NAVFAC
Naval Facilities Engineering Command

Off-Base Drinking Water Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG J19022-1

Naval Air Station Oceana
Virginia Beach, Virginia

July 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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

TestAmerica Job ID: 320-19022-1
Client Project/Site: NAS Oceana, VA - 9000 CTO-WE01

For:
CH2M Hill Constructors, Inc.
1100 NE Circle Blvd
Corvallis, Oregon 97330

Attn: Tiffany Hill

Authorized for release by:
6/2/2016 3:04:01 PM

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Definitions/Glossary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Qualifiers

LCMS

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

Glossary

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

Job ID: 320-19022-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: CH2M Hill Constructors, Inc.

Project: NAS Oceana, VA - 9000 CTO-WE01

Report Number: 320-19022-1

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 05/20/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.6 C.

PFC

Samples OF-STORLAG-PT-0516 (320-19022-1), OF-TRMLAG-PT-0516 (320-19022-2), OF-POLLAG-PT-0516 (320-19022-3), OF-CLTANK-PT-0516 (320-19022-4), OF-BACKWASH-PT-0516 (320-19022-5), OF-FILTER-PT-0516 (320-19022-6), OF-INF01-PT-0615 (320-19022-7) and OF-PROCESS BLANK-PT-0516 (320-19022-8) were analyzed for PFC in accordance with PFC. The samples were prepared on 05/25/2016 and analyzed on 05/29/2016, 05/31/2016, 06/01/2016 and 06/02/2016.

Samples OF-STORLAG-PT-0516 (320-19022-1)[5X], OF-TRMLAG-PT-0516 (320-19022-2)[5X], OF-POLLAG-PT-0516 (320-19022-3)[5X], OF-CLTANK-PT-0516 (320-19022-4)[5X], OF-BACKWASH-PT-0516 (320-19022-5)[10X], OF-FILTER-PT-0516 (320-19022-6)[10X] and

Job ID: 320-19022-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

OF-INF01-PT-0615 (320-19022-7)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: OF-INF01-PT-0615 (320-19022-7). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

The level 1 standard from the ICAL is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5 amu, so detection of the analyte serves as verification that the assigned mass is within +/- 0.5 amu of the true value, which meets the DOD tune criterion. (ICV 320-112007/12)

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-111374

The following samples were received in laboratory with a pH of 12. Samples were adjusted to a pH of 7 with Acetic Acid prior to extraction. OF-STORLAG-PT-0516 (320-19022-1), OF-TRMLAG-PT-0516 (320-19022-2), OF-POLLAG-PT-0516 (320-19022-3), OF-CLTANK-PT-0516 (320-19022-4), OF-BACKWASH-PT-0516 (320-19022-5), OF-FILTER-PT-0516 (320-19022-6), OF-INF01-PT-0615 (320-19022-7) and OF-PROCESS BLANK-PT-0516 (320-19022-8)

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

Detection Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Client Sample ID: OF-STORLAG-PT-0516 — Lab Sample ID: 320-19022-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.089		0.0026	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.62	M	0.0026	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.021		0.0026	0.00067	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.056		0.0026	0.00094	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.55	M	0.0026	0.00090	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.8	D M	0.021	0.0066	ug/L	5		WS-LC-0025	Total/NA

Client Sample ID: OF-TRMLAG-PT-0516 — Lab Sample ID: 320-19022-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.078		0.0026	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.011		0.0026	0.00068	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.057		0.0026	0.00095	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.60	M	0.0026	0.00090	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.3	D M	0.013	0.0039	ug/L	5		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.9	D M	0.021	0.0066	ug/L	5		WS-LC-0025	Total/NA

Client Sample ID: OF-POLLAG-PT-0516 — Lab Sample ID: 320-19022-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.092		0.0025	0.00082	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.75	M	0.0025	0.00076	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.019		0.0025	0.00067	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00093	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.00089	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.9	D M	0.020	0.0065	ug/L	5		WS-LC-0025	Total/NA

Client Sample ID: OF-CLTANK-PT-0516 — Lab Sample ID: 320-19022-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.087		0.0025	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.71	M	0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.019		0.0025	0.00066	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.061		0.0025	0.00092	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	2.0	D M	0.020	0.0064	ug/L	5		WS-LC-0025	Total/NA

Client Sample ID: OF-BACKWASH-PT-0516 — Lab Sample ID: 320-19022-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.093		0.0027	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0056		0.0027	0.00071	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0027	0.0010	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	3.8	D M	0.027	0.0081	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1.2	D M	0.027	0.0094	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.6	D M	0.043	0.014	ug/L	10		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Client Sample ID: OF-FILTER-PT-0516 — Lab Sample ID: 320-19022-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.11		0.0025	0.00079	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0050		0.0025	0.00064	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.094		0.0025	0.00090	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	4.0	D M	0.025	0.0073	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1.1	D M	0.025	0.0085	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.5	D M	0.039	0.013	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF-INF01-PT-0615 — Lab Sample ID: 320-19022-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.13		0.0026	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0064		0.0026	0.00068	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0026	0.00095	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	5.9	D M	0.026	0.0077	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1.3	D M	0.026	0.0090	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	2.3	D M	0.041	0.013	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF-PROCESS BLANK-PT-0516 — Lab Sample ID: 320-19022-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: OF-STORLAG-PT-0516

Lab Sample ID: 320-19022-1

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.089		0.0026	0.00083	ug/L		05/25/16 15:20	05/29/16 02:25	1
Perfluorooctanoic acid (PFOA)	0.62	M	0.0026	0.00077	ug/L		05/25/16 15:20	05/29/16 02:25	1
Perfluorononanoic acid (PFNA)	0.021		0.0026	0.00067	ug/L		05/25/16 15:20	05/29/16 02:25	1
Perfluorobutanesulfonic acid (PFBS)	0.056		0.0026	0.00094	ug/L		05/25/16 15:20	05/29/16 02:25	1
Perfluorohexanesulfonic acid (PFHxS)	0.55	M	0.0026	0.00090	ug/L		05/25/16 15:20	05/29/16 02:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*89*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:25*	*1*
13C5 PFNA	*69*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:25*	*1*
13C4 PFOA	*80*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:25*	*1*
13C4-PFHpA	*83*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:25*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	1.8	D M	0.021	0.0066	ug/L		05/25/16 15:20	06/02/16 10:16	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*101*		*25 - 150*	*05/25/16 15:20*	*06/02/16 10:16*	*5*

Client Sample ID: OF-TRMLAG-PT-0516

Lab Sample ID: 320-19022-2

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.078		0.0026	0.00083	ug/L		05/25/16 15:20	05/29/16 02:47	1
Perfluorononanoic acid (PFNA)	0.011		0.0026	0.00068	ug/L		05/25/16 15:20	05/29/16 02:47	1
Perfluorobutanesulfonic acid (PFBS)	0.057		0.0026	0.00095	ug/L		05/25/16 15:20	05/29/16 02:47	1
Perfluorohexanesulfonic acid (PFHxS)	0.60	M	0.0026	0.00090	ug/L		05/25/16 15:20	05/29/16 02:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*88*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:47*	*1*
13C5 PFNA	*54*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:47*	*1*
13C4-PFHpA	*77*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:47*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.3	D M	0.013	0.0039	ug/L		05/25/16 15:20	05/31/16 23:15	5
Perfluorooctanesulfonic acid (PFOS)	1.9	D M	0.021	0.0066	ug/L		05/25/16 15:20	05/31/16 23:15	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*102*		*25 - 150*	*05/25/16 15:20*	*05/31/16 23:15*	*5*
13C4 PFOA	*84*		*25 - 150*	*05/25/16 15:20*	*05/31/16 23:15*	*5*

Client Sample ID: OF-POLLAG-PT-0516

Lab Sample ID: 320-19022-3

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.092		0.0025	0.00082	ug/L		05/25/16 15:20	05/29/16 03:08	1
Perfluorooctanoic acid (PFOA)	0.75	M	0.0025	0.00076	ug/L		05/25/16 15:20	05/29/16 03:08	1
Perfluorononanoic acid (PFNA)	0.019		0.0025	0.00067	ug/L		05/25/16 15:20	05/29/16 03:08	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00093	ug/L		05/25/16 15:20	05/29/16 03:08	1
Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.00089	ug/L		05/25/16 15:20	05/29/16 03:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*89*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:08*	*1*
13C5 PFNA	*66*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:08*	*1*
13C4 PFOA	*73*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:08*	*1*
13C4-PFHpA	*77*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:08*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	1.9	D M	0.020	0.0065	ug/L		05/25/16 15:20	05/31/16 23:37	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*101*		*25 - 150*	*05/25/16 15:20*	*05/31/16 23:37*	*5*

Client Sample ID: OF-CLTANK-PT-0516

Lab Sample ID: 320-19022-4

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.087		0.0025	0.00080	ug/L		05/25/16 15:20	05/29/16 03:29	1
Perfluorooctanoic acid (PFOA)	0.71	M	0.0025	0.00075	ug/L		05/25/16 15:20	05/29/16 03:29	1
Perfluorononanoic acid (PFNA)	0.019		0.0025	0.00066	ug/L		05/25/16 15:20	05/29/16 03:29	1
Perfluorobutanesulfonic acid (PFBS)	0.061		0.0025	0.00092	ug/L		05/25/16 15:20	05/29/16 03:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.00087	ug/L		05/25/16 15:20	05/29/16 03:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*70*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:29*	*1*
13C5 PFNA	*40*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:29*	*1*
13C4 PFOA	*48*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:29*	*1*
13C4-PFHpA	*52*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:29*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.0	D M	0.020	0.0064	ug/L		05/25/16 15:20	05/31/16 23:58	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*72*		*25 - 150*	*05/25/16 15:20*	*05/31/16 23:58*	*5*

Client Sample ID: OF-BACKWASH-PT-0516

Lab Sample ID: 320-19022-5
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.093		0.0027	0.00087	ug/L		05/25/16 15:20	05/29/16 03:51	1
Perfluorononanoic acid (PFNA)	0.0056		0.0027	0.00071	ug/L		05/25/16 15:20	05/29/16 03:51	1
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0027	0.0010	ug/L		05/25/16 15:20	05/29/16 03:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*40*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:51*	*1*
13C5 PFNA	*35*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:51*	*1*
13C4-PFHpA	*44*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:51*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.8	D M	0.027	0.0081	ug/L		05/25/16 15:20	06/01/16 00:19	10
Perfluorohexanesulfonic acid (PFHxS)	1.2	D M	0.027	0.0094	ug/L		05/25/16 15:20	06/01/16 00:19	10
Perfluorooctanesulfonic acid (PFOS)	1.6	D M	0.043	0.014	ug/L		05/25/16 15:20	06/01/16 00:19	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*109*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:19*	*10*
13C4 PFOS	*109*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:19*	*10*
13C4 PFOA	*96*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:19*	*10*

Client Sample ID: OF-FILTER-PT-0516

Lab Sample ID: 320-19022-6
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.11		0.0025	0.00079	ug/L		05/25/16 15:20	05/29/16 04:12	1
Perfluorononanoic acid (PFNA)	0.0050		0.0025	0.00064	ug/L		05/25/16 15:20	05/29/16 04:12	1
Perfluorobutanesulfonic acid (PFBS)	0.094		0.0025	0.00090	ug/L		05/25/16 15:20	05/29/16 04:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*77*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:12*	*1*
13C5 PFNA	*55*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:12*	*1*
13C4-PFHpA	*79*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:12*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	4.0	D M	0.025	0.0073	ug/L		05/25/16 15:20	06/01/16 00:41	10
Perfluorohexanesulfonic acid (PFHxS)	1.1	D M	0.025	0.0085	ug/L		05/25/16 15:20	06/01/16 00:41	10
Perfluorooctanesulfonic acid (PFOS)	1.5	D M	0.039	0.013	ug/L		05/25/16 15:20	06/01/16 00:41	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*107*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:41*	*10*
13C4 PFOS	*117*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:41*	*10*
13C4 PFOA	*87*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:41*	*10*

Client Sample ID: OF-INF01-PT-0615

Lab Sample ID: 320-19022-7

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.13		0.0026	0.00083	ug/L		05/25/16 15:20	05/29/16 04:33	1
Perfluorononanoic acid (PFNA)	0.0064		0.0026	0.00068	ug/L		05/25/16 15:20	05/29/16 04:33	1
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0026	0.00095	ug/L		05/25/16 15:20	05/29/16 04:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*27*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:33*	*1*
13C5 PFNA	*23*	*Q*	*25 - 150*	*05/25/16 15:20*	*05/29/16 04:33*	*1*
13C4-PFHpA	*29*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:33*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.9	D M	0.026	0.0077	ug/L		05/25/16 15:20	06/01/16 01:02	10
Perfluorohexanesulfonic acid (PFHxS)	1.3	D M	0.026	0.0090	ug/L		05/25/16 15:20	06/01/16 01:02	10
Perfluorooctanesulfonic acid (PFOS)	2.3	D M	0.041	0.013	ug/L		05/25/16 15:20	06/01/16 01:02	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*105*		*25 - 150*	*05/25/16 15:20*	*06/01/16 01:02*	*10*
13C4 PFOS	*89*		*25 - 150*	*05/25/16 15:20*	*06/01/16 01:02*	*10*
13C4 PFOA	*75*		*25 - 150*	*05/25/16 15:20*	*06/01/16 01:02*	*10*

Client Sample ID: OF-PROCESS BLANK-PT-0516

Lab Sample ID: 320-19022-8

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00076	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.00071	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorononanoic acid (PFNA)	0.0019	U M	0.0024	0.00062	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00087	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0024	0.00083	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorooctanesulfonic acid (PFOS)	0.0029	U M	0.0038	0.0012	ug/L		05/25/16 15:20	05/29/16 05:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*129*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*
13C4 PFOS	*127*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*
13C5 PFNA	*105*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*
13C4 PFOA	*123*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*
13C4-PFHpA	*121*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*

Isotope Dilution Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3O2 PFHx (25-150)	3C4 PFOS (25-150)	3C5 PFNA (25-150)	3C4 PFOA (25-150)	3C4-PFHp (25-150)			
320-19022-1	OF-STORLAG-PT-0516	89		69	80	83			
320-19022-1 - DL	OF-STORLAG-PT-0516		101						
320-19022-2	OF-TRMLAG-PT-0516	88		54		77			
320-19022-2 - DL	OF-TRMLAG-PT-0516		102		84				
320-19022-3	OF-POLLAG-PT-0516	89		66	73	77			
320-19022-3 - DL	OF-POLLAG-PT-0516		101						
320-19022-4	OF-CLTANK-PT-0516	70		40	48	52			
320-19022-4 - DL	OF-CLTANK-PT-0516		72						
320-19022-5	OF-BACKWASH-PT-0516	40		35		44			
320-19022-5 - DL	OF-BACKWASH-PT-0516	109	109		96				
320-19022-6	OF-FILTER-PT-0516	77		55		79			
320-19022-6 - DL	OF-FILTER-PT-0516	107	117		87				
320-19022-7	OF-INF01-PT-0615	27		23 Q		29			
320-19022-7 - DL	OF-INF01-PT-0615	105	89		75				
320-19022-8	OF-PROCESS BLANK-PT-0516	129	127	105	123	121			
LCS 320-111374/2-A	Lab Control Sample	114	111	110	113	111			
LCSD 320-111374/3-A	Lab Control Sample Dup	118	114	112	115	114			
MB 320-111374/1-A	Method Blank	127	125	121	132	124			

Surrogate Legend

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

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-111374/1-A
Matrix: Water
Analysis Batch: 112007

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 111374

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.00087	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0013	ug/L		05/25/16 15:20	05/31/16 17:56	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*127*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*
13C4 PFOS	*125*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*
13C5 PFNA	*121*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*
13C4 PFOA	*132*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*
13C4-PFHpA	*124*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*

Lab Sample ID: LCS 320-111374/2-A
Matrix: Water
Analysis Batch: 112007

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 111374

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0361		ug/L		90	60 - 140
Perfluorooctanoic acid (PFOA)	0.0400	0.0339		ug/L		85	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0348		ug/L		87	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0308		ug/L		87	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0308	M	ug/L		85	60 - 140
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0385	M	ug/L		104	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
18O2 PFHxS	*114*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C4 PFOA	*113*		*25 - 150*
13C4-PFHpA	*111*		*25 - 150*

Lab Sample ID: LCSD 320-111374/3-A
Matrix: Water
Analysis Batch: 112007

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 111374

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0343		ug/L		86	60 - 140	5	30
Perfluorooctanoic acid (PFOA)	0.0400	0.0341		ug/L		85	60 - 140	1	30
Perfluorononanoic acid (PFNA)	0.0400	0.0334		ug/L		84	60 - 140	4	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0305		ug/L		86	50 - 150	1	30
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0310	M	ug/L		85	60 - 140	1	30
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0420	M	ug/L		113	60 - 140	9	30

QC Sample Results

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
18O2 PFHxS	118		25 - 150
13C4 PFOS	114		25 - 150
13C5 PFNA	112		25 - 150
13C4 PFOA	115		25 - 150
13C4-PFHpA	114		25 - 150

QC Association Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

LCMS

Prep Batch: 111374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-19022-1 - DL	OF-STORLAG-PT-0516	Total/NA	Water	3535	
320-19022-1	OF-STORLAG-PT-0516	Total/NA	Water	3535	
320-19022-2	OF-TRMLAG-PT-0516	Total/NA	Water	3535	
320-19022-2 - DL	OF-TRMLAG-PT-0516	Total/NA	Water	3535	
320-19022-3	OF-POLLAG-PT-0516	Total/NA	Water	3535	
320-19022-3 - DL	OF-POLLAG-PT-0516	Total/NA	Water	3535	
320-19022-4	OF-CLTANK-PT-0516	Total/NA	Water	3535	
320-19022-4 - DL	OF-CLTANK-PT-0516	Total/NA	Water	3535	
320-19022-5	OF-BACKWASH-PT-0516	Total/NA	Water	3535	
320-19022-5 - DL	OF-BACKWASH-PT-0516	Total/NA	Water	3535	
320-19022-6 - DL	OF-FILTER-PT-0516	Total/NA	Water	3535	
320-19022-6	OF-FILTER-PT-0516	Total/NA	Water	3535	
320-19022-7	OF-INF01-PT-0615	Total/NA	Water	3535	
320-19022-7 - DL	OF-INF01-PT-0615	Total/NA	Water	3535	
320-19022-8	OF-PROCESS BLANK-PT-0516	Total/NA	Water	3535	
LCS 320-111374/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-111374/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
MB 320-111374/1-A	Method Blank	Total/NA	Water	3535	

Analysis Batch: 111859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-19022-1	OF-STORLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-2	OF-TRMLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-3	OF-POLLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-4	OF-CLTANK-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-5	OF-BACKWASH-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-6	OF-FILTER-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-7	OF-INF01-PT-0615	Total/NA	Water	WS-LC-0025	111374
320-19022-8	OF-PROCESS BLANK-PT-0516	Total/NA	Water	WS-LC-0025	111374

Analysis Batch: 112007

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-19022-2 - DL	OF-TRMLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-3 - DL	OF-POLLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-4 - DL	OF-CLTANK-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-5 - DL	OF-BACKWASH-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-6 - DL	OF-FILTER-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-7 - DL	OF-INF01-PT-0615	Total/NA	Water	WS-LC-0025	111374
LCS 320-111374/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	111374
LCSD 320-111374/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025	111374
MB 320-111374/1-A	Method Blank	Total/NA	Water	WS-LC-0025	111374

Analysis Batch: 112205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-19022-1 - DL	OF-STORLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374

Lab Chronicle

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Client Sample ID: OF-STORLAG-PT-0516
Lab Sample ID: 320-19022-1
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 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			485.8 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	485.8 mL	1.00 mL	111859	05/29/16 02:25	JRB	TAL SAC
Total/NA	Prep	3535	DL		485.8 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	485.8 mL	1.00 mL	112205	06/02/16 10:16	JRB	TAL SAC

Client Sample ID: OF-TRMLAG-PT-0516
Lab Sample ID: 320-19022-2
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 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			481.7 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	481.7 mL	1.00 mL	111859	05/29/16 02:47	JRB	TAL SAC
Total/NA	Prep	3535	DL		481.7 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	481.7 mL	1.00 mL	112007	05/31/16 23:15	JRB	TAL SAC

Client Sample ID: OF-POLLAG-PT-0516
Lab Sample ID: 320-19022-3
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 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			491 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	491 mL	1.00 mL	111859	05/29/16 03:08	JRB	TAL SAC
Total/NA	Prep	3535	DL		491 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	491 mL	1.00 mL	112007	05/31/16 23:37	JRB	TAL SAC

Client Sample ID: OF-CLTANK-PT-0516
Lab Sample ID: 320-19022-4
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 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			499 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	499 mL	1.00 mL	111859	05/29/16 03:29	JRB	TAL SAC
Total/NA	Prep	3535	DL		499 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	499 mL	1.00 mL	112007	05/31/16 23:58	JRB	TAL SAC

Client Sample ID: OF-BACKWASH-PT-0516
Lab Sample ID: 320-19022-5
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 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			460.8 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	460.8 mL	1.00 mL	111859	05/29/16 03:51	JRB	TAL SAC
Total/NA	Prep	3535	DL		460.8 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC

Lab Chronicle

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Client Sample ID: OF-BACKWASH-PT-0516

Lab Sample ID: 320-19022-5
Matrix: Water
Date Collected: 05/19/16 13:35
Date Received: 05/20/16 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	WS-LC-0025	DL	10	460.8 mL	1.00 mL	112007	06/01/16 00:19	JRB	TAL SAC

Client Sample ID: OF-FILTER-PT-0516

Lab Sample ID: 320-19022-6
Matrix: Water
Date Collected: 05/19/16 13:35
Date Received: 05/20/16 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			509.4 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	509.4 mL	1.00 mL	111859	05/29/16 04:12	JRB	TAL SAC
Total/NA	Prep	3535	DL		509.4 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	509.4 mL	1.00 mL	112007	06/01/16 00:41	JRB	TAL SAC

Client Sample ID: OF-INF01-PT-0615

Lab Sample ID: 320-19022-7
Matrix: Water
Date Collected: 05/19/16 13:35
Date Received: 05/20/16 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			483.6 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	483.6 mL	1.00 mL	111859	05/29/16 04:33	JRB	TAL SAC
Total/NA	Prep	3535	DL		483.6 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	483.6 mL	1.00 mL	112007	06/01/16 01:02	JRB	TAL SAC

Client Sample ID: OF-PROCESS BLANK-PT-0516

Lab Sample ID: 320-19022-8
Matrix: Water
Date Collected: 05/19/16 13:35
Date Received: 05/20/16 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			525 mL	1.00 mL	111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	525 mL	1.00 mL	111859	05/29/16 05:58	JRB	TAL SAC

Laboratory References:

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

Certification Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

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
Oregon	NELAP	10	4040	01-29-17

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
Oregon	NELAP	10	4025	01-09-17

Method Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Method	Method Description	Protocol	Laboratory
WS-LC-0025	Perfluorinated Hydrocarbons	TAL SOP	TAL SAC

Protocol References:

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-19022-1	OF-STORLAG-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-2	OF-TRMLAG-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-3	OF-POLLAG-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-4	OF-CLTANK-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-5	OF-BACKWASH-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-6	OF-FILTER-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-7	OF-INF01-PT-0615	Water	05/19/16 13:35	05/20/16 09:40
320-19022-8	OF-PROCESS BLANK-PT-0516	Water	05/19/16 13:35	05/20/16 09:40

CH2MHILL Applied Sciences Laboratory
CHAIN OF CUSTODY RECORD
AND AGREEMENT TO PERFORM SERVICES

Chain of Custody Record

1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330
(541) 768-3120

Client Contact

Project Name: Fentress PFC Sampling
Project # or PO #: 674207.FI.FS
Company Name: CH2M
Address: 5701 Cleveland St. Suite 200
City/State/Zip: Virginia Beach VA 23462
Project Manager: Bill Friedman & Tiffany Hill
Phone #: 775-671-6232
Report to email: Tiffany.Hill@ch2m.com

Analysis Turnaround Time

TAT Is Calander days

TAT if different from below _____

☐ 21 days (STD)

☒ 14 days * ☐ 3 day *

☐ 7 days * ☐ 2 days *

☐ 5 days * ☐ 1 day *

* (Surcharges will apply)

Preservation Used

1

Analysis Requested

PFCs

For Lab Use Only:

SDG:_____
Custody Seals intact? ☐ Yes ☐ No
Hand delivered? ☐ Yes ☐ No
Cooler Temp :____°C
Therm ID No.:____Therm Exp.____
Packing Material: Circle Below
Ice Blue Ice Box Bubble Wrap
Radiological Screen? ☐ Yes ☐ No

Sample Identification (Limit of 20 characters)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (Water, Soil, Air)	Total # of Cont.	PFCs	Sample Specific Notes:	Lab ID:
OF - STORLAG - PT - 0516	5/19/16	1335	G	W	2	2	1210	
OF - TRMLAG - PT - 0516	"	"	"	"	2	2	1150	
OF - POLLAG - PT - 0516	"	"	"	"	2	2	1125	
OF - CLTANK - PT - 0516	"	"	"	"	2	2	1048	
OF - BACKWASH - PT - 0516	"	"	"	"	2	2	1030	
OF - FILTER - PT - 0516	"	"	"	"	2	2	1015	
OF - INF01 - PT - 0516	"	"	"	"	2	2	0955	
OF - Process Blank - PT - 0516	"	"	"	"	4	4	1335	WSS 05/20/16

320-19022 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are samples hazardous? ☐ Yes ☒ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic
If YES or NO is not checked above, samples will be assumed hazardous and hazardous disposal fees will be applied.

Sample Disposal (A fee may be added if samples are retained longer than 30 day per client request, samples are returned to client, or classified as hazardous.)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ months

Sampled By: Brad Suedbeck Brad Suedbeck Date/Time: 5/19/16 1335
Relinquished by: Brad Suedbeck Brad Suedbeck Date/Time: 5/19/16 1335
Received by: Date/Time: 05/20/16 0940
Relinquished by: Date/Time:
Received in Laboratory by: Date/Time:
Shipped Via: ☐ UPS ☒ Fed-Ex ☐ USPS ☐ Other Tracking #:

Special Instructions/QC Requirements

See orginal COC attached. (No. 193526) 5.6°C

Page 21 of 23

6/2/2016

DOC CONTROL ID. ASL1081-0614

Chain of Custody Record TO: ASL

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

WE01

Q2019

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
CH2M Hill	Bill Friedman	05/10/16	193526
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 1
5701 Cleveland St Suite 200	757-671-6232		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Virginia Beach / VA / 23462			
Project Name and Location (State)	**Carrier/Waybill Number**		
Fentress PFC Sampling WE01	FedEx		
Contract/Purchase Order/Quote No.			

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: Total Oxidizable Precursor PFCS	Special Instructions/ Conditions of Receipt
OF-STORLAG-PT-0516 11	05/10/16	1210		X			X						2	1
OF-TRMTLAG-PT-0516 11		1150		X			X						2	2
OF-POLLAG-PT-0516 11		1125		X			X						2	3
OF-CLTANK-PT-0516 11		1048		X			X						2	4
~~OF~~ OF-BACKWASH-PT-0516 11		1030		X			X						2	5
OF-FILTER-PT-0516 11		1015		X			X						2	6
OF-INF01-PT-0516 11	↓	0955		X			X						2	7

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)

	Relinquished By	Date	Time	Received By	Date	Time
1.	Katherine Sitta	05/10/16	1600		05/20/16	
2.						
3.					5/11/16	0945

Comments
TO ASL for total oxidizer precurser PFCS
recd by: 05/20/16 0440 1.1°C
5.6°C

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

6/2/2016

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-19022-1

Login Number: 19022
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	False	No time on COC, logged in per container labels.
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: 320-19022-1

Job Description: NAS Oceana, VA - 9000 CTO-WE01

For:
CH2M Hill Constructors, Inc.
1100 NE Circle Blvd
Corvallis, OR 97330

Attention: Tiffany Hill

Approved for release.
Laura Turpen
Project Manager I
6/2/2016 3:05 PM

Laura Turpen, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4414
laura.turpen@testamericainc.com
06/02/2016

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

The Lab Certification ID# is 4025.

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

Table of Contents

Table of Contents

Qualifiers

LCMS

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

Glossary

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

CASE NARRATIVE

Client: CH2M Hill Constructors, Inc.

Project: NAS Oceana, VA - 9000 CTO-WE01

Report Number: 320-19022-1

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 05/20/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.6 C.

PFC

Samples OF-STORLAG-PT-0516 (320-19022-1), OF-TRMLAG-PT-0516 (320-19022-2), OF-POLLAG-PT-0516 (320-19022-3), OF-CLTANK-PT-0516 (320-19022-4), OF-BACKWASH-PT-0516 (320-19022-5), OF-FILTER-PT-0516 (320-19022-6), OF-INF01-PT-0615 (320-19022-7) and OF-PROCESS BLANK-PT-0516 (320-19022-8) were analyzed for PFC in accordance with PFC. The samples were prepared on 05/25/2016 and analyzed on 05/29/2016, 05/31/2016, 06/01/2016 and 06/02/2016.

Samples OF-STORLAG-PT-0516 (320-19022-1)[5X], OF-TRMLAG-PT-0516 (320-19022-2)[5X], OF-POLLAG-PT-0516 (320-19022-3)[5X], OF-CLTANK-PT-0516 (320-19022-4)[5X], OF-BACKWASH-PT-0516 (320-19022-5)[10X], OF-FILTER-PT-0516 (320-19022-6)[10X] and OF-INF01-PT-0615 (320-19022-7)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: OF-INF01-PT-0615 (320-19022-7). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

The level 1 standard from the ICAL is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5 amu, so detection of the analyte serves as verification that the assigned mass is within +/- 0.5 amu of the true value, which meets the DOD tune criterion. (ICV 320-112007/12)

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-111374

The following samples were received in laboratory with a pH of 12. Samples were adjusted to a pH of 7 with Acetic Acid prior to extraction.

OF-STORLAG-PT-0516 (320-19022-1), OF-TRMLAG-PT-0516 (320-19022-2), OF-POLLAG-PT-0516 (320-19022-3), OF-CLTANK-PT-0516 (320-19022-4), OF-BACKWASH-PT-0516 (320-19022-5), OF-FILTER-PT-0516 (320-19022-6), OF-INF01-PT-0615 (320-19022-7) and OF-PROCESS BLANK-PT-0516 (320-19022-8)

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

Detection Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Client Sample ID: OF-STORLAG-PT-0516 — Lab Sample ID: 320-19022-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.089		0.0026	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.62	M	0.0026	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.021		0.0026	0.00067	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.056		0.0026	0.00094	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.55	M	0.0026	0.00090	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.8	D M	0.021	0.0066	ug/L	5		WS-LC-0025	Total/NA

Client Sample ID: OF-TRMLAG-PT-0516 — Lab Sample ID: 320-19022-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.078		0.0026	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.011		0.0026	0.00068	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.057		0.0026	0.00095	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.60	M	0.0026	0.00090	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.3	D M	0.013	0.0039	ug/L	5		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.9	D M	0.021	0.0066	ug/L	5		WS-LC-0025	Total/NA

Client Sample ID: OF-POLLAG-PT-0516 — Lab Sample ID: 320-19022-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.092		0.0025	0.00082	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.75	M	0.0025	0.00076	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.019		0.0025	0.00067	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00093	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.00089	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.9	D M	0.020	0.0065	ug/L	5		WS-LC-0025	Total/NA

Client Sample ID: OF-CLTANK-PT-0516 — Lab Sample ID: 320-19022-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.087		0.0025	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.71	M	0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.019		0.0025	0.00066	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.061		0.0025	0.00092	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	2.0	D M	0.020	0.0064	ug/L	5		WS-LC-0025	Total/NA

Client Sample ID: OF-BACKWASH-PT-0516 — Lab Sample ID: 320-19022-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.093		0.0027	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0056		0.0027	0.00071	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0027	0.0010	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	3.8	D M	0.027	0.0081	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1.2	D M	0.027	0.0094	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.6	D M	0.043	0.014	ug/L	10		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Client Sample ID: OF-FILTER-PT-0516 — Lab Sample ID: 320-19022-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.11		0.0025	0.00079	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0050		0.0025	0.00064	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.094		0.0025	0.00090	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	4.0	D M	0.025	0.0073	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1.1	D M	0.025	0.0085	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.5	D M	0.039	0.013	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF-INF01-PT-0615 — Lab Sample ID: 320-19022-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.13		0.0026	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0064		0.0026	0.00068	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0026	0.00095	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	5.9	D M	0.026	0.0077	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1.3	D M	0.026	0.0090	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	2.3	D M	0.041	0.013	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF-PROCESS BLANK-PT-0516 — Lab Sample ID: 320-19022-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: OF-STORLAG-PT-0516

Lab Sample ID: 320-19022-1

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.089		0.0026	0.00083	ug/L		05/25/16 15:20	05/29/16 02:25	1
Perfluorooctanoic acid (PFOA)	0.62	M	0.0026	0.00077	ug/L		05/25/16 15:20	05/29/16 02:25	1
Perfluorononanoic acid (PFNA)	0.021		0.0026	0.00067	ug/L		05/25/16 15:20	05/29/16 02:25	1
Perfluorobutanesulfonic acid (PFBS)	0.056		0.0026	0.00094	ug/L		05/25/16 15:20	05/29/16 02:25	1
Perfluorohexanesulfonic acid (PFHxS)	0.55	M	0.0026	0.00090	ug/L		05/25/16 15:20	05/29/16 02:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*89*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:25*	*1*
13C5 PFNA	*69*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:25*	*1*
13C4 PFOA	*80*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:25*	*1*
13C4-PFHpA	*83*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:25*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	1.8	D M	0.021	0.0066	ug/L		05/25/16 15:20	06/02/16 10:16	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*101*		*25 - 150*	*05/25/16 15:20*	*06/02/16 10:16*	*5*

Client Sample ID: OF-TRMLAG-PT-0516

Lab Sample ID: 320-19022-2

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.078		0.0026	0.00083	ug/L		05/25/16 15:20	05/29/16 02:47	1
Perfluorononanoic acid (PFNA)	0.011		0.0026	0.00068	ug/L		05/25/16 15:20	05/29/16 02:47	1
Perfluorobutanesulfonic acid (PFBS)	0.057		0.0026	0.00095	ug/L		05/25/16 15:20	05/29/16 02:47	1
Perfluorohexanesulfonic acid (PFHxS)	0.60	M	0.0026	0.00090	ug/L		05/25/16 15:20	05/29/16 02:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*88*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:47*	*1*
13C5 PFNA	*54*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:47*	*1*
13C4-PFHpA	*77*		*25 - 150*	*05/25/16 15:20*	*05/29/16 02:47*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.3	D M	0.013	0.0039	ug/L		05/25/16 15:20	05/31/16 23:15	5
Perfluorooctanesulfonic acid (PFOS)	1.9	D M	0.021	0.0066	ug/L		05/25/16 15:20	05/31/16 23:15	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*102*		*25 - 150*	*05/25/16 15:20*	*05/31/16 23:15*	*5*
13C4 PFOA	*84*		*25 - 150*	*05/25/16 15:20*	*05/31/16 23:15*	*5*

Client Sample ID: OF-POLLAG-PT-0516

Lab Sample ID: 320-19022-3

Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.092		0.0025	0.00082	ug/L		05/25/16 15:20	05/29/16 03:08	1
Perfluorooctanoic acid (PFOA)	0.75	M	0.0025	0.00076	ug/L		05/25/16 15:20	05/29/16 03:08	1
Perfluorononanoic acid (PFNA)	0.019		0.0025	0.00067	ug/L		05/25/16 15:20	05/29/16 03:08	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.00093	ug/L		05/25/16 15:20	05/29/16 03:08	1
Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.00089	ug/L		05/25/16 15:20	05/29/16 03:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*89*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:08*	*1*
13C5 PFNA	*66*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:08*	*1*
13C4 PFOA	*73*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:08*	*1*
13C4-PFHpA	*77*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:08*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	1.9	D M	0.020	0.0065	ug/L		05/25/16 15:20	05/31/16 23:37	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*101*		*25 - 150*	*05/25/16 15:20*	*05/31/16 23:37*	*5*

Client Sample ID: OF-CLTANK-PT-0516

Lab Sample ID: 320-19022-4

Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.087		0.0025	0.00080	ug/L		05/25/16 15:20	05/29/16 03:29	1
Perfluorooctanoic acid (PFOA)	0.71	M	0.0025	0.00075	ug/L		05/25/16 15:20	05/29/16 03:29	1
Perfluorononanoic acid (PFNA)	0.019		0.0025	0.00066	ug/L		05/25/16 15:20	05/29/16 03:29	1
Perfluorobutanesulfonic acid (PFBS)	0.061		0.0025	0.00092	ug/L		05/25/16 15:20	05/29/16 03:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.00087	ug/L		05/25/16 15:20	05/29/16 03:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*70*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:29*	*1*
13C5 PFNA	*40*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:29*	*1*
13C4 PFOA	*48*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:29*	*1*
13C4-PFHpA	*52*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:29*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.0	D M	0.020	0.0064	ug/L		05/25/16 15:20	05/31/16 23:58	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*72*		*25 - 150*	*05/25/16 15:20*	*05/31/16 23:58*	*5*

Client Sample ID: OF-BACKWASH-PT-0516

Lab Sample ID: 320-19022-5

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.093		0.0027	0.00087	ug/L		05/25/16 15:20	05/29/16 03:51	1
Perfluorononanoic acid (PFNA)	0.0056		0.0027	0.00071	ug/L		05/25/16 15:20	05/29/16 03:51	1
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0027	0.0010	ug/L		05/25/16 15:20	05/29/16 03:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*40*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:51*	*1*
13C5 PFNA	*35*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:51*	*1*
13C4-PFHpA	*44*		*25 - 150*	*05/25/16 15:20*	*05/29/16 03:51*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.8	D M	0.027	0.0081	ug/L		05/25/16 15:20	06/01/16 00:19	10
Perfluorohexanesulfonic acid (PFHxS)	1.2	D M	0.027	0.0094	ug/L		05/25/16 15:20	06/01/16 00:19	10
Perfluorooctanesulfonic acid (PFOS)	1.6	D M	0.043	0.014	ug/L		05/25/16 15:20	06/01/16 00:19	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*109*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:19*	*10*
13C4 PFOS	*109*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:19*	*10*
13C4 PFOA	*96*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:19*	*10*

Client Sample ID: OF-FILTER-PT-0516

Lab Sample ID: 320-19022-6

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.11		0.0025	0.00079	ug/L		05/25/16 15:20	05/29/16 04:12	1
Perfluorononanoic acid (PFNA)	0.0050		0.0025	0.00064	ug/L		05/25/16 15:20	05/29/16 04:12	1
Perfluorobutanesulfonic acid (PFBS)	0.094		0.0025	0.00090	ug/L		05/25/16 15:20	05/29/16 04:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*77*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:12*	*1*
13C5 PFNA	*55*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:12*	*1*
13C4-PFHpA	*79*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:12*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	4.0	D M	0.025	0.0073	ug/L		05/25/16 15:20	06/01/16 00:41	10
Perfluorohexanesulfonic acid (PFHxS)	1.1	D M	0.025	0.0085	ug/L		05/25/16 15:20	06/01/16 00:41	10
Perfluorooctanesulfonic acid (PFOS)	1.5	D M	0.039	0.013	ug/L		05/25/16 15:20	06/01/16 00:41	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*107*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:41*	*10*
13C4 PFOS	*117*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:41*	*10*
13C4 PFOA	*87*		*25 - 150*	*05/25/16 15:20*	*06/01/16 00:41*	*10*

Client Sample ID: OF-INF01-PT-0615

Lab Sample ID: 320-19022-7

Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.13		0.0026	0.00083	ug/L		05/25/16 15:20	05/29/16 04:33	1
Perfluorononanoic acid (PFNA)	0.0064		0.0026	0.00068	ug/L		05/25/16 15:20	05/29/16 04:33	1
Perfluorobutanesulfonic acid (PFBS)	0.15		0.0026	0.00095	ug/L		05/25/16 15:20	05/29/16 04:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*27*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:33*	*1*
13C5 PFNA	*23*	*Q*	*25 - 150*	*05/25/16 15:20*	*05/29/16 04:33*	*1*
13C4-PFHpA	*29*		*25 - 150*	*05/25/16 15:20*	*05/29/16 04:33*	*1*

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.9	D M	0.026	0.0077	ug/L		05/25/16 15:20	06/01/16 01:02	10
Perfluorohexanesulfonic acid (PFHxS)	1.3	D M	0.026	0.0090	ug/L		05/25/16 15:20	06/01/16 01:02	10
Perfluorooctanesulfonic acid (PFOS)	2.3	D M	0.041	0.013	ug/L		05/25/16 15:20	06/01/16 01:02	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*105*		*25 - 150*	*05/25/16 15:20*	*06/01/16 01:02*	*10*
13C4 PFOS	*89*		*25 - 150*	*05/25/16 15:20*	*06/01/16 01:02*	*10*
13C4 PFOA	*75*		*25 - 150*	*05/25/16 15:20*	*06/01/16 01:02*	*10*

Client Sample ID: OF-PROCESS BLANK-PT-0516

Lab Sample ID: 320-19022-8

Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00076	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.00071	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorononanoic acid (PFNA)	0.0019	U M	0.0024	0.00062	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00087	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0024	0.00083	ug/L		05/25/16 15:20	05/29/16 05:58	1
Perfluorooctanesulfonic acid (PFOS)	0.0029	U M	0.0038	0.0012	ug/L		05/25/16 15:20	05/29/16 05:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*129*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*
13C4 PFOS	*127*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*
13C5 PFNA	*105*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*
13C4 PFOA	*123*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*
13C4-PFHpA	*121*		*25 - 150*	*05/25/16 15:20*	*05/29/16 05:58*	*1*

Default Detection Limits

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.0025	0.00092	ug/L	WS-LC-0025
Perfluoroheptanoic acid (PFHpA)	0.0025	0.00080	ug/L	WS-LC-0025
Perfluorohexanesulfonic acid (PFHxS)	0.0025	0.00087	ug/L	WS-LC-0025
Perfluorononanoic acid (PFNA)	0.0025	0.00065	ug/L	WS-LC-0025
Perfluorooctanesulfonic acid (PFOS)	0.0040	0.0013	ug/L	WS-LC-0025
Perfluorooctanoic acid (PFOA)	0.0025	0.00075	ug/L	WS-LC-0025

Isotope Dilution Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3O2 PFHx (25-150)	3C4 PFOS (25-150)	3C5 PFNA (25-150)	3C4 PFOA (25-150)	3C4-PFHp (25-150)			
320-19022-1	OF-STORLAG-PT-0516	89		69	80	83			
320-19022-1 - DL	OF-STORLAG-PT-0516		101						
320-19022-2	OF-TRMLAG-PT-0516	88		54		77			
320-19022-2 - DL	OF-TRMLAG-PT-0516		102		84				
320-19022-3	OF-POLLAG-PT-0516	89		66	73	77			
320-19022-3 - DL	OF-POLLAG-PT-0516		101						
320-19022-4	OF-CLTANK-PT-0516	70		40	48	52			
320-19022-4 - DL	OF-CLTANK-PT-0516		72						
320-19022-5	OF-BACKWASH-PT-0516	40		35		44			
320-19022-5 - DL	OF-BACKWASH-PT-0516	109	109		96				
320-19022-6	OF-FILTER-PT-0516	77		55		79			
320-19022-6 - DL	OF-FILTER-PT-0516	107	117		87				
320-19022-7	OF-INF01-PT-0615	27		23 Q		29			
320-19022-7 - DL	OF-INF01-PT-0615	105	89		75				
320-19022-8	OF-PROCESS BLANK-PT-0516	129	127	105	123	121			
LCS 320-111374/2-A	Lab Control Sample	114	111	110	113	111			
LCSD 320-111374/3-A	Lab Control Sample Dup	118	114	112	115	114			
MB 320-111374/1-A	Method Blank	127	125	121	132	124			

Surrogate Legend

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

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-111374/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 112007 — **Prep Batch: 111374**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.00087	ug/L		05/25/16 15:20	05/31/16 17:56	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0013	ug/L		05/25/16 15:20	05/31/16 17:56	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*127*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*
13C4 PFOS	*125*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*
13C5 PFNA	*121*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*
13C4 PFOA	*132*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*
13C4-PFHpA	*124*		*25 - 150*	*05/25/16 15:20*	*05/31/16 17:56*	*1*

Lab Sample ID: LCS 320-111374/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 112007 — **Prep Batch: 111374**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0361		ug/L		90	60 - 140
Perfluorooctanoic acid (PFOA)	0.0400	0.0339		ug/L		85	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0348		ug/L		87	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0308		ug/L		87	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0308	M	ug/L		85	60 - 140
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0385	M	ug/L		104	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
18O2 PFHxS	*114*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C4 PFOA	*113*		*25 - 150*
13C4-PFHpA	*111*		*25 - 150*

Lab Sample ID: LCSD 320-111374/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 112007 — **Prep Batch: 111374**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0343		ug/L		86	60 - 140	5	30
Perfluorooctanoic acid (PFOA)	0.0400	0.0341		ug/L		85	60 - 140	1	30
Perfluorononanoic acid (PFNA)	0.0400	0.0334		ug/L		84	60 - 140	4	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0305		ug/L		86	50 - 150	1	30
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0310	M	ug/L		85	60 - 140	1	30
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0420	M	ug/L		113	60 - 140	9	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
18O2 PFHxS	118		25 - 150
13C4 PFOS	114		25 - 150
13C5 PFNA	112		25 - 150
13C4 PFOA	115		25 - 150
13C4-PFHpA	114		25 - 150

LCMS

Prep Batch: 111374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-19022-1 - DL	OF-STORLAG-PT-0516	Total/NA	Water	3535	
320-19022-1	OF-STORLAG-PT-0516	Total/NA	Water	3535	
320-19022-2 - DL	OF-TRMLAG-PT-0516	Total/NA	Water	3535	
320-19022-2	OF-TRMLAG-PT-0516	Total/NA	Water	3535	
320-19022-3 - DL	OF-POLLAG-PT-0516	Total/NA	Water	3535	
320-19022-3	OF-POLLAG-PT-0516	Total/NA	Water	3535	
320-19022-4	OF-CLTANK-PT-0516	Total/NA	Water	3535	
320-19022-4 - DL	OF-CLTANK-PT-0516	Total/NA	Water	3535	
320-19022-5	OF-BACKWASH-PT-0516	Total/NA	Water	3535	
320-19022-5 - DL	OF-BACKWASH-PT-0516	Total/NA	Water	3535	
320-19022-6 - DL	OF-FILTER-PT-0516	Total/NA	Water	3535	
320-19022-6	OF-FILTER-PT-0516	Total/NA	Water	3535	
320-19022-7	OF-INF01-PT-0615	Total/NA	Water	3535	
320-19022-7 - DL	OF-INF01-PT-0615	Total/NA	Water	3535	
320-19022-8	OF-PROCESS BLANK-PT-0516	Total/NA	Water	3535	
LCS 320-111374/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-111374/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
MB 320-111374/1-A	Method Blank	Total/NA	Water	3535	

Analysis Batch: 111859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-19022-1	OF-STORLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-2	OF-TRMLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-3	OF-POLLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-4	OF-CLTANK-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-5	OF-BACKWASH-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-6	OF-FILTER-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-7	OF-INF01-PT-0615	Total/NA	Water	WS-LC-0025	111374
320-19022-8	OF-PROCESS BLANK-PT-0516	Total/NA	Water	WS-LC-0025	111374

Analysis Batch: 112007

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-19022-2 - DL	OF-TRMLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-3 - DL	OF-POLLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-4 - DL	OF-CLTANK-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-5 - DL	OF-BACKWASH-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-6 - DL	OF-FILTER-PT-0516	Total/NA	Water	WS-LC-0025	111374
320-19022-7 - DL	OF-INF01-PT-0615	Total/NA	Water	WS-LC-0025	111374
LCS 320-111374/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	111374
LCSD 320-111374/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025	111374
MB 320-111374/1-A	Method Blank	Total/NA	Water	WS-LC-0025	111374

Analysis Batch: 112205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-19022-1 - DL	OF-STORLAG-PT-0516	Total/NA	Water	WS-LC-0025	111374

Client Sample ID: OF-STORLAG-PT-0516
Lab Sample ID: 320-19022-1
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	111859	05/29/16 02:25	JRB	TAL SAC
Total/NA	Prep	3535	DL		111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	112205	06/02/16 10:16	JRB	TAL SAC

Client Sample ID: OF-TRMLAG-PT-0516
Lab Sample ID: 320-19022-2
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	111859	05/29/16 02:47	JRB	TAL SAC
Total/NA	Prep	3535	DL		111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	112007	05/31/16 23:15	JRB	TAL SAC

Client Sample ID: OF-POLLAG-PT-0516
Lab Sample ID: 320-19022-3
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	111859	05/29/16 03:08	JRB	TAL SAC
Total/NA	Prep	3535	DL		111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	112007	05/31/16 23:37	JRB	TAL SAC

Client Sample ID: OF-CLTANK-PT-0516
Lab Sample ID: 320-19022-4
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	111859	05/29/16 03:29	JRB	TAL SAC
Total/NA	Prep	3535	DL		111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	112007	05/31/16 23:58	JRB	TAL SAC

Client Sample ID: OF-BACKWASH-PT-0516
Lab Sample ID: 320-19022-5
Date Collected: 05/19/16 13:35
Matrix: Water
Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	111859	05/29/16 03:51	JRB	TAL SAC
Total/NA	Prep	3535	DL		111374	05/25/16 15:20	JER	TAL SAC

Client Sample ID: OF-BACKWASH-PT-0516

Lab Sample ID: 320-19022-5

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WS-LC-0025	DL	10	112007	06/01/16 00:19	JRB	TAL SAC

Client Sample ID: OF-FILTER-PT-0516

Lab Sample ID: 320-19022-6

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	111859	05/29/16 04:12	JRB	TAL SAC
Total/NA	Prep	3535	DL		111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	112007	06/01/16 00:41	JRB	TAL SAC

Client Sample ID: OF-INF01-PT-0615

Lab Sample ID: 320-19022-7

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	111859	05/29/16 04:33	JRB	TAL SAC
Total/NA	Prep	3535	DL		111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	112007	06/01/16 01:02	JRB	TAL SAC

Client Sample ID: OF-PROCESS BLANK-PT-0516

Lab Sample ID: 320-19022-8

Date Collected: 05/19/16 13:35

Matrix: Water

Date Received: 05/20/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			111374	05/25/16 15:20	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	111859	05/29/16 05:58	JRB	TAL SAC

Laboratory References:

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

Certification Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

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
Oregon	NELAP	10	4040	01-29-17

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
Oregon	NELAP	10	4025	01-09-17

Method Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Method	Method Description	Protocol	Laboratory
WS-LC-0025	Perfluorinated Hydrocarbons	TAL SOP	TAL SAC

Protocol References:

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: NAS Oceana, VA - 9000 CTO-WE01

TestAmerica Job ID: 320-19022-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-19022-1	OF-STORLAG-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-2	OF-TRMLAG-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-3	OF-POLLAG-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-4	OF-CLTANK-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-5	OF-BACKWASH-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-6	OF-FILTER-PT-0516	Water	05/19/16 13:35	05/20/16 09:40
320-19022-7	OF-INF01-PT-0615	Water	05/19/16 13:35	05/20/16 09:40
320-19022-8	OF-PROCESS BLANK-PT-0516	Water	05/19/16 13:35	05/20/16 09:40

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 111859

Lab Sample ID: ICV 320-111859/13 Client Sample ID:

Date Analyzed: 05/28/16 20:24 Lab File ID: 28MAY2016A6A_014.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C2 PFDA	12.38	Incomplete Integration	barnettj	05/29/16 15:17

Lab Sample ID: 320-19022-1 Client Sample ID: OF-STORLAG-PT-0516

Date Analyzed: 05/29/16 02:25 Lab File ID: 28MAY2016A6A_031.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.50	Isomers	barnettj	05/31/16 14:21
Perfluorooctanoic acid (PFOA)	10.59	Isomers	barnettj	05/31/16 14:21

Lab Sample ID: 320-19022-2 Client Sample ID: OF-TRMLAG-PT-0516

Date Analyzed: 05/29/16 02:47 Lab File ID: 28MAY2016A6A_032.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.50	Isomers	barnettj	05/31/16 14:26

Lab Sample ID: 320-19022-3 Client Sample ID: OF-POLLAG-PT-0516

Date Analyzed: 05/29/16 03:08 Lab File ID: 28MAY2016A6A_033.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.50	Isomers	barnettj	05/31/16 14:27
Perfluorooctanoic acid (PFOA)	10.58	Isomers	barnettj	05/31/16 14:27

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 111859

Lab Sample ID: 320-19022-4 Client Sample ID: OF-CLTANK-PT-0516

Date Analyzed: 05/29/16 03:29 Lab File ID: 28MAY2016A6A_034.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.50	Isomers	barnettj	05/31/16 14:29
Perfluorooctanoic acid (PFOA)	10.59	Isomers	barnettj	05/31/16 14:29

Lab Sample ID: 320-19022-8 Client Sample ID: OF-PROCESS BLANK-PT-0516

Date Analyzed: 05/29/16 05:58 Lab File ID: 28MAY2016A6A_041.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.53	Isomers	barnettj	05/31/16 14:35
Perfluorononanoic acid (PFNA)	11.55	Missed Peak	barnettj	05/31/16 14:35

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 112007

Lab Sample ID: LCS 320-111374/2-A Client Sample ID:

Date Analyzed: 05/31/16 18:18 Lab File ID: 31MAY2016A6A_018.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.51	Isomers	barnettj	06/01/16 11:11
Perfluorooctanesulfonic acid (PFOS)	11.54	Isomers	barnettj	06/01/16 11:11

Lab Sample ID: LCSD 320-111374/3-A Client Sample ID:

Date Analyzed: 05/31/16 18:39 Lab File ID: 31MAY2016A6A_019.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.52	Isomers	barnettj	06/01/16 11:12
Perfluorooctanesulfonic acid (PFOS)	11.56	Isomers	barnettj	06/01/16 11:12

Lab Sample ID: 320-19022-2 DL Client Sample ID: OF-TRMLAG-PT-0516 DL

Date Analyzed: 05/31/16 23:15 Lab File ID: 31MAY2016A6A_032.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	10.60	Isomers	barnettj	06/01/16 14:49
Perfluorooctanesulfonic acid (PFOS)	11.55	Isomers	barnettj	06/01/16 14:49

Lab Sample ID: 320-19022-3 DL Client Sample ID: OF-POLLAG-PT-0516 DL

Date Analyzed: 05/31/16 23:37 Lab File ID: 31MAY2016A6A_033.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.56	Isomers	barnettj	06/01/16 14:51

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 112007

Lab Sample ID: 320-19022-4 DL Client Sample ID: OF-CLTANK-PT-0516 DL

Date Analyzed: 05/31/16 23:58 Lab File ID: 31MAY2016A6A_034.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.55	Isomers	barnettj	06/01/16 14:51

Lab Sample ID: 320-19022-5 DL Client Sample ID: OF-BACKWASH-PT-0516 DL

Date Analyzed: 06/01/16 00:19 Lab File ID: 31MAY2016A6A_035.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.51	Isomers	barnettj	06/01/16 14:56
Perfluorooctanoic acid (PFOA)	10.59	Isomers	barnettj	06/01/16 14:56
Perfluorooctanesulfonic acid (PFOS)	11.54	Isomers	barnettj	06/01/16 14:56

Lab Sample ID: 320-19022-6 DL Client Sample ID: OF-FILTER-PT-0516 DL

Date Analyzed: 06/01/16 00:41 Lab File ID: 31MAY2016A6A_036.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.51	Isomers	barnettj	06/01/16 14:59
Perfluorooctanoic acid (PFOA)	10.60	Isomers	barnettj	06/01/16 14:59
Perfluorooctanesulfonic acid (PFOS)	11.56	Isomers	barnettj	06/01/16 14:59

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 112007

Lab Sample ID: 320-19022-7 DL Client Sample ID: OF-INF01-PT-0615 DL

Date Analyzed: 06/01/16 01:02 Lab File ID: 31MAY2016A6A_037.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.51	Isomers	barnettj	06/01/16 15:00
Perfluorooctanoic acid (PFOA)	10.60	Isomers	barnettj	06/01/16 15:00
Perfluorooctanesulfonic acid (PFOS)	11.56	Isomers	barnettj	06/01/16 15:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 112205

Lab Sample ID: CCV 320-112205/54 Client Sample ID:

Date Analyzed: 06/02/16 09:35 Lab File ID: 31MAY2016A6A_128.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorodecanoic acid (PFDA)	12.41	Incomplete Integration	barnettj	06/02/16 10:20

Lab Sample ID: 320-19022-1 DL Client Sample ID: OF-STORLAG-PT-0516 DL

Date Analyzed: 06/02/16 10:16 Lab File ID: 31MAY2016A6A_130.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.56	Isomers	barnettj	06/02/16 11:32

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00041	11/23/16	05/23/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00005	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00005	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00005	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00006	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00009	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00006	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00006	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00006	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00010	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00007	200 uL	13C2 PFUnA	1 ug/mL
.LCM2PFHxDA_00005	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00005	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00005	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00006	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00009	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00006	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00006	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00006	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00010	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00007	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-L1_00019	09/08/16	04/18/16	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00036	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_00045	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.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	0.5 ng/mL
							Perfluorodecane Sulfonic acid	0.482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.473 ng/mL
							Perfluorononanoic acid (PFNA)	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctandecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.478 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_00036	10/07/16	04/07/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00004	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00004	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00004	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00005	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00008	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00005	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00005	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00005	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00009	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00006	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00004	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00004	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00004	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00005	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00008	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00005	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00005	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00005	08/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00009	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00006	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00045	09/08/16	04/18/16	Methanol, Lot 090285	5 mL	LCPFCSP_00044	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 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_00044	09/08/16	03/08/16	Methanol, Lot 090285	10000 uL	LCPFBA_00003	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	200 uL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L2_00020	09/08/16	04/18/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00036	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_00045	50 uL	Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.946 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctandecanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.956 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00036	10/07/16	04/07/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00004	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00004	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00004	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00005	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00008	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00005	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00005	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00005	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00009	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00006	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00004	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00004	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00004	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00005	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00008	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00005	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00005	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00005	08/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00009	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00006	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00045	09/08/16	04/18/16	Methanol, Lot 090285	5 mL	LCPFCSP_00044	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 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_00044	09/08/16	03/08/16	Methanol, Lot 090285	10000 uL	LCPFBA_00003	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	200 uL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L3_00017	09/08/16	04/18/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00036	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_00045	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.73 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctandecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.78 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

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFCSU_00036	10/07/16	04/07/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00004	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00004	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00004	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00005	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00008	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00005	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00005	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00005	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00009	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00006	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00004	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00004	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00004	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00005	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00008	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00005	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00005	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00005	08/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00009	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00006	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00045	09/08/16	04/18/16	Methanol, Lot 090285	5 mL	LCPFCSP_00044	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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_00044	09/08/16	03/08/16	Methanol, Lot 090285	10000 uL	LCPFBA_00003	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	200 uL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L4_00020	09/08/16	04/18/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00036	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_00044	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.92 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctandecanoic acid	20 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.12 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_00036	10/07/16	04/07/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00004	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00004	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00004	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00005	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00008	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00005	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00005	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxS_00005	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00009	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00006	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00004	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00004	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00004	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00005	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00008	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00005	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00005	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00005	08/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00009	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00006	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00044	09/08/16	03/08/16	Methanol, Lot 090285	10000 uL	LCPFBA_00003	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	200 uL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L5_00018	09/08/16	04/18/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00036	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_00044	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.3 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctandecanoic acid	50 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	47.8 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_00036	10/07/16	04/07/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00004	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00004	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00004	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00005	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00008	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00005	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00005	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00005	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00009	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00006	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00004	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00004	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00004	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00005	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00008	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00005	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00005	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00005	08/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00009	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00006	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00044	09/08/16	03/08/16	Methanol, Lot 090285	10000 uL	LCPFBA_00003	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxSA_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	200 uL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L6_00017	09/08/16	04/18/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00036	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00044	1000 uL	Perfluorobutyric acid	200 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL
							Perfluorodecanoic acid	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							Perfluorodecane Sulfonic acid	192.8 ng/mL
							Perfluoroheptanoic acid (PFHpA)	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	189.2 ng/mL
							Perfluorononanoic acid (PFNA)	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctandecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	191.2 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_00036	10/07/16	04/07/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00004	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00004	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00004	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00005	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00008	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00005	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00005	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00005	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00009	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00006	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00004	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00004	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00004	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00005	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00008	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00005	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00005	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxS_00005	08/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00009	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00006	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00044	09/08/16	03/08/16	Methanol, Lot 090285	10000 uL	LCPFBA_00003	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	200 uL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L7_00017	09/08/16	04/18/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00036	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_00044	2000 uL	Perfluorobutyric acid	400 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	353.6 ng/mL
							Perfluorodecanoic acid	400 ng/mL
							Perfluorododecanoic acid	400 ng/mL
							Perfluorodecane Sulfonic acid	385.6 ng/mL
							Perfluoroheptanoic acid (PFHpA)	400 ng/mL
							Perfluoroheptanesulfonic Acid	380.8 ng/mL
							Perfluorohexanoic acid	400 ng/mL
							Perfluorohexadecanoic acid	400 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	378.4 ng/mL
							Perfluorononanoic acid (PFNA)	400 ng/mL
							Perfluorooctanoic acid (PFOA)	400 ng/mL
							Perfluorooctandecanoic acid	400 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	382.4 ng/mL
							Perfluorooctane Sulfonamide	400 ng/mL
							Perfluoropentanoic acid	400 ng/mL
							Perfluorotetradecanoic acid	400 ng/mL
							Perfluorotridecanoic acid	400 ng/mL
							Perfluoroundecanoic acid	400 ng/mL
.LCMPFCSU_00036	10/07/16	04/07/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00004	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00004	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00004	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00005	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00008	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00005	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00005	200 uL	13C2 PFDoA	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00005	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00009	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00006	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00004	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00004	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00004	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00005	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00008	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00005	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00005	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00005	08/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00009	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00006	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00044	09/08/16	03/08/16	Methanol, Lot 090285	10000 uL	LCPFBA_00003	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	200 uL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFCIC_00017	06/16/16	05/14/16	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00040	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFACMXB_00007	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.25 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00040	11/05/16	05/11/16	Methanol, Lot Baker 115935	10000 uL	LCM2PFHxDA_00005	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00005	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00005	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00006	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00009	200 uL	13C8 FOSA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFBA_00006	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00007	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00006	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00008	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00006	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00005	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00010	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00012	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00007	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00005	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00005	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00005	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00006	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00009	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00006	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00007	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00006	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00008	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00006	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00005	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00010	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00012	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00007	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFACMXB_00007	11/06/20	Wellington Laboratories, Lot PFACMXB1115			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00049	11/17/16	05/17/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	200 uL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonate	0.964 ug/mL
							Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptane Sulfonate	0.952 ug/mL
							Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexane Sulfonate	0.91 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00002	200 uL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	200 uL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
.LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
							Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
							Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
.LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
.LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
.LCPFPeS_00002	07/04/17	Wellington Laboratories, Lot LPFPeS0712			(Purchased Reagent)		PFPeS (Perflouro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LCM2PFHxDA_00004

591157
ID: LCM2PFHxDA_00004
Exp: 01/07/21 Prpd: CBW
13C2-PFHxDA at 50ug/mL

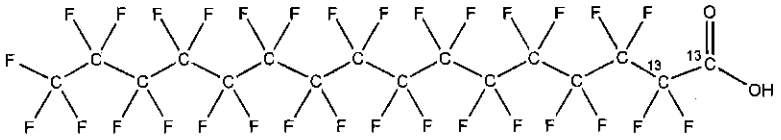
R: 3/3/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFHxDA
LOT NUMBER: M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

CALA Testing Accreditation No.: A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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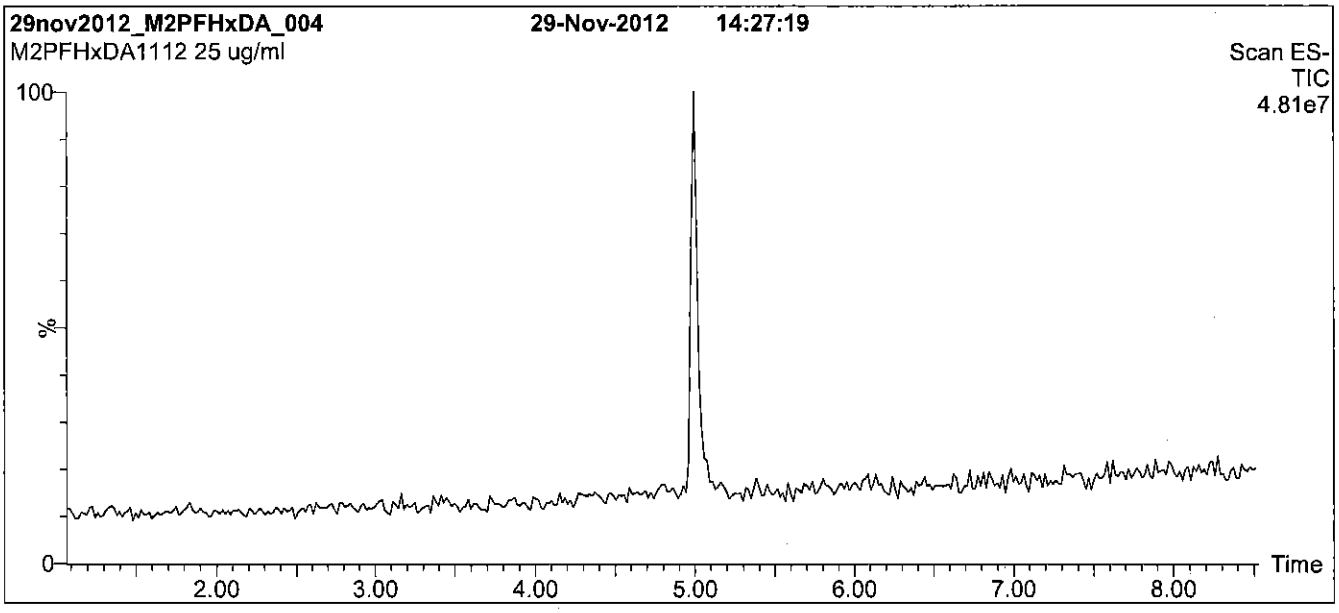
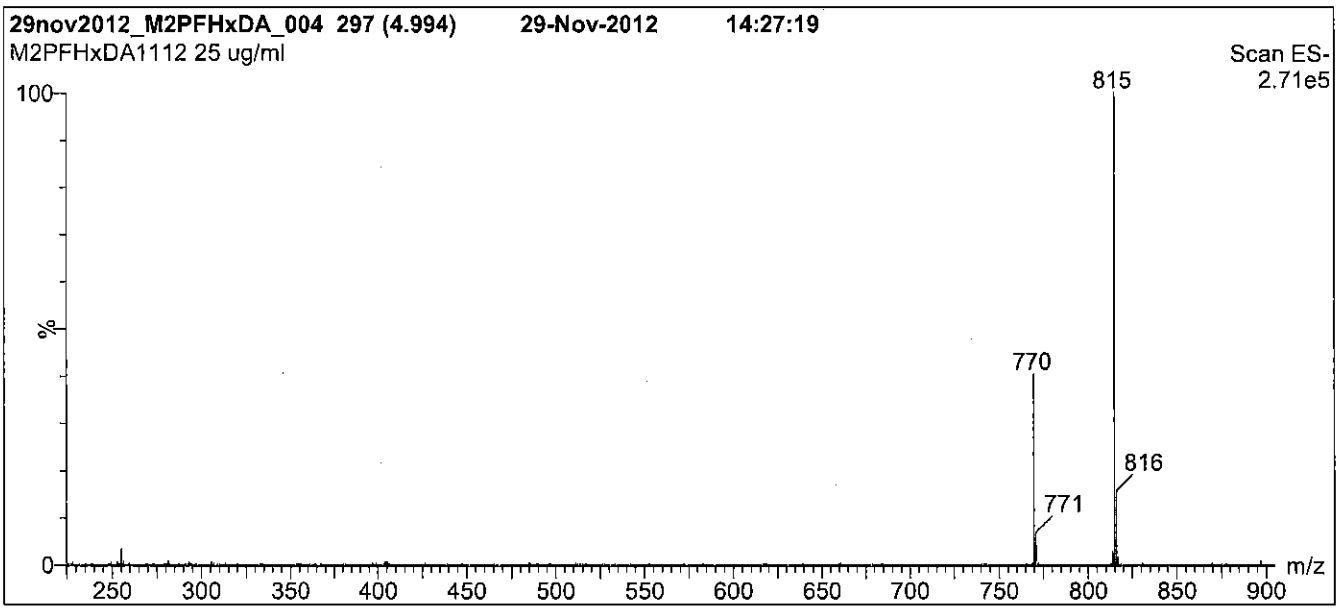
Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

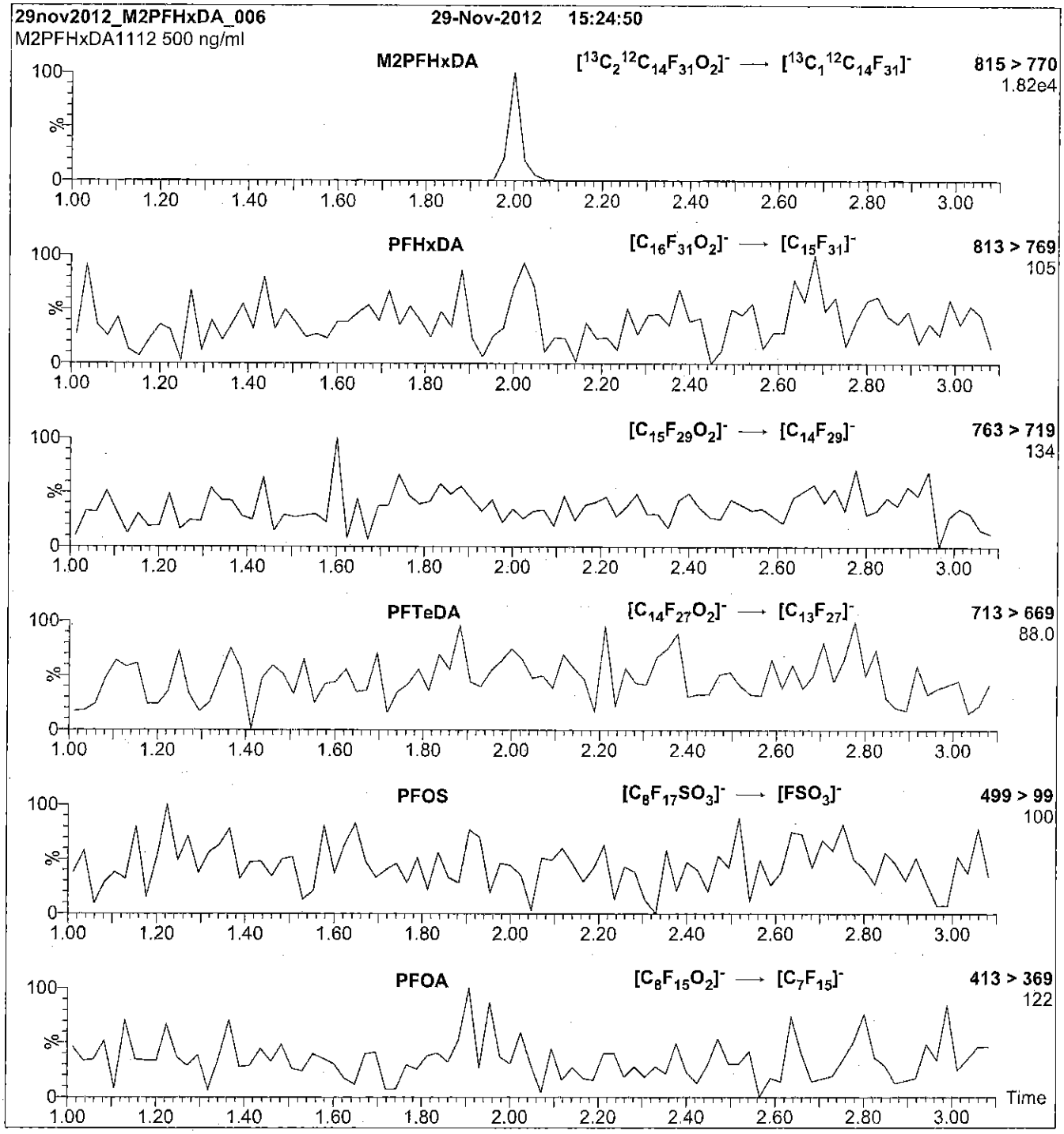
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCM2PFHxDA_00005

609709
ID: LCM2PFHxDA_00005
Exp: 01/07/21 Prpd: CBW
13C2-PFHxDA at 50ug/mL

R 4/7/16 CBW

WELLINGTON LABORATORIES

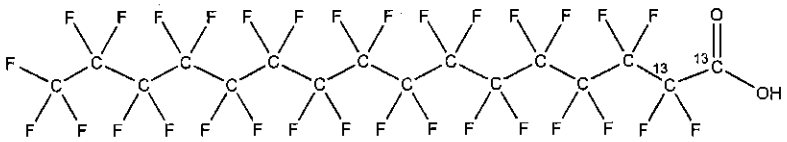
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFHxDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid

LOT NUMBER: M2PFHxDA1112

STRUCTURE:

CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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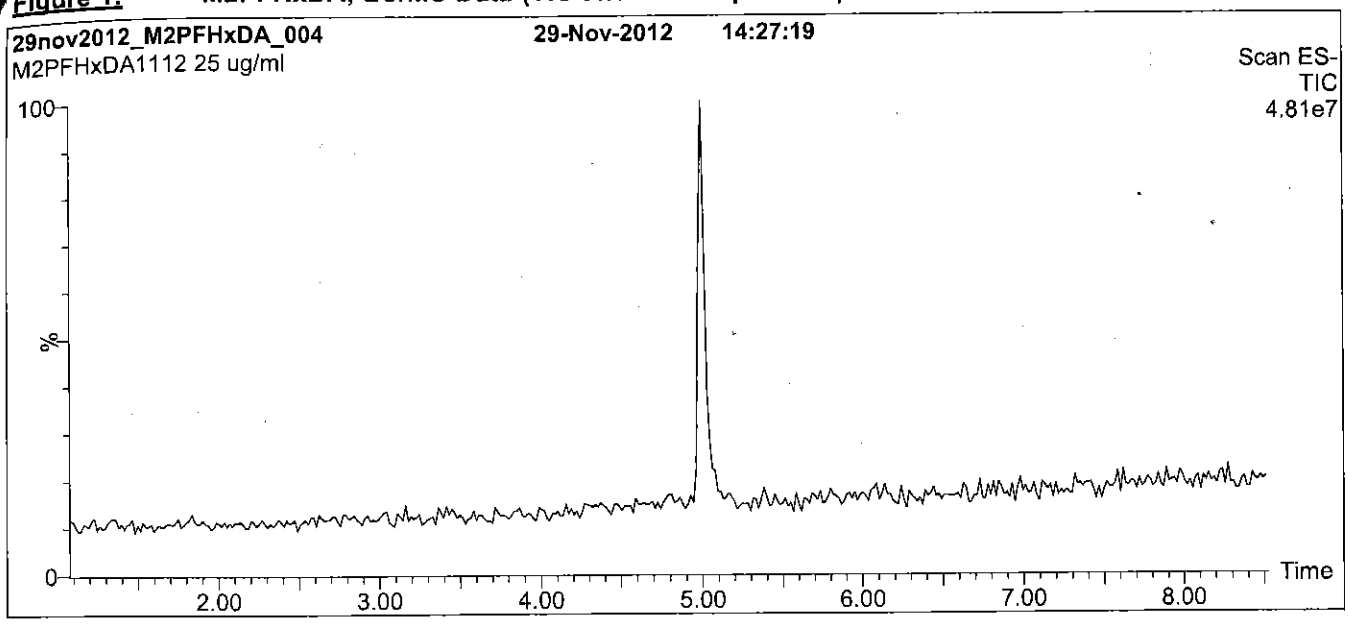
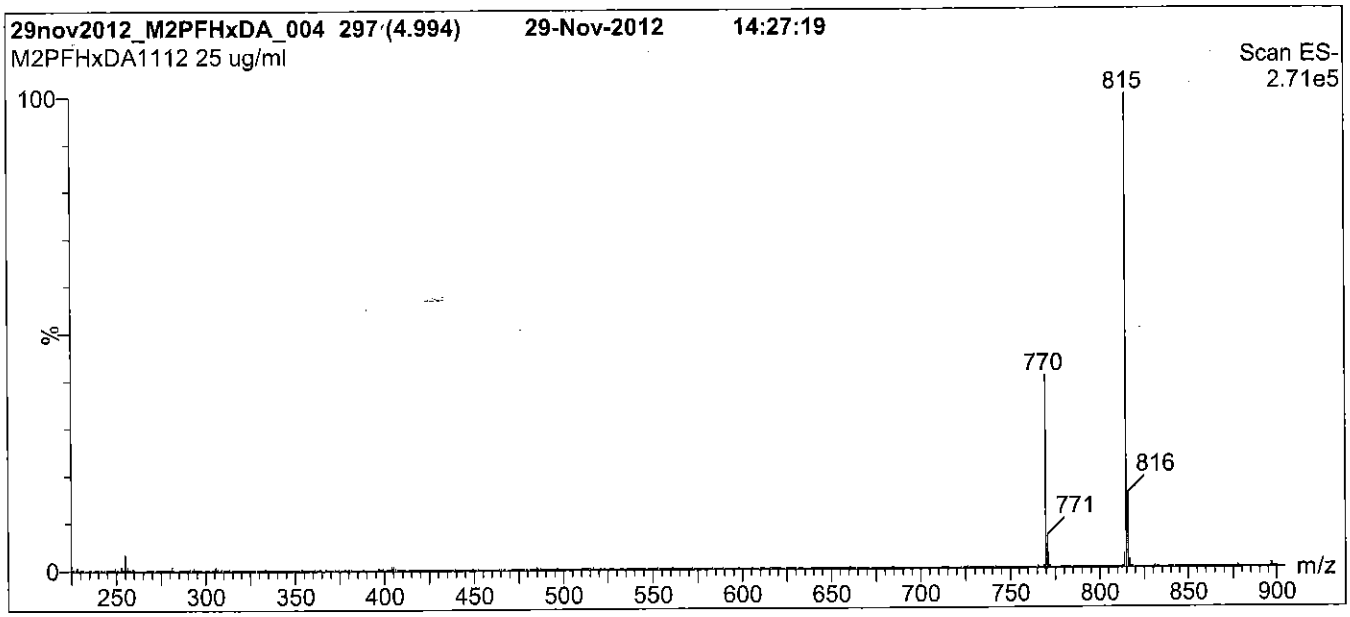




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

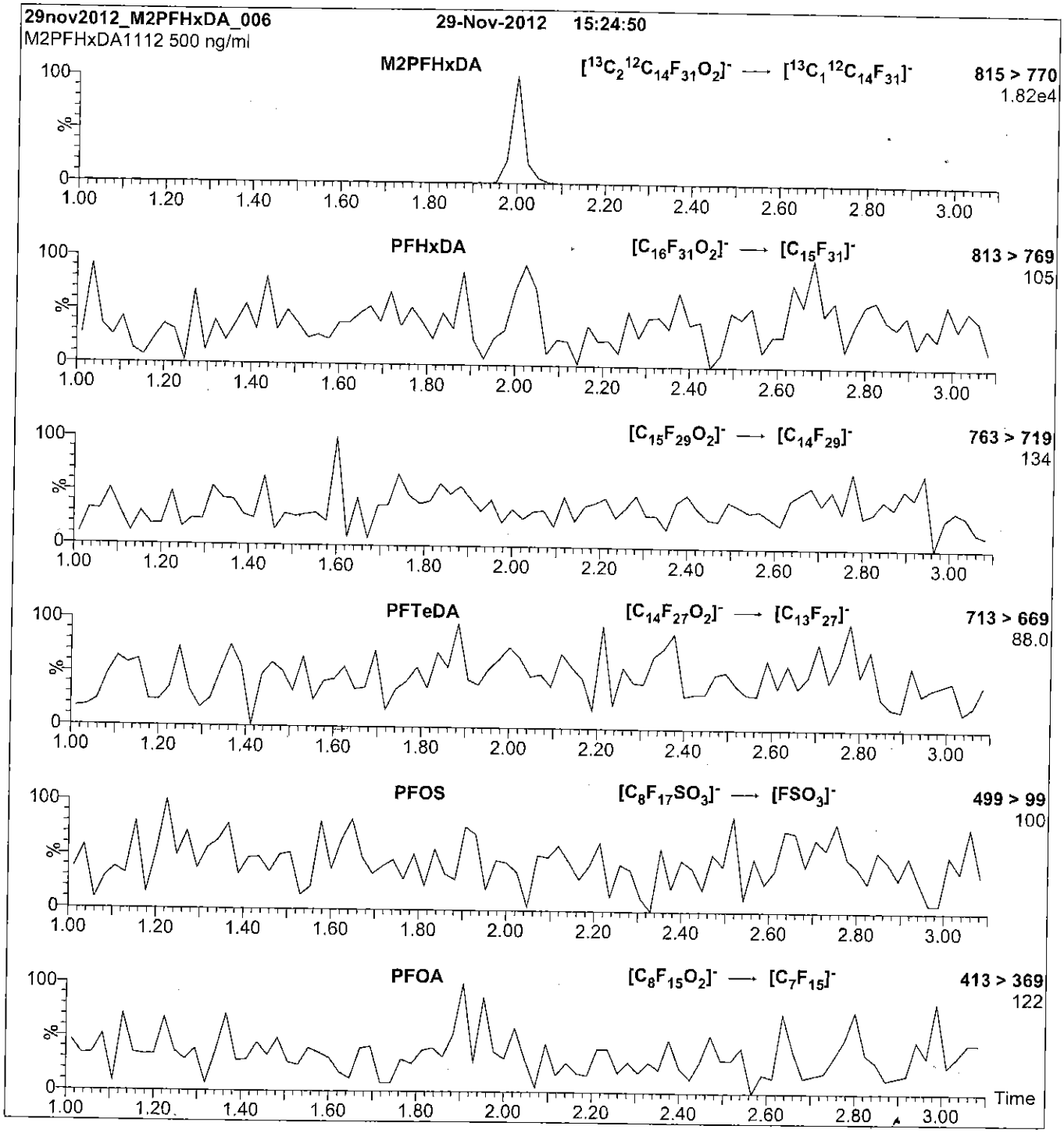
Flow: 300 µl/min

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_00004

591158
ID: LCM2PFTeDA_00004
Exp: 12/07/20 Prpd: CBW
13C2-PFTeDA at 50ug/mL

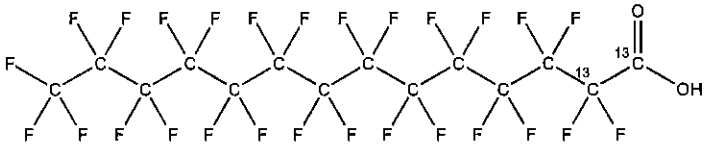
R: 3/3/16 CBW

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCTION

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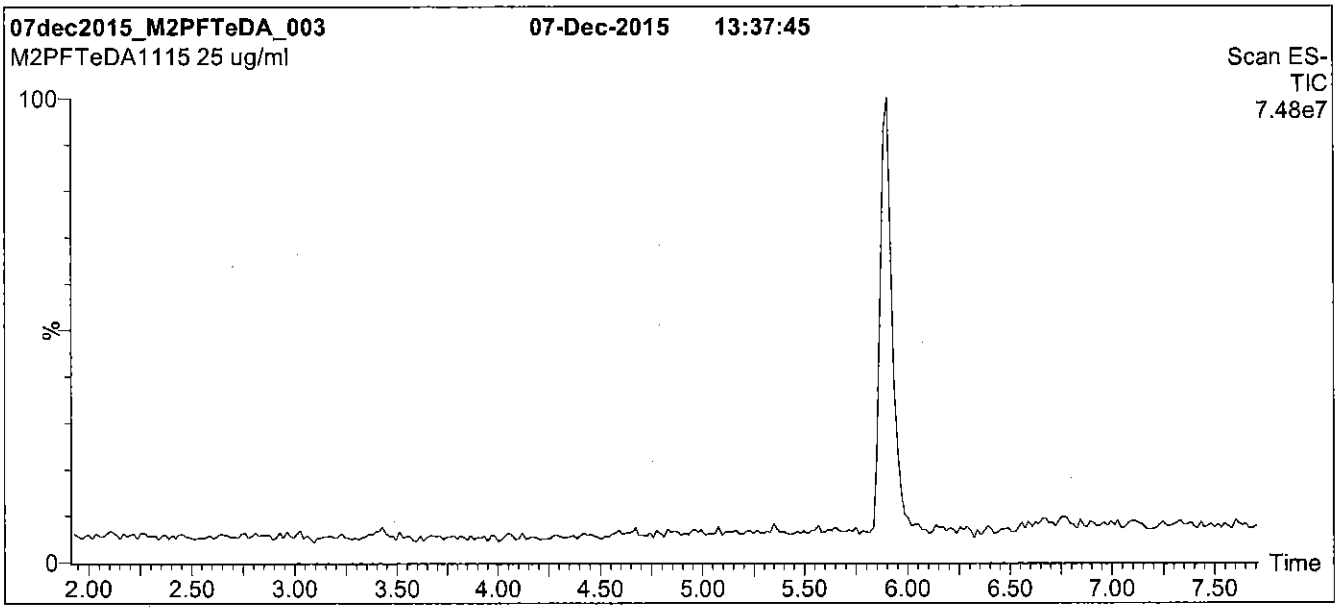
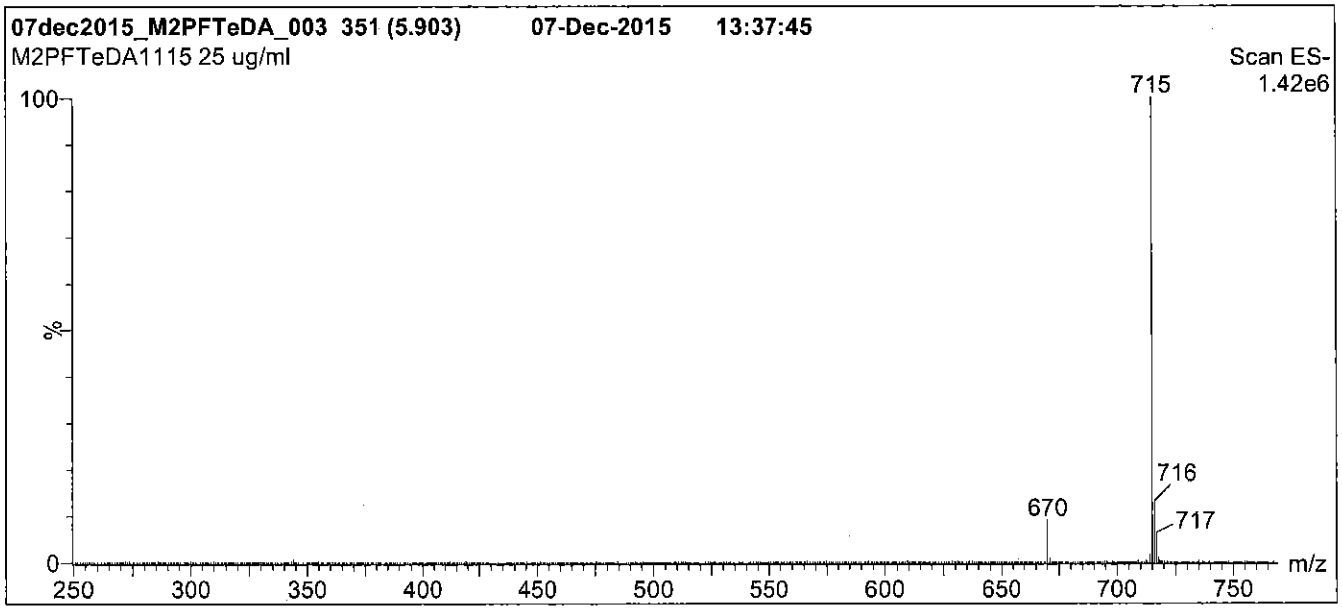




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

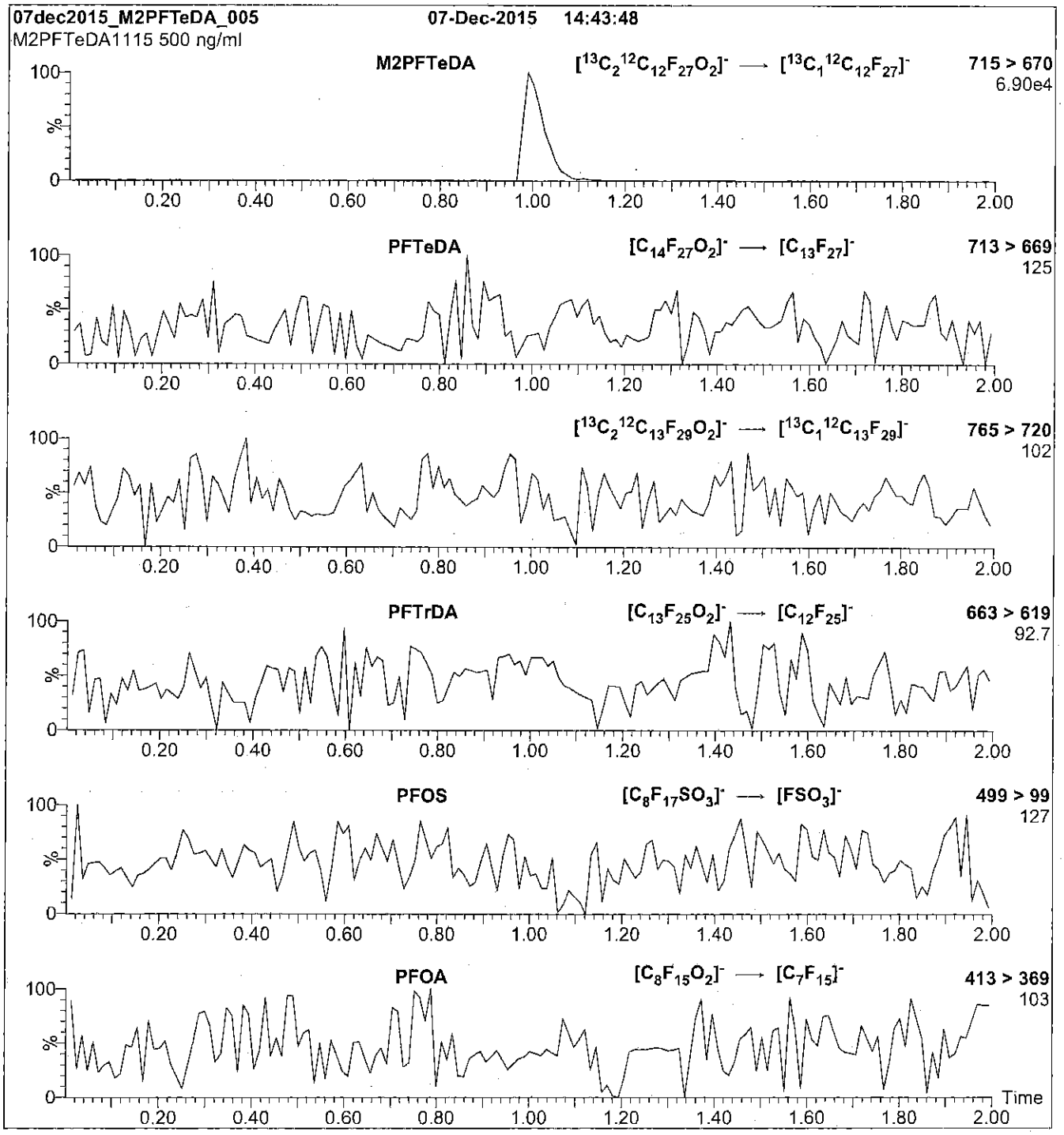
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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

LCM2PFTeDA_00005

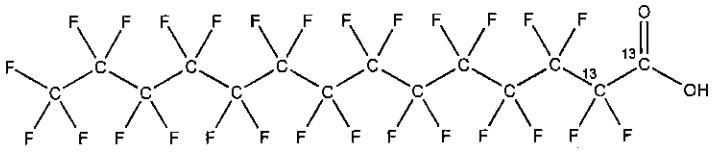
R: 4/7/16 CBW

609710
ID: LCM2PFTeDA_00005
Exp: 12/07/20 Prpd: CBW
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



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LAST TESTED: (mm/dd/yyyy)	12/07/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/07/2020		
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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 ISO 34 REFERENCE MATERIAL PRODUCER

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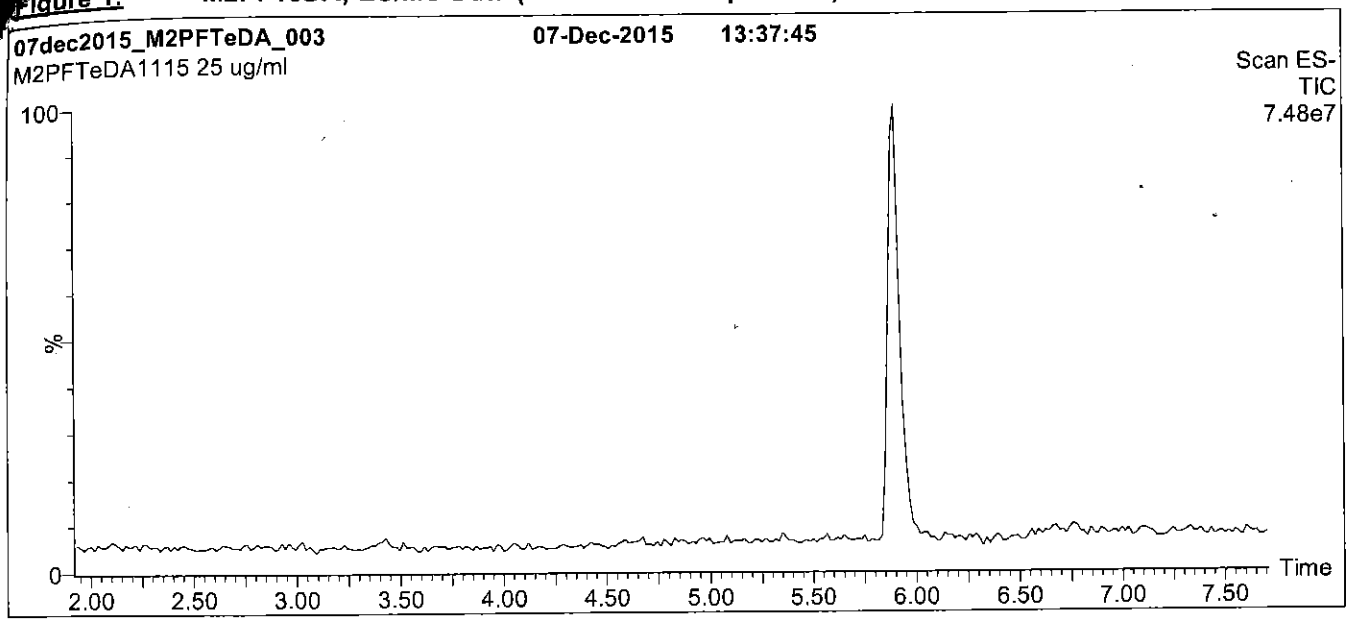
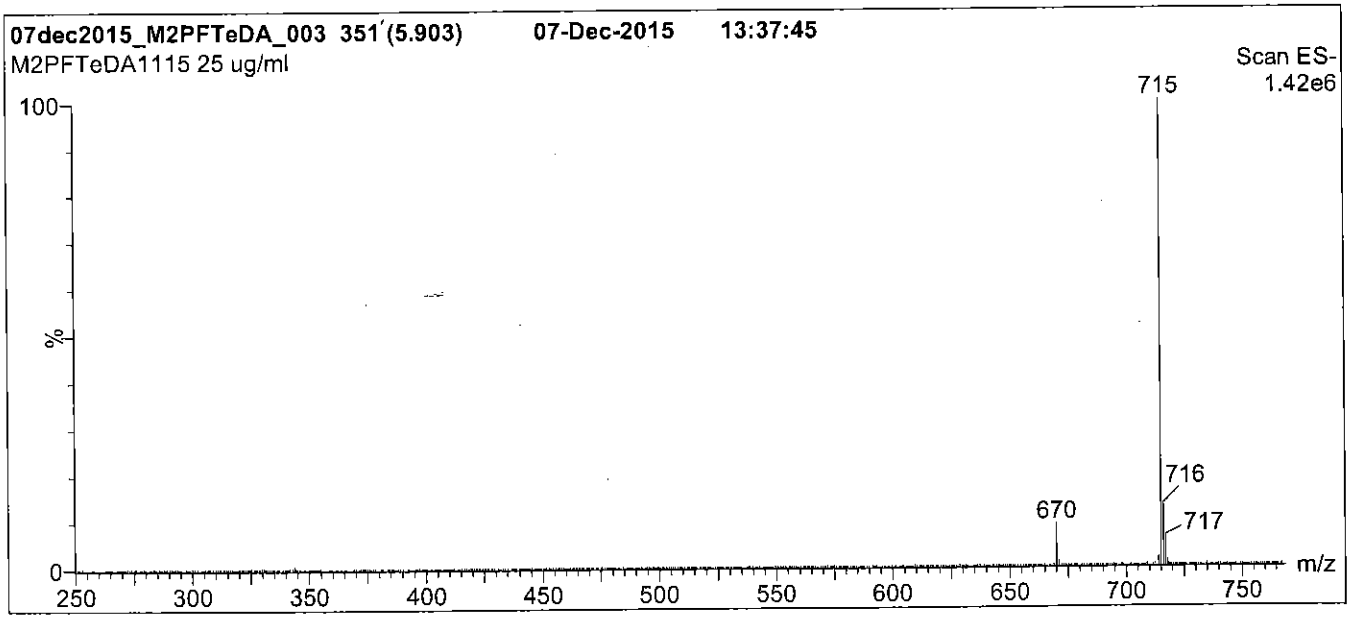
Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

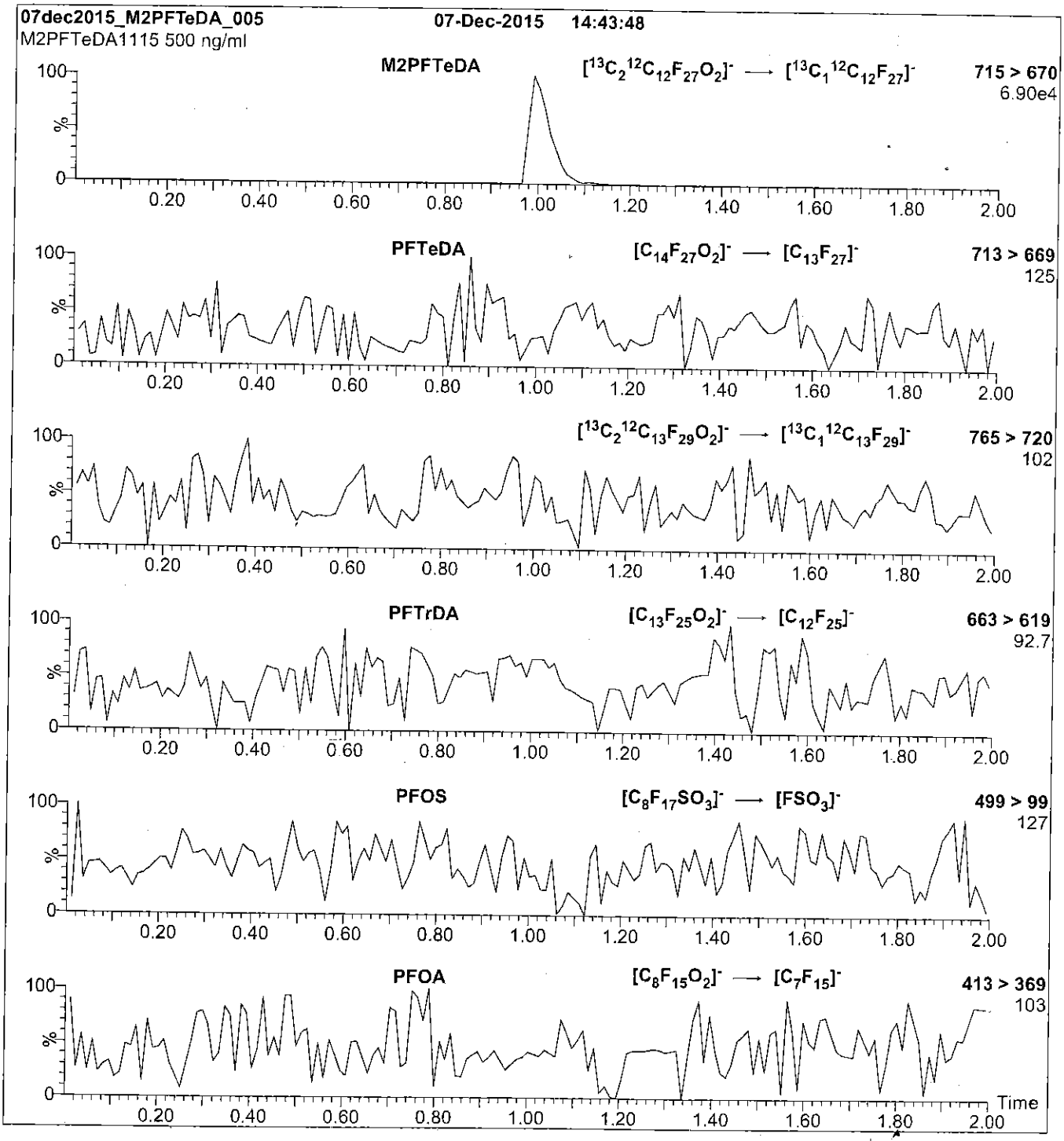
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

Figure 2: **M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M2PFTeDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCM4PFHPA_00004

R:3/3/16 CBW

WELLINGTON LABORATORIES

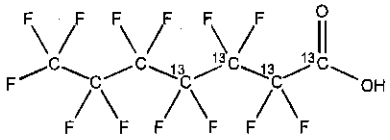
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid

LOT NUMBER: M4PFHpA0515

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)	05/22/2015		
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.

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:

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HAZARDS:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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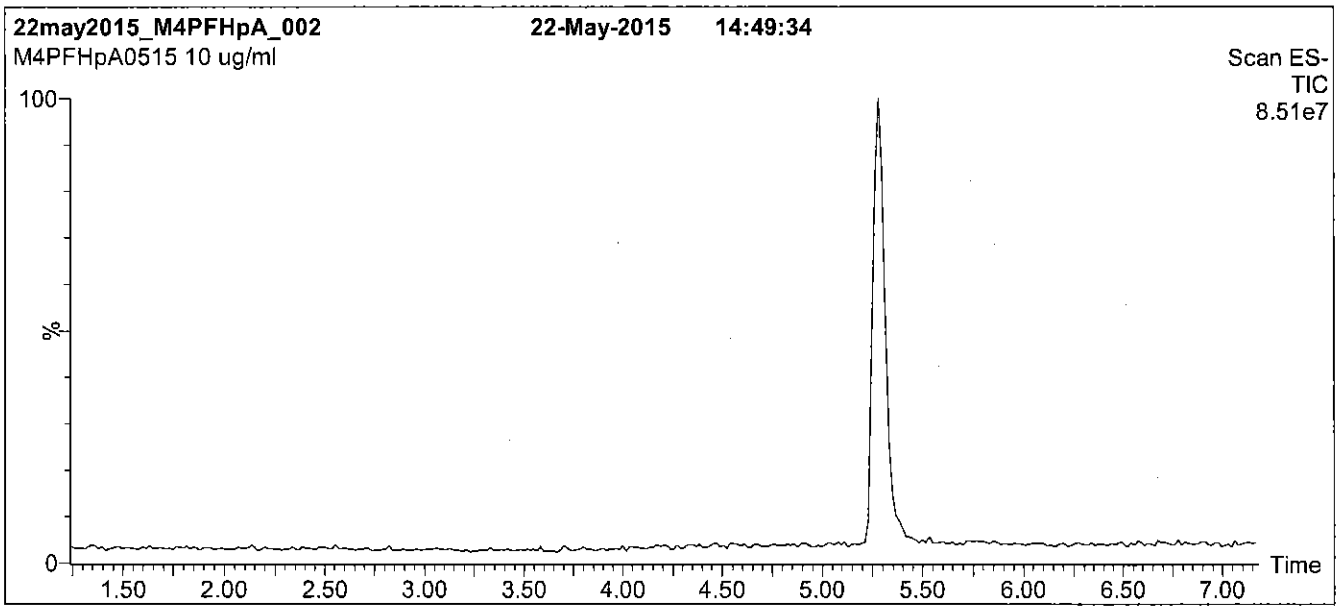
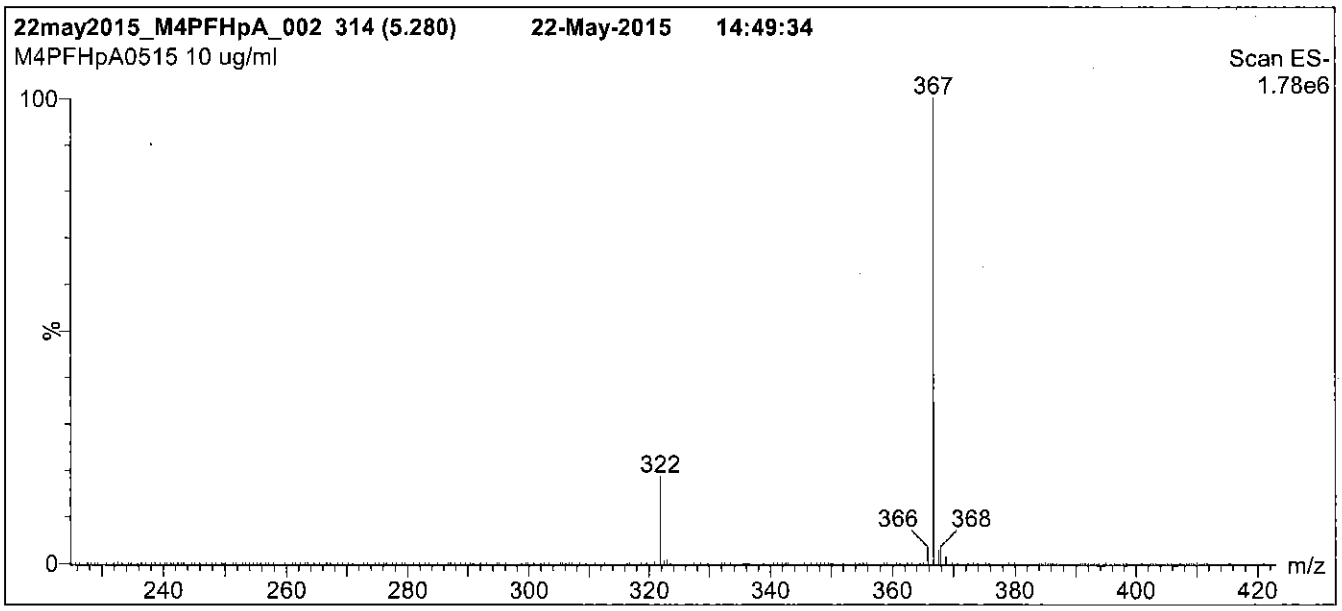




Conditions for Figure 1:

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

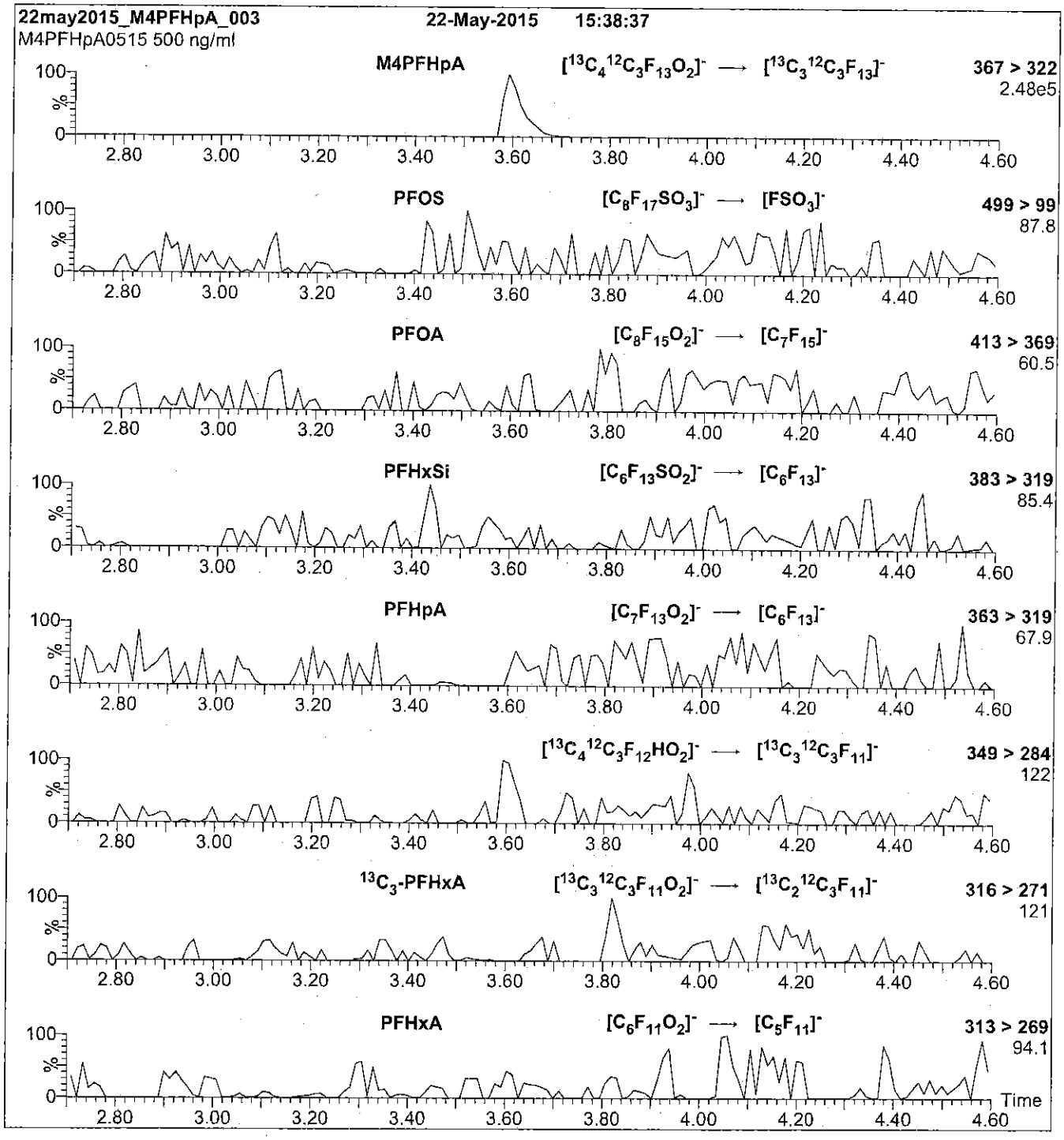
Flow: 300 µl/min

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) = 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

LCM4PFHPA_00005

R 4/7/16 CBW

609711
ID: LCM4PFHPA_00005
Exp: 05/22/20 Prpd: CBW
13C4-Perfluoroheptanoic a

WELLINGTON LABORATORIES

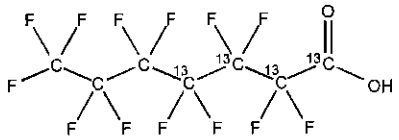
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid

LOT NUMBER: M4PFHpA0515

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)	05/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/22/2020		
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Figure 1: LC/MS Data (TIC and Mass Spectrum)
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ADDITIONAL INFORMATION:

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

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

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CALA

ANAB ACCREDITED

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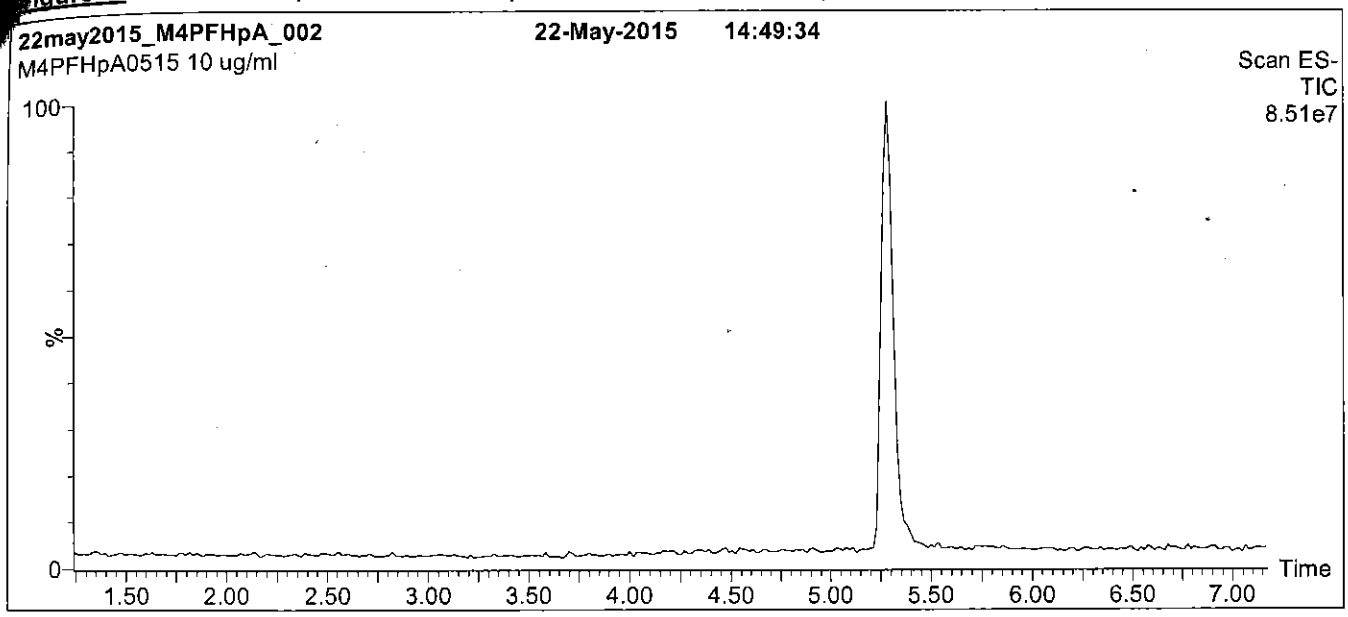
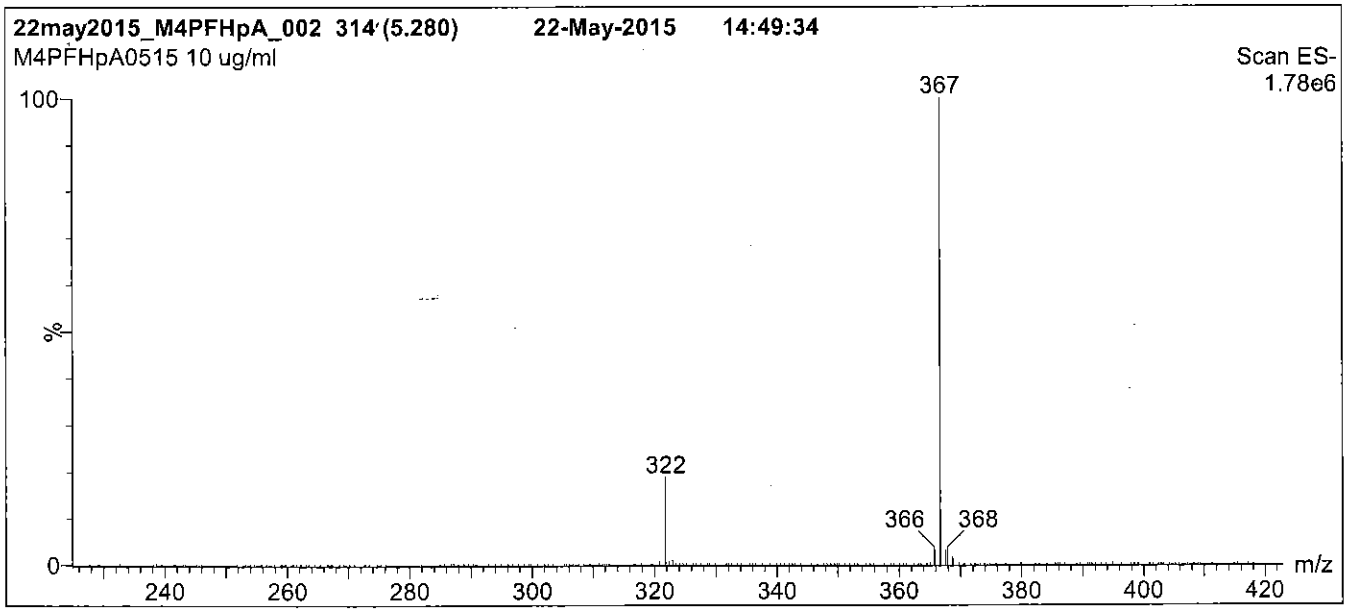
Figure 1: M4PFHpA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

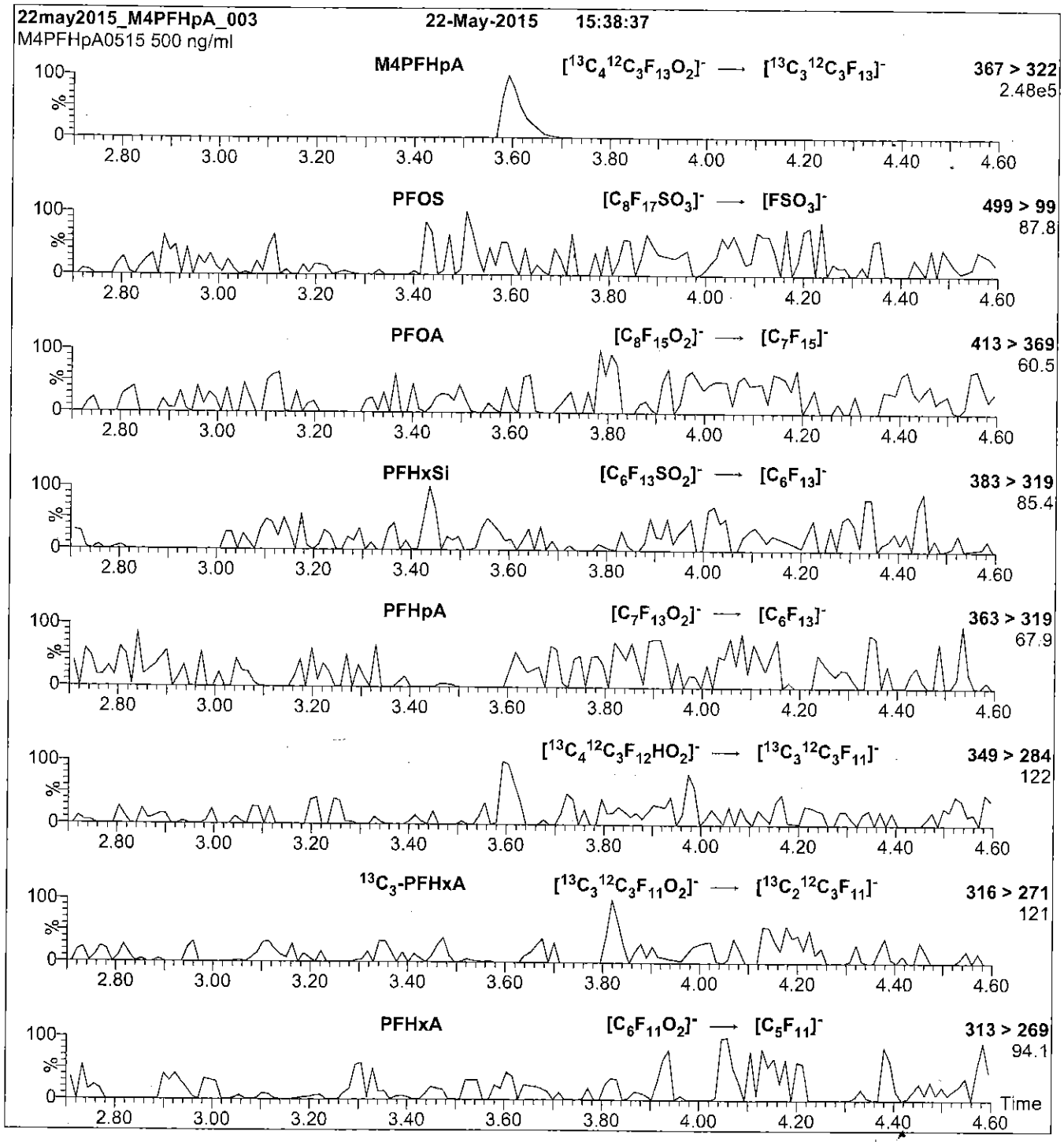
Flow: 300 µl/min

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) = 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_00005

R:3/3/16 cbw

591160
ID: LCM5PFPEA_00005
Exp: 05/22/20 Prpd: CBW
13C5-Perfluoropentanoic a

WELLINGTON LABORATORIES

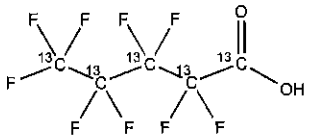
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[$^{13}C_5$]pentanoic acid

LOT NUMBER: M5PFPeA0515

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.

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

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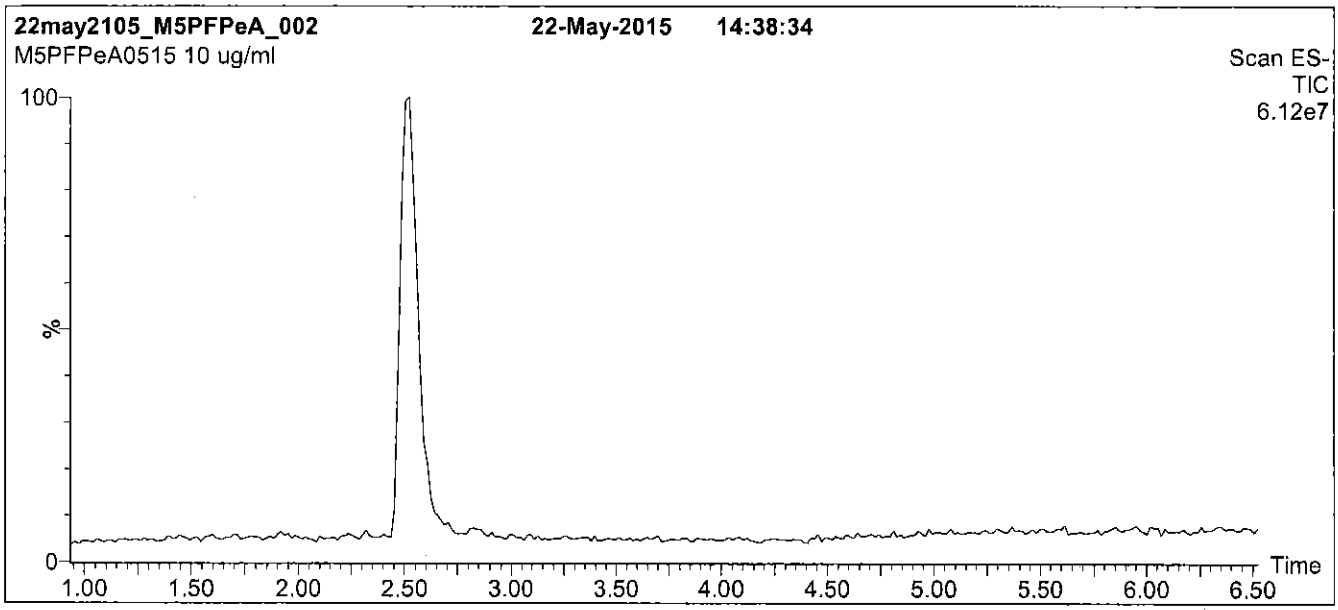
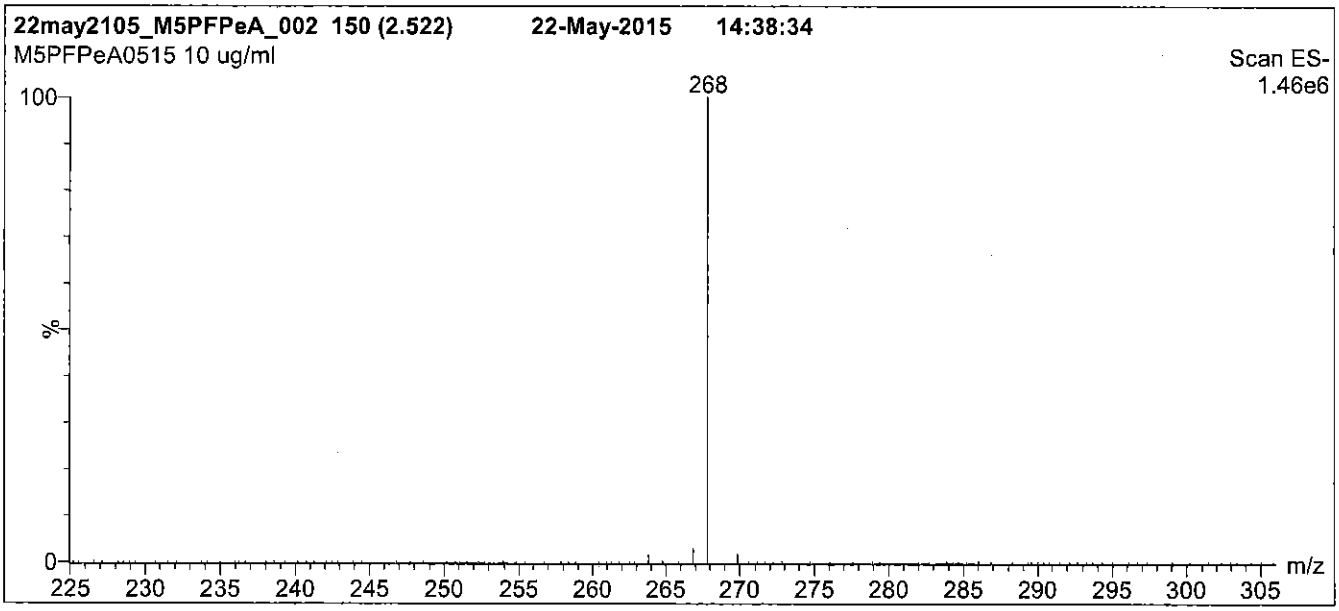
Figure 1: **M5PFPeA; LC/MS Data (TIC and Mass Spectrum)**





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

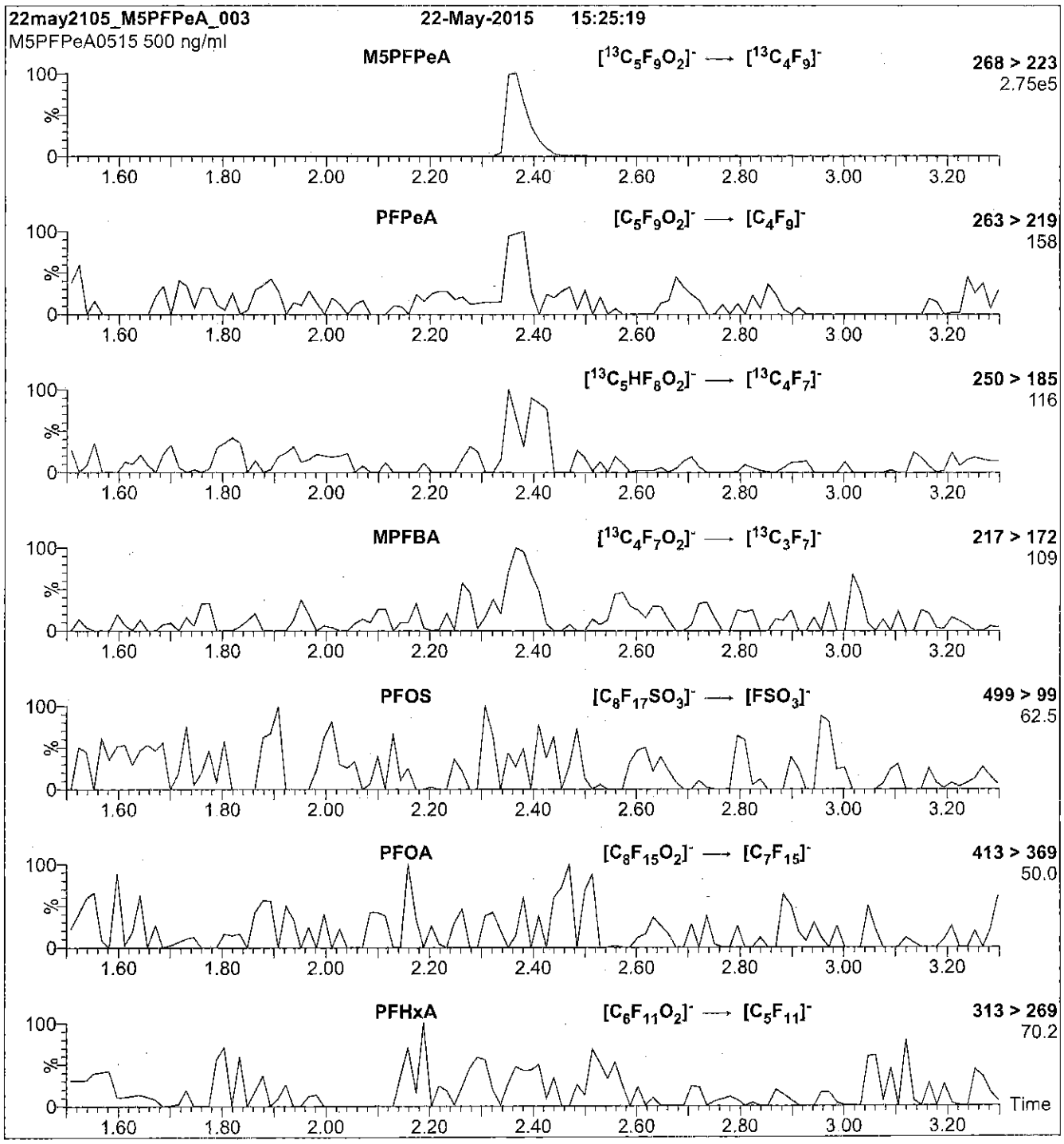
Flow: 300 µl/min

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

LCM5PFPEA_00006

609706
ID: LCM5PFPEA_00006
Exp: 05/22/20 Prpd: CBW
13C5-Perfluoropentanoic a

R 4/7/16 CBW

WELLINGTON LABORATORIES

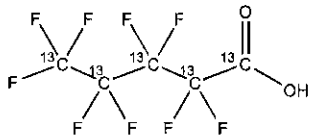
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[$^{13}C_5$]pentanoic acid

LOT NUMBER: M5PFPeA0515

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

CHEMICAL PURITY: >98%
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

MOLECULAR WEIGHT: 269.01
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ^{13}C ($^{13}C_5$)

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

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HOMOGENEITY:

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

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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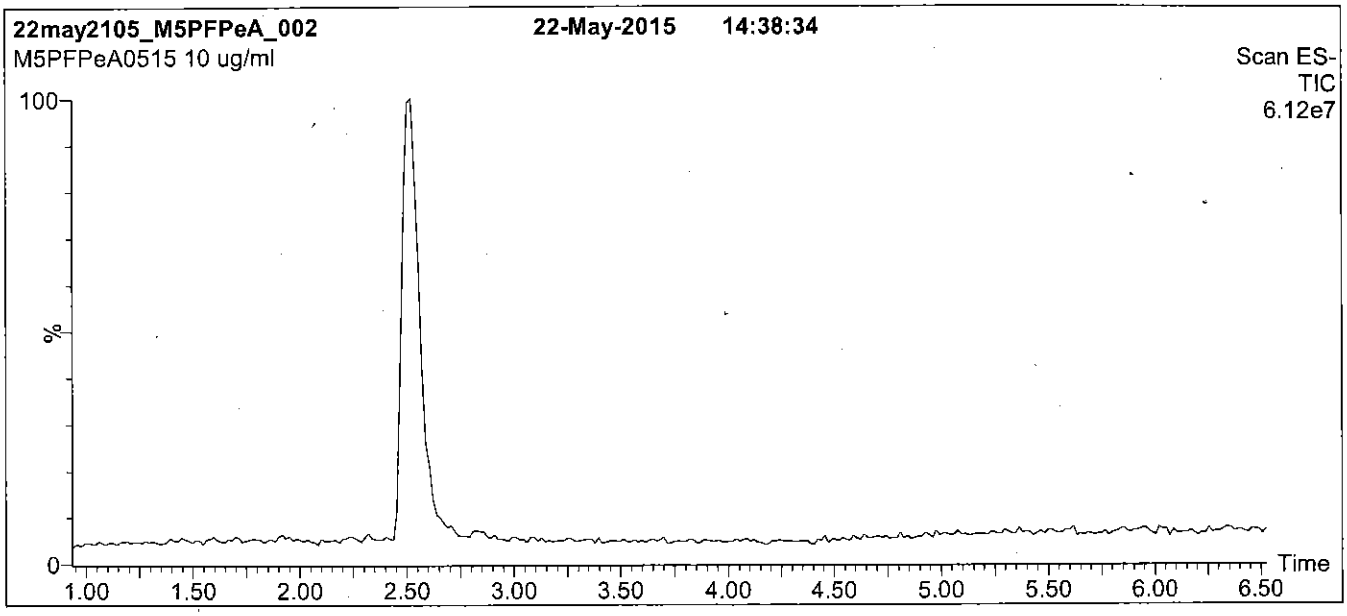
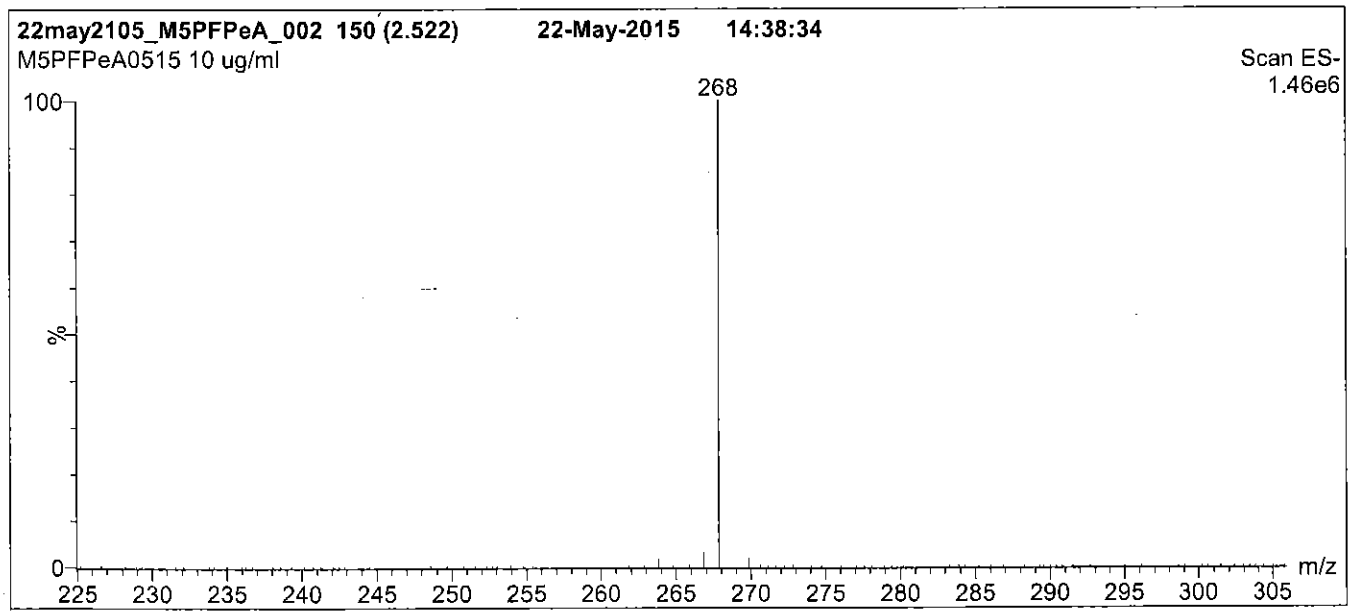
Figure 1: **M5PFPeA; LC/MS Data (TIC and Mass Spectrum)**





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

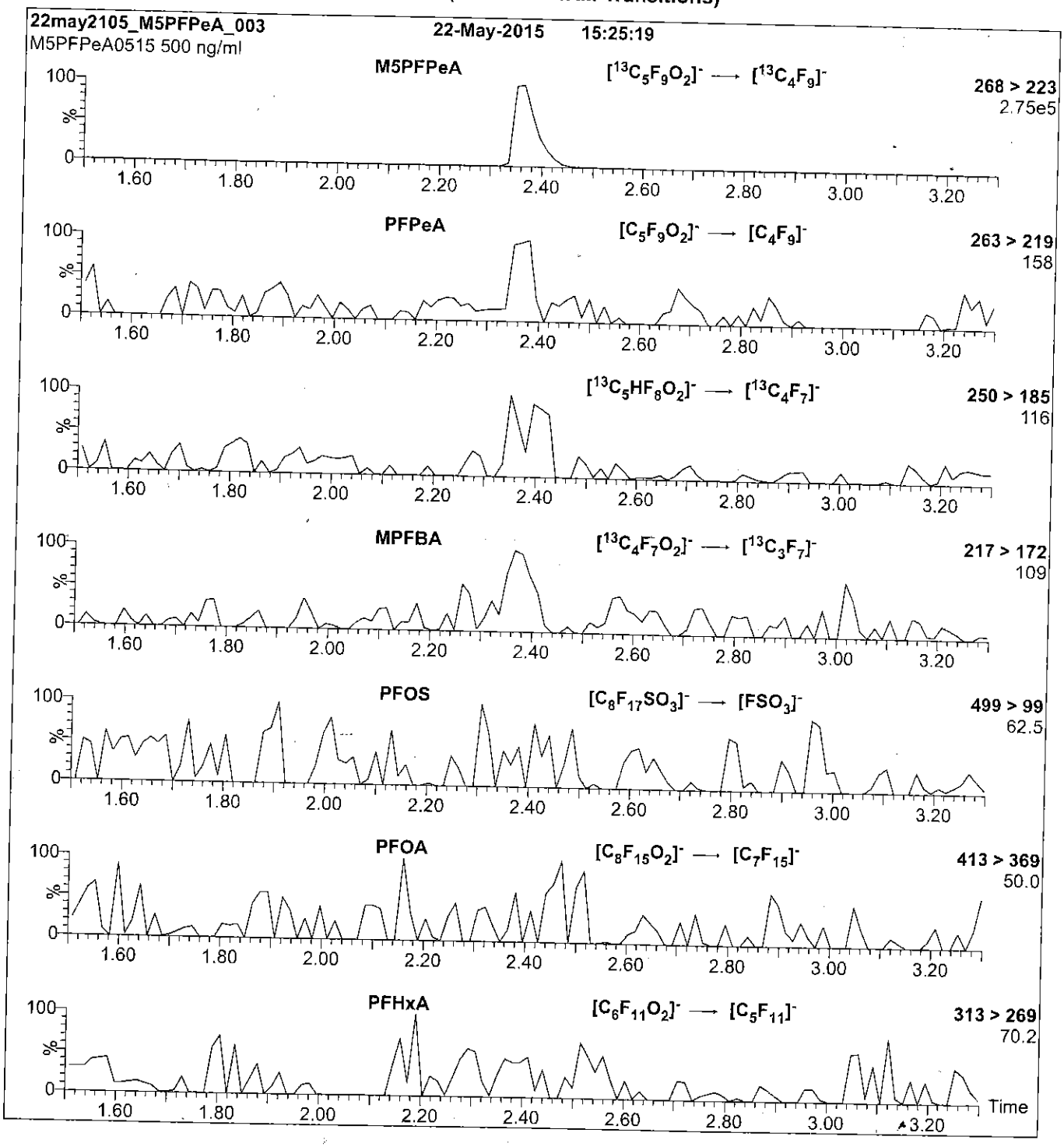
Flow: 300 µl/min

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_00008

R: 3/3/16 CBJ

591143
ID: LCM8FOSA_00008
Exp: 12/22/17 Prpd: CBW
13C8-Perfluorooctanesulfo

WELLINGTON LABORATORIES

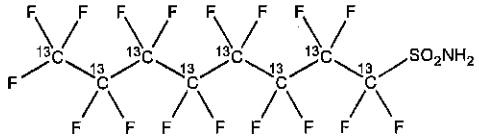
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[$^{13}C_8$]octanesulfonamide

LOT NUMBER: M8FOSA1215I

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: _____ **Date:** 01/14/2016 (mm/dd/yyyy)
B.G. Chittim

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA
Testing
Accreditation No. A 1226

ANAB
ACCREDITED
ISO 17025 / 34
REFERENCE MATERIAL PRODUCER

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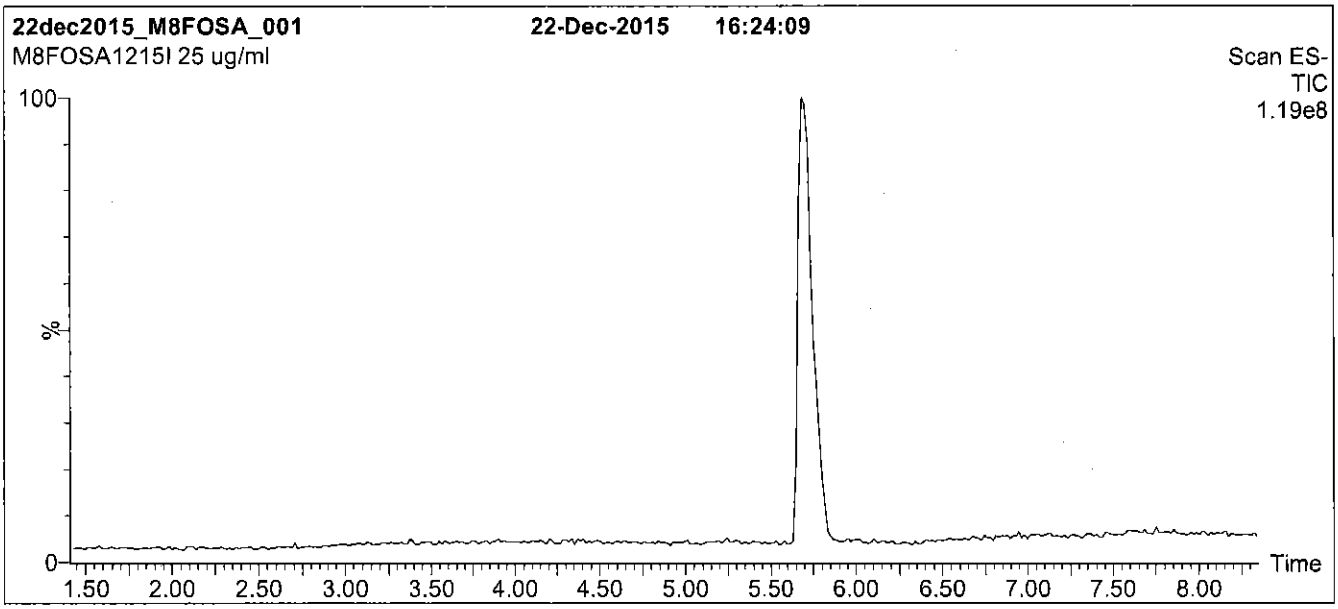
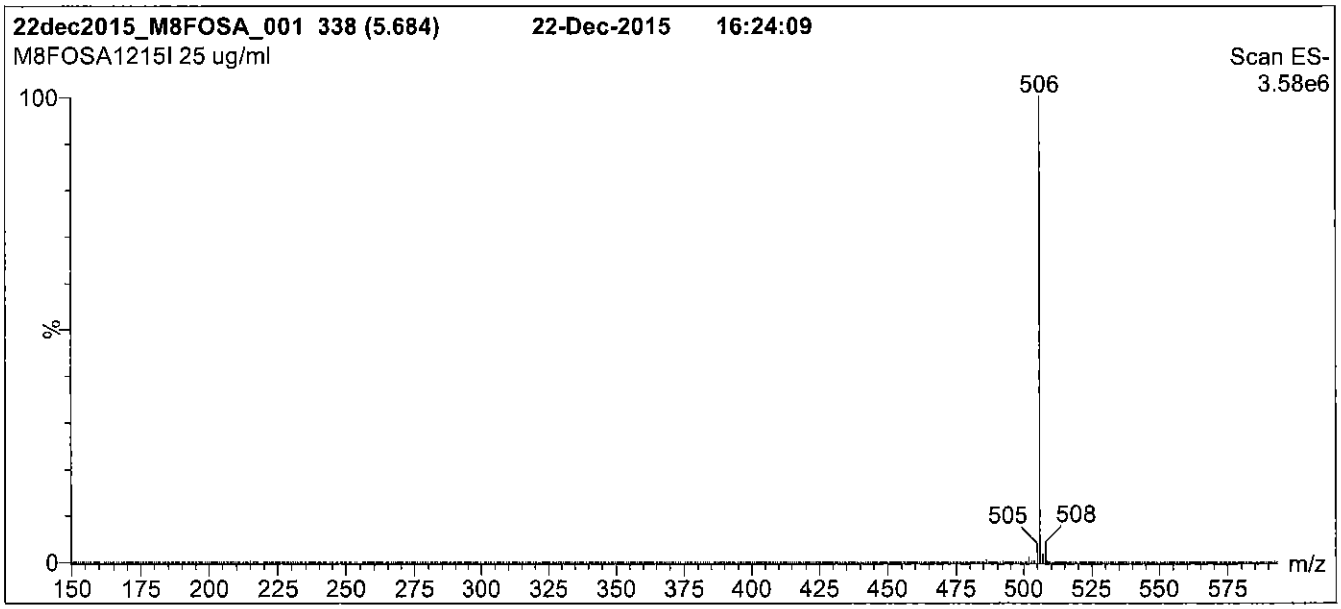
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

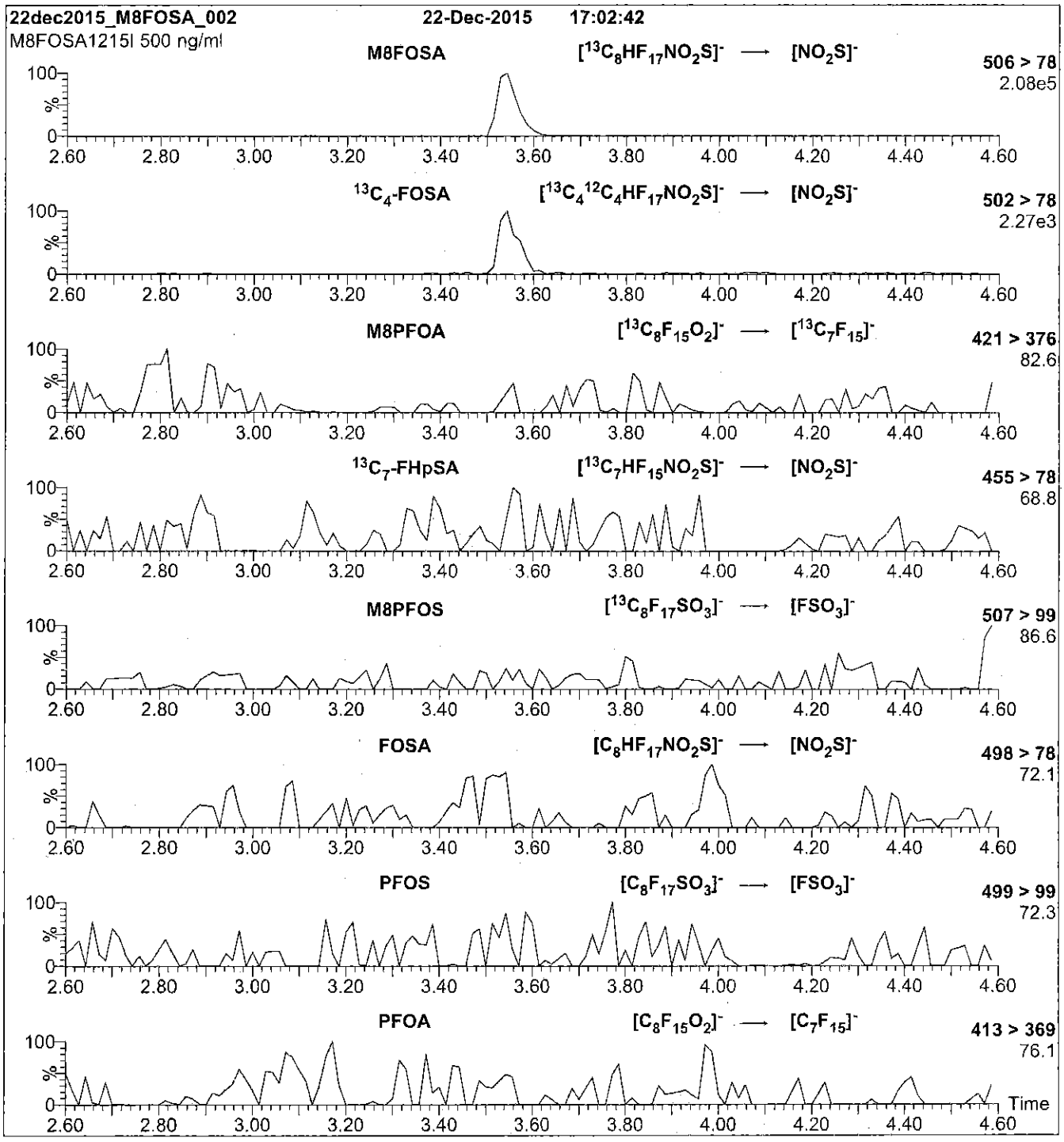
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM8FOSA_00009

609714
ID: LCM8FOSA_00009
Exp: 12/22/17 Prpd: CBW
13C8-Perfluorooctanesulfo

R=4/7/16 CBW

WELLINGTON LABORATORIES

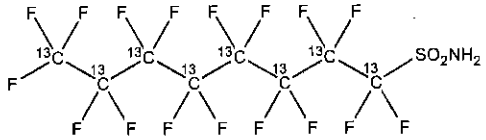
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[$^{13}C_8$]octanesulfonamide

LOT NUMBER: M8FOSA1215I

STRUCTURE:

CAS #: Not available



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CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
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LAST TESTED: (mm/dd/yyyy)	12/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/22/2017		
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DOCUMENTATION/ DATA ATTACHED:

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

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CALA Testing Accreditation Inc. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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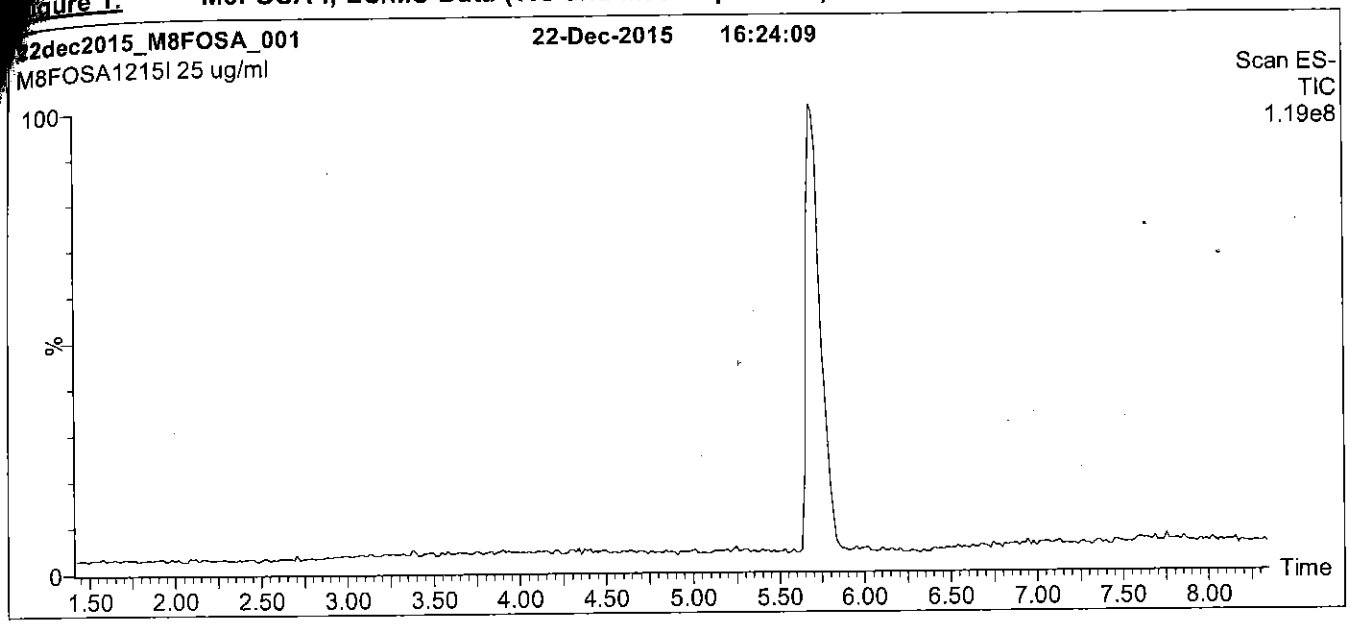
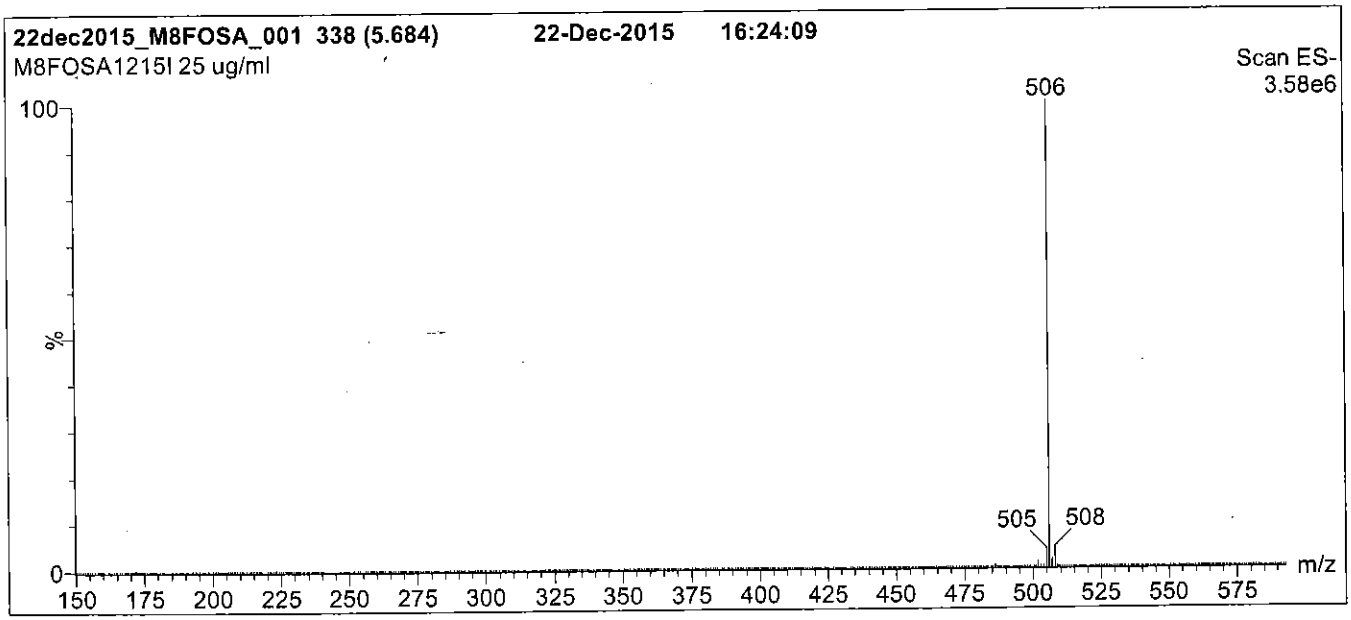




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

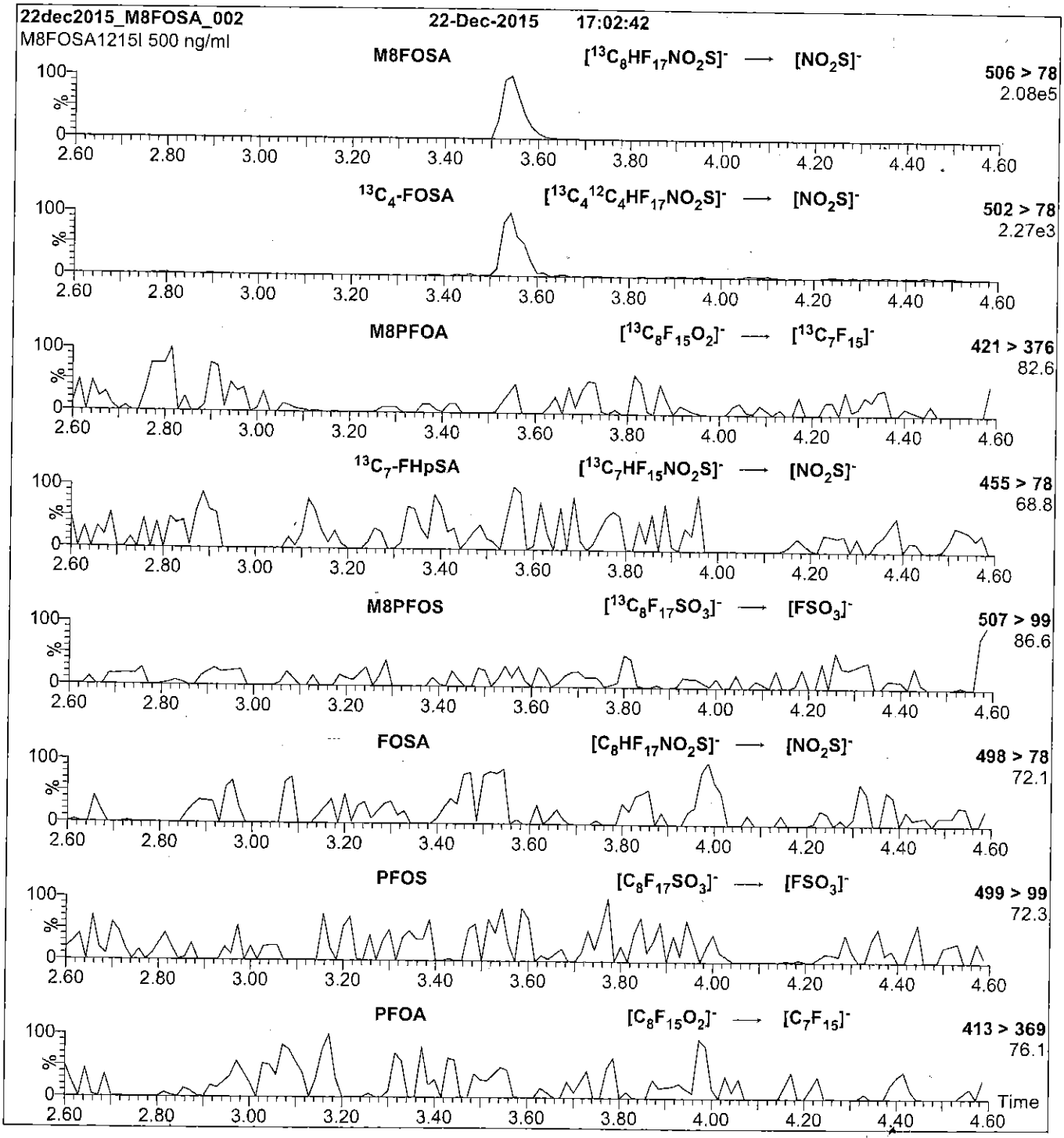
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
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_00005

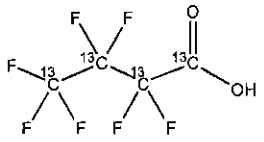
R: 3/3/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFBA
LOT NUMBER: MPFBA1014
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)	10/31/2014		
EXPIRY DATE: (mm/dd/yyyy)	10/31/2019		
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:** 03/31/2015 (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.

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HOMOGENEITY:

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

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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 17034 REFERENCE MATERIAL PRODUCER

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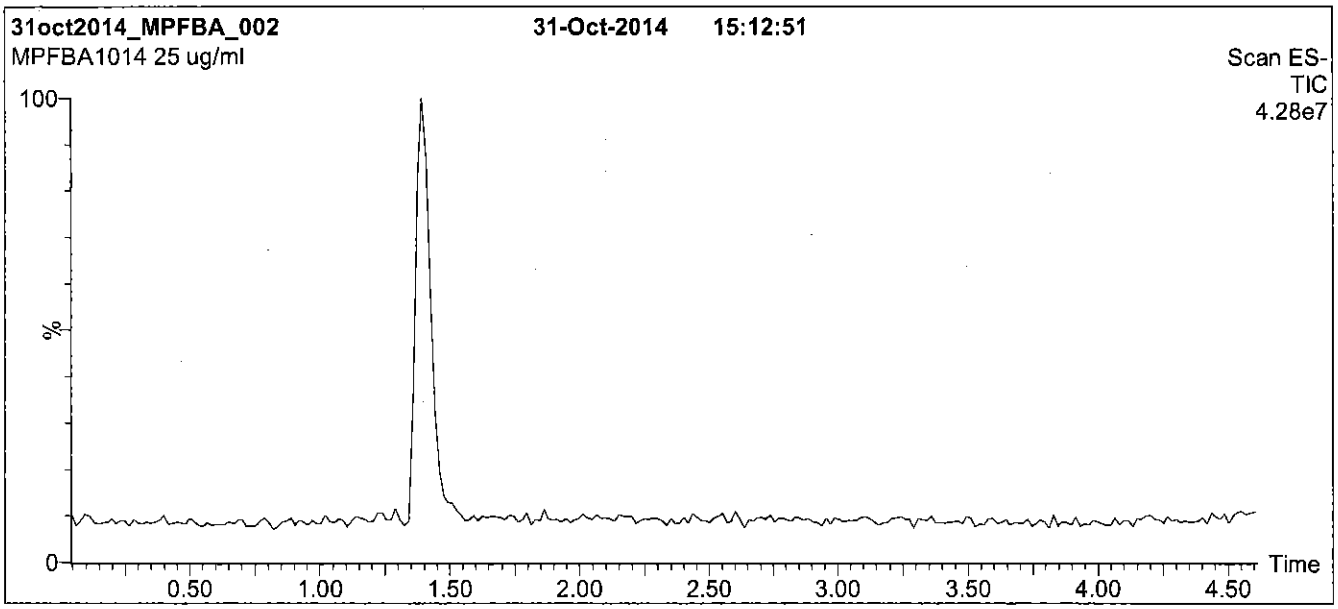
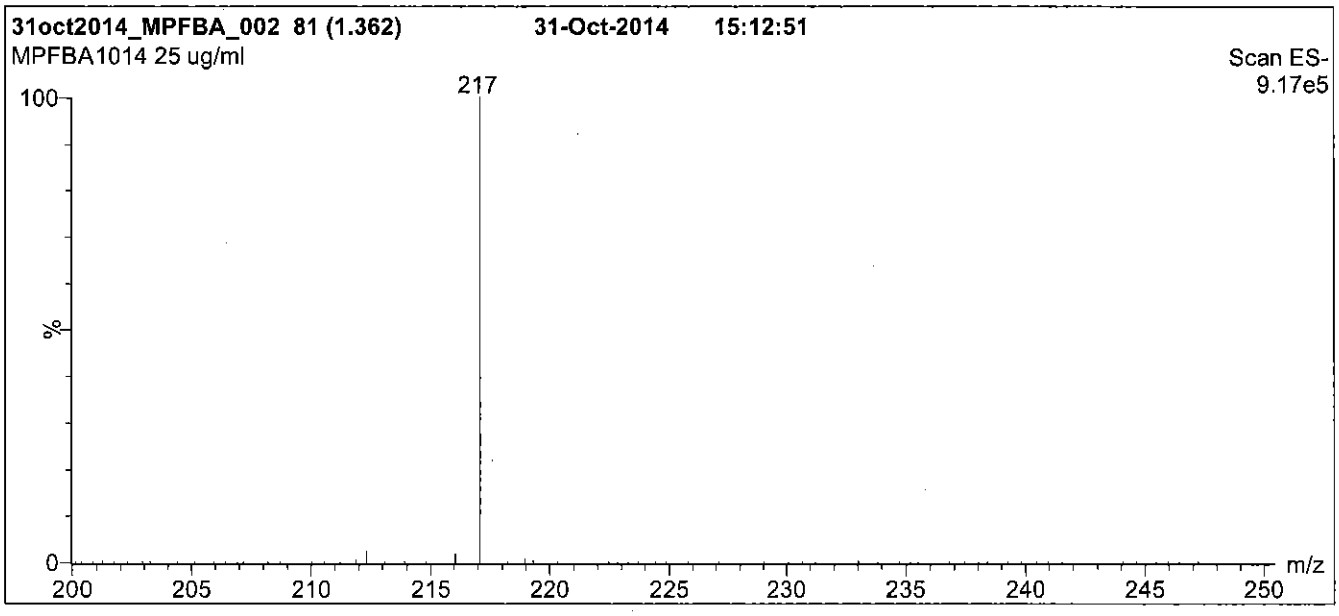
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

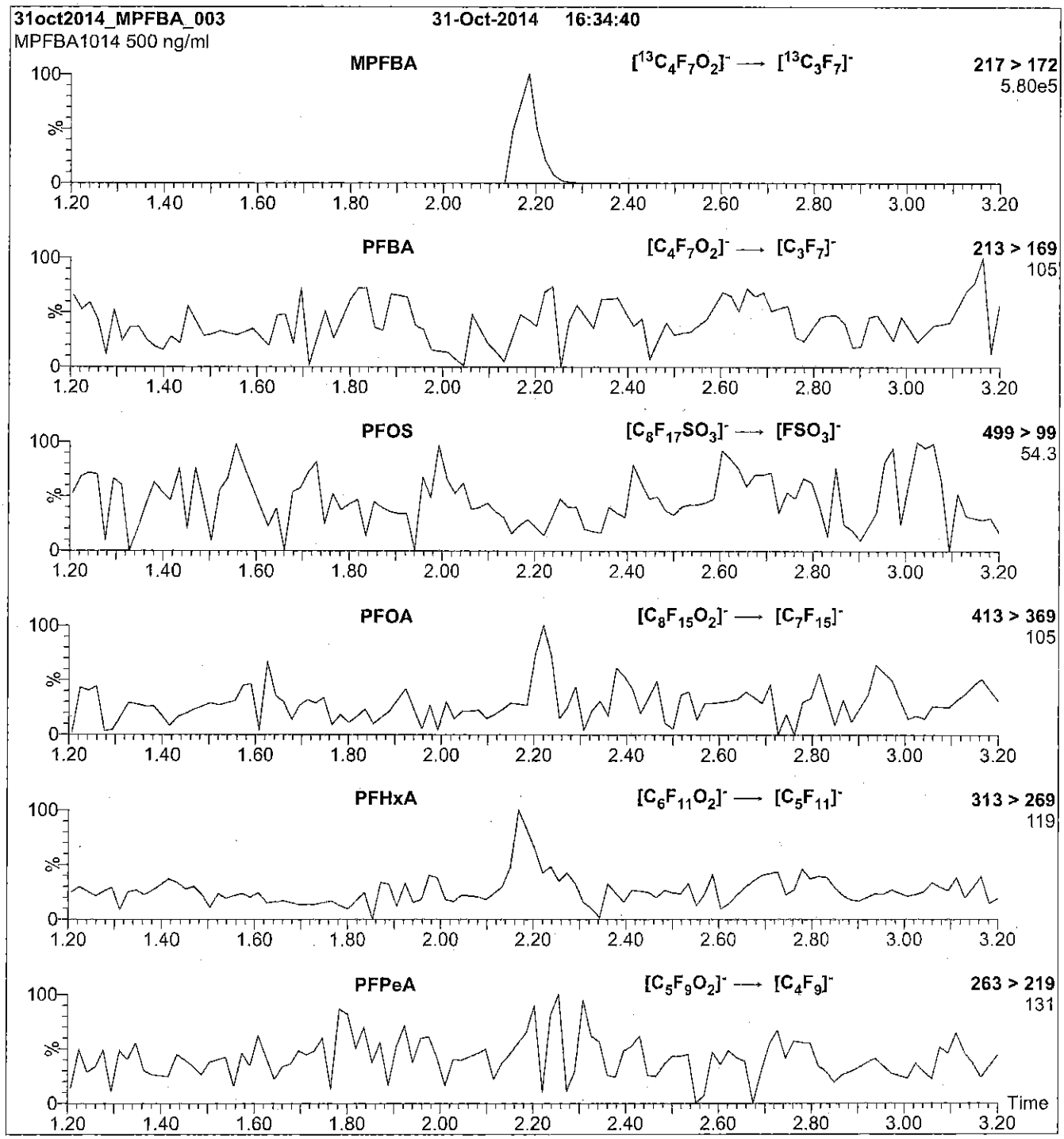
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **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) = 3.28e-3
Collision Energy (eV) = 10

Reagent

LCMPFBA_00006

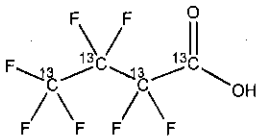
609707
ID: LCMPFBA_00006
Exp: 10/31/19 Prpd: CBW
13C4-Perfluorobutanoic ac

R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFBA	**LOT NUMBER:**	MPFBA1014
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)	10/31/2014		
EXPIRY DATE: (mm/dd/yyyy)	10/31/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
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Certified By: _____ B.G. Chittim **Date:** 03/31/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A1226

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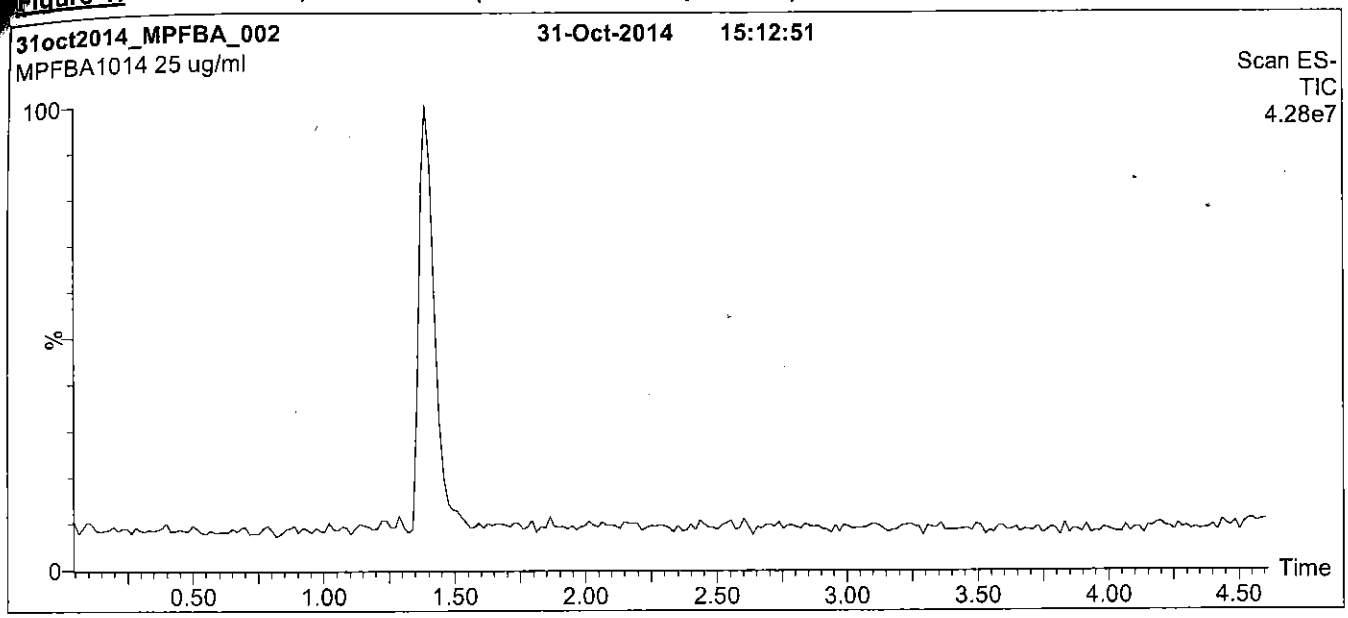
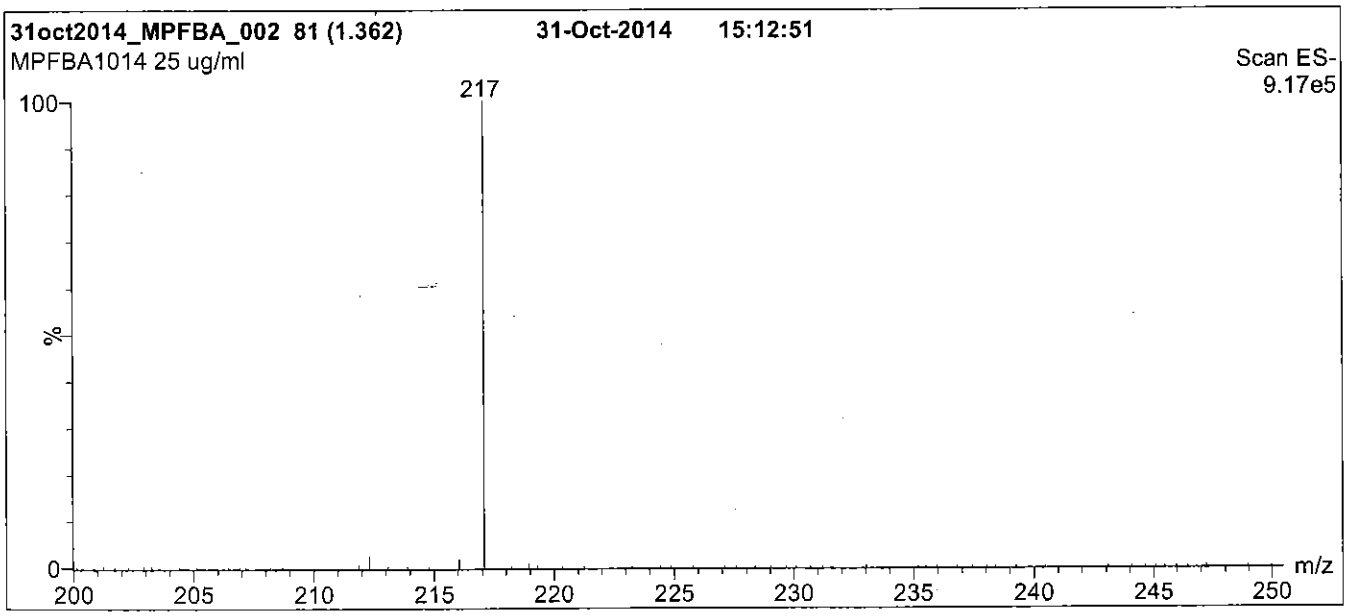




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

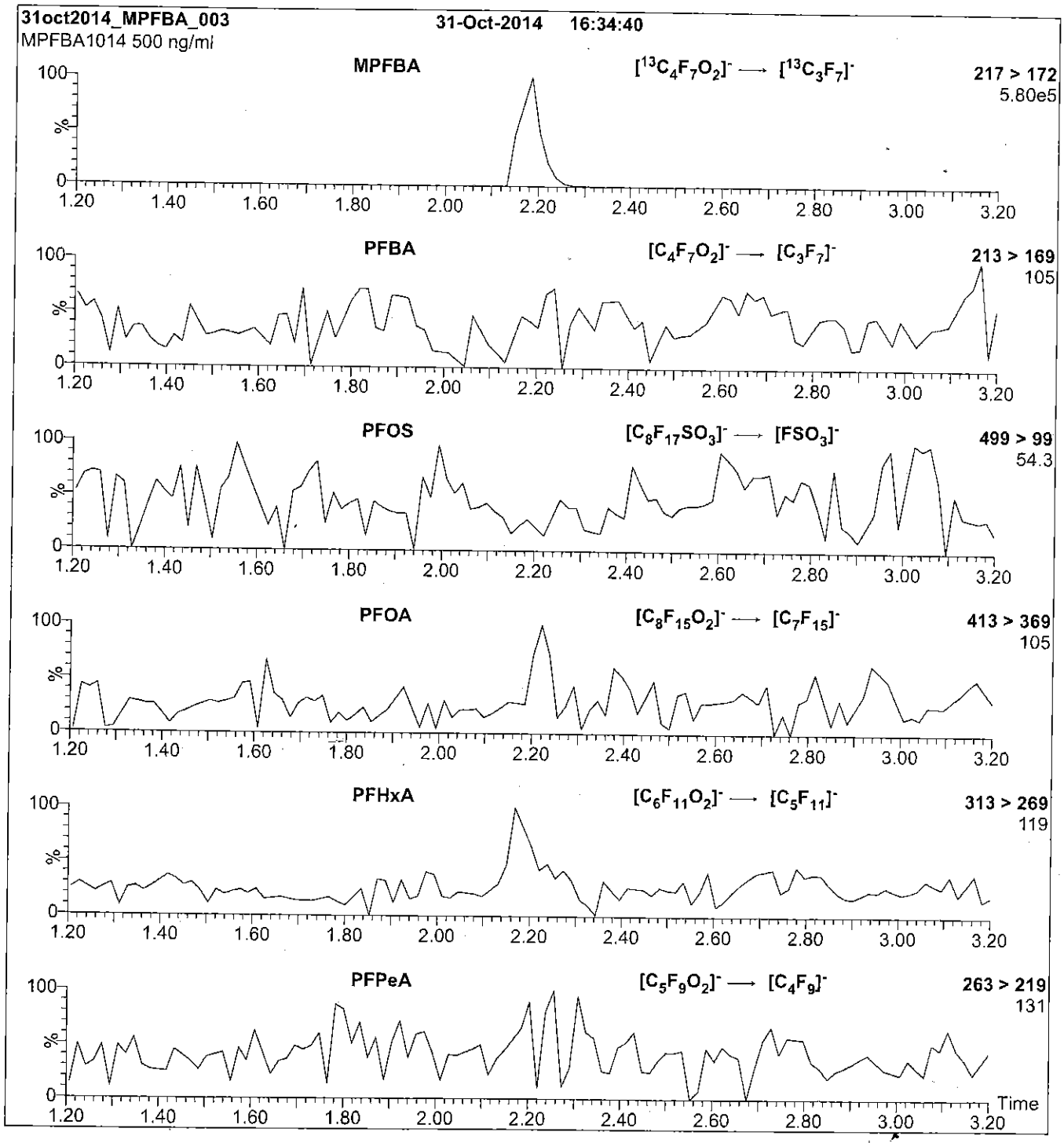
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **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) = 3.28e-3
Collision Energy (eV) = 10

Reagent

LCMPFDA_00007

Rec. 3/29/16 JRB ✓

WELLINGTON LABORATORIES

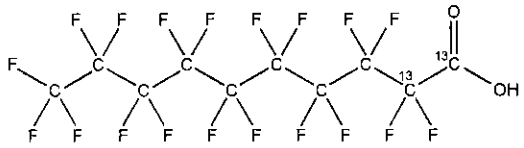
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid

LOT NUMBER: MPFDA0815

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{19}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

MOLECULAR WEIGHT: 516.07
SOLVENT(S): Methanol
Water (<1%)

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)

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
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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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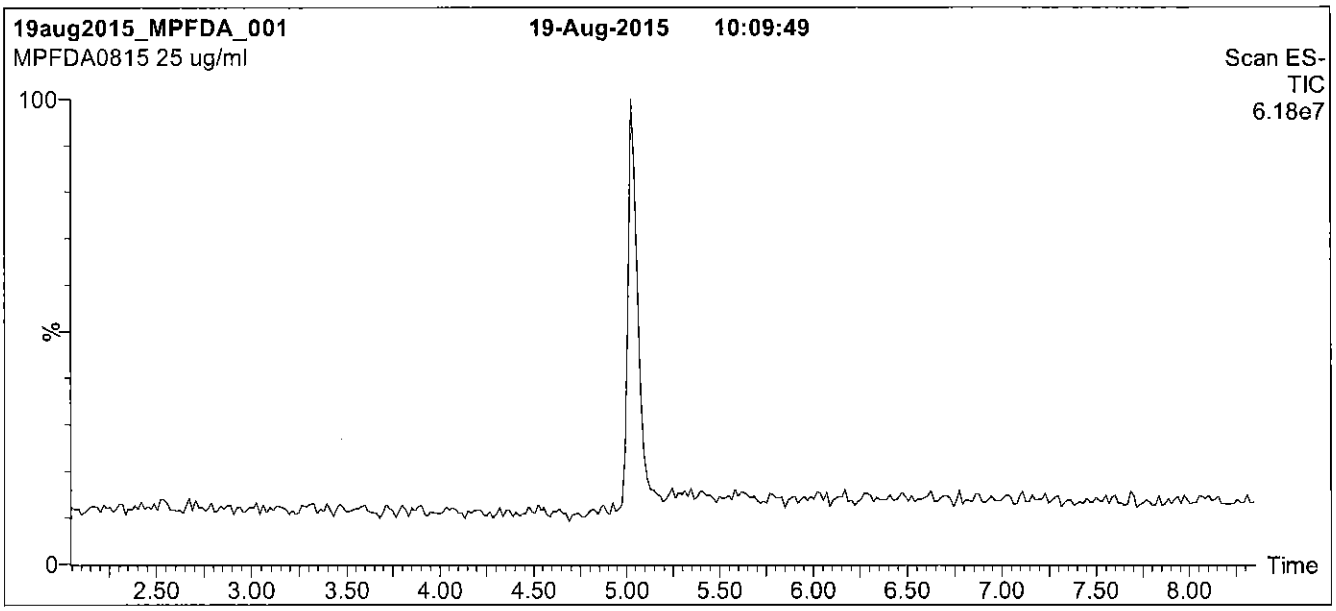
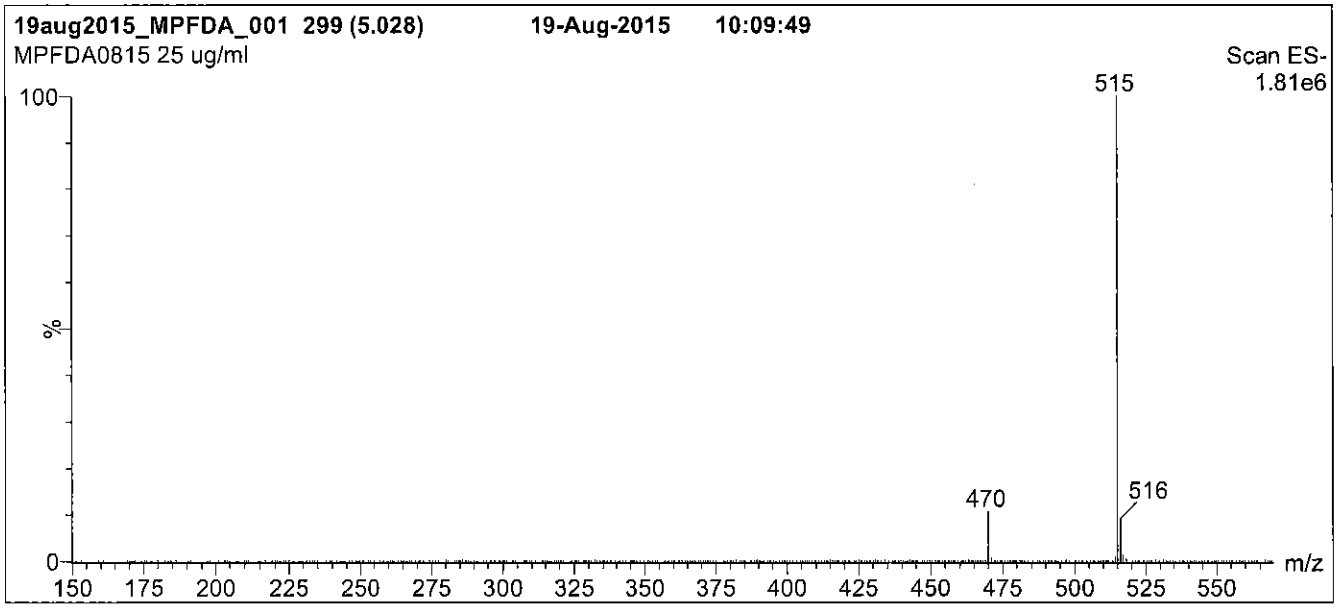




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

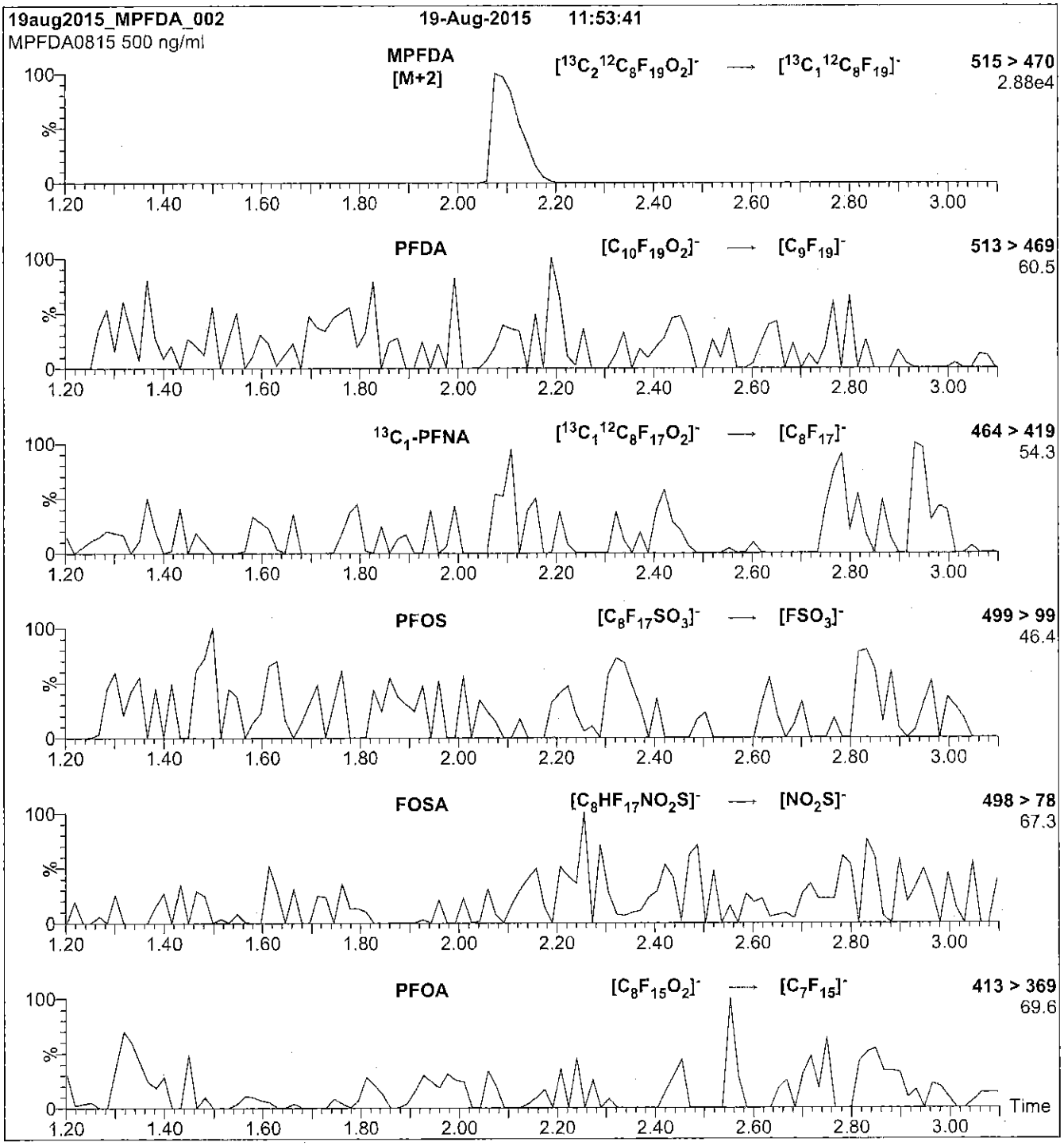
Flow: 300 µl/min

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_00005

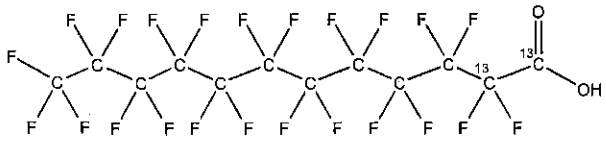
R:3/3/16 CBW

591162
ID: LCMPFDoA_00005
Exp: 07/17/19 Prpd: CBW
13C2-Perfluorododecanoic

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDoA
LOT NUMBER: MPFDoA0714
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/17/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/17/2019		
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:

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

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CALA Testing Accreditation Inc. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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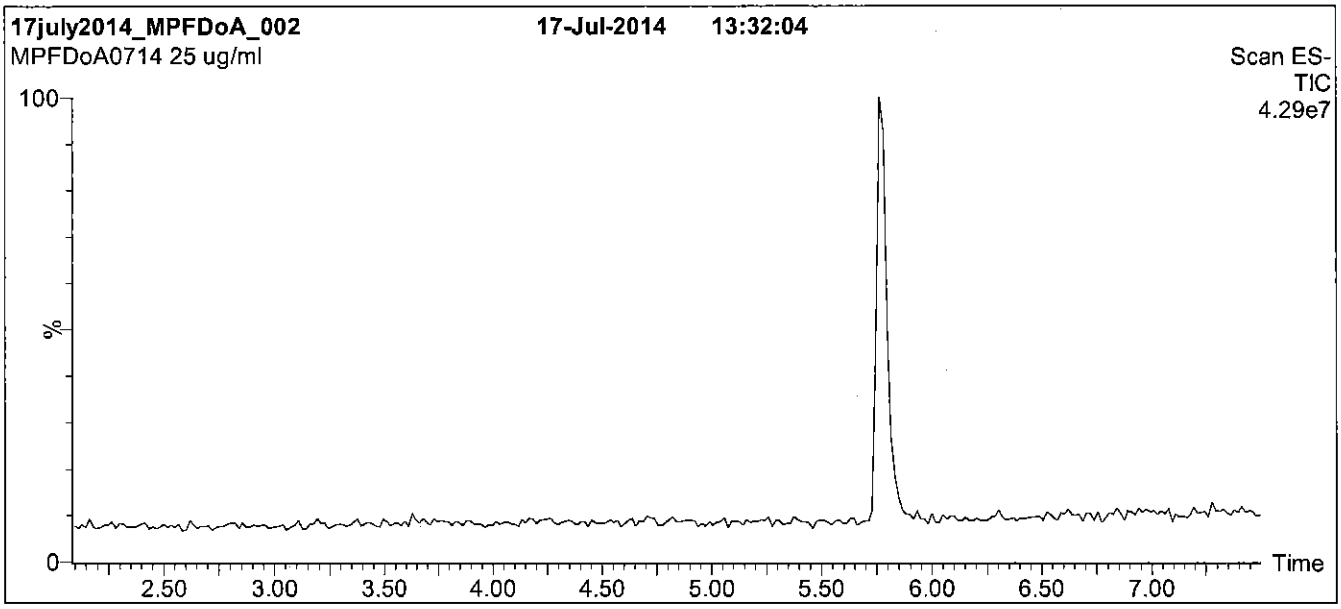
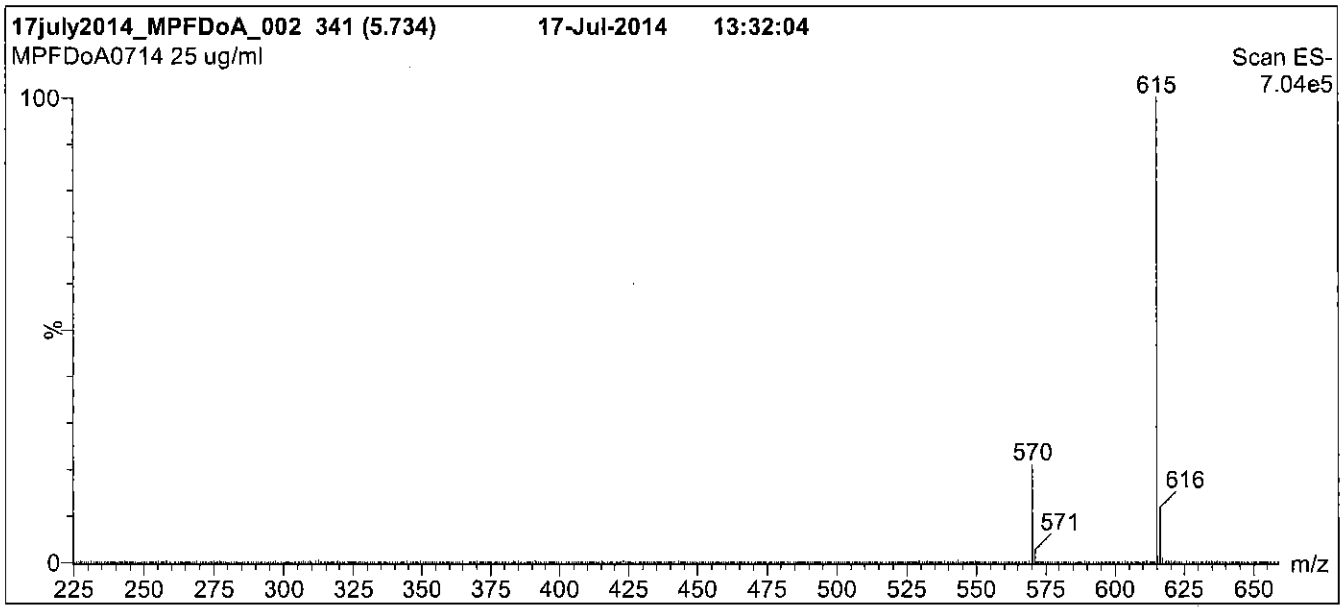
Figure 1: **MPFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

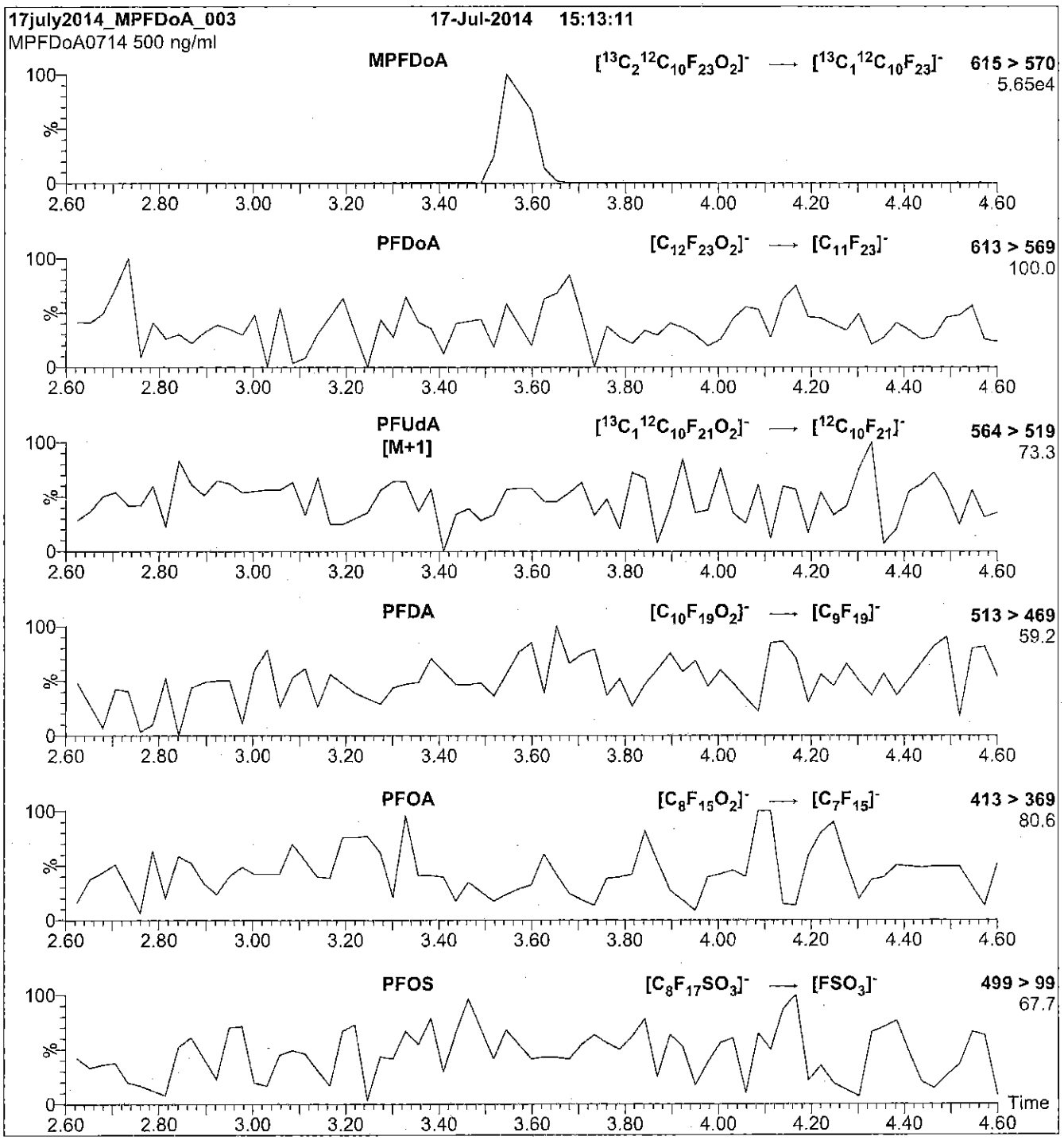
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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) = 3.43e-3
Collision Energy (eV) = 13

Reagent

LCMPFDoA_00006

609708
ID: LCMPFDoA_00006
Exp: 07/17/19 Prpd: CBW
13C2-Perfluorododecanoic

R: 4/7/16 CBW

WELLINGTON LABORATORIES

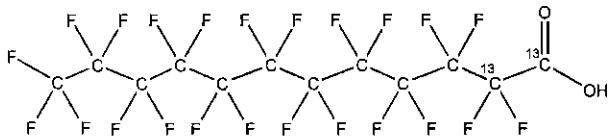
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFDoA0714

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/17/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/17/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

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

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CALA Testing Accreditation Inc. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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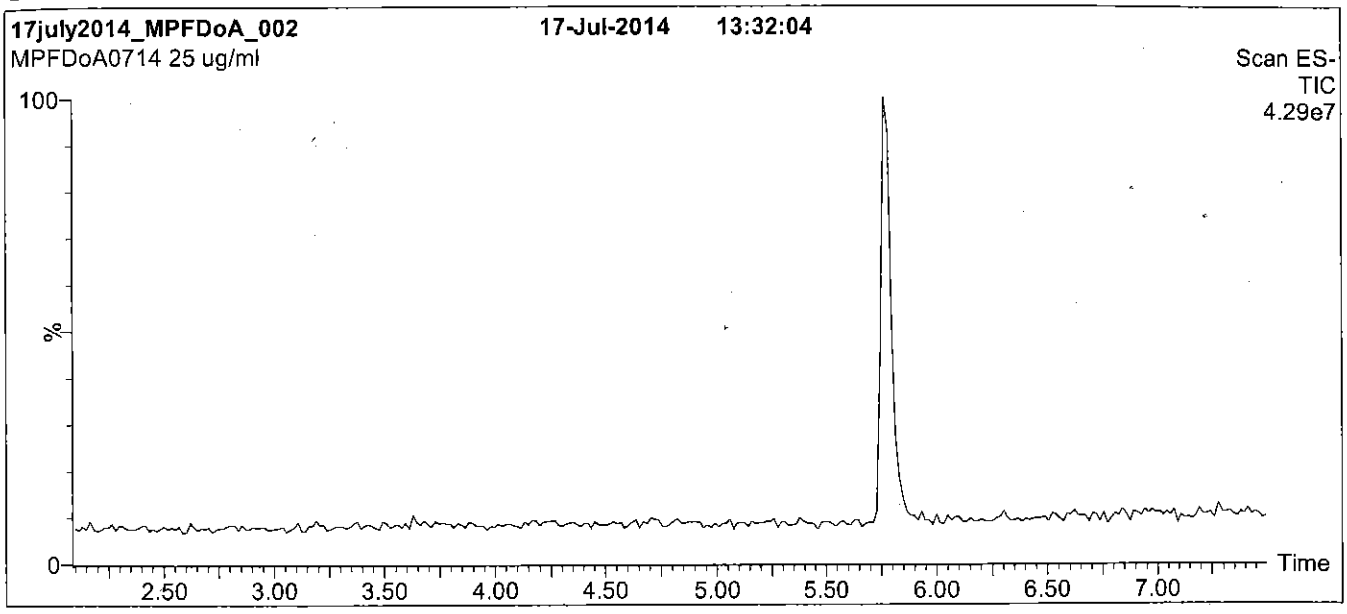
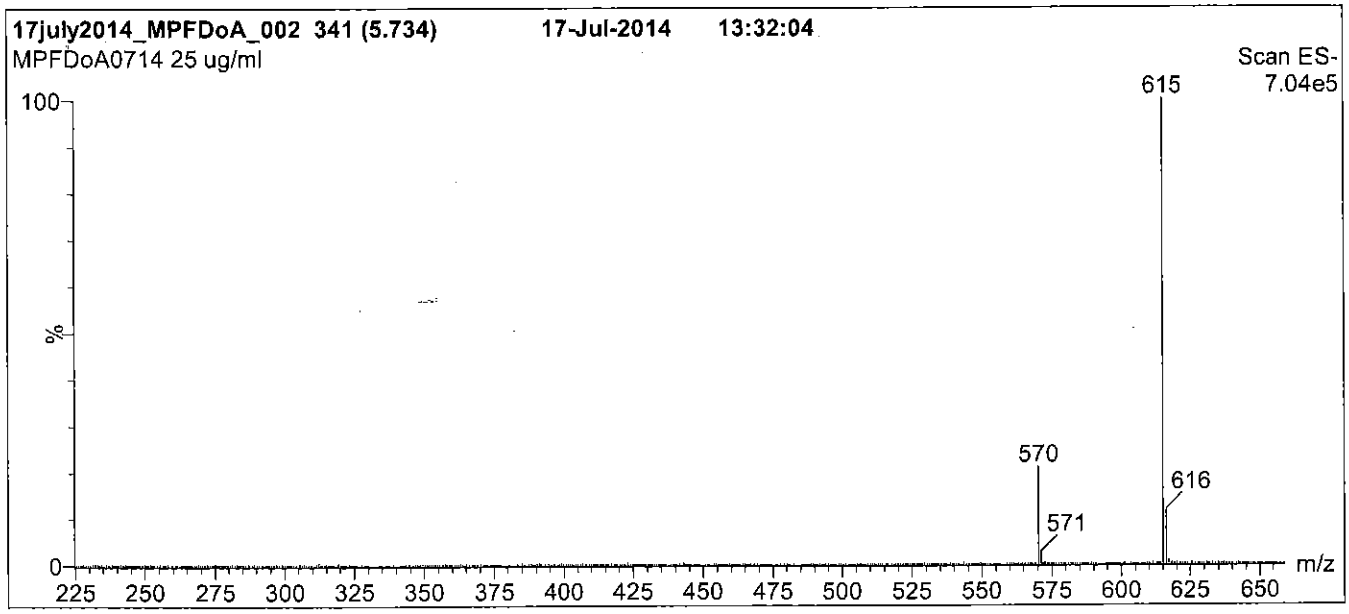




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

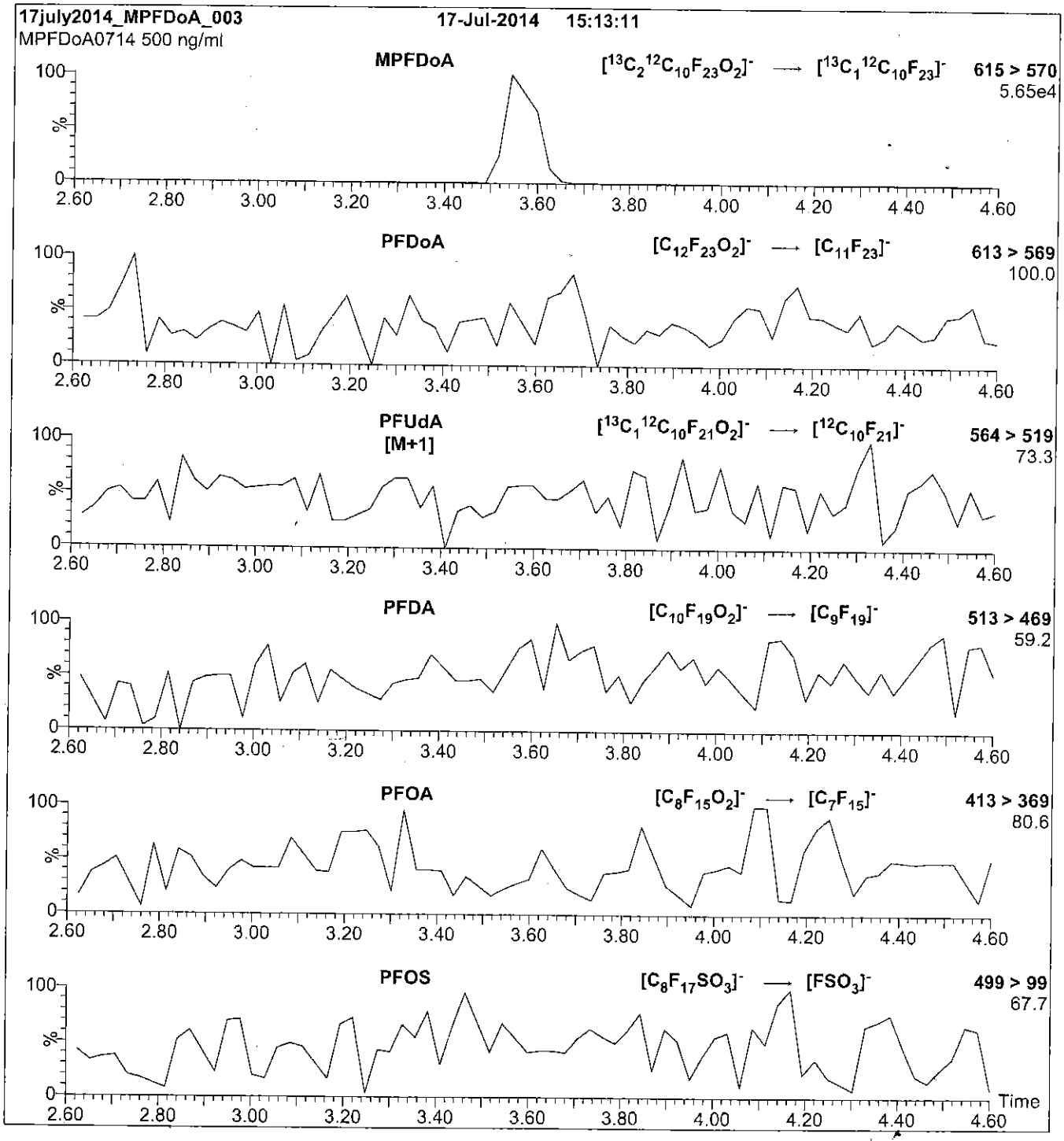
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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



Condltions 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) = 3.43e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00008

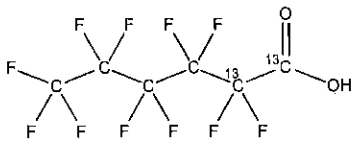
605233
ID: LCMPFHxA_00008
Exp: 04/09/20 Prpd: CBW
13C2-Perfluorohexanoic ac

Rec. 3/29/16 JRB ✓

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFHxA
LOT NUMBER: MPFHxA0415
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-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 04/09/2015
EXPIRY DATE: (mm/dd/yyyy) 04/09/2020
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 < 0.1% 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:** 04/14/2015 (mm/dd/yyyy)

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CALA Testing Accredited by A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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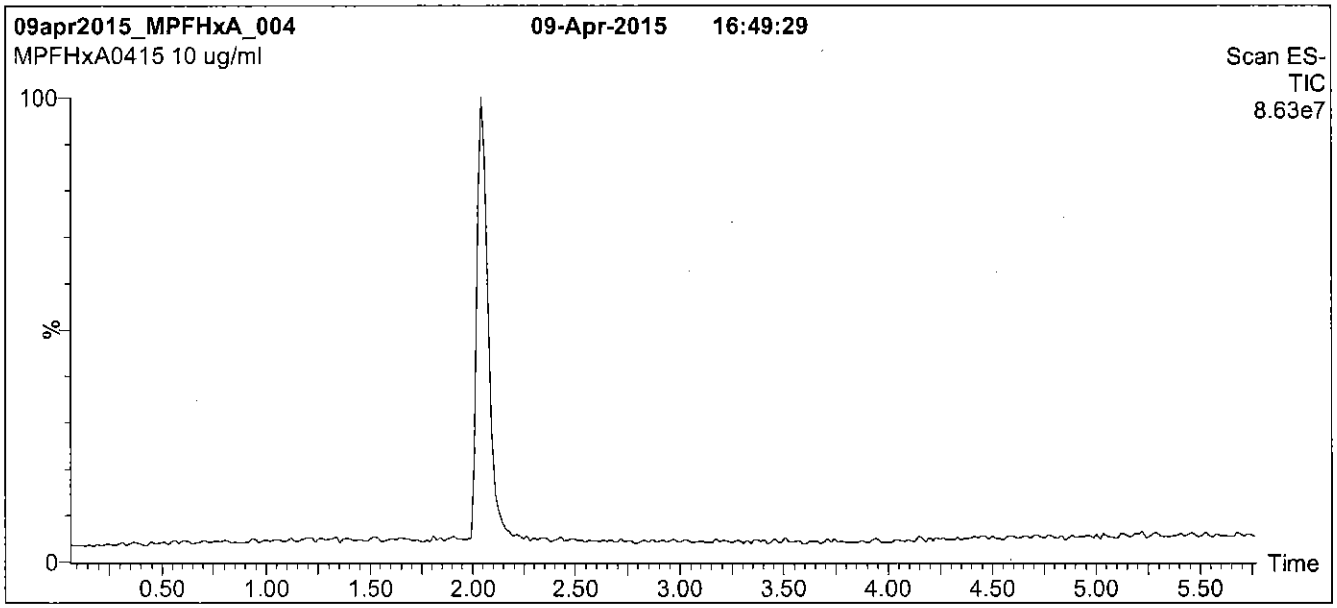
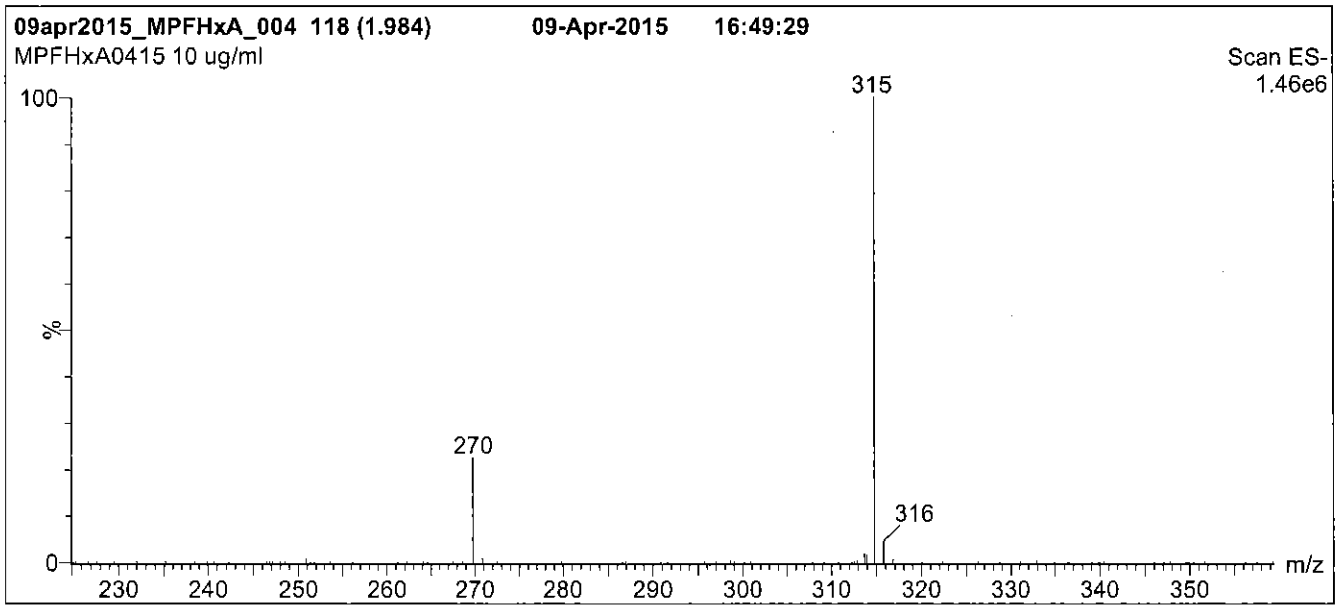
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

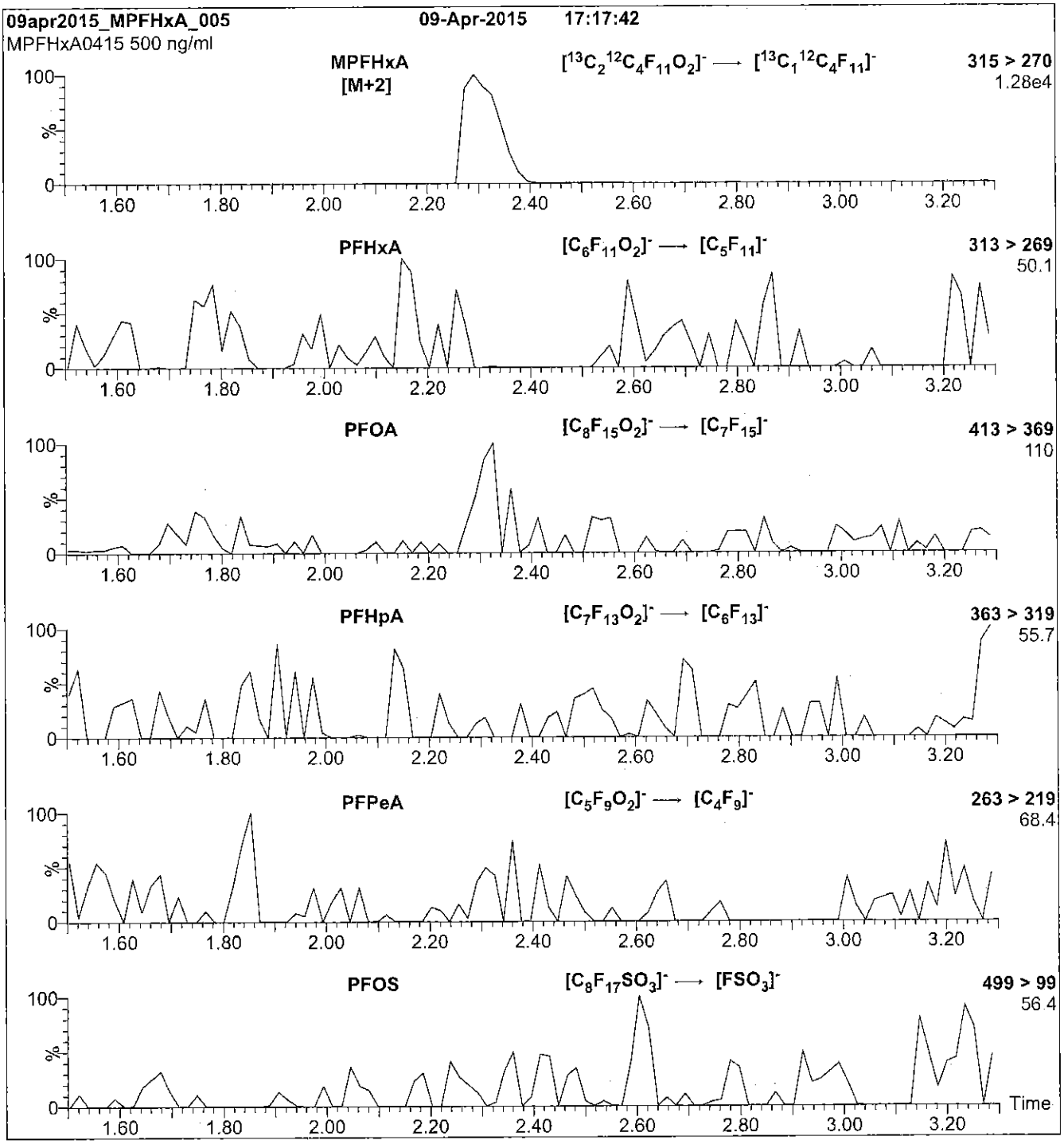
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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) = 3.20e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxS_00005

591163
ID: LCMPFHxS_00005
Exp: 08/23/20 Prpd: CBW
18O2-Perfluorohexanesulfo

R: 3/3/16 CBW

WELLINGTON LABORATORIES

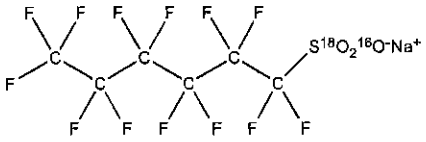
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFHxS
COMPOUND: Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate

LOT NUMBER: MPFHxS1015

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		

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ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 ISO 34 REFERENCE MATERIAL PRODUCER

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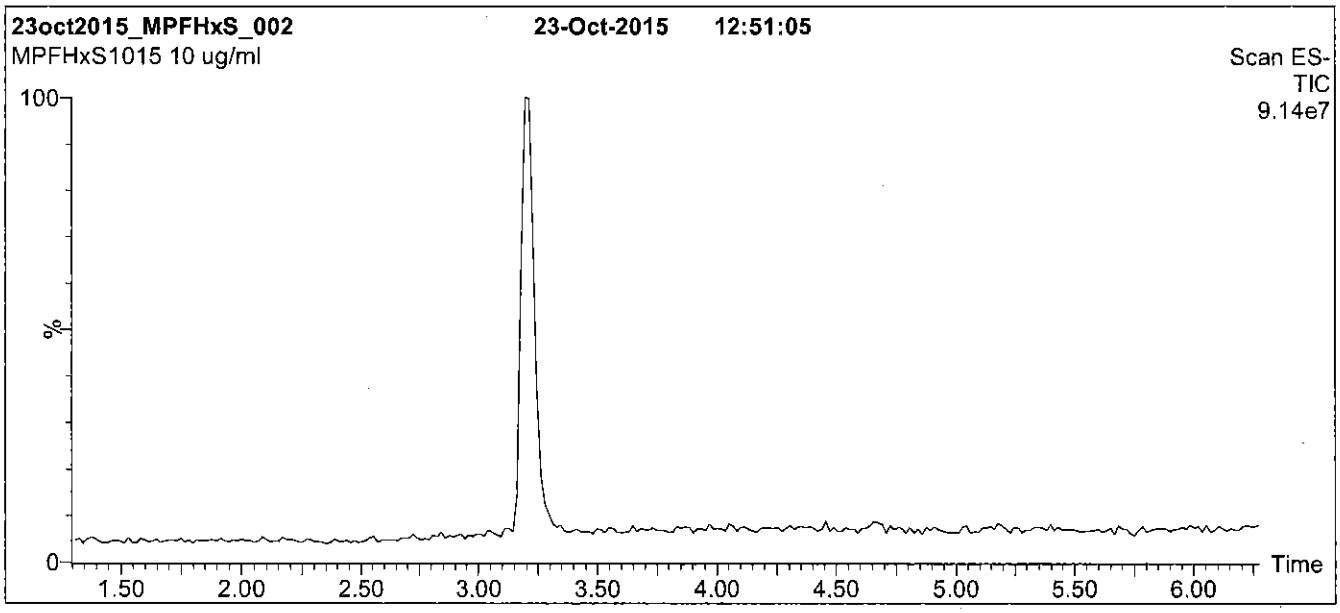
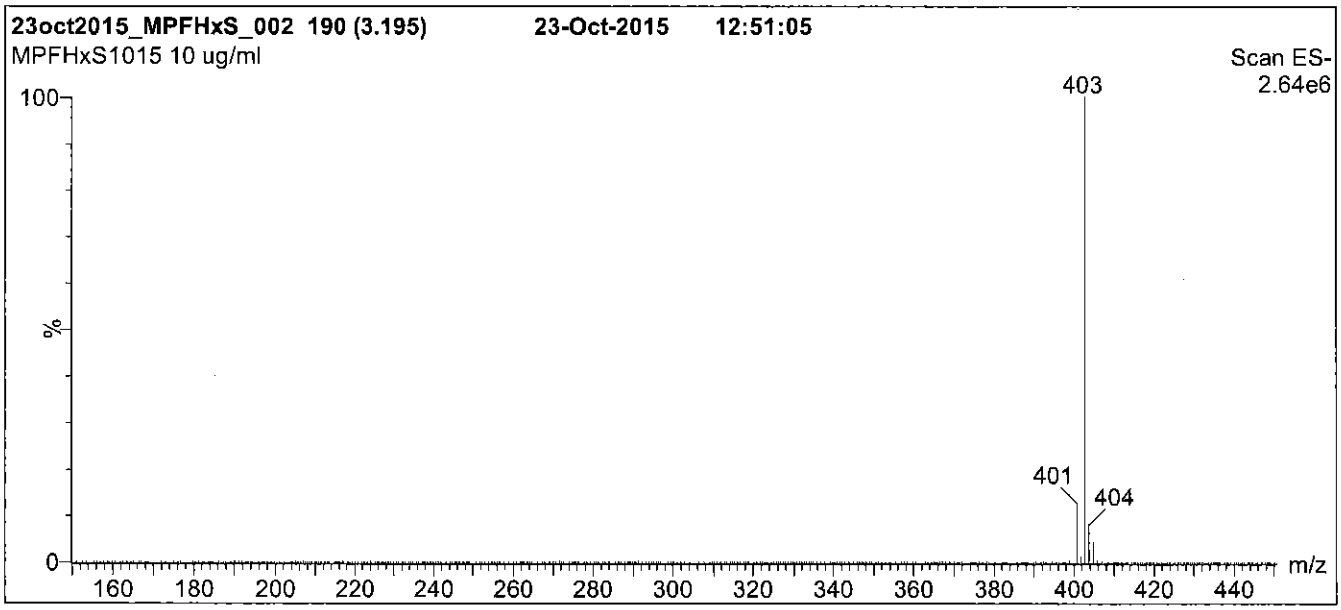
Figure 1: **MPFHxS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

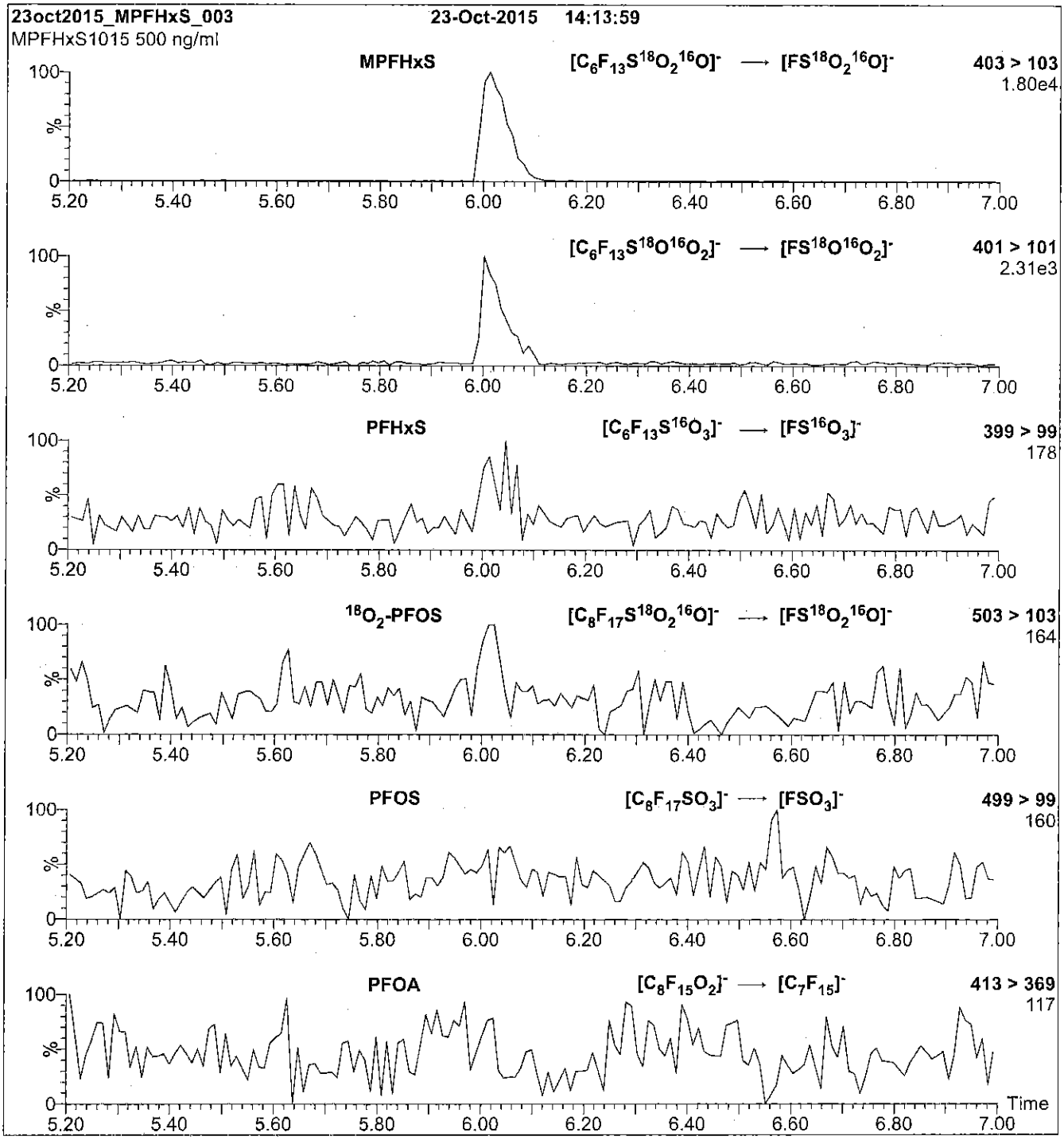
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Reagent

LCMPFHxS_00006

609705
ID: LCMPFHxS_00006
Exp: 10/23/20 Prpd: CBW
18O2-Perfluorohexanesulfo

R: 4/7/16 CBW

WELLINGTON LABORATORIES

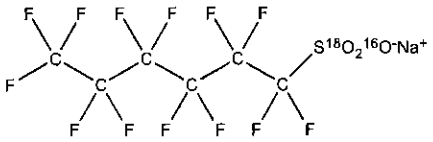
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFHxS
COMPOUND: Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate

LOT NUMBER: MPFHxS1015

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)	**SOLVENT(S):**	Methanol
	47.3 ± 2.4 µg/ml (MPFHxS anion)		
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 ($C_6F_{13}S^{18}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
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Certified By: B.G. Chittim **Date:** 10/28/2015 (mm/dd/yyyy)

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CALA
Testing
Accredited Lab No. A1226

ANAB
ACCREDITED
ISO 17025
REFERENCE MATERIAL PRODUCER

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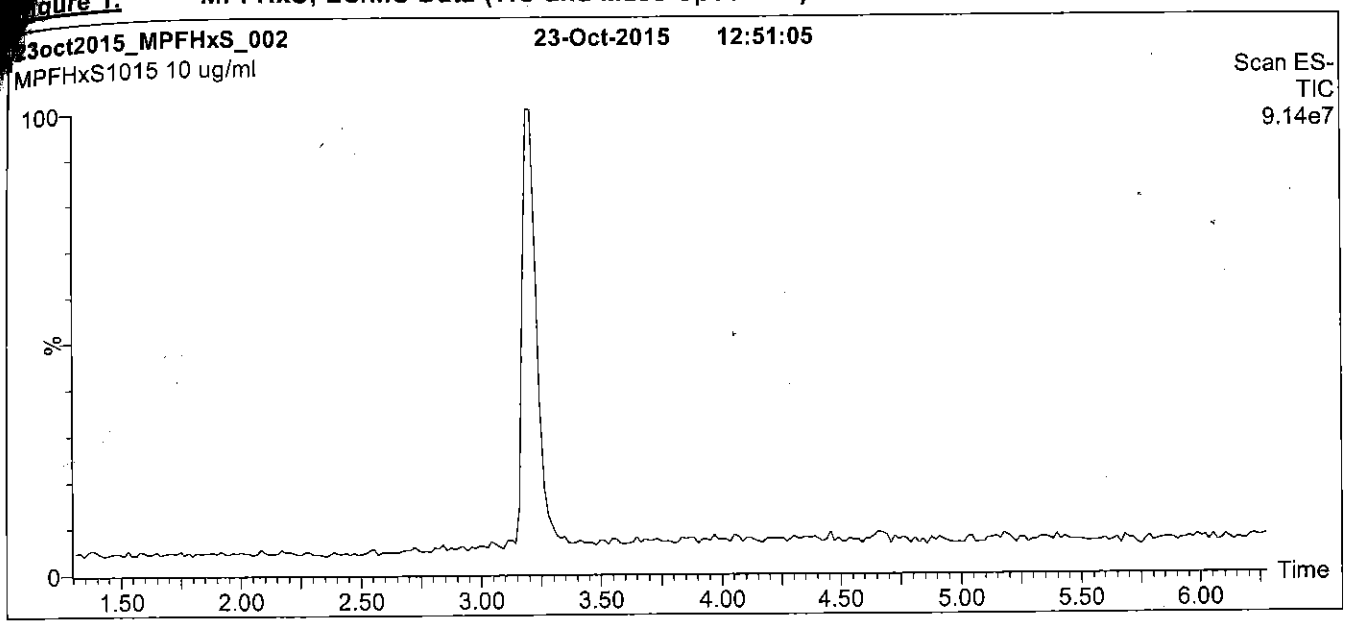
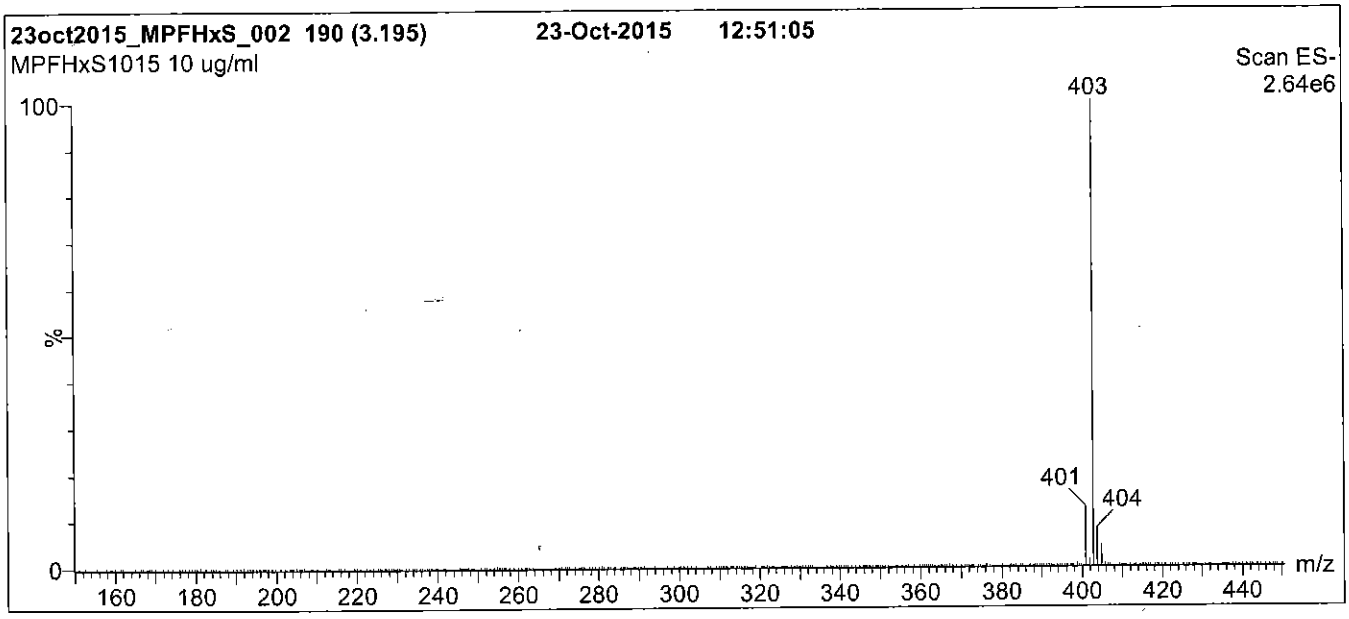
Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

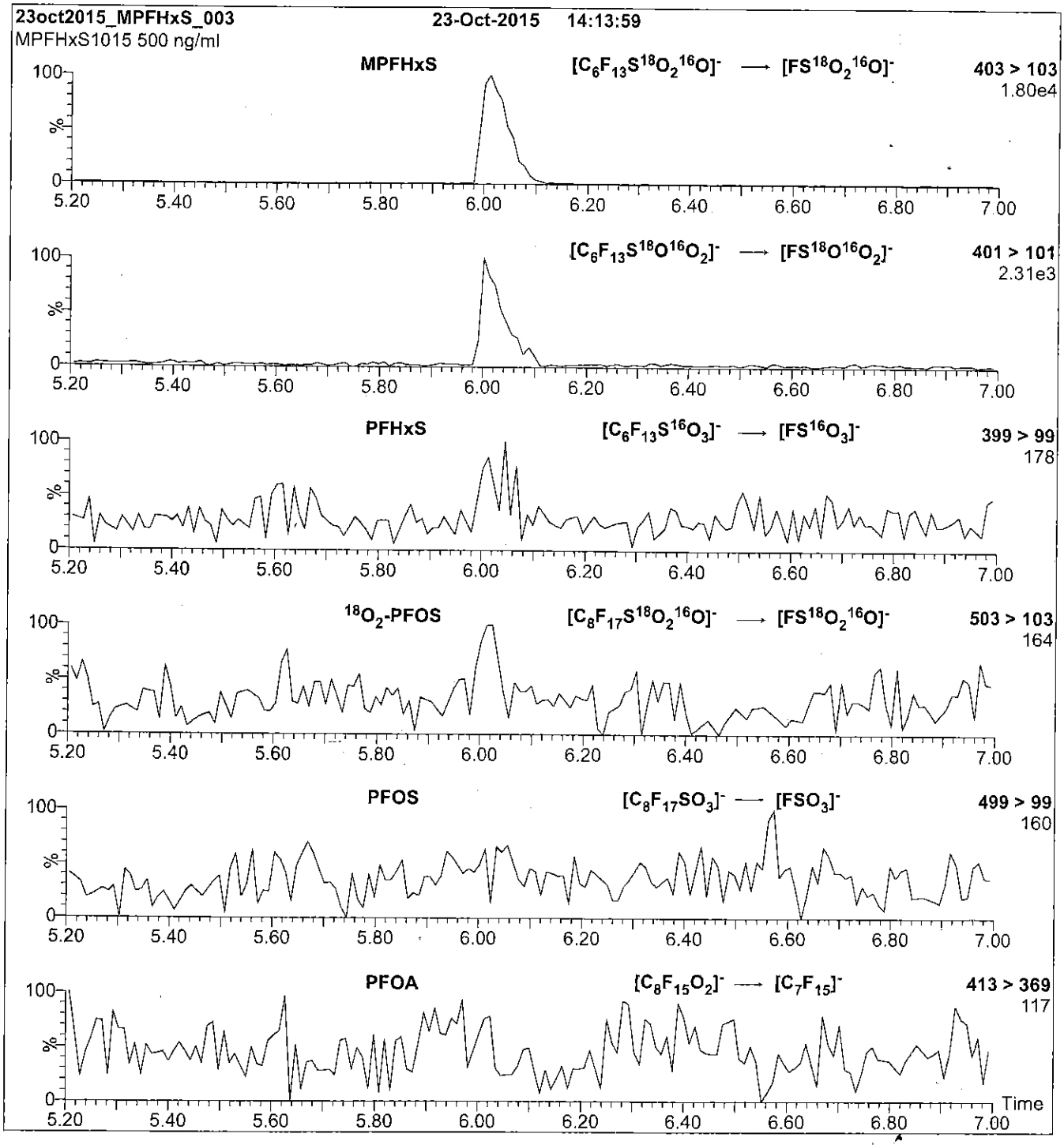
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Reagent

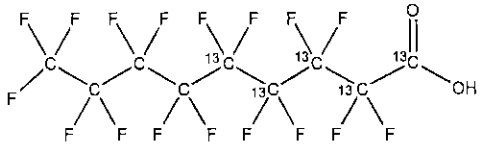
LCMPFNA_00005

Rec. 3/24/16 JEB V

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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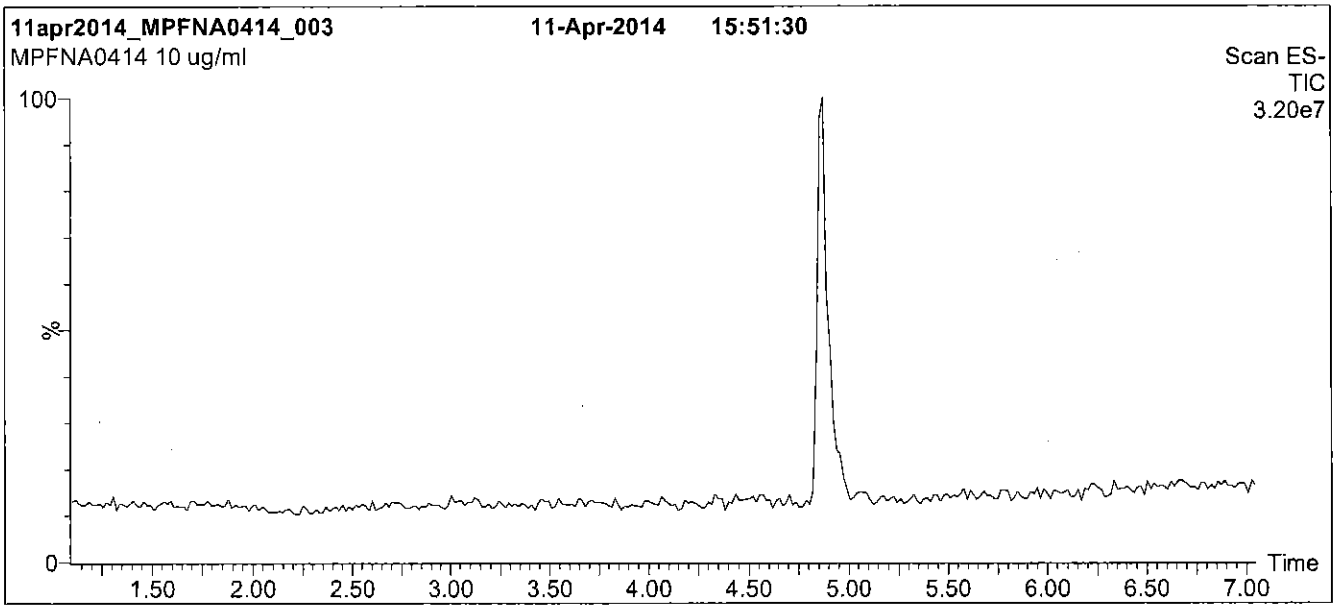
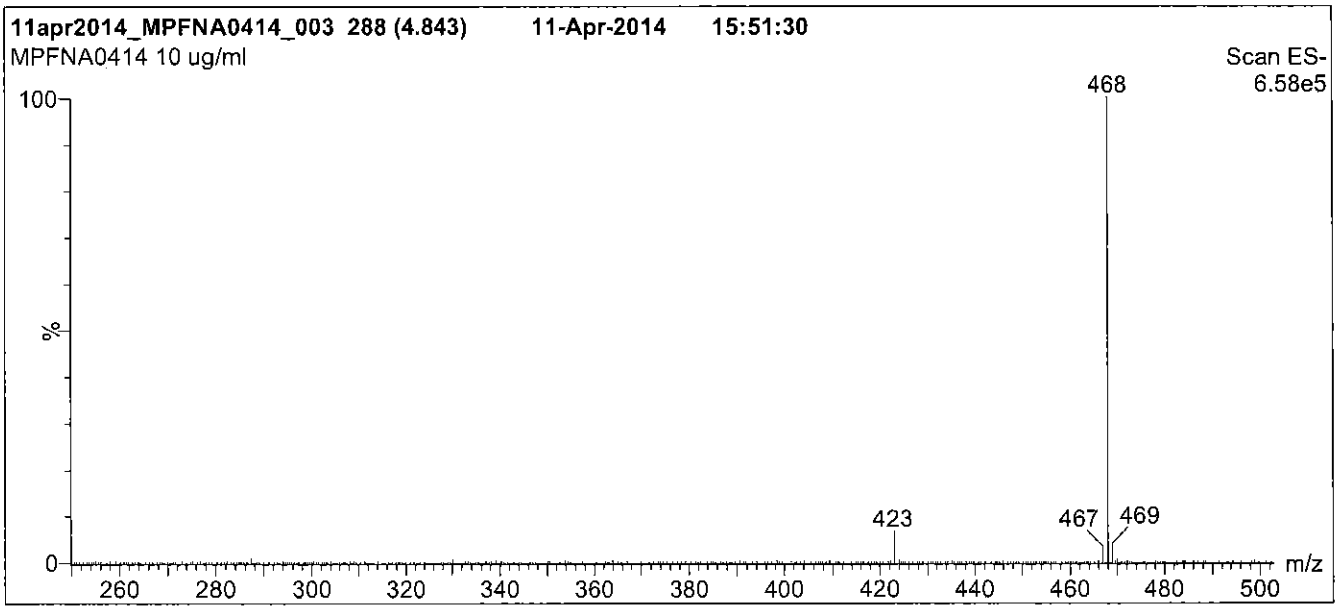
Figure 1: **MPFNA; LC/MS Data (TIC and Mass Spectrum)**





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

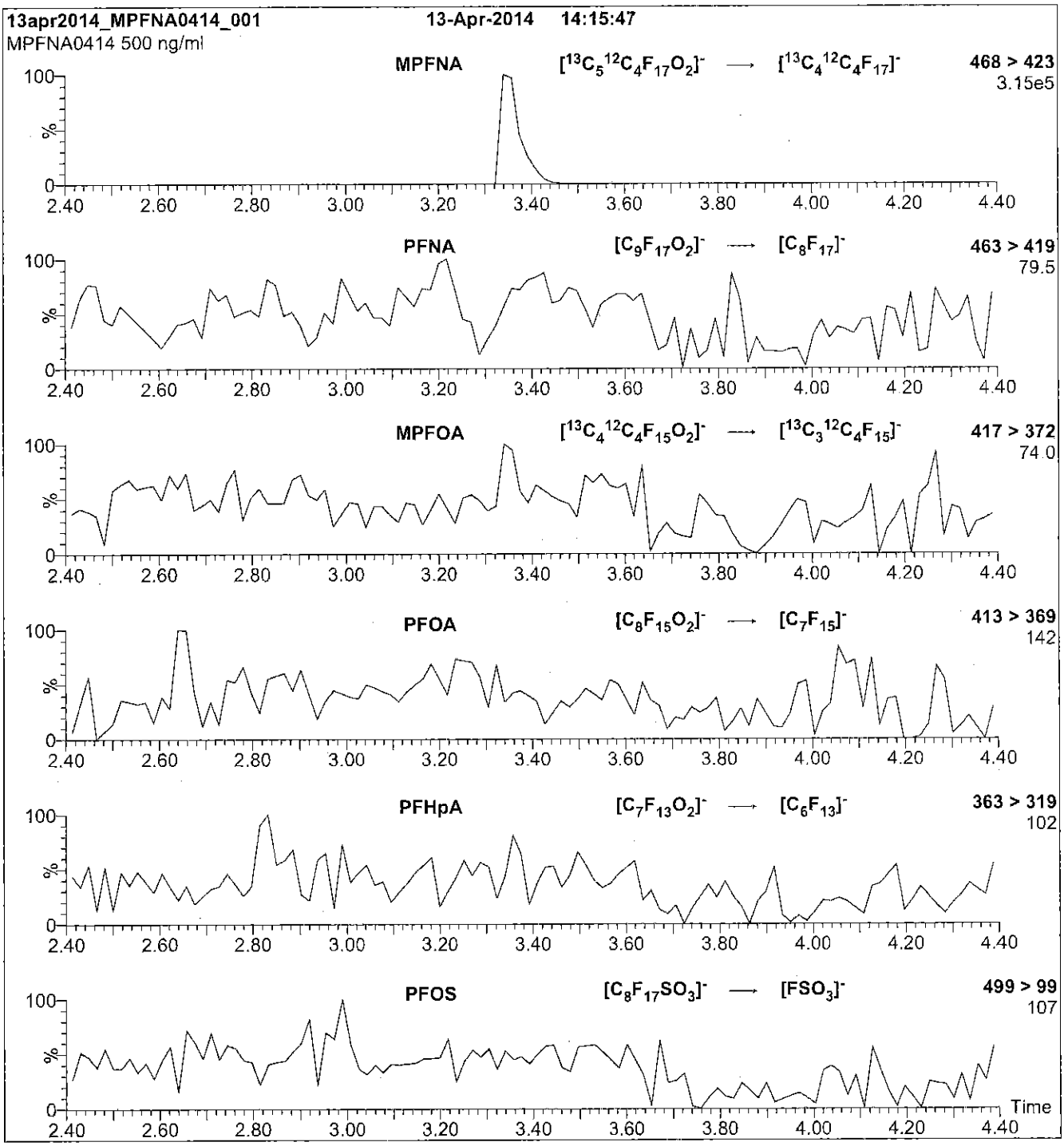
Flow: 300 µl/min

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_00009

591145
ID: LCMPFOA_00009
Exp: 01/22/21 Prpd: CBW
13C4-Perfluorooctanoic ac

R: 3/3/16 CBW

WELLINGTON LABORATORIES

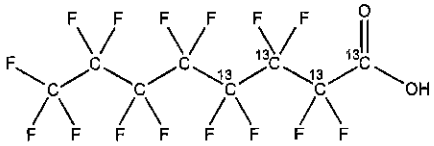
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFOA0116

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4HF_{15}O_2$	**MOLECULAR WEIGHT:**	418.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	01/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/22/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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UNCERTAINTY:

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

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

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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CALA

ANAB ACCREDITED

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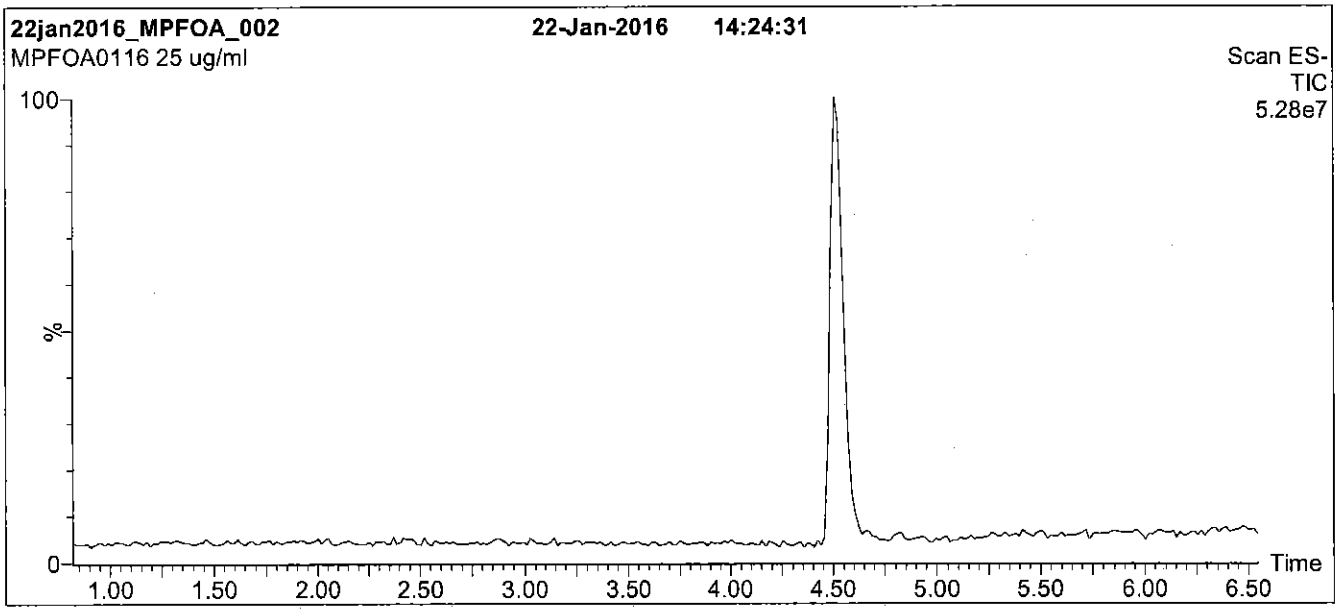
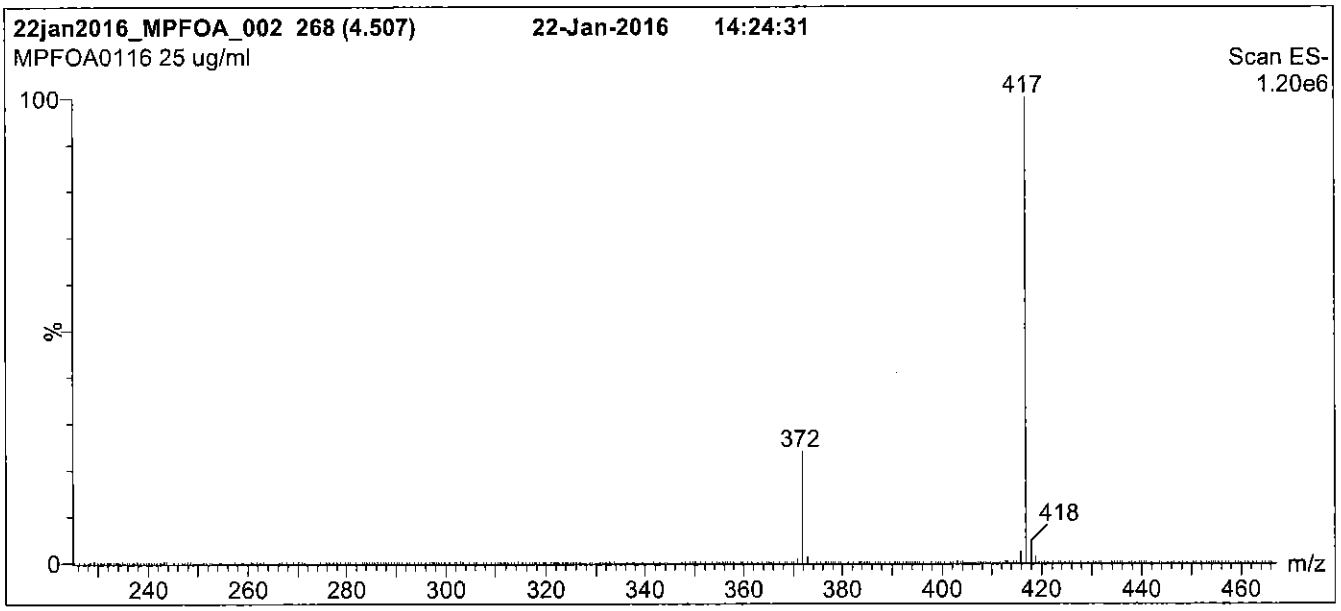
Figure 1: **MPFOA; LC/MS Data (TIC and Mass Spectrum)**





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

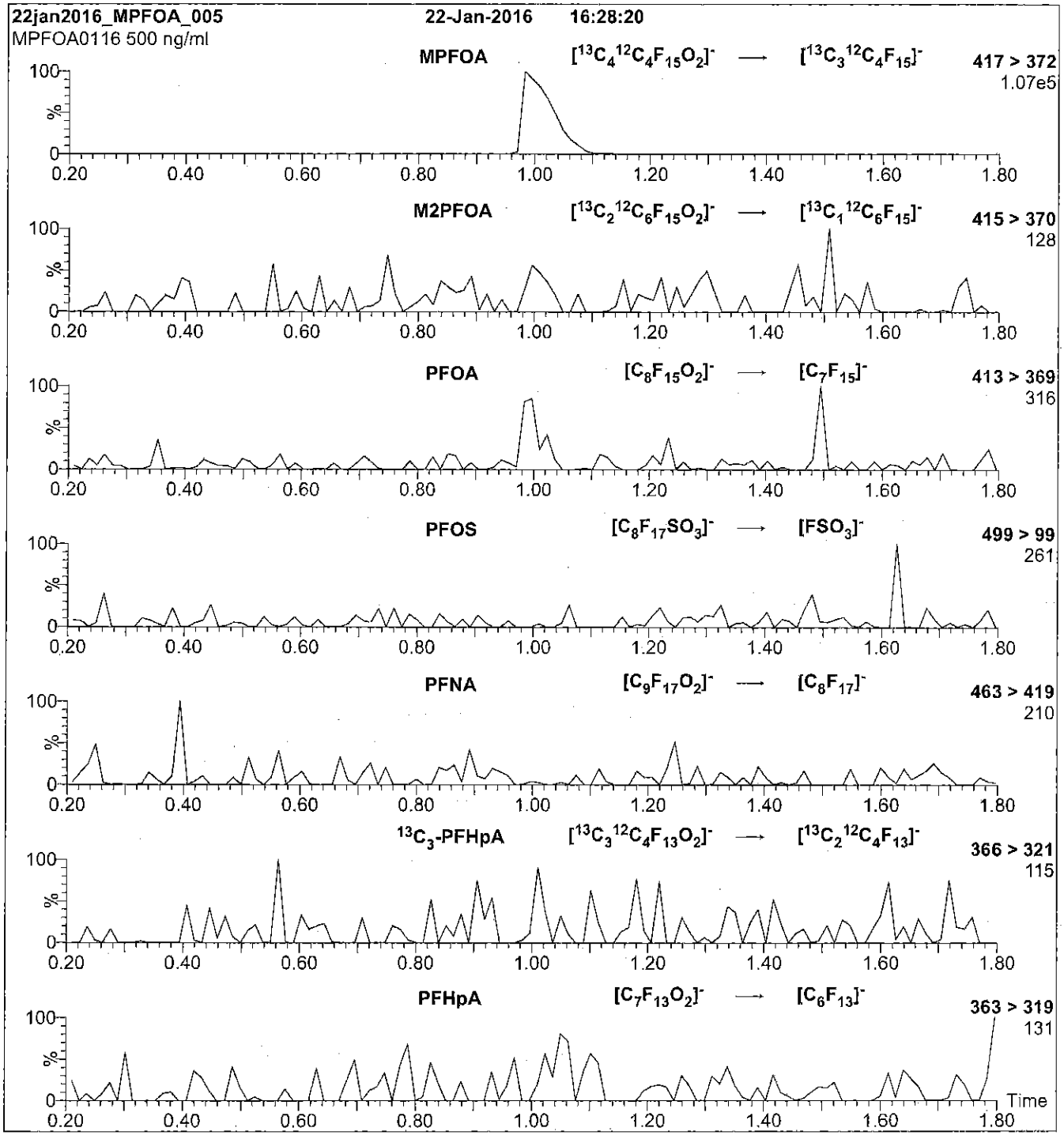
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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

LCMPFOA_00010

609713
ID: LCMPFOA_00010
Exp: 01/22/21 Prpd: CBW
13C4-Perfluorooctanoic ac

R: 4/7/16 CBW

WELLINGTON LABORATORIES

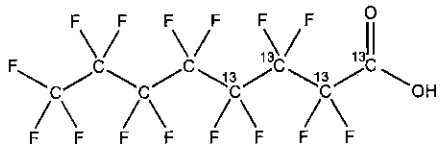
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

MOLECULAR WEIGHT: 418.04
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

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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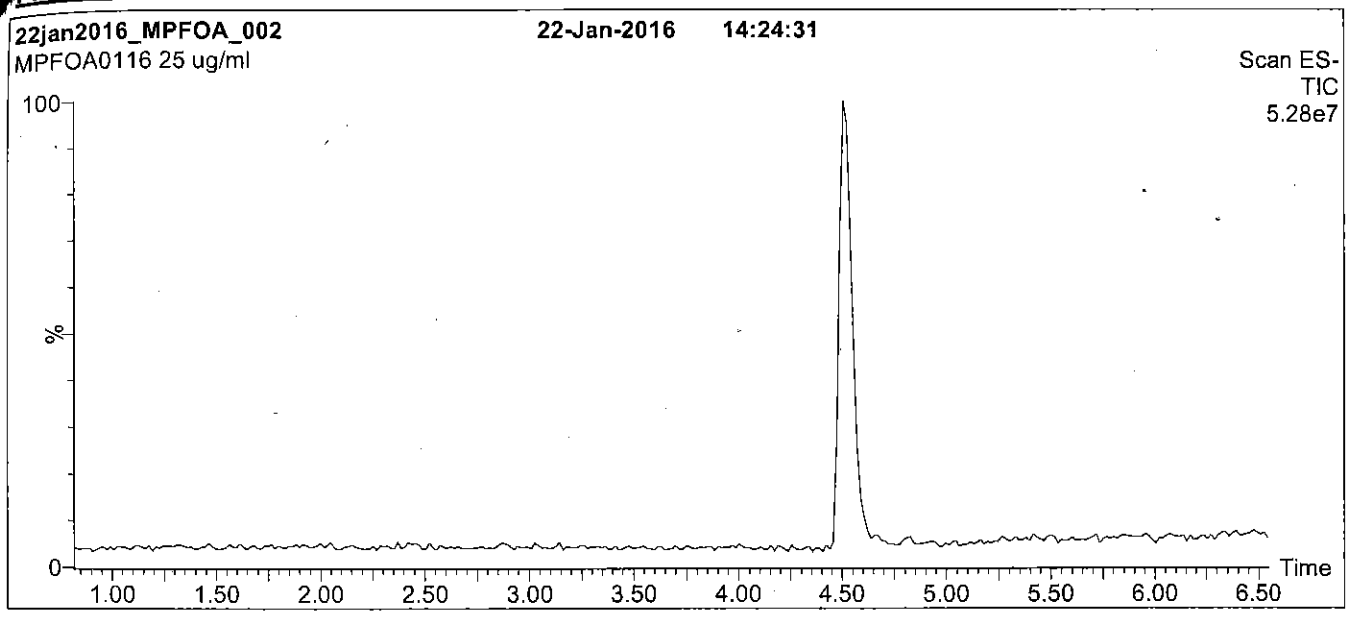
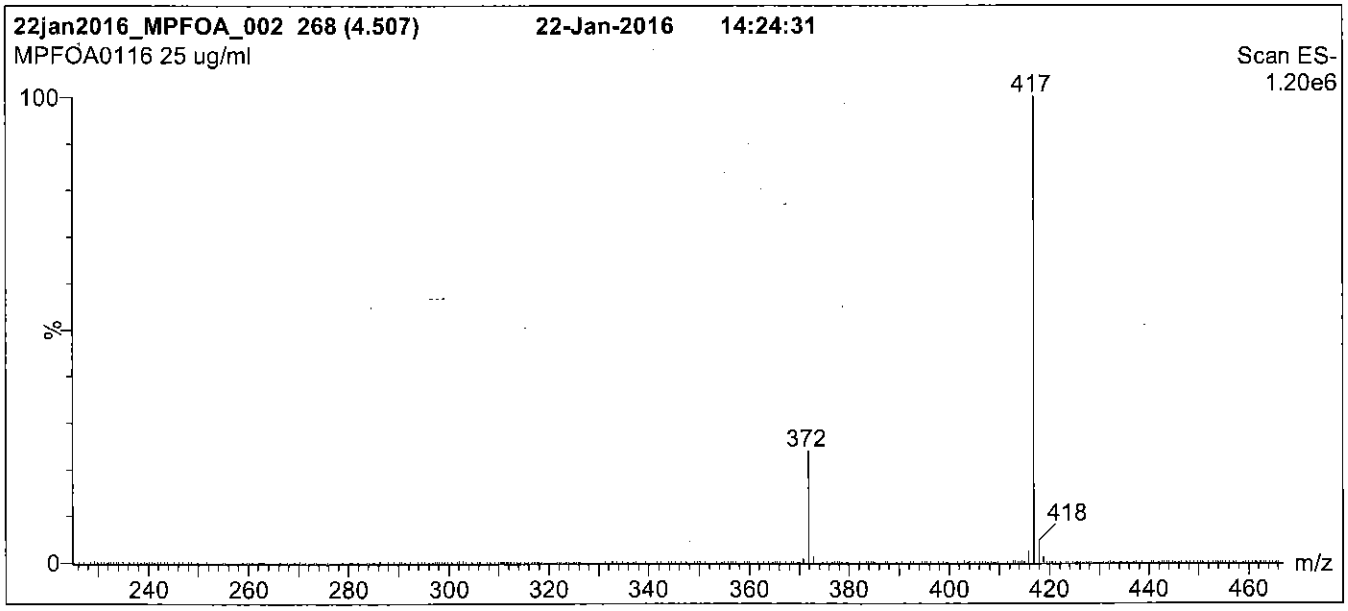




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

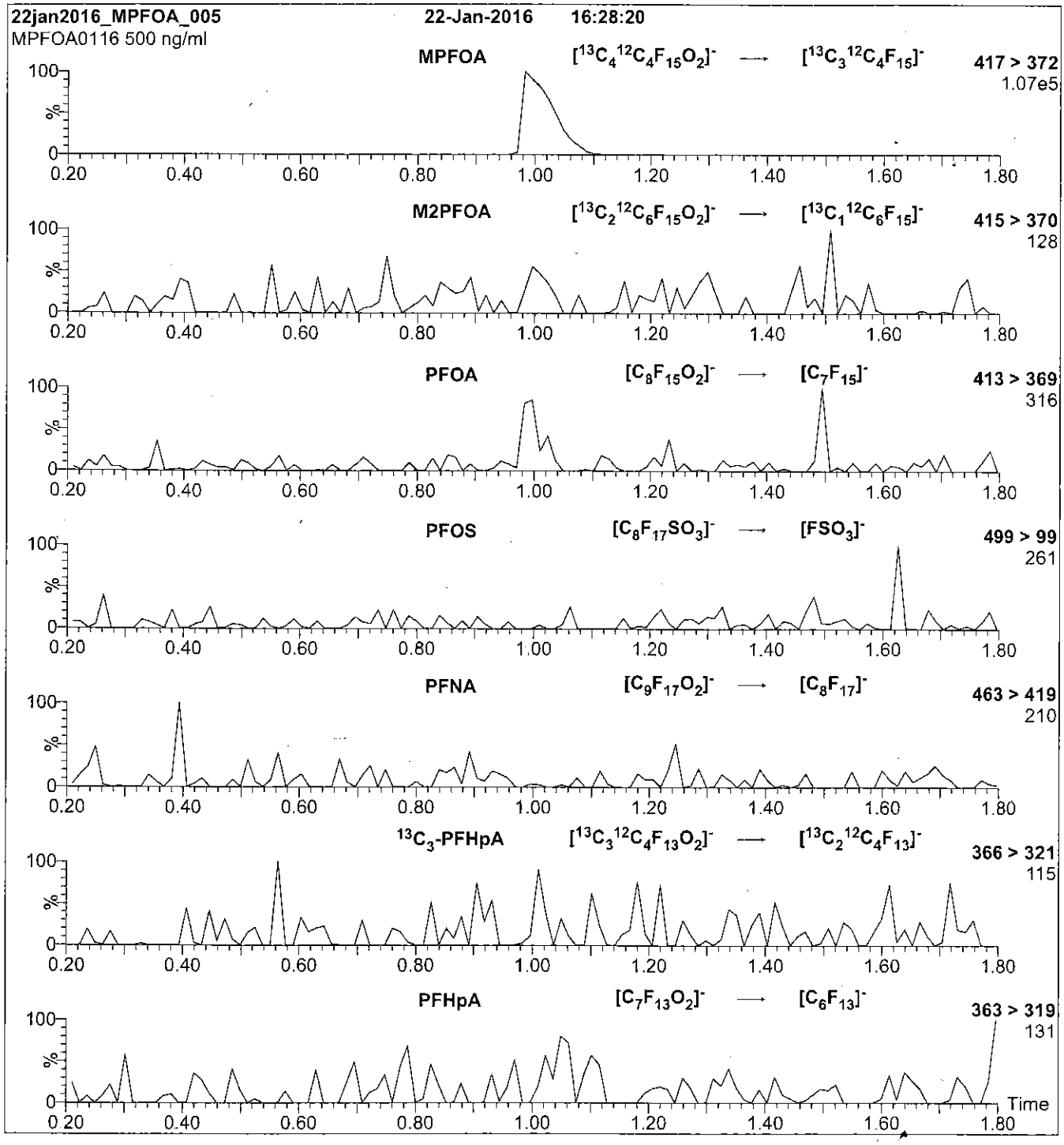
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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_00012

Rec. 3/29/16 JRB ✓

605227
ID: LCMPFOS_00012
Exp: 01/22/21 Prpd: CBW
13C4-Perfluorooctanesulfo

606228
ID: LCMPFOS_00013
Exp: 01/22/21 Prpd: CBW
13C4-Perfluorooctanesulfo

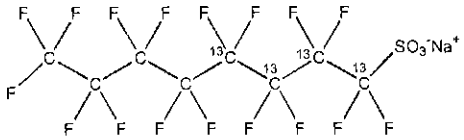
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0116

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)	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 ~ 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:** 02/01/2016 (mm/dd/yyyy)

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

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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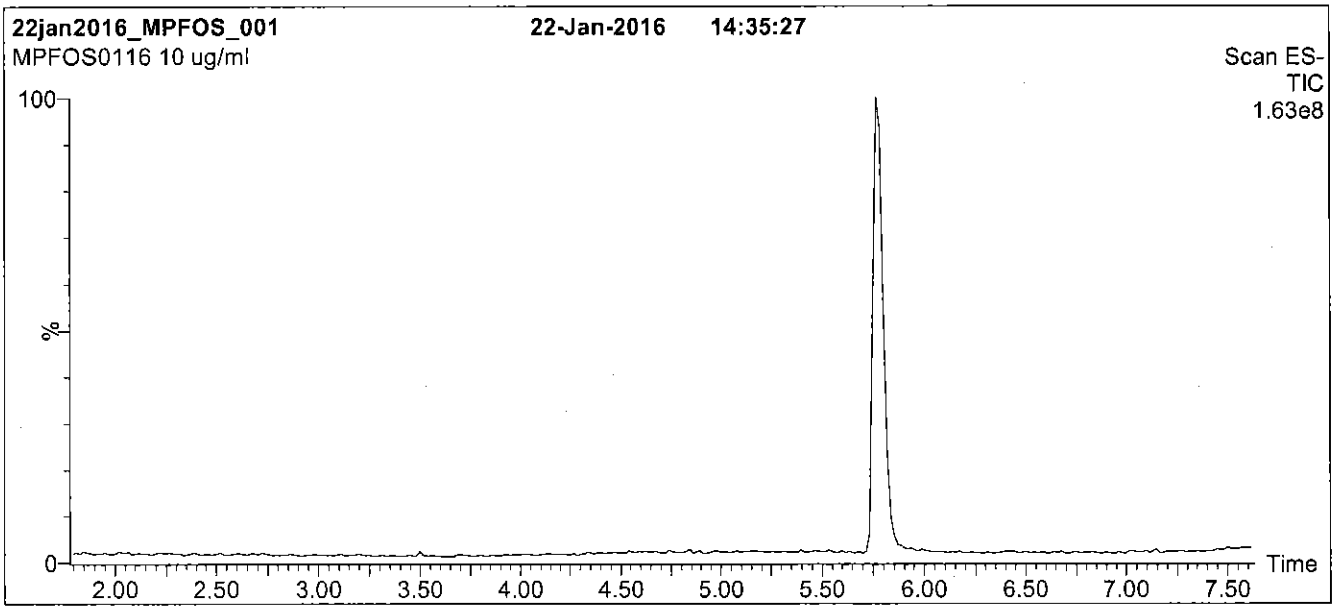
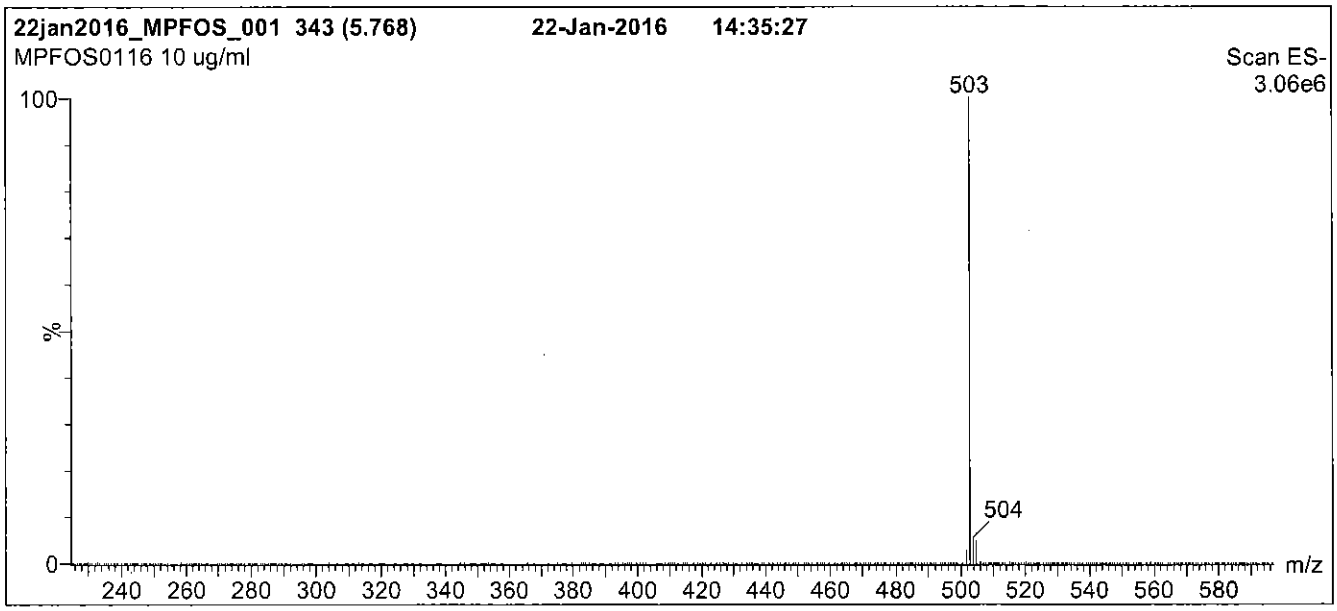




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

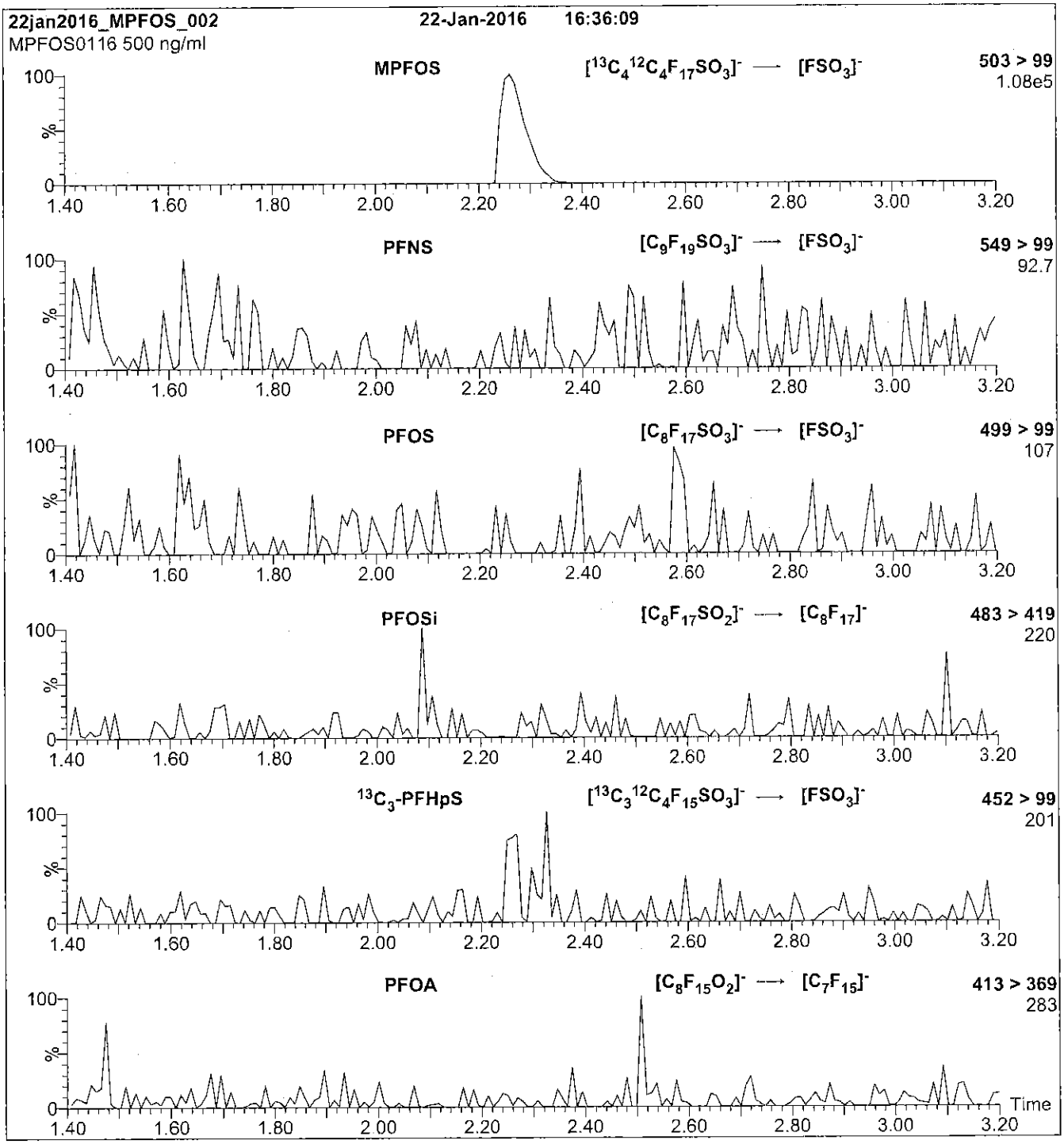
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 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) = 3.70e-3
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00006

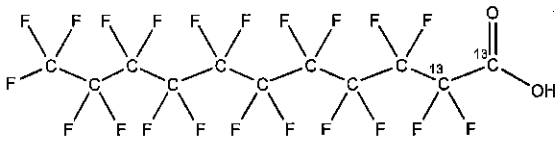
591165
ID: LCMPFUdA_00006
Exp: 10/31/19 Prpd: CBW
13C2-Perfluoroundecanoic

R: 3/3/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFUdA
LOT NUMBER: MPFUdA1014
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	**MOLECULAR WEIGHT:**	566.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/31/2014		
EXPIRY DATE: (mm/dd/yyyy)	10/31/2019		
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.
- 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.

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

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UNCERTAINTY:

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

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

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

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LIMITED WARRANTY:

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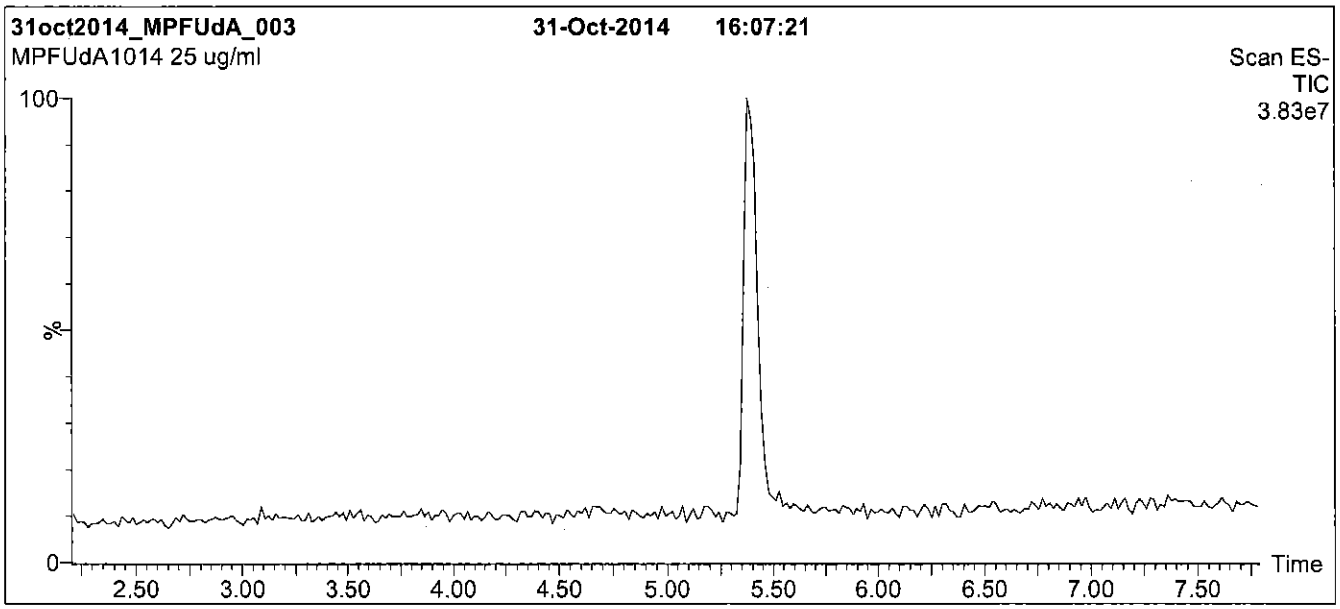
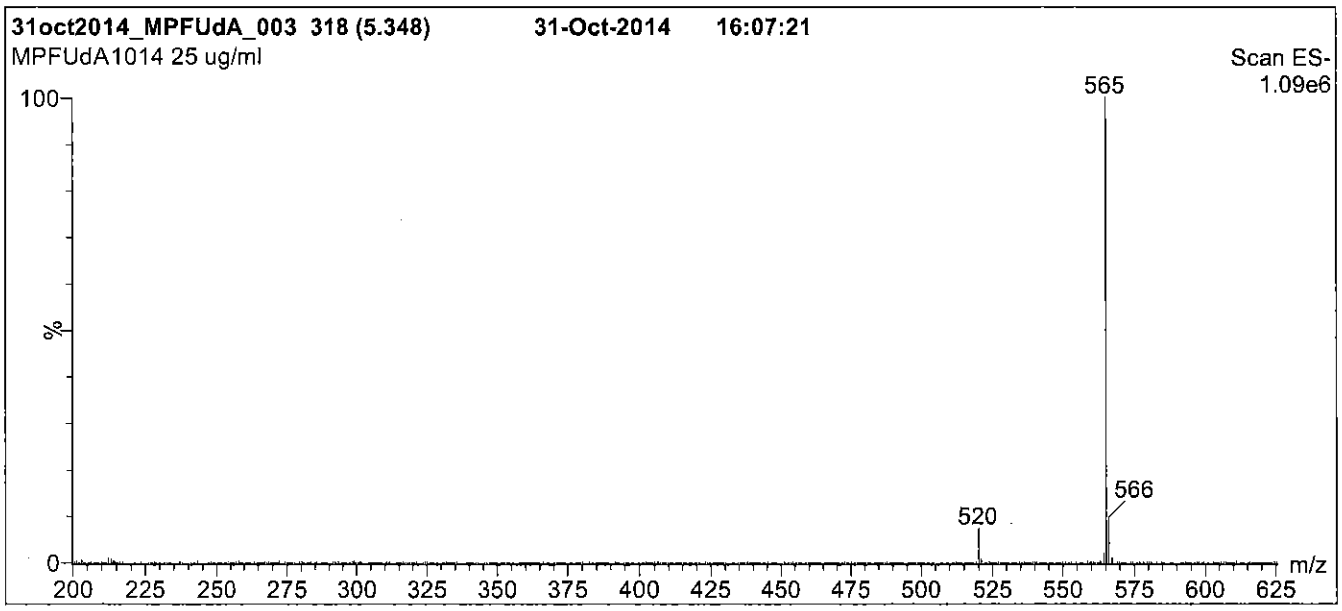
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

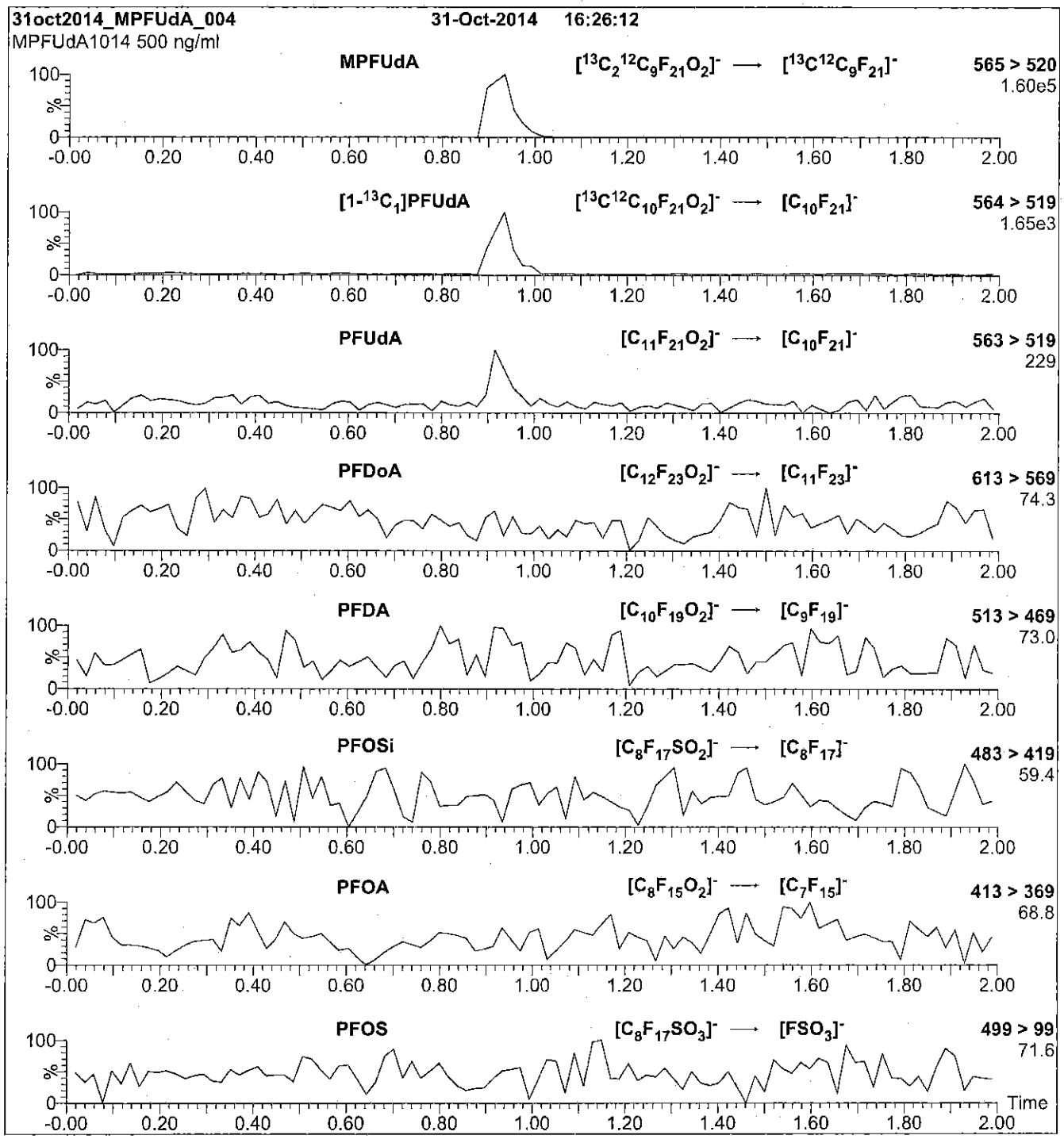
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 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% (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) = 11

Reagent

LCMPFUdA_00007

609704
ID: LCMPFUdA_00007
Exp: 10/31/19 Prpd: CBW
13C2-Perfluoroundecanoic

R: 4/7/16 CBW

WELLINGTON LABORATORIES

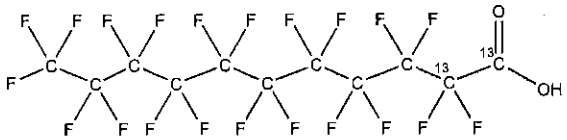
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFUdA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{21}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 566.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/31/2014
EXPIRY DATE: (mm/dd/yyyy) 10/31/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)

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:** 04/01/2015 (mm/dd/yyyy)

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

INTENDED USE:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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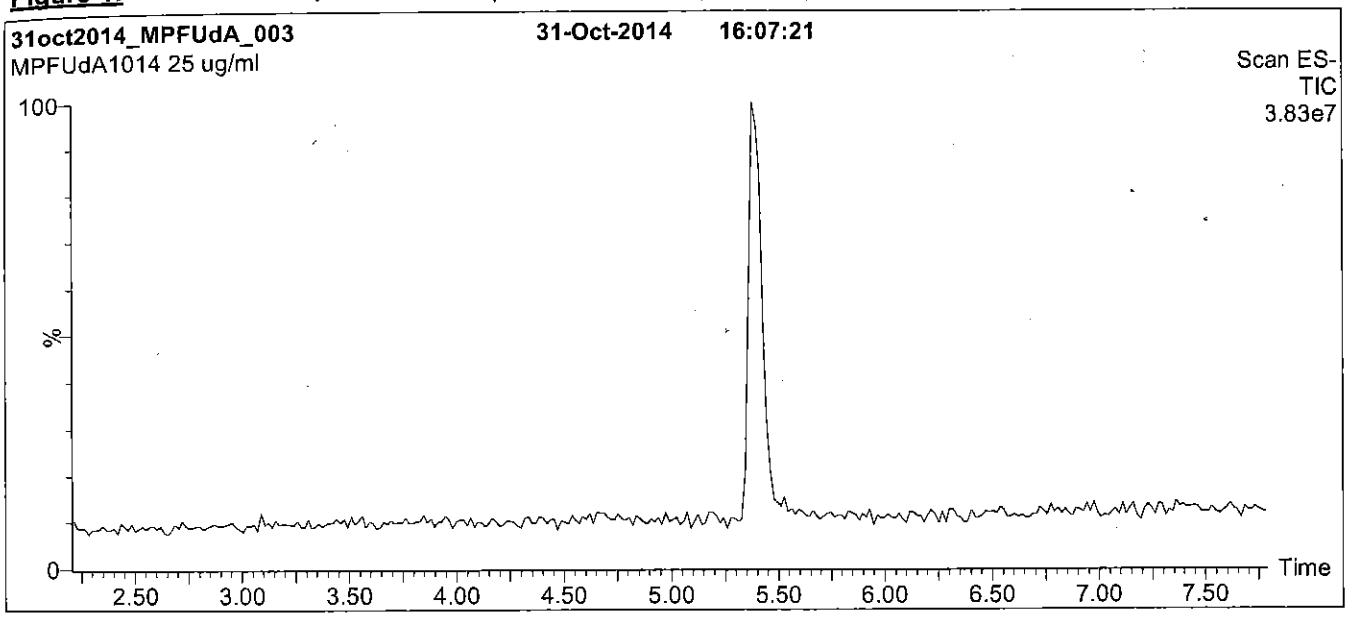

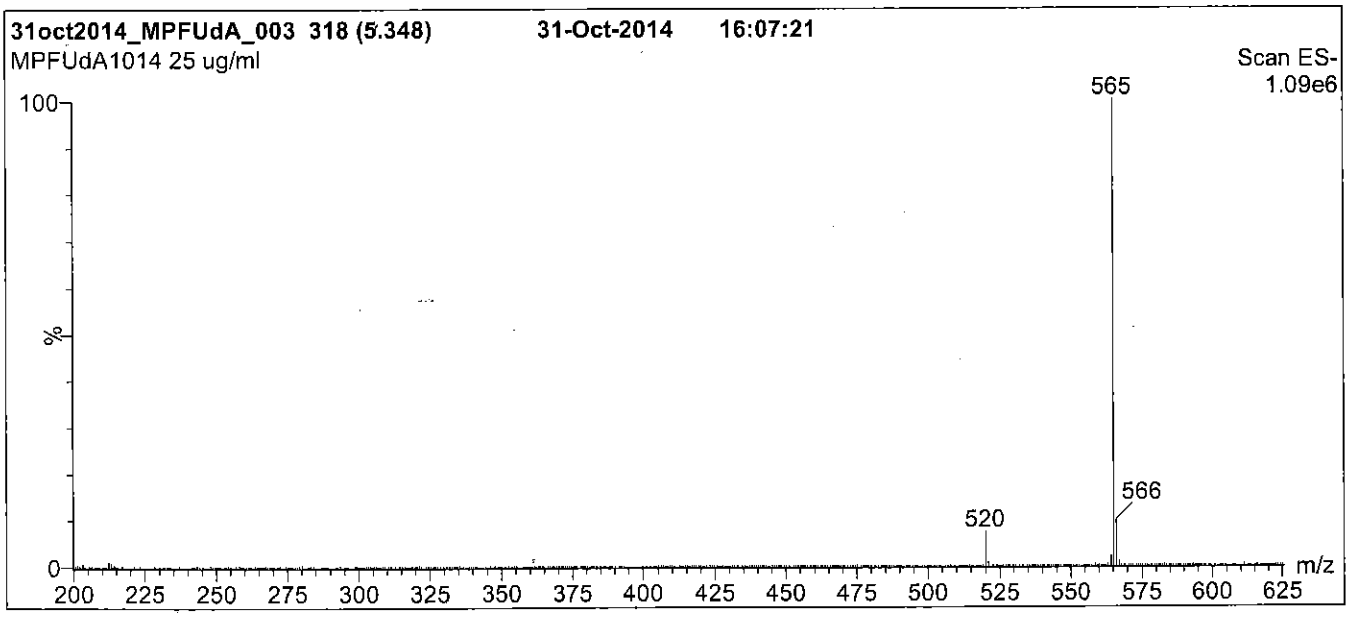

Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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 (200 - 850 amu)

Source: Electrospray (negative)
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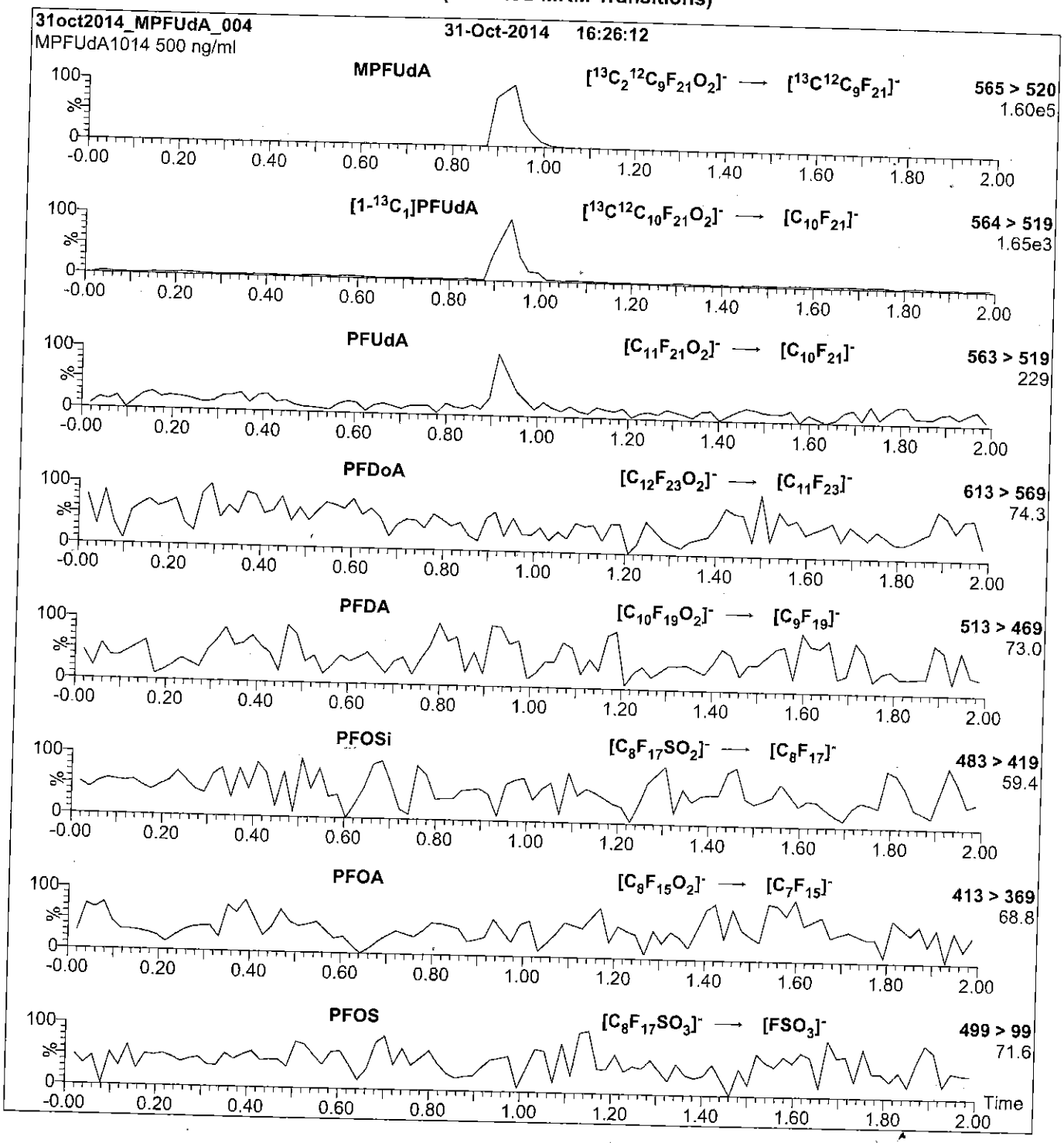
Desolvation Gas Flow (l/hr) = 750

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% (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) = 11

Reagent

LCPFACMXB_00007

P: 12/30/15 CW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXB

Solution/Mixture of Native Perfluoroalkylcarboxylic Acids and Native Perfluoroalkylsulfonates

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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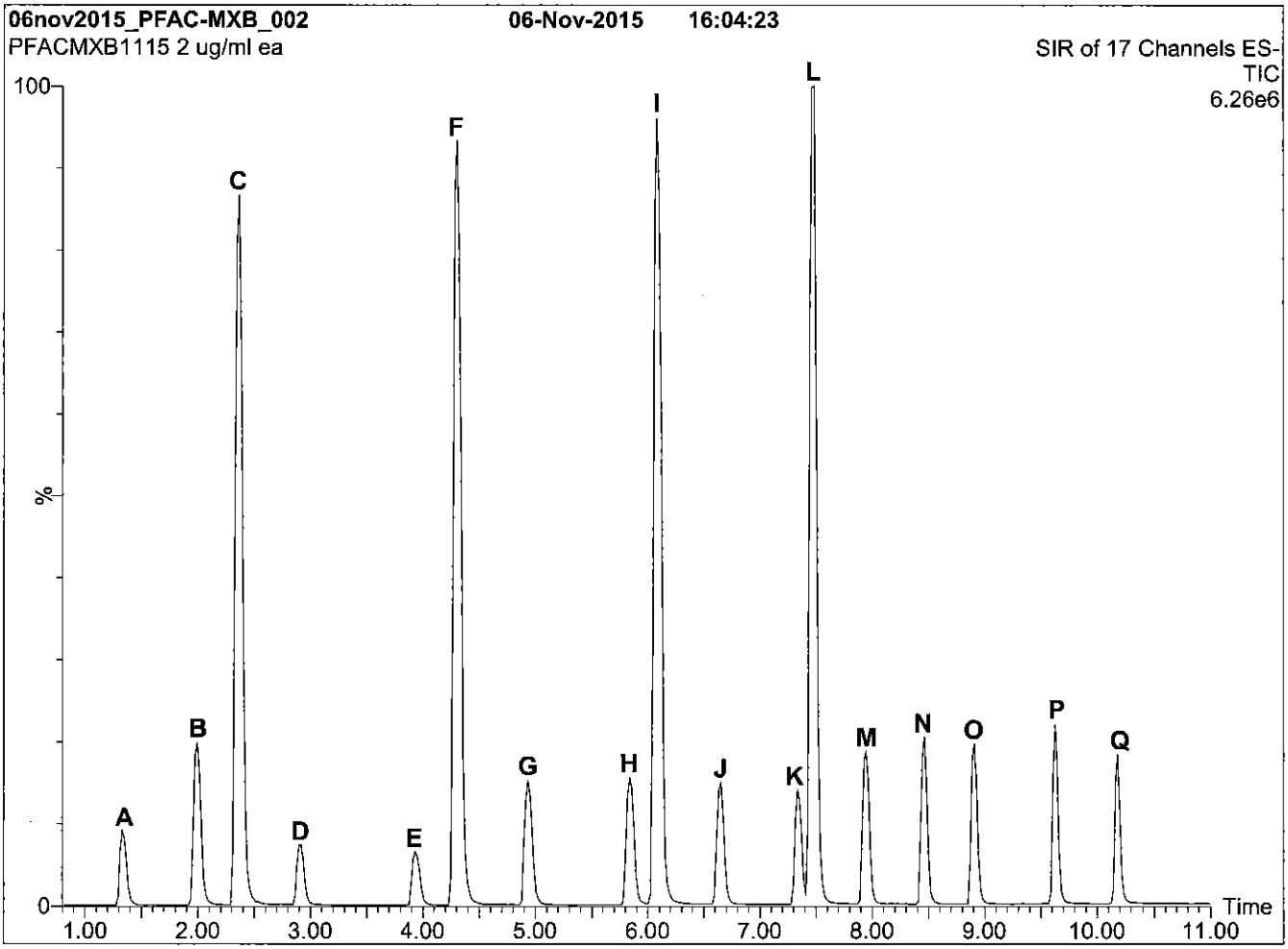
Table A: **PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))**

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

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

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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR of 17 Channels

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

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

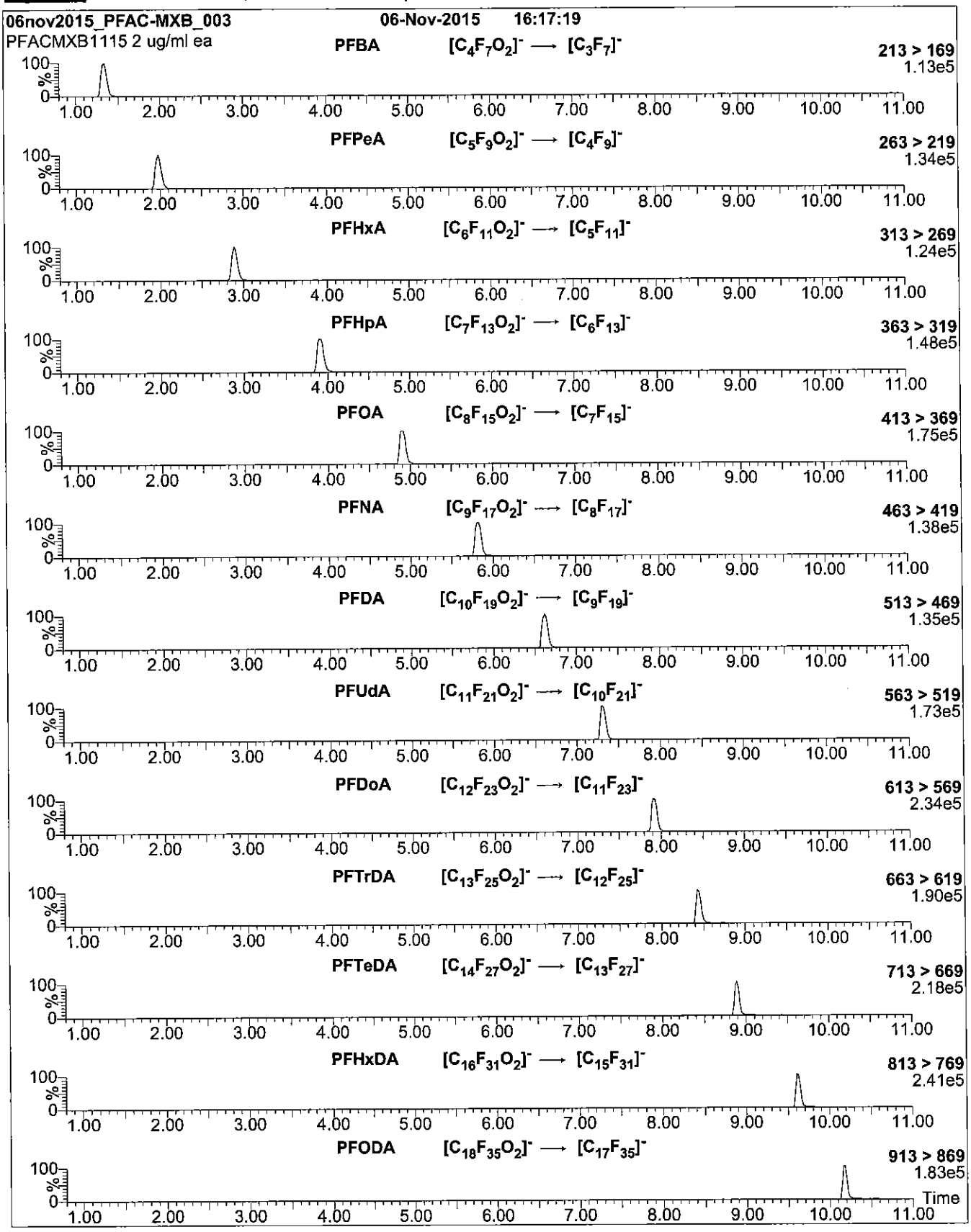
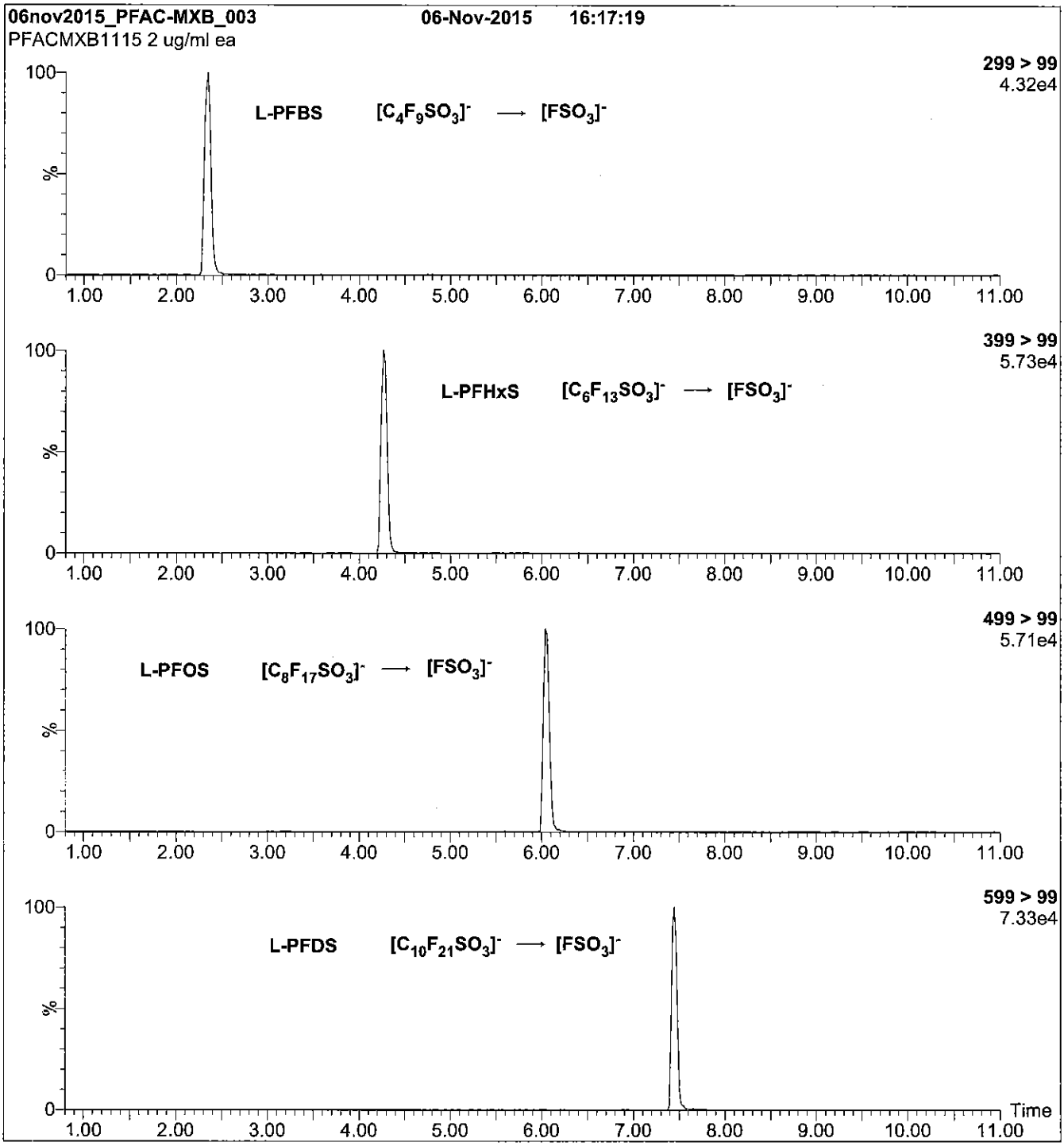


Figure 3: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figures 2 and 3:

Injection: on-column (PFAC-MXB)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

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

Reagent

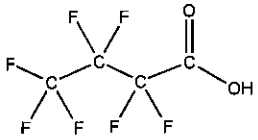
LCPFBA_00003

rec 7/15/14

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFBA	**LOT NUMBER:**	PFBA0313
COMPOUND:	Perfluoro-n-butanoic acid		
STRUCTURE:		**CAS #:**	375-22-4



MOLECULAR FORMULA:	$C_4HF_7O_2$	**MOLECULAR WEIGHT:**	214.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	03/05/2013		
EXPIRY DATE: (mm/dd/yyyy)	03/05/2018		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

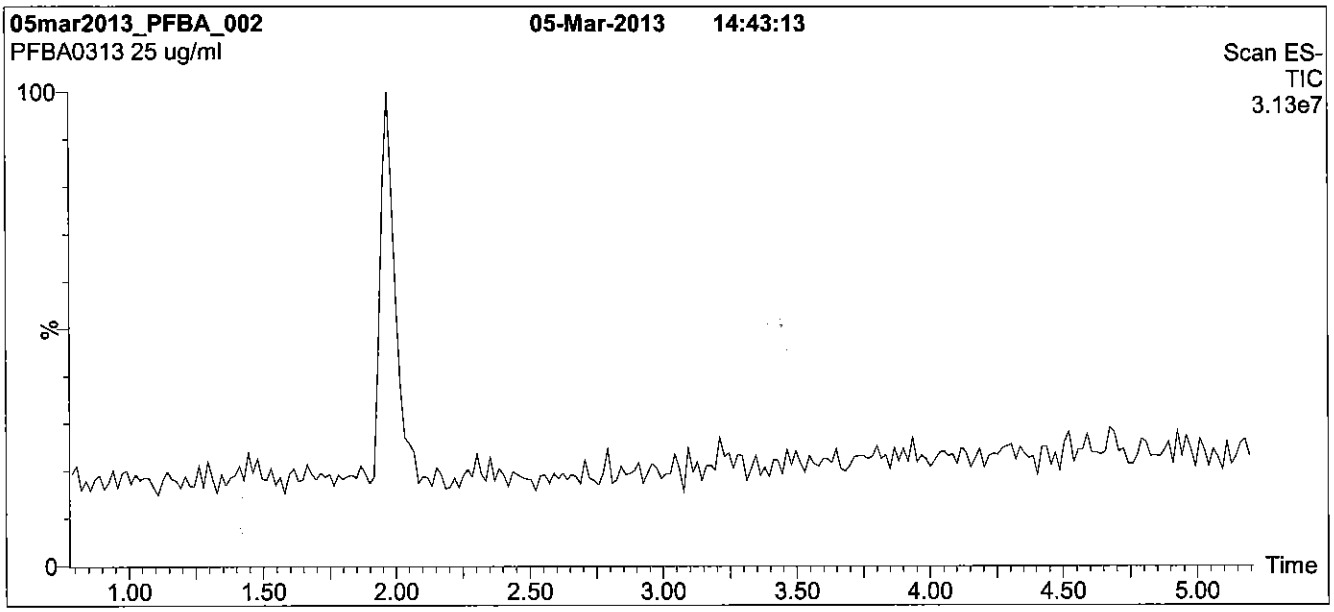
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

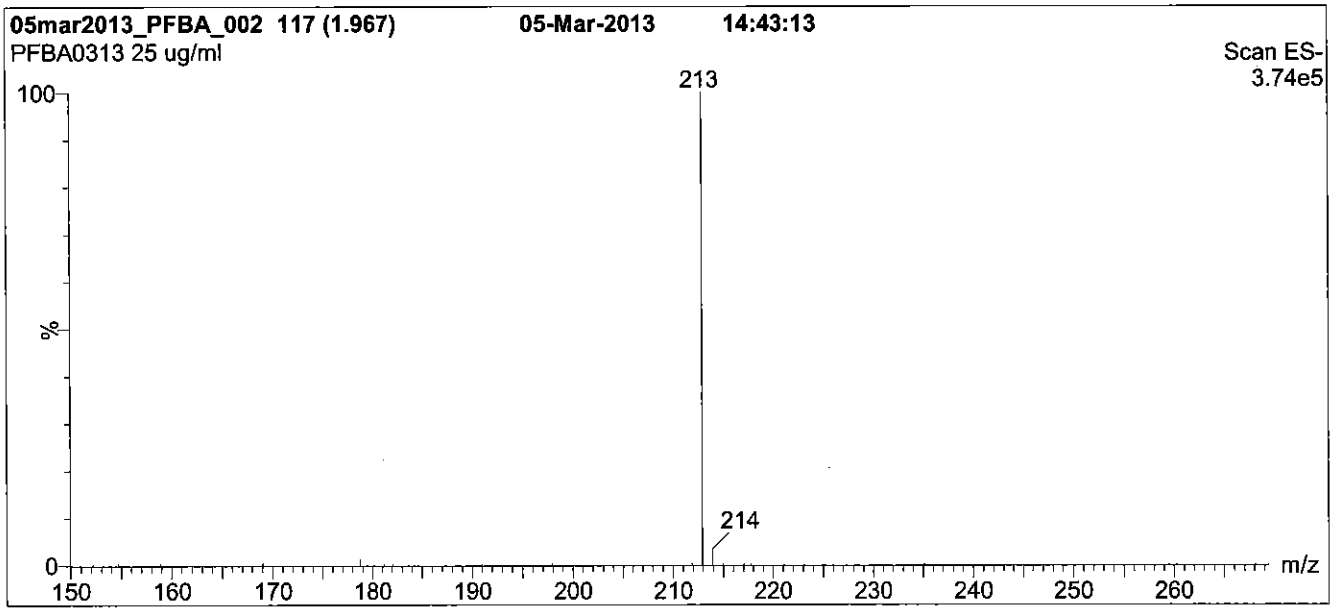
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **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: 25% (80:20 MeOH:ACN) / 75% 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

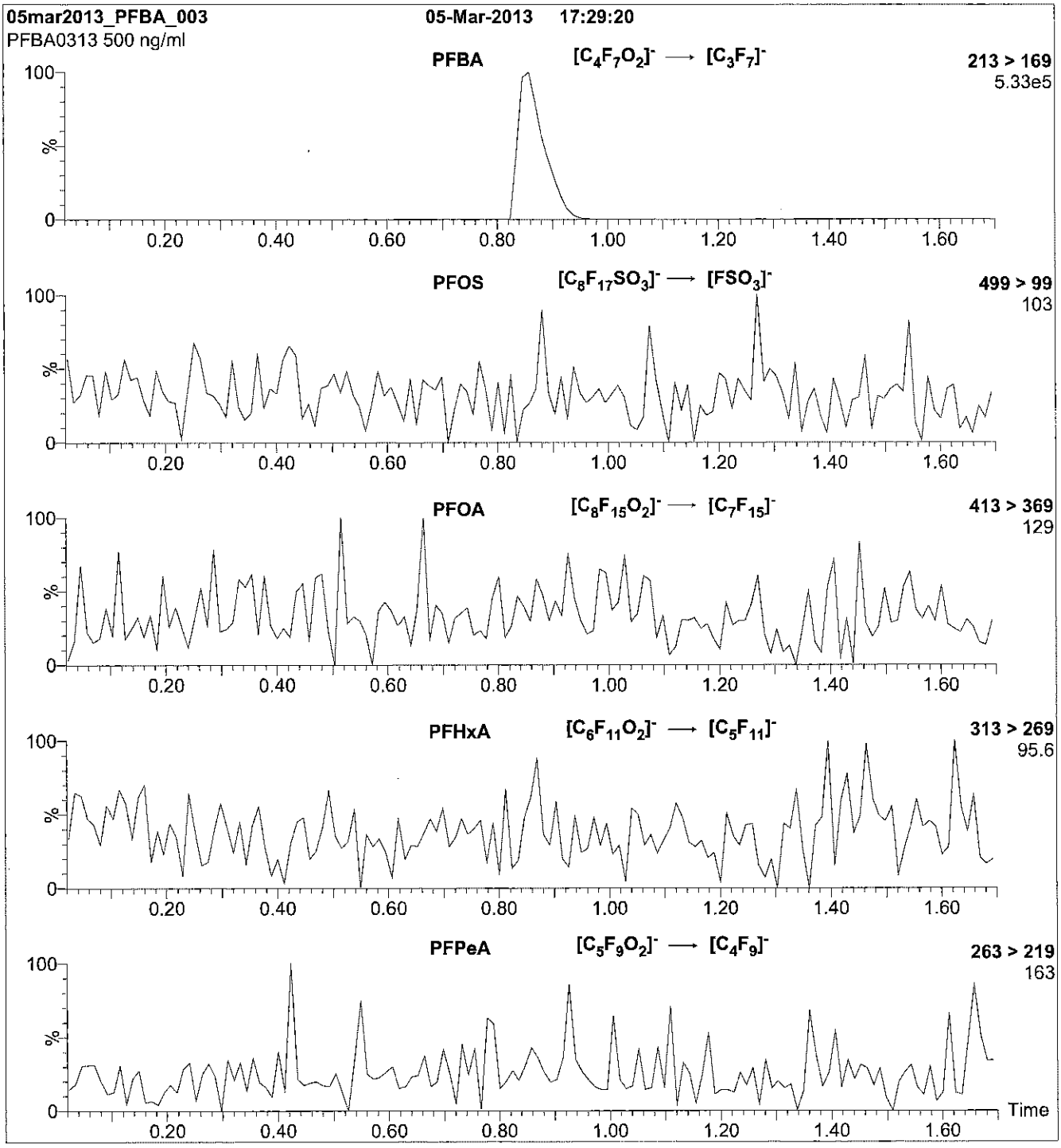
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.70e-3
Collision Energy (eV) = 10

Reagent

LCPFBA_00004

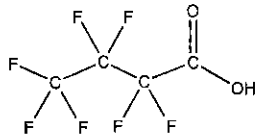
R: 2/25/16 CBW

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accredited by A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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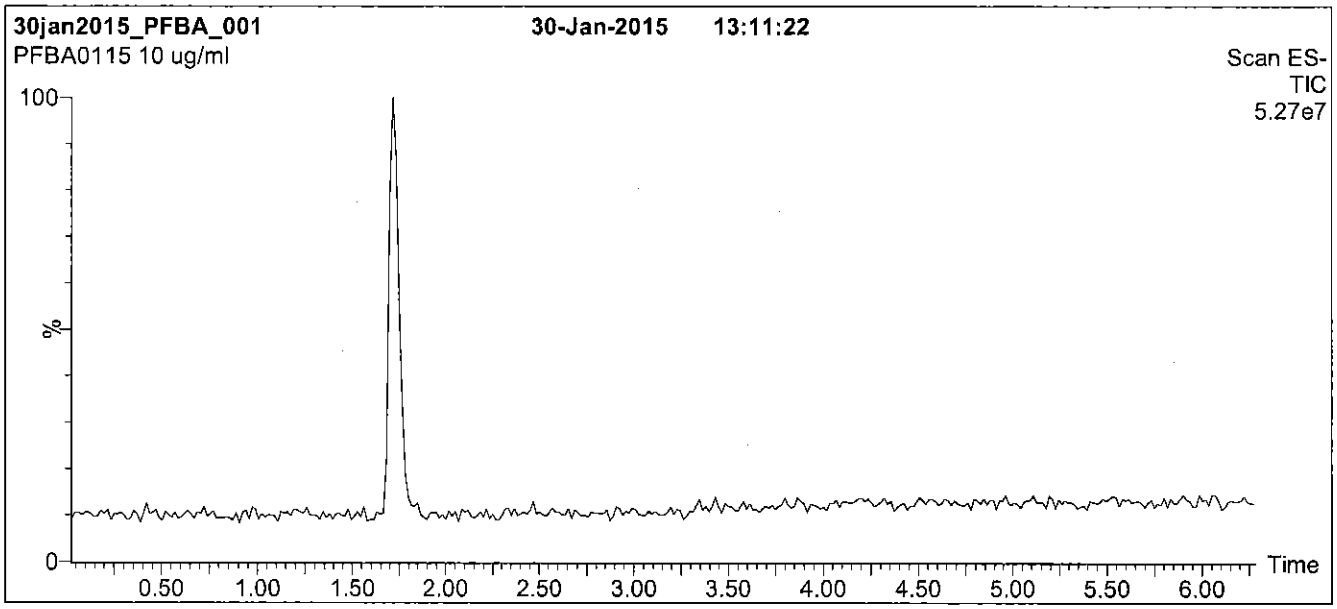
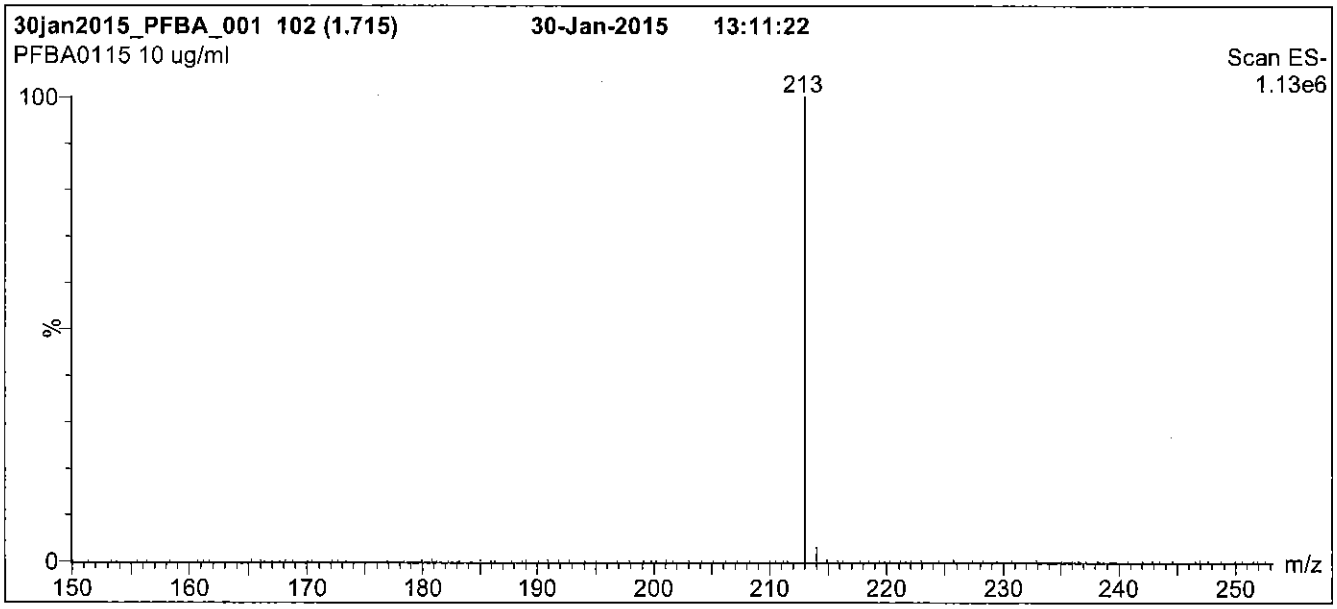




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

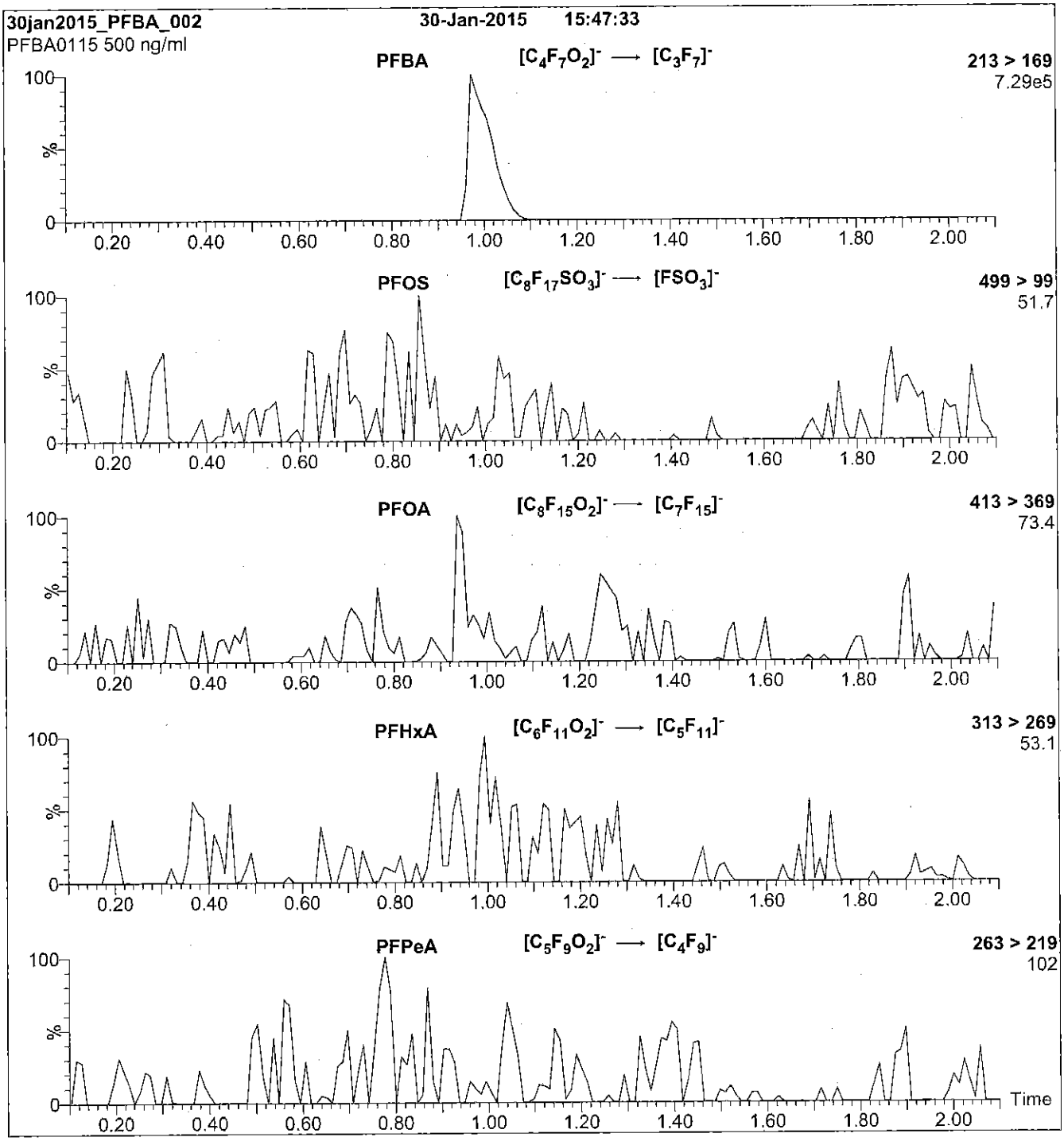
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFBS_00003

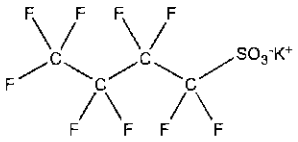
r. 2/11/15

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: 29420-49-3



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/17/2014 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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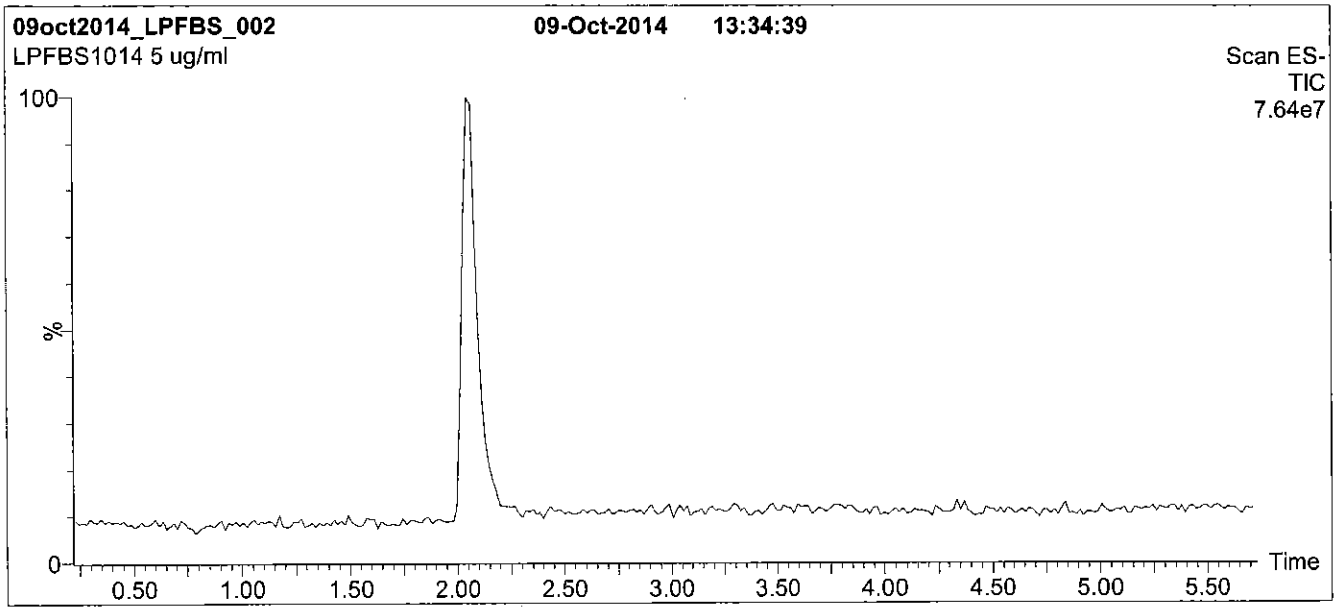
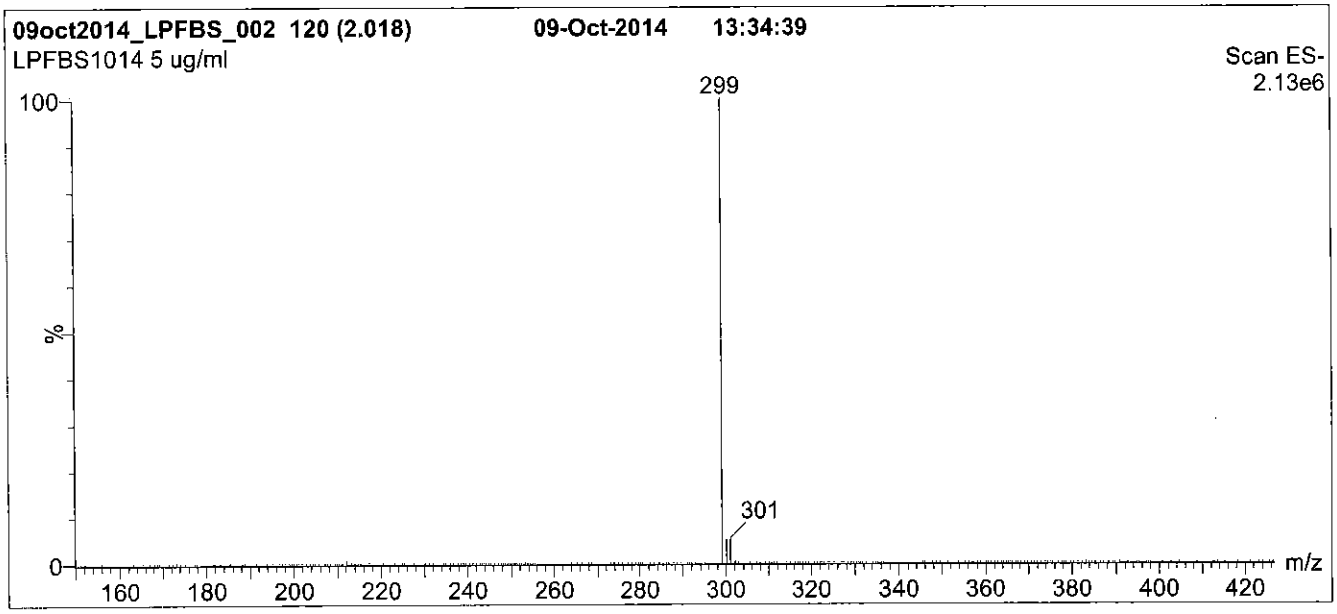
CALA Testing Accreditation No: A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

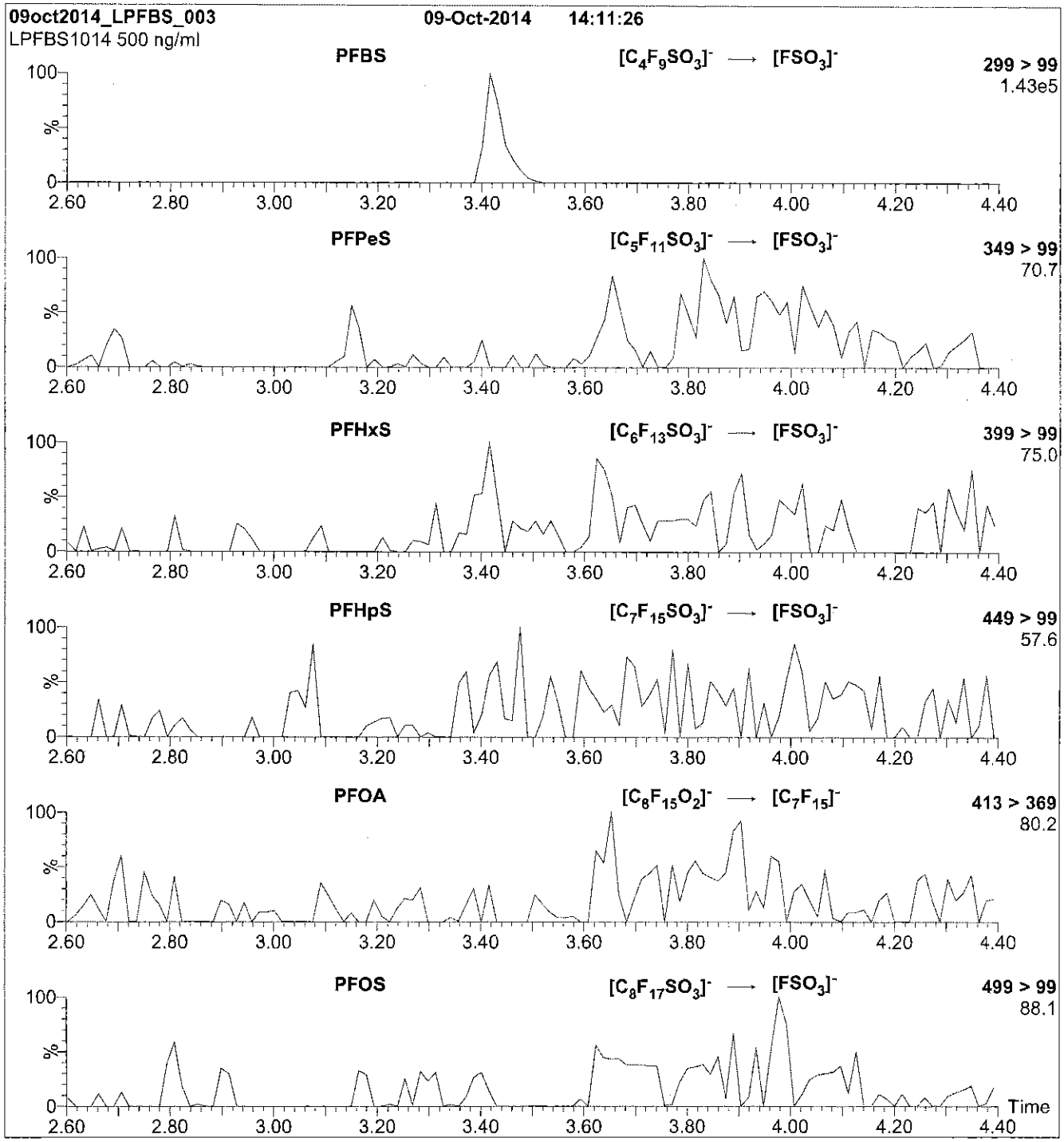
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCPFDA_00004

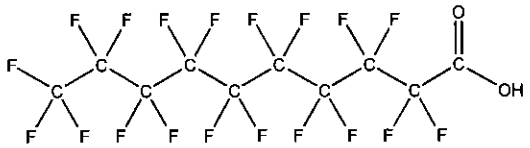
rec: 12/30/15 cw

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 335-76-2



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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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CALA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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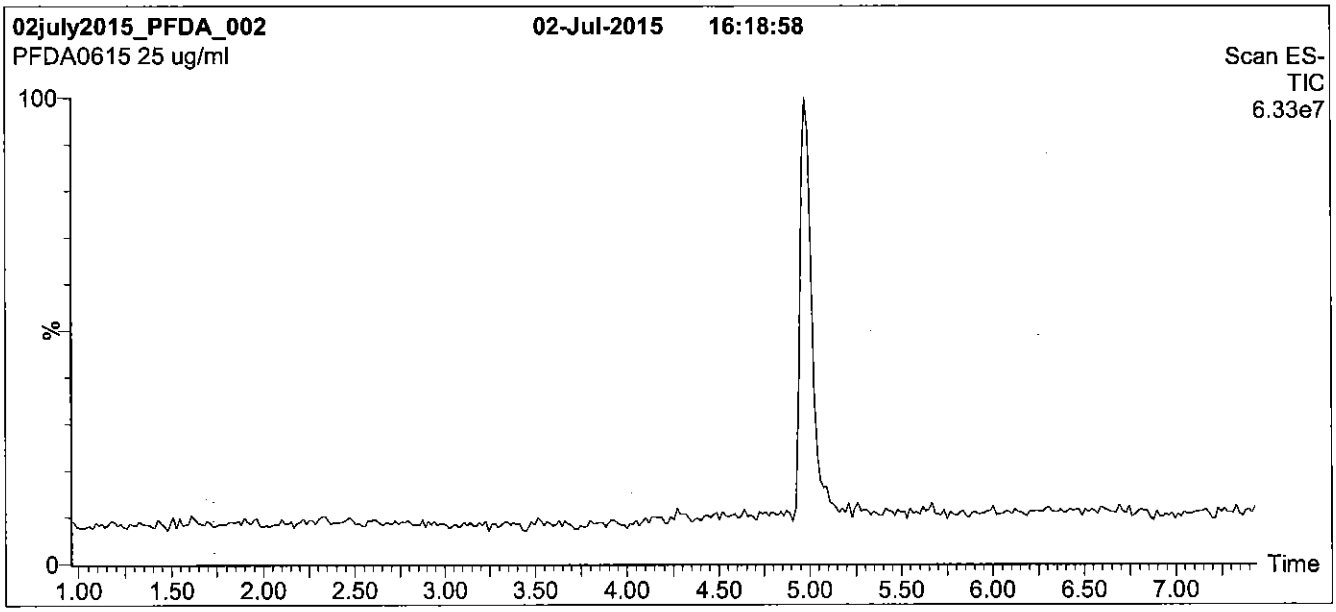
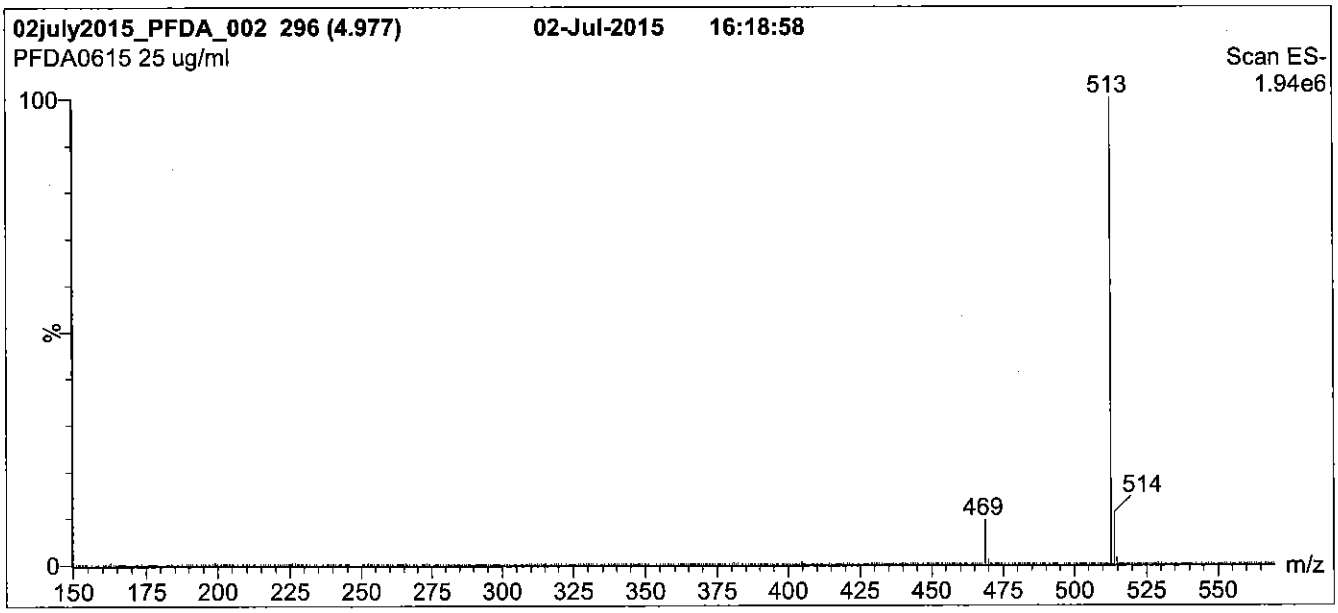
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

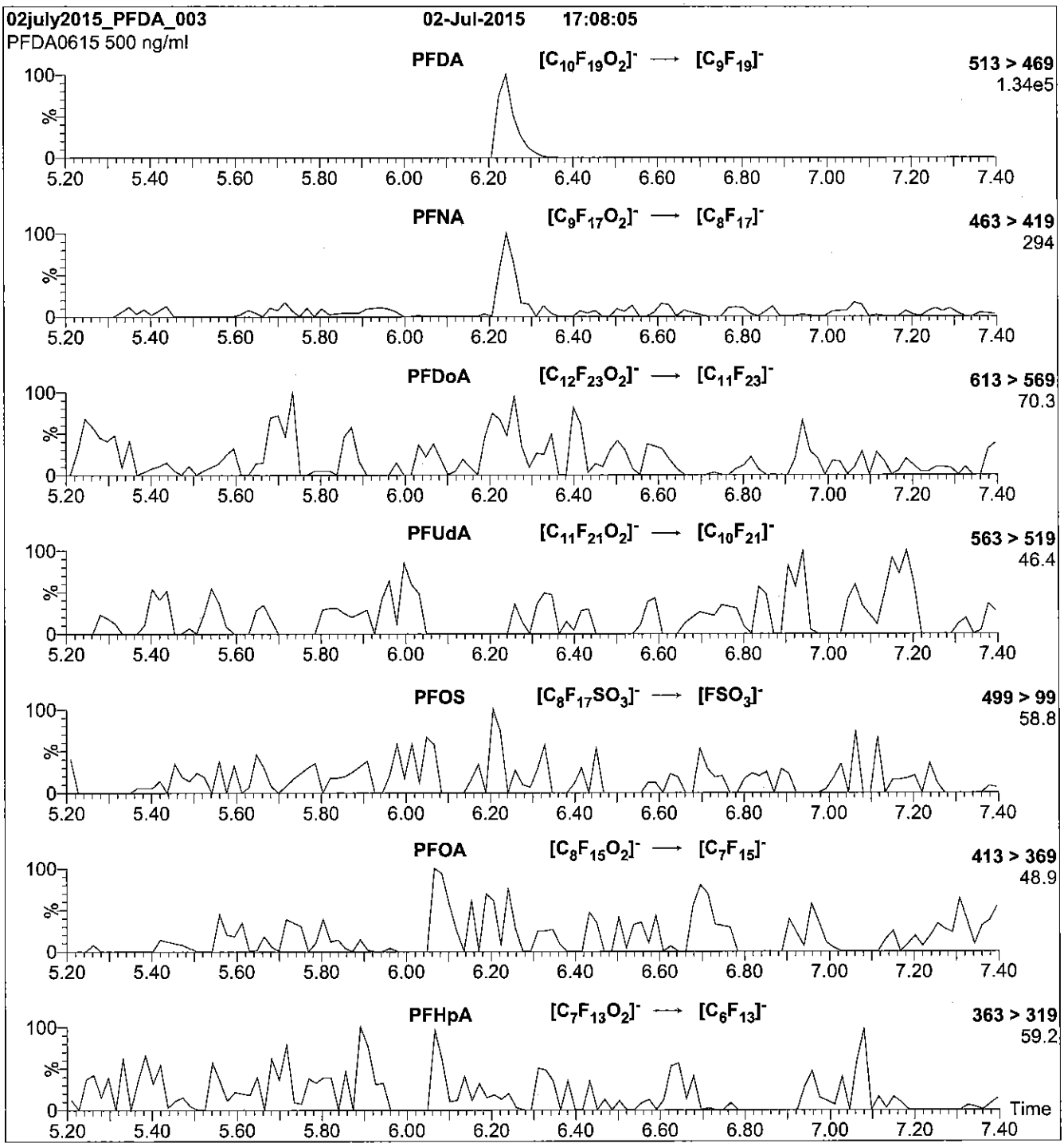
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFDoA_00004

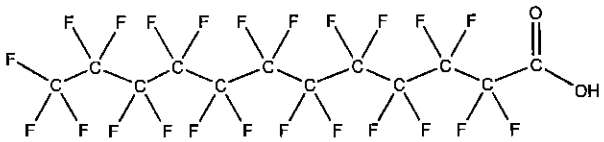
Rec: 12/30/15 cw

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDoA
COMPOUND: Perfluoro-n-dodecanoic acid
LOT NUMBER: PFDoA0115

STRUCTURE:
CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 614.10
SOLVENT(S): Methanol
Water (<1%)

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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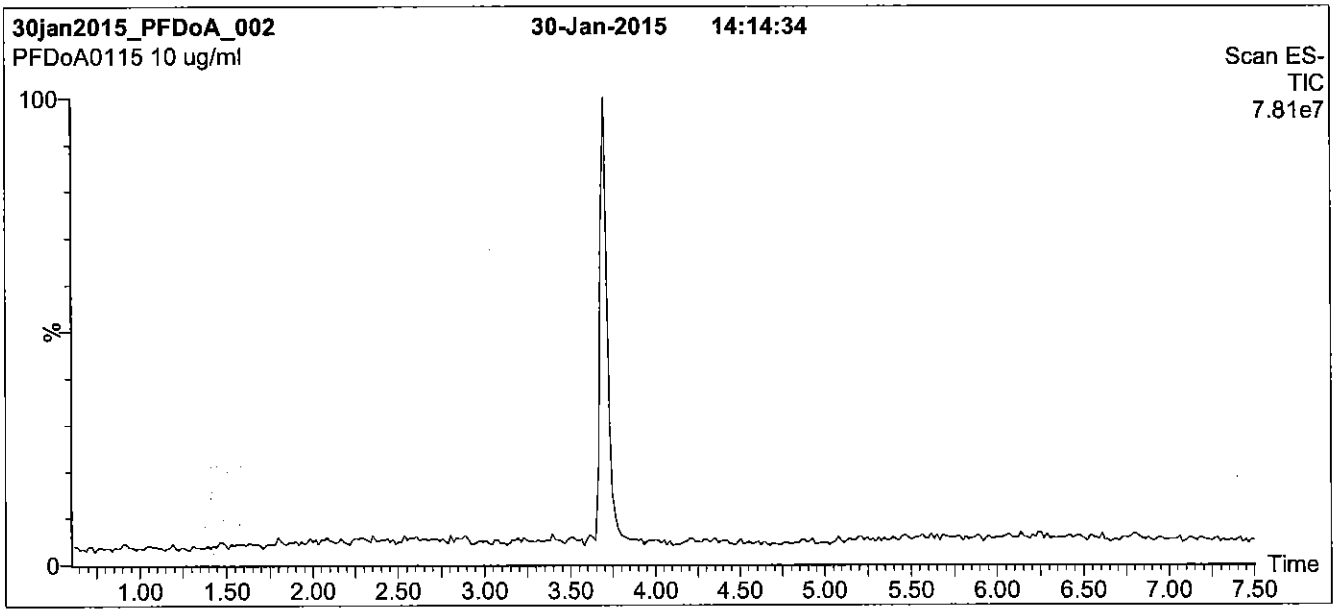
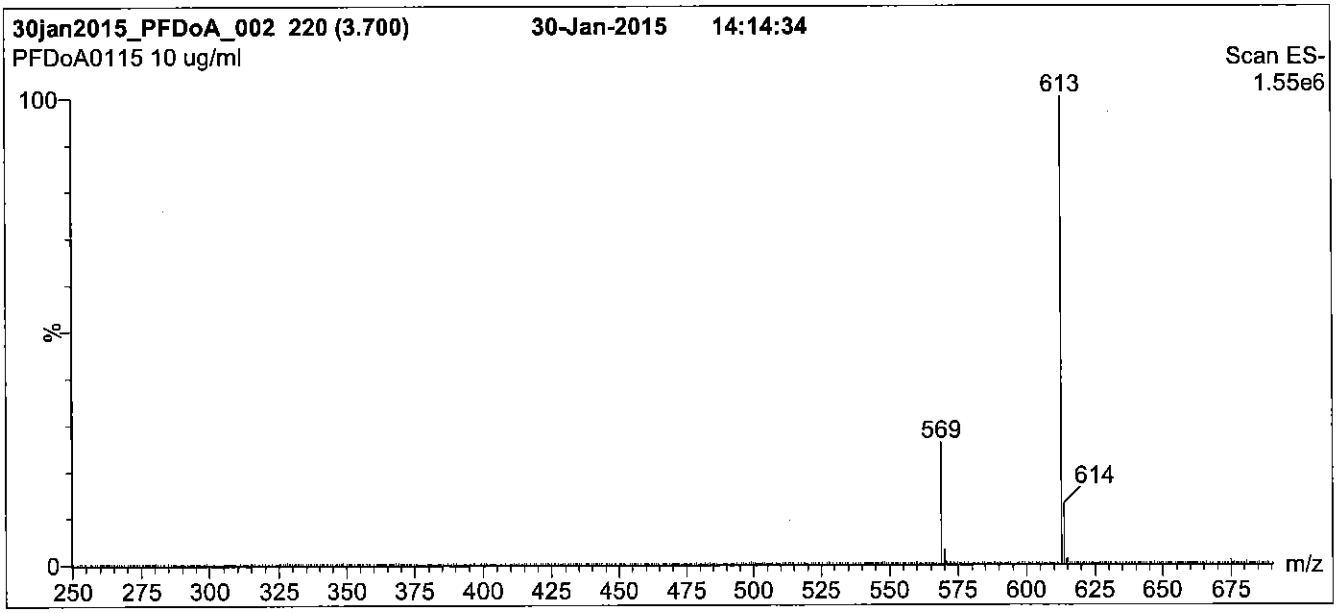
Figure 1: **PFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

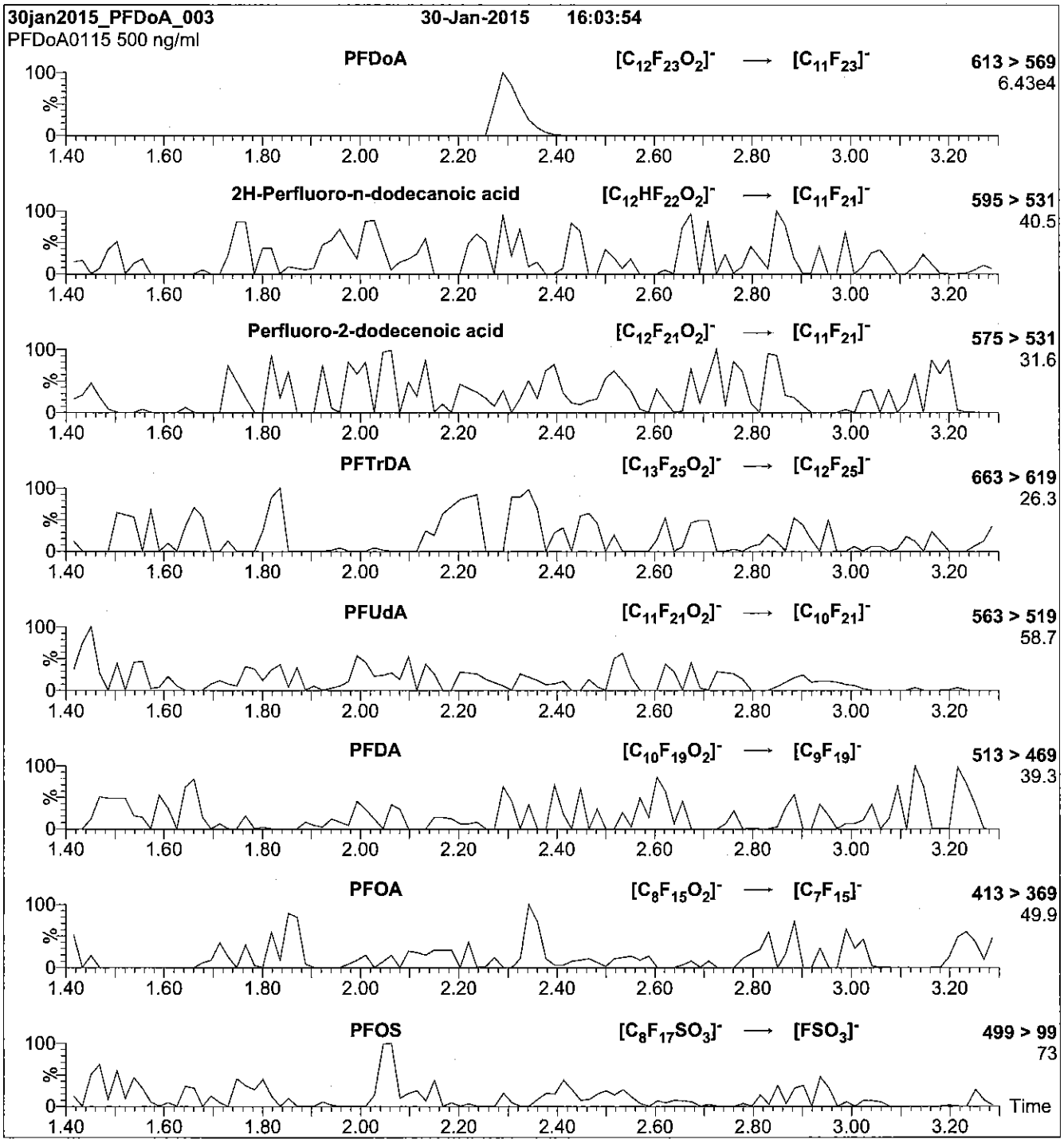
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFDS_00005

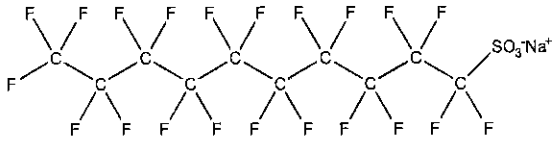
Rec. 3/29/16 JRB

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS0615
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:
CAS #: 2806-15-7



MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$	**MOLECULAR WEIGHT:**	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	48.2 ± 2.4 µg/ml (PFDS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/02/2015		
EXPIRY DATE: (mm/dd/yyyy)	07/02/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

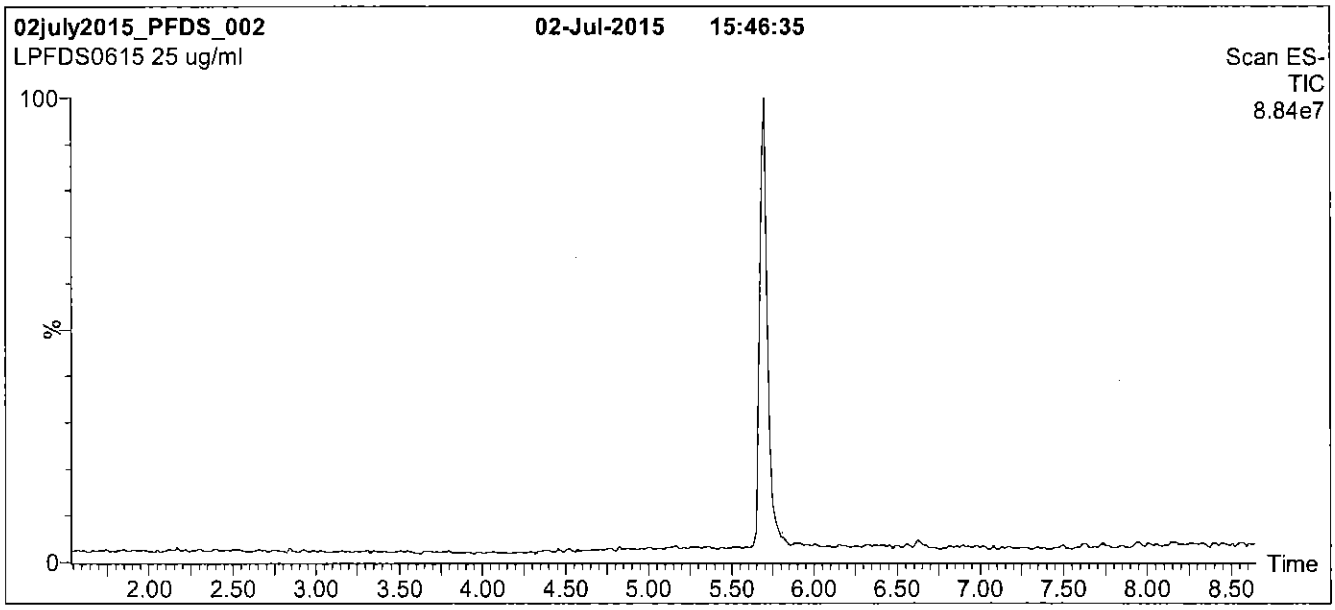
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

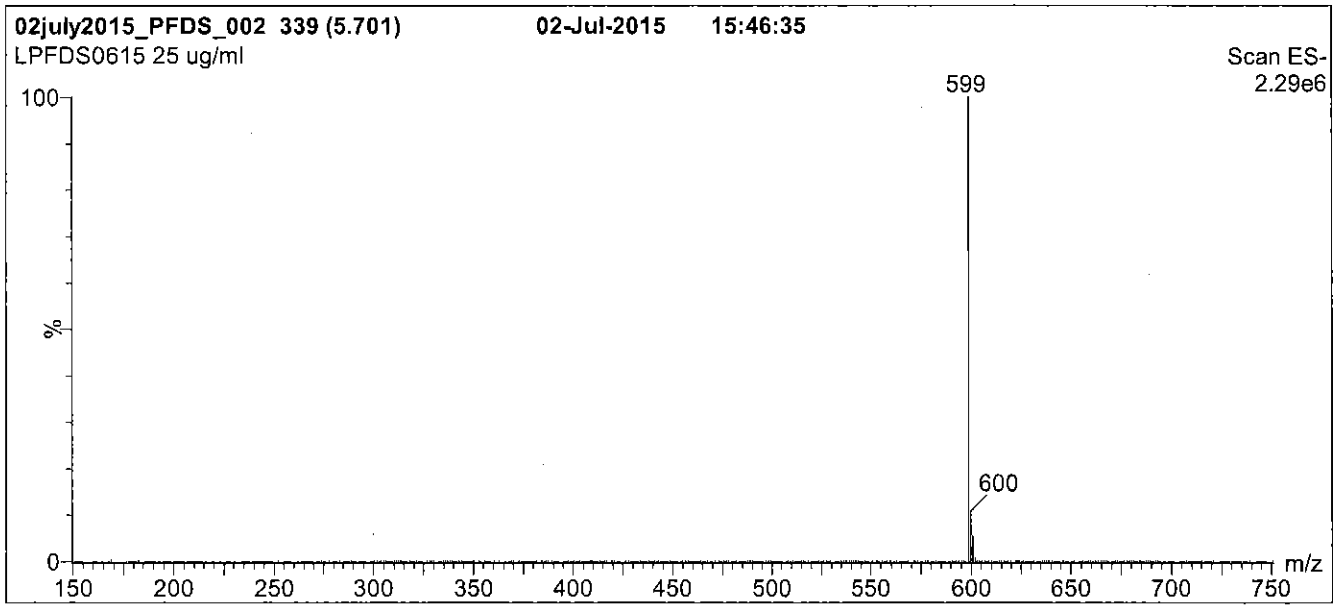
CALA

ANAB ACCREDITED

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

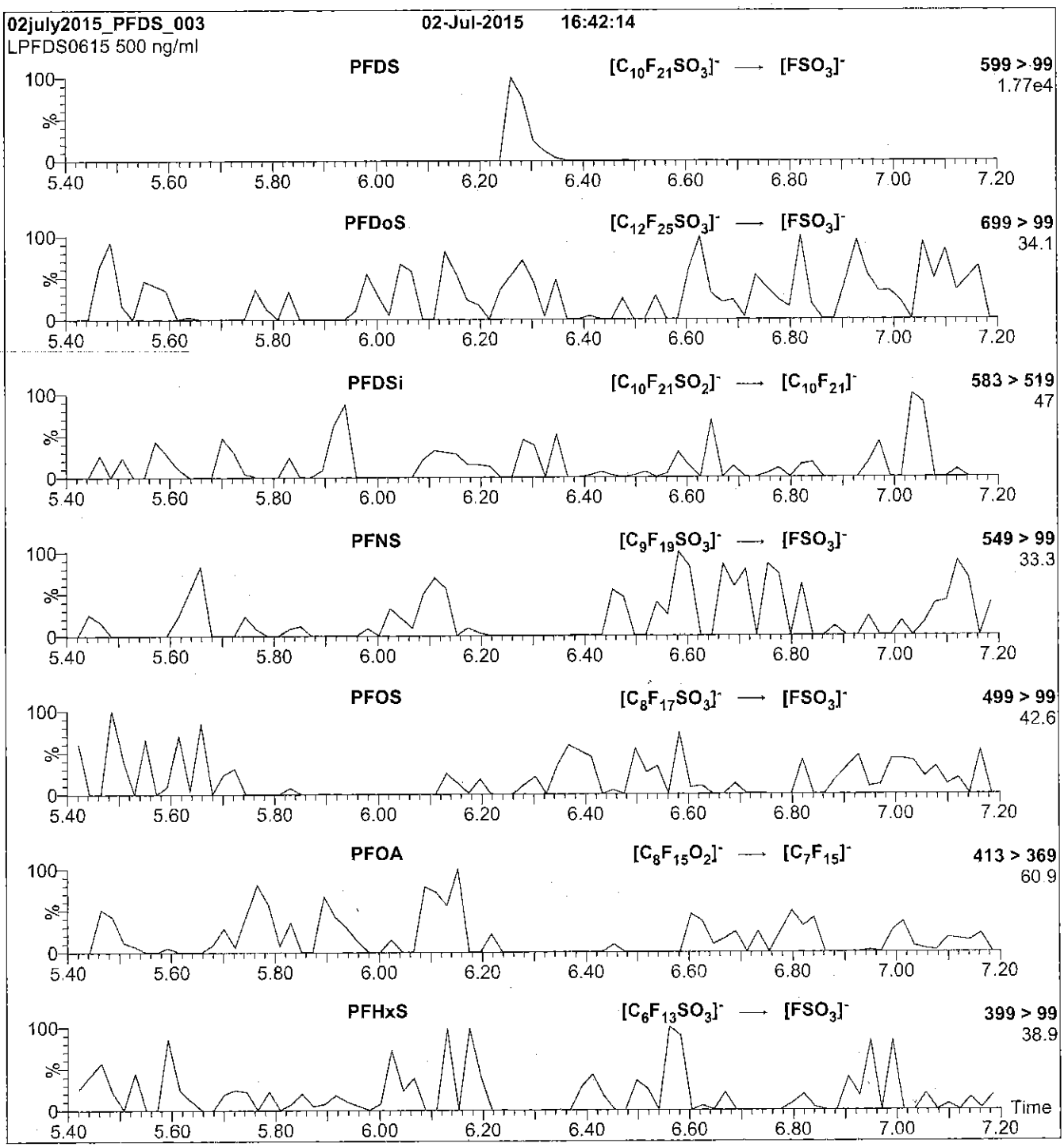
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHpA_00004

WELLINGTON LABORATORIES

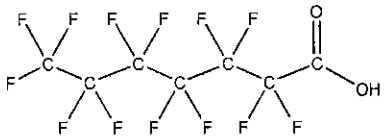
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFHpA0514

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) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- 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:** 05/22/2014 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

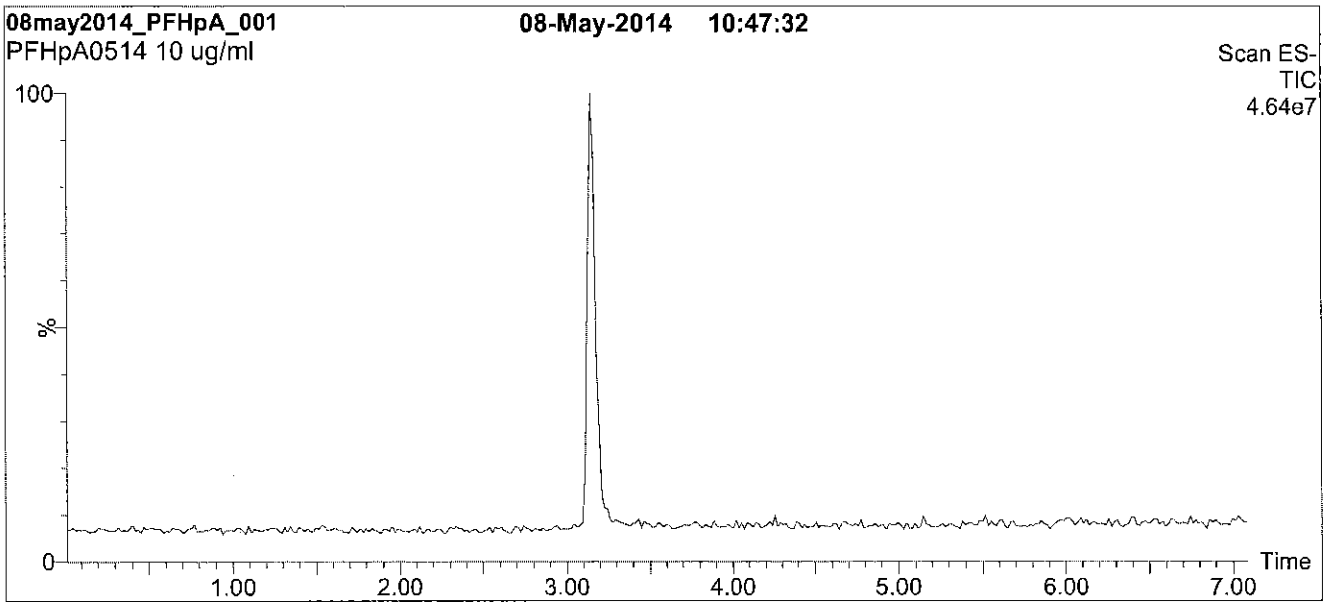
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

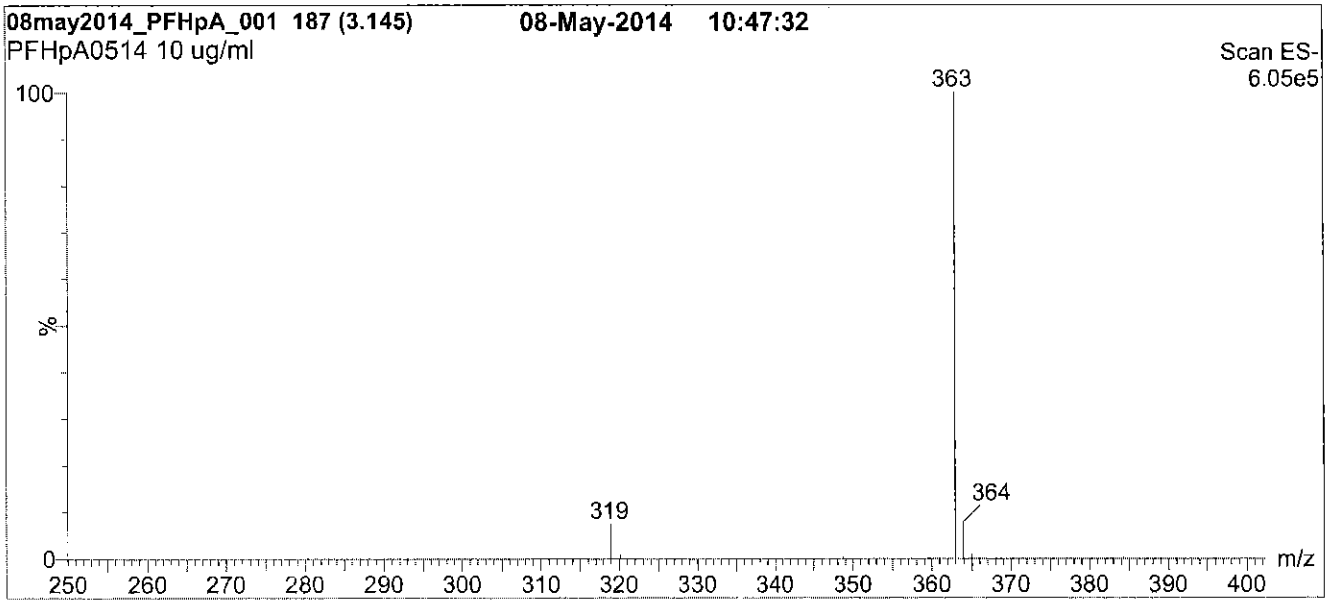
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **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 C_{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

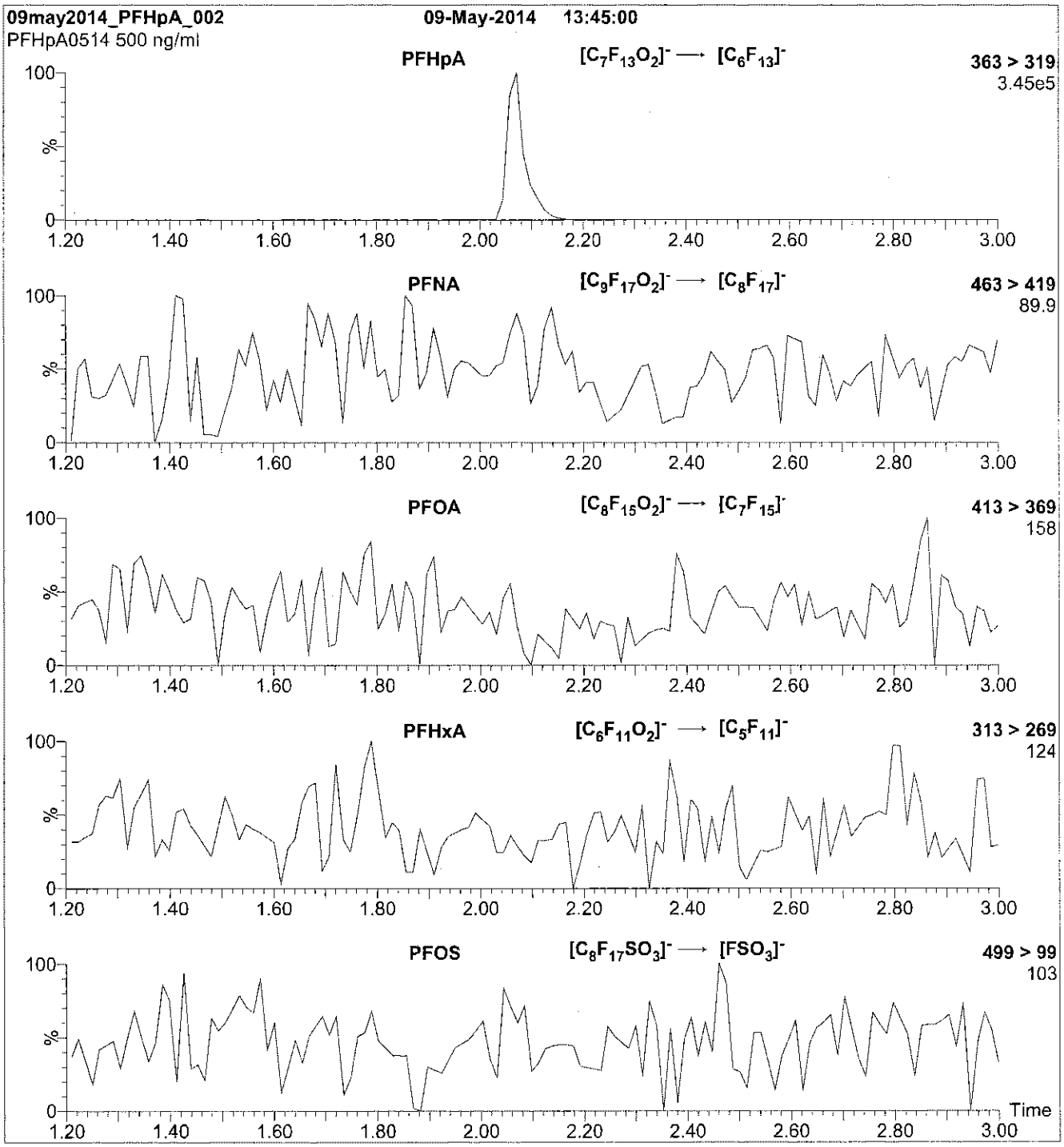
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 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) = 3.24e-3
Collision Energy (eV) = 11

Reagent

LCPFHpA_00005

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

R: 4/7/16 CBW

WELLINGTON LABORATORIES

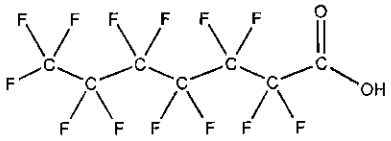
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



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

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

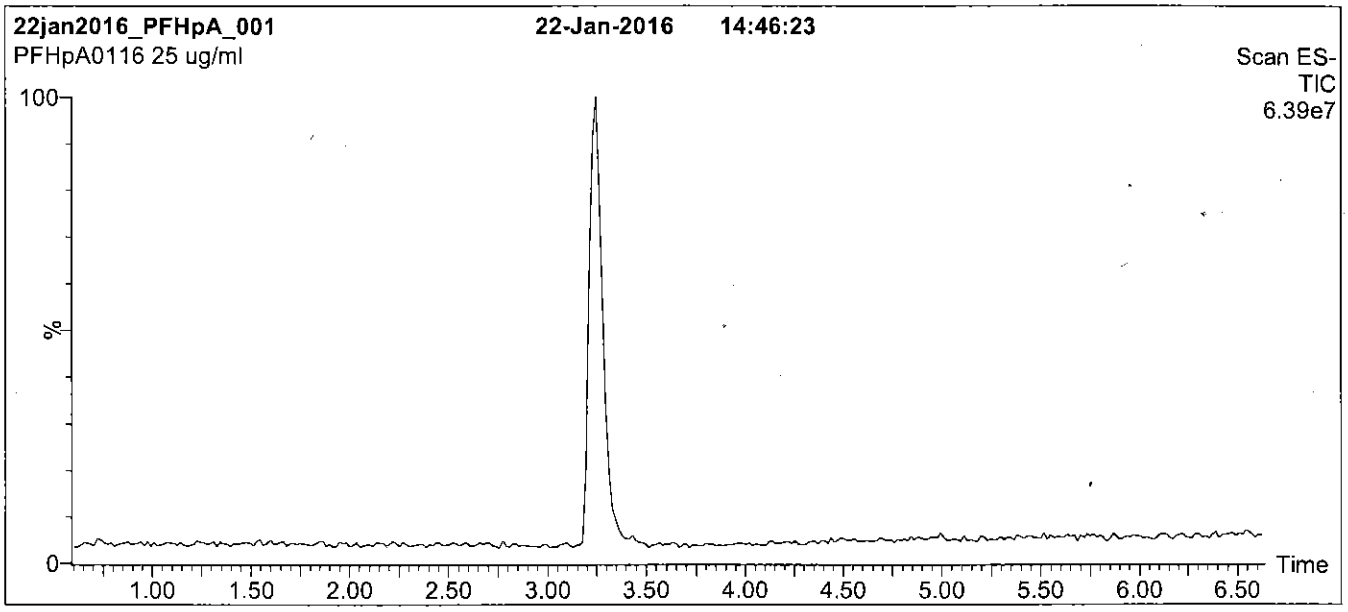
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

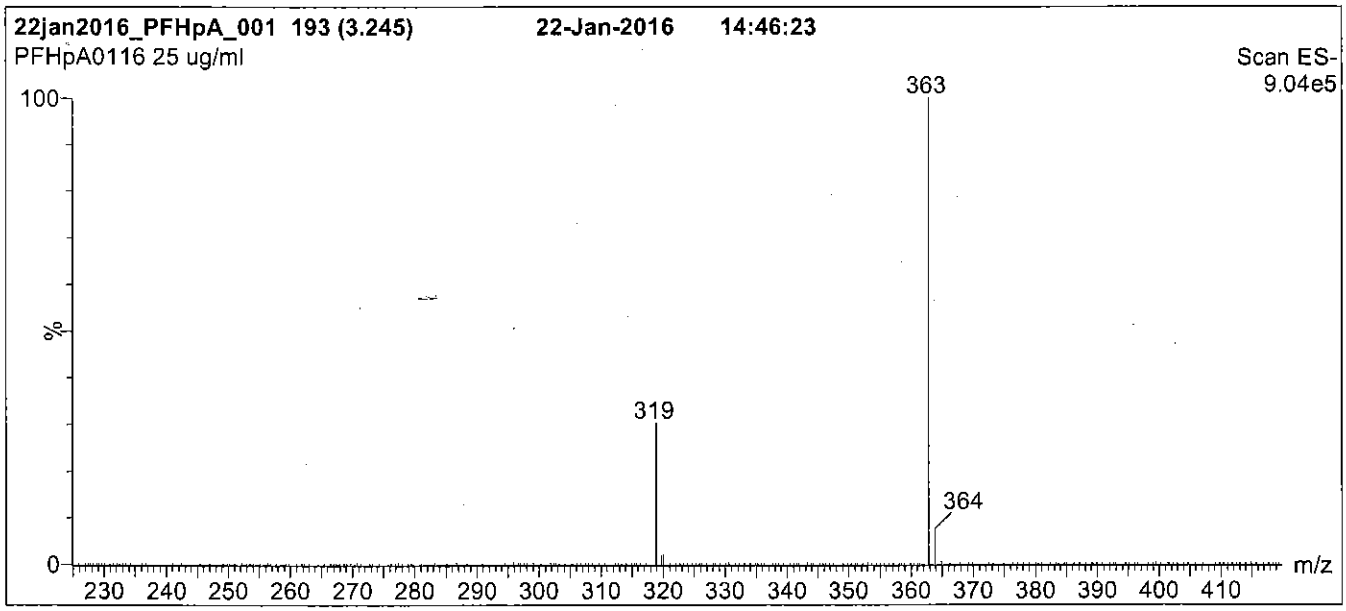
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

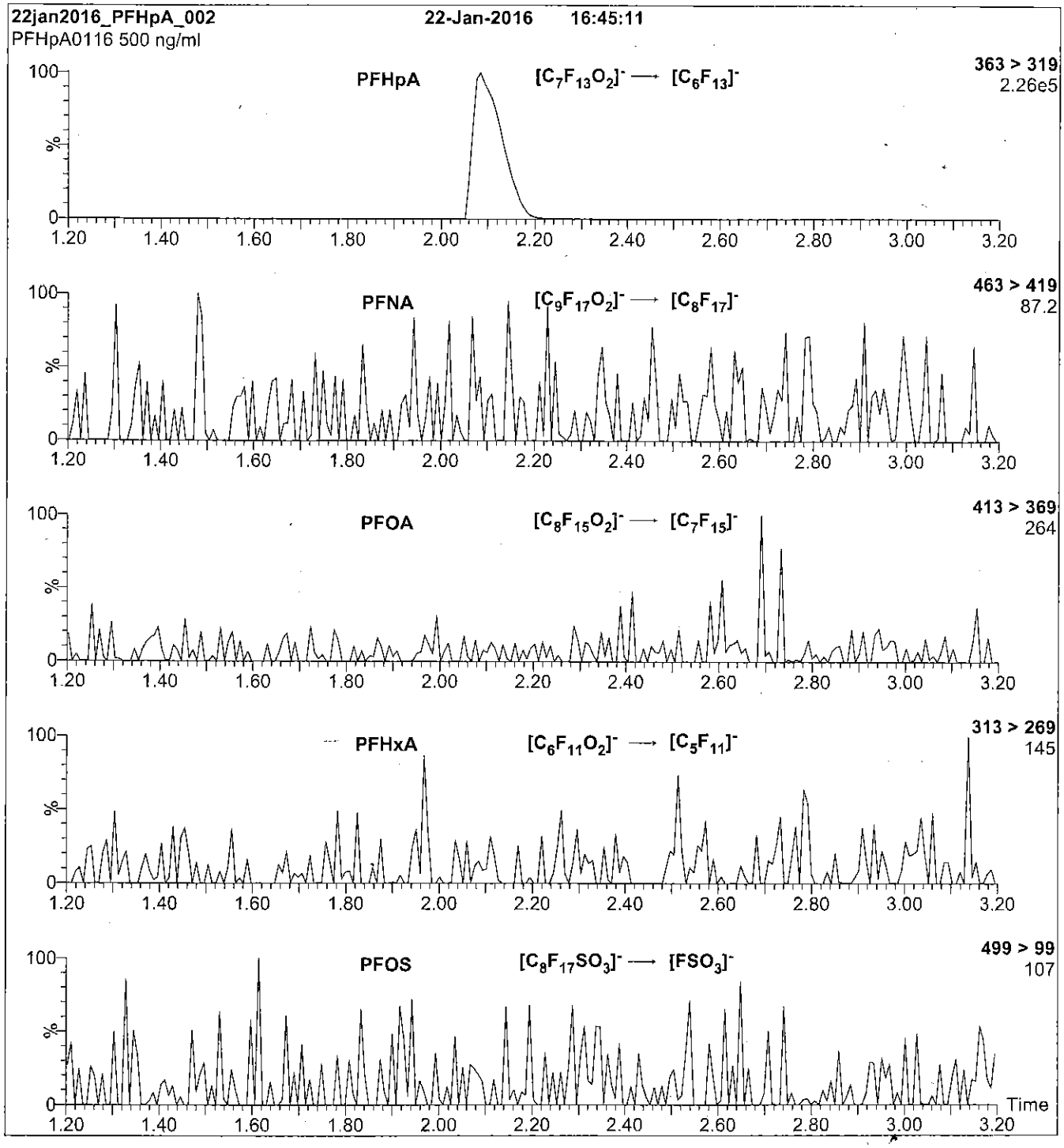
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHxA_00003

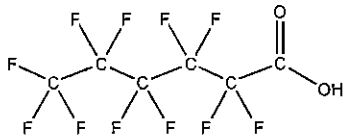
V: 2/11/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid
LOT NUMBER: PFHxA0514

STRUCTURE:
CAS #: 307-24-4



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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- 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:** 05/22/2014 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

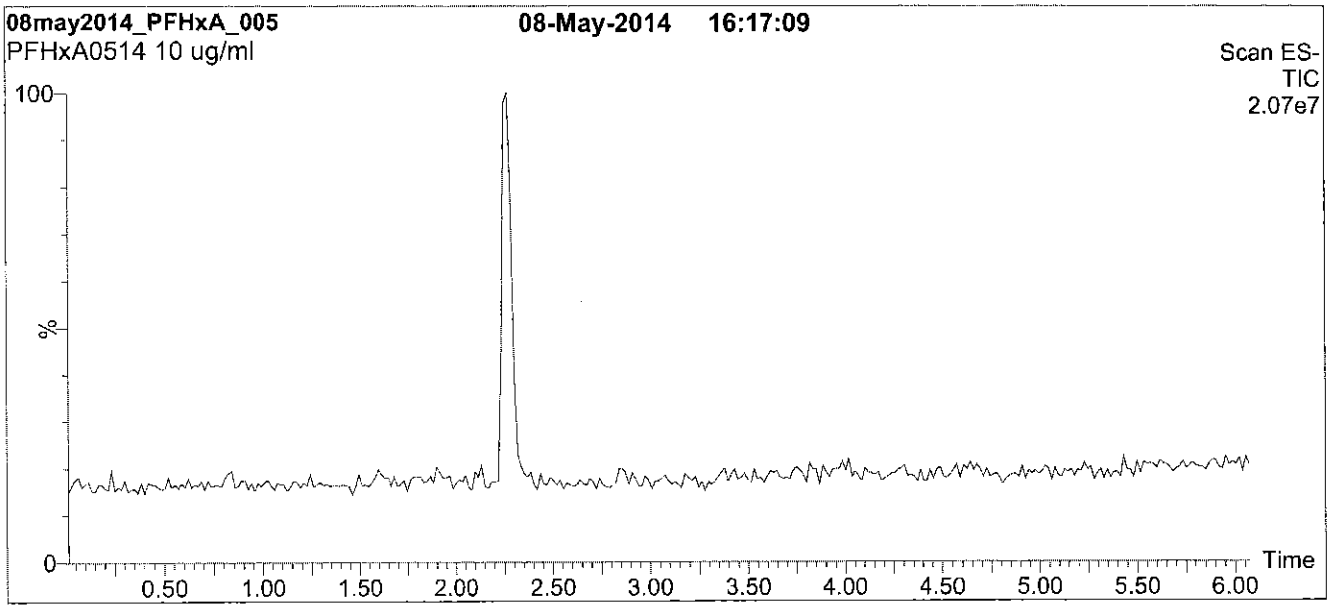
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

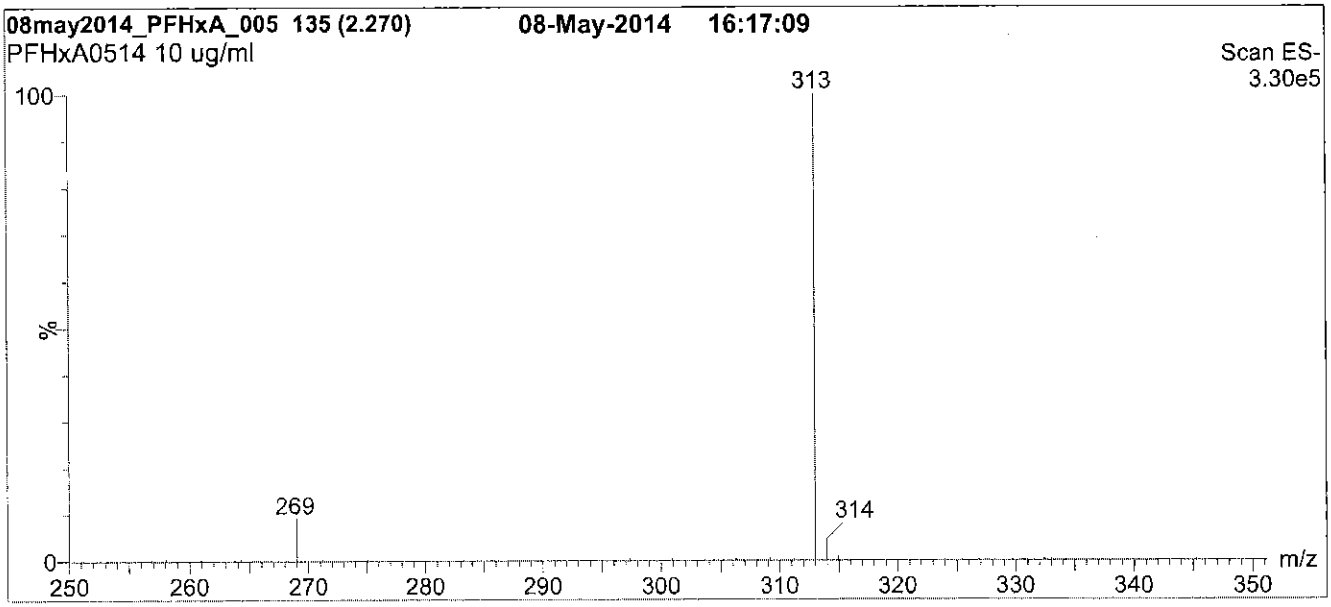
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **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 C_{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

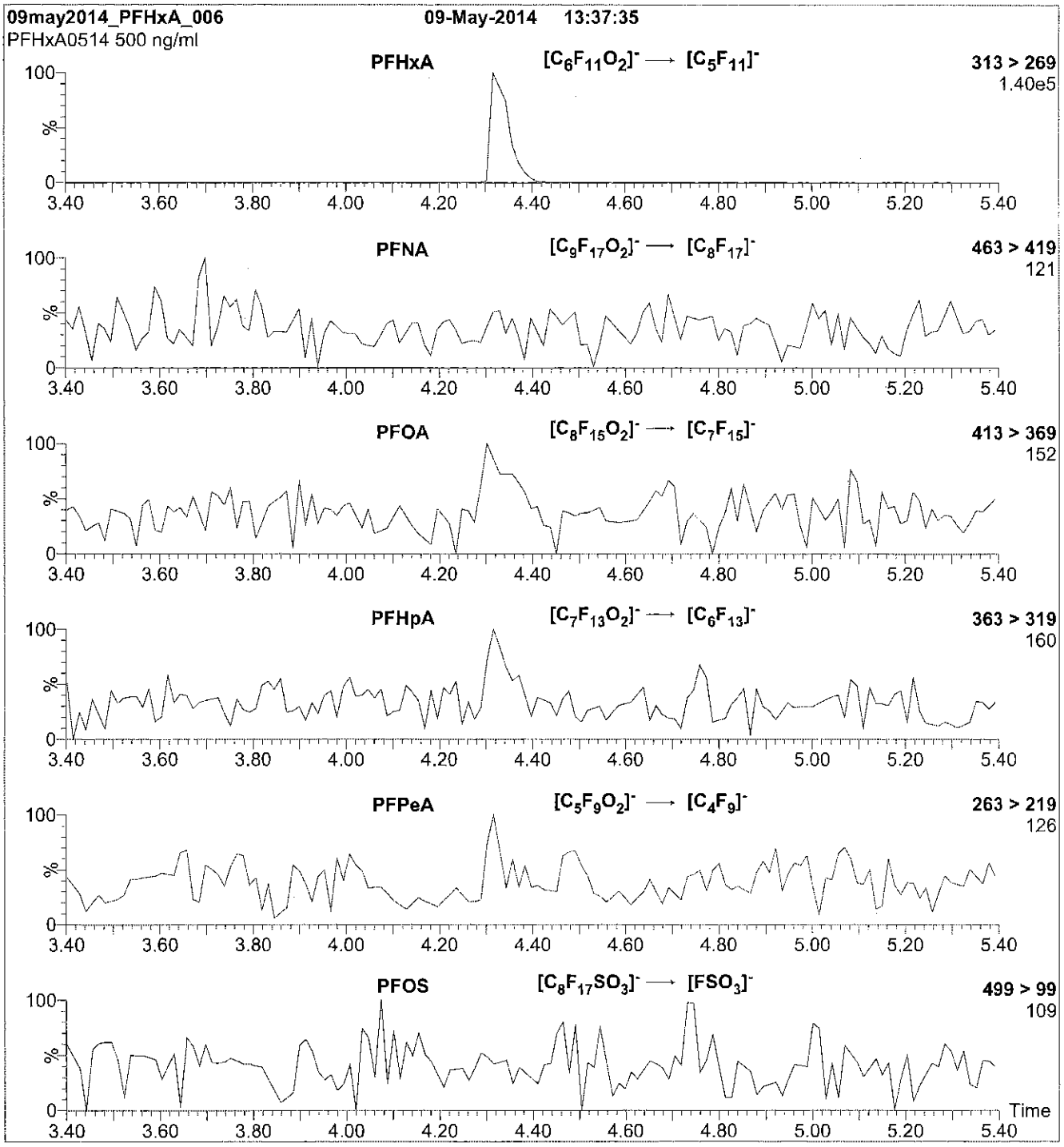
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 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) = 3.24e-3
Collision Energy (eV) = 10

Reagent

LCPFHxA_00004

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

R: 4/7/16 CBW

WELLINGTON LABORATORIES

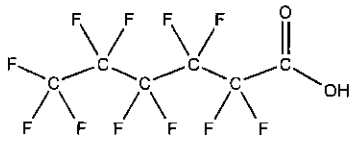
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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CALA Testing

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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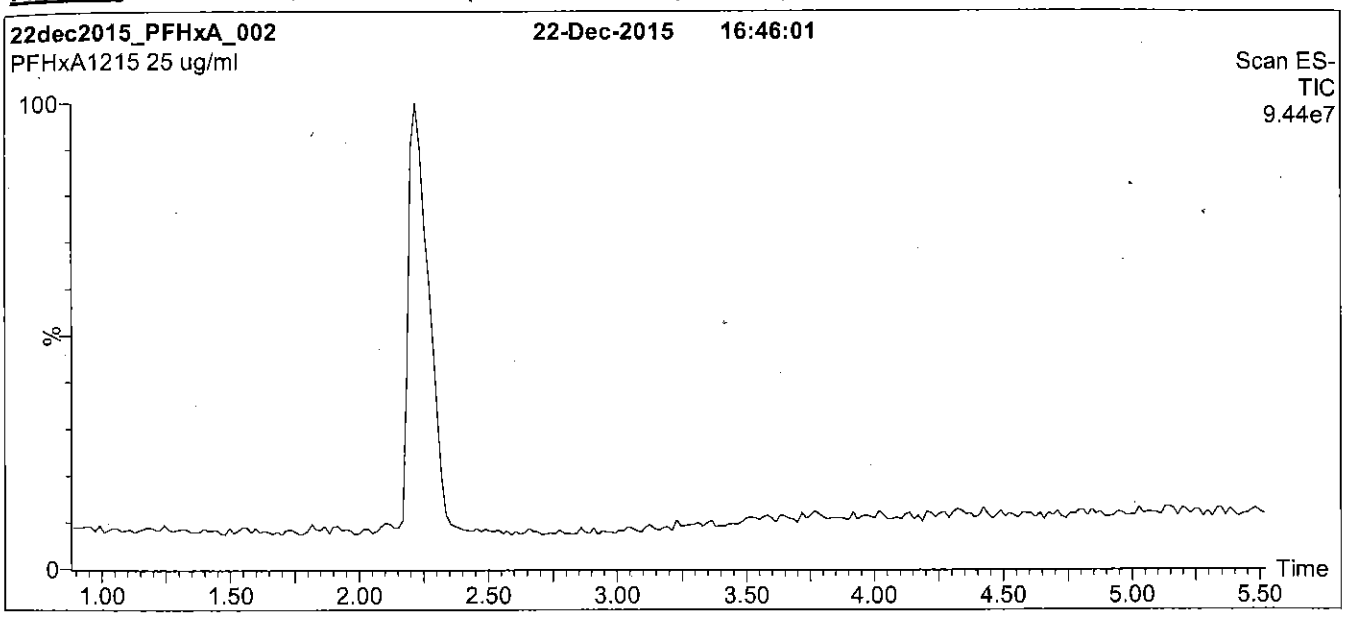
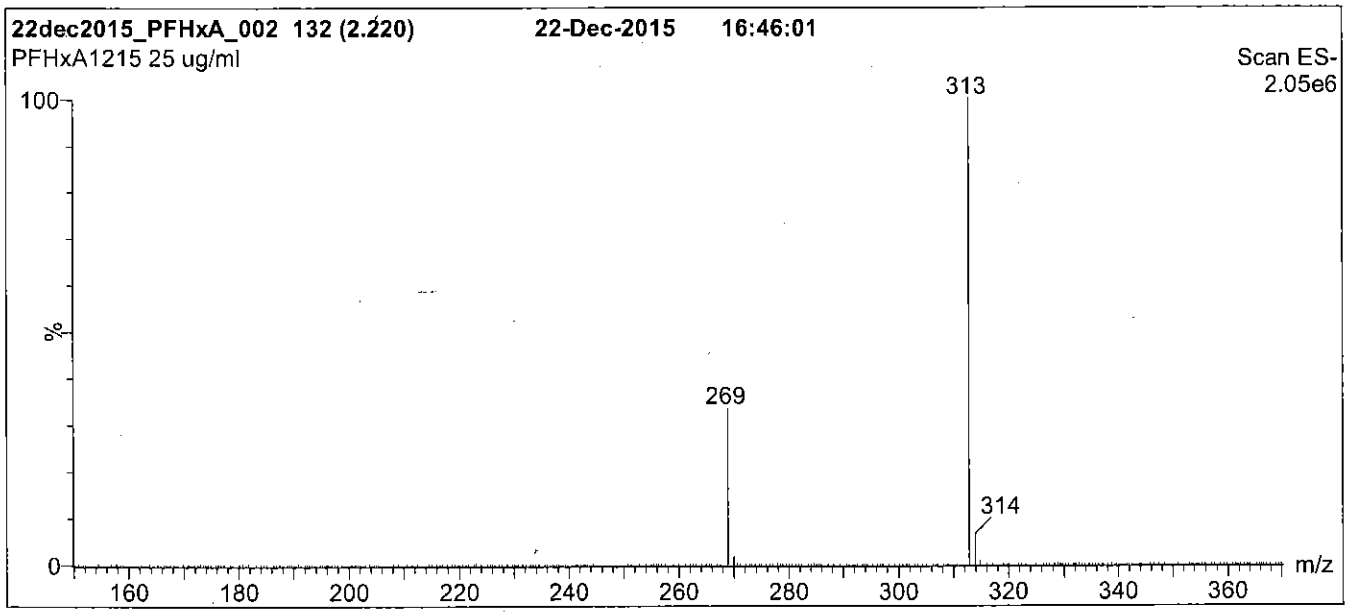




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

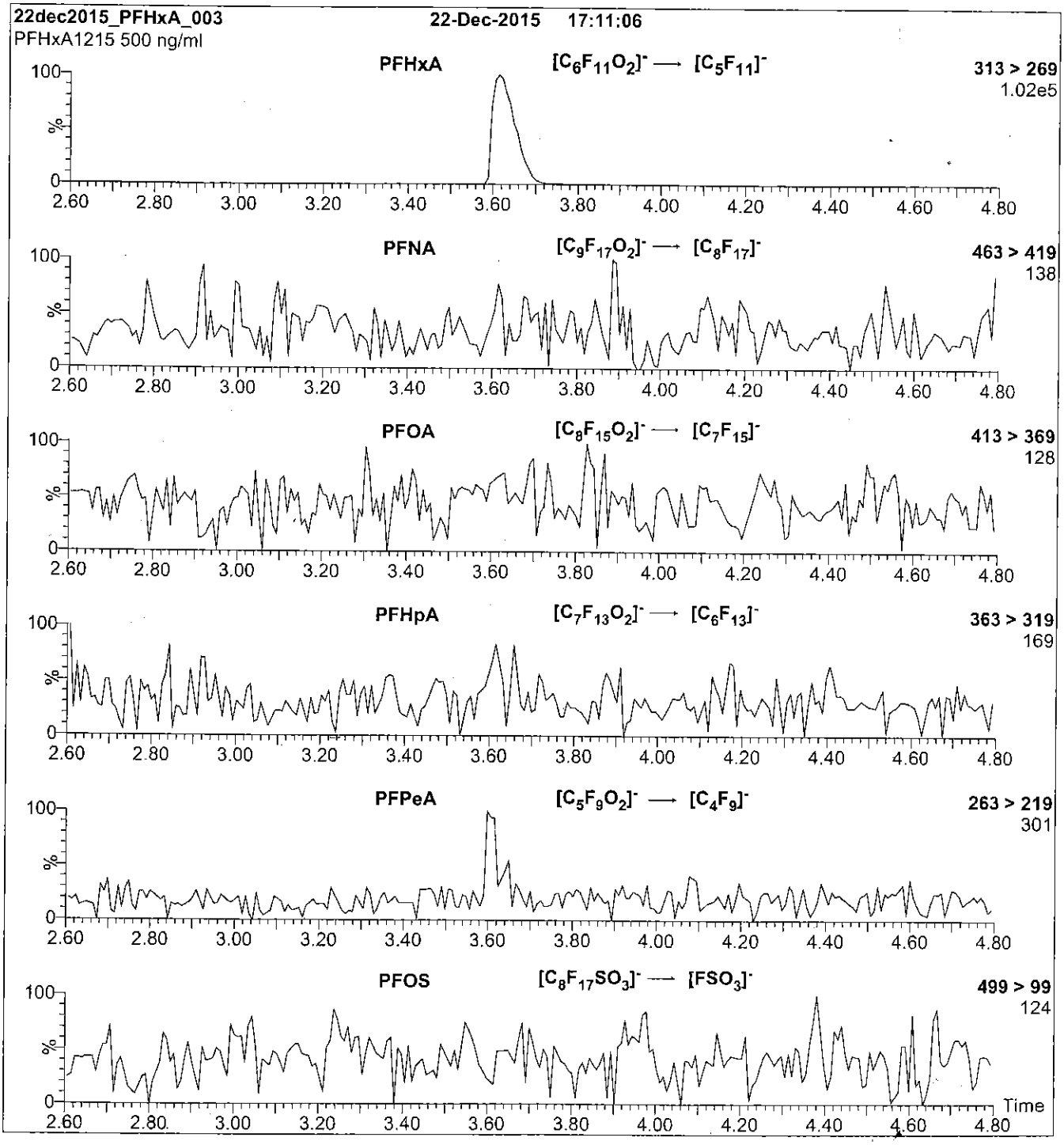
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHxS-br_00001

P: 12/9/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

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

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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

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

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

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

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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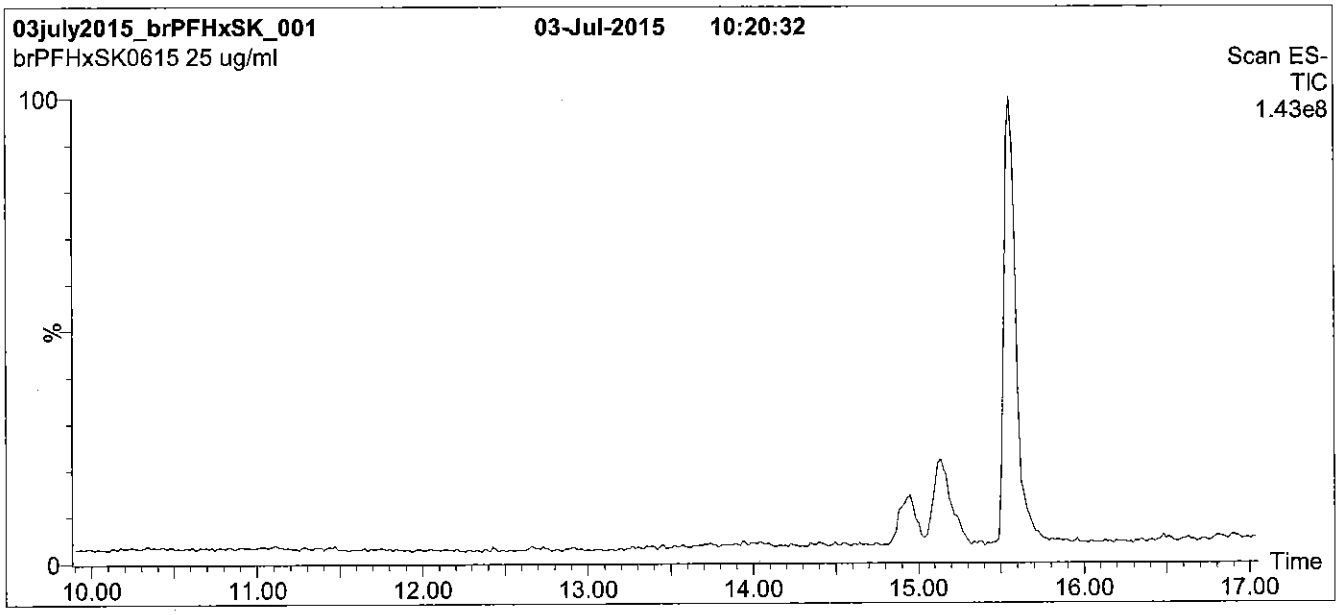
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

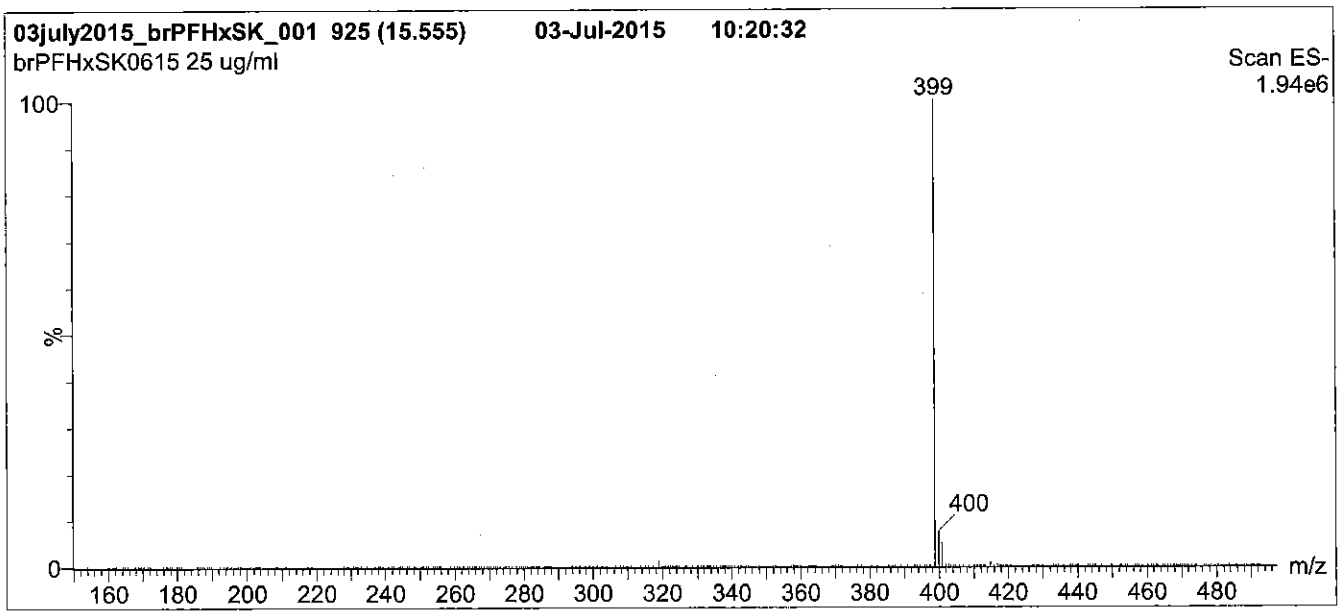
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

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

Certified By: _____ **Date:** 07/15/2015
B.G. Chittim (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

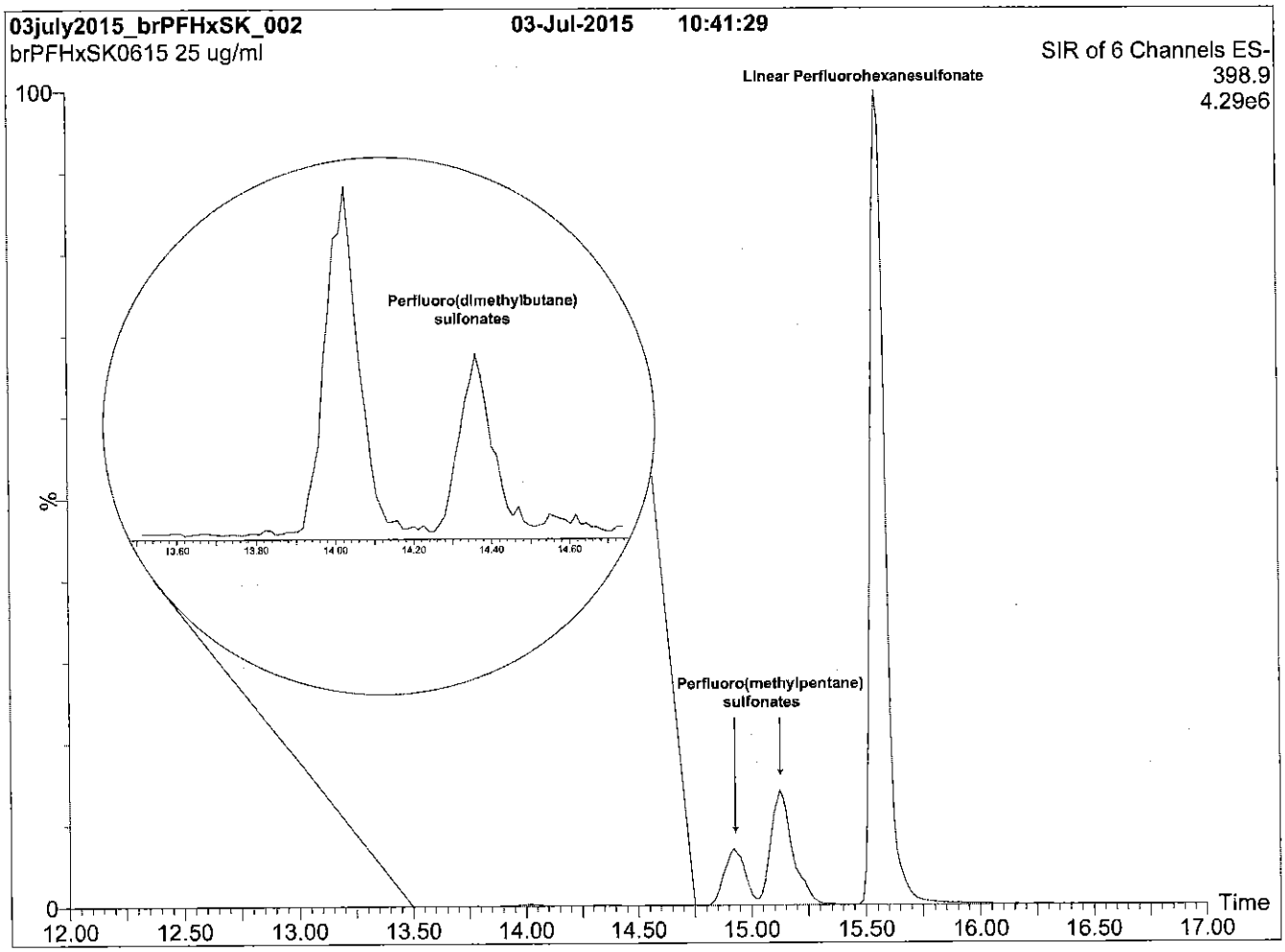
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

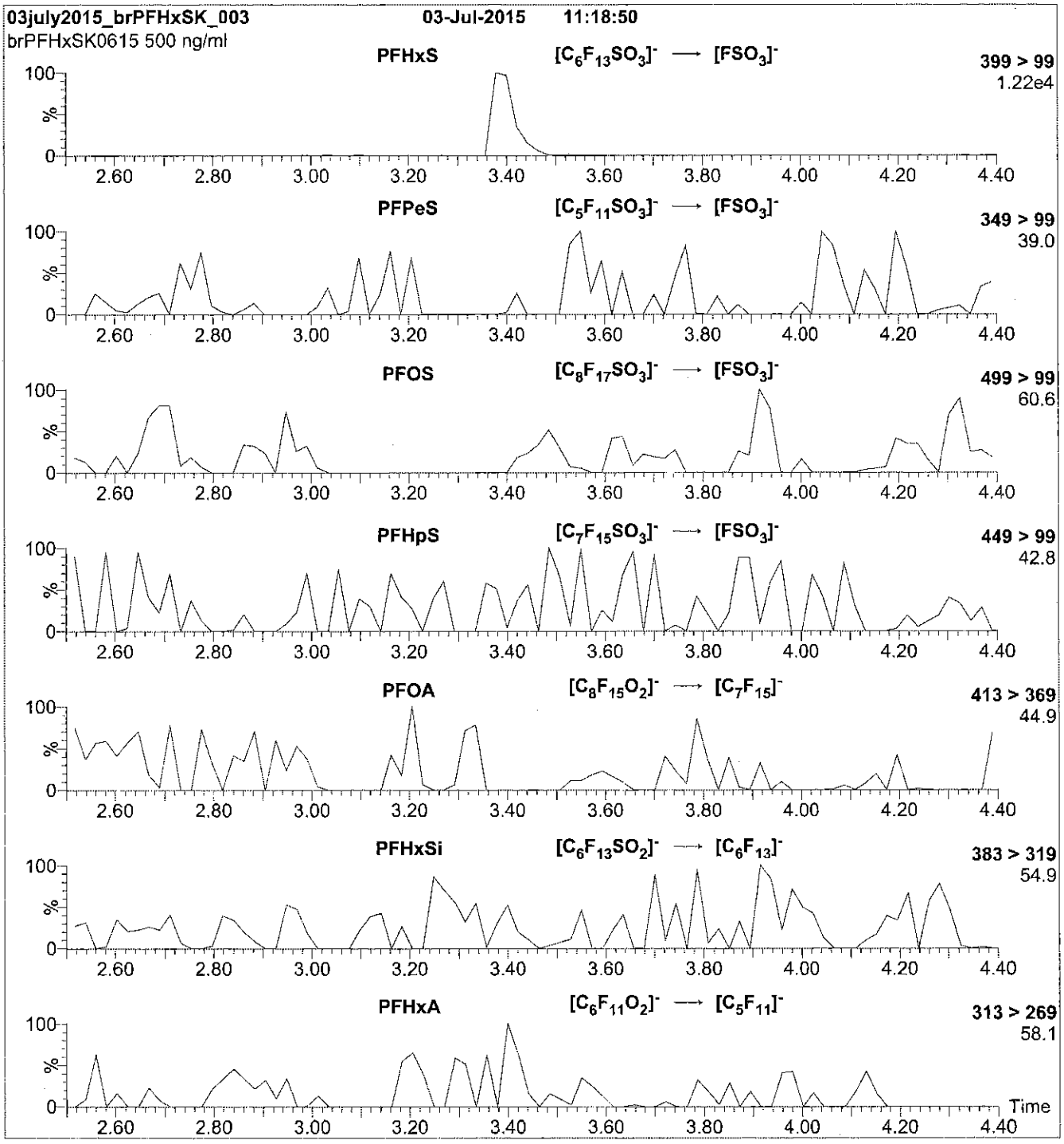
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

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

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



Conditions for Figure 3:

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

MS Parameters

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

Reagent

LCPFNA_00004

P: 3/27/15 sv

S:

WELLINGTON LABORATORIES

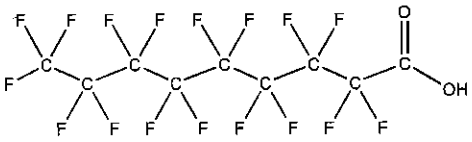
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA0514

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) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- 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:** 05/22/2014 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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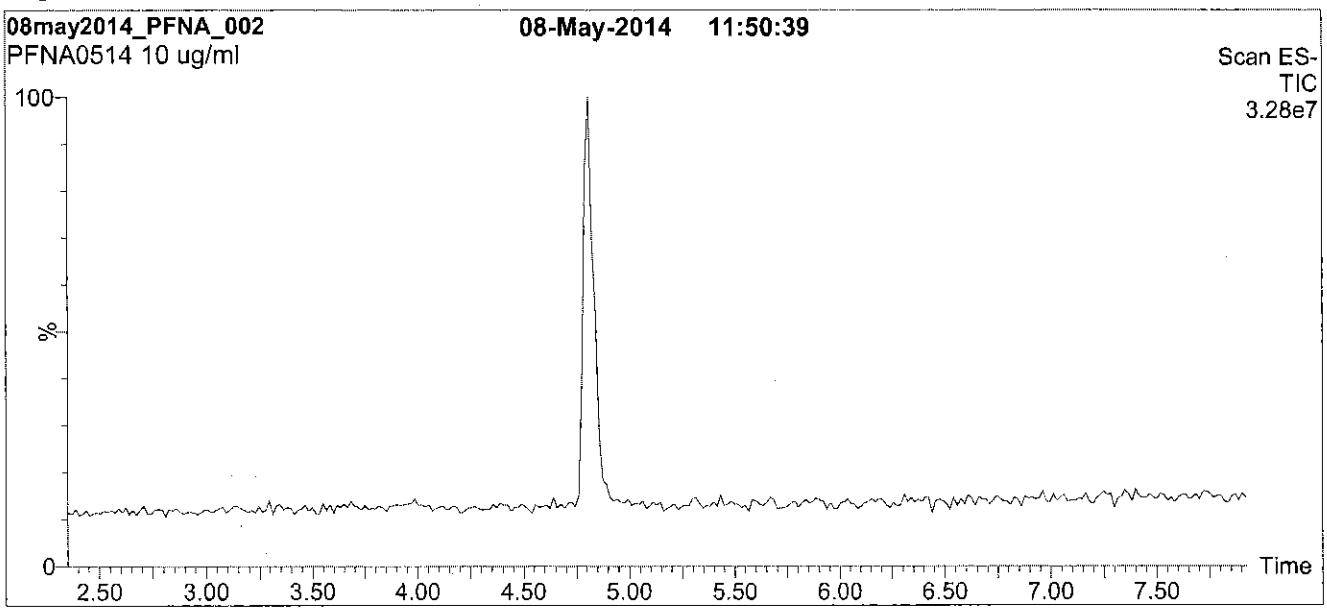
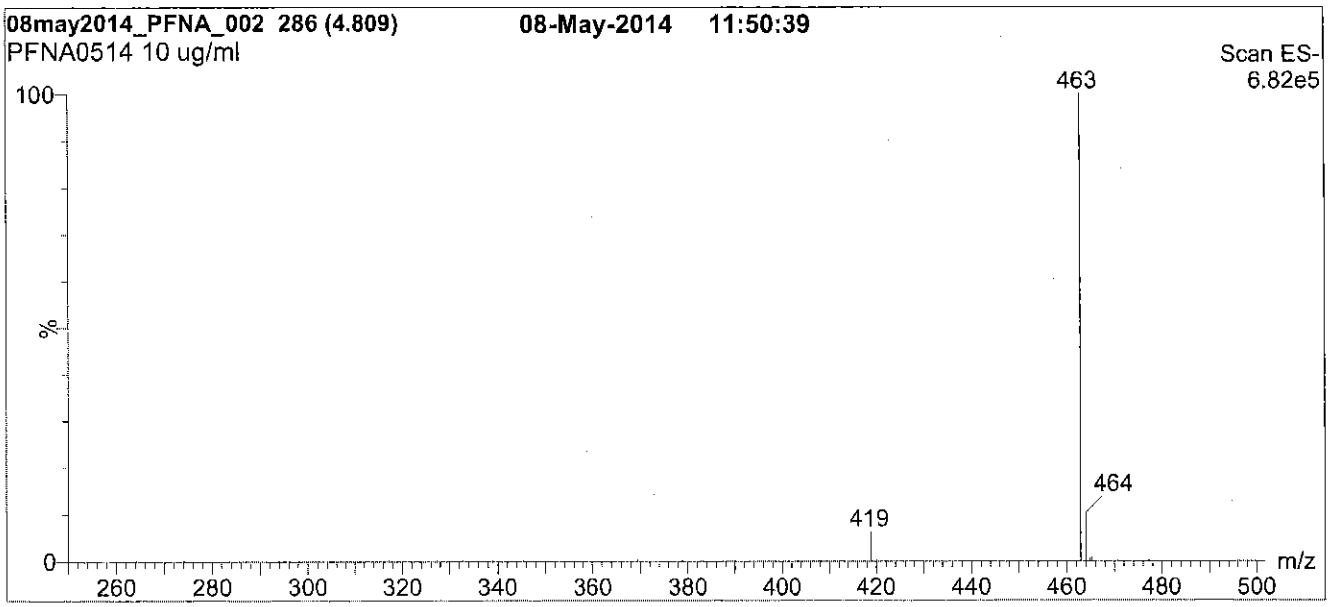
Figure 1: **PFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH C_{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

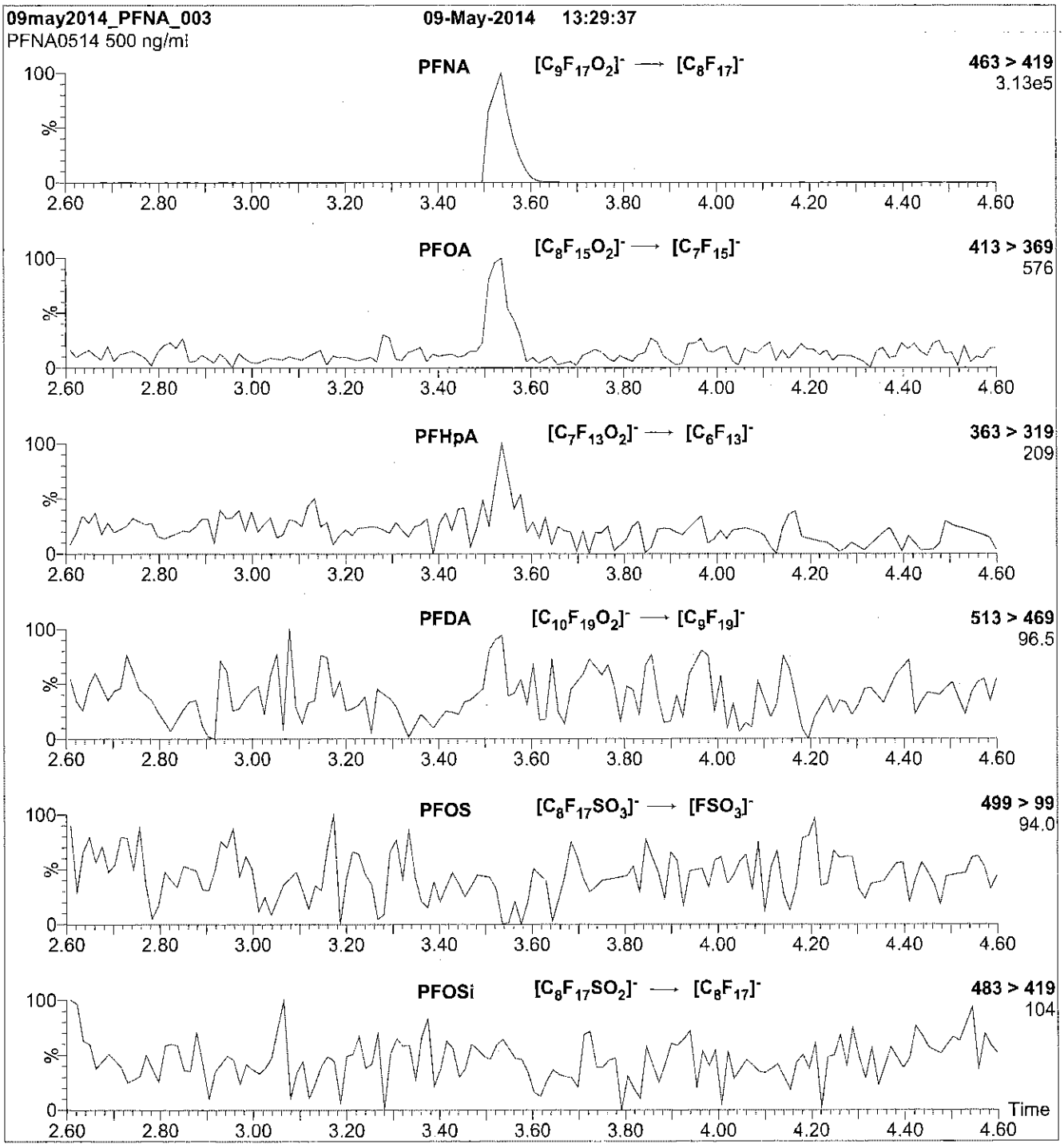
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 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) = 3.17e-3
Collision Energy (eV) = 11

Reagent

LCPFNA_00005

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

R·4/7/16 CBW

WELLINGTON LABORATORIES

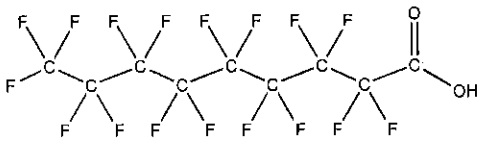
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA1015

STRUCTURE:

CAS #: 375-95-1



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MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
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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

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

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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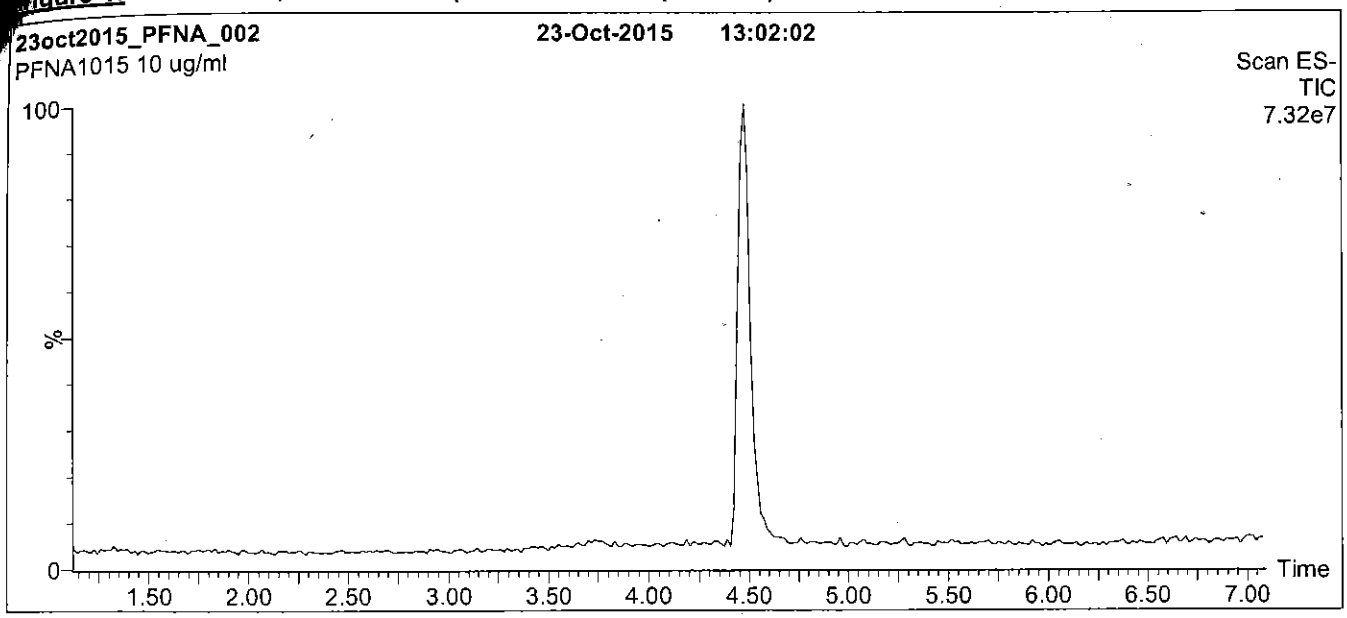
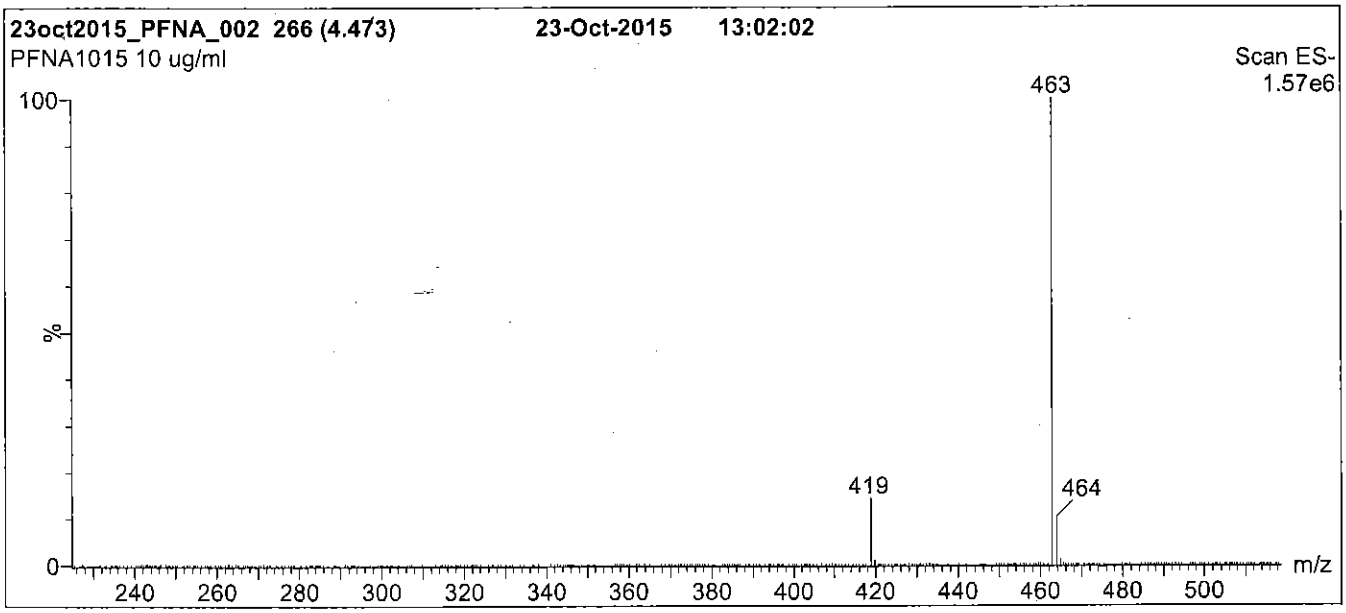




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

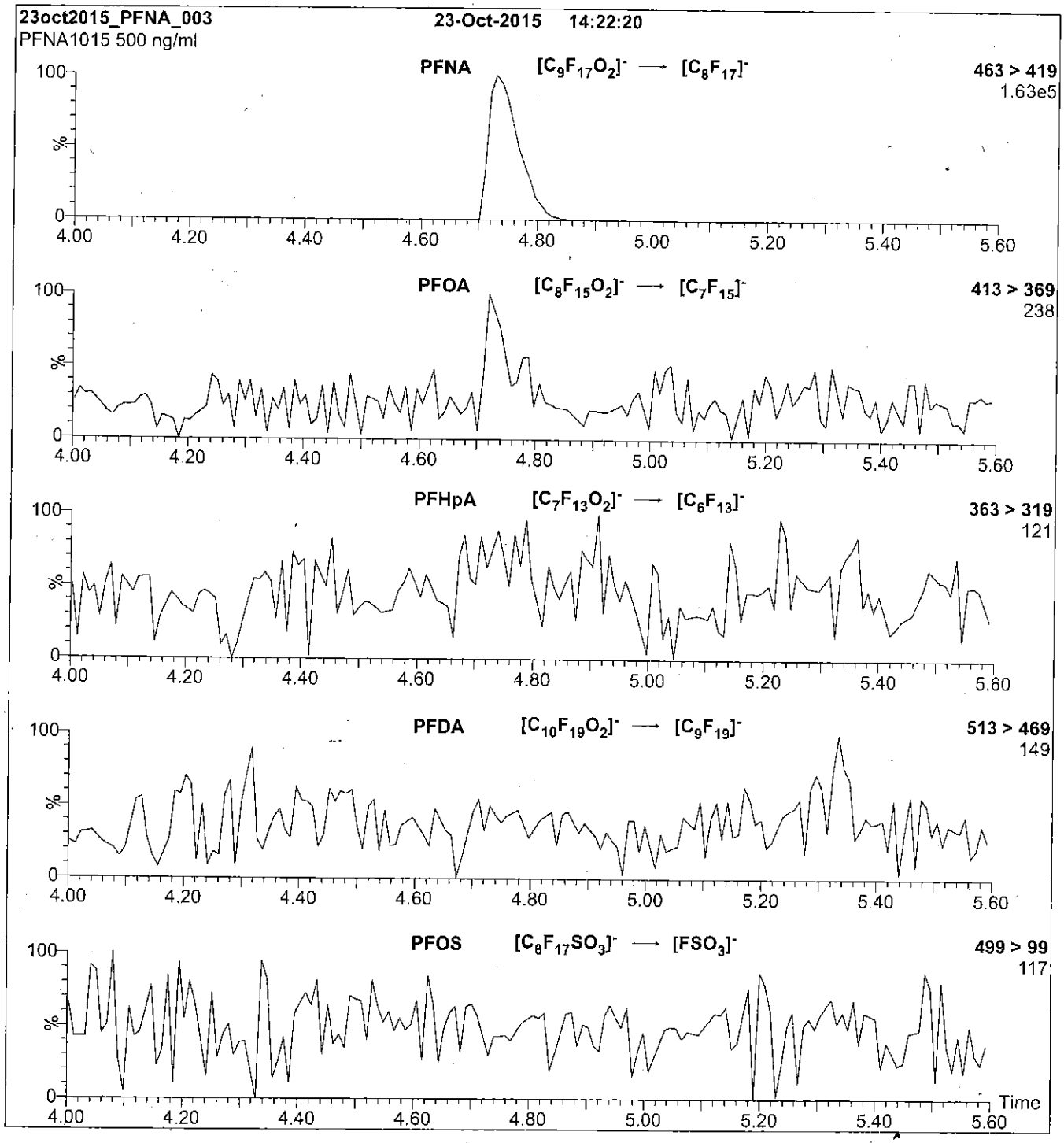
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

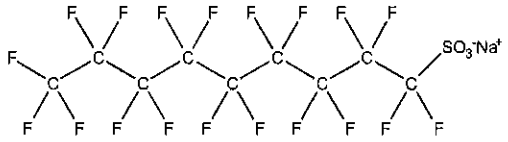
LCPFNS_00002

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFNS
COMPOUND: Sodium perfluoro-1-nonanesulfonate
LOT NUMBER: LPFNS0712
CAS #: 98789-57-2

STRUCTURE:



MOLECULAR FORMULA:	$C_9F_{19}SO_3Na$	**MOLECULAR WEIGHT:**	572.12
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.0 ± 2.4 µg/ml (PFNS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/04/2012		
EXPIRY DATE: (mm/dd/yyyy)	07/04/2017		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

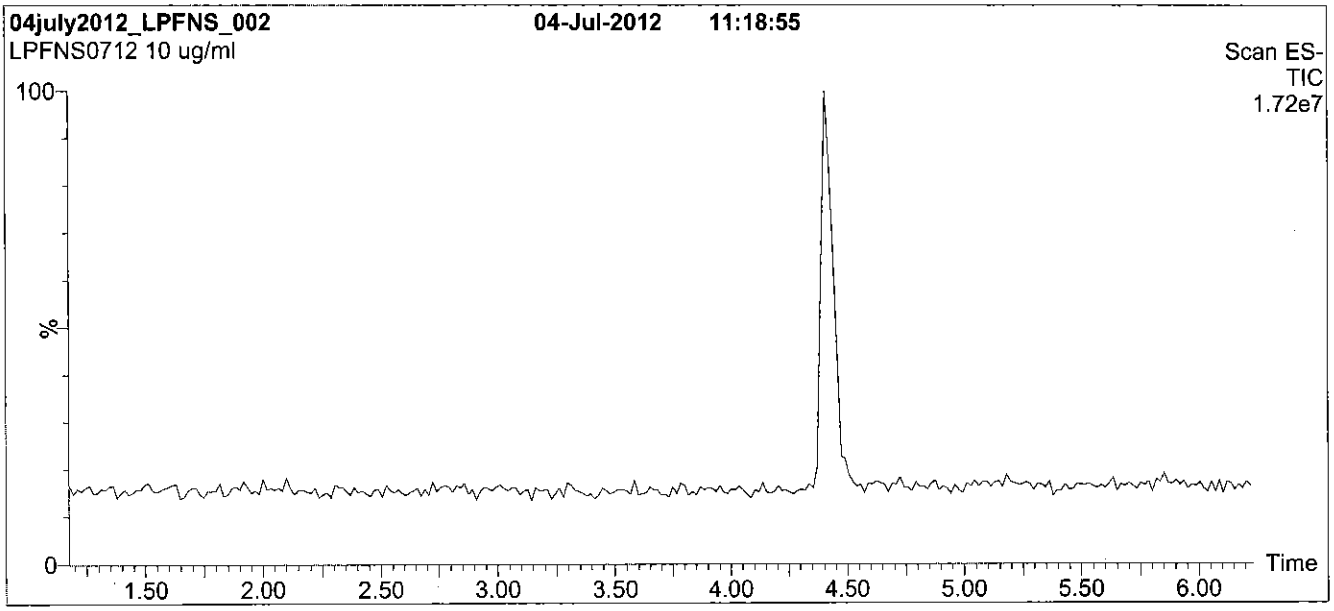
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

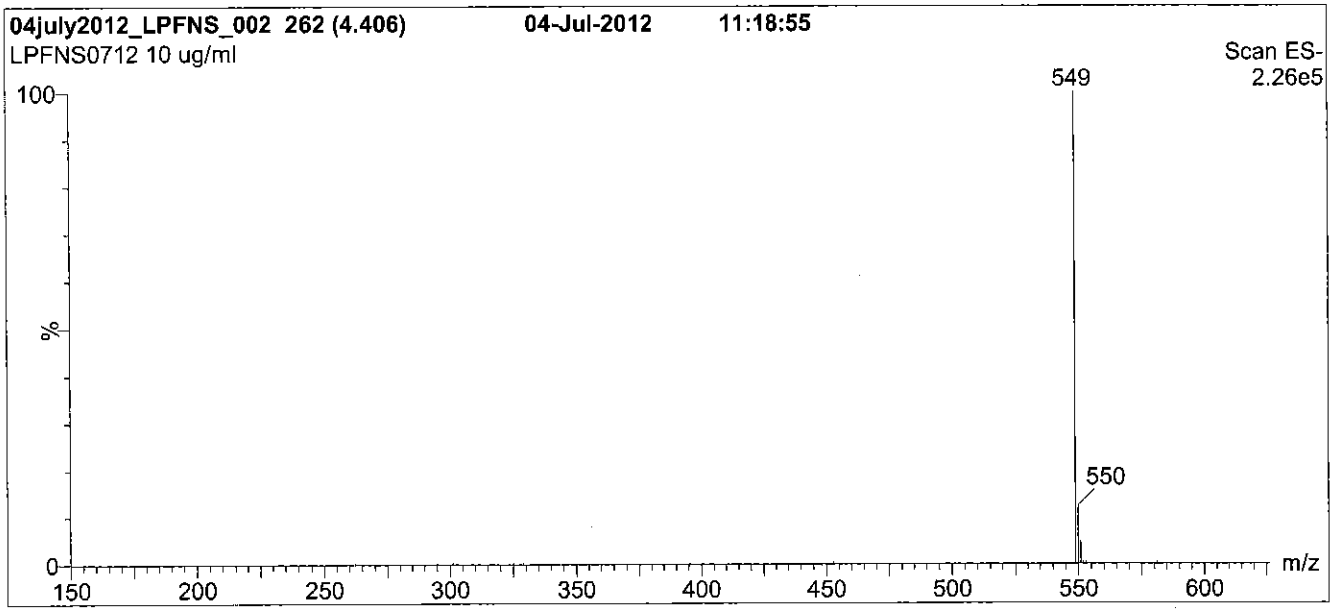
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

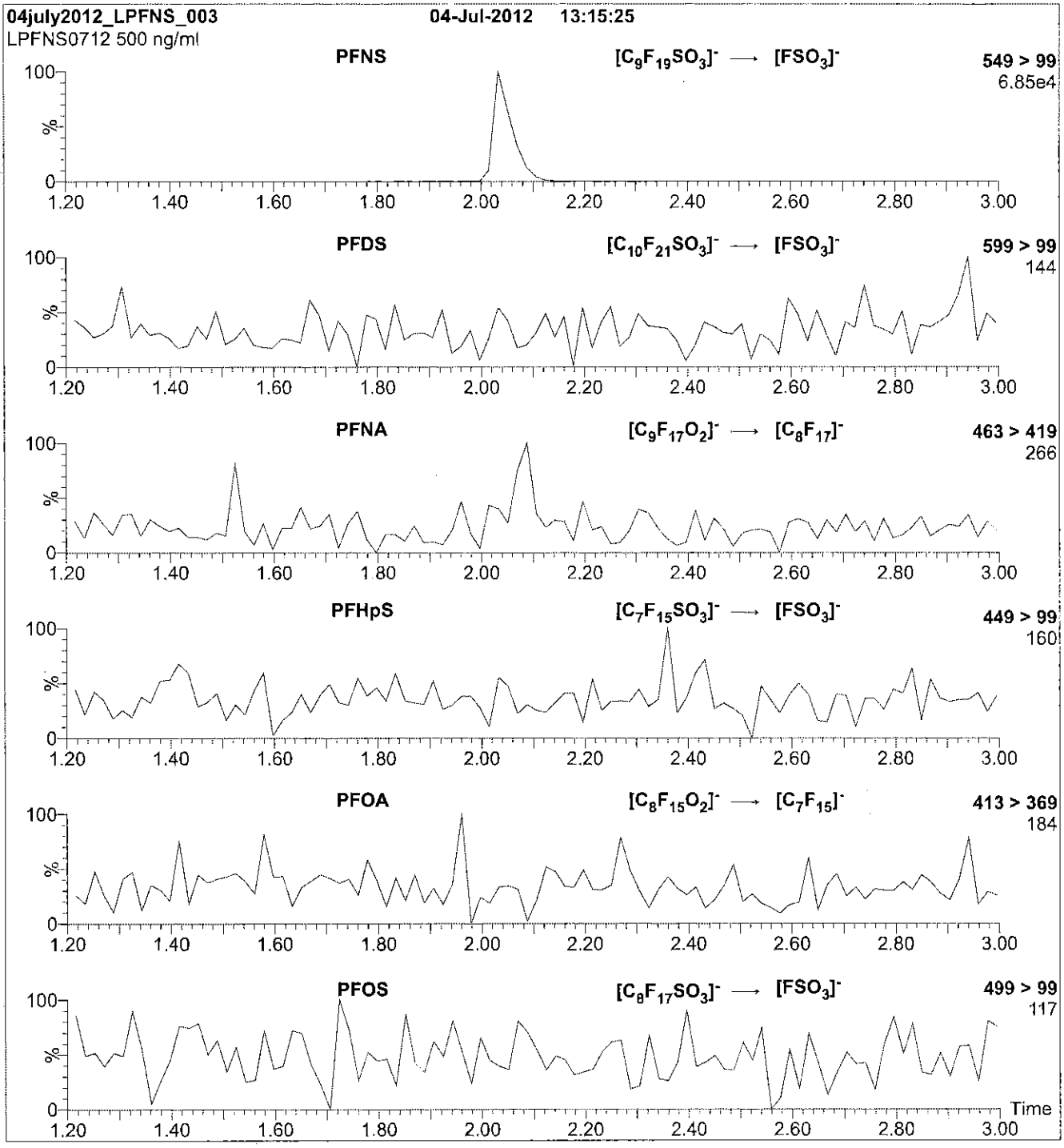
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFOA_00005

Rec 4/30/15 CW

WELLINGTON LABORATORIES

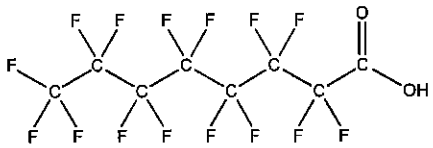
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFOA1115

STRUCTURE:

CAS #: 335-67-1



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

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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:

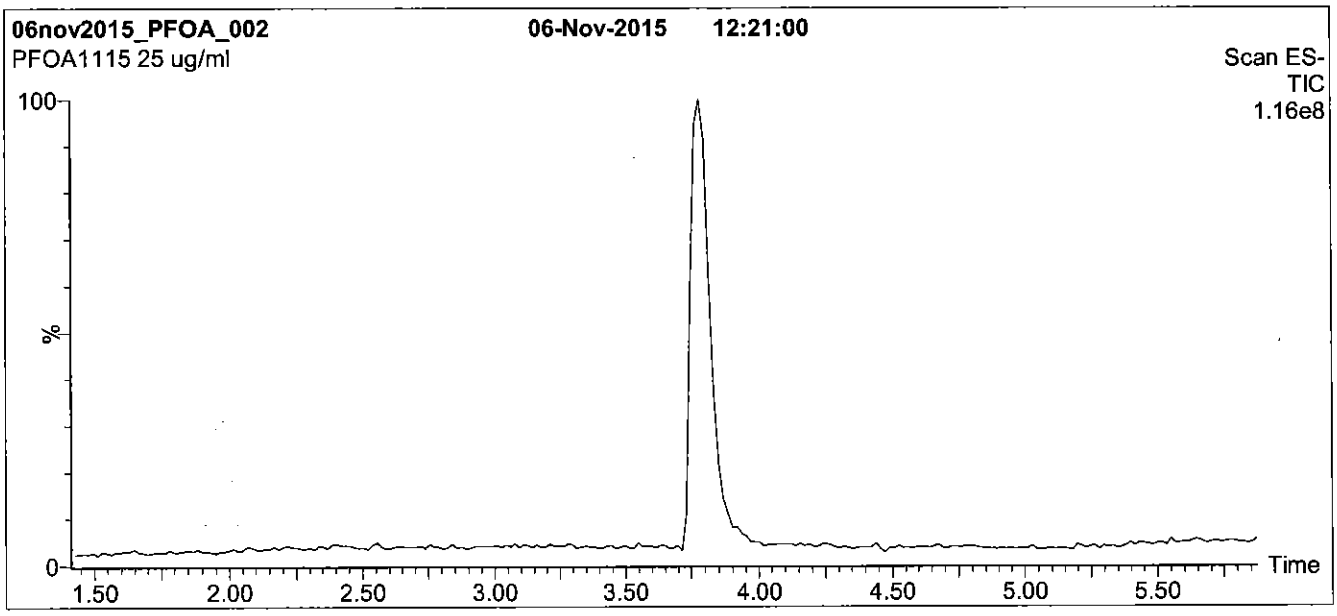
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

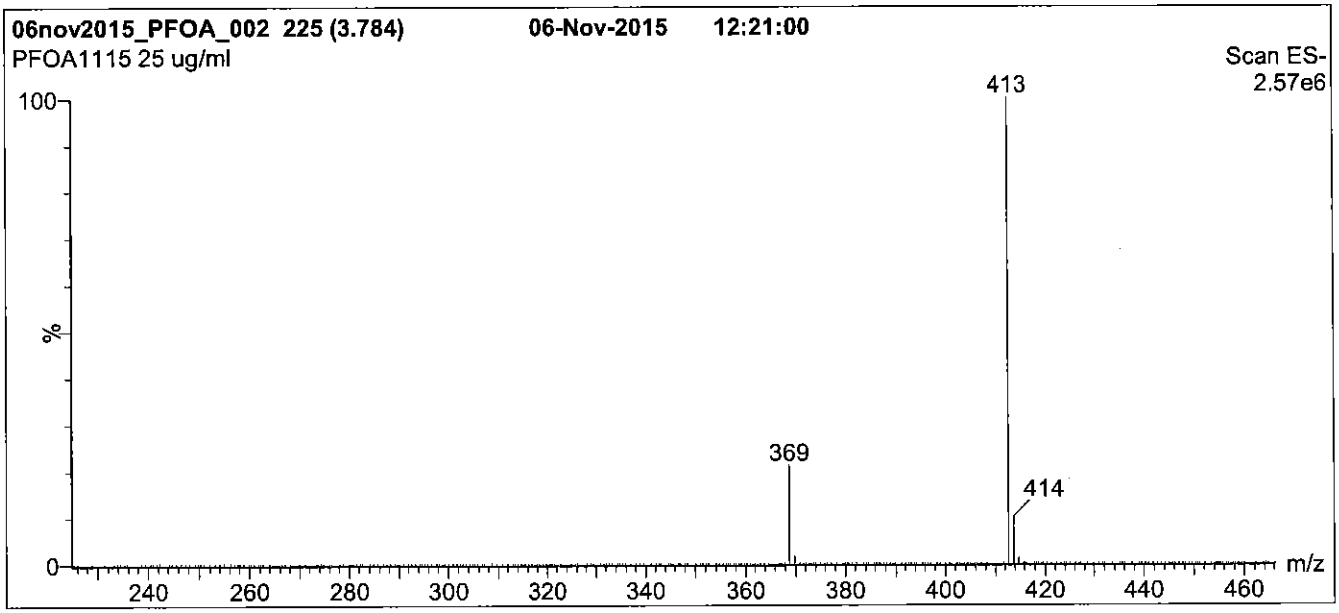
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034:2016 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

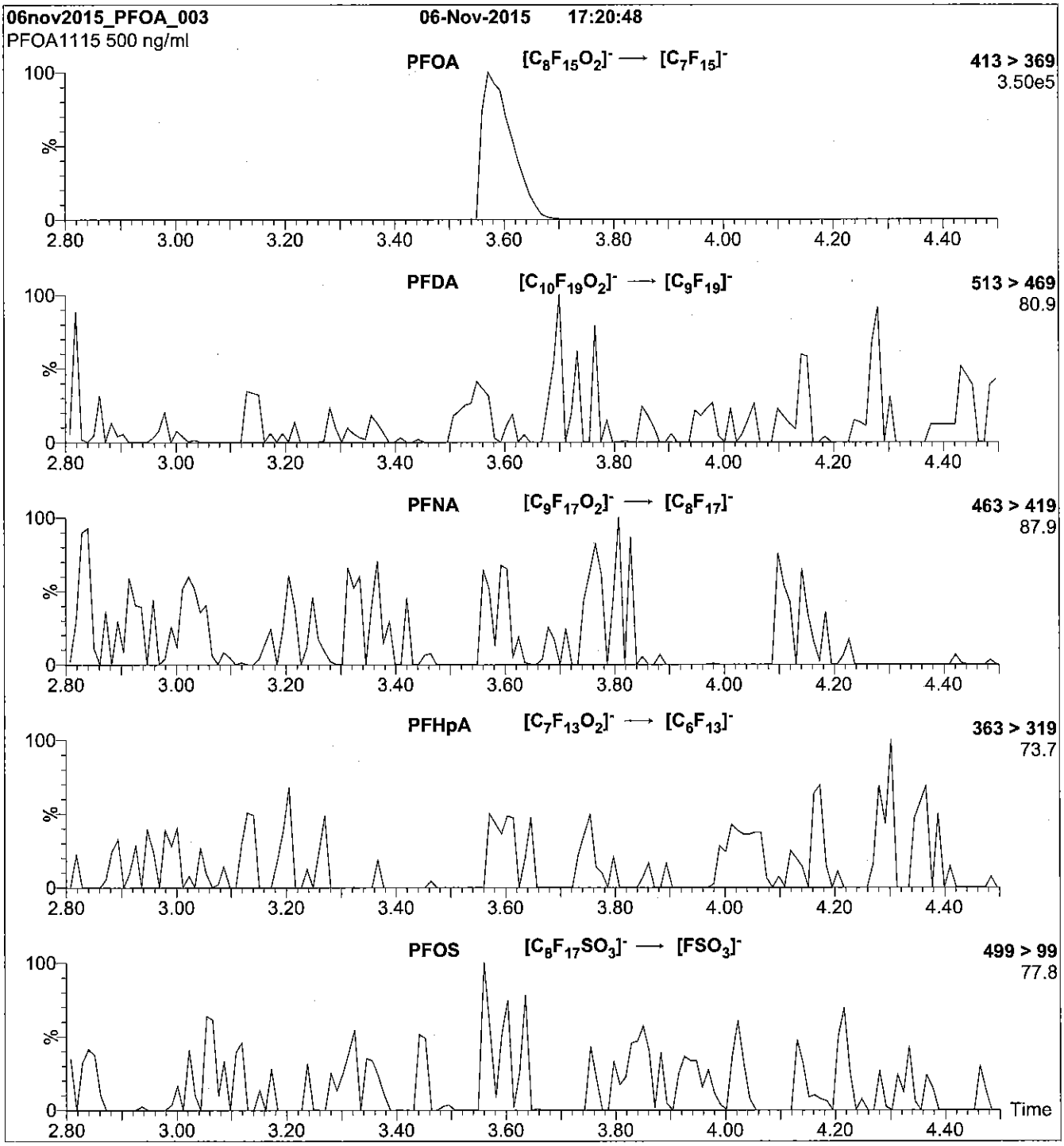
Flow: 300 µl/min

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

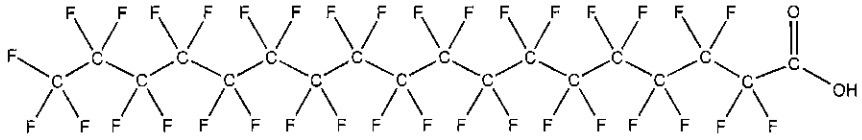
LCPFODA_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid
LOT NUMBER: PFODA0807

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
MOLECULAR WEIGHT: 914.15
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (4%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/25/2014
EXPIRY DATE: (mm/dd/yyyy) 04/25/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- 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:** 04/28/2014 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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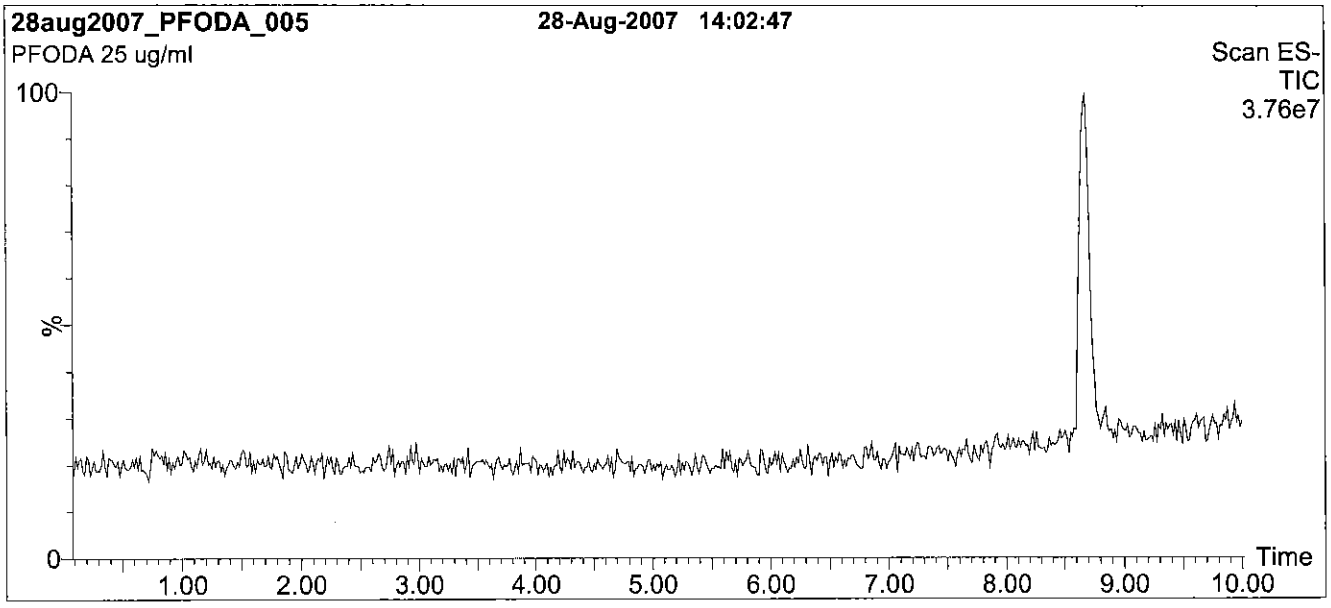
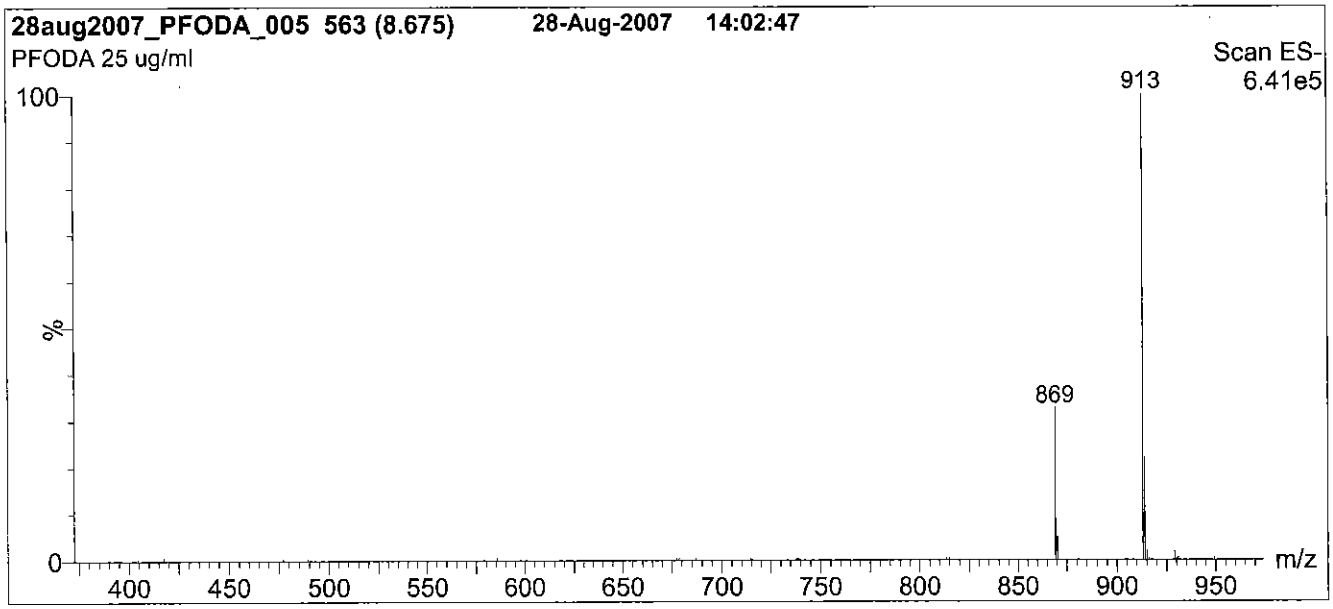
CALA Testing Accredited Agent No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **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: 75% (80:20 MeOH:ACN) / 25% H_2O
(both with 10 mM NH_4OAc buffer)
Hold 5 min. Ramp to 100% organic over 6 min.
Hold 3 min before returning to initial conditions.
Time: 16 min

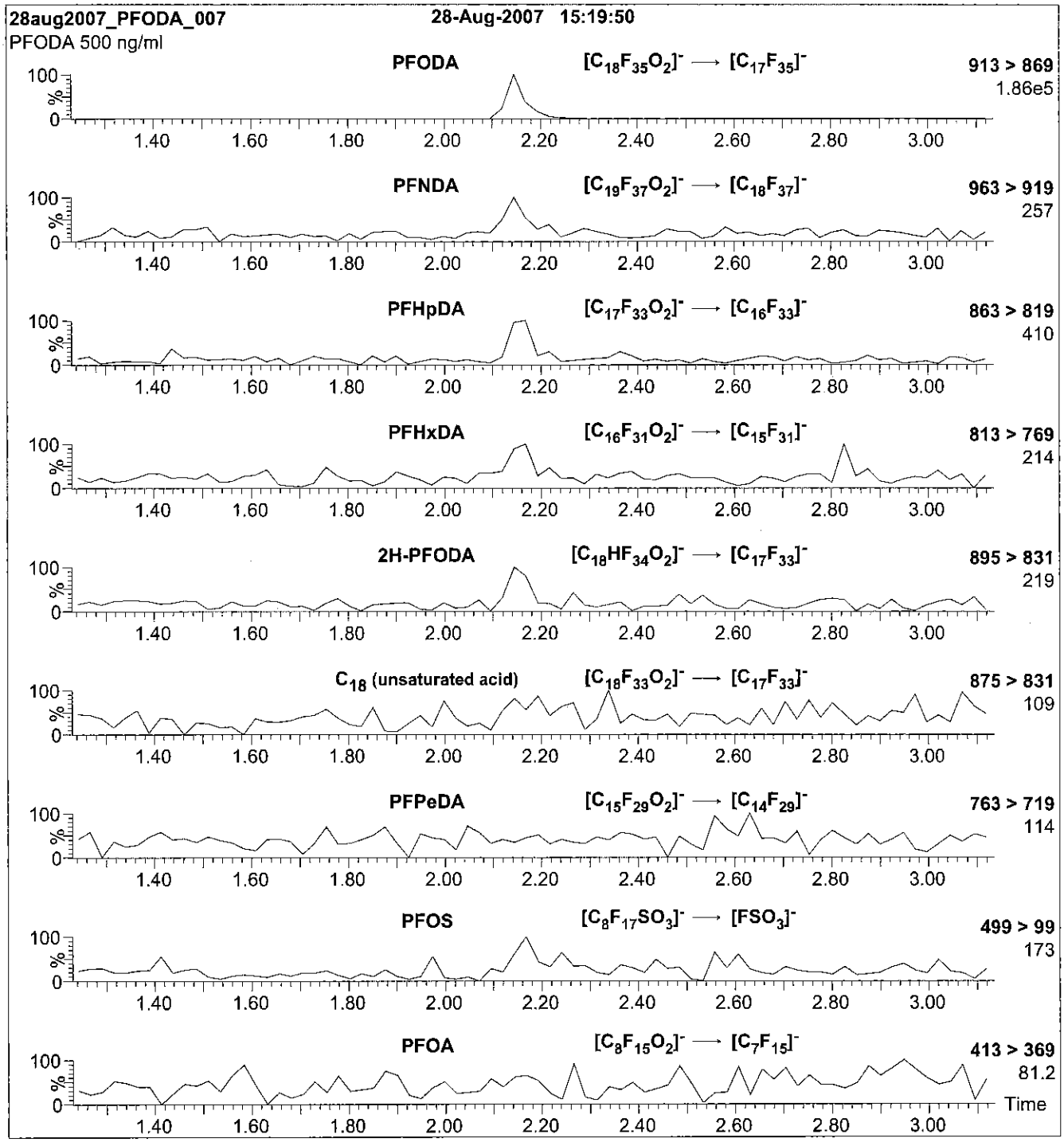
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1100 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) = 650

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 75% (80:20 MeOH:ACN) / 25% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 15

Reagent

LCPFODA_00005

Rec. 3/29/16 JRB

WELLINGTON LABORATORIES

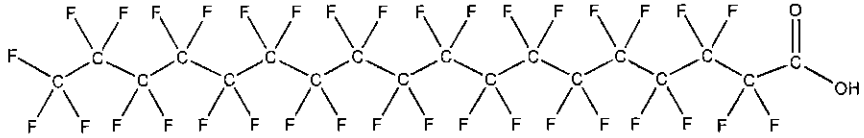
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFODA0115

STRUCTURE:

CAS #: 16517-11-6



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

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

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QUALITY MANAGEMENT:

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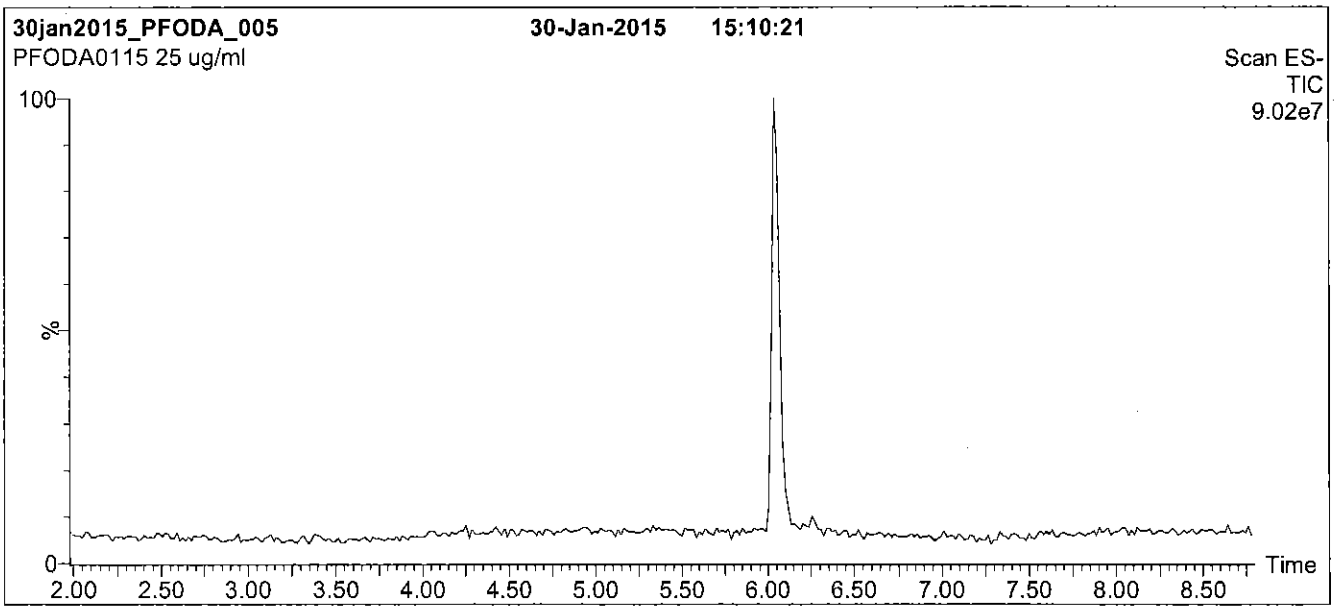
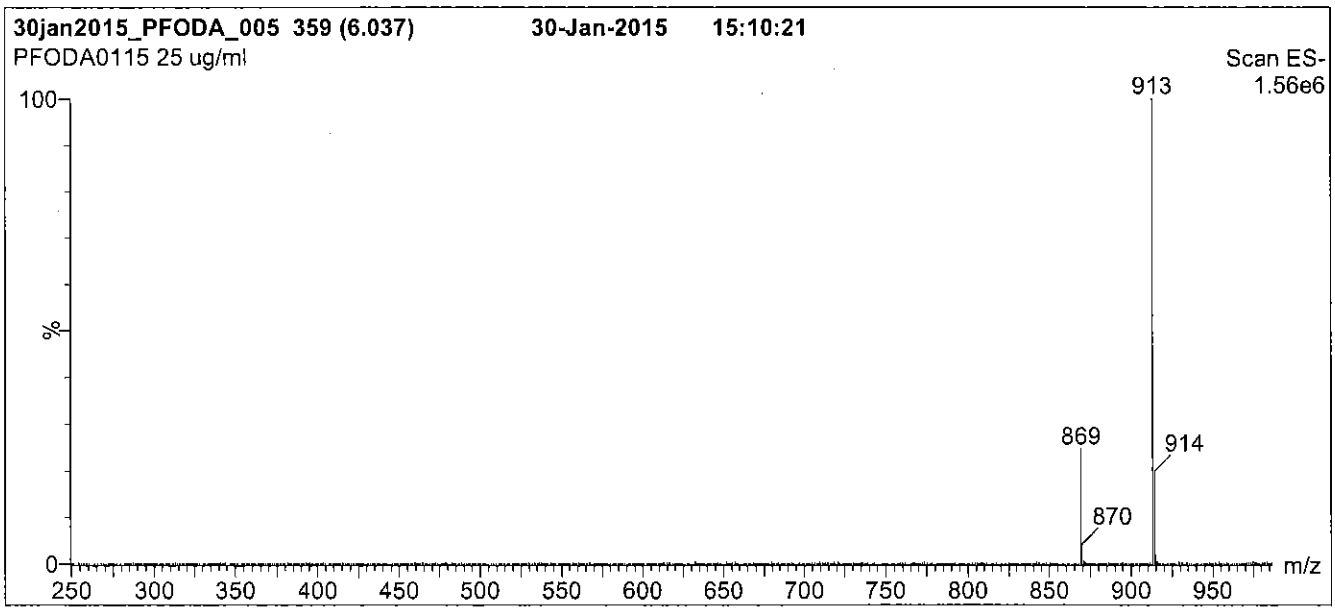
CALA Testing Accreditation No. A1226

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

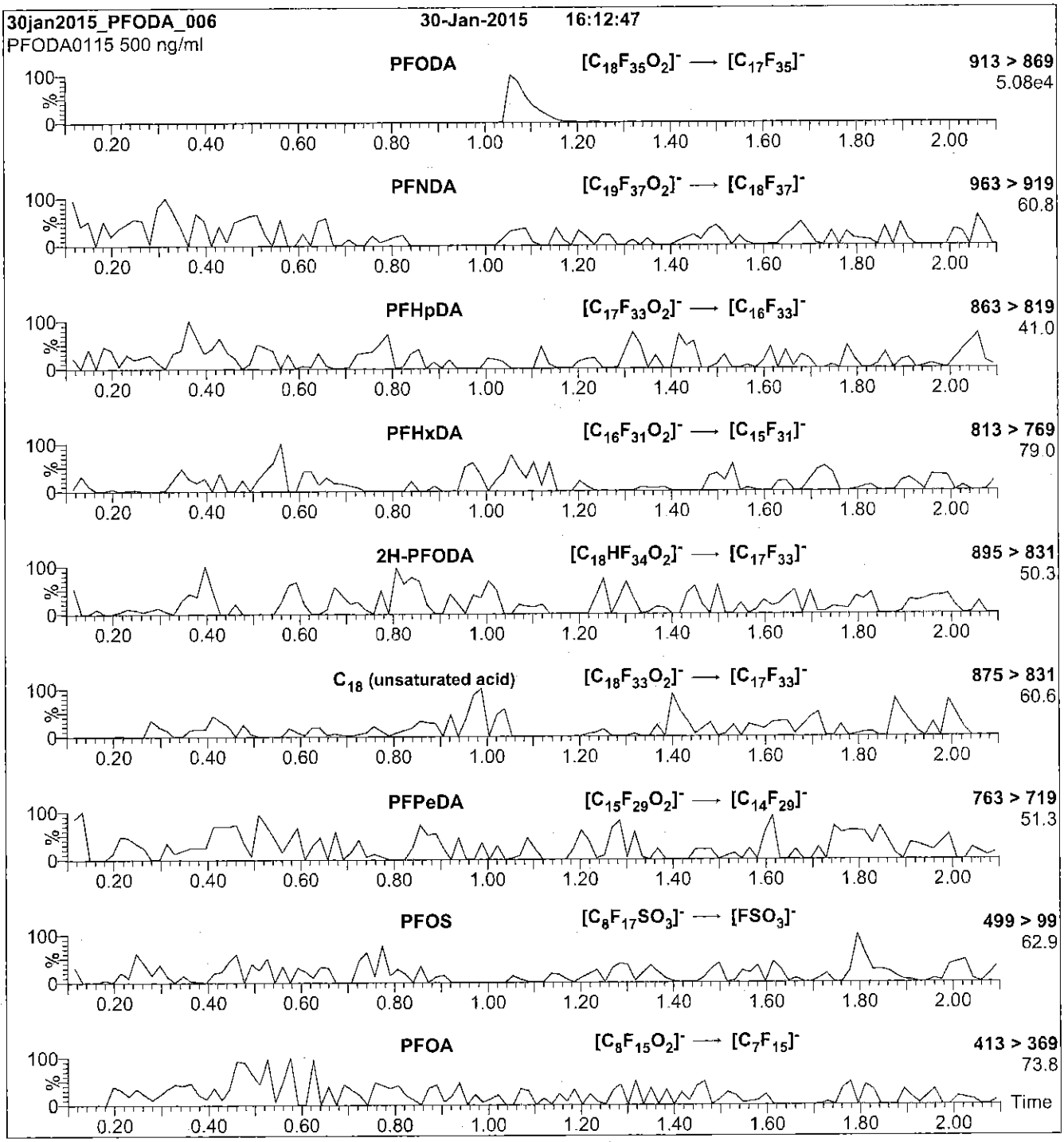
Flow: 300 µl/min

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

LCPFOS-br_00001

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

P: 12/9/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate
Solution/Mixture of Linear and
Branched Isomers

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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

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

TRACEABILITY:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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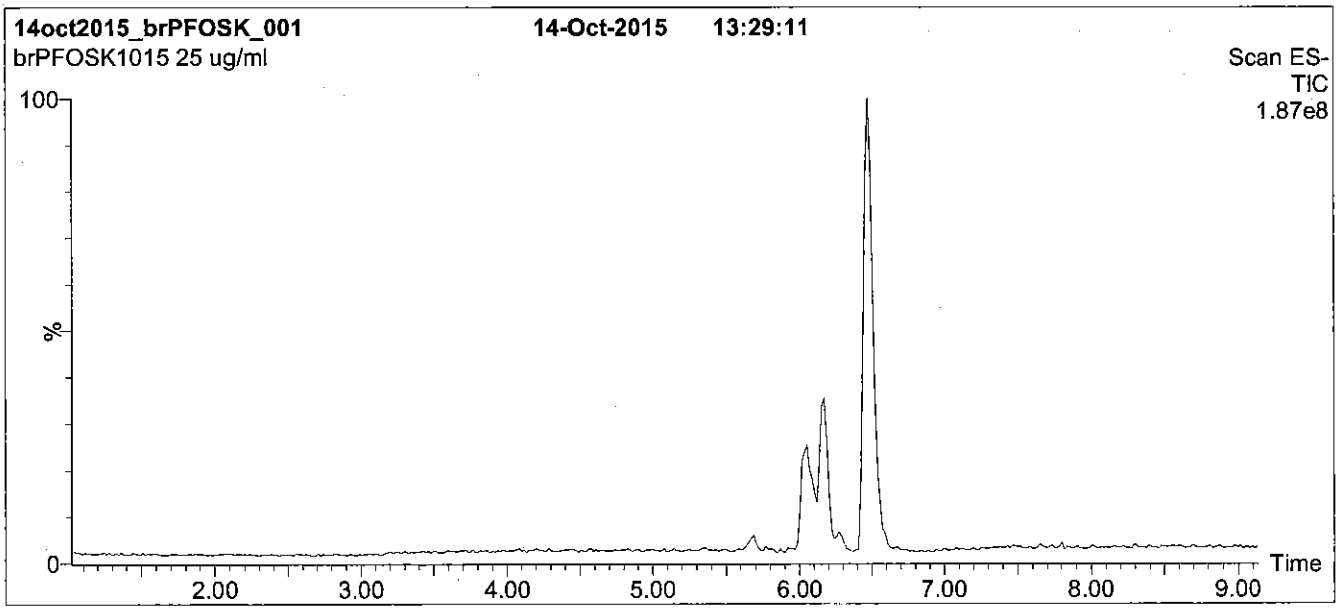
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

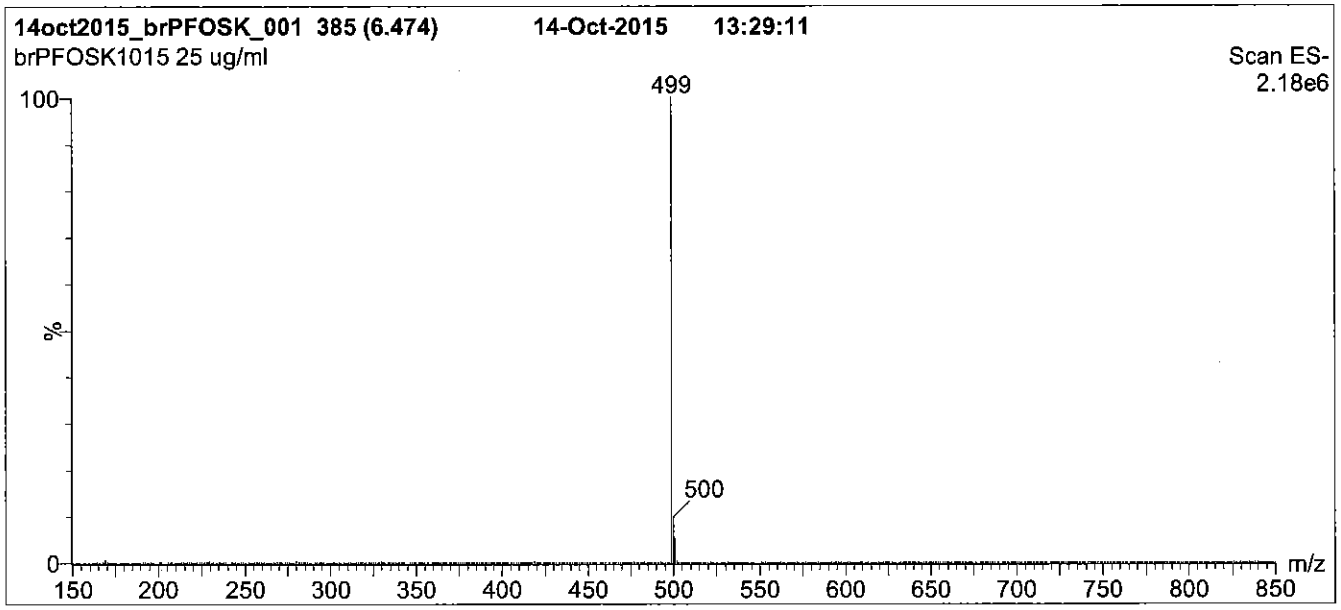
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate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

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

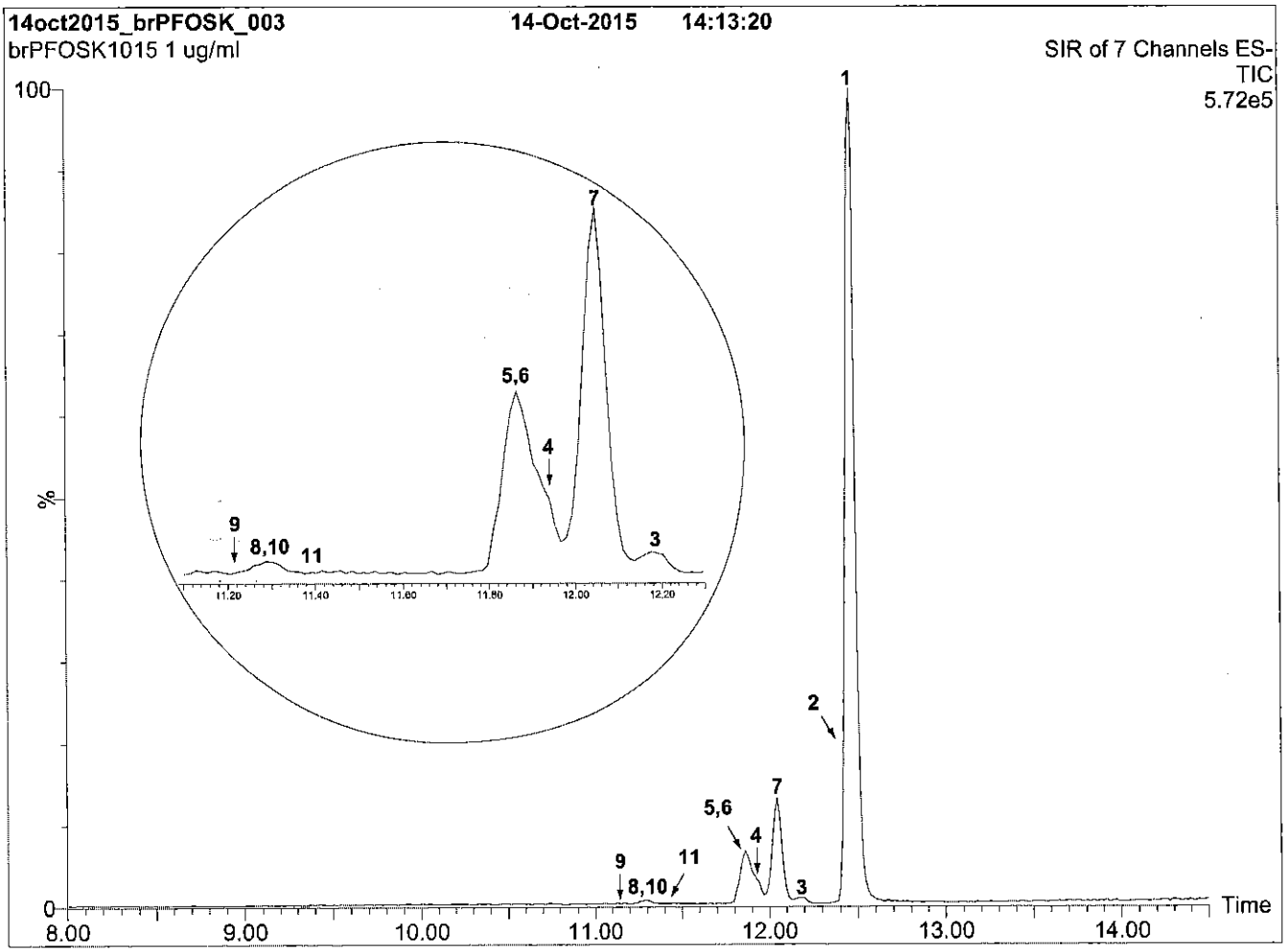
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Chromatographic Conditions:

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

Injection: 1.0 µg/ml of br-PFOSK

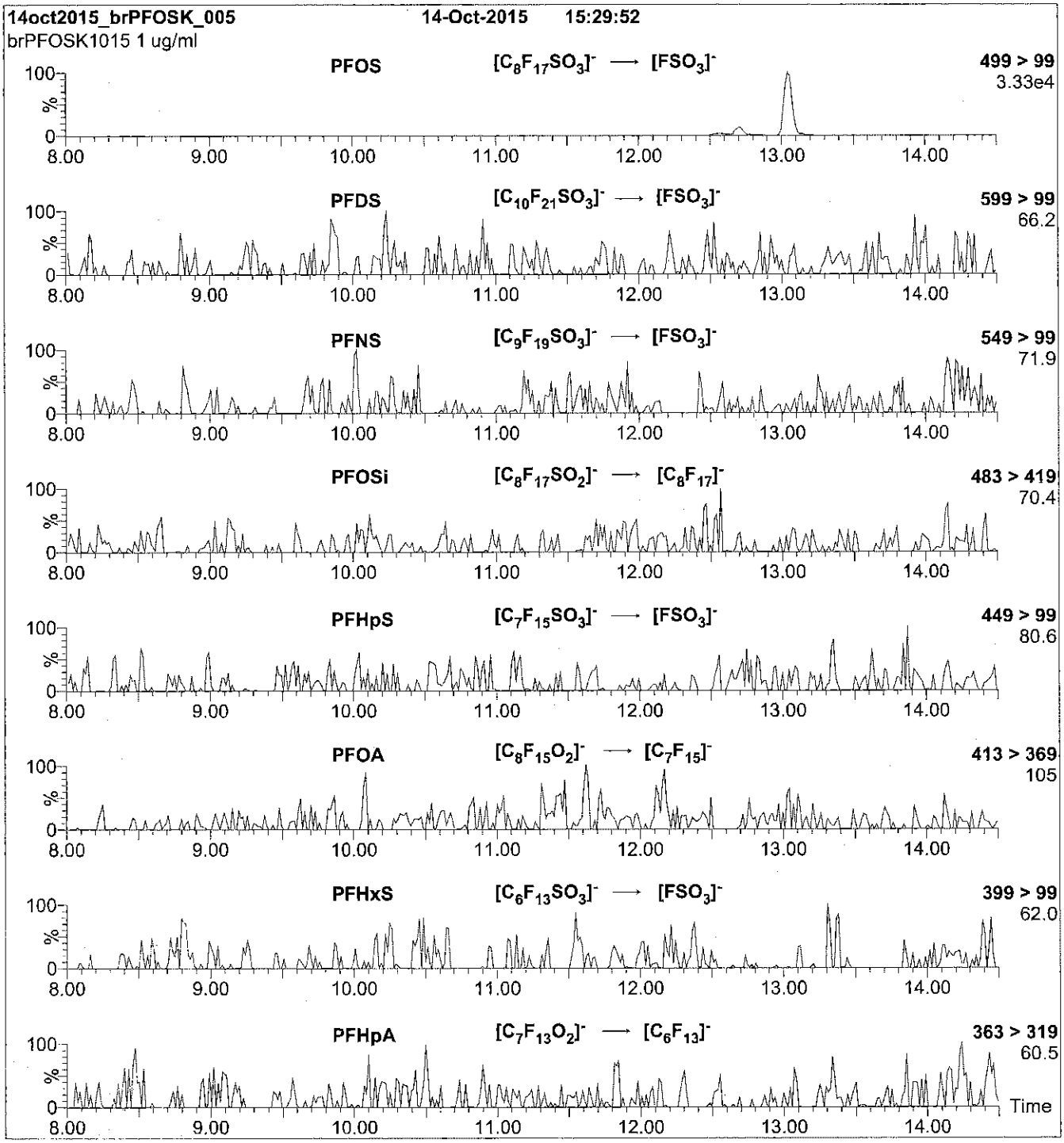
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

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

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



Condltions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFOS_00004

C 3/17/15 SV

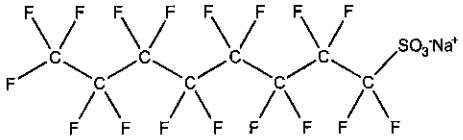
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFOS
COMPOUND: Sodium perfluoro-1-octanesulfonate
LOT NUMBER: LPFOS0614

STRUCTURE:

CAS #: 4021-47-0



MOLECULAR FORMULA:	$C_8F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	522.11
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (PFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	06/20/2014		
EXPIRY DATE: (mm/dd/yyyy)	06/20/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/27/2014 (mm/dd/yyyy)

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

INTENDED USE:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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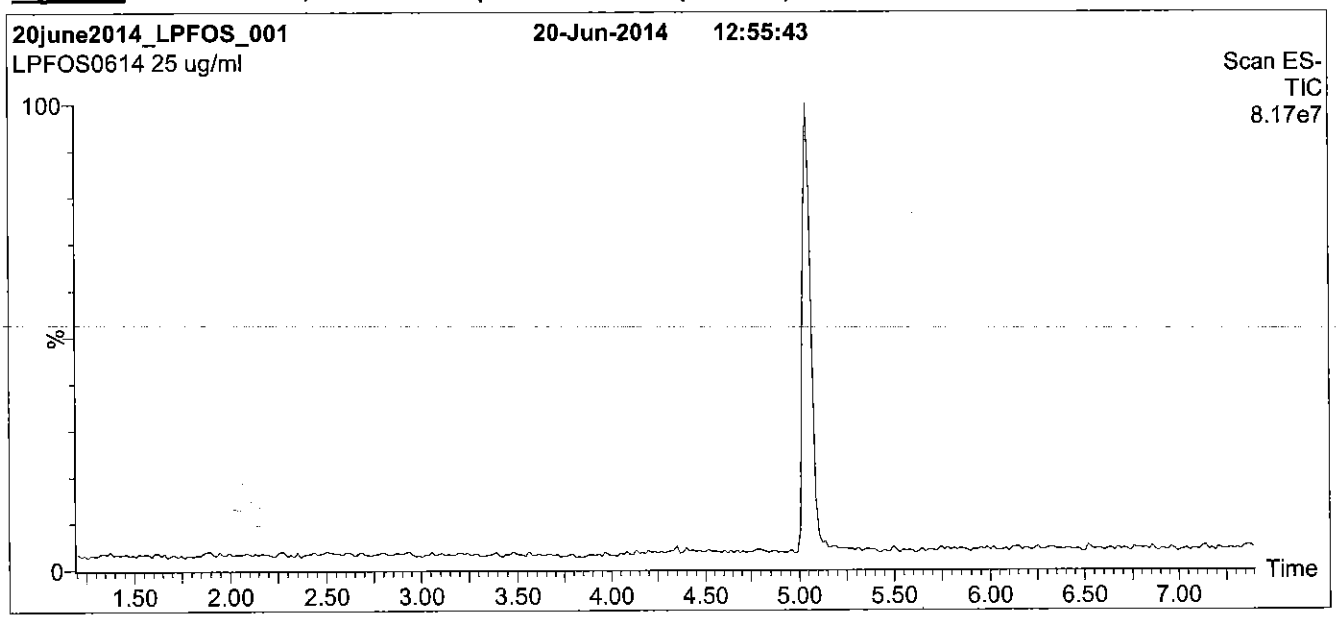
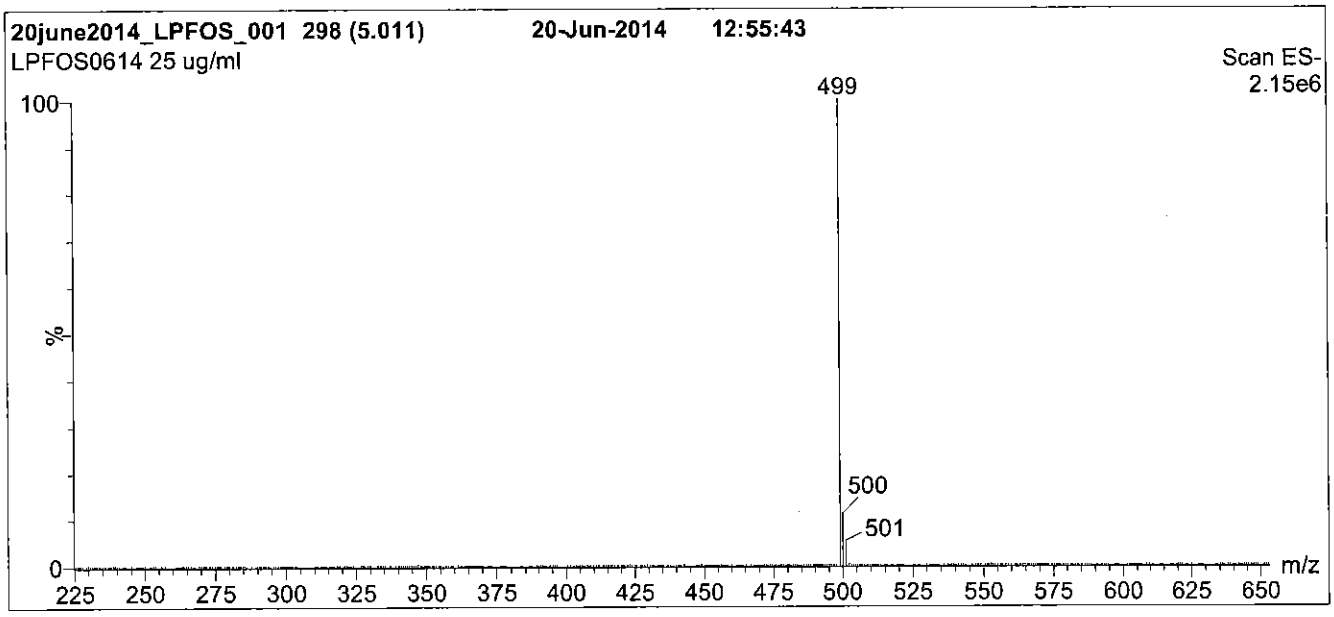
Figure 1: **L-PFOS; LC/MS Data (TIC and Mass Spectrum)**





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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

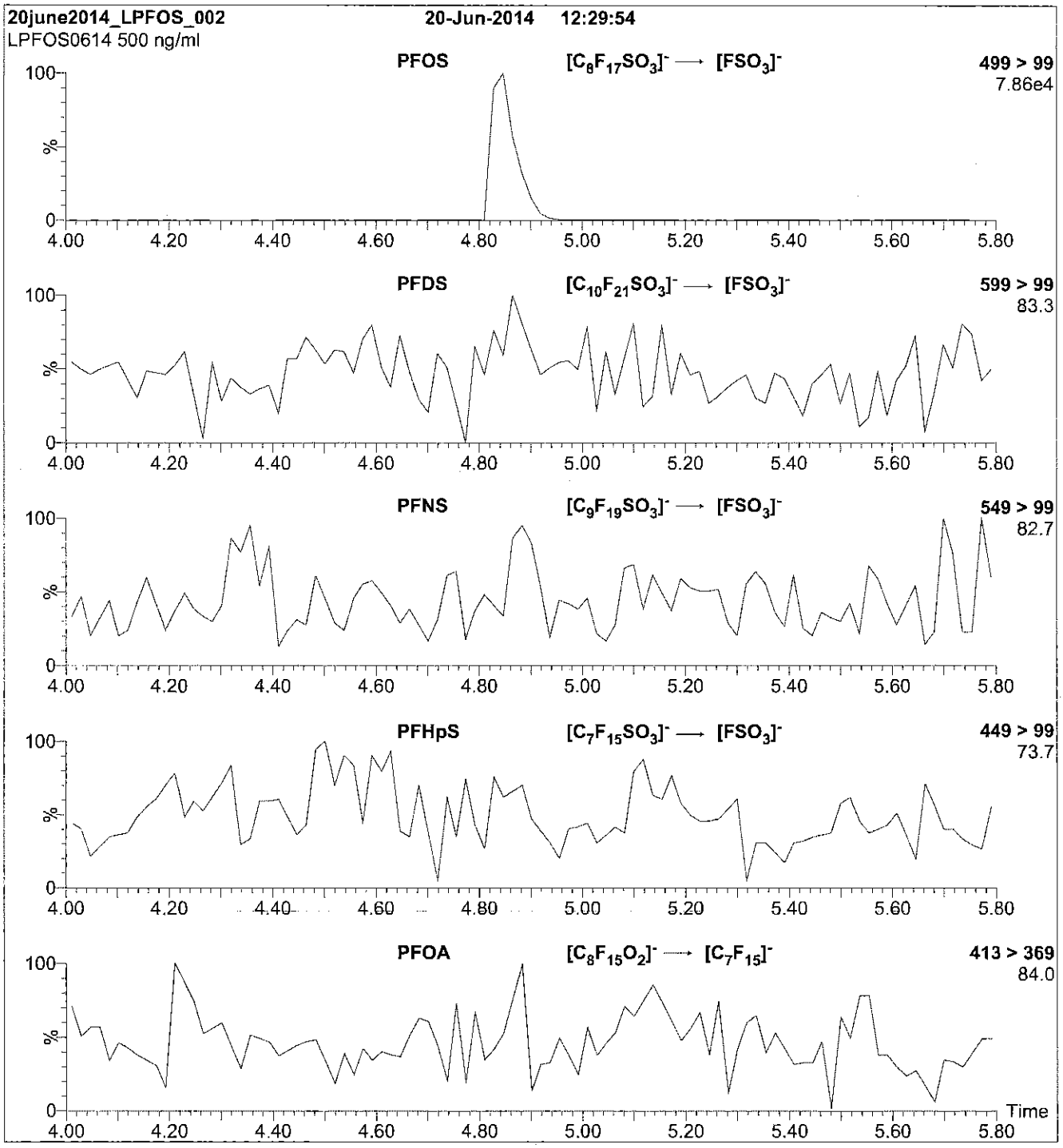
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 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: **L-PFOS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (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) = 40

Reagent

LCPFOSA_00006

Rec 12/30/15 CW

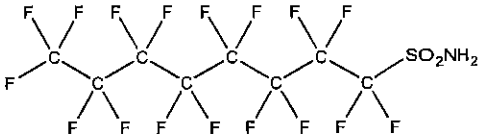
WELLINGTON LABORATORIES

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:

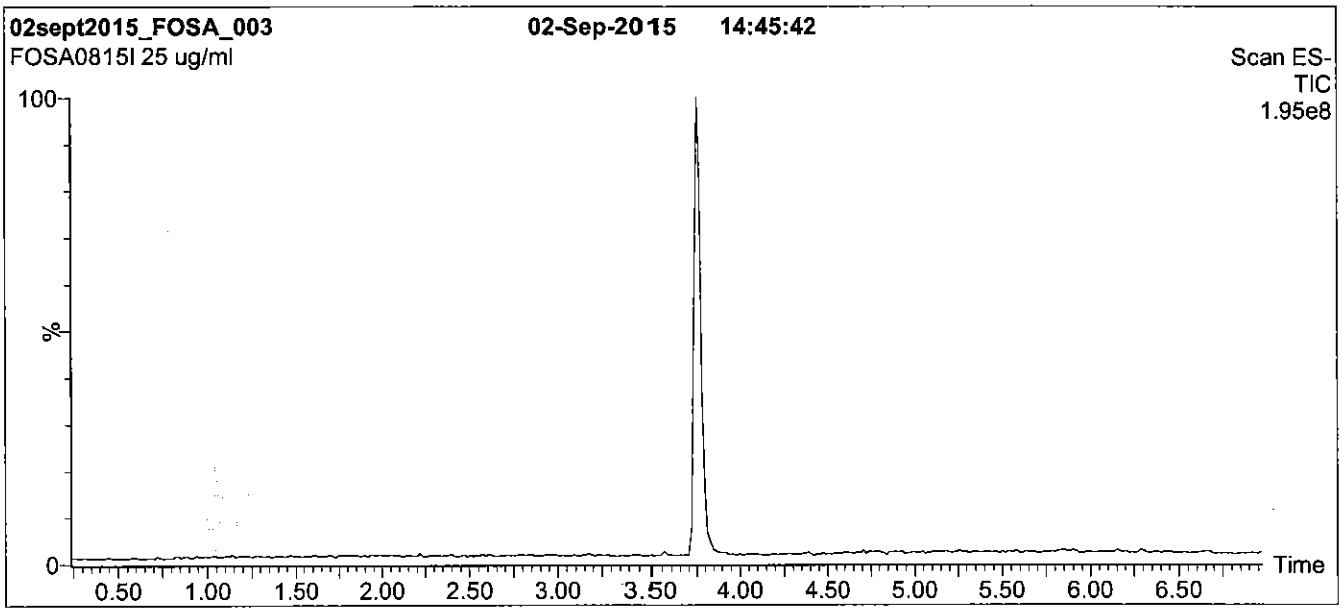
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

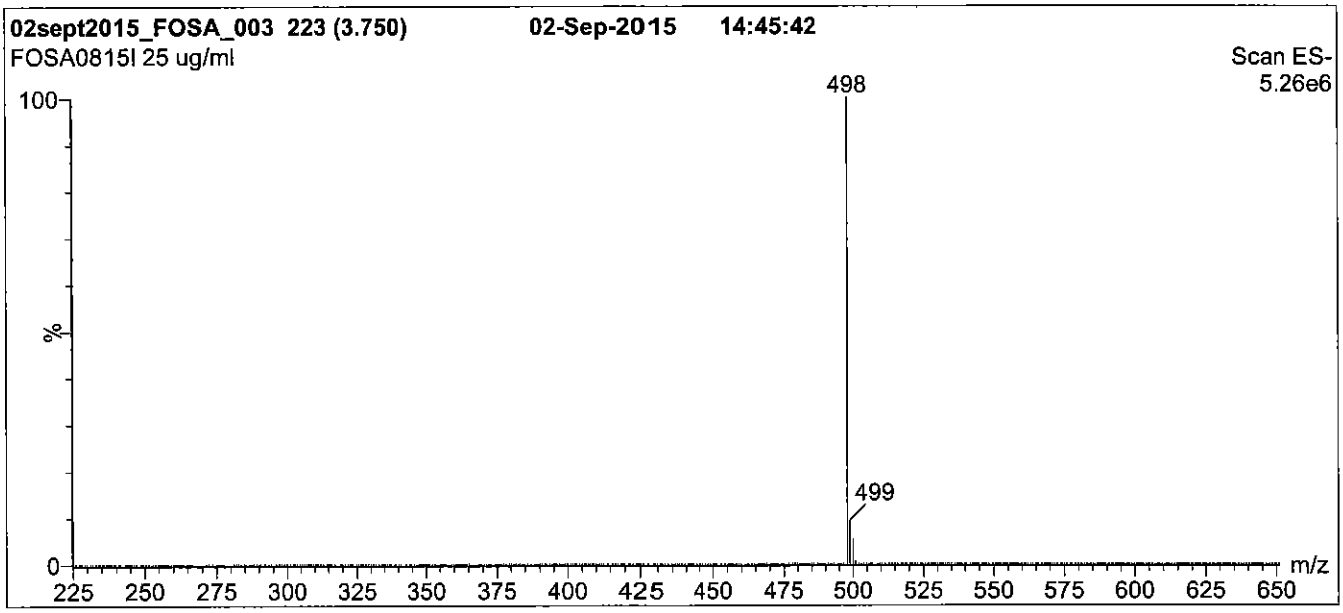
CALA Testing Accreditation No. A1226

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

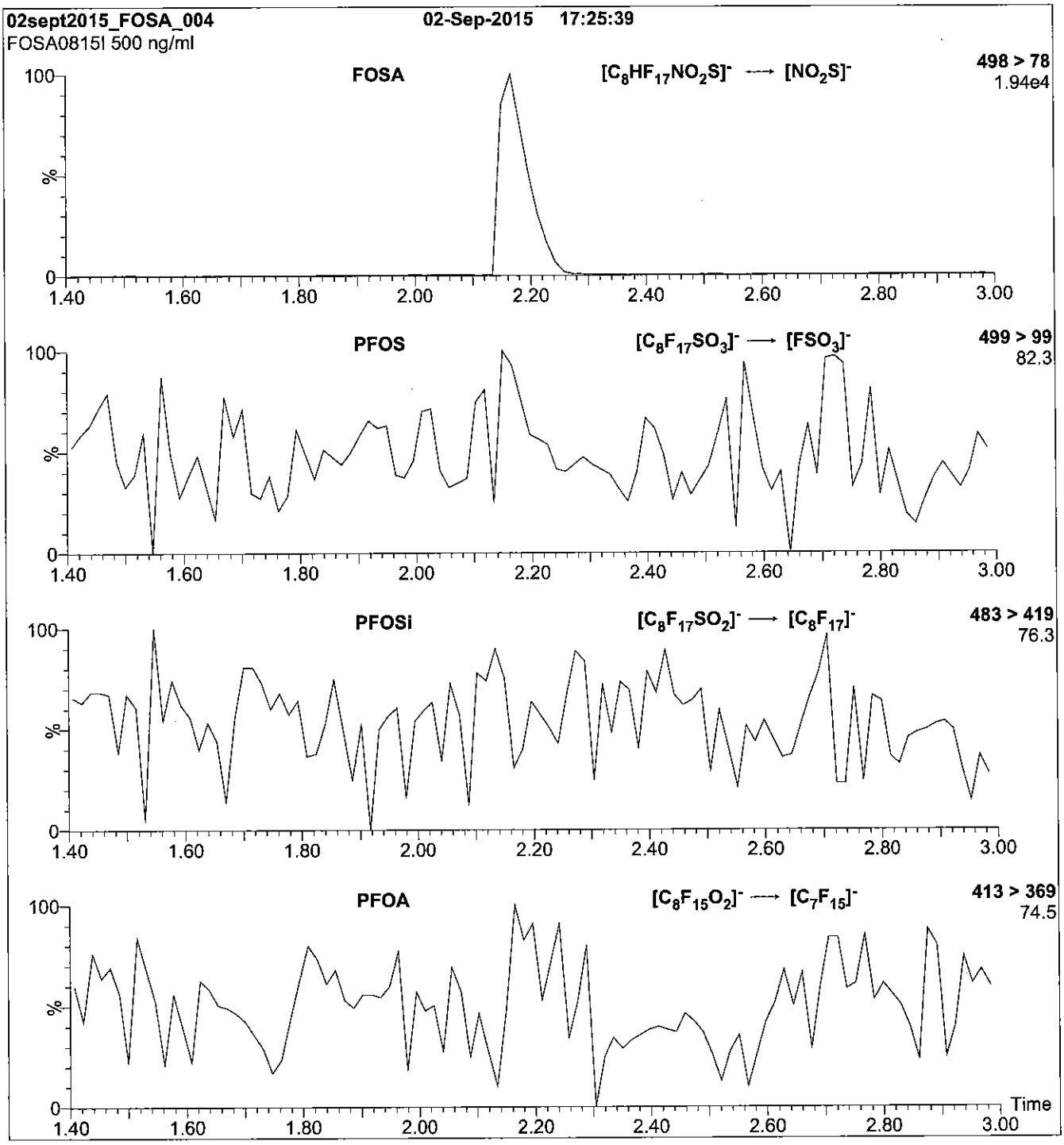
Flow: 300 µl/min

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

LCPFPeA_00004

Rec: 12/30/15 aw

WELLINGTON LABORATORIES

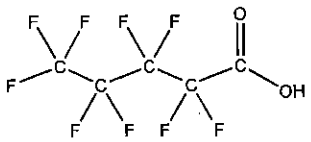
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFPeA0115

STRUCTURE:

CAS #: 2706-90-3



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

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/26/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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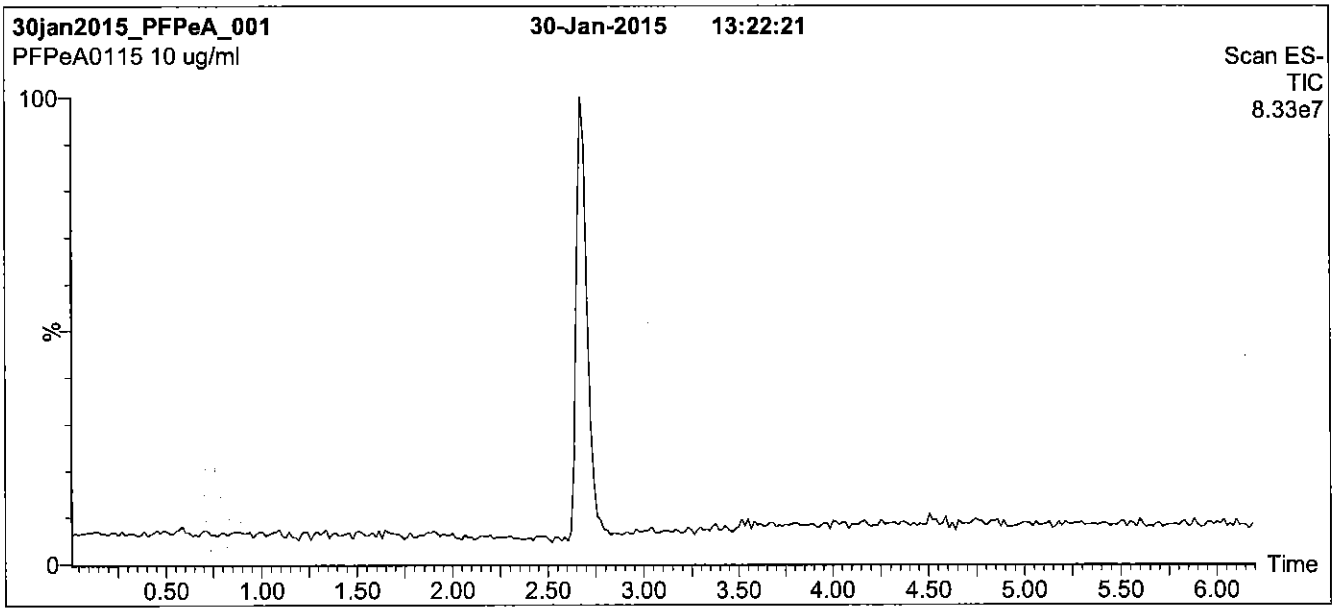
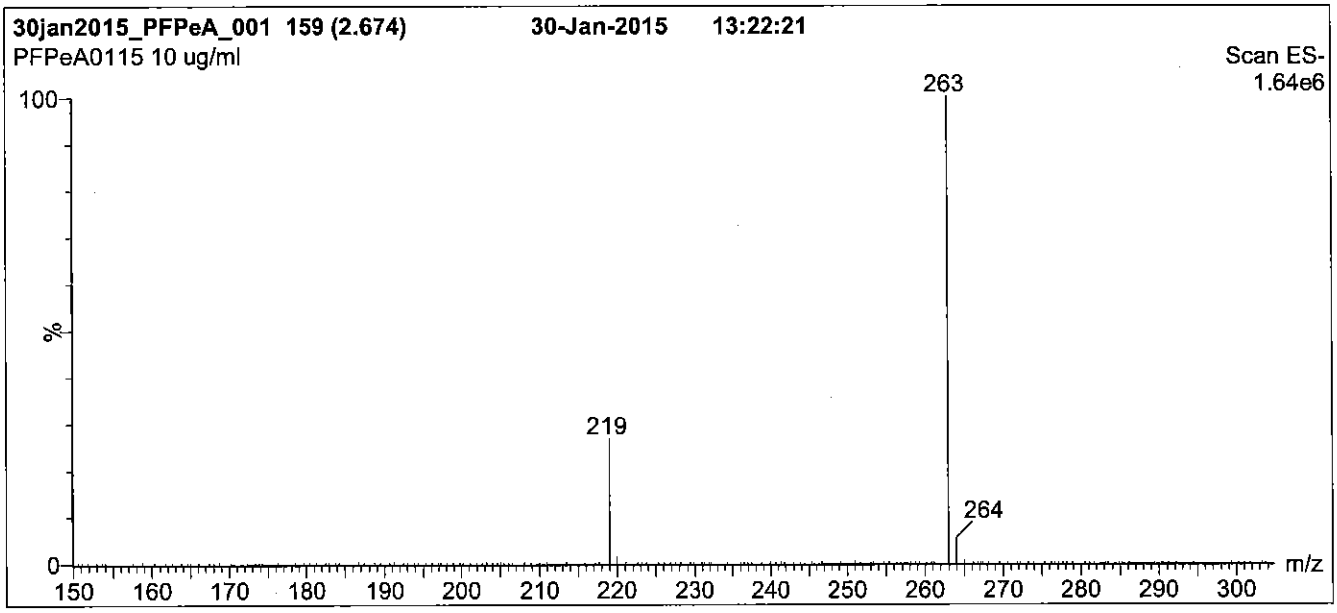
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

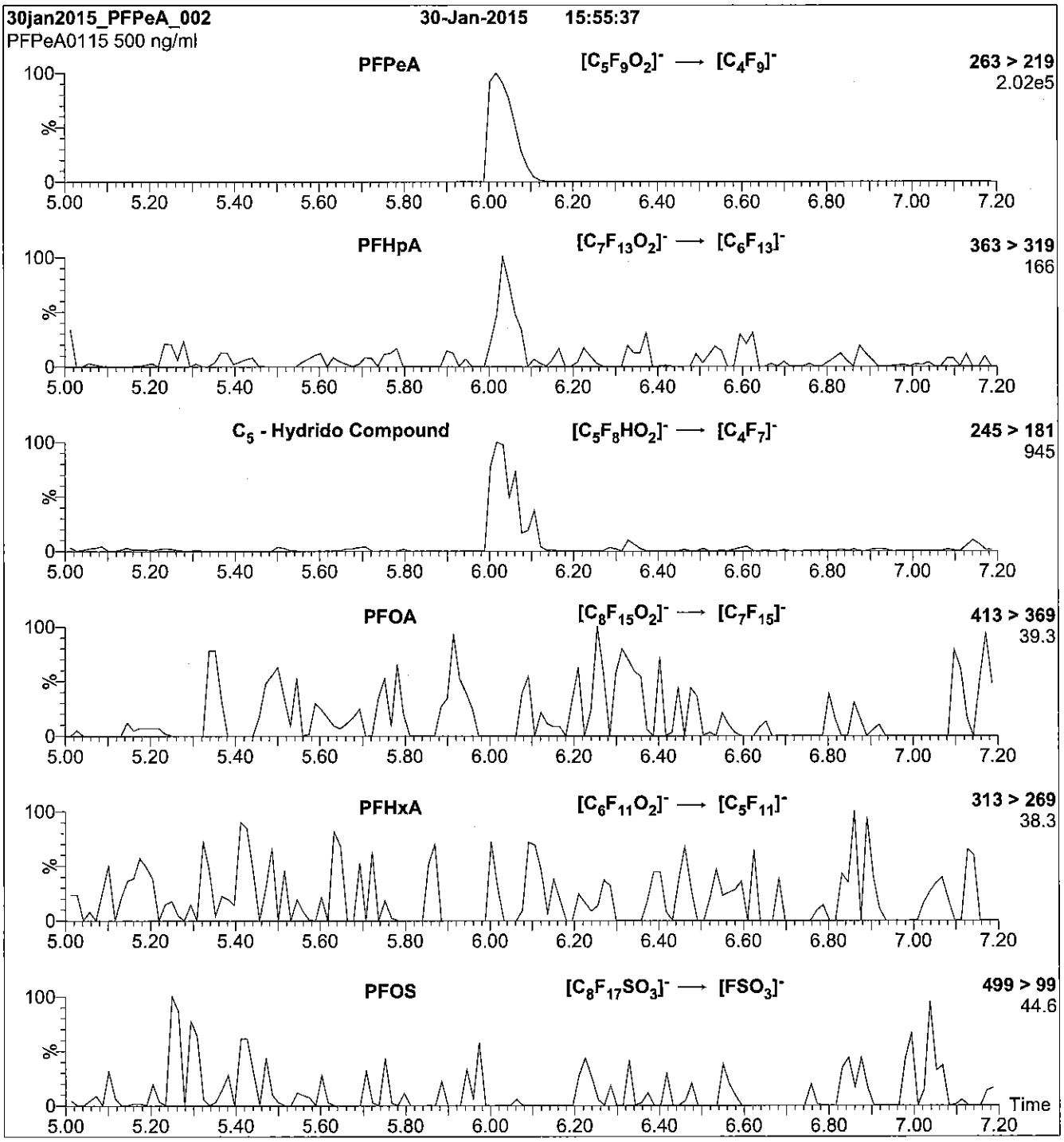
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

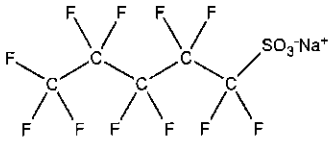
LCPFPeS_00002

R 24hrs w

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS
LOT NUMBER: LPFPeS0712
COMPOUND: Sodium perfluoro-1-pentanesulfonate
STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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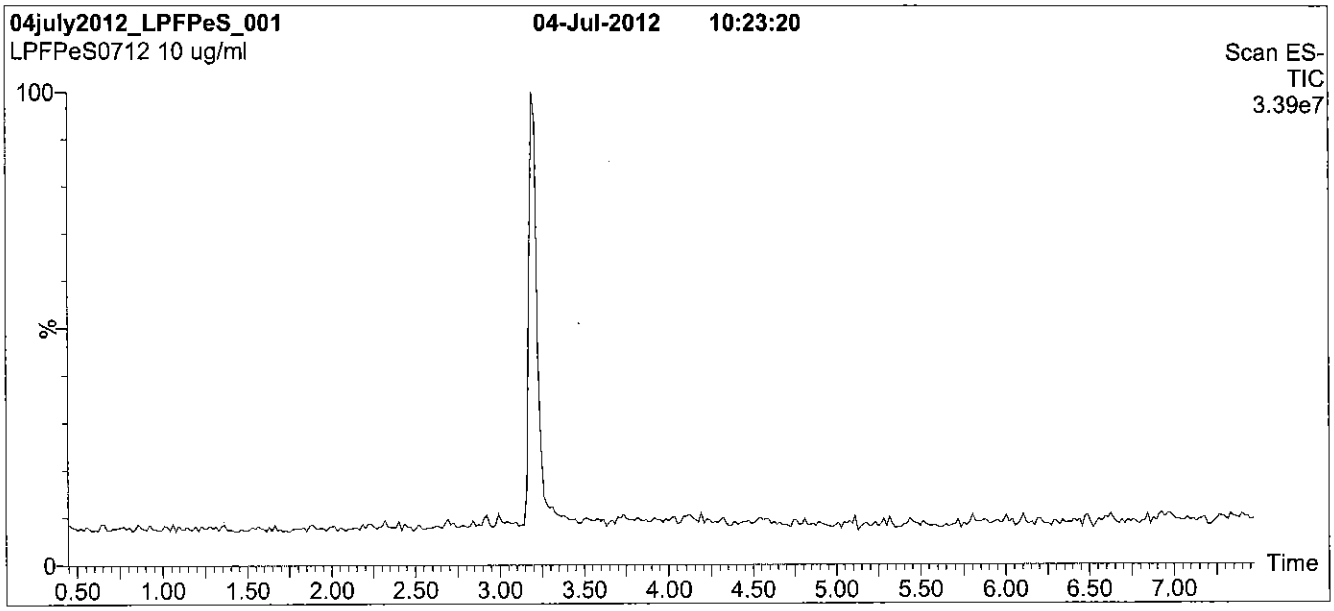
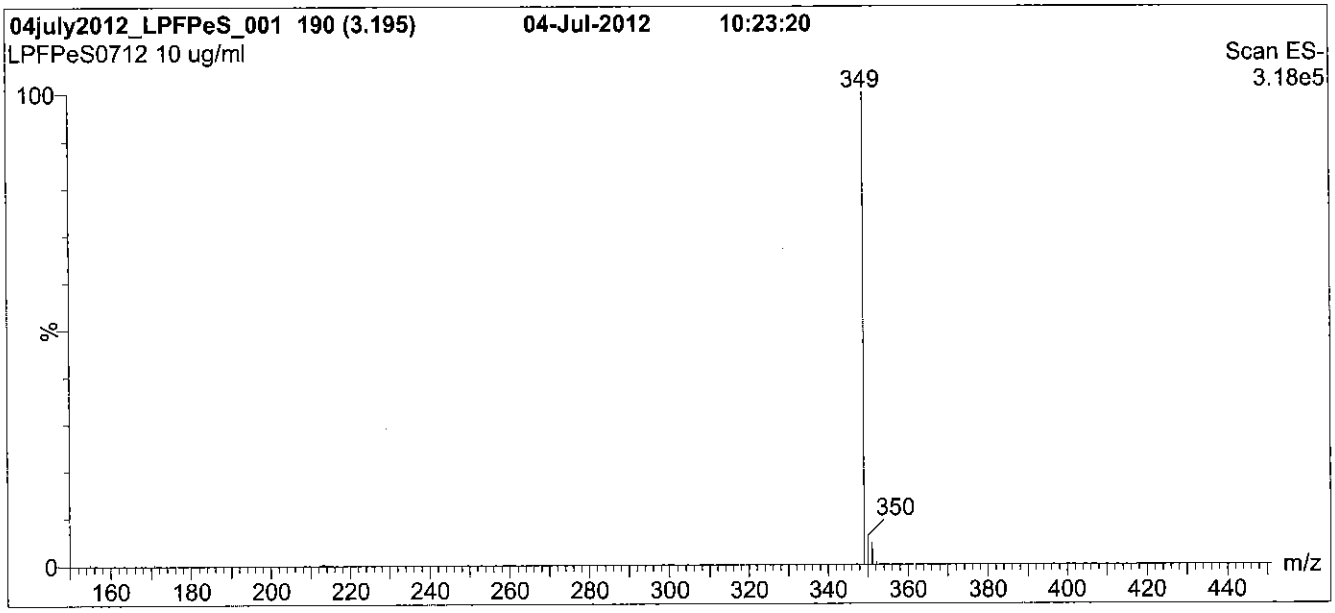
Figure 1: **L-PFPeS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

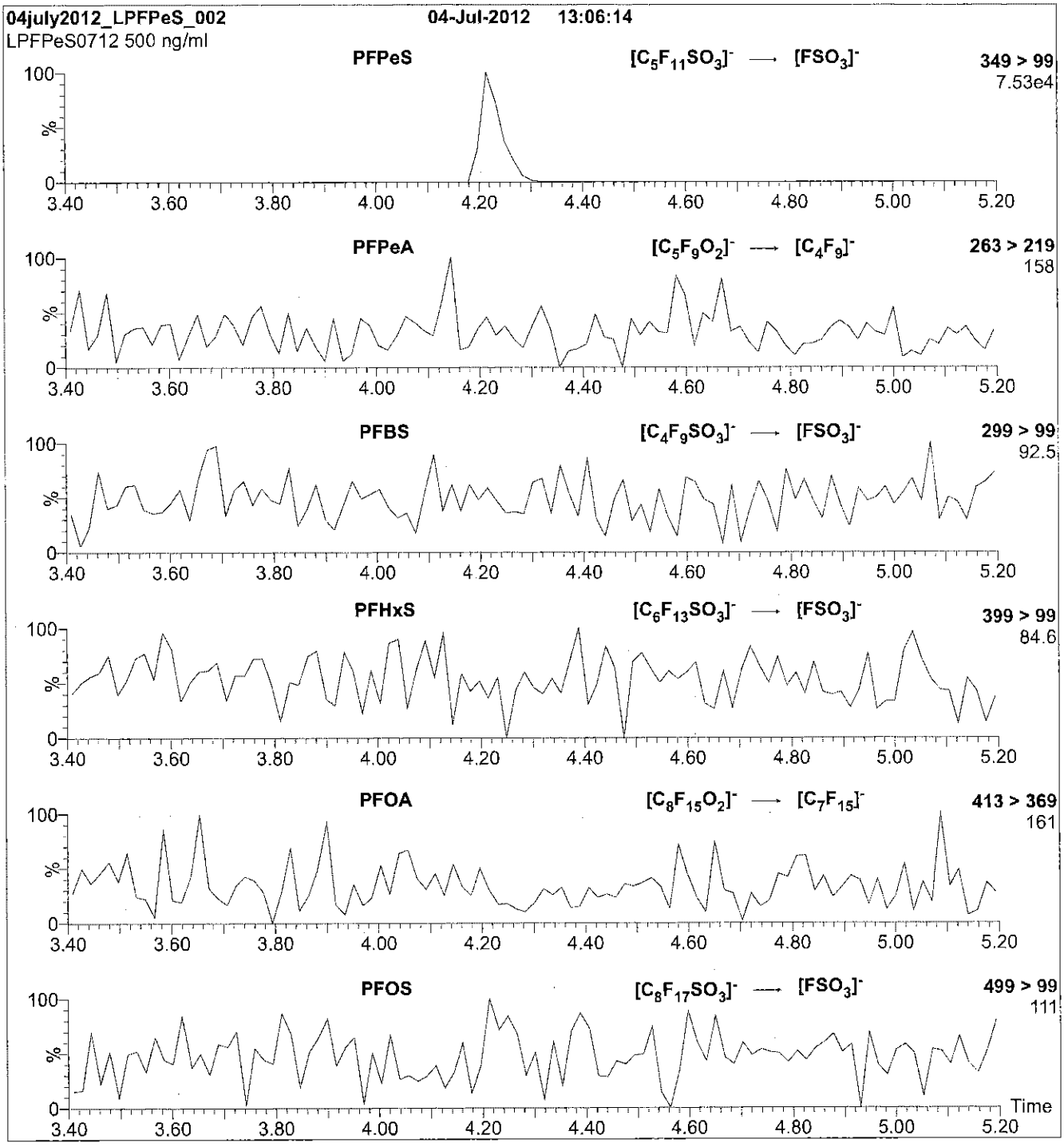
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFTeDA_00003

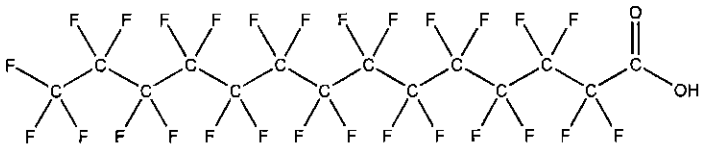
V: 2/11/15 SRV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0613
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) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
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 ~ 0.2% 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:** 07/17/2013 (mm/dd/yyyy)

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

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QUALITY MANAGEMENT:

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CALA Testing Accredited Laboratory No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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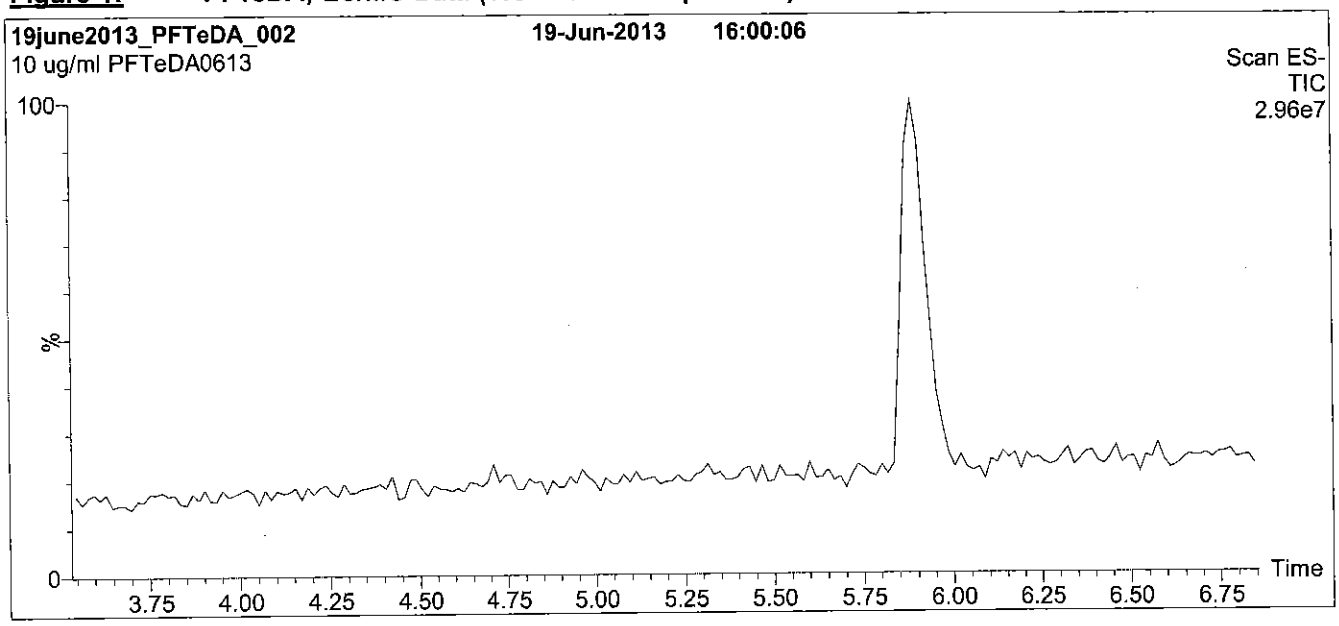
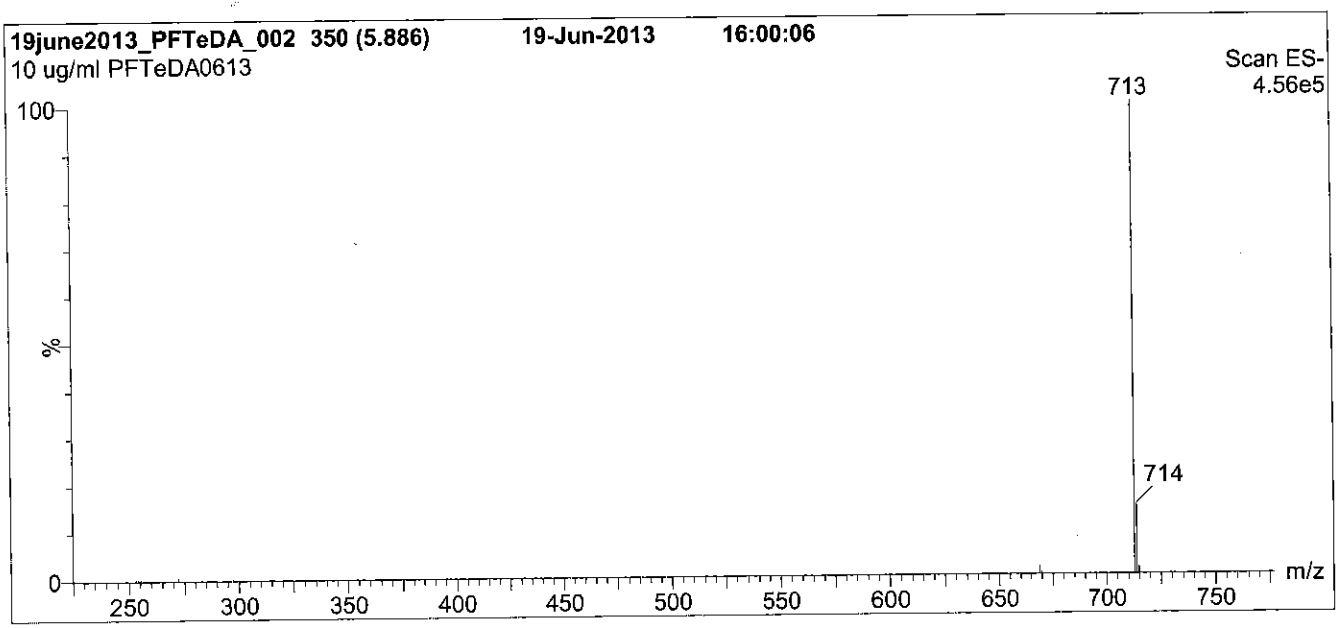
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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 0.50 min.
Time: 10 min

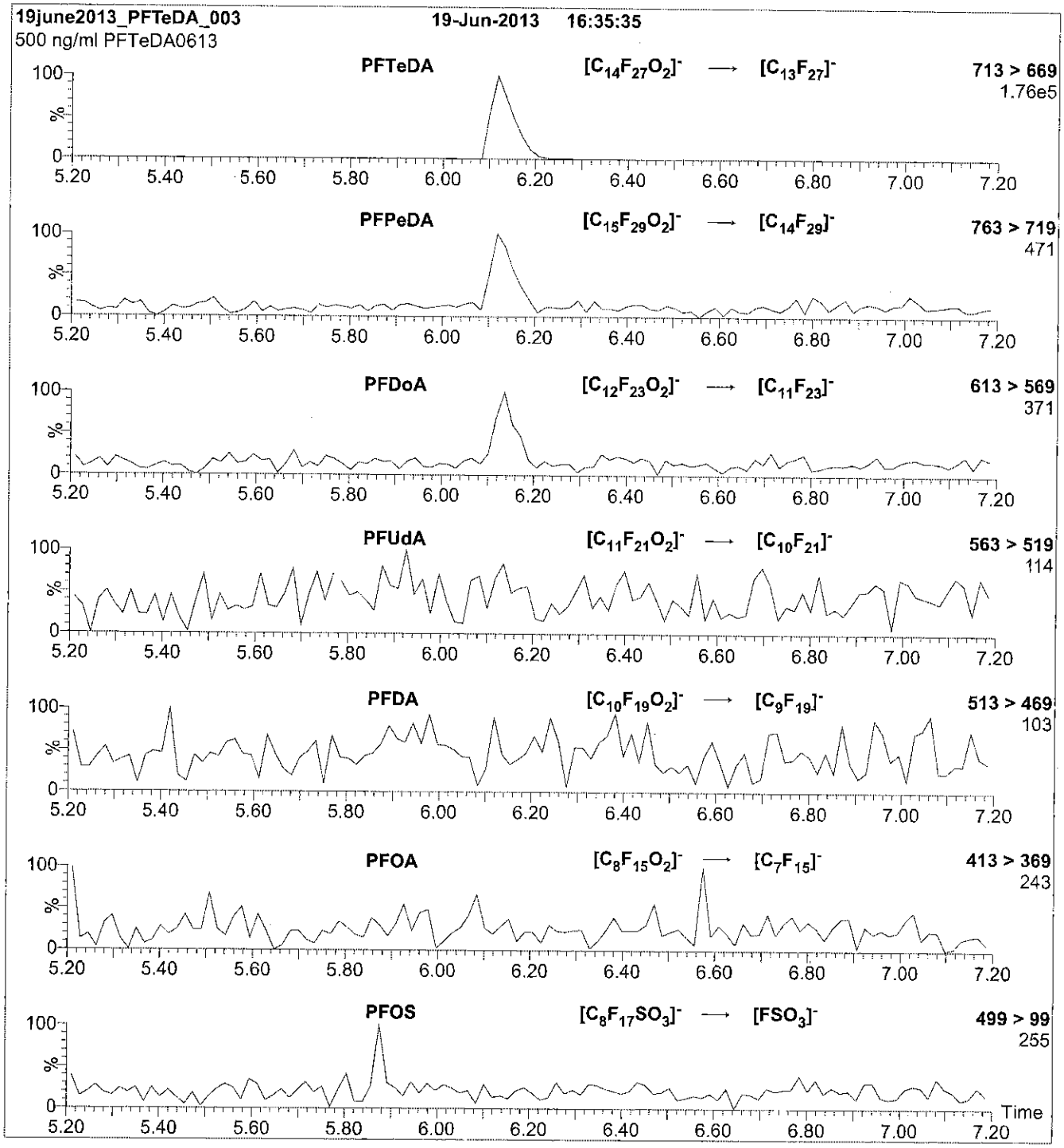
Flow: 300 µl/min

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: **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) = 3.50e-3
Collision Energy (eV) = 14

Reagent

LCPFTeDA_00004

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

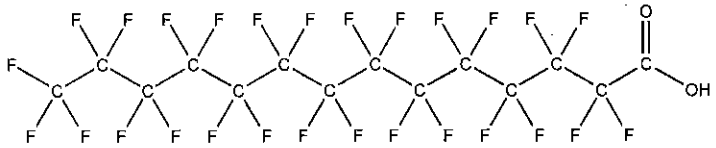
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 376-06-7



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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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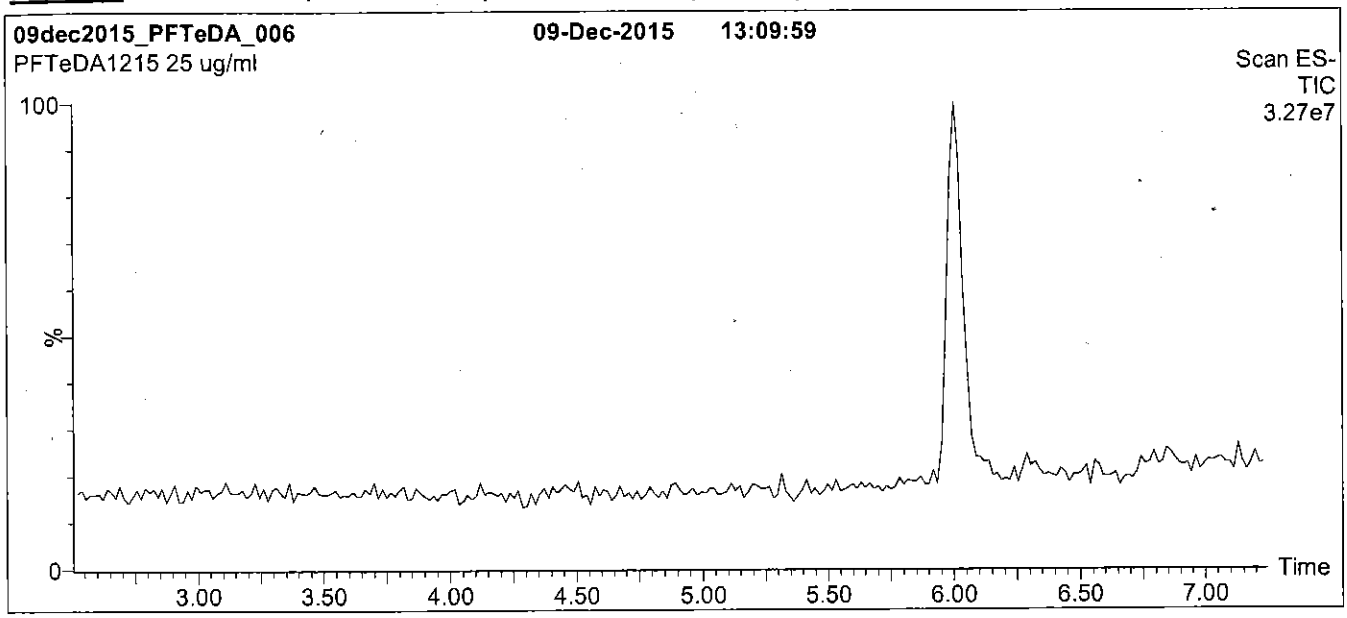
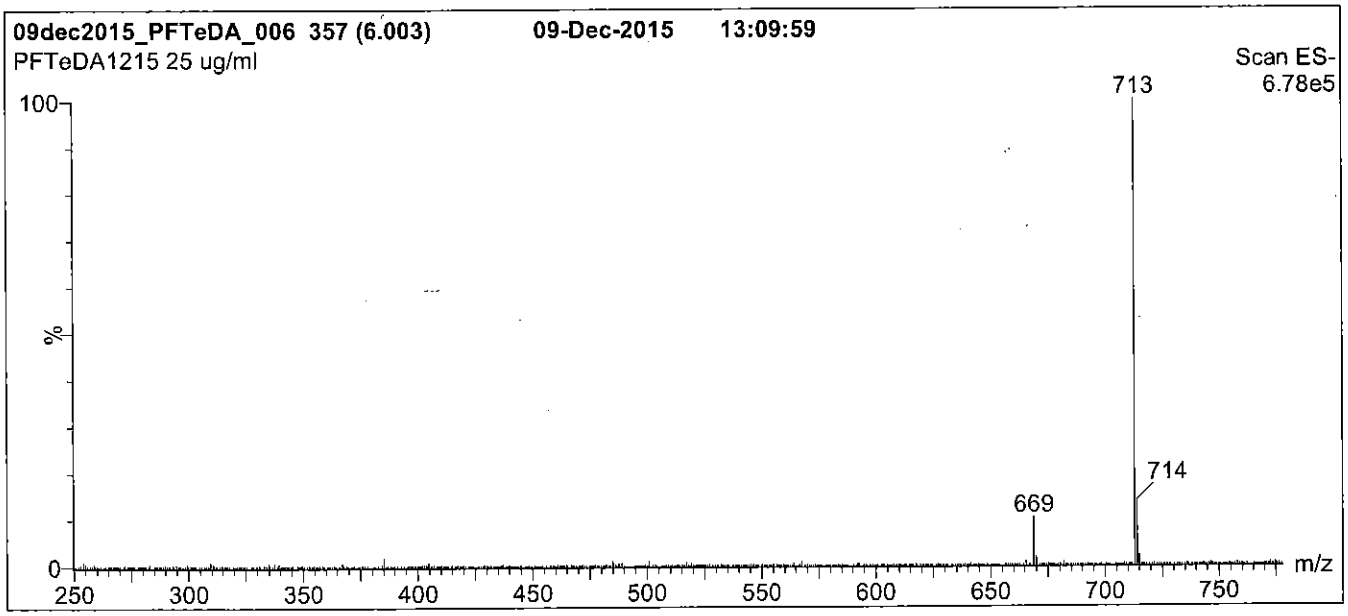




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

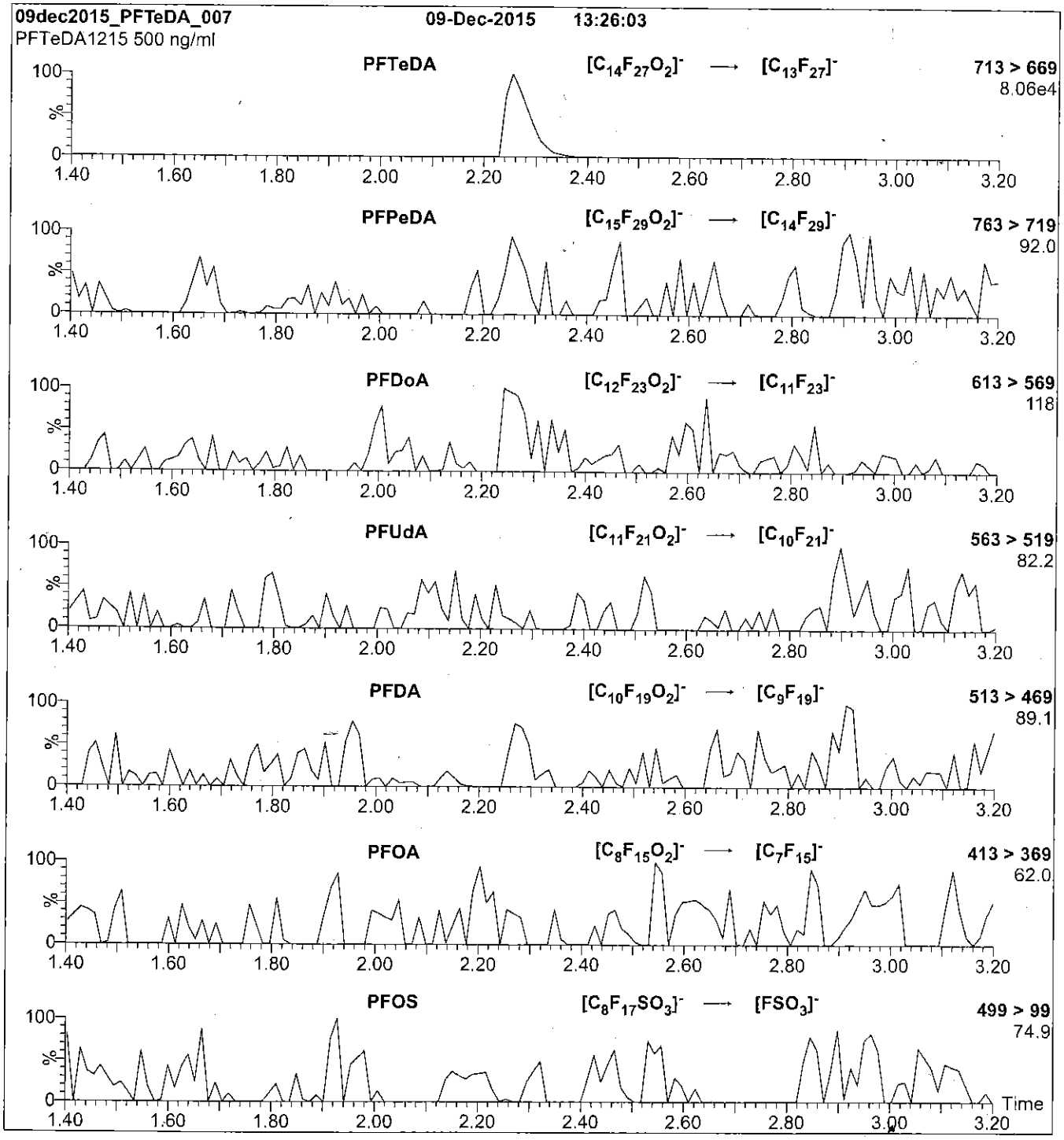
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFTrDA_00003

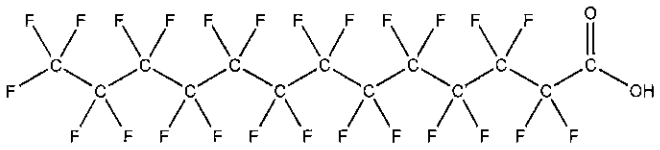
V. 2/11/15 CTN

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:** 12/11/2013 (mm/dd/yyyy)

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

INTENDED USE:

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CALA Testing Accreditation No. A 1226

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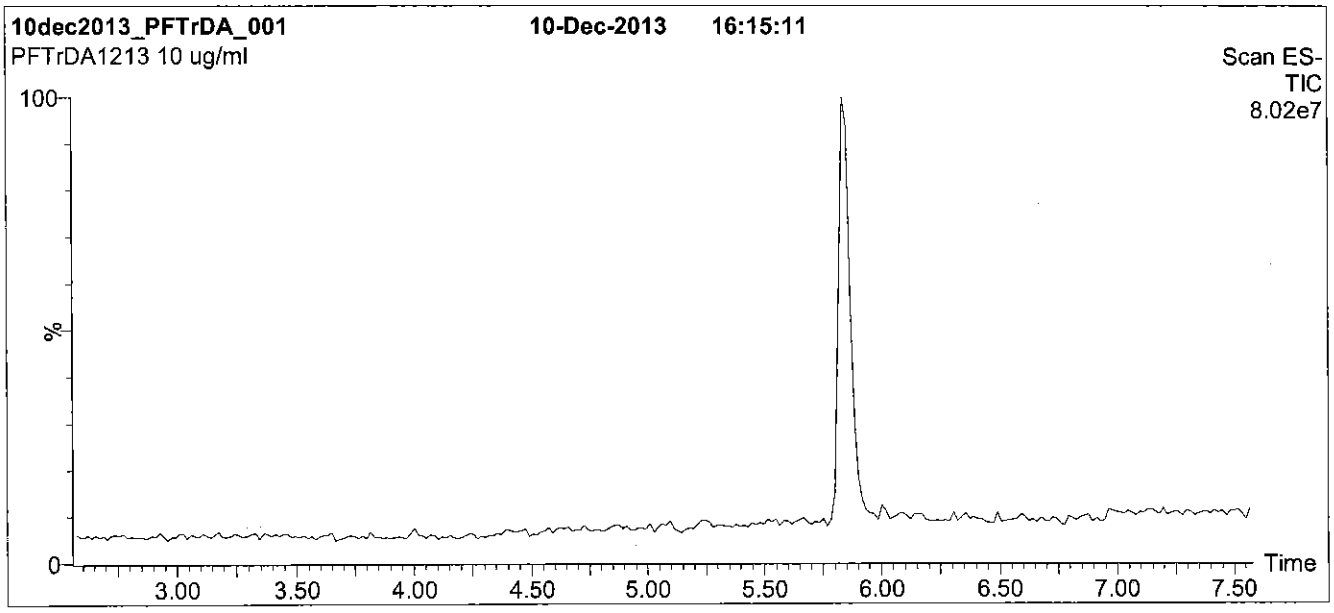
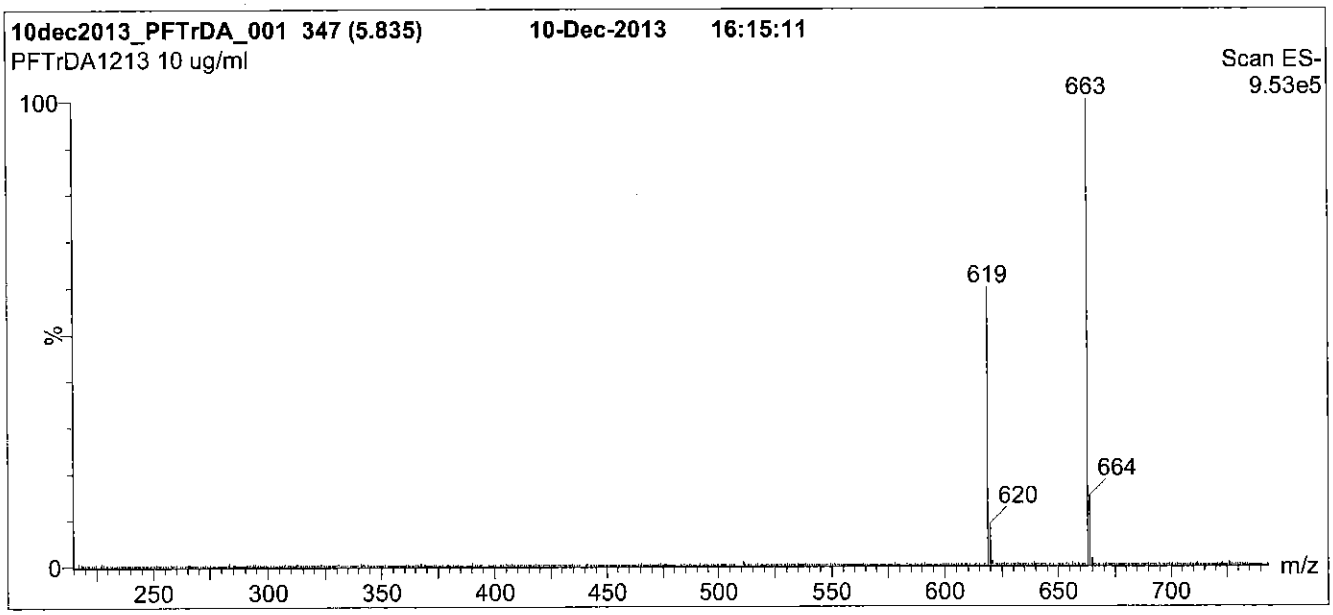
Figure 1: **PFTrDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

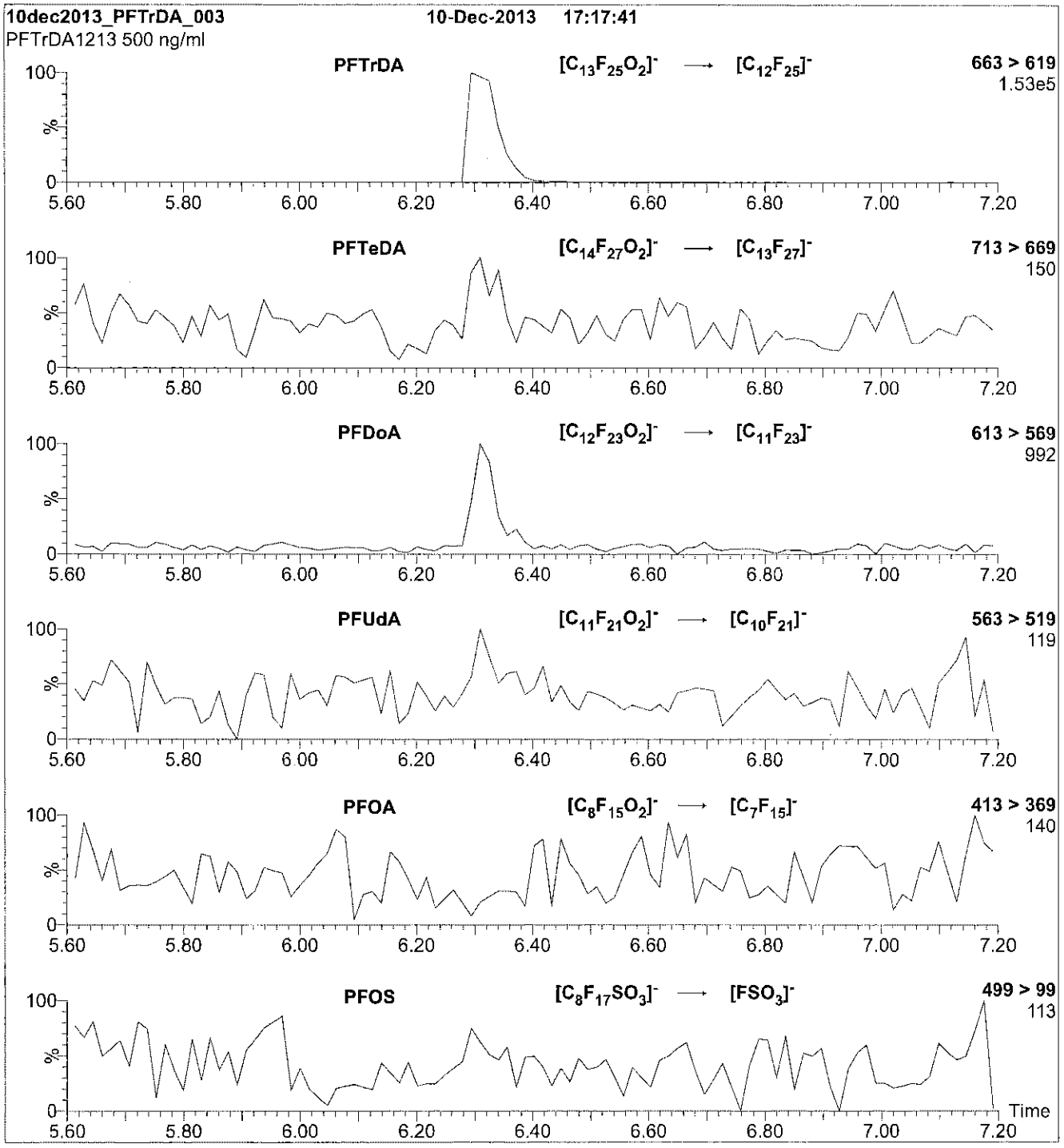
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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_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:
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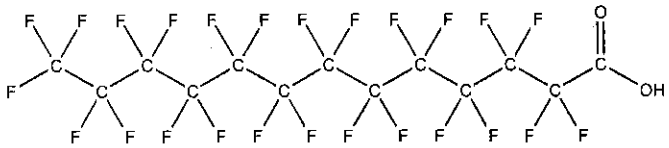

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Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/10/2013
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Figure 1: LC/MS Data (TIC and Mass Spectrum)
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Certified By: B.G. Chittim **Date:** 03/25/2015 (mm/dd/yyyy)

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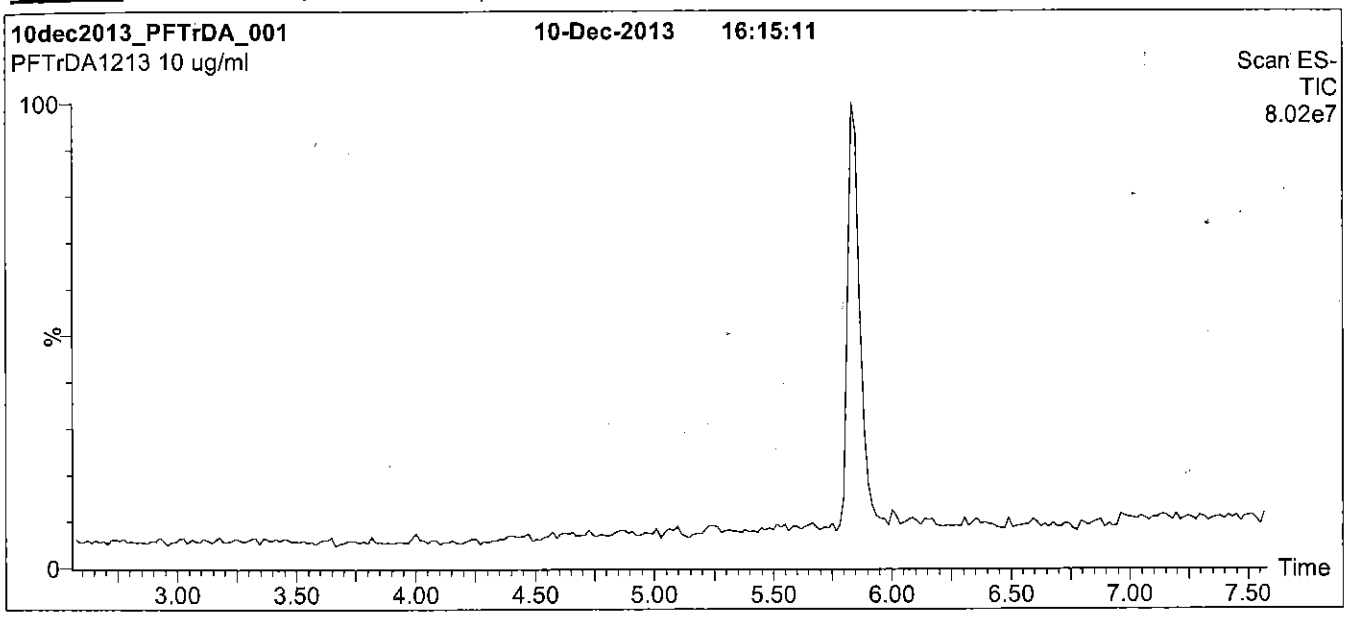
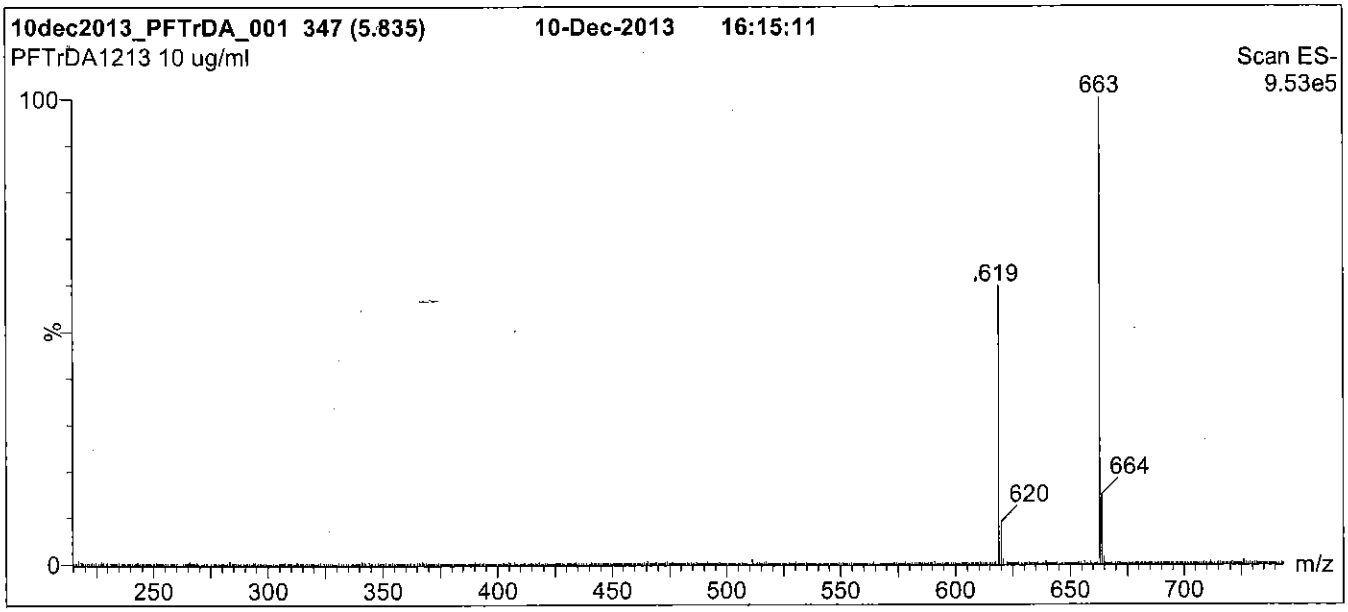
CALA Technical Accreditation No. A 1226

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

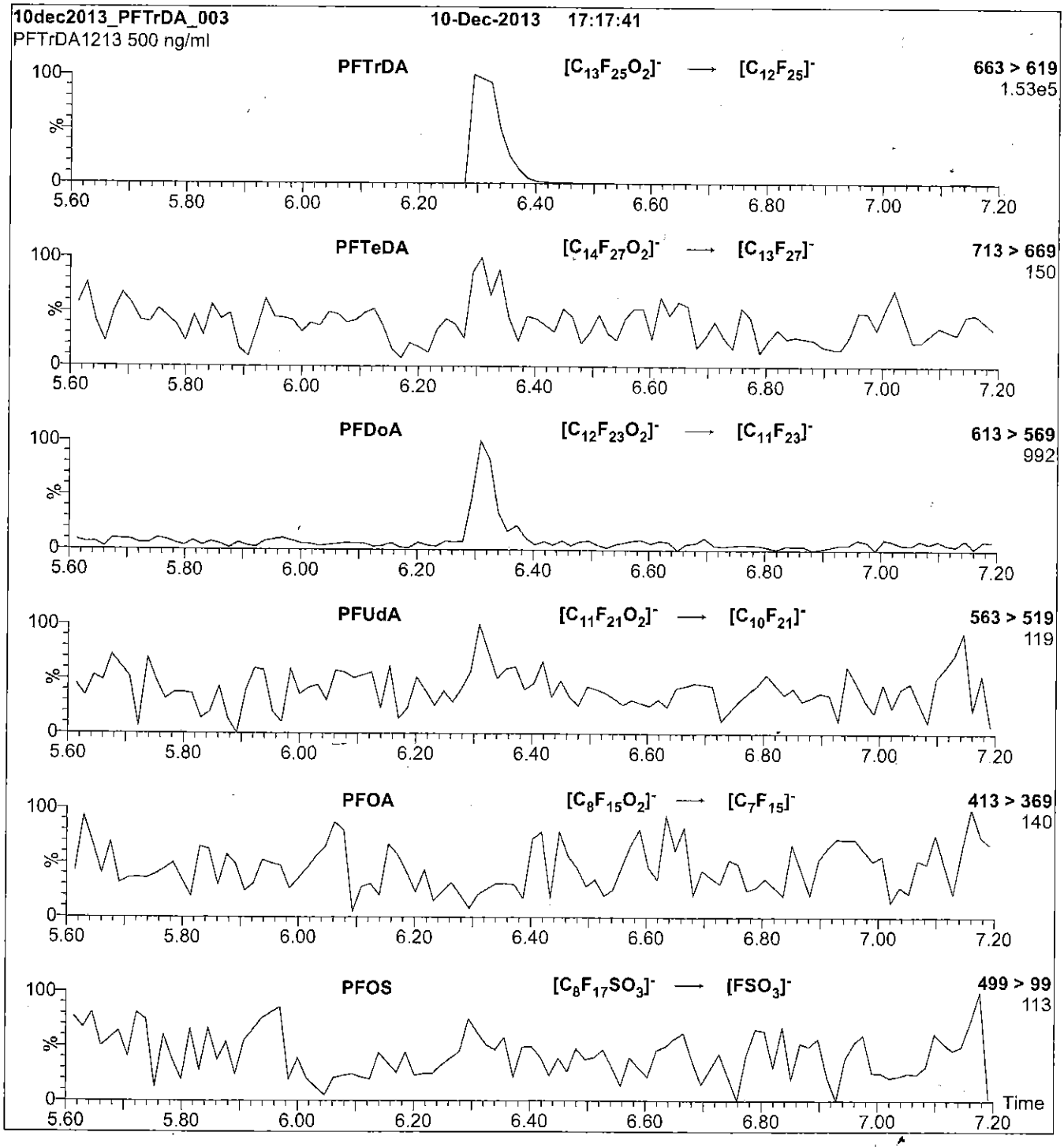
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFUdA_00003

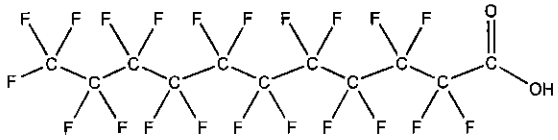
R 2/11/15 SFV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid
LOT NUMBER: PFUdA0613

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) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/03/2013 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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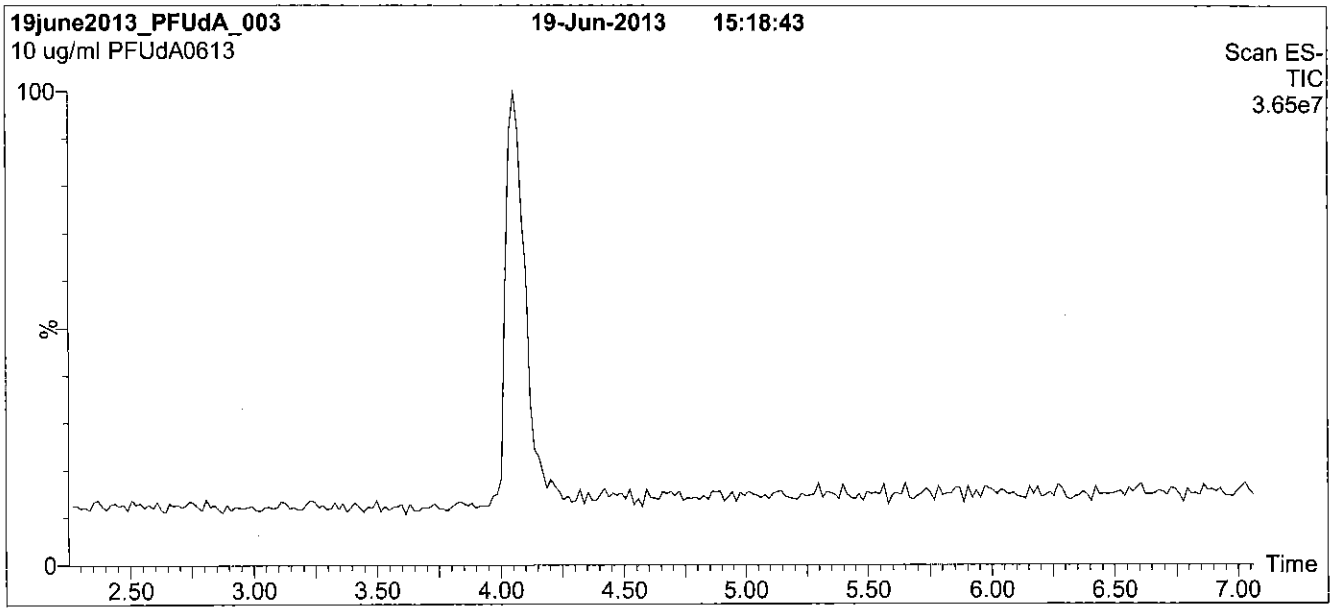
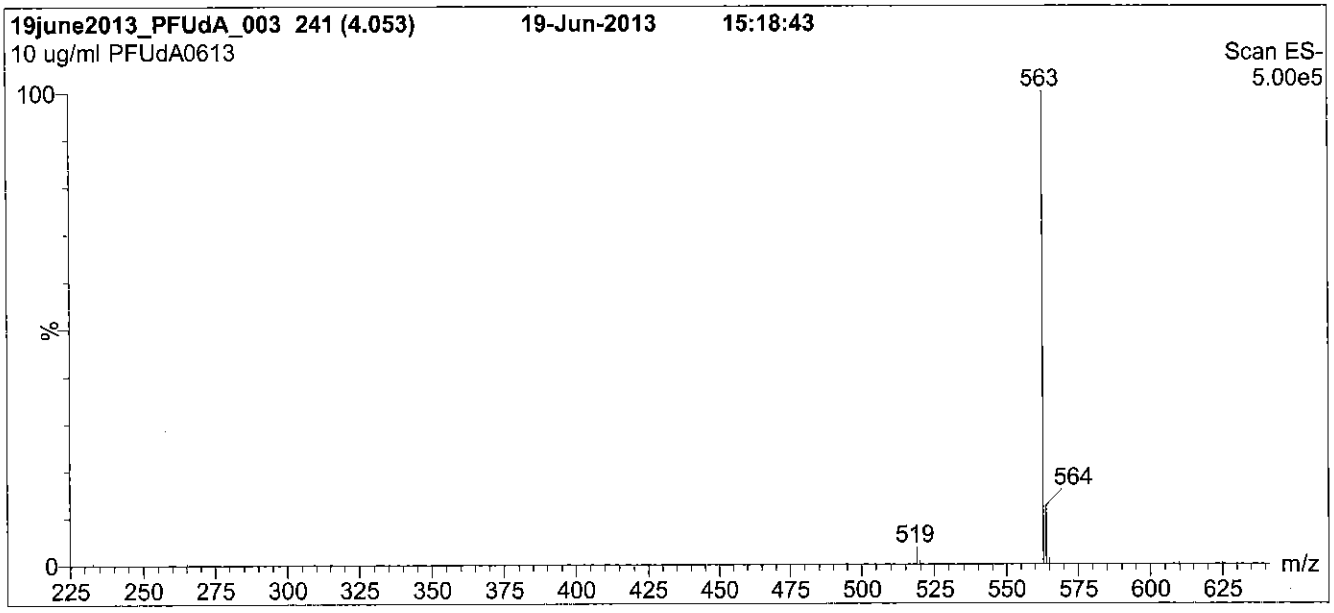
Figure 1: **PFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

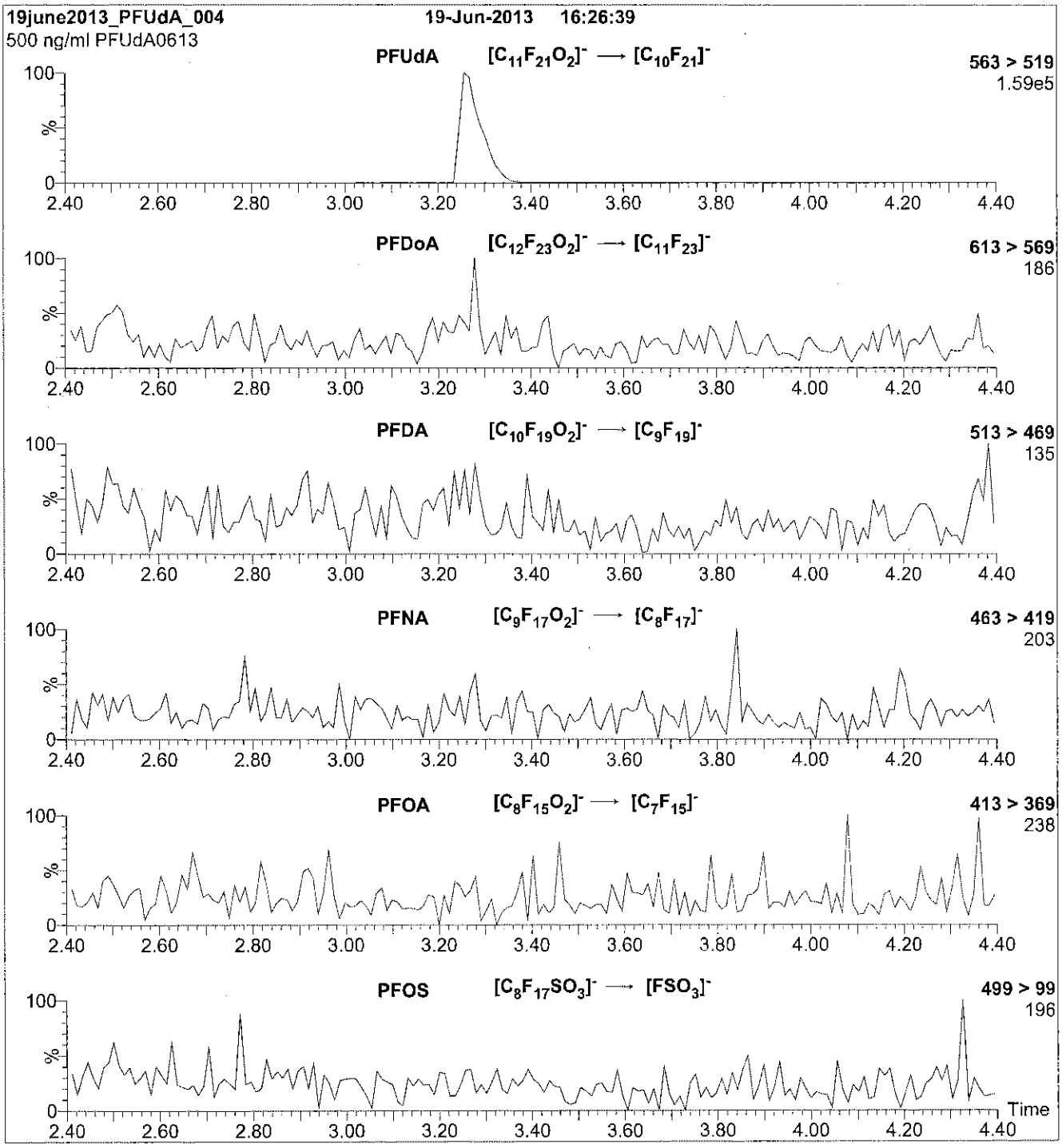
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.46e-3
Collision Energy (eV) = 11

Reagent

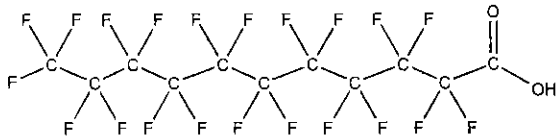
LCPFUdA_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 2058-94-8



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

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

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

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- See page 2 for further details.
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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

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HAZARDS:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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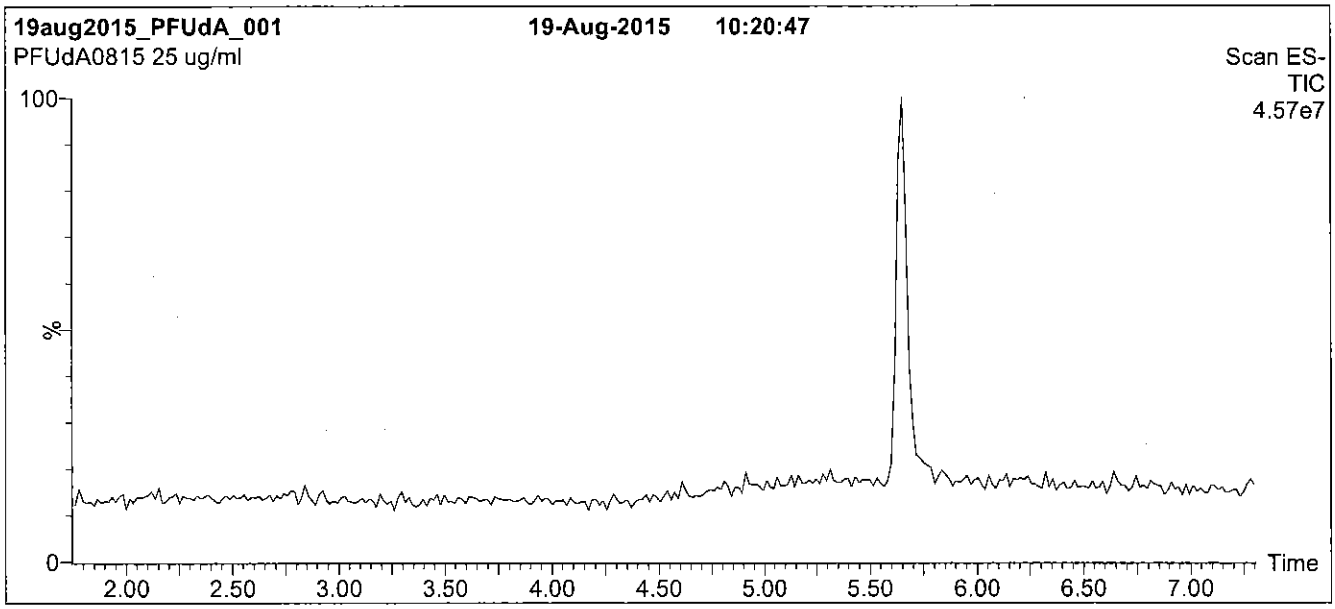

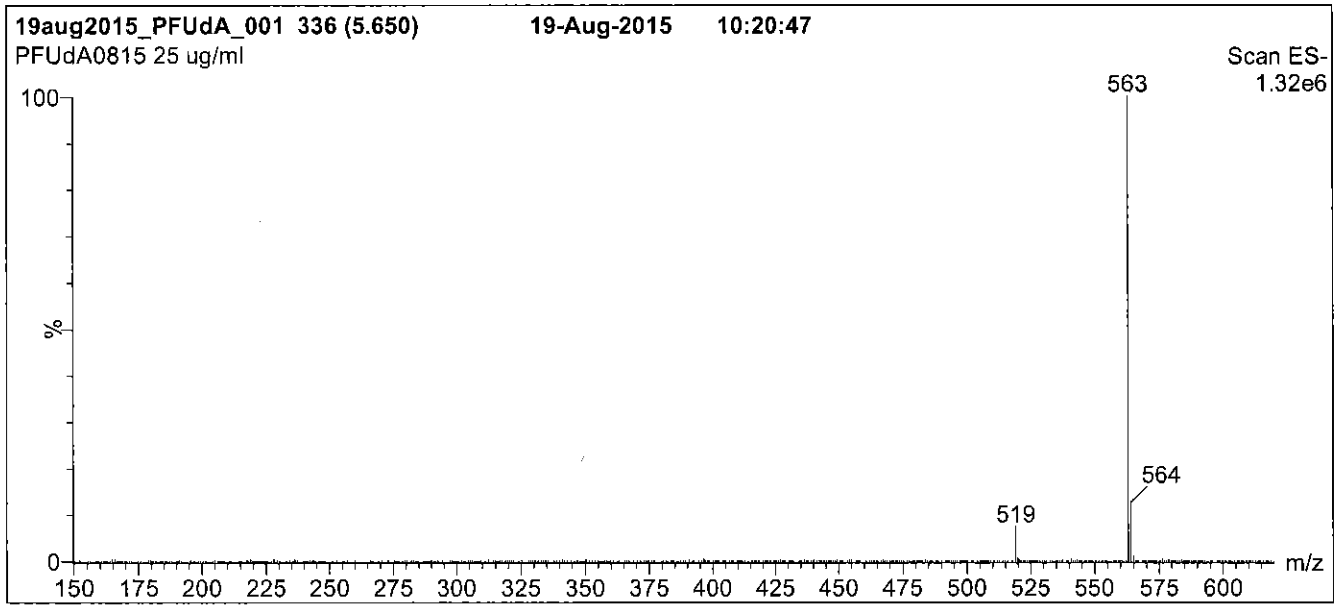

Conditions for Figure 1:

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

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1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 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

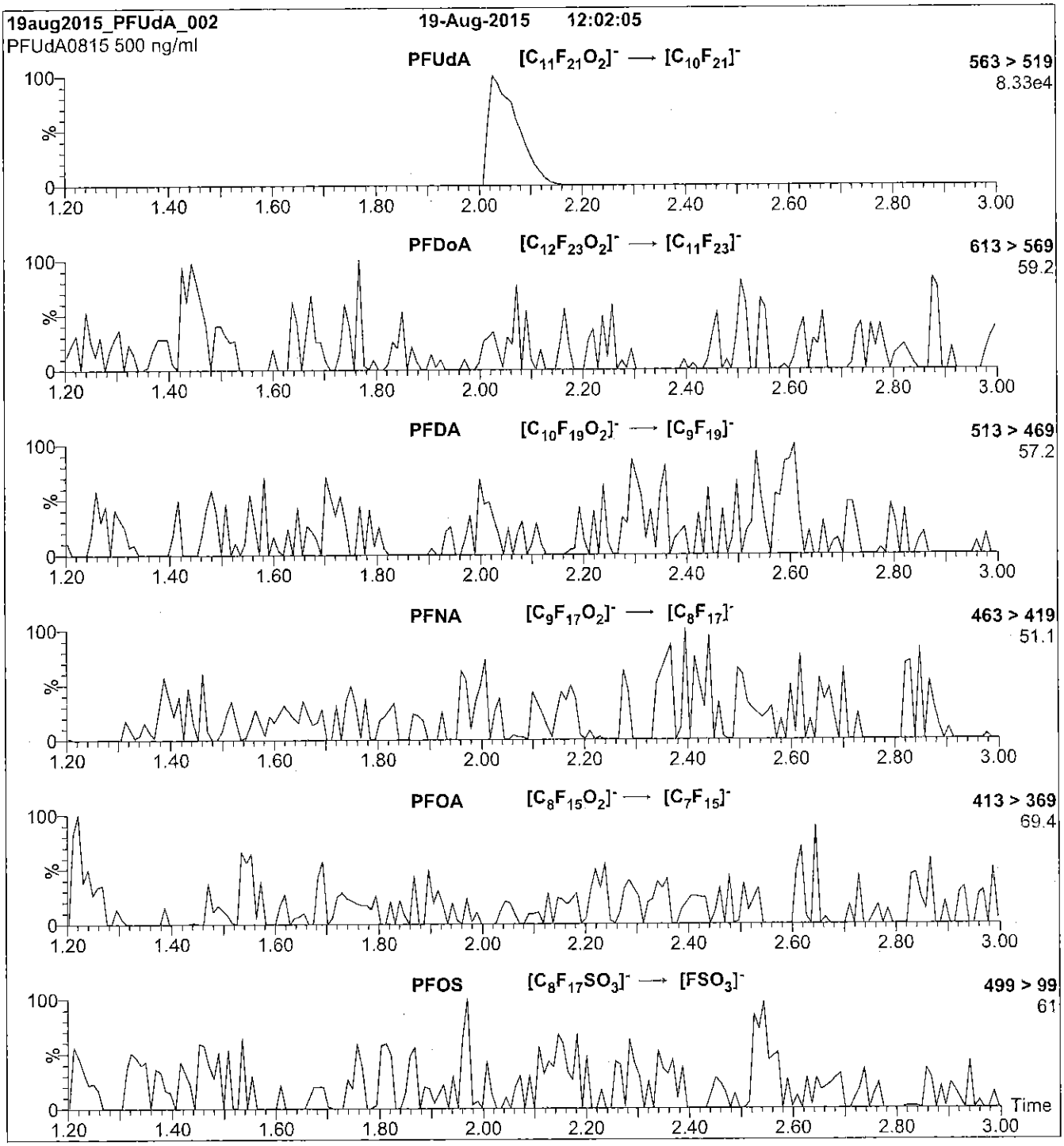
Flow: 300 µl/min

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.: 320-19022-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	13CHpA #	PFHxS #	PFNA #
OF-TRMLAG-PT-0516	320-19022-2	77	88	54
OF-BACKWASH-PT-0516	320-19022-5	44	40	35
OF-FILTER-PT-0516	320-19022-6	79	77	55
OF-INF01-PT-0615	320-19022-7	29	27	23 Q

	QC LIMITS
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	13CHpA #	PFHxS #	PFOA #	PFNA #
OF-STORLAG-PT-0516	320-19022-1	83	89	80	69
OF-POLLAG-PT-0516	320-19022-3	77	89	73	66
OF-CLTANK-PT-0516	320-19022-4	52	70	48	40

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

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
OF-PROCESS BLANK-PT-0516	320-19022-8	121	129	123	127	105
	MB 320-111374/1-A	124	127	132	125	121
	LCS 320-111374/2-A	111	114	113	111	110
	LCSD 320-111374/3-A	114	118	115	114	112

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

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
OF-BACKWASH-PT-0516 DL	320-19022-5 DL	109	96	109
OF-FILTER-PT-0516 DL	320-19022-6 DL	107	87	117
OF-INF01-PT-0615 DL	320-19022-7 DL	105	75	89

	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 WS-LC-0025

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
OF-TRMLAG-PT-0516 DL	320-19022-2 DL	84	102

	QC LIMITS
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFOS #
OF-STORLAG-PT-0516 DL	320-19022-1 DL	101
OF-POLLAG-PT-0516 DL	320-19022-3 DL	101
OF-CLTANK-PT-0516 DL	320-19022-4 DL	72

	QC LIMITS
PFOS = 13C4 PFOS	25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 31MAY2016A6A_018.d

Lab ID: LCS 320-111374/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0361	90	60-140	
Perfluorooctanoic acid (PFOA)	0.0400	0.0339	85	60-140	
Perfluorononanoic acid (PFNA)	0.0400	0.0348	87	60-140	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0308	87	50-150	
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0308	85	60-140	M
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0385	104	60-140	M
18O2 PFHxS	0.0946	0.108	114	25-150	
13C4 PFOS	0.0956	0.106	111	25-150	
13C5 PFNA	0.100	0.110	110	25-150	
13C4 PFOA	0.100	0.113	113	25-150	
13C4-PFHpA	0.100	0.111	111	25-150	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 31MAY2016A6A_019.d

Lab ID: LCSD 320-111374/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0343	86	5	30	60-140	
Perfluorooctanoic acid (PFOA)	0.0400	0.0341	85	1	30	60-140	
Perfluorononanoic acid (PFNA)	0.0400	0.0334	84	4	30	60-140	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0305	86	1	30	50-150	
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0310	85	1	30	60-140	M
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0420	113	9	30	60-140	M
18O2 PFHxS	0.0946	0.112	118			25-150	
13C4 PFOS	0.0956	0.109	114			25-150	
13C5 PFNA	0.100	0.112	112			25-150	
13C4 PFOA	0.100	0.115	115			25-150	
13C4-PFHpA	0.100	0.114	114			25-150	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab File ID: 31MAY2016A6A_017.d Lab Sample ID: MB 320-111374/1-A

Matrix: Water Date Extracted: 05/25/2016 15:20

Instrument ID: A6 Date Analyzed: 05/31/2016 17:56

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
OF-STORLAG-PT-0516	320-19022-1	28MAY2016A6A_031.d	05/29/2016 02:25
OF-TRMLAG-PT-0516	320-19022-2	28MAY2016A6A_032.d	05/29/2016 02:47
OF-POLLAG-PT-0516	320-19022-3	28MAY2016A6A_033.d	05/29/2016 03:08
OF-CLTANK-PT-0516	320-19022-4	28MAY2016A6A_034.d	05/29/2016 03:29
OF-BACKWASH-PT-0516	320-19022-5	28MAY2016A6A_035.d	05/29/2016 03:51
OF-FILTER-PT-0516	320-19022-6	28MAY2016A6A_036.d	05/29/2016 04:12
OF-INF01-PT-0615	320-19022-7	28MAY2016A6A_037.d	05/29/2016 04:33
OF-PROCESS BLANK-PT-0516	320-19022-8	28MAY2016A6A_041.d	05/29/2016 05:58
	LCS 320-111374/2-A	31MAY2016A6A_018.d	05/31/2016 18:18
	LCSD 320-111374/3-A	31MAY2016A6A_019.d	05/31/2016 18:39
OF-TRMLAG-PT-0516 DL	320-19022-2 DL	31MAY2016A6A_032.d	05/31/2016 23:15
OF-POLLAG-PT-0516 DL	320-19022-3 DL	31MAY2016A6A_033.d	05/31/2016 23:37
OF-CLTANK-PT-0516 DL	320-19022-4 DL	31MAY2016A6A_034.d	05/31/2016 23:58
OF-BACKWASH-PT-0516 DL	320-19022-5 DL	31MAY2016A6A_035.d	06/01/2016 00:19
OF-FILTER-PT-0516 DL	320-19022-6 DL	31MAY2016A6A_036.d	06/01/2016 00:41
OF-INF01-PT-0615 DL	320-19022-7 DL	31MAY2016A6A_037.d	06/01/2016 01:02
OF-STORLAG-PT-0516 DL	320-19022-1 DL	31MAY2016A6A_130.d	06/02/2016 10:16

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-STORLAG-PT-0516 Lab Sample ID: 320-19022-1

Matrix: Water Lab File ID: 28MAY2016A6A_031.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 485.8(mL) Date Analyzed: 05/29/2016 02:25

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 111859 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.089		0.0026	0.0021	0.00083
335-67-1	Perfluorooctanoic acid (PFOA)	0.62	M	0.0026	0.0021	0.00077
375-95-1	Perfluorononanoic acid (PFNA)	0.021		0.0026	0.0021	0.00067
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.056		0.0026	0.0021	0.00094
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.55	M	0.0026	0.0021	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	89		25-150
STL00995	13C5 PFNA	69		25-150
STL00990	13C4 PFOA	80		25-150
STL01892	13C4-PFHpA	83		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_031.d
Lims ID: 320-19022-A-1-A
Client ID: OF-STORLAG-PT-0516
Sample Type: Client
Inject. Date: 29-May-2016 02:25:53 ALS Bottle#: 12 Worklist Smp#: 30
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-19022-A-1-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:31 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 31-May-2016 14:21:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.078	7.085	-0.007	1.000	876085	27.4				
D 8 13C4-PFHpA										
367.0 > 322.0	9.458	9.474	-0.016		2582414	41.7		83.3	42036	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.458	9.475	-0.017	1.000	2699964	43.4			383	
D 11 18O2 PFHxS										
403.0 > 84.0	9.493	9.507	-0.014		1199122	42.0		88.8	39868	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.499	9.507	-0.008	1.000	6228224	268.6				M
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.586	0.0		2706009	40.2		80.4	18686	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.586	10.587	-0.001	1.000	16437884	298.8			4982	M
413.0 > 169.0	10.586	10.587	-0.001	1.000	7155971		2.30(0.00-0.00)		2077	M
D 16 13C4 PFOS										
503.0 > 80.0	11.527	11.543	-0.016		1150516	32.7		68.5	53263	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.527	11.545	-0.018	1.000	29115084	963.5			3231	EM
499.0 > 99.0	11.527	11.545	-0.018	1.000	13439775		2.17(0.00-0.00)		1152	M
D 17 13C5 PFNA										
468.0 > 423.0	11.544	11.562	-0.018		2138125	34.5		68.9	8508	
18 Perfluorononanoic acid										
463.0 > 419.0	11.544	11.563	-0.019	1.000	364701	10.1			350	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 31-May-2016 14:41:40 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_031.d

Injection Date: 29-May-2016 02:25:53 Instrument ID: A6

Lims ID: 320-19022-A-1-A Lab Sample ID: 320-19022-1

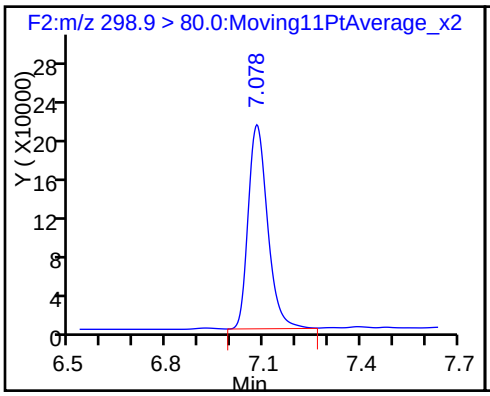
Client ID: OF-STORLAG-PT-0516

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 30

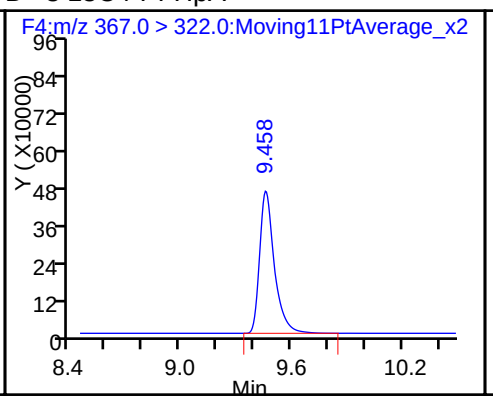
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

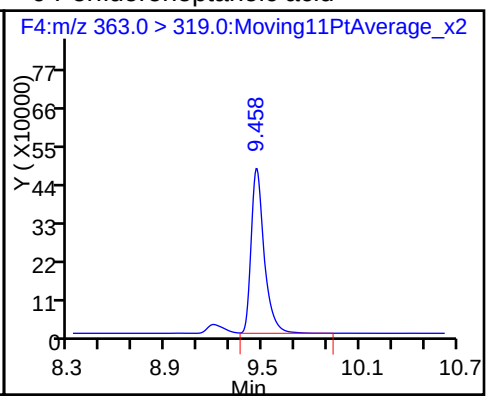
40 Perfluorobutanesulfonic acid



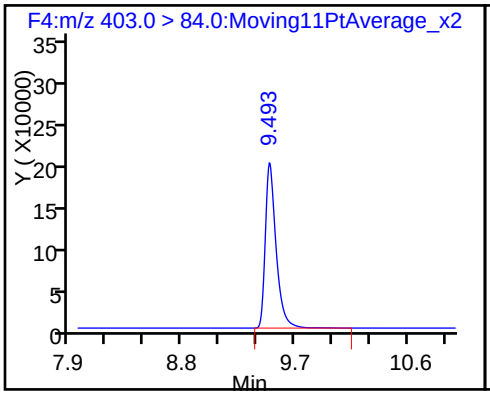
D 8 13C4-PFHpA



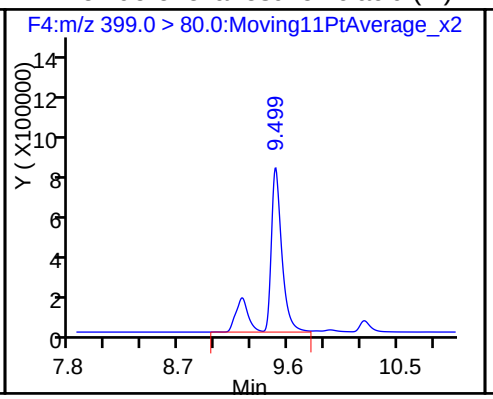
9 Perfluoroheptanoic acid



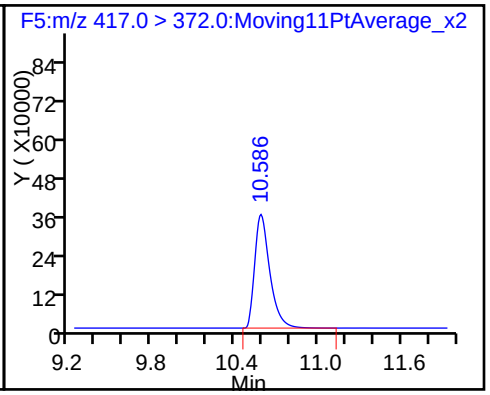
D 11 18O2 PFHxS



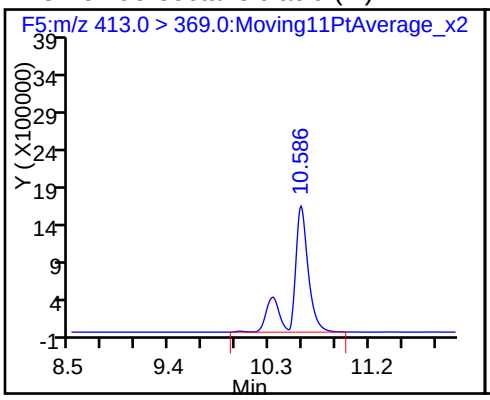
41 Perfluorohexanesulfonic acid (M)



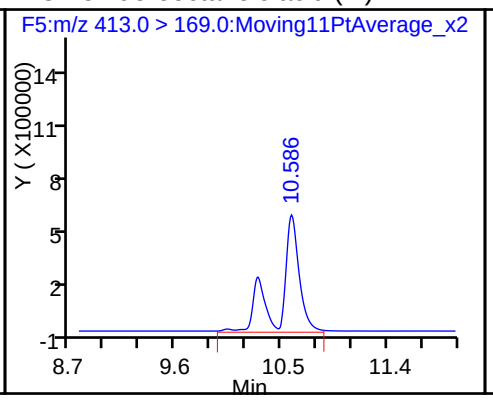
D 12 13C4 PFOA



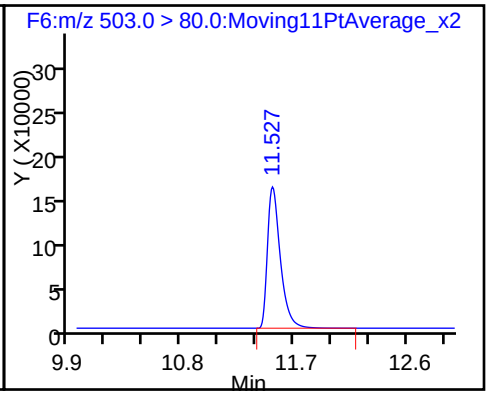
13 Perfluorooctanoic acid (M)



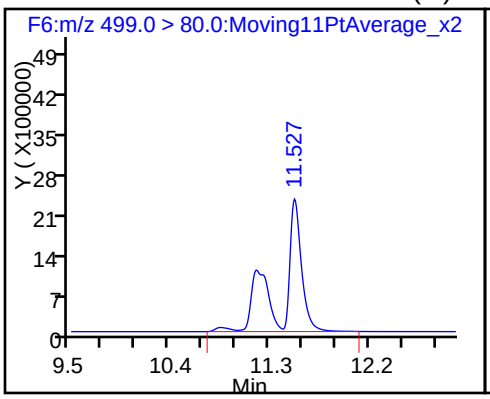
13 Perfluorooctanoic acid (M)



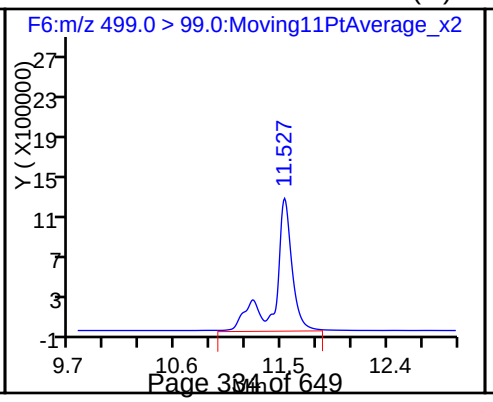
D 16 13C4 PFOS



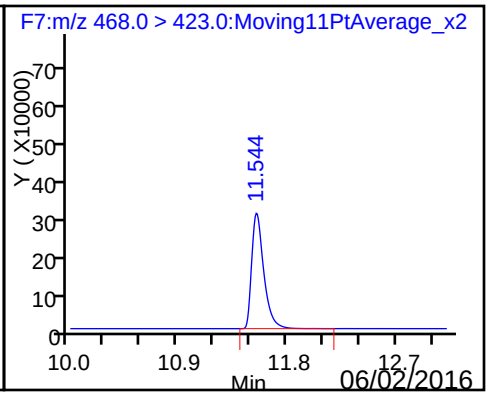
15 Perfluorooctane sulfonic acid (M)



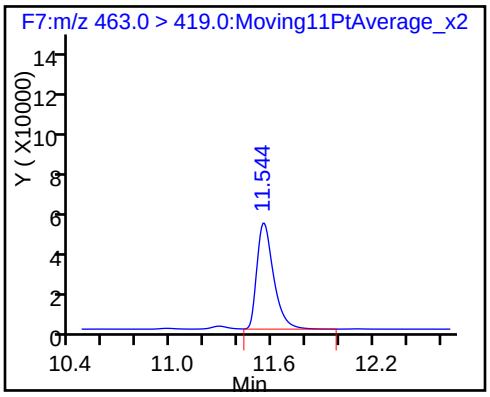
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

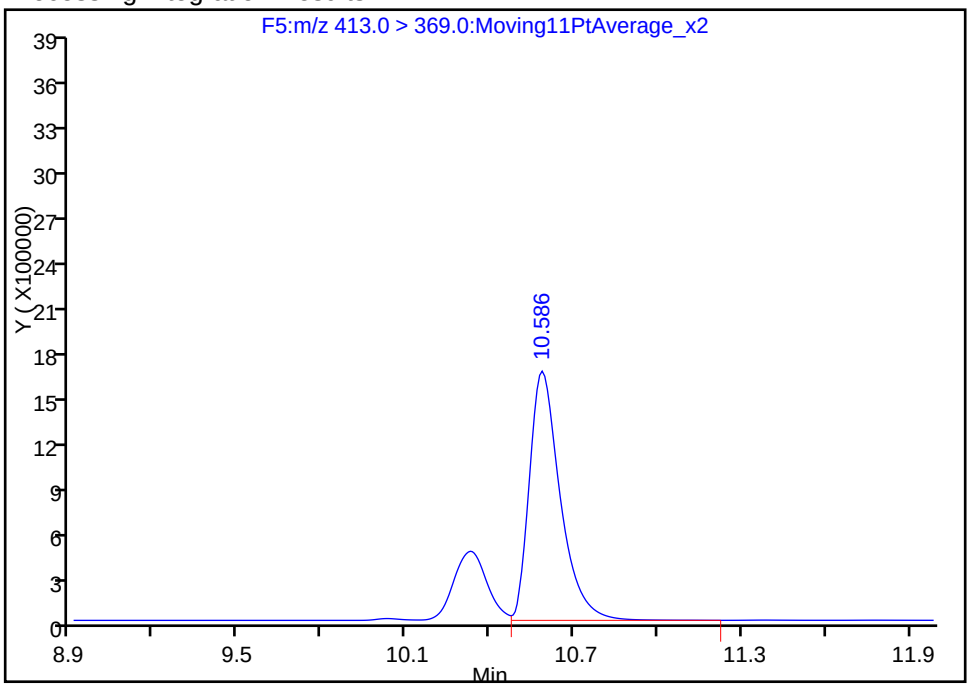
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_031.d				
Injection Date:	29-May-2016 02:25:53	Instrument ID:	A6		
Lims ID:	320-19022-A-1-A	Lab Sample ID:	320-19022-1		
Client ID:	OF-STORLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	12	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

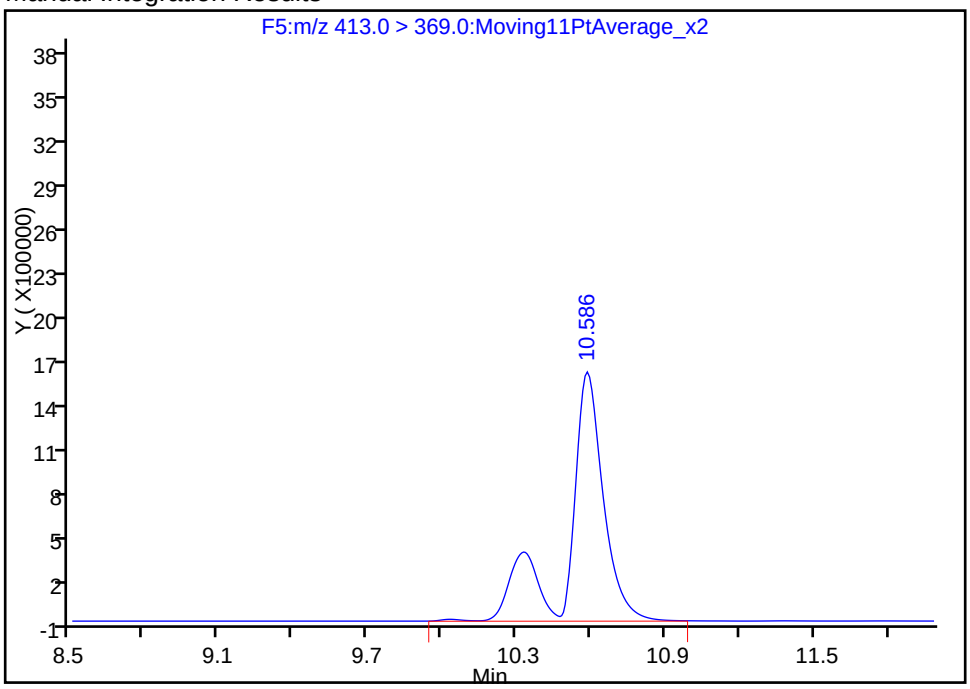
Processing Integration Results

RT: 10.59
Area: 12598106
Amount: 229.0019
Amount Units: ng/ml



Manual Integration Results

RT: 10.59
Area: 16437884
Amount: 298.7994
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:21:35

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

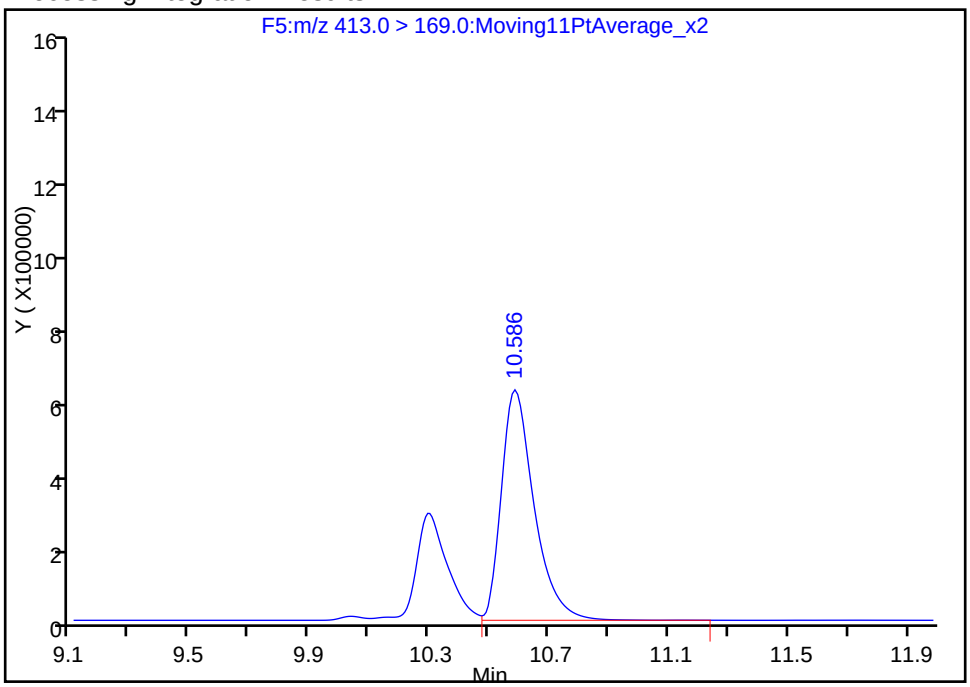
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_031.d				
Injection Date:	29-May-2016 02:25:53	Instrument ID:	A6		
Lims ID:	320-19022-A-1-A	Lab Sample ID:	320-19022-1		
Client ID:	OF-STORLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	12	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

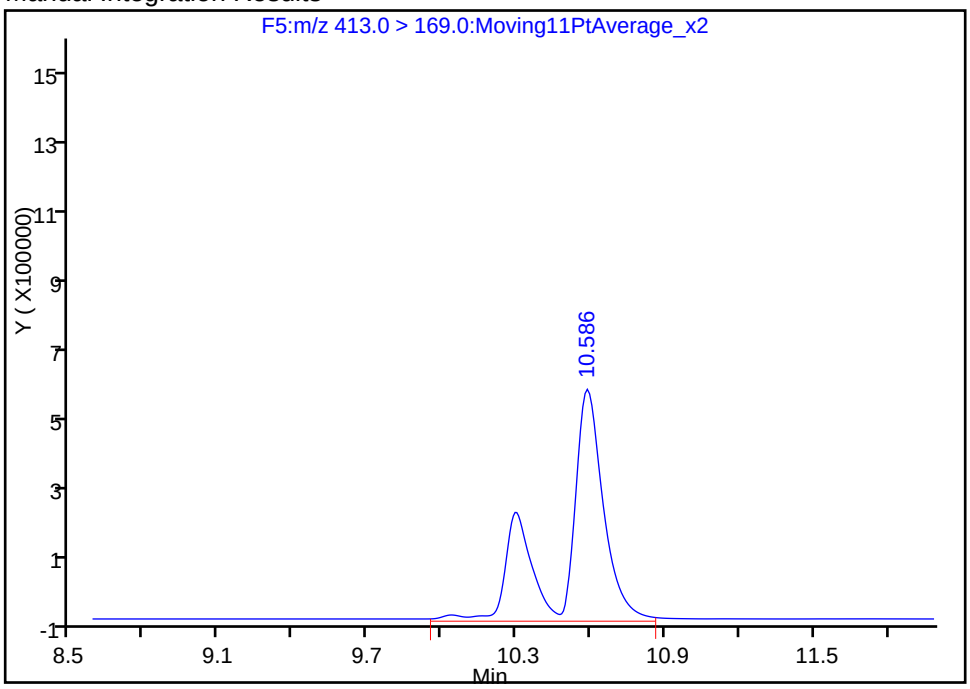
Processing Integration Results

RT: 10.59
Area: 4717830
Amount: 229.0019
Amount Units: ng/ml



Manual Integration Results

RT: 10.59
Area: 7155971
Amount: 298.7994
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:21:35

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

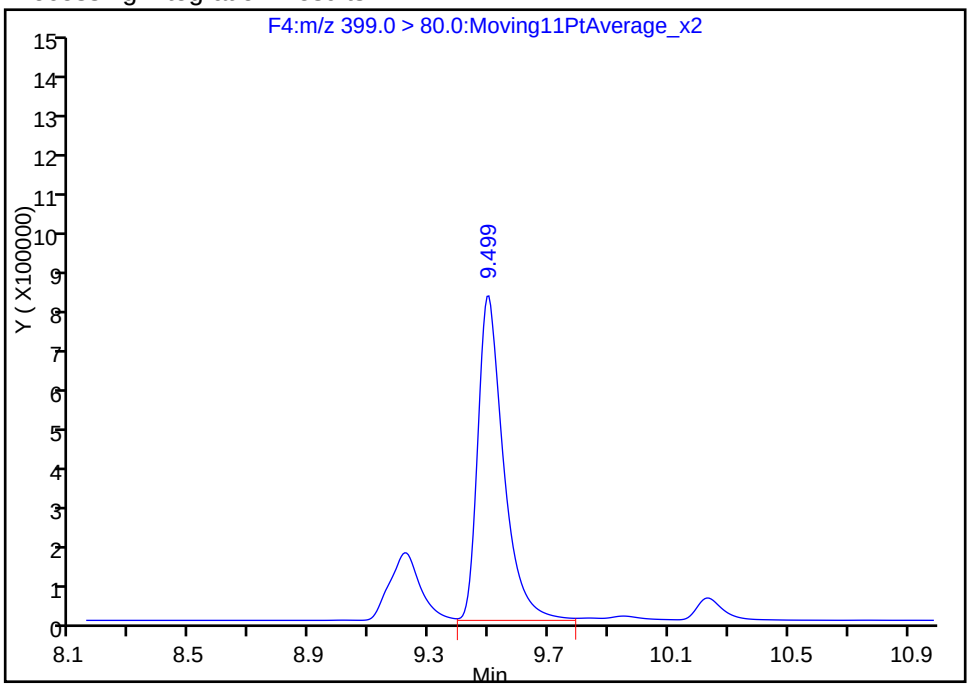
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_031.d				
Injection Date:	29-May-2016 02:25:53	Instrument ID:	A6		
Lims ID:	320-19022-A-1-A	Lab Sample ID:	320-19022-1		
Client ID:	OF-STORLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	12	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

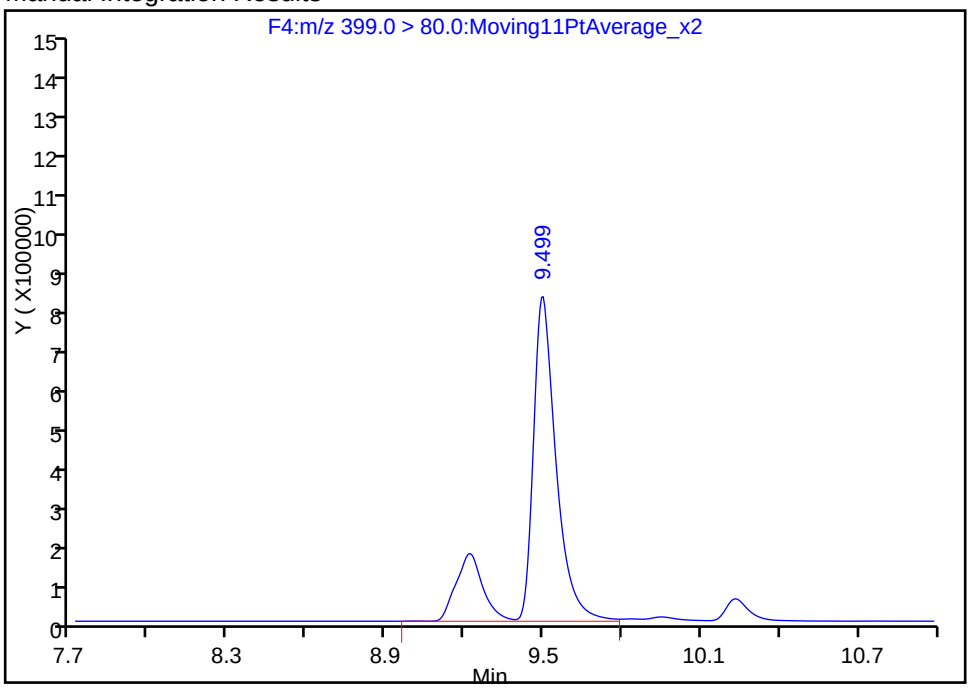
Processing Integration Results

RT: 9.50
Area: 4992005
Amount: 215.2939
Amount Units: ng/ml



Manual Integration Results

RT: 9.50
Area: 6228224
Amount: 268.6092
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:21:35

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-STORLAG-PT-0516 DL Lab Sample ID: 320-19022-1 DL

Matrix: Water Lab File ID: 31MAY2016A6A_130.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 485.8(mL) Date Analyzed: 06/02/2016 10:16

Con. Extract Vol.: 1.00(mL) Dilution Factor: 5

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112205 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.8	D M	0.021	0.015	0.0066

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_130.d
Lims ID: 320-19022-A-1-A
Client ID: OF-STORLAG-PT-0516
Sample Type: Client
Inject. Date: 02-Jun-2016 10:16:49 ALS Bottle#: 42 Worklist Smp#: 56
Injection Vol: 15.0 ul Dil. Factor: 5.0000
Sample Info: 320-19022-a-1-a 5X
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Jun-2016 11:48:51 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 02-Jun-2016 11:32:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										M
298.9 > 80.0	7.088	7.099	-0.011	1.000	181395	3.91				M
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.494	-0.019	1.000	704911	7.81			271	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.495	-0.020		761540	11.1		22.2	41578	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.532	-0.022		337560	10.9		23.1	26727	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.510	9.533	-0.023	1.000	1620615	48.5				M
D 12 13C4 PFOA										
417.0 > 372.0	10.595	10.612	-0.017		760343	10.5		20.9	99020	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.595	10.612	-0.017	1.000	4626117	59.3			1859	M
413.0 > 169.0	10.595	10.612	-0.017	1.000	1844387		2.51(0.00-0.00)		1746	M
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		383853	9.67		20.2	26888	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.560	11.571	-0.011	1.000	8500933	171.4			6932	M
499.0 > 99.0	11.560	11.571	-0.011	1.000	4029176		2.11(0.00-0.00)		1385	M
D 17 13C5 PFNA										
468.0 > 423.0	11.578	11.589	-0.011		658029	9.87		19.7	47017	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	114820	2.02			4096	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 02-Jun-2016 11:49:04 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_130.d

Injection Date: 02-Jun-2016 10:16:49 Instrument ID: A6

Lims ID: 320-19022-A-1-A Lab Sample ID: 320-19022-1

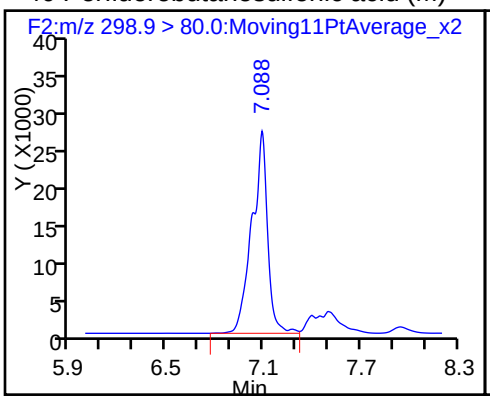
Client ID: OF-STORLAG-PT-0516

Operator ID: JRB ALS Bottle#: 42 Worklist Smp#: 56

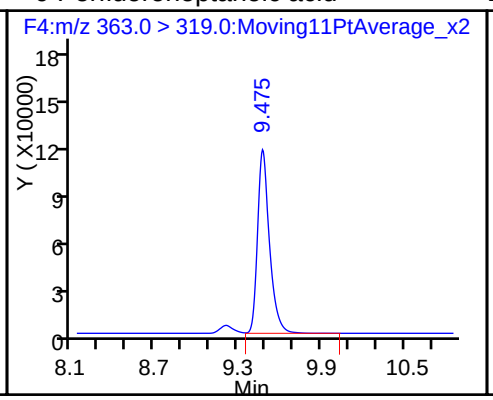
Injection Vol: 15.0 ul Dil. Factor: 5.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

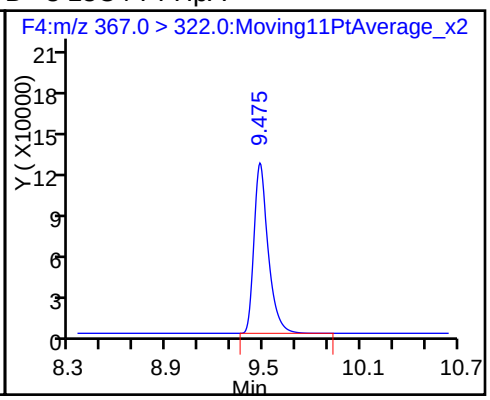
40 Perfluorobutanesulfonic acid (M)



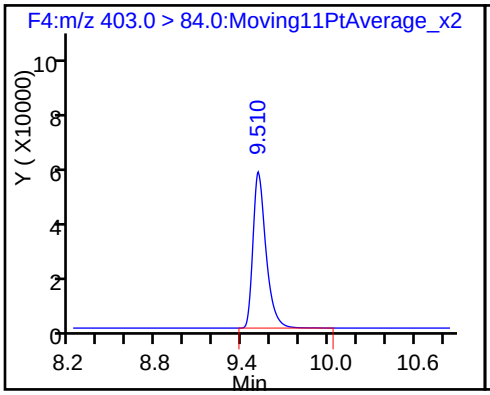
9 Perfluoroheptanoic acid



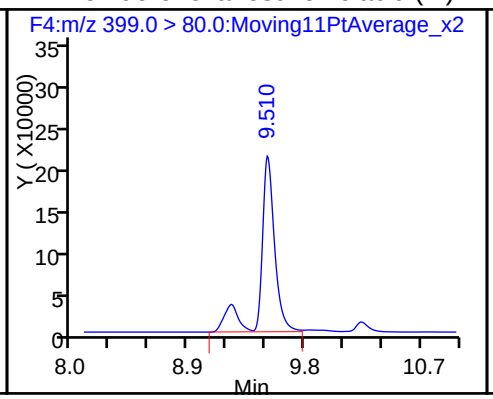
D 8 13C4-PFHpA



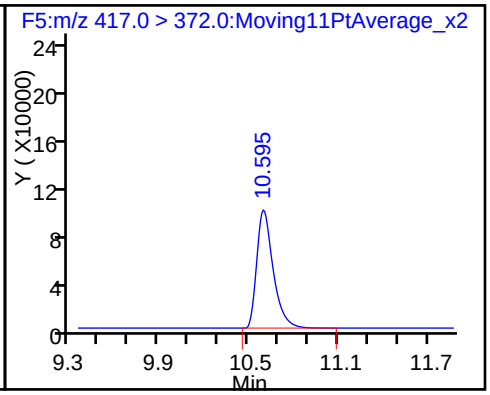
D 11 18O2 PFHxS



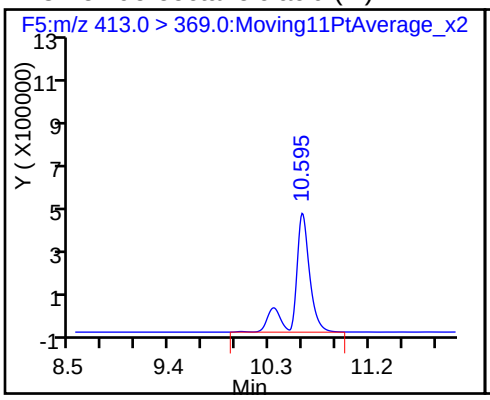
41 Perfluorohexanesulfonic acid (M)



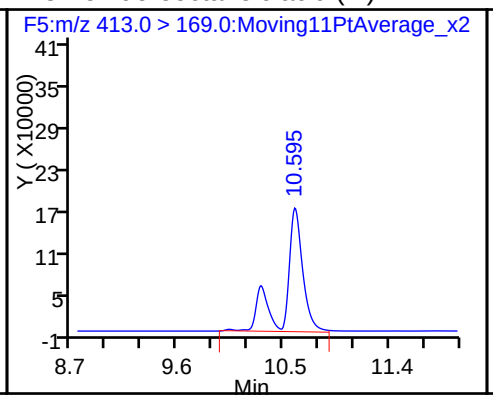
D 12 13C4 PFOA



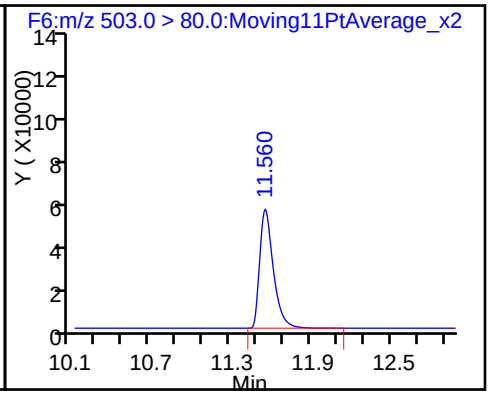
13 Perfluorooctanoic acid (M)



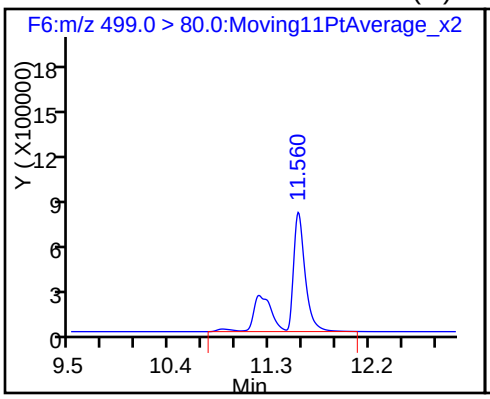
13 Perfluorooctanoic acid (M)



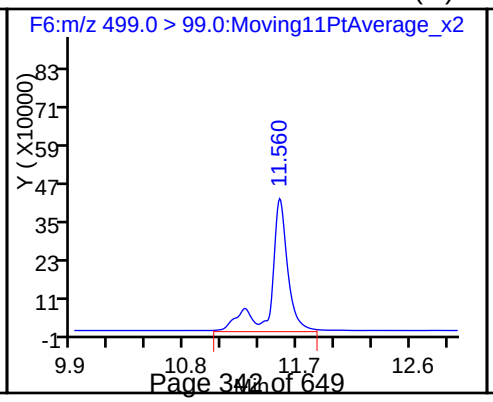
D 16 13C4 PFOS



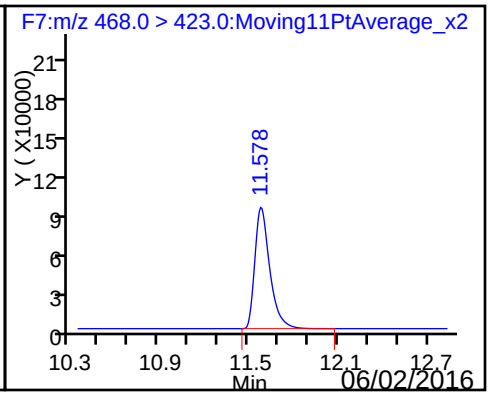
15 Perfluorooctane sulfonic acid (M)



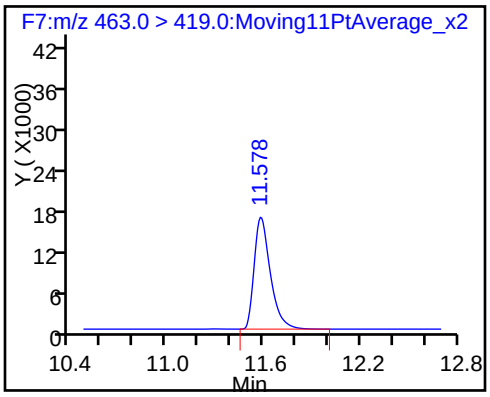
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

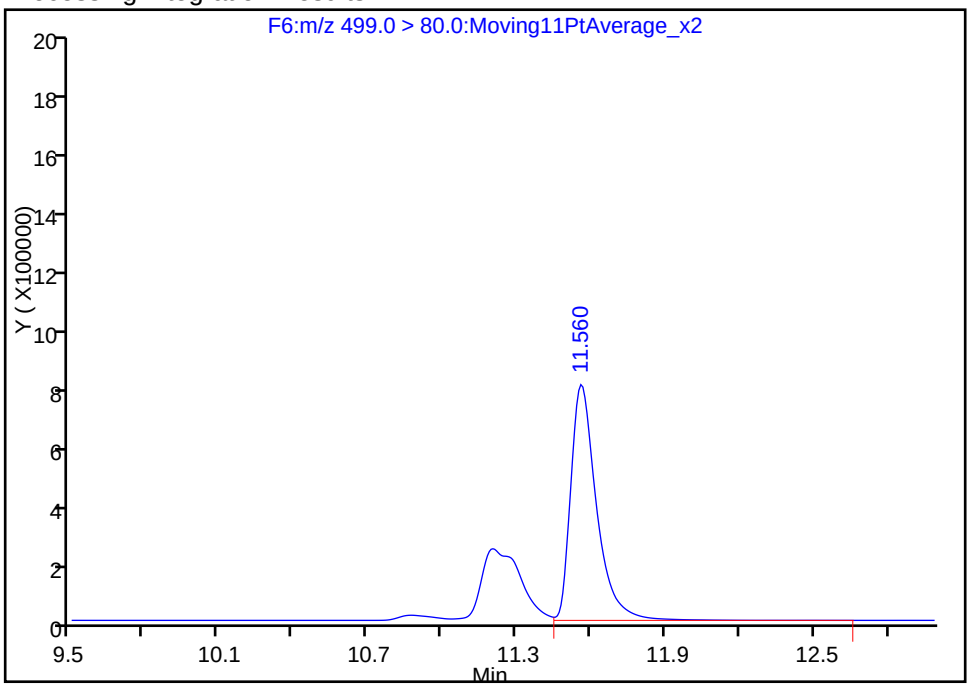
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_130.d				
Injection Date:	02-Jun-2016 10:16:49	Instrument ID:	A6		
Lims ID:	320-19022-A-1-A	Lab Sample ID:	320-19022-1		
Client ID:	OF-STORLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	42	Worklist Smp#:	56
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 1

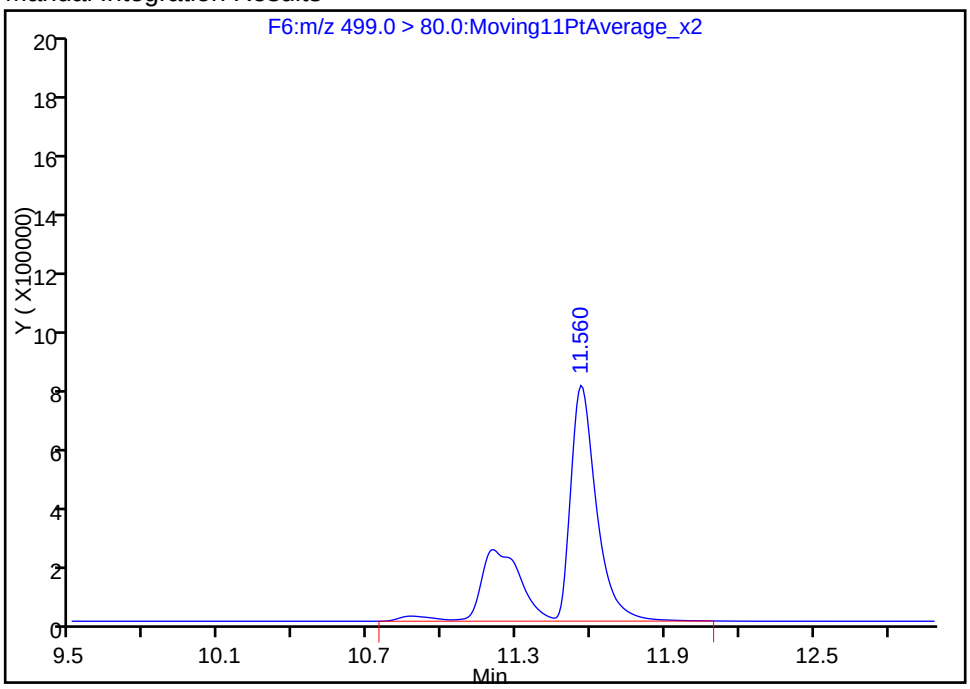
Processing Integration Results

RT: 11.56
Area: 5746322
Amount: 115.8457
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 8500933
Amount: 171.3786
Amount Units: ng/ml



Reviewer: barnettj, 02-Jun-2016 11:32:50

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

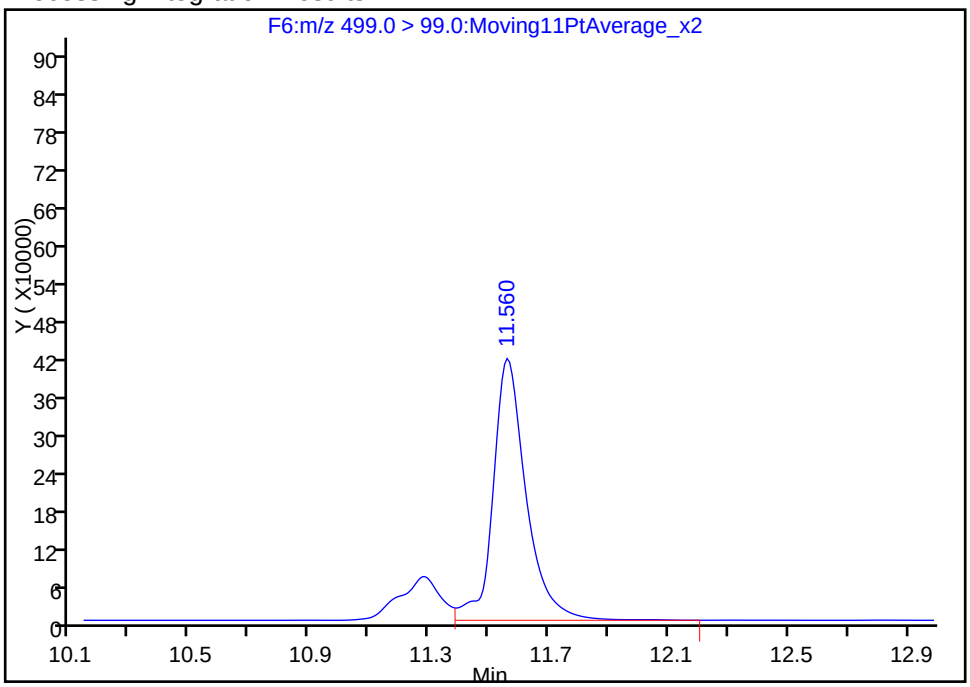
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_130.d				
Injection Date:	02-Jun-2016 10:16:49	Instrument ID:	A6		
Lims ID:	320-19022-A-1-A	Lab Sample ID:	320-19022-1		
Client ID:	OF-STORLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	42	Worklist Smp#:	56
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 2

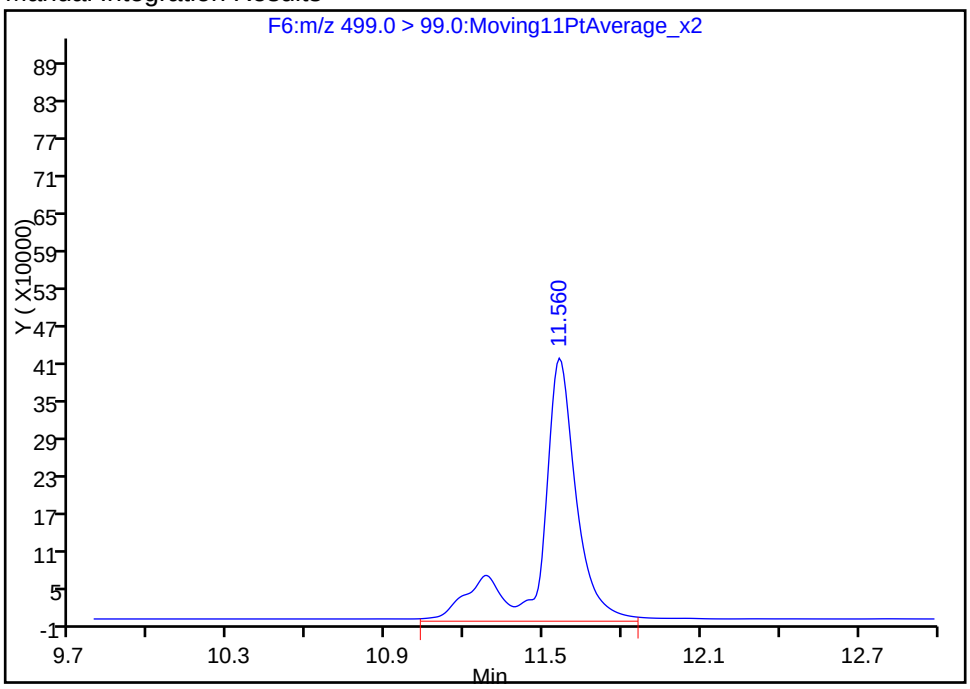
Processing Integration Results

RT: 11.56
Area: 3213600
Amount: 115.8457
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 4029176
Amount: 171.3786
Amount Units: ng/ml



Reviewer: barnettj, 02-Jun-2016 11:32:50

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-TRMLAG-PT-0516 Lab Sample ID: 320-19022-2

Matrix: Water Lab File ID: 28MAY2016A6A_032.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 481.7(mL) Date Analyzed: 05/29/2016 02:47

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 111859 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.078		0.0026	0.0021	0.00083
375-95-1	Perfluorononanoic acid (PFNA)	0.011		0.0026	0.0021	0.00068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.057		0.0026	0.0021	0.00095
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.60	M	0.0026	0.0021	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	88		25-150
STL00995	13C5 PFNA	54		25-150
STL01892	13C4-PFHpA	77		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_032.d
Lims ID: 320-19022-A-2-A
Client ID: OF-TRMLAG-PT-0516
Sample Type: Client
Inject. Date: 29-May-2016 02:47:10 ALS Bottle#: 13 Worklist Smp#: 31
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-19022-A-2-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:31 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 31-May-2016 14:26:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.078	7.085	-0.007	1.000	861245	27.3				
D 8 13C4-PFHpA										
367.0 > 322.0	9.469	9.474	-0.005		2398534	38.7		77.4	211475	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.469	9.475	-0.006	1.000	2185477	37.8			126	
D 11 18O2 PFHxS										
403.0 > 84.0	9.504	9.507	-0.003		1184852	41.5		87.7	6359	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.504	9.507	-0.003	1.000	6653697	290.4				M
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.586	0.0		1907642	28.3		56.6	81903	
13 Perfluorooctanoic acid										EM
413.0 > 369.0	10.586	10.587	-0.001	1.000	28114512	724.9			2400	EM
413.0 > 169.0	10.586	10.587	-0.001	1.000	11826052		2.38(0.00-0.00)		650	M
D 16 13C4 PFOS										
503.0 > 80.0	11.526	11.543	-0.017		1130102	32.2		67.3	78528	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.526	11.545	-0.019	1.000	31698912	1068.0			1218	EM
499.0 > 99.0	11.526	11.545	-0.019	1.000	14079608		2.25(0.00-0.00)		1595	M
D 17 13C5 PFNA										
468.0 > 423.0	11.553	11.562	-0.009		1688372	27.2		54.4	120210	
18 Perfluorononanoic acid										
463.0 > 419.0	11.553	11.563	-0.010	1.000	144558	5.07			168	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 31-May-2016 14:41:41 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_032.d

Injection Date: 29-May-2016 02:47:10 Instrument ID: A6

Lims ID: 320-19022-A-2-A Lab Sample ID: 320-19022-2

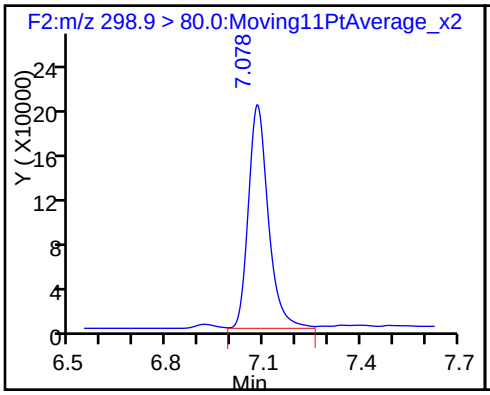
Client ID: OF-TRMLAG-PT-0516

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 31

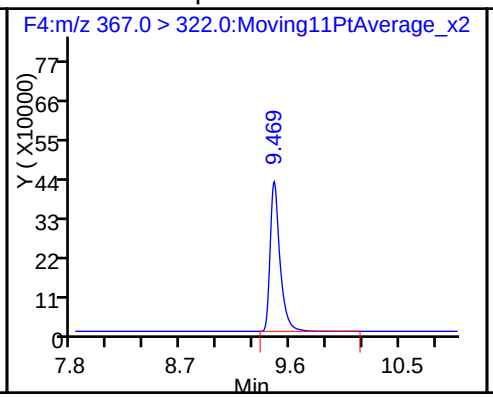
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

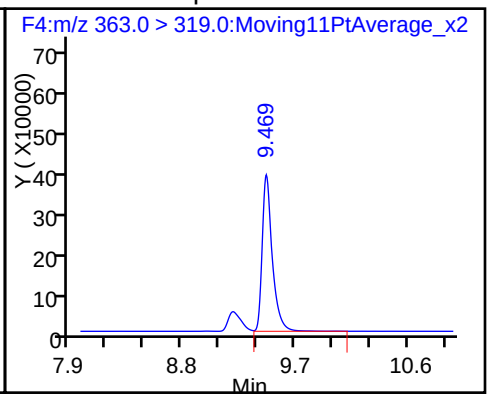
40 Perfluorobutanesulfonic acid



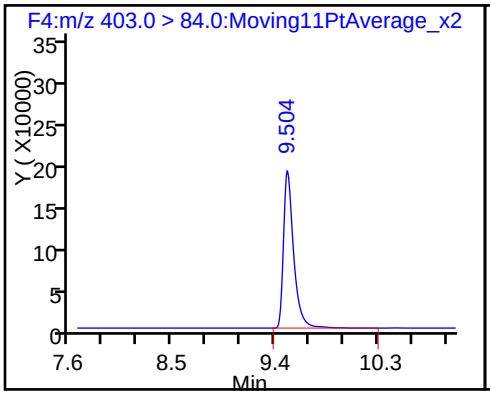
D 8 13C4-PFHpA



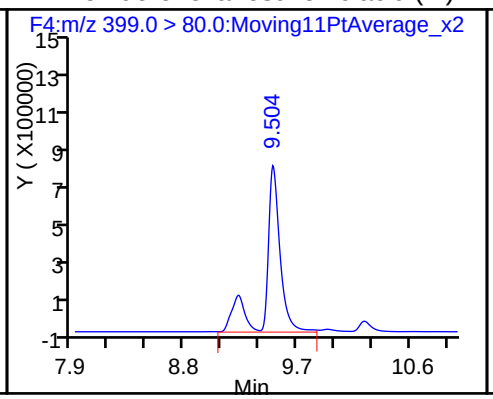
9 Perfluoroheptanoic acid



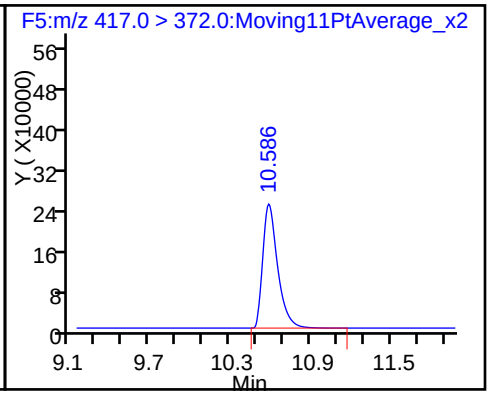
D 11 18O2 PFHxS



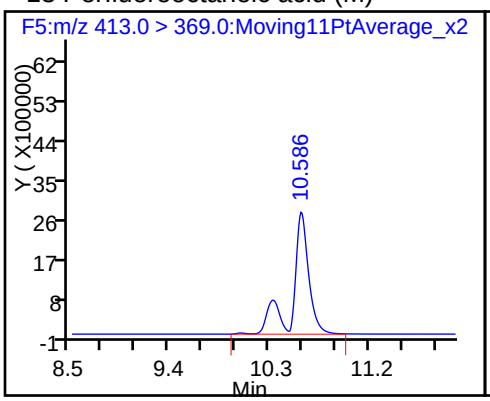
41 Perfluorohexanesulfonic acid (M)



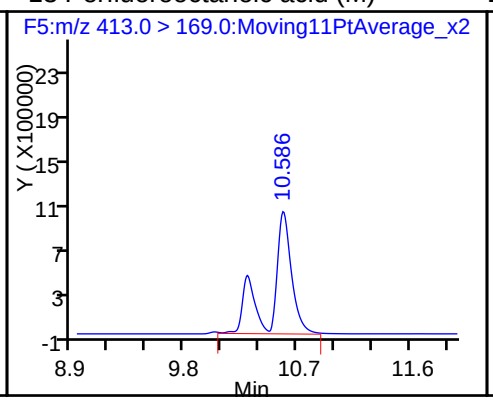
D 12 13C4 PFOA



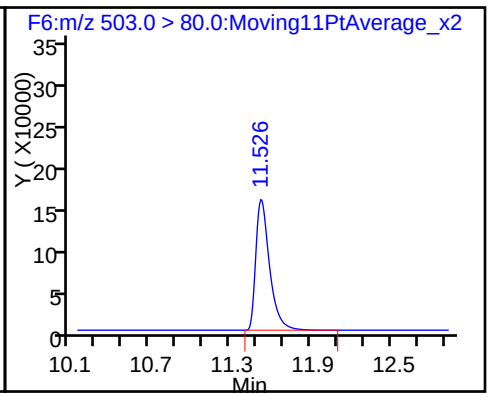
13 Perfluorooctanoic acid (M)



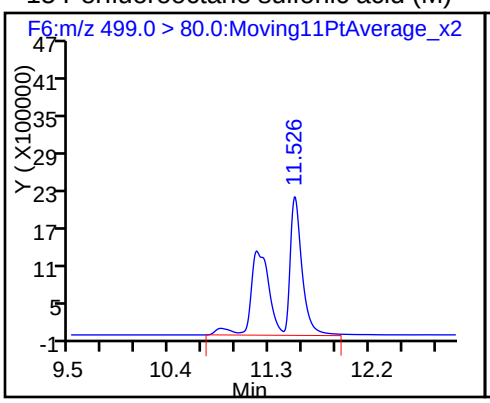
13 Perfluorooctanoic acid (M)



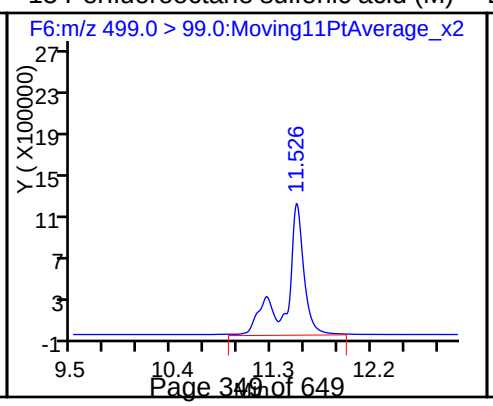
D 16 13C4 PFOS



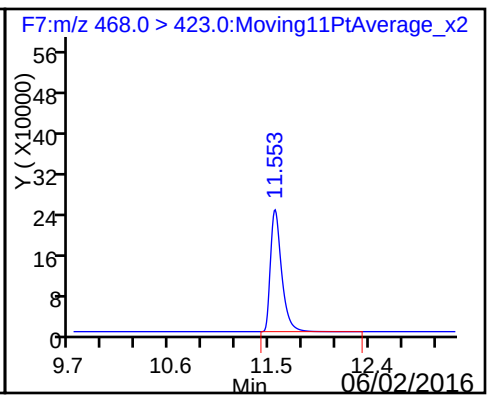
15 Perfluorooctane sulfonic acid (M)



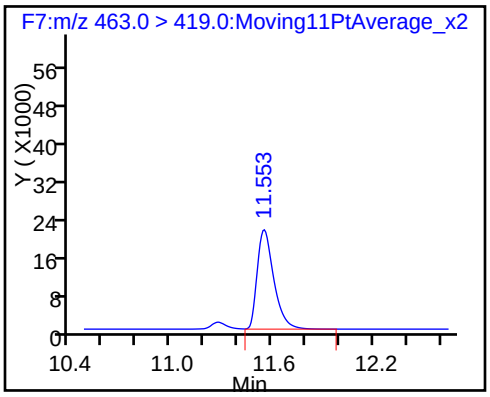
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

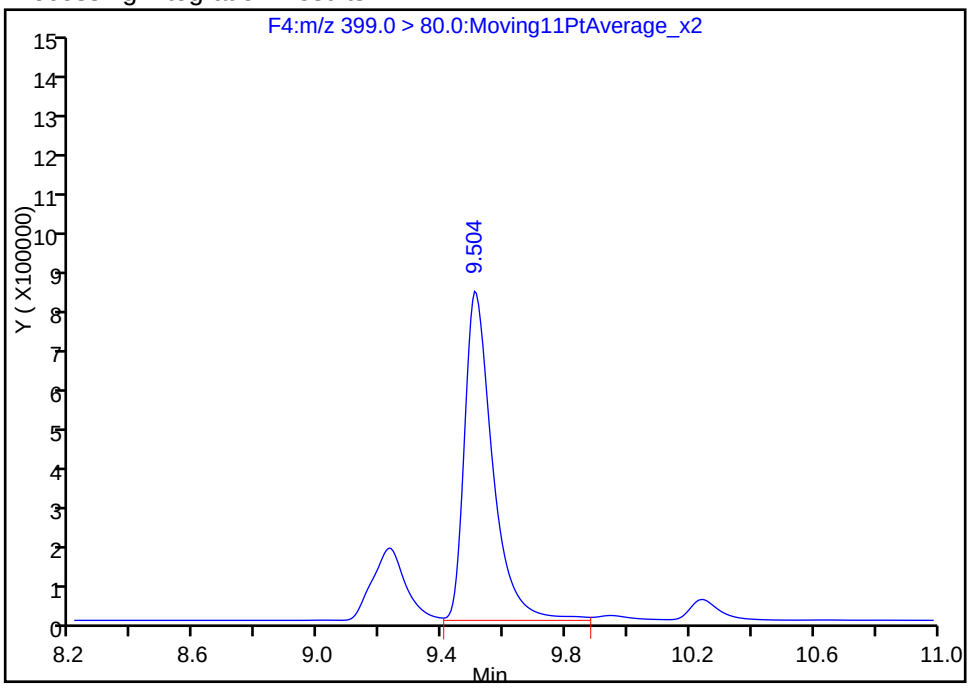
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_032.d				
Injection Date:	29-May-2016 02:47:10	Instrument ID:	A6		
Lims ID:	320-19022-A-2-A	Lab Sample ID:	320-19022-2		
Client ID:	OF-TRMLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	13	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

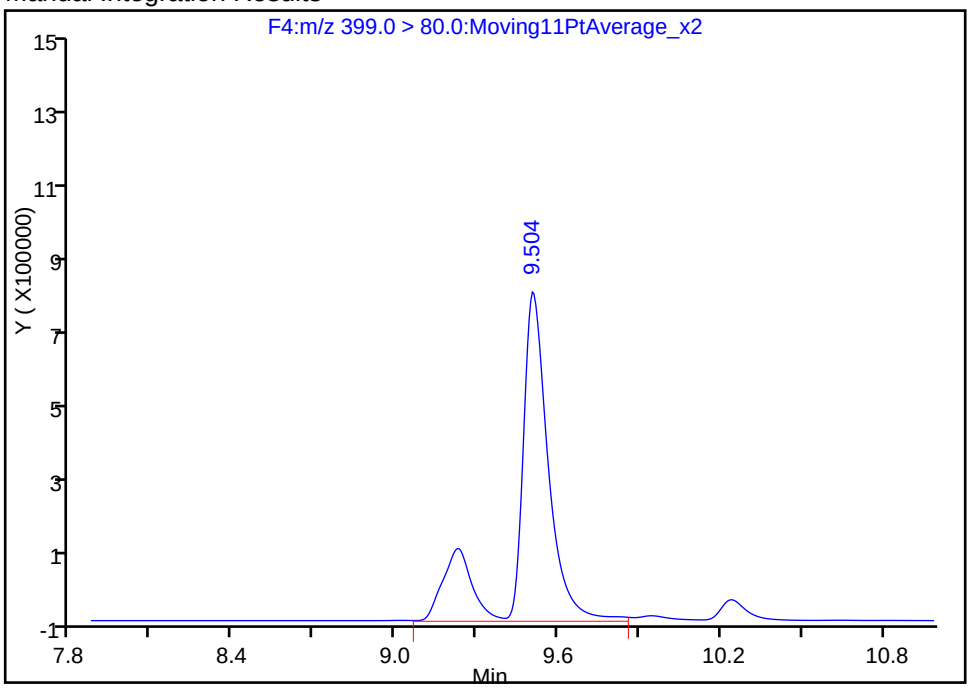
Processing Integration Results

RT: 9.50
Area: 5235247
Amount: 228.5036
Amount Units: ng/ml



Manual Integration Results

RT: 9.50
Area: 6653697
Amount: 290.4149
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:26:18

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-TRMLAG-PT-0516 DL Lab Sample ID: 320-19022-2 DL

Matrix: Water Lab File ID: 31MAY2016A6A_032.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 481.7(mL) Date Analyzed: 05/31/2016 23:15

Con. Extract Vol.: 1.00(mL) Dilution Factor: 5

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.3	D M	0.013	0.010	0.0039
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.9	D M	0.021	0.016	0.0066

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	102		25-150
STL00990	13C4 PFOA	84		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_032.d
Lims ID: 320-19022-A-2-A
Client ID: OF-TRMLAG-PT-0516
Sample Type: Client
Inject. Date: 31-May-2016 23:15:55 ALS Bottle#: 13 Worklist Smp#: 30
Injection Vol: 15.0 ul Dil. Factor: 5.0000
Sample Info: 320-19022-A-2-A 5X
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 16:40:52 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 01-Jun-2016 14:49:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										M
298.9 > 80.0	7.092	7.099	-0.007	1.000	196715	4.41				M
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.494	-0.019	1.000	630474	8.45			196	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.495	-0.020		630888	9.19		18.4	11238	
D 11 18O2 PFHxS										
403.0 > 84.0	9.504	9.532	-0.028		324343	10.5		22.2	8109	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.504	9.533	-0.029	1.000	1868772	58.2				M
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.612	-0.026		613981	8.44		16.9	13091	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.595	10.612	-0.017	1.000	8161604	129.5			1150	M
413.0 > 169.0	10.595	10.612	-0.017	1.000	3205603		2.55(0.00-0.00)		492	M
D 16 13C4 PFOS										
503.0 > 80.0	11.552	11.568	-0.016		386783	9.74		20.4	27395	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.552	11.571	-0.019	1.000	8962676	179.3			3900	M
499.0 > 99.0	11.552	11.571	-0.019	1.000	3867622		2.32(0.00-0.00)		1444	M
D 17 13C5 PFNA										
468.0 > 423.0	11.569	11.589	-0.020		535412	8.03		16.1	37891	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	35713	0.7721			863	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 02-Jun-2016 11:42:21 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_032.d

Injection Date: 31-May-2016 23:15:55 Instrument ID: A6

Lims ID: 320-19022-A-2-A Lab Sample ID: 320-19022-2

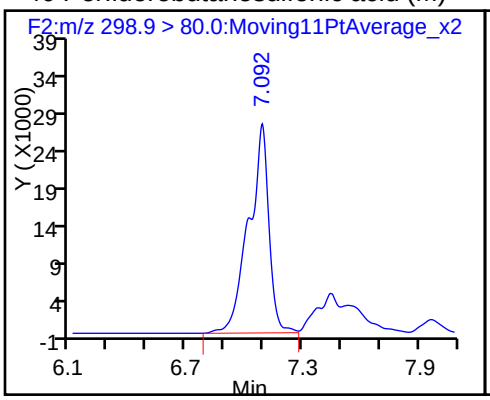
Client ID: OF-TRMLAG-PT-0516

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 30

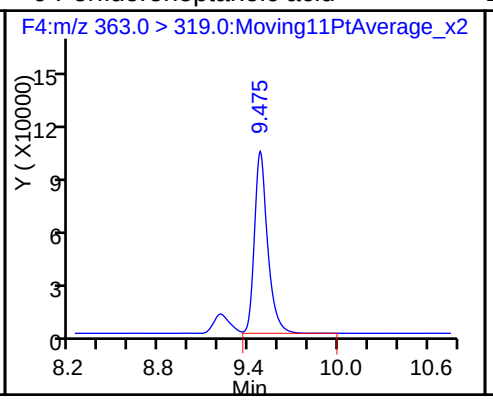
Injection Vol: 15.0 ul Dil. Factor: 5.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

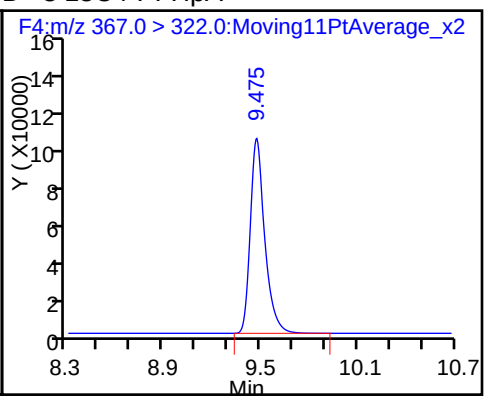
40 Perfluorobutanesulfonic acid (M)



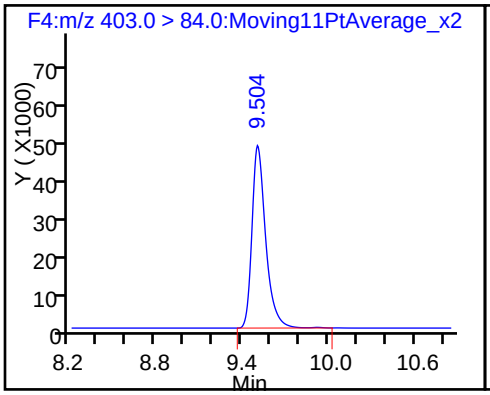
9 Perfluoroheptanoic acid



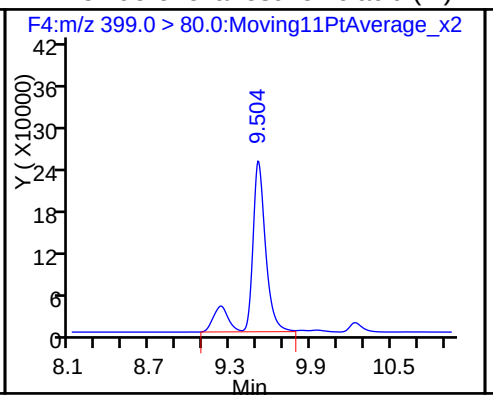
D 8 13C4-PFHpA



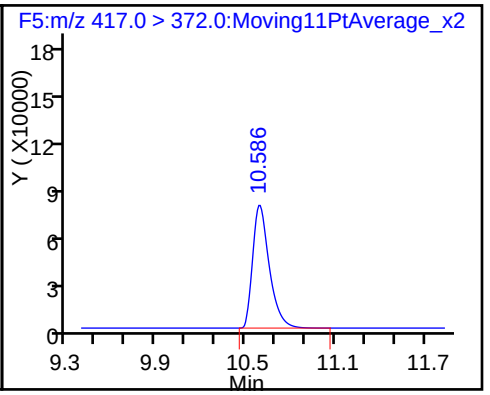
D 11 18O2 PFHxS



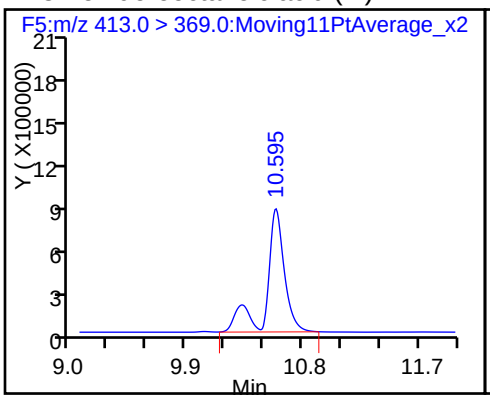
41 Perfluorohexanesulfonic acid (M)



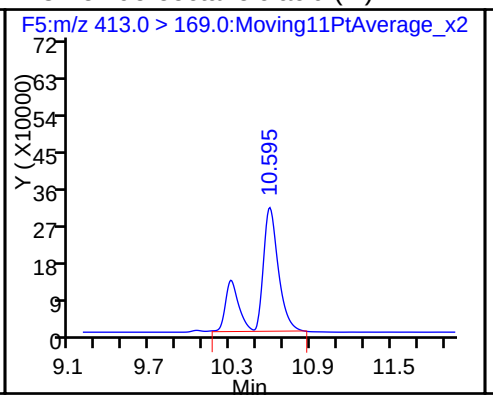
D 12 13C4 PFOA



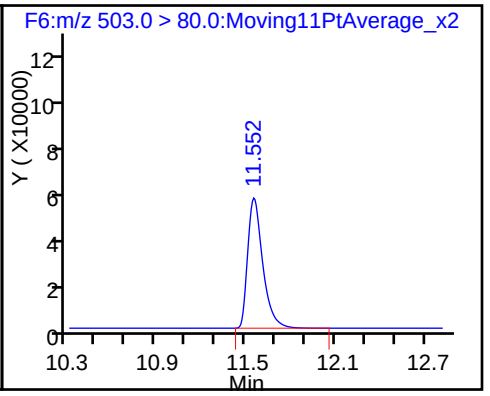
13 Perfluorooctanoic acid (M)



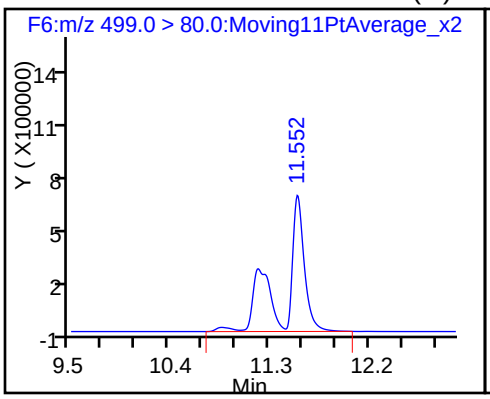
13 Perfluorooctanoic acid (M)



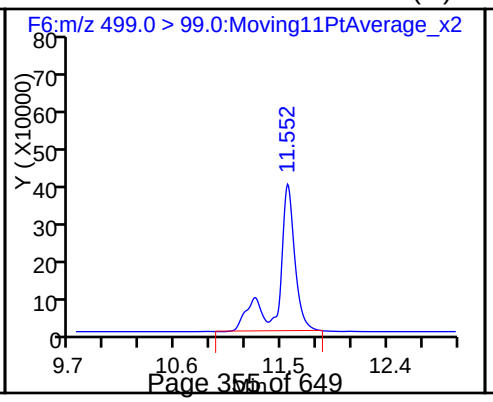
D 16 13C4 PFOS



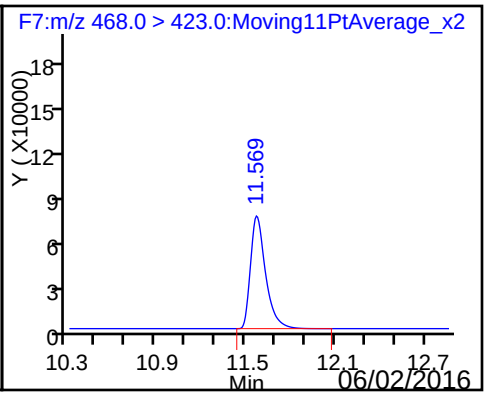
15 Perfluorooctane sulfonic acid (M)



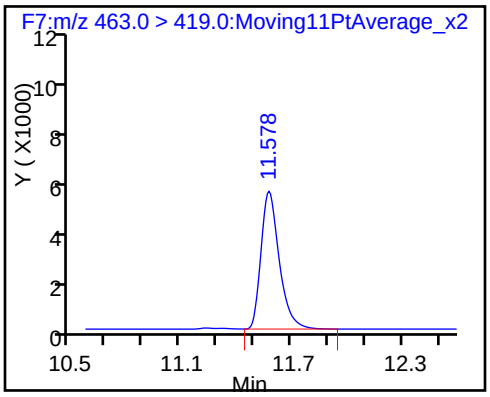
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

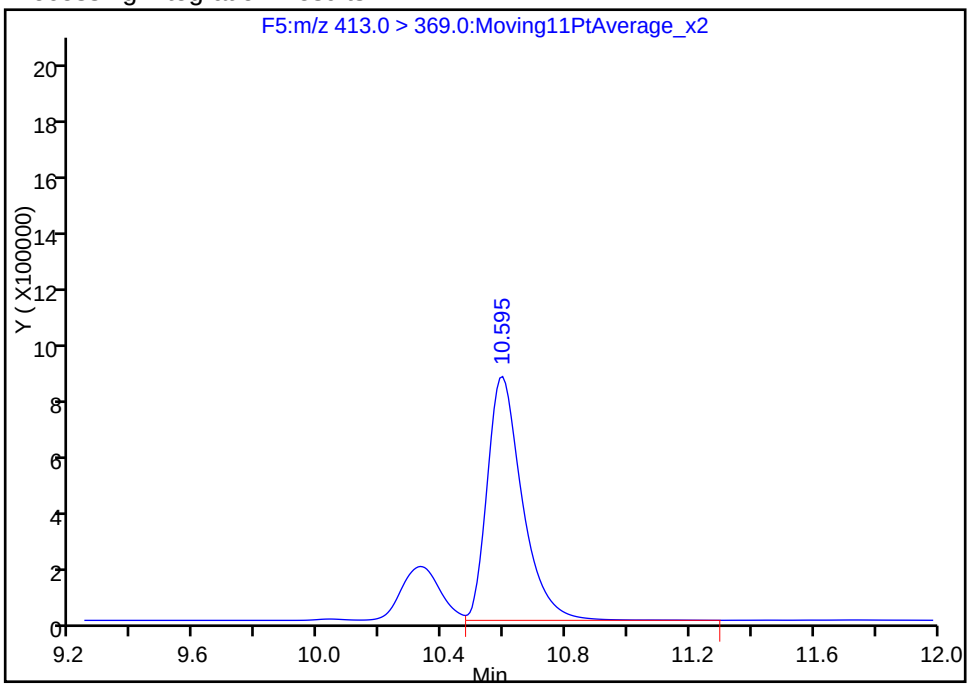
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_032.d				
Injection Date:	31-May-2016 23:15:55	Instrument ID:	A6		
Lims ID:	320-19022-A-2-A	Lab Sample ID:	320-19022-2		
Client ID:	OF-TRMLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	13	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

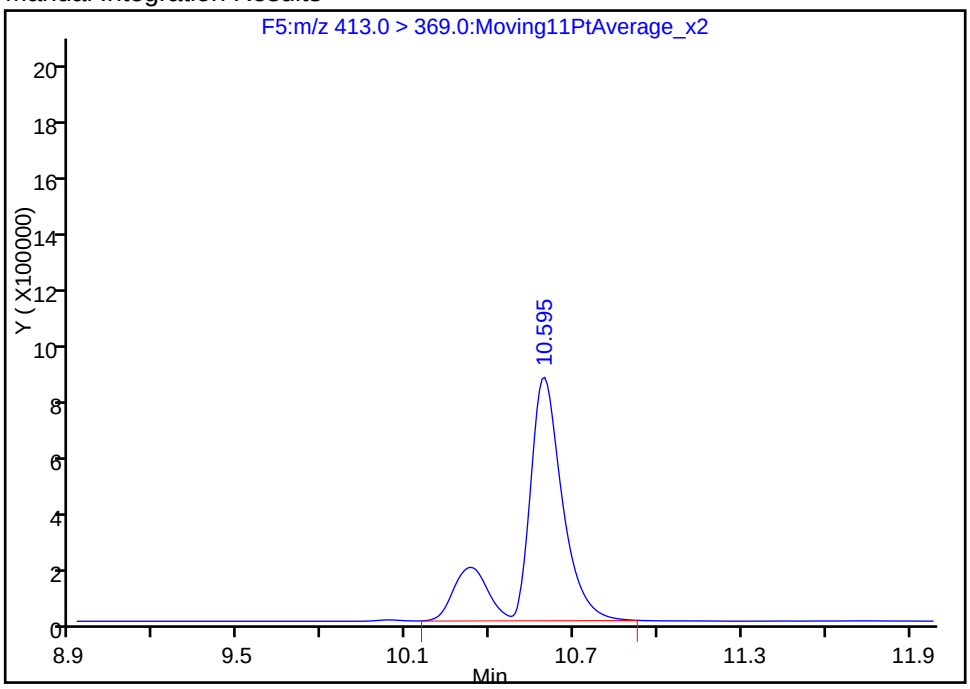
Processing Integration Results

RT: 10.60
Area: 6633626
Amount: 105.2517
Amount Units: ng/ml



Manual Integration Results

RT: 10.60
Area: 8161604
Amount: 129.4952
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:49:49

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

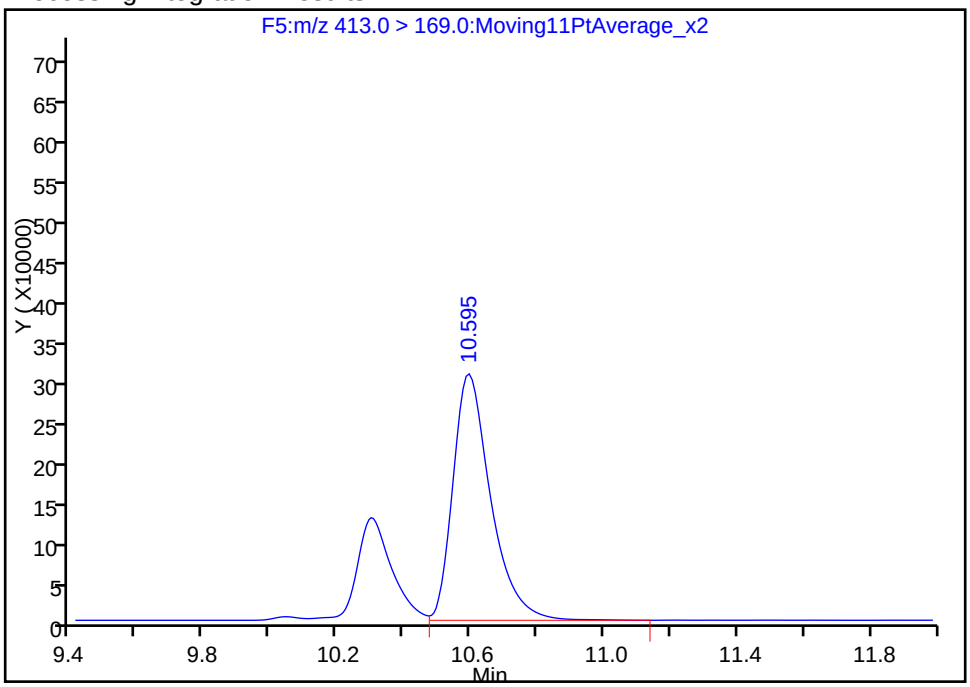
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_032.d				
Injection Date:	31-May-2016 23:15:55	Instrument ID:	A6		
Lims ID:	320-19022-A-2-A	Lab Sample ID:	320-19022-2		
Client ID:	OF-TRMLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	13	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

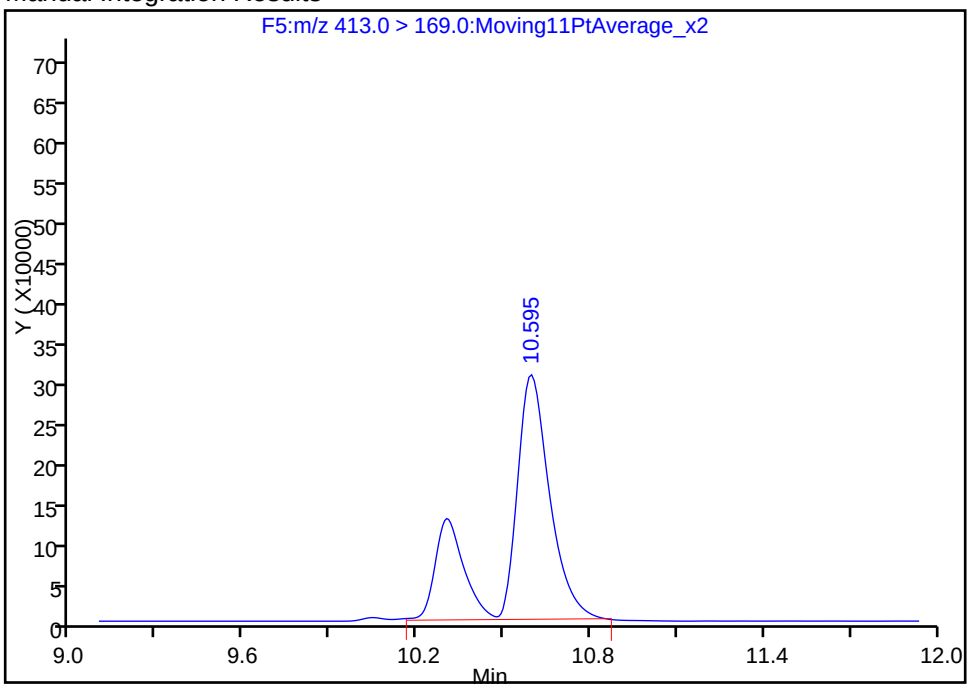
Processing Integration Results

RT: 10.60
Area: 2403671
Amount: 105.2517
Amount Units: ng/ml



Manual Integration Results

RT: 10.60
Area: 3205603
Amount: 129.4952
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:49:49

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

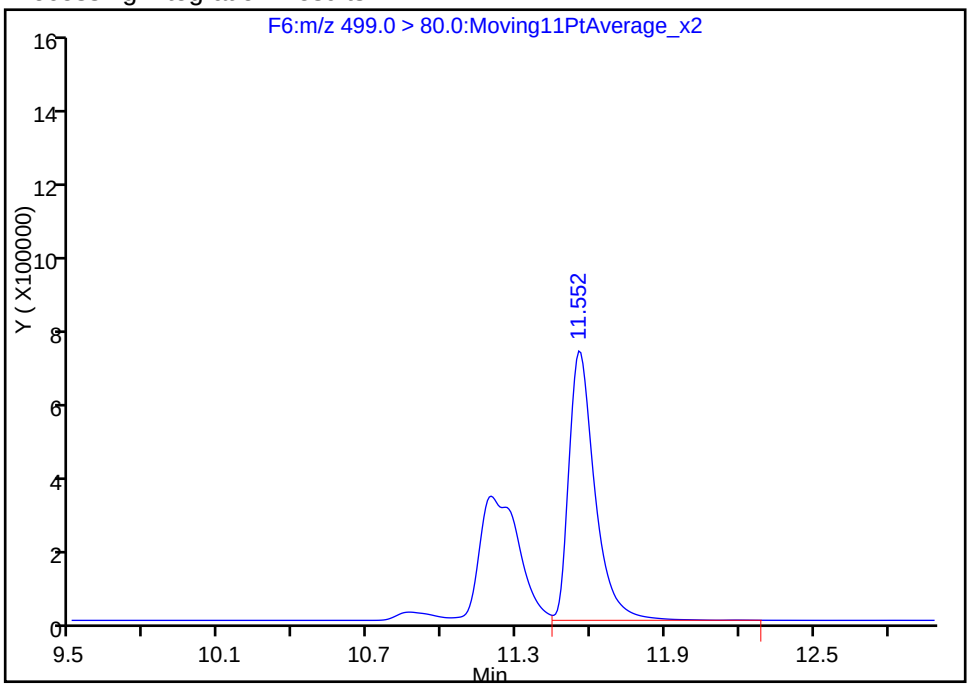
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_032.d				
Injection Date:	31-May-2016 23:15:55	Instrument ID:	A6		
Lims ID:	320-19022-A-2-A	Lab Sample ID:	320-19022-2		
Client ID:	OF-TRMLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	13	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 1

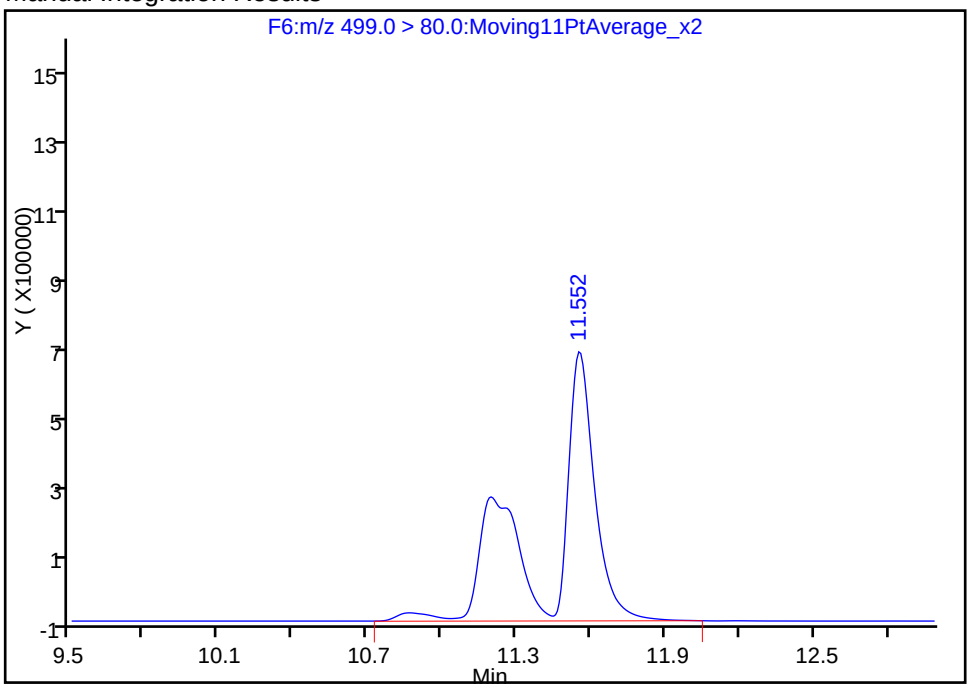
Processing Integration Results

RT: 11.55
Area: 5163136
Amount: 103.3002
Amount Units: ng/ml



Manual Integration Results

RT: 11.55
Area: 8962676
Amount: 179.3186
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:49:49

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

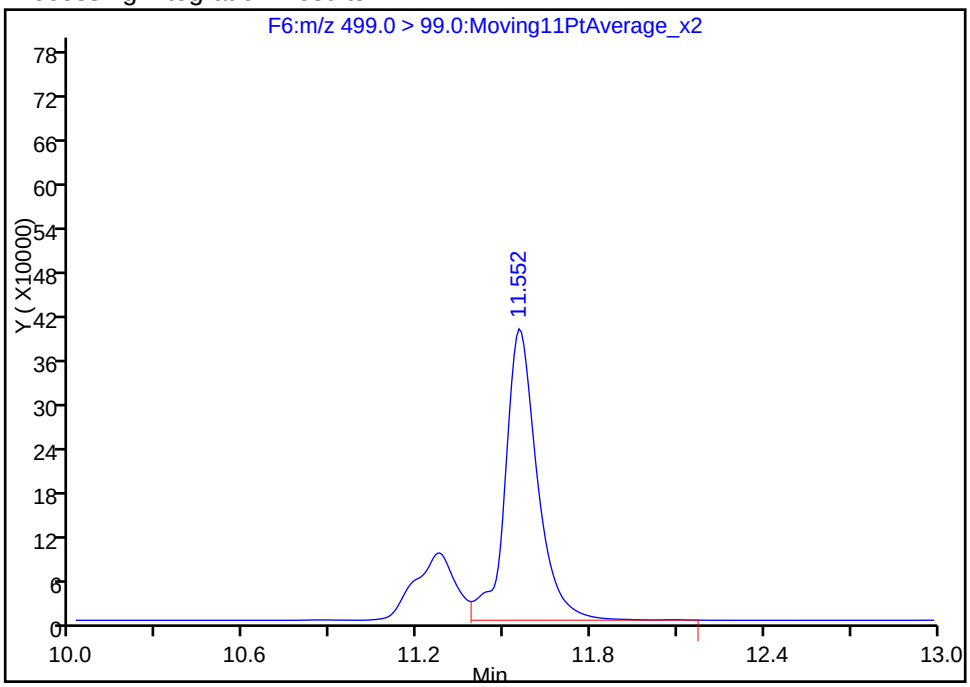
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_032.d				
Injection Date:	31-May-2016 23:15:55	Instrument ID:	A6		
Lims ID:	320-19022-A-2-A	Lab Sample ID:	320-19022-2		
Client ID:	OF-TRMLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	13	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 2

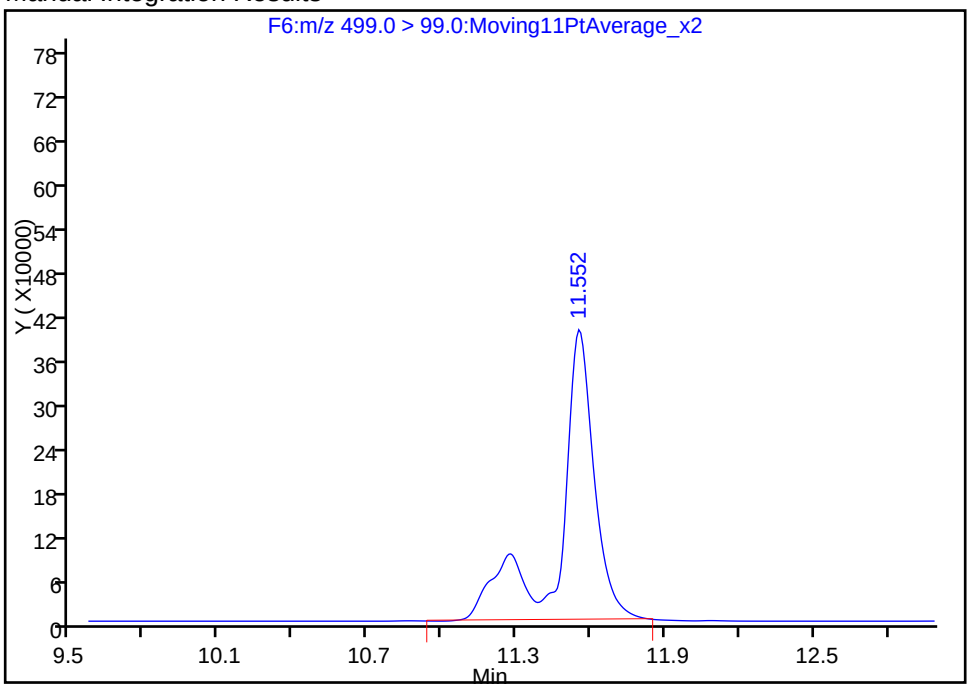
Processing Integration Results

RT: 11.55
Area: 3105027
Amount: 103.3002
Amount Units: ng/ml



Manual Integration Results

RT: 11.55
Area: 3867622
Amount: 179.3186
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:49:49
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-POLLAG-PT-0516 | Lab Sample ID: 320-19022-3

Matrix: Water | Lab File ID: 28MAY2016A6A_033.d

Analysis Method: WS-LC-0025 | Date Collected: 05/19/2016 13:35

Extraction Method: 3535 | Date Extracted: 05/25/2016 15:20

Sample wt/vol: 491(mL) | Date Analyzed: 05/29/2016 03:08

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 111859 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.092		0.0025	0.0020	0.00082
335-67-1	Perfluorooctanoic acid (PFOA)	0.75	M	0.0025	0.0020	0.00076
375-95-1	Perfluorononanoic acid (PFNA)	0.019		0.0025	0.0020	0.00067
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.060		0.0025	0.0020	0.00093
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.0020	0.00089

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	89		25-150
STL00995	13C5 PFNA	66		25-150
STL00990	13C4 PFOA	73		25-150
STL01892	13C4-PFHpA	77		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_033.d
Lims ID: 320-19022-B-3-A
Client ID: OF-POLLAG-PT-0516
Sample Type: Client
Inject. Date: 29-May-2016 03:08:27 ALS Bottle#: 14 Worklist Smp#: 32
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-19022-B-3-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:31 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 31-May-2016 14:27:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.078	7.085	-0.007	1.000	936090	29.3				
D 8 13C4-PFHpA										
367.0 > 322.0	9.457	9.474	-0.017		2386921	38.5		77.0	4809	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.463	9.475	-0.012	1.000	2595700	45.2			353	
D 11 18O2 PFHxS										
403.0 > 84.0	9.493	9.507	-0.014		1197132	41.9		88.7	33809	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.499	9.507	-0.008	1.000	6514302	281.4				M
D 12 13C4 PFOA										
417.0 > 372.0	10.577	10.586	-0.009		2451164	36.4		72.8	24699	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.577	10.587	-0.010	1.000	18395195	369.1			3367	M
413.0 > 169.0	10.577	10.587	-0.010	1.000	7555753		2.43(0.00-0.00)		1252	M
D 16 13C4 PFOS										
503.0 > 80.0	11.535	11.543	-0.008		1038093	29.5		61.8	143636	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.535	11.545	-0.010	1.000	29032802	1064.9			2400	EM
499.0 > 99.0	11.535	11.545	-0.010	1.000	12874363		2.26(0.00-0.00)		2052	M
D 17 13C5 PFNA										
468.0 > 423.0	11.553	11.562	-0.009		2036756	32.8		65.7	48569	
18 Perfluorononanoic acid										
463.0 > 419.0	11.553	11.563	-0.010	1.000	318497	9.26			391	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 31-May-2016 14:41:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_033.d

Injection Date: 29-May-2016 03:08:27 Instrument ID: A6

Lims ID: 320-19022-B-3-A Lab Sample ID: 320-19022-3

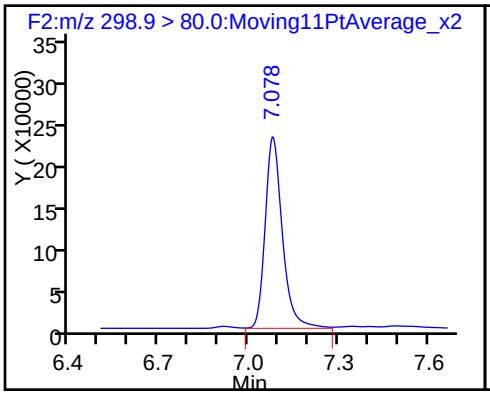
Client ID: OF-POLLAG-PT-0516

Operator ID: JRB ALS Bottle#: 14 Worklist Smp#: 32

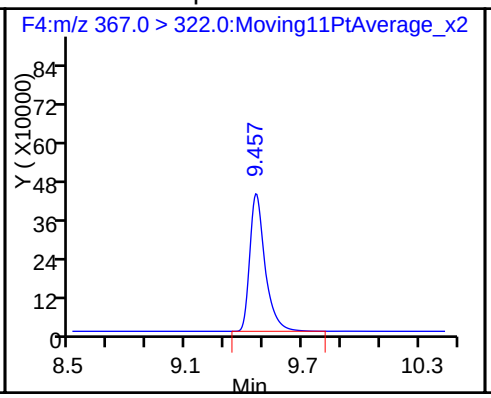
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

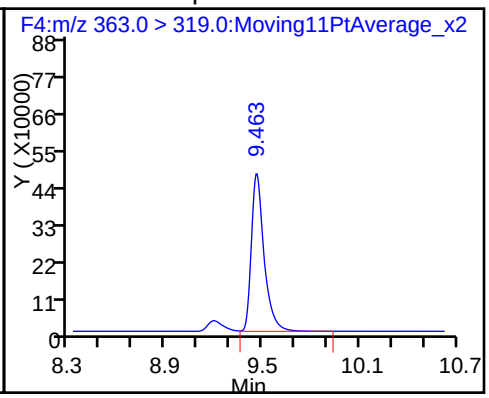
40 Perfluorobutanesulfonic acid



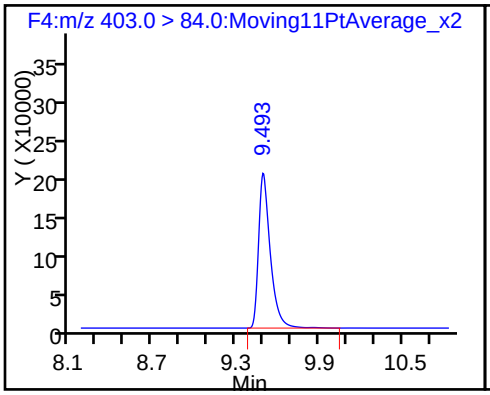
D 8 13C4-PFHpA



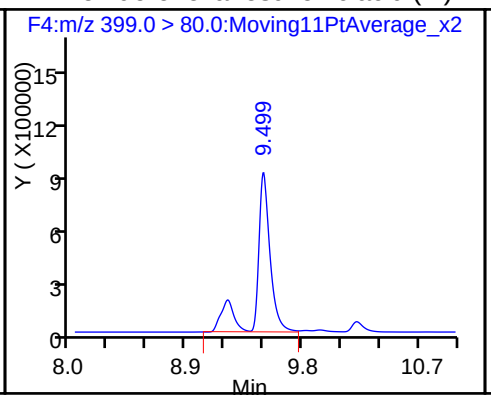
9 Perfluoroheptanoic acid



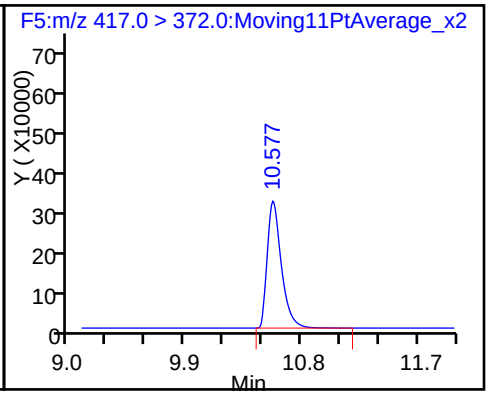
D 11 18O2 PFHxS



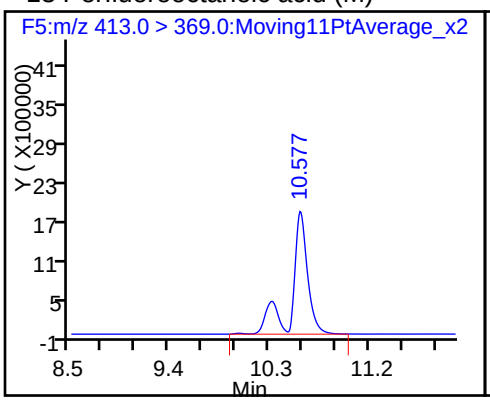
41 Perfluorohexanesulfonic acid (M)



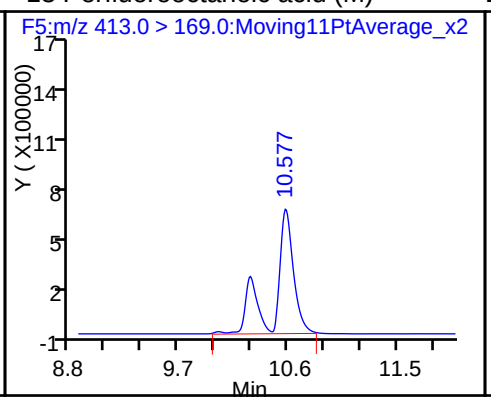
D 12 13C4 PFOA



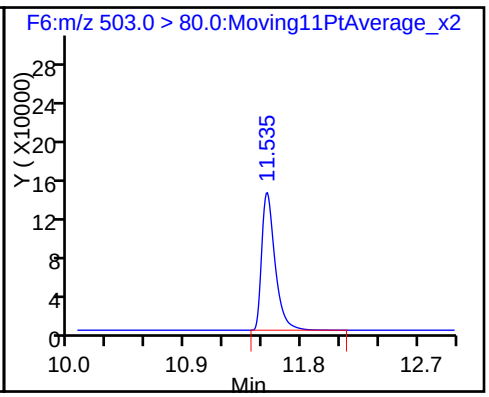
13 Perfluorooctanoic acid (M)



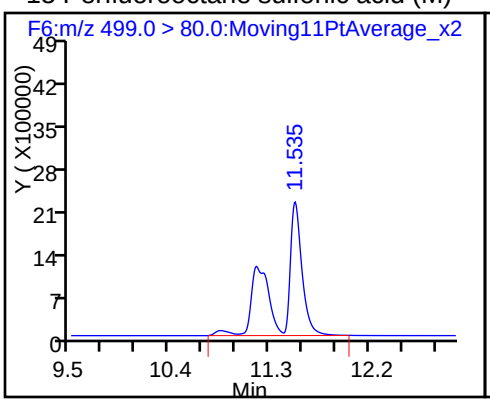
13 Perfluorooctanoic acid (M)



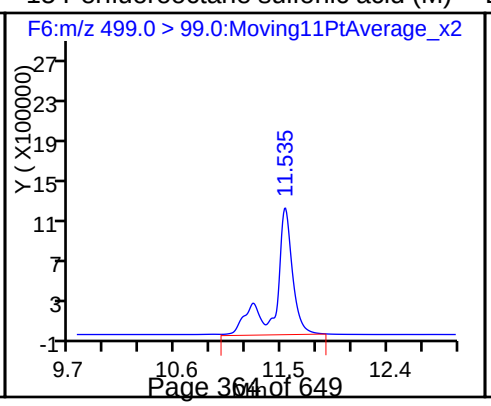
D 16 13C4 PFOS



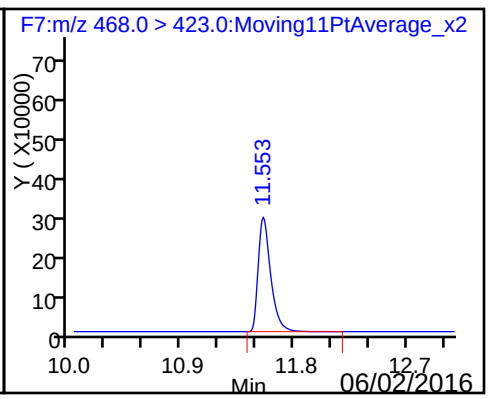
15 Perfluorooctane sulfonic acid (M)



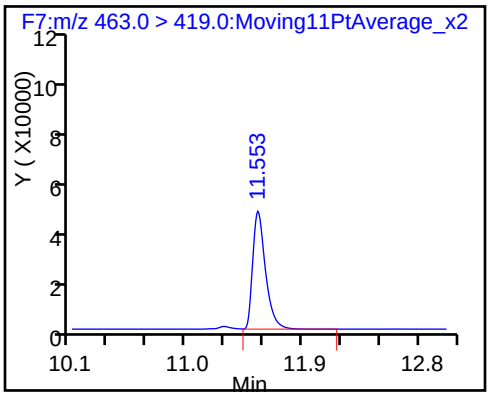
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

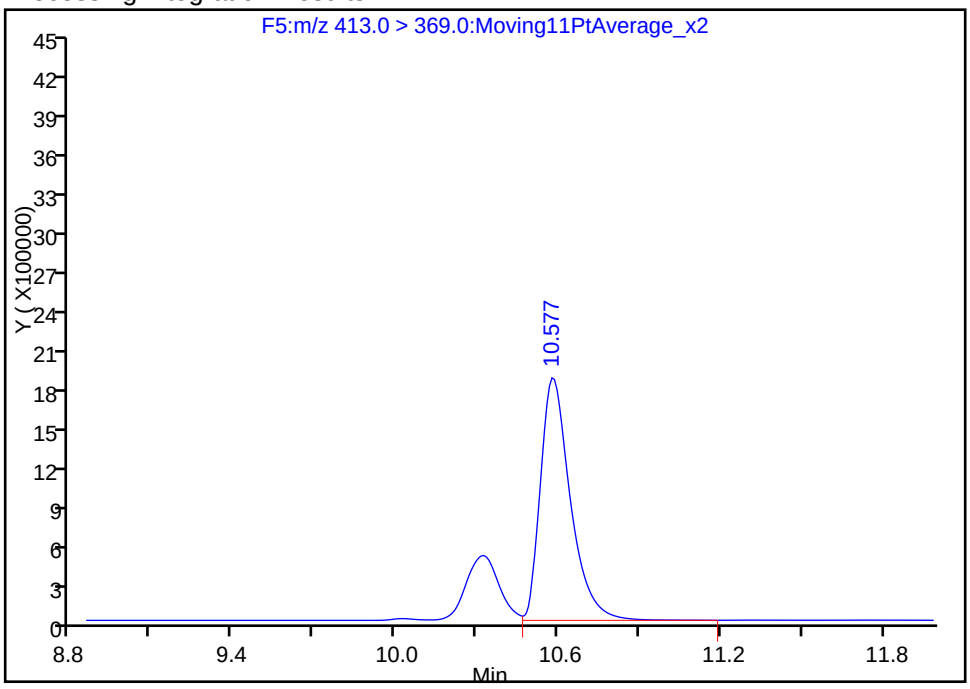
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_033.d				
Injection Date:	29-May-2016 03:08:27	Instrument ID:	A6		
Lims ID:	320-19022-B-3-A	Lab Sample ID:	320-19022-3		
Client ID:	OF-POLLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	14	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

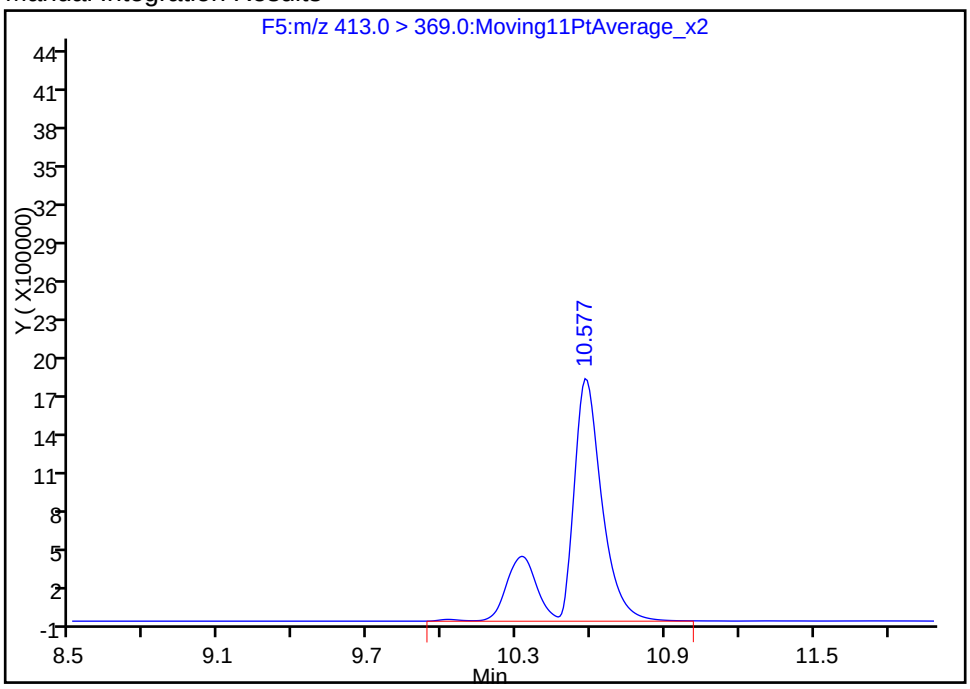
Processing Integration Results

RT: 10.58
Area: 14163707
Amount: 284.2285
Amount Units: ng/ml



Manual Integration Results

RT: 10.58
Area: 18395195
Amount: 369.1434
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:27:51

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

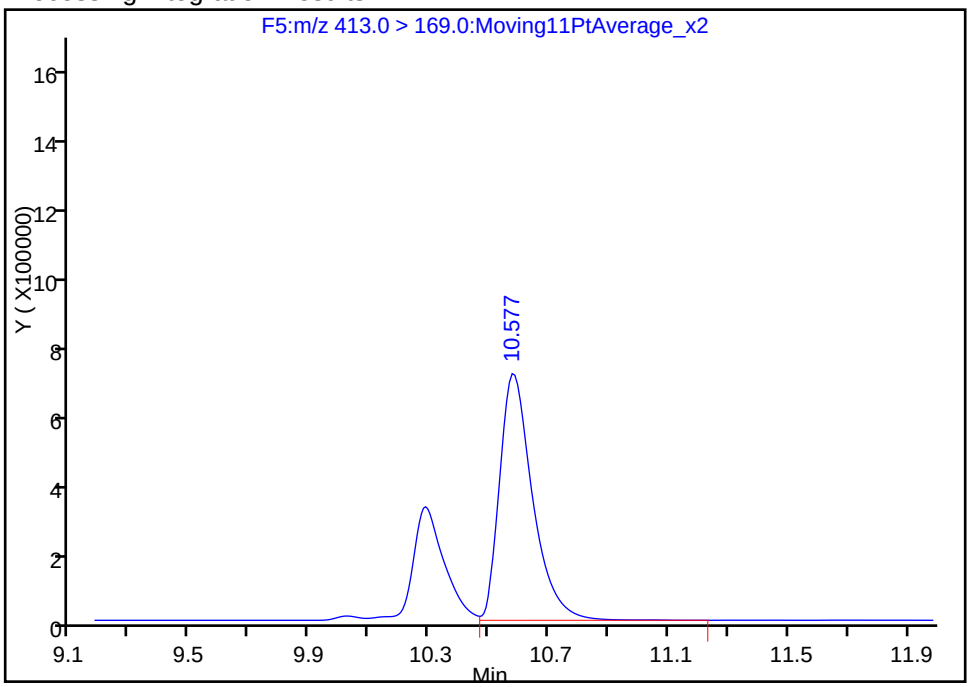
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_033.d				
Injection Date:	29-May-2016 03:08:27	Instrument ID:	A6		
Lims ID:	320-19022-B-3-A	Lab Sample ID:	320-19022-3		
Client ID:	OF-POLLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	14	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

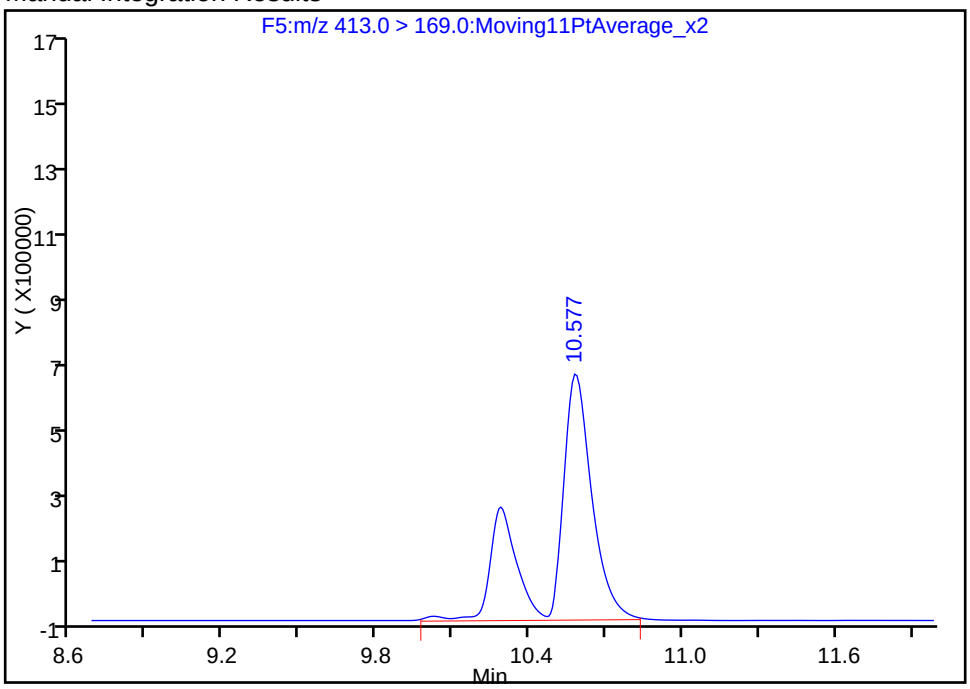
Processing Integration Results

RT: 10.58
Area: 5277774
Amount: 284.2285
Amount Units: ng/ml



Manual Integration Results

RT: 10.58
Area: 7555753
Amount: 369.1434
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:27:51

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

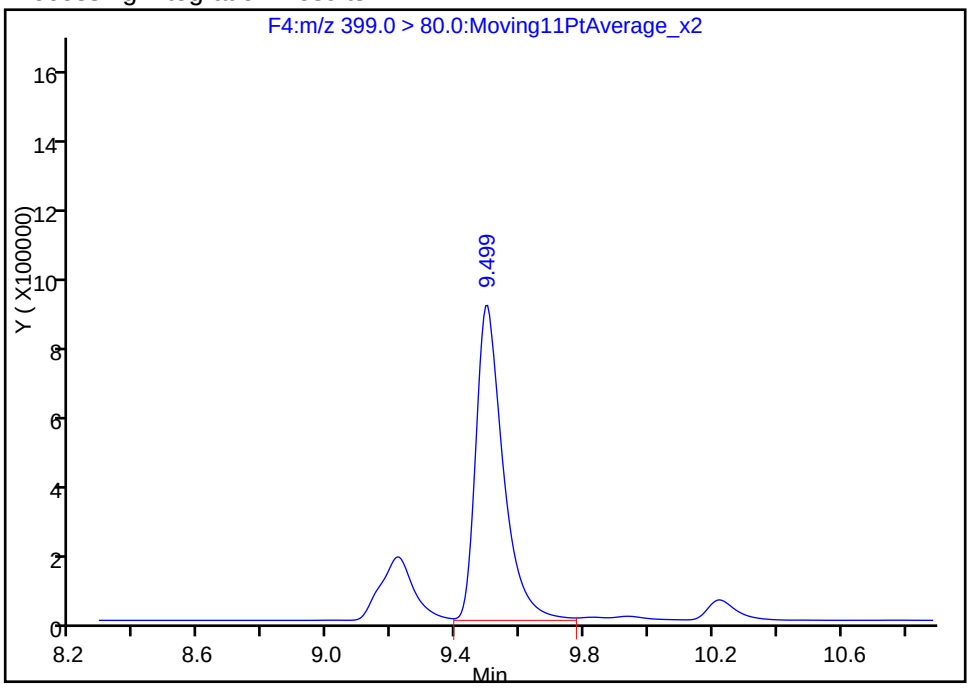
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_033.d				
Injection Date:	29-May-2016 03:08:27	Instrument ID:	A6		
Lims ID:	320-19022-B-3-A	Lab Sample ID:	320-19022-3		
Client ID:	OF-POLLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	14	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

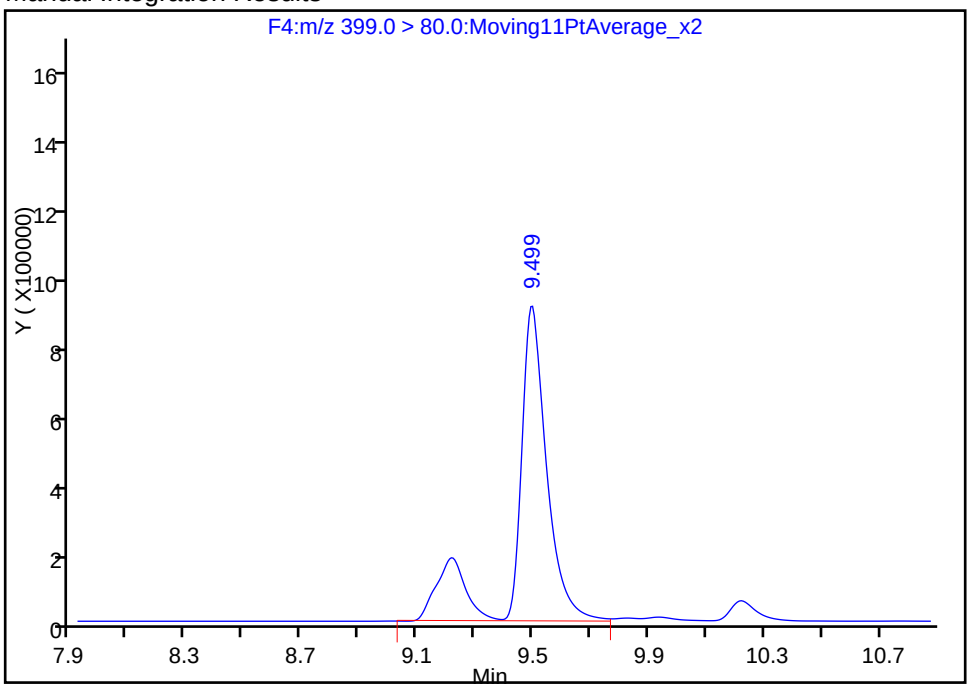
Processing Integration Results

RT: 9.50
Area: 5285961
Amount: 228.3505
Amount Units: ng/ml



Manual Integration Results

RT: 9.50
Area: 6514302
Amount: 281.4141
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:27:51

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-POLLAG-PT-0516 DL Lab Sample ID: 320-19022-3 DL

Matrix: Water Lab File ID: 31MAY2016A6A_033.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 491(mL) Date Analyzed: 05/31/2016 23:37

Con. Extract Vol.: 1.00(mL) Dilution Factor: 5

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.9	D M	0.020	0.015	0.0065

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_033.d
Lims ID: 320-19022-B-3-A
Client ID: OF-POLLAG-PT-0516
Sample Type: Client
Inject. Date: 31-May-2016 23:37:12 ALS Bottle#: 14 Worklist Smp#: 31
Injection Vol: 15.0 ul Dil. Factor: 5.0000
Sample Info: 320-19022-B-3-A 5X
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 16:40:52 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 01-Jun-2016 14:51:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.085	7.099	-0.014	1.000	189691	4.07				
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.494	-0.019	1.000	737050	8.57			452	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.495	-0.020		728056	10.6		21.2	61170	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.532	-0.022		338793	11.0		23.2	18053	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.505	9.533	-0.028	1.000	1817745	54.2				M
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.612	-0.026		734440	10.1		20.2	48025	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.595	10.612	-0.017	1.000	5678666	75.3			1239	M
413.0 > 169.0	10.595	10.612	-0.017	1.000	2274178		2.50(0.00-0.00)		1356	M
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		384571	9.69		20.3	27626	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.560	11.571	-0.011	1.000	9071483	182.5			1779	M
499.0 > 99.0	11.560	11.571	-0.011	1.000	4406814		2.06(0.00-0.00)		2278	M
D 17 13C5 PFNA										
468.0 > 423.0	11.578	11.589	-0.011		630303	9.46		18.9	44779	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	104994	1.93			2558	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 02-Jun-2016 11:42:25 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_033.d

Injection Date: 31-May-2016 23:37:12 Instrument ID: A6

Lims ID: 320-19022-B-3-A Lab Sample ID: 320-19022-3

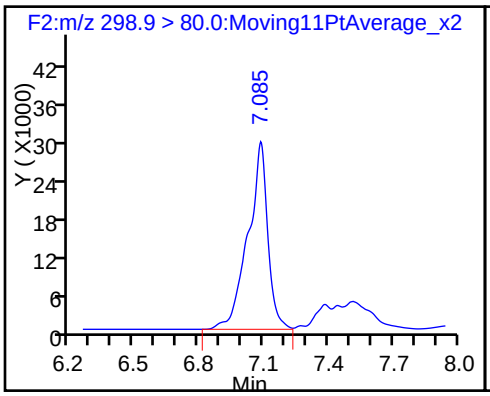
Client ID: OF-POLLAG-PT-0516

Operator ID: JRB ALS Bottle#: 14 Worklist Smp#: 31

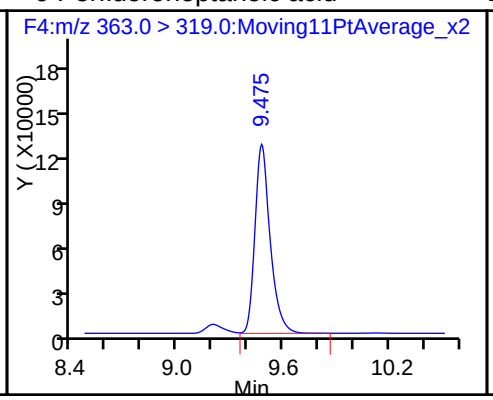
Injection Vol: 15.0 ul Dil. Factor: 5.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

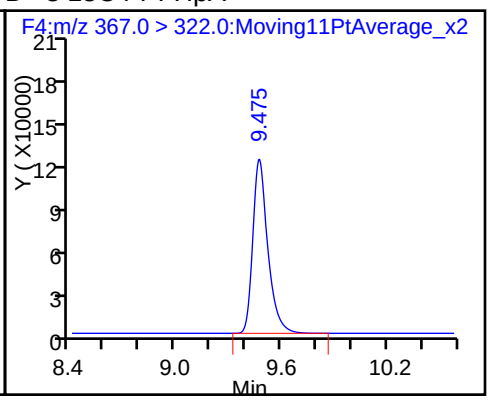
40 Perfluorobutanesulfonic acid



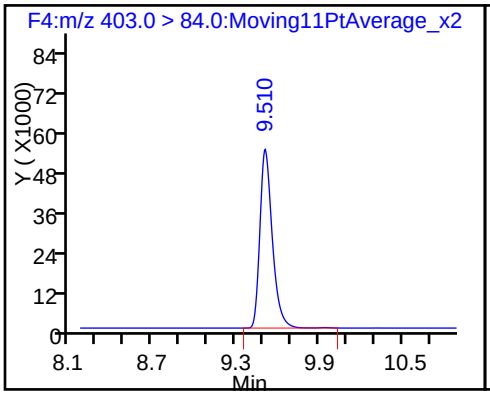
9 Perfluoroheptanoic acid



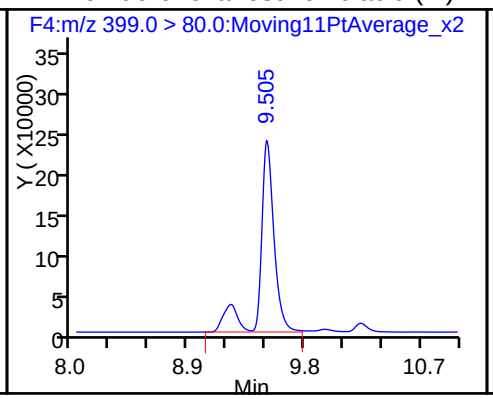
D 8 13C4-PFHpA



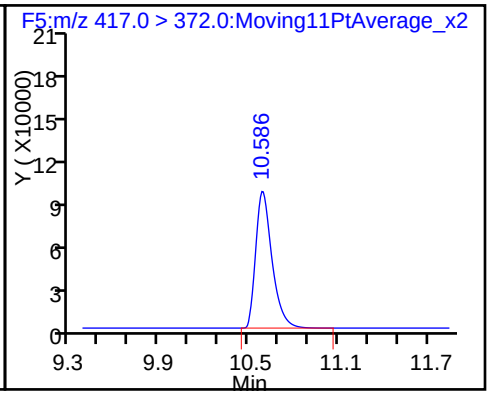
D 11 18O2 PFHxS



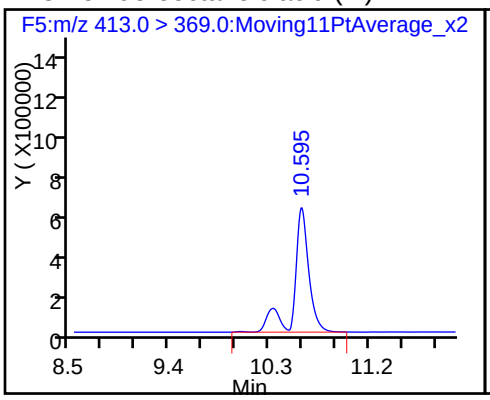
41 Perfluorohexanesulfonic acid (M)



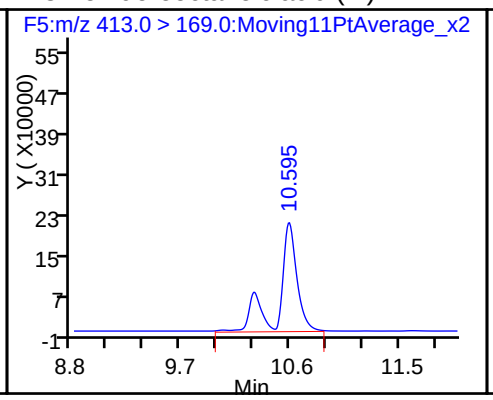
D 12 13C4 PFOA



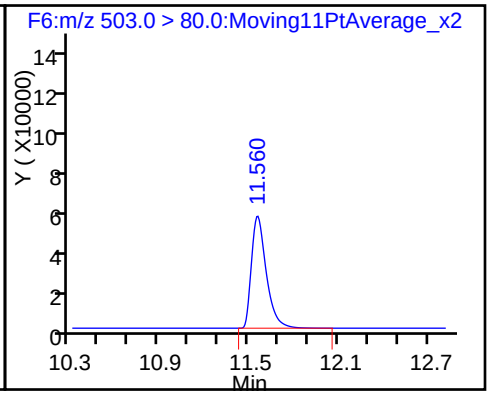
13 Perfluorooctanoic acid (M)



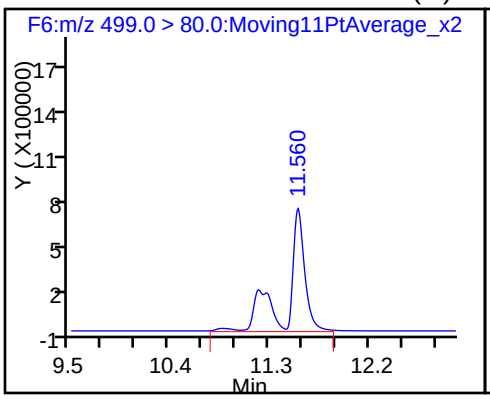
13 Perfluorooctanoic acid (M)



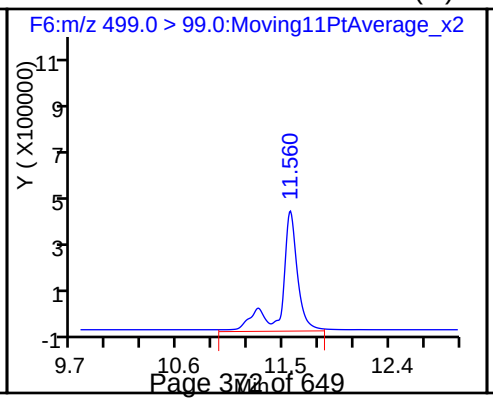
D 16 13C4 PFOS



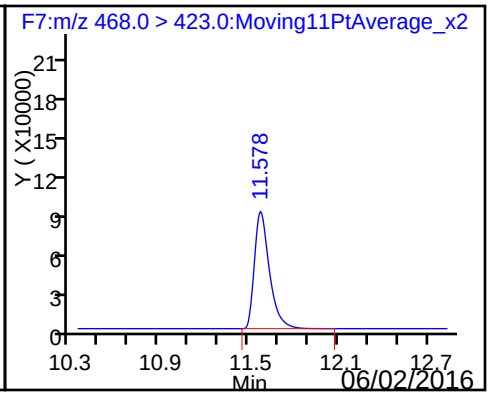
15 Perfluorooctane sulfonic acid (M)



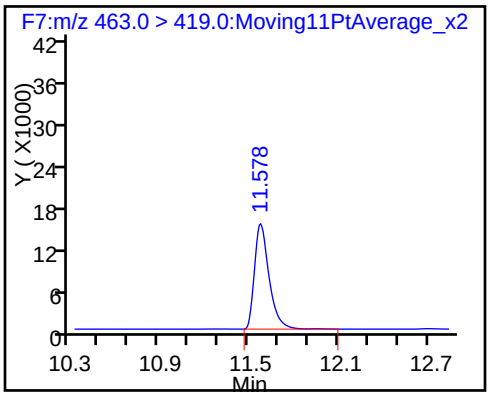
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

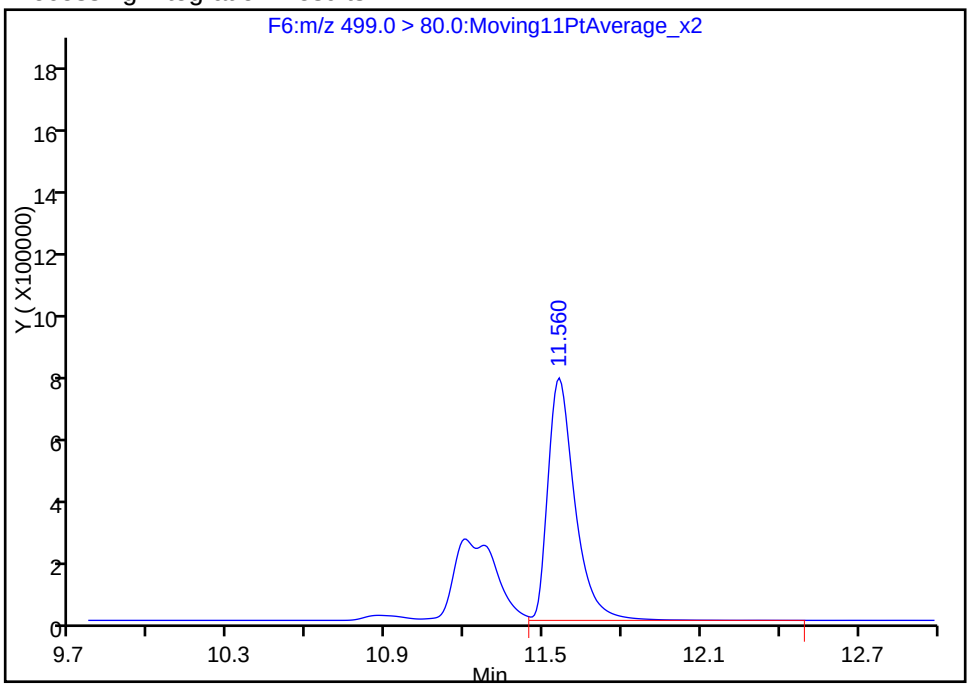
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_033.d				
Injection Date:	31-May-2016 23:37:12	Instrument ID:	A6		
Lims ID:	320-19022-B-3-A	Lab Sample ID:	320-19022-3		
Client ID:	OF-POLLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	14	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 1

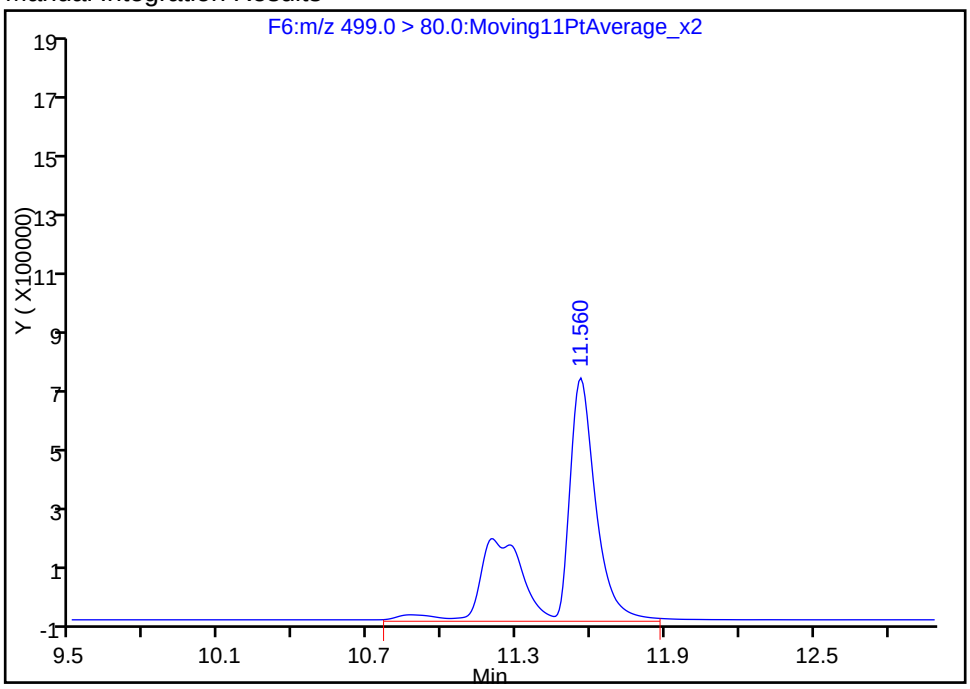
Processing Integration Results

RT: 11.56
Area: 5656414
Amount: 113.8203
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 9071483
Amount: 182.5395
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:51:05

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

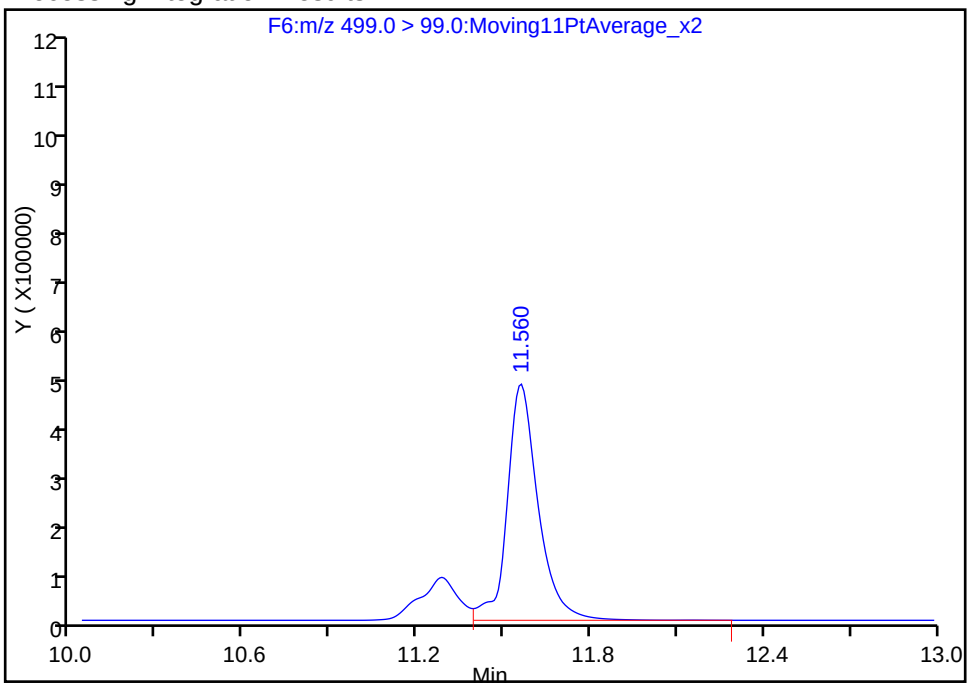
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_033.d				
Injection Date:	31-May-2016 23:37:12	Instrument ID:	A6		
Lims ID:	320-19022-B-3-A	Lab Sample ID:	320-19022-3		
Client ID:	OF-POLLAG-PT-0516				
Operator ID:	JRB	ALS Bottle#:	14	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 2

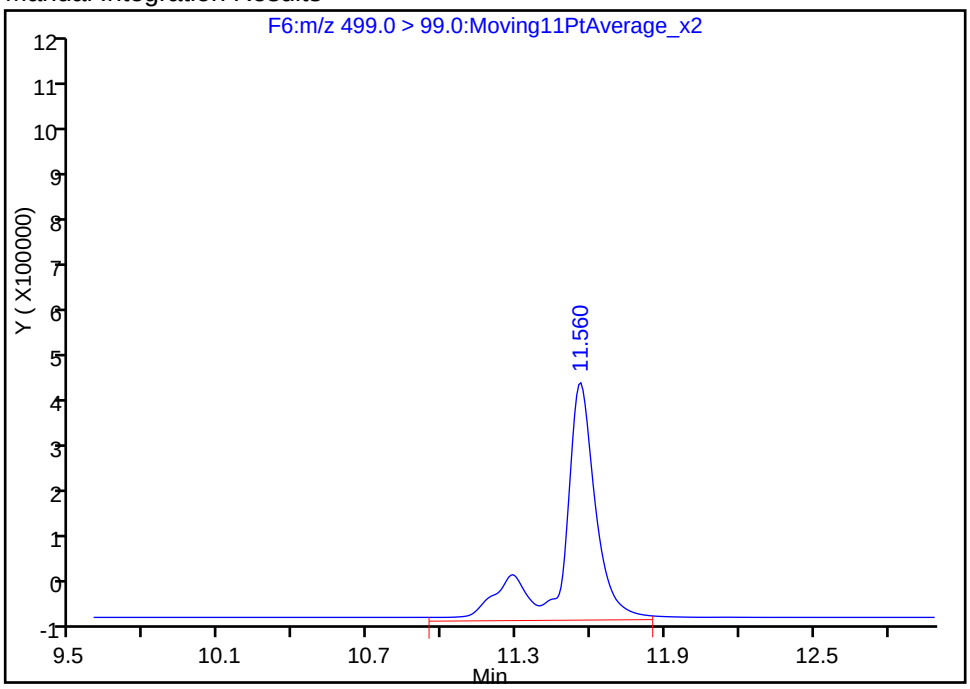
Processing Integration Results

RT: 11.56
Area: 3364981
Amount: 113.8203
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 4406814
Amount: 182.5395
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:51:05
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-CLTANK-PT-0516 Lab Sample ID: 320-19022-4

Matrix: Water Lab File ID: 28MAY2016A6A_034.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 499(mL) Date Analyzed: 05/29/2016 03:29

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 111859 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.087		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.71	M	0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.019		0.0025	0.0020	0.00066
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.061		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.57	M	0.0025	0.0020	0.00087

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	70		25-150
STL00995	13C5 PFNA	40		25-150
STL00990	13C4 PFOA	48		25-150
STL01892	13C4-PFHpA	52		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_034.d
Lims ID: 320-19022-A-4-A
Client ID: OF-CLTANK-PT-0516
Sample Type: Client
Inject. Date: 29-May-2016 03:29:44 ALS Bottle#: 15 Worklist Smp#: 33
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-19022-A-4-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:31 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 31-May-2016 14:29:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.081	7.085	-0.004	1.000	765063	30.3				
D 8 13C4-PFHpA										
367.0 > 322.0	9.457	9.474	-0.017		1602384	25.9		51.7	72327	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.463	9.475	-0.012	1.000	1684222	43.7			336	
D 11 18O2 PFHxS										
403.0 > 84.0	9.499	9.507	-0.008		948003	33.2		70.2	20209	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.499	9.507	-0.008	1.000	5236902	285.7				M
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.586	0.0		1613706	24.0		47.9	106353	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.586	10.587	-0.001	1.000	11681386	356.1			3520	M
413.0 > 169.0	10.586	10.587	-0.001	1.000	4621536		2.53(0.00-0.00)		2614	M
D 16 13C4 PFOS										
503.0 > 80.0	11.535	11.543	-0.008		890656	25.3		53.0	62333	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.535	11.545	-0.010	1.000	24344447	1040.7			2151	EM
499.0 > 99.0	11.535	11.545	-0.010	1.000	11074824		2.20(0.00-0.00)		2107	M
D 17 13C5 PFNA										
468.0 > 423.0	11.561	11.562	-0.001		1233239	19.9		39.8	17579	
18 Perfluorononanoic acid										
463.0 > 419.0	11.561	11.563	-0.002	1.000	193914	9.31			591	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 31-May-2016 14:41:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_034.d

Injection Date: 29-May-2016 03:29:44 Instrument ID: A6

Lims ID: 320-19022-A-4-A Lab Sample ID: 320-19022-4

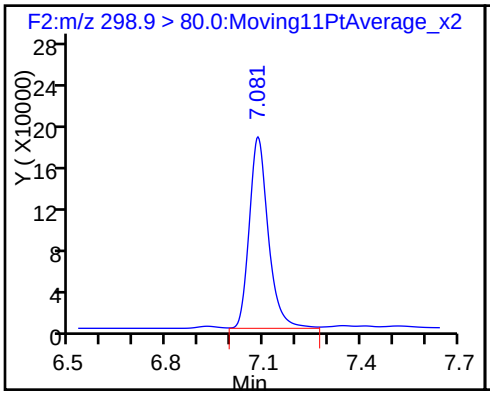
Client ID: OF-CLTANK-PT-0516

Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 33

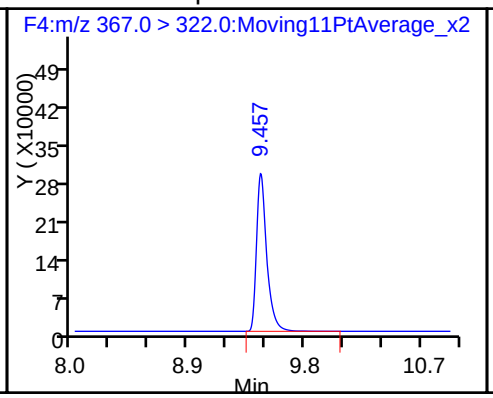
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

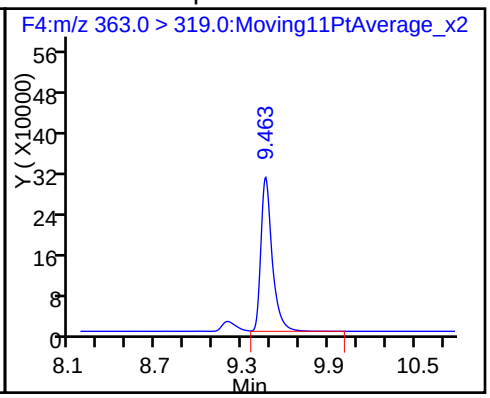
40 Perfluorobutanesulfonic acid



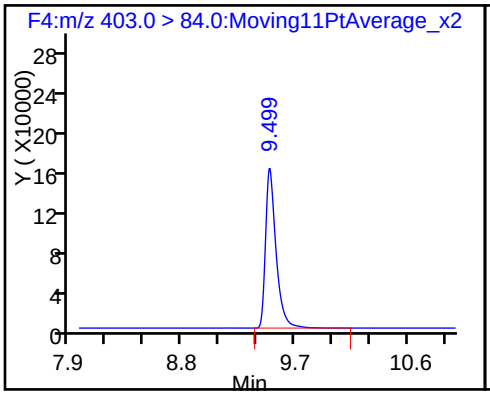
D 8 13C4-PFHpA



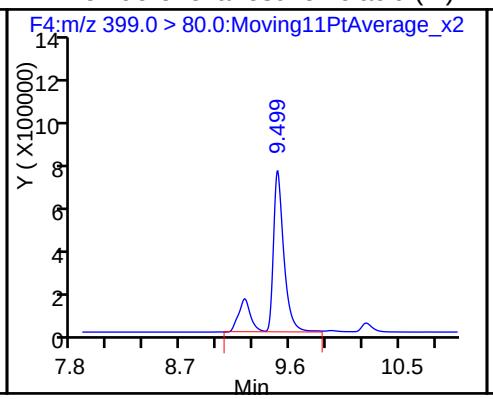
9 Perfluoroheptanoic acid



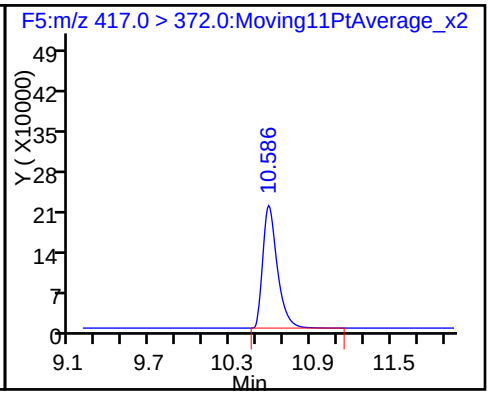
D 11 18O2 PFHxS



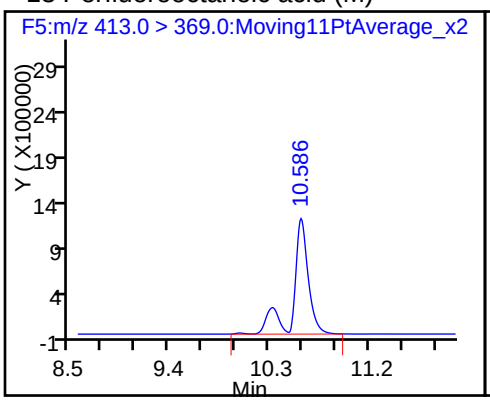
41 Perfluorohexanesulfonic acid (M)



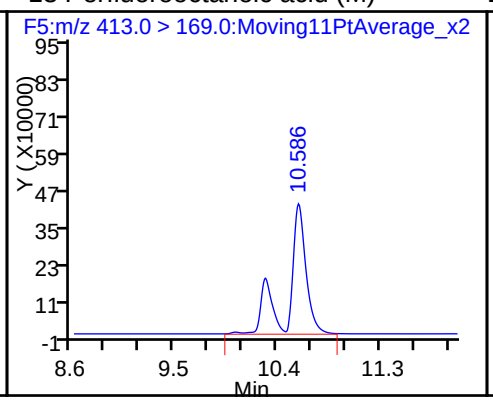
D 12 13C4 PFOA



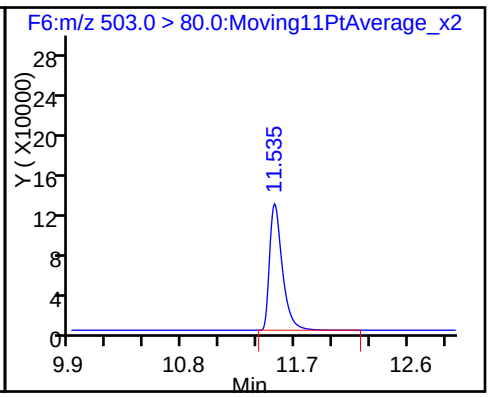
13 Perfluorooctanoic acid (M)



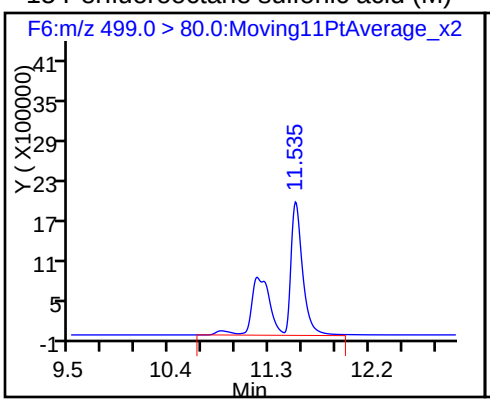
13 Perfluorooctanoic acid (M)



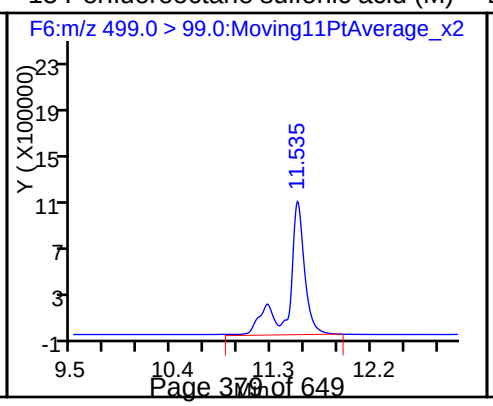
D 16 13C4 PFOS



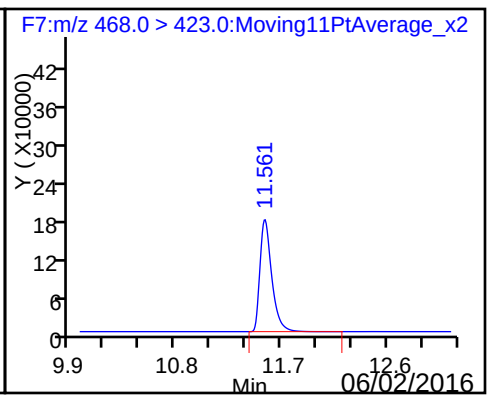
15 Perfluorooctane sulfonic acid (M)



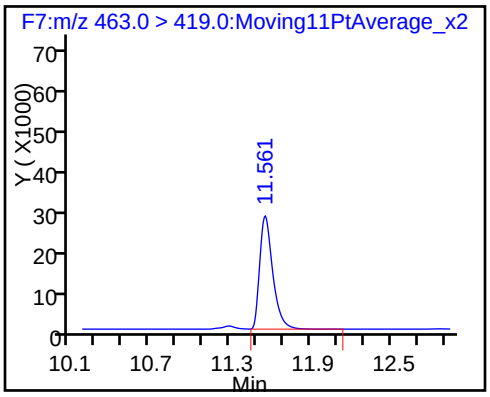
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

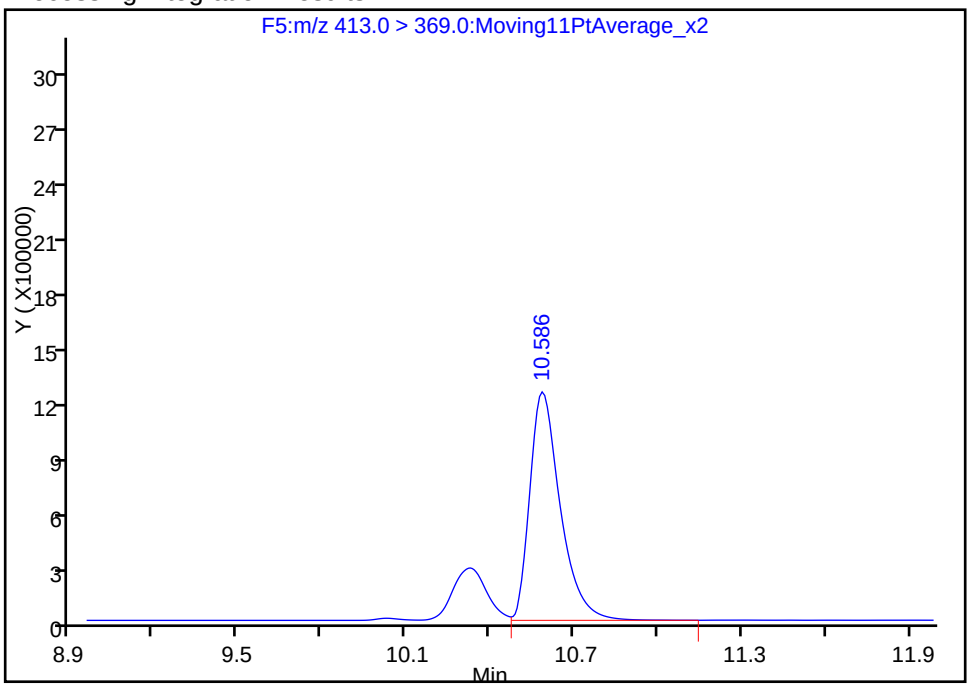
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_034.d				
Injection Date:	29-May-2016 03:29:44	Instrument ID:	A6		
Lims ID:	320-19022-A-4-A	Lab Sample ID:	320-19022-4		
Client ID:	OF-CLTANK-PT-0516				
Operator ID:	JRB	ALS Bottle#:	15	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

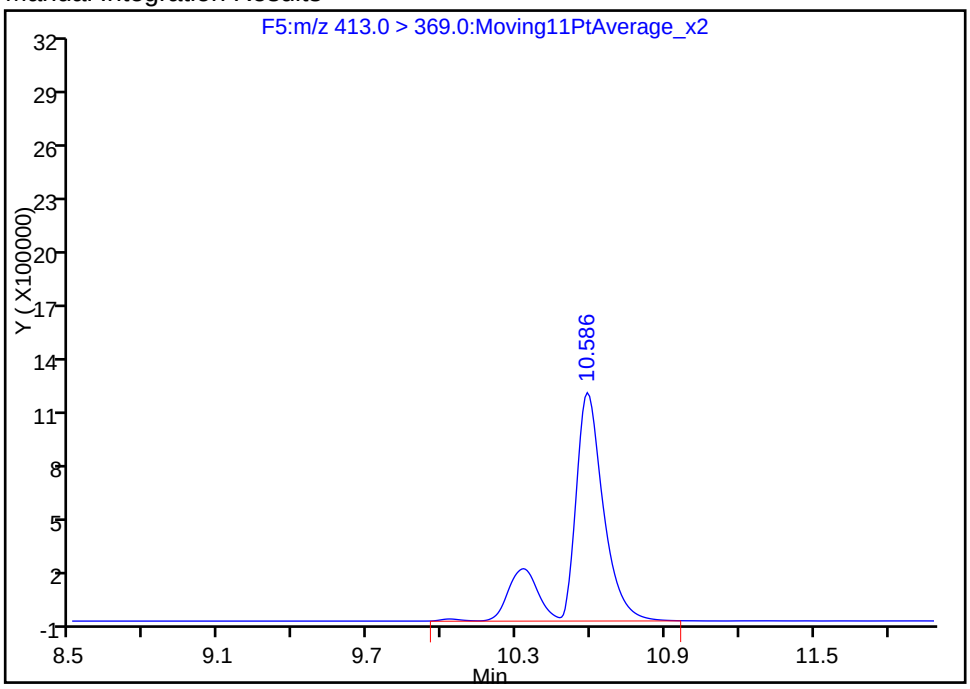
Processing Integration Results

RT: 10.59
Area: 9273461
Amount: 282.6705
Amount Units: ng/ml



Manual Integration Results

RT: 10.59
Area: 11681386
Amount: 356.0680
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:29:20

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

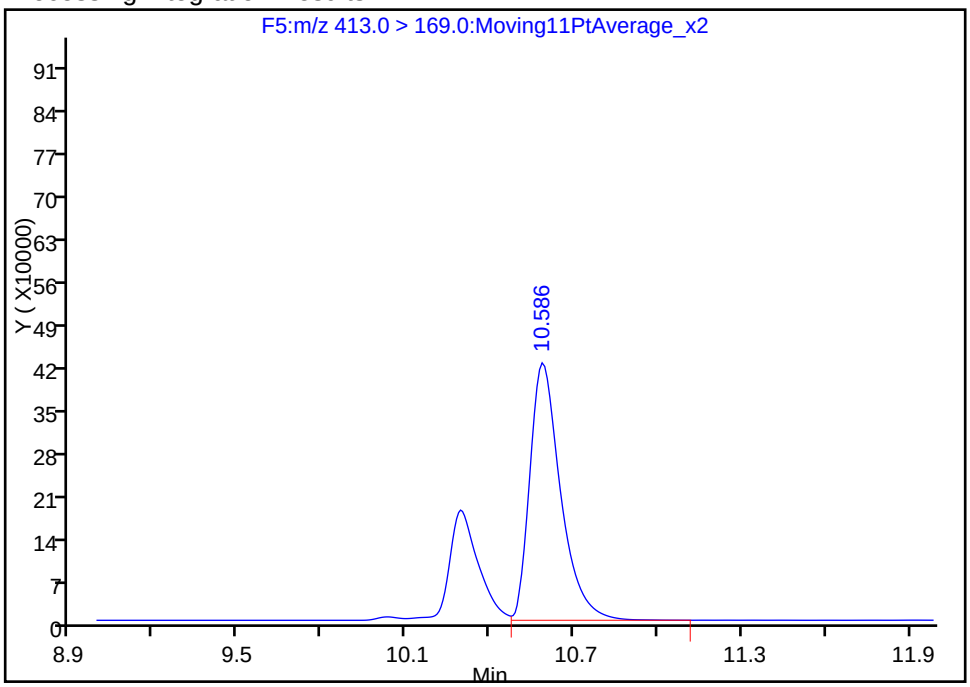
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_034.d				
Injection Date:	29-May-2016 03:29:44	Instrument ID:	A6		
Lims ID:	320-19022-A-4-A	Lab Sample ID:	320-19022-4		
Client ID:	OF-CLTANK-PT-0516				
Operator ID:	JRB	ALS Bottle#:	15	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

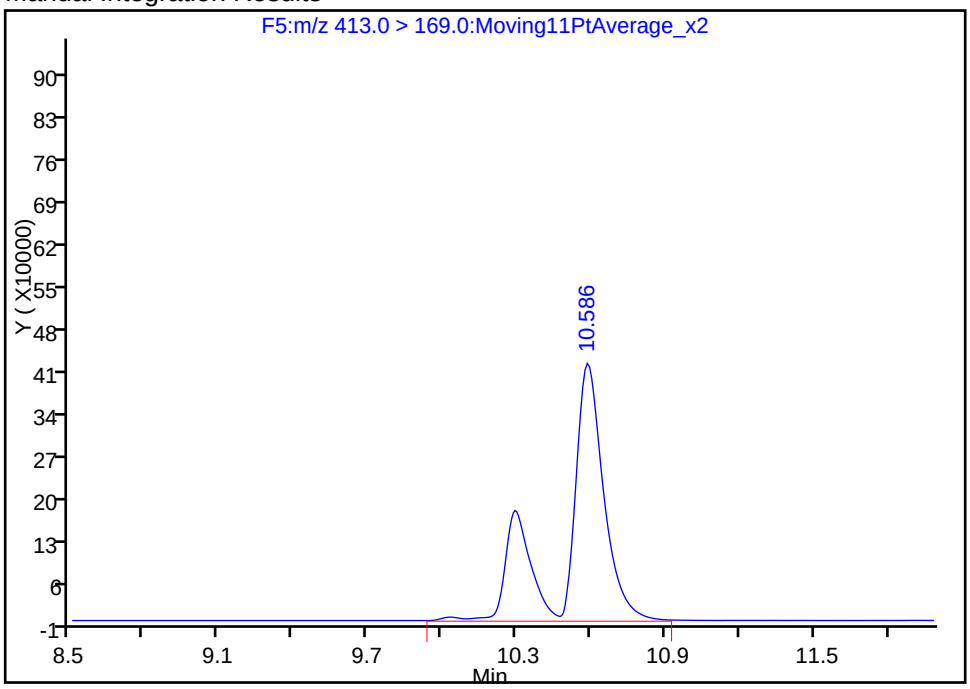
Processing Integration Results

RT: 10.59
Area: 3240108
Amount: 282.6705
Amount Units: ng/ml



Manual Integration Results

RT: 10.59
Area: 4621536
Amount: 356.0680
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:29:20

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

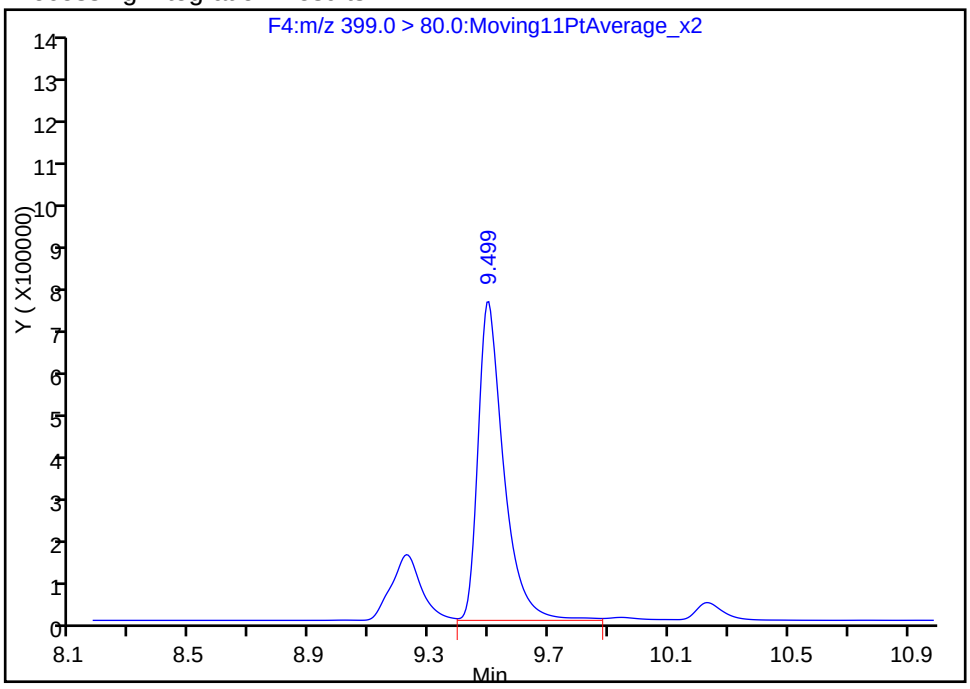
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_034.d				
Injection Date:	29-May-2016 03:29:44	Instrument ID:	A6		
Lims ID:	320-19022-A-4-A	Lab Sample ID:	320-19022-4		
Client ID:	OF-CLTANK-PT-0516				
Operator ID:	JRB	ALS Bottle#:	15	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

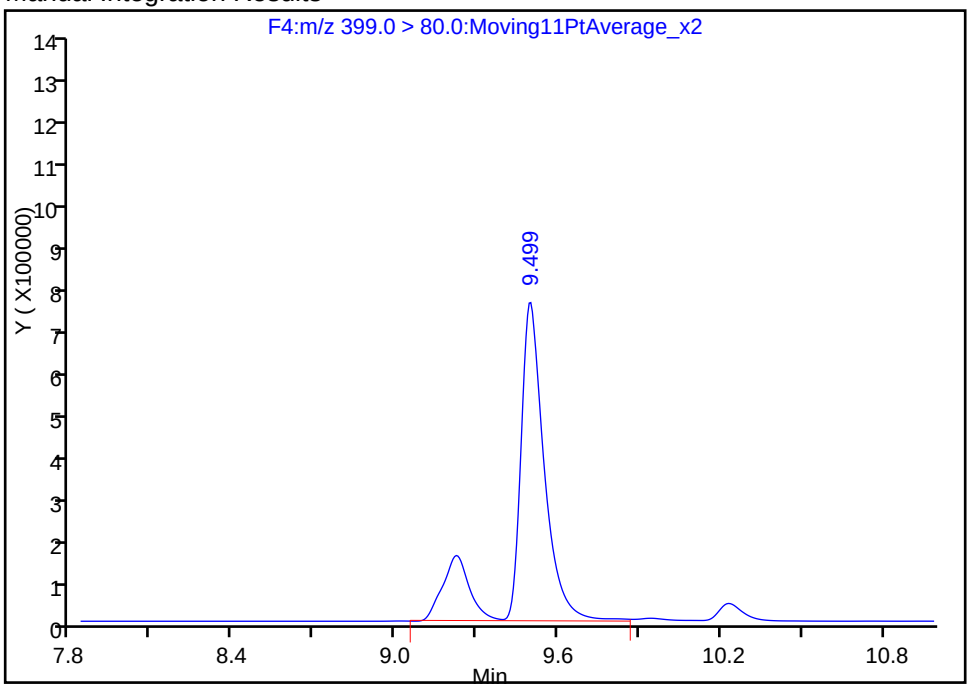
Processing Integration Results

RT: 9.50
Area: 4268806
Amount: 232.8717
Amount Units: ng/ml



Manual Integration Results

RT: 9.50
Area: 5236902
Amount: 285.6832
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:29:20

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-CLTANK-PT-0516 DL | Lab Sample ID: 320-19022-4 DL

Matrix: Water | Lab File ID: 31MAY2016A6A_034.d

Analysis Method: WS-LC-0025 | Date Collected: 05/19/2016 13:35

Extraction Method: 3535 | Date Extracted: 05/25/2016 15:20

Sample wt/vol: 499(mL) | Date Analyzed: 05/31/2016 23:58

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 5

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.0	D M	0.020	0.015	0.0064

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	72		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_034.d
Lims ID: 320-19022-A-4-A
Client ID: OF-CLTANK-PT-0516
Sample Type: Client
Inject. Date: 31-May-2016 23:58:28 ALS Bottle#: 15 Worklist Smp#: 32
Injection Vol: 15.0 ul Dil. Factor: 5.0000
Sample Info: 320-19022-A-4-A 5X
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 16:40:52 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 01-Jun-2016 14:51:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.085	7.099	-0.014	1.000	166416	5.01				
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.470	9.494	-0.024	1.000	485130	9.56			432	
D 8 13C4-PFHpA										
367.0 > 322.0	9.470	9.495	-0.025		431005	6.28		12.6	35421	
D 11 18O2 PFHxS										
403.0 > 84.0	9.505	9.532	-0.027		241696	7.84		16.6	4830	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.505	9.533	-0.028	1.000	1340100	56.0				M
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.612	-0.026		483527	6.65		13.3	32136	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.586	10.612	-0.026	1.000	3027053	61.0			63.5	M
413.0 > 169.0	10.595	10.612	-0.017	1.001	1217341		2.49(0.00-0.00)		24.8	M
D 16 13C4 PFOS										
503.0 > 80.0	11.552	11.568	-0.016		272526	6.86		14.4	19789	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.552	11.571	-0.019	1.000	7120277	202.2			16.1	M
499.0 > 99.0	11.552	11.571	-0.019	1.000	3341737		2.13(0.00-0.00)		42.5	M
D 17 13C5 PFNA										
468.0 > 423.0	11.570	11.589	-0.019		374053	5.61		11.2	26786	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	53816	1.67			3960	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 02-Jun-2016 11:42:28 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_034.d

Injection Date: 31-May-2016 23:58:28 Instrument ID: A6

Lims ID: 320-19022-A-4-A Lab Sample ID: 320-19022-4

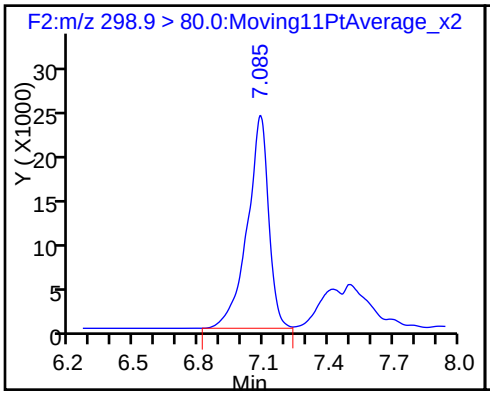
Client ID: OF-CLTANK-PT-0516

Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 32

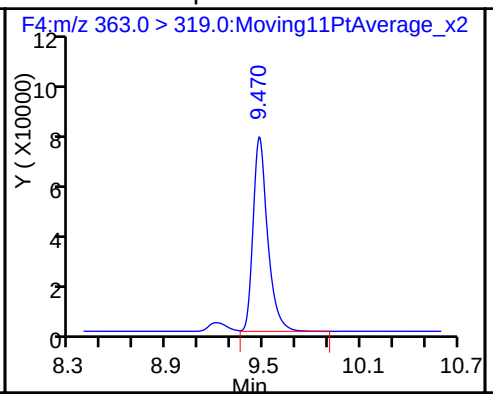
Injection Vol: 15.0 ul Dil. Factor: 5.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

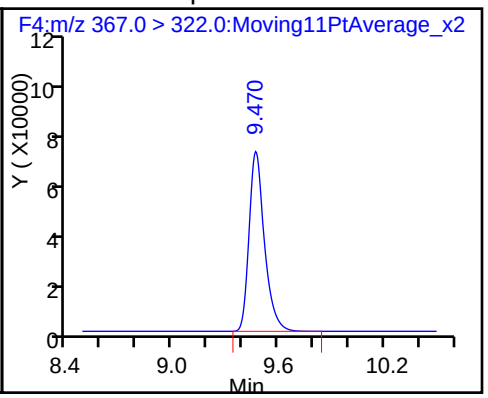
40 Perfluorobutanesulfonic acid



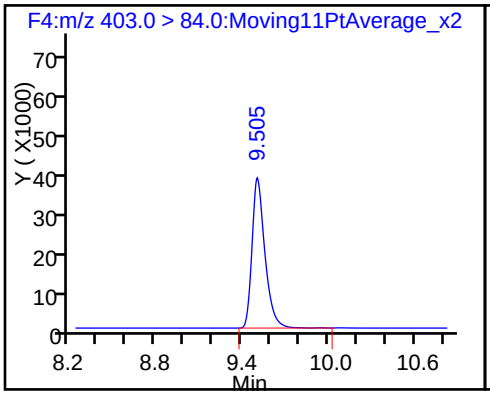
9 Perfluoroheptanoic acid



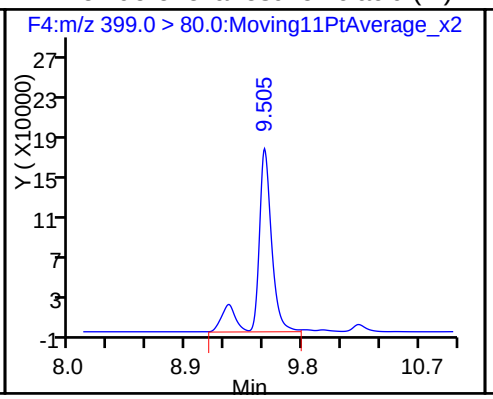
D 8 13C4-PFHpA



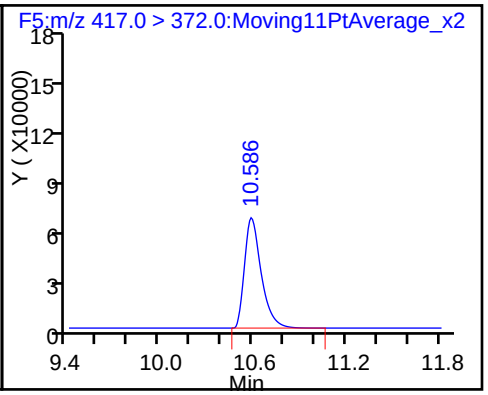
D 11 18O2 PFHxS



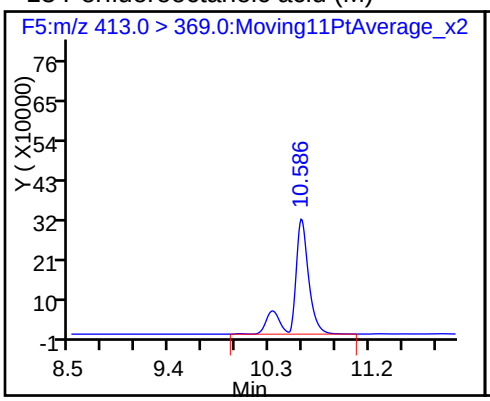
41 Perfluorohexanesulfonic acid (M)



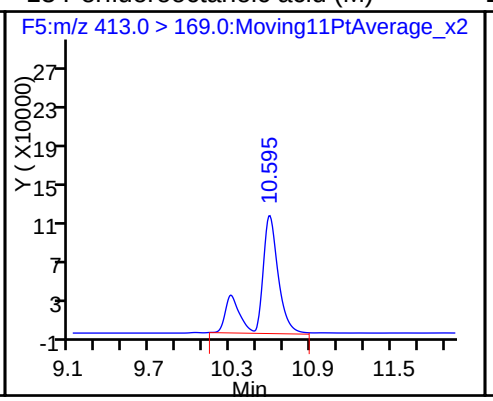
D 12 13C4 PFOA



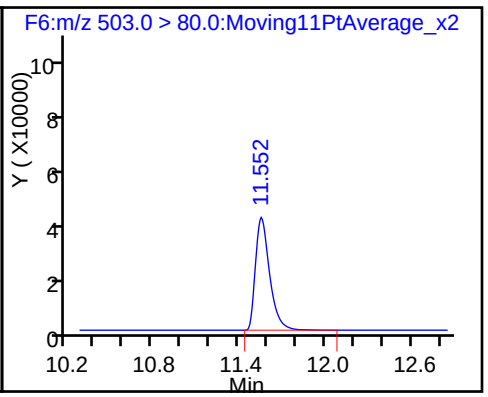
13 Perfluorooctanoic acid (M)



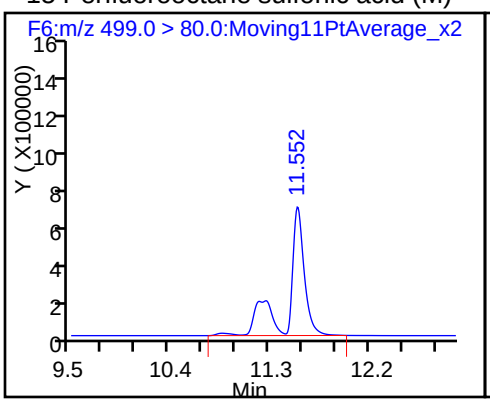
13 Perfluorooctanoic acid (M)



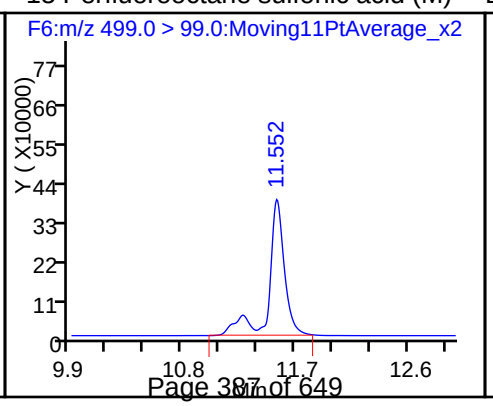
D 16 13C4 PFOS



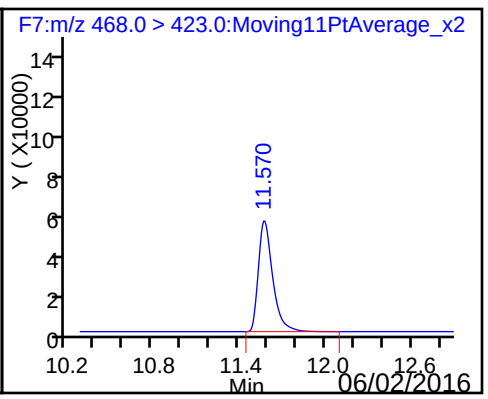
15 Perfluorooctane sulfonic acid (M)



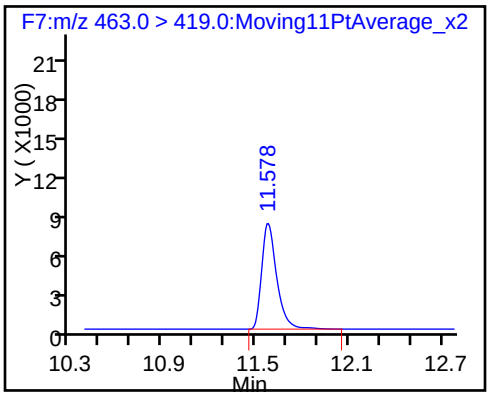
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

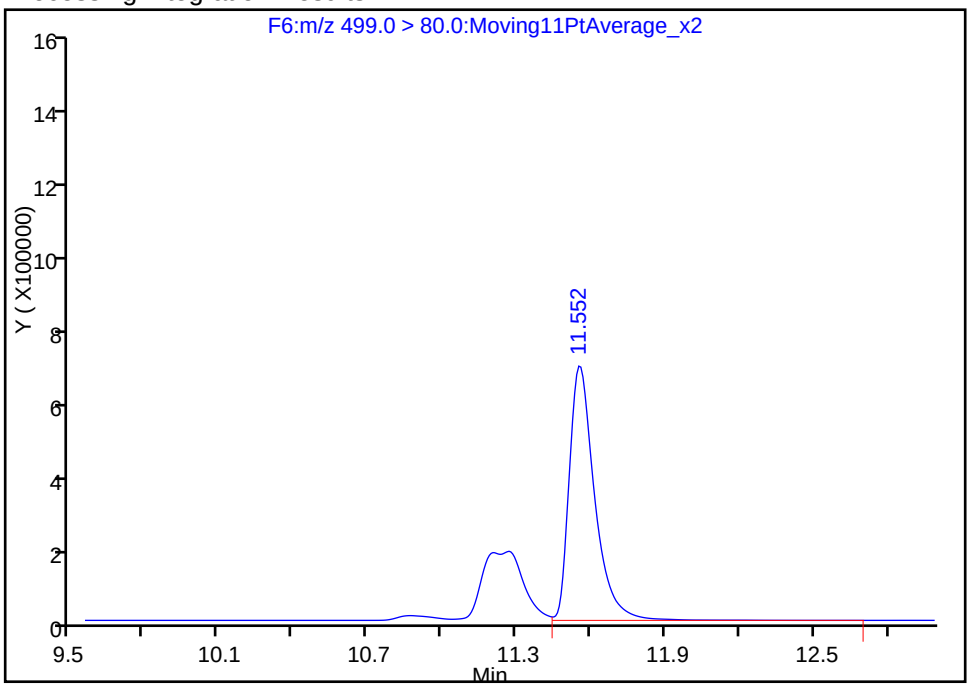
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_034.d				
Injection Date:	31-May-2016 23:58:28	Instrument ID:	A6		
Lims ID:	320-19022-A-4-A	Lab Sample ID:	320-19022-4		
Client ID:	OF-CLTANK-PT-0516				
Operator ID:	JRB	ALS Bottle#:	15	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 1

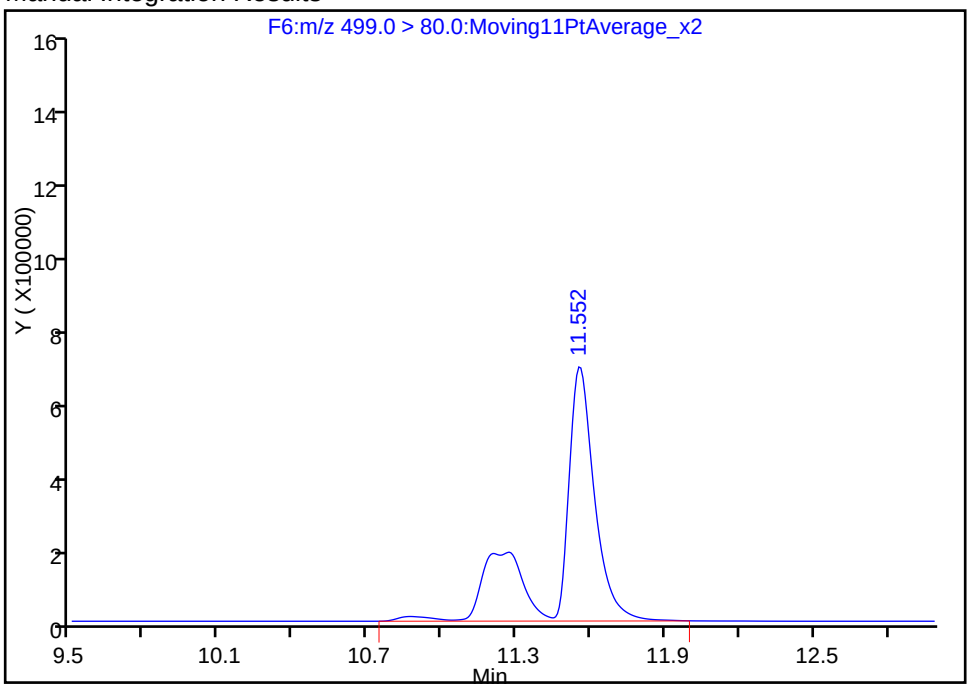
Processing Integration Results

RT: 11.55
Area: 4902660
Amount: 139.2127
Amount Units: ng/ml



Manual Integration Results

RT: 11.55
Area: 7120277
Amount: 202.1827
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:51:23

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

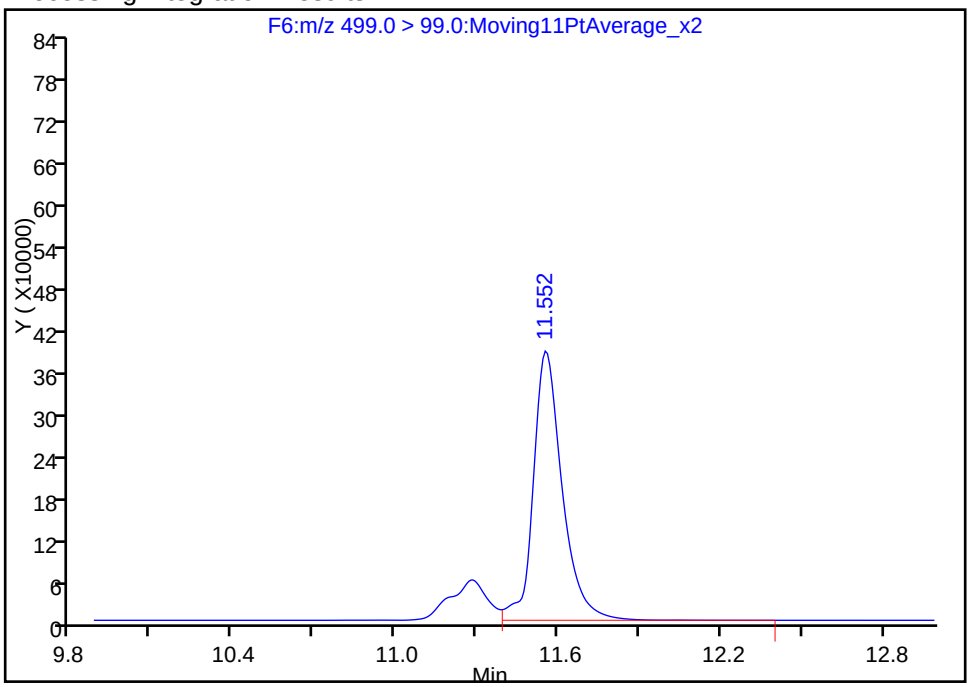
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_034.d				
Injection Date:	31-May-2016 23:58:28	Instrument ID:	A6		
Lims ID:	320-19022-A-4-A	Lab Sample ID:	320-19022-4		
Client ID:	OF-CLTANK-PT-0516				
Operator ID:	JRB	ALS Bottle#:	15	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 2

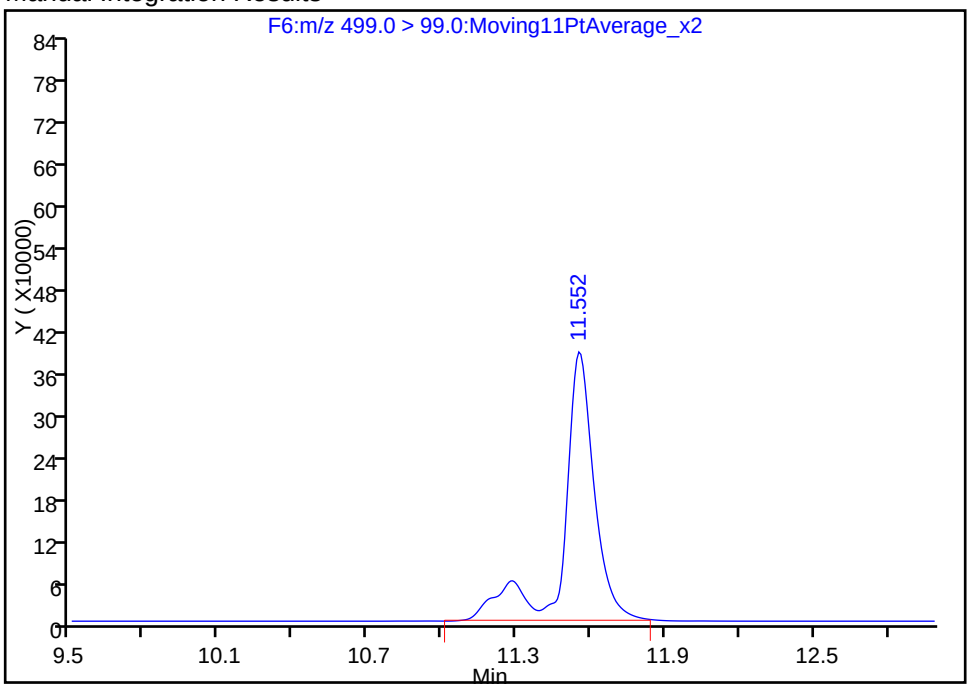
Processing Integration Results

RT: 11.55
Area: 2867916
Amount: 139.2127
Amount Units: ng/ml



Manual Integration Results

RT: 11.55
Area: 3341737
Amount: 202.1827
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:51:23
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-BACKWASH-PT-0516 Lab Sample ID: 320-19022-5

Matrix: Water Lab File ID: 28MAY2016A6A_035.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 460.8(mL) Date Analyzed: 05/29/2016 03:51

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 111859 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.093		0.0027	0.0022	0.00087
375-95-1	Perfluorononanoic acid (PFNA)	0.0056		0.0027	0.0022	0.00071
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.15		0.0027	0.0022	0.0010

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	40		25-150
STL00995	13C5 PFNA	35		25-150
STL01892	13C4-PFHpA	44		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_035.d
Lims ID: 320-19022-A-5-A
Client ID: OF-BACKWASH-PT-0516
Sample Type: Client
Inject. Date: 29-May-2016 03:51:02 ALS Bottle#: 16 Worklist Smp#: 34
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-19022-A-5-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:31 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 31-May-2016 14:30:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.092	7.085	0.007	1.000	979821	67.7				
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.474	0.001		1372166	22.1		44.3	243222	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.475	0.0	1.000	1415684	42.8			54.4	
D 11 18O2 PFHxS										
403.0 > 84.0	9.511	9.507	0.004		543285	19.0		40.2	29191	
41 Perfluorohexanesulfonic acid										EM
399.0 > 80.0	9.511	9.507	0.004	1.000	5741685	546.6				EM
D 12 13C4 PFOA										
417.0 > 372.0	10.577	10.586	-0.009		985508	14.6		29.3	20694	
13 Perfluorooctanoic acid										EM
413.0 > 369.0	10.586	10.587	-0.001	1.000	38793104	1936.2			3443	EM
413.0 > 169.0	10.586	10.587	-0.001	1.000	16567206		2.34(0.00-0.00)		1404	M
D 16 13C4 PFOS										
503.0 > 80.0	11.535	11.543	-0.008		588760	16.8		35.0	26686	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.543	11.545	-0.002	1.000	13114024	848.1			1989	EM
499.0 > 99.0	11.543	11.545	-0.002	1.000	5459131		2.40(0.00-0.00)		808	M
D 17 13C5 PFNA										
468.0 > 423.0	11.561	11.562	-0.001		1093786	17.6		35.3	77357	
18 Perfluorononanoic acid										
463.0 > 419.0	11.561	11.563	-0.002	1.000	47888	2.59			56.1	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

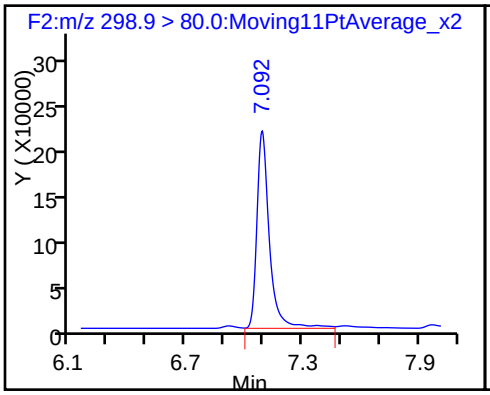
Report Date: 31-May-2016 14:41:49 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

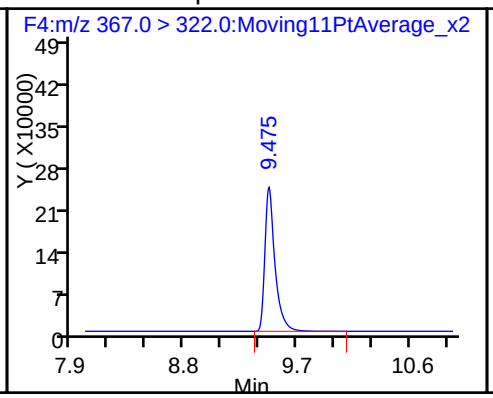
Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_035.d

Injection Date:	29-May-2016 03:51:02	Instrument ID:	A6
Lims ID:	320-19022-A-5-A	Lab Sample ID:	320-19022-5
Client ID:	OF-BACKWASH-PT-0516		
Operator ID:	JRB	ALS Bottle#:	16 Worklist Smp#: 34
Injection Vol:	15.0 ul	Dil. Factor:	1.0000
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL

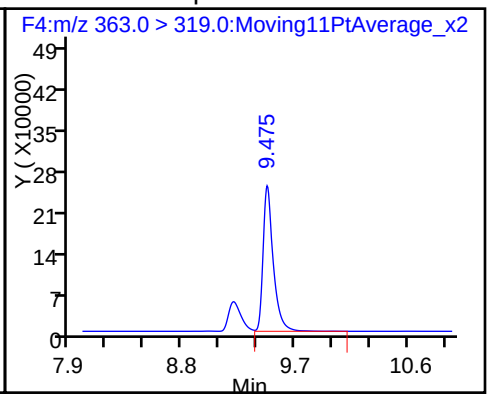
40 Perfluorobutanesulfonic acid



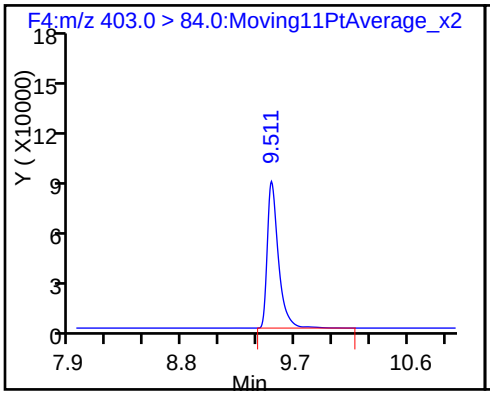
D 8 13C4-PFHpA



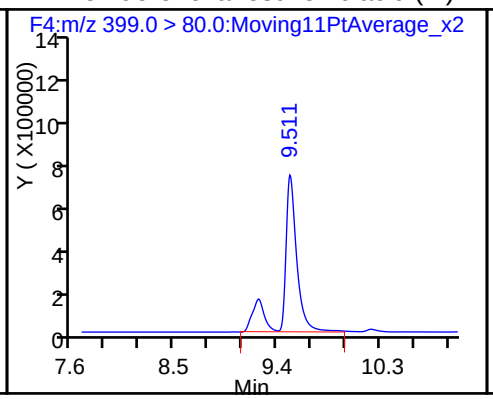
9 Perfluoroheptanoic acid



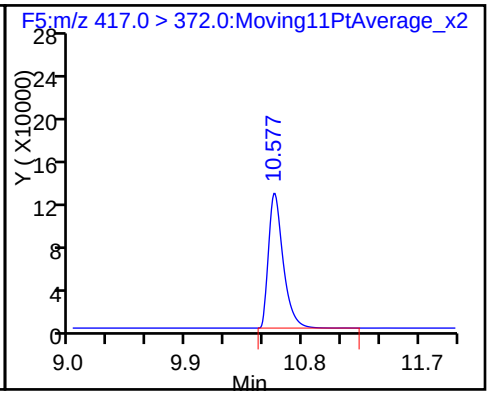
D 11 18O2 PFHxS



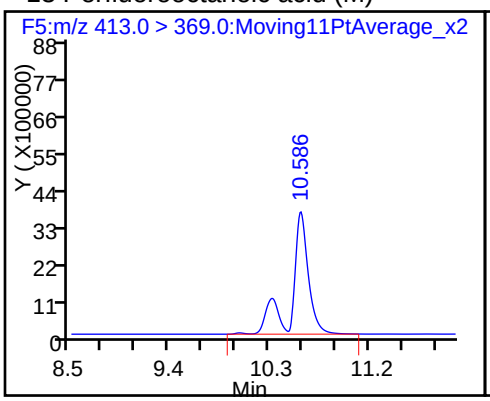
41 Perfluorohexanesulfonic acid (M)



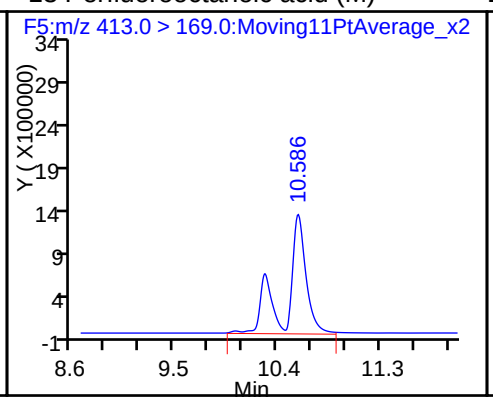
D 12 13C4 PFOA



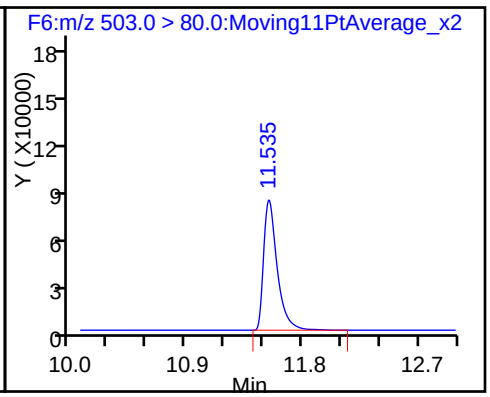
13 Perfluorooctanoic acid (M)



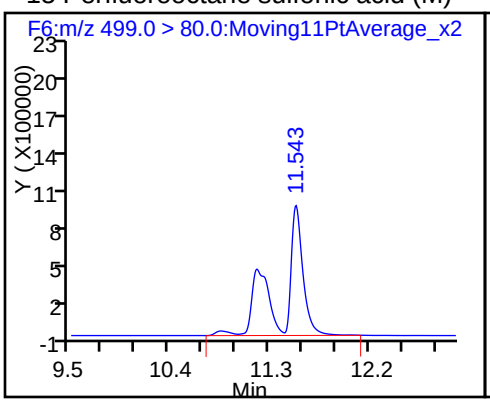
13 Perfluorooctanoic acid (M)



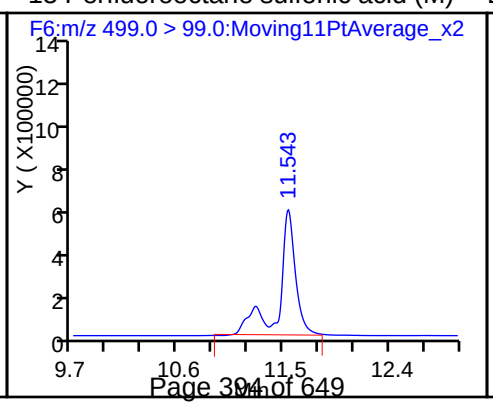
D 16 13C4 PFOS



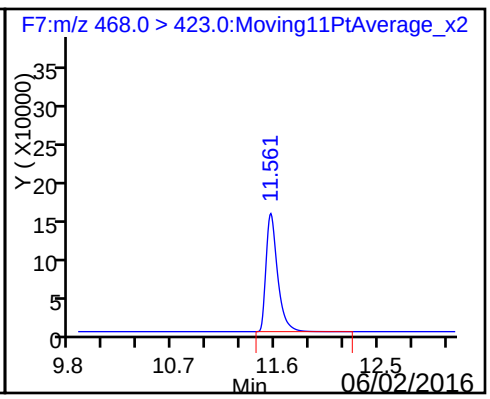
15 Perfluorooctane sulfonic acid (M)



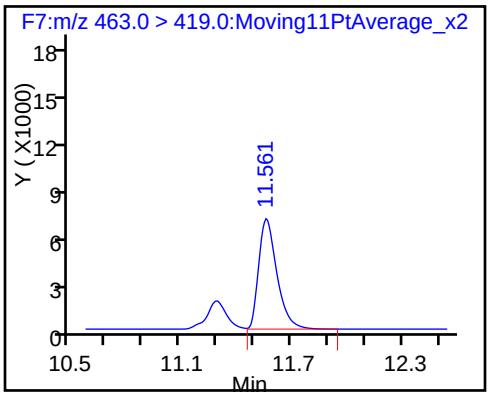
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-BACKWASH-PT-0516 DL Lab Sample ID: 320-19022-5 DL

Matrix: Water Lab File ID: 31MAY2016A6A_035.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 460.8(mL) Date Analyzed: 06/01/2016 00:19

Con. Extract Vol.: 1.00(mL) Dilution Factor: 10

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	3.8	D M	0.027	0.022	0.0081
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.2	D M	0.027	0.022	0.0094
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.6	D M	0.043	0.033	0.014

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	109		25-150
STL00991	13C4 PFOS	109		25-150
STL00990	13C4 PFOA	96		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_035.d
Lims ID: 320-19022-A-5-A
Client ID: OF-BACKWASH-PT-0516
Sample Type: Client
Inject. Date: 01-Jun-2016 00:19:45 ALS Bottle#: 16 Worklist Smp#: 33
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Sample Info: 320-19022-A-5-A 10X
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 16:40:52 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 01-Jun-2016 14:56:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										M
298.9 > 80.0	7.092	7.099	-0.007	1.000	203542	4.68				M
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.494	-0.019	1.000	410652	4.46			100	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.495	-0.020		377831	5.50		11.0	55359	
D 11 18O2 PFHxS										
403.0 > 84.0	9.505	9.532	-0.027		158270	5.13		10.9	11745	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.505	9.533	-0.028	1.000	1719234	54.9				M
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.612	-0.026		349495	4.80		9.6	22092	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.586	10.612	-0.026	1.000	12644243	176.2			1635	M
413.0 > 169.0	10.596	10.612	-0.016	1.001	5180816		2.44(0.00-0.00)		1256	M
D 16 13C4 PFOS										
503.0 > 80.0	11.543	11.568	-0.025		206870	5.21		10.9	14634	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.543	11.571	-0.028	1.000	4048697	75.7			3335	M
499.0 > 99.0	11.543	11.571	-0.028	1.000	1828756		2.21(0.00-0.00)		2734	M
D 17 13C5 PFNA										
468.0 > 423.0	11.561	11.589	-0.028		397422	5.96		11.9	28769	
18 Perfluorononanoic acid										
463.0 > 419.0	11.561	11.589	-0.028	1.000	14009	0.2040			63.5	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 02-Jun-2016 11:42:31 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_035.d

Injection Date: 01-Jun-2016 00:19:45 Instrument ID: A6

Lims ID: 320-19022-A-5-A Lab Sample ID: 320-19022-5

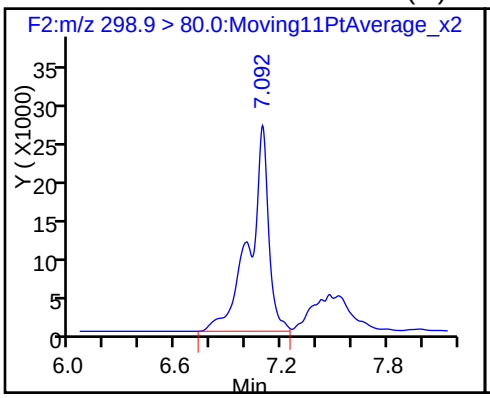
Client ID: OF-BACKWASH-PT-0516

Operator ID: JRB ALS Bottle#: 16 Worklist Smp#: 33

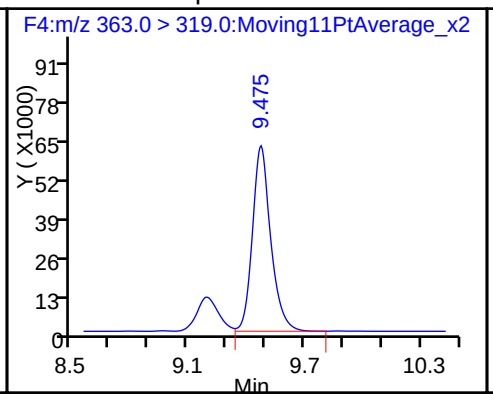
Injection Vol: 15.0 ul Dil. Factor: 10.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

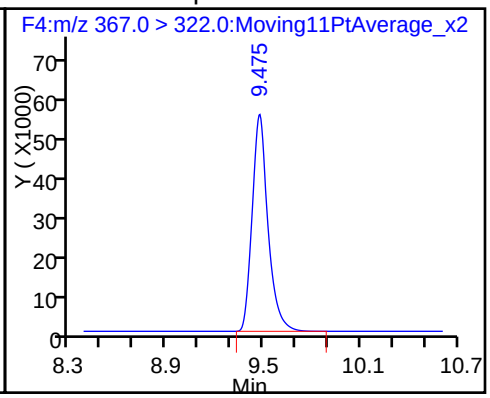
40 Perfluorobutanesulfonic acid (M)



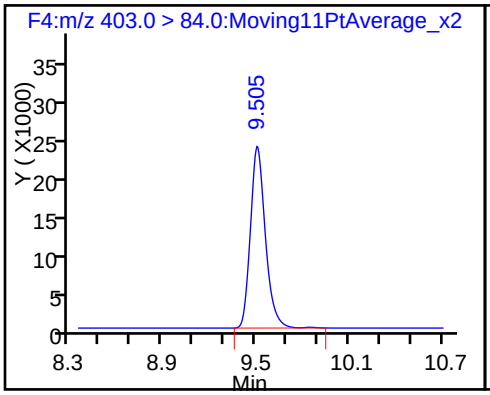
9 Perfluoroheptanoic acid



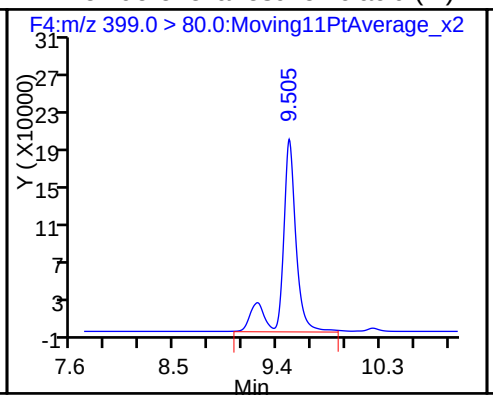
D 8 13C4-PFHpA



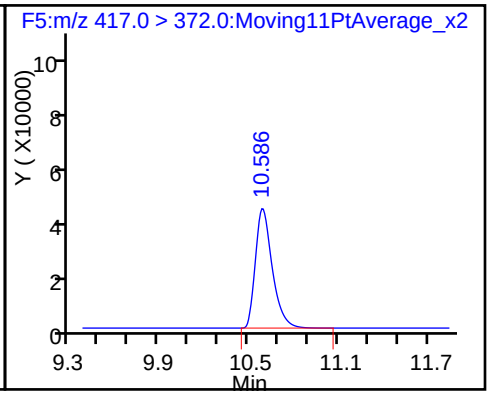
D 11 18O2 PFHxS



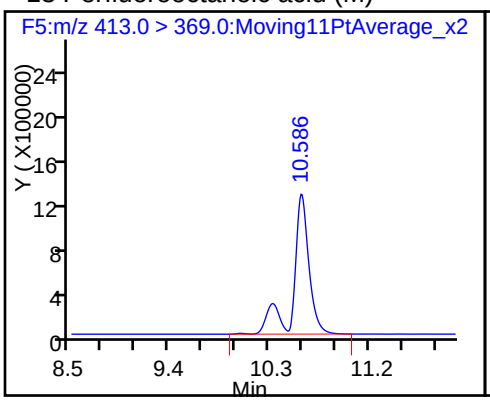
41 Perfluorohexanesulfonic acid (M)



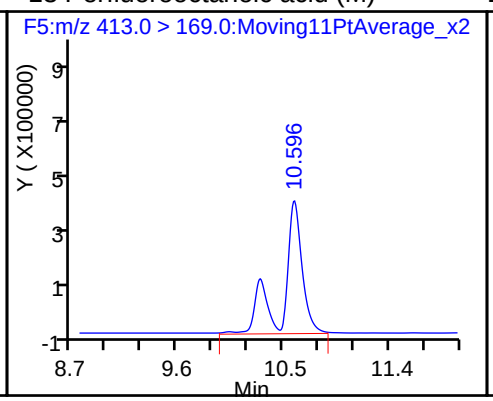
D 12 13C4 PFOA



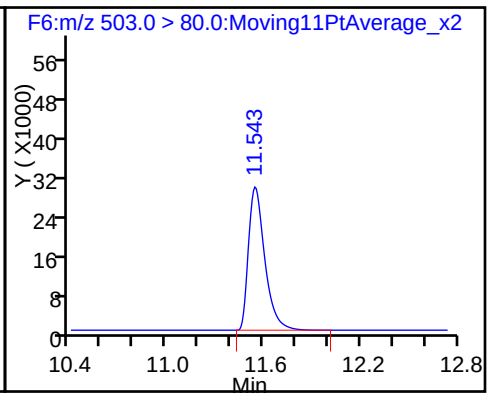
13 Perfluorooctanoic acid (M)



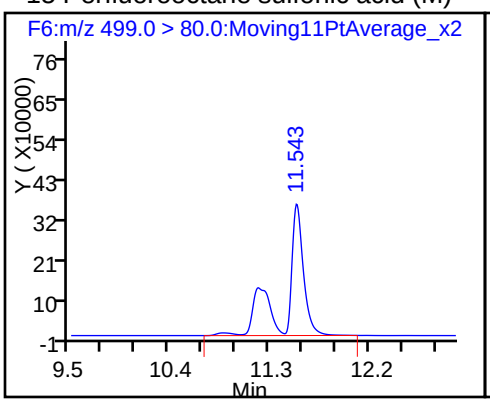
13 Perfluorooctanoic acid (M)



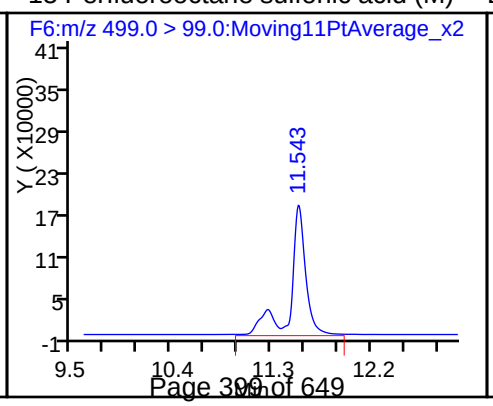
D 16 13C4 PFOS



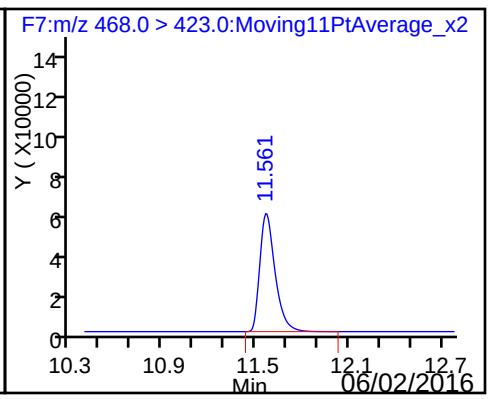
15 Perfluorooctane sulfonic acid (M)



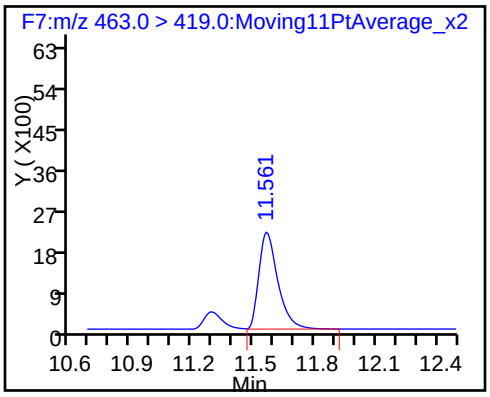
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

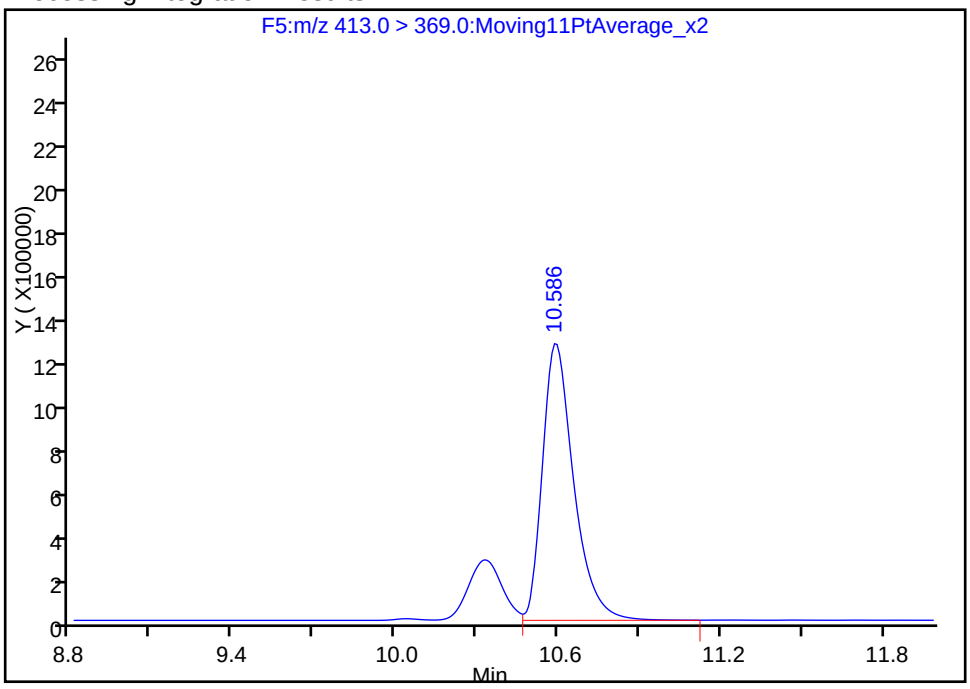
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_035.d				
Injection Date:	01-Jun-2016 00:19:45	Instrument ID:	A6		
Lims ID:	320-19022-A-5-A	Lab Sample ID:	320-19022-5		
Client ID:	OF-BACKWASH-PT-0516				
Operator ID:	JRB	ALS Bottle#:	16	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

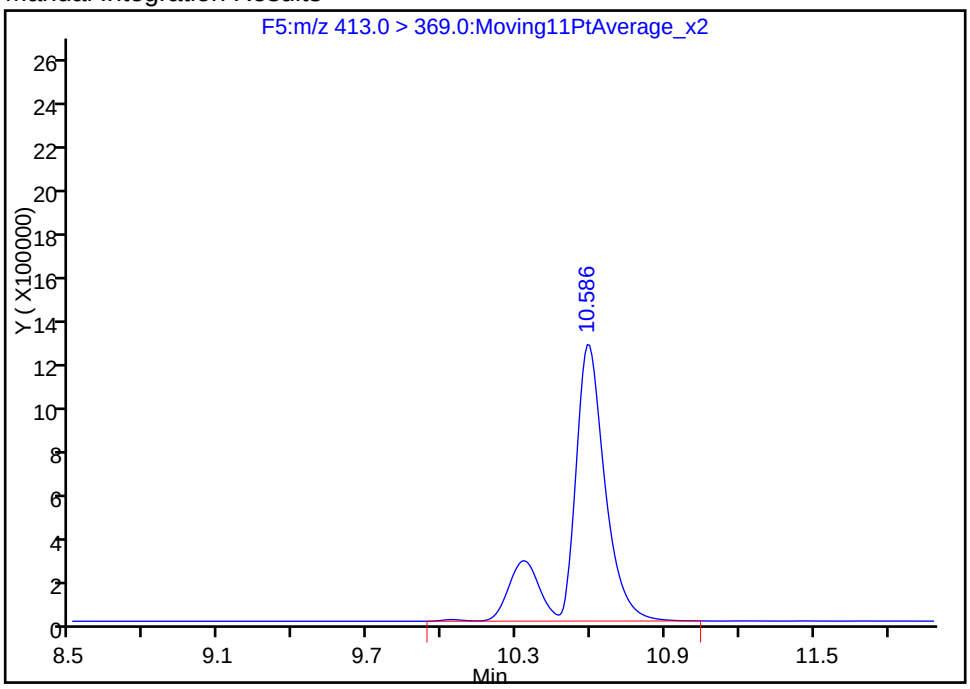
Processing Integration Results

RT: 10.59
Area: 10244613
Amount: 142.7768
Amount Units: ng/ml



Manual Integration Results

RT: 10.59
Area: 12644243
Amount: 176.2199
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:56:28

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

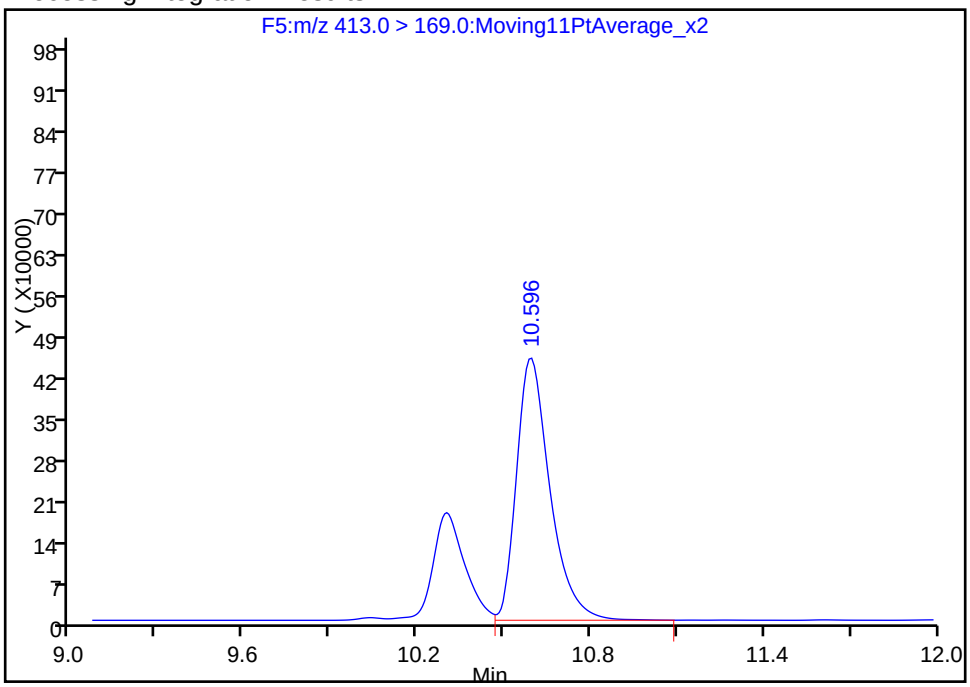
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_035.d				
Injection Date:	01-Jun-2016 00:19:45	Instrument ID:	A6		
Lims ID:	320-19022-A-5-A	Lab Sample ID:	320-19022-5		
Client ID:	OF-BACKWASH-PT-0516				
Operator ID:	JRB	ALS Bottle#:	16	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

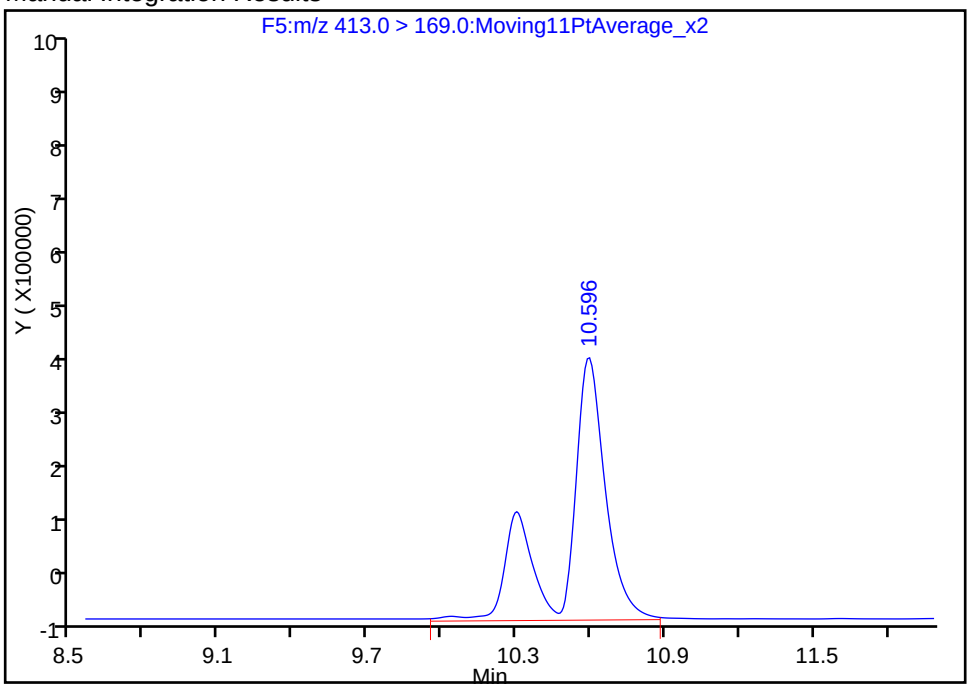
Processing Integration Results

RT: 10.60
Area: 3620561
Amount: 142.7768
Amount Units: ng/ml



Manual Integration Results

RT: 10.60
Area: 5180816
Amount: 176.2199
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:56:28
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

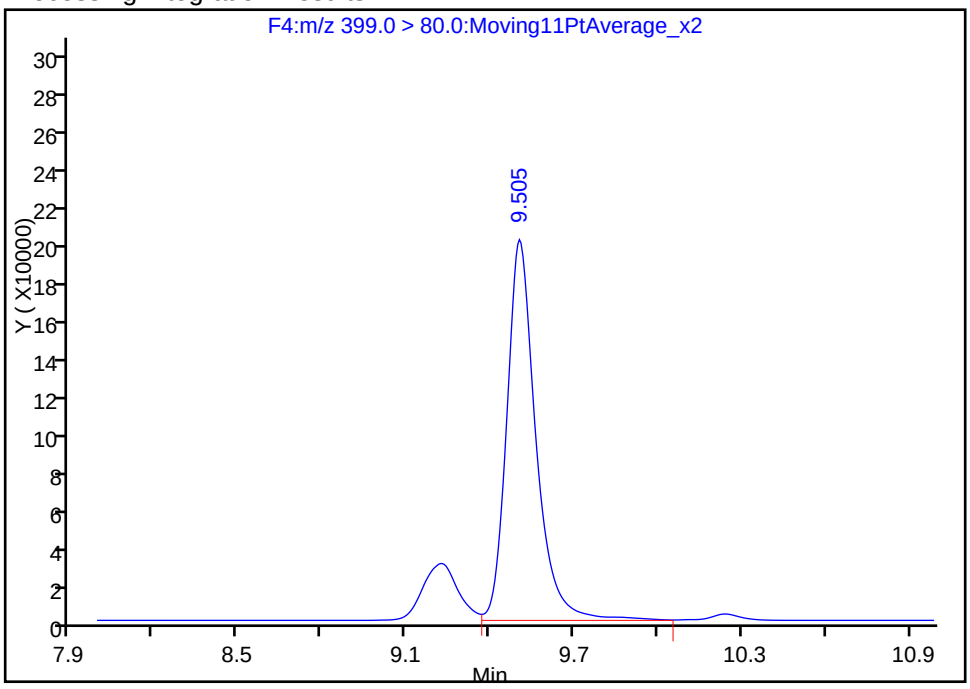
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_035.d				
Injection Date:	01-Jun-2016 00:19:45	Instrument ID:	A6		
Lims ID:	320-19022-A-5-A	Lab Sample ID:	320-19022-5		
Client ID:	OF-BACKWASH-PT-0516				
Operator ID:	JRB	ALS Bottle#:	16	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

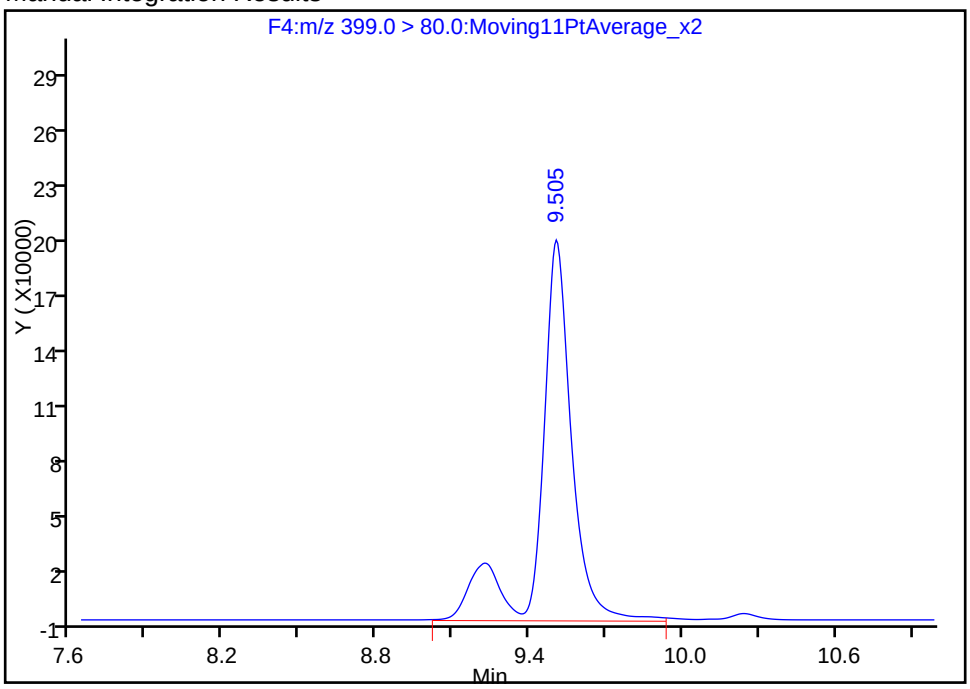
Processing Integration Results

RT: 9.50
Area: 1436405
Amount: 45.832846
Amount Units: ng/ml



Manual Integration Results

RT: 9.50
Area: 1719234
Amount: 54.857360
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:56:28

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

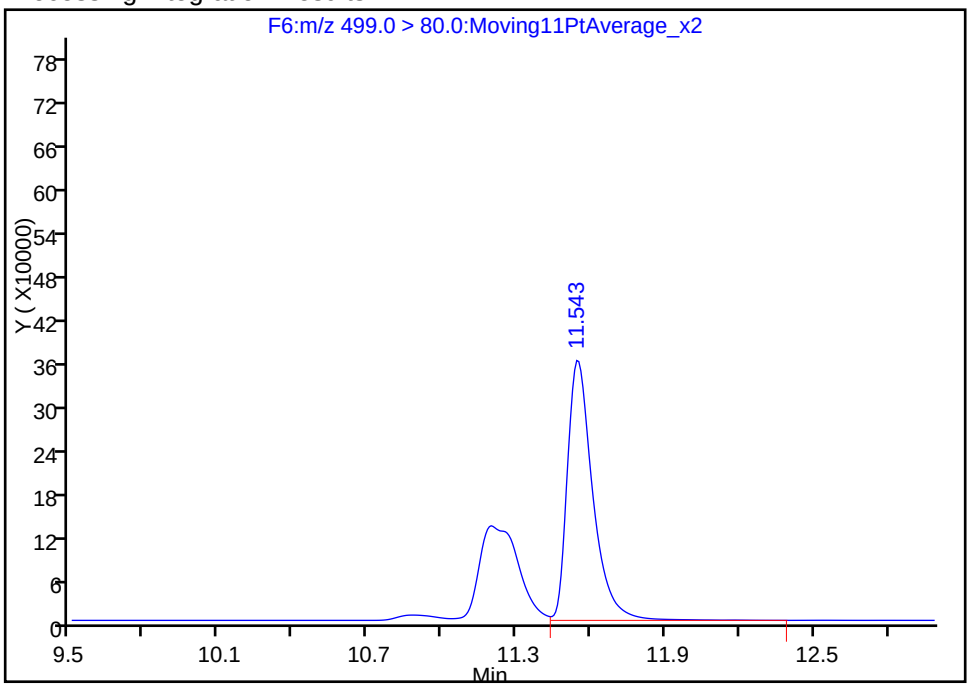
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_035.d				
Injection Date:	01-Jun-2016 00:19:45	Instrument ID:	A6		
Lims ID:	320-19022-A-5-A	Lab Sample ID:	320-19022-5		
Client ID:	OF-BACKWASH-PT-0516				
Operator ID:	JRB	ALS Bottle#:	16	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 1

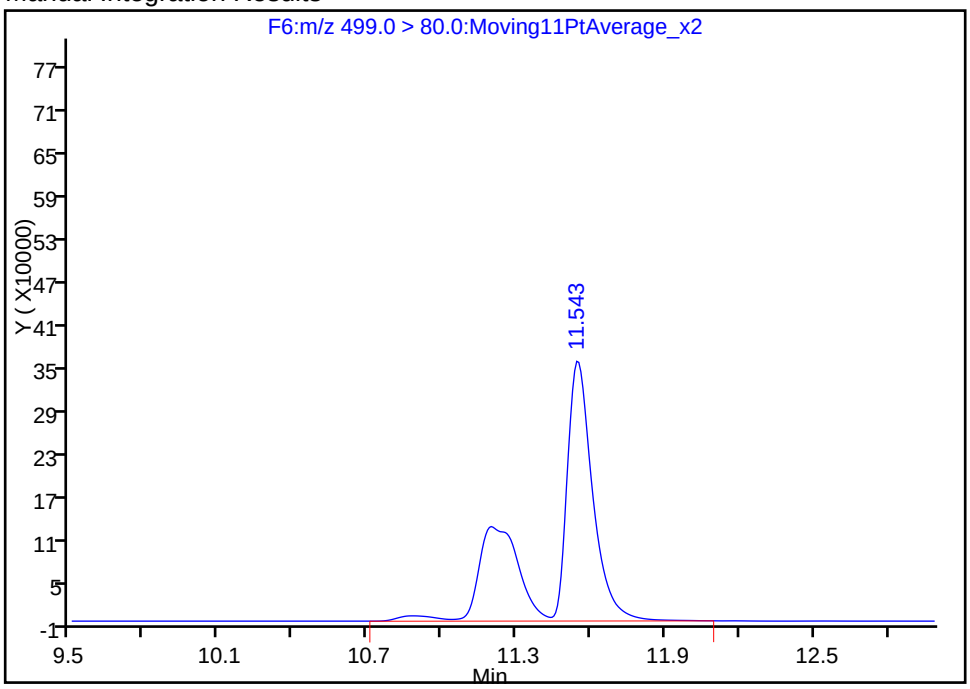
Processing Integration Results

RT: 11.54
Area: 2560290
Amount: 47.886892
Amount Units: ng/ml



Manual Integration Results

RT: 11.54
Area: 4048697
Amount: 75.725607
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:56:28

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

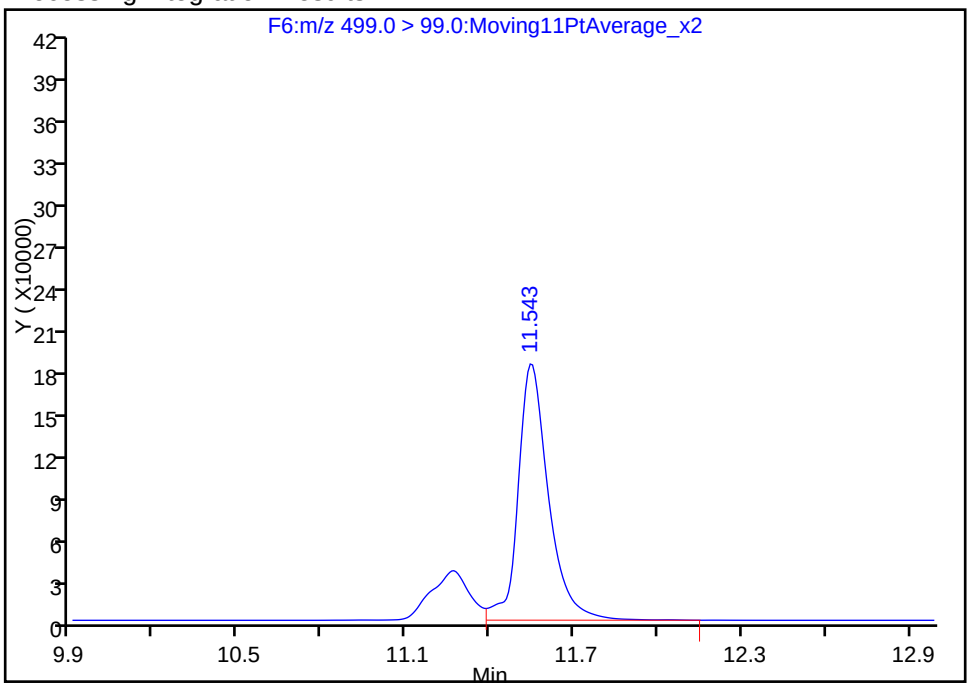
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_035.d				
Injection Date:	01-Jun-2016 00:19:45	Instrument ID:	A6		
Lims ID:	320-19022-A-5-A	Lab Sample ID:	320-19022-5		
Client ID:	OF-BACKWASH-PT-0516				
Operator ID:	JRB	ALS Bottle#:	16	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 2

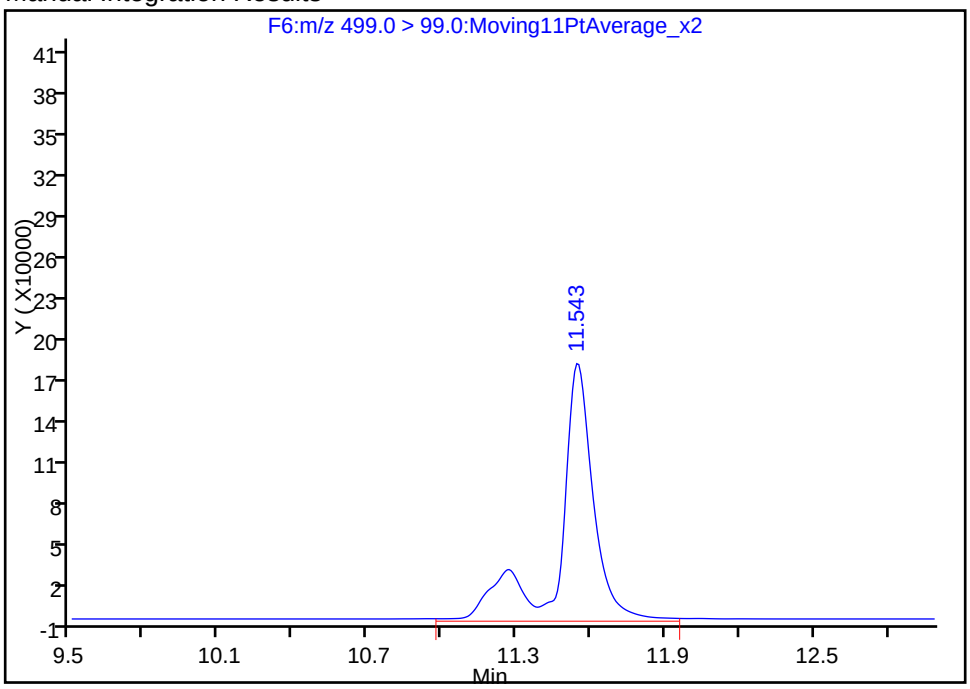
Processing Integration Results

RT: 11.54
Area: 1393823
Amount: 47.886892
Amount Units: ng/ml



Manual Integration Results

RT: 11.54
Area: 1828756
Amount: 75.725607
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:56:28
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-FILTER-PT-0516 Lab Sample ID: 320-19022-6

Matrix: Water Lab File ID: 28MAY2016A6A_036.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 509.4(mL) Date Analyzed: 05/29/2016 04:12

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 111859 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.11		0.0025	0.0020	0.00079
375-95-1	Perfluorononanoic acid (PFNA)	0.0050		0.0025	0.0020	0.00064
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.094		0.0025	0.0020	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	77		25-150
STL00995	13C5 PFNA	55		25-150
STL01892	13C4-PFHpA	79		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_036.d
Lims ID: 320-19022-B-6-A
Client ID: OF-FILTER-PT-0516
Sample Type: Client
Inject. Date: 29-May-2016 04:12:20 ALS Bottle#: 17 Worklist Smp#: 35
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-19022-B-6-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:31 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 31-May-2016 14:32:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.085	7.085	0.0	1.000	1322434	47.8				
D 8 13C4-PFHpA										
367.0 > 322.0	9.457	9.474	-0.017		2439209	39.4		78.7	18779	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.457	9.475	-0.018	1.000	3241369	55.3			68.7	
D 11 18O2 PFHxS										
403.0 > 84.0	9.498	9.507	-0.009		1038252	36.4		76.9	41471	
41 Perfluorohexanesulfonic acid										EM
399.0 > 80.0	9.498	9.507	-0.009	1.000	10251402	510.6				EM
D 12 13C4 PFOA										
417.0 > 372.0	10.577	10.586	-0.009		1555136	23.1		46.2	28031	
13 Perfluorooctanoic acid										EM
413.0 > 369.0	10.577	10.587	-0.010	1.000	69263264	2190.8			1586	EM
413.0 > 169.0	10.586	10.587	-0.001	1.001	29058035		2.38(0.00-0.00)		1559	M
D 16 13C4 PFOS										
503.0 > 80.0	11.535	11.543	-0.008		1129646	32.1		67.2	17303	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.543	11.545	-0.002	1.000	28478220	959.9			2265	EM
499.0 > 99.0	11.535	11.545	-0.010	0.999	12509389		2.28(0.00-0.00)		970	M
D 17 13C5 PFNA										
468.0 > 423.0	11.561	11.562	-0.001		1709505	27.6		55.1	60729	
18 Perfluorononanoic acid										
463.0 > 419.0	11.561	11.563	-0.002	1.000	73105	2.53			33.7	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 31-May-2016 14:41:50 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_036.d

Injection Date: 29-May-2016 04:12:20 Instrument ID: A6

Lims ID: 320-19022-B-6-A Lab Sample ID: 320-19022-6

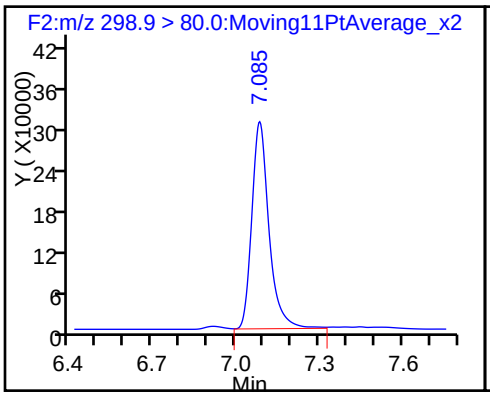
Client ID: OF-FILTER-PT-0516

Operator ID: JRB ALS Bottle#: 17 Worklist Smp#: 35

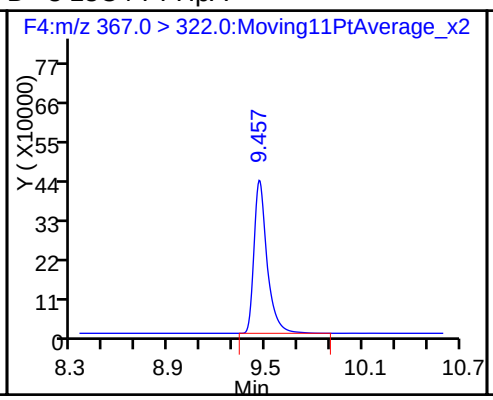
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

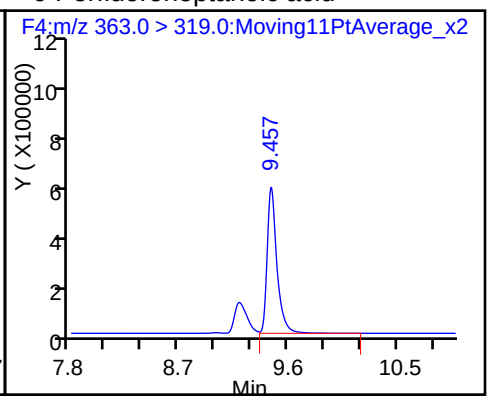
40 Perfluorobutanesulfonic acid



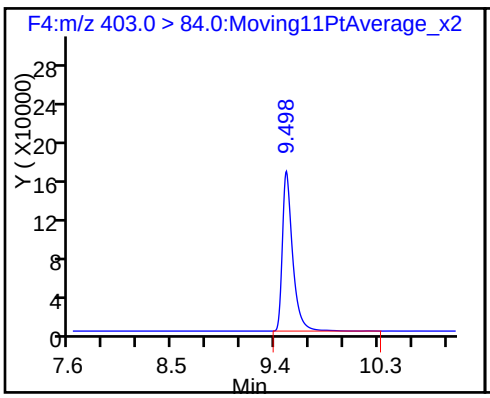
D 8 13C4-PFHpA



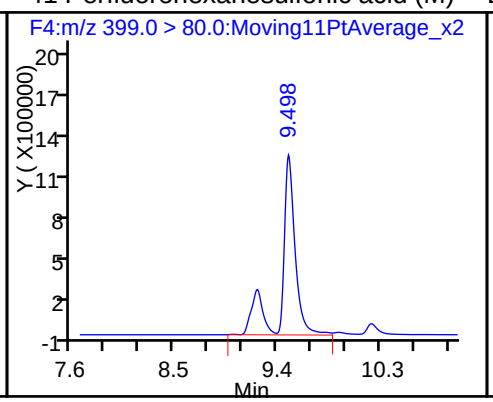
9 Perfluoroheptanoic acid



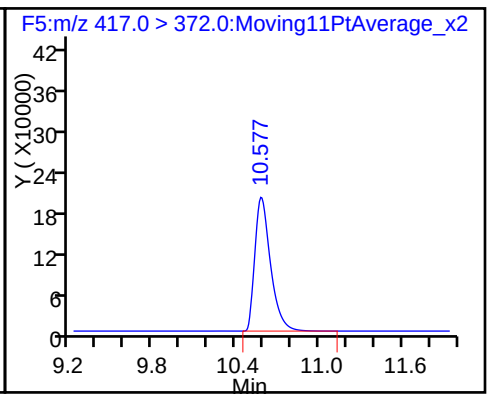
D 11 18O2 PFHxS



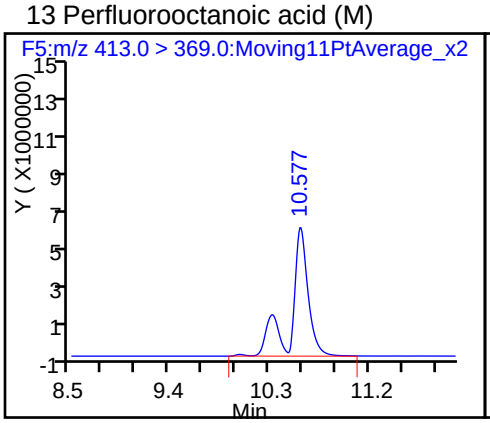
41 Perfluorohexanesulfonic acid (M)



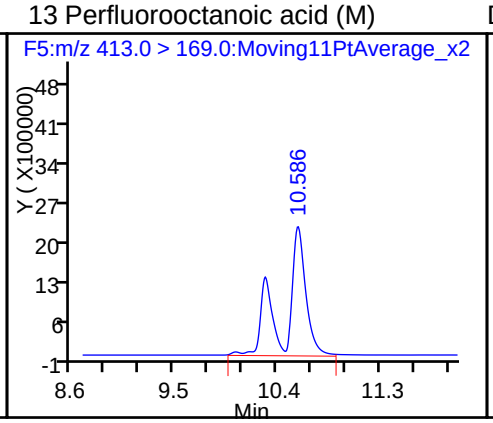
D 12 13C4 PFOA



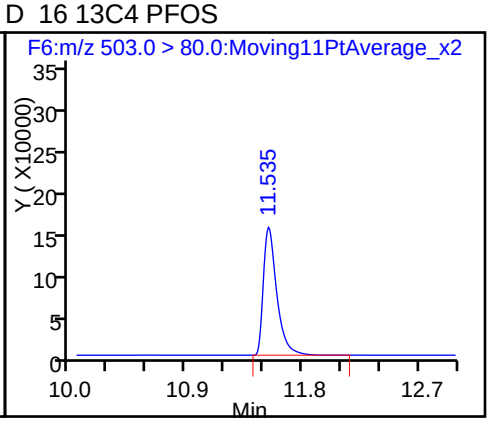
13 Perfluorooctanoic acid (M)



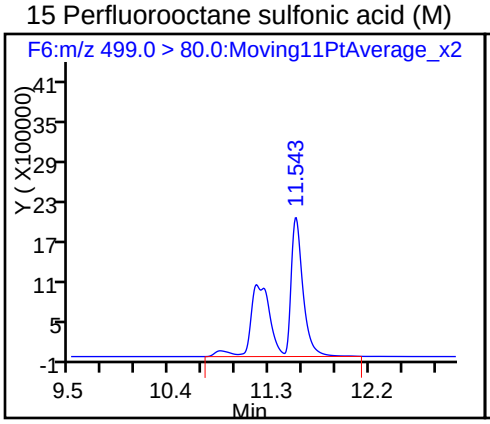
13 Perfluorooctanoic acid (M)



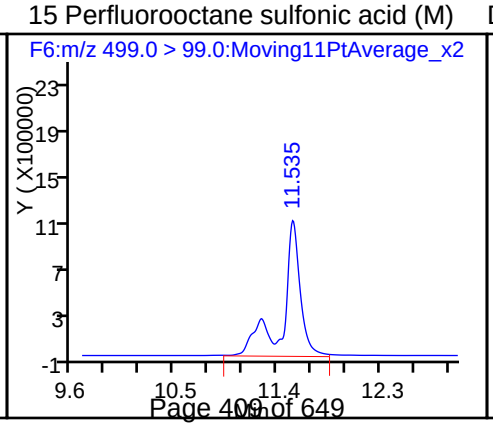
D 16 13C4 PFOS



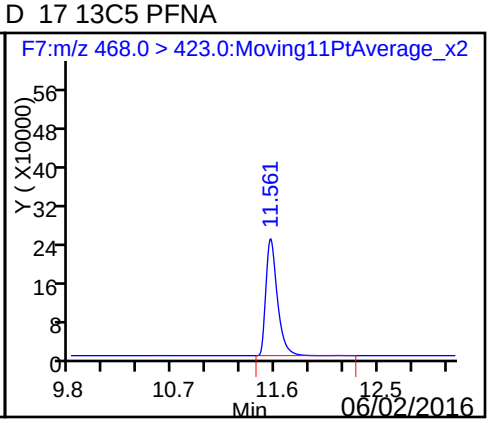
15 Perfluorooctane sulfonic acid (M)



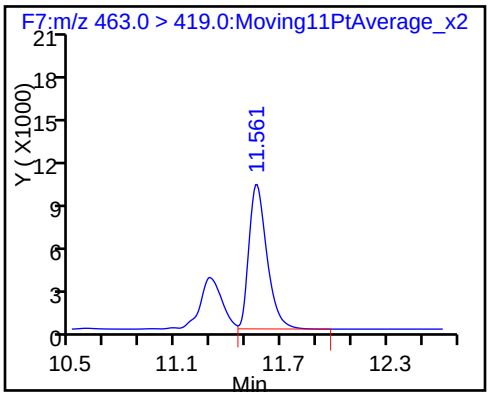
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-FILTER-PT-0516 DL Lab Sample ID: 320-19022-6 DL

Matrix: Water Lab File ID: 31MAY2016A6A_036.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 509.4(mL) Date Analyzed: 06/01/2016 00:41

Con. Extract Vol.: 1.00(mL) Dilution Factor: 10

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	4.0	D M	0.025	0.020	0.0073
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.1	D M	0.025	0.020	0.0085
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.5	D M	0.039	0.029	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	107		25-150
STL00991	13C4 PFOS	117		25-150
STL00990	13C4 PFOA	87		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_036.d
Lims ID: 320-19022-B-6-A
Client ID: OF-FILTER-PT-0516
Sample Type: Client
Inject. Date: 01-Jun-2016 00:41:04 ALS Bottle#: 17 Worklist Smp#: 34
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Sample Info: 320-19022-B-6-A 10X
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 16:40:52 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 01-Jun-2016 14:59:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.092	7.099	-0.007	1.000	138157	3.22				
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.494	-0.019	1.000	512751	5.32			125	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.495	-0.020		399852	5.82		11.6	30873	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.532	-0.022		155933	5.06		10.7	11467	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.510	9.533	-0.023	1.000	1678952	54.4				M
D 12 13C4 PFOA										
417.0 > 372.0	10.595	10.612	-0.017		315952	4.34		8.7	20186	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.595	10.612	-0.017	1.000	13191738	203.4			1999	M
413.0 > 169.0	10.595	10.612	-0.017	1.000	5462967		2.41(0.00-0.00)		1522	M
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		222767	5.61		11.7	15826	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.560	11.571	-0.011	1.000	4402263	76.5			4179	M
499.0 > 99.0	11.560	11.571	-0.011	1.000	2016949		2.18(0.00-0.00)		2017	M
D 17 13C5 PFNA										
468.0 > 423.0	11.578	11.589	-0.011		314895	4.72		9.4	22518	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	8800	0.1617			27.8	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 02-Jun-2016 11:42:35 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_036.d

Injection Date: 01-Jun-2016 00:41:04 Instrument ID: A6

Lims ID: 320-19022-B-6-A Lab Sample ID: 320-19022-6

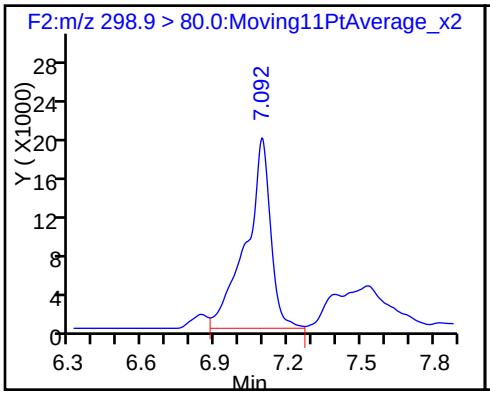
Client ID: OF-FILTER-PT-0516

Operator ID: JRB ALS Bottle#: 17 Worklist Smp#: 34

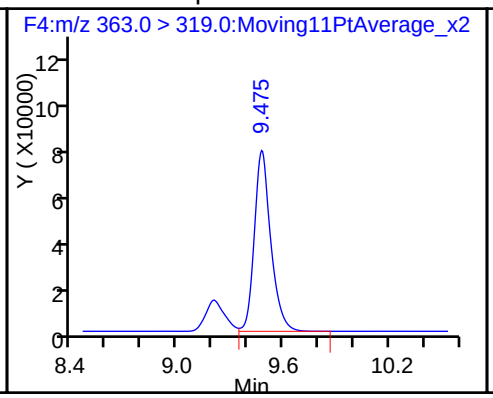
Injection Vol: 15.0 ul Dil. Factor: 10.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

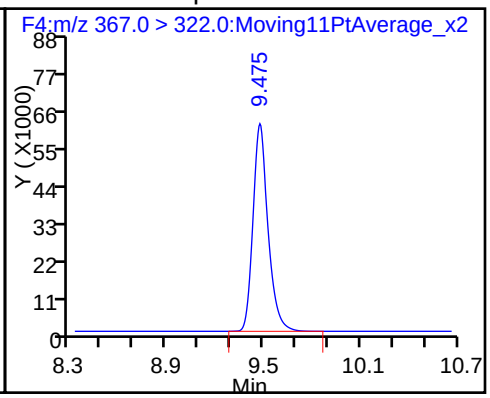
40 Perfluorobutanesulfonic acid



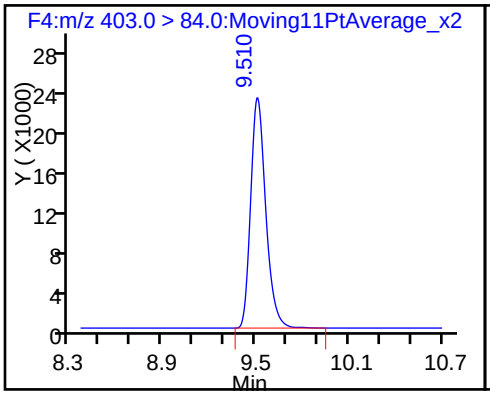
9 Perfluoroheptanoic acid



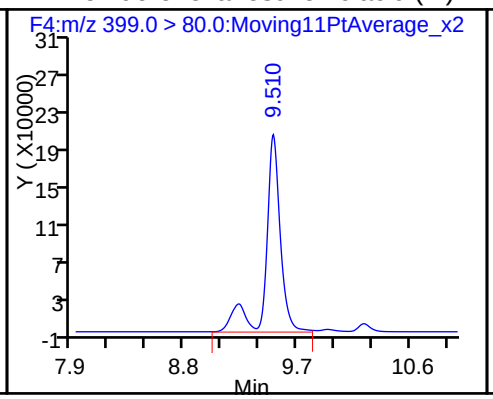
D 8 13C4-PFHpA



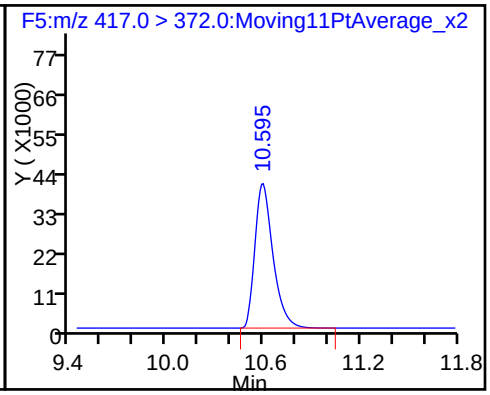
D 11 18O2 PFHxS



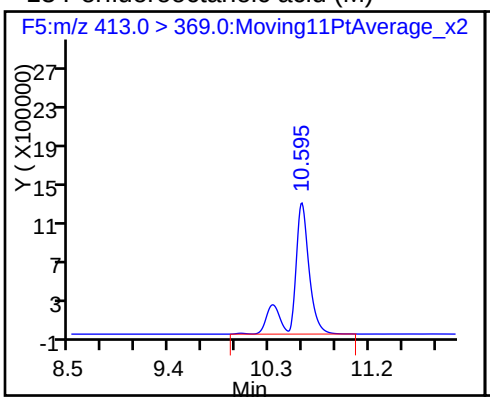
41 Perfluorohexanesulfonic acid (M)



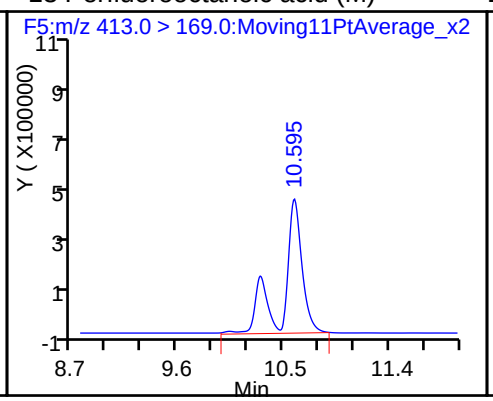
D 12 13C4 PFOA



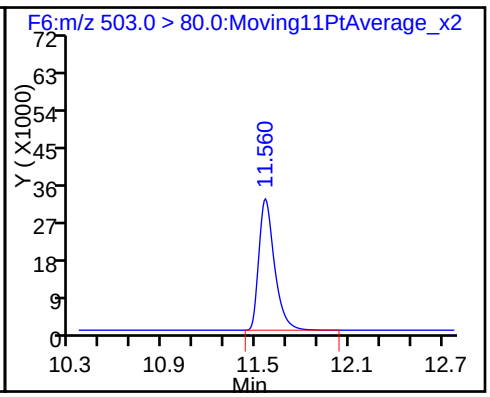
13 Perfluorooctanoic acid (M)



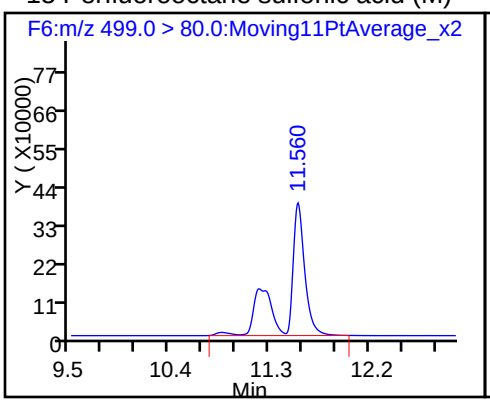
13 Perfluorooctanoic acid (M)



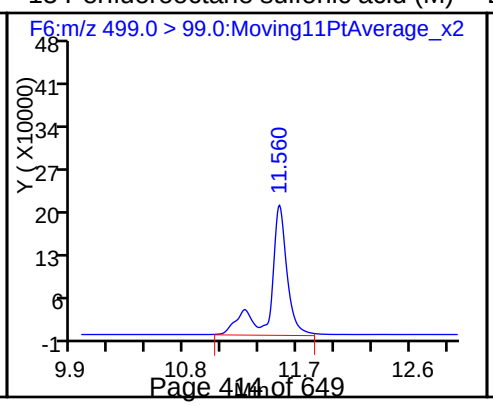
D 16 13C4 PFOS



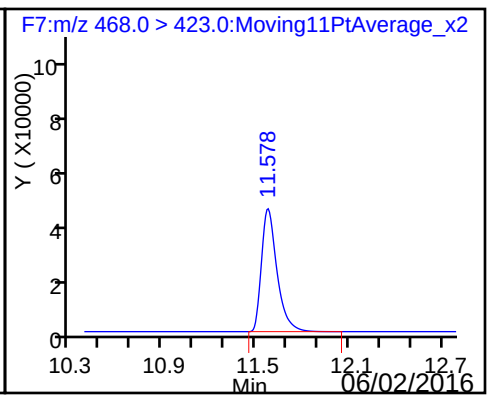
15 Perfluorooctane sulfonic acid (M)



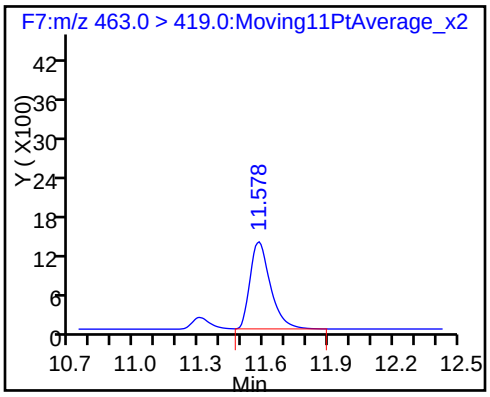
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

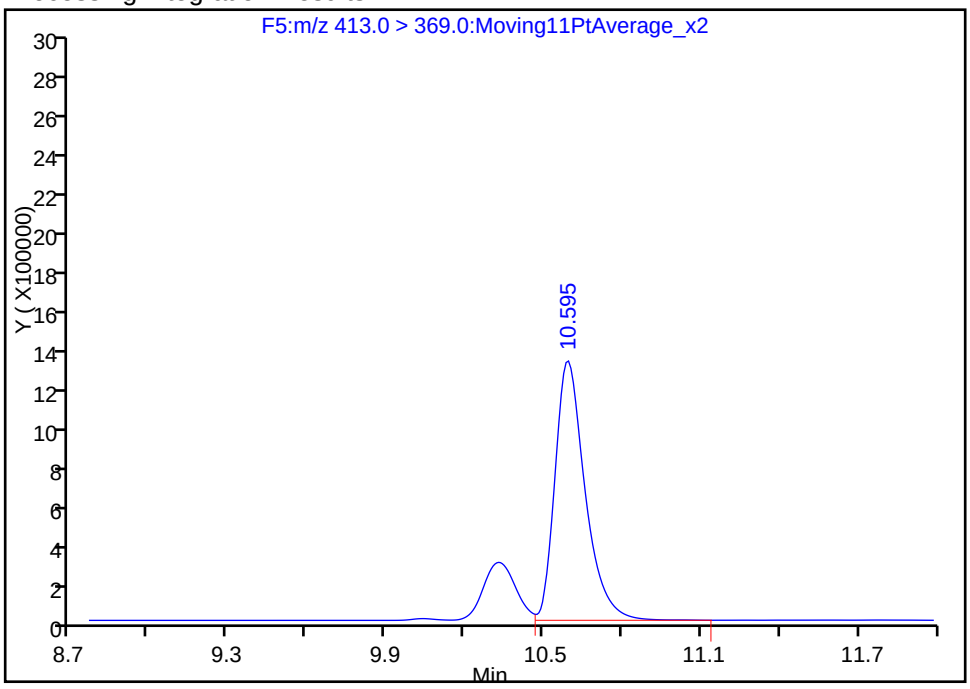
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_036.d				
Injection Date:	01-Jun-2016 00:41:04	Instrument ID:	A6		
Lims ID:	320-19022-B-6-A	Lab Sample ID:	320-19022-6		
Client ID:	OF-FILTER-PT-0516				
Operator ID:	JRB	ALS Bottle#:	17	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

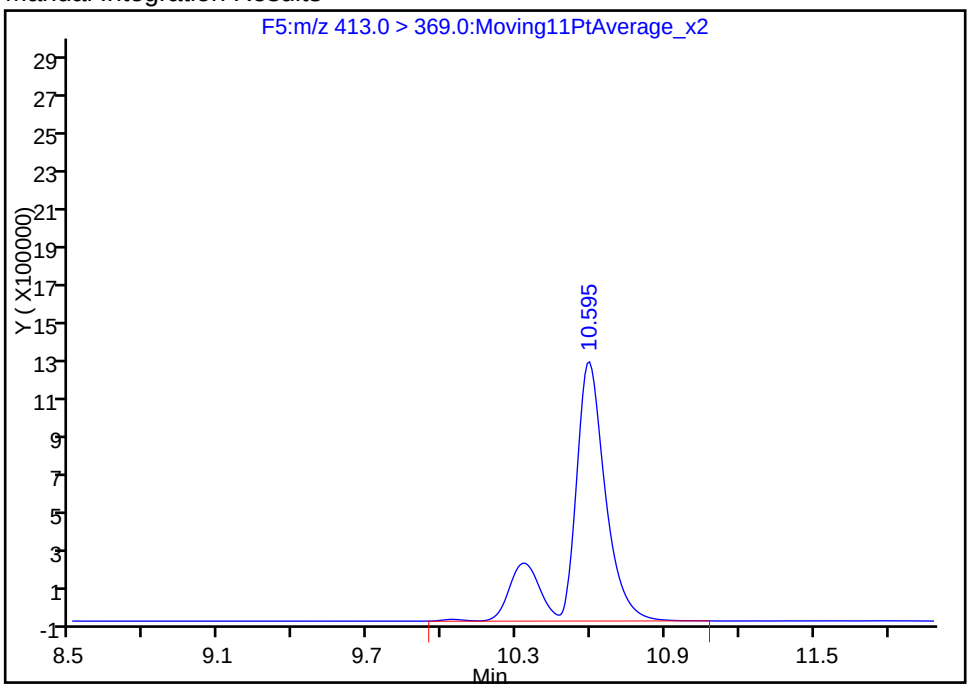
Processing Integration Results

RT: 10.60
Area: 10607362
Amount: 163.5270
Amount Units: ng/ml



Manual Integration Results

RT: 10.60
Area: 13191738
Amount: 203.3687
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:59:42

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

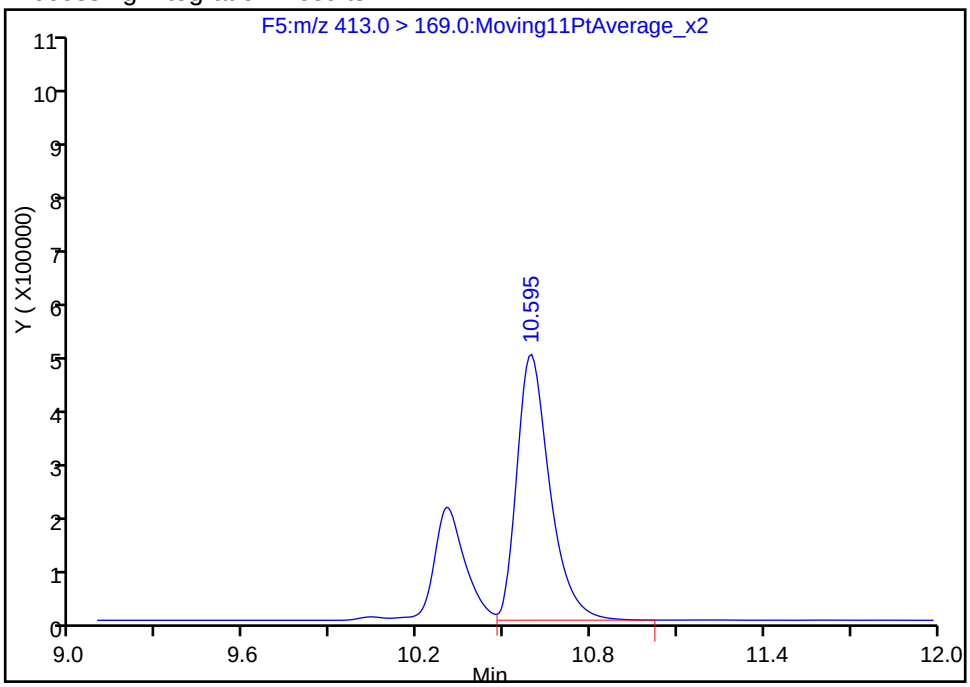
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_036.d				
Injection Date:	01-Jun-2016 00:41:04	Instrument ID:	A6		
Lims ID:	320-19022-B-6-A	Lab Sample ID:	320-19022-6		
Client ID:	OF-FILTER-PT-0516				
Operator ID:	JRB	ALS Bottle#:	17	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

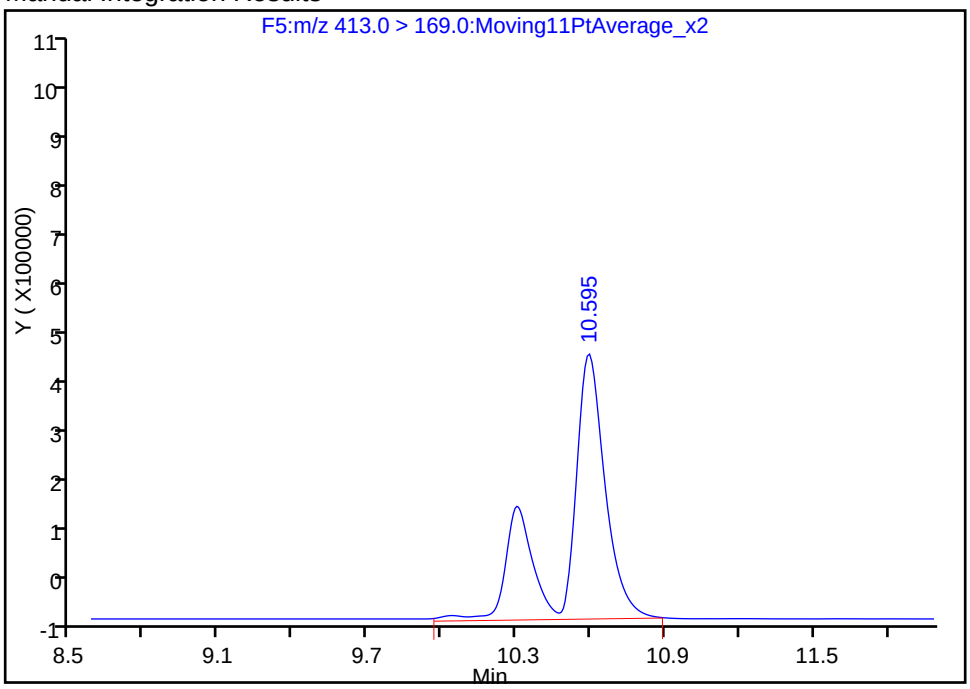
Processing Integration Results

RT: 10.60
Area: 3832907
Amount: 163.5270
Amount Units: ng/ml



Manual Integration Results

RT: 10.60
Area: 5462967
Amount: 203.3687
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:59:42

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

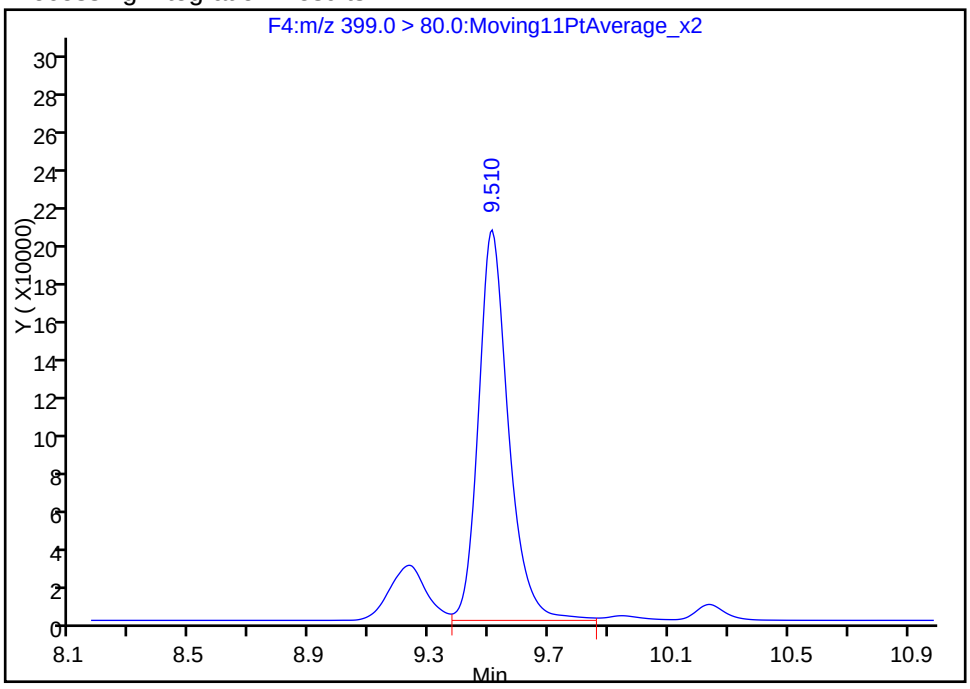
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_036.d				
Injection Date:	01-Jun-2016 00:41:04	Instrument ID:	A6		
Lims ID:	320-19022-B-6-A	Lab Sample ID:	320-19022-6		
Client ID:	OF-FILTER-PT-0516				
Operator ID:	JRB	ALS Bottle#:	17	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

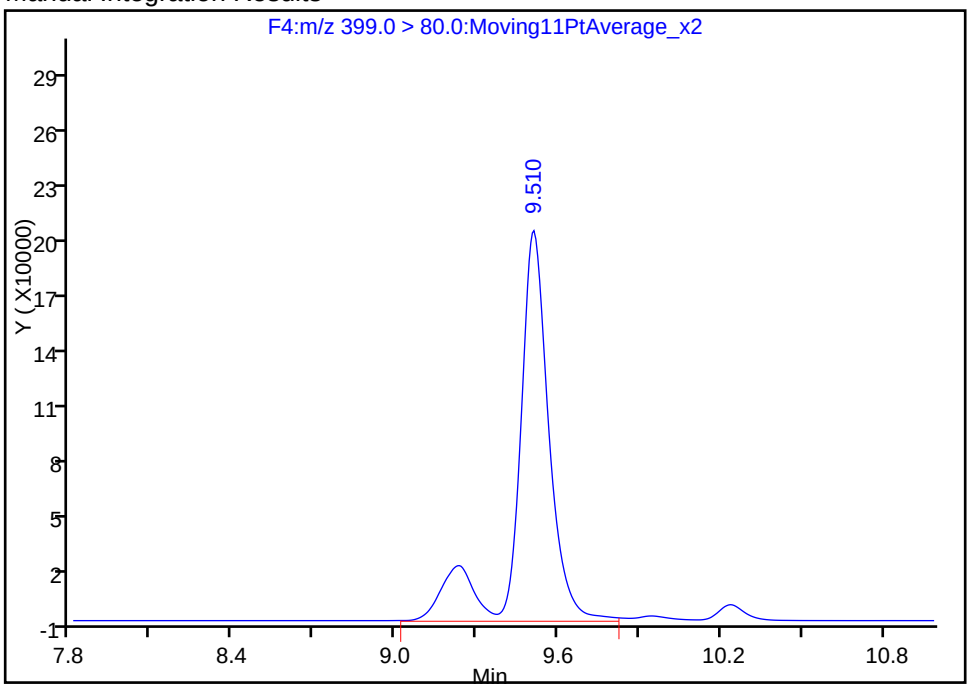
Processing Integration Results

RT: 9.51
Area: 1420379
Amount: 46.000730
Amount Units: ng/ml



Manual Integration Results

RT: 9.51
Area: 1678952
Amount: 54.374936
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:59:42

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

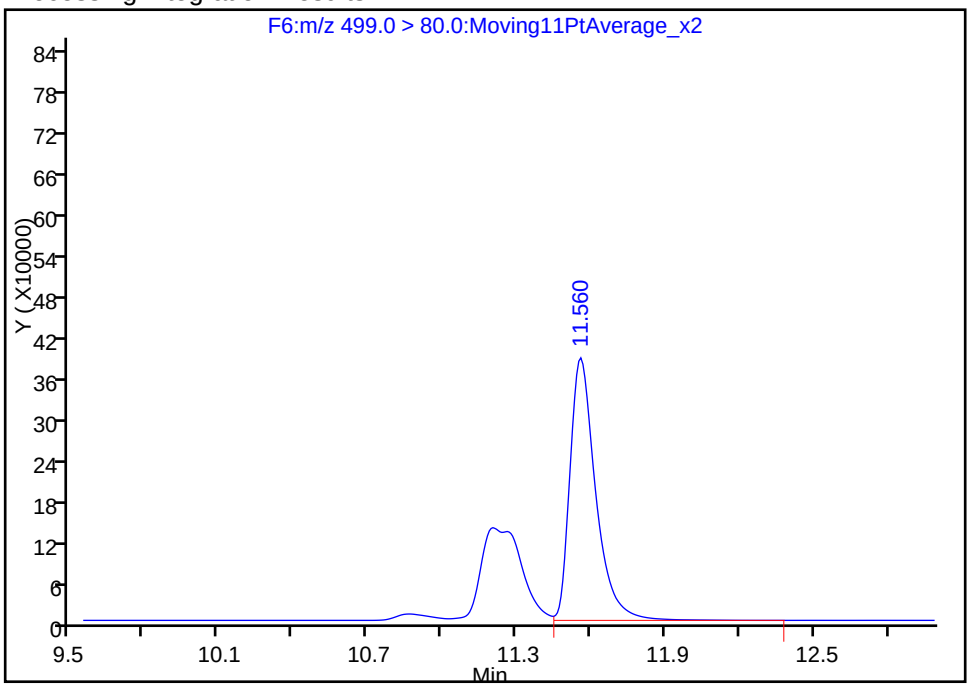
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_036.d				
Injection Date:	01-Jun-2016 00:41:04	Instrument ID:	A6		
Lims ID:	320-19022-B-6-A	Lab Sample ID:	320-19022-6		
Client ID:	OF-FILTER-PT-0516				
Operator ID:	JRB	ALS Bottle#:	17	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 1

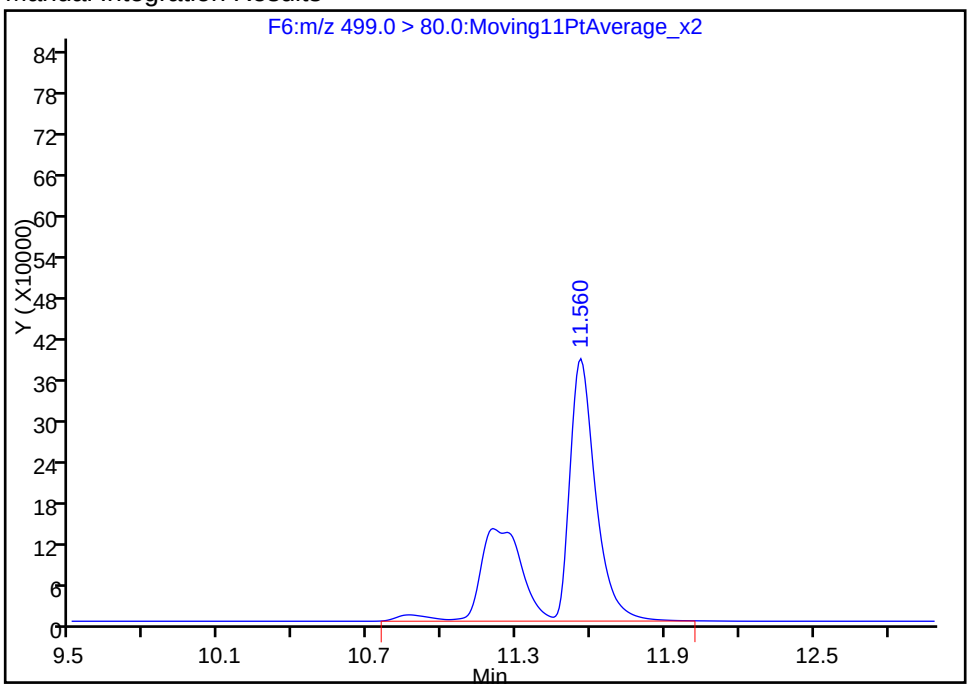
Processing Integration Results

RT: 11.56
Area: 2786402
Amount: 48.396942
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 4402263
Amount: 76.462788
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:59:42

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

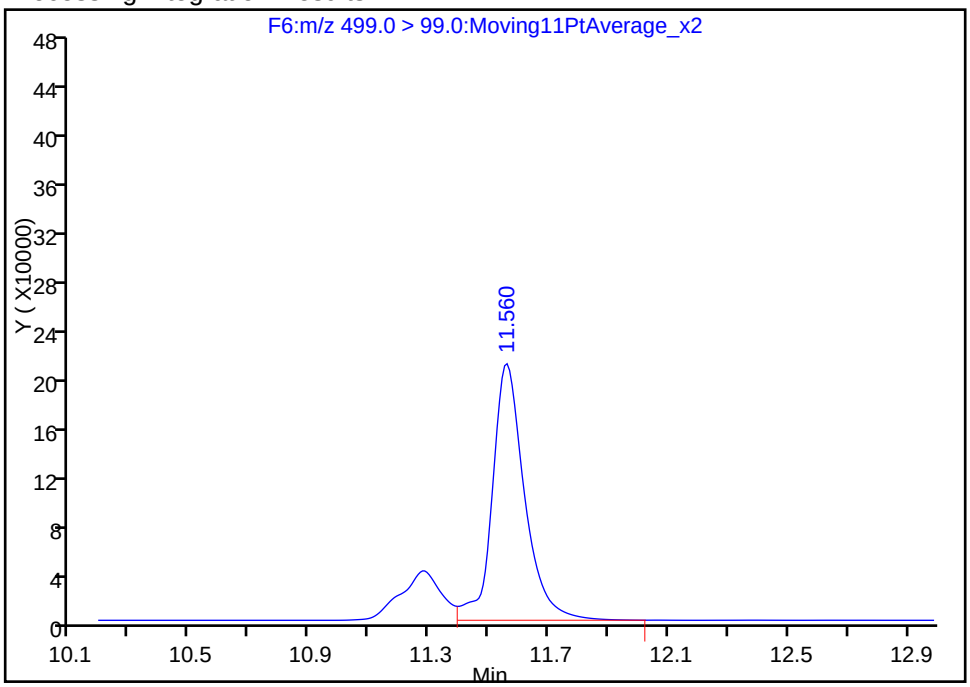
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_036.d				
Injection Date:	01-Jun-2016 00:41:04	Instrument ID:	A6		
Lims ID:	320-19022-B-6-A	Lab Sample ID:	320-19022-6		
Client ID:	OF-FILTER-PT-0516				
Operator ID:	JRB	ALS Bottle#:	17	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 2

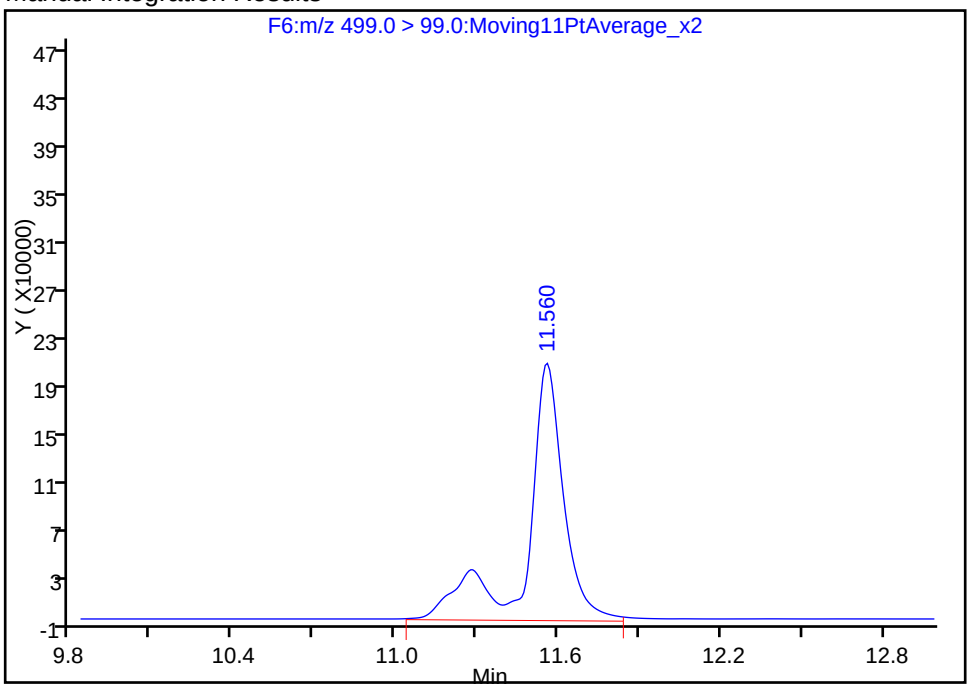
Processing Integration Results

RT: 11.56
Area: 1582552
Amount: 48.396942
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 2016949
Amount: 76.462788
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 14:59:42
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-INF01-PT-0615 Lab Sample ID: 320-19022-7

Matrix: Water Lab File ID: 28MAY2016A6A_037.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 483.6(mL) Date Analyzed: 05/29/2016 04:33

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 111859 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.13		0.0026	0.0021	0.00083
375-95-1	Perfluorononanoic acid (PFNA)	0.0064		0.0026	0.0021	0.00068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.15		0.0026	0.0021	0.00095

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	27		25-150
STL00995	13C5 PFNA	23	Q	25-150
STL01892	13C4-PFHpA	29		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_037.d
Lims ID: 320-19022-A-7-A
Client ID: OF-INF01-PT-0615
Sample Type: Client
Inject. Date: 29-May-2016 04:33:36 ALS Bottle#: 18 Worklist Smp#: 36
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-19022-A-7-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:31 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 31-May-2016 14:34:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.095	7.085	0.010	1.000	690432	71.1				
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.474	0.001		887642	14.3		28.6	15582	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.475	0.0	1.000	1374842	64.5			57.6	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.507	0.003		364330	12.8		27.0	28880	
41 Perfluorohexanesulfonic acid										EM
399.0 > 80.0	9.510	9.507	0.003	1.000	4855928	689.3				EM
D 12 13C4 PFOA										
417.0 > 372.0	10.595	10.586	0.009		641555	9.53		19.1	11419	
13 Perfluorooctanoic acid										EM
413.0 > 369.0	10.595	10.587	0.008	1.000	36987139	2835.8			2041	EM
413.0 > 169.0	10.595	10.587	0.008	1.000	15986055		2.31(0.00-0.00)		1138	M
D 16 13C4 PFOS										
503.0 > 80.0	11.552	11.543	0.009		438820	12.5		26.1	30232	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.552	11.545	0.007	1.000	12353920	1071.9			1749	EM
499.0 > 99.0	11.552	11.545	0.007	1.000	5475753		2.26(0.00-0.00)		1320	M
D 17 13C5 PFNA										
468.0 > 423.0	11.569	11.562	0.007		704527	11.4		22.7	33189	
18 Perfluorononanoic acid										
463.0 > 419.0	11.569	11.563	0.006	1.000	37040	3.11			56.9	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 31-May-2016 14:41:53 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_037.d

Injection Date: 29-May-2016 04:33:36 Instrument ID: A6

Lims ID: 320-19022-A-7-A Lab Sample ID: 320-19022-7

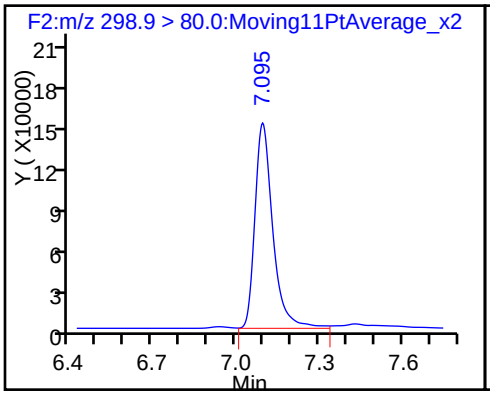
Client ID: OF-INF01-PT-0615

Operator ID: JRB ALS Bottle#: 18 Worklist Smp#: 36

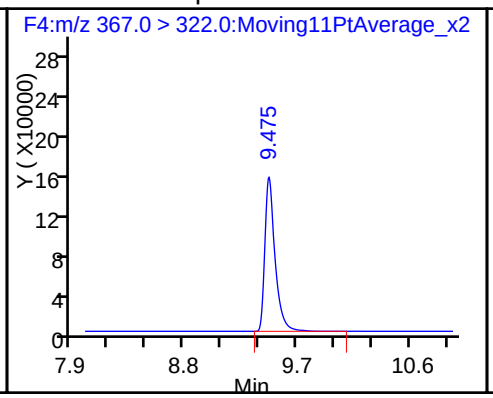
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

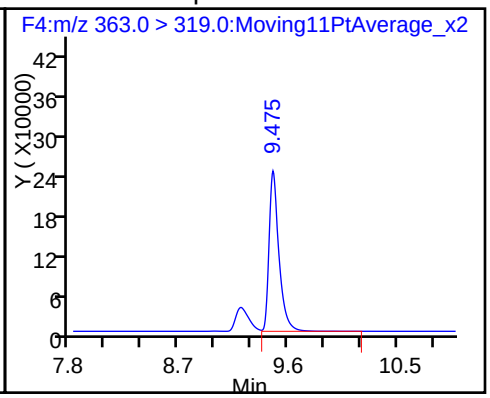
40 Perfluorobutanesulfonic acid



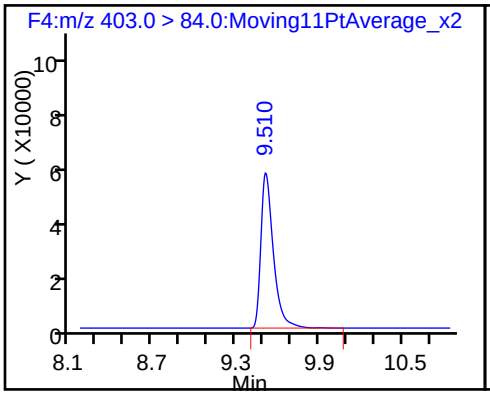
D 8 13C4-PFHpA



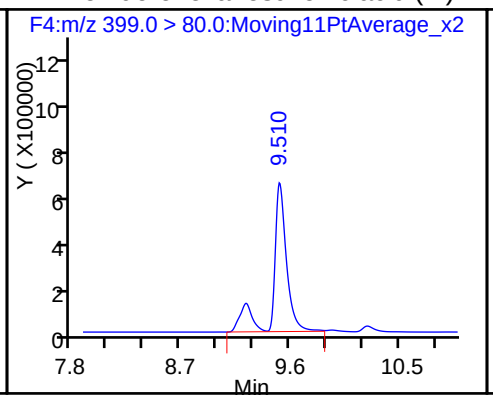
9 Perfluoroheptanoic acid



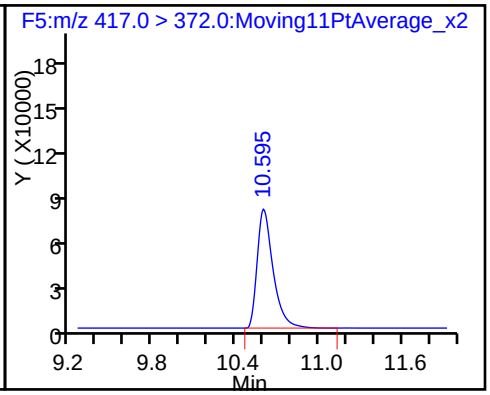
D 11 18O2 PFHxS



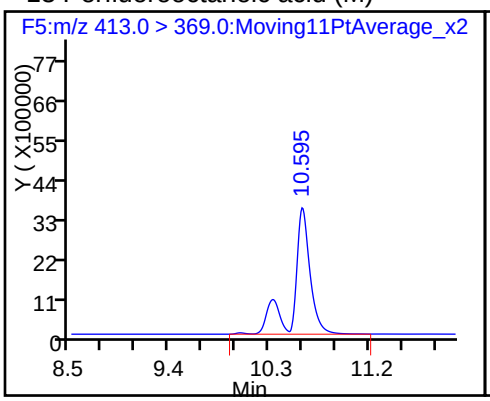
41 Perfluorohexanesulfonic acid (M)



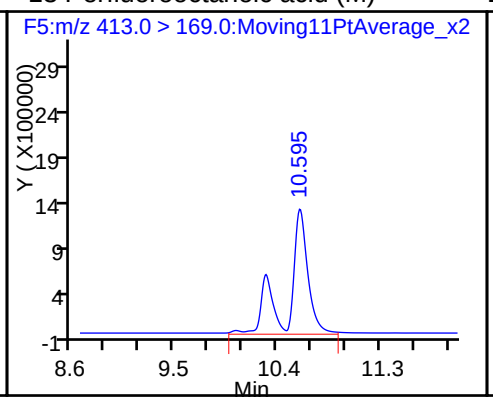
D 12 13C4 PFOA



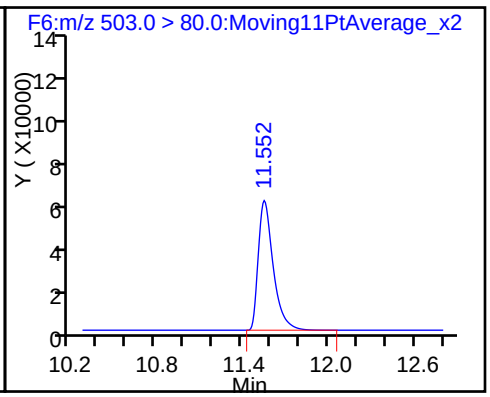
13 Perfluorooctanoic acid (M)



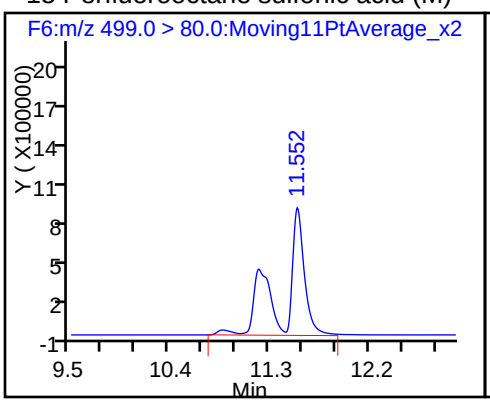
13 Perfluorooctanoic acid (M)



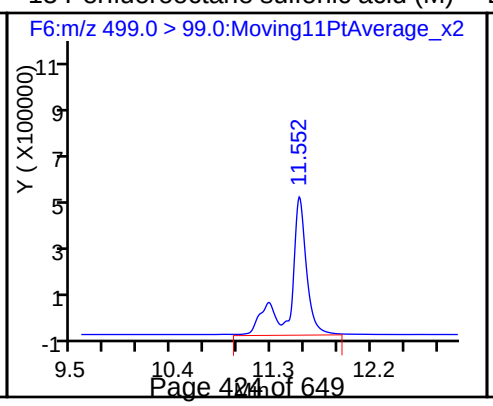
D 16 13C4 PFOS



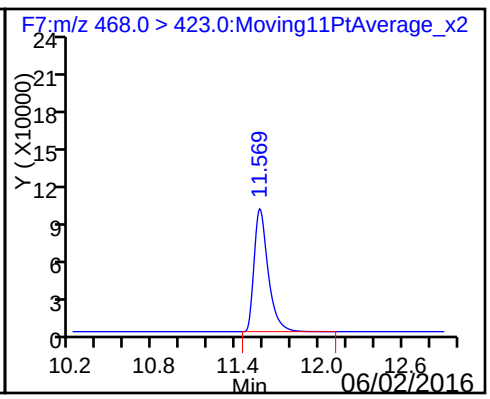
15 Perfluorooctane sulfonic acid (M)



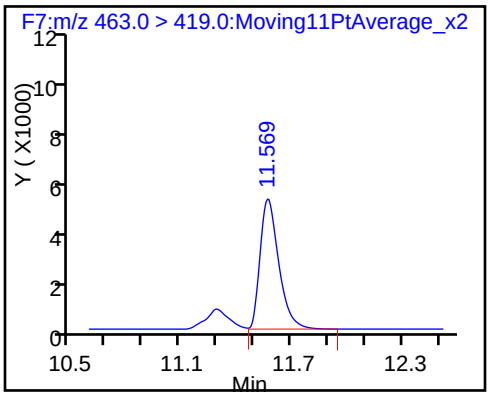
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-INF01-PT-0615 DL Lab Sample ID: 320-19022-7 DL

Matrix: Water Lab File ID: 31MAY2016A6A_037.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 483.6(mL) Date Analyzed: 06/01/2016 01:02

Con. Extract Vol.: 1.00(mL) Dilution Factor: 10

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	5.9	D M	0.026	0.021	0.0077
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.3	D M	0.026	0.021	0.0090
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.3	D M	0.041	0.031	0.013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	105		25-150
STL00991	13C4 PFOS	89		25-150
STL00990	13C4 PFOA	75		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_037.d
Lims ID: 320-19022-A-7-A
Client ID: OF-INF01-PT-0615
Sample Type: Client
Inject. Date: 01-Jun-2016 01:02:20 ALS Bottle#: 18 Worklist Smp#: 35
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Sample Info: 320-19022-A-7-A 10X
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 16:40:52 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 01-Jun-2016 15:00:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.085	7.099	-0.014	1.000	226485	5.40				
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.481	9.494	-0.013	1.000	530651	6.20			142	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.495	-0.020		357415	5.21		10.4	3181	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.532	-0.022		152686	4.95		10.5	4812	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.510	9.533	-0.023	1.000	1843345	61.0				M
D 12 13C4 PFOA										
417.0 > 372.0	10.595	10.612	-0.017		272235	3.74		7.5	17298	
13 Perfluorooctanoic acid										M
413.0 > 369.0	10.595	10.612	-0.017	1.000	15898025	284.4			2055	M
413.0 > 169.0	10.604	10.612	-0.008	1.001	6543388		2.43(0.00-0.00)		1399	M
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		169503	4.27		8.9	2233	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.560	11.571	-0.011	1.000	4888333	111.6			2409	M
499.0 > 99.0	11.560	11.571	-0.011	1.000	2092181		2.34(0.00-0.00)		9762	M
D 17 13C5 PFNA										
468.0 > 423.0	11.578	11.589	-0.011		295042	4.43		8.9	21188	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	18974	0.3722			92.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 02-Jun-2016 11:42:38 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_037.d

Injection Date: 01-Jun-2016 01:02:20 Instrument ID: A6

Lims ID: 320-19022-A-7-A Lab Sample ID: 320-19022-7

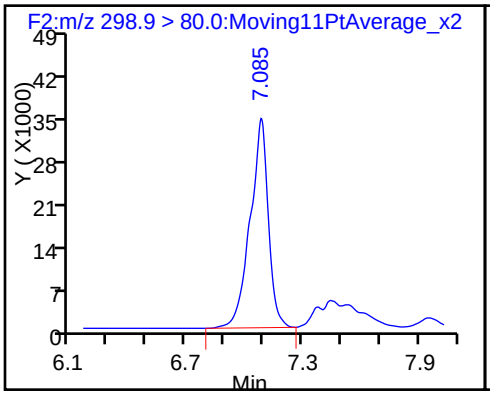
Client ID: OF-INF01-PT-0615

Operator ID: JRB ALS Bottle#: 18 Worklist Smp#: 35

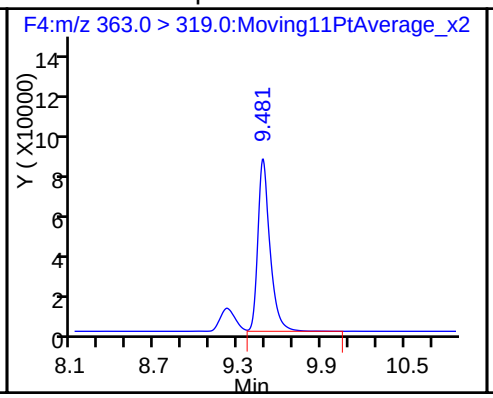
Injection Vol: 15.0 ul Dil. Factor: 10.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

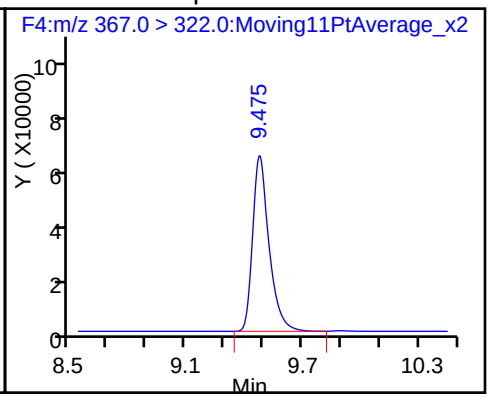
40 Perfluorobutanesulfonic acid



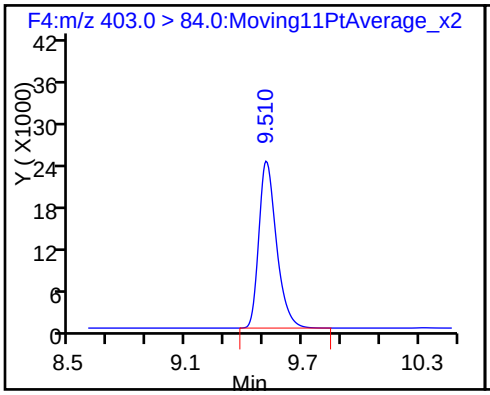
9 Perfluoroheptanoic acid



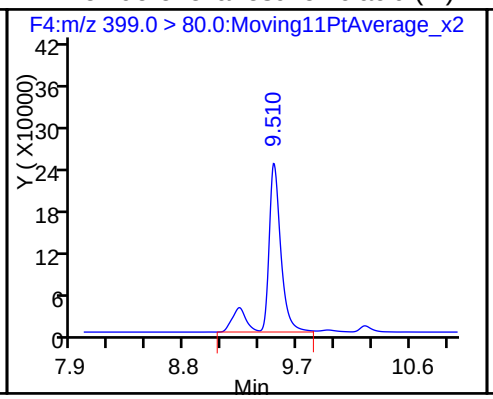
D 8 13C4-PFHpA



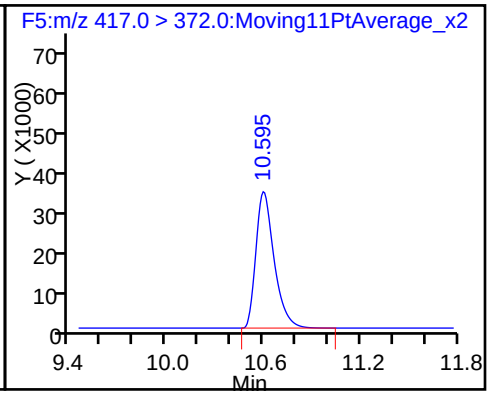
D 11 18O2 PFHxS



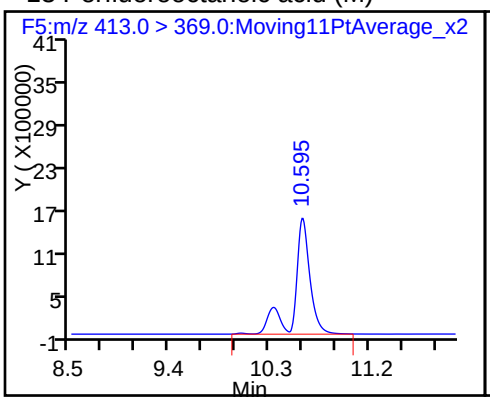
41 Perfluorohexanesulfonic acid (M)



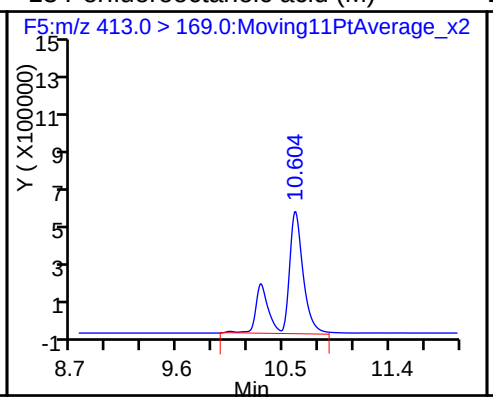
D 12 13C4 PFOA



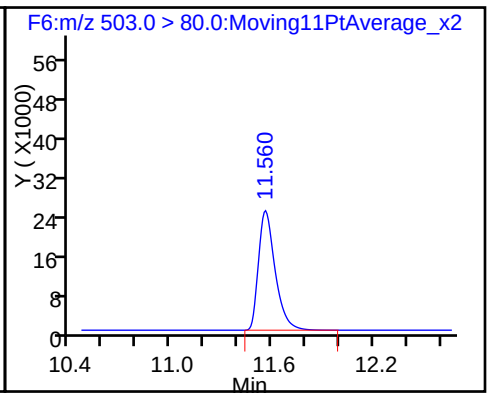
13 Perfluorooctanoic acid (M)



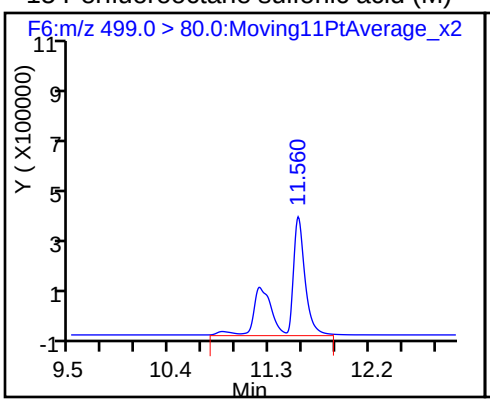
13 Perfluorooctanoic acid (M)



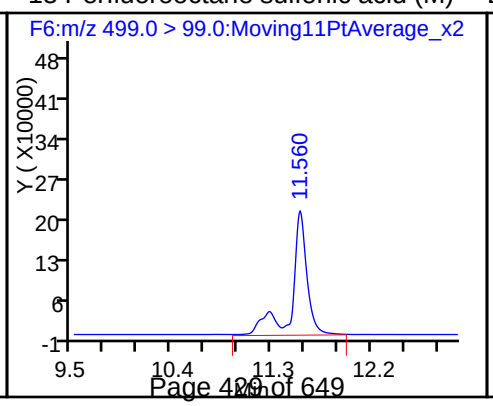
D 16 13C4 PFOS



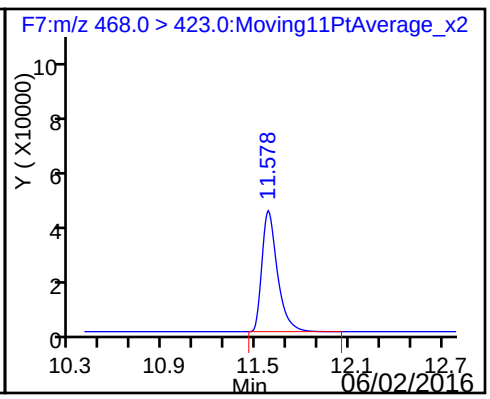
15 Perfluorooctane sulfonic acid (M)



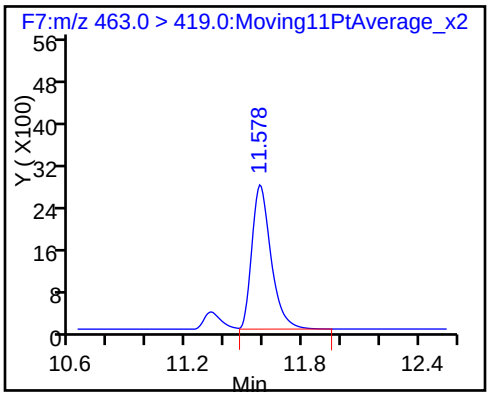
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

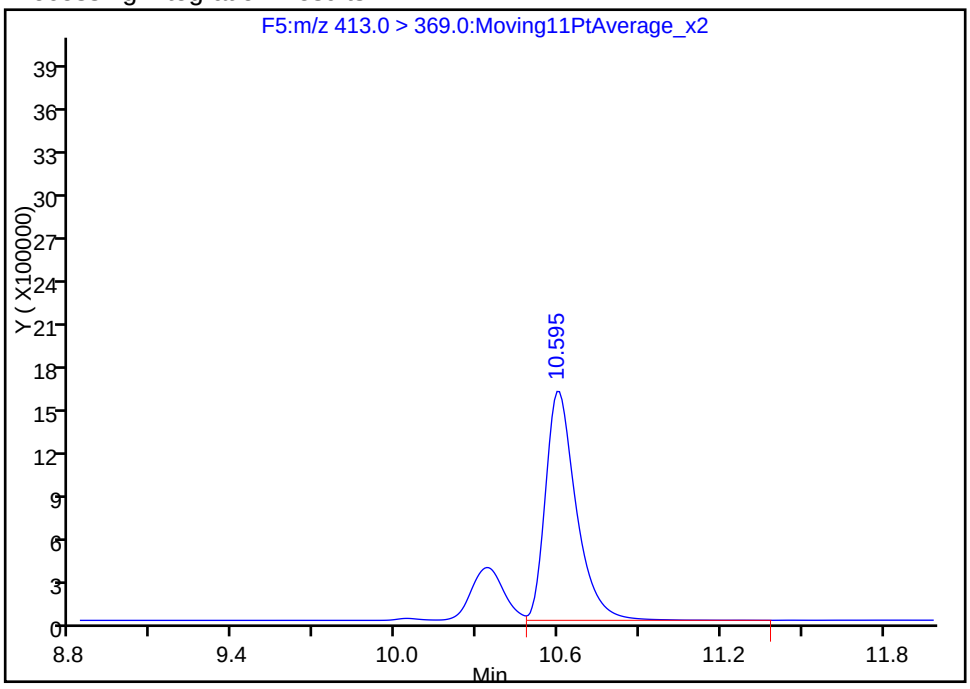
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_037.d				
Injection Date:	01-Jun-2016 01:02:20	Instrument ID:	A6		
Lims ID:	320-19022-A-7-A	Lab Sample ID:	320-19022-7		
Client ID:	OF-INF01-PT-0615				
Operator ID:	JRB	ALS Bottle#:	18	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

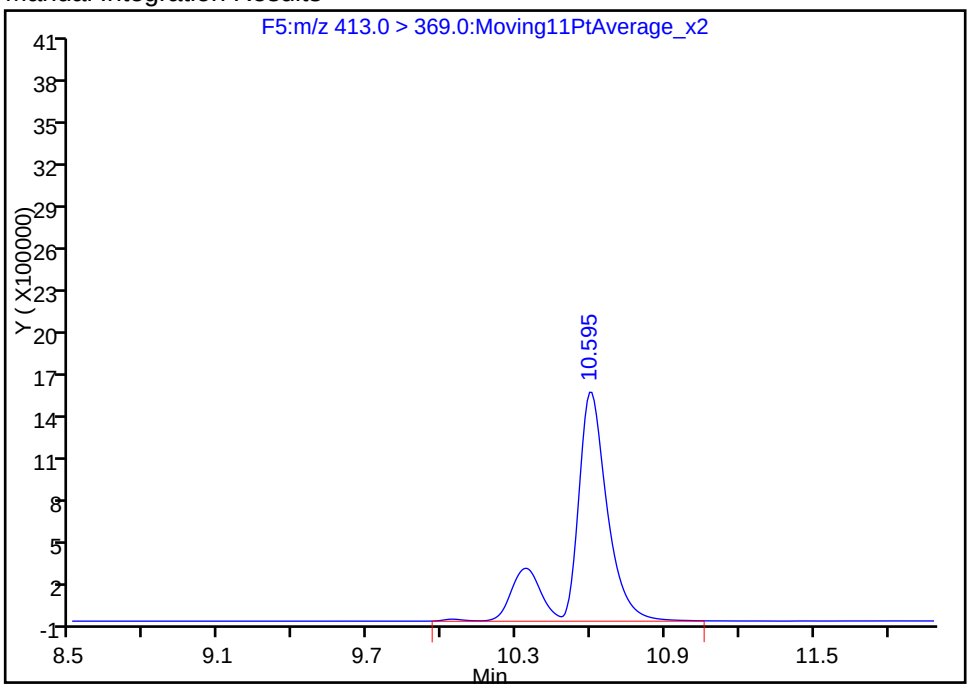
Processing Integration Results

RT: 10.60
Area: 12701056
Amount: 227.2475
Amount Units: ng/ml



Manual Integration Results

RT: 10.60
Area: 15898025
Amount: 284.4477
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 15:00:51

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

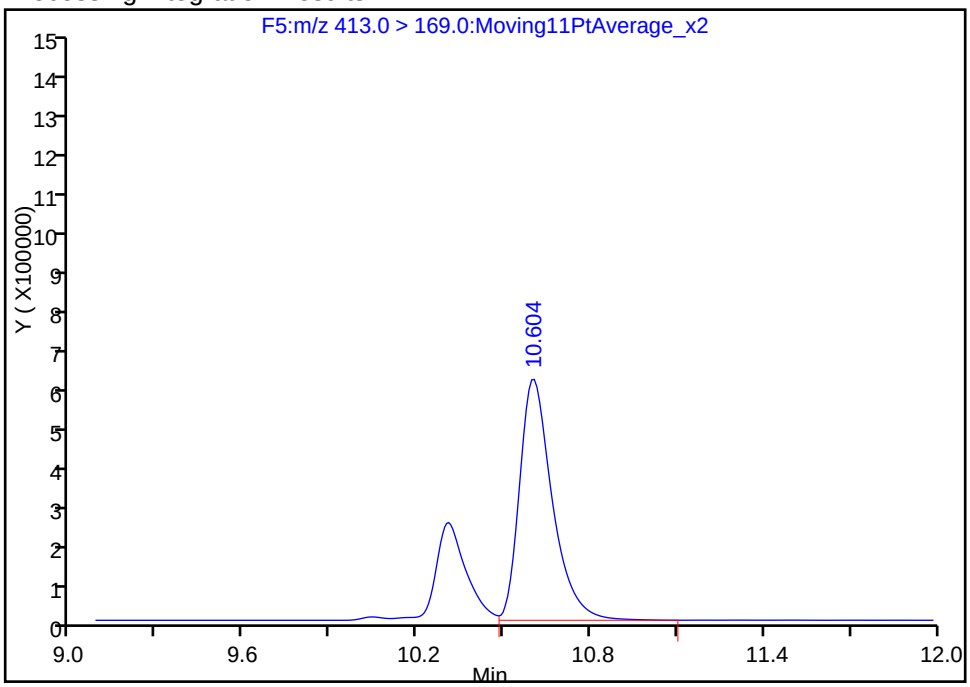
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_037.d				
Injection Date:	01-Jun-2016 01:02:20	Instrument ID:	A6		
Lims ID:	320-19022-A-7-A	Lab Sample ID:	320-19022-7		
Client ID:	OF-INF01-PT-0615				
Operator ID:	JRB	ALS Bottle#:	18	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F5:MRM		

13 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

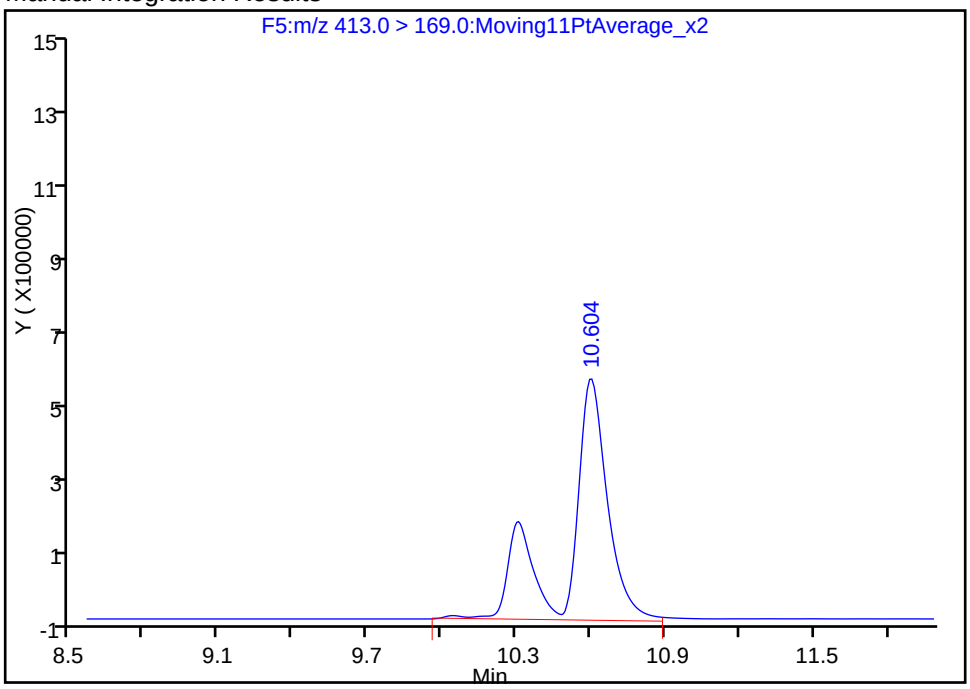
Processing Integration Results

RT: 10.60
Area: 4688759
Amount: 227.2475
Amount Units: ng/ml



Manual Integration Results

RT: 10.60
Area: 6543388
Amount: 284.4477
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 15:00:51
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

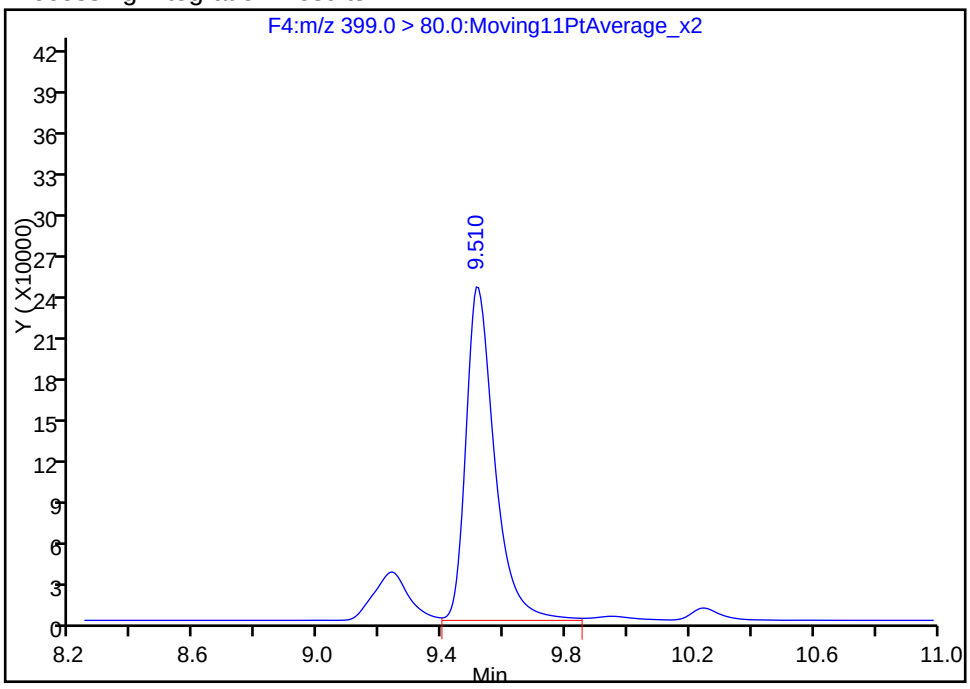
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_037.d				
Injection Date:	01-Jun-2016 01:02:20	Instrument ID:	A6		
Lims ID:	320-19022-A-7-A	Lab Sample ID:	320-19022-7		
Client ID:	OF-INF01-PT-0615				
Operator ID:	JRB	ALS Bottle#:	18	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

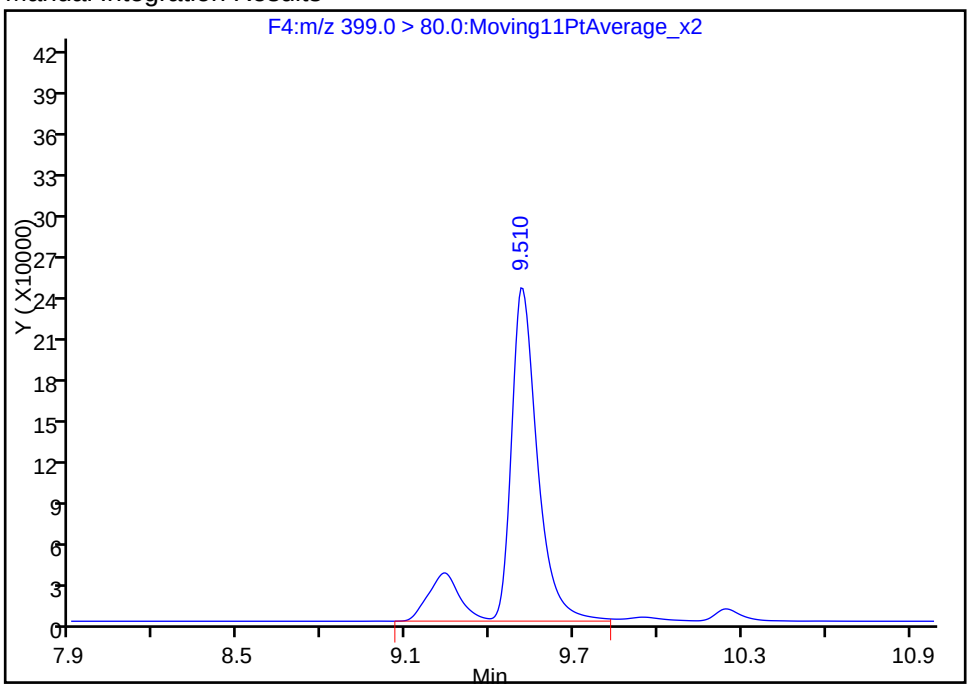
Processing Integration Results

RT: 9.51
Area: 1573292
Amount: 52.036567
Amount Units: ng/ml



Manual Integration Results

RT: 9.51
Area: 1843345
Amount: 60.968558
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 15:00:51

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

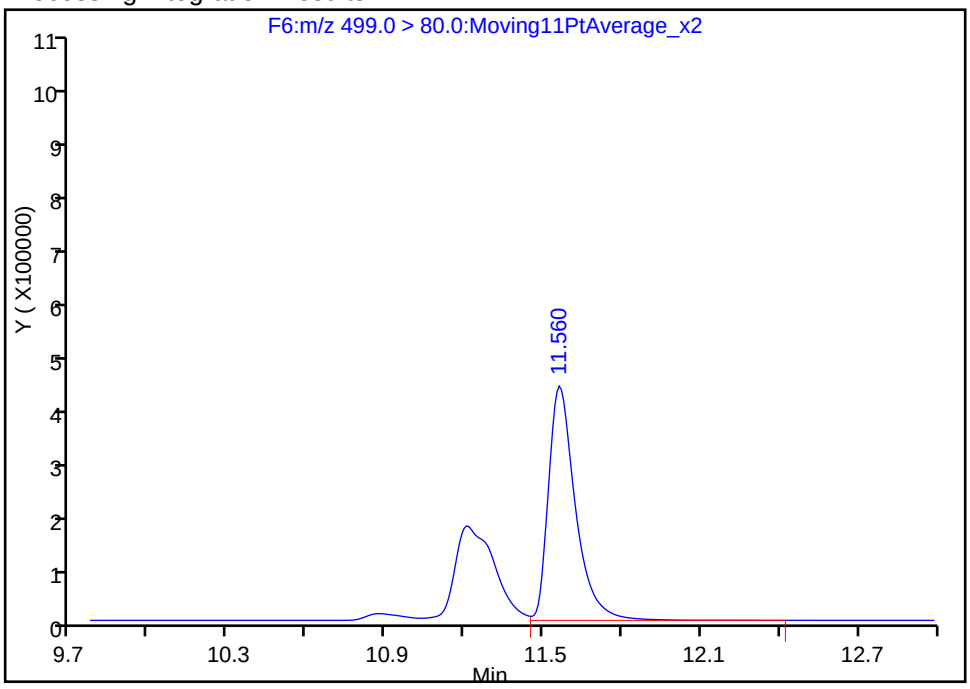
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_037.d				
Injection Date:	01-Jun-2016 01:02:20	Instrument ID:	A6		
Lims ID:	320-19022-A-7-A	Lab Sample ID:	320-19022-7		
Client ID:	OF-INF01-PT-0615				
Operator ID:	JRB	ALS Bottle#:	18	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 1

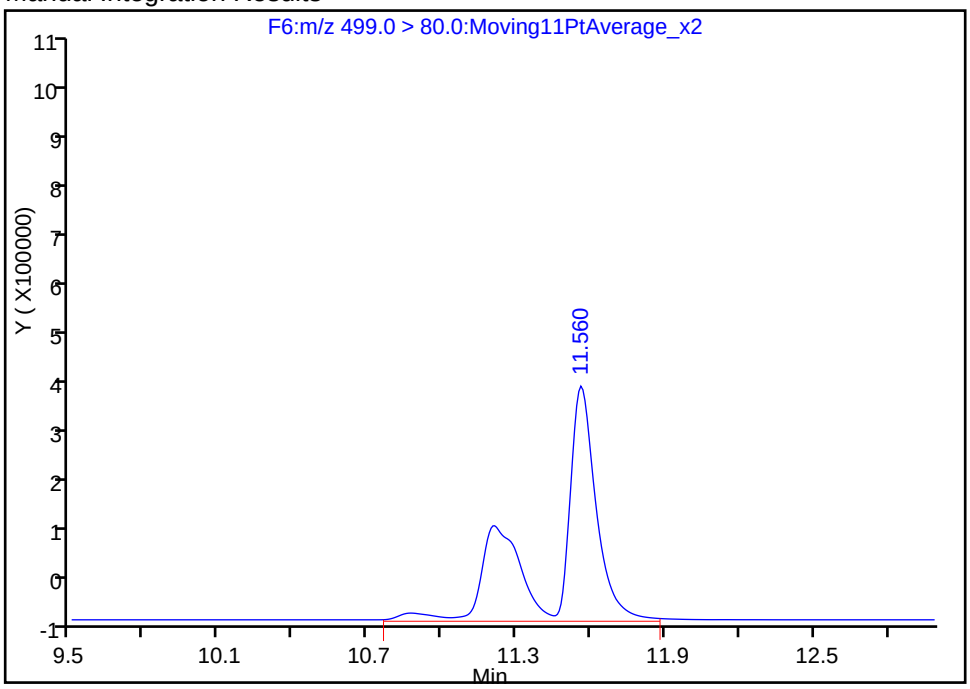
Processing Integration Results

RT: 11.56
Area: 2911770
Amount: 66.466786
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 4888333
Amount: 111.5857
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 15:00:51

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

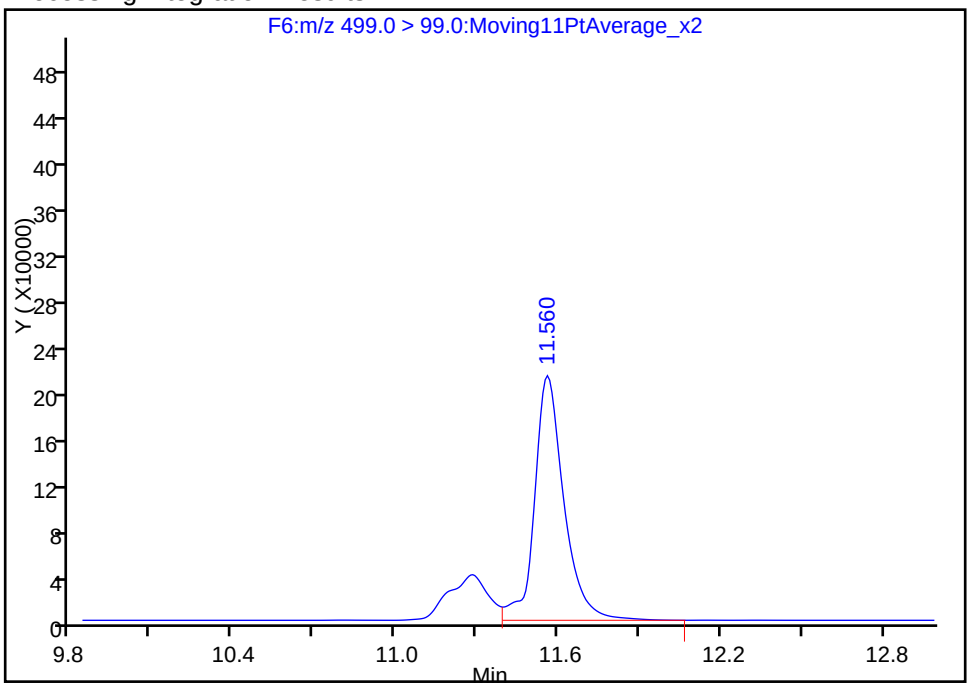
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_037.d				
Injection Date:	01-Jun-2016 01:02:20	Instrument ID:	A6		
Lims ID:	320-19022-A-7-A	Lab Sample ID:	320-19022-7		
Client ID:	OF-INF01-PT-0615				
Operator ID:	JRB	ALS Bottle#:	18	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	10.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 2

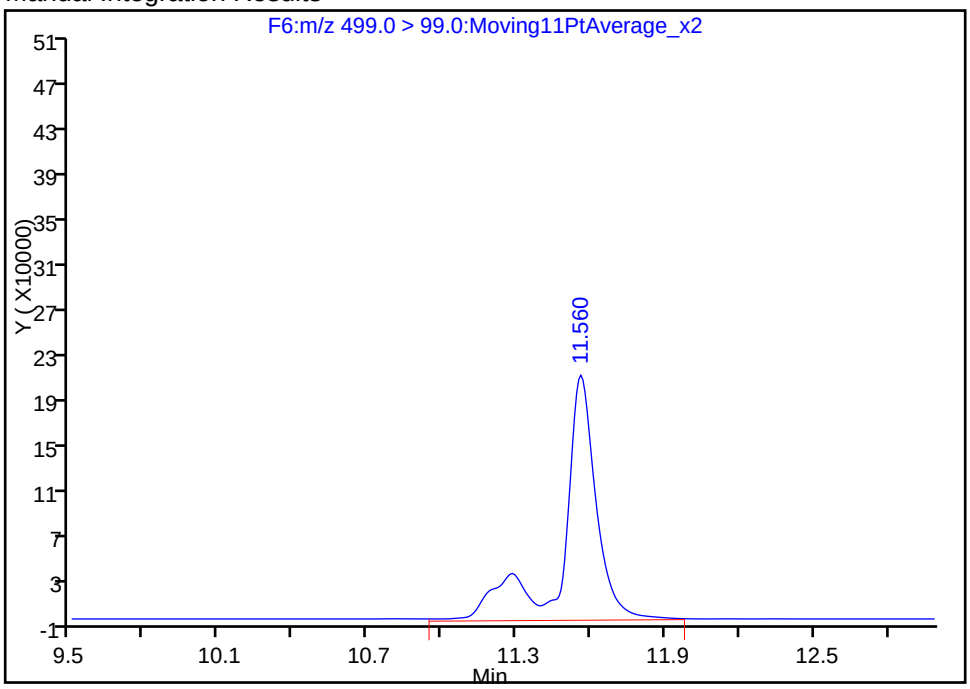
Processing Integration Results

RT: 11.56
Area: 1612756
Amount: 66.466786
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 2092181
Amount: 111.5857
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 15:00:51

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: OF-PROCESS BLANK-PT-0516 Lab Sample ID: 320-19022-8

Matrix: Water Lab File ID: 28MAY2016A6A_041.d

Analysis Method: WS-LC-0025 Date Collected: 05/19/2016 13:35

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 525(mL) Date Analyzed: 05/29/2016 05:58

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 111859 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.0019	0.00076
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.0019	0.00071
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U M	0.0024	0.0019	0.00062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.0019	0.00087
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0024	0.0019	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0029	U M	0.0038	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	129		25-150
STL00991	13C4 PFOS	127		25-150
STL00995	13C5 PFNA	105		25-150
STL00990	13C4 PFOA	123		25-150
STL01892	13C4-PFHpA	121		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_041.d
Lims ID: 320-19022-A-8-A
Client ID: OF-PROCESS BLANK-PT-0516
Sample Type: Client
Inject. Date: 29-May-2016 05:58:41 ALS Bottle#: 19 Worklist Smp#: 40
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-19022-A-8-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 15:08:21 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 31-May-2016 14:35:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA										
367.0 > 322.0	9.470	9.474	-0.004		3744954	60.4		121	133697	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.470	9.475	-0.005	1.000	6897	-0.3799			351	
D 11 18O2 PFHxS										
403.0 > 84.0	9.505	9.507	-0.002		1735737	60.8		129	36569	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.510	9.507	0.003	1.000	3241	0.0966				
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.586	0.0		4140223	61.5		123	18363	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.586	10.587	-0.001	1.000	17349	0.2061			8.4	
413.0 > 169.0	10.577	10.587	-0.010	0.999	7380		2.35(0.00-0.00)		10.5	
D 16 13C4 PFOS										
503.0 > 80.0	11.527	11.543	-0.016		2130049	60.6		127	52104	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.527	11.545	-0.018	1.000	5225	0.0934			291	M
499.0 > 99.0	11.527	11.545	-0.018	1.000	1875		2.79(0.00-0.00)		145	M
D 17 13C5 PFNA										
468.0 > 423.0	11.545	11.562	-0.017		3259362	52.5		105	20580	
18 Perfluorononanoic acid										M
463.0 > 419.0	11.545	11.563	-0.018	1.000	752	0.0137			39.7	M

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 31-May-2016 15:08:42 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_041.d

Injection Date: 29-May-2016 05:58:41 Instrument ID: A6

Lims ID: 320-19022-A-8-A Lab Sample ID: 320-19022-8

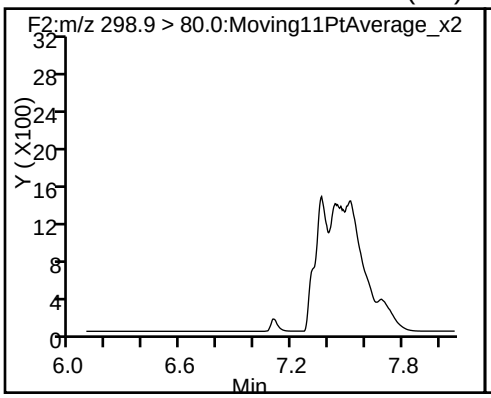
Client ID: OF-PROCESS BLANK-PT-0516

Operator ID: JRB ALS Bottle#: 19 Worklist Smp#: 40

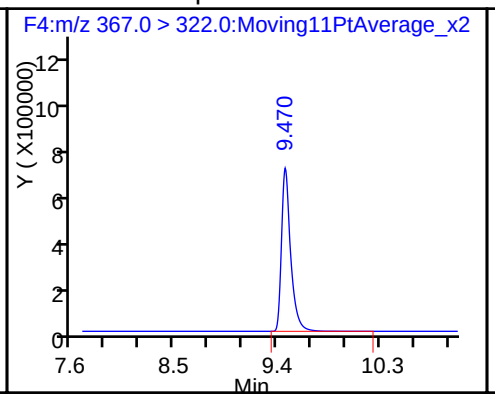
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

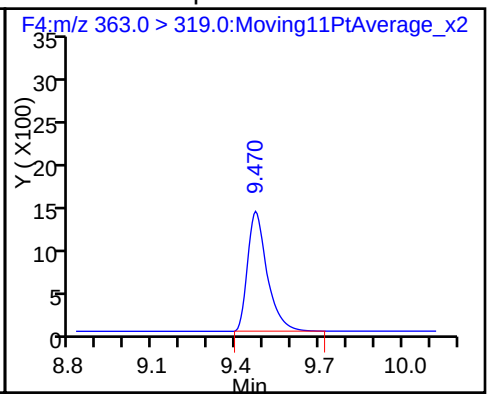
40 Perfluorobutanesulfonic acid (ND)



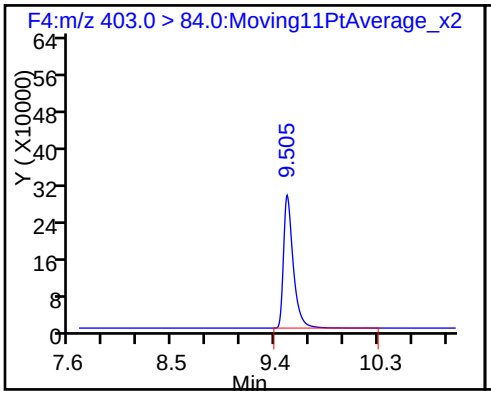
D 8 13C4-PFHpA



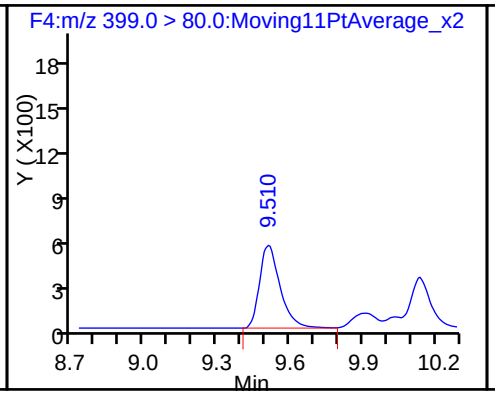
9 Perfluoroheptanoic acid



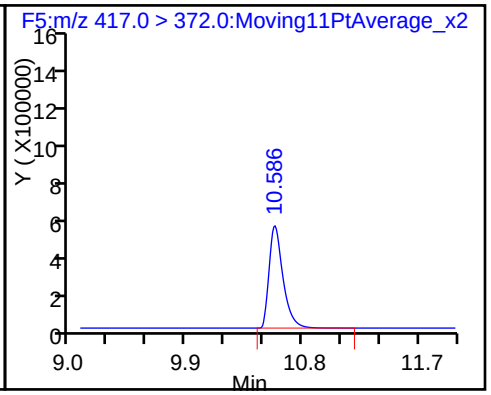
D 11 18O2 PFHxS



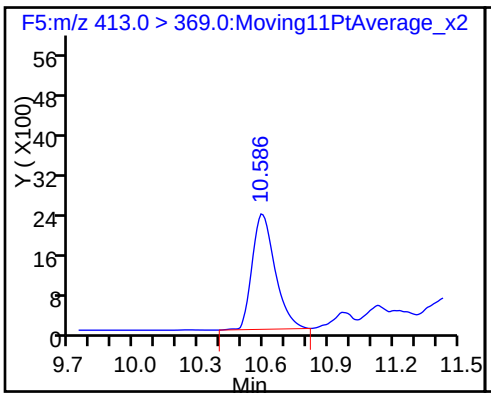
41 Perfluorohexanesulfonic acid



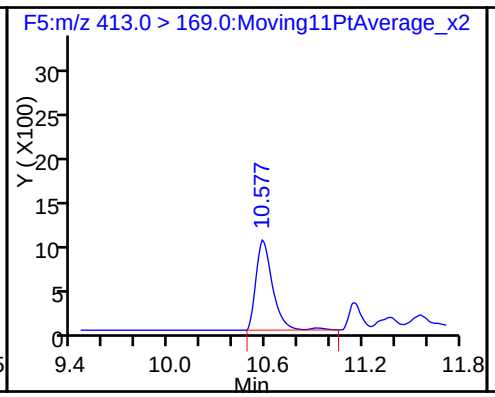
D 12 13C4 PFOA



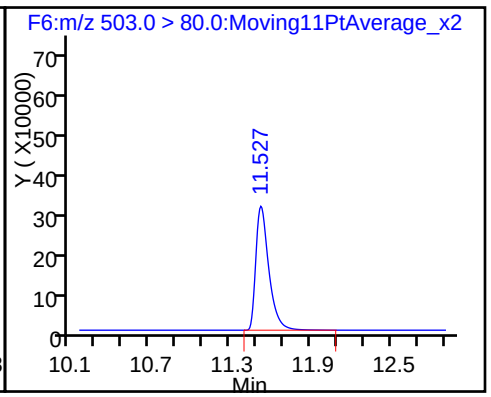
13 Perfluorooctanoic acid



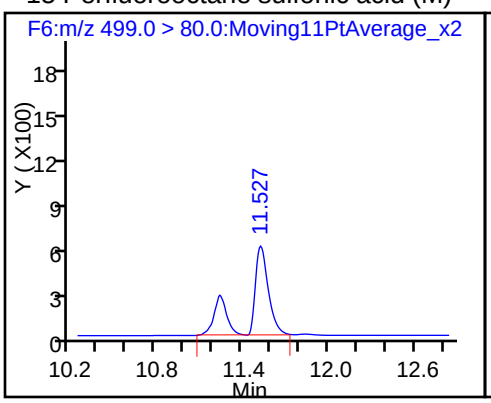
13 Perfluorooctanoic acid



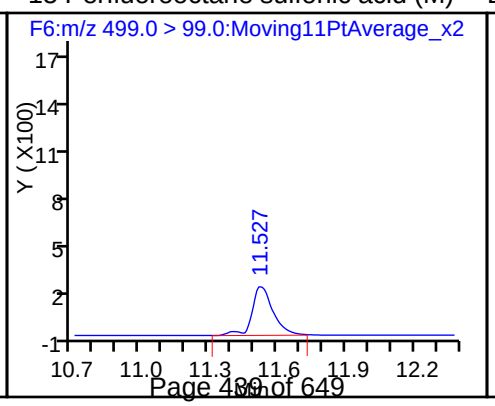
D 16 13C4 PFOS



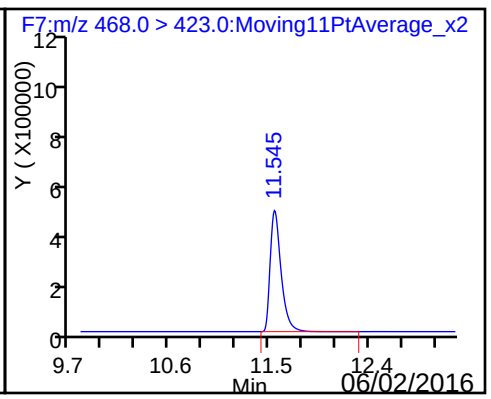
15 Perfluorooctane sulfonic acid (M)



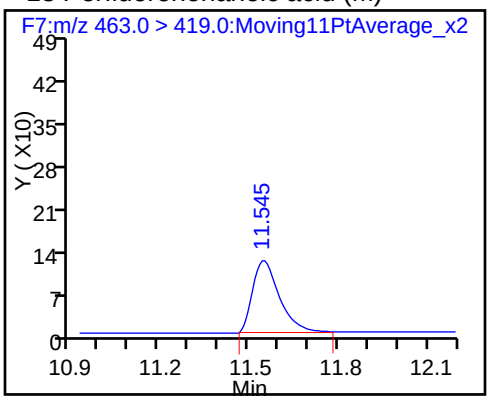
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

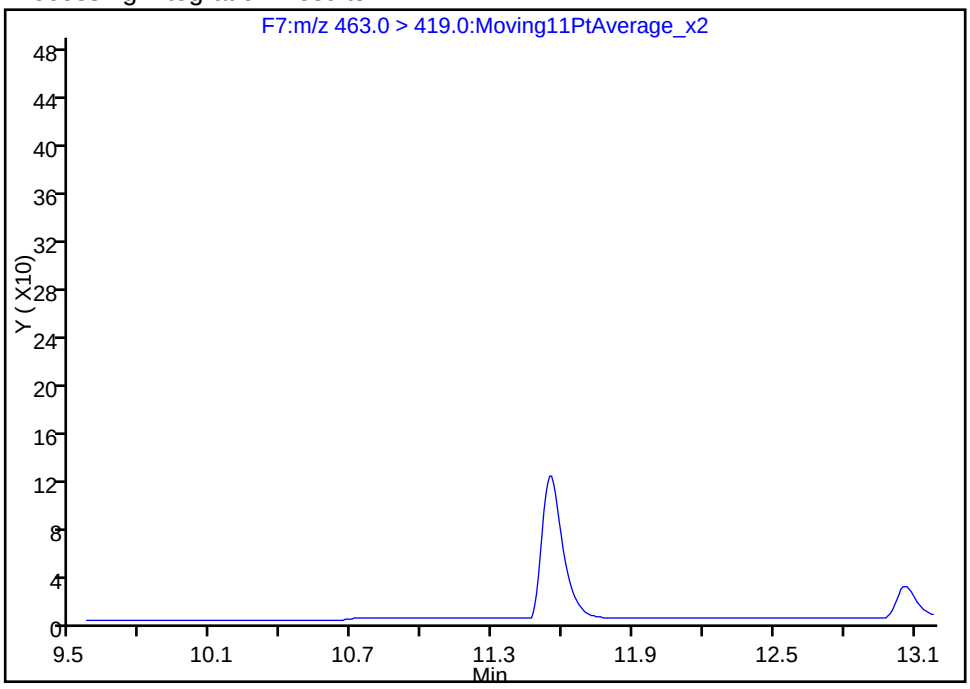
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_041.d				
Injection Date:	29-May-2016 05:58:41	Instrument ID:	A6		
Lims ID:	320-19022-A-8-A	Lab Sample ID:	320-19022-8		
Client ID:	OF-PROCESS BLANK-PT-0516				
Operator ID:	JRB	ALS Bottle#:	19	Worklist Smp#:	40
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F7:MRM		

18 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

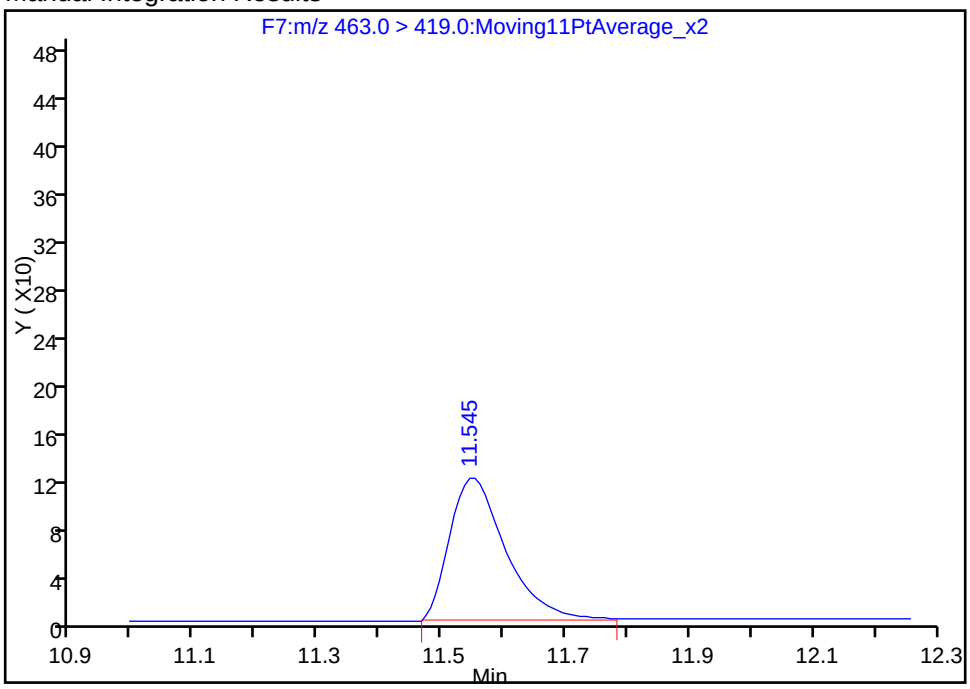
Not Detected
Expected RT: 11.56

Processing Integration Results



Manual Integration Results

RT: 11.54
Area: 752
Amount: 0.013664
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:35:59
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

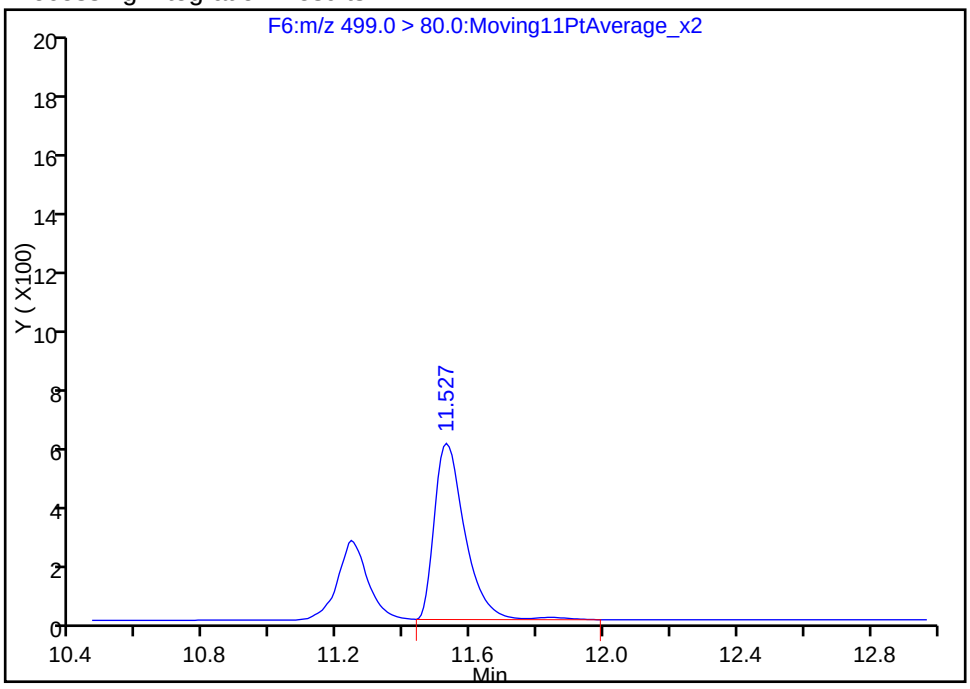
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_041.d				
Injection Date:	29-May-2016 05:58:41	Instrument ID:	A6		
Lims ID:	320-19022-A-8-A	Lab Sample ID:	320-19022-8		
Client ID:	OF-PROCESS BLANK-PT-0516				
Operator ID:	JRB	ALS Bottle#:	19	Worklist Smp#:	40
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 1

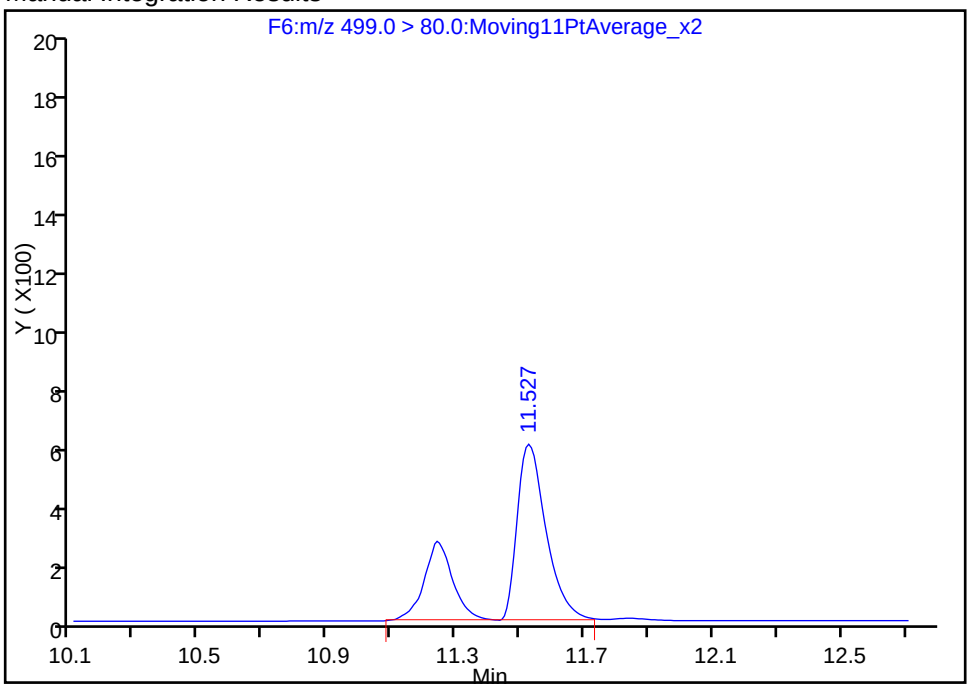
Processing Integration Results

RT: 11.53
Area: 3740
Amount: 0.066854
Amount Units: ng/ml



Manual Integration Results

RT: 11.53
Area: 5225
Amount: 0.093399
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:35:59

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

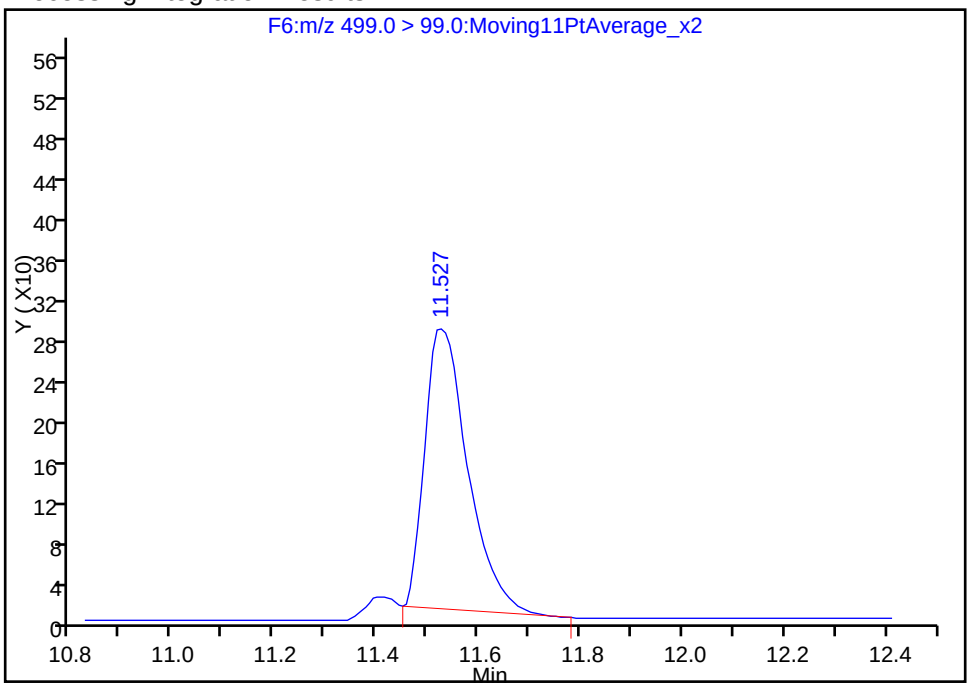
Data File:	\\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_041.d				
Injection Date:	29-May-2016 05:58:41	Instrument ID:	A6		
Lims ID:	320-19022-A-8-A	Lab Sample ID:	320-19022-8		
Client ID:	OF-PROCESS BLANK-PT-0516				
Operator ID:	JRB	ALS Bottle#:	19	Worklist Smp#:	40
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

Signal: 2

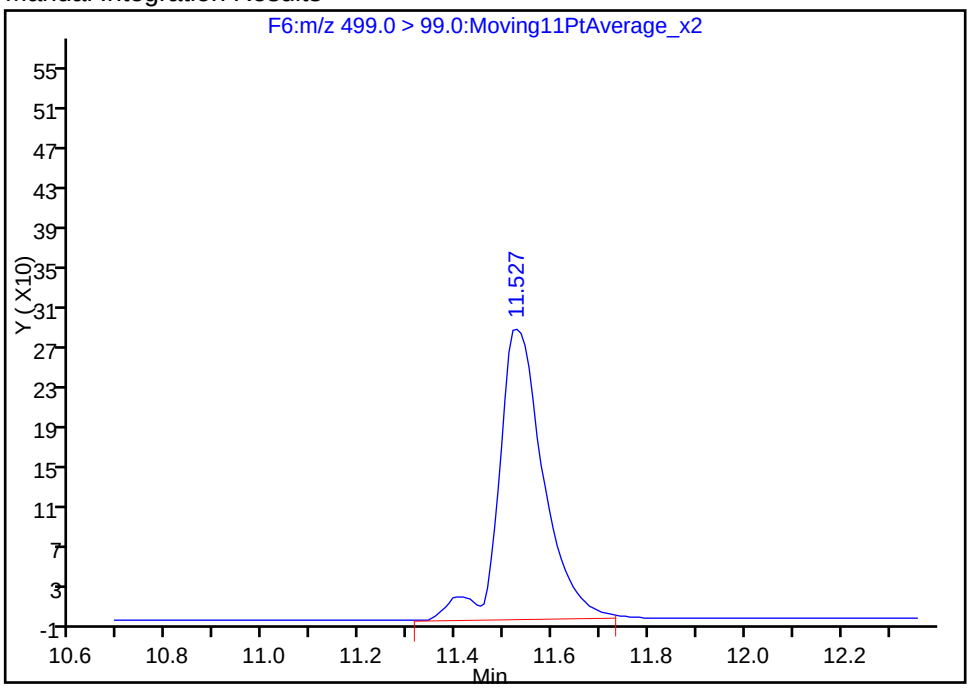
Processing Integration Results

RT: 11.53
Area: 1632
Amount: 0.066854
Amount Units: ng/ml



Manual Integration Results

RT: 11.53
Area: 1875
Amount: 0.093399
Amount Units: ng/ml



Reviewer: barnettj, 31-May-2016 14:35:59

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.: 320-19022-1 Analy Batch No.: 111859

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/28/2016 13:56 Calibration End Date: 05/28/2016 19:41 Calibration ID: 21828

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-111859/2	28MAY2016A6A_003.d
Level 2	STD 320-111859/3	28MAY2016A6A_004.d
Level 3	STD 320-111859/4	28MAY2016A6A_005.d
Level 4	STD 320-111859/5	28MAY2016A6A_006.d
Level 5	STD 320-111859/6	28MAY2016A6A_007.d
Level 6	STD 320-111859/10	28MAY2016A6A_011.d
Level 7	STD 320-111859/11	28MAY2016A6A_012.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	+++++	5.800	5.800	5.797	5.797	5.794	5.794				5.549 - 6.049	5.797
Perfluoropentanoic acid (PFPeA)	6.960	6.960	6.960	6.955	6.964	6.955	6.960				6.710 - 7.210	6.959
Perfluorobutanesulfonic acid (PFBS)	7.088	7.085	7.088	7.081	7.087	7.081	7.085				6.836 - 7.336	7.085
Perfluorohexanoic acid (PFHxA)	8.236	8.230	8.236	8.236	8.235	8.236	8.236				7.985 - 8.485	8.235
Perfluoroheptanoic acid (PFHpA)	+++++	9.475	9.475	9.475	9.488	9.470	9.469				9.227 - 9.727	9.475
Perfluorohexanesulfonic acid (PFHxS)	9.499	9.510	9.505	9.504	9.518	9.505	9.504				9.257 - 9.757	9.506
Perfluorooctanoic acid (PFOA)	10.586	10.577	10.586	10.586	10.584	10.596	10.595				10.334 - 10.834	10.587
Perfluoroheptanesulfonic Acid (PFHpS)	+++++	10.586	10.586	10.595	10.593	10.605	10.604				10.343 - 10.843	10.595
Perfluorooctanesulfonic acid (PFOS)	+++++	11.543	11.543	11.535	11.541	11.543	11.552				11.295 - 11.795	11.543
Perfluorononanoic acid (PFNA)	+++++	11.561	11.561	11.553	11.559	11.570	11.569				11.311 - 11.811	11.562
Perfluorodecanoic acid (PFDA)	12.393	12.383	12.393	12.393	12.396	12.393	12.393				12.142 - 12.642	12.392
Perfluorooctane Sulfonamide (FOSA)	+++++	13.004	13.004	13.004	12.998	13.004	12.994				12.753 - 13.253	13.001
Perfluorodecanesulfonic acid (PFDS)	13.041	13.050	13.050	13.050	13.047	13.050	13.050				12.797 - 13.297	13.048
Perfluoroundecanoic acid (PFUnA)	+++++	13.094	13.094	13.094	13.091	13.102	13.093				12.843 - 13.343	13.095
Perfluorododecanoic acid (PFDoA)	13.685	13.676	13.685	13.685	13.684	13.685	13.694				13.433 - 13.933	13.685
Perfluorotridecanoic Acid (PFTriA)	14.182	14.182	14.182	14.182	14.182	14.190	14.189				13.932 - 14.432	14.184
Perfluorotetradecanoic acid (PFTeA)	14.615	14.602	14.609	14.609	14.604	14.609	14.615				14.358 - 14.858	14.609
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	15.200	15.205	15.199	15.199	15.200	15.204				14.953 - 15.453	15.201
Perfluoro-n-octandecanoic acid (PFODA)	15.476	15.476	15.471	15.466	15.476	15.471	15.476				15.223 - 15.723	15.473
13C4 PFBA	5.797	5.794	5.797	5.794	5.797	5.794	5.794				5.546 - 6.046	5.795
13C5-PFPeA	6.960	6.955	6.960	6.955	6.959	6.955	6.955				6.708 - 7.208	6.957
13C2 PFHxA	8.236	8.236	8.236	8.236	8.240	8.236	8.236				7.987 - 8.487	8.237
13C4-PFHpA	9.469	9.475	9.475	9.475	9.482	9.470	9.469				9.225 - 9.725	9.474
18O2 PFHxS	9.499	9.505	9.505	9.510	9.518	9.505	9.504				9.257 - 9.757	9.507
13C4 PFOA	10.586	10.577	10.586	10.586	10.584	10.596	10.586				10.334 - 10.834	10.586
13C4 PFOS	11.543	11.543	11.543	11.535	11.541	11.543	11.552				11.291 - 11.791	11.543
13C5 PFNA	11.561	11.561	11.561	11.553	11.559	11.570	11.569				11.309 - 11.809	11.562
13C2 PFDA	12.393	12.383	12.393	12.393	12.396	12.393	12.393				12.142 - 12.642	12.392
13C8 FOSA	12.994	13.004	13.004	13.004	12.998	13.004	12.994				12.751 - 13.251	13.000
13C2 PFUnA	13.094	13.094	13.094	13.094	13.091	13.102	13.093				12.843 - 13.343	13.095
13C2 PFDoA	13.685	13.676	13.685	13.685	13.684	13.685	13.694				13.433 - 13.933	13.685
13C2-PFTeDA	14.615	14.602	14.609	14.609	14.604	14.609	14.615				14.358 - 14.858	14.609
13C2-PFHxDA	15.214	15.200	15.205	15.199	15.199	15.200	15.204				14.953 - 15.453	15.203

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1 Analy Batch No.: 111859

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/28/2016 13:56 Calibration End Date: 05/28/2016 19:41 Calibration ID: 21828

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-111859/2	28MAY2016A6A_003.d
Level 2	STD 320-111859/3	28MAY2016A6A_004.d
Level 3	STD 320-111859/4	28MAY2016A6A_005.d
Level 4	STD 320-111859/5	28MAY2016A6A_006.d
Level 5	STD 320-111859/6	28MAY2016A6A_007.d
Level 6	STD 320-111859/10	28MAY2016A6A_011.d
Level 7	STD 320-111859/11	28MAY2016A6A_012.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 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	25921 22592	27346 20601	25850 18422	26383	Ave		23873.6514				14.2		50.0			
13C5-PFPeA	57695 57146	63659 47447	58811 39168	57427	Ave		54479.0114				15.2		50.0			
13C2 PFHxA	62996 58257	67716 49982	62984 43925	62629	Ave		58355.5029				14.5		50.0			
13C4-PFHpA	67058 63301	71757 49885	71809 42603	67489	Ave		61986.1343				18.3		50.0			
18O2 PFHxS	30830 29062	33079 23793	31556 19842	31685	Ave		28549.4624				17.1		50.0			
13C4 PFOA	81187 64505	82654 50078	75850 43270	73928	Ave		67353.0857				22.9		50.0			
13C4 PFOS	39944 34820	42535 28239	40183 23007	37320	Ave		35149.7908				20.2		50.0			
13C5 PFNA	70225 63801	72535 48106	67254 41306	71016	Ave		62034.7171				19.9		50.0			
13C2 PFDA	54351 48805	58945 40482	57792 32432	55657	Ave		49780.6914				20.0		50.0			
13C8 FOSA	116810 106764	134408 96250	127985 79030	122232	Ave		111925.606				17.3		50.0			
13C2 PFUnA	78044 66811	84545 56671	79228 46951	75995	Ave		69749.2943				19.6		50.0			
13C2 PFDoA	90231 79234	101863 68113	93415 62339	86895	Ave		83155.5886				17.0		50.0			
13C2-PFTeDA	78434 72642	84816 66913	81602 56664	78529	Ave		74228.7457				13.1		50.0			
13C2-PFHxDA	122698 119125	130918 103428	122655 95177	123808	Ave		116829.777				10.9		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.: 320-19022-1 Analy Batch No.: 111859

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/28/2016 13:56 Calibration End Date: 05/28/2016 19:41 Calibration ID: 21828

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	+++++ 35050	34507 30102	37067	37051	37511	AveID		1.5160				11.5		35.0			
Perfluoropentanoic acid (PFPeA)	86722 54596	83015 46076	67911	63880	65821	AveID		1.2219				11.3		35.0			
Perfluorobutanesulfonic acid (PFBS)	38704 32013	38320 28747	39105	34921	36970	AveID		1.2602				9.1		50.0			
Perfluorohexanoic acid (PFHxA)	63732 58233	67663 51013	72900	65111	69013	AveID		1.1027				7.4		35.0			
Perfluoroheptanoic acid (PFHpA)	+++++ 58921	140457 51604	90174	72506	73744	L1ID	0.5448	1.1915							0.9990		0.9900
Perfluorohexanesulfonic acid (PFHxS)	31548 22127	26484 18502	28389	26157	28795	AveID		0.9146				8.9		35.0			
Perfluorooctanoic acid (PFOA)	70072 52607	85957 45646	81590	70373	69629	AveID		1.0165				7.9		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	+++++ 23561	25977 18849	32233	29577	28601	AveID		0.7801				10.8		50.0			
Perfluorooctanesulfonic acid (PFOS)	+++++ 36173	44626 29881	55829	44270	46240	AveID		1.2554				9.6		35.0			
Perfluorononanoic acid (PFNA)	+++++ 41505	58658 37135	59738	52047	55765	AveID		0.8443				7.5		35.0			
Perfluorodecanoic acid (PFDA)	82176 49588	72848 43863	75965	64472	65900	AveID		1.3069				8.8		35.0			
Perfluorooctane Sulfonamide (FOSA)	+++++ 78980	94333 69758	107760	86344	96345	AveID		0.8093				10.7		35.0			
Perfluorodecanesulfonic acid (PFDS)	22871 22387	27464 18208	33840	32635	33324	L1ID	-0.051	0.8070							0.9970		0.9900
Perfluoroundecanoic acid (PFUnA)	+++++ 56245	125195 48384	94857	74387	72921	L2ID	0.4629	1.0300							0.9970		0.9900
Perfluorododecanoic acid (PFDoA)	61484 60089	74884 52718	75807	71289	70161	AveID		0.8088				9.4		35.0			
Perfluorotridecanoic Acid (PFTriA)	116262 71474	108908 61399	122047	99986	92945	AveID		1.1460				10.6		50.0			
Perfluorotetradecanoic acid (PFTeA)	166074 63427	128745 53904	90626	73242	74265	L2ID	0.4631	0.8761							0.9960		0.9900
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 107310	291704 92385	160664	130657	134820	L2ID	1.3220	1.5262							0.9960		0.9900
Perfluoro-n-octandecanoic acid (PFODA)	138978 114733	122791 116142	129321	119191	135866	AveID		1.5377				15.0		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1 Analy Batch No.: 111859

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/28/2016 13:56 Calibration End Date: 05/28/2016 19:41 Calibration ID: 21828

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-111859/2	28MAY2016A6A_003.d
Level 2	STD 320-111859/3	28MAY2016A6A_004.d
Level 3	STD 320-111859/4	28MAY2016A6A_005.d
Level 4	STD 320-111859/5	28MAY2016A6A_006.d
Level 5	STD 320-111859/6	28MAY2016A6A_007.d
Level 6	STD 320-111859/10	28MAY2016A6A_011.d
Level 7	STD 320-111859/11	28MAY2016A6A_012.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4 PFBA	Ave	1296043 1030072	1367288 921081	1292505	1319168	1129621	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	2884762 2372336	3182936 1958386	2940572	2871357	2857305	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	3149793 2499100	3385798 2196254	3149210	3131441	2912830	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	3352885 2494258	3587871 2130133	3590466	3374470	3165064	50.0 50.0	50.0 50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	1458256 1125402	1564640 938514	1492582	1498717	1374616	47.3 47.3	47.3 47.3	47.3	47.3	47.3
13C4 PFOA	Ave	4059325 2503906	4132713 2163488	3792495	3696388	3225265	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	1909302 1349842	2033174 1099749	1920727	1783907	1664419	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	3511246 2405278	3626734 2065307	3362723	3550811	3190052	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDA	Ave	2717556 2024121	2947259 1621605	2889575	2782870	2440256	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	5840499 4812502	6720392 3951484	6399261	6111613	5338211	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	3902187 2833534	4227249 2347573	3961419	3799760	3340531	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	4511545 3405671	5093128 3116941	4670748	4344747	3961676	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	3921714 3345667	4240820 2833190	4080123	3926467	3632080	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	6134883 5171420	6545892 4758827	6132732	6190424	5956244	50.0 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.: 320-19022-1 Analy Batch No.: 111859

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/28/2016 13:56 Calibration End Date: 05/28/2016 19:41 Calibration ID: 21828

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-111859/2	28MAY2016A6A_003.d
Level 2	STD 320-111859/3	28MAY2016A6A_004.d
Level 3	STD 320-111859/4	28MAY2016A6A_005.d
Level 4	STD 320-111859/5	28MAY2016A6A_006.d
Level 5	STD 320-111859/6	28MAY2016A6A_007.d
Level 6	STD 320-111859/10	28MAY2016A6A_011.d
Level 7	STD 320-111859/11	28MAY2016A6A_012.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	+++++ 7009910	34507 12040963	185334	741026	1875570	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	43361 10919228	83015 18430262	339555	1277608	3291069	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	17107 5659839	33875 10165048	172844	617407	1634091	0.442 177	0.884 354	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	31866 11646564	67663 20405381	364501	1302223	3450640	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		L1ID	+++++ 11784227	140457 20641461	450868	1450124	3687199	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	14922 4186378	25054 7001101	134280	494894	1361989	0.473 189	0.946 378	4.73	18.9	47.3
Perfluorooctanoic acid (PFOA)		AveID	35036 10521352	85957 18258509	407952	1407454	3481430	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	+++++ 4485928	24730 7177688	153430	563150	1361416	+++++ 190	0.952 381	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	+++++ 6916291	42662 11426654	266861	846435	2210260	+++++ 191	0.956 382	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		AveID	+++++ 8301026	58658 14853862	298691	1040937	2788226	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecanoic acid (PFDA)		AveID	41088 9917621	72848 17545327	379826	1289431	3294984	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	+++++ 15796057	94333 27903019	538799	1726883	4817228	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecanesulfonic acid (PFDS)		L1ID	11024 4316122	26475 7020978	163110	629202	1606213	0.482 193	0.964 386	4.82	19.3	48.2
Perfluoroundecanoic acid (PFUnA)		L2ID	+++++ 11249044	125195 19353671	474285	1487744	3646070	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	30742 12017863	74884 21087337	379036	1425770	3508060	0.500 200	1.00 400	5.00	20.0	50.0

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1 Analy Batch No.: 111859

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/28/2016 13:56 Calibration End Date: 05/28/2016 19:41 Calibration ID: 21828

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorotridecanoic Acid (PFTriA)		AveID	58131 14294825	108908 24559689	610235	1999729	4647252	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		L2ID	83037 12685494	128745 21561674	453131	1464843	3713233	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 21462072	291704 36953897	803321	2613147	6740979	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-octandecanoic acid (PFODA)		AveID	69489 22946617	122791 46456813	646607	2383815	6793291	0.500 200	1.00 400	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L1ID = Linear 1/conc IsoDil
L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_003.d
Lims ID: Std L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 28-May-2016 13:56:43 ALS Bottle#: 9 Worklist Smp#: 2
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L1
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:00 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 29-May-2016 15:03:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.797	5.796	0.001		1296043	54.3		109	8578	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.799	0.001	1.000	12057	0.3068		61.4	1007	
D 3 13C5-PFPeA										
267.9 > 223.0	6.960	6.958	0.002		2884762	53.0		106	6978	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.960	6.960	0.0	1.000	43361	0.6151		123	7.1	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.088	7.086	0.002	1.000	17107	0.4403		99.6		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.088	7.086	0.002	1.000	17107	NC			11.4	
298.9 > 99.0	7.085	7.086	-0.001	0.999	7451		2.30(0.00-0.00)		14.7	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.236	8.235	0.001	1.000	31866	0.4587		91.7	1031	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.237	-0.001		3149793	54.0		108	9986	
D 8 13C4-PFHpA										
367.0 > 322.0	9.469	9.475	-0.006		3352885	54.1		108	9010	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.469	9.477	-0.008	1.000	41905	0.0673		13.5	639	
D 11 18O2 PFHxS										
403.0 > 84.0	9.499	9.507	-0.008		1458256	51.1		108	6391	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.499	9.507	-0.008	1.000	14922	NC			216	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.499	9.507	-0.008	1.000	14922	0.5292		112		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.584	0.002		4059325	60.3		121	107502	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.586	10.584	0.002	1.000	35036	0.4245		84.9	20.2	
413.0 > 169.0	10.586	10.584	0.002	1.000	12236		2.86(0.00-0.00)	84.9	22.7	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.604	10.593	0.011	1.000	6854	NC			479	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.604	10.593	0.011	1.000	6854	0.2200		46.2		
D 16 13C4 PFOS										
503.0 > 80.0	11.543	11.541	0.002		1909302	54.3		114	45538	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.560	11.545	0.015	1.000	24436	0.4873		102	852	
499.0 > 99.0	11.543	11.545	-0.002	0.999	8094		3.02(0.00-0.00)	102	591	
D 17 13C5 PFNA										
468.0 > 423.0	11.561	11.559	0.002		3511246	56.6		113	15003	
18 Perfluorononanoic acid										
463.0 > 419.0	11.569	11.561	0.008	1.000	25485	0.4298		86.0	210	
D 19 13C2 PFDA										
515.0 > 470.0	12.393	12.392	0.001		2717556	54.6		109	165177	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.393	12.392	0.001	1.000	41088	0.5784		116	2553	
D 23 13C8 FOSA										
506.0 > 78.0	12.994	13.001	-0.007		5840499	52.2		104	1778	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.004	13.003	0.001	1.000	44329	0.4689		93.8	2941	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.041	13.047	-0.006	1.000	11024	0.4051		84.0		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.041	13.047	-0.006	1.000	11024	NC			818	
D 26 13C2 PFUnA										
565.0 > 520.0	13.094	13.093	0.001		3902187	55.9		112	61810	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.094	13.093	0.001	1.000	63507	0.3407		68.1	4489	
D 28 13C2 PFDoA										
615.0 > 570.0	13.685	13.683	0.002		4511545	54.3		109	17639	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.685	13.683	0.002	1.000	30742	0.4212		84.2	48.0	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	58131	0.5622		112	48.5	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.615	14.608	0.007		3921714	52.8		106	14707	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.608	0.007	1.000	83037	0.5218		104	24.5	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.214	15.203	0.011		6134883	52.5		105	8626	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.214	15.203	0.011	1.000	208523	0.6480		130	242	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.476	15.473	0.003	1.000	69489	0.5008		100	54.6	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L1_00019 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:01 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_003.d

Injection Date: 28-May-2016 13:56:43 Instrument ID: A6

Lims ID: Std L1

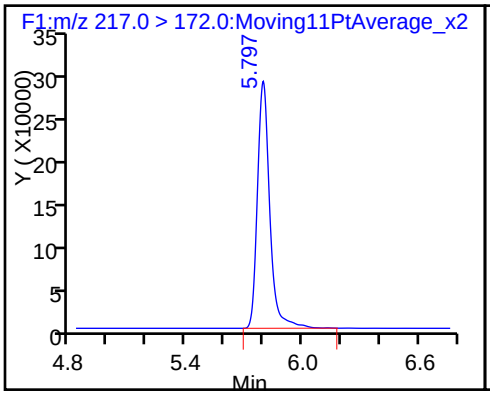
Client ID:

Operator ID: JRB ALS Bottle#: 9 Worklist Smp#: 2

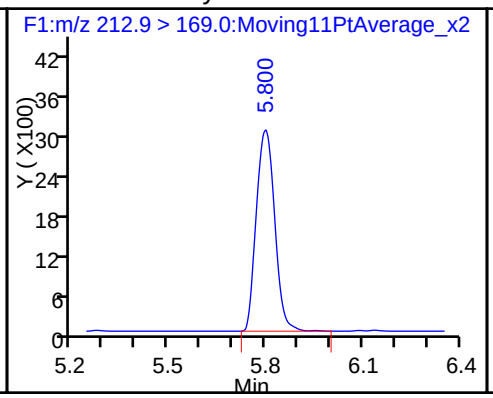
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

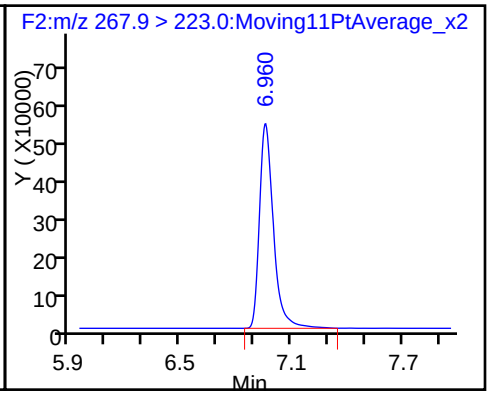
D 1 13C4 PFBA



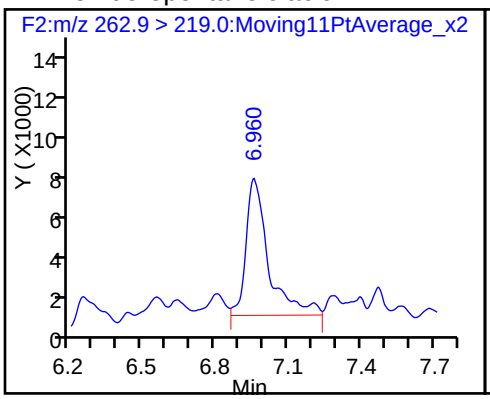
2 Perfluorobutyric acid



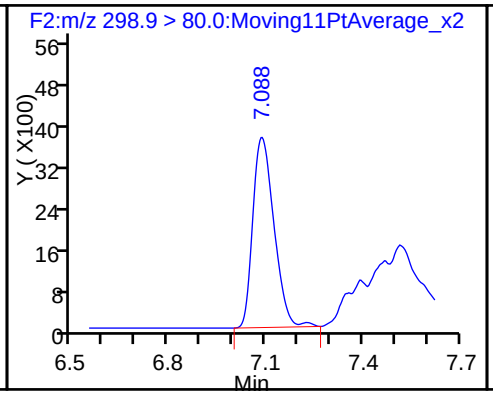
D 3 13C5-PFPeA



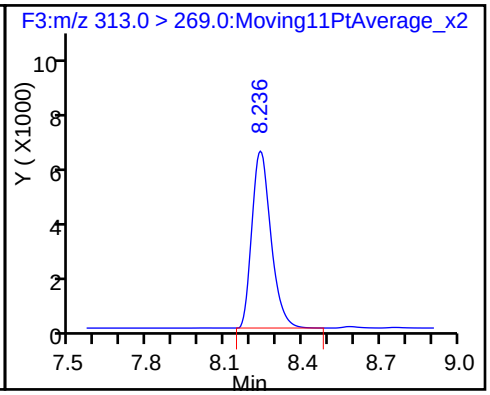
4 Perfluoropentanoic acid



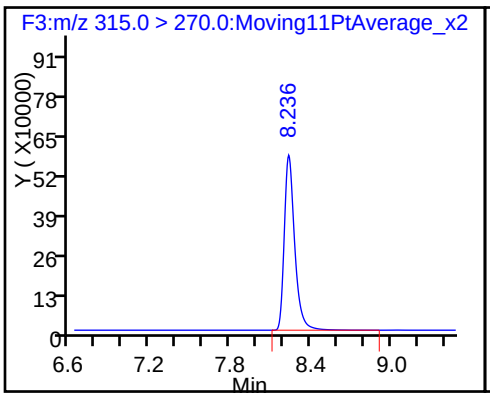
40 Perfluorobutanesulfonic acid



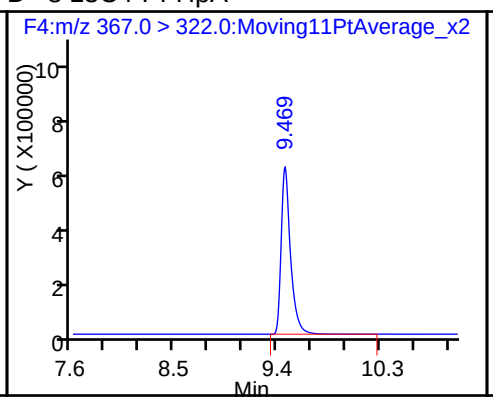
7 Perfluorohexanoic acid



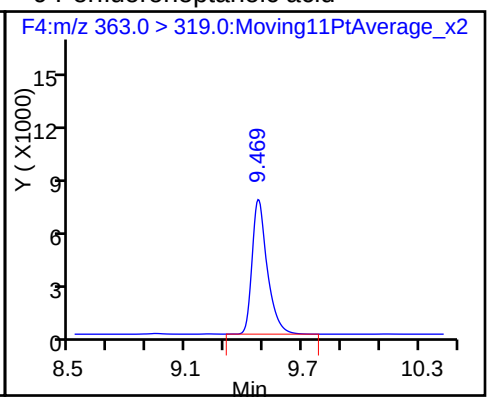
D 6 13C2 PFHxA



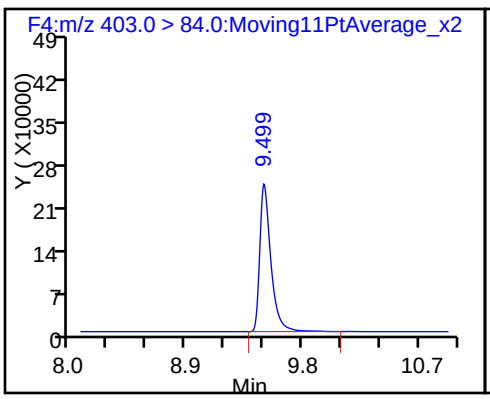
D 8 13C4-PFHpA



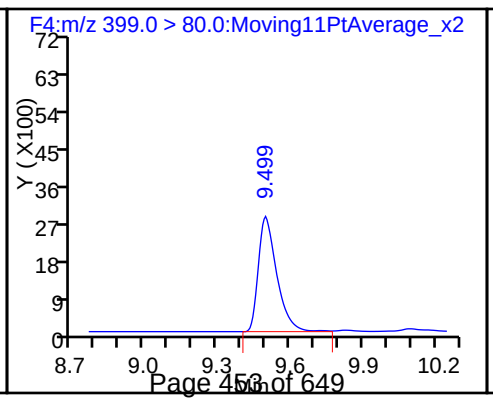
9 Perfluoroheptanoic acid



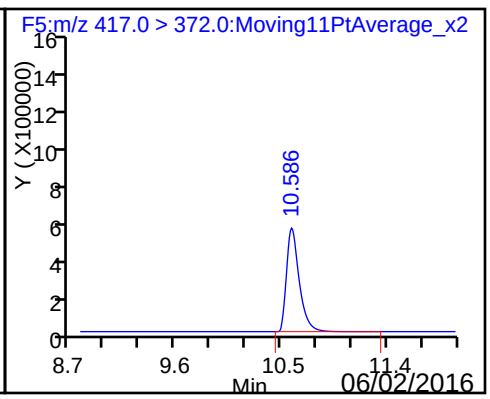
D 11 18O2 PFHxS



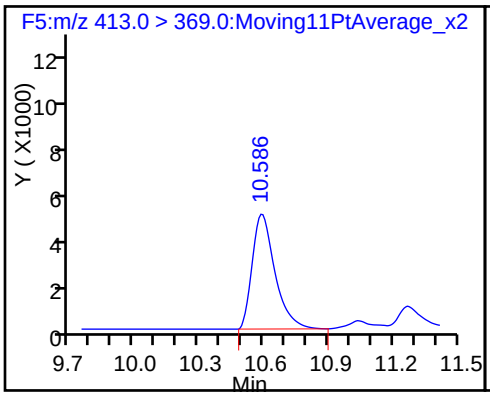
41 Perfluorohexanesulfonic acid



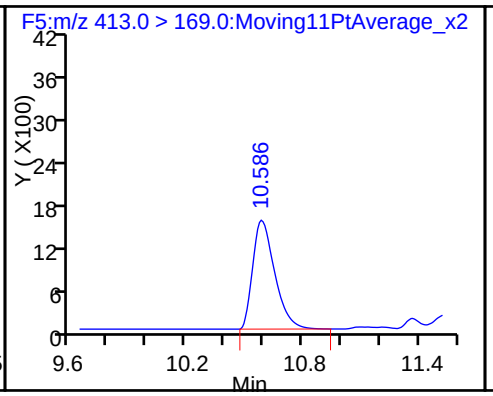
D 12 13C4 PFOA



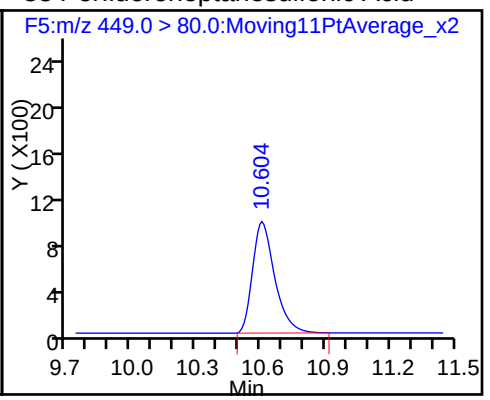
13 Perfluorooctanoic acid



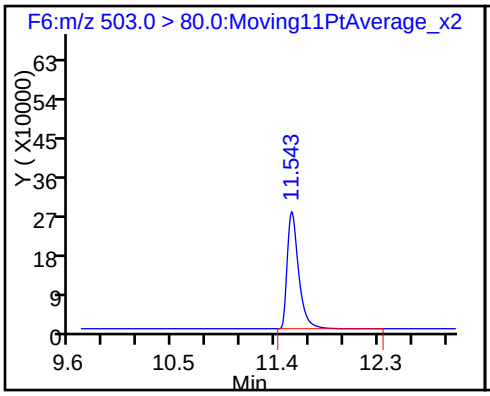
13 Perfluorooctanoic acid



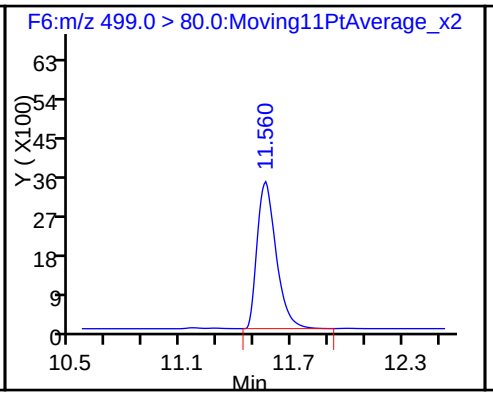
38 Perfluoroheptanesulfonic Acid



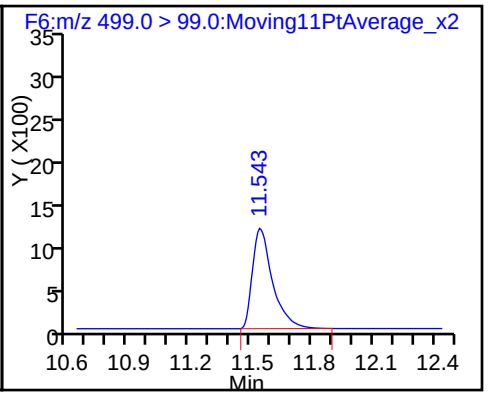
D 16 13C4 PFOS



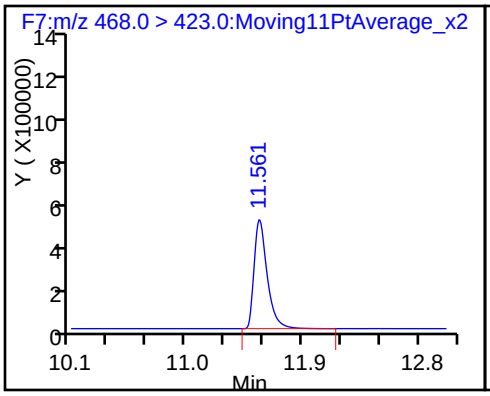
15 Perfluorooctane sulfonic acid



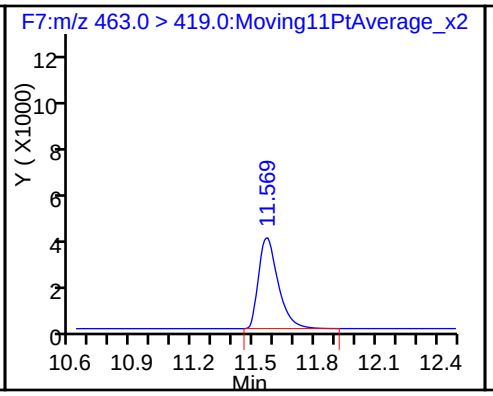
15 Perfluorooctane sulfonic acid



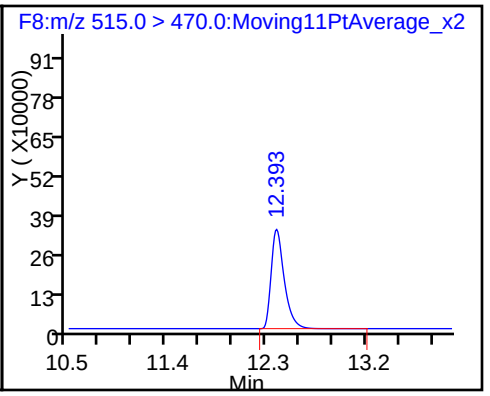
D 17 13C5 PFNA



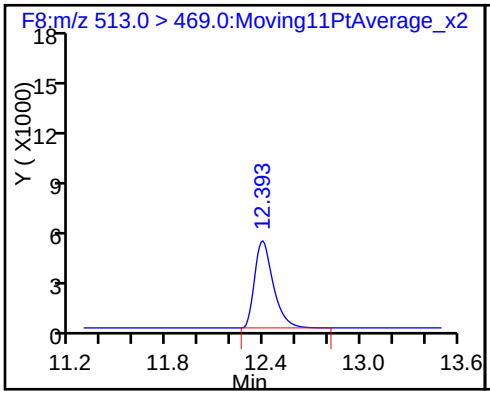
18 Perfluorononanoic acid



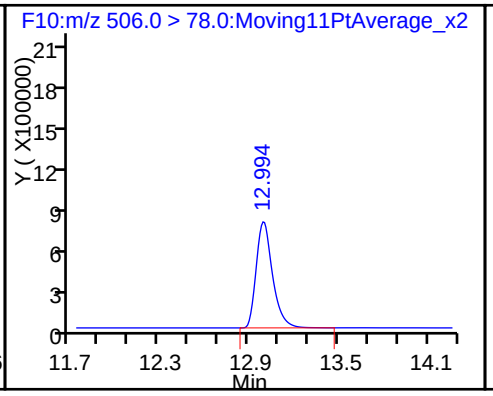
D 19 13C2 PFDA



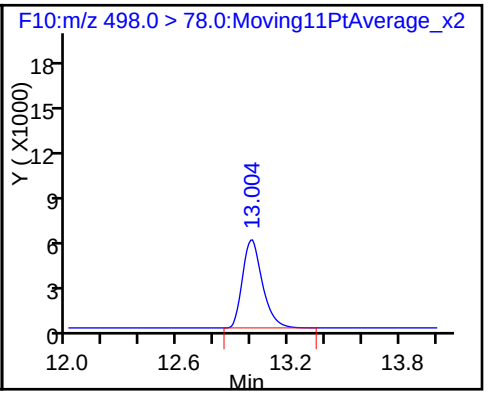
20 Perfluorodecanoic acid



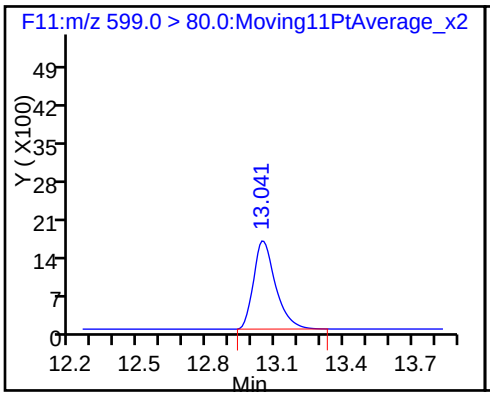
D 23 13C8 FOSA



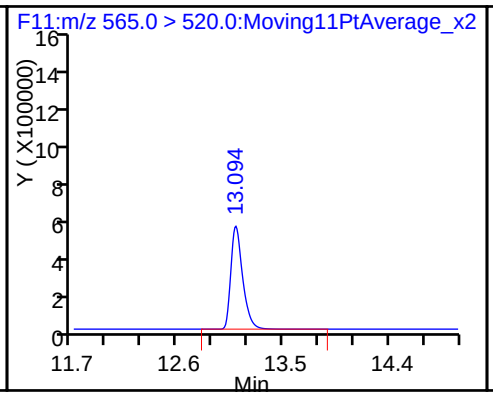
24 Perfluorooctane Sulfonamide



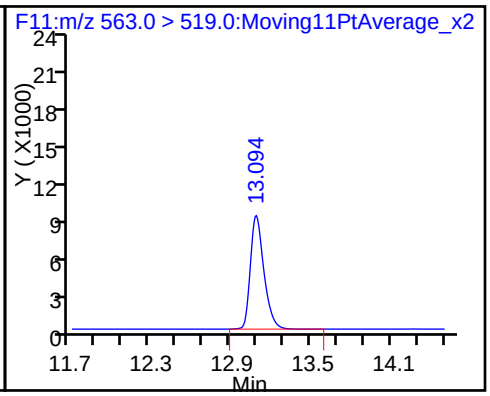
39 Perfluorodecane Sulfonic acid



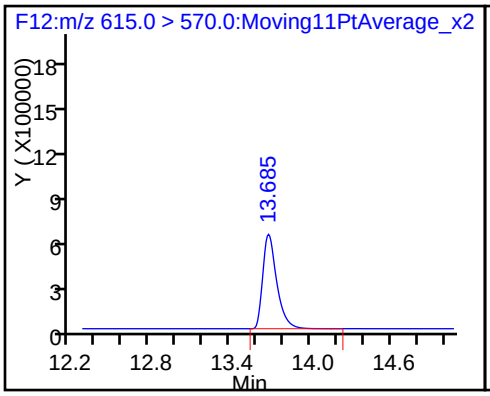
D 26 13C2 PFUnA



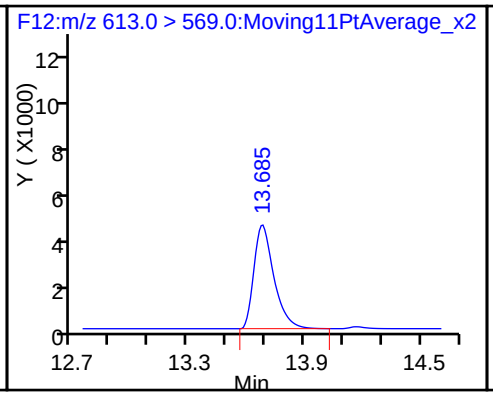
27 Perfluoroundecanoic acid



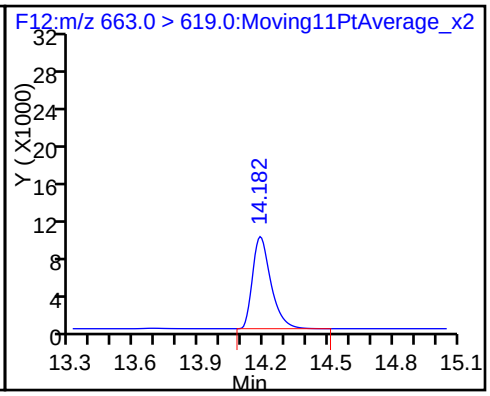
D 28 13C2 PFDoA



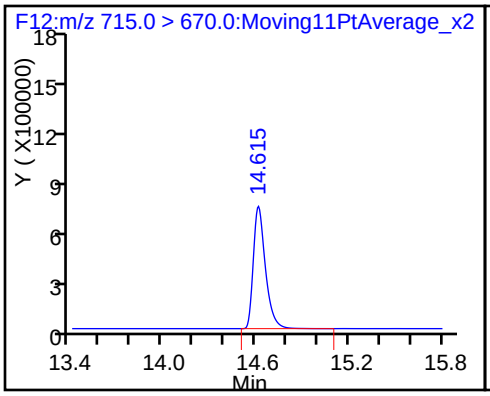
29 Perfluorododecanoic acid



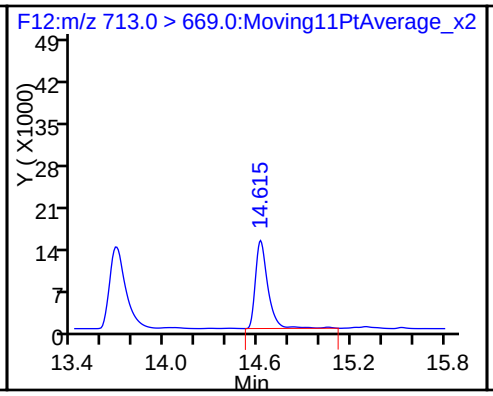
30 Perfluorotridecanoic acid



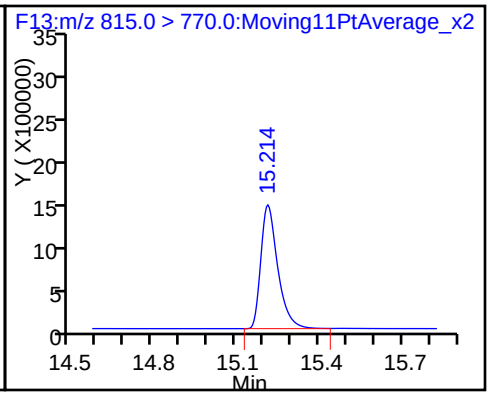
D 33 13C2-PFTeDA



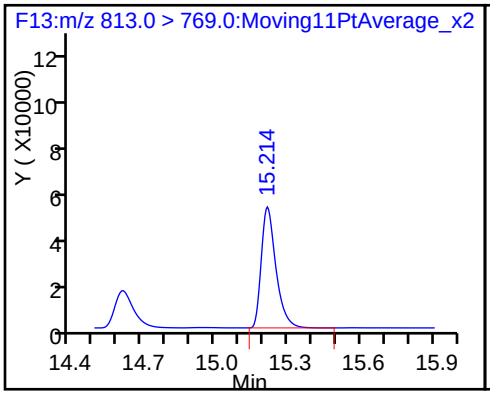
32 Perfluorotetradecanoic acid



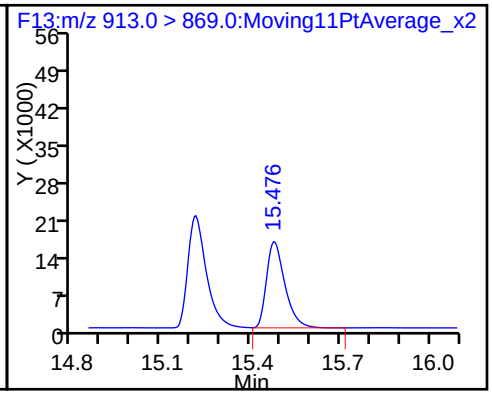
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_004.d
Lims ID: Std L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 28-May-2016 14:17:58 ALS Bottle#: 10 Worklist Smp#: 3
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L2
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:04 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.796	-0.002		1367288	57.3		115	43220	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.799	0.001	1.000	34507	0.8324		83.2	1559	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.958	-0.003		3182936	58.4		117	4413	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.960	6.960	0.0	1.000	83015	1.07		107	14.5	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.085	7.086	-0.001	1.000	33875	0.8126		91.9		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.085	7.086	-0.001	1.000	33875	NC			15.2	
298.9 > 99.0	7.085	7.086	-0.001	1.000	13100		2.59(0.00-0.00)		28.0	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.230	8.235	-0.005	1.000	67663	0.9061		90.6	6376	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.237	-0.001		3385798	58.0		116	9389	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.475	0.0		3587871	57.9		116	51631	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.477	-0.002	1.000	140457	1.19		119	2493	
D 11 18O2 PFHxS										
403.0 > 84.0	9.505	9.507	-0.002		1564640	54.8		116	3091	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.510	9.507	0.003	1.000	25054	NC			159	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.510	9.507	0.003	1.000	25054	0.8281		87.5		
D 12 13C4 PFOA										
417.0 > 372.0	10.577	10.584	-0.007		4132713	61.4		123	91201	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.577	10.584	-0.007	1.000	85957	1.02		102	68.8	
413.0 > 169.0	10.586	10.584	0.002	1.001	32556		2.64(0.00-0.00)	102	93.0	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.586	10.593	-0.007	1.000	24730	NC			1714	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.586	10.593	-0.007	1.000	24730	0.7453		78.3		
D 16 13C4 PFOS										
503.0 > 80.0	11.543	11.541	0.002		2033174	57.8		121	96334	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.543	11.545	-0.002	1.000	42662	0.7989		83.6	251	
499.0 > 99.0	11.543	11.545	-0.002	1.000	25676		1.66(0.00-0.00)	83.6	469	
D 17 13C5 PFNA										
468.0 > 423.0	11.561	11.559	0.002		3626734	58.5		117	13622	
18 Perfluorononanoic acid										
463.0 > 419.0	11.561	11.561	0.0	1.000	58658	0.9578		95.8	4331	
D 19 13C2 PFDA										
515.0 > 470.0	12.383	12.392	-0.009		2947259	59.2		118	29864	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.383	12.392	-0.009	1.000	72848	0.9456		94.6	4528	
D 23 13C8 FOSA										
506.0 > 78.0	13.004	13.001	0.003		6720392	60.0		120	7091	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.004	13.003	0.001	1.000	94333	0.8672		86.7	1586	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.050	13.047	0.003	1.000	26475	0.8344		86.6		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.050	13.047	0.003	1.000	26475	NC			1823	
D 26 13C2 PFUnA										
565.0 > 520.0	13.094	13.093	0.001		4227249	60.6		121	18844	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.094	13.093	0.001	1.000	125195	0.9883		98.8	6042	
D 28 13C2 PFDoA										
615.0 > 570.0	13.676	13.683	-0.007		5093128	61.2		122	22500	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.676	13.683	-0.007	1.000	74884	0.9089		90.9	84.2	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	108908	0.9329		93.3	88.5	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.602	14.608	-0.006		4240820	57.1		114	12579	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.602	14.608	-0.006	1.000	128745	0.9141		91.4	52.6	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.200	15.203	-0.003		6545892	56.0		112	9201	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.200	15.203	-0.003	1.000	291704	1.01		101	120	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.476	15.473	0.003	1.000	122791	0.7839		78.4	81.1	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:05 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_004.d

Injection Date: 28-May-2016 14:17:58 Instrument ID: A6

Lims ID: Std L2

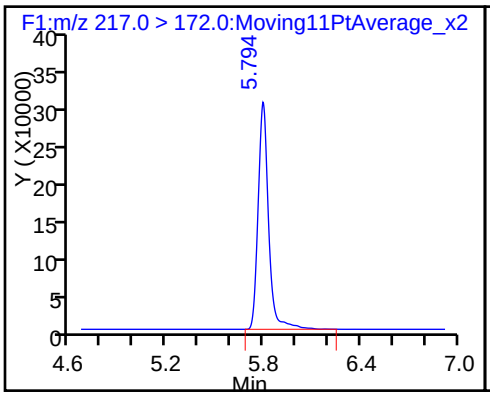
Client ID:

Operator ID: JRB ALS Bottle#: 10 Worklist Smp#: 3

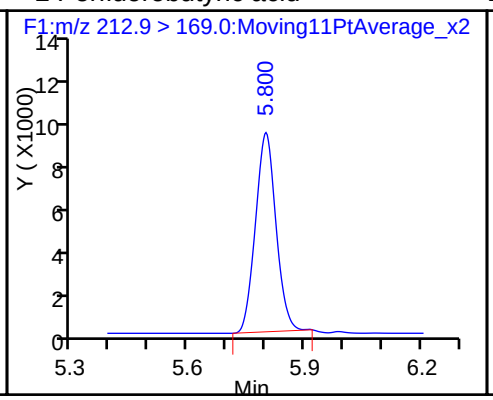
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

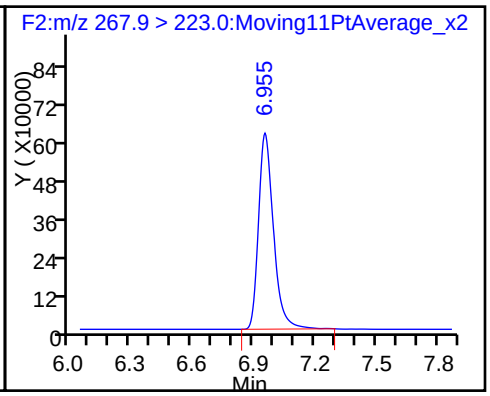
D 1 13C4 PFBA



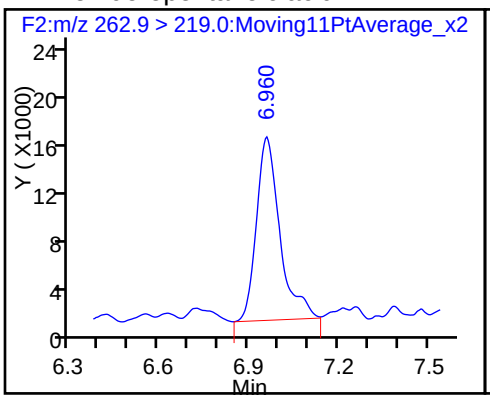
2 Perfluorobutyric acid



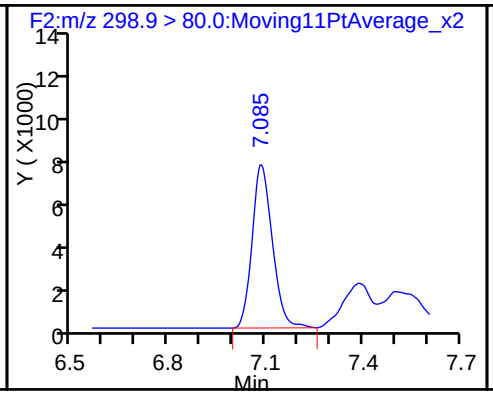
D 3 13C5-PFPeA



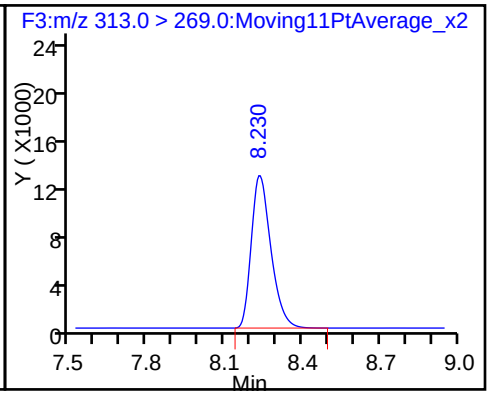
4 Perfluoropentanoic acid



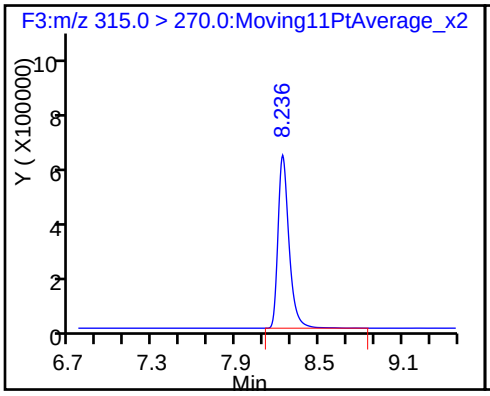
40 Perfluorobutanesulfonic acid



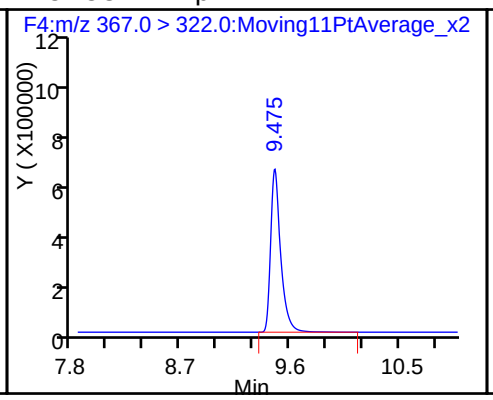
7 Perfluorohexanoic acid



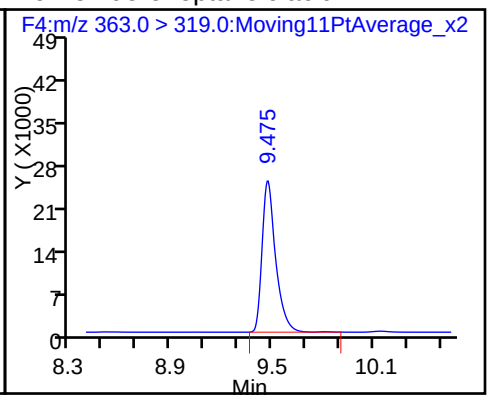
D 6 13C2 PFHxA



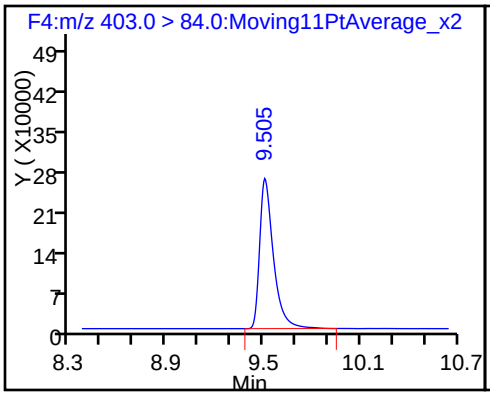
D 8 13C4-PFHpA



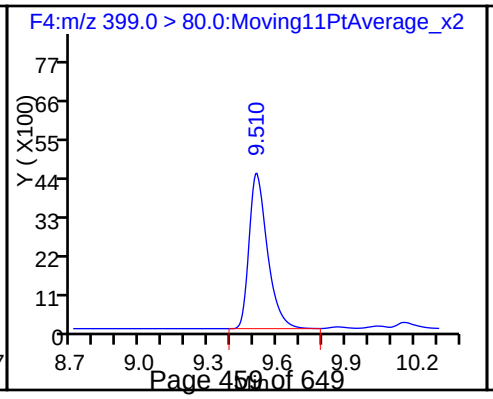
9 Perfluoroheptanoic acid



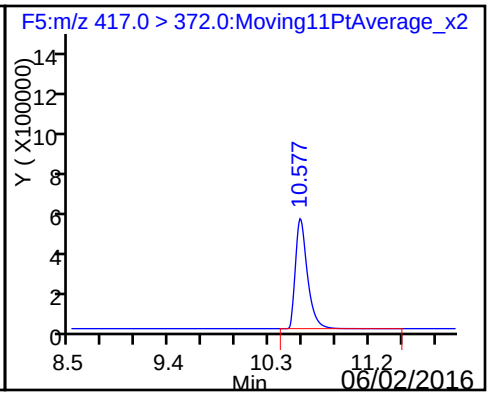
D 11 18O2 PFHxS



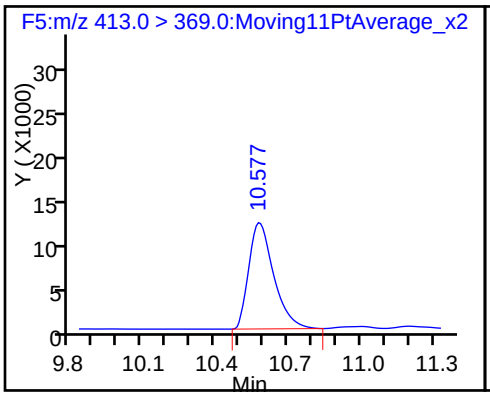
41 Perfluorohexanesulfonic acid



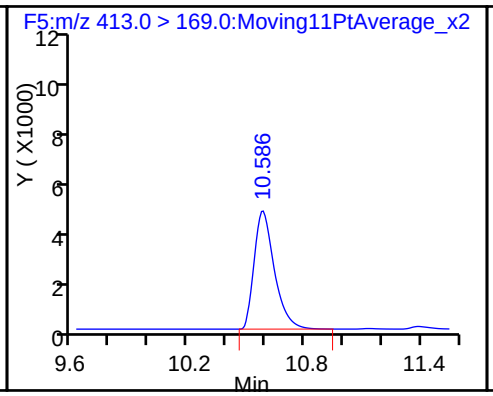
D 12 13C4 PFOA



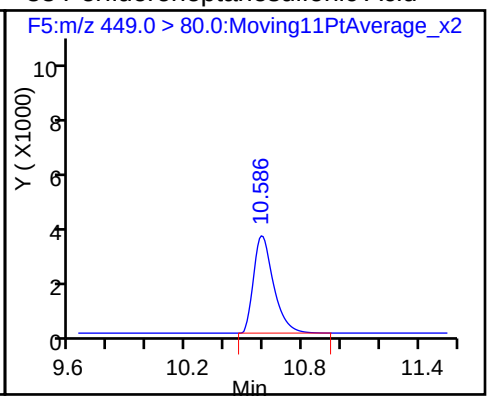
13 Perfluorooctanoic acid



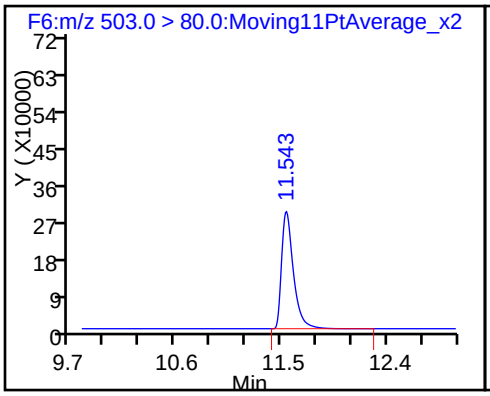
13 Perfluorooctanoic acid



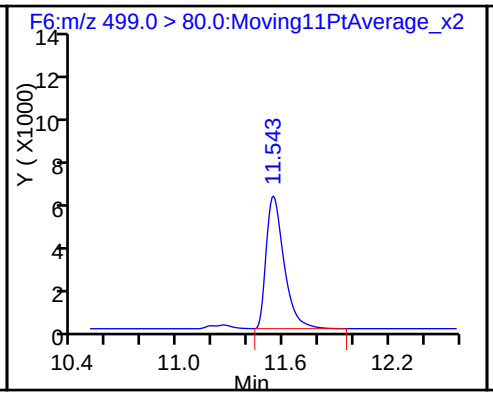
38 Perfluoroheptanesulfonic Acid



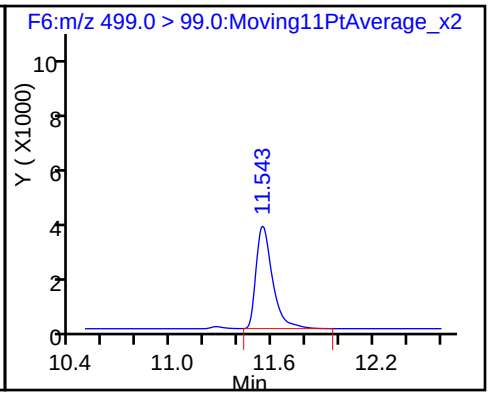
D 16 13C4 PFOS



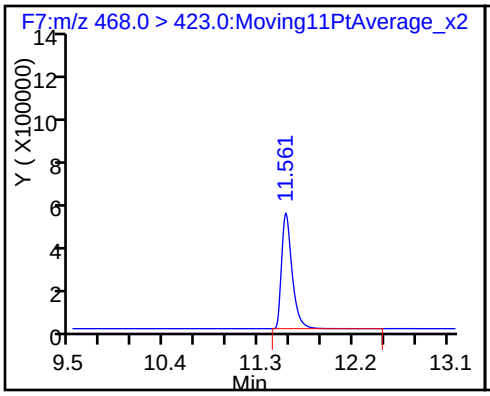
15 Perfluorooctane sulfonic acid



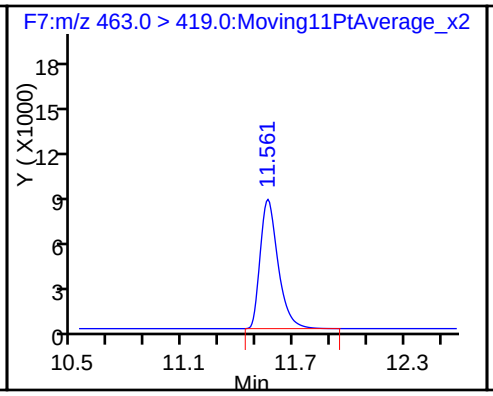
15 Perfluorooctane sulfonic acid



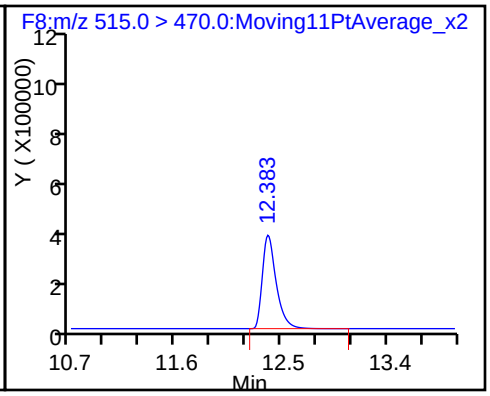
D 17 13C5 PFNA



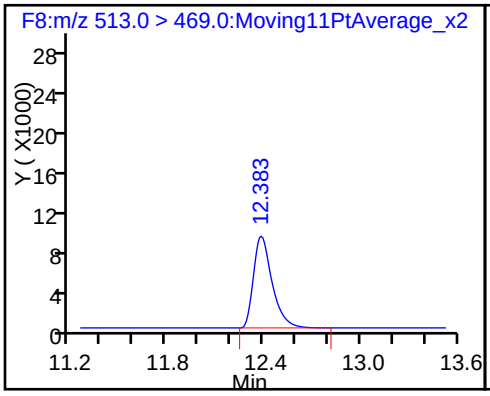
18 Perfluorononanoic acid



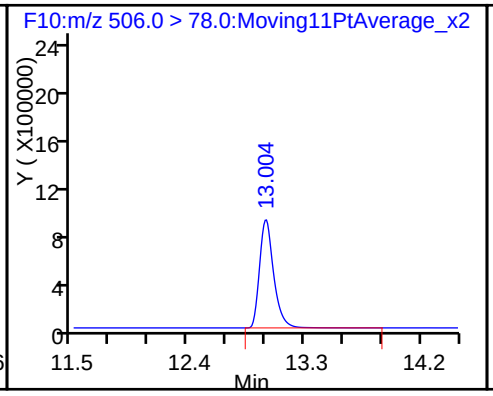
D 19 13C2 PFDA



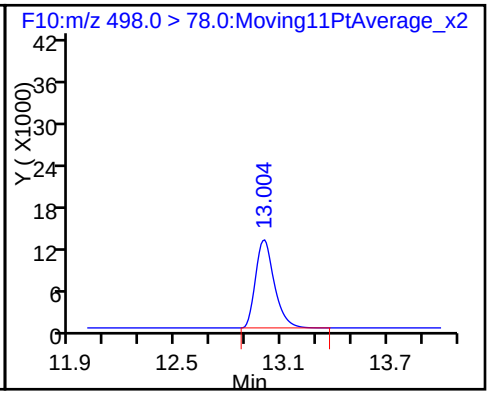
20 Perfluorodecanoic acid



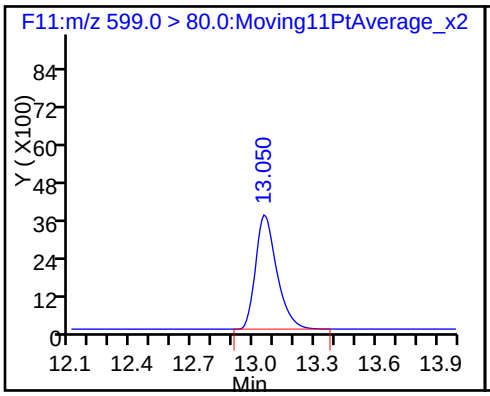
D 23 13C8 FOSA



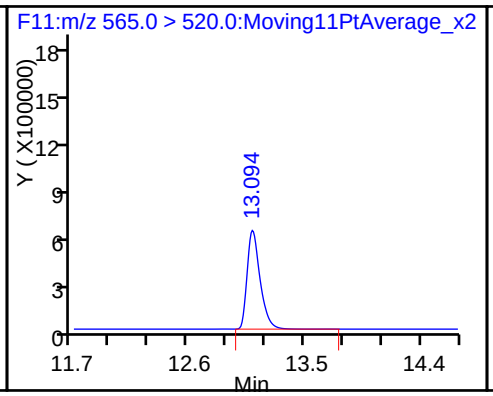
24 Perfluorooctane Sulfonamide



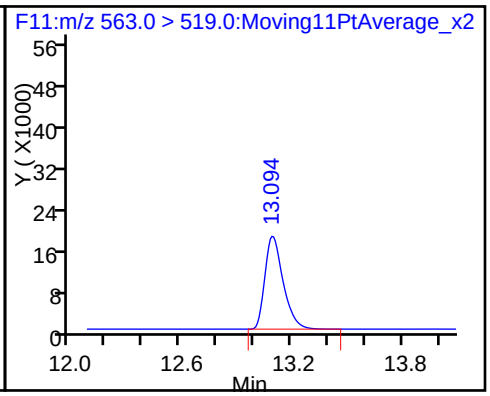
39 Perfluorodecane Sulfonic acid



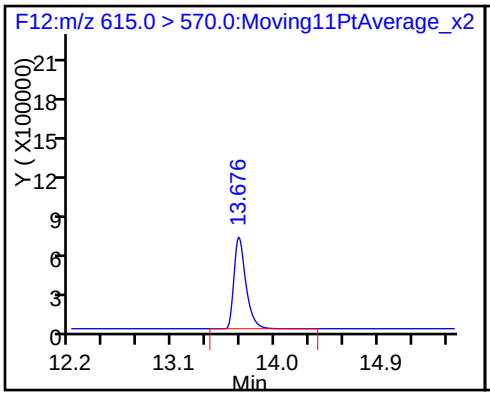
D 26 13C2 PFUnA



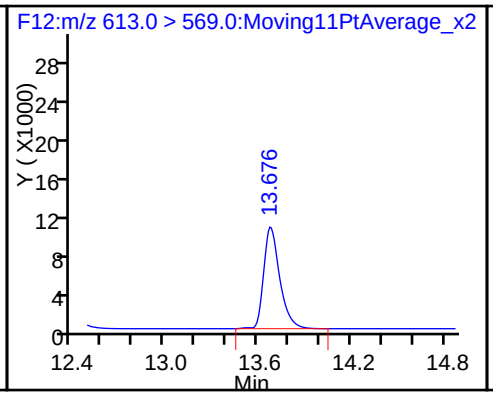
27 Perfluoroundecanoic acid



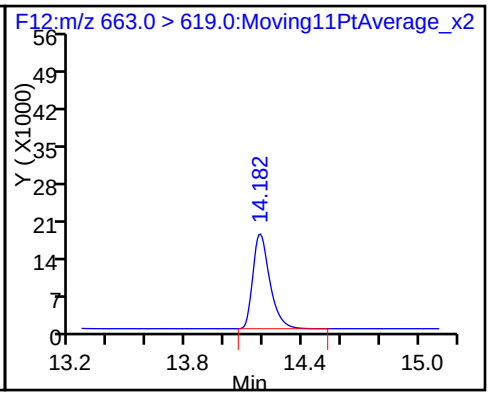
D 28 13C2 PFDoA



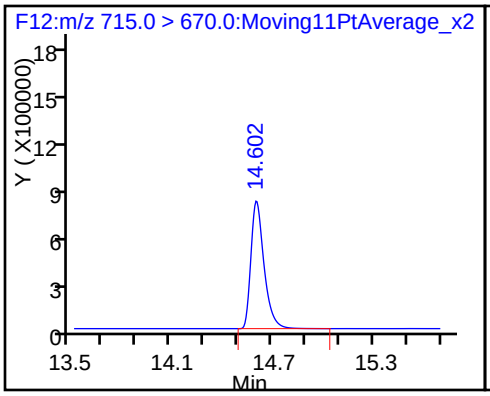
29 Perfluorododecanoic acid



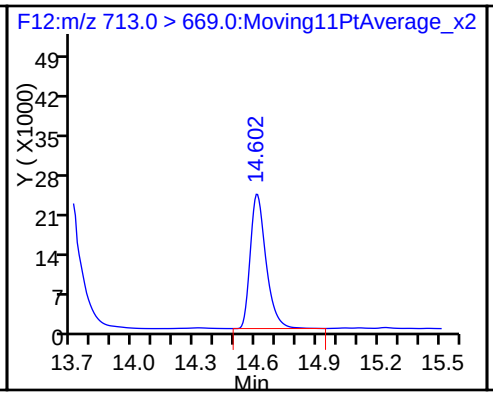
30 Perfluorotridecanoic acid



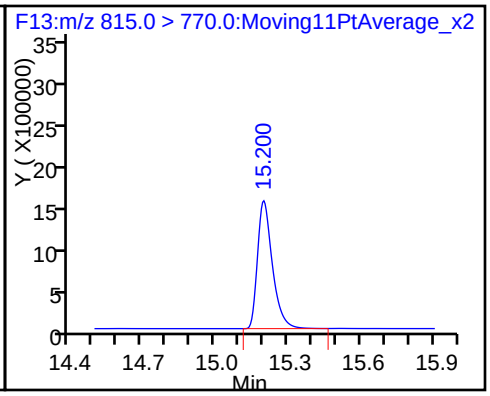
D 33 13C2-PFTeDA



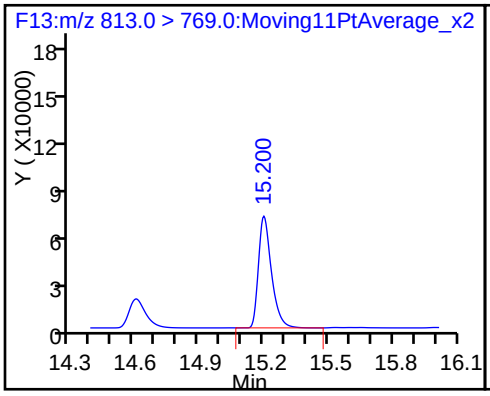
32 Perfluorotetradecanoic acid



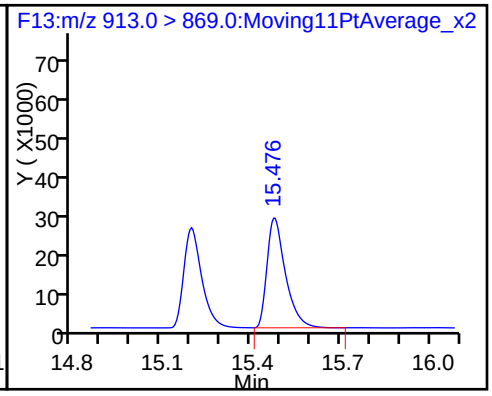
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_005.d
Lims ID: Std L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 28-May-2016 14:39:14 ALS Bottle#: 11 Worklist Smp#: 4
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L3
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:07 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.797	5.796	0.001		1292505	54.1		108	3585	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.799	0.001	1.000	185334	4.73		94.6	1755	
D 3 13C5-PFPeA										
267.9 > 223.0	6.960	6.958	0.002		2940572	54.0		108	56615	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.960	6.960	0.0	1.000	339555	4.73		94.5	84.2	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.088	7.086	0.002	1.000	172844	4.35		98.3		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.088	7.086	0.002	1.000	172844	NC			76.6	
298.9 > 99.0	7.088	7.086	0.002	1.000	79169		2.18(0.00-0.00)		113	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.236	8.235	0.001	1.000	364501	5.25		105	1356	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.237	-0.001		3149210	54.0		108	17417	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.475	0.0		3590466	57.9		116	44472	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.477	-0.002	1.000	450868	4.81		96.2	5580	
D 11 18O2 PFHxS										
403.0 > 84.0	9.505	9.507	-0.002		1492582	52.3		111	81595	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.505	9.507	-0.002	1.000	134280	NC			810	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.505	9.507	-0.002	1.000	134280	4.65		98.4		
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.584	0.002		3792495	56.3		113	70587	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.586	10.584	0.002	1.000	407952	5.29		106	343	
413.0 > 169.0	10.586	10.584	0.002	1.000	146406		2.79(0.00-0.00)	106	124	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.586	10.593	-0.007	1.000	153430	NC			10141	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.586	10.593	-0.007	1.000	153430	4.89		103		
D 16 13C4 PFOS										
503.0 > 80.0	11.543	11.541	0.002		1920727	54.6		114	15236	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.543	11.545	-0.002	1.000	266861	5.29		111	680	
499.0 > 99.0	11.543	11.545	-0.002	1.000	121645		2.19(0.00-0.00)	111	6037	
D 17 13C5 PFNA										
468.0 > 423.0	11.561	11.559	0.002		3362723	54.2		108	43320	
18 Perfluorononanoic acid										
463.0 > 419.0	11.561	11.561	0.0	1.000	298691	5.26		105	21314	
D 19 13C2 PFDA										
515.0 > 470.0	12.393	12.392	0.001		2889575	58.0		116	12176	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.393	12.392	0.001	1.000	379826	5.03		101	23061	
D 23 13C8 FOSA										
506.0 > 78.0	13.004	13.001	0.003		6399261	57.2		114	6677	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.004	13.003	0.001	1.000	538799	5.20		104	23527	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.050	13.047	0.003	1.000	163110	5.09		106		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.050	13.047	0.003	1.000	163110	NC			11323	
D 26 13C2 PFUnA										
565.0 > 520.0	13.094	13.093	0.001		3961419	56.8		114	46839	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.094	13.093	0.001	1.000	474285	5.36		107	13634	
D 28 13C2 PFDoA										
615.0 > 570.0	13.685	13.683	0.002		4670748	56.2		112	23598	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.685	13.683	0.002	1.000	379036	5.02		100	439	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	610235	5.70		114	279	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.609	14.608	0.001		4080123	55.0		110	15309	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.609	14.608	0.001	1.000	453131	5.01		100	189	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.205	15.203	0.002		6132732	52.5		105	7942	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.205	15.203	0.002	1.000	803321	4.77		95.4	740	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.471	15.473	-0.002	1.000	646607	4.50		90.0	477	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L3_00017 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:08 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_005.d

Injection Date: 28-May-2016 14:39:14 Instrument ID: A6

Lims ID: Std L3

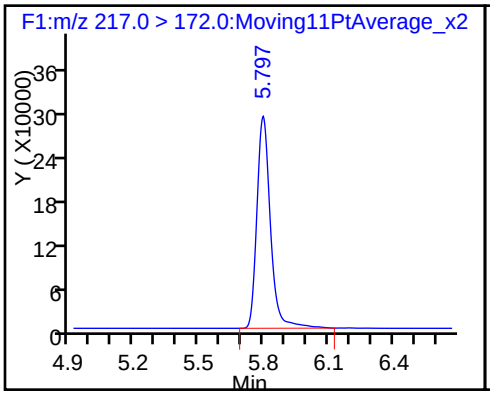
Client ID:

Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 4

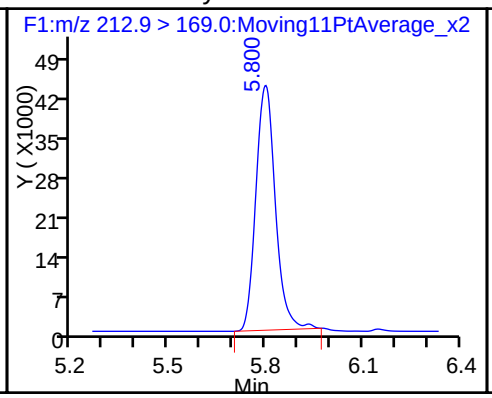
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

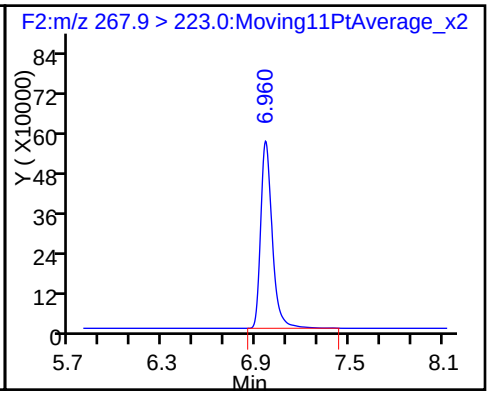
D 1 13C4 PFBA



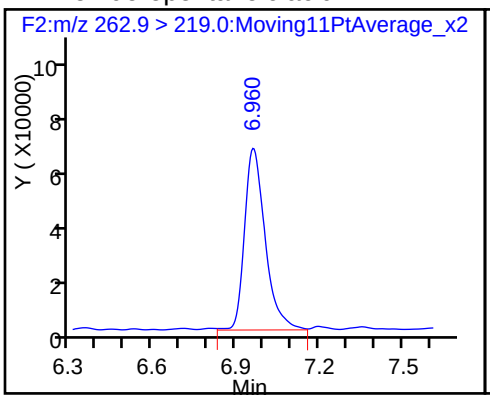
2 Perfluorobutyric acid



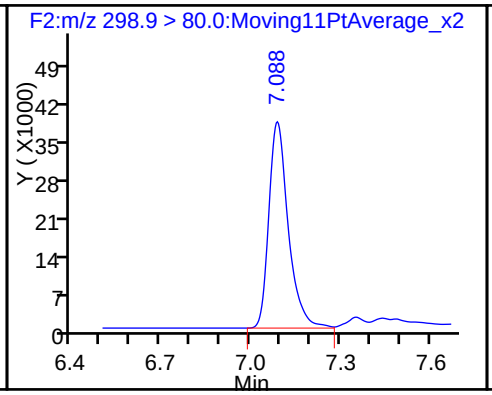
D 3 13C5-PFPeA



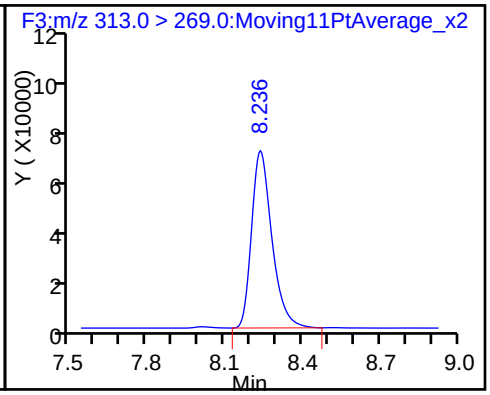
4 Perfluoropentanoic acid



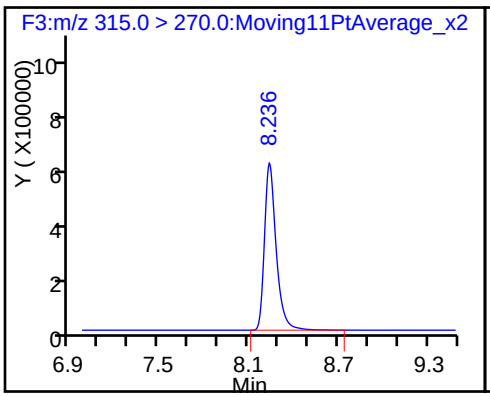
40 Perfluorobutanesulfonic acid



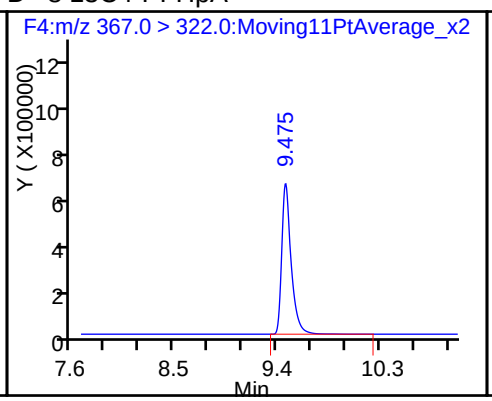
7 Perfluorohexanoic acid



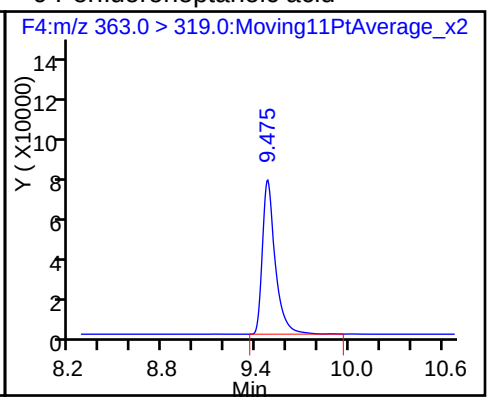
D 6 13C2 PFHxA



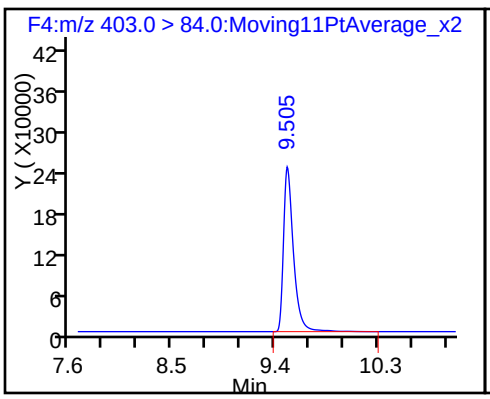
D 8 13C4-PFHpA



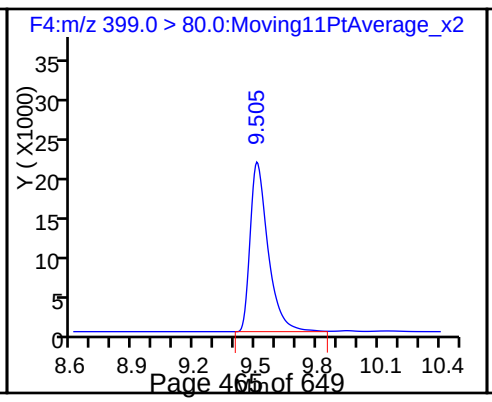
9 Perfluoroheptanoic acid



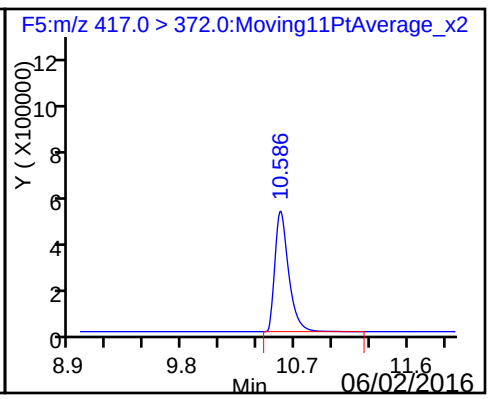
D 11 18O2 PFHxS



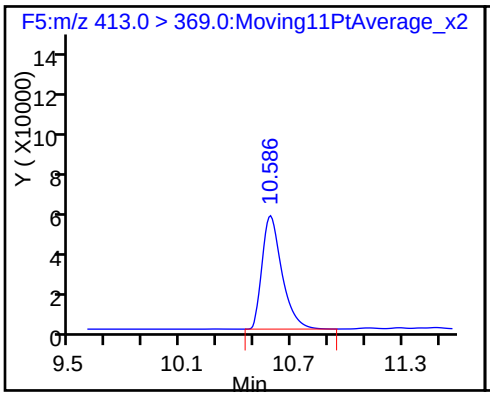
41 Perfluorohexanesulfonic acid



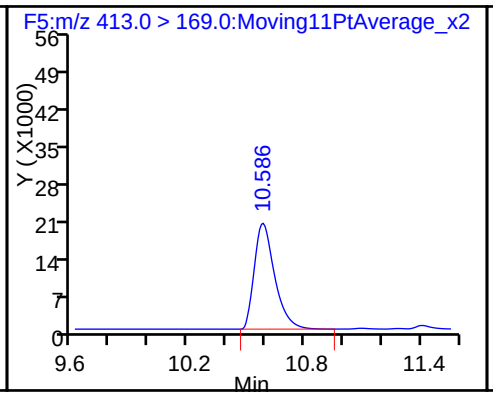
D 12 13C4 PFOA



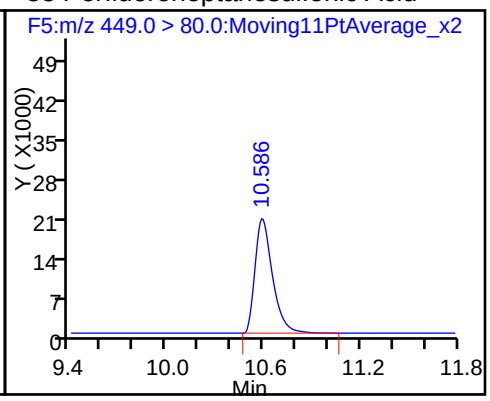
13 Perfluorooctanoic acid



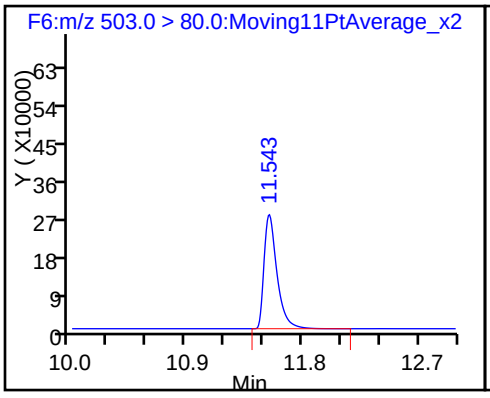
13 Perfluorooctanoic acid



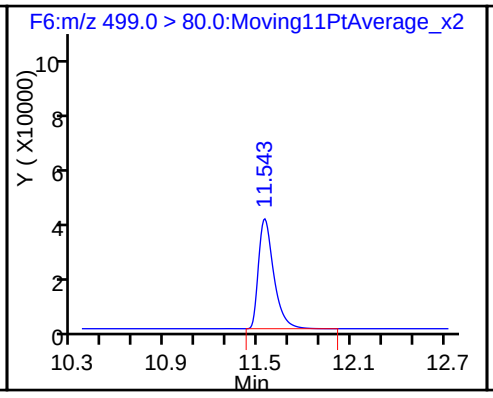
38 Perfluoroheptanesulfonic Acid



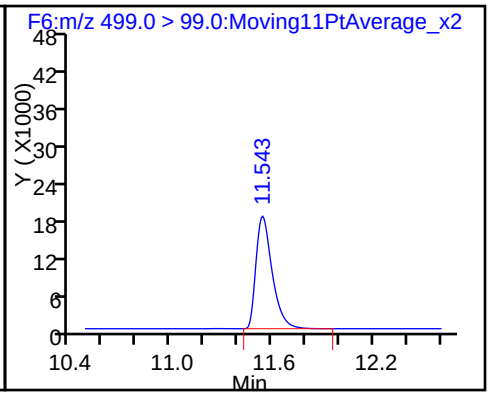
D 16 13C4 PFOS



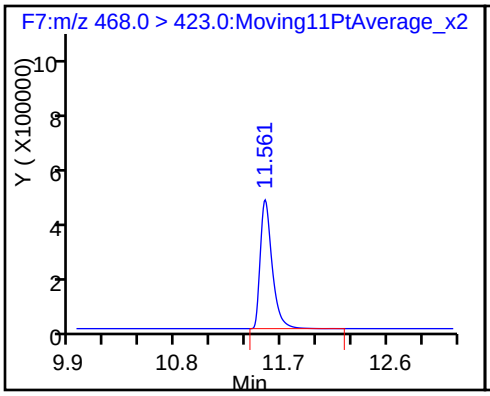
15 Perfluorooctane sulfonic acid



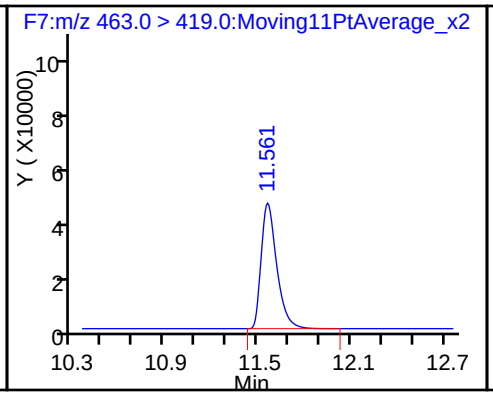
15 Perfluorooctane sulfonic acid



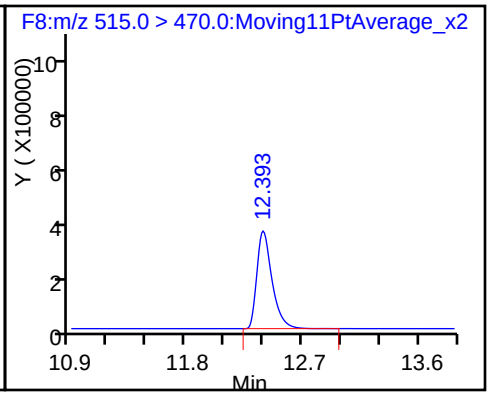
D 17 13C5 PFNA



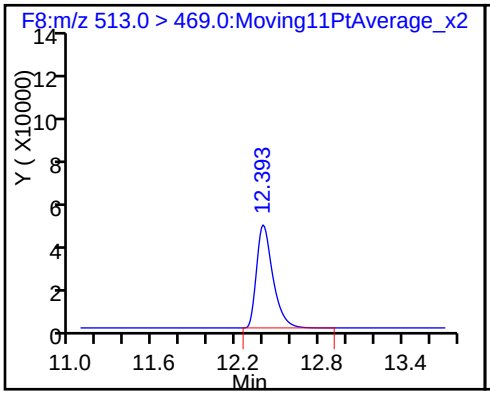
18 Perfluorononanoic acid



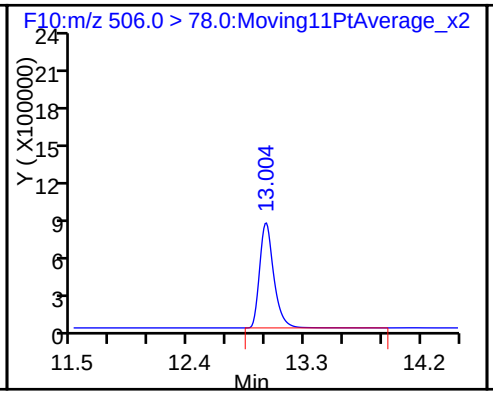
D 19 13C2 PFDA



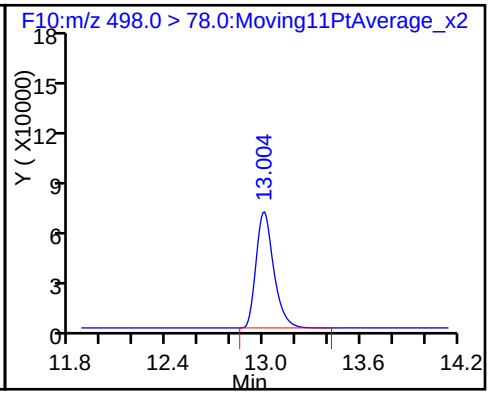
20 Perfluorodecanoic acid



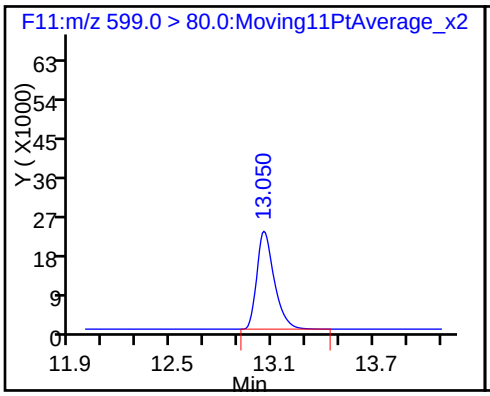
D 23 13C8 FOSA



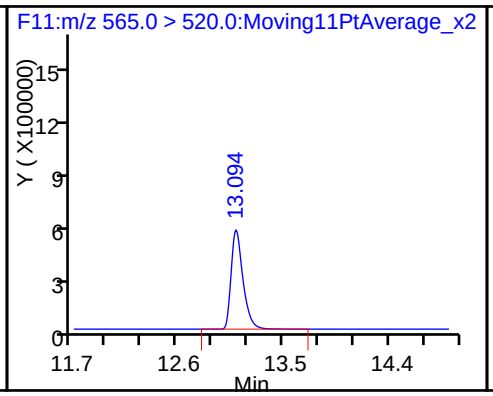
24 Perfluorooctane Sulfonamide



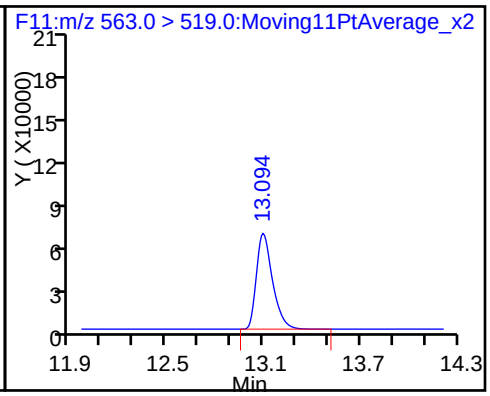
39 Perfluorodecane Sulfonic acid



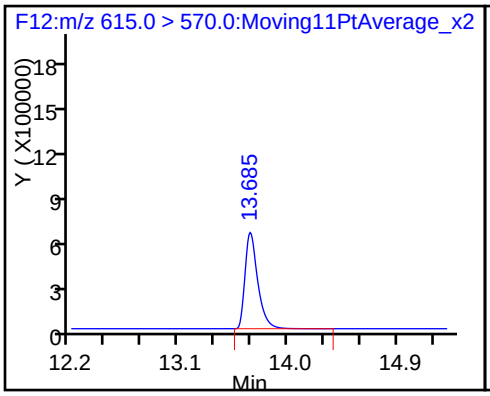
D 26 13C2 PFUnA



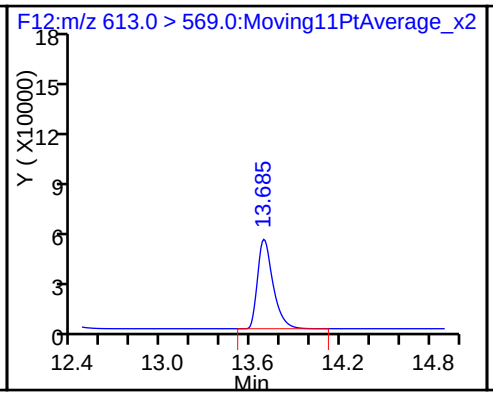
27 Perfluoroundecanoic acid



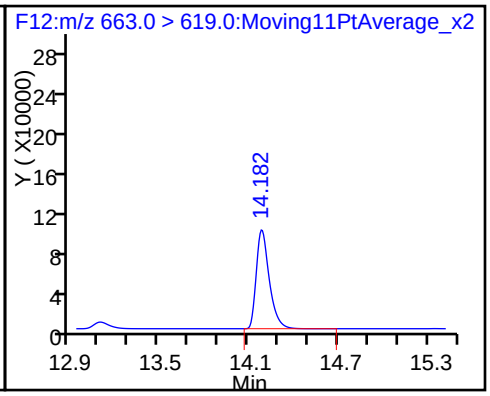
D 28 13C2 PFDoA



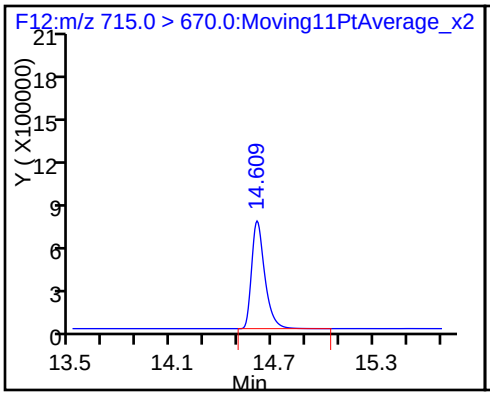
29 Perfluorododecanoic acid



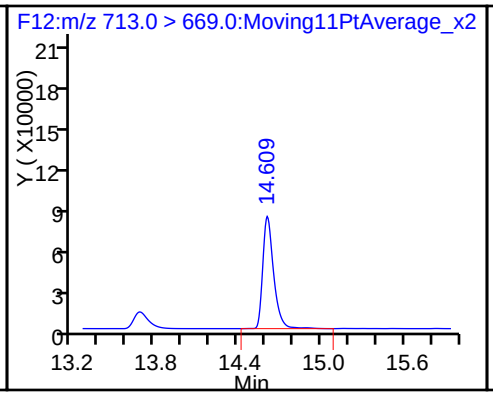
30 Perfluorotridecanoic acid



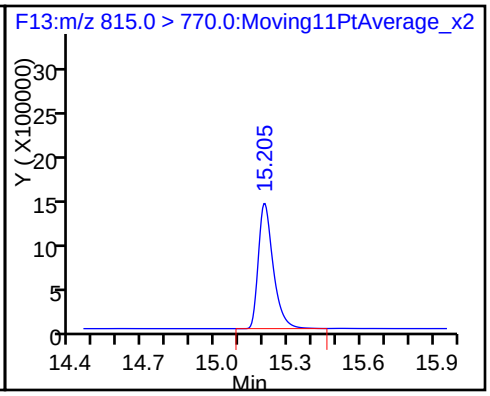
D 33 13C2-PFTeDA



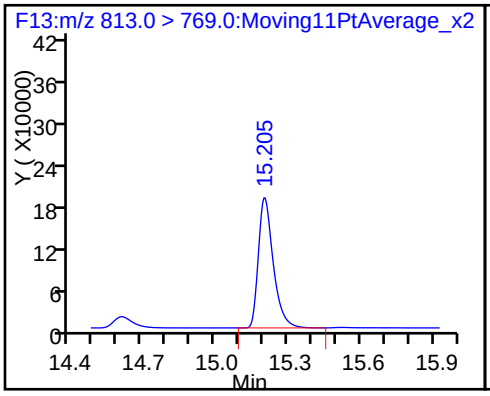
32 Perfluorotetradecanoic acid



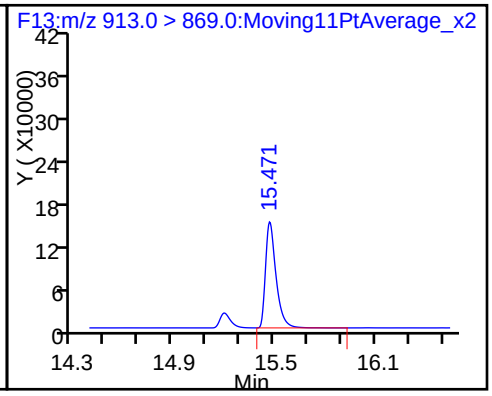
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_006.d
Lims ID: Std L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 28-May-2016 15:00:29 ALS Bottle#: 12 Worklist Smp#: 5
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:10 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 29-May-2016 15:15:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.796	-0.002		1319168	55.3		111	5525	
2 Perfluorobutyric acid										
212.9 > 169.0	5.797	5.799	-0.002	1.000	741026	18.5		92.6	55064	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.958	-0.003		2871357	52.7		105	3513	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.955	6.960	-0.005	1.000	1277608	18.2		91.0	248	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.081	7.086	-0.005	1.000	617407	15.5		87.5		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.081	7.086	-0.005	1.000	617407	NC			182	
298.9 > 99.0	7.081	7.086	-0.005	1.000	306756		2.01(0.00-0.00)		478	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.236	8.235	0.001	1.000	1302223	18.9		94.3	5460	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.237	-0.001		3131441	53.7		107	14125	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.475	0.0		3374470	54.4		109	24252	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.477	-0.002	1.000	1450124	17.6		87.9	19247	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.507	0.003		1498717	52.5		111	81816	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.504	9.507	-0.003	1.000	494894	NC			1455	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.504	9.507	-0.003	1.000	494894	17.1		90.3		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.584	0.002		3696388	54.9		110	13389	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.586	10.584	0.002	1.000	1407454	18.7		93.6	499	
413.0 > 169.0	10.586	10.584	0.002	1.000	495895		2.84(0.00-0.00)	93.6	769	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.595	10.593	0.002	1.000	563150	NC			36166	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.595	10.593	0.002	1.000	563150	19.3		102		
D 16 13C4 PFOS										
503.0 > 80.0	11.535	11.541	-0.006		1783907	50.8		106	126613	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.535	11.545	-0.010	1.000	846435	18.1		94.5	1022	
499.0 > 99.0	11.535	11.545	-0.010	1.000	434769		1.95(0.00-0.00)	94.5	3694	
D 17 13C5 PFNA										
468.0 > 423.0	11.553	11.559	-0.006		3550811	57.2		114	64024	
18 Perfluorononanoic acid										
463.0 > 419.0	11.553	11.561	-0.008	1.000	1040937	17.4		86.8	9363	
D 19 13C2 PFDA										
515.0 > 470.0	12.393	12.392	0.001		2782870	55.9		112	169613	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.393	12.392	0.001	1.000	1289431	17.7		88.6	26240	
D 23 13C8 FOSA										
506.0 > 78.0	13.004	13.001	0.003		6111613	54.6		109	4247	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.004	13.003	0.001	1.000	1726883	17.5		87.3	15196	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.050	13.047	0.003	1.000	629202	21.0		109		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.050	13.047	0.003	1.000	629202	NC			12726	
D 26 13C2 PFUnA										
565.0 > 520.0	13.094	13.093	0.001		3799760	54.5		109	60417	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.094	13.093	0.001	1.000	1487744	18.6		92.8	42349	
D 28 13C2 PFDoA										
615.0 > 570.0	13.685	13.683	0.002		4344747	52.2		104	17845	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.685	13.683	0.002	1.000	1425770	20.3		101	2792	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	1999729	20.1		100	1505	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.609	14.608	0.001		3926467	52.9		106	11430	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.609	14.608	0.001	1.000	1464843	18.7		93.6	695	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.199	15.203	-0.004		6190424	53.0		106	10742	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.199	15.203	-0.004	1.000	2613147	18.8		94.2	1446	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.466	15.473	-0.007	1.000	2383815	17.8		89.2	1622	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_006.d

Injection Date: 28-May-2016 15:00:29 Instrument ID: A6

Lims ID: Std L4

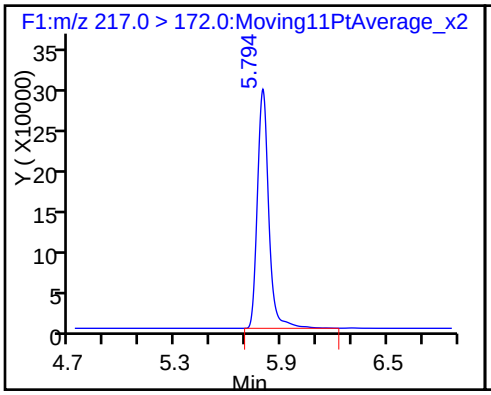
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 5

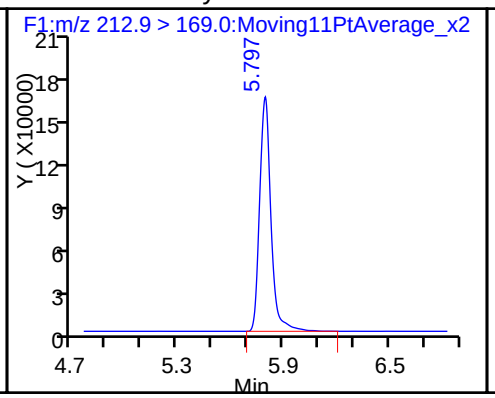
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

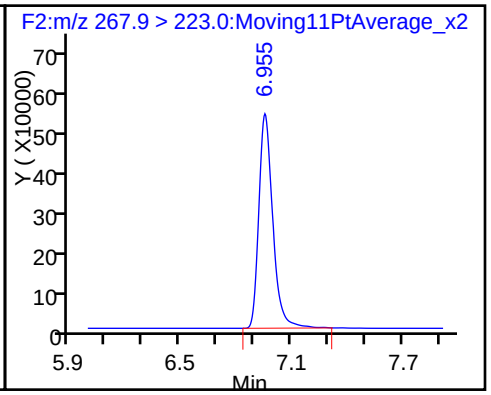
D 1 13C4 PFBA



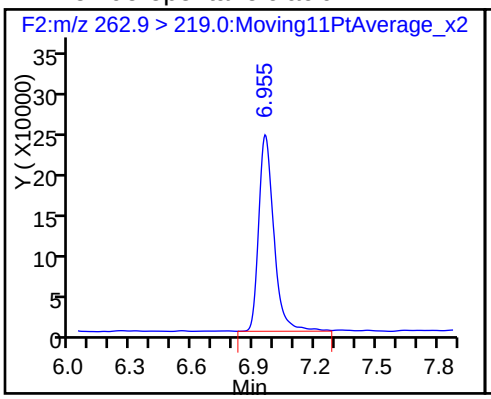
2 Perfluorobutyric acid



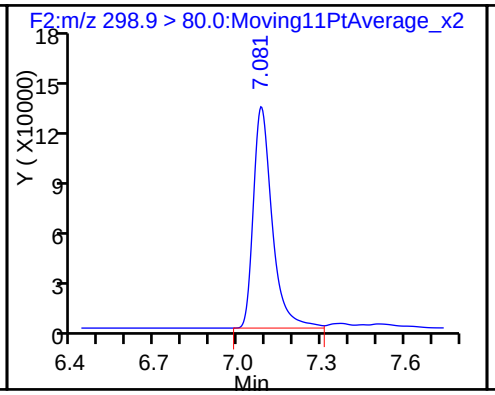
D 3 13C5-PFPeA



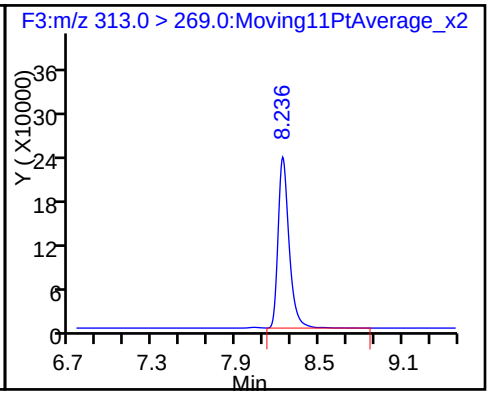
4 Perfluoropentanoic acid



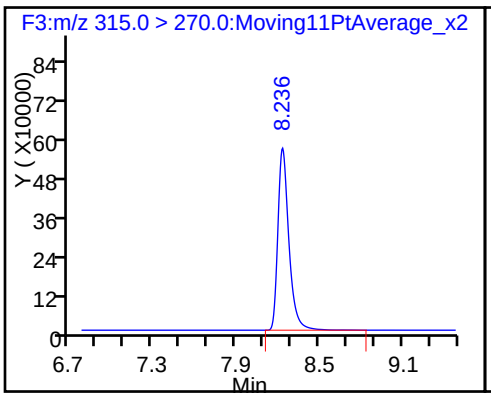
40 Perfluorobutanesulfonic acid



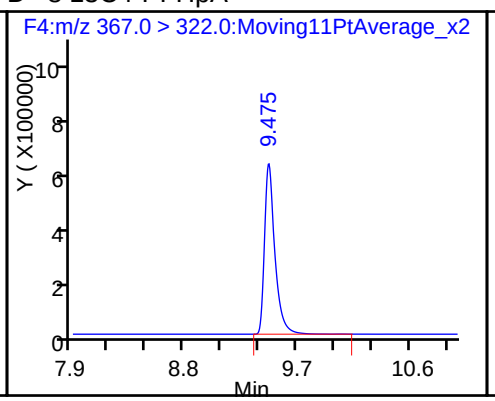
7 Perfluorohexanoic acid



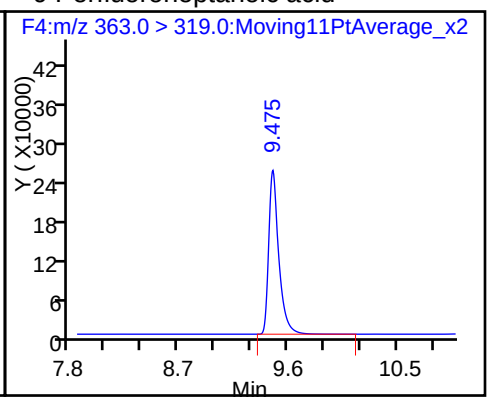
D 6 13C2 PFHxA



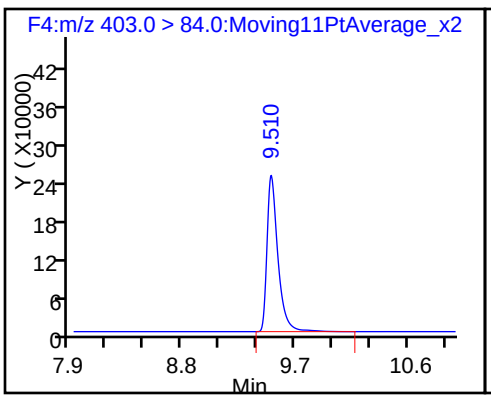
D 8 13C4-PFHpA



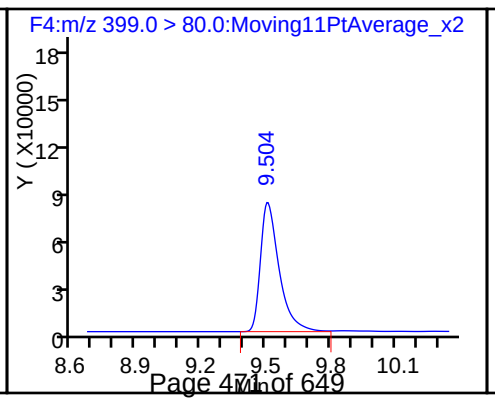
9 Perfluoroheptanoic acid



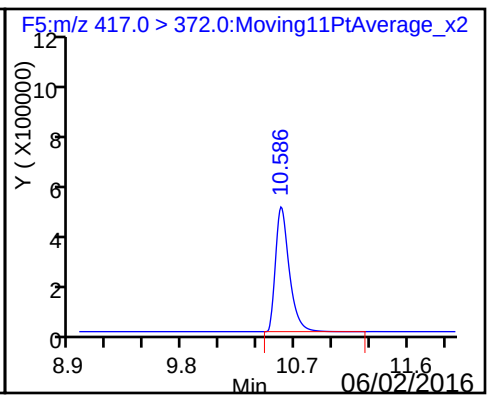
D 11 18O2 PFHxS



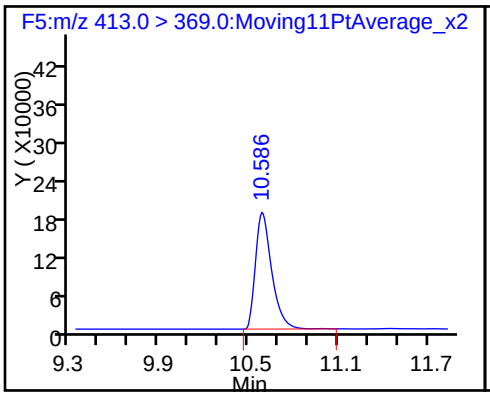
41 Perfluorohexanesulfonic acid



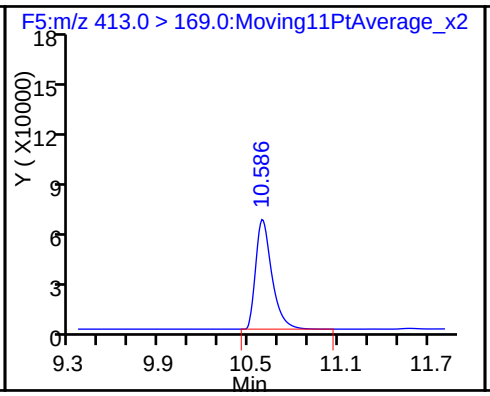
D 12 13C4 PFOA



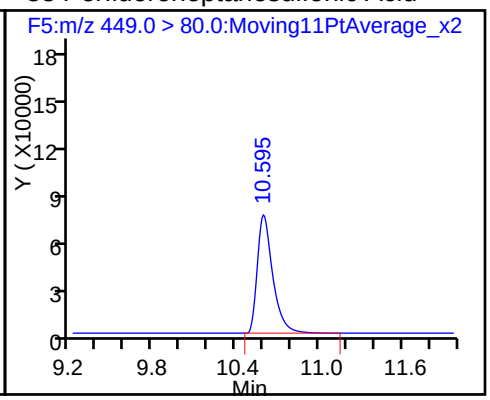
13 Perfluorooctanoic acid



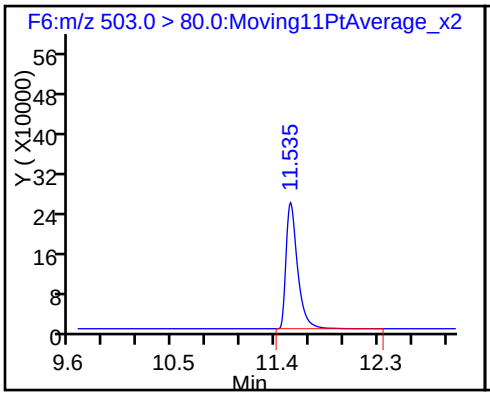
13 Perfluorooctanoic acid



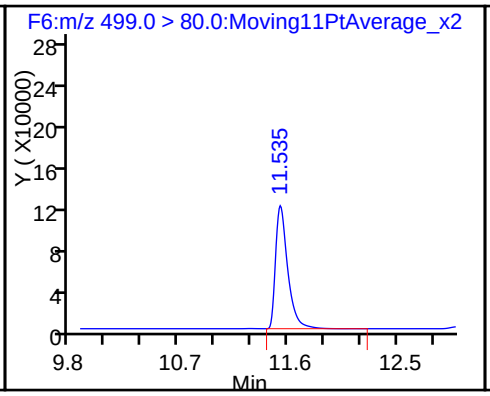
38 Perfluoroheptanesulfonic Acid



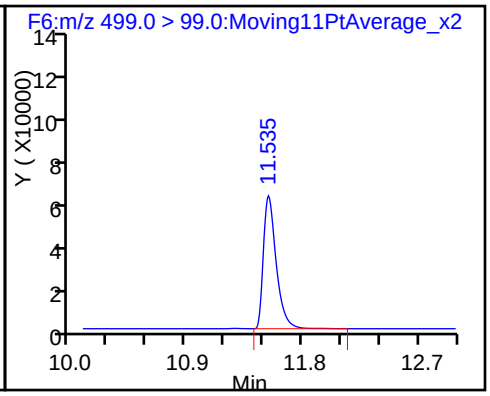
D 16 13C4 PFOS



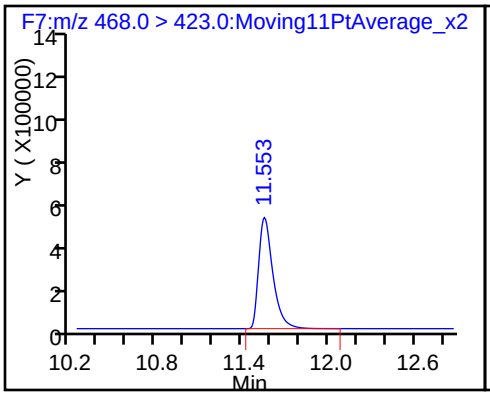
15 Perfluorooctane sulfonic acid



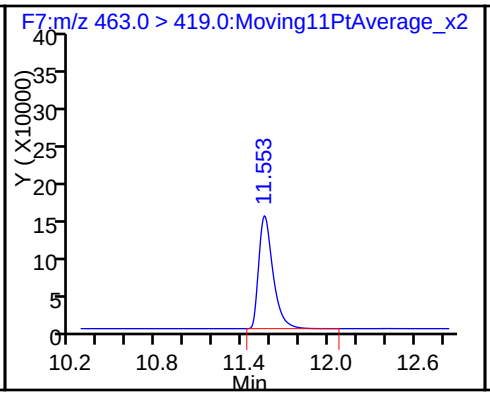
15 Perfluorooctane sulfonic acid



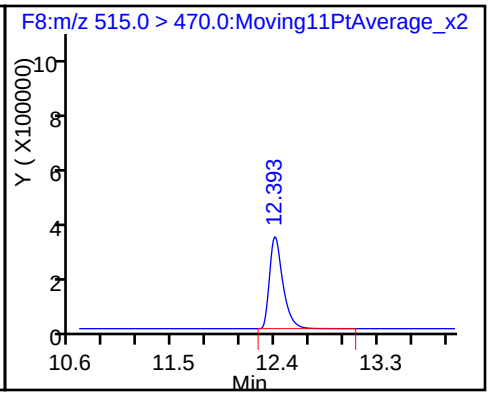
D 17 13C5 PFNA



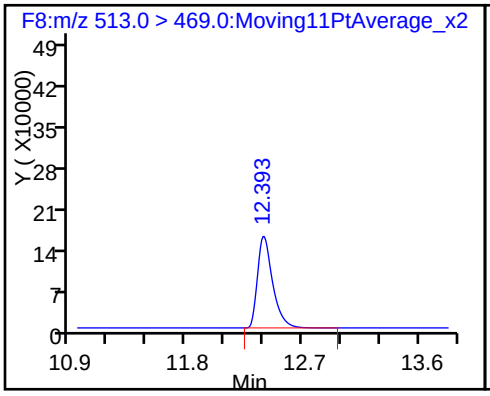
18 Perfluorononanoic acid



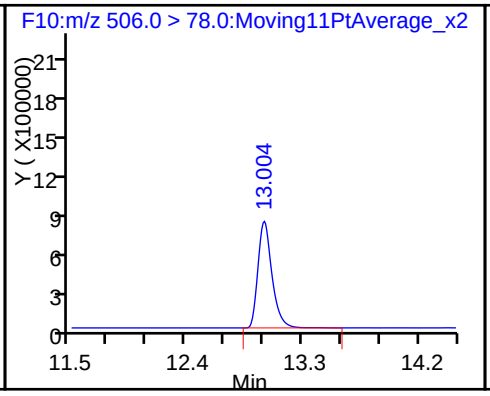
D 19 13C2 PFDA



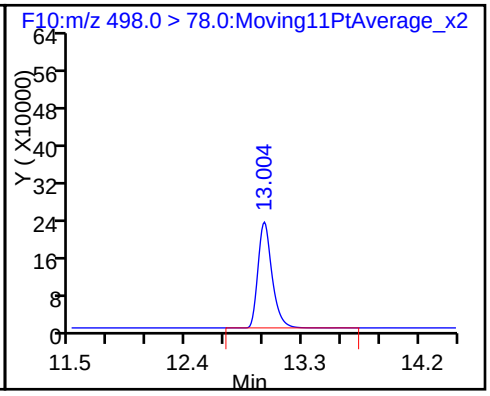
20 Perfluorodecanoic acid



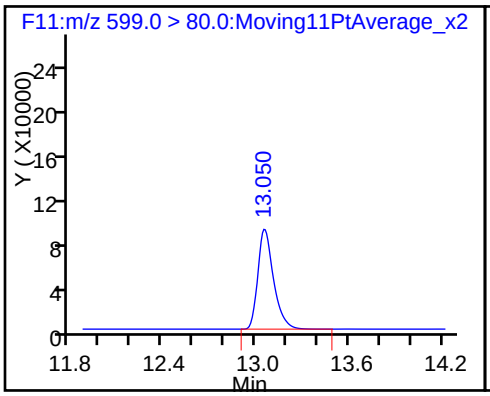
D 23 13C8 FOSA



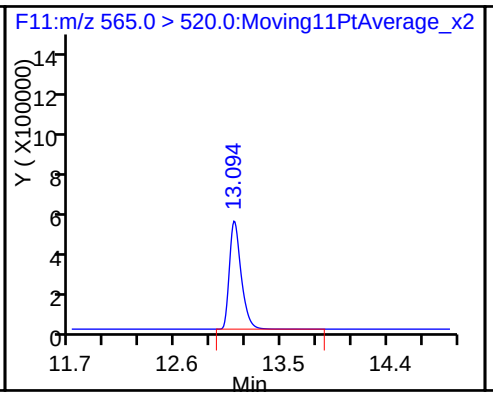
24 Perfluorooctane Sulfonamide



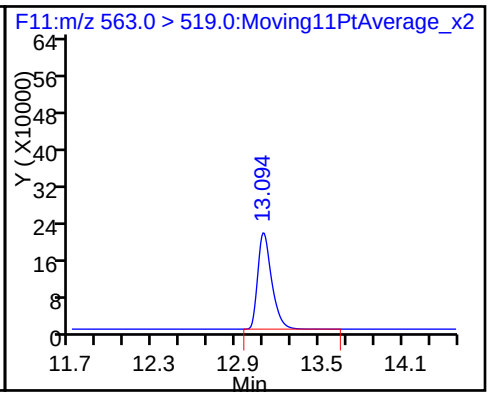
39 Perfluorodecane Sulfonic acid



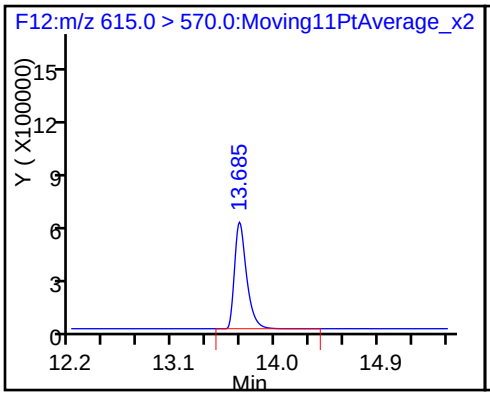
D 26 13C2 PFUnA



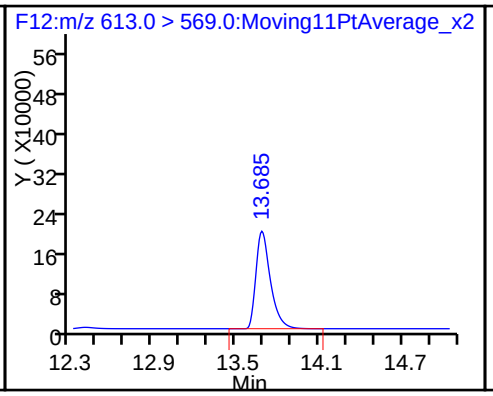
27 Perfluoroundecanoic acid



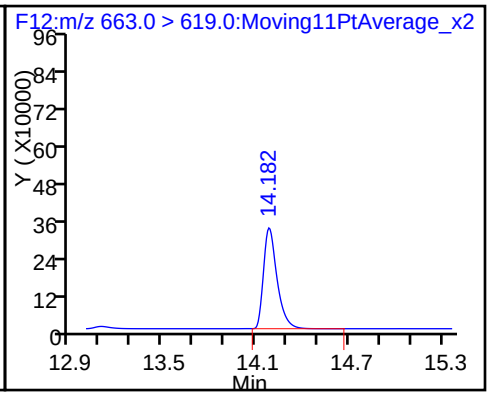
D 28 13C2 PFDoA



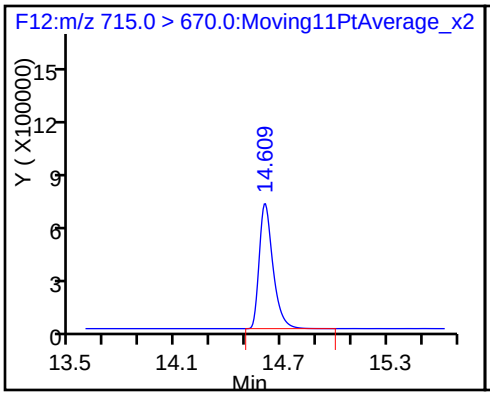
29 Perfluorododecanoic acid



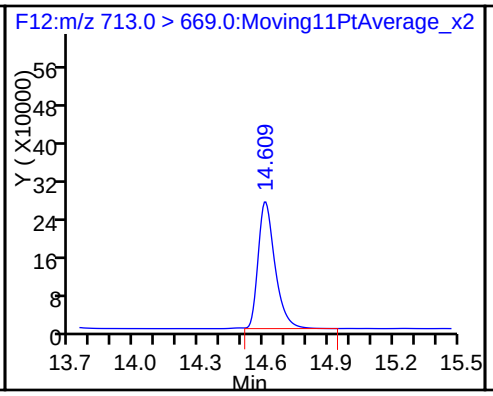
30 Perfluorotridecanoic acid



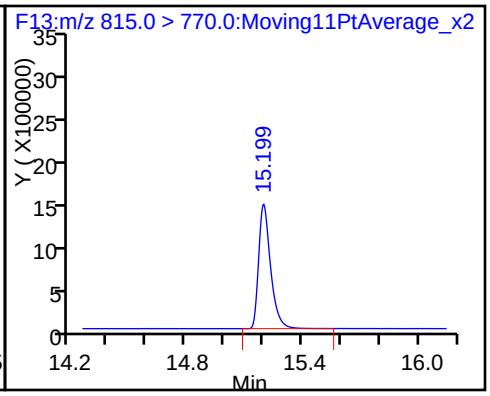
D 33 13C2-PFTeDA



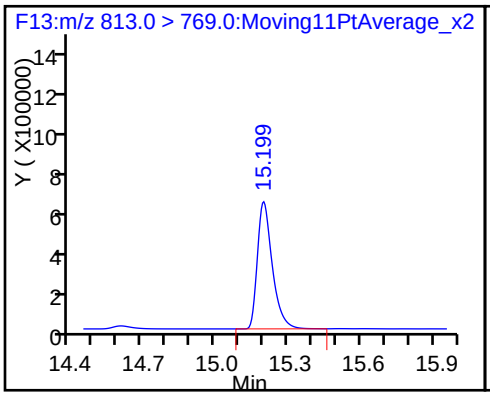
32 Perfluorotetradecanoic acid



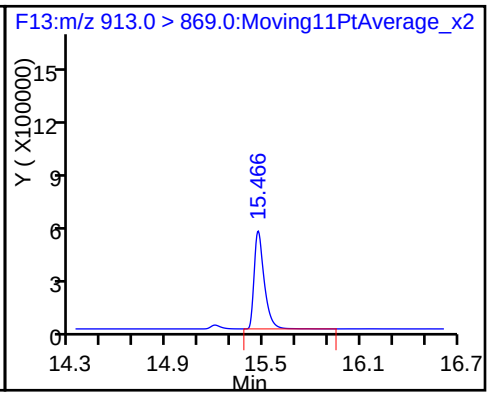
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_007.d
Lims ID: Std L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 28-May-2016 15:22:40 ALS Bottle#: 13 Worklist Smp#: 6
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:13 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.797	5.796	0.001		1129621	47.3		94.6	546	
2 Perfluorobutyric acid										
212.9 > 169.0	5.797	5.799	-0.002	1.000	1875570	54.8		110	2424	
D 3 13C5-PFPeA										
267.9 > 223.0	6.959	6.958	0.001		2857305	52.4		105	66145	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.964	6.960	0.004	1.000	3291069	47.1		94.3	761	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.087	7.086	0.001	1.000	1634091	44.6		101		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.087	7.086	0.001	1.000	1634091	NC			605	
298.9 > 99.0	7.087	7.086	0.001	1.000	860536		1.90(0.00-0.00)		640	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.235	8.235	0.0	1.000	3450640	53.7		107	1242	
D 6 13C2 PFHxA										
315.0 > 270.0	8.240	8.237	0.003		2912830	49.9		99.8	254744	
D 8 13C4-PFHpA										
367.0 > 322.0	9.482	9.475	0.007		3165064	51.1		102	19341	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.488	9.477	0.011	1.000	3687199	48.4		96.9	38800	
D 11 18O2 PFHxS										
403.0 > 84.0	9.518	9.507	0.011		1374616	48.1		102	3729	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.518	9.507	0.011	1.000	1361989	NC			2111	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.518	9.507	0.011	1.000	1361989	51.2		108		
D 12 13C4 PFOA										
417.0 > 372.0	10.584	10.584	0.0		3225265	47.9		95.8	41049	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.584	10.584	0.0	1.000	3481430	53.1		106	937	
413.0 > 169.0	10.584	10.584	0.0	1.000	1322078		2.63(0.00-0.00)	106	1202	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.593	10.593	0.0	1.000	1361416	NC			43067	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.593	10.593	0.0	1.000	1361416	50.1		105		
D 16 13C4 PFOS										
503.0 > 80.0	11.541	11.541	0.0		1664419	47.4		99.1	32422	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.541	11.545	-0.004	1.000	2210260	50.6		106	822	
499.0 > 99.0	11.541	11.545	-0.004	1.000	1241512		1.78(0.00-0.00)	106	2097	
D 17 13C5 PFNA										
468.0 > 423.0	11.559	11.559	0.0		3190052	51.4		103	20762	
18 Perfluorononanoic acid										
463.0 > 419.0	11.559	11.561	-0.002	1.000	2788226	51.8		104	13084	
D 19 13C2 PFDA										
515.0 > 470.0	12.396	12.392	0.004		2440256	49.0		98.0	142432	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.396	12.392	0.004	1.000	3294984	51.7		103	38277	
D 23 13C8 FOSA										
506.0 > 78.0	12.998	13.001	-0.003		5338211	47.7		95.4	1915	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.998	13.003	-0.005	1.000	4817228	55.8		112	4271	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.047	13.047	0.0	1.000	1606213	57.2		119		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.047	13.047	0.0	1.000	1606213	NC			7978	
D 26 13C2 PFUnA										
565.0 > 520.0	13.091	13.093	-0.002		3340531	47.9		95.8	6097	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.091	13.093	-0.002	1.000	3646070	52.5		105	18349	
D 28 13C2 PFDoA										
615.0 > 570.0	13.684	13.683	0.001		3961676	47.6		95.3	19545	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.684	13.683	0.001	1.000	3508060	54.7		109	4580	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	4647252	51.2		102	2314	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.604	14.608	-0.004		3632080	48.9		97.9	9593	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.604	14.608	-0.004	1.000	3713233	53.0		106	1612	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.199	15.203	-0.004		5956244	51.0		102	6609	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.199	15.203	-0.004	1.000	6740979	54.9		110	3426	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.476	15.473	0.003	1.000	6793291	55.8		112	3956	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00018 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_007.d

Injection Date: 28-May-2016 15:22:40 Instrument ID: A6

Lims ID: Std L5

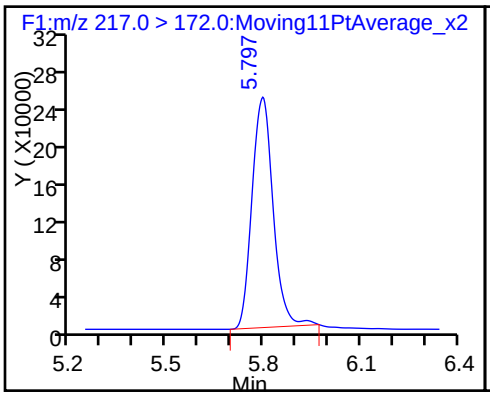
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 6

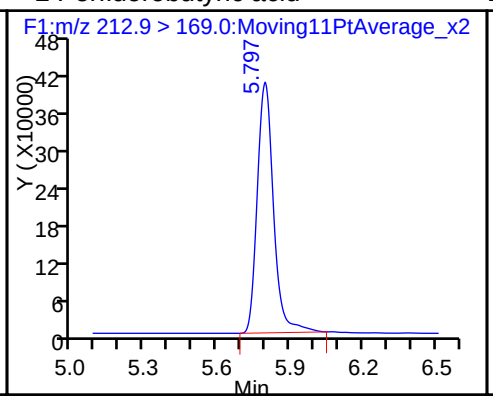
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

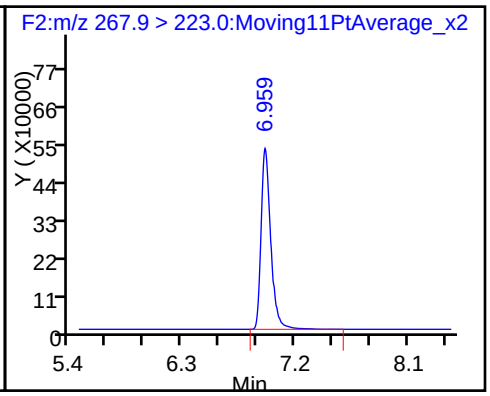
D 1 13C4 PFBA



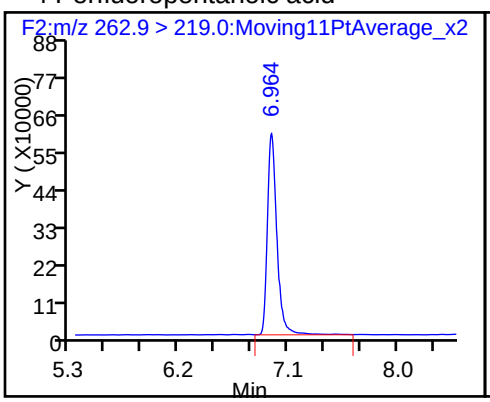
2 Perfluorobutyric acid



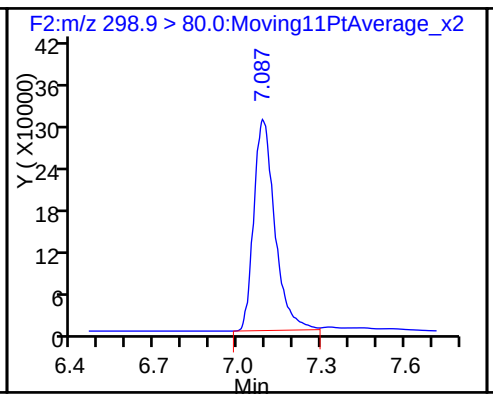
D 3 13C5-PFPeA



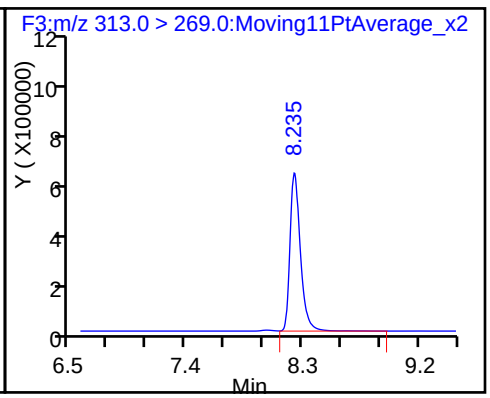
4 Perfluoropentanoic acid



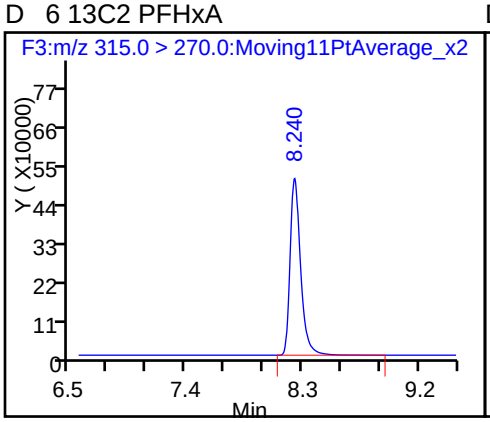
40 Perfluorobutanesulfonic acid



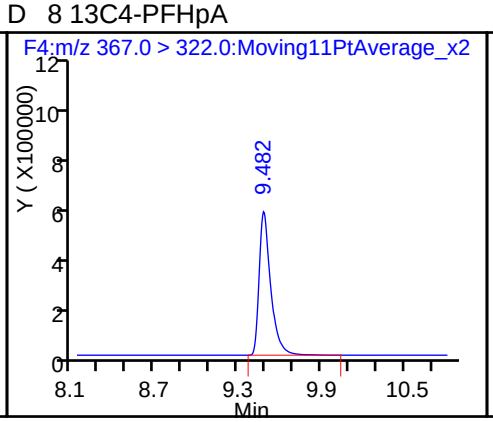
7 Perfluorohexanoic acid



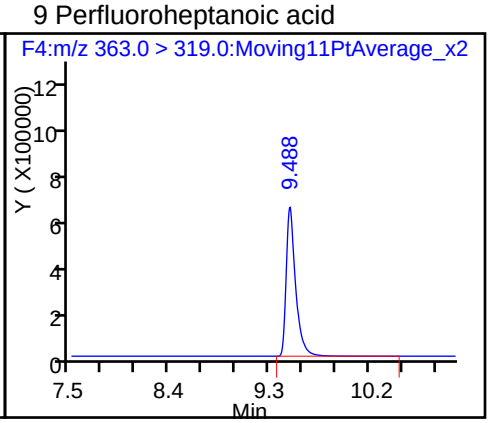
D 6 13C2 PFHxA



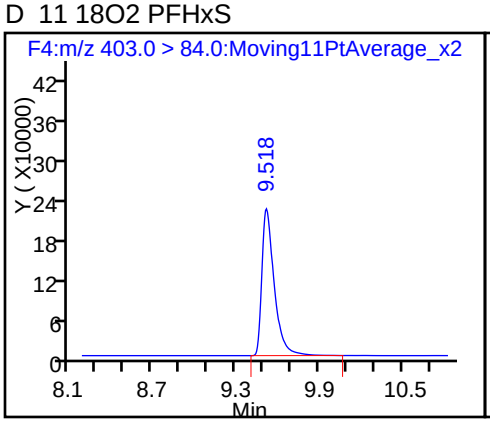
D 8 13C4-PFHpA



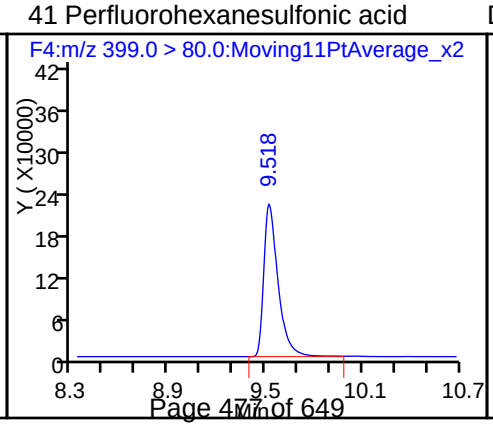
9 Perfluoroheptanoic acid



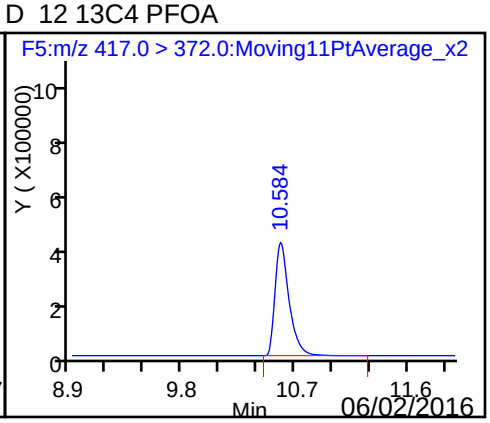
D 11 18O2 PFHxS



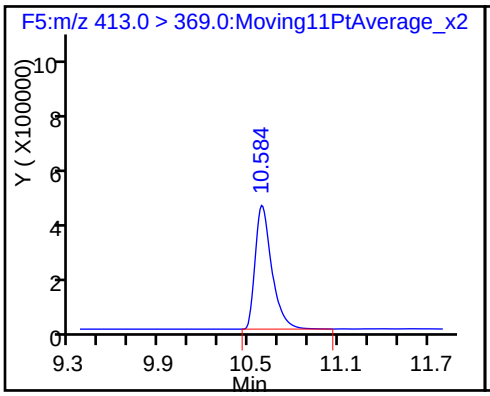
41 Perfluorohexanesulfonic acid



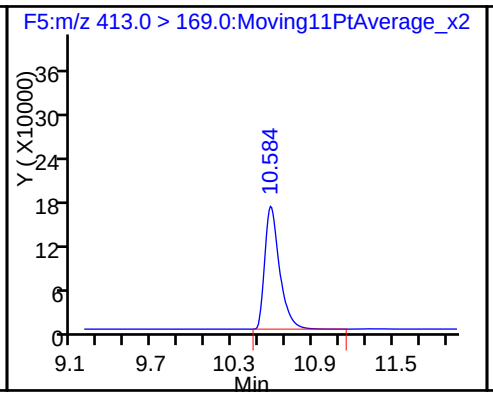
D 12 13C4 PFOA



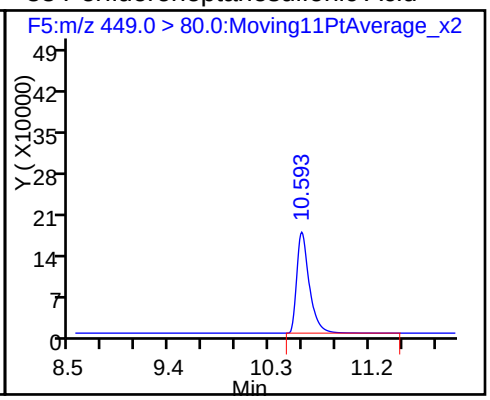
13 Perfluorooctanoic acid



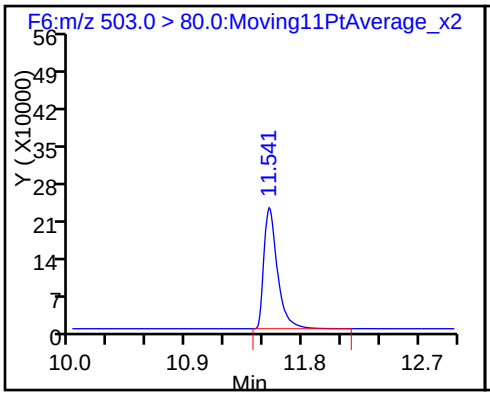
13 Perfluorooctanoic acid



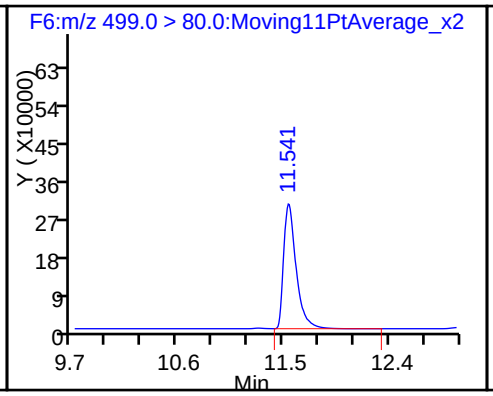
38 Perfluoroheptanesulfonic Acid



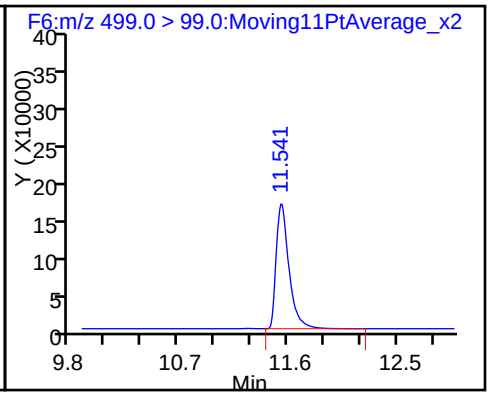
D 16 13C4 PFOS



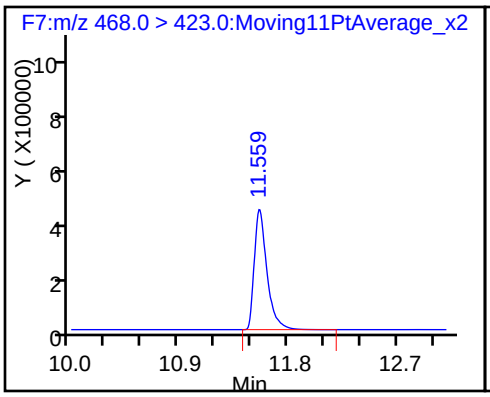
15 Perfluorooctane sulfonic acid



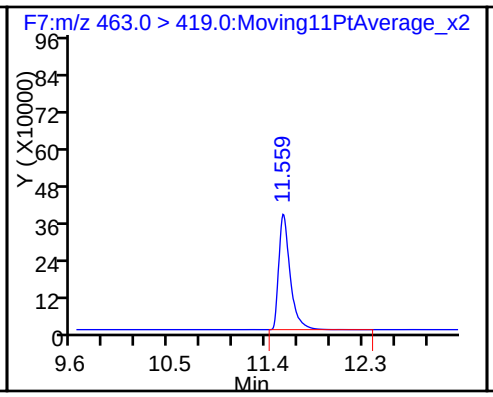
15 Perfluorooctane sulfonic acid



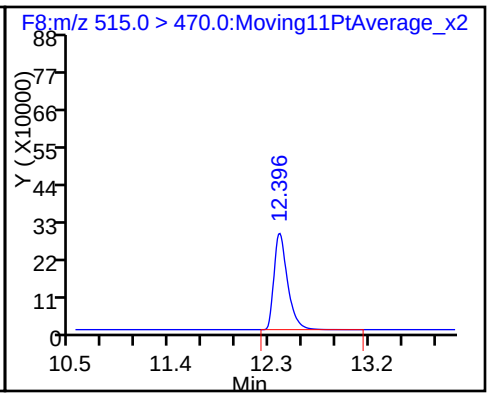
D 17 13C5 PFNA



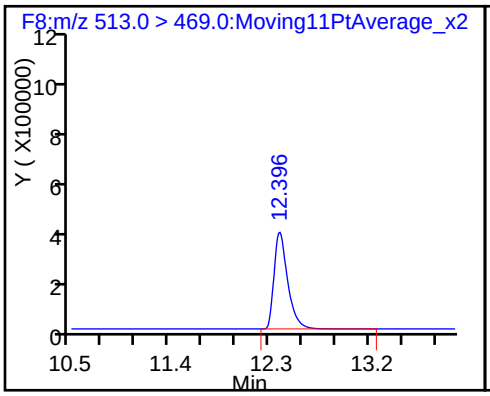
18 Perfluorononanoic acid



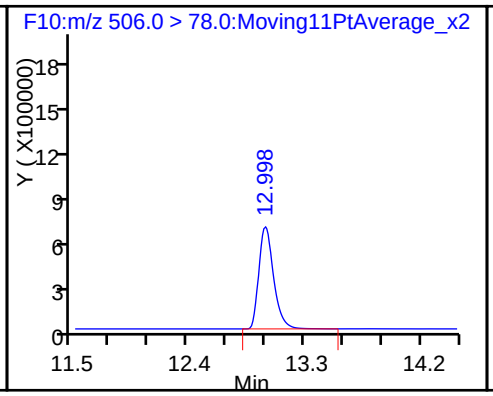
D 19 13C2 PFDA



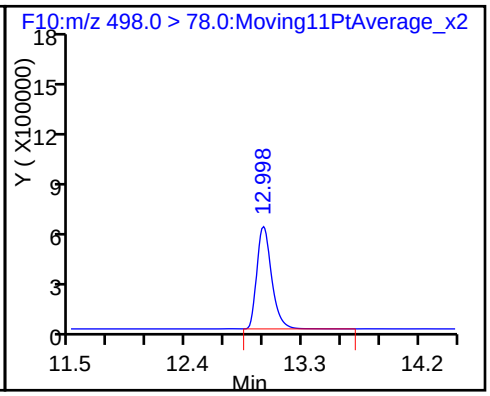
20 Perfluorodecanoic acid



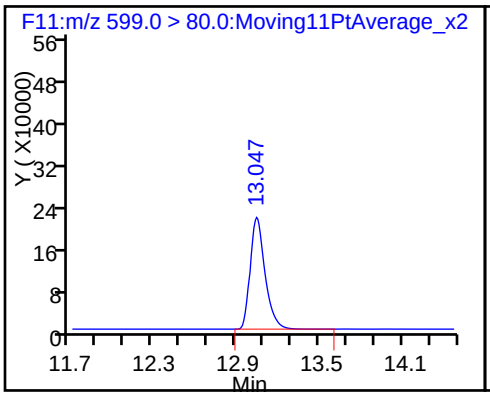
D 23 13C8 FOSA



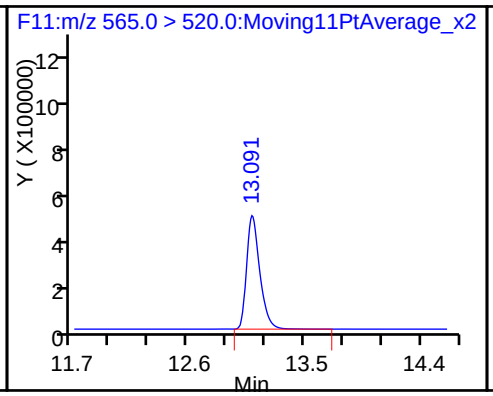
24 Perfluorooctane Sulfonamide



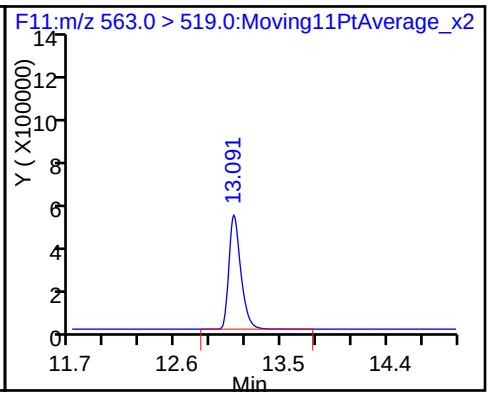
39 Perfluorodecane Sulfonic acid



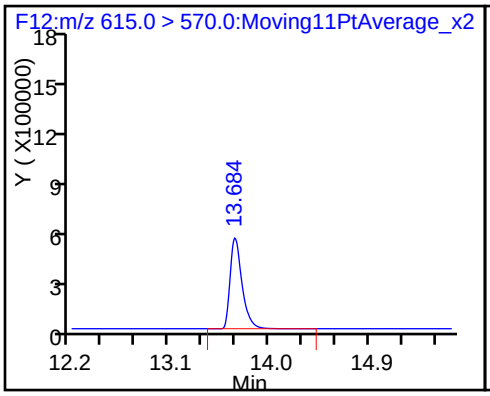
D 26 13C2 PFUnA



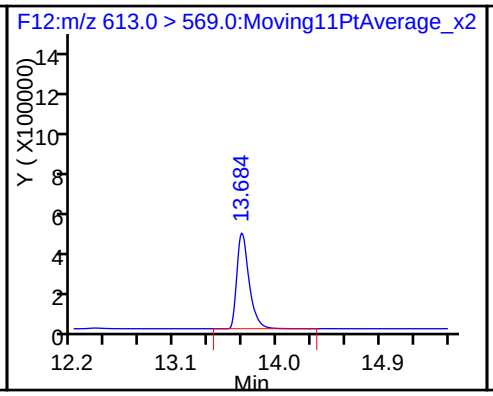
27 Perfluoroundecanoic acid



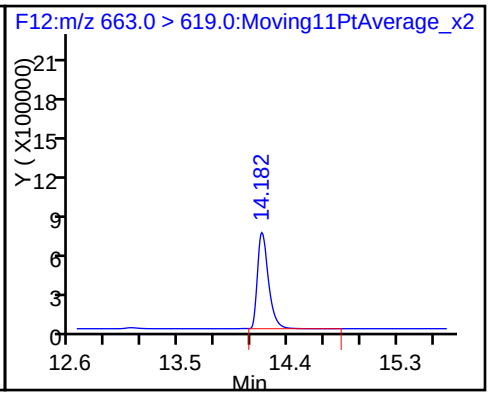
D 28 13C2 PFDoA



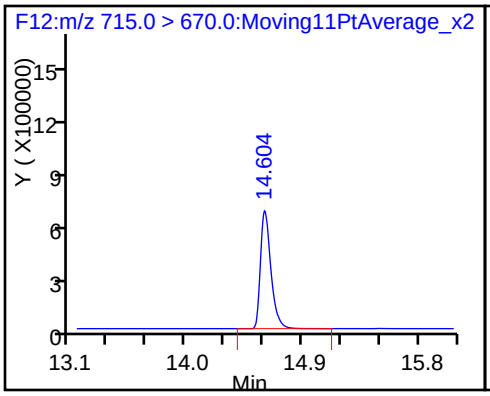
29 Perfluorododecanoic acid



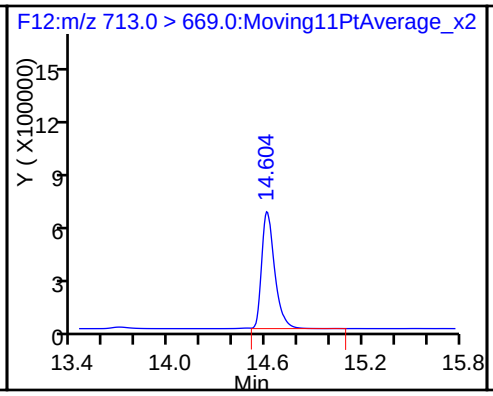
30 Perfluorotridecanoic acid



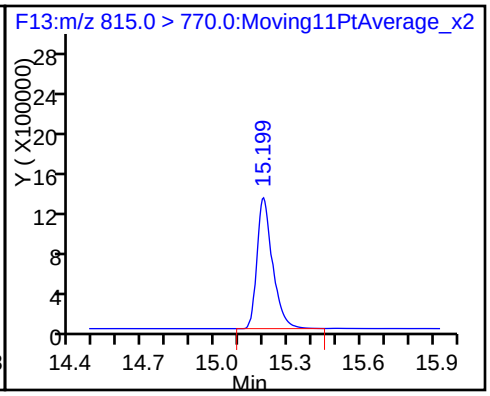
D 33 13C2-PFTeDA



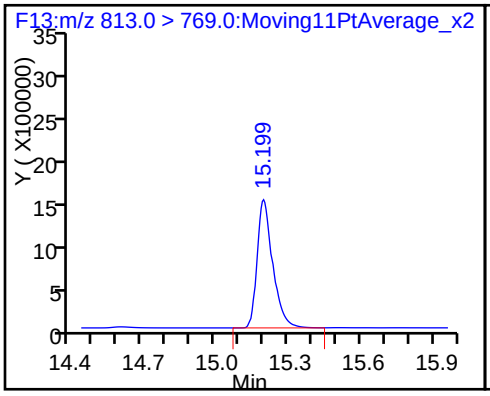
32 Perfluorotetradecanoic acid



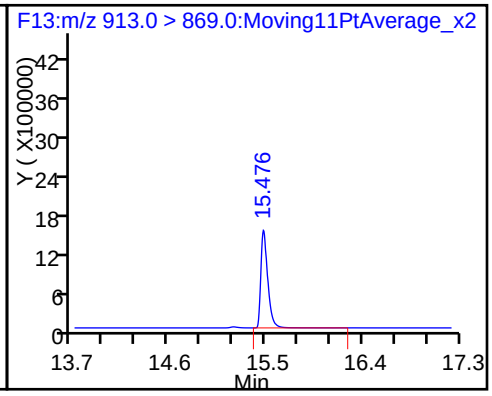
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_011.d
Lims ID: Std L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 28-May-2016 19:20:17 ALS Bottle#: 14 Worklist Smp#: 10
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L6
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:17 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 29-May-2016 15:37:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.795	-0.001		1030072	43.1		86.3	646	
2 Perfluorobutyric acid										
212.9 > 169.0	5.794	5.797	-0.003	1.000	7009910	224.5		112	26769	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.957	-0.002		2372336	43.5		87.1	1907	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.955	6.959	-0.004	1.000	10919228	188.3		94.2	2071	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.081	7.085	-0.004	1.000	5659839	188.8		107		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.081	7.085	-0.004	1.000	5659839	NC			987	
298.9 > 99.0	7.085	7.085	0.0	1.000	2809951		2.01(0.00-0.00)		651	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.236	8.235	0.001	1.000	11646564	211.3		106	2025	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.236	0.0		2499100	42.8		85.7	5682	
D 8 13C4-PFHpA										
367.0 > 322.0	9.470	9.474	-0.004		2494258	40.2		80.5	13302	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.470	9.475	-0.005	1.000	11784227	197.8		98.9	9429	
D 11 18O2 PFHxS										
403.0 > 84.0	9.505	9.507	-0.002		1125402	39.4		83.3	35595	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.505	9.507	-0.002	1.000	4186378	NC			1379	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.505	9.507	-0.002	1.000	4186378	192.4		102		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.596	10.586	0.010		2503906	37.2		74.4	26130	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.596	10.587	0.009	1.000	10521352	206.7		103	1525	
413.0 > 169.0	10.596	10.587	0.009	1.000	3972655		2.65(0.00-0.00)	103	5294	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.605	10.596	0.009	1.000	4485928	NC			6687	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.605	10.596	0.009	1.000	4485928	203.6		107		
D 16 13C4 PFOS										
503.0 > 80.0	11.543	11.543	0.0		1349842	38.4		80.3	1721	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.543	11.545	-0.002	1.000	6916291	195.1		102	472	
499.0 > 99.0	11.543	11.545	-0.002	1.000	3751382		1.84(0.00-0.00)	102	2890	
D 17 13C5 PFNA										
468.0 > 423.0	11.570	11.562	0.008		2405278	38.8		77.5	83453	
18 Perfluorononanoic acid										
463.0 > 419.0	11.570	11.563	0.007	1.000	8301026	204.4		102	25149	
D 19 13C2 PFDA										
515.0 > 470.0	12.393	12.392	0.001		2024121	40.7		81.3	121813	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.393	12.392	0.001	1.000	9917621	187.5		93.7	7532	
D 23 13C8 FOSA										
506.0 > 78.0	13.004	13.000	0.004		4812502	43.0		86.0	2559	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.004	13.002	0.002	1.000	15796057	202.8		101	1351	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.050	13.048	0.002	1.000	4316122	189.4		98.3		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.050	13.048	0.002	1.000	4316122	NC			17817	
D 26 13C2 PFUnA										
565.0 > 520.0	13.102	13.094	0.008		2833534	40.6		81.2	30671	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.102	13.094	0.008	1.000	11249044	192.3		96.1	11348	
D 28 13C2 PFDoA										
615.0 > 570.0	13.685	13.685	0.0		3405671	41.0		81.9	19100	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.685	13.685	0.0	1.000	12017863	218.1		109	8837	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.190	14.184	0.006	1.000	14294825	183.1		91.6	4032	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.609	14.609	0.0		3345667	45.1		90.1	11255	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.609	14.609	0.0	1.000	12685494	212.0		106	2494	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.200	15.203	-0.003		5171420	44.3		88.5	7010	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.200	15.203	-0.003	1.000	21462072	205.6		103	4196	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.471	15.473	-0.002	1.000	22946617	219.1		110	5385	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L6_00017 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:18 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_011.d

Injection Date: 28-May-2016 19:20:17 Instrument ID: A6

Lims ID: Std L6

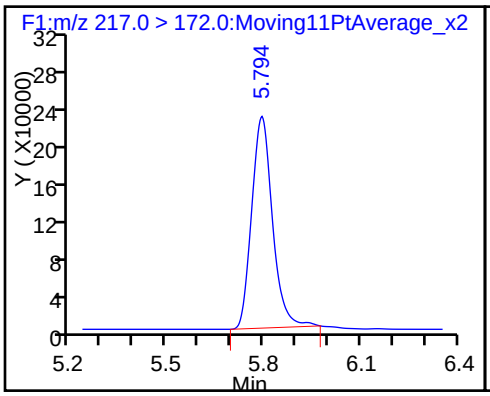
Client ID:

Operator ID: JRB ALS Bottle#: 14 Worklist Smp#: 10

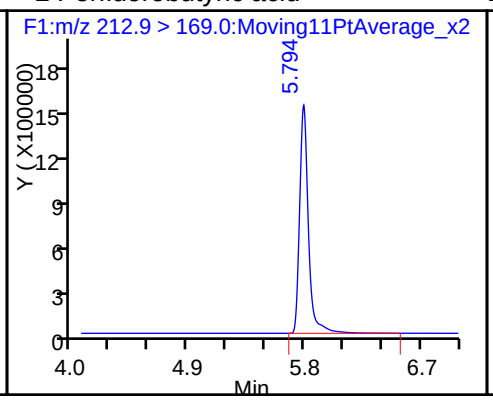
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

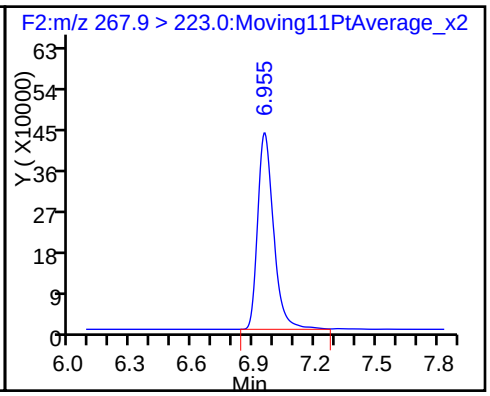
D 1 13C4 PFBA



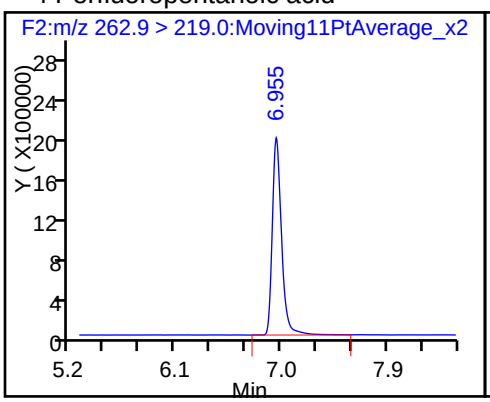
2 Perfluorobutyric acid



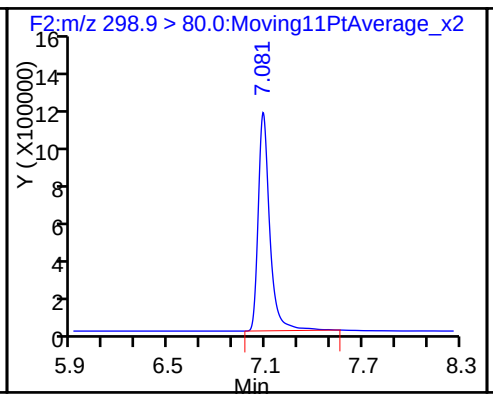
D 3 13C5-PFPeA



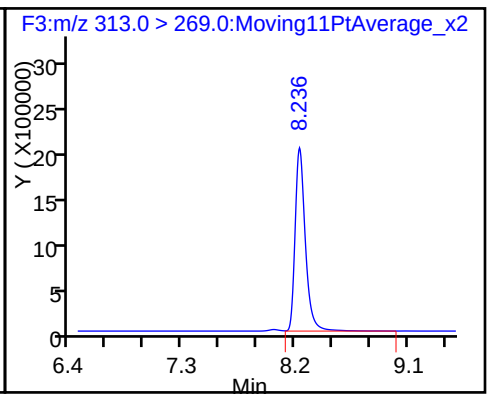
4 Perfluoropentanoic acid



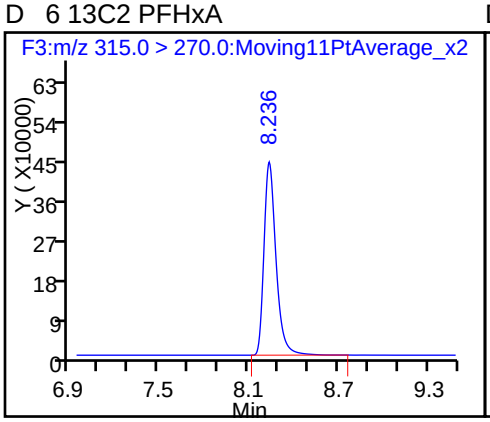
40 Perfluorobutanesulfonic acid



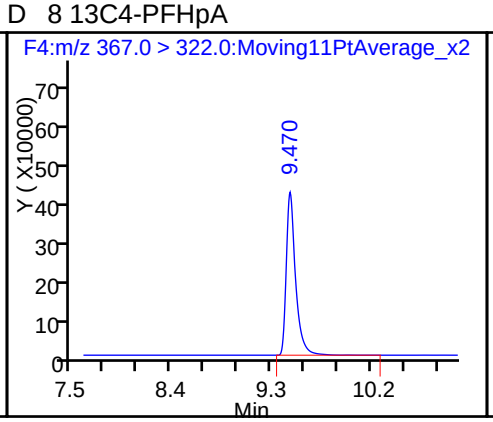
7 Perfluorohexanoic acid



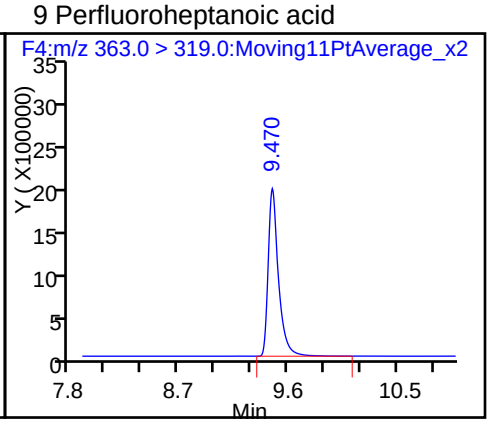
D 6 13C2 PFHxA



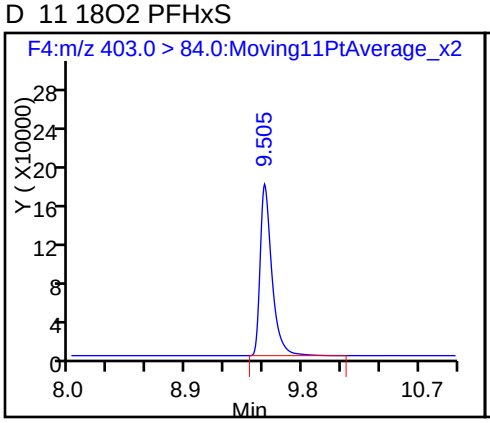
D 8 13C4-PFHpA



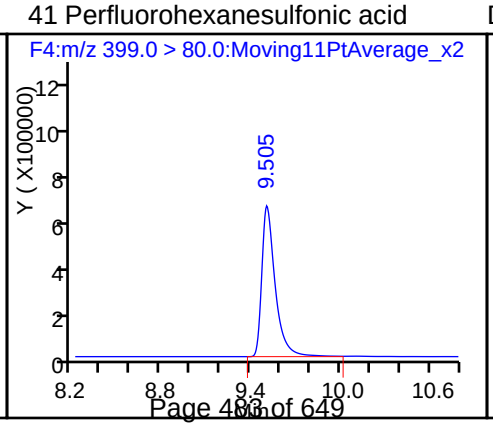
9 Perfluoroheptanoic acid



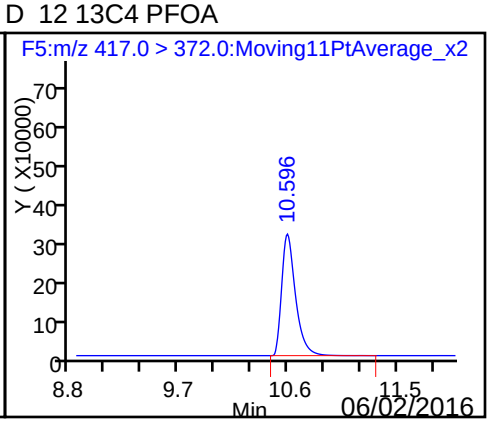
D 11 18O2 PFHxS



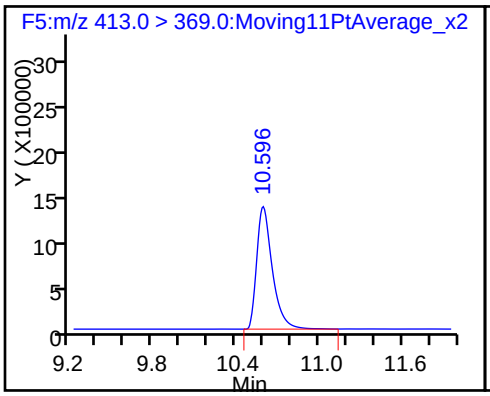
41 Perfluorohexanesulfonic acid



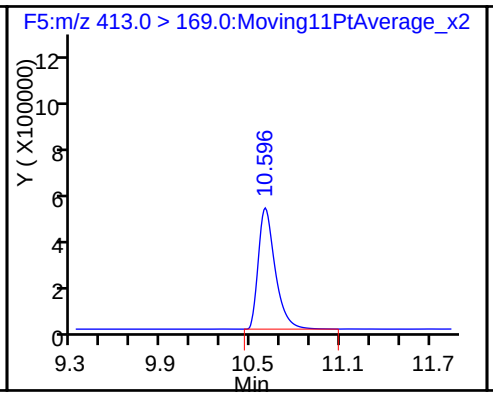
D 12 13C4 PFOA



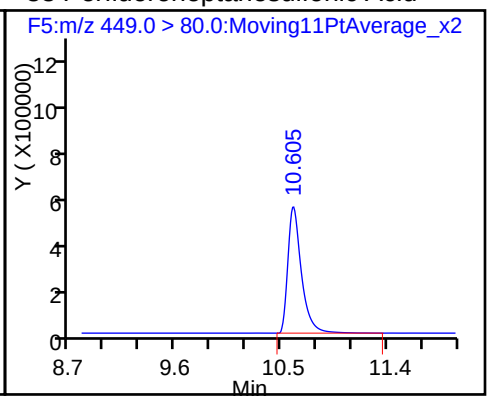
13 Perfluorooctanoic acid



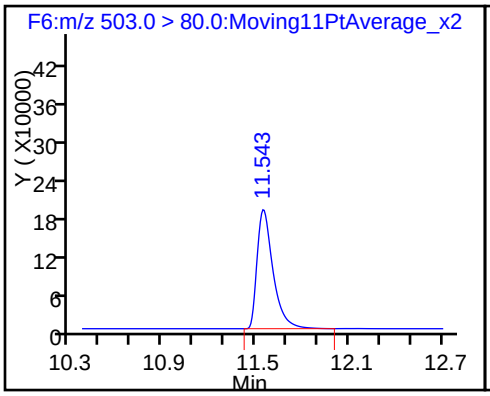
13 Perfluorooctanoic acid



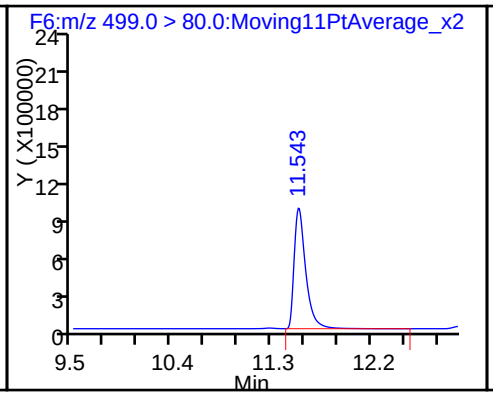
38 Perfluoroheptanesulfonic Acid



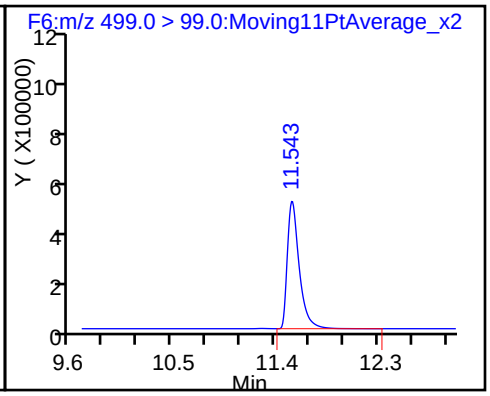
D 16 13C4 PFOS



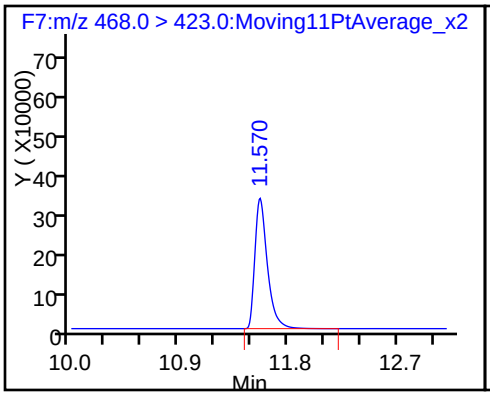
15 Perfluorooctane sulfonic acid



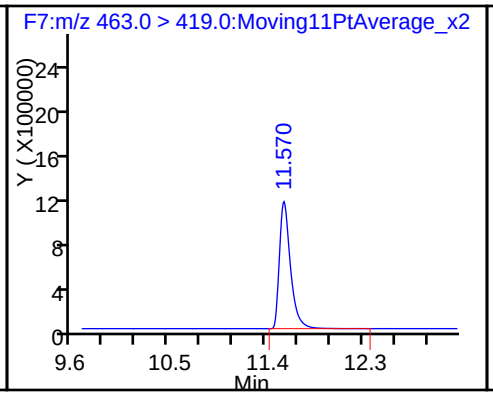
15 Perfluorooctane sulfonic acid



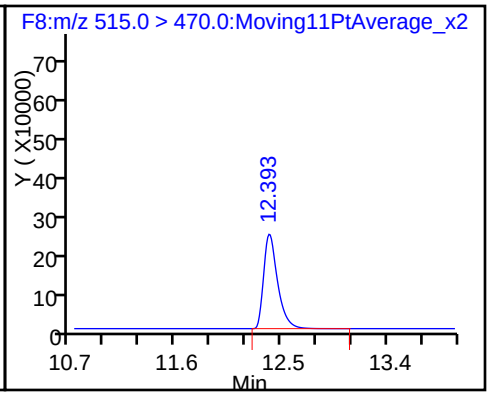
D 17 13C5 PFNA



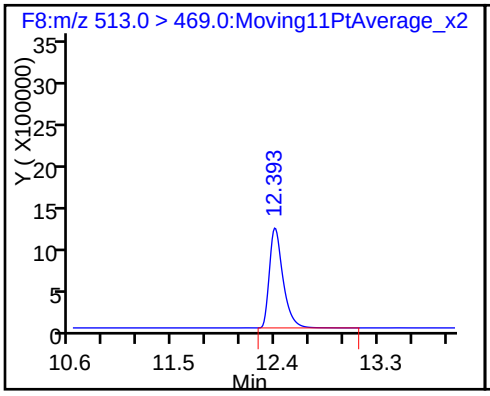
18 Perfluorononanoic acid



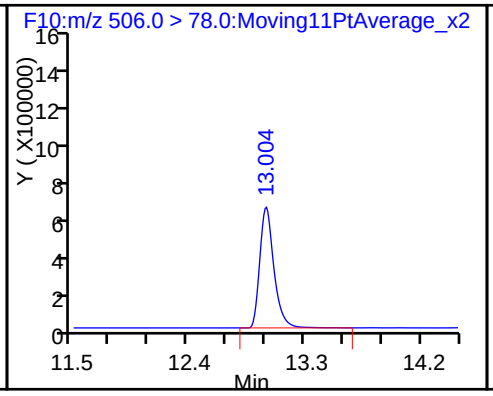
D 19 13C2 PFDA



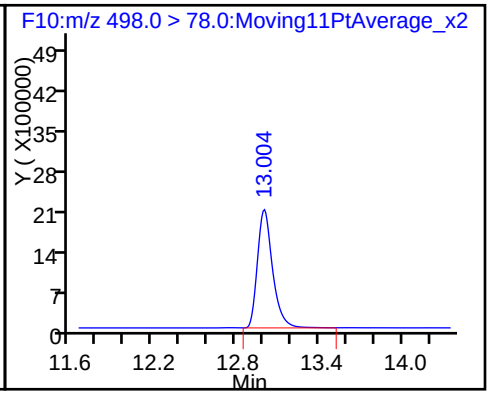
20 Perfluorodecanoic acid



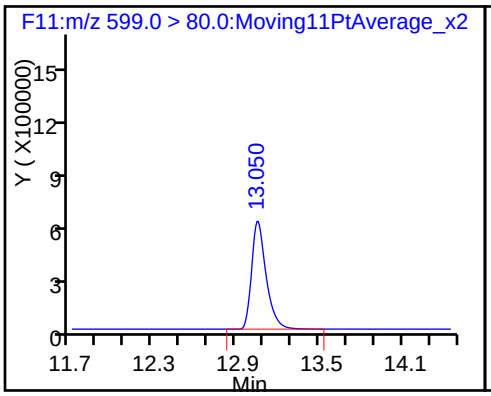
D 23 13C8 FOSA



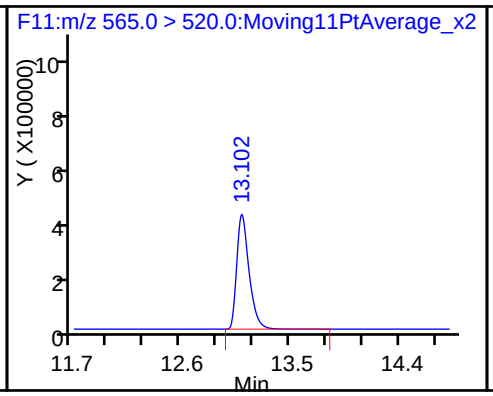
24 Perfluorooctane Sulfonamide



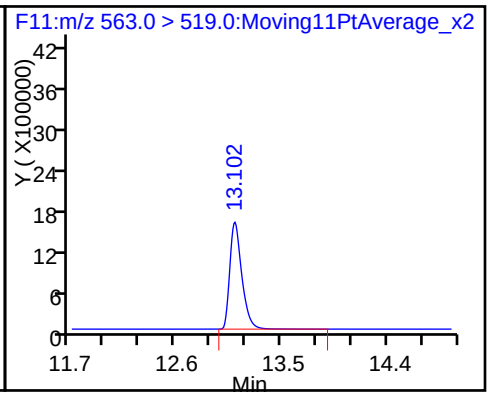
39 Perfluorodecane Sulfonic acid



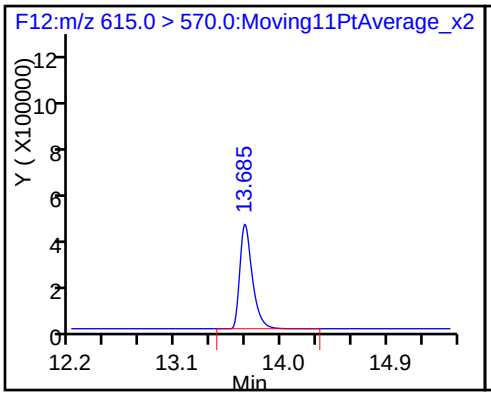
D 26 13C2 PFUnA



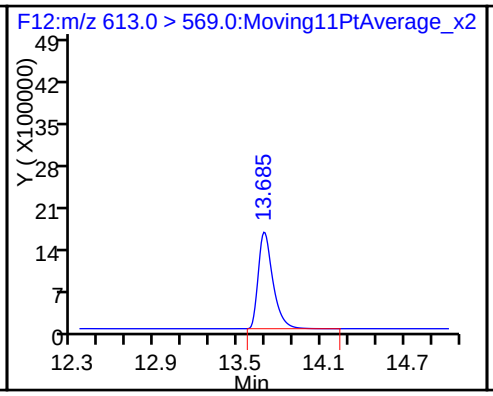
27 Perfluoroundecanoic acid



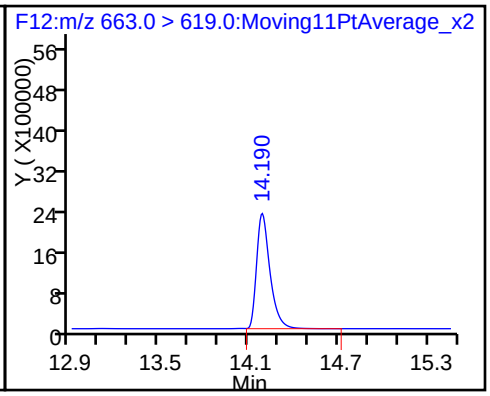
D 28 13C2 PFDoA



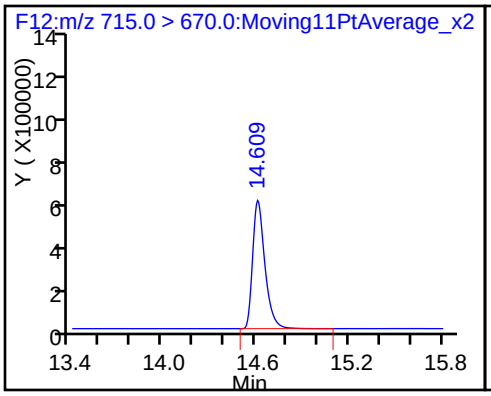
29 Perfluorododecanoic acid



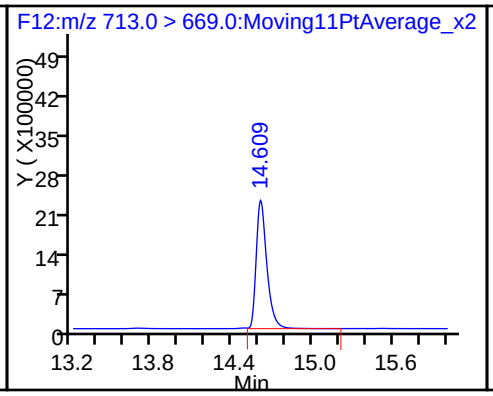
30 Perfluorotridecanoic acid



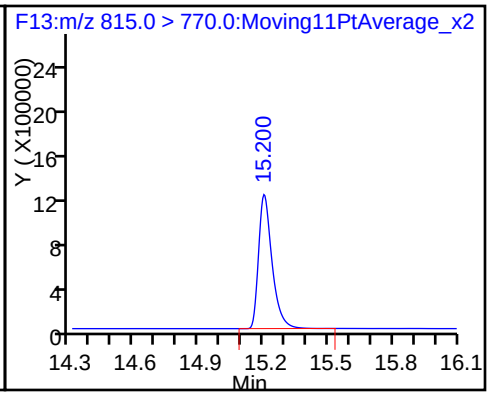
D 33 13C2-PFTeDA



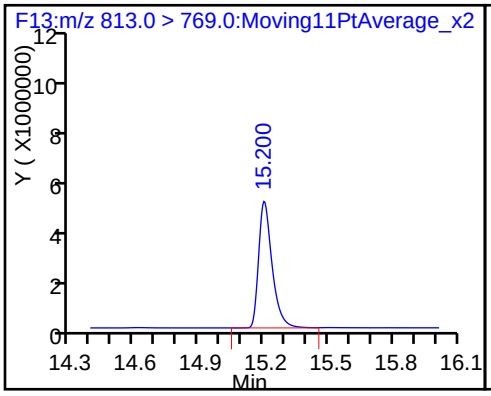
32 Perfluorotetradecanoic acid



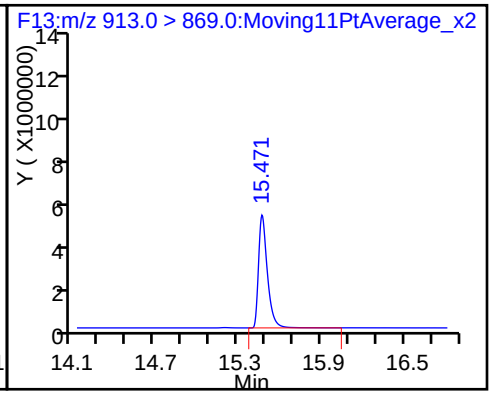
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d
Lims ID: Std L7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 28-May-2016 19:41:34 ALS Bottle#: 15 Worklist Smp#: 11
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L7
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:21 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.795	-0.001		921081	38.6		77.2	629	
2 Perfluorobutyric acid										
212.9 > 169.0	5.794	5.797	-0.003	1.000	12040963	431.2		108	21815	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.957	-0.002		1958386	35.9		71.9	1962	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.960	6.959	0.001	1.000	18430262	385.1		96.3	2993	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.085	7.085	0.0	1.000	10165048	406.5		115		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.085	7.085	0.0	1.000	10165048	NC			1530	
298.9 > 99.0	7.085	7.085	0.0	1.000	5062927		2.01(0.00-0.00)		9623	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.236	8.235	0.001	1.000	20405381	421.3		105	2021	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.236	0.0		2196254	37.6		75.3	38679	
D 8 13C4-PFHpA										
367.0 > 322.0	9.469	9.474	-0.005		2130133	34.4		68.7	19827	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.469	9.475	-0.006	1.000	20641461	406.2		102	26320	
D 11 18O2 PFHxS										
403.0 > 84.0	9.504	9.507	-0.003		938514	32.9		69.5	48189	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.504	9.507	-0.003	1.000	7001101	NC			2487	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.504	9.507	-0.003	1.000	7001101	385.8		102		
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.586	0.0		2163488	32.1		64.2	68056	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.595	10.587	0.008	1.000	18258509	415.1		104	8809	
413.0 > 169.0	10.595	10.587	0.008	1.000	6705845		2.72(0.00-0.00)	104	3472	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.604	10.596	0.008	1.000	7177688	NC			5957	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.604	10.596	0.008	1.000	7177688	399.9		105		
D 16 13C4 PFOS										
503.0 > 80.0	11.552	11.543	0.009		1099749	31.3		65.5	6925	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.552	11.545	0.007	1.000	11426654	395.6		103	486	
499.0 > 99.0	11.552	11.545	0.007	1.000	6398016		1.79(0.00-0.00)	103	2024	
D 17 13C5 PFNA										
468.0 > 423.0	11.569	11.562	0.007		2065307	33.3		66.6	31365	
18 Perfluorononanoic acid										
463.0 > 419.0	11.569	11.563	0.006	1.000	14853862	425.9		106	7857	
D 19 13C2 PFDA										
515.0 > 470.0	12.393	12.392	0.001		1621605	32.6		65.1	38475	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.393	12.392	0.001	1.000	17545327	413.9		103	7015	
D 23 13C8 FOSA										
506.0 > 78.0	12.994	13.000	-0.006		3951484	35.3		70.6	8154	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.994	13.002	-0.008	1.000	27903019	436.3		109	1770	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.050	13.048	0.002	1.000	7020978	378.2		98.1		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.050	13.048	0.002	1.000	7020978	NC			15970	
D 26 13C2 PFUnA										
565.0 > 520.0	13.093	13.094	-0.001		2347573	33.7		67.3	36606	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.093	13.094	-0.001	1.000	19353671	399.7		99.9	9302	
D 28 13C2 PFDoA										
615.0 > 570.0	13.694	13.685	0.009		3116941	37.5		75.0	13808	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.694	13.685	0.009	1.000	21087337	418.2		105	6265	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.189	14.184	0.005	1.000	24559689	343.8		85.9	3938	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.615	14.609	0.006		2833190	38.2		76.3	9359	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.609	0.006	1.000	21561674	394.2		98.6	3916	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.204	15.203	0.001		4758827	40.7		81.5	5780	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.204	15.203	0.001	1.000	36953897	387.5		96.9	3483	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.476	15.473	0.003	1.000	46456813	484.6		121	6187	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L7_00017 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:22 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Injection Date: 28-May-2016 19:41:34 Instrument ID: A6

Lims ID: Std L7

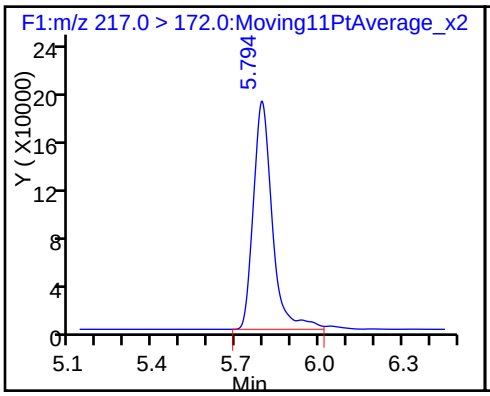
Client ID:

Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 11

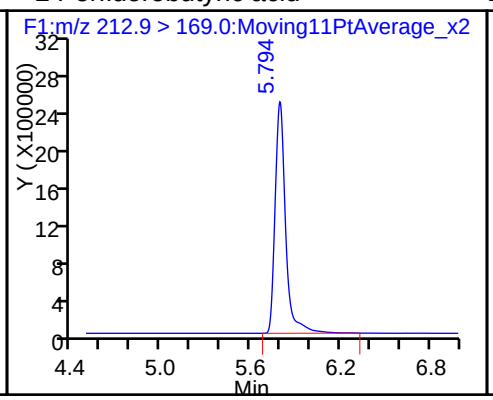
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

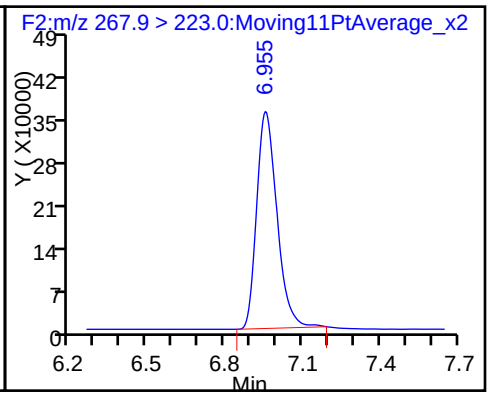
D 1 13C4 PFBA



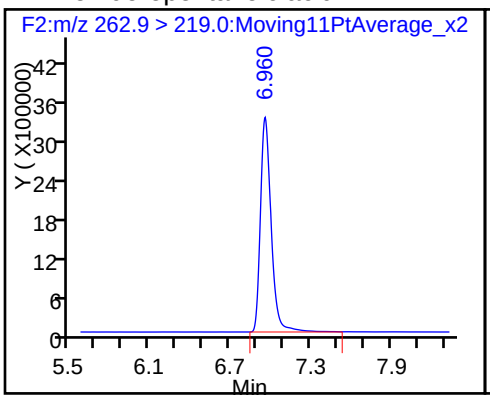
2 Perfluorobutyric acid



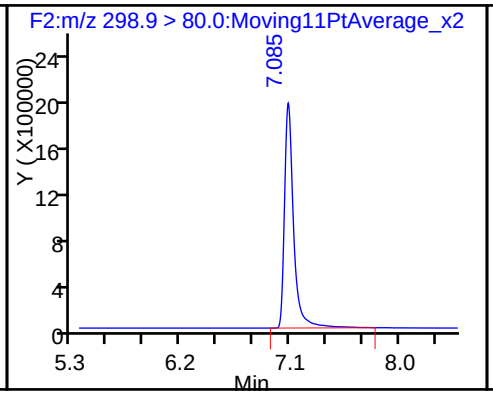
D 3 13C5-PFPeA



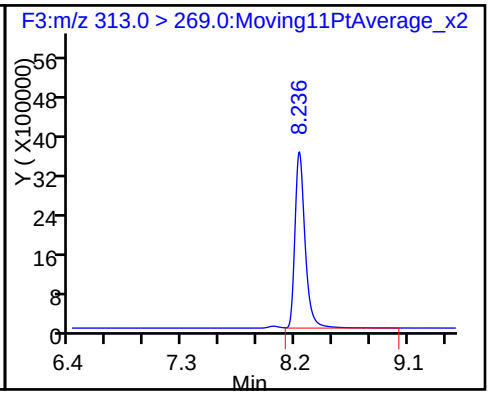
4 Perfluoropentanoic acid



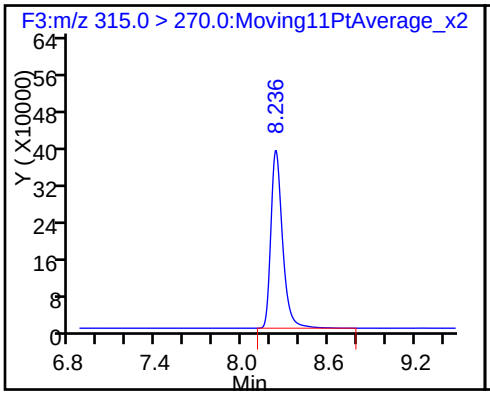
40 Perfluorobutanesulfonic acid



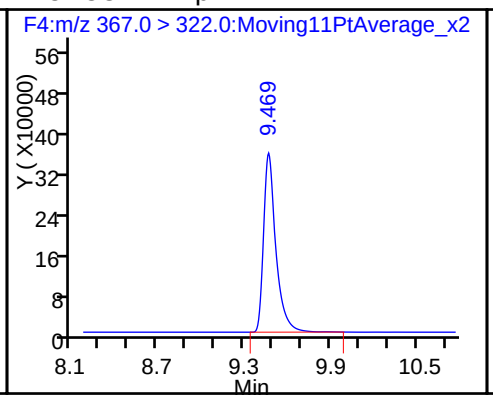
7 Perfluorohexanoic acid



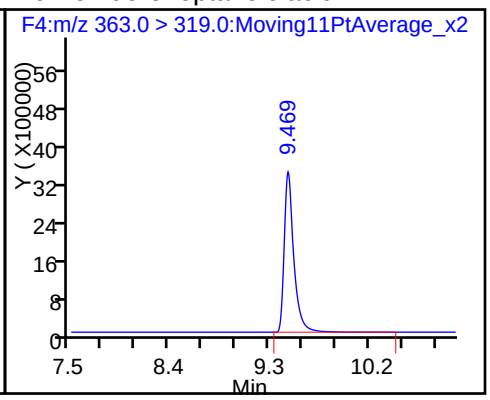
D 6 13C2 PFHxA



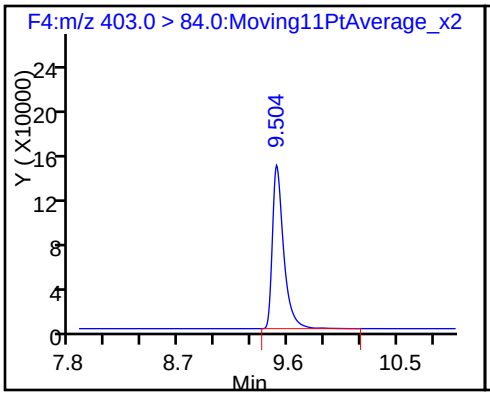
D 8 13C4-PFHpA



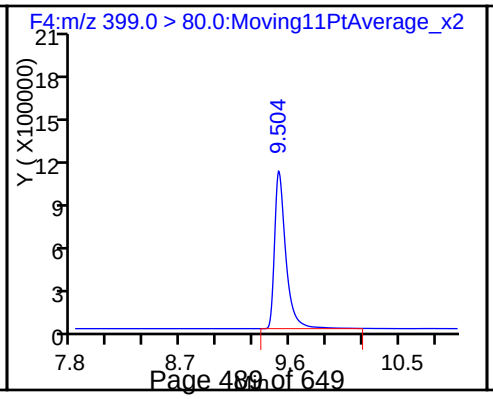
9 Perfluoroheptanoic acid



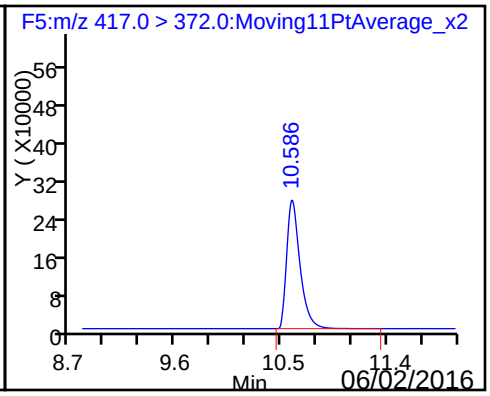
D 11 18O2 PFHxS



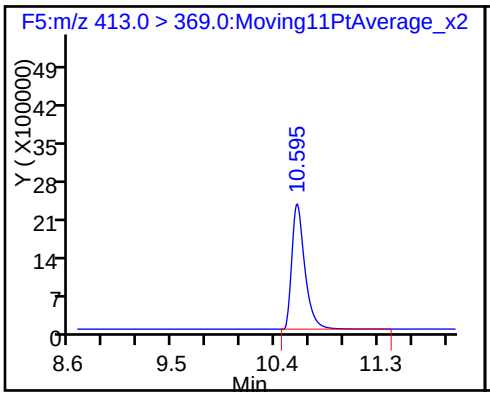
41 Perfluorohexanesulfonic acid



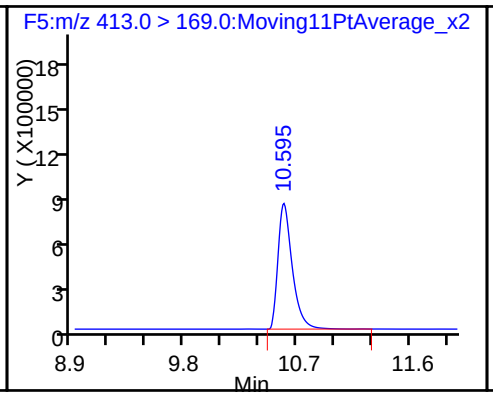
D 12 13C4 PFOA



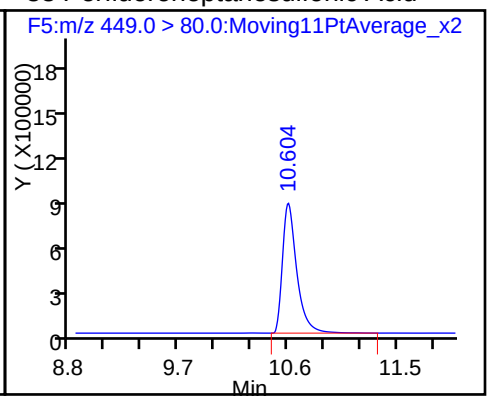
13 Perfluorooctanoic acid



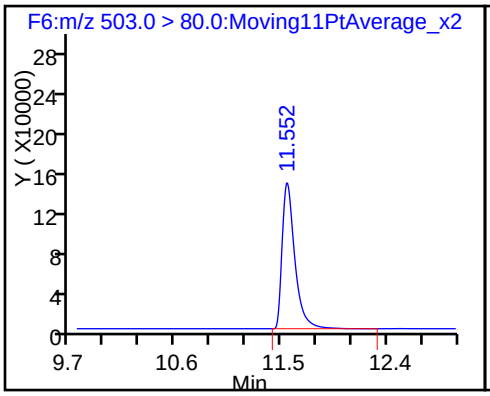
13 Perfluorooctanoic acid



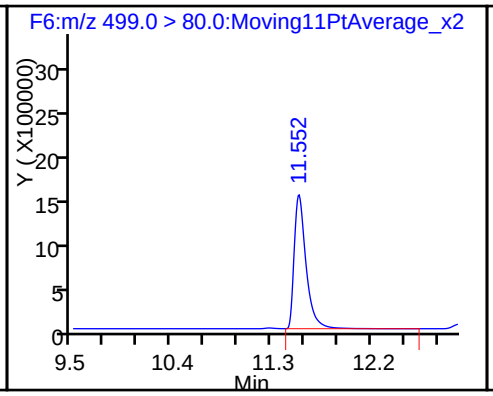
38 Perfluoroheptanesulfonic Acid



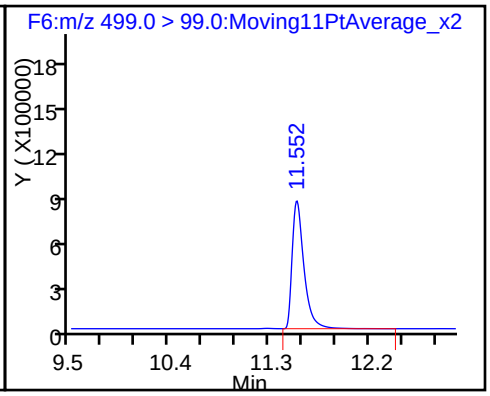
D 16 13C4 PFOS



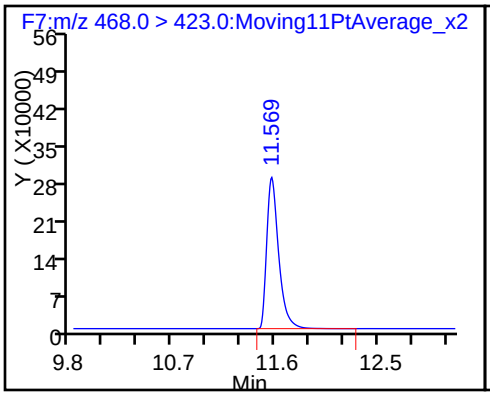
15 Perfluorooctane sulfonic acid



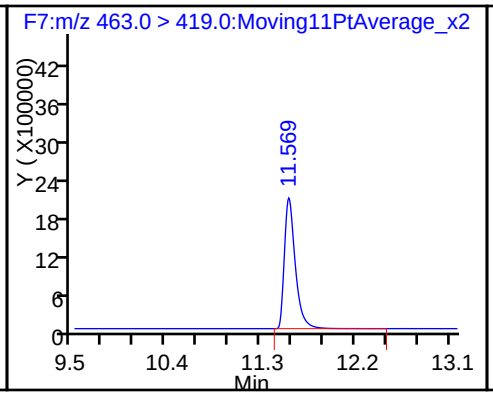
15 Perfluorooctane sulfonic acid



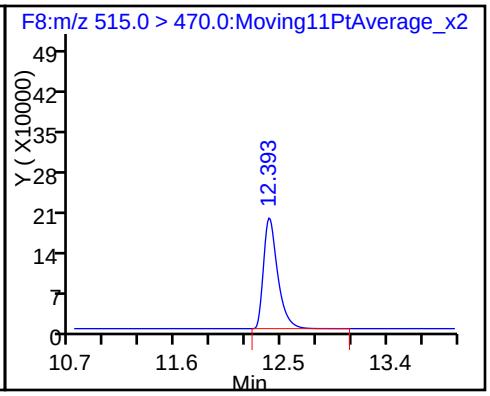
D 17 13C5 PFNA



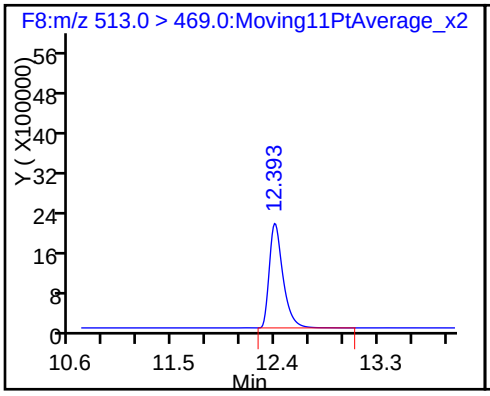
18 Perfluorononanoic acid



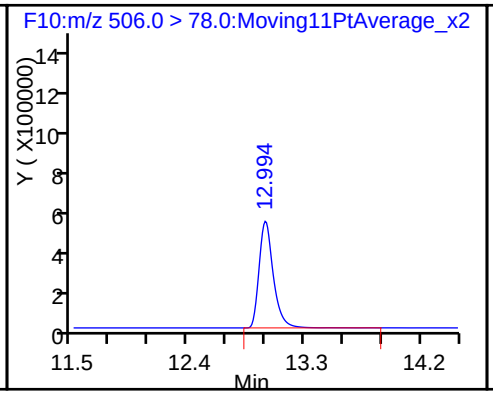
D 19 13C2 PFDA



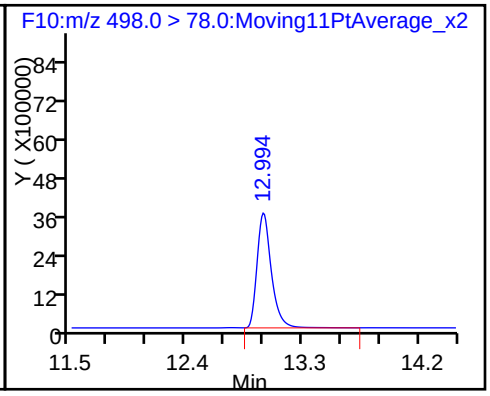
20 Perfluorodecanoic acid



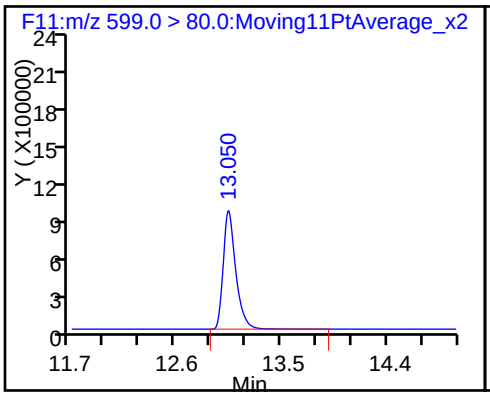
D 23 13C8 FOSA



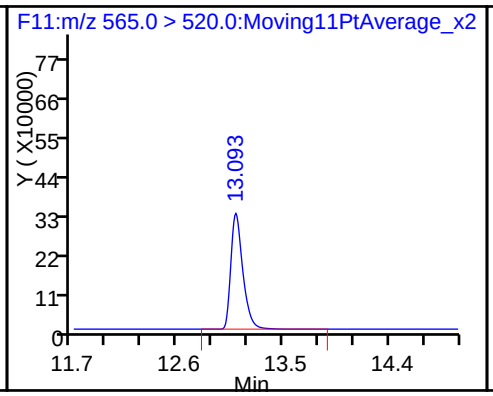
24 Perfluorooctane Sulfonamide



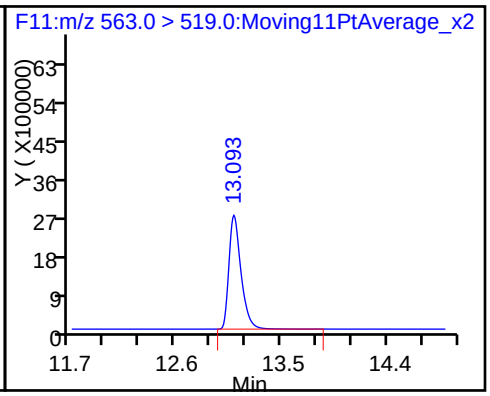
39 Perfluorodecane Sulfonic acid



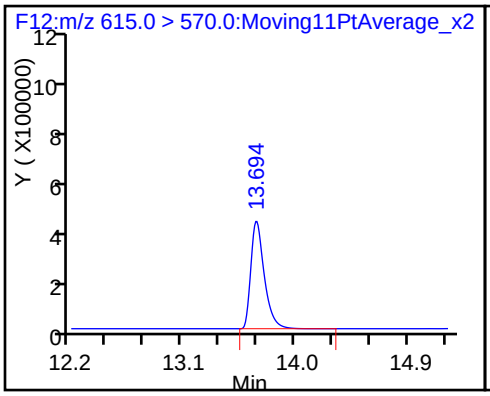
D 26 13C2 PFUnA



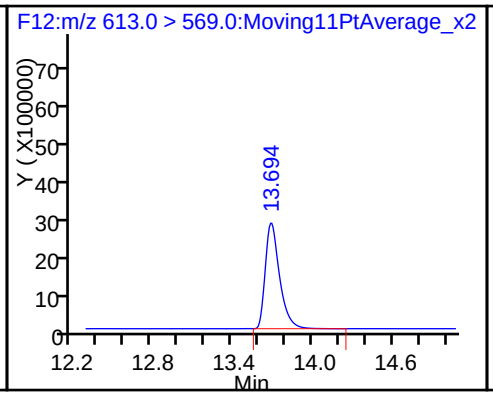
27 Perfluoroundecanoic acid



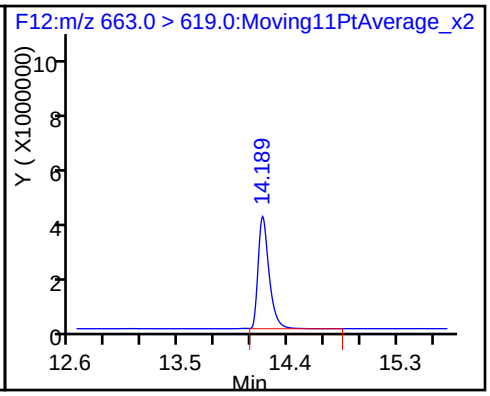
D 28 13C2 PFDoA



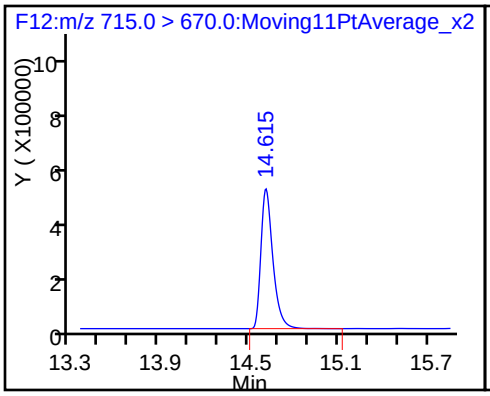
29 Perfluorododecanoic acid



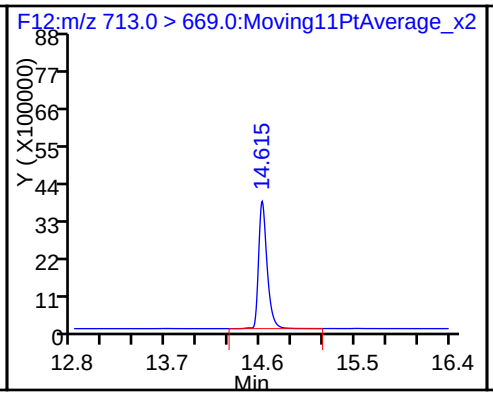
30 Perfluorotridecanoic acid



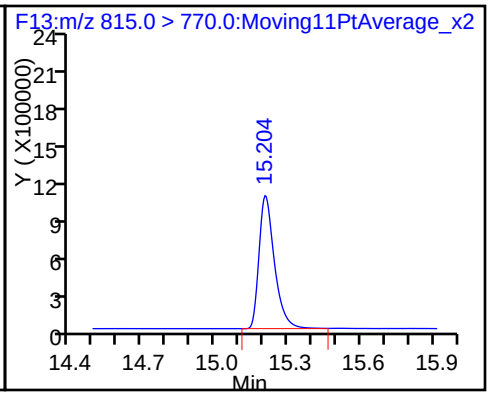
D 33 13C2-PFTeDA



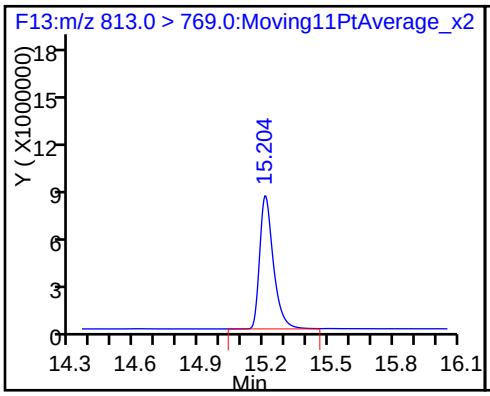
32 Perfluorotetradecanoic acid



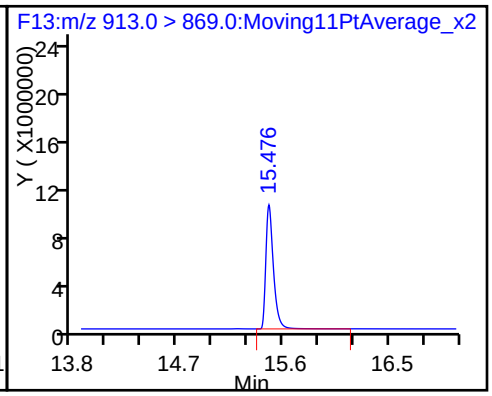
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1 Analy Batch No.: 112007

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/31/2016 12:51 Calibration End Date: 05/31/2016 14:59 Calibration ID: 21842

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-112007/3	31MAY2016A6A_003.d
Level 2	STD 320-112007/4	31MAY2016A6A_004.d
Level 3	STD 320-112007/5	31MAY2016A6A_005.d
Level 4	STD 320-112007/6	31MAY2016A6A_006.d
Level 5	STD 320-112007/7	31MAY2016A6A_007.d
Level 6	STD 320-112007/8	31MAY2016A6A_008.d
Level 7	STD 320-112007/9	31MAY2016A6A_009.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	+++++	5.809	5.806	5.803	5.803	5.800	5.800				5.556 - 6.056	5.804
Perfluoropentanoic acid (PFPeA)	6.974	6.969	6.974	6.969	6.969	6.964	6.969				6.720 - 7.220	6.970
Perfluorobutanesulfonic acid (PFBS)	7.106	7.102	7.102	7.095	7.095	7.095	7.095				6.849 - 7.349	7.099
Perfluorohexanoic acid (PFHxA)	8.252	8.258	8.252	8.252	8.252	8.252	8.252				8.003 - 8.503	8.253
Perfluoroheptanoic acid (PFHpA)	+++++	9.499	9.498	9.493	9.493	9.487	9.493				9.244 - 9.744	9.494
Perfluorohexanesulfonic acid (PFHxS)	9.538	9.538	9.531	9.532	9.531	9.532	9.532				9.283 - 9.783	9.533
Perfluorooctanoic acid (PFOA)	10.623	10.614	10.614	10.605	10.614	10.614	10.605				10.362 - 10.862	10.613
Perfluoroheptanesulfonic Acid (PFHpS)	+++++	10.632	10.623	10.614	10.614	10.623	10.614				10.372 - 10.872	10.620
Perfluorooctanesulfonic acid (PFOS)	+++++	11.585	11.568	11.569	11.577	11.560	11.560				11.321 - 11.821	11.570
Perfluorononanoic acid (PFNA)	+++++	11.595	11.586	11.586	11.594	11.586	11.578				11.339 - 11.839	11.588
Perfluorodecanoic acid (PFDA)	12.434	12.425	12.424	12.424	12.424	12.414	12.414				12.173 - 12.673	12.423
Perfluorooctane Sulfonamide (FOSA)	+++++	13.021	13.013	13.021	13.013	13.021	13.013				12.768 - 13.268	13.017
Perfluorodecanesulfonic acid (PFDS)	+++++	13.084	13.076	13.075	13.076	13.084	13.076				12.831 - 13.331	13.079
Perfluoroundecanoic acid (PFUnA)	+++++	13.128	13.120	13.119	13.120	13.128	13.120				12.874 - 13.374	13.123
Perfluorododecanoic acid (PFDoA)	13.730	13.719	13.730	13.701	13.721	13.710	13.712				13.468 - 13.968	13.718
Perfluorotridecanoic Acid (PFTriA)	14.228	14.227	14.228	14.204	14.220	14.211	14.220				13.970 - 14.470	14.220
Perfluorotetradecanoic acid (PFTeA)	14.655	14.647	14.648	14.640	14.642	14.634	14.642				14.394 - 14.894	14.644
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	15.228	15.225	15.223	15.220	15.218	15.220				14.973 - 15.473	15.222
Perfluoro-n-octandecanoic acid (PFODA)	15.496	15.495	15.491	15.495	15.491	15.495	15.486				15.243 - 15.743	15.493
13C4 PFBA	5.806	5.806	5.803	5.803	5.803	5.800	5.800				5.553 - 6.053	5.803
13C5-PFPeA	6.969	6.974	6.969	6.969	6.969	6.964	6.964				6.718 - 7.218	6.968
13C2 PFHxA	8.252	8.258	8.252	8.252	8.252	8.247	8.252				8.002 - 8.502	8.252
13C4-PFHpA	9.499	9.499	9.498	9.493	9.493	9.487	9.493				9.245 - 9.745	9.495
18O2 PFHxS	9.531	9.538	9.531	9.532	9.531	9.532	9.532				9.282 - 9.782	9.532
13C4 PFOA	10.623	10.614	10.614	10.605	10.614	10.614	10.605				10.362 - 10.862	10.613
13C4 PFOS	11.577	11.577	11.568	11.569	11.568	11.560	11.560				11.318 - 11.818	11.568
13C5 PFNA	11.594	11.595	11.586	11.586	11.594	11.586	11.578				11.339 - 11.839	11.588
13C2 PFDA	12.434	12.425	12.424	12.424	12.424	12.414	12.414				12.173 - 12.673	12.423
13C8 FOSA	13.031	13.021	13.013	13.021	13.013	13.021	13.013				12.769 - 13.269	13.019
13C2 PFUnA	13.137	13.128	13.120	13.119	13.120	13.128	13.120				12.874 - 13.374	13.125
13C2 PFDoA	13.730	13.719	13.730	13.701	13.721	13.710	13.712				13.468 - 13.968	13.718
13C2-PFTeDA	14.648	14.647	14.648	14.640	14.642	14.634	14.642				14.393 - 14.893	14.643
13C2-PFHxDA	15.229	15.228	15.225	15.223	15.220	15.218	15.220				14.973 - 15.473	15.223

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1 Analy Batch No.: 112007

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/31/2016 12:51 Calibration End Date: 05/31/2016 14:59 Calibration ID: 21842

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-112007/3	31MAY2016A6A_003.d
Level 2	STD 320-112007/4	31MAY2016A6A_004.d
Level 3	STD 320-112007/5	31MAY2016A6A_005.d
Level 4	STD 320-112007/6	31MAY2016A6A_006.d
Level 5	STD 320-112007/7	31MAY2016A6A_007.d
Level 6	STD 320-112007/8	31MAY2016A6A_008.d
Level 7	STD 320-112007/9	31MAY2016A6A_009.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 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	26623 24710	26024 20959	27520 18411	26440	Ave		24383.8886				13.9		50.0			
13C5-PFPeA	78502 63903	68112 50506	72941 42270	68565	Ave		63542.7229				20.1		50.0			
13C2 PFHxA	69769 63597	62953 51253	68090 45007	68302	Ave		61281.6400				15.5		50.0			
13C4-PFHpA	80576 68813	76180 50484	81722 46127	76607	Ave		68644.1886				21.2		50.0			
18O2 PFHxS	33221 33189	31989 24378	38672 20418	34000	Ave		30838.2543				20.3		50.0			
13C4 PFOA	90986 71597	83136 49411	89983 42396	81809	Ave		72759.8914				26.8		50.0			
13C4 PFOS	47814 39933	45431 28108	47631 23944	45087	Ave		39706.8410				24.6		50.0			
13C5 PFNA	79942 65326	78040 49641	77750 43535	72387	Ave		66660.2314				22.0		50.0			
13C2 PFDA	62869 51695	59243 37699	67593 32661	56797	Ave		52651.0400				24.7		50.0			
13C8 FOSA	139000 132571	133977 97359	151253 86558	136690	Ave		125343.880				19.0		50.0			
13C2 PFUnA	91904 75837	88051 53797	87410 45776	83653	Ave		75204.1086				24.2		50.0			
13C2 PFDoA	105358 92411	97012 72670	108647 61718	97291	Ave		90729.5114				19.0		50.0			
13C2-PFTeDA	93696 83332	84115 65519	96573 57157	87249	Ave		81091.4857				17.9		50.0			
13C2-PFHxDA	139468 132878	129655 104471	143265 94863	137329	Ave		125989.854				14.9		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1 Analy Batch No.: 112007

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/31/2016 12:51 Calibration End Date: 05/31/2016 14:59 Calibration ID: 21842

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	+++++ 33601	30976 28810	45392	38248	42491	AveID		1.5290				12.4		35.0			
Perfluoropentanoic acid (PFPeA)	101330 58090	76403 49537	79525	74326	75305	AveID		1.1553				6.1		35.0			
Perfluorobutanesulfonic acid (PFBS)	40595 34562	45609 30506	43279	39116	42236	AveID		1.3002				11.3		50.0			
Perfluorohexanoic acid (PFHxA)	66462 59812	71362 52176	84440	74747	72989	AveID		1.1278				7.9		35.0			
Perfluoroheptanoic acid (PFHpA)	+++++ 59210	110770 51781	102300	79372	85732	L1ID	0.3353	1.1425							0.9990		0.9900
Perfluorohexanesulfonic acid (PFHxS)	30093 23000	30416 19411	37049	31032	31023	AveID		0.9366				2.1		35.0			
Perfluorooctanoic acid (PFOA)	97714 53605	82635 45105	87733	77186	75211	AveID		1.0265				5.4		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	+++++ 23376	22462 19466	39215	35368	33685	L2ID	-0.316	0.8358							0.9980		0.9900
Perfluorooctanesulfonic acid (PFOS)	+++++ 37809	45840 29893	57676	52986	56851	AveID		1.2354				11.6		35.0			
Perfluorononanoic acid (PFNA)	+++++ 42549	76977 36104	66098	54643	59164	AveID		0.8639				9.0		35.0			
Perfluorodecanoic acid (PFDA)	66094 49487	79213 42529	86265	67160	69048	AveID		1.2568				8.3		35.0			
Perfluorooctane Sulfonamide (FOSA)	+++++ 84278	94929 70539	121772	106269	104798	AveID		0.7937				6.5		35.0			
Perfluorodecanesulfonic acid (PFDS)	+++++ 23434	40392 19162	43138	36285	33762	L1ID	0.1509	0.8132							0.9990		0.9900
Perfluoroundecanoic acid (PFUnA)	+++++ 57176	127094 50080	96218	78611	77745	L2ID	0.4149	1.0227							0.9960		0.9900
Perfluorododecanoic acid (PFDoA)	80640 63739	82131 53329	95456	76941	77686	AveID		0.8376				5.2		35.0			
Perfluorotridecanoic Acid (PFTriA)	119404 71732	119146 61710	137603	98527	109019	AveID		1.1153				10.4		50.0			
Perfluorotetradecanoic acid (PFTeA)	147048 64372	112219 55440	110490	84044	82336	L2ID	0.2540	0.8966							0.9980		0.9900
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 106839	287385 92683	187061	141940	148168	L2ID	1.4797	1.4713							0.9980		0.9900
Perfluoro-n-octandecanoic acid (PFODA)	150480 113182	139236 106090	136273	130243	145290	AveID		1.4722				10.6		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1 Analy Batch No.: 112007

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/31/2016 12:51 Calibration End Date: 05/31/2016 14:59 Calibration ID: 21842

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-112007/3	31MAY2016A6A_003.d
Level 2	STD 320-112007/4	31MAY2016A6A_004.d
Level 3	STD 320-112007/5	31MAY2016A6A_005.d
Level 4	STD 320-112007/6	31MAY2016A6A_006.d
Level 5	STD 320-112007/7	31MAY2016A6A_007.d
Level 6	STD 320-112007/8	31MAY2016A6A_008.d
Level 7	STD 320-112007/9	31MAY2016A6A_009.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4 PFBA	Ave	1331127 1047944	1301198 920558	1376019	1322004	1235511	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	3925096 2525317	3405590 2113511	3647062	3428245	3195132	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	3488446 2562636	3147638 2250360	3404519	3415124	3179851	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	4028812 2524194	3809003 2306360	4086096	3830335	3440666	50.0 50.0	50.0 50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	1571368 1153063	1513092 965792	1829184	1608216	1569831	47.3 47.3	47.3 47.3	47.3	47.3	47.3
13C4 PFOA	Ave	4549323 2470567	4156783 2119790	4499170	4090464	3579865	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	2285487 1343585	2171603 1144504	2276752	2155157	1908821	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	3997110 2482043	3902011 2176766	3887506	3619357	3266288	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDA	Ave	3143437 1884965	2962171 1633067	3379637	2839856	2584731	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	6949998 4867961	6698828 4327875	7562660	6834485	6628551	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	4595181 2689857	4402566 2288823	4370522	4182650	3791839	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	5267912 3633475	4850596 3085918	5432350	4864529	4620549	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	4684783 3275932	4205754 2857848	4828661	4362467	4166575	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	6973385 5223563	6482747 4743139	7163241	6866465	6643909	50.0 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.: 320-19022-1 Analy Batch No.: 112007

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/31/2016 12:51 Calibration End Date: 05/31/2016 14:59 Calibration ID: 21842

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-112007/3	31MAY2016A6A_003.d
Level 2	STD 320-112007/4	31MAY2016A6A_004.d
Level 3	STD 320-112007/5	31MAY2016A6A_005.d
Level 4	STD 320-112007/6	31MAY2016A6A_006.d
Level 5	STD 320-112007/7	31MAY2016A6A_007.d
Level 6	STD 320-112007/8	31MAY2016A6A_008.d
Level 7	STD 320-112007/9	31MAY2016A6A_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	+++++ 6720179	30976 11523989	226960	764950	2124537	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	50665 11617905	76403 19814969	397624	1486524	3765270	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	17943 6110567	40318 10786825	191295	691572	1866850	0.442 177	0.884 354	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	33231 11962395	71362 20870280	422198	1494943	3649464	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		L1ID	+++++ 11841967	110770 20712505	511502	1587434	4286583	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	14234 4351661	28774 7345254	175241	587126	1467407	0.473 189	0.946 378	4.73	18.9	47.3
Perfluorooctanoic acid (PFOA)		AveID	48857 10721047	82635 18041857	438664	1543711	3760545	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		L2ID	+++++ 4450812	21384 7412646	186662	673415	1603386	+++++ 190	0.952 381	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	+++++ 7229088	43823 11431237	275691	1013086	2717455	+++++ 191	0.956 382	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		AveID	+++++ 8509750	76977 14441472	330489	1092851	2958176	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecanoic acid (PFDA)		AveID	33047 9897323	79213 17011559	431327	1343196	3452418	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	+++++ 16855550	94929 28215564	608860	2125370	5239897	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecanesulfonic acid (PFDS)		L1ID	+++++ 4518038	38938 7388958	207924	699570	1627317	+++++ 193	0.964 386	4.82	19.3	48.2
Perfluoroundecanoic acid (PFUnA)		L2ID	+++++ 11435145	127094 20032158	481092	1572228	3887233	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	40320 12747780	82131 21331668	477282	1538810	3884314	0.500 200	1.00 400	5.00	20.0	50.0

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1 Analy Batch No.: 112007

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/31/2016 12:51 Calibration End Date: 05/31/2016 14:59 Calibration ID: 21842

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorotridecanoic Acid (PFTriA)		AveID	59702 14346430	119146 24683868	688014	1970539	5450962	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		L2ID	73524 12874426	112219 22175922	552449	1680871	4116786	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 21367734	287385 37073350	935306	2838801	7408407	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-octandecanoic acid (PFODA)		AveID	75240 22636301	139236 42435932	681363	2604852	7264490	0.500 200	1.00 400	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L1ID = Linear 1/conc IsoDil
L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_003.d
Lims ID: Std L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 31-May-2016 12:51:48 ALS Bottle#: 9 Worklist Smp#: 3
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L1
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:12:58 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 31-May-2016 16:13:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.806	5.803	0.003		1331127	54.6		109	583	
2 Perfluorobutyric acid										
212.9 > 169.0	5.819	5.806	0.013	1.000	13906	0.3416		68.3	693	
D 3 13C5-PFPeA										
267.9 > 223.0	6.969	6.968	0.001		3925096	61.8		124	11143	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.974	6.970	0.004	1.000	50665	0.5586		112	38.6	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.106	7.099	0.007	1.000	17943	0.4154		94.0		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.106	7.099	0.007	1.000	17943	NC			8.6	
298.9 > 99.0	7.113	7.099	0.014	1.001	6555		2.74(0.00-0.00)		20.9	
D 6 13C2 PFHxA										
315.0 > 270.0	8.252	8.252	0.0		3488446	56.9		114	62698	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.252	8.253	-0.001	1.000	33231	0.4223		84.5	3095	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.493	9.494	-0.001	1.000	33507	0.0705		14.1	1286	
D 8 13C4-PFHpA										
367.0 > 322.0	9.499	9.495	0.004		4028812	58.7		117	28638	
D 11 18O2 PFHxS										
403.0 > 84.0	9.531	9.532	-0.001		1571368	51.0		108	16549	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.538	9.533	0.005	1.000	14234	NC			127	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.538	9.533	0.005	1.000	14234	0.4575		96.7		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.623	10.612	0.011		4549323	62.5		125	13875	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.623	10.612	0.011	1.000	48857	0.5231		105	50.4	
413.0 > 169.0	10.623	10.612	0.011	1.000	13214		3.70(0.00-0.00)	105	15.9	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.632	10.622	0.010	1.000	13716	NC			955	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.632	10.622	0.010	1.000	13716	0.7215		152		
D 16 13C4 PFOS										
503.0 > 80.0	11.577	11.568	0.009		2285487	57.6		120	22927	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.577	11.571	0.006	1.000	26660	0.4513		94.4	285	
499.0 > 99.0	11.585	11.571	0.014	1.001	15622		1.71(0.00-0.00)	94.4	559	
D 17 13C5 PFNA										
468.0 > 423.0	11.594	11.589	0.005		3997110	60.0		120	70209	
18 Perfluorononanoic acid										
463.0 > 419.0	11.594	11.589	0.005	1.000	22966	0.3325		66.5	1691	
D 19 13C2 PFDA										
515.0 > 470.0	12.434	12.423	0.011		3143437	59.7		119	63563	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.434	12.423	0.011	1.000	33047	0.4182		83.6	2075	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.022	13.018	0.004	1.000	45567	0.4130		82.6	3139	
D 23 13C8 FOSA										
506.0 > 78.0	13.031	13.019	0.012		6949998	55.4		111	4270	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.094	13.081	0.013	1.000	10222	0.0774		16.1		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.094	13.081	0.013	1.000	10222	NC			715	
D 26 13C2 PFUnA										
565.0 > 520.0	13.137	13.124	0.013		4595181	61.1		122	44194	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.137	13.124	0.013	1.000	79413	0.4393		87.9	5774	
D 28 13C2 PFDoA										
615.0 > 570.0	13.730	13.718	0.012		5267912	58.1		116	29976	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.730	13.718	0.012	1.000	40320	0.4569		91.4	41.0	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.228	14.220	0.008	1.000	59702	0.5081		102	127	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.648	14.643	0.005		4684783	57.8		116	10225	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.655	14.644	0.011	1.000	73524	0.4951		99.0	62.8	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.229	15.223	0.006		6973385	55.3		111	10112	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.229	15.223	0.006	1.000	243520	0.5653		113	742	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.496	15.493	0.003	1.000	75240	0.4851		97.0	185	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L1_00019 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:12:58 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_003.d

Injection Date: 31-May-2016 12:51:48 Instrument ID: A6

Lims ID: Std L1

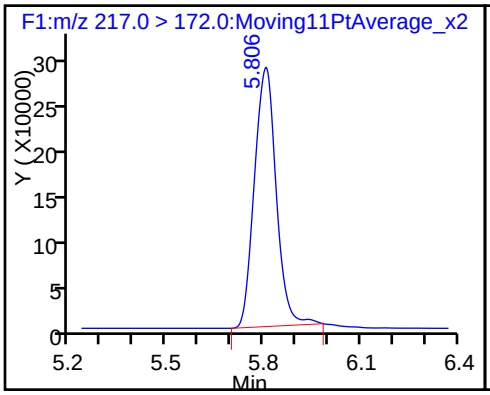
Client ID:

Operator ID: JRB ALS Bottle#: 9 Worklist Smp#: 3

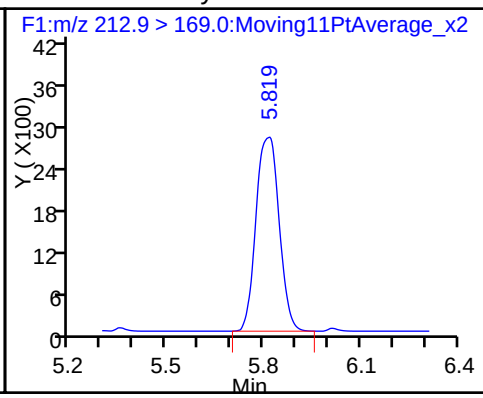
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

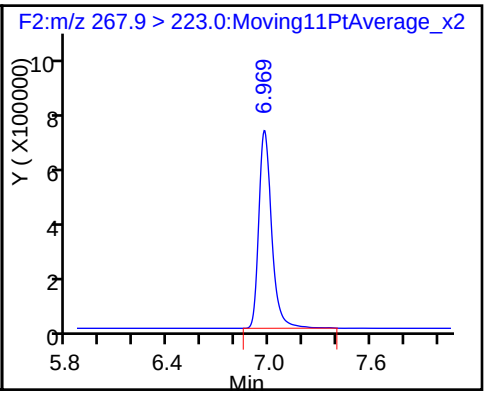
D 1 13C4 PFBA



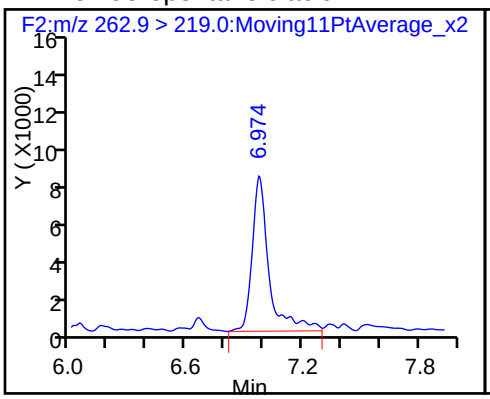
2 Perfluorobutyric acid



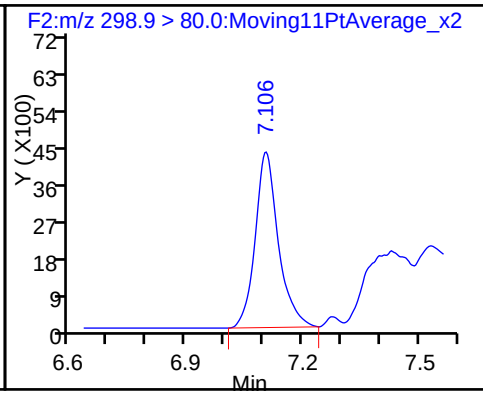
D 3 13C5-PFPeA



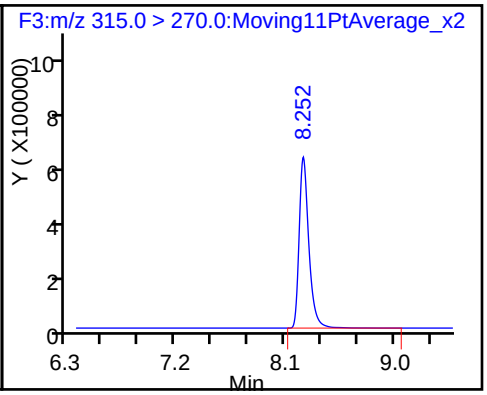
4 Perfluoropentanoic acid



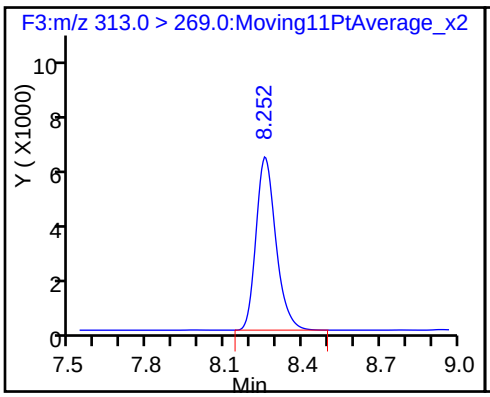
40 Perfluorobutanesulfonic acid



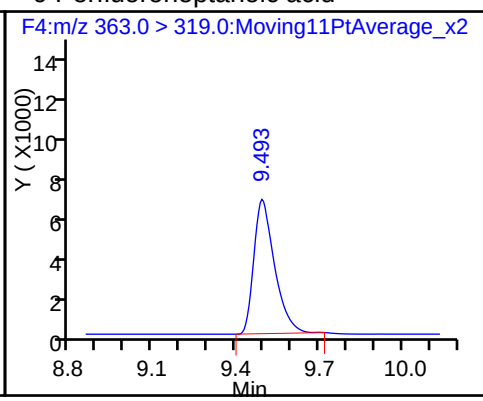
D 6 13C2 PFHxA



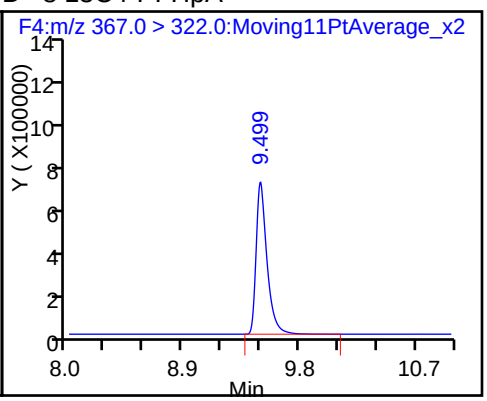
7 Perfluorohexanoic acid



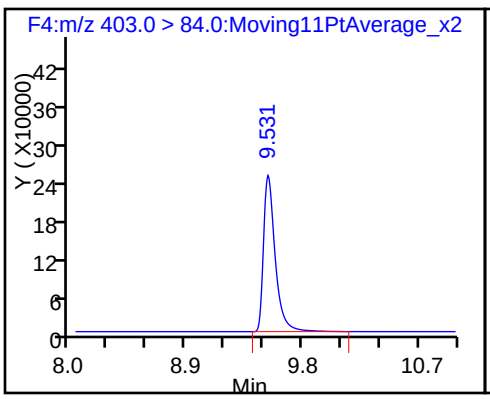
9 Perfluoroheptanoic acid



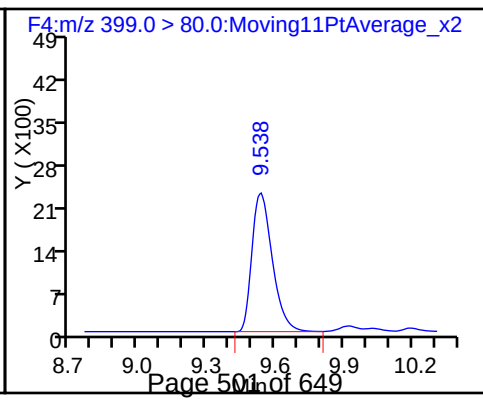
D 8 13C4-PFHpA



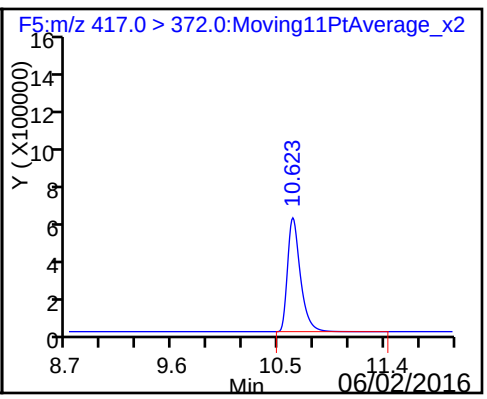
D 11 18O2 PFHxS



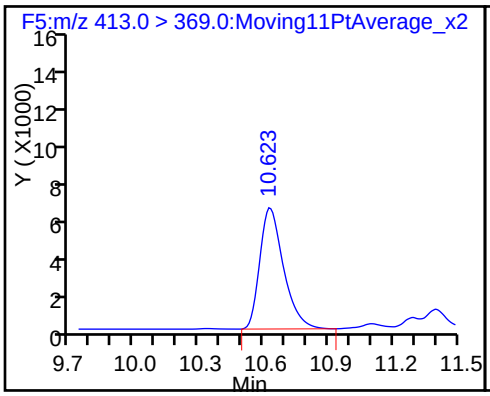
41 Perfluorohexanesulfonic acid



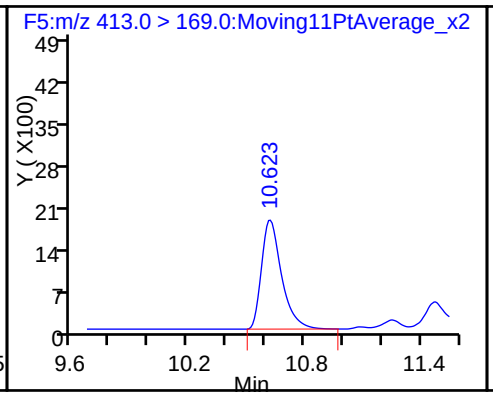
D 12 13C4 PFOA



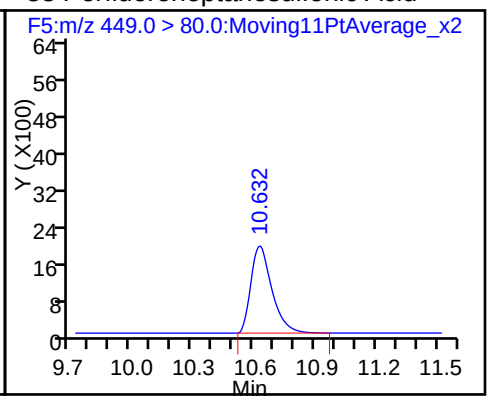
13 Perfluorooctanoic acid



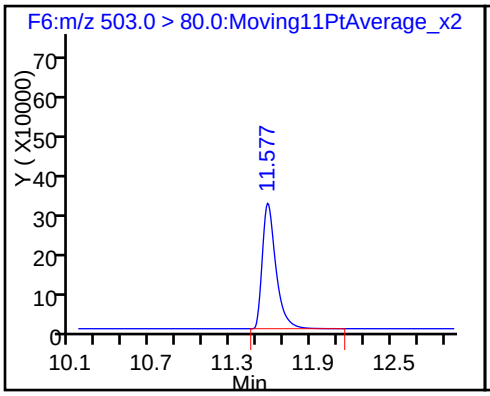
13 Perfluorooctanoic acid



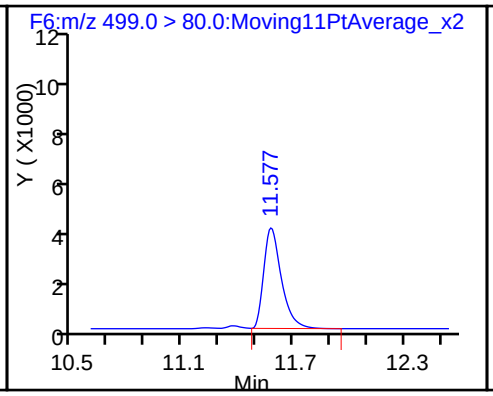
38 Perfluoroheptanesulfonic Acid



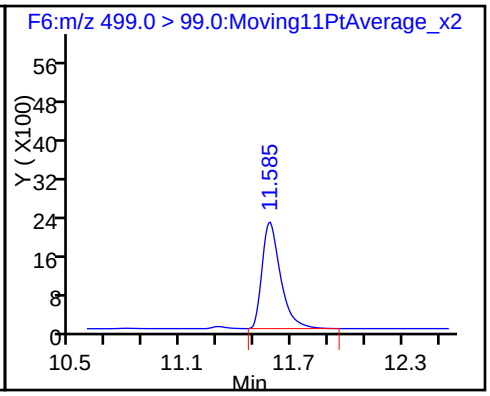
D 16 13C4 PFOS



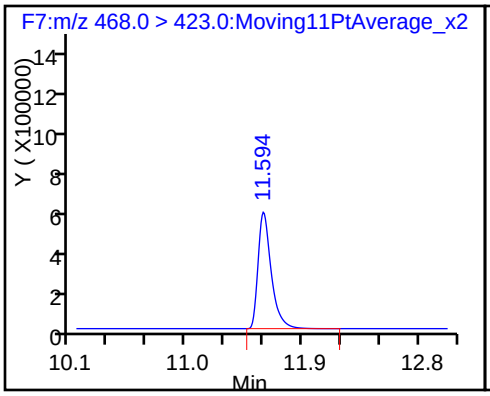
15 Perfluorooctane sulfonic acid



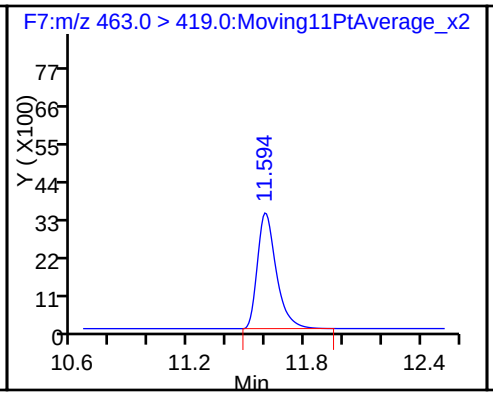
15 Perfluorooctane sulfonic acid



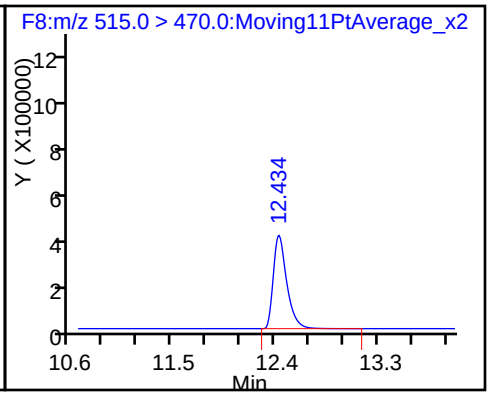
D 17 13C5 PFNA



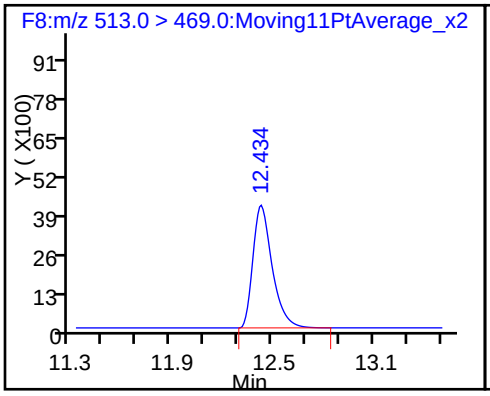
18 Perfluorononanoic acid



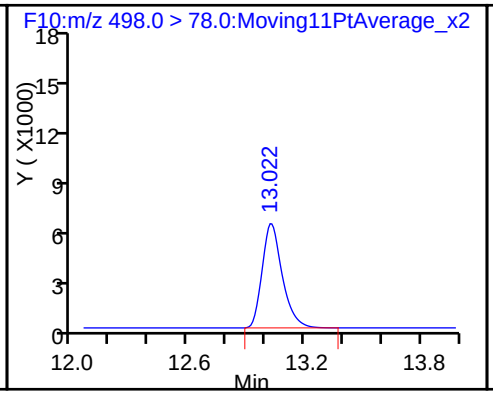
D 19 13C2 PFDA



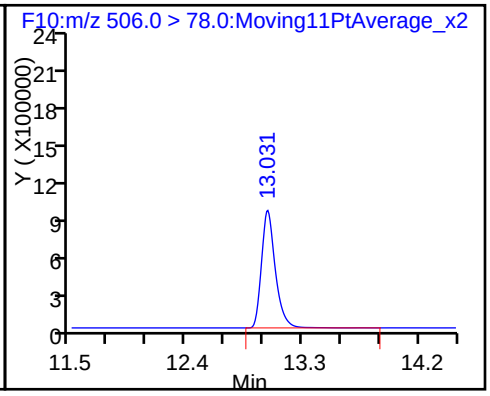
20 Perfluorodecanoic acid



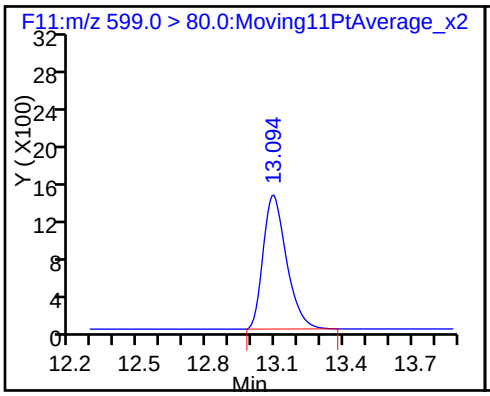
24 Perfluorooctane Sulfonamide



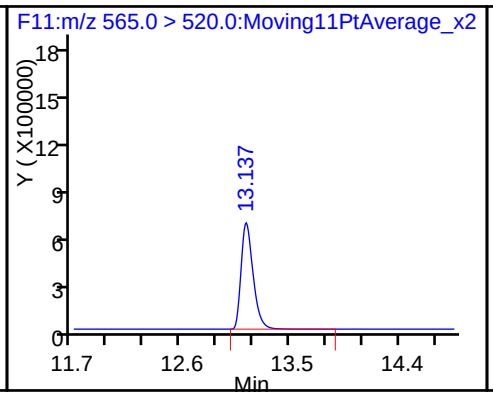
D 23 13C8 FOSA



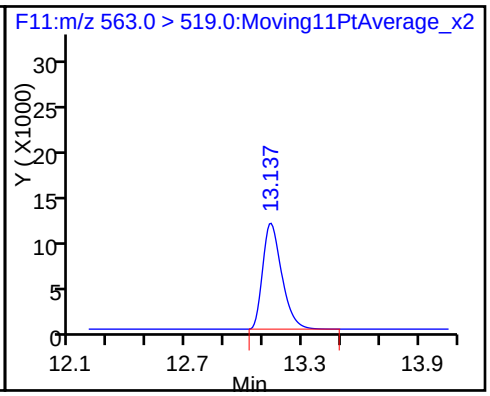
39 Perfluorodecane Sulfonic acid



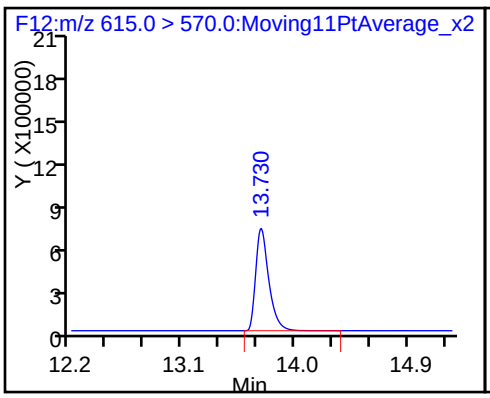
D 26 13C2 PFUnA



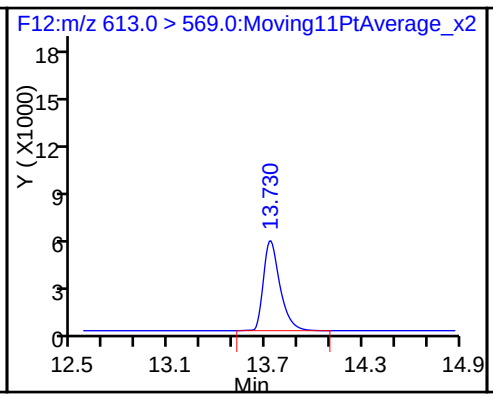
27 Perfluoroundecanoic acid



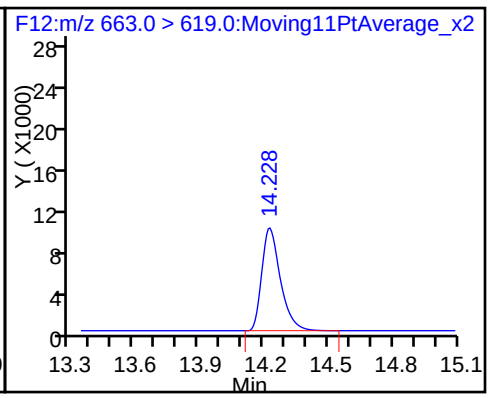
D 28 13C2 PFDoA



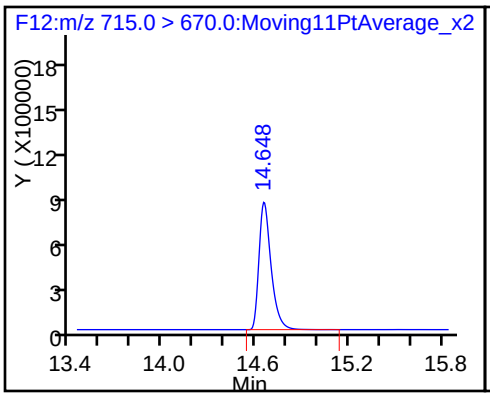
29 Perfluorododecanoic acid



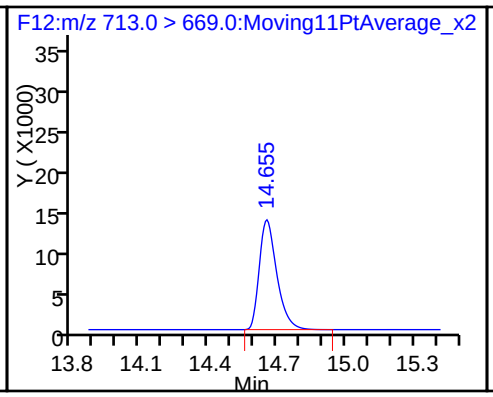
30 Perfluorotridecanoic acid



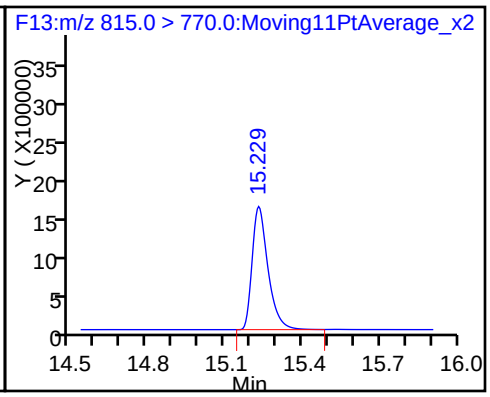
D 33 13C2-PFTeDA



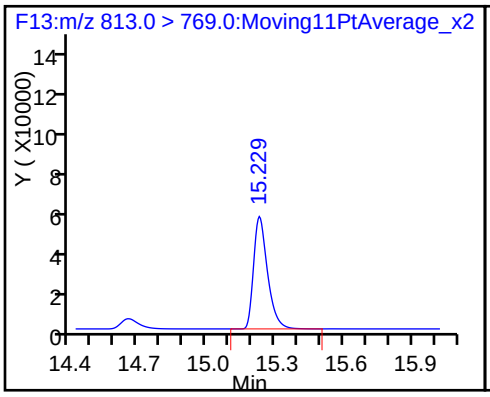
32 Perfluorotetradecanoic acid



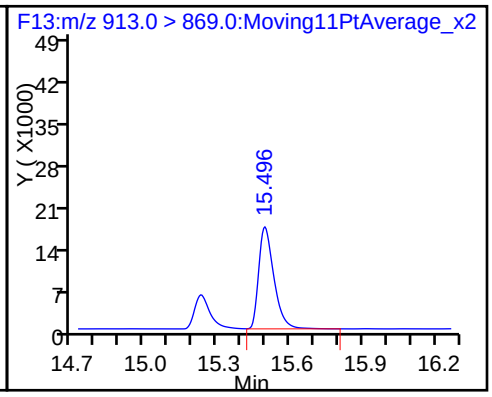
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_004.d
Lims ID: Std L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 31-May-2016 13:13:05 ALS Bottle#: 10 Worklist Smp#: 4
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L2
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:13:01 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 31-May-2016 16:20:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.806	5.803	0.003		1301198	53.4		107	10042	
2 Perfluorobutyric acid										
212.9 > 169.0	5.809	5.806	0.003	1.000	30976	0.7785		77.8	977	
D 3 13C5-PFPeA										
267.9 > 223.0	6.974	6.968	0.006		3405590	53.6		107	3399	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.969	6.970	-0.001	1.000	76403	0.9709		97.1	52.9	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.102	7.099	0.003	1.000	40318	0.9693		110		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.102	7.099	0.003	1.000	40318	NC			23.0	
298.9 > 99.0	7.102	7.099	0.003	1.000	21372		1.89(0.00-0.00)		68.7	
D 6 13C2 PFHxA										
315.0 > 270.0	8.258	8.252	0.006		3147638	51.4		103	9930	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.258	8.253	0.005	1.000	71362	1.01		101	6738	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.499	9.494	0.005	1.000	110770	0.9792		97.9	9430	
D 8 13C4-PFHpA										
367.0 > 322.0	9.499	9.495	0.004		3809003	55.5		111	217555	
D 11 18O2 PFHxS										
403.0 > 84.0	9.538	9.532	0.006		1513092	49.1		104	6808	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.538	9.533	0.005	1.000	28774	NC			110	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.538	9.533	0.005	1.000	28774	0.9604		102		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.614	10.612	0.002		4156783	57.1		114	5449	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.614	10.612	0.002	1.000	82635	0.9683		96.8	44.0	
413.0 > 169.0	10.623	10.612	0.011	1.001	37155		2.22(0.00-0.00)	96.8	131	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.632	10.622	0.010	1.000	21384	NC			1453	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.632	10.622	0.010	1.000	21384	0.9414		98.9		
D 16 13C4 PFOS										
503.0 > 80.0	11.577	11.568	0.009		2171603	54.7		114	101988	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.585	11.571	0.014	1.000	43823	0.7808		81.7	233	
499.0 > 99.0	11.577	11.571	0.006	0.999	29380		1.49(0.00-0.00)	81.7	2146	
D 17 13C5 PFNA										
468.0 > 423.0	11.595	11.589	0.006		3902011	58.5		117	29144	
18 Perfluorononanoic acid										
463.0 > 419.0	11.595	11.589	0.006	1.000	76977	1.14		114	5547	
D 19 13C2 PFDA										
515.0 > 470.0	12.425	12.423	0.002		2962171	56.3		113	25747	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.425	12.423	0.002	1.000	79213	1.06		106	4830	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.021	13.018	0.003	1.000	94929	0.8927		89.3	3193	
D 23 13C8 FOSA										
506.0 > 78.0	13.021	13.019	0.002		6698828	53.4		107	7749	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.084	13.081	0.003	1.000	38938	0.8685		90.1		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.084	13.081	0.003	1.000	38938	NC			2875	
D 26 13C2 PFUnA										
565.0 > 520.0	13.128	13.124	0.004		4402566	58.5		117	90464	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.128	13.124	0.004	1.000	127094	1.01		101	9305	
D 28 13C2 PFDoA										
615.0 > 570.0	13.719	13.718	0.001		4850596	53.5		107	14103	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.719	13.718	0.001	1.000	82131	1.01		101	261	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.227	14.220	0.007	1.000	119146	1.10		110	202	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.647	14.643	0.004		4205754	51.9		104	6513	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.647	14.644	0.003	1.000	112219	1.01		101	43.1	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.228	15.223	0.005		6482747	51.5		103	8800	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.228	15.223	0.005	1.000	287385	1.01		101	128	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.495	15.493	0.002	1.000	139236	0.9749		97.5	282	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00020 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:13:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_004.d

Injection Date: 31-May-2016 13:13:05 Instrument ID: A6

Lims ID: Std L2

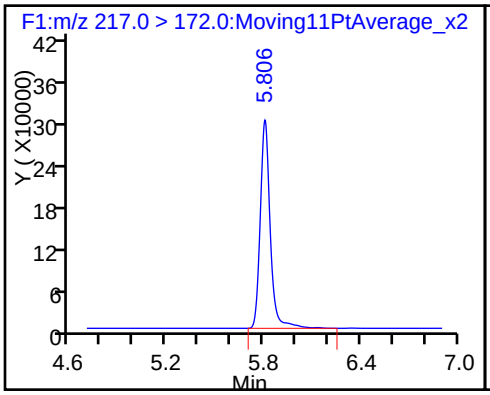
Client ID:

Operator ID: JRB ALS Bottle#: 10 Worklist Smp#: 4

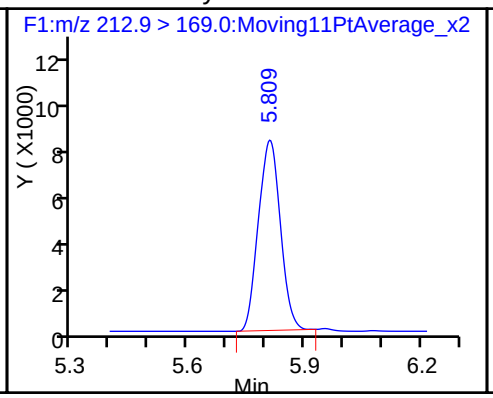
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

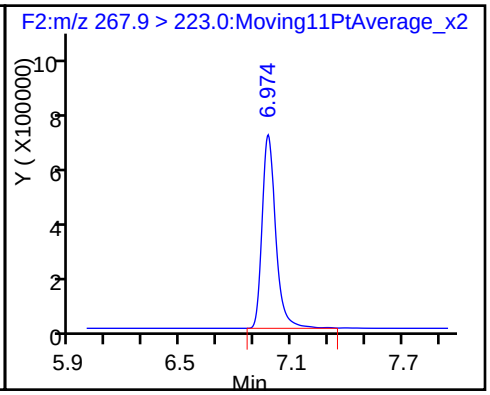
D 1 13C4 PFBA



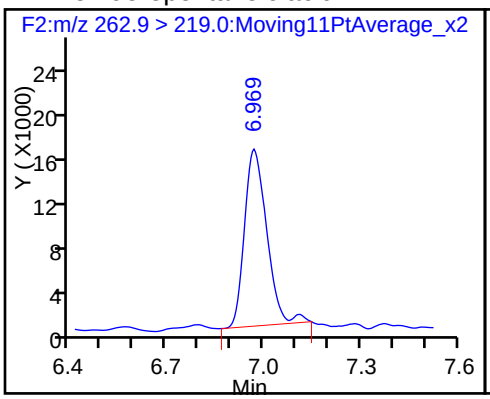
2 Perfluorobutyric acid



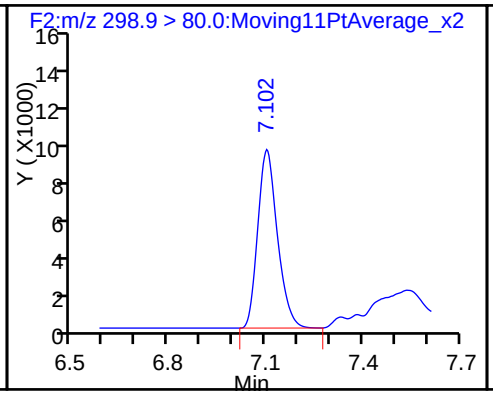
D 3 13C5-PFPeA



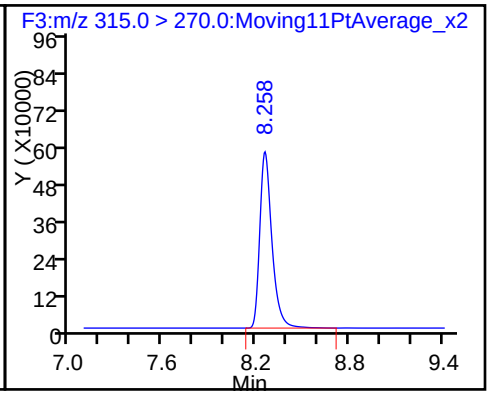
4 Perfluoropentanoic acid



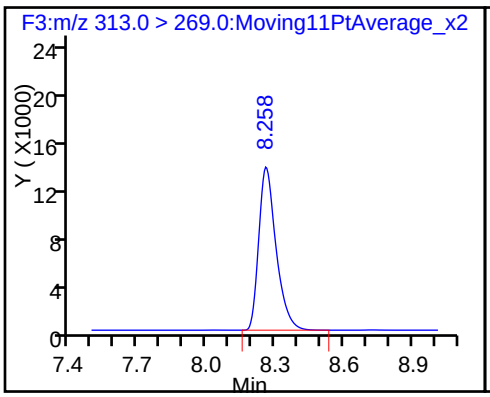
40 Perfluorobutanesulfonic acid



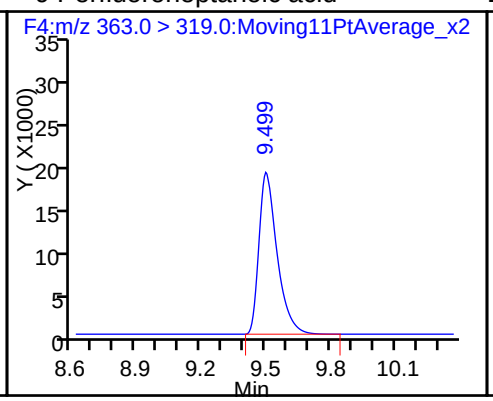
D 6 13C2 PFHxA



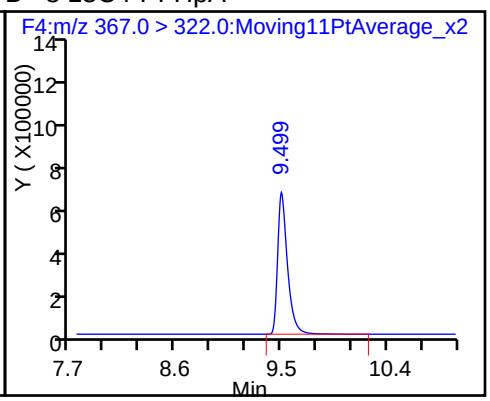
7 Perfluorohexanoic acid



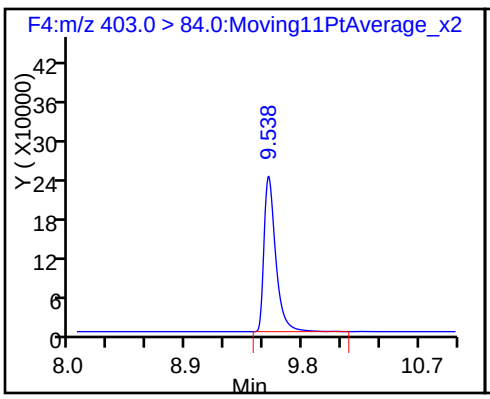
9 Perfluoroheptanoic acid



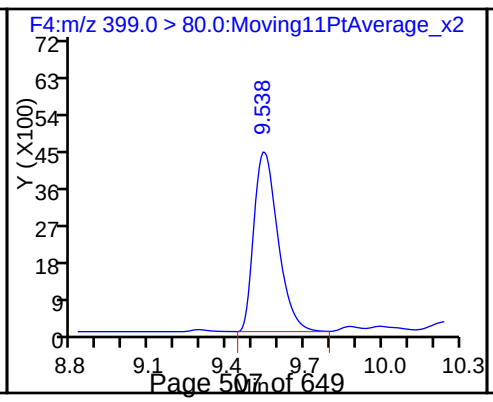
D 8 13C4-PFHpA



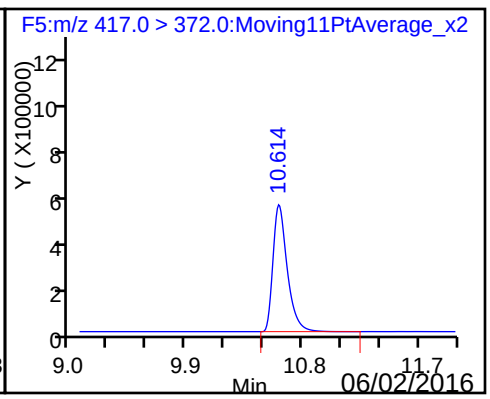
D 11 18O2 PFHxS



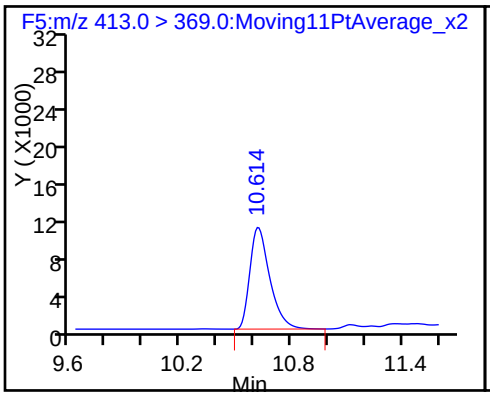
41 Perfluorohexanesulfonic acid



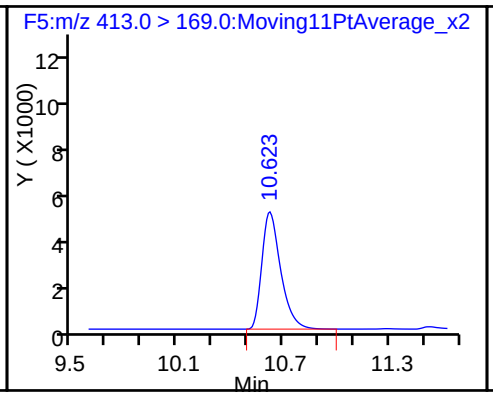
D 12 13C4 PFOA



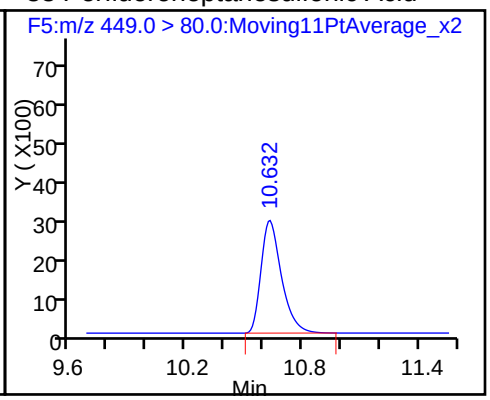
13 Perfluorooctanoic acid



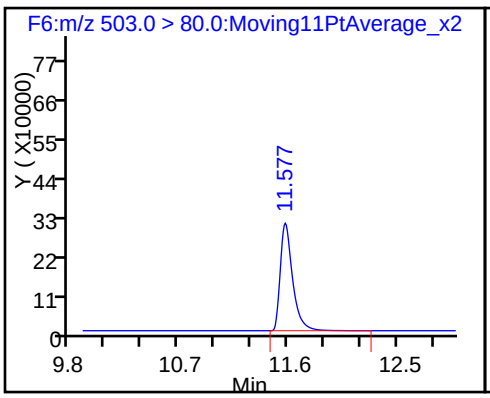
13 Perfluorooctanoic acid



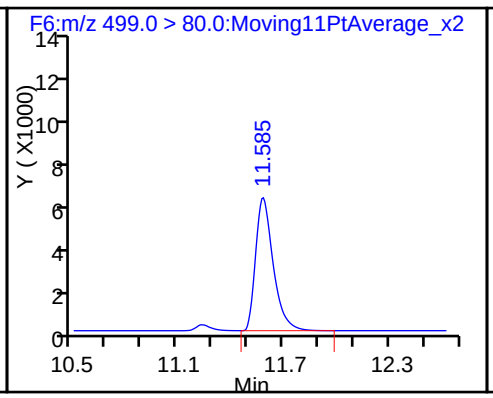
38 Perfluoroheptanesulfonic Acid



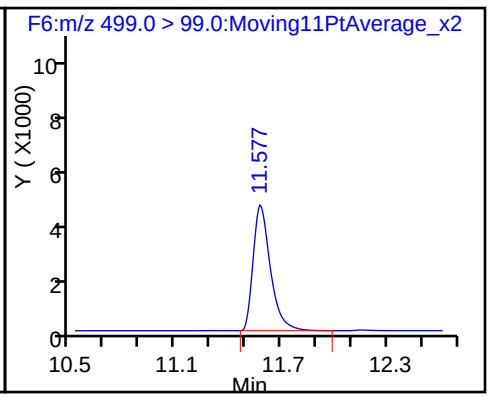
D 16 13C4 PFOS



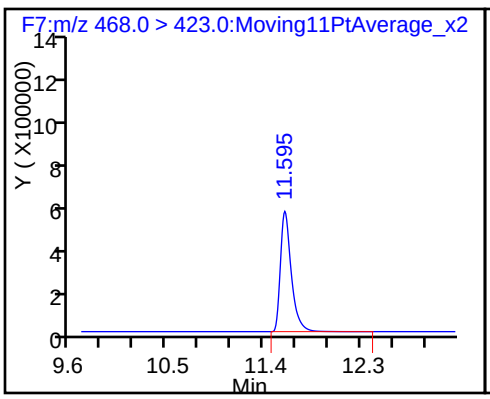
15 Perfluorooctane sulfonic acid



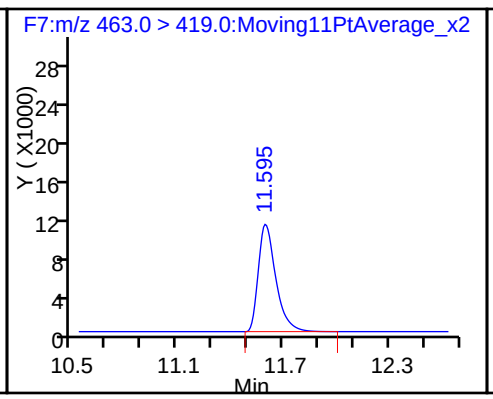
15 Perfluorooctane sulfonic acid



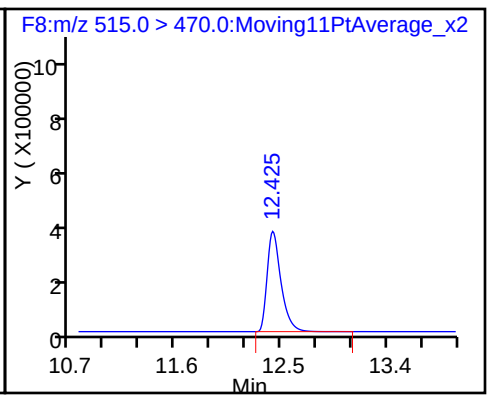
D 17 13C5 PFNA



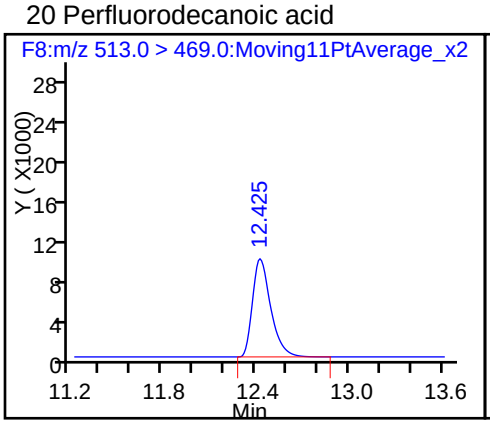
18 Perfluorononanoic acid



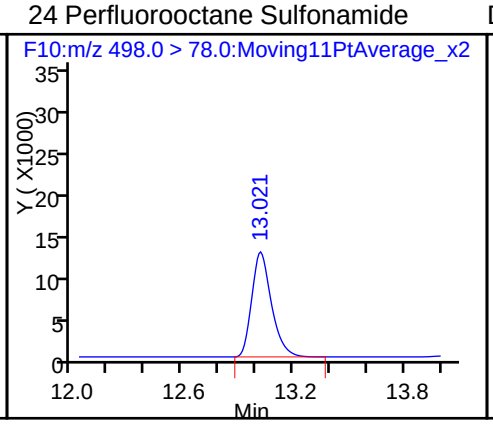
D 19 13C2 PFDA



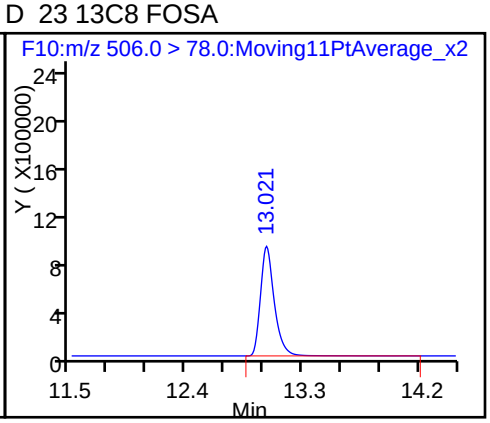
20 Perfluorodecanoic acid



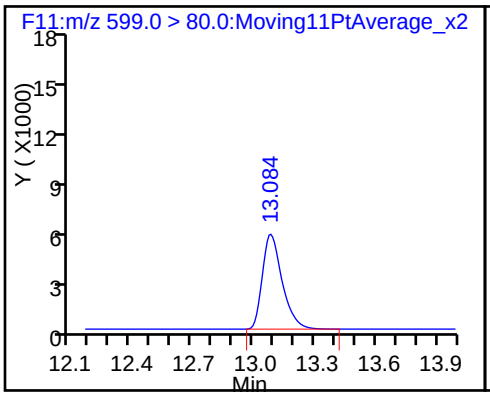
24 Perfluorooctane Sulfonamide



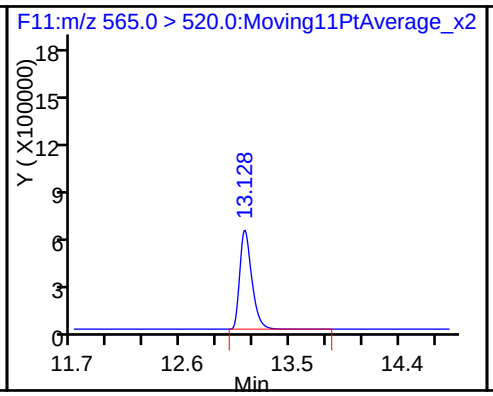
D 23 13C8 FOSA



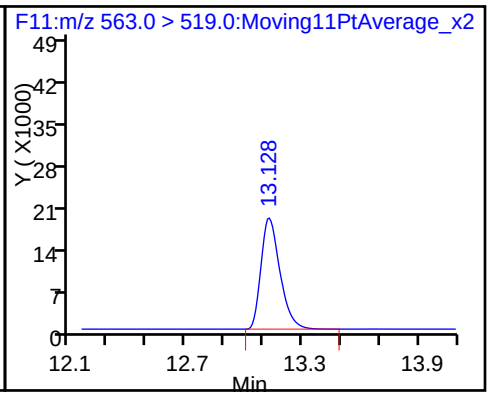
39 Perfluorodecane Sulfonic acid



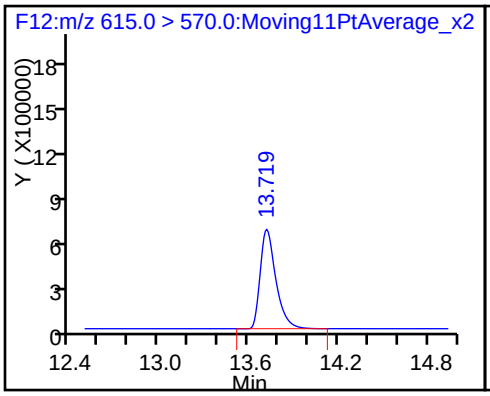
D 26 13C2 PFUnA



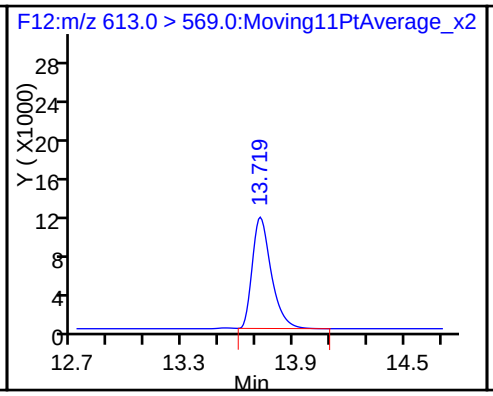
27 Perfluoroundecanoic acid



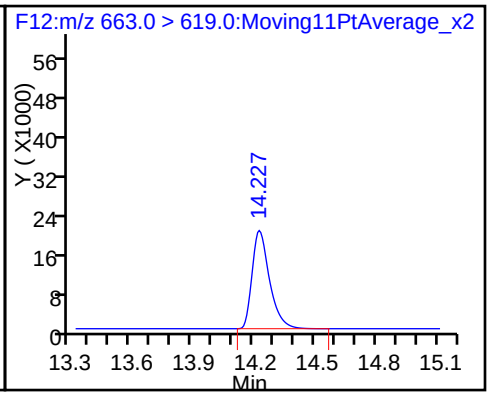
D 28 13C2 PFDoA



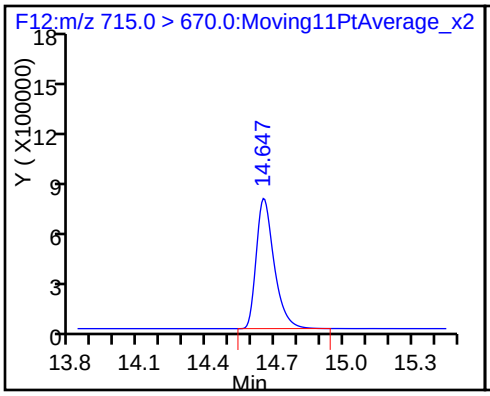
29 Perfluorododecanoic acid



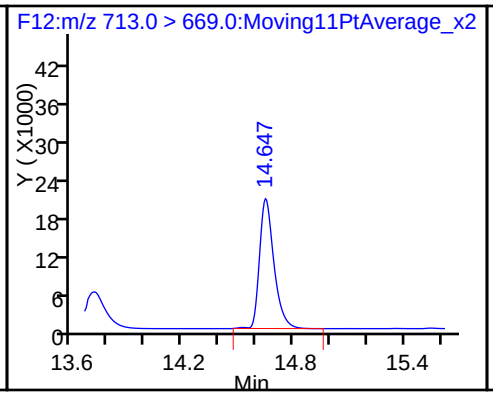
30 Perfluorotridecanoic acid



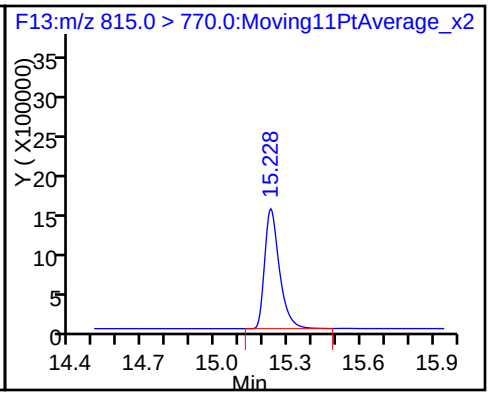
D 33 13C2-PFTeDA



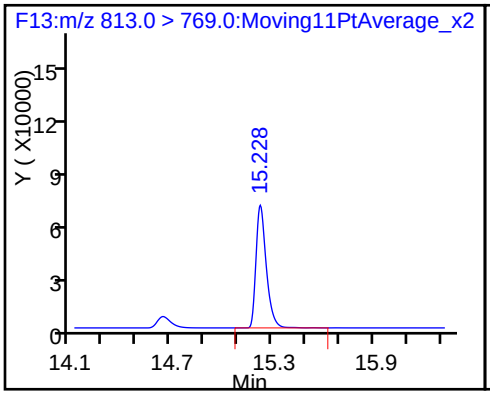
32 Perfluorotetradecanoic acid



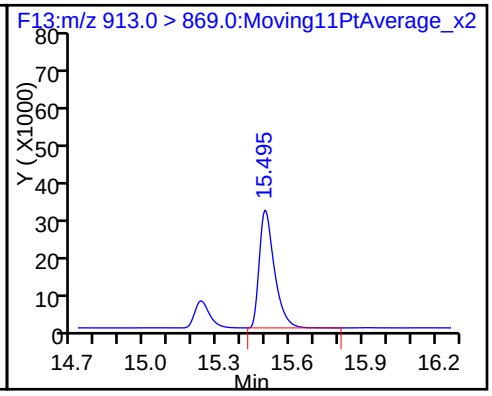
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_005.d
Lims ID: Std L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 31-May-2016 13:34:22 ALS Bottle#: 11 Worklist Smp#: 5
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L3
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:13:05 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.803	5.803	0.0		1376019	56.4		113	141569	
2 Perfluorobutyric acid										
212.9 > 169.0	5.806	5.806	0.0	1.000	226960	5.39		108	8222	
D 3 13C5-PFPeA										
267.9 > 223.0	6.969	6.968	0.001		3647062	57.4		115	9847	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.974	6.970	0.004	1.000	397624	4.72		94.4	146	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.102	7.099	0.003	1.000	191295	3.80		86.1		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.102	7.099	0.003	1.000	191295	NC			87.1	
298.9 > 99.0	7.099	7.099	0.0	1.000	103225		1.85(0.00-0.00)		139	
D 6 13C2 PFHxA										
315.0 > 270.0	8.252	8.252	0.0		3404519	55.6		111	7609	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.252	8.253	-0.001	1.000	422198	5.50		110	6345	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.498	9.494	0.004	1.000	511502	5.18		104	21767	
D 8 13C4-PFHpA										
367.0 > 322.0	9.498	9.495	0.003		4086096	59.5		119	23293	
D 11 18O2 PFHxS										
403.0 > 84.0	9.531	9.532	-0.001		1829184	59.3		125	3506	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.531	9.533	-0.002	1.000	175241	NC			505	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.531	9.533	-0.002	1.000	175241	4.84		102		
D 12 13C4 PFOA										
417.0 > 372.0	10.614	10.612	0.002		4499170	61.8		124	98027	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.614	10.612	0.002	1.000	438664	4.75		95.0	252	
413.0 > 169.0	10.614	10.612	0.002	1.000	151535		2.89(0.00-0.00)	95.0	203	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.623	10.622	0.001	1.000	186662	NC			12345	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.623	10.622	0.001	1.000	186662	5.07		106		
D 16 13C4 PFOS										
503.0 > 80.0	11.568	11.568	0.0		2276752	57.3		120	159851	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.568	11.571	-0.003	1.000	275691	4.69		98.0	1285	
499.0 > 99.0	11.568	11.571	-0.003	1.000	160311		1.72(0.00-0.00)	98.0	11252	
D 17 13C5 PFNA										
468.0 > 423.0	11.586	11.589	-0.003		3887506	58.3		117	9266	
18 Perfluorononanoic acid										
463.0 > 419.0	11.586	11.589	-0.003	1.000	330489	4.92		98.4	4328	
D 19 13C2 PFDA										
515.0 > 470.0	12.424	12.423	0.001		3379637	64.2		128	34431	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.424	12.423	0.001	1.000	431327	5.08		102	26552	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.013	13.018	-0.005	1.000	608860	5.07		101	40649	
D 23 13C8 FOSA										
506.0 > 78.0	13.013	13.019	-0.006		7562660	60.3		121	7004	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.076	13.081	-0.005	1.000	207924	5.18		108		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.076	13.081	-0.005	1.000	207924	NC			14878	
D 26 13C2 PFUnA										
565.0 > 520.0	13.120	13.124	-0.004		4370522	58.1		116	11210	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.120	13.124	-0.004	1.000	481092	4.98		99.5	23236	
D 28 13C2 PFDoA										
615.0 > 570.0	13.730	13.718	0.012		5432350	59.9		120	23930	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.730	13.718	0.012	1.000	477282	5.24		105	1125	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.228	14.220	0.008	1.000	688014	5.68		114	389	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.648	14.643	0.005		4828661	59.5		119	17366	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.648	14.644	0.004	1.000	552449	5.39		108	131	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.225	15.223	0.002		7163241	56.9		114	9261	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.225	15.223	0.002	1.000	935306	4.85		96.9	1329	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.491	15.493	-0.002	1.000	681363	4.26		85.2	1027	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L3_00017 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:13:06 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_005.d

Injection Date: 31-May-2016 13:34:22 Instrument ID: A6

Lims ID: Std L3

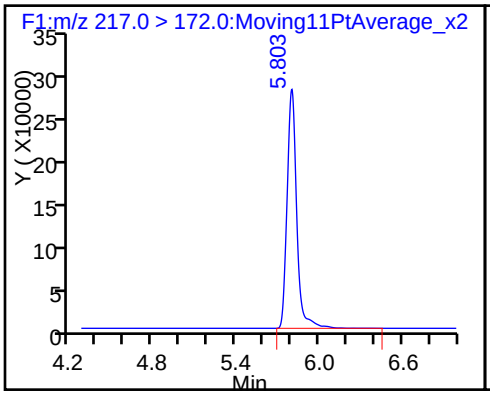
Client ID:

Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 5

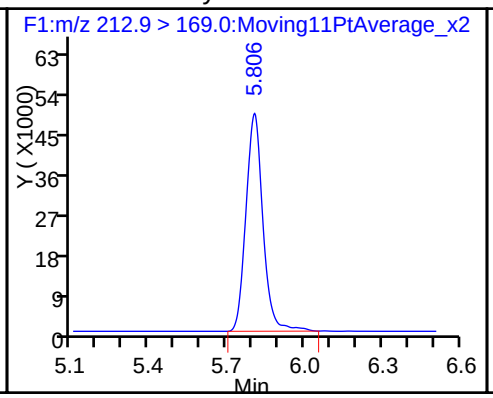
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

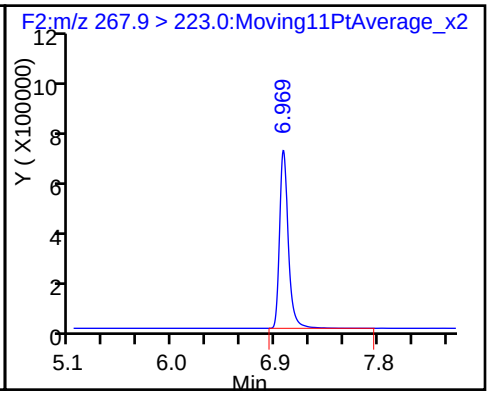
D 1 13C4 PFBA



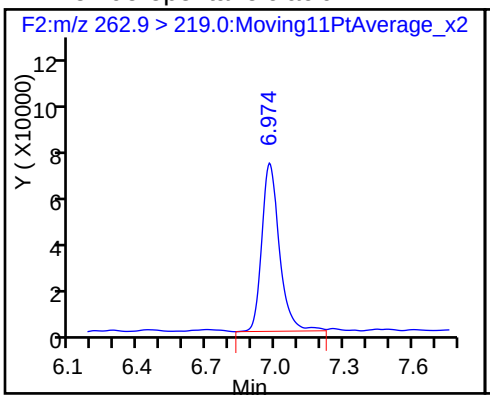
2 Perfluorobutyric acid



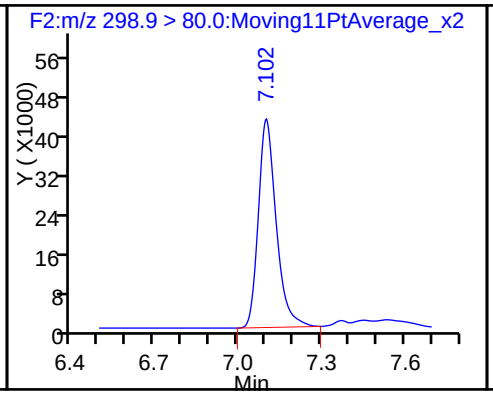
D 3 13C5-PFPeA



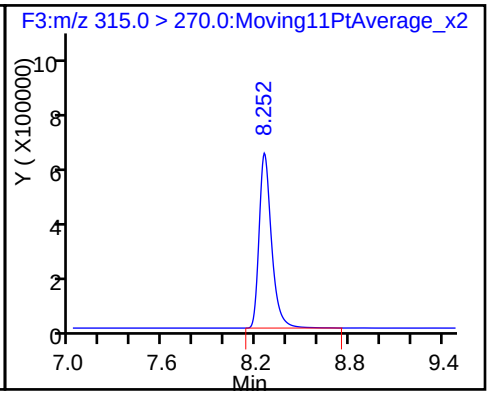
4 Perfluoropentanoic acid



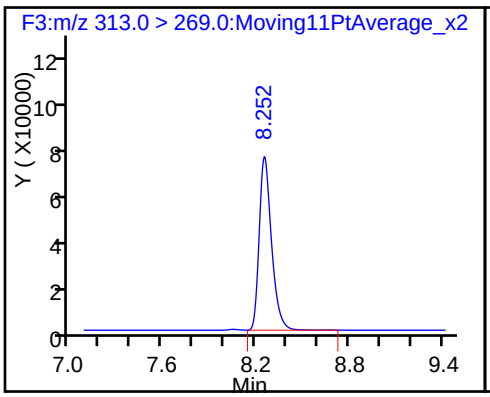
40 Perfluorobutanesulfonic acid



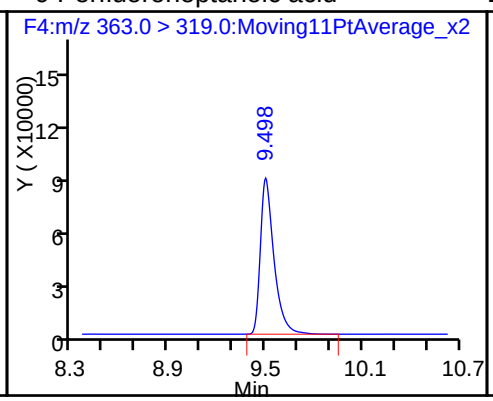
D 6 13C2 PFHxA



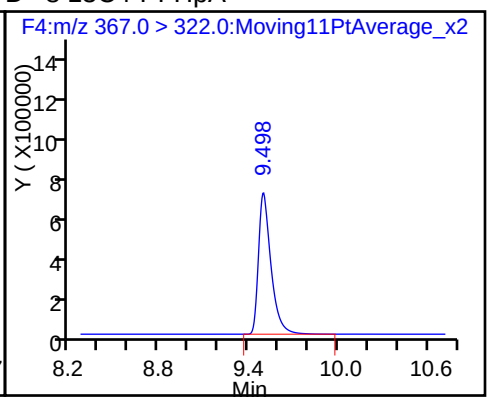
7 Perfluorohexanoic acid



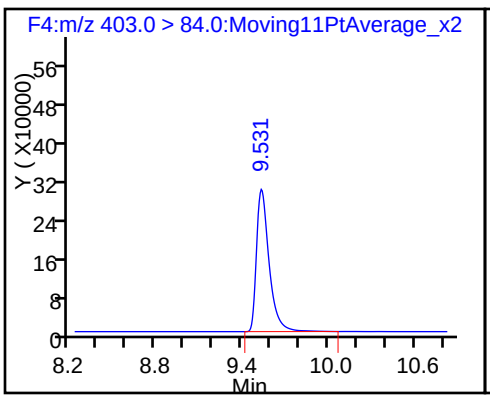
9 Perfluoroheptanoic acid



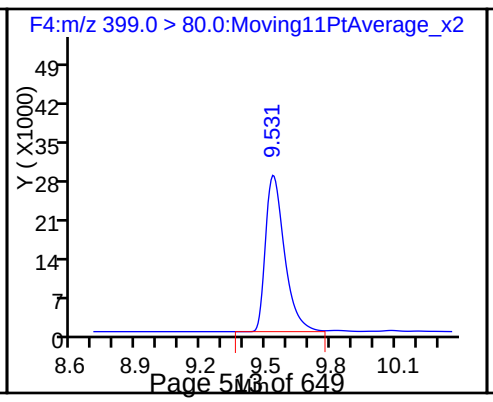
D 8 13C4-PFHpA



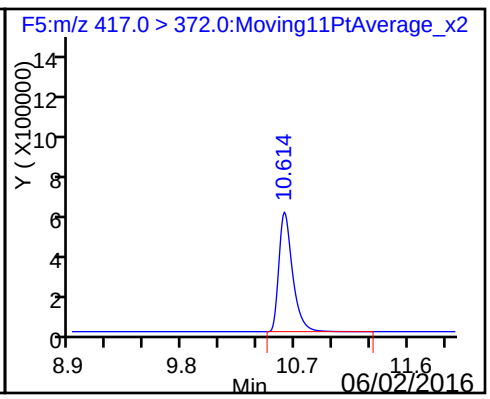
D 11 18O2 PFHxS



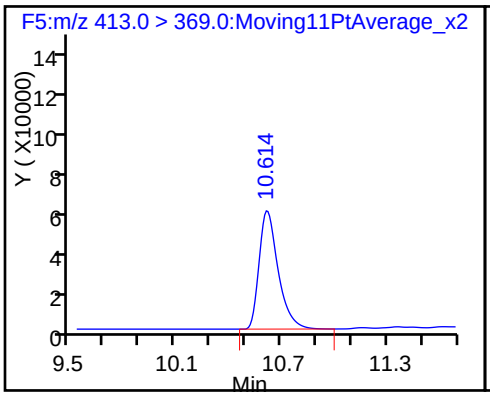
41 Perfluorohexanesulfonic acid



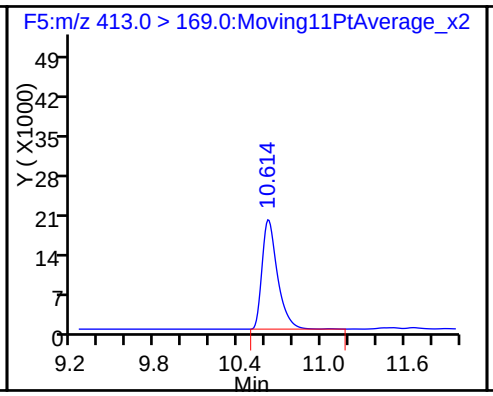
D 12 13C4 PFOA



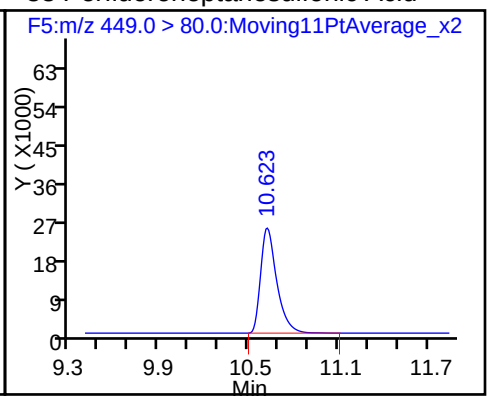
13 Perfluorooctanoic acid



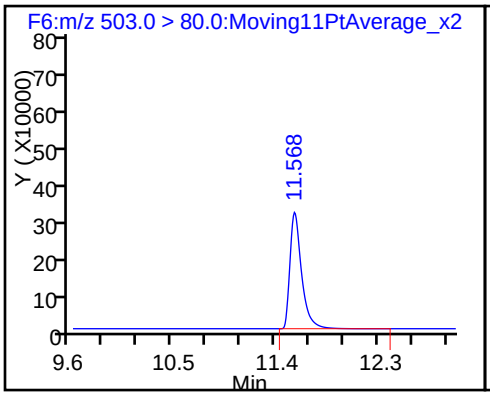
13 Perfluorooctanoic acid



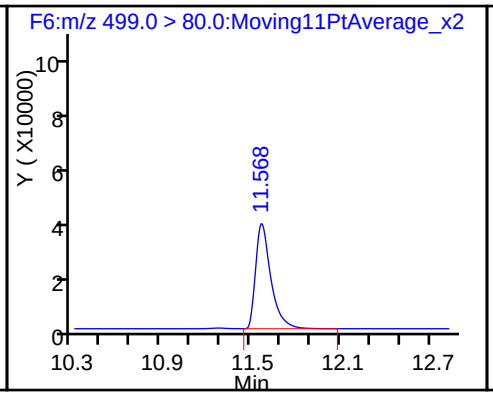
38 Perfluoroheptanesulfonic Acid



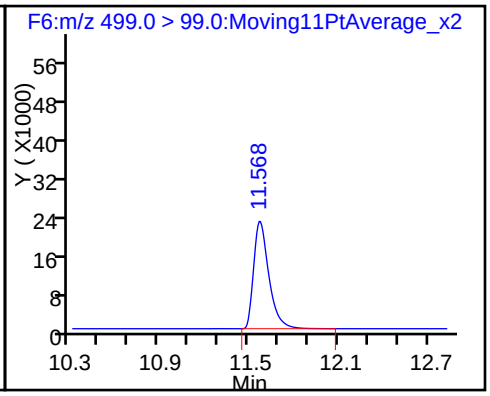
D 16 13C4 PFOS



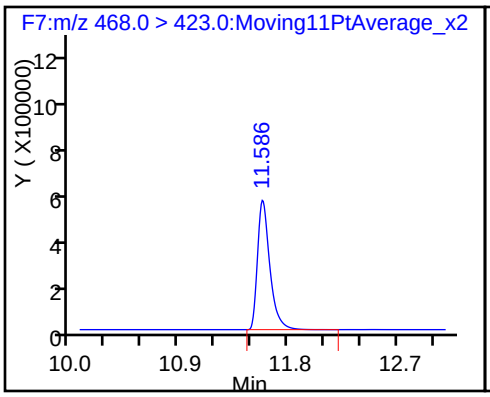
15 Perfluorooctane sulfonic acid



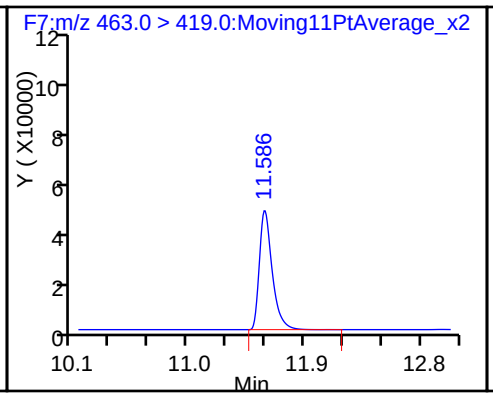
15 Perfluorooctane sulfonic acid



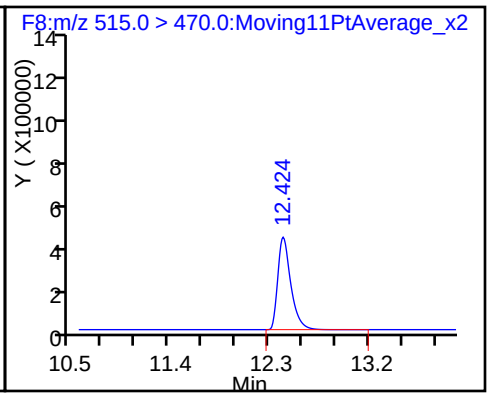
D 17 13C5 PFNA



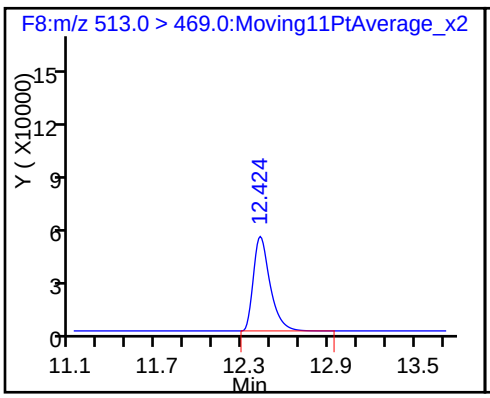
18 Perfluorononanoic acid



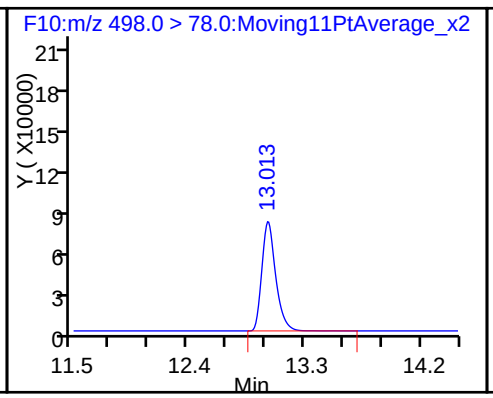
D 19 13C2 PFDA



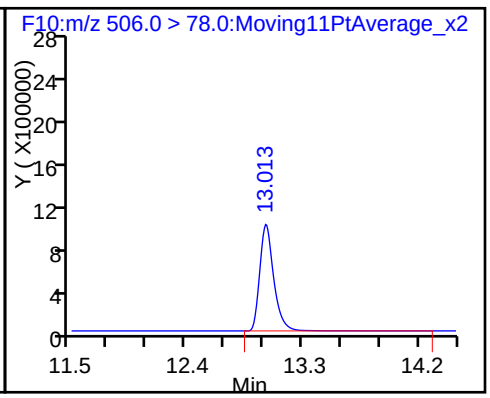
20 Perfluorodecanoic acid



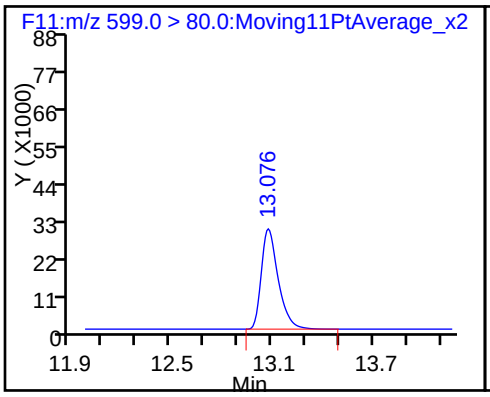
24 Perfluorooctane Sulfonamide



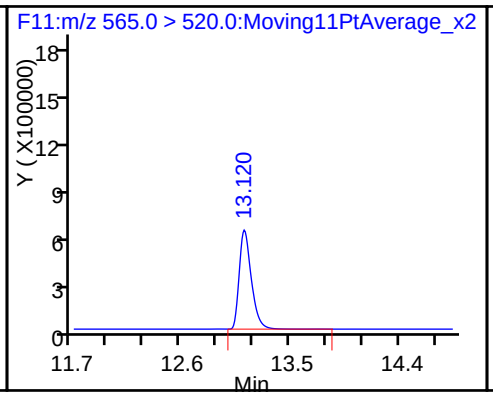
D 23 13C8 FOSA



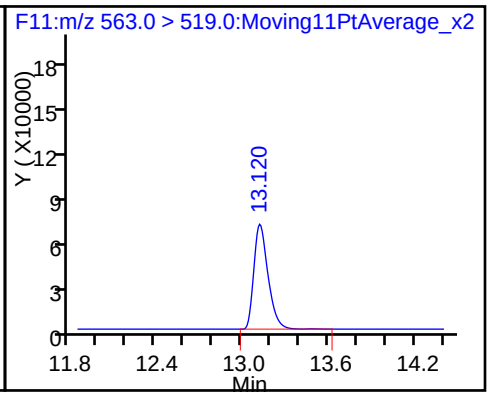
39 Perfluorodecane Sulfonic acid



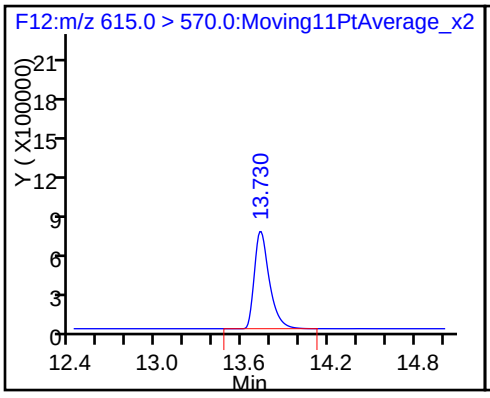
D 26 13C2 PFUnA



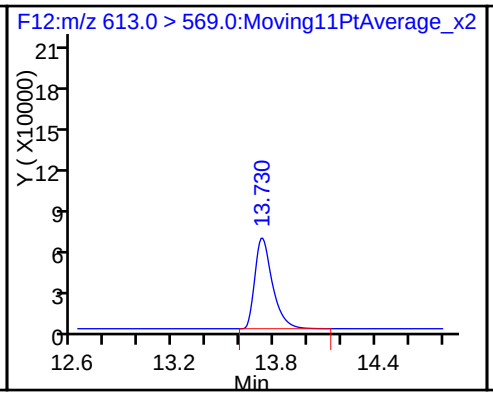
27 Perfluoroundecanoic acid



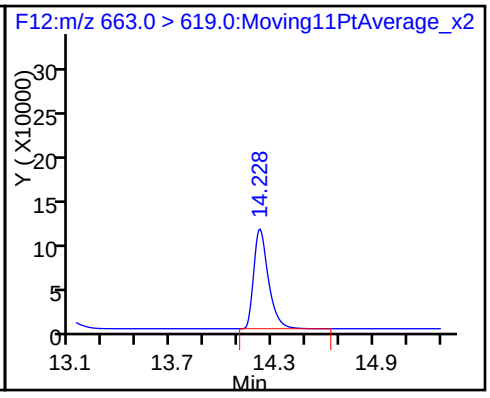
D 28 13C2 PFDoA



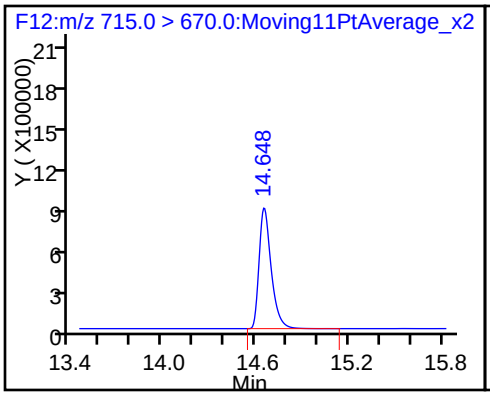
29 Perfluorododecanoic acid



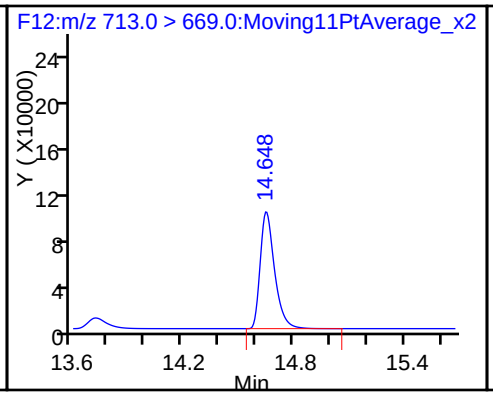
30 Perfluorotridecanoic acid



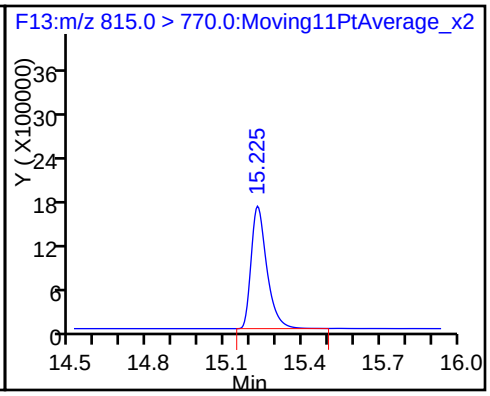
D 33 13C2-PFTeDA



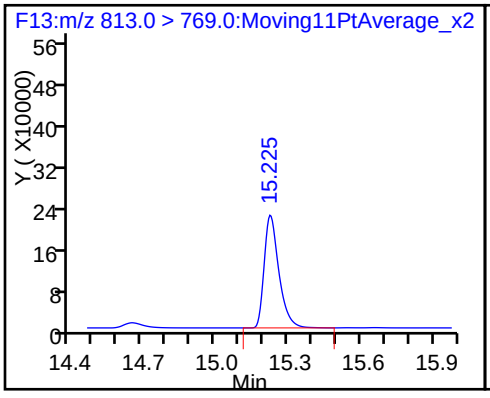
32 Perfluorotetradecanoic acid



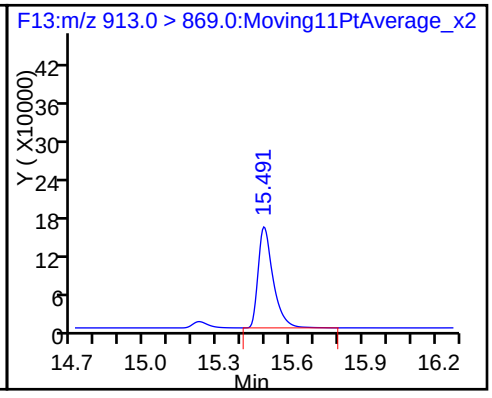
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_006.d
Lims ID: Std L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 31-May-2016 13:55:37 ALS Bottle#: 12 Worklist Smp#: 6
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:13:08 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 31-May-2016 16:09:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.803	5.803	0.0		1322004	54.2		108	22046	
2 Perfluorobutyric acid										
212.9 > 169.0	5.803	5.806	-0.003	1.000	764950	18.9		94.6	11892	
D 3 13C5-PFPeA										
267.9 > 223.0	6.969	6.968	0.001		3428245	54.0		108	12537	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.969	6.970	-0.001	1.000	1486524	18.8		93.8	492	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.095	7.099	-0.004	1.000	691572	15.6		88.5		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.095	7.099	-0.004	1.000	691572	NC			177	
298.9 > 99.0	7.095	7.099	-0.004	1.000	340981		2.03(0.00-0.00)		723	
D 6 13C2 PFHxA										
315.0 > 270.0	8.252	8.252	0.0		3415124	55.7		111	13962	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.252	8.253	-0.001	1.000	1494943	19.4		97.0	1269	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.493	9.494	-0.001	1.000	1587434	17.8		89.2	67466	
D 8 13C4-PFHpA										
367.0 > 322.0	9.493	9.495	-0.002		3830335	55.8		112	16528	
D 11 18O2 PFHxS										
403.0 > 84.0	9.532	9.532	0.0		1608216	52.2		110	9170	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.532	9.533	-0.001	1.000	587126	NC			1221	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.532	9.533	-0.001	1.000	587126	18.4		97.4		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.605	10.612	-0.007		4090464	56.2		112	133672	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.605	10.612	-0.007	1.000	1543711	18.4		91.9	339	
413.0 > 169.0	10.614	10.612	0.002	1.001	594177		2.60(0.00-0.00)	91.9	343	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.614	10.622	-0.008	1.000	673415	NC			44226	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.614	10.622	-0.008	1.000	673415	18.2		95.8		
D 16 13C4 PFOS										
503.0 > 80.0	11.569	11.568	0.001		2155157	54.3		114	33409	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.569	11.571	-0.002	1.000	1013086	18.2		95.1	220	
499.0 > 99.0	11.569	11.571	-0.002	1.000	534706		1.89(0.00-0.00)	95.1	871	
D 17 13C5 PFNA										
468.0 > 423.0	11.586	11.589	-0.003		3619357	54.3		109	255914	
18 Perfluorononanoic acid										
463.0 > 419.0	11.586	11.589	-0.003	1.000	1092851	17.5		87.4	77278	
D 19 13C2 PFDA										
515.0 > 470.0	12.424	12.423	0.001		2839856	53.9		108	49434	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.424	12.423	0.001	1.000	1343196	18.8		94.1	81561	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.021	13.018	0.003	1.000	2125370	19.6		98.0	5049	
D 23 13C8 FOSA										
506.0 > 78.0	13.021	13.019	0.002		6834485	54.5		109	5796	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.075	13.081	-0.006	1.000	699570	18.9		98.0		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.075	13.081	-0.006	1.000	699570	NC			33169	
D 26 13C2 PFUnA										
565.0 > 520.0	13.119	13.124	-0.005		4182650	55.6		111	16961	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.119	13.124	-0.005	1.000	1572228	18.0		89.9	56405	
D 28 13C2 PFDoA										
615.0 > 570.0	13.701	13.718	-0.017		4864529	53.6		107	21462	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.701	13.718	-0.017	1.000	1538810	18.9		94.4	971	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.204	14.220	-0.016	1.000	1970539	18.2		90.8	1500	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.640	14.643	-0.003		4362467	53.8		108	10824	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.640	14.644	-0.004	1.000	1680871	19.0		94.9	1272	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.223	15.223	0.0		6866465	54.5		109	10752	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.223	15.223	0.0	1.000	2838801	18.8		94.1	2876	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.495	15.493	0.002	1.000	2604852	18.2		90.9	1668	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:13:09 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_006.d

Injection Date: 31-May-2016 13:55:37 Instrument ID: A6

Lims ID: Std L4

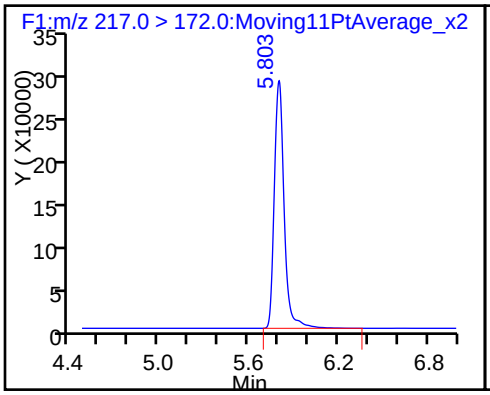
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 6

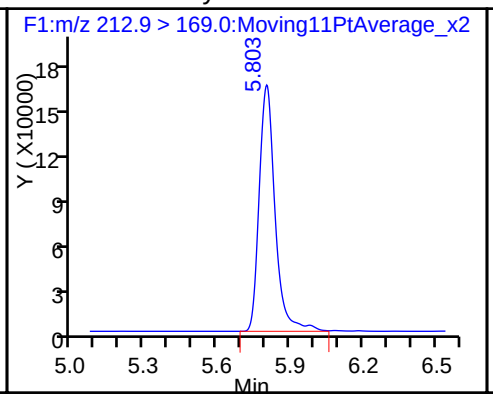
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

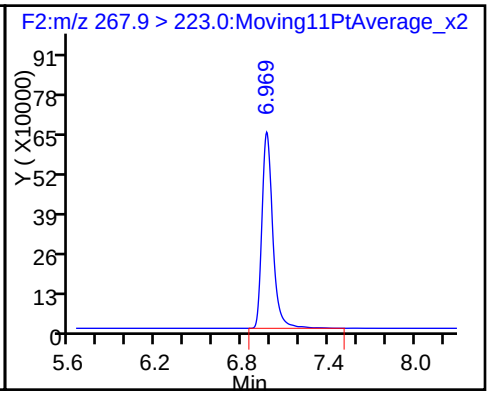
D 1 13C4 PFBA



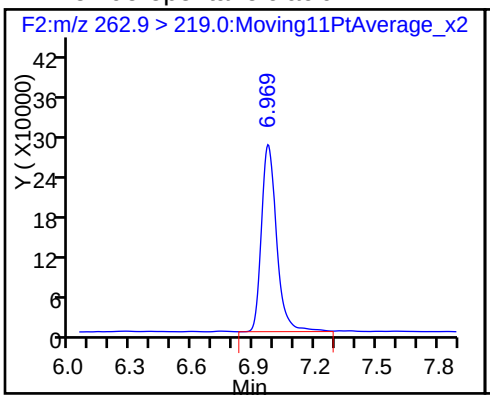
2 Perfluorobutyric acid



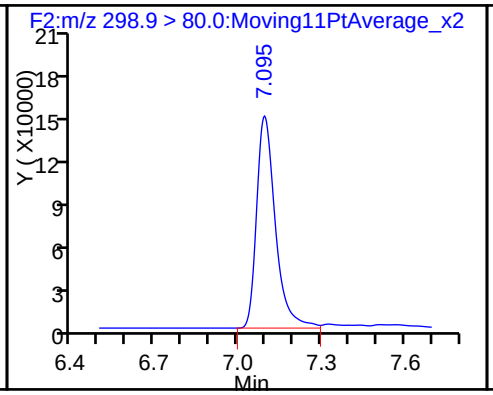
D 3 13C5-PFPeA



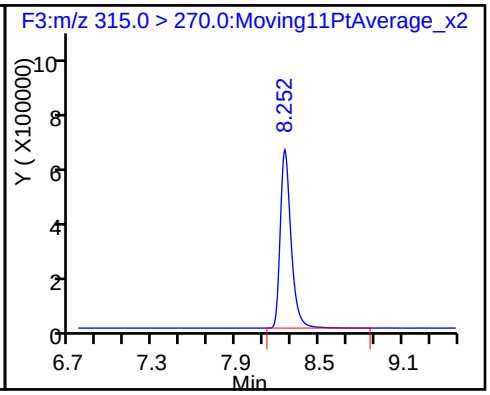
4 Perfluoropentanoic acid



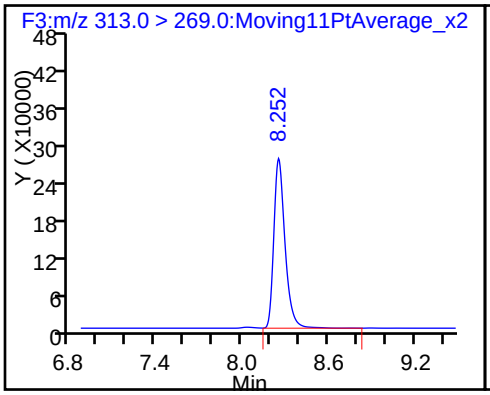
40 Perfluorobutanesulfonic acid



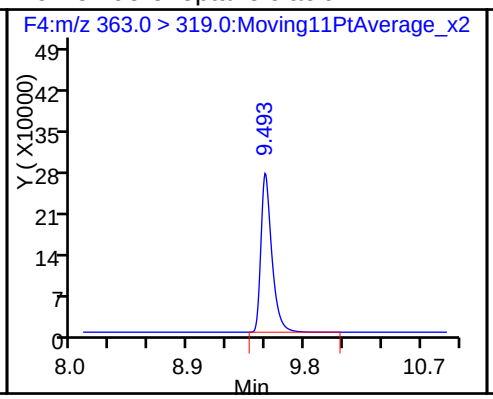
D 6 13C2 PFHxA



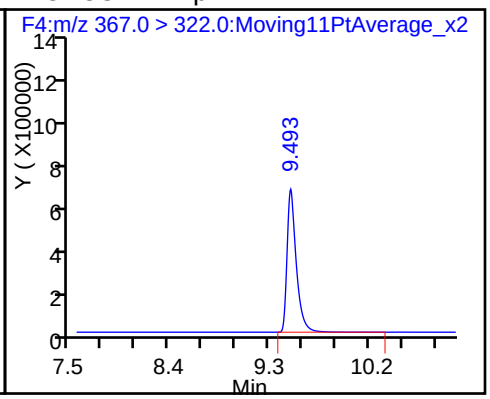
7 Perfluorohexanoic acid



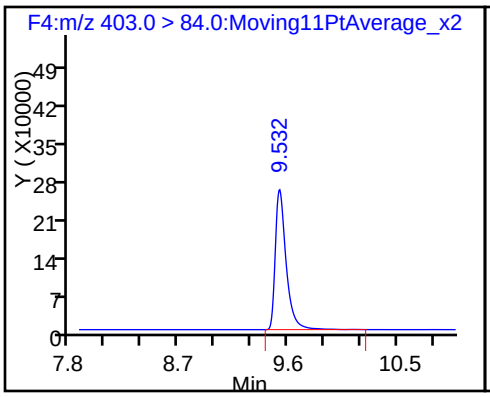
9 Perfluoroheptanoic acid



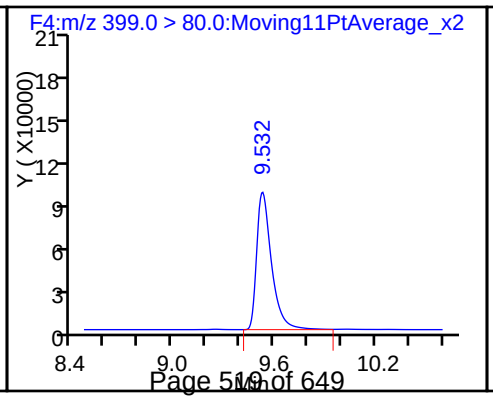
D 8 13C4-PFHpA



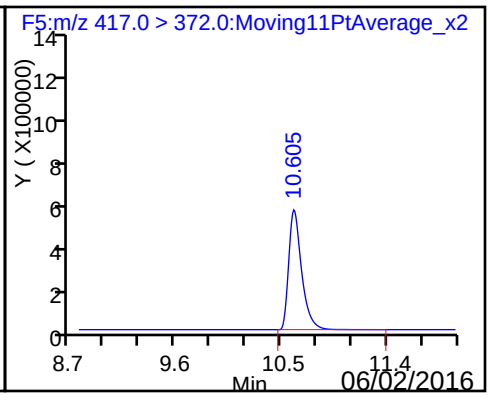
D 11 18O2 PFHxS



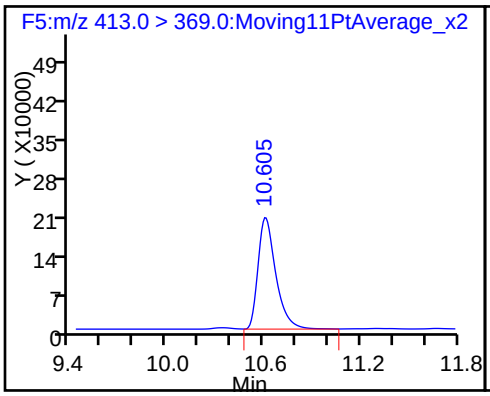
41 Perfluorohexanesulfonic acid



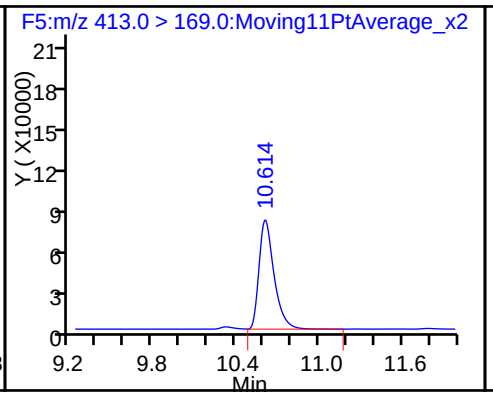
D 12 13C4 PFOA



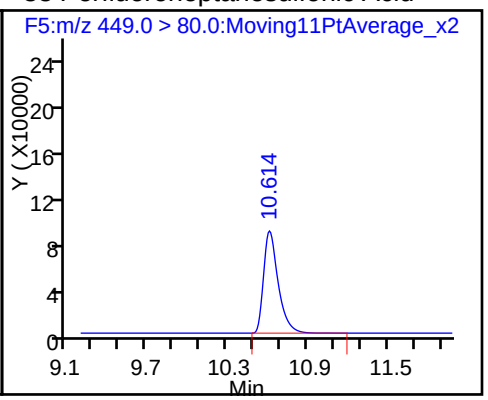
13 Perfluorooctanoic acid



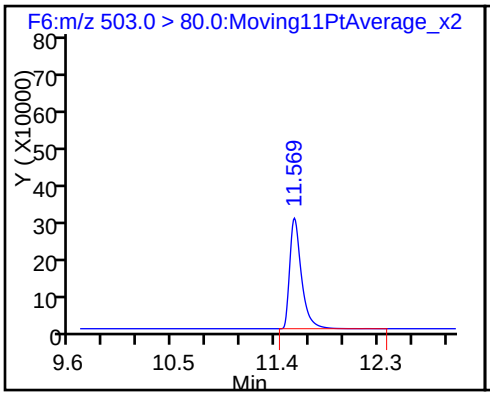
13 Perfluorooctanoic acid



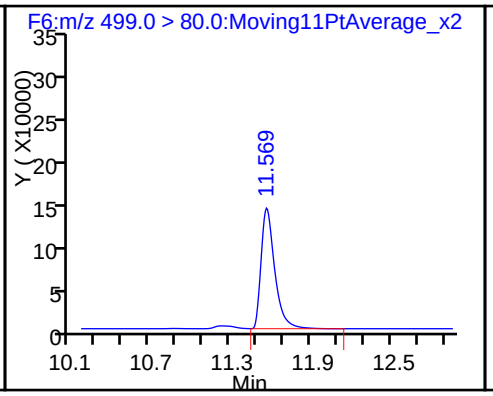
38 Perfluoroheptanesulfonic Acid



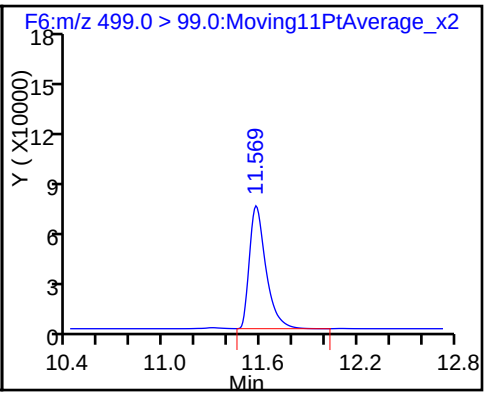
D 16 13C4 PFOS



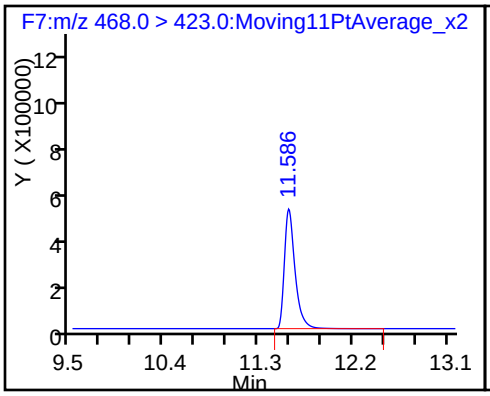
15 Perfluorooctane sulfonic acid



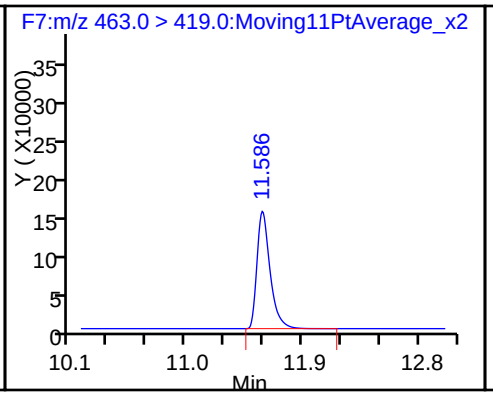
15 Perfluorooctane sulfonic acid



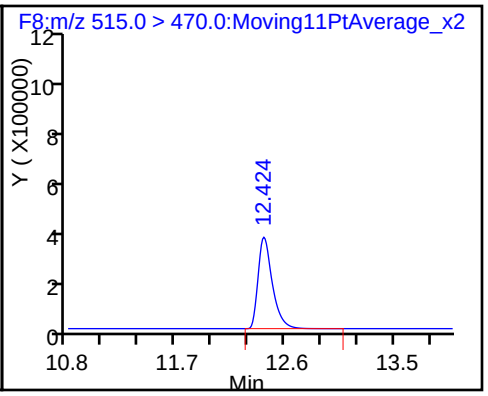
D 17 13C5 PFNA



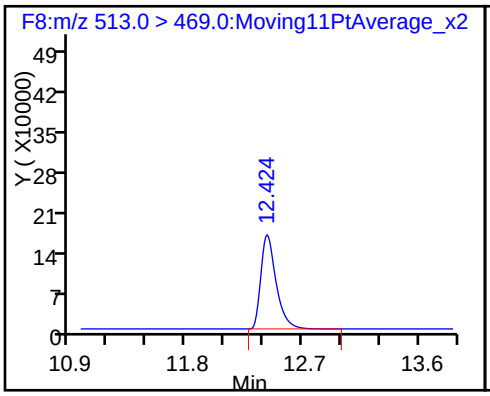
18 Perfluorononanoic acid



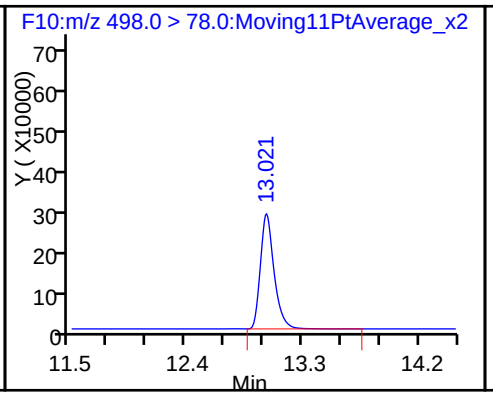
D 19 13C2 PFDA



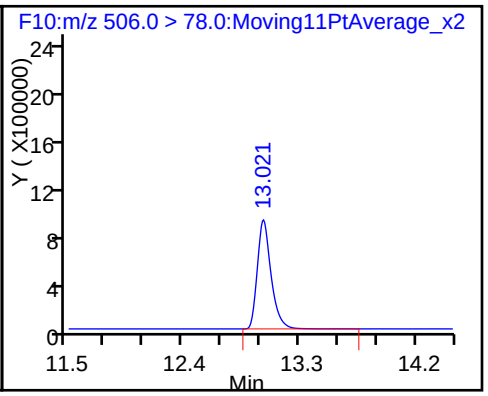
20 Perfluorodecanoic acid



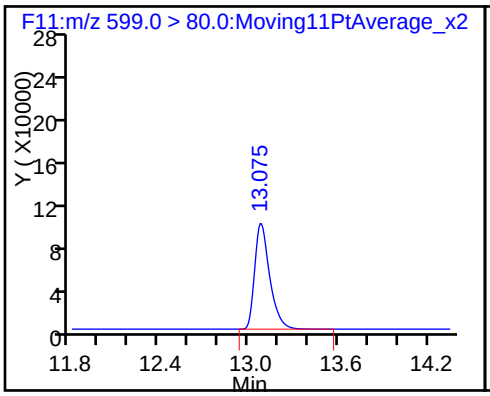
24 Perfluorooctane Sulfonamide



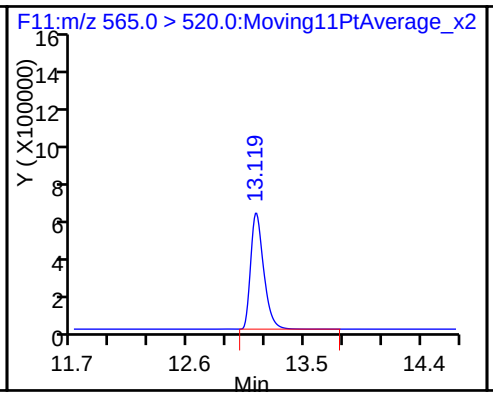
D 23 13C8 FOSA



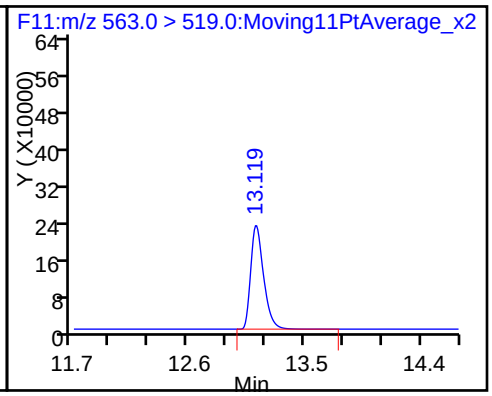
39 Perfluorodecane Sulfonic acid



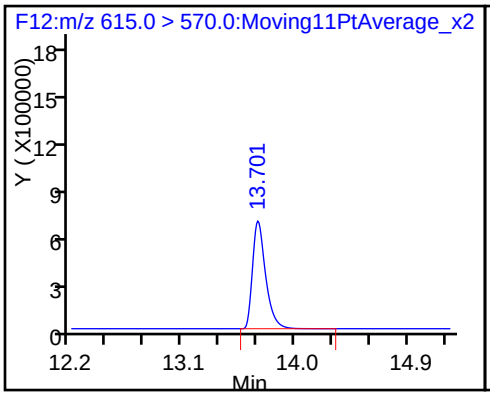
D 26 13C2 PFUnA



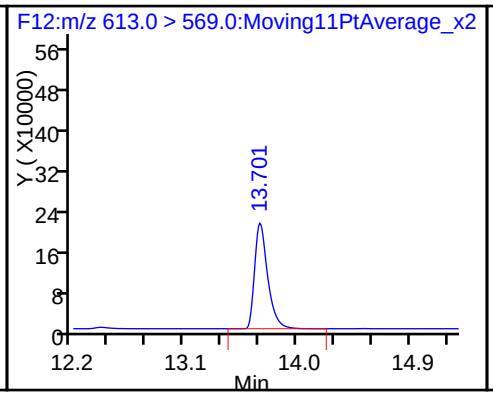
27 Perfluoroundecanoic acid



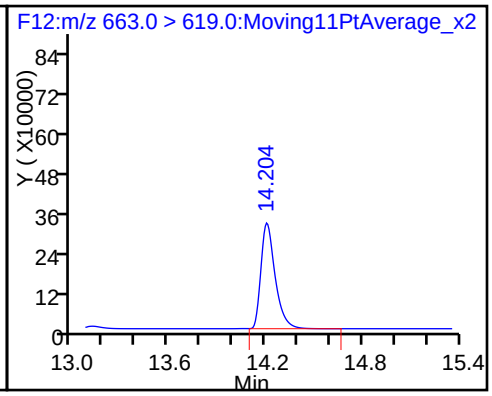
D 28 13C2 PFDoA



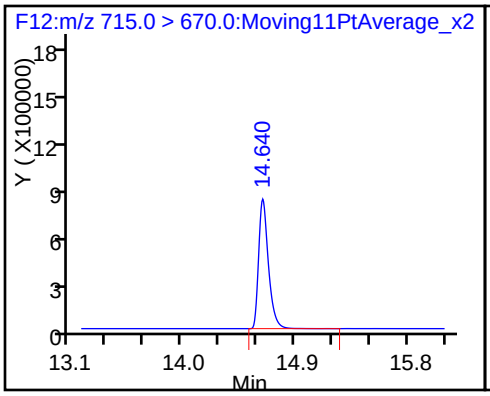
29 Perfluorododecanoic acid



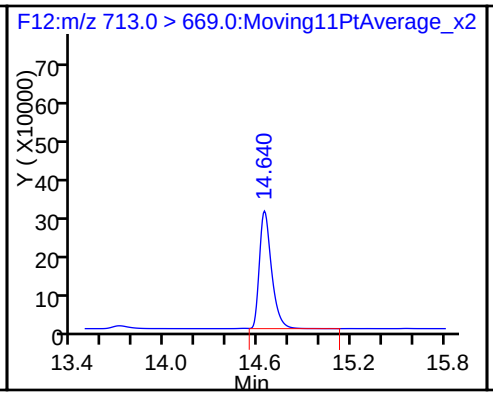
30 Perfluorotridecanoic acid



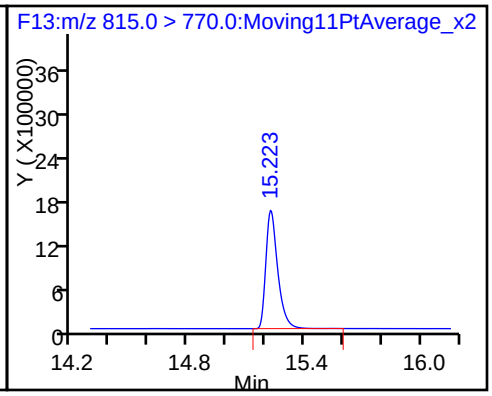
D 33 13C2-PFTeDA



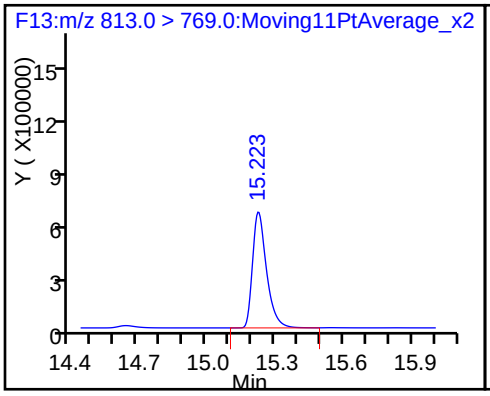
32 Perfluorotetradecanoic acid



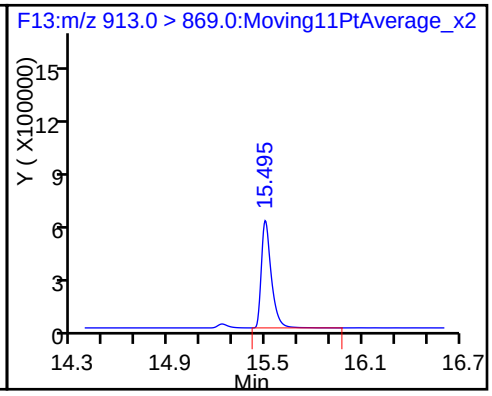
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_007.d
Lims ID: Std L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 31-May-2016 14:16:53 ALS Bottle#: 13 Worklist Smp#: 7
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:13:11 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.803	5.803	0.0		1235511	50.7		101	3862	
2 Perfluorobutyric acid										
212.9 > 169.0	5.803	5.806	-0.003	1.000	2124537	56.2		112	5884	
D 3 13C5-PFPeA										
267.9 > 223.0	6.969	6.968	0.001		3195132	50.3		101	30850	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.969	6.970	-0.001	1.000	3765270	51.0		102	970	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.095	7.099	-0.004	1.000	1866850	43.3		97.9		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.095	7.099	-0.004	1.000	1866850	NC			494	
298.9 > 99.0	7.095	7.099	-0.004	1.000	932402		2.00(0.00-0.00)		635	
D 6 13C2 PFHxA										
315.0 > 270.0	8.252	8.252	0.0		3179851	51.9		104	94579	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.252	8.253	-0.001	1.000	3649464	50.9		102	1102	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.493	9.494	-0.001	1.000	4286583	54.2		108	15329	
D 8 13C4-PFHpA										
367.0 > 322.0	9.493	9.495	-0.002		3440666	50.1		100	296291	
D 11 18O2 PFHxS										
403.0 > 84.0	9.531	9.532	-0.001		1569831	50.9		108	12640	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.531	9.533	-0.002	1.000	1467407	NC			1530	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.531	9.533	-0.002	1.000	1467407	47.2		99.8		
D 12 13C4 PFOA										
417.0 > 372.0	10.614	10.612	0.002		3579865	49.2		98.4	6918	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.614	10.612	0.002	1.000	3760545	51.2		102	1975	
413.0 > 169.0	10.614	10.612	0.002	1.000	1423500		2.64(0.00-0.00)	102	2295	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.614	10.622	-0.008	1.000	1603386	NC			13591	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.614	10.622	-0.008	1.000	1603386	48.4		102		
D 16 13C4 PFOS										
503.0 > 80.0	11.568	11.568	0.0		1908821	48.1		101	17665	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.577	11.571	0.006	1.000	2717455	55.1		115	326	
499.0 > 99.0	11.577	11.571	0.006	1.000	1468906		1.85(0.00-0.00)	115	536	
D 17 13C5 PFNA										
468.0 > 423.0	11.594	11.589	0.005		3266288	49.0		98.0	2908	
18 Perfluorononanoic acid										
463.0 > 419.0	11.594	11.589	0.005	1.000	2958176	52.4		105	69186	
D 19 13C2 PFDA										
515.0 > 470.0	12.424	12.423	0.001		2584731	49.1		98.2	62920	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.424	12.423	0.001	1.000	3452418	53.1		106	34926	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.013	13.018	-0.005	1.000	5239897	49.8		99.6	2888	
D 23 13C8 FOSA										
506.0 > 78.0	13.013	13.019	-0.006		6628551	52.9		106	10705	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.076	13.081	-0.005	1.000	1627317	49.9		104		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.076	13.081	-0.005	1.000	1627317	NC			32726	
D 26 13C2 PFUnA										
565.0 > 520.0	13.120	13.124	-0.004		3791839	50.4		101	45313	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.120	13.124	-0.004	1.000	3887233	49.7		99.4	13230	
D 28 13C2 PFDoA										
615.0 > 570.0	13.721	13.718	0.003		4620549	50.9		102	21675	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.721	13.718	0.003	1.000	3884314	50.2		100	6305	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.220	14.220	0.0	1.000	5450962	52.9		106	4345	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.642	14.643	-0.001		4166575	51.4		103	8206	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.642	14.644	-0.002	1.000	4116786	49.4		98.8	1558	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.220	15.223	-0.003		6643909	52.7		105	9304	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.220	15.223	-0.003	1.000	7408407	53.5		107	3980	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.491	15.493	-0.002	1.000	7264490	53.4		107	3654	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00018 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:13:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_007.d

Injection Date: 31-May-2016 14:16:53 Instrument ID: A6

Lims ID: Std L5

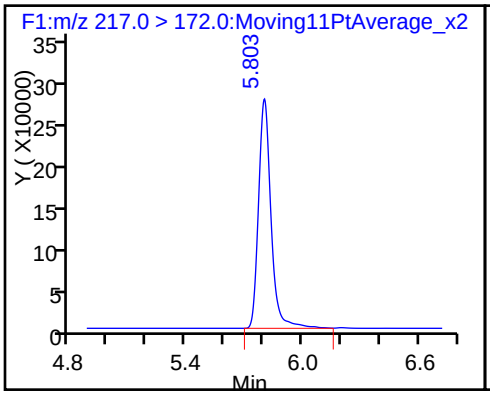
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 7

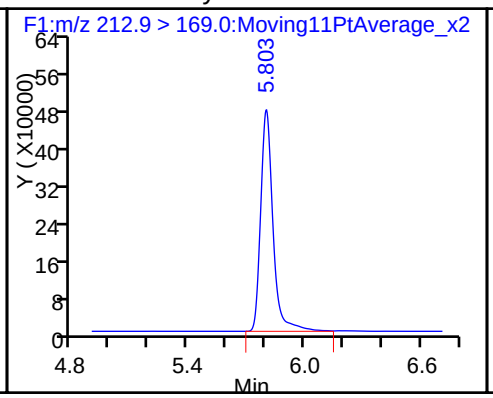
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

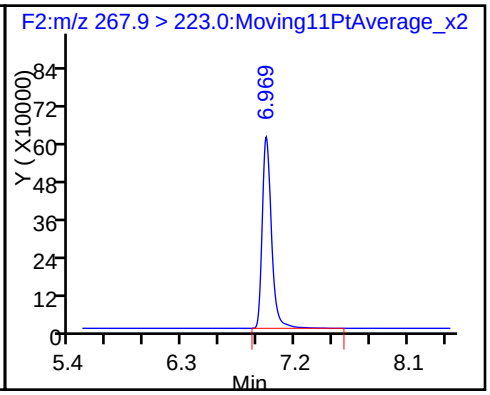
D 1 13C4 PFBA



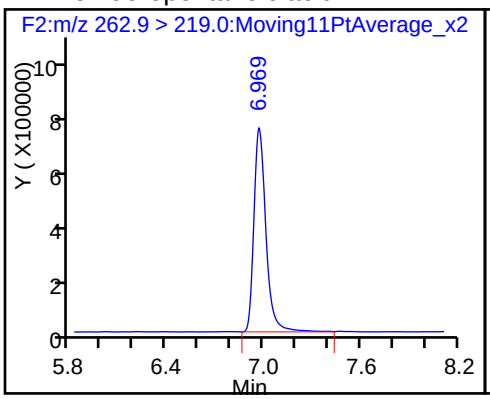
2 Perfluorobutyric acid



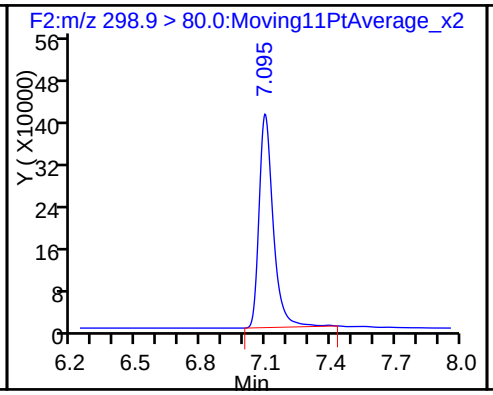
D 3 13C5-PFPeA



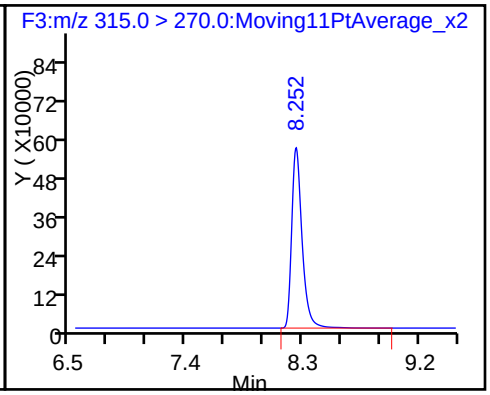
4 Perfluoropentanoic acid



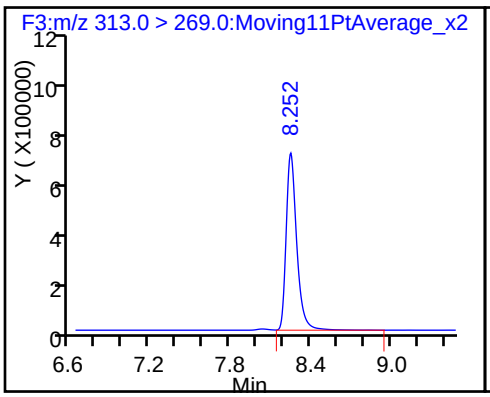
40 Perfluorobutanesulfonic acid



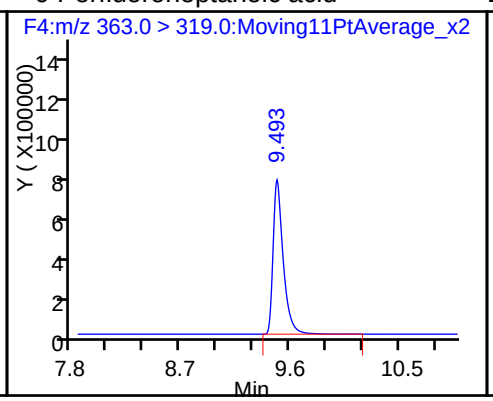
D 6 13C2 PFHxA



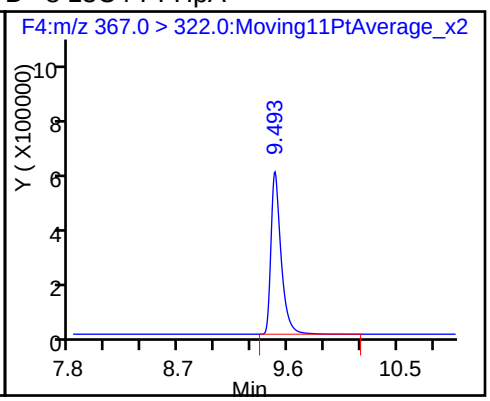
7 Perfluorohexanoic acid



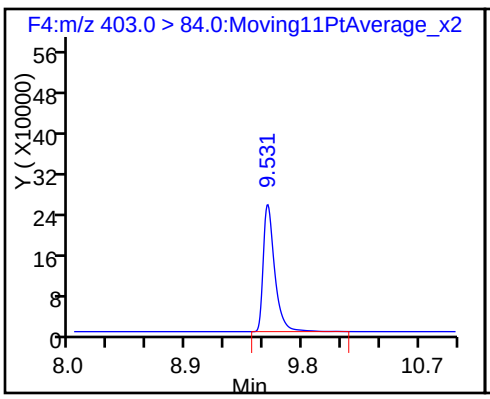
9 Perfluoroheptanoic acid



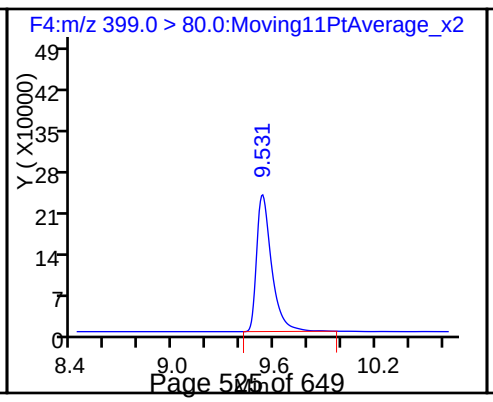
D 8 13C4-PFHpA



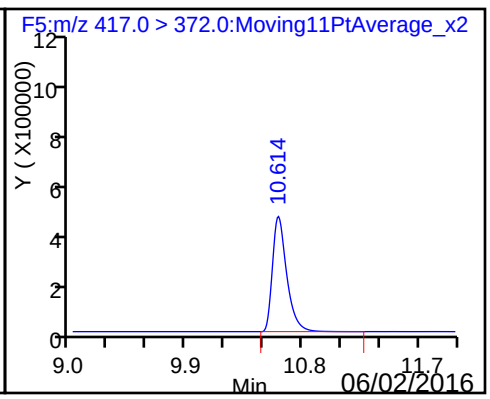
D 11 18O2 PFHxS



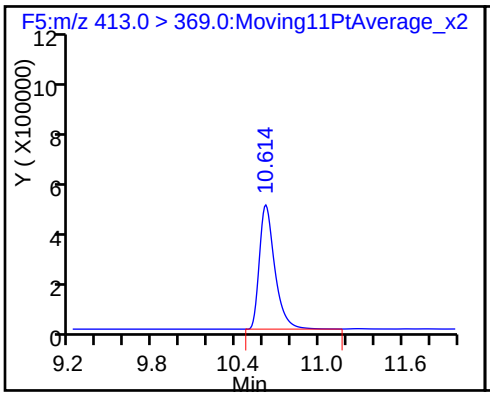
41 Perfluorohexanesulfonic acid



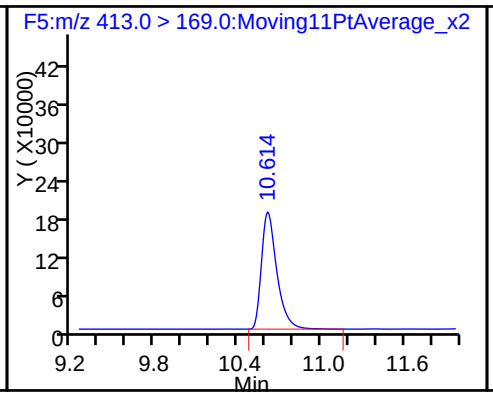
D 12 13C4 PFOA



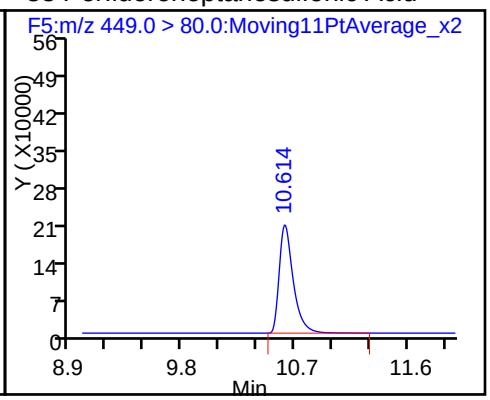
13 Perfluorooctanoic acid



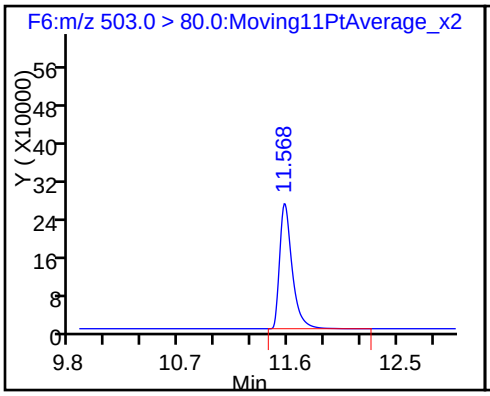
13 Perfluorooctanoic acid



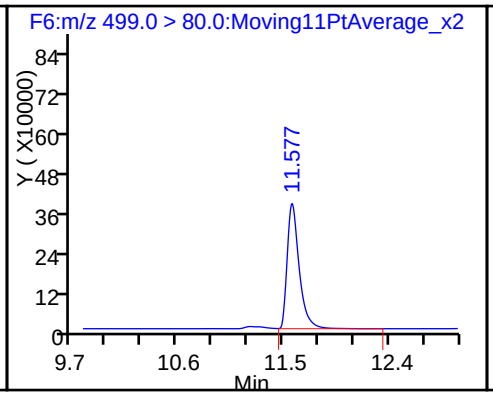
38 Perfluoroheptanesulfonic Acid



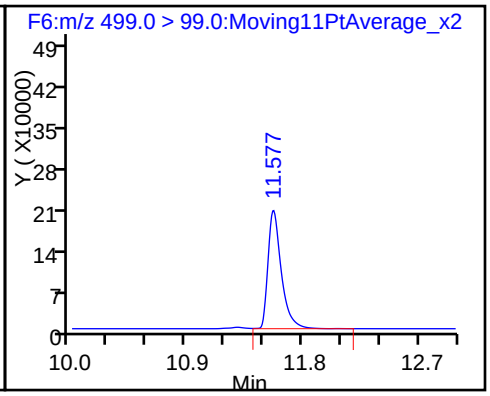
D 16 13C4 PFOS



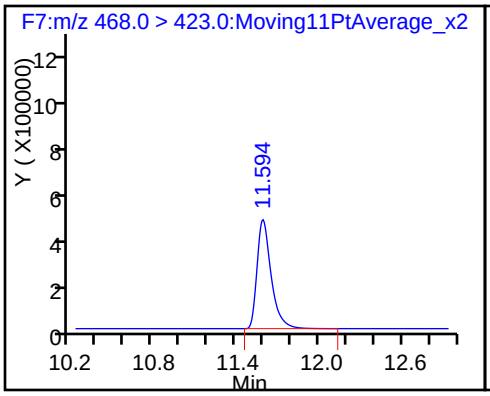
15 Perfluorooctane sulfonic acid



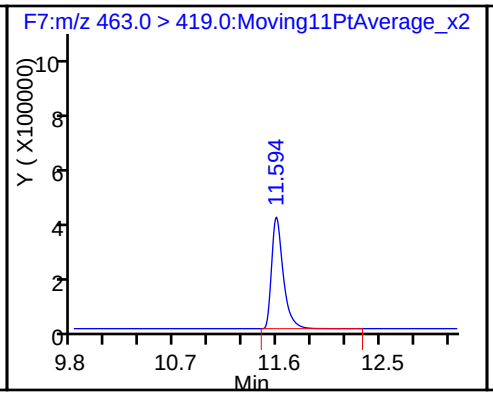
15 Perfluorooctane sulfonic acid



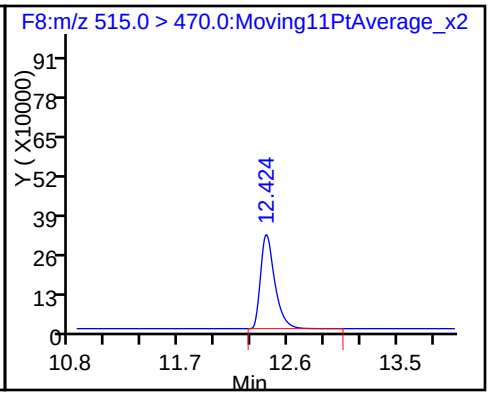
D 17 13C5 PFNA



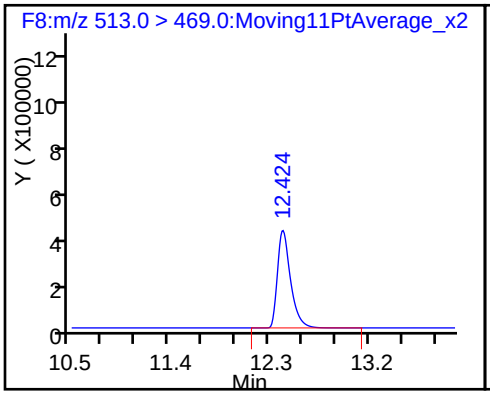
18 Perfluorononanoic acid



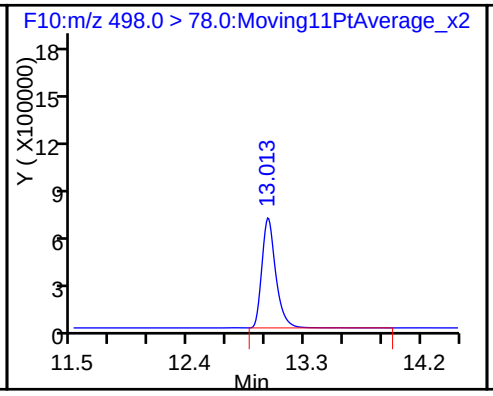
D 19 13C2 PFDA



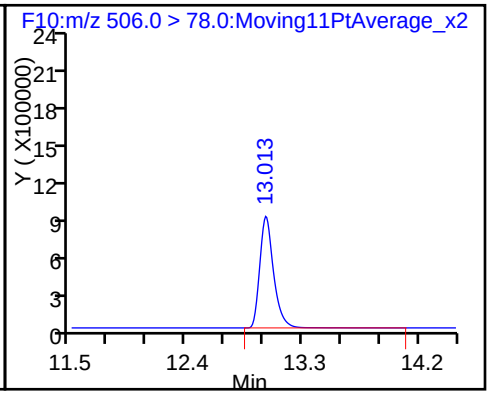
20 Perfluorodecanoic acid



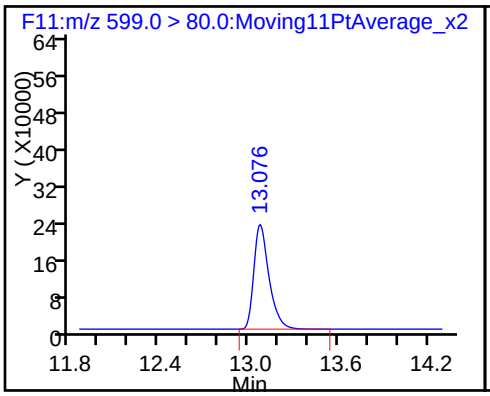
24 Perfluorooctane Sulfonamide



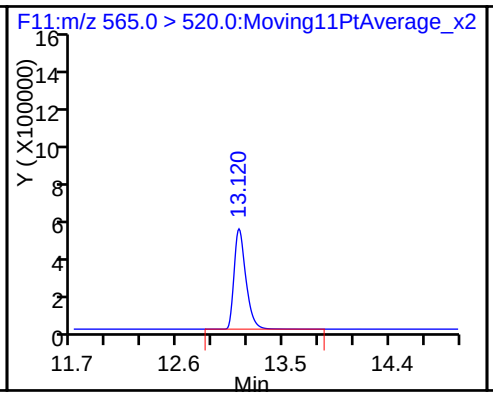
D 23 13C8 FOSA



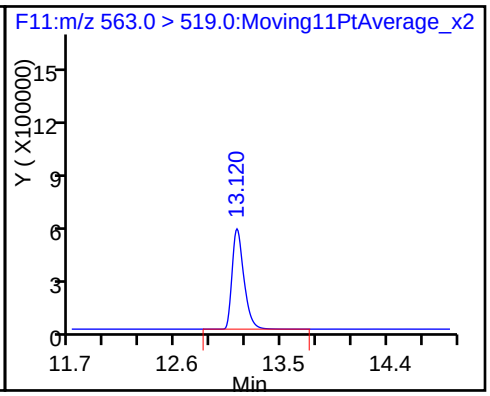
39 Perfluorodecane Sulfonic acid



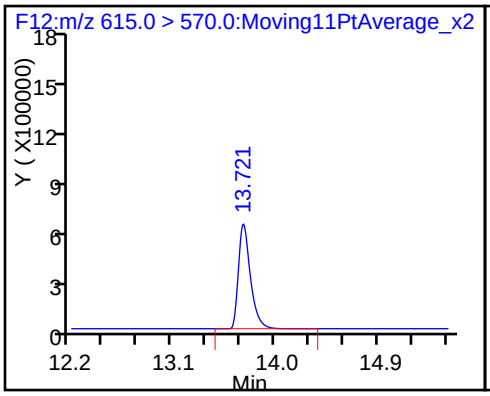
D 26 13C2 PFUnA



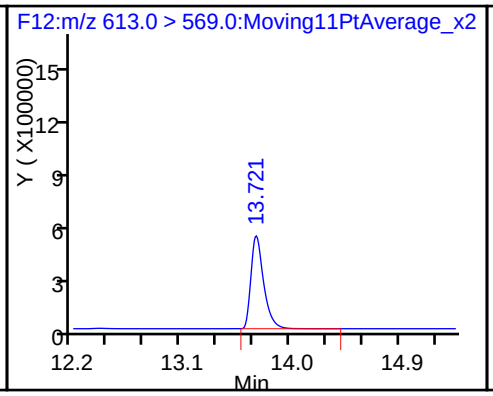
27 Perfluoroundecanoic acid



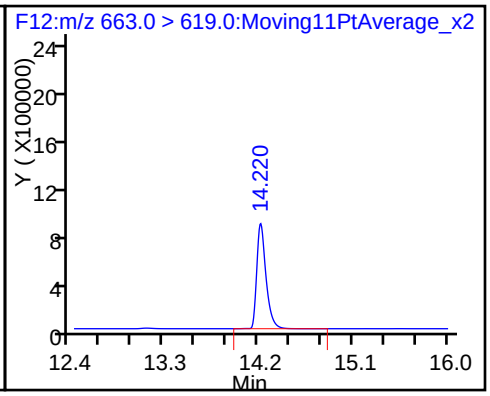
D 28 13C2 PFDoA



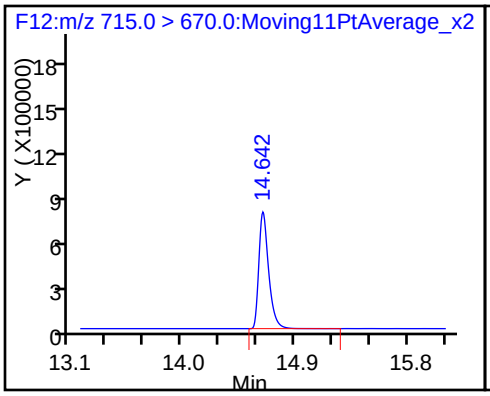
29 Perfluorododecanoic acid



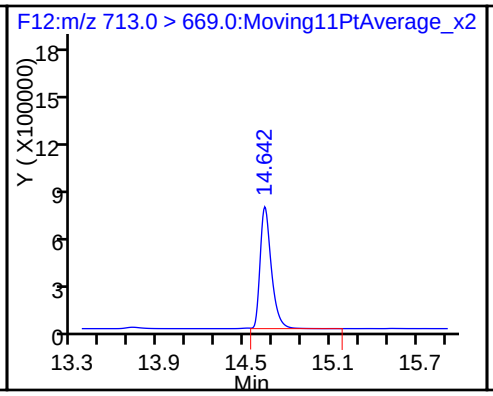
30 Perfluorotridecanoic acid



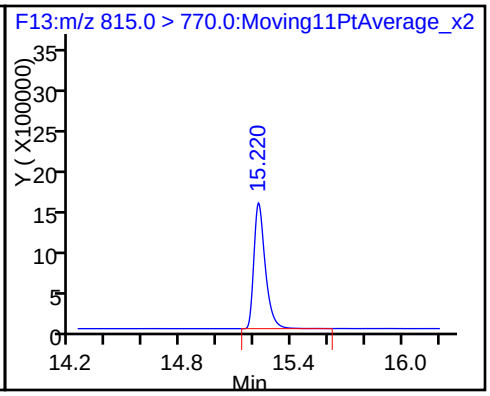
D 33 13C2-PFTeDA



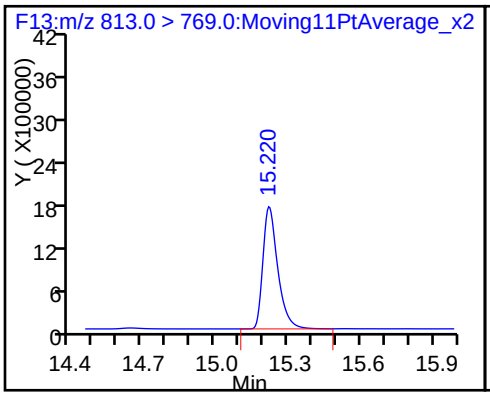
32 Perfluorotetradecanoic acid



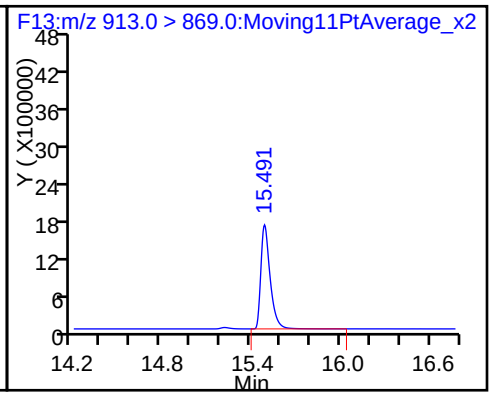
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_008.d
Lims ID: Std L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 31-May-2016 14:38:09 ALS Bottle#: 14 Worklist Smp#: 8
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L6
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:13:14 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.800	5.803	-0.003		1047944	43.0		86.0	110955	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.806	-0.006	1.000	6720179	209.7		105	3482	
D 3 13C5-PFPeA										
267.9 > 223.0	6.964	6.968	-0.004		2525317	39.7		79.5	8362	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.964	6.970	-0.006	1.000	11617905	199.1		99.6	4615	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.095	7.099	-0.004	1.000	6110567	192.8		109		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.095	7.099	-0.004	1.000	6110567	NC			734	
298.9 > 99.0	7.092	7.099	-0.007	1.000	2847225		2.15(0.00-0.00)		829	
D 6 13C2 PFHxA										
315.0 > 270.0	8.247	8.252	-0.005		2562636	41.8		83.6	6964	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.252	8.253	-0.001	1.000	11962395	207.0		103	1786	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.487	9.494	-0.007	1.000	11841967	205.0		103	8777	
D 8 13C4-PFHpA										
367.0 > 322.0	9.487	9.495	-0.008		2524194	36.8		73.5	16875	
D 11 18O2 PFHxS										
403.0 > 84.0	9.532	9.532	0.0		1153063	37.4		79.1	6298	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.532	9.533	-0.001	1.000	4351661	NC			2929	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.532	9.533	-0.001	1.000	4351661	190.6		101		
D 12 13C4 PFOA										
417.0 > 372.0	10.614	10.612	0.002		2470567	34.0		67.9	5830	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.614	10.612	0.002	1.000	10721047	211.4		106	2973	
413.0 > 169.0	10.614	10.612	0.002	1.000	3924112		2.73(0.00-0.00)	106	9019	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.623	10.622	0.001	1.000	4450812	NC			3860	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.623	10.622	0.001	1.000	4450812	189.8		99.7		
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		1343585	33.8		70.8	90210	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.560	11.571	-0.011	1.000	7229088	208.2		109	976	
499.0 > 99.0	11.560	11.571	-0.011	1.000	3873072		1.87(0.00-0.00)	109	2426	
D 17 13C5 PFNA										
468.0 > 423.0	11.586	11.589	-0.003		2482043	37.2		74.5	68727	
18 Perfluorononanoic acid										
463.0 > 419.0	11.586	11.589	-0.003	1.000	8509750	198.4		99.2	10207	
D 19 13C2 PFDA										
515.0 > 470.0	12.414	12.423	-0.009		1884965	35.8		71.6	8135	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.414	12.423	-0.009	1.000	9897323	208.9		104	25190	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.021	13.018	0.003	1.000	16855550	218.1		109	1303	
D 23 13C8 FOSA										
506.0 > 78.0	13.021	13.019	0.002		4867961	38.8		77.7	6339	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.084	13.081	0.003	1.000	4518038	197.5		102		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.084	13.081	0.003	1.000	4518038	NC			11987	
D 26 13C2 PFUnA										
565.0 > 520.0	13.128	13.124	0.004		2689857	35.8		71.5	18213	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.128	13.124	0.004	1.000	11435145	207.4		104	12138	
D 28 13C2 PFDoA										
615.0 > 570.0	13.710	13.718	-0.008		3633475	40.0		80.1	23178	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.710	13.718	-0.008	1.000	12747780	209.4		105	10597	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.211	14.220	-0.009	1.000	14346430	177.0		88.5	4833	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.634	14.643	-0.009		3275932	40.4		80.8	4793	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.634	14.644	-0.010	1.000	12874426	197.3		98.7	3427	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.218	15.223	-0.005		5223563	41.5		82.9	5009	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.218	15.223	-0.005	1.000	21367734	198.8		99.4	4527	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.495	15.493	0.002	1.000	22636301	211.6		106	5157	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L6_00017 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:13:15 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_008.d

Injection Date: 31-May-2016 14:38:09 Instrument ID: A6

Lims ID: Std L6

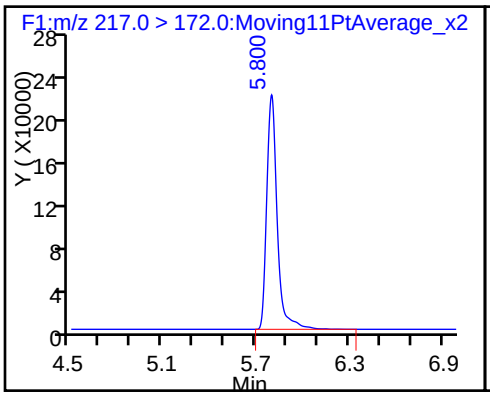
Client ID:

Operator ID: JRB ALS Bottle#: 14 Worklist Smp#: 8

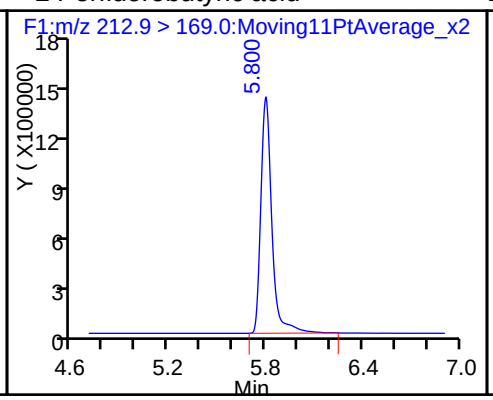
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

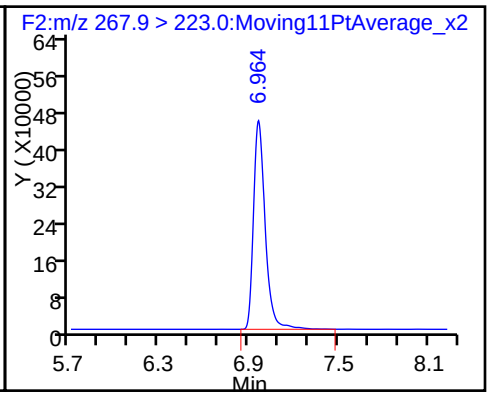
D 1 13C4 PFBA



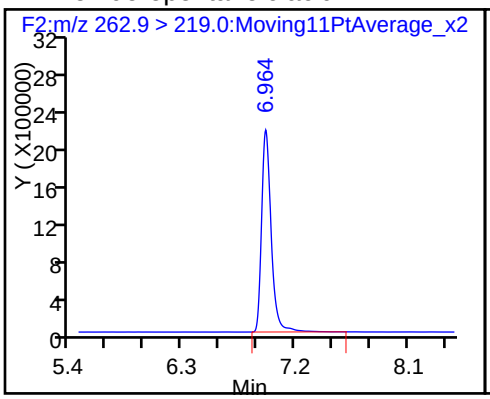
2 Perfluorobutyric acid



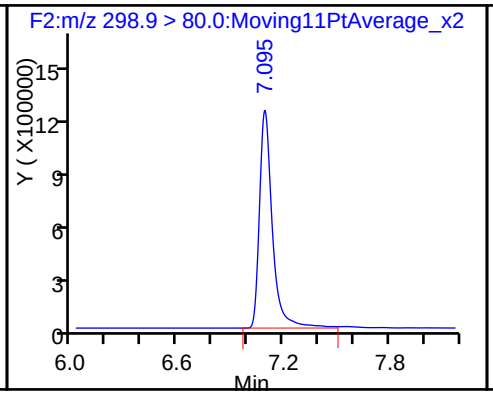
D 3 13C5-PFPeA



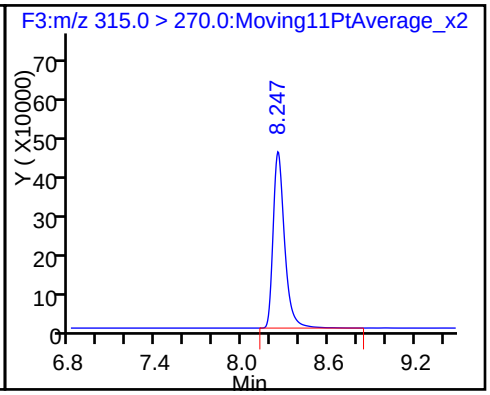
4 Perfluoropentanoic acid



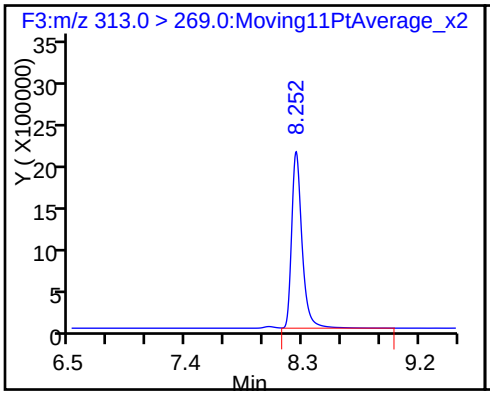
40 Perfluorobutanesulfonic acid



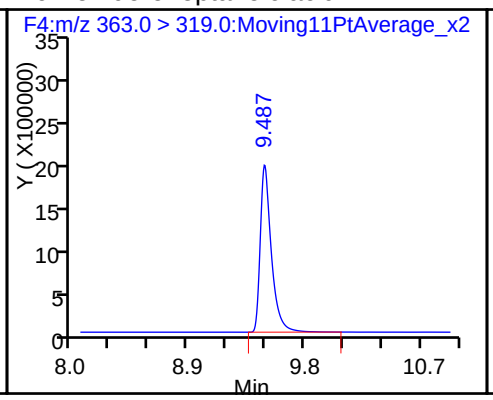
D 6 13C2 PFHxA



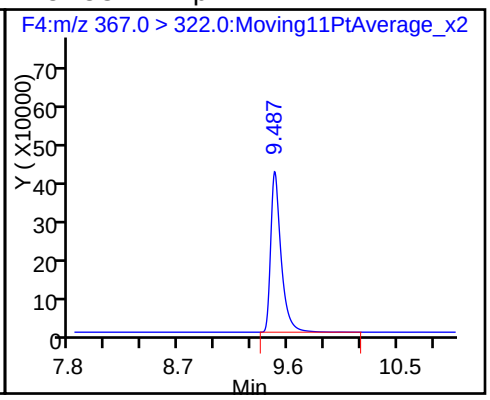
7 Perfluorohexanoic acid



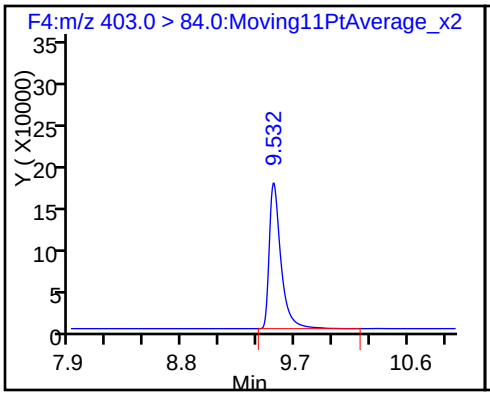
9 Perfluoroheptanoic acid



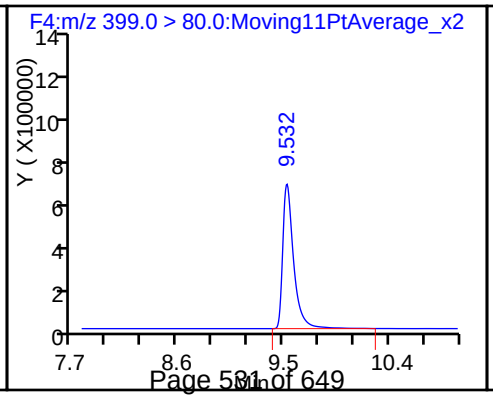
D 8 13C4-PFHpA



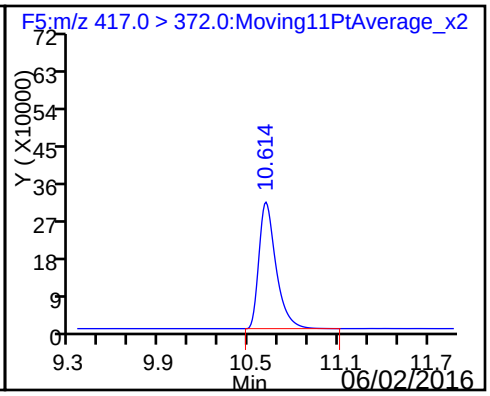
D 11 18O2 PFHxS



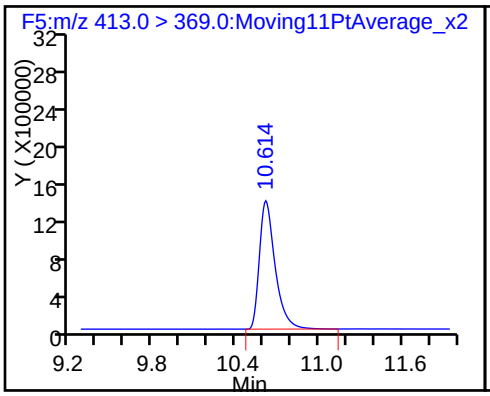
41 Perfluorohexanesulfonic acid



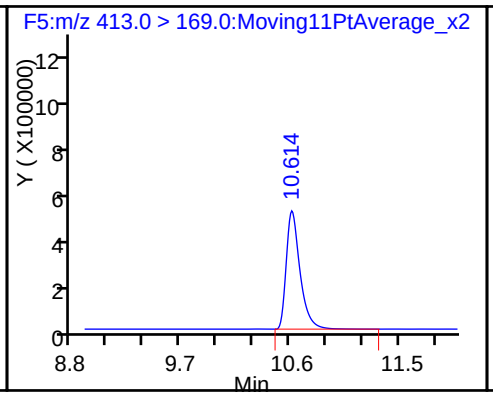
D 12 13C4 PFOA



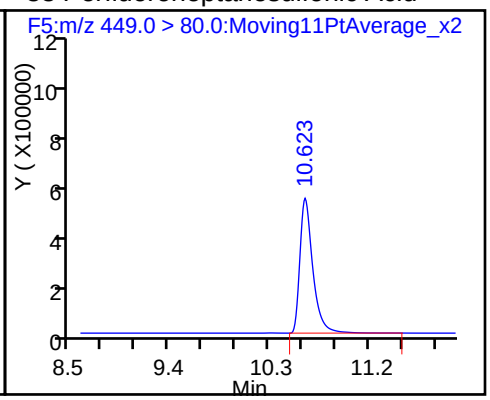
13 Perfluorooctanoic acid



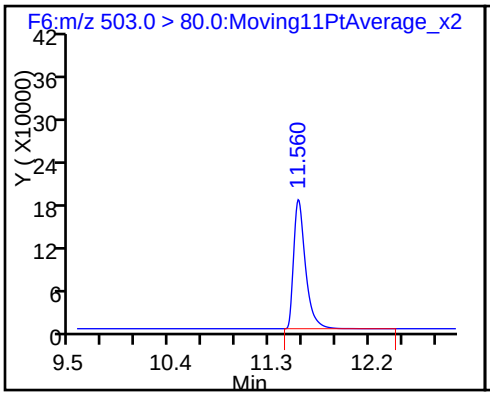
13 Perfluorooctanoic acid



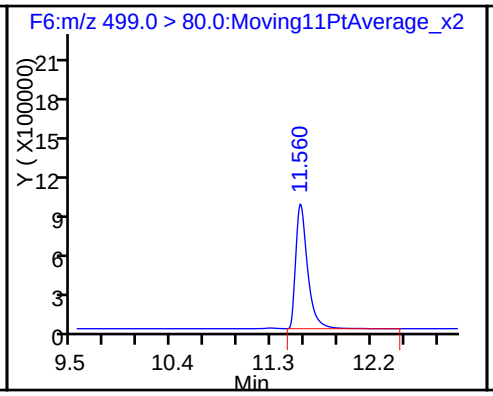
38 Perfluoroheptanesulfonic Acid



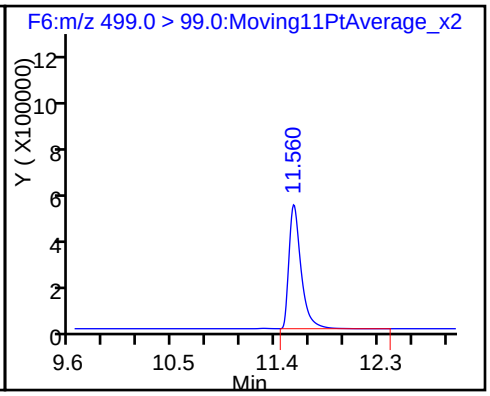
D 16 13C4 PFOS



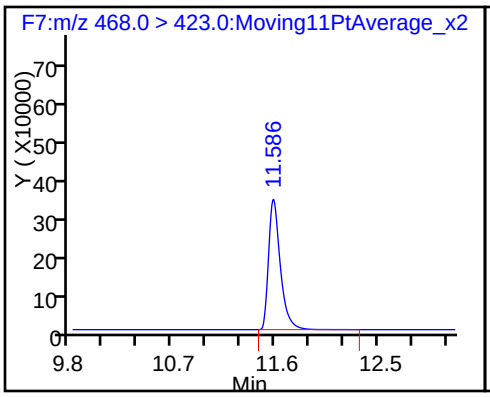
15 Perfluorooctane sulfonic acid



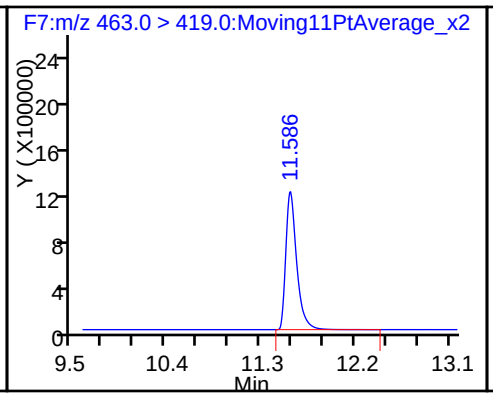
15 Perfluorooctane sulfonic acid



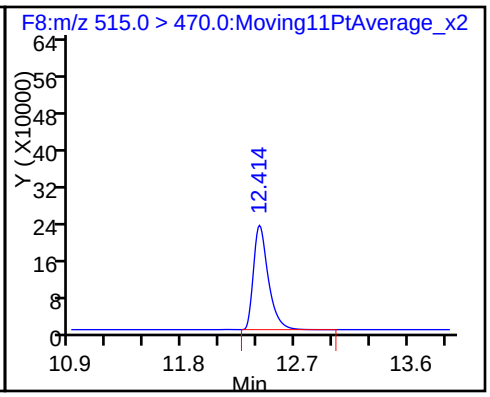
D 17 13C5 PFNA



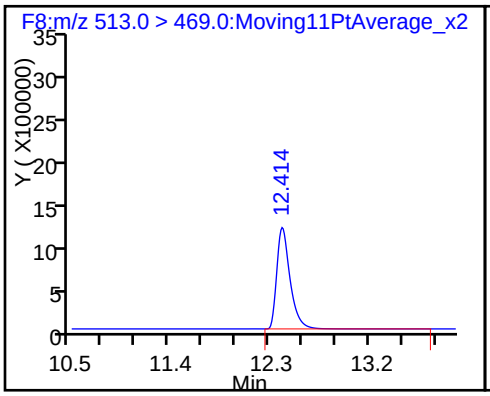
18 Perfluorononanoic acid



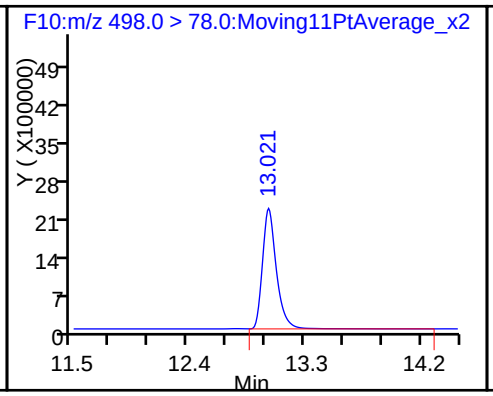
D 19 13C2 PFDA



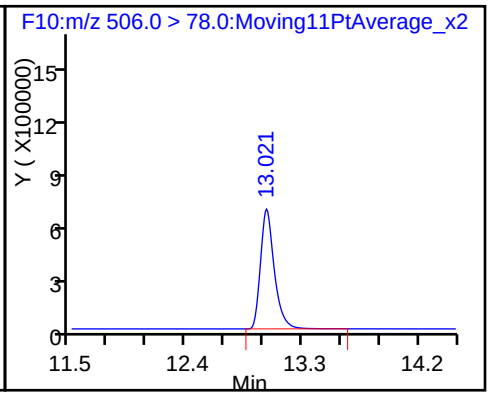
20 Perfluorodecanoic acid



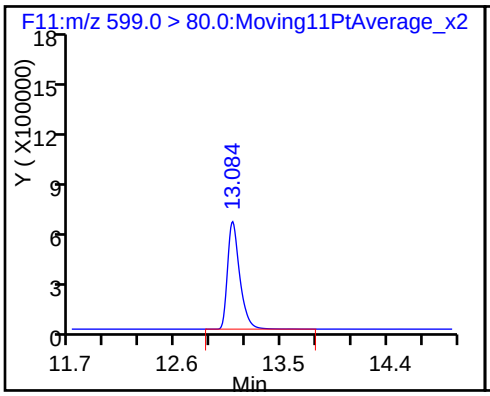
24 Perfluorooctane Sulfonamide



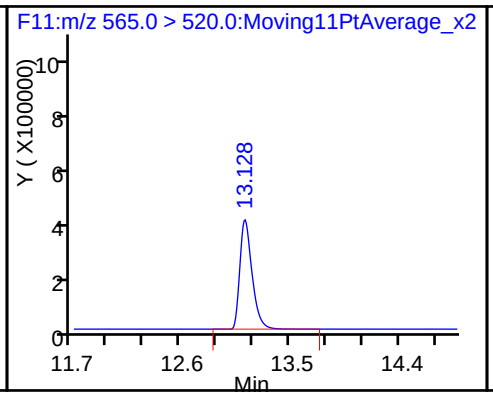
D 23 13C8 FOSA



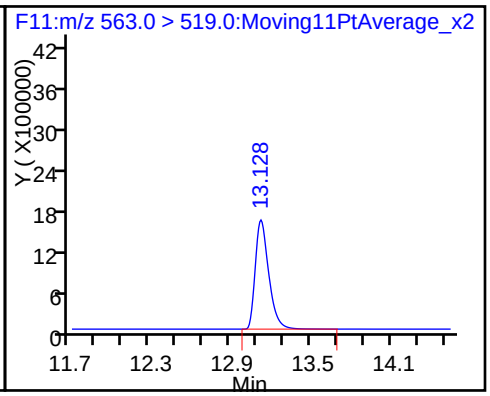
39 Perfluorodecane Sulfonic acid



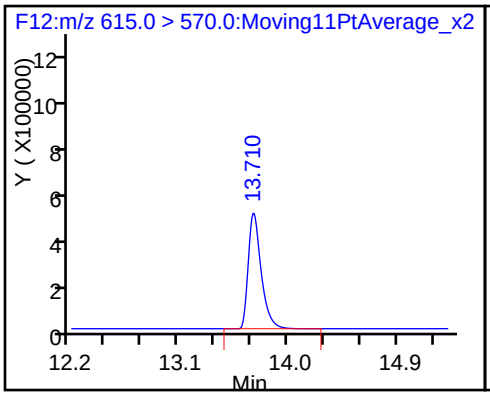
D 26 13C2 PFUnA



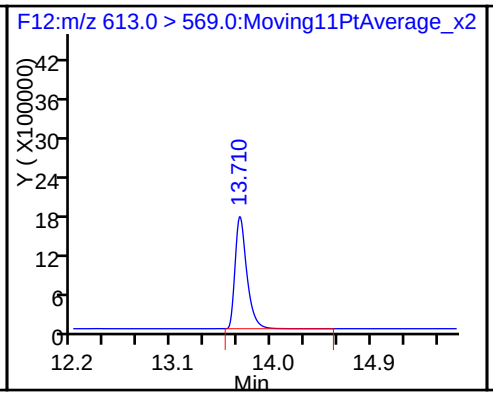
27 Perfluoroundecanoic acid



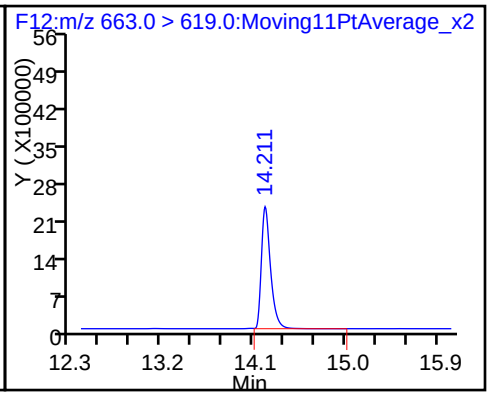
D 28 13C2 PFDoA



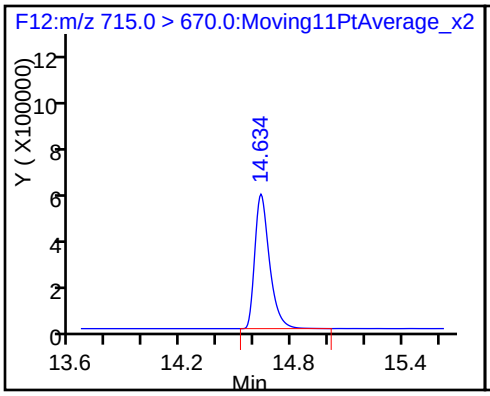
29 Perfluorododecanoic acid



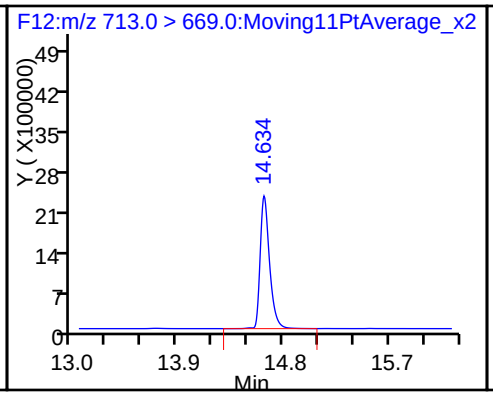
30 Perfluorotridecanoic acid



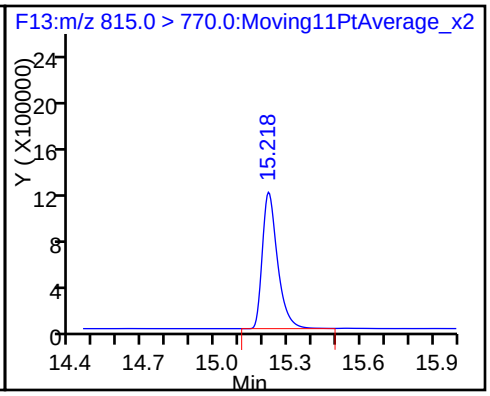
D 33 13C2-PFTeDA



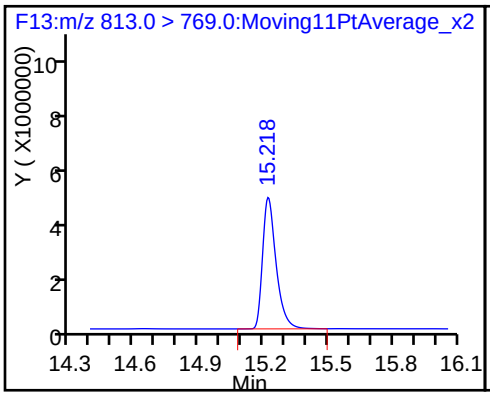
32 Perfluorotetradecanoic acid



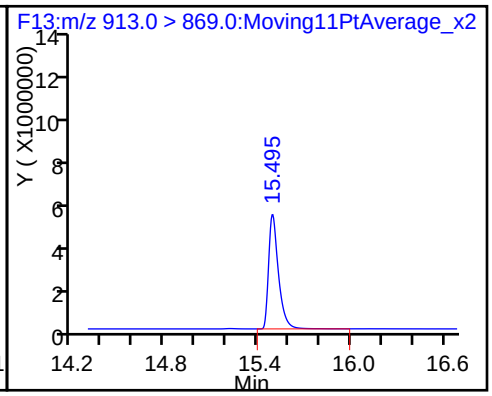
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d
Lims ID: Std L7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 31-May-2016 14:59:27 ALS Bottle#: 15 Worklist Smp#: 9
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L7
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:13:17 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.800	5.803	-0.003		920558	37.8		75.5	5065	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.806	-0.006	1.000	11523989	409.4		102	24027	
D 3 13C5-PFPeA										
267.9 > 223.0	6.964	6.968	-0.004		2113511	33.3		66.5	7344	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.969	6.970	-0.001	1.000	19814969	405.7		101	7096	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.095	7.099	-0.004	1.000	10786825	406.3		115		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.095	7.099	-0.004	1.000	10786825	NC			2424	
298.9 > 99.0	7.095	7.099	-0.004	1.000	4989671		2.16(0.00-0.00)		2957	
D 6 13C2 PFHxA										
315.0 > 270.0	8.252	8.252	0.0		2250360	36.7		73.4	80570	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.252	8.253	-0.001	1.000	20870280	411.2		103	709	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.493	9.494	-0.001	1.000	20712505	392.7		98.2	7773	
D 8 13C4-PFHpA										
367.0 > 322.0	9.493	9.495	-0.002		2306360	33.6		67.2	64904	
D 11 18O2 PFHxS										
403.0 > 84.0	9.532	9.532	0.0		965792	31.3		66.2	48915	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.532	9.533	-0.001	1.000	7345254	NC			3061	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.532	9.533	-0.001	1.000	7345254	384.1		102		
D 12 13C4 PFOA										
417.0 > 372.0	10.605	10.612	-0.007		2119790	29.1		58.3	17652	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.605	10.612	-0.007	1.000	18041857	414.6		104	2116	
413.0 > 169.0	10.605	10.612	-0.007	1.000	6621828		2.72(0.00-0.00)	104	1770	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.614	10.622	-0.008	1.000	7412646	NC			4189	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.614	10.622	-0.008	1.000	7412646	370.8		97.4		
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		1144504	28.8		60.3	21935	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.560	11.571	-0.011	1.000	11431237	386.5		101	1062	
499.0 > 99.0	11.560	11.571	-0.011	1.000	6547181		1.75(0.00-0.00)	101	2209	
D 17 13C5 PFNA										
468.0 > 423.0	11.578	11.589	-0.011		2176766	32.7		65.3	99535	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	14441472	384.0		96.0	14871	
D 19 13C2 PFDA										
515.0 > 470.0	12.414	12.423	-0.009		1633067	31.0		62.0	39094	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.414	12.423	-0.009	1.000	17011559	414.4		104	5345	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.013	13.018	-0.005	1.000	28215564	410.7		103	1516	
D 23 13C8 FOSA										
506.0 > 78.0	13.013	13.019	-0.006		4327875	34.5		69.1	3809	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.076	13.081	-0.005	1.000	7388958	379.3		98.4		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.076	13.081	-0.005	1.000	7388958	NC			11562	
D 26 13C2 PFUnA										
565.0 > 520.0	13.120	13.124	-0.004		2288823	30.4		60.9	161967	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.120	13.124	-0.004	1.000	20032158	427.5		107	19704	
D 28 13C2 PFDoA										
615.0 > 570.0	13.712	13.718	-0.006		3085918	34.0		68.0	11769	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.712	13.718	-0.006	1.000	21331668	412.6		103	5962	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.220	14.220	0.0	1.000	24683868	358.6		89.6	4213	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.642	14.643	-0.001		2857848	35.2		70.5	8865	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.642	14.644	-0.002	1.000	22175922	400.5		100	2285	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.220	15.223	-0.003		4743139	37.6		75.3	5121	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.220	15.223	-0.003	1.000	37073350	407.3		102	3469	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.486	15.493	-0.007	1.000	42435932	467.1		117	5239	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L7_00017 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:13:18 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Injection Date: 31-May-2016 14:59:27 Instrument ID: A6

Lims ID: Std L7

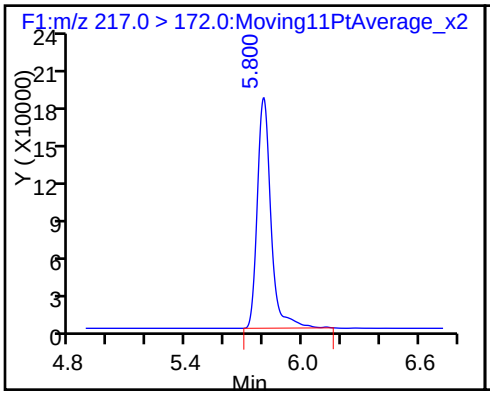
Client ID:

Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 9

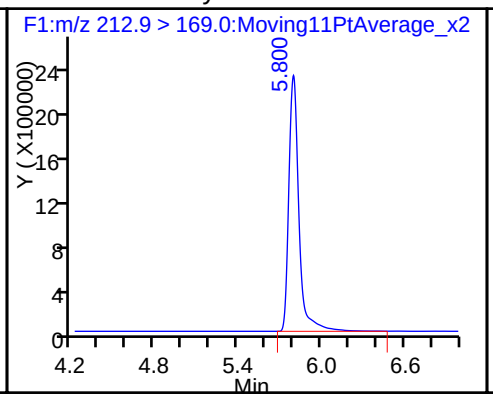
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

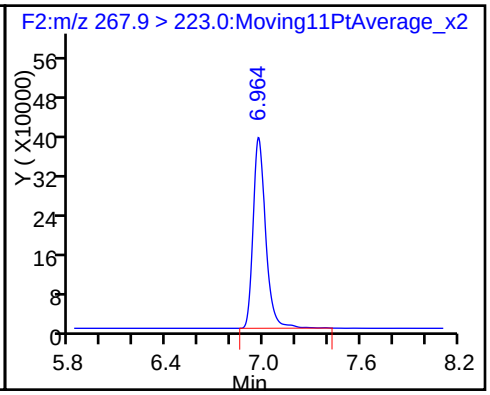
D 1 13C4 PFBA



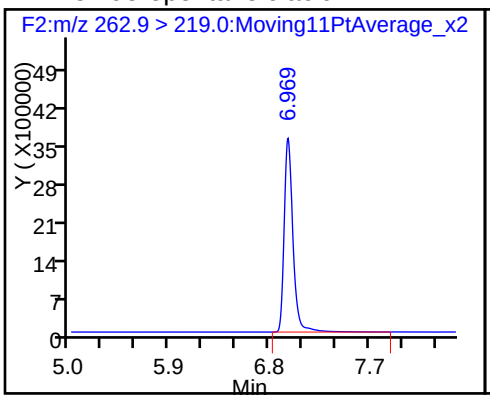
2 Perfluorobutyric acid



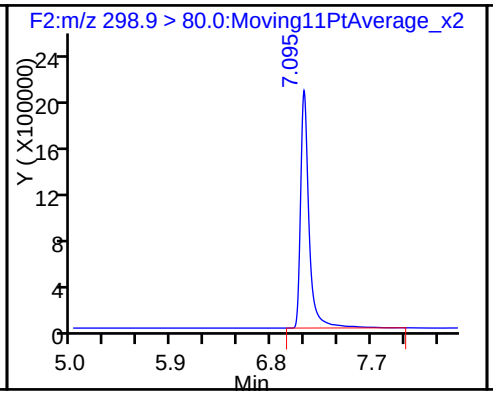
D 3 13C5-PFPeA



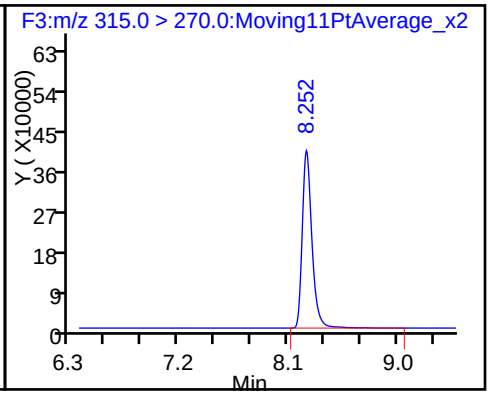
4 Perfluoropentanoic acid



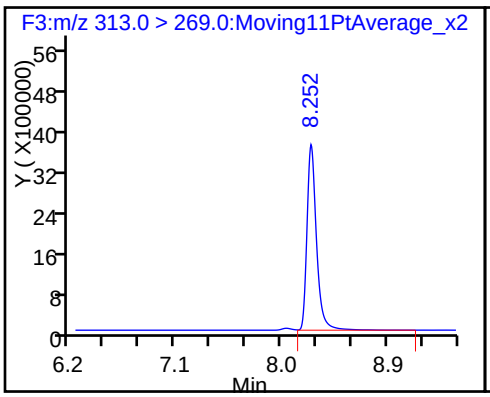
40 Perfluorobutanesulfonic acid



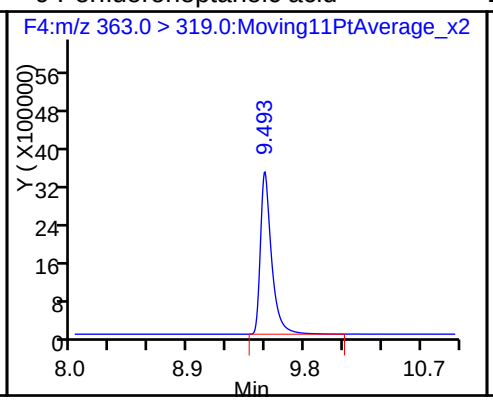
D 6 13C2 PFHxA



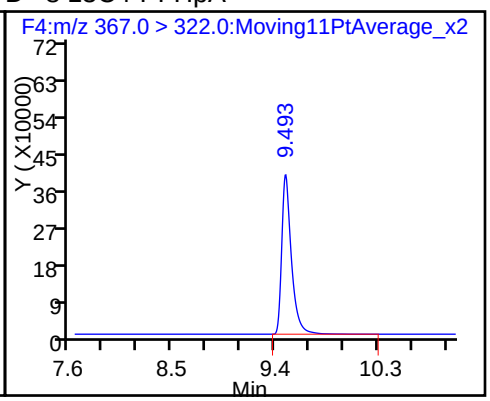
7 Perfluorohexanoic acid



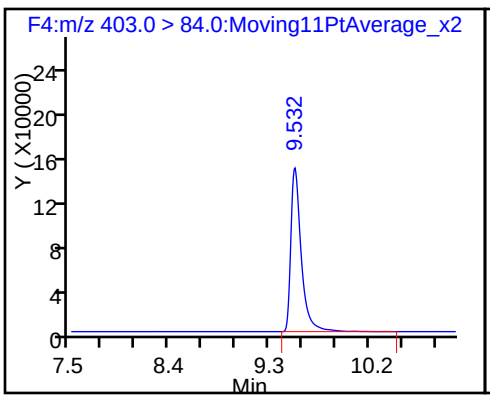
9 Perfluoroheptanoic acid



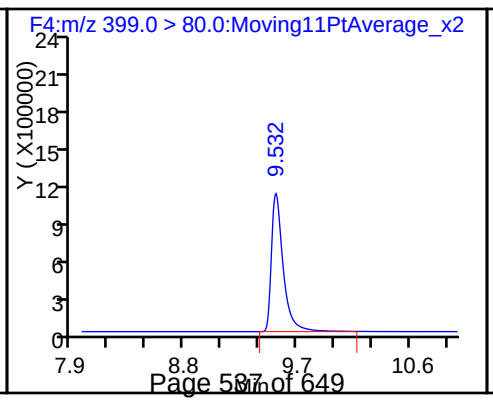
D 8 13C4-PFHpA



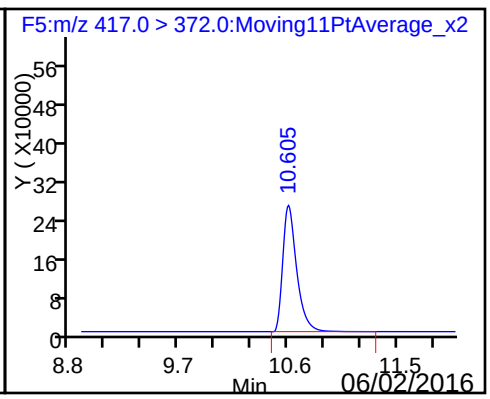
D 11 18O2 PFHxS



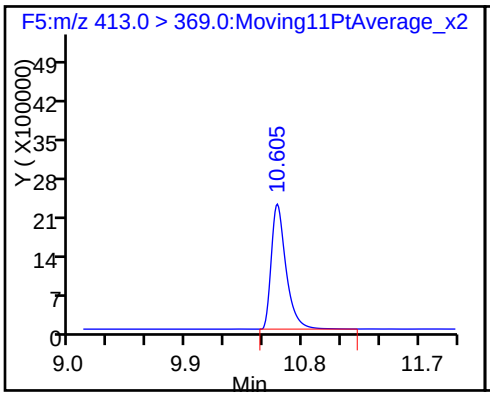
41 Perfluorohexanesulfonic acid



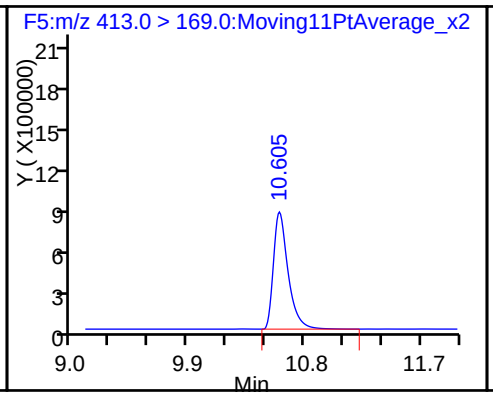
D 12 13C4 PFOA



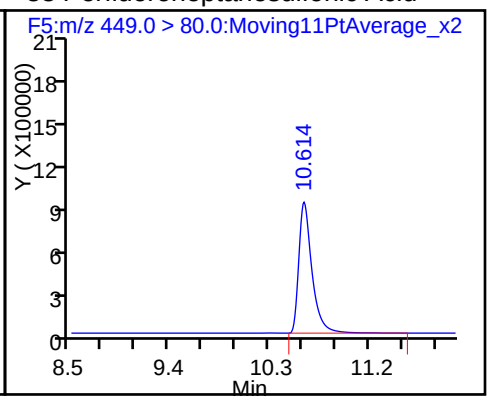
13 Perfluorooctanoic acid



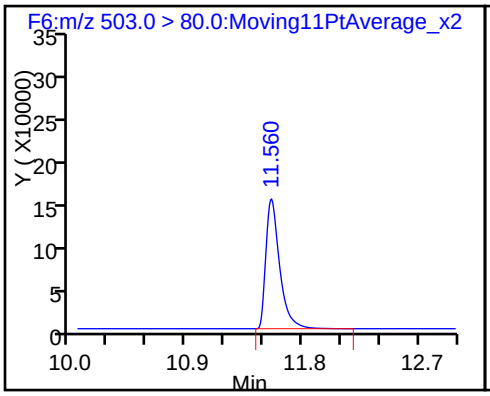
13 Perfluorooctanoic acid



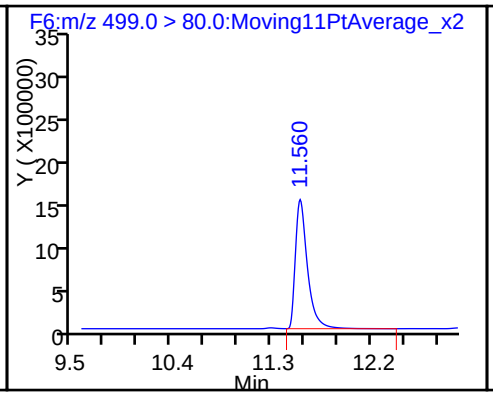
38 Perfluoroheptanesulfonic Acid



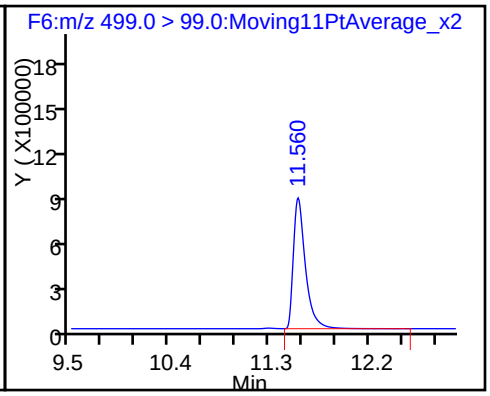
D 16 13C4 PFOS



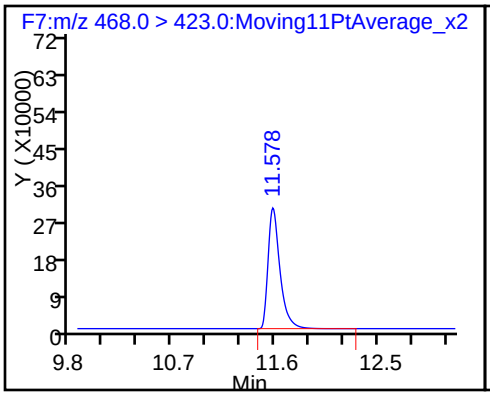
15 Perfluorooctane sulfonic acid



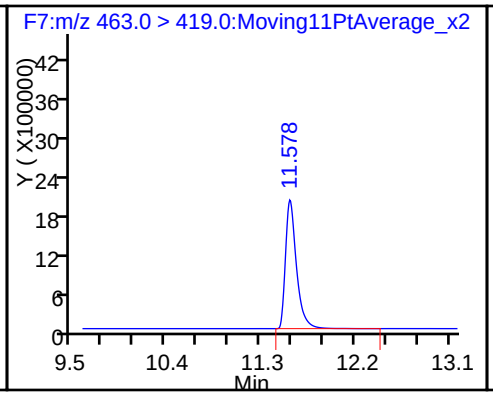
15 Perfluorooctane sulfonic acid



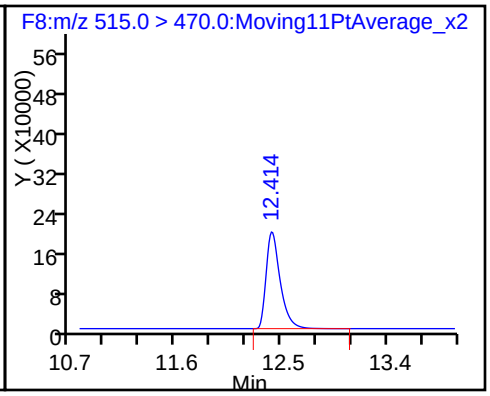
D 17 13C5 PFNA



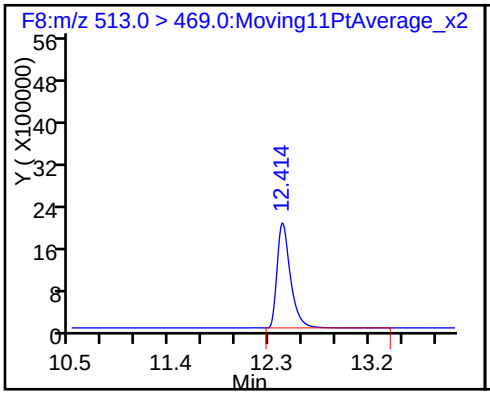
18 Perfluorononanoic acid



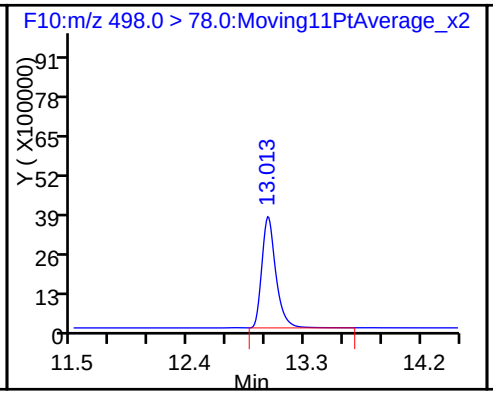
D 19 13C2 PFDA



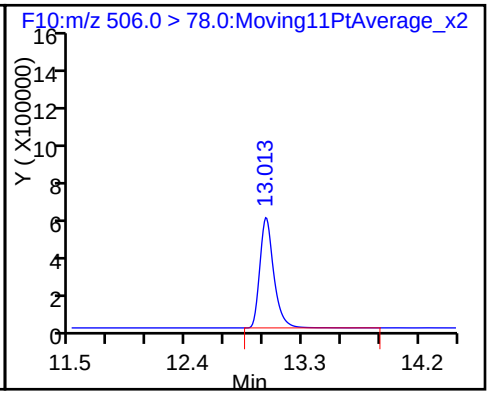
20 Perfluorodecanoic acid



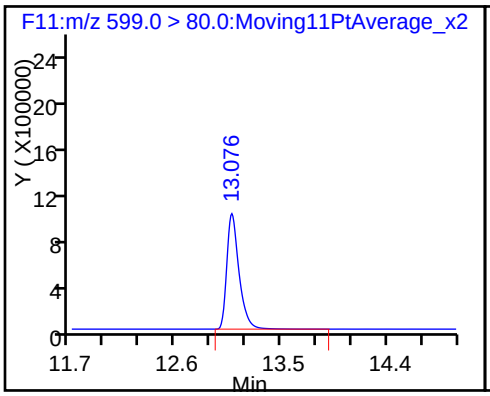
24 Perfluorooctane Sulfonamide



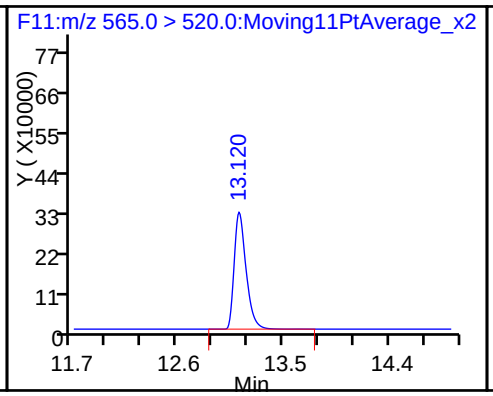
D 23 13C8 FOSA



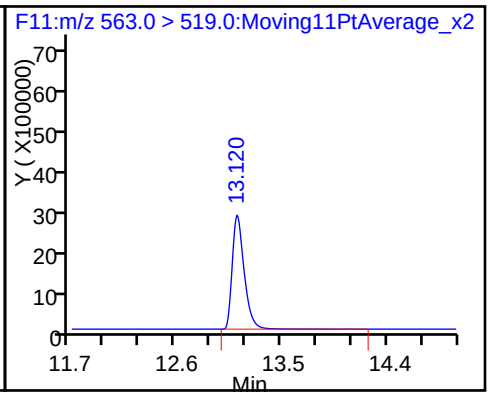
39 Perfluorodecane Sulfonic acid



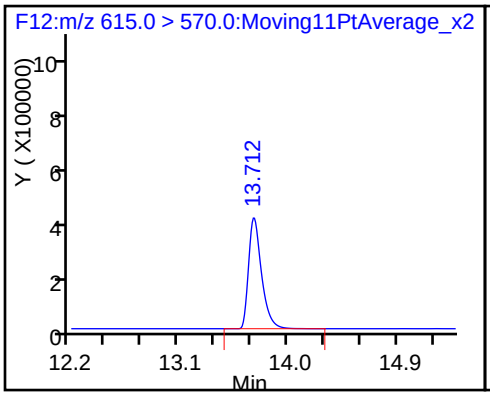
D 26 13C2 PFUnA



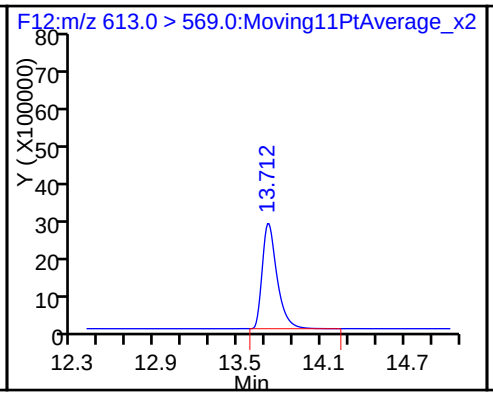
27 Perfluoroundecanoic acid



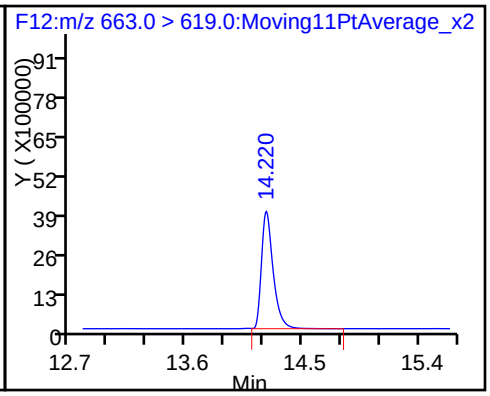
D 28 13C2 PFDoA



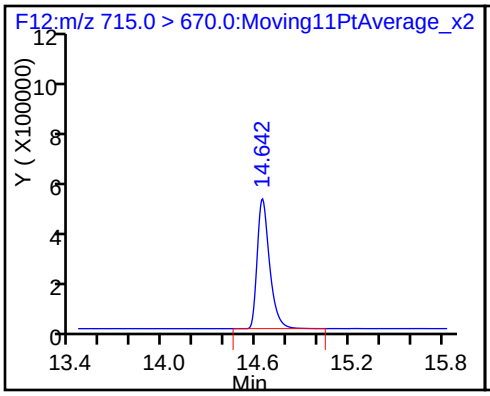
29 Perfluorododecanoic acid



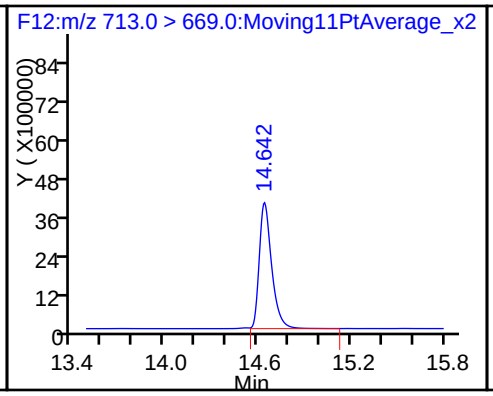
30 Perfluorotridecanoic acid



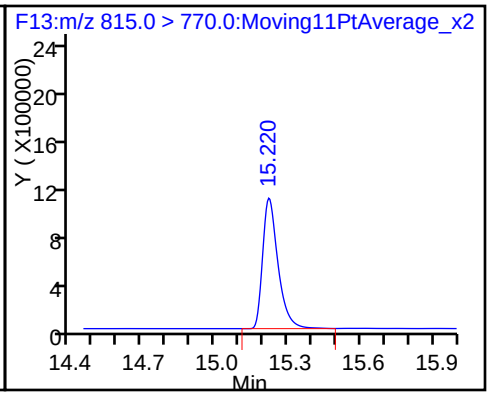
D 33 13C2-PFTeDA



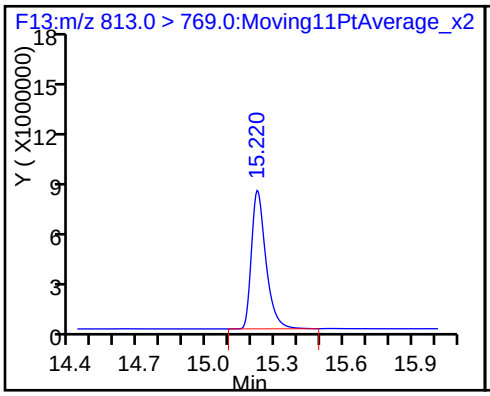
32 Perfluorotetradecanoic acid



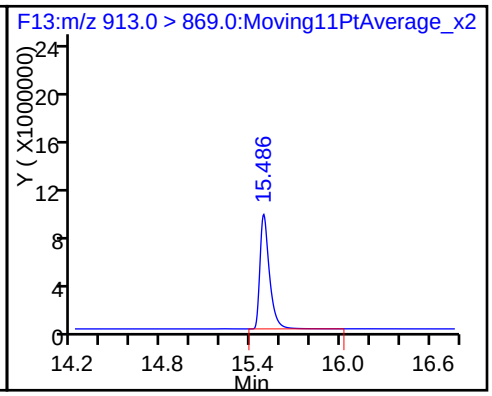
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: ICV 320-111859/13 Calibration Date: 05/28/2016 20:24

Instrument ID: A6 Calib Start Date: 05/28/2016 13:56

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/28/2016 19:41

Lab File ID: 28MAY2016A6A_014.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.516	1.411		46.5	50.0	-6.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.222	1.115		45.6	50.0	-8.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.260	1.201		42.2	44.3	-4.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.103	1.073		48.7	50.0	-2.7	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.157		48.1	50.0	-3.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9146	0.9012		46.6	47.3	-1.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.016	0.9330		45.9	50.0	-8.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.255	1.089		41.4	47.8	-13.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8443	0.8371		49.6	50.0	-0.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.307	1.182		45.2	50.0	-9.5	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8093	0.7538		46.6	50.0	-6.9	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.8086		48.4	48.3	0.3	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9907		47.6	50.0	-4.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8088	0.8117		50.2	50.0	0.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.146	1.099		48.0	50.0	-4.1	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.8653		48.9	50.0	-2.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.453		46.7	50.0	-6.5	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.538	1.400		45.5	50.0	-9.0	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_014.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 28-May-2016 20:24:07 ALS Bottle#: 16 Worklist Smp#: 13
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A4*sub6

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:28 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 29-May-2016 15:17:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.791	5.795	-0.004		1345461	56.4		113	5149	
2 Perfluorobutyric acid										
212.9 > 169.0	5.791	5.797	-0.006	1.000	1898494	46.5			81562	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.957	-0.002		2836156	52.1		104	13701	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.955	6.959	-0.004	1.000	3162462	45.6			558	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.085	7.085	0.0	1.000	1571946	42.2				
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.085	7.085	0.0	1.000	1571946	NC			298	
298.9 > 99.0	7.081	7.085	-0.004	1.000	790668		1.99(0.00-0.00)		865	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.236	8.235	0.001	1.000	3328444	48.7			2903	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.236	0.0		3100977	53.1		106	92517	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.474	0.001		3154250	50.9		102	36446	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.481	9.475	0.006	1.000	3649130	48.1			32992	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.507	0.003		1398522	49.0		104	112341	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.510	9.507	0.003	1.000	1259046	NC			1725	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.510	9.507	0.003	1.000	1259046	46.6				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.595	10.586	0.009		3429017	50.9		102	26052	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.595	10.587	0.008	1.000	3199381	45.9			1119	
413.0 > 169.0	10.595	10.587	0.008	1.000	1196827		2.67(0.00-0.00)		1474	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.595	10.596	-0.001	1.000	1253871	NC			26946	
D 16 13C4 PFOS										
503.0 > 80.0	11.552	11.543	0.009		1880077	53.5		112	88288	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.552	11.545	0.007	1.000	2046118	41.4			377	
499.0 > 99.0	11.552	11.545	0.007	1.000	1145031		1.79(0.00-0.00)		31902	
D 17 13C5 PFNA										
468.0 > 423.0	11.569	11.562	0.007		3140085	50.6		101	63325	
18 Perfluorononanoic acid										
463.0 > 419.0	11.569	11.563	0.006	1.000	2628413	49.6			12905	
D 19 13C2 PFDA										M
515.0 > 470.0	12.383	12.392	-0.009		2546608	51.2		102	9150	M
20 Perfluorodecanoic acid										
513.0 > 469.0	12.393	12.392	0.001	1.000	3010601	45.2			52124	
D 23 13C8 FOSA										
506.0 > 78.0	12.994	13.000	-0.006		5793483	51.8		104	3670	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.994	13.002	-0.008	1.000	4366919	46.6			3072	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.041	13.048	-0.007	1.000	1534458	48.4				
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.041	13.048	-0.007	1.000	1534458	NC			5412	
D 26 13C2 PFUnA										
565.0 > 520.0	13.085	13.094	-0.009		3548066	50.9		102	100590	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.085	13.094	-0.009	1.000	3515059	47.6			10588	
D 28 13C2 PFDoA										
615.0 > 570.0	13.675	13.685	-0.010		4304208	51.8		104	16757	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.675	13.685	-0.010	1.000	3493754	50.2			3582	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.174	14.184	-0.010	1.000	4730865	48.0			2583	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.602	14.609	-0.007		3682610	49.6		99.2	22467	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.602	14.609	-0.007	1.000	3724365	48.9			1338	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.194	15.203	-0.009		6044801	51.7		103	8165	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.194	15.203	-0.009	1.000	6255470	46.7			4064	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.476	15.473	0.003	1.000	6025232	45.5			2941	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFCIC_00017 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:29 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_014.d

Injection Date: 28-May-2016 20:24:07 Instrument ID: A6

Lims ID: ICV

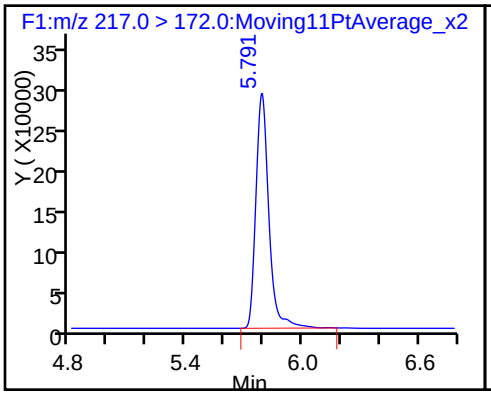
Client ID:

Operator ID: JRB ALS Bottle#: 16 Worklist Smp#: 13

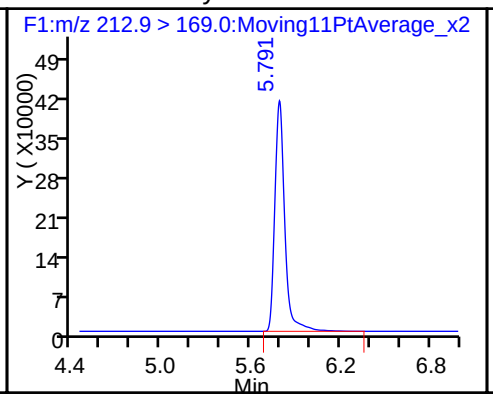
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

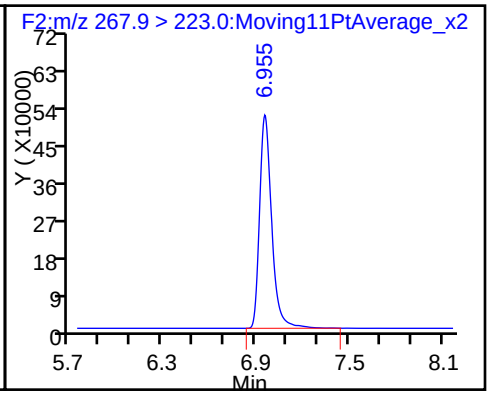
D 1 13C4 PFBA



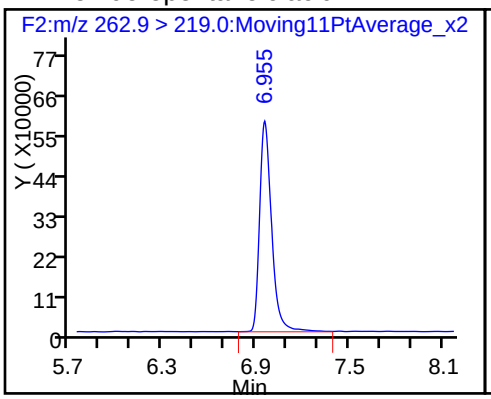
2 Perfluorobutyric acid



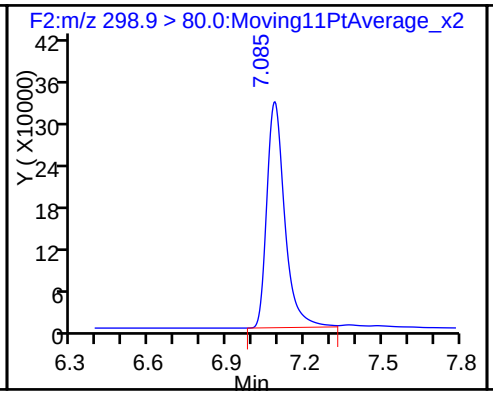
D 3 13C5-PFPeA



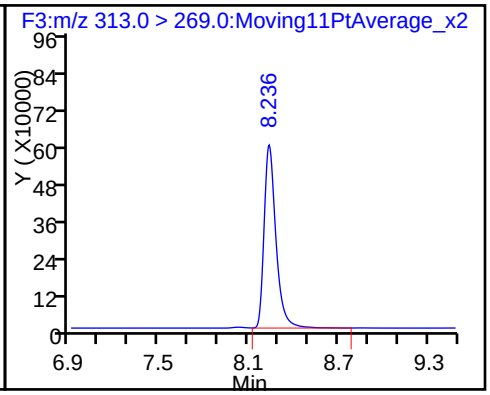
4 Perfluoropentanoic acid



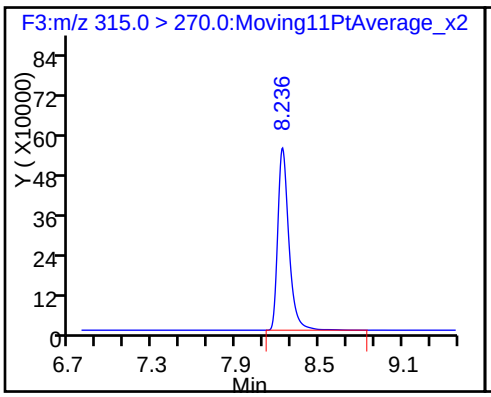
40 Perfluorobutanesulfonic acid



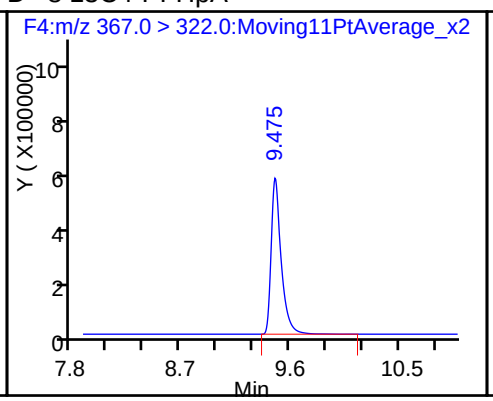
7 Perfluorohexanoic acid



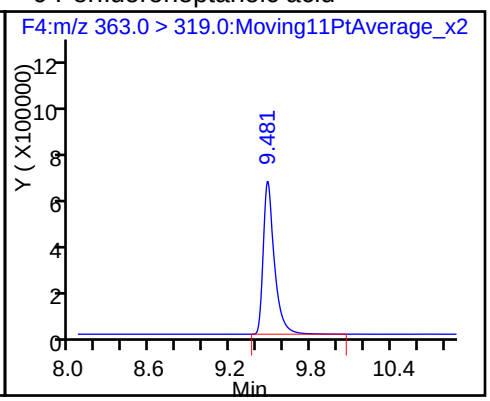
D 6 13C2 PFHxA



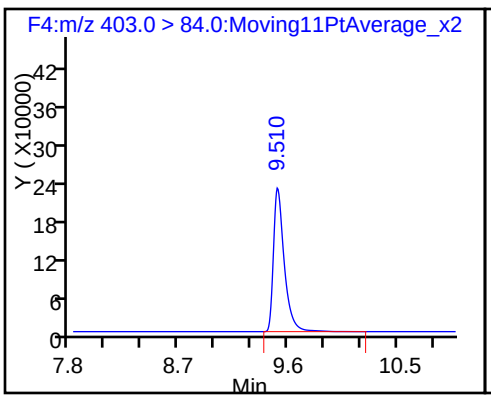
D 8 13C4-PFHpA



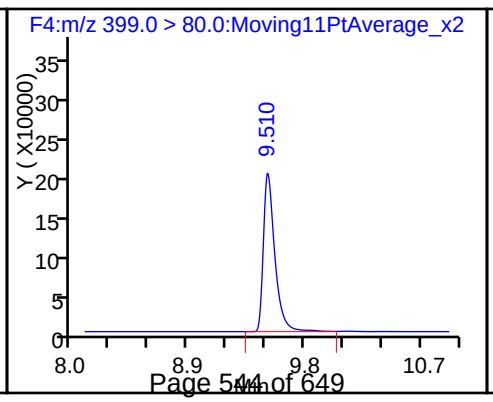
9 Perfluoroheptanoic acid



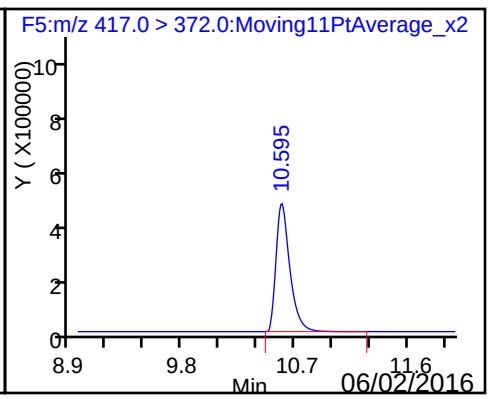
D 11 18O2 PFHxS



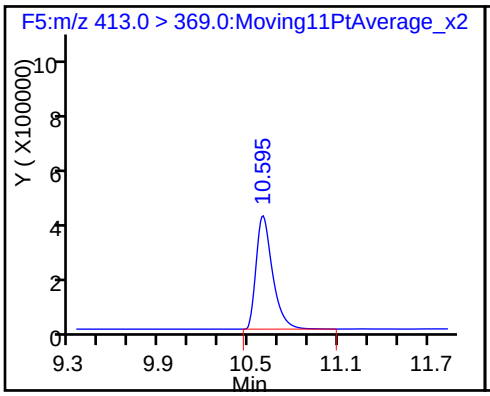
41 Perfluorohexanesulfonic acid



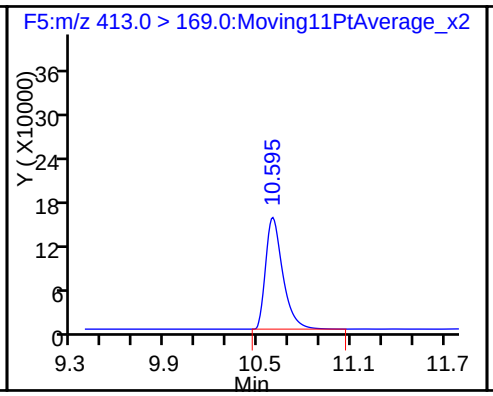
D 12 13C4 PFOA



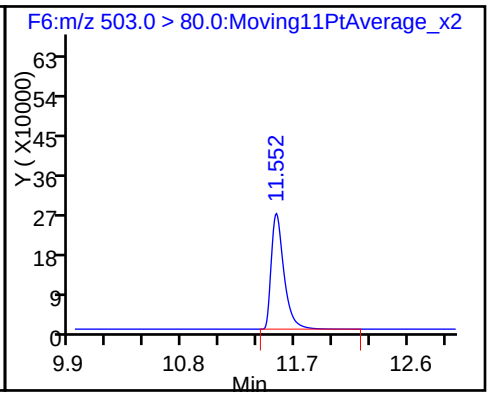
13 Perfluorooctanoic acid



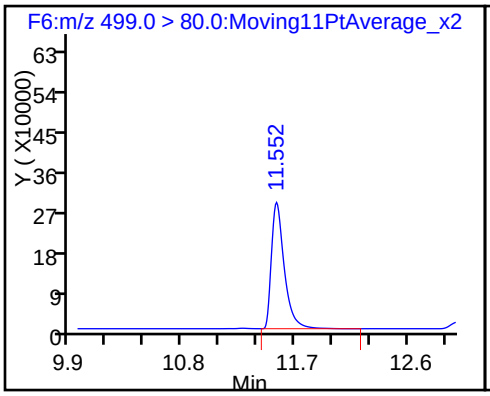
13 Perfluorooctanoic acid



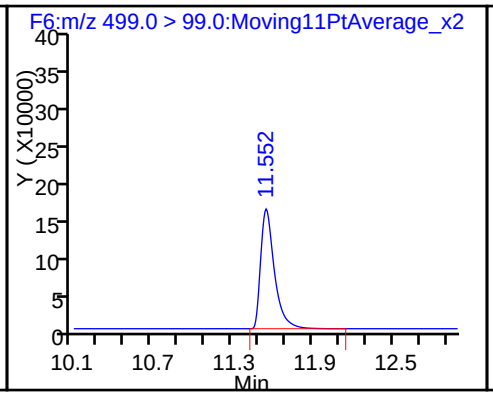
D 16 13C4 PFOS



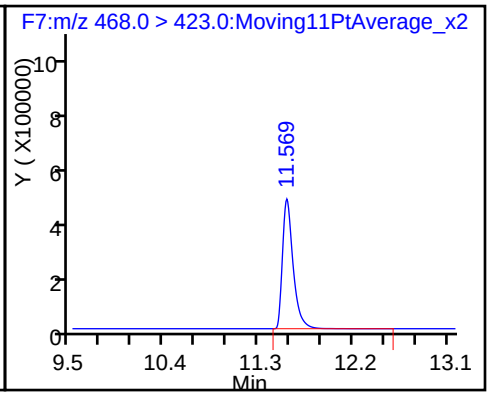
15 Perfluorooctane sulfonic acid



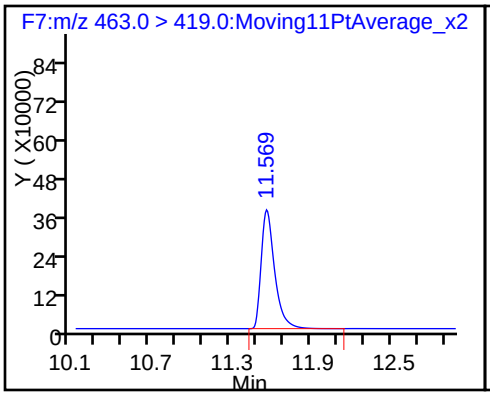
15 Perfluorooctane sulfonic acid



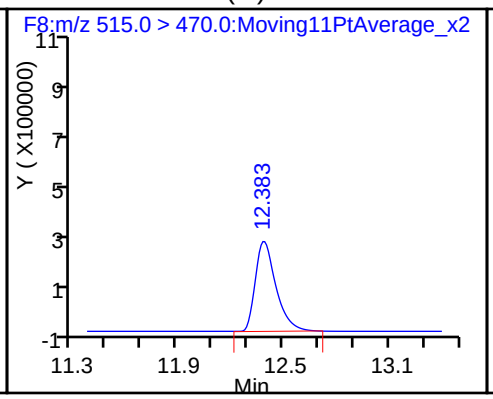
D 17 13C5 PFNA



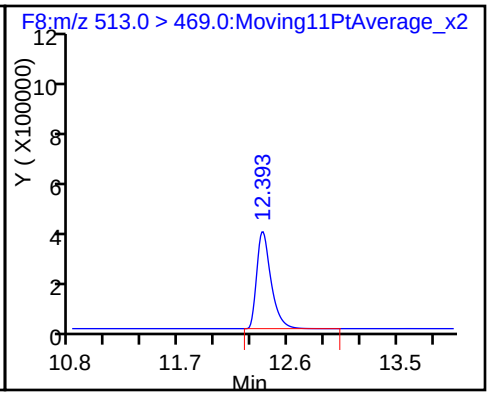
18 Perfluorononanoic acid



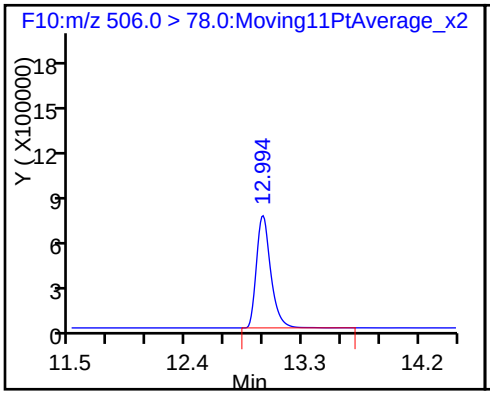
D 19 13C2 PFDA (M)



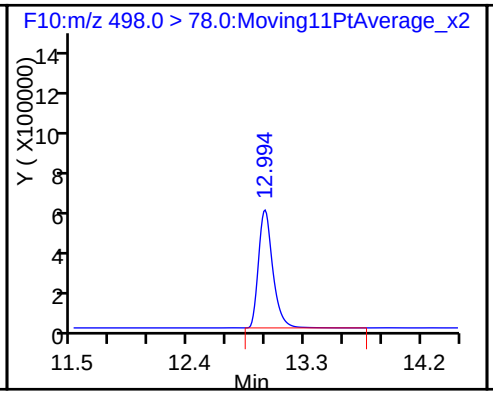
20 Perfluorodecanoic acid



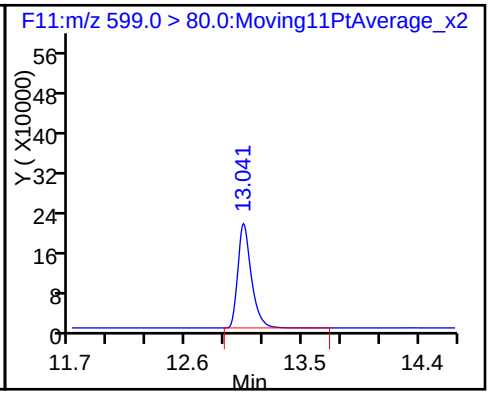
D 23 13C8 FOSA



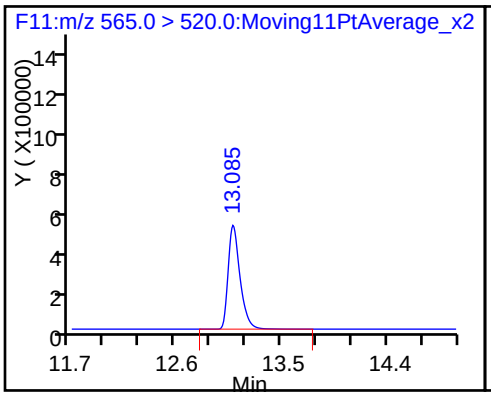
24 Perfluorooctane Sulfonamide



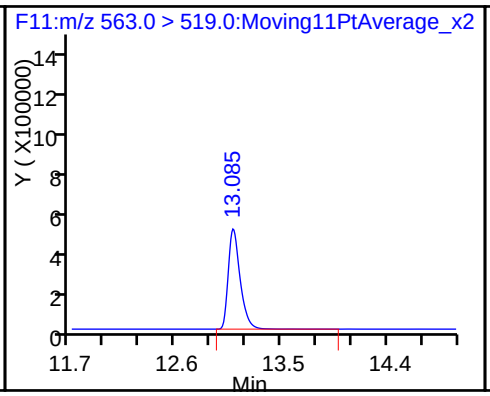
39 Perfluorodecane Sulfonic acid



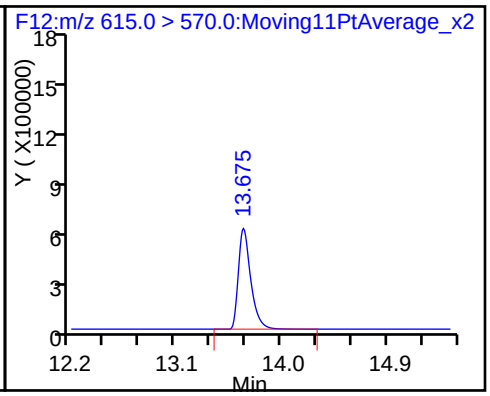
D 26 13C2 PFUnA



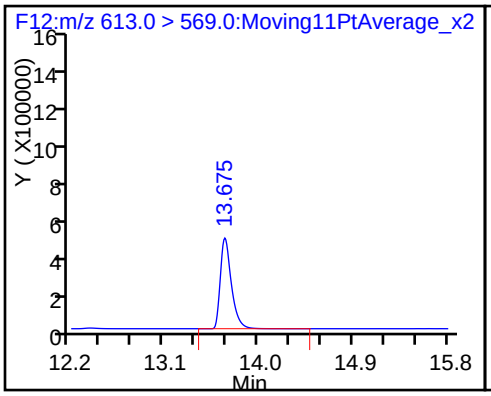
27 Perfluoroundecanoic acid



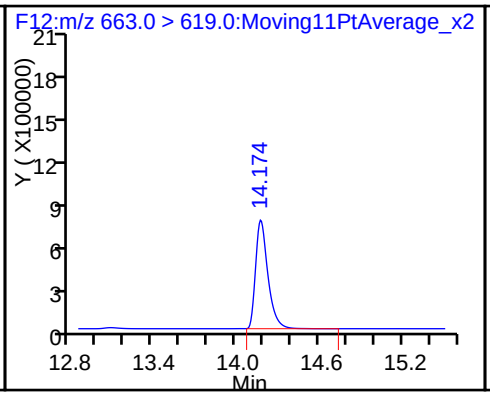
D 28 13C2 PFDoA



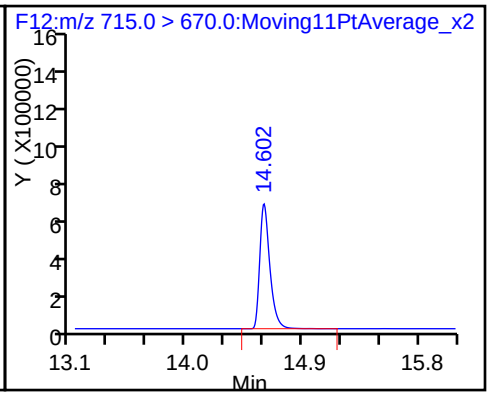
29 Perfluorododecanoic acid



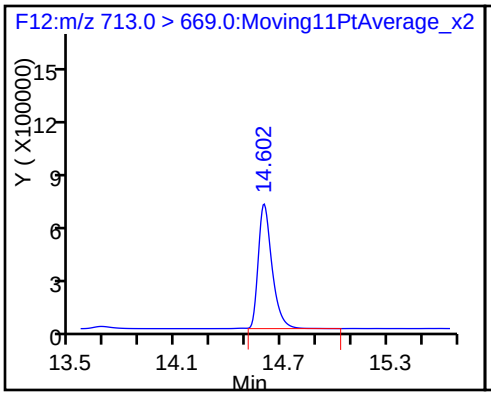
30 Perfluorotridecanoic acid



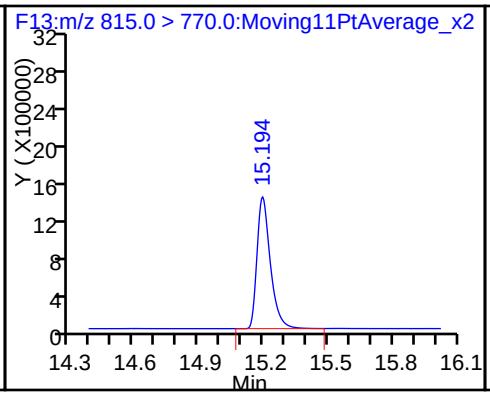
D 33 13C2-PFTeDA



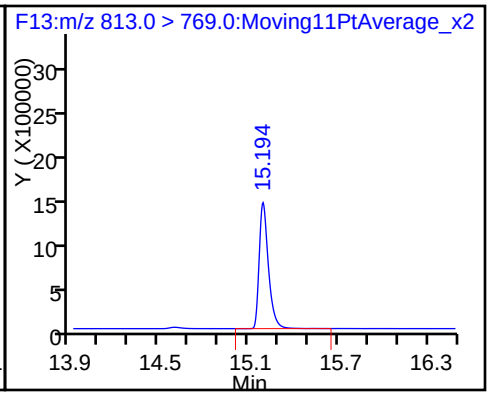
32 Perfluorotetradecanoic acid



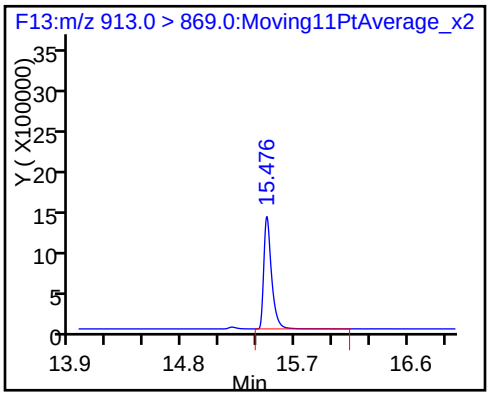
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: CCV 320-111859/26 Calibration Date: 05/29/2016 01:00

Instrument ID: A6 Calib Start Date: 05/28/2016 13:56

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/28/2016 19:41

Lab File ID: 28MAY2016A6A_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.516	1.697		56.0	50.0	12.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.222	1.144		46.8	50.0	-6.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.260	1.376		48.3	44.2	9.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.103	1.191		54.0	50.0	8.0	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.243		51.7	50.0	3.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9146	0.9663		50.0	47.3	5.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.016	1.102		54.2	50.0	8.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.7801	0.8877		54.2	47.6	13.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.255	1.693		64.5	47.8	34.9*	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8443	0.8452		50.1	50.0	0.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.307	1.310		50.1	50.0	0.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8093	0.8909		55.0	50.0	10.1	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.8684		51.9	48.2	7.7	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.092		52.5	50.0	5.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8088	0.8753		54.1	50.0	8.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.146	1.121		48.9	50.0	-2.2	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.8822		49.8	50.0	-0.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.472		47.4	50.0	-5.3	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.538	1.395		45.4	50.0	-9.3	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_027.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 29-May-2016 01:00:47 ALS Bottle#: 13 Worklist Smp#: 26
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5 CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:31 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 29-May-2016 15:20:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.795	-0.001		1176038	49.3		98.5	24495	
2 Perfluorobutyric acid										
212.9 > 169.0	5.791	5.797	-0.006	1.000	1996065	56.0		112	18496	
D 3 13C5-PFPeA										
267.9 > 223.0	6.951	6.957	-0.006		2773201	50.9		102	18418	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.955	6.959	-0.004	1.000	3173307	46.8		93.6	612	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.078	7.085	-0.007	1.000	1719343	48.3		109		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.078	7.085	-0.007	1.000	1719343	NC			399	
298.9 > 99.0	7.078	7.085	-0.007	1.000	815215		2.11(0.00-0.00)		316	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.230	8.235	-0.005	1.000	3560721	54.0		108	1172	
D 6 13C2 PFHxA										
315.0 > 270.0	8.230	8.236	-0.006		2989834	51.2		102	12367	
D 8 13C4-PFHpA										
367.0 > 322.0	9.469	9.474	-0.005		3106915	50.1		100	268760	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.469	9.475	-0.006	1.000	3860619	51.7		103	15535	
D 11 18O2 PFHxS										
403.0 > 84.0	9.504	9.507	-0.003		1337014	46.8		99.0	4430	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.504	9.507	-0.003	1.000	1291940	NC			1562	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.504	9.507	-0.003	1.000	1291940	50.0		106		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.586	0.0		3260483	48.4		96.8	38079	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.586	10.587	-0.001	1.000	3594448	54.2		108	1517	
413.0 > 169.0	10.586	10.587	-0.001	1.000	1311305		2.74(0.00-0.00)		892	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.595	10.596	-0.001	1.000	1521013	NC			5161	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.595	10.596	-0.001	1.000	1521013	54.2		114		
D 16 13C4 PFOS										
503.0 > 80.0	11.535	11.543	-0.008		1720552	48.9		102	40908	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.535	11.545	-0.010	1.000	2913494	64.5		135	56.7	
499.0 > 99.0	11.535	11.545	-0.010	1.000	1601532		1.82(0.00-0.00)		93.1	
D 17 13C5 PFNA										
468.0 > 423.0	11.553	11.562	-0.009		2924871	47.1		94.3	31859	
18 Perfluorononanoic acid										
463.0 > 419.0	11.553	11.563	-0.010	1.000	2472097	50.1		100	29048	
D 19 13C2 PFDA										
515.0 > 470.0	12.383	12.392	-0.009		2377779	47.8		95.5	13755	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.383	12.392	-0.009	1.000	3114605	50.1		100	75359	
D 23 13C8 FOSA										
506.0 > 78.0	13.004	13.000	0.004		5224290	46.7		93.4	4252	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.004	13.002	0.002	1.000	4654506	55.0		110	3412	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.050	13.048	0.002	1.000	1506666	51.9		108		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.050	13.048	0.002	1.000	1506666	NC			104483	
D 26 13C2 PFUnA										
565.0 > 520.0	13.093	13.094	-0.001		3444115	49.4		98.8	162663	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.093	13.094	-0.001	1.000	3759826	52.5		105	19798	
D 28 13C2 PFDoA										
615.0 > 570.0	13.685	13.685	0.0		4163555	50.1		100	18245	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.685	13.685	0.0	1.000	3644490	54.1		108	4386	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.189	14.184	0.005	1.000	4668213	48.9		97.8	3497	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.615	14.609	0.006		3643462	49.1		98.2	12545	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.609	0.006	1.000	3673095	49.8		99.6	1225	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.194	15.203	-0.009		5522994	47.3		94.5	7489	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.194	15.203	-0.009	1.000	6130355	47.4		94.7	3383	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.456	15.473	-0.017	1.000	5807469	45.4		90.7	3415	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00018 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:31 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_027.d

Injection Date: 29-May-2016 01:00:47 Instrument ID: A6

Lims ID: CCV L5

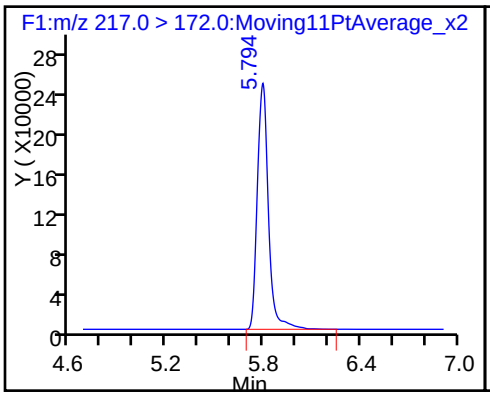
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 26

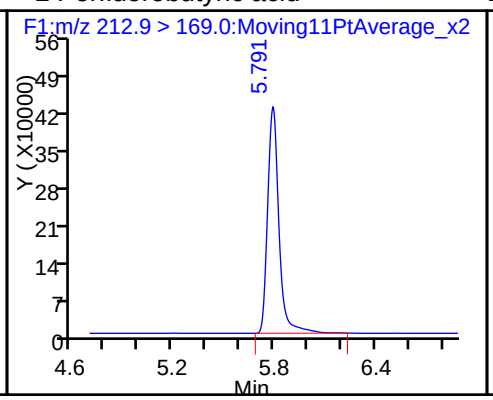
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

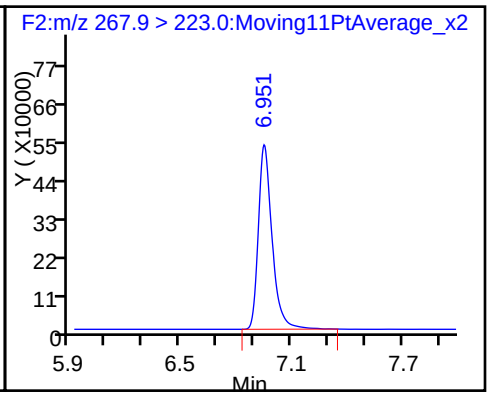
D 1 13C4 PFBA



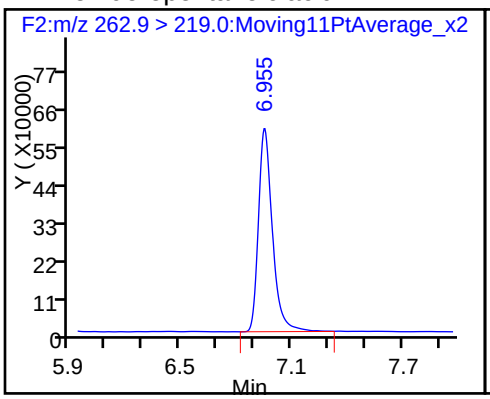
2 Perfluorobutyric acid



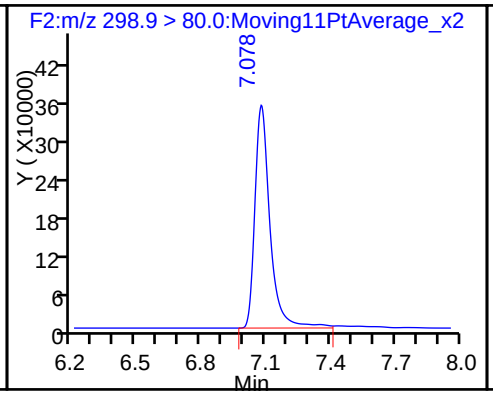
D 3 13C5-PFPeA



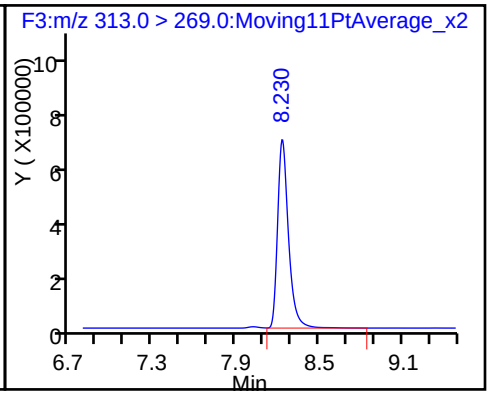
4 Perfluoropentanoic acid



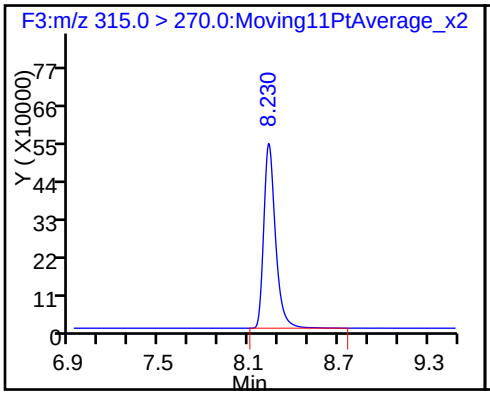
40 Perfluorobutanesulfonic acid



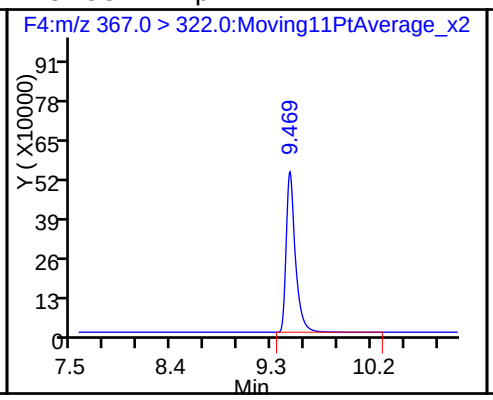
7 Perfluorohexanoic acid



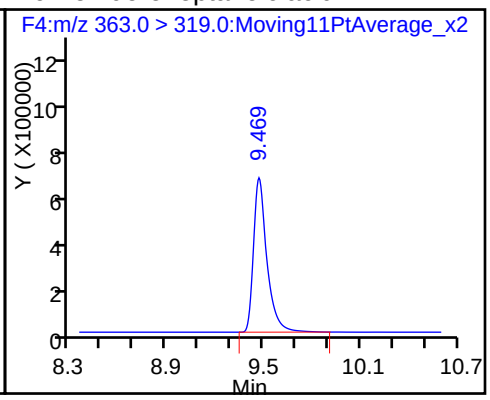
D 6 13C2 PFHxA



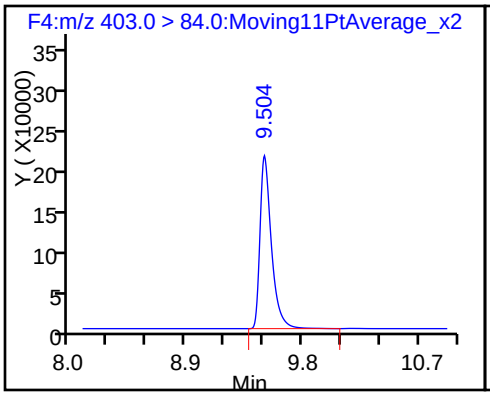
D 8 13C4-PFHpA



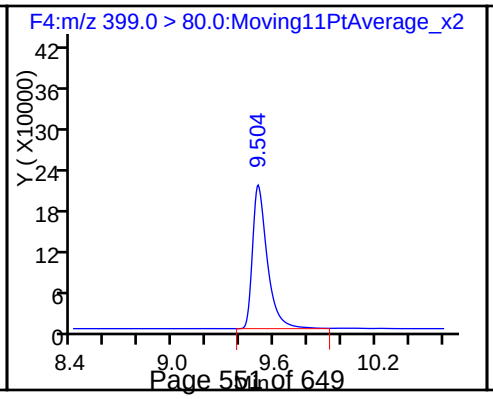
9 Perfluoroheptanoic acid



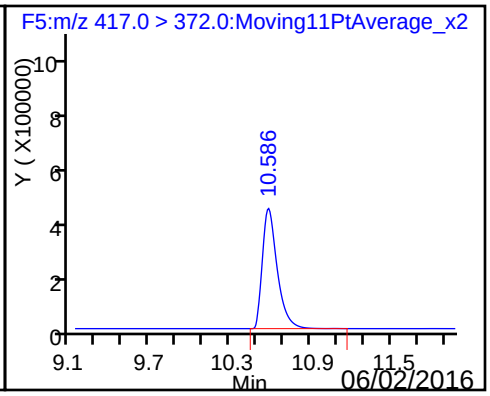
D 11 18O2 PFHxS



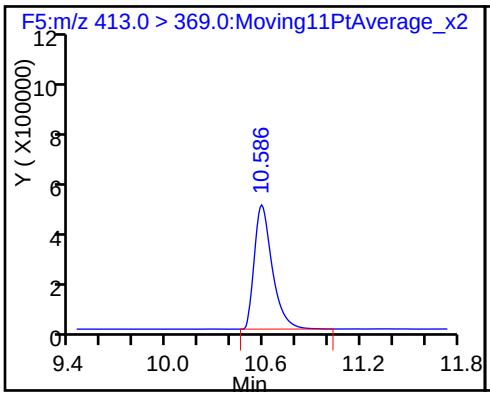
41 Perfluorohexanesulfonic acid



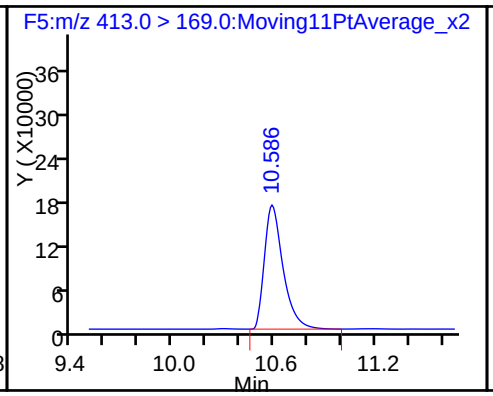
D 12 13C4 PFOA



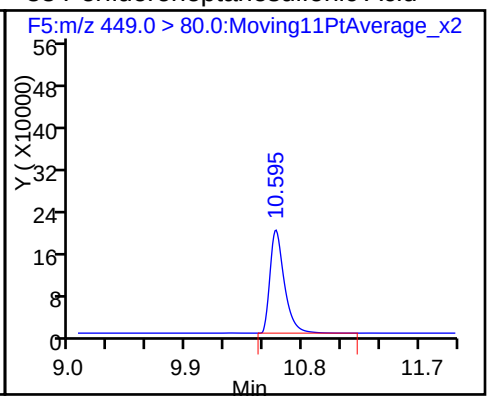
13 Perfluorooctanoic acid



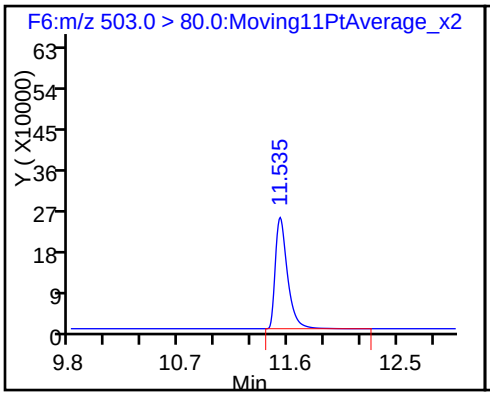
13 Perfluorooctanoic acid



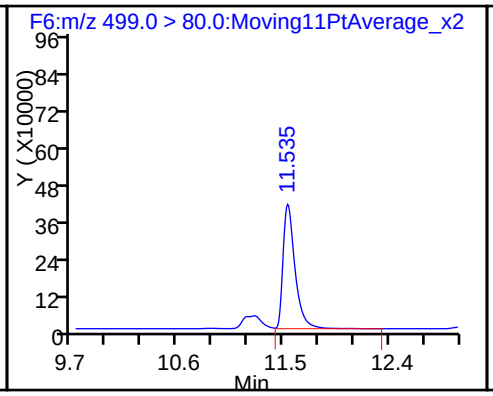
38 Perfluoroheptanesulfonic Acid



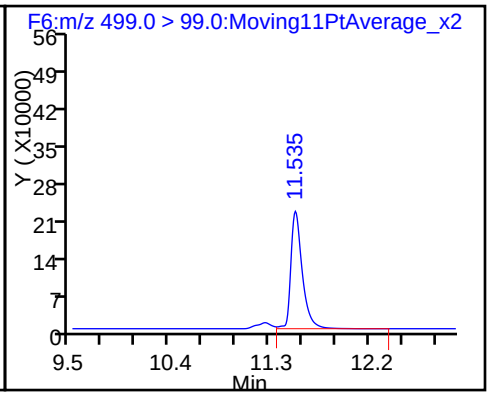
D 16 13C4 PFOS



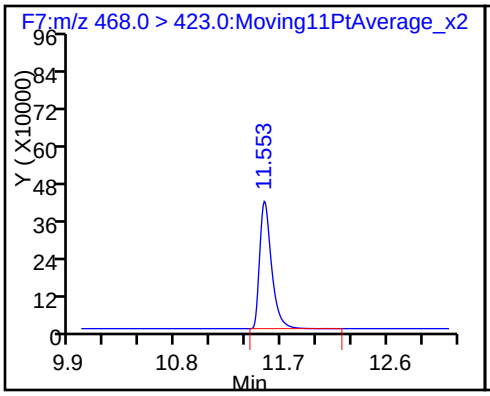
15 Perfluorooctane sulfonic acid



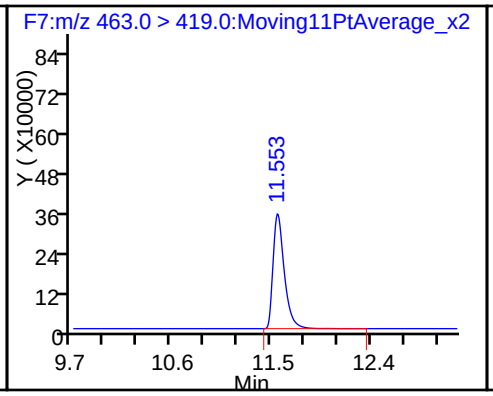
15 Perfluorooctane sulfonic acid



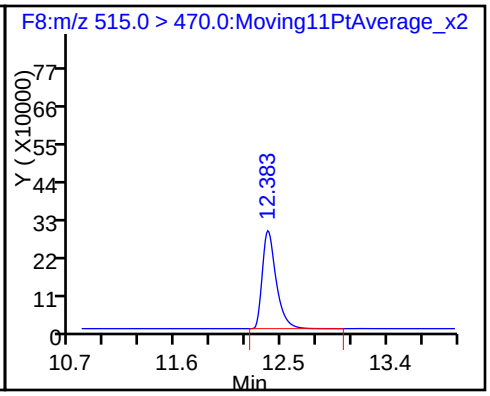
D 17 13C5 PFNA



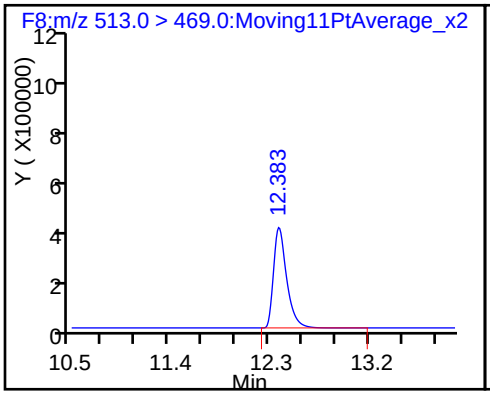
18 Perfluorononanoic acid



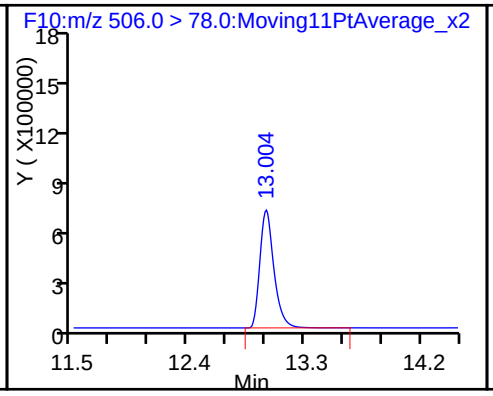
D 19 13C2 PFDA



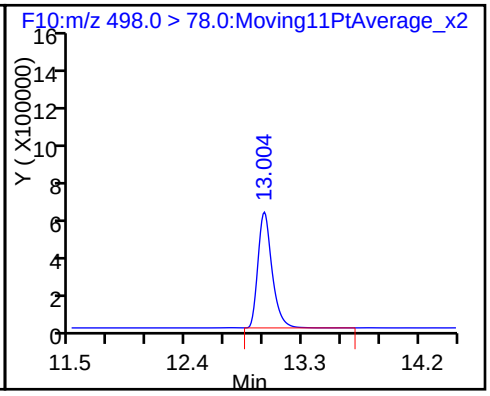
20 Perfluorodecanoic acid



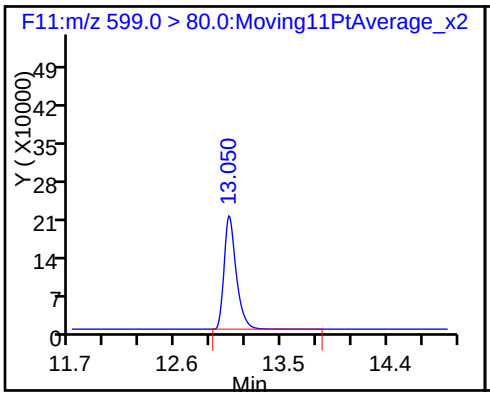
D 23 13C8 FOSA



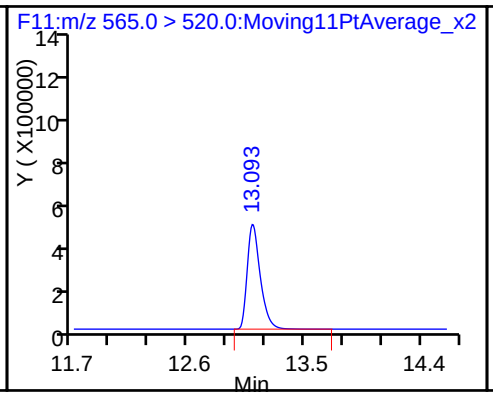
24 Perfluorooctane Sulfonamide



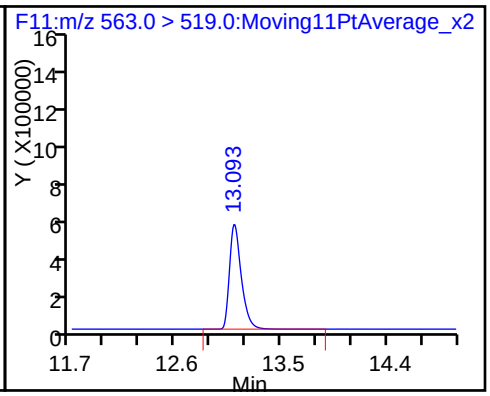
39 Perfluorodecane Sulfonic acid



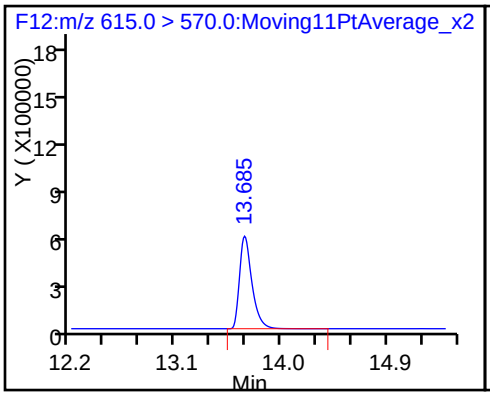
D 26 13C2 PFUnA



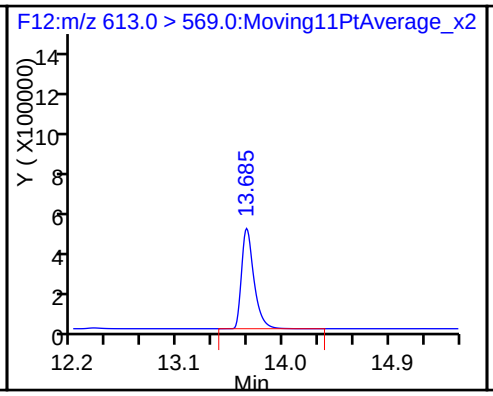
27 Perfluoroundecanoic acid



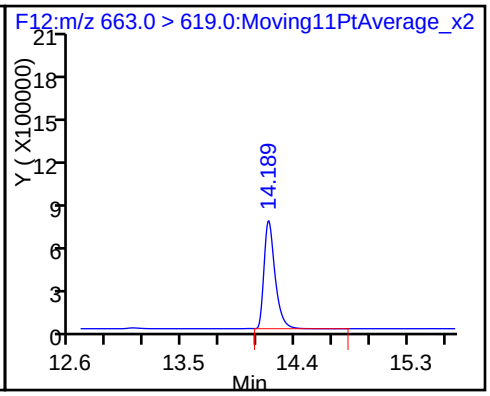
D 28 13C2 PFDoA



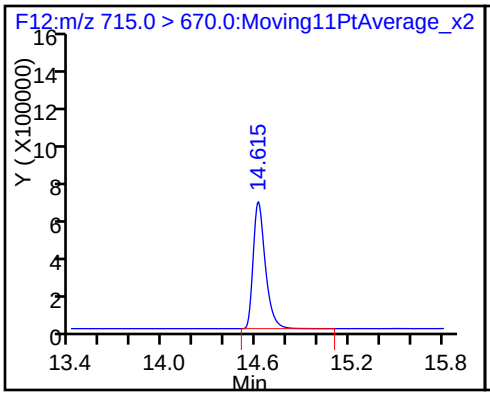
29 Perfluorododecanoic acid



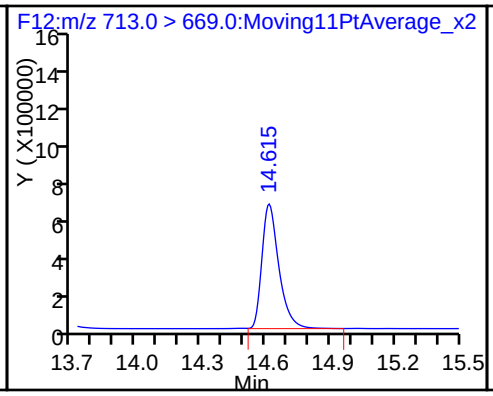
30 Perfluorotridecanoic acid



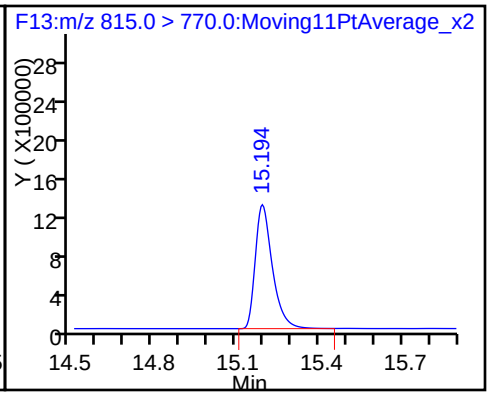
D 33 13C2-PFTeDA



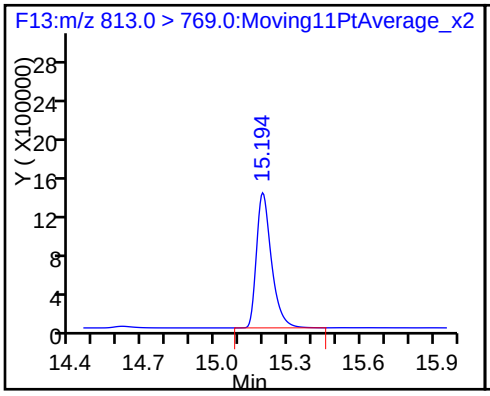
32 Perfluorotetradecanoic acid



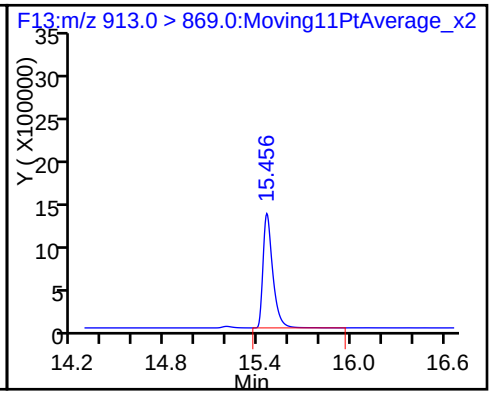
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: CCV 320-111859/38 Calibration Date: 05/29/2016 05:16

Instrument ID: A6 Calib Start Date: 05/28/2016 13:56

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/28/2016 19:41

Lab File ID: 28MAY2016A6A_039.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.516	1.468		19.4	20.0	-3.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.222	0.997		16.3	20.0	-18.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.260	1.180		16.6	17.7	-6.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.103	1.153		20.9	20.0	4.6	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.059		17.3	20.0	-13.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9146	0.8646		17.9	18.9	-5.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.016	1.039		20.4	20.0	2.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.7801	0.7966		19.4	19.0	2.1	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.255	1.249		19.0	19.1	-0.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8443	0.7501		17.8	20.0	-11.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.307	1.201		18.4	20.0	-8.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8093	0.7769		19.2	20.0	-4.0	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.8200		19.7	19.3	1.9	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9207		17.4	20.0	-12.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8088	0.7363		18.2	20.0	-9.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.146	0.9933		17.3	20.0	-13.3	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.7662		17.0	20.0	-15.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.408		17.6	20.0	-12.1	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.538	1.090		14.2	20.0	-29.1*	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_039.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 29-May-2016 05:16:08 ALS Bottle#: 12 Worklist Smp#: 38
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4 CCV L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 14:41:57 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 29-May-2016 15:21:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.791	5.795	-0.004		1266911	53.1		106	5763	
2 Perfluorobutyric acid										
212.9 > 169.0	5.797	5.797	0.0	1.000	743829	19.4		96.8	52800	
D 3 13C5-PFPeA										
267.9 > 223.0	6.951	6.957	-0.006		3164140	58.1		116	7193	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.955	6.959	-0.004	1.000	1261621	16.3		81.6	276	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.081	7.085	-0.004	1.000	668190	16.6		93.6		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.081	7.085	-0.004	1.000	668190	NC			157	
298.9 > 99.0	7.078	7.085	-0.007	1.000	326655		2.05(0.00-0.00)		224	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.236	8.235	0.001	1.000	1468066	20.9		105	1661	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.236	0.0		3182346	54.5		109	35888	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.474	0.001		3391741	54.7		109	32902	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.475	0.0	1.000	1436487	17.3		86.6	20962	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.507	0.003		1515107	53.1		112	20798	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.510	9.507	0.003	1.000	523970	NC			1186	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.510	9.507	0.003	1.000	523970	17.9		94.5		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.586	0.0		3917293	58.2		116	257522	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.586	10.587	-0.001	1.000	1628478	20.4		102	230	
413.0 > 169.0	10.586	10.587	-0.001	1.000	632804		2.57(0.00-0.00)		245	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.596	10.596	0.0	1.000	619007	NC			7229	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.596	10.596	0.0	1.000	619007	19.4		102		
D 16 13C4 PFOS										
503.0 > 80.0	11.543	11.543	0.0		1950886	55.5		116	93247	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.543	11.545	-0.002	1.000	974412	19.0		99.5	564	
499.0 > 99.0	11.543	11.545	-0.002	1.000	518759		1.88(0.00-0.00)		1041	
D 17 13C5 PFNA										
468.0 > 423.0	11.561	11.562	-0.001		3485312	56.2		112	41470	
18 Perfluorononanoic acid										
463.0 > 419.0	11.561	11.563	-0.002	1.000	1045767	17.8		88.8	50130	
D 19 13C2 PFDA										
515.0 > 470.0	12.393	12.392	0.001		2758162	55.4		111	167379	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.393	12.392	0.001	1.000	1324839	18.4		91.9	80443	
D 23 13C8 FOSA										
506.0 > 78.0	12.994	13.000	-0.006		5840348	52.2		104	3986	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.994	13.002	-0.008	1.000	1814958	19.2		96.0	12048	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.040	13.048	-0.008	1.000	645209	19.7		102		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.040	13.048	-0.008	1.000	645209	NC			30097	
D 26 13C2 PFUnA										
565.0 > 520.0	13.084	13.094	-0.010		3972883	57.0		114	31480	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.084	13.094	-0.010	1.000	1463171	17.4		87.1	23028	
D 28 13C2 PFDoA										
615.0 > 570.0	13.682	13.685	-0.003		4824529	58.0		116	31339	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.682	13.685	-0.003	1.000	1420878	18.2		91.0	1607	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.181	14.184	-0.003	1.000	1916807	17.3		86.7	1664	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.601	14.609	-0.008		3950667	53.2		106	25916	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.601	14.609	-0.008	1.000	1478612	17.0		84.8	653	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.193	15.203	-0.010		6288622	53.8		108	8830	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.193	15.203	-0.010	1.000	2717112	17.6		87.9	2118	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.475	15.473	0.002	1.000	2103963	14.2		70.9	1443	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 14:41:58 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_039.d

Injection Date: 29-May-2016 05:16:08 Instrument ID: A6

Lims ID: CCV L4

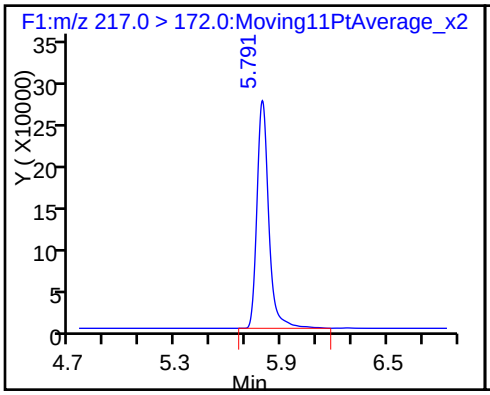
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 38

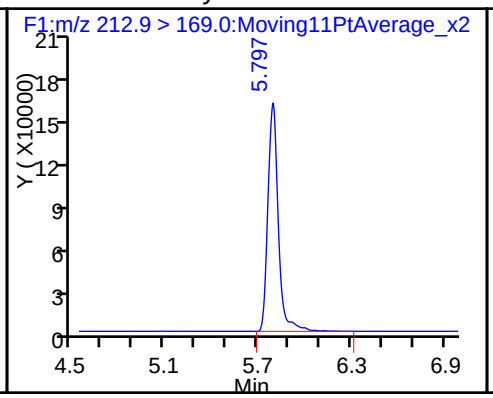
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

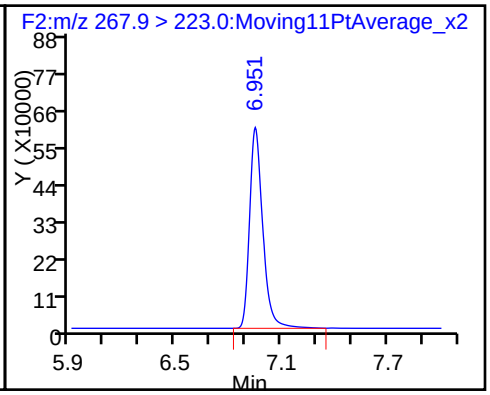
D 1 13C4 PFBA



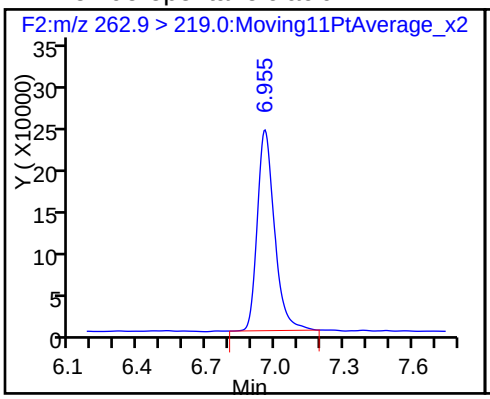
2 Perfluorobutyric acid



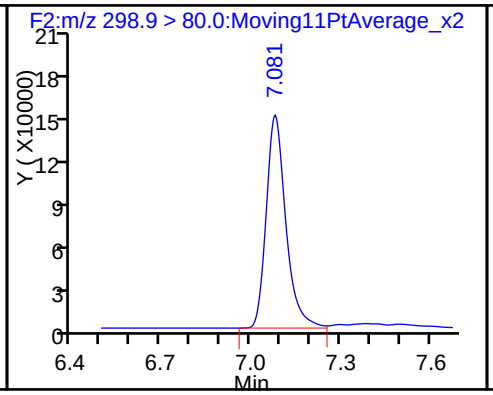
D 3 13C5-PFPeA



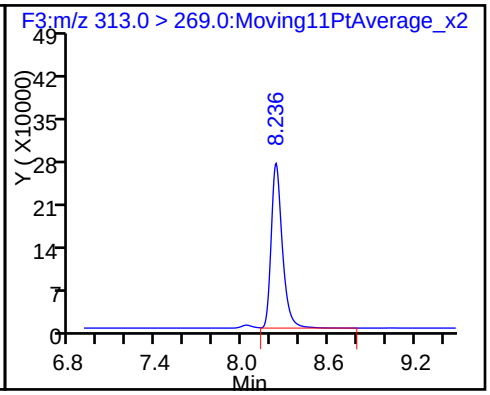
4 Perfluoropentanoic acid



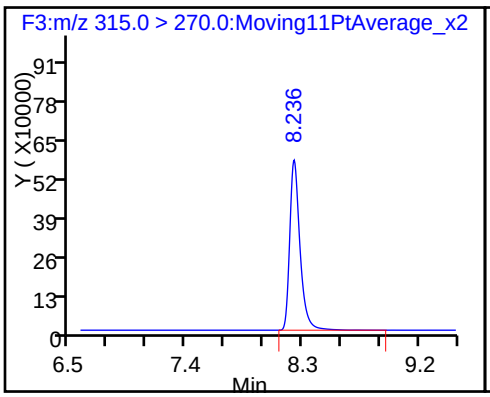
40 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid



D 6 13C2 PFHxA



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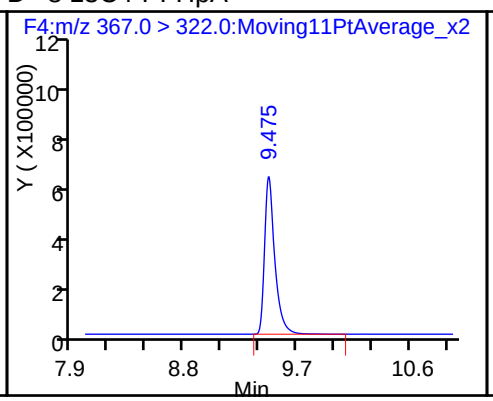
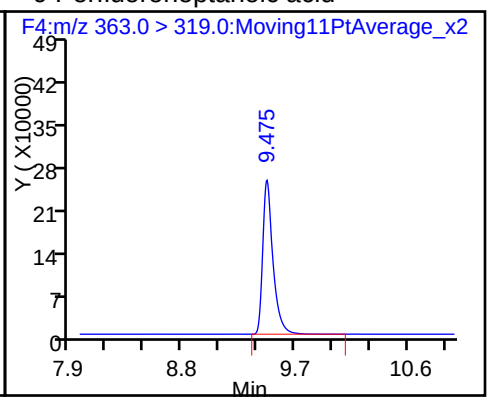
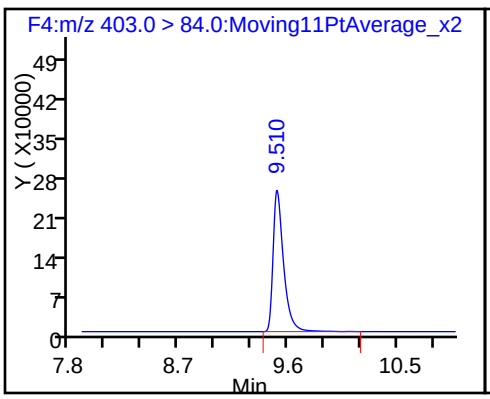


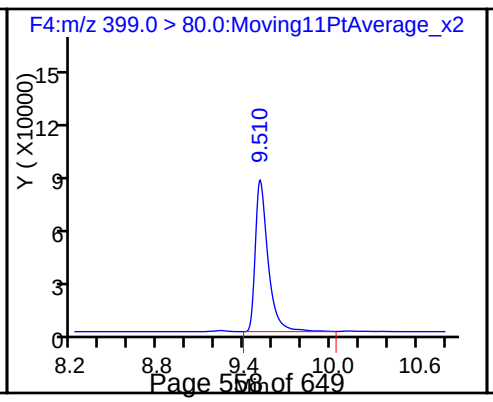
9 Perfluoroheptanoic acid



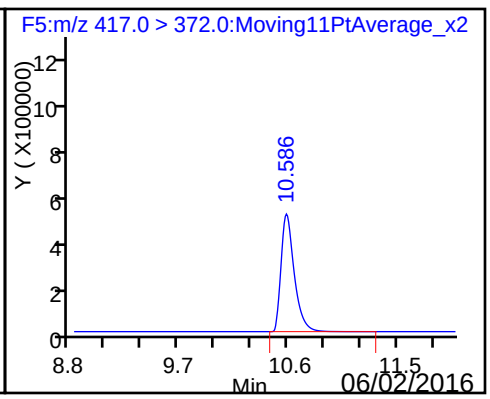
D 11 18O2 PFHxS



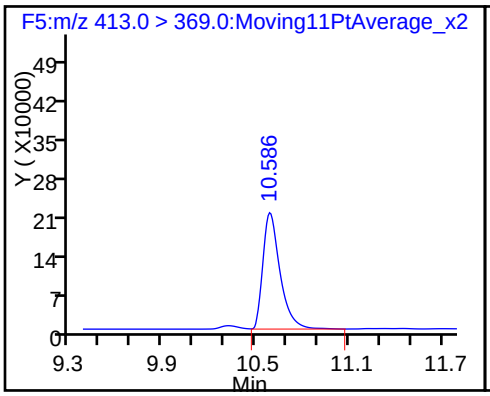
41 Perfluorohexanesulfonic acid



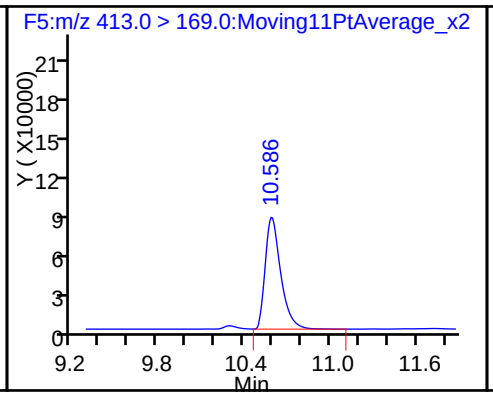
D 12 13C4 PFOA



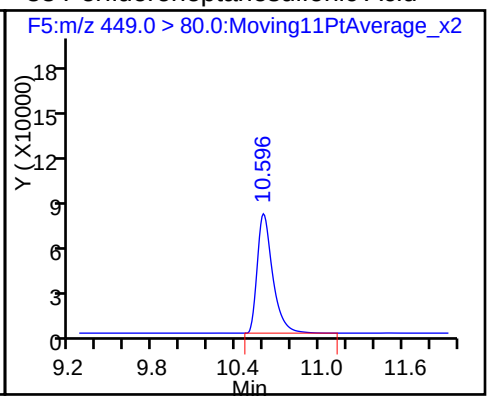
13 Perfluorooctanoic acid



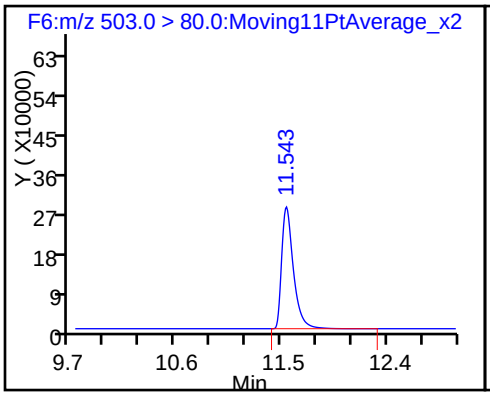
13 Perfluorooctanoic acid



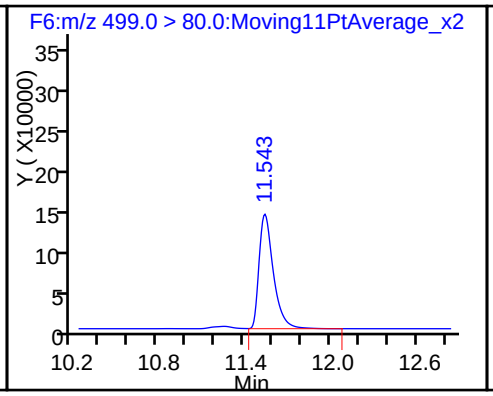
38 Perfluoroheptanesulfonic Acid



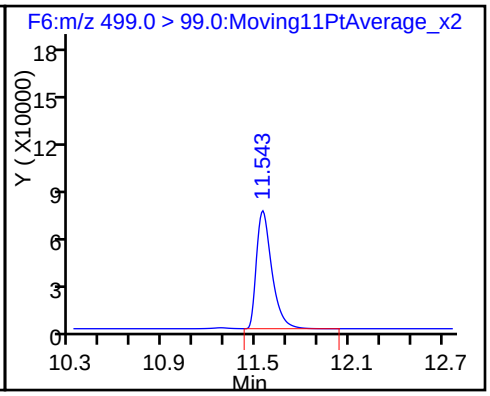
D 16 13C4 PFOS



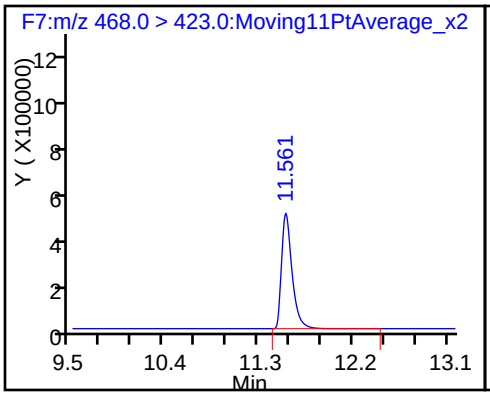
15 Perfluorooctane sulfonic acid



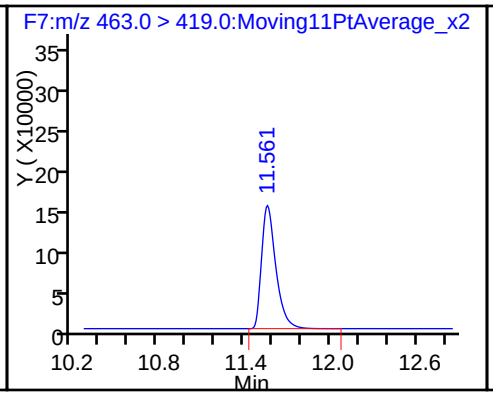
15 Perfluorooctane sulfonic acid



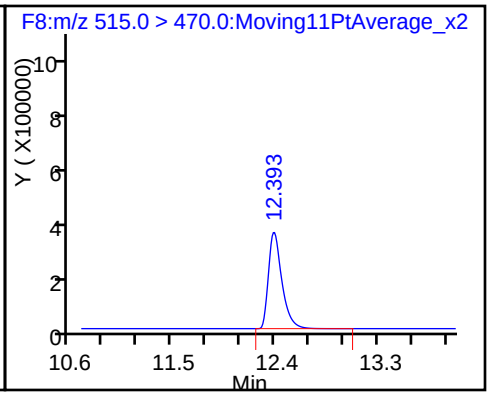
D 17 13C5 PFNA



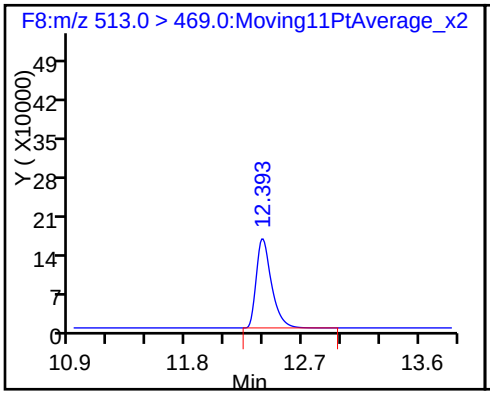
18 Perfluorononanoic acid



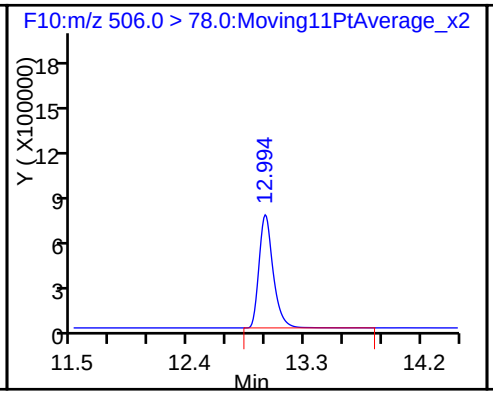
D 19 13C2 PFDA



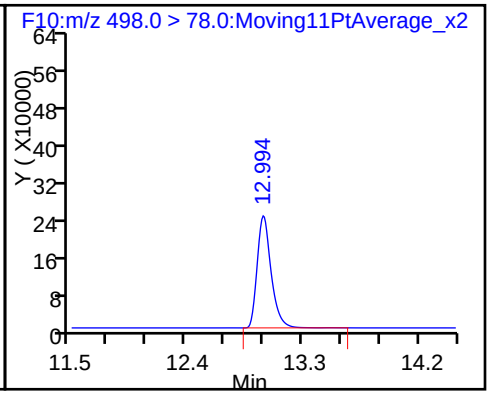
20 Perfluorodecanoic acid



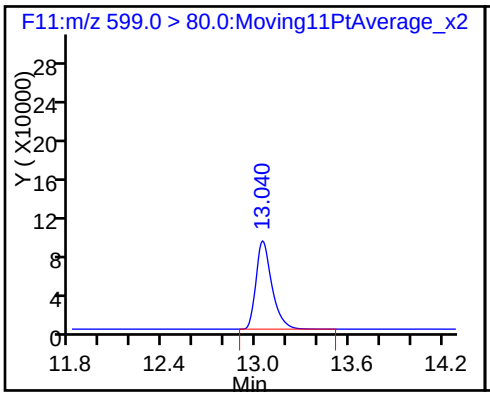
D 23 13C8 FOSA



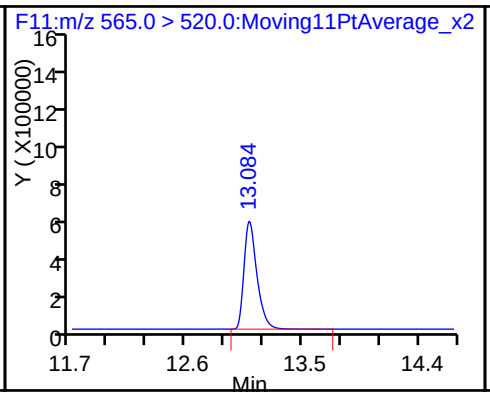
24 Perfluorooctane Sulfonamide



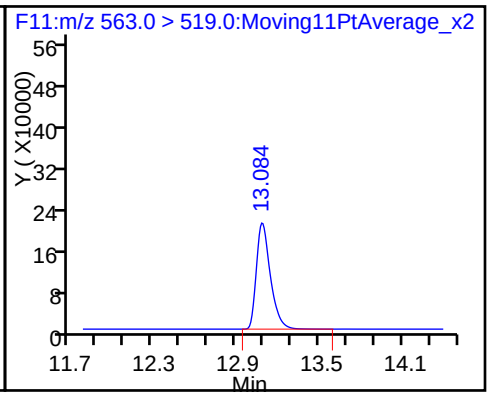
39 Perfluorodecane Sulfonic acid



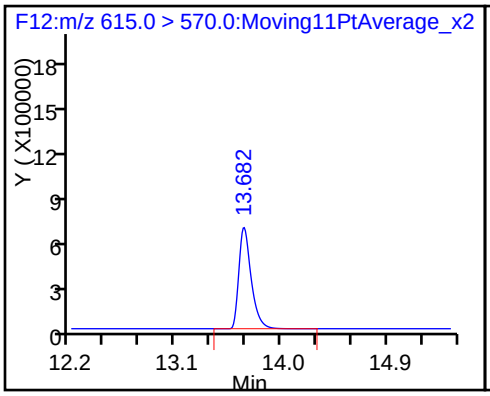
D 26 13C2 PFUnA



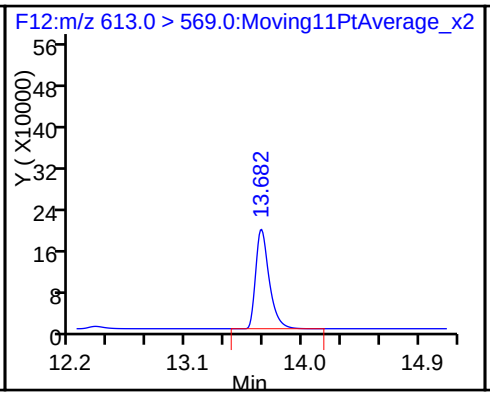
27 Perfluoroundecanoic acid



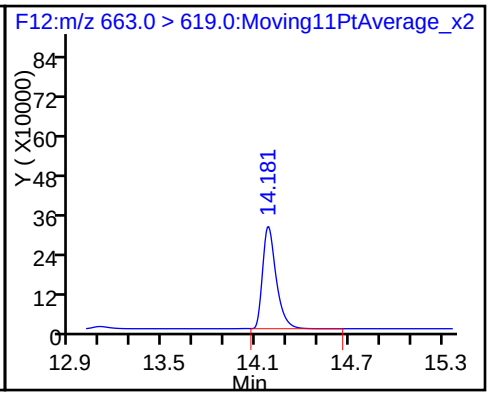
D 28 13C2 PFDoA



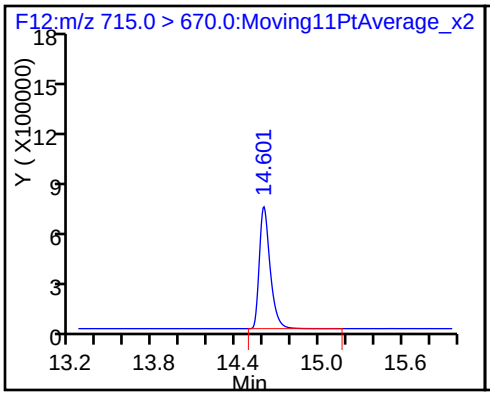
29 Perfluorododecanoic acid



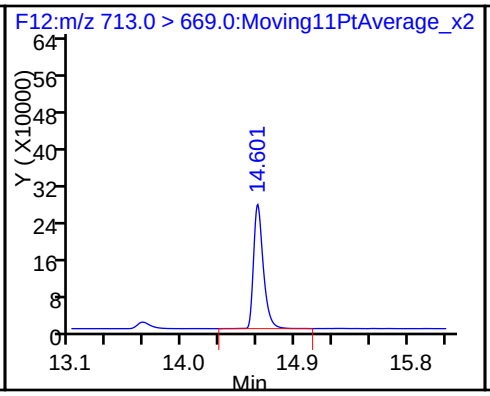
30 Perfluorotridecanoic acid



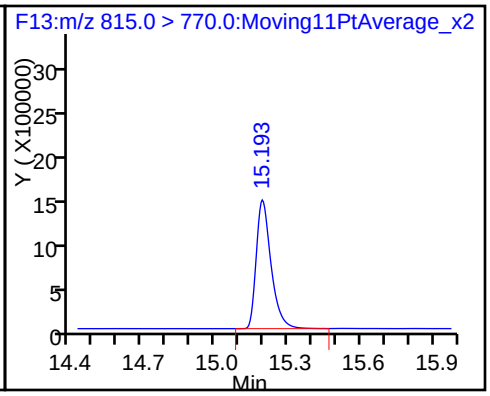
D 33 13C2-PFTeDA



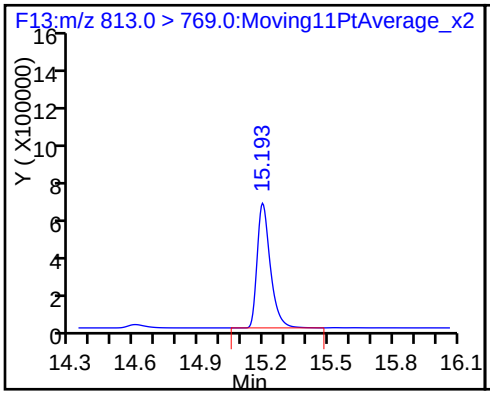
32 Perfluorotetradecanoic acid



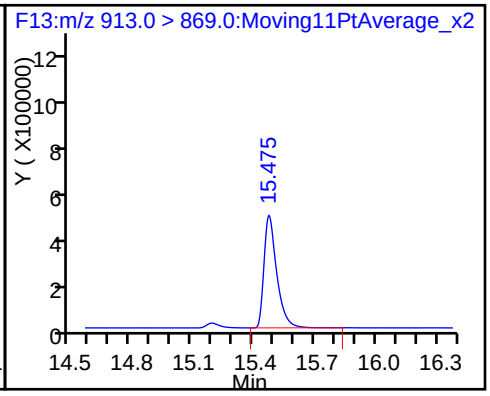
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: CCV 320-111859/52 Calibration Date: 05/29/2016 10:14

Instrument ID: A6 Calib Start Date: 05/28/2016 13:56

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/28/2016 19:41

Lab File ID: 28MAY2016A6A_053.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.516	1.668		55.0	50.0	10.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.222	1.156		47.3	50.0	-5.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.260	1.331		46.7	44.2	5.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.103	1.205		54.6	50.0	9.3	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.213		50.4	50.0	0.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9146	0.9179		47.5	47.3	0.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.016	1.023		50.3	50.0	0.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.7801	0.9933		60.6	47.6	27.3*	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.255	1.464		55.7	47.8	16.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8443	0.9084		53.8	50.0	7.6	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.307	1.355		51.8	50.0	3.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8093	0.8897		55.0	50.0	9.9	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.9012		53.9	48.2	11.8	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.052		50.6	50.0	1.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8088	0.8552		52.9	50.0	5.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.146	1.161		50.7	50.0	1.3	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.8967		50.6	50.0	1.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.487		47.9	50.0	-4.3	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.538	1.301		42.3	50.0	-15.4	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_053.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 29-May-2016 10:14:01 ALS Bottle#: 13 Worklist Smp#: 52
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5 CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 31-May-2016 15:08:54 Calib Date: 28-May-2016 19:41:34
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_012.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK048

First Level Reviewer: barnettj Date: 29-May-2016 15:26:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.797	5.795	0.002		1298258	54.4		109	83936	
2 Perfluorobutyric acid										
212.9 > 169.0	5.797	5.797	0.0	1.000	2164906	55.0		110	41793	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.957	-0.002		3015023	55.3		111	78953	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.955	6.959	-0.004	1.000	3485095	47.3		94.6	1025	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.085	7.085	0.0	1.000	1928398	46.7		106		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.085	7.085	0.0	1.000	1928398	NC			734	
298.9 > 99.0	7.085	7.085	0.0	1.000	904036		2.13(0.00-0.00)		306	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.230	8.235	-0.005	1.000	3744279	54.6		109	1252	
D 6 13C2 PFHxA										
315.0 > 270.0	8.230	8.236	-0.006		3107983	53.3		107	8801	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.474	0.001		3328502	53.7		107	144121	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.475	9.475	0.0	1.000	4037462	50.4		101	26746	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.507	0.003		1550720	54.3		115	51310	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.510	9.507	0.003	1.000	1423331	NC			3823	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.510	9.507	0.003	1.000	1423331	47.5		100		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.586	10.586	0.0		3682619	54.7		109	36583	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.586	10.587	-0.001	1.000	3768743	50.3		101	2993	
413.0 > 169.0	10.586	10.587	-0.001	1.000	1327098		2.84(0.00-0.00)		1133	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.595	10.596	-0.001	1.000	1774667	NC			28736	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.595	10.596	-0.001	1.000	1774667	60.6		127		
D 16 13C4 PFOS										
503.0 > 80.0	11.552	11.543	0.009		1794153	51.0		107	125409	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.552	11.545	0.007	1.000	2626567	55.7		117	148	
499.0 > 99.0	11.552	11.545	0.007	1.000	1440264		1.82(0.00-0.00)		404	
D 17 13C5 PFNA										
468.0 > 423.0	11.569	11.562	0.007		3203071	51.6		103	13658	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.563	0.015	1.000	2909575	53.8		108	18582	
D 19 13C2 PFDA										
515.0 > 470.0	12.404	12.392	0.012		2536737	51.0		102	34421	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.404	12.392	0.012	1.000	3436833	51.8		104	19955	
D 23 13C8 FOSA										
506.0 > 78.0	13.013	13.000	0.013		5731317	51.2		102	2902	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.013	13.002	0.011	1.000	5099160	55.0		110	1952	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.058	13.048	0.010	1.000	1630359	53.9		112		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.058	13.048	0.010	1.000	1630359	NC			46035	
D 26 13C2 PFUnA										
565.0 > 520.0	13.102	13.094	0.008		3697328	53.0		106	75266	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.102	13.094	0.008	1.000	3888603	50.6		101	34497	
D 28 13C2 PFDoA										
615.0 > 570.0	13.685	13.685	0.0		4555933	54.8		110	24842	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.685	13.685	0.0	1.000	3896298	52.9		106	4466	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.184	-0.002	1.000	5290561	50.7		101	3261	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.615	14.609	0.006		3865803	52.1		104	11445	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.609	0.006	1.000	4085178	50.6		101	1312	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.205	15.203	0.002		6211071	53.2		106	9136	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.205	15.203	0.002	1.000	6775657	47.9		95.7	4020	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.476	15.473	0.003	1.000	5925348	42.3		84.6	2589	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00018 Amount Added: 1.00 Units: mL

Report Date: 31-May-2016 15:08:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160529-31180.b\28MAY2016A6A_053.d

Injection Date: 29-May-2016 10:14:01 Instrument ID: A6

Lims ID: CCV L5

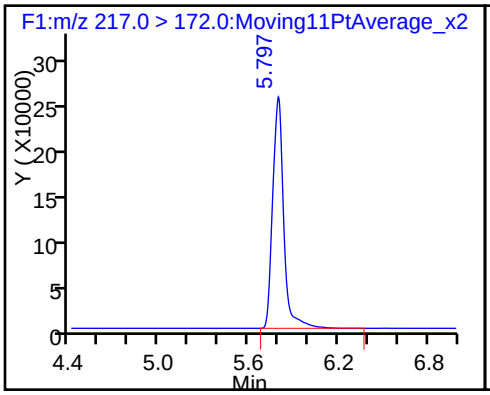
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 52

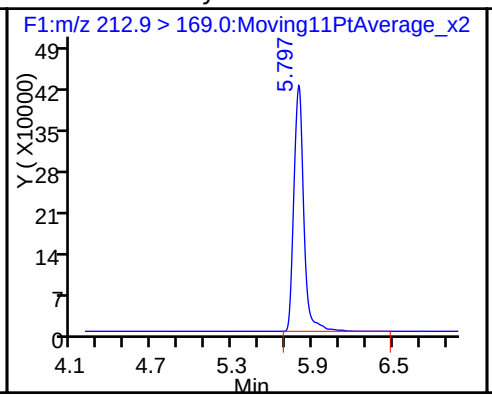
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

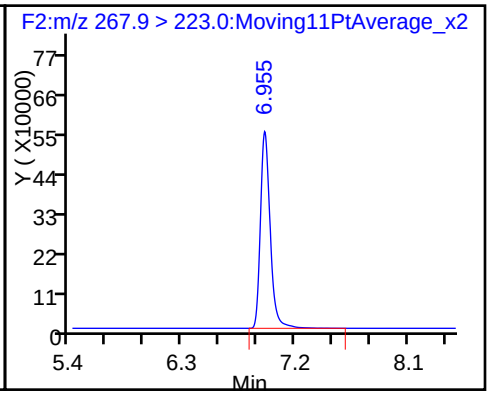
D 1 13C4 PFBA



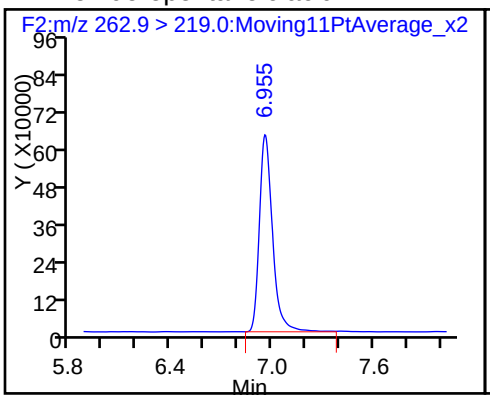
2 Perfluorobutyric acid



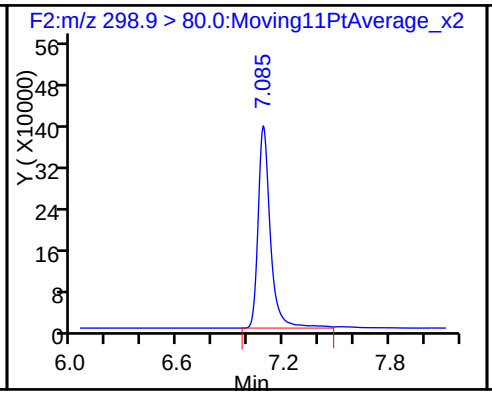
D 3 13C5-PFPeA



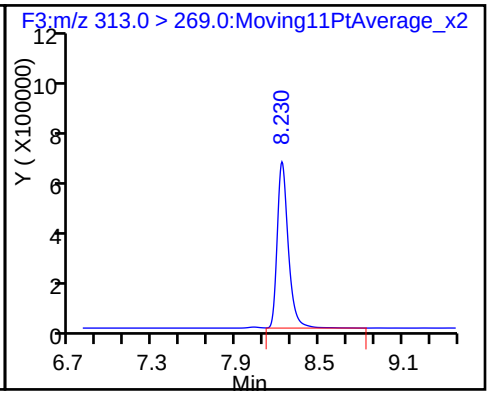
4 Perfluoropentanoic acid



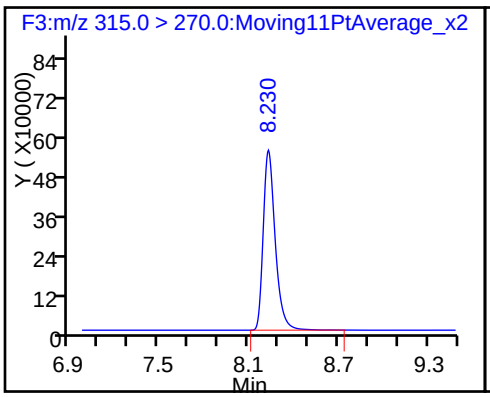
40 Perfluorobutanesulfonic acid



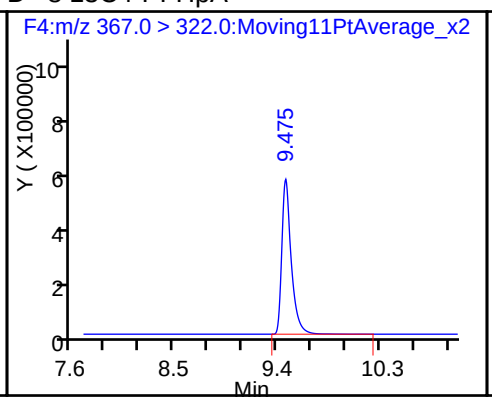
7 Perfluorohexanoic acid



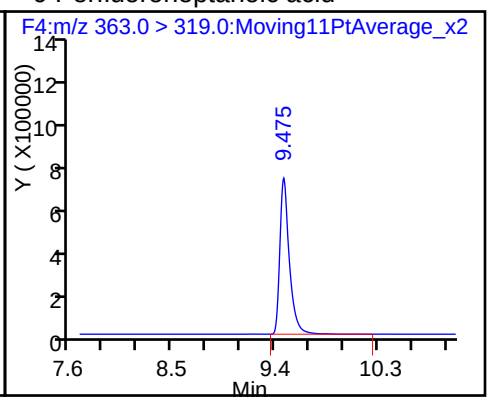
D 6 13C2 PFHxA



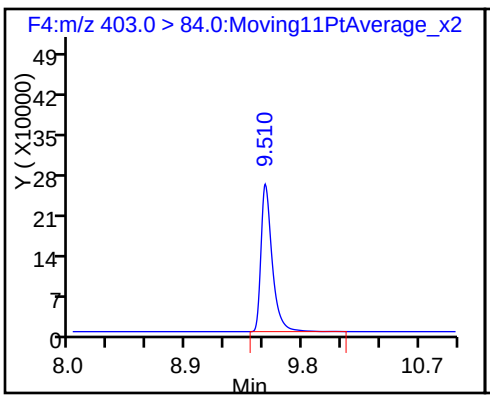
D 8 13C4-PFHpA



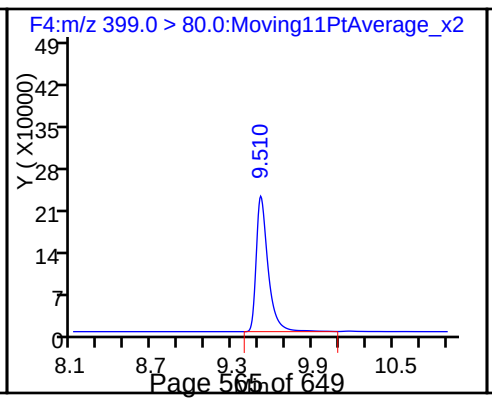
9 Perfluoroheptanoic acid



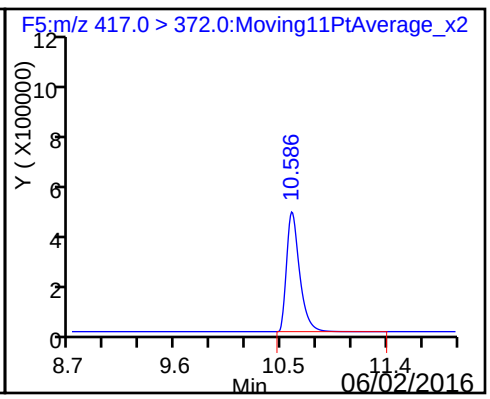
D 11 18O2 PFHxS



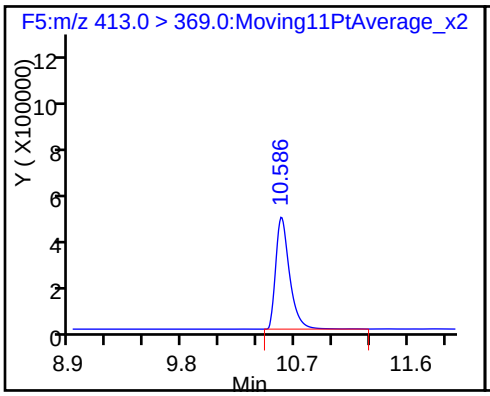
41 Perfluorohexanesulfonic acid



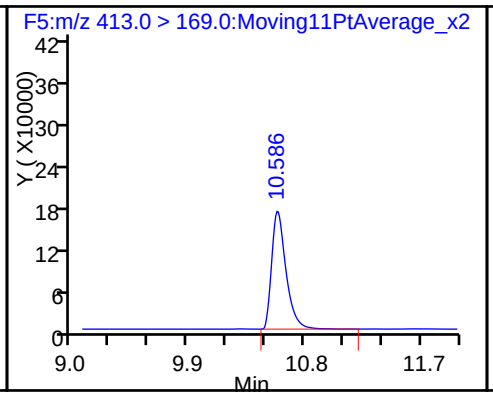
D 12 13C4 PFOA



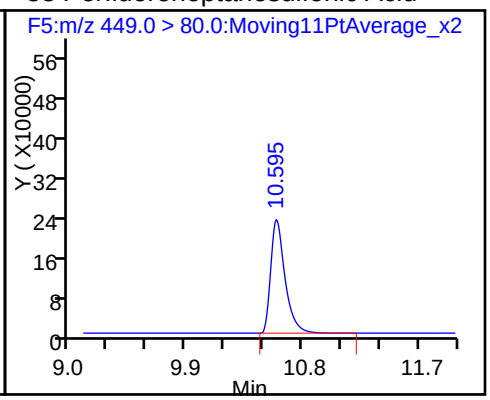
13 Perfluorooctanoic acid



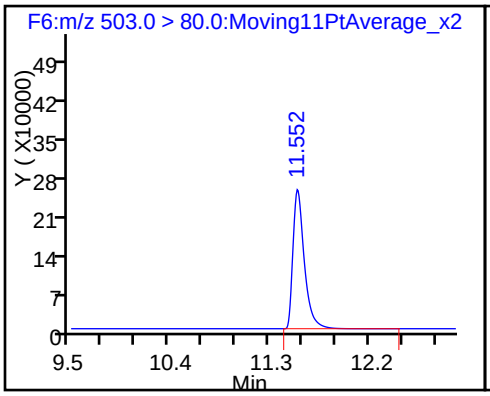
13 Perfluorooctanoic acid



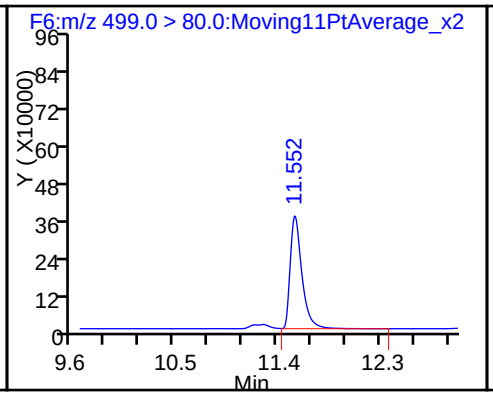
38 Perfluoroheptanesulfonic Acid



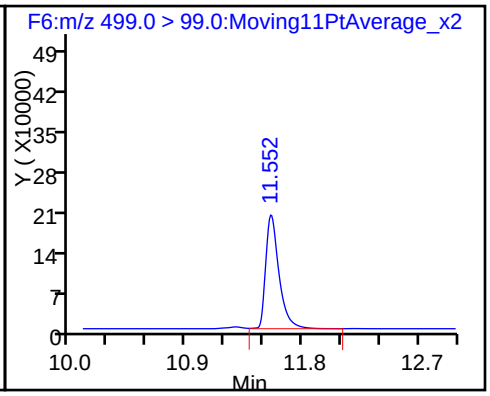
D 16 13C4 PFOS



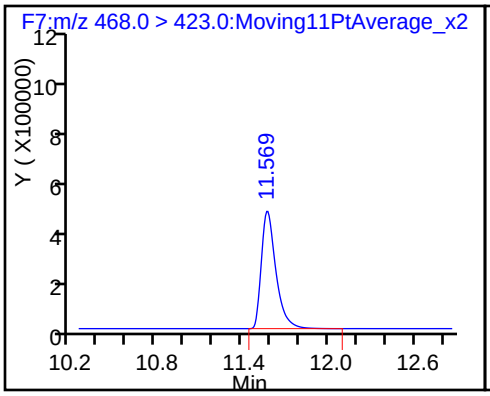
15 Perfluorooctane sulfonic acid



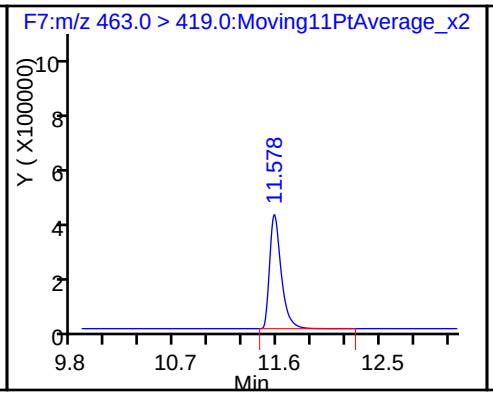
15 Perfluorooctane sulfonic acid



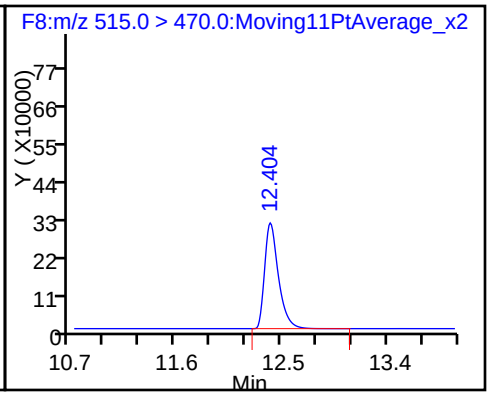
D 17 13C5 PFNA



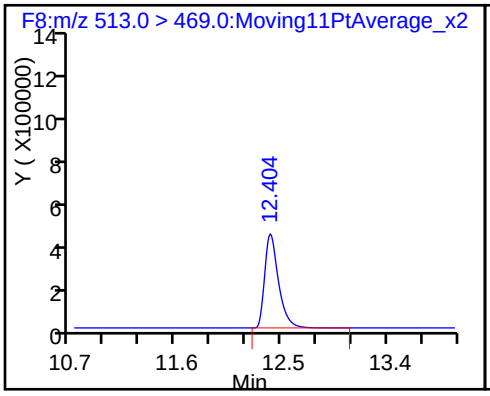
18 Perfluorononanoic acid



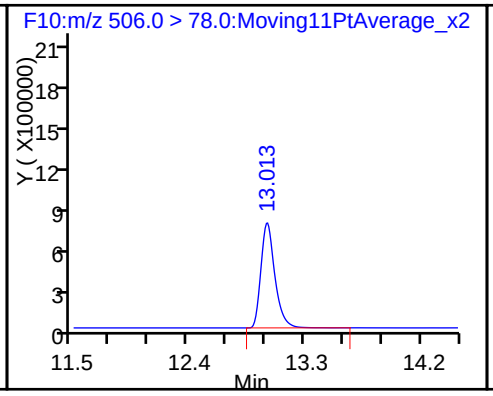
D 19 13C2 PFDA



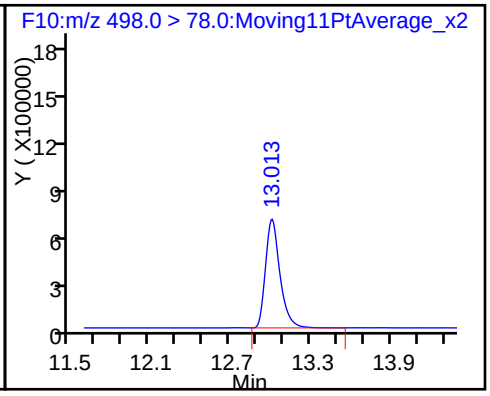
20 Perfluorodecanoic acid



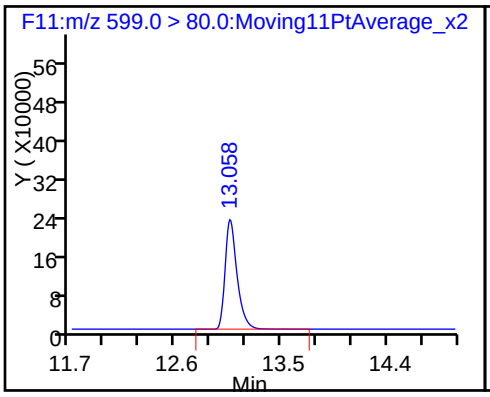
D 23 13C8 FOSA



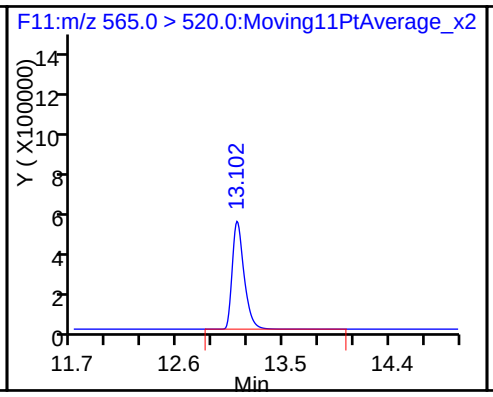
24 Perfluorooctane Sulfonamide



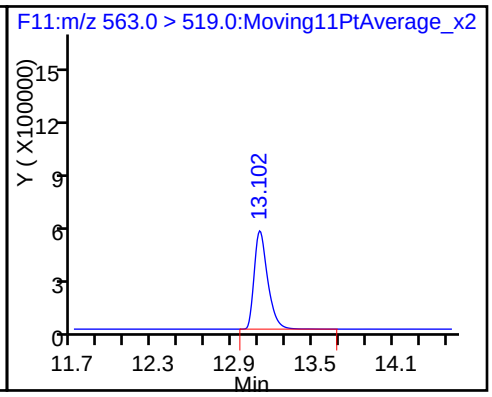
39 Perfluorodecane Sulfonic acid



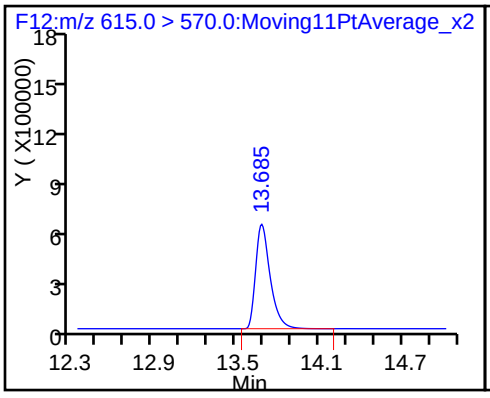
D 26 13C2 PFUnA



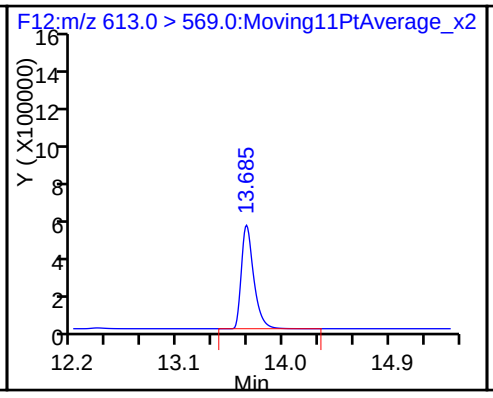
27 Perfluoroundecanoic acid



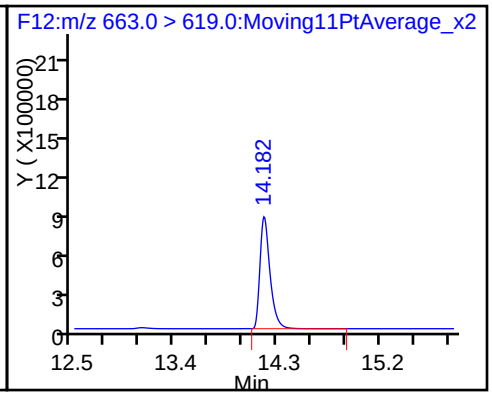
D 28 13C2 PFDoA



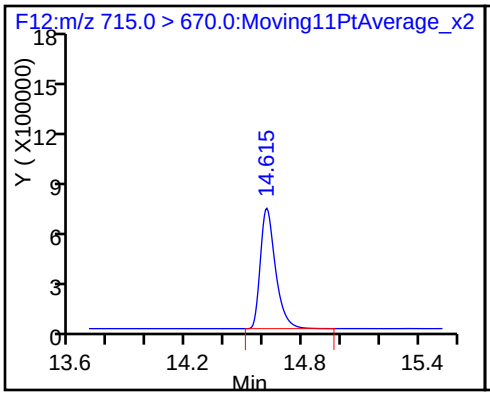
29 Perfluorododecanoic acid



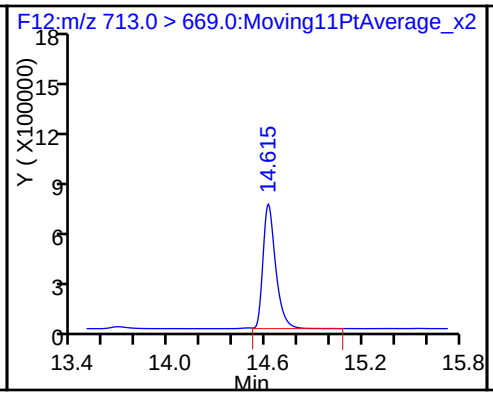
30 Perfluorotridecanoic acid



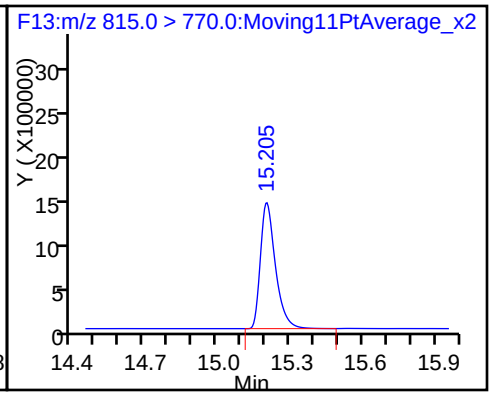
D 33 13C2-PFTeDA



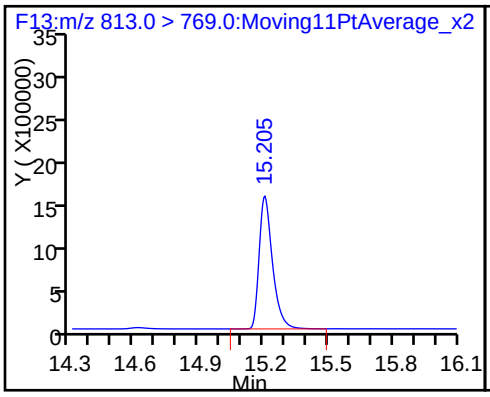
32 Perfluorotetradecanoic acid



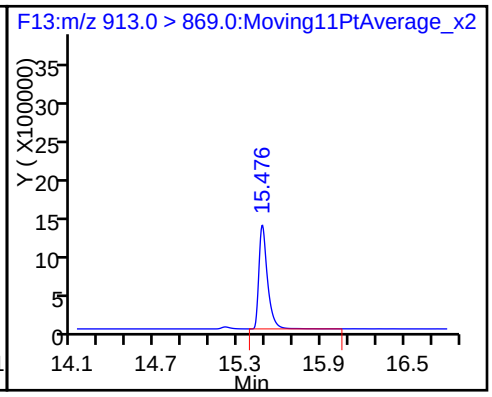
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: ICV 320-112007/12 Calibration Date: 05/31/2016 16:03

Instrument ID: A6 Calib Start Date: 05/31/2016 12:51

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/31/2016 14:59

Lab File ID: 31MAY2016A6A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.529	1.527		49.9	50.0	-0.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.155	1.001		43.3	50.0	-13.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.300	1.253		42.6	44.3	-3.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.128	1.021		45.3	50.0	-9.4	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.084		47.1	50.0	-5.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9366	0.8542		43.1	47.3	-8.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.027	0.9188		44.8	50.0	-10.5	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.235	1.037		40.1	47.8	-16.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8639	0.8394		48.6	50.0	-2.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.257	1.207		48.0	50.0	-3.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7937	0.7330		46.2	50.0	-7.6	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.8203		48.5	48.3	0.5	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9291		45.0	50.0	-10.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8376	0.8214		49.0	50.0	-1.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.115	1.036		46.5	50.0	-7.1	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.8268		45.8	50.0	-8.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.414		47.1	50.0	-5.9	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.472	1.469		49.9	50.0	-0.2	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_012.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 31-May-2016 16:03:15 ALS Bottle#: 16 Worklist Smp#: 12
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A4*sub6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:13:27 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.800	5.803	-0.003		1309752	53.7		107	3113	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.806	-0.006	1.000	1999668	49.9			10494	
D 3 13C5-PFPeA										
267.9 > 223.0	6.960	6.968	-0.008		3377744	53.2		106	61556	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.964	6.970	-0.006	1.000	3379909	43.3			1102	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.092	7.099	-0.007	1.000	1845008	42.6				
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.092	7.099	-0.007	1.000	1845008	NC			179	
298.9 > 99.0	7.092	7.099	-0.007	1.000	893476		2.06(0.00-0.00)		457	
D 6 13C2 PFHxA										
315.0 > 270.0	8.241	8.252	-0.011		3387118	55.3		111	8844	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.241	8.253	-0.012	1.000	3459077	45.3			4331	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.481	9.494	-0.013	1.000	3998040	47.1			12262	
D 8 13C4-PFHpA										
367.0 > 322.0	9.481	9.495	-0.014		3688077	53.7		107	57700	
D 11 18O2 PFHxS										
403.0 > 84.0	9.517	9.532	-0.015		1574028	51.0		108	5704	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.517	9.533	-0.016	1.000	1343142	NC			1569	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.517	9.533	-0.016	1.000	1343142	43.1				
D 12 13C4 PFOA										
417.0 > 372.0	10.595	10.612	-0.017		3896492	53.6		107	251925	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.595	10.612	-0.017	1.000	3579936	44.8			921	
413.0 > 169.0	10.595	10.612	-0.017	1.000	1357198		2.64(0.00-0.00)		3109	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.604	10.622	-0.018	1.000	1357113	NC			87398	
D 16 13C4 PFOS										
503.0 > 80.0	11.552	11.568	-0.016		1994664	50.2		105	92605	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.552	11.571	-0.019	1.000	2066216	40.1			461	
499.0 > 99.0	11.552	11.571	-0.019	1.000	1199599		1.72(0.00-0.00)		4977	
D 17 13C5 PFNA										
468.0 > 423.0	11.569	11.589	-0.020		3320087	49.8		99.6	33522	
18 Perfluorononanoic acid										
463.0 > 419.0	11.569	11.589	-0.020	1.000	2786864	48.6			17965	
D 19 13C2 PFDA										
515.0 > 470.0	12.404	12.423	-0.019		2705439	51.4		103	25277	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.404	12.423	-0.019	1.000	3266545	48.0			44220	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.994	13.018	-0.024	1.000	4604720	46.2			4201	
D 23 13C8 FOSA										
506.0 > 78.0	12.994	13.019	-0.025		6281963	50.1		100	3104	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.050	13.081	-0.031	1.000	1651558	48.5				
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.050	13.081	-0.031	1.000	1651558	NC			114722	
D 26 13C2 PFUnA										
565.0 > 520.0	13.093	13.124	-0.031		3845562	51.1		102	7905	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.093	13.124	-0.031	1.000	3572883	45.0			33651	
D 28 13C2 PFDoA										
615.0 > 570.0	13.685	13.718	-0.033		4674918	51.5		103	24363	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.685	13.718	-0.033	1.000	3839910	49.0			7576	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.220	-0.038	1.000	4845020	46.5			4524	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.609	14.643	-0.034		4091225	50.5		101	13305	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.609	14.644	-0.035	1.000	3865409	45.8			1976	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.209	15.223	-0.014		6290759	49.9		99.9	8392	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.209	15.223	-0.014	1.000	6611884	47.1			3827	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.481	15.493	-0.012	1.000	6865782	49.9			3447	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_00017 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:13:28 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_012.d

Injection Date: 31-May-2016 16:03:15 Instrument ID: A6

Lims ID: ICV

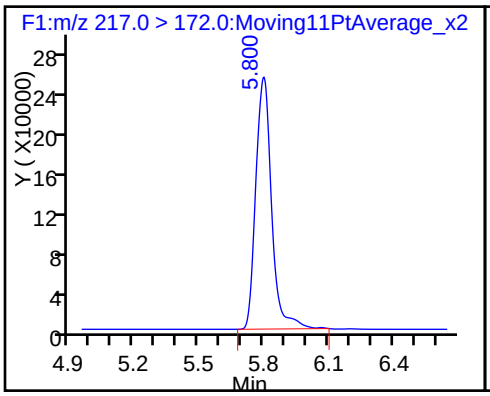
Client ID:

Operator ID: JRB ALS Bottle#: 16 Worklist Smp#: 12

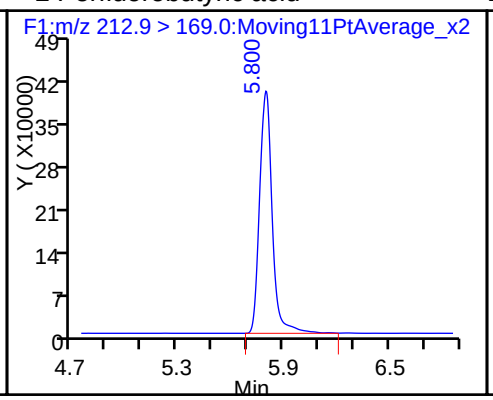
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

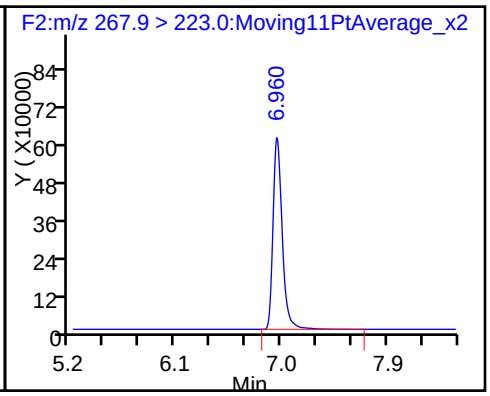
D 1 13C4 PFBA



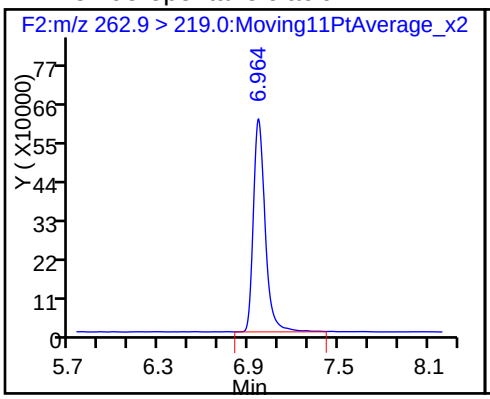
2 Perfluorobutyric acid



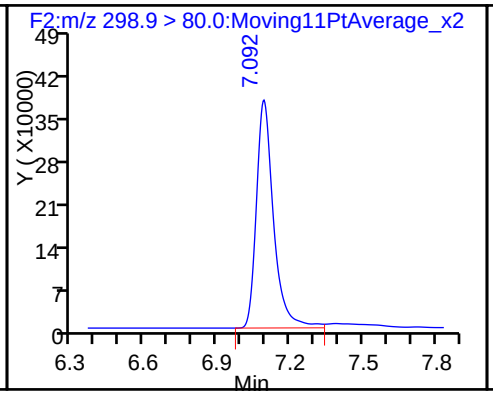
D 3 13C5-PFPeA



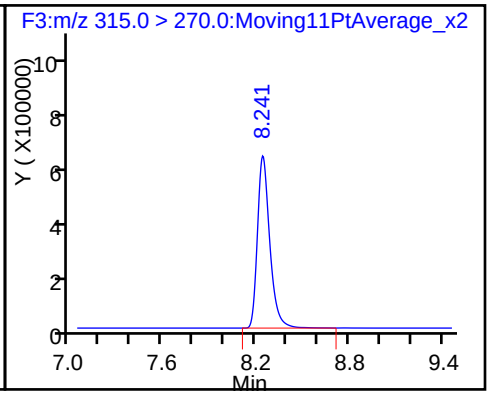
4 Perfluoropentanoic acid



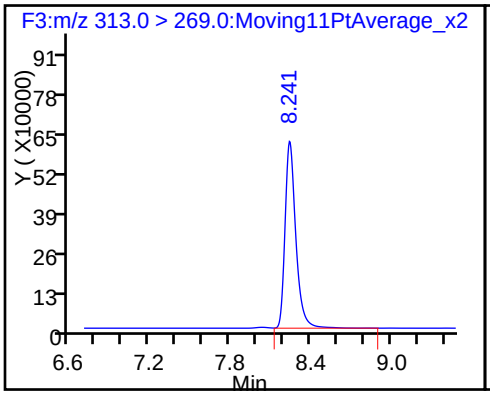
40 Perfluorobutanesulfonic acid



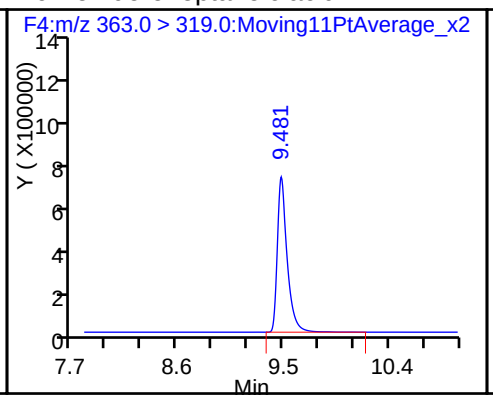
D 6 13C2 PFHxA



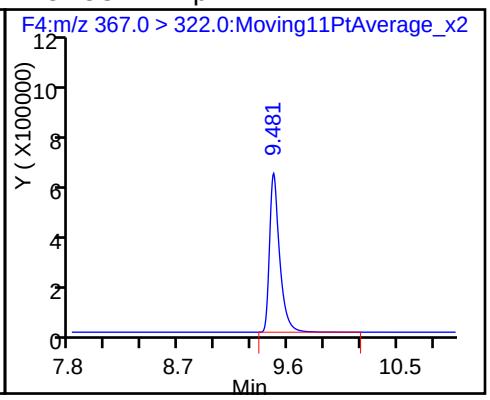
7 Perfluorohexanoic acid



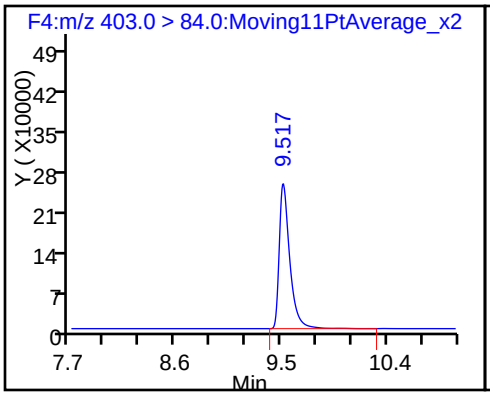
9 Perfluoroheptanoic acid



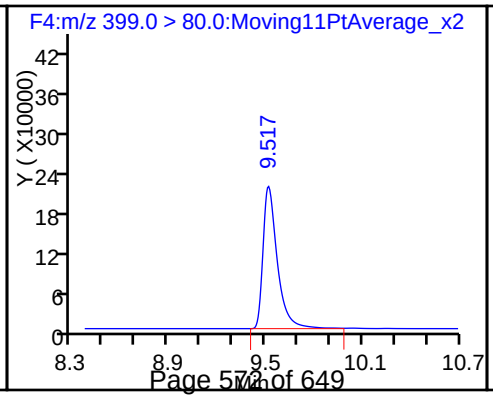
D 8 13C4-PFHpA



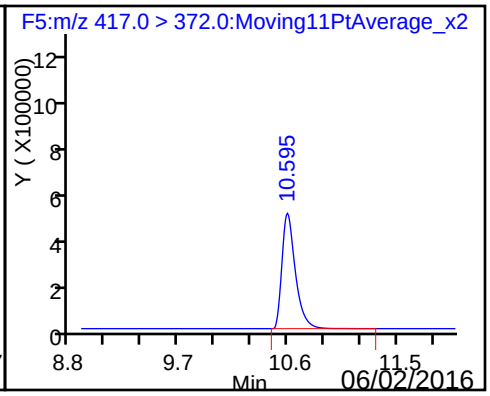
D 11 18O2 PFHxS



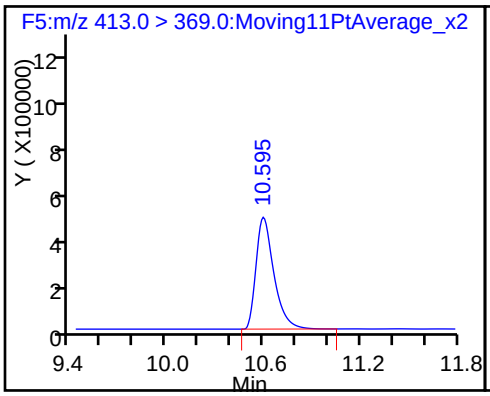
41 Perfluorohexanesulfonic acid



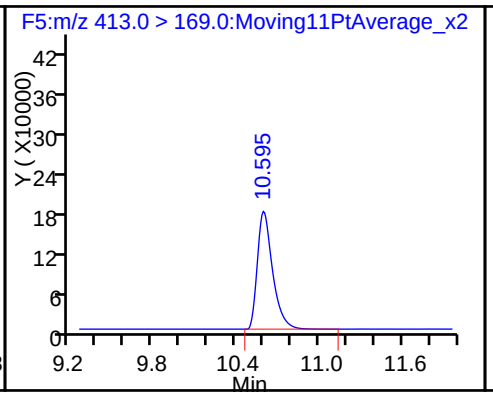
D 12 13C4 PFOA



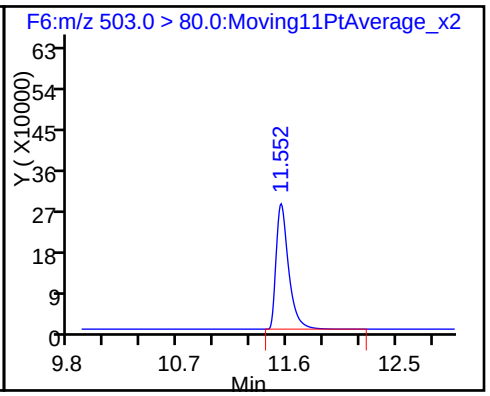
13 Perfluorooctanoic acid



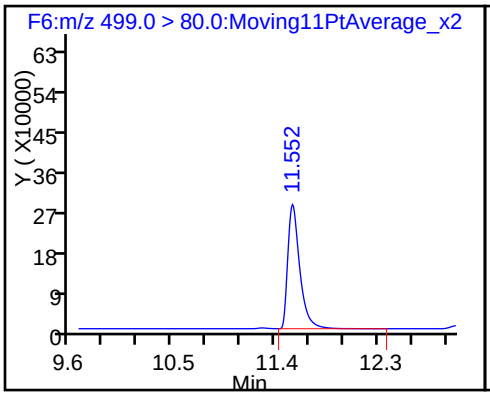
13 Perfluorooctanoic acid



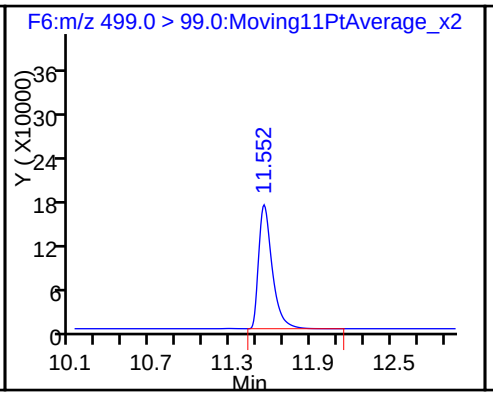
D 16 13C4 PFOS



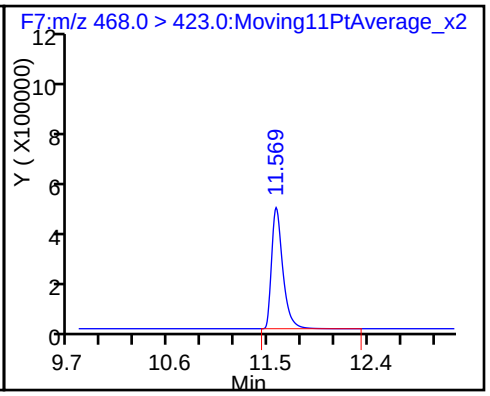
15 Perfluorooctane sulfonic acid



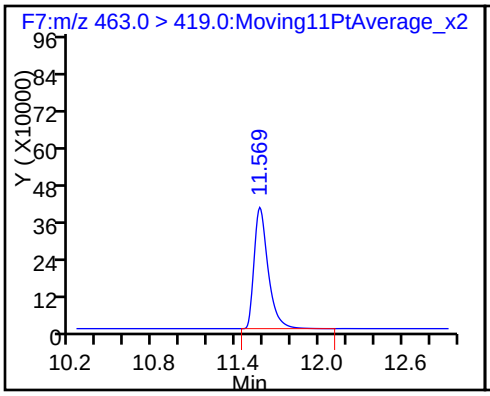
15 Perfluorooctane sulfonic acid



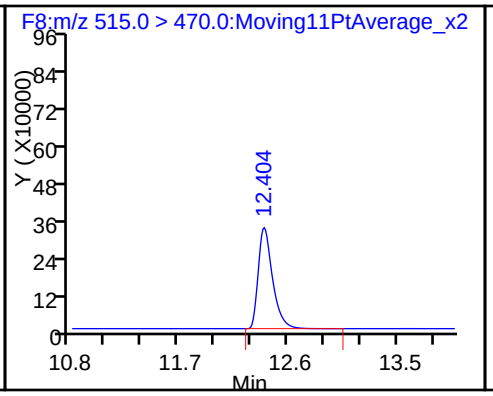
D 17 13C5 PFNA



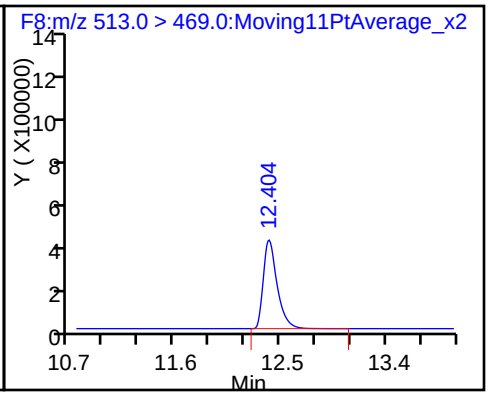
18 Perfluorononanoic acid



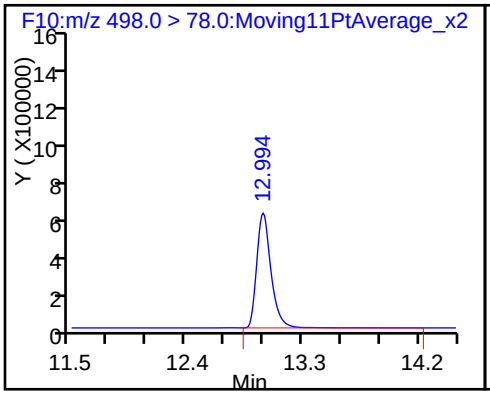
D 19 13C2 PFDA



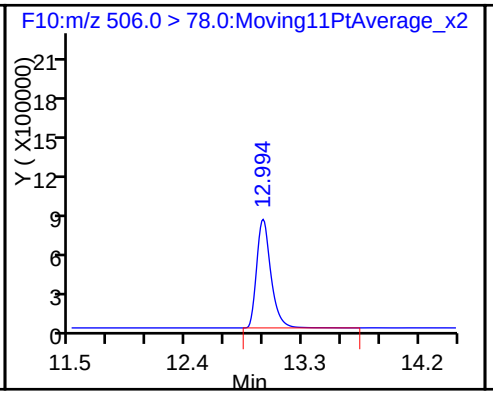
20 Perfluorodecanoic acid



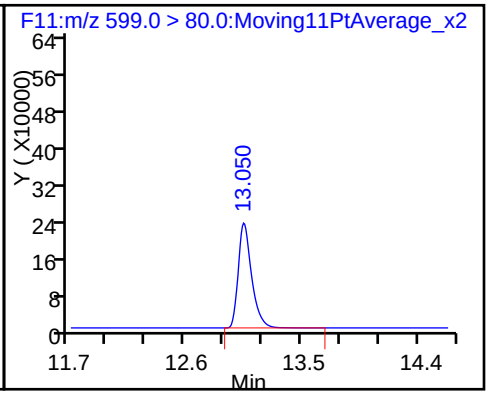
24 Perfluorooctane Sulfonamide



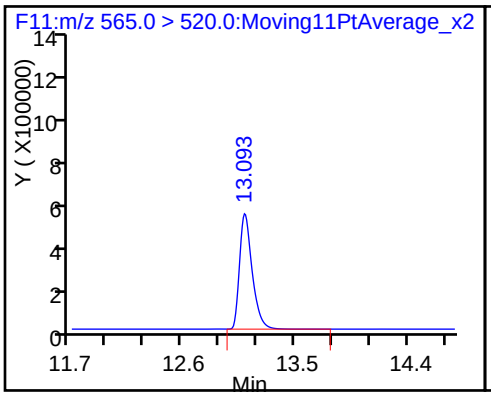
D 23 13C8 FOSA



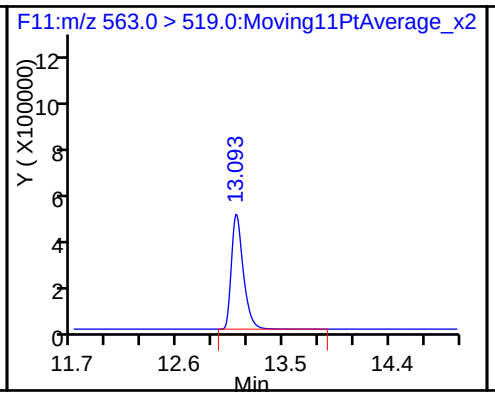
39 Perfluorodecane Sulfonic acid



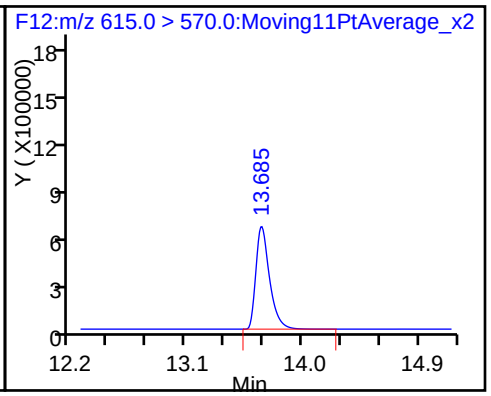
D 26 13C2 PFUnA



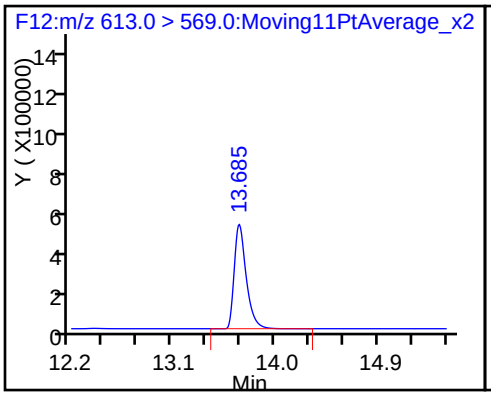
27 Perfluoroundecanoic acid



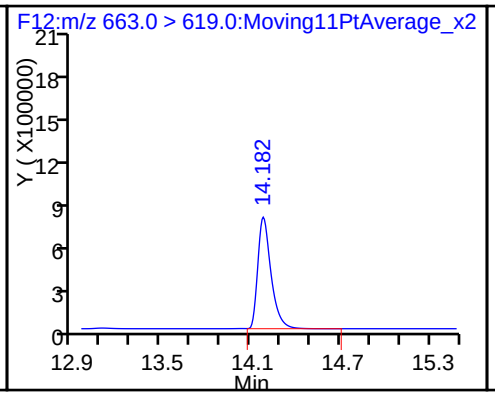
D 28 13C2 PFDoA



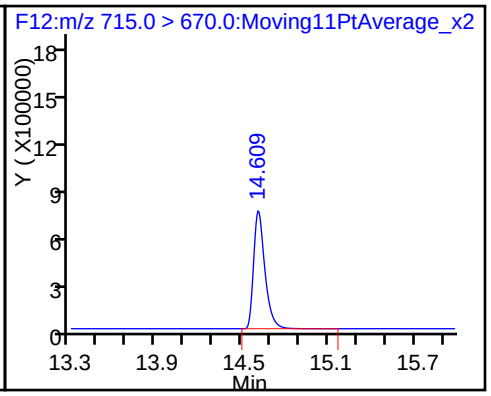
29 Perfluorododecanoic acid



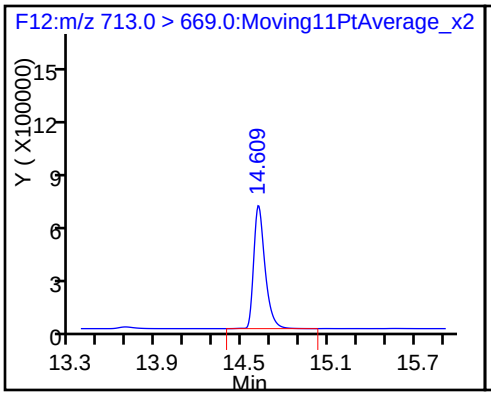
30 Perfluorotridecanoic acid



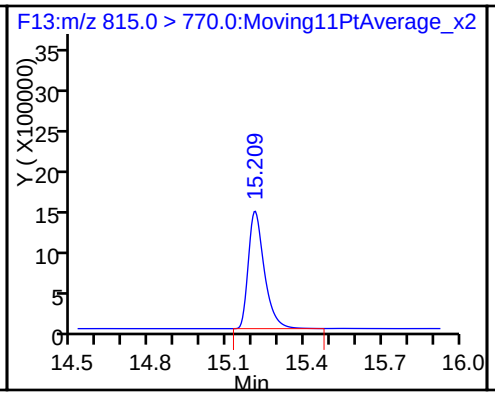
D 33 13C2-PFTeDA



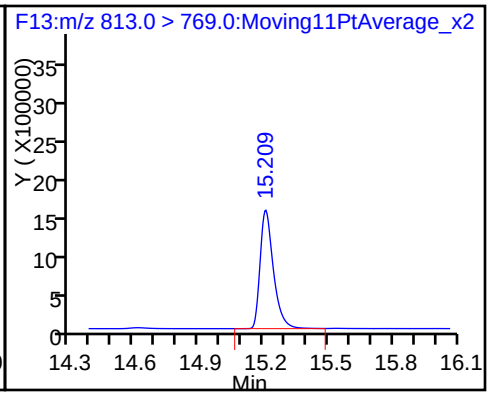
32 Perfluorotetradecanoic acid



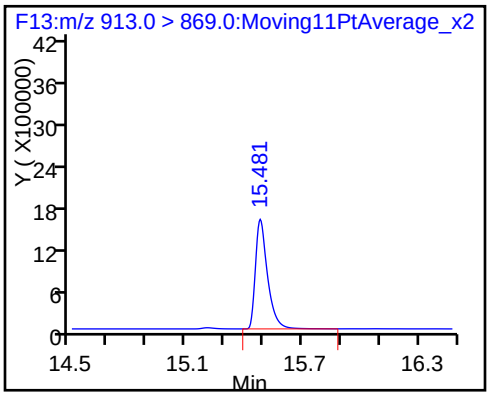
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: CCV 320-112007/25 Calibration Date: 05/31/2016 21:29

Instrument ID: A6 Calib Start Date: 05/31/2016 12:51

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/31/2016 14:59

Lab File ID: 31MAY2016A6A_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.529	1.671		54.7	50.0	9.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.155	1.179		51.0	50.0	2.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.300	1.320		44.9	44.2	1.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.128	1.172		52.0	50.0	3.9	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.185		51.6	50.0	3.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9366	0.9438		47.7	47.3	0.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.8089		46.5	47.6	-2.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.027	1.026		50.0	50.0	-0.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.235	1.424		55.1	47.8	15.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8639	0.8731		50.5	50.0	1.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.257	1.434		57.0	50.0	14.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7937	0.8229		51.8	50.0	3.7	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.8995		53.1	48.2	10.2	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.090		52.9	50.0	5.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8376	0.8471		50.6	50.0	1.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.115	1.131		50.7	50.0	1.4	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.9409		52.2	50.0	4.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.597		53.3	50.0	6.5	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.472	1.609		54.6	50.0	9.3	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_027.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 31-May-2016 21:29:35 ALS Bottle#: 13 Worklist Smp#: 25
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5 CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:53:11 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 01-Jun-2016 10:20:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.803	-0.009		1303815	53.5		107	44190	
2 Perfluorobutyric acid										
212.9 > 169.0	5.797	5.806	-0.009	1.000	2179092	54.7		109	19183	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.968	-0.013		3167127	49.8		99.7	5967	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.960	6.970	-0.010	1.000	3732889	51.0		102	744	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.088	7.099	-0.011	1.000	1949376	44.9		102		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.088	7.099	-0.011	1.000	1949376	NC			196	
298.9 > 99.0	7.085	7.099	-0.014	0.999	994004		1.96(0.00-0.00)		174	
D 6 13C2 PFHxA										
315.0 > 270.0	8.247	8.252	-0.005		3368134	55.0		110	22401	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.247	8.253	-0.006	1.000	3947316	52.0		104	1060	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.487	9.494	-0.007	1.000	4368893	51.6		103	14159	
D 8 13C4-PFHpA										
367.0 > 322.0	9.481	9.495	-0.014		3685813	53.7		107	14446	
D 11 18O2 PFHxS										
403.0 > 84.0	9.525	9.532	-0.007		1579966	51.2		108	4858	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.525	9.533	-0.008	1.000	1491095	NC			1037	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.525	9.533	-0.008	1.000	1491095	47.7		101		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.605	10.612	-0.007		3776058	51.9		104	21979	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.605	10.612	-0.007	1.000	3874191	50.0		99.9	1246	
413.0 > 169.0	10.605	10.612	-0.007	1.000	1455790		2.66(0.00-0.00)		1932	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.605	10.622	-0.017	1.000	1581703	NC			12022	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.605	10.622	-0.017	1.000	1581703	46.5		97.6		
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		1963495	49.4		103	34224	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.560	11.571	-0.011	1.000	2796532	55.1		115	234	
499.0 > 99.0	11.560	11.571	-0.011	1.000	1488146		1.88(0.00-0.00)		512	
D 17 13C5 PFNA										
468.0 > 423.0	11.578	11.589	-0.011		3341392	50.1		100	51644	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	2917202	50.5		101	58783	
D 19 13C2 PFDA										
515.0 > 470.0	12.414	12.423	-0.009		2540784	48.3		96.5	21994	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.414	12.423	-0.009	1.000	3642837	57.0		114	20066	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.012	13.018	-0.006	1.000	5296945	51.8		104	2471	
D 23 13C8 FOSA										
506.0 > 78.0	13.012	13.019	-0.007		6437008	51.4		103	2765	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.066	13.081	-0.015	1.000	1780860	53.1		110		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.066	13.081	-0.015	1.000	1780860	NC			63018	
D 26 13C2 PFUnA										
565.0 > 520.0	13.119	13.124	-0.005		3796499	50.5		101	25714	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.119	13.124	-0.005	1.000	4136561	52.9		106	146524	
D 28 13C2 PFDoA										
615.0 > 570.0	13.701	13.718	-0.017		4780123	52.7		105	64727	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.701	13.718	-0.017	1.000	4049230	50.6		101	3594	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.196	14.220	-0.024	1.000	5407567	50.7		101	3031	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.627	14.643	-0.016		4180911	51.6		103	8961	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.627	14.644	-0.017	1.000	4497772	52.2		104	1594	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.208	15.223	-0.015		7167344	56.9		114	7993	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.208	15.223	-0.015	1.000	7634324	53.3		107	4222	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.475	15.493	-0.018	1.000	7690787	54.6		109	3283	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00018 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 14:53:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_027.d

Injection Date: 31-May-2016 21:29:35 Instrument ID: A6

Lims ID: CCV L5

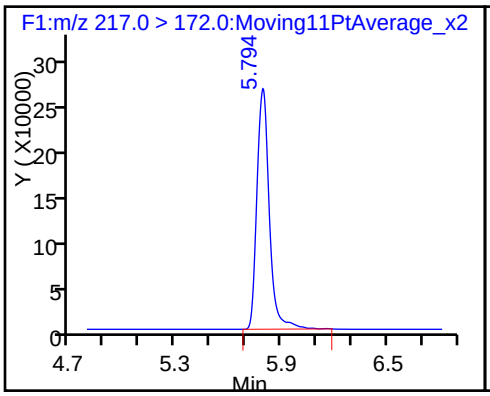
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 25

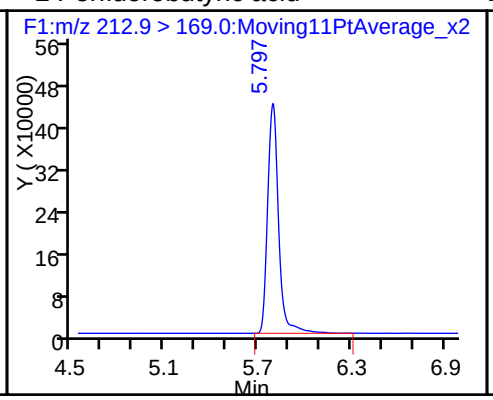
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

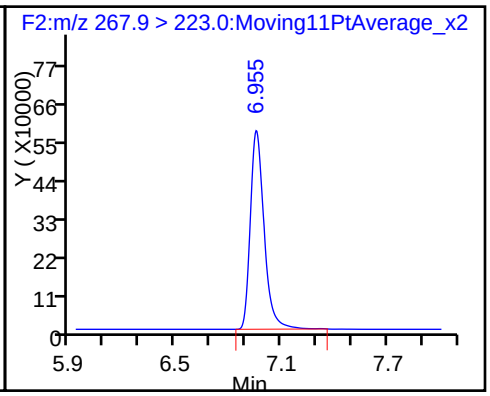
D 1 13C4 PFBA



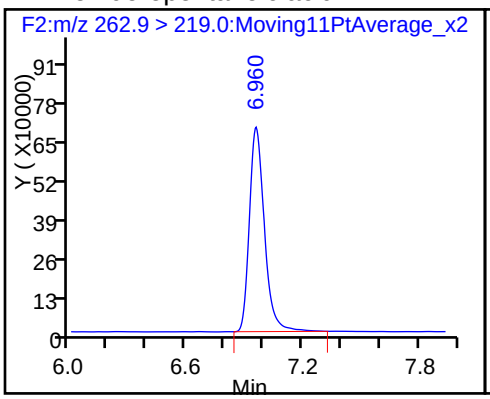
2 Perfluorobutyric acid



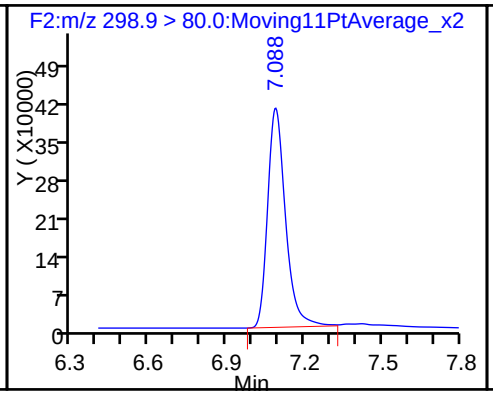
D 3 13C5-PFPeA



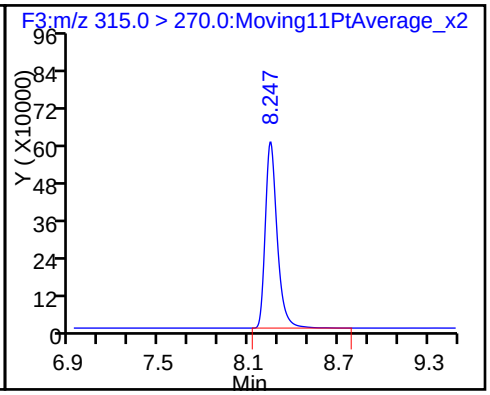
4 Perfluoropentanoic acid



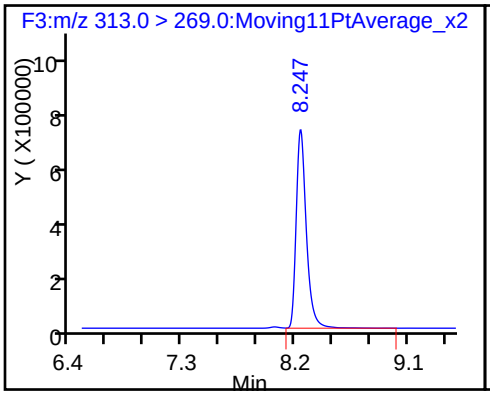
40 Perfluorobutanesulfonic acid



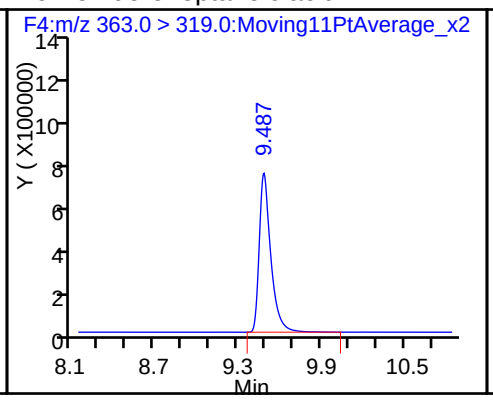
D 6 13C2 PFHxA



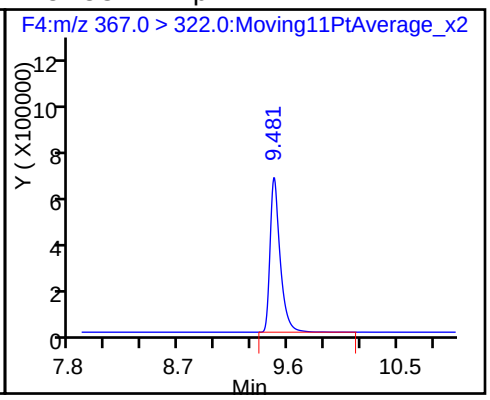
7 Perfluorohexanoic acid



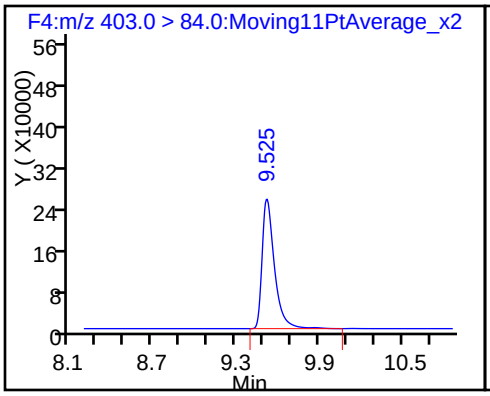
9 Perfluoroheptanoic acid



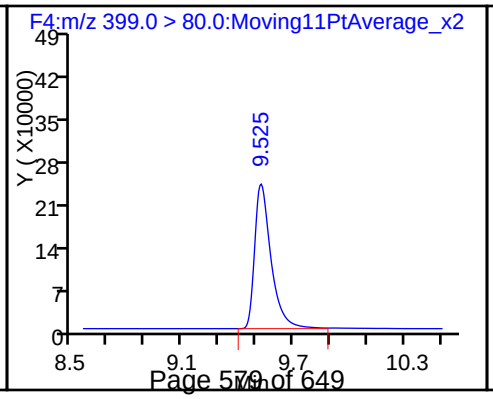
D 8 13C4-PFHpA



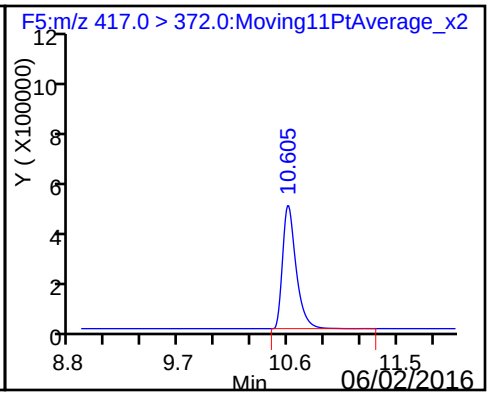
D 11 18O2 PFHxS



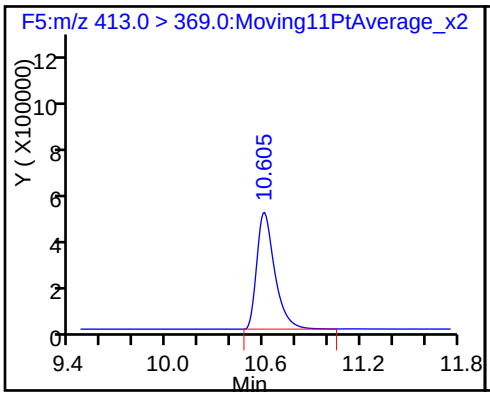
41 Perfluorohexanesulfonic acid



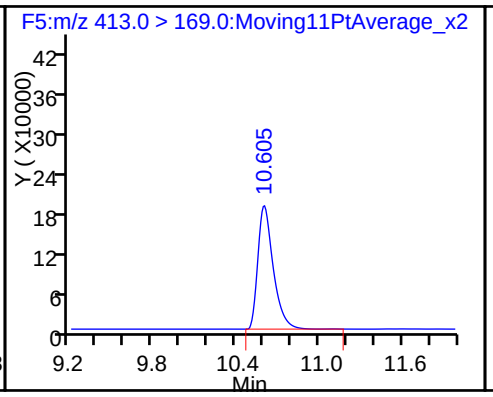
D 12 13C4 PFOA



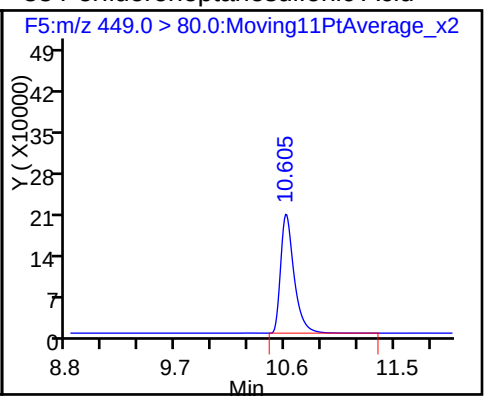
13 Perfluorooctanoic acid



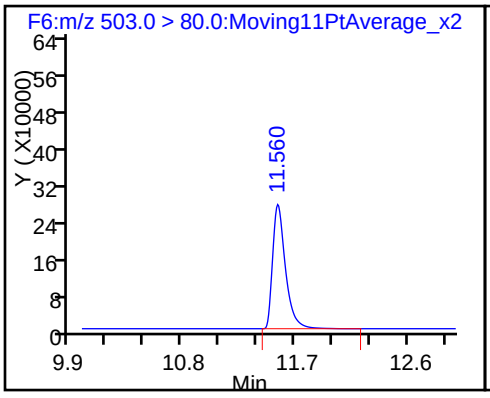
13 Perfluorooctanoic acid



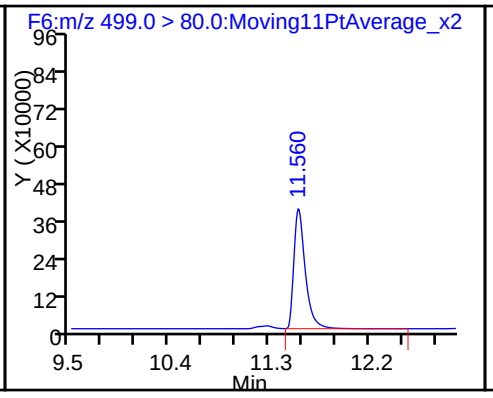
38 Perfluoroheptanesulfonic Acid



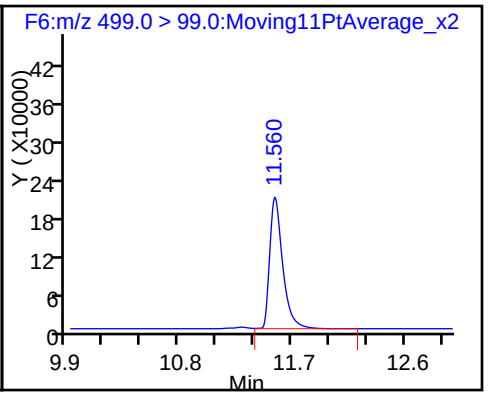
D 16 13C4 PFOS



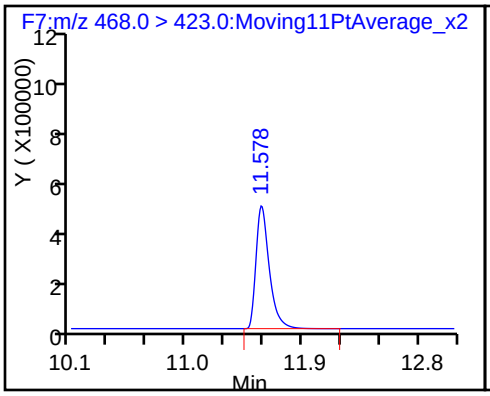
15 Perfluorooctane sulfonic acid



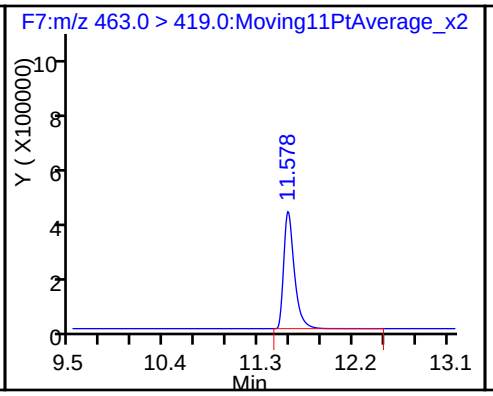
15 Perfluorooctane sulfonic acid



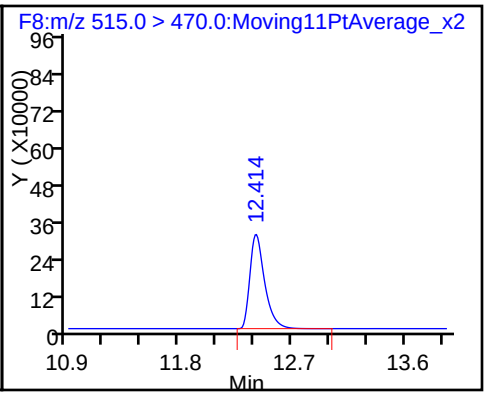
D 17 13C5 PFNA



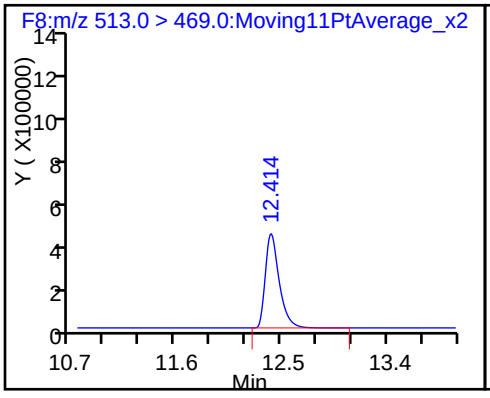
18 Perfluorononanoic acid



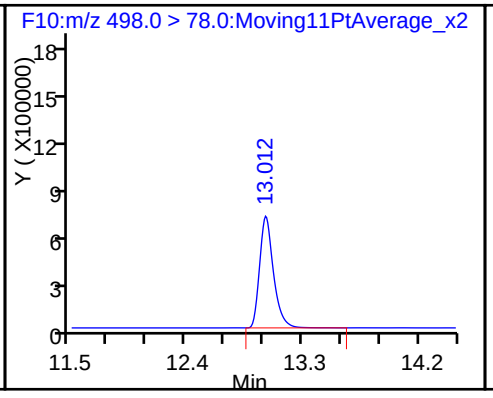
D 19 13C2 PFDA



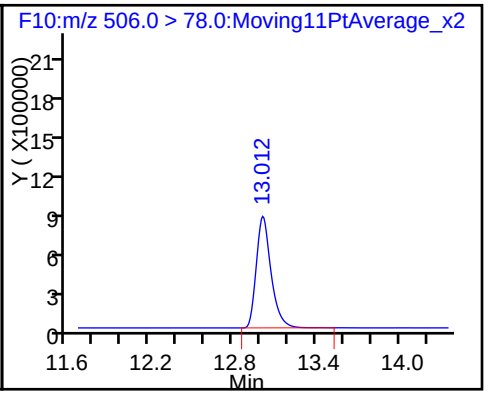
20 Perfluorodecanoic acid



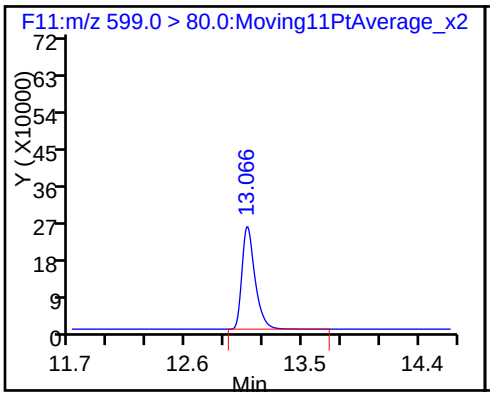
24 Perfluorooctane Sulfonamide



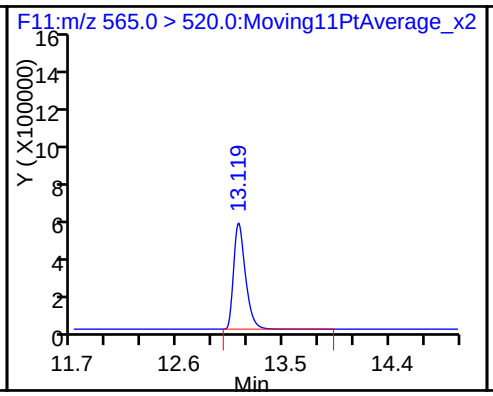
D 23 13C8 FOSA



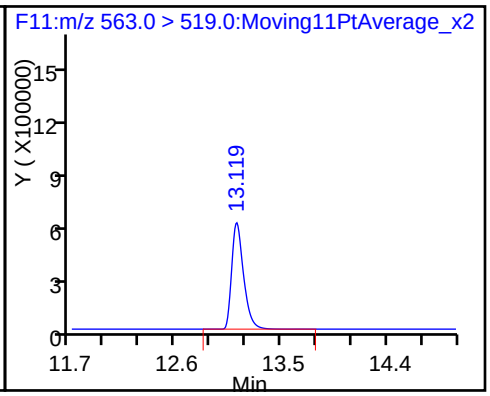
39 Perfluorodecane Sulfonic acid



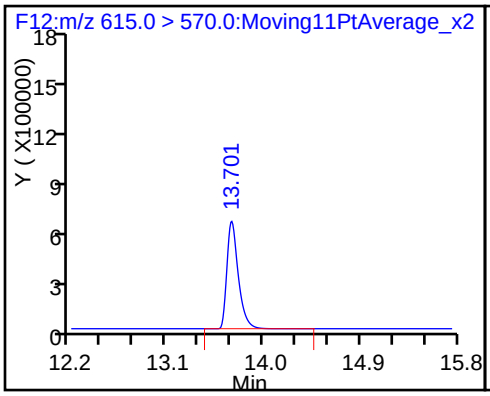
D 26 13C2 PFUnA



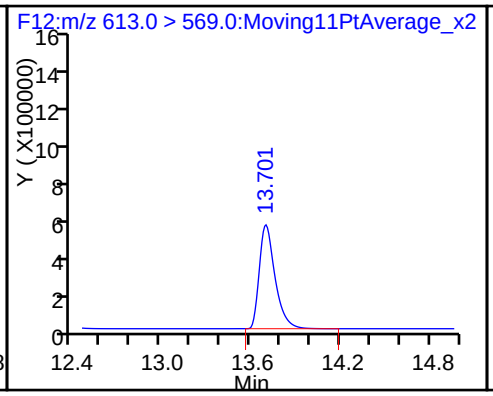
27 Perfluoroundecanoic acid



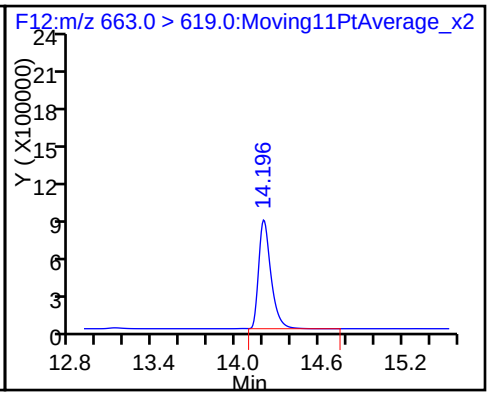
D 28 13C2 PFDoA



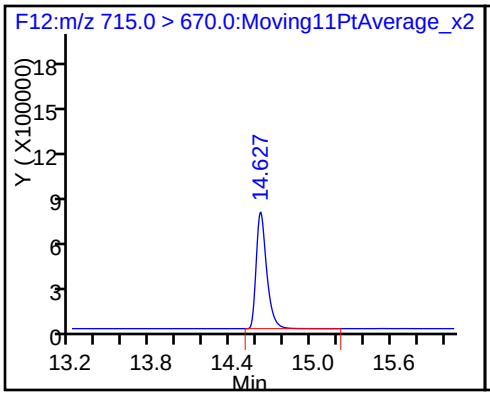
29 Perfluorododecanoic acid



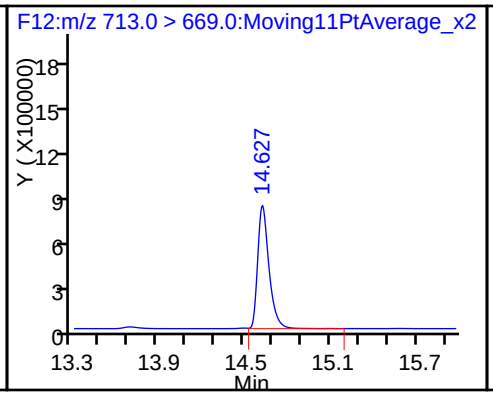
30 Perfluorotridecanoic acid



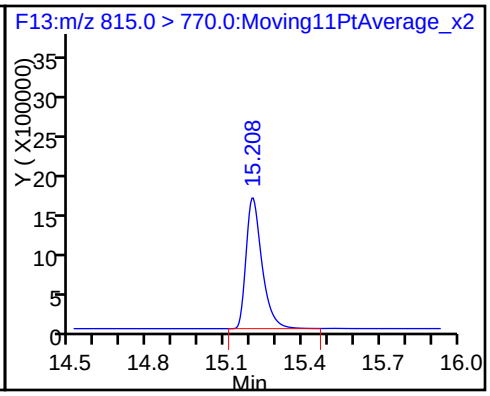
D 33 13C2-PFTeDA



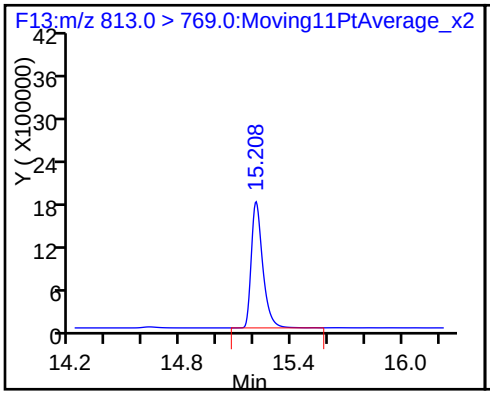
32 Perfluorotetradecanoic acid



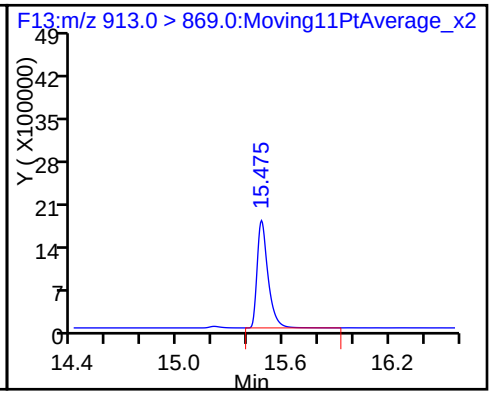
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: CCV 320-112007/37 Calibration Date: 06/01/2016 01:44

Instrument ID: A6 Calib Start Date: 05/31/2016 12:51

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/31/2016 14:59

Lab File ID: 31MAY2016A6A_039.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.529	1.422		18.6	20.0	-7.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.155	1.008		17.5	20.0	-12.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.300	1.286		17.5	17.7	-1.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.128	1.043		18.5	20.0	-7.5	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.057		18.2	20.0	-9.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9366	0.9373		18.9	18.9	0.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.027	1.013		19.7	20.0	-1.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.7874		18.3	19.0	-3.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.235	1.321		20.4	19.1	7.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8639	0.8258		19.1	20.0	-4.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.257	1.175		18.7	20.0	-6.5	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7937	0.7641		19.3	20.0	-3.7	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.7988		18.8	19.3	-2.7	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.016		19.5	20.0	-2.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8376	0.8066		19.3	20.0	-3.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.115	1.072		19.2	20.0	-3.9	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.8910		19.6	20.0	-2.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.588		20.6	20.0	2.9	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.472	1.407		19.1	20.0	-4.5	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_039.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 01-Jun-2016 01:44:50 ALS Bottle#: 12 Worklist Smp#: 37
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4 CCV L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub9

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 15:04:38 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 01-Jun-2016 10:24:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.803	-0.009		1322912	54.3		109	13821	
2 Perfluorobutyric acid										
212.9 > 169.0	5.794	5.806	-0.012	1.000	752726	18.6		93.0	14297	
D 3 13C5-PFPeA										
267.9 > 223.0	6.964	6.968	-0.004		3270053	51.5		103	8885	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.964	6.970	-0.006	1.000	1318858	17.5		87.3	251	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.092	7.099	-0.007	1.000	704656	17.5		98.9		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.092	7.099	-0.007	1.000	704656	NC			106	
298.9 > 99.0	7.092	7.099	-0.007	1.000	338571		2.08(0.00-0.00)		141	
D 6 13C2 PFHxA										
315.0 > 270.0	8.247	8.252	-0.005		3392034	55.4		111	34614	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.252	8.253	-0.001	1.000	1415671	18.5		92.5	1990	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.493	9.494	-0.001	1.000	1487741	18.2		91.0	9339	
D 8 13C4-PFHpA										
367.0 > 322.0	9.487	9.495	-0.008		3519001	51.3		103	13718	
D 11 18O2 PFHxS										
403.0 > 84.0	9.524	9.532	-0.008		1465793	47.5		100	5189	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.524	9.533	-0.009	1.000	549557	NC			954	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.524	9.533	-0.009	1.000	549557	18.9		100		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.604	10.612	-0.008		3907709	53.7		107	16945	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.604	10.612	-0.008	1.000	1583994	19.7		98.7	335	
413.0 > 169.0	10.604	10.612	-0.008	1.000	592384		2.67(0.00-0.00)		458	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.614	10.622	-0.008	1.000	615164	NC			20095	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.614	10.622	-0.008	1.000	615164	18.3		96.2		
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		1961452	49.4		103	137665	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.560	11.571	-0.011	1.000	1036640	20.4		107	269	
499.0 > 99.0	11.560	11.571	-0.011	1.000	539121		1.92(0.00-0.00)		654	
D 17 13C5 PFNA										
468.0 > 423.0	11.578	11.589	-0.011		3536429	53.1		106	100458	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	1168159	19.1		95.6	15254	
D 19 13C2 PFDA										
515.0 > 470.0	12.414	12.423	-0.009		2803309	53.2		106	170056	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.414	12.423	-0.009	1.000	1318037	18.7		93.5	80657	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.022	13.018	0.004	1.000	1847784	19.3		96.3	9204	
D 23 13C8 FOSA										
506.0 > 78.0	13.022	13.019	0.003		6045431	48.2		96.5	5881	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.076	13.081	-0.005	1.000	631992	18.8		97.3		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.076	13.081	-0.005	1.000	631992	NC			44647	
D 26 13C2 PFUnA										
565.0 > 520.0	13.120	13.124	-0.004		3873016	51.5		103	24207	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.120	13.124	-0.004	1.000	1574171	19.5		97.3	37838	
D 28 13C2 PFDoA										
615.0 > 570.0	13.703	13.718	-0.015		4718722	52.0		104	22122	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.703	13.718	-0.015	1.000	1522352	19.3		96.3	2244	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.205	14.220	-0.015	1.000	2022900	19.2		96.1	1577	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.628	14.643	-0.015		4290564	52.9		106	17153	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.628	14.644	-0.016	1.000	1681670	19.6		98.0	748	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.204	15.223	-0.019		6931865	55.0		110	7299	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.204	15.223	-0.019	1.000	2997236	20.6		103	2468	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.466	15.493	-0.027	1.000	2654917	19.1		95.5	1662	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00020 Amount Added: 1.00 Units: mL

Report Date: 01-Jun-2016 15:04:39 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_039.d

Injection Date: 01-Jun-2016 01:44:50 Instrument ID: A6

Lims ID: CCV L4

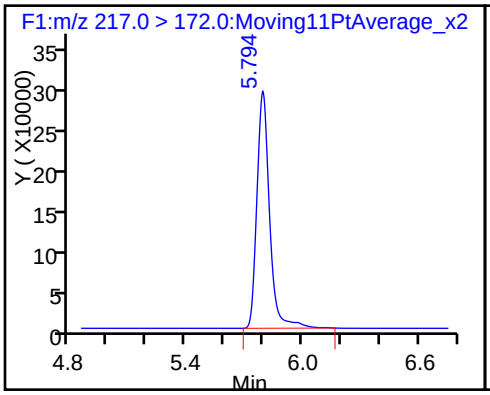
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 37

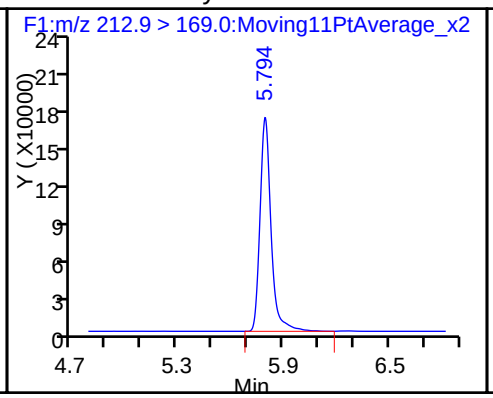
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

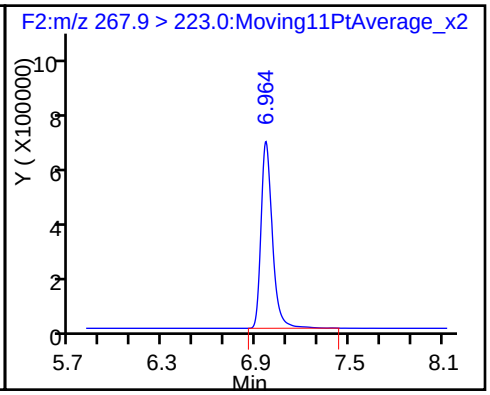
D 1 13C4 PFBA



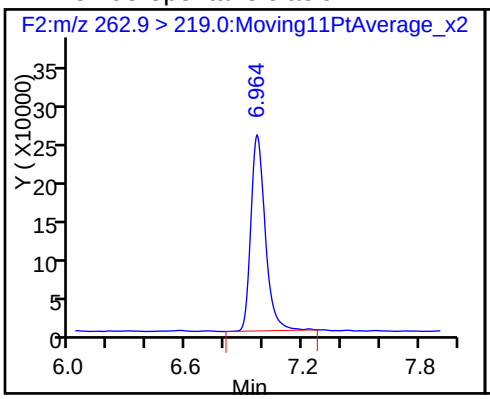
2 Perfluorobutyric acid



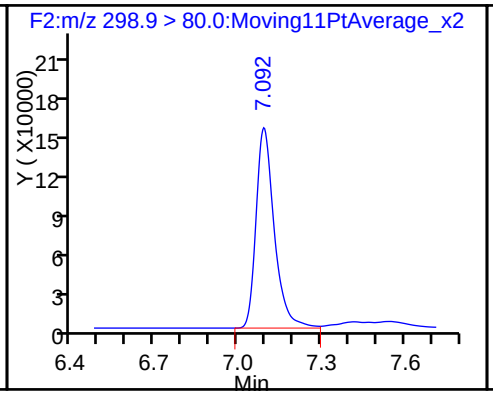
D 3 13C5-PFPeA



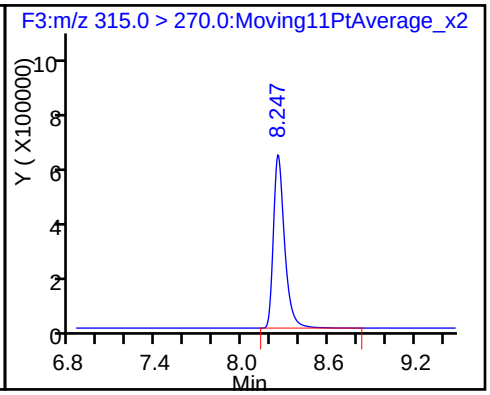
4 Perfluoropentanoic acid



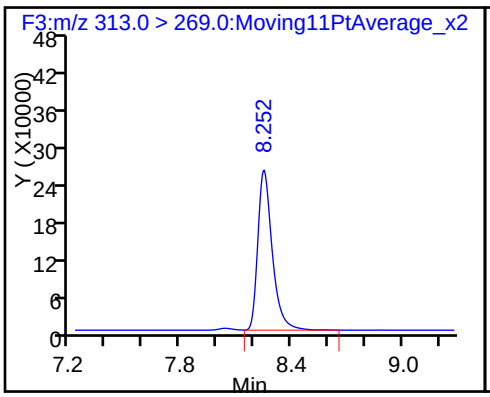
40 Perfluorobutanesulfonic acid



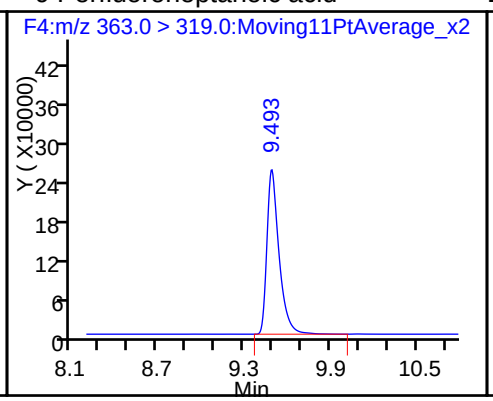
D 6 13C2 PFHxA



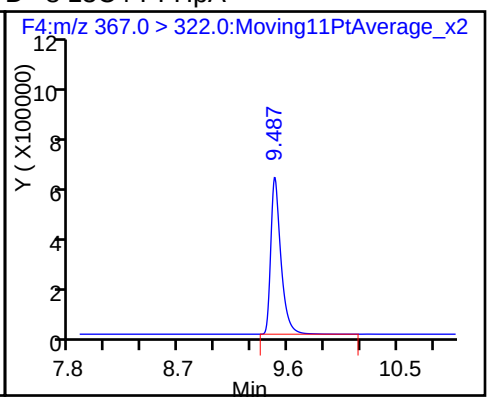
7 Perfluorohexanoic acid



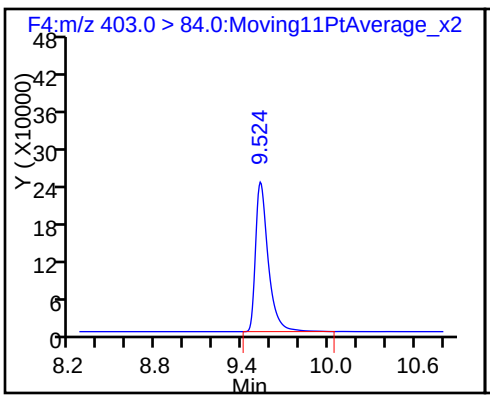
9 Perfluoroheptanoic acid



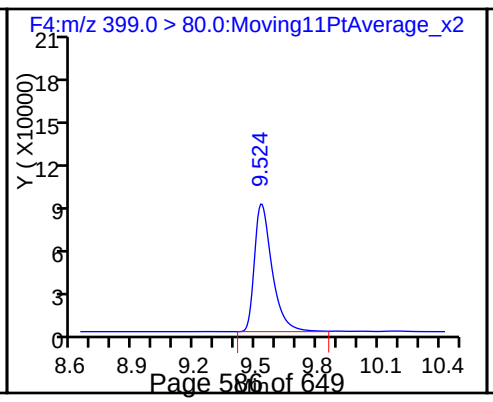
D 8 13C4-PFHpA



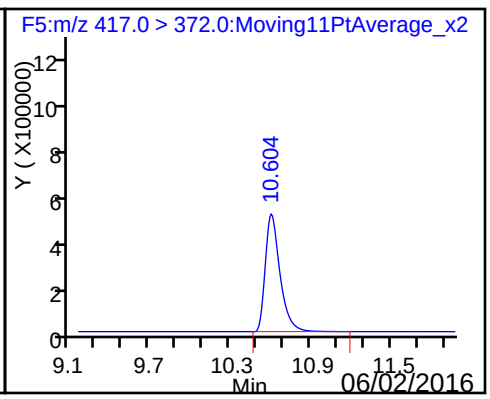
D 11 18O2 PFHxS



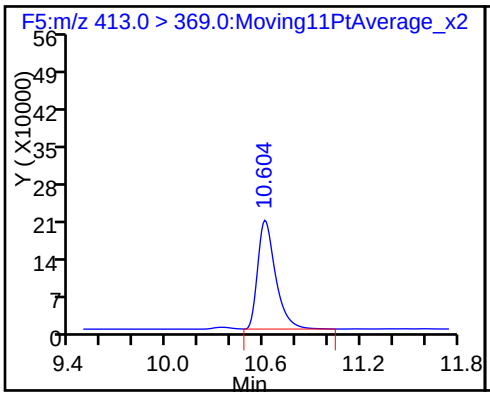
41 Perfluorohexanesulfonic acid



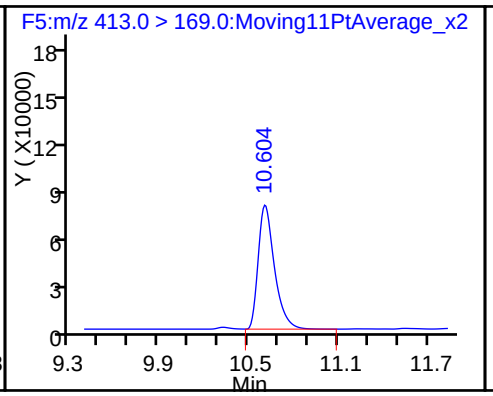
D 12 13C4 PFOA



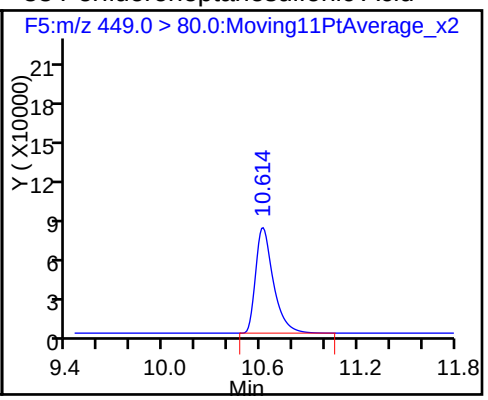
13 Perfluorooctanoic acid



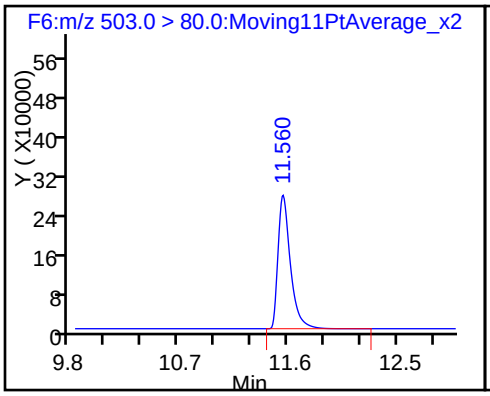
13 Perfluorooctanoic acid



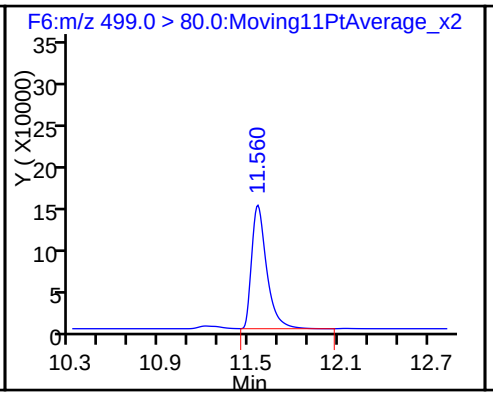
38 Perfluoroheptanesulfonic Acid



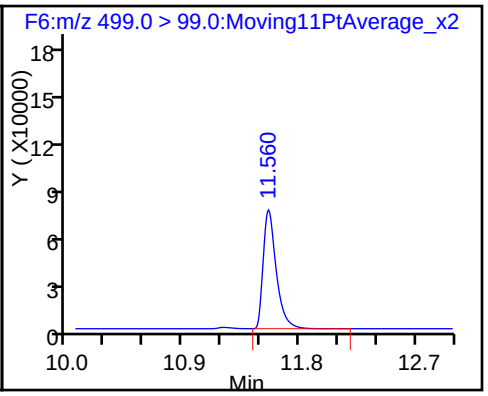
D 16 13C4 PFOS



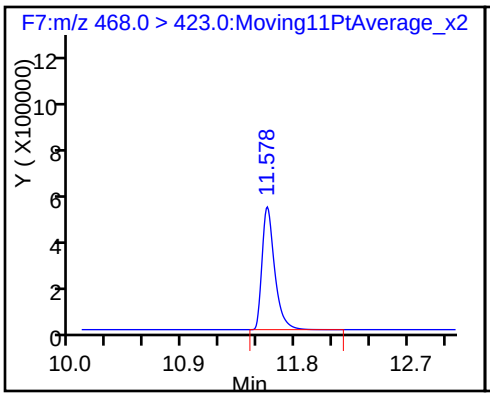
15 Perfluorooctane sulfonic acid



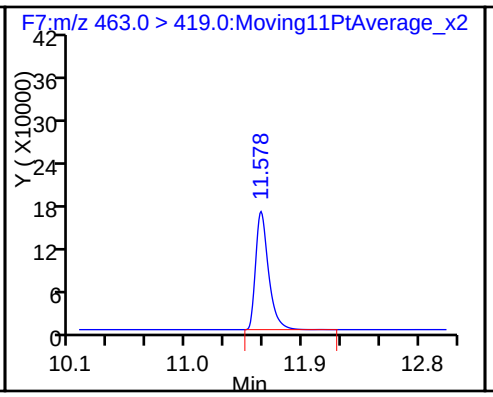
15 Perfluorooctane sulfonic acid



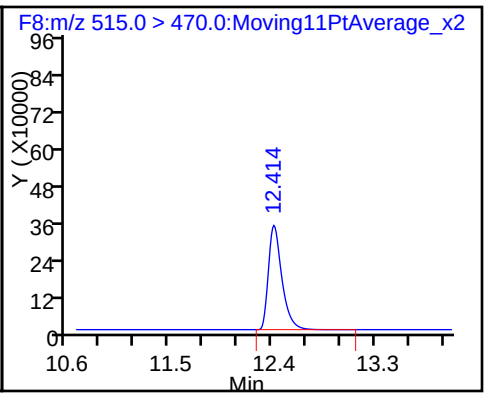
D 17 13C5 PFNA



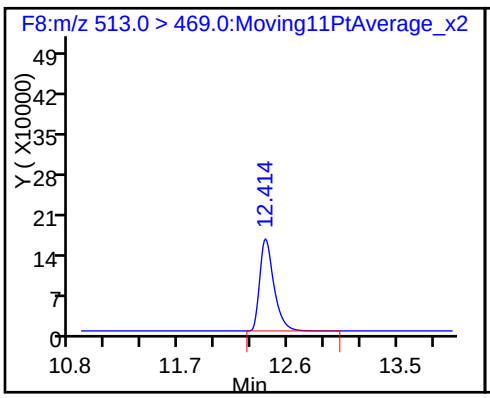
18 Perfluorononanoic acid



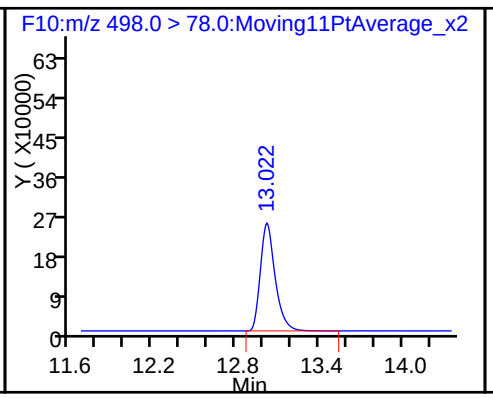
D 19 13C2 PFDA



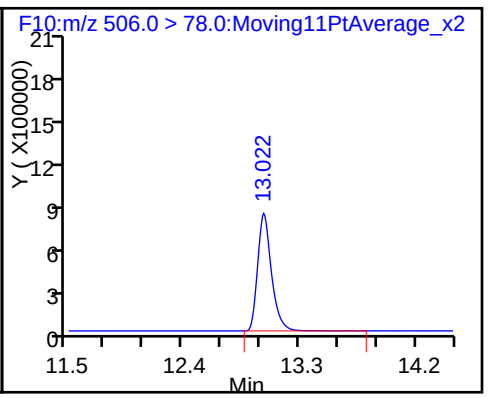
20 Perfluorodecanoic acid



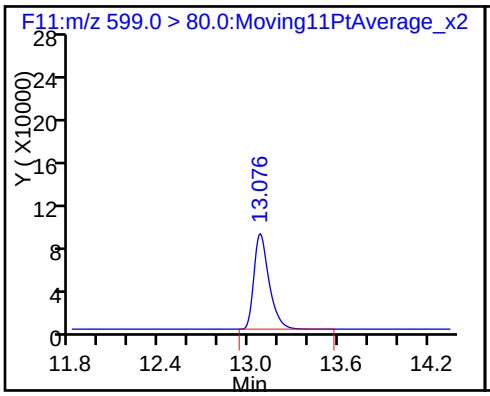
24 Perfluorooctane Sulfonamide



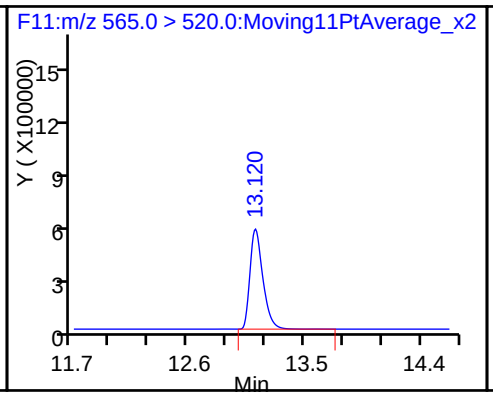
D 23 13C8 FOSA



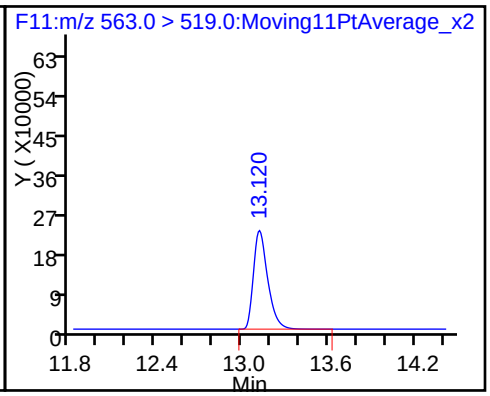
39 Perfluorodecane Sulfonic acid



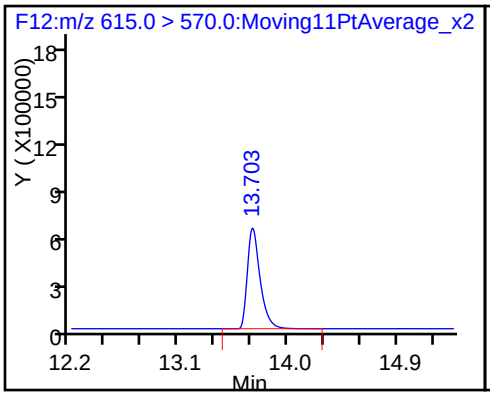
D 26 13C2 PFUnA



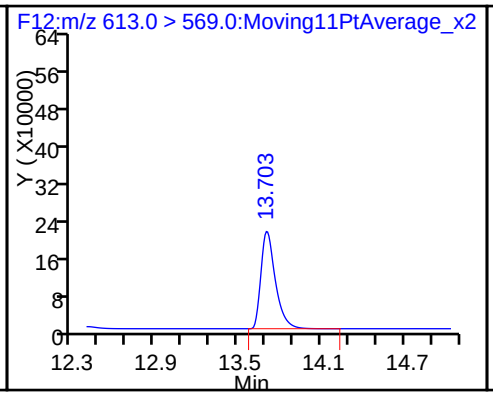
27 Perfluoroundecanoic acid



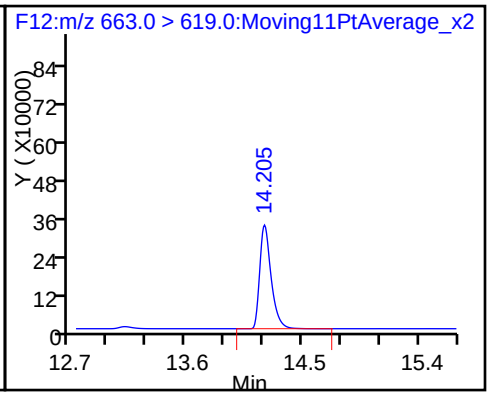
D 28 13C2 PFDoA



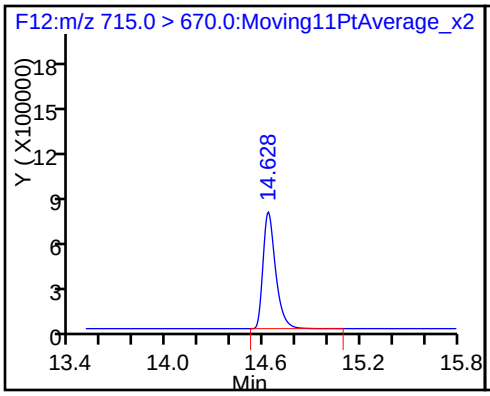
29 Perfluorododecanoic acid



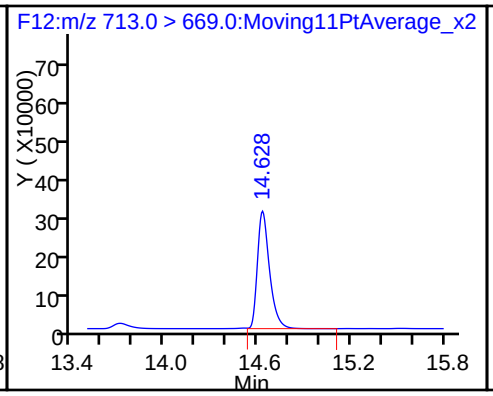
30 Perfluorotridecanoic acid



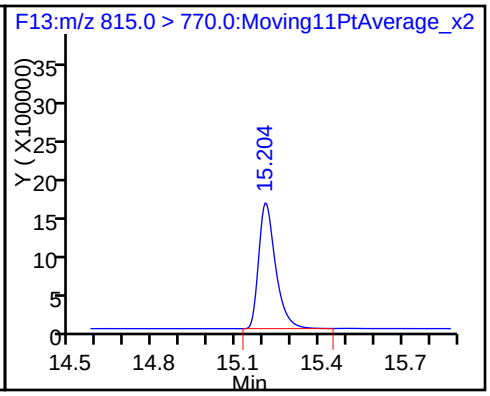
D 33 13C2-PFTeDA



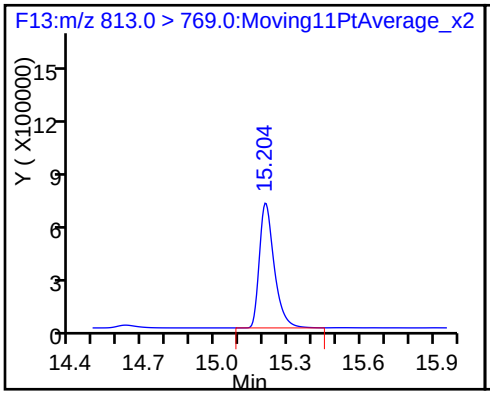
32 Perfluorotetradecanoic acid



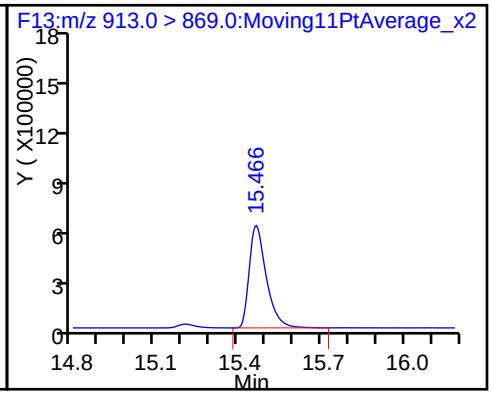
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: CCV 320-112205/54 Calibration Date: 06/02/2016 09:35

Instrument ID: A6 Calib Start Date: 05/31/2016 12:51

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/31/2016 14:59

Lab File ID: 31MAY2016A6A_128.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.529	1.657		54.2	50.0	8.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.155	1.151		49.8	50.0	-0.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.300	1.368		46.5	44.2	5.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.128	1.187		52.6	50.0	5.3	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.260		54.8	50.0	9.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9366	0.9590		48.4	47.3	2.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.027	1.071		52.1	50.0	4.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.8834		50.7	47.6	6.5	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.235	1.266		49.0	47.8	2.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8639	0.8514		49.3	50.0	-1.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.257	1.302		51.8	50.0	3.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7937	0.8455		53.3	50.0	6.5	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.8309		49.1	48.2	1.8	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.035		50.2	50.0	0.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8376	0.8600		51.3	50.0	2.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.115	1.125		50.5	50.0	0.9	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.9220		51.1	50.0	2.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.597		53.3	50.0	6.5	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.472	1.704		57.9	50.0	15.8	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_128.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Jun-2016 09:35:32 ALS Bottle#: 13 Worklist Smp#: 54
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5 CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Jun-2016 11:33:33 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 02-Jun-2016 10:20:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.803	-0.009		1300502	53.3		107	16715	
2 Perfluorobutyric acid										
212.9 > 169.0	5.791	5.806	-0.015	1.000	2154753	54.2		108	90129	
D 3 13C5-PFPeA										
267.9 > 223.0	6.960	6.968	-0.008		2935257	46.2		92.4	26434	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.960	6.970	-0.010	1.000	3377587	49.8		99.6	698	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.092	7.099	-0.007	1.000	1872491	46.5		105		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.092	7.099	-0.007	1.000	1872491	NC			334	
298.9 > 99.0	7.095	7.099	-0.004	1.000	933500		2.01(0.00-0.00)		5385	
D 6 13C2 PFHxA										
315.0 > 270.0	8.247	8.252	-0.005		3219721	52.5		105	13569	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.247	8.253	-0.006	1.000	3822697	52.6		105	1278	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.493	9.494	-0.001	1.000	3915404	54.8		110	23421	
D 8 13C4-PFHpA										
367.0 > 322.0	9.493	9.495	-0.002		3107621	45.3		90.5	16263	
D 11 18O2 PFHxS										
403.0 > 84.0	9.531	9.532	-0.001		1464466	47.5		100	111546	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.531	9.533	-0.002	1.000	1404349	NC			2114	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.531	9.533	-0.002	1.000	1404349	48.4		102		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.614	10.612	0.002		3309616	45.5		91.0	69711	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.614	10.612	0.002	1.000	3543038	52.1		104	2259	
413.0 > 169.0	10.614	10.612	0.002	1.000	1261379		2.81(0.00-0.00)		1708	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.623	10.622	0.001	1.000	1592345	NC			8687	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.623	10.622	0.001	1.000	1592345	50.7		106		
D 16 13C4 PFOS										
503.0 > 80.0	11.568	11.568	0.0		1810039	45.6		95.4	122551	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.577	11.571	0.006	1.000	2292290	49.0		103	731	
499.0 > 99.0	11.577	11.571	0.006	1.000	1279514		1.79(0.00-0.00)		1972	
D 17 13C5 PFNA										
468.0 > 423.0	11.586	11.589	-0.003		3113047	46.7		93.4	215174	
18 Perfluorononanoic acid										
463.0 > 419.0	11.594	11.589	0.005	1.000	2650500	49.3		98.6	33459	
D 19 13C2 PFDA										
515.0 > 470.0	12.414	12.423	-0.009		2345659	44.6		89.1	57209	
20 Perfluorodecanoic acid										M
513.0 > 469.0	12.414	12.423	-0.009	1.000	3053081	51.8		104	4185	M
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.031	13.018	0.013	1.000	4409543	53.3		107	3925	
D 23 13C8 FOSA										
506.0 > 78.0	13.031	13.019	0.012		5215201	41.6		83.2	5929	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.076	13.081	-0.005	1.000	1516527	49.1		102		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.076	13.081	-0.005	1.000	1516527	NC			42281	
D 26 13C2 PFUnA										
565.0 > 520.0	13.120	13.124	-0.004		3389036	45.1		90.1	25339	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.120	13.124	-0.004	1.000	3508870	50.2		100	26283	
D 28 13C2 PFDoA										
615.0 > 570.0	13.703	13.718	-0.015		4151182	45.8		91.5	22556	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.703	13.718	-0.015	1.000	3569829	51.3		103	4491	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.197	14.220	-0.023	1.000	4671656	50.5		101	2793	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.648	14.643	0.005		3728759	46.0		92.0	8611	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.648	14.644	0.004	1.000	3827284	51.1		102	1407	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.220	15.223	-0.003		5881585	46.7		93.4	7874	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.220	15.223	-0.003	1.000	6627676	53.3		107	4639	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.466	15.493	-0.027	1.000	7074423	57.9		116	3846	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L5_00018 Amount Added: 1.00 Units: mL

Report Date: 02-Jun-2016 11:33:35 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_128.d

Injection Date: 02-Jun-2016 09:35:32 Instrument ID: A6

Lims ID: CCV L5

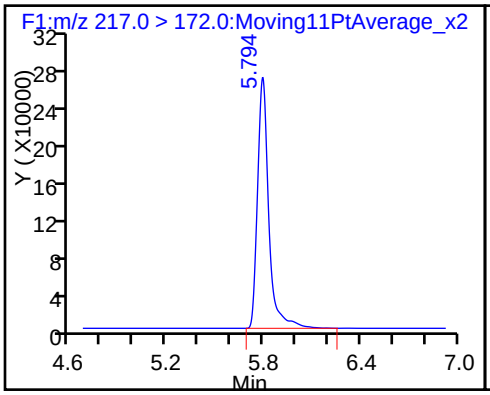
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 54

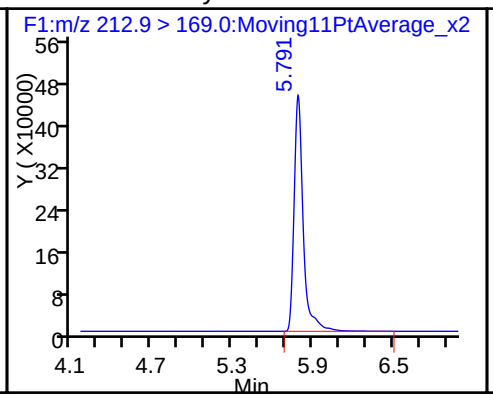
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

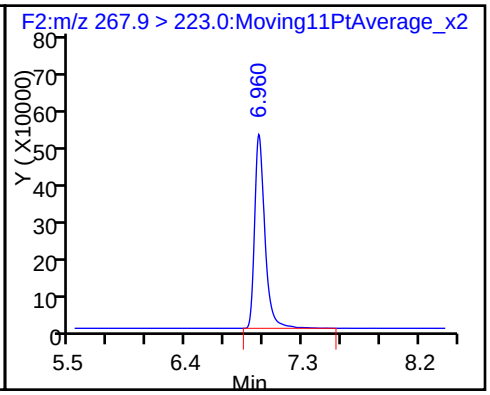
D 1 13C4 PFBA



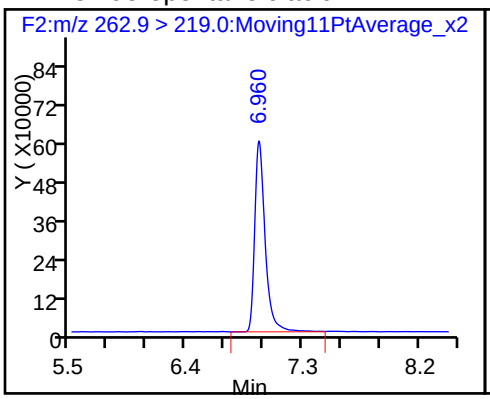
2 Perfluorobutyric acid



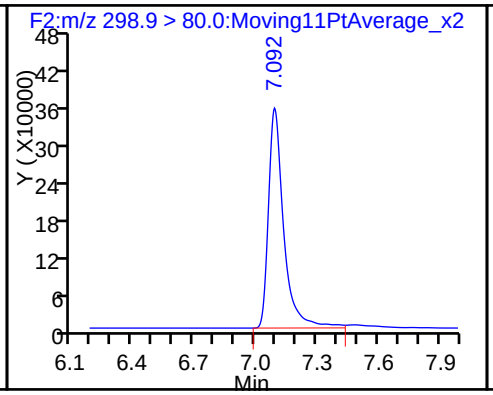
D 3 13C5-PFPeA



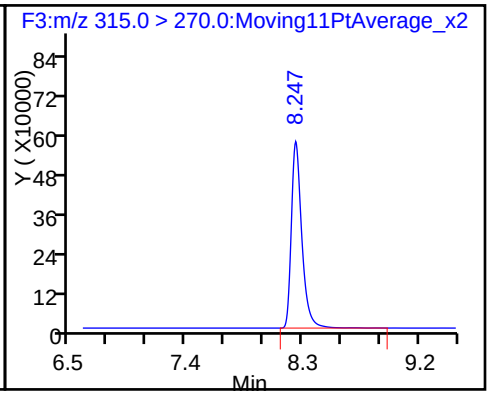
4 Perfluoropentanoic acid



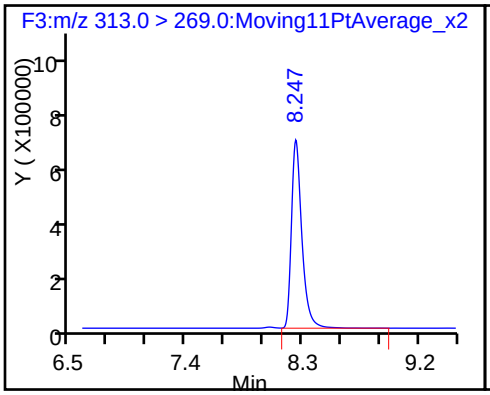
40 Perfluorobutanesulfonic acid



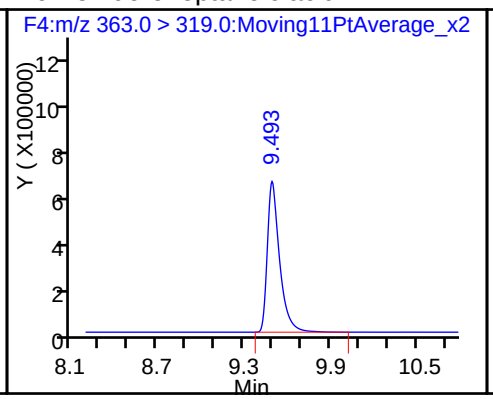
D 6 13C2 PFHxA



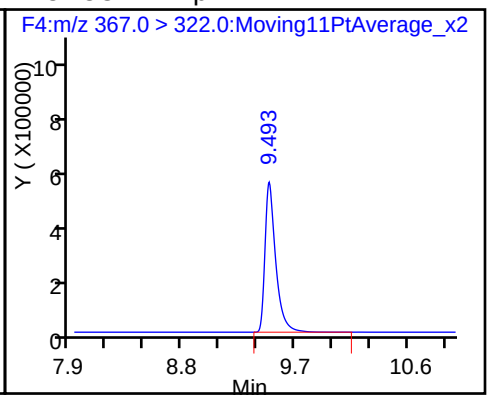
7 Perfluorohexanoic acid



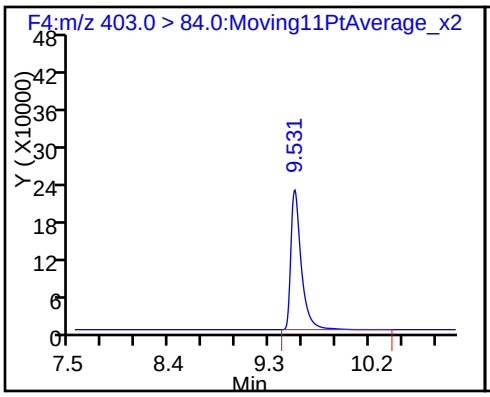
9 Perfluoroheptanoic acid



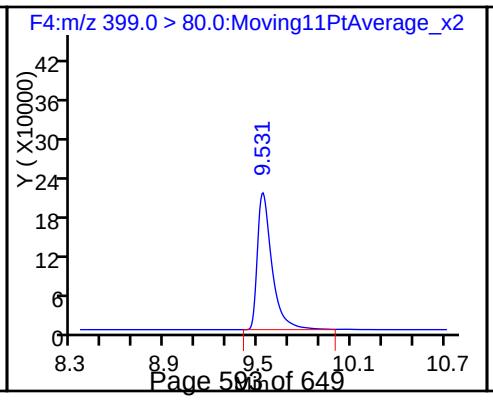
D 8 13C4-PFHpA



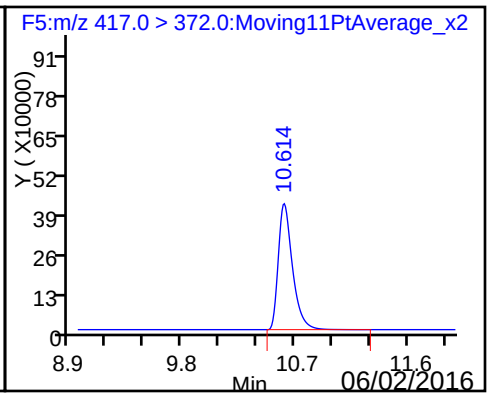
D 11 18O2 PFHxS



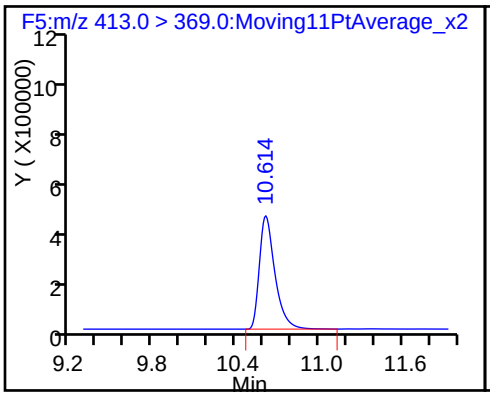
41 Perfluorohexanesulfonic acid



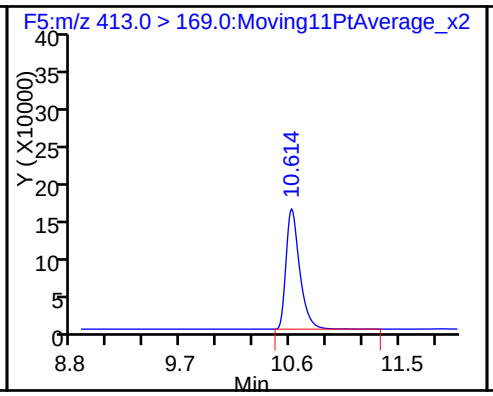
D 12 13C4 PFOA



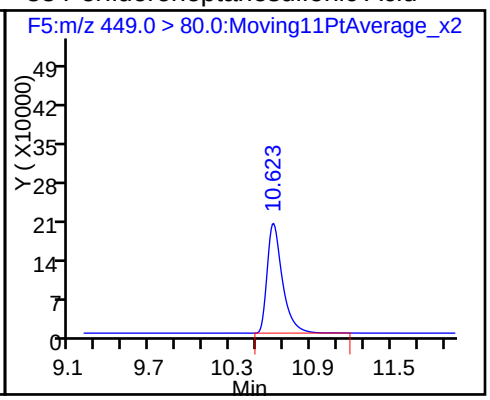
13 Perfluorooctanoic acid



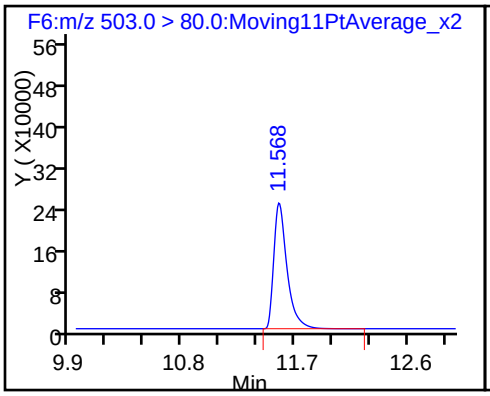
13 Perfluorooctanoic acid



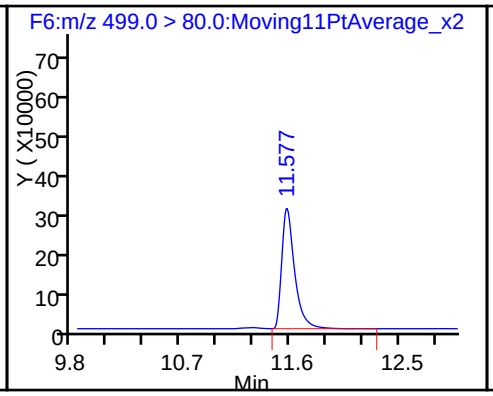
38 Perfluoroheptanesulfonic Acid



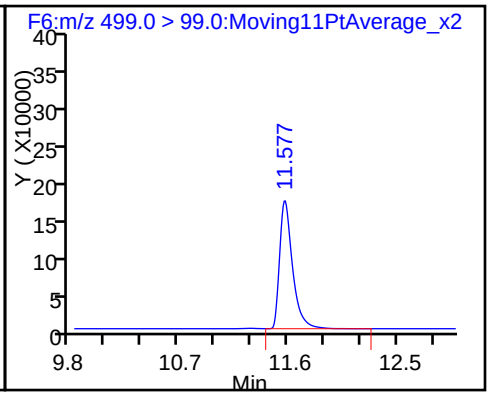
D 16 13C4 PFOS



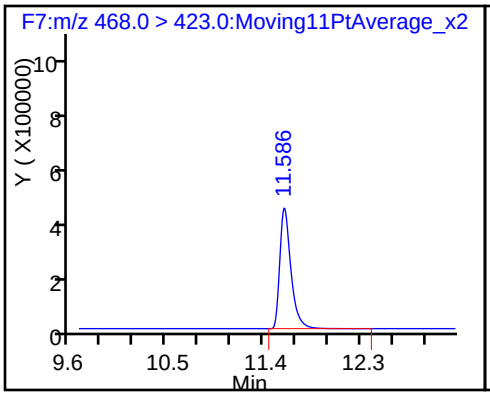
15 Perfluorooctane sulfonic acid



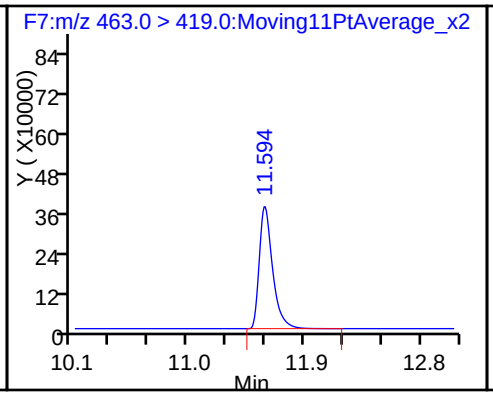
15 Perfluorooctane sulfonic acid



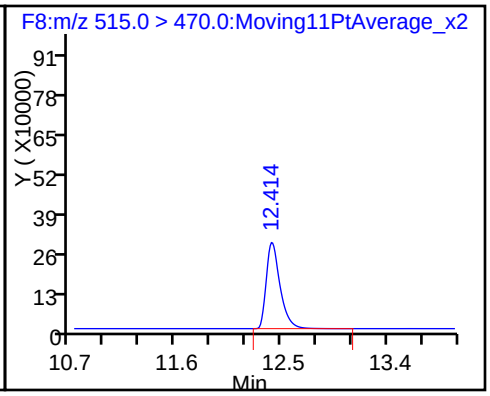
D 17 13C5 PFNA



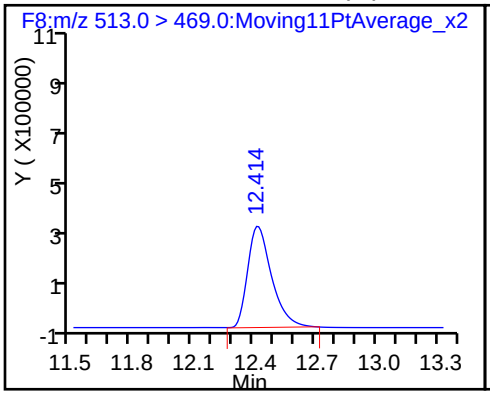
18 Perfluorononanoic acid



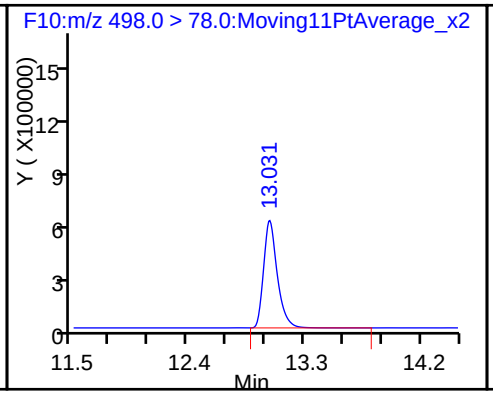
D 19 13C2 PFDA



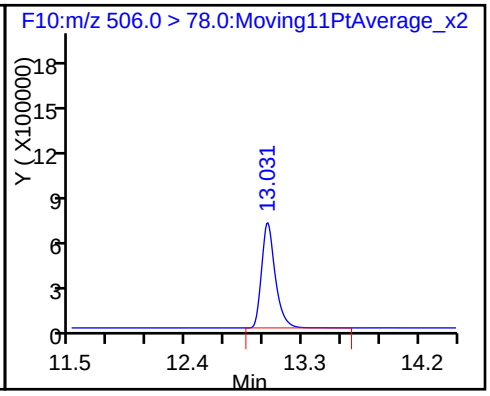
20 Perfluorodecanoic acid (M)



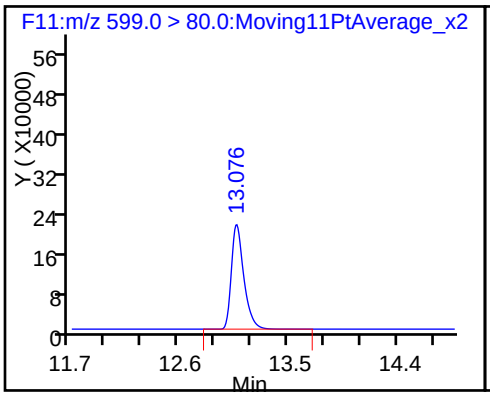
24 Perfluorooctane Sulfonamide



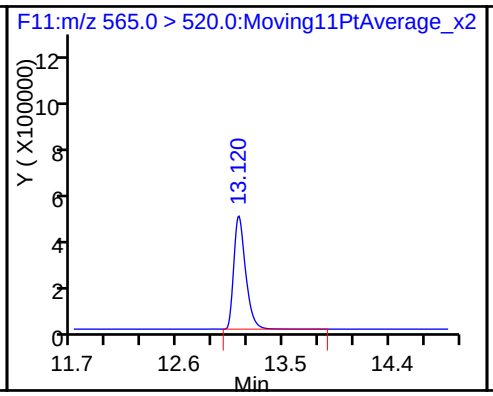
D 23 13C8 FOSA



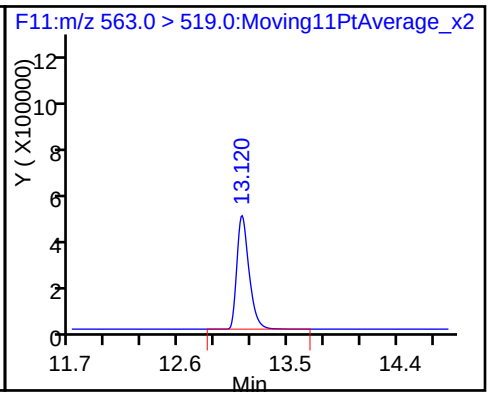
39 Perfluorodecane Sulfonic acid



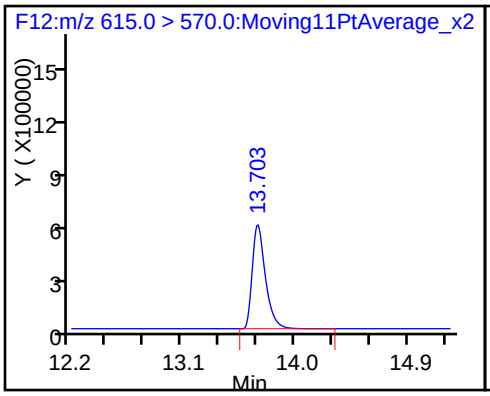
D 26 13C2 PFUnA



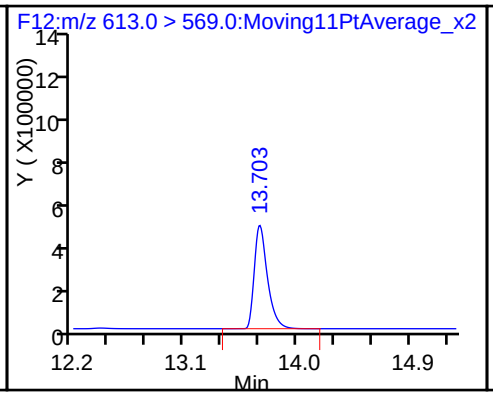
27 Perfluoroundecanoic acid



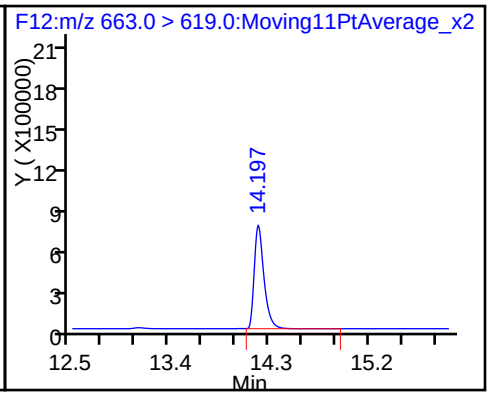
D 28 13C2 PFDoA



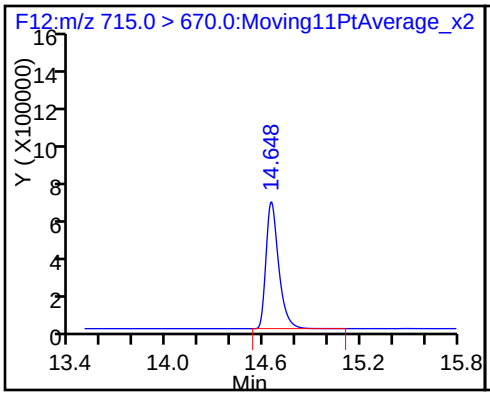
29 Perfluorododecanoic acid



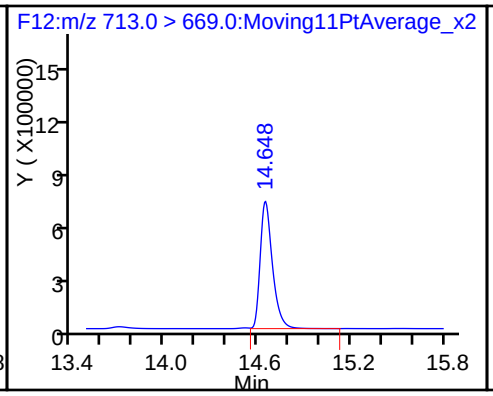
30 Perfluorotridecanoic acid



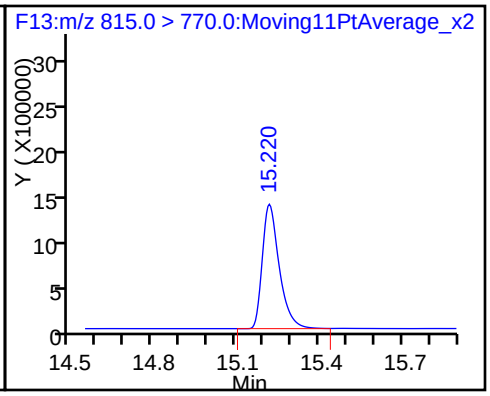
D 33 13C2-PFTeDA



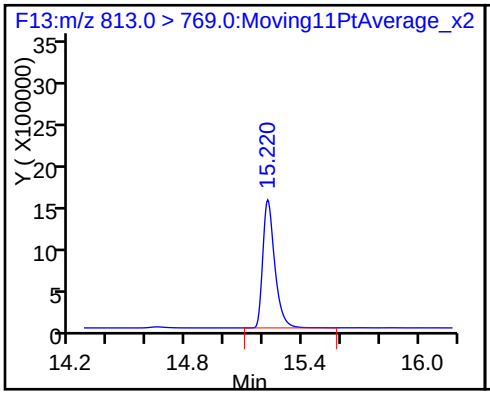
32 Perfluorotetradecanoic acid



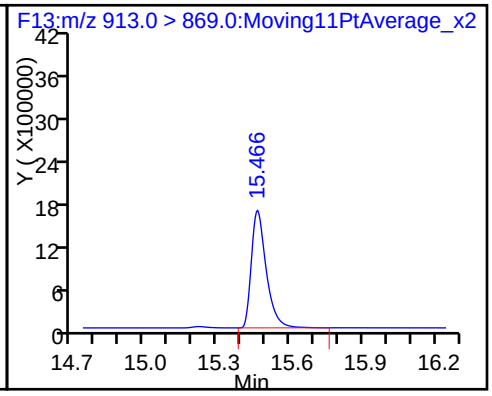
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

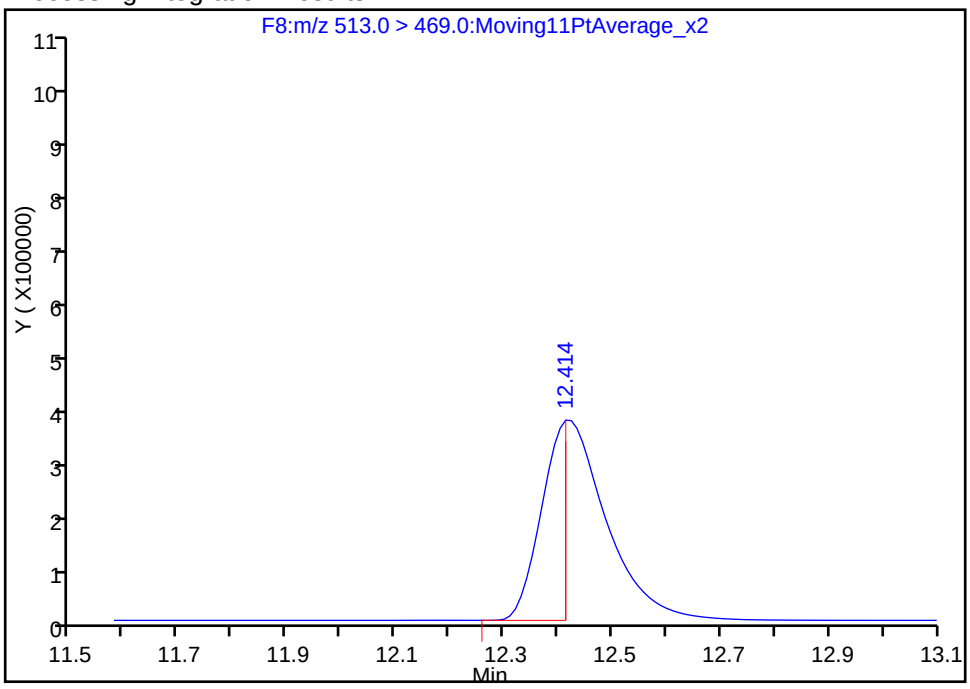
Data File: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_128.d
Injection Date: 02-Jun-2016 09:35:32 Instrument ID: A6
Lims ID: CCV L5
Client ID:
Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 54
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F8:MRM

20 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 1

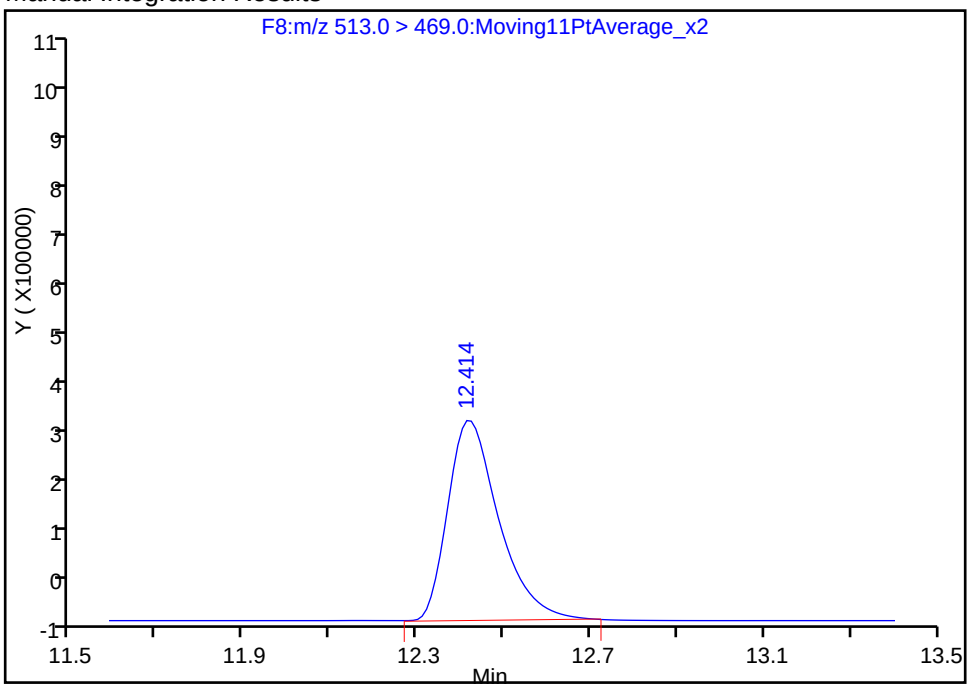
Processing Integration Results

RT: 12.41
Area: 1131741
Amount: 19.194988
Amount Units: ng/ml



Manual Integration Results

RT: 12.41
Area: 3053081
Amount: 51.782036
Amount Units: ng/ml



Reviewer: barnettj, 02-Jun-2016 10:20:28
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Lab Sample ID: CCV 320-112205/58 Calibration Date: 06/02/2016 11:00

Instrument ID: A6 Calib Start Date: 05/31/2016 12:51

GC Column: Acquity ID: 2.10(mm) Calib End Date: 05/31/2016 14:59

Lab File ID: 31MAY2016A6A_132.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.529	1.748		57.2	50.0	14.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.155	1.112		48.1	50.0	-3.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.300	1.413		48.0	44.2	8.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.128	1.208		53.5	50.0	7.1	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.207		52.5	50.0	5.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.9366	1.027		51.9	47.3	9.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.027	1.010		49.2	50.0	-1.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.8521		48.9	47.6	2.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.235	1.352		52.3	47.8	9.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8639	0.9200		53.2	50.0	6.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.257	1.285		51.1	50.0	2.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7937	0.8824		55.6	50.0	11.2	25.0
Perfluorodecanesulfonic acid (PFDS)	L1ID		0.8256		48.7	48.2	1.1	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.042		50.5	50.0	1.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8376	0.8873		53.0	50.0	5.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.115	1.158		51.9	50.0	3.8	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.9188		51.0	50.0	1.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.664		55.5	50.0	11.1	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.472	1.412		47.9	50.0	-4.1	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_132.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Jun-2016 11:00:30 ALS Bottle#: 13 Worklist Smp#: 58
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5 CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Jun-2016 11:48:51 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK018

First Level Reviewer: barnettj Date: 02-Jun-2016 11:48:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.794	5.803	-0.009		1167069	47.9		95.7	420	
2 Perfluorobutyric acid										
212.9 > 169.0	5.794	5.806	-0.012	1.000	2039616	57.2		114	22697	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.968	-0.013		2908991	45.8		91.6	6373	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.960	6.970	-0.010	1.000	3233717	48.1		96.2	654	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.088	7.099	-0.011	1.000	1703044	48.0		109		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.088	7.099	-0.011	1.000	1703044	NC			217	
298.9 > 99.0	7.088	7.099	-0.011	1.000	867758		1.96(0.00-0.00)		838	
D 6 13C2 PFHxA										
315.0 > 270.0	8.241	8.252	-0.011		3063632	50.0		100.0	13835	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.247	8.253	-0.006	1.000	3699585	53.5		107	1806	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.487	9.494	-0.007	1.000	3696802	52.5		105	30957	
D 8 13C4-PFHpA										
367.0 > 322.0	9.487	9.495	-0.008		3064032	44.6		89.3	7921	
D 11 18O2 PFHxS										
403.0 > 84.0	9.524	9.532	-0.008		1290101	41.8		88.4	19400	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.524	9.533	-0.009	1.000	1324727	NC			564	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.524	9.533	-0.009	1.000	1324727	51.9		110		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.605	10.612	-0.007		3302313	45.4		90.8	19180	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.605	10.612	-0.007	1.000	3335182	49.2		98.4	1507	
413.0 > 169.0	10.605	10.612	-0.007	1.000	1184064		2.82(0.00-0.00)		1889	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.614	10.622	-0.008	1.000	1458339	NC			10091	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.614	10.622	-0.008	1.000	1458339	48.9		103		
D 16 13C4 PFOS										
503.0 > 80.0	11.569	11.568	0.001		1718744	43.3		90.6	13042	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.569	11.571	-0.002	1.000	2324042	52.3		109	696	
499.0 > 99.0	11.569	11.571	-0.002	1.000	1276175		1.82(0.00-0.00)		2421	
D 17 13C5 PFNA										
468.0 > 423.0	11.586	11.589	-0.003		2835142	42.5		85.1	48800	
18 Perfluorononanoic acid										
463.0 > 419.0	11.586	11.589	-0.003	1.000	2608373	53.2		106	24297	
D 19 13C2 PFDA										
515.0 > 470.0	12.424	12.423	0.001		2310385	43.9		87.8	138660	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.424	12.423	0.001	1.000	2968215	51.1		102	59338	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.040	13.018	0.022	1.000	4423804	55.6		111	3277	
D 23 13C8 FOSA										
506.0 > 78.0	13.040	13.019	0.021		5013242	40.0		80.0	6485	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.085	13.081	0.004	1.000	1430776	48.7		101		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.085	13.081	0.004	1.000	1430776	NC			67150	
D 26 13C2 PFUnA										
565.0 > 520.0	13.129	13.124	0.005		3307924	44.0		88.0	8784	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.129	13.124	0.005	1.000	3445505	50.5		101	15454	
D 28 13C2 PFDoA										
615.0 > 570.0	13.712	13.718	-0.006		4016920	44.3		88.5	45673	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.712	13.718	-0.006	1.000	3564154	53.0		106	5516	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.205	14.220	-0.015	1.000	4651636	51.9		104	4032	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.635	14.643	-0.008		3749647	46.2		92.5	13994	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.635	14.644	-0.009	1.000	3690766	51.0		102	1555	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.205	15.223	-0.018		5819418	46.2		92.4	8589	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.205	15.223	-0.018	1.000	6682641	55.5		111	4309	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.461	15.493	-0.032	1.000	5670370	47.9		95.9	3373	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00018 Amount Added: 1.00 Units: mL

Report Date: 02-Jun-2016 11:48:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160602-31259.b\31MAY2016A6A_132.d

Injection Date: 02-Jun-2016 11:00:30 Instrument ID: A6

Lims ID: CCV L5

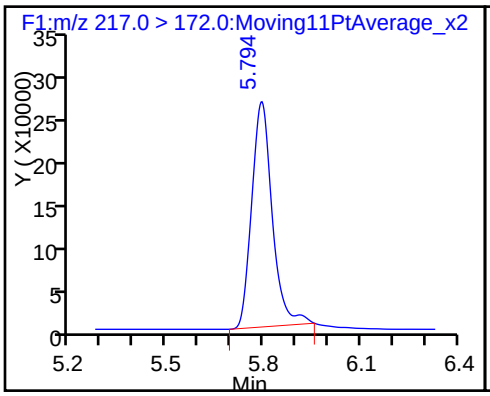
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 58

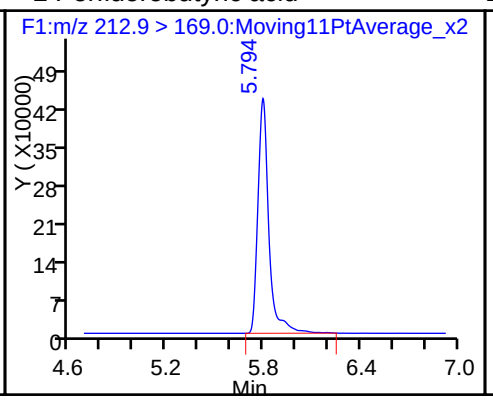
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

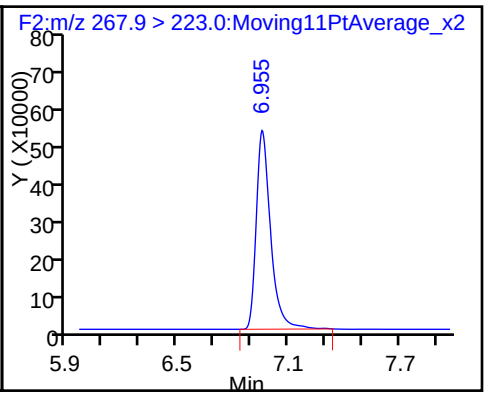
D 1 13C4 PFBA



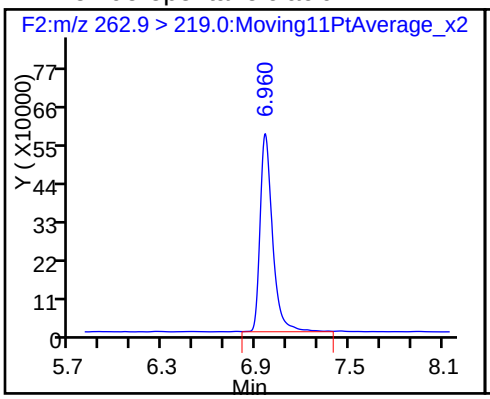
2 Perfluorobutyric acid



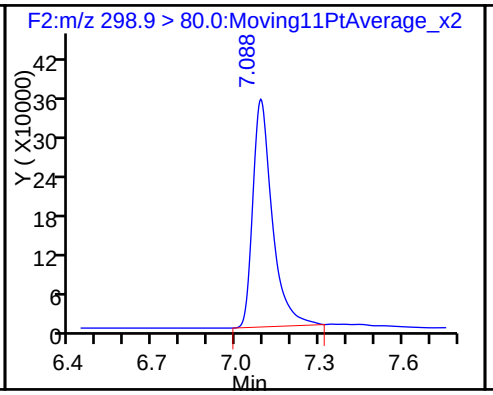
D 3 13C5-PFPeA



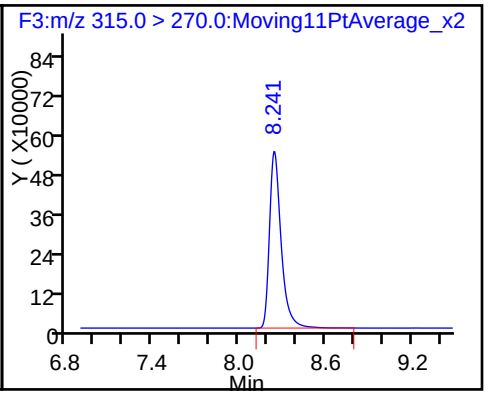
4 Perfluoropentanoic acid



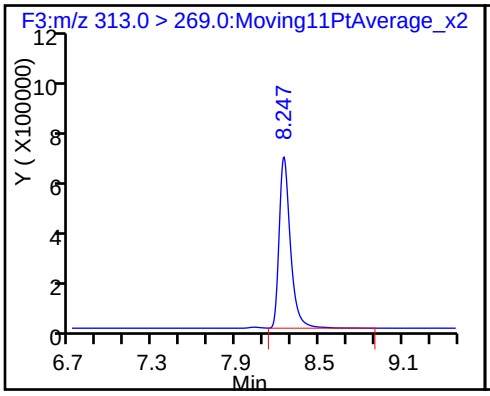
40 Perfluorobutanesulfonic acid



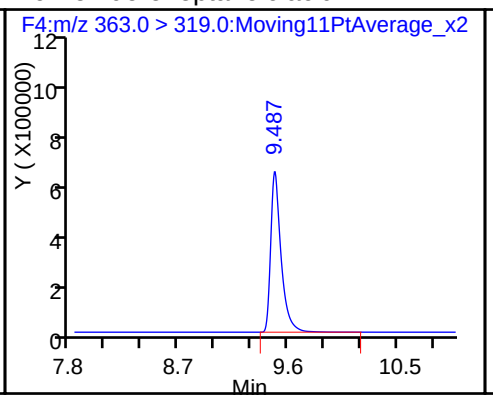
D 6 13C2 PFHxA



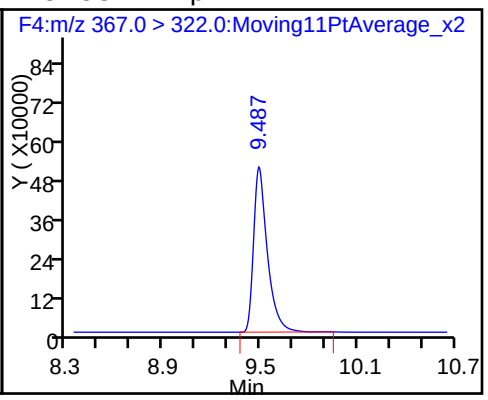
7 Perfluorohexanoic acid



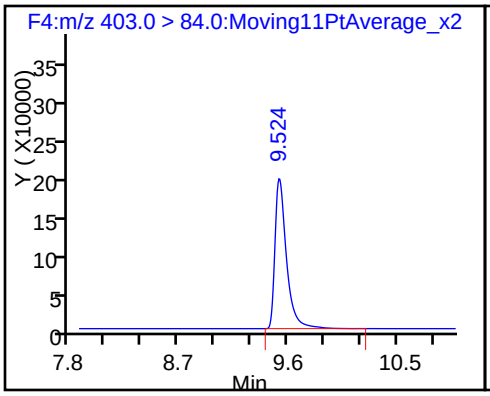
9 Perfluoroheptanoic acid



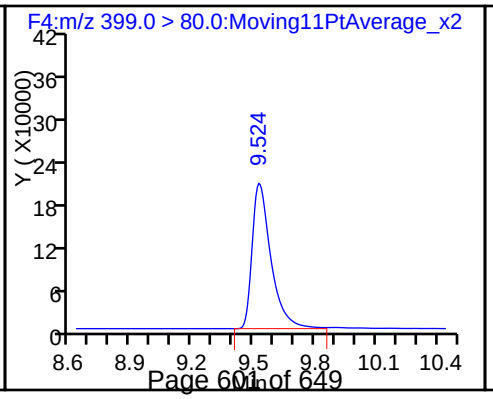
D 8 13C4-PFHpA



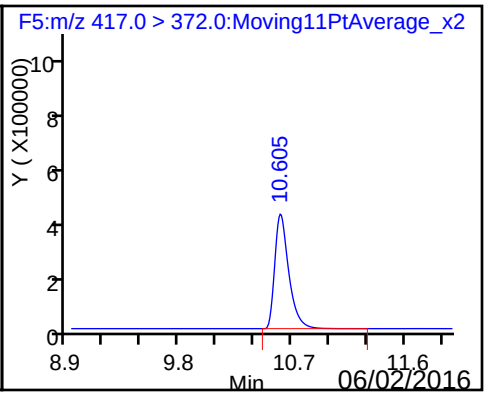
D 11 18O2 PFHxS



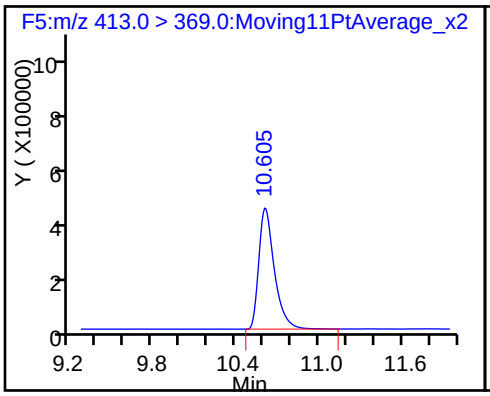
41 Perfluorohexanesulfonic acid



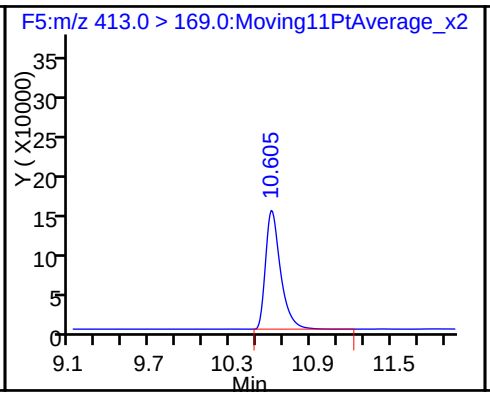
D 12 13C4 PFOA



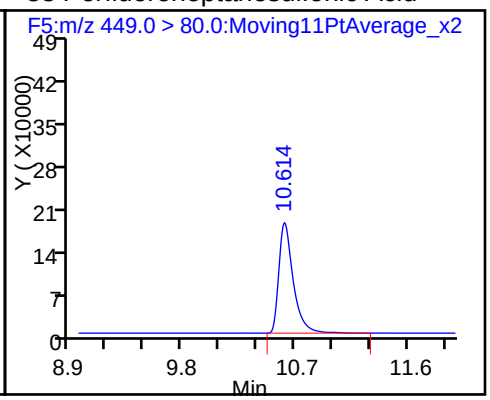
13 Perfluorooctanoic acid



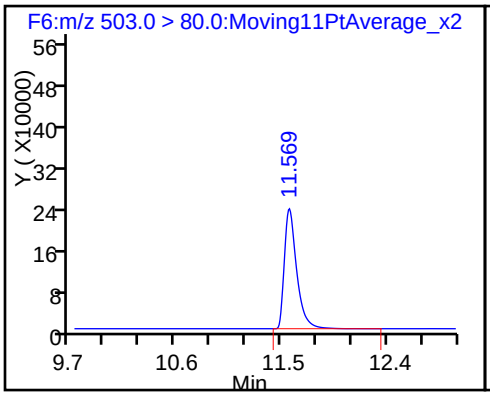
13 Perfluorooctanoic acid



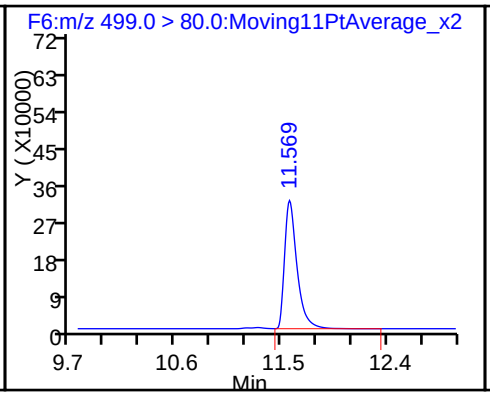
38 Perfluoroheptanesulfonic Acid



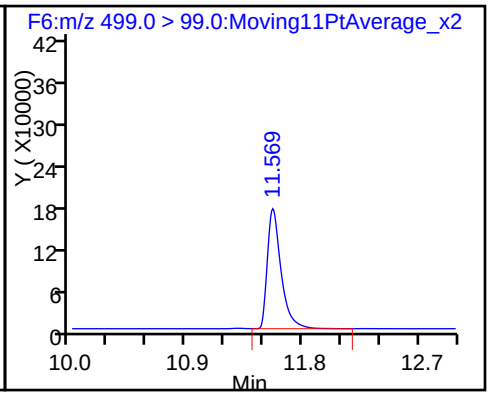
D 16 13C4 PFOS



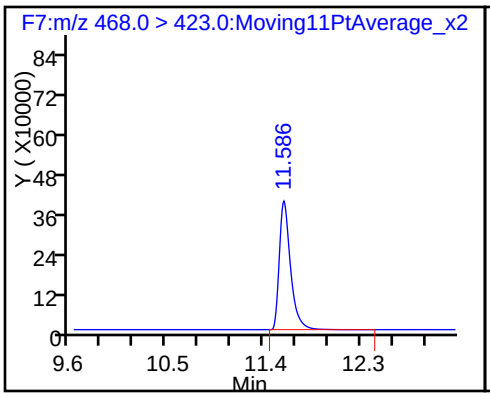
15 Perfluorooctane sulfonic acid



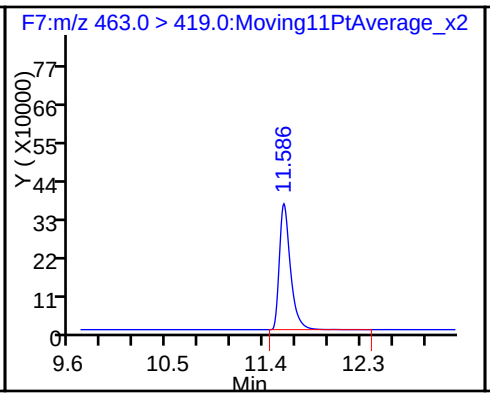
15 Perfluorooctane sulfonic acid



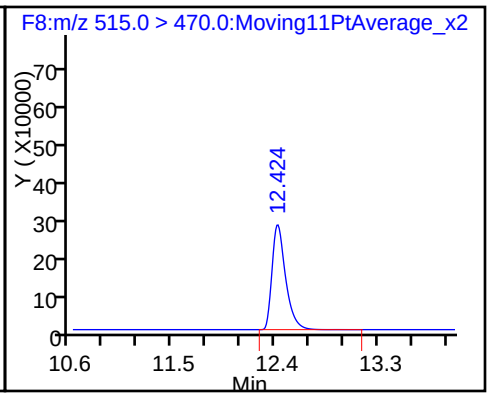
D 17 13C5 PFNA



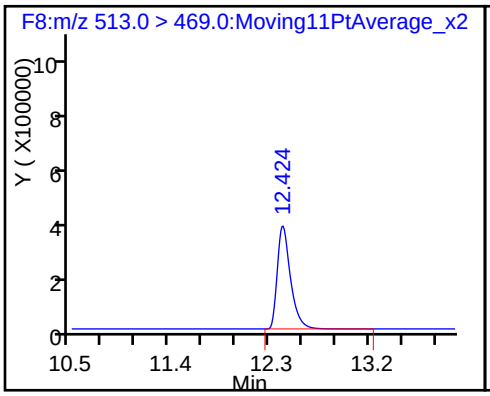
18 Perfluorononanoic acid



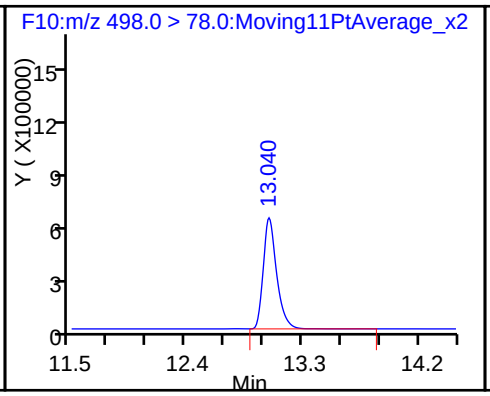
D 19 13C2 PFDA



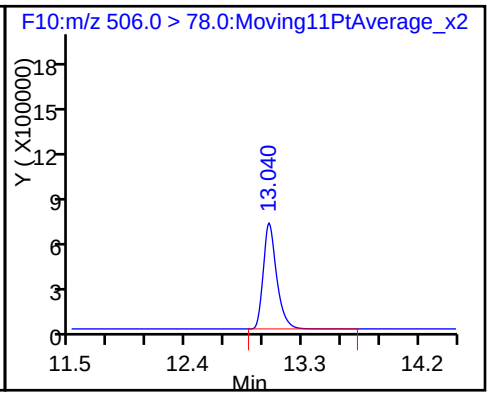
20 Perfluorodecanoic acid



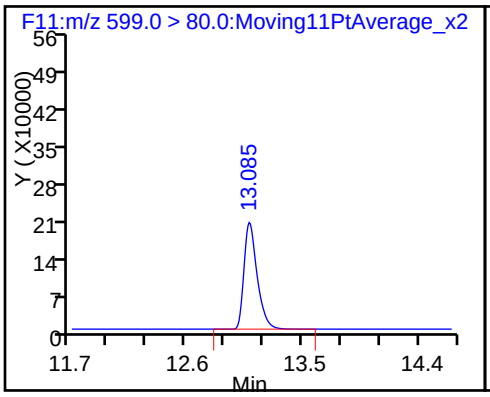
24 Perfluorooctane Sulfonamide



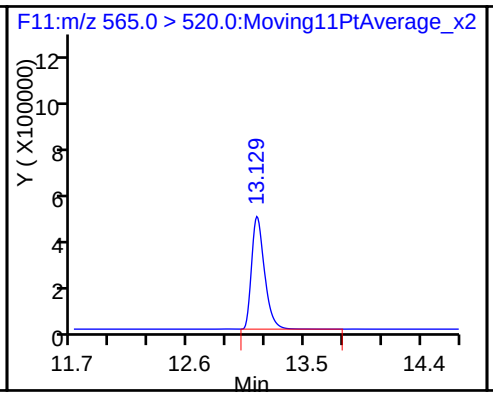
D 23 13C8 FOSA



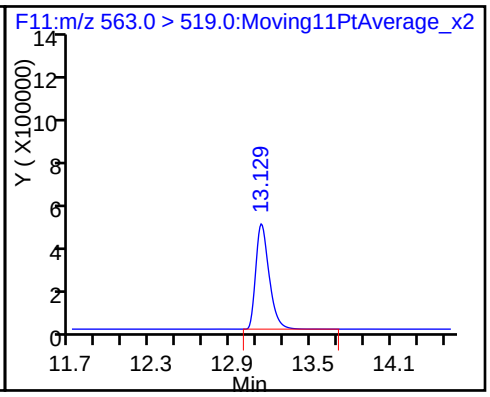
39 Perfluorodecane Sulfonic acid



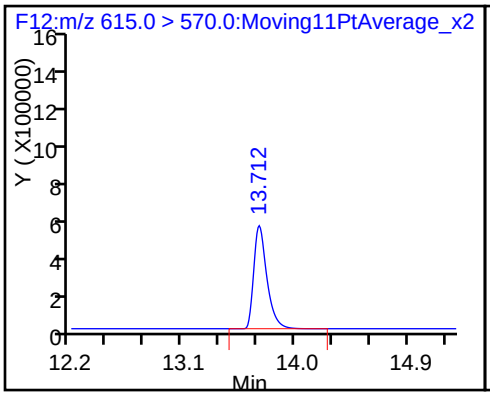
D 26 13C2 PFUnA



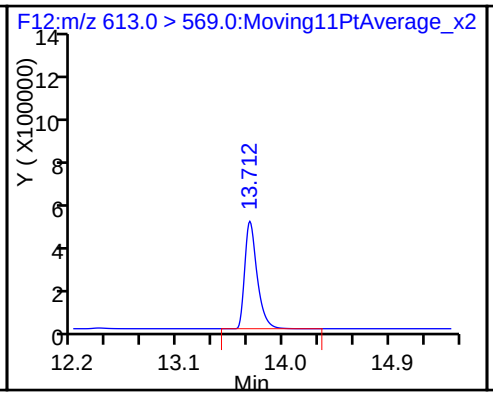
27 Perfluoroundecanoic acid



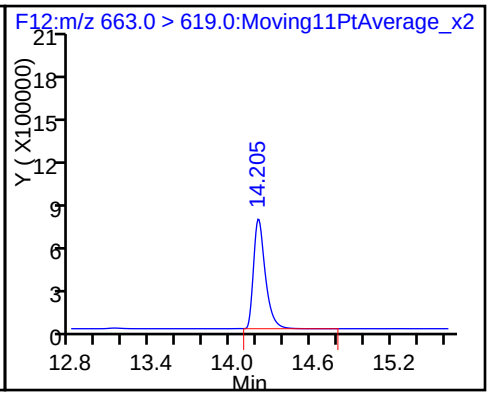
D 28 13C2 PFDoA



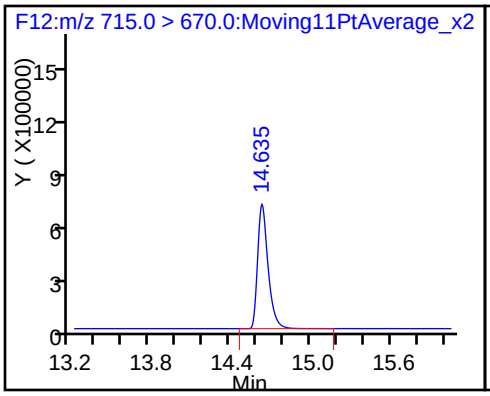
29 Perfluorododecanoic acid



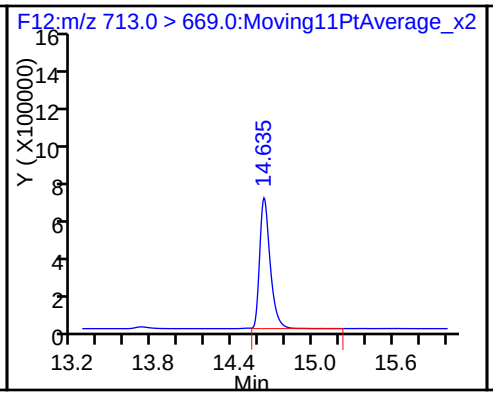
30 Perfluorotridecanoic acid



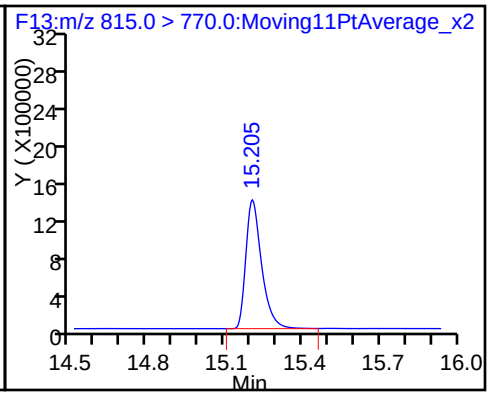
D 33 13C2-PFTeDA



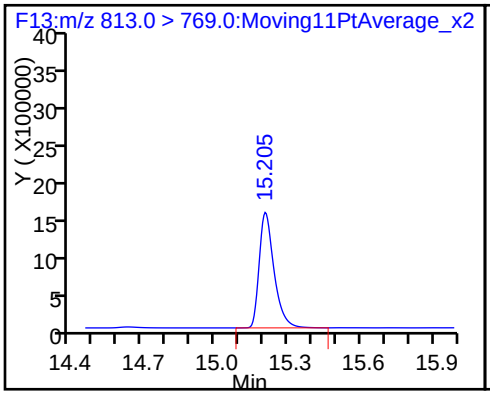
32 Perfluorotetradecanoic acid



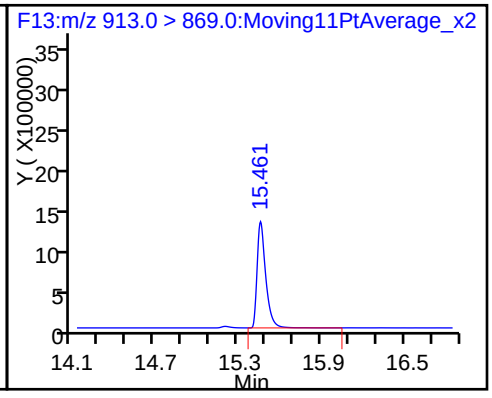
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-111374/1-A

Matrix: Water Lab File ID: 31MAY2016A6A_017.d

Analysis Method: WS-LC-0025 Date Collected:

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 500.00(mL) Date Analyzed: 05/31/2016 17:56

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	127		25-150
STL00991	13C4 PFOS	125		25-150
STL00995	13C5 PFNA	121		25-150
STL00990	13C4 PFOA	132		25-150
STL01892	13C4-PFHpA	124		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_017.d
Lims ID: MB 320-111374/1-A
Client ID:
Sample Type: MB
Inject. Date: 31-May-2016 17:56:46 ALS Bottle#: 1 Worklist Smp#: 15
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: MB 320-111374/1-A BOX 83
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:51:05 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.797	5.803	-0.006		1419092	58.2		116	48900	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.806	-0.006	1.000	5332	0.1229			110	
D 3 13C5-PFPeA										
267.9 > 223.0	6.955	6.968	-0.013		3721260	58.6		117	19282	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.905	6.970	-0.065	1.000	753	0.008757			0.3	
D 6 13C2 PFHxA										
315.0 > 270.0	8.236	8.252	-0.016		3574285	58.3		117	26572	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.470	9.494	-0.024	1.000	1841	-0.2746			36.3	
D 8 13C4-PFHpA										
367.0 > 322.0	9.475	9.495	-0.020		4252664	62.0		124	146600	
D 11 18O2 PFHxS										
403.0 > 84.0	9.510	9.532	-0.022		1856288	60.2		127	15227	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.505	9.533	-0.028	1.000	3000	NC			20.4	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.505	9.533	-0.028	1.000	3000	0.0816				
D 12 13C4 PFOA										
417.0 > 372.0	10.595	10.612	-0.017		4812462	66.1		132	16230	
D 16 13C4 PFOS										
503.0 > 80.0	11.543	11.568	-0.025		2381892	60.0		125	169358	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.543	11.571	-0.028	1.000	3019	0.0490			180	
D 17 13C5 PFNA										
468.0 > 423.0	11.570	11.589	-0.019		4042912	60.6		121	40766	
D 19 13C2 PFDA										
515.0 > 470.0	12.404	12.423	-0.019		3151338	59.9		120	34971	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
20 Perfluorodecanoic acid										
513.0 > 469.0	12.414	12.423	-0.009	1.000	14069	0.1776			876	
D 23 13C8 FOSA										
506.0 > 78.0	13.004	13.019	-0.015		1749740	14.0		27.9	6781	
D 26 13C2 PFUnA										
565.0 > 520.0	13.102	13.124	-0.022		4276760	56.9		114	28911	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.102	13.124	-0.022	1.000	44502	0.1031			549	
D 28 13C2 PFDoA										
615.0 > 570.0	13.694	13.718	-0.024		4266226	47.0		94.0	32297	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.205	14.220	-0.015	1.000	6265	0.0658			7.5	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.622	14.643	-0.021		3211658	39.6		79.2	11664	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.622	14.644	-0.022	1.000	33712	0.1574			17.0	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.200	15.223	-0.023		4966619	39.4		78.8	16534	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.200	15.223	-0.023	1.000	140086	0.1102			273	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.466	15.493	-0.027	1.000	32099	0.2555			29.6	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 01-Jun-2016 14:51:37 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_017.d

Injection Date: 31-May-2016 17:56:46 Instrument ID: A6

Lims ID: MB 320-111374/1-A

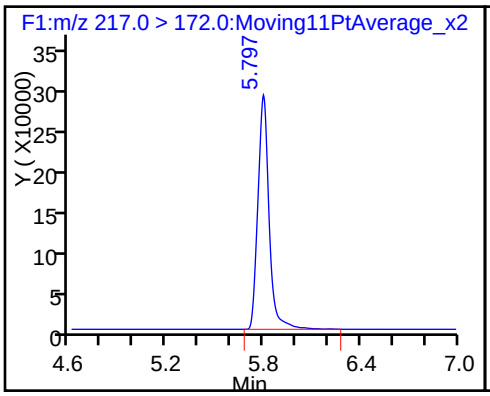
Client ID:

Operator ID: JRB ALS Bottle#: 1 Worklist Smp#: 15

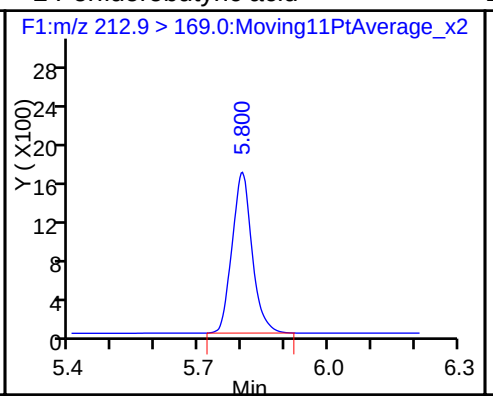
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

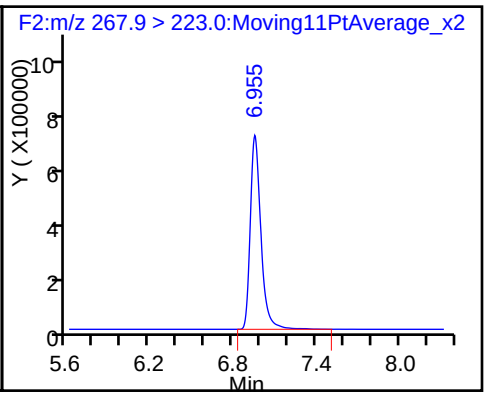
D 1 13C4 PFBA



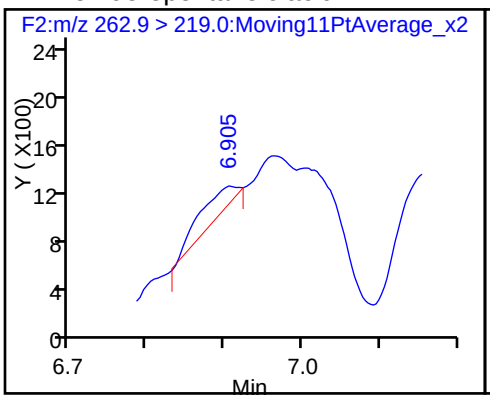
2 Perfluorobutyric acid



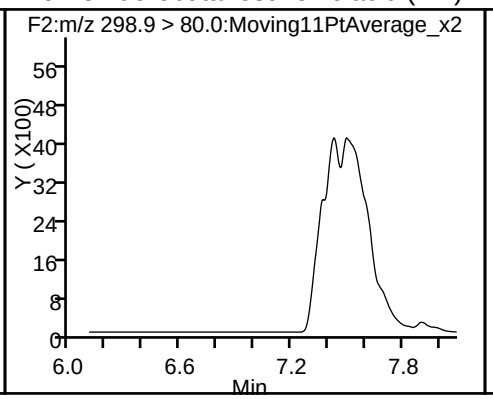
D 3 13C5-PFPeA



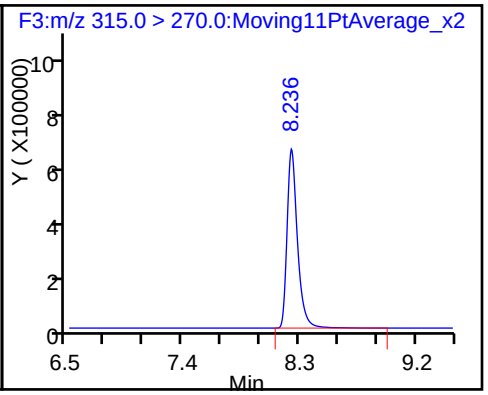
4 Perfluoropentanoic acid



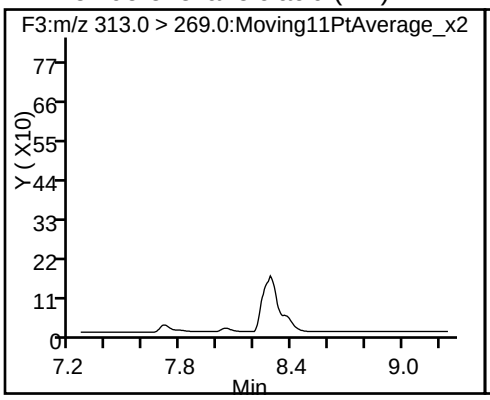
40 Perfluorobutanesulfonic acid (ND)



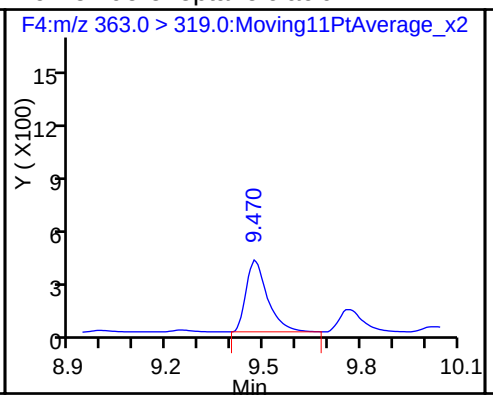
D 6 13C2 PFHxA



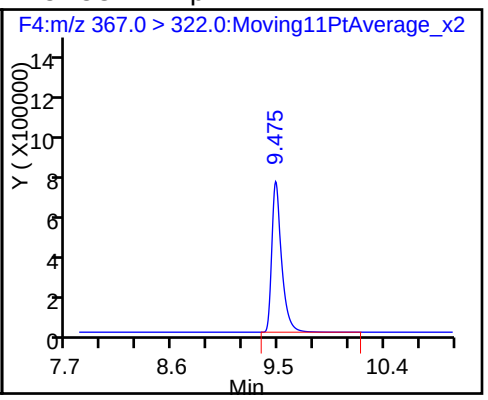
7 Perfluorohexanoic acid (ND)



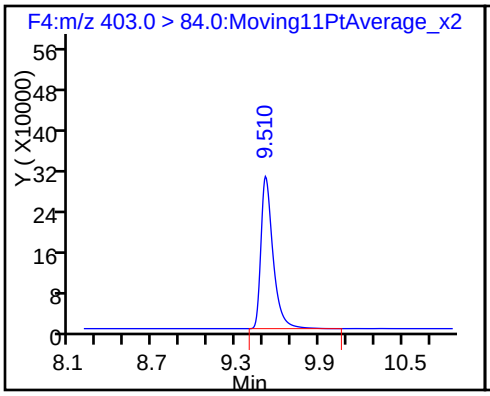
9 Perfluoroheptanoic acid



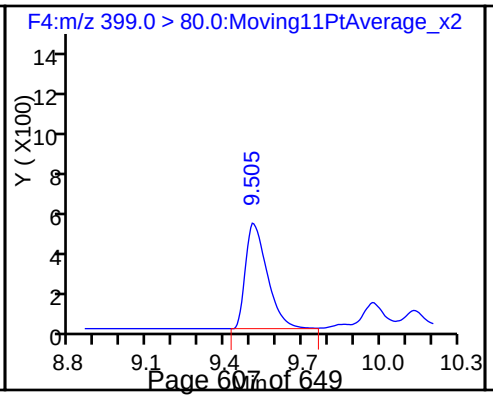
D 8 13C4-PFHpA



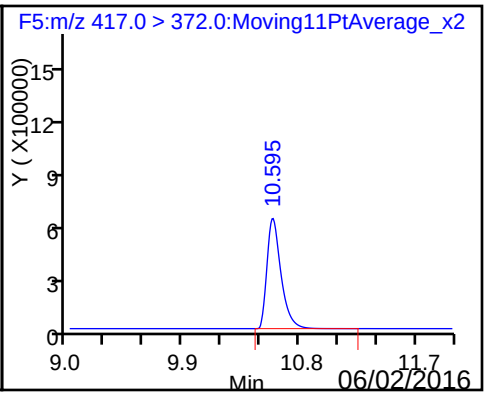
D 11 18O2 PFHxS



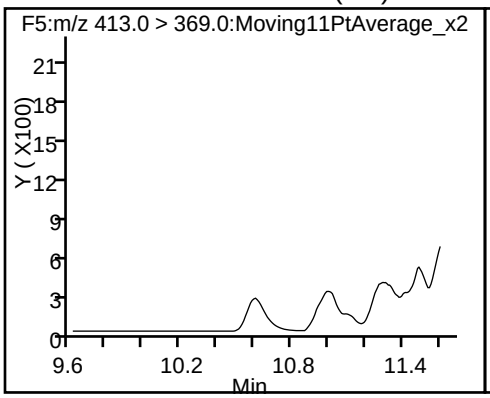
41 Perfluorohexanesulfonic acid



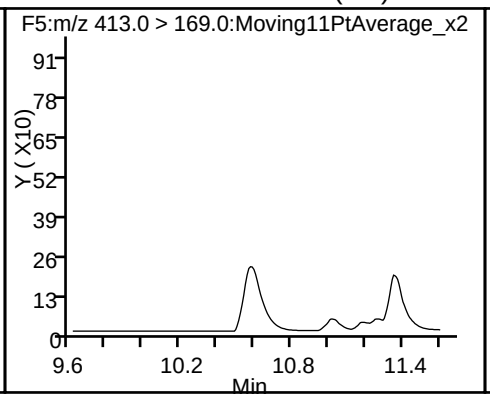
D 12 13C4 PFOA



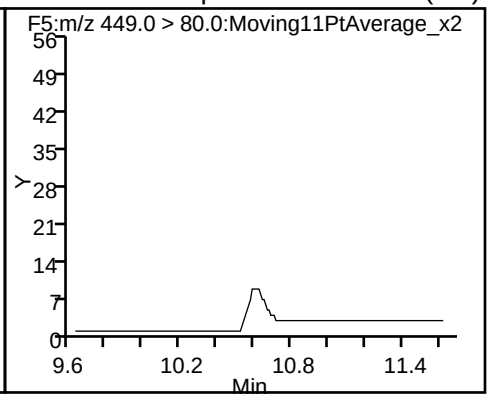
13 Perfluorooctanoic acid (ND)



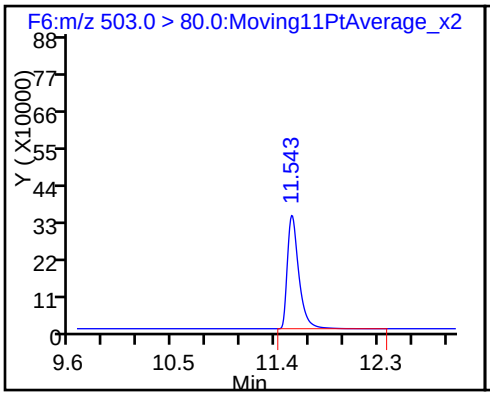
13 Perfluorooctanoic acid (ND)



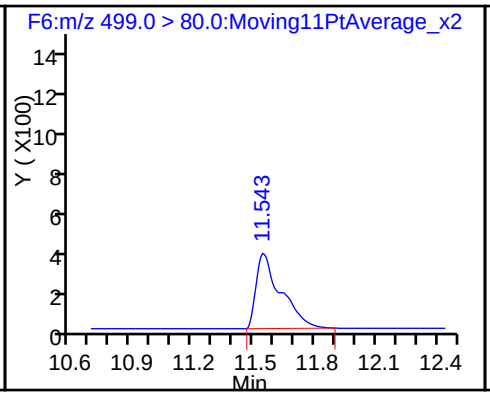
38 Perfluoroheptanesulfonic Acid (ND)



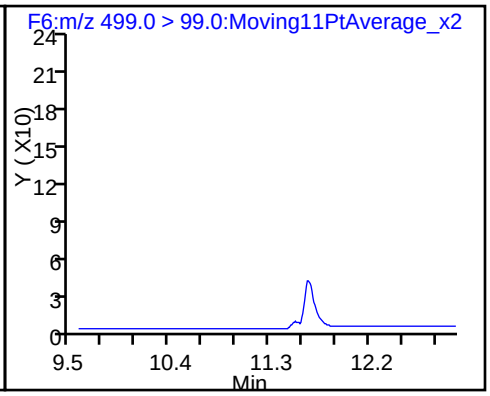
D 16 13C4 PFOS



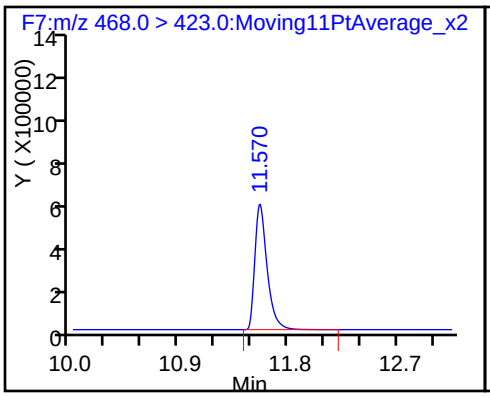
15 Perfluorooctane sulfonic acid



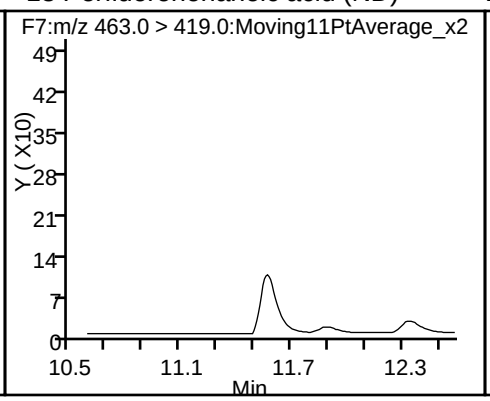
15 Perfluorooctane sulfonic acid



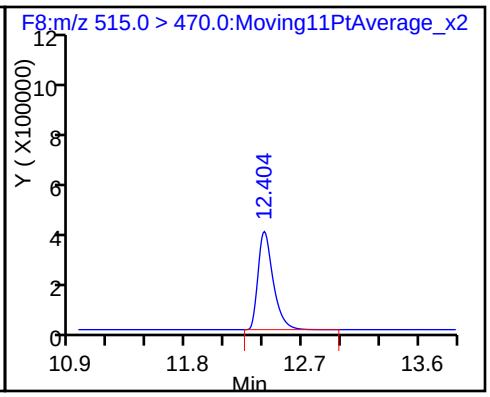
D 17 13C5 PFNA



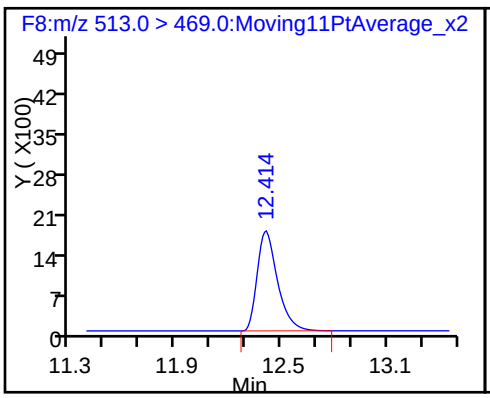
18 Perfluorononanoic acid (ND)



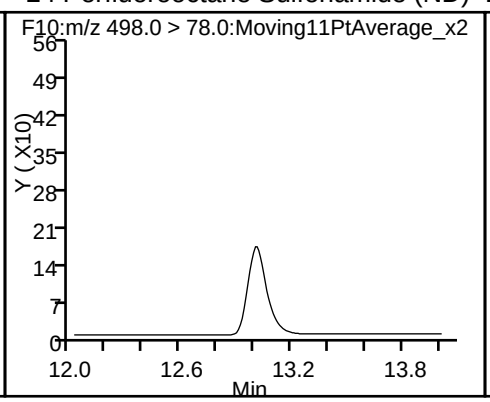
D 19 13C2 PFDA



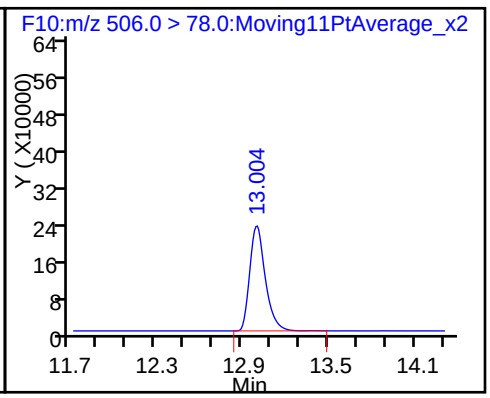
20 Perfluorodecanoic acid



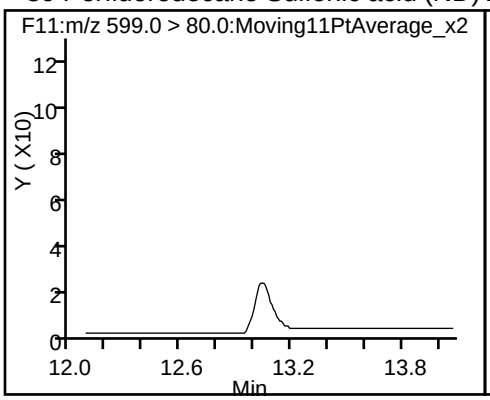
24 Perfluorooctane Sulfonamide (ND)



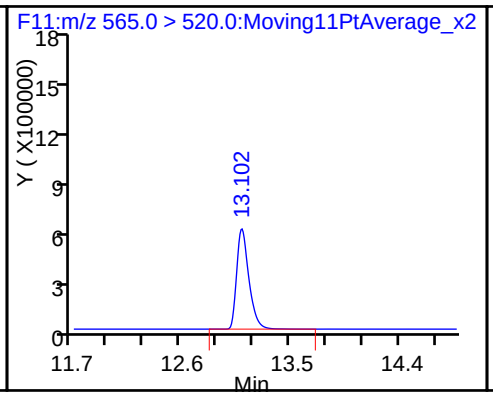
D 23 13C8 FOSA



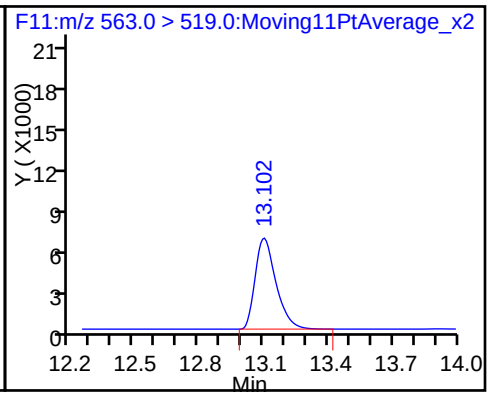
39 Perfluorodecane Sulfonic acid (ND)



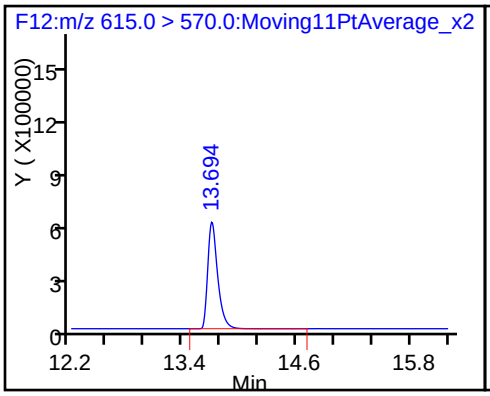
D 26 13C2 PFUnA



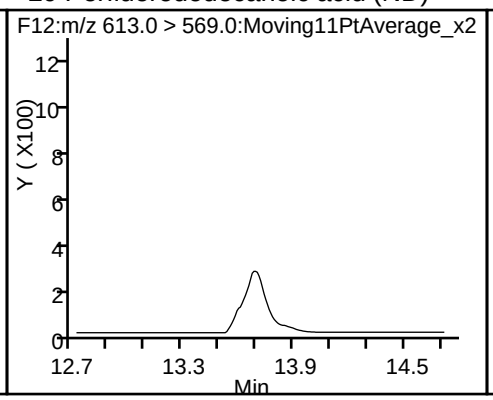
27 Perfluoroundecanoic acid



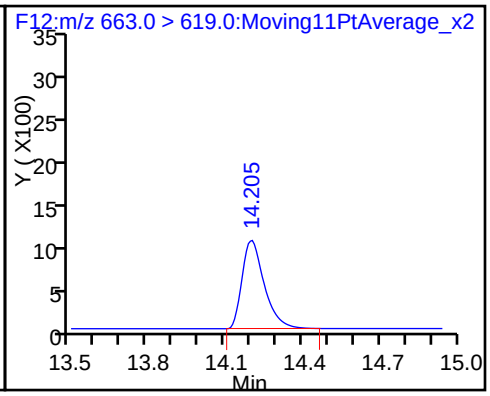
D 28 13C2 PFDoA



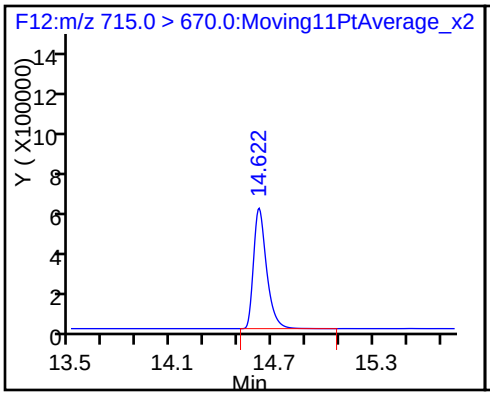
29 Perfluorododecanoic acid (ND)



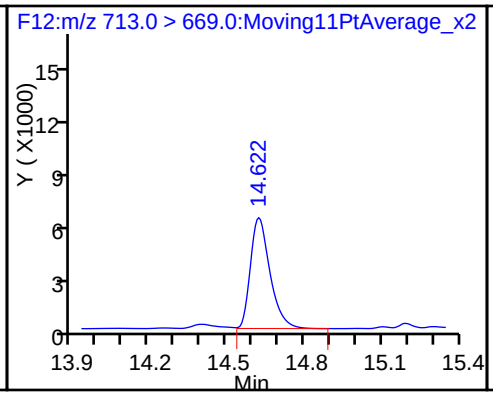
30 Perfluorotridecanoic acid



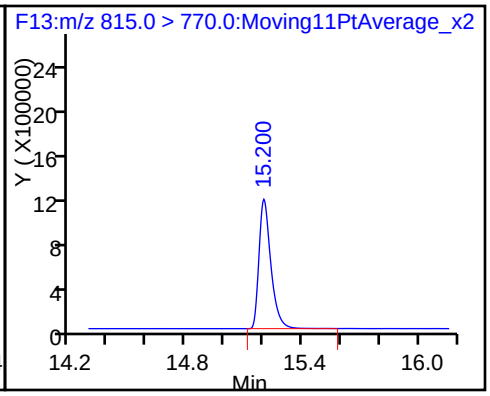
D 33 13C2-PFTeDA



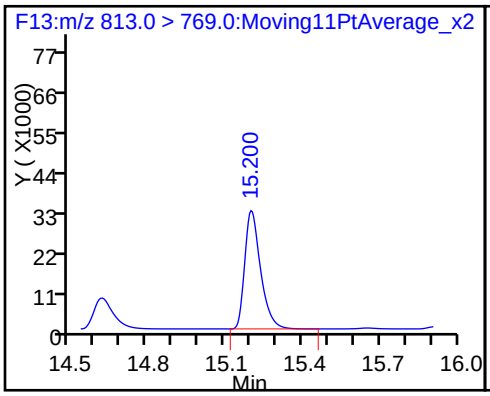
32 Perfluorotetradecanoic acid



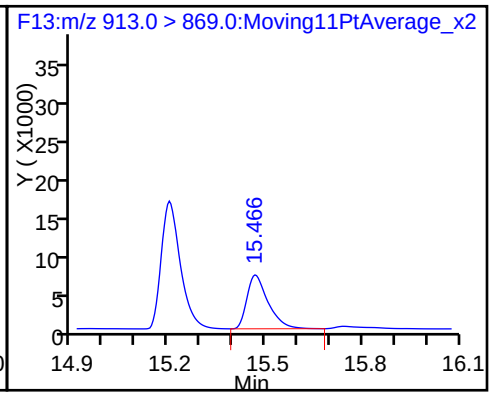
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-19022-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-111374/2-A

Matrix: Water | Lab File ID: 31MAY2016A6A_018.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 05/25/2016 15:20

Sample wt/vol: 500.00(mL) | Date Analyzed: 05/31/2016 18:18

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0361		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0339		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0348		0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0308		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0308	M	0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0385	M	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	114		25-150
STL00991	13C4 PFOS	111		25-150
STL00995	13C5 PFNA	110		25-150
STL00990	13C4 PFOA	113		25-150
STL01892	13C4-PFHpA	111		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_018.d
Lims ID: LCS 320-111374/2-A
Client ID:
Sample Type: LCS
Inject. Date: 31-May-2016 18:18:02 ALS Bottle#: 2 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: LCS 320-111374/2-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:51:05 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 01-Jun-2016 11:11:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.800	5.803	-0.003		1279105	52.5		105	27558	
2 Perfluorobutyric acid										
212.9 > 169.0	5.797	5.806	-0.009	1.000	700093	17.9		89.5	17858	
D 3 13C5-PFPeA										
267.9 > 223.0	6.960	6.968	-0.008		3480418	54.8		110	17488	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.964	6.970	-0.006	1.000	1373937	17.1		85.4	533	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.092	7.099	-0.007	1.000	705786	15.4		87.0		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.092	7.099	-0.007	1.000	705786	NC			89.6	
298.9 > 99.0	7.088	7.099	-0.011	1.000	346604		2.04(0.00-0.00)		211	
D 6 13C2 PFHxA										
315.0 > 270.0	8.241	8.252	-0.011		3464376	56.5		113	17438	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.241	8.253	-0.012	1.000	1409938	18.0		90.2	1960	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.481	9.494	-0.013	1.000	1602480	18.0		90.2	18625	
D 8 13C4-PFHpA										
367.0 > 322.0	9.481	9.495	-0.014		3824522	55.7		111	7772	
D 11 18O2 PFHxS										
403.0 > 84.0	9.518	9.532	-0.014		1669723	54.1		114	8969	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.511	9.533	-0.022	1.000	416989	NC			568	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.511	9.533	-0.022	1.000	508960	15.4		84.6		M
D 12 13C4 PFOA										
417.0 > 372.0	10.596	10.612	-0.016		4108767	56.5		113	5337	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.596	10.612	-0.016	1.000	1429723	16.9		84.7	229	
413.0 > 169.0	10.596	10.612	-0.016	1.000	501554		2.85(0.00-0.00)		968	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.605	10.622	-0.017	1.000	612250	NC			40441	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.605	10.622	-0.017	1.000	612250	17.1		89.7		
D 16 13C4 PFOS										
503.0 > 80.0	11.535	11.568	-0.033		2097395	52.8		111	74179	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.535	11.571	-0.036	1.000	1042961	19.2		104	1131	M
499.0 > 99.0	11.535	11.571	-0.036	1.000	473860		2.20(0.00-0.00)		14313	M
D 17 13C5 PFNA										
468.0 > 423.0	11.553	11.589	-0.036		3665252	55.0		110	86198	
18 Perfluorononanoic acid										
463.0 > 419.0	11.561	11.589	-0.028	1.000	1102025	17.4		87.0	78075	
D 19 13C2 PFDA										
515.0 > 470.0	12.404	12.423	-0.019		2835960	53.9		108	68746	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.404	12.423	-0.019	1.000	1325003	18.6		92.9	11448	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	13.004	13.018	-0.014	1.000	389315	20.9		104	17248	
D 23 13C8 FOSA										
506.0 > 78.0	13.004	13.019	-0.015		1176017	9.38		18.8	19251	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.059	13.081	-0.022	1.000	745964	20.7		107		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.059	13.081	-0.022	1.000	745964	NC			53182	
D 26 13C2 PFUnA										
565.0 > 520.0	13.102	13.124	-0.022		4133838	55.0		110	14021	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.102	13.124	-0.022	1.000	1571645	18.2		90.9	13249	
D 28 13C2 PFDoA										
615.0 > 570.0	13.694	13.718	-0.024		5011104	55.2		110	42556	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.694	13.718	-0.024	1.000	1331932	15.9		79.3	2113	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.190	14.220	-0.030	1.000	2010947	18.0		89.9	2199	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.615	14.643	-0.028		4042500	49.9		99.7	16591	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.644	-0.029	1.000	1591069	17.4		87.1	716	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.200	15.223	-0.023		5911642	46.9		93.8	13646	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.205	15.223	-0.018	1.000	2417800	15.4		77.0	3146	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.476	15.493	-0.017	1.000	2832266	19.2		96.0	2835	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Report Date: 01-Jun-2016 14:51:47 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_018.d

Injection Date: 31-May-2016 18:18:02 Instrument ID: A6

Lims ID: LCS 320-111374/2-A

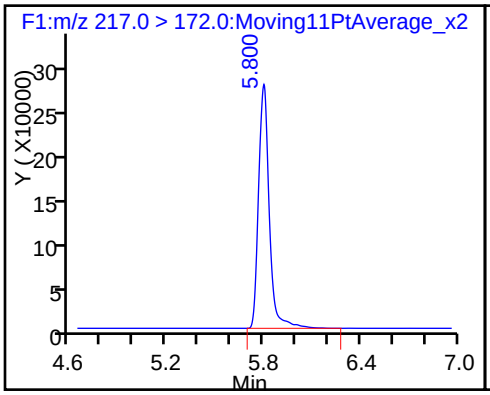
Client ID:

Operator ID: JRB ALS Bottle#: 2 Worklist Smp#: 16

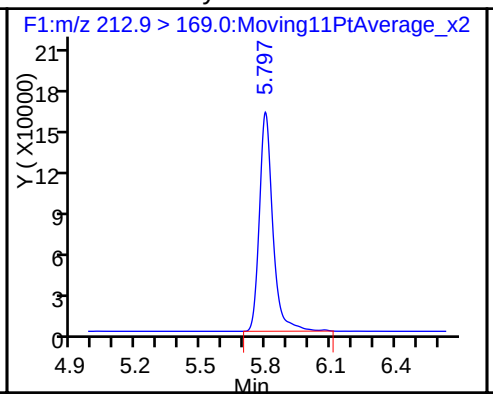
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

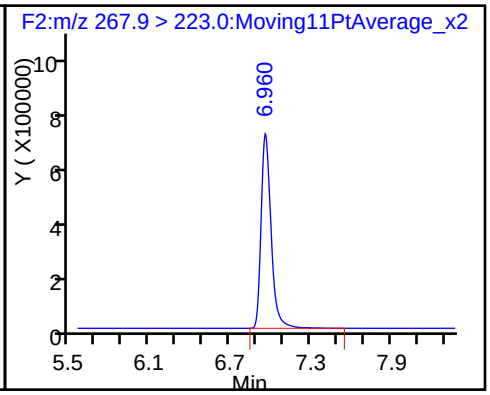
D 1 13C4 PFBA



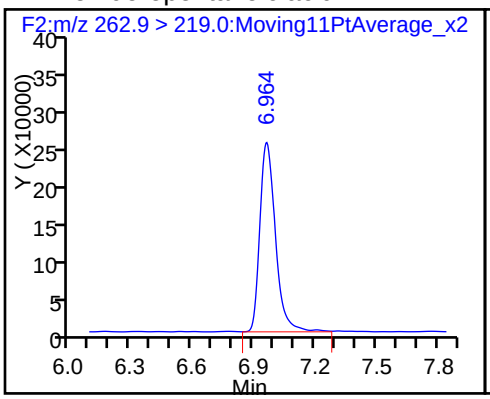
2 Perfluorobutyric acid



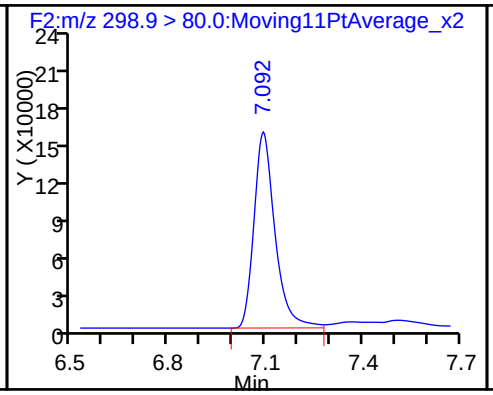
D 3 13C5-PFPeA



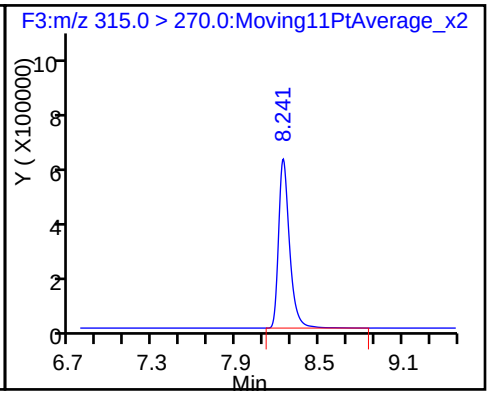
4 Perfluoropentanoic acid



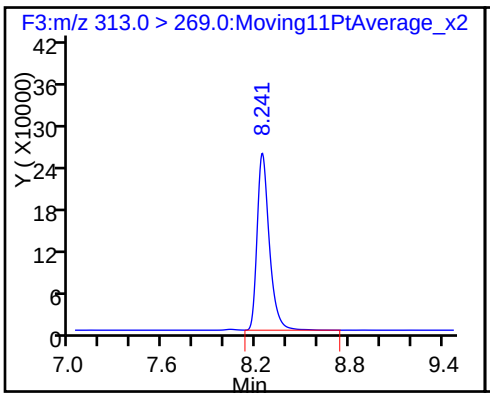
40 Perfluorobutanesulfonic acid



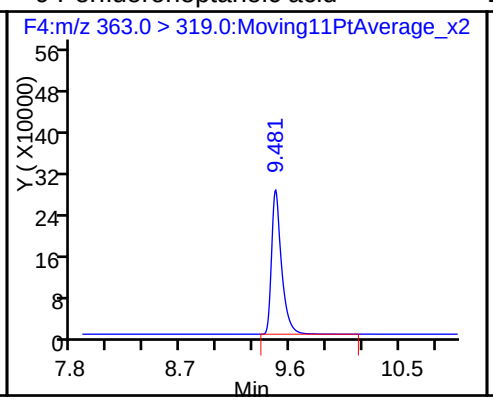
D 6 13C2 PFHxA



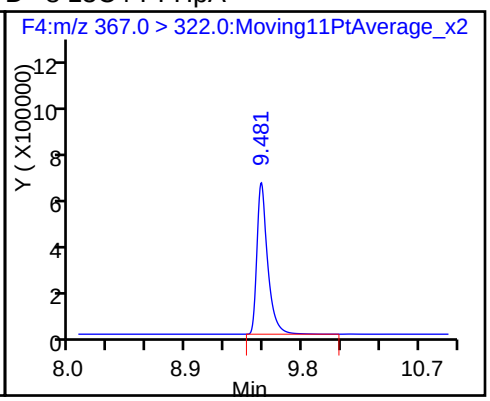
7 Perfluorohexanoic acid



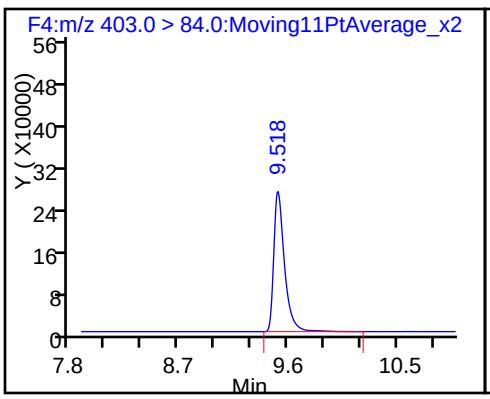
9 Perfluoroheptanoic acid



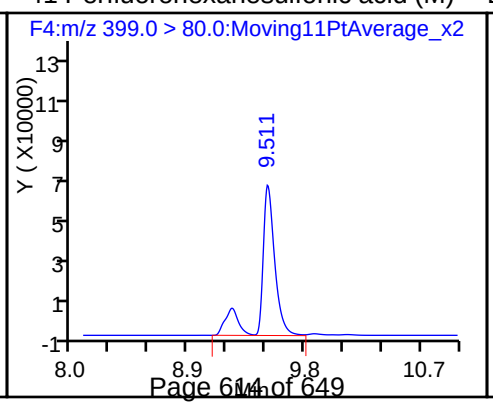
D 8 13C4-PFHpA



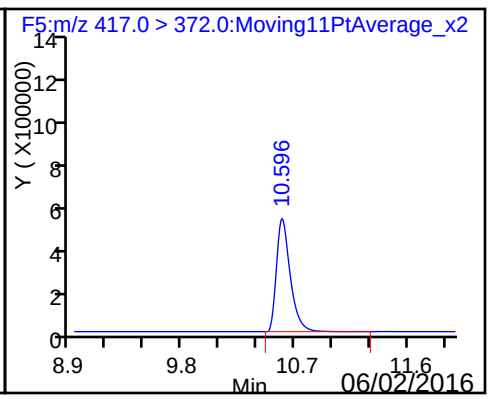
D 11 18O2 PFHxS



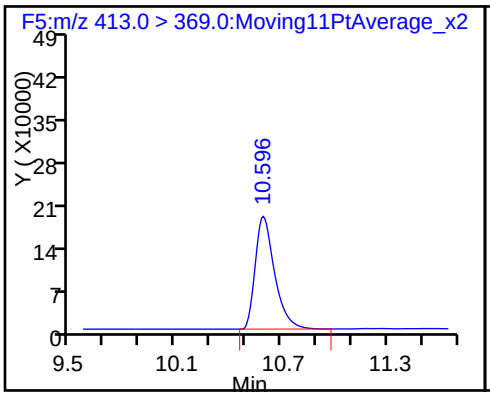
41 Perfluorohexanesulfonic acid (M)



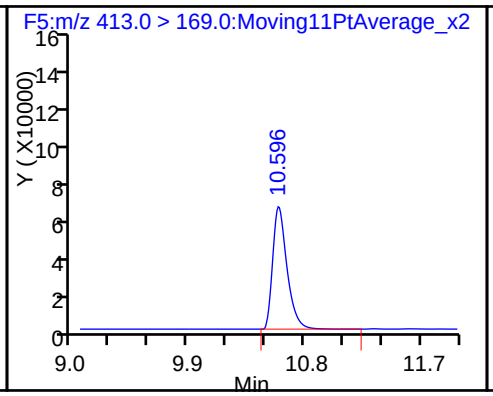
D 12 13C4 PFOA



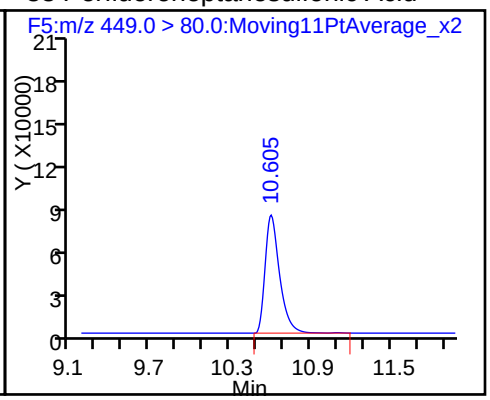
13 Perfluorooctanoic acid



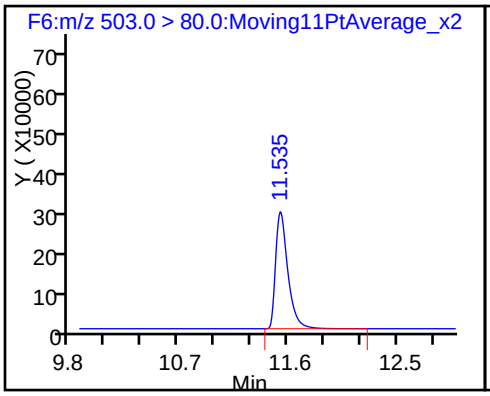
13 Perfluorooctanoic acid



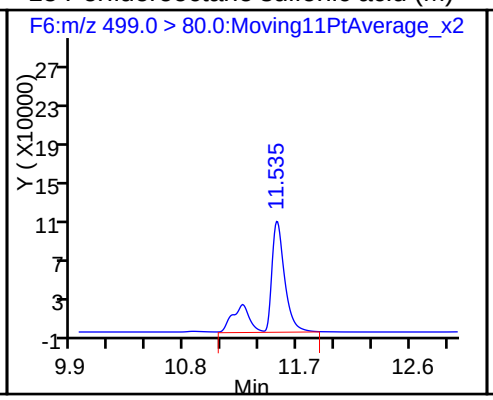
38 Perfluoroheptanesulfonic Acid



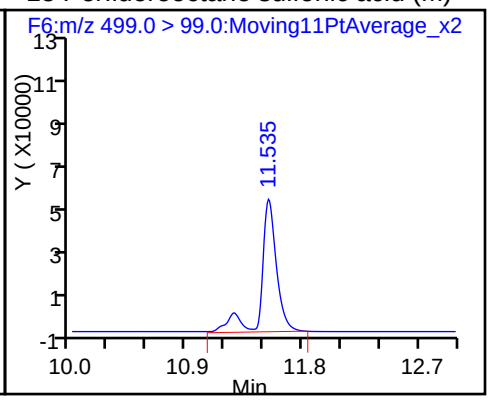
D 16 13C4 PFOS



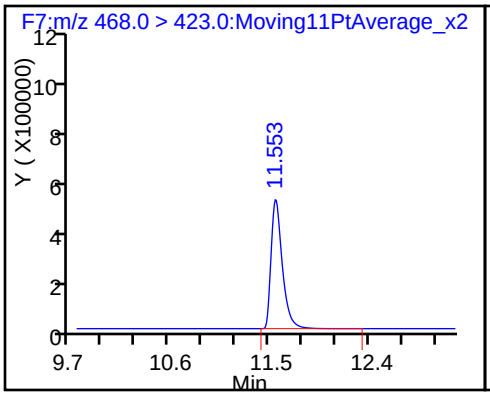
15 Perfluorooctane sulfonic acid (M)



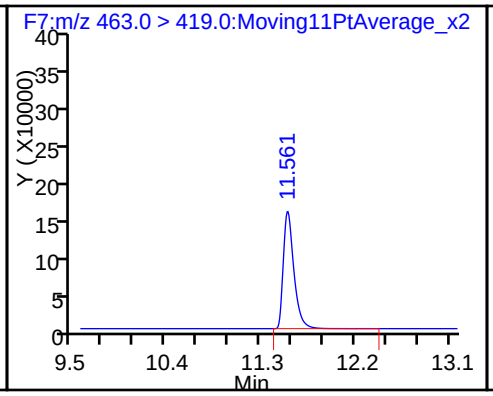
15 Perfluorooctane sulfonic acid (M)



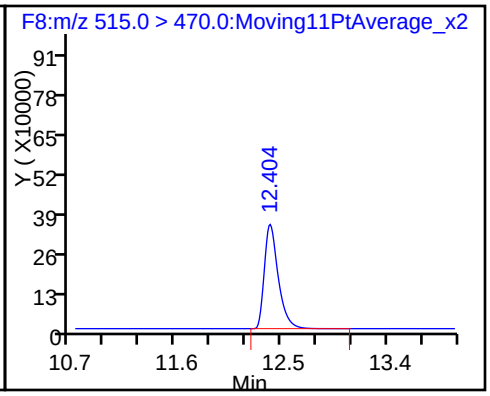
D 17 13C5 PFNA



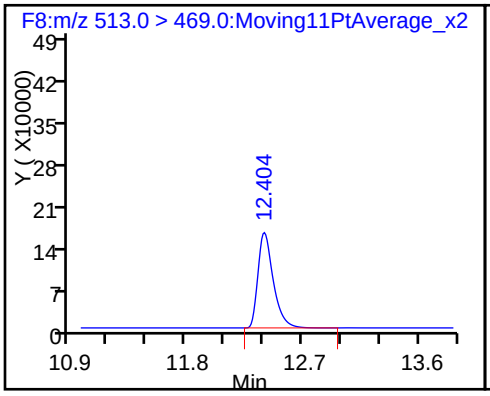
18 Perfluorononanoic acid



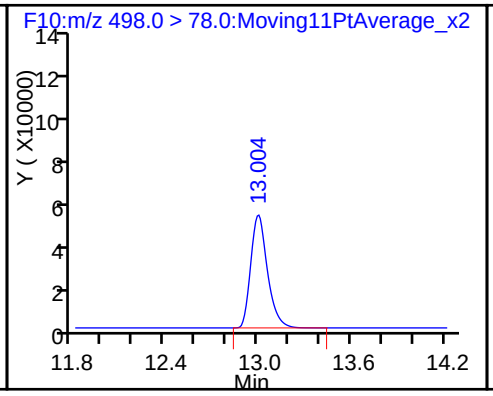
D 19 13C2 PFDA



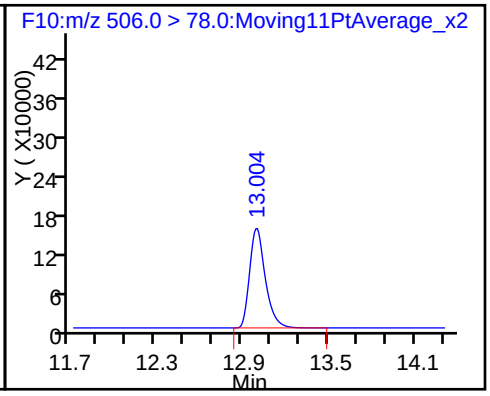
20 Perfluorodecanoic acid



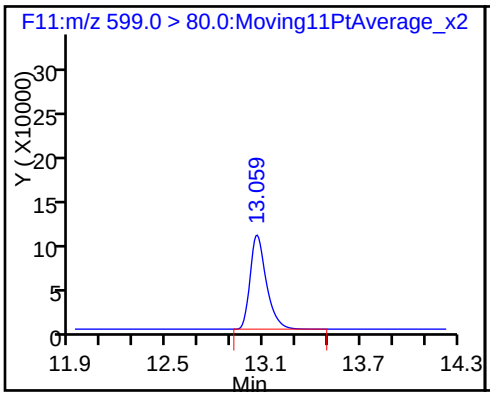
24 Perfluorooctane Sulfonamide



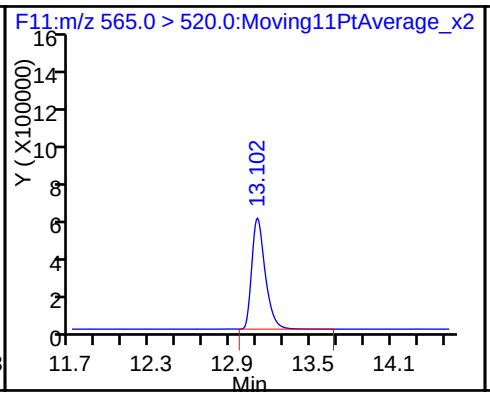
D 23 13C8 FOSA



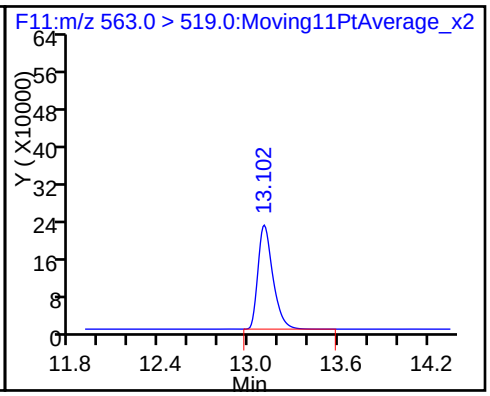
39 Perfluorodecane Sulfonic acid



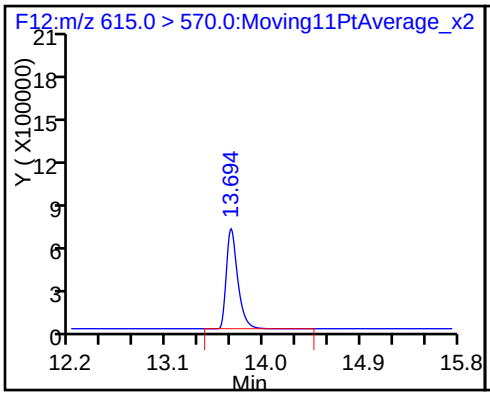
D 26 13C2 PFUnA



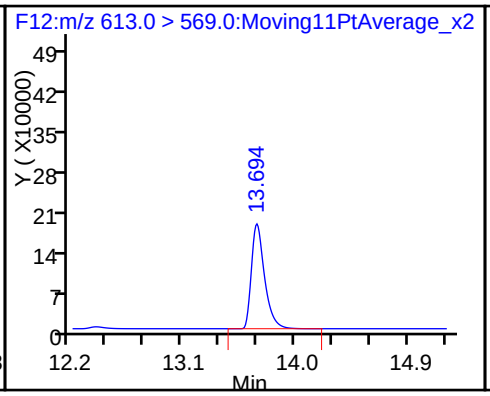
27 Perfluoroundecanoic acid



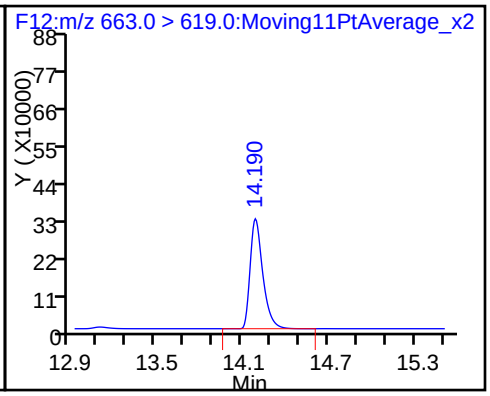
D 28 13C2 PFDoA



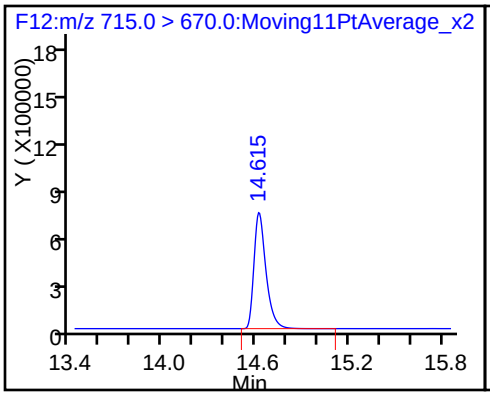
29 Perfluorododecanoic acid



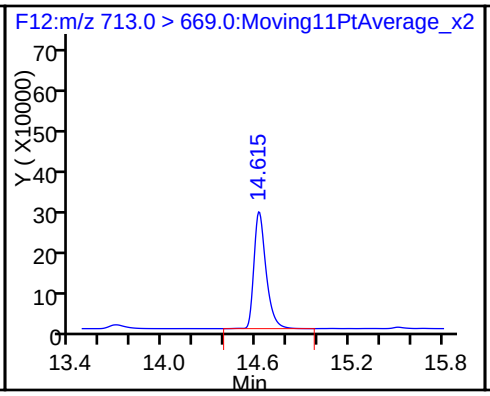
30 Perfluorotridecanoic acid



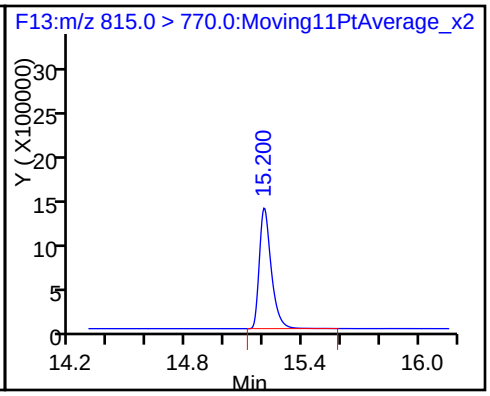
D 33 13C2-PFTeDA



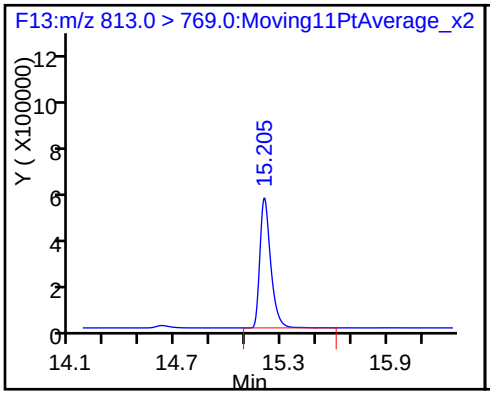
32 Perfluorotetradecanoic acid



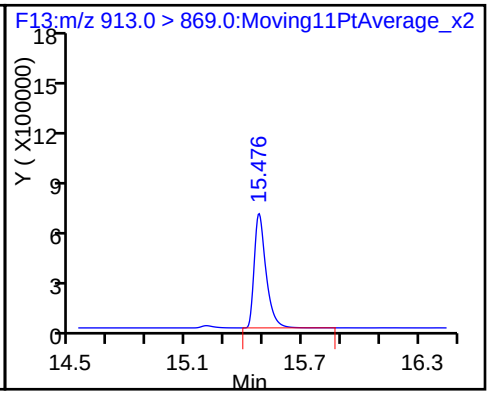
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

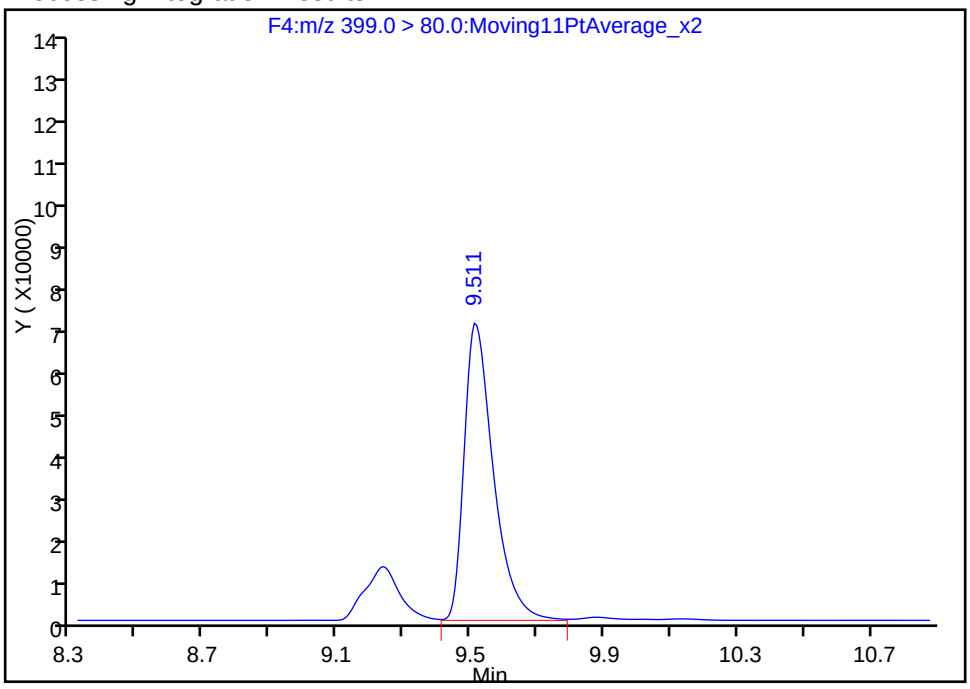
Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_018.d
Injection Date: 31-May-2016 18:18:02 Instrument ID: A6
Lims ID: LCS 320-111374/2-A
Client ID:
Operator ID: JRB ALS Bottle#: 2 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

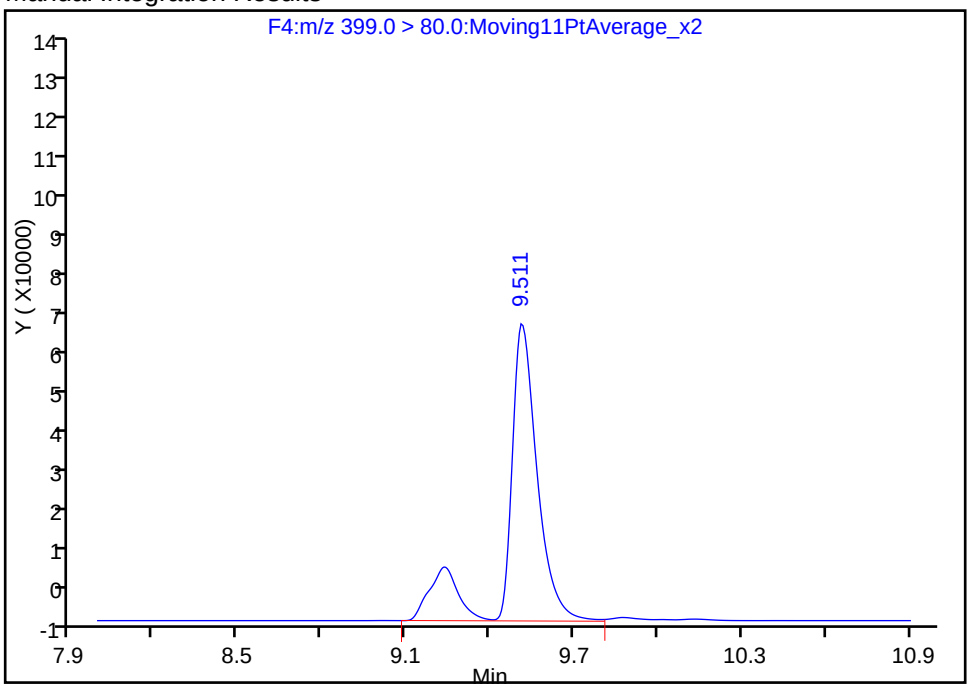
Processing Integration Results

RT: 9.51
Area: 416989
Amount: 12.611847
Amount Units: ng/ml



Manual Integration Results

RT: 9.51
Area: 508960
Amount: 15.393513
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 11:11:25
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

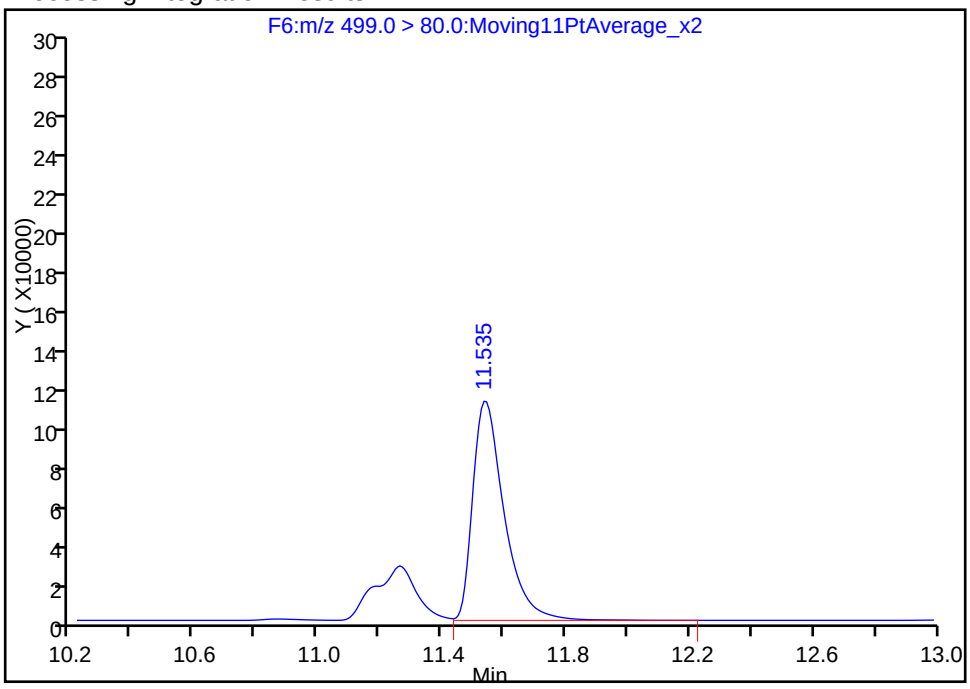
Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_018.d
Injection Date: 31-May-2016 18:18:02 Instrument ID: A6
Lims ID: LCS 320-111374/2-A
Client ID:
Operator ID: JRB ALS Bottle#: 2 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

Signal: 1

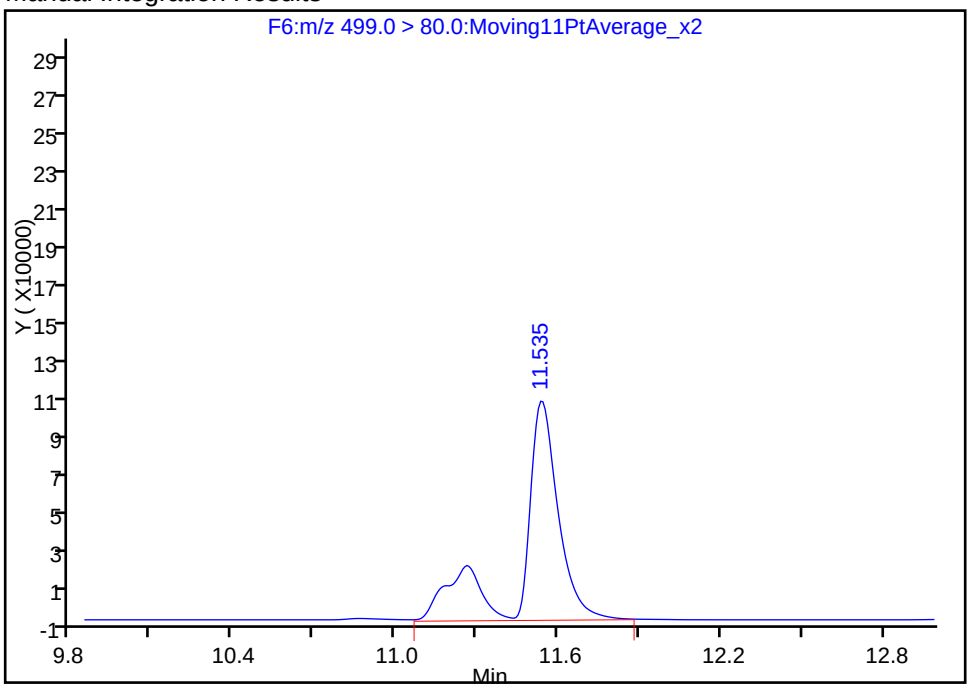
Processing Integration Results

RT: 11.54
Area: 773799
Amount: 14.274896
Amount Units: ng/ml



Manual Integration Results

RT: 11.54
Area: 1042961
Amount: 19.240344
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 11:11:25
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

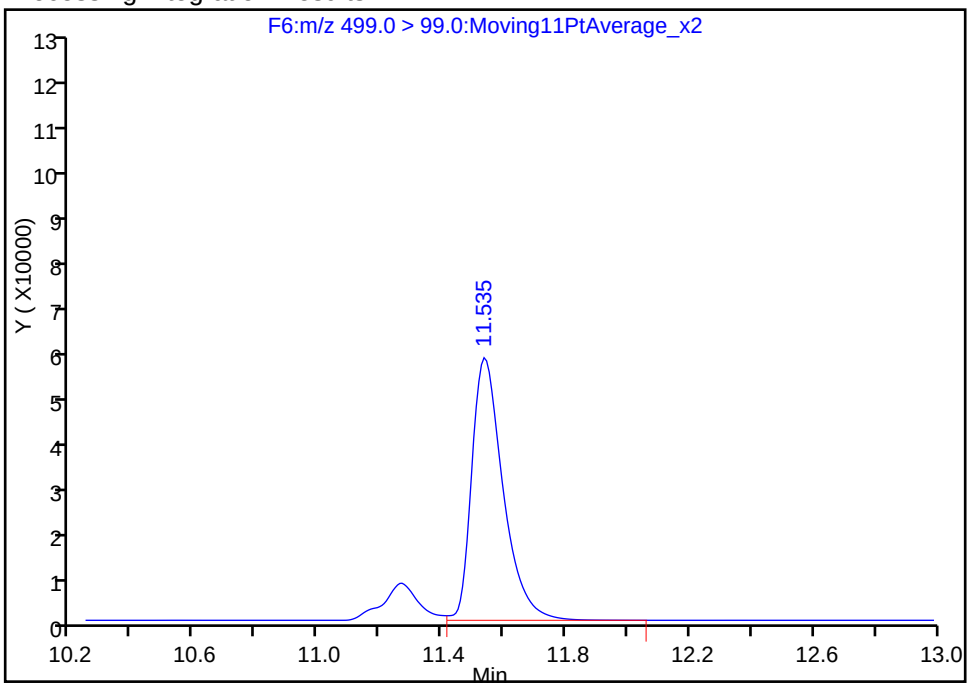
Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_018.d
Injection Date: 31-May-2016 18:18:02 Instrument ID: A6
Lims ID: LCS 320-111374/2-A
Client ID:
Operator ID: JRB ALS Bottle#: 2 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

Signal: 2

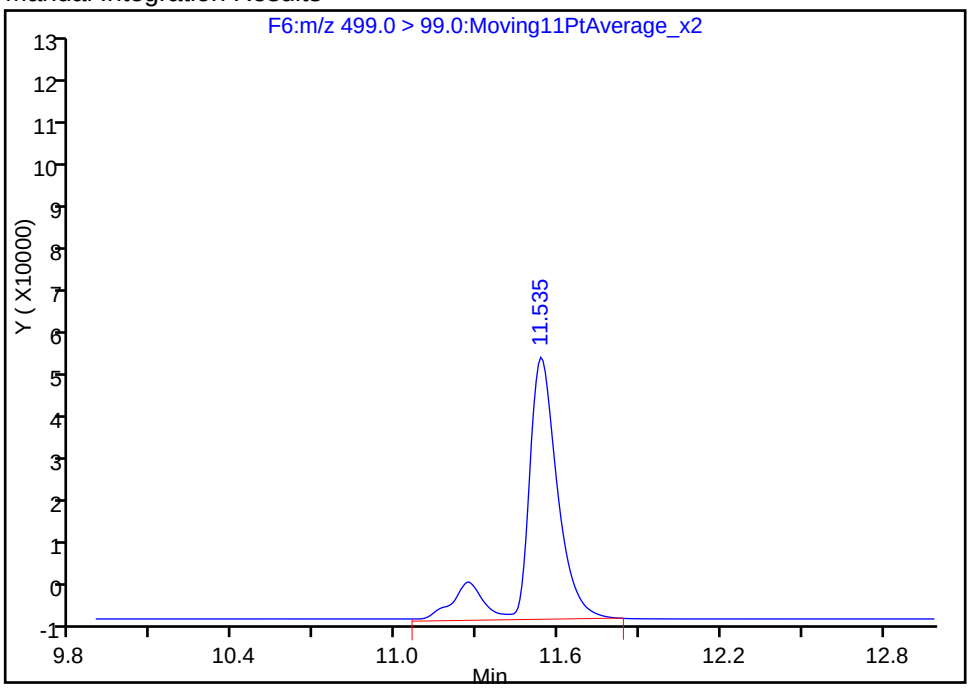
Processing Integration Results

RT: 11.54
Area: 403558
Amount: 14.274896
Amount Units: ng/ml



Manual Integration Results

RT: 11.54
Area: 473860
Amount: 19.240344
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 11:11:25
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-111374/3-A

Matrix: Water Lab File ID: 31MAY2016A6A_019.d

Analysis Method: WS-LC-0025 Date Collected:

Extraction Method: 3535 Date Extracted: 05/25/2016 15:20

Sample wt/vol: 500.00(mL) Date Analyzed: 05/31/2016 18:39

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 112007 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0343		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0341		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0334		0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0305		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0310	M	0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0420	M	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	118		25-150
STL00991	13C4 PFOS	114		25-150
STL00995	13C5 PFNA	112		25-150
STL00990	13C4 PFOA	115		25-150
STL01892	13C4-PFHpA	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_019.d
Lims ID: LCSD 320-111374/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 31-May-2016 18:39:18 ALS Bottle#: 3 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 320-111374/3-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 01-Jun-2016 14:51:05 Calib Date: 31-May-2016 14:59:27
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_009.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 01-Jun-2016 11:12:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.797	5.803	-0.006		1330396	54.6		109	4487	
2 Perfluorobutyric acid										
212.9 > 169.0	5.797	5.806	-0.009	1.000	729278	17.9		89.6	9211	
D 3 13C5-PFPeA										
267.9 > 223.0	6.960	6.968	-0.008		3364176	52.9		106	13048	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.964	6.970	-0.006	1.000	1332432	17.1		85.7	492	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.092	7.099	-0.007	1.000	722922	15.3		86.3		
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.092	7.099	-0.007	1.000	722922	NC			85.4	
298.9 > 99.0	7.088	7.099	-0.011	1.000	338653		2.13(0.00-0.00)		304	
D 6 13C2 PFHxA										
315.0 > 270.0	8.247	8.252	-0.005		3484223	56.9		114	48845	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.247	8.253	-0.006	1.000	1315331	16.7		83.7	3481	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.481	9.494	-0.013	1.000	1564283	17.2		85.8	9360	
D 8 13C4-PFHpA										
367.0 > 322.0	9.481	9.495	-0.014		3920240	57.1		114	13063	
D 11 18O2 PFHxS										
403.0 > 84.0	9.517	9.532	-0.015		1723567	55.9		118	17473	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.517	9.533	-0.016	1.000	432217	NC			797	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.517	9.533	-0.016	1.000	529585	15.5		85.3		M
D 12 13C4 PFOA										
417.0 > 372.0	10.595	10.612	-0.017		4180717	57.5		115	41767	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.595	10.612	-0.017	1.000	1465048	17.1		85.3	330	
413.0 > 169.0	10.595	10.612	-0.017	1.000	522623		2.80(0.00-0.00)		1075	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.604	10.622	-0.018	1.000	599586	NC			39165	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.604	10.622	-0.018	1.000	599586	16.2		85.1		
D 16 13C4 PFOS										
503.0 > 80.0	11.560	11.568	-0.008		2167293	54.6		114	76142	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.560	11.571	-0.011	1.000	1176647	21.0		113	17648	M
499.0 > 99.0	11.560	11.571	-0.011	1.000	524066		2.25(0.00-0.00)		4137	M
D 17 13C5 PFNA										
468.0 > 423.0	11.578	11.589	-0.011		3744493	56.2		112	23876	
18 Perfluorononanoic acid										
463.0 > 419.0	11.578	11.589	-0.011	1.000	1080508	16.7		83.5	50912	
D 19 13C2 PFDA										
515.0 > 470.0	12.404	12.423	-0.019		3024494	57.4		115	52585	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.404	12.423	-0.019	1.000	1361516	17.9		89.5	55225	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.994	13.018	-0.024	1.000	338814	20.5		102	4512	
D 23 13C8 FOSA										
506.0 > 78.0	12.994	13.019	-0.025		1041959	8.31		16.6	68753	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.050	13.081	-0.031	1.000	667667	17.9		93.0		
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.050	13.081	-0.031	1.000	667667	NC			5901	
D 26 13C2 PFUnA										
565.0 > 520.0	13.093	13.124	-0.031		4203200	55.9		112	11244	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.102	13.124	-0.022	1.000	1533610	17.4		87.2	19799	
D 28 13C2 PFDoA										
615.0 > 570.0	13.694	13.718	-0.024		4868265	53.7		107	28809	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.694	13.718	-0.024	1.000	1395077	17.1		85.5	1964	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.189	14.220	-0.031	1.000	1840250	16.9		84.7	1077	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.622	14.643	-0.021		3725843	45.9		91.9	11522	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.628	14.644	-0.016	1.000	1352319	15.2		76.0	658	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.204	15.223	-0.019		5440523	43.2		86.4	12185	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.204	15.223	-0.019	1.000	2233667	14.6		72.9	2827	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.471	15.493	-0.022	1.000	2722088	19.0		95.0	3078	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Report Date: 01-Jun-2016 14:51:58 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_019.d

Injection Date: 31-May-2016 18:39:18 Instrument ID: A6

Lims ID: LCSD 320-111374/3-A

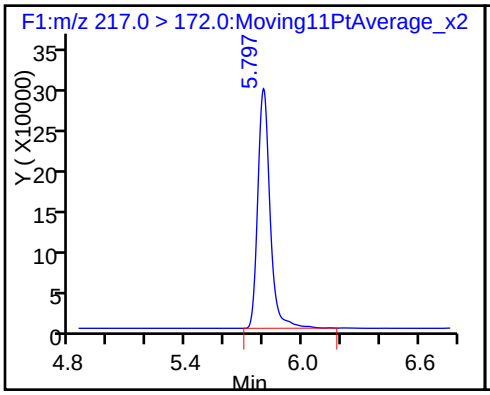
Client ID:

Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 17

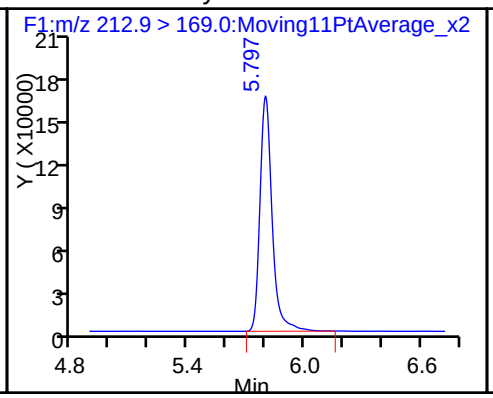
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

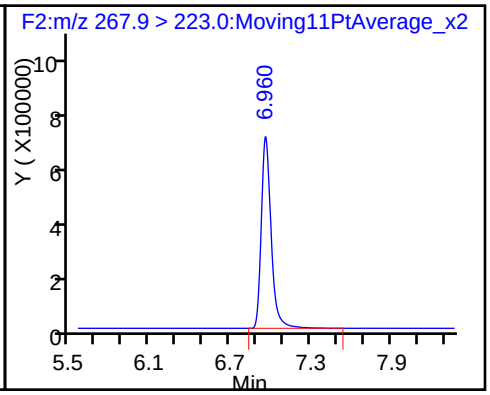
D 1 13C4 PFBA



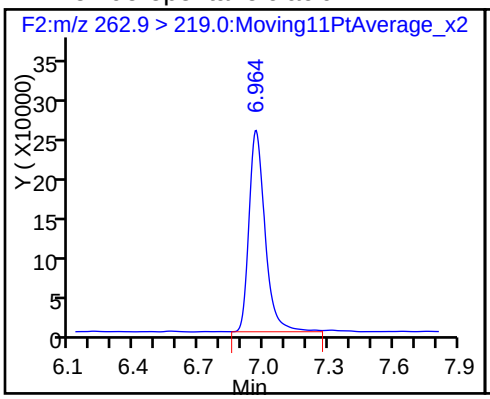
2 Perfluorobutyric acid



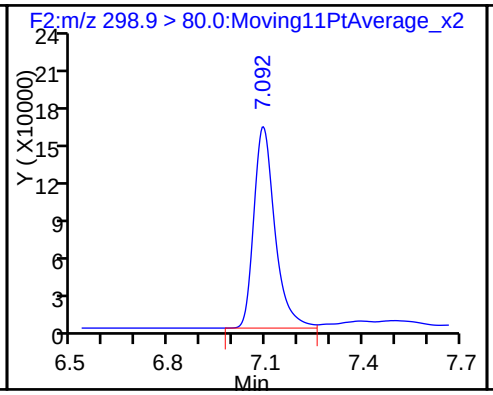
D 3 13C5-PFPeA



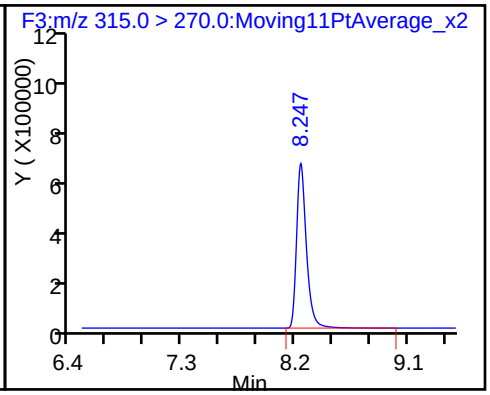
4 Perfluoropentanoic acid



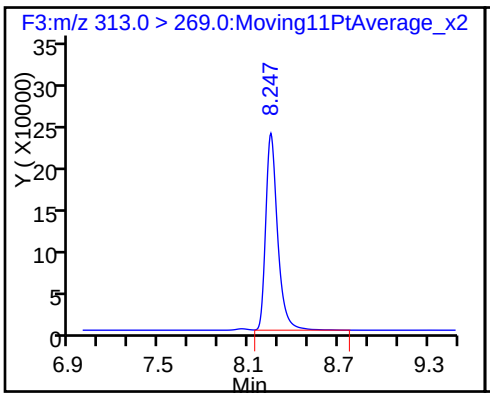
40 Perfluorobutanesulfonic acid



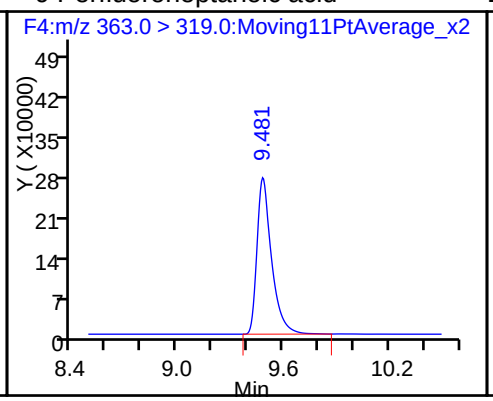
D 6 13C2 PFHxA



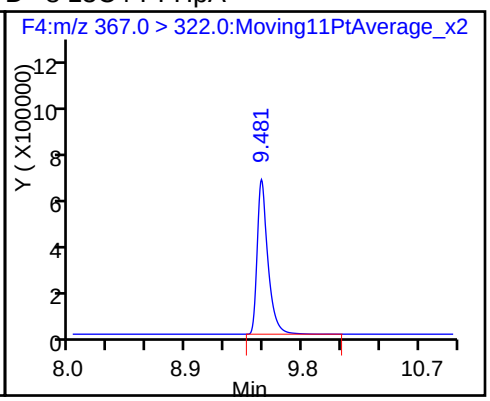
7 Perfluorohexanoic acid



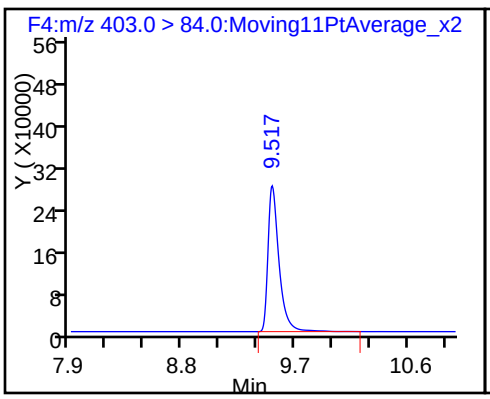
9 Perfluoroheptanoic acid



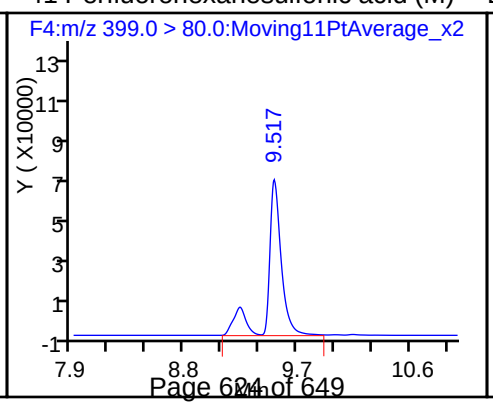
D 8 13C4-PFHpA



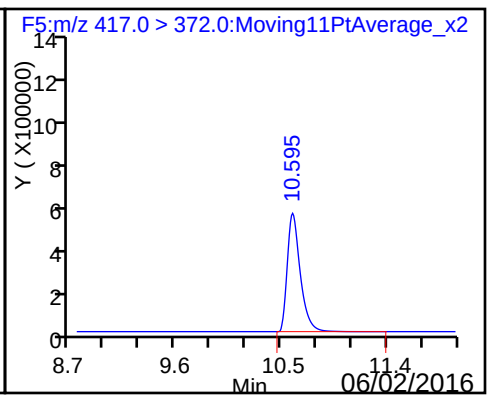
D 11 18O2 PFHxS



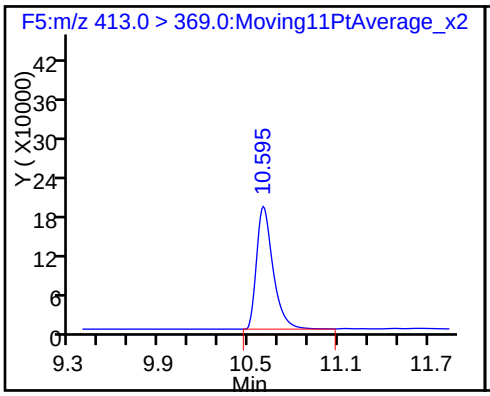
41 Perfluorohexanesulfonic acid (M)



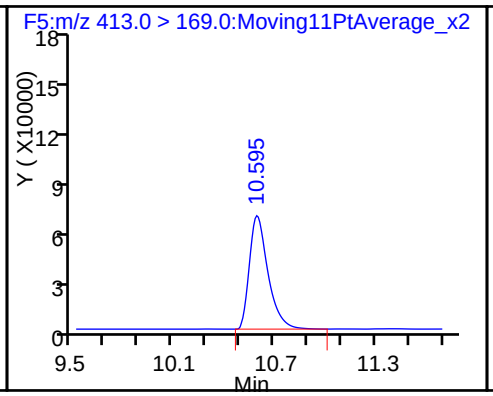
D 12 13C4 PFOA



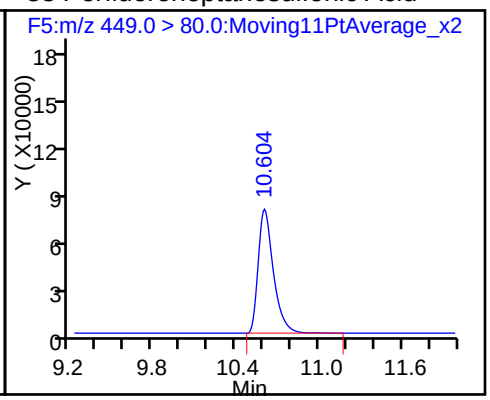
13 Perfluorooctanoic acid



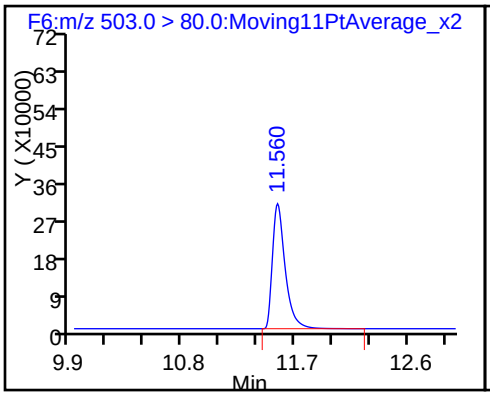
13 Perfluorooctanoic acid



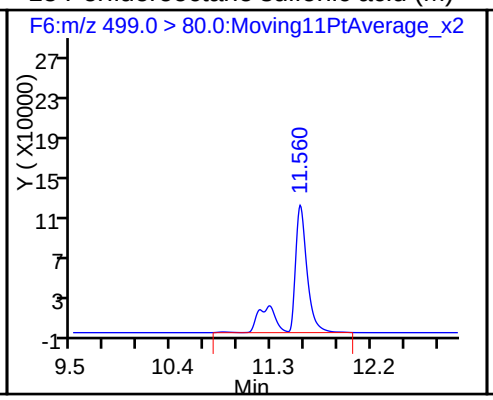
38 Perfluoroheptanesulfonic Acid



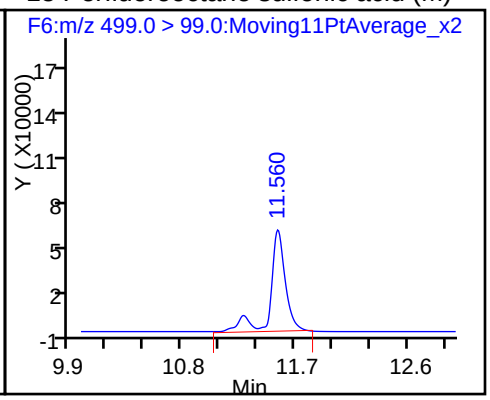
D 16 13C4 PFOS



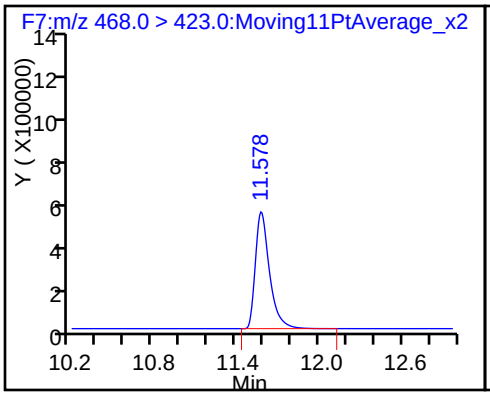
15 Perfluorooctane sulfonic acid (M)



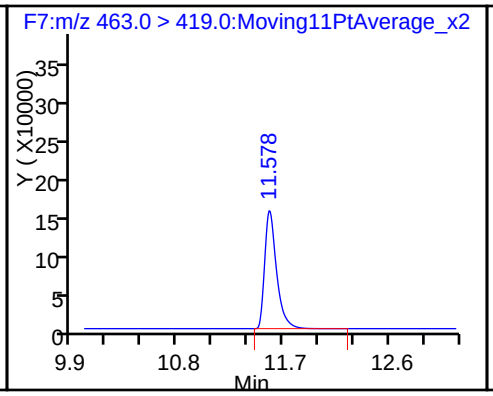
15 Perfluorooctane sulfonic acid (M)



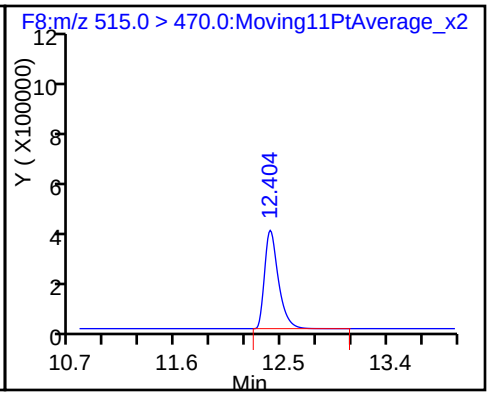
D 17 13C5 PFNA



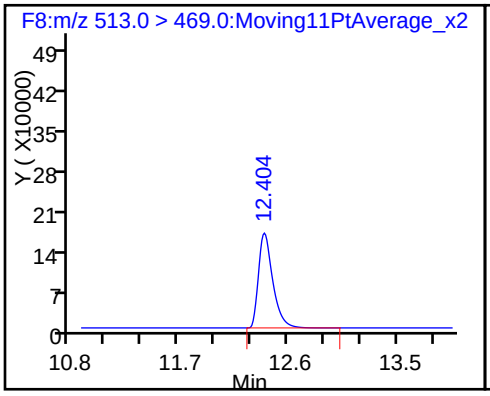
18 Perfluorononanoic acid



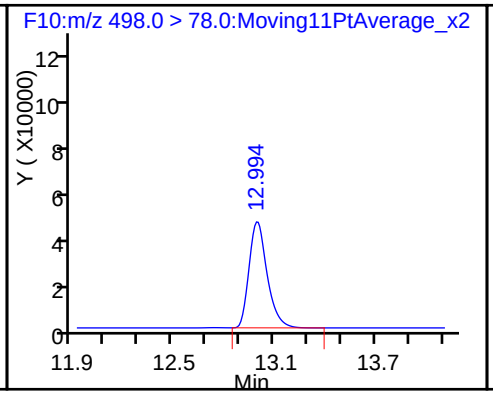
D 19 13C2 PFDA



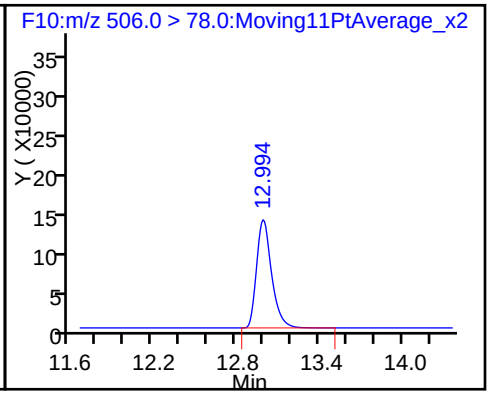
20 Perfluorodecanoic acid



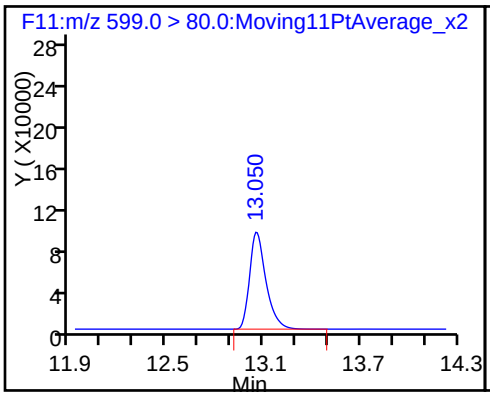
24 Perfluorooctane Sulfonamide



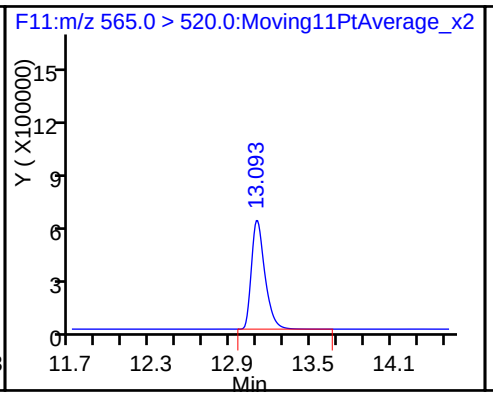
D 23 13C8 FOSA



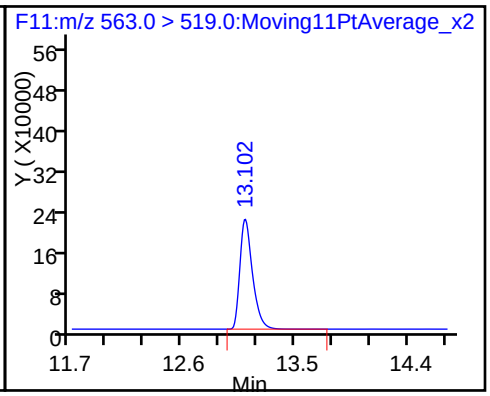
39 Perfluorodecane Sulfonic acid



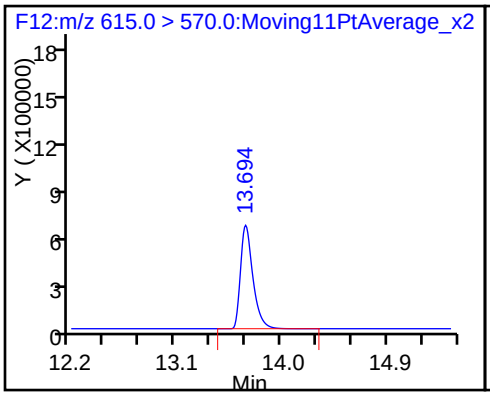
D 26 13C2 PFUnA



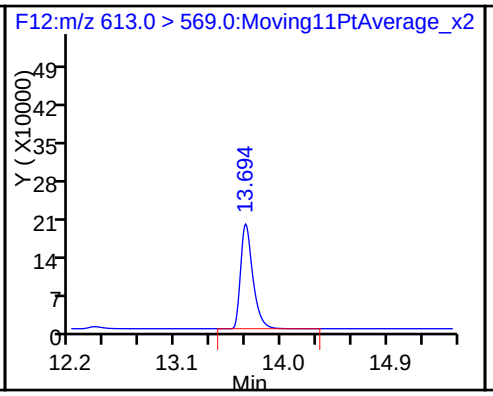
27 Perfluoroundecanoic acid



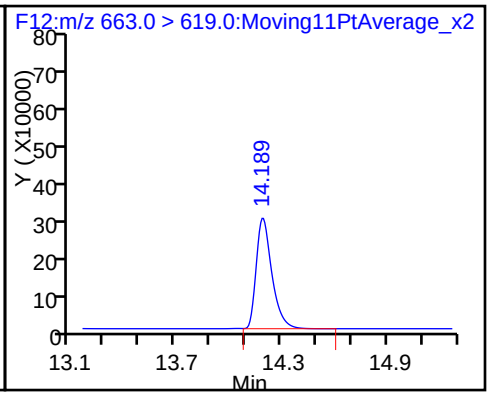
D 28 13C2 PFDoA



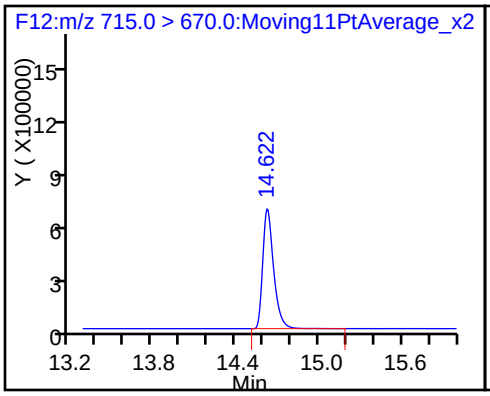
29 Perfluorododecanoic acid



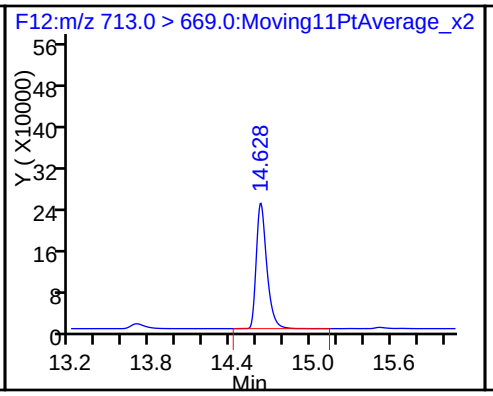
30 Perfluorotridecanoic acid



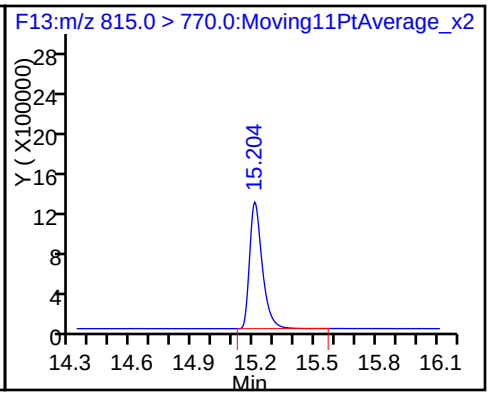
D 33 13C2-PFTeDA



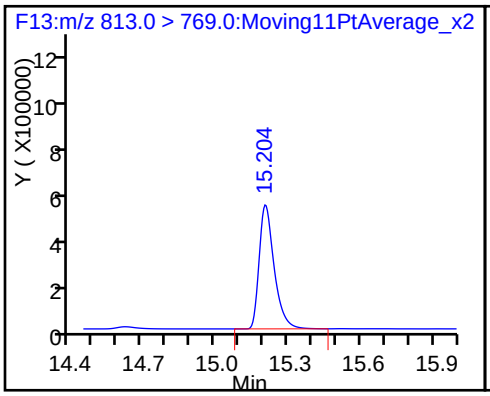
32 Perfluorotetradecanoic acid



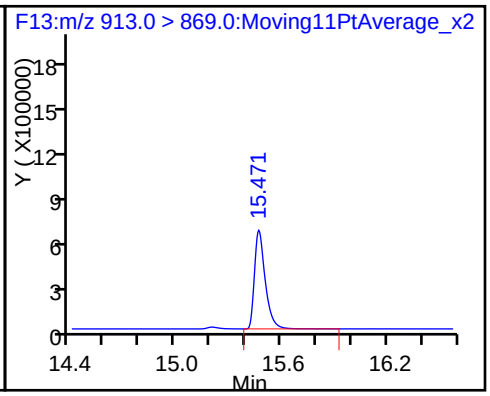
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

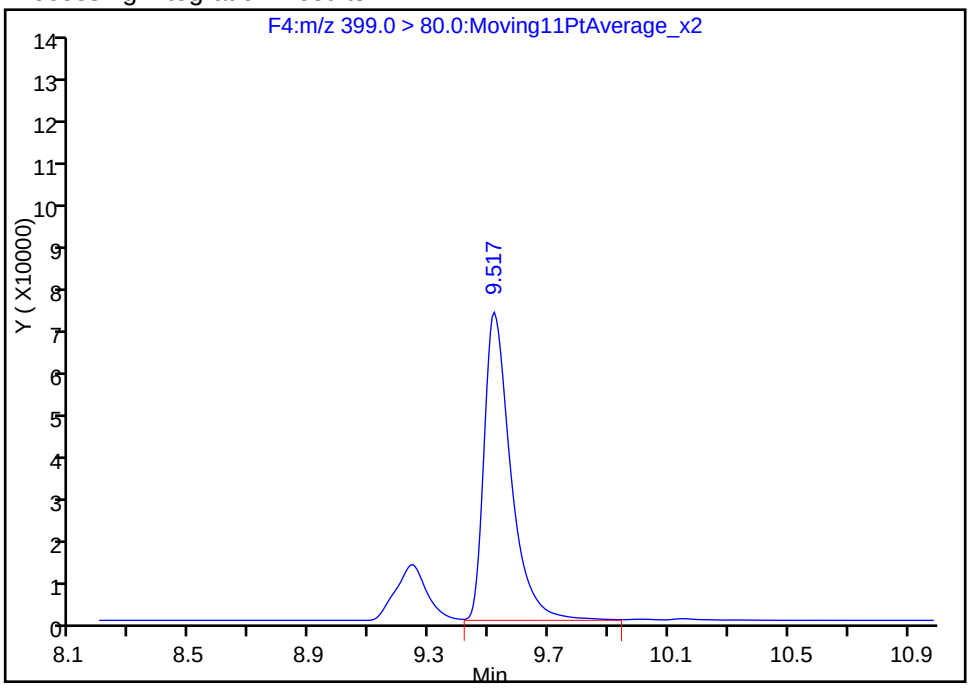
Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_019.d
Injection Date: 31-May-2016 18:39:18 Instrument ID: A6
Lims ID: LCSD 320-111374/3-A
Client ID:
Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

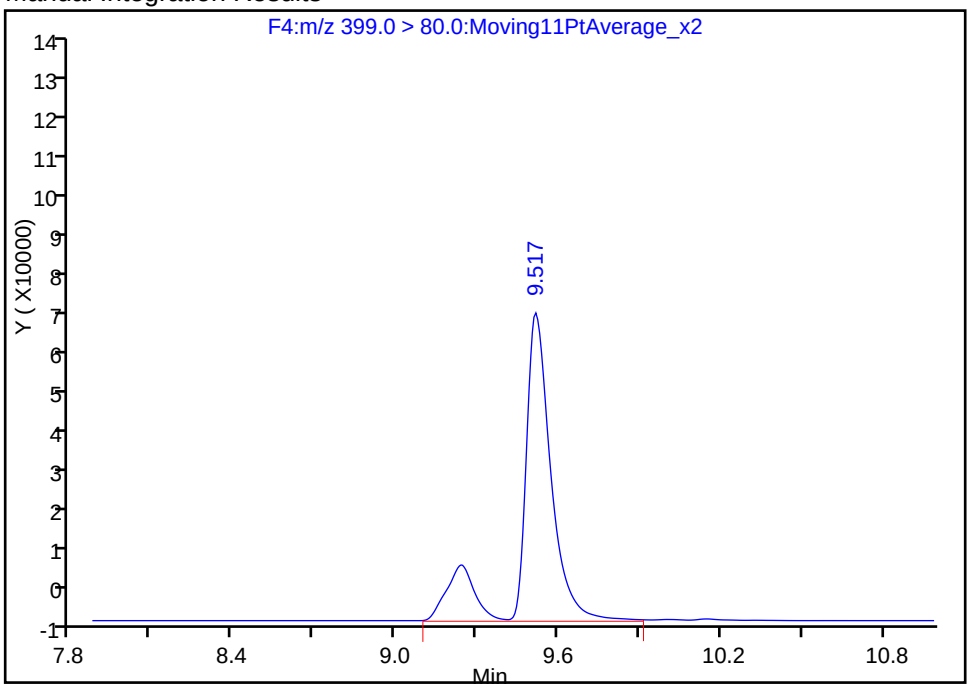
Processing Integration Results

RT: 9.52
Area: 432217
Amount: 12.664038
Amount Units: ng/ml



Manual Integration Results

RT: 9.52
Area: 529585
Amount: 15.516938
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 11:12:20
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

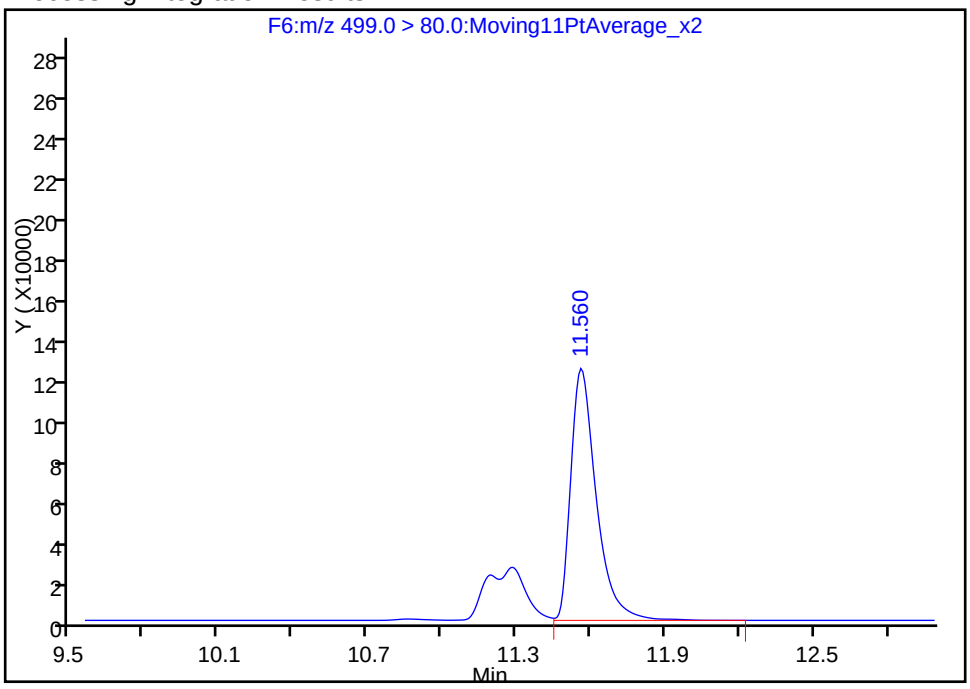
Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_019.d
Injection Date: 31-May-2016 18:39:18 Instrument ID: A6
Lims ID: LCSD 320-111374/3-A
Client ID:
Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

Signal: 1

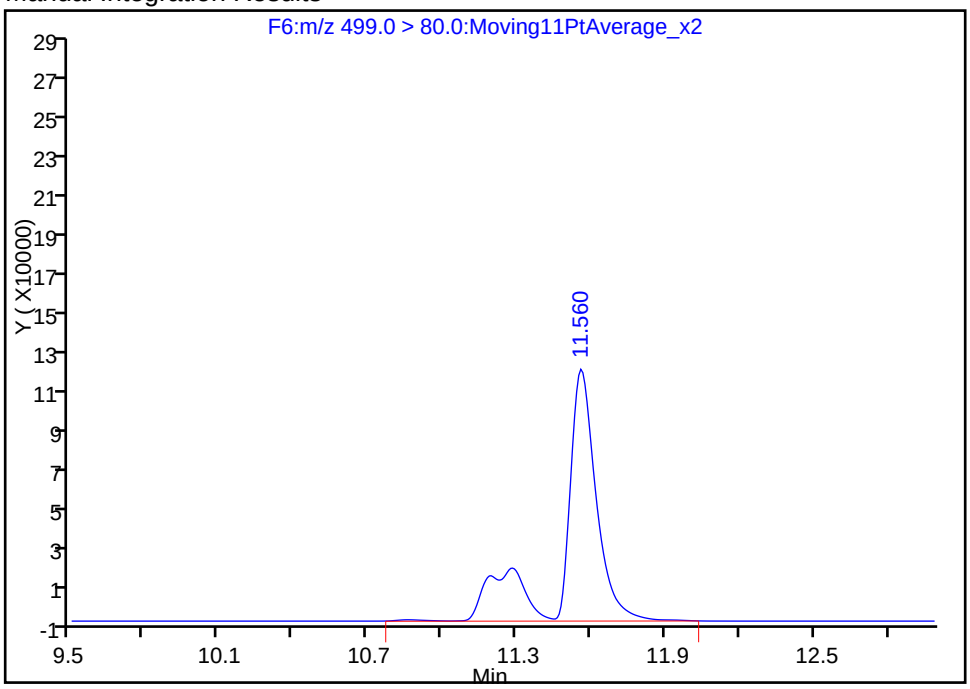
Processing Integration Results

RT: 11.56
Area: 886485
Amount: 15.826277
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 1176647
Amount: 21.006494
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 11:12:20
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

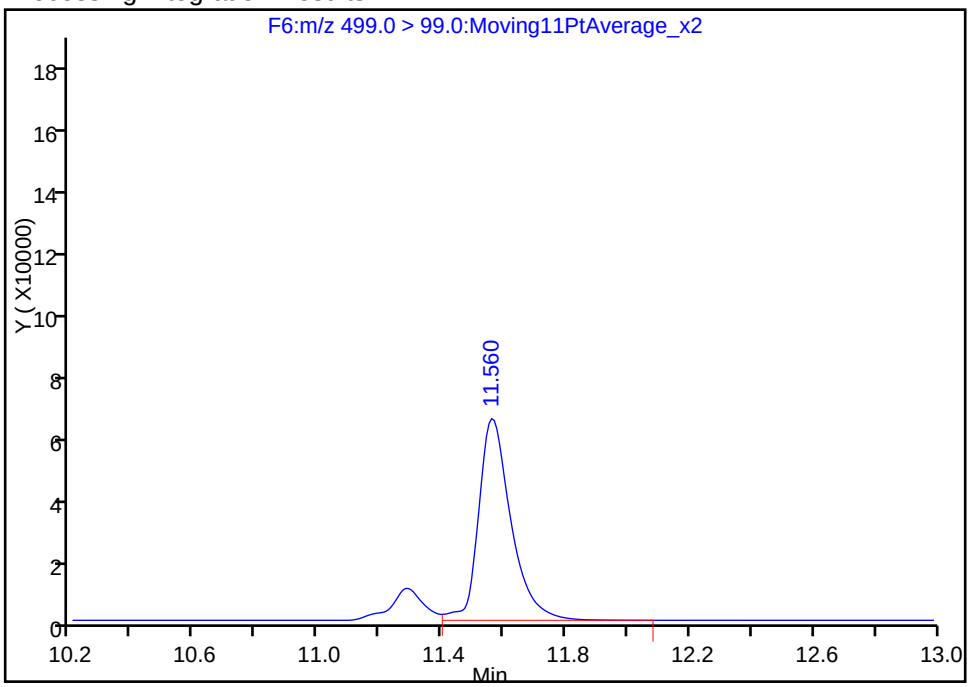
Data File: \\ChromNA\Sacramento\ChromData\A6\20160531-31217.b\31MAY2016A6A_019.d
Injection Date: 31-May-2016 18:39:18 Instrument ID: A6
Lims ID: LCSD 320-111374/3-A
Client ID:
Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

Signal: 2

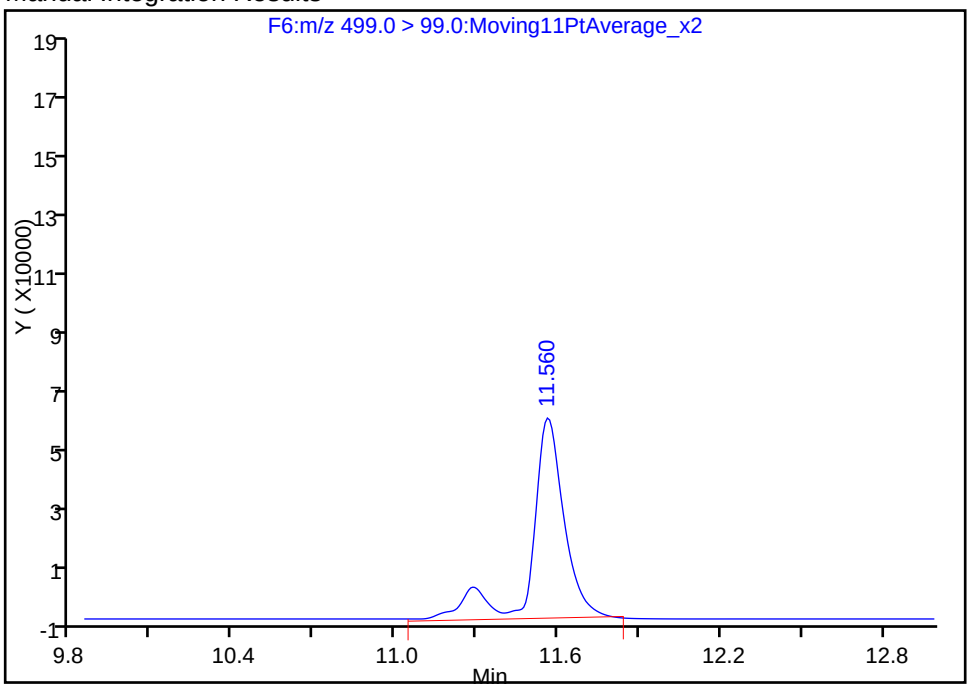
Processing Integration Results

RT: 11.56
Area: 455093
Amount: 15.826277
Amount Units: ng/ml



Manual Integration Results

RT: 11.56
Area: 524066
Amount: 21.006494
Amount Units: ng/ml



Reviewer: barnettj, 01-Jun-2016 11:12:20
Audit Action: Manually Integrated Audit Reason: Isomers

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Start Date: 05/28/2016 13:56

Analysis Batch Number: 111859 End Date: 05/29/2016 20:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-111859/2 IC		05/28/2016 13:56	1	28MAY2016A6A_003.d	Acquity 2.1(mm)
STD 320-111859/3 IC		05/28/2016 14:17	1	28MAY2016A6A_004.d	Acquity 2.1(mm)
STD 320-111859/4 IC		05/28/2016 14:39	1	28MAY2016A6A_005.d	Acquity 2.1(mm)
STD 320-111859/5 IC		05/28/2016 15:00	1	28MAY2016A6A_006.d	Acquity 2.1(mm)
STD 320-111859/6 IC		05/28/2016 15:22	1	28MAY2016A6A_007.d	Acquity 2.1(mm)
STD 320-111859/10 IC		05/28/2016 19:20	1	28MAY2016A6A_011.d	Acquity 2.1(mm)
STD 320-111859/11 IC		05/28/2016 19:41	1	28MAY2016A6A_012.d	Acquity 2.1(mm)
ZZZZZ		05/28/2016 20:02	1		Acquity 2.1(mm)
ICV 320-111859/13		05/28/2016 20:24	1	28MAY2016A6A_014.d	Acquity 2.1(mm)
ZZZZZ		05/28/2016 20:45	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 21:06	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 21:27	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 21:49	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 22:10	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 22:31	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 22:53	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 23:14	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 23:35	1		Acquity 2.1(mm)
ZZZZZ		05/28/2016 23:56	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 00:18	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 00:39	1		Acquity 2.1(mm)
CCV 320-111859/26		05/29/2016 01:00	1	28MAY2016A6A_027.d	Acquity 2.1(mm)
ZZZZZ		05/29/2016 01:22	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 01:43	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 02:04	1		Acquity 2.1(mm)
320-19022-1		05/29/2016 02:25	1	28MAY2016A6A_031.d	Acquity 2.1(mm)
320-19022-2		05/29/2016 02:47	1	28MAY2016A6A_032.d	Acquity 2.1(mm)
320-19022-3		05/29/2016 03:08	1	28MAY2016A6A_033.d	Acquity 2.1(mm)
320-19022-4		05/29/2016 03:29	1	28MAY2016A6A_034.d	Acquity 2.1(mm)
320-19022-5		05/29/2016 03:51	1	28MAY2016A6A_035.d	Acquity 2.1(mm)
320-19022-6		05/29/2016 04:12	1	28MAY2016A6A_036.d	Acquity 2.1(mm)
320-19022-7		05/29/2016 04:33	1	28MAY2016A6A_037.d	Acquity 2.1(mm)
ZZZZZ		05/29/2016 04:54	1		Acquity 2.1(mm)
CCV 320-111859/38		05/29/2016 05:16	1	28MAY2016A6A_039.d	Acquity 2.1(mm)
ZZZZZ		05/29/2016 05:37	1		Acquity 2.1(mm)
320-19022-8		05/29/2016 05:58	1	28MAY2016A6A_041.d	Acquity 2.1(mm)
ZZZZZ		05/29/2016 06:19	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Start Date: 05/28/2016 13:56

Analysis Batch Number: 111859 End Date: 05/29/2016 20:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		05/29/2016 06:41	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 07:02	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 07:23	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 08:27	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 08:48	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 09:10	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 09:31	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 09:52	1		Acquity 2.1(mm)
CCV 320-111859/52		05/29/2016 10:14	1	28MAY2016A6A_053.d	Acquity 2.1(mm)
ZZZZZ		05/29/2016 10:35	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 10:56	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 11:17	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 11:39	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 12:00	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 12:21	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 12:42	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 13:04	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 13:25	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 13:46	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 14:08	1		Acquity 2.1(mm)
CCV 320-111859/64		05/29/2016 14:29	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 14:50	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 15:11	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 15:33	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 15:54	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 16:15	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 16:36	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 16:58	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 17:19	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 17:40	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 18:02	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 18:23	1		Acquity 2.1(mm)
CCV 320-111859/76		05/29/2016 18:44	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 19:05	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 19:27	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 19:48	1		Acquity 2.1(mm)
ZZZZZ		05/29/2016 20:09	1		Acquity 2.1(mm)
CCV 320-111859/81		05/29/2016 20:31	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Start Date: 05/31/2016 12:51

Analysis Batch Number: 112007 End Date: 06/01/2016 15:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-112007/3 IC		05/31/2016 12:51	1	31MAY2016A6A_003.d	Acquity 2.1(mm)
STD 320-112007/4 IC		05/31/2016 13:13	1	31MAY2016A6A_004.d	Acquity 2.1(mm)
STD 320-112007/5 IC		05/31/2016 13:34	1	31MAY2016A6A_005.d	Acquity 2.1(mm)
STD 320-112007/6 IC		05/31/2016 13:55	1	31MAY2016A6A_006.d	Acquity 2.1(mm)
STD 320-112007/7 IC		05/31/2016 14:16	1	31MAY2016A6A_007.d	Acquity 2.1(mm)
STD 320-112007/8 IC		05/31/2016 14:38	1	31MAY2016A6A_008.d	Acquity 2.1(mm)
STD 320-112007/9 IC		05/31/2016 14:59	1	31MAY2016A6A_009.d	Acquity 2.1(mm)
ZZZZZ		05/31/2016 15:20	1		Acquity 2.1(mm)
ZZZZZ		05/31/2016 15:42	1		Acquity 2.1(mm)
ICV 320-112007/12		05/31/2016 16:03	1	31MAY2016A6A_012.d	Acquity 2.1(mm)
ZZZZZ		05/31/2016 17:14	1		Acquity 2.1(mm)
ZZZZZ		05/31/2016 17:35	1		Acquity 2.1(mm)
MB 320-111374/1-A		05/31/2016 17:56	1	31MAY2016A6A_017.d	Acquity 2.1(mm)
LCS 320-111374/2-A		05/31/2016 18:18	1	31MAY2016A6A_018.d	Acquity 2.1(mm)
LCSD 320-111374/3-A		05/31/2016 18:39	1	31MAY2016A6A_019.d	Acquity 2.1(mm)
ZZZZZ		05/31/2016 19:00	10		Acquity 2.1(mm)
ZZZZZ		05/31/2016 19:21	5		Acquity 2.1(mm)
ZZZZZ		05/31/2016 19:43	20		Acquity 2.1(mm)
ZZZZZ		05/31/2016 20:04	20		Acquity 2.1(mm)
ZZZZZ		05/31/2016 20:25	20		Acquity 2.1(mm)
ZZZZZ		05/31/2016 20:47	5		Acquity 2.1(mm)
ZZZZZ		05/31/2016 21:08	1		Acquity 2.1(mm)
CCV 320-112007/25		05/31/2016 21:29	1	31MAY2016A6A_027.d	Acquity 2.1(mm)
ZZZZZ		05/31/2016 21:50	1		Acquity 2.1(mm)
ZZZZZ		05/31/2016 22:12	20		Acquity 2.1(mm)
ZZZZZ		05/31/2016 22:33	1		Acquity 2.1(mm)
ZZZZZ		05/31/2016 22:54	5		Acquity 2.1(mm)
320-19022-2 DL		05/31/2016 23:15	5	31MAY2016A6A_032.d	Acquity 2.1(mm)
320-19022-3 DL		05/31/2016 23:37	5	31MAY2016A6A_033.d	Acquity 2.1(mm)
320-19022-4 DL		05/31/2016 23:58	5	31MAY2016A6A_034.d	Acquity 2.1(mm)
320-19022-5 DL		06/01/2016 00:19	10	31MAY2016A6A_035.d	Acquity 2.1(mm)
320-19022-6 DL		06/01/2016 00:41	10	31MAY2016A6A_036.d	Acquity 2.1(mm)
320-19022-7 DL		06/01/2016 01:02	10	31MAY2016A6A_037.d	Acquity 2.1(mm)
ZZZZZ		06/01/2016 01:23	1		Acquity 2.1(mm)
CCV 320-112007/37		06/01/2016 01:44	1	31MAY2016A6A_039.d	Acquity 2.1(mm)
ZZZZZ		06/01/2016 02:06	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 02:27	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Start Date: 05/31/2016 12:51

Analysis Batch Number: 112007 End Date: 06/01/2016 15:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		06/01/2016 02:48	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 03:09	20		Acquity 2.1(mm)
ZZZZZ		06/01/2016 03:31	10		Acquity 2.1(mm)
ZZZZZ		06/01/2016 03:52	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 04:13	50		Acquity 2.1(mm)
ZZZZZ		06/01/2016 05:17	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 05:38	1		Acquity 2.1(mm)
CCV 320-112007/49		06/01/2016 06:00	1		Acquity 2.1(mm)
CCV 320-112007/63		06/01/2016 10:58	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 11:22	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 11:43	10		Acquity 2.1(mm)
ZZZZZ		06/01/2016 12:05	10		Acquity 2.1(mm)
ZZZZZ		06/01/2016 13:51	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 14:12	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 14:33	1		Acquity 2.1(mm)
CCV 320-112007/74		06/01/2016 15:02	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Instrument ID: A6 Start Date: 06/01/2016 15:02

Analysis Batch Number: 112205 End Date: 06/02/2016 11:00

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-112205/2		06/01/2016 15:02	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 16:06	1		Acquity 2.1(mm)
ZZZZZ		06/01/2016 19:45	1		Acquity 2.1(mm)
CCV 320-112205/16		06/01/2016 20:07	1		Acquity 2.1(mm)
CCV 320-112205/54		06/02/2016 09:35	1	31MAY2016A6A_128.d	Acquity 2.1(mm)
320-19022-1 DL		06/02/2016 10:16	5	31MAY2016A6A_130.d	Acquity 2.1(mm)
ZZZZZ		06/02/2016 10:39	1		Acquity 2.1(mm)
CCV 320-112205/58		06/02/2016 11:00	1	31MAY2016A6A_132.d	Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19022-1

SDG No.:

Batch Number: 111374 Batch Start Date: 05/25/16 15:20 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 05/26/16 19:08

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00041	LCPFCSP 00049
MB 320-111374/1		3535, WS-LC-0025				500.00 mL	1.00 mL	50 uL	
LCS 320-111374/2		3535, WS-LC-0025				500.00 mL	1.00 mL	50 uL	20 uL
LCSD 320-111374/3		3535, WS-LC-0025				500.00 mL	1.00 mL	50 uL	20 uL
320-19022-A-1	OF-STORLAG-PT-0516	3535, WS-LC-0025	T	532.93 g	47.11 g	485.8 mL	1.00 mL	50 uL	
320-19022-A-2	OF-TRMLAG-PT-0516	3535, WS-LC-0025	T	530.39 g	48.72 g	481.7 mL	1.00 mL	50 uL	
320-19022-B-3	OF-POLLAG-PT-0516	3535, WS-LC-0025	T	535.78 g	44.75 g	491 mL	1.00 mL	50 uL	
320-19022-A-4	OF-CLTANK-PT-0516	3535, WS-LC-0025	T	543.24 g	44.25 g	499 mL	1.00 mL	50 uL	
320-19022-A-5	OF-BACKWASH-PT-0516	3535, WS-LC-0025	T	504.61 g	43.82 g	460.8 mL	1.00 mL	50 uL	
320-19022-B-6	OF-FILTER-PT-0516	3535, WS-LC-0025	T	553.93 g	44.54 g	509.4 mL	1.00 mL	50 uL	
320-19022-A-7	OF-INF01-PT-0615	3535, WS-LC-0025	T	530.57 g	46.94 g	483.6 mL	1.00 mL	50 uL	
320-19022-A-8	OF-PROCESS BLANK-PT-0516	3535, WS-LC-0025	T	568.97 g	43.93 g	525 mL	1.00 mL	50 uL	

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 320-111374/1		3535, WS-LC-0025							
LCS 320-111374/2		3535, WS-LC-0025							
LCSD 320-111374/3		3535, WS-LC-0025							
320-19022-A-1	OF-STORLAG-PT-0516	3535, WS-LC-0025	T	pH: 12 Adjusted to: 7					
320-19022-A-2	OF-TRMLAG-PT-0516	3535, WS-LC-0025	T	pH: 12 Adjusted to: 7					
320-19022-B-3	OF-POLLAG-PT-0516	3535, WS-LC-0025	T	pH: 12 Adjusted to: 7					
320-19022-A-4	OF-CLTANK-PT-0516	3535, WS-LC-0025	T	pH: 12 Adjusted to: 7					
320-19022-A-5	OF-BACKWASH-PT-0516	3535, WS-LC-0025	T	pH: 12 Adjusted to: 7					
320-19022-B-6	OF-FILTER-PT-0516	3535, WS-LC-0025	T	pH: 12 Adjusted to: 7					

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.: 320-19022-1

SDG No.:

Batch Number: 111374 Batch Start Date: 05/25/16 15:20 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 05/26/16 19:08

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
320-19022-A-7	OF-INF01-PT-0615	3535, WS-LC-0025	T	pH: 12 Adjusted to: 7					
320-19022-A-8	OF-PROCESS BLANK-PT-0516	3535, WS-LC-0025	T	pH: 12 Adjusted to: 7					

Batch Notes	
Acid ID	429065 (HOAc)
Acid Name	HOAc
Balance ID	QA-070
Batch Comment	0.1N NaOH:624176, MANIFOLDS: 5, 6
H2O ID	5/23/16
Hexane ID	0000135581
Manifold ID	5, 6
Methanol ID	625013
Pipette ID	EC15219
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Solvent Lot #	636630
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002736075A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 320-19022 Work List ID(s): 31180, 31217, 31259

Extraction Batch: 111374 Analysis Batch(es): 111859, 112007, 112205

Delivery Rank 4 Due Date: 5-31-16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch#	✓	✓	
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 ($r^2 \geq 0.990$). JRB 6/2/16	✓		✓
• 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. NCM	✓	✓	
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# 53632	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): JRB Date: 6-2-16

2nd Level Reviewer: MWM Date: 6/2/2016

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-111374

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 5/25/2016 3:20:53PM

Batch End: 5-26-16 19:08

19022 = CH2

Solid-Phase Extraction (SPE)

Due ~~5/3~~ 5/31

RH 5/27/16

	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~320-111374/1 N/A	N/A		500.00 mL				N/A	N/A	N/A		MB 320-111374/1-A
				1.00 mL								
2	LCS~320-111374/2 N/A	N/A		500.00 mL				N/A	N/A	N/A		LCS 320-111374/2-A
				1.00 mL								
3	LCSD~320-111374/3 N/A	N/A		500.00 mL				N/A	N/A	N/A		LCSD 320-111374/3-A
				1.00 mL								
	320-19034-B-11 (PFC_IDA_DOD5)	N/A (320-19034-1)	572.56 g	527.8 mL				5/26/16	12_Days	4	10X	320-19034-B-11-A
			44.80 g	1.00 mL								
	320-19034-A-12 (PFC_IDA_DOD5)	N/A (320-19034-1)	571.44 g	526.4 mL				5/26/16	12_Days	4	5X	320-19034-A-12-A
			45.08 g	1.00 mL								
6	320-19034-A-13 (PFC_IDA_DOD5)	N/A (320-19034-1)	553.78 g	508.5 mL				5/26/16	12_Days	4	20X	320-19034-A-13-A
			45.24 g	1.00 mL								
7	320-19034-A-14 (PFC_IDA_DOD5)	N/A (320-19034-1)	578.37 g	531.3 mL				5/26/16	12_Days	4	20X	320-19034-A-14-A
			47.06 g	1.00 mL								
8	320-19034-A-15 (PFC_IDA_DOD5)	N/A (320-19034-1)	567.64 g	522.1 mL				5/26/16	12_Days	4	20X	320-19034-A-15-A
			45.54 g	1.00 mL								
9	320-19034-A-16 (PFC_IDA_DOD5)	N/A (320-19034-1)	573.42 g	528.4 mL				5/26/16	12_Days	4	5X	320-19034-A-16-A
			44.98 g	1.00 mL								
10	320-19034-A-17 (PFC_IDA_DOD5)	N/A (320-19034-1)	560.62 g	515.8 mL				5/26/16	12_Days	4	20X	320-19034-A-17-A
			44.79 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-111374 Analyst: Reed, Jonathan E Batch Open: 5/25/2016 3:20:53PM

Method Code: 320-3535_IVWT-320 Batch End:

11	320-19034-A-18 (PFC_IDA_DOD5)	N/A (320-19034-1)	581.19 g / 47.09 g	534.1 mL / 1.00 mL				5/26/16	12_Days	4	
12	320-19022-A-1 (PFC_IDA_DOD5)	N/A (320-19022-1)	532.93 g / 47.11 g	485.8 mL / 1.00 mL				5/24/16	11_Days	4	5X
13	320-19022-A-2 (PFC_IDA_DOD5)	N/A (320-19022-1)	530.39 g / 48.72 g	481.7 mL / 1.00 mL				5/24/16	11_Days	4	5X
14	320-19022-B-3 (PFC_IDA_DOD5)	N/A (320-19022-1)	535.78 g / 44.75 g	491 mL / 1.00 mL				5/24/16	11_Days	4	5X
15	320-19022-A-4 (PFC_IDA_DOD5)	N/A (320-19022-1)	543.24 g / 44.25 g	499 mL / 1.00 mL				5/24/16	11_Days	4	5X
16	320-19022-A-5 (PFC_IDA_DOD5)	N/A (320-19022-1)	504.61 g / 43.82 g	460.8 mL / 1.00 mL				5/24/16	11_Days	4	10X
17	320-19022-B-6 (PFC_IDA_DOD5)	N/A (320-19022-1)	553.93 g / 44.54 g	509.4 mL / 1.00 mL				5/24/16	11_Days	4	10X
18	320-19022-A-7 (PFC_IDA_DOD5)	N/A (320-19022-1)	530.57 g / 46.94 g	483.6 mL / 1.00 mL				5/24/16	11_Days	4	10X
19	320-19022-A-8 (PFC_IDA_DOD5)	N/A (320-19022-1)	568.97 g / 43.93 g	525 mL / 1.00 mL				5/24/16	11_Days	4	
20	320-19085-B-1 (PFC_IDA_DOD5)	N/A (320-19085-1)	582.93 g / 46.12 g	536.8 mL / 1.00 mL				5/31/16	12_Days	4	
21	320-19085-B-2 (PFC_IDA_DOD5)	N/A (320-19085-1)	580.30 g / 46.95 g	533.4 mL / 1.00 mL				5/31/16	12_Days	4	20X
22	320-19085-B-3 (PFC_IDA_DOD5)	N/A (320-19085-1)	566.37 g / 47.04 g	519.3 mL / 1.00 mL				5/31/16	12_Days	4	10X, 50X

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-111374

Analyst: Reed, Jonathan E

Batch Open: 5/25/2016 3:20:53PM

Method Code: 320-3535_IVWT-320

Batch End:

23	320-19085-B-4 (PFC_IDA_DOD5)	N/A (320-19085-1)	576.13 g 45.45 g	530.7 mL 1.00 mL				5/31/16	12_Days	4	40X 

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-111374

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 5/25/2016 3:20:53PM

Batch End:

Batch Notes

Manifold ID	5, 6
Methanol ID	625013
Hexane ID	0000135581
Sodium Hypochlorite ID	NA
First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002736075A
H2O ID	5/23/16
Pipette ID	EC15219
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	636630
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Acid Name	HOAc
Acid ID	429065
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-111374 Analyst: Reed, Jonathan E Batch Open: 5/25/2016 3:20:53PM

Method Code: 320-3535_IVWT-320 Batch End:

SOP Number

Batch Comment 0.1N NaOH:624176 , Manifolds 5, 6

Comments

320-19022-A-1
Sample Comments: Possible high pH
Method Comments: Possible high pH

320-19022-A-2
Sample Comments: Possible high pH
Method Comments: Possible high pH

320-19022-B-3
Sample Comments: Possible high pH
Method Comments: Possible high pH

320-19022-A-4
Sample Comments: Possible high pH
Method Comments: Possible high pH

320-19022-A-5
Sample Comments: Possible high pH
Method Comments: Possible high pH

320-19022-B-6
Sample Comments: Possible high pH
Method Comments: Possible high pH

320-19022-A-7
Sample Comments: Possible high pH
Method Comments: Possible high pH

320-19022-A-8
Sample Comments: Possible high pH
Method Comments: Possible high pH

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-111374
Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 5/25/2016 3:20:53PM
Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-111374/1	LCMPFCSU_00041	50 uL	1.00 mL	5/25/16	VPM 5-25-16
LCS 320-111374/2	LCMPFCSU_00041	50 uL	1.00 mL		
LCS 320-111374/2	LCPFCSP_00049	20 uL	1.00 mL		
LCSD 320-111374/3	LCMPFCSU_00041	50 uL	1.00 mL		
LCSD 320-111374/3	LCPFCSP_00049	20 uL	1.00 mL		
320-19034-B-11	LCMPFCSU_00041	50 uL	1.00 mL		
320-19034-A-12	LCMPFCSU_00041	50 uL	1.00 mL		
320-19034-A-13	LCMPFCSU_00041	50 uL	1.00 mL		
320-19034-A-14	LCMPFCSU_00041	50 uL	1.00 mL		
320-19034-A-15	LCMPFCSU_00041	50 uL	1.00 mL		
320-19034-A-16	LCMPFCSU_00041	50 uL	1.00 mL		
320-19034-A-17	LCMPFCSU_00041	50 uL	1.00 mL		
320-19034-A-18	LCMPFCSU_00041	50 uL	1.00 mL		
320-19022-A-1	LCMPFCSU_00041	50 uL	1.00 mL		
320-19022-A-2	LCMPFCSU_00041	50 uL	1.00 mL		
320-19022-B-3	LCMPFCSU_00041	50 uL	1.00 mL		
320-19022-A-4	LCMPFCSU_00041	50 uL	1.00 mL		
320-19022-A-5	LCMPFCSU_00041	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-111374 Analyst: Reed, Jonathan E Batch Open: 5/25/2016 3:20:53PM

Method Code: 320-3535_IVWT-320 Batch End:

320-19022-B-6	LCMPFCSU_00041	50 uL	1.00 mL	VPM 5-25-16 5/29/16	
320-19022-A-7	LCMPFCSU_00041	50 uL	1.00 mL	VPM	VPM 5-25-16
320-19022-A-8	LCMPFCSU_00041	50 uL	1.00 mL		
320-19085-B-1	LCMPFCSU_00041	50 uL	1.00 mL		
320-19085-B-2	LCMPFCSU_00041	50 uL	1.00 mL		
320-19085-B-3	LCMPFCSU_00041	50 uL	1.00 mL		
320-19085-B-4	LCMPFCSU_00041	50 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 111374 Test: PFC-1

Earliest Holding Time: 5/25/16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: [signature] Date: 5/26/16

2nd Level Reviewer: HJA Date: 5-27-16

Comments: _____

Shipping and Receiving Documents

CH2MHILL Applied Sciences Laboratory
CHAIN OF CUSTODY RECORD
AND AGREEMENT TO PERFORM SERVICES

Chain of Custody Record

1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330
(541) 768-3120

Client Contact

Project Name: Fentress PFC Sampling
Project # or PO #: 674207. FI. FS
Company Name: CH2M
Address: 5701 Cleveland St. Suite 200
City/State/Zip: Virginia Beach VA 23462
Project Manager: Bill Friedman & Tiffany Hill
Phone #: 775-671-6332
Report to email: Tiffany.Hill@ch2m.com

Analysis Turnaround Time

TAT is Calander days

TAT if different from below _____

☐ 21 days (STD)

☒ 14 days * ☐ 3 day *
☐ 7 days * ☐ 2 days *
☐ 5 days * ☐ 1 day *

* (Surcharges will apply)

Preservation Used

1

Analysis Requested

PFCs

For Lab Use Only:

SDG:_____
Custody Seals intact? ☐ Yes ☐ No
Hand delivered? ☐ Yes ☐ No
Cooler Temp :____℃
Therm ID No.:____Therm Exp.____
Packing Material: Circle Below
Ice Blue Ice Box Bubble Wrap
Radiological Screen? ☐ Yes ☐ No

Sample Identification (Limit of 20 characters)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (Water, Soil, Air)	Total # of Cont.	Sample Specific Notes:	Lab ID:
OF - STORLAG - PT - 0516	5/19/16	1335	G	W	2	1210	
OF - TRMLAG - PT - 0516	"	"	"	"	2	1150	
OF - POLLAG - PT - 0516	"	"	"	"	2	1125	
OF - CLTANK - PT - 0516	"	"	"	"	2	1048	
OF - BACKWASH - PT - 0516	"	"	"	"	2	1030	
OF - FILTER - PT - 0516	"	"	"	"	2	1015	
OF - INF01 - PT - 0516	"	"	"	"	2	0955	
OF - Process Blank - PT - 0516	"	"	"	"	4	1335	WSS 05/20/16

320-19022 Chain of Custody

Page 1 of 1

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are samples hazardous? ☐ Yes ☒ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic
If YES or NO is not checked above, samples will be assumed hazardous and hazardous disposal fees will be applied.

Sample Disposal (A fee may be added if samples are retained longer than 30 day per client request, samples are returned to client, or classified as hazardous.)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ months

Sampled By: Brad Swedberg Date/Time: 5/19/16 1335
Relinquished by: Brad Swedberg Date/Time: 5/19/16 1335
Received by: Date/Time: 05/20/16 0940
Relinquished by: Date/Time:
Received in Laboratory by: Date/Time:
Shipped Via: ☐ UPS ☒ Fed-Ex ☐ USPS ☐ Other Tracking #:

Special Instructions/QC Requirements

See orginal COC attached. (No. 193526)

5.6°C

DOC CONTROL ID. ASL1081-0614

06/02/2016

Chain of Custody Record

TO: ASL

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

WE01

2019

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
CH2M Hill	Bill Friedman	05/10/16	193526
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
5701 Cleveland St Suite 200	757-671-6232		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Virginia Beach / VA / 23462			
Project Name and Location (State)	**Carrier/Waybill Number**		
Fentress PFC Sampling WE01	FedEx		
Contract/Purchase Order/Quote No.			

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: Total Oxidizable Precursor PFCs	Special Instructions/ Conditions of Receipt
OF-STORLAG-PT-0516 11	05/10/16	1210		X			X						2	1
OF-TRMTLAG-PT-0516 11		1150		X			X						2	2
OF-POLLAG-PT-0516 11		1125		X			X						2	3
OF-CLTANK-PT-0516 11		1048		X			X						2	4
OF-BACKWASH-PT-0516 11		1030		X			X						2	5
OF-FILTER-PT-0516 11		1015		X			X						2	6
OF-INF01-PT-0516 11		0955		X			X						2	7

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	05/10/16	1600	1. Received By	05/20/16	
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By	5/11/16	0945

Comments
TO ASL for total oxidizer precurser PFCS

recd by: 05/20/16 0440 1.1°C

5.6°C

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

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-19022-1

Login Number: 19022
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	False	No time on COC, logged in per container labels.
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	

Contract_ID	SIO_STN_Number	Phase	IsolationId_ID	Sample_Name	OSIM_Code	Analysis_Group	Analytical_Method	FRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	Date/Time_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	QC_Criteria_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Quoted_Limit_Date	QC_Narrative	MDL	Detection_Limit	QAM_Version	DL	LOD	LOQ	Analysis_Batch	Validator_Name	Val_Date
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:12	05/06/2016			20160509	16:04:00	20160525	01:29:00	105-18750-1	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.016	0.016	ng/L			PB	TRG				00000000			0.0024	1.0	0.00075	0.0024	0.0024	105-18750-1	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:12	05/06/2016			20160509	16:04:00	20160525	01:29:00	105-18750-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.36	0.36	ng/L		M	PB	TRG				00000000			0.0024	1.0	0.00075	0.0024	0.0024	105-18750-1	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:12	05/06/2016			20160509	16:04:00	20160525	01:29:00	105-18750-1	1	1			Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.014	0.014	ng/L			PB	TRG				00000000			0.0024	1.0	0.00086	0.0024	0.0024	105-18750-1	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:12	05/06/2016			20160509	16:04:00	20160525	01:29:00	105-18750-1	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.32	0.32	ng/L		Y2	PB	TRG				00000000			0.0024	1.0	0.00082	0.0024	0.0024	105-18750-1	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:12	05/06/2016			20160509	16:04:00	20160525	01:29:00	105-18750-1	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-1	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:12	05/06/2016			20160509	16:04:00	20160525	01:29:00	105-18750-1	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-1	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:12	05/06/2016			20160509	16:04:00	20160525	01:29:00	105-18750-1	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-1	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	DLI	NSS	W		05/09/2016 09:12	05/06/2016			20160509	16:04:00	20160526	12:24:00	105-18750-1	20	2			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.80	0.80	ng/L		D M Q	PB	TRG				00000000		0.375	0.5	1.0	0.214	0.556	0.375	105-18750-1	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	NM-100-180926/S-A	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	LBS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.0035	0.0035	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00077	0.0024	0.0024	105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	NM-100-180926/S-A	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	LBS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.0018	0.0018	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00082	0.0024	0.0024	105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00077	0.0024	0.0024	105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.0018	0.0018	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00086	0.0024	0.0024	105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.0167	0.0167	ng/L		J M Q	PB	TRG				00000000		0.0012	0.0024	1.0	0.0012	0.0028	0.0024	105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:00	05/06/2016			20160509	16:04:00	20160525	01:51:00	105-18750-2	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-2	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			Perfluorohexanoic acid (PFHpA)	375-85-9	0.013	0.013	ng/L			PB	TRG				00000000		0.0079	0.0020	0.0024	0.0079	0.0020	0.0024	105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00077	0.0024	0.0024	105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.0018	0.0018	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00086	0.0024	0.0024	105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00077	0.0024	0.0024	105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.016	0.016	ng/L			PB	TRG				00000000		0.0012	0.0024	1.0	0.0012	0.0028	0.0024	105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:44	05/06/2016			20160509	16:04:00	20160525	02:02:00	105-18750-3	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-3	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			Perfluorohexanoic acid (PFHpA)	375-85-9	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00076	0.0024	0.0024	105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00077	0.0024	0.0024	105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.0018	0.0018	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00086	0.0024	0.0024	105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.0114	0.0114	ng/L		J	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.0012	0.0028	0.0024	105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:32	05/06/2016			20160509	16:04:00	20160525	01:55:00	105-18750-4	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-4	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			Perfluorohexanoic acid (PFHpA)	375-85-9	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00076	0.0024	0.0024	105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00077	0.0024	0.0024	105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.0067	0.0067	ng/L		M Q	PB	TRG				00000000		0.0012	0.0024	1.0	0.00082	0.0024	0.0024	105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.0129	0.0129	ng/L		J	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.0012	0.0028	0.0024	105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:20	05/06/2016			20160509	16:04:00	20160525	01:49:00	105-18750-5	1	1			1363 PFAA	1363 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-5	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:08	05/06/2016			20160509	16:04:00	20160525	01:37:00	105-18750-6	1	1			Perfluorohexanoic acid (PFHpA)	375-85-9	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00076	0.0024	0.0024	105-18750-6	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:08	05/06/2016			20160509	16:04:00	20160525	01:37:00	105-18750-6	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.0019	0.0019	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00077	0.0024	0.0024	105-18750-6	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:08	05/06/2016			20160509	16:04:00	20160525	01:37:00	105-18750-6	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.0018	0.0018	ng/L		U	PT_ISC			PB	TRG				00000000			0.0024	1.0	0.00086	0.0024	0.0024	105-18750-6	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:08	05/06/2016			20160509	16:04:00	20160525	01:37:00	105-18750-6	1	1			Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.0167	0.0167	ng/L		J M Q	PB	TRG				00000000		0.0012	0.0024	1.0	0.0012	0.0028	0.0024	105-18750-6	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:08	05/06/2016			20160509	16:04:00	20160525	01:37:00	105-18750-6	1	1			1802 PFAS	1802 PFAS	NA			PT_ISC			PB	SUMI				00000000							105-18750-6	105-111160	
NAUTI0SIO0000	W001		OCEANA_NAS	OP-R4H4-0116	NONE	SVOA	TAMS_WLS-0005	SVOA	TAMS	Test America	NONE	NA	SW8181	SSD	NSS	W		05/09/2016 09:08	05/06/2016			20160509	16:04:00	20160525	01:37:00	105-18750-6	1	1			1414 PFAA	1414 PFAA	NA			PT_ISC			PB	SUMI				00000000							105-18750-6	105

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CH2M_Code	Analysis_Group	Analytical_Method	PRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	DateTime_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	GC_Column_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date
N6247016D9000	WE01		OCEANA_NAS	OF-INF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 09:55	05/11/2016			20160512	10:01:00	20160526	12:46:00	320-18794-1	20	1			13C4-PFHPA	13C4-PFHPA		141	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-INF01-0516	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	REG	W	4	05/10/2016 09:55	05/11/2016			20160517	08:05:00	20160518	16:30:43	320-18794-1	1	1			Iron	7439-89-6		5500	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18794-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	OF-INF01-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	FF	SW3005A	000	REG	W	4	05/10/2016 09:55	05/11/2016			20160519	14:45:00	20160520	22:44:52	320-18794-1	1	1			Iron	7439-89-6		170	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18794-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.064	UG_L	D		PR	TRG					00000000			0.048	5	0.015	0.038	0.048	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			Perfluorooctanoic acid (PFOA)	335-67-1		3.7	UG_L	D M		PR	TRG					00000000			0.048	5	0.014	0.038	0.048	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			Perfluorononanoic acid (PFNA)	375-95-1		0.038	UG_L	U		PR	TRG					00000000			0.048	5	0.012	0.038	0.048	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.025	UG_L	J D M		PR	TRG					00000000			0.048	5	0.018	0.038	0.048	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.85	UG_L	D M		PR	TRG					00000000			0.048	5	0.017	0.038	0.048	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		1.2	UG_L	Q B D M		PR	TRG					00000000			0.076	5	0.024	0.057	0.076	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			18O2 PFHXS	18O2 PFHXS		161	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			13C4 PFOS	13C4 PFOS		158	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			13C5 PFNA	13C5 PFNA		151	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			13C4 PFOA	13C4 PFOA		142	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-EFF01-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:06	05/11/2016			20160512	10:01:00	20160526	13:07:00	320-18794-2	20	1			13C4-PFHPA	13C4-PFHPA		150	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:05:59	320-18794-3	2	1			Total organic carbon (TOC)	TOC		51	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:05:59	320-18794-3	2	1			Total organic carbon (TOC)	TOC		51	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:05:59	320-18794-3	2	1			Total organic carbon (TOC)	TOC		50	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:05:59	320-18794-3	2	1			Total organic carbon (TOC)	TOC		50	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:05:59	320-18794-3	2	1			Total organic carbon (TOC)	TOC		51	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	FILT	FWCHEM	9060	PCHAR	TAMER	Test America	NONE	FF	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:23:41	320-18794-3	2	1			Dissolved organic carbon	DOC		29	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326067		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	FILT	FWCHEM	9060	PCHAR	TAMER	Test America	NONE	FF	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:23:41	320-18794-3	2	1			Dissolved organic carbon	DOC		29	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326067		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	FILT	FWCHEM	9060	PCHAR	TAMER	Test America	NONE	FF	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:23:41	320-18794-3	2	1			Dissolved organic carbon	DOC		30	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326067		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	FILT	FWCHEM	9060	PCHAR	TAMER	Test America	NONE	FF	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:23:41	320-18794-3	2	1			Dissolved organic carbon	DOC		29	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326067		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	FILT	FWCHEM	9060	PCHAR	TAMER	Test America	NONE	FF	NONE	000	REG	W	4	05/10/2016 10:48	05/11/2016					20160518	21:23:41	320-18794-3	2	1			Dissolved organic carbon	DOC		29	MG_L			PR	TRG					00000000			2.0	5	0.31	1.0	2.0	320-18794-1	280-326067		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160525	08:00:00	320-18794-4	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.011	UG_L	M		PR	TRG					00000000			0.0039	5	0.0012	0.0029	0.0039	320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160525	08:00:00	320-18794-4	1	1			13C4 PFOS	13C4 PFOS		124	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00078	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		0.0040	UG_L	M		PR	TRG					00000000			0.0024	5	0.00072	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			Perfluorononanoic acid (PFNA)	375-95-1		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00063	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00089	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.0016	UG_L	J M		PR	TRG					00000000			0.0024	5	0.00084	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			18O2 PFHXS	18O2 PFHXS		122	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			13C5 PFNA	13C5 PFNA		133	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			13C4 PFOA	13C4 PFOA		141	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:00	05/11/2016			20160512	10:01:00	20160526	07:22:00	320-18794-4	1	2			13C4-PFHPA	13C4-PFHPA		131	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160525	08:21:00	320-18794-5	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.0027	UG_L	J M		PR	TRG					00000000			0.0037	5	0.0012	0.0028	0.0037	320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160525	08:21:00	320-18794-5	1	1			13C4 PFOS	13C4 PFOS		132	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00074	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		0.0017	UG_L	J		PR	TRG					00000000			0.0023	5	0.00069	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			Perfluorononanoic acid (PFNA)	375-95-1		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00060	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00085	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.00083	UG_L	J		PR	TRG					00000000			0.0023	5	0.00080	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			18O2 PFHXS	18O2 PFHXS		21	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			13C5 PFNA	13C5 PFNA		18	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			13C4 PFOA	13C4 PFOA		17	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:05	05/11/2016			20160512	10:01:00	20160526	07:44:00	320-18794-5	1	2			13C4-PFHPA	13C4-PFHPA		17	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160525	08:43:00	320-18794-6	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.0027	UG_L	U M		PR	TRG					00000000			0.0036	5	0.0012	0.0027	0.0036	320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160525	08:43:00	320-18794-6	1	1			13C4 PFOS	13C4 PFOS		147	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00072	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		0.0018	UG_L	J M		PR	TRG					00000000			0.0023	5	0.00067	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			Perfluorononanoic acid (PFNA)	375-95-1		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00059	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00083	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00078	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			18O2 PFHXS	18O2 PFHXS		140	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			13C5 PFNA	13C5 PFNA		119	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			13C4 PFOA	13C4 PFOA		126	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW78D-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/09/2016 09:07	05/11/2016			20160512	10:01:00	20160526	08:05:00	320-18794-6	1	2			13C4-PFHPA	13C4-PFHPA		117	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160525	09:04:00	320-18794-7	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.0029	UG_L	U		PR	TRG					00000000			0.0039	5	0.0012	0.0029	0.0039	320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160525	09:04:00	320-18794-7	1	1			13C4 PFOS	13C4 PFOS		135	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00078	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		0.0019	UG_L	U M		PR	TRG					00000000			0.0024	5	0.00073	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			Perfluorononanoic acid (PFNA)	375-95-1		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00064	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00089	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00085	0.0019	0.0024	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			18O2 PFHXS	18O2 PFHXS		144	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			13C5 PFNA	13C5 PFNA		144	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			13C4 PFOA	13C4 PFOA		141	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FB77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:45	05/11/2016			20160512	10:01:00	20160526	08:26:00	320-18794-7	1	2			13C4-PFHPA	13C4-PFHPA		142	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160525	09:25:00	320-18794-8	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.0028	UG_L	U		PR	TRG					00000000			0.0037	5	0.0012	0.0028	0.0037	320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160525	09:25:00	320-18794-8	1	1			13C4 PFOS	13C4 PFOS		148	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00074	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00069	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			Perfluorononanoic acid (PFNA)	375-95-1		0.0018	UG_L	U M		PR	TRG					00000000			0.0023	5	0.00060	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00084	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.0018	UG_L	U		PR	TRG					00000000			0.0023	5	0.00080	0.0018	0.0023	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			18O2 PFHXS	18O2 PFHXS		134	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			13C5 PFNA	13C5 PFNA		106	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			13C4 PFOA	13C4 PFOA		118	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW77-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 14:54	05/11/2016			20160512	10:01:00	20160526	08:47:00	320-18794-8	1	2			13C4-PFHPA	13C4-PFHPA		107	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-INF01-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	LF	SW3005A	000	MS	W	4	05/10/2016 09:55	05/11/2016			20160519	14:45:00	20160520	22:50:13	320-18794-1	1	1			Iron	7439-89-6		98	PCT_REC			PR	TRG		MSA	115	87	00000000			100	5	22	85	100	320-18794-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	OF-INF01-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	LF	SW3005A	000	MSD	W	4	05/10/2016 09:55	05/11/2016			20160519	14:45:00	20160520	22:52:44	320-18794-1	1	1			Iron	7439-89-6		98	PCT_REC			PR	TRG		MSP	115	87	00000000			100	5	22	85	100	320-18794-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-325380/2-A	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	BS	W	4	05/17/2016 08:05	05/17/2016			20160517	08:05:00	20160518	16:28:16	LCS 280-325380/2-A	1	1			Iron	7439-89-6		99	PCT_REC			PR	TRG		LSA	115	87	00000000			100	5	22	85	100	320-18794-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-325537/1	NONE	WCHEM	2540D	PCHAR	TAMER	Test America	NONE	NA	NONE	000	BS	W	4	05/16/2016 16:19	05/16/2016					20160516	16:19:31	LCS 280-325537/1	1	1			Total suspended solids (TSS)	TSS		90	PCT_REC			PR	TRG		LSA	114	86	00000000			4.0	5	1.1	2.8	4.0	320-18794-1	280-325537		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-325709/2-C	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	LF	SW3005A	000	BS	W	4	05/19/2016 14:45	05/19/2016			20160519	14:45:00	20160520	22:36:58	LCS 280-325709/2-C	1	1			Iron	7439-89-6		100	PCT_REC			PR	TRG		LSA	115	87	00000000			100	5	22	85	100	320-18794-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-326066/3	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	BS	W	4	05/18/2016 16:42	05/18/2016					20160518	16:42:52	LCS 280-326066/3	1	1			Total organic carbon (TOC)	TOC		98	PCT_REC			PR	TRG		LSA	112	88	00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-326066/3	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	BS	W	4	05/18/2016 16:42	05/18/2016					20160518	16:42:52	LCS 280-326066/3	1	1			Total organic carbon (TOC)	TOC		98	PCT_REC			PR	TRG		LSA	112	88	00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-326066/3	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	BS	W	4	05/18/2016 16:42	05/18/2016					20160518	16:42:52	LCS 280-326066/3	1	1			Total organic carbon (TOC)	TOC		98	PCT_REC			PR	TRG		LSA	112	88	00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-326066/3	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	BS	W	4	05/18/2016 16:42	05/18/2016					20160518	16:42:52	LCS 280-326066/3	1	1			Total organic carbon (TOC)	TOC		99	PCT_REC			PR	TRG		LSA	112	88	00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-326066/3	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	BS	W	4	05/18/2016 16:42	05/18/2016					20160518	16:42:52	LCS 280-326066/3	1	1			Total organic carbon (TOC)	TOC		98	PCT_REC			PR	TRG		LSA	112	88	00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:35:00	LCS 320-109640/2-A	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		89	PCT_REC	M		PR	TRG		LSA	140	60	00000000			0.0040	5	0.0013	0.0030	0.0040	320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:35:00	LCS 320-109640/2-A	1	1			13C4 PFOS	13C4 PFOS		132	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		98	PCT_REC			PR	TRG		LSA	140	60	00000000			0.0025	5	0.00080	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		84	PCT_REC			PR	TRG		LSA	140	60	00000000			0.0025	5	0.00075	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluorononanoic acid (PFNA)	375-95-1		90	PCT_REC			PR	TRG		LSA	140	60	00000000			0.0025	5	0.00065	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		86	PCT_REC			PR	TRG		LSA	150	50	00000000			0.0025	5	0.00092	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		103	PCT_REC	M		PR	TRG		LSA	140	60	00000000			0.0025	5	0.00087	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			18O2 PFHXS	18O2 PFHXS		121	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			13C5 PFNA	13C5 PFNA		138	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			13C4 PFOA	13C4 PFOA		132	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			13C4-PFHPA	13C4-PFHPA		122	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:56:00	LCSD 320-109640/3-A	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		90	PCT_REC	M		PR	TRG		LSP	140	60	00000000			0.0040	5	0.0013	0.0030	0.0040	320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:56:00	LCSD 320-109640/3-A	1	1			13C4 PFOS	13C4 PFOS		119	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		101	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00080	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		95	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00075	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluorononanoic acid (PFNA)	375-95-1		97	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00065	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		88	PCT_REC			PR	TRG		LSP	150	50	00000000			0.0025	5	0.00092	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		82	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00087	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			18O2 PFHXS	18O2 PFHXS		114	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			13C5 PFNA	13C5 PFNA		129	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			13C4 PFOA	13C4 PFOA		124	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			13C4-PFHPA	13C4-PFHPA		125	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 280-325380/1-A	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	LB1	W	4	05/17/2016 08:05	05/17/2016			20160517	08:05:00	20160518	16:25:53	MB 280-325380/1-A	1	1			Iron	7439-89-6		85	UG_L	U		PR	TRG					00000000			100	5	22	85	100	320-18794-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	MB 280-325537/2	NONE	WCHEM	2540D	PCHAR	TAMER	Test America	NONE	NA	NONE	000	LB1	W	4	05/16/2016 16:19	05/16/2016					20160516	16:19:31	MB 280-325537/2	1	1			Total suspended solids (TSS)	TSS		2.8	MG_L	U		PR	TRG					00000000			4.0	5	1.1	2.8	4.0	320-18794-1	280-325537		
N6247016D9000	WE01		OCEANA_NAS	MB 280-325709/1-C	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	LF	SW3005A	000	LB1	W	4	05/19/2016 14:45	05/19/2016			20160519	14:45:00	20160520	22:34:14	MB 280-325709/1-C	1	1			Iron	7439-89-6		85	UG_L	U		PR	TRG					00000000			100	5	22	85	100	320-18794-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	MB 280-326066/4	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	LB1	W	4	05/18/2016 16:58	05/18/2016					20160518	16:58:27	MB 280-326066/4	1	1			Total organic carbon (TOC)	TOC		0.251	MG_L	J		PR	TRG					00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	MB 280-326066/4	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	LB1	W	4	05/18/2016 16:58	05/18/2016					20160518	16:58:27	MB 280-326066/4	1	1			Total organic carbon (TOC)	TOC		0.252	MG_L	J		PR	TRG					00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	MB 280-326066/4	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	LB1	W	4	05/18/2016 16:58	05/18/2016					20160518	16:58:27	MB 280-326066/4	1	1			Total organic carbon (TOC)	TOC		0.251	MG_L	J		PR	TRG					00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	MB 280-326066/4	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	LB1	W	4	05/18/2016 16:58	05/18/2016					20160518	16:58:27	MB 280-326066/4	1	1			Total organic carbon (TOC)	TOC		0.255	MG_L	J		PR	TRG					00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	MB 280-326066/4	NONE	WCHEM	9060	PCHAR	TAMER	Test America	NONE	NA	NONE	000	LB1	W	4	05/18/2016 16:58	05/18/2016					20160518	16:58:27	MB 280-326066/4	1	1			Total organic carbon (TOC)	TOC		0.252	MG_L	J		PR	TRG					00000000			1.0	5	0.16	0.50	1.0	320-18794-1	280-326066		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:14:00	MB 320-109640/1-A	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.00136	UG_L	J M		PR	TRG					00000000			0.0040	5	0.0013	0.0030	0.0040	320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:14:00	MB 320-109640/1-A	1	1			13C4 PFOS	13C4 PFOS		120	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18794-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00080	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00075	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluorononanoic acid (PFNA)	375-95-1		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00065	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00092	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00087	0.0020	0.0025	320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			18O2 PFHXS	18O2 PFHXS		115	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			13C5 PFNA	13C5 PFNA		129	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			13C4 PFOA	13C4 PFOA		142	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			13C4-PFHPA	13C4-PFHPA		128	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18794-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.051	UG_L	D		PR	TRG					00000000			0.047	5	0.015	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.45	UG_L	D M		PR	TRG					00000000			0.047	5	0.014	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			Perfluorononanoic acid (PFNA)	375-95-1		0.037	UG_L	U		PR	TRG					00000000			0.047	5	0.012	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.037	UG_L	U		PR	TRG					00000000			0.047	5	0.017	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.29	UG_L	D M		PR	TRG					00000000			0.047	5	0.016	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		1.3	UG_L	B D M		PR	TRG					00000000			0.075	5	0.024	0.056	0.075	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			18O2 PFHXS	18O2 PFHXS		178	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			13C4 PFOS	13C4 PFOS		115	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			13C5 PFNA	13C5 PFNA		145	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			13C4 PFOA	13C4 PFOA		154	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160512	10:01:00	20160526	10:12:00	320-18796-1	20	1			13C4-PFHPA	13C4-PFHPA		160	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	FF	SW3005A	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160517	08:05:00	20160517	17:30:33	320-18796-1	1	1			Iron	7439-89-6		1400	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-325799		
N6247016D9000	WE01		OCEANA_NAS	OF-STORLAG-0516	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	REG	W	4	05/10/2016 12:10	05/11/2016			20160517	08:05:00	20160518	16:33:21	320-18796-1	1	1			Iron	7439-89-6		1100	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.071	UG_L	D		PR	TRG					00000000			0.025	5	0.0079	0.020	0.025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			Perfluorooctanoic acid (PFOA)	335-67-1		1.4	UG_L	D M		PR	TRG					00000000			0.025	5	0.0073	0.020	0.025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			Perfluorononanoic acid (PFNA)	375-95-1		0.0094	UG_L	J D		PR	TRG					00000000			0.025	5	0.0064	0.020	0.025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.033	UG_L	D		PR	TRG					00000000			0.025	5	0.0090	0.020	0.025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.56	UG_L	D M		PR	TRG					00000000			0.025	5	0.0085	0.020	0.025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		1.7	UG_L	B D M		PR	TRG					00000000			0.039	5	0.013	0.029	0.039	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			18O2 PFHXS	18O2 PFHXS		136	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			13C4 PFOS	13C4 PFOS		115	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			13C5 PFNA	13C5 PFNA		144	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			13C4 PFOA	13C4 PFOA		141	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160512	10:01:00	20160526	18:11:00	320-18796-2	10	1			13C4-PFHPA	13C4-PFHPA		140	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	FF	SW3005A	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160517	08:05:00	20160517	17:33:11	320-18796-2	1	1			Iron	7439-89-6		98	UG_L	J		PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-325799		
N6247016D9000	WE01		OCEANA_NAS	OF-TRMTLAG-0516	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	REG	W	4	05/10/2016 11:50	05/11/2016			20160517	08:05:00	20160518	16:36:01	320-18796-2	1	1			Iron	7439-89-6		350	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.045	UG_L	J D		PR	TRG					00000000			0.049	5	0.016	0.040	0.049	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.53	UG_L	D M		PR	TRG					00000000			0.049	5	0.015	0.040	0.049	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			Perfluorononanoic acid (PFNA)	375-95-1		0.040	UG_L	U		PR	TRG					00000000			0.049	5	0.013	0.040	0.049	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.040	UG_L	U		PR	TRG					00000000			0.049	5	0.018	0.040	0.049	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.31	UG_L	D M		PR	TRG					00000000			0.049	5	0.017	0.040	0.049	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		1.2	UG_L	B D M		PR	TRG					00000000			0.079	5	0.025	0.059	0.079	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			18O2 PFHXS	18O2 PFHXS		164	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			13C4 PFOS	13C4 PFOS		119	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			13C5 PFNA	13C5 PFNA		120	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			13C4 PFOA	13C4 PFOA		154	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160512	10:01:00	20160526	10:58:00	320-18796-3	20	1			13C4-PFHPA	13C4-PFHPA		157	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	FF	SW3005A	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160517	08:05:00	20160517	17:35:50	320-18796-3	1	1			Iron	7439-89-6		800	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-325799		
N6247016D9000	WE01		OCEANA_NAS	OF-POLLLAG-0516	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	REG	W	4	05/10/2016 11:25	05/11/2016			20160517	08:05:00	20160518	16:38:40	320-18796-3	1	1			Iron	7439-89-6		1500	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.049	UG_L	D		PR	TRG					00000000			0.047	5	0.015	0.038	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.47	UG_L	D M		PR	TRG					00000000			0.047	5	0.014	0.038	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			Perfluorononanoic acid (PFNA)	375-95-1		0.038	UG_L	U		PR	TRG					00000000			0.047	5	0.012	0.038	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.038	UG_L	U		PR	TRG					00000000			0.047	5	0.017	0.038	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.30	UG_L	D M		PR	TRG					00000000			0.047	5	0.017	0.038	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		1.1	UG_L	B D M		PR	TRG					00000000			0.076	5	0.024	0.057	0.076	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			18O2 PFHXS	18O2 PFHXS		164	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			13C4 PFOS	13C4 PFOS		135	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			13C5 PFNA	13C5 PFNA		140	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			13C4 PFOA	13C4 PFOA		154	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160512	10:01:00	20160526	11:21:00	320-18796-4	20	1			13C4-PFHPA	13C4-PFHPA		152	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	FF	SW3005A	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160517	08:05:00	20160517	17:38:28	320-18796-4	1	1			Iron	7439-89-6		1500	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-325799		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	REG	W	4	05/10/2016 10:48	05/11/2016			20160517	08:05:00	20160518	16:41:20	320-18796-4	1	1			Iron	7439-89-6		1400	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONE	WCHEM	2540D	PCHAR	TAMER	Test America	NONE	NA	NONE	000	REG	W	4	05/10/2016 10:30	05/11/2016					20160516	16:19:31	320-18796-5	1	1			Total suspended solids (TSS)	TSS		4700	MG_L			PR	TRG					00000000			500	5	140	350	500	320-18796-1	280-325537		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.080	UG_L	D		PR	TRG					00000000			0.047	5	0.015	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			Perfluorooctanoic acid (PFOA)	335-67-1		4.1	UG_L	D M		PR	TRG					00000000			0.047	5	0.014	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			Perfluorononanoic acid (PFNA)	375-95-1		0.037	UG_L	U		PR	TRG					00000000			0.047	5	0.012	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.026	UG_L	J D		PR	TRG					00000000			0.047	5	0.017	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.84	UG_L	D M		PR	TRG					00000000			0.047	5	0.016	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		1.6	UG_L	B D M		PR	TRG					00000000			0.075	5	0.024	0.056	0.075	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			18O2 PFHXS	18O2 PFHXS		165	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			13C4 PFOS	13C4 PFOS		127	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			13C5 PFNA	13C5 PFNA		152	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			13C4 PFOA	13C4 PFOA		130	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160512	10:01:00	20160526	11:42:00	320-18796-5	20	1			13C4-PFHPA	13C4-PFHPA		143	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160517	08:05:00	20160518	16:43:59	320-18796-5	1	1			Iron	7439-89-6		640000	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	OF-BACKWASH-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	LF	SW3005A	000	REG	W	4	05/10/2016 10:30	05/11/2016			20160519	14:45:00	20160520	22:39:28	320-18796-5	1	1			Iron	7439-89-6		580	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.072	UG_L	D		PR	TRG					00000000			0.047	5	0.015	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			Perfluorooctanoic acid (PFOA)	335-67-1		3.6	UG_L	D M		PR	TRG					00000000			0.047	5	0.014	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			Perfluorononanoic acid (PFNA)	375-95-1		0.037	UG_L	U		PR	TRG					00000000			0.047	5	0.012	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.023	UG_L	J D		PR	TRG					00000000			0.047	5	0.017	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.77	UG_L	D M		PR	TRG					00000000			0.047	5	0.016	0.037	0.047	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		1.5	UG_L	B D M		PR	TRG					00000000			0.074	5	0.024	0.056	0.074	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			18O2 PFHXS	18O2 PFHXS		164	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			13C4 PFOS	13C4 PFOS		127	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			13C5 PFNA	13C5 PFNA		140	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			13C4 PFOA	13C4 PFOA		131	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160512	10:01:00	20160526	12:03:00	320-18796-6	20	1			13C4-PFHPA	13C4-PFHPA		132	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160517	08:05:00	20160518	16:46:56	320-18796-6	1	1			Iron	7439-89-6		190	UG_L			PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	OF-FILTER-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	LF	SW3005A	000	REG	W	4	05/10/2016 10:15	05/11/2016			20160519	14:45:00	20160520	22:42:10	320-18796-6	1	1			Iron	7439-89-6		85	UG_L	U		PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	FF	SW3005A	000	MS	W	4	05/10/2016 10:48	05/11/2016			20160517	08:05:00	20160517	17:43:46	320-18796-4	1	1			Iron	7439-89-6		110	PCT_REC			PR	TRG		MSA	115	87	00000000			100	5	22	85	100	320-18796-1	280-325799		
N6247016D9000	WE01		OCEANA_NAS	OF-CLTANK-0516	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	FF	SW3005A	000	MSD	W	4	05/10/2016 10:48	05/11/2016			20160517	08:05:00	20160517	17:46:10	320-18796-4	1	1			Iron	7439-89-6		104	PCT_REC			PR	TRG		MSP	115	87	00000000			100	5	22	85	100	320-18796-1	280-325799		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-325380/2-A	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	BS	W	4	05/17/2016 08:05	05/17/2016			20160517	08:05:00	20160518	16:28:16	LCS 280-325380/2-A	1	1			Iron	7439-89-6		99	PCT_REC			PR	TRG		LSA	115	87	00000000			100	5	22	85	100	320-18796-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-325382/2-A	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3005A	000	BS	W	4	05/17/2016 08:05	05/17/2016			20160517	08:05:00	20160517	17:28:08	LCS 280-325382/2-A	1	1			Iron	7439-89-6		97	PCT_REC			PR	TRG		LSA	115	87	00000000			100	5	22	85	100	320-18796-1	280-325799		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-325537/1	NONE	WCHEM	2540D	PCHAR	TAMER	Test America	NONE	NA	NONE	000	BS	W	4	05/16/2016 16:19	05/16/2016					20160516	16:19:31	LCS 280-325537/1	1	1			Total suspended solids (TSS)	TSS		90	PCT_REC			PR	TRG		LSA	114	86	00000000			4.0	5	1.1	2.8	4.0	320-18796-1	280-325537		
N6247016D9000	WE01		OCEANA_NAS	LCS 280-325709/2-C	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	LF	SW3005A	000	BS	W	4	05/19/2016 14:45	05/19/2016			20160519	14:45:00	20160520	22:36:58	LCS 280-325709/2-C	1	1			Iron	7439-89-6		100	PCT_REC			PR	TRG		LSA	115	87	00000000			100	5	22	85	100	320-18796-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:35:00	LCS 320-109640/2-A	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		104	PCT_REC			PR	TRG		LSA	140	60	00000000			0.0025	5	0.00080	0.0020	0.0025	320-18796-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		98	PCT_REC			PR	TRG		LSA	140	60	00000000			0.0025	5	0.00080	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		84	PCT_REC			PR	TRG		LSA	140	60	00000000			0.0025	5	0.00075	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluorononanoic acid (PFNA)	375-95-1		90	PCT_REC			PR	TRG		LSA	140	60	00000000			0.0025	5	0.00065	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		86	PCT_REC			PR	TRG		LSA	150	50	00000000			0.0025	5	0.00092	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		103	PCT_REC	M		PR	TRG		LSA	140	60	00000000			0.0025	5	0.00087	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			18O2 PFHXS	18O2 PFHXS		121	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			13C5 PFNA	13C5 PFNA		138	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			13C4 PFOA	13C4 PFOA		132	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCS 320-109640/2-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BS	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:58:00	LCS 320-109640/2-A	1	2			13C4-PFHPA	13C4-PFHPA		122	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:56:00	LCSD 320-109640/3-A	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		108	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00075	0.0020	0.0025	320-18796-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		101	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00080	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		95	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00075	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluorononanoic acid (PFNA)	375-95-1		97	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00065	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		88	PCT_REC			PR	TRG		LSP	150	50	00000000			0.0025	5	0.00092	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		82	PCT_REC			PR	TRG		LSP	140	60	00000000			0.0025	5	0.00087	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			18O2 PFHXS	18O2 PFHXS		114	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			13C5 PFNA	13C5 PFNA		129	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			13C4 PFOA	13C4 PFOA		124	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	LCSD 320-109640/3-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	BSD	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	06:19:00	LCSD 320-109640/3-A	1	2			13C4-PFHPA	13C4-PFHPA		125	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 280-325380/1-A	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3010A	000	LB1	W	4	05/17/2016 08:05	05/17/2016			20160517	08:05:00	20160518	16:25:53	MB 280-325380/1-A	1	1			Iron	7439-89-6		85	UG_L	U		PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326010		
N6247016D9000	WE01		OCEANA_NAS	MB 280-325382/1-A	NONE	METAL	6010C	MET	TAMER	Test America	NONE	NA	SW3005A	000	LB1	W	4	05/17/2016 08:05	05/17/2016			20160517	08:05:00	20160517	17:25:47	MB 280-325382/1-A	1	1			Iron	7439-89-6		23.7	UG_L	J		PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-325799		
N6247016D9000	WE01		OCEANA_NAS	MB 280-325537/2	NONE	WCHEM	2540D	PCHAR	TAMER	Test America	NONE	NA	NONE	000	LB1	W	4	05/16/2016 16:19	05/16/2016					20160516	16:19:31	MB 280-325537/2	1	1			Total suspended solids (TSS)	TSS		2.8	MG_L	U		PR	TRG					00000000			4.0	5	1.1	2.8	4.0	320-18796-1	280-325537		
N6247016D9000	WE01		OCEANA_NAS	MB 280-325709/1-C	FILT	FMETAL	6010C	MET	TAMER	Test America	NONE	LF	SW3005A	000	LB1	W	4	05/19/2016 14:45	05/19/2016			20160519	14:45:00	20160520	22:34:14	MB 280-325709/1-C	1	1			Iron	7439-89-6		85	UG_L	U		PR	TRG					00000000			100	5	22	85	100	320-18796-1	280-326363		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160525	06:14:00	MB 320-109640/1-A	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.00136	UG_L	J M		PR	TRG					00000000			0.0040	5	0.0013	0.0030	0.0040	320-18796-1	320-111182		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	RA0	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00080	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluorooctanoic acid (PFOA)	335-67-1		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00075	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluorononanoic acid (PFNA)	375-95-1		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00065	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00092	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.0020	UG_L	U		PR	TRG					00000000			0.0025	5	0.00087	0.0020	0.0025	320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			18O2 PFHXS	18O2 PFHXS		115	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			13C5 PFNA	13C5 PFNA		129	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			13C4 PFOA	13C4 PFOA		142	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	MB 320-109640/1-A	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	LB1	W	4	05/12/2016 10:01	05/12/2016			20160512	10:01:00	20160526	05:37:00	MB 320-109640/1-A	1	2			13C4-PFHPA	13C4-PFHPA		128	PCT_REC			PR	SURR		SMSA	150	25	00000000				5				320-18796-1	320-111390		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00077	0.0019	0.0024	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00072	0.0019	0.0024	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			Perfluorononanoic acid (PFNA)	375-95-1		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00063	0.0019	0.0024	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00088	0.0019	0.0024	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4		0.00095	UG_L	J		PR	TRG					00000000			0.0024	5	0.00084	0.0019	0.0024	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.0094	UG_L	M		PR	TRG					00000000			0.0039	5	0.0012	0.0029	0.0039	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			18O2 PFHXS	18O2 PFHXS		47	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			13C4 PFOS	13C4 PFOS		7	PCT_REC	Q		PR	SURR		SLSA	150	25	00000000				5				320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			13C5 PFNA	13C5 PFNA		64	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			13C4 PFOA	13C4 PFOA		74	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-RW83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:22	05/17/2016			20160520	11:05:00	20160527	21:54:00	320-18918-1	1	1			13C4-PFHPA	13C4-PFHPA		75	PCT_REC			PR	SURR		SLSA	150	25	00000000				5				320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-FB83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:15	05/17/2016			20160520	11:05:00	20160527	22:15:00	320-18918-2	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00078	0.0019	0.0024	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-FB83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:15	05/17/2016			20160520	11:05:00	20160527	22:15:00	320-18918-2	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00073	0.0019	0.0024	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-FB83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:15	05/17/2016			20160520	11:05:00	20160527	22:15:00	320-18918-2	1	1			Perfluorononanoic acid (PFNA)	375-95-1		0.0019	UG_L	U M		PR	TRG					00000000			0.0024	5	0.00064	0.0019	0.0024	320-18918-1	320-111733		
N6247016D9000	WE01		OCEANA_NAS	OF-FB83-0516	NONS	SVOA	TA_WS-LC-0025	SVOA	TAMER	Test America	NONE	NA	SW3535	000	REG	W	4	05/16/2016 08:15	05/17/2016			20160520	11:05:00	20160527	22:15:00	320-18918-2	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.0019	UG_L	U		PR	TRG					00000000			0.0024	5	0.00089	0.0019	0.0024	320-18918-1	320-111733		

Contract_ID	Sol_ITN_Number	Phase	Installation_ID	Sample_Name	OWM_Code	Analyte_Group	Analytical_Method	PBS_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	Waterflow_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	QC_Criteria_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Quoted_Limit_Data	QC_Narrative	MDL	Detection_Limit	EDM_Version	DL	LOD	LOQ	Sample_Batch	Validator_Name	Val_Date
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.01		ug/L	M		PB	TRG			00000000		N	0.00686	0.0034	0.0034	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.0019		ug/L	M		PB	TRG			00000000		N	0.0012	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			1,4-Dioxane	123-91-1	0.5		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0686	0.034	0.034	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			11Cl-PF3OUdS	763051-92-9	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			4,8-dioxa-3H-perfluorononanoic acid	919005-14-4	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.0019		ug/L	M		PB	TRG		S10A	150	25	00000000		N	0.0019	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.01		ug/L	M		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorooctanesulfonamide (FOSA)	754-91-6	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoroundecanesulfonic acid (PFUnS)	749786-16-1	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.0019		ug/L	M		PB	TRG		S10A	150	25	00000000		N	0.0012	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.0019		ug/L	M		PB	TRG		S10A	150	25	00000000		N	0.0012	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.01		ug/L	U		PB	TRG		S10A	150	25	00000000		N	0.0034	0.0019	0.0019	320-18918-1	320-111733	
NAUTH20439000	W691		OCEANA_NAS	OP-FB80-0516	NONE	SVOA	TA_WS-LC-MS/MS	SVOA	TAMER	Test America	NONE	NA	SWB301	000	MDL	W	O	05/16/2016 08:15	05/17/2016		20160520	11:05:00	20160527	22:21:00	320-18918-2	1	1			Perfluoroundecanesulfonic acid (PFUnS)	749786-16-1

Data Validation Summary

Oceana CTO-WE44, NALF Fentress

TO: Tiffany Hill/CVO

Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: June 14, 2016

Introduction

The following data validation report discusses the data validation process and findings for TestAmerica Laboratories in the Sample Delivery Groups (SDGs) listed in the table below.

Samples were analyzed using the following analytical methods:

- WS-LC-0025 Perfluorinated Hydrocarbons
- SW6010C Iron, total & dissolved

The samples included in these SDGs are listed in the table below.

SDG	Sample_Name	Matrix
320-18704-1	OF-RW44-0516	Water
320-18704-1	OF-FB44-0516	Water
320-18704-1	OF-RW42B2-0516	Water
320-18704-1	OF-FB42B2-0516	Water
320-18704-1	OF-RW42A-0516	Water
320-18704-1	OF-FB42A-0516	Water
320-18704-1	OF-RW42B-0516	Water
320-18704-1	OF-FB42B-0516	Water
320-18704-1	OF-RW42C-516	Water
320-18704-1	OF-RW42CD-0516	Water

SDG	Sample_Name	Matrix
320-18704-1	OF-FB42C-0516	Water
320-18719-1	OF-FB08-0516	Water
320-18719-1	OF-RW08-0516	Water
320-18719-1	OF-FB71-0516	Water
320-18719-1	OF-RW71-0516	Water
320-18719-1	OF-FB84-0516	Water
320-18719-1	OF-RW84-0516	Water
320-18794-1	OF-INF01-0516	Water
320-18794-1	OF-EFF01-0516	Water
320-18794-1	OF-FB78-0516	Water
320-18794-1	OF-RW78-0516	Water
320-18794-1	OF-RW78D-0516	Water
320-18794-1	OF-FB77-0516	Water
320-18794-1	OF-RW77-0516	Water
320-18796-1	OF-STORLAG-0516	Water
320-18796-1	OF-TRMTLAG-0516	Water
320-18796-1	OF-POLLLAG-0516	Water
320-18796-1	OF-CLTANK-0516	Water
320-18796-1	OF-BACKWASH-0516	Water
320-18796-1	OF-FILTER-0516	Water
320-18918-1	OF-RW83-0516	Water
320-18918-1	OF-FB83-0516	Water
320-18849-1	OF-FB74-0516	Water
320-18849-1	OF-RW74-0516	Water
320-18849-1	OF-FB59-0516	Water
320-18849-1	OF-RW59-0516	Water
320-19022-1	OF-STORLAG-PT-0516	Water
320-19022-1	OF-TRMLAG-PT-0516	Water
320-19022-1	OF-POLLAG-PT-0516	Water
320-19022-1	OF-CLTANK-PT-0516	Water
320-19022-1	OF-BACKWASH-PT-0516	Water
320-19022-1	OF-FILTER-PT-0516	Water
320-19022-1	OF-INF01-PT-0615	Water
320-19022-1	OF-PROCESS BLANK-PT-0516	Water

Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Sampling and Analysis Plan Perfluorinated Compound Investigation, Naval Auxiliary Landing Field Fentress, Chesapeake, Virginia Contract Task Order WE44 (December 2015), National Functional Guidelines for Organic Data Review

(August 2014), and National Functional Guidelines for Inorganic Data Review (August 2014), with Region 3 Modification (Use of 'B' qualifier) as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Tuning Instrument
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Laboratory Control Samples
- Matrix Spike/Spike Duplicate
- Serial Dilution
- Isotope Dilution Analyte
- Field Duplicates
- Identification/Quantitation
- Reporting Limits
- Total vs. Dissolved

Overall Evaluation of Data/Potential Usability Issues

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

Data Completeness

The SDGs were received complete and intact.

Technical Holding Times

According to the chain of custody records, sampling was performed on 5/4/16 through 5/19/16. Samples were received at the laboratory 5/6/16 through 5/20/16. All sample preparation and analyses were performed within holding time requirements.

Blanks

Several compounds were detected in the field blanks and method blanks as listed below. Affected data are summarized in **Attachment 1**.

Blank ID	Compound	Conc.	Units
OF-FB42C-0516	Perfluorohexanesulfonic acid (PFHxS)	0.0011	UG_L
OF-FB44-0516	Perfluorooctane Sulfonate (PFOS)	0.0037	UG_L
OF-FB42B2-0516	Perfluorohexanesulfonic acid (PFHxS)	0.00097	UG_L
OF-FB42A-0516	Perfluorooctane Sulfonate (PFOS)	0.0029	UG_L
OF-FB78-0516	Perfluorooctane Sulfonate (PFOS)	0.011	UG_L
OF-FB78-0516	Perfluorooctanoic acid (PFOA)	0.0040	UG_L
OF-FB78-0516	Perfluorohexanesulfonic acid (PFHxS)	0.0016	UG_L
MB 280-325382/1-A	Iron	23.7	UG_L
MB 320-109334/1-A	Perfluorooctane Sulfonate (PFOS)	0.00149	UG_L
MB 320-109334/1-A	Perfluorooctane Sulfonate (PFOS)	0.00149	UG_L
MB 320-109640/1-A	Perfluorooctane Sulfonate (PFOS)	0.00136	UG_L
MB 320-109640/1-A	Perfluorooctane Sulfonate (PFOS)	0.00136	UG_L

Lab Control Sample/Sample Duplicate

Perfluorohexanesulfonic acid (PFHxS) did not meet RPD criteria between the LCS and LCSD in SDGs 320-18719-1 and 320-18704-1. Affected data are summarized in **Attachment 1**.

Isotope Dilution Analyte

Internal standards exhibited low or high recoveries for the samples listed below. Affected data are summarized in **Attachment 1**.

SDG	Sample_Name
320-18794-1	OF-INF01-0516
320-18794-1	OF-EFF01-0516
320-18794-1	OF-RW78-0516
320-18796-1	OF-STORLAG-0516
320-18796-1	OF-POLLLAG-0516
320-18796-1	OF-CLTANK-0516
320-18796-1	OF-BACKWASH-0516

SDG	Sample_Name
320-18918-1	OF-RW83-0516
320-18918-1	OF-FB83-0516
320-19022-1	OF-INF01-PT-0615

Total vs. Dissolved

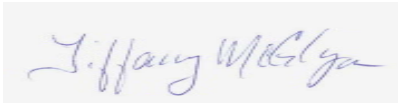
Iron did not meet criteria for total and dissolved for sample OF-STORLAG-0516. Affected data are summarized in **Attachment 1**.

Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

Qualifier Code Reference

Value	Description
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

Value	Description
MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

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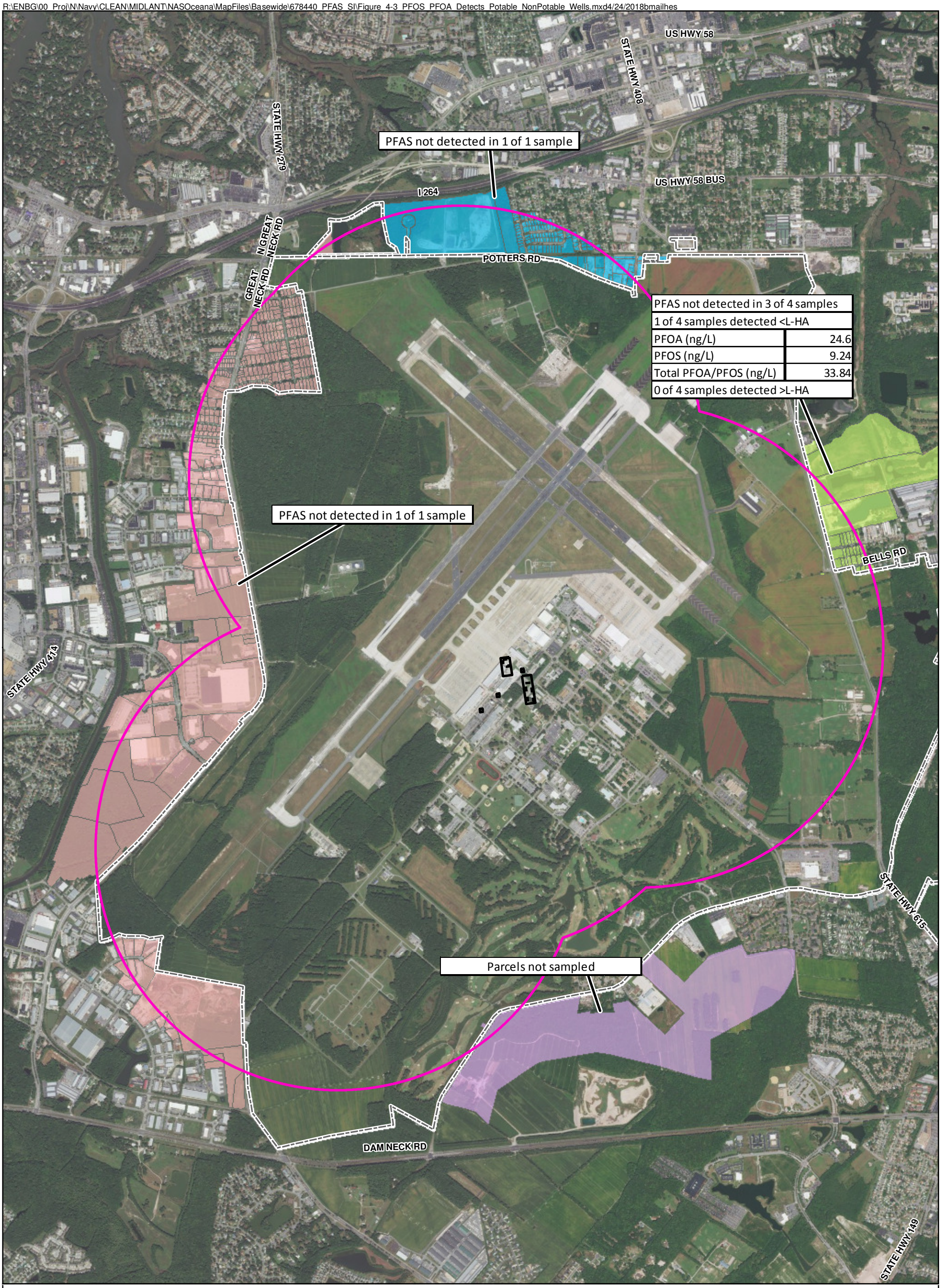

Legend

- Non-Core Target Treatment Area (2004)
- Core Target Treatment Area (2004) (Core)
- Sampling Area
- Installation Boundary

Off-Base Parcels

- East
- North
- South
- West

N
W E
S

0 1,000 2,000 4,000 Feet

Imagery Source: ©2017 Esri

Figure 4-3
COCs Detections in Potable Wells Sampled from Parcels Located Off-Base
Basewide Per- and Polyfluoroalkyl Substances Site Inspection Report
NAS Oceana, Virginia Beach, Virginia

ch2m