NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG 320-13012-1

Naval Air Station Pensacola
Pensacola, Florida

July 2019

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NAS PENSACOLA
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LABORATORY PACKAGE, 320-13012-1, NAS PENSACOLA FL
05/28/2015
TEST AMERICA

ANALYTICAL REPORT

Job Number: 320-13012-1

SDG Number: Proj # 112603383

Job Description: OLF Bronson Field

Contract Number: N62470-08-D-1001

For:
Tetra Tech, Inc.
1558 Village Square Blvd.
Suite 2
Tallahassee, FL 32309

Attention: Frank Lesesne

Approved for release.
Linda C. Laver
Project Manager II
5/28/2015 3:34 PM

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05/28/2015

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Qualifiers

LCMS

Qualifier	Qualifier Description
M	Manual integrated compound.
D	The reported value is from a dilution.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
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: Tetra Tech, Inc.
Project: OLF Bronson Field
Contract No. N62470-08-D-1001
Report Number: 320-13012-1

Comments

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 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 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.

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

Receipt

The samples were received on 5/14/2015 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.9º C.

Receipt Exceptions

The sample ID and collection date listed on the container label did not match the information for the following sample listed on the Chain-of-Custody (COC): BF-103-GW03-0515 on 5/13. The container is labeled as BF-103-GW03-0515D on 5/14. Per client directive, the sample has been logged in as BF-103-GW03-0515D on 5/13 (320-13012-10).

LCMS

PFOA/PFOS:

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with Batch 74169.

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

Client Sample ID: BF-105-GW01-0515 — Lab Sample ID: 320-13012-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.1		2.0	0.74	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	4.3	M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: BF-103-GW01-0515 — Lab Sample ID: 320-13012-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.2		2.0	0.75	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	10	M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: BF-103-GW055-0515 — Lab Sample ID: 320-13012-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.7		2.0	0.75	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	24	M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: BF-103-GW05D-0515 — Lab Sample ID: 320-13012-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	22		2.0	0.74	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	24	M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: BF-103-GW04-0515 — Lab Sample ID: 320-13012-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.2		2.0	0.75	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.0	M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: BF-104-GW02-0515 — Lab Sample ID: 320-13012-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	88		2.0	0.75	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1800	D M	10	6.4	ng/L	5		WS-LC-0025	Total/NA

Client Sample ID: BF-104-GW01-0515 — Lab Sample ID: 320-13012-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.9	J	2.0	0.75	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.0	M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: BF-103-GW02-0515 — Lab Sample ID: 320-13012-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.6		2.0	0.75	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.6	J M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: BF-103-GW03-0515 — Lab Sample ID: 320-13012-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	12		2.0	0.75	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	15	M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

Client Sample ID: BF-103-GW03-0515D — Lab Sample ID: 320-13012-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	11		2.0	0.75	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctane Sulfonate (PFOS)	16	M	2.0	1.3	ng/L	1		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: BF-105-GW01-0515

Lab Sample ID: 320-13012-1
Date Collected: 05/12/15 11:35
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.1		2.0	0.74	ng/L		05/15/15 14:07	05/18/15 19:16	1
Perfluorooctane Sulfonate (PFOS)	4.3	M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 19:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*123*		*25 - 150*	*05/15/15 14:07*	*05/18/15 19:16*	*1*
13C4 PFOA	*77*		*25 - 150*	*05/15/15 14:07*	*05/18/15 19:16*	*1*

Client Sample ID: BF-103-GW01-0515

Lab Sample ID: 320-13012-2
Date Collected: 05/12/15 13:40
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.2		2.0	0.75	ng/L		05/15/15 14:07	05/18/15 19:38	1
Perfluorooctane Sulfonate (PFOS)	10	M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 19:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*125*		*25 - 150*	*05/15/15 14:07*	*05/18/15 19:38*	*1*
13C4 PFOA	*83*		*25 - 150*	*05/15/15 14:07*	*05/18/15 19:38*	*1*

Client Sample ID: BF-103-GW055-0515

Lab Sample ID: 320-13012-3
Date Collected: 05/12/15 15:50
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.7		2.0	0.75	ng/L		05/15/15 14:07	05/18/15 19:59	1
Perfluorooctane Sulfonate (PFOS)	24	M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 19:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*112*		*25 - 150*	*05/15/15 14:07*	*05/18/15 19:59*	*1*
13C4 PFOA	*108*		*25 - 150*	*05/15/15 14:07*	*05/18/15 19:59*	*1*

Client Sample ID: BF-103-GW05D-0515

Lab Sample ID: 320-13012-4
Date Collected: 05/12/15 17:15
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	22		2.0	0.74	ng/L		05/15/15 14:07	05/18/15 20:20	1
Perfluorooctane Sulfonate (PFOS)	24	M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 20:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*110*		*25 - 150*	*05/15/15 14:07*	*05/18/15 20:20*	*1*
13C4 PFOA	*84*		*25 - 150*	*05/15/15 14:07*	*05/18/15 20:20*	*1*

Client Sample ID: BF-103-GW04-0515

Lab Sample ID: 320-13012-5
Date Collected: 05/12/15 18:40
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.2		2.0	0.75	ng/L		05/15/15 14:07	05/18/15 20:41	1

Client Sample ID: BF-103-GW04-0515

Lab Sample ID: 320-13012-5

Date Collected: 05/12/15 18:40
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonate (PFOS)	2.0	M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 20:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*115*		*25 - 150*	*05/15/15 14:07*	*05/18/15 20:41*	*1*
13C4 PFOA	*56*		*25 - 150*	*05/15/15 14:07*	*05/18/15 20:41*	*1*

Client Sample ID: BF-104-GW02-0515

Lab Sample ID: 320-13012-6

Date Collected: 05/13/15 10:45
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	88		2.0	0.75	ng/L		05/15/15 14:07	05/18/15 21:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*72*		*25 - 150*	*05/15/15 14:07*	*05/18/15 21:03*	*1*
13C4 PFOA	*50*		*25 - 150*	*05/15/15 14:07*	*05/18/15 21:03*	*1*

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonate (PFOS)	1800	D M	10	6.4	ng/L		05/15/15 14:07	05/19/15 11:30	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*119*		*25 - 150*	*05/15/15 14:07*	*05/19/15 11:30*	*5*
13C4 PFOA	*79*		*25 - 150*	*05/15/15 14:07*	*05/19/15 11:30*	*5*

Client Sample ID: BF-104-GW01-0515

Lab Sample ID: 320-13012-7

Date Collected: 05/13/15 11:15
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	J	2.0	0.75	ng/L		05/15/15 14:07	05/18/15 21:24	1
Perfluorooctane Sulfonate (PFOS)	5.0	M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 21:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*109*		*25 - 150*	*05/15/15 14:07*	*05/18/15 21:24*	*1*
13C4 PFOA	*56*		*25 - 150*	*05/15/15 14:07*	*05/18/15 21:24*	*1*

Client Sample ID: BF-103-GW02-0515

Lab Sample ID: 320-13012-8

Date Collected: 05/13/15 12:50
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.6		2.0	0.75	ng/L		05/15/15 14:07	05/18/15 21:45	1
Perfluorooctane Sulfonate (PFOS)	1.6	J M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 21:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*110*		*25 - 150*	*05/15/15 14:07*	*05/18/15 21:45*	*1*
13C4 PFOA	*60*		*25 - 150*	*05/15/15 14:07*	*05/18/15 21:45*	*1*

Client Sample ID: BF-103-GW03-0515

Lab Sample ID: 320-13012-9

Date Collected: 05/13/15 14:10
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	12		2.0	0.75	ng/L		05/15/15 14:07	05/18/15 22:28	1
Perfluorooctane Sulfonate (PFOS)	15	M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 22:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*116*		*25 - 150*	*05/15/15 14:07*	*05/18/15 22:28*	*1*
13C4 PFOA	*69*		*25 - 150*	*05/15/15 14:07*	*05/18/15 22:28*	*1*

Client Sample ID: BF-103-GW03-0515D

Lab Sample ID: 320-13012-10

Date Collected: 05/13/15 14:20
Matrix: Water
Date Received: 05/14/15 09:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	11		2.0	0.75	ng/L		05/15/15 14:07	05/18/15 22:49	1
Perfluorooctane Sulfonate (PFOS)	16	M	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 22:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*114*		*25 - 150*	*05/15/15 14:07*	*05/18/15 22:49*	*1*
13C4 PFOA	*64*		*25 - 150*	*05/15/15 14:07*	*05/18/15 22:49*	*1*

Default Detection Limits

Client: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	LOQ	DL	Units	Method
Perfluorooctane Sulfonate (PFOS)	2.0	1.3	ng/L	WS-LC-0025
Perfluorooctanoic acid (PFOA)	2.0	0.75	ng/L	WS-LC-0025

Isotope Dilution Summary

Client: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)									
		3C4 PFOS	3C4 PFOA								
Lab Sample ID	Client Sample ID	(25-150)	(25-150)								
320-13012-1	BF-105-GW01-0515	123	77								
320-13012-2	BF-103-GW01-0515	125	83								
320-13012-3	BF-103-GW055-0515	112	108								
320-13012-4	BF-103-GW05D-0515	110	84								
320-13012-5	BF-103-GW04-0515	115	56								
320-13012-6	BF-104-GW02-0515	72	50								
320-13012-6 - DL	BF-104-GW02-0515	119	79								
320-13012-7	BF-104-GW01-0515	109	56								
320-13012-8	BF-103-GW02-0515	110	60								
320-13012-9	BF-103-GW03-0515	116	69								
320-13012-10	BF-103-GW03-0515D	114	64								
LCS 320-74169/2-A	Lab Control Sample	120	124								
MB 320-74169/1-A	Method Blank	122	136								

Surrogate Legend

13C4 PFOS = 13C4 PFOS
13C4 PFOA = 13C4 PFOA

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-74169/1-A
Matrix: Water
Analysis Batch: 74318

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 74169

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.5	U	2.0	0.75	ng/L		05/15/15 14:07	05/18/15 18:34	1
Perfluorooctane Sulfonate (PFOS)	1.5	U	2.0	1.3	ng/L		05/15/15 14:07	05/18/15 18:34	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*122*		*25 - 150*	*05/15/15 14:07*	*05/18/15 18:34*	*1*
13C4 PFOA	*136*		*25 - 150*	*05/15/15 14:07*	*05/18/15 18:34*	*1*

Lab Sample ID: LCS 320-74169/2-A
Matrix: Water
Analysis Batch: 74318

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 74169

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanoic acid (PFOA)			40.0	39.6		ng/L		99	60 - 140		
Perfluorooctane Sulfonate (PFOS)			38.2	37.0		ng/L		97	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOS	*120*		*25 - 150*
13C4 PFOA	*124*		*25 - 150*

LCMS

Prep Batch: 74169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-13012-1	BF-105-GW01-0515	Total/NA	Water	3535	
320-13012-2	BF-103-GW01-0515	Total/NA	Water	3535	
320-13012-3	BF-103-GW055-0515	Total/NA	Water	3535	
320-13012-4	BF-103-GW05D-0515	Total/NA	Water	3535	
320-13012-5	BF-103-GW04-0515	Total/NA	Water	3535	
320-13012-6	BF-104-GW02-0515	Total/NA	Water	3535	
320-13012-6 - DL	BF-104-GW02-0515	Total/NA	Water	3535	
320-13012-7	BF-104-GW01-0515	Total/NA	Water	3535	
320-13012-8	BF-103-GW02-0515	Total/NA	Water	3535	
320-13012-9	BF-103-GW03-0515	Total/NA	Water	3535	
320-13012-10	BF-103-GW03-0515D	Total/NA	Water	3535	
LCS 320-74169/2-A	Lab Control Sample	Total/NA	Water	3535	
MB 320-74169/1-A	Method Blank	Total/NA	Water	3535	

Analysis Batch: 74318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-13012-1	BF-105-GW01-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-2	BF-103-GW01-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-3	BF-103-GW055-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-4	BF-103-GW05D-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-5	BF-103-GW04-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-6	BF-104-GW02-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-7	BF-104-GW01-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-8	BF-103-GW02-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-9	BF-103-GW03-0515	Total/NA	Water	WS-LC-0025	74169
320-13012-10	BF-103-GW03-0515D	Total/NA	Water	WS-LC-0025	74169
LCS 320-74169/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	74169
MB 320-74169/1-A	Method Blank	Total/NA	Water	WS-LC-0025	74169

Analysis Batch: 74338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-13012-6 - DL	BF-104-GW02-0515	Total/NA	Water	WS-LC-0025	74169

Client Sample ID: BF-105-GW01-0515 — Lab Sample ID: 320-13012-1

Date Collected: 05/12/15 11:35 — **Matrix: Water**
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 19:16	CBW	TAL SAC

Client Sample ID: BF-103-GW01-0515 — Lab Sample ID: 320-13012-2

Date Collected: 05/12/15 13:40 — **Matrix: Water**
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 19:38	CBW	TAL SAC

Client Sample ID: BF-103-GW055-0515 — Lab Sample ID: 320-13012-3

Date Collected: 05/12/15 15:50 — **Matrix: Water**
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 19:59	CBW	TAL SAC

Client Sample ID: BF-103-GW05D-0515 — Lab Sample ID: 320-13012-4

Date Collected: 05/12/15 17:15 — **Matrix: Water**
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 20:20	CBW	TAL SAC

Client Sample ID: BF-103-GW04-0515 — Lab Sample ID: 320-13012-5

Date Collected: 05/12/15 18:40 — **Matrix: Water**
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 20:41	CBW	TAL SAC

Client Sample ID: BF-104-GW02-0515 — Lab Sample ID: 320-13012-6

Date Collected: 05/13/15 10:45 — **Matrix: Water**
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 21:03	CBW	TAL SAC

Client Sample ID: BF-104-GW02-0515
Lab Sample ID: 320-13012-6
Date Collected: 05/13/15 10:45
Matrix: Water
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	5	74338	05/19/15 11:30	JRB	TAL SAC

Client Sample ID: BF-104-GW01-0515
Lab Sample ID: 320-13012-7
Date Collected: 05/13/15 11:15
Matrix: Water
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 21:24	CBW	TAL SAC

Client Sample ID: BF-103-GW02-0515
Lab Sample ID: 320-13012-8
Date Collected: 05/13/15 12:50
Matrix: Water
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 21:45	CBW	TAL SAC

Client Sample ID: BF-103-GW03-0515
Lab Sample ID: 320-13012-9
Date Collected: 05/13/15 14:10
Matrix: Water
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 22:28	CBW	TAL SAC

Client Sample ID: BF-103-GW03-0515D
Lab Sample ID: 320-13012-10
Date Collected: 05/13/15 14:20
Matrix: Water
Date Received: 05/14/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			74169	05/15/15 14:07	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	74318	05/18/15 22:49	CBW	TAL SAC

Laboratory References:

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

Certification Summary

Client: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

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	01-31-16

Method Summary

Client: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

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: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-13012-1	BF-105-GW01-0515	Water	05/12/15 11:35	05/14/15 09:30
320-13012-2	BF-103-GW01-0515	Water	05/12/15 13:40	05/14/15 09:30
320-13012-3	BF-103-GW055-0515	Water	05/12/15 15:50	05/14/15 09:30
320-13012-4	BF-103-GW05D-0515	Water	05/12/15 17:15	05/14/15 09:30
320-13012-5	BF-103-GW04-0515	Water	05/12/15 18:40	05/14/15 09:30
320-13012-6	BF-104-GW02-0515	Water	05/13/15 10:45	05/14/15 09:30
320-13012-7	BF-104-GW01-0515	Water	05/13/15 11:15	05/14/15 09:30
320-13012-8	BF-103-GW02-0515	Water	05/13/15 12:50	05/14/15 09:30
320-13012-9	BF-103-GW03-0515	Water	05/13/15 14:10	05/14/15 09:30
320-13012-10	BF-103-GW03-0515D	Water	05/13/15 14:20	05/14/15 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Analysis Batch Number: 74318

Lab Sample ID: STD 320-74318/5 IC Client Sample ID:

Date Analyzed: 05/18/15 16:48 Lab File ID: 18MAY2015A_008.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroundecanoic acid (PFUnA)	12.83	Split Peak	westendorfc	05/19/15 10:41

Lab Sample ID: 320-13012-1 Client Sample ID: BF-105-GW01-0515

Date Analyzed: 05/18/15 19:16 Lab File ID: 18MAY2015A_015.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:24

Lab Sample ID: 320-13012-2 Client Sample ID: BF-103-GW01-0515

Date Analyzed: 05/18/15 19:38 Lab File ID: 18MAY2015A_016.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:25

Lab Sample ID: 320-13012-3 Client Sample ID: BF-103-GW055-0515

Date Analyzed: 05/18/15 19:59 Lab File ID: 18MAY2015A_017.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:25

Lab Sample ID: 320-13012-4 Client Sample ID: BF-103-GW05D-0515

Date Analyzed: 05/18/15 20:20 Lab File ID: 18MAY2015A_018.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:26

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Analysis Batch Number: 74318

Lab Sample ID: 320-13012-5 Client Sample ID: BF-103-GW04-0515

Date Analyzed: 05/18/15 20:41 Lab File ID: 18MAY2015A_019.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:29

Lab Sample ID: 320-13012-7 Client Sample ID: BF-104-GW01-0515

Date Analyzed: 05/18/15 21:24 Lab File ID: 18MAY2015A_021.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:19

Lab Sample ID: 320-13012-8 Client Sample ID: BF-103-GW02-0515

Date Analyzed: 05/18/15 21:45 Lab File ID: 18MAY2015A_022.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:20

Lab Sample ID: 320-13012-9 Client Sample ID: BF-103-GW03-0515

Date Analyzed: 05/18/15 22:28 Lab File ID: 18MAY2015A_024.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:21

Lab Sample ID: 320-13012-10 Client Sample ID: BF-103-GW03-0515D

Date Analyzed: 05/18/15 22:49 Lab File ID: 18MAY2015A_025.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:22

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Analysis Batch Number: 74338

Lab Sample ID: 320-13012-6 DL Client Sample ID: BF-104-GW02-0515 DL

Date Analyzed: 05/19/15 11:30 Lab File ID: 18MAY2015A_031.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.27	Isomers	barnettj	05/19/15 14:10

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00015	09/13/15	05/01/15	Methanol, Lot baker 90285	25 mL	LCM2PFHxDA_00002	0.2 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.2 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.2 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.2 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00005	0.5 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00003	0.2 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00005	0.2 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.2 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00006	0.2 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.2 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.2 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00006	0.5 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.5 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00004	0.2 mL	13C2 PFUnA	0.4 ug/mL
.LCM2PFHxDA_00002	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00005	12/15/19	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00003	01/22/18	Wellington Laboratories, Lot MPFBA0113			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA_00005	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00006	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00006	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00004	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-L1_00010	08/13/15	04/16/15	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00014	250 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
					LCPFCSP_00027	25 uL	Perfluorobutyric acid	0.5 ng/mL
							Perfluorobutane Sulfonate	0.442 ng/mL
							Perfluorodecanoic acid	0.5 ng/mL
							Perfluorododecanoic acid	0.5 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PFDoS (Perflouro-1-dodecanesulfonate)	0.484 ng/mL
							Perfluorodecane Sulfonate	0.482 ng/mL
							Perfluoroheptanoic acid	0.5 ng/mL
							Perfluoroheptane Sulfonate	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexane Sulfonate	0.473 ng/mL
							Perfluorononanoic acid	0.5 ng/mL
							PFNS (Perflouro-1-nonanesulfonate)	0.48 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctandecanoic acid	0.5 ng/mL
							Perfluorooctane Sulfonate (PFOS)	0.478 ng/mL
							Perfluorooctane Sulfonamide	0.5 ng/mL
							Perfluoropentanoic acid	0.5 ng/mL
							PFPeS (Perflouro-1-pentanesulfonate)	0.469 ng/mL
							Perfluorotetradecanoic acid	0.5 ng/mL
							Perfluorotridecanoic acid	0.5 ng/mL
							Perfluoroundecanoic acid	0.5 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00027	10/09/15	04/09/15	Methanol, Lot 090285	10 mL	LCPFCSP_00026	1 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutane Sulfonate	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							PFDoS (Perflouro-1-dodecanesulfonate)	0.0968 ug/mL
							Perfluorodecane Sulfonate	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptane Sulfonate	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexane Sulfonate	0.0946 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							PFNS (Perflouro-1-nonanesulfonate)	0.096 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							PFPeS (Perflouro-1-pentanesulfonate)	0.0938 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00026	10/09/15	04/09/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00004	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS_00004	0.1 mL	Perfluorooctane Sulfonate (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
...LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
...LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHpS_00004	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptane Sulfonate	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
...LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
...LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(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)		Perfluorooctane Sulfonate (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(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_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_00012	08/13/15	04/24/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00014	250 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL
							13C4 PFOA	50 ng/mL

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SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
					LCPFCSP_00027	50 uL	Perfluorobutyric acid	1 ng/mL
							Perfluorobutane Sulfonate	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ng/mL
							Perfluorodecane Sulfonate	0.964 ng/mL
							Perfluoroheptanoic acid	1 ng/mL
							Perfluoroheptane Sulfonate	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexane Sulfonate	0.946 ng/mL
							Perfluorononanoic acid	1 ng/mL
							PFNS (Perflouro-1-nonanesulfonate)	0.96 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctandecanoic acid	1 ng/mL
							Perfluorooctane Sulfonate (PFOS)	0.956 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							PFPeS (Perflouro-1-pentanesulfonate)	0.938 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL

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SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00027	10/09/15	04/09/15	Methanol, Lot 090285	10 mL	LCPFCSP_00026	1 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutane Sulfonate	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							PFDoS (Perflouro-1-dodecanesulfonate)	0.0968 ug/mL
							Perfluorodecane Sulfonate	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptane Sulfonate	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexane Sulfonate	0.0946 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							PFNS (Perflouro-1-nonanesulfonate)	0.096 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							PFPeS (Perflouro-1-pentanesulfonate)	0.0938 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00026	10/09/15	04/09/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00004	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL

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SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctane Sulfonate (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
...LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
...LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHpS_00004	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptane Sulfonate	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
...LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
...LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(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)		Perfluorooctane Sulfonate (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(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_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_00010	08/13/15	04/16/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00014	250 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL

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SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
					LCPFCSP_00027	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutane Sulfonate	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							PFDoS (Perflouro-1-dodecanesulfonate)	4.84 ng/mL
							Perfluorodecane Sulfonate	4.82 ng/mL
							Perfluoroheptanoic acid	5 ng/mL
							Perfluoroheptane Sulfonate	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexane Sulfonate	4.73 ng/mL
							Perfluorononanoic acid	5 ng/mL
							PFNS (Perflouro-1-nonanesulfonate)	4.8 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctandecanoic acid	5 ng/mL
							Perfluorooctane Sulfonate (PFOS)	4.78 ng/mL
							Perfluorooctane Sulfonamide	5 ng/mL
							Perfluoropentanoic acid	5 ng/mL
							PFPeS (Perflouro-1-pentanesulfonate)	4.69 ng/mL
							Perfluorotetradecanoic acid	5 ng/mL
							Perfluorotridecanoic acid	5 ng/mL
							Perfluoroundecanoic acid	5 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL

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SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00027	10/09/15	04/09/15	Methanol, Lot 090285	10 mL	LCPFCSP_00026	1 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutane Sulfonate	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							PFDoS (Perflouro-1-dodecanesulfonate)	0.0968 ug/mL
							Perfluorodecane Sulfonate	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptane Sulfonate	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexane Sulfonate	0.0946 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							PFNS (Perflouro-1-nonanesulfonate)	0.096 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							PFPeS (Perflouro-1-pentanesulfonate)	0.0938 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00026	10/09/15	04/09/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00004	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctane Sulfonate (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
...LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
...LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHpS_00004	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptane Sulfonate	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
...LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
...LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(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)		Perfluorooctane Sulfonate (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(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_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.: Proj # 112603383

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_00010	08/13/15	04/16/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00014	250 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
					LCPFCSP_00026	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutane Sulfonate	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							PFDoS (Perflouro-1-dodecanesulfonate)	19.36 ng/mL
							Perfluorodecane Sulfonate	19.28 ng/mL
							Perfluoroheptanoic acid	20 ng/mL
							Perfluoroheptane Sulfonate	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexane Sulfonate	18.92 ng/mL
							Perfluorononanoic acid	20 ng/mL
							PFNS (Perflouro-1-nonanesulfonate)	19.2 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctandecanoic acid	20 ng/mL
							Perfluorooctane Sulfonate (PFOS)	19.12 ng/mL
							Perfluorooctane Sulfonamide	20 ng/mL
							Perfluoropentanoic acid	20 ng/mL
							PFPeS (Perflouro-1-pentanesulfonate)	18.76 ng/mL
							Perfluorotetradecanoic acid	20 ng/mL
							Perfluorotridecanoic acid	20 ng/mL
							Perfluoroundecanoic acid	20 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00026	10/09/15	04/09/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00004	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctane Sulfonate (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
..LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00004	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptane Sulfonate	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
..LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(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)		Perfluorooctane Sulfonate (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(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_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_00010	08/13/15	04/16/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00014	250 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
					LCPFCSP_00026	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutane Sulfonate	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL

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SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ng/mL
							Perfluorodecane Sulfonate	48.2 ng/mL
							Perfluoroheptanoic acid	50 ng/mL
							Perfluoroheptane Sulfonate	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexane Sulfonate	47.3 ng/mL
							Perfluorononanoic acid	50 ng/mL
							PFNS (Perflouro-1-nonanesulfonate)	48 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctandecanoic acid	50 ng/mL
							Perfluorooctane Sulfonate (PFOS)	47.8 ng/mL
							Perfluorooctane Sulfonamide	50 ng/mL
							Perfluoropentanoic acid	50 ng/mL
							PFPeS (Perflouro-1-pentanesulfonate)	46.9 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
							Perfluoroundecanoic acid	50 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00026	10/09/15	04/09/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00004	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctane Sulfonate (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
..LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00004	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptane Sulfonate	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
..LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(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_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_00009	08/13/15	04/16/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00014	100 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
					LCPFCSP_00026	400 uL	Perfluorobutyric acid	200 ng/mL
							Perfluorobutane Sulfonate	176.8 ng/mL
							Perfluorodecanoic acid	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							PFDoS (Perflouro-1-dodecanesulfonate)	193.6 ng/mL
							Perfluorodecane Sulfonate	192.8 ng/mL
							Perfluoroheptanoic acid	200 ng/mL
							Perfluoroheptane Sulfonate	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexane Sulfonate	189.2 ng/mL
							Perfluorononanoic acid	200 ng/mL
							PFNS (Perflouro-1-nonanesulfonate)	192 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctandecanoic acid	200 ng/mL
							Perfluorooctane Sulfonate (PFOS)	191.2 ng/mL
							Perfluorooctane Sulfonamide	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							PFPeS (Perflouro-1-pentanesulfonate)	187.6 ng/mL
							Perfluorotetradecanoic acid	200 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00026	10/09/15	04/09/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00004	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctane Sulfonate (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
..LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00004	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptane Sulfonate	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
..LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(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)		Perfluorooctane Sulfonate (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(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_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-L7_00009	08/13/15	04/16/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00014	100 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
					LCPFCSP_00026	800 uL	Perfluorobutyric acid	400 ng/mL
							Perfluorobutane Sulfonate	353.6 ng/mL
							Perfluorodecanoic acid	400 ng/mL
							Perfluorododecanoic acid	400 ng/mL
							PFDoS (Perflouro-1-dodecanesulfonate)	387.2 ng/mL
							Perfluorodecane Sulfonate	385.6 ng/mL
							Perfluoroheptanoic acid	400 ng/mL
							Perfluoroheptane Sulfonate	380.8 ng/mL
							Perfluorohexanoic acid	400 ng/mL
							Perfluorohexadecanoic acid	400 ng/mL
							Perfluorohexane Sulfonate	378.4 ng/mL
							Perfluorononanoic acid	400 ng/mL
							PFNS (Perflouro-1-nonanesulfonate)	384 ng/mL
							Perfluorooctanoic acid (PFOA)	400 ng/mL
							Perfluorooctandecanoic acid	400 ng/mL
							Perfluorooctane Sulfonate (PFOS)	382.4 ng/mL
							Perfluorooctane Sulfonamide	400 ng/mL
							Perfluoropentanoic acid	400 ng/mL
							PFPeS (Perflouro-1-pentanesulfonate)	375.2 ng/mL
							Perfluorotetradecanoic acid	400 ng/mL
							Perfluorotridecanoic acid	400 ng/mL
							Perfluoroundecanoic acid	400 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00026	10/09/15	04/09/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00004	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctane Sulfonate (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
..LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00004	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(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)		Perfluorooctane Sulfonate (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(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_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-L9_00009	08/13/15	04/10/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00014	250 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFCIC_00010	07/16/15	04/24/15	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00014	250 uL	13C2-PFHxDA	20 ng/mL
							13C2-PFTeDA	20 ng/mL
							13C4-PFHpA	20 ng/mL
							13C5-PFPeA	20 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	20 ng/mL
							13C2 PFDA	20 ng/mL
							13C2 PFDoA	20 ng/mL
							13C2 PFHxA	20 ng/mL
							18O2 PFHxS	18.92 ng/mL
							13C5 PFNA	20 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	20 ng/mL
					LCPFACMXB_00004	125 uL	Perfluorooctane Sulfonate (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00014	08/13/15	04/10/15	Methanol, Lot baker 90285	5 mL	LCM2PFHxDA_00001	0.04 mL	13C2-PFHxDA	0.4 ug/mL
					LCM2PFTeDA_00001	0.04 mL	13C2-PFTeDA	0.4 ug/mL
					LCM4PFHPA_00002	0.04 mL	13C4-PFHpA	0.4 ug/mL
					LCM5PFPEA_00003	0.04 mL	13C5-PFPeA	0.4 ug/mL
					LCM8FOSA_00004	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00002	0.04 mL	13C4 PFBA	0.4 ug/mL
					LCMPFDA_00003	0.04 mL	13C2 PFDA	0.4 ug/mL
					LCMPFDoA_00003	0.04 mL	13C2 PFDoA	0.4 ug/mL
					LCMPFHxA_00004	0.04 mL	13C2 PFHxA	0.4 ug/mL
					LCMPFHxS_00003	0.04 mL	18O2 PFHxS	0.3784 ug/mL
					LCMPFNA_00002	0.04 mL	13C5 PFNA	0.4 ug/mL
					LCMPFOA_00005	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00007	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00003	0.04 mL	13C2 PFUnA	0.4 ug/mL
..LCM2PFHxDA_00001	11/29/15	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00001	11/29/15	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00004	10/11/18	Wellington Laboratories, Lot M8FOSA1013M			(Purchased Reagent)		13C8 FOSA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFBA_00002	08/13/15	Wellington Laboratories, Lot MPFBA0812			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00003	09/13/17	Wellington Laboratories, Lot MPFDA0912			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00004	02/14/18	Wellington Laboratories, Lot MPFHxA0213			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00002	09/13/15	Wellington Laboratories, Lot MPFNA0912			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00005	07/04/19	Wellington Laboratories, Lot MPFOA0614			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00003	09/29/16	Wellington Laboratories, Lot MPFUdA0911			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFACMXB_00004	01/08/18	Wellington Laboratories, Lot PFACMXB0312			(Purchased Reagent)		Perfluorooctane Sulfonate (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00026	10/09/15	04/09/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00004	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctane Sulfonate (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
.LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
.LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
.LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFHpS_00004	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptane Sulfonate	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
.LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
.LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
.LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
.LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(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)		Perfluorooctane Sulfonate (PFOS)	47.8 ug/mL
.LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(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_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

Reagent

LCM2PFHxDA_00001

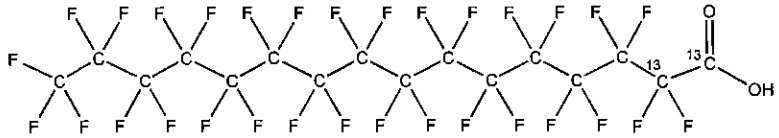
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

12-19-12 New pdf.

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)	11/29/2012		
EXPIRY DATE: (mm/dd/yyyy)	11/29/2015		
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: _____ **Date:** 12/05/2012 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. 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:

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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

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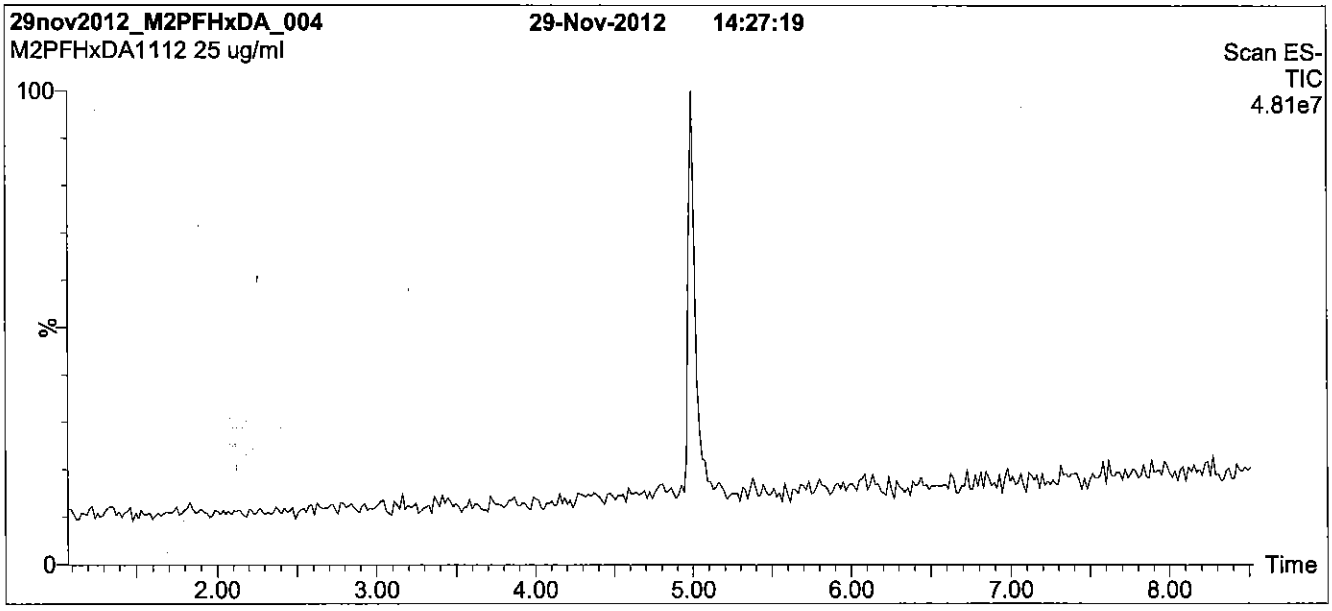
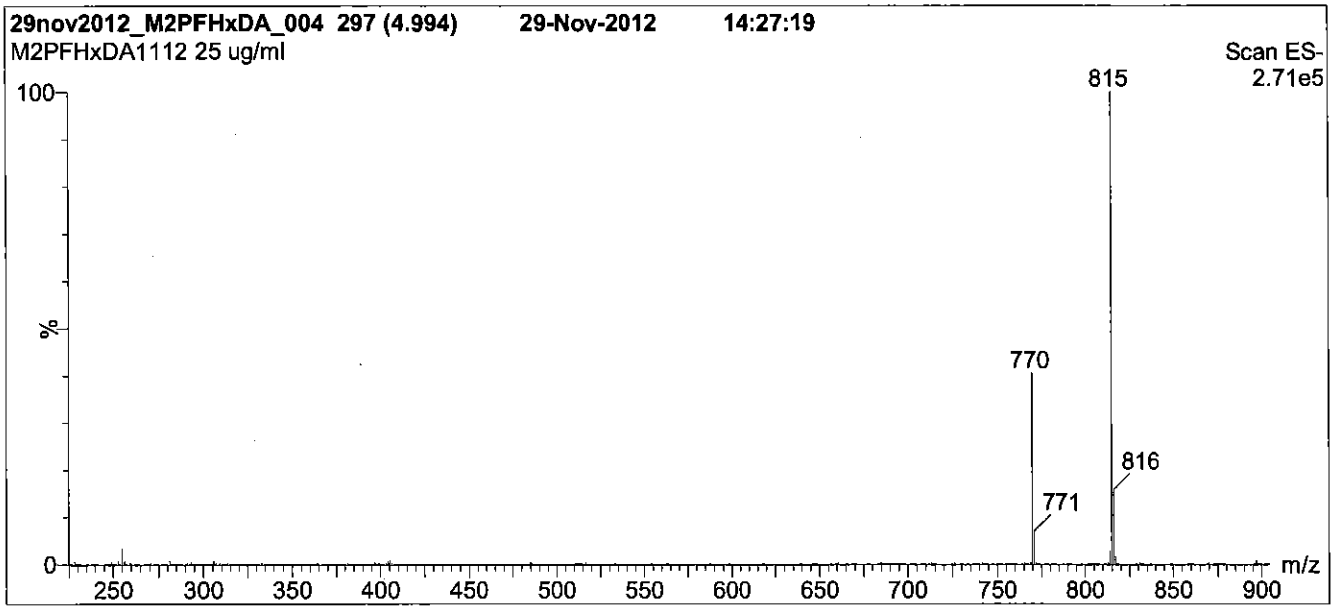
Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





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

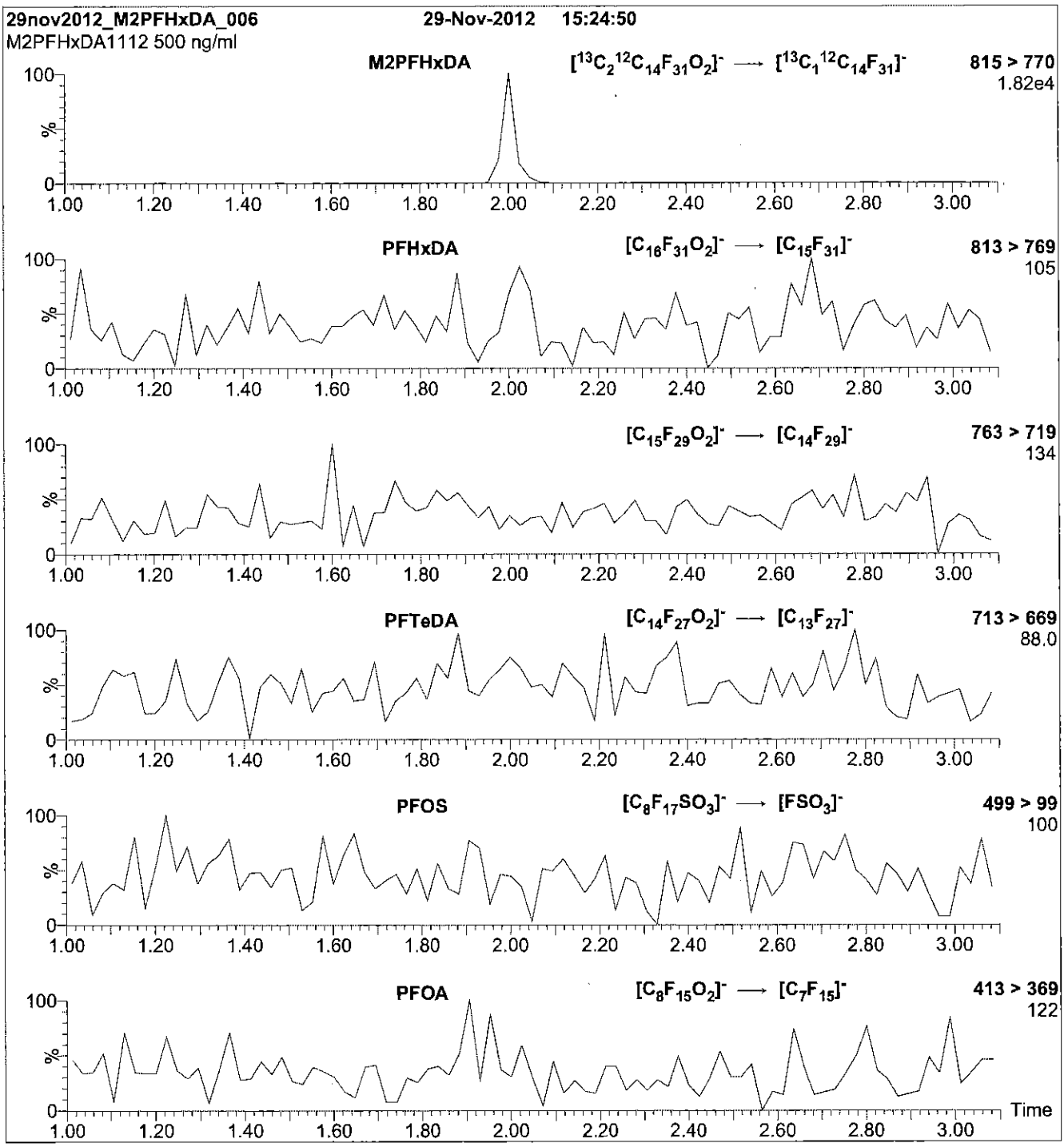
Flow: 300 µl/min

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_00002

Rec: 8/14/14 SKV

Scanned: 8/18/14 STV

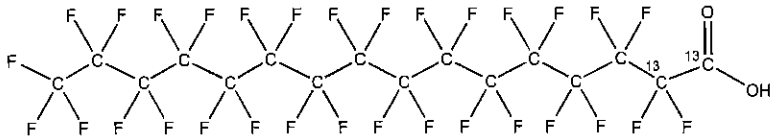
318141
ID: LCM2PFHxDA_00002
Exp: 11/29/17 Prpd: SKV
13C2-PFHxDA at 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_{14}HF_{31}O_2$
MOLECULAR WEIGHT: 816.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 11/29/2012
EXPIRY DATE: (mm/dd/yyyy) 11/29/2017
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.
- 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:** 01/10/2013 (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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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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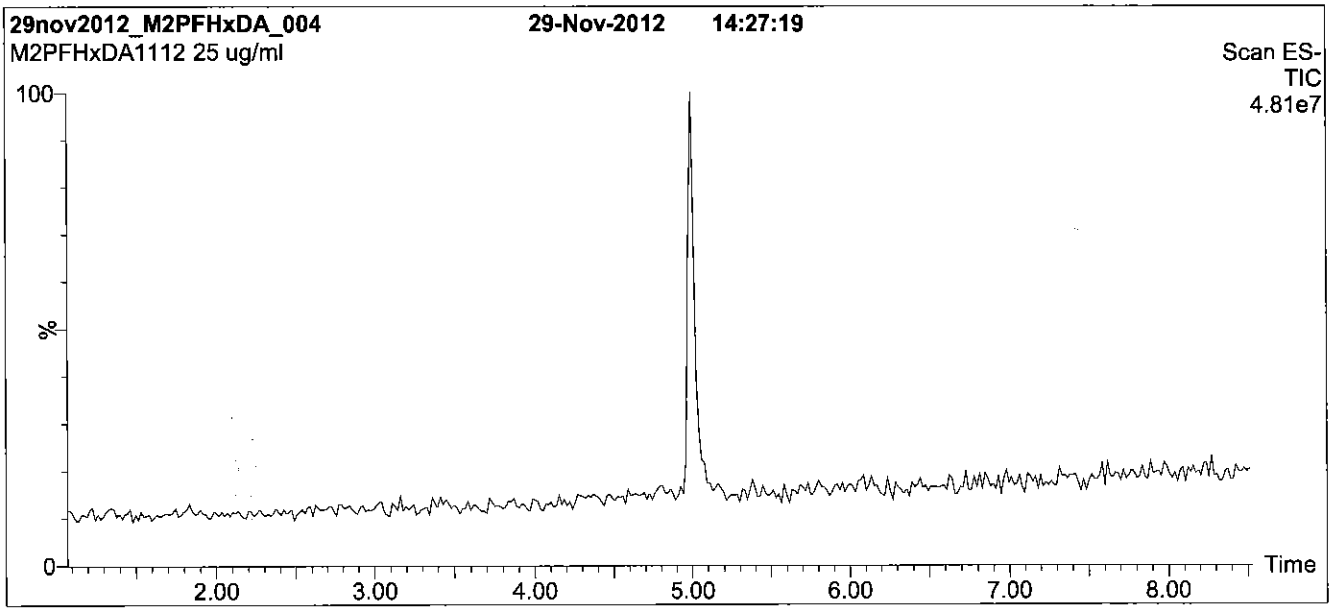
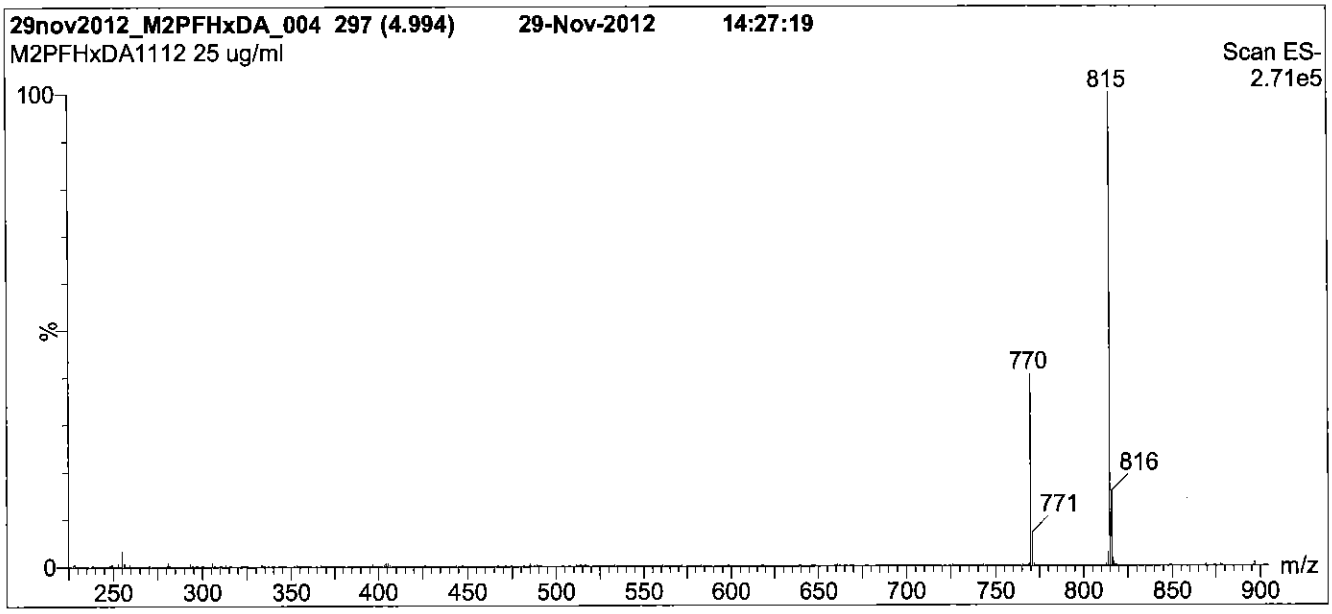
Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

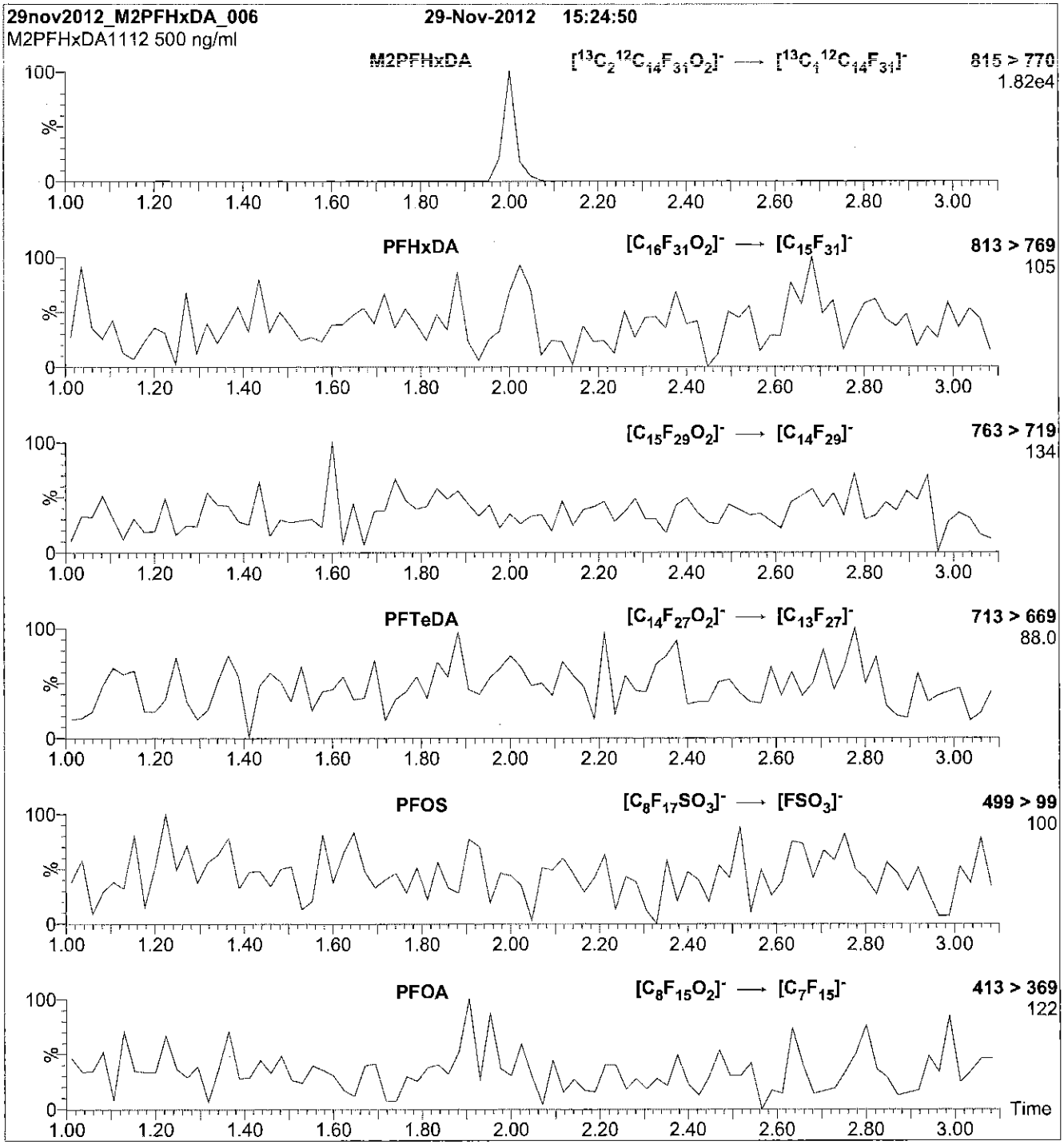
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFHxDA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

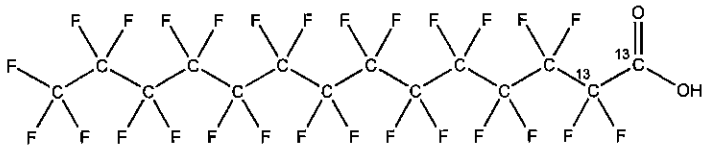
LCM2PFTeDA_00001

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

12-19-12 New pdt.

PRODUCT CODE:	M2PFTeDA	**LOT NUMBER:**	M2PFTeDA1112
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)	11/29/2012		
EXPIRY DATE: (mm/dd/yyyy)	11/29/2015		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/04/2012 (mm/dd/yyyy)
B.G. Chittim

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

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CALA Testing Accreditation No. A 1226

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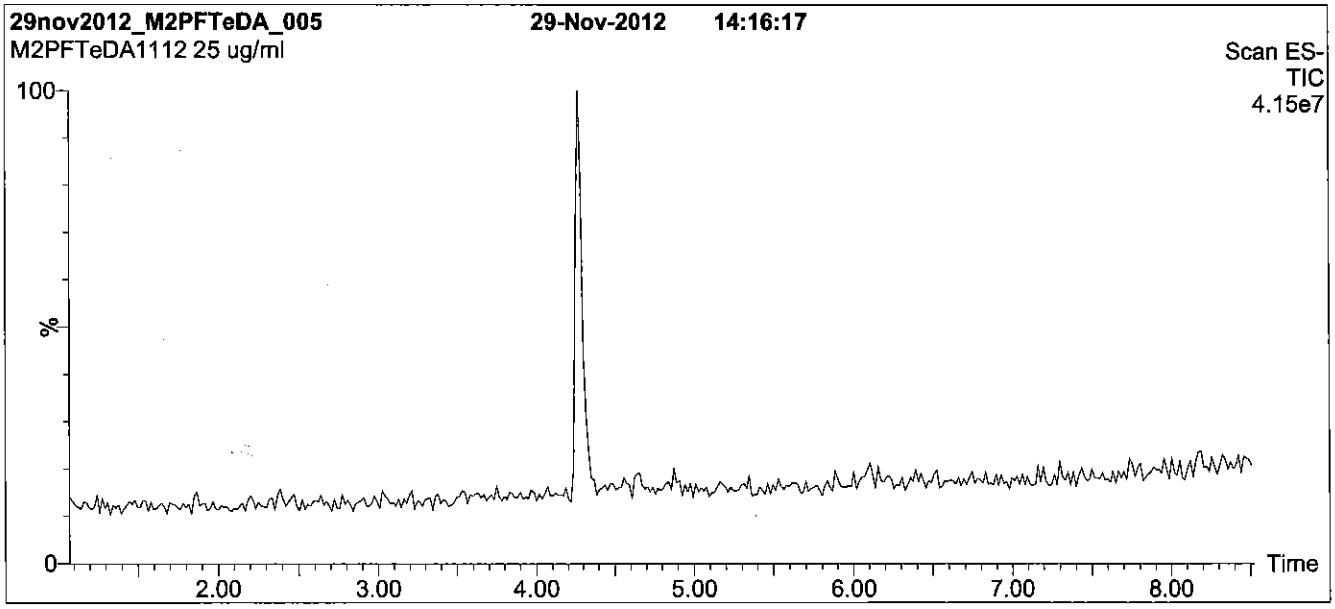
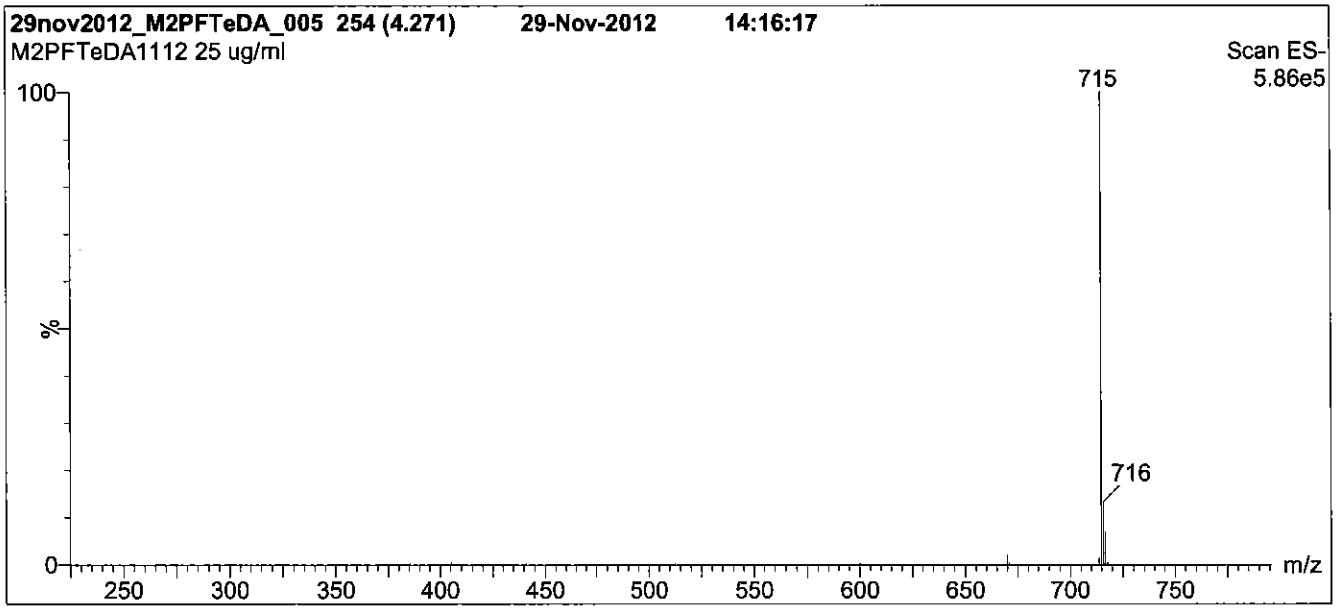
Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





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: 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

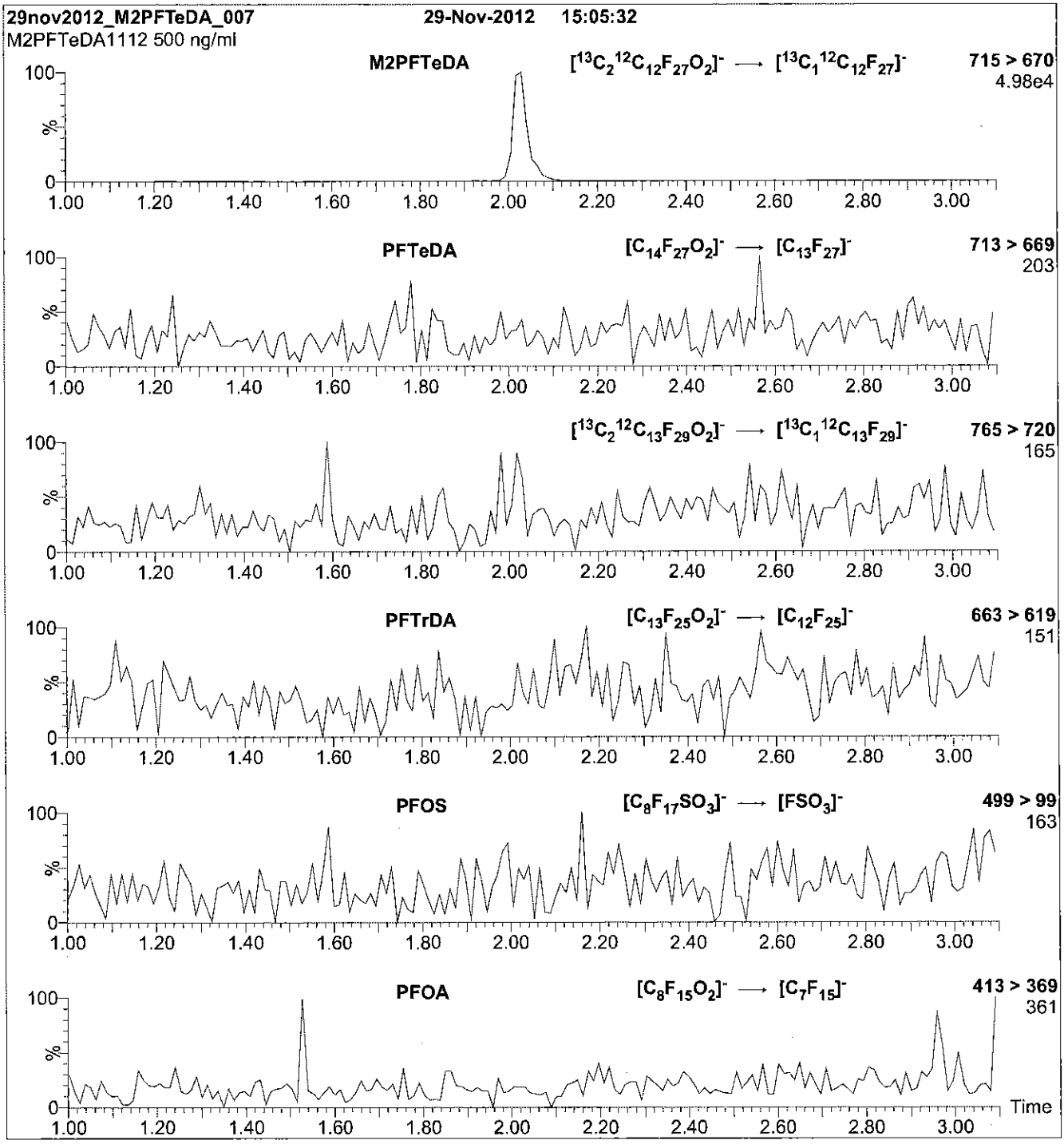
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 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) = 3.66e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00002

Scanned & SV 8/18/14
Rec: 8/14/14 SKV
Scanned 8/18/14 SKV

318185
ID: LCM4PFHPA_00002
Exp: 12/10/18 Prpd: SKV
13C4-Perfluoroheptanoic a

WELLINGTON LABORATORIES

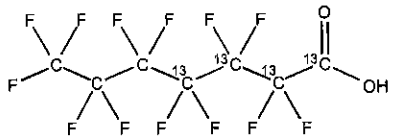
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: M4PFHpA1213

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_3HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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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:

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.

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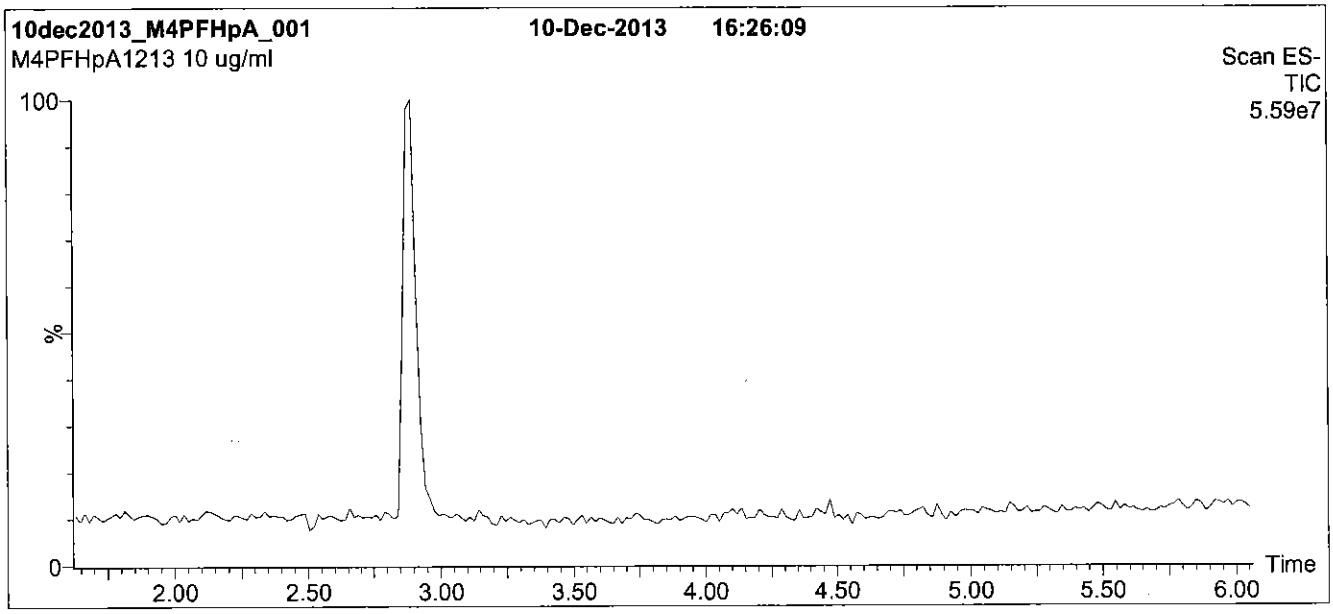
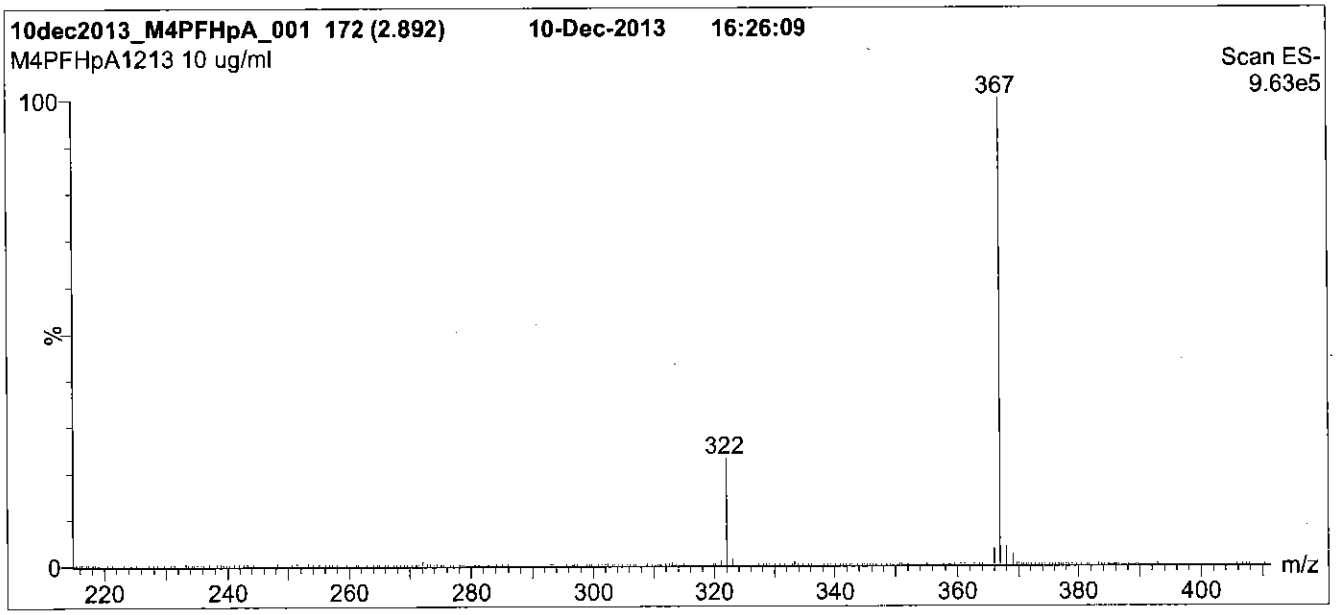
Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

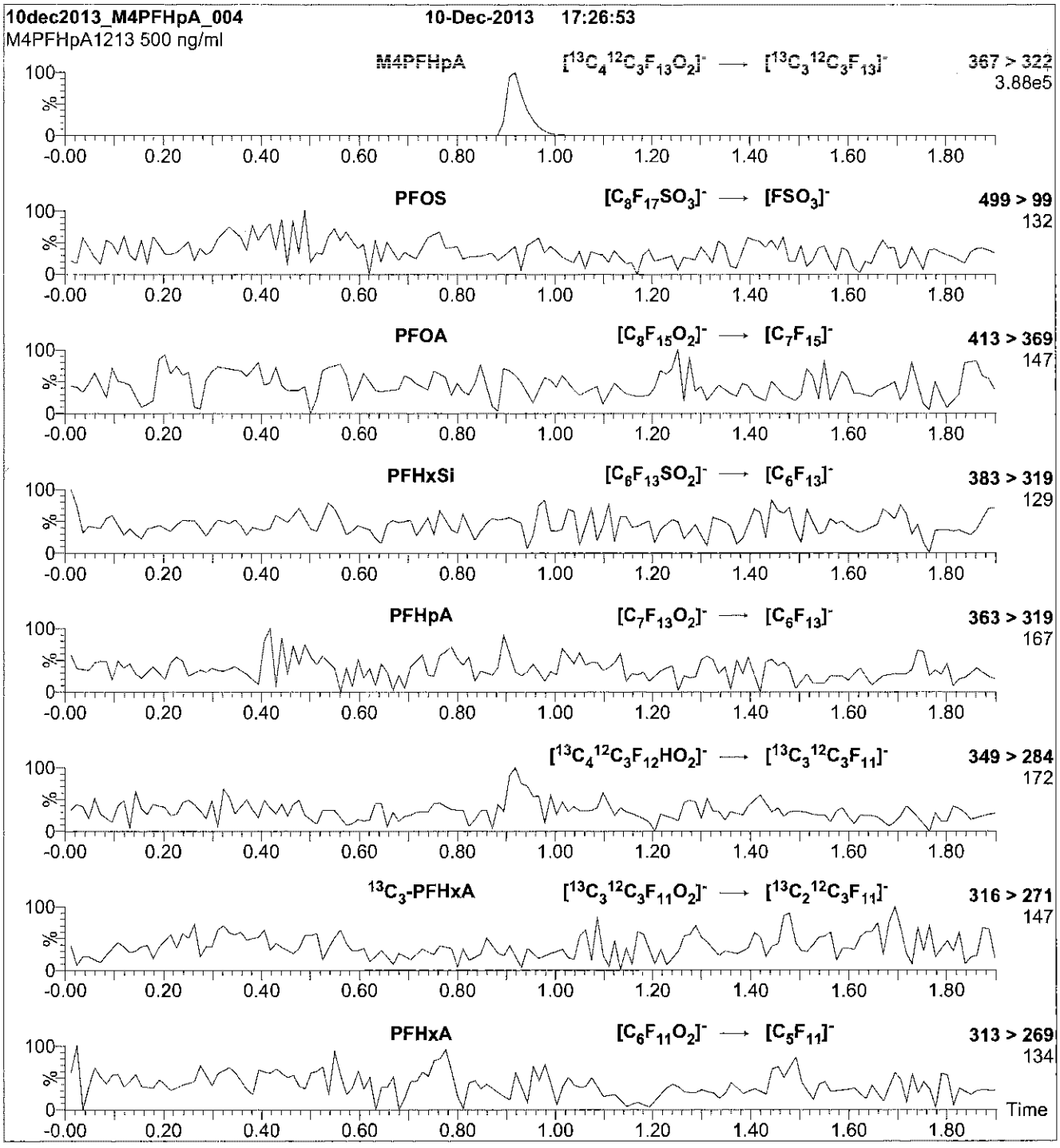
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 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) = 3.39e-3
Collision Energy (eV) = 11

Reagent

LCM5PFPEA_00003

Rec 5/14/14 SFV

WELLINGTON LABORATORIES

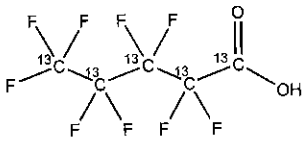
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: M5PFPeA0313

STRUCTURE:

CAS #: Not available



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

MOLECULAR WEIGHT: 269.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/21/2013
EXPIRY DATE: (mm/dd/yyyy) 03/21/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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.

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Certified By: B.G. Chittim **Date:** 03/26/2013 (mm/dd/yyyy)

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Form#:27, Issued 2004-11-10
Revision#:2, Revised 2012-06-13

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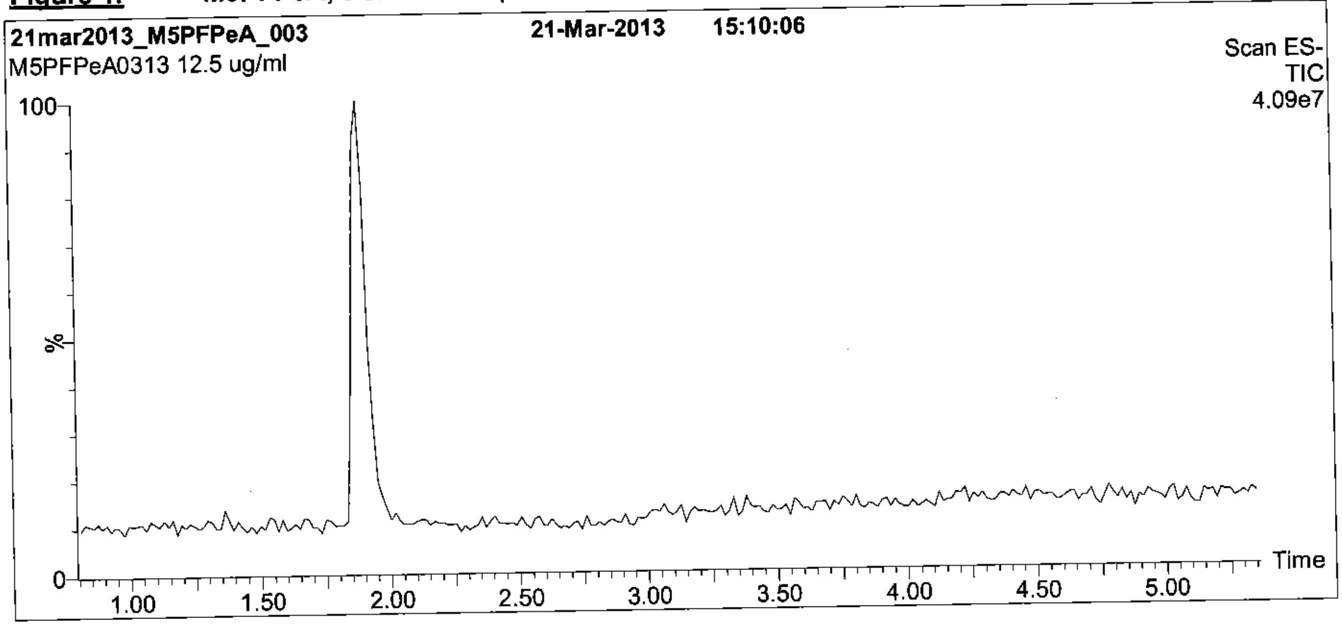
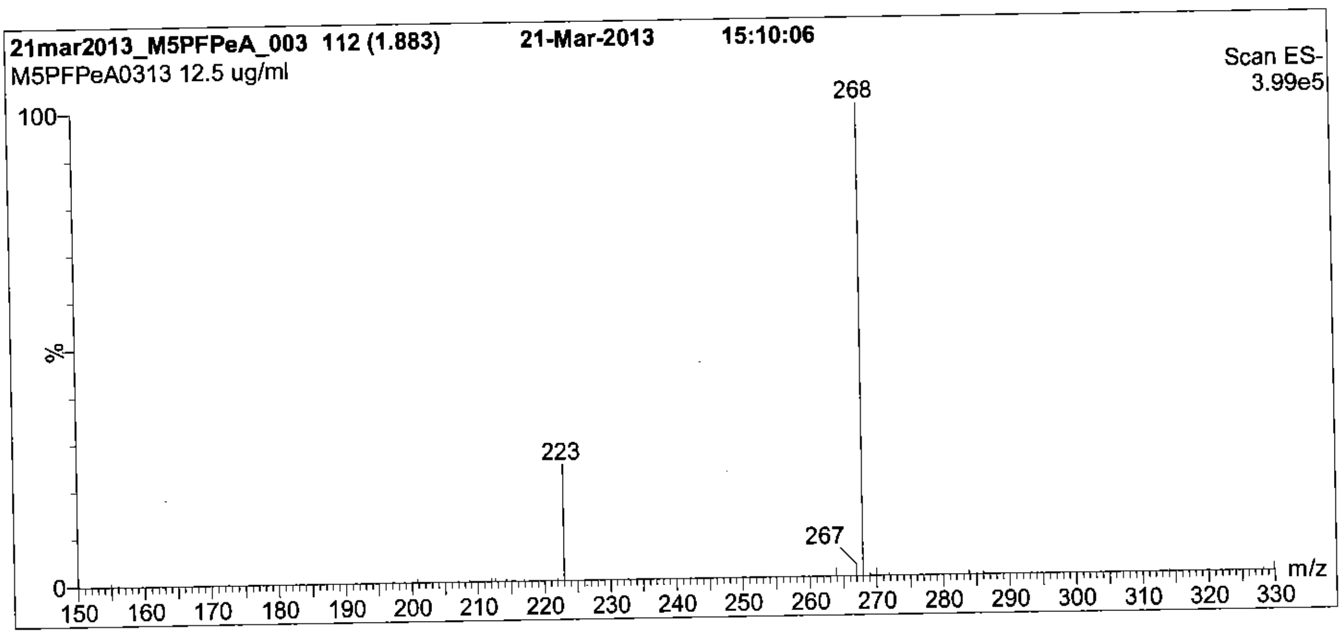
Figure 1: **M5PFPeA; LC/MS Data (TIC and Mass Spectrum)**





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

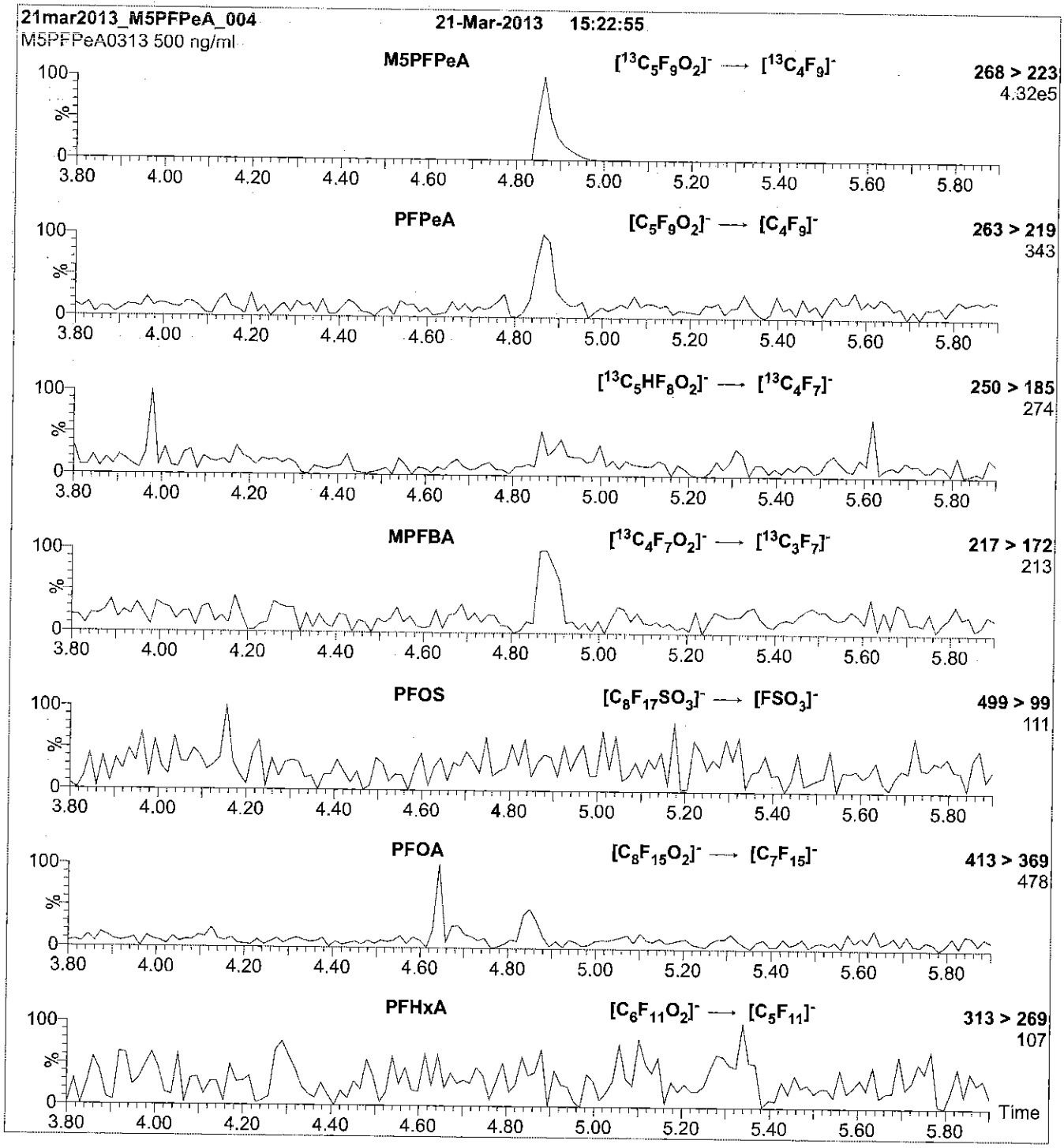
Flow: 300 µl/min

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) = 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 60% (80:20 MeOH:ACN) / 40% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00004

Rec 8/14/14 STW

WELLINGTON LABORATORIES

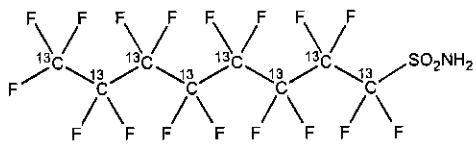
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-M

COMPOUND: Perfluoro-1-[$^{13}C_8$]octanesulfonamide

LOT NUMBER: M8FOSA1013M

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $^{13}C_8H_2F_{17}NO_2S$

CONCENTRATION: 50 ± 2.5 µg/ml

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 10/11/2013

EXPIRY DATE: (mm/dd/yyyy) 10/11/2018

RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 507.09

SOLVENT(S): Methanol

ISOTOPIC PURITY: ≥99% ^{13}C ($^{13}C_8$)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: 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: 10/25/2013 (mm/dd/yyyy)

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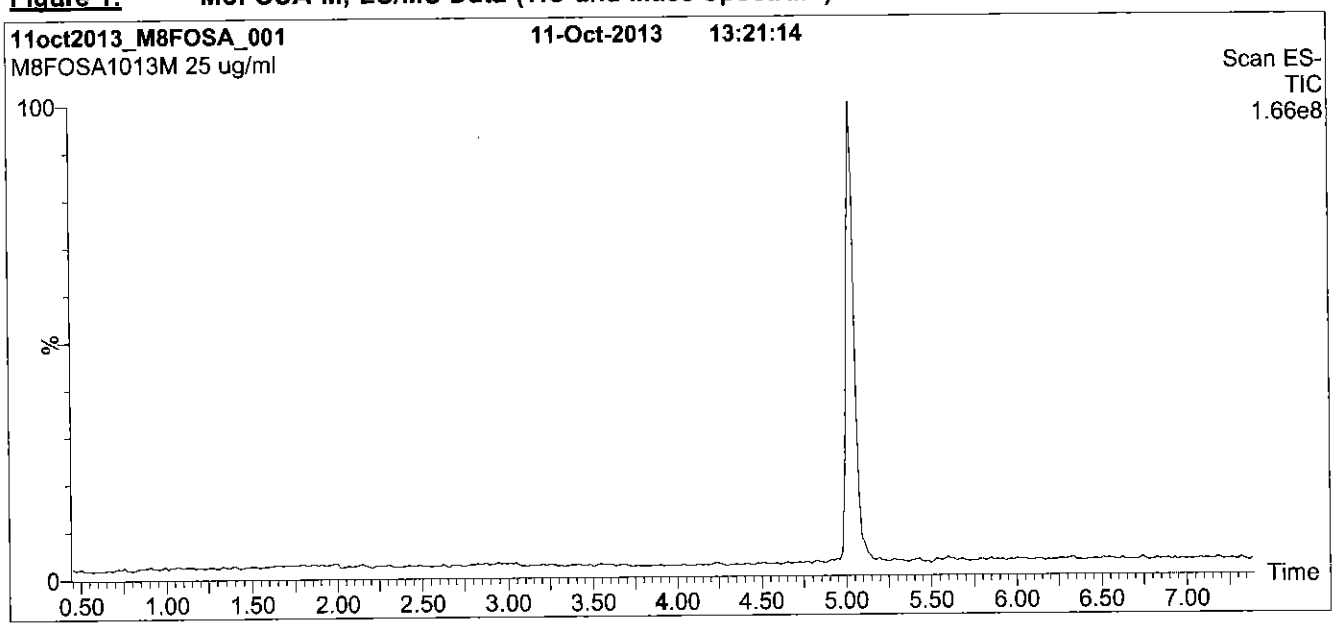
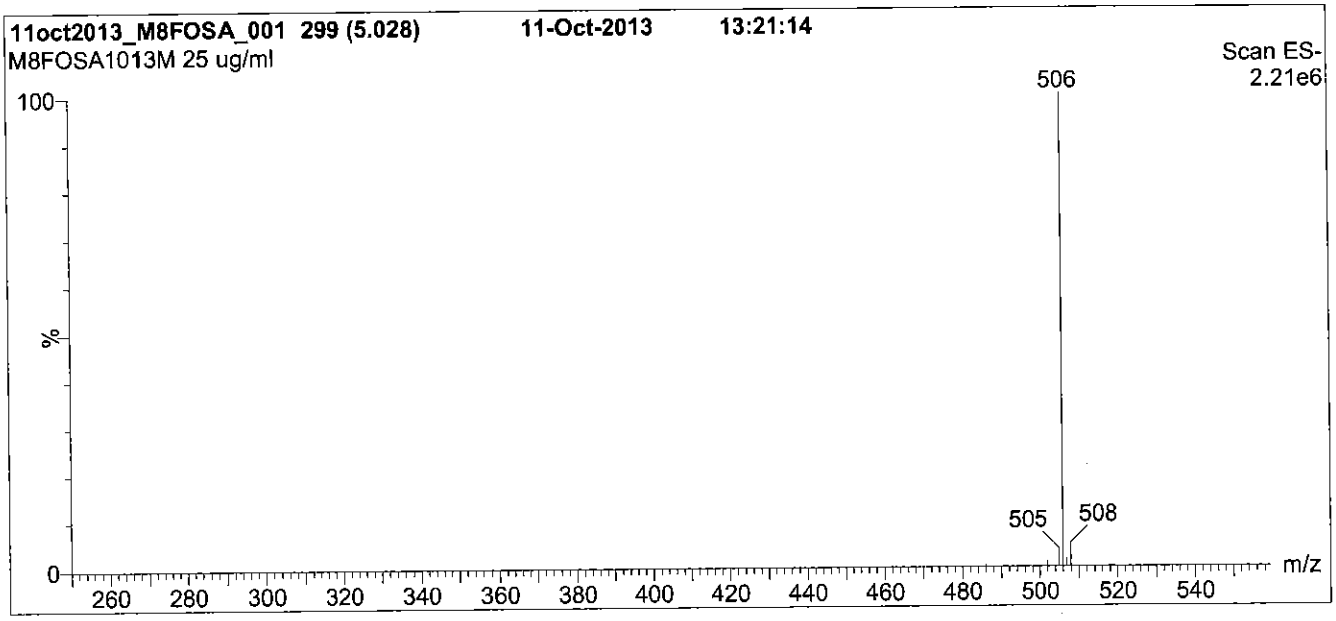
Figure 1: **M8FOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% 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

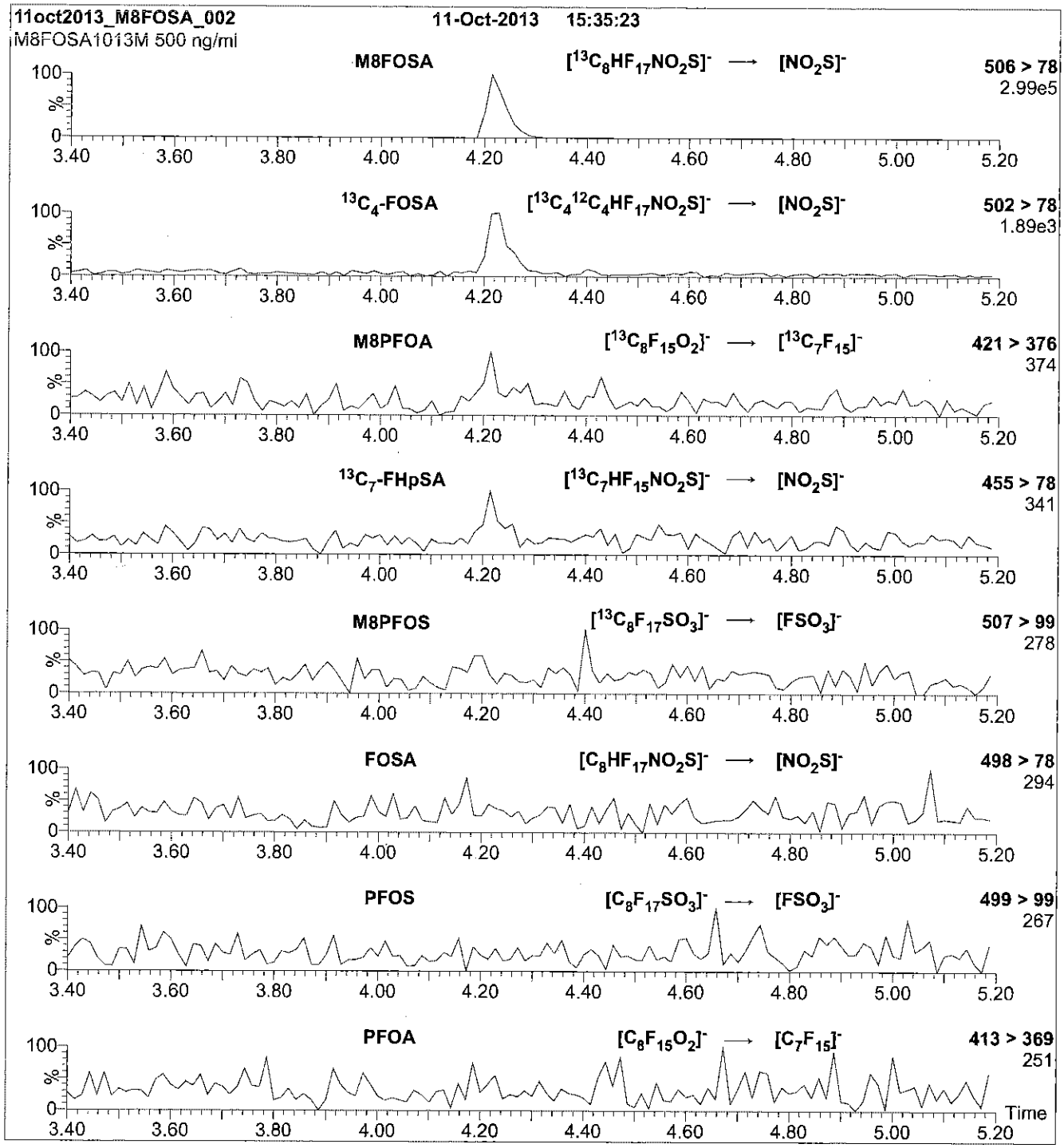
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 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-M; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM8FOSA_00005

V: 2/11/15 BV

WELLINGTON LABORATORIES

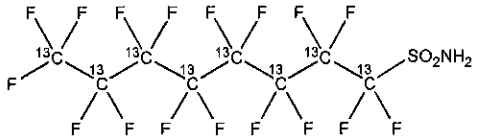
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: M8FOSA1214I

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)	12/15/2014		
EXPIRY DATE: (mm/dd/yyyy)	12/15/2019		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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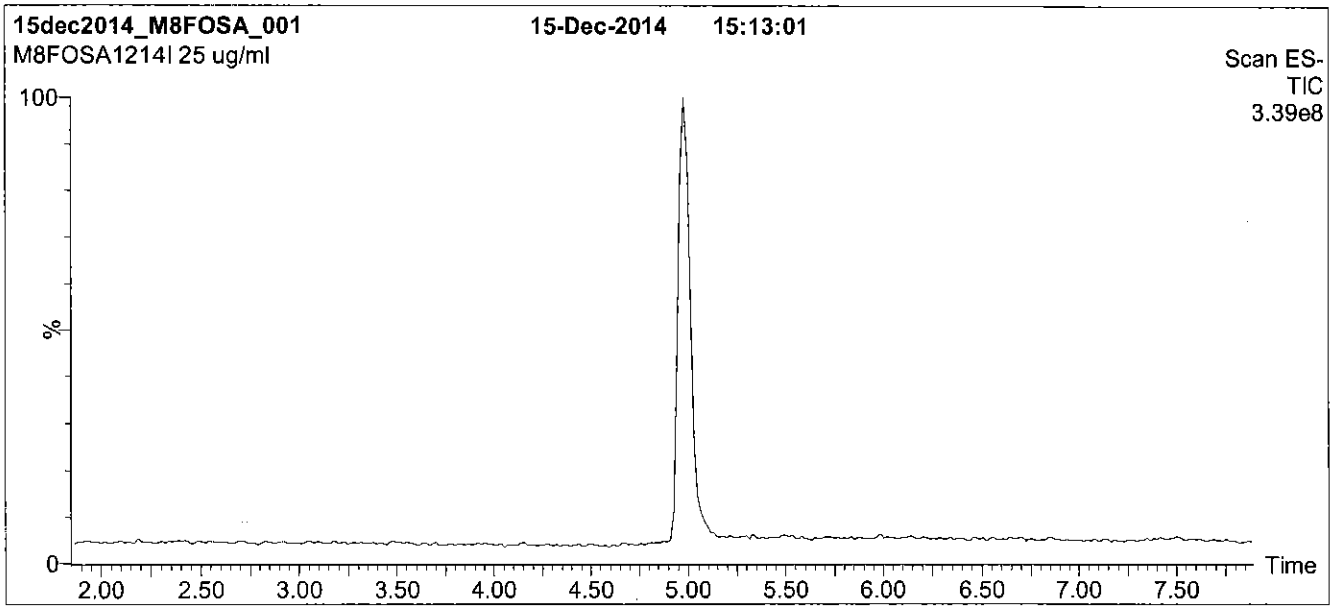
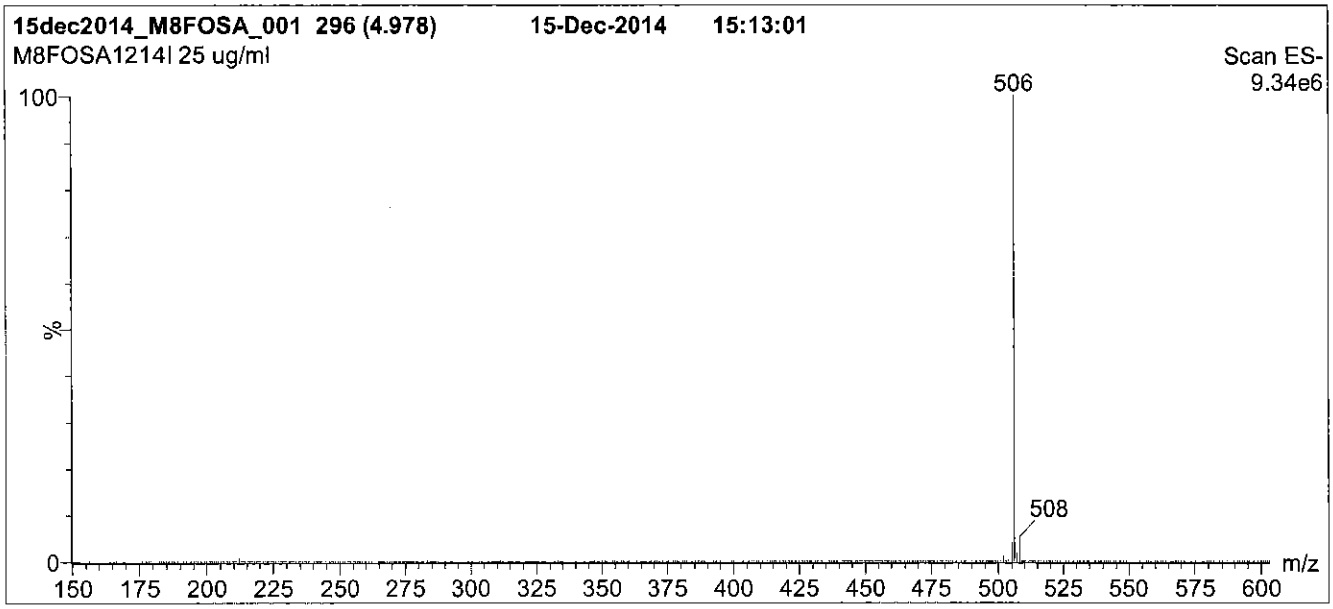
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





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: 55% (80:20 MeOH:ACN) / 45% 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

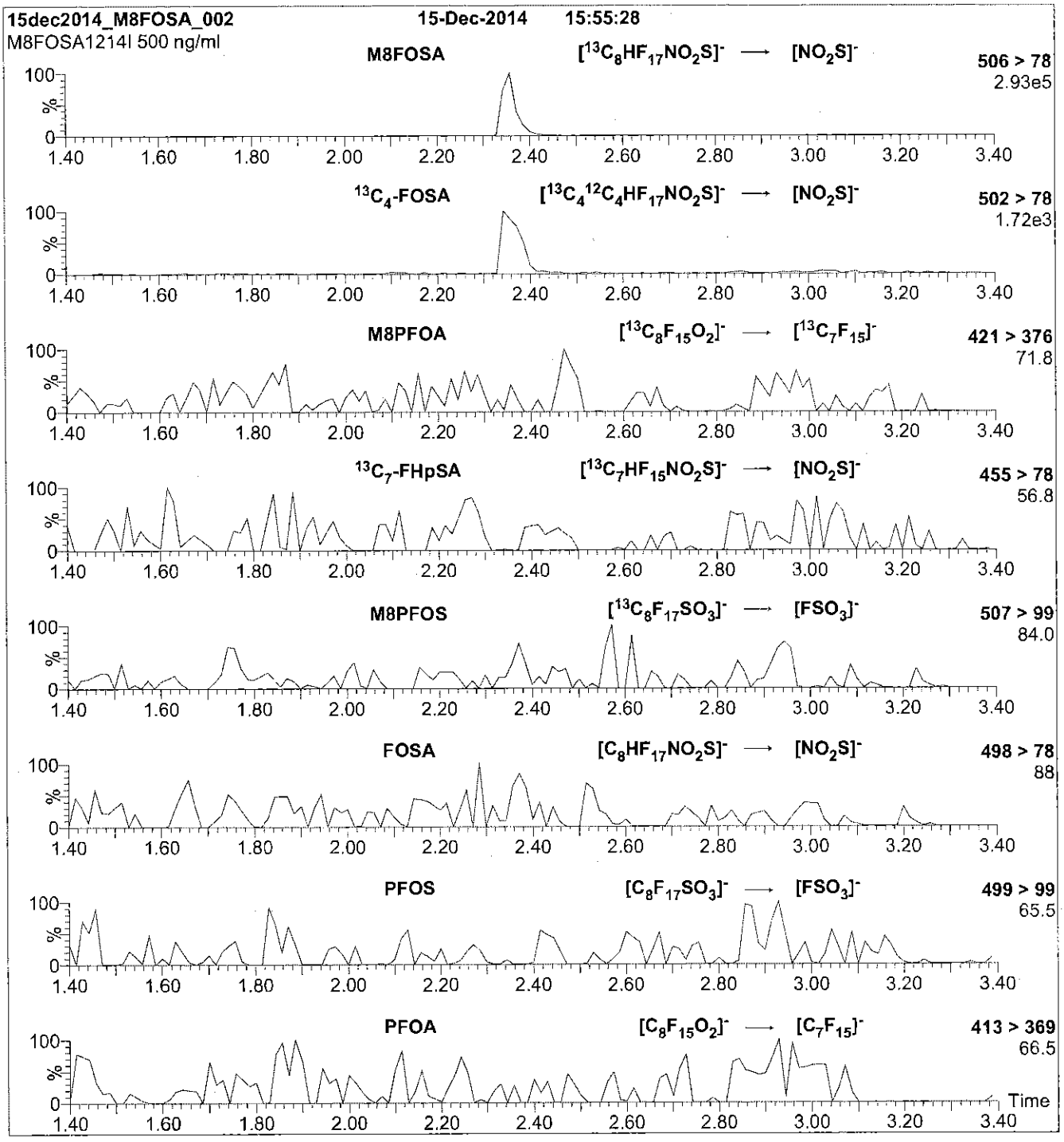
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
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) = 3.31e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00002

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

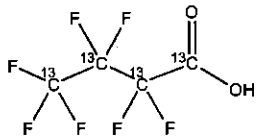
R 12-14-12
LCMPFBA_00002

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

LOT NUMBER: MPFBA0812

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)	08/13/2012		
EXPIRY DATE: (mm/dd/yyyy)	08/13/2015		
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 ~ 0.7% of native PFBA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 08/23/2012
B.G. Chittim (mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. 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.

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Where possible, all of our products are synthesized using single-product, unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, 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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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

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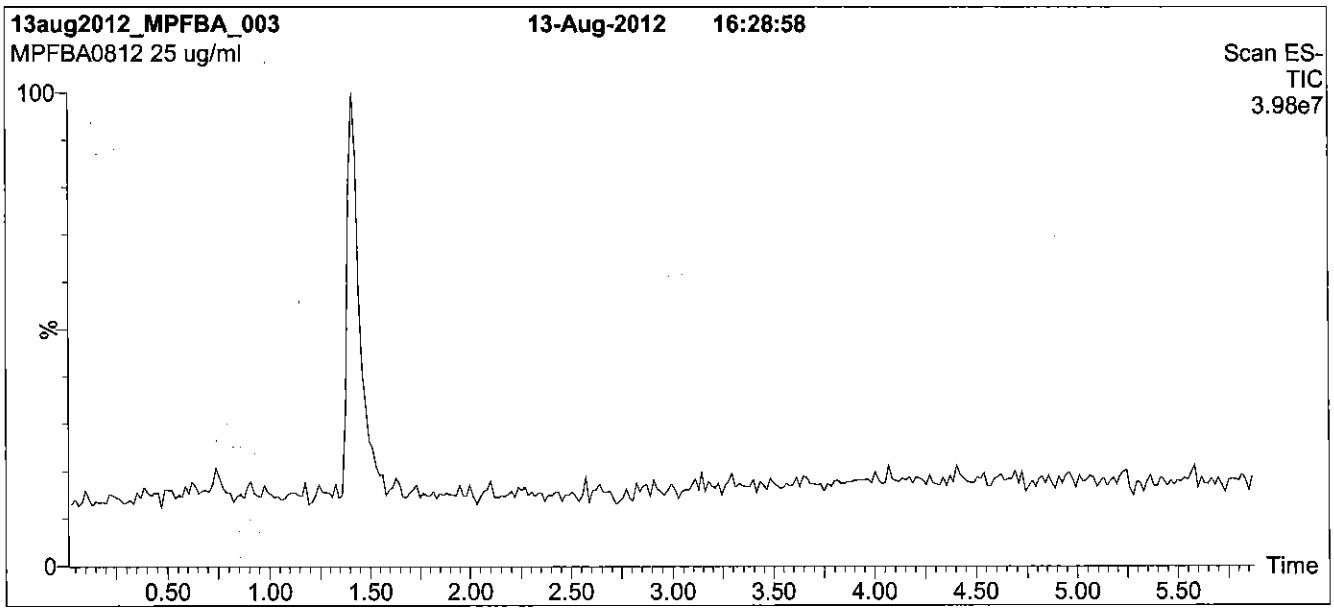
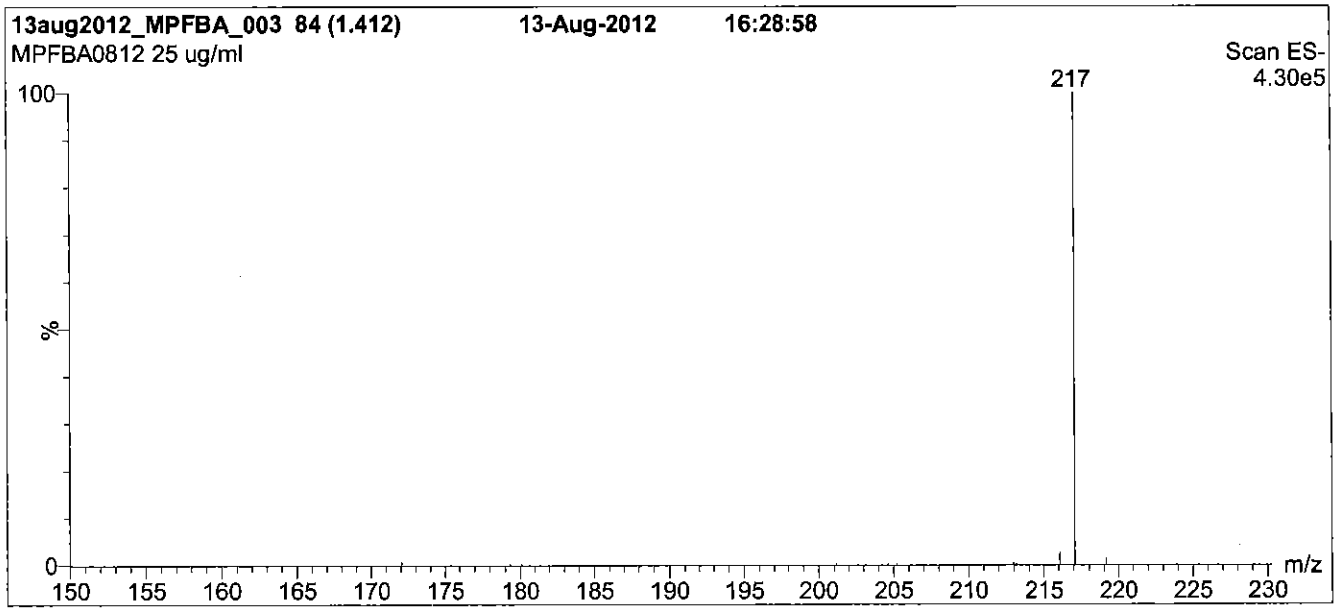
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





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 7.5 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

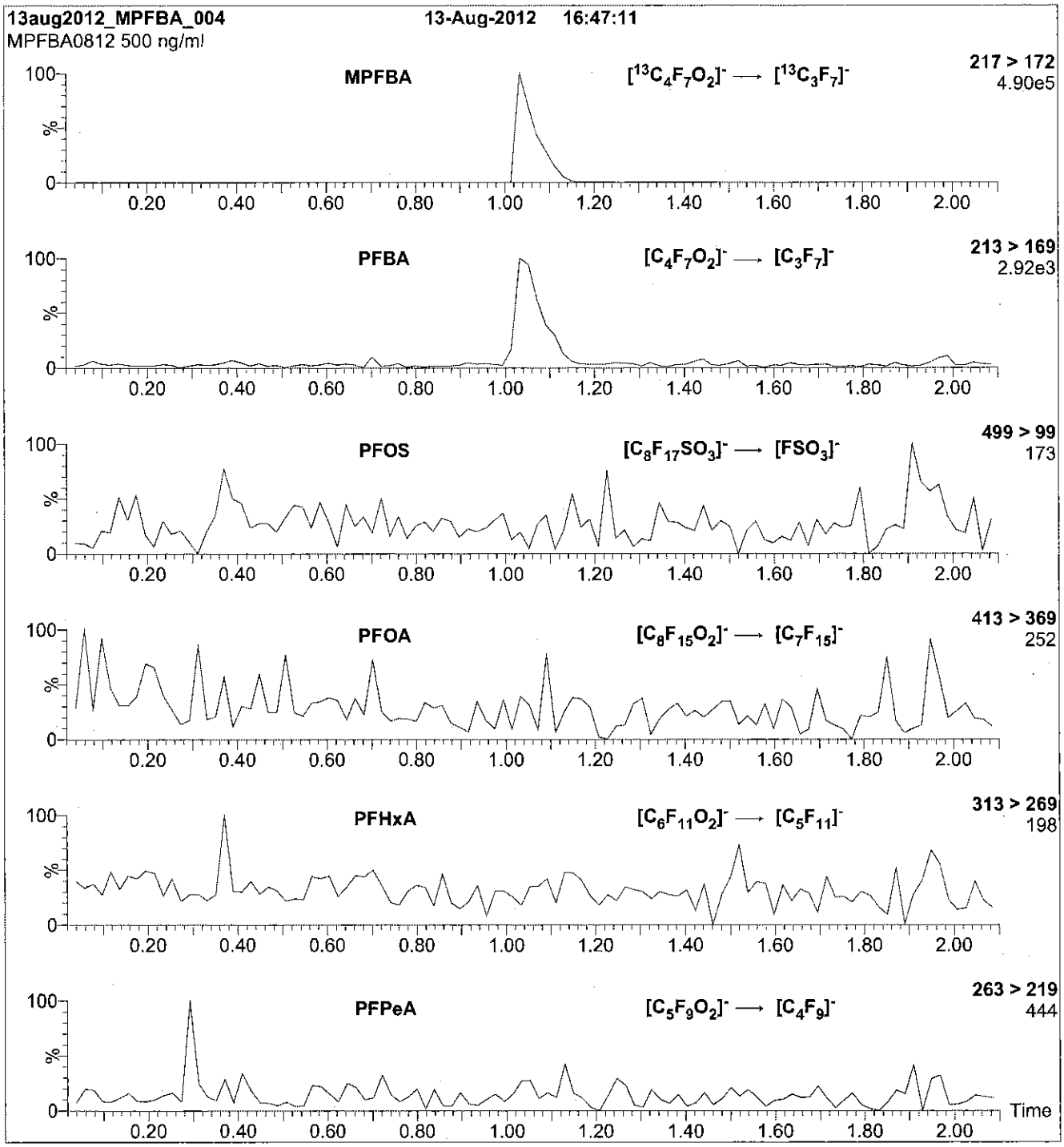
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 60
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 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

Reagent

LCMPFBA_00003

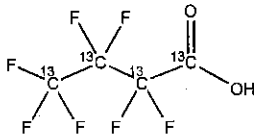
V: 2/11/15 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFBA
LOT NUMBER: MPFBA0113
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)	01/22/2013		
EXPIRY DATE: (mm/dd/yyyy)	01/22/2018		
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: _____ **Date:** 01/28/2013 (mm/dd/yyyy)
B.G. Chittim

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

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CALA Testing Accreditation No. A 1226

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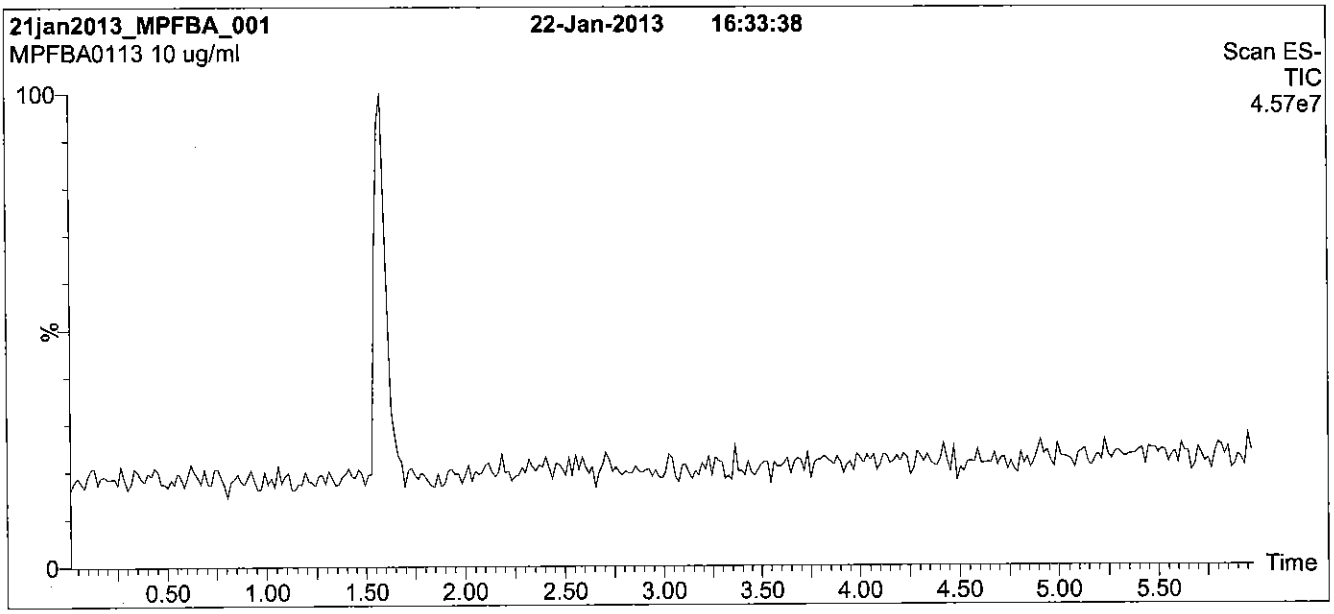
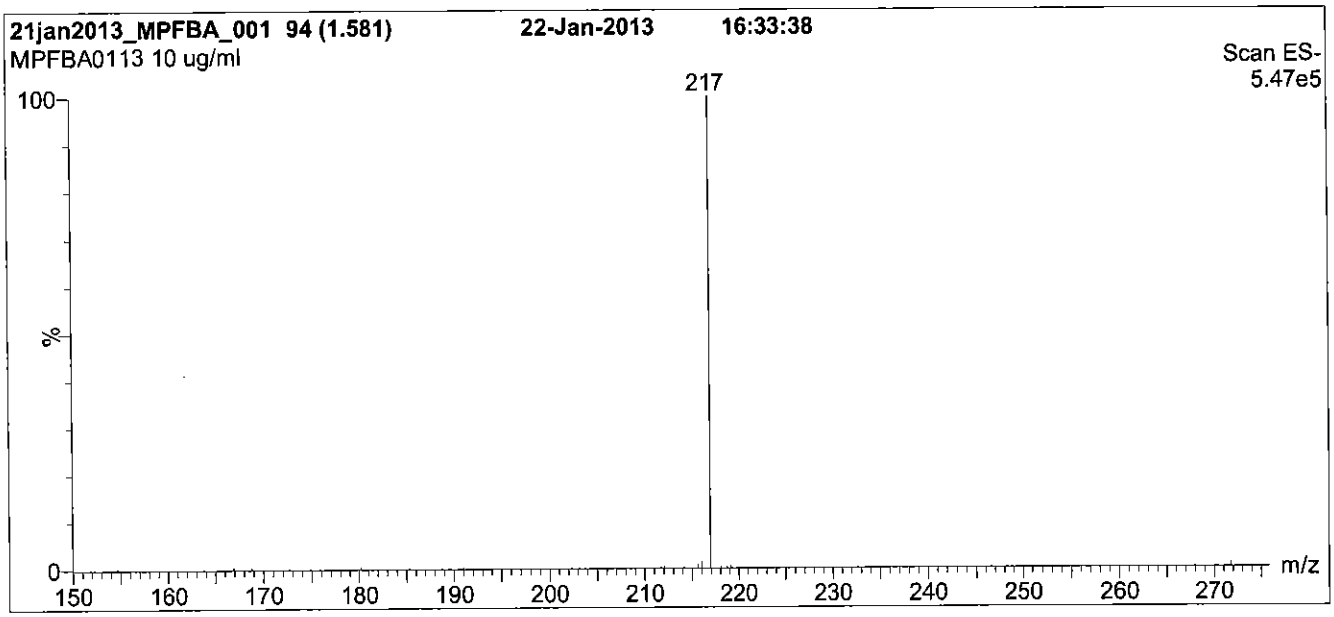




Conditions for Figure 1:

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

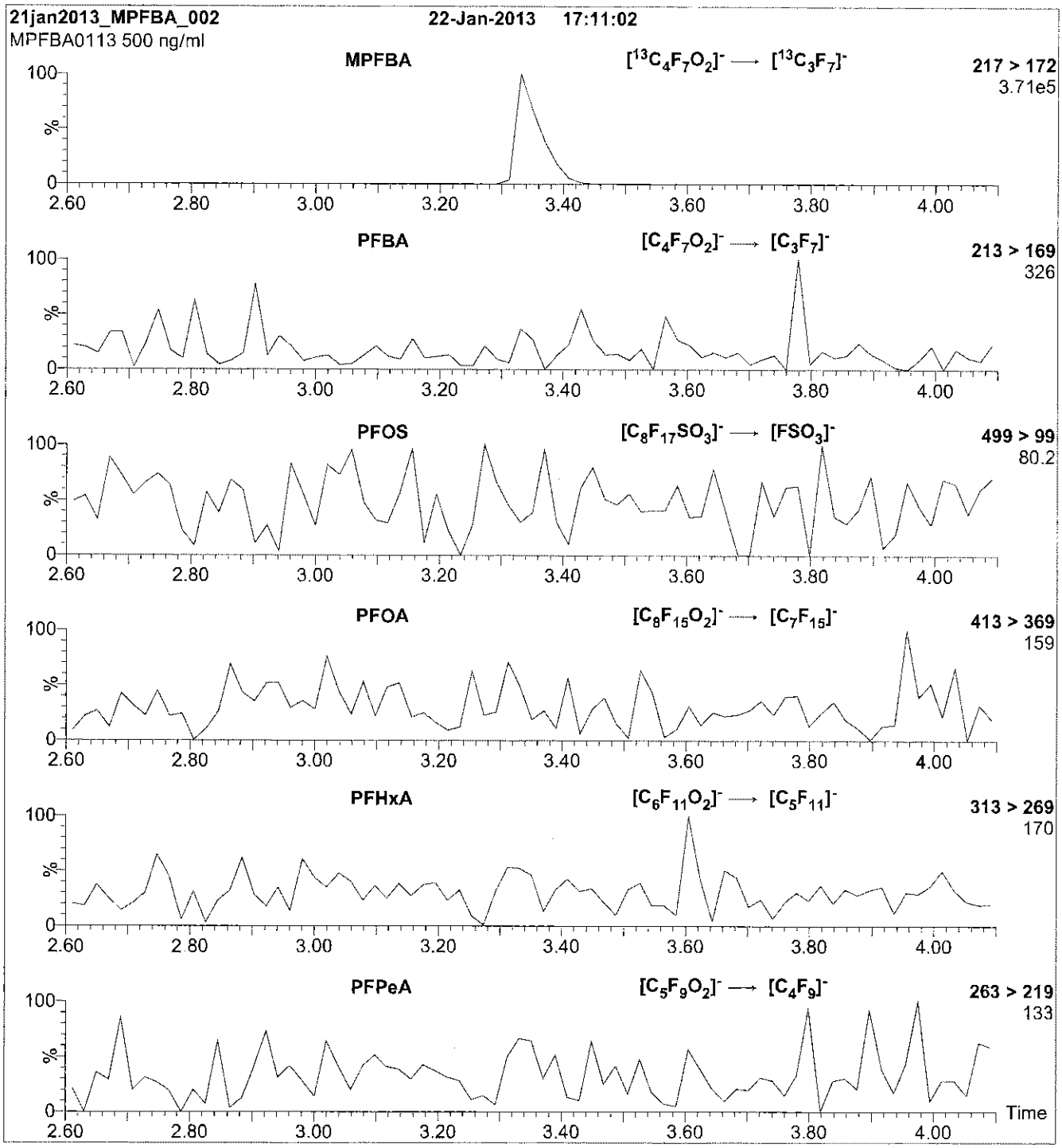
Flow: 300 µl/min

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: **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) = 3.24e-3
Collision Energy (eV) = 10

Reagent

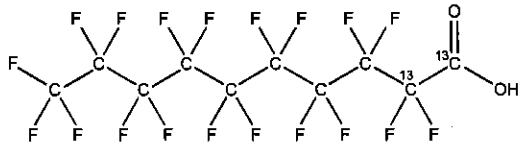
LCMPFDA_00003

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDA
LOT NUMBER: MPFDA0912
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	09/13/2012		
EXPIRY DATE: (mm/dd/yyyy)	09/13/2017		
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.
- Contains ~ 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/09/2013 (mm/dd/yyyy)

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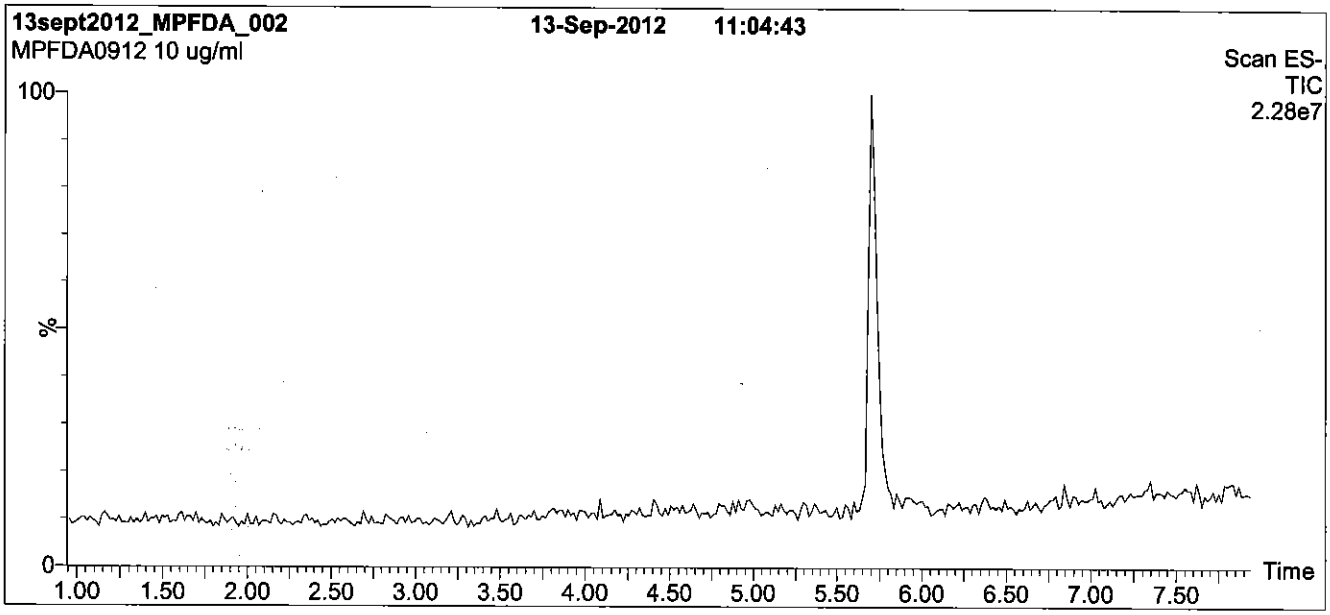
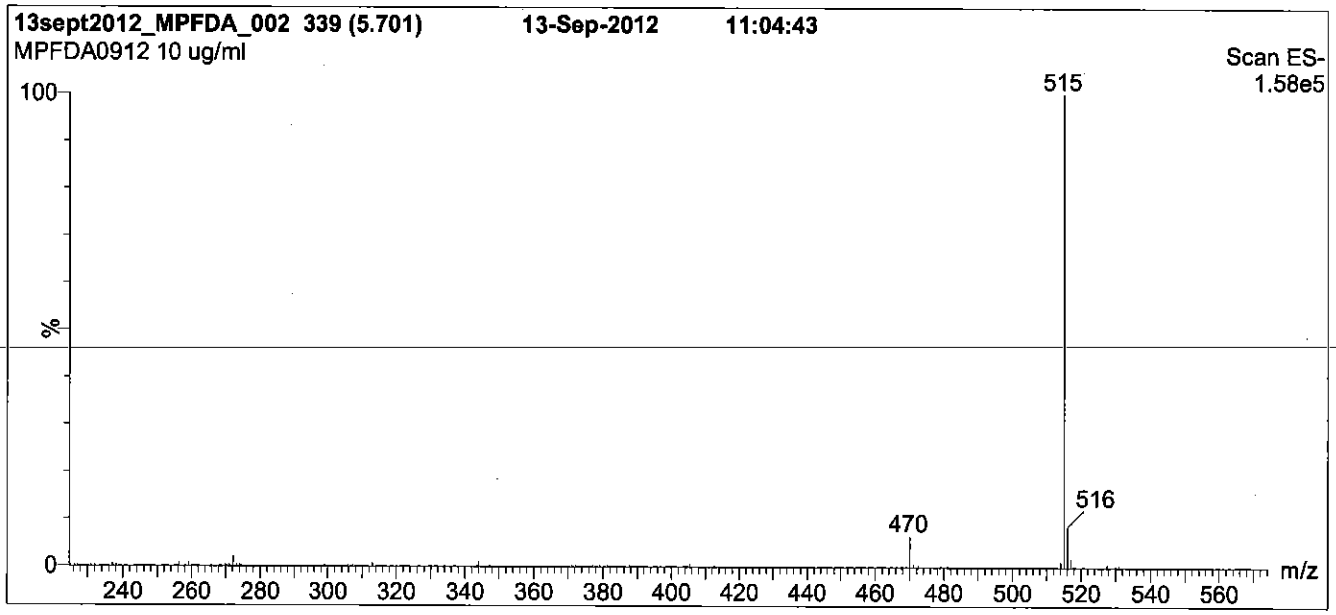




Conditions for Figure 1:

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

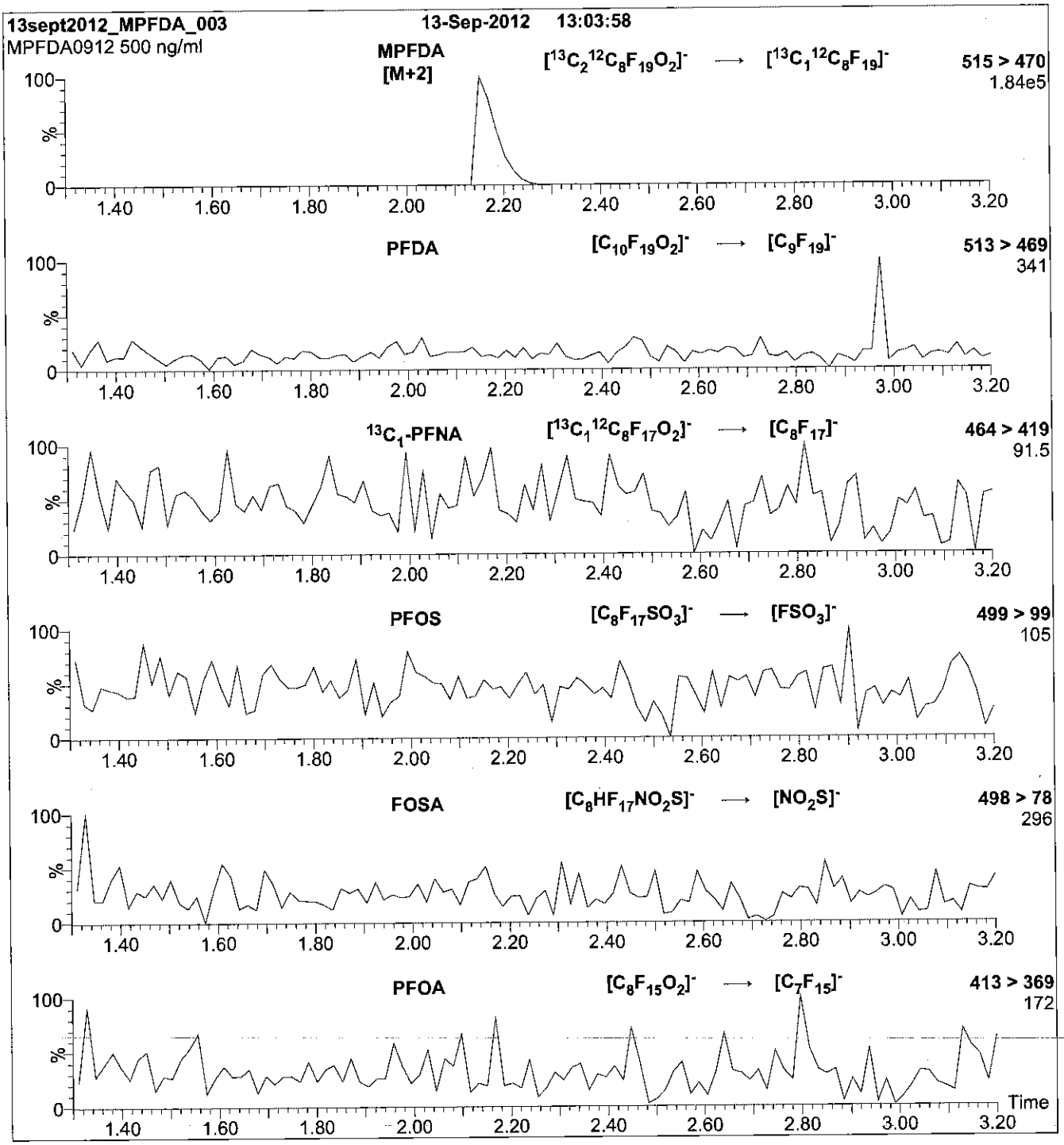
Flow: 300 µl/min

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: **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) = 3.62e-3
Collision Energy (eV) = 13

Reagent

LCMPFDA_00005

RL 4/15/15 SKV

WELLINGTON LABORATORIES

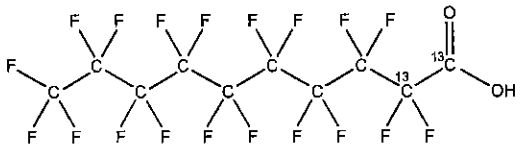
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFDA0414

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	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.
- Contains ~ 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/15/2014 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. 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:

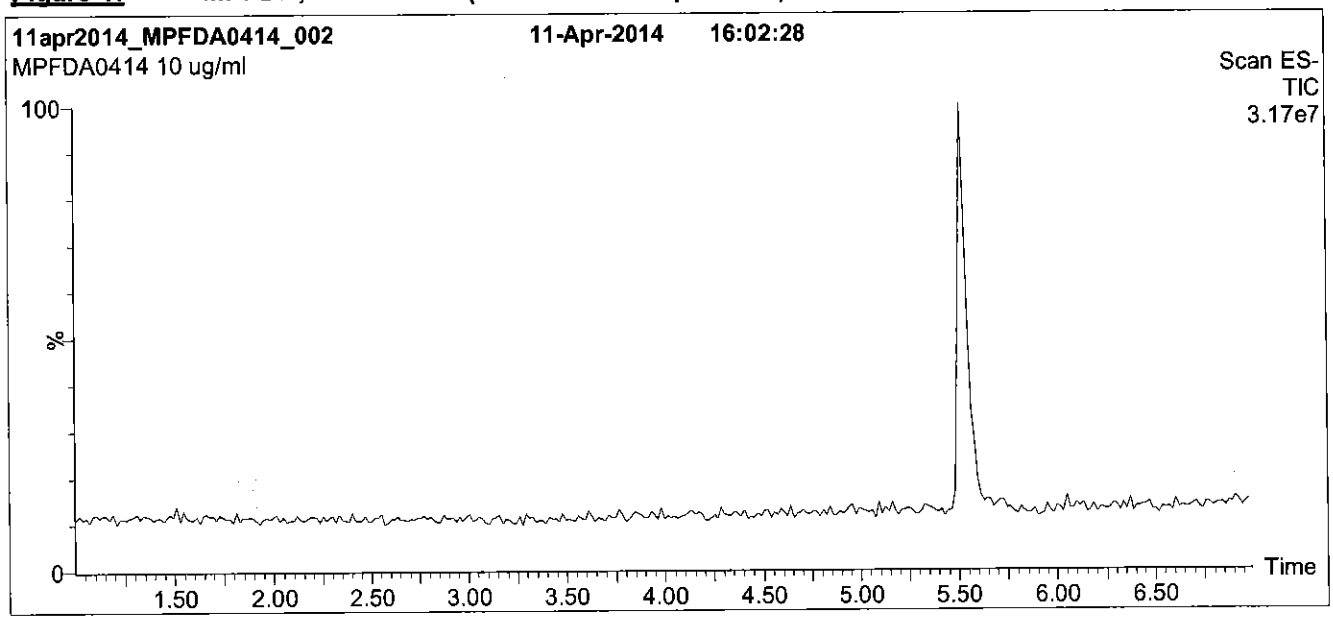
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

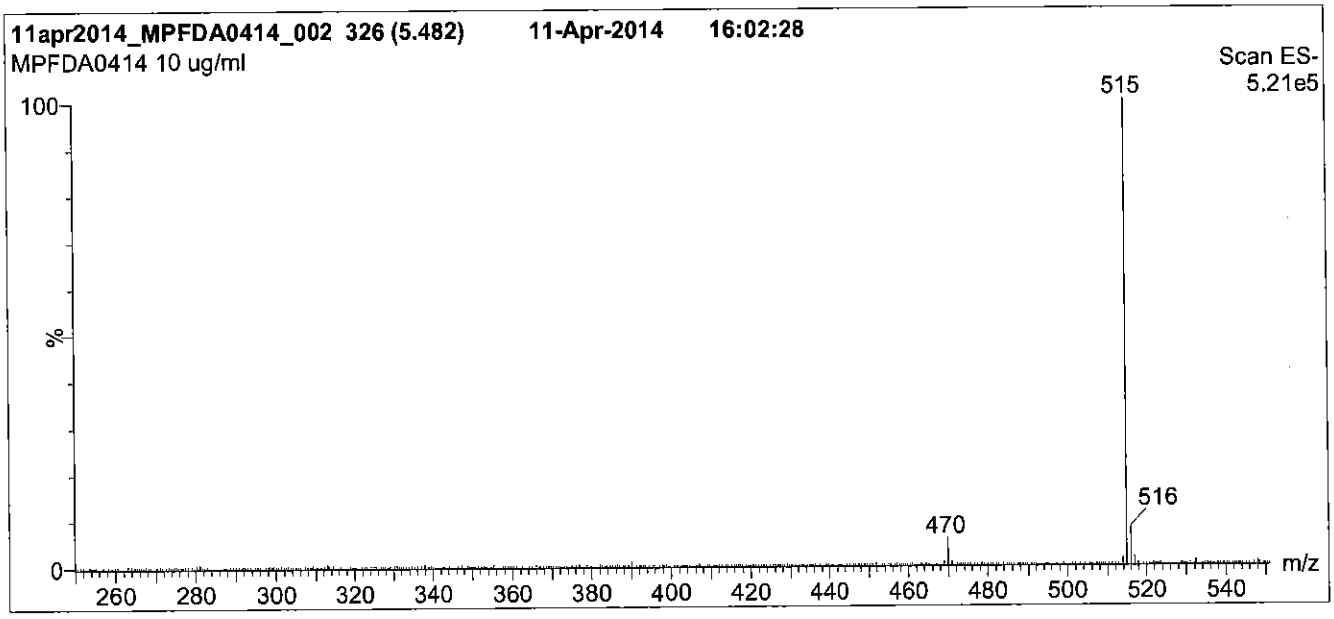
CALA Testing Accreditation No. A1226

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

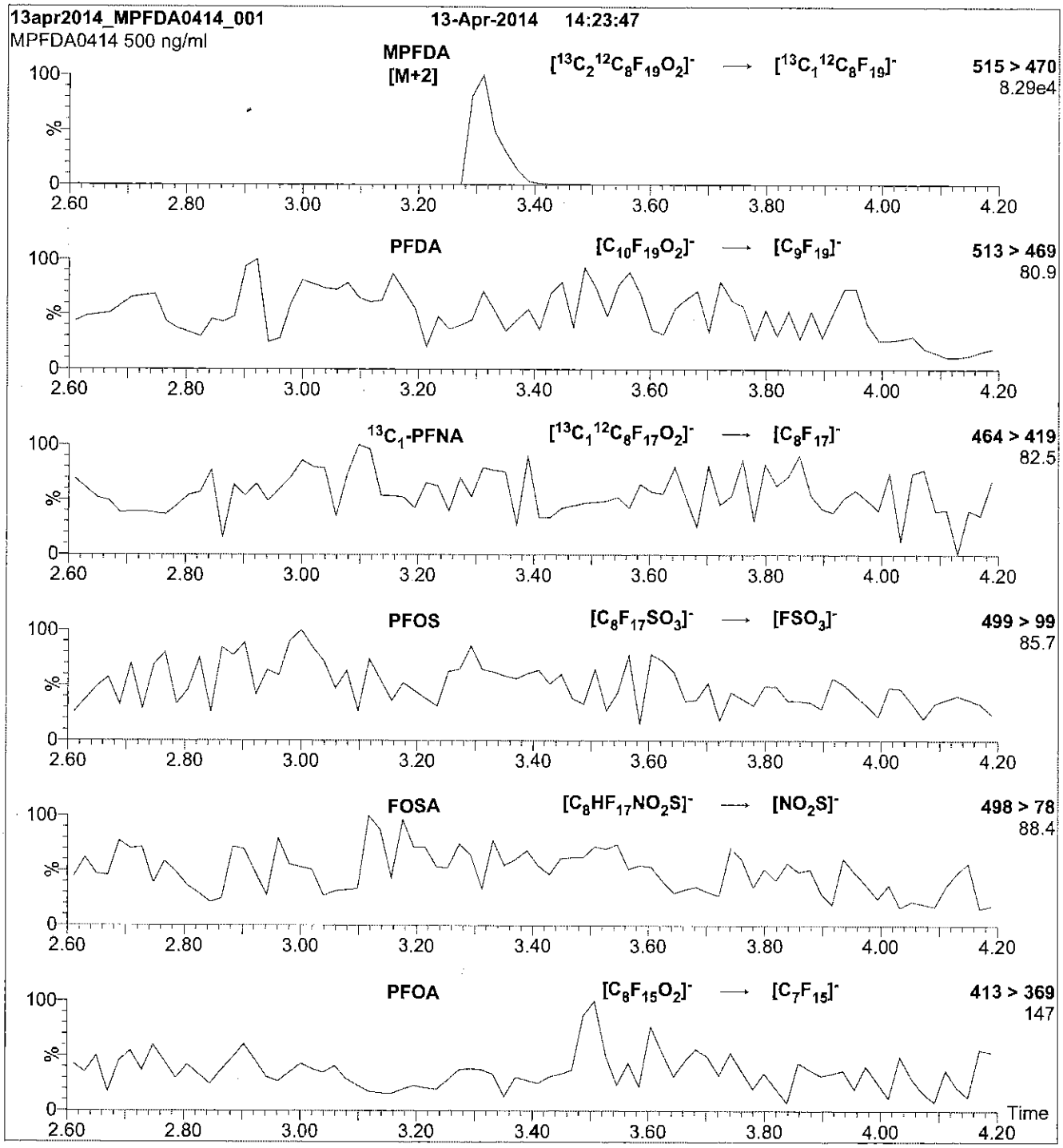
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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: **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) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFDoA_00003

P. 2/11/15 SRW

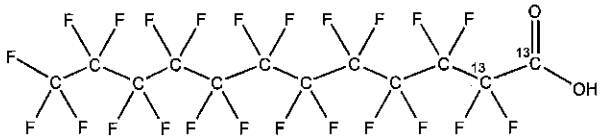
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFDoA0714
CAS #: Not available

STRUCTURE:



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:** 07/21/2014 (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

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UNCERTAINTY:

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

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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:

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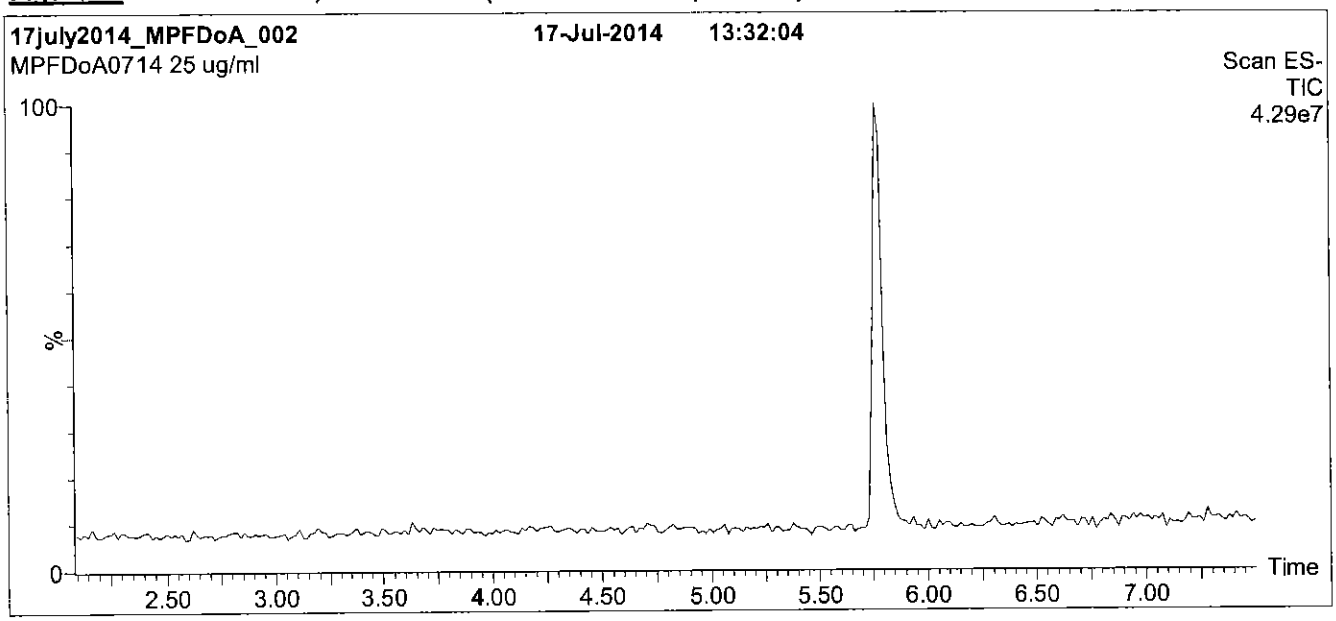
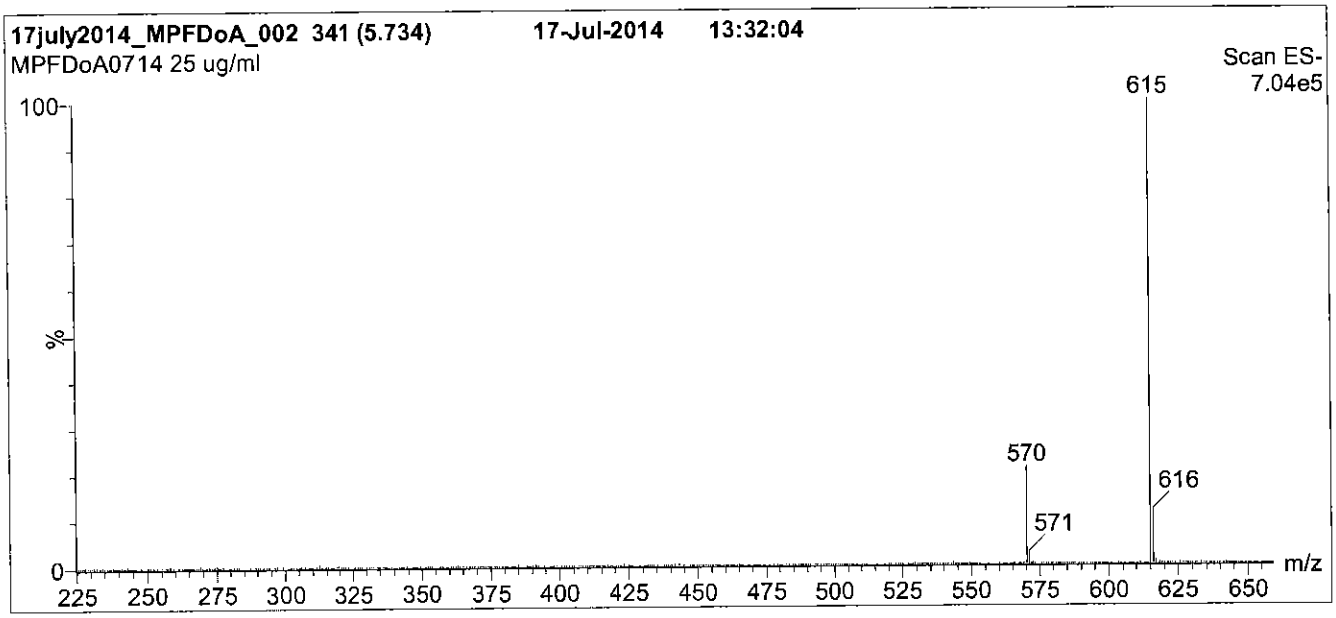
CALA Testing Accreditation No. A 1226

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: **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 **m**M NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 **m**in.
Time: 10 min

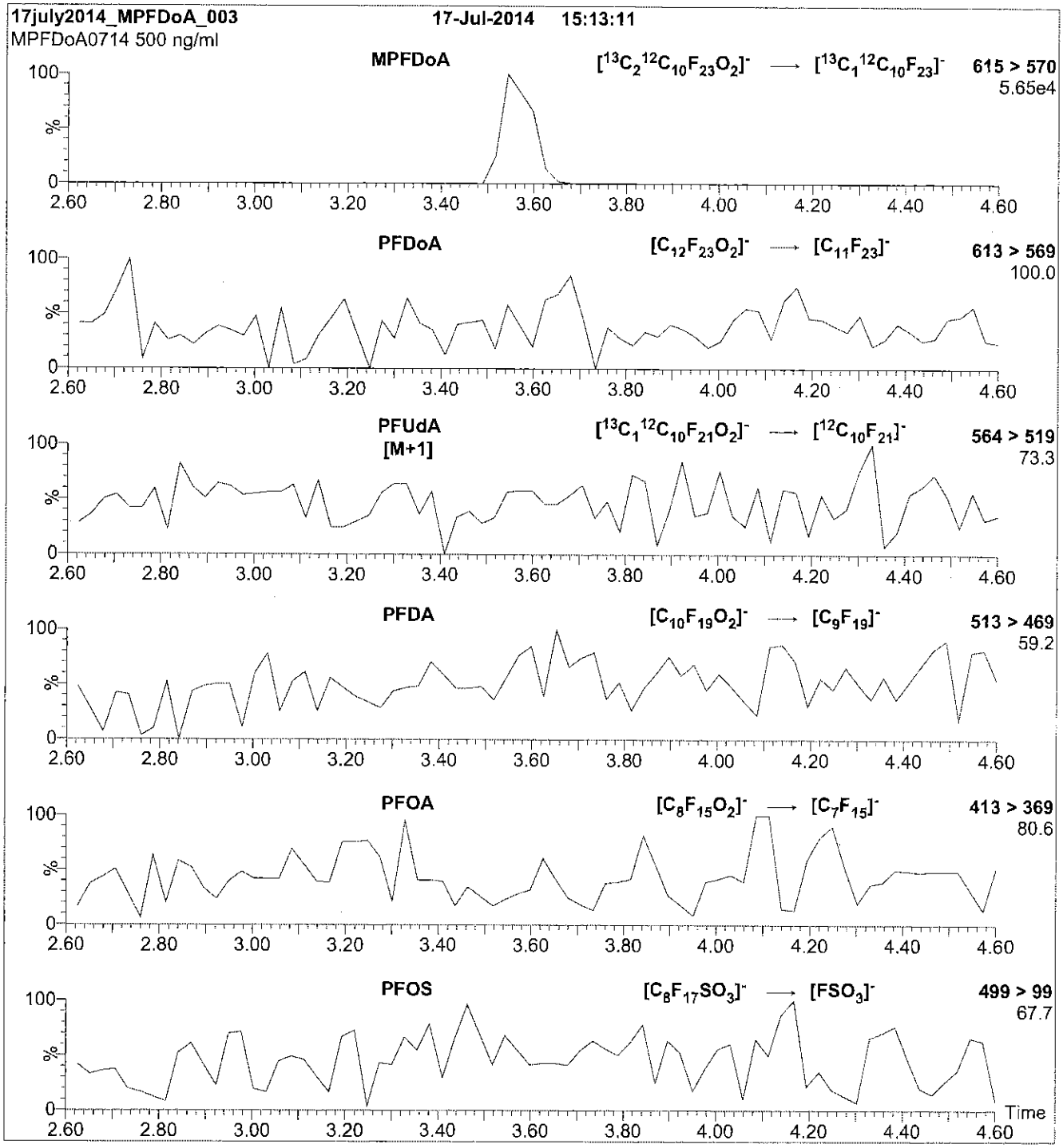
Flow: 300 µl/min

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

LCMPFHxA_00004

WELLINGTON LABORATORIES

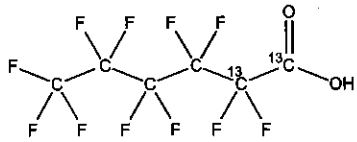
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFHxA0213

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/14/2013		
EXPIRY DATE: (mm/dd/yyyy)	02/14/2018		
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 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:** 02/20/2013 (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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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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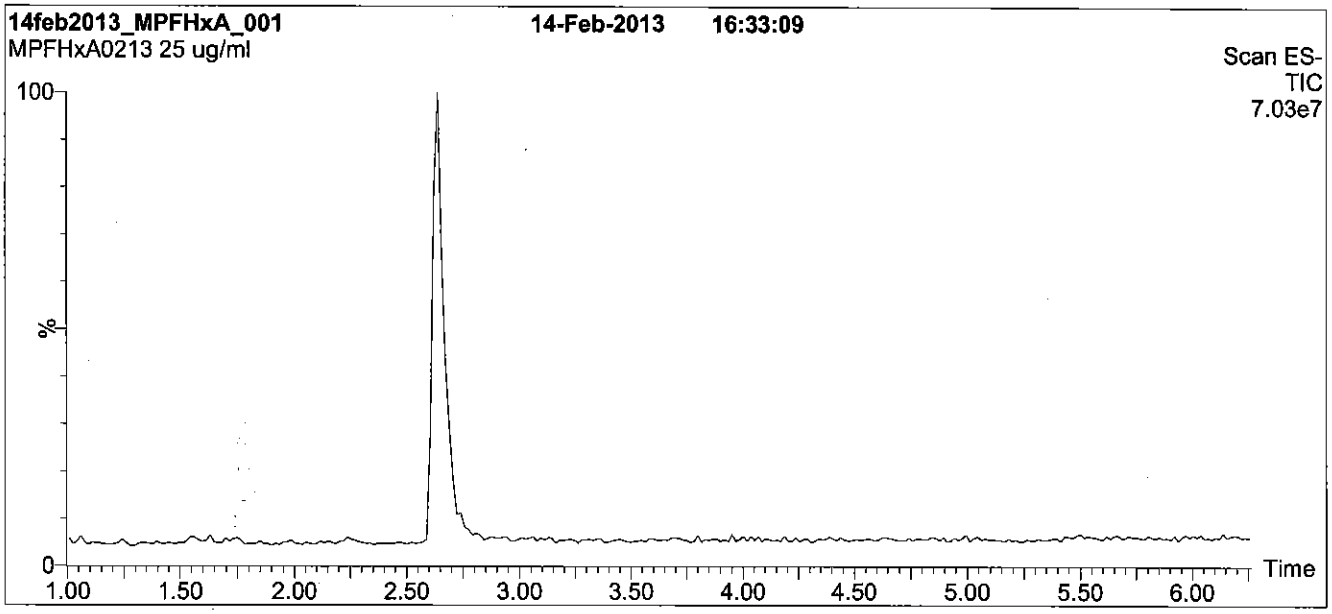
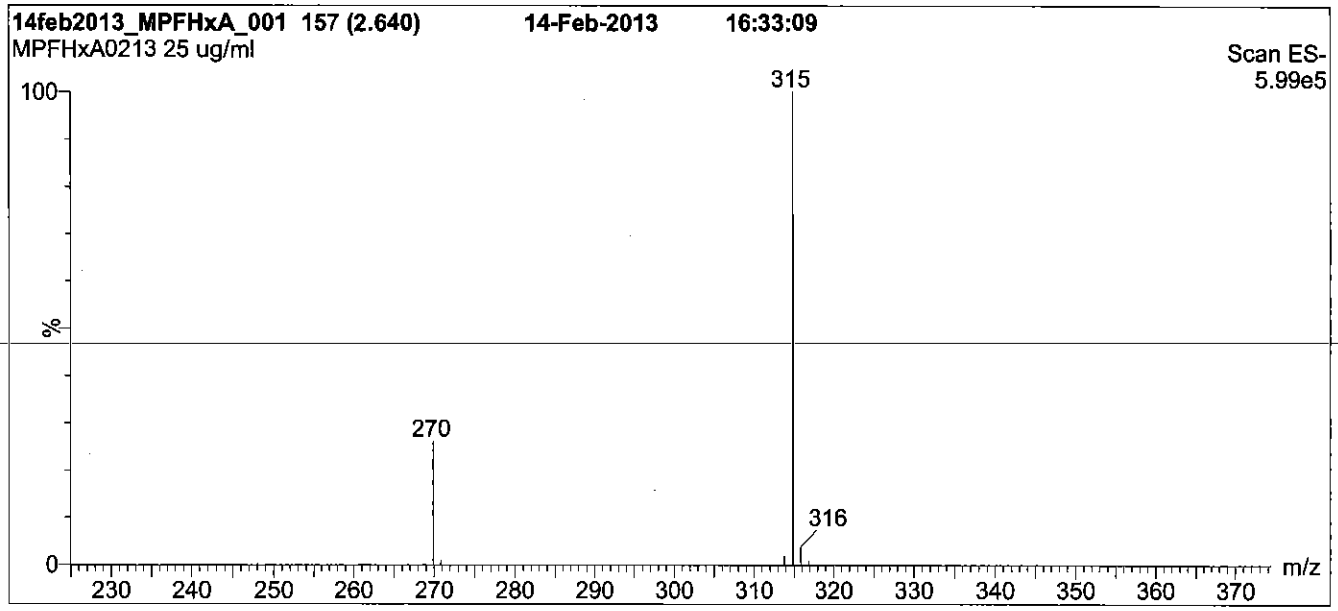
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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 2 min before returning to initial conditions over 0.5 min.
Time: 10 min

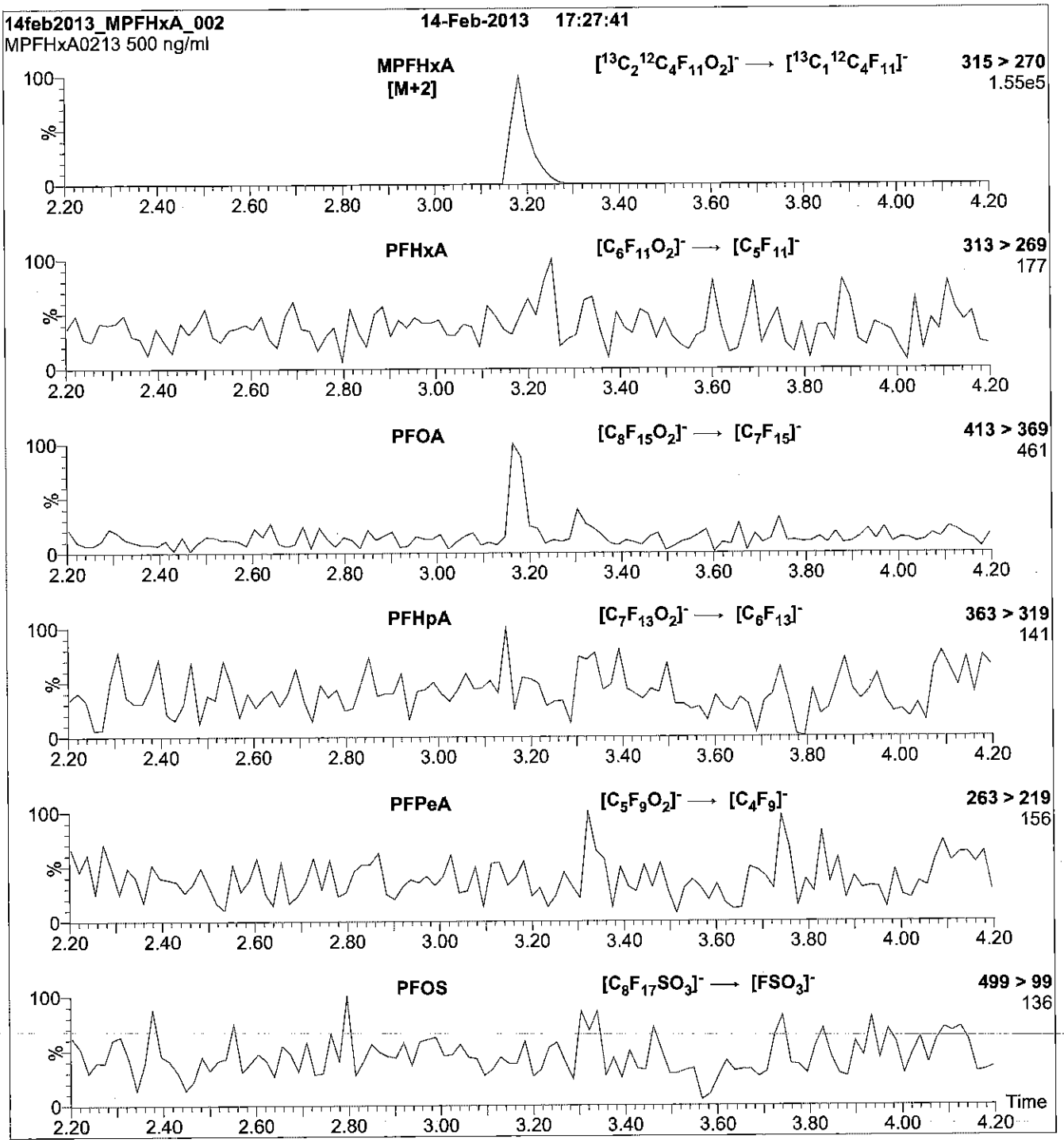
Flow: 300 µl/min

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

Reagent

LCMPFHxA_00006

P: 4/15/15 SKV

WELLINGTON LABORATORIES

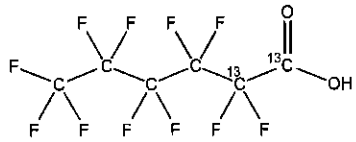
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFHxA0414

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/13/2014		
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.
- 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:** 04/15/2014 (mm/dd/yyyy)

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

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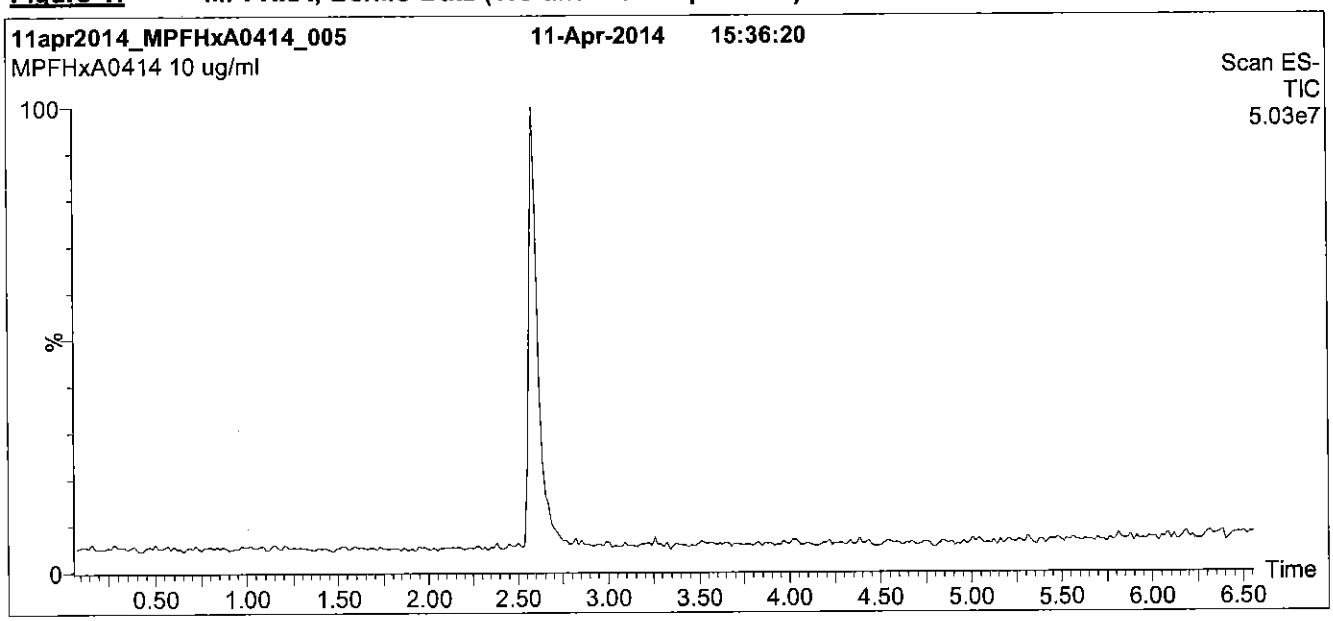
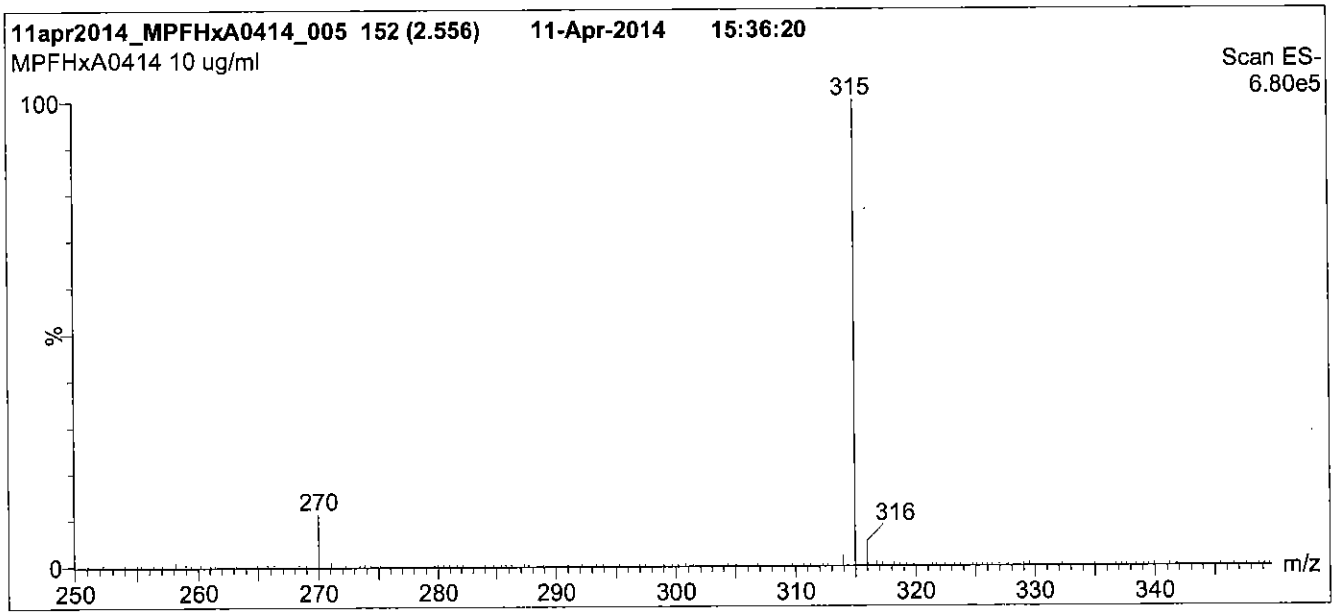
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





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

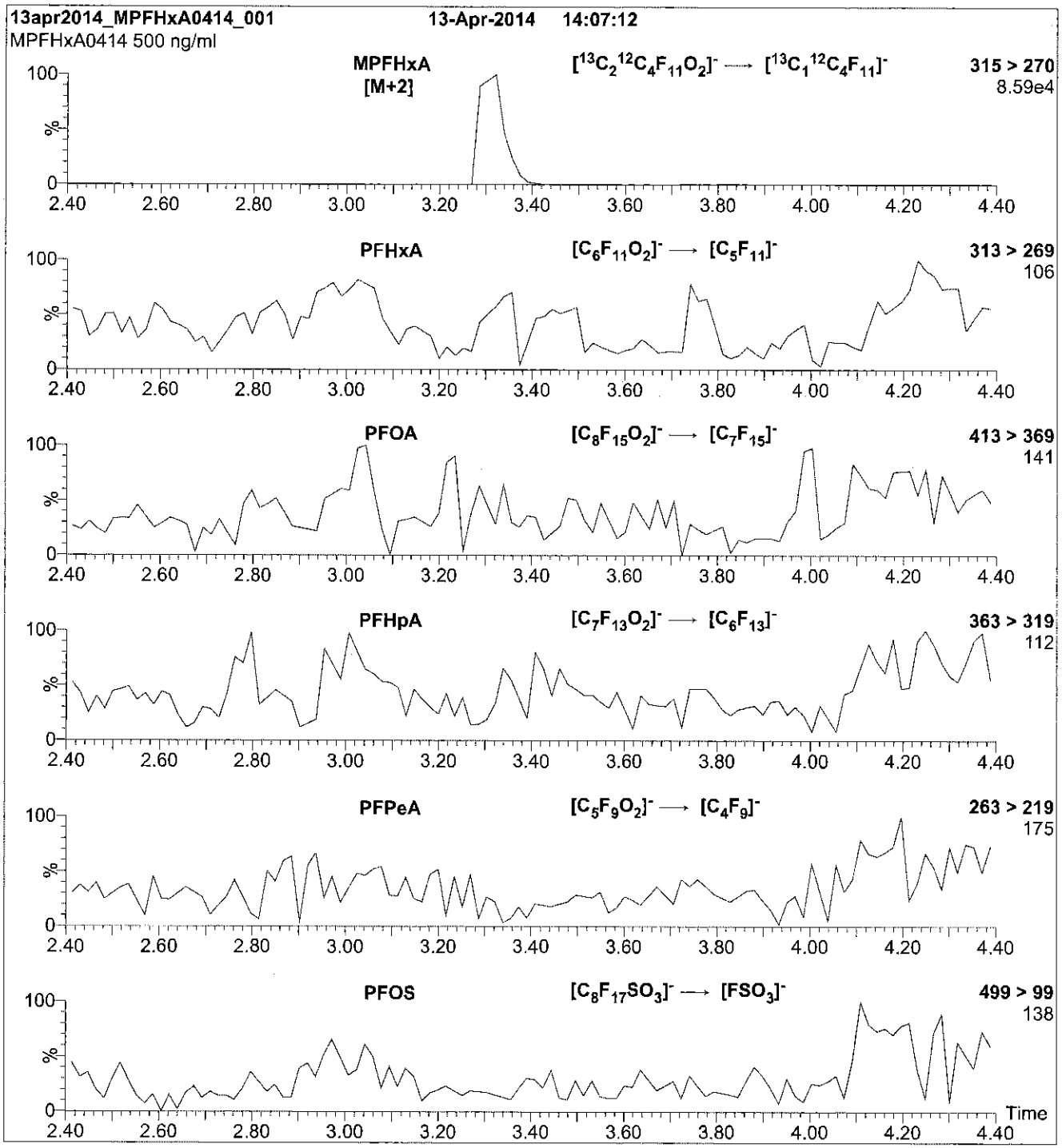
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 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) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxS_00003

v. 2/11/15

WELLINGTON LABORATORIES

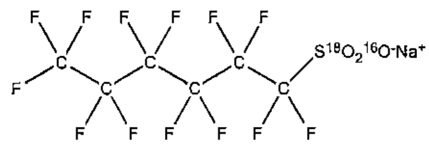
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS

LOT NUMBER: MPFHxS0713

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

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $C_6F_{13}S^{18}O_2{}^{16}ONa$

MOLECULAR WEIGHT: 426.10

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.3 ± 2.4 µg/ml (MPFHxS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: >94% ($^{18}O_2$)

LAST TESTED: (mm/dd/yyyy) 07/25/2013

EXPIRY DATE: (mm/dd/yyyy) 07/25/2018

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.
- 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:** 04/15/2014 (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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CALA Testing Accreditation No. A1226

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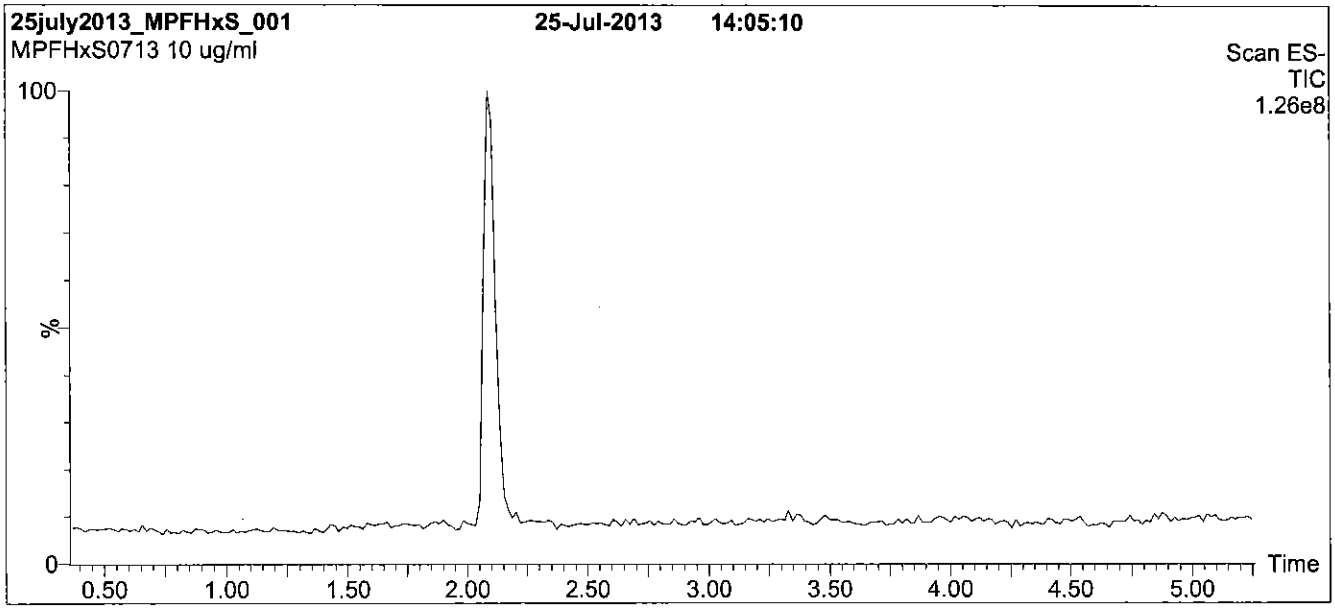
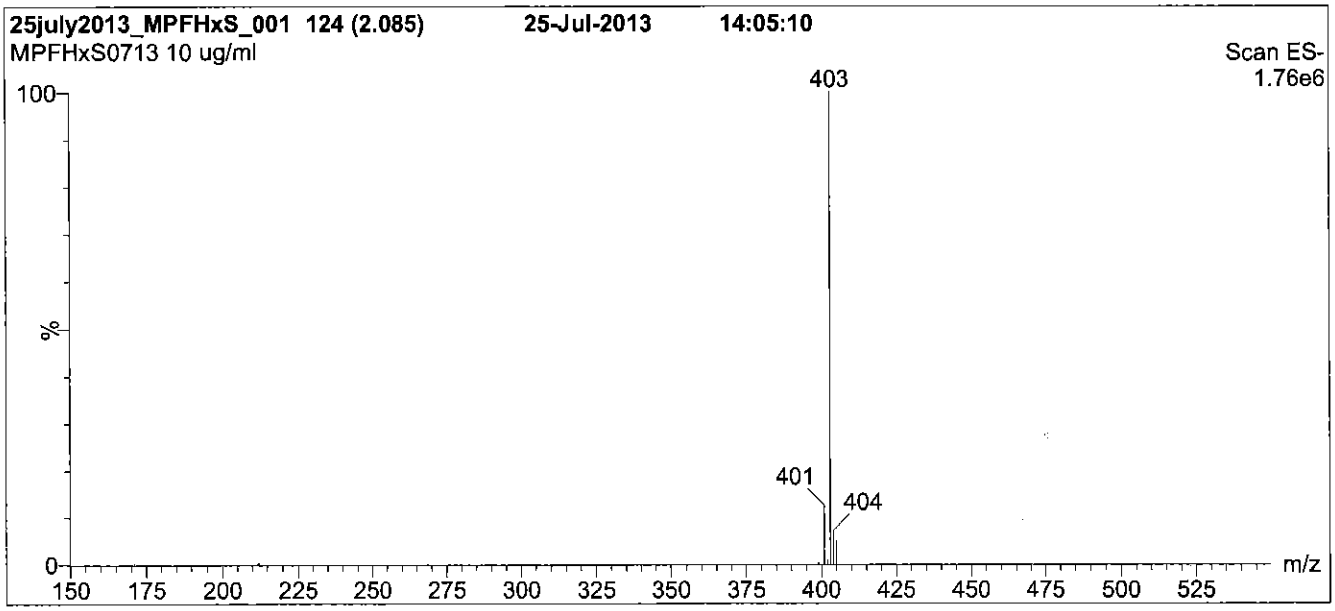




Conditions for Figure 1:

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

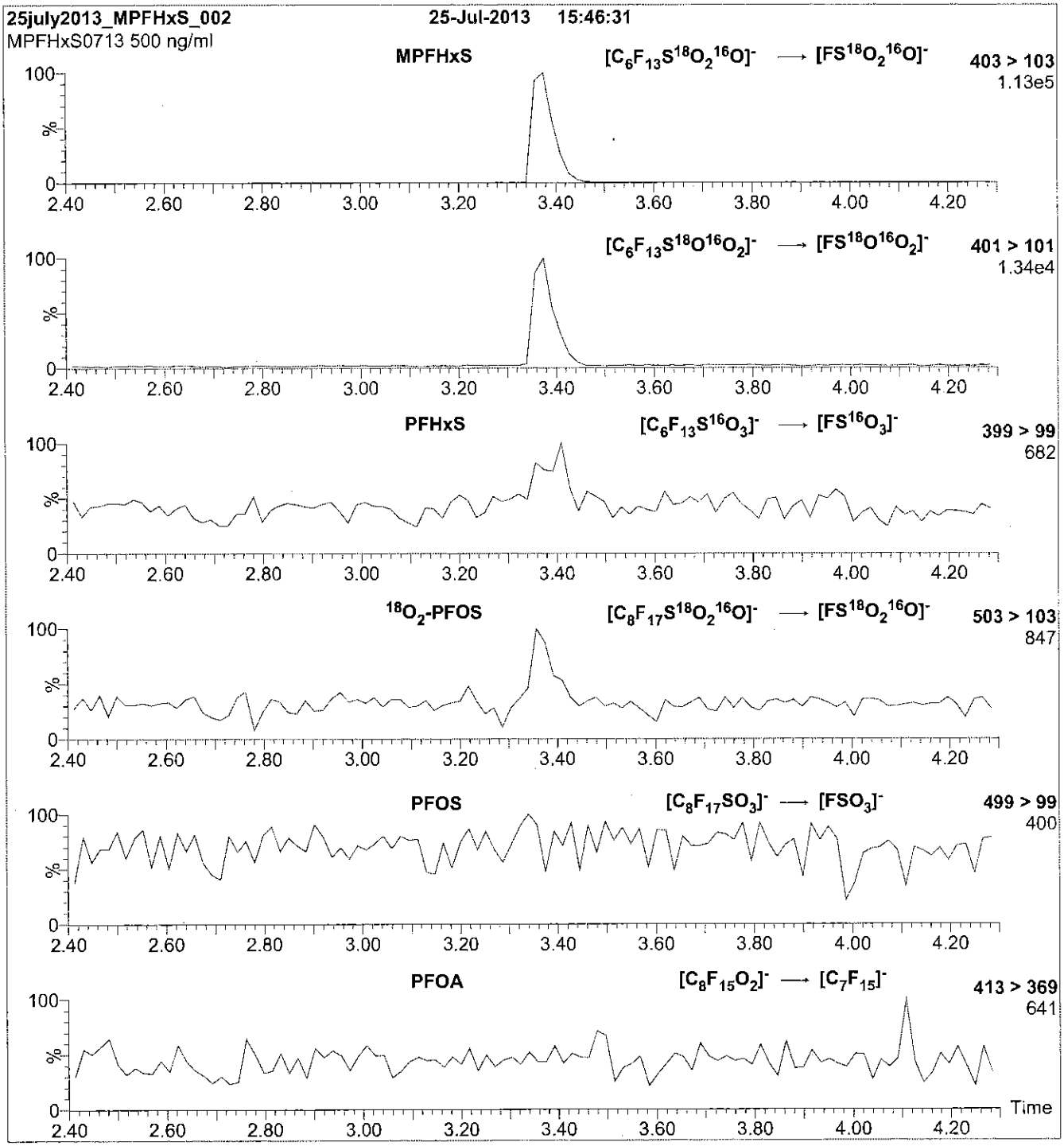
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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) = 3.58e-3
Collision Energy (eV) = 30

Reagent

LCMPFNA_00002

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

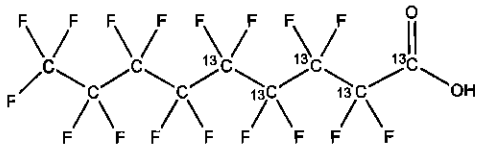
12-14-12
LCMPFNA_00002

PRODUCT CODE: MPFNA
COMPOUND: Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid

LOT NUMBER: MPFNA0912

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_5{}^{12}C_4HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/13/2012
EXPIRY DATE: (mm/dd/yyyy) 09/13/2015
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 469.04
SOLVENT(S): Methanol
Water (<1%)

ISOTOPIC PURITY: ≥99% ^{13}C
(1,2,3,4,5-$^{13}C_5$)

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 09/26/2012 (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

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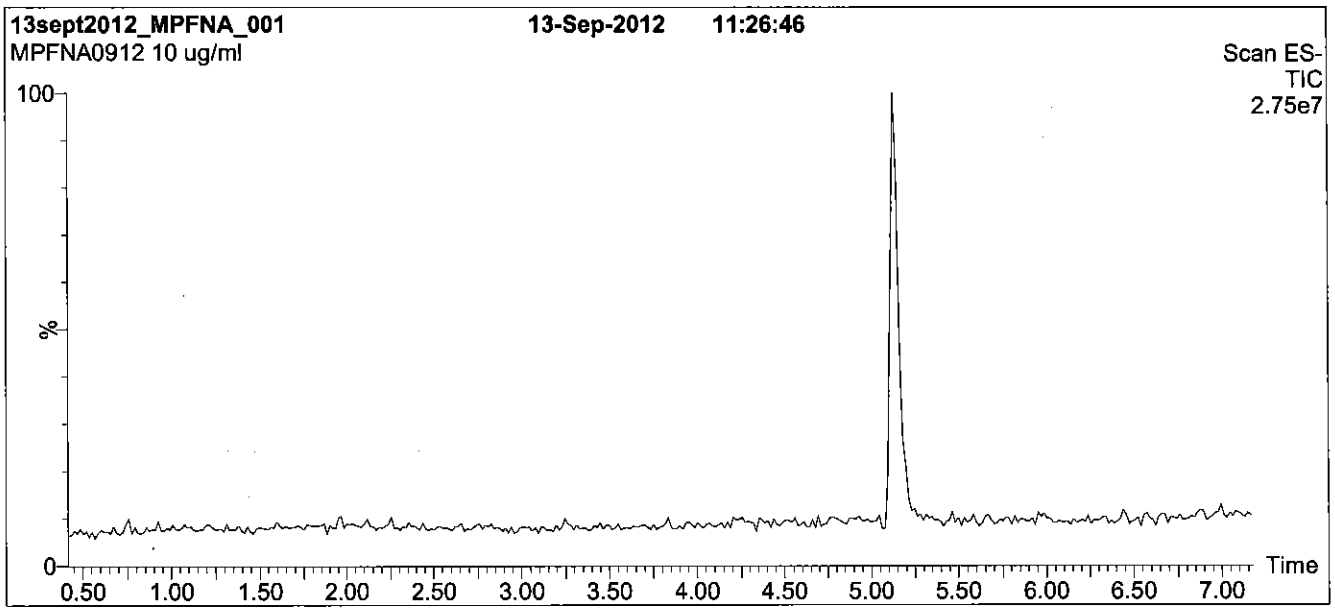
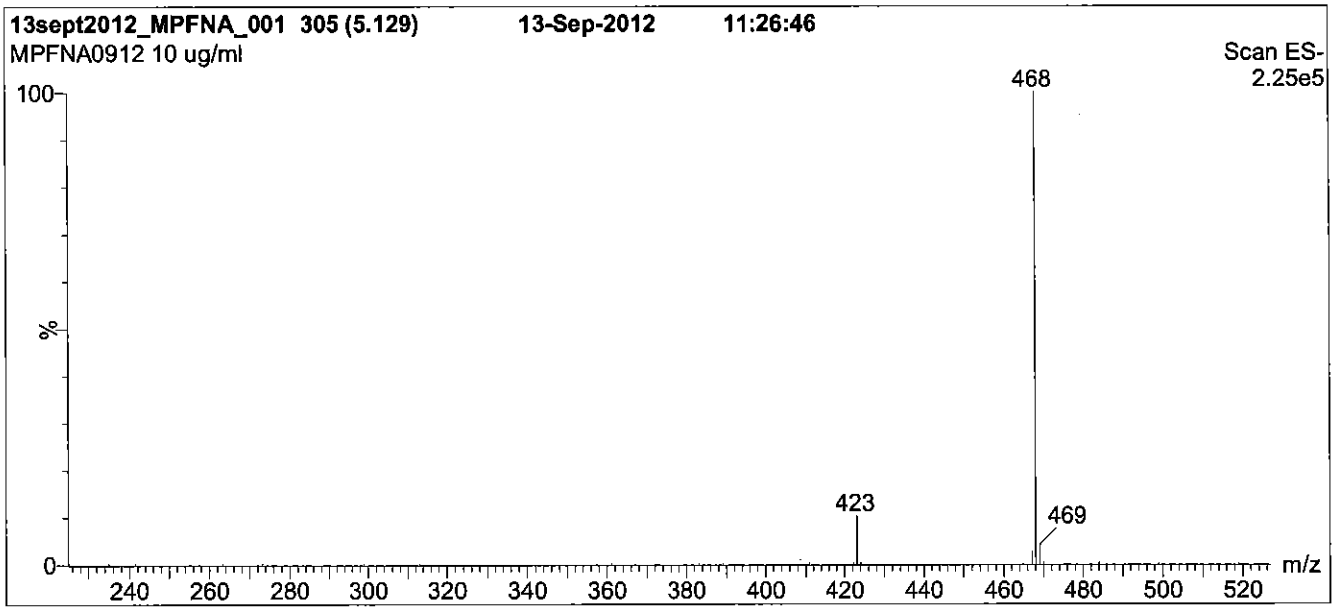
Figure 1: **MPFNA; LC/MS Data (TIC and Mass Spectrum)**





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

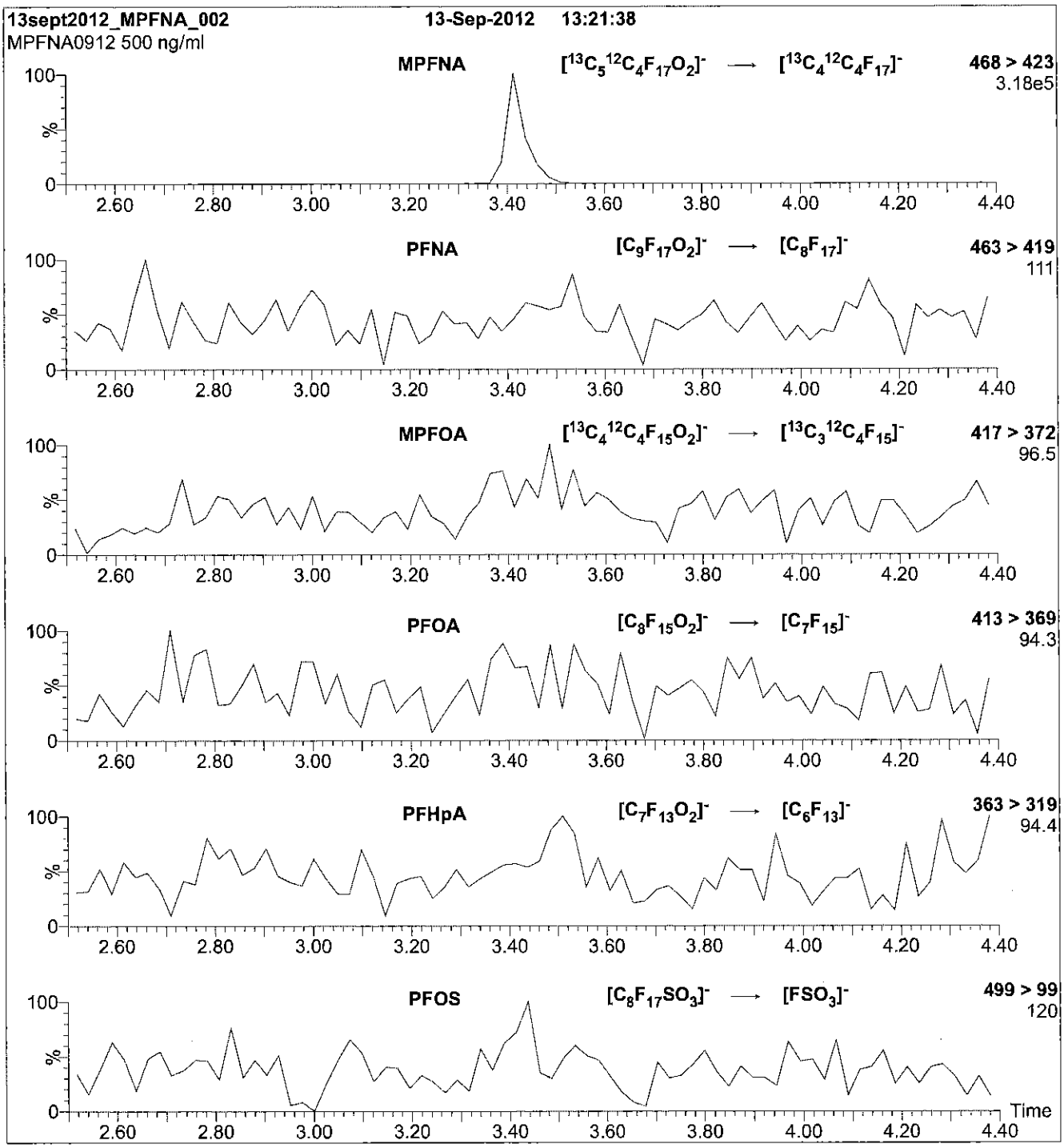
Flow: 300 µl/min

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: **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) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00005

Rec 8/14/14 SK

WELLINGTON LABORATORIES

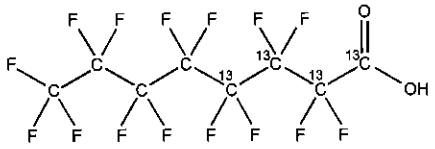
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFOA0614

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 ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	07/04/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/04/2019		
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 native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/08/2014
B.G. Chittim (mm/dd/yyyy)

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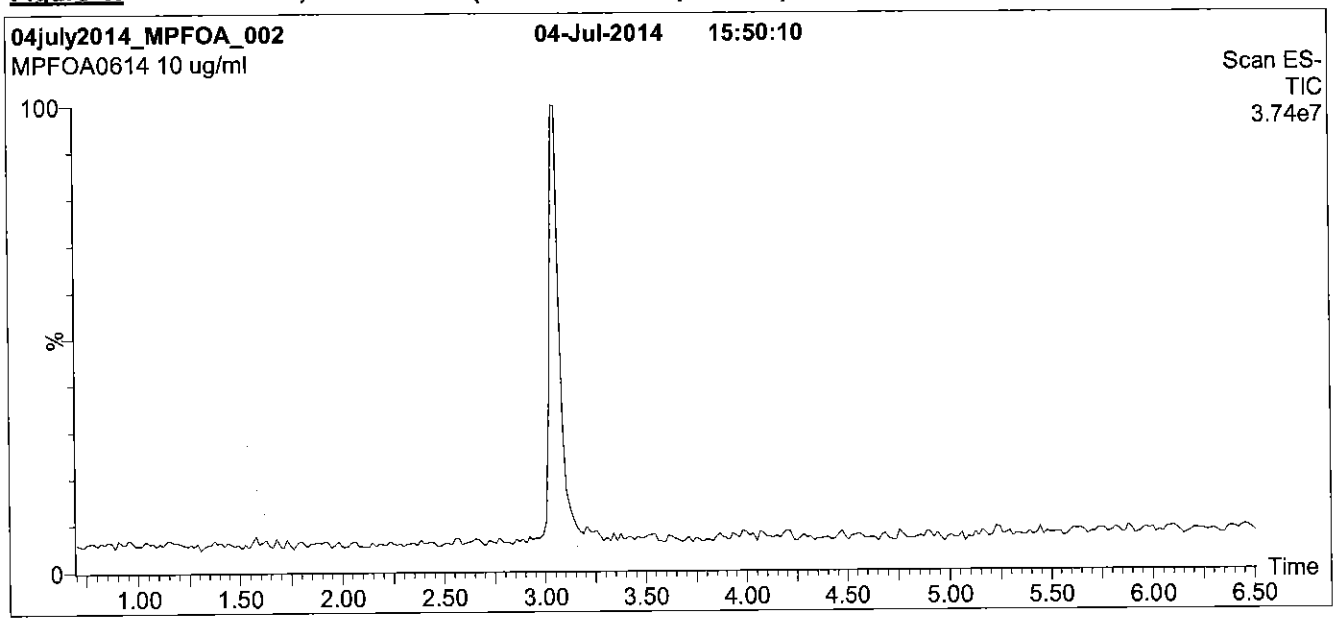
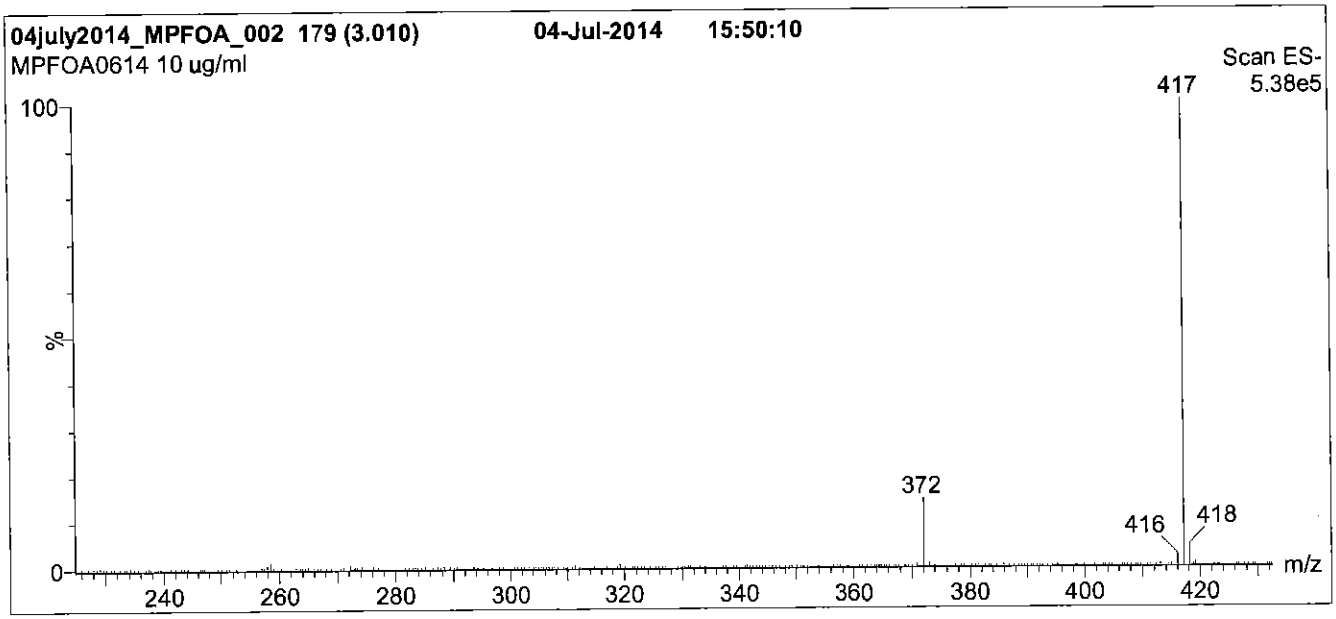
Figure 1: **MPFOA; LC/MS Data (TIC and Mass Spectrum)**





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 7.5 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

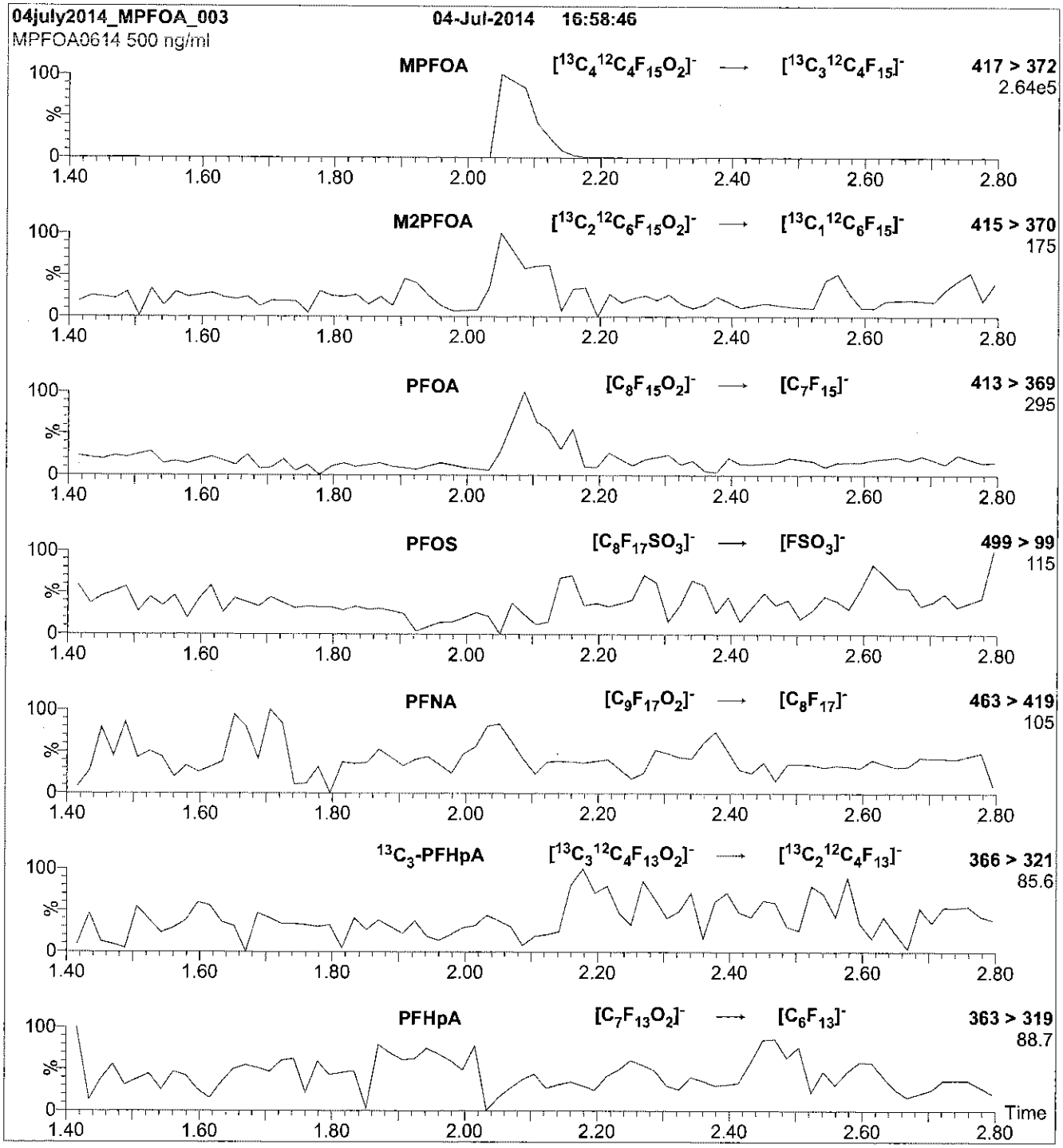
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 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: **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) = 3.62e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00006

R: 4/15/15 SKV

WELLINGTON LABORATORIES

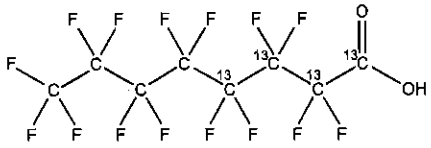
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFOA0415

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) 04/10/2015
EXPIRY DATE: (mm/dd/yyyy) 04/10/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/10/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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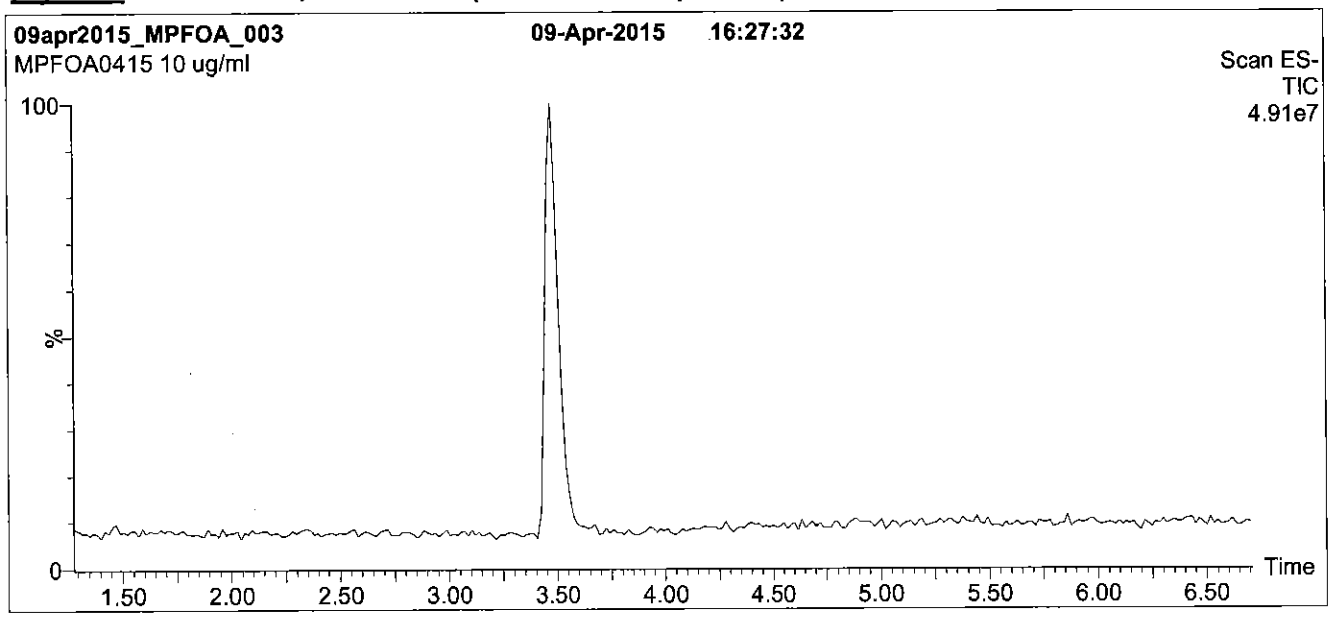
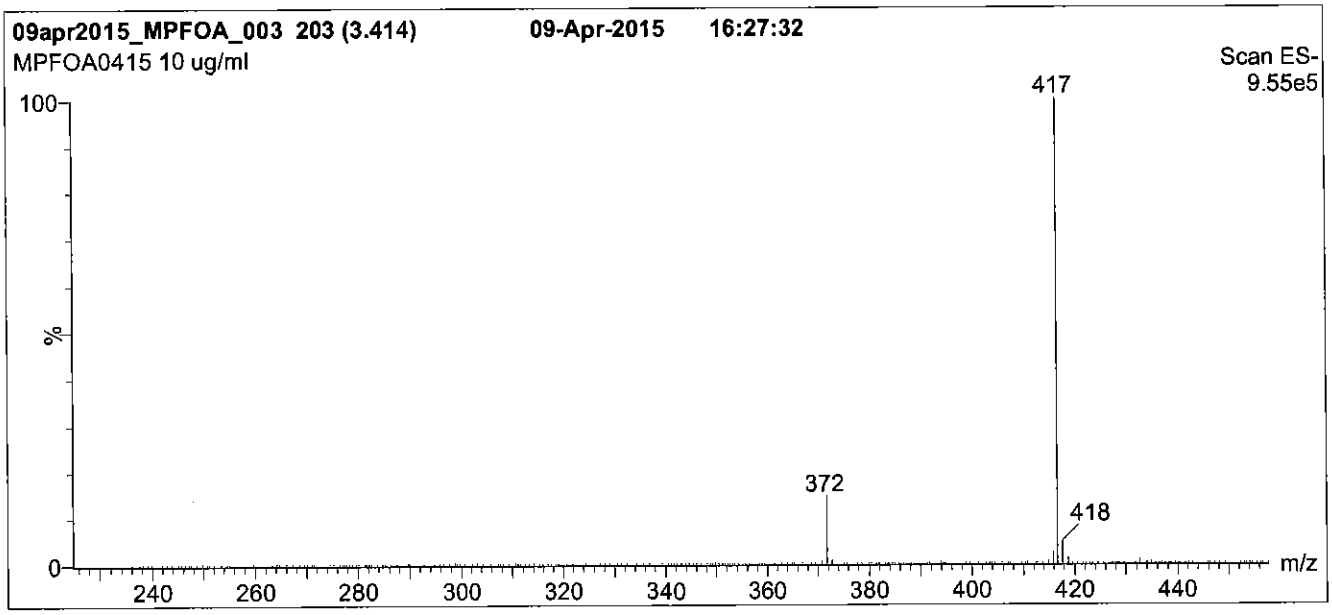
Figure 1: **MPFOA; LC/MS Data (TIC and Mass Spectrum)**





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: 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

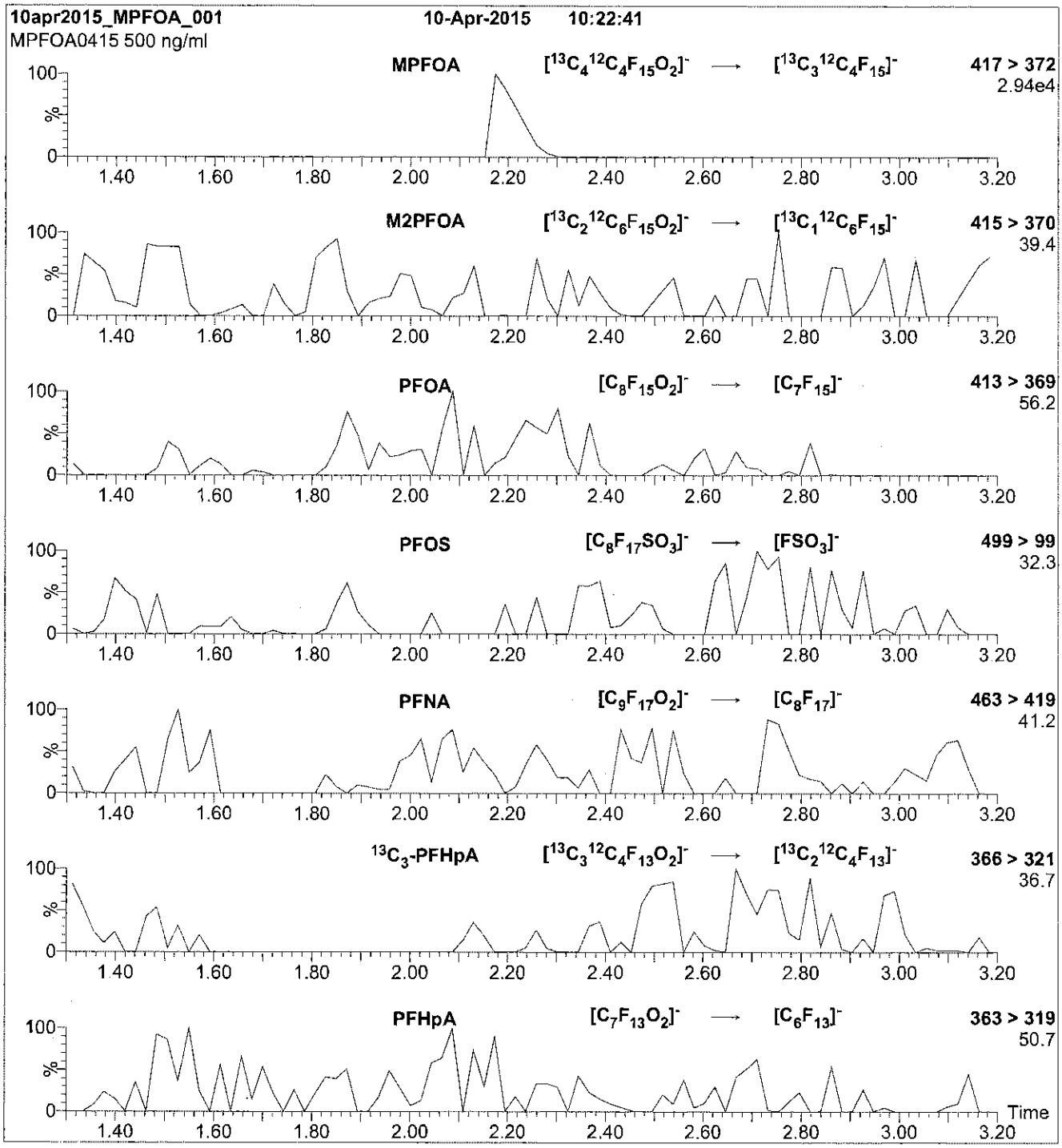
Flow: 300 µl/min

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) = 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) = 3.24e-3
Collision Energy (eV) = 11

Reagent

LCMPFOS_00007

r: 2/10/15 SN

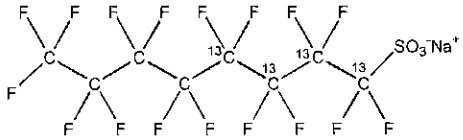
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1014

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)	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.
- 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:** 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:

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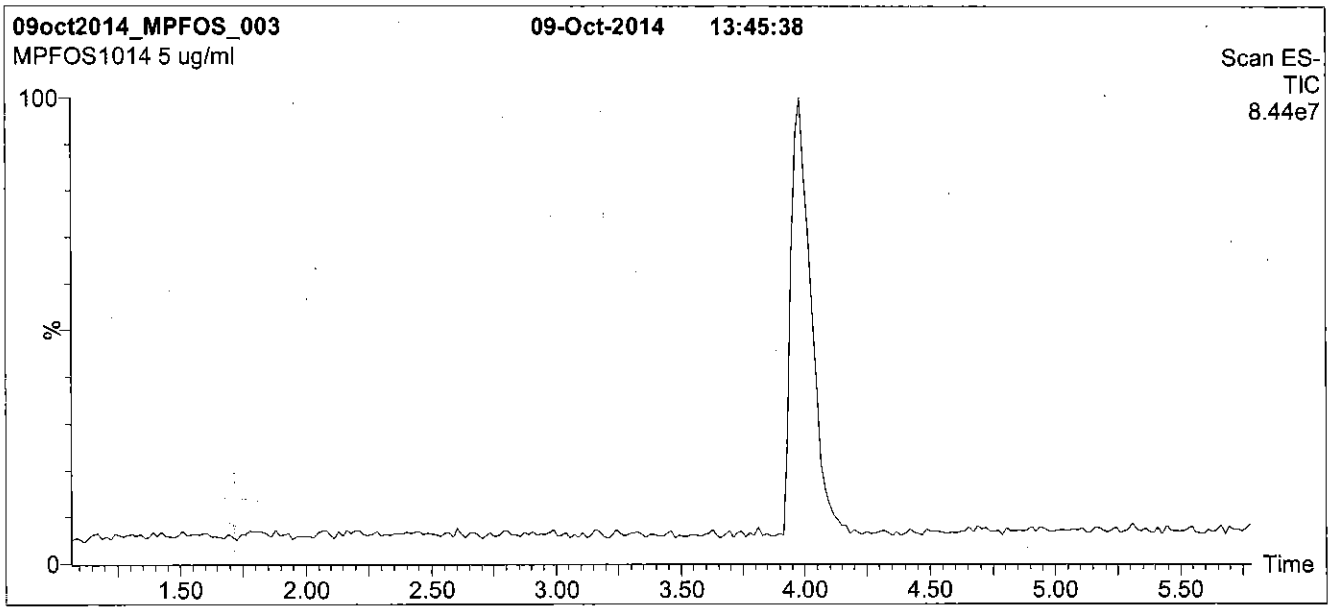
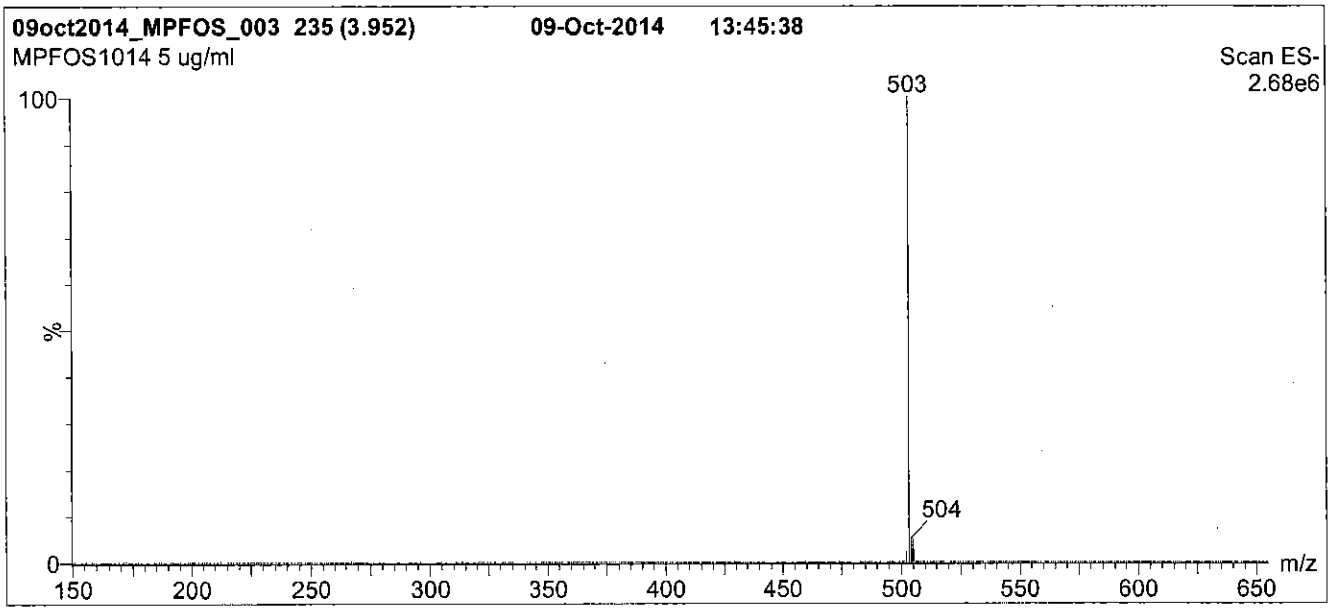
Figure 1: **MPFOS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

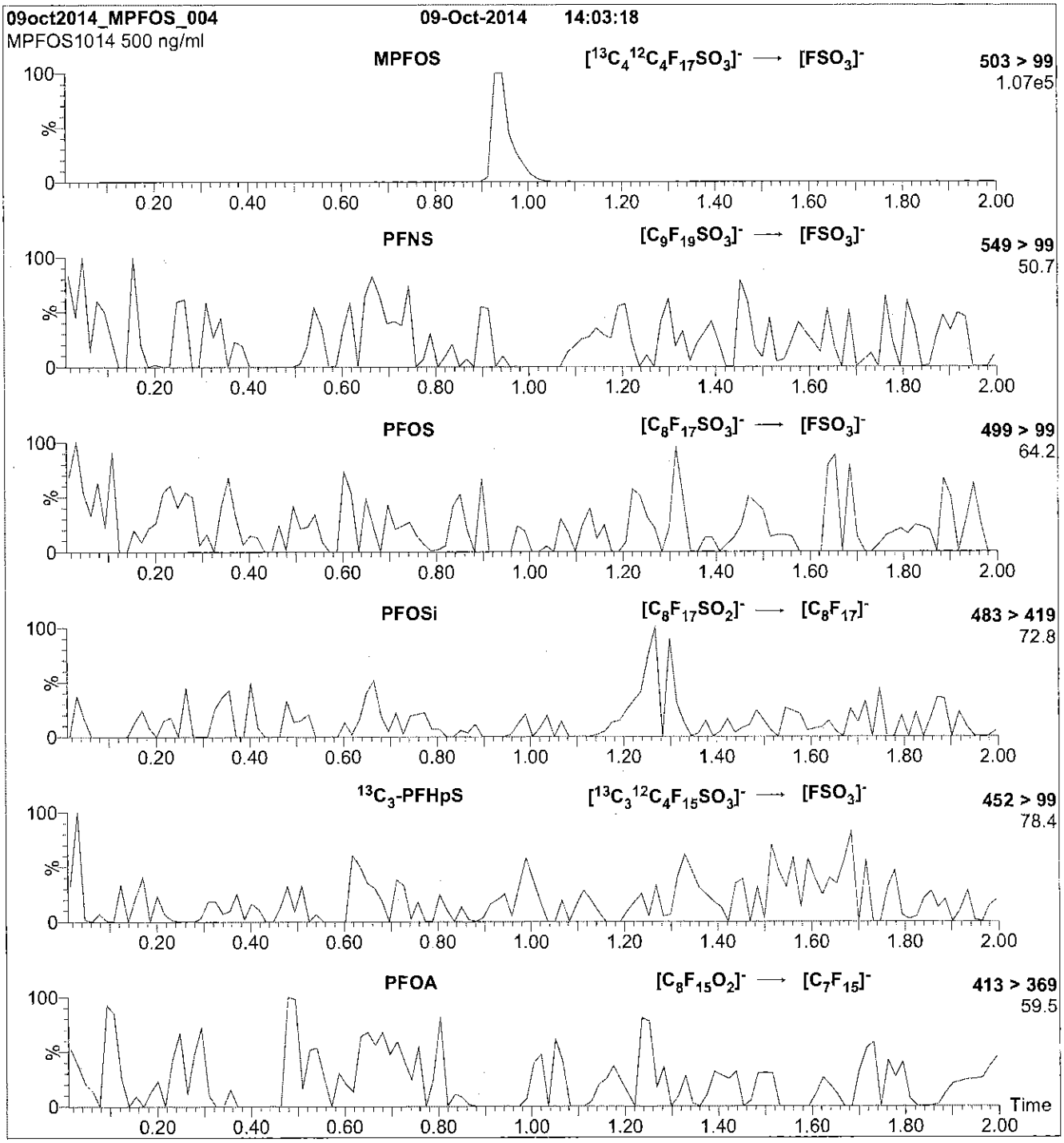
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 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) = 3.43e-3
Collision Energy (eV) = 40

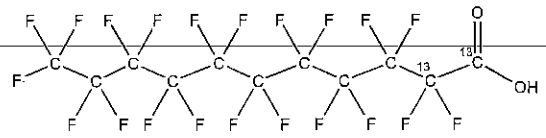
Reagent

LCMPFUdA_00003

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFUdA	**LOT NUMBER:**	MPFUdA0911
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)	09/29/2011		
EXPIRY DATE: (mm/dd/yyyy)	09/29/2016		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/09/2013 (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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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS 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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$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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:

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QUALITY MANAGEMENT:

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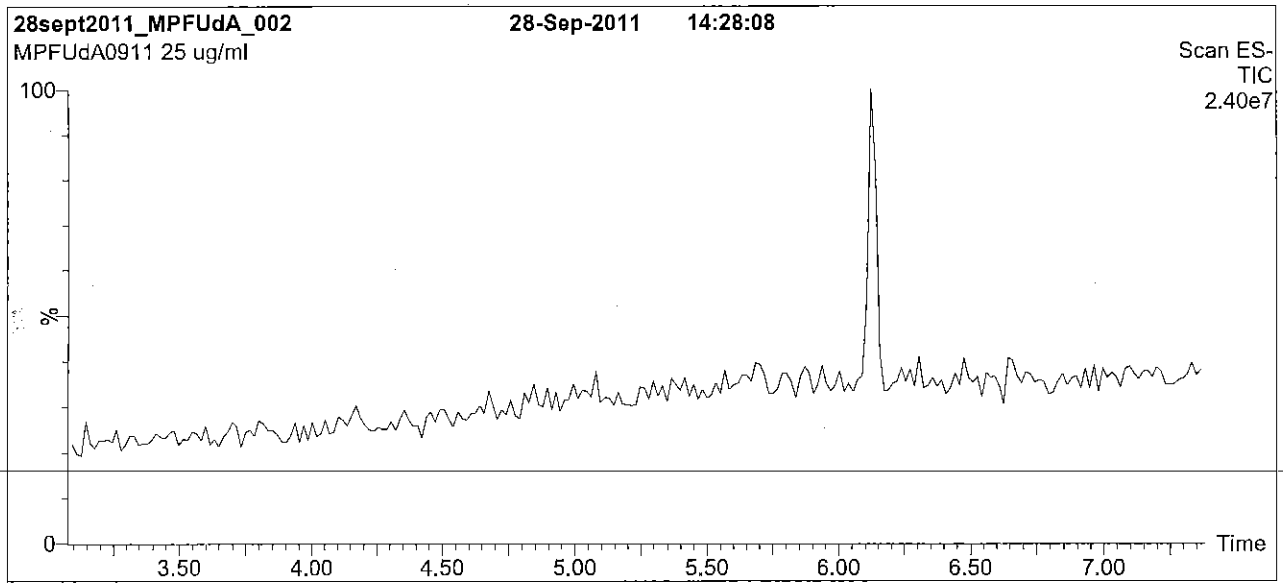
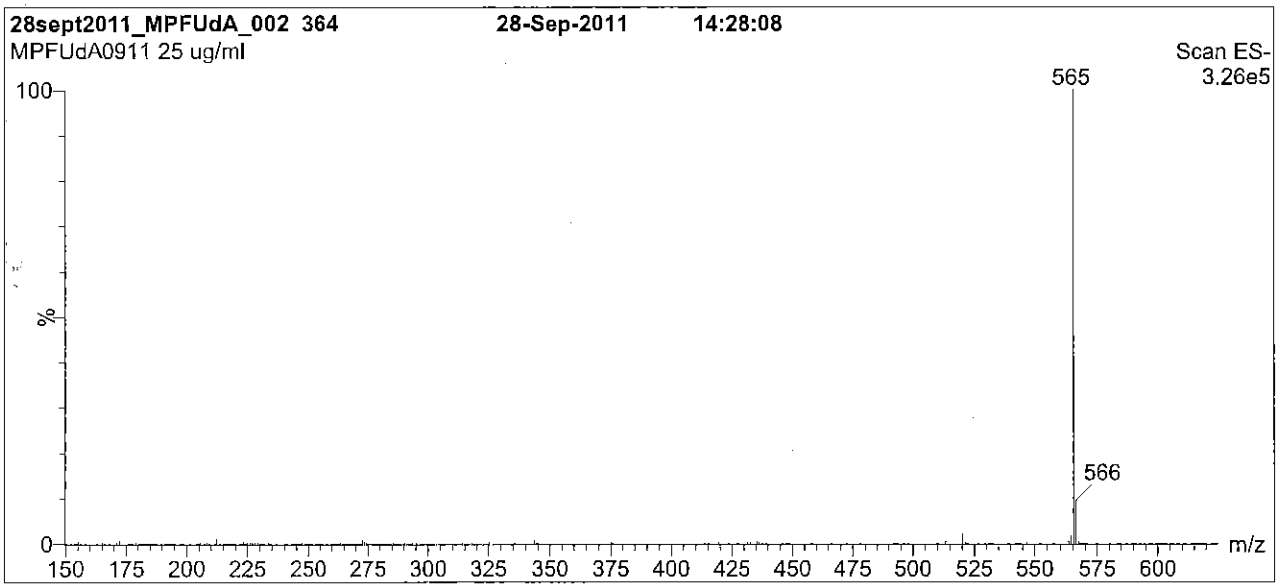
CALA Testing Accreditation No. A 1226

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: **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: Kinetex PFP
2.6 µm, 4.6 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Hold for 2 min. 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

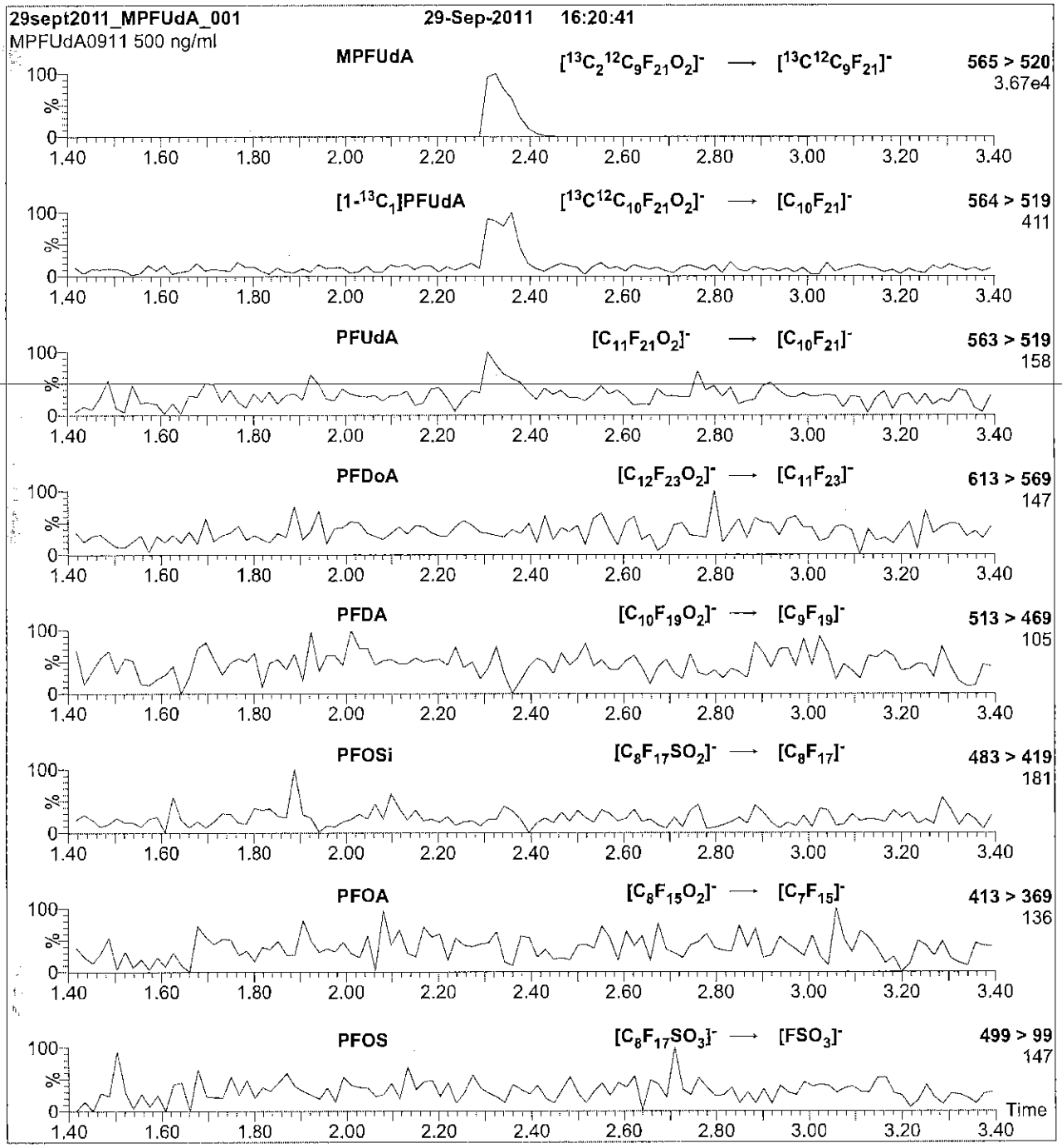
Flow: 1.0 ml/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (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

LCMPFUdA_00004

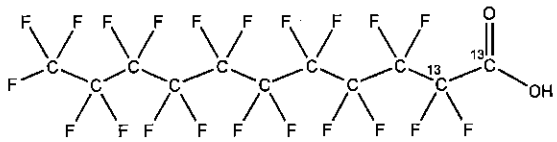
P: 4/15/15 SKU

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:** 11/03/2014 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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INTENDED USE:

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. 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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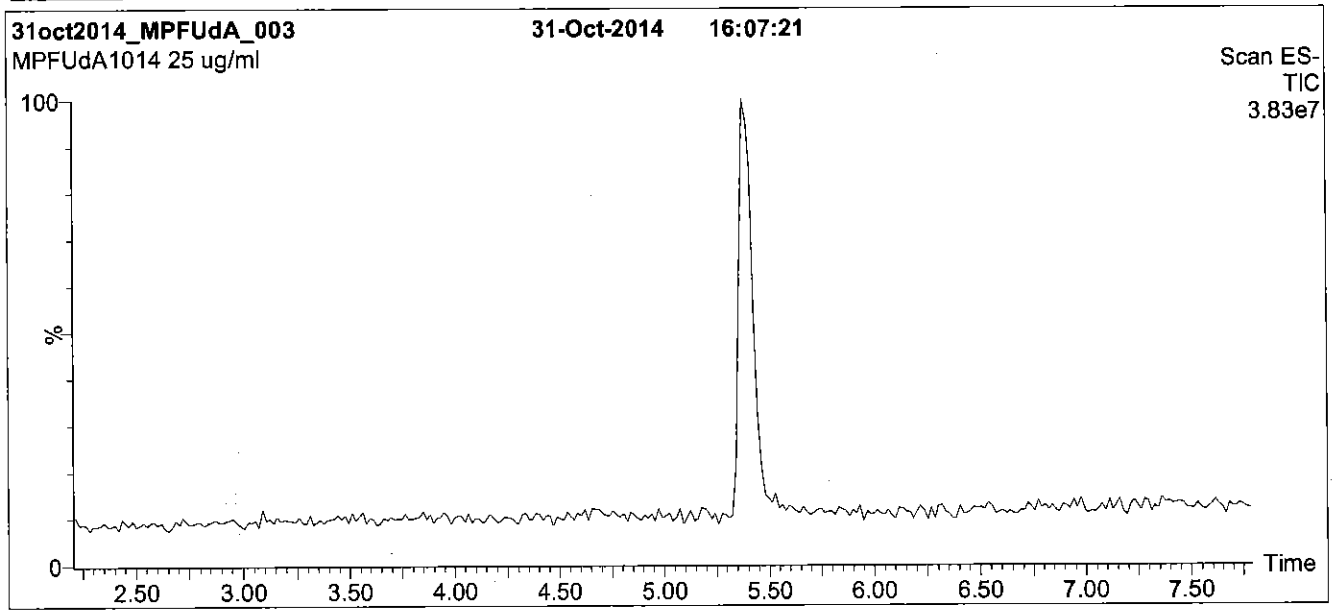
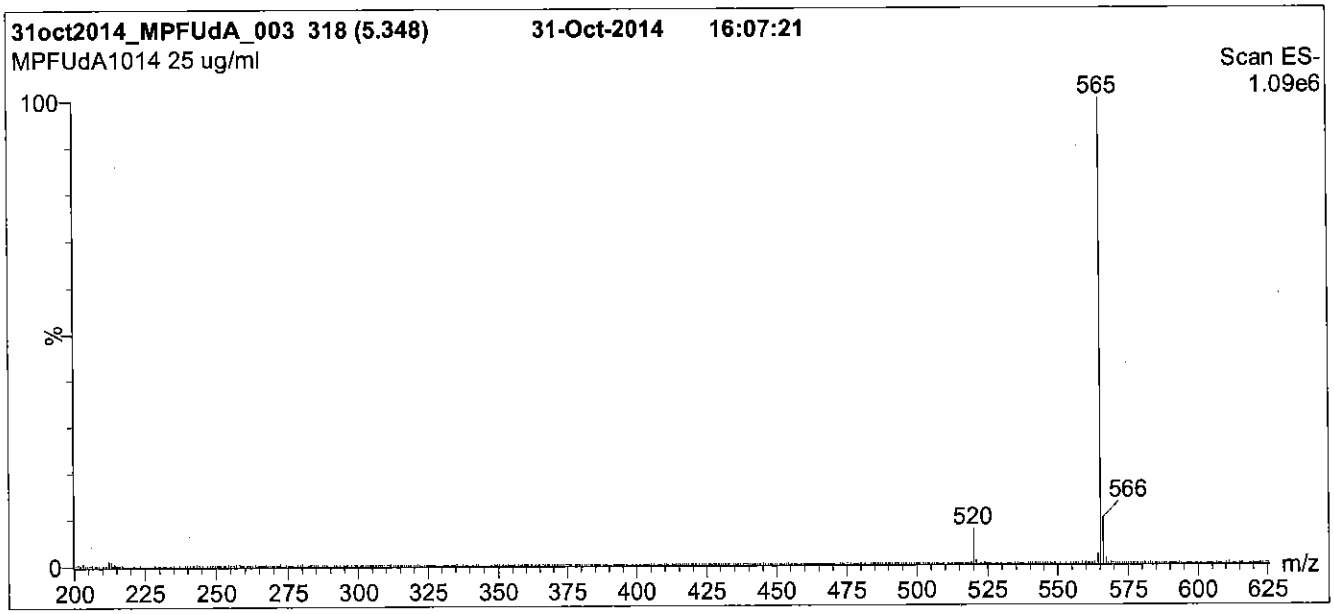
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





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

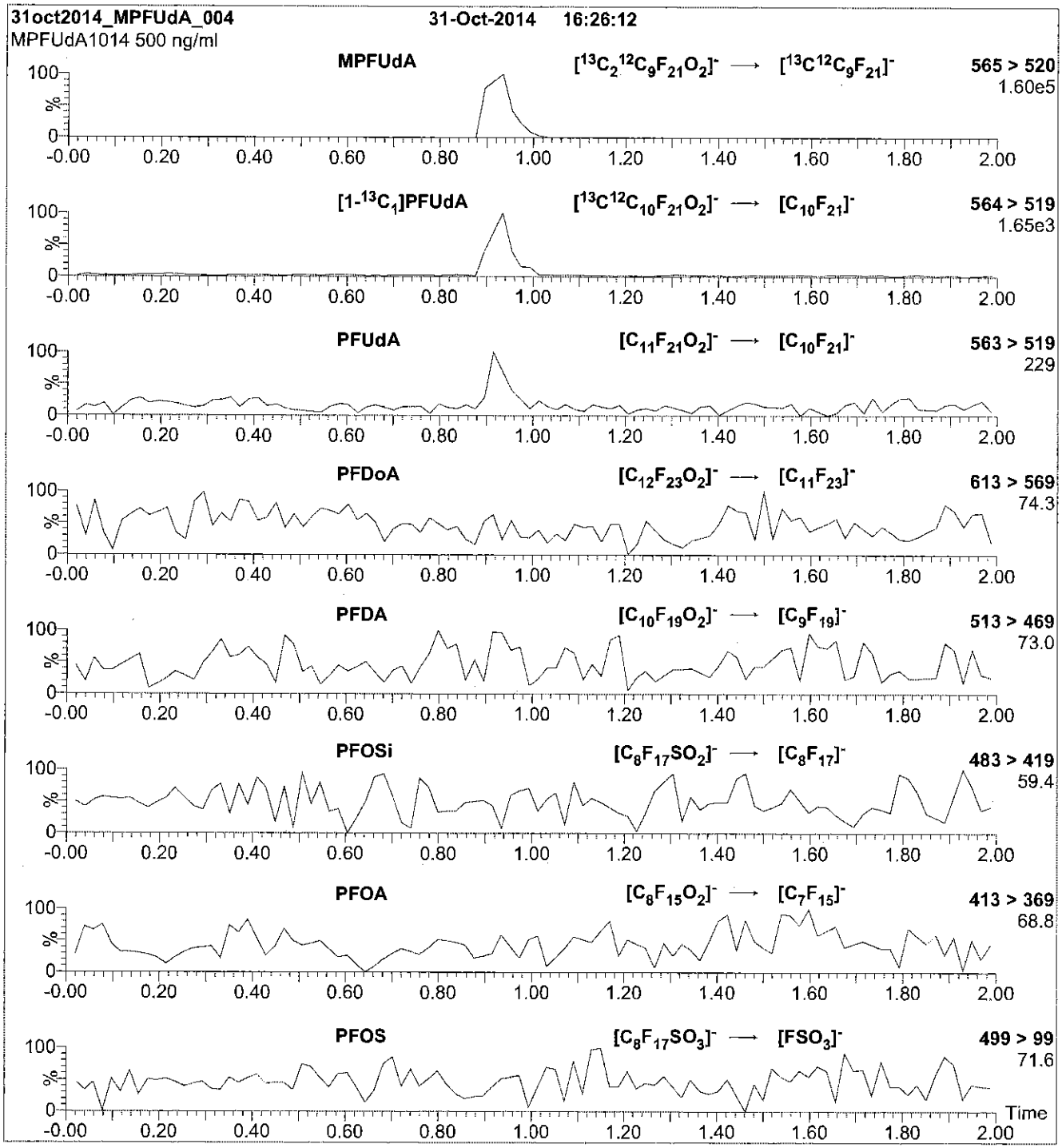
Flow: 300 µl/min

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

LCPFACMXB_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXB

Solution/Mixture of Native Perfluoroalkylcarboxylic Acids and Native Perfluoroalkylsulfonates

PRODUCT CODE:	PFAC-MXB
LOT NUMBER:	PFACMXB0312
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	03/07/2012
LAST TESTED: (mm/dd/yyyy)	01/08/2013
EXPIRY DATE: (mm/dd/yyyy)	01/08/2018
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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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:

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:

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QUALITY MANAGEMENT:

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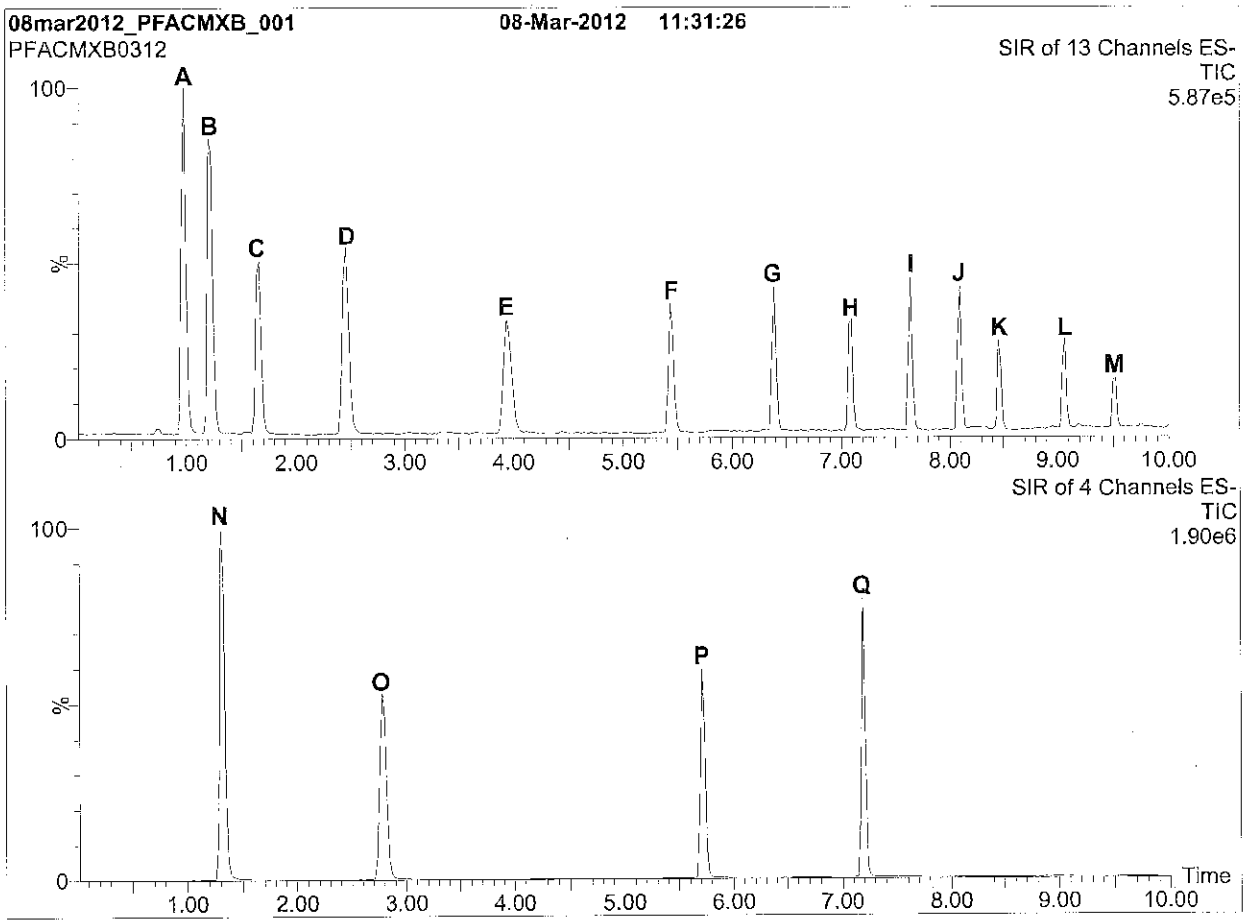
Table A: **PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))**

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	C
Perfluoro-n-heptanoic acid	PFHpA	2000	D
Perfluoro-n-octanoic acid	PFOA	2000	E
Perfluoro-n-nonanoic acid	PFNA	2000	F
Perfluoro-n-decanoic acid	PFDA	2000	G
Perfluoro-n-undecanoic acid	PFUdA	2000	H
Perfluoro-n-dodecanoic acid	PFDoA	2000	I
Perfluoro-n-tridecanoic acid	PFTrDA	2000	J
Perfluoro-n-tetradecanoic acid	PFTeDA	2000	K
Perfluoro-n-hexadecanoic acid	PFHxDA	2000	L
Perfluoro-n-octadecanoic acid	PFODA	2000	M

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

Certified By: B.G. Chittim **Date:** 03/20/2015 (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: 50% H_2O / 50% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Hold for 3 min; ramp to 100% organic over 7 min and
hold for 2 min before returning to initial conditions in 0.5 min.

Time: 15 min

Flow: 300 µl/min

MS Parameters

Experiment:
Function 1: SIR of 13 Channels
Function 2: SIR of 4 Channels

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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

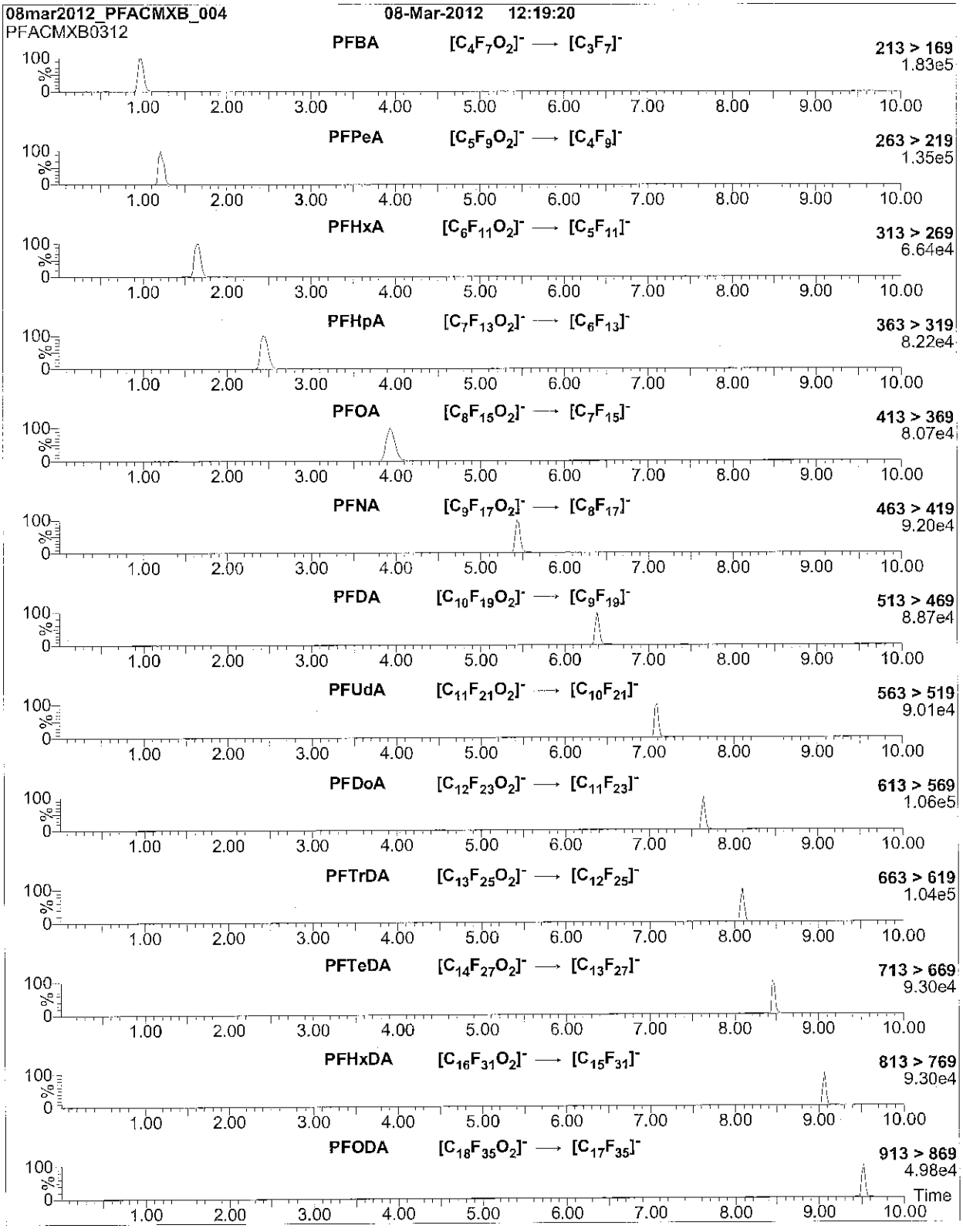
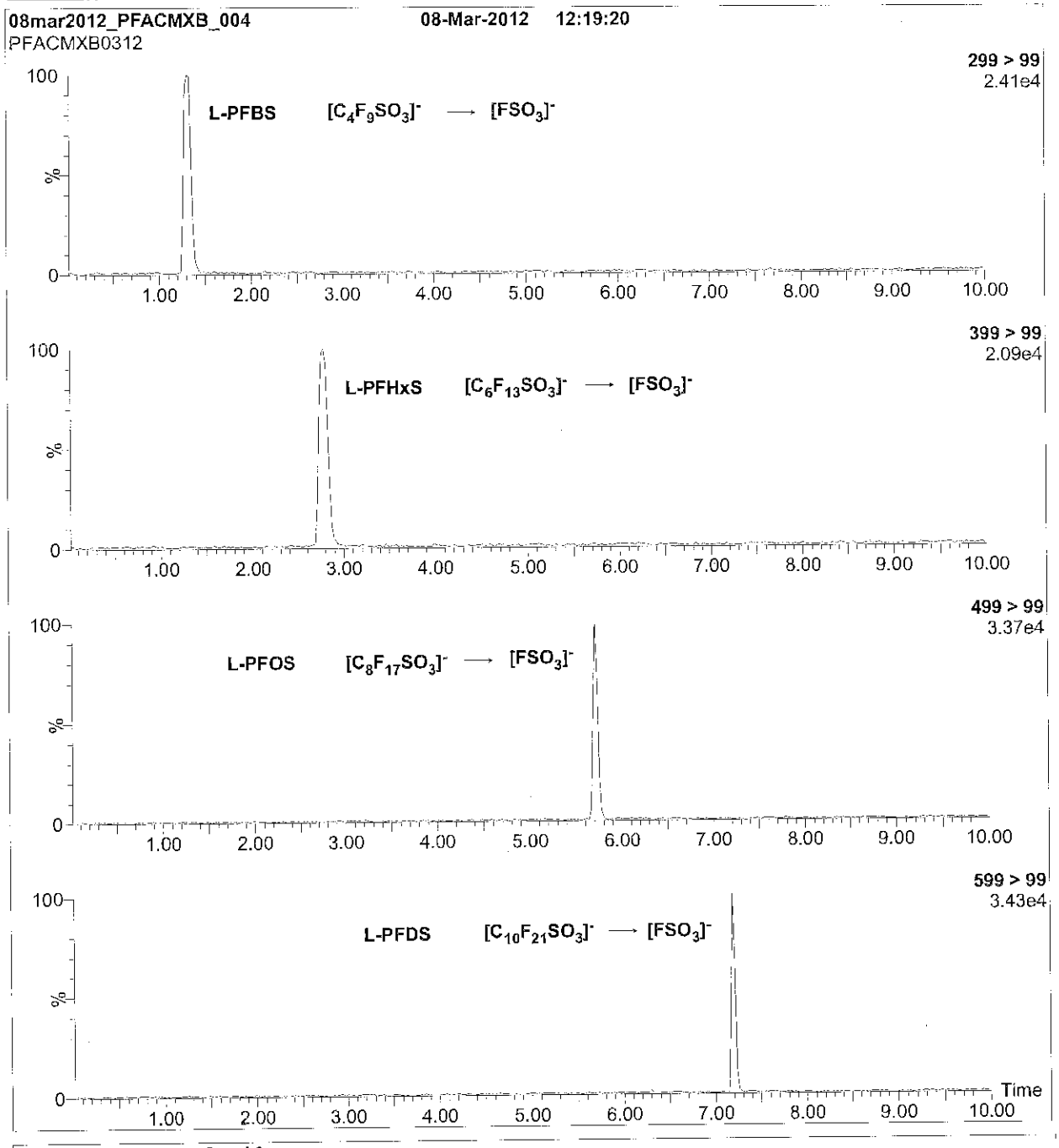


Figure 3: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



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) = 3.17e-3
Collision Energy (eV) = 9-50 (variable)

Reagent

LCPFBA_00003

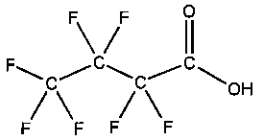
rec 7/15/14

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:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 03/06/2013 (mm/dd/yyyy)

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CALA Testing Accredited to ISO/IEC 17025 A1226

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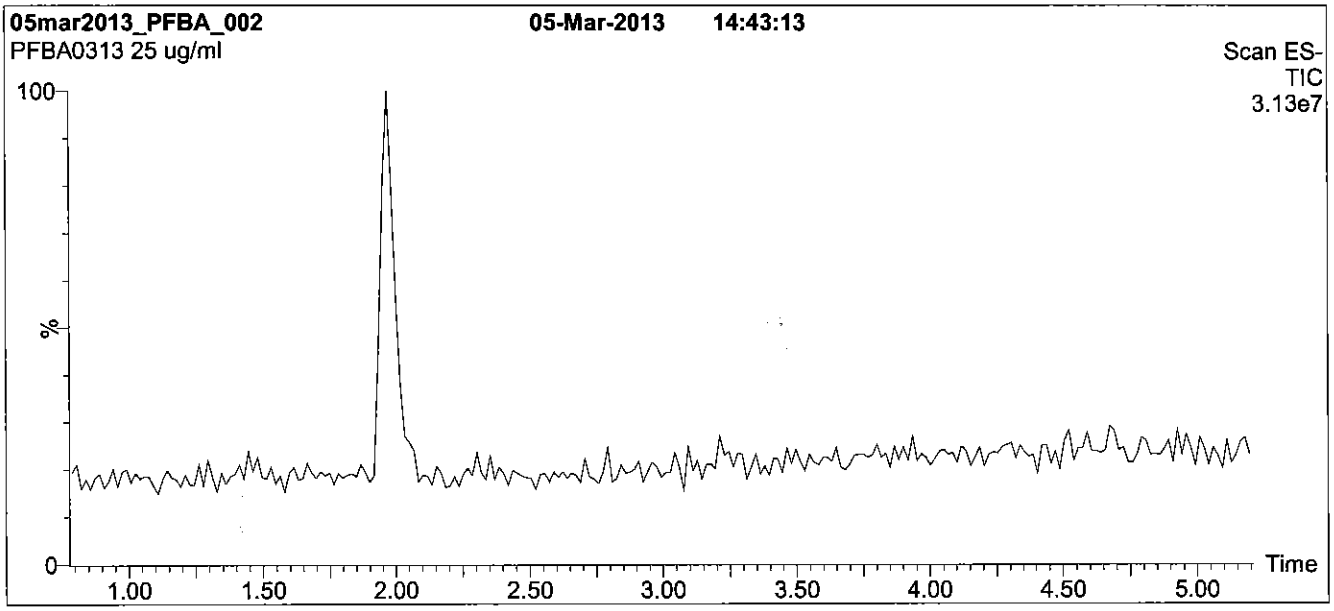
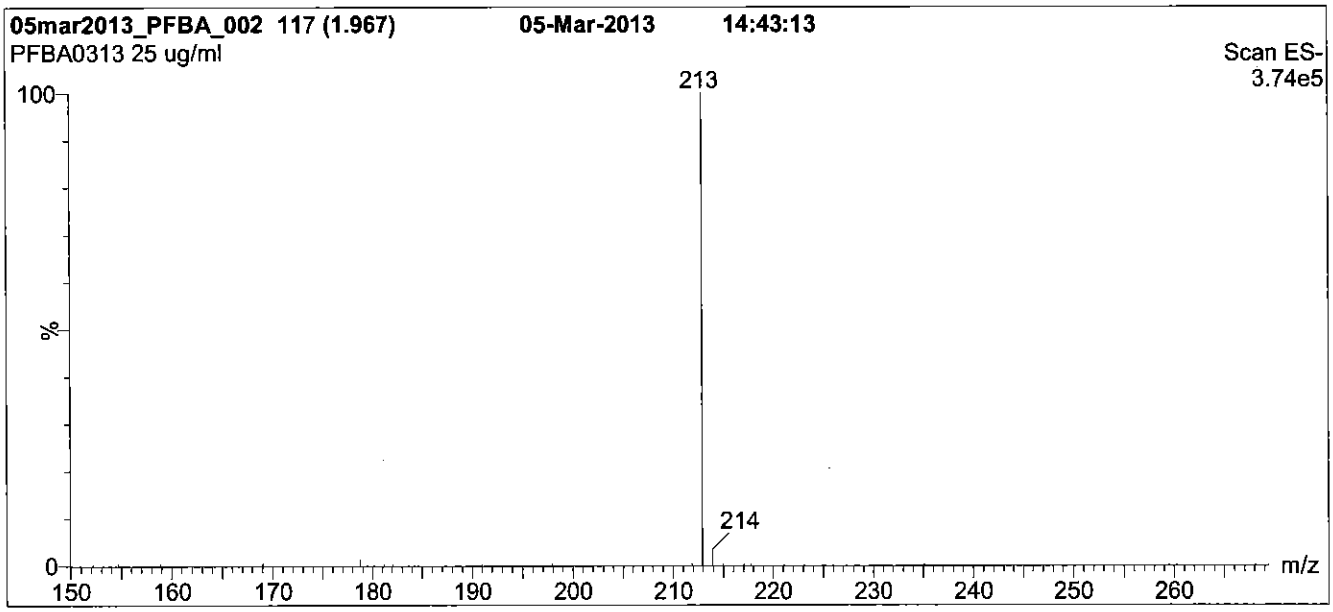
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

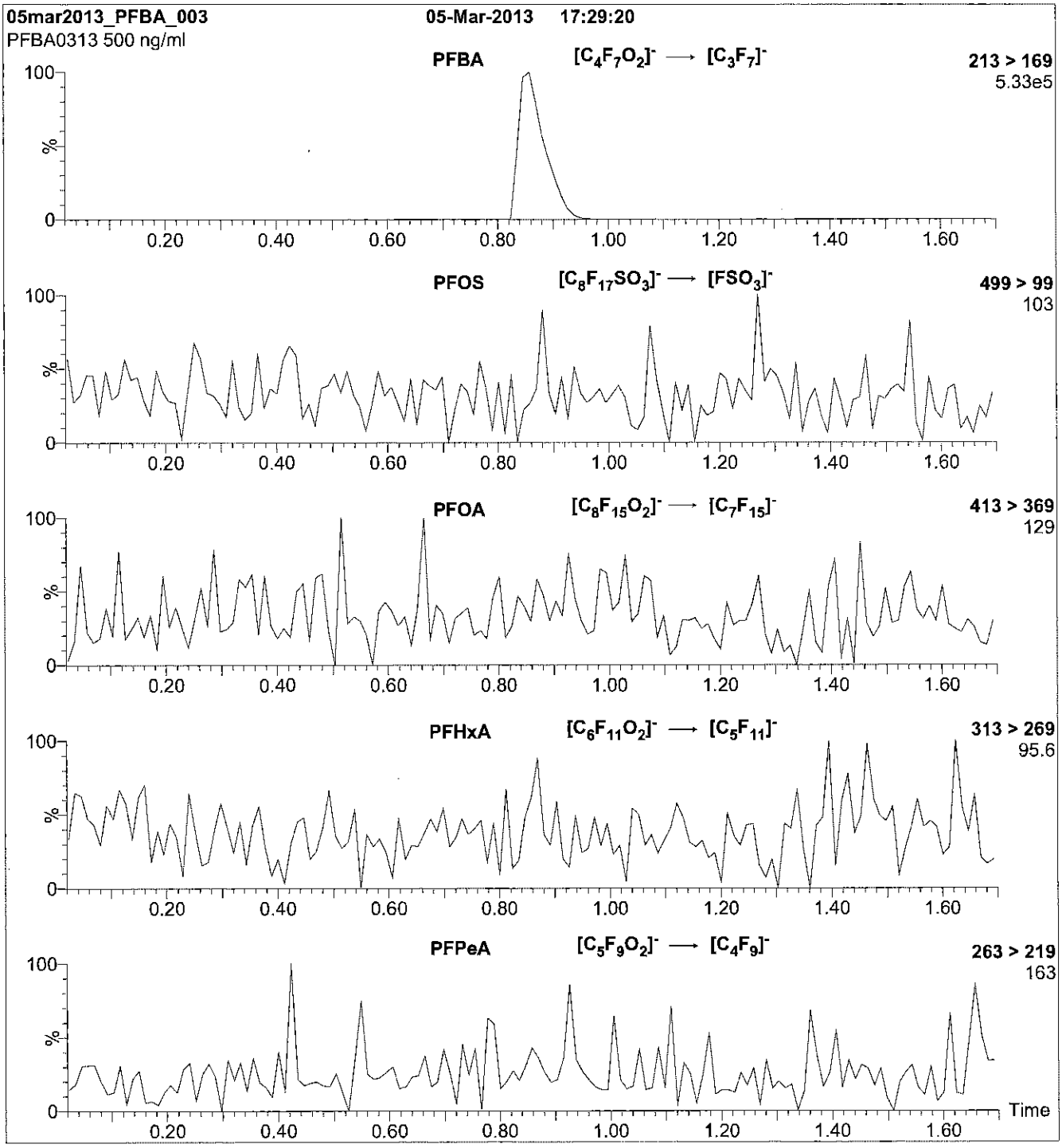
Flow: 300 µl/min

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

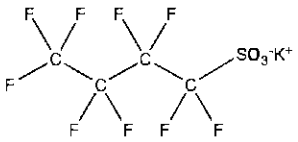
LCPFBS_00003

r. 2/n/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.

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

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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.

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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 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.

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

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

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

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No: A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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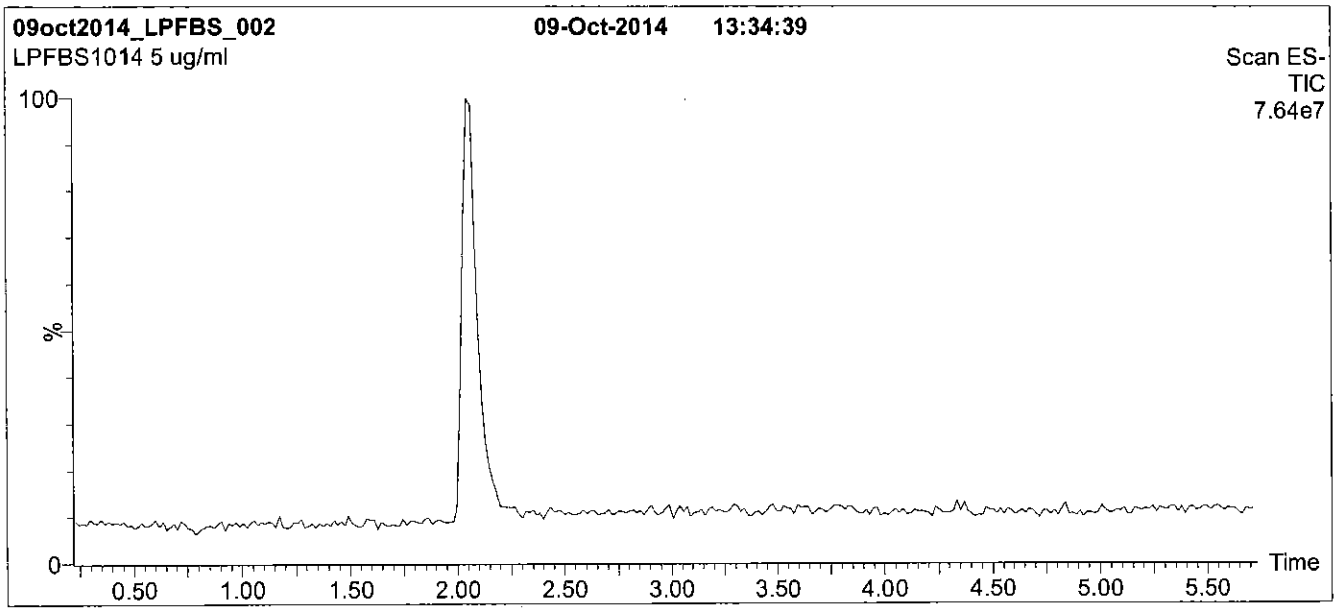
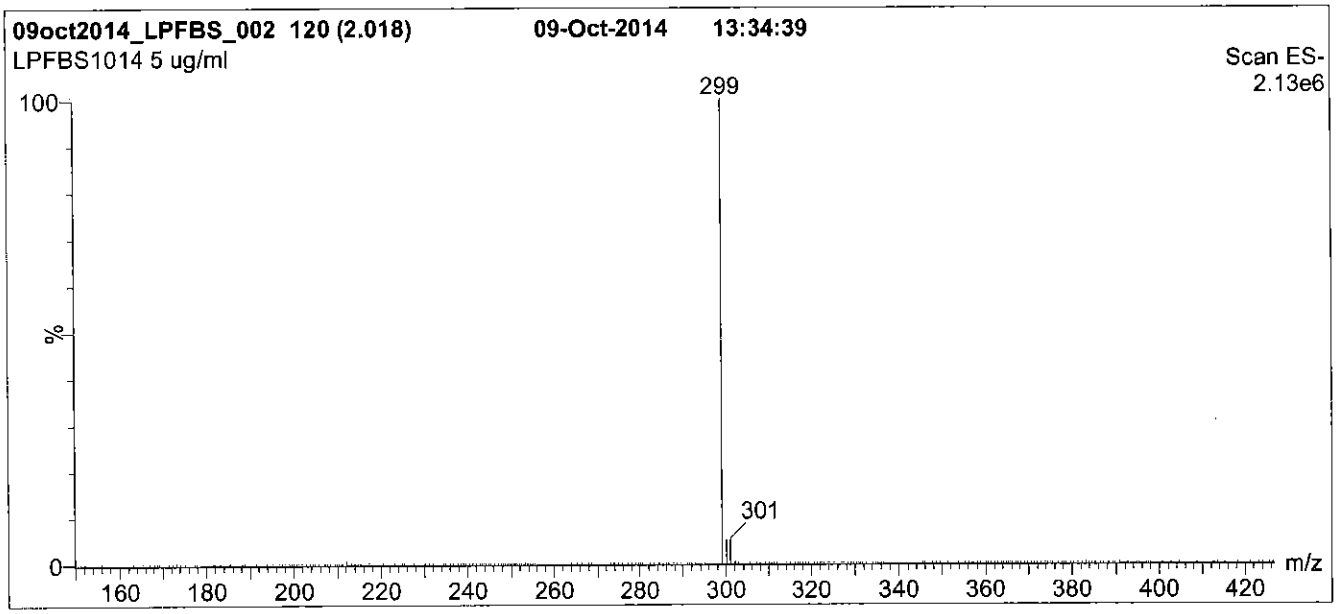
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

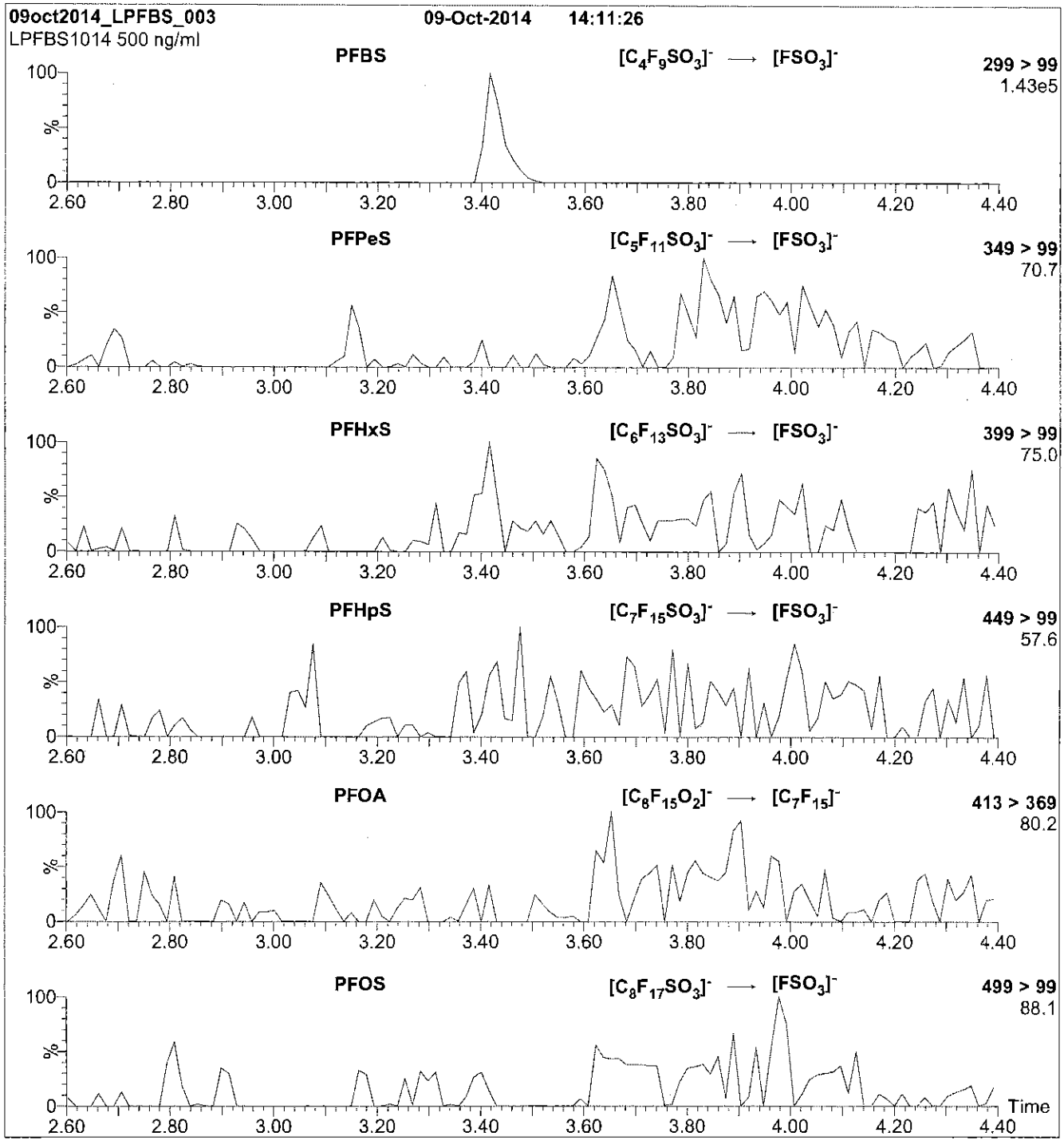
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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_00003

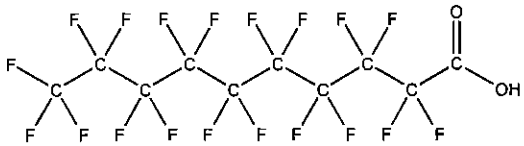
Rec 7/16/14

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDA
COMPOUND: Perfluoro-n-decanoic acid
LOT NUMBER: PFDA0613

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) 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 ~ 0.4% PFNA and ~ 0.1% PFOA.

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

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LIMITED WARRANTY:

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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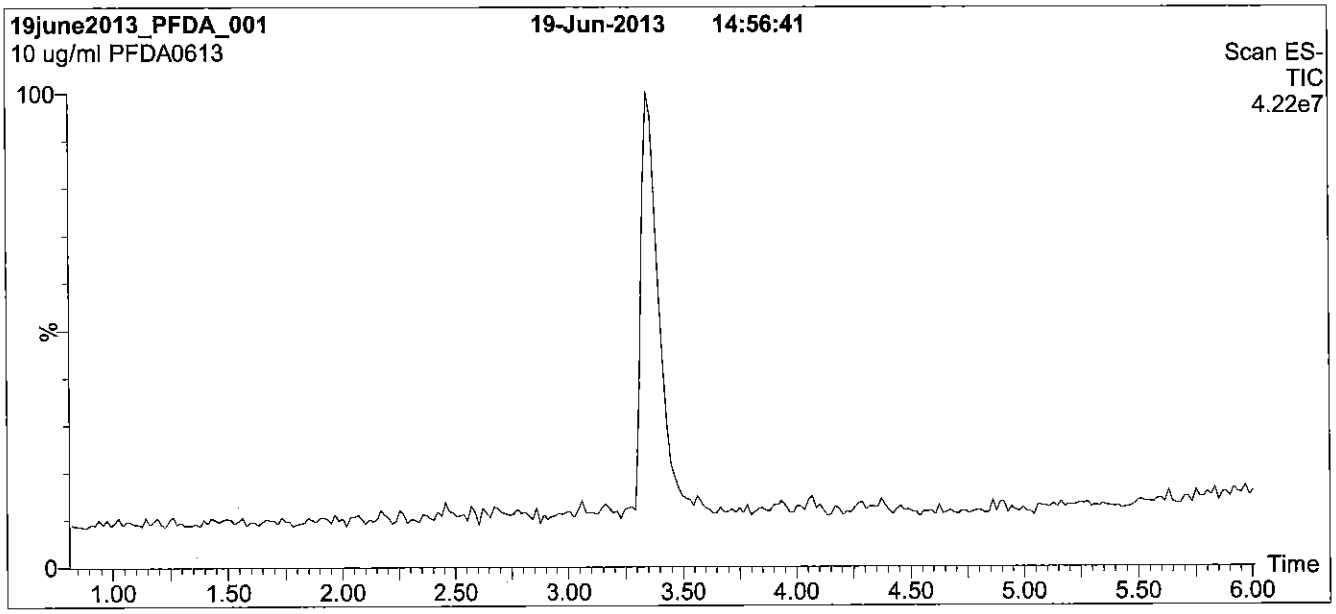
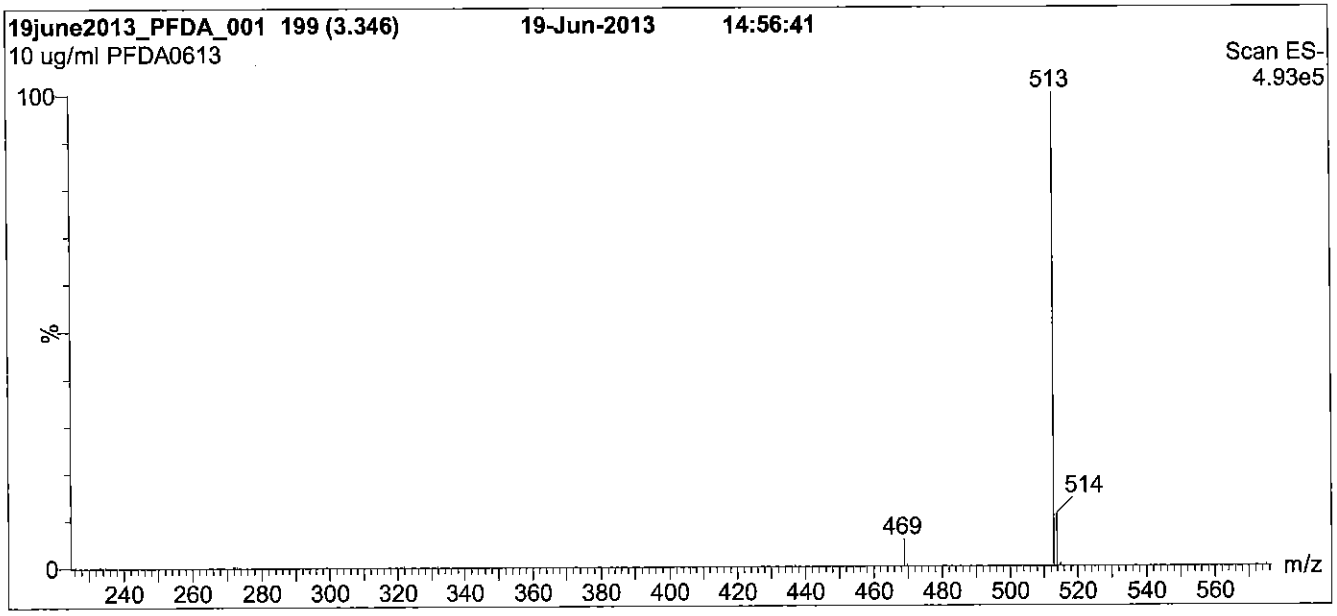
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

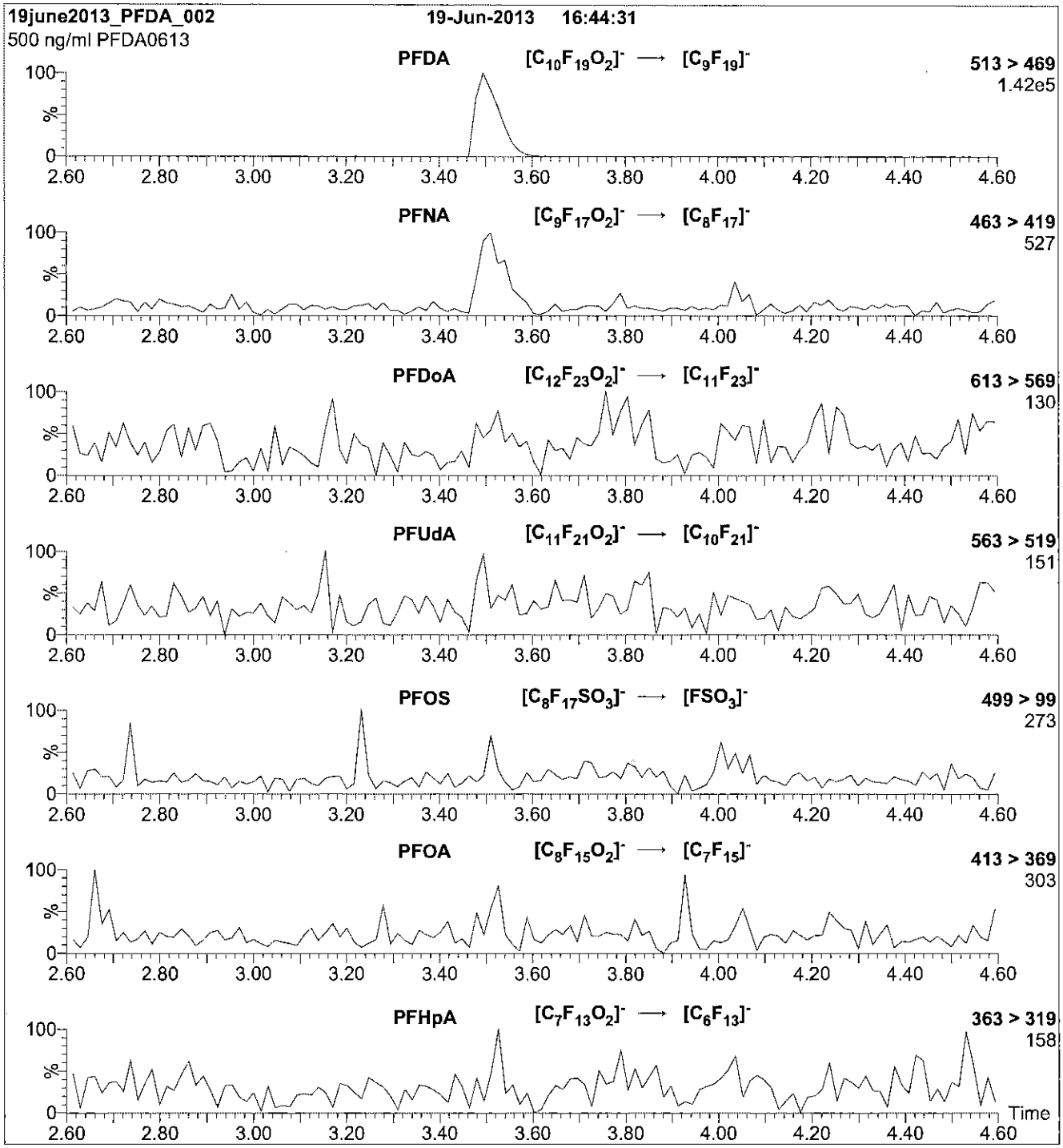
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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) = 3.58e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00003

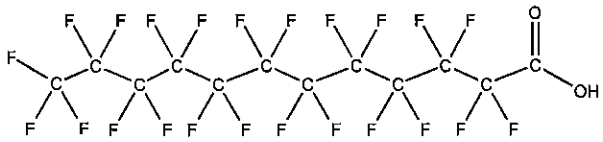
Rec 7/14/15

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDoA
COMPOUND: Perfluoro-n-dodecanoic acid
LOT NUMBER: PFDoA0113

STRUCTURE:
CAS #: 307-55-1



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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/03/2013
EXPIRY DATE: (mm/dd/yyyy) 01/03/2018
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:

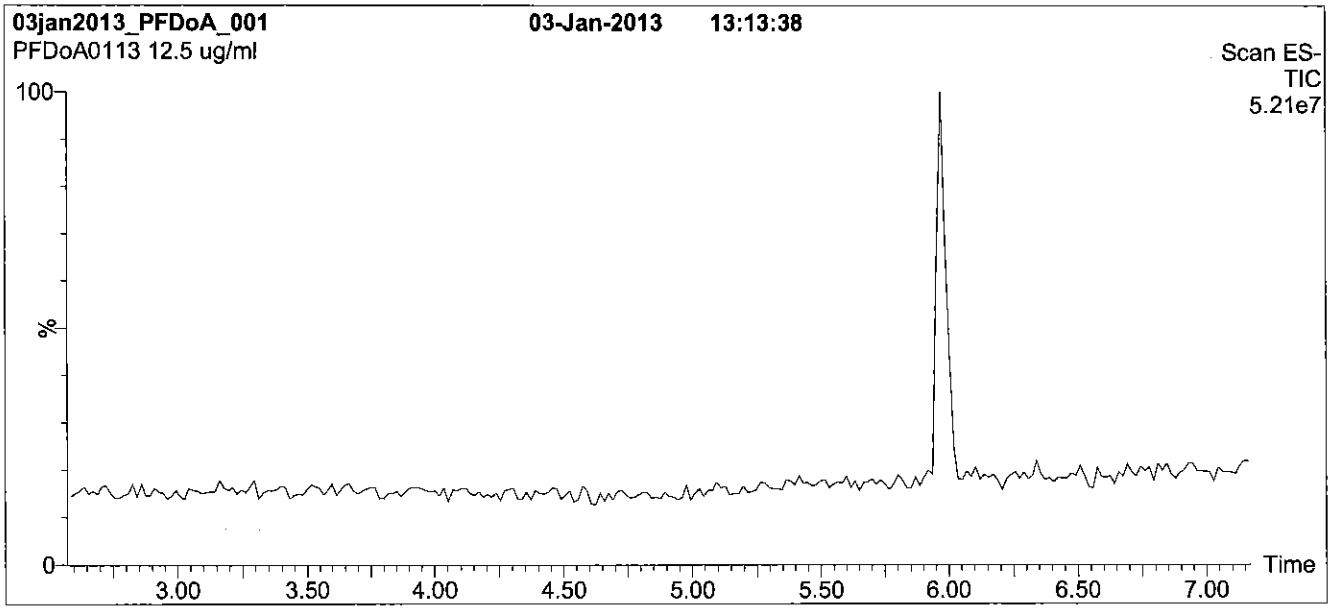
- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

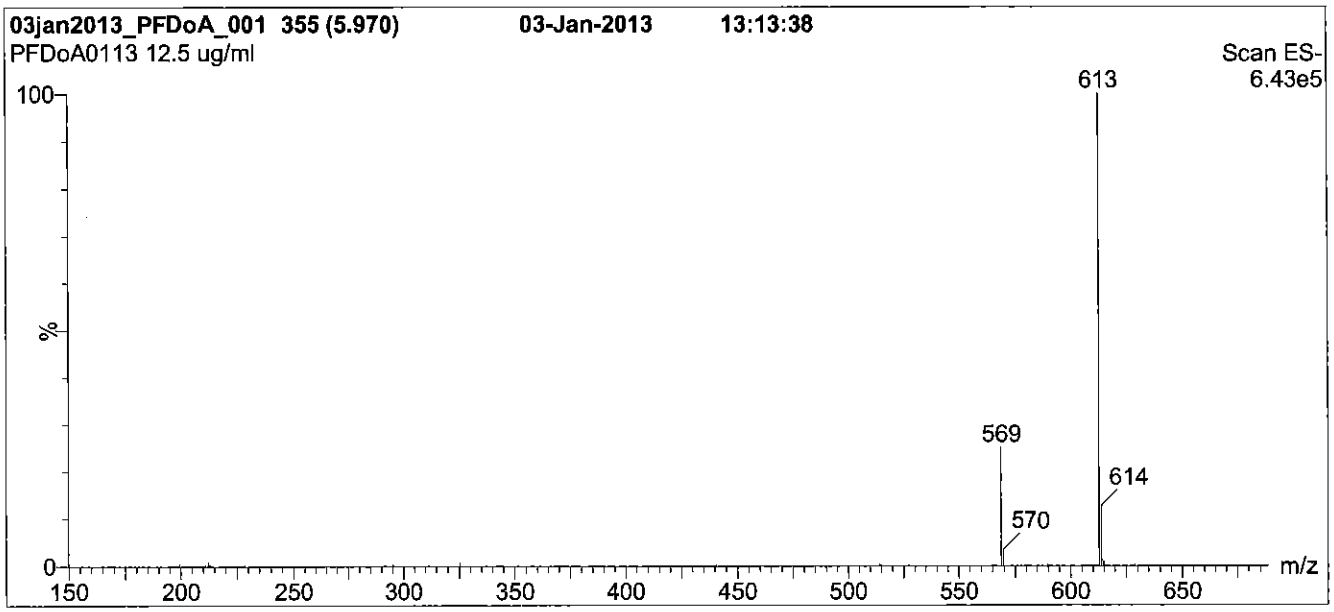
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/01/2013 (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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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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 2 min.
Return to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Reagent

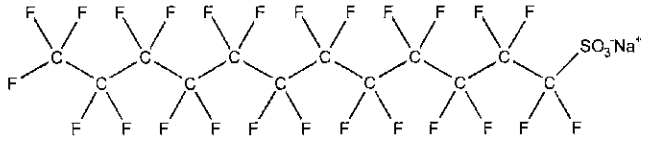
LCPFDoS_00003

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDoS
LOT NUMBER: LPFDoS1011
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_{12}F_{25}SO_3Na$
MOLECULAR WEIGHT:	722.14
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.4 ± 2.4 µg/ml (PFDoS anion)
SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%
LAST TESTED: (mm/dd/yyyy)	10/06/2011
EXPIRY DATE: (mm/dd/yyyy)	10/06/2016
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 ~ 0.3% of sodium perfluoro-1-tetradecanesulfonate and ~ 0.8% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/15/2013 (mm/dd/yyyy)

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CALA Testing Accreditation No. A 1226

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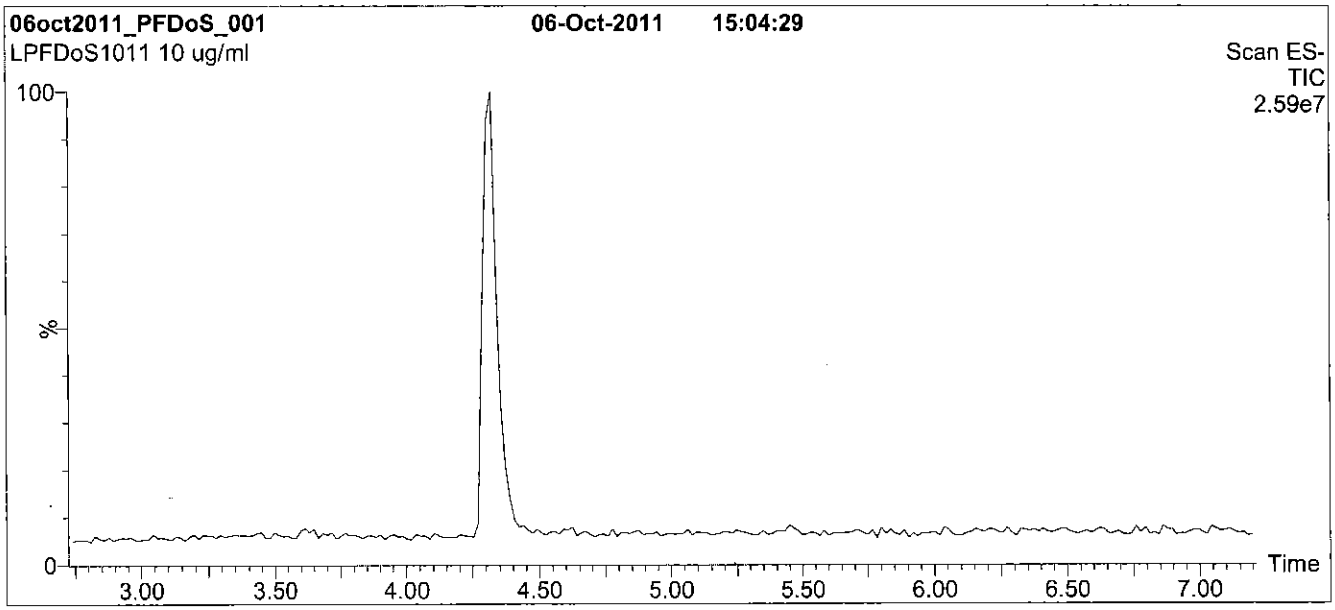

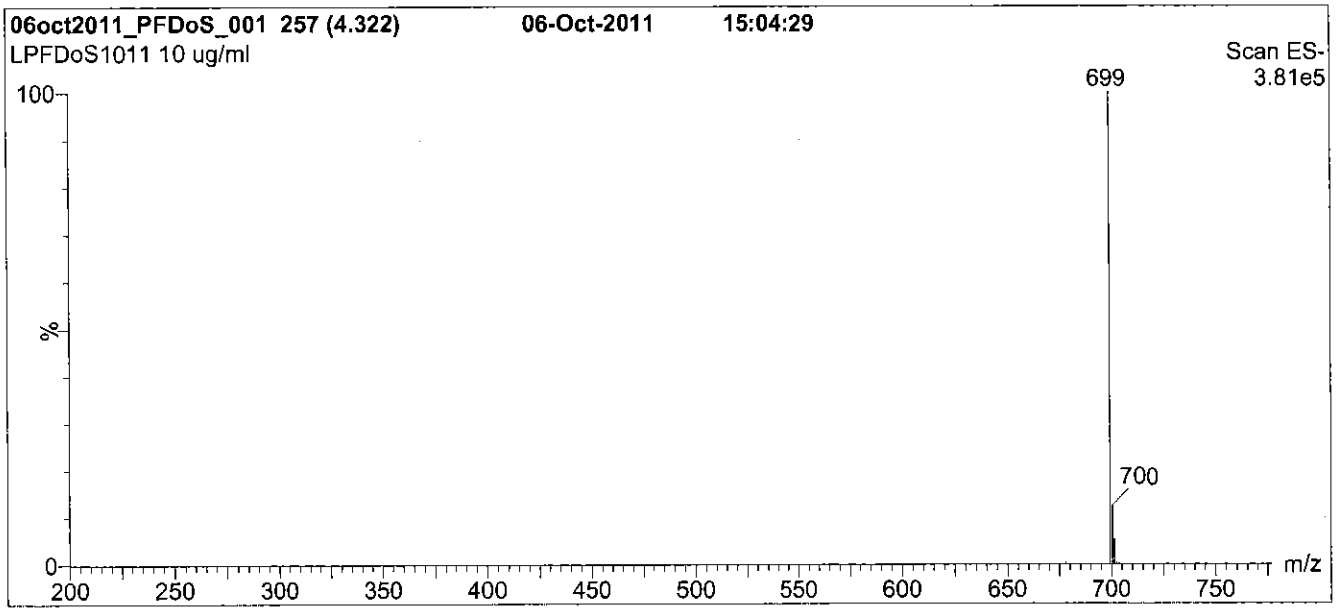

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1.7 µm, 2.1 x 100 mm

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

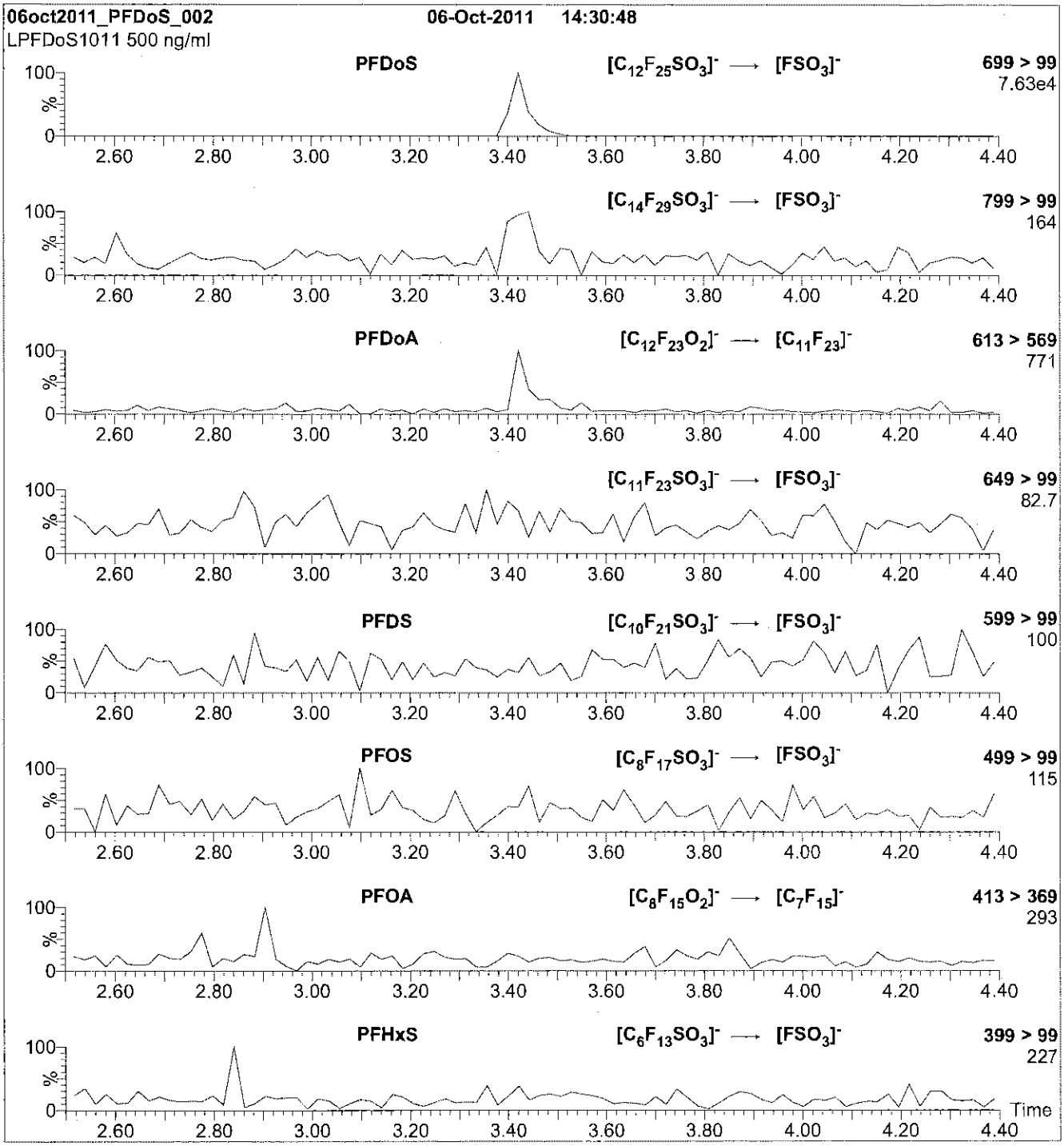
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 80.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 65% (80:20 MeOH:ACN) / 35% 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

LCPFDS_00003

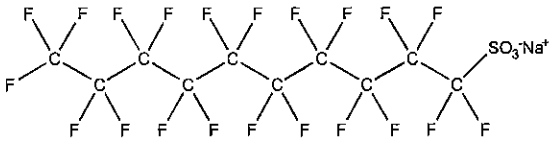
Γ: 2/11/15 BV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS0913
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$	**MOLECULAR WEIGHT:**	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/13/2013		
EXPIRY DATE: (mm/dd/yyyy)	09/13/2018		
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:

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Certified By: B.G. Chittim **Date:** 09/23/2013 (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.

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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 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.

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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 our products.

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CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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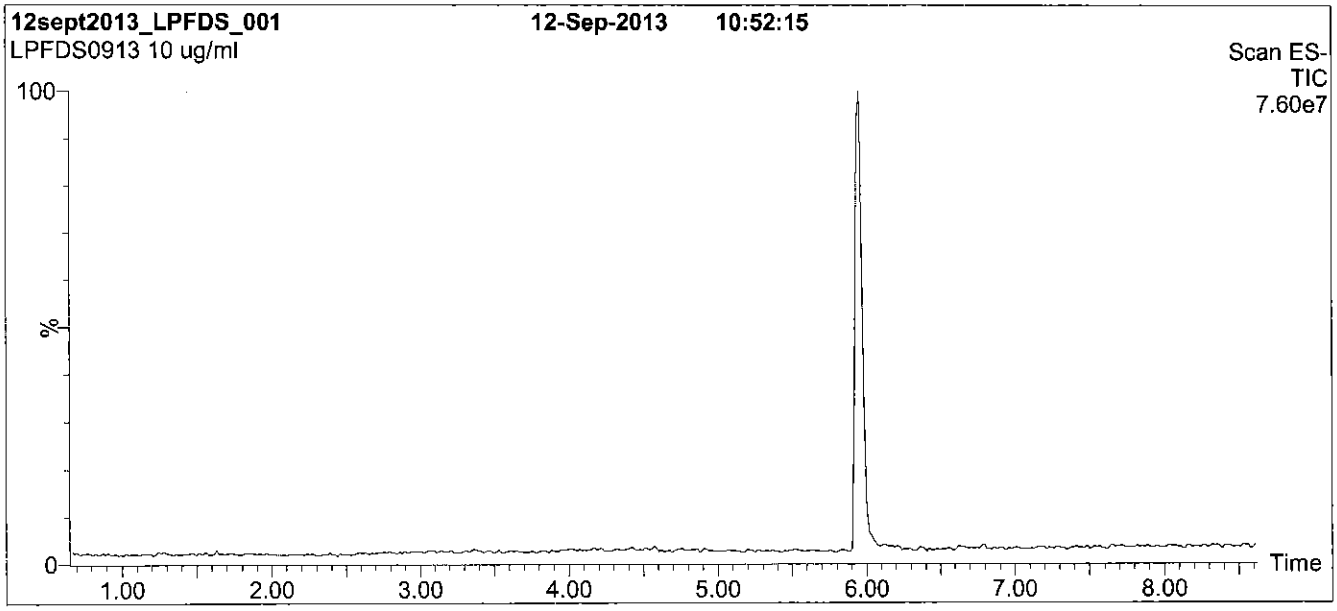
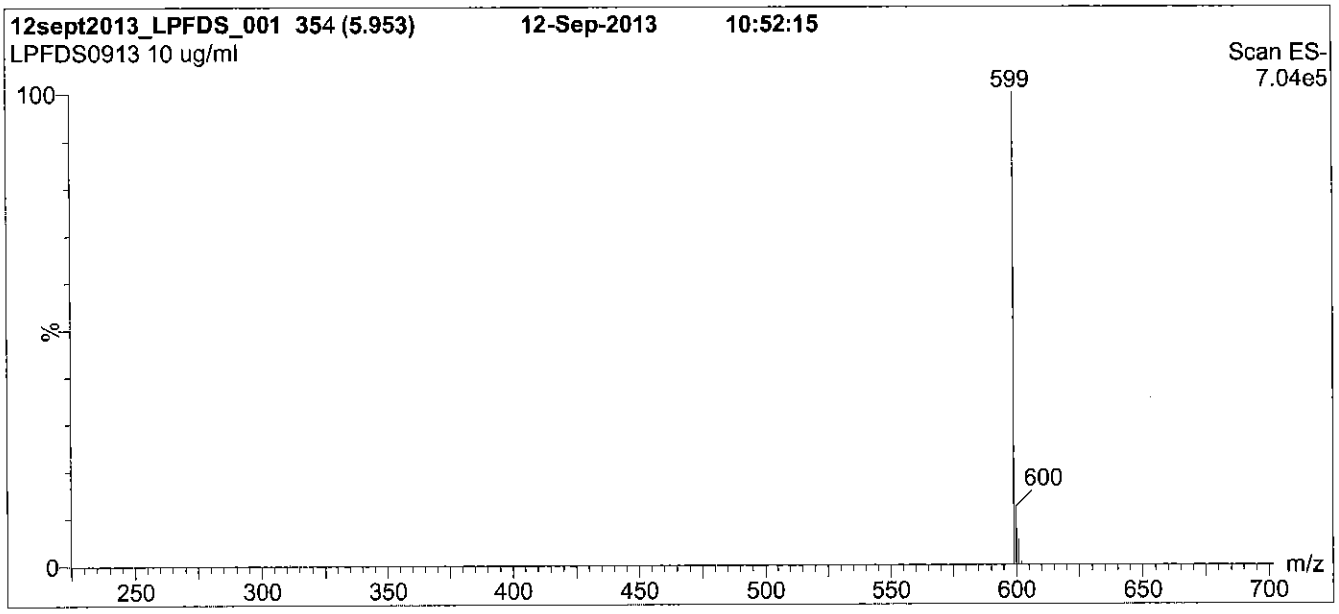
Figure 1: **L-PFDS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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: 11 min

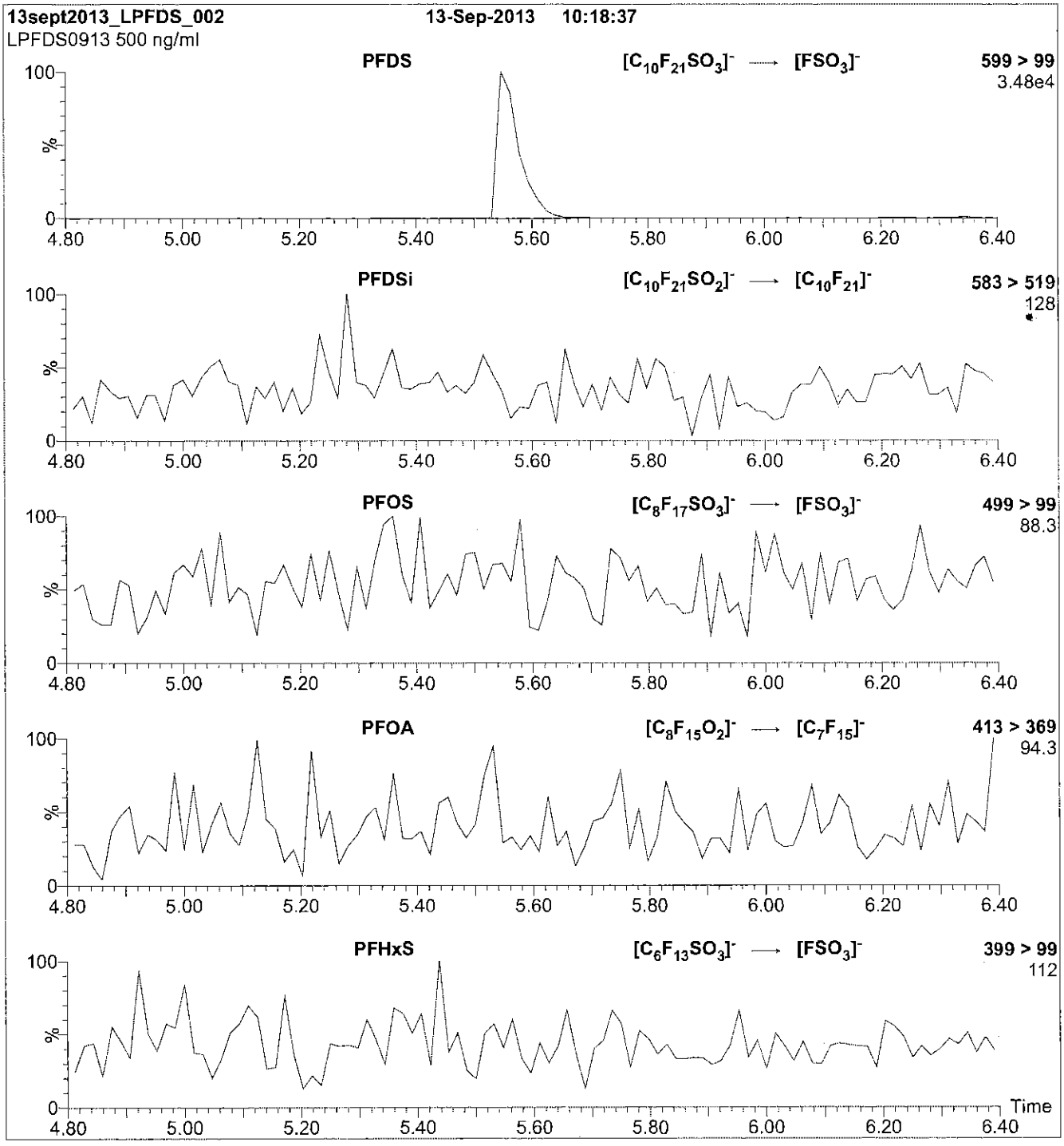
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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) = 3.78e-3
Collision Energy (eV) = 50

Reagent

LCPFHpA_00004

WELLINGTON LABORATORIES

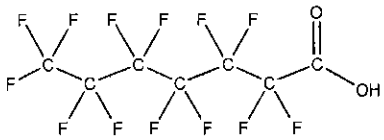
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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)

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

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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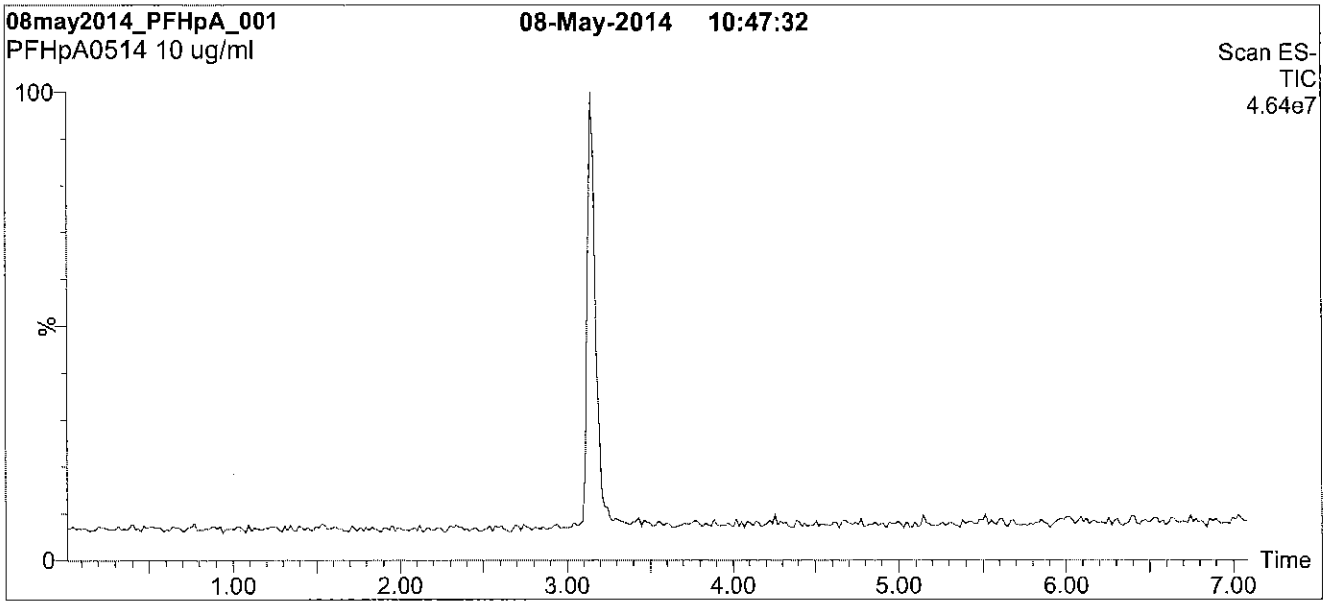
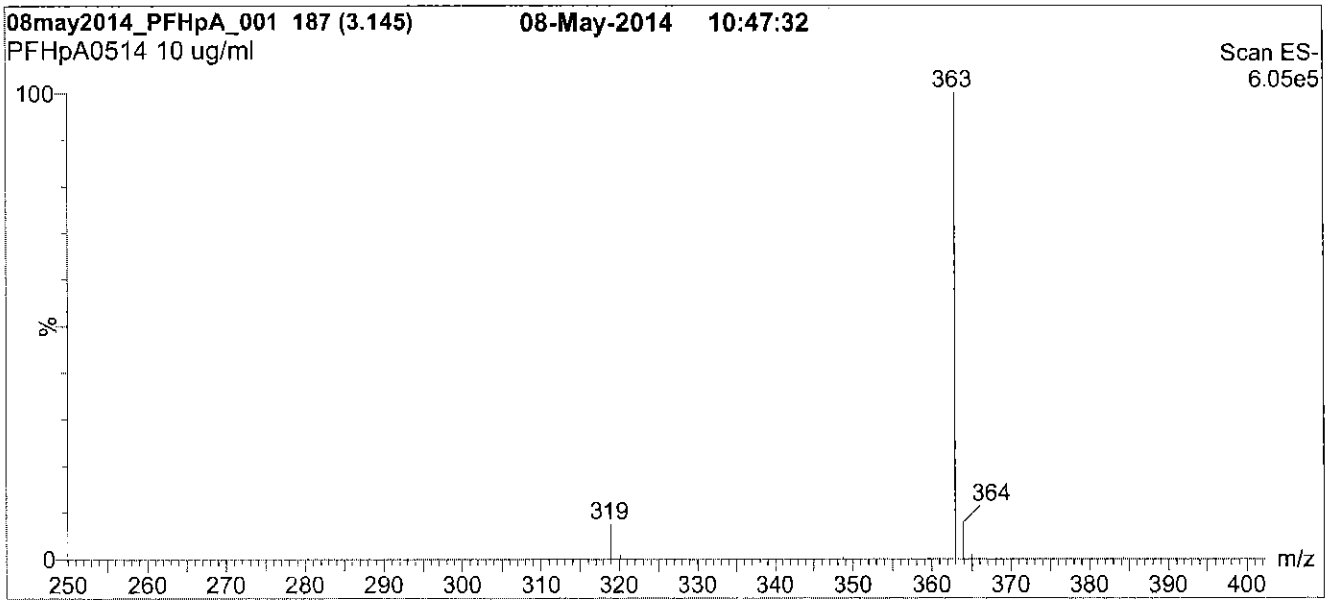
Figure 1: **PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH 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

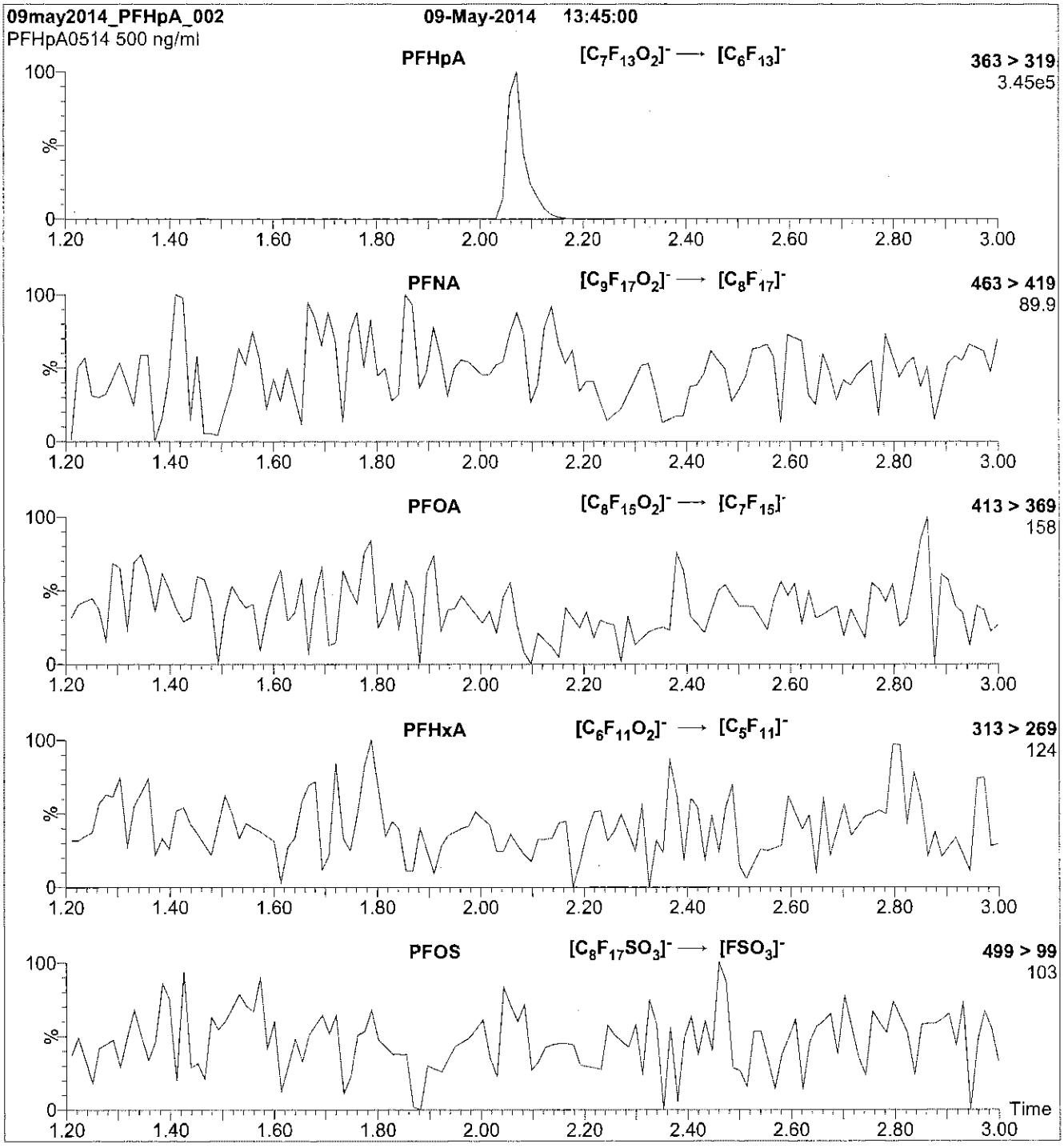
Flow: 300 µl/min

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

LCPFHpS_00004

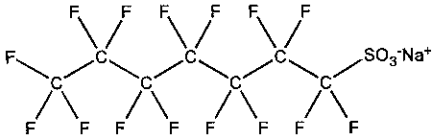
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFHpS **LOT NUMBER:** LPFHpS1112

COMPOUND: Sodium perfluoro-1-heptanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.6 ± 2.4 µg/ml (PFHpS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/21/2012		
EXPIRY DATE: (mm/dd/yyyy)	11/21/2017		
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 ~ 0.1% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.2% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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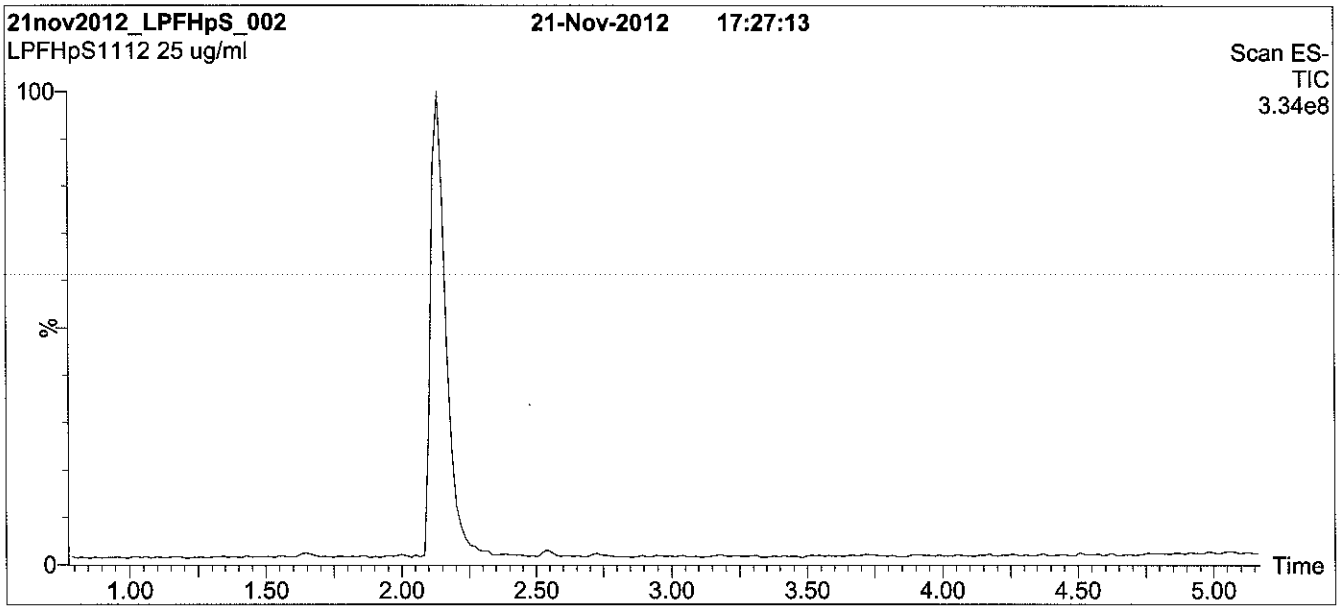

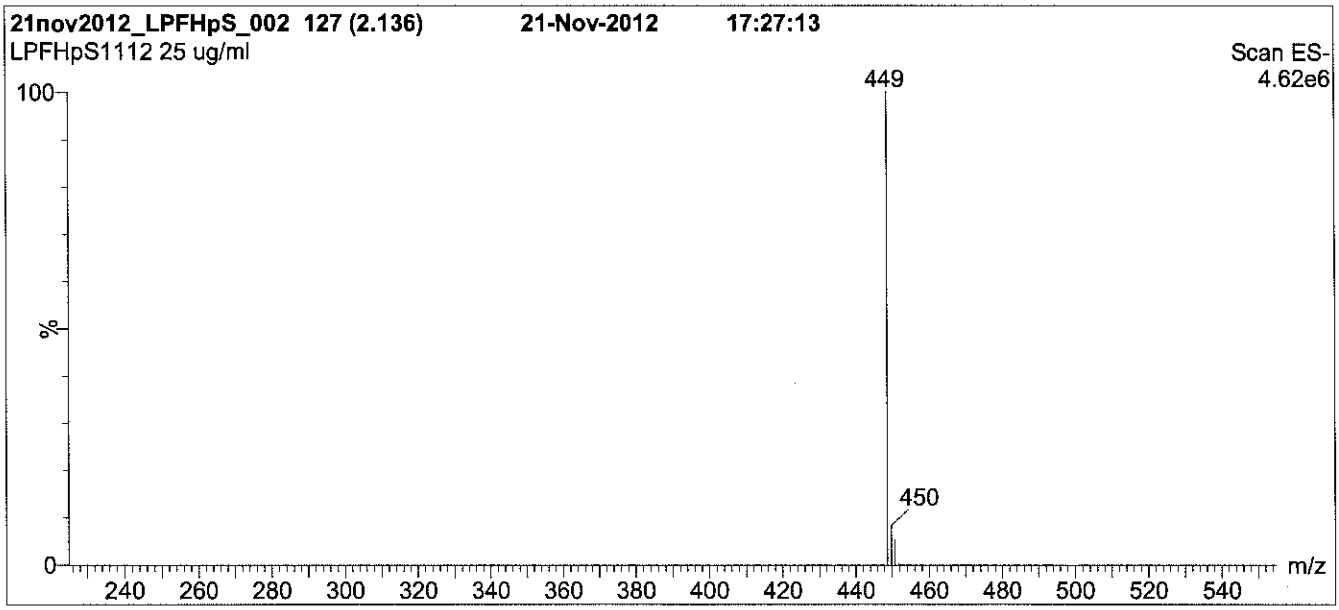

Conditions for Figure 1:

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Chromatographic Conditions

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

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Start: 55% (80:20 MeOH:ACN) / 45% H_2O
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Ramp to 90% organic over 7.5 min and hold
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Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Reagent

LCPFHxA_00003

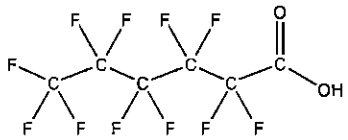
V: 2/11/15 SN

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.

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Certified By: B.G. Chittim **Date:** 05/22/2014 (mm/dd/yyyy)

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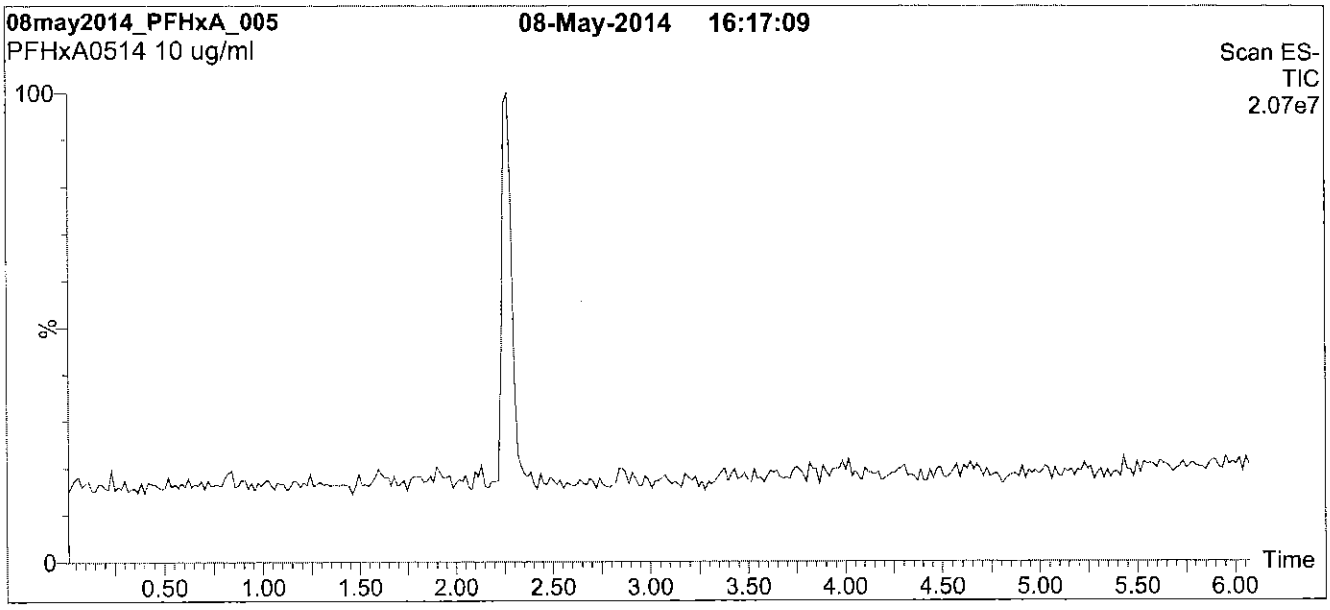
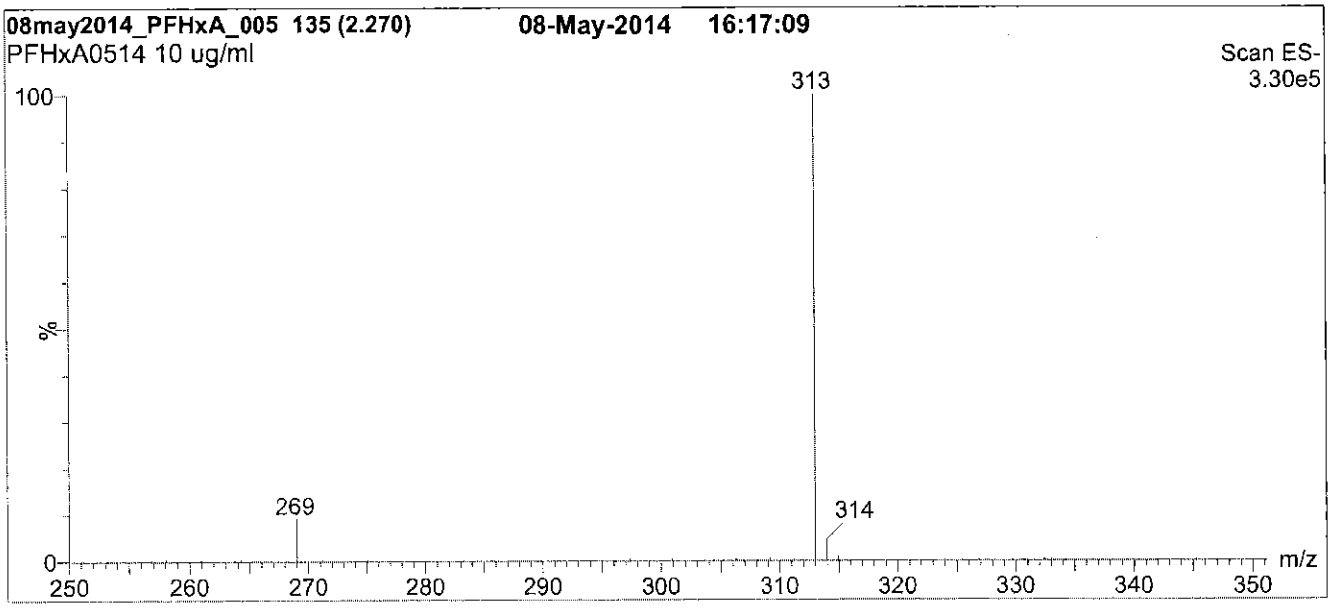
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





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1.7 µm, 2.1 x 100 mm

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Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

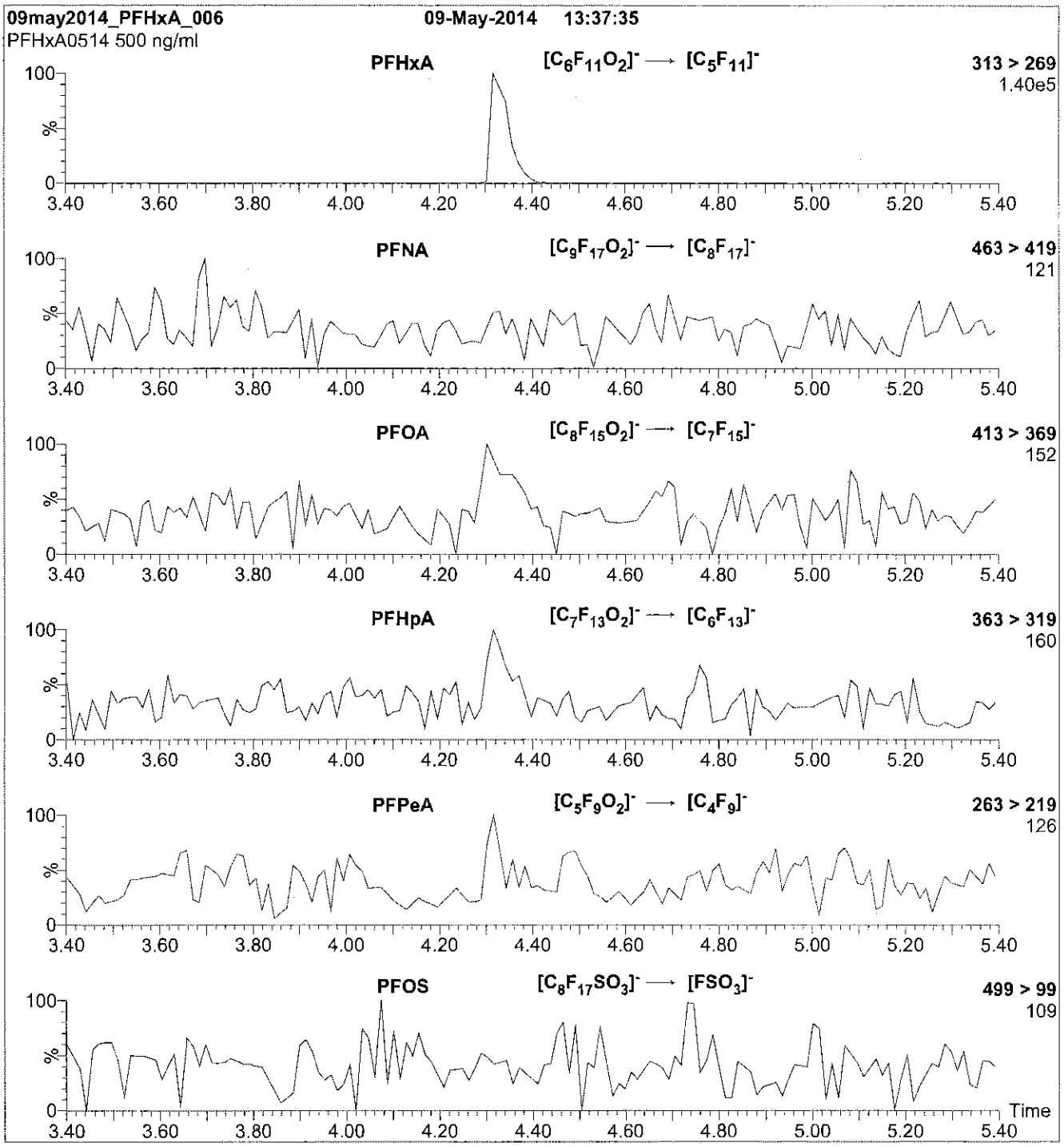
Flow: 300 µl/min

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

LCPFHxS_00003

V. 2/11/15 GV

WELLINGTON LABORATORIES

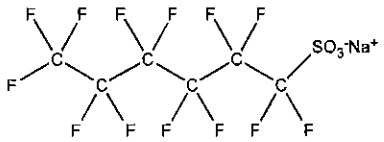
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHxS
COMPOUND: Sodium perfluoro-1-hexanesulfonate

LOT NUMBER: LPFHxS0514

STRUCTURE:

CAS #: 82382-12-5



MOLECULAR FORMULA:	$C_6F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	422.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (PFHxS anion)	**SOLVENT(S):**	Methanol
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		

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FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/16/2014 (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:

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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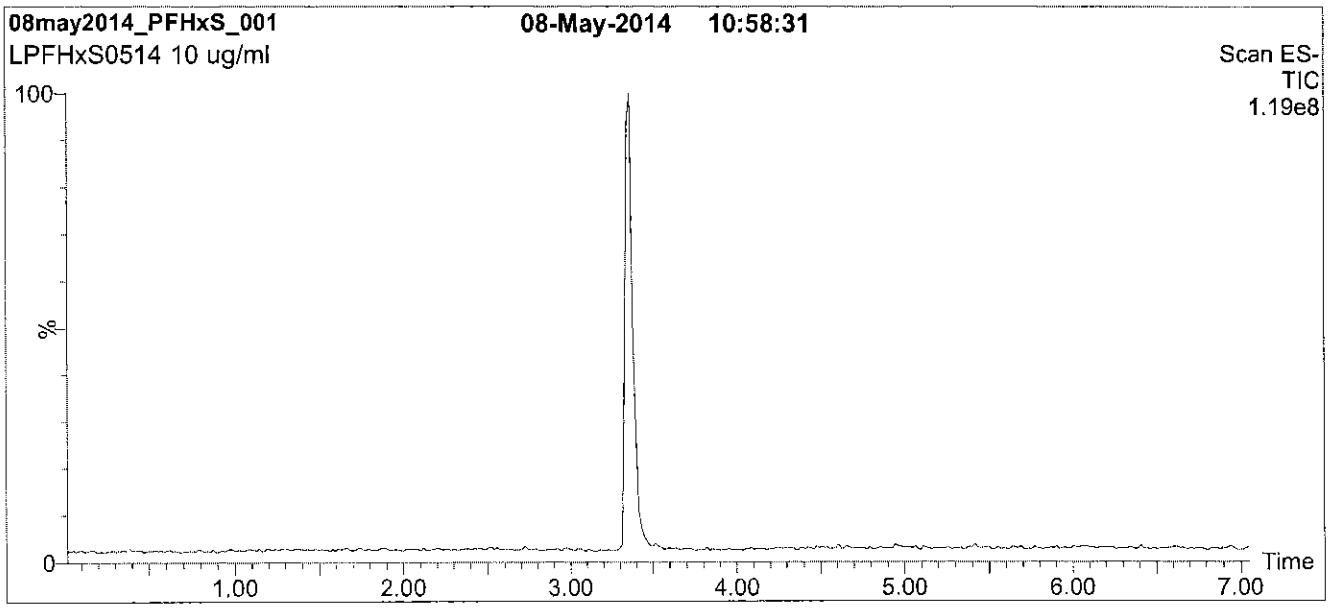
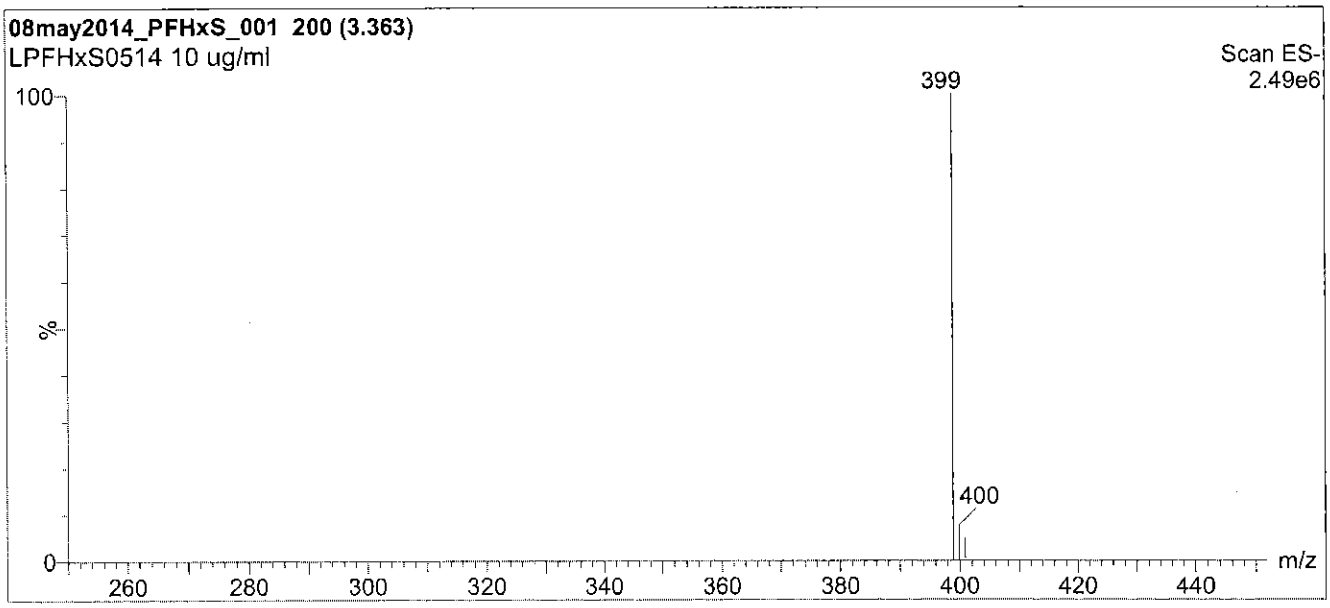
Figure 1: **L-PFHxS; LC/MS Data (TIC and Mass Spectrum)**





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

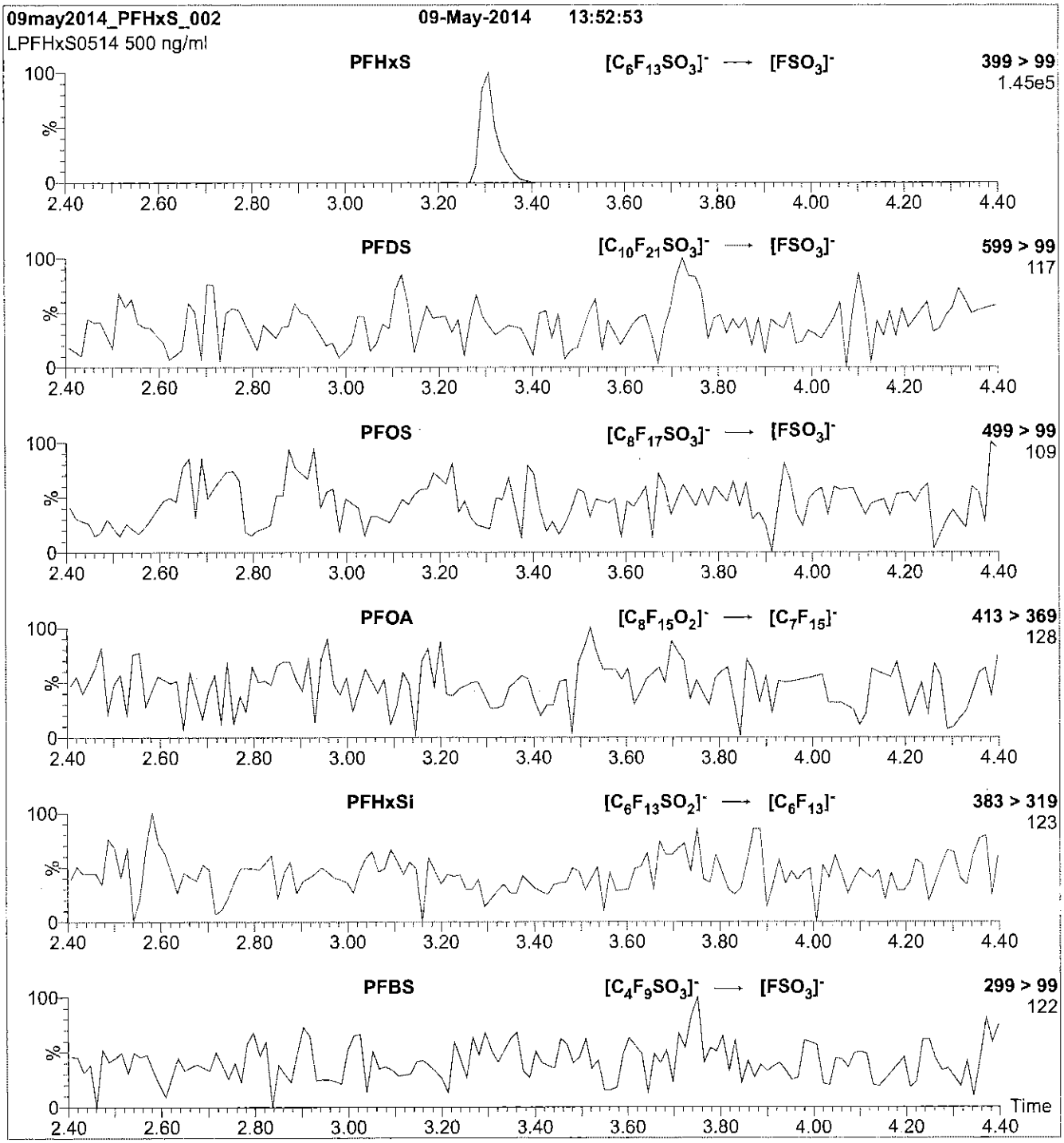
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (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) = 30

Reagent

LCPFNA_00004

P: 3/27/15 SK

S:

WELLINGTON LABORATORIES

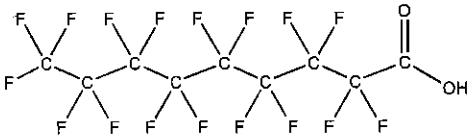
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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).

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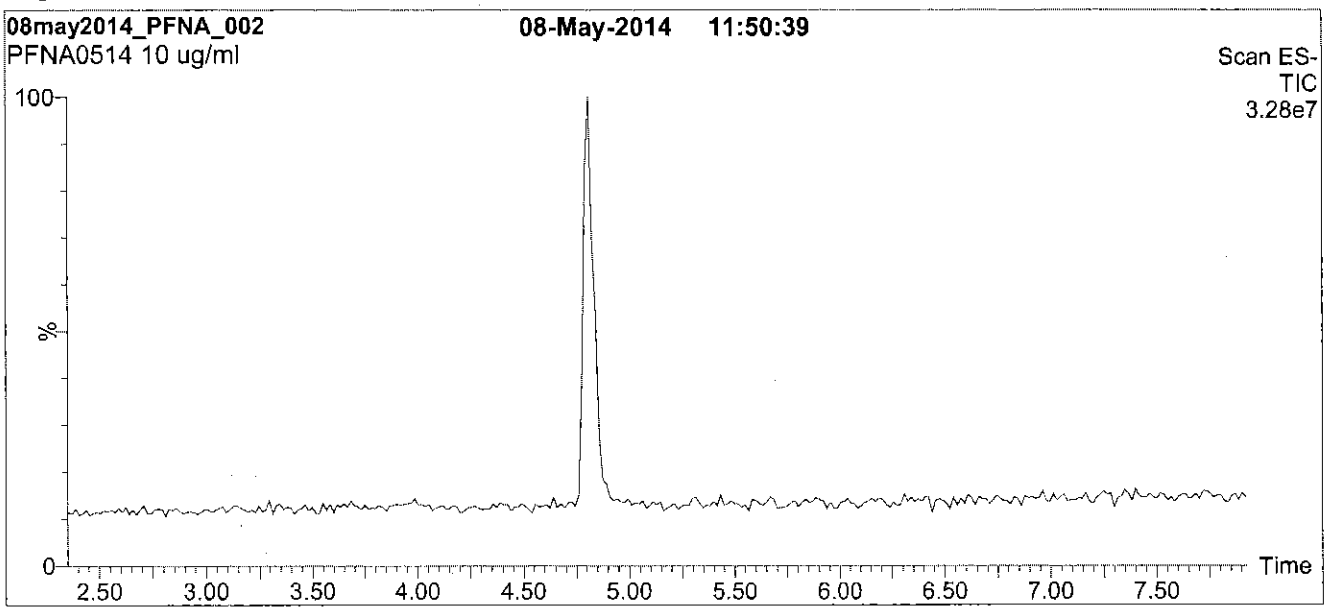
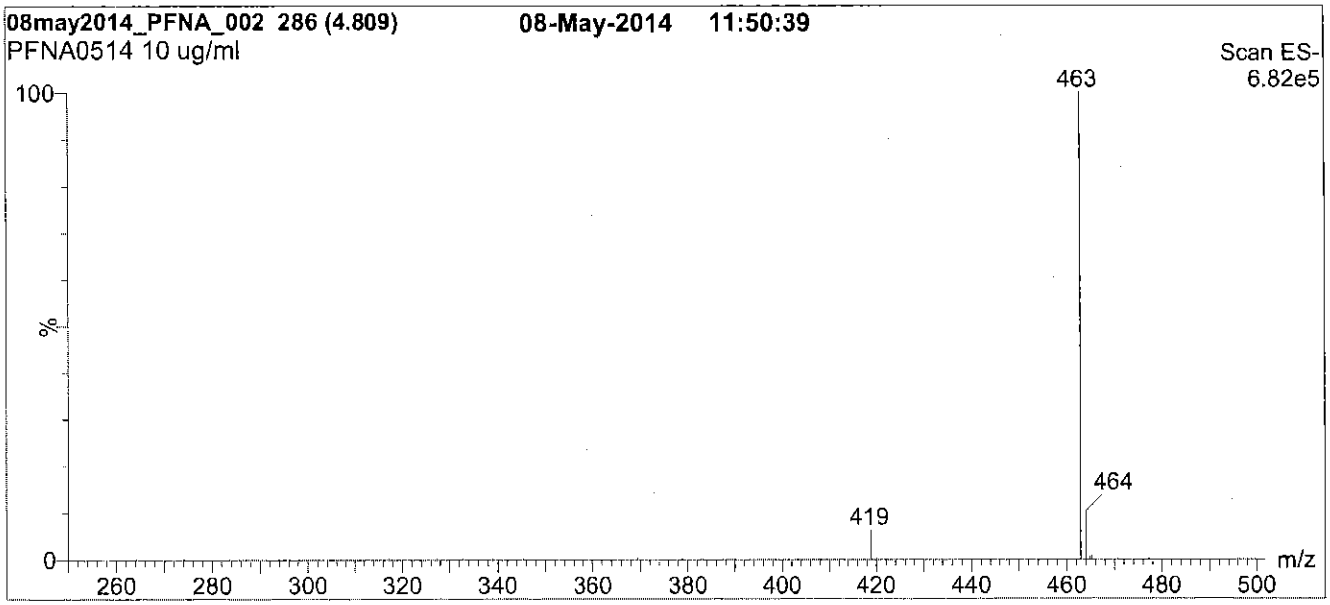
Figure 1: **PFNA; LC/MS Data (TIC and Mass Spectrum)**





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

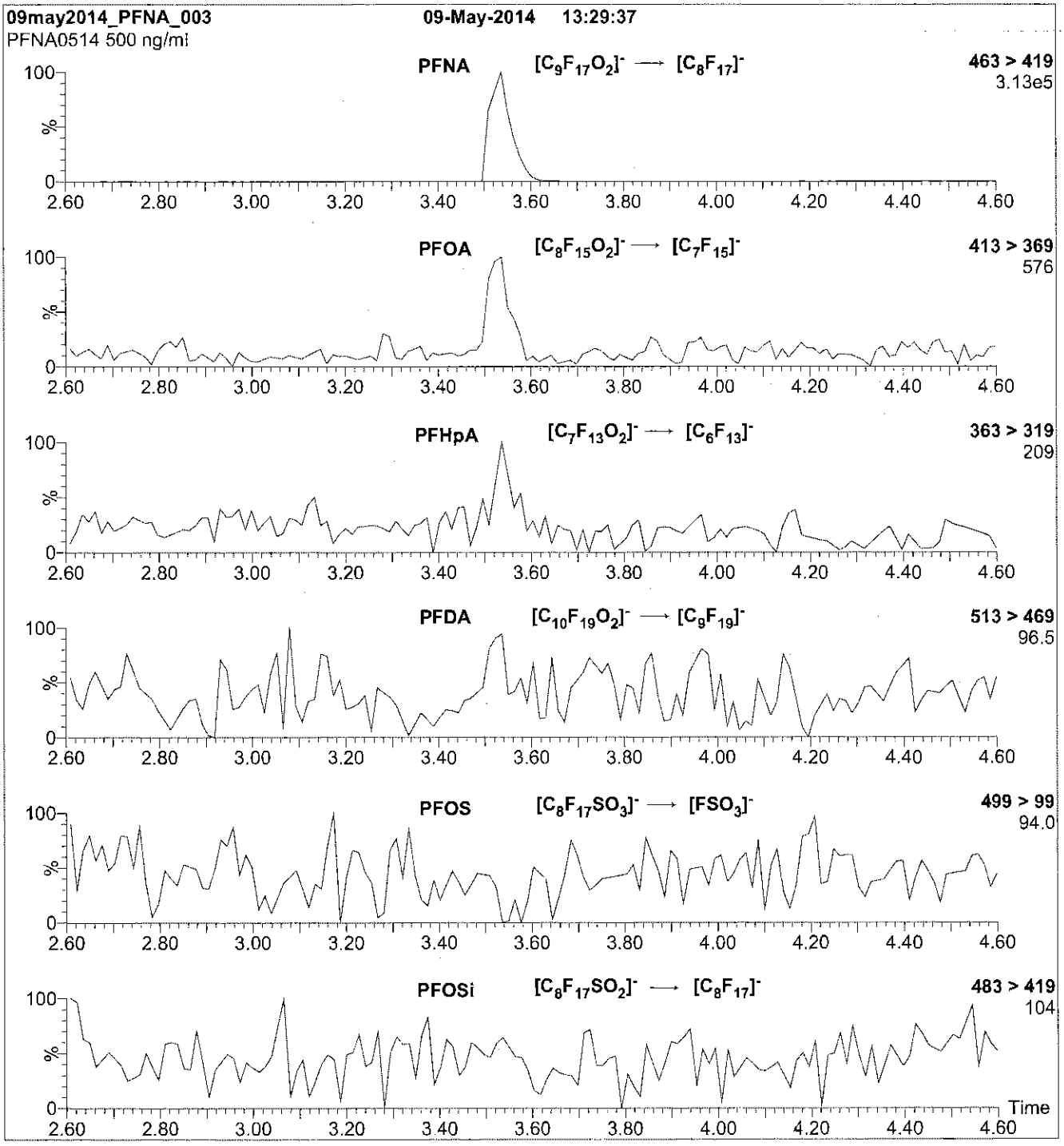
Flow: 300 µl/min

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

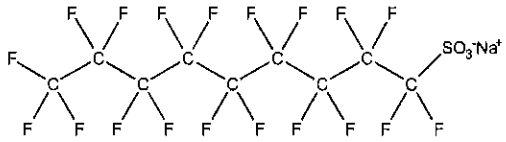
Reagent

LCPFNS_00002

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	L-PFNS	**LOT NUMBER:**	LPFNS0712
COMPOUND:	Sodium perfluoro-1-nonanesulfonate		
STRUCTURE:		**CAS #:**	98789-57-2



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.

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Certified By: B.G. Chittim **Date:** 01/15/2013 (mm/dd/yyyy)

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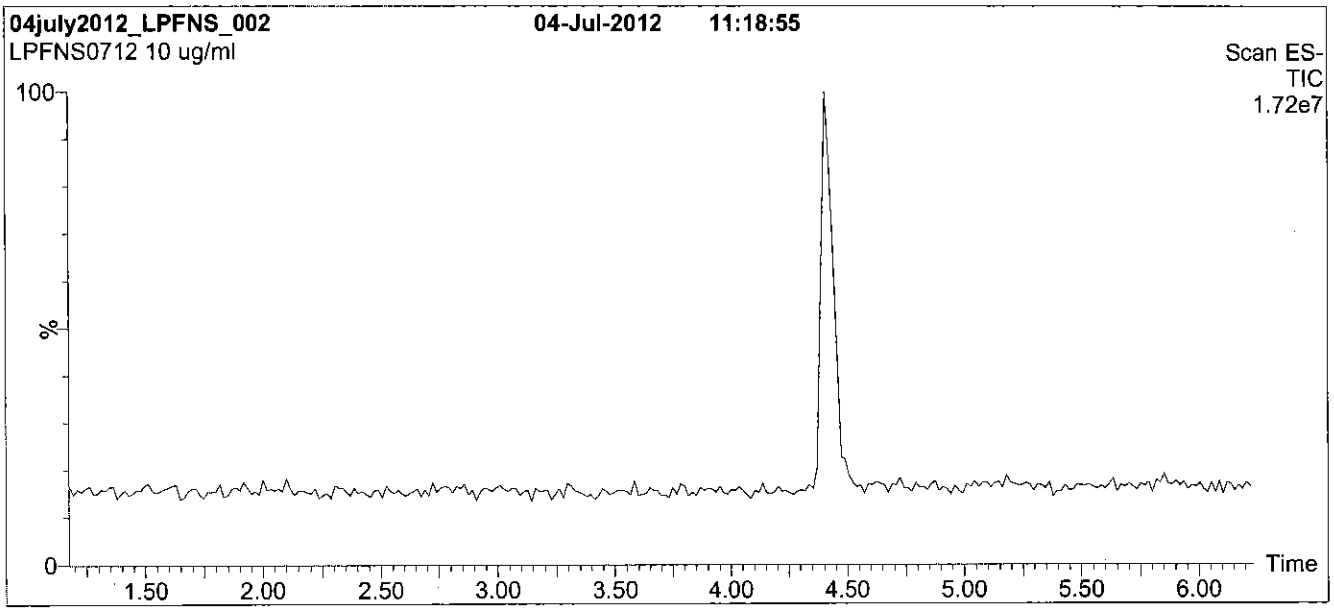
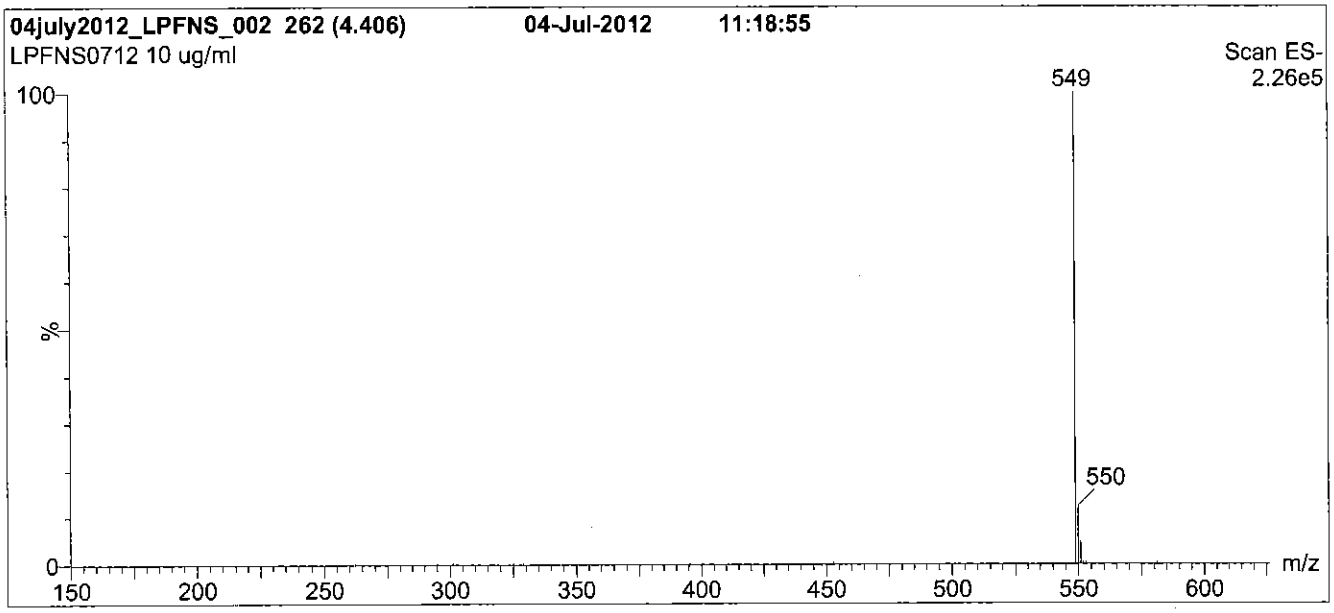
Figure 1: **L-PFNS; LC/MS Data (TIC and Mass Spectrum)**





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

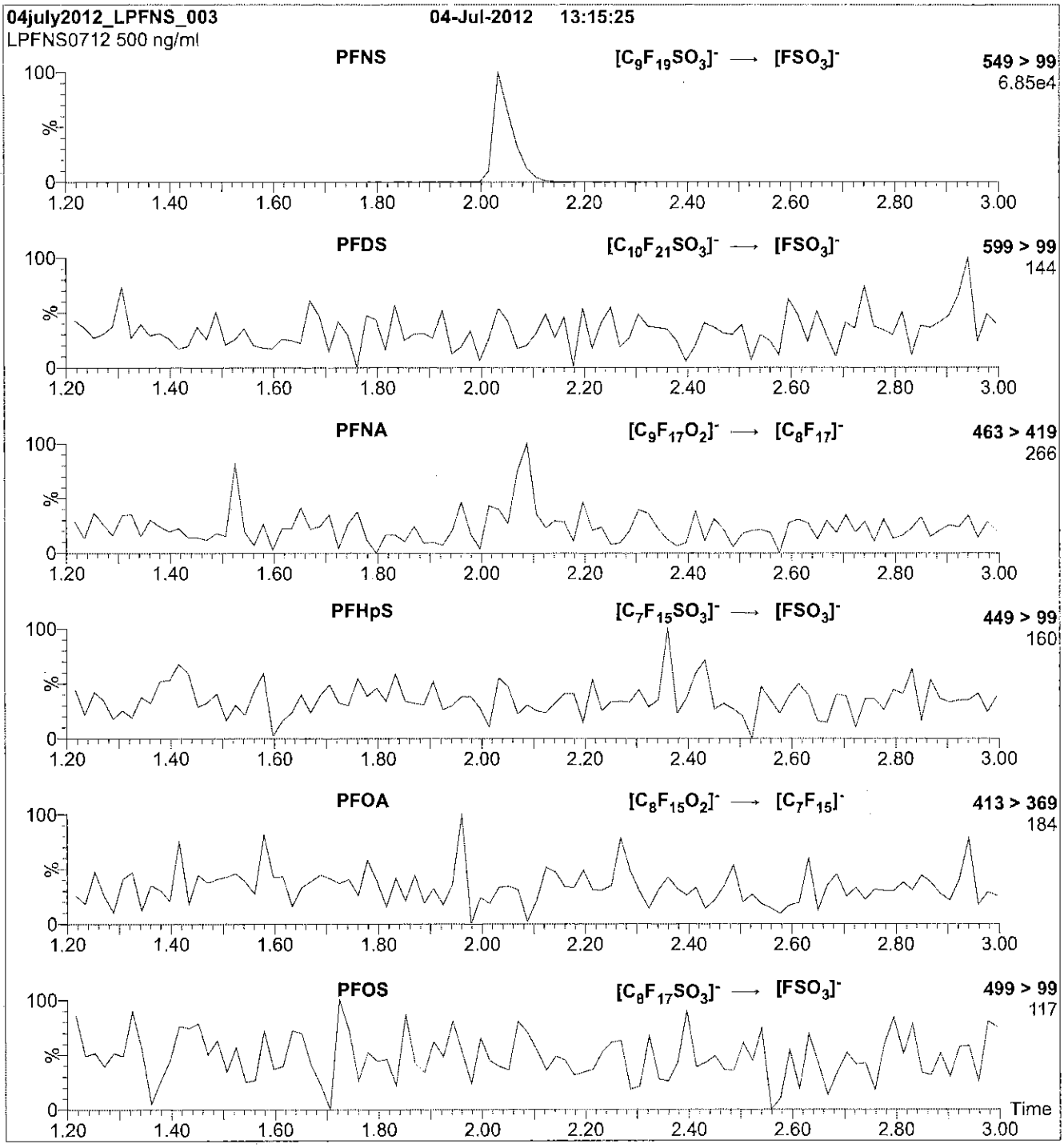
Flow: 300 µl/min

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_00004

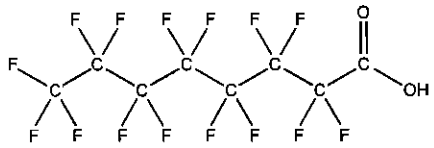
Rec 7/15/14

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid
LOT NUMBER: PFOA1013

STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
MOLECULAR WEIGHT: 414.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/11/2013
EXPIRY DATE: (mm/dd/yyyy) 10/11/2018
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.

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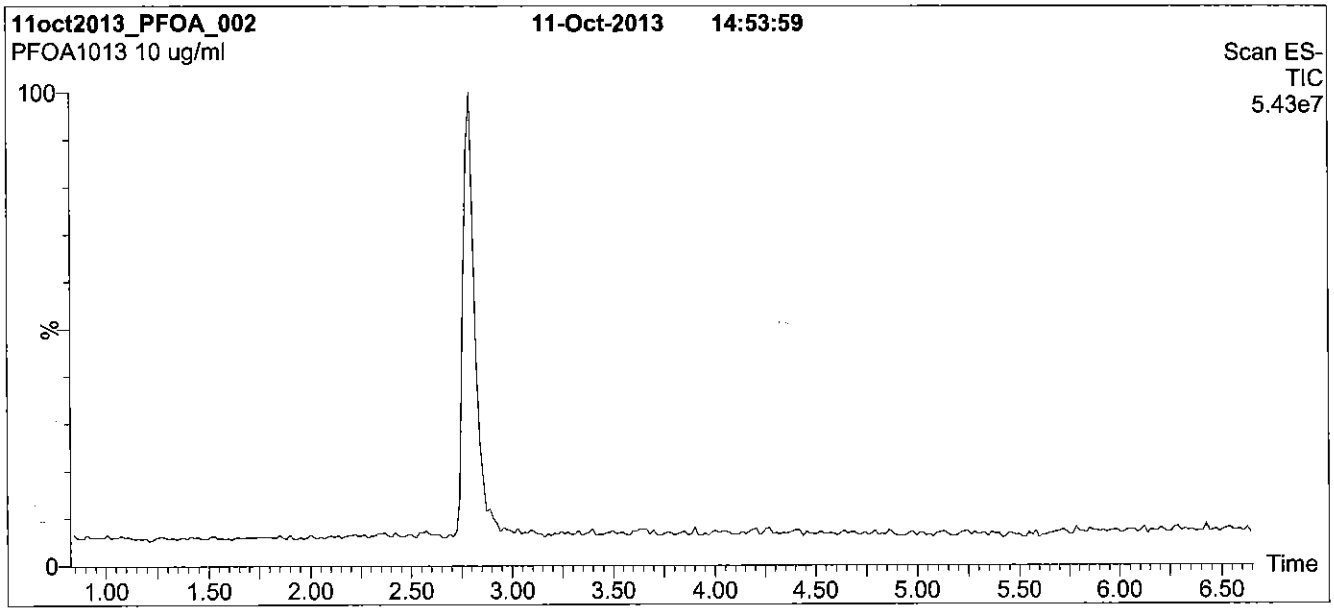
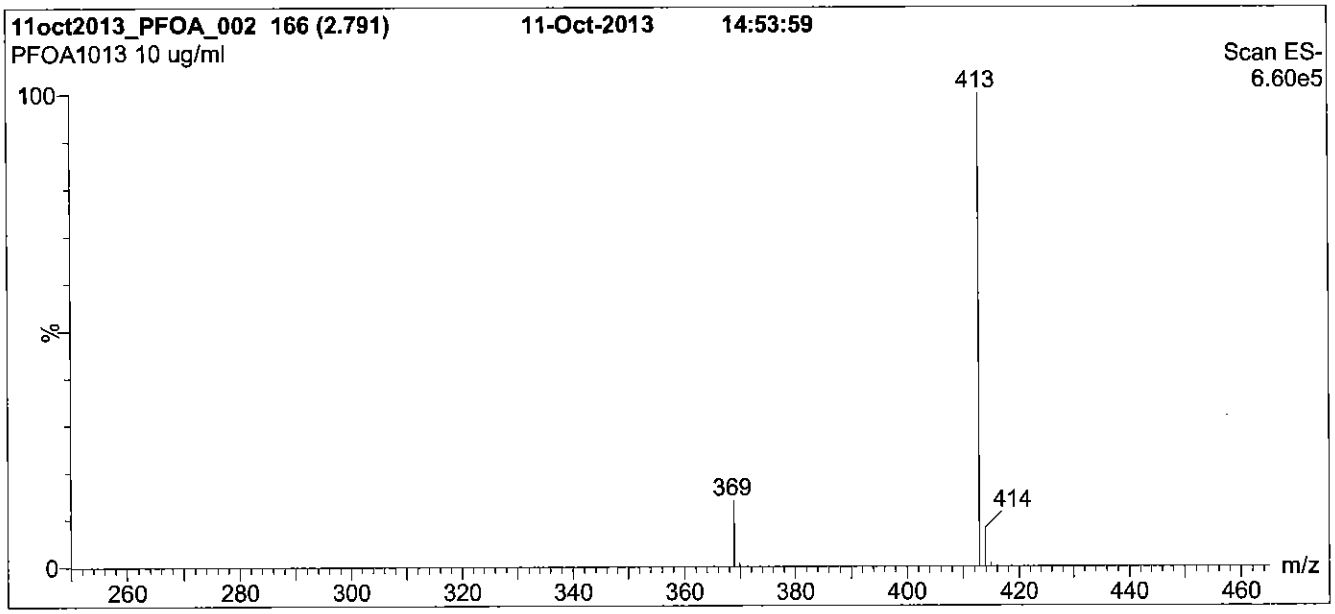
Figure 1: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% 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

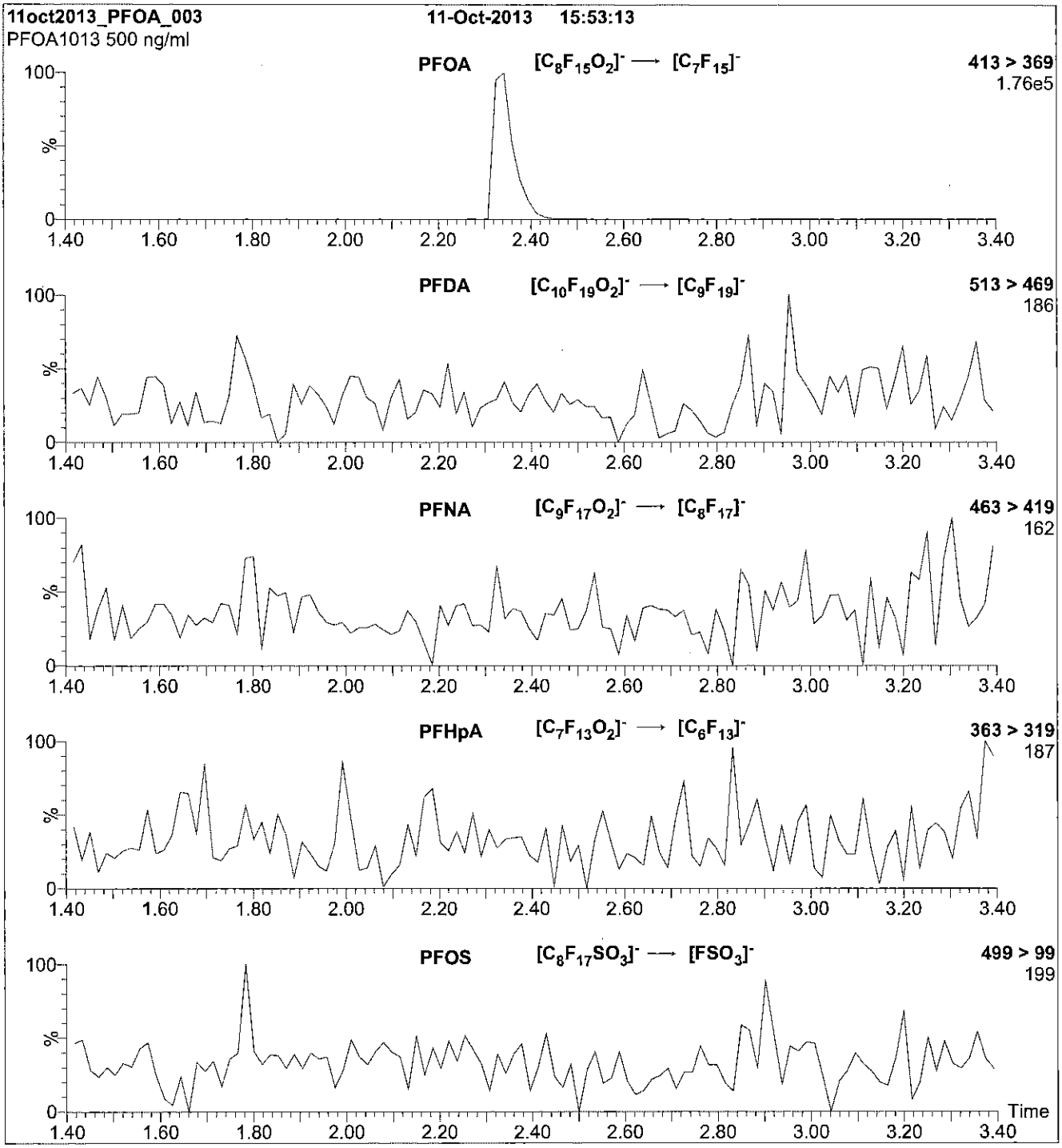
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 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: **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) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCPFODA_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

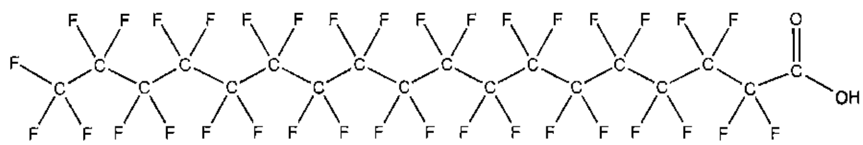
PRODUCT CODE: PFODA

COMPOUND: Perfluoro-n-octadecanoic acid

LOT NUMBER: PFODA0807

STRUCTURE:

CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$

CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 914.15

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.

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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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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 Accredited to No. A1226

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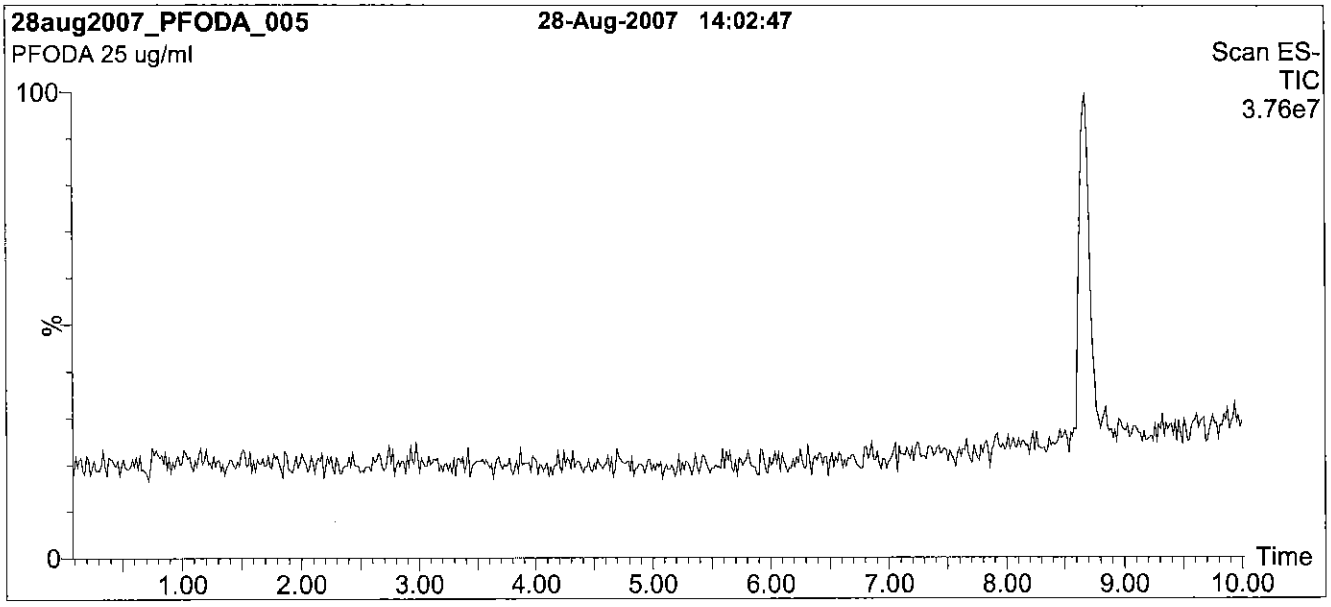
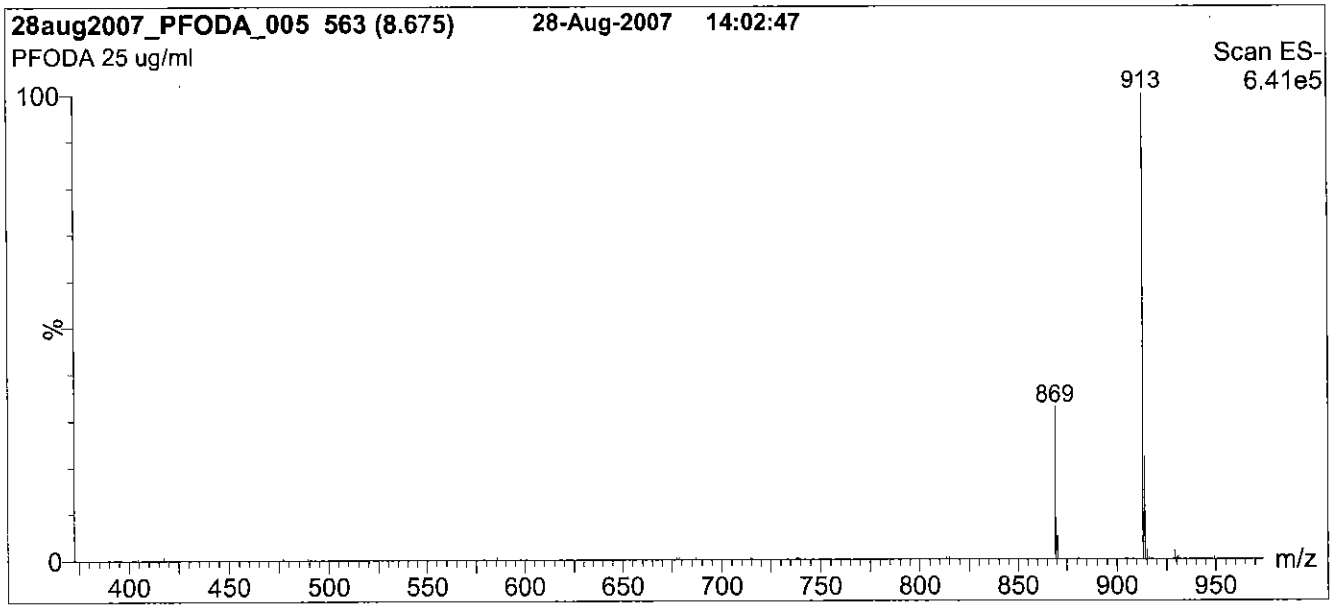
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

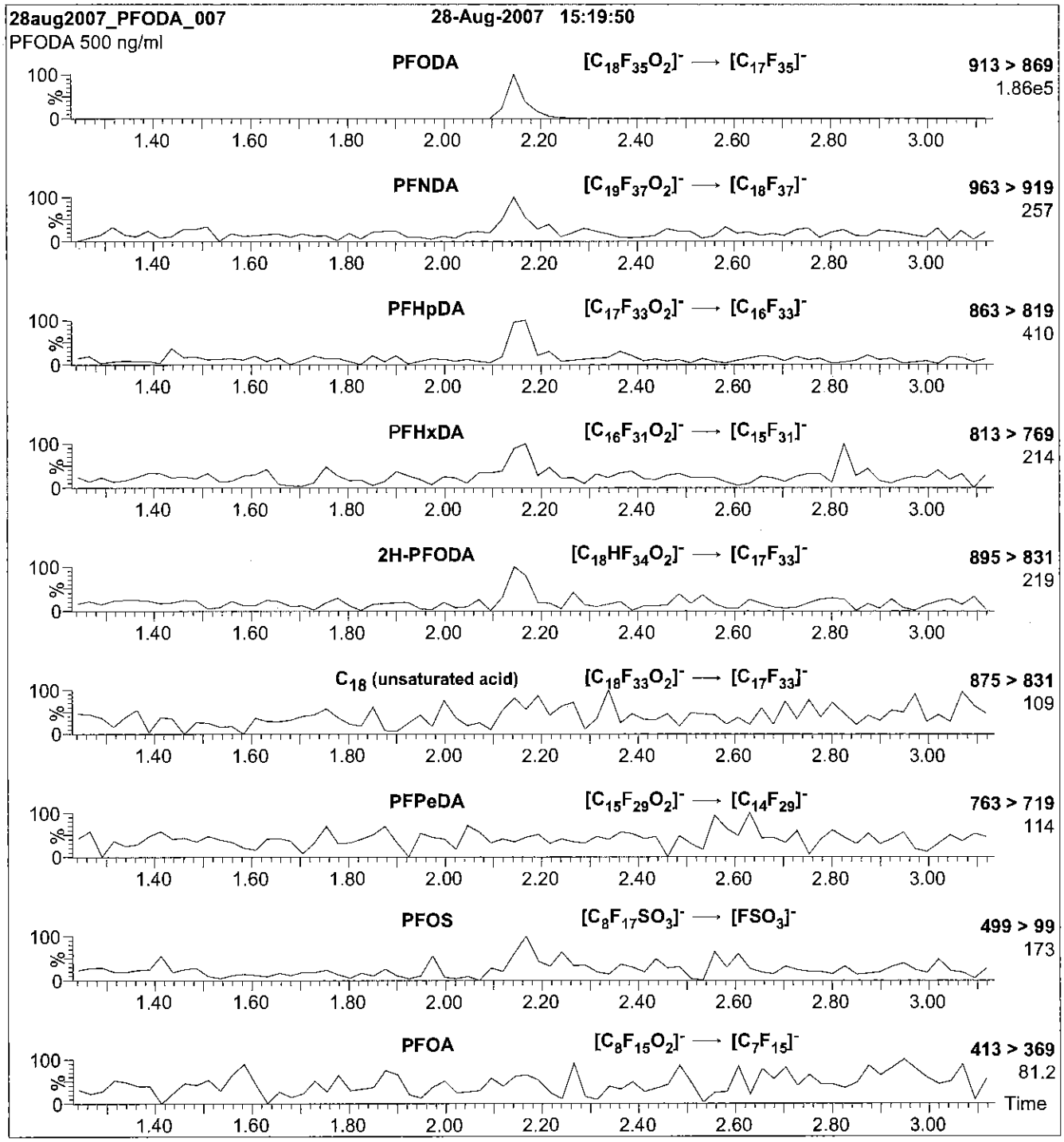
Flow: 300 µl/min

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

LCPFOS_00004

C. 3/17/15 SV

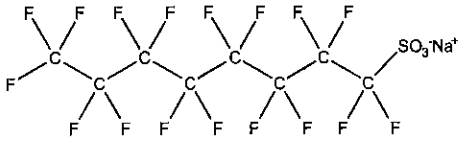
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFOS
LOT NUMBER: LPFOS0614
COMPOUND: Sodium perfluoro-1-octanesulfonate

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
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CALA Testing Accreditation No. A 1226

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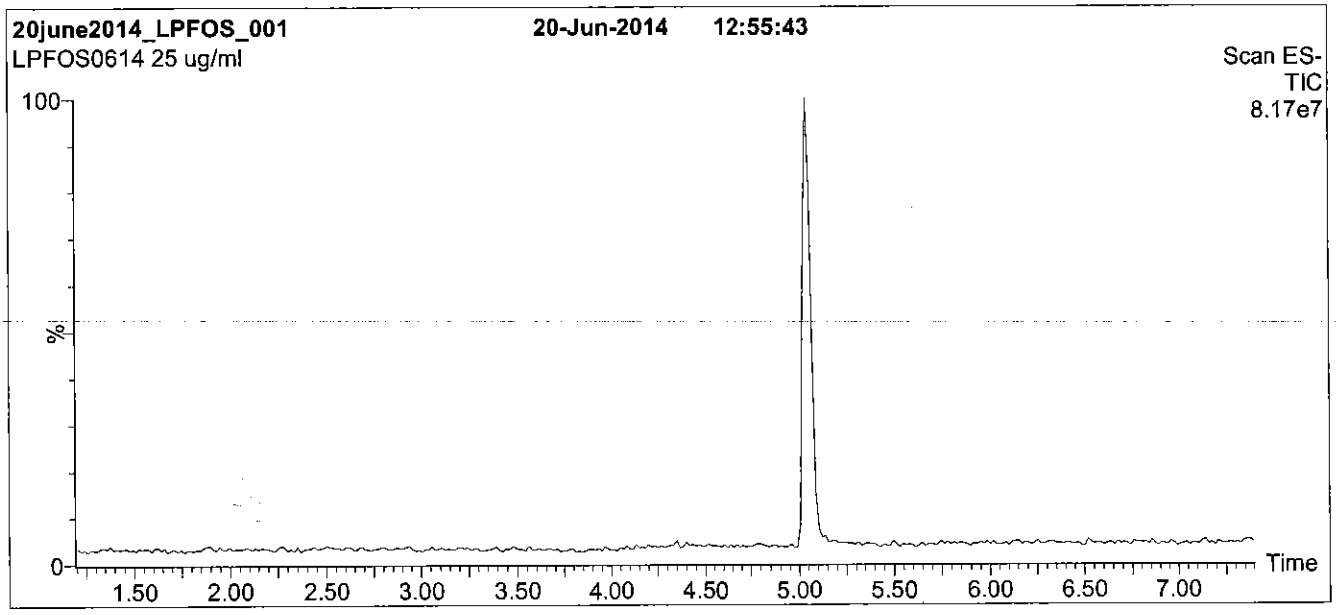
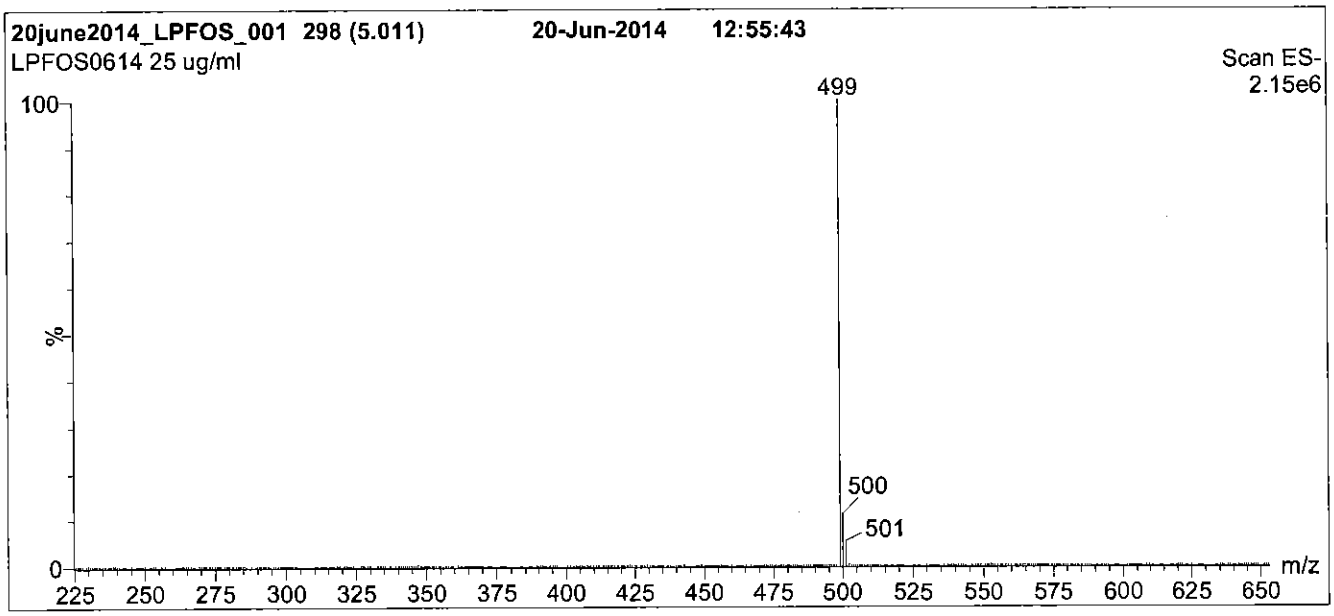
Figure 1: **L-PFOS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

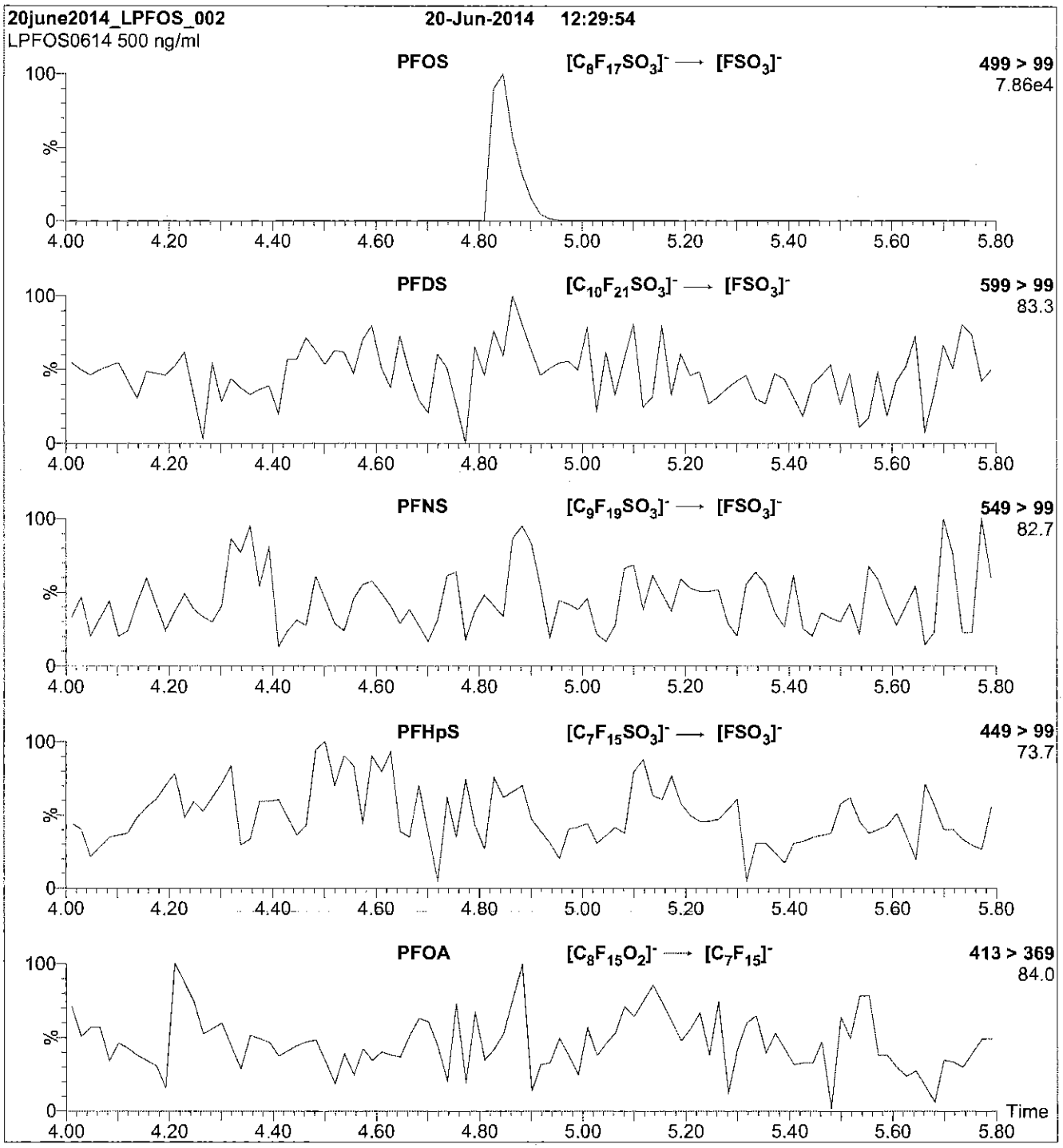
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 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_00005

M 2/11/15 BV

WELLINGTON LABORATORIES

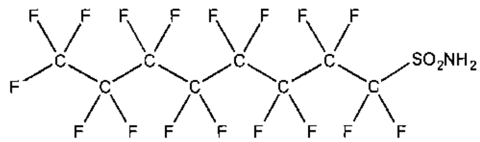
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I

LOT NUMBER: FOSA0714I

COMPOUND: Perfluoro-1-octanesulfonamide

STRUCTURE:



CAS #: 754-91-6

MOLECULAR FORMULA: $C_8H_2F_{17}NO_2S$

MOLECULAR WEIGHT: 499.14

CONCENTRATION: 50 ± 2.5 µg/ml

SOLVENT(S): Isopropanol

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 07/31/2014

EXPIRY DATE: (mm/dd/yyyy) Stability studies ongoing

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: B.G. Chittim

Date: 08/05/2014 (mm/dd/yyyy)

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

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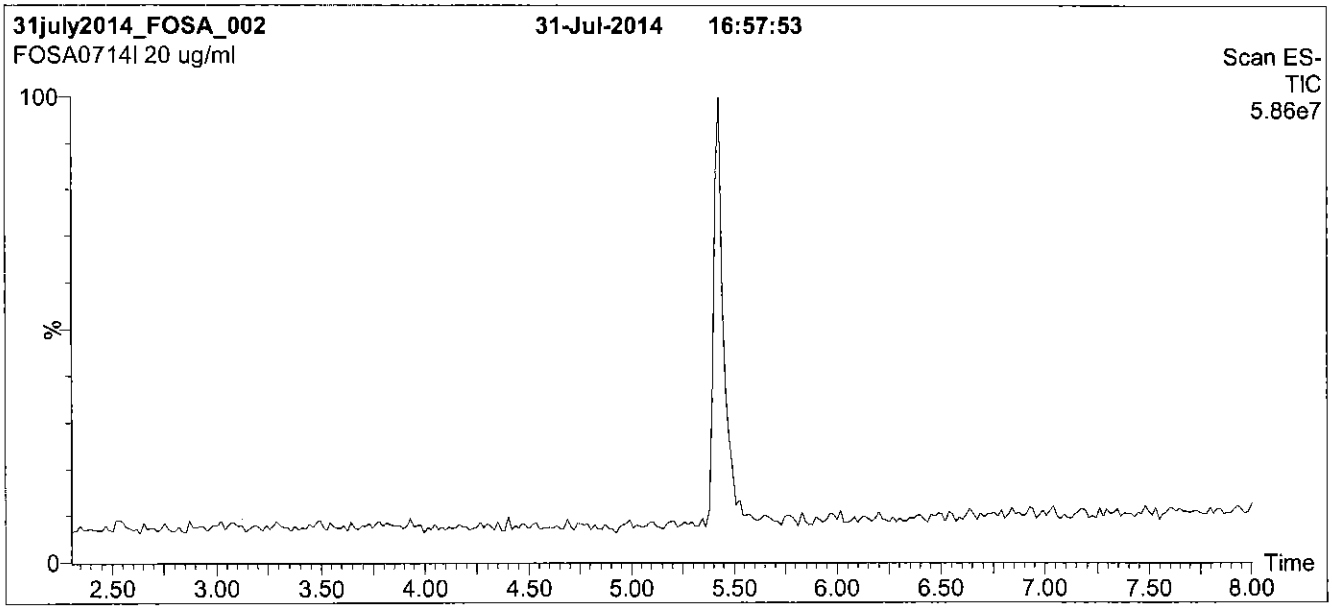
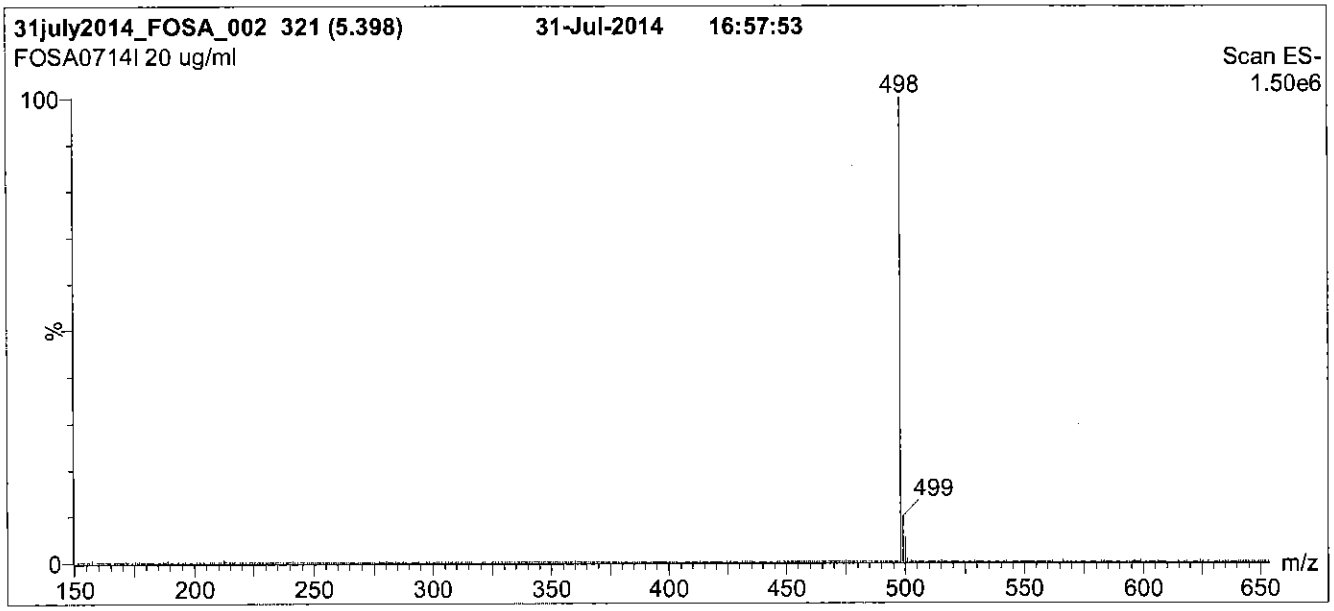
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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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: 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

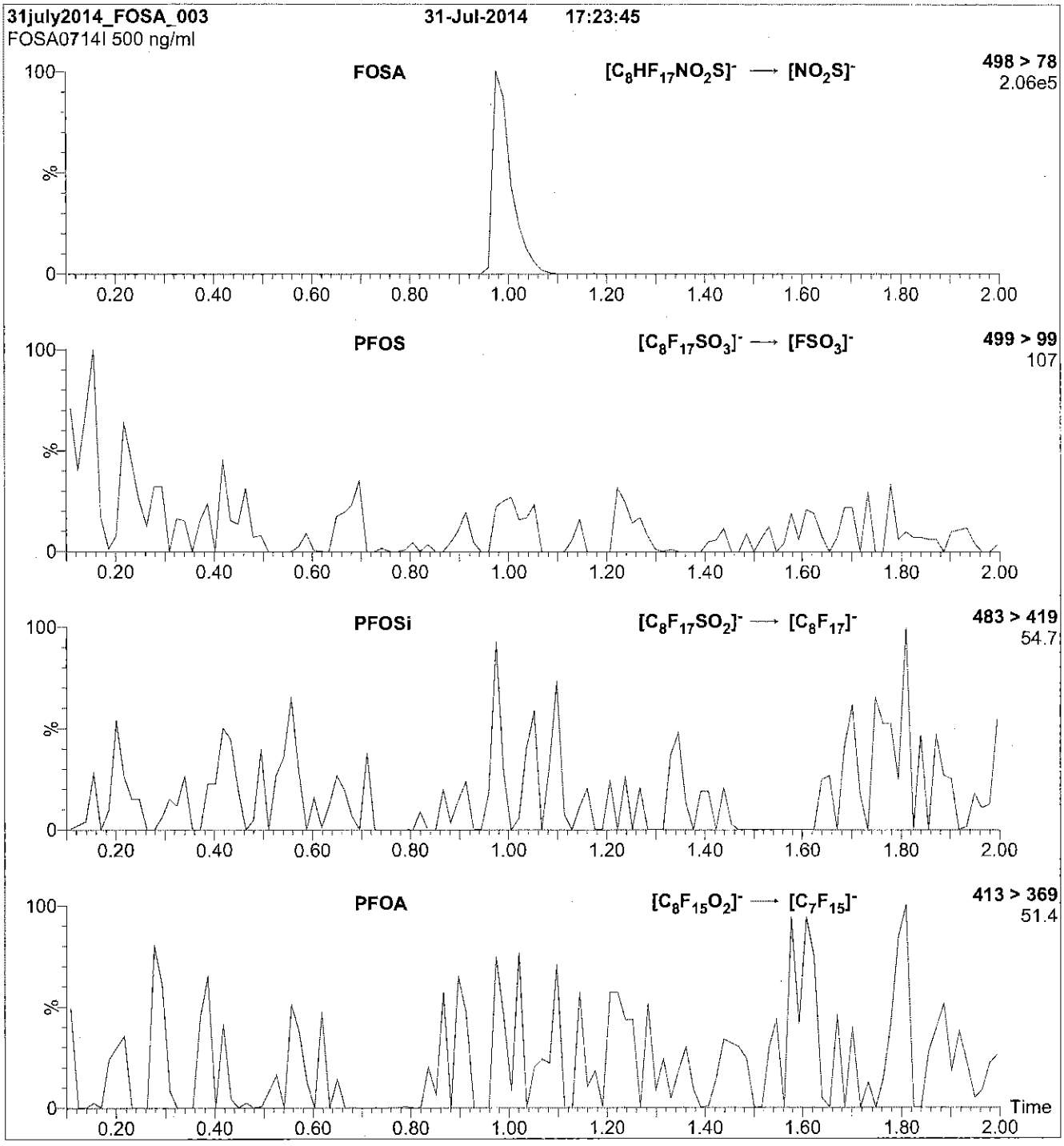
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 950 amu)

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

Figure 2: **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) = 3.58e-3
Collision Energy (eV) = 30

Reagent

LCPFPeA_00003

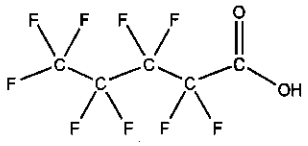
Rec 7/15/14

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid
LOT NUMBER: PFPeA0113

STRUCTURE:
CAS #: 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$
MOLECULAR WEIGHT: 264.05
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/03/2013
EXPIRY DATE: (mm/dd/yyyy) 01/03/2018
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 ~ 0.3% 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:** 01/14/2013 (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 Accredited/Laboratoire No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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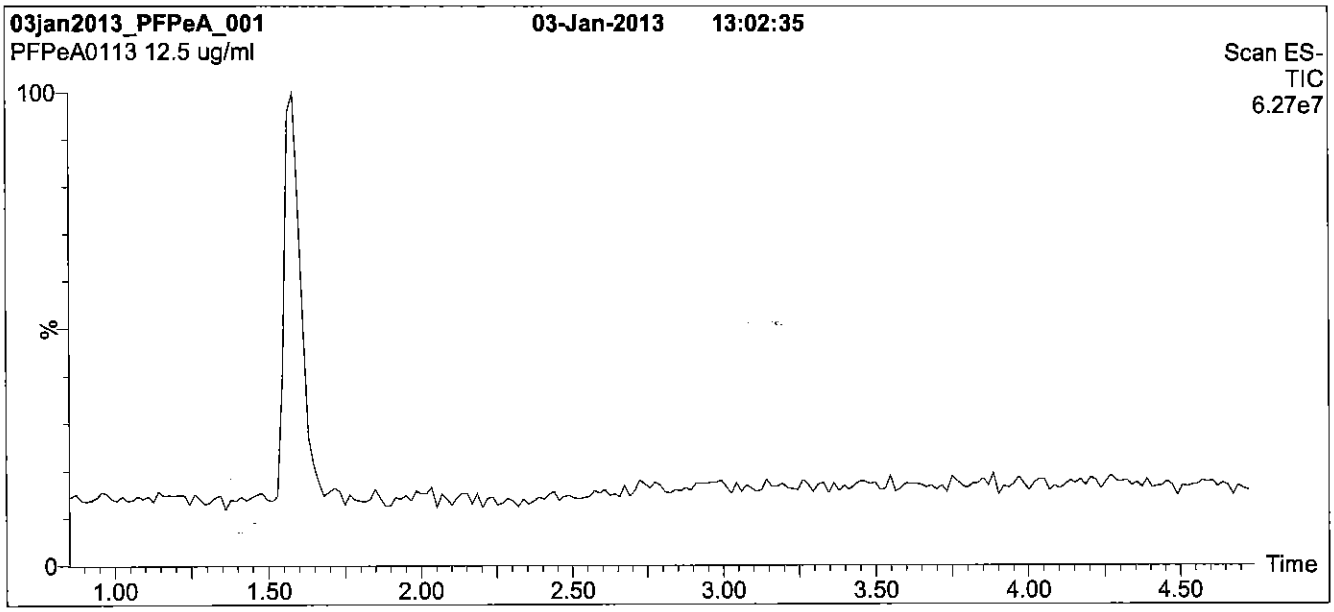
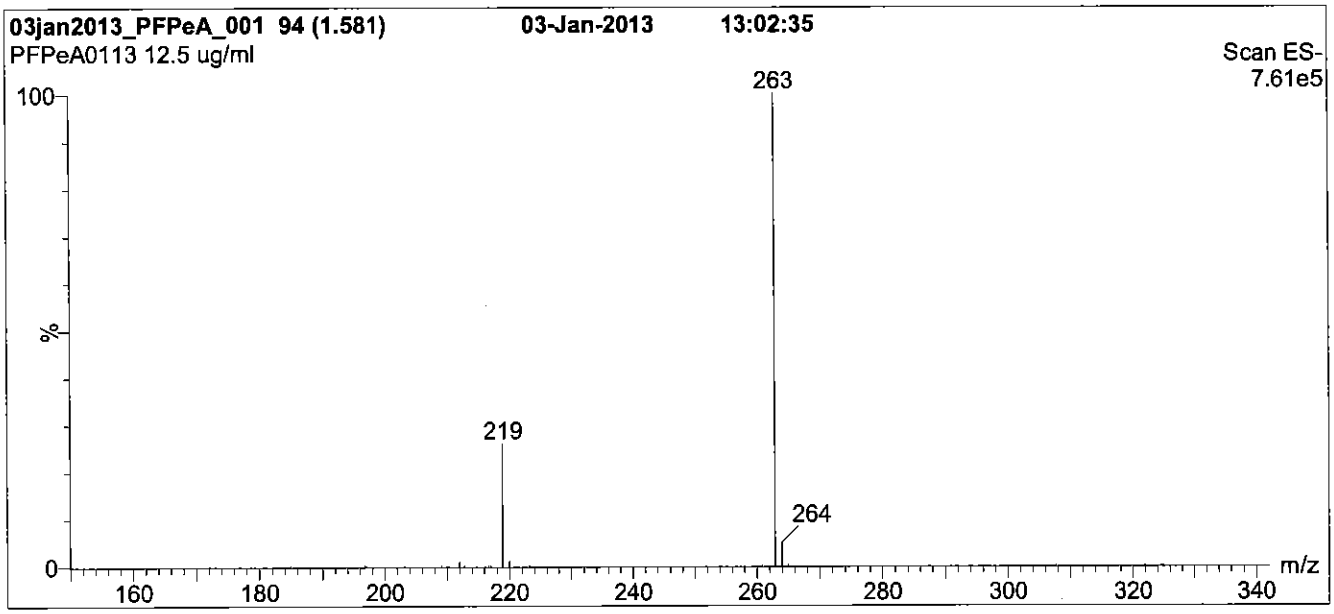
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





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

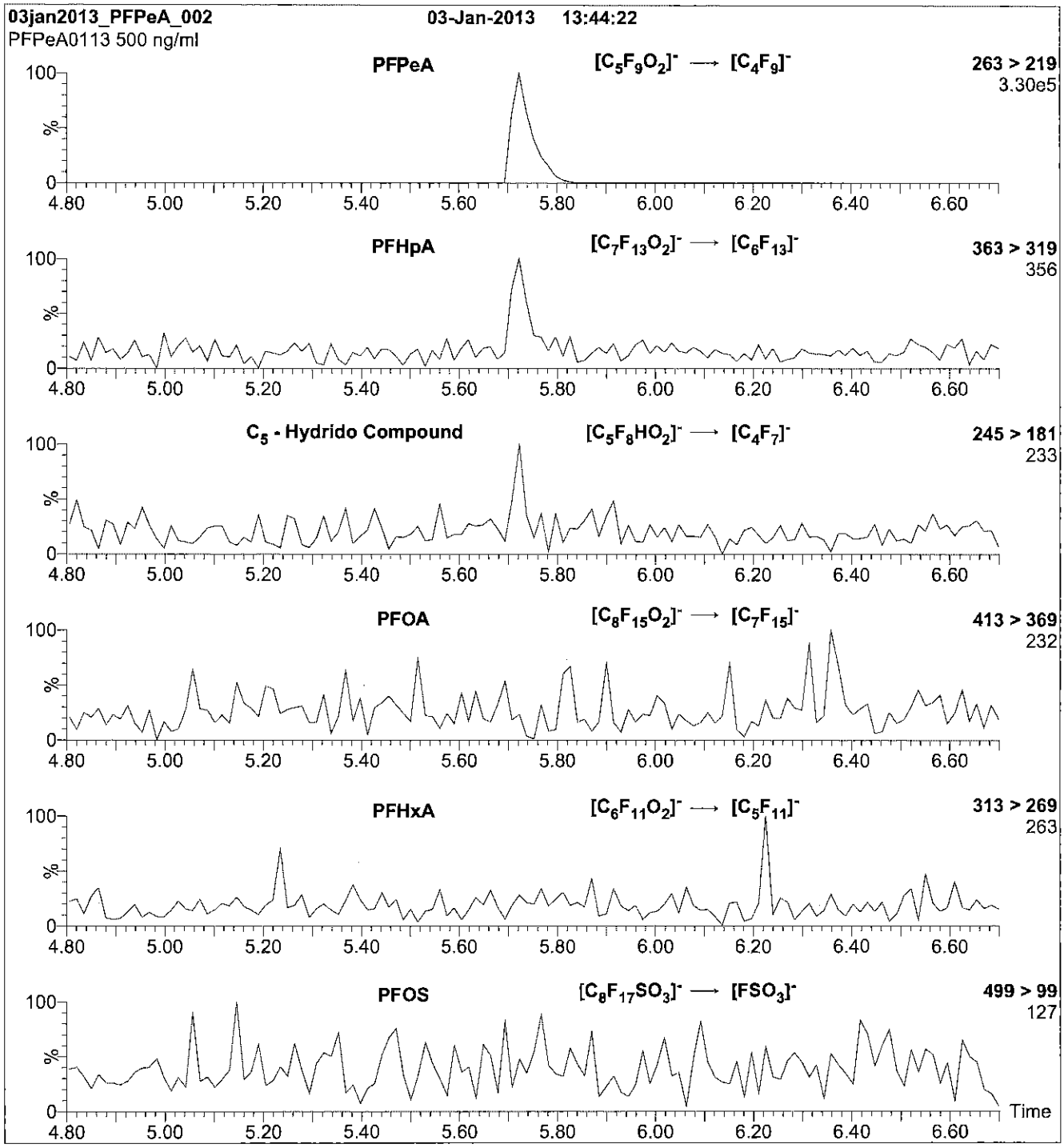
Flow: 300 µl/min

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) = 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 70% (80:20 MeOH:ACN) / 30% 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

WELLINGTON LABORATORIES

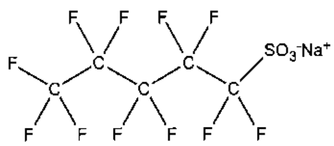
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS

COMPOUND: Sodium perfluoro-1-pentanesulfonate

LOT NUMBER: LPFPeS0712

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $C_5F_{11}SO_3Na$

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
46.9 ± 2.3 µg/ml (PFPeS anion)

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

MOLECULAR WEIGHT: 372.09

SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: 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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CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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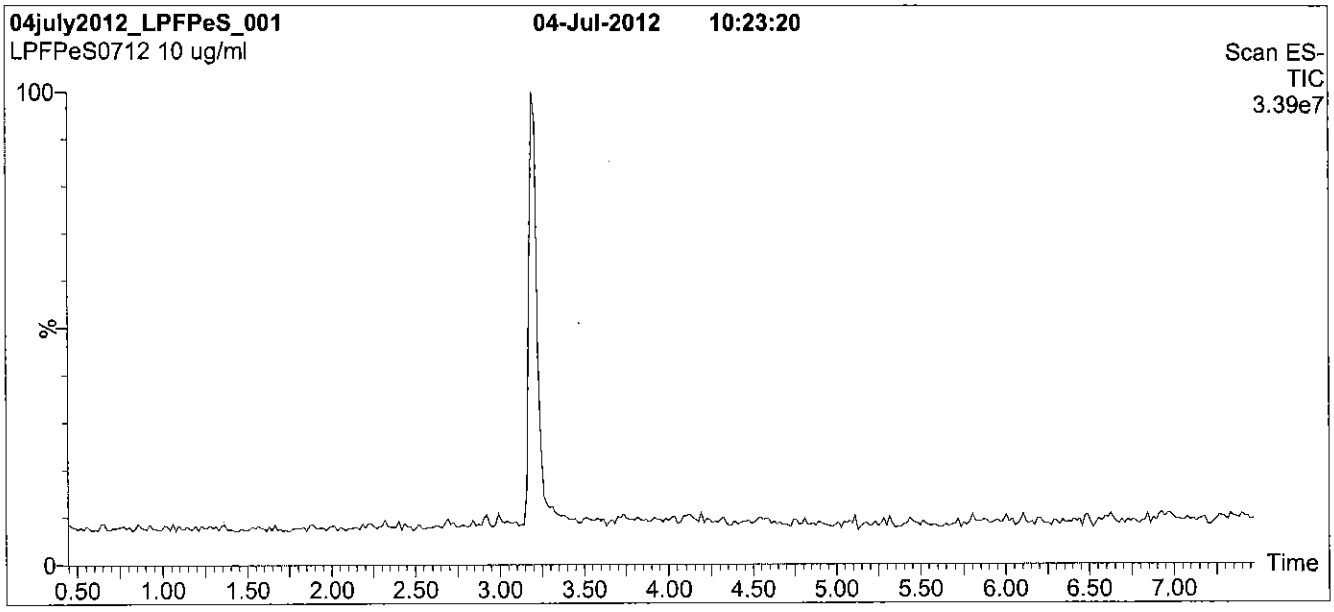
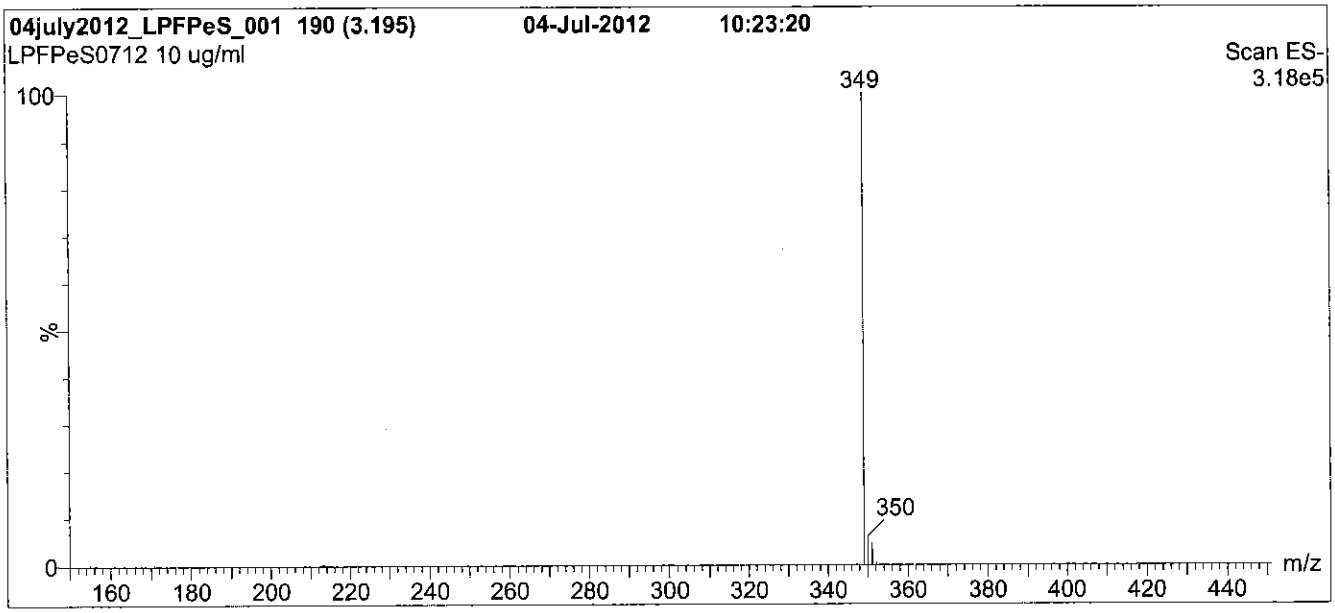
Figure 1: **L-PFPeS; LC/MS Data (TIC and Mass Spectrum)**





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

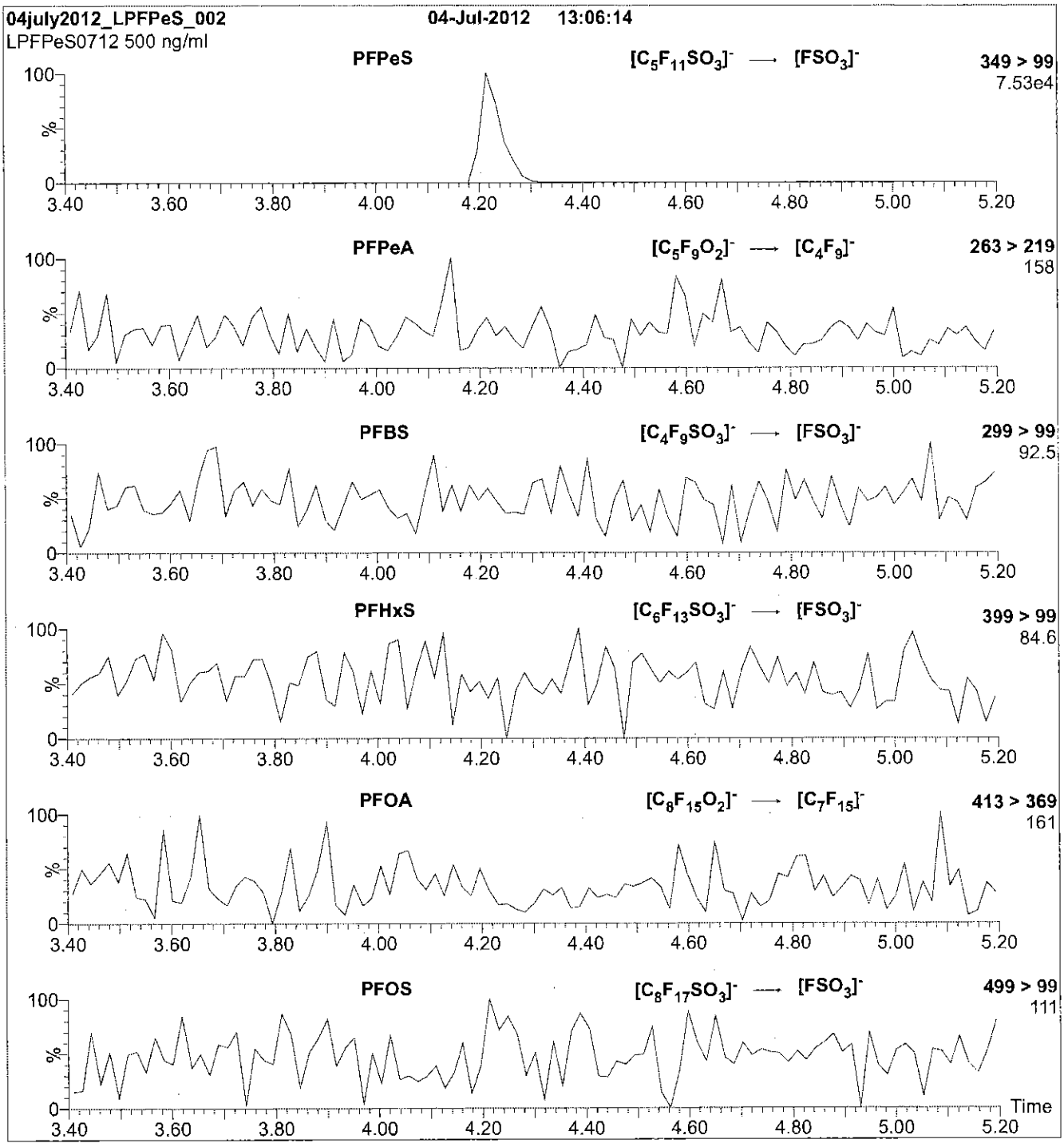
Flow: 300 µl/min

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

r: 2/11/15 SRV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

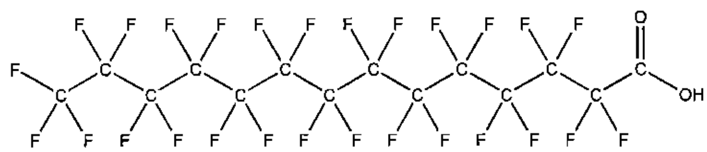
PRODUCT CODE: PFTeDA

COMPOUND: Perfluoro-n-tetradecanoic acid

LOT NUMBER: PFTeDA0613

STRUCTURE:

CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$

CONCENTRATION: 50 ± 2.5 μg/ml

MOLECULAR WEIGHT: 714.11

SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 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: [signature] B.G. Chittim **Date:** 07/17/2013 (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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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA Testing Accredited Laboratory No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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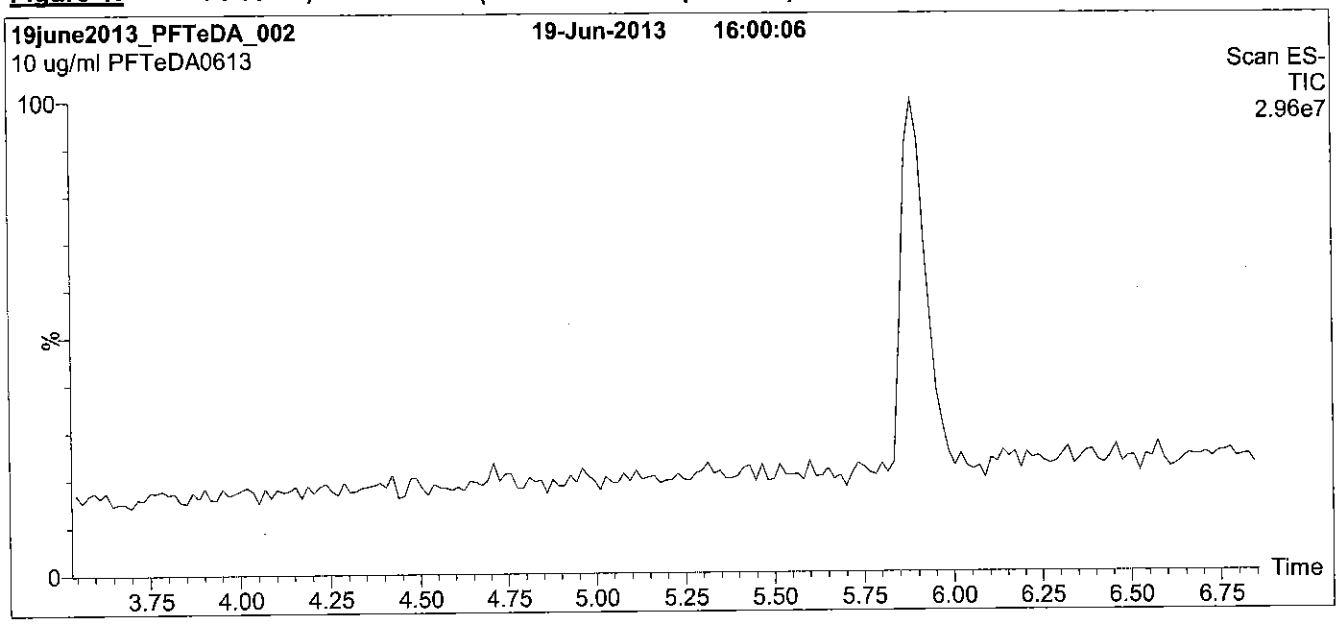
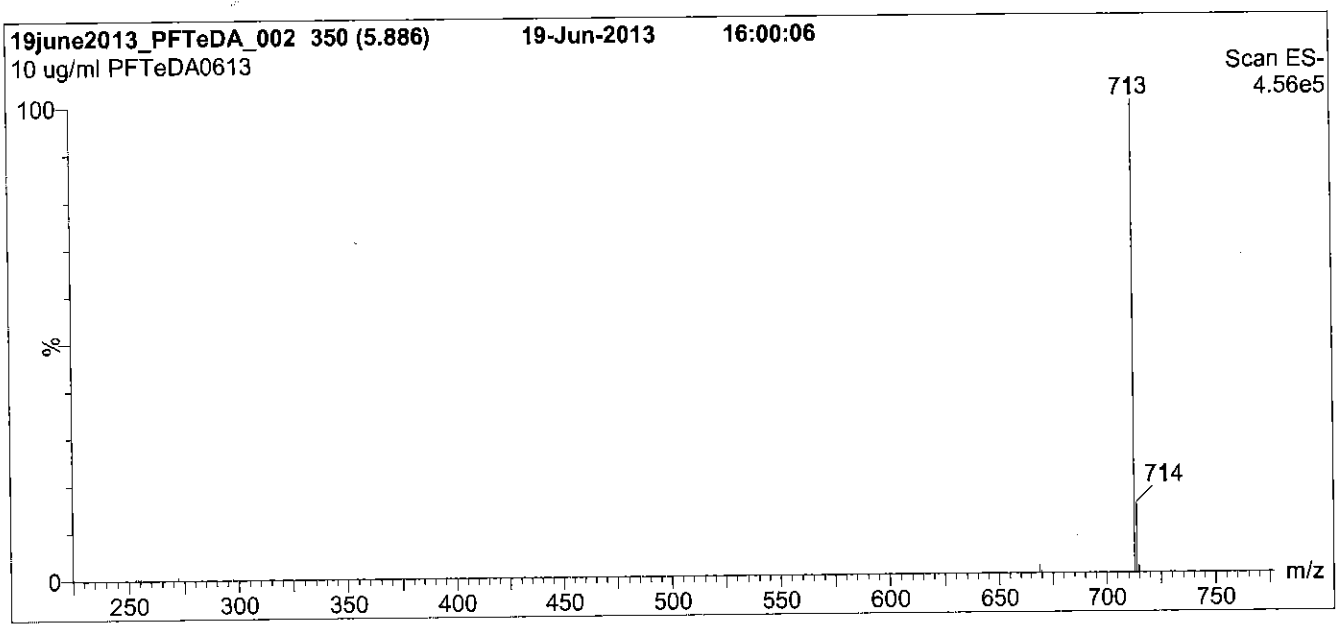
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





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

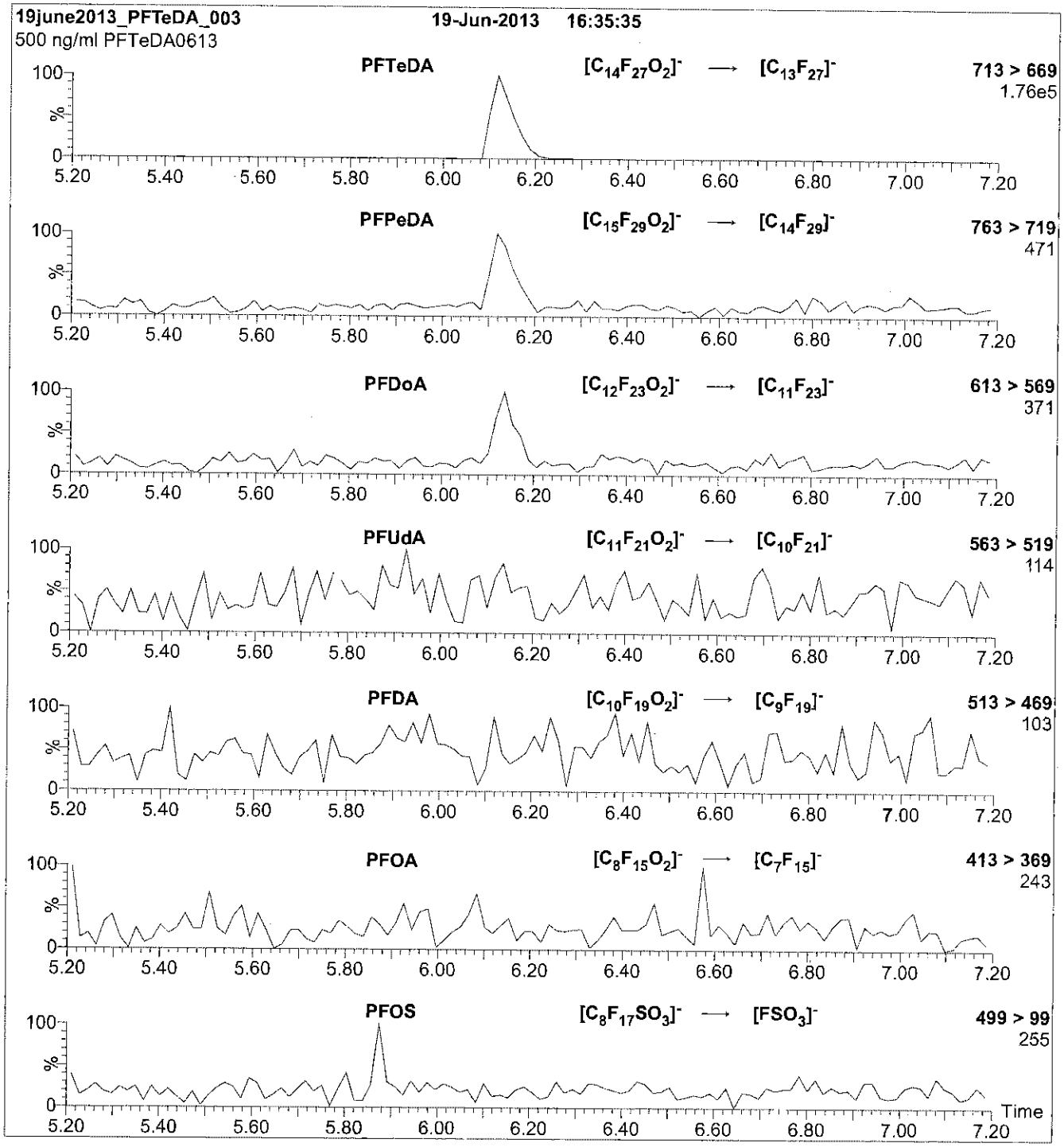
Flow: 300 µl/min

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

LCPFTrDA_00003

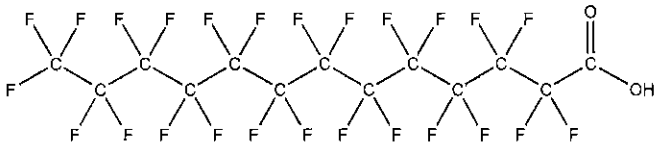
V. 2/11/15 CTN

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{26}O_2$
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 ($C_{14}HF_{27}O_2$).

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Certified By: B.G. Chittim **Date:** 12/11/2013 (mm/dd/yyyy)

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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:

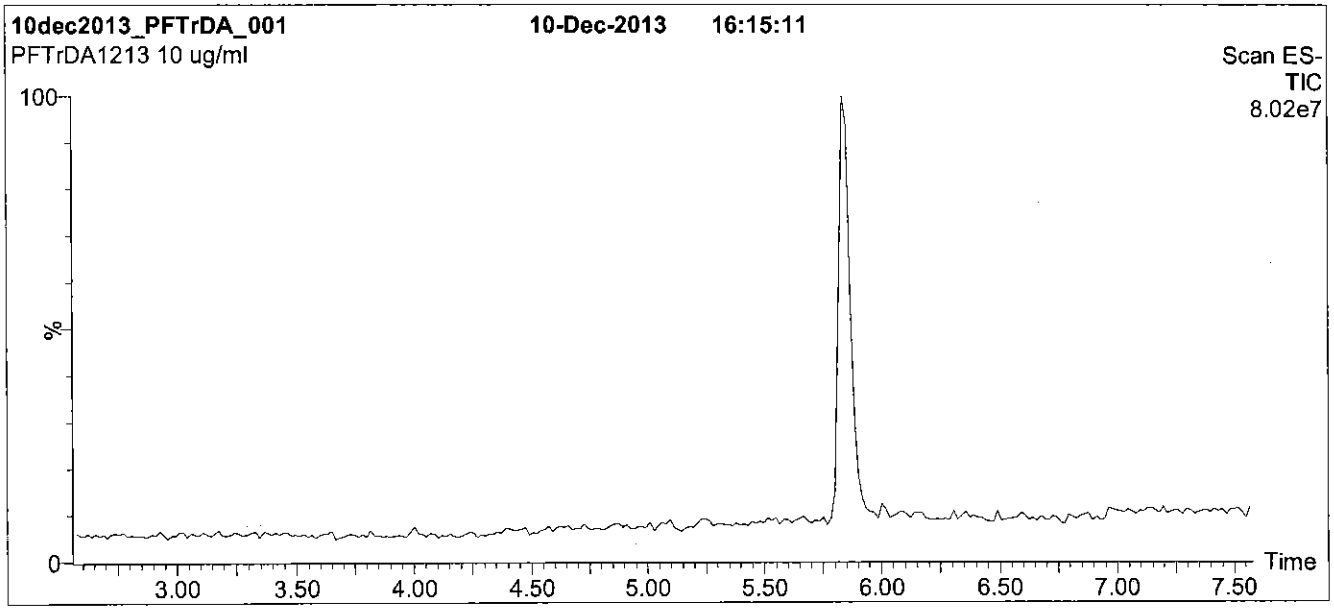
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

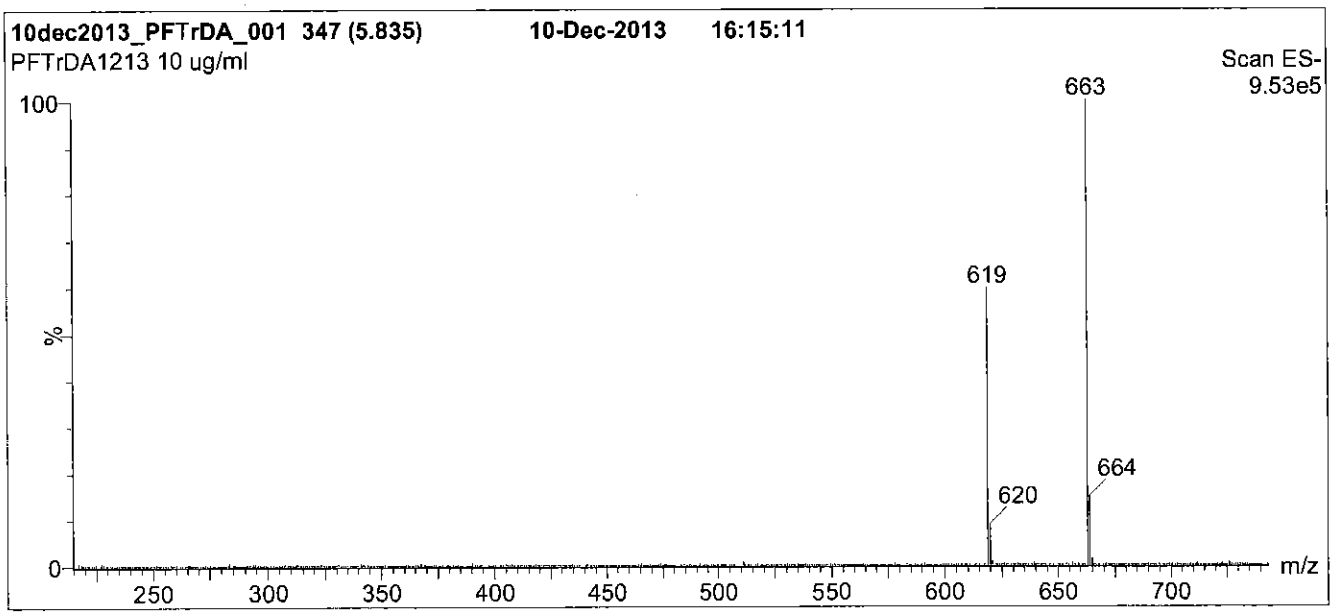
CALA Testing

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: **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

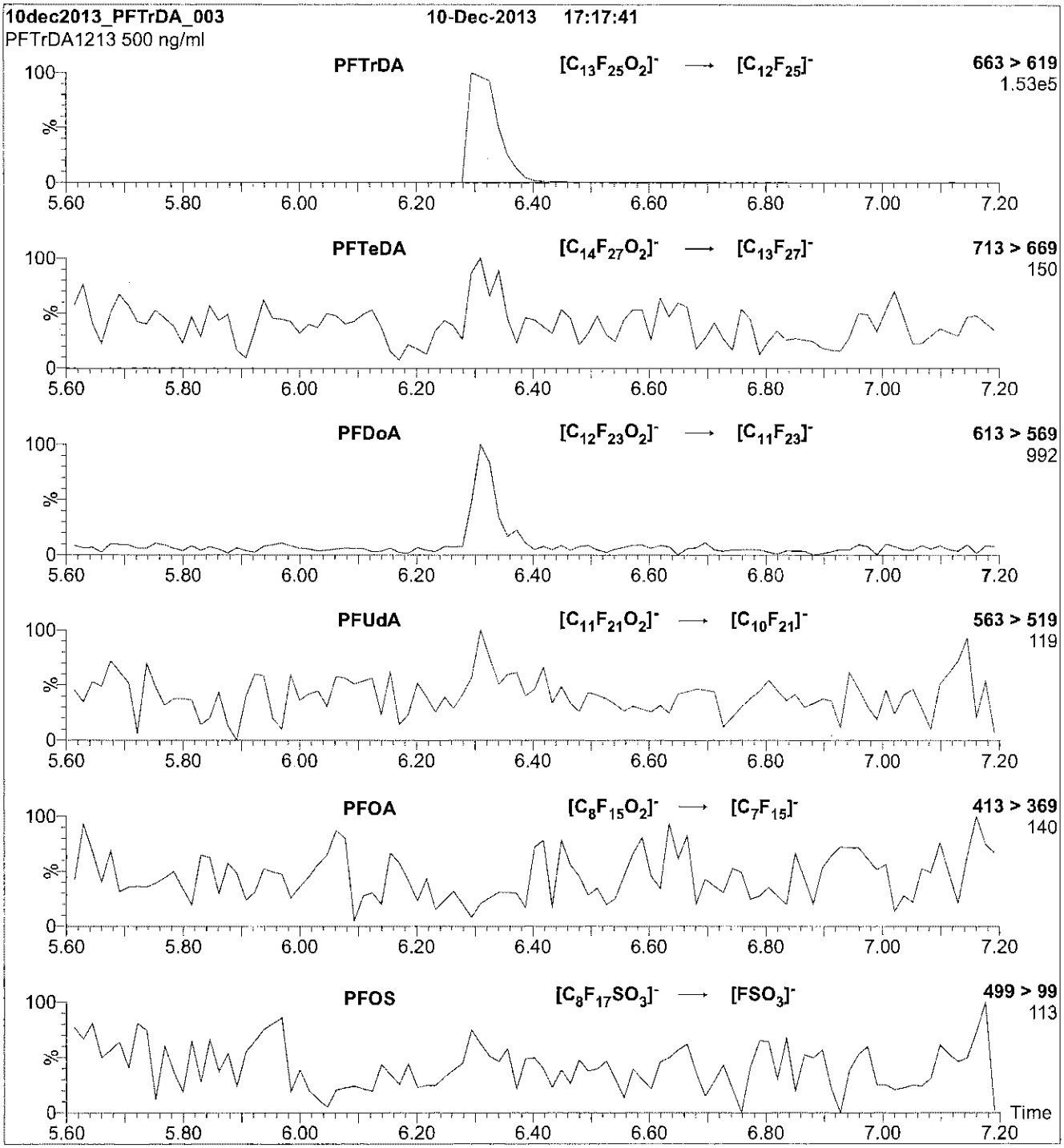
Flow: 300 µl/min

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

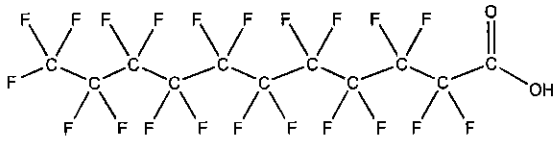
R. 2/11/15 SFV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
LOT NUMBER: PFUdA0613
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) 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.

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CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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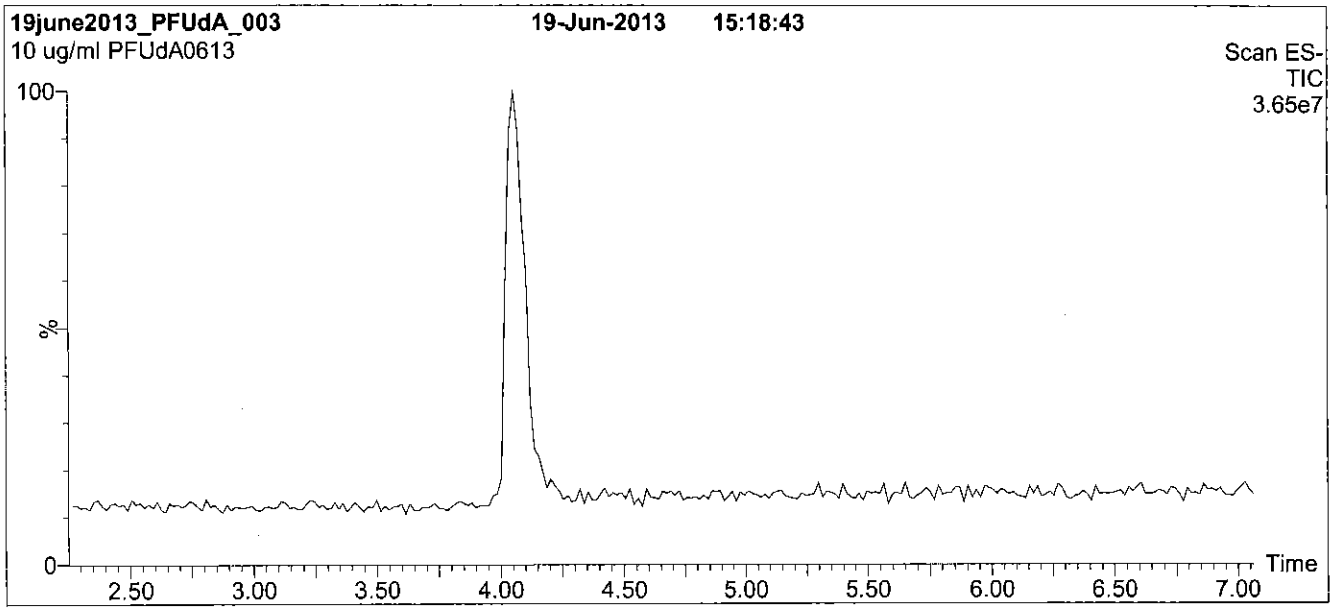
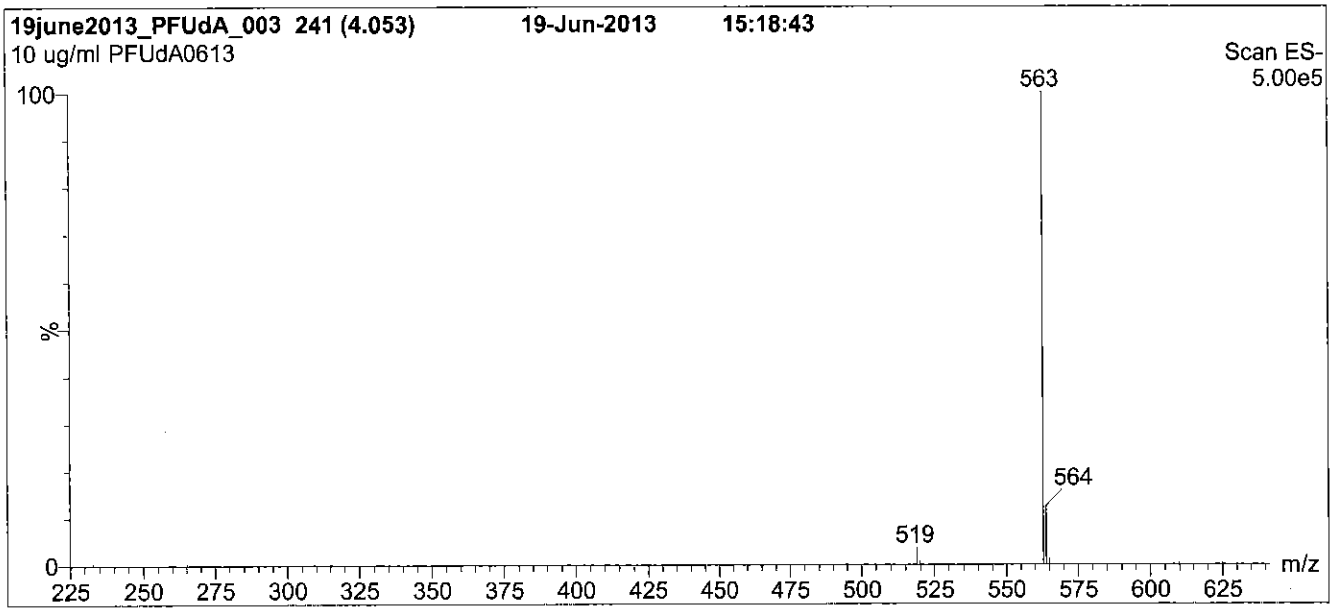
Figure 1: **PFUdA; LC/MS Data (TIC and Mass Spectrum)**





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

Chromatographic Conditions

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

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

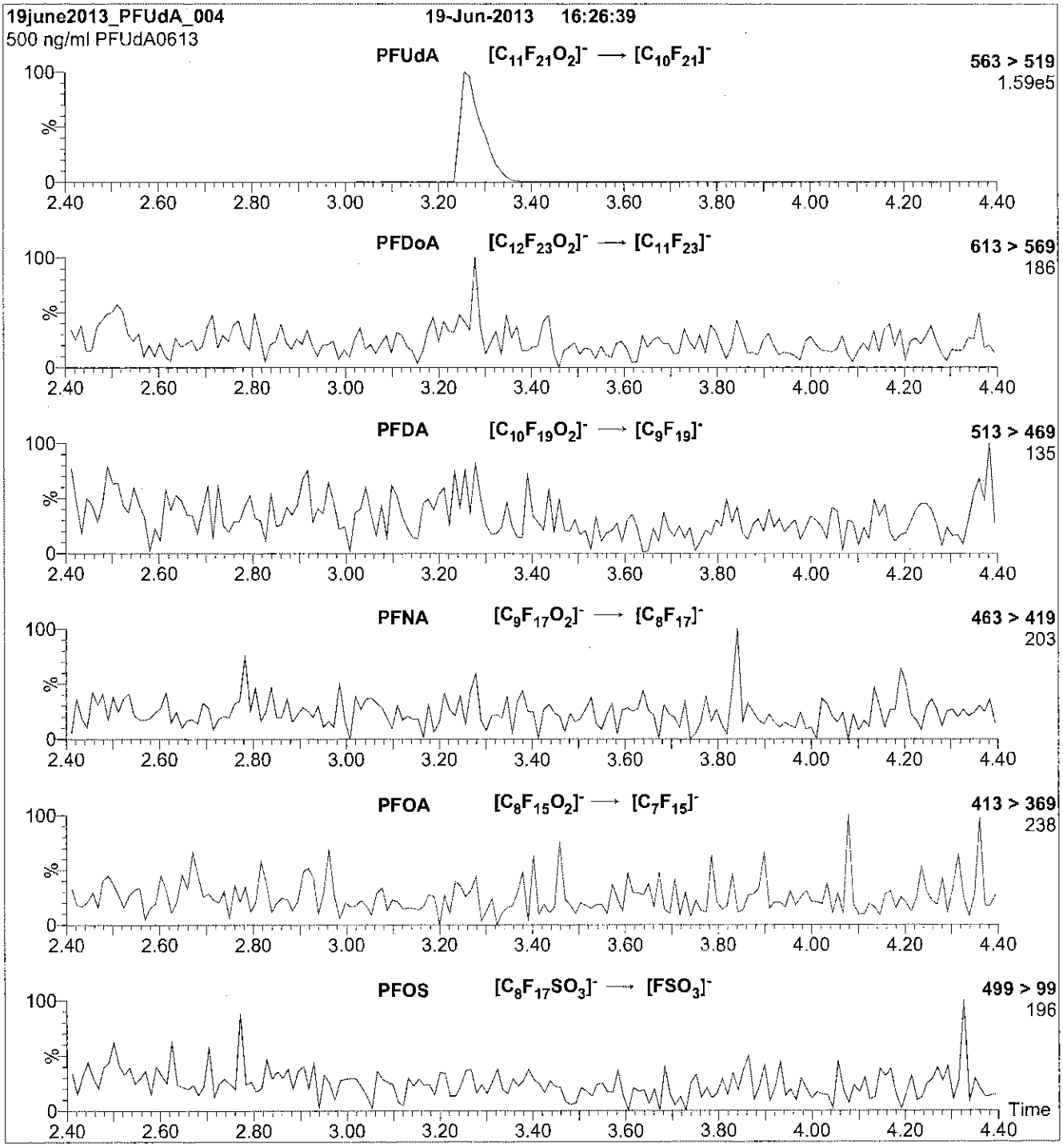
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

PFC_IDA

Perfluorinated Hydrocarbons

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Matrix: Water Level: Low

GC Column (1): Xterra C18 ID: 3.2 (mm)

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
BF-105-GW01-0515	320-13012-1	77	123
BF-103-GW01-0515	320-13012-2	83	125
BF-103-GW055-0515	320-13012-3	108	112
BF-103-GW05D-0515	320-13012-4	84	110
BF-103-GW04-0515	320-13012-5	56	115
BF-104-GW02-0515	320-13012-6	50	72
BF-104-GW02-0515 DL	320-13012-6 DL	79	119
BF-104-GW01-0515	320-13012-7	56	109
BF-103-GW02-0515	320-13012-8	60	110
BF-103-GW03-0515	320-13012-9	69	116
BF-103-GW03-0515D	320-13012-10	64	114
	MB 320-74169/1-A	136	122
	LCS 320-74169/2-A	124	120

	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 III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Matrix: Water Level: Low Lab File ID: 18MAY2015A_014.d

Lab ID: LCS 320-74169/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	40.0	39.6	99	60-140	
Perfluorooctane Sulfonate (PFOS)	38.2	37.0	97	60-140	
13C4 PFOS	95.6	115	120	25-150	
13C4 PFOA	100	124	124	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.: 320-13012-1

SDG No.: Proj # 112603383

Lab File ID: 18MAY2015A_013.d Lab Sample ID: MB 320-74169/1-A

Matrix: Water Date Extracted: 05/15/2015 14:07

Instrument ID: A6 Date Analyzed: 05/18/2015 18:34

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-74169/2-A	18MAY2015A_014.d	05/18/2015 18:55
BF-105-GW01-0515	320-13012-1	18MAY2015A_015.d	05/18/2015 19:16
BF-103-GW01-0515	320-13012-2	18MAY2015A_016.d	05/18/2015 19:38
BF-103-GW055-0515	320-13012-3	18MAY2015A_017.d	05/18/2015 19:59
BF-103-GW05D-0515	320-13012-4	18MAY2015A_018.d	05/18/2015 20:20
BF-103-GW04-0515	320-13012-5	18MAY2015A_019.d	05/18/2015 20:41
BF-104-GW02-0515	320-13012-6	18MAY2015A_020.d	05/18/2015 21:03
BF-104-GW01-0515	320-13012-7	18MAY2015A_021.d	05/18/2015 21:24
BF-103-GW02-0515	320-13012-8	18MAY2015A_022.d	05/18/2015 21:45
BF-103-GW03-0515	320-13012-9	18MAY2015A_024.d	05/18/2015 22:28
BF-103-GW03-0515D	320-13012-10	18MAY2015A_025.d	05/18/2015 22:49
BF-104-GW02-0515 DL	320-13012-6 DL	18MAY2015A_031.d	05/19/2015 11:30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-105-GW01-0515 | Lab Sample ID: 320-13012-1

Matrix: Water | Lab File ID: 18MAY2015A_015.d

Analysis Method: WS-LC-0025 | Date Collected: 05/12/2015 11:35

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 502.65(mL) | Date Analyzed: 05/18/2015 19:16

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.1		2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	4.3	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	123		25-150
STL00990	13C4 PFOA	77		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_015.d
Lims ID: 320-13012-A-1-A Lab Sample ID: 320-13012-1
Client ID: BF-105-GW01-0515
Sample Type: Client
Inject. Date: 18-May-2015 19:16:59 ALS Bottle#: 35 Worklist Smp#: 28
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-1-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:53:49

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	10.308	10.304	0.004		2029698	38.3		76.6	4099	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.301	10.306	-0.005	1.000	44140	1.07			13.1	
413.0 > 169.0	10.315	10.306	0.009	1.001	21281		2.07(0.00-0.00)		16.6	
D 16 13C4 PFOS										
503.0 > 80.0	11.262	11.260	0.002		1815204	58.7		123	4902	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.255	11.261	-0.006	1.000	78919	2.14			144	M
499.0 > 99.0	11.262	11.261	0.001	1.001	46145		1.71(0.00-0.00)		64.2	M

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 19-May-2015 14:32:12 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_015.d

Injection Date: 18-May-2015 19:16:59 Instrument ID: A6

Lims ID: 320-13012-A-1-A Lab Sample ID: 320-13012-1

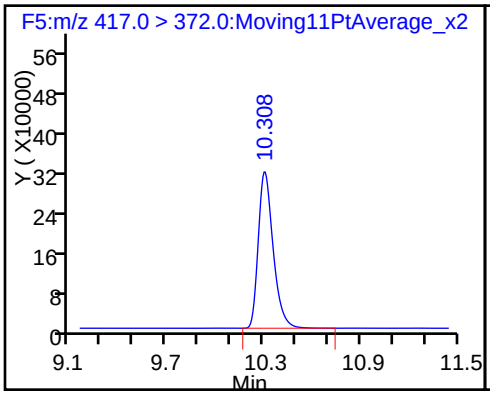
Client ID: BF-105-GW01-0515

Operator ID: JRB ALS Bottle#: 35 Worklist Smp#: 28

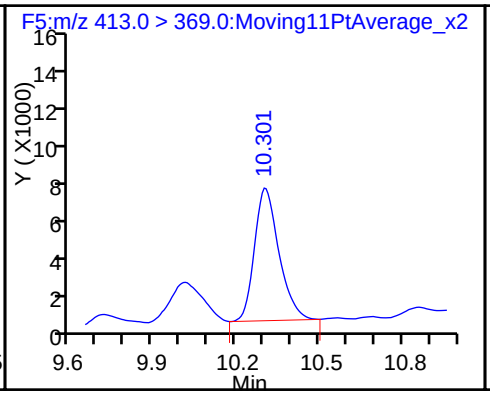
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

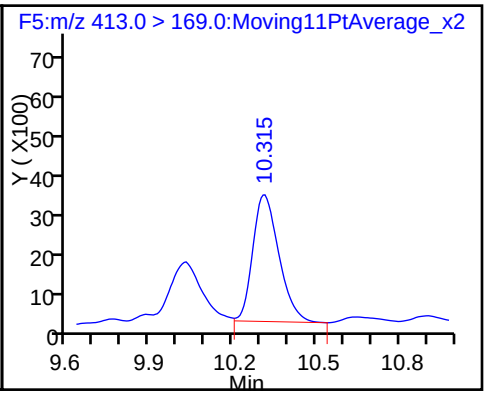
D 12 13C4 PFOA



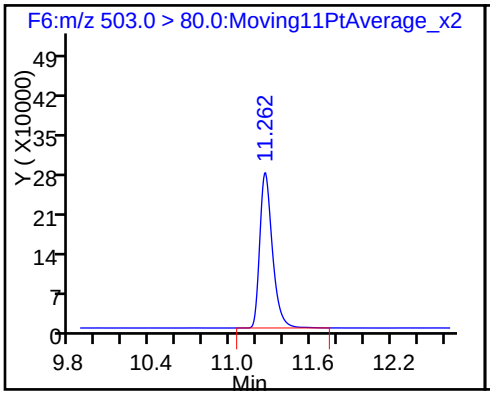
13 Perfluorooctanoic acid



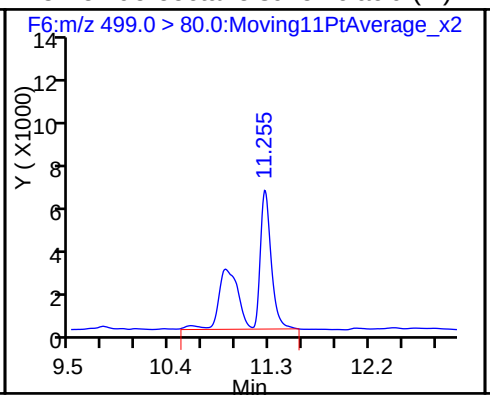
13 Perfluorooctanoic acid



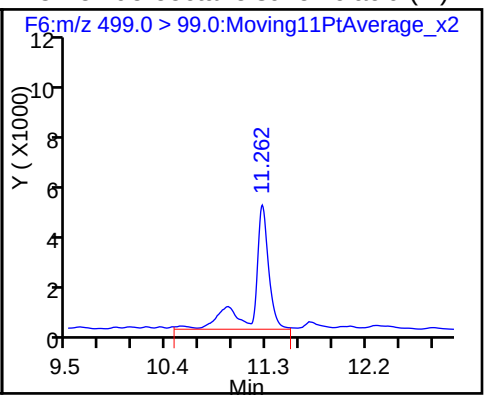
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

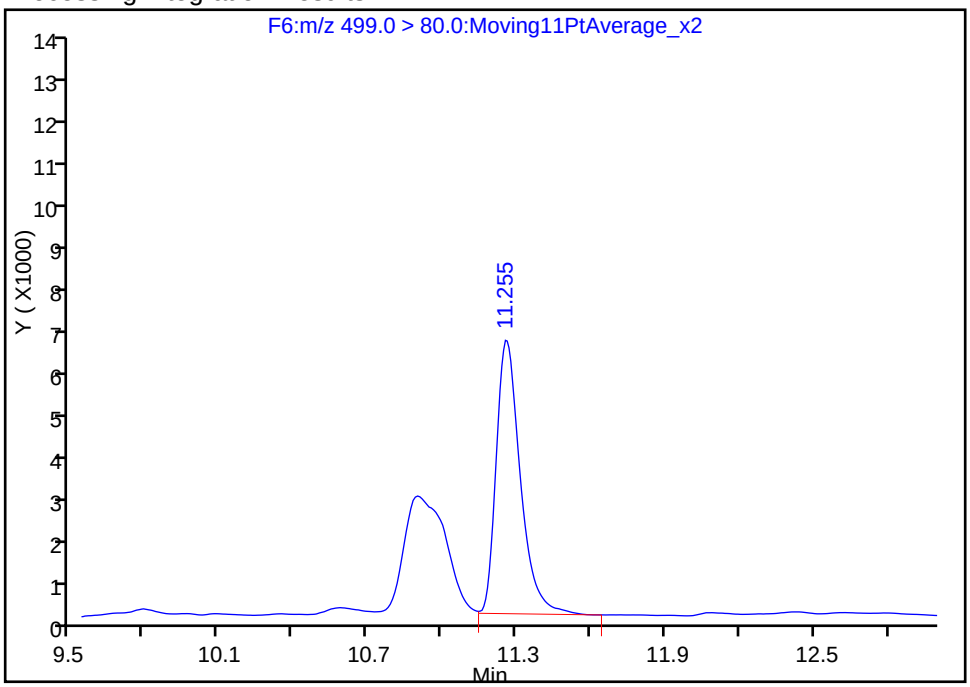
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_015.d				
Injection Date:	18-May-2015 19:16:59	Instrument ID:	A6		
Lims ID:	320-13012-A-1-A	Lab Sample ID:	320-13012-1		
Client ID:	BF-105-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	35	Worklist Smp#:	28
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

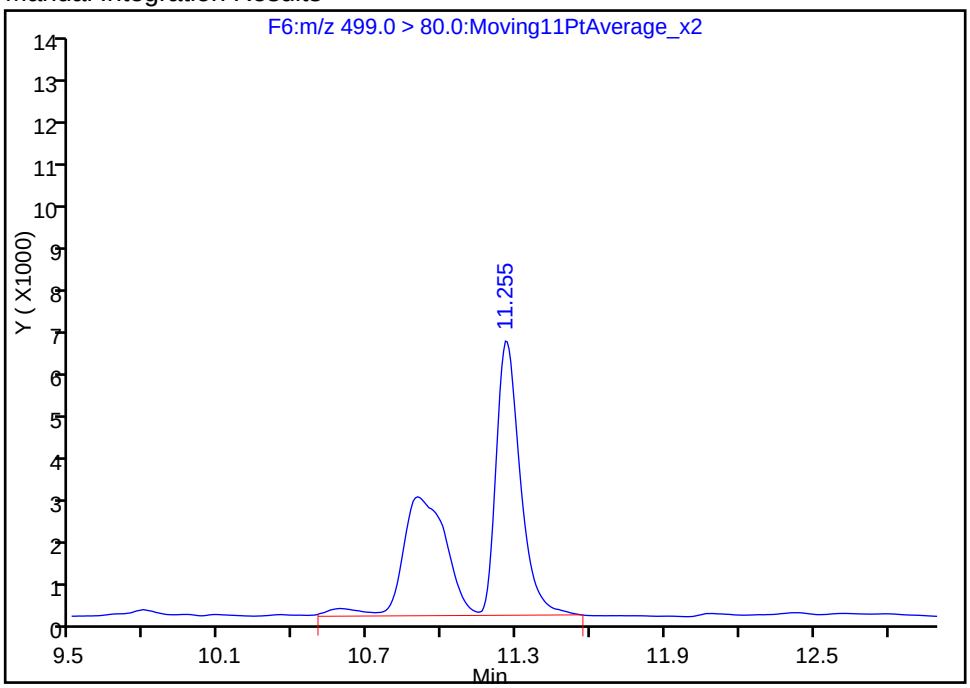
Processing Integration Results

RT: 11.26
Area: 43867
Amount: 1.187619
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 78919
Amount: 2.136588
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:24:25
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

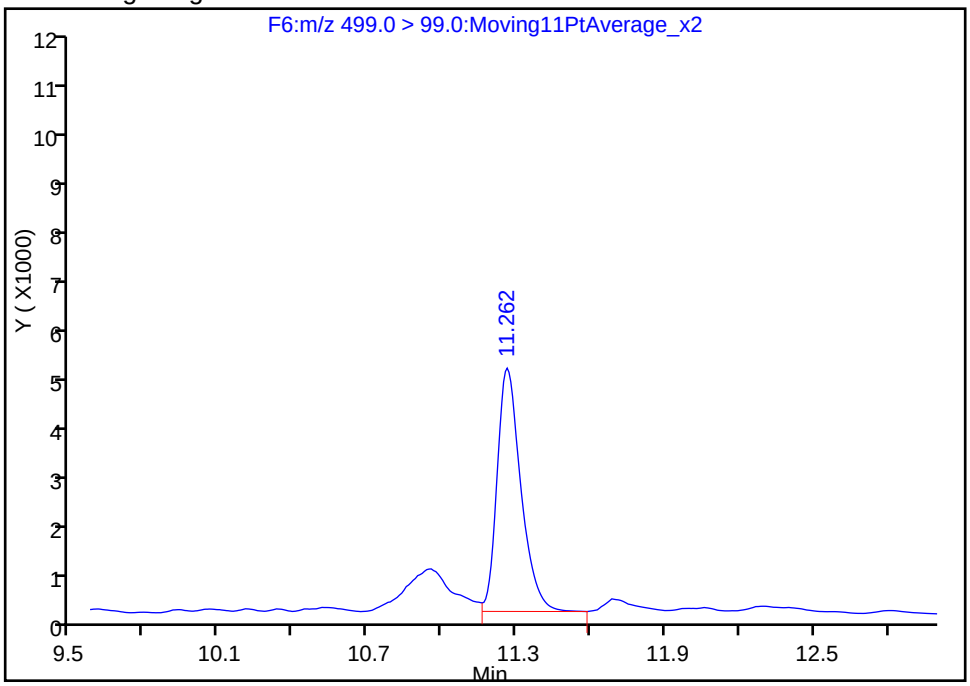
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_015.d				
Injection Date:	18-May-2015 19:16:59	Instrument ID:	A6		
Lims ID:	320-13012-A-1-A	Lab Sample ID:	320-13012-1		
Client ID:	BF-105-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	35	Worklist Smp#:	28
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

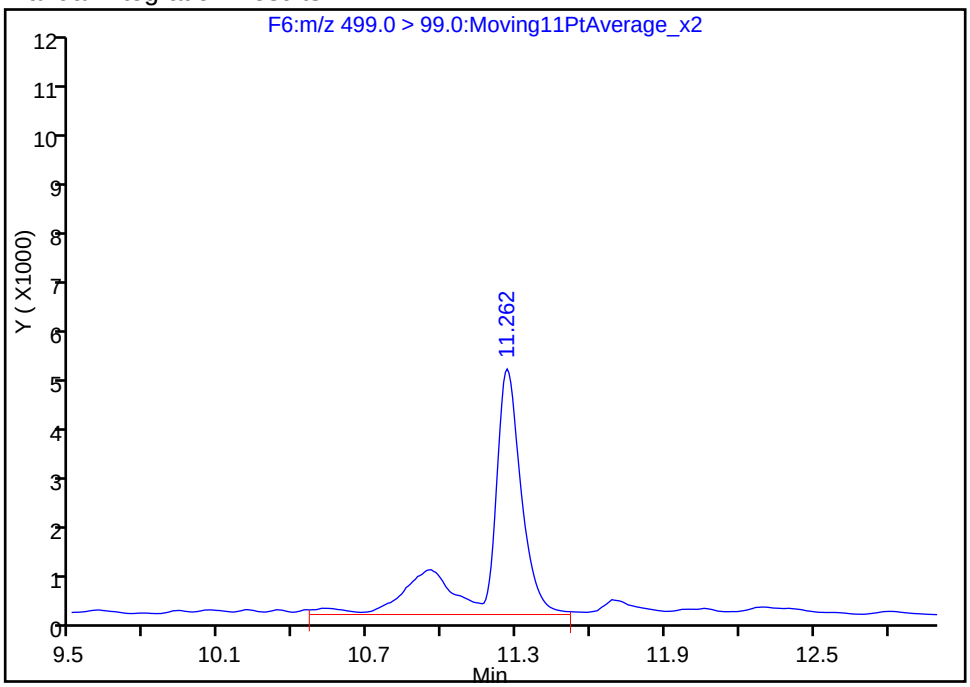
Processing Integration Results

RT: 11.26
Area: 31886
Amount: 1.187619
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 46145
Amount: 2.136588
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:24:25
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW01-0515 Lab Sample ID: 320-13012-2

Matrix: Water Lab File ID: 18MAY2015A_016.d

Analysis Method: WS-LC-0025 Date Collected: 05/12/2015 13:40

Extraction Method: 3535 Date Extracted: 05/15/2015 14:07

Sample wt/vol: 501.57(mL) Date Analyzed: 05/18/2015 19:38

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.2		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	10	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	125		25-150
STL00990	13C4 PFOA	83		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_016.d
Lims ID: 320-13012-A-2-A Lab Sample ID: 320-13012-2
Client ID: BF-103-GW01-0515
Sample Type: Client
Inject. Date: 18-May-2015 19:38:13 ALS Bottle#: 36 Worklist Smp#: 29
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-2-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:53:51

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	10.308	10.304	0.004		2192427	41.4		82.7	5883	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	47896	1.08			16.2	
413.0 > 169.0	10.308	10.306	0.002	1.000	15940		3.00(0.00-0.00)		14.8	
D 16 13C4 PFOS										
503.0 > 80.0	11.263	11.260	0.003		1845657	59.6		125	5483	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.263	11.261	0.002	1.000	188978	5.03			432	M
499.0 > 99.0	11.263	11.261	0.002	1.000	118680		1.59(0.00-0.00)		200	M

QC Flag Legend

Review Flags
M - Manually Integrated

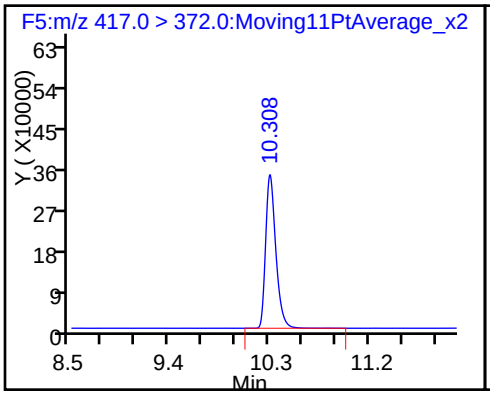
Report Date: 19-May-2015 14:32:13 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

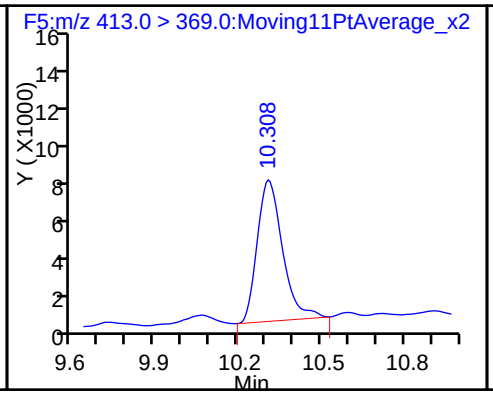
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_016.d

Injection Date:	18-May-2015 19:38:13	Instrument ID:	A6		
Lims ID:	320-13012-A-2-A	Lab Sample ID:	320-13012-2		
Client ID:	BF-103-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	36	Worklist Smp#:	29
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

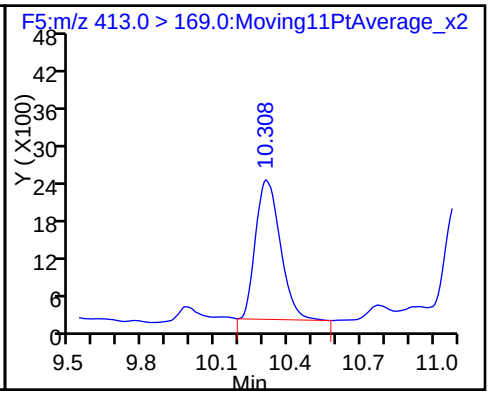
D 12 13C4 PFOA



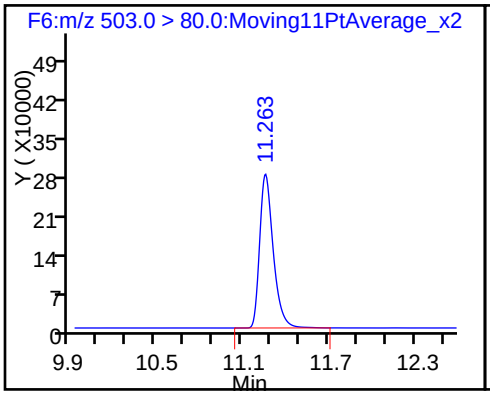
13 Perfluorooctanoic acid



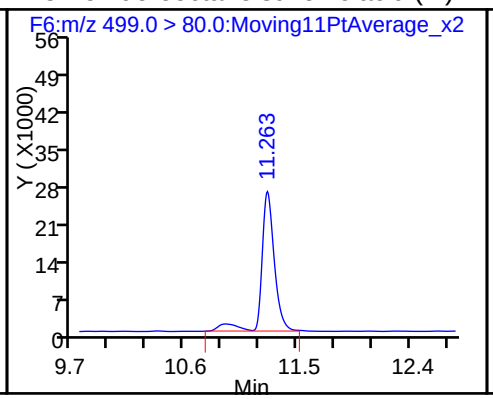
13 Perfluorooctanoic acid



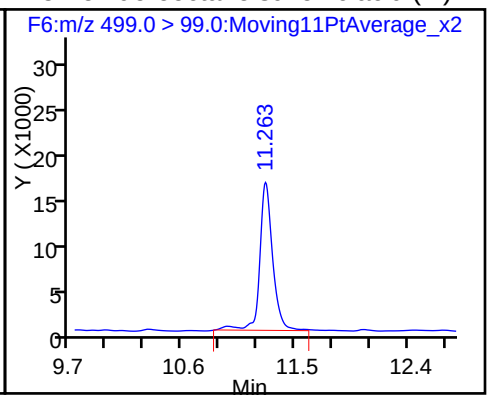
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

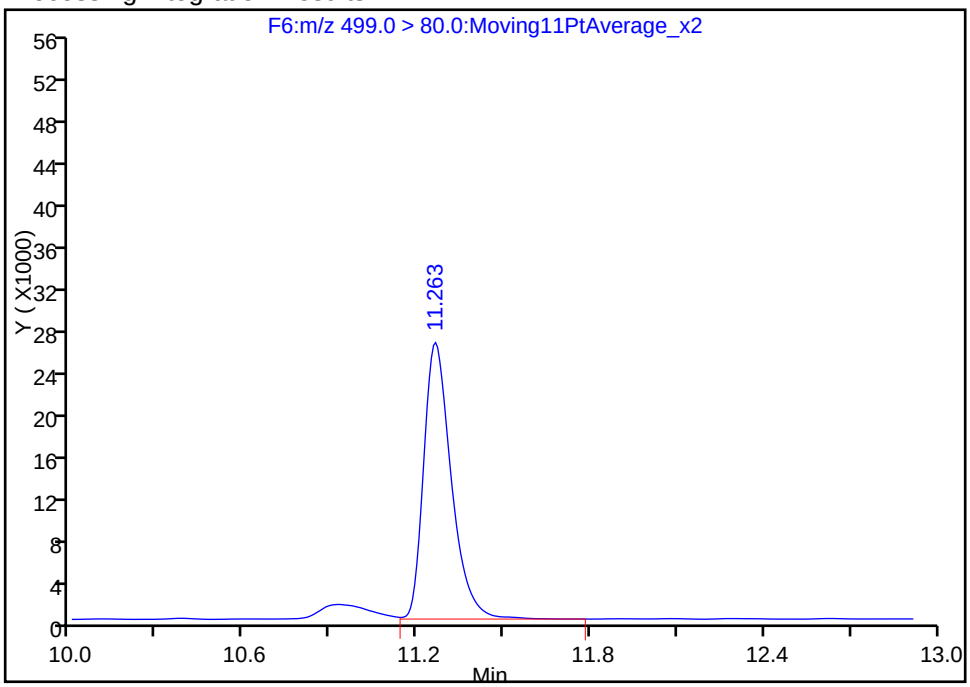
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_016.d				
Injection Date:	18-May-2015 19:38:13	Instrument ID:	A6		
Lims ID:	320-13012-A-2-A	Lab Sample ID:	320-13012-2		
Client ID:	BF-103-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	36	Worklist Smp#:	29
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

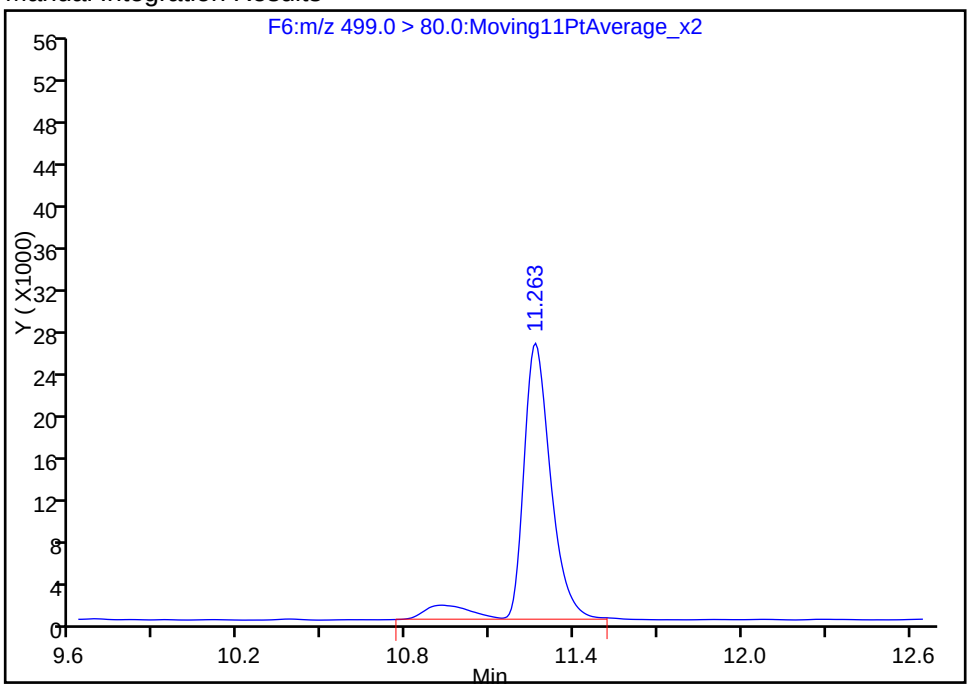
Processing Integration Results

RT: 11.26
Area: 175892
Amount: 4.683384
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 188978
Amount: 5.031818
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:25:00
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

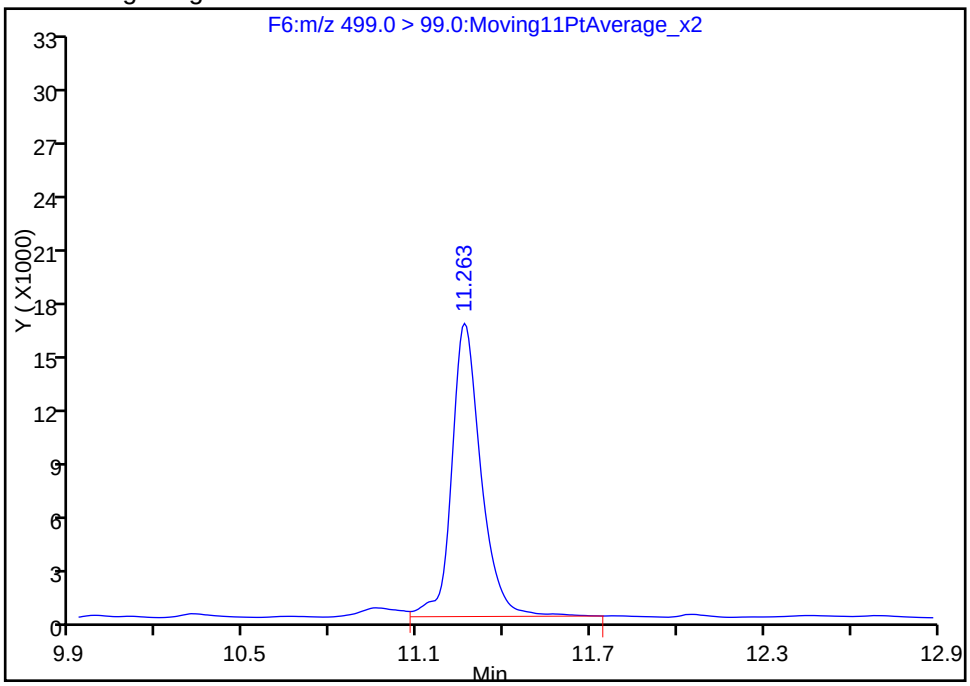
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_016.d

Injection Date:	18-May-2015 19:38:13	Instrument ID:	A6		
Lims ID:	320-13012-A-2-A	Lab Sample ID:	320-13012-2		
Client ID:	BF-103-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	36	Worklist Smp#:	29
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

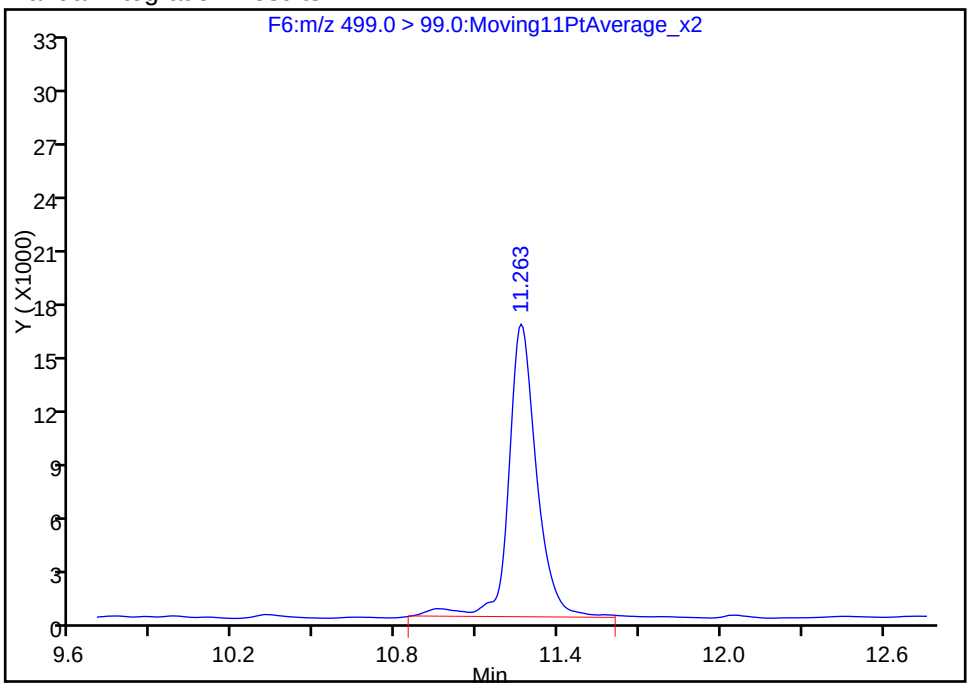
Processing Integration Results

RT: 11.26
Area: 116158
Amount: 4.683384
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 118680
Amount: 5.031818
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:25:00
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW055-0515 | Lab Sample ID: 320-13012-3

Matrix: Water | Lab File ID: 18MAY2015A_017.d

Analysis Method: WS-LC-0025 | Date Collected: 05/12/2015 15:50

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.12(mL) | Date Analyzed: 05/18/2015 19:59

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.7		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	24	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	112		25-150
STL00990	13C4 PFOA	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_017.d
Lims ID: 320-13012-A-3-A Lab Sample ID: 320-13012-3
Client ID: BF-103-GW055-0515
Sample Type: Client
Inject. Date: 18-May-2015 19:59:28 ALS Bottle#: 37 Worklist Smp#: 30
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-3-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:53:53

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	10.294	10.304	-0.010		2873296	54.2		108	6098	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.301	10.306	-0.005	1.000	79735	1.37			4.0	
413.0 > 169.0	10.301	10.306	-0.005	1.000	25754		3.10(0.00-0.00)		23.9	
D 16 13C4 PFOS										
503.0 > 80.0	11.255	11.260	-0.005		1653456	53.4		112	770	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.255	11.261	-0.006	1.000	409609	12.2			181	M
499.0 > 99.0	11.255	11.261	-0.006	1.000	237423		1.73(0.00-0.00)		172	M

QC Flag Legend

Review Flags
M - Manually Integrated

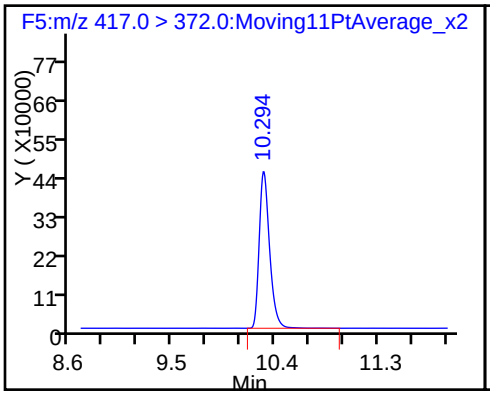
Report Date: 19-May-2015 14:32:14 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

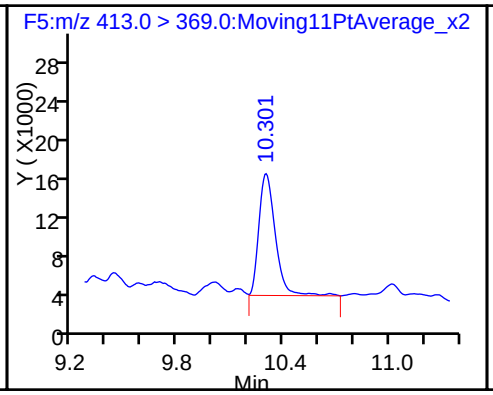
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_017.d

Injection Date:	18-May-2015 19:59:28	Instrument ID:	A6		
Lims ID:	320-13012-A-3-A	Lab Sample ID:	320-13012-3		
Client ID:	BF-103-GW055-0515				
Operator ID:	JRB	ALS Bottle#:	37	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

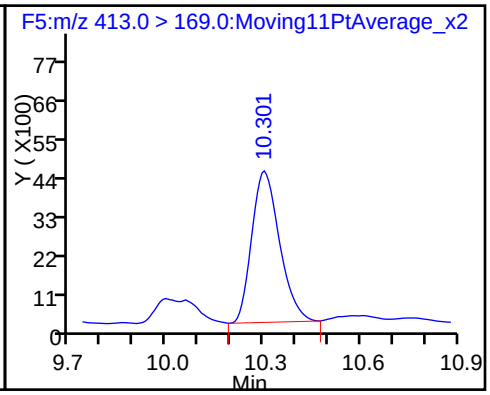
D 12 13C4 PFOA



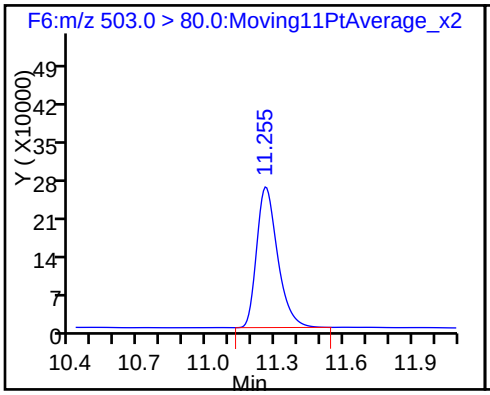
13 Perfluorooctanoic acid



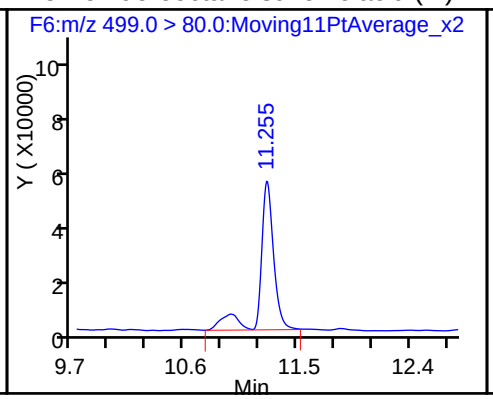
13 Perfluorooctanoic acid



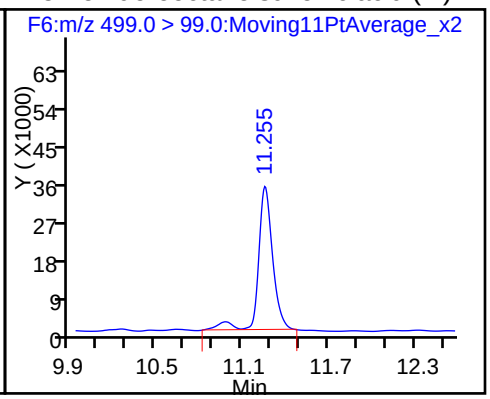
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

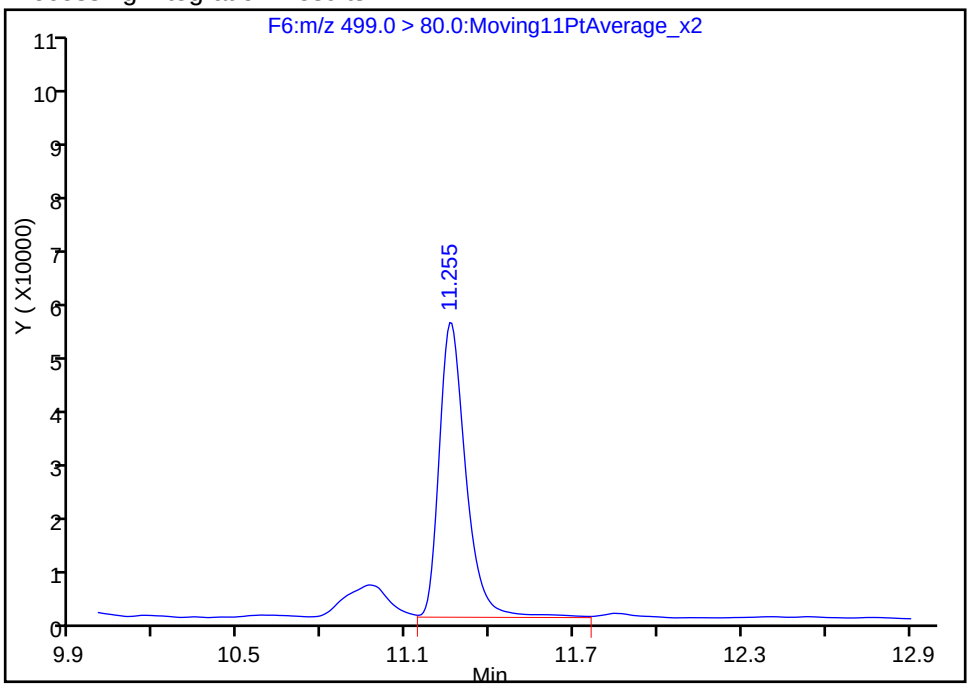
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_017.d				
Injection Date:	18-May-2015 19:59:28	Instrument ID:	A6		
Lims ID:	320-13012-A-3-A	Lab Sample ID:	320-13012-3		
Client ID:	BF-103-GW055-0515				
Operator ID:	JRB	ALS Bottle#:	37	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

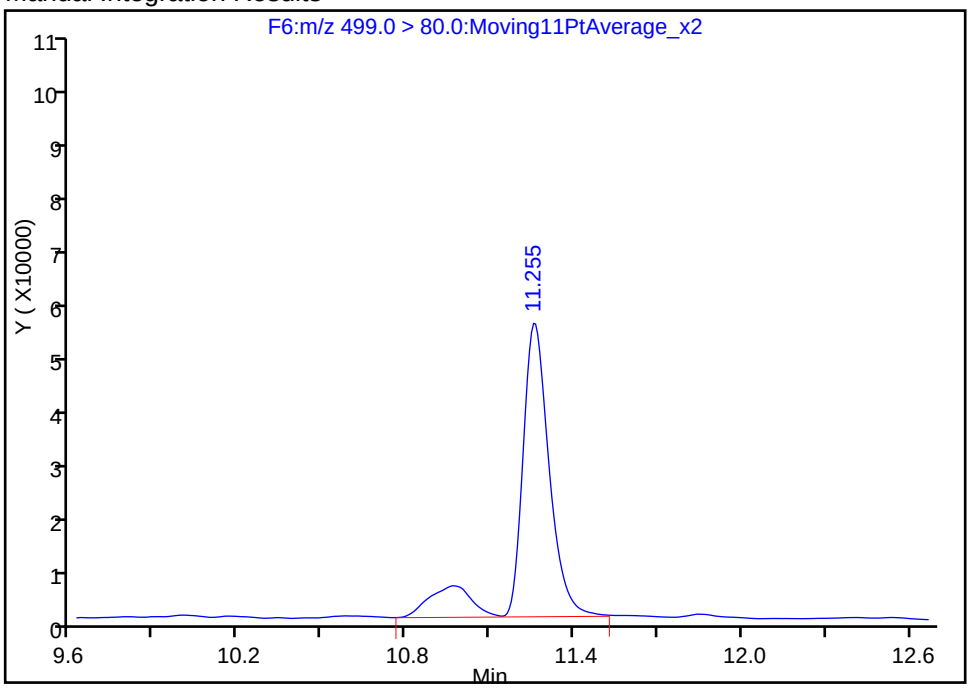
Processing Integration Results

RT: 11.26
Area: 359978
Amount: 10.699118
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 409609
Amount: 12.174230
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:25:37
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

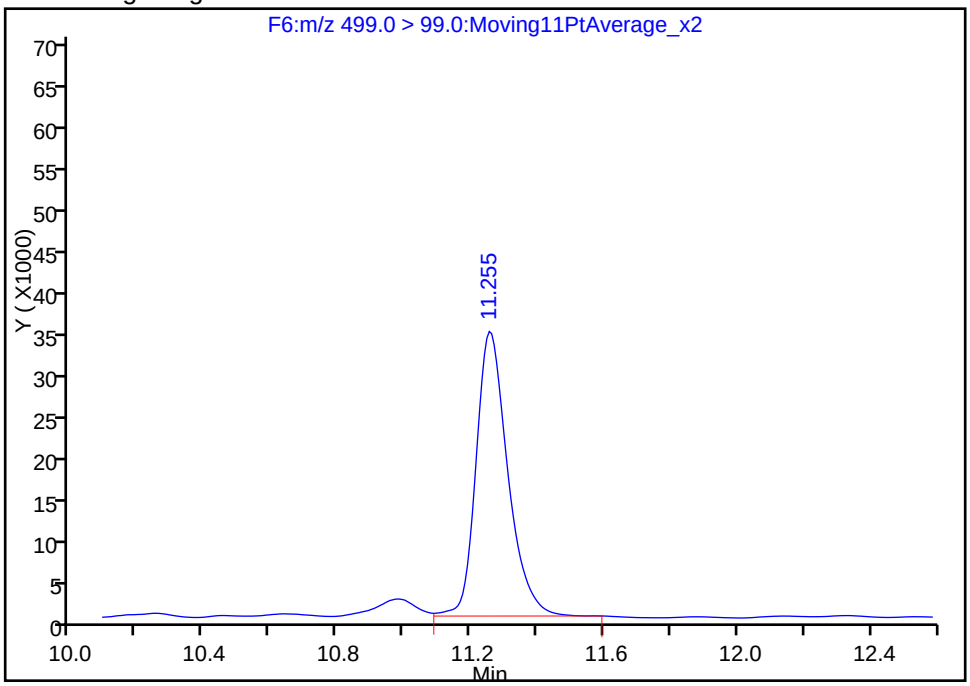
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_017.d				
Injection Date:	18-May-2015 19:59:28	Instrument ID:	A6		
Lims ID:	320-13012-A-3-A	Lab Sample ID:	320-13012-3		
Client ID:	BF-103-GW055-0515				
Operator ID:	JRB	ALS Bottle#:	37	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

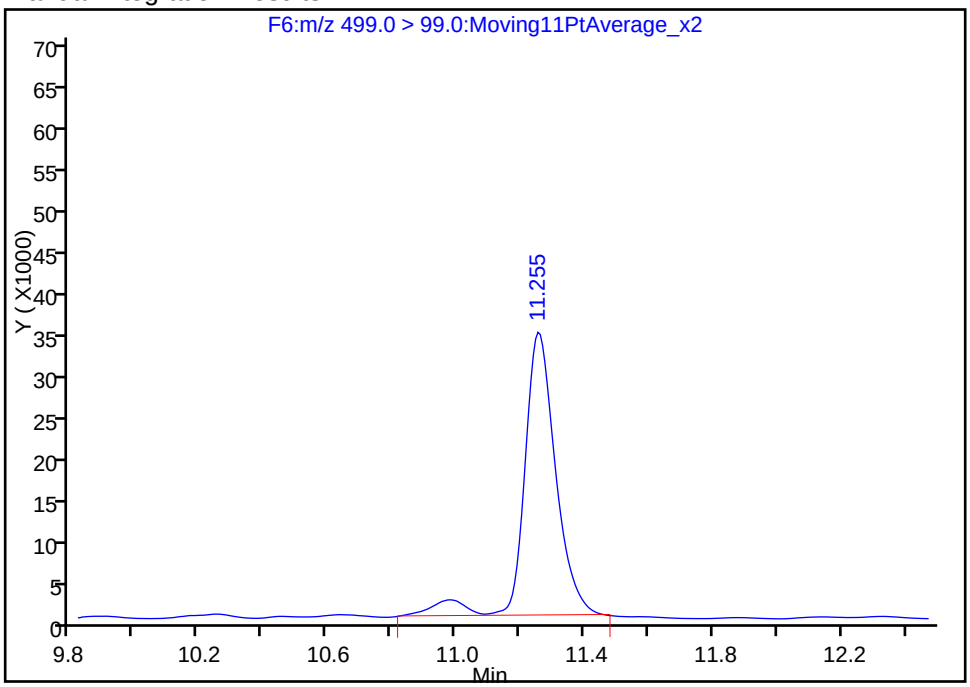
Processing Integration Results

RT: 11.26
Area: 228827
Amount: 10.699118
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 237423
Amount: 12.174230
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:25:37
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW05D-0515 | Lab Sample ID: 320-13012-4

Matrix: Water | Lab File ID: 18MAY2015A_018.d

Analysis Method: WS-LC-0025 | Date Collected: 05/12/2015 17:15

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 502.49(mL) | Date Analyzed: 05/18/2015 20:20

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	22		2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	24	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	110		25-150
STL00990	13C4 PFOA	84		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_018.d
Lims ID: 320-13012-A-4-A Lab Sample ID: 320-13012-4
Client ID: BF-103-GW05D-0515
Sample Type: Client
Inject. Date: 18-May-2015 20:20:43 ALS Bottle#: 38 Worklist Smp#: 31
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-4-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:53:56

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	10.308	10.304	0.004		2232837	42.1		84.3	7008	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	502693	11.1			76.9	
413.0 > 169.0	10.308	10.306	0.002	1.000	184832		2.72(0.00-0.00)		68.8	
D 16 13C4 PFOS										
503.0 > 80.0	11.262	11.260	0.002		1633172	52.8		110	1289	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.262	11.261	0.001	1.000	402861	12.1			309	M
499.0 > 99.0	11.262	11.261	0.001	1.000	201668		2.00(0.00-0.00)		216	M

QC Flag Legend

Review Flags
M - Manually Integrated

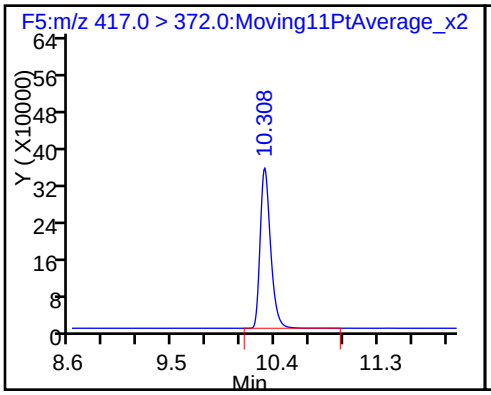
Report Date: 19-May-2015 14:32:14 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

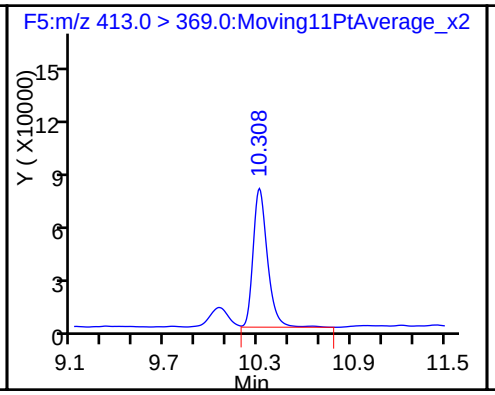
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_018.d

Injection Date:	18-May-2015 20:20:43	Instrument ID:	A6		
Lims ID:	320-13012-A-4-A	Lab Sample ID:	320-13012-4		
Client ID:	BF-103-GW05D-0515				
Operator ID:	JRB	ALS Bottle#:	38	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

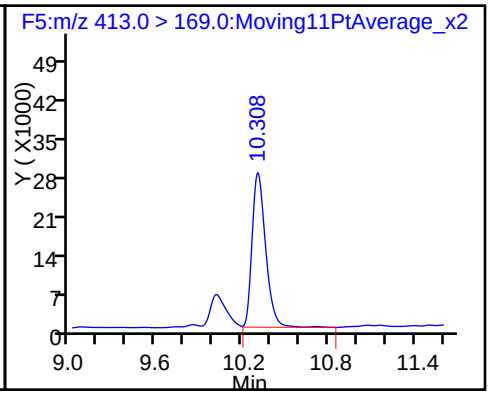
D 12 13C4 PFOA



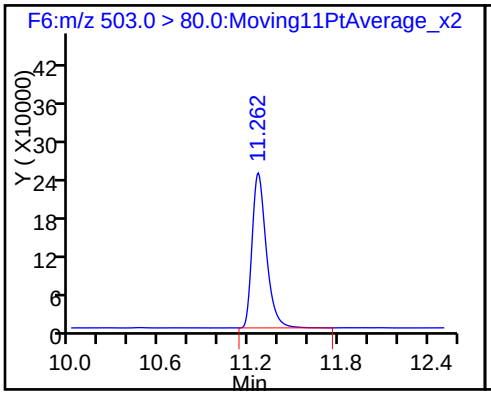
13 Perfluorooctanoic acid



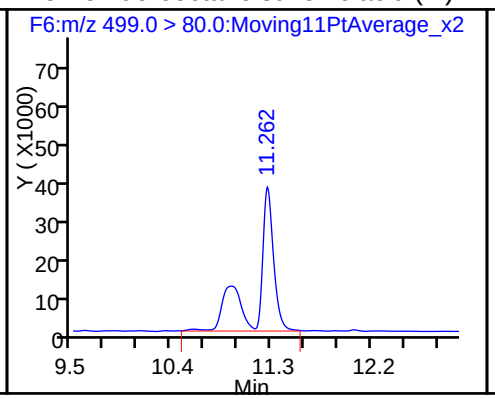
13 Perfluorooctanoic acid



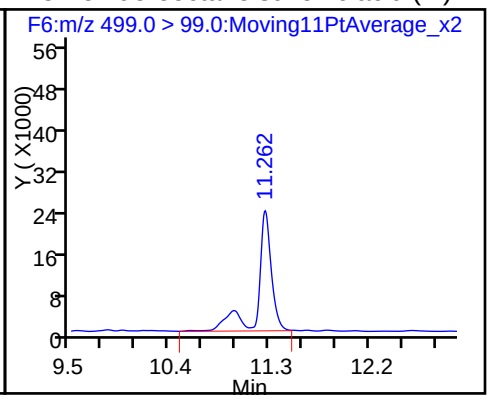
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

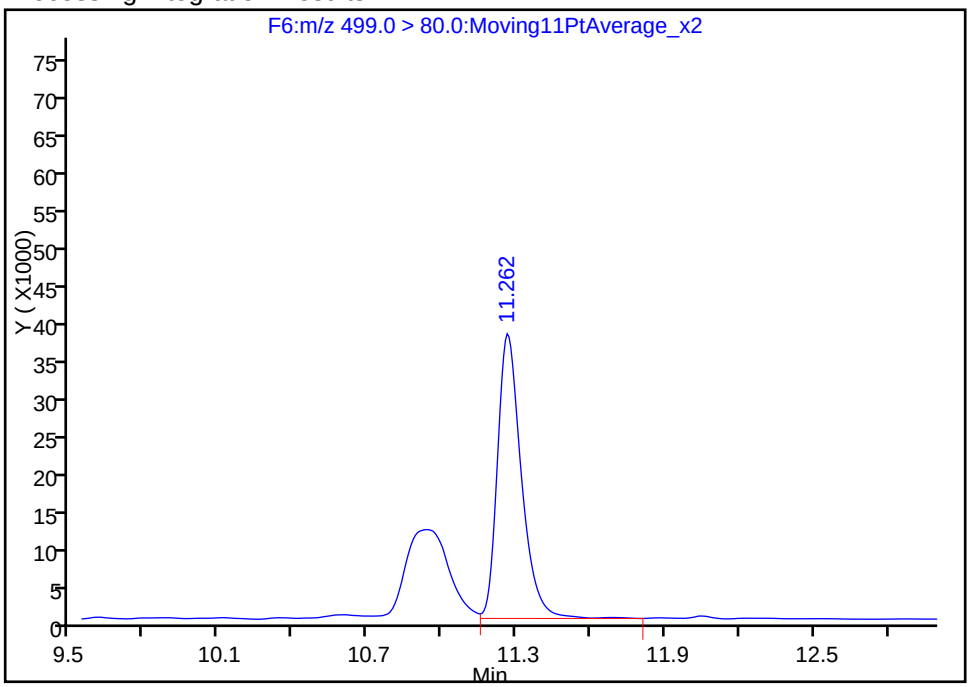
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_018.d				
Injection Date:	18-May-2015 20:20:43	Instrument ID:	A6		
Lims ID:	320-13012-A-4-A	Lab Sample ID:	320-13012-4		
Client ID:	BF-103-GW05D-0515				
Operator ID:	JRB	ALS Bottle#:	38	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

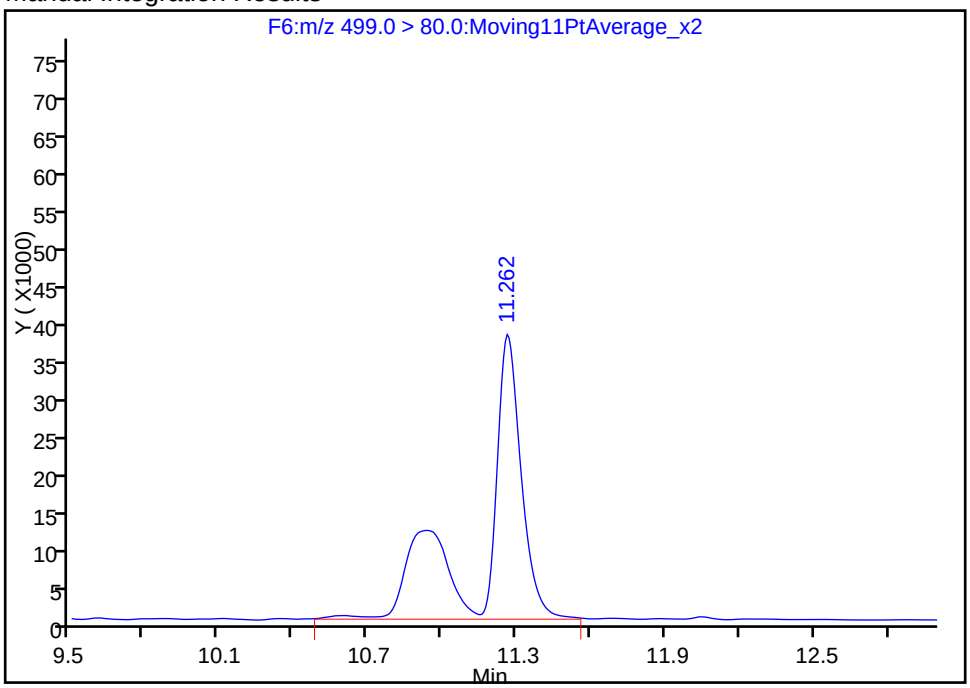
Processing Integration Results

RT: 11.26
Area: 255863
Amount: 7.699104
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 402861
Amount: 12.122382
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:26:52
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

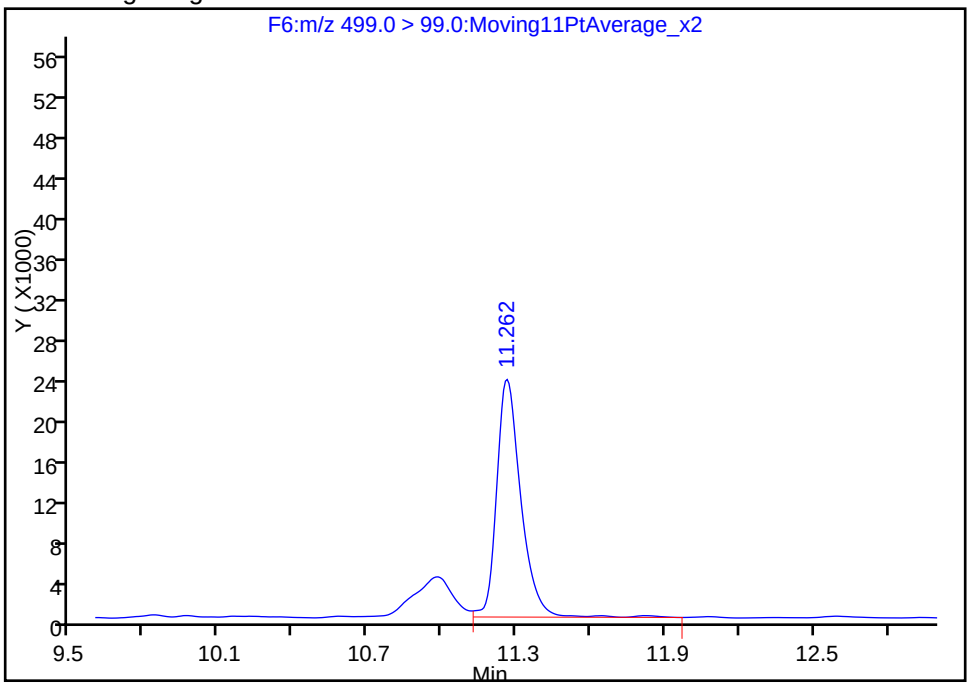
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_018.d

Injection Date:	18-May-2015 20:20:43	Instrument ID:	A6		
Lims ID:	320-13012-A-4-A	Lab Sample ID:	320-13012-4		
Client ID:	BF-103-GW05D-0515				
Operator ID:	JRB	ALS Bottle#:	38	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

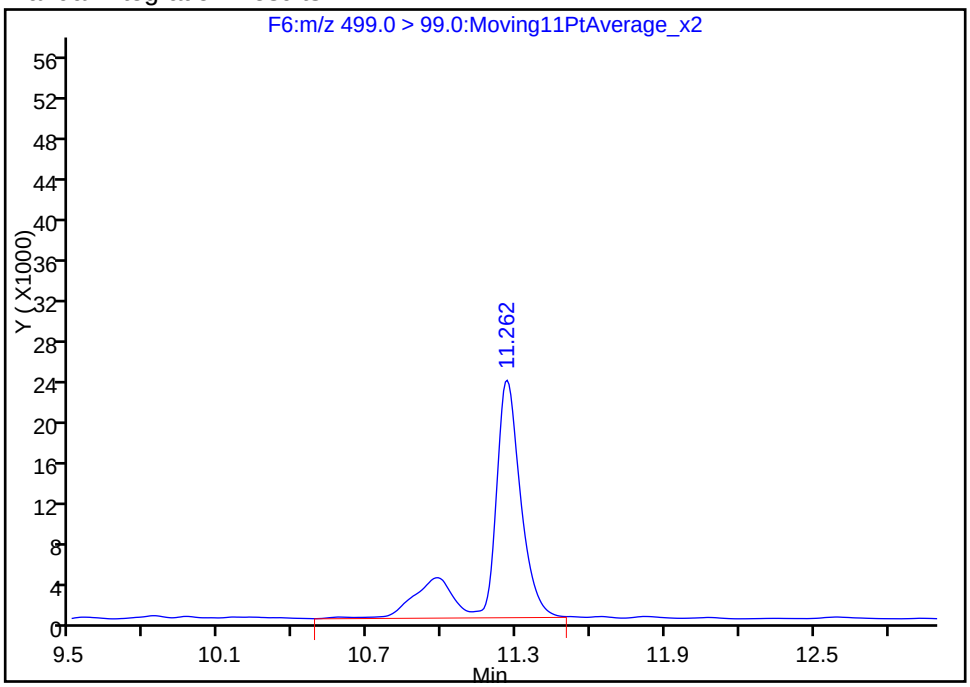
Processing Integration Results

RT: 11.26
Area: 159632
Amount: 7.699104
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 201668
Amount: 12.122382
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:26:52
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW04-0515 | Lab Sample ID: 320-13012-5

Matrix: Water | Lab File ID: 18MAY2015A_019.d

Analysis Method: WS-LC-0025 | Date Collected: 05/12/2015 18:40

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.17(mL) | Date Analyzed: 05/18/2015 20:41

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	3.2		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.0	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	115		25-150
STL00990	13C4 PFOA	56		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_019.d
Lims ID: 320-13012-A-5-A Lab Sample ID: 320-13012-5
Client ID: BF-103-GW04-0515
Sample Type: Client
Inject. Date: 18-May-2015 20:41:58 ALS Bottle#: 39 Worklist Smp#: 32
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-5-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 12:19:38

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	10.308	10.304	0.004		1483443	28.0		56.0	4186	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	48689	1.62			18.2	
413.0 > 169.0	10.308	10.306	0.002	1.000	20903		2.33(0.00-0.00)		23.7	
D 16 13C4 PFOS										
503.0 > 80.0	11.263	11.260	0.003		1700489	54.9		115	4482	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.255	11.261	-0.006	1.000	34220	0.9889			60.3	M
499.0 > 99.0	11.270	11.261	0.009	1.001	17242		1.98(0.00-0.00)		17.0	M

QC Flag Legend

Review Flags
M - Manually Integrated

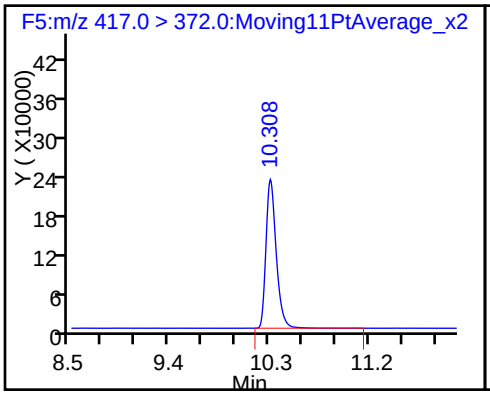
Report Date: 19-May-2015 14:32:16 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

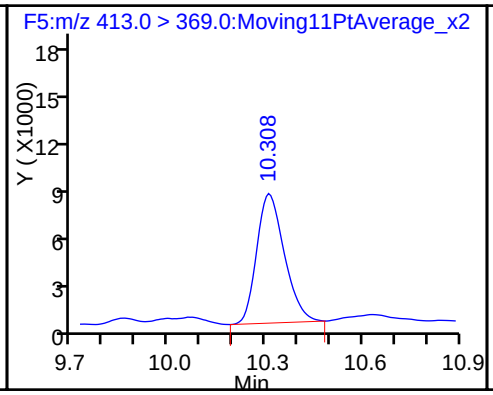
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_019.d

Injection Date:	18-May-2015 20:41:58	Instrument ID:	A6		
Lims ID:	320-13012-A-5-A	Lab Sample ID:	320-13012-5		
Client ID:	BF-103-GW04-0515				
Operator ID:	JRB	ALS Bottle#:	39	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

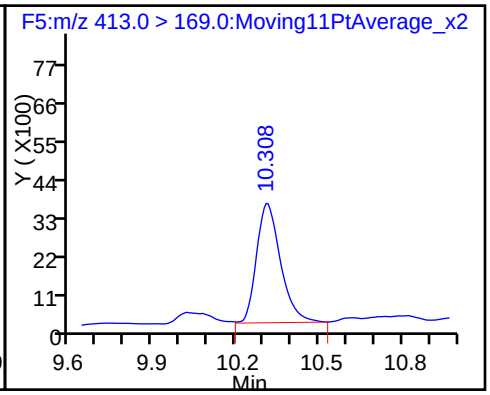
D 12 13C4 PFOA



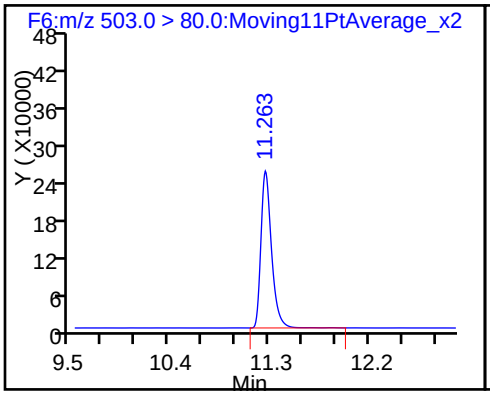
13 Perfluorooctanoic acid



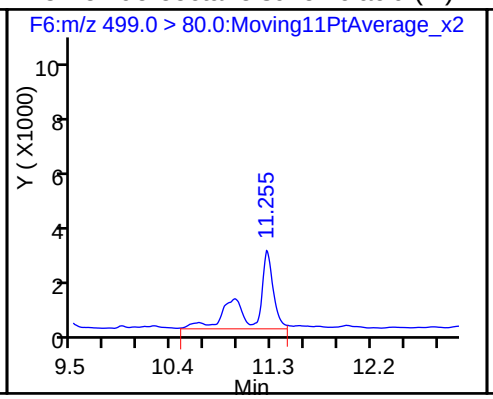
13 Perfluorooctanoic acid



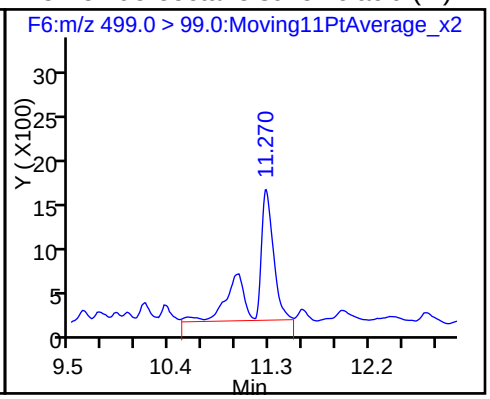
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



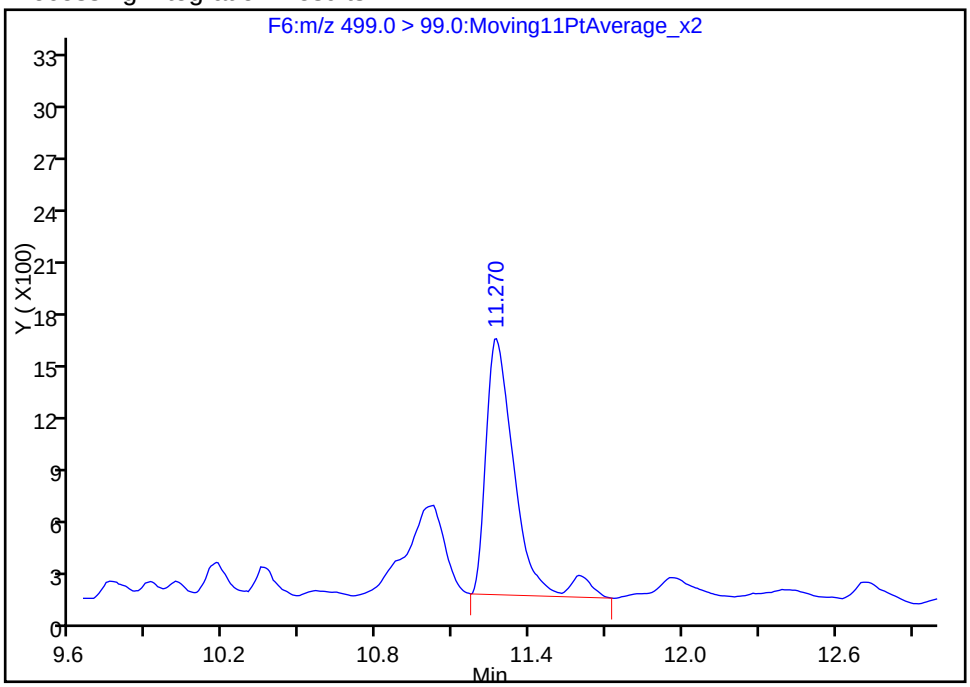
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_019.d				
Injection Date:	18-May-2015 20:41:58	Instrument ID:	A6		
Lims ID:	320-13012-A-5-A	Lab Sample ID:	320-13012-5		
Client ID:	BF-103-GW04-0515				
Operator ID:	JRB	ALS Bottle#:	39	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

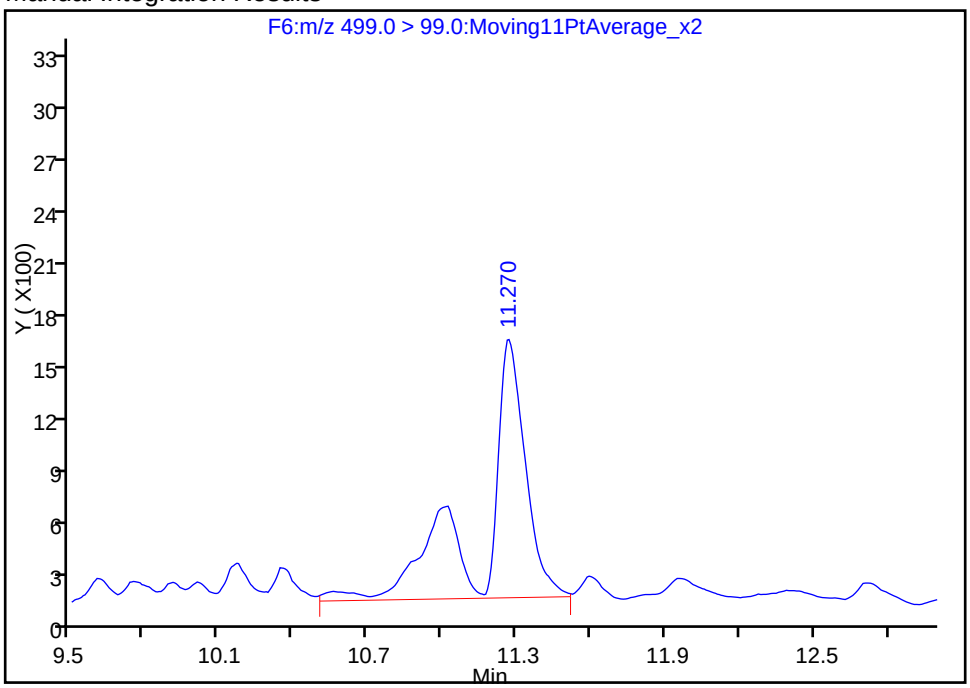
Processing Integration Results

RT: 11.27
Area: 11439
Amount: 0.501262
Amount Units: ng/ml



Manual Integration Results

RT: 11.27
Area: 17242
Amount: 0.988942
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:29:27
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

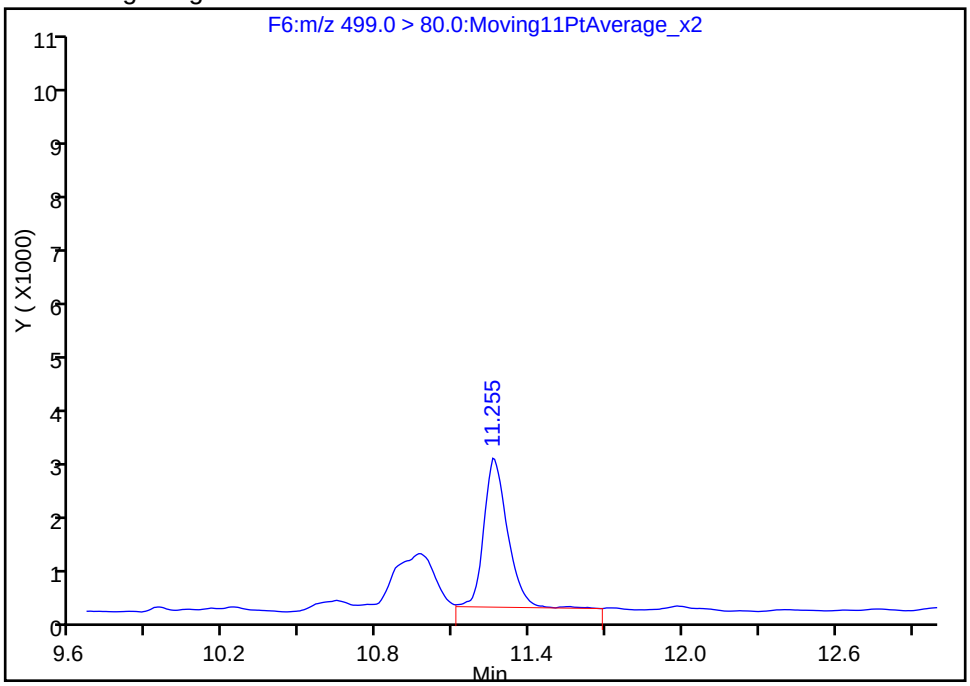
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_019.d

Injection Date:	18-May-2015 20:41:58	Instrument ID:	A6		
Lims ID:	320-13012-A-5-A	Lab Sample ID:	320-13012-5		
Client ID:	BF-103-GW04-0515				
Operator ID:	JRB	ALS Bottle#:	39	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

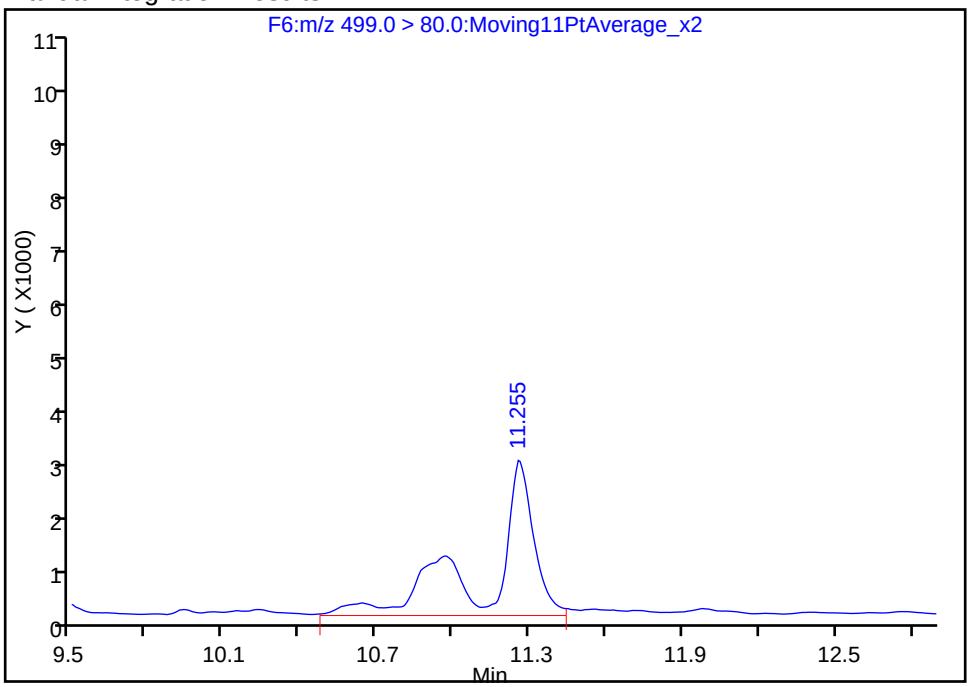
Processing Integration Results

RT: 11.26
Area: 17345
Amount: 0.501262
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 34220
Amount: 0.988942
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:29:27
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-104-GW02-0515 | Lab Sample ID: 320-13012-6

Matrix: Water | Lab File ID: 18MAY2015A_020.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 10:45

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.81(mL) | Date Analyzed: 05/18/2015 21:03

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	88		2.0	1.5	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	72		25-150
STL00990	13C4 PFOA	50		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_020.d
Lims ID: 320-13012-A-6-A Lab Sample ID: 320-13012-6
Client ID: BF-104-GW02-0515
Sample Type: Client
Inject. Date: 18-May-2015 21:03:14 ALS Bottle#: 40 Worklist Smp#: 33
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-6-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 19-May-2015 14:09:25

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	10.301	10.304	-0.003		1327441	25.0		50.1	3678	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	1185055	44.1			324	
413.0 > 169.0	10.308	10.306	0.002	1.000	426726		2.78(0.00-0.00)		369	
D 16 13C4 PFOS										
503.0 > 80.0	11.263	11.260	0.003		1071894	34.6		72.5	2219	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.263	11.261	0.002	1.000	22081621	1012.4			4312	EM
499.0 > 99.0	11.263	11.261	0.002	1.000	10702578		2.06(0.00-0.00)		2994	M

QC Flag Legend

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

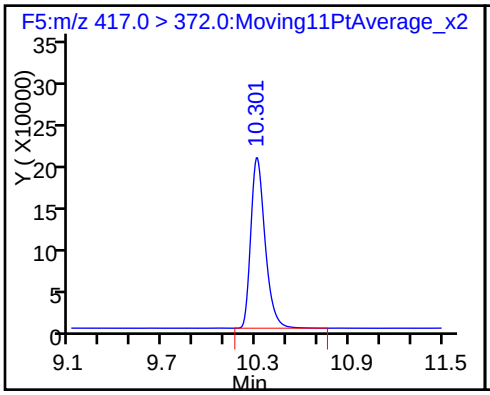
Report Date: 19-May-2015 14:32:17 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

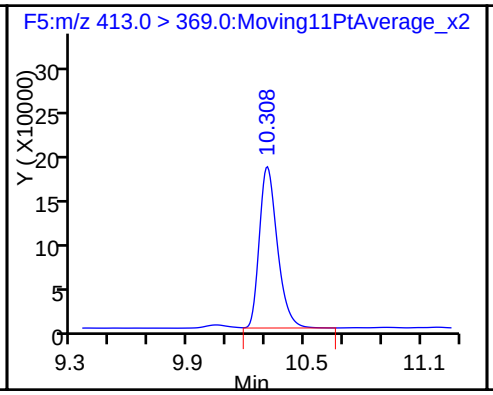
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_020.d

Injection Date:	18-May-2015 21:03:14	Instrument ID:	A6		
Lims ID:	320-13012-A-6-A	Lab Sample ID:	320-13012-6		
Client ID:	BF-104-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	40	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

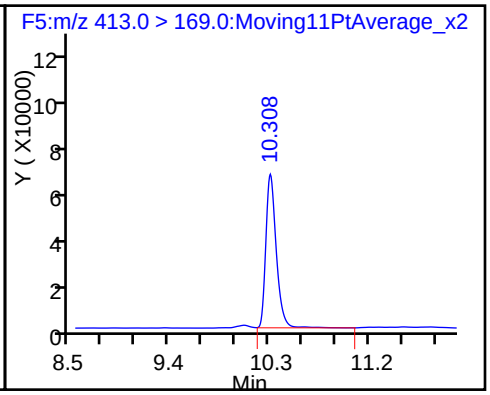
D 12 13C4 PFOA



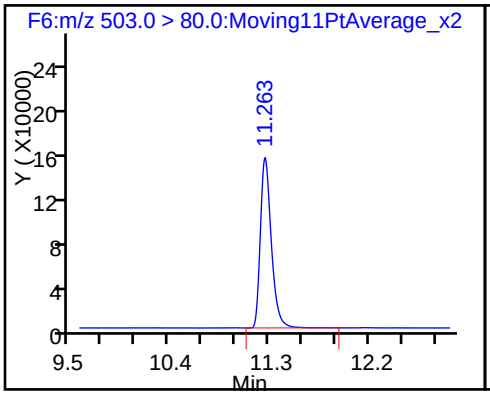
13 Perfluorooctanoic acid



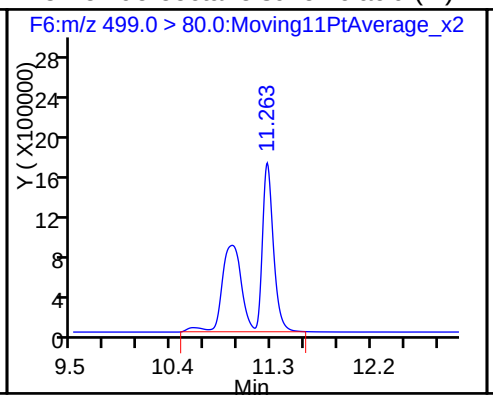
13 Perfluorooctanoic acid



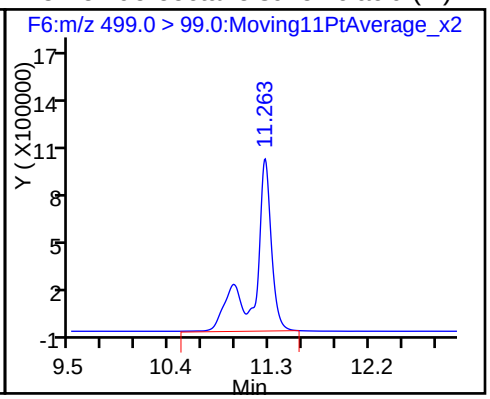
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-104-GW02-0515 DL | Lab Sample ID: 320-13012-6 DL

Matrix: Water | Lab File ID: 18MAY2015A_031.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 10:45

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.81(mL) | Date Analyzed: 05/19/2015 11:30

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 5

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74338 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1800	D M	10	7.5	6.4

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	119		25-150
STL00990	13C4 PFOA	79		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_031.d
Lims ID: 320-13012-A-6-A Lab Sample ID: 320-13012-6
Client ID: BF-104-GW02-0515
Sample Type: Client
Inject. Date: 19-May-2015 11:30:37 ALS Bottle#: 45 Worklist Smp#: 4
Injection Vol: 15.0 ul Dil. Factor: 5.0000
Sample Info: 320-13012-A-6-A 5x
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21915.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:33:02 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 12:19:25

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	10.308	10.304	0.004		417072	7.87		15.7	1219	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	357170	8.46			114	
413.0 > 169.0	10.315	10.306	0.009	1.001	127843		2.79(0.00-0.00)		133	
D 16 13C4 PFOS										
503.0 > 80.0	11.270	11.260	0.010		351224	11.3		23.7	1322	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.270	11.261	0.009	1.000	6269106	175.4			3056	M
499.0 > 99.0	11.270	11.261	0.009	1.000	3075831		2.04(0.00-0.00)		2934	M

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 19-May-2015 14:33:03 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_031.d

Injection Date: 19-May-2015 11:30:37 Instrument ID: A6

Lims ID: 320-13012-A-6-A Lab Sample ID: 320-13012-6

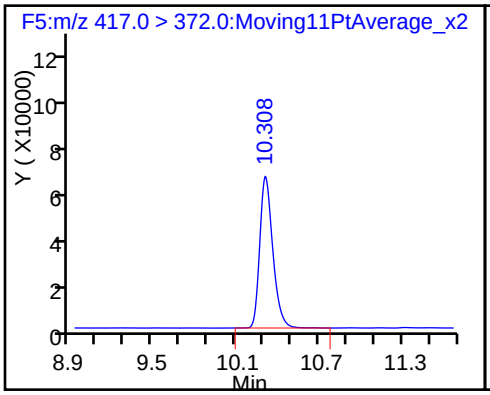
Client ID: BF-104-GW02-0515

Operator ID: JRB ALS Bottle#: 45 Worklist Smp#: 4

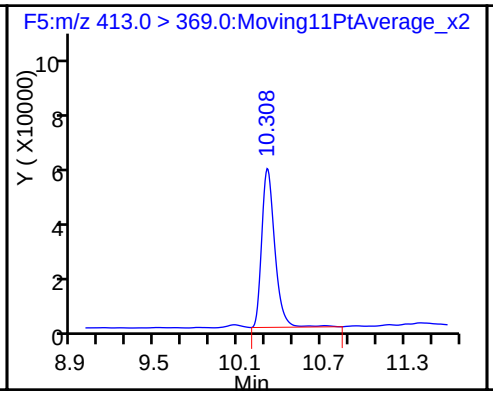
Injection Vol: 15.0 ul Dil. Factor: 5.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

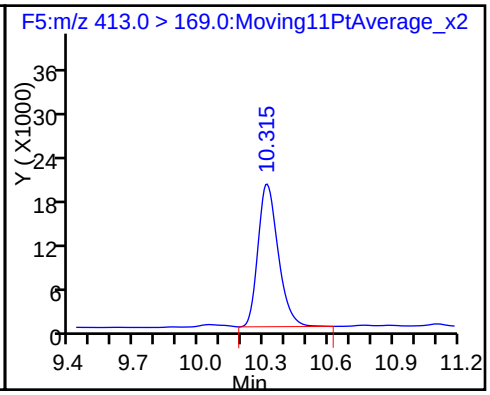
D 12 13C4 PFOA



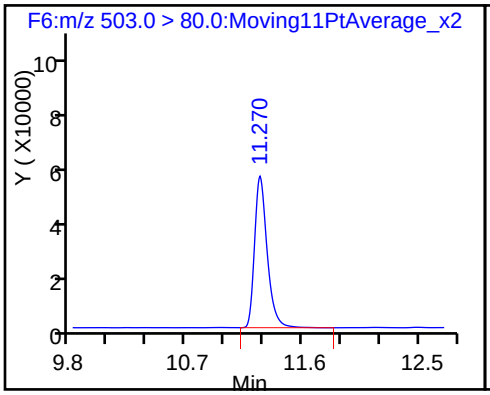
13 Perfluorooctanoic acid



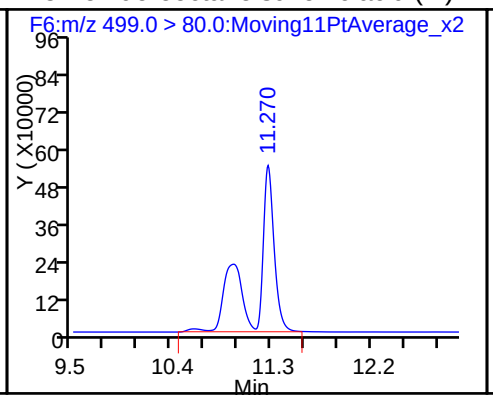
13 Perfluorooctanoic acid



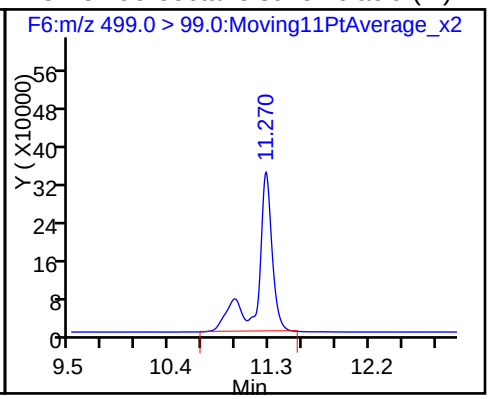
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

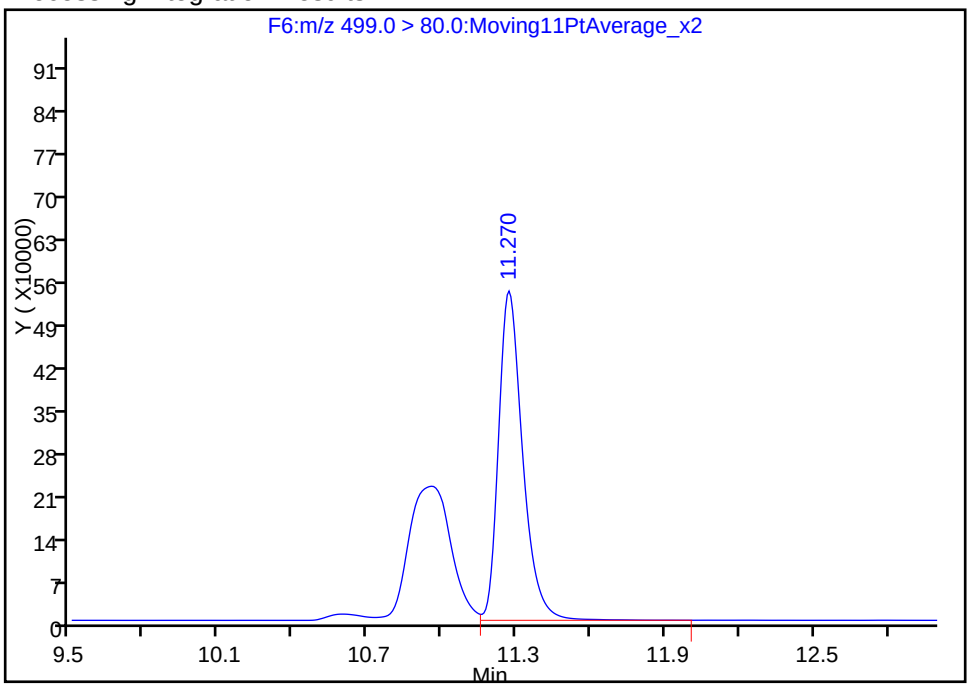
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_031.d				
Injection Date:	19-May-2015 11:30:37	Instrument ID:	A6		
Lims ID:	320-13012-A-6-A	Lab Sample ID:	320-13012-6		
Client ID:	BF-104-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	45	Worklist Smp#:	4
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

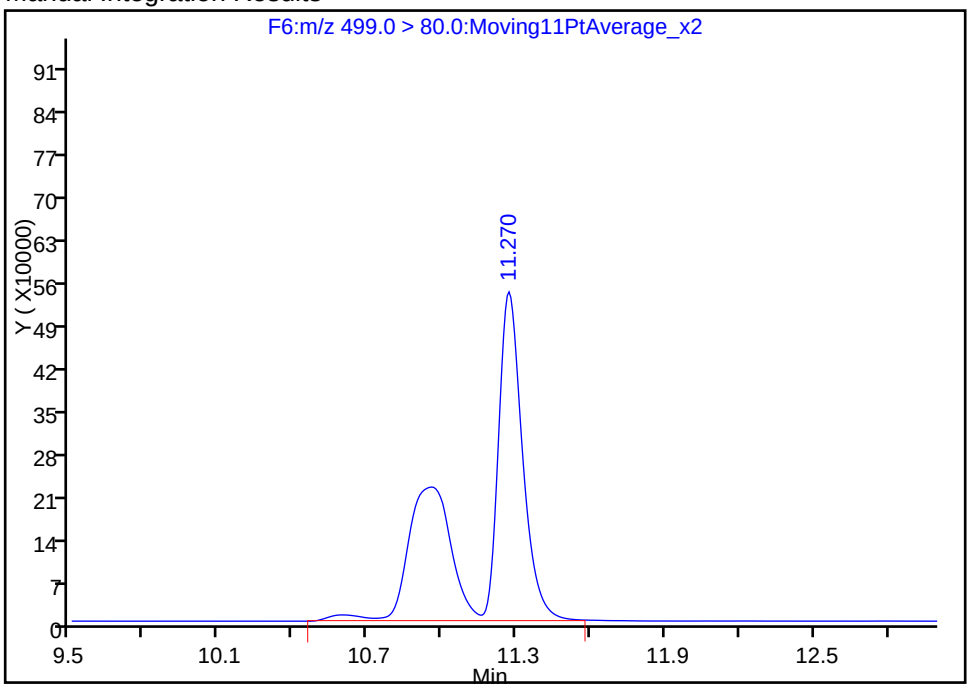
Processing Integration Results

RT: 11.27
Area: 3651459
Amount: 102.1826
Amount Units: ng/ml



Manual Integration Results

RT: 11.27
Area: 6269106
Amount: 175.4349
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:10:52
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

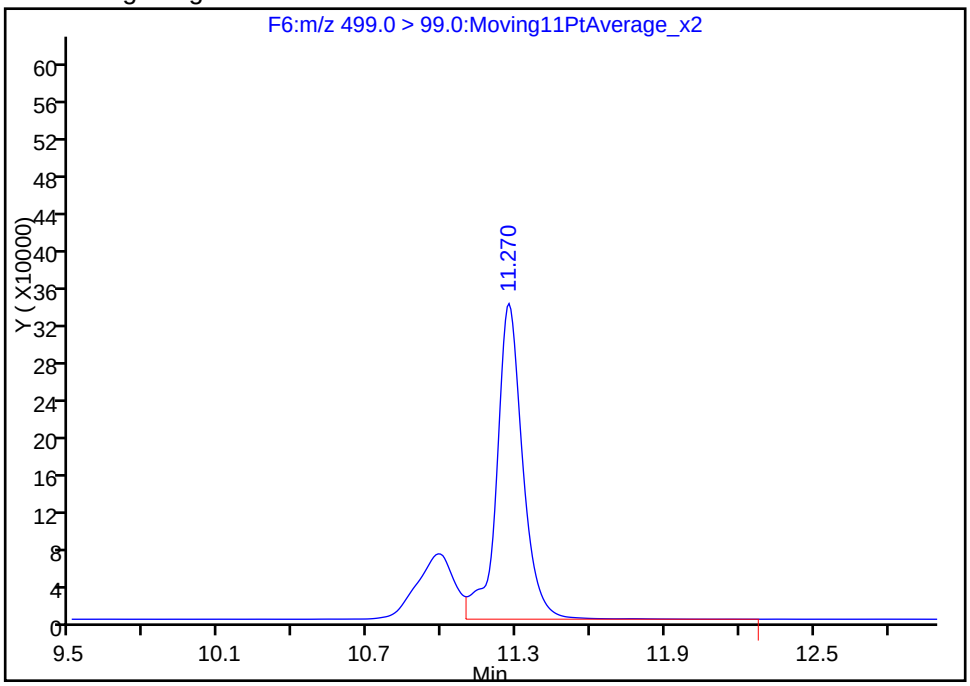
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_031.d				
Injection Date:	19-May-2015 11:30:37	Instrument ID:	A6		
Lims ID:	320-13012-A-6-A	Lab Sample ID:	320-13012-6		
Client ID:	BF-104-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	45	Worklist Smp#:	4
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

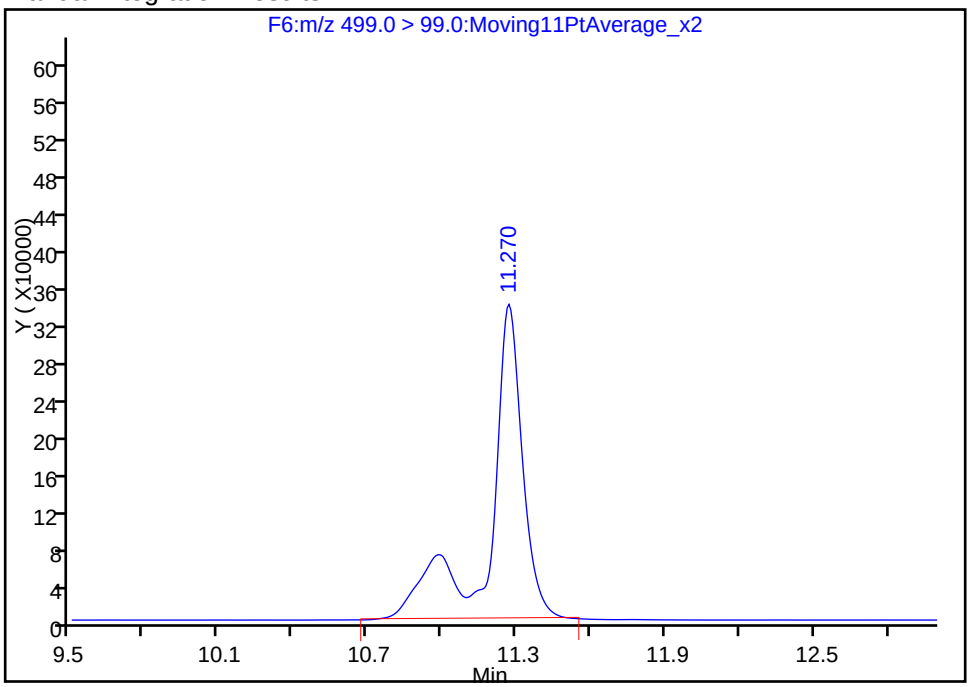
Processing Integration Results

RT: 11.27
Area: 2464939
Amount: 102.1826
Amount Units: ng/ml



Manual Integration Results

RT: 11.27
Area: 3075831
Amount: 175.4349
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:10:52
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-104-GW01-0515 | Lab Sample ID: 320-13012-7

Matrix: Water | Lab File ID: 18MAY2015A_021.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 11:15

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 501.78(mL) | Date Analyzed: 05/18/2015 21:24

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	J	2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	5.0	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	109		25-150
STL00990	13C4 PFOA	56		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_021.d
Lims ID: 320-13012-A-7-A Lab Sample ID: 320-13012-7
Client ID: BF-104-GW01-0515
Sample Type: Client
Inject. Date: 18-May-2015 21:24:31 ALS Bottle#: 41 Worklist Smp#: 34
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-7-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:54:04

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	10.308	10.304	0.004		1478314	27.9		55.8	4514	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	27903	0.9318			12.1	
413.0 > 169.0	10.308	10.306	0.002	1.000	7058		3.95(0.00-0.00)		7.3	
D 16 13C4 PFOS										
503.0 > 80.0	11.263	11.260	0.003		1615827	52.2		109	5192	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.263	11.261	0.002	1.000	82856	2.52			144	M
499.0 > 99.0	11.256	11.261	-0.005	0.999	47209		1.76(0.00-0.00)		66.1	M

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 19-May-2015 14:32:18 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_021.d

Injection Date: 18-May-2015 21:24:31 Instrument ID: A6

Lims ID: 320-13012-A-7-A Lab Sample ID: 320-13012-7

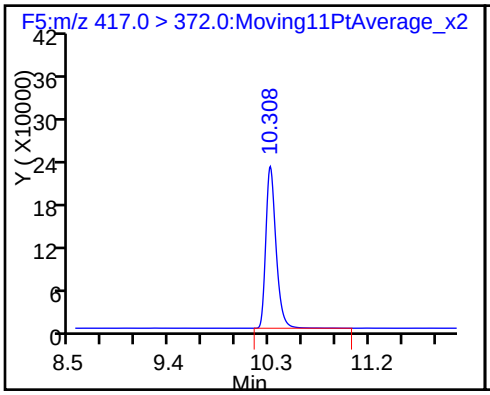
Client ID: BF-104-GW01-0515

Operator ID: JRB ALS Bottle#: 41 Worklist Smp#: 34

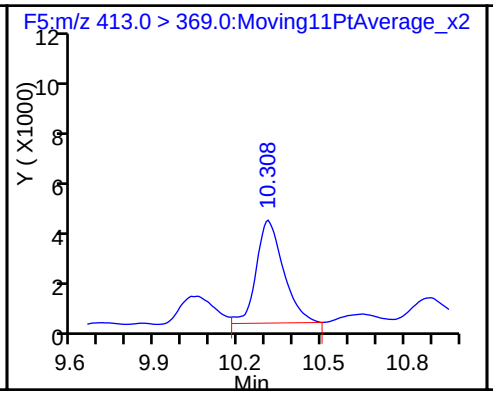
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

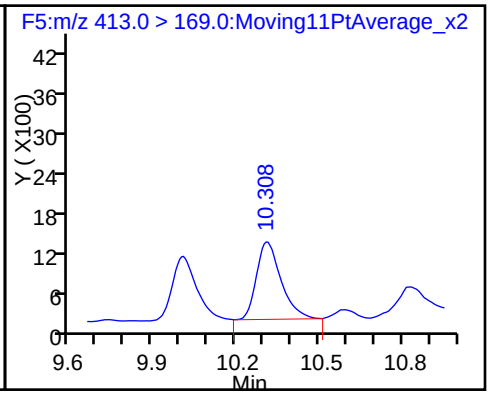
D 12 13C4 PFOA



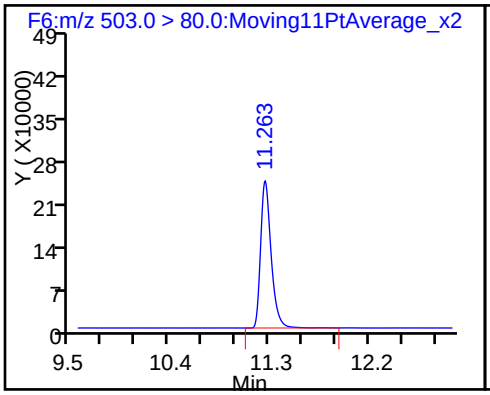
13 Perfluorooctanoic acid



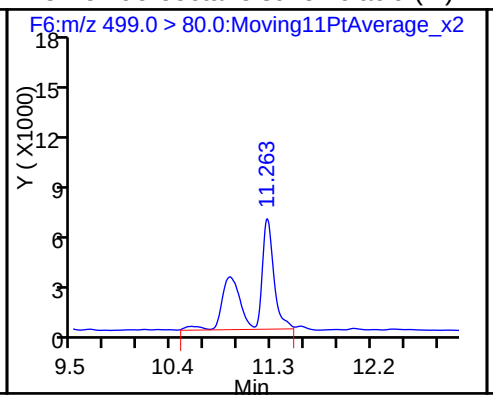
13 Perfluorooctanoic acid



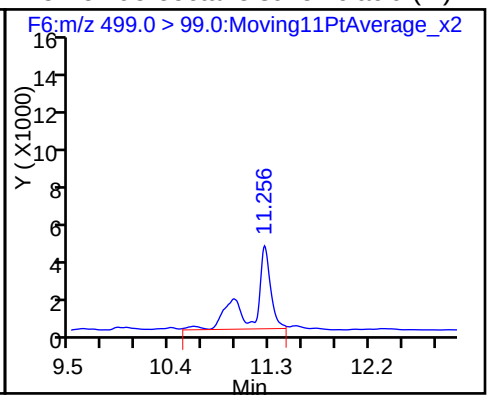
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

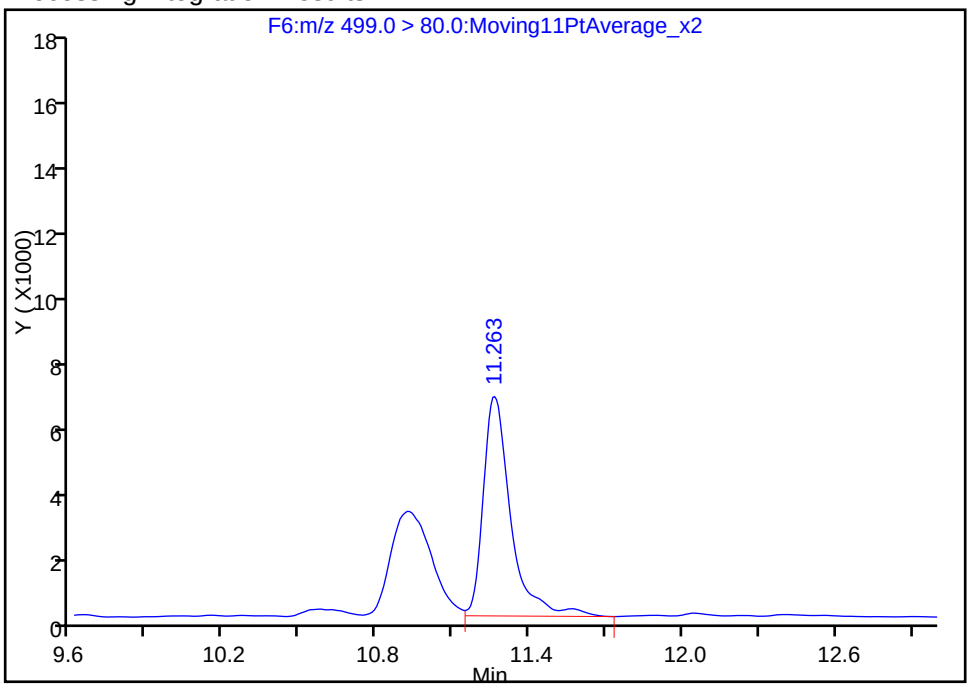
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_021.d				
Injection Date:	18-May-2015 21:24:31	Instrument ID:	A6		
Lims ID:	320-13012-A-7-A	Lab Sample ID:	320-13012-7		
Client ID:	BF-104-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	41	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

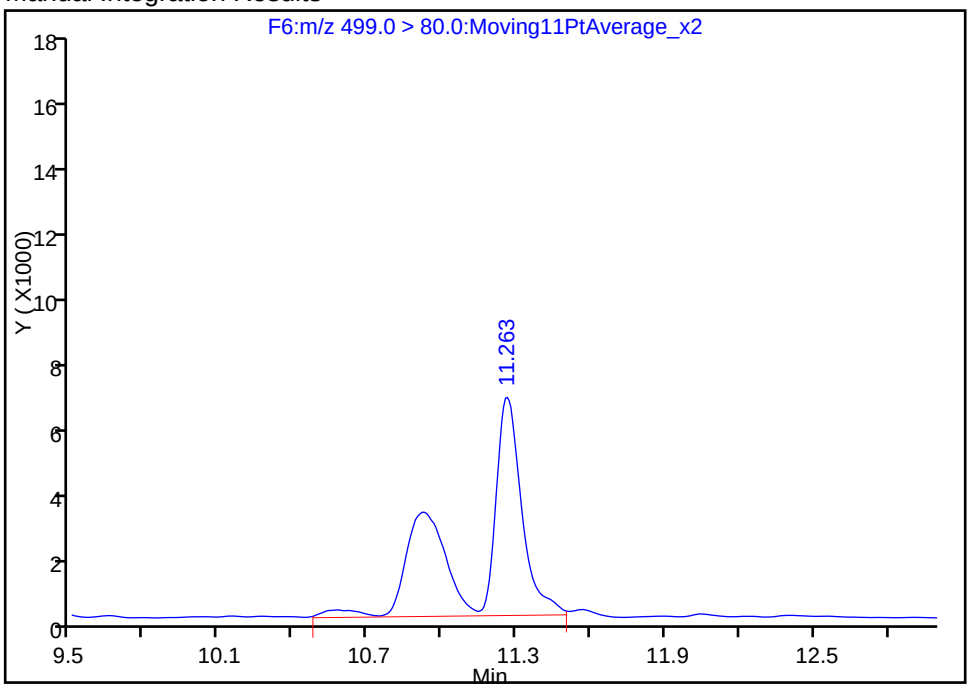
Processing Integration Results

RT: 11.26
Area: 48955
Amount: 1.488905
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 82856
Amount: 2.519961
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:19:58
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

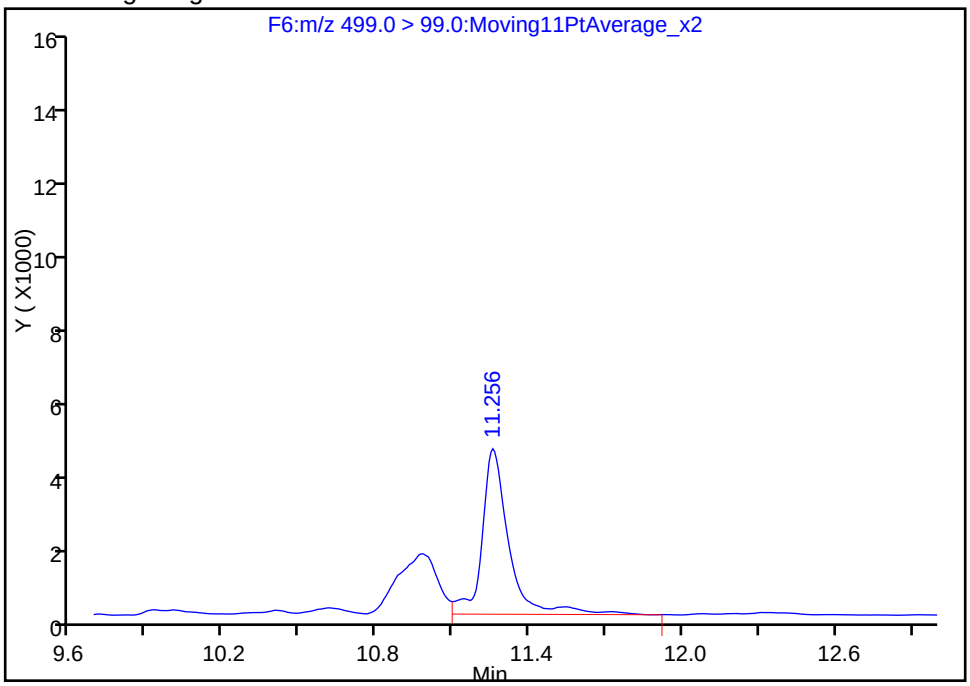
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_021.d				
Injection Date:	18-May-2015 21:24:31	Instrument ID:	A6		
Lims ID:	320-13012-A-7-A	Lab Sample ID:	320-13012-7		
Client ID:	BF-104-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	41	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

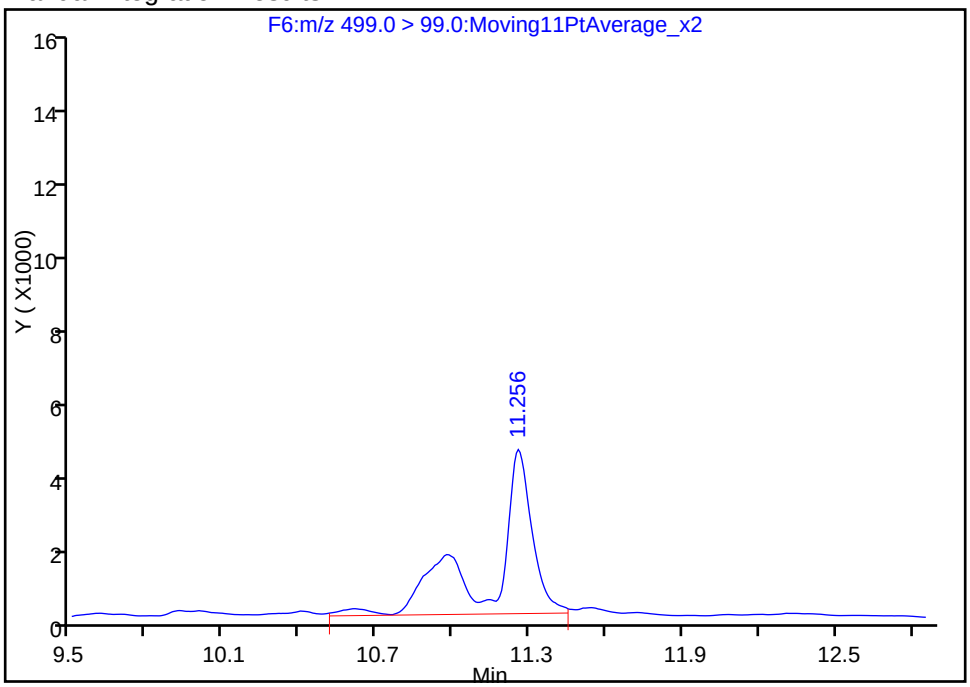
Processing Integration Results

RT: 11.26
Area: 31869
Amount: 1.488905
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 47209
Amount: 2.519961
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:19:58
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW02-0515 Lab Sample ID: 320-13012-8

Matrix: Water Lab File ID: 18MAY2015A_022.d

Analysis Method: WS-LC-0025 Date Collected: 05/13/2015 12:50

Extraction Method: 3535 Date Extracted: 05/15/2015 14:07

Sample wt/vol: 499.17(mL) Date Analyzed: 05/18/2015 21:45

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.6		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.6	J M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	110		25-150
STL00990	13C4 PFOA	60		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_022.d
Lims ID: 320-13012-A-8-A Lab Sample ID: 320-13012-8
Client ID: BF-103-GW02-0515
Sample Type: Client
Inject. Date: 18-May-2015 21:45:45 ALS Bottle#: 42 Worklist Smp#: 35
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-8-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:54:07

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	10.308	10.304	0.004		1584705	29.9		59.8	4177	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	41960	1.31			15.2	
413.0 > 169.0	10.315	10.306	0.009	1.001	16132		2.60(0.00-0.00)		21.1	
D 16 13C4 PFOS										
503.0 > 80.0	11.255	11.260	-0.005		1620731	52.4		110	3357	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.255	11.261	-0.006	1.000	27124	0.8224			35.0	M
499.0 > 99.0	11.263	11.261	0.002	1.001	9385		2.89(0.00-0.00)		10.8	M

QC Flag Legend

Review Flags
M - Manually Integrated

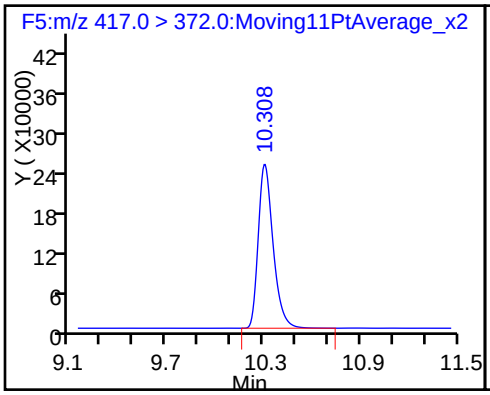
Report Date: 19-May-2015 14:32:19 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

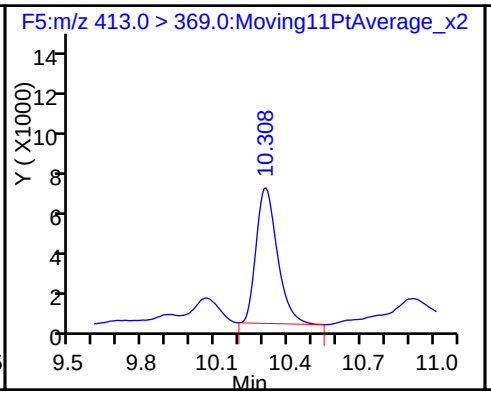
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_022.d

Injection Date:	18-May-2015 21:45:45	Instrument ID:	A6		
Lims ID:	320-13012-A-8-A	Lab Sample ID:	320-13012-8		
Client ID:	BF-103-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	42	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

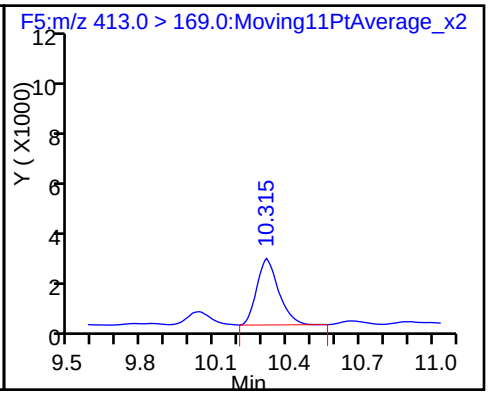
D 12 13C4 PFOA



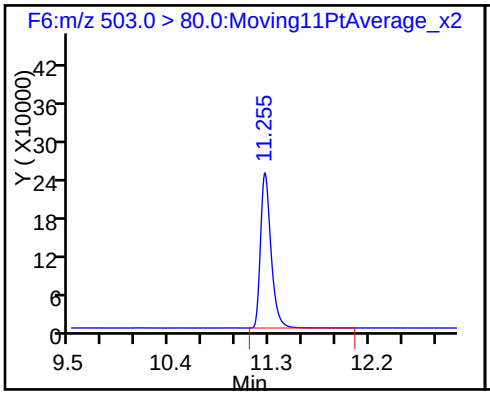
13 Perfluorooctanoic acid



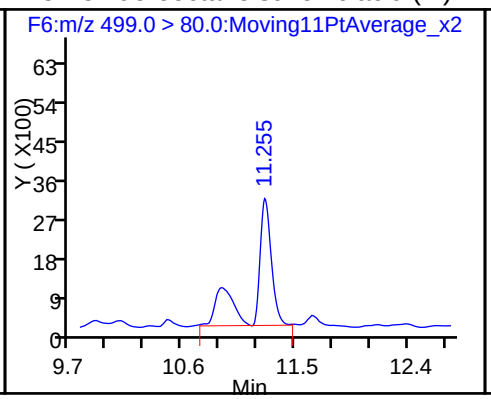
13 Perfluorooctanoic acid



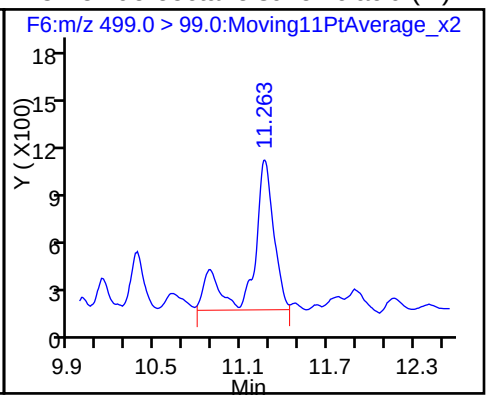
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

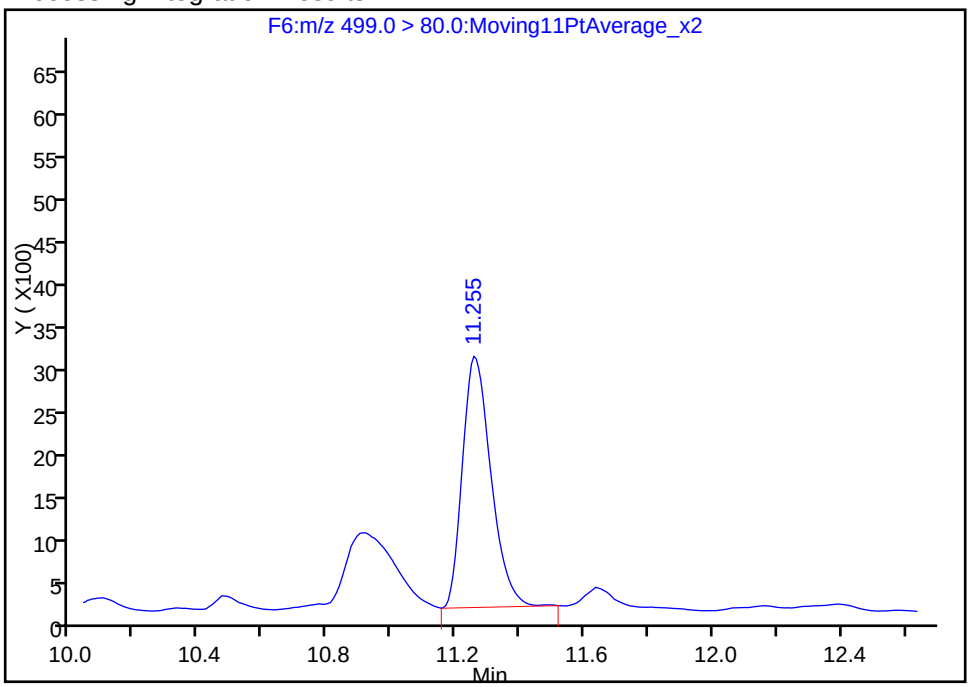
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_022.d				
Injection Date:	18-May-2015 21:45:45	Instrument ID:	A6		
Lims ID:	320-13012-A-8-A	Lab Sample ID:	320-13012-8		
Client ID:	BF-103-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	42	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

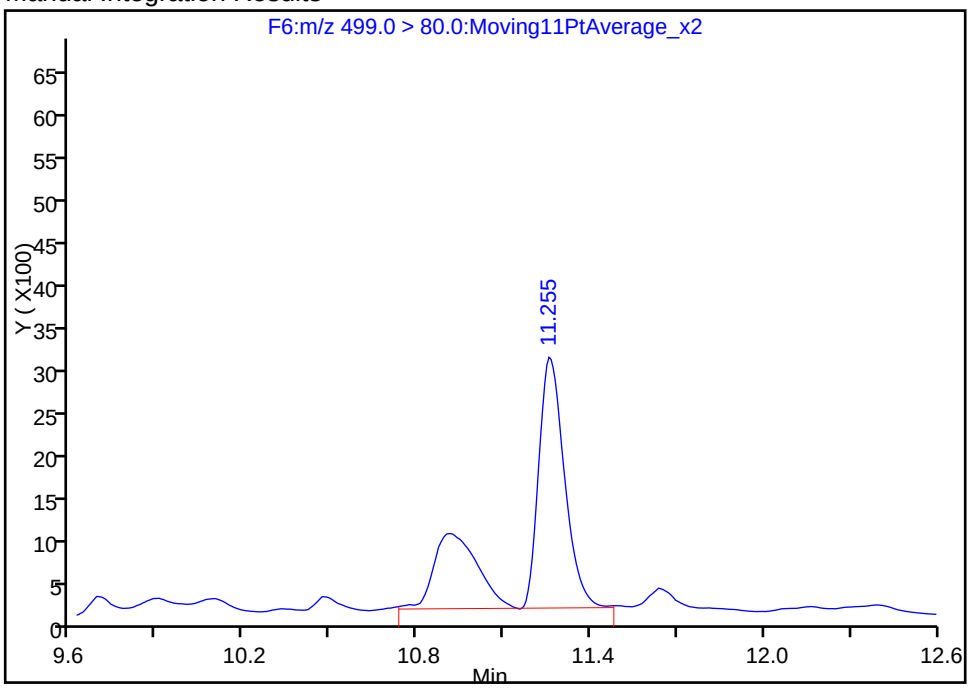
Processing Integration Results

RT: 11.26
Area: 17987
Amount: 0.545397
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 27124
Amount: 0.822446
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:20:47
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

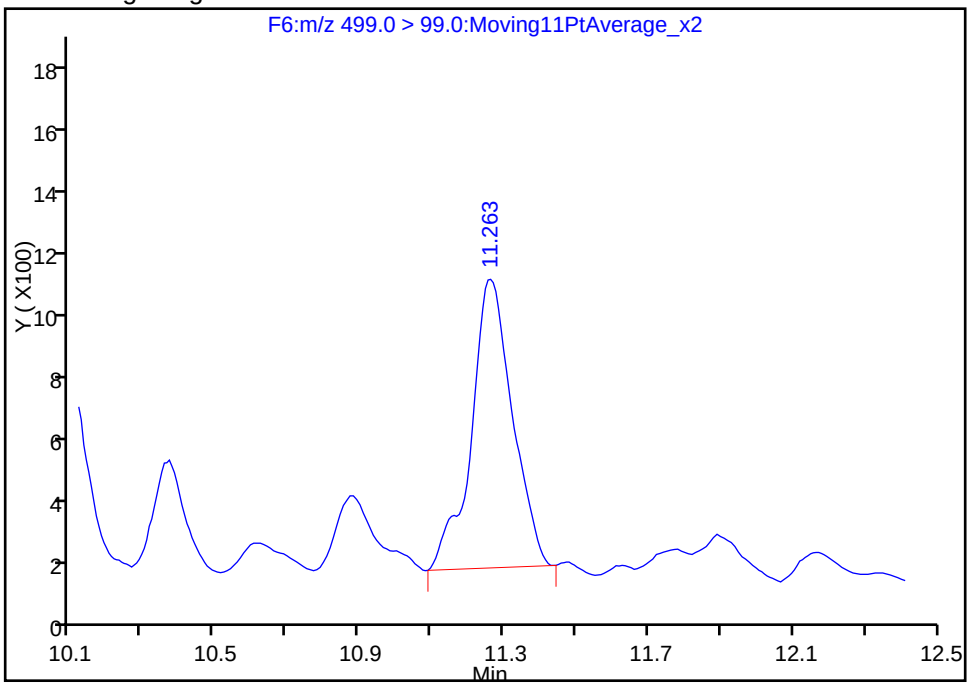
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_022.d				
Injection Date:	18-May-2015 21:45:45	Instrument ID:	A6		
Lims ID:	320-13012-A-8-A	Lab Sample ID:	320-13012-8		
Client ID:	BF-103-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	42	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

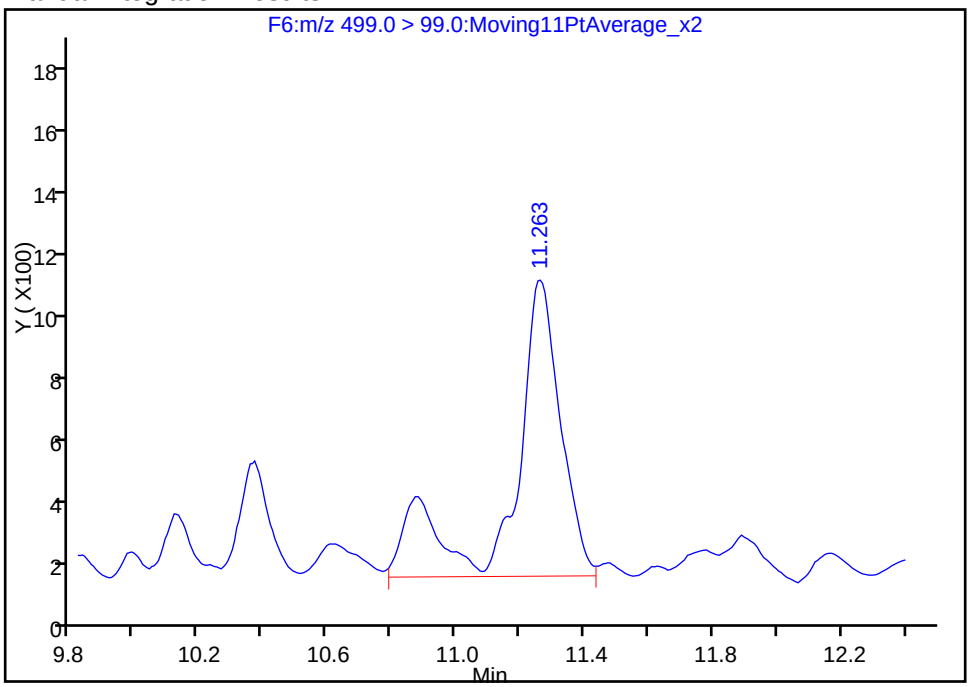
Processing Integration Results

RT: 11.26
Area: 6906
Amount: 0.545397
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 9385
Amount: 0.822446
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:20:47
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW03-0515 Lab Sample ID: 320-13012-9

Matrix: Water Lab File ID: 18MAY2015A_024.d

Analysis Method: WS-LC-0025 Date Collected: 05/13/2015 14:10

Extraction Method: 3535 Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.21(mL) Date Analyzed: 05/18/2015 22:28

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	12		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	15	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	116		25-150
STL00990	13C4 PFOA	69		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_024.d
Lims ID: 320-13012-A-9-A Lab Sample ID: 320-13012-9
Client ID: BF-103-GW03-0515
Sample Type: Client
Inject. Date: 18-May-2015 22:28:15 ALS Bottle#: 43 Worklist Smp#: 36
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-9-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:32:19 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:54:12

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	10.301	10.304	-0.003		1834744	34.6		69.2	5936	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.301	10.306	-0.005	1.000	224404	6.04			60.3	
413.0 > 169.0	10.301	10.306	-0.005	1.000	81172		2.76(0.00-0.00)		48.1	
D 16 13C4 PFOS										
503.0 > 80.0	11.255	11.260	-0.005		1712542	55.3		116	5772	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.255	11.261	-0.006	1.000	268575	7.71			323	M
499.0 > 99.0	11.255	11.261	-0.006	1.000	137654		1.95(0.00-0.00)		278	M

QC Flag Legend

Review Flags
M - Manually Integrated

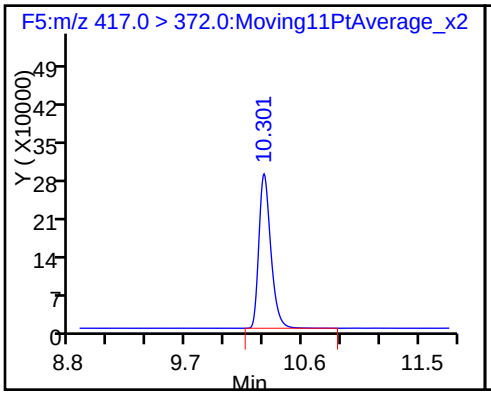
Report Date: 19-May-2015 14:32:20 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

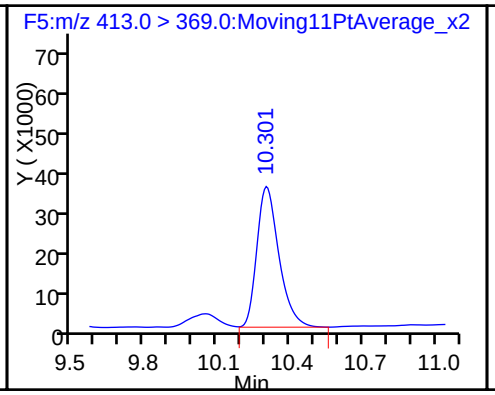
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_024.d

Injection Date:	18-May-2015 22:28:15	Instrument ID:	A6		
Lims ID:	320-13012-A-9-A	Lab Sample ID:	320-13012-9		
Client ID:	BF-103-GW03-0515				
Operator ID:	JRB	ALS Bottle#:	43	Worklist Smp#:	36
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

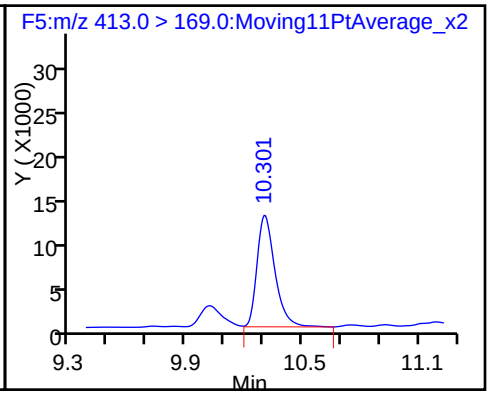
D 12 13C4 PFOA



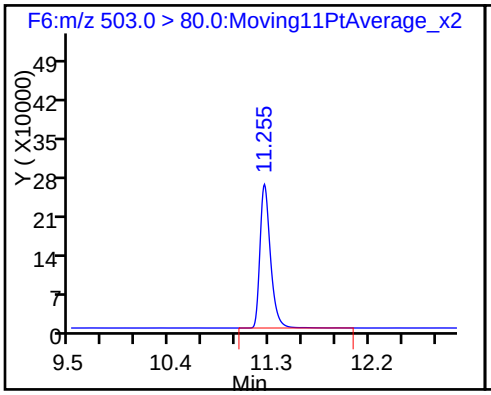
13 Perfluorooctanoic acid



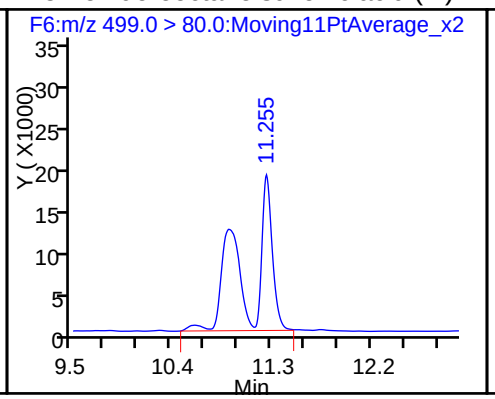
13 Perfluorooctanoic acid



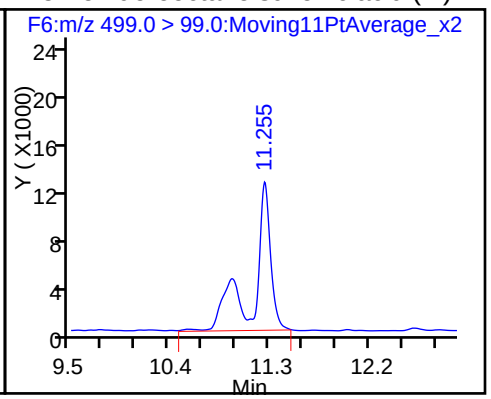
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

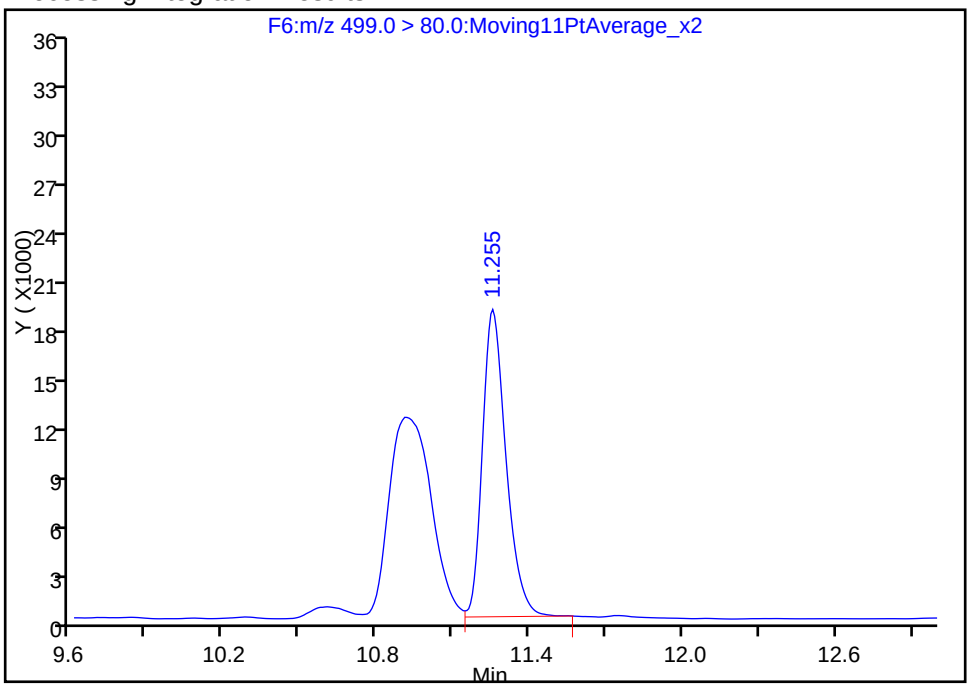
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_024.d				
Injection Date:	18-May-2015 22:28:15	Instrument ID:	A6		
Lims ID:	320-13012-A-9-A	Lab Sample ID:	320-13012-9		
Client ID:	BF-103-GW03-0515				
Operator ID:	JRB	ALS Bottle#:	43	Worklist Smp#:	36
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

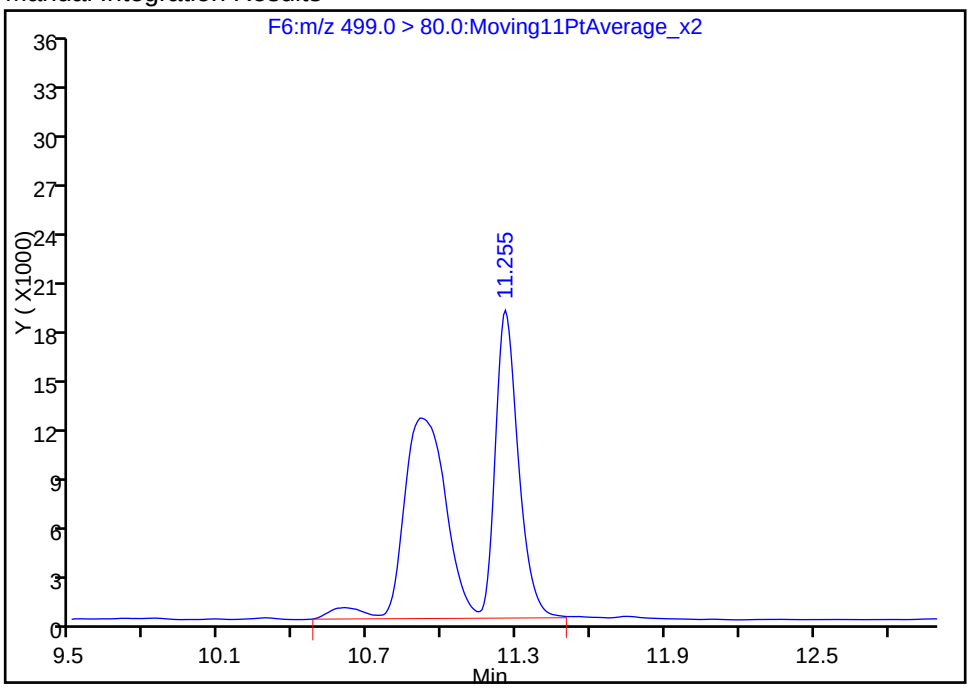
Processing Integration Results

RT: 11.26
Area: 120517
Amount: 3.458372
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 268575
Amount: 7.707065
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:21:42
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

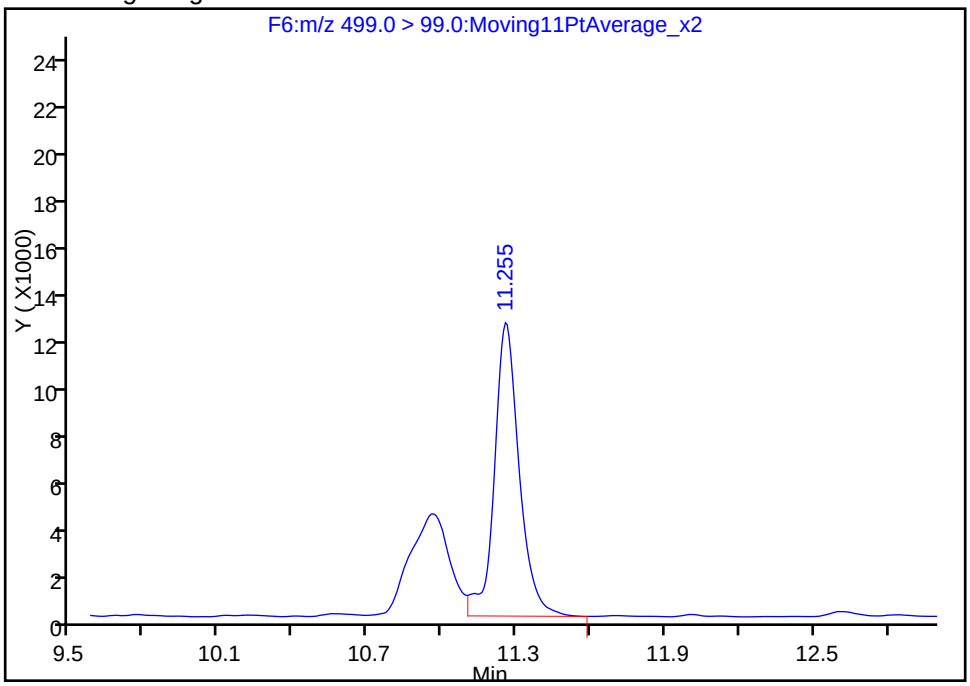
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_024.d				
Injection Date:	18-May-2015 22:28:15	Instrument ID:	A6		
Lims ID:	320-13012-A-9-A	Lab Sample ID:	320-13012-9		
Client ID:	BF-103-GW03-0515				
Operator ID:	JRB	ALS Bottle#:	43	Worklist Smp#:	36
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

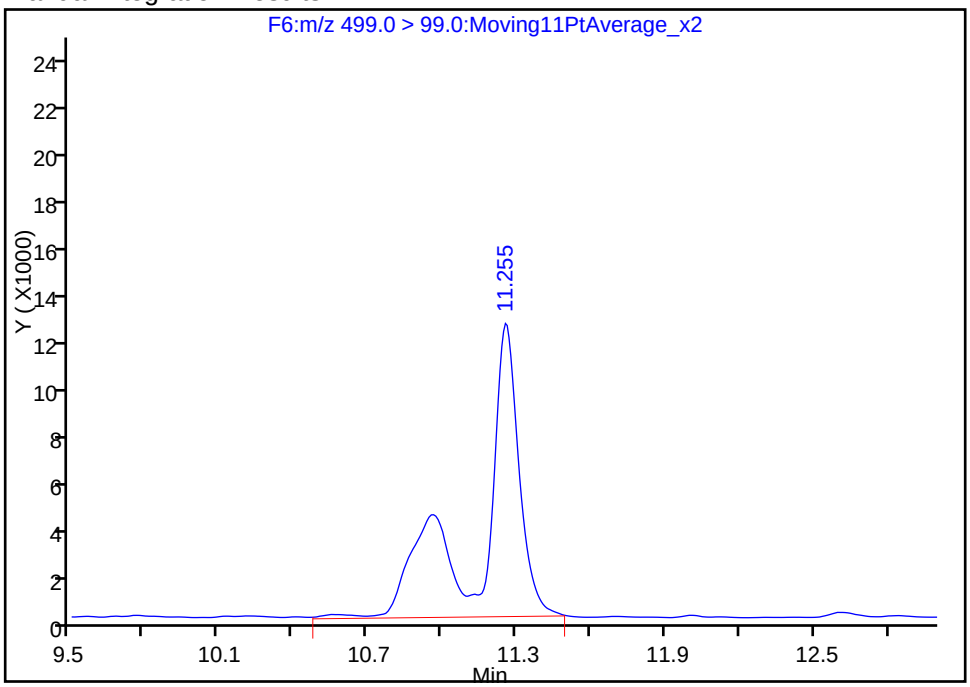
Processing Integration Results

RT: 11.26
Area: 87233
Amount: 3.458372
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 137654
Amount: 7.707065
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:21:42
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW03-0515D Lab Sample ID: 320-13012-10

Matrix: Water Lab File ID: 18MAY2015A_025.d

Analysis Method: WS-LC-0025 Date Collected: 05/13/2015 14:20

Extraction Method: 3535 Date Extracted: 05/15/2015 14:07

Sample wt/vol: 499.53(mL) Date Analyzed: 05/18/2015 22:49

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	11		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	16	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	114		25-150
STL00990	13C4 PFOA	64		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_025.d
Lims ID: 320-13012-A-10-A Lab Sample ID: 320-13012-10
Client ID: BF-103-GW03-0515D
Sample Type: Client
Inject. Date: 18-May-2015 22:49:29 ALS Bottle#: 44 Worklist Smp#: 37
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-13012-A-10-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:32:19 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:54:15

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	10.301	10.304	-0.003		1706592	32.2		64.4	5488	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.301	10.306	-0.005	1.000	191253	5.53			55.7	
413.0 > 169.0	10.308	10.306	0.002	1.001	70407		2.72(0.00-0.00)		42.0	
D 16 13C4 PFOS										
503.0 > 80.0	11.255	11.260	-0.005		1679998	54.3		114	5509	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.255	11.261	-0.006	1.000	267065	7.81			424	M
499.0 > 99.0	11.263	11.261	0.002	1.001	130367		2.05(0.00-0.00)		217	M

QC Flag Legend

Review Flags
M - Manually Integrated

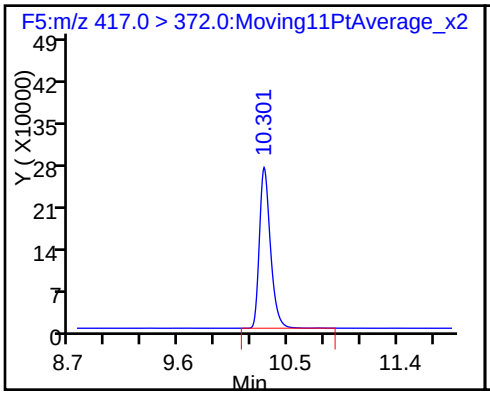
Report Date: 19-May-2015 14:32:22 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

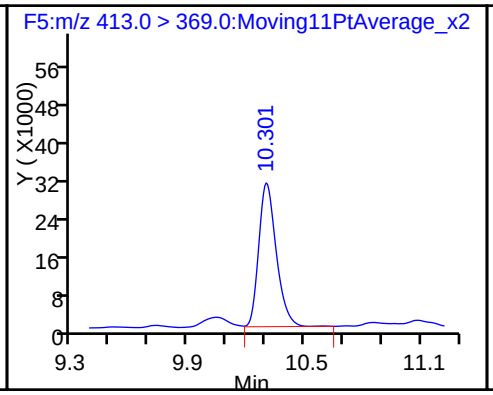
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_025.d

Injection Date:	18-May-2015 22:49:29	Instrument ID:	A6		
Lims ID:	320-13012-A-10-A	Lab Sample ID:	320-13012-10		
Client ID:	BF-103-GW03-0515D				
Operator ID:	JRB	ALS Bottle#:	44	Worklist Smp#:	37
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

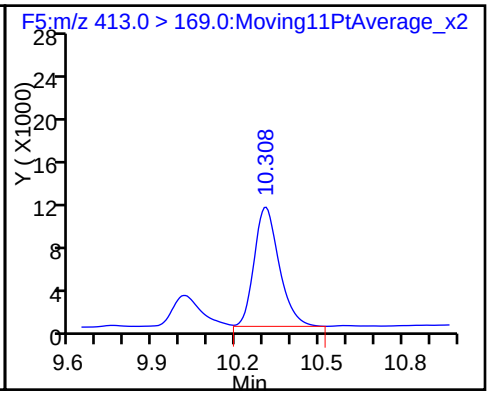
D 12 13C4 PFOA



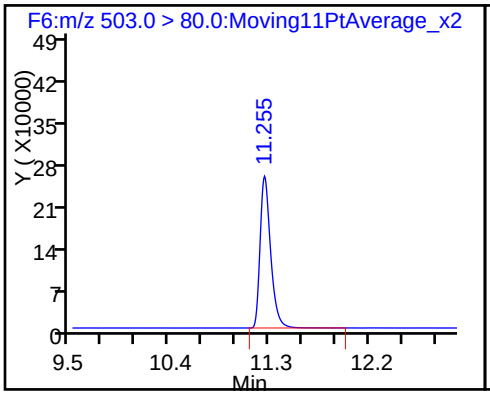
13 Perfluorooctanoic acid



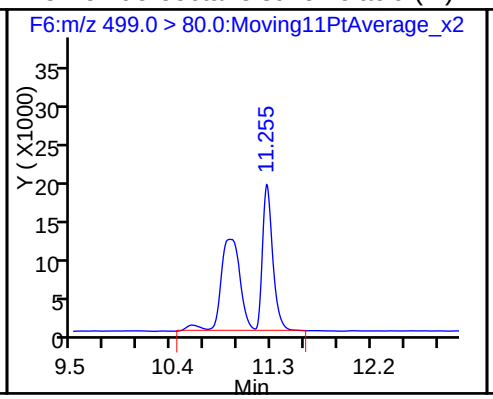
13 Perfluorooctanoic acid



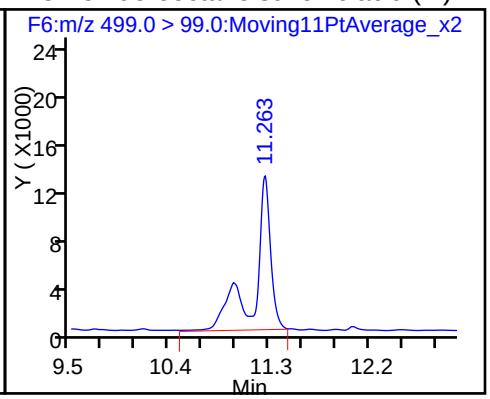
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



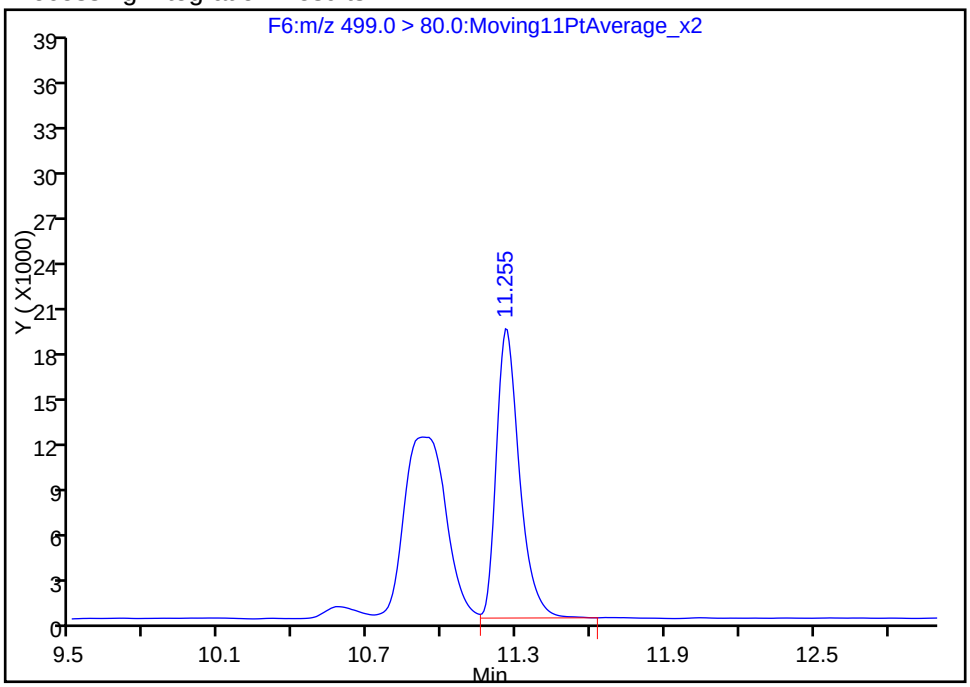
TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_025.d
Injection Date: 18-May-2015 22:49:29 Instrument ID: A6
Lims ID: 320-13012-A-10-A Lab Sample ID: 320-13012-10
Client ID: BF-103-GW03-0515D
Operator ID: JRB ALS Bottle#: 44 Worklist Smp#: 37
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC ICAL
Column: Detector F6:MRM

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

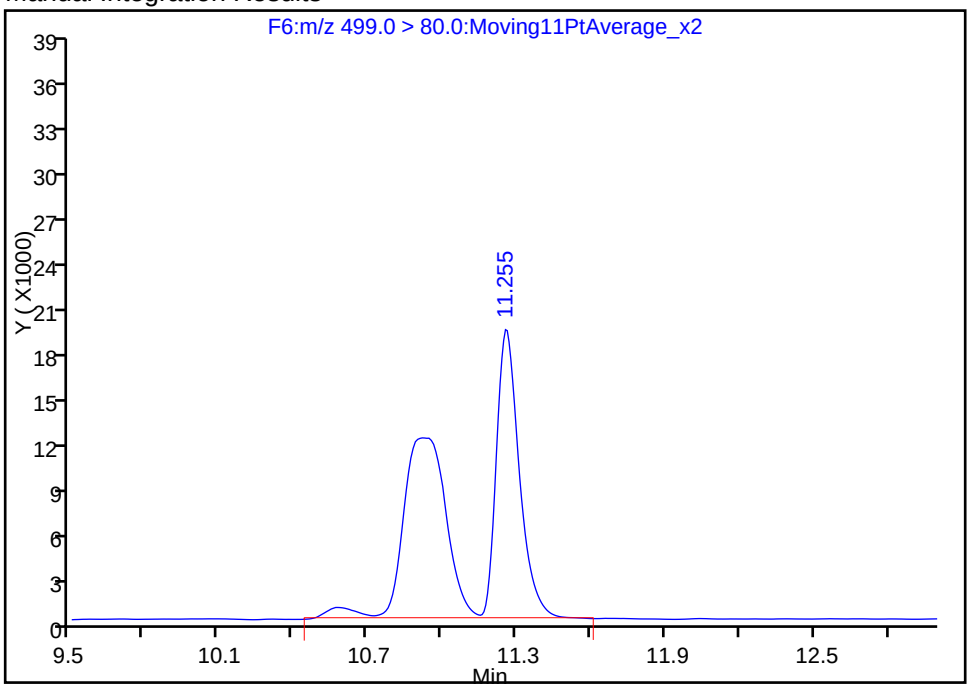
Processing Integration Results

RT: 11.26
Area: 124368
Amount: 3.638015
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 267065
Amount: 7.812191
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:22:38
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

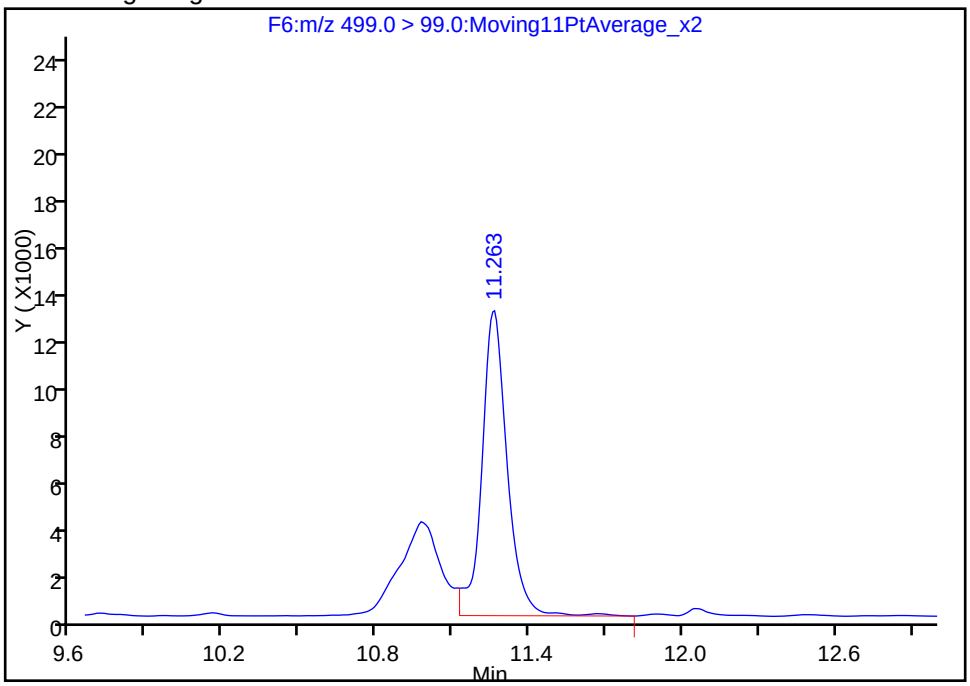
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_025.d

Injection Date:	18-May-2015 22:49:29	Instrument ID:	A6		
Lims ID:	320-13012-A-10-A	Lab Sample ID:	320-13012-10		
Client ID:	BF-103-GW03-0515D				
Operator ID:	JRB	ALS Bottle#:	44	Worklist Smp#:	37
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

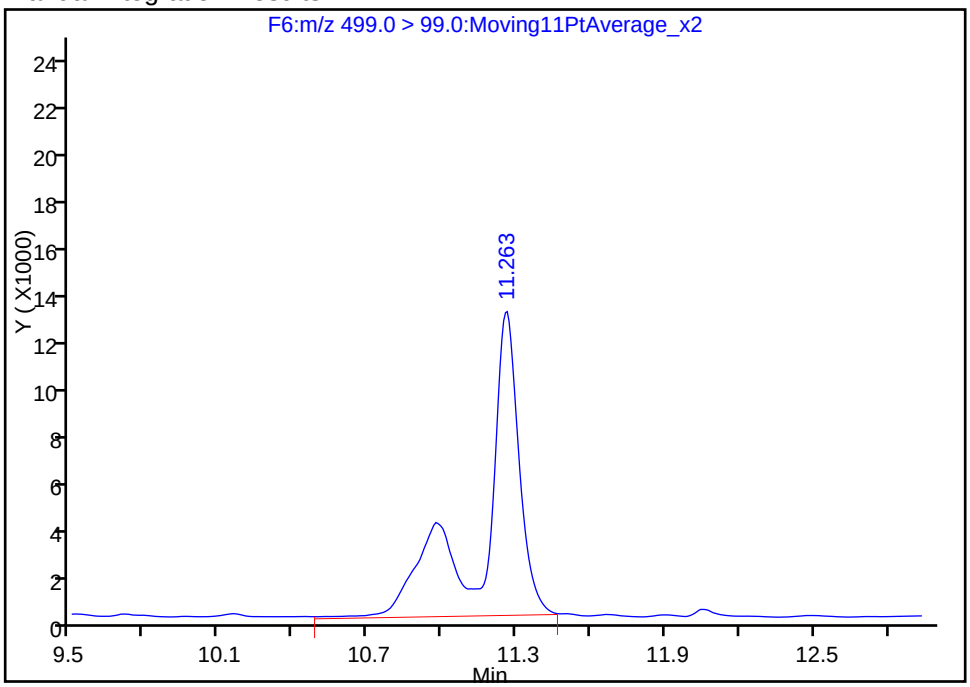
Processing Integration Results

RT: 11.26
Area: 87392
Amount: 3.638015
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 130367
Amount: 7.812191
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:22:38
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM VI
LCMS INITIAL CALIBRATION DATA
EXTERNAL STANDARD RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-74318/2	18MAY2015A_004.d
Level 2	STD 320-74318/3	18MAY2015A_005.d
Level 3	STD 320-74318/4	18MAY2015A_006.d
Level 4	STD 320-74318/38	18MAY2015A_007.d
Level 5	STD 320-74318/5	18MAY2015A_008.d
Level 6	STD 320-74318/6	18MAY2015A_009.d
Level 7	STD 320-74318/7	18MAY2015A_010.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
13C4 PFBA	5.678	5.668	5.671	5.671	5.668	5.665	5.668				5.420 - 5.920	5.670
13C5 PFPeA	6.757	6.762	6.767	6.762	6.757	6.757	6.757				6.510 - 7.010	6.760
13C2 PFHxA	7.953	7.985	7.991	7.991	7.980	7.980	7.985				7.731 - 8.231	7.981
13C4-PFHpA	9.147	9.206	9.212	9.206	9.200	9.200	9.200				8.946 - 9.446	9.196
18O2 PFHxS	9.176	9.235	9.241	9.235	9.229	9.229	9.235				8.976 - 9.476	9.226
13C4 PFOA	10.252	10.315	10.322	10.315	10.308	10.308	10.308				10.054 - 10.554	10.304
13C4 PFOS	11.212	11.270	11.277	11.270	11.262	11.263	11.263				11.010 - 11.510	11.260
13C5 PFNA	11.235	11.285	11.293	11.293	11.285	11.286	11.285				11.030 - 11.530	11.280
13C2 PFDA	12.077	12.130	12.130	12.130	12.122	12.130	12.129				11.871 - 12.371	12.121
13C8 FOSA	12.643	12.684	12.684	12.684	12.674	12.684	12.684				12.427 - 12.927	12.677
13C2 PFUnA	12.789	12.841	12.841	12.841	12.830	12.830	12.841				12.580 - 13.080	12.830
13C2 PFDoA	13.424	13.478	13.478	13.470	13.454	13.461	13.470				13.212 - 13.712	13.462
13C2-PFTeDA	14.381	14.427	14.427	14.420	14.404	14.403	14.420				14.162 - 14.662	14.412
13C2-PFHxDA	15.054	15.084	15.084	15.079	15.059	15.063	15.079				14.822 - 15.322	15.072

FORM VI
LCMS INITIAL CALIBRATION DATA
EXTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-74318/2	18MAY2015A_004.d
Level 2	STD 320-74318/3	18MAY2015A_005.d
Level 3	STD 320-74318/4	18MAY2015A_006.d
Level 4	STD 320-74318/38	18MAY2015A_007.d
Level 5	STD 320-74318/5	18MAY2015A_008.d
Level 6	STD 320-74318/6	18MAY2015A_009.d
Level 7	STD 320-74318/7	18MAY2015A_010.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	32680 24615	26505 20007	25576 20212	24489	Ave		24869.0643				17.2		50.0			
13C5 PFPeA	51969 44543	48999 36384	45825 34420	45043	Ave		43883.3071				14.5		50.0			
13C2 PFHxA	60273 51127	58416 41830	54691 39628	52394	Ave		51194.1429				15.3		50.0			
13C4-PFHpA	70524 55696	62601 39832	62893 37932	58229	Ave		55386.7857				22.0		50.0			
18O2 PFHxS	26356 22057	22740 19750	22221 18282	22313	Ave		21959.6648				11.5		50.0			
13C4 PFOA	65937 51634	61650 39166	59411 35999	57232	Ave		53004.1600				21.6		50.0			
13C4 PFOS	37201 31347	35012 23757	33524 23248	32542	Ave		30947.3252				17.5		50.0			
13C5 PFNA	60691 48245	54741 35985	51741 35456	51835	Ave		48384.8714				19.5		50.0			
13C2 PFDA	60880 47839	57471 34541	55564 36875	53487	Ave		49522.3143				20.7		50.0			
13C8 FOSA	69693 57203	60763 47369	57524 51178	57705	Ave		57347.8771				12.4		50.0			
13C2 PFUnA	76057 64233	76119 46576	68989 47651	65968	Ave		63656.1000				19.1		50.0			
13C2 PFDoA	86399 72249	79709 56175	76086 55912	72896	Ave		71346.4143				16.1		50.0			
13C2-PFTeDA	70781 66486	70764 53695	62540 60195	64422	Ave		64126.1571				9.5		50.0			
13C2-PFHxDA	89489 84284	86691 72868	86584 79106	85225	Ave		83463.7071				6.8		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

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)	37822 32978	43842 31339	38704	37275	36772	AveID		1.5057				11.1		35.0			
Perfluoropentanoic acid (PFPeA)	58016 38575	51565 35997	47799	42181	43016	AveID		1.0314				5.9		35.0			
Perfluorobutane Sulfonate (PFBS)	35864 20203	20761 18781	22755	22022	32665	AveID		1.1166				19.2		50.0			
Perfluorohexanoic acid (PFHxA)	69208 44440	61816 41223	58536	53172	51616	AveID		1.0577				4.4		35.0			
PFPeS (Perflouro-1-pentanesulfonate)	11173 11741	12471 11553	13292	11268	12607	AveID		0.5534				12.6		50.0			
Perfluoroheptanoic acid (PFHpA)	68022 44756	70119 39794	63717	58641	57133	AveID		1.0433				5.7		35.0			
Perfluorohexane Sulfonate (PFHxS)	21159 12600	17027 11353	12781	12596	12677	AveID		0.6464				14.5		35.0			
Perfluorooctanoic acid (PFOA)	73656 40540	63593 36972	57671	53043	50695	AveID		1.0129				6.0		35.0			
Perfluoro-1-heptanesulfonate (PFHpS)	13706 12030	14586 10886	14023	13615	13346	AveID		0.4317				10.2		50.0			
Perfluorooctane Sulfonate (PFOS)	29649 26165	35428 24305	33046	29441	30172	AveID		0.9727				10.2		35.0			
Perfluorononanoic acid (PFNA)	49272 34082	47238 31806	46667	44592	40141	AveID		0.8733				5.2		35.0			
PFNS (Perflouro-1-nonanesulfonate)	16352 12041	15204 11025	15358	13123	14299	AveID		0.4532				7.2		50.0			
Perfluorodecanoic acid (PFDA)	87624 41192	71081 38102	66457	55060	53920	AveID		1.1792				11.9		35.0			
Perfluorooctane Sulfonamide (FOSA)	64496 56632	65393 55348	68741	61263	65042	AveID		1.0961				8.5		35.0			
Perfluorodecane sulfonate (PFDS)	9365.1 12709	18080 11310	12456	13883	14777	AveID		0.4370				22.5		50.0			
Perfluoroundecanoic acid (PFUnA)	+++++ 44299	87615 40032	69252	61158	57215	AveID		0.9606				11.3		35.0			
Perfluorododecanoic acid (PFDoA)	75270 47922	66319 44492	60825	57126	57230	AveID		0.8182				4.2		35.0			
PFDoS (Perflouro-1-dodecanesulfonate)	19440 12878	21856 11796	14212	15335	15656	AveID		0.5130				12.1		50.0			
Perfluorotridecanoic Acid (PFTriA)	68900 45611	74117 43873	68205	67612	59611	AveID		0.8533				7.3		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

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								
Perfluorotetradecanoic acid (PFTeA)	70232 35573	62227 33497	49559	43221	42856	AveID		0.6662				13.9		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	376184 69667	207812 65302	105855	83958	83306	L2ID	1.5865	1.1237							0.9950		0.9900
Perfluoro-n-octandecanoic acid (PFODA)	51398 56850	50349 57832	49971	52199	59355	AveID		0.7810				23.1		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS INITIAL CALIBRATION DATA
EXTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
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Level 2	STD 320-74318/3	18MAY2015A_005.d
Level 3	STD 320-74318/4	18MAY2015A_006.d
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Level 5	STD 320-74318/5	18MAY2015A_008.d
Level 6	STD 320-74318/6	18MAY2015A_009.d
Level 7	STD 320-74318/7	18MAY2015A_010.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	653604 400142	530090 404238	511513	489779	492303	20.0 20.0	20.0 20.0	20.0	20.0	20.0
13C5 PFPeA	Ave	1039372 727683	979985 688402	916509	900859	890853	20.0 20.0	20.0 20.0	20.0	20.0	20.0
13C2 PFHxA	Ave	1205467 836605	1168324 792553	1093818	1047879	1022534	20.0 20.0	20.0 20.0	20.0	20.0	20.0
13C4-PFHpA	Ave	1410480 796649	1252027 758642	1257855	1164587	1113910	20.0 20.0	20.0 20.0	20.0	20.0	20.0
18O2 PFHxS	Ave	498652 373666	430247 345886	420413	422161	417313	18.9 18.9	18.9 18.9	18.9	18.9	18.9
13C4 PFOA	Ave	3296852 1958294	3082502 1799941	2970573	2861579	2581715	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	1778188 1135603	1673565 1111270	1602446	1555517	1498386	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	1213823 719697	1094811 709124	1034824	1036709	964894	20.0 20.0	20.0 20.0	20.0	20.0	20.0
13C2 PFDA	Ave	1217593 690811	1149415 737497	1111282	1069749	956777	20.0 20.0	20.0 20.0	20.0	20.0	20.0
13C8 FOSA	Ave	3484639 2368447	3038149 2558906	2876186	2885273	2860157	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	1521131 931517	1522372 953027	1379777	1319365	1284665	20.0 20.0	20.0 20.0	20.0	20.0	20.0
13C2 PFDoA	Ave	1727976 1123492	1594184 1118241	1521720	1457915	1444970	20.0 20.0	20.0 20.0	20.0	20.0	20.0
13C2-PFTeDA	Ave	1415618 1073897	1415289 1203896	1250799	1288438	1329725	20.0 20.0	20.0 20.0	20.0	20.0	20.0
13C2-PFHxDA	Ave	1789774 1457368	1733816 1582115	1731671	1704500	1685675	20.0 20.0	20.0 20.0	20.0	20.0	20.0

Curve Type Legend:
Ave = Average

FORM VI
LCMS INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

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Level 3	STD 320-74318/4	18MAY2015A_006.d
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Level 5	STD 320-74318/5	18MAY2015A_008.d
Level 6	STD 320-74318/6	18MAY2015A_009.d
Level 7	STD 320-74318/7	18MAY2015A_010.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	18911 6595650	43842 12535784	193520	745501	1838615	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	29008 7714906	51565 14398957	238993	843616	2150779	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorobutane Sulfonate (PFBS)		AveID	15852 3571971	18353 6640915	100576	389353	1443807	0.442 177	0.884 354	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	34604 8888091	61816 16489297	292679	1063439	2580804	0.500 200	1.00 400	5.00	20.0	50.0
PFPeS (Perflouro-1-pentanesulfonate)		AveID	5240 2202683	11698 4334691	62338	211396	591251	0.469 188	0.938 375	4.69	18.8	46.9
Perfluoroheptanoic acid (PFHpA)		AveID	34011 8951257	70119 15917732	318583	1172825	2856646	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorohexane Sulfonate (PFHxS)		AveID	10008 2383890	16108 4295897	60456	238322	599636	0.473 189	0.946 378	4.73	18.9	47.3
Perfluorooctanoic acid (PFOA)		AveID	36828 8108025	63593 14788659	288353	1060865	2534725	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoro-1-heptanesulfonate (PFHpS)		AveID	6524 2290466	13886 4145425	66749	259223	635292	0.476 190	0.952 381	4.76	19.0	47.6
Perfluorooctane Sulfonate (PFOS)		AveID	14172 5002747	33869 9294380	157962	562912	1442217	0.478 191	0.956 382	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		AveID	24636 6816356	47238 12722440	233336	891839	2007057	0.500 200	1.00 400	5.00	20.0	50.0
PFNS (Perflouro-1-nonanesulfonate)		AveID	7849 2311834	14596 4233560	73717	251954	686373	0.480 192	0.960 384	4.80	19.2	48.0
Perfluorodecanoic acid (PFDA)		AveID	43812 8238334	71081 15240729	332284	1101199	2696020	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	32248 11326486	65393 22139268	343707	1225250	3252075	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorodecane sulfonate (PFDS)		AveID	4514 2450258	17429 4361175	60040	267659	712238	0.482 193	0.964 386	4.82	19.3	48.2

FORM VI
LCMS INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

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
Perfluoroundecanoic acid (PFUnA)		AveID	+++++ 8859763	87615 16012908	346260	1223167	2860752	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	37635 9584481	66319 17796913	304124	1142518	2861491	0.500 200	1.00 400	5.00	20.0	50.0
PFDoS (Perflouro-1-dodecanesulfonate)		AveID	9409 2493238	21157 4567433	68785	296879	757768	0.484 194	0.968 387	4.84	19.4	48.4
Perfluorotridecanoic Acid (PFTriA)		AveID	34450 9122228	74117 17549193	341027	1352242	2980528	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	35116 7114649	62227 13398666	247794	864418	2142776	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	188092 13933433	207812 26120714	529276	1679150	4165292	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-octandecanoic acid (PFODA)		AveID	25699 11369930	50349 23132894	249857	1043974	2967755	0.500 200	1.00 400	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_004.d
Lims ID: Std L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 18-May-2015 15:23:18 ALS Bottle#: 1 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: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:13 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 10:42:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.665	5.669	-0.004	1.000	18911	0.3843		76.9	47.6	
D 1 13C4 PFBA										
217.0 > 172.0	5.678	5.670	0.008		653604	26.3		131	3673	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		1039372	23.7		118	3839	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.753	6.761	-0.008	1.000	29008	0.5412		108	22.2	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.877	6.873	0.004	1.000	15852	0.5387		122	9.9	
298.9 > 99.0	6.863	6.873	-0.010	0.998	7923		2.00(0.00-0.00)	122	7.2	
D 6 13C2 PFHxA										
315.0 > 270.0	7.953	7.981	-0.028		1205467	23.5		118	5078	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.947	7.982	-0.035	1.000	34604	0.5428		109	106	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.018	8.056	-0.038	0.874	5240	0.3593		76.6	25.0	
D 8 13C4-PFHpA										
367.0 > 322.0	9.147	9.196	-0.049		1410480	25.5		127	4996	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.153	9.196	-0.043	1.000	34011	0.4622		92.4	67.0	
D 11 18O2 PFHxS										
403.0 > 84.0	9.176	9.226	-0.050		498652	22.7		120	2226	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.182	9.227	-0.045	1.000	10008	0.5874		124	8.0	
D 12 13C4 PFOA										
417.0 > 372.0	10.252	10.304	-0.052		3296852	62.2		124	13116	

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	10.259	10.306	-0.047	1.000	36828	0.5514		110	13.4	
413.0 > 169.0	10.259	10.306	-0.047	1.000	10040		3.67(0.00-0.00)	110	11.8	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.259	10.311	-0.052	1.000	6524	0.4062		85.3	29.2	
D 16 13C4 PFOS										
503.0 > 80.0	11.212	11.260	-0.048		1778188	57.5		120	6069	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.212	11.261	-0.049	1.000	14172	0.3917		81.9	63.8	
499.0 > 99.0	11.212	11.261	-0.049	1.000	9799		1.45(0.00-0.00)	81.9	24.4	
D 17 13C5 PFNA										
468.0 > 423.0	11.235	11.280	-0.045		1213823	25.1		125	4031	
18 Perfluorononanoic acid										
463.0 > 419.0	11.235	11.281	-0.046	1.000	24636	0.4648		93.0	59.4	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.039	12.086	-0.047	1.000	7849	0.4656		97.0	35.4	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.077	12.121	-0.044	1.000	43812	0.6103		122	110	
D 19 13C2 PFDA										
515.0 > 470.0	12.077	12.121	-0.044		1217593	24.6		123	6148	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.633	12.675	-0.042	1.000	32248	0.4222		84.4	121	
D 23 13C8 FOSA										
506.0 > 78.0	12.643	12.677	-0.034		3484639	60.8		122	4945	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.748	12.786	-0.038	1.000	4514	0.2777		57.6	20.6	
D 26 13C2 PFUnA										
565.0 > 520.0	12.789	12.830	-0.041		1521131	23.9		119	2269	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.799	12.833	-0.034	1.000	56049	0.7671		153	40.8	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.424	13.462	-0.038	1.000	37635	0.5324		106	69.1	
D 28 13C2 PFDoA										
615.0 > 570.0	13.424	13.462	-0.038		1727976	24.2		121	2691	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.887	13.918	-0.031	1.000	9409	0.4930		102	30.9	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.942	13.976	-0.034	1.000	34450	0.4673		93.5	18.5	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.381	14.412	-0.031		1415618	22.1		110	2297	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.389	14.413	-0.024	1.000	35116	0.6101		122	9.3	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.054	15.072	-0.018		1789774	21.4		107	2755	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.054	15.072	-0.018	1.000	188092	0.5256		105	174	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.400	15.409	-0.009	1.000	25699	0.3808		76.2	23.3	

Reagents:

LCPFC-L1_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:13 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_004.d

Injection Date: 18-May-2015 15:23:18 Instrument ID: A6

Lims ID: Std L1

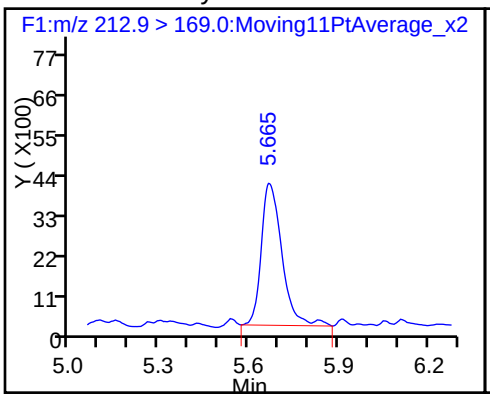
Client ID:

Operator ID: JSS ALS Bottle#: 1 Worklist Smp#: 2

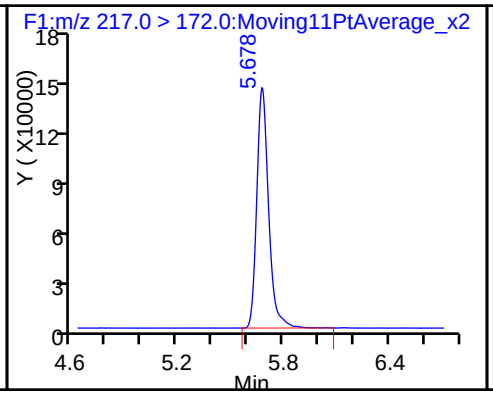
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

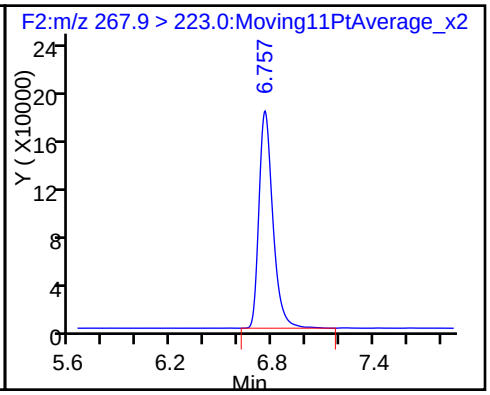
2 Perfluorobutyric acid



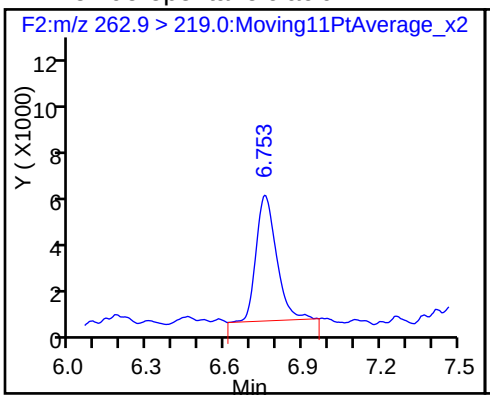
D 1 13C4 PFBA



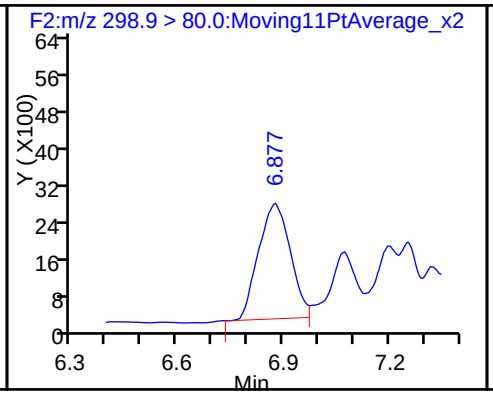
D 3 13C5-PFPeA



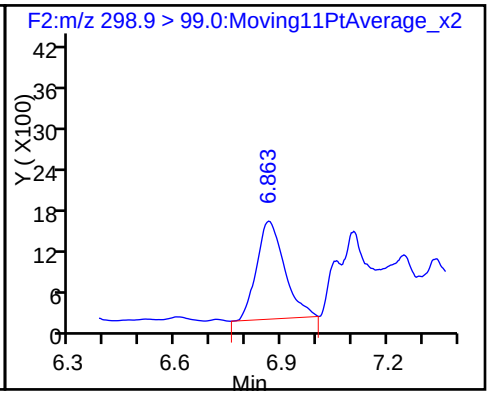
4 Perfluoropentanoic acid



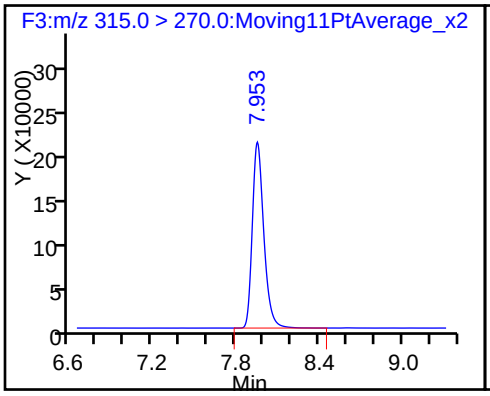
5 Perfluorobutane Sulfonate



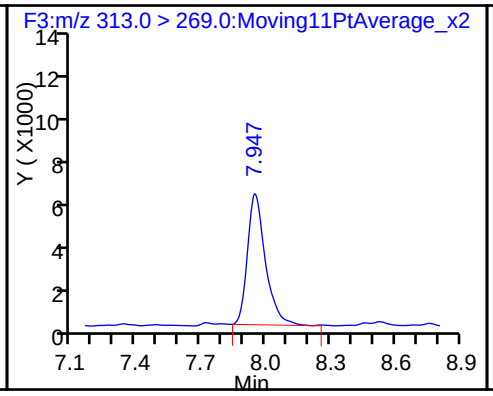
5 Perfluorobutane Sulfonate



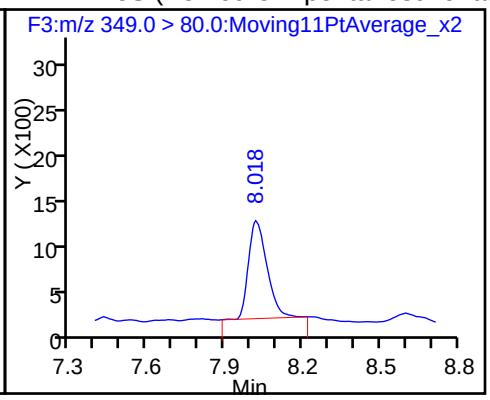
D 6 13C2 PFHxA



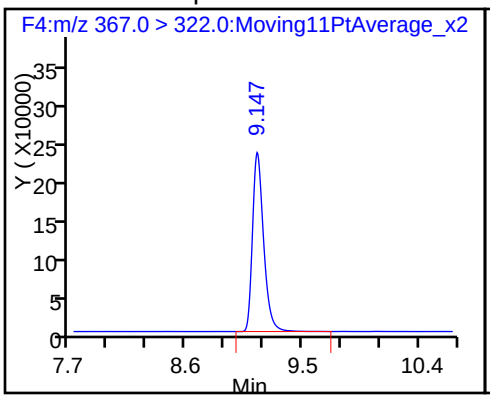
7 Perfluorohexanoic acid



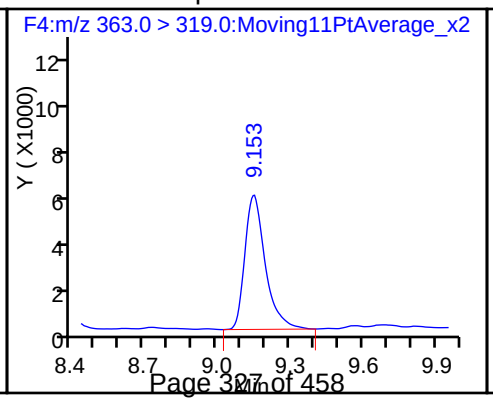
22 PFPeS (Perflouro-1-pentanesulfonat



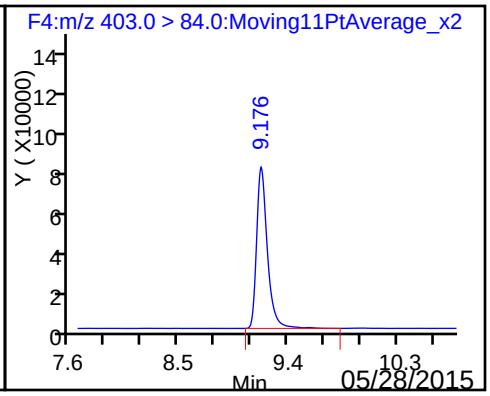
D 8 13C4-PFHpA



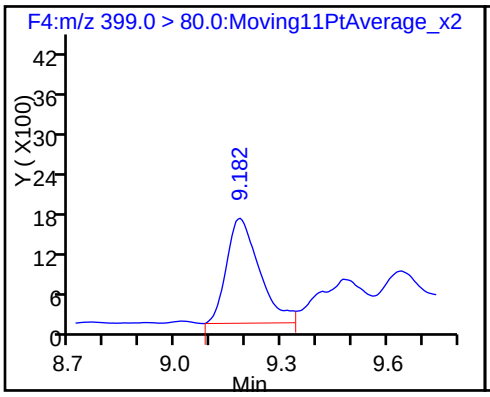
9 Perfluoroheptanoic acid



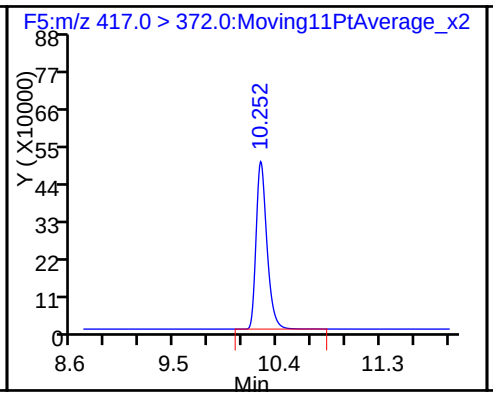
D 11 18O2 PFHxS



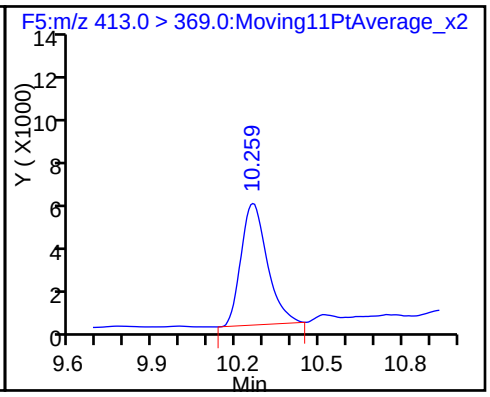
10 Perfluorohexane Sulfonate



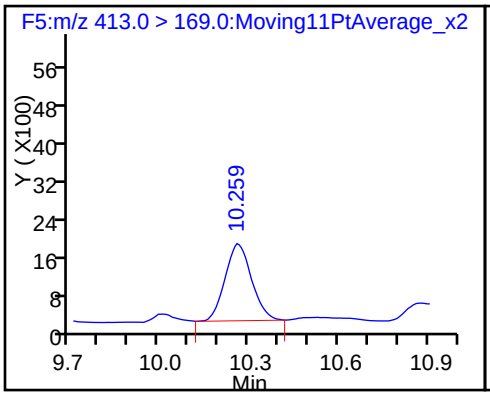
D 12 13C4 PFOA



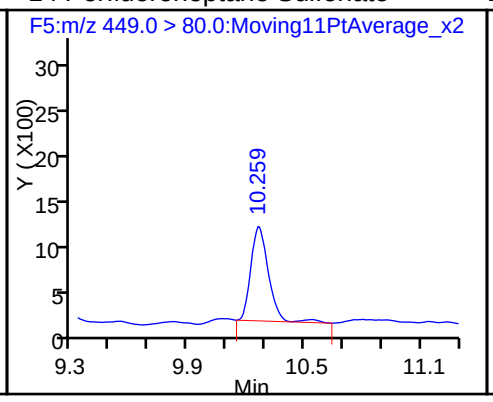
13 Perfluorooctanoic acid



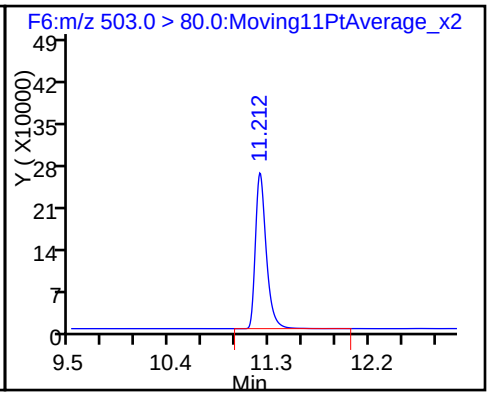
13 Perfluorooctanoic acid



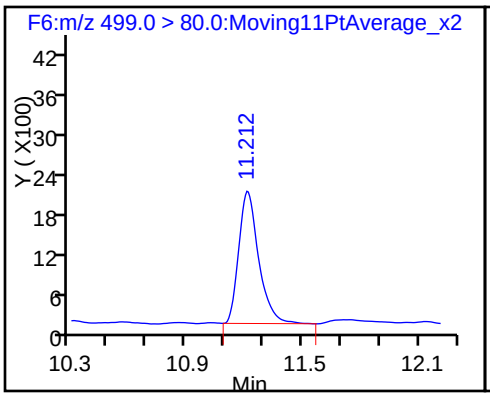
14 Perfluoroheptane Sulfonate



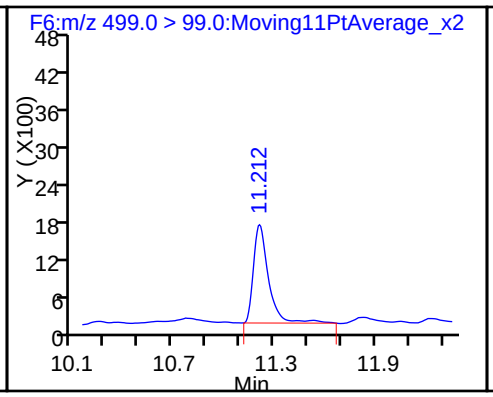
D 16 13C4 PFOS



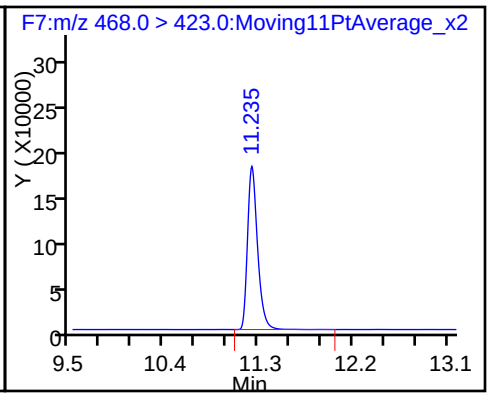
15 Perfluorooctane sulfonic acid



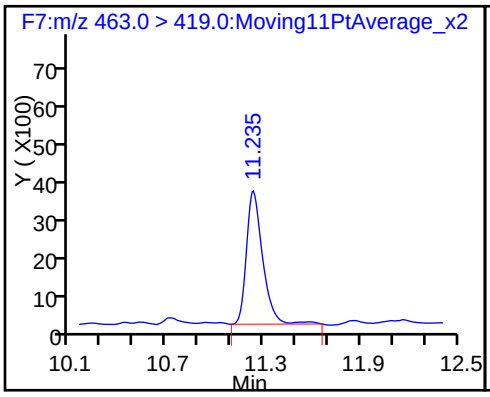
15 Perfluorooctane sulfonic acid



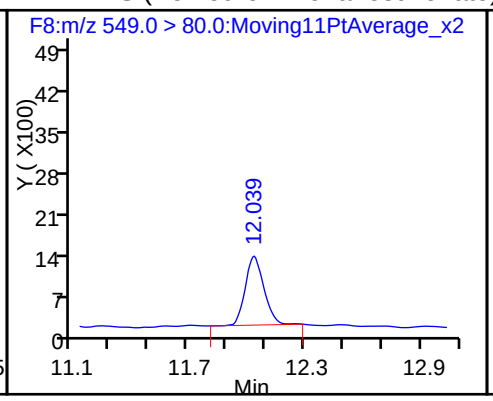
D 17 13C5 PFNA



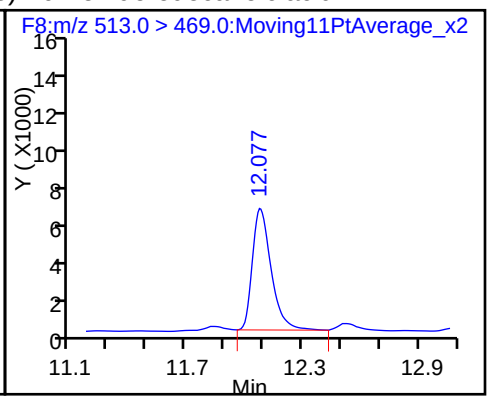
18 Perfluorononanoic acid



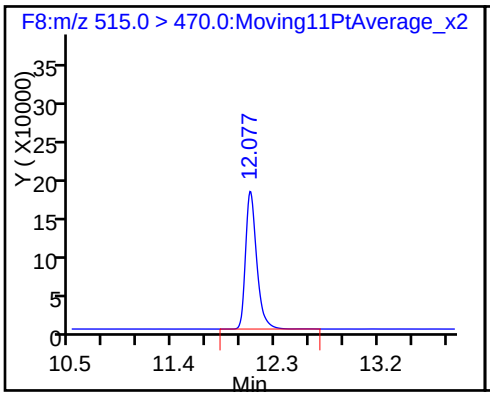
21 PFNS (Perflouro-1-nonanesulfonate)



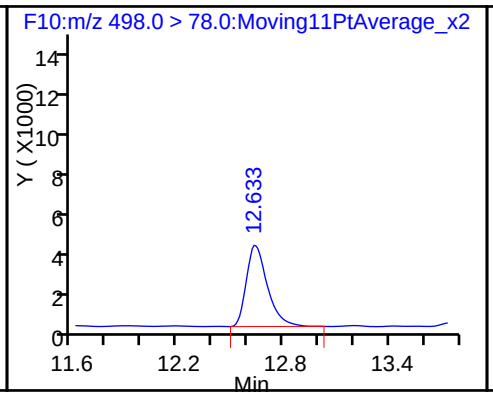
20 Perfluorodecanoic acid



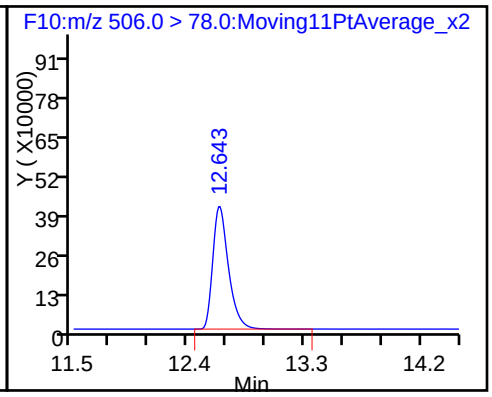
D 19 13C2 PFDA



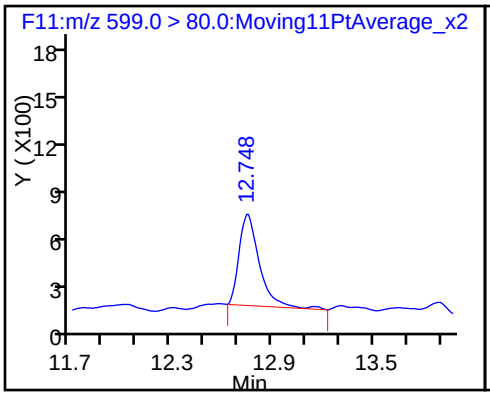
24 Perfluorooctane Sulfonamide



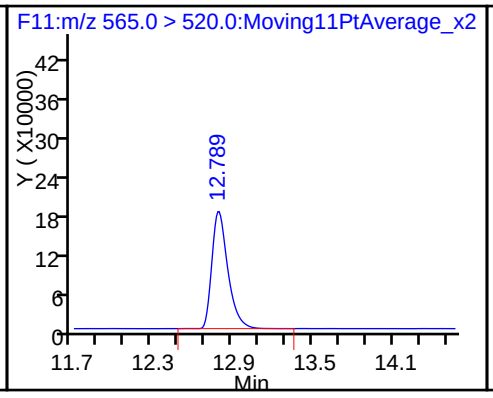
D 23 13C8 FOSA



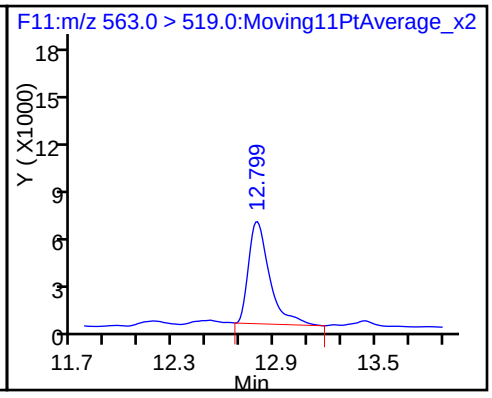
25 Perfluorodecane Sulfonate



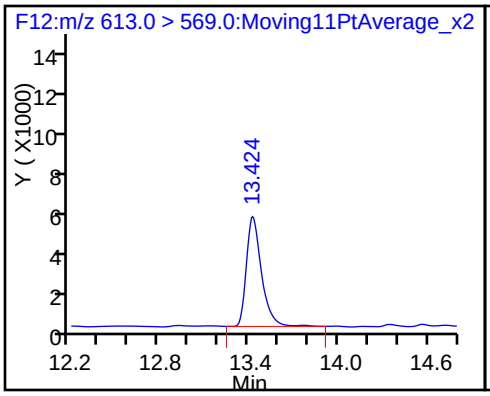
D 26 13C2 PFUnA



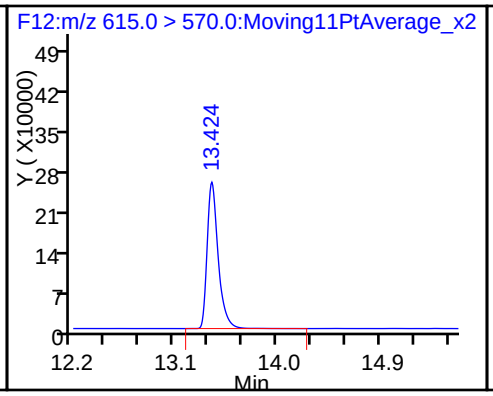
27 Perfluoroundecanoic acid



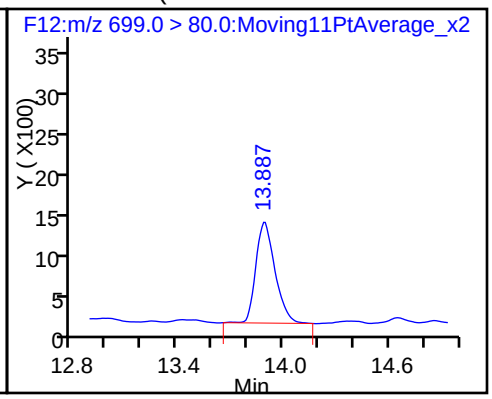
29 Perfluorododecanoic acid



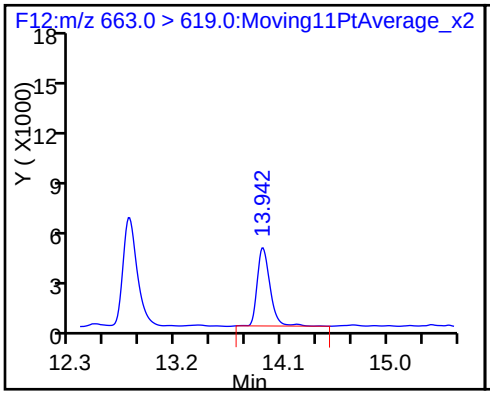
D 28 13C2 PFDoA



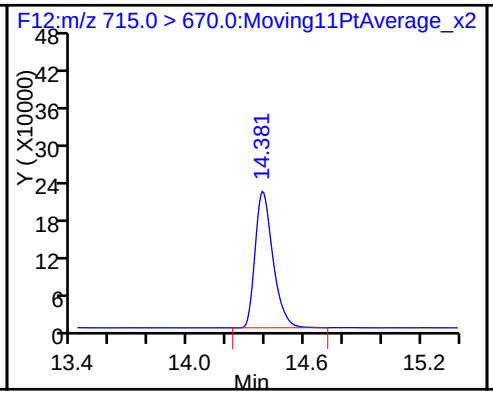
31 PFDoS (Perflouro-1-dodecanesulfona



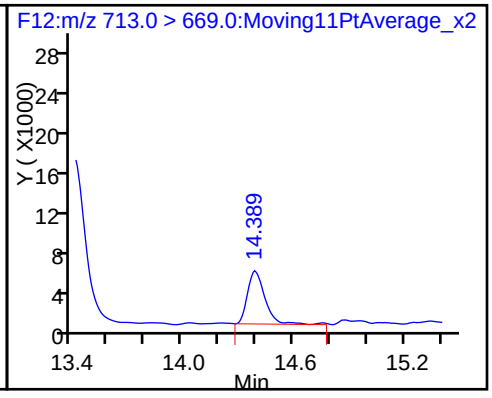
30 Perfluorotridecanoic acid



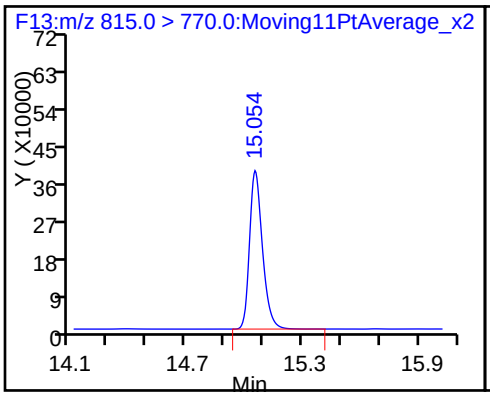
D 33 13C2-PFTeDA



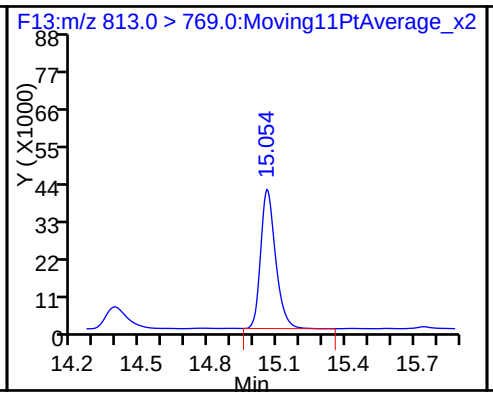
32 Perfluorotetradecanoic acid



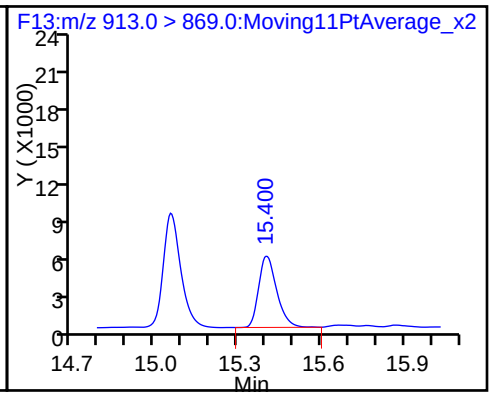
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_005.d
Lims ID: Std L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 18-May-2015 15:44:33 ALS Bottle#: 2 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: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:14 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 10:42:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.668	5.669	-0.001	1.000	43842	1.10		110	103	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.670	-0.002		530090	21.3		107	2379	
D 3 13C5-PFPeA										
267.9 > 223.0	6.762	6.760	0.002		979985	22.3		112	2813	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.762	6.761	0.001	1.000	51565	1.02		102	42.4	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.872	6.873	-0.001	1.000	18353	0.7228		81.8	13.3	
298.9 > 99.0	6.877	6.873	0.004	1.001	11961		1.53(0.00-0.00)	81.8	10.7	
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	7.981	0.004		1168324	22.8		114	5215	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.991	7.982	0.009	1.000	61816	1.00		100	164	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.062	8.056	0.006	0.873	11698	0.9296		99.1	40.0	
D 8 13C4-PFHpA										
367.0 > 322.0	9.206	9.196	0.010		1252027	22.6		113	4357	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.206	9.196	0.010	1.000	70119	1.07		107	146	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.226	0.009		430247	19.6		104	1495	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.223	9.227	-0.004	1.000	16108	1.10		116	14.4	
D 12 13C4 PFOA										
417.0 > 372.0	10.315	10.304	0.011		3082502	58.2		116	8259	

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	10.315	10.306	0.009	1.000	63593	1.02		102	23.8	
413.0 > 169.0	10.315	10.306	0.009	1.000	22626		2.81(0.00-0.00)	102	22.4	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.329	10.311	0.018	1.000	13886	0.9187		96.5	46.6	
D 16 13C4 PFOS										
503.0 > 80.0	11.270	11.260	0.010		1673565	54.1		113	3963	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.270	11.261	0.009	1.000	33869	0.99		104	91.5	
499.0 > 99.0	11.270	11.261	0.009	1.000	17321		1.96(0.00-0.00)	104	42.5	
D 17 13C5 PFNA										
468.0 > 423.0	11.285	11.280	0.005		1094811	22.6		113	3175	
18 Perfluorononanoic acid										
463.0 > 419.0	11.293	11.281	0.012	1.000	47238	0.9881		98.8	112	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.099	12.086	0.013	1.000	14596	0.9199		95.8	70.6	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.130	12.121	0.009	1.000	71081	1.05		105	173	
D 19 13C2 PFDA										
515.0 > 470.0	12.130	12.121	0.009		1149415	23.2		116	2597	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.684	12.675	0.009	1.000	65393	0.9819		98.2	232	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		3038149	53.0		106	5827	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.799	12.786	0.013	1.000	17429	1.14		118	62.4	
D 26 13C2 PFUnA										
565.0 > 520.0	12.841	12.830	0.011		1522372	23.9		120	2801	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.841	12.833	0.008	1.000	87615	1.20		120	69.4	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.478	13.462	0.016	1.000	66319	1.02		102	87.8	
D 28 13C2 PFDoA										
615.0 > 570.0	13.478	13.462	0.016		1594184	22.3		112	2494	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.933	13.918	0.015	1.000	21157	1.18		122	72.6	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.988	13.976	0.012	1.000	74117	1.09		109	45.6	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.427	14.412	0.015		1415289	22.1		110	2810	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.427	14.413	0.014	1.000	62227	1.17		117	16.3	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.084	15.072	0.012		1733816	20.8		104	2644	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.084	15.072	0.012	1.000	207812	0.9083		90.8	162	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.421	15.409	0.012	1.000	50349	0.8087		80.9	46.0	

Reagents:

LCPFC-L2_00012 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:14 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_005.d

Injection Date: 18-May-2015 15:44:33 Instrument ID: A6

Lims ID: Std L2

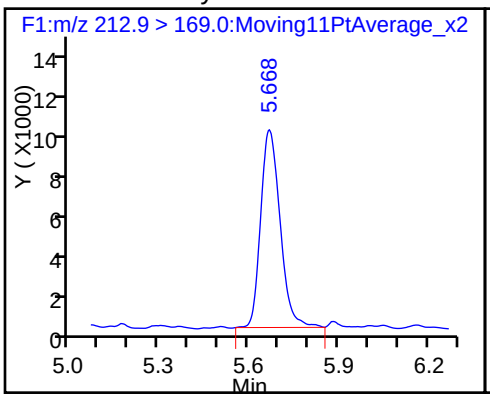
Client ID:

Operator ID: JSS ALS Bottle#: 2 Worklist Smp#: 3

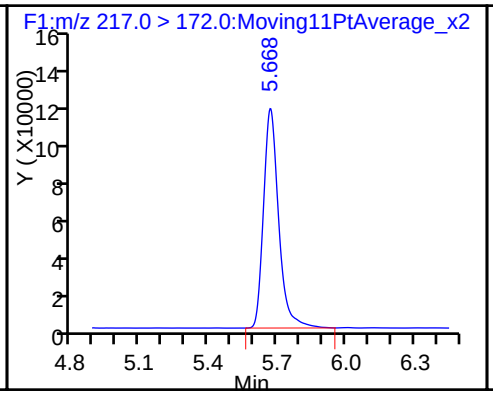
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

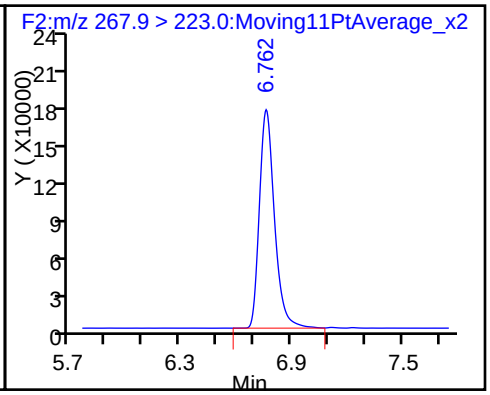
2 Perfluorobutyric acid



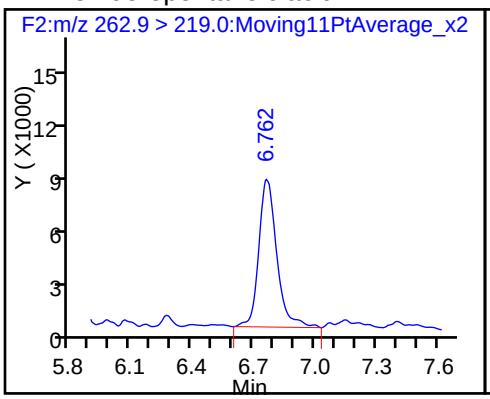
D 1 13C4 PFBA



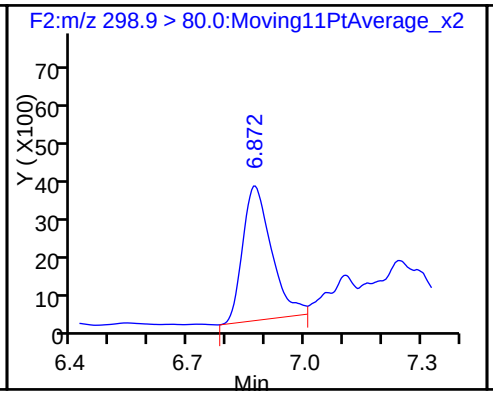
D 3 13C5-PFPeA



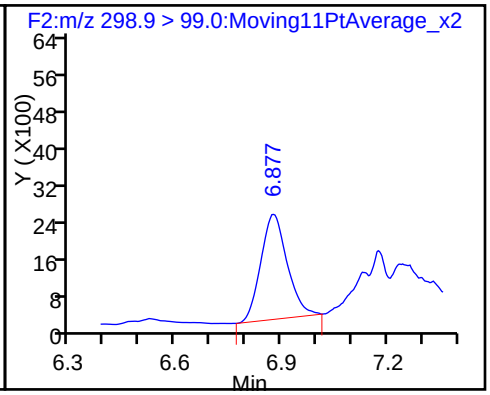
4 Perfluoropentanoic acid



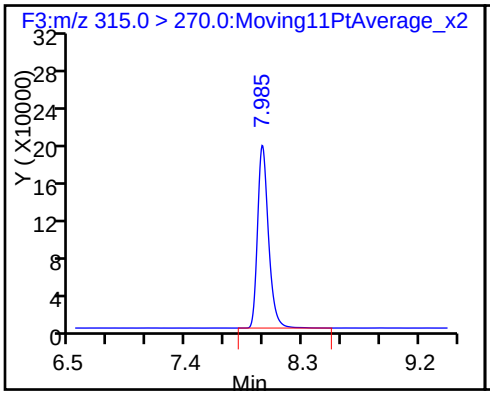
5 Perfluorobutane Sulfonate



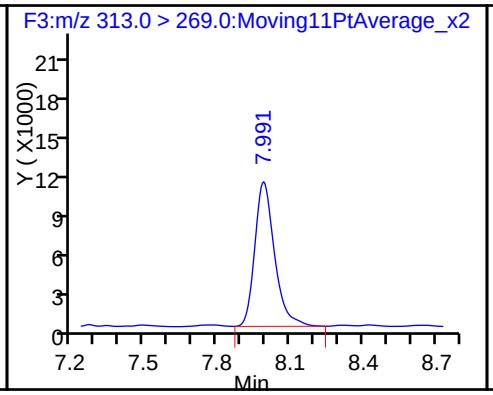
5 Perfluorobutane Sulfonate



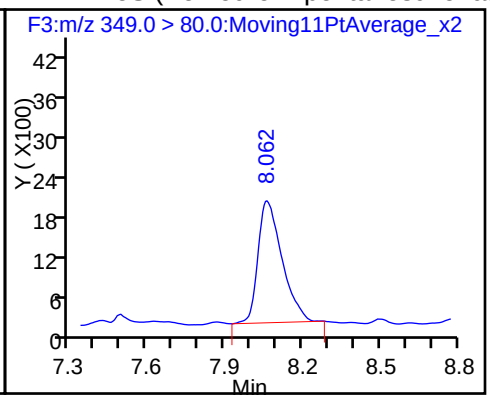
D 6 13C2 PFHxA



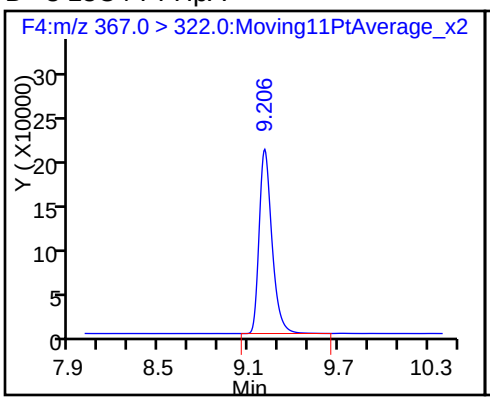
7 Perfluorohexanoic acid



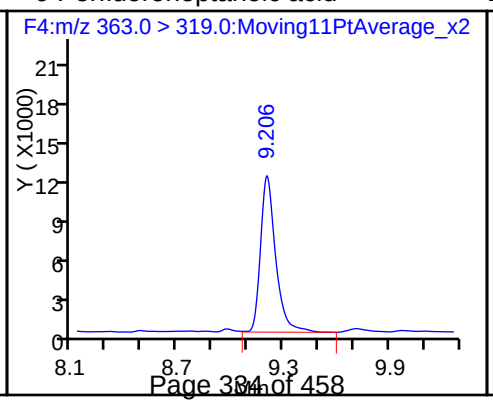
22 PFPeS (Perflouro-1-pentanesulfonat



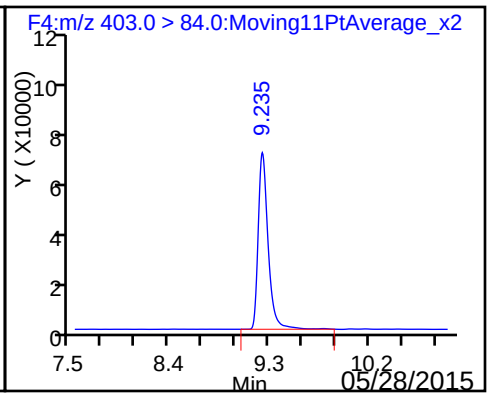
D 8 13C4-PFHpA



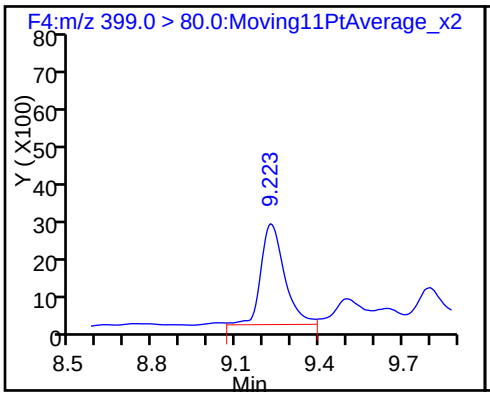
9 Perfluoroheptanoic acid



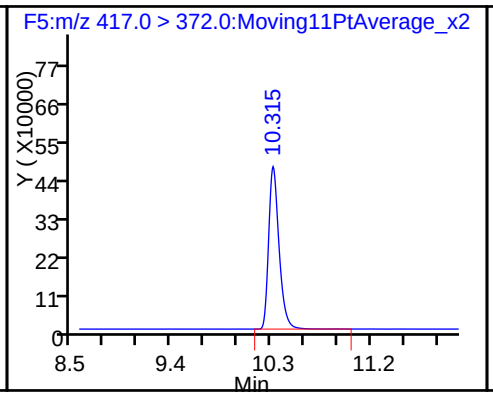
D 11 18O2 PFHxS



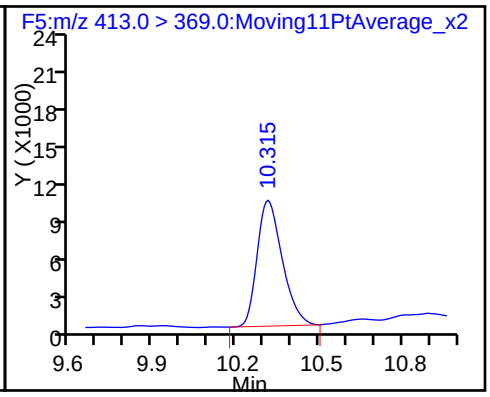
10 Perfluorohexane Sulfonate



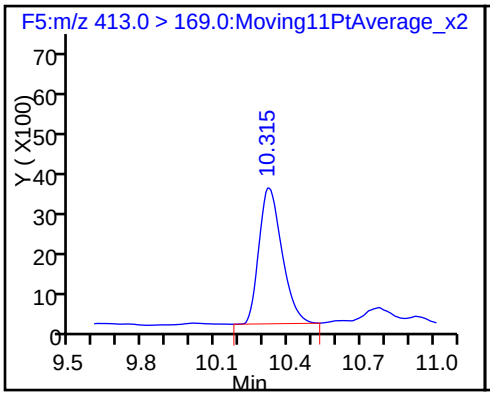
D 12 13C4 PFOA



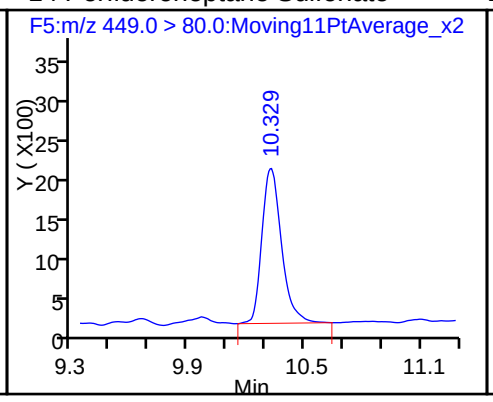
13 Perfluorooctanoic acid



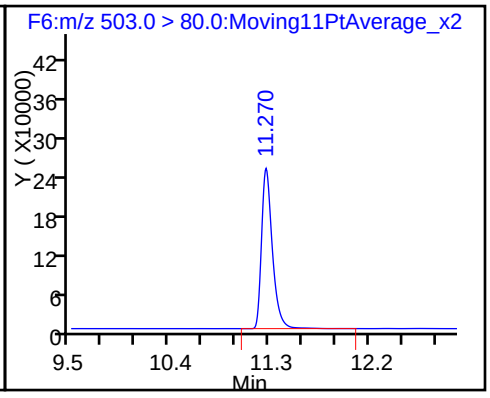
13 Perfluorooctanoic acid



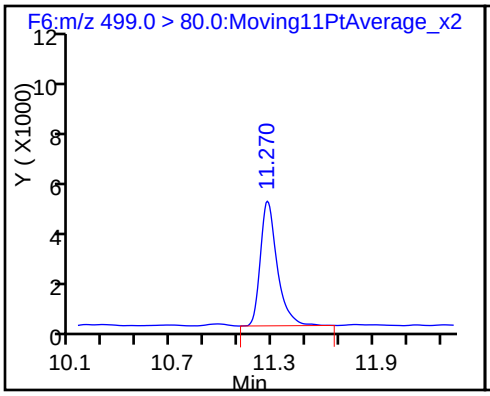
14 Perfluoroheptane Sulfonate



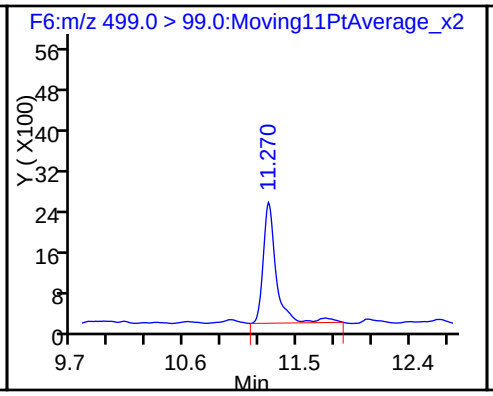
D 16 13C4 PFOS



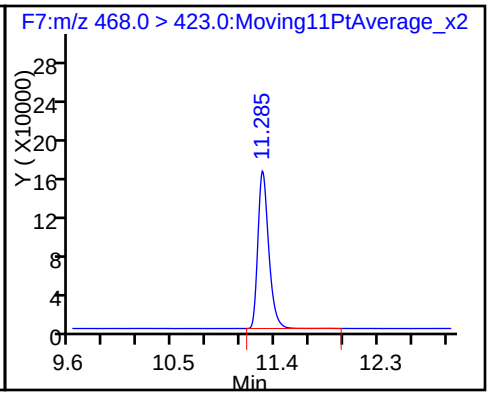
15 Perfluorooctane sulfonic acid



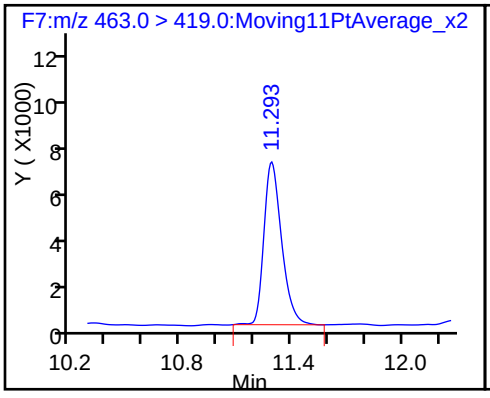
15 Perfluorooctane sulfonic acid



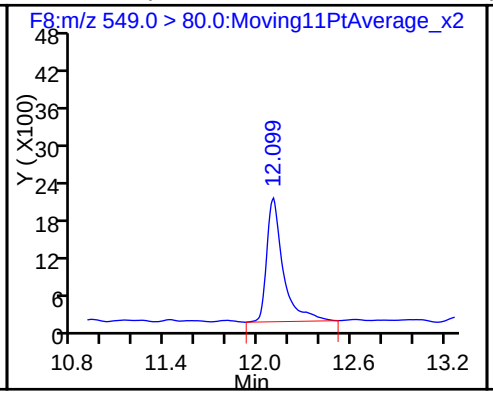
D 17 13C5 PFNA



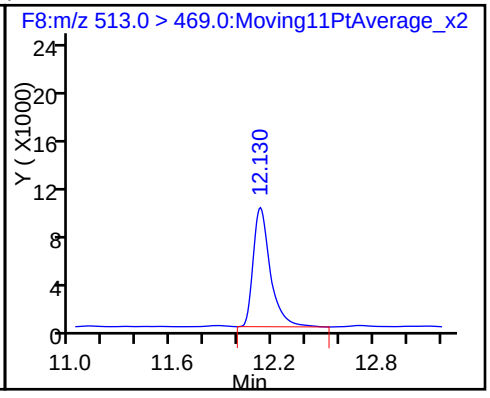
18 Perfluorononanoic acid



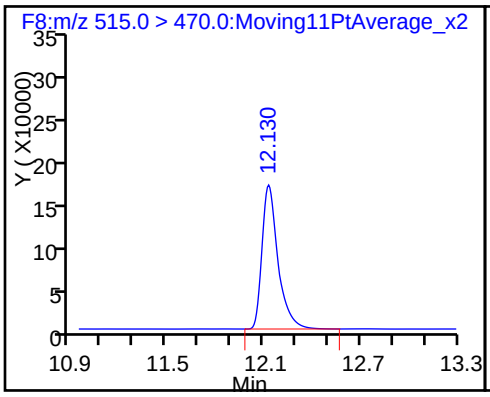
21 PFNS (Perflouro-1-nonanesulfonate)



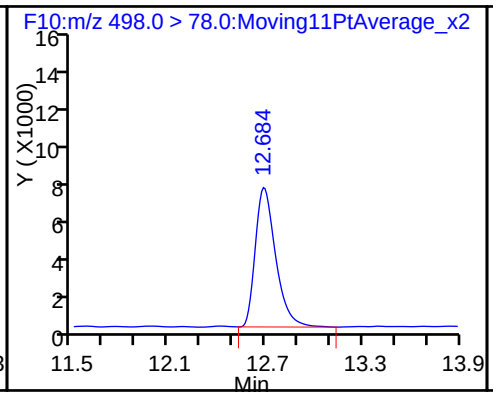
20 Perfluorodecanoic acid



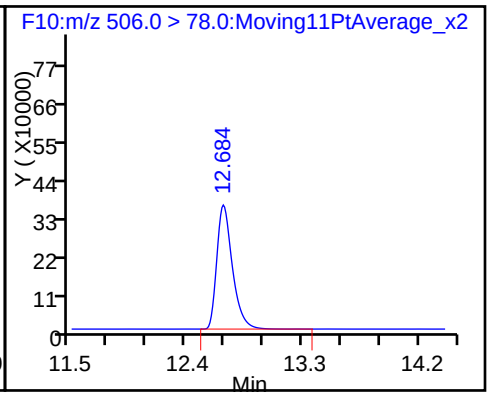
D 19 13C2 PFDA



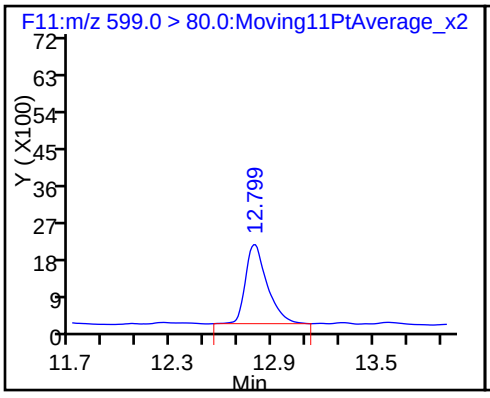
24 Perfluorooctane Sulfonamide



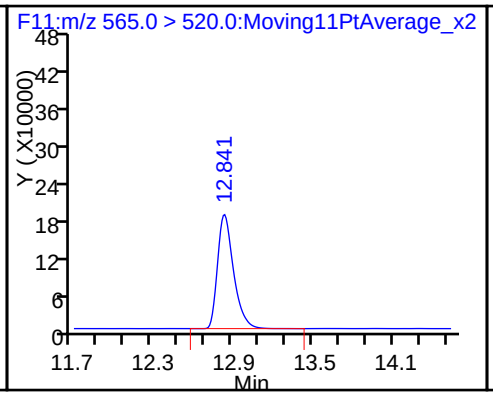
D 23 13C8 FOSA



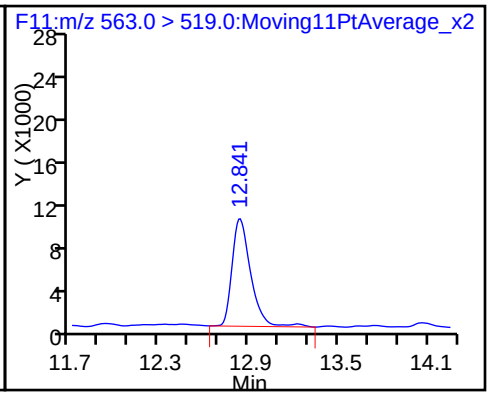
25 Perfluorodecane Sulfonate



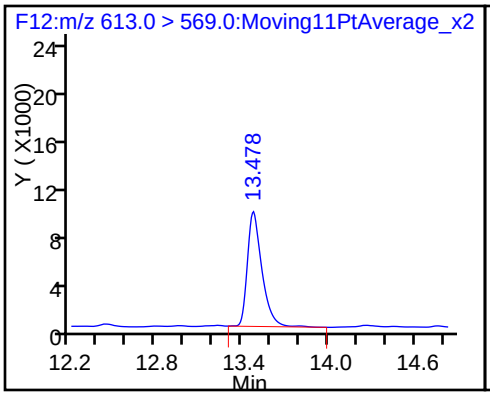
D 26 13C2 PFUnA



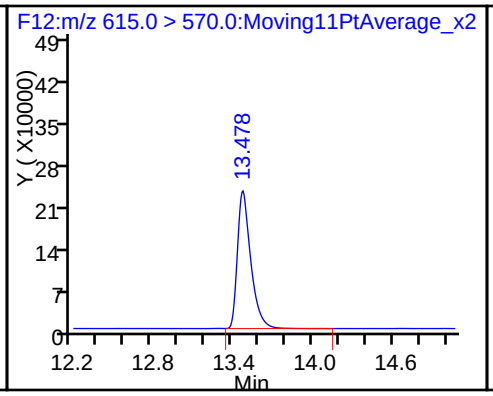
27 Perfluoroundecanoic acid



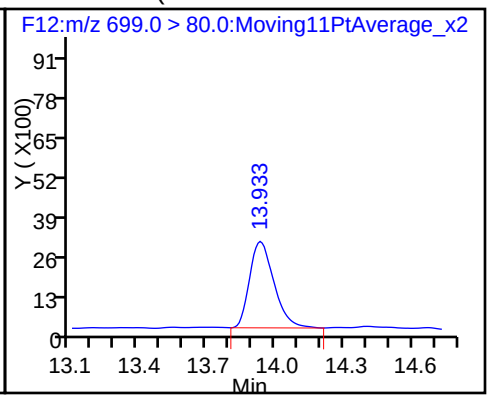
29 Perfluorododecanoic acid



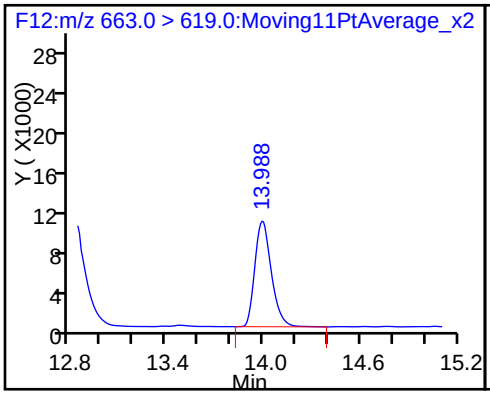
D 28 13C2 PFDoA



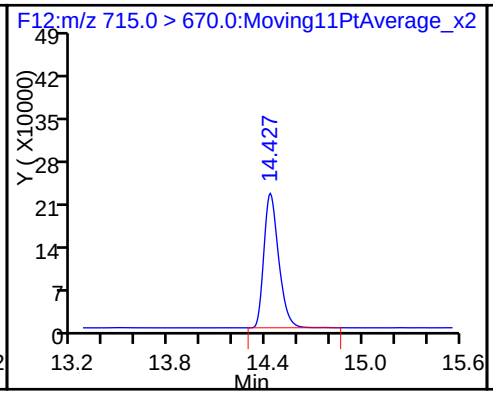
31 PFDoS (Perflouro-1-dodecanesulfona



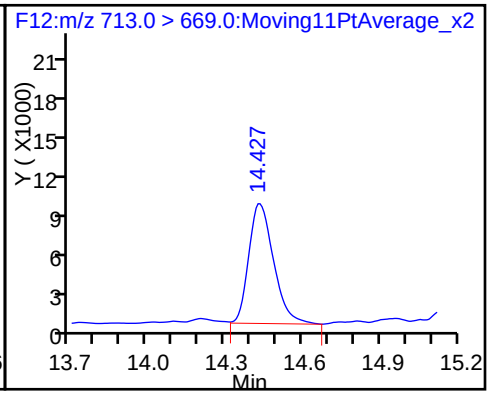
30 Perfluorotridecanoic acid



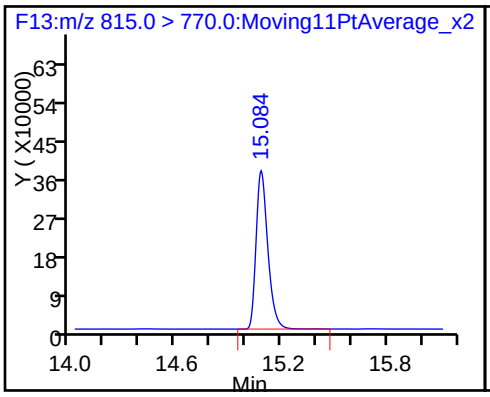
D 33 13C2-PFTeDA



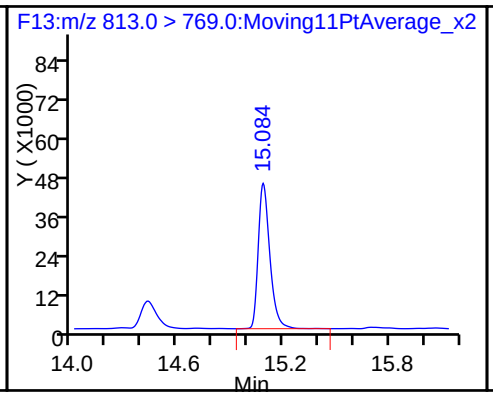
32 Perfluorotetradecanoic acid



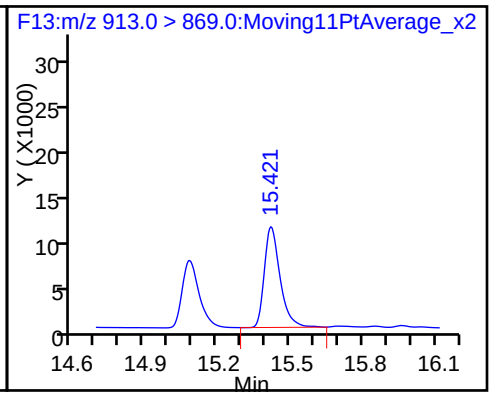
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_006.d
Lims ID: Std L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 18-May-2015 16:05:46 ALS Bottle#: 3 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: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 10:43:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.674	5.669	0.005	1.000	193520	5.03		101	598	
D 1 13C4 PFBA										
217.0 > 172.0	5.671	5.670	0.001		511513	20.6		103	3008	
D 3 13C5-PFPeA										
267.9 > 223.0	6.767	6.760	0.007		916509	20.9		104	2885	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.767	6.761	0.006	1.000	238993	5.06		101	174	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.877	6.873	0.004	1.000	100576	4.05		91.7	62.8	
298.9 > 99.0	6.882	6.873	0.009	1.001	55027		1.83(0.00-0.00)	91.7	52.8	
D 6 13C2 PFHxA										
315.0 > 270.0	7.991	7.981	0.010		1093818	21.4		107	5271	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.991	7.982	0.009	1.000	292679	5.06		101	573	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.067	8.056	0.011	0.873	62338	5.07		108	280	
D 8 13C4-PFHpA										
367.0 > 322.0	9.212	9.196	0.016		1257855	22.7		114	4744	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.212	9.196	0.016	1.000	318583	4.86		97.1	894	
D 11 18O2 PFHxS										
403.0 > 84.0	9.241	9.226	0.015		420413	19.1		101	1629	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.241	9.227	0.014	1.000	60456	4.21		89.0	44.4	
D 12 13C4 PFOA										
417.0 > 372.0	10.322	10.304	0.018		2970573	56.0		112	9149	

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	10.322	10.306	0.016	1.000	288353	4.79		95.8	110	
413.0 > 169.0	10.322	10.306	0.016	1.000	108138		2.67(0.00-0.00)	95.8	105	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.322	10.311	0.011	1.000	66749	4.61		96.9	316	
D 16 13C4 PFOS										
503.0 > 80.0	11.277	11.260	0.017		1602446	51.8		108	6669	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.277	11.261	0.016	1.000	157962	4.84		101	257	
499.0 > 99.0	11.277	11.261	0.016	1.000	87366		1.81(0.00-0.00)	101	192	
D 17 13C5 PFNA										
468.0 > 423.0	11.293	11.280	0.013		1034824	21.4		107	2112	
18 Perfluorononanoic acid										
463.0 > 419.0	11.293	11.281	0.012	1.000	233336	5.16		103	493	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.099	12.086	0.013	1.000	73717	4.85		101	295	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.130	12.121	0.009	1.000	332284	5.07		101	722	
D 19 13C2 PFDA										
515.0 > 470.0	12.130	12.121	0.009		1111282	22.4		112	3791	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.684	12.675	0.009	1.000	343707	5.45		109	1565	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2876186	50.2		100	4533	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.799	12.786	0.013	1.000	60040	4.10		85.0	172	
D 26 13C2 PFUnA										
565.0 > 520.0	12.841	12.830	0.011		1379777	21.7		108	1556	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.841	12.833	0.008	1.000	346260	5.22		104	301	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.478	13.462	0.016	1.000	304124	4.89		97.7	458	
D 28 13C2 PFDoA										
615.0 > 570.0	13.478	13.462	0.016		1521720	21.3		107	2152	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.933	13.918	0.015	1.000	68785	4.00		82.6	207	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.988	13.976	0.012	1.000	341027	5.25		105	191	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.427	14.412	0.015		1250799	19.5		97.5	2529	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.427	14.413	0.014	1.000	247794	4.89		97.8	61.6	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.084	15.072	0.012		1731671	20.7		104	2779	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.084	15.072	0.012	1.000	529276	4.78		95.6	448	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.421	15.409	0.012	1.000	249857	4.20		84.1	211	

Reagents:

LCPFC-L3_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:15 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_006.d

Injection Date: 18-May-2015 16:05:46 Instrument ID: A6

Lims ID: Std L3

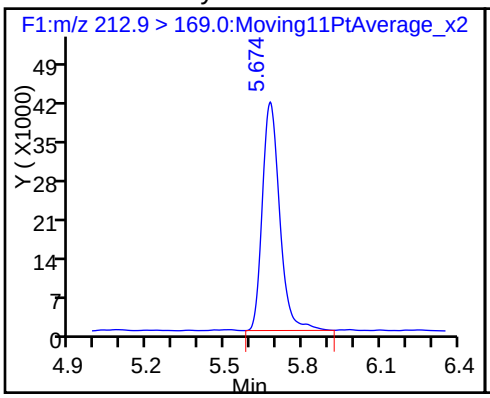
Client ID:

Operator ID: JSS ALS Bottle#: 3 Worklist Smp#: 4

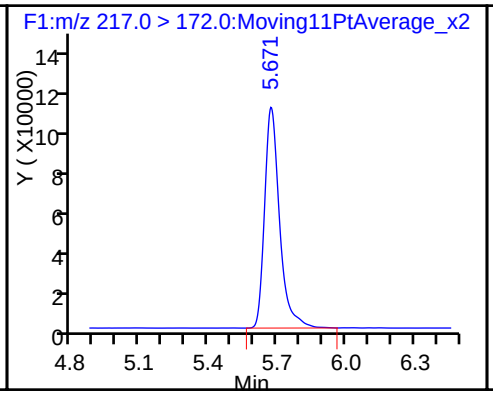
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

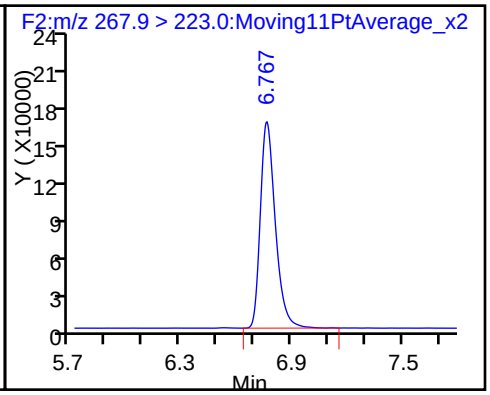
2 Perfluorobutyric acid



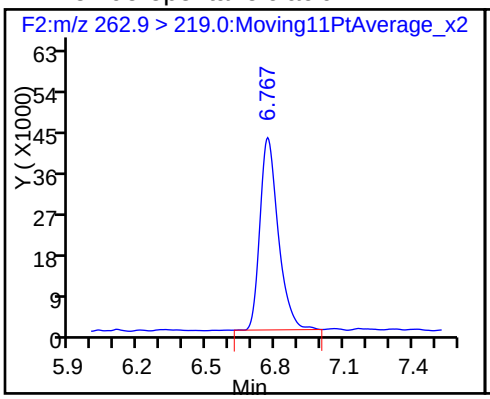
D 1 13C4 PFBA



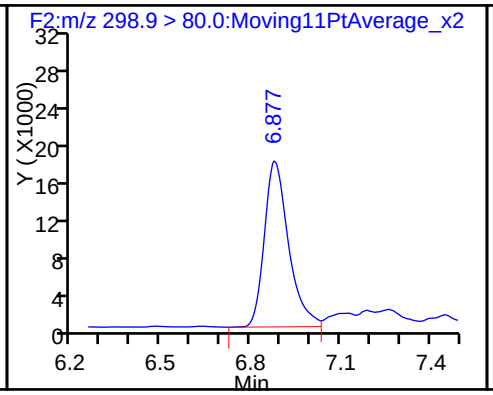
D 3 13C5-PFPeA



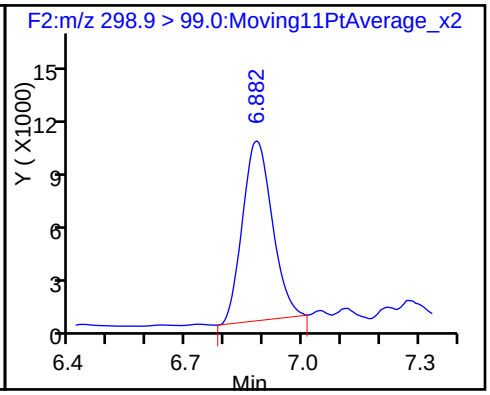
4 Perfluoropentanoic acid



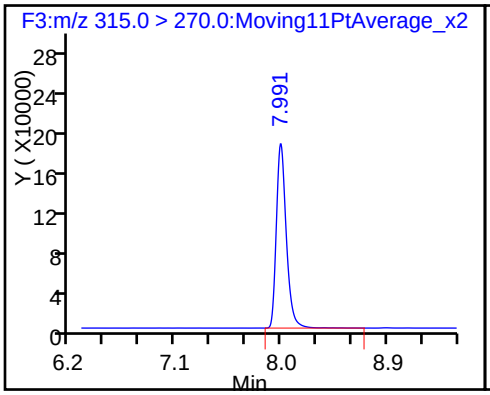
5 Perfluorobutane Sulfonate



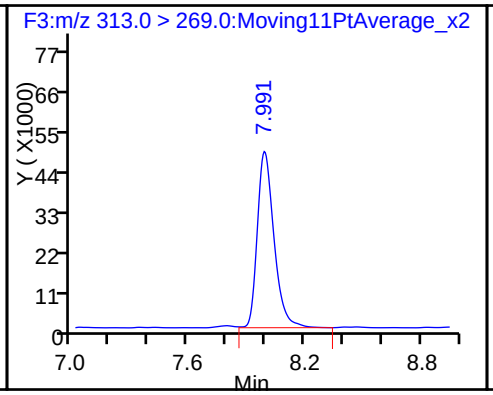
5 Perfluorobutane Sulfonate



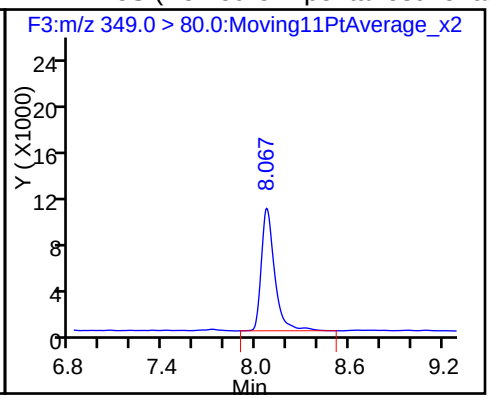
D 6 13C2 PFHxA



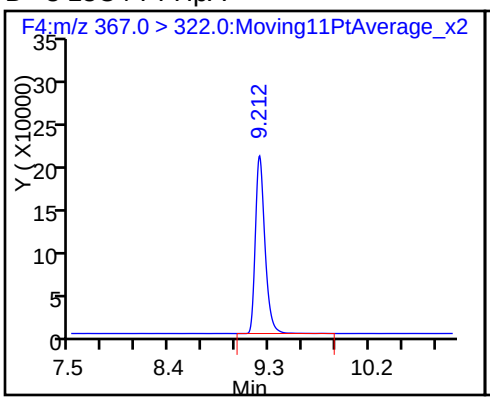
7 Perfluorohexanoic acid



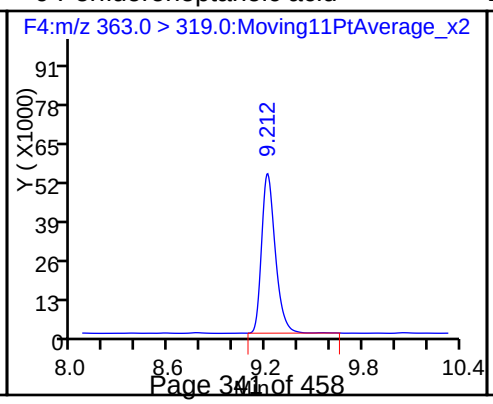
22 PFPeS (Perflouro-1-pentanesulfonat



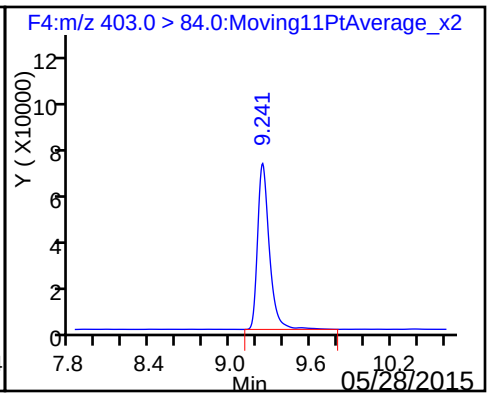
D 8 13C4-PFHpA



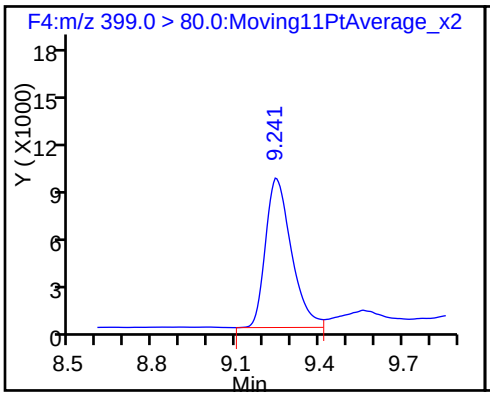
9 Perfluoroheptanoic acid



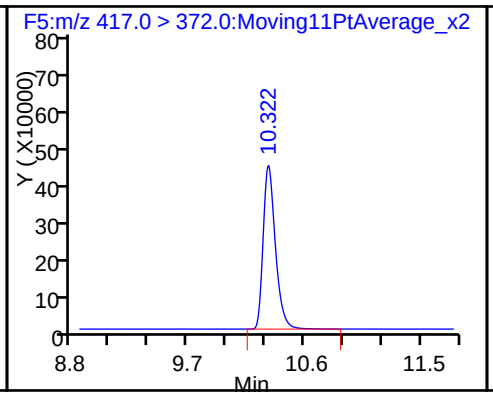
D 11 18O2 PFHxS



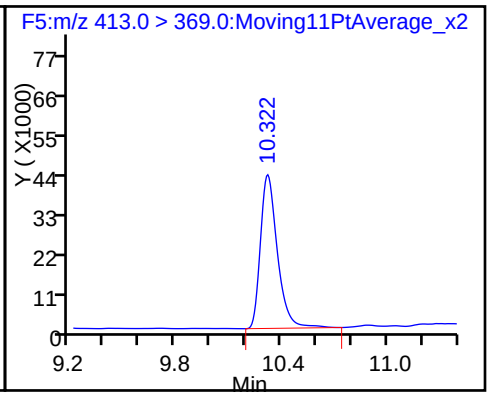
10 Perfluorohexane Sulfonate



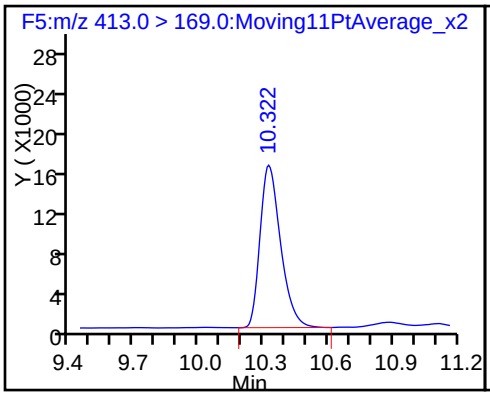
D 12 13C4 PFOA



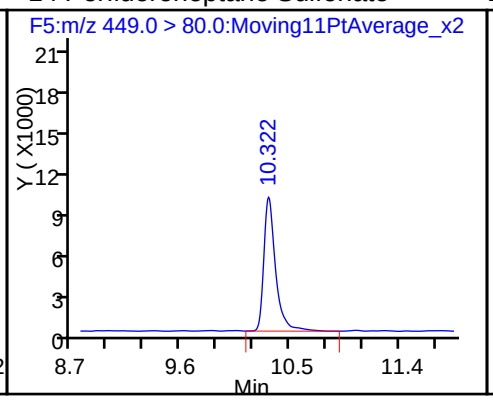
13 Perfluorooctanoic acid



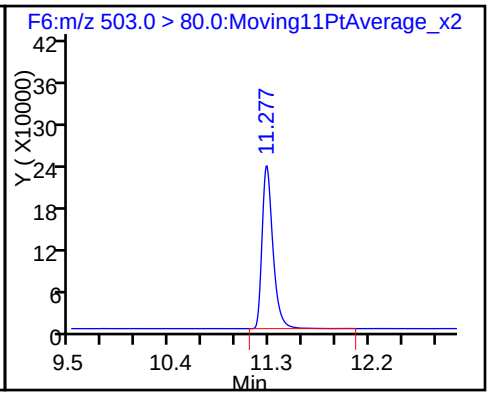
13 Perfluorooctanoic acid



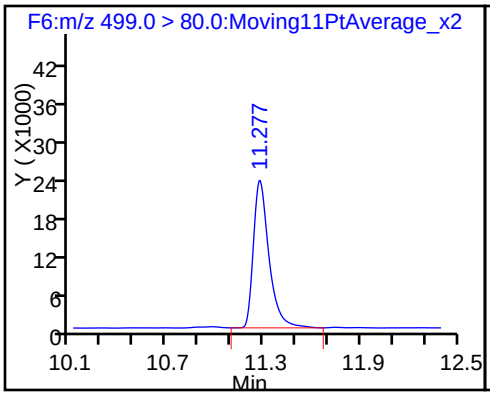
14 Perfluoroheptane Sulfonate



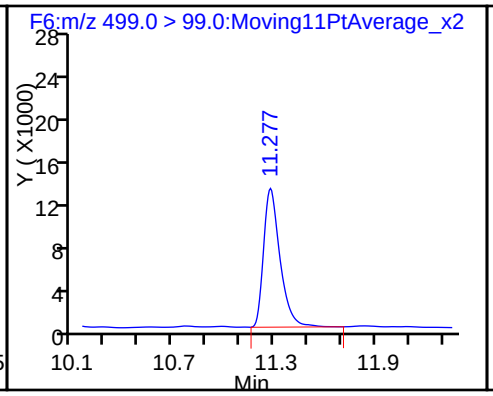
D 16 13C4 PFOS



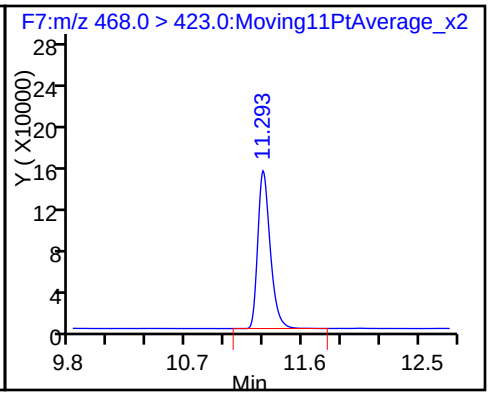
15 Perfluorooctane sulfonic acid



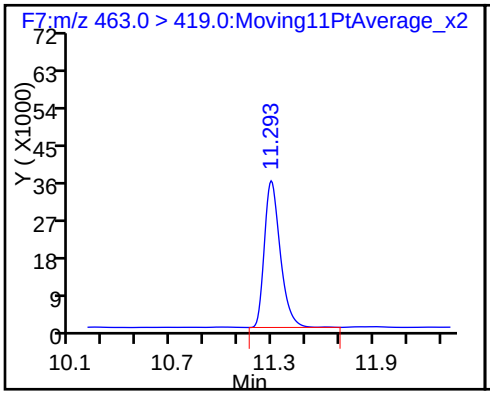
15 Perfluorooctane sulfonic acid



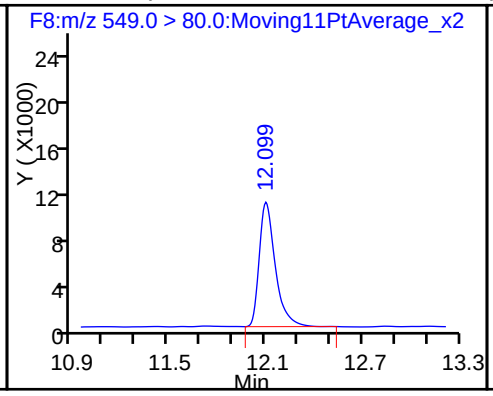
D 17 13C5 PFNA



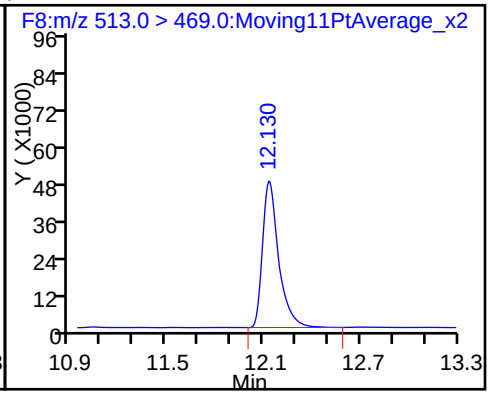
18 Perfluorononanoic acid



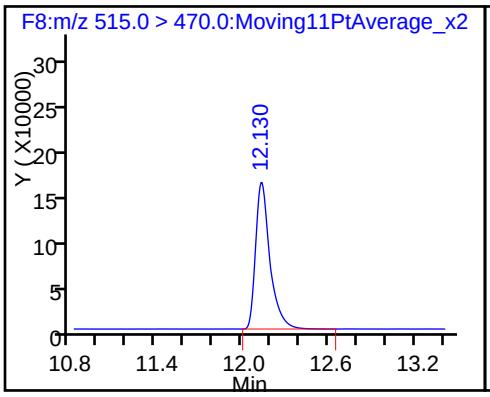
21 PFNS (Perflouro-1-nonanesulfonate)



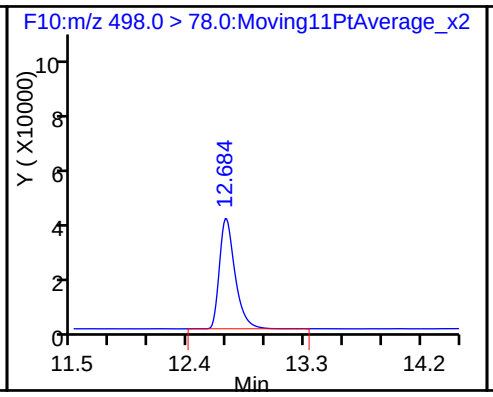
20 Perfluorodecanoic acid



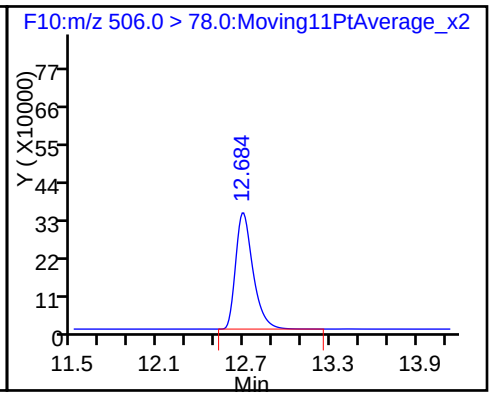
D 19 13C2 PFDA



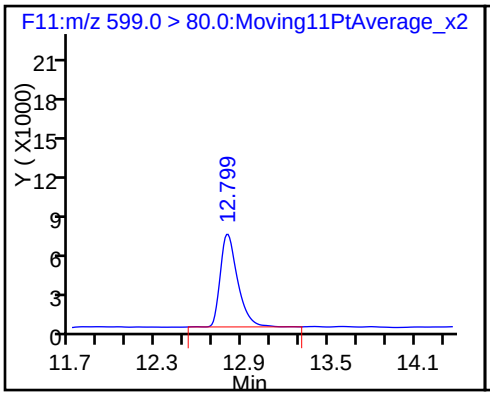
24 Perfluorooctane Sulfonamide



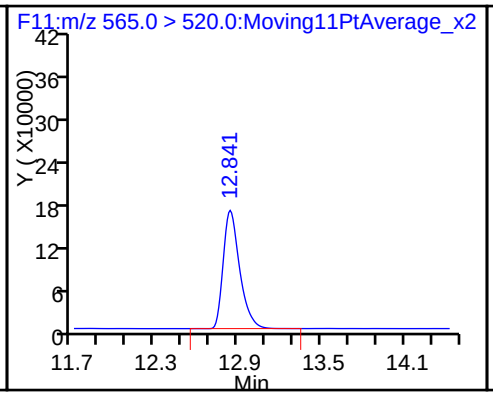
D 23 13C8 FOSA



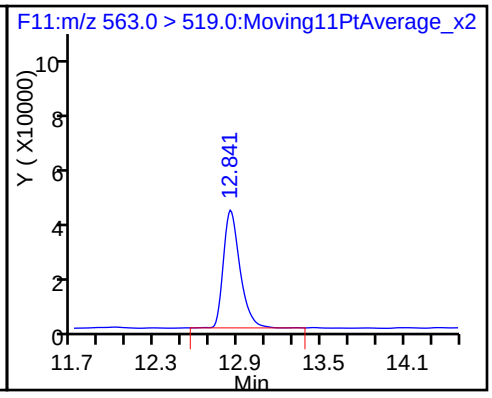
25 Perfluorodecane Sulfonate



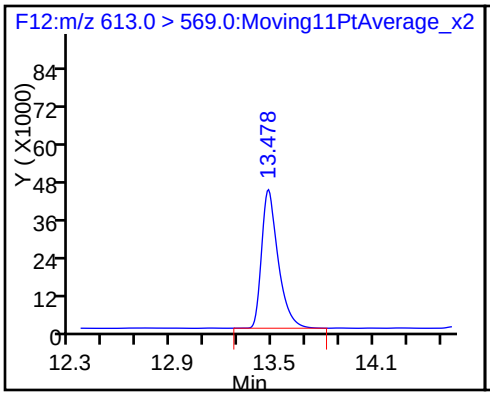
D 26 13C2 PFUnA



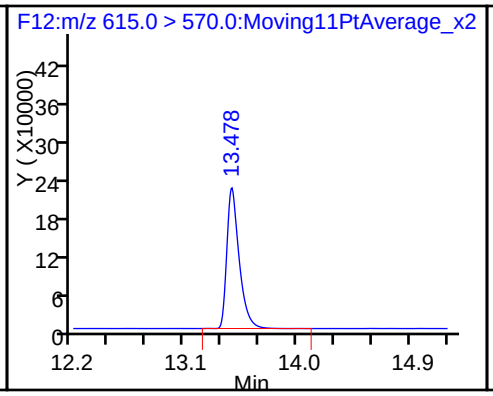
27 Perfluoroundecanoic acid



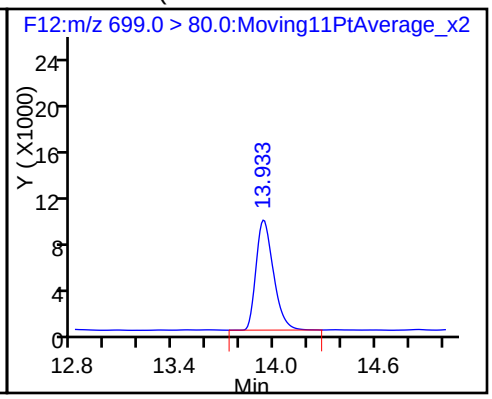
29 Perfluorododecanoic acid



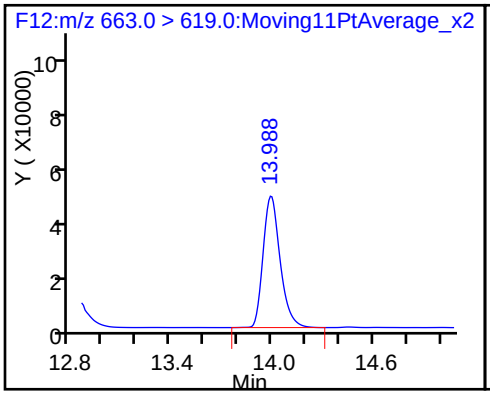
D 28 13C2 PFDoA



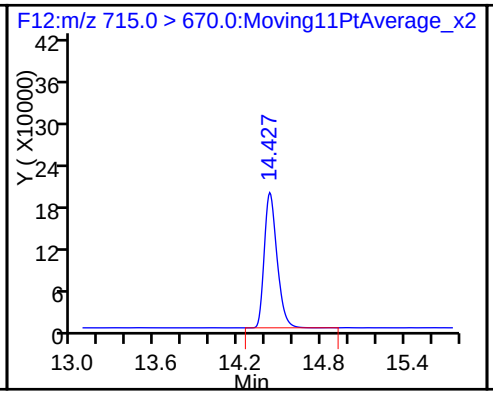
31 PFDoS (Perflouro-1-dodecanesulfona



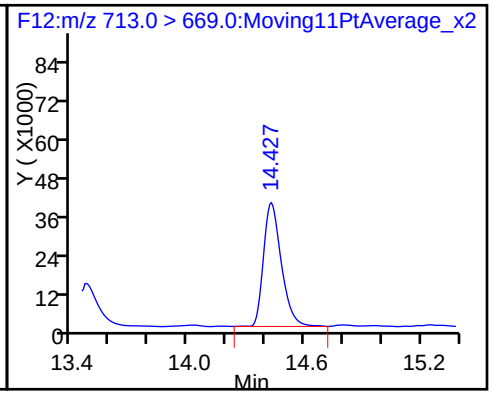
30 Perfluorotridecanoic acid



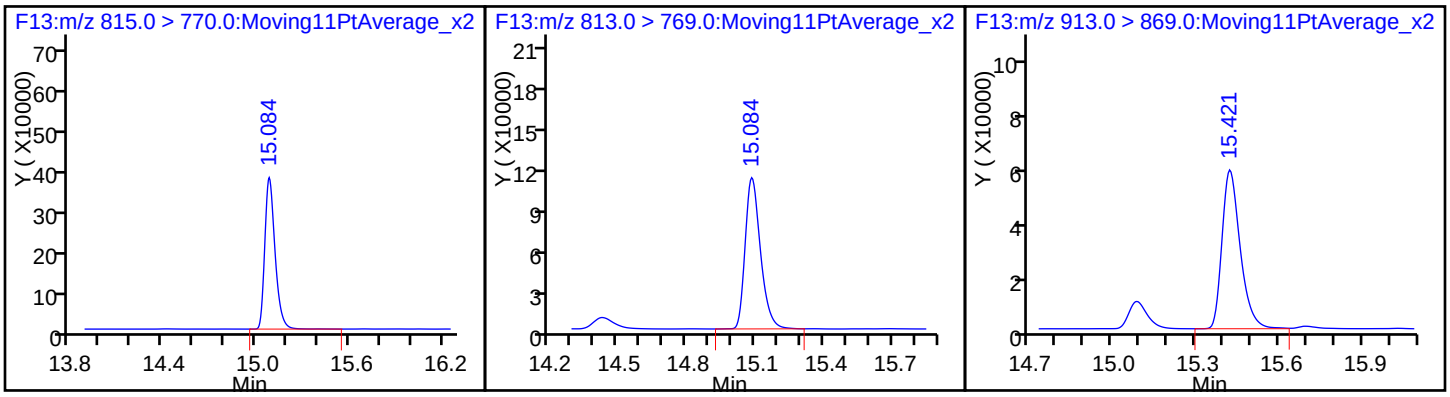
D 33 13C2-PFTeDA



32 Perfluorotetradecanoic acid



D 35 13C2-PFHxDA | 34 Perfluorohexadecanoic acid | 36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_008.d
Lims ID: Std L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 18-May-2015 16:48:16 ALS Bottle#: 5 Worklist Smp#: 5
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: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:17 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 10:41:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.668	5.669	-0.001	1.000	1838615	49.6		99.2	3860	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.670	-0.002		492303	19.8		99.0	1304	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		890853	20.3		102	4036	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.757	6.761	-0.004	1.000	2150779	46.8		93.6	1528	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.868	6.873	-0.005	1.000	1443807	58.6		133	817	
298.9 > 99.0	6.872	6.873	-0.001	1.001	915135		1.58(0.00-0.00)	133	713	
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	7.981	-0.001		1022534	20.0		99.9	3646	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	7.982	0.003	1.000	2580804	47.7		95.5	2656	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.062	8.056	0.006	0.874	591251	48.4		103	1938	
D 8 13C4-PFHpA										
367.0 > 322.0	9.200	9.196	0.004		1113910	20.1		101	4326	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.200	9.196	0.004	1.000	2856646	49.2		98.3	5971	
D 11 18O2 PFHxS										
403.0 > 84.0	9.229	9.226	0.003		417313	19.0		100	927	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.229	9.227	0.002	1.000	599636	42.1		88.9	527	
D 12 13C4 PFOA										
417.0 > 372.0	10.308	10.304	0.004		2581715	48.7		97.4	10133	

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	10.308	10.306	0.002	1.000	2534725	48.5		96.9	814	
413.0 > 169.0	10.308	10.306	0.002	1.000	909219		2.79(0.00-0.00)	96.9	704	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.315	10.311	0.004	1.000	635292	46.9		98.6	2440	
D 16 13C4 PFOS										
503.0 > 80.0	11.262	11.260	0.002		1498386	48.4		101	4011	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.262	11.261	0.001	1.000	1442217	47.3		99.0	443	
499.0 > 99.0	11.262	11.261	0.001	1.000	894699		1.61(0.00-0.00)	99.0	1917	
D 17 13C5 PFNA										
468.0 > 423.0	11.285	11.280	0.005		964894	19.9		99.7	2892	
18 Perfluorononanoic acid										
463.0 > 419.0	11.285	11.281	0.004	1.000	2007057	47.6		95.3	2774	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.084	12.086	-0.002	1.000	686373	48.3		101	3706	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.122	12.121	0.001	1.000	2696020	47.8		95.6	6667	
D 19 13C2 PFDA										
515.0 > 470.0	12.122	12.121	0.001		956777	19.3		96.6	3512	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.674	12.675	-0.001	1.000	3252075	51.9		104	3760	
D 23 13C8 FOSA										
506.0 > 78.0	12.674	12.677	-0.003		2860157	49.9		99.7	6277	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.789	12.786	0.003	1.000	712238	52.0		108	2675	
D 26 13C2 PFUnA										
565.0 > 520.0	12.830	12.830	0.0		1284665	20.2		101	1477	
27 Perfluoroundecanoic acid										M
563.0 > 519.0	12.830	12.833	-0.003	1.000	2860752	46.4		92.7	1916	M
29 Perfluorododecanoic acid										
613.0 > 569.0	13.454	13.462	-0.008	1.000	2861491	48.4		96.8	2997	
D 28 13C2 PFDoA										
615.0 > 570.0	13.454	13.462	-0.008		1444970	20.3		101	2272	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.915	13.918	-0.003	1.000	757768	47.1		97.4	2430	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.970	13.976	-0.006	1.000	2980528	48.3		96.7	1619	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.404	14.412	-0.008		1329725	20.7		104	2996	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.404	14.413	-0.009	1.000	2142776	44.5		89.0	510	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.059	15.072	-0.013		1685675	20.2		101	2448	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.064	15.072	-0.008	1.000	4165292	49.9		99.8	2884	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.395	15.409	-0.014	1.000	2967755	52.6		105	1423	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L5_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:18 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_008.d

Injection Date: 18-May-2015 16:48:16 Instrument ID: A6

Lims ID: Std L5

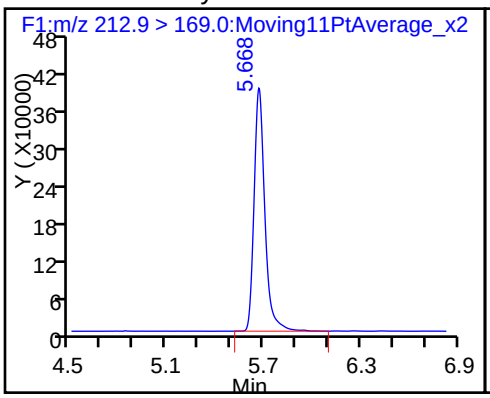
Client ID:

Operator ID: JSS ALS Bottle#: 5 Worklist Smp#: 5

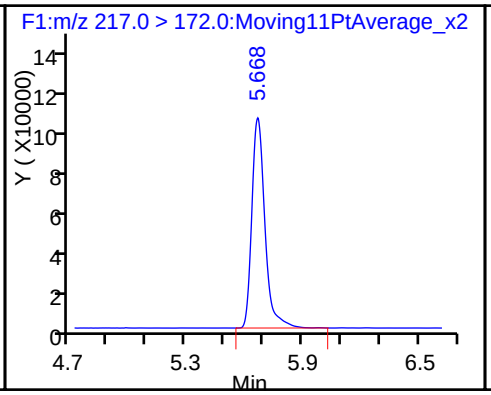
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

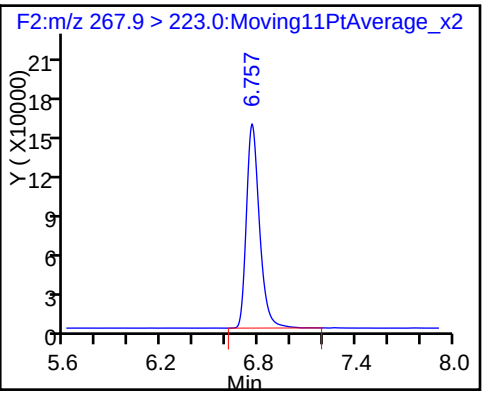
2 Perfluorobutyric acid



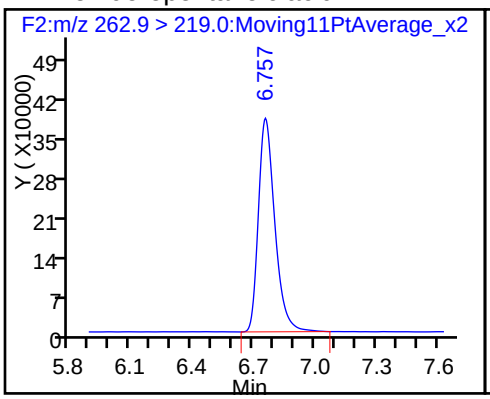
D 1 13C4 PFBA



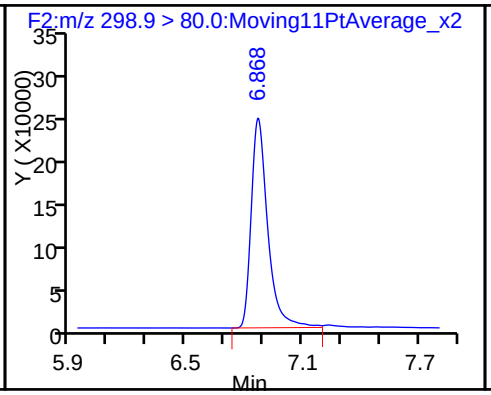
D 3 13C5-PFPeA



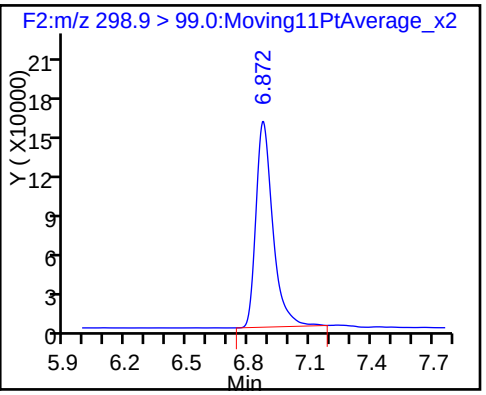
4 Perfluoropentanoic acid



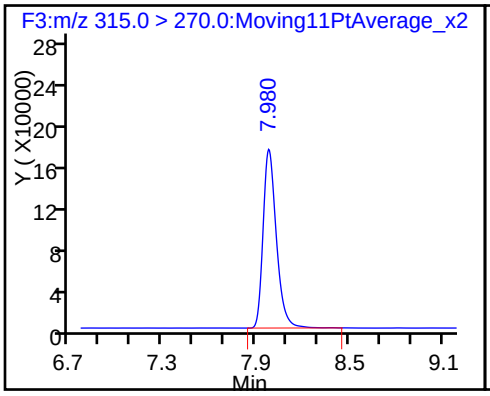
5 Perfluorobutane Sulfonate



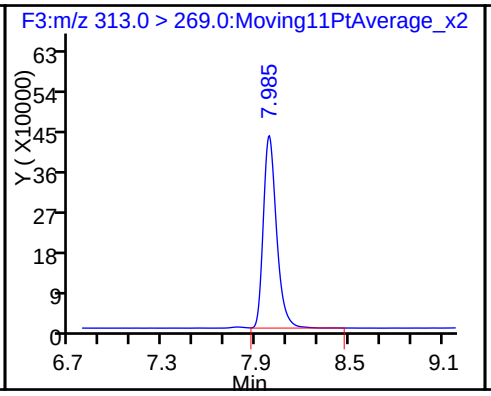
5 Perfluorobutane Sulfonate



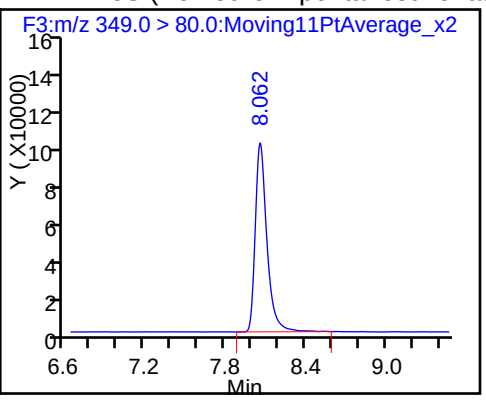
D 6 13C2 PFHxA



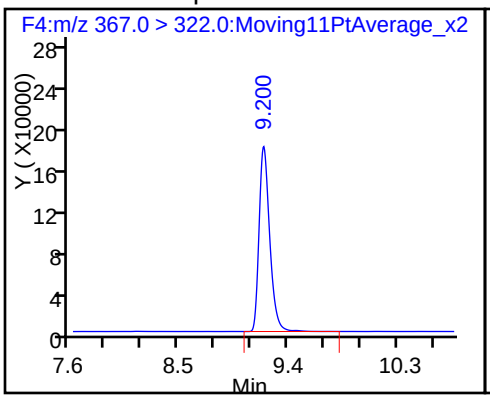
7 Perfluorohexanoic acid



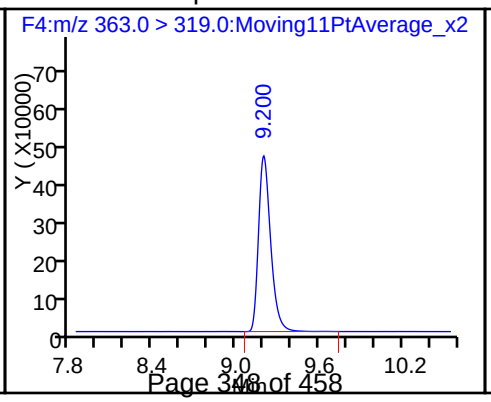
22 PFPeS (Perflouro-1-pentanesulfonat



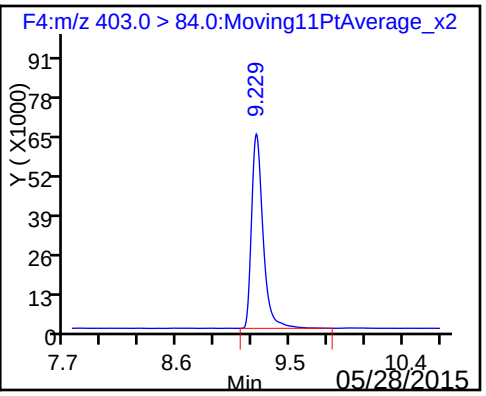
D 8 13C4-PFHpA



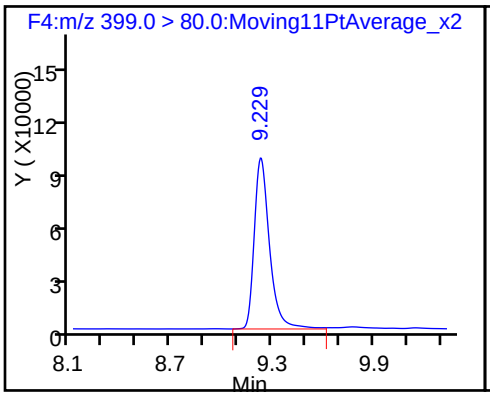
9 Perfluoroheptanoic acid



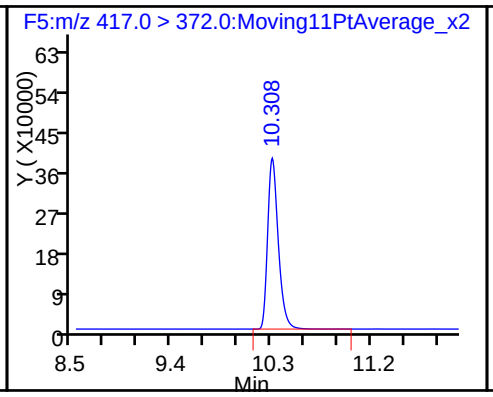
D 11 18O2 PFHxS



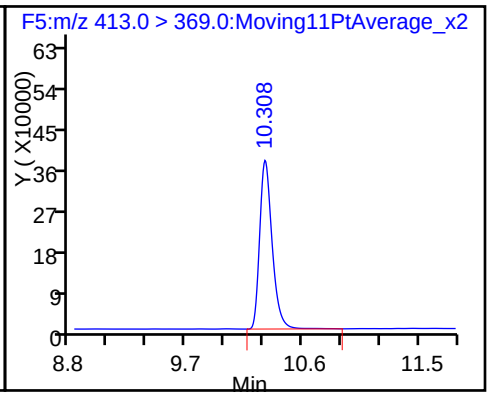
10 Perfluorohexane Sulfonate



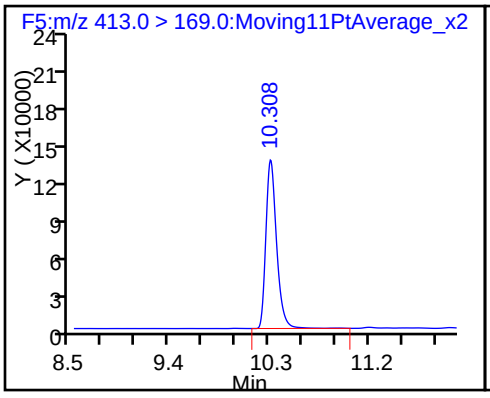
D 12 13C4 PFOA



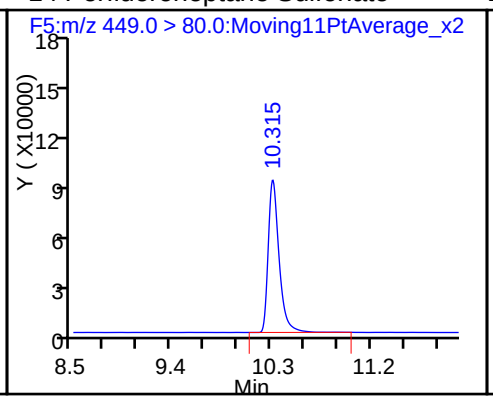
13 Perfluorooctanoic acid



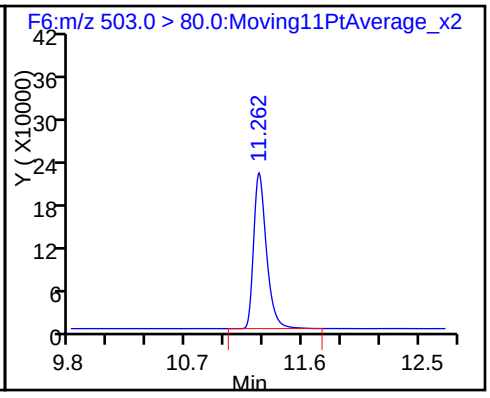
13 Perfluorooctanoic acid



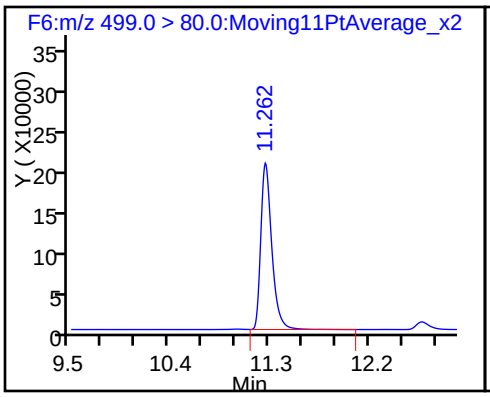
14 Perfluoroheptane Sulfonate



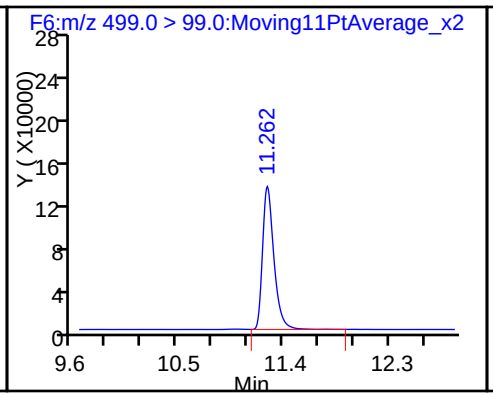
D 16 13C4 PFOS



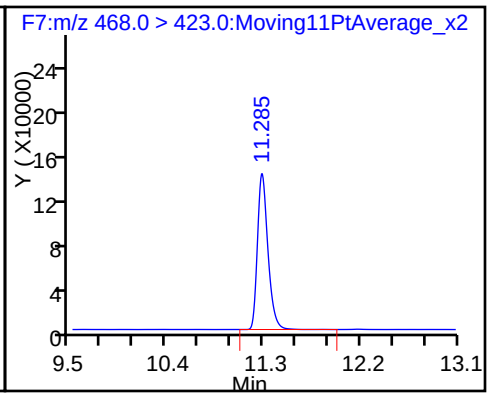
15 Perfluorooctane sulfonic acid



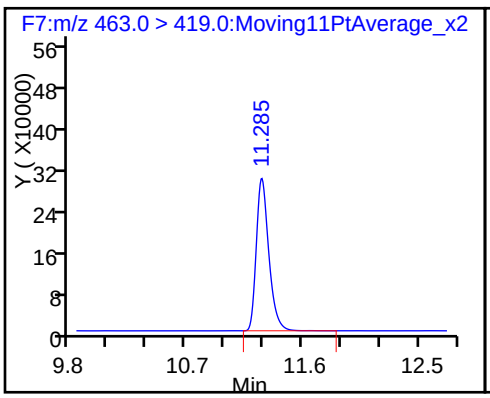
15 Perfluorooctane sulfonic acid



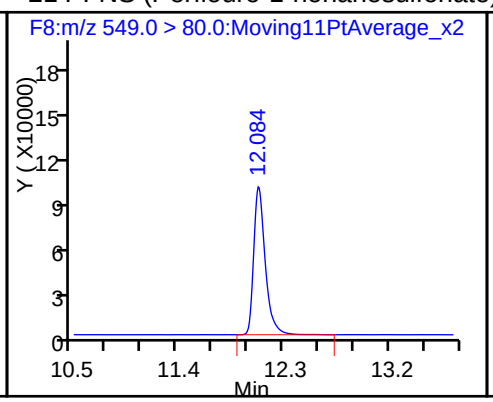
D 17 13C5 PFNA



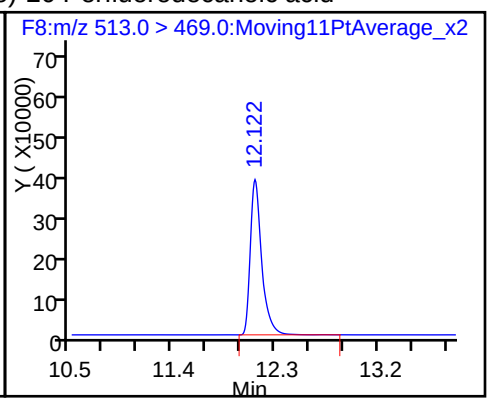
18 Perfluorononanoic acid



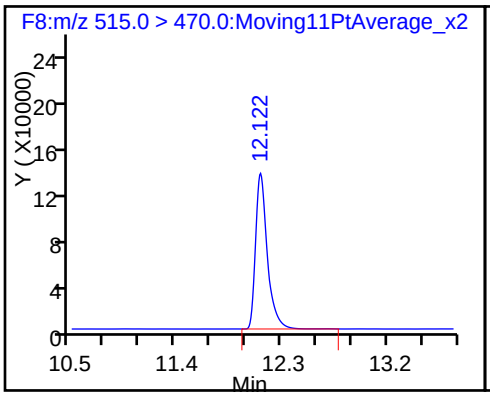
21 PFNS (Perflouro-1-nonanesulfonate)



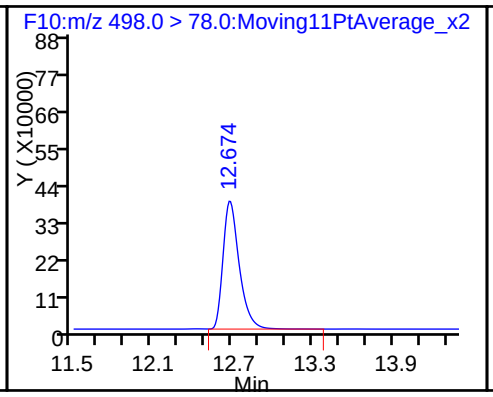
20 Perfluorodecanoic acid



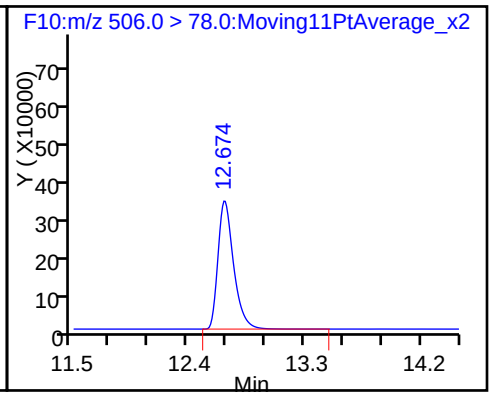
D 19 13C2 PFDA



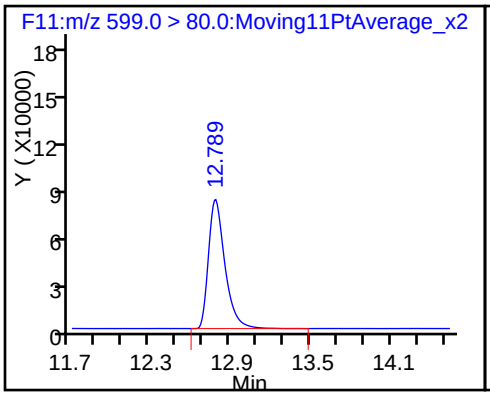
24 Perfluorooctane Sulfonamide



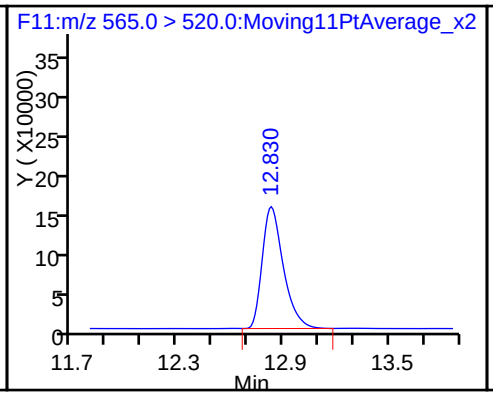
D 23 13C8 FOSA



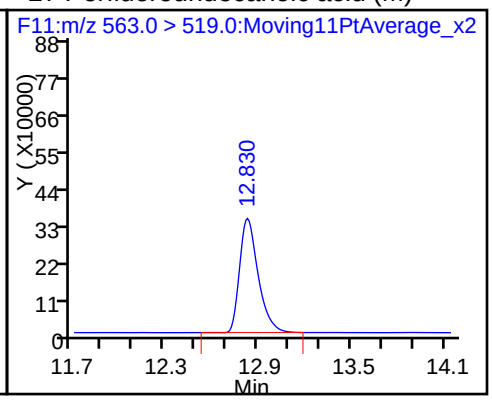
25 Perfluorodecane Sulfonate



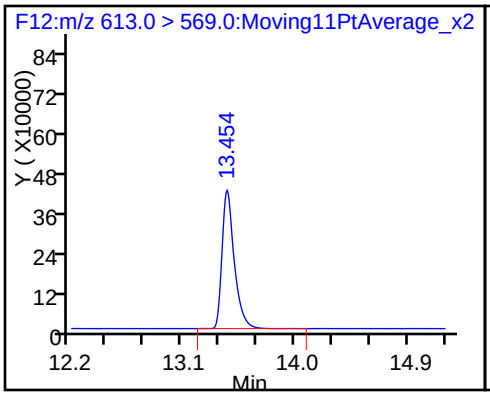
D 26 13C2 PFUnA



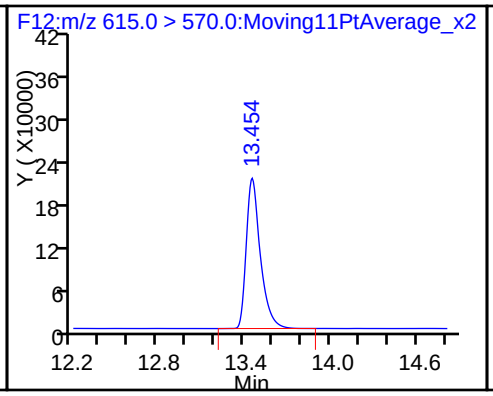
27 Perfluoroundecanoic acid (M)



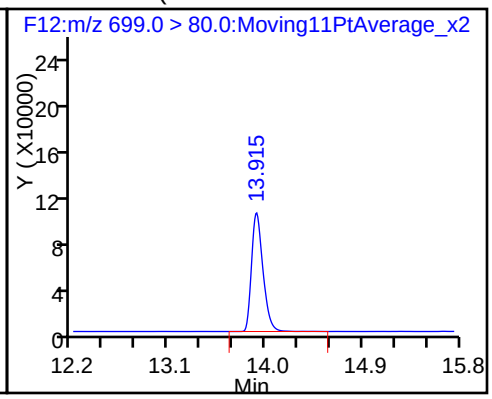
29 Perfluorododecanoic acid



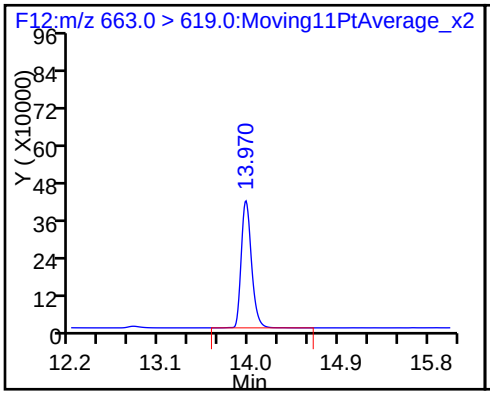
D 28 13C2 PFDoA



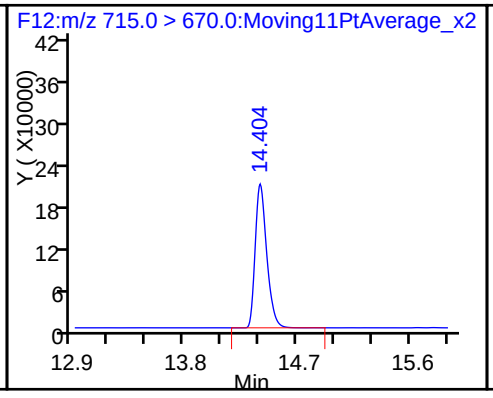
31 PFDoS (Perflouro-1-dodecanesulfona



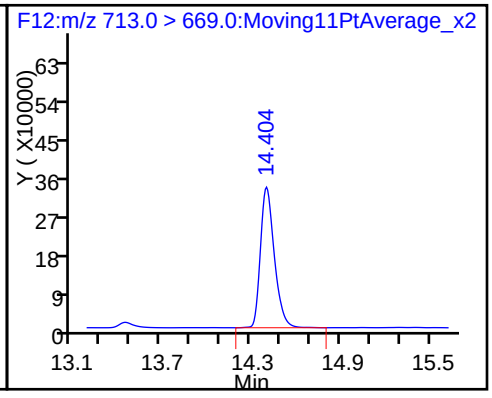
30 Perfluorotridecanoic acid



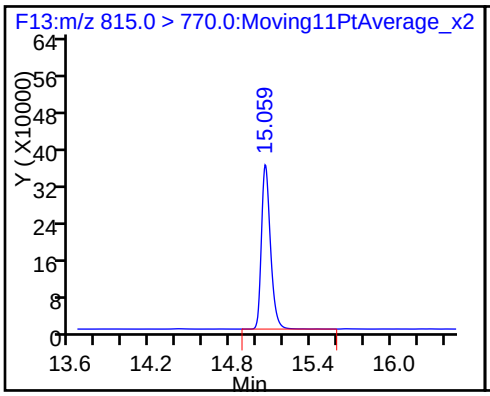
D 33 13C2-PFTeDA



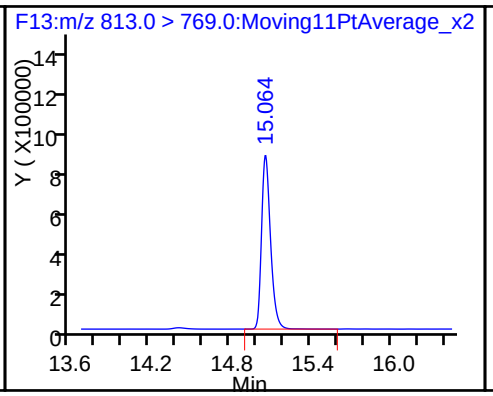
32 Perfluorotetradecanoic acid



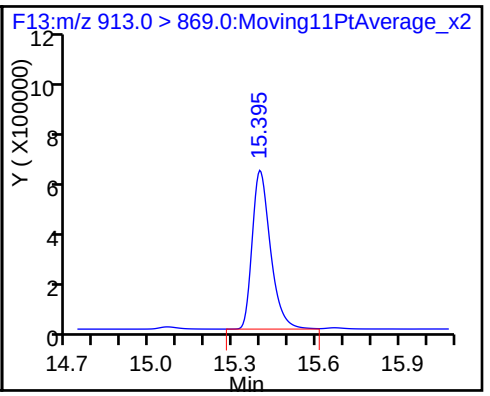
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



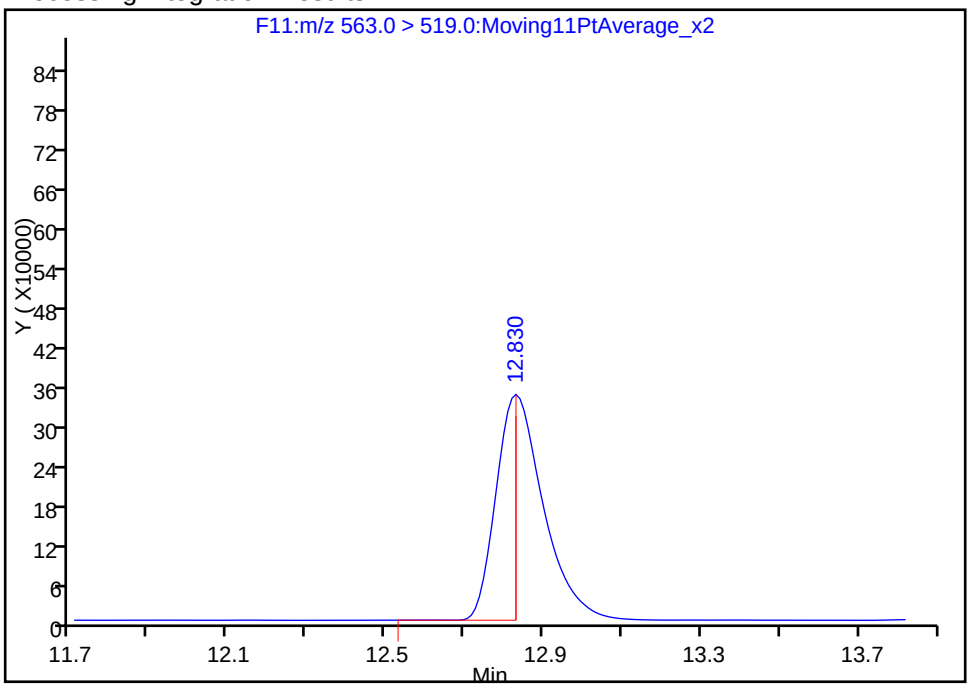
TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_008.d
Injection Date: 18-May-2015 16:48:16 Instrument ID: A6
Lims ID: Std L5
Client ID:
Operator ID: JSS ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC ICAL
Column: Detector F11:MRM

27 Perfluoroundecanoic acid, CAS: 2058-94-8

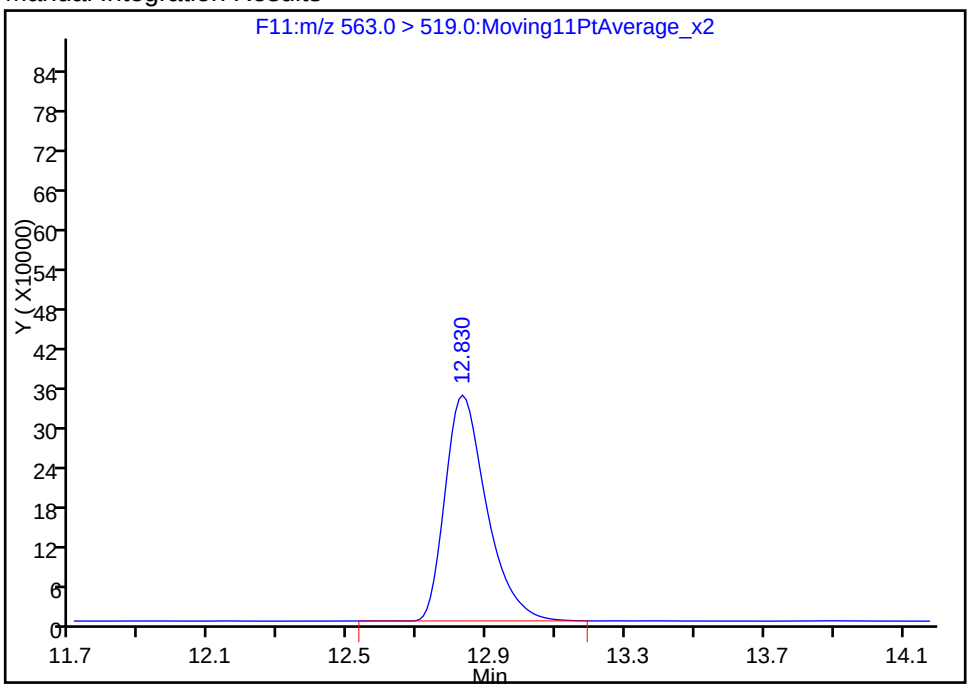
Processing Integration Results

RT: 12.83
Area: 1181597
Amount: 21.059179
Amount Units: ng/ml



Manual Integration Results

RT: 12.83
Area: 2860752
Amount: 46.361309
Amount Units: ng/ml



Reviewer: westendorfc, 19-May-2015 10:41:51
Audit Action: Manually Integrated
Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_009.d
Lims ID: Std L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 18-May-2015 17:09:32 ALS Bottle#: 6 Worklist Smp#: 6
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: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:18 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 10:44:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.668	5.669	-0.001	1.000	6595650	218.9		109	13088	
D 1 13C4 PFBA										
217.0 > 172.0	5.665	5.670	-0.005		400142	16.1		80.4	1859	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		727683	16.6		82.9	2300	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.757	6.761	-0.004	1.000	7714906	205.6		103	4135	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.868	6.873	-0.005	1.000	3571971	162.0		91.6	2268	
298.9 > 99.0	6.872	6.873	-0.001	1.001	2284653		1.56(0.00-0.00)	91.6	1240	
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	7.981	-0.001		836605	16.3		81.7	3162	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	7.982	0.003	1.000	8888091	200.9		100	3013	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.056	8.056	0.0	0.873	2202683	201.5		107	3445	
D 8 13C4-PFHpA										
367.0 > 322.0	9.200	9.196	0.004		796649	14.4		71.9	3998	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.200	9.196	0.004	1.000	8951257	215.4		108	10040	
D 11 18O2 PFHxS										
403.0 > 84.0	9.229	9.226	0.003		373666	17.0		89.9	1098	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.235	9.227	0.008	1.000	2383890	186.7		98.7	2073	
D 12 13C4 PFOA										
417.0 > 372.0	10.308	10.304	0.004		1958294	36.9		73.9	7097	

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	10.308	10.306	0.002	1.000	8108025	204.4		102	2486	
413.0 > 169.0	10.308	10.306	0.002	1.000	3054031		2.65(0.00-0.00)	102	1903	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.315	10.311	0.004	1.000	2290466	223.3		117	5037	
D 16 13C4 PFOS										
503.0 > 80.0	11.263	11.260	0.003		1135603	36.7		76.8	2643	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.263	11.261	0.002	1.000	5002747	216.5		113	413	
499.0 > 99.0	11.263	11.261	0.002	1.000	3022947		1.65(0.00-0.00)	113	3067	
D 17 13C5 PFNA										
468.0 > 423.0	11.286	11.280	0.006		719697	14.9		74.4	1888	
18 Perfluorononanoic acid										
463.0 > 419.0	11.286	11.281	0.005	1.000	6816356	216.9		108	11385	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.092	12.086	0.006	1.000	2311834	214.7		112	6636	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.130	12.121	0.009	1.000	8238334	202.3		101	10036	
D 19 13C2 PFDA										
515.0 > 470.0	12.130	12.121	0.009		690811	13.9		69.7	1657	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.684	12.675	0.009	1.000	11326486	218.2		109	3912	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2368447	41.3		82.6	4851	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.789	12.786	0.003	1.000	2450258	236.0		122	4468	
D 26 13C2 PFUnA										
565.0 > 520.0	12.830	12.830	0.0		931517	14.6		73.2	1434	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.841	12.833	0.008	1.000	8859763	198.0		99.0	4173	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.461	13.462	-0.001	1.000	9584481	208.5		104	5753	
D 28 13C2 PFDoA										
615.0 > 570.0	13.461	13.462	-0.001		1123492	15.7		78.7	1823	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.912	13.918	-0.006	1.000	2493238	204.6		106	4144	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.967	13.976	-0.009	1.000	9122228	190.3		95.2	3733	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.403	14.412	-0.009		1073897	16.7		83.7	1757	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.403	14.413	-0.010	1.000	7114649	190.1		95.1	1748	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.063	15.072	-0.009		1457368	17.5		87.3	2414	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.063	15.072	-0.009	1.000	13933433	219.3		110	4858	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.399	15.409	-0.010	1.000	11369930	259.1		130	2469	

Reagents:

LCPFC-L6_00009 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:19 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_009.d

Injection Date: 18-May-2015 17:09:32 Instrument ID: A6

Lims ID: Std L6

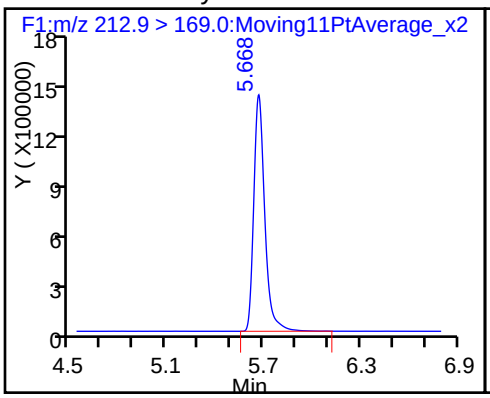
Client ID:

Operator ID: JSS ALS Bottle#: 6 Worklist Smp#: 6

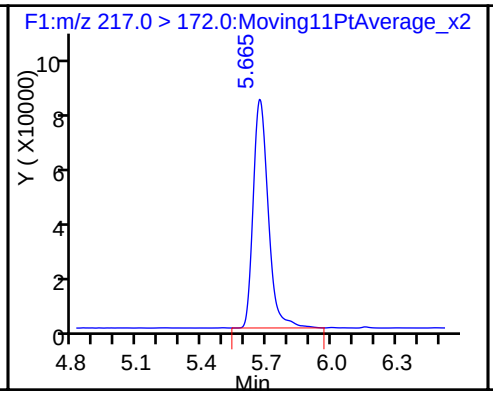
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

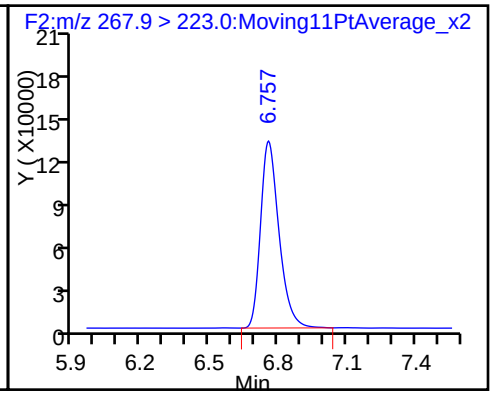
2 Perfluorobutyric acid



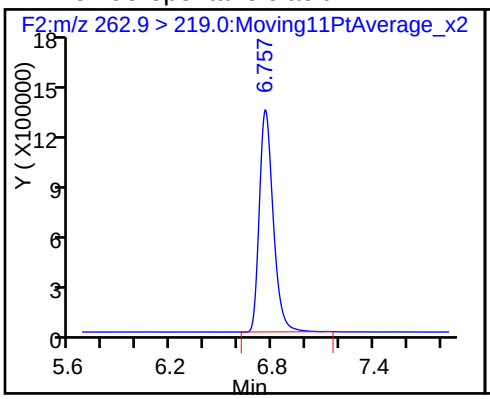
D 1 13C4 PFBA



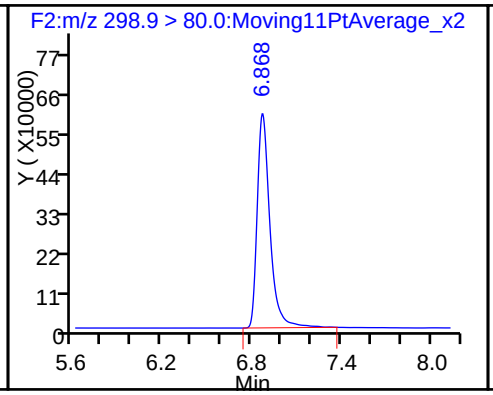
D 3 13C5-PFPeA



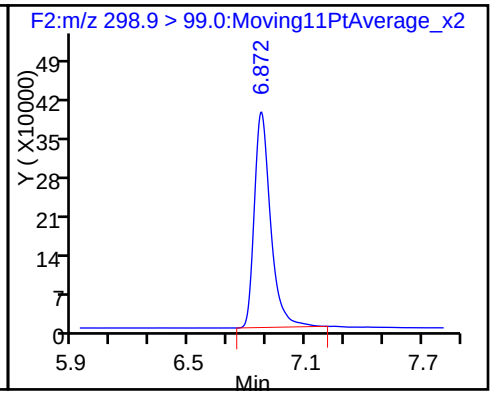
4 Perfluoropentanoic acid



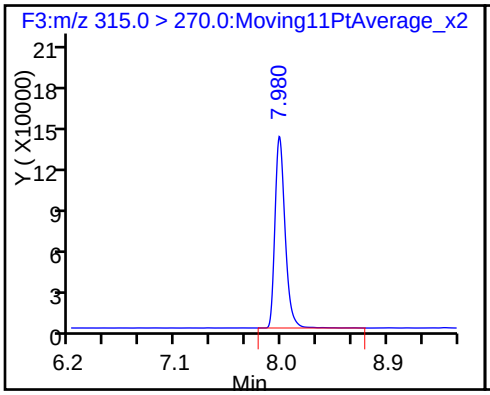
5 Perfluorobutane Sulfonate



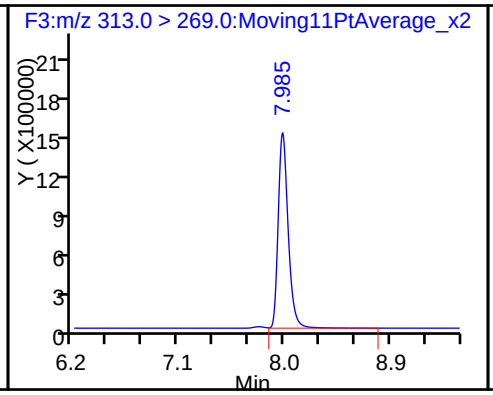
5 Perfluorobutane Sulfonate



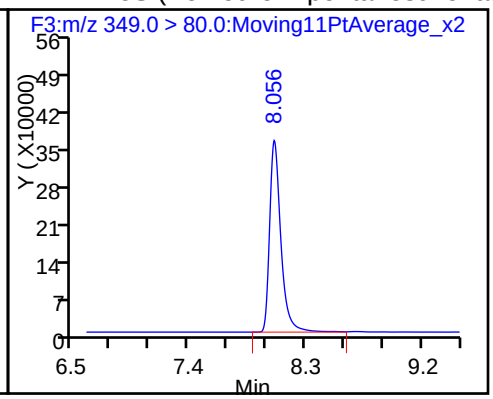
D 6 13C2 PFHxA



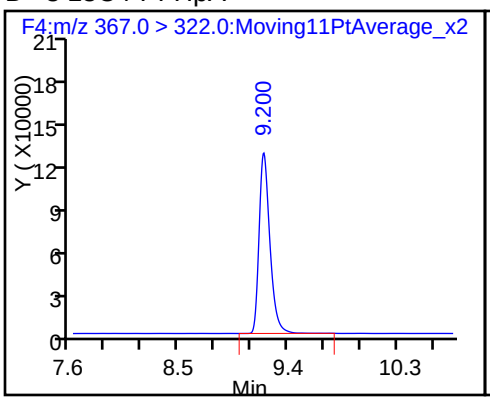
7 Perfluorohexanoic acid



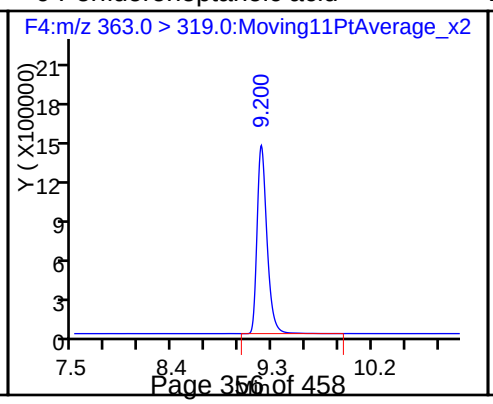
22 PFPeS (Perflouro-1-pentanesulfonat



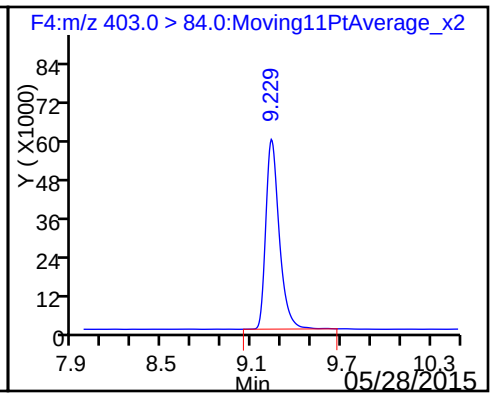
D 8 13C4-PFHpA



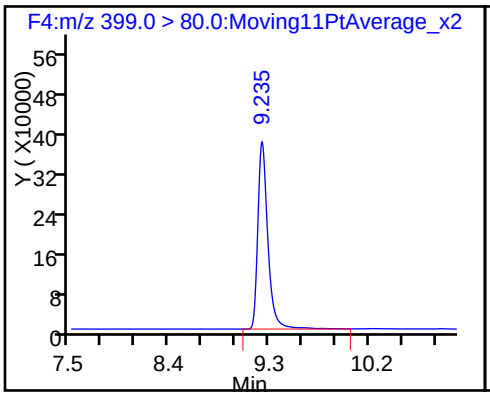
9 Perfluoroheptanoic acid



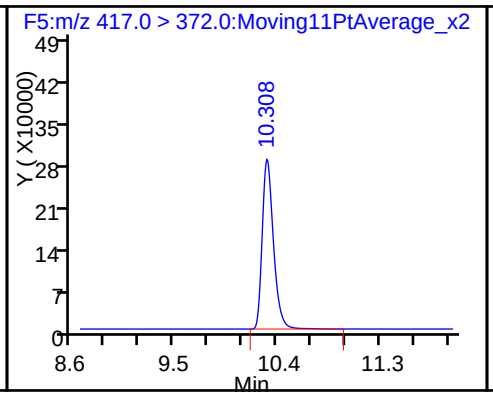
D 11 18O2 PFHxS



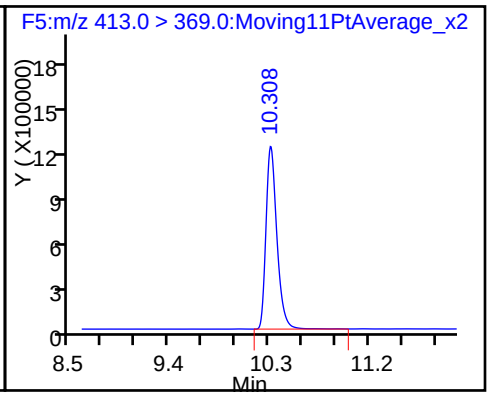
10 Perfluorohexane Sulfonate



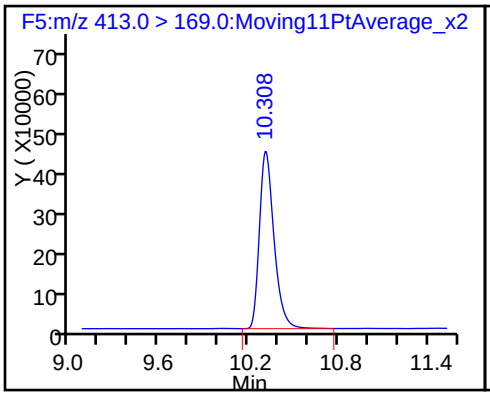
D 12 13C4 PFOA



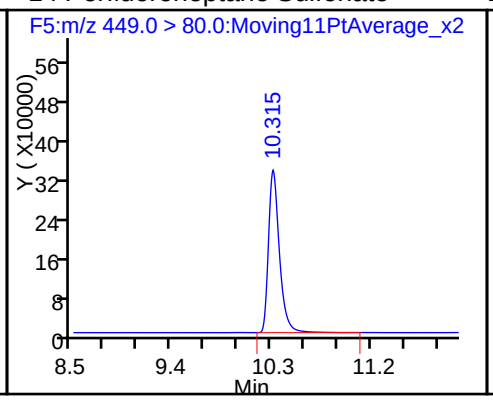
13 Perfluorooctanoic acid



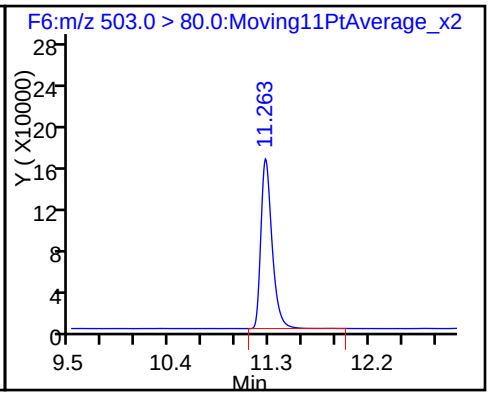
13 Perfluorooctanoic acid



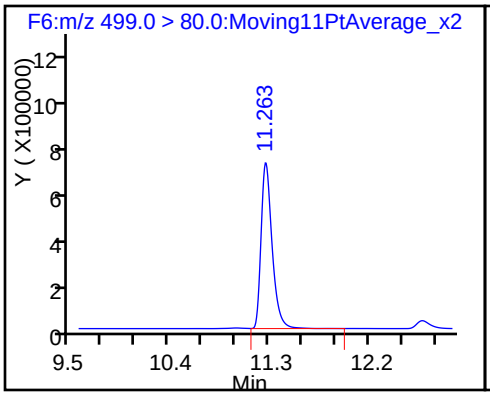
14 Perfluoroheptane Sulfonate



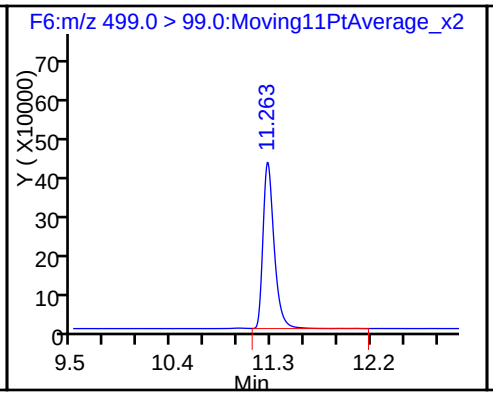
D 16 13C4 PFOS



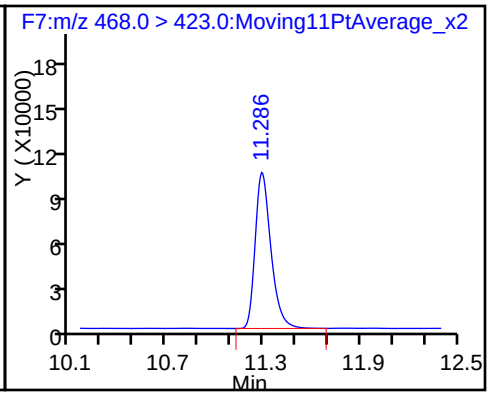
15 Perfluorooctane sulfonic acid



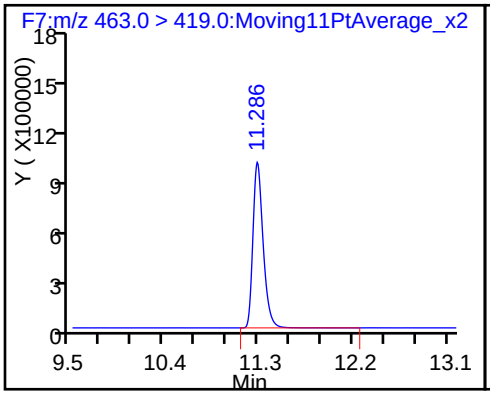
15 Perfluorooctane sulfonic acid



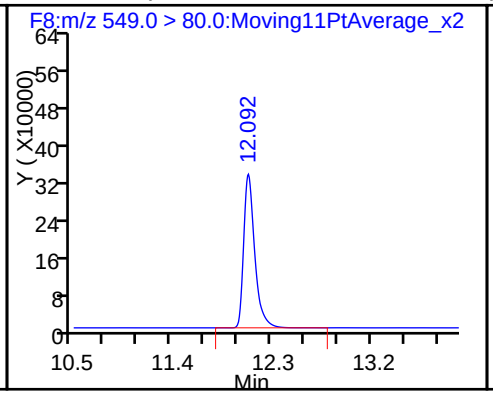
D 17 13C5 PFNA



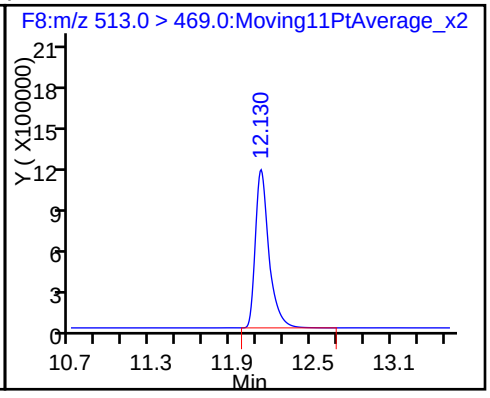
18 Perfluorononanoic acid



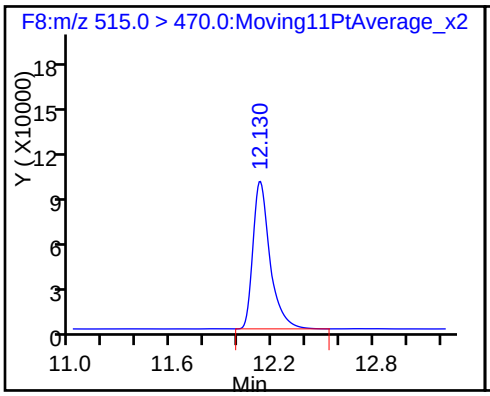
21 PFNS (Perflouro-1-nonanesulfonate)



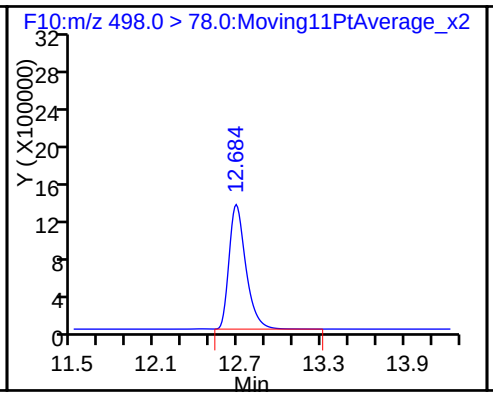
20 Perfluorodecanoic acid



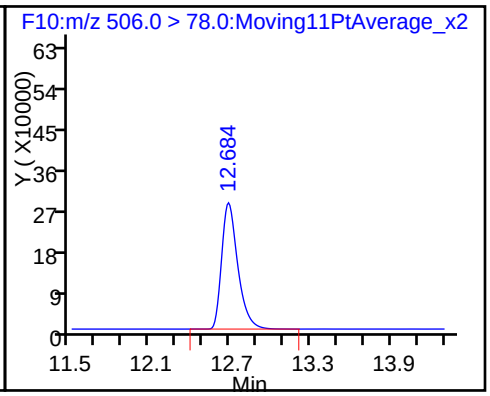
D 19 13C2 PFDA



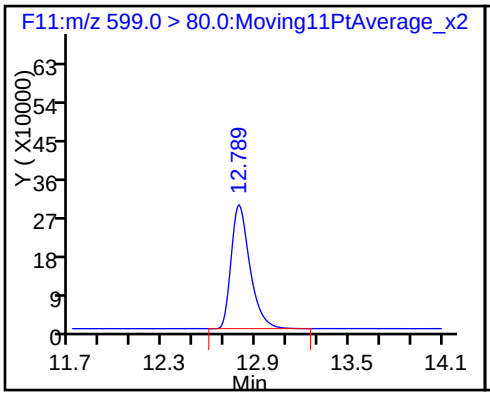
24 Perfluorooctane Sulfonamide



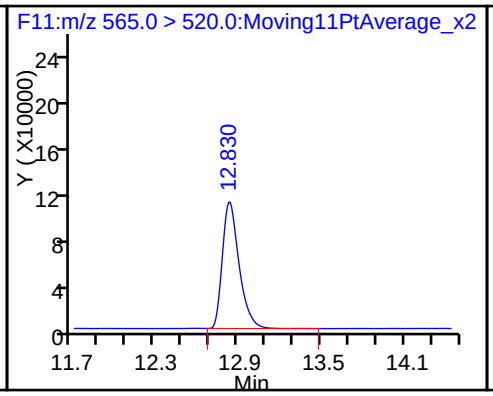
D 23 13C8 FOSA



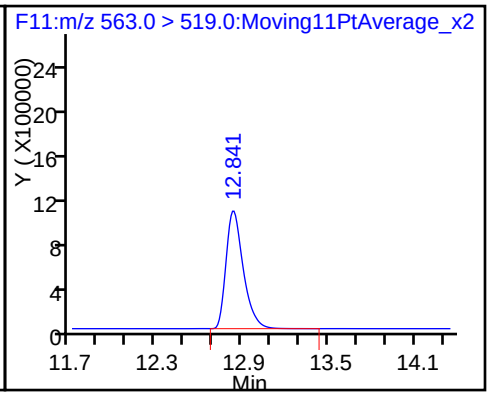
25 Perfluorodecane Sulfonate



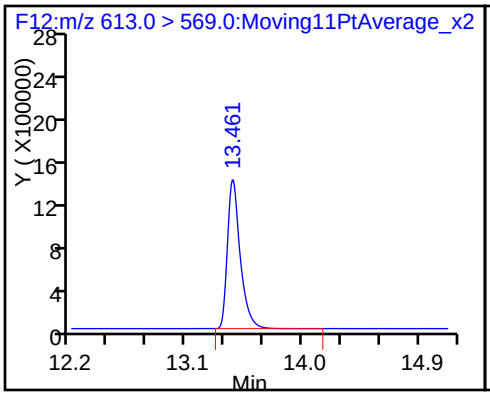
D 26 13C2 PFUnA



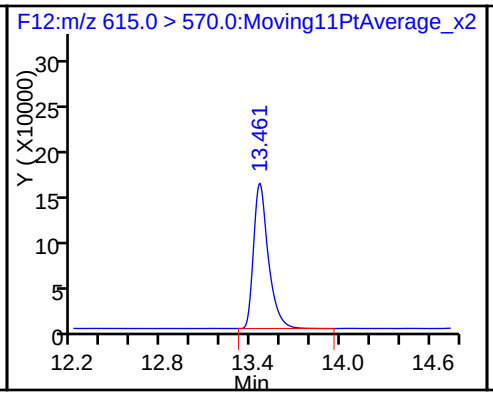
27 Perfluoroundecanoic acid



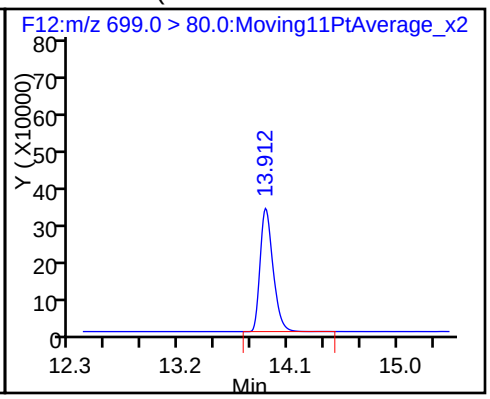
29 Perfluorododecanoic acid



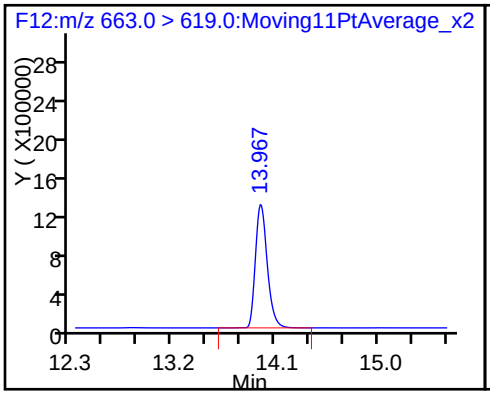
D 28 13C2 PFDoA



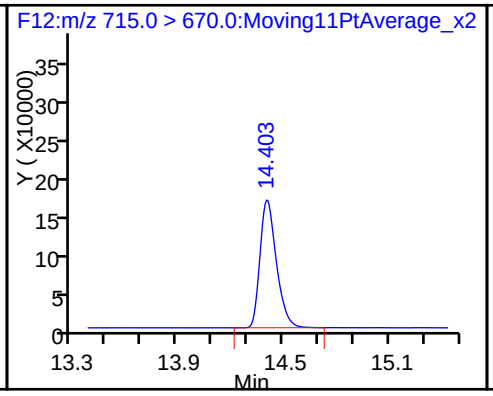
31 PFDoS (Perflouro-1-dodecanesulfona



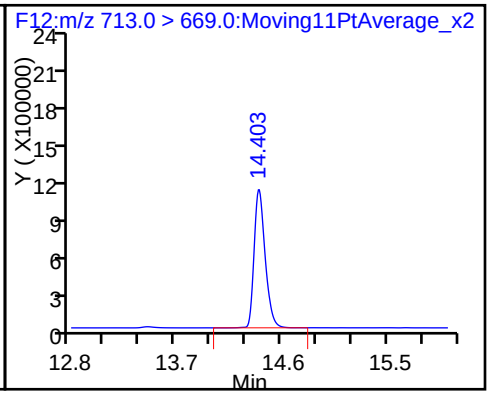
30 Perfluorotridecanoic acid



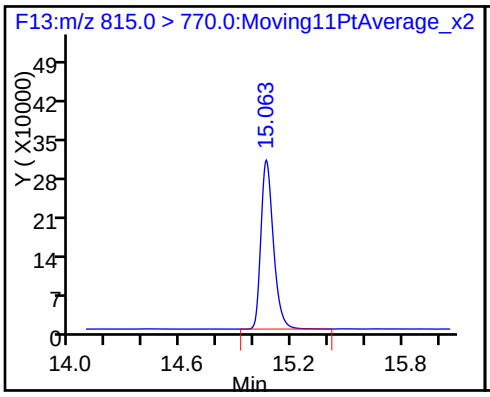
D 33 13C2-PFTeDA



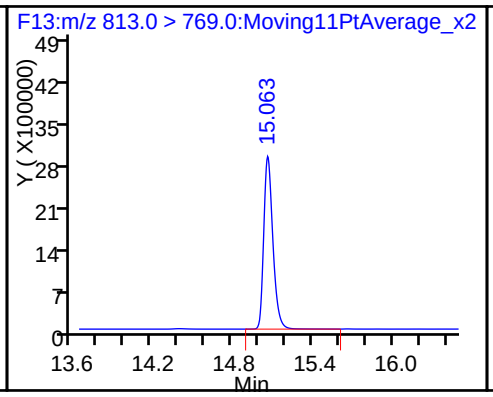
32 Perfluorotetradecanoic acid



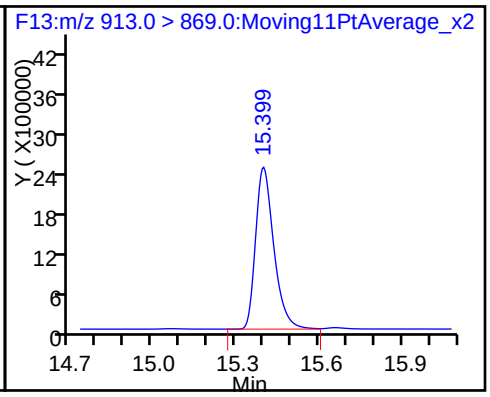
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d
Lims ID: Std L7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 18-May-2015 17:30:46 ALS Bottle#: 7 Worklist Smp#: 7
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: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:20 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 10:44:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.668	5.669	-0.001	1.000	12535784	411.9		103	19240	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.670	-0.002		404238	16.3		81.3	1856	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		688402	15.7		78.4	2594	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.762	6.761	0.001	1.000	14398957	405.6		101	7674	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.872	6.873	-0.001	1.000	6640915	325.3		92.0	2316	
298.9 > 99.0	6.872	6.873	-0.001	1.000	4255437		1.56(0.00-0.00)	92.0	3677	
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	7.981	0.004		792553	15.5		77.4	2279	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	7.982	0.003	1.000	16489297	393.4		98.4	2904	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.062	8.056	0.006	0.873	4334691	428.5		114	7517	
D 8 13C4-PFHpA										
367.0 > 322.0	9.200	9.196	0.004		758642	13.7		68.5	3712	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.200	9.196	0.004	1.000	15917732	402.2		101	16395	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.226	0.009		345886	15.8		83.3	1151	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.235	9.227	0.008	1.000	4295897	363.5		96.1	2964	
D 12 13C4 PFOA										
417.0 > 372.0	10.308	10.304	0.004		1799941	34.0		67.9	6028	

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	10.315	10.306	0.009	1.000	14788659	405.6		101	5456	
413.0 > 169.0	10.315	10.306	0.009	1.000	5312119		2.78(0.00-0.00)	101	2486	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.315	10.311	0.004	1.000	4145425	413.0		108	8766	
D 16 13C4 PFOS										
503.0 > 80.0	11.263	11.260	0.003		1111270	35.9		75.1	2042	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.270	11.261	0.009	1.000	9294380	411.0		107	344	
499.0 > 99.0	11.263	11.261	0.002	0.999	5357739		1.73(0.00-0.00)	107	3452	
D 17 13C5 PFNA										
468.0 > 423.0	11.285	11.280	0.005		709124	14.7		73.3	1869	
18 Perfluorononanoic acid										
463.0 > 419.0	11.285	11.281	0.004	1.000	12722440	410.9		103	17350	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.092	12.086	0.006	1.000	4233560	401.8		105	6243	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.129	12.121	0.008	1.000	15240729	350.5		87.6	9364	
D 19 13C2 PFDA										
515.0 > 470.0	12.129	12.121	0.008		737497	14.9		74.5	2492	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.684	12.675	0.009	1.000	22139268	394.7		98.7	4989	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2558906	44.6		89.2	3565	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.789	12.786	0.003	1.000	4361175	429.3		111	6594	
D 26 13C2 PFUnA										
565.0 > 520.0	12.841	12.830	0.011		953027	15.0		74.9	1266	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.841	12.833	0.008	1.000	16012908	349.8		87.5	6189	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.470	13.462	0.008	1.000	17796913	389.0		97.3	6212	
D 28 13C2 PFDoA										
615.0 > 570.0	13.470	13.462	0.008		1118241	15.7		78.4	1814	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.924	13.918	0.006	1.000	4567433	383.0		98.9	5296	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.988	13.976	0.012	1.000	17549193	367.8		92.0	4452	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.420	14.412	0.008		1203896	18.8		93.9	2151	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.420	14.413	0.007	1.000	13398666	359.7		89.9	2641	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.079	15.072	0.007		1582115	19.0		94.8	2372	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.079	15.072	0.007	1.000	26120714	414.3		104	5172	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.411	15.409	0.002	1.000	23132894	529.7		132	2548	

Reagents:

LCPFC-L7_00009 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:20 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Injection Date: 18-May-2015 17:30:46 Instrument ID: A6

Lims ID: Std L7

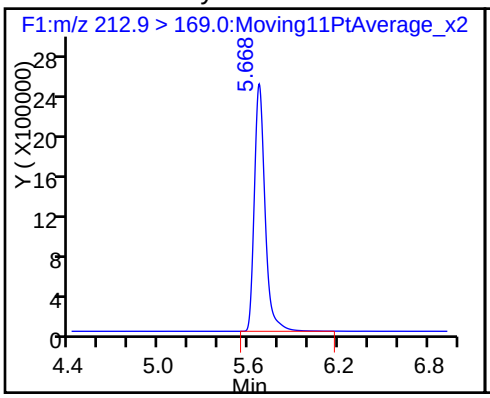
Client ID:

Operator ID: JSS ALS Bottle#: 7 Worklist Smp#: 7

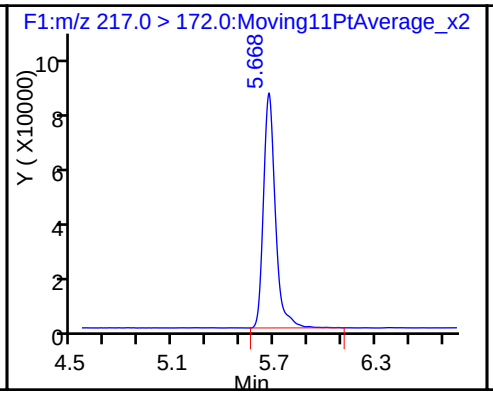
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

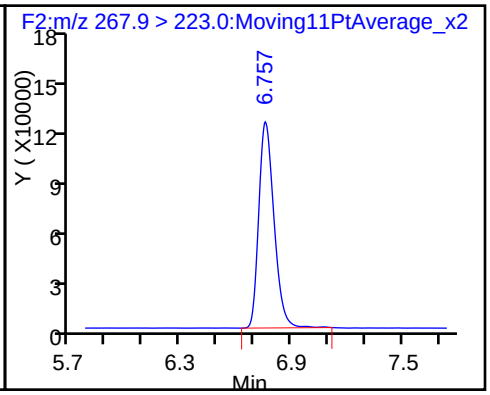
2 Perfluorobutyric acid



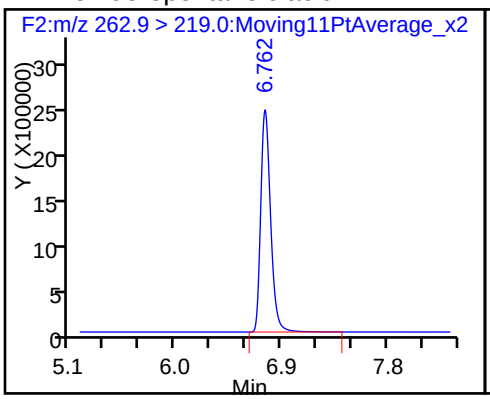
D 1 13C4 PFBA



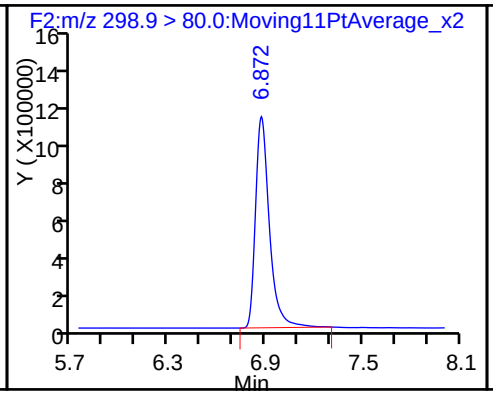
D 3 13C5-PFPeA



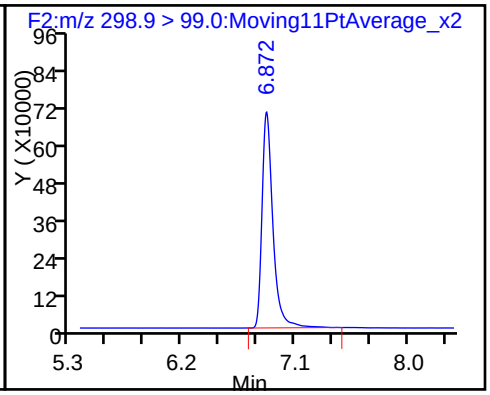
4 Perfluoropentanoic acid



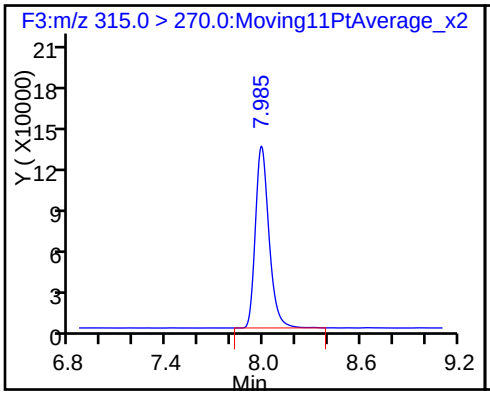
5 Perfluorobutane Sulfonate



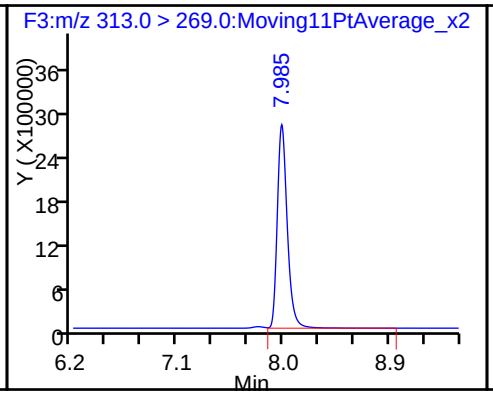
5 Perfluorobutane Sulfonate



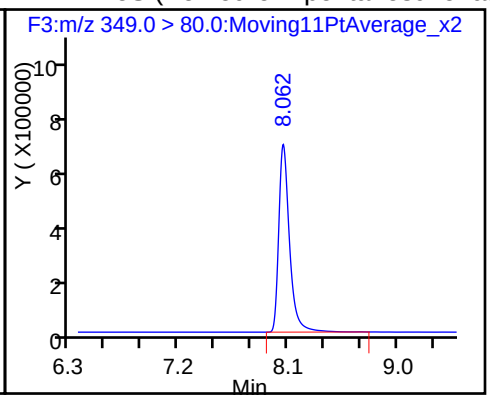
D 6 13C2 PFHxA



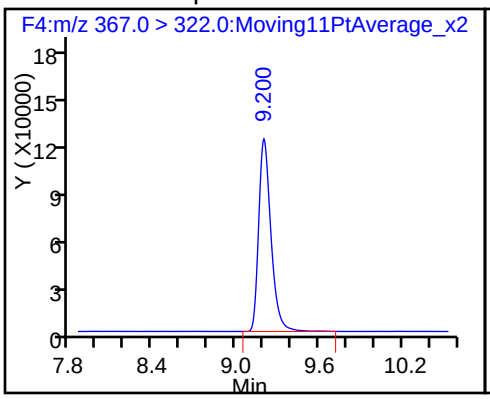
7 Perfluorohexanoic acid



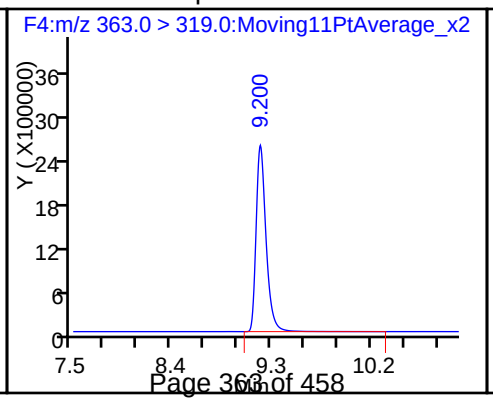
22 PFPeS (Perflouro-1-pentanesulfonat



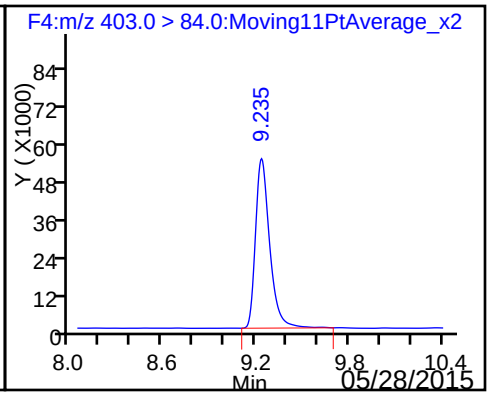
D 8 13C4-PFHpA



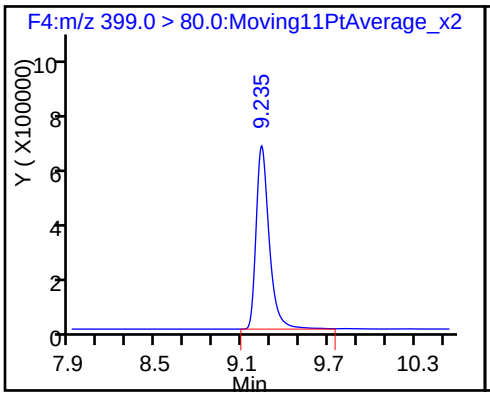
9 Perfluoroheptanoic acid



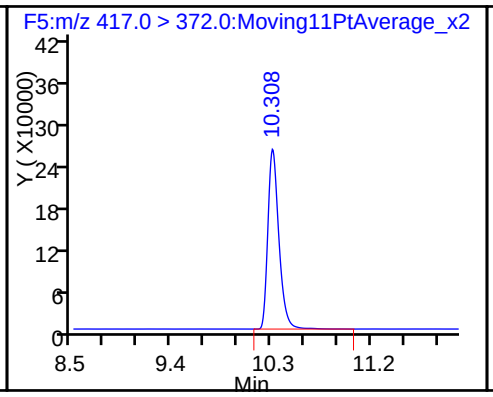
D 11 18O2 PFHxS



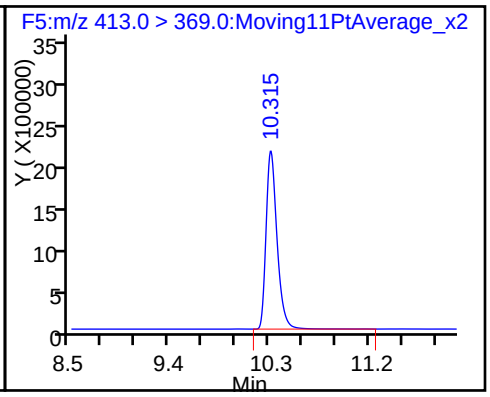
10 Perfluorohexane Sulfonate



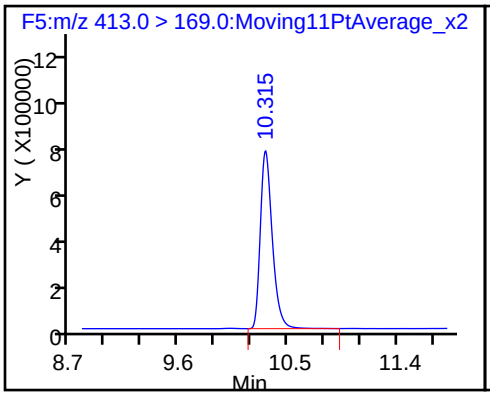
D 12 13C4 PFOA



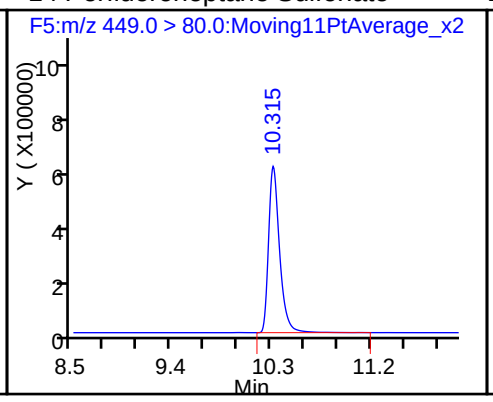
13 Perfluorooctanoic acid



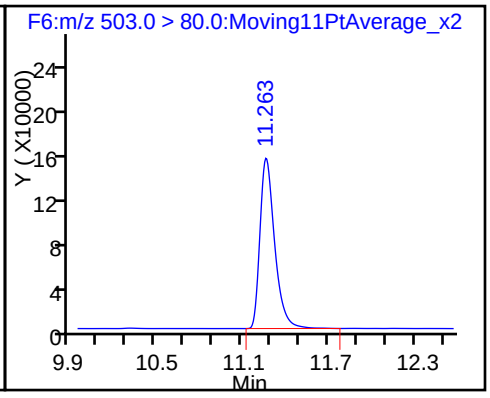
13 Perfluorooctanoic acid



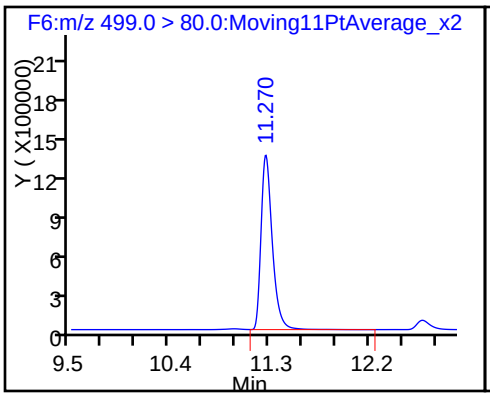
14 Perfluoroheptane Sulfonate



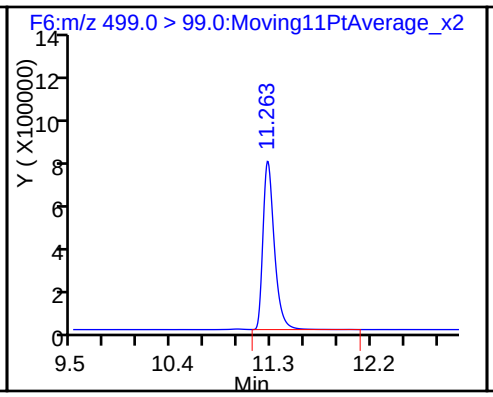
D 16 13C4 PFOS



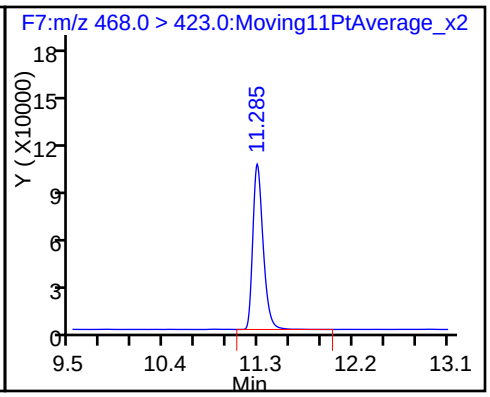
15 Perfluorooctane sulfonic acid



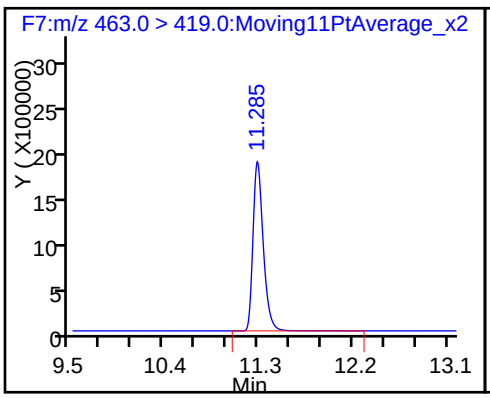
15 Perfluorooctane sulfonic acid



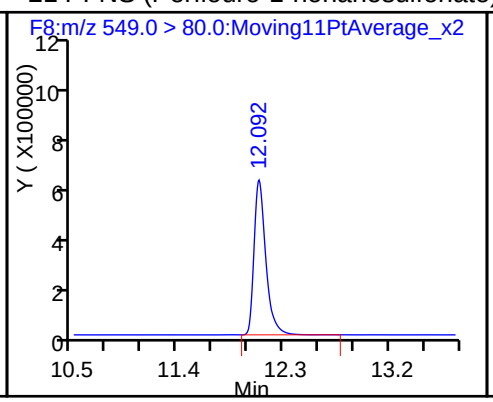
D 17 13C5 PFNA



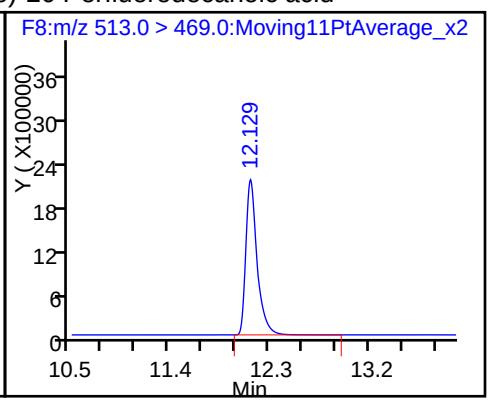
18 Perfluorononanoic acid



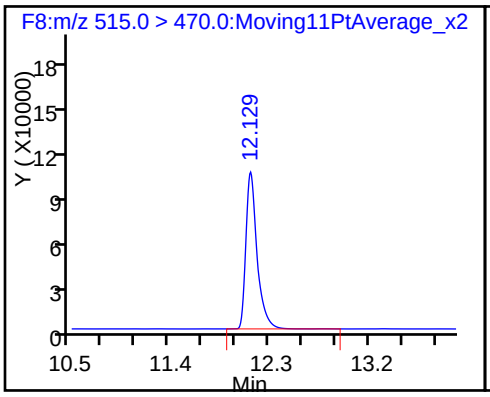
21 PFNS (Perflouro-1-nonanesulfonate)



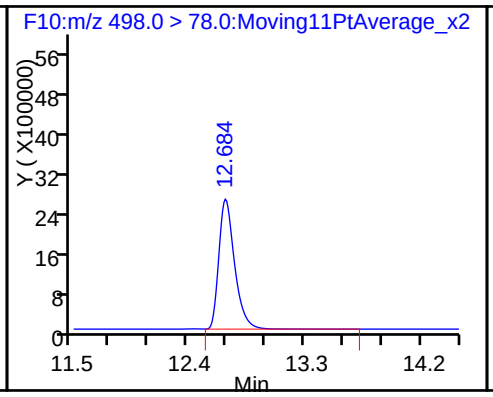
20 Perfluorodecanoic acid



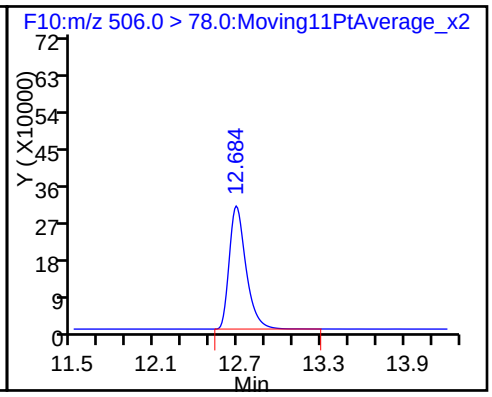
D 19 13C2 PFDA



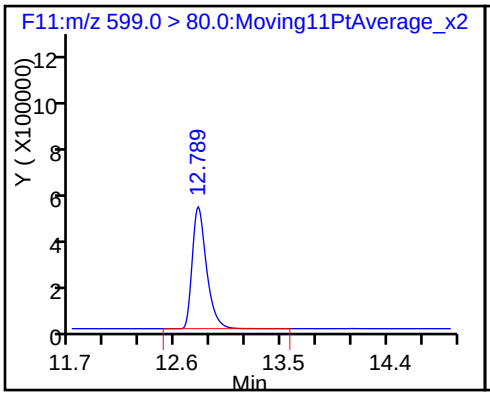
24 Perfluorooctane Sulfonamide



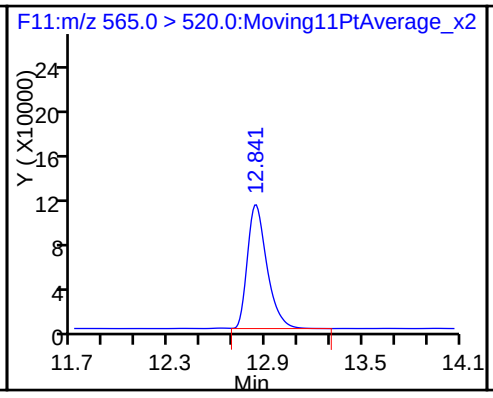
D 23 13C8 FOSA



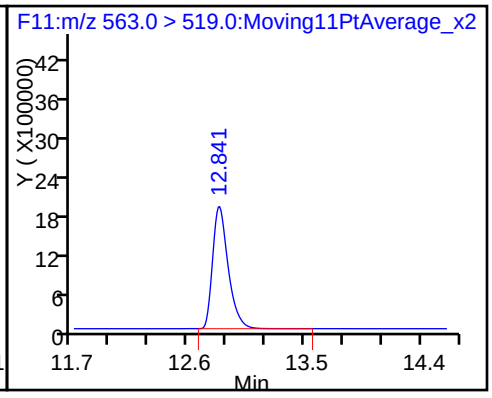
25 Perfluorodecane Sulfonate



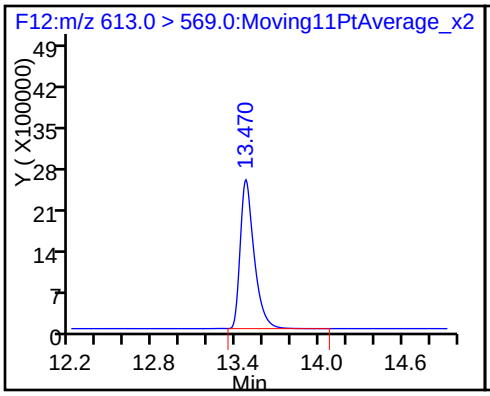
D 26 13C2 PFUnA



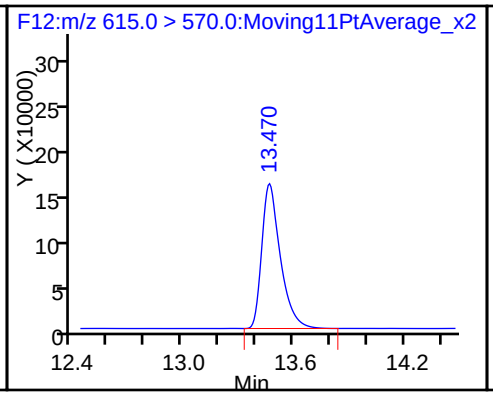
27 Perfluoroundecanoic acid



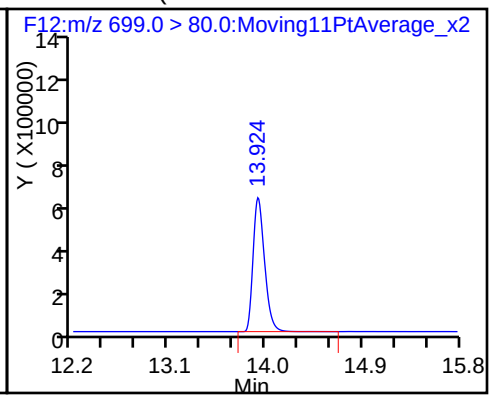
29 Perfluorododecanoic acid



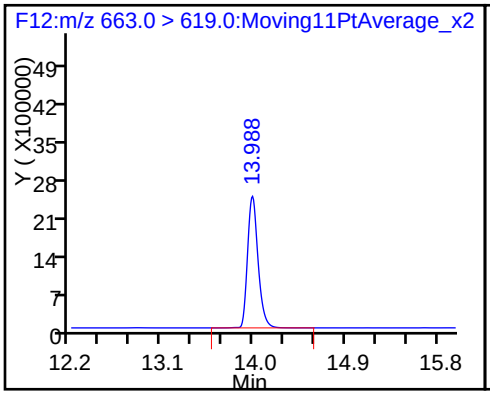
D 28 13C2 PFDoA



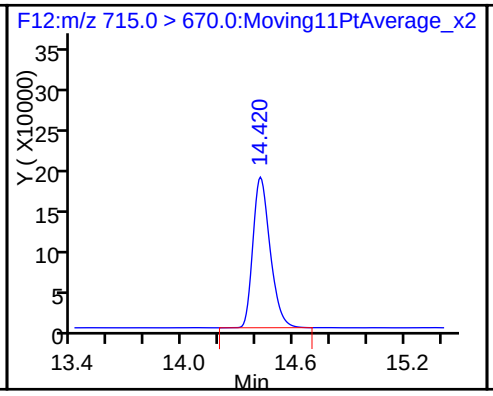
31 PFDoS (Perflouro-1-dodecanesulfona



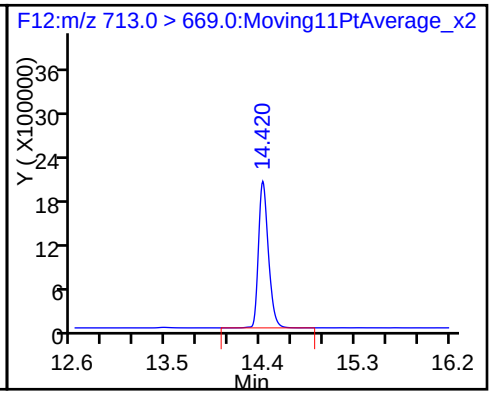
30 Perfluorotridecanoic acid



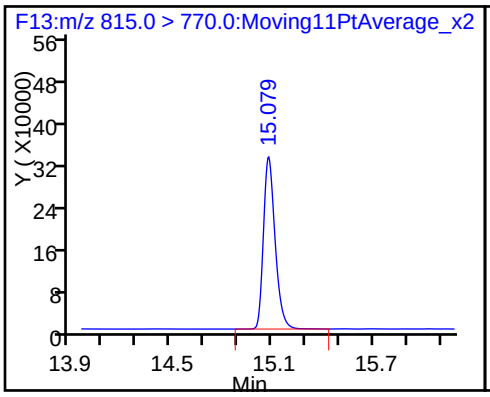
D 33 13C2-PFTeDA



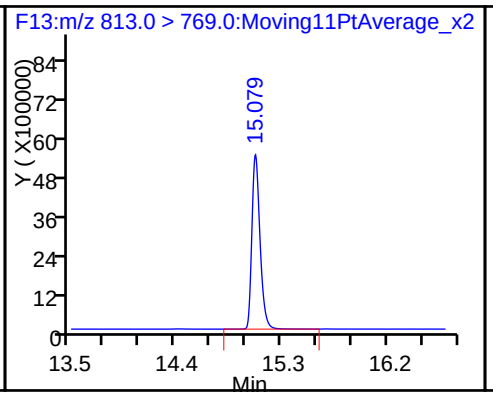
32 Perfluorotetradecanoic acid



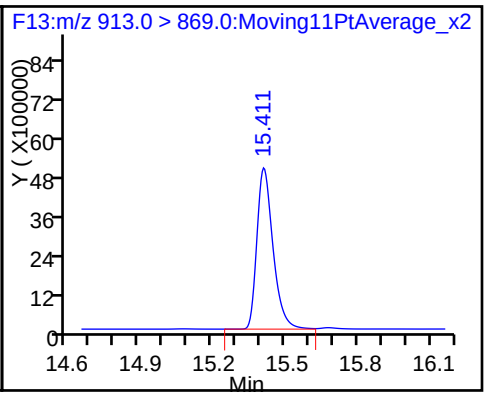
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_007.d
Lims ID: Std L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 18-May-2015 16:27:00 ALS Bottle#: 4 Worklist Smp#: 38
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: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:16 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 08:32:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.671	5.669	0.002	1.000	745501	20.2		101	1830	
D 1 13C4 PFBA										
217.0 > 172.0	5.671	5.670	0.001		489779	19.7		98.5	2520	
D 3 13C5-PFPeA										
267.9 > 223.0	6.762	6.760	0.002		900859	20.5		103	3309	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.767	6.761	0.006	1.000	843616	18.2		90.8	567	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.877	6.873	0.004	1.000	389353	15.6		88.4	218	
298.9 > 99.0	6.877	6.873	0.004	1.000	238386		1.63(0.00-0.00)	88.4	182	
D 6 13C2 PFHxA										
315.0 > 270.0	7.991	7.981	0.010		1047879	20.5		102	2697	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.991	7.982	0.009	1.000	1063439	19.2		95.9	1414	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.067	8.056	0.011	0.874	211396	17.1		91.3	866	
D 8 13C4-PFHpA										
367.0 > 322.0	9.206	9.196	0.010		1164587	21.0		105	5140	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.206	9.196	0.010	1.000	1172825	19.3		96.5	2559	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.226	0.009		422161	19.2		102	1399	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.241	9.227	0.014	1.000	238322	16.5		87.3	180	
D 12 13C4 PFOA										
417.0 > 372.0	10.315	10.304	0.011		2861579	54.0		108	7188	

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	10.315	10.306	0.009	1.000	1060865	18.3		91.5	373	
413.0 > 169.0	10.315	10.306	0.009	1.000	376934		2.81(0.00-0.00)	91.5	319	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.322	10.311	0.011	1.000	259223	18.5		96.9	660	
D 16 13C4 PFOS										
503.0 > 80.0	11.270	11.260	0.010		1555517	50.3		105	3117	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.270	11.261	0.009	1.000	562912	17.8		93.0	371	
499.0 > 99.0	11.270	11.261	0.009	1.000	349539		1.61(0.00-0.00)	93.0	1079	
D 17 13C5 PFNA										
468.0 > 423.0	11.293	11.280	0.013		1036709	21.4		107	2354	
18 Perfluorononanoic acid										
463.0 > 419.0	11.293	11.281	0.012	1.000	891839	19.7		98.5	2397	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.099	12.086	0.013	1.000	251954	17.1		89.0	1257	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.130	12.121	0.009	1.000	1101199	17.5		87.3	4051	
D 19 13C2 PFDA										
515.0 > 470.0	12.130	12.121	0.009		1069749	21.6		108	3779	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.684	12.675	0.009	1.000	1225250	19.4		96.9	3214	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2885273	50.3		101	4273	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.789	12.786	0.003	1.000	267659	18.8		97.6	1018	
D 26 13C2 PFUnA										
565.0 > 520.0	12.841	12.830	0.011		1319365	20.7		104	2056	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.841	12.833	0.008	1.000	1223167	19.3		96.5	853	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.470	13.462	0.008	1.000	1142518	19.2		95.8	1311	
D 28 13C2 PFDoA										
615.0 > 570.0	13.470	13.462	0.008		1457915	20.4		102	2205	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.924	13.918	0.006	1.000	296879	17.8		91.9	1062	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.988	13.976	0.012	1.000	1352242	21.7		109	772	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.420	14.412	0.008		1288438	20.1		100	2506	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.420	14.413	0.007	1.000	864418	17.8		89.0	220	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.079	15.072	0.007		1704500	20.4		102	2390	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.079	15.072	0.007	1.000	1679150	19.1		95.4	1307	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.416	15.409	0.007	1.000	1043974	18.3		91.7	750	

Reagents:

LCPFC-L4_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:17 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_007.d

Injection Date: 18-May-2015 16:27:00 Instrument ID: A6

Lims ID: Std L4

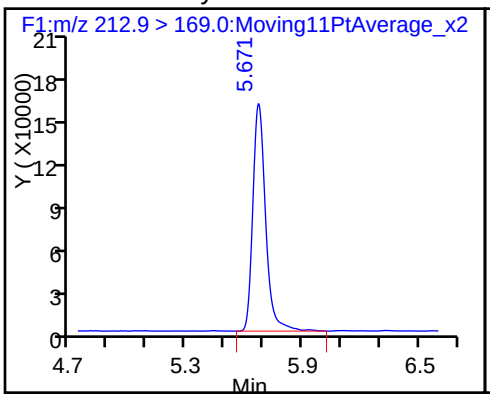
Client ID:

Operator ID: JSS ALS Bottle#: 4 Worklist Smp#: 38

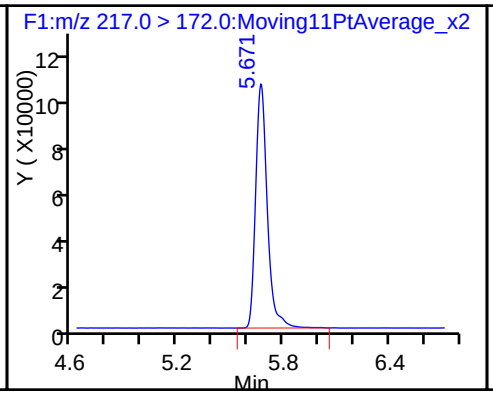
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

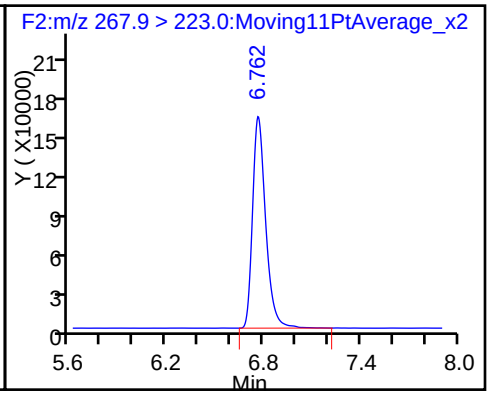
2 Perfluorobutyric acid



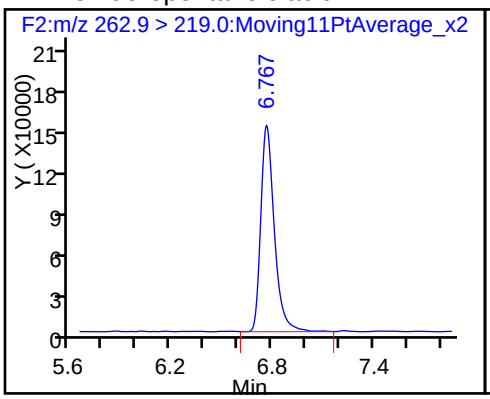
D 1 13C4 PFBA



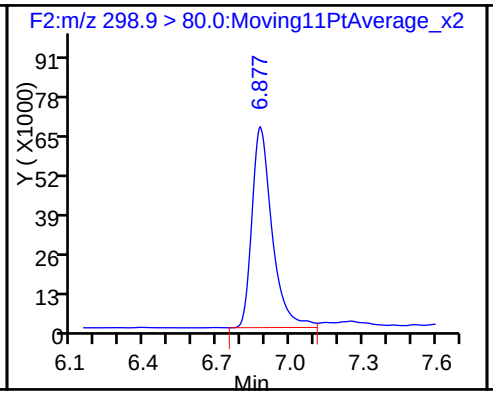
D 3 13C5-PFPeA



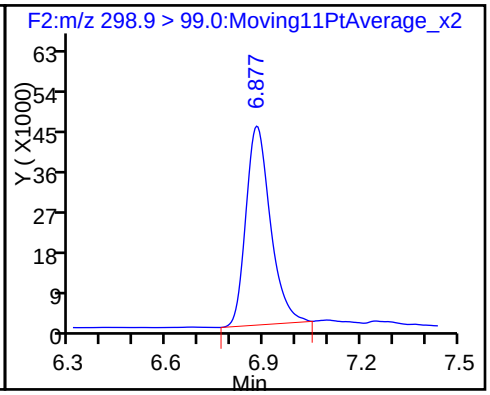
4 Perfluoropentanoic acid



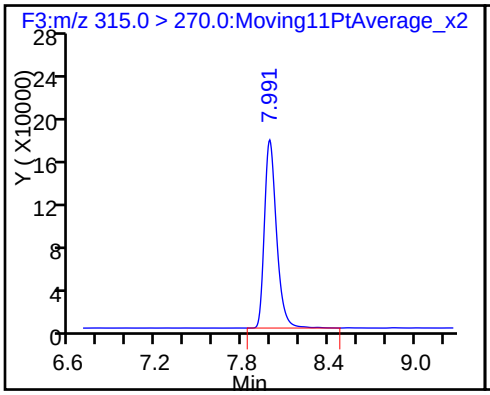
5 Perfluorobutane Sulfonate



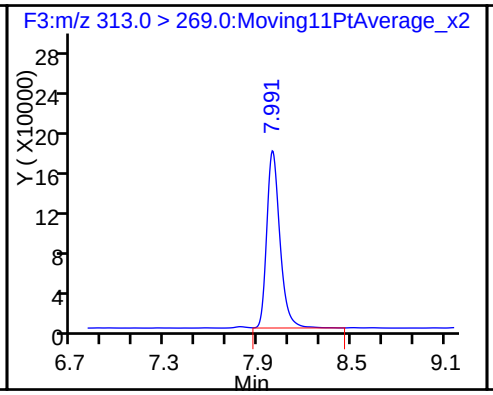
5 Perfluorobutane Sulfonate



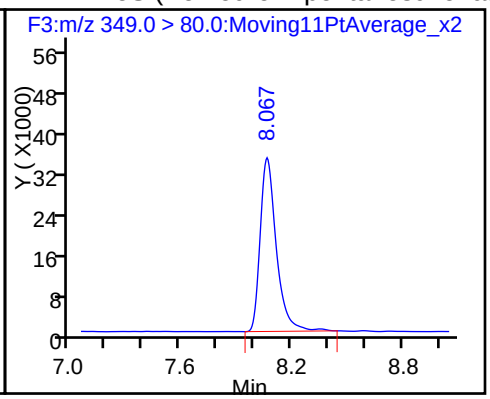
D 6 13C2 PFHxA



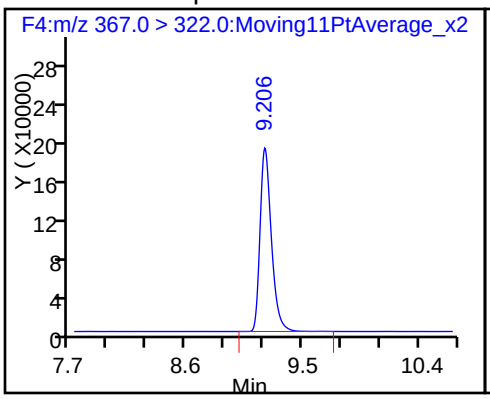
7 Perfluorohexanoic acid



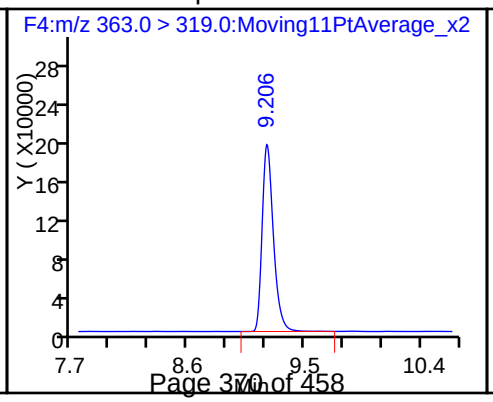
22 PFPeS (Perflouro-1-pentanesulfonat



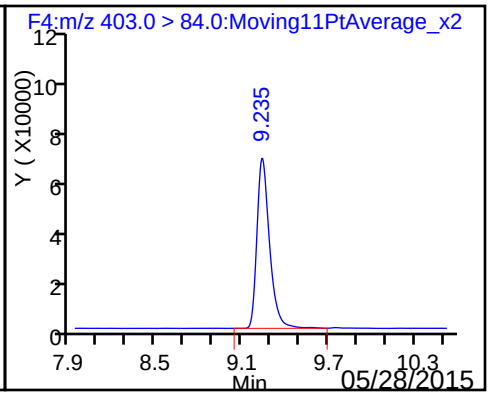
D 8 13C4-PFHpA



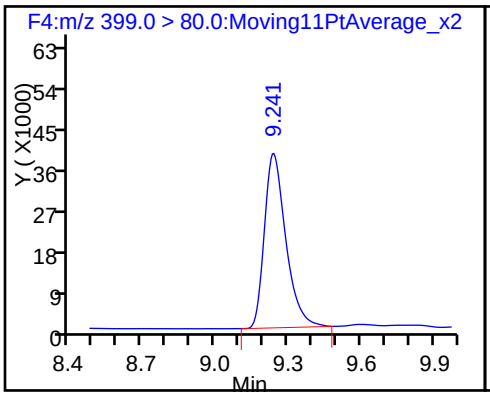
9 Perfluoroheptanoic acid



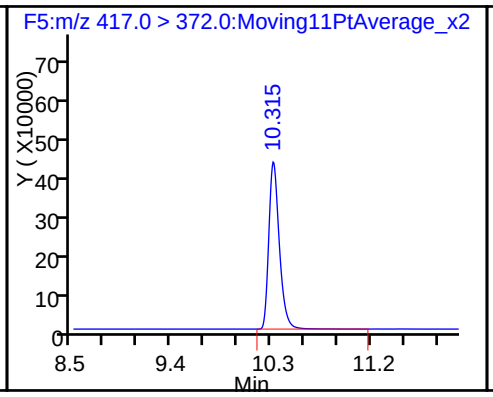
D 11 18O2 PFHxS



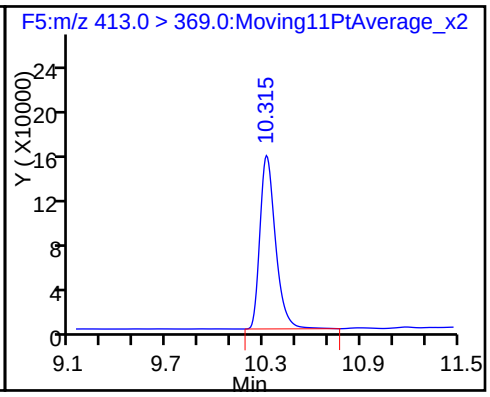
10 Perfluorohexane Sulfonate



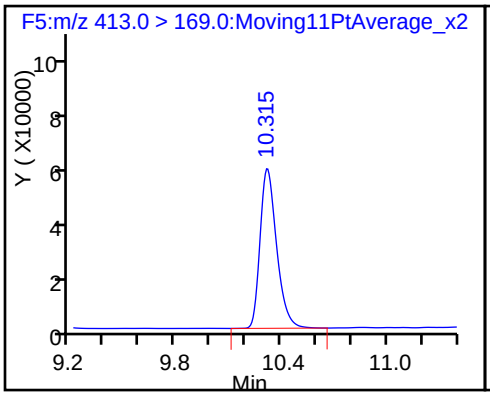
D 12 13C4 PFOA



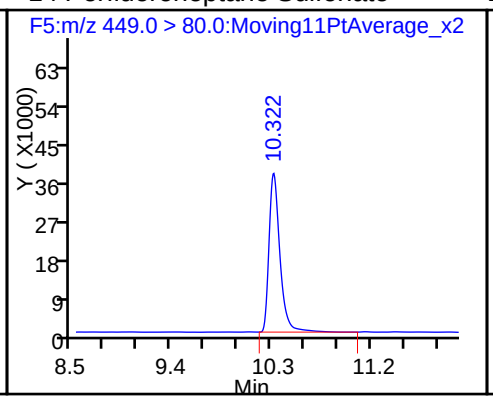
13 Perfluorooctanoic acid



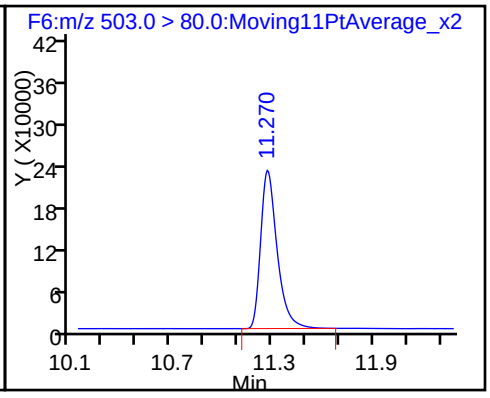
13 Perfluorooctanoic acid



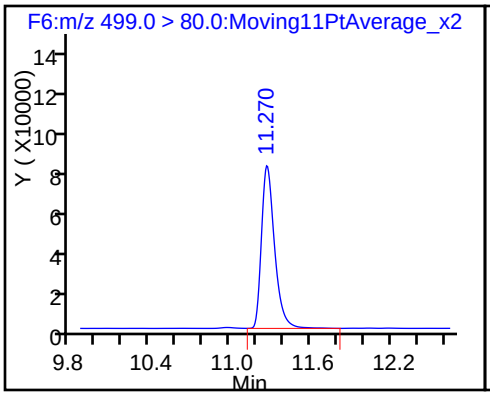
14 Perfluoroheptane Sulfonate



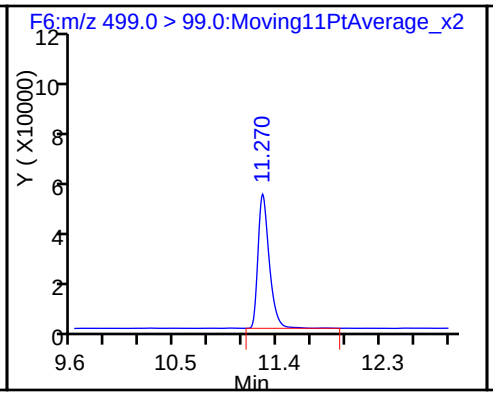
D 16 13C4 PFOS



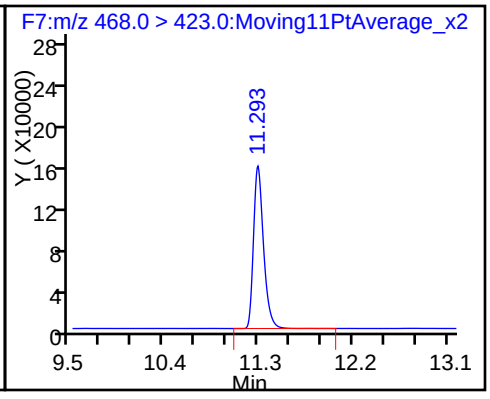
15 Perfluorooctane sulfonic acid



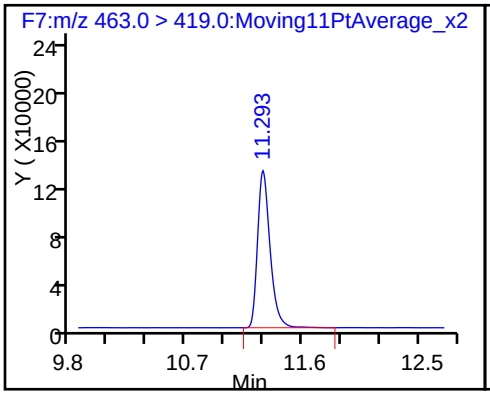
15 Perfluorooctane sulfonic acid



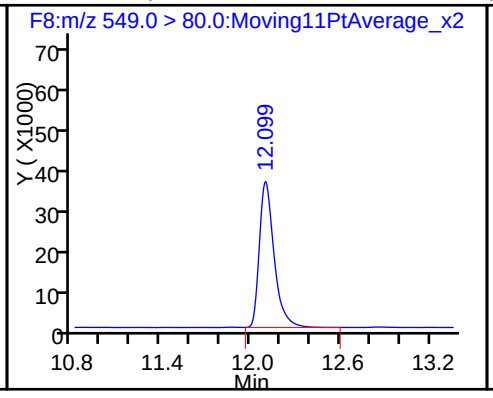
D 17 13C5 PFNA



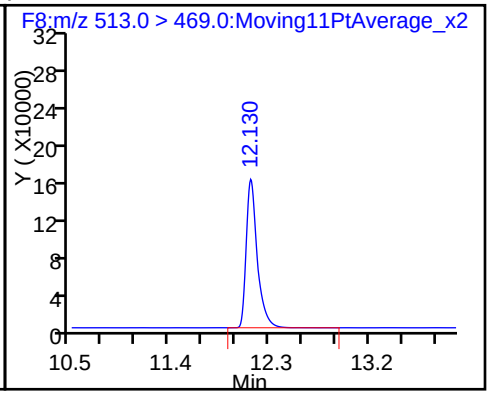
18 Perfluorononanoic acid



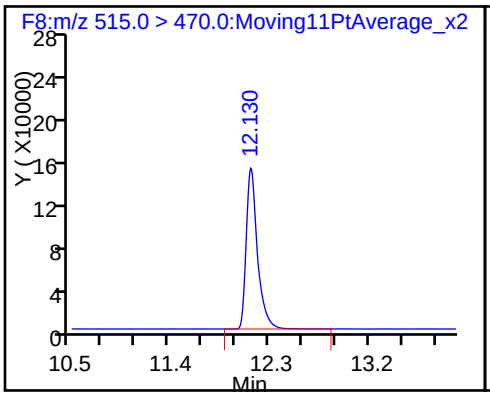
21 PFNS (Perflouro-1-nonanesulfonate)



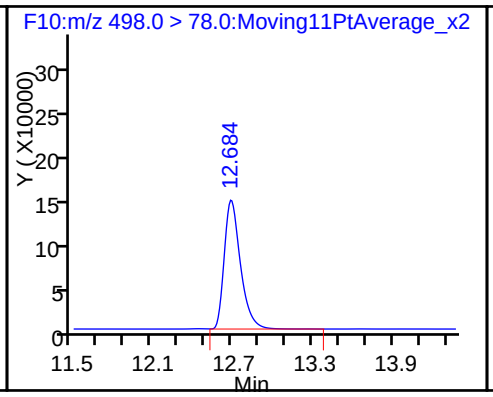
20 Perfluorodecanoic acid



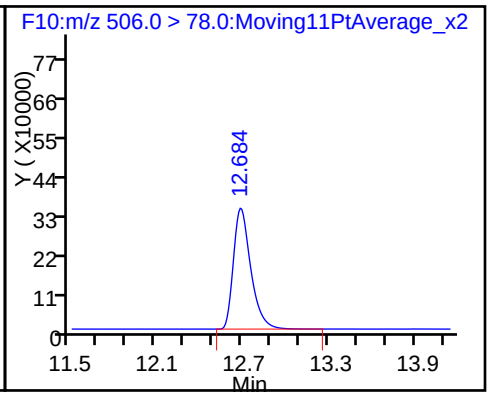
D 19 13C2 PFDA



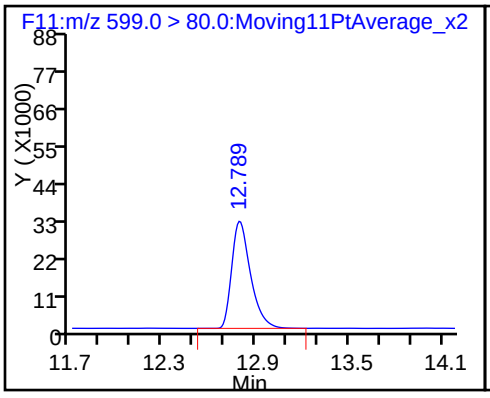
24 Perfluorooctane Sulfonamide



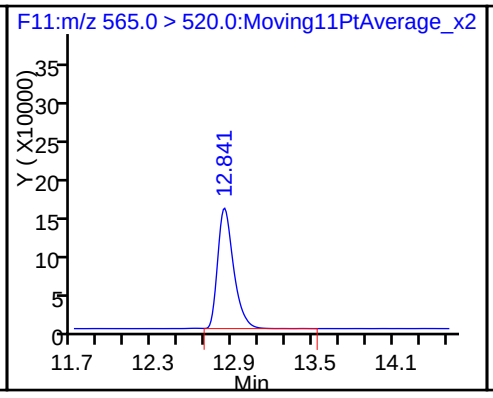
D 23 13C8 FOSA



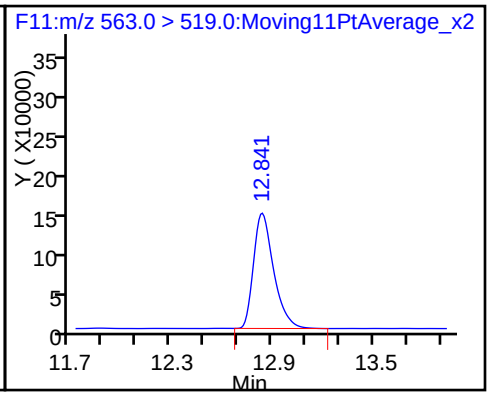
25 Perfluorodecane Sulfonate



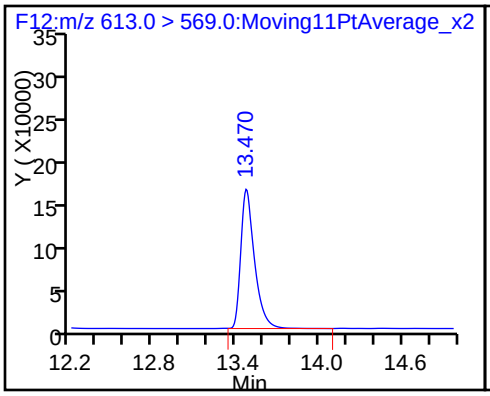
D 26 13C2 PFUnA



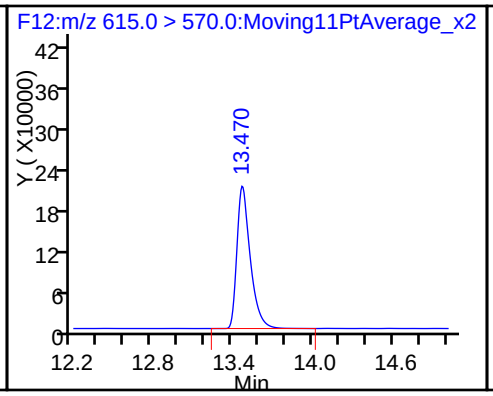
27 Perfluoroundecanoic acid



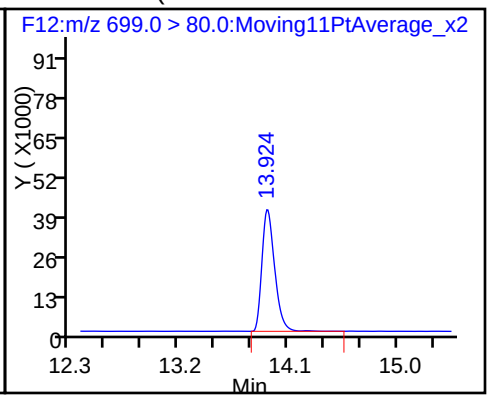
29 Perfluorododecanoic acid



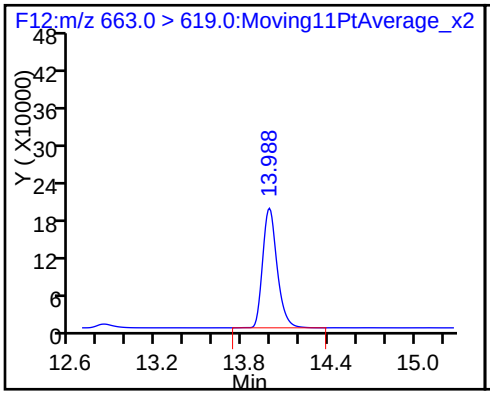
D 28 13C2 PFDoA



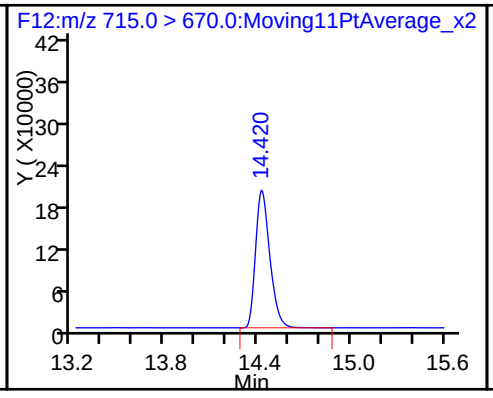
31 PFDoS (Perflouro-1-dodecanesulfona



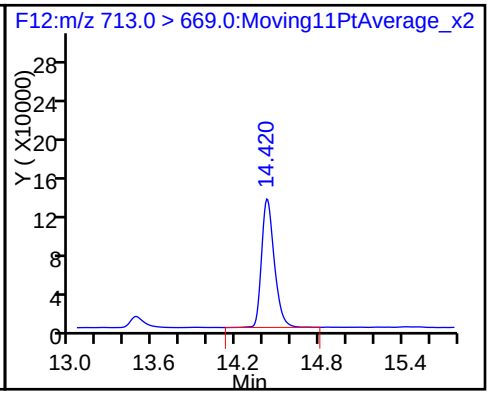
30 Perfluorotridecanoic acid



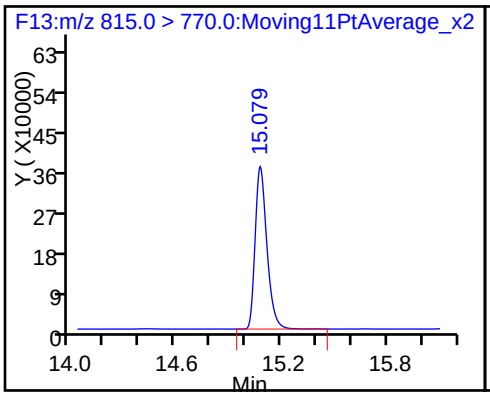
D 33 13C2-PFTeDA



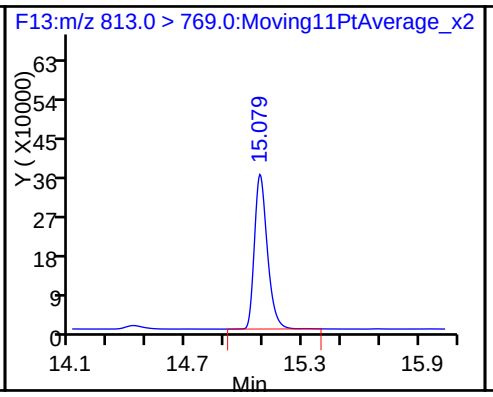
32 Perfluorotetradecanoic acid



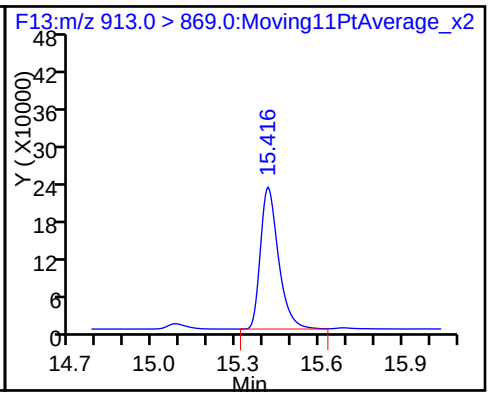
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: ICV 320-74318/9 Calibration Date: 05/18/2015 18:13

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_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	1.506	1.592		52.9	50.0	5.7	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.013		49.1	50.0	-1.8	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	1.047		41.5	44.3	-6.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	1.064		50.3	50.0	0.6	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.088		52.1	50.0	4.2	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5978		43.7	47.3	-7.5	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.4112		45.3	47.6	-4.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	1.067		52.7	50.0	5.3	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	1.066		52.3	47.8	9.6	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8959		51.3	50.0	2.6	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.227		52.0	50.0	4.0	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.136		51.8	50.0	3.6	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4848		53.5	48.3	10.9	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.9581		49.9	50.0	-0.3	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.8702		53.2	50.0	6.4	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	1.020		59.8	50.0	19.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.6411		48.1	50.0	-3.8	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.280		55.5	50.0	11.1	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.9857		63.1	50.0	26.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_012.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 18-May-2015 18:13:15 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JSS Instrument ID: A6
Sublist: chrom-PFAC_A4*sub6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:42 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 10:53:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.668	5.669	-0.001	1.000	1918636	52.9			3811	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.670	-0.002		482170	19.4		96.9	2616	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		882298	20.1		101	3618	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.762	6.761	0.001	1.000	2233530	49.1			1294	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.872	6.873	-0.001	1.000	968157	41.5			593	
298.9 > 99.0	6.872	6.873	-0.001	1.000	648017		1.49(0.00-0.00)		434	
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	7.981	0.004		1039818	20.3		102	4037	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	7.982	0.003	1.000	2765787	50.3			2444	
D 8 13C4-PFHpA										
367.0 > 322.0	9.200	9.196	0.004		1095755	19.8		98.9	3966	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.200	9.196	0.004	1.000	2979207	52.1			5064	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.226	0.009		395384	18.0		95.2	1497	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.229	9.227	0.002	1.000	590294	43.7			476	
D 12 13C4 PFOA										
417.0 > 372.0	10.308	10.304	0.004		2620296	49.4		98.9	6527	

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	10.315	10.306	0.009	1.000	2795342	52.7			971	
413.0 > 169.0	10.315	10.306	0.009	1.000	987048		2.83(0.00-0.00)		765	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.315	10.311	0.004	1.000	607989	45.3			2572	
D 16 13C4 PFOS										
503.0 > 80.0	11.263	11.260	0.003		1484910	48.0		100	4089	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.263	11.261	0.002	1.000	1580978	52.3			559	
499.0 > 99.0	11.263	11.261	0.002	1.000	908395		1.74(0.00-0.00)		2715	
D 17 13C5 PFNA										
468.0 > 423.0	11.285	11.280	0.005		957562	19.8		99.0	2440	
18 Perfluorononanoic acid										
463.0 > 419.0	11.285	11.281	0.004	1.000	2144705	51.3			2642	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.122	12.121	0.001	1.000	3257591	52.0			6722	
D 19 13C2 PFDA										
515.0 > 470.0	12.122	12.121	0.001		1062167	21.4		107	2418	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.684	12.675	0.009	1.000	3226299	51.8			2924	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2841174	49.5		99.1	4660	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.789	12.786	0.003	1.000	726692	53.5			2469	
D 26 13C2 PFUnA										
565.0 > 520.0	12.830	12.830	0.0		1311455	20.6		103	2544	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.830	12.833	-0.003	1.000	3141288	49.9			2281	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.470	13.462	0.008	1.000	3113577	53.2			3341	
D 28 13C2 PFDoA										
615.0 > 570.0	13.470	13.462	0.008		1431197	20.1		100	2031	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.979	13.976	0.003	1.000	3649788	59.8			1636	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.420	14.412	0.008		1323235	20.6		103	1891	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.420	14.413	0.007	1.000	2293724	48.1			546	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.074	15.072	0.002		1718375	20.6		103	2769	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.074	15.072	0.002	1.000	4578882	55.5			2359	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.411	15.409	0.002	1.000	3526835	63.1			1423	

Reagents:

LCPFCIC_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:43 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_012.d

Injection Date: 18-May-2015 18:13:15 Instrument ID: A6

Lims ID: ICV

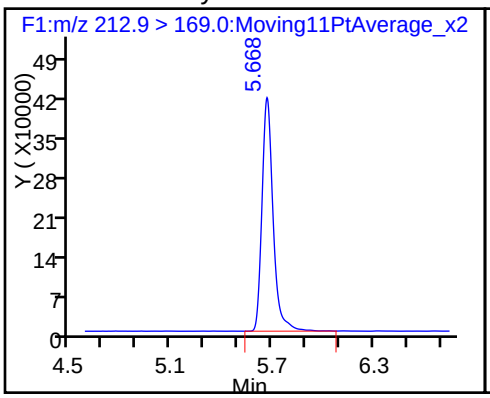
Client ID:

Operator ID: JSS ALS Bottle#: 8 Worklist Smp#: 9

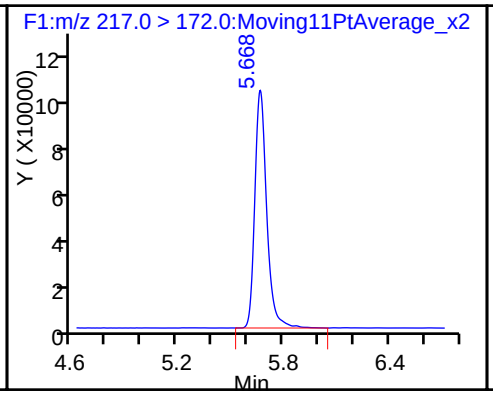
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

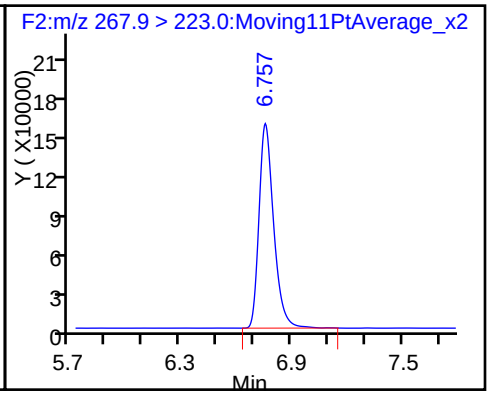
2 Perfluorobutyric acid



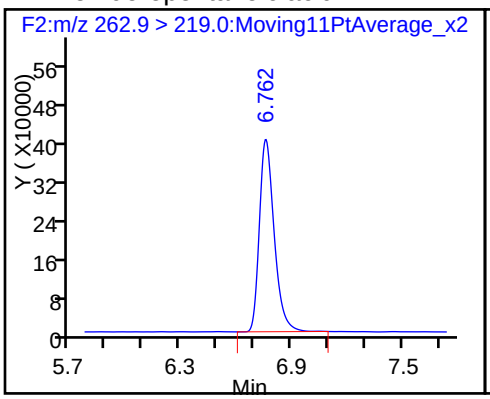
D 1 13C4 PFBA



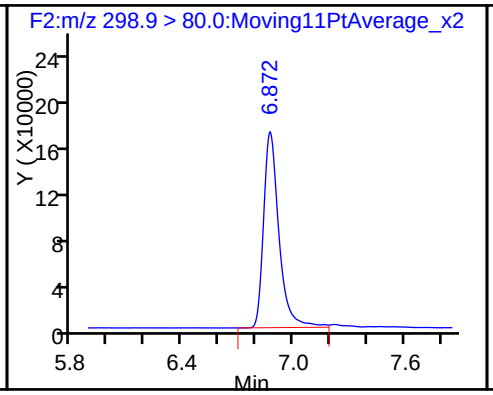
D 3 13C5-PFPeA



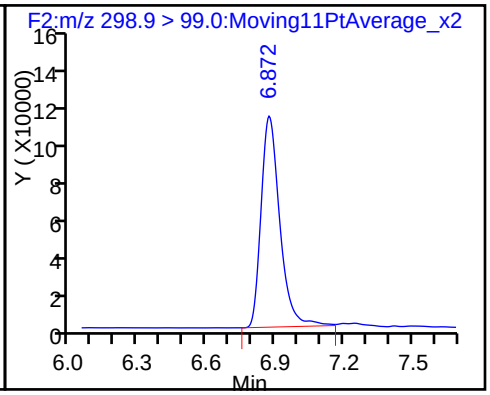
4 Perfluoropentanoic acid



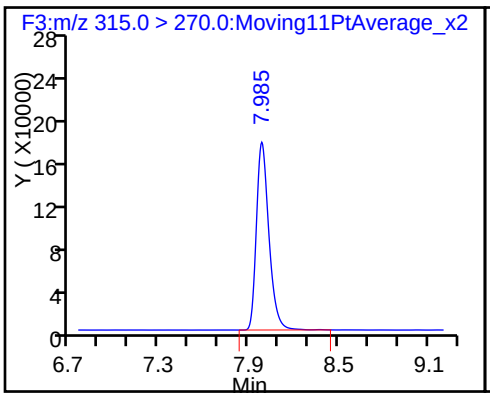
5 Perfluorobutane Sulfonate



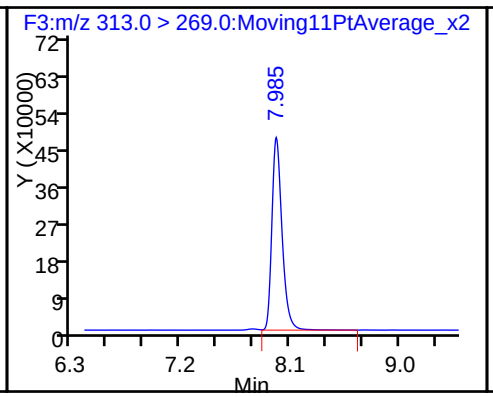
5 Perfluorobutane Sulfonate



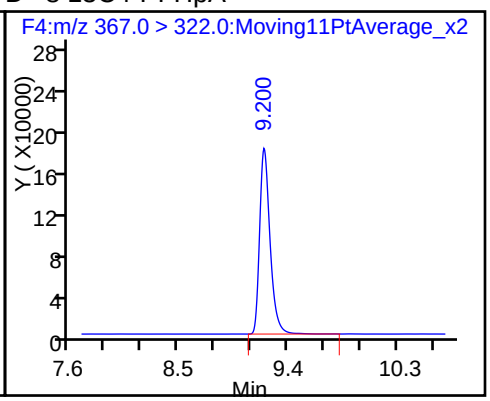
D 6 13C2 PFHxA



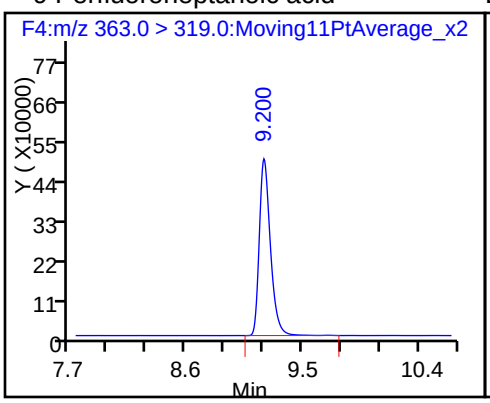
7 Perfluorohexanoic acid



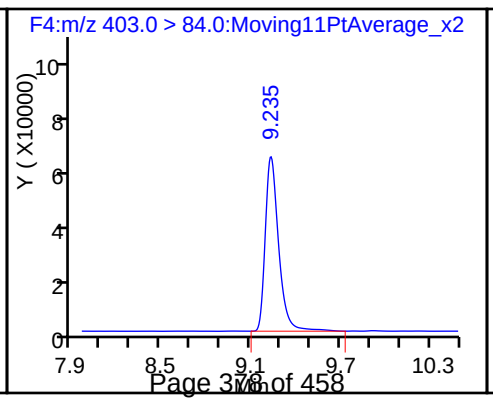
D 8 13C4-PFHpA



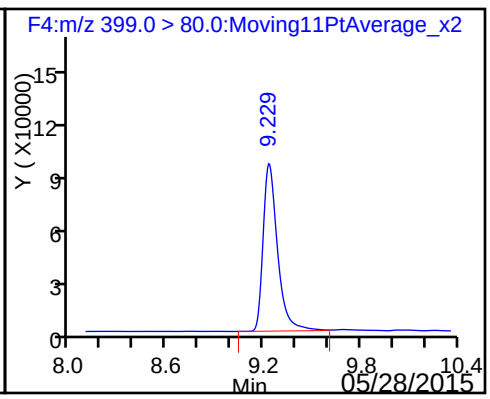
9 Perfluoroheptanoic acid



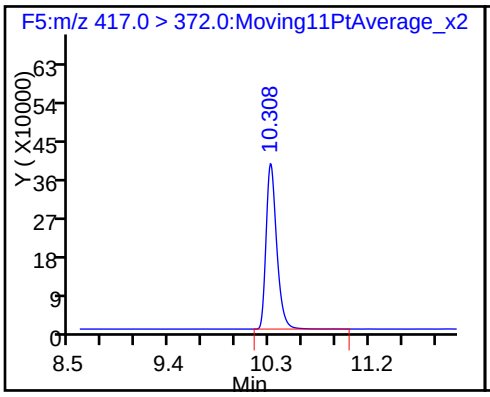
D 11 18O2 PFHxS



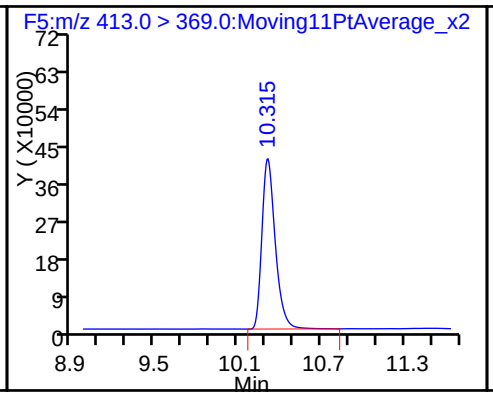
10 Perfluorohexane Sulfonate



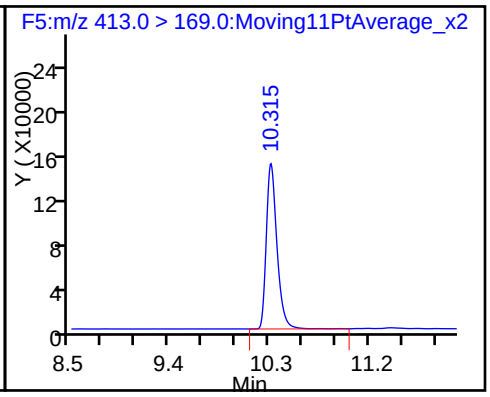
D 12 13C4 PFOA



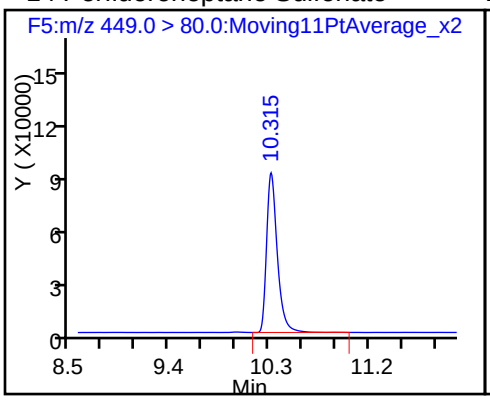
13 Perfluorooctanoic acid



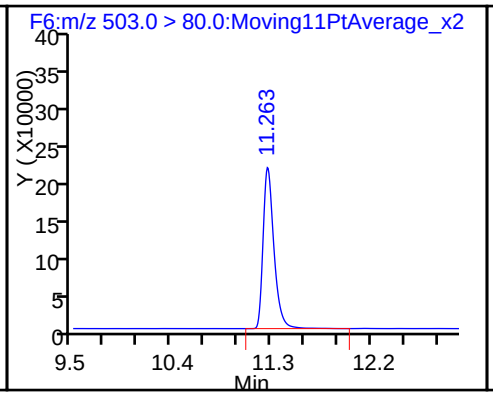
13 Perfluorooctanoic acid



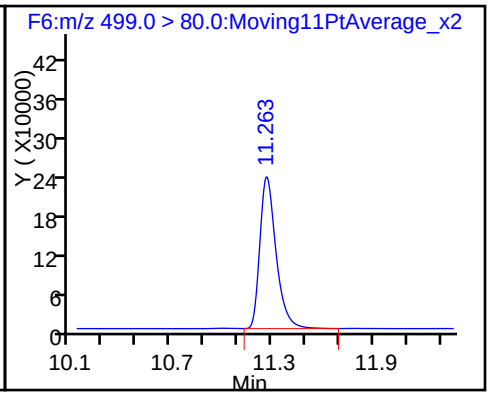
14 Perfluoroheptane Sulfonate



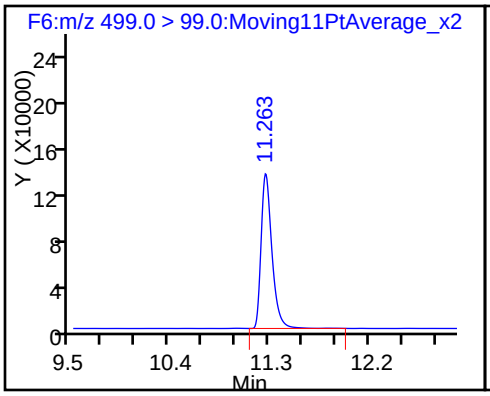
D 16 13C4 PFOS



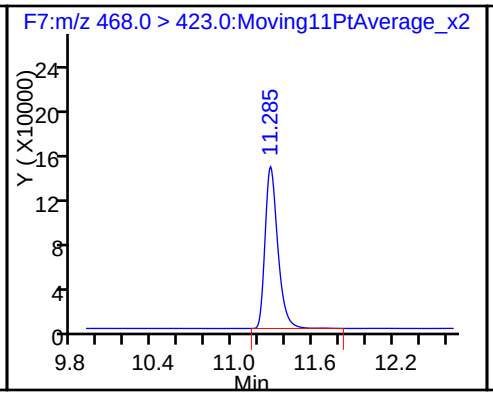
15 Perfluorooctane sulfonic acid



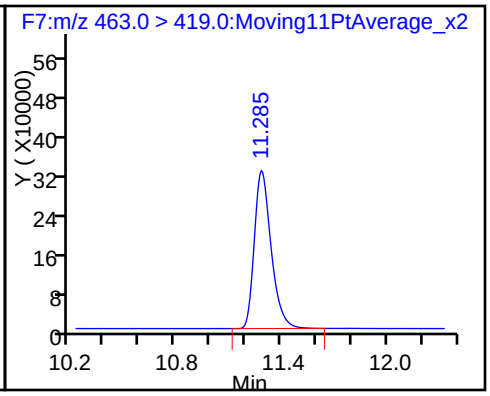
15 Perfluorooctane sulfonic acid



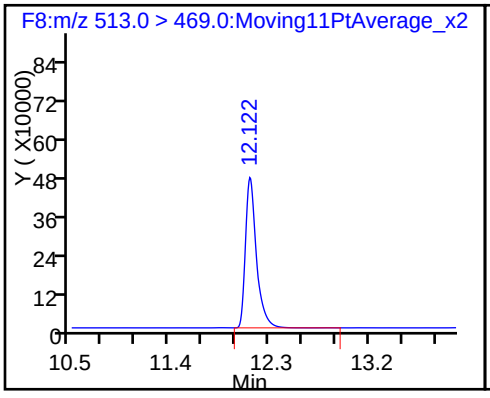
D 17 13C5 PFNA



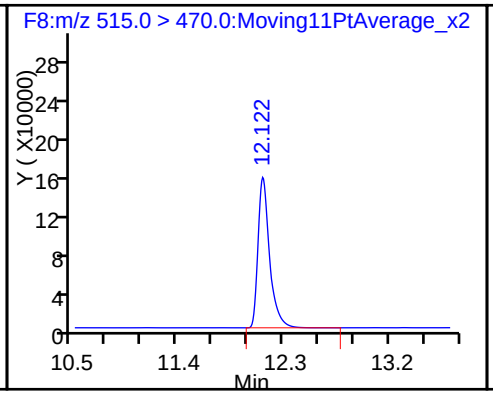
18 Perfluorononanoic acid



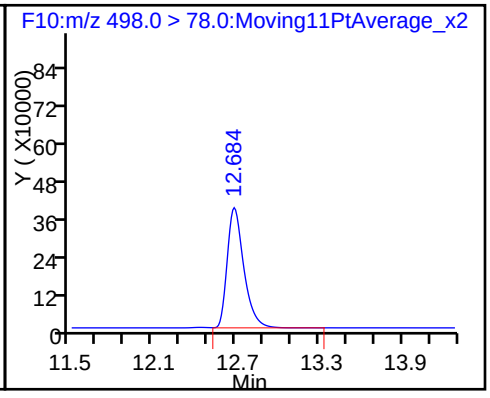
20 Perfluorodecanoic acid



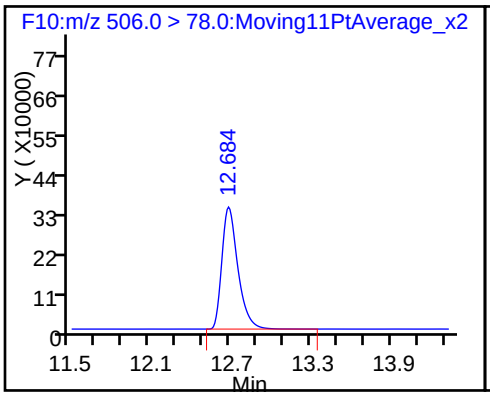
D 19 13C2 PFDA



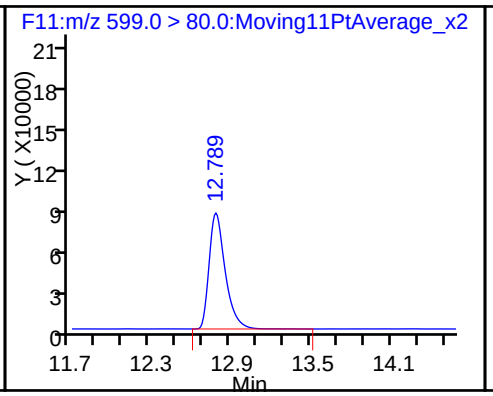
24 Perfluorooctane Sulfonamide



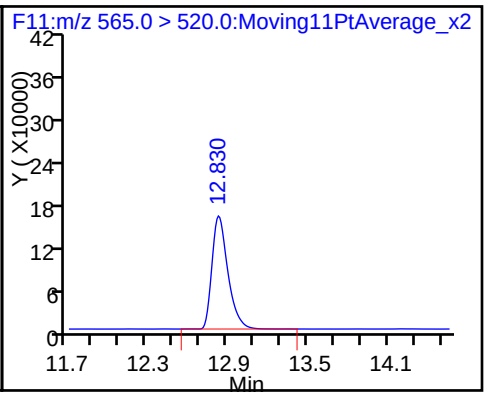
D 23 13C8 FOSA



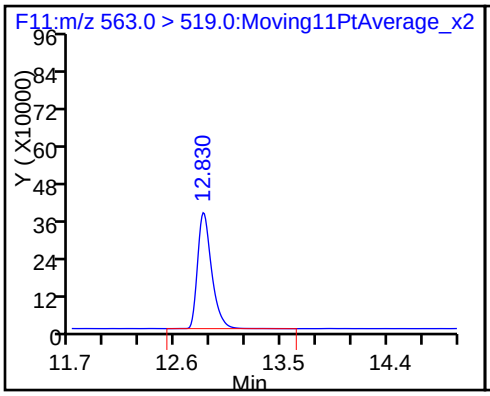
25 Perfluorodecane Sulfonate



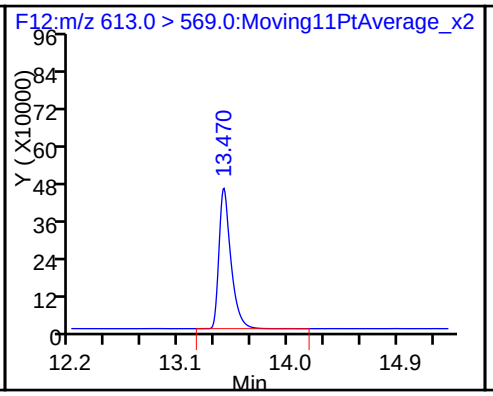
D 26 13C2 PFUnA



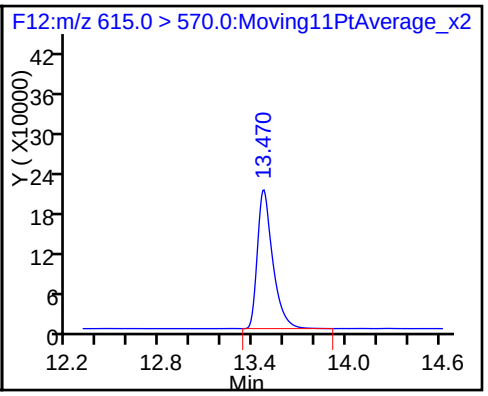
27 Perfluoroundecanoic acid



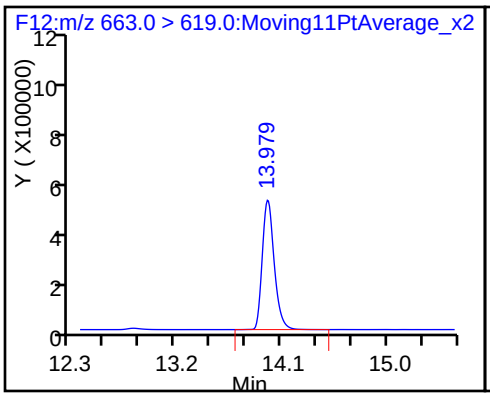
29 Perfluorododecanoic acid



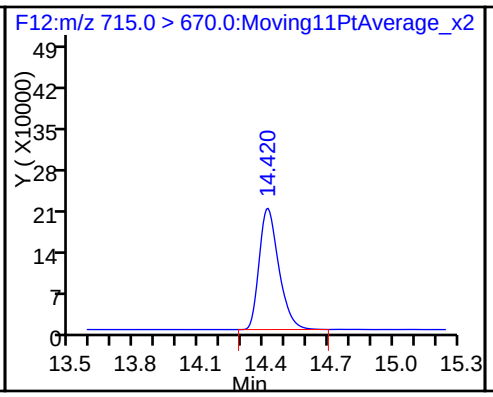
D 28 13C2 PFDoA



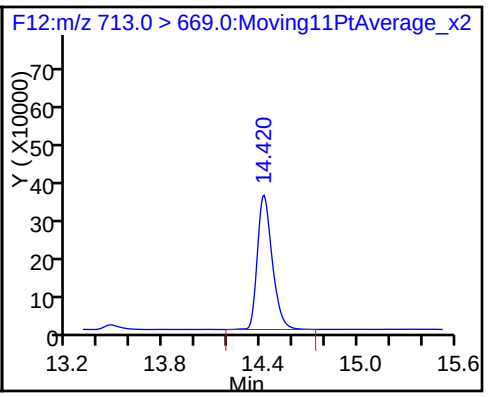
30 Perfluorotridecanoic acid



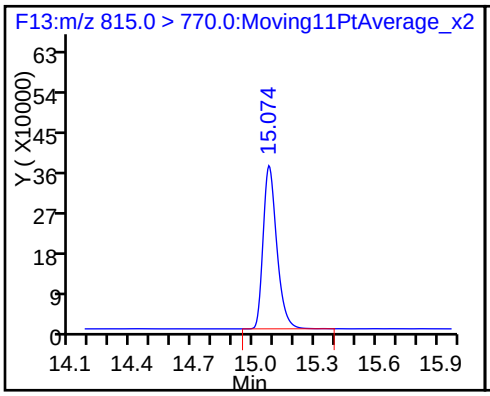
D 33 13C2-PFTeDA



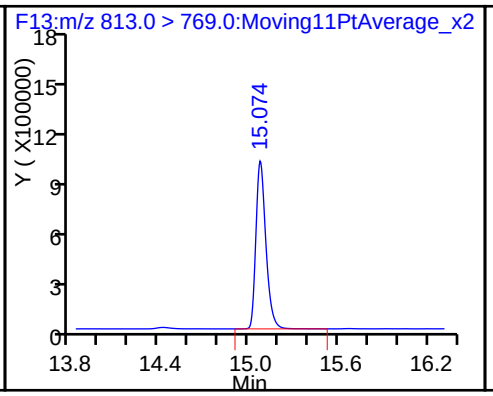
32 Perfluorotetradecanoic acid



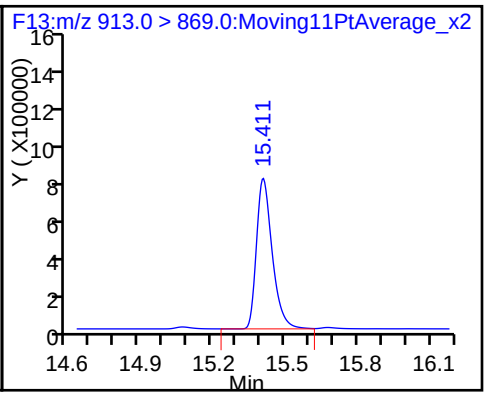
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74318/15 Calibration Date: 05/18/2015 22:06

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.401		18.6	20.0	-6.9	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.037		20.1	20.0	0.5	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	0.9670		15.3	17.7	-13.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	0.9020		17.1	20.0	-14.7	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.021		19.6	20.0	-2.1	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5532		16.2	18.9	-14.4	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3560		15.7	19.0	-17.5	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9257		18.3	20.0	-8.6	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.9673		19.0	19.1	-0.6	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8150		18.7	20.0	-6.7	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.101		18.7	20.0	-6.6	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.207		22.0	20.0	10.2	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4333		19.1	19.3	-0.9	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.9120		19.0	20.0	-5.1	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.7671		18.8	20.0	-6.2	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.8464		19.8	20.0	-0.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.6152		18.5	20.0	-7.6	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.279		21.4	20.0	6.8	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.7964		20.4	20.0	2.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_023.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 18-May-2015 22:06:59 ALS Bottle#: 4 Worklist Smp#: 15
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:32:19 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:54:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.668	5.669	-0.001	1.000	676312	18.6		93.1	1467	
D 1 13C4 PFBA										
217.0 > 172.0	5.665	5.670	-0.005		482604	19.4		97.0	2544	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		792319	18.1		90.3	2695	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.757	6.761	-0.004	1.000	821629	20.1		101	624	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.872	6.873	-0.001	1.000	344759	15.3		86.6	203	
298.9 > 99.0	6.872	6.873	-0.001	1.000	228603		1.51(0.00-0.00)		184	
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	7.981	0.004		986089	19.3		96.3	4191	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	7.982	0.003	1.000	889438	17.1		85.3	1374	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.062	8.056	0.006	0.873	187361	16.8		89.5	491	
D 8 13C4-PFHpA										
367.0 > 322.0	9.200	9.196	0.004		1020968	18.4		92.2	5336	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.206	9.196	0.010	1.000	1042536	19.6		97.9	2004	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.226	0.009		381536	17.4		91.8	1870	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.235	9.227	0.008	1.000	211072	16.2		85.6	196	
D 12 13C4 PFOA										
417.0 > 372.0	10.308	10.304	0.004		2443827	46.1		92.2	6483	

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	10.315	10.306	0.009	1.000	904903	18.3		91.4	472	
413.0 > 169.0	10.315	10.306	0.009	1.000	327191		2.77(0.00-0.00)		341	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.315	10.311	0.004	1.000	203451	15.7		82.5	778	
D 16 13C4 PFOS										
503.0 > 80.0	11.263	11.260	0.003		1434780	46.4		97.0	4111	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.270	11.261	0.009	1.000	555124	19.0		99.4	484	
499.0 > 99.0	11.270	11.261	0.009	1.000	333721		1.66(0.00-0.00)		1562	
D 17 13C5 PFNA										
468.0 > 423.0	11.285	11.280	0.005		946409	19.6		97.8	2993	
18 Perfluorononanoic acid										
463.0 > 419.0	11.285	11.281	0.004	1.000	771339	18.7		93.3	1766	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.092	12.086	0.006	1.000	218279	16.0		83.6	895	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.122	12.121	0.001	1.000	1018693	18.7		93.4	3640	
D 19 13C2 PFDA										
515.0 > 470.0	12.122	12.121	0.001		925242	18.7		93.4	3325	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.695	12.675	0.020	1.000	1070063	22.0		110	1816	
D 23 13C8 FOSA										
506.0 > 78.0	12.695	12.677	0.018		2215503	38.6		77.3	3411	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.789	12.786	0.003	1.000	250743	19.1		99.1	513	
D 26 13C2 PFUnA										
565.0 > 520.0	12.830	12.830	0.0		1167878	18.3		91.7	1577	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.830	12.833	-0.003	1.000	1065093	19.0		94.9	1041	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.455	13.462	-0.007	1.000	1040207	18.8		93.8	1314	
D 28 13C2 PFDoA										
615.0 > 570.0	13.455	13.462	-0.007		1355966	19.0		95.0	2471	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.906	13.918	-0.012	1.000	265041	17.2		88.9	716	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.961	13.976	-0.015	1.000	1147702	19.8		99.2	665	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.397	14.412	-0.015		1281362	20.0		99.9	3077	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.404	14.413	-0.009	1.000	834245	18.5		92.4	187	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.059	15.072	-0.013		1775146	21.3		106	3340	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.059	15.072	-0.013	1.000	1734809	21.4		107	1431	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.385	15.409	-0.024	1.000	1079840	20.4		102	827	

Reagents:

LCPFC-L4_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 14:32:20 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_023.d

Injection Date: 18-May-2015 22:06:59 Instrument ID: A6

Lims ID: CCV L4

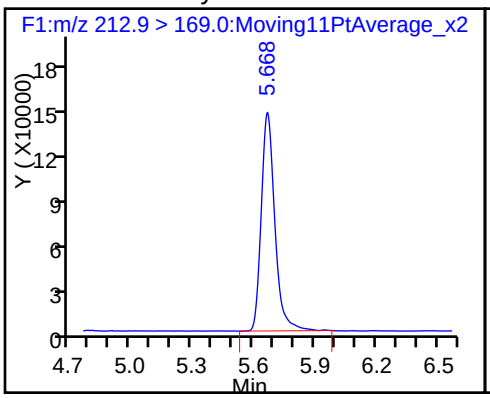
Client ID:

Operator ID: JRB ALS Bottle#: 4 Worklist Smp#: 15

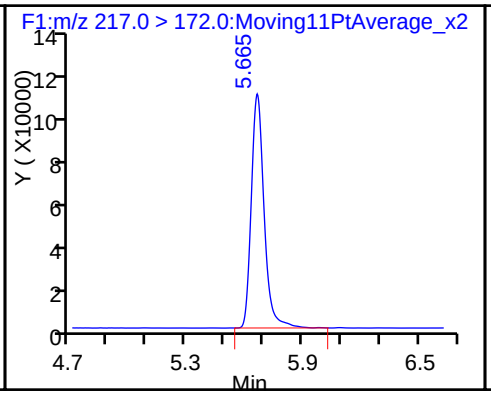
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

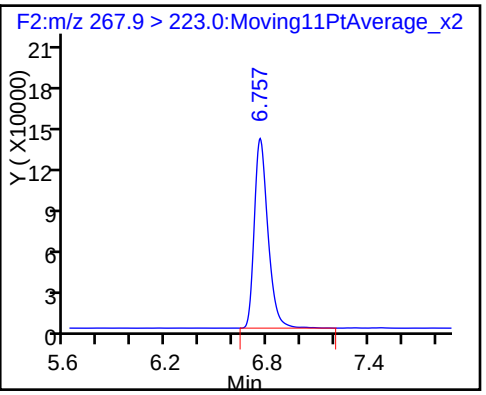
2 Perfluorobutyric acid



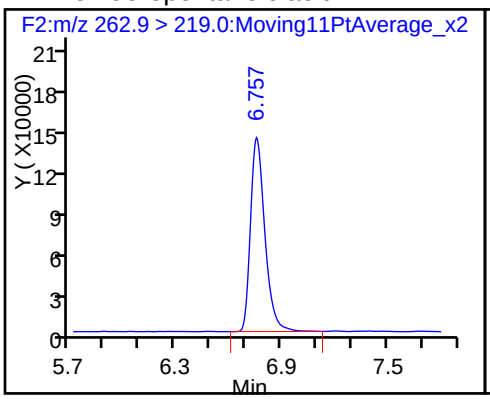
D 1 13C4 PFBA



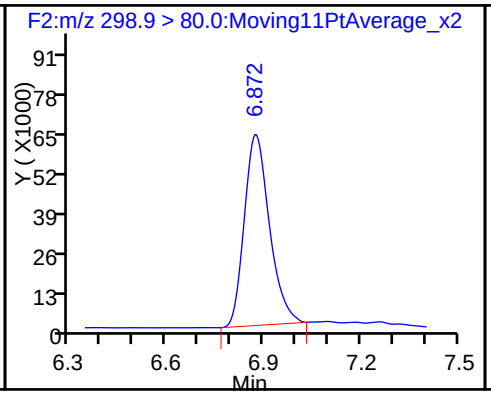
D 3 13C5-PFPeA



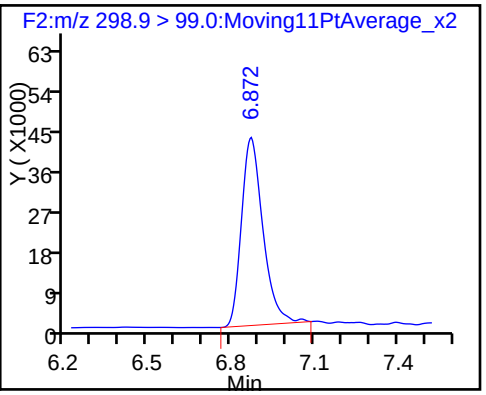
4 Perfluoropentanoic acid



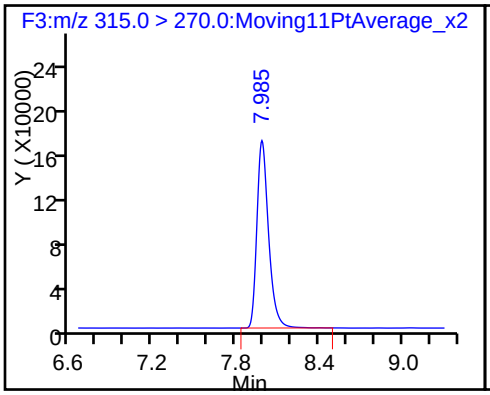
5 Perfluorobutane Sulfonate



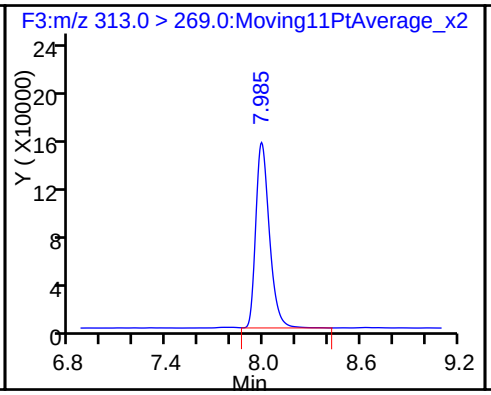
5 Perfluorobutane Sulfonate



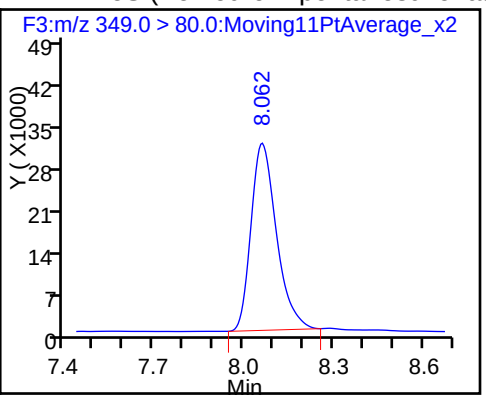
D 6 13C2 PFHxA



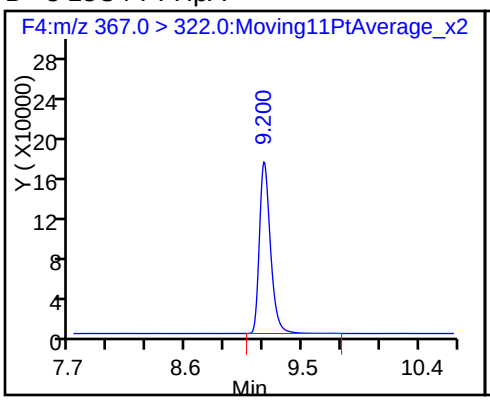
7 Perfluorohexanoic acid



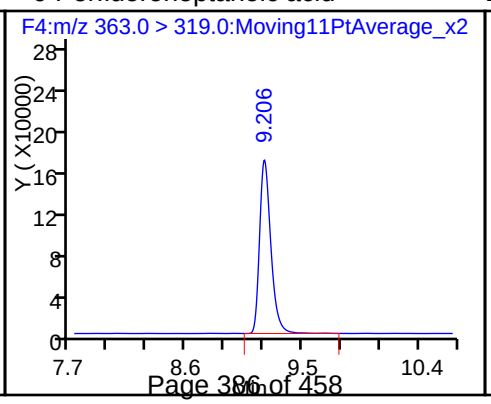
22 PFPeS (Perflouro-1-pentanesulfonat



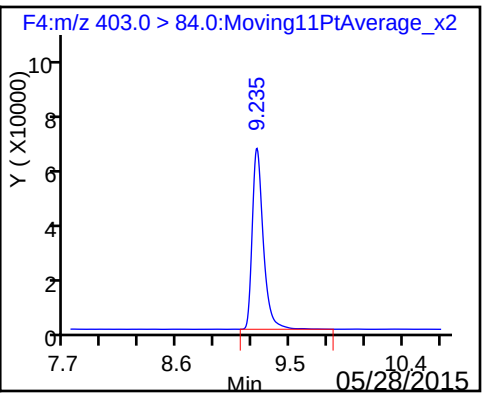
D 8 13C4-PFHpA



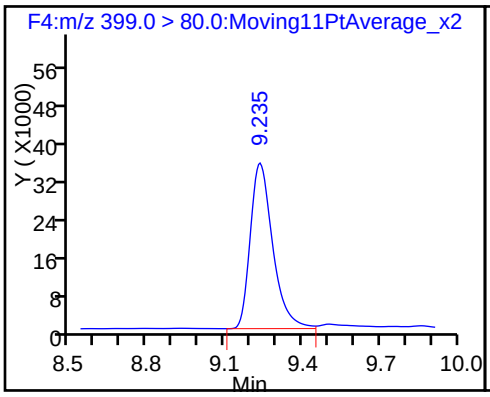
9 Perfluoroheptanoic acid



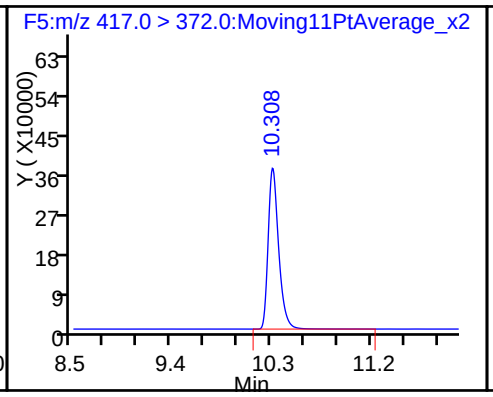
D 11 18O2 PFHxS



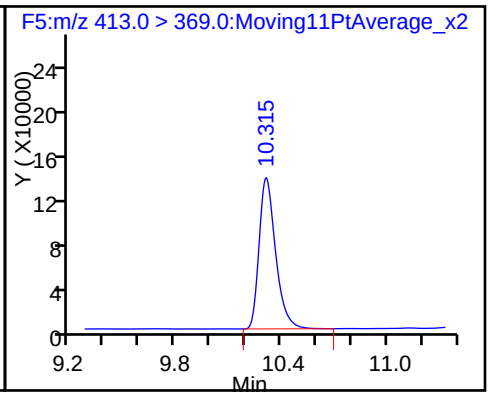
10 Perfluorohexane Sulfonate



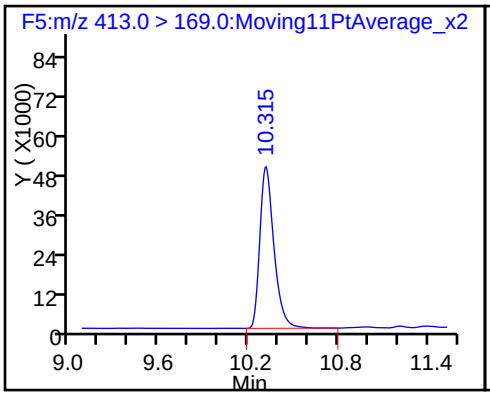
D 12 13C4 PFOA



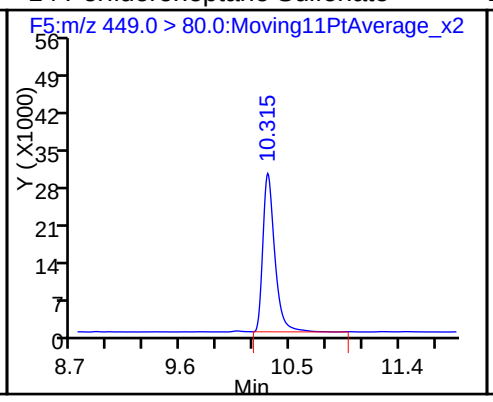
13 Perfluorooctanoic acid



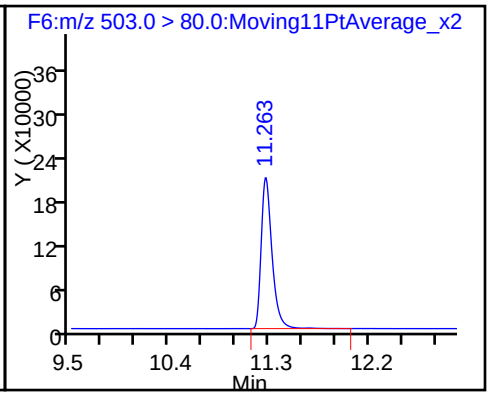
13 Perfluorooctanoic acid



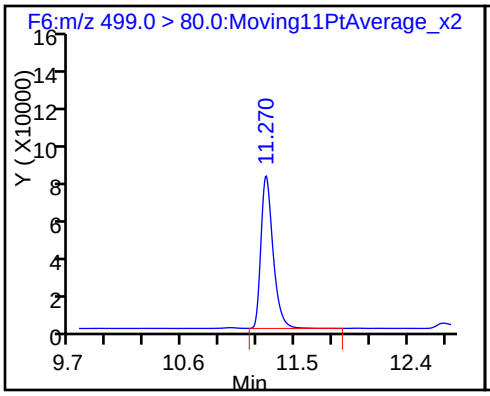
14 Perfluoroheptane Sulfonate



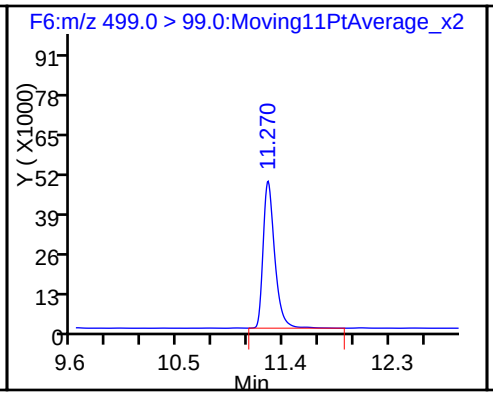
D 16 13C4 PFOS



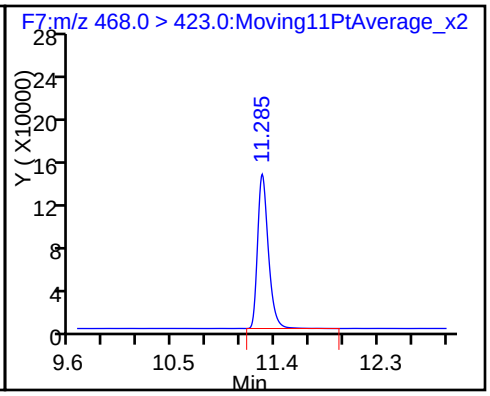
15 Perfluorooctane sulfonic acid



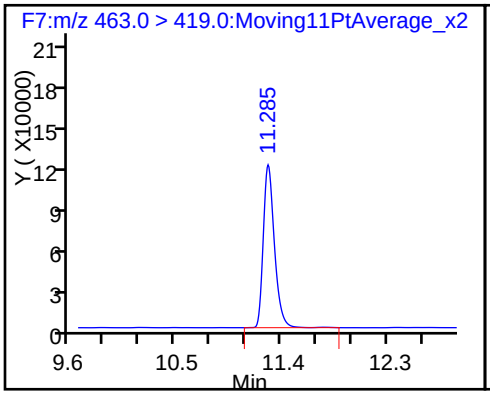
15 Perfluorooctane sulfonic acid



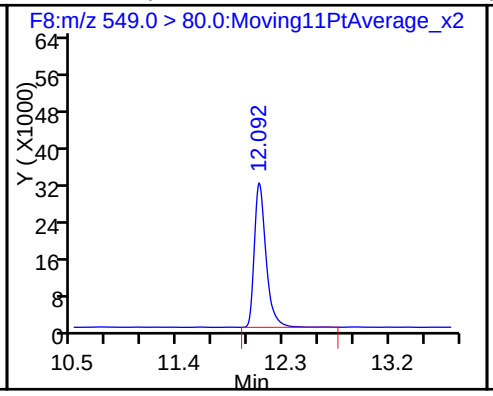
D 17 13C5 PFNA



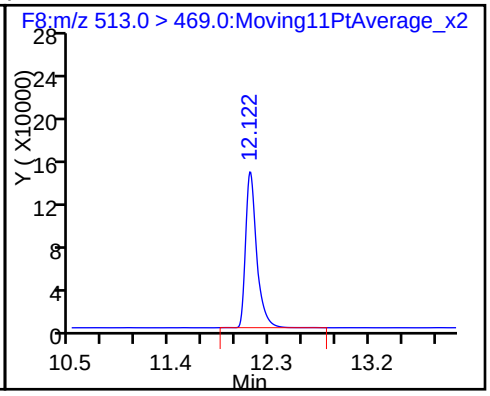
18 Perfluorononanoic acid



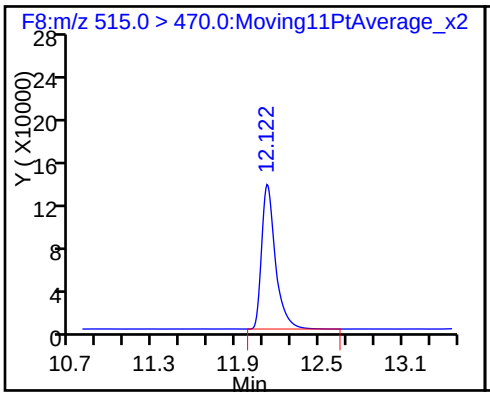
21 PFNS (Perflouro-1-nonanesulfonate)



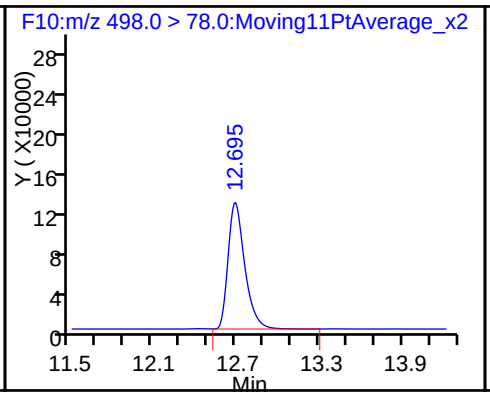
20 Perfluorodecanoic acid



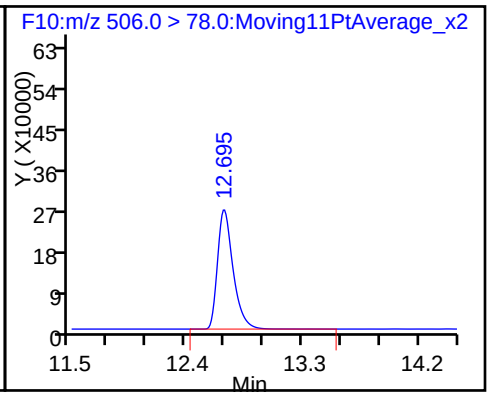
D 19 13C2 PFDA



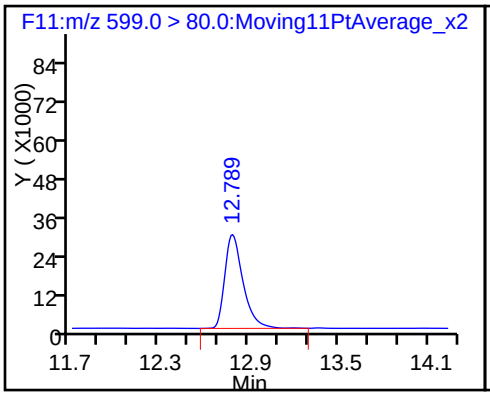
24 Perfluorooctane Sulfonamide



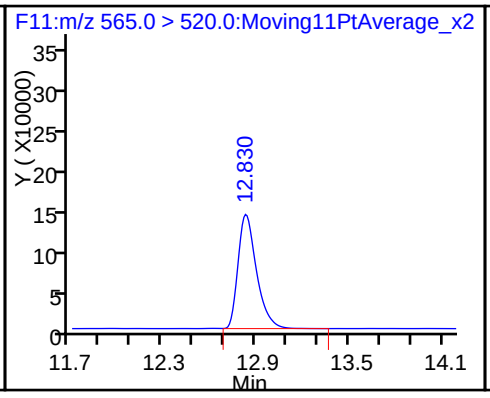
D 23 13C8 FOSA



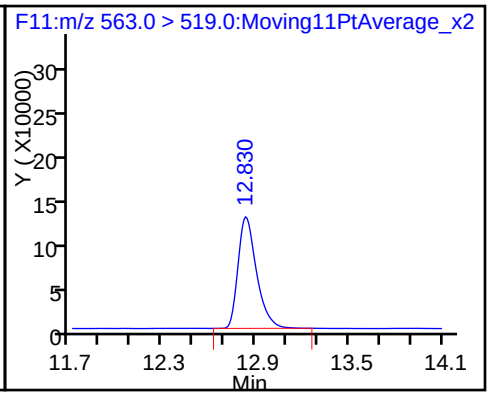
25 Perfluorodecane Sulfonate



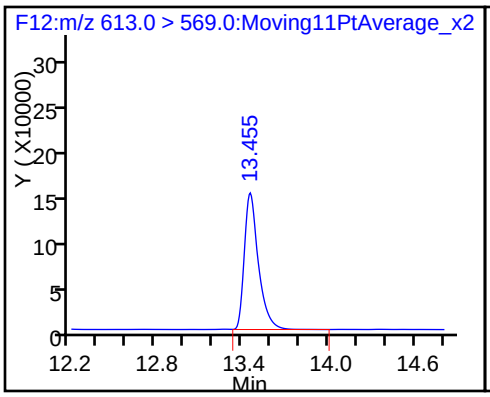
D 26 13C2 PFUnA



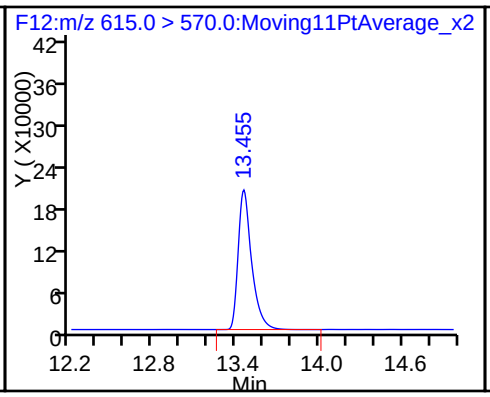
27 Perfluoroundecanoic acid



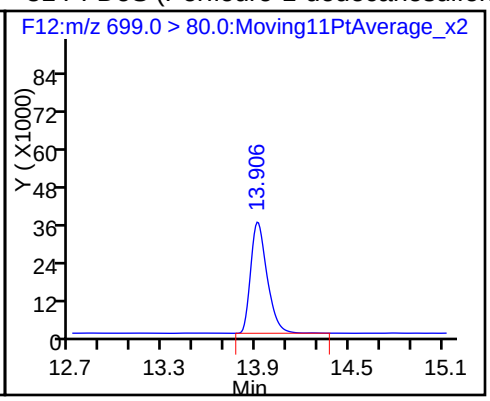
29 Perfluorododecanoic acid



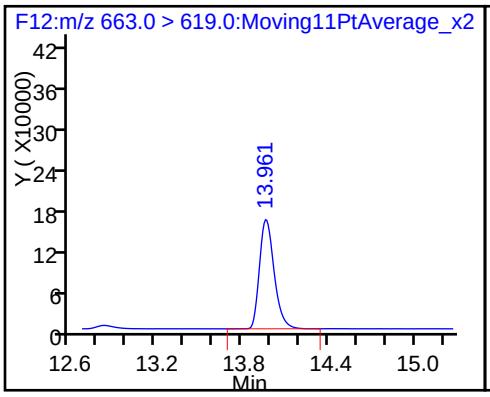
D 28 13C2 PFDoA



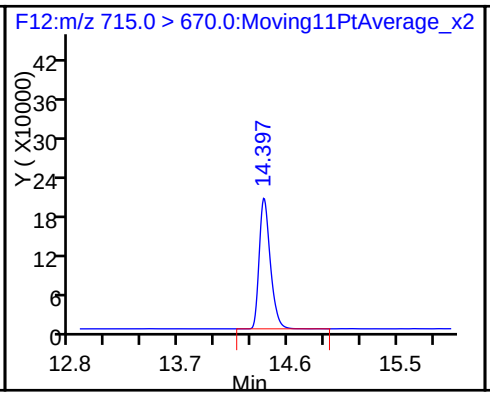
31 PFDoS (Perflouro-1-dodecanesulfona



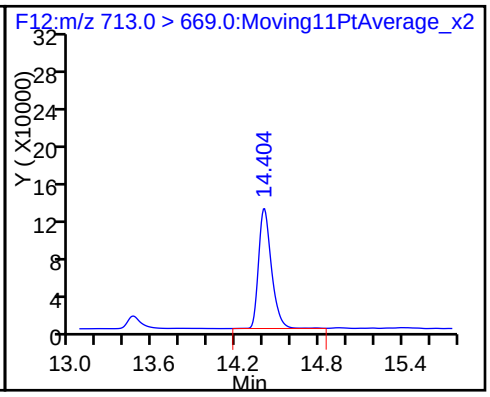
30 Perfluorotridecanoic acid



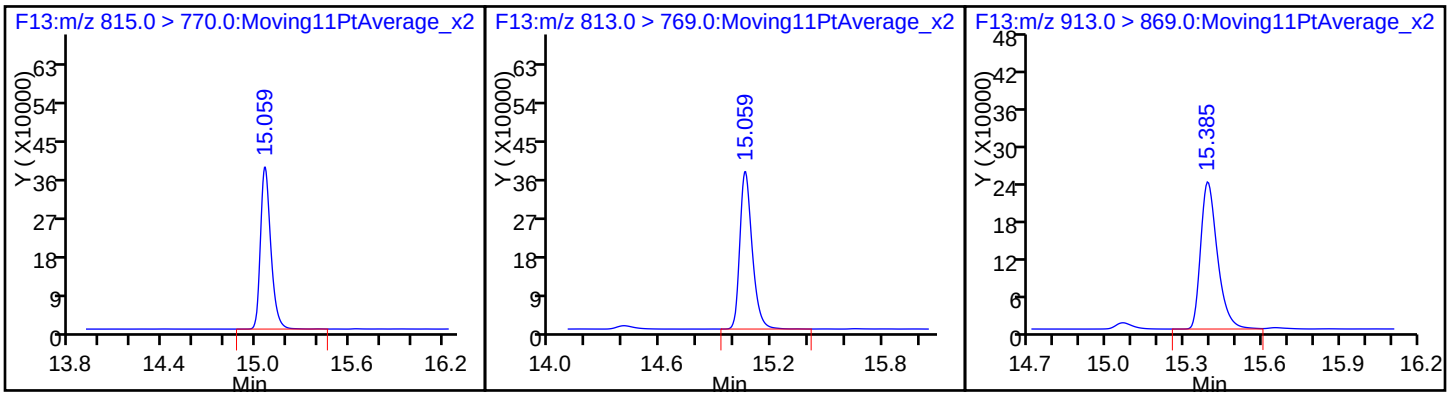
D 33 13C2-PFTeDA



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.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74318/25 Calibration Date: 05/18/2015 23:10

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.541		51.2	50.0	2.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.9653		46.8	50.0	-6.4	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	1.445		57.2	44.2	29.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	0.9712		45.9	50.0	-8.2	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.020		48.9	50.0	-2.3	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5423		39.7	47.3	-16.1	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9759		48.2	50.0	-3.7	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3744		41.3	47.6	-13.3	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.9885		48.6	47.8	1.6	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8833		50.6	50.0	1.1	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.079		45.8	50.0	-8.5	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.195		54.5	50.0	9.0	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4064		44.8	48.2	-7.0	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.9131		47.5	50.0	-4.9	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.7976		48.7	50.0	-2.5	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.8523		49.9	50.0	-0.1	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.6036		45.3	50.0	-9.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.269		55.1	50.0	10.1	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.9367		60.0	50.0	19.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_026.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 18-May-2015 23:10:45 ALS Bottle#: 5 Worklist Smp#: 25
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:32:22 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:54:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.665	5.669	-0.004	1.000	1720570	51.2		102	3297	
D 1 13C4 PFBA										
217.0 > 172.0	5.665	5.670	-0.005		446684	18.0		89.8	2269	
D 3 13C5-PFPeA										
267.9 > 223.0	6.753	6.760	-0.007		826017	18.8		94.1	2626	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.753	6.761	-0.008	1.000	1993406	46.8		93.6	1515	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.868	6.873	-0.005	1.000	1324091	57.2		129	846	
298.9 > 99.0	6.868	6.873	-0.005	1.000	887163		1.49(0.00-0.00)		1202	
D 6 13C2 PFHxA										
315.0 > 270.0	7.975	7.981	-0.006		930397	18.2		90.9	3330	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.980	7.982	-0.002	1.000	2258993	45.9		91.8	2587	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.051	8.056	-0.005	0.873	495244	43.2		92.1	1542	
D 8 13C4-PFHpA										
367.0 > 322.0	9.188	9.196	-0.008		984390	17.8		88.9	3513	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.194	9.196	-0.002	1.000	2509034	48.9		97.7	4775	
D 11 18O2 PFHxS										
403.0 > 84.0	9.223	9.226	-0.003		392210	17.9		94.4	2222	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.223	9.227	-0.004	1.000	531712	39.7		83.9	721	
D 12 13C4 PFOA										
417.0 > 372.0	10.301	10.304	-0.003		2353864	44.4		88.8	6840	

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	10.301	10.306	-0.005	1.000	2297087	48.2		96.3	920	
413.0 > 169.0	10.301	10.306	-0.005	1.000	833660		2.76(0.00-0.00)		976	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.308	10.311	-0.003	1.000	543249	41.3		86.7	1706	
D 16 13C4 PFOS										
503.0 > 80.0	11.256	11.260	-0.004		1457162	47.1		98.5	3704	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.256	11.261	-0.005	1.000	1440436	48.6		102	504	
499.0 > 99.0	11.256	11.261	-0.005	1.000	875636		1.65(0.00-0.00)		1738	
D 17 13C5 PFNA										
468.0 > 423.0	11.271	11.280	-0.009		850100	17.6		87.8	2513	
18 Perfluorononanoic acid										
463.0 > 419.0	11.271	11.281	-0.010	1.000	1877229	50.6		101	3775	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.077	12.086	-0.009	1.000	588183	42.6		88.7	2229	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.114	12.121	-0.007	1.000	2398273	45.8		91.5	4222	
D 19 13C2 PFDA										
515.0 > 470.0	12.114	12.121	-0.007		888771	17.9		89.7	2529	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.684	12.675	0.009	1.000	2953650	54.5		109	5003	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2472404	43.1		86.2	5075	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.779	12.786	-0.007	1.000	597193	44.8		93.0	1729	
D 26 13C2 PFUnA										
565.0 > 520.0	12.820	12.830	-0.010		1127495	17.7		88.6	1373	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.820	12.833	-0.013	1.000	2573913	47.5		95.1	1417	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.455	13.462	-0.007	1.000	2664748	48.7		97.5	3130	
D 28 13C2 PFDoA										
615.0 > 570.0	13.455	13.462	-0.007		1336456	18.7		93.7	2147	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.915	13.918	-0.003	1.000	677128	43.3		89.5	2037	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.970	13.976	-0.006	1.000	2847522	49.9		99.9	1927	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.404	14.412	-0.008		1274744	19.9		99.4	2241	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.404	14.413	-0.009	1.000	2016758	45.3		90.6	509	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.064	15.072	-0.008		1721578	20.6		103	3626	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.064	15.072	-0.008	1.000	4239662	55.1		110	2862	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.400	15.409	-0.009	1.000	3129592	60.0		120	1609	

Reagents:

LCPFC-L5_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 14:32:23 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_026.d

Injection Date: 18-May-2015 23:10:45 Instrument ID: A6

Lims ID: CCV L5

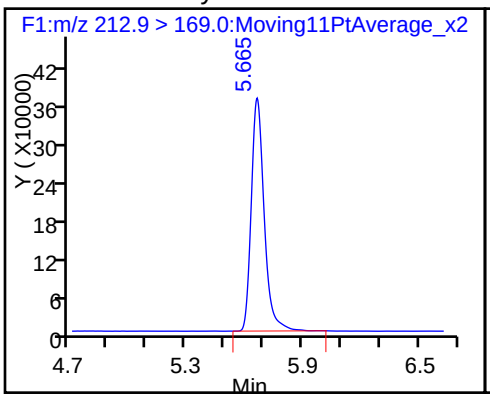
Client ID:

Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 25

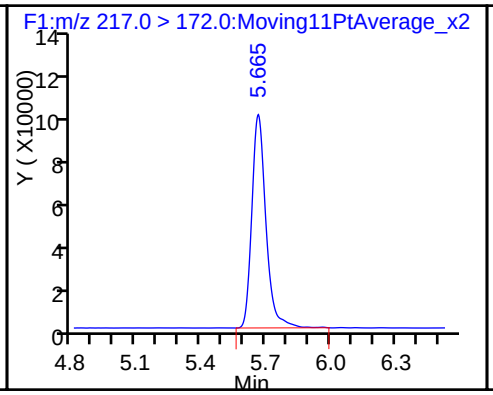
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

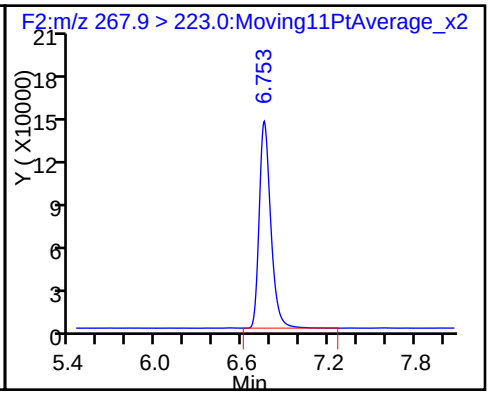
2 Perfluorobutyric acid



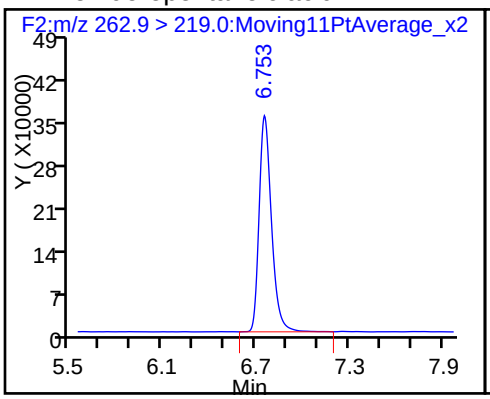
D 1 13C4 PFBA



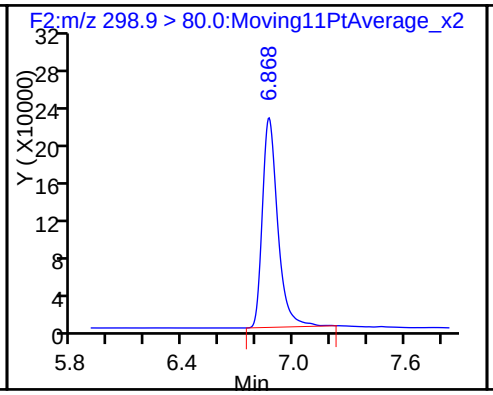
D 3 13C5-PFPeA



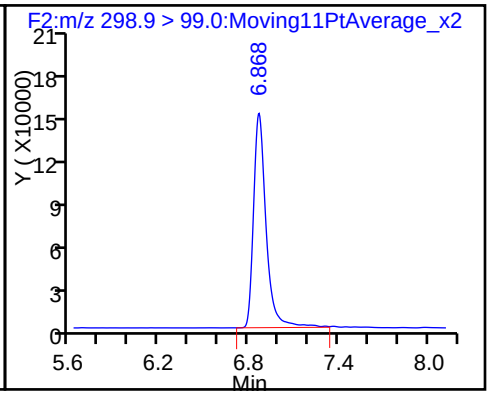
4 Perfluoropentanoic acid



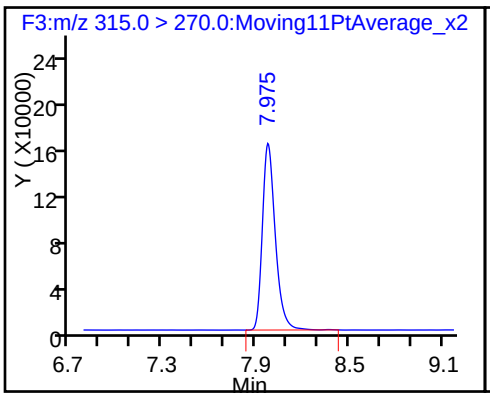
5 Perfluorobutane Sulfonate



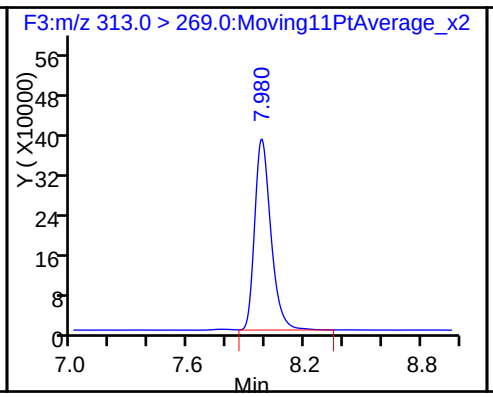
5 Perfluorobutane Sulfonate



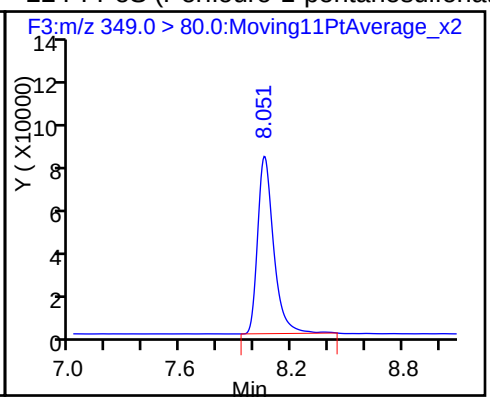
D 6 13C2 PFHxA



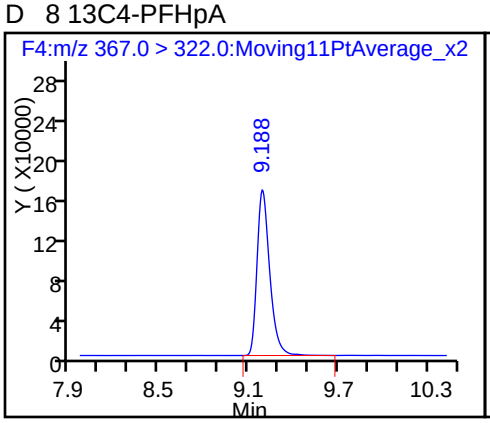
7 Perfluorohexanoic acid



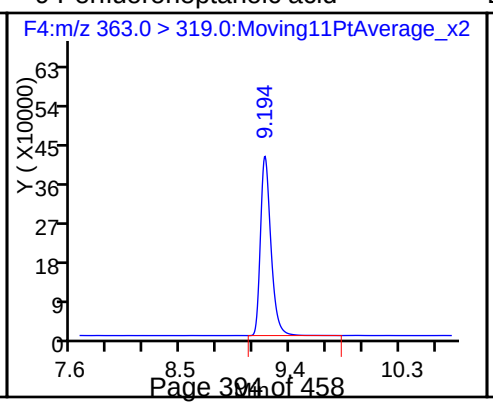
22 PFPeS (Perflouro-1-pentanesulfonat



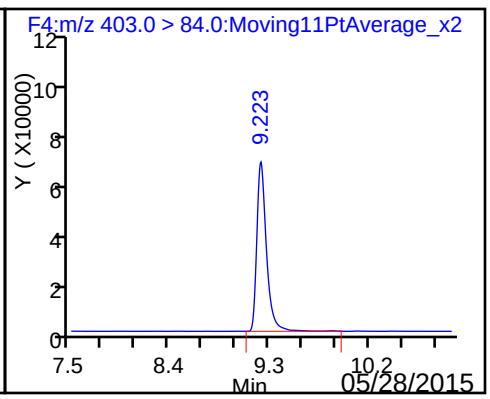
D 8 13C4-PFHpA



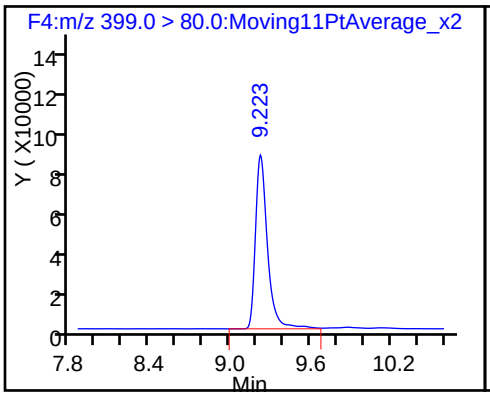
9 Perfluoroheptanoic acid



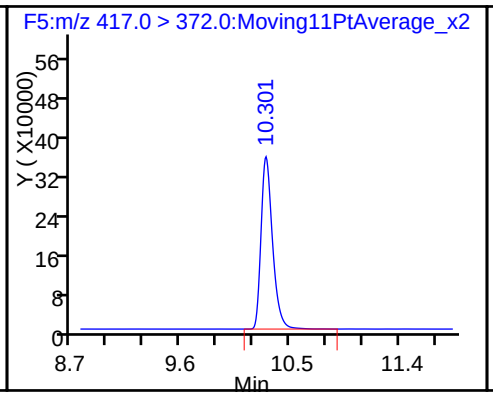
D 11 18O2 PFHxS



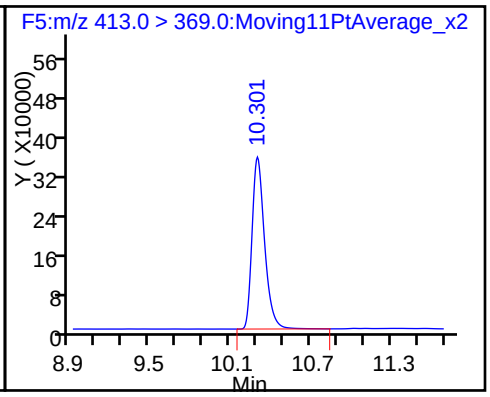
10 Perfluorohexane Sulfonate



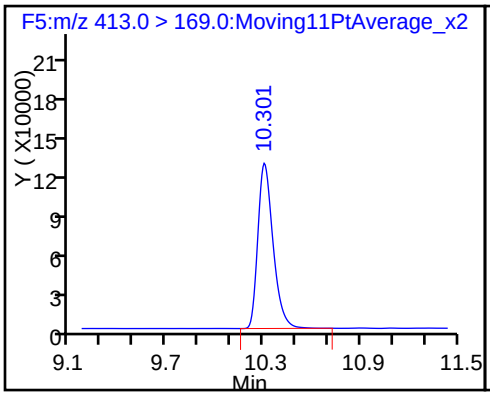
D 12 13C4 PFOA



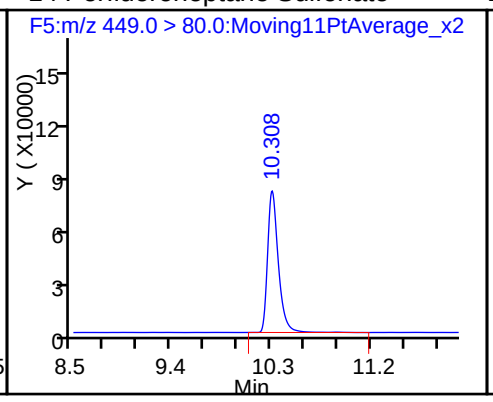
13 Perfluorooctanoic acid



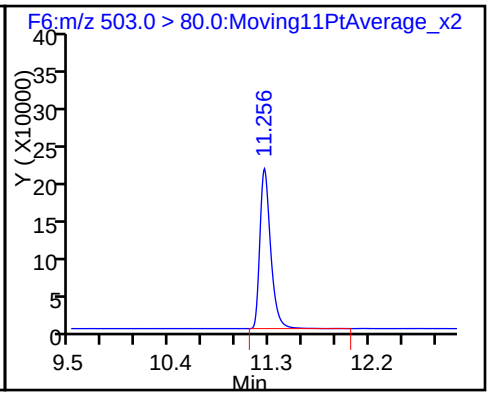
13 Perfluorooctanoic acid



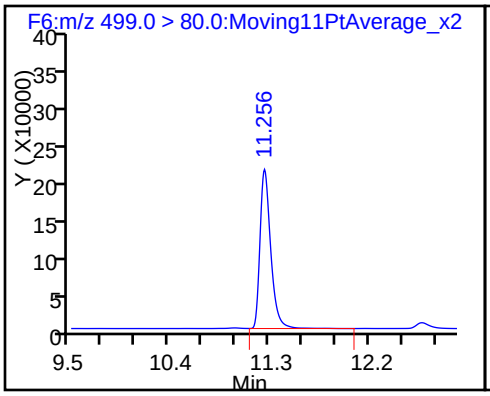
14 Perfluoroheptane Sulfonate



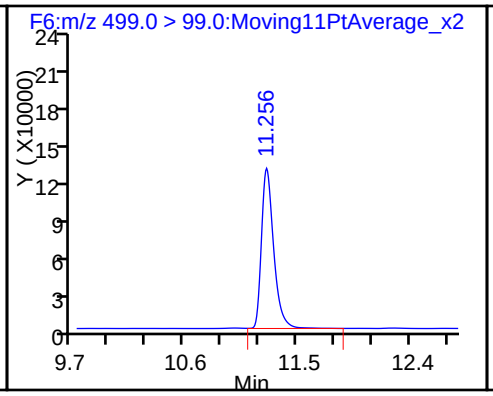
D 16 13C4 PFOS



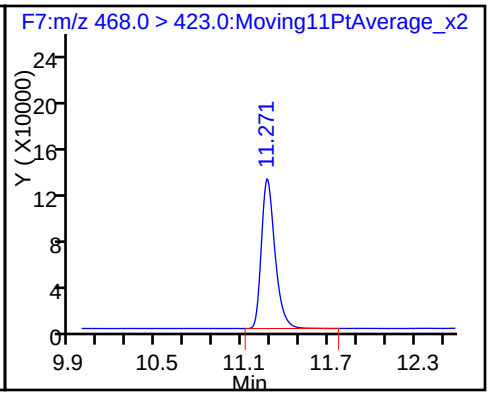
15 Perfluorooctane sulfonic acid



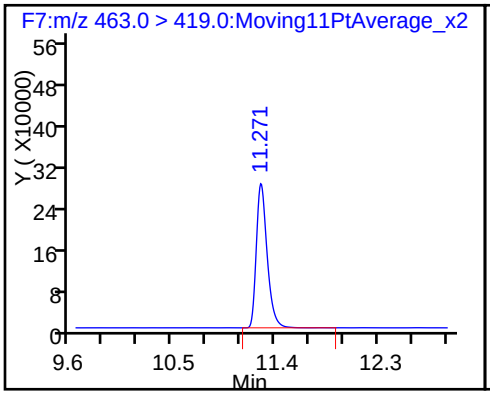
15 Perfluorooctane sulfonic acid



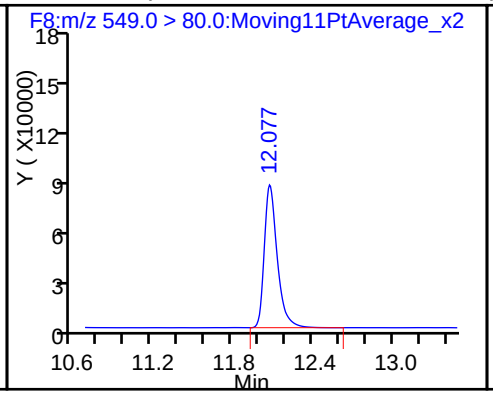
D 17 13C5 PFNA



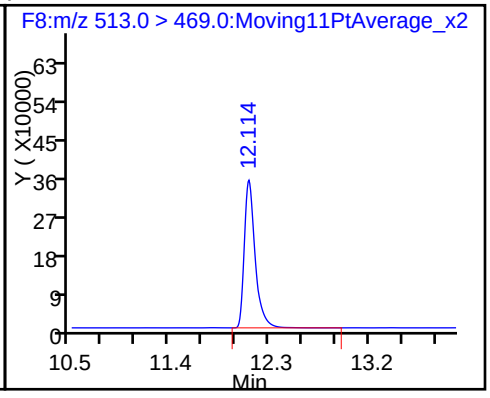
18 Perfluorononanoic acid



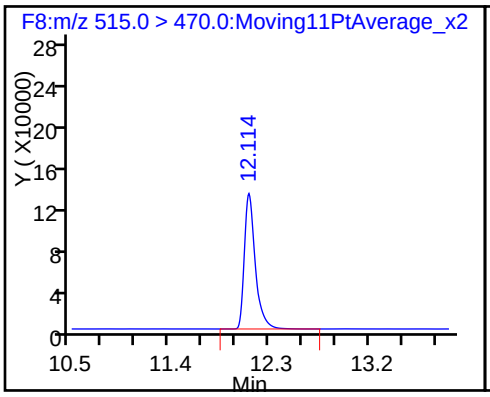
21 PFNS (Perflouro-1-nonanesulfonate)



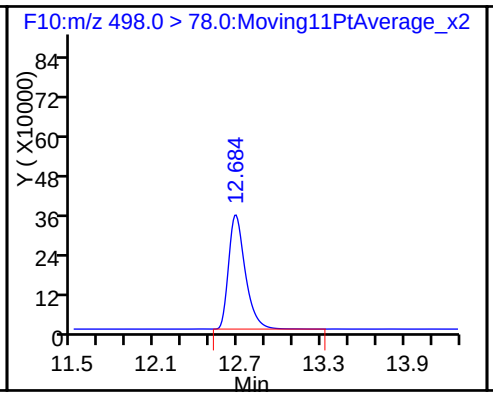
20 Perfluorodecanoic acid



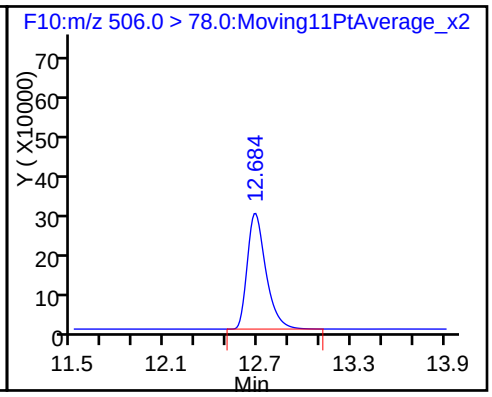
D 19 13C2 PFDA



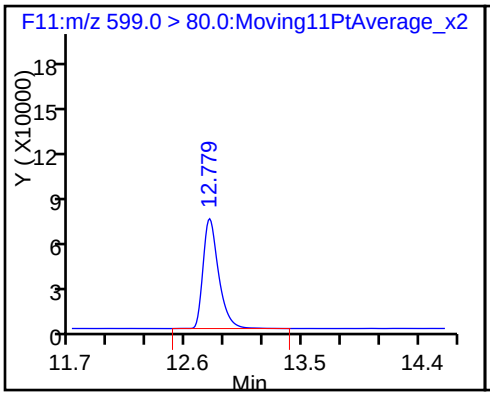
24 Perfluorooctane Sulfonamide



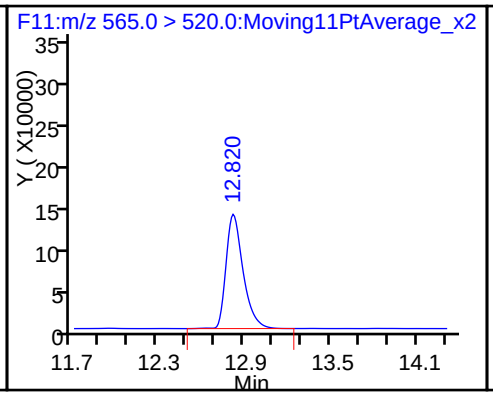
D 23 13C8 FOSA



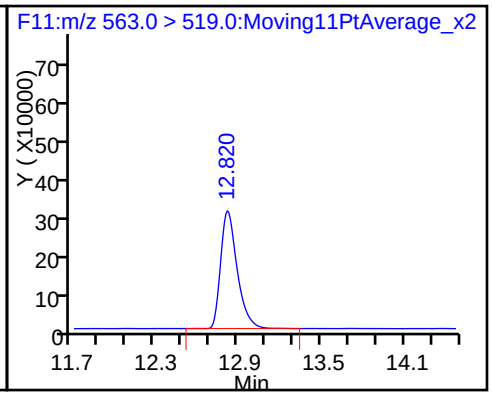
25 Perfluorodecane Sulfonate



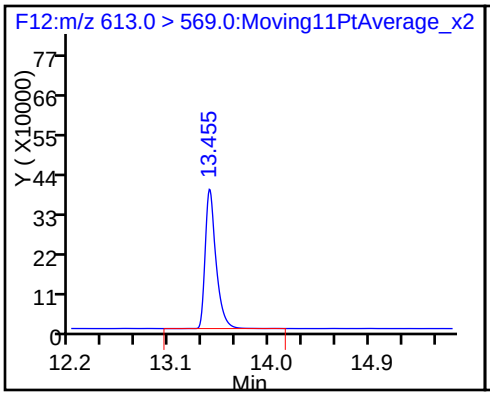
D 26 13C2 PFUnA



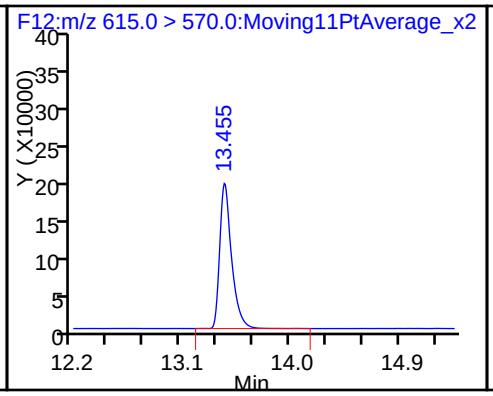
27 Perfluoroundecanoic acid



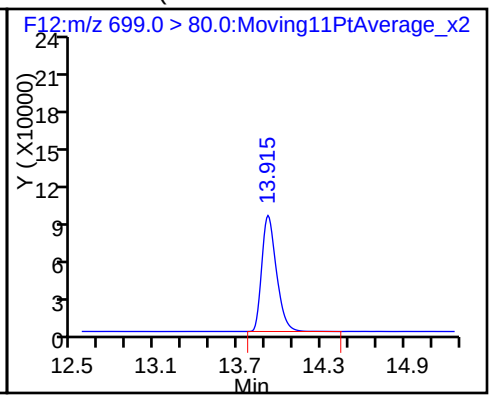
29 Perfluorododecanoic acid



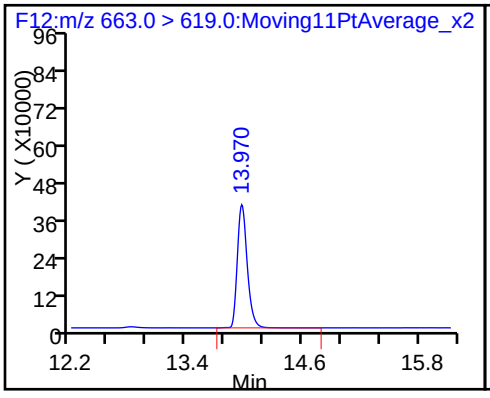
D 28 13C2 PFDoA



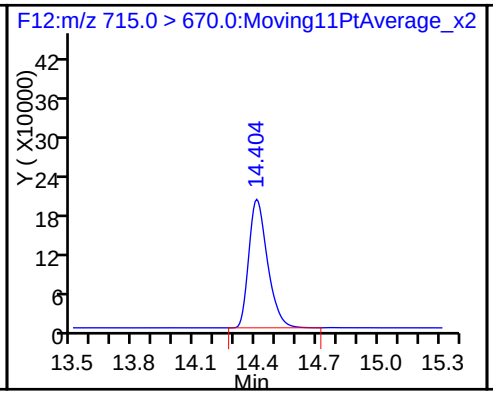
31 PFDoS (Perflouro-1-dodecanesulfona



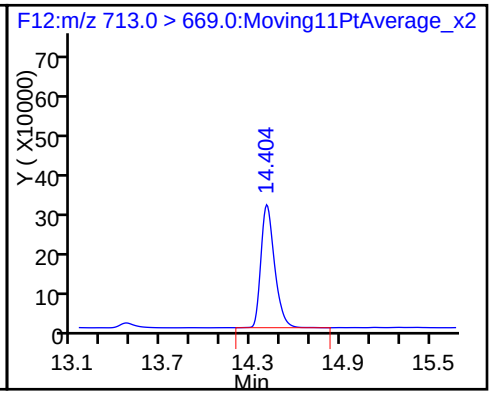
30 Perfluorotridecanoic acid



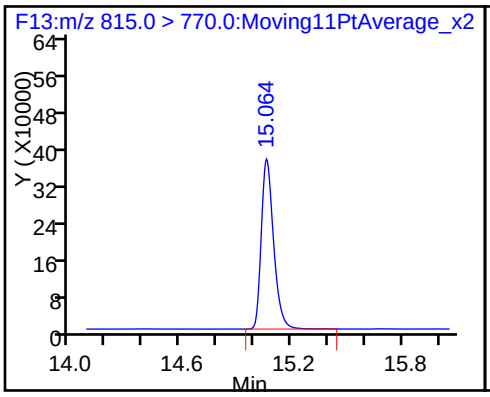
D 33 13C2-PFTeDA



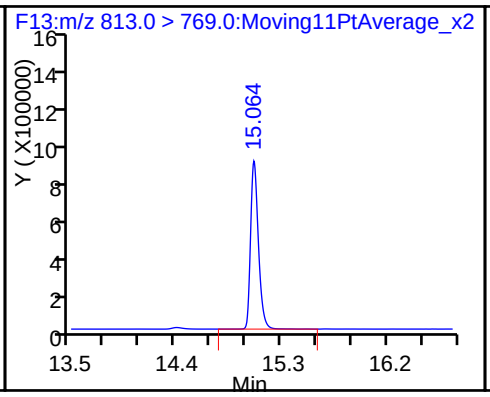
32 Perfluorotetradecanoic acid



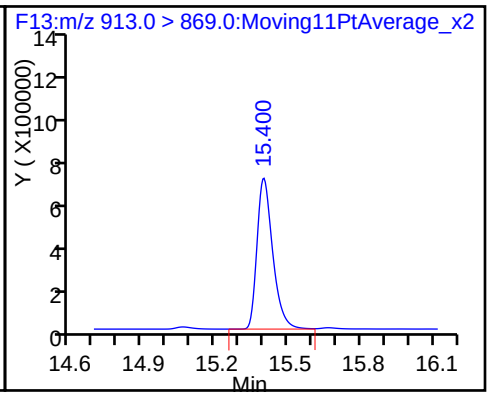
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74338/2 Calibration Date: 05/19/2015 10:48

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.512		20.1	20.0	0.4	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.9900		19.2	20.0	-4.0	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	1.083		17.1	17.7	-3.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	1.022		19.3	20.0	-3.4	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.069		20.5	20.0	2.4	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5325		15.6	18.9	-17.6	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3549		15.7	19.0	-17.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9584		18.9	20.0	-5.4	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.8572		16.8	19.1	-11.9	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8101		18.6	20.0	-7.2	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.099		18.6	20.0	-6.8	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.142		20.8	20.0	4.2	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4123		18.2	19.3	-5.7	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.8760		18.2	20.0	-8.8	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.7673		18.8	20.0	-6.2	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.8422		19.7	20.0	-1.3	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.5626		16.9	20.0	-15.6	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.197		19.9	20.0	-0.5	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.7337		18.8	20.0	-6.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_029.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 19-May-2015 10:48:04 ALS Bottle#: 4 Worklist Smp#: 2
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21915.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:33:00 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 12:13:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.681	5.669	0.012	1.000	775597	20.1		100	2001	
D 1 13C4 PFBA										
217.0 > 172.0	5.681	5.670	0.011		512994	20.6		103	2416	
D 3 13C5-PFPeA										
267.9 > 223.0	6.762	6.760	0.002		926074	21.1		106	2842	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.762	6.761	0.001	1.000	916809	19.2		96.0	589	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.872	6.873	-0.001	1.000	404051	17.1		97.0	332	
298.9 > 99.0	6.872	6.873	-0.001	1.000	242495		1.67(0.00-0.00)		185	
D 6 13C2 PFHxA										
315.0 > 270.0	7.958	7.981	-0.023		1060655	20.7		104	4449	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.958	7.982	-0.024	1.000	1084162	19.3		96.6	1574	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.029	8.056	-0.027	0.874	208269	17.8		95.1	650	
D 8 13C4-PFHpA										
367.0 > 322.0	9.153	9.196	-0.043		1148460	20.7		104	3807	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.153	9.196	-0.043	1.000	1227410	20.5		102	3432	
D 11 18O2 PFHxS										
403.0 > 84.0	9.182	9.226	-0.044		399337	18.2		96.1	1707	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.182	9.227	-0.045	1.000	212634	15.6		82.4	178	
D 12 13C4 PFOA										
417.0 > 372.0	10.259	10.304	-0.045		2890970	54.5		109	7541	

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	10.259	10.306	-0.047	1.000	1108308	18.9		94.6	474	
413.0 > 169.0	10.259	10.306	-0.047	1.000	397695		2.79(0.00-0.00)		431	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.259	10.311	-0.052	1.000	228439	15.7		82.2	752	
D 16 13C4 PFOS										
503.0 > 80.0	11.219	11.260	-0.041		1615938	52.2		109	7851	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.219	11.261	-0.042	1.000	554060	16.8		88.1	425	
499.0 > 99.0	11.219	11.261	-0.042	1.000	355356		1.56(0.00-0.00)		994	
D 17 13C5 PFNA										
468.0 > 423.0	11.235	11.280	-0.045		1100074	22.7		114	2900	
18 Perfluorononanoic acid										
463.0 > 419.0	11.235	11.281	-0.046	1.000	891211	18.6		92.8	1975	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.054	12.086	-0.032	1.000	262592	17.1		89.3	1261	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.084	12.121	-0.037	1.000	1154938	18.6		93.2	4105	
D 19 13C2 PFDA										
515.0 > 470.0	12.084	12.121	-0.037		1051318	21.2		106	3778	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.643	12.675	-0.032	1.000	1252689	20.8		104	2809	
D 23 13C8 FOSA										
506.0 > 78.0	12.643	12.677	-0.034		2741212	47.8		95.6	7923	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.758	12.786	-0.028	1.000	268732	18.2		94.3	881	
D 26 13C2 PFUnA										
565.0 > 520.0	12.799	12.830	-0.031		1434670	22.5		113	2010	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.799	12.833	-0.034	1.000	1256792	18.2		91.2	826	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.424	13.462	-0.038	1.000	1149860	18.8		93.8	1600	
D 28 13C2 PFDoA										
615.0 > 570.0	13.424	13.462	-0.038		1498643	21.0		105	1924	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.887	13.918	-0.031	1.000	290621	16.8		86.6	976	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.942	13.976	-0.034	1.000	1262214	19.7		98.7	638	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.389	14.412	-0.023		1376564	21.5		107	3201	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.389	14.413	-0.024	1.000	843082	16.9		84.4	188	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.054	15.072	-0.018		1769173	21.2		106	2953	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.054	15.072	-0.018	1.000	1794580	19.9		99.5	1474	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.396	15.409	-0.013	1.000	1099570	18.8		93.9	741	

Reagents:

LCPFC-L4_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 14:33:01 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_029.d

Injection Date: 19-May-2015 10:48:04 Instrument ID: A6

Lims ID: CCV L4

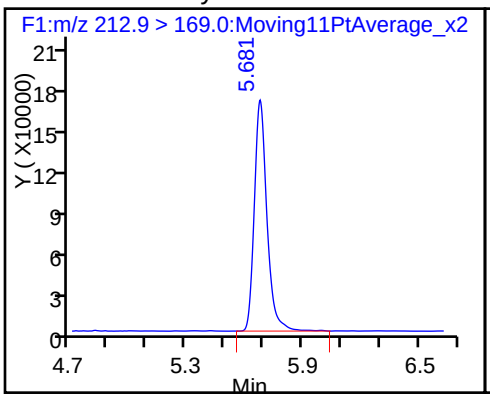
Client ID:

Operator ID: JRB ALS Bottle#: 4 Worklist Smp#: 2

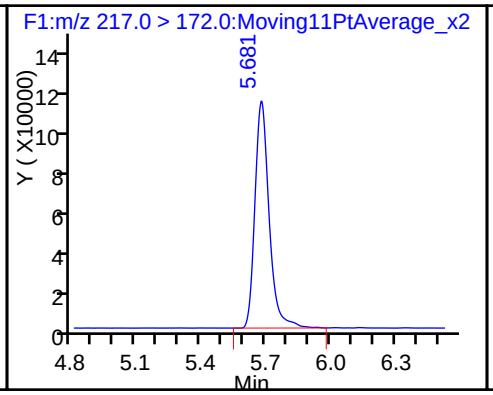
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

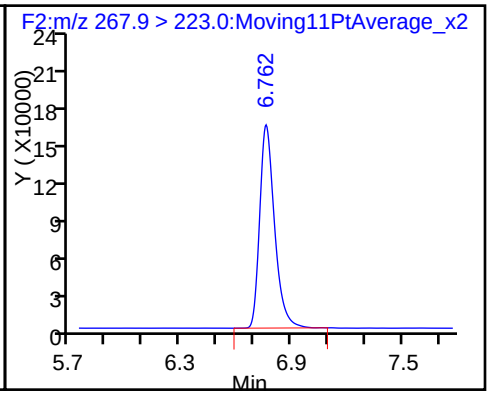
2 Perfluorobutyric acid



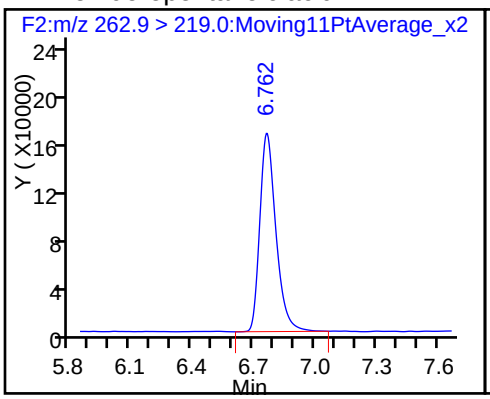
D 1 13C4 PFBA



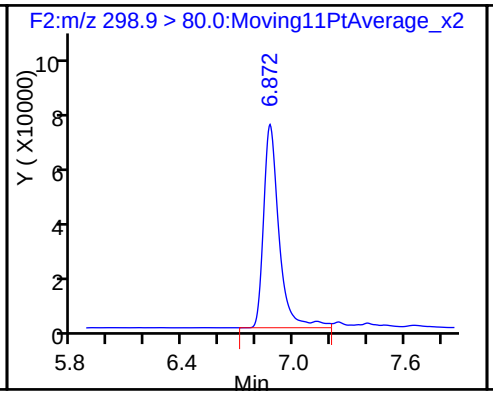
D 3 13C5-PFPeA



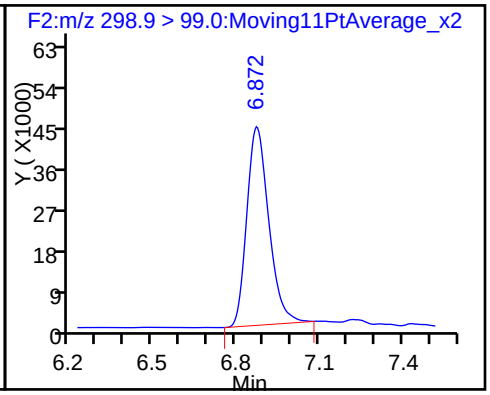
4 Perfluoropentanoic acid



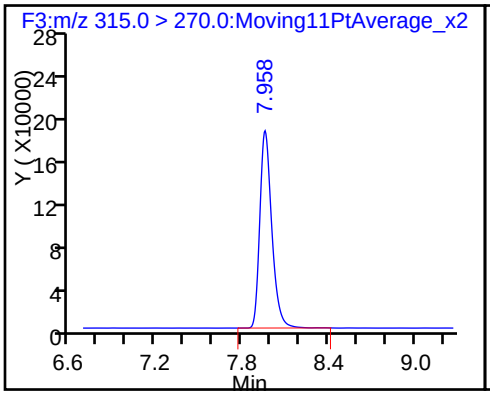
5 Perfluorobutane Sulfonate



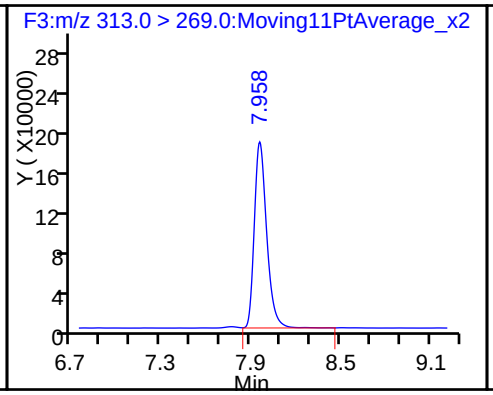
5 Perfluorobutane Sulfonate



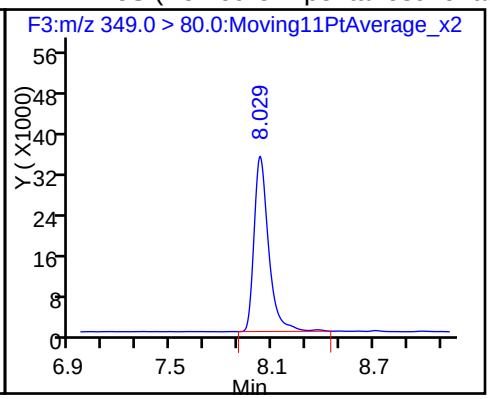
D 6 13C2 PFHxA



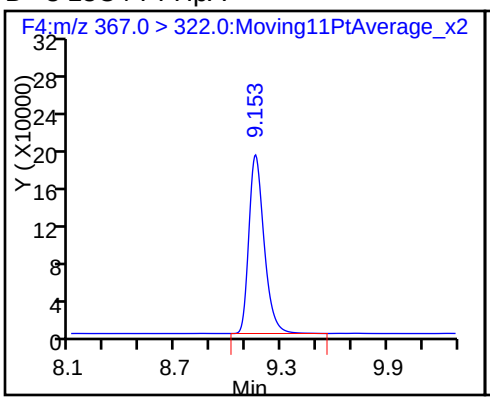
7 Perfluorohexanoic acid



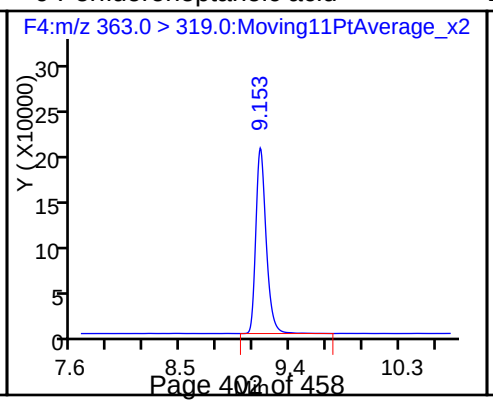
22 PFPeS (Perflouro-1-pentanesulfonat



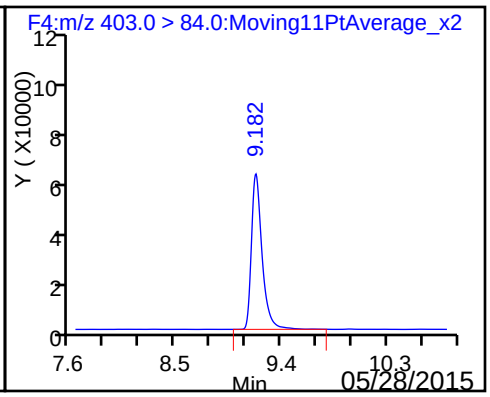
D 8 13C4-PFHpA



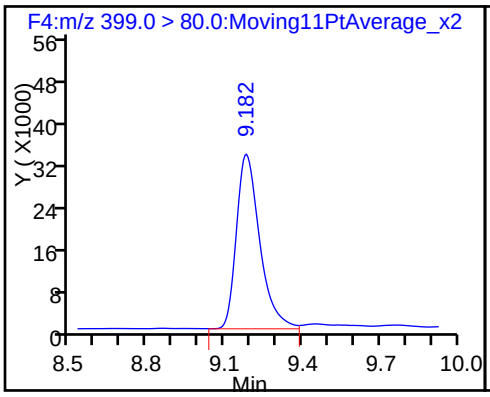
9 Perfluoroheptanoic acid



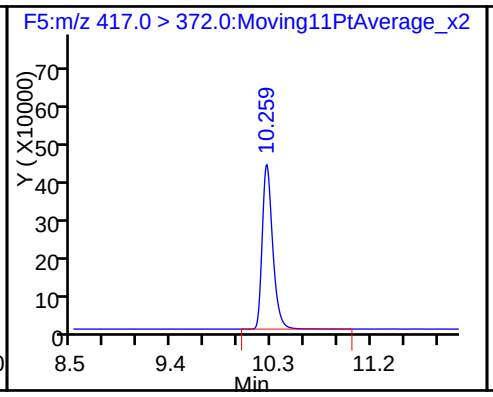
D 11 18O2 PFHxS



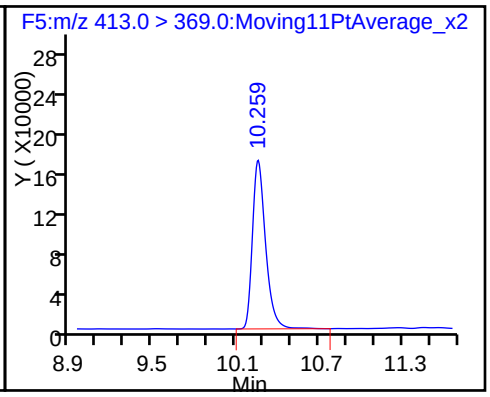
10 Perfluorohexane Sulfonate



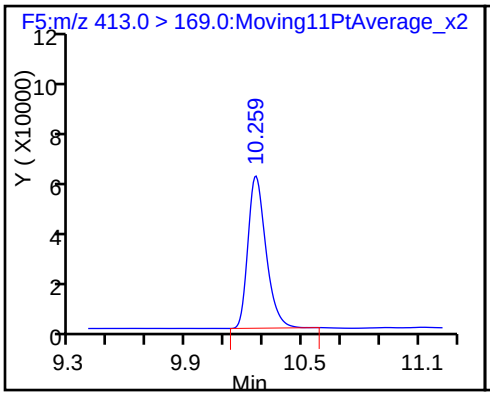
D 12 13C4 PFOA



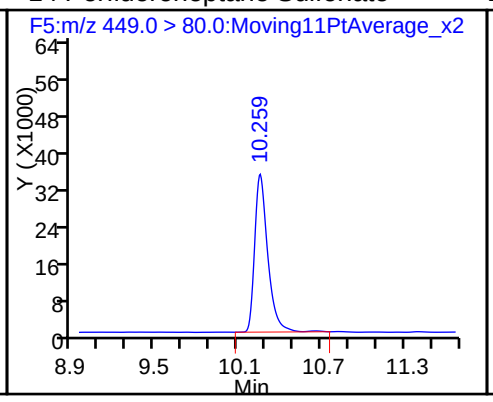
13 Perfluorooctanoic acid



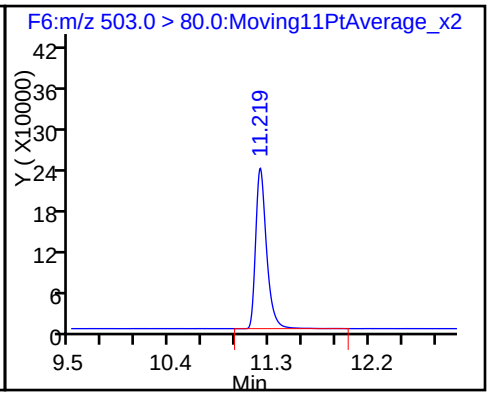
13 Perfluorooctanoic acid



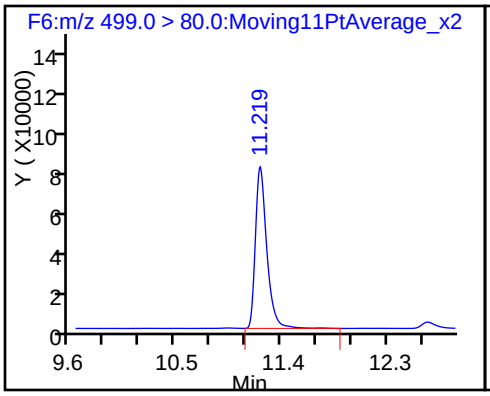
14 Perfluoroheptane Sulfonate



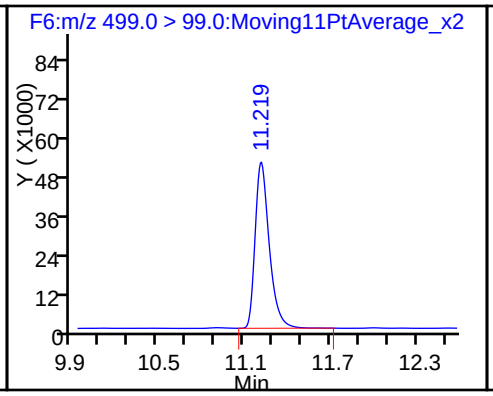
D 16 13C4 PFOS



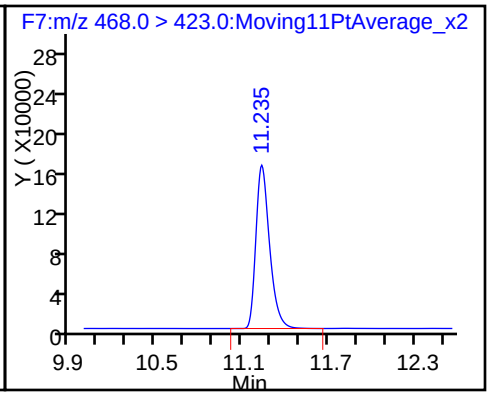
15 Perfluorooctane sulfonic acid



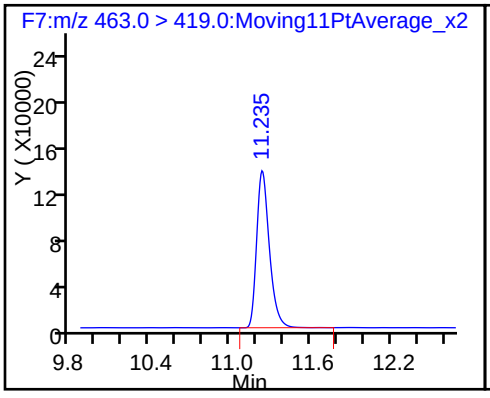
15 Perfluorooctane sulfonic acid



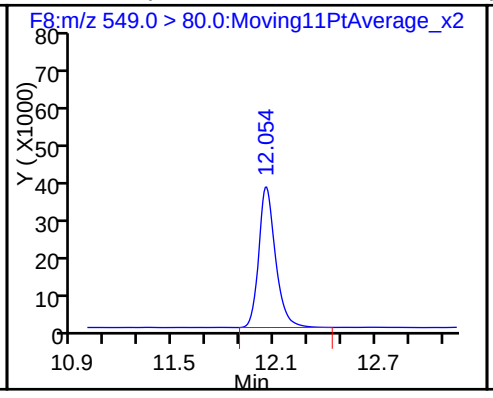
D 17 13C5 PFNA



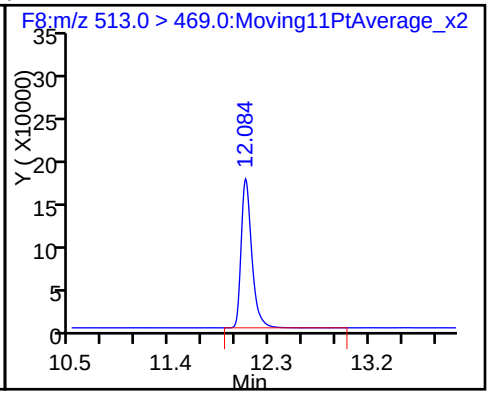
18 Perfluorononanoic acid



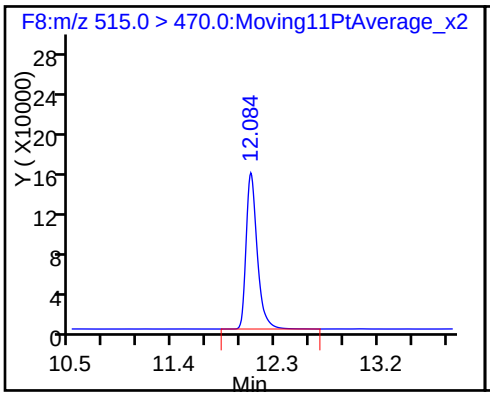
21 PFNS (Perflouro-1-nonanesulfonate)



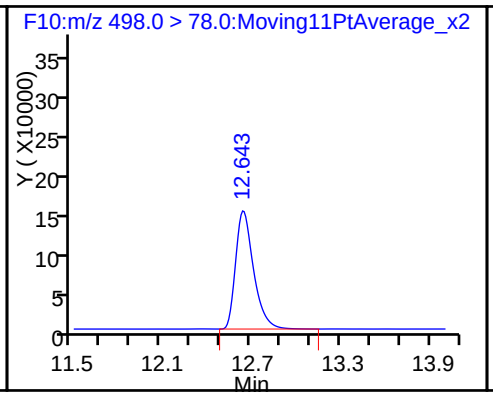
20 Perfluorodecanoic acid



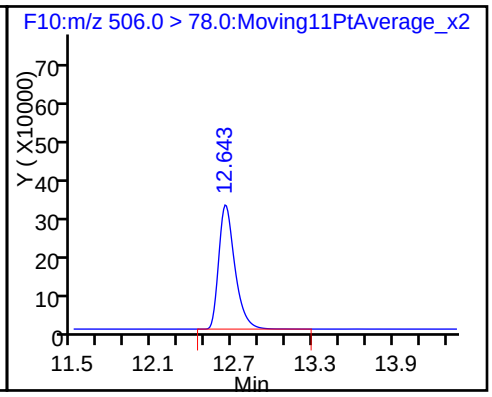
D 19 13C2 PFDA



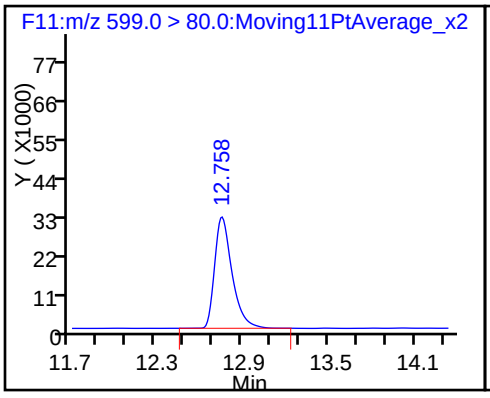
24 Perfluorooctane Sulfonamide



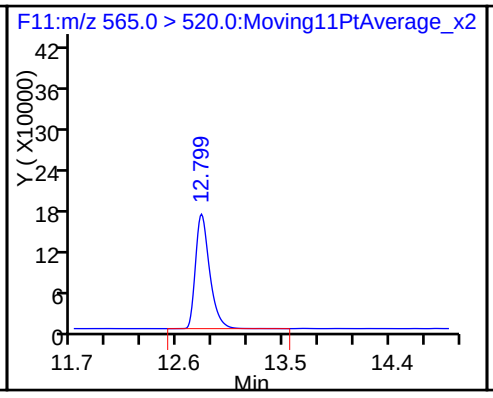
D 23 13C8 FOSA



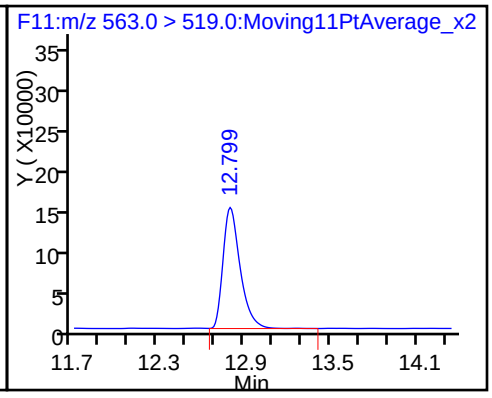
25 Perfluorodecane Sulfonate



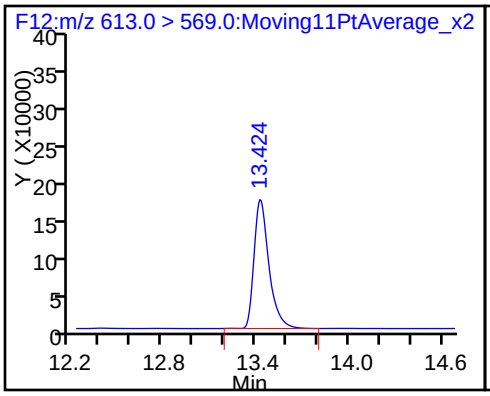
D 26 13C2 PFUnA



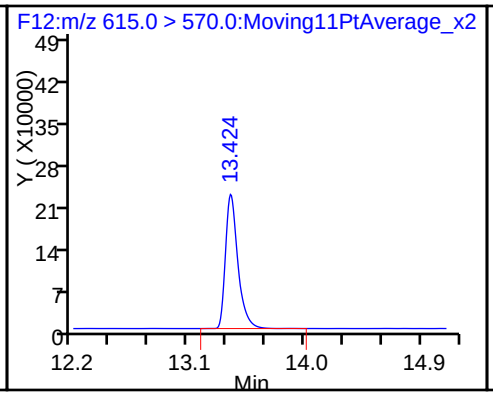
27 Perfluoroundecanoic acid



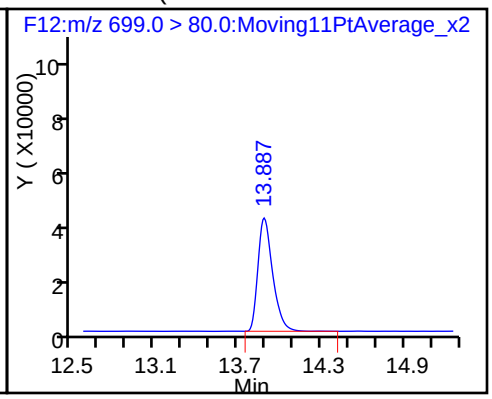
29 Perfluorododecanoic acid



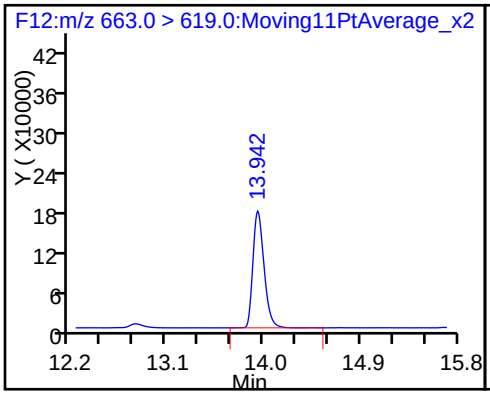
D 28 13C2 PFDoA



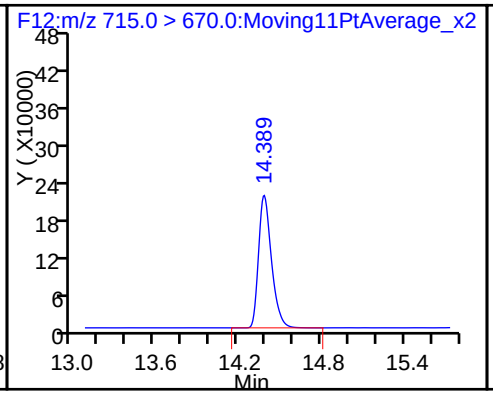
31 PFDoS (Perflouro-1-dodecanesulfona



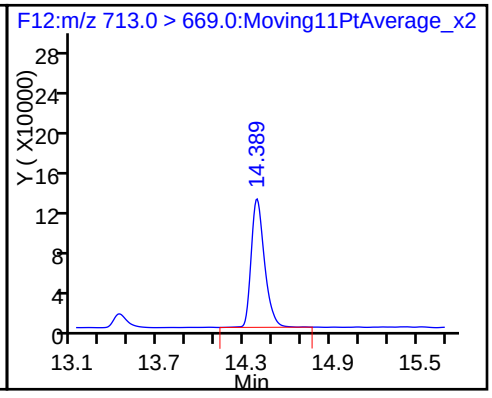
30 Perfluorotridecanoic acid



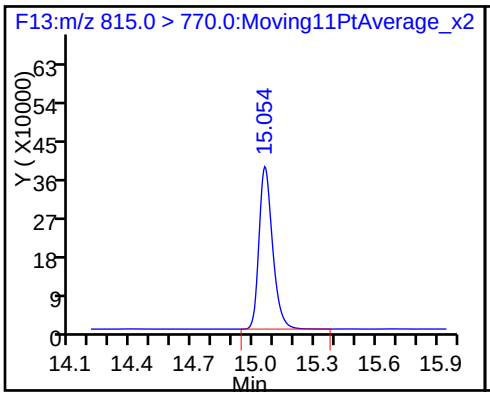
D 33 13C2-PFTeDA



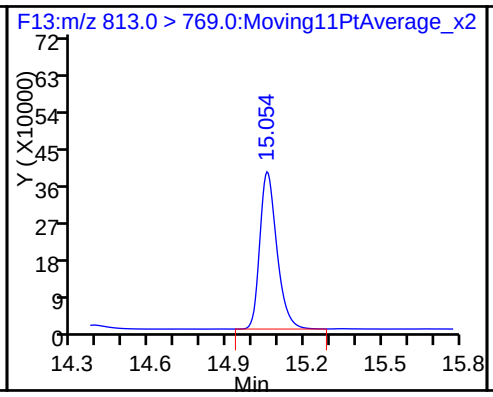
32 Perfluorotetradecanoic acid



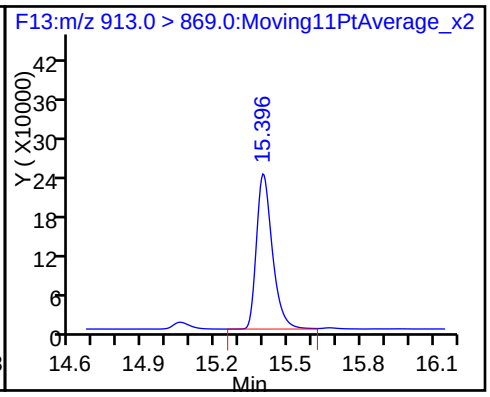
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74338/3 Calibration Date: 05/19/2015 11:09

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.781		1.18	1.00	18.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.8953		1.50	1.00	-13.2	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	0.8728		1.50	0.884	-21.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	1.134		1.07	1.00	7.2	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.112		1.07	1.00	6.6	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.7188		1.05	0.946	11.2	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3710		0.818	0.952	-14.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9773		0.965	1.00	-3.5	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.8542		1.50	0.956	-12.2	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.7840		0.898	1.00	-10.2	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.111		0.942	1.00	-5.8	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.251		1.14	1.00	14.1	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.3394		1.50	0.964	-22.3	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	1.159		1.21	1.00	20.7	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.9161		1.12	1.00	12.0	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.7599		0.891	1.00	-10.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.8937		1.34	1.00	34.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		2.294		0.629	1.00	-37.1	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.5595		0.716	1.00	-28.4	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_030.d
Lims ID: CCV L2
Client ID:
Sample Type: CCV
Inject. Date: 19-May-2015 11:09:22 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21915.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:33:02 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 19-May-2015 14:14:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.687	5.669	0.018	1.000	48909	1.18		118	118	
D 1 13C4 PFBA										
217.0 > 172.0	5.684	5.670	0.014		549368	22.1		110	2615	
D 3 13C5-PFPeA										
267.9 > 223.0	6.762	6.760	0.002		1007269	23.0		115	3541	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.757	6.761	-0.004	1.000	45092	0.8681		86.8	29.8	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.868	6.873	-0.005	1.000	17945	0.6910		78.2	12.1	
298.9 > 99.0	6.872	6.873	-0.001	1.001	12195		1.47(0.00-0.00)		12.8	
D 6 13C2 PFHxA										
315.0 > 270.0	7.953	7.981	-0.028		1178247	23.0		115	3602	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.953	7.982	-0.029	1.000	66821	1.07		107	191	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.024	8.056	-0.032	0.874	10809	0.8399		89.5	30.7	
D 8 13C4-PFHpA										
367.0 > 322.0	9.147	9.196	-0.049		1323477	23.9		119	5984	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.153	9.196	-0.043	1.000	73612	1.07		107	139	
D 11 18O2 PFHxS										
403.0 > 84.0	9.176	9.226	-0.050		440034	20.0		106	1258	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.194	9.227	-0.033	1.000	15814	1.05		111	13.7	
D 12 13C4 PFOA										
417.0 > 372.0	10.259	10.304	-0.045		3369994	63.6		127	15051	

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	10.259	10.306	-0.047	1.000	65868	0.9649		96.5	23.5	
413.0 > 169.0	10.252	10.306	-0.054	0.999	24094		2.73(0.00-0.00)		30.7	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.259	10.311	-0.052	1.000	12588	0.8182		85.9	58.3	
D 16 13C4 PFOS										
503.0 > 80.0	11.219	11.260	-0.041		1703460	55.0		115	5723	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.227	11.261	-0.034	1.000	29102	0.8396		87.8	114	
499.0 > 99.0	11.227	11.261	-0.034	1.000	22543		1.29(0.00-0.00)		79.8	
D 17 13C5 PFNA										
468.0 > 423.0	11.242	11.280	-0.038		1148179	23.7		119	3384	
18 Perfluorononanoic acid										
463.0 > 419.0	11.242	11.281	-0.039	1.000	45008	0.8977		89.8	105	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.046	12.086	-0.040	1.000	14395	0.8913		92.8	74.5	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.084	12.121	-0.037	1.000	62115	0.9425		94.2	170	
D 19 13C2 PFDA										
515.0 > 470.0	12.084	12.121	-0.037		1117802	22.6		113	2930	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.653	12.675	-0.022	1.000	73972	1.14		114	265	
D 23 13C8 FOSA										
506.0 > 78.0	12.653	12.677	-0.024		2957701	51.6		103	3494	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.758	12.786	-0.028	1.000	11659	0.7486		77.7	34.1	
D 26 13C2 PFUnA										
565.0 > 520.0	12.799	12.830	-0.031		1536012	24.1		121	2158	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.799	12.833	-0.034	1.000	89025	1.21		121	60.4	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.432	13.462	-0.030	1.000	75330	1.12		112	111	
D 28 13C2 PFDoA										
615.0 > 570.0	13.432	13.462	-0.030		1644623	23.1		115	2172	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.887	13.918	-0.031	1.000	13896	0.7601		78.5	64.3	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.942	13.976	-0.034	1.000	62489	0.8906		89.1	34.5	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.389	14.412	-0.023		1473134	23.0		115	2976	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.397	14.413	-0.016	1.000	73493	1.34		134	15.4	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.059	15.072	-0.013		1814806	21.7		109	3325	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.059	15.072	-0.013	1.000	188613	0.6294		62.9	172	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.400	15.409	-0.009	1.000	46008	0.7163		71.6	43.3	

Reagents:

LCPFC-L2_00012 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 14:33:02 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_030.d

Injection Date: 19-May-2015 11:09:22 Instrument ID: A6

Lims ID: CCV L2

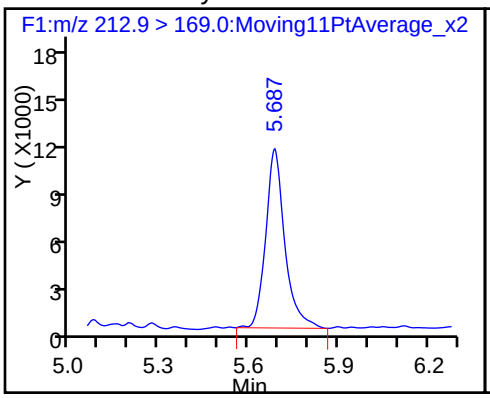
Client ID:

Operator ID: JSS ALS Bottle#: 2 Worklist Smp#: 3

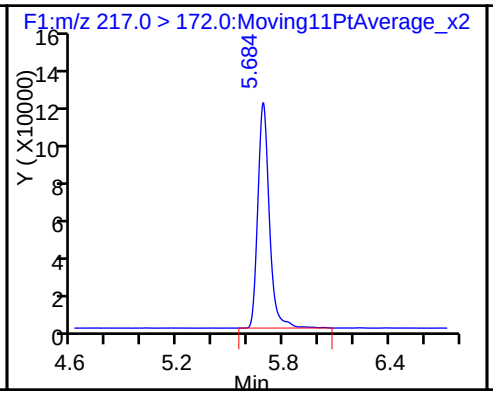
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

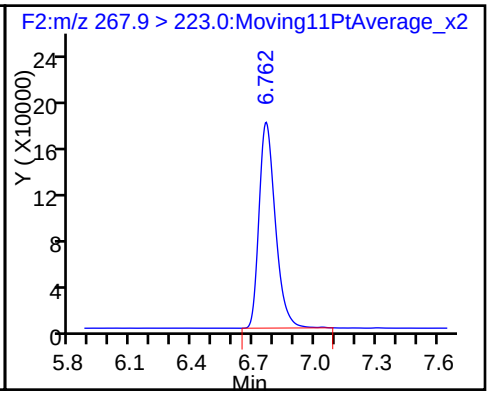
2 Perfluorobutyric acid



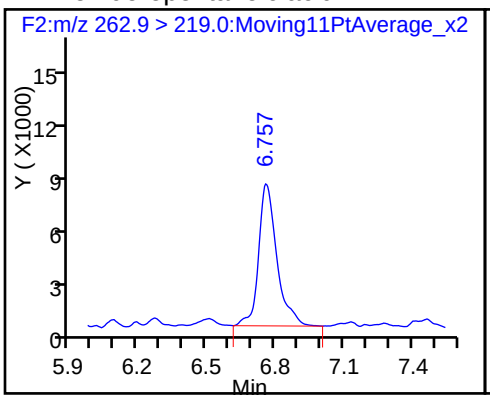
D 1 13C4 PFBA



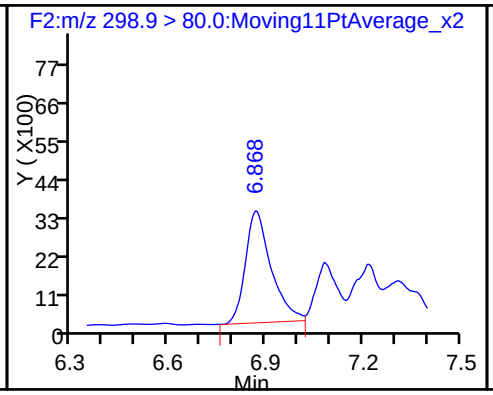
D 3 13C5-PFPeA



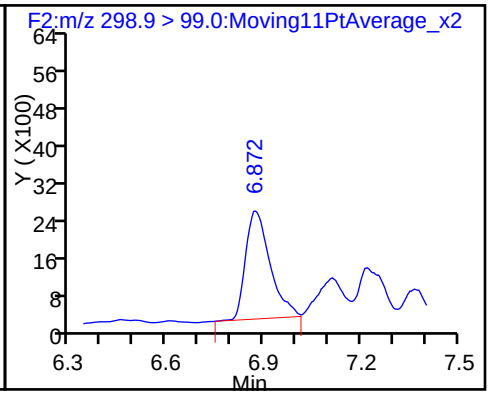
4 Perfluoropentanoic acid



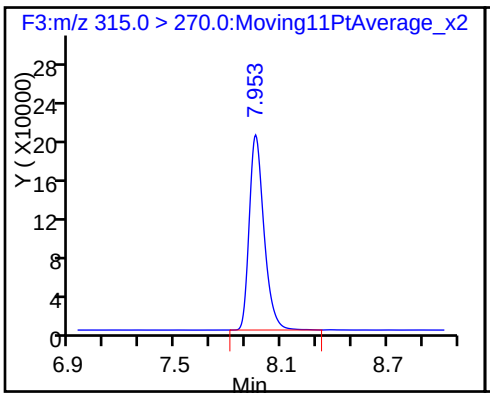
5 Perfluorobutane Sulfonate



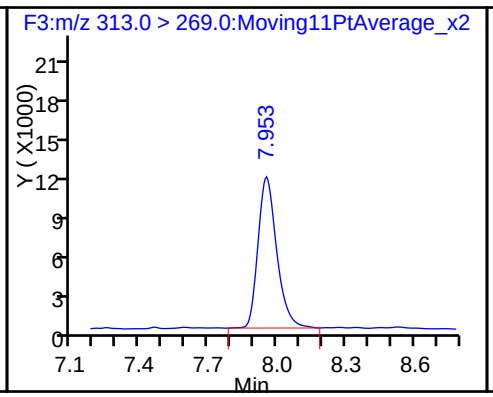
5 Perfluorobutane Sulfonate



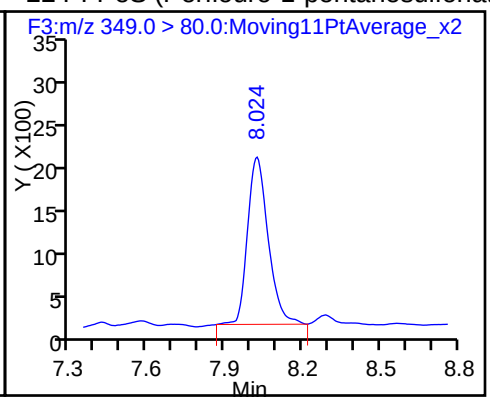
D 6 13C2 PFHxA



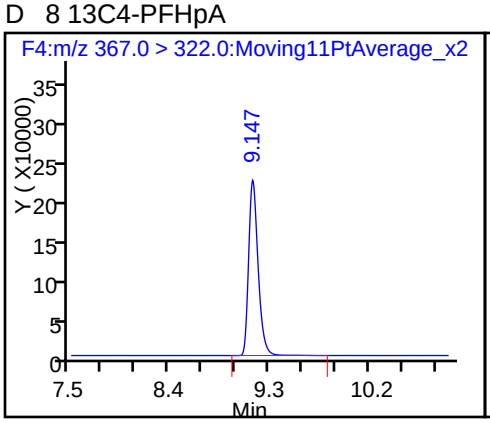
7 Perfluorohexanoic acid



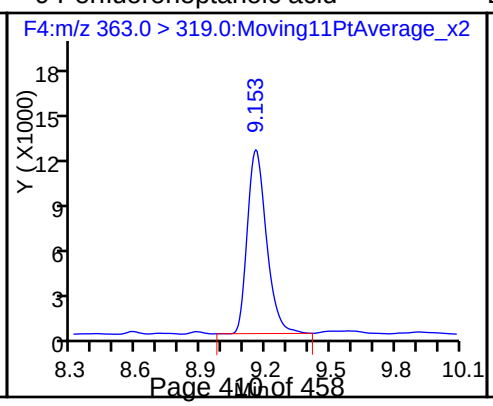
22 PFPeS (Perflouro-1-pentanesulfonat



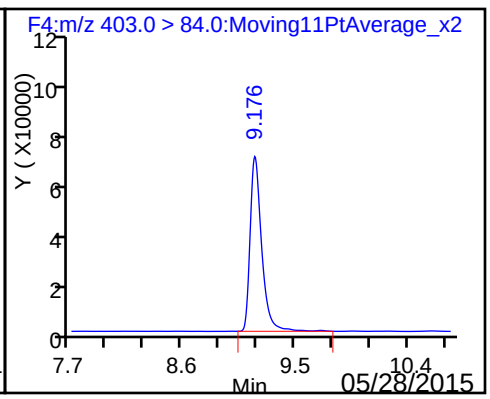
D 8 13C4-PFHpA



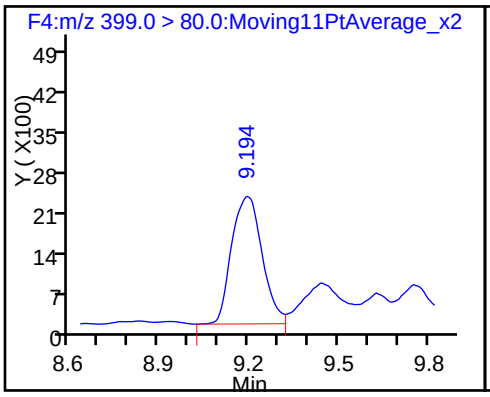
9 Perfluoroheptanoic acid



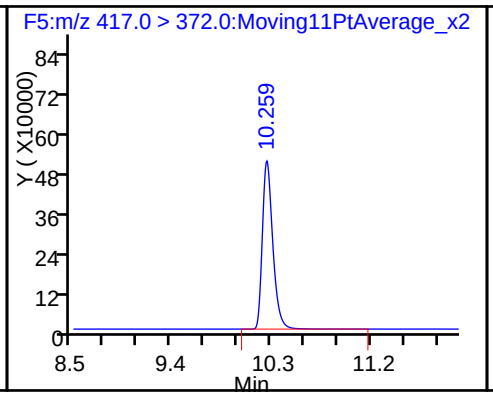
D 11 18O2 PFHxS



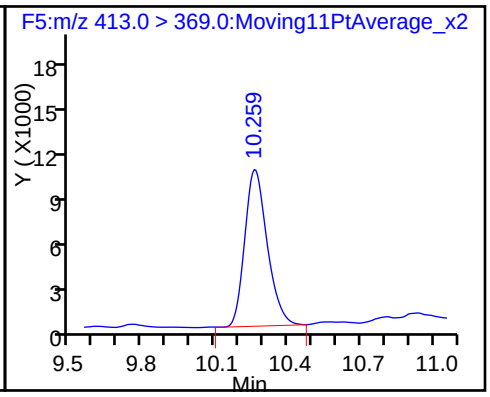
10 Perfluorohexane Sulfonate



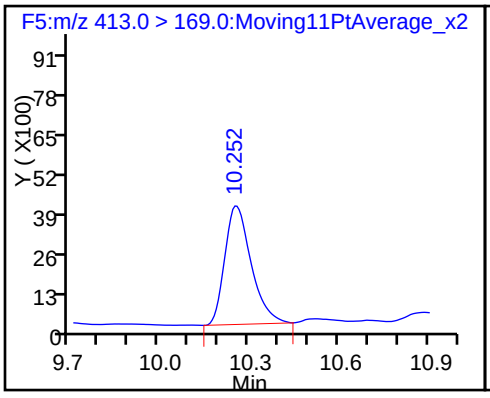
D 12 13C4 PFOA



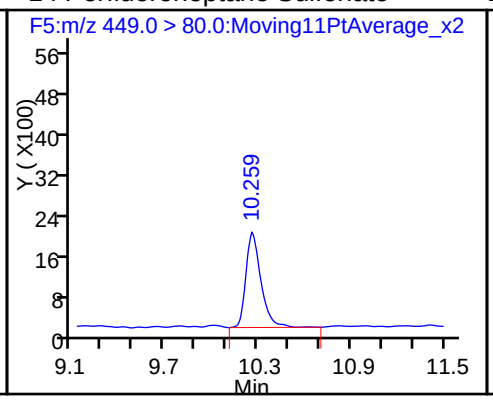
13 Perfluorooctanoic acid



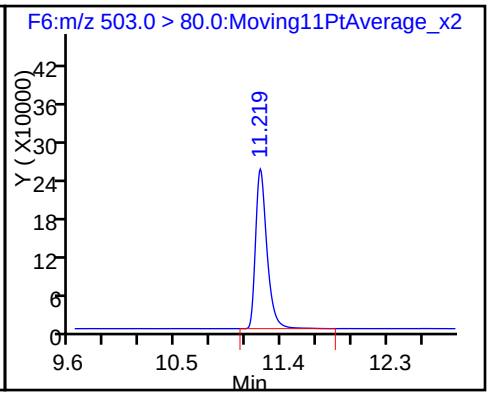
13 Perfluorooctanoic acid



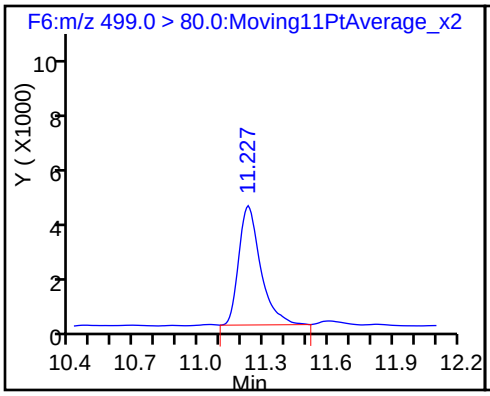
14 Perfluoroheptane Sulfonate



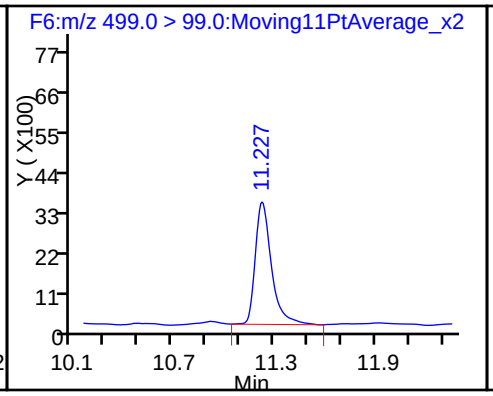
D 16 13C4 PFOS



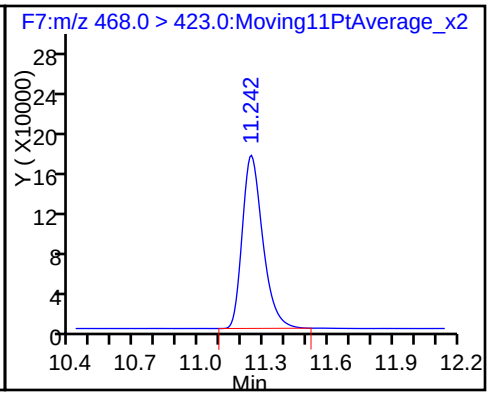
15 Perfluorooctane sulfonic acid



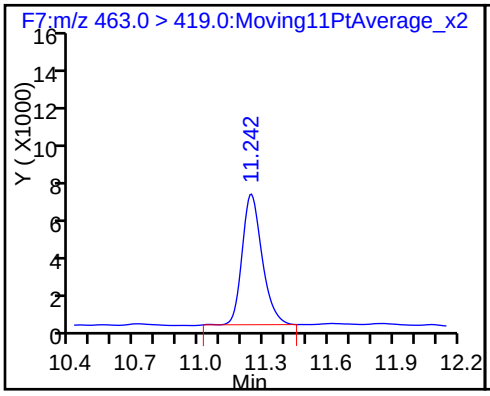
15 Perfluorooctane sulfonic acid



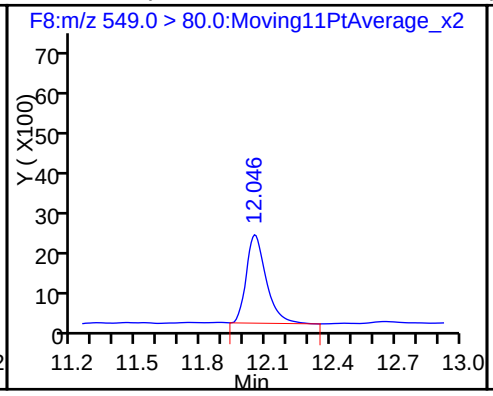
D 17 13C5 PFNA



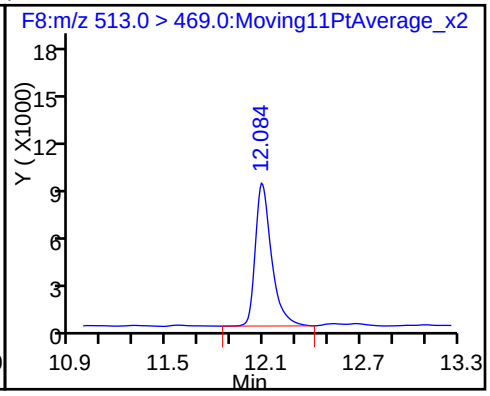
18 Perfluorononanoic acid



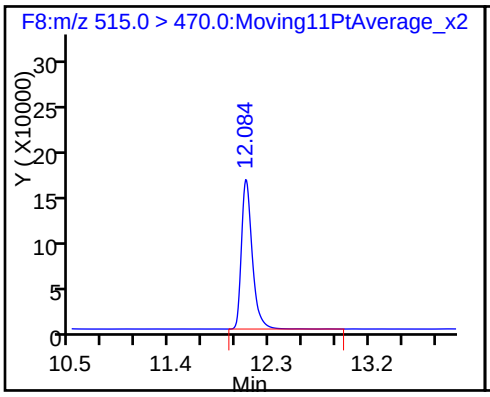
21 PFNS (Perflouro-1-nonanesulfonate)



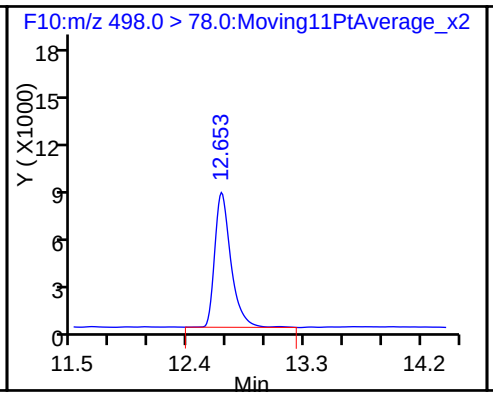
20 Perfluorodecanoic acid



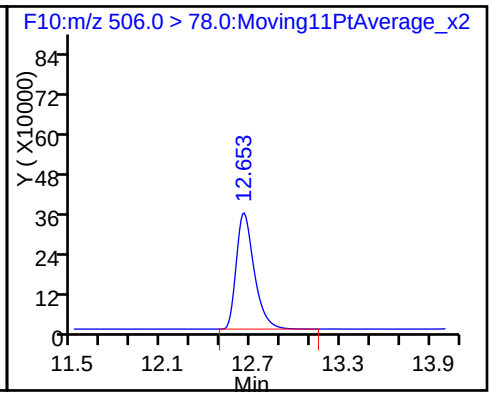
D 19 13C2 PFDA



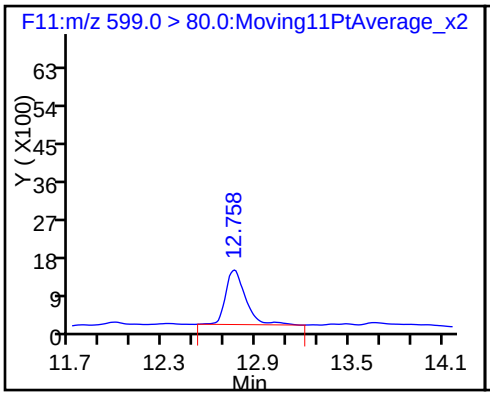
24 Perfluorooctane Sulfonamide



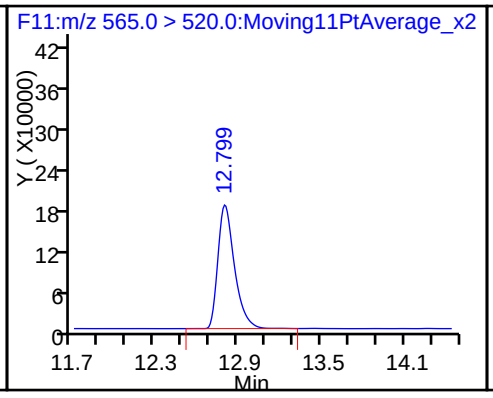
D 23 13C8 FOSA



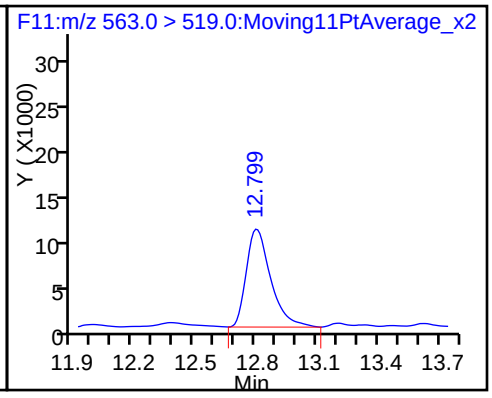
25 Perfluorodecane Sulfonate



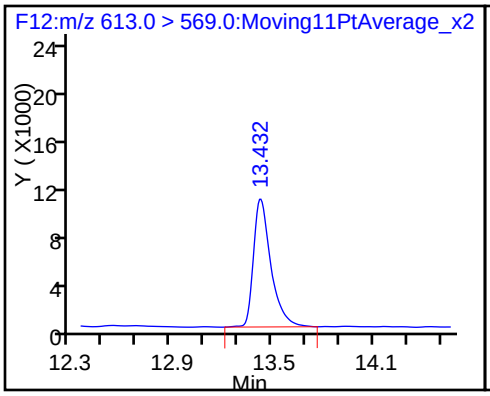
D 26 13C2 PFUnA



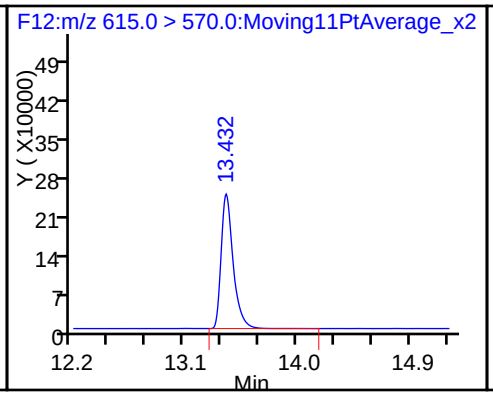
27 Perfluoroundecanoic acid



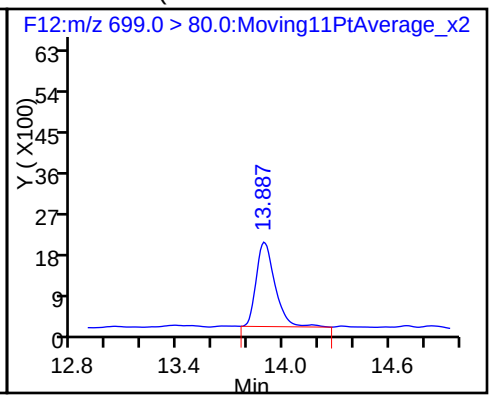
29 Perfluorododecanoic acid



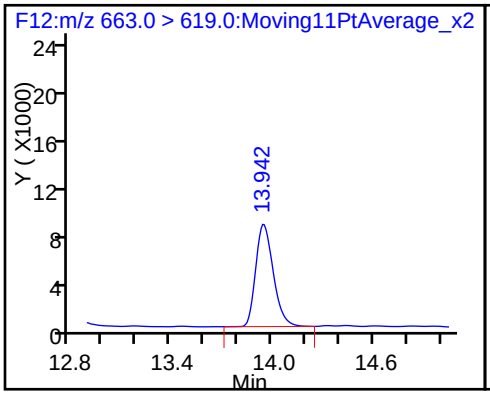
D 28 13C2 PFDoA



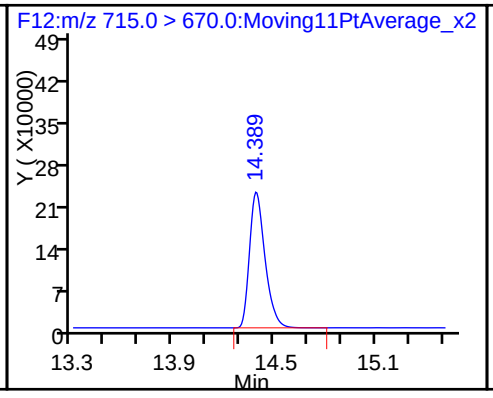
31 PFDoS (Perflouro-1-dodecanesulfona



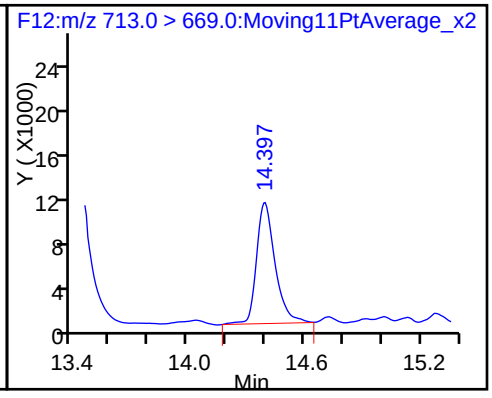
30 Perfluorotridecanoic acid



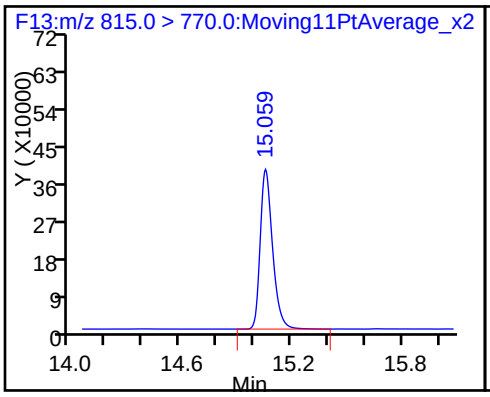
D 33 13C2-PFTeDA



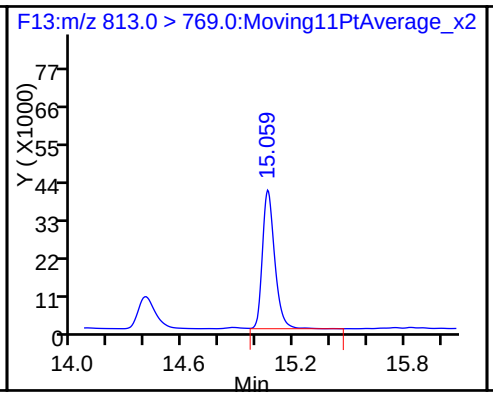
32 Perfluorotetradecanoic acid



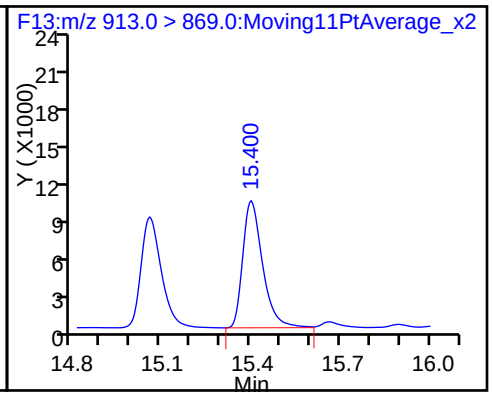
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74338/8 Calibration Date: 05/19/2015 12:55

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.456		48.3	50.0	-3.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.998		48.4	50.0	-3.3	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	1.505		59.6	44.2	34.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	0.9938		47.0	50.0	-6.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.014		48.6	50.0	-2.8	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5586		40.9	47.3	-13.6	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9604		47.4	50.0	-5.2	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3886		42.8	47.6	-10.0	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.9615		47.3	47.8	-1.1	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8817		50.5	50.0	1.0	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.096		46.5	50.0	-7.1	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.183		53.9	50.0	7.9	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4636		51.1	48.2	6.1	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.9016		46.9	50.0	-6.1	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.8497		51.9	50.0	3.9	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.8748		51.3	50.0	2.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.6398		48.0	50.0	-4.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.444		62.9	50.0	25.7	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	1.144		73.2	50.0	46.4	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_035.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 19-May-2015 12:55:35 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21915.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:33:04 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 19-May-2015 14:04:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.671	5.669	0.002	1.000	1808746	48.3		96.7	3686	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.670	-0.002		497028	20.0		99.9	2562	
D 3 13C5-PFPeA										
267.9 > 223.0	6.762	6.760	0.002		904923	20.6		103	2624	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.762	6.761	0.001	1.000	2257138	48.4		96.7	1227	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.877	6.873	0.004	1.000	1358713	59.6		135	763	
298.9 > 99.0	6.872	6.873	-0.001	0.999	871030		1.56(0.00-0.00)		696	
D 6 13C2 PFHxA										
315.0 > 270.0	7.991	7.981	0.010		988752	19.3		96.6	3923	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.991	7.982	0.009	1.000	2456529	47.0		94.0	2378	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.062	8.056	0.006	0.873	502754	44.5		94.8	1672	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.196	0.009		1111260	20.1		100	3322	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.205	9.196	0.009	1.000	2816981	48.6		97.2	3494	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.226	0.009		386551	17.6		93.0	918	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.235	9.227	0.008	1.000	539794	40.9		86.4	451	
D 12 13C4 PFOA										
417.0 > 372.0	10.315	10.304	0.011		2685216	50.7		101	8892	

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	10.315	10.306	0.009	1.000	2579002	47.4		94.8	865	
413.0 > 169.0	10.315	10.306	0.009	1.000	911153		2.83(0.00-0.00)		776	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.322	10.311	0.011	1.000	561863	42.8		90.0	1898	
D 16 13C4 PFOS										
503.0 > 80.0	11.270	11.260	0.010		1451955	46.9		98.2	3444	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.270	11.261	0.009	1.000	1396094	47.3		98.9	480	
499.0 > 99.0	11.270	11.261	0.009	1.000	886897		1.57(0.00-0.00)		2741	
D 17 13C5 PFNA										
468.0 > 423.0	11.293	11.280	0.013		930161	19.2		96.1	3276	
18 Perfluorononanoic acid										
463.0 > 419.0	11.293	11.281	0.012	1.000	2050232	50.5		101	1958	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.099	12.086	0.013	1.000	619233	45.0		93.7	1682	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.129	12.121	0.008	1.000	2668358	46.5		92.9	4036	
D 19 13C2 PFDA										
515.0 > 470.0	12.129	12.121	0.008		974203	19.7		98.4	4386	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.694	12.675	0.019	1.000	2952951	53.9		108	2900	
D 23 13C8 FOSA										
506.0 > 78.0	12.694	12.677	0.017		2497079	43.5		87.1	5444	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.789	12.786	0.003	1.000	678723	51.1		106	1664	
D 26 13C2 PFUnA										
565.0 > 520.0	12.840	12.830	0.010		1313092	20.6		103	2928	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.840	12.833	0.007	1.000	2959612	46.9		93.9	3435	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.462	13.462	0.0	1.000	3052893	51.9		104	3636	
D 28 13C2 PFDoA										
615.0 > 570.0	13.462	13.462	0.0		1437146	20.1		101	2931	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.915	13.918	-0.003	1.000	695297	44.6		92.2	2145	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.970	13.976	-0.006	1.000	3142950	51.3		103	1751	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.412	14.412	0.0		1322686	20.6		103	2251	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.412	14.413	-0.001	1.000	2298715	48.0		96.0	572	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.064	15.072	-0.008		2121709	25.4		127	4109	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.064	15.072	-0.008	1.000	5189619	62.9		126	3686	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.395	15.409	-0.014	1.000	4109018	73.2		146	2346	

Reagents:

LCPFC-L5_00010 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 14:33:04 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_035.d

Injection Date: 19-May-2015 12:55:35 Instrument ID: A6

Lims ID: CCV L5

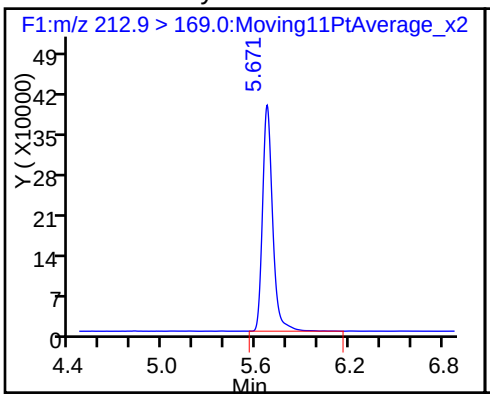
Client ID:

Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 8

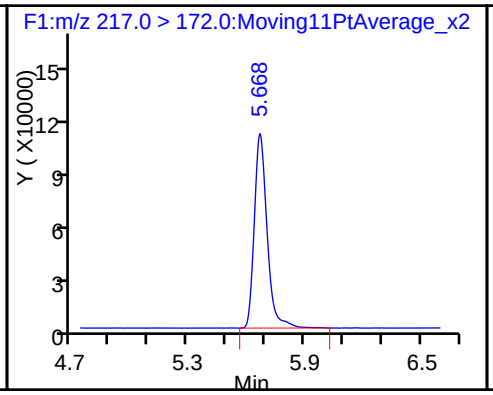
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

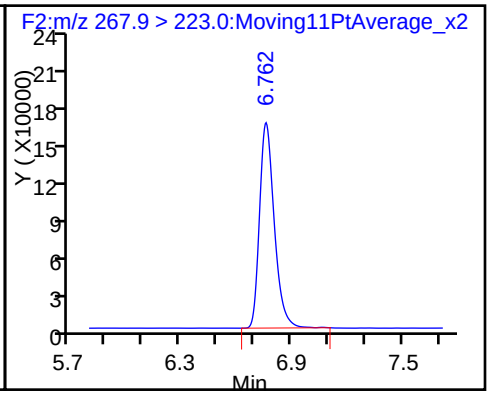
2 Perfluorobutyric acid



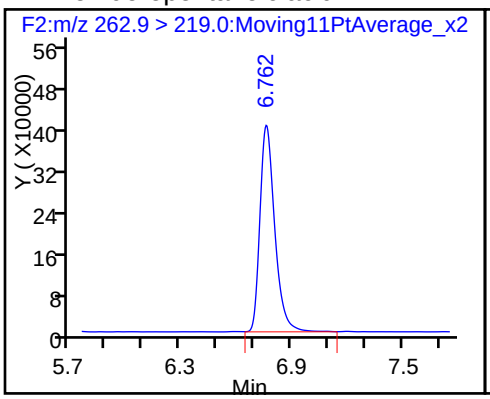
D 1 13C4 PFBA



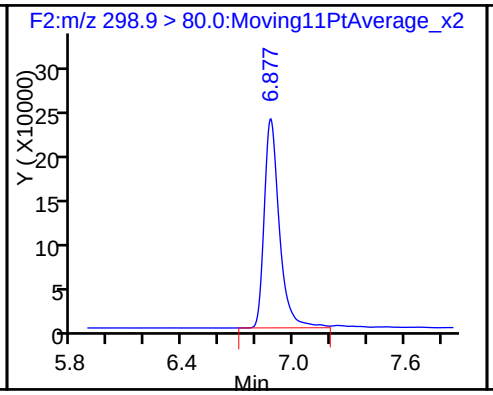
D 3 13C5-PFPeA



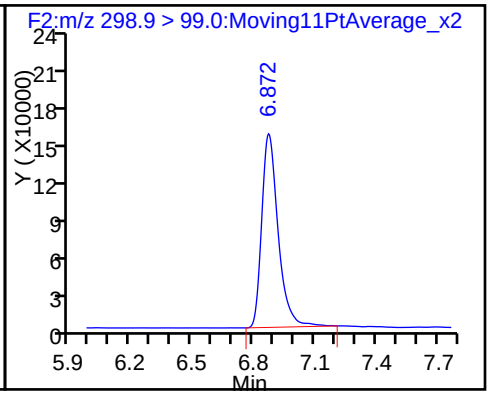
4 Perfluoropentanoic acid



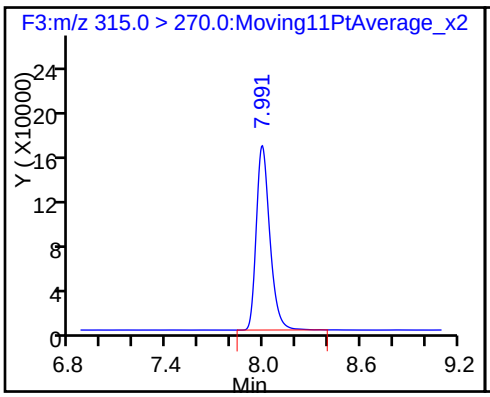
5 Perfluorobutane Sulfonate



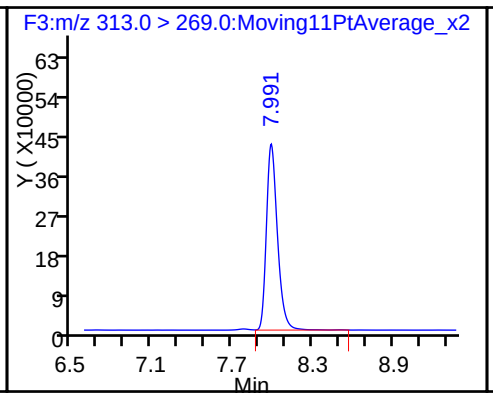
5 Perfluorobutane Sulfonate



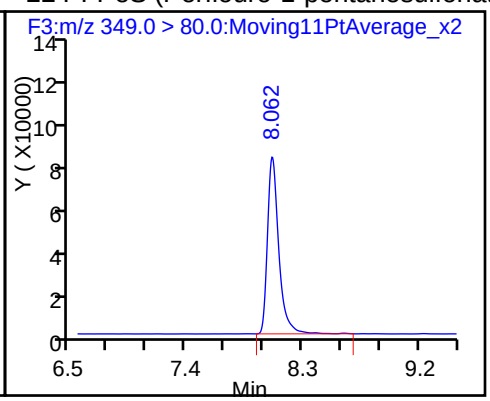
D 6 13C2 PFHxA



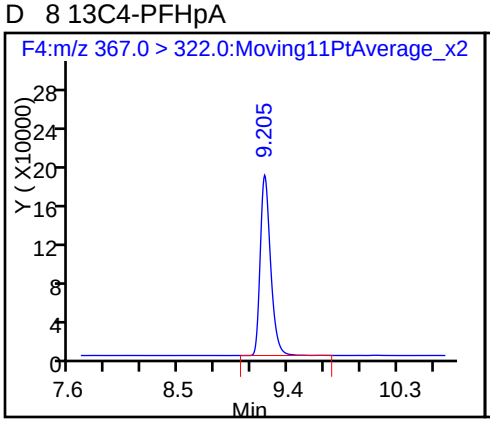
7 Perfluorohexanoic acid



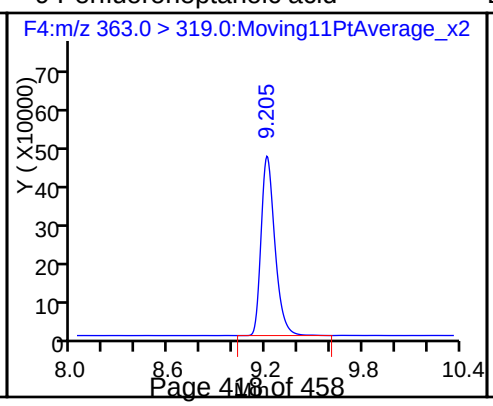
22 PFPeS (Perflouro-1-pentanesulfonat



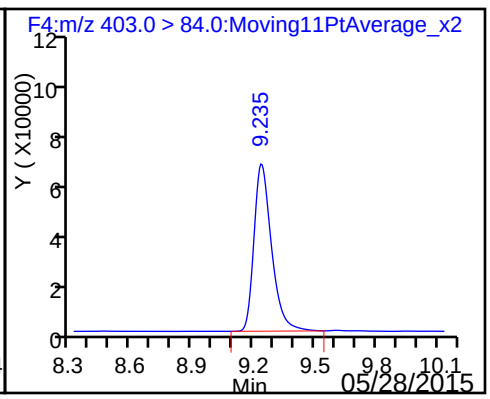
D 8 13C4-PFHpA



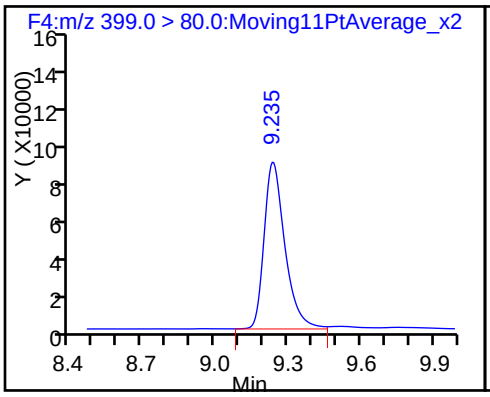
9 Perfluoroheptanoic acid



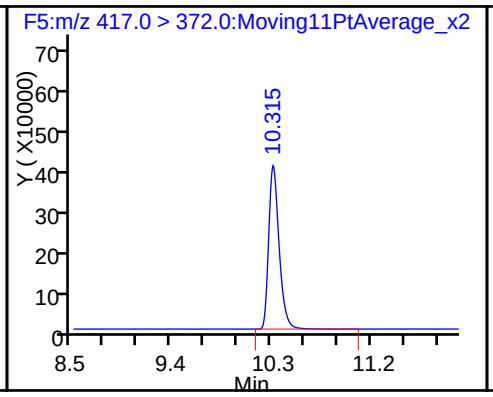
D 11 18O2 PFHxS



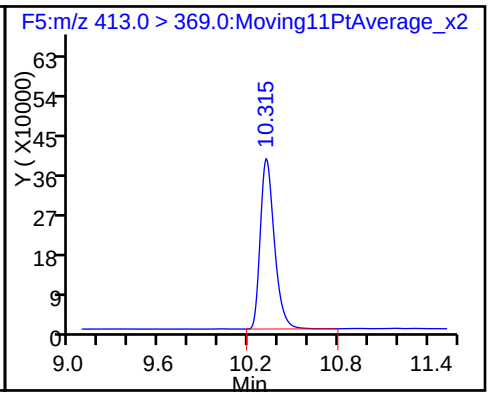
10 Perfluorohexane Sulfonate



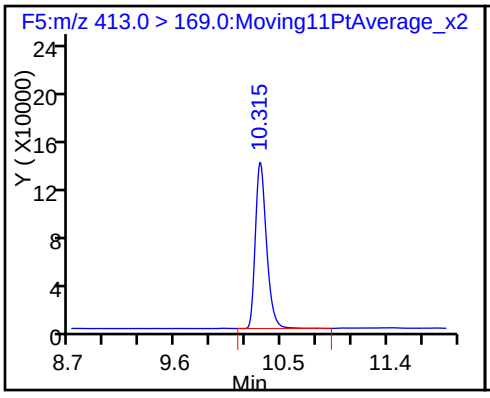
D 12 13C4 PFOA



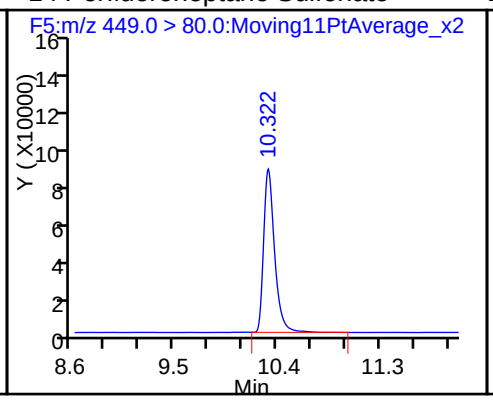
13 Perfluorooctanoic acid



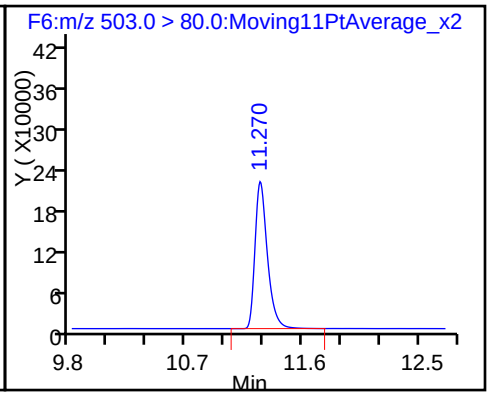
13 Perfluorooctanoic acid



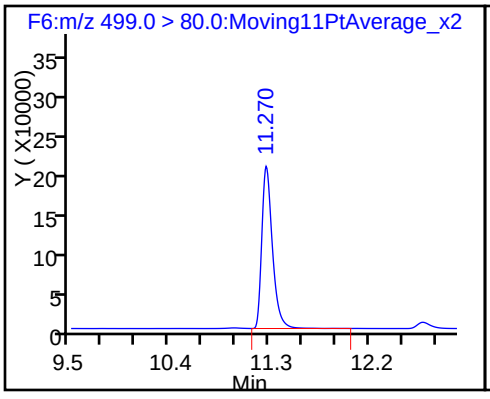
14 Perfluoroheptane Sulfonate



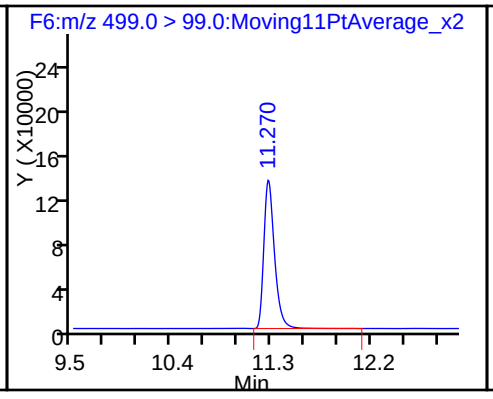
D 16 13C4 PFOS



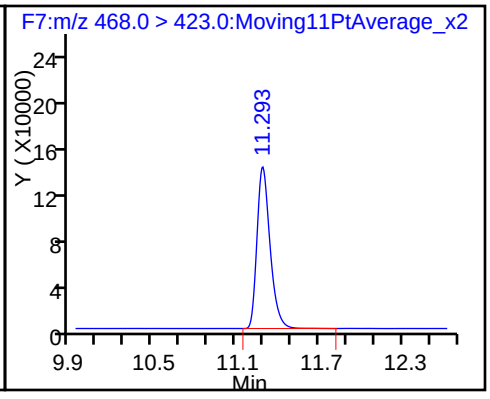
15 Perfluorooctane sulfonic acid



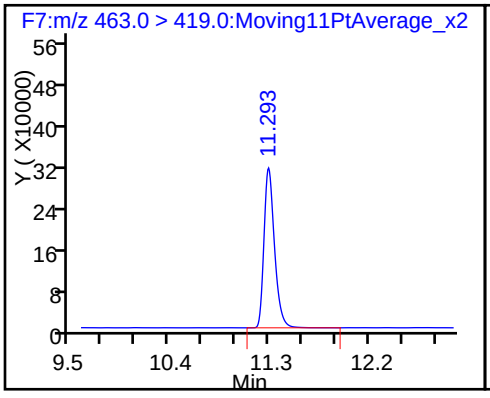
15 Perfluorooctane sulfonic acid



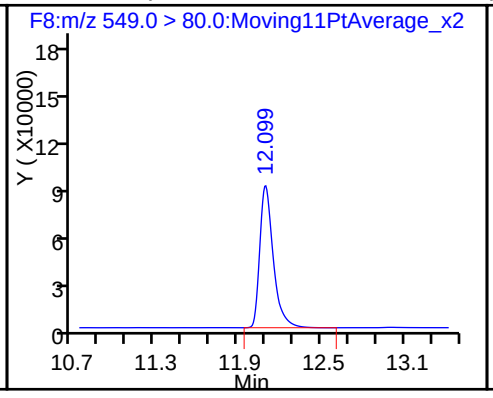
D 17 13C5 PFNA



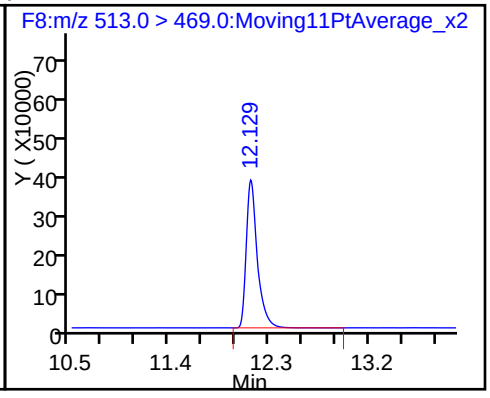
18 Perfluorononanoic acid



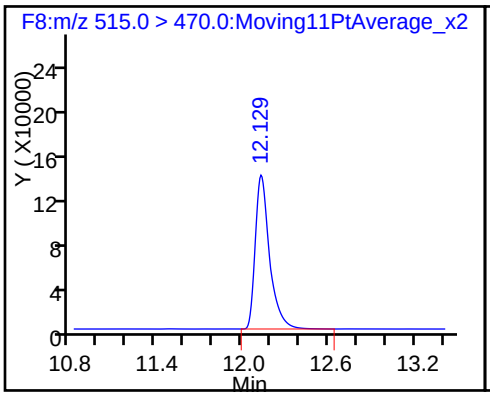
21 PFNS (Perflouro-1-nonanesulfonate)



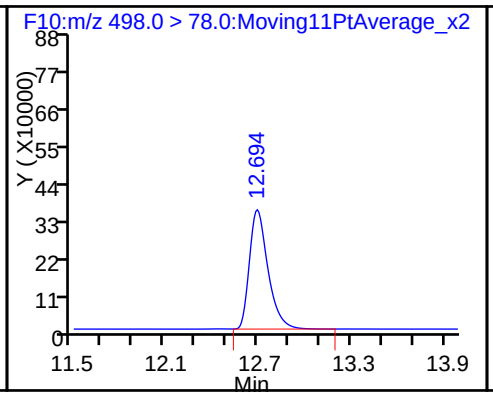
20 Perfluorodecanoic acid



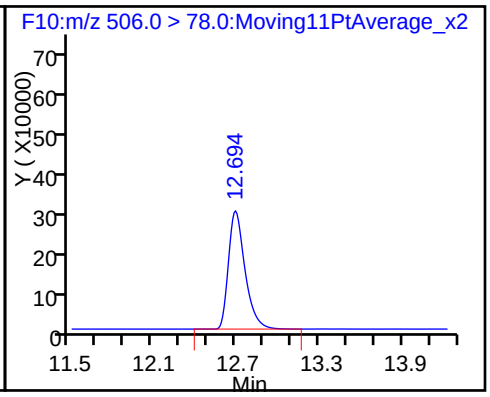
D 19 13C2 PFDA



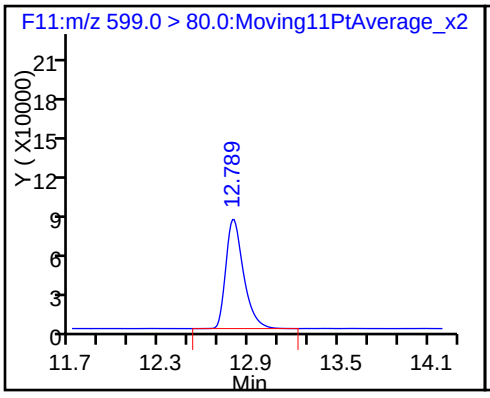
24 Perfluorooctane Sulfonamide



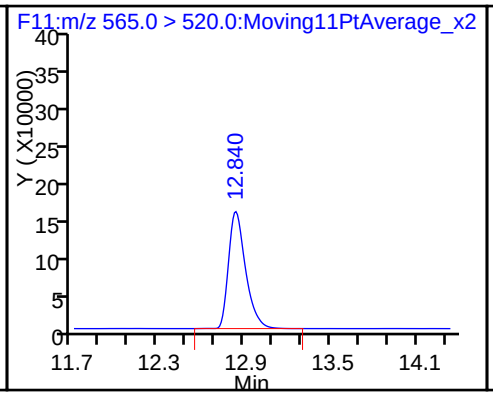
D 23 13C8 FOSA



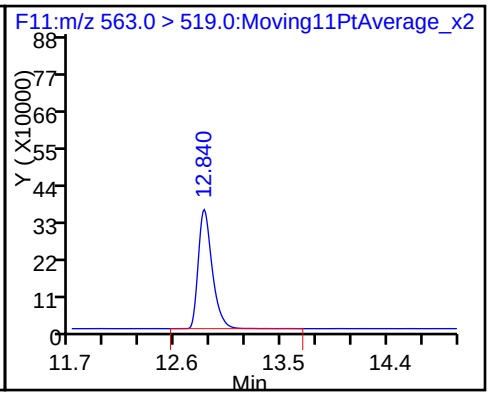
25 Perfluorodecane Sulfonate



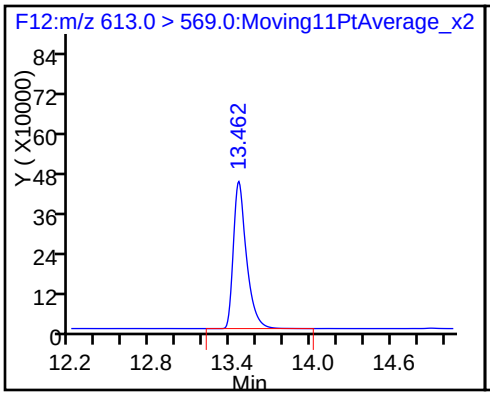
D 26 13C2 PFUnA



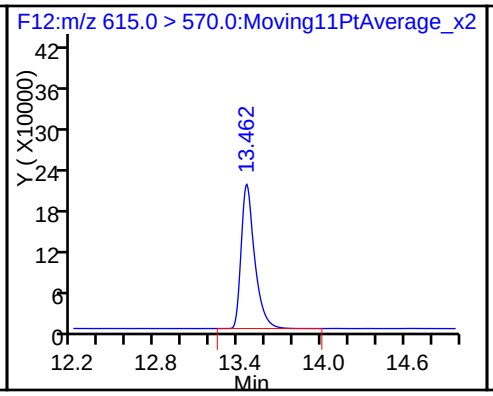
27 Perfluoroundecanoic acid



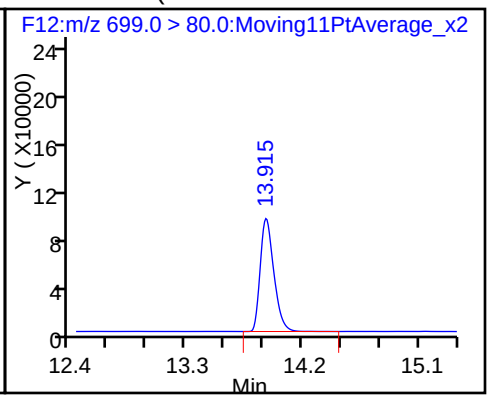
29 Perfluorododecanoic acid



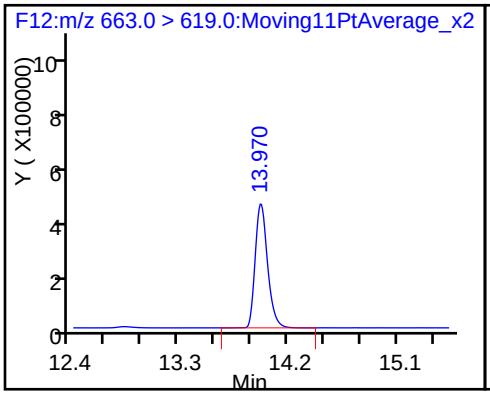
D 28 13C2 PFDoA



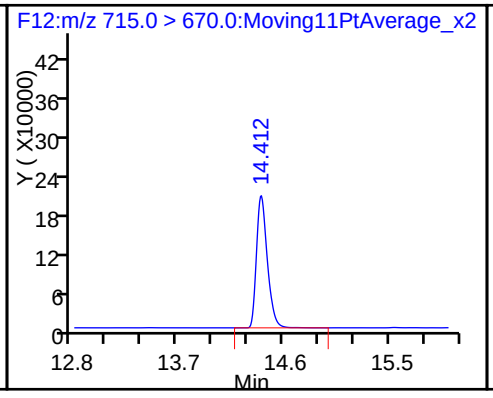
31 PFDoS (Perflouro-1-dodecanesulfona



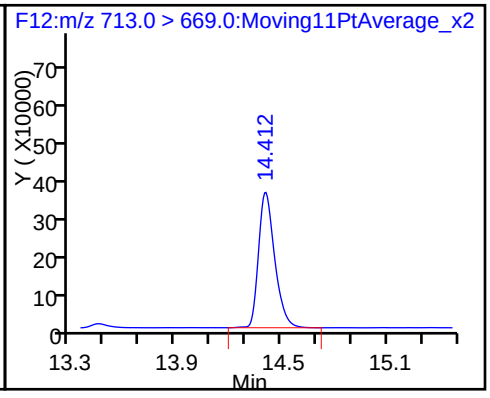
30 Perfluorotridecanoic acid



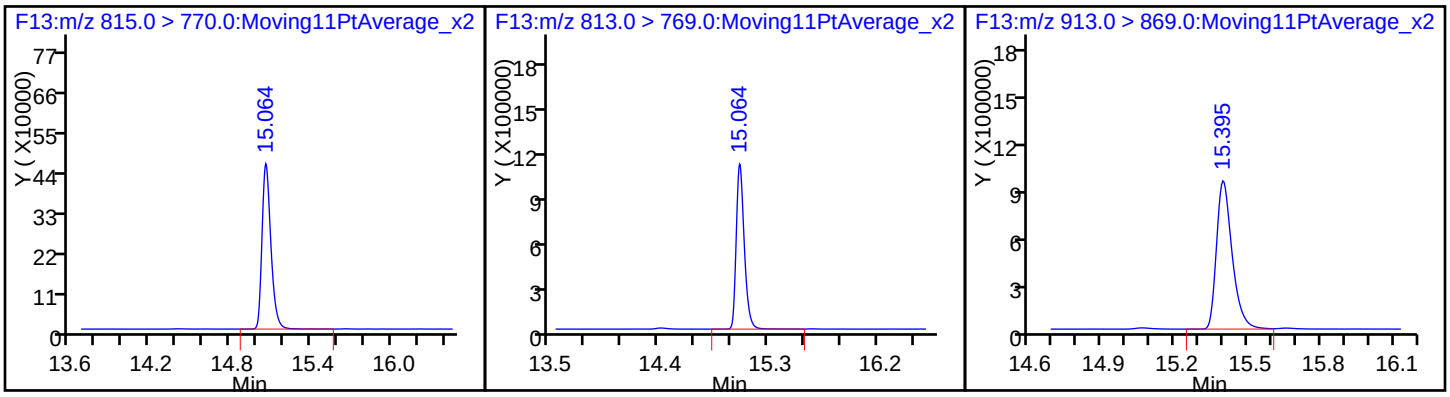
D 33 13C2-PFTeDA



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.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: | Lab Sample ID: MB 320-74169/1-A

Matrix: Water | Lab File ID: 18MAY2015A_013.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.00(mL) | Date Analyzed: 05/18/2015 18:34

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5	U	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	122		25-150
STL00990	13C4 PFOA	136		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_013.d
Lims ID: MB 320-74169/1-A
Client ID:
Sample Type: MB
Inject. Date: 18-May-2015 18:34:32 ALS Bottle#: 33 Worklist Smp#: 26
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: MB 320-74169/1-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:53:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.659	5.669	-0.010	1.000	13193	0.2579			18.7	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.670	-0.002		679634	27.3		137	2799	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		1079167	24.6		123	3178	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.757	6.761	-0.004	1.000	5154	0.0926			3.6	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.882	6.873	0.009	1.000	2298	0.0839			1.8	
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	7.981	0.004		1290357	25.2		126	5112	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.975	7.982	-0.007	1.000	9353	0.1371			22.5	
D 8 13C4-PFHpA										
367.0 > 322.0	9.199	9.196	0.003		1461257	26.4		132	5515	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.211	9.196	0.015	1.000	2550	0.0335			6.8	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.226	0.009		464315	21.1		112	1908	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.223	9.227	-0.004	1.000	1541	0.0971			1.4	
D 12 13C4 PFOA										
417.0 > 372.0	10.308	10.304	0.004		3602496	68.0		136	14009	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	17026	0.2333			7.5	
413.0 > 169.0	10.343	10.306	0.037	1.003	5588		3.05(0.00-0.00)		5.4	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.287	10.311	-0.024	1.000	1788	0.1100			8.1	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 16 13C4 PFOS										
503.0 > 80.0	11.262	11.260	0.002		1799754	58.2		122	5164	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.262	11.261	0.001	1.000	3786	0.1034			14.0	
D 17 13C5 PFNA										
468.0 > 423.0	11.285	11.280	0.005		1316847	27.2		136	5269	
18 Perfluorononanoic acid										
463.0 > 419.0	11.293	11.281	0.012	1.000	4819	0.0838			8.6	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.129	12.121	0.008	1.000	14024	0.1706			29.1	
D 19 13C2 PFDA										
515.0 > 470.0	12.122	12.121	0.001		1394608	28.2		141	5582	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.674	12.675	-0.001	1.000	8951	0.1789			20.9	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2282995	39.8		79.6	5258	
D 26 13C2 PFUnA										
565.0 > 520.0	12.830	12.830	0.0		1579211	24.8		124	2470	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.841	12.833	0.008	1.000	30912	0.4075			19.1	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.470	13.462	0.008	1.000	8914	0.1585			10.9	
D 28 13C2 PFDoA										
615.0 > 570.0	13.470	13.462	0.008		1374669	19.3		96.3	2390	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.988	13.976	0.012	1.000	12978	0.2213			7.0	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.420	14.412	0.008		728060	11.4		56.8	1634	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.420	14.413	0.007	1.000	17205	0.3757			4.2	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.074	15.072	0.002		1130209	13.5		67.7	2335	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.074	15.072	0.002	1.000	73619	-0.4586			74.9	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.415	15.409	0.006	1.000	27203	0.5067			22.1	

Report Date: 19-May-2015 14:32:10 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_013.d

Injection Date: 18-May-2015 18:34:32 Instrument ID: A6

Lims ID: MB 320-74169/1-A

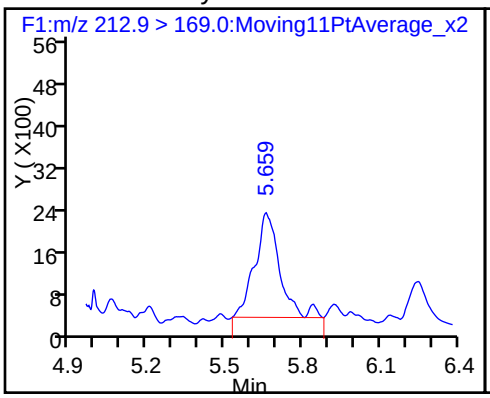
Client ID:

Operator ID: JRB ALS Bottle#: 33 Worklist Smp#: 26

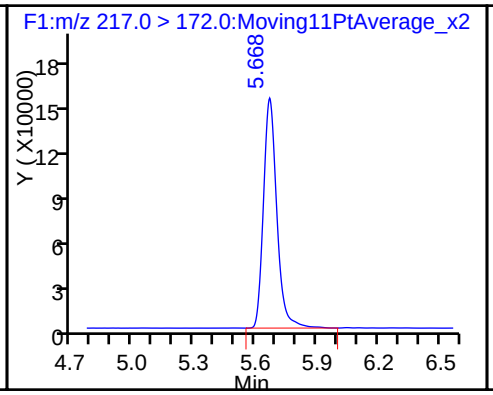
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

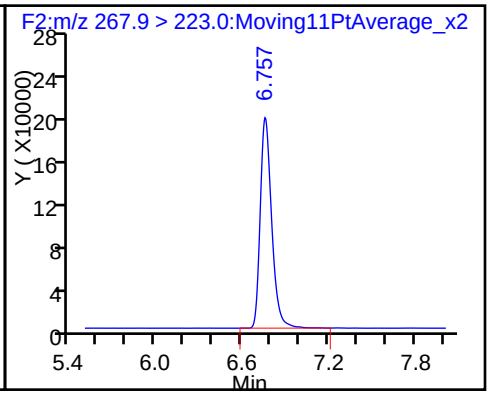
2 Perfluorobutyric acid



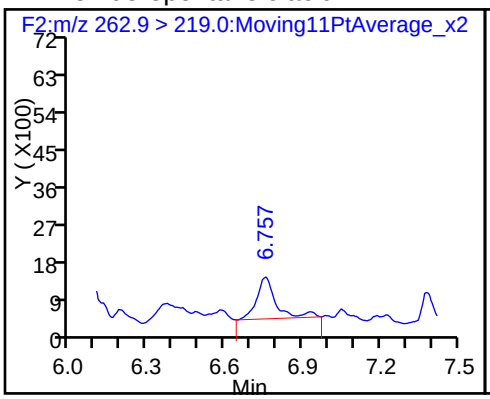
D 1 13C4 PFBA



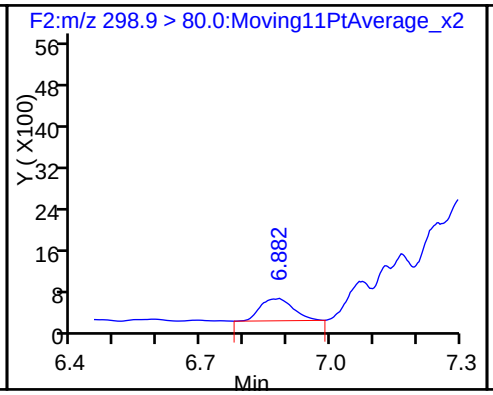
D 3 13C5-PFPeA



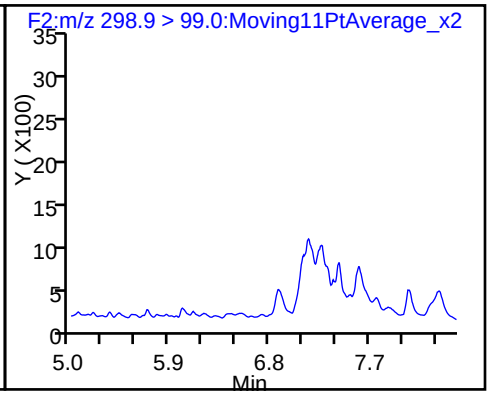
4 Perfluoropentanoic acid



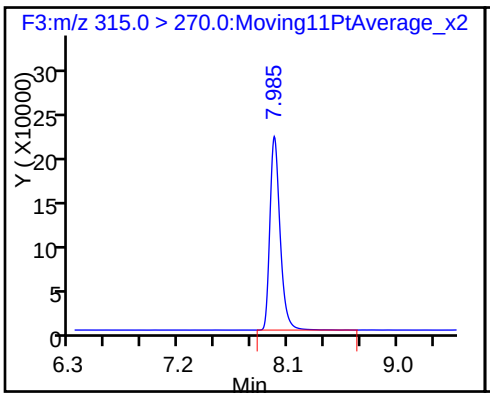
5 Perfluorobutane Sulfonate



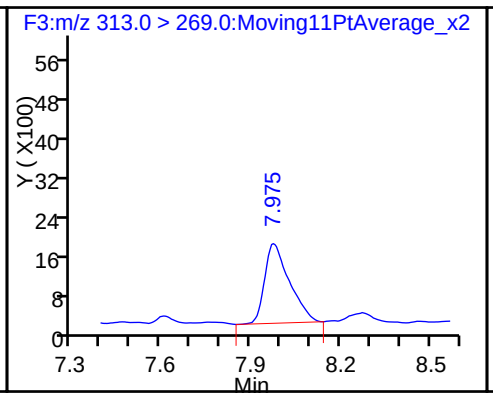
5 Perfluorobutane Sulfonate



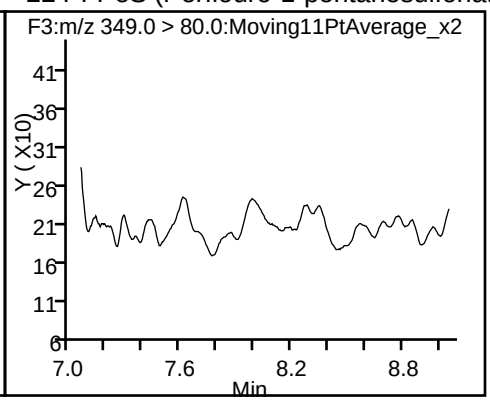
D 6 13C2 PFHxA



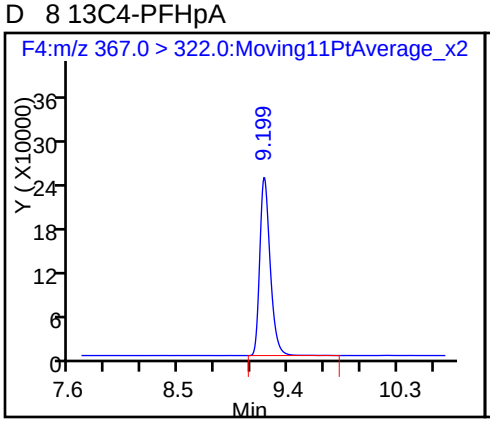
7 Perfluorohexanoic acid



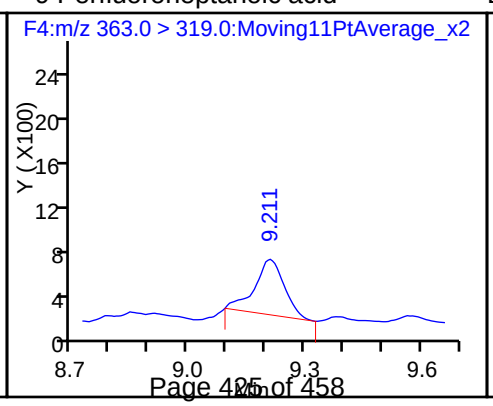
22 PFPeS (Perflouro-1-pentanesulfonat (ND)



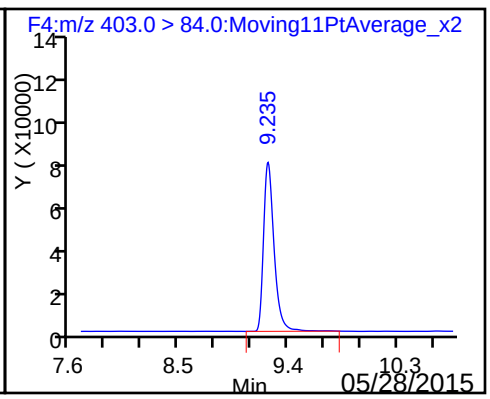
D 8 13C4-PFHpA



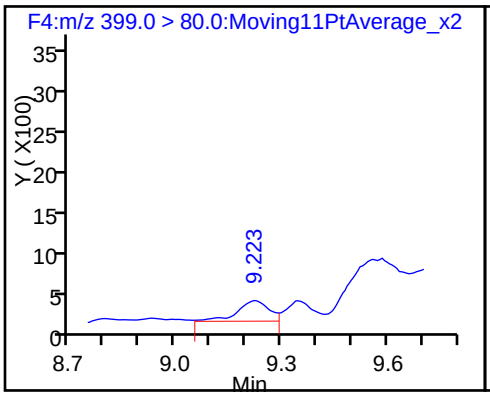
9 Perfluoroheptanoic acid



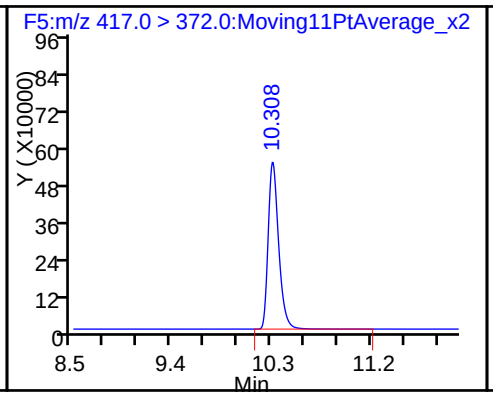
D 11 18O2 PFHxS



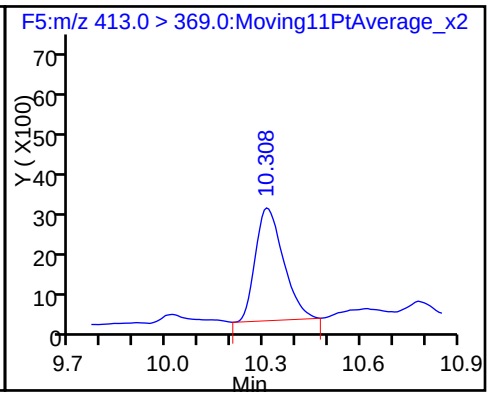
10 Perfluorohexane Sulfonate



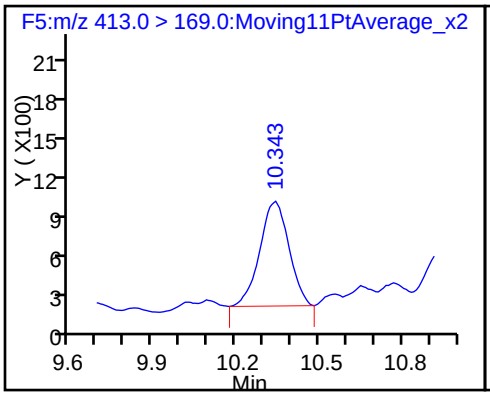
D 12 13C4 PFOA



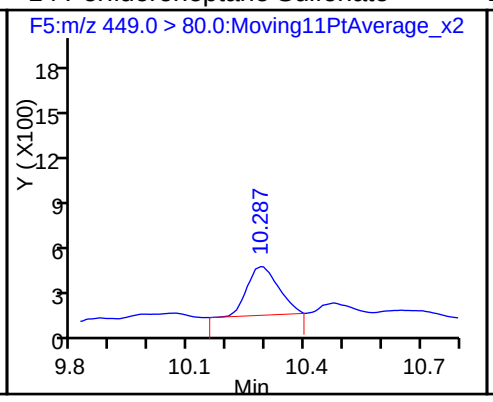
13 Perfluorooctanoic acid



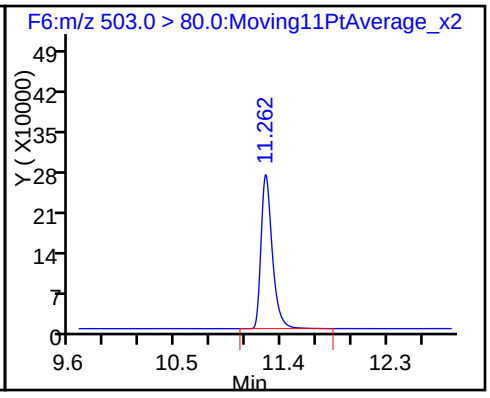
13 Perfluorooctanoic acid



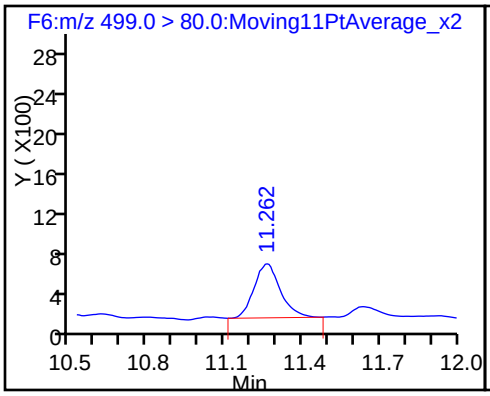
14 Perfluoroheptane Sulfonate



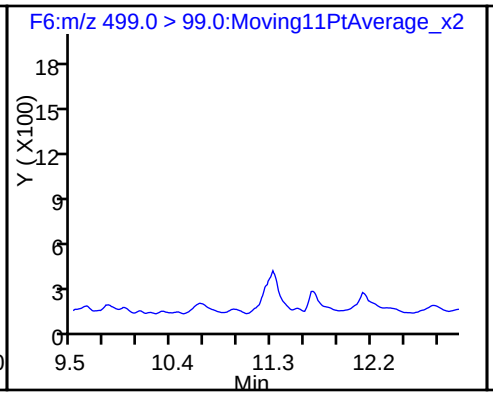
D 16 13C4 PFOS



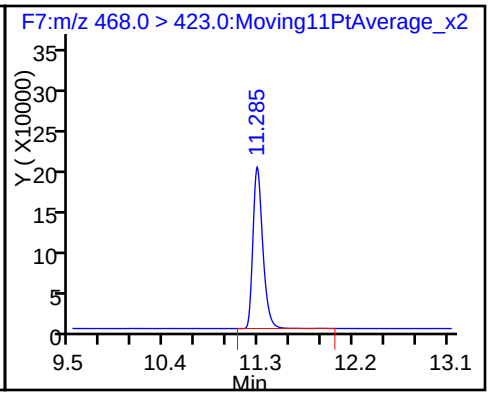
15 Perfluorooctane sulfonic acid



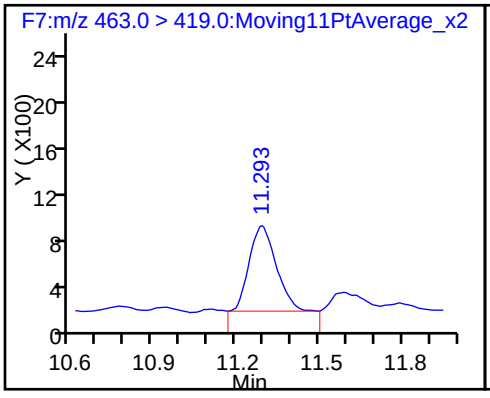
15 Perfluorooctane sulfonic acid



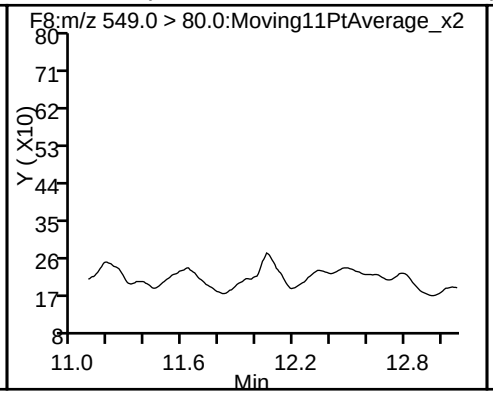
D 17 13C5 PFNA



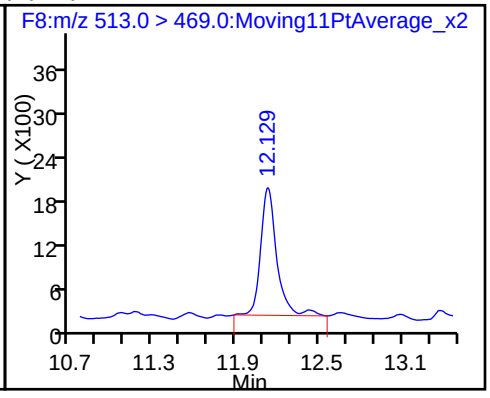
18 Perfluorononanoic acid



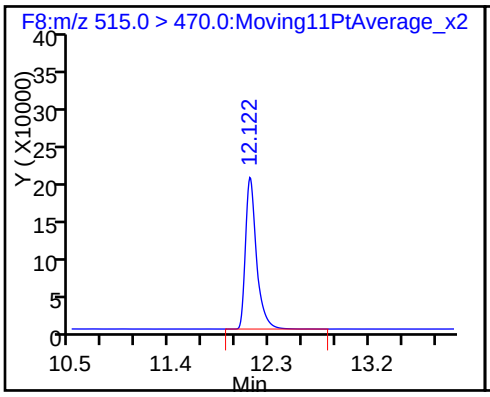
21 PFNS (Perflouro-1-nonanesulfonate) (ISTD)



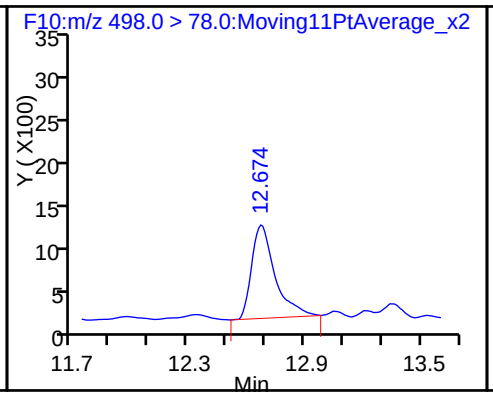
20 Perfluorodecanoic acid



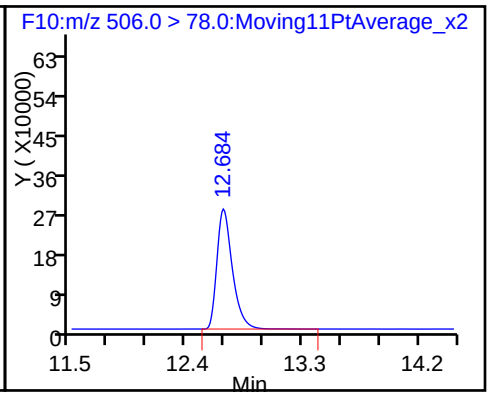
D 19 13C2 PFDA



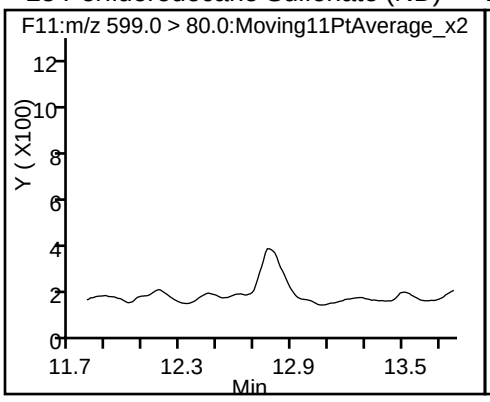
24 Perfluorooctane Sulfonamide



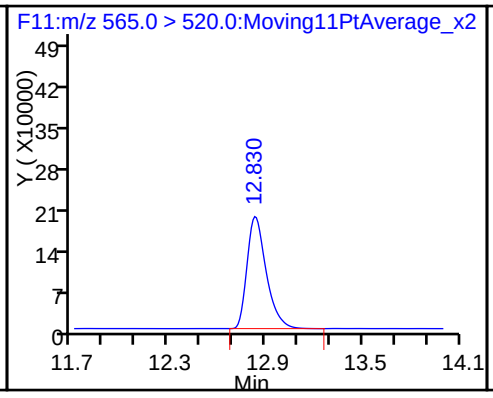
D 23 13C8 FOSA



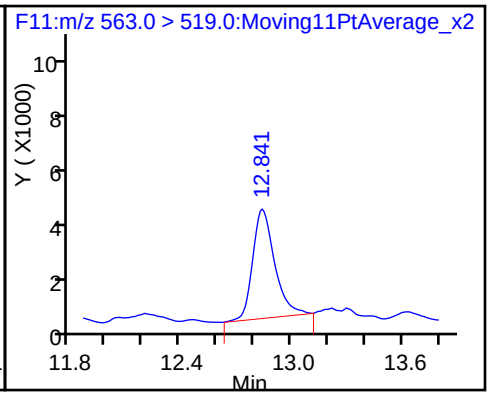
25 Perfluorodecane Sulfonate (ND)



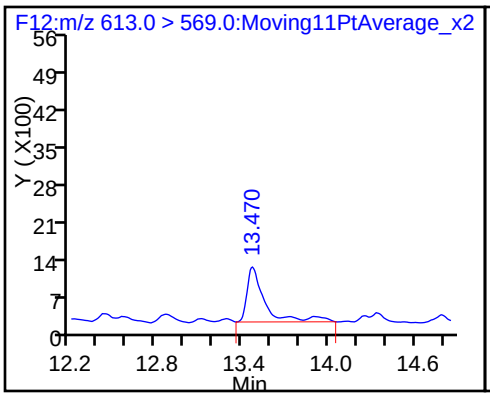
D 26 13C2 PFUnA



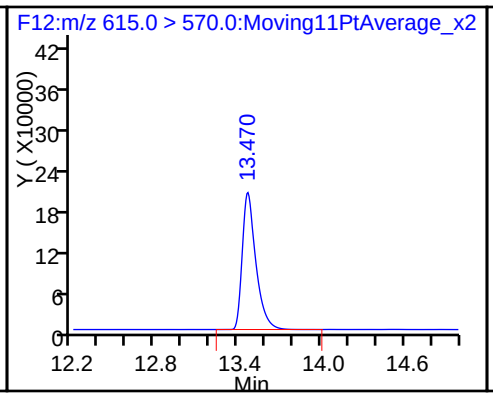
27 Perfluoroundecanoic acid



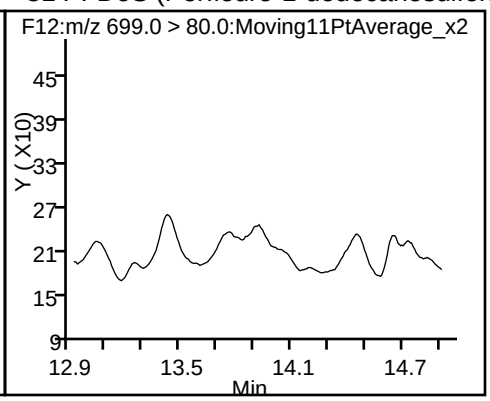
29 Perfluorododecanoic acid



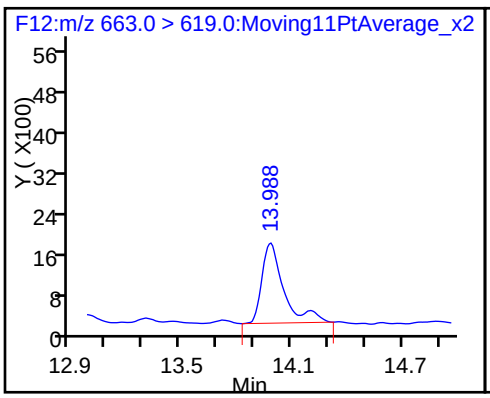
D 28 13C2 PFDoA



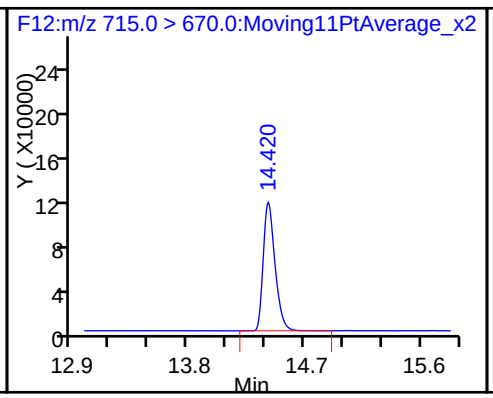
31 PFDoS (Perflouro-1-dodecanesulfona (ND)



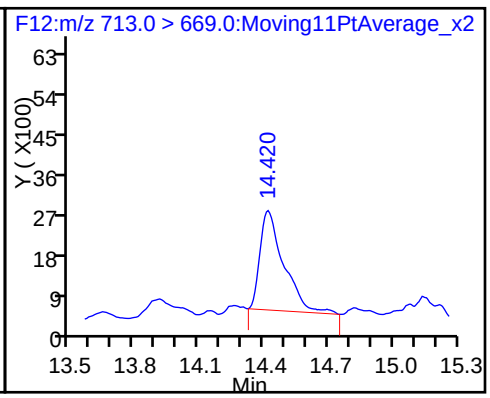
30 Perfluorotridecanoic acid



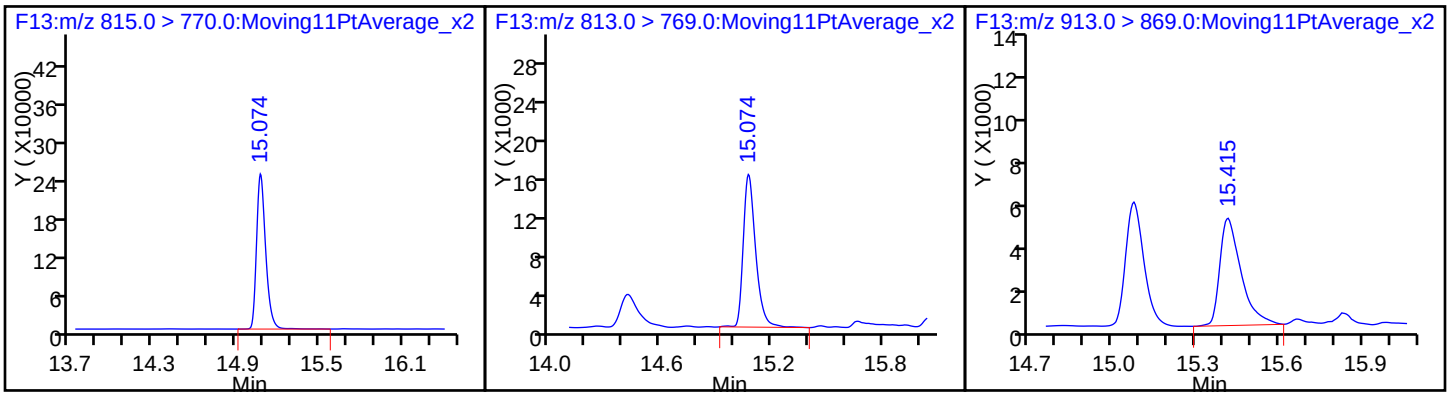
D 33 13C2-PFTeDA



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.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: Lab Sample ID: CCB 320-74318/8

Matrix: Water Lab File ID: 18MAY2015A_011.d

Analysis Method: WS-LC-0025 Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 1(mL) Date Analyzed: 05/18/2015 17:52

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5	U	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	108		25-150
STL00990	13C4 PFOA	115		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_011.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 18-May-2015 17:52:02 ALS Bottle#: 9 Worklist Smp#: 8
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: ICB
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JSS Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 10:53:36 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 19-May-2015 10:53:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.659	5.669	-0.010	1.000	11957	0.3220			28.8	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.670	-0.002		493289	19.8		99.2	2466	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		937504	21.4		107	2239	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.790	6.761	0.029	1.000	8383	0.1734			5.8	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.868	6.873	-0.005	1.000	4473	0.1851			3.9	
298.9 > 99.0	6.882	6.873	0.009	1.002	3365		1.33(0.00-0.00)		3.3	
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	7.981	0.004		1026081	20.0		100	3687	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	7.982	0.003	1.000	12612	0.2324			29.2	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.083	8.056	0.027	0.875	2214	0.1849			10.3	
D 8 13C4-PFHpA										
367.0 > 322.0	9.199	9.196	0.003		1213907	21.9		110	2901	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.194	9.196	-0.002	1.000	12548	0.1982			29.6	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.226	0.009		409490	18.6		98.6	1435	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.217	9.227	-0.010	1.000	4980	0.3559			3.6	
D 12 13C4 PFOA										
417.0 > 372.0	10.308	10.304	0.004		3036156	57.3		115	7437	

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	10.315	10.306	0.009	1.000	19314	0.3140			6.9	
413.0 > 169.0	10.308	10.306	0.002	0.999	8488		2.28(0.00-0.00)		6.8	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.322	10.311	0.011	1.000	3542	0.2448			8.4	
D 16 13C4 PFOS										
503.0 > 80.0	11.262	11.260	0.002		1601719	51.8		108	6023	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.270	11.261	0.009	1.000	13374	0.4103			47.2	
499.0 > 99.0	11.255	11.261	-0.006	0.999	7701		1.74(0.00-0.00)		12.8	
D 17 13C5 PFNA										
468.0 > 423.0	11.285	11.280	0.005		1093588	22.6		113	5485	
18 Perfluorononanoic acid										
463.0 > 419.0	11.278	11.281	-0.003	1.000	18932	0.3965			42.7	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.099	12.086	0.013	1.000	3849	0.2535			11.9	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.129	12.121	0.008	1.000	41655	0.5817			97.5	
D 19 13C2 PFDA										
515.0 > 470.0	12.121	12.121	0.0		1214539	24.5		123	3584	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.694	12.675	0.019	1.000	29020	0.4677			56.8	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2830834	49.4		98.7	5111	
D 26 13C2 PFUnA										
565.0 > 520.0	12.830	12.830	0.0		1408079	22.1		111	1519	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.840	12.833	0.007	1.000	41972	0.6206			20.8	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.470	13.462	0.008	1.000	20614	0.3187			19.8	
D 28 13C2 PFDoA										
615.0 > 570.0	13.470	13.462	0.008		1581346	22.2		111	2705	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.942	13.918	0.024	1.000	3446	0.2005			7.2	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.988	13.976	0.012	1.000	25051	0.3713			12.5	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.420	14.412	0.008		1366842	21.3		107	3002	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.420	14.413	0.007	1.000	35577	0.6754			8.6	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.074	15.072	0.002		1844414	22.1		110	2430	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.074	15.072	0.002	1.000	134080	0.0973			70.4	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.406	15.409	-0.003	1.000	79323	1.28			43.2	

Reagents:

LCPFC-L9_00009 Amount Added: 1.00 Units: mL

Report Date: 19-May-2015 10:53:40 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_011.d

Injection Date: 18-May-2015 17:52:02 Instrument ID: A6

Lims ID: CCB

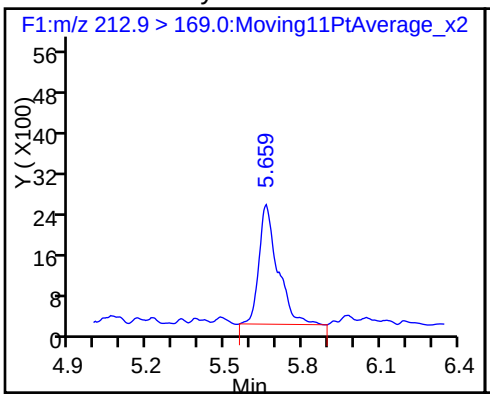
Client ID:

Operator ID: JSS ALS Bottle#: 9 Worklist Smp#: 8

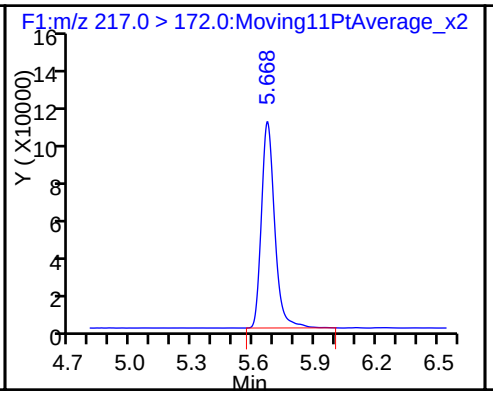
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

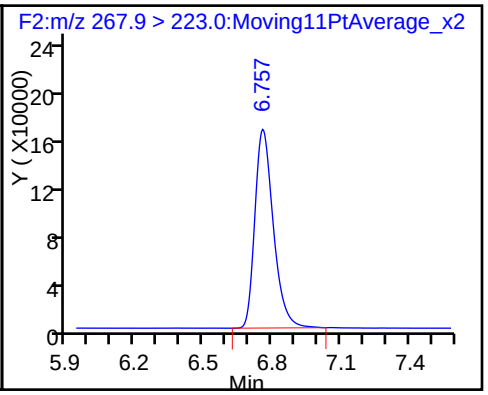
2 Perfluorobutyric acid



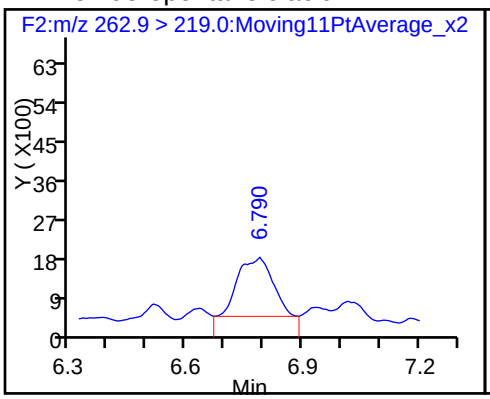
D 1 13C4 PFBA



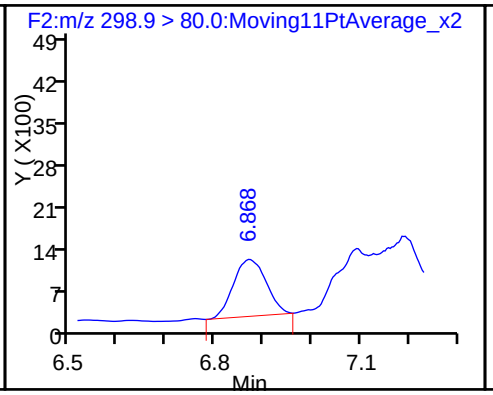
D 3 13C5-PFPeA



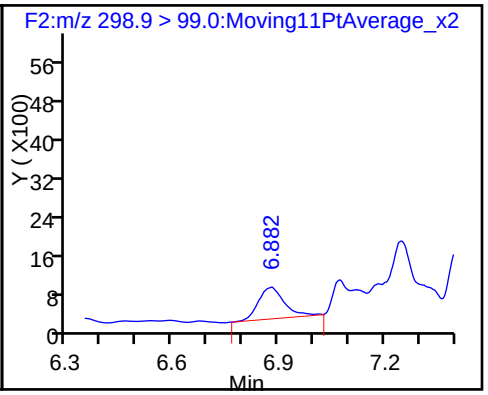
4 Perfluoropentanoic acid



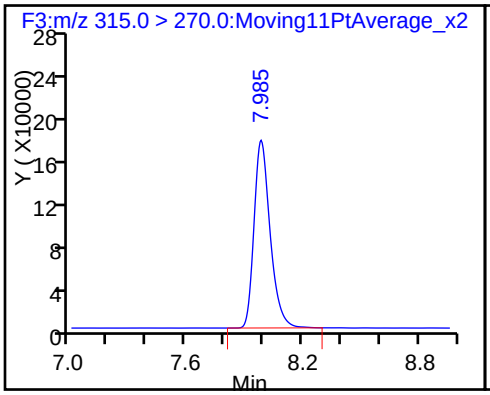
5 Perfluorobutane Sulfonate



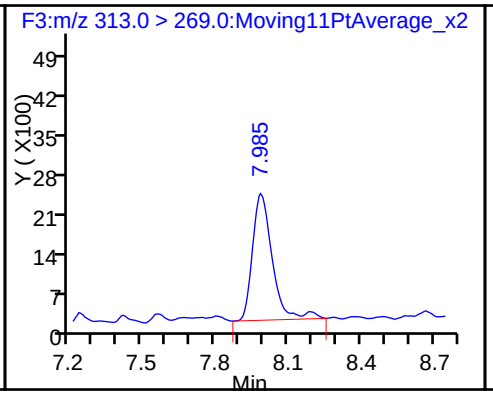
5 Perfluorobutane Sulfonate



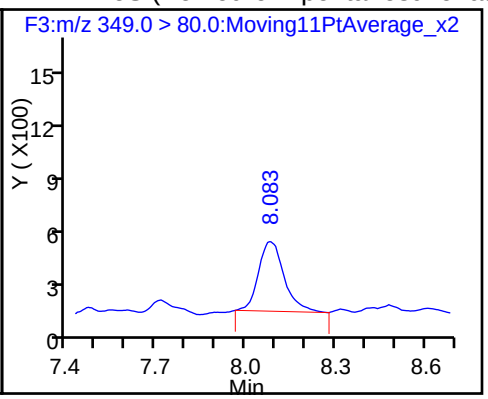
D 6 13C2 PFHxA



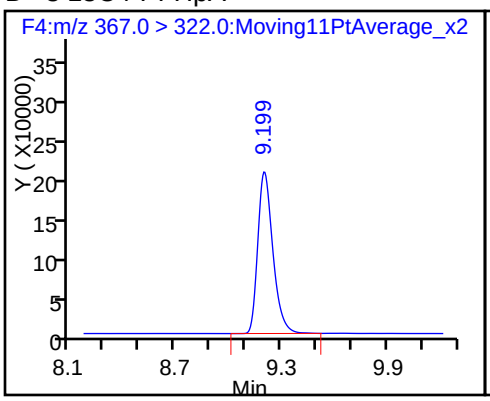
7 Perfluorohexanoic acid



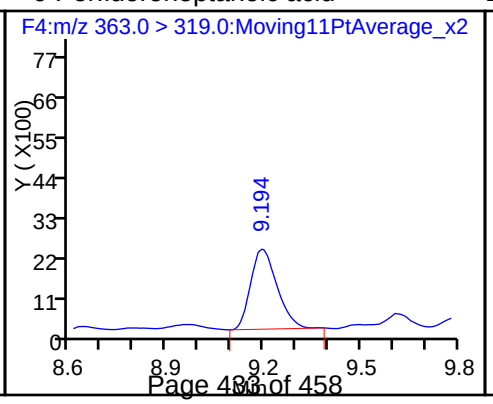
22 PFPeS (Perflouro-1-pentanesulfonat



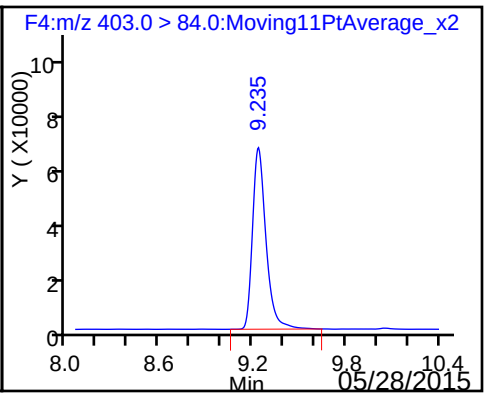
D 8 13C4-PFHpA



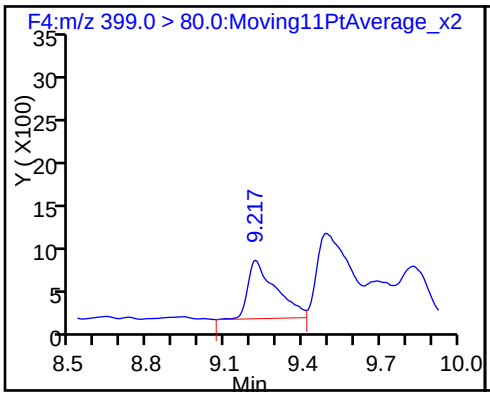
9 Perfluoroheptanoic acid



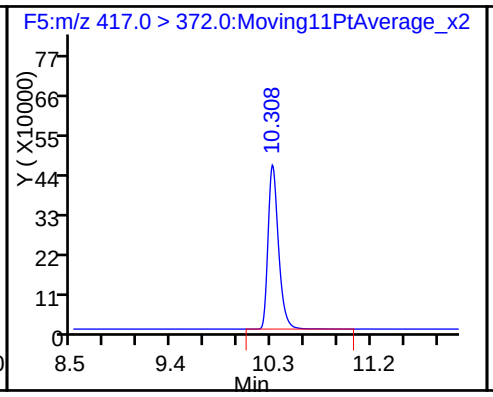
D 11 18O2 PFHxS



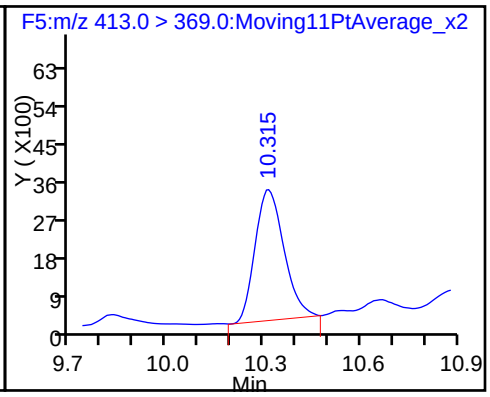
10 Perfluorohexane Sulfonate



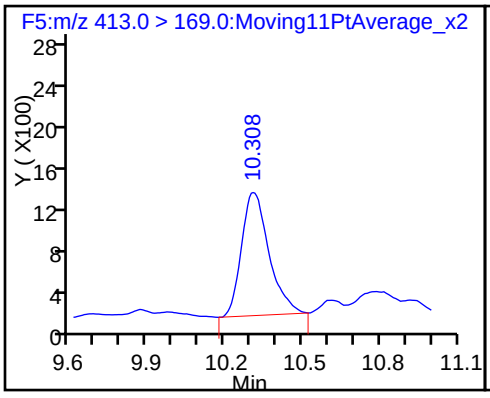
D 12 13C4 PFOA



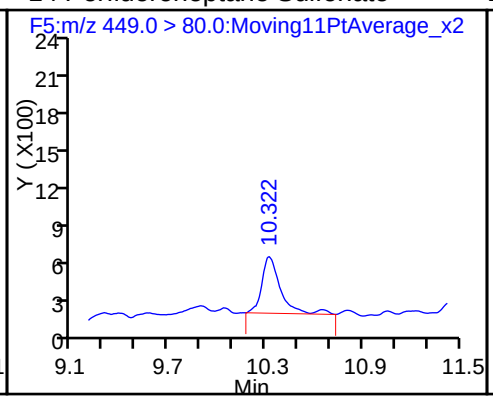
13 Perfluorooctanoic acid



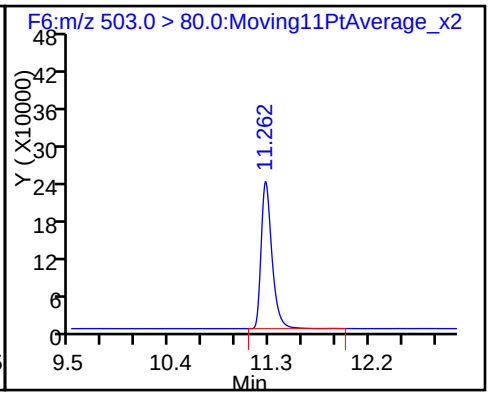
13 Perfluorooctanoic acid



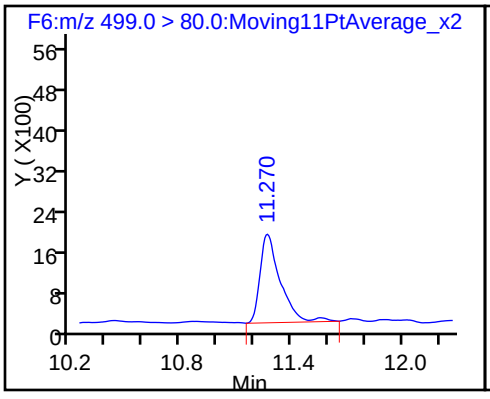
14 Perfluoroheptane Sulfonate



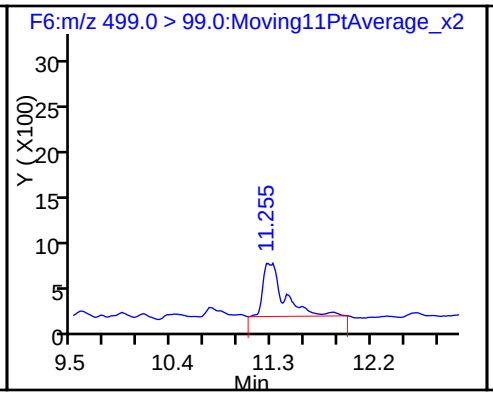
D 16 13C4 PFOS



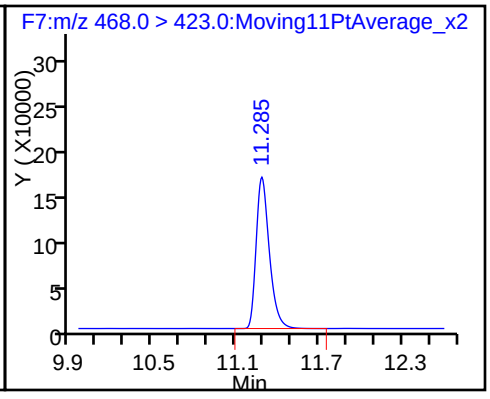
15 Perfluorooctane sulfonic acid



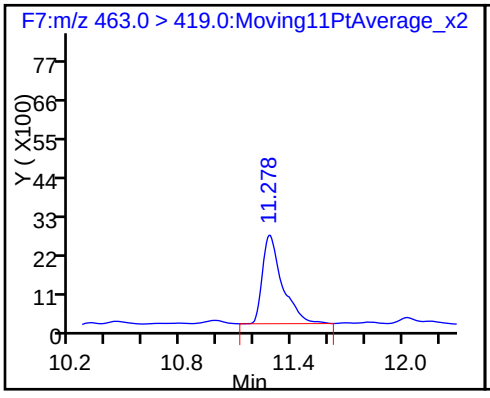
15 Perfluorooctane sulfonic acid



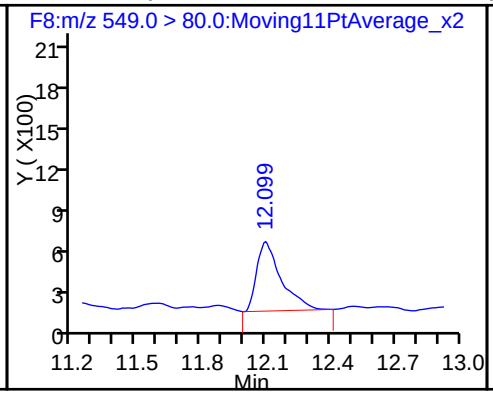
D 17 13C5 PFNA



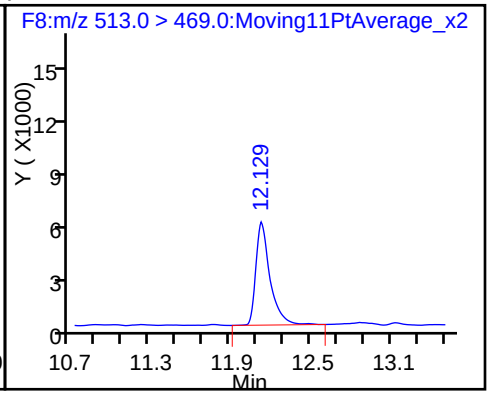
18 Perfluorononanoic acid



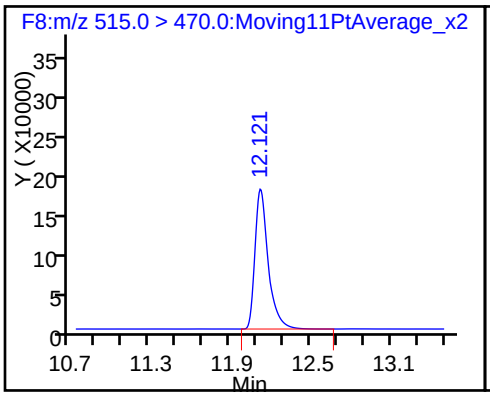
21 PFNS (Perflouro-1-nonanesulfonate)



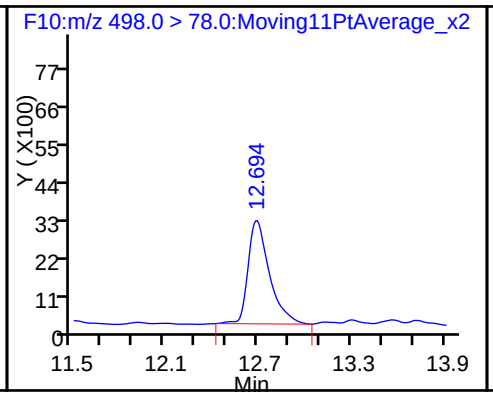
20 Perfluorodecanoic acid



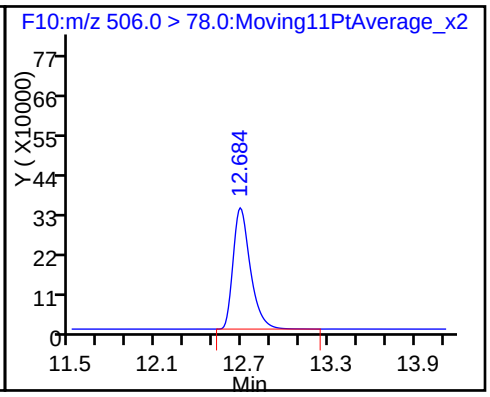
D 19 13C2 PFDA



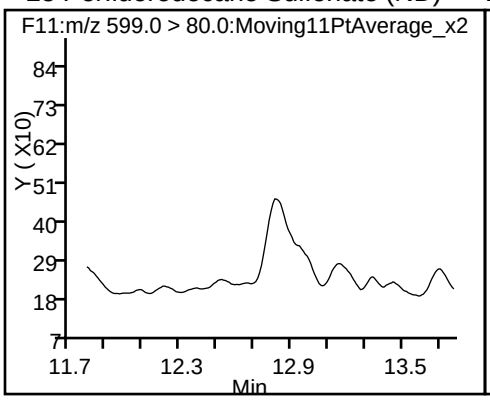
24 Perfluorooctane Sulfonamide



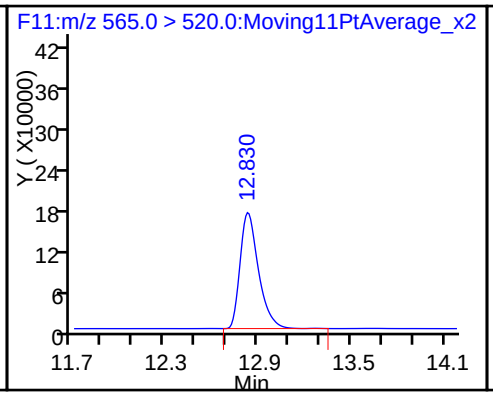
D 23 13C8 FOSA



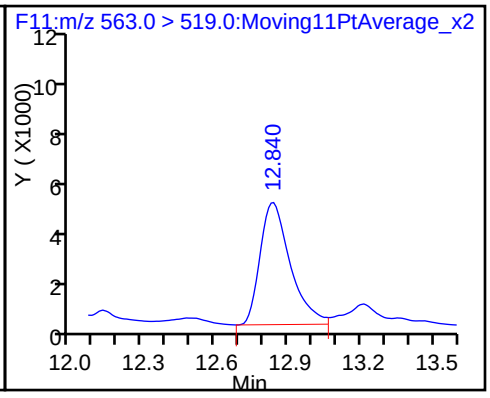
25 Perfluorodecane Sulfonate (ND)



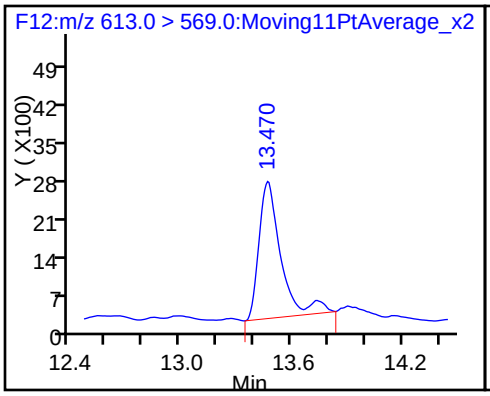
D 26 13C2 PFUnA



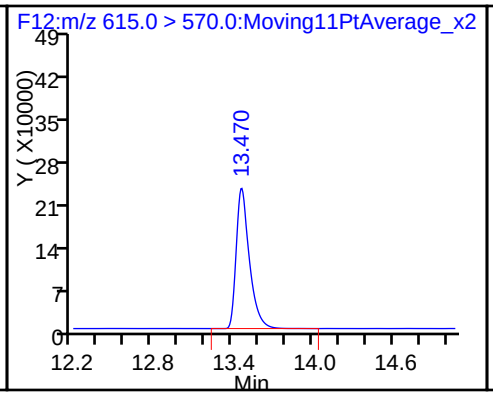
27 Perfluoroundecanoic acid



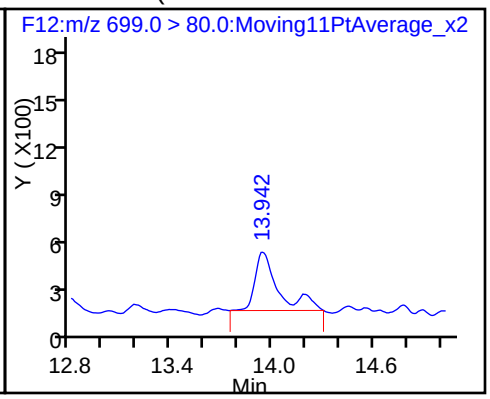
29 Perfluorododecanoic acid



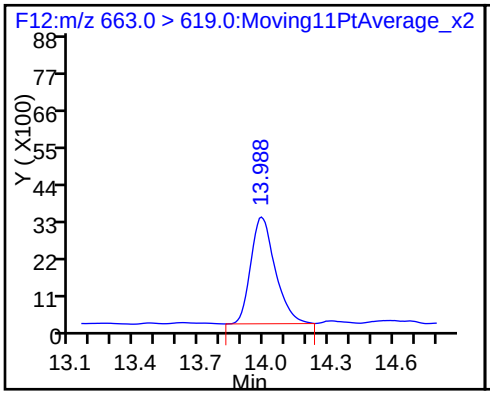
D 28 13C2 PFDoA



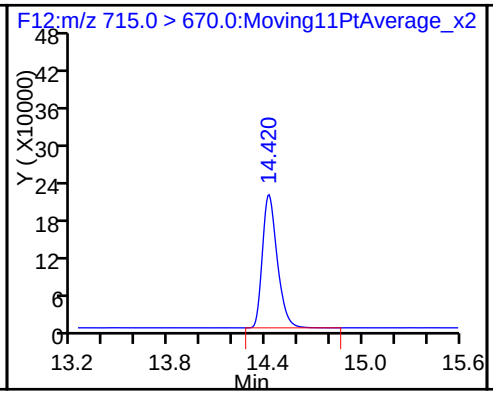
31 PFDoS (Perflouro-1-dodecanesulfona



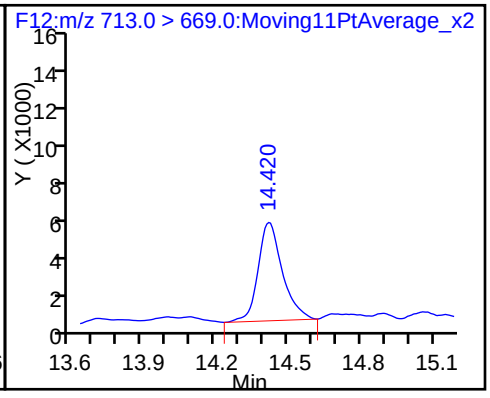
30 Perfluorotridecanoic acid



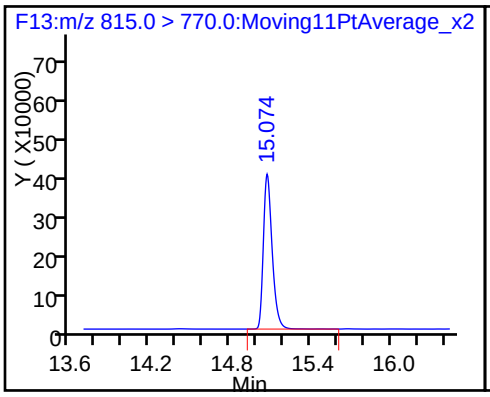
D 33 13C2-PFTeDA



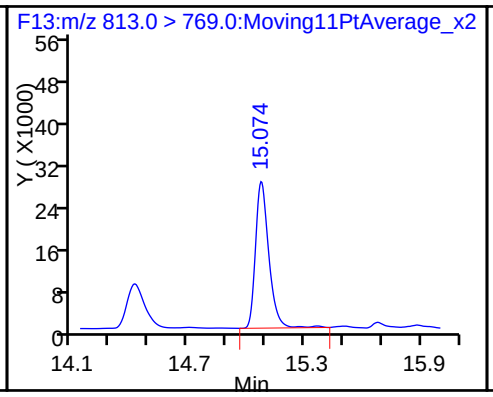
32 Perfluorotetradecanoic acid



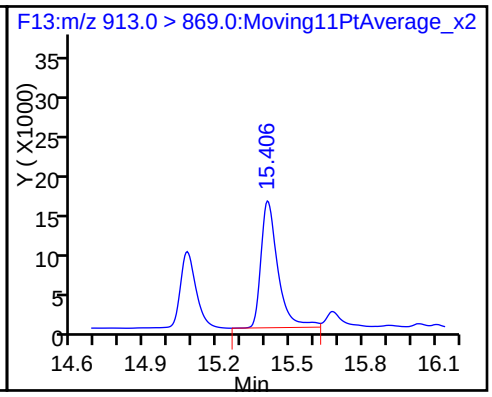
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: | Lab Sample ID: LCS 320-74169/2-A

Matrix: Water | Lab File ID: 18MAY2015A_014.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.00(mL) | Date Analyzed: 05/18/2015 18:55

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	39.6		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	37.0		2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	120		25-150
STL00990	13C4 PFOA	124		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_014.d
Lims ID: LCS 320-74169/2-A
Client ID:
Sample Type: LCS
Inject. Date: 18-May-2015 18:55:46 ALS Bottle#: 34 Worklist Smp#: 27
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: LCS 320-74169/2-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21909.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:31:15 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 10:53:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.668	5.669	-0.001	1.000	857097	16.9		84.6	1458	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.670	-0.002		672658	27.0		135	3303	
D 3 13C5-PFPeA										
267.9 > 223.0	6.757	6.760	-0.003		1057407	24.1		120	2910	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.762	6.761	0.001	1.000	1046365	19.2		95.9	626	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.872	6.873	-0.001	1.000	418403	14.8		83.7	260	
298.9 > 99.0	6.872	6.873	-0.001	1.000	260452		1.61(0.00-0.00)		227	
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	7.981	0.004		1215934	23.8		119	5940	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	7.982	0.003	1.000	1242481	19.3		96.6	1658	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.062	8.056	0.006	0.874	245071	17.5		93.3	851	
D 8 13C4-PFHpA										
367.0 > 322.0	9.199	9.196	0.003		1358442	24.5		123	4567	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.205	9.196	0.009	1.000	1404146	19.8		99.1	3152	
D 11 18O2 PFHxS										
403.0 > 84.0	9.229	9.226	0.003		478945	21.8		115	1102	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.235	9.227	0.008	1.000	268627	16.4		86.8	244	
D 12 13C4 PFOA										
417.0 > 372.0	10.308	10.304	0.004		3297908	62.2		124	14636	

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	10.315	10.306	0.009	1.000	1323605	19.8		99.1	442	
413.0 > 169.0	10.308	10.306	0.002	0.999	468452		2.83(0.00-0.00)		438	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.315	10.311	0.004	1.000	264964	16.5		86.6	809	
D 16 13C4 PFOS										
503.0 > 80.0	11.262	11.260	0.002		1779861	57.5		120	3984	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.262	11.261	0.001	1.000	669662	18.5		96.7	650	
499.0 > 99.0	11.262	11.261	0.001	1.000	410698		1.63(0.00-0.00)		1075	
D 17 13C5 PFNA										
468.0 > 423.0	11.285	11.280	0.005		1201123	24.8		124	4188	
18 Perfluorononanoic acid										
463.0 > 419.0	11.285	11.281	0.004	1.000	1048122	20.0		99.9	2084	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.091	12.086	0.005	1.000	275994	16.4		85.2	1394	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.122	12.121	0.001	1.000	1398355	17.6		87.8	2772	
D 19 13C2 PFDA										
515.0 > 470.0	12.122	12.121	0.001		1350597	27.3		136	6108	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.684	12.675	0.009	1.000	974700	20.5		103	1250	
D 23 13C8 FOSA										
506.0 > 78.0	12.684	12.677	0.007		2165241	37.8		75.5	2429	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.789	12.786	0.003	1.000	310600	19.1		99.0	717	
D 26 13C2 PFUnA										
565.0 > 520.0	12.830	12.830	0.0		1426817	22.4		112	2772	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.830	12.833	-0.003	1.000	1377969	20.1		101	813	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.454	13.462	-0.008	1.000	1191879	18.9		94.4	1722	
D 28 13C2 PFDoA										
615.0 > 570.0	13.454	13.462	-0.008		1542800	21.6		108	3028	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.915	13.918	-0.003	1.000	179707	9.41		48.6	531	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.970	13.976	-0.006	1.000	891292	13.5		67.7	493	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.405	14.412	-0.007		869462	13.6		67.8	2054	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.405	14.413	-0.008	1.000	594500	11.6		57.8	138	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.059	15.072	-0.013		1301825	15.6		78.0	2355	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.059	15.072	-0.013	1.000	1419714	15.0		74.8	1488	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.391	15.409	-0.018	1.000	841462	14.0		69.8	675	

Report Date: 19-May-2015 14:32:11 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_014.d

Injection Date: 18-May-2015 18:55:46 Instrument ID: A6

Lims ID: LCS 320-74169/2-A

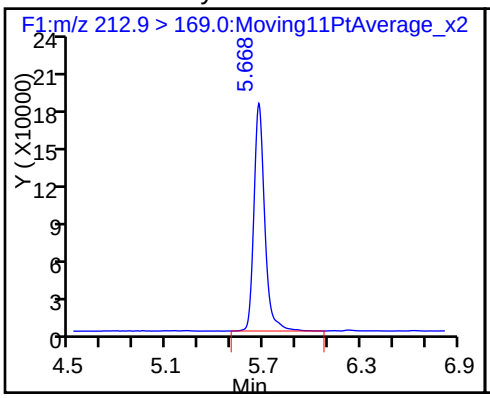
Client ID:

Operator ID: JRB ALS Bottle#: 34 Worklist Smp#: 27

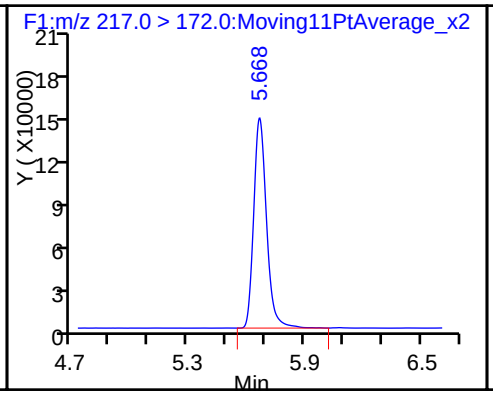
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

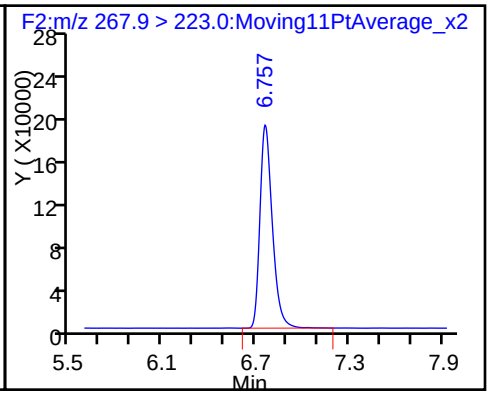
2 Perfluorobutyric acid



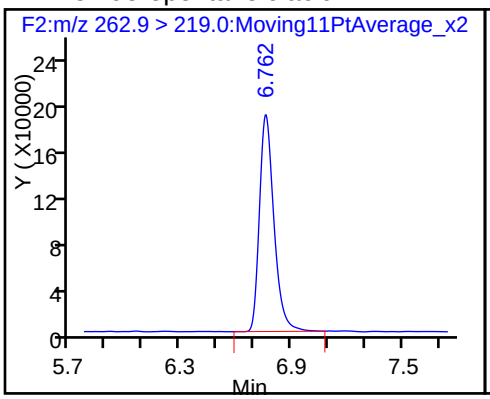
D 1 13C4 PFBA



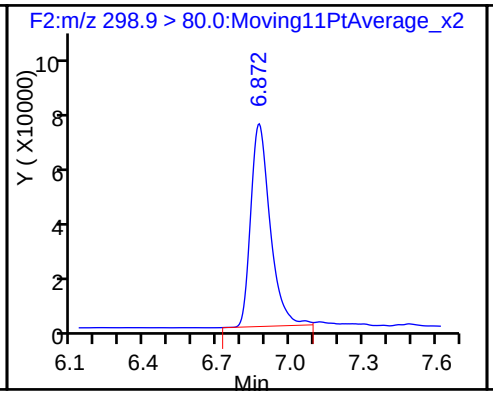
D 3 13C5-PFPeA



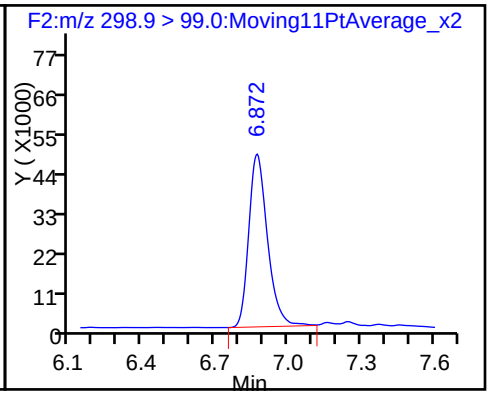
4 Perfluoropentanoic acid



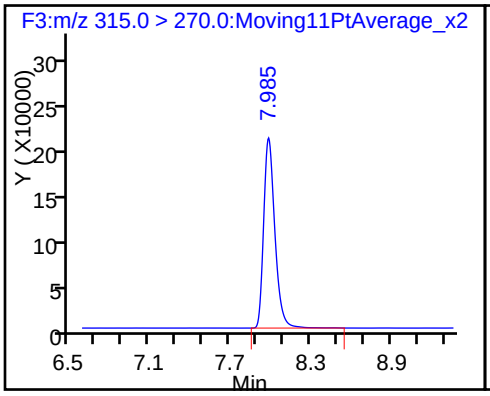
5 Perfluorobutane Sulfonate



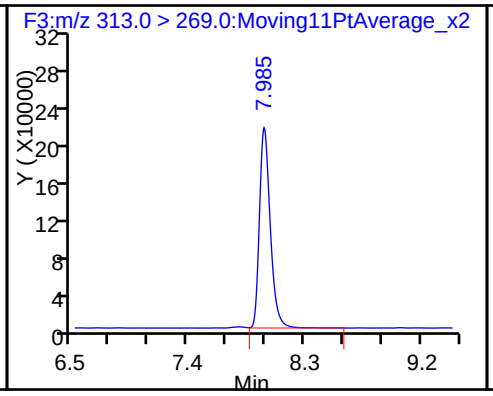
5 Perfluorobutane Sulfonate



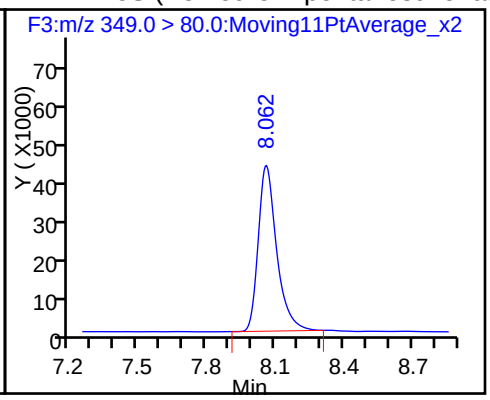
D 6 13C2 PFHxA



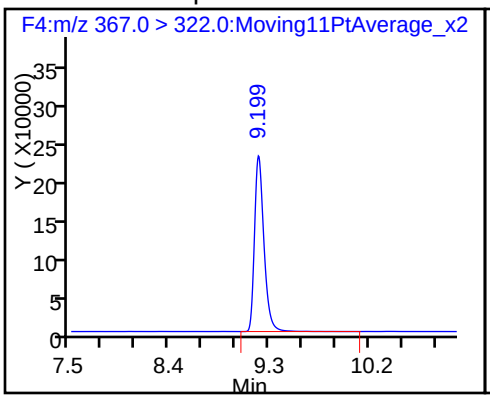
7 Perfluorohexanoic acid



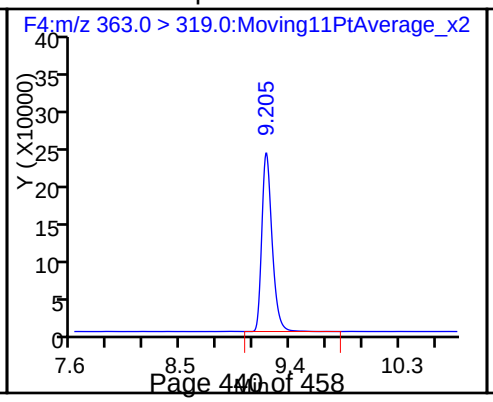
22 PFPeS (Perflouro-1-pentanesulfonat



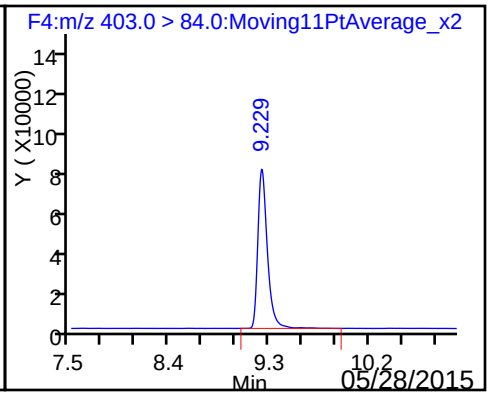
D 8 13C4-PFHpA



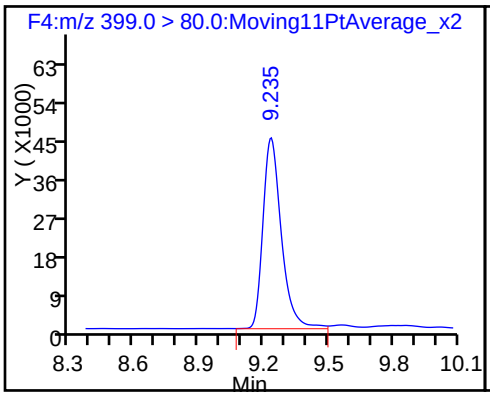
9 Perfluoroheptanoic acid



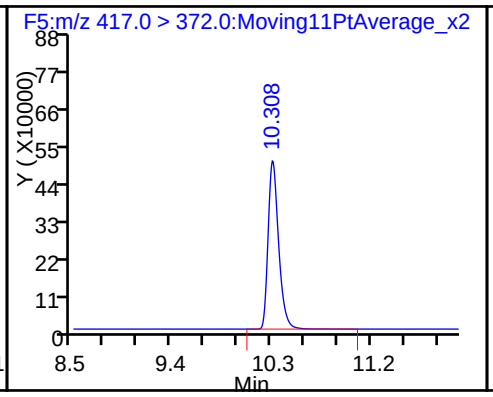
D 11 18O2 PFHxS



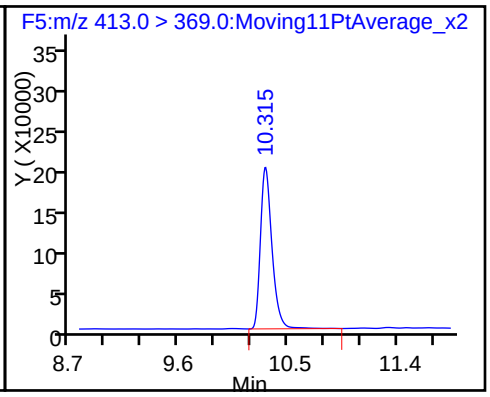
10 Perfluorohexane Sulfonate



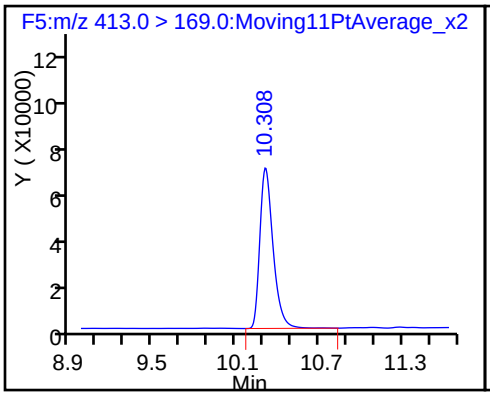
D 12 13C4 PFOA



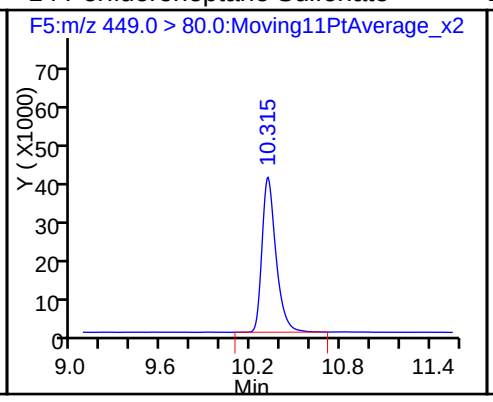
13 Perfluorooctanoic acid



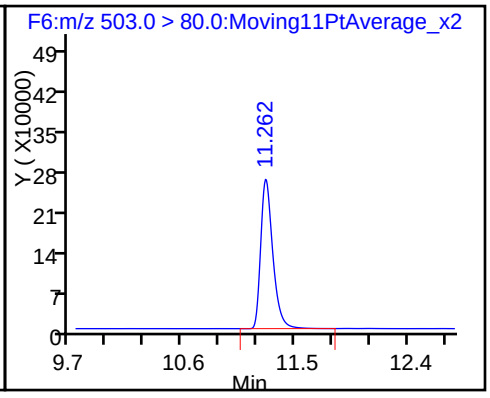
13 Perfluorooctanoic acid



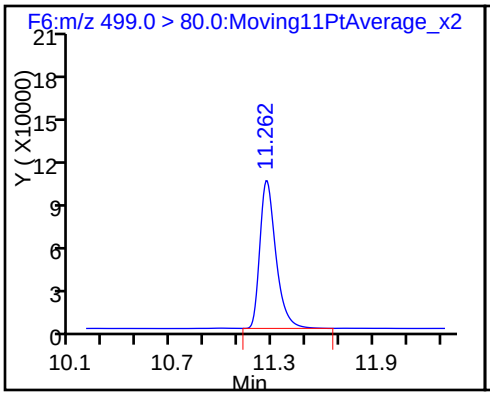
14 Perfluoroheptane Sulfonate



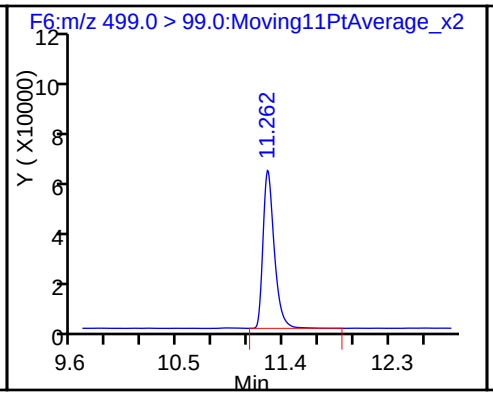
D 16 13C4 PFOS



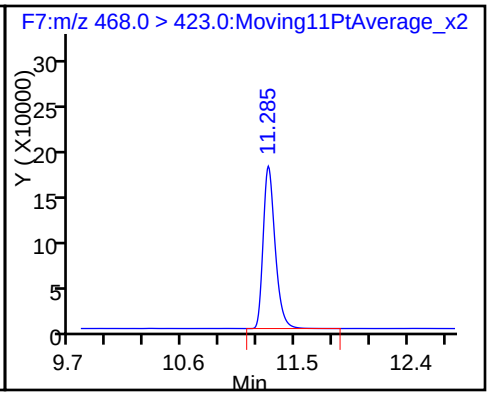
15 Perfluorooctane sulfonic acid



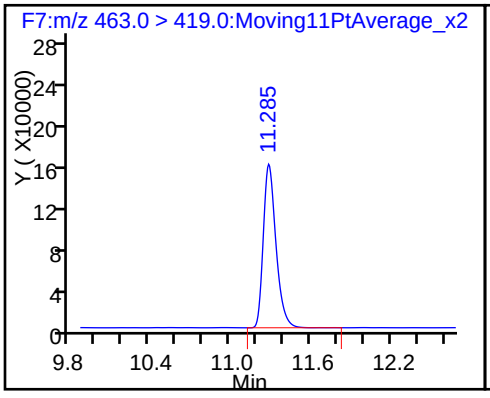
15 Perfluorooctane sulfonic acid



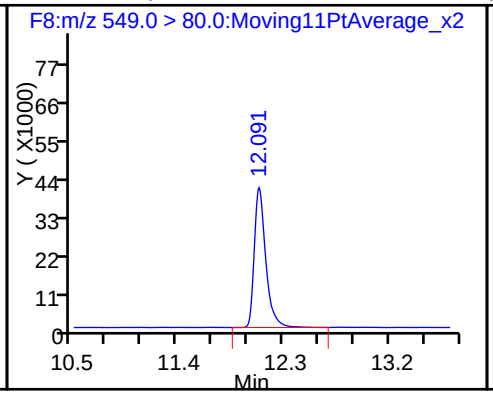
D 17 13C5 PFNA



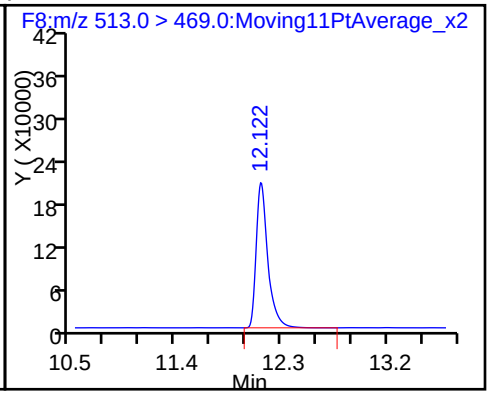
18 Perfluorononanoic acid



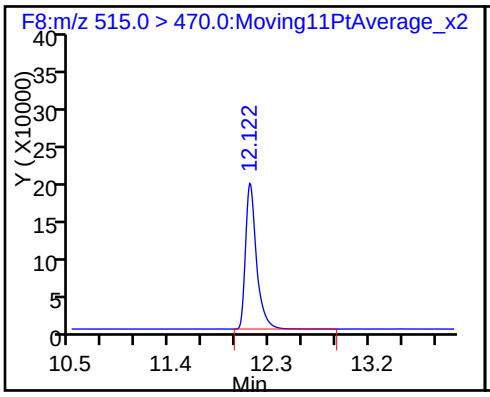
21 PFNS (Perflouro-1-nonanesulfonate)



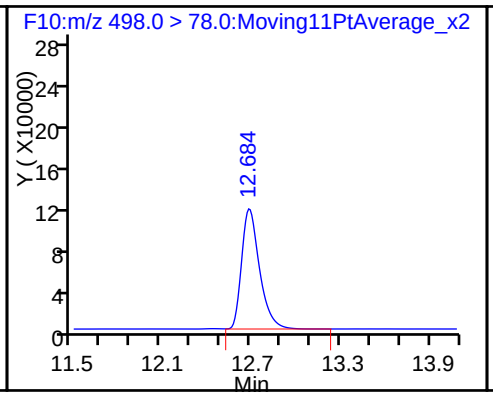
20 Perfluorodecanoic acid



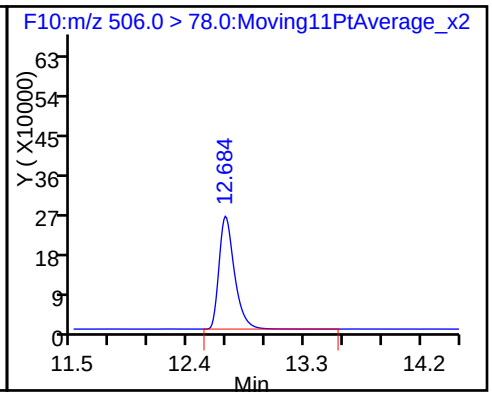
D 19 13C2 PFDA



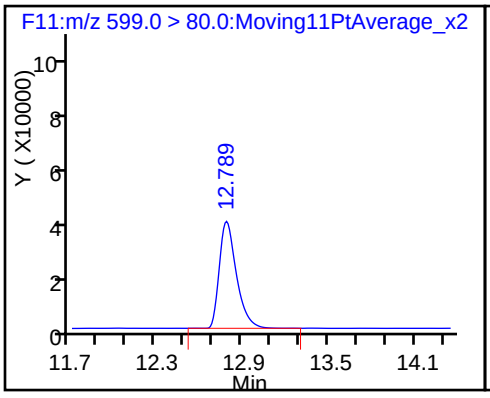
24 Perfluorooctane Sulfonamide



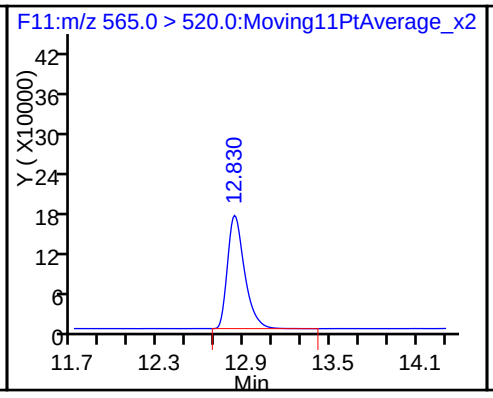
D 23 13C8 FOSA



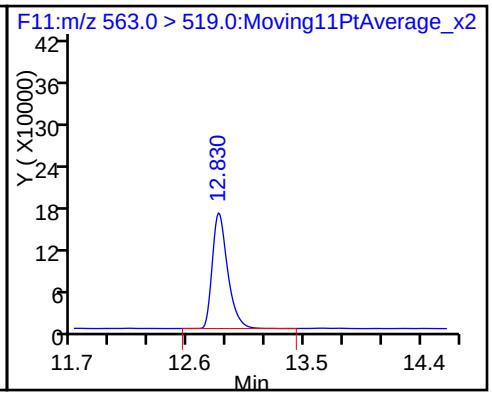
25 Perfluorodecane Sulfonate



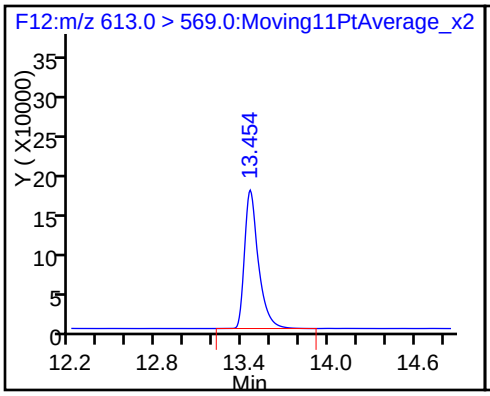
D 26 13C2 PFUnA



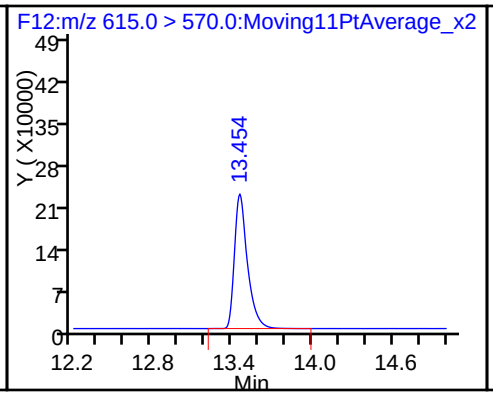
27 Perfluoroundecanoic acid



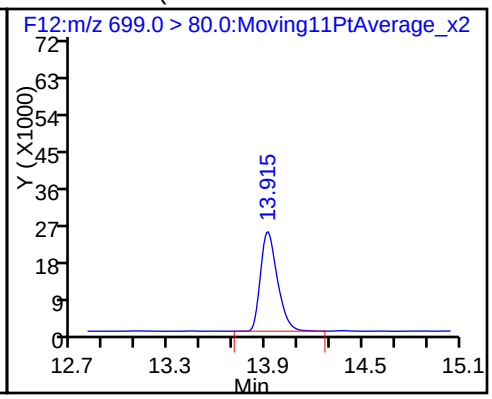
29 Perfluorododecanoic acid



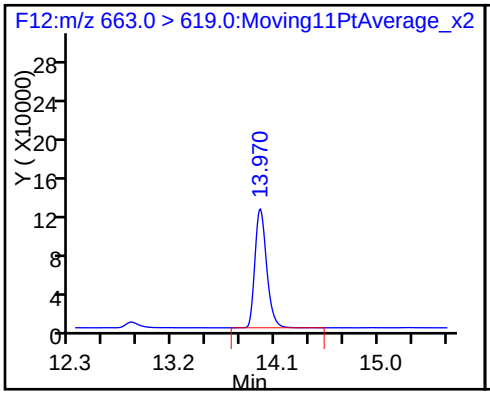
D 28 13C2 PFDoA



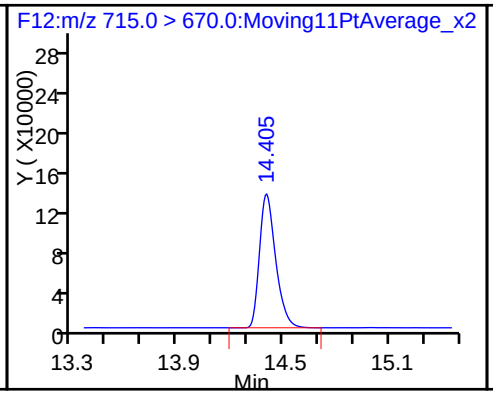
31 PFDoS (Perflouro-1-dodecanesulfona



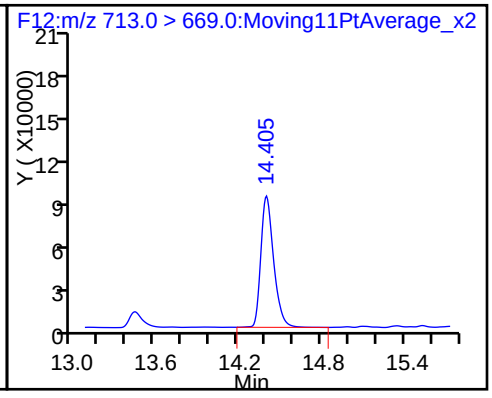
30 Perfluorotridecanoic acid



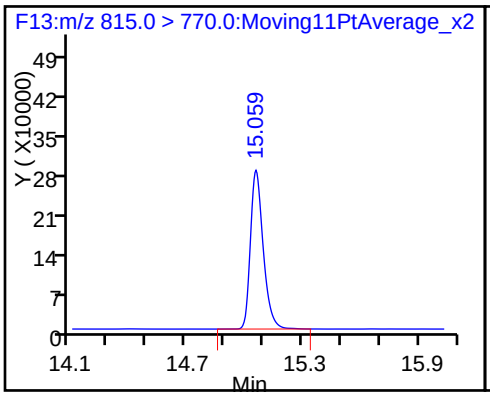
D 33 13C2-PFTeDA



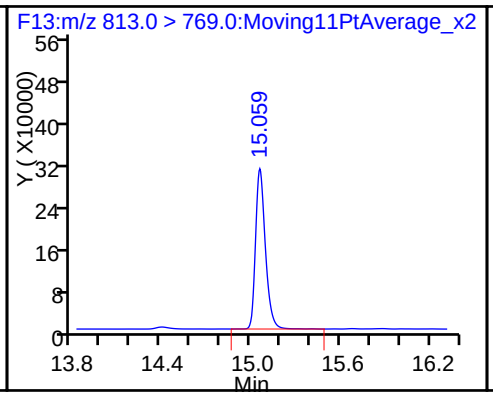
32 Perfluorotetradecanoic acid



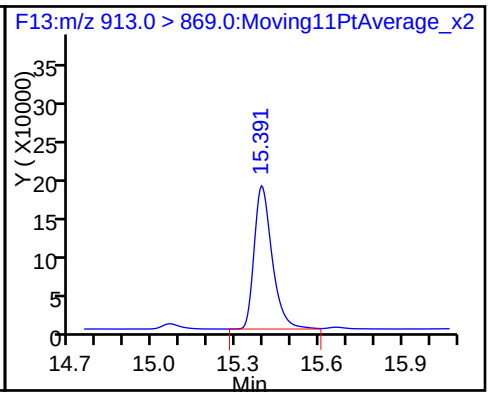
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Start Date: 05/18/2015 15:23

Analysis Batch Number: 74318 End Date: 05/18/2015 23:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-74318/2 IC		05/18/2015 15:23	1	18MAY2015A_004.d	Xterra C18 3.2(mm)
STD 320-74318/3 IC		05/18/2015 15:44	1	18MAY2015A_005.d	Xterra C18 3.2(mm)
STD 320-74318/4 IC		05/18/2015 16:05	1	18MAY2015A_006.d	Xterra C18 3.2(mm)
STD 320-74318/38 IC		05/18/2015 16:27	1	18MAY2015A_007.d	Xterra C18 3.2(mm)
STD 320-74318/5 IC		05/18/2015 16:48	1	18MAY2015A_008.d	Xterra C18 3.2(mm)
STD 320-74318/6 IC		05/18/2015 17:09	1	18MAY2015A_009.d	Xterra C18 3.2(mm)
STD 320-74318/7 IC		05/18/2015 17:30	1	18MAY2015A_010.d	Xterra C18 3.2(mm)
CCB 320-74318/8		05/18/2015 17:52	1	18MAY2015A_011.d	Xterra C18 3.2(mm)
ICV 320-74318/9		05/18/2015 18:13	1	18MAY2015A_012.d	Xterra C18 3.2(mm)
MB 320-74169/1-A		05/18/2015 18:34	1	18MAY2015A_013.d	Xterra C18 3.2(mm)
LCS 320-74169/2-A		05/18/2015 18:55	1	18MAY2015A_014.d	Xterra C18 3.2(mm)
320-13012-1	BF-105-GW01-0515	05/18/2015 19:16	1	18MAY2015A_015.d	Xterra C18 3.2(mm)
320-13012-2	BF-103-GW01-0515	05/18/2015 19:38	1	18MAY2015A_016.d	Xterra C18 3.2(mm)
320-13012-3	BF-103-GW055-0515	05/18/2015 19:59	1	18MAY2015A_017.d	Xterra C18 3.2(mm)
320-13012-4	BF-103-GW05D-0515	05/18/2015 20:20	1	18MAY2015A_018.d	Xterra C18 3.2(mm)
320-13012-5	BF-103-GW04-0515	05/18/2015 20:41	1	18MAY2015A_019.d	Xterra C18 3.2(mm)
320-13012-6	BF-104-GW02-0515	05/18/2015 21:03	1	18MAY2015A_020.d	Xterra C18 3.2(mm)
320-13012-7	BF-104-GW01-0515	05/18/2015 21:24	1	18MAY2015A_021.d	Xterra C18 3.2(mm)
320-13012-8	BF-103-GW02-0515	05/18/2015 21:45	1	18MAY2015A_022.d	Xterra C18 3.2(mm)
CCV 320-74318/15		05/18/2015 22:06	1	18MAY2015A_023.d	Xterra C18 3.2(mm)
320-13012-9	BF-103-GW03-0515	05/18/2015 22:28	1	18MAY2015A_024.d	Xterra C18 3.2(mm)
320-13012-10	BF-103-GW03-0515D	05/18/2015 22:49	1	18MAY2015A_025.d	Xterra C18 3.2(mm)
CCV 320-74318/25		05/18/2015 23:10	1	18MAY2015A_026.d	Xterra C18 3.2(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Start Date: 05/19/2015 10:48

Analysis Batch Number: 74338 End Date: 05/19/2015 20:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-74338/2		05/19/2015 10:48	1	18MAY2015A_029.d	Xterra C18 3.2(mm)
CCV 320-74338/3		05/19/2015 11:09	1	18MAY2015A_030.d	Xterra C18 3.2(mm)
320-13012-6 DL	BF-104-GW02-0515 DL	05/19/2015 11:30	5	18MAY2015A_031.d	Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 11:51	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 12:13	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 12:34	1		Xterra C18 3.2(mm)
CCV 320-74338/8		05/19/2015 12:55	1	18MAY2015A_035.d	Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 13:16	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 13:38	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 13:59	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 14:20	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 14:41	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 15:03	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 15:24	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 15:45	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 16:06	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 16:28	1		Xterra C18 3.2(mm)
CCV 320-74338/19		05/19/2015 16:49	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 17:10	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 17:31	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 17:53	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 18:14	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 18:35	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 18:56	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 19:18	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 19:39	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 20:00	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 20:21	1		Xterra C18 3.2(mm)
CCV 320-74338/30		05/19/2015 20:43	1		Xterra C18 3.2(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Batch Number: 74169 Batch Start Date: 05/15/15 14:07 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 05/17/15 11:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	LCMPFCSU 00015	LCPFCSP 00026		
MB 320-74169/1		3535, WS-LC-0025		500.00 mL	1.00 mL	50 uL			
LCS 320-74169/2		3535, WS-LC-0025		500.00 mL	1.00 mL	50 uL	20 uL		
320-13012-A-1	BF-105-GW01-0515	3535, WS-LC-0025	T	502.65 mL	1.00 mL	50 uL			
320-13012-A-2	BF-103-GW01-0515	3535, WS-LC-0025	T	501.57 mL	1.00 mL	50 uL			
320-13012-A-3	BF-103-GW055-0515	3535, WS-LC-0025	T	500.12 mL	1.00 mL	50 uL			
320-13012-A-4	BF-103-GW05D-0515	3535, WS-LC-0025	T	502.49 mL	1.00 mL	50 uL			
320-13012-A-5	BF-103-GW04-0515	3535, WS-LC-0025	T	500.17 mL	1.00 mL	50 uL			
320-13012-A-6	BF-104-GW02-0515	3535, WS-LC-0025	T	500.81 mL	1.00 mL	50 uL			
320-13012-A-7	BF-104-GW01-0515	3535, WS-LC-0025	T	501.78 mL	1.00 mL	50 uL			
320-13012-A-8	BF-103-GW02-0515	3535, WS-LC-0025	T	499.17 mL	1.00 mL	50 uL			
320-13012-A-9	BF-103-GW03-0515	3535, WS-LC-0025	T	500.21 mL	1.00 mL	50 uL			
320-13012-A-10	BF-103-GW03-0515D	3535, WS-LC-0025	T	499.53 mL	1.00 mL	50 uL			

Batch Notes	
Balance ID	QA-070
H2O Lot used	05/06/15
Pipette ID	EC15219
Analyst who added reagent	JER
SU Reagent Drop	JER
SU Reagent Drop Witness	HJA
Solvent Lot #	436697
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk Lot Number	002334148A WATERS

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.: 320-13012-1

SDG No.: Proj # 112603383

Batch Number: 74169 Batch Start Date: 05/15/15 14:07 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 05/17/15 11:45

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): 13012 Work List ID(s): 21909, 21915

Extraction Batch: 74169 Analysis Batch(es): 74318, 74338

Delivery Rank 4 Due Date: 6/2/15

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 ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?			✓
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.			✓
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?			✓
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?			✓
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#			✓
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

**Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.*

1st Level (Analyst): JRB Date: 5/19/15

2nd Level Reviewer: Mkeway Date: 5/20/2015

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-74169

Analyst: Reed, Jonathan E

Batch Open: 5/15/2015 2:07:04PM

Method Code: 320-3535_IVWT-320

Batch End: 5/17/15 11:45

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-74169/1 N/A	N/A		500.00 mL				N/A	N/A	N/A		
				1.00 mL								
2	LCS~320-74169/2 N/A	N/A		500.00 mL				N/A	N/A	N/A		
				1.00 mL								
3	320-13012-A-1 (PFC_IDA)	Proj # 112603383		502.65 mL				6/2/15	12_Days	4		
				1.00 mL								
4	320-13012-A-2 (PFC_IDA)	Proj # 112603383		501.57 mL				6/2/15	12_Days	4		
				1.00 mL								
5	320-13012-A-3 (PFC_IDA)	Proj # 112603383		500.12 mL				6/2/15	12_Days	4		
				1.00 mL								
6	320-13012-A-4 (PFC_IDA)	Proj # 112603383		502.49 mL				6/2/15	12_Days	4		
				1.00 mL								
7	320-13012-A-5 (PFC_IDA)	Proj # 112603383		500.17 mL				6/2/15	12_Days	4		
				1.00 mL								
8	320-13012-A-6 (PFC_IDA)	Proj # 112603383		500.81 mL				6/2/15	12_Days	4		
				1.00 mL								
9	320-13012-A-7 (PFC_IDA)	Proj # 112603383		501.78 mL				6/2/15	12_Days	4		
				1.00 mL								
10	320-13012-A-8 (PFC_IDA)	Proj # 112603383		499.17 mL				6/2/15	12_Days	4		
				1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-74169

Analyst: Reed, Jonathan E

Batch Open: 5/15/2015 2:07:04PM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-13012-A-9 (PFC_IDA)	Proj # 112603383		500.21 mL				6/2/15	12_Days	4	320-13012-A-9-A
				1.00 mL							
12	320-13012-A-10 (PFC_IDA)	Proj # 112603383		499.53 mL				6/2/15	12_Days	4	320-13012-A-10-A
				1.00 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-74169

Analyst: Reed, Jonathan E

Batch Open: 5/15/2015 2:07:04PM

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk Lot Number	002334148A WATERS
H2O Lot used	05/06/15
Pipette ID	EC15219
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	436697
Analyst who added reagent	JER
SU Reagent Drop	JER
SU Reagent Drop Witness	HJA
Acid Name	NA
Acid Lot	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl Lot #	NA
SOP Number	WS-LC-0025
Batch Comment	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-74169

Method Code: 320-3535_IVWT-320

Analyst: Reed, Jonathan E

Batch Open: 5/15/2015 2:07:04PM

Batch End:

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-74169

Analyst: Reed, Jonathan E

Batch Open: 5/15/2015 2:07:04PM

Method Code: 320-3535_IVWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-74169/1	LCMPFCSU_00015	50.00 uL	1.00 mL	5/15/15	HSA 5-15-15
LCS 320-74169/2	LCMPFCSU_00015	50.00 uL	1.00 mL		
LCS 320-74169/2	LCPFCSP_00026	20.00 uL	1.00 mL		
320-13012-A-1	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-2	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-3	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-4	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-5	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-6	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-7	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-8	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-9	LCMPFCSU_00015	50.00 uL	1.00 mL		
320-13012-A-10	LCMPFCSU_00015	50.00 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-74169

Analyst: Reed, Jonathan E

Batch Open: 5/15/2015 2:07:04PM

Method Code: 320-3535_IVWT-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 74169 Test: PFC-L

Earliest Holding Time: 5/19/15

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	—
All necessary NCMs filed (including holding time)	✓	—
Method/sample/login/QAS checked and correct	✓	—
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	—
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	—
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	—
Comments are transcribed correctly in TALS	✓	—
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	—
All spike amounts correct and added to necessary samples and QC	✓	—
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	—
All necessary 'batch information' complete and entered into TALS correctly	✓	—

1st Level Reviewer: [signature] Date: 5/17/15

2nd Level Reviewer: HSA Date: 5-18-15

Comments: _____

Shipping and Receiving Documents

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER Nº 1444 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112603383	OLF Bronson Field.	Frank Lesesne	850-385-9866	Test America
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: J.D. Spalding	PHONE NUMBER: 407-760-1973	ADDRESS: 880 Riverside Pkwy
		CARRIER/WAYBILL NUMBER: N/A Drop off @ Pensacola Lab		CITY, STATE: West Sacramento CA.

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G): P	PRESERVATIVE USED: ICE	TYPE OF ANALYSIS: PFOA/PFOS	COMMENTS
5/12	1135	BF-105-GW01-0515	105-01	14.7	24.7	GW	G	1			X	
5/12	1340	BF-103-GW01-0515	103-01	7.82	17.82	GW	G	1			X	
5/12	1550	BF-103 GW05S-0515	103-05	2.64	7.64	GW	G	1			X	
5/12	1715	BF-103-GW05D-0515	103-05	6.49	16.49	GW	G	1			X	
5/12	1840	BF-103-GW04-0515	103-04	5.97	15.97	GW	G	1			X	
5/13	1045	BF-104-GW02-0515	104-02	8.71	18.71	GW	G	1			X	
5/13	1115	BF-104-GW01-0515	104-01	10.81	20.81	GW	G	1			X	
5/13	1250	BF-103-GW02-0515	103-02	7.07	17.07	GW	G	1			X	
5/13	1410	BF-103-GW03-0515	103-03	11.41	21.41	GW	G	1			X	
5/13	1420	BF-103-GW03-0515	103-03	11.41	21.41	GW	G	1			X	
				NFE								

320-13012 Chain of Custody

5-13-2015

	DATE	TIME		DATE	TIME
1 RELINQUISHED BY	5-13-2015	1649	1 RECEIVED BY	5-13-15	1649
2. RELINQUISHED BY	5-13-15	1700	2. RECEIVED BY	5/14/15	930
3 RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION. WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R FORM NO TtNUS-001

* Replace BF-103-GW03-0515D on 5-14-15

0.9°C TB 1.1C

Page 457 of 458

05/28/2015

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-13012-1
SDG Number: Proj # 112603383

Login Number: 13012
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.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	-10: ID on container does not match the COC. Logged in per COC.
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"BF-105-GW01-0515","WS-LC-0025","RES","320-13012-1","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","4.3","ng/L","M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","502.65","1.00","1.5",""
"BF-105-GW01-0515","WS-LC-0025","RES","320-13012-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","2.1","ng/L","","0.74","DL","","TRG","","","2.0","LOQ","YES","-99","","502.65","1.00","1.5",""
"BF-105-GW01-0515","WS-LC-0025","RES","320-13012-1","TALSAC","STL00990","13C4 PFOA","76","ng/L","","-99","DL","","TRG","77","","-99","LOQ","YES","99.5","","502.65","1.00","0",""
"BF-105-GW01-0515","WS-LC-0025","RES","320-13012-1","TALSAC","STL00991","13C4 PFOS","120","ng/L","","-99","DL","","TRG","123","","-99","LOQ","YES","95.1","","502.65","1.00","0",""
"BF-103-GW03-0515D","WS-LC-0025","RES","320-13012-10","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","16","ng/L","M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","499.53","1.00","1.5",""
"BF-103-GW03-0515D","WS-LC-0025","RES","320-13012-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","11","ng/L","","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","499.53","1.00","1.5",""
"BF-103-GW03-0515D","WS-LC-0025","RES","320-13012-10","TALSAC","STL00990","13C4 PFOA","64","ng/L","","-99","DL","","TRG","64","","-99","LOQ","YES","100","","499.53","1.00","0",""
"BF-103-GW03-0515D","WS-LC-0025","RES","320-13012-10","TALSAC","STL00991","13C4 PFOS","110","ng/L","","-99","DL","","TRG","114","","-99","LOQ","YES","95.7","","499.53","1.00","0",""
"BF-103-GW01-0515","WS-LC-0025","RES","320-13012-2","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","10","ng/L","M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","501.57","1.00","1.5",""
"BF-103-GW01-0515","WS-LC-0025","RES","320-13012-2","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","2.2","ng/L","","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","501.57","1.00","1.5",""
"BF-103-GW01-0515","WS-LC-0025","RES","320-13012-2","TALSAC","STL00990","13C4 PFOA","82","ng/L","","-99","DL","","TRG","83","","-99","LOQ","YES","99.7","","501.57","1.00","0",""
"BF-103-GW01-0515","WS-LC-0025","RES","320-13012-2","TALSAC","STL00991","13C4 PFOS","120","ng/L","","-99","DL","","TRG","125","","-99","LOQ","YES","95.3","","501.57","1.00","0",""
"BF-103-GW055-0515","WS-LC-0025","RES","320-13012-3","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","24","ng/L","M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","500.12","1.00","1.5",""
"BF-103-GW055-0515","WS-LC-0025","RES","320-13012-3","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","2.7","ng/L","","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","500.12","1.00","1.5",""
"BF-103-GW055-0515","WS-LC-0025","RES","320-13012-3","TALSAC","STL00990","13C4 PFOA","110","ng/L","","-99","DL","","TRG","108","","-99","LOQ","YES","100","","500.12","1.00","0",""
"BF-103-GW055-0515","WS-LC-0025","RES","320-13012-3","TALSAC","STL00991","13C4 PFOS","110","ng/L","","-99","DL","","TRG","112","","-99","LOQ","YES","95.6","","500.12","1.00","0",""
"BF-103-GW05D-0515","WS-LC-0025","RES","320-13012-4","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","24","ng/L","M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","502.49","1.00","1.5",""
"BF-103-GW05D-0515","WS-LC-0025","RES","320-13012-4","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","22","ng/L","","0.74","DL","","TRG","","","2.0","LOQ","YES","-99","","502.49","1.00","1.5",""
"BF-103-GW05D-0515","WS-LC-0025","RES","320-13012-4","TALSAC","STL00990","13C4 PFOA","84","ng/L","","-99","DL","","TRG","84","","-99","LOQ","YES","99.5","","502.49","1.00","0",""
"BF-103-GW05D-0515","WS-LC-0025","RES","320-13012-4","TALSAC","STL00991","13C4 PFOS","110","ng/L","","-99","DL","","TRG","110","","-99","LOQ","YES","95.1","","502.49","1.00","0",""
"BF-103-GW04-0515","WS-LC-0025","RES","320-13012-5","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","2.0","ng/L","M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","500.17","1.00","1.5",""
"BF-103-GW04-0515","WS-LC-0025","RES","320-13012-5","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","3.2","ng/L","","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","500.17","1.00","1.5",""
"BF-103-GW04-0515","WS-LC-0025","RES","320-13012-5","TALSAC","STL00990","13C4 PFOA","56","ng/L","","-99","DL","","TRG","56","","-99","LOQ","YES","100","","500.17","1.00","0",""
"BF-103-GW04-0515","WS-LC-0025","RES","320-13012-5","TALSAC","STL00991","13C4 PFOS","110","ng/L","","-99","DL","","TRG","115","","-99","LOQ","YES","95.6","","500.17","1.00","0",""
"BF-104-GW02-0515","WS-LC-0025","DL","320-13012-6","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","1800","ng/L","D M","6.4","DL","","TRG","","","10","LOQ","YES","-99","","500.81","1.00","7.5",""
"BF-104-GW02-0515","WS-LC-0025","DL","320-13012-6","TALSAC","STL00990","13C4 PFOA","79","ng/L","","-99","DL","","TRG","79","","-99","LOQ","YES","99.8","","500.81","1.00","0",""
"BF-104-GW02-0515","WS-LC-0025","DL","320-13012-6","TALSAC","STL00991","13C4

PFOS","110","ng/L","","-99","DL","","TRG","119","","-99","LOQ","YES","95.4","","500.81","1.00","0",""
"BF-104-GW02-0515","WS-LC-0025","RES","320-13012-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","88","ng/L","","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","500.81","1.00","1.5",""
"BF-104-GW02-0515","WS-LC-0025","RES","320-13012-6","TALSAC","STL00990","13C4
PFOA","50","ng/L","","-99","DL","","TRG","50","","-99","LOQ","YES","99.8","","500.81","1.00","0",""
"BF-104-GW02-0515","WS-LC-0025","RES","320-13012-6","TALSAC","STL00991","13C4
PFOS","69","ng/L","","-99","DL","","TRG","72","","-99","LOQ","YES","95.4","","500.81","1.00","0",""
"BF-104-GW01-0515","WS-LC-0025","RES","320-13012-7","TALSAC","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","5.0","ng/L","M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","501.78","1.00","1.5",""
"BF-104-GW01-0515","WS-LC-0025","RES","320-13012-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","1.9","ng/L","J","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","501.78","1.00","1.5",""
"BF-104-GW01-0515","WS-LC-0025","RES","320-13012-7","TALSAC","STL00990","13C4
PFOA","56","ng/L","","-99","DL","","TRG","56","","-99","LOQ","YES","99.6","","501.78","1.00","0",""
"BF-104-GW01-0515","WS-LC-0025","RES","320-13012-7","TALSAC","STL00991","13C4
PFOS","100","ng/L","","-99","DL","","TRG","109","","-99","LOQ","YES","95.3","","501.78","1.00","0",""
"BF-103-GW02-0515","WS-LC-0025","RES","320-13012-8","TALSAC","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","1.6","ng/L","J M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","499.17","1.00","1.5",""
"BF-103-GW02-0515","WS-LC-0025","RES","320-13012-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","2.6","ng/L","","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","499.17","1.00","1.5",""
"BF-103-GW02-0515","WS-LC-0025","RES","320-13012-8","TALSAC","STL00990","13C4
PFOA","60","ng/L","","-99","DL","","TRG","60","","-99","LOQ","YES","100","","499.17","1.00","0",""
"BF-103-GW02-0515","WS-LC-0025","RES","320-13012-8","TALSAC","STL00991","13C4
PFOS","100","ng/L","","-99","DL","","TRG","110","","-99","LOQ","YES","95.8","","499.17","1.00","0",""
"BF-103-GW03-0515","WS-LC-0025","RES","320-13012-9","TALSAC","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","15","ng/L","M","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","500.21","1.00","1.5",""
"BF-103-GW03-0515","WS-LC-0025","RES","320-13012-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","12","ng/L","","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","500.21","1.00","1.5",""
"BF-103-GW03-0515","WS-LC-0025","RES","320-13012-9","TALSAC","STL00990","13C4
PFOA","69","ng/L","","-99","DL","","TRG","69","","-99","LOQ","YES","100","","500.21","1.00","0",""
"BF-103-GW03-0515","WS-LC-0025","RES","320-13012-9","TALSAC","STL00991","13C4
PFOS","110","ng/L","","-99","DL","","TRG","116","","-99","LOQ","YES","95.6","","500.21","1.00","0",""
"LCS 320-74169/2-A","WS-LC-0025","RES","LCS 320-74169/2-A","TALSAC","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","37.0","ng/L","","1.3","DL","","SPK","97","","2.0","LOQ","YES","38.2","","500.00","1.00","1.5",""
"LCS 320-74169/2-A","WS-LC-0025","RES","LCS 320-74169/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","39.6","ng/L","","0.75","DL","","SPK","99","","2.0","LOQ","YES","40.0","","500.00","1.00","1.5",""
"LCS 320-74169/2-A","WS-LC-0025","RES","LCS 320-74169/2-A","TALSAC","STL00990","13C4
PFOA","124","ng/L","","-99","DL","","SPK","124","","-99","LOQ","YES","100","","500.00","1.00","0",""
"LCS 320-74169/2-A","WS-LC-0025","RES","LCS 320-74169/2-A","TALSAC","STL00991","13C4
PFOS","115","ng/L","","-99","DL","","SPK","120","","-99","LOQ","YES","95.6","","500.00","1.00","0",""
"MB 320-74169/1-A","WS-LC-0025","RES","MB 320-74169/1-A","TALSAC","1763-23-1","Perfluorooctane
Sulfonate (PFOS)","1.5","ng/L","U","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","500.00","1.00","1.5",""
"MB 320-74169/1-A","WS-LC-0025","RES","MB 320-74169/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","1.5","ng/L","U","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","500.00","1.00","1.5",""
"MB 320-74169/1-A","WS-LC-0025","RES","MB 320-74169/1-A","TALSAC","STL00990","13C4
PFOA","136","ng/L","","-99","DL","","TRG","136","","-99","LOQ","YES","100","","500.00","1.00","0",""
"MB 320-74169/1-A","WS-LC-0025","RES","MB 320-74169/1-A","TALSAC","STL00991","13C4
PFOS","116","ng/L","","-99","DL","","TRG","122","","-99","LOQ","YES","95.6","","500.00","1.00","0",""
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13012-1","05/14/2015 09:30","05/28/2015 16:56",""
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TETRA TECH

INTERNAL CORRESPONDENCE

TO: **F. LESESNE** **DATE:** **JUNE 17, 2015**

FROM: **EDWARD SEDLMYER** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PFOA / PFOS**
OLF BRONSON FIELD
SAMPLE DELIVERY GROUP (SDG) 320-13012-1

SAMPLES: 10/Aqueous/PFOA/PFOS

BF-103-GW01-0515	BF-103-GW02-0515	BF-103-GW03-0515
BF-103-GW03-0515D	BF-103-GW04-0515	BF-103-GW05S-0515
BF-103-GW05D-0515	BF-104-GW01-0515	BF-104-GW02-0515
BF-105-GW01-0515		

OVERVIEW

The sample set for OLF Bronson Field, SDG 320-13012-1 consisted of ten (10) aqueous samples. One field duplicate pair was associated with this SDG: BF-103-GW03-0515 / BF-103-GW03-0515D. The samples were analyzed for perfluorooctanoic acid (PFOA), and perfluorooctane sulfonate (PFOS).

The samples were collected on May 12 and 13, 2015 and analyzed by Test America Inc. All analyses were conducted in accordance with a modified EPA Method 537 Rev 1.1 analytical method and reporting protocols. The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • LC/MS Tuning
* • Laboratory Method Blank Results
* • Initial and Continuing Calibrations
* • Matrix Spike/Matrix Spike Duplicate Sample (MS/MSD) Results
* • Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Results
* • Field Duplicate Results
* • Detection Limits
* • Compound Identification
* • Compound Quantification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

PFOA/PFOS

No laboratory issues were noted.

NOTES

All results for PFOS were manually integrated by the laboratory to all include PFOS isomers within the mass retention time window. No action was taken on this basis.

Insufficient sample volume was available to perform an MS/MSD. No action was taken on this basis.

Sample BF-103-GW03-0515 is listed twice on the chain-of-custody (C.O.C) with sample collection times of 14:10 and 14:20. The sample collected at 14:20 was designated as a field duplicate and logged in as sample ID BF-103-GW03-0515D.

Sample BF-103-GW05S-0515 was named incorrectly by the laboratory. The data reviewer corrected the EDD and the form I.

Sample BR-104-GW02-0515 was analyzed at a dilution of five times in order to quantify PFOS within linear calibration range.

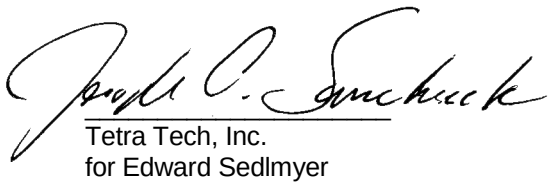
Detected results reported below the limit of quantitation (LOQ) but greater than the Method Detection Limit (MDL) were qualified as estimated, (J).

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the USEPA National Functional Guidelines for Organic Data Validation (June 2008) and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013). The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
for Edward Sedlmyer
Chemist/Data Validator

Tetra Tech Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 03383	NSAMPLE	BF-103-GW01-0515			BF-103-GW02-0515			BF-103-GW03-0515			BF-103-GW03-0515D		
SDG: 320-13012-1	LAB_ID	320-13012-2			320-13012-8			320-13012-9			320-13012-10		
FRACTION: OS	SAMP_DATE	5/12/2015			5/13/2015			5/13/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF										BF-103-GW03-0515		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		2.2			2.6			12			11		
PERFLUOROOCTANE SULFONIC ACID		10			1.6	J	P	15			16		

PROJ_NO: 03383	NSAMPLE	BF-103-GW04-0515			BF-103-GW055-0515			BF-103-GW05D-0515			BF-104-GW01-0515		
SDG: 320-13012-1	LAB_ID	320-13012-5			320-13012-3			320-13012-4			320-13012-7		
FRACTION: OS	SAMP_DATE	5/12/2015			5/12/2015			5/12/2015			5/13/2015		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		3.2			2.7			22			1.9	J	P
PERFLUOROOCTANE SULFONIC ACID		2			24			24			5		

PROJ_NO: 03383	NSAMPLE	BF-104-GW02-0515			BF-105-GW01-0515		
SDG: 320-13012-1	LAB_ID	320-13012-6			320-13012-1		
FRACTION: OS	SAMP_DATE	5/13/2015			5/12/2015		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		88			2.1		
PERFLUOROOCTANE SULFONIC ACID		1800			4.3		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-105-GW01-0515 | Lab Sample ID: 320-13012-1

Matrix: Water | Lab File ID: 18MAY2015A_015.d

Analysis Method: WS-LC-0025 | Date Collected: 05/12/2015 11:35

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 502.65(mL) | Date Analyzed: 05/18/2015 19:16

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.1		2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	4.3	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	123		25-150
STL00990	13C4 PFOA	77		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW01-0515 | Lab Sample ID: 320-13012-2

Matrix: Water | Lab File ID: 18MAY2015A_016.d

Analysis Method: WS-LC-0025 | Date Collected: 05/12/2015 13:40

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 501.57(mL) | Date Analyzed: 05/18/2015 19:38

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.2		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	10	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	125		25-150
STL00990	13C4 PFOA	83		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

6/17/15
JAS

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW055-0515 S Lab Sample ID: 320-13012-3

Matrix: Water Lab File ID: 18MAY2015A_017.d

Analysis Method: WS-LC-0025 Date Collected: 05/12/2015 15:50

Extraction Method: 3535 Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.12(mL) Date Analyzed: 05/18/2015 19:59

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.7		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	24	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	112		25-150
STL00990	13C4 PFOA	108		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW05D-0515 | Lab Sample ID: 320-13012-4

Matrix: Water | Lab File ID: 18MAY2015A_018.d

Analysis Method: WS-LC-0025 | Date Collected: 05/12/2015 17:15

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 502.49(mL) | Date Analyzed: 05/18/2015 20:20

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	22		2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	24	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	110		25-150
STL00990	13C4 PFOA	84		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW04-0515 Lab Sample ID: 320-13012-5

Matrix: Water Lab File ID: 18MAY2015A_019.d

Analysis Method: WS-LC-0025 Date Collected: 05/12/2015 18:40

Extraction Method: 3535 Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.17(mL) Date Analyzed: 05/18/2015 20:41

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	3.2		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.0	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	115		25-150
STL00990	13C4 PFOA	56		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-104-GW02-0515 | Lab Sample ID: 320-13012-6

Matrix: Water | Lab File ID: 18MAY2015A_020.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 10:45

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.81(mL) | Date Analyzed: 05/18/2015 21:03

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	88		2.0	1.5	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	72		25-150
STL00990	13C4 PFOA	50		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-104-GW02-0515 DL | Lab Sample ID: 320-13012-6 DL

Matrix: Water | Lab File ID: 18MAY2015A_031.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 10:45

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.81(mL) | Date Analyzed: 05/19/2015 11:30

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 5

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74338 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1800	D M	10	7.5	6.4

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	119		25-150
STL00990	13C4 PFOA	79		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-104-GW01-0515 | Lab Sample ID: 320-13012-7

Matrix: Water | Lab File ID: 18MAY2015A_021.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 11:15

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 501.78(mL) | Date Analyzed: 05/18/2015 21:24

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	J	2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	5.0	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	109		25-150
STL00990	13C4 PFOA	56		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW02-0515 | Lab Sample ID: 320-13012-8

Matrix: Water | Lab File ID: 18MAY2015A_022.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 12:50

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 499.17(mL) | Date Analyzed: 05/18/2015 21:45

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.6		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.6	J M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	110		25-150
STL00990	13C4 PFOA	60		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW03-0515 | Lab Sample ID: 320-13012-9

Matrix: Water | Lab File ID: 18MAY2015A_024.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 14:10

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.21(mL) | Date Analyzed: 05/18/2015 22:28

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	12		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	15	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	116		25-150
STL00990	13C4 PFOA	69		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-103-GW03-0515D Lab Sample ID: 320-13012-10

Matrix: Water Lab File ID: 18MAY2015A_025.d

Analysis Method: WS-LC-0025 Date Collected: 05/13/2015 14:20

Extraction Method: 3535 Date Extracted: 05/15/2015 14:07

Sample wt/vol: 499.53(mL) Date Analyzed: 05/18/2015 22:49

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	11		2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	16	M	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	114		25-150
STL00990	13C4 PFOA	64		25-150

APPENDIX C

SUPPORT DOCUMENTATION

NAS PENSACOLA
WATER DATA
320-13012-1

FRACTION	CHEMICAL	BF-103-GW03-0515	UNITS	BF-103-GW03-0515D	RPD	D
OS	PENTADECAFLUOROOCTANOIC ACID	12	NG/L	11	8.70	1.00
OS	PERFLUOROOCTANE SULFONIC ACID	15	NG/L	16	6.45	1.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: BF-104-GW02-0515 DL | Lab Sample ID: 320-13012-6 DL

Matrix: Water | Lab File ID: 18MAY2015A_031.d

Analysis Method: WS-LC-0025 | Date Collected: 05/13/2015 10:45

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.81(mL) | Date Analyzed: 05/19/2015 11:30

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 5

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74338 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1800	D M	10	7.5	6.4

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	119		25-150
STL00990	13C4 PFOA	79		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_031.d
Lims ID: 320-13012-A-6-A Lab Sample ID: 320-13012-6
Client ID: BF-104-GW02-0515
Sample Type: Client
Inject. Date: 19-May-2015 11:30:37 ALS Bottle#: 45 Worklist Smp#: 4
Injection Vol: 15.0 ul Dil. Factor: 5.0000
Sample Info: 320-13012-A-6-A 5x
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\Sacchrom\ChromData\A6\20150519-21915.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:33:02 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: westendorfc Date: 19-May-2015 12:19:25

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	10.308	10.304	0.004		417072	7.87		15.7	1219	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.308	10.306	0.002	1.000	357170	8.46			114	
413.0 > 169.0	10.315	10.306	0.009	1.001	127843		2.79(0.00-0.00)		133	
D 16 13C4 PFOS										
503.0 > 80.0	11.270	11.260	0.010		351224	11.3		23.7	1322	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.270	11.261	0.009	1.000	6269106	175.4			3056	M
499.0 > 99.0	11.270	11.261	0.009	1.000	3075831		2.04(0.00-0.00)		2934	M

QC Flag Legend

Review Flags
M - Manually Integrated

PFOS = 1800 ng/L

(175.4 X 1000 X 5) / 500.81 = 1754 ng/L

ANALYTICAL REPORT

Job Number: 320-13012-1

SDG Number: Proj # 112603383

Job Description: OLF Bronson Field

Contract Number: N62470-08-D-1001

For:
Tetra Tech, Inc.
1558 Village Square Blvd.
Suite 2
Tallahassee, FL 32309

Attention: Frank Lesesne

Approved for release.
Linda C. Laver
Project Manager II
5/28/2015 3:34 PM

Linda C. Laver, Project Manager II
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4362
linda.laver@testamericainc.com
05/28/2015

CASE NARRATIVE
Client: Tetra Tech, Inc.
Project: OLF Bronson Field
Contract No. N62470-08-D-1001
Report Number: 320-13012-1

Comments

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 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 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.

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

Receipt

The samples were received on 5/14/2015 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.9º C.

Receipt Exceptions

The sample ID and collection date listed on the container label did not match the information for the following sample listed on the Chain-of-Custody (COC): BF-103-GW03-0515 on 5/13. The container is labeled as BF-103-GW03-0515D on 5/14. Per client directive, the sample has been logged in as BF-103-GW03-0515D on 5/13 (320-13012-10).

LCMS

PFOA/PFOS:

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with Batch 74169.

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

Method Summary

Client: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

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: Tetra Tech, Inc.
Project/Site: OLF Bronson Field

TestAmerica Job ID: 320-13012-1
SDG: Proj # 112603383

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-13012-1	BF-105-GW01-0515	Water	05/12/15 11:35	05/14/15 09:30
320-13012-2	BF-103-GW01-0515	Water	05/12/15 13:40	05/14/15 09:30
320-13012-3	BF-103-GW055-0515	Water	05/12/15 15:50	05/14/15 09:30
320-13012-4	BF-103-GW05D-0515	Water	05/12/15 17:15	05/14/15 09:30
320-13012-5	BF-103-GW04-0515	Water	05/12/15 18:40	05/14/15 09:30
320-13012-6	BF-104-GW02-0515	Water	05/13/15 10:45	05/14/15 09:30
320-13012-7	BF-104-GW01-0515	Water	05/13/15 11:15	05/14/15 09:30
320-13012-8	BF-103-GW02-0515	Water	05/13/15 12:50	05/14/15 09:30
320-13012-9	BF-103-GW03-0515	Water	05/13/15 14:10	05/14/15 09:30
320-13012-10	BF-103-GW03-0515D	Water	05/13/15 14:20	05/14/15 09:30

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER Nº 1444 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112603383	OLF Bronson Field.	Frank Lesesne	850-385-9866	Test America
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: J.D. Spalding	PHONE NUMBER: 407-760-1973	ADDRESS: 880 Riverside Pkwy
		CARRIER/WAYBILL NUMBER: N/A Drop off @ Pensacola Lab		CITY, STATE: West Sacramento CA.

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2015	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G): P	PRESERVATIVE USED: ICE	TYPE OF ANALYSIS: PFOA/PFOS	COMMENTS
5/12	1135	BF-105-GW01-0515	105-01	14.7	24.7	GW	G	1			X	
5/12	1340	BF-103-GW01-0515	103-01	7.82	17.82	GW	G	1			X	
5/12	1550	BF-103 GW05S-0515	103-05	2.64	7.64	GW	G	1			X	
5/12	1715	BF-103-GW05D-0515	103-05	6.49	16.49	GW	G	1			X	
5/12	1840	BF-103-GW04-0515	103-04	5.97	15.97	GW	G	1			X	
5/13	1045	BF-104-GW02-0515	104-02	8.71	18.71	GW	G	1			X	
5/13	1115	BF-104-GW01-0515	104-01	10.81	20.81	GW	G	1			X	
5/13	1250	BF-103-GW02-0515	103-02	7.07	17.07	GW	G	1			X	
5/13	1410	BF-103-GW03-0515	103-03	11.41	21.41	GW	G	1			X	
5/13	1420	BF-103-GW03-0515	103-03	11.41	21.41	GW	G	1			X	
				NFE								

320-13012 Chain of Custody

5-13-2015

	DATE	TIME		DATE	TIME
1 RELINQUISHED BY	5-13-2015	1649	1 RECEIVED BY	5-13-15	1649
2. RELINQUISHED BY	5-13-15	1700	2. RECEIVED BY	5/14/15	930
3 RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION. WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R FORM NO TtNUS-001

* Replace BF-103-GW03-0515D on 5-14-15

0.9°C TB 1.1C

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05/28/2015

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-13012-1
SDG Number: Proj # 112603383

Login Number: 13012
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.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	-10: ID on container does not match the COC. Logged in per COC.
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

PFC_IDA

Perfluorinated Hydrocarbons

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab File ID: 18MAY2015A_013.d Lab Sample ID: MB 320-74169/1-A

Matrix: Water Date Extracted: 05/15/2015 14:07

Instrument ID: A6 Date Analyzed: 05/18/2015 18:34

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-74169/2-A	18MAY2015A_014.d	05/18/2015 18:55
BF-105-GW01-0515	320-13012-1	18MAY2015A_015.d	05/18/2015 19:16
BF-103-GW01-0515	320-13012-2	18MAY2015A_016.d	05/18/2015 19:38
BF-103-GW055-0515	320-13012-3	18MAY2015A_017.d	05/18/2015 19:59
BF-103-GW05D-0515	320-13012-4	18MAY2015A_018.d	05/18/2015 20:20
BF-103-GW04-0515	320-13012-5	18MAY2015A_019.d	05/18/2015 20:41
BF-104-GW02-0515	320-13012-6	18MAY2015A_020.d	05/18/2015 21:03
BF-104-GW01-0515	320-13012-7	18MAY2015A_021.d	05/18/2015 21:24
BF-103-GW02-0515	320-13012-8	18MAY2015A_022.d	05/18/2015 21:45
BF-103-GW03-0515	320-13012-9	18MAY2015A_024.d	05/18/2015 22:28
BF-103-GW03-0515D	320-13012-10	18MAY2015A_025.d	05/18/2015 22:49
BF-104-GW02-0515 DL	320-13012-6 DL	18MAY2015A_031.d	05/19/2015 11:30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: | Lab Sample ID: MB 320-74169/1-A

Matrix: Water | Lab File ID: 18MAY2015A_013.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 05/15/2015 14:07

Sample wt/vol: 500.00(mL) | Date Analyzed: 05/18/2015 18:34

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5	U	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	122		25-150
STL00990	13C4 PFOA	136		25-150

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Matrix: Water Level: Low Lab File ID: 18MAY2015A_014.d

Lab ID: LCS 320-74169/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	40.0	39.6	99	60-140	
Perfluorooctane Sulfonate (PFOS)	38.2	37.0	97	60-140	
13C4 PFOS	95.6	115	120	25-150	
13C4 PFOA	100	124	124	25-150	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Matrix: Water Level: Low

GC Column (1): Xterra C18 ID: 3.2 (mm)

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
BF-105-GW01-0515	320-13012-1	77	123
BF-103-GW01-0515	320-13012-2	83	125
BF-103-GW055-0515	320-13012-3	108	112
BF-103-GW05D-0515	320-13012-4	84	110
BF-103-GW04-0515	320-13012-5	56	115
BF-104-GW02-0515	320-13012-6	50	72
BF-104-GW02-0515 DL	320-13012-6 DL	79	119
BF-104-GW01-0515	320-13012-7	56	109
BF-103-GW02-0515	320-13012-8	60	110
BF-103-GW03-0515	320-13012-9	69	116
BF-103-GW03-0515D	320-13012-10	64	114
	MB 320-74169/1-A	136	122
	LCS 320-74169/2-A	124	120

	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

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Start Date: 05/18/2015 15:23

Analysis Batch Number: 74318 End Date: 05/18/2015 23:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-74318/2 IC		05/18/2015 15:23	1	18MAY2015A_004.d	Xterra C18 3.2(mm)
STD 320-74318/3 IC		05/18/2015 15:44	1	18MAY2015A_005.d	Xterra C18 3.2(mm)
STD 320-74318/4 IC		05/18/2015 16:05	1	18MAY2015A_006.d	Xterra C18 3.2(mm)
STD 320-74318/38 IC		05/18/2015 16:27	1	18MAY2015A_007.d	Xterra C18 3.2(mm)
STD 320-74318/5 IC		05/18/2015 16:48	1	18MAY2015A_008.d	Xterra C18 3.2(mm)
STD 320-74318/6 IC		05/18/2015 17:09	1	18MAY2015A_009.d	Xterra C18 3.2(mm)
STD 320-74318/7 IC		05/18/2015 17:30	1	18MAY2015A_010.d	Xterra C18 3.2(mm)
CCB 320-74318/8		05/18/2015 17:52	1	18MAY2015A_011.d	Xterra C18 3.2(mm)
ICV 320-74318/9		05/18/2015 18:13	1	18MAY2015A_012.d	Xterra C18 3.2(mm)
MB 320-74169/1-A		05/18/2015 18:34	1	18MAY2015A_013.d	Xterra C18 3.2(mm)
LCS 320-74169/2-A		05/18/2015 18:55	1	18MAY2015A_014.d	Xterra C18 3.2(mm)
320-13012-1	BF-105-GW01-0515	05/18/2015 19:16	1	18MAY2015A_015.d	Xterra C18 3.2(mm)
320-13012-2	BF-103-GW01-0515	05/18/2015 19:38	1	18MAY2015A_016.d	Xterra C18 3.2(mm)
320-13012-3	BF-103-GW055-0515	05/18/2015 19:59	1	18MAY2015A_017.d	Xterra C18 3.2(mm)
320-13012-4	BF-103-GW05D-0515	05/18/2015 20:20	1	18MAY2015A_018.d	Xterra C18 3.2(mm)
320-13012-5	BF-103-GW04-0515	05/18/2015 20:41	1	18MAY2015A_019.d	Xterra C18 3.2(mm)
320-13012-6	BF-104-GW02-0515	05/18/2015 21:03	1	18MAY2015A_020.d	Xterra C18 3.2(mm)
320-13012-7	BF-104-GW01-0515	05/18/2015 21:24	1	18MAY2015A_021.d	Xterra C18 3.2(mm)
320-13012-8	BF-103-GW02-0515	05/18/2015 21:45	1	18MAY2015A_022.d	Xterra C18 3.2(mm)
CCV 320-74318/15		05/18/2015 22:06	1	18MAY2015A_023.d	Xterra C18 3.2(mm)
320-13012-9	BF-103-GW03-0515	05/18/2015 22:28	1	18MAY2015A_024.d	Xterra C18 3.2(mm)
320-13012-10	BF-103-GW03-0515D	05/18/2015 22:49	1	18MAY2015A_025.d	Xterra C18 3.2(mm)
CCV 320-74318/25		05/18/2015 23:10	1	18MAY2015A_026.d	Xterra C18 3.2(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Start Date: 05/19/2015 10:48

Analysis Batch Number: 74338 End Date: 05/19/2015 20:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-74338/2		05/19/2015 10:48	1	18MAY2015A_029.d	Xterra C18 3.2(mm)
CCV 320-74338/3		05/19/2015 11:09	1	18MAY2015A_030.d	Xterra C18 3.2(mm)
320-13012-6 DL	BF-104-GW02-0515 DL	05/19/2015 11:30	5	18MAY2015A_031.d	Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 11:51	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 12:13	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 12:34	1		Xterra C18 3.2(mm)
CCV 320-74338/8		05/19/2015 12:55	1	18MAY2015A_035.d	Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 13:16	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 13:38	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 13:59	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 14:20	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 14:41	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 15:03	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 15:24	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 15:45	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 16:06	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 16:28	1		Xterra C18 3.2(mm)
CCV 320-74338/19		05/19/2015 16:49	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 17:10	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 17:31	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 17:53	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 18:14	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 18:35	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 18:56	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 19:18	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 19:39	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 20:00	1		Xterra C18 3.2(mm)
ZZZZZ		05/19/2015 20:21	1		Xterra C18 3.2(mm)
CCV 320-74338/30		05/19/2015 20:43	1		Xterra C18 3.2(mm)

FORM VI
LCMS INITIAL CALIBRATION DATA
EXTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-74318/2	18MAY2015A_004.d
Level 2	STD 320-74318/3	18MAY2015A_005.d
Level 3	STD 320-74318/4	18MAY2015A_006.d
Level 4	STD 320-74318/38	18MAY2015A_007.d
Level 5	STD 320-74318/5	18MAY2015A_008.d
Level 6	STD 320-74318/6	18MAY2015A_009.d
Level 7	STD 320-74318/7	18MAY2015A_010.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	32680 24615	26505 20007	25576 20212	24489	Ave		24869.0643				17.2		50.0			
13C5 PFPeA	51969 44543	48999 36384	45825 34420	45043	Ave		43883.3071				14.5		50.0			
13C2 PFHxA	60273 51127	58416 41830	54691 39628	52394	Ave		51194.1429				15.3		50.0			
13C4-PFHpA	70524 55696	62601 39832	62893 37932	58229	Ave		55386.7857				22.0		50.0			
18O2 PFHxS	26356 22057	22740 19750	22221 18282	22313	Ave		21959.6648				11.5		50.0			
13C4 PFOA	65937 51634	61650 39166	59411 35999	57232	Ave		53004.1600				21.6		50.0			
13C4 PFOS	37201 31347	35012 23757	33524 23248	32542	Ave		30947.3252				17.5		50.0			
13C5 PFNA	60691 48245	54741 35985	51741 35456	51835	Ave		48384.8714				19.5		50.0			
13C2 PFDA	60880 47839	57471 34541	55564 36875	53487	Ave		49522.3143				20.7		50.0			
13C8 FOSA	69693 57203	60763 47369	57524 51178	57705	Ave		57347.8771				12.4		50.0			
13C2 PFUnA	76057 64233	76119 46576	68989 47651	65968	Ave		63656.1000				19.1		50.0			
13C2 PFDoA	86399 72249	79709 56175	76086 55912	72896	Ave		71346.4143				16.1		50.0			
13C2-PFTeDA	70781 66486	70764 53695	62540 60195	64422	Ave		64126.1571				9.5		50.0			
13C2-PFHxDA	89489 84284	86691 72868	86584 79106	85225	Ave		83463.7071				6.8		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

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)	37822 32978	43842 31339	38704	37275	36772	AveID		1.5057				11.1		35.0			
Perfluoropentanoic acid (PFPeA)	58016 38575	51565 35997	47799	42181	43016	AveID		1.0314				5.9		35.0			
Perfluorobutane Sulfonate (PFBS)	35864 20203	20761 18781	22755	22022	32665	AveID		1.1166				19.2		50.0			
Perfluorohexanoic acid (PFHxA)	69208 44440	61816 41223	58536	53172	51616	AveID		1.0577				4.4		35.0			
PFPeS (Perflouro-1-pentanesulfonate)	11173 11741	12471 11553	13292	11268	12607	AveID		0.5534				12.6		50.0			
Perfluoroheptanoic acid (PFHpA)	68022 44756	70119 39794	63717	58641	57133	AveID		1.0433				5.7		35.0			
Perfluorohexane Sulfonate (PFHxS)	21159 12600	17027 11353	12781	12596	12677	AveID		0.6464				14.5		35.0			
Perfluorooctanoic acid (PFOA)	73656 40540	63593 36972	57671	53043	50695	AveID		1.0129				6.0		35.0			
Perfluoro-1-heptanesulfonate (PFHpS)	13706 12030	14586 10886	14023	13615	13346	AveID		0.4317				10.2		50.0			
Perfluorooctane Sulfonate (PFOS)	29649 26165	35428 24305	33046	29441	30172	AveID		0.9727				10.2		35.0			
Perfluorononanoic acid (PFNA)	49272 34082	47238 31806	46667	44592	40141	AveID		0.8733				5.2		35.0			
PFNS (Perflouro-1-nonanesulfonate)	16352 12041	15204 11025	15358	13123	14299	AveID		0.4532				7.2		50.0			
Perfluorodecanoic acid (PFDA)	87624 41192	71081 38102	66457	55060	53920	AveID		1.1792				11.9		35.0			
Perfluorooctane Sulfonamide (FOSA)	64496 56632	65393 55348	68741	61263	65042	AveID		1.0961				8.5		35.0			
Perfluorodecane sulfonate (PFDS)	9365.1 12709	18080 11310	12456	13883	14777	AveID		0.4370				22.5		50.0			
Perfluoroundecanoic acid (PFUnA)	+++++ 44299	87615 40032	69252	61158	57215	AveID		0.9606				11.3		35.0			
Perfluorododecanoic acid (PFDoA)	75270 47922	66319 44492	60825	57126	57230	AveID		0.8182				4.2		35.0			
PFDoS (Perflouro-1-dodecanesulfonate)	19440 12878	21856 11796	14212	15335	15656	AveID		0.5130				12.1		50.0			
Perfluorotridecanoic Acid (PFTriA)	68900 45611	74117 43873	68205	67612	59611	AveID		0.8533				7.3		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1 Analy Batch No.: 74318

SDG No.: Proj # 112603383

Instrument ID: A6 GC Column: Xterra C18 ID: 3.2(mm) Heated Purge: (Y/N) N

Calibration Start Date: 05/18/2015 15:23 Calibration End Date: 05/18/2015 17:30 Calibration ID: 13614

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								
Perfluorotetradecanoic acid (PFTeA)	70232 35573	62227 33497	49559	43221	42856	AveID		0.6662				13.9		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	376184 69667	207812 65302	105855	83958	83306	L2ID	1.5865	1.1237							0.9950		0.9900
Perfluoro-n-octandecanoic acid (PFODA)	51398 56850	50349 57832	49971	52199	59355	AveID		0.7810				23.1		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: ICV 320-74318/9 Calibration Date: 05/18/2015 18:13

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_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	1.506	1.592		52.9	50.0	5.7	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.013		49.1	50.0	-1.8	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	1.047		41.5	44.3	-6.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	1.064		50.3	50.0	0.6	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.088		52.1	50.0	4.2	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5978		43.7	47.3	-7.5	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.4112		45.3	47.6	-4.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	1.067		52.7	50.0	5.3	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	1.066		52.3	47.8	9.6	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8959		51.3	50.0	2.6	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.227		52.0	50.0	4.0	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.136		51.8	50.0	3.6	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4848		53.5	48.3	10.9	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.9581		49.9	50.0	-0.3	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.8702		53.2	50.0	6.4	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	1.020		59.8	50.0	19.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.6411		48.1	50.0	-3.8	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.280		55.5	50.0	11.1	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.9857		63.1	50.0	26.2	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74318/15 Calibration Date: 05/18/2015 22:06

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.401		18.6	20.0	-6.9	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.037		20.1	20.0	0.5	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	0.9670		15.3	17.7	-13.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	0.9020		17.1	20.0	-14.7	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.021		19.6	20.0	-2.1	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5532		16.2	18.9	-14.4	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3560		15.7	19.0	-17.5	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9257		18.3	20.0	-8.6	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.9673		19.0	19.1	-0.6	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8150		18.7	20.0	-6.7	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.101		18.7	20.0	-6.6	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.207		22.0	20.0	10.2	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4333		19.1	19.3	-0.9	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.9120		19.0	20.0	-5.1	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.7671		18.8	20.0	-6.2	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.8464		19.8	20.0	-0.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.6152		18.5	20.0	-7.6	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.279		21.4	20.0	6.8	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.7964		20.4	20.0	2.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74318/25 Calibration Date: 05/18/2015 23:10

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.541		51.2	50.0	2.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.9653		46.8	50.0	-6.4	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	1.445		57.2	44.2	29.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	0.9712		45.9	50.0	-8.2	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.020		48.9	50.0	-2.3	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5423		39.7	47.3	-16.1	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9759		48.2	50.0	-3.7	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3744		41.3	47.6	-13.3	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.9885		48.6	47.8	1.6	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8833		50.6	50.0	1.1	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.079		45.8	50.0	-8.5	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.195		54.5	50.0	9.0	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4064		44.8	48.2	-7.0	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.9131		47.5	50.0	-4.9	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.7976		48.7	50.0	-2.5	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.8523		49.9	50.0	-0.1	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.6036		45.3	50.0	-9.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.269		55.1	50.0	10.1	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.9367		60.0	50.0	19.9	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74338/2 Calibration Date: 05/19/2015 10:48

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.512		20.1	20.0	0.4	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.9900		19.2	20.0	-4.0	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	1.083		17.1	17.7	-3.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	1.022		19.3	20.0	-3.4	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.069		20.5	20.0	2.4	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5325		15.6	18.9	-17.6	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3549		15.7	19.0	-17.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9584		18.9	20.0	-5.4	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.8572		16.8	19.1	-11.9	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8101		18.6	20.0	-7.2	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.099		18.6	20.0	-6.8	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.142		20.8	20.0	4.2	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4123		18.2	19.3	-5.7	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.8760		18.2	20.0	-8.8	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.7673		18.8	20.0	-6.2	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.8422		19.7	20.0	-1.3	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.5626		16.9	20.0	-15.6	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.197		19.9	20.0	-0.5	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.7337		18.8	20.0	-6.1	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74338/3 Calibration Date: 05/19/2015 11:09

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.781		1.18	1.00	18.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.8953		1.50	1.00	-13.2	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	0.8728		1.50	0.884	-21.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	1.134		1.07	1.00	7.2	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.112		1.07	1.00	6.6	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.7188		1.05	0.946	11.2	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3710		0.818	0.952	-14.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9773		0.965	1.00	-3.5	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.8542		1.50	0.956	-12.2	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.7840		0.898	1.00	-10.2	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.111		0.942	1.00	-5.8	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.251		1.14	1.00	14.1	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.3394		1.50	0.964	-22.3	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	1.159		1.21	1.00	20.7	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.9161		1.12	1.00	12.0	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.7599		0.891	1.00	-10.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.8937		1.34	1.00	34.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		2.294		0.629	1.00	-37.1	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.5595		0.716	1.00	-28.4	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74338/8 Calibration Date: 05/19/2015 12:55

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.456		48.3	50.0	-3.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.998		48.4	50.0	-3.3	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	1.505		59.6	44.2	34.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	0.9938		47.0	50.0	-6.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.014		48.6	50.0	-2.8	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.5586		40.9	47.3	-13.6	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9604		47.4	50.0	-5.2	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3886		42.8	47.6	-10.0	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.9615		47.3	47.8	-1.1	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.8817		50.5	50.0	1.0	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.096		46.5	50.0	-7.1	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.183		53.9	50.0	7.9	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.4636		51.1	48.2	6.1	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	0.9016		46.9	50.0	-6.1	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.8497		51.9	50.0	3.9	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.8748		51.3	50.0	2.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.6398		48.0	50.0	-4.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.444		62.9	50.0	25.7	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	1.144		73.2	50.0	46.4	50.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-13012-1

SDG No.: Proj # 112603383

Client Sample ID: | Lab Sample ID: CCB 320-74318/8

Matrix: Water | Lab File ID: 18MAY2015A_011.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 05/18/2015 17:52

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 15(uL) | GC Column: Xterra C18 ID: 3.2(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 74318 | Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5	U	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	108		25-150
STL00990	13C4 PFOA	115		25-150

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Batch Number: 74169 Batch Start Date: 05/15/15 14:07 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 05/17/15 11:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	LCMPFCSU 00015	LCPFCSP 00026		
MB 320-74169/1		3535, WS-LC-0025		500.00 mL	1.00 mL	50 uL			
LCS 320-74169/2		3535, WS-LC-0025		500.00 mL	1.00 mL	50 uL	20 uL		
320-13012-A-1	BF-105-GW01-0515	3535, WS-LC-0025	T	502.65 mL	1.00 mL	50 uL			
320-13012-A-2	BF-103-GW01-0515	3535, WS-LC-0025	T	501.57 mL	1.00 mL	50 uL			
320-13012-A-3	BF-103-GW055-0515	3535, WS-LC-0025	T	500.12 mL	1.00 mL	50 uL			
320-13012-A-4	BF-103-GW05D-0515	3535, WS-LC-0025	T	502.49 mL	1.00 mL	50 uL			
320-13012-A-5	BF-103-GW04-0515	3535, WS-LC-0025	T	500.17 mL	1.00 mL	50 uL			
320-13012-A-6	BF-104-GW02-0515	3535, WS-LC-0025	T	500.81 mL	1.00 mL	50 uL			
320-13012-A-7	BF-104-GW01-0515	3535, WS-LC-0025	T	501.78 mL	1.00 mL	50 uL			
320-13012-A-8	BF-103-GW02-0515	3535, WS-LC-0025	T	499.17 mL	1.00 mL	50 uL			
320-13012-A-9	BF-103-GW03-0515	3535, WS-LC-0025	T	500.21 mL	1.00 mL	50 uL			
320-13012-A-10	BF-103-GW03-0515D	3535, WS-LC-0025	T	499.53 mL	1.00 mL	50 uL			

Batch Notes	
Balance ID	QA-070
H2O Lot used	05/06/15
Pipette ID	EC15219
Analyst who added reagent	JER
SU Reagent Drop	JER
SU Reagent Drop Witness	HJA
Solvent Lot #	436697
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk Lot Number	002334148A WATERS

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 MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Analysis Batch Number: 74318

Lab Sample ID: STD 320-74318/5 IC Client Sample ID:

Date Analyzed: 05/18/15 16:48 Lab File ID: 18MAY2015A_008.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroundecanoic acid (PFUnA)	12.83	Split Peak	westendorfc	05/19/15 10:41

Lab Sample ID: 320-13012-1 Client Sample ID: BF-105-GW01-0515

Date Analyzed: 05/18/15 19:16 Lab File ID: 18MAY2015A_015.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:24

Lab Sample ID: 320-13012-2 Client Sample ID: BF-103-GW01-0515

Date Analyzed: 05/18/15 19:38 Lab File ID: 18MAY2015A_016.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:25

Lab Sample ID: 320-13012-3 Client Sample ID: BF-103-GW055-0515

Date Analyzed: 05/18/15 19:59 Lab File ID: 18MAY2015A_017.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:25

Lab Sample ID: 320-13012-4 Client Sample ID: BF-103-GW05D-0515

Date Analyzed: 05/18/15 20:20 Lab File ID: 18MAY2015A_018.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:26

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Analysis Batch Number: 74318

Lab Sample ID: 320-13012-5 Client Sample ID: BF-103-GW04-0515

Date Analyzed: 05/18/15 20:41 Lab File ID: 18MAY2015A_019.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:29

Lab Sample ID: 320-13012-7 Client Sample ID: BF-104-GW01-0515

Date Analyzed: 05/18/15 21:24 Lab File ID: 18MAY2015A_021.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:19

Lab Sample ID: 320-13012-8 Client Sample ID: BF-103-GW02-0515

Date Analyzed: 05/18/15 21:45 Lab File ID: 18MAY2015A_022.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:20

Lab Sample ID: 320-13012-9 Client Sample ID: BF-103-GW03-0515

Date Analyzed: 05/18/15 22:28 Lab File ID: 18MAY2015A_024.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:21

Lab Sample ID: 320-13012-10 Client Sample ID: BF-103-GW03-0515D

Date Analyzed: 05/18/15 22:49 Lab File ID: 18MAY2015A_025.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.26	Isomers	barnettj	05/19/15 14:22

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Instrument ID: A6 Analysis Batch Number: 74338

Lab Sample ID: 320-13012-6 DL Client Sample ID: BF-104-GW02-0515 DL

Date Analyzed: 05/19/15 11:30 Lab File ID: 18MAY2015A_031.d GC Column: Xterra C18 ID: 3.2(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	11.27	Isomers	barnettj	05/19/15 14:10

Report Date: 19-May-2015 14:32:12 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_015.d

Injection Date: 18-May-2015 19:16:59 Instrument ID: A6

Lims ID: 320-13012-A-1-A Lab Sample ID: 320-13012-1

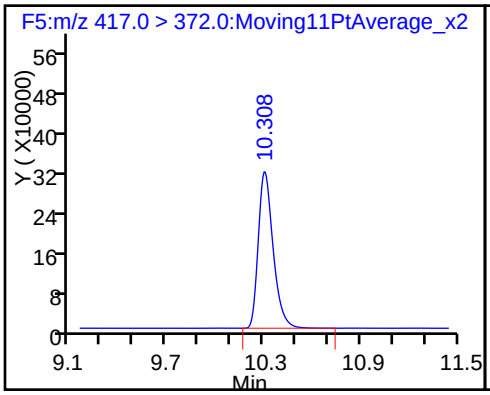
Client ID: BF-105-GW01-0515

Operator ID: JRB ALS Bottle#: 35 Worklist Smp#: 28

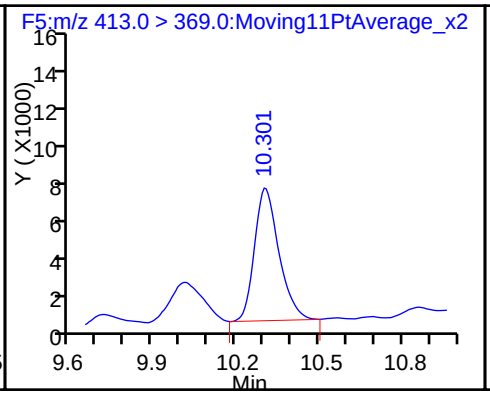
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

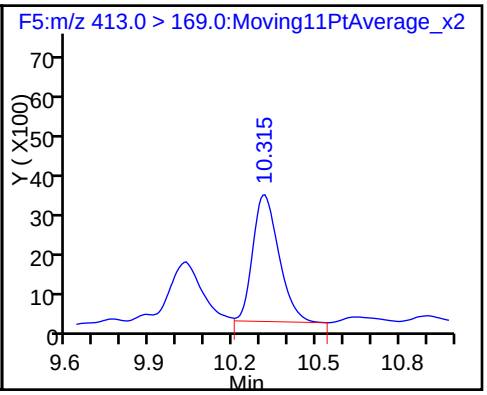
D 12 13C4 PFOA



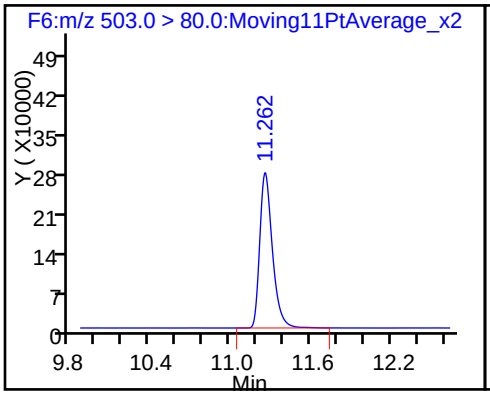
13 Perfluorooctanoic acid



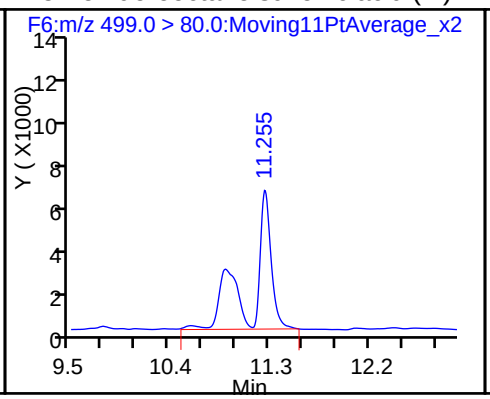
13 Perfluorooctanoic acid



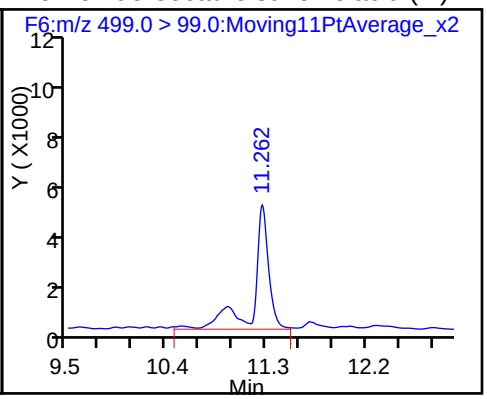
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

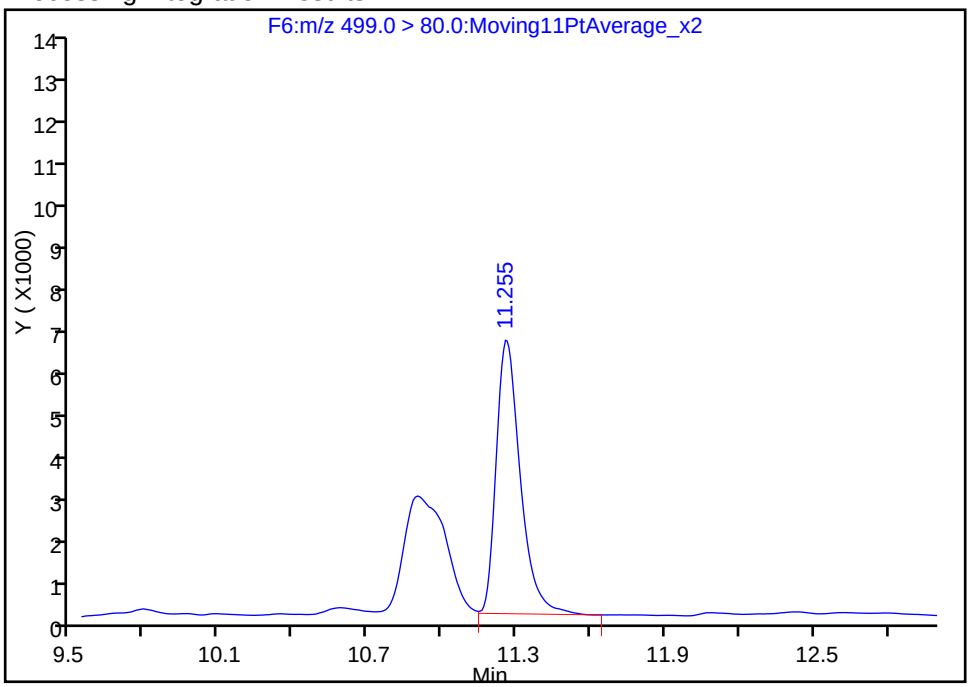
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_015.d				
Injection Date:	18-May-2015 19:16:59	Instrument ID:	A6		
Lims ID:	320-13012-A-1-A	Lab Sample ID:	320-13012-1		
Client ID:	BF-105-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	35	Worklist Smp#:	28
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

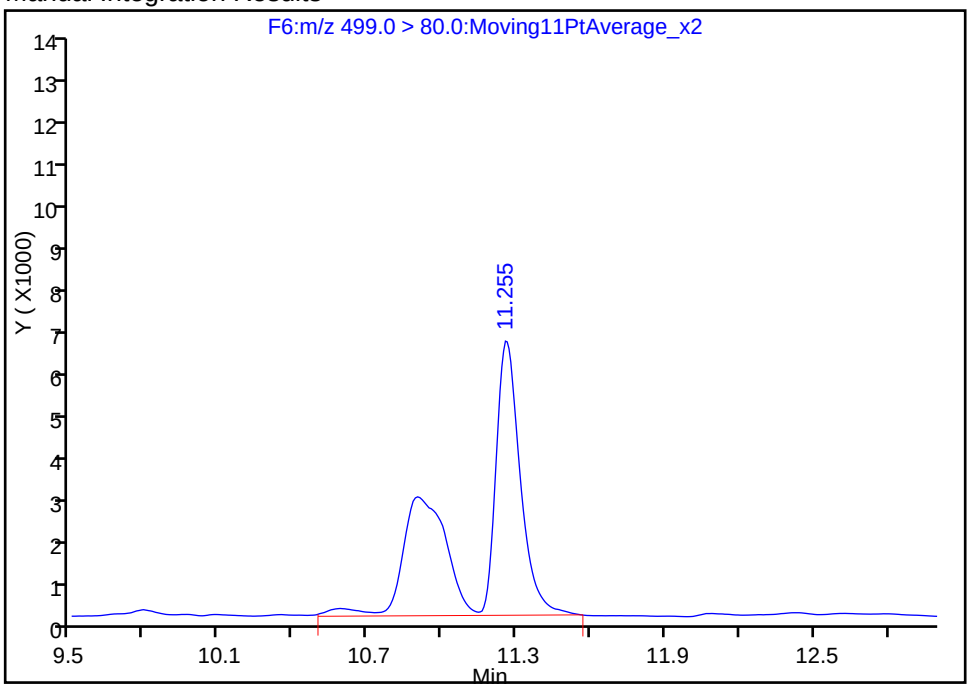
Processing Integration Results

RT: 11.26
Area: 43867
Amount: 1.187619
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 78919
Amount: 2.136588
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:24:25
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

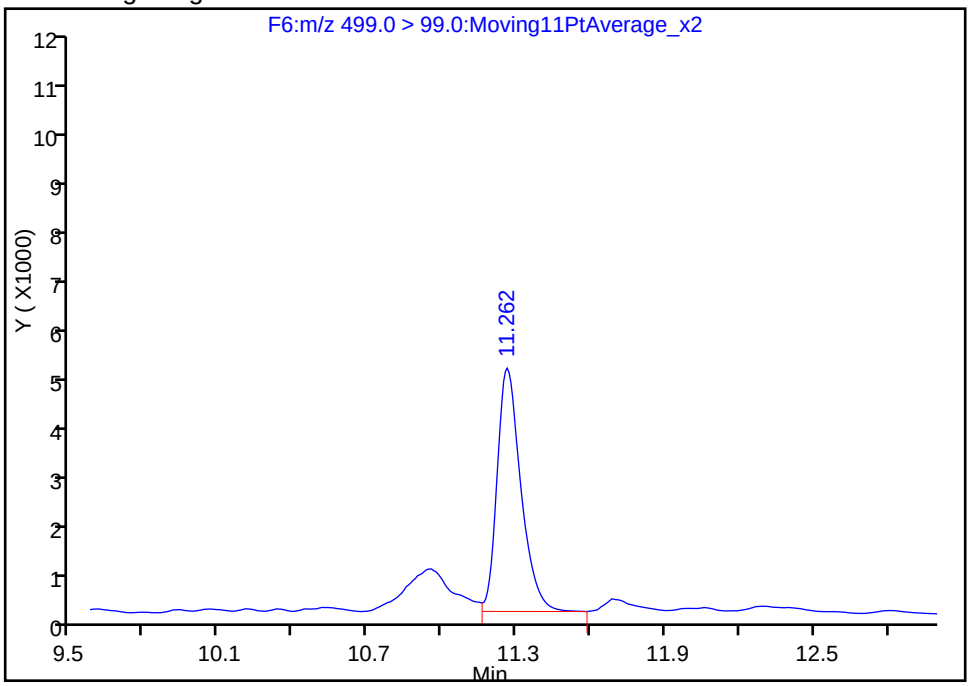
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_015.d				
Injection Date:	18-May-2015 19:16:59	Instrument ID:	A6		
Lims ID:	320-13012-A-1-A	Lab Sample ID:	320-13012-1		
Client ID:	BF-105-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	35	Worklist Smp#:	28
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

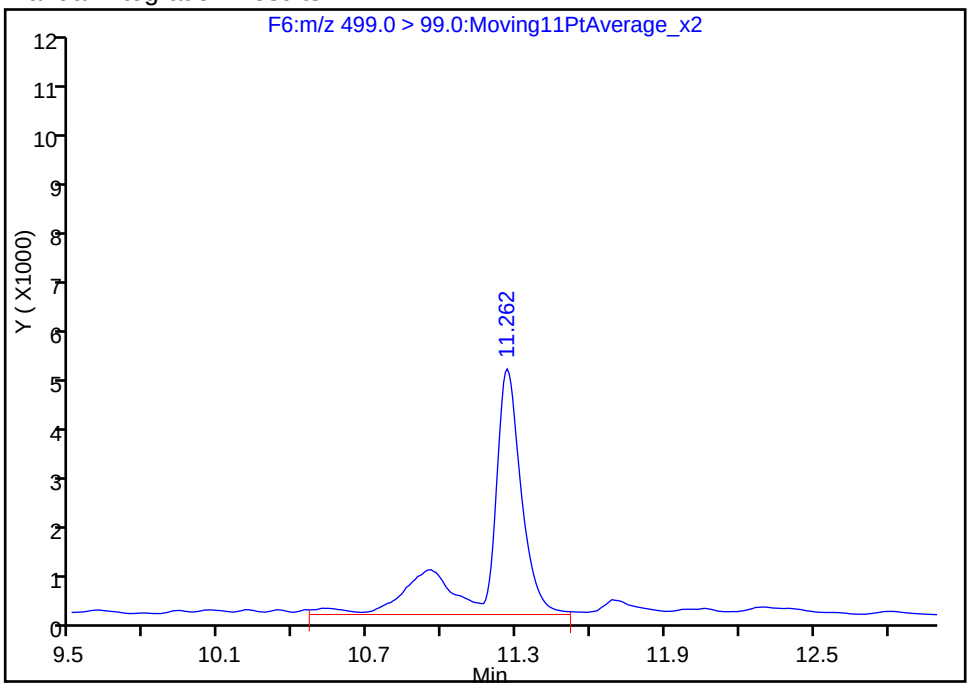
Processing Integration Results

RT: 11.26
Area: 31886
Amount: 1.187619
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 46145
Amount: 2.136588
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:24:25
Audit Action: Manually Integrated
Audit Reason: Isomers

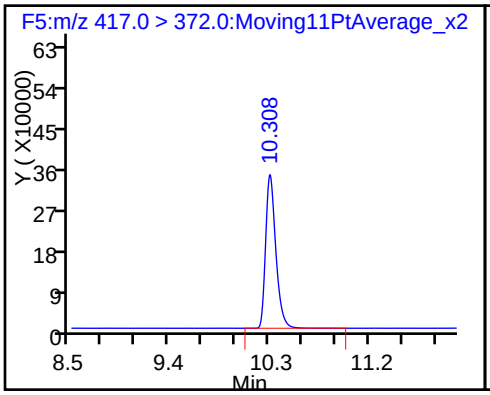
Report Date: 19-May-2015 14:32:13 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

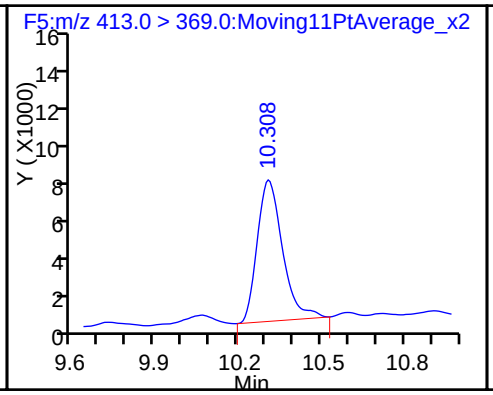
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_016.d

Injection Date:	18-May-2015 19:38:13	Instrument ID:	A6		
Lims ID:	320-13012-A-2-A	Lab Sample ID:	320-13012-2		
Client ID:	BF-103-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	36	Worklist Smp#:	29
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

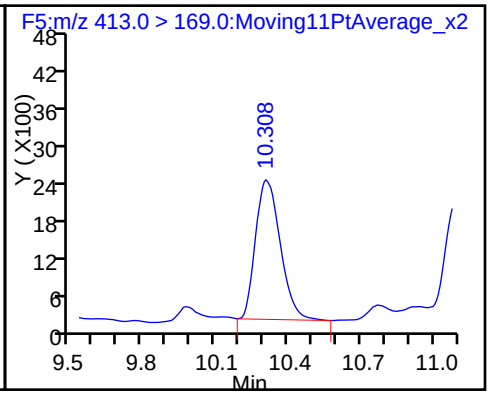
D 12 13C4 PFOA



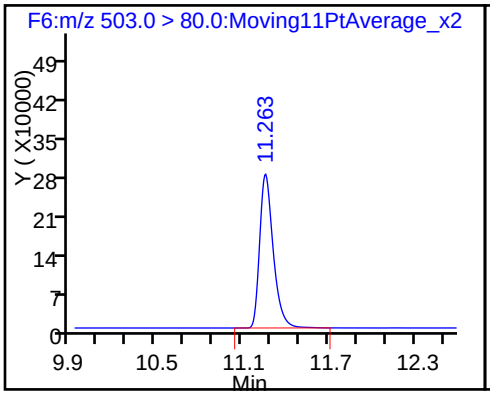
13 Perfluorooctanoic acid



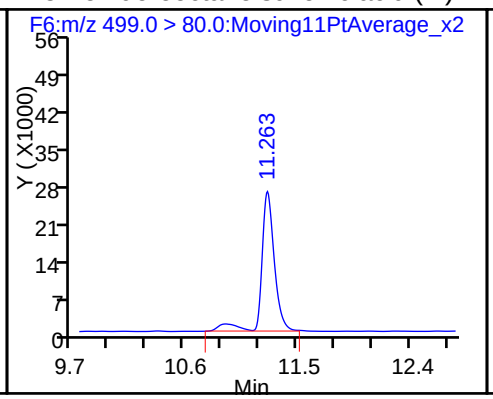
13 Perfluorooctanoic acid



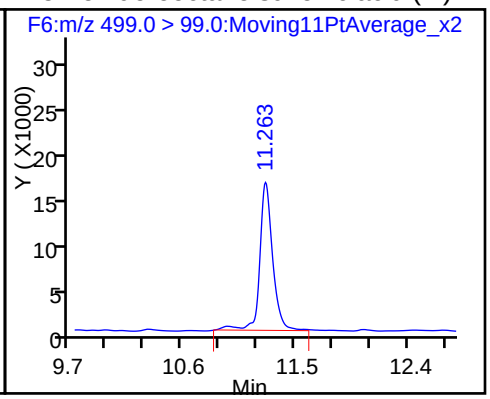
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

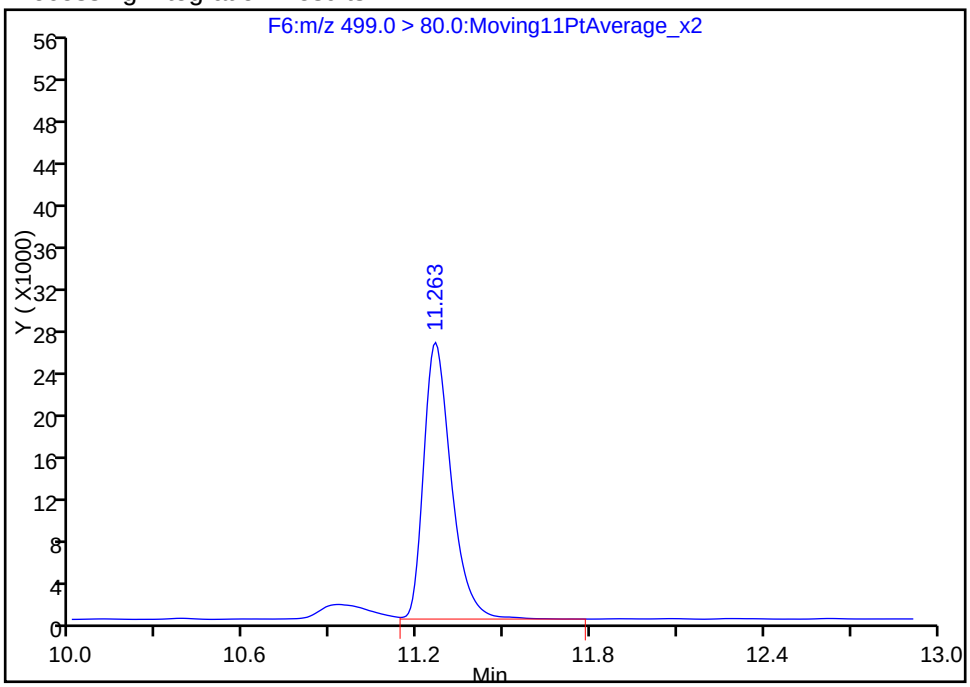
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_016.d				
Injection Date:	18-May-2015 19:38:13	Instrument ID:	A6		
Lims ID:	320-13012-A-2-A	Lab Sample ID:	320-13012-2		
Client ID:	BF-103-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	36	Worklist Smp#:	29
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

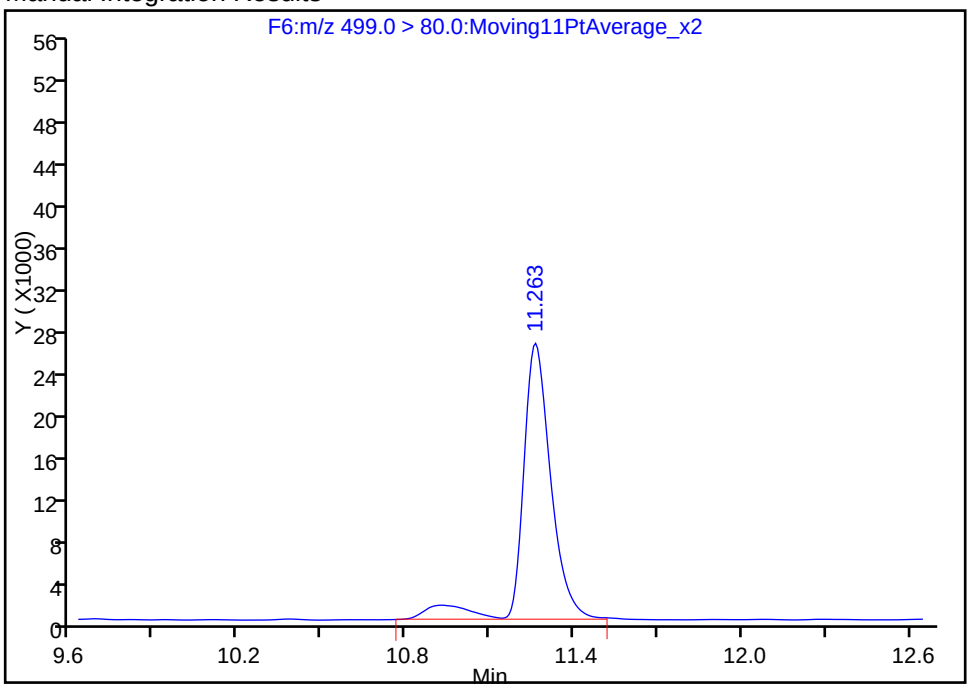
Processing Integration Results

RT: 11.26
Area: 175892
Amount: 4.683384
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 188978
Amount: 5.031818
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:25:00
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

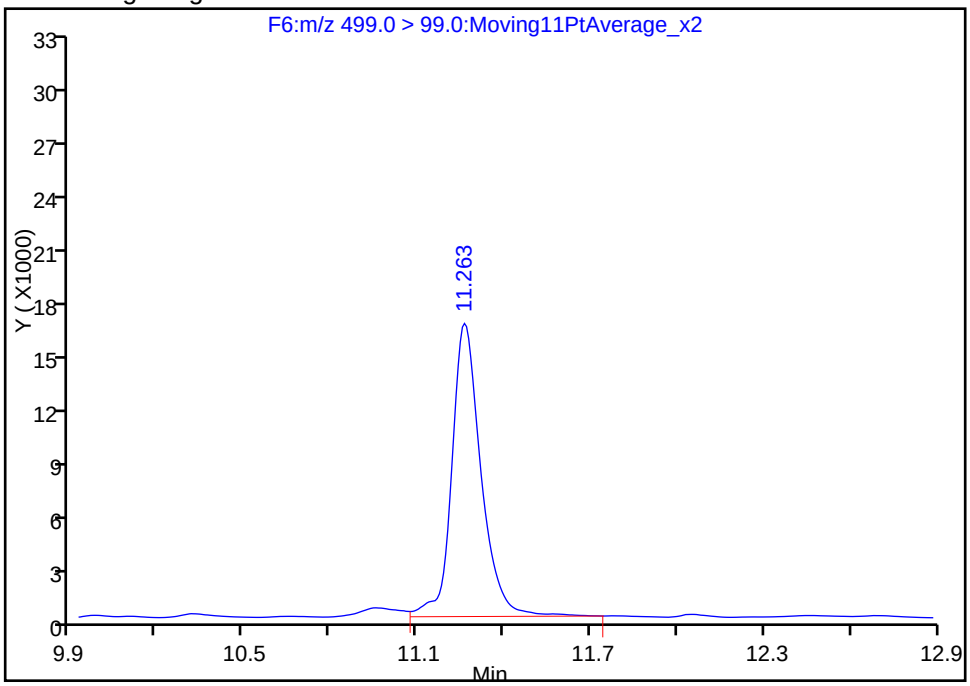
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_016.d				
Injection Date:	18-May-2015 19:38:13	Instrument ID:	A6		
Lims ID:	320-13012-A-2-A	Lab Sample ID:	320-13012-2		
Client ID:	BF-103-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	36	Worklist Smp#:	29
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

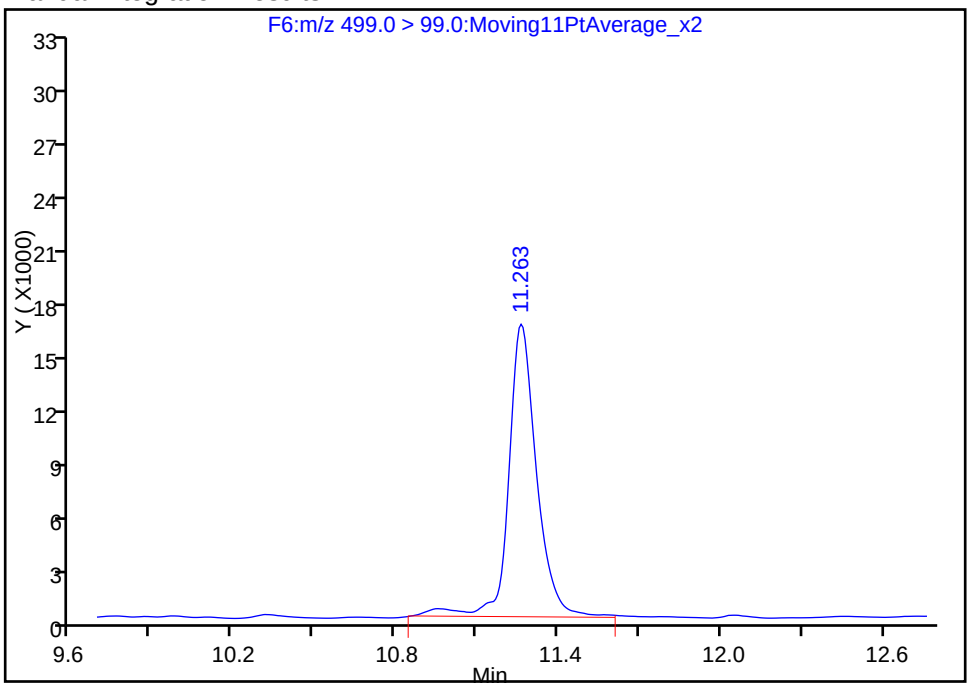
Processing Integration Results

RT: 11.26
Area: 116158
Amount: 4.683384
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 118680
Amount: 5.031818
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:25:00
Audit Action: Manually Integrated
Audit Reason: Isomers

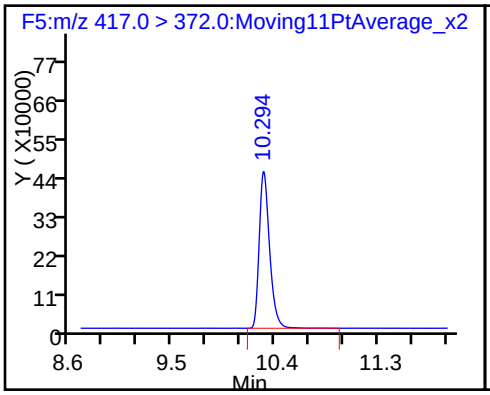
Report Date: 19-May-2015 14:32:14 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

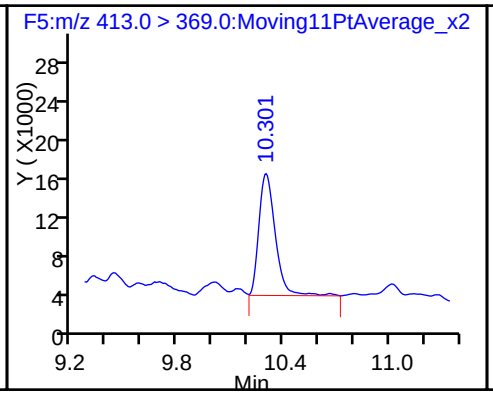
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_017.d

Injection Date:	18-May-2015 19:59:28	Instrument ID:	A6		
Lims ID:	320-13012-A-3-A	Lab Sample ID:	320-13012-3		
Client ID:	BF-103-GW055-0515				
Operator ID:	JRB	ALS Bottle#:	37	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

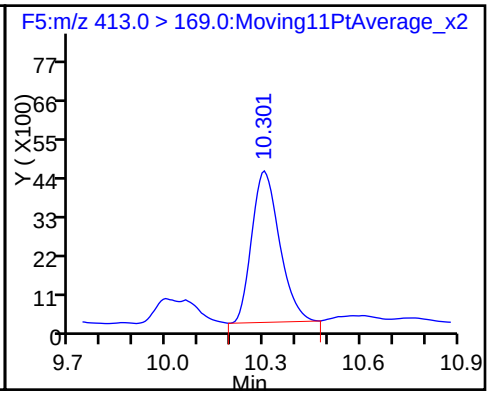
D 12 13C4 PFOA



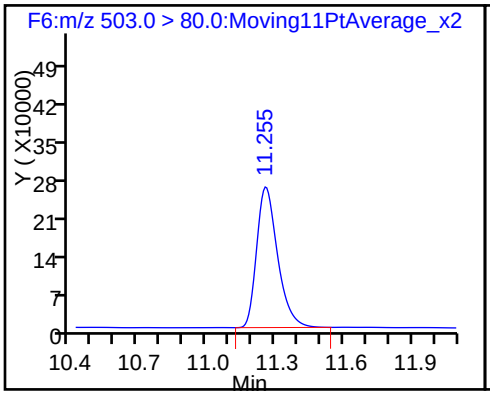
13 Perfluorooctanoic acid



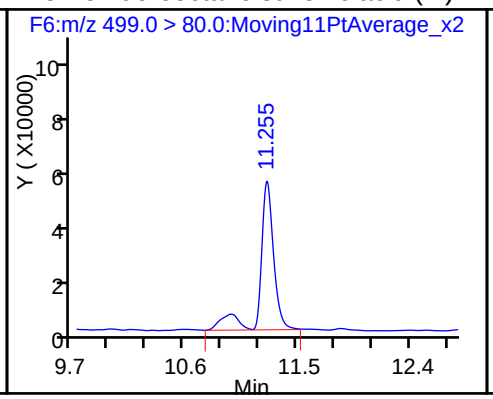
13 Perfluorooctanoic acid



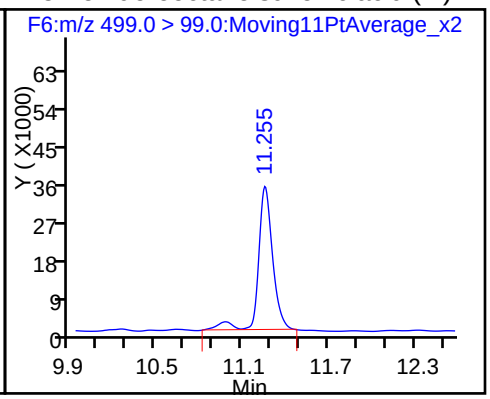
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

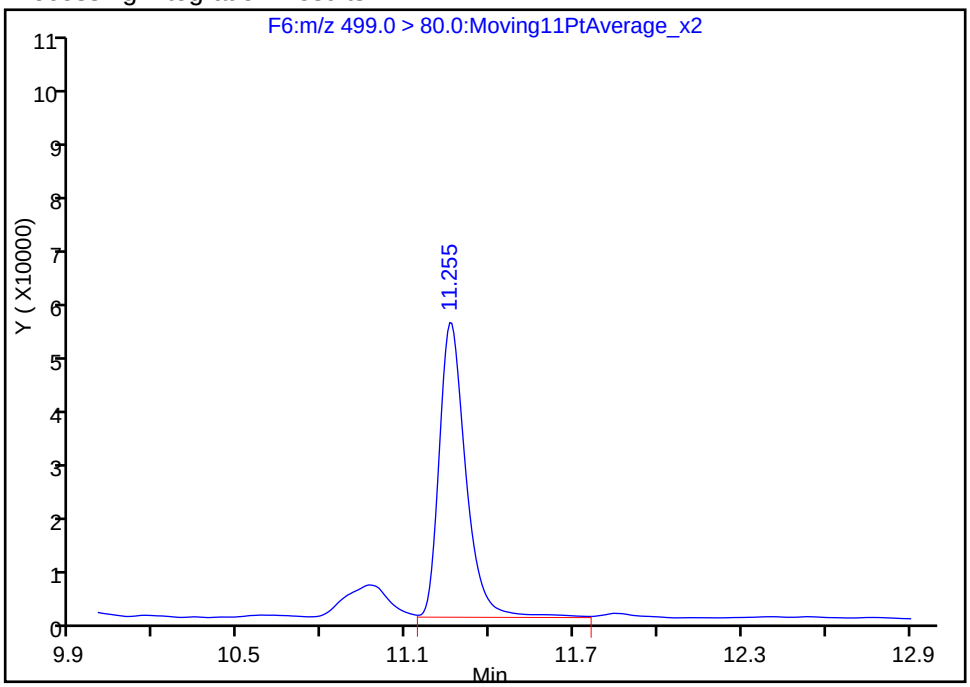
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_017.d				
Injection Date:	18-May-2015 19:59:28	Instrument ID:	A6		
Lims ID:	320-13012-A-3-A	Lab Sample ID:	320-13012-3		
Client ID:	BF-103-GW055-0515				
Operator ID:	JRB	ALS Bottle#:	37	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

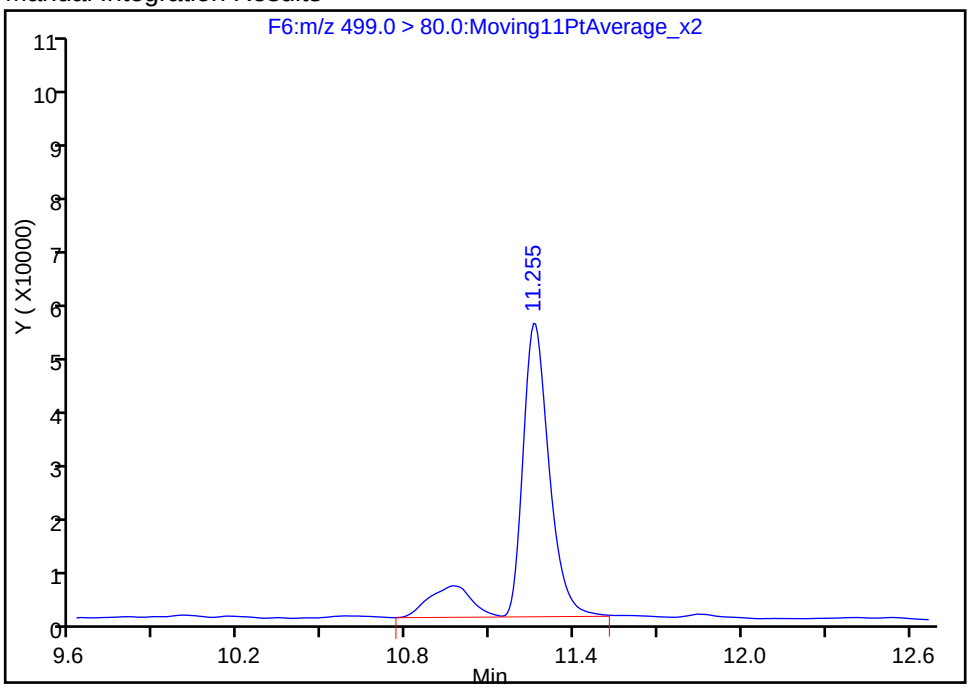
Processing Integration Results

RT: 11.26
Area: 359978
Amount: 10.699118
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 409609
Amount: 12.174230
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:25:37
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

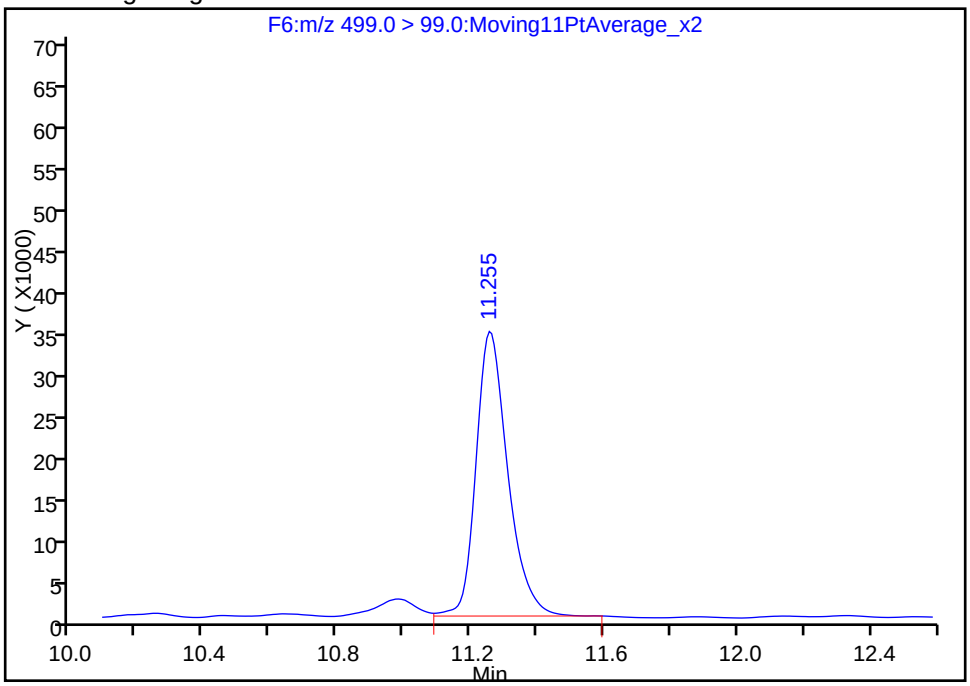
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_017.d

Injection Date:	18-May-2015 19:59:28	Instrument ID:	A6		
Lims ID:	320-13012-A-3-A	Lab Sample ID:	320-13012-3		
Client ID:	BF-103-GW055-0515				
Operator ID:	JRB	ALS Bottle#:	37	Worklist Smp#:	30
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

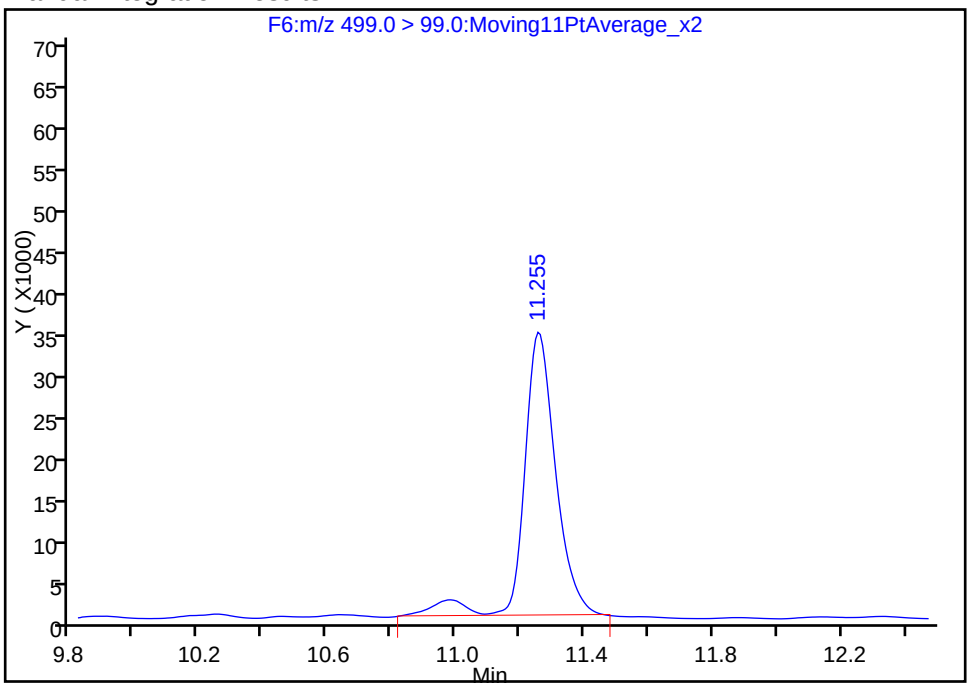
Processing Integration Results

RT: 11.26
Area: 228827
Amount: 10.699118
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 237423
Amount: 12.174230
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:25:37
Audit Action: Manually Integrated
Audit Reason: Isomers

Report Date: 19-May-2015 14:32:14 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_018.d

Injection Date: 18-May-2015 20:20:43 Instrument ID: A6

Lims ID: 320-13012-A-4-A Lab Sample ID: 320-13012-4

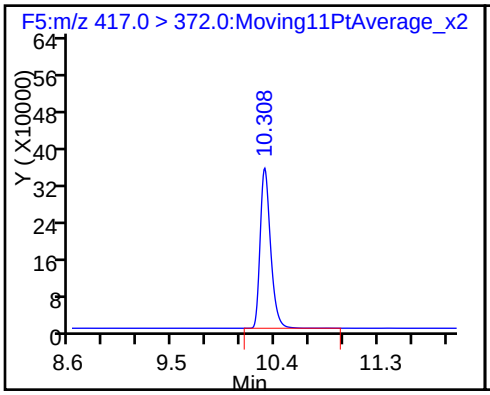
Client ID: BF-103-GW05D-0515

Operator ID: JRB ALS Bottle#: 38 Worklist Smp#: 31

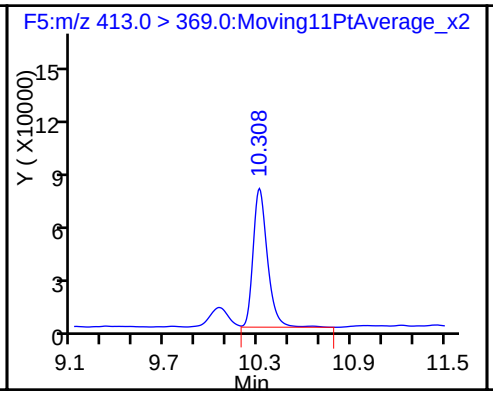
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

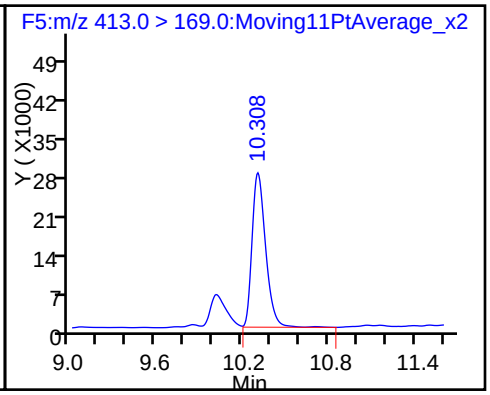
D 12 13C4 PFOA



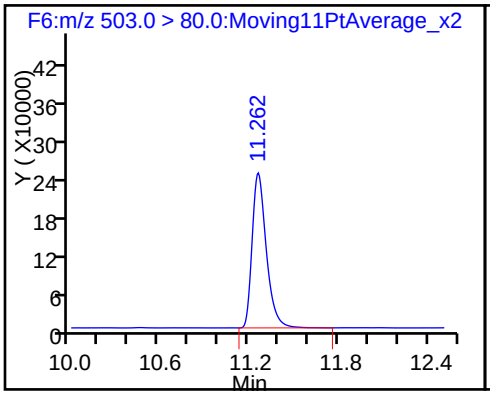
13 Perfluorooctanoic acid



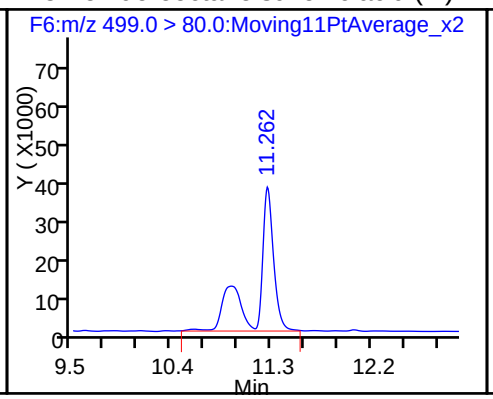
13 Perfluorooctanoic acid



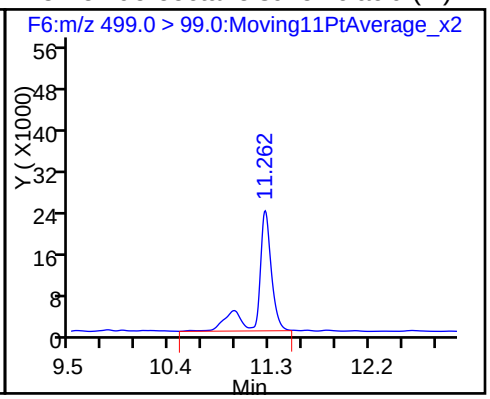
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

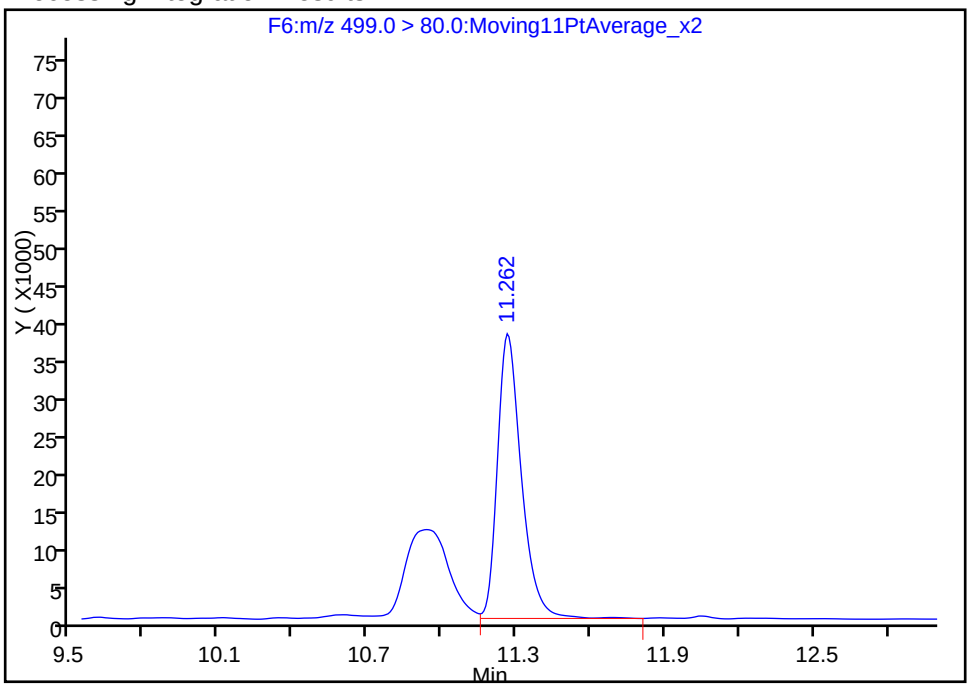
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_018.d				
Injection Date:	18-May-2015 20:20:43	Instrument ID:	A6		
Lims ID:	320-13012-A-4-A	Lab Sample ID:	320-13012-4		
Client ID:	BF-103-GW05D-0515				
Operator ID:	JRB	ALS Bottle#:	38	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

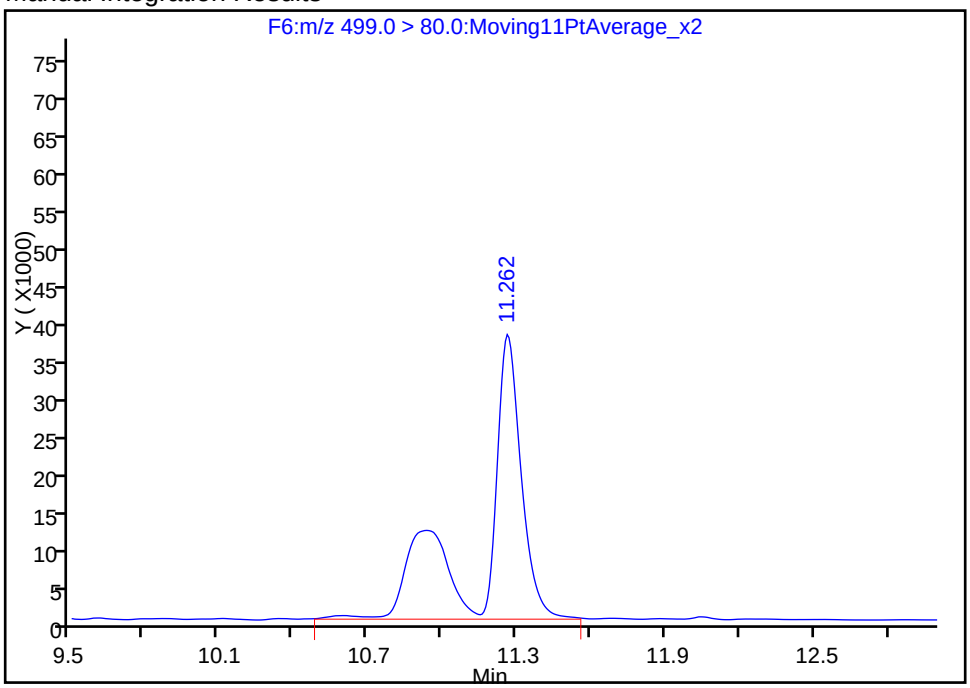
Processing Integration Results

RT: 11.26
Area: 255863
Amount: 7.699104
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 402861
Amount: 12.122382
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:26:52
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

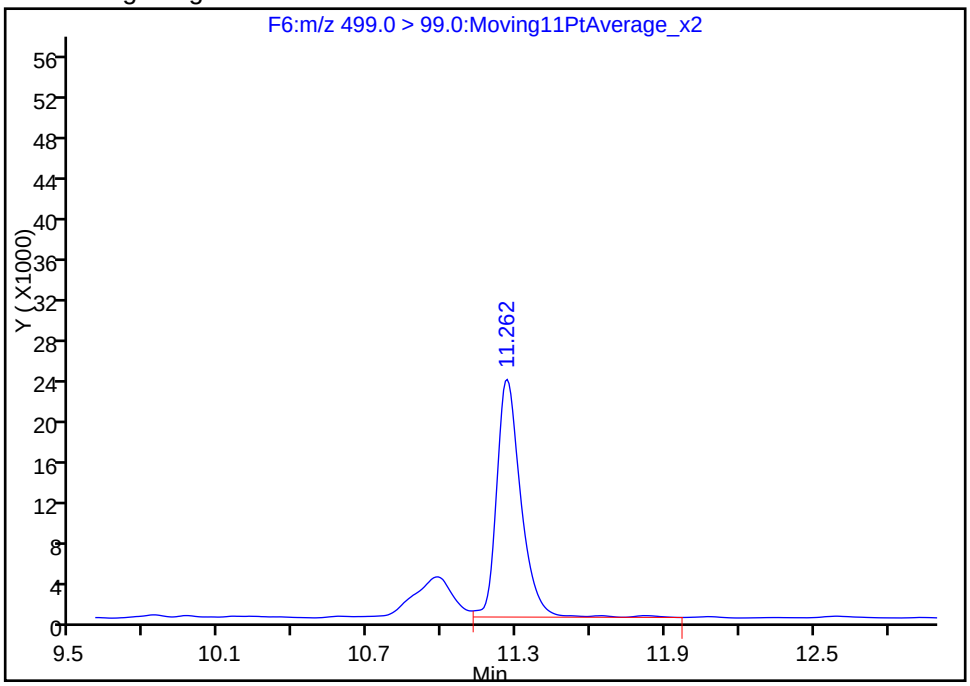
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_018.d

Injection Date:	18-May-2015 20:20:43	Instrument ID:	A6		
Lims ID:	320-13012-A-4-A	Lab Sample ID:	320-13012-4		
Client ID:	BF-103-GW05D-0515				
Operator ID:	JRB	ALS Bottle#:	38	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

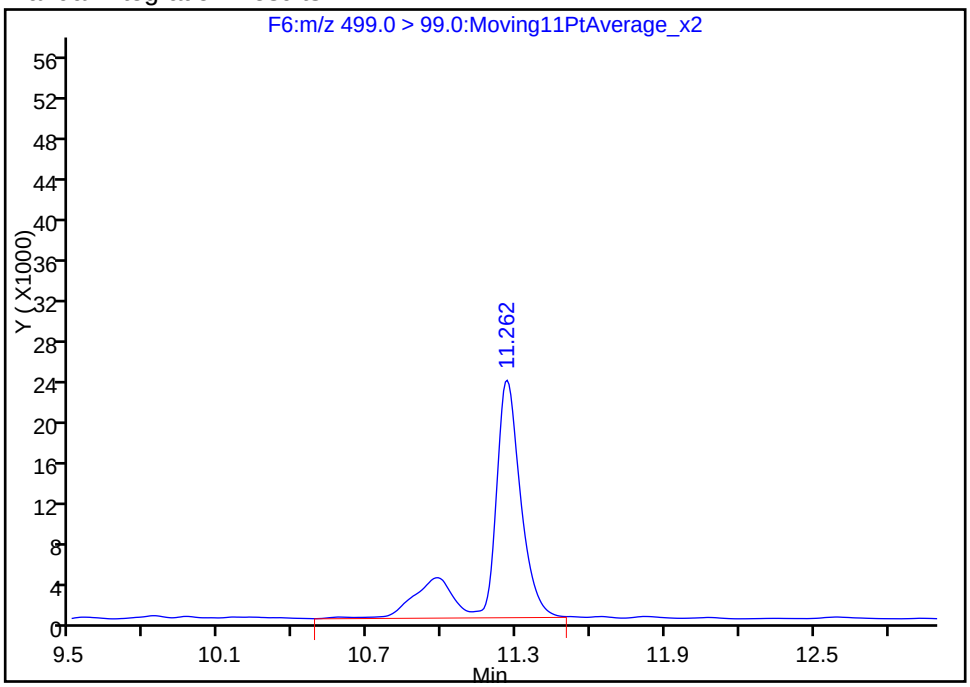
Processing Integration Results

RT: 11.26
Area: 159632
Amount: 7.699104
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 201668
Amount: 12.122382
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:26:52
Audit Action: Manually Integrated
Audit Reason: Isomers

Report Date: 19-May-2015 14:32:16 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_019.d

Injection Date: 18-May-2015 20:41:58 Instrument ID: A6

Lims ID: 320-13012-A-5-A Lab Sample ID: 320-13012-5

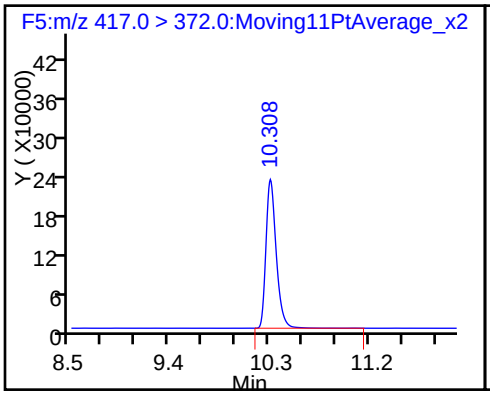
Client ID: BF-103-GW04-0515

Operator ID: JRB ALS Bottle#: 39 Worklist Smp#: 32

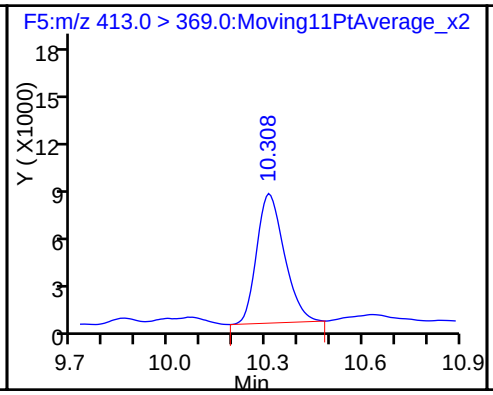
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

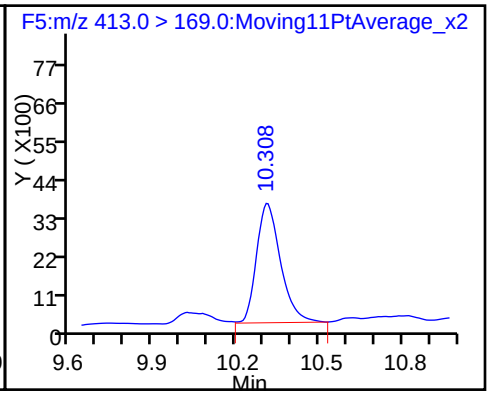
D 12 13C4 PFOA



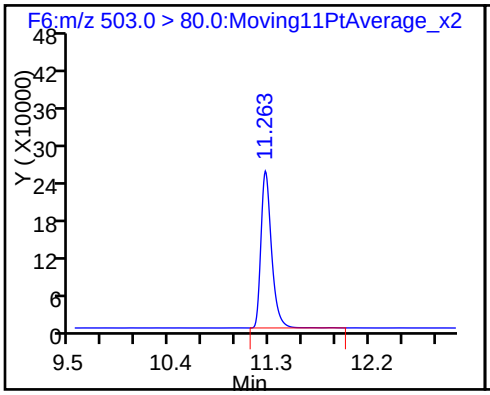
13 Perfluorooctanoic acid



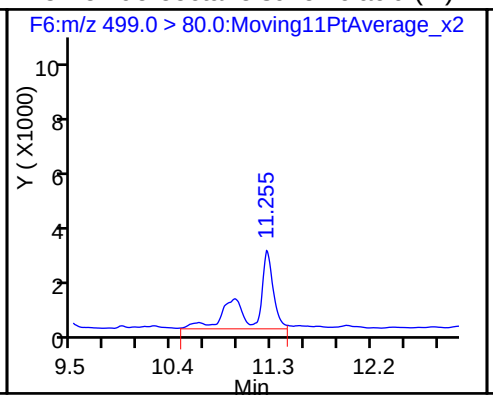
13 Perfluorooctanoic acid



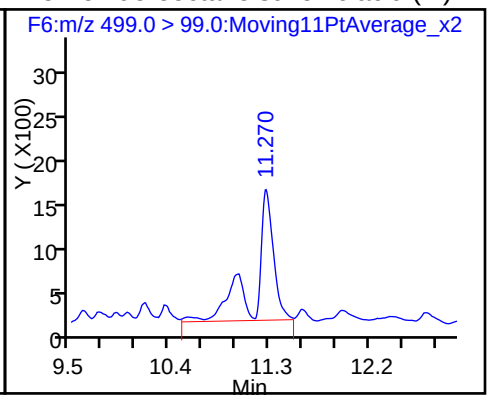
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



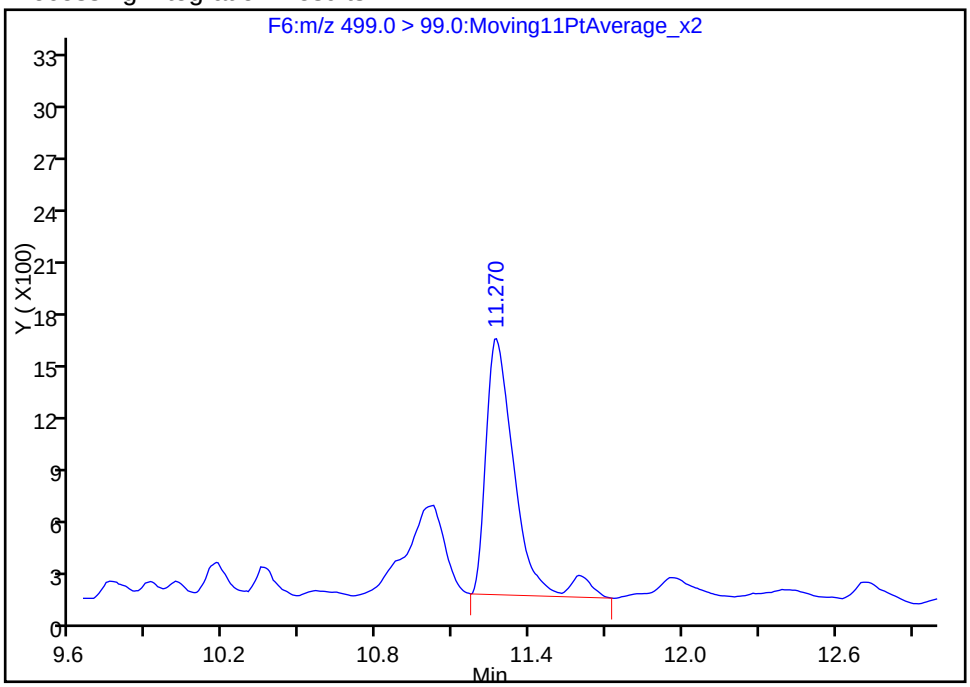
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_019.d				
Injection Date:	18-May-2015 20:41:58	Instrument ID:	A6		
Lims ID:	320-13012-A-5-A	Lab Sample ID:	320-13012-5		
Client ID:	BF-103-GW04-0515				
Operator ID:	JRB	ALS Bottle#:	39	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

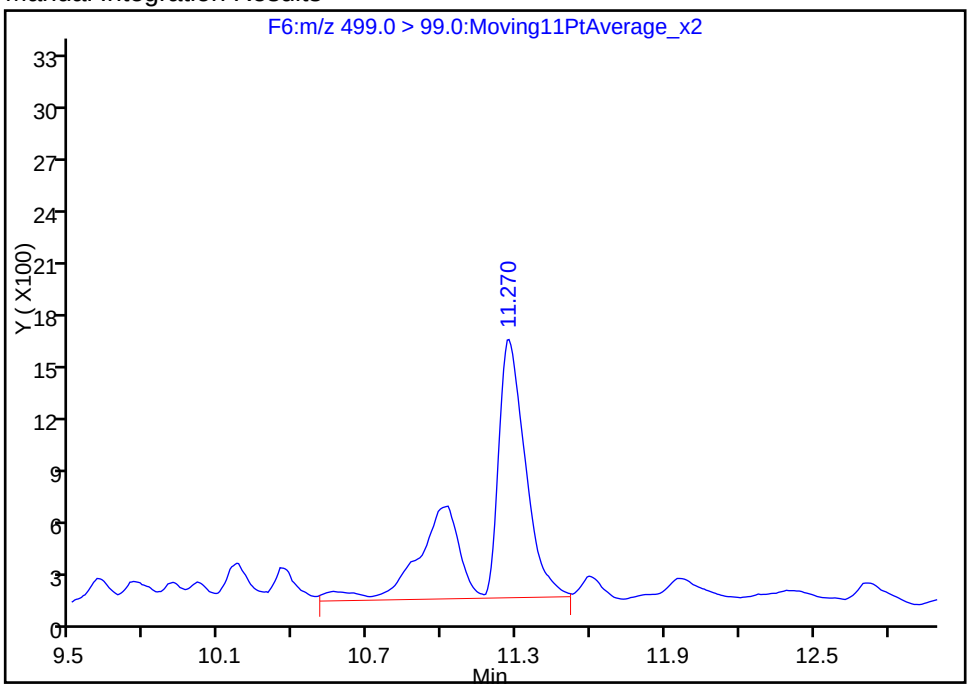
Processing Integration Results

RT: 11.27
Area: 11439
Amount: 0.501262
Amount Units: ng/ml



Manual Integration Results

RT: 11.27
Area: 17242
Amount: 0.988942
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:29:27
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

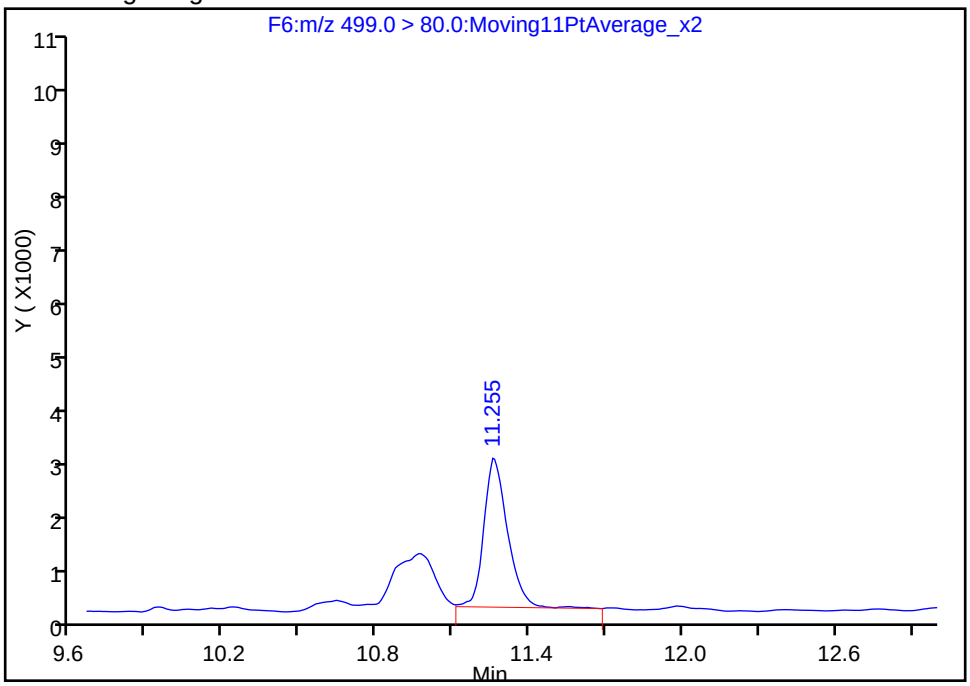
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_019.d

Injection Date:	18-May-2015 20:41:58	Instrument ID:	A6		
Lims ID:	320-13012-A-5-A	Lab Sample ID:	320-13012-5		
Client ID:	BF-103-GW04-0515				
Operator ID:	JRB	ALS Bottle#:	39	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

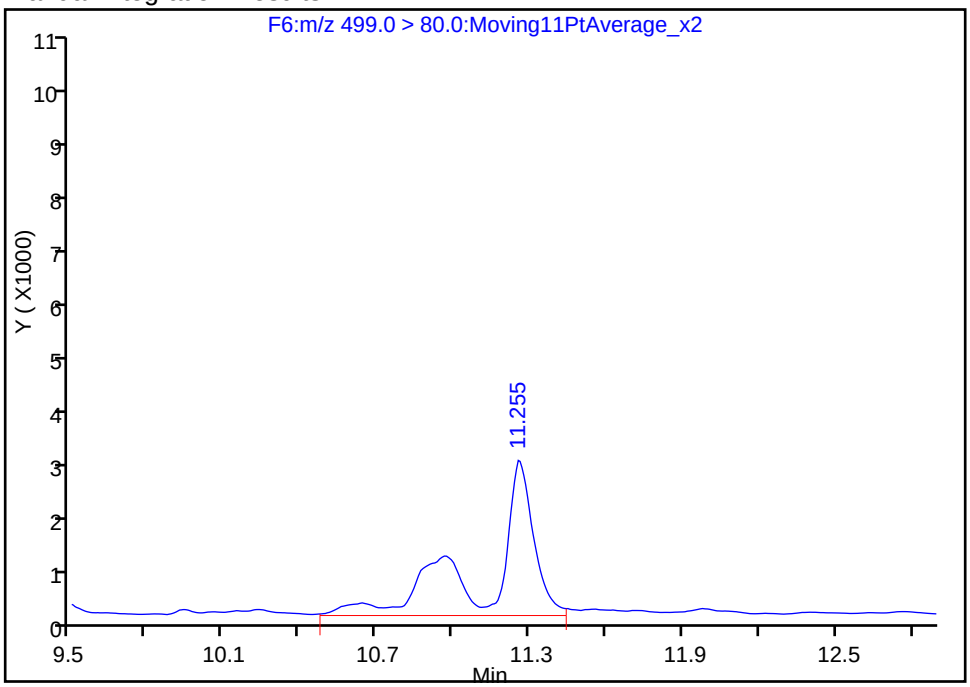
Processing Integration Results

RT: 11.26
Area: 17345
Amount: 0.501262
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 34220
Amount: 0.988942
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:29:27
Audit Action: Manually Integrated
Audit Reason: Isomers

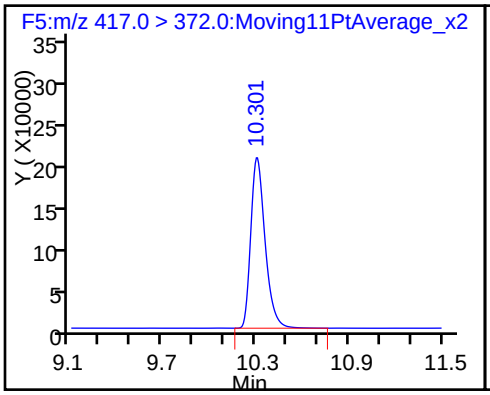
Report Date: 19-May-2015 14:32:17 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

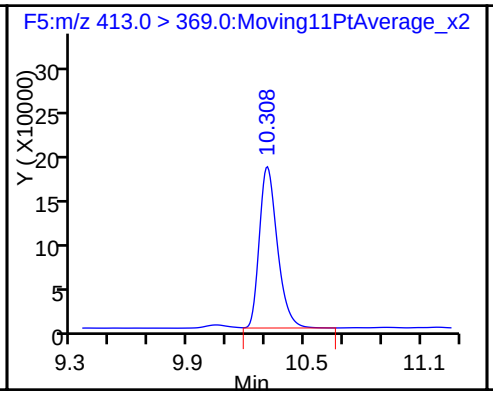
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_020.d

Injection Date:	18-May-2015 21:03:14	Instrument ID:	A6		
Lims ID:	320-13012-A-6-A	Lab Sample ID:	320-13012-6		
Client ID:	BF-104-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	40	Worklist Smp#:	33
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

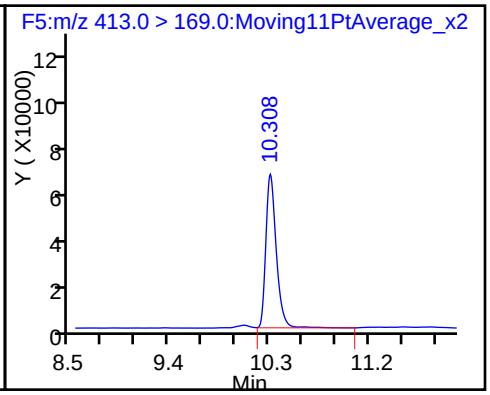
D 12 13C4 PFOA



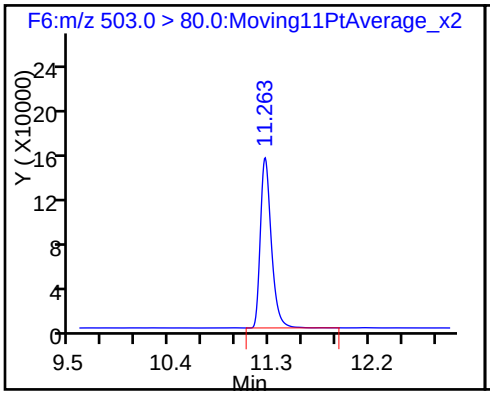
13 Perfluorooctanoic acid



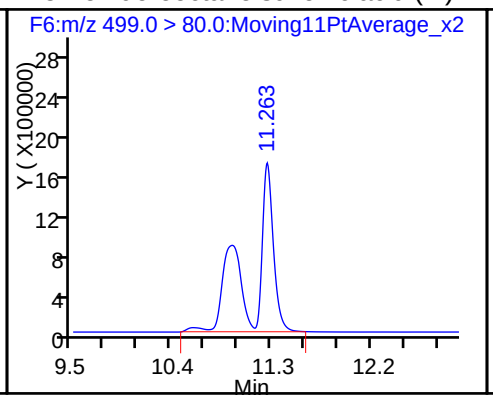
13 Perfluorooctanoic acid



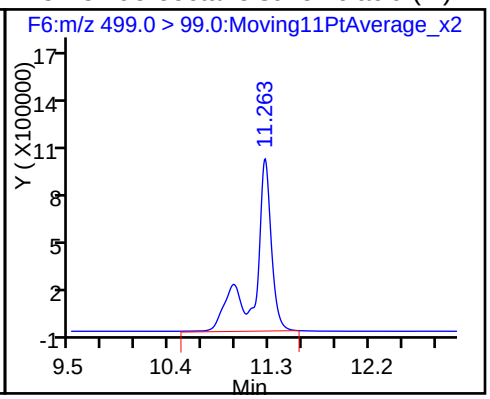
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



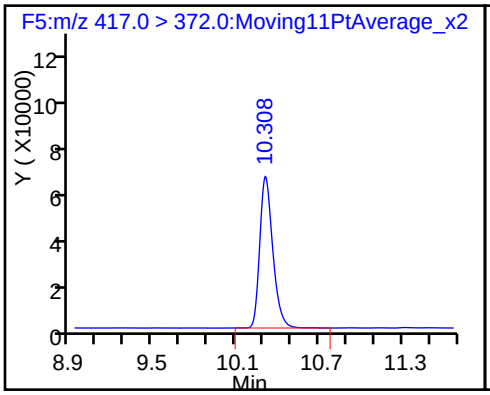
Report Date: 19-May-2015 14:33:03 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

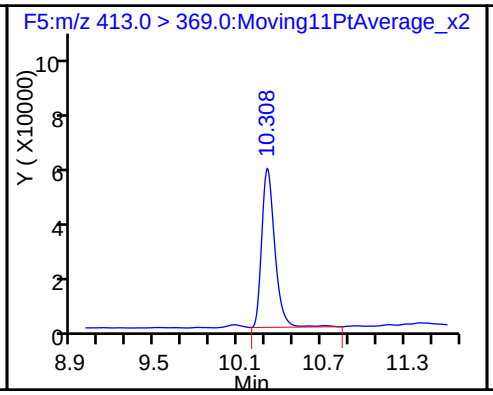
Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_031.d

Injection Date:	19-May-2015 11:30:37	Instrument ID:	A6		
Lims ID:	320-13012-A-6-A	Lab Sample ID:	320-13012-6		
Client ID:	BF-104-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	45	Worklist Smp#:	4
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

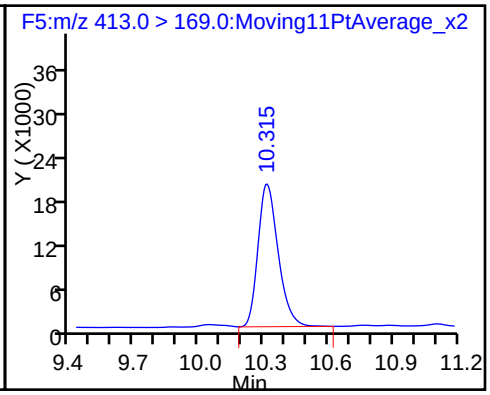
D 12 13C4 PFOA



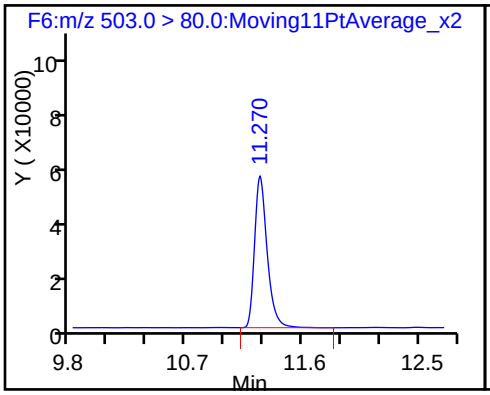
13 Perfluorooctanoic acid



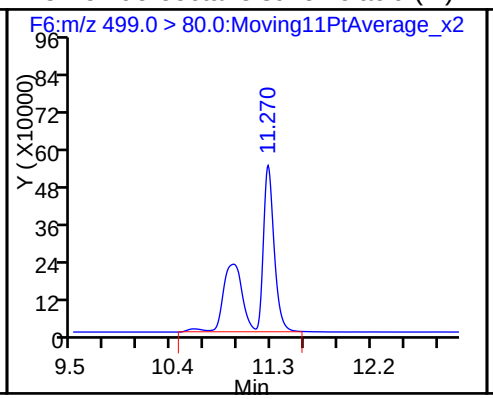
13 Perfluorooctanoic acid



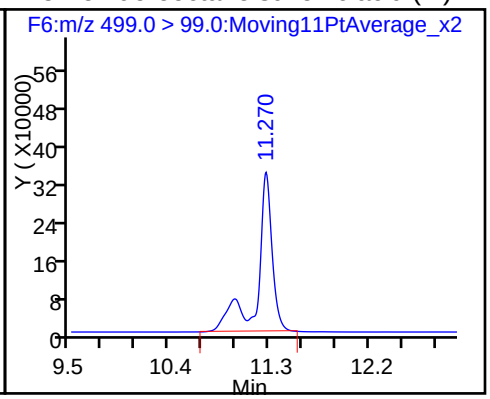
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



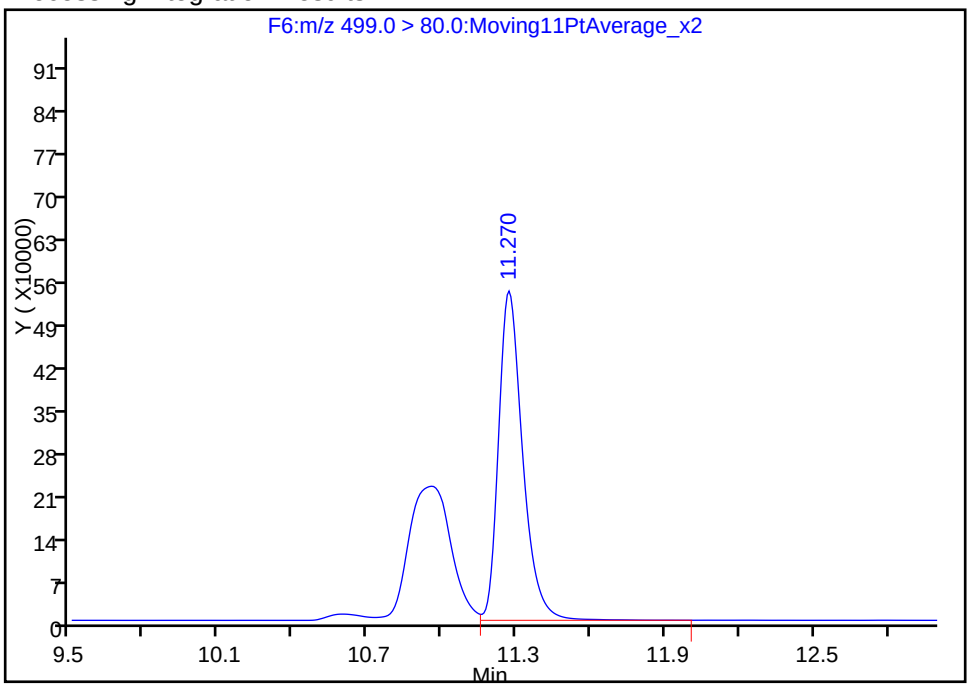
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_031.d				
Injection Date:	19-May-2015 11:30:37	Instrument ID:	A6		
Lims ID:	320-13012-A-6-A	Lab Sample ID:	320-13012-6		
Client ID:	BF-104-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	45	Worklist Smp#:	4
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

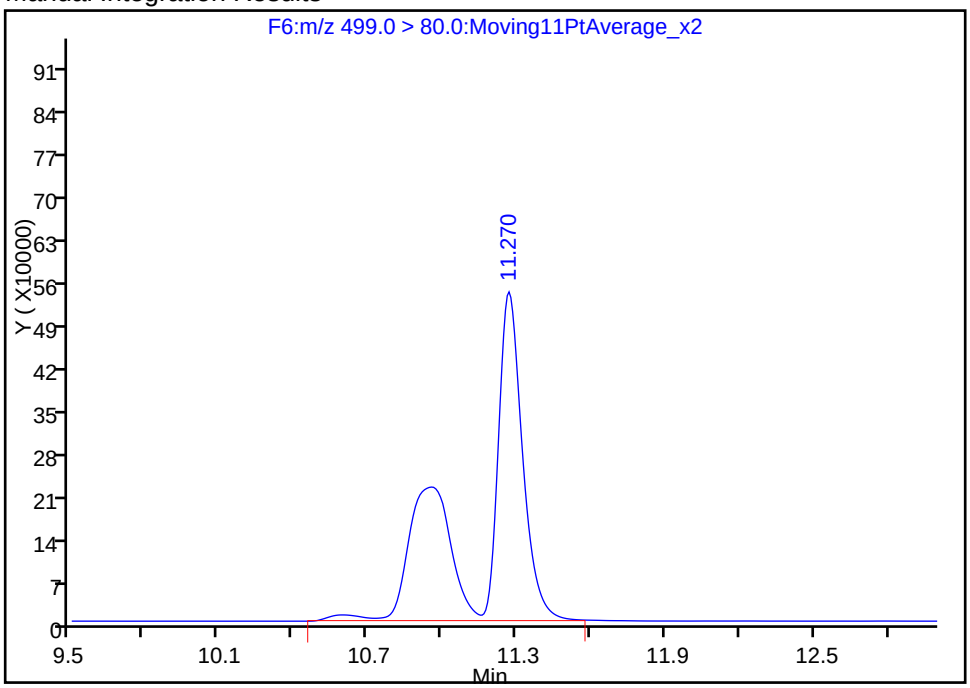
Processing Integration Results

RT: 11.27
Area: 3651459
Amount: 102.1826
Amount Units: ng/ml



Manual Integration Results

RT: 11.27
Area: 6269106
Amount: 175.4349
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:10:52
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

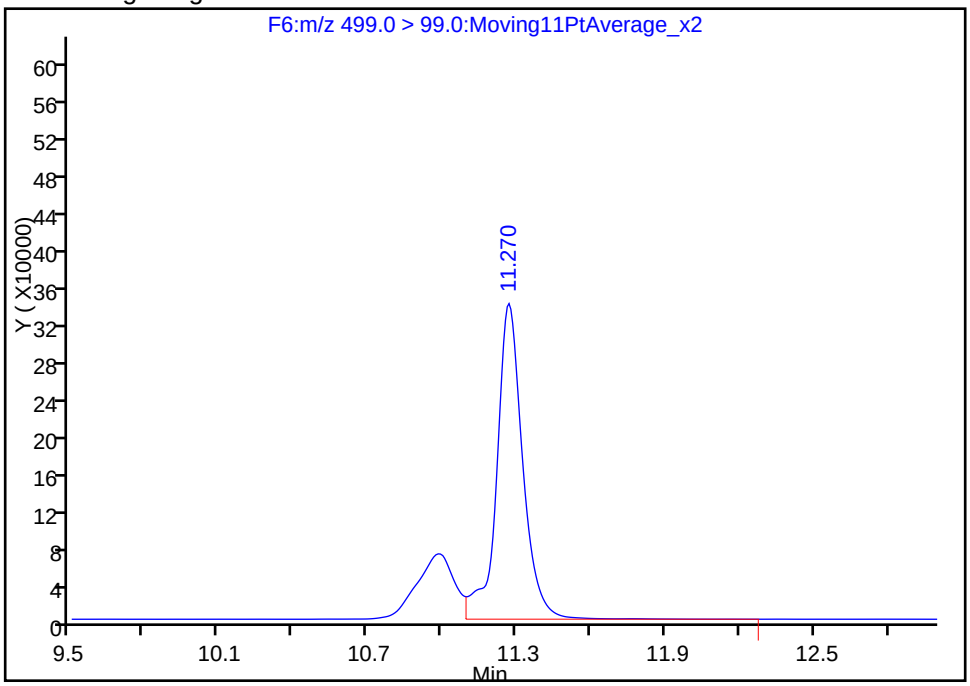
Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_031.d

Injection Date:	19-May-2015 11:30:37	Instrument ID:	A6		
Lims ID:	320-13012-A-6-A	Lab Sample ID:	320-13012-6		
Client ID:	BF-104-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	45	Worklist Smp#:	4
Injection Vol:	15.0 ul	Dil. Factor:	5.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

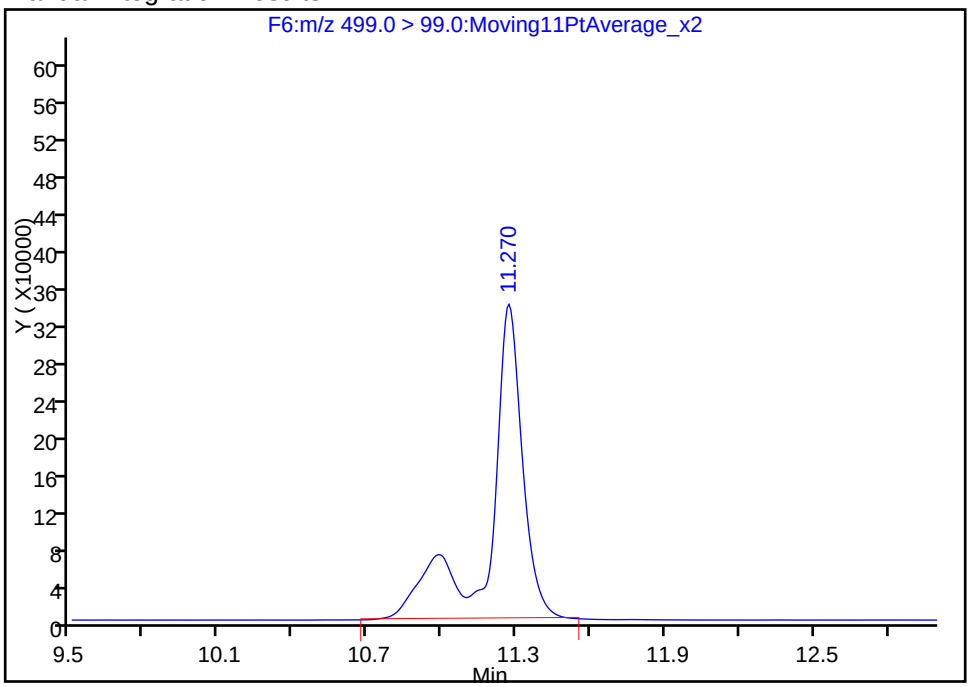
Processing Integration Results

RT: 11.27
Area: 2464939
Amount: 102.1826
Amount Units: ng/ml



Manual Integration Results

RT: 11.27
Area: 3075831
Amount: 175.4349
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:10:52
Audit Action: Manually Integrated
Audit Reason: Isomers

Report Date: 19-May-2015 14:32:18 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_021.d

Injection Date: 18-May-2015 21:24:31 Instrument ID: A6

Lims ID: 320-13012-A-7-A Lab Sample ID: 320-13012-7

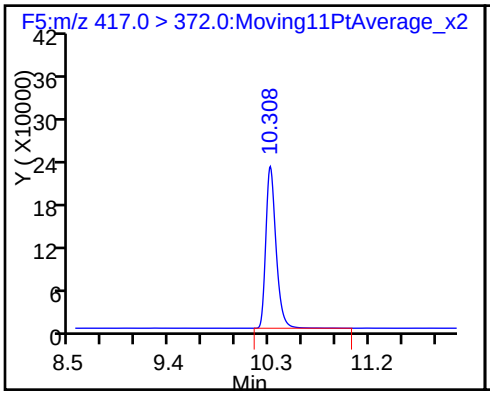
Client ID: BF-104-GW01-0515

Operator ID: JRB ALS Bottle#: 41 Worklist Smp#: 34

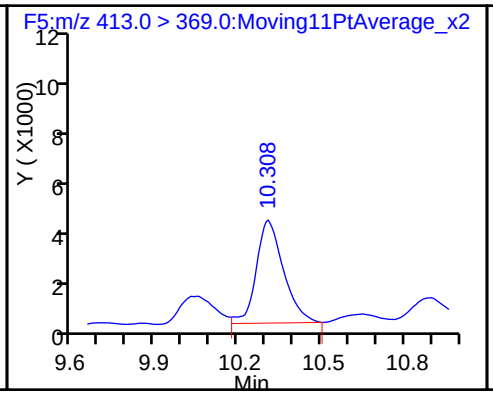
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

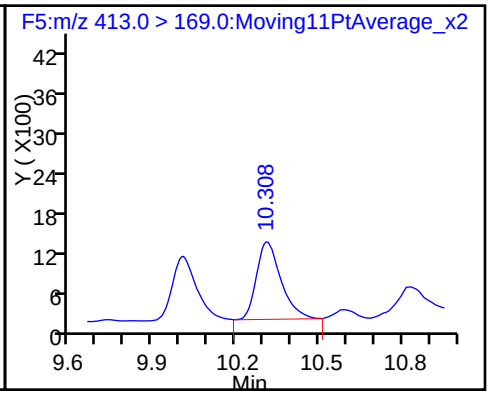
D 12 13C4 PFOA



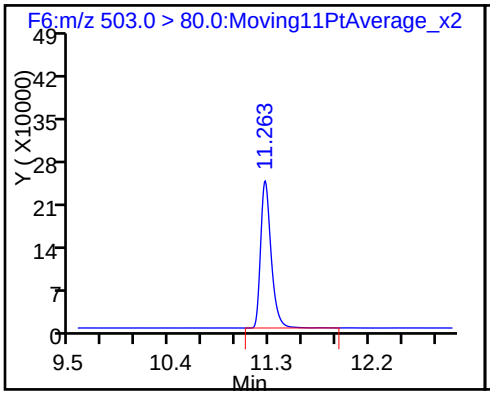
13 Perfluorooctanoic acid



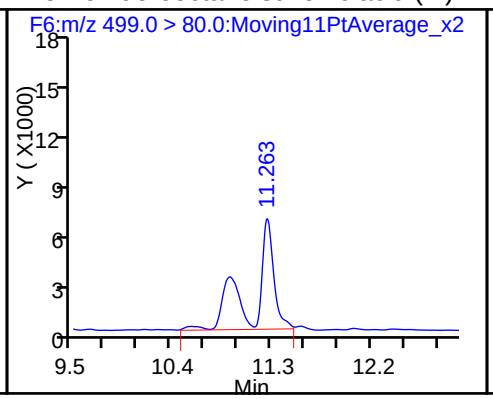
13 Perfluorooctanoic acid



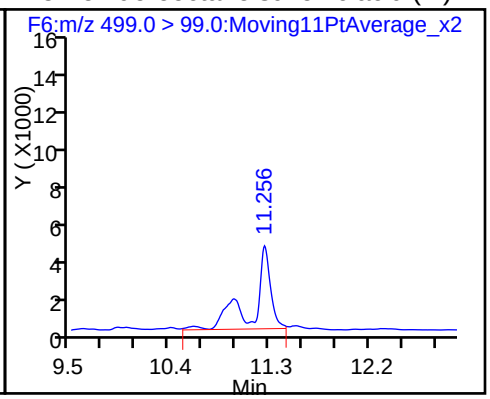
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

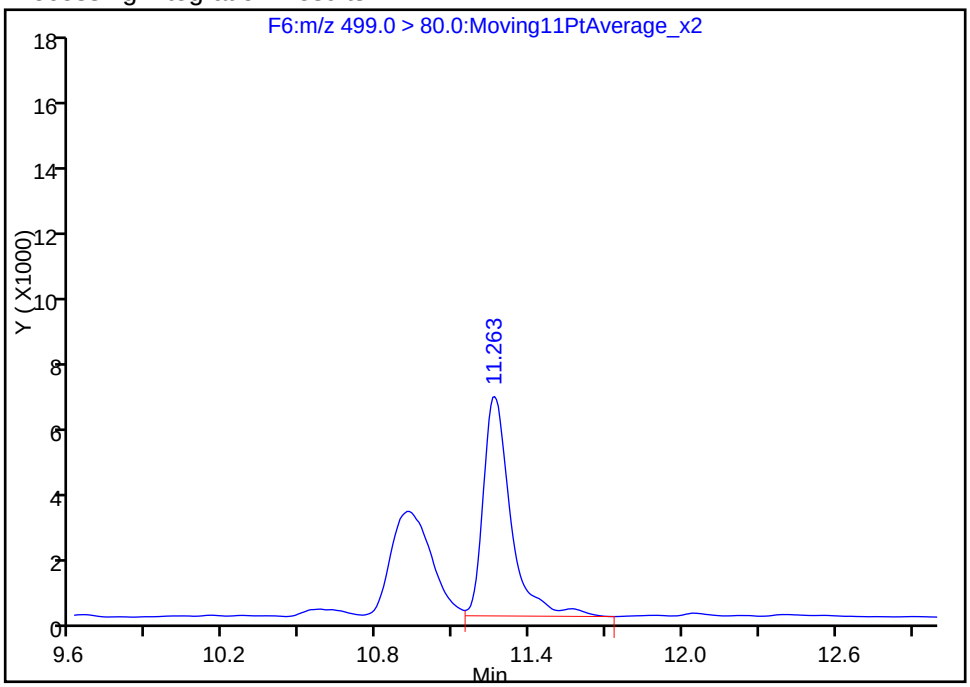
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_021.d				
Injection Date:	18-May-2015 21:24:31	Instrument ID:	A6		
Lims ID:	320-13012-A-7-A	Lab Sample ID:	320-13012-7		
Client ID:	BF-104-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	41	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

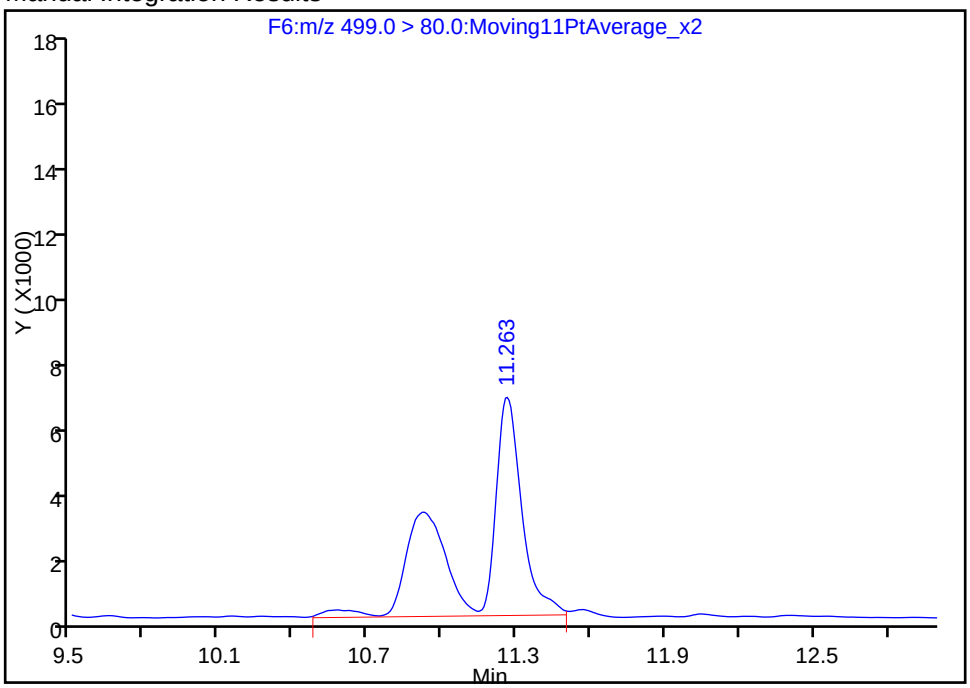
Processing Integration Results

RT: 11.26
Area: 48955
Amount: 1.488905
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 82856
Amount: 2.519961
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:19:58
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

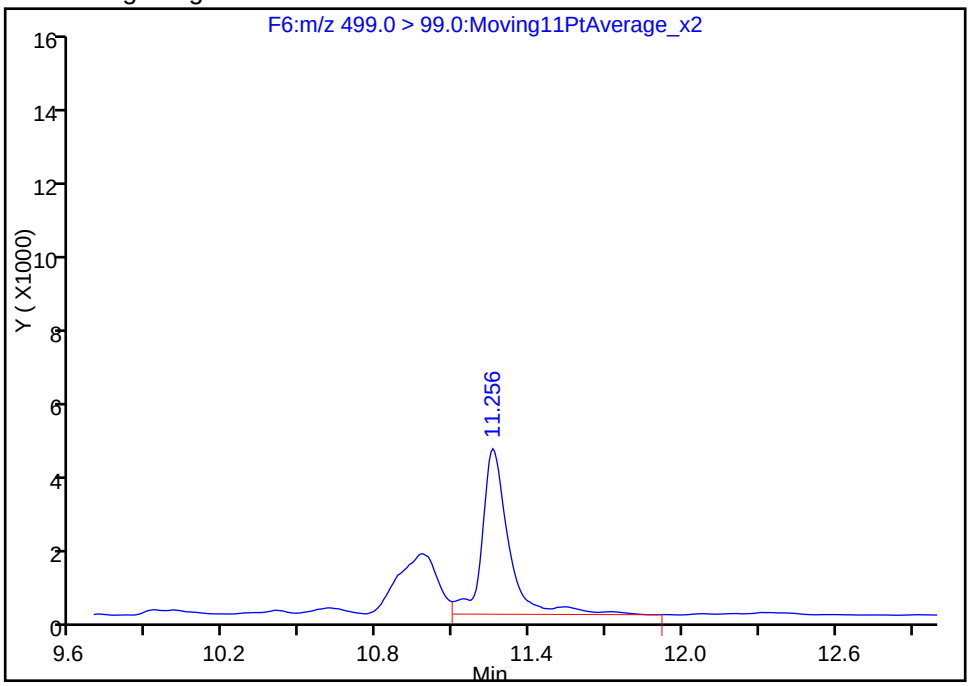
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_021.d

Injection Date:	18-May-2015 21:24:31	Instrument ID:	A6		
Lims ID:	320-13012-A-7-A	Lab Sample ID:	320-13012-7		
Client ID:	BF-104-GW01-0515				
Operator ID:	JRB	ALS Bottle#:	41	Worklist Smp#:	34
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

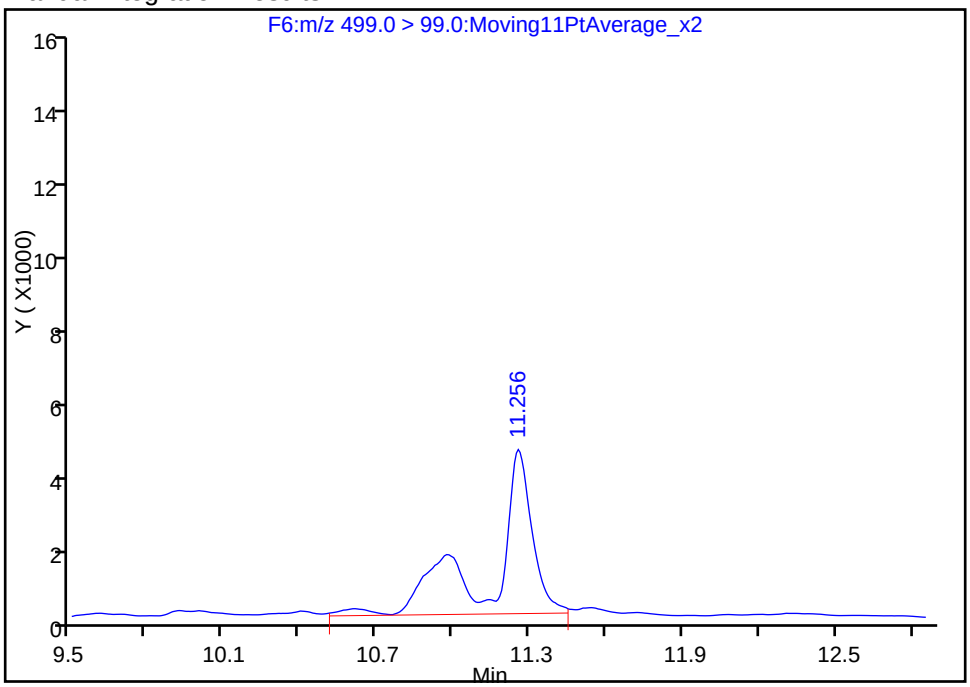
Processing Integration Results

RT: 11.26
Area: 31869
Amount: 1.488905
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 47209
Amount: 2.519961
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:19:58
Audit Action: Manually Integrated
Audit Reason: Isomers

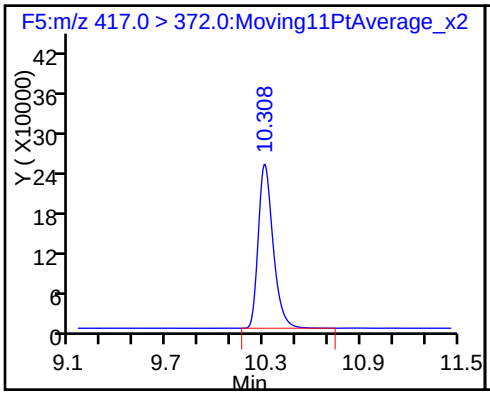
Report Date: 19-May-2015 14:32:19 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

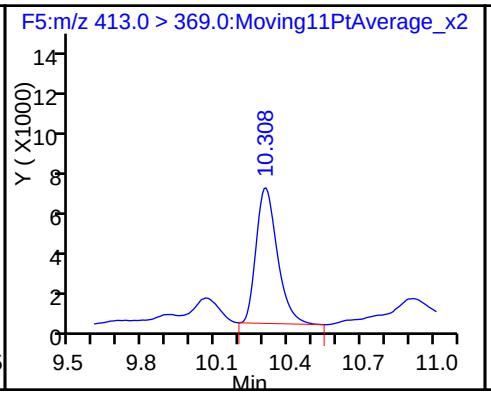
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_022.d

Injection Date:	18-May-2015 21:45:45	Instrument ID:	A6		
Lims ID:	320-13012-A-8-A	Lab Sample ID:	320-13012-8		
Client ID:	BF-103-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	42	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		

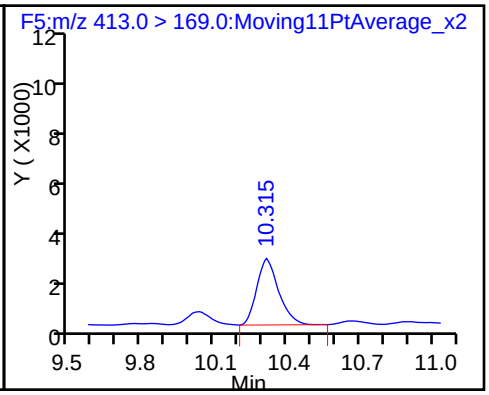
D 12 13C4 PFOA



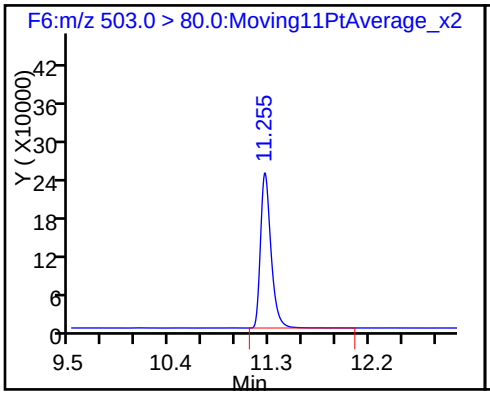
13 Perfluorooctanoic acid



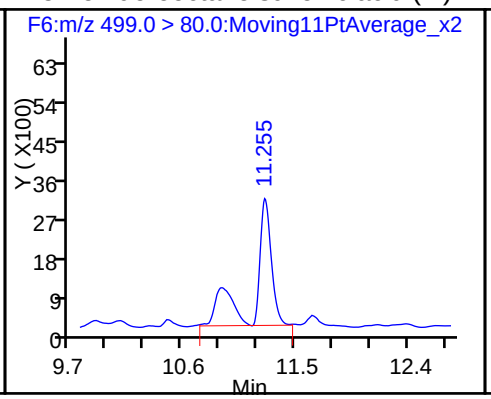
13 Perfluorooctanoic acid



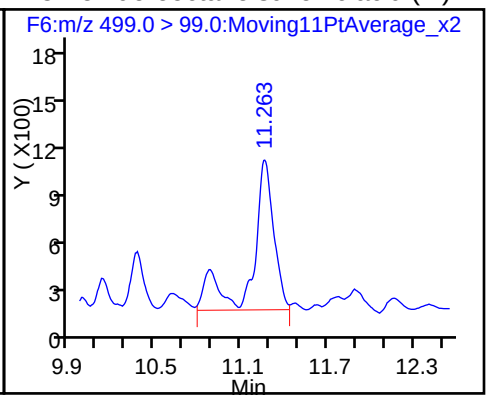
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

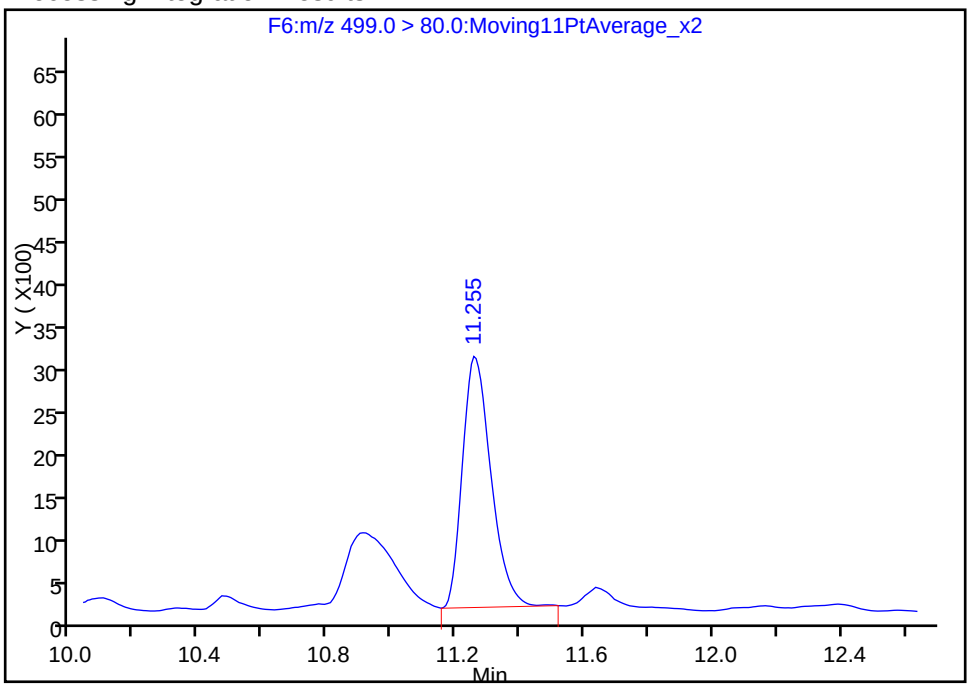
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_022.d				
Injection Date:	18-May-2015 21:45:45	Instrument ID:	A6		
Lims ID:	320-13012-A-8-A	Lab Sample ID:	320-13012-8		
Client ID:	BF-103-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	42	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

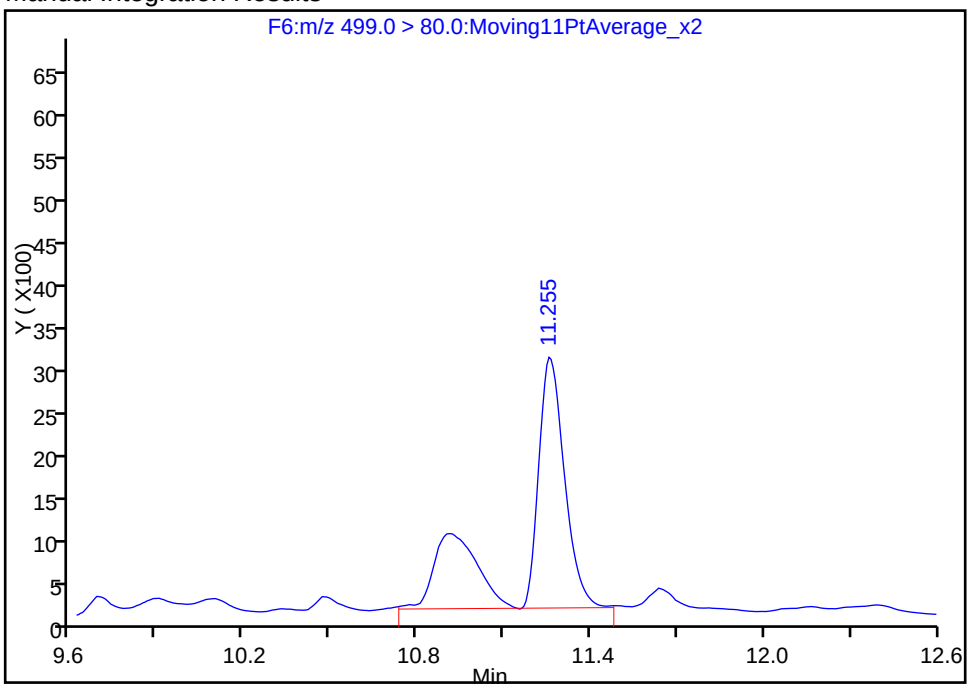
Processing Integration Results

RT: 11.26
Area: 17987
Amount: 0.545397
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 27124
Amount: 0.822446
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:20:47
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

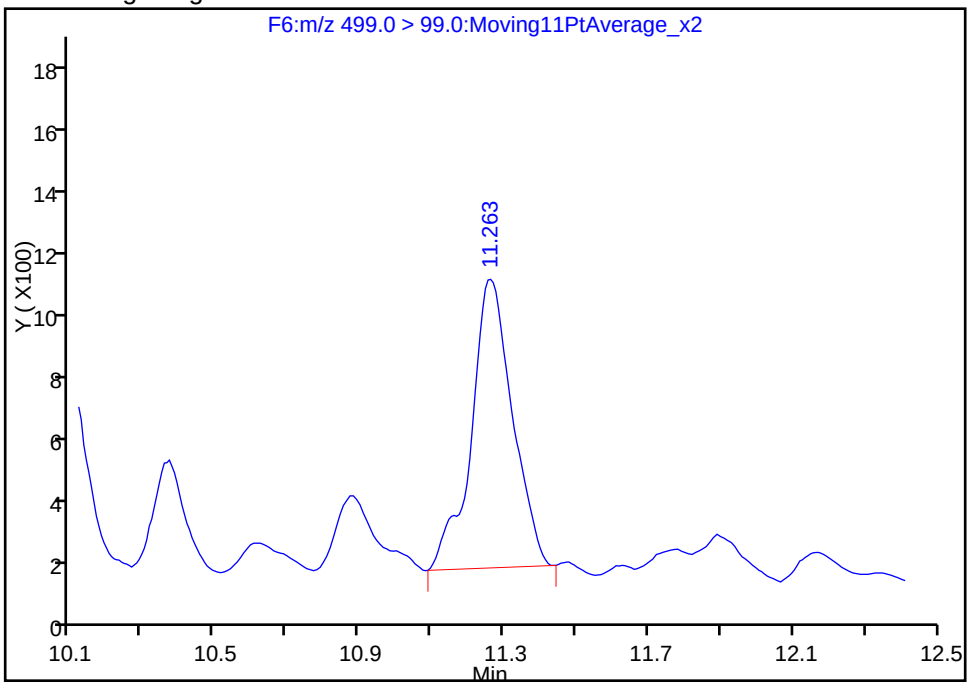
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_022.d

Injection Date:	18-May-2015 21:45:45	Instrument ID:	A6		
Lims ID:	320-13012-A-8-A	Lab Sample ID:	320-13012-8		
Client ID:	BF-103-GW02-0515				
Operator ID:	JRB	ALS Bottle#:	42	Worklist Smp#:	35
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

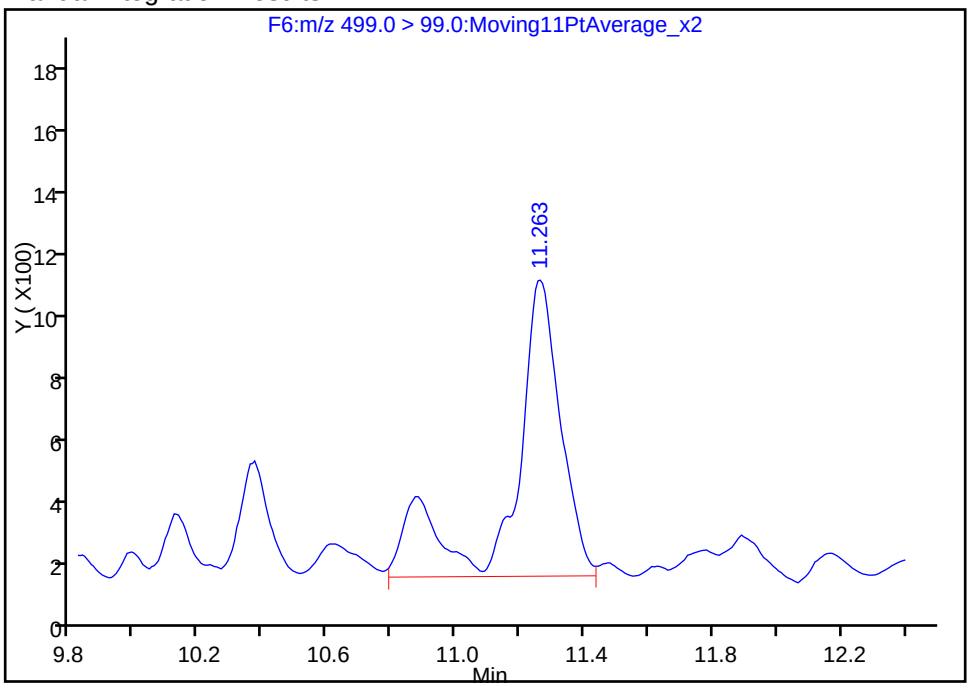
Processing Integration Results

RT: 11.26
Area: 6906
Amount: 0.545397
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 9385
Amount: 0.822446
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:20:47
Audit Action: Manually Integrated
Audit Reason: Isomers

Report Date: 19-May-2015 14:32:20 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_024.d

Injection Date: 18-May-2015 22:28:15 Instrument ID: A6

Lims ID: 320-13012-A-9-A Lab Sample ID: 320-13012-9

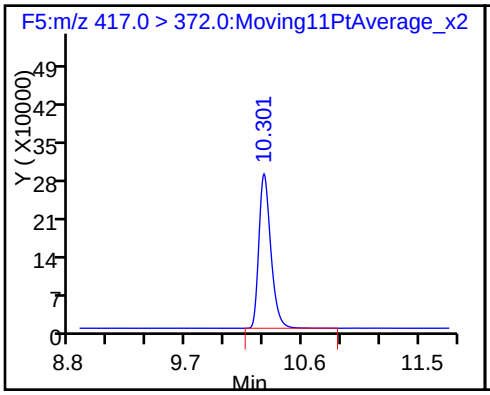
Client ID: BF-103-GW03-0515

Operator ID: JRB ALS Bottle#: 43 Worklist Smp#: 36

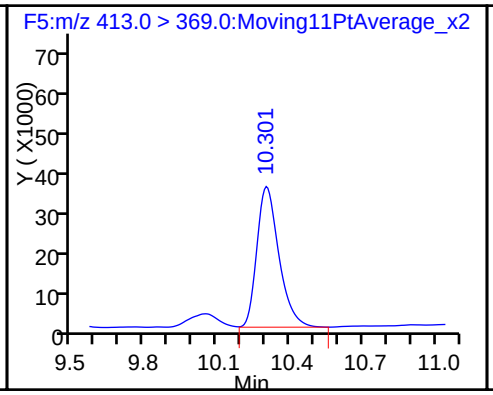
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

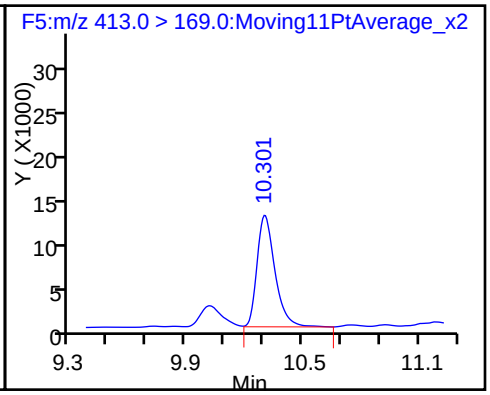
D 12 13C4 PFOA



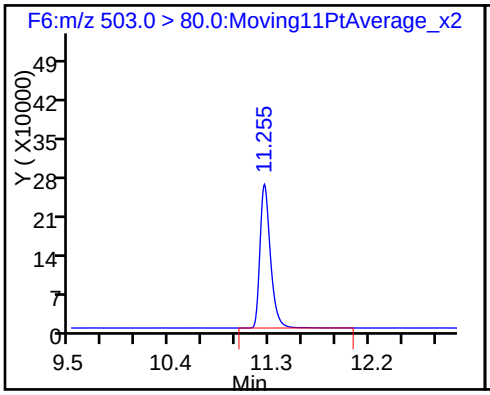
13 Perfluorooctanoic acid



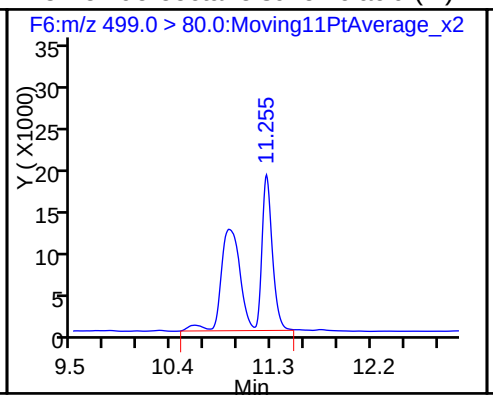
13 Perfluorooctanoic acid



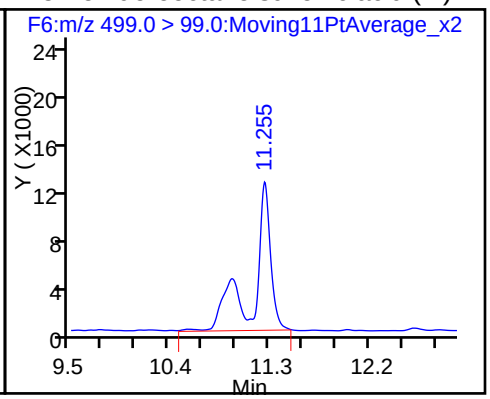
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



Manual Integration/User Assign Peak Report

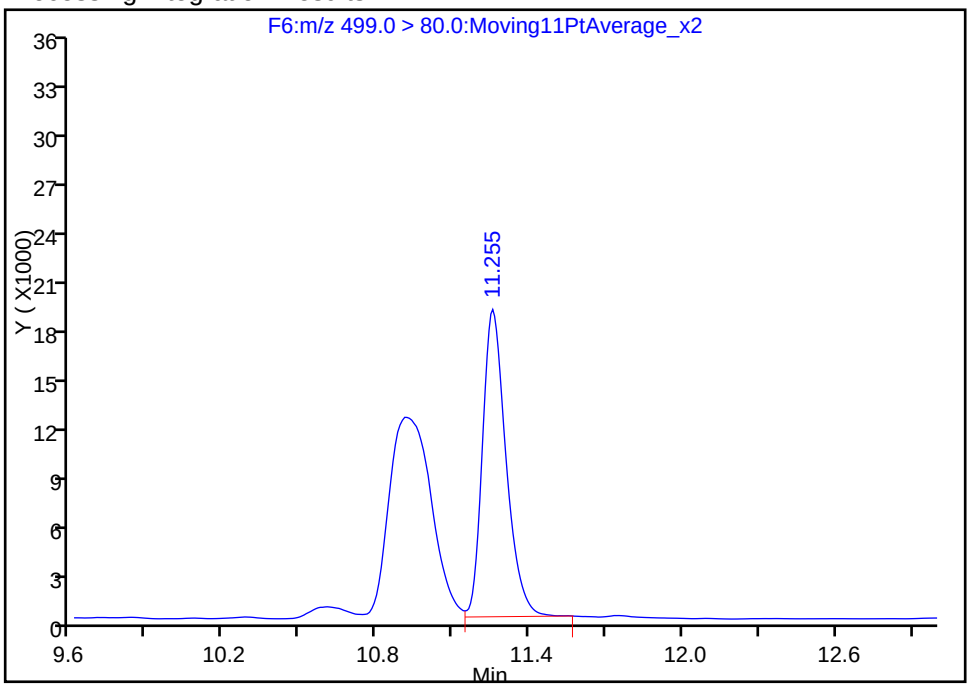
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_024.d				
Injection Date:	18-May-2015 22:28:15	Instrument ID:	A6		
Lims ID:	320-13012-A-9-A	Lab Sample ID:	320-13012-9		
Client ID:	BF-103-GW03-0515				
Operator ID:	JRB	ALS Bottle#:	43	Worklist Smp#:	36
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

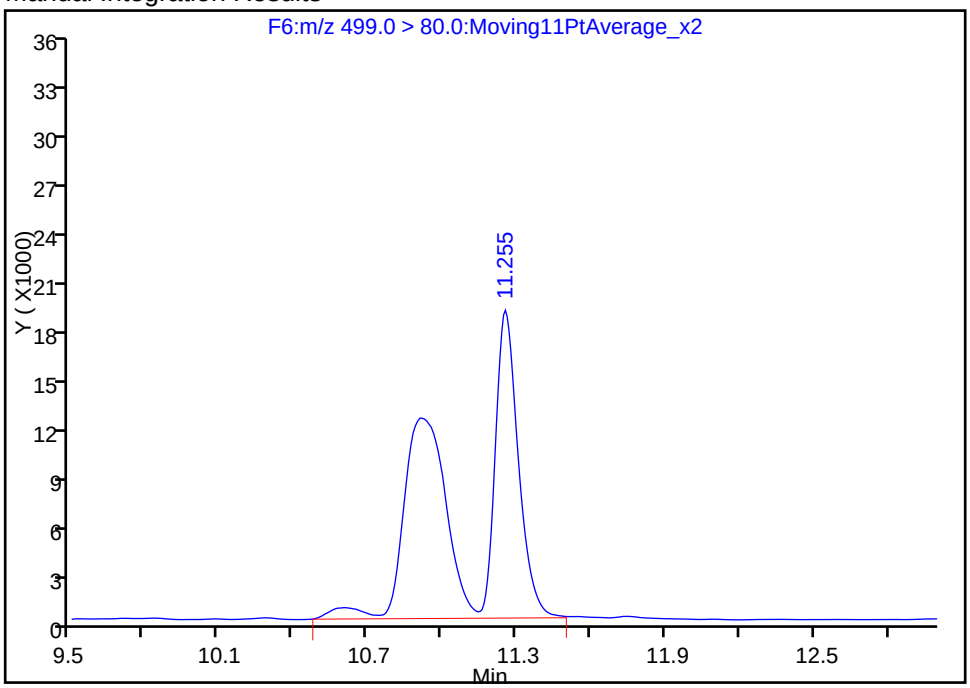
Processing Integration Results

RT: 11.26
Area: 120517
Amount: 3.458372
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 268575
Amount: 7.707065
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:21:42
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

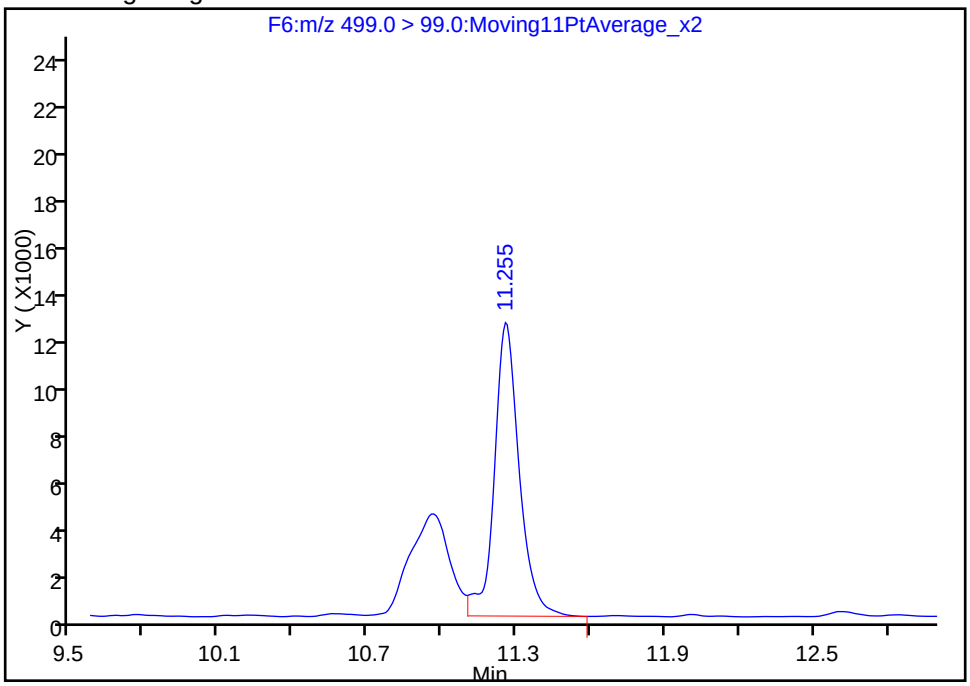
TestAmerica Sacramento

Data File:	\\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_024.d				
Injection Date:	18-May-2015 22:28:15	Instrument ID:	A6		
Lims ID:	320-13012-A-9-A	Lab Sample ID:	320-13012-9		
Client ID:	BF-103-GW03-0515				
Operator ID:	JRB	ALS Bottle#:	43	Worklist Smp#:	36
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

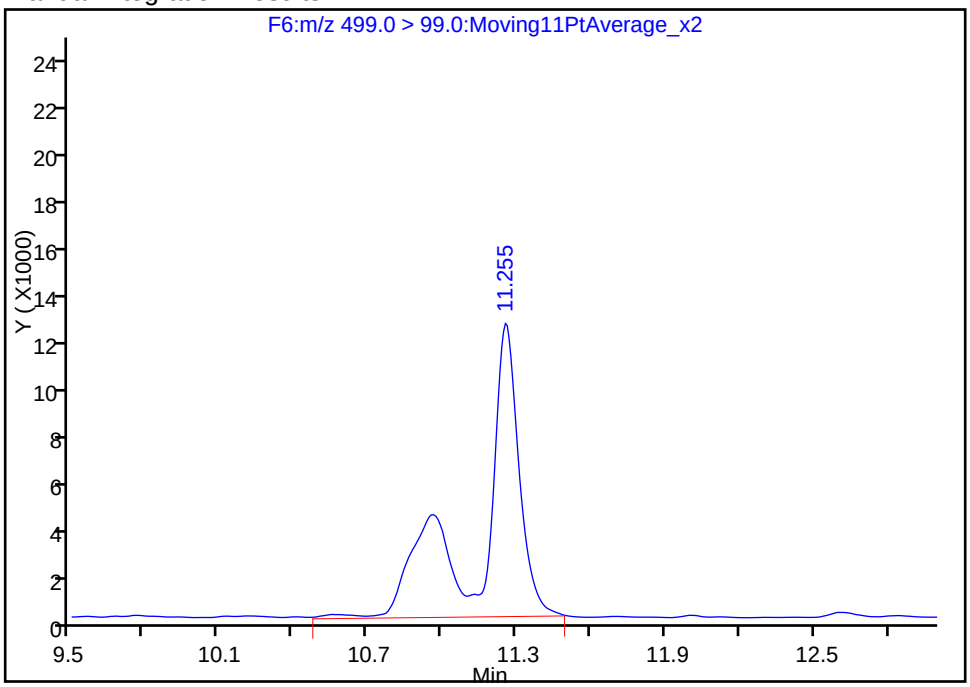
Processing Integration Results

RT: 11.26
Area: 87233
Amount: 3.458372
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 137654
Amount: 7.707065
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:21:42
Audit Action: Manually Integrated
Audit Reason: Isomers

Report Date: 19-May-2015 14:32:22 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_025.d

Injection Date: 18-May-2015 22:49:29 Instrument ID: A6

Lims ID: 320-13012-A-10-A Lab Sample ID: 320-13012-10

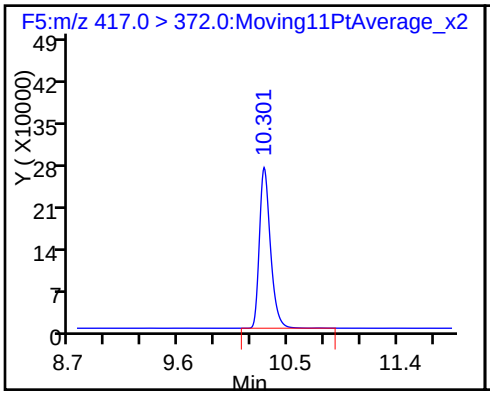
Client ID: BF-103-GW03-0515D

Operator ID: JRB ALS Bottle#: 44 Worklist Smp#: 37

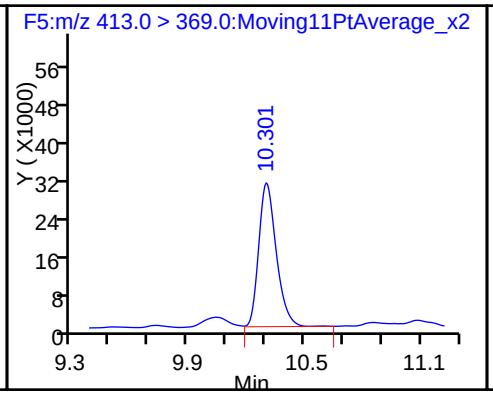
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

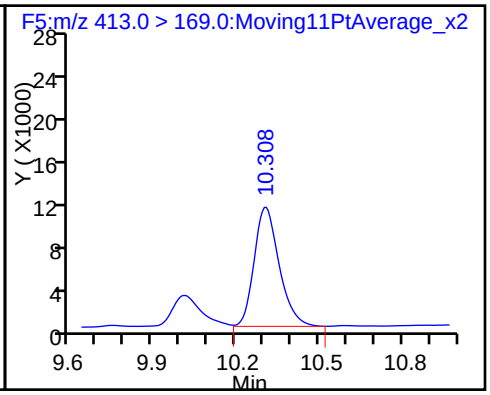
D 12 13C4 PFOA



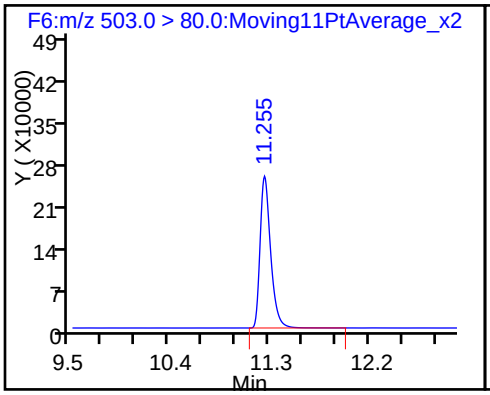
13 Perfluorooctanoic acid



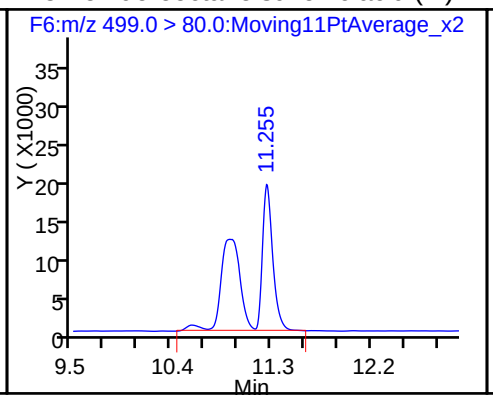
13 Perfluorooctanoic acid



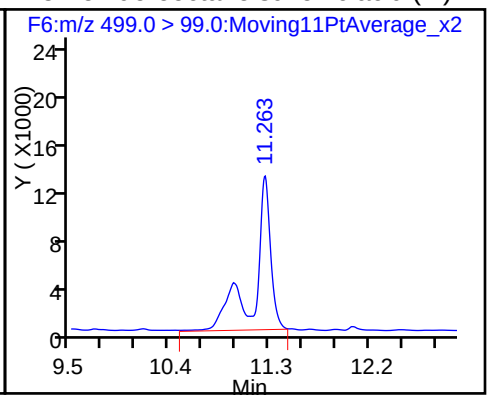
D 16 13C4 PFOS



15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



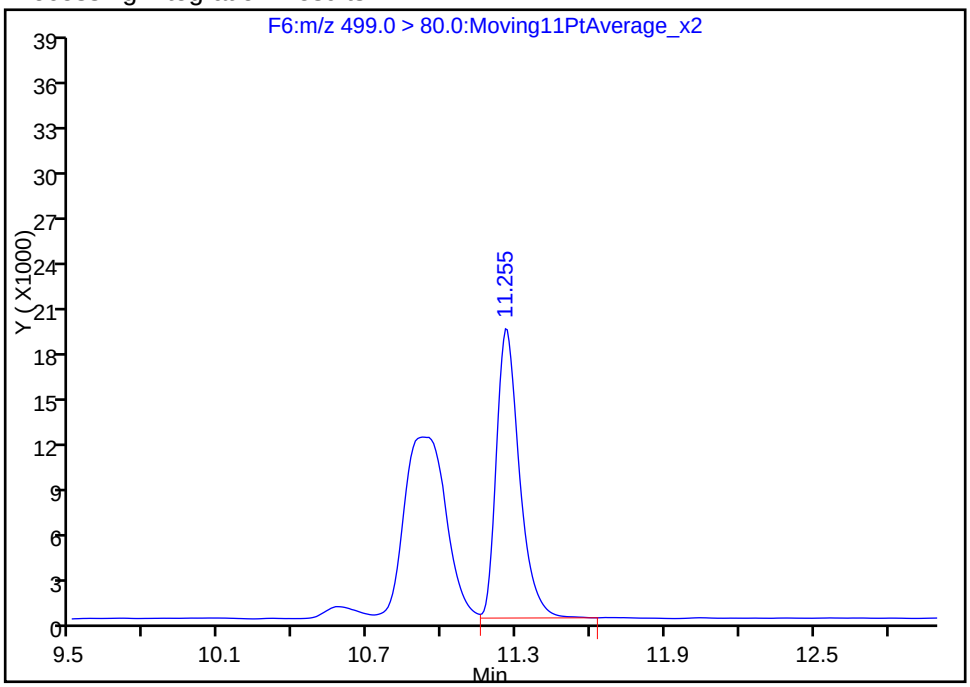
TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_025.d
Injection Date: 18-May-2015 22:49:29 Instrument ID: A6
Lims ID: 320-13012-A-10-A Lab Sample ID: 320-13012-10
Client ID: BF-103-GW03-0515D
Operator ID: JRB ALS Bottle#: 44 Worklist Smp#: 37
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC ICAL
Column: Detector F6:MRM

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

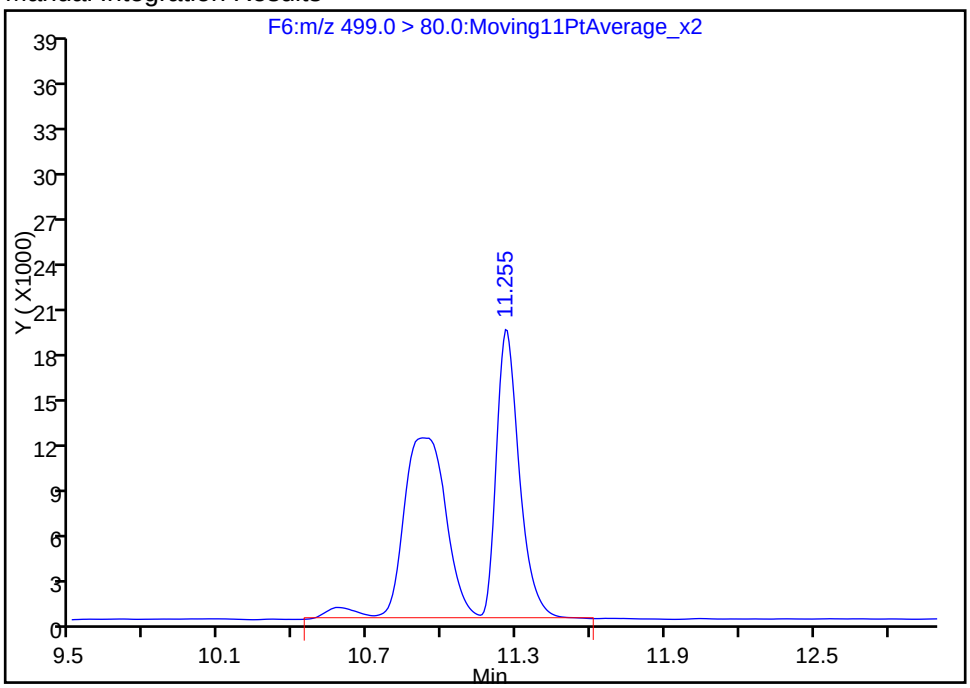
Processing Integration Results

RT: 11.26
Area: 124368
Amount: 3.638015
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 267065
Amount: 7.812191
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:22:38
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

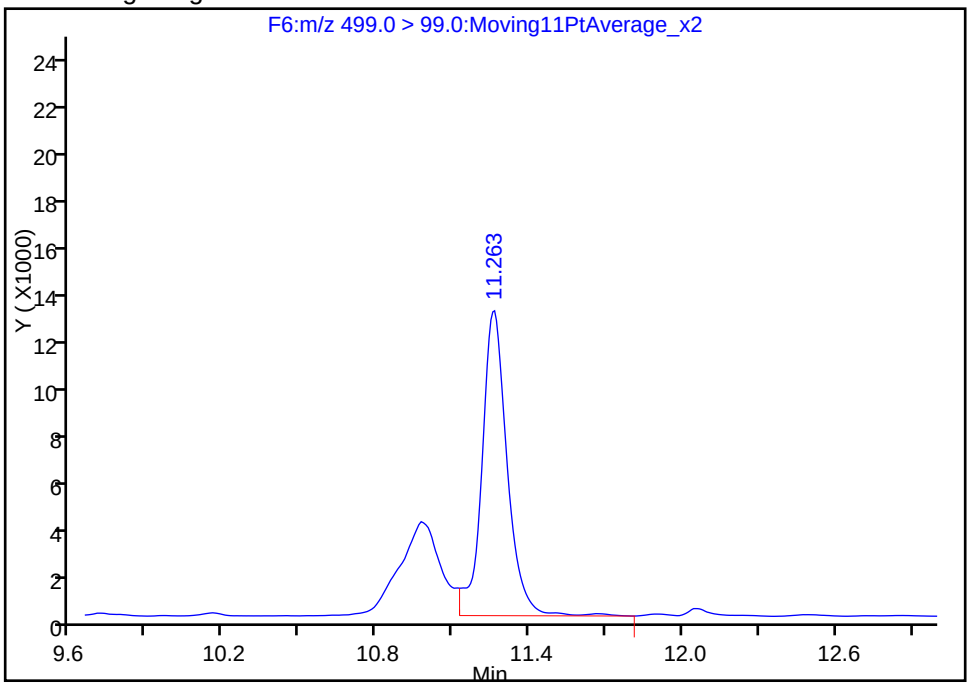
Data File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_025.d

Injection Date:	18-May-2015 22:49:29	Instrument ID:	A6		
Lims ID:	320-13012-A-10-A	Lab Sample ID:	320-13012-10		
Client ID:	BF-103-GW03-0515D				
Operator ID:	JRB	ALS Bottle#:	44	Worklist Smp#:	37
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC ICAL		
Column:		Detector	F6:MRM		

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

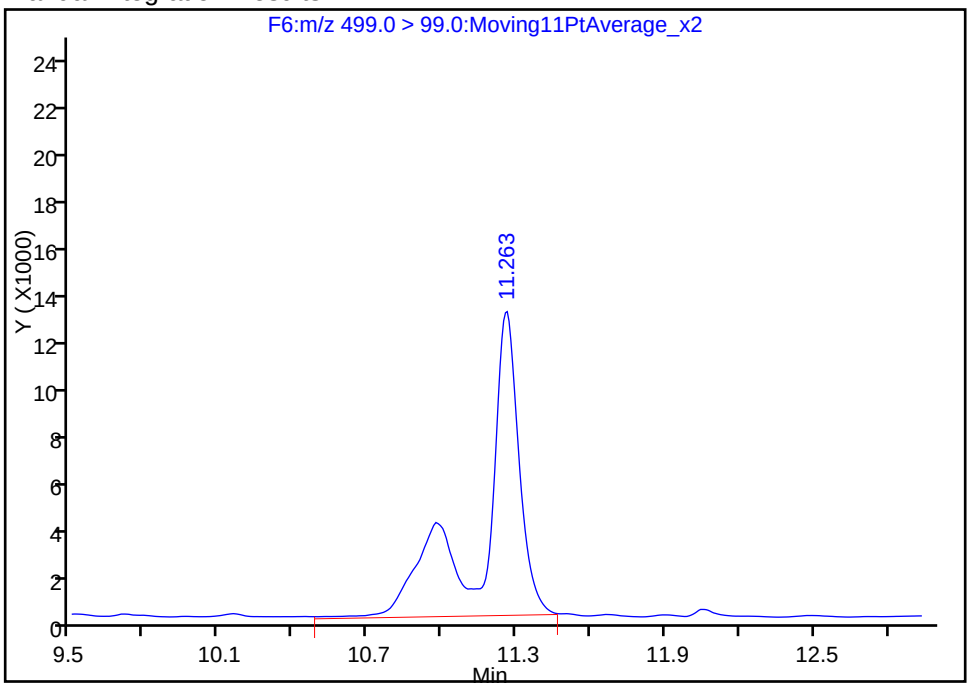
Processing Integration Results

RT: 11.26
Area: 87392
Amount: 3.638015
Amount Units: ng/ml



Manual Integration Results

RT: 11.26
Area: 130367
Amount: 7.812191
Amount Units: ng/ml



Reviewer: barnettj, 19-May-2015 14:22:38
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-13012-1

SDG No.: Proj # 112603383

Lab Sample ID: CCV 320-74338/3 Calibration Date: 05/19/2015 11:09

Instrument ID: A6 Calib Start Date: 05/18/2015 15:23

GC Column: Xterra C18 ID: 3.20(mm) Calib End Date: 05/18/2015 17:30

Lab File ID: 18MAY2015A_030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.506	1.781		1.18	1.00	18.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.8953		1.50	1.00	-13.2	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.117	0.8728		1.50	0.884	-21.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.058	1.134		1.07	1.00	7.2	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.112		1.07	1.00	6.6	40.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.6464	0.7188		1.05	0.946	11.2	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	0.4317	0.3710		0.818	0.952	-14.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.013	0.9773		0.965	1.00	-3.5	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	0.9727	0.8542		1.50	0.956	-12.2	40.0
Perfluorononanoic acid (PFNA)	AveID	0.8733	0.7840		0.898	1.00	-10.2	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.179	1.111		0.942	1.00	-5.8	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.096	1.251		1.14	1.00	14.1	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.4370	0.3394		1.50	0.964	-22.3	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9606	1.159		1.21	1.00	20.7	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8182	0.9161		1.12	1.00	12.0	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8533	0.7599		0.891	1.00	-10.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6662	0.8937		1.34	1.00	34.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		2.294		0.629	1.00	-37.1	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.7810	0.5595		0.716	1.00	-28.4	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_030.d
Lims ID: CCV L2
Client ID:
Sample Type: CCV
Inject. Date: 19-May-2015 11:09:22 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JSS Instrument ID: A6
Sublist: chrom-PFAC_A6*sub1

Method: \\Sacchrom\ChromData\A6\20150519-21915.b\PFAC_A6.m
Limit Group: LC PFC ICAL
Last Update: 19-May-2015 14:33:02 Calib Date: 18-May-2015 17:30:46
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A6\20150519-21909.b\18MAY2015A_010.d

Column 1 : Det: F1:MRM
Process Host: XAWRK017

First Level Reviewer: barnettj Date: 19-May-2015 14:14:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.687	5.669	0.018	1.000	48909	1.18		118	118	
D 1 13C4 PFBA										
217.0 > 172.0	5.684	5.670	0.014		549368	22.1		110	2615	
D 3 13C5-PFPeA										
267.9 > 223.0	6.762	6.760	0.002		1007269	23.0		115	3541	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.757	6.761	-0.004	1.000	45092	0.8681		86.8	29.8	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.868	6.873	-0.005	1.000	17945	0.6910		78.2	12.1	
298.9 > 99.0	6.872	6.873	-0.001	1.001	12195		1.47(0.00-0.00)		12.8	
D 6 13C2 PFHxA										
315.0 > 270.0	7.953	7.981	-0.028		1178247	23.0		115	3602	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.953	7.982	-0.029	1.000	66821	1.07		107	191	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.024	8.056	-0.032	0.874	10809	0.8399		89.5	30.7	
D 8 13C4-PFHpA										
367.0 > 322.0	9.147	9.196	-0.049		1323477	23.9		119	5984	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.153	9.196	-0.043	1.000	73612	1.07		107	139	
D 11 18O2 PFHxS										
403.0 > 84.0	9.176	9.226	-0.050		440034	20.0		106	1258	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.194	9.227	-0.033	1.000	15814	1.05		111	13.7	
D 12 13C4 PFOA										
417.0 > 372.0	10.259	10.304	-0.045		3369994	63.6		127	15051	

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	10.259	10.306	-0.047	1.000	65868	0.9649		96.5	23.5	
413.0 > 169.0	10.252	10.306	-0.054	0.999	24094		2.73(0.00-0.00)		30.7	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.259	10.311	-0.052	1.000	12588	0.8182		85.9	58.3	
D 16 13C4 PFOS										
503.0 > 80.0	11.219	11.260	-0.041		1703460	55.0		115	5723	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.227	11.261	-0.034	1.000	29102	0.8396		87.8	114	
499.0 > 99.0	11.227	11.261	-0.034	1.000	22543		1.29(0.00-0.00)		79.8	
D 17 13C5 PFNA										
468.0 > 423.0	11.242	11.280	-0.038		1148179	23.7		119	3384	
18 Perfluorononanoic acid										
463.0 > 419.0	11.242	11.281	-0.039	1.000	45008	0.8977		89.8	105	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.046	12.086	-0.040	1.000	14395	0.8913		92.8	74.5	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.084	12.121	-0.037	1.000	62115	0.9425		94.2	170	
D 19 13C2 PFDA										
515.0 > 470.0	12.084	12.121	-0.037		1117802	22.6		113	2930	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.653	12.675	-0.022	1.000	73972	1.14		114	265	
D 23 13C8 FOSA										
506.0 > 78.0	12.653	12.677	-0.024		2957701	51.6		103	3494	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.758	12.786	-0.028	1.000	11659	0.7486		77.7	34.1	
D 26 13C2 PFUnA										
565.0 > 520.0	12.799	12.830	-0.031		1536012	24.1		121	2158	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.799	12.833	-0.034	1.000	89025	1.21		121	60.4	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.432	13.462	-0.030	1.000	75330	1.12		112	111	
D 28 13C2 PFDoA										
615.0 > 570.0	13.432	13.462	-0.030		1644623	23.1		115	2172	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.887	13.918	-0.031	1.000	13896	0.7601		78.5	64.3	
30 Perfluorotridecanoic acid										
663.0 > 619.0	13.942	13.976	-0.034	1.000	62489	0.8906		89.1	34.5	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.389	14.412	-0.023		1473134	23.0		115	2976	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.397	14.413	-0.016	1.000	73493	1.34		134	15.4	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.059	15.072	-0.013		1814806	21.7		109	3325	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.059	15.072	-0.013	1.000	188613	0.6294		62.9	172	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.400	15.409	-0.009	1.000	46008	0.7163		71.6	43.3	

Report Date: 19-May-2015 14:33:02 Chrom Revision: 2.2 05-May-2015 11:39:10

TestAmerica Sacramento

Data File: \\Sacchrom\ChromData\A6\20150519-21915.b\18MAY2015A_030.d

Injection Date: 19-May-2015 11:09:22 Instrument ID: A6

Lims ID: CCV L2

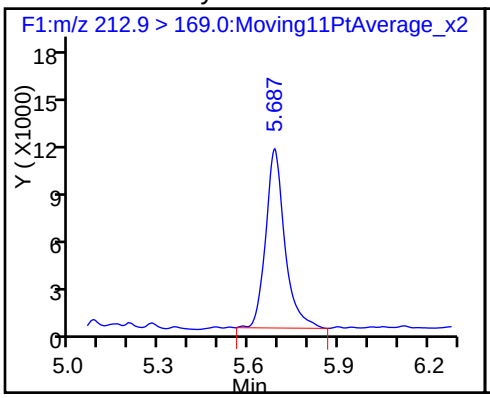
Client ID:

Operator ID: JSS ALS Bottle#: 2 Worklist Smp#: 3

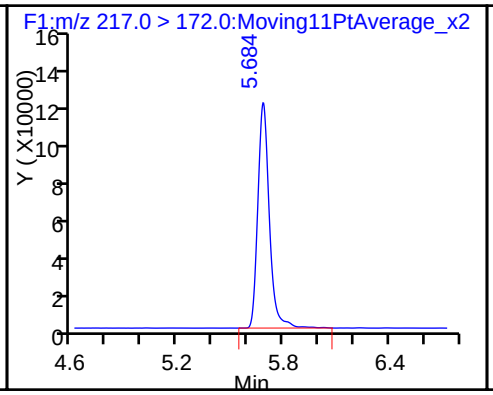
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC ICAL

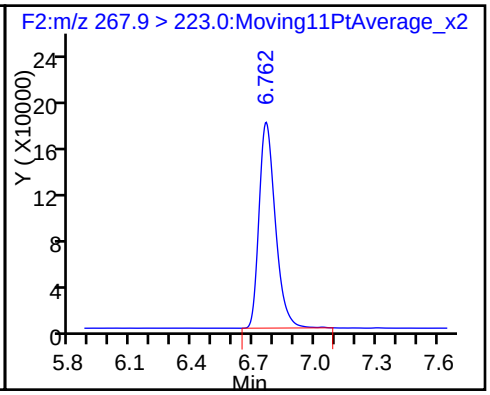
2 Perfluorobutyric acid



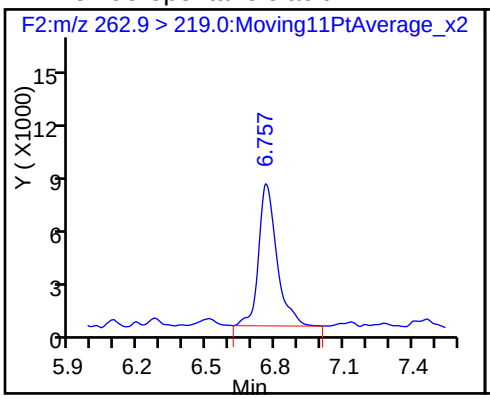
D 1 13C4 PFBA



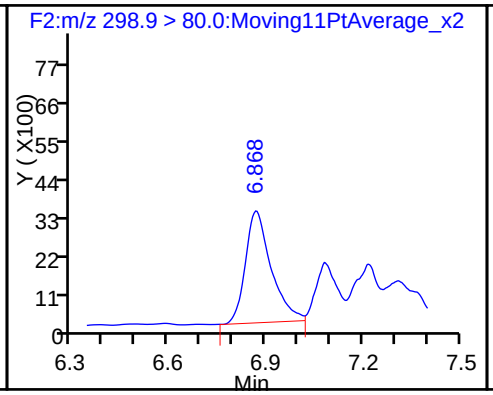
D 3 13C5-PFPeA



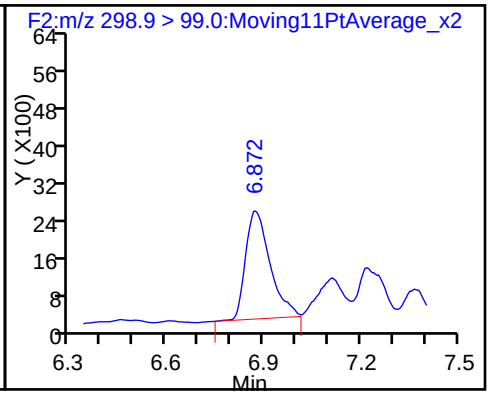
4 Perfluoropentanoic acid



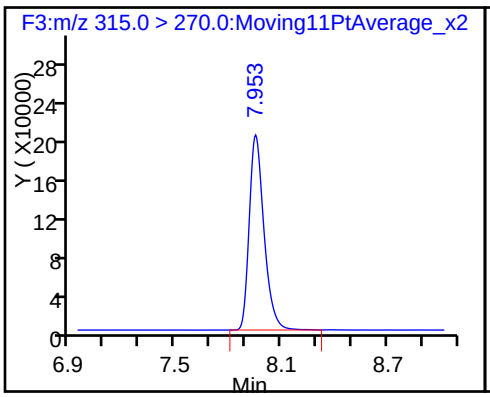
5 Perfluorobutane Sulfonate



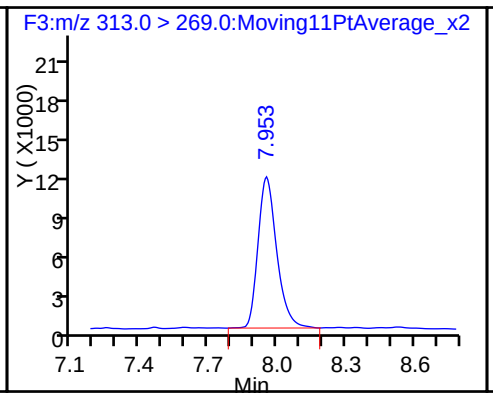
5 Perfluorobutane Sulfonate



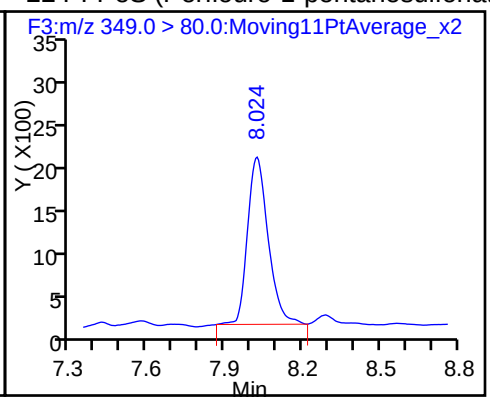
D 6 13C2 PFHxA



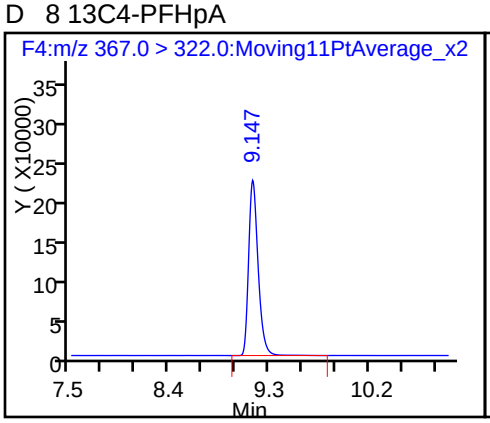
7 Perfluorohexanoic acid



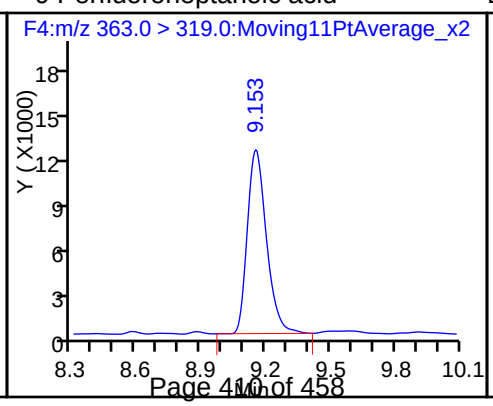
22 PFPeS (Perflouro-1-pentanesulfonat



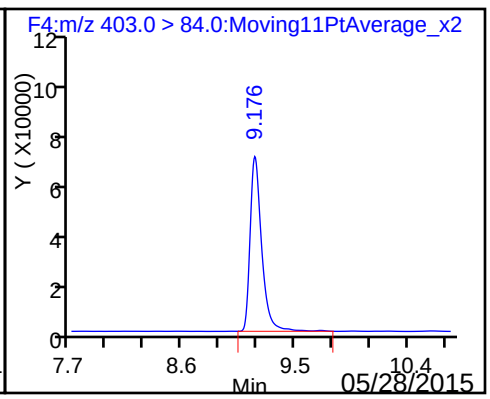
D 8 13C4-PFHpA



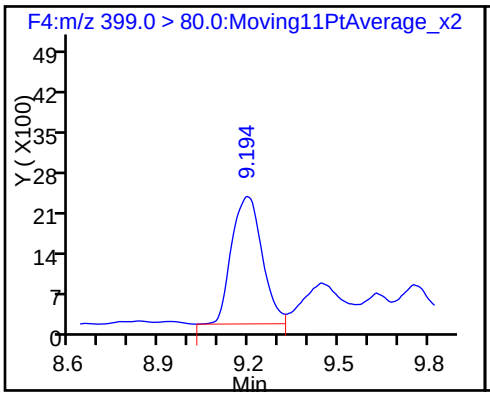
9 Perfluoroheptanoic acid



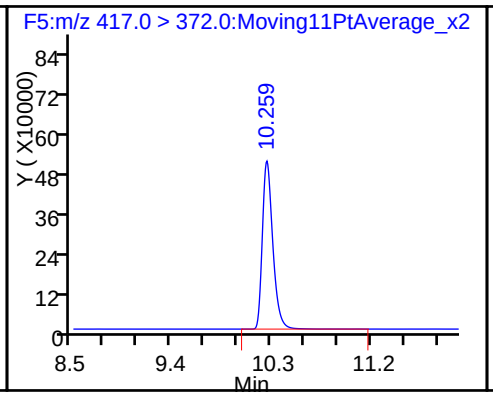
D 11 18O2 PFHxS



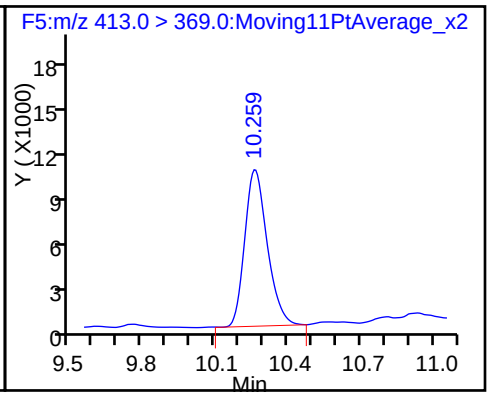
10 Perfluorohexane Sulfonate



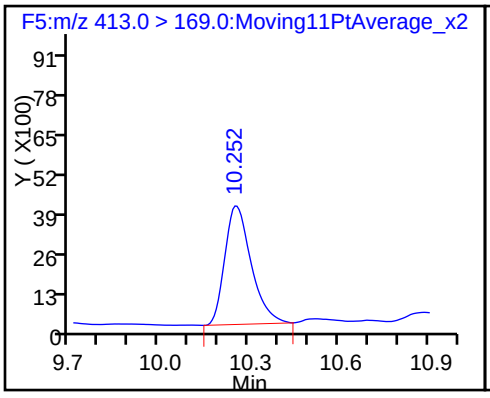
D 12 13C4 PFOA



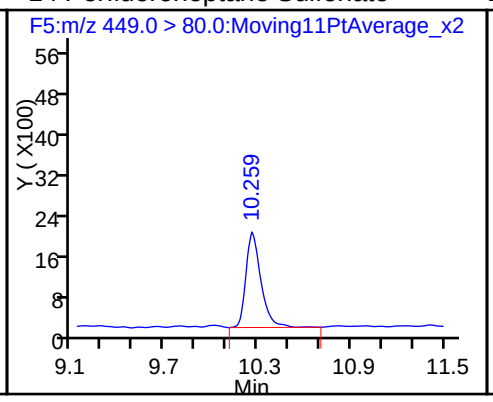
13 Perfluorooctanoic acid



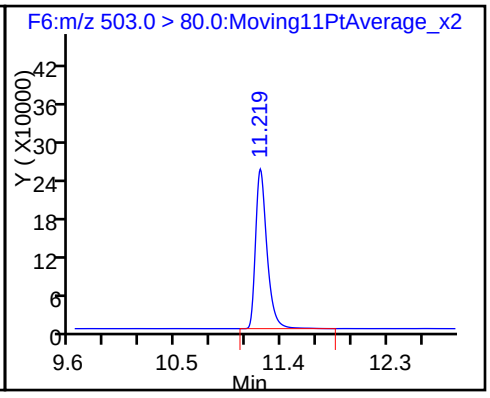
13 Perfluorooctanoic acid



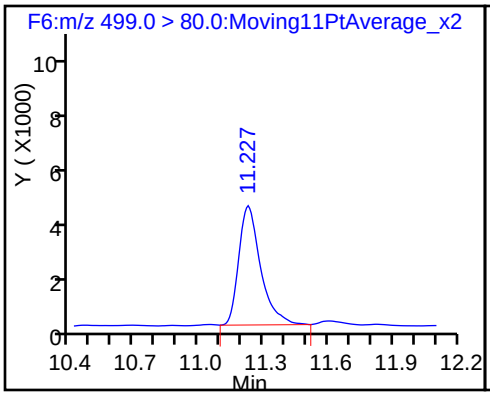
14 Perfluoroheptane Sulfonate



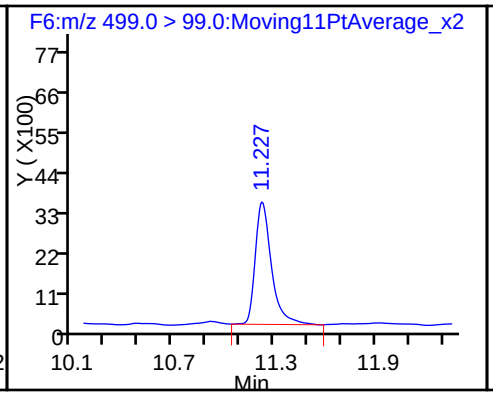
D 16 13C4 PFOS



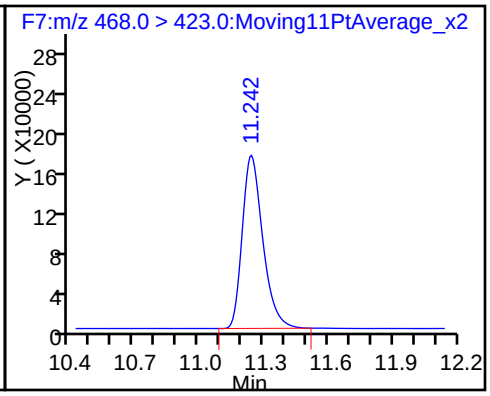
15 Perfluorooctane sulfonic acid



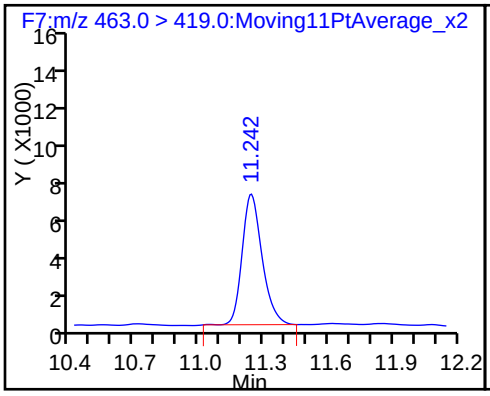
15 Perfluorooctane sulfonic acid



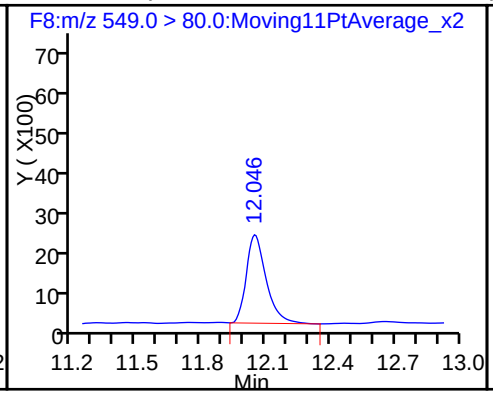
D 17 13C5 PFNA



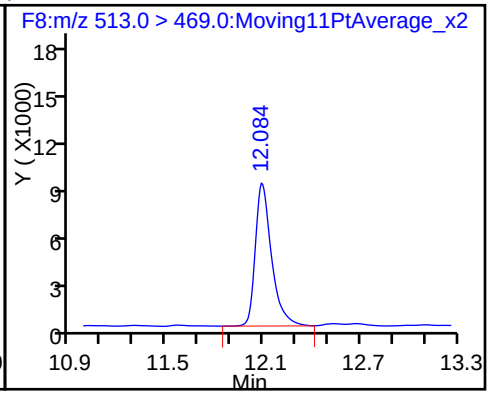
18 Perfluorononanoic acid



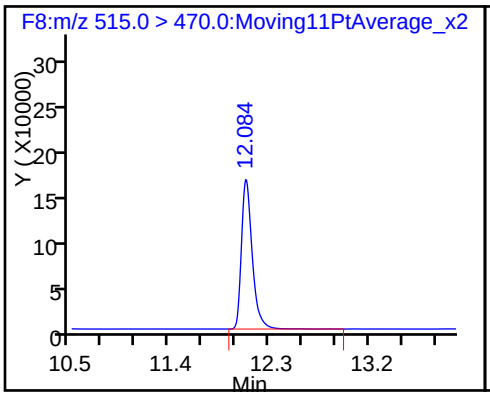
21 PFNS (Perflouro-1-nonanesulfonate)



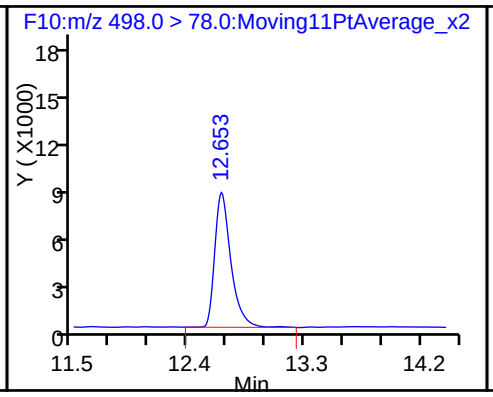
20 Perfluorodecanoic acid



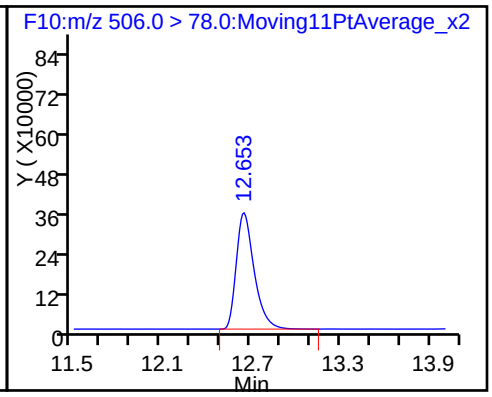
D 19 13C2 PFDA



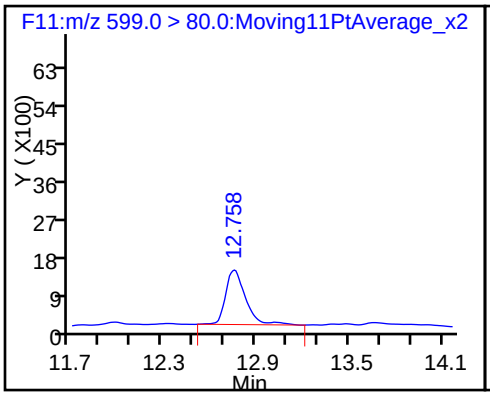
24 Perfluorooctane Sulfonamide



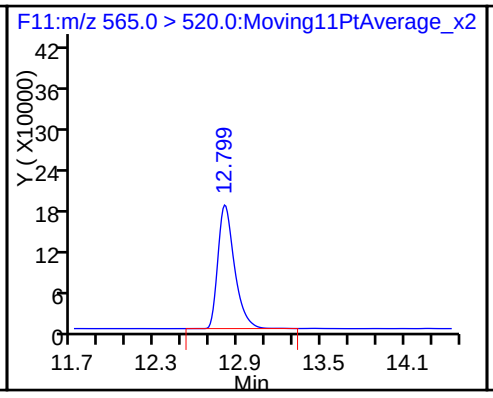
D 23 13C8 FOSA



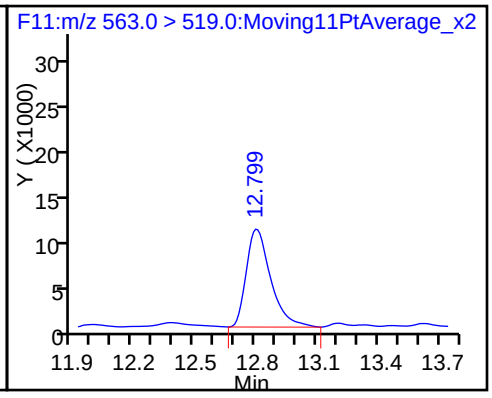
25 Perfluorodecane Sulfonate



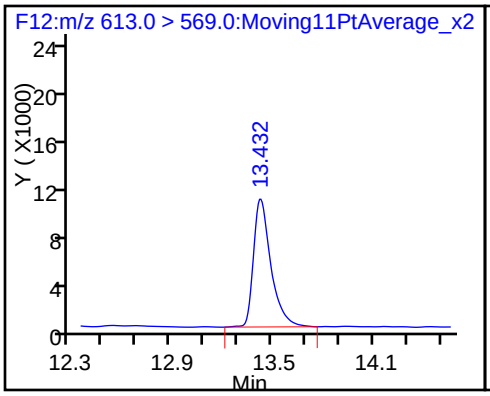
D 26 13C2 PFUnA



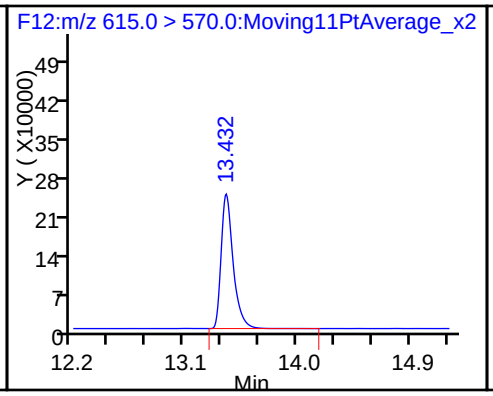
27 Perfluoroundecanoic acid



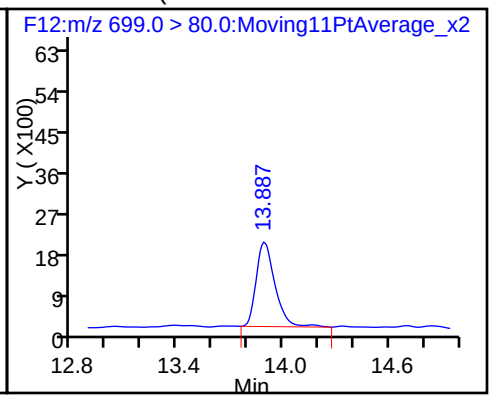
29 Perfluorododecanoic acid



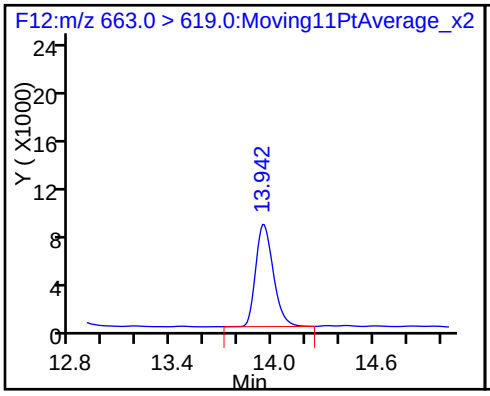
D 28 13C2 PFDoA



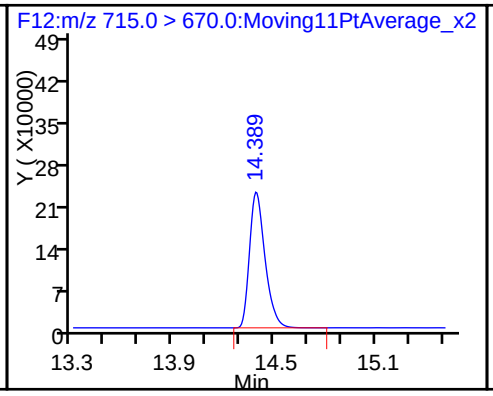
31 PFDoS (Perflouro-1-dodecanesulfona



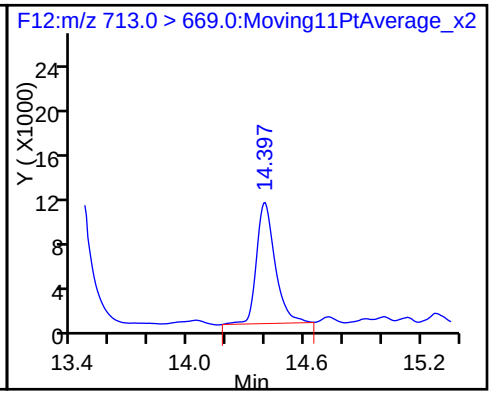
30 Perfluorotridecanoic acid



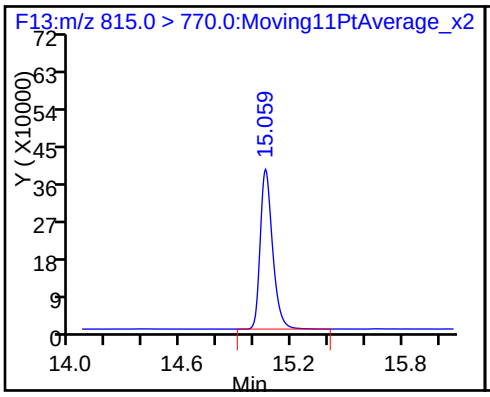
D 33 13C2-PFTeDA



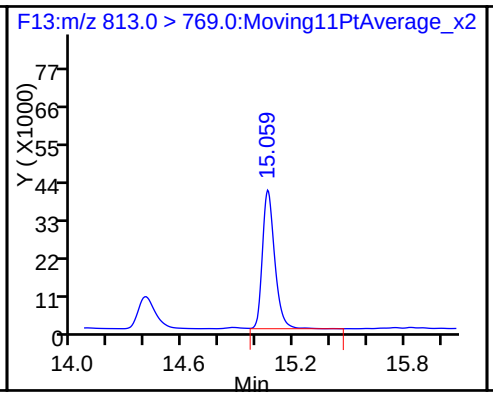
32 Perfluorotetradecanoic acid



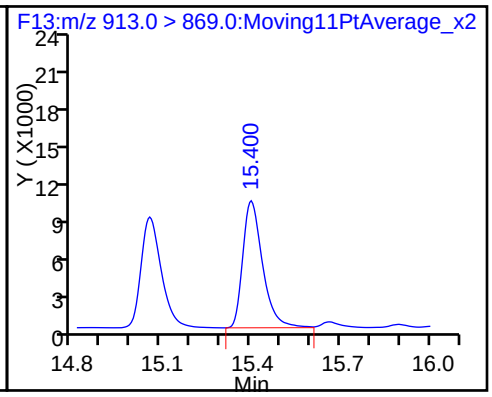
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC	RES_META_ID
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00103	SITE 00103	BF103-MW03	Monitoring well	1049605.14	515847.3374	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF103-GW03-0515-D	Ground water	Field duplicate	13-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00103	SITE 00103	BF103-MW05S	Monitoring well	1049655.499	514758.2174	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF103-GW05S-0515	Ground water	Normal (Regular)	12-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00103	SITE 00103	BF103-MW04	Monitoring well	1049857.328	515266.9501	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF103-GW04-0515	Ground water	Normal (Regular)	12-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00103	SITE 00103	BF103-MW01	Monitoring well	1049320.585	517117.867	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF103-GW01-0515	Ground water	Normal (Regular)	12-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00103	SITE 00103	BF103-MW05D	Monitoring well	1049655.707	514758.3197	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF103-GW05D-0515	Ground water	Normal (Regular)	12-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00103	SITE 00103	BF103-MW02	Monitoring well	1049924.913	516490.5042	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF103-GW02-0515	Ground water	Normal (Regular)	13-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00103	SITE 00103	BF103-MW03	Monitoring well	1049605.14	515847.3374	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF103-GW03-0515	Ground water	Normal (Regular)	13-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00104	SITE 00104	BF104-MW02	Monitoring well	1049420.407	515525.0287	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF104-GW02-0515	Ground water	Normal (Regular)	13-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00104	SITE 00104	BF104-MW01	Monitoring well	1049311.603	516159.5426	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF104-GW01-0515	Ground water	Normal (Regular)	13-May-15	537	Perfluoroalkyl Compounds	20160125100918.00
SOUTHEAST	PENSACOLA_NAS	320-13012-1	SITE 00105	SITE 00105	BF105-MW01	Monitoring well	1048397.371	516307.1118	N6247008D1001	JM51	TETRA TECH NUS, INC.	BF-105-GW01-0515	Ground water	Normal (Regular)	12-May-15	537	Perfluoroalkyl Compounds	20160125100918.00