
DPT-16-06-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	1.6	0.021	0.026	µg/L	J-	si
DPT-16-06-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.28	0.021	0.026	µg/L	J-	si
DPT-16-07-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	0.37	0.0020	0.0025	µg/L	J-	si
DPT-16-07-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)	0.17	0.0020	0.0025	µg/L	J-	si
DPT-16-07-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	1.9	0.030	0.040	µg/L	J-	si
DPT-16-07-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.18	0.0020	0.0025	µg/L	J-	si
DPT-16-07-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	3.1	0.030	0.040	µg/L	J-	si
DPT-16-07-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	1.2	0.020	0.025	µg/L	J-	si
DPT-16-08-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	0.038	0.0030	0.0040	µg/L	J-	si
DPT-16-08-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	0.0075	0.0020	0.0025	µg/L	J-	si
DPT-16-08-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)	0.0030	0.0020	0.0025	µg/L	J-	si
DPT-16-08-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	0.022	0.0029	0.0039	µg/L	J-	si
DPT-16-08-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.0045	0.0019	0.0024	µg/L	J-	si
DPT-16-08-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.0056	0.0019	0.0024	µg/L	J-	si
DPT-16-09-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	0.019	0.0029	0.0039	µg/L	J-	si
DPT-16-09-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	0.0045	0.0019	0.0024	µg/L	J-	si
DPT-16-09-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)	0.0043	0.0019	0.0024	µg/L	J-	si
DPT-16-09-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	0.017	0.0029	0.0038	µg/L	J-	si
DPT-16-09-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.0021	0.0019	0.0024	µg/L	J-	si
DPT-16-09-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.0027	0.0019	0.0024	µg/L	J-	si
DPT-16-10-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	0.030	0.0029	0.0038	µg/L	J-	si
DPT-16-10-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	0.0062	0.0019	0.0024	µg/L	J-	si
DPT-16-10-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)	0.010	0.0019	0.0024	µg/L	J-	si
DPT-16-10-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	0.11	0.0030	0.0040	µg/L	J-	si
DPT-16-10-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.014	0.0020	0.0025	µg/L	J-	si
DPT-16-10-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)		0.0020	0.0025	µg/L	UJ	si
DPT-16-11-GW-18-22	WG	Perfluorobutanesulfonic Acid (PFBS)	0.18	0.0019	0.0024	µg/L	J-	si
DPT-16-11-GW-18-22	WG	Perfluorooctanesulfonic Acid (PFOS)	6.0	0.29	0.38	µg/L	J-	si
DPT-16-11-GW-18-22	WG	Perfluorooctanoic Acid (PFOA)	2.0	0.19	0.24	µg/L	J-	si
DPT-16-11-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	0.33	0.0020	0.0025	µg/L	J-	si
DPT-16-11-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.080	0.0020	0.0025	µg/L	J-	si
DPT-16-11-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	0.86	0.030	0.040	µg/L	J-	si
DPT-16-11-GW-31-35-DUP	WG	Perfluorooctanoic Acid (PFOA)	0.33	0.0020	0.0025	µg/L	J-	si
DPT-16-11-GW-31-35-DUP	WG	Perfluorobutanesulfonic Acid (PFBS)	0.076	0.0020	0.0025	µg/L	J-	si
DPT-16-11-GW-31-35-DUP	WG	Perfluorooctanesulfonic Acid (PFOS)	0.88	0.029	0.039	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-16-03	Direct Push/Geoprobe	1474690	496612	DPT-16-03-GW-18-22	Ground water	11/30/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-03	Direct Push/Geoprobe	1474690	496612	DPT-16-03-GW-31-35	Ground water	11/30/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-04	Direct Push/Geoprobe	1474790	496544	DPT-16-04-GW-18-22	Ground water	11/30/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-04	Direct Push/Geoprobe	1474790	496544	DPT-16-04-GW-31-35	Ground water	11/30/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-06	Direct Push/Geoprobe	1474470	496622	DPT-16-06-GW-18-22	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-06	Direct Push/Geoprobe	1474470	496622	DPT-16-06-GW-31-35	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-07	Direct Push/Geoprobe	1474540	496564	DPT-16-07-GW-18-22	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-07	Direct Push/Geoprobe	1474540	496564	DPT-16-07-GW-31-35	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-08	Direct Push/Geoprobe	1474610	496499	DPT-16-08-GW-18-22	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-08	Direct Push/Geoprobe	1474610	496499	DPT-16-08-GW-31-35	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-09	Direct Push/Geoprobe	1474670	496461	DPT-16-09-GW-18-22	Ground water	11/30/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-09	Direct Push/Geoprobe	1474670	496461	DPT-16-09-GW-31-35	Ground water	11/30/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-10	Direct Push/Geoprobe	1474760	496406	DPT-16-10-GW-18-22	Ground water	11/30/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-10	Direct Push/Geoprobe	1474760	496406	DPT-16-10-GW-31-35	Ground water	11/30/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-11	Direct Push/Geoprobe	1474520	496402	DPT-16-11-GW-18-22	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-11	Direct Push/Geoprobe	1474520	496402	DPT-16-11-GW-31-35	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-11	Direct Push/Geoprobe	1474520	496402	DPT-16-11-GW-31-35-DUP	Ground water	12/1/2016	Perfluoroalkyl Compounds	320-23998-1