NAVFAC
Naval Facilities Engineering Command

Off-Base Drinking Water Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG 320-17363-1

Naval Weapons Station Earle
Colts Neck, New Jersey

July 2019

N60478.SF.001863
NWS EARLE
5090.3c

LABORATORY DATA PACKAGE, 320-17363-1, NWS EARLE, NJ

02/25/2016

TESTAMERICA LABORATORIES, INC

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

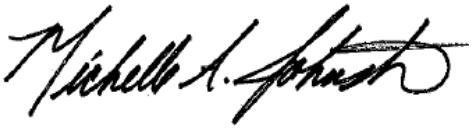
ANALYTICAL REPORT

Job Number: 320-17363-1

Job Description: Ensafe--NWS-Earle, NJ PFCs Potable Water

For:
Earth Toxics, Inc
PO BOX 3382
Logan, UT 84321

Attention: Mike Dryden



Approved for release.
Michelle A Johnston
Project Manager II
2/25/2016 1:33 PM

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cc: Ms. Tina Cantwell
Ms. Nicole Loos
Ms. Jennifer O'Keefe

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

The Lab Certification ID# is 4025.

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

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Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

Glossary

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

CASE NARRATIVE
Client: Earth Toxics, Inc.
Project: NWS Earle Site 46
Report Number: 320-17363-1

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

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.

Sample Receipt

The samples were received on 2/20/2016 10:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.2ºC and 2.0ºC. No anomalies were encountered during sample receipt.

Perfluorinated Hydrocarbons (PFCs)

Samples BC2_19_16 (320-17363-1), DW-57 (320-17363-2), DW-57FB (320-17363-3), DW-48 (320-17363-4), DW-48FB (320-17363-5), DW-59 (320-17363-6), DW-59FB (320-17363-7), DW-88 (320-17363-8), DW-88FB (320-17363-9), DW-10 (320-17363-10), DW-10FB (320-17363-11), DW-63 (320-17363-12), DW-63FB (320-17363-13), DW-87 (320-17363-14), DW-87FB (320-17363-15), DW-23 (320-17363-16), DW-23FB (320-17363-17) and DUP-021916 (320-17363-18) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with WS-LC-0025. The samples were prepared on 02/22/2016 and analyzed on 02/23/2016 and 02/24/2016.

Reporting limits and method detection limits have been adjusted accordingly for the initial volumes extracted.

MS/MSD analyses for prep batch 320-101153 were not requested.

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

Detection Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17363-1

Client Sample ID: BC2_19_16 — Lab Sample ID: 320-17363-1

No Detections.

Client Sample ID: DW-57 — Lab Sample ID: 320-17363-2

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.8	J	2.4	1.9	0.88	ng/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.5		2.4	1.9	0.77	ng/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	41	M	2.4	1.9	0.83	ng/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	3.4		2.4	1.9	0.63	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	200	M	3.8	2.9	1.2	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	28		2.4	1.9	0.71	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-57FB — Lab Sample ID: 320-17363-3

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.2	1.8	0.78	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.7	J M	3.6	2.7	1.1	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-48 — Lab Sample ID: 320-17363-4

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.83	J	2.2	1.8	0.76	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-48FB — Lab Sample ID: 320-17363-5

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.71	J	2.2	1.8	0.70	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-59 — Lab Sample ID: 320-17363-6

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.83	J M	2.2	1.8	0.78	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-59FB — Lab Sample ID: 320-17363-7

No Detections.

Client Sample ID: DW-88 — Lab Sample ID: 320-17363-8

No Detections.

Client Sample ID: DW-88FB — Lab Sample ID: 320-17363-9

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17363-1

Client Sample ID: DW-10 — Lab Sample ID: 320-17363-10

No Detections.

Client Sample ID: DW-10FB — Lab Sample ID: 320-17363-11

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.80	J	2.2	1.8	0.78	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-63 — Lab Sample ID: 320-17363-12

No Detections.

Client Sample ID: DW-63FB — Lab Sample ID: 320-17363-13

No Detections.

Client Sample ID: DW-87 — Lab Sample ID: 320-17363-14

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.86	J	2.3	1.8	0.83	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-87FB — Lab Sample ID: 320-17363-15

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.86	J	2.3	1.8	0.79	ng/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.78	J	2.3	1.8	0.59	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-23 — Lab Sample ID: 320-17363-16

No Detections.

Client Sample ID: DW-23FB — Lab Sample ID: 320-17363-17

No Detections.

Client Sample ID: DUP-021916 — Lab Sample ID: 320-17363-18

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: BC2_19_16
Lab Sample ID: 320-17363-1
Date Collected: 02/19/16 00:00
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83	ng/L		02/23/16 23:58	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73	ng/L		02/23/16 23:58	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.79	ng/L		02/23/16 23:58	1
Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.59	ng/L		02/23/16 23:58	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.2	ng/L		02/23/16 23:58	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68	ng/L		02/23/16 23:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*25 - 150*	*02/22/16 13:35*	*02/23/16 23:58*	*1*
13C4 PFOA	*114*		*25 - 150*	*02/22/16 13:35*	*02/23/16 23:58*	*1*
13C4 PFOS	*95*		*25 - 150*	*02/22/16 13:35*	*02/23/16 23:58*	*1*
13C4-PFHpA	*119*		*25 - 150*	*02/22/16 13:35*	*02/23/16 23:58*	*1*
13C5 PFNA	*100*		*25 - 150*	*02/22/16 13:35*	*02/23/16 23:58*	*1*
18O2 PFHxS	*98*		*25 - 150*	*02/22/16 13:35*	*02/23/16 23:58*	*1*

Client Sample ID: DW-57
Lab Sample ID: 320-17363-2

Date Collected: 02/19/16 14:41
Matrix: Water

Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	J	2.4	1.9	0.88	ng/L		02/24/16 00:19	1
Perfluoroheptanoic acid (PFHpA)	4.5		2.4	1.9	0.77	ng/L		02/24/16 00:19	1
Perfluorohexanesulfonic acid (PFHxS)	41	M	2.4	1.9	0.83	ng/L		02/24/16 00:19	1
Perfluorononanoic acid (PFNA)	3.4		2.4	1.9	0.63	ng/L		02/24/16 00:19	1
Perfluorooctanesulfonic acid (PFOS)	200	M	3.8	2.9	1.2	ng/L		02/24/16 00:19	1
Perfluorooctanoic acid (PFOA)	28		2.4	1.9	0.71	ng/L		02/24/16 00:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*68*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:19*	*1*
13C4 PFOA	*52*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:19*	*1*
13C4 PFOS	*87*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:19*	*1*
13C4-PFHpA	*71*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:19*	*1*
13C5 PFNA	*34*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:19*	*1*
18O2 PFHxS	*96*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:19*	*1*

Client Sample ID: DW-57FB
Lab Sample ID: 320-17363-3
Date Collected: 02/19/16 14:27
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.83	ng/L		02/24/16 00:41	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72	ng/L		02/24/16 00:41	1
Perfluorohexanesulfonic acid (PFHxS)	**1.1**	**J**	2.2	1.8	0.78	ng/L		02/24/16 00:41	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.59	ng/L		02/24/16 00:41	1
Perfluorooctanesulfonic acid (PFOS)	**1.7**	**J M**	3.6	2.7	1.1	ng/L		02/24/16 00:41	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67	ng/L		02/24/16 00:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:41*	*1*
13C4 PFOA	*109*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:41*	*1*
13C4 PFOS	*96*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:41*	*1*
13C4-PFHpA	*120*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:41*	*1*
13C5 PFNA	*96*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:41*	*1*
18O2 PFHxS	*92*		*25 - 150*	*02/22/16 13:35*	*02/24/16 00:41*	*1*

Client Sample ID: DW-48
Lab Sample ID: 320-17363-4
Date Collected: 02/19/16 14:11
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.80	ng/L		02/24/16 01:02	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70	ng/L		02/24/16 01:02	1
Perfluorohexanesulfonic acid (PFHxS)	**0.83**	**J**	2.2	1.8	0.76	ng/L		02/24/16 01:02	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57	ng/L		02/24/16 01:02	1
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1	ng/L		02/24/16 01:02	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66	ng/L		02/24/16 01:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:02*	*1*
13C4 PFOA	*88*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:02*	*1*
13C4 PFOS	*99*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:02*	*1*
13C4-PFHpA	*104*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:02*	*1*
13C5 PFNA	*71*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:02*	*1*
18O2 PFHxS	*104*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:02*	*1*

Client Sample ID: DW-48FB
Lab Sample ID: 320-17363-5
Date Collected: 02/19/16 13:52
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.81	ng/L		02/24/16 01:44	1
Perfluoroheptanoic acid (PFHpA)	**0.71**	**J**	2.2	1.8	0.70	ng/L		02/24/16 01:44	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76	ng/L		02/24/16 01:44	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57	ng/L		02/24/16 01:44	1
Perfluorooctanesulfonic acid (PFOS)	2.6	U M	3.5	2.6	1.1	ng/L		02/24/16 01:44	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66	ng/L		02/24/16 01:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:44*	*1*
13C4 PFOA	*106*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:44*	*1*
13C4 PFOS	*99*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:44*	*1*
13C4-PFHpA	*115*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:44*	*1*
13C5 PFNA	*103*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:44*	*1*
18O2 PFHxS	*92*		*25 - 150*	*02/22/16 13:35*	*02/24/16 01:44*	*1*

Client Sample ID: DW-59
Lab Sample ID: 320-17363-6
Date Collected: 02/19/16 13:36
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82	ng/L		02/24/16 02:05	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72	ng/L		02/24/16 02:05	1
Perfluorohexanesulfonic acid (PFHxS)	**0.83**	**J M**	2.2	1.8	0.78	ng/L		02/24/16 02:05	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58	ng/L		02/24/16 02:05	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U M	3.6	2.7	1.1	ng/L		02/24/16 02:05	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67	ng/L		02/24/16 02:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:05*	*1*
13C4 PFOA	*77*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:05*	*1*
13C4 PFOS	*94*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:05*	*1*
13C4-PFHpA	*91*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:05*	*1*
13C5 PFNA	*67*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:05*	*1*
18O2 PFHxS	*94*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:05*	*1*

Client Sample ID: DW-59FB
Lab Sample ID: 320-17363-7
Date Collected: 02/19/16 13:27
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.81	ng/L		02/24/16 02:27	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70	ng/L		02/24/16 02:27	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76	ng/L		02/24/16 02:27	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57	ng/L		02/24/16 02:27	1
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1	ng/L		02/24/16 02:27	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66	ng/L		02/24/16 02:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*97*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:27*	*1*
13C4 PFOA	*109*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:27*	*1*
13C4 PFOS	*94*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:27*	*1*
13C4-PFHpA	*111*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:27*	*1*
13C5 PFNA	*104*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:27*	*1*
18O2 PFHxS	*89*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:27*	*1*

Client Sample ID: DW-88
Lab Sample ID: 320-17363-8
Date Collected: 02/19/16 13:11
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.80	ng/L		02/24/16 02:48	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70	ng/L		02/24/16 02:48	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76	ng/L		02/24/16 02:48	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57	ng/L		02/24/16 02:48	1
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1	ng/L		02/24/16 02:48	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66	ng/L		02/24/16 02:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:48*	*1*
13C4 PFOA	*97*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:48*	*1*
13C4 PFOS	*92*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:48*	*1*
13C4-PFHpA	*104*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:48*	*1*
13C5 PFNA	*83*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:48*	*1*
18O2 PFHxS	*92*		*25 - 150*	*02/22/16 13:35*	*02/24/16 02:48*	*1*

Client Sample ID: DW-88FB
Lab Sample ID: 320-17363-9
Date Collected: 02/19/16 12:57
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.84	ng/L		02/24/16 03:09	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.74	ng/L		02/24/16 03:09	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.80	ng/L		02/24/16 03:09	1
Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.60	ng/L		02/24/16 03:09	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2	ng/L		02/24/16 03:09	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.69	ng/L		02/24/16 03:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*105*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:09*	*1*
13C4 PFOA	*117*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:09*	*1*
13C4 PFOS	*95*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:09*	*1*
13C4-PFHpA	*119*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:09*	*1*
13C5 PFNA	*103*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:09*	*1*
18O2 PFHxS	*96*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:09*	*1*

Client Sample ID: DW-10
Lab Sample ID: 320-17363-10
Date Collected: 02/19/16 10:31
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	1.9	0.88	ng/L		02/24/16 03:30	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	1.9	0.77	ng/L		02/24/16 03:30	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U M	2.4	1.9	0.84	ng/L		02/24/16 03:30	1
Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.63	ng/L		02/24/16 03:30	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	2.9	1.2	ng/L		02/24/16 03:30	1
Perfluorooctanoic acid (PFOA)	1.9	U	2.4	1.9	0.72	ng/L		02/24/16 03:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:30*	*1*
13C4 PFOA	*85*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:30*	*1*
13C4 PFOS	*95*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:30*	*1*
13C4-PFHpA	*95*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:30*	*1*
13C5 PFNA	*69*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:30*	*1*
18O2 PFHxS	*100*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:30*	*1*

Client Sample ID: DW-10FB
Lab Sample ID: 320-17363-11
Date Collected: 02/19/16 10:12
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82	ng/L		02/24/16 03:52	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72	ng/L		02/24/16 03:52	1
Perfluorohexanesulfonic acid (PFHxS)	**0.80**	**J**	2.2	1.8	0.78	ng/L		02/24/16 03:52	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.59	ng/L		02/24/16 03:52	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1	ng/L		02/24/16 03:52	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67	ng/L		02/24/16 03:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:52*	*1*
13C4 PFOA	*114*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:52*	*1*
13C4 PFOS	*96*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:52*	*1*
13C4-PFHpA	*115*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:52*	*1*
13C5 PFNA	*105*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:52*	*1*
18O2 PFHxS	*94*		*25 - 150*	*02/22/16 13:35*	*02/24/16 03:52*	*1*

Client Sample ID: DW-63
Lab Sample ID: 320-17363-12
Date Collected: 02/19/16 11:06
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.83	ng/L		02/24/16 04:13	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72	ng/L		02/24/16 04:13	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.78	ng/L		02/24/16 04:13	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.59	ng/L		02/24/16 04:13	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1	ng/L		02/24/16 04:13	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67	ng/L		02/24/16 04:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:13*	*1*
13C4 PFOA	*76*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:13*	*1*
13C4 PFOS	*99*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:13*	*1*
13C4-PFHpA	*95*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:13*	*1*
13C5 PFNA	*51*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:13*	*1*
18O2 PFHxS	*98*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:13*	*1*

Client Sample ID: DW-63FB
Lab Sample ID: 320-17363-13
Date Collected: 02/19/16 10:47
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83	ng/L		02/24/16 04:34	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73	ng/L		02/24/16 04:34	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.79	ng/L		02/24/16 04:34	1
Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.59	ng/L		02/24/16 04:34	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.2	ng/L		02/24/16 04:34	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68	ng/L		02/24/16 04:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:34*	*1*
13C4 PFOA	*113*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:34*	*1*
13C4 PFOS	*99*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:34*	*1*
13C4-PFHpA	*117*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:34*	*1*
13C5 PFNA	*102*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:34*	*1*
18O2 PFHxS	*93*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:34*	*1*

Client Sample ID: DW-87
Lab Sample ID: 320-17363-14
Date Collected: 02/19/16 12:36
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	**0.86**	**J**	2.3	1.8	0.83	ng/L		02/24/16 04:55	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.72	ng/L		02/24/16 04:55	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.78	ng/L		02/24/16 04:55	1
Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.59	ng/L		02/24/16 04:55	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1	ng/L		02/24/16 04:55	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.67	ng/L		02/24/16 04:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:55*	*1*
13C4 PFOA	*98*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:55*	*1*
13C4 PFOS	*93*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:55*	*1*
13C4-PFHpA	*108*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:55*	*1*
13C5 PFNA	*81*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:55*	*1*
18O2 PFHxS	*93*		*25 - 150*	*02/22/16 13:35*	*02/24/16 04:55*	*1*

Client Sample ID: DW-87FB
Lab Sample ID: 320-17363-15
Date Collected: 02/19/16 12:27
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83	ng/L		02/24/16 05:38	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73	ng/L		02/24/16 05:38	1
Perfluorohexanesulfonic acid (PFHxS)	**0.86**	**J**	2.3	1.8	0.79	ng/L		02/24/16 05:38	1
Perfluorononanoic acid (PFNA)	**0.78**	**J**	2.3	1.8	0.59	ng/L		02/24/16 05:38	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.2	ng/L		02/24/16 05:38	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68	ng/L		02/24/16 05:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:38*	*1*
13C4 PFOA	*114*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:38*	*1*
13C4 PFOS	*97*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:38*	*1*
13C4-PFHpA	*124*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:38*	*1*
13C5 PFNA	*105*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:38*	*1*
18O2 PFHxS	*91*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:38*	*1*

Client Sample ID: DW-23
Lab Sample ID: 320-17363-16
Date Collected: 02/19/16 12:06
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83	ng/L		02/24/16 05:59	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.72	ng/L		02/24/16 05:59	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.79	ng/L		02/24/16 05:59	1
Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.59	ng/L		02/24/16 05:59	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.2	ng/L		02/24/16 05:59	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68	ng/L		02/24/16 05:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:59*	*1*
13C4 PFOA	*79*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:59*	*1*
13C4 PFOS	*98*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:59*	*1*
13C4-PFHpA	*96*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:59*	*1*
13C5 PFNA	*70*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:59*	*1*
18O2 PFHxS	*93*		*25 - 150*	*02/22/16 13:35*	*02/24/16 05:59*	*1*

Client Sample ID: DW-23FB
Lab Sample ID: 320-17363-17
Date Collected: 02/19/16 10:47
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82	ng/L		02/24/16 06:20	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72	ng/L		02/24/16 06:20	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.78	ng/L		02/24/16 06:20	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.59	ng/L		02/24/16 06:20	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1	ng/L		02/24/16 06:20	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67	ng/L		02/24/16 06:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:20*	*1*
13C4 PFOA	*111*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:20*	*1*
13C4 PFOS	*96*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:20*	*1*
13C4-PFHpA	*113*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:20*	*1*
13C5 PFNA	*109*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:20*	*1*
18O2 PFHxS	*95*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:20*	*1*

Client Sample ID: DUP-021916
Lab Sample ID: 320-17363-18
Date Collected: 02/19/16 12:06
Matrix: Water
Date Received: 02/20/16 10:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92	ng/L		02/24/16 06:41	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.81	ng/L		02/24/16 06:41	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.88	ng/L		02/24/16 06:41	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.66	ng/L		02/24/16 06:41	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3	ng/L		02/24/16 06:41	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75	ng/L		02/24/16 06:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:41*	*1*
13C4 PFOA	*89*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:41*	*1*
13C4 PFOS	*91*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:41*	*1*
13C4-PFHpA	*100*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:41*	*1*
13C5 PFNA	*76*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:41*	*1*
18O2 PFHxS	*89*		*25 - 150*	*02/22/16 13:35*	*02/24/16 06:41*	*1*

Default Detection Limits

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17363-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	2.5	0.92	ng/L	WS-LC-0025
Perfluoroheptanoic acid (PFHpA)	2.5	0.80	ng/L	WS-LC-0025
Perfluorohexanesulfonic acid (PFHxS)	2.5	0.87	ng/L	WS-LC-0025
Perfluorononanoic acid (PFNA)	2.5	0.65	ng/L	WS-LC-0025
Perfluorooctanesulfonic acid (PFOS)	4.0	1.3	ng/L	WS-LC-0025
Perfluorooctanoic acid (PFOA)	2.5	0.75	ng/L	WS-LC-0025

Isotope Dilution Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17363-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		3C2 PFHxA	13C4 PFOA	13C4 PFOS	3C4-PFHpA	13C5 PFNA	8O2 PFHxS		
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)		
320-17363-1	BC2_19_16	101	114	95	119	100	98		
320-17363-2	DW-57	68	52	87	71	34	96		
320-17363-3	DW-57FB	100	109	96	120	96	92		
320-17363-4	DW-48	87	88	99	104	71	104		
320-17363-5	DW-48FB	97	106	99	115	103	92		
320-17363-6	DW-59	84	77	94	91	67	94		
320-17363-7	DW-59FB	97	109	94	111	104	89		
320-17363-8	DW-88	91	97	92	104	83	92		
320-17363-9	DW-88FB	105	117	95	119	103	96		
320-17363-10	DW-10	86	85	95	95	69	100		
320-17363-11	DW-10FB	101	114	96	115	105	94		
320-17363-12	DW-63	83	76	99	95	51	98		
320-17363-13	DW-63FB	95	113	99	117	102	93		
320-17363-14	DW-87	93	98	93	108	81	93		
320-17363-15	DW-87FB	100	114	97	124	105	91		
320-17363-16	DW-23	90	79	98	96	70	93		
320-17363-17	DW-23FB	99	111	96	113	109	95		
320-17363-18	DUP-021916	83	89	91	100	76	89		
LCS 320-101153/2-A	Lab Control Sample	95	102	91	110	102	102		
LCSD 320-101153/3-A	Lab Control Sample Dup	95	97	87	109	93	95		
MB 320-101153/1-A	Method Blank	100	110	101	120	104	104		

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA
13C4 PFOA = 13C4 PFOA
13C4 PFOS = 13C4 PFOS
13C4-PFHpA = 13C4-PFHpA
13C5 PFNA = 13C5 PFNA
18O2 PFHxS = 18O2 PFHxS

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-101153/1-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 101347
Prep Batch: 101153

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92	ng/L		02/23/16 22:54	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80	ng/L		02/23/16 22:54	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87	ng/L		02/23/16 22:54	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65	ng/L		02/23/16 22:54	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3	ng/L		02/23/16 22:54	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75	ng/L		02/23/16 22:54	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*25 - 150*	*02/22/16 13:35*	*02/23/16 22:54*	*1*
13C4 PFOA	*110*		*25 - 150*	*02/22/16 13:35*	*02/23/16 22:54*	*1*
13C4 PFOS	*101*		*25 - 150*	*02/22/16 13:35*	*02/23/16 22:54*	*1*
13C4-PFHpA	*120*		*25 - 150*	*02/22/16 13:35*	*02/23/16 22:54*	*1*
13C5 PFNA	*104*		*25 - 150*	*02/22/16 13:35*	*02/23/16 22:54*	*1*
18O2 PFHxS	*104*		*25 - 150*	*02/22/16 13:35*	*02/23/16 22:54*	*1*

Lab Sample ID: LCS 320-101153/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 101347
Prep Batch: 101153

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	33.4		ng/L		94	50 - 150
Perfluoroheptanoic acid (PFHpA)	40.0	34.2		ng/L		86	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	37.8	32.7		ng/L		86	60 - 140
Perfluorononanoic acid (PFNA)	40.0	37.7		ng/L		94	60 - 140
Perfluorooctanesulfonic acid (PFOS)	38.2	41.7		ng/L		109	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.7		ng/L		97	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*95*		*25 - 150*
13C4 PFOA	*102*		*25 - 150*
13C4 PFOS	*91*		*25 - 150*
13C4-PFHpA	*110*		*25 - 150*
13C5 PFNA	*102*		*25 - 150*
18O2 PFHxS	*102*		*25 - 150*

Lab Sample ID: LCSD 320-101153/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 101347
Prep Batch: 101153

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	35.4	33.2		ng/L		94	50 - 150	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	36.9		ng/L		92	60 - 140	8	30
Perfluorohexanesulfonic acid (PFHxS)	37.8	32.3		ng/L		85	60 - 140	1	30
Perfluorononanoic acid (PFNA)	40.0	43.6		ng/L		109	60 - 140	14	30

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

Lab Sample ID: LCSD 320-101153/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 101347
Prep Batch: 101153

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)			38.2	42.9		ng/L		112	60 - 140	3	30
Perfluorooctanoic acid (PFOA)			40.0	40.3		ng/L		101	60 - 140	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*95*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C4 PFOS	*87*		*25 - 150*
13C4-PFHpA	*109*		*25 - 150*
13C5 PFNA	*93*		*25 - 150*
18O2 PFHxS	*95*		*25 - 150*

LCMS

Prep Batch: 101153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17363-1	BC2_19_16	Total/NA	Water	3535	
320-17363-2	DW-57	Total/NA	Water	3535	
320-17363-3	DW-57FB	Total/NA	Water	3535	
320-17363-4	DW-48	Total/NA	Water	3535	
320-17363-5	DW-48FB	Total/NA	Water	3535	
320-17363-6	DW-59	Total/NA	Water	3535	
320-17363-7	DW-59FB	Total/NA	Water	3535	
320-17363-8	DW-88	Total/NA	Water	3535	
320-17363-9	DW-88FB	Total/NA	Water	3535	
320-17363-10	DW-10	Total/NA	Water	3535	
320-17363-11	DW-10FB	Total/NA	Water	3535	
320-17363-12	DW-63	Total/NA	Water	3535	
320-17363-13	DW-63FB	Total/NA	Water	3535	
320-17363-14	DW-87	Total/NA	Water	3535	
320-17363-15	DW-87FB	Total/NA	Water	3535	
320-17363-16	DW-23	Total/NA	Water	3535	
320-17363-17	DW-23FB	Total/NA	Water	3535	
320-17363-18	DUP-021916	Total/NA	Water	3535	
LCS 320-101153/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-101153/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
MB 320-101153/1-A	Method Blank	Total/NA	Water	3535	

Analysis Batch: 101347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17363-1	BC2_19_16	Total/NA	Water	WS-LC-0025	101153
320-17363-2	DW-57	Total/NA	Water	WS-LC-0025	101153
320-17363-3	DW-57FB	Total/NA	Water	WS-LC-0025	101153
320-17363-4	DW-48	Total/NA	Water	WS-LC-0025	101153
320-17363-5	DW-48FB	Total/NA	Water	WS-LC-0025	101153
320-17363-6	DW-59	Total/NA	Water	WS-LC-0025	101153
320-17363-7	DW-59FB	Total/NA	Water	WS-LC-0025	101153
320-17363-8	DW-88	Total/NA	Water	WS-LC-0025	101153
320-17363-9	DW-88FB	Total/NA	Water	WS-LC-0025	101153
320-17363-10	DW-10	Total/NA	Water	WS-LC-0025	101153
320-17363-11	DW-10FB	Total/NA	Water	WS-LC-0025	101153
320-17363-12	DW-63	Total/NA	Water	WS-LC-0025	101153
320-17363-13	DW-63FB	Total/NA	Water	WS-LC-0025	101153
320-17363-14	DW-87	Total/NA	Water	WS-LC-0025	101153
320-17363-15	DW-87FB	Total/NA	Water	WS-LC-0025	101153
320-17363-16	DW-23	Total/NA	Water	WS-LC-0025	101153
320-17363-17	DW-23FB	Total/NA	Water	WS-LC-0025	101153
320-17363-18	DUP-021916	Total/NA	Water	WS-LC-0025	101153
LCS 320-101153/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	101153
LCSD 320-101153/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025	101153
MB 320-101153/1-A	Method Blank	Total/NA	Water	WS-LC-0025	101153

Client Sample ID: BC2_19_16

Lab Sample ID: 320-17363-1

Date Collected: 02/19/16 00:00

Matrix: Water

Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			552.8 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	552.8 mL	1.00 mL	101347	02/23/16 23:58	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-57

Lab Sample ID: 320-17363-2

Date Collected: 02/19/16 14:41

Matrix: Water

Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			523.1 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	523.1 mL	1.00 mL	101347	02/24/16 00:19	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-57FB

Lab Sample ID: 320-17363-3

Date Collected: 02/19/16 14:27

Matrix: Water

Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			556 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	556 mL	1.00 mL	101347	02/24/16 00:41	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-48

Lab Sample ID: 320-17363-4

Date Collected: 02/19/16 14:11

Matrix: Water

Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			570.4 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	570.4 mL	1.00 mL	101347	02/24/16 01:02	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-48FB

Lab Sample ID: 320-17363-5

Date Collected: 02/19/16 13:52

Matrix: Water

Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			568.9 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	568.9 mL	1.00 mL	101347	02/24/16 01:44	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-59
Lab Sample ID: 320-17363-6
Date Collected: 02/19/16 13:36
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			560.6 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	560.6 mL	1.00 mL	101347	02/24/16 02:05	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-59FB
Lab Sample ID: 320-17363-7
Date Collected: 02/19/16 13:27
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			569.7 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	569.7 mL	1.00 mL	101347	02/24/16 02:27	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-88
Lab Sample ID: 320-17363-8
Date Collected: 02/19/16 13:11
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			570.8 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	570.8 mL	1.00 mL	101347	02/24/16 02:48	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-88FB
Lab Sample ID: 320-17363-9
Date Collected: 02/19/16 12:57
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			543.8 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	543.8 mL	1.00 mL	101347	02/24/16 03:09	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-10
Lab Sample ID: 320-17363-10
Date Collected: 02/19/16 10:31
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			518.8 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	518.8 mL	1.00 mL	101347	02/24/16 03:30	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-10FB
Lab Sample ID: 320-17363-11
Date Collected: 02/19/16 10:12
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			556.4 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	556.4 mL	1.00 mL	101347	02/24/16 03:52	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-63
Lab Sample ID: 320-17363-12
Date Collected: 02/19/16 11:06
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			556.2 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	556.2 mL	1.00 mL	101347	02/24/16 04:13	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-63FB
Lab Sample ID: 320-17363-13
Date Collected: 02/19/16 10:47
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			552.5 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	552.5 mL	1.00 mL	101347	02/24/16 04:34	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-87
Lab Sample ID: 320-17363-14
Date Collected: 02/19/16 12:36
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			555.3 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	555.3 mL	1.00 mL	101347	02/24/16 04:55	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-87FB
Lab Sample ID: 320-17363-15
Date Collected: 02/19/16 12:27
Matrix: Water
Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			553.1 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	553.1 mL	1.00 mL	101347	02/24/16 05:38	JRB	TAL SAC
	Instrument ID: A6									

Lab Chronicle

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17363-1

Client Sample ID: DW-23

Lab Sample ID: 320-17363-16

Date Collected: 02/19/16 12:06

Matrix: Water

Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			554 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	554 mL	1.00 mL	101347	02/24/16 05:59	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DW-23FB

Lab Sample ID: 320-17363-17

Date Collected: 02/19/16 10:47

Matrix: Water

Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			558.8 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	558.8 mL	1.00 mL	101347	02/24/16 06:20	JRB	TAL SAC
	Instrument ID: A6									

Client Sample ID: DUP-021916

Lab Sample ID: 320-17363-18

Date Collected: 02/19/16 12:06

Matrix: Water

Date Received: 02/20/16 10:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			496.7 mL	1.00 mL	101153	02/22/16 13:35	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	496.7 mL	1.00 mL	101347	02/24/16 06:41	JRB	TAL SAC
	Instrument ID: A6									

Laboratory References:

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

Certification Summary

Client: Earth Toxics, Inc
TestAmerica Job ID: 320-17363-1
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
New Jersey	NELAP	2	CA005	06-30-16

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
New Jersey	NELAP	2	CO004	06-30-16

Method Summary

Client: Earth Toxics, Inc
TestAmerica Job ID: 320-17363-1
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

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: Earth Toxics, Inc
TestAmerica Job ID: 320-17363-1
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-17363-1	BC2_19_16	Water	02/19/16 00:00	02/20/16 10:20
320-17363-2	DW-57	Water	02/19/16 14:41	02/20/16 10:20
320-17363-3	DW-57FB	Water	02/19/16 14:27	02/20/16 10:20
320-17363-4	DW-48	Water	02/19/16 14:11	02/20/16 10:20
320-17363-5	DW-48FB	Water	02/19/16 13:52	02/20/16 10:20
320-17363-6	DW-59	Water	02/19/16 13:36	02/20/16 10:20
320-17363-7	DW-59FB	Water	02/19/16 13:27	02/20/16 10:20
320-17363-8	DW-88	Water	02/19/16 13:11	02/20/16 10:20
320-17363-9	DW-88FB	Water	02/19/16 12:57	02/20/16 10:20
320-17363-10	DW-10	Water	02/19/16 10:31	02/20/16 10:20
320-17363-11	DW-10FB	Water	02/19/16 10:12	02/20/16 10:20
320-17363-12	DW-63	Water	02/19/16 11:06	02/20/16 10:20
320-17363-13	DW-63FB	Water	02/19/16 10:47	02/20/16 10:20
320-17363-14	DW-87	Water	02/19/16 12:36	02/20/16 10:20
320-17363-15	DW-87FB	Water	02/19/16 12:27	02/20/16 10:20
320-17363-16	DW-23	Water	02/19/16 12:06	02/20/16 10:20
320-17363-17	DW-23FB	Water	02/19/16 10:47	02/20/16 10:20
320-17363-18	DUP-021916	Water	02/19/16 12:06	02/20/16 10:20

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 101158

Lab Sample ID: STD 320-101158/2 IC Client Sample ID:

Date Analyzed: 02/22/16 11:29 Lab File ID: 22FEB2016A6A_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanesulfonic Acid (PFHpS)	10.42	Assign Peak	westendorfc	02/22/16 14:40
Perfluorodecane Sulfonic acid	12.92	Assign Peak	westendorfc	02/22/16 14:40

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 101347

Lab Sample ID: 320-17363-2 Client Sample ID: DW-57

Date Analyzed: 02/24/16 00:19 Lab File ID: 23FEB2016A6A_032.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.24	Isomers	barnettj	02/24/16 09:54
Perfluorooctanesulfonic acid (PFOS)	11.29	Isomers	barnettj	02/24/16 09:54

Lab Sample ID: 320-17363-3 Client Sample ID: DW-57FB

Date Analyzed: 02/24/16 00:41 Lab File ID: 23FEB2016A6A_033.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.28	Isomers	barnettj	02/24/16 09:59

Lab Sample ID: 320-17363-5 Client Sample ID: DW-48FB

Date Analyzed: 02/24/16 01:44 Lab File ID: 23FEB2016A6A_036.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.28	Missed Peak	barnettj	02/24/16 10:24

Lab Sample ID: 320-17363-6 Client Sample ID: DW-59

Date Analyzed: 02/24/16 02:05 Lab File ID: 23FEB2016A6A_037.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.24	Isomers	barnettj	02/24/16 10:25
Perfluorooctanesulfonic acid (PFOS)	11.29	Missed Peak	barnettj	02/24/16 10:25

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Instrument ID: A6 Analysis Batch Number: 101347

Lab Sample ID: 320-17363-10 Client Sample ID: DW-10

Date Analyzed: 02/24/16 03:30 Lab File ID: 23FEB2016A6A_041.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.27	Isomers	barnettj	02/24/16 10:40

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00027	08/19/16	02/19/16	Methanol, Lot Baker 115491	5 mL	LCM2PFHxDA_00003	0.1 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.1 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.1 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.1 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00007	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.1 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.1 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.1 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.1 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.1 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.1 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00008	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00010	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.1 mL	13C2 PFUnA	1 ug/mL
.LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00007	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00008	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00010	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-L1_00018	06/29/16	12/30/15	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	25 uL	Perfluorobutyric acid	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid	0.5 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	0.5 ng/mL
							Perfluorodecane Sulfonic acid	0.482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.473 ng/mL
							Perfluorononanoic acid (PFNA)	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctandecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.478 ng/mL
							Perfluorooctane Sulfonamide	0.5 ng/mL
							Perfluoropentanoic acid	0.5 ng/mL
							Perfluorotetradecanoic acid	0.5 ng/mL
							Perfluorotridecanoic acid	0.5 ng/mL
							Perfluoroundecanoic acid	0.5 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 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	Perfluorooctanesulfonic acid (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
					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
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...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
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_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)		Perfluorooctanesulfonic acid (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
...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_00019	06/29/16	01/08/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	50 uL	Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.946 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctandecanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.956 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 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	Perfluorooctanesulfonic acid (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
					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
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	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
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_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)		Perfluorooctanesulfonic acid (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
...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_00016	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.73 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctandecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.78 ng/mL
							Perfluorooctane Sulfonamide	5 ng/mL
							Perfluoropentanoic acid	5 ng/mL
							Perfluorotetradecanoic acid	5 ng/mL
							Perfluorotridecanoic acid	5 ng/mL
							Perfluoroundecanoic acid	5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 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	Perfluorooctanesulfonic acid (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
					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
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	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
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_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)		Perfluorooctanesulfonic acid (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
...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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L4_00017	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.92 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctandecanoic acid	20 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.12 ng/mL
							Perfluorooctane Sulfonamide	20 ng/mL
							Perfluoropentanoic acid	20 ng/mL
							Perfluorotetradecanoic acid	20 ng/mL
							Perfluorotridecanoic acid	20 ng/mL
							Perfluoroundecanoic acid	20 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 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	Perfluorooctanesulfonic acid (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
					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
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	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
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_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)		Perfluorooctanesulfonic acid (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
..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_00016	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.3 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctandecanoic acid	50 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	47.8 ng/mL
							Perfluorooctane Sulfonamide	50 ng/mL
							Perfluoropentanoic acid	50 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
							Perfluoroundecanoic acid	50 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 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	Perfluorooctanesulfonic acid (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
					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
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	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
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_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)		Perfluorooctanesulfonic acid (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
..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_00015	06/29/16	12/30/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00024	100 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	400 uL	Perfluorobutyric acid	200 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL
							Perfluorodecanoic acid	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							Perfluorodecane Sulfonic acid	192.8 ng/mL
							Perfluoroheptanoic acid (PFHpA)	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	189.2 ng/mL
							Perfluorononanoic acid (PFNA)	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctandecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	191.2 ng/mL
							Perfluorooctane Sulfonamide	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							Perfluorotetradecanoic acid	200 ng/mL
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 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	Perfluorooctanesulfonic acid (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
					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
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	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
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_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)		Perfluorooctanesulfonic acid (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
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L7_00015	06/29/16	12/30/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00024	100 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	800 uL	Perfluorobutyric acid	400 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	353.6 ng/mL
							Perfluorodecanoic acid	400 ng/mL
							Perfluorododecanoic acid	400 ng/mL
							Perfluorodecane Sulfonic acid	385.6 ng/mL
							Perfluoroheptanoic acid (PFHpA)	400 ng/mL
							Perfluoroheptanesulfonic Acid	380.8 ng/mL
							Perfluorohexanoic acid	400 ng/mL
							Perfluorohexadecanoic acid	400 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	378.4 ng/mL
							Perfluorononanoic acid (PFNA)	400 ng/mL
							Perfluorooctanoic acid (PFOA)	400 ng/mL
							Perfluorooctandecanoic acid	400 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	382.4 ng/mL
							Perfluorooctane Sulfonamide	400 ng/mL
							Perfluoropentanoic acid	400 ng/mL
							Perfluorotetradecanoic acid	400 ng/mL
							Perfluorotridecanoic acid	400 ng/mL
							Perfluoroundecanoic acid	400 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 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	Perfluorooctanesulfonic acid (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
					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
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	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

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_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)		Perfluorooctanesulfonic acid (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
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFCIC_00016	06/16/16	12/22/15	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00023	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFACMXB_00008	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.25 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00023	06/21/16	12/21/15	Methanol, Lot Baker 115491	5 mL	LCM2PFHxDA_00002	0.1 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.1 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.1 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.1 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.1 mL	13C8 FOSA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFBA_00004	0.1 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00005	0.1 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00003	0.1 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00006	0.1 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.1 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.1 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00004	0.1 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00002	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(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_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00004	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFACMXB_00008	06/20/19	Wellington Laboratories, Lot PFACMXB0614			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00041	08/11/16	02/11/16	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
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	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
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00005	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	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	Perfluorooctanesulfonic acid (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
.LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	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
.LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpS_00005	01/28/19	Wellington Laboratories, Lot LPFHpS0114			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
.LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
.LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
.LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.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)		Perfluorooctanesulfonic acid (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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

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

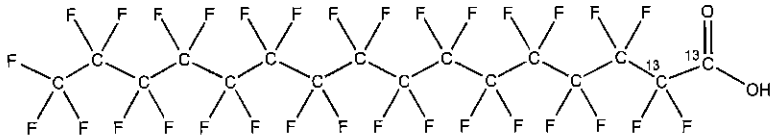
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: M2PFHxDA1112

STRUCTURE:

CAS #: Not available



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

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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UNCERTAINTY:

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

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

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

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

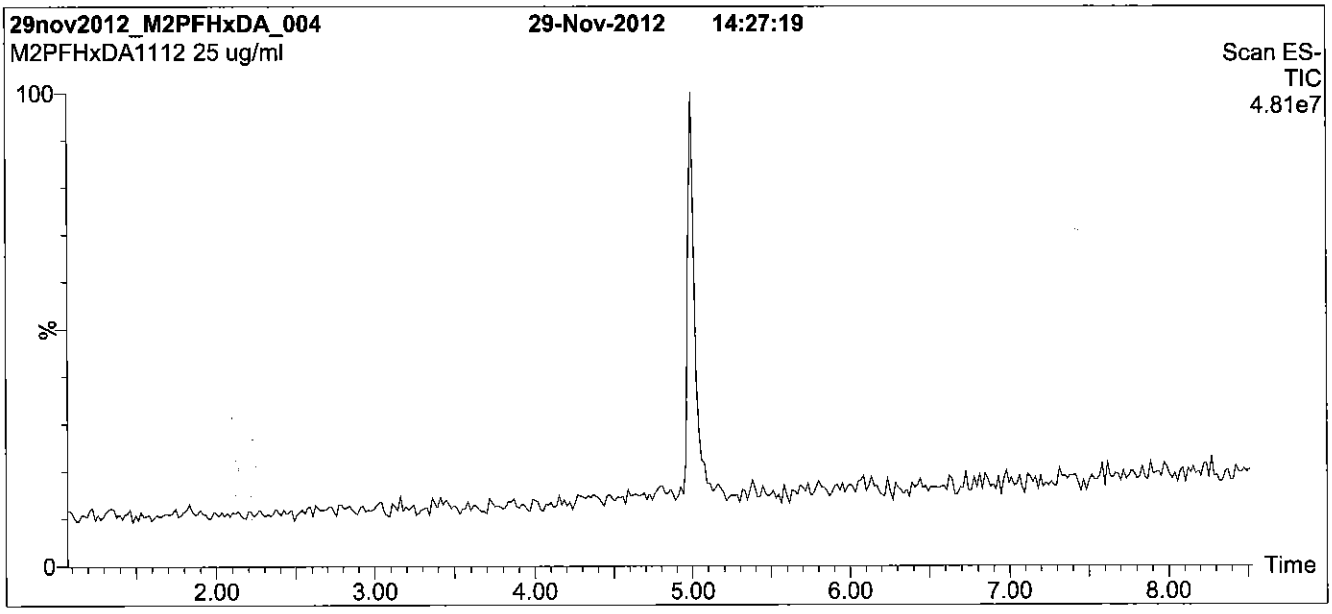
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

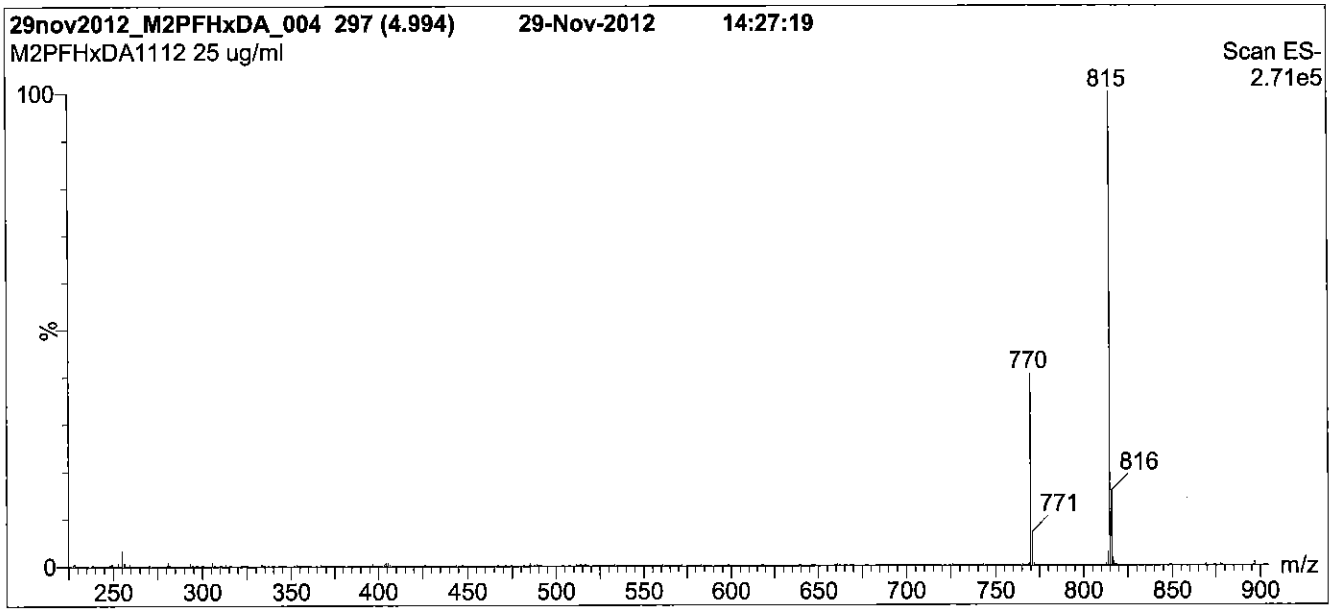
CALA Testing Accreditation No. A1226

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: **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

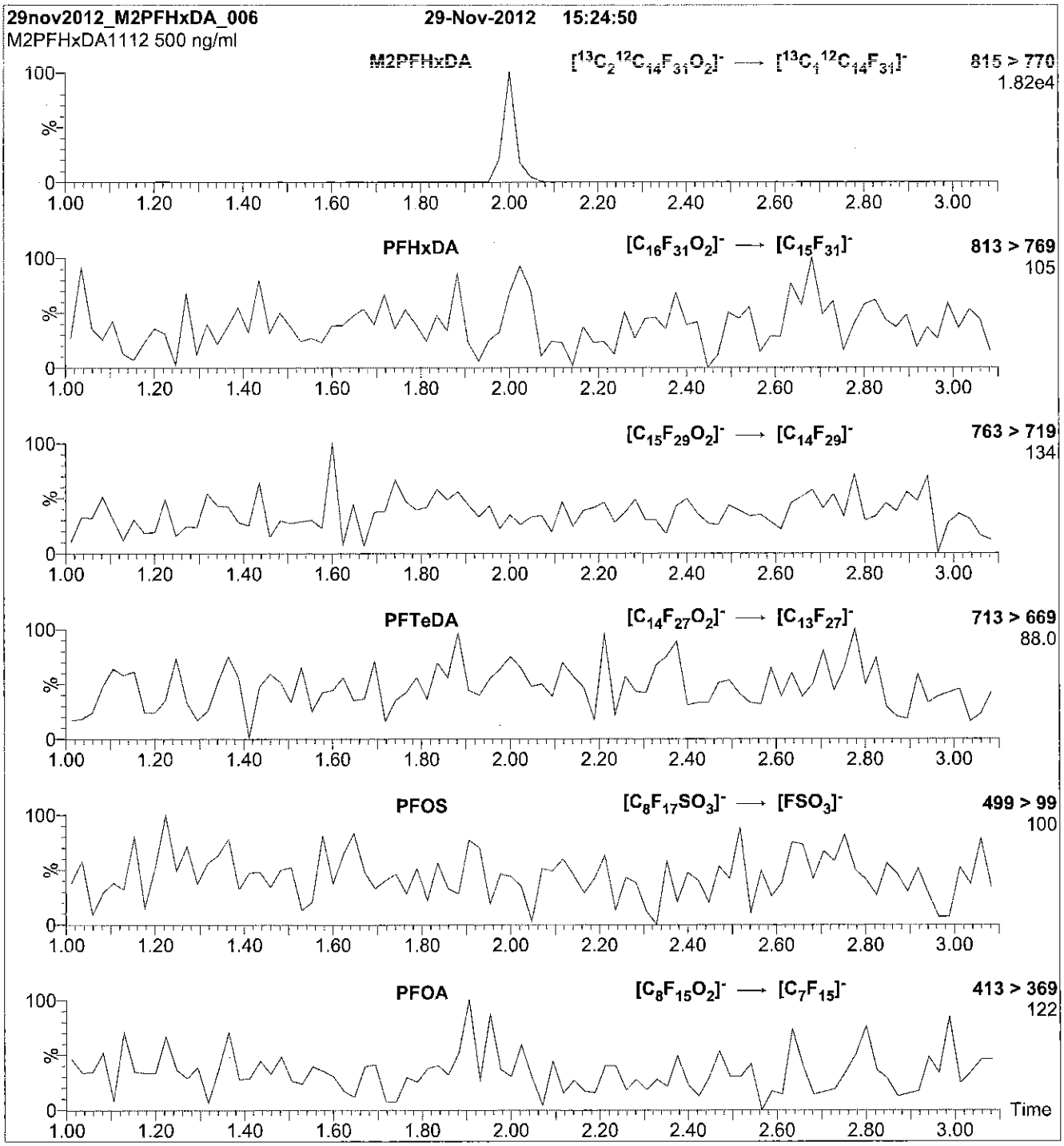
Flow: 300 µl/min

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_00003

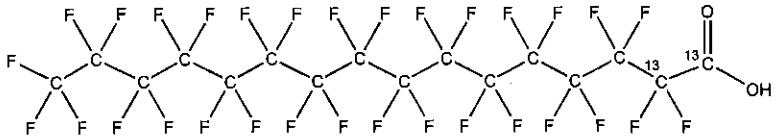
r: 12/9/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	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: _____ **Date:** 04/01/2015 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

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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. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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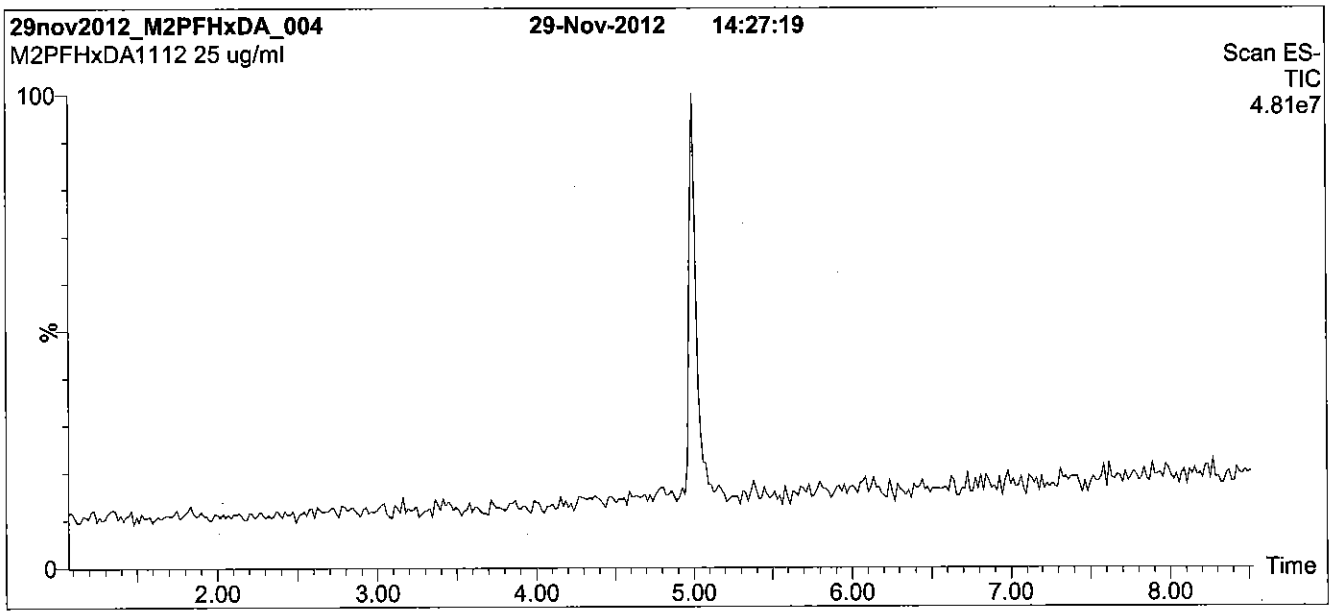
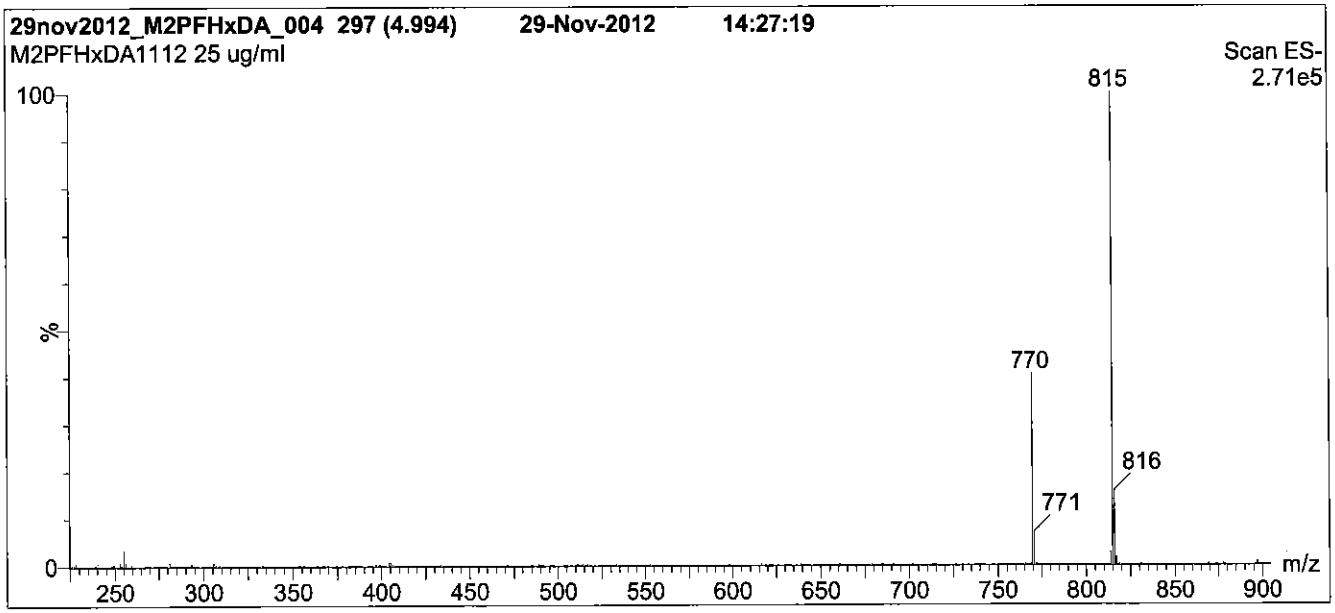
Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

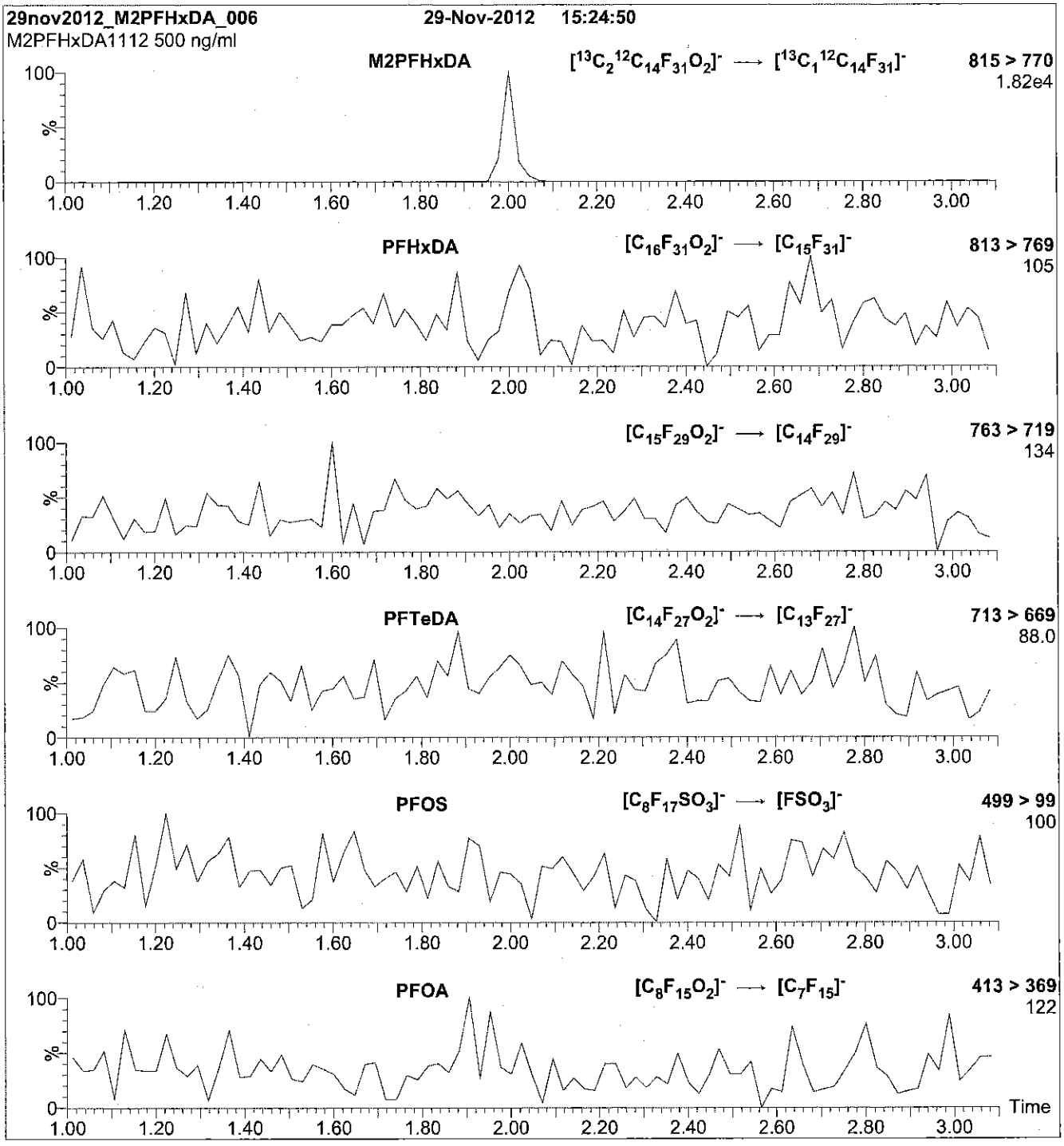
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM2PFTeDA_00003

r: 12/9/15 SFV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

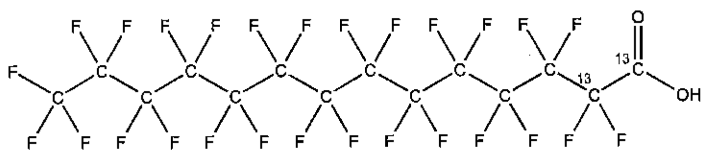
PRODUCT CODE: M2PFTeDA

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-$^{13}C_2$)

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.

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Certified By: B.G. Chittim

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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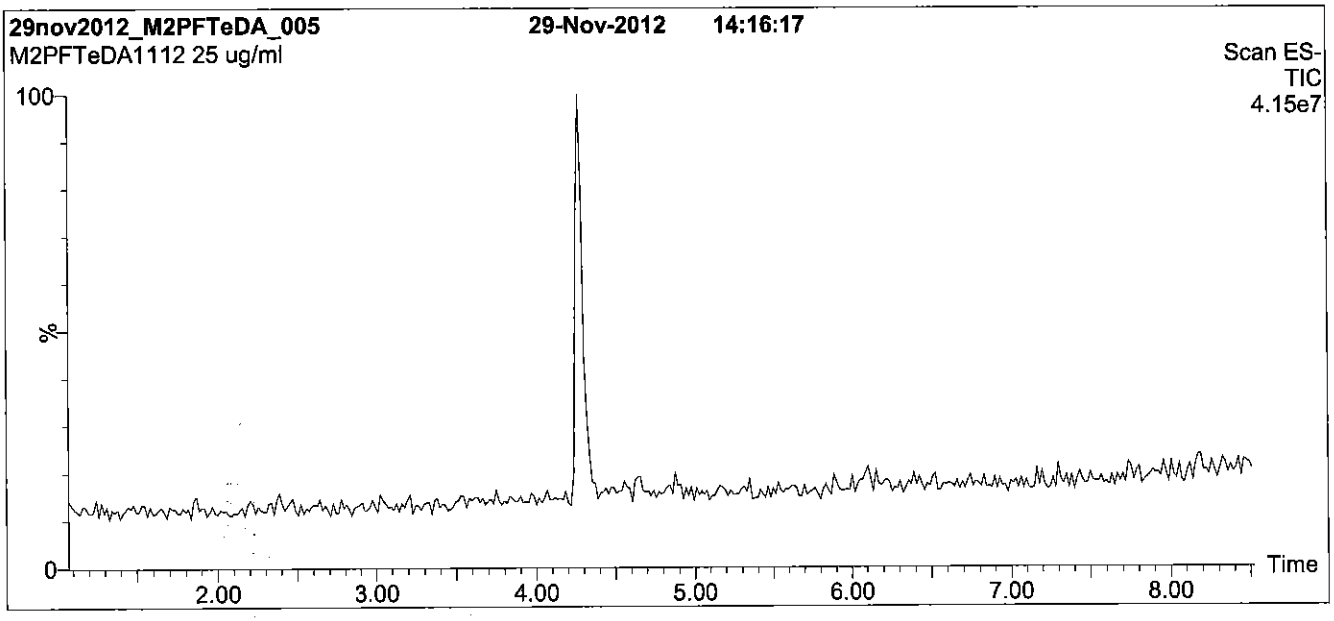
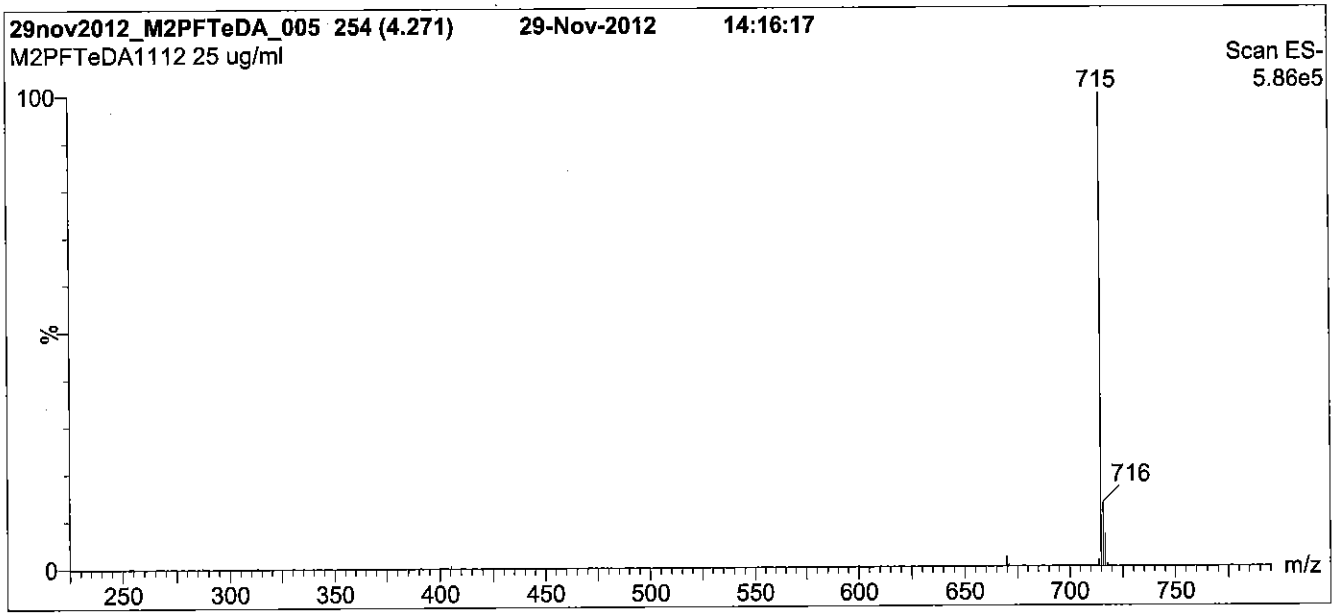
Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

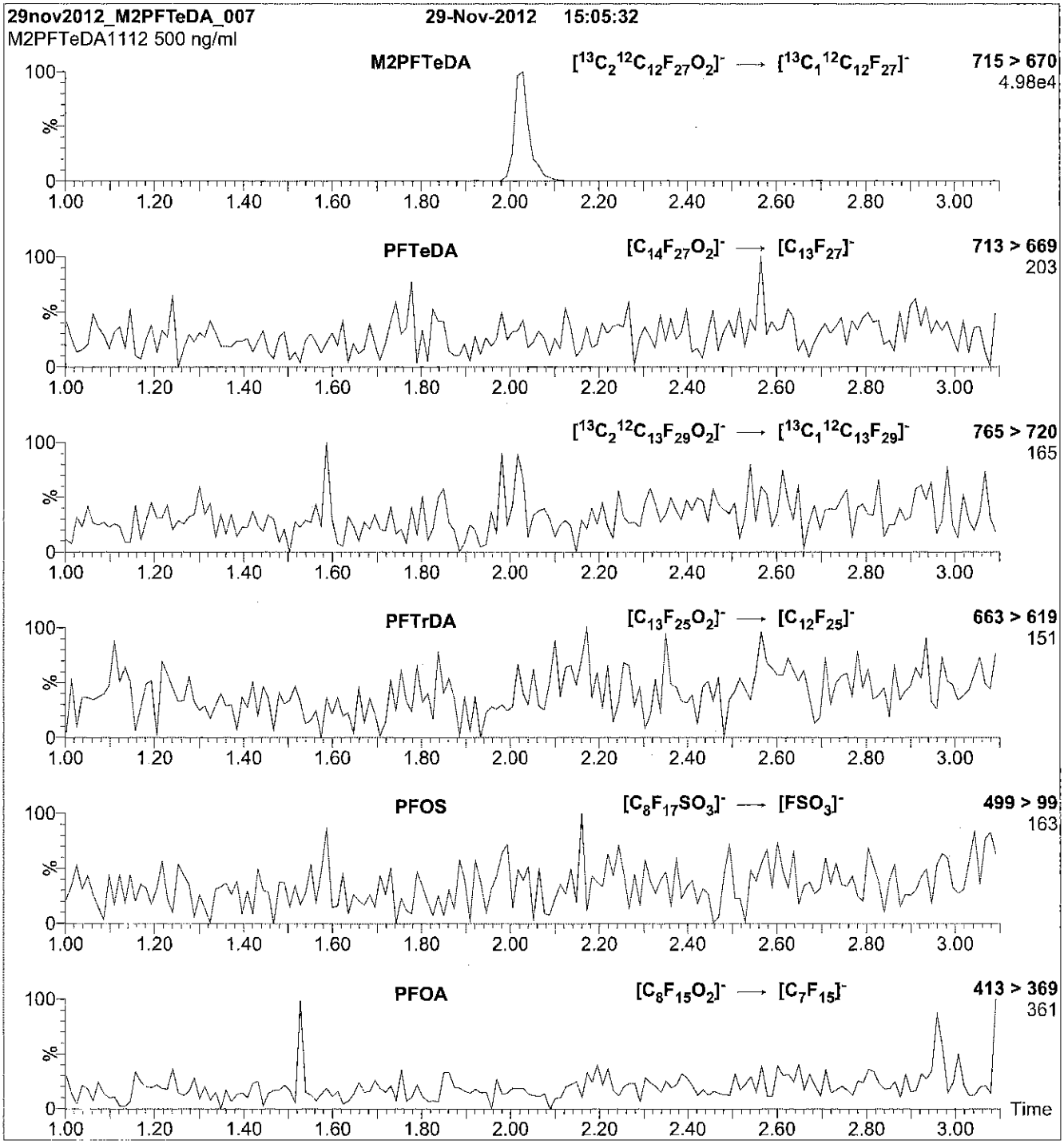
Flow: 300 µl/min

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_00003

r: 11/10/15 SEV

WELLINGTON LABORATORIES

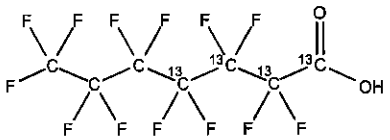
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: M4PFHpA0515

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_3HF_{13}O_2$	**MOLECULAR WEIGHT:**	368.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/22/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO/IEC 17025 REFERENCE MATERIAL PRODUCER

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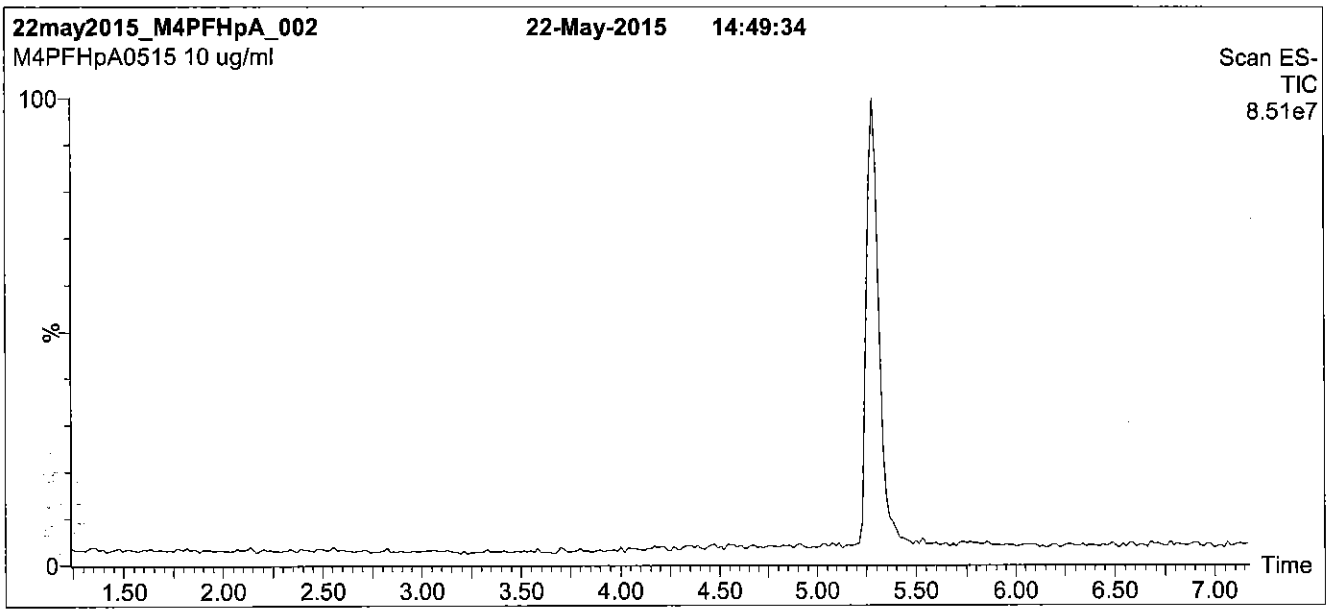
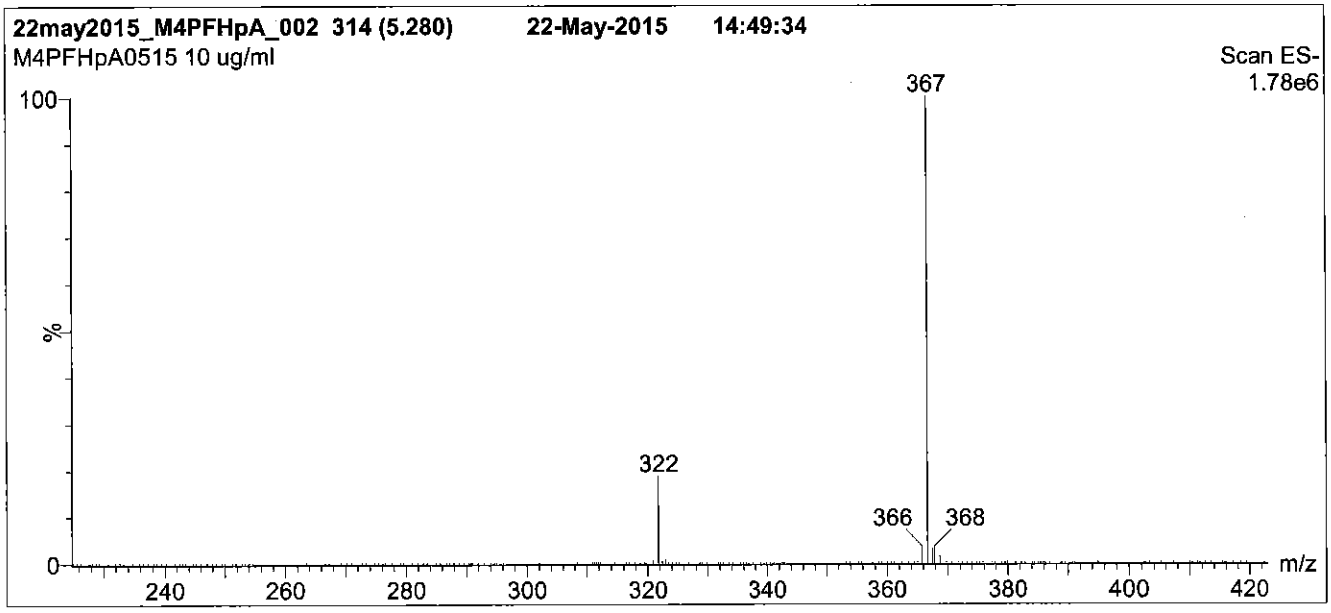
Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





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

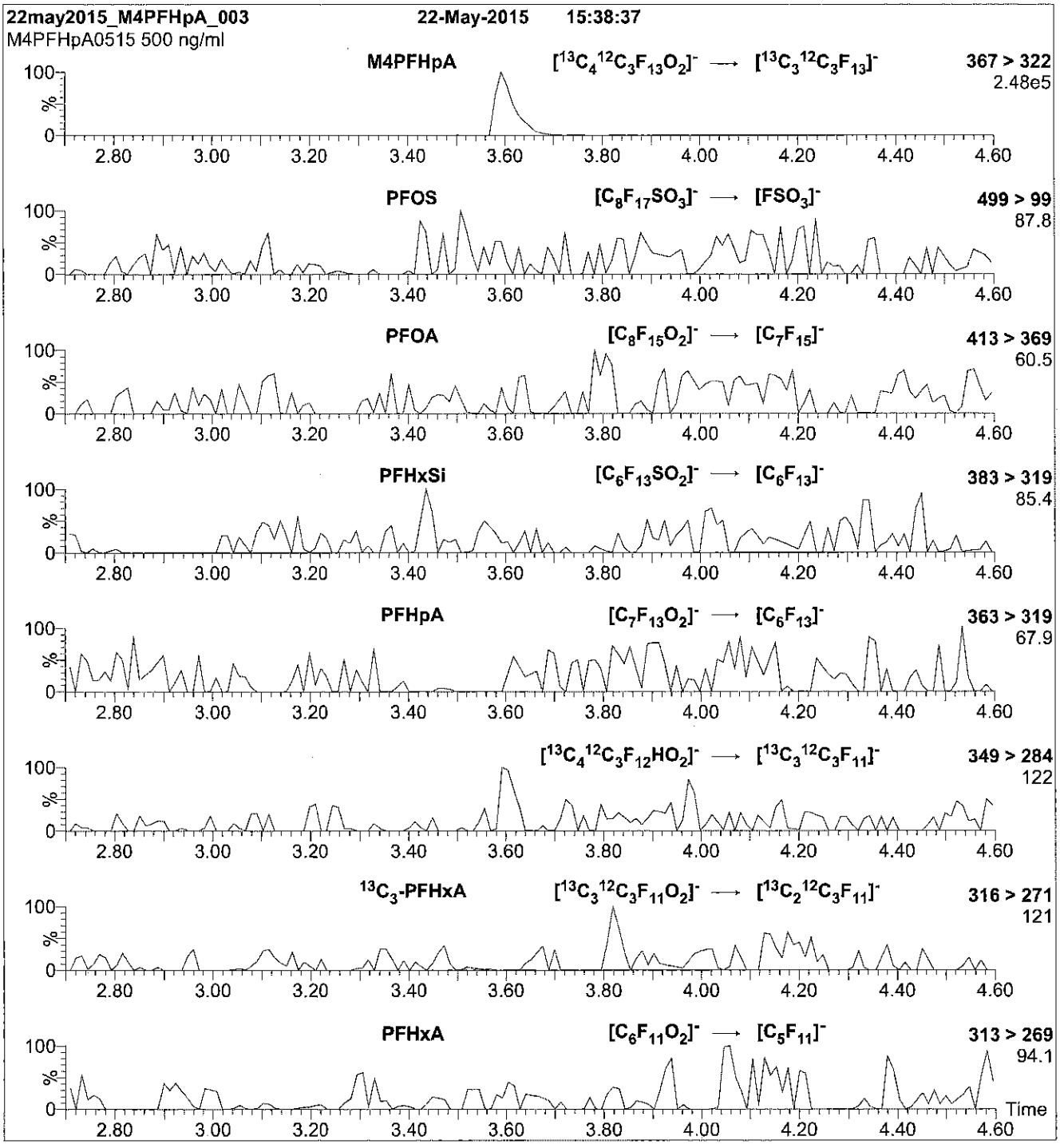
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM5PFPEA_00004

V1 11/10/15 SRA

WELLINGTON LABORATORIES

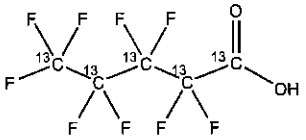
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: M5PFPeA0515

STRUCTURE:

CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

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

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

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CALA Testing Accreditation No.: A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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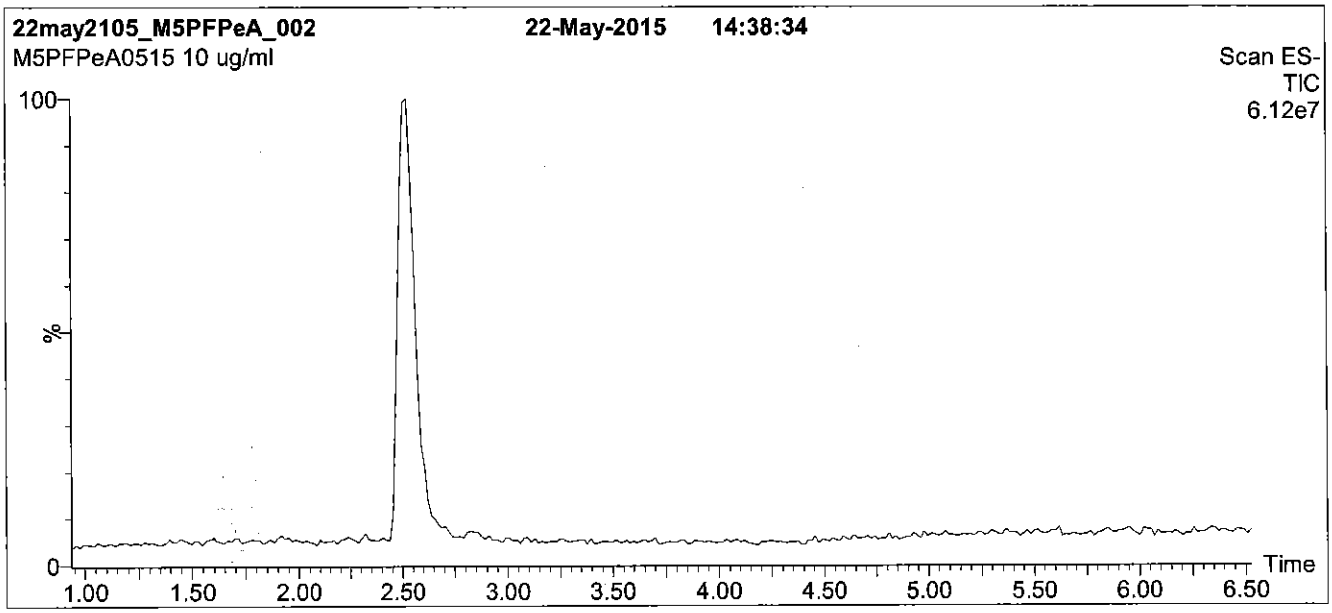
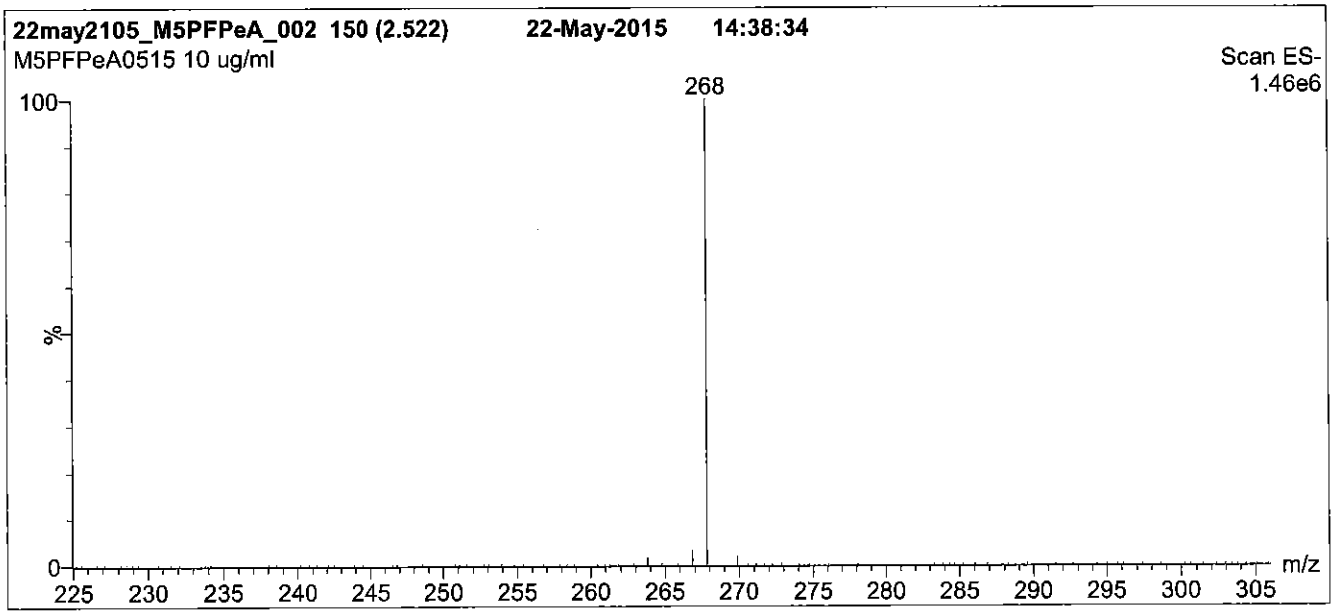
Figure 1: **M5PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

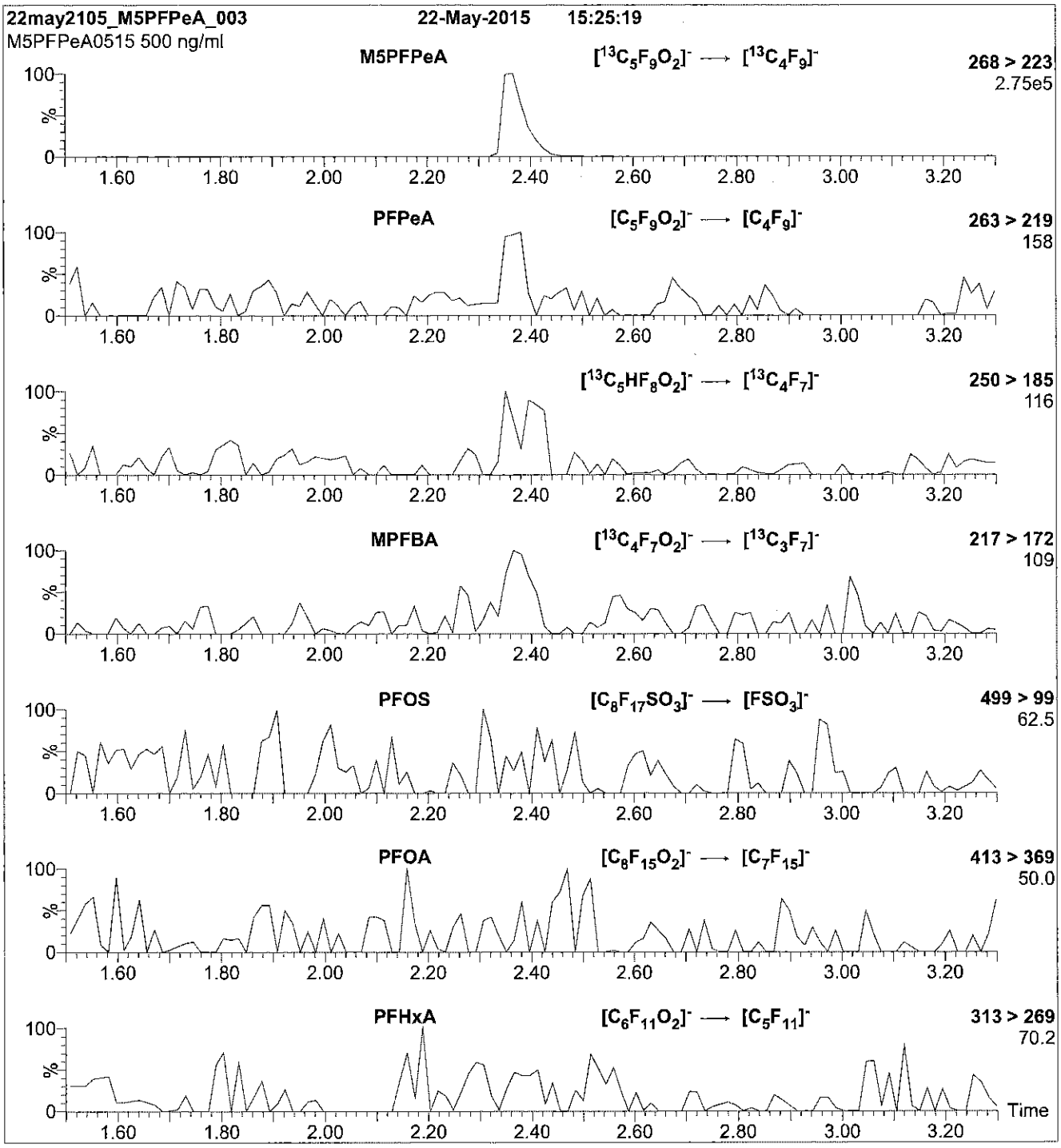
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M5PFPeA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM8FOSA_00006

Rec: 9/15/15 SV

WELLINGTON LABORATORIES

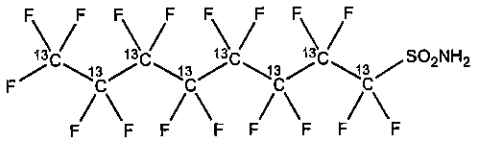
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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)	12/15/2016		
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:** 04/01/2015 (mm/dd/yyyy)

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

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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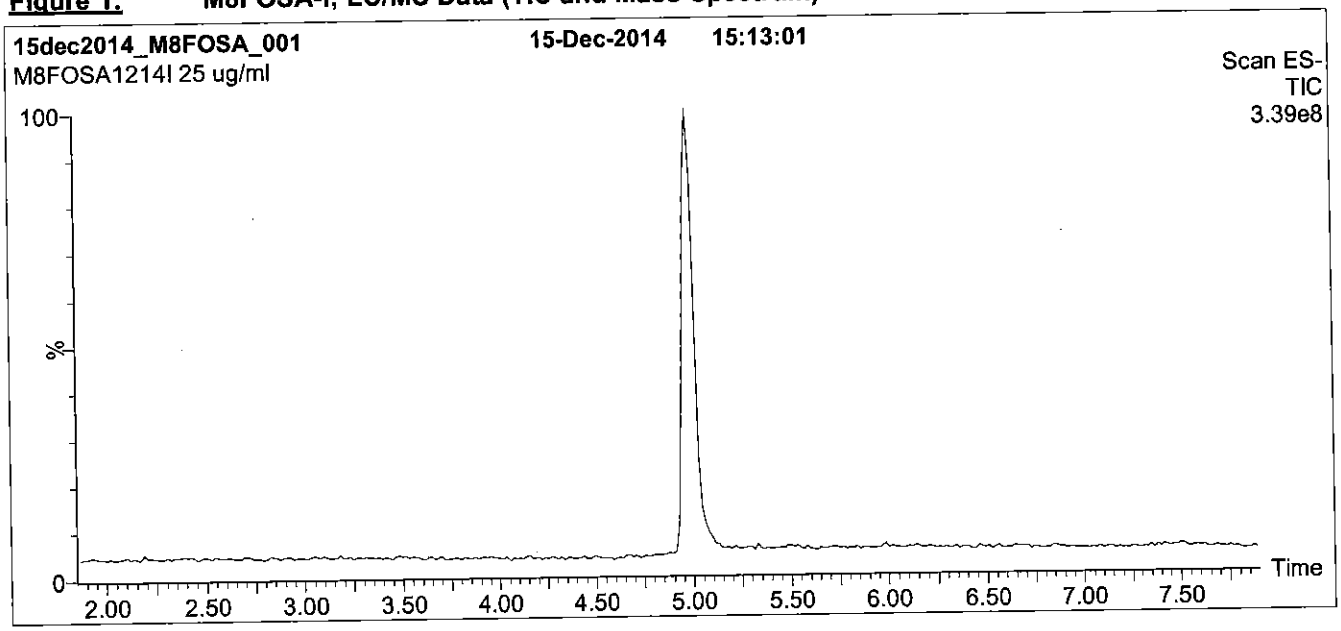
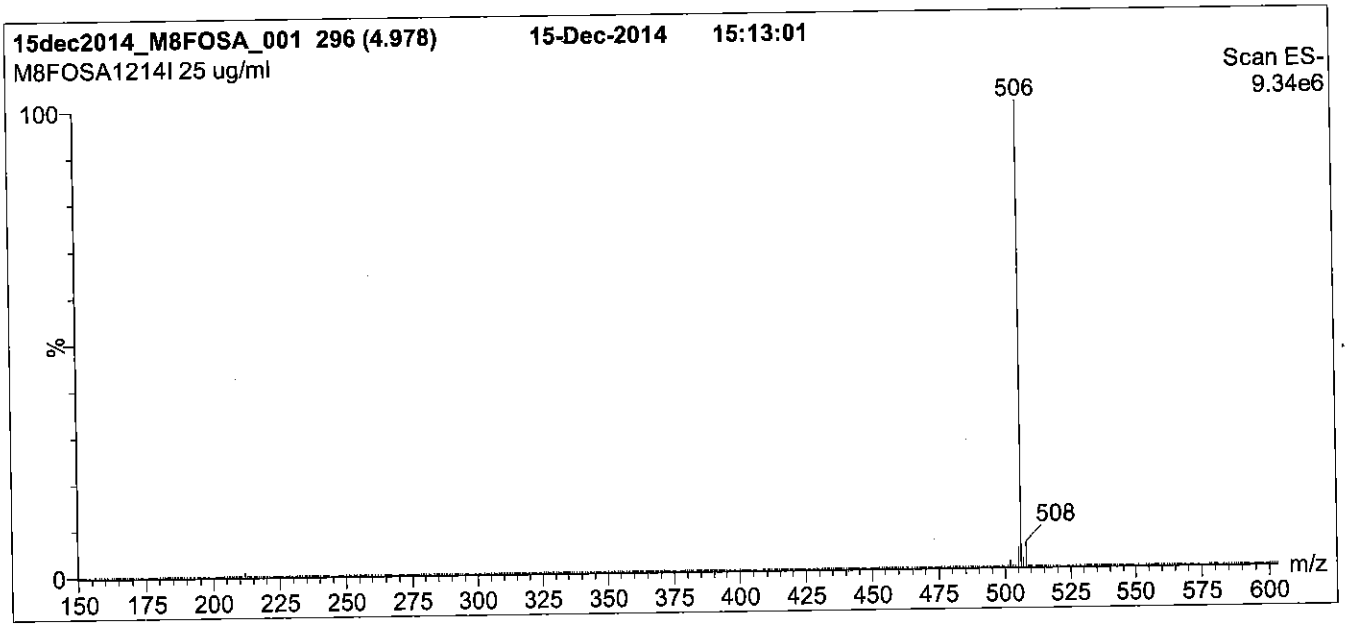
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Condltions for Figure 1:

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

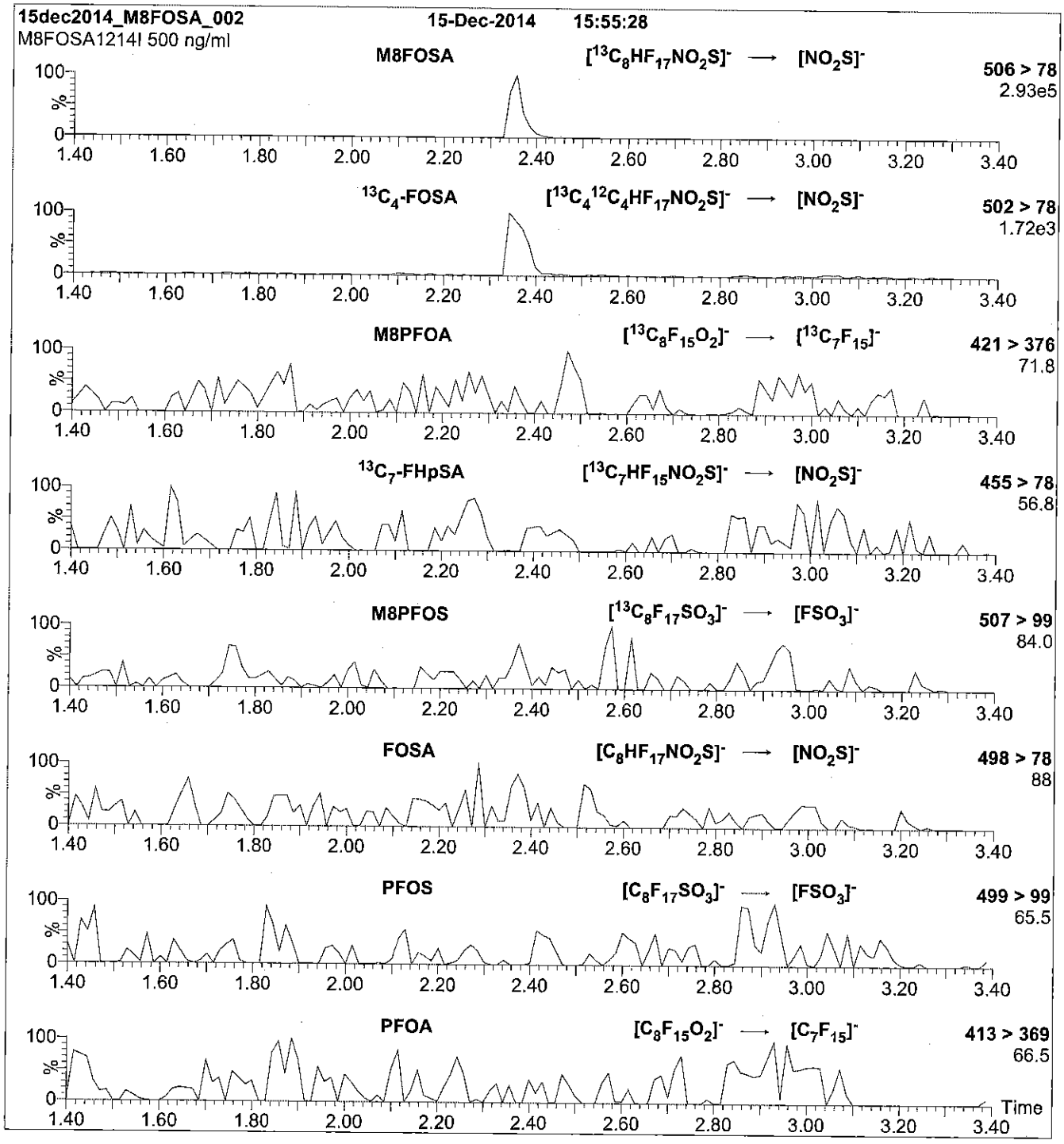
Flow: 300 µl/min

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

LCM8FOSA_00007

572887
ID: LCM8FOSA_00007
Exp. 12/15/16 Prpd: CBW
13C8-Perfluorooctanesulfo

R: 1/25/16
S:

WELLINGTON LABORATORIES

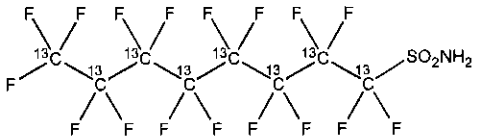
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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)	12/15/2016		
RECOMMENDED STORAGE:	Refrigerate ampoule		

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

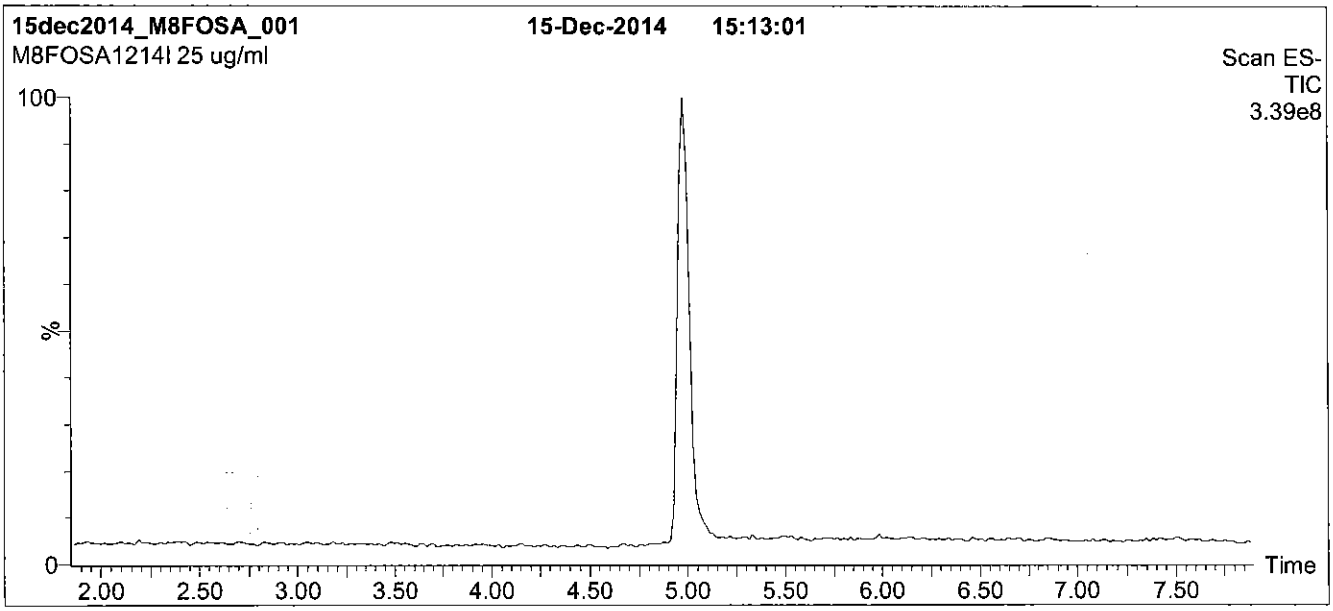
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

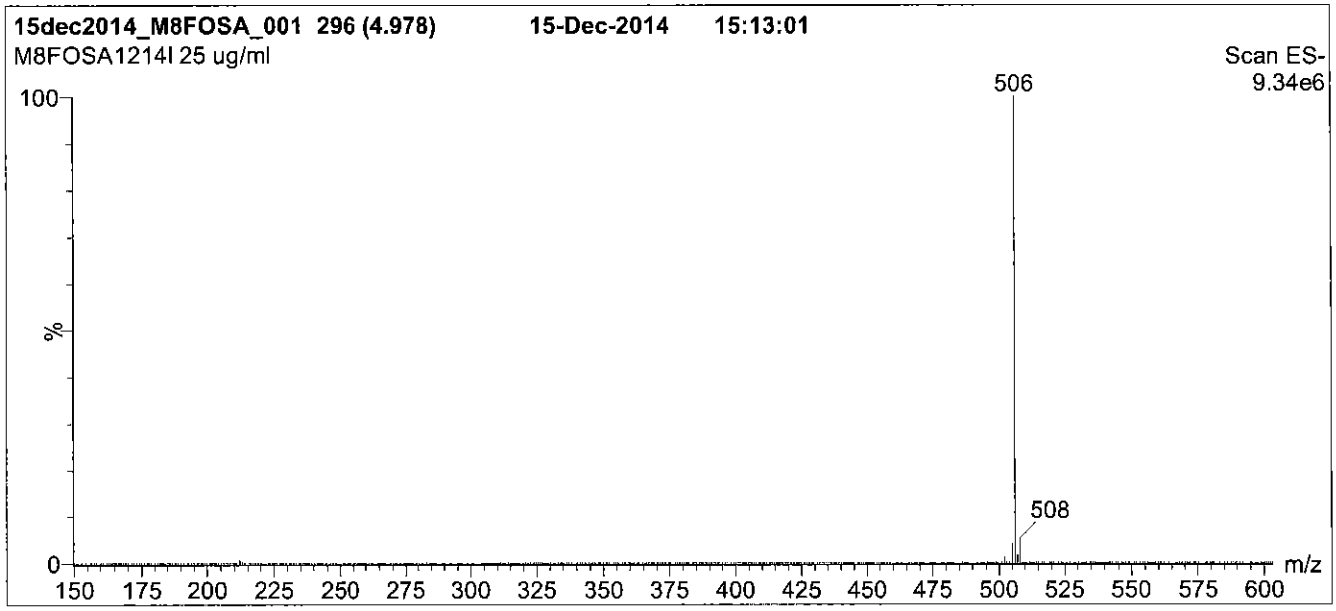
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

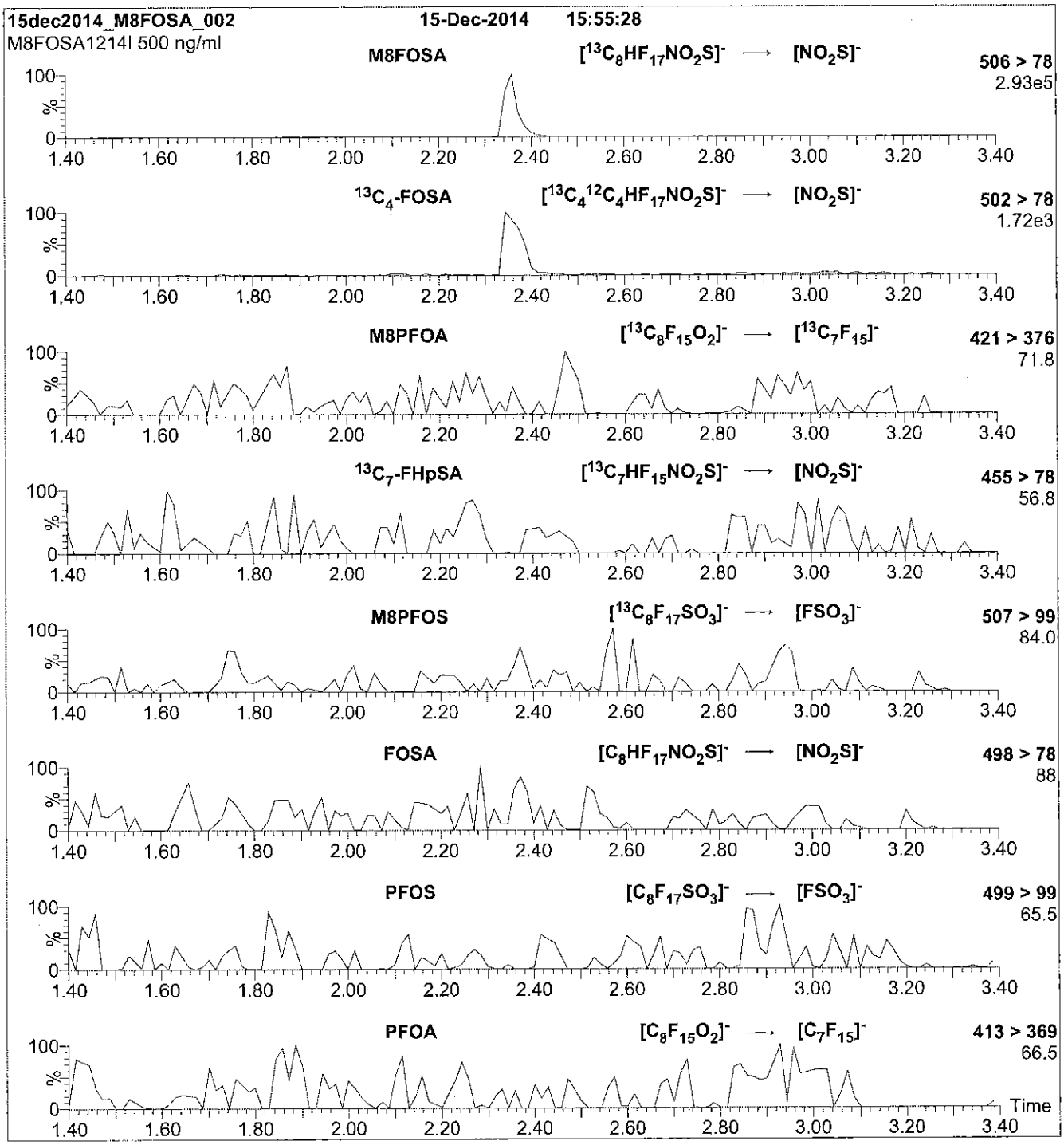
Flow: 300 µl/min

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_00004

R: 12/9/15 SEJ

WELLINGTON LABORATORIES

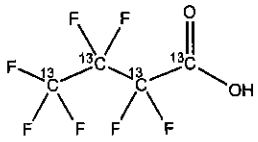
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFBA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_4HF_7O_2$	**MOLECULAR WEIGHT:**	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	10/31/2014		
EXPIRY DATE: (mm/dd/yyyy)	10/31/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/31/2015
B.G. Chittim (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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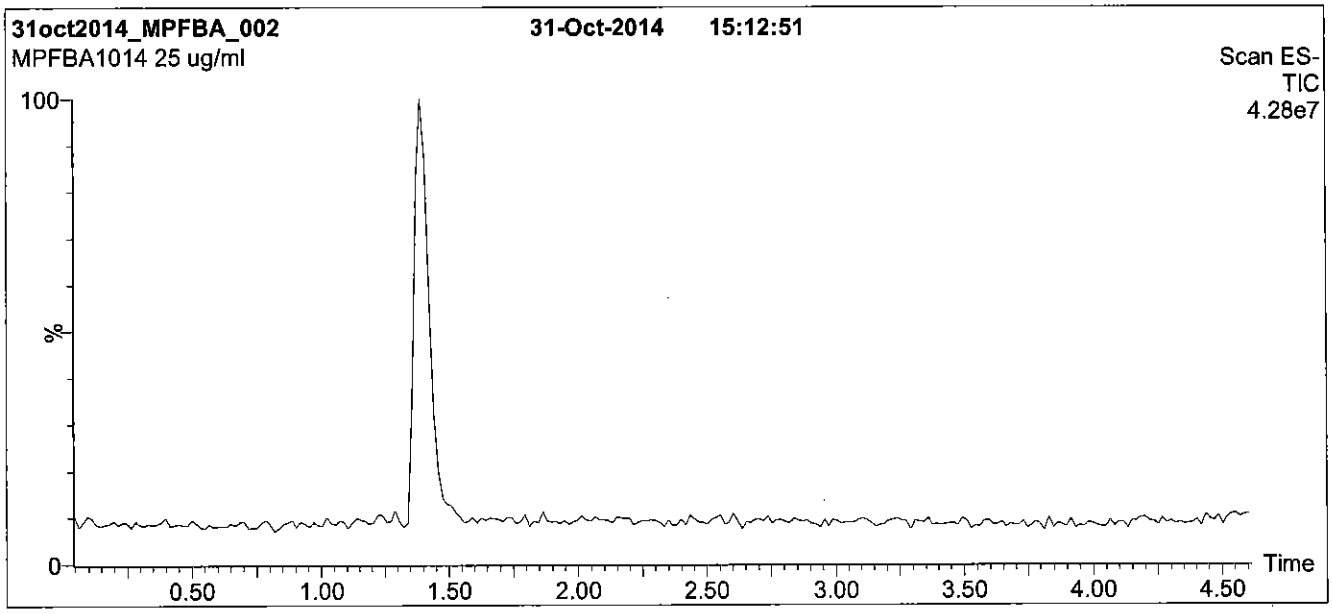
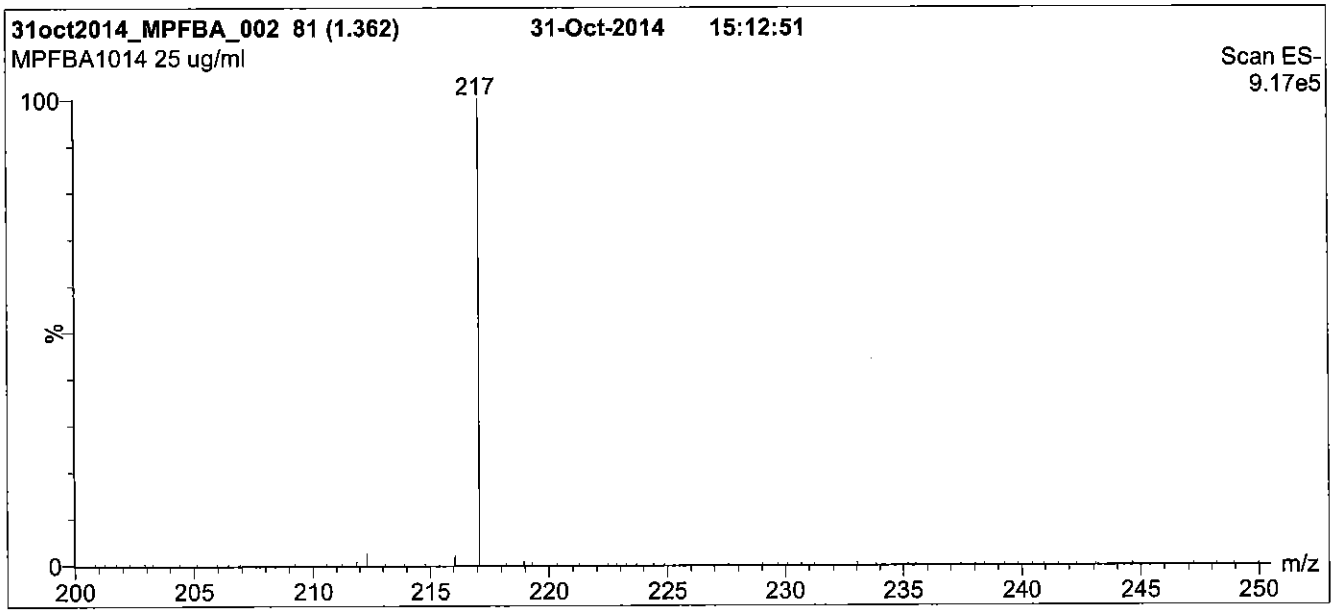
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

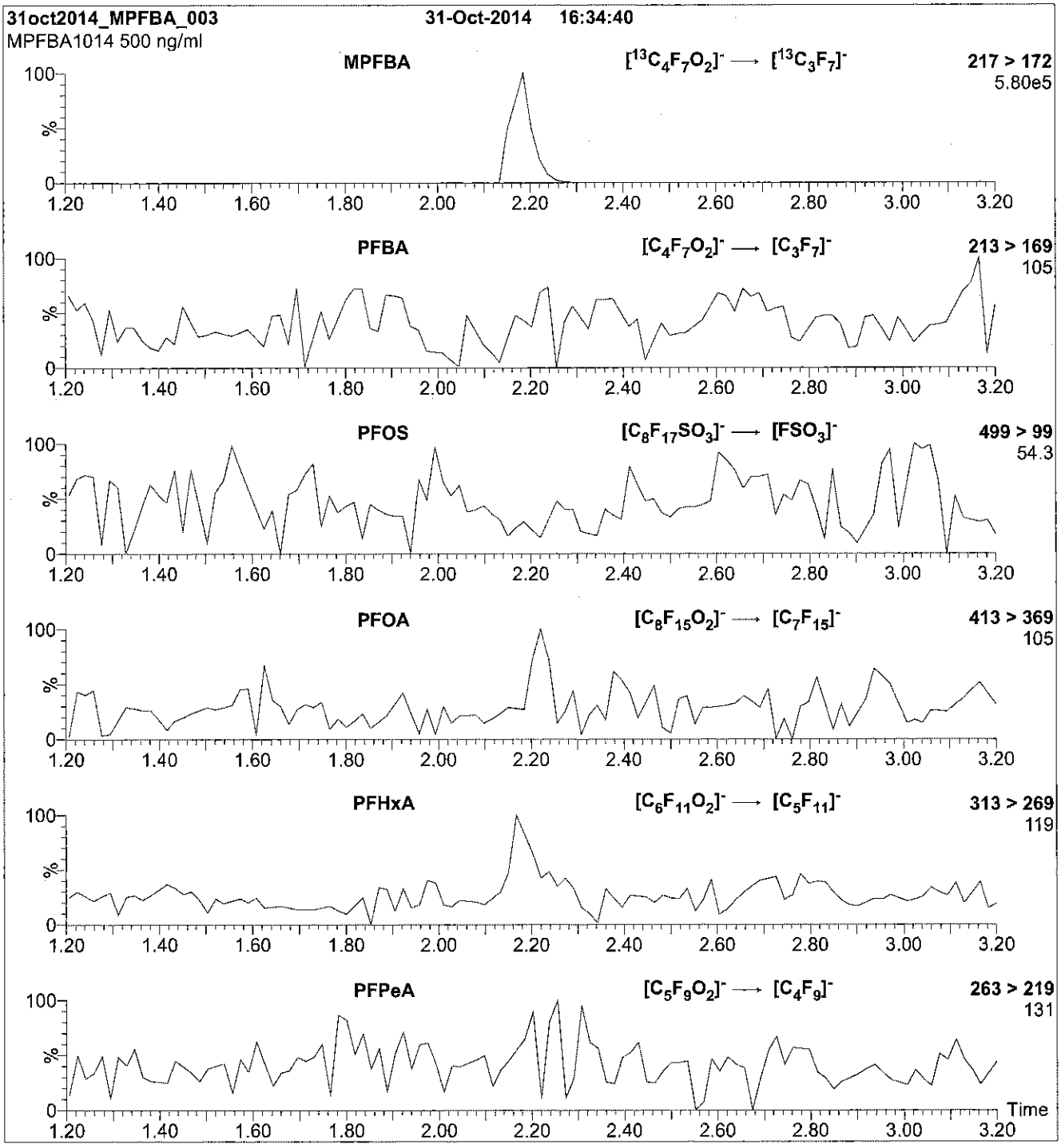
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 10

Reagent

LCMPFDA_00004

R: 10-20-2011 (was 2012)

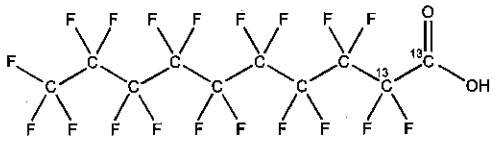
Rec. 10-20-2011

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

12LCMS0262
LCMPFDA_00001

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0411
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-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/07/2011		
EXPIRY DATE: (mm/dd/yyyy)	04/07/2014		
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:** 04/19/2011 (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:

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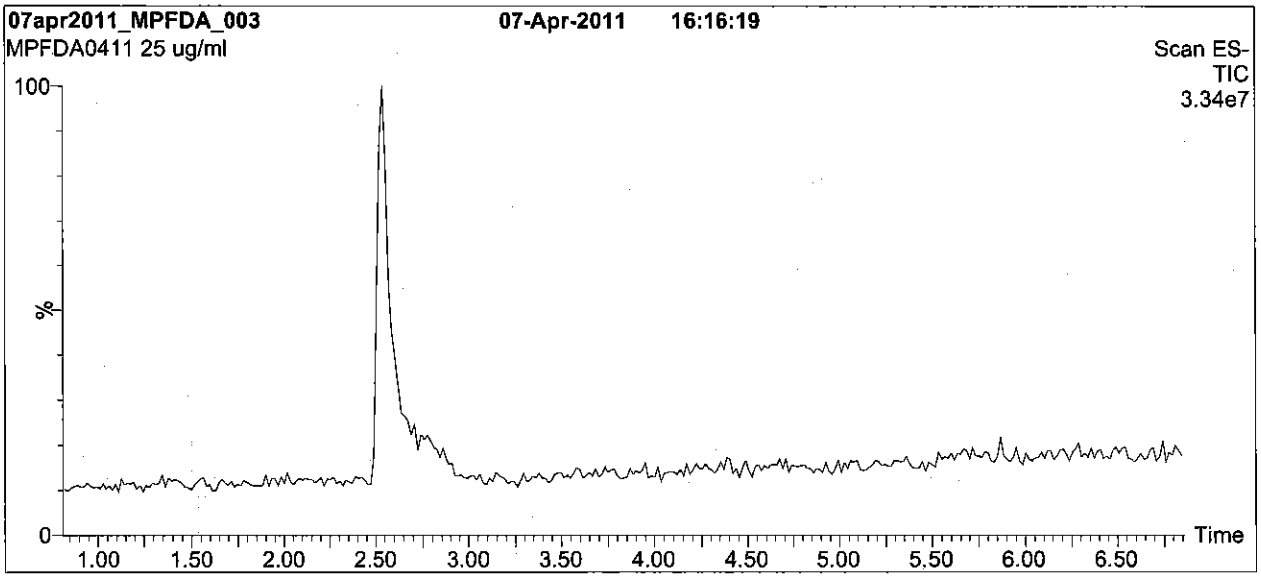
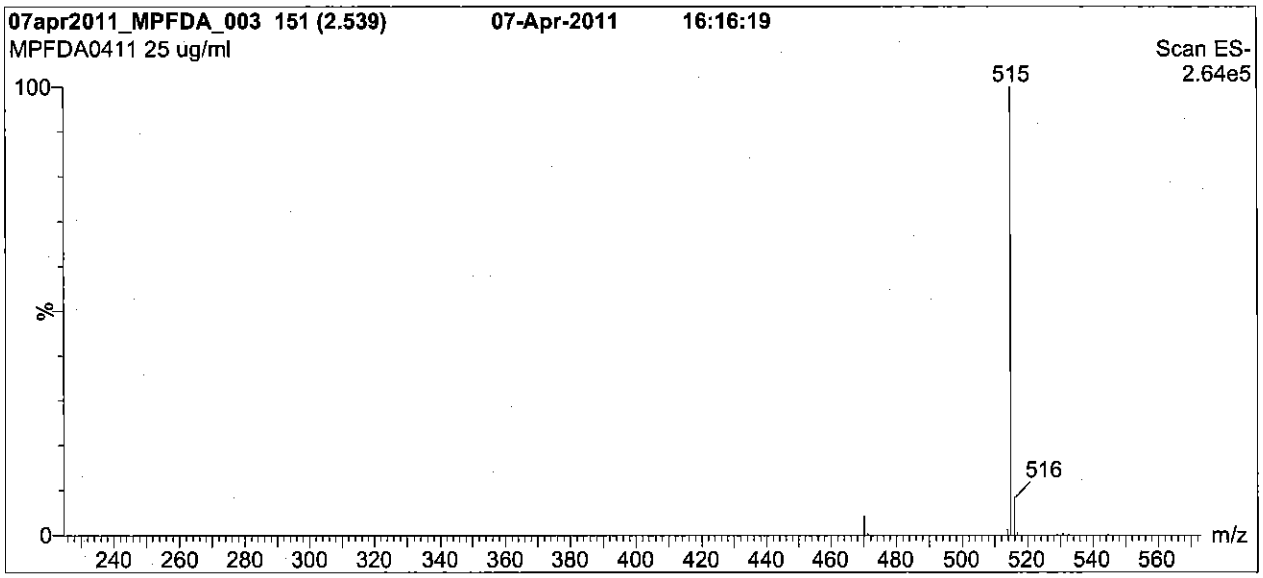




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

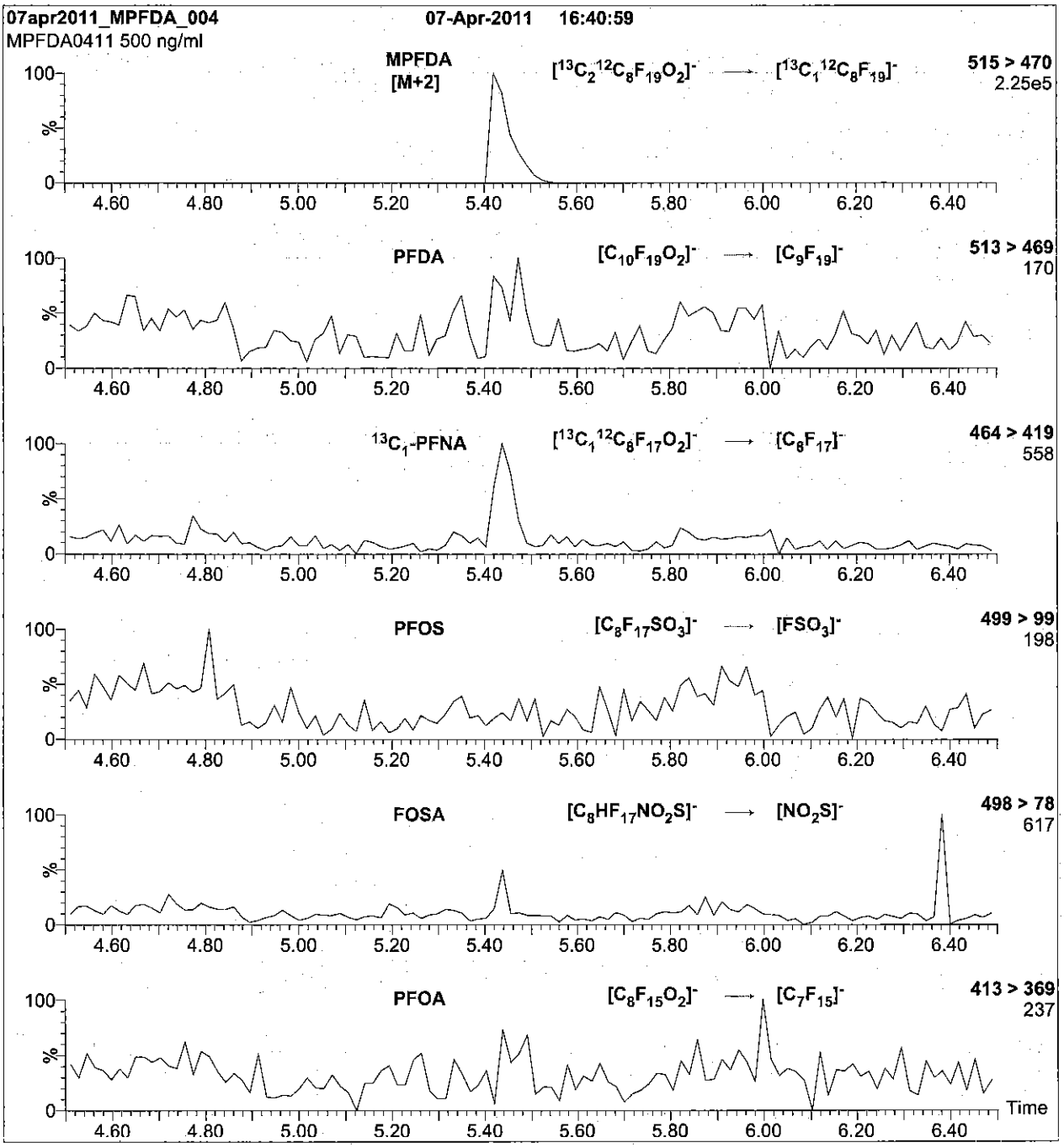
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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 70% (80:20 MeOH:ACN) / 30% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCMPFDA_00005

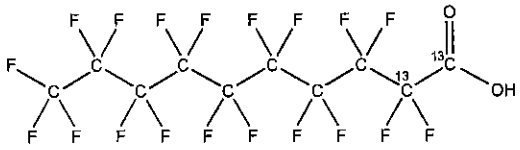
RL 4/15/15 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDA
LOT NUMBER: MPFDA0414
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) 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:

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- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
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Certified By: _____ **Date:** 04/15/2014 (mm/dd/yyyy)
B.G. Chittim

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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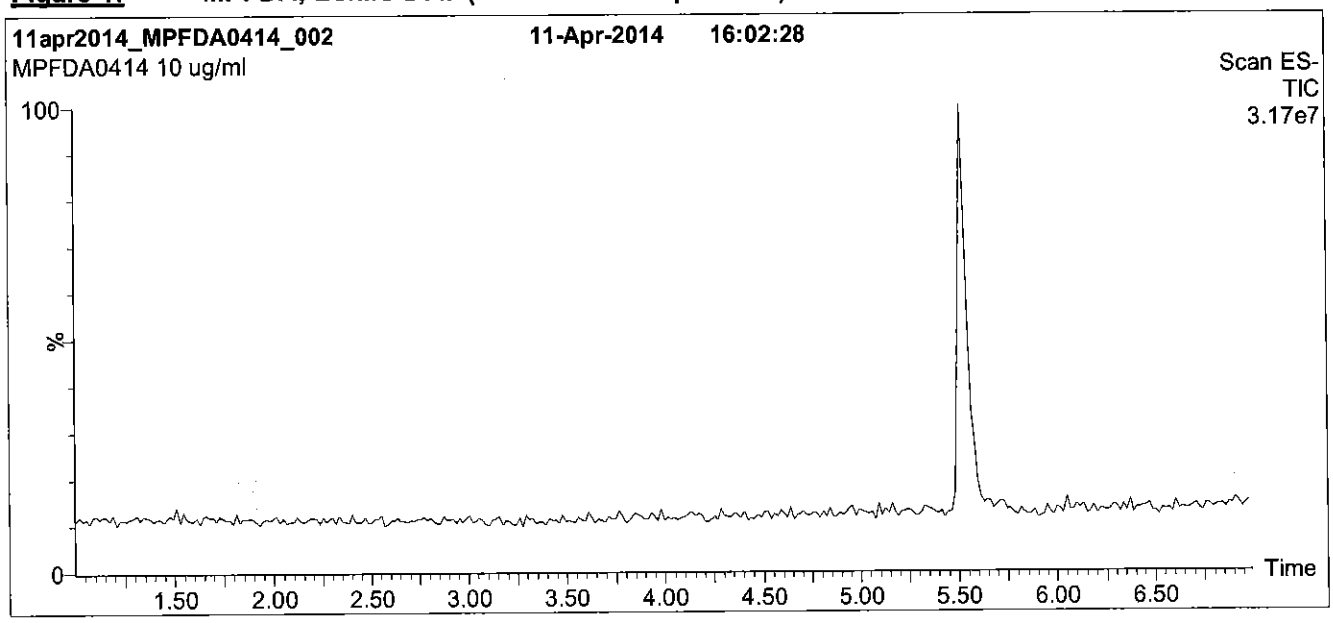
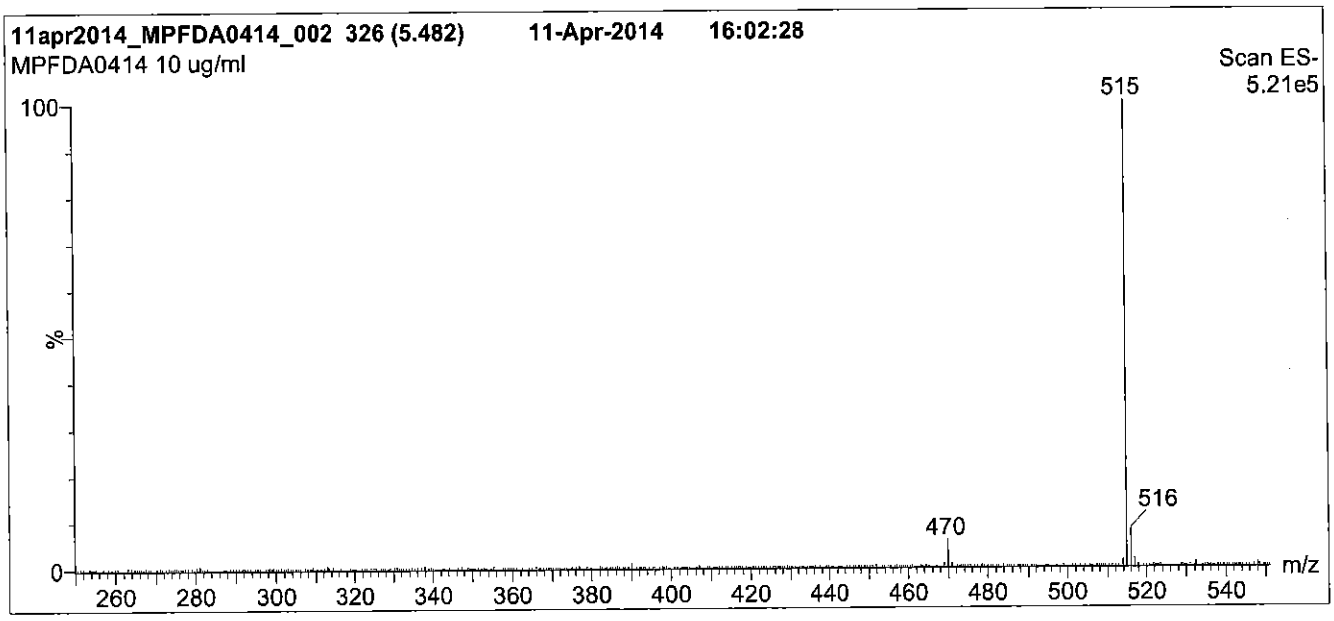
Figure 1: **MPFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

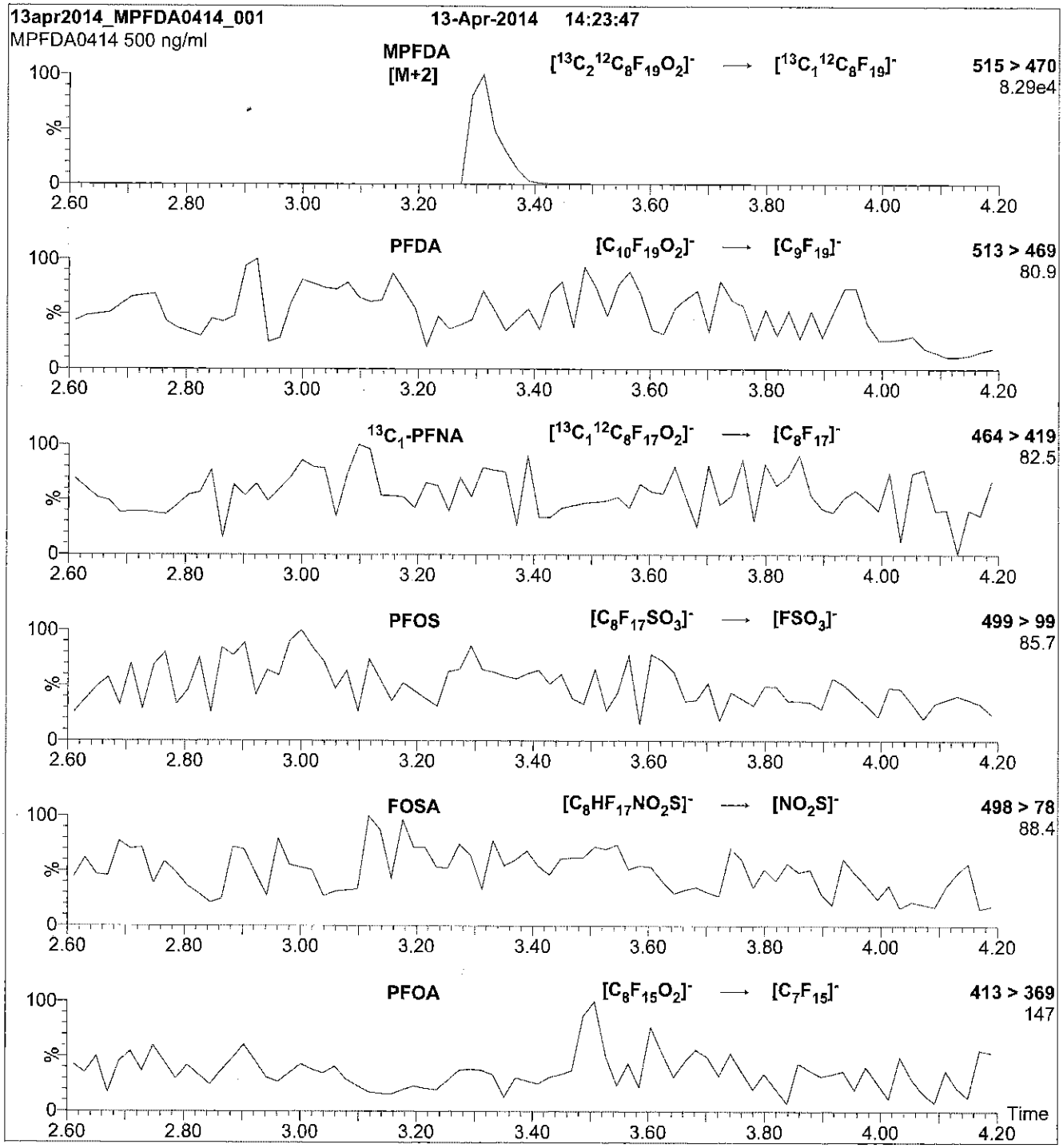
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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 SRV

WELLINGTON LABORATORIES

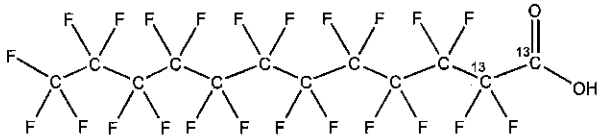
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFDoA0714

STRUCTURE:

CAS #: Not available



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

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:** 07/21/2014 (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:

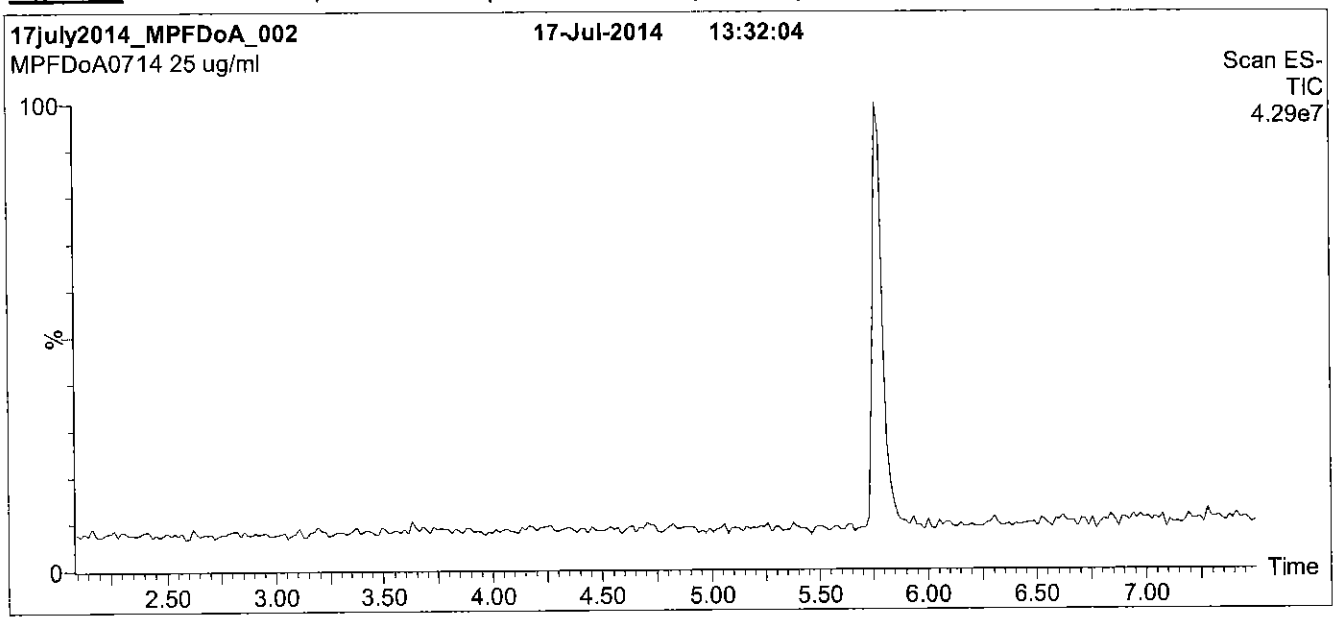
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

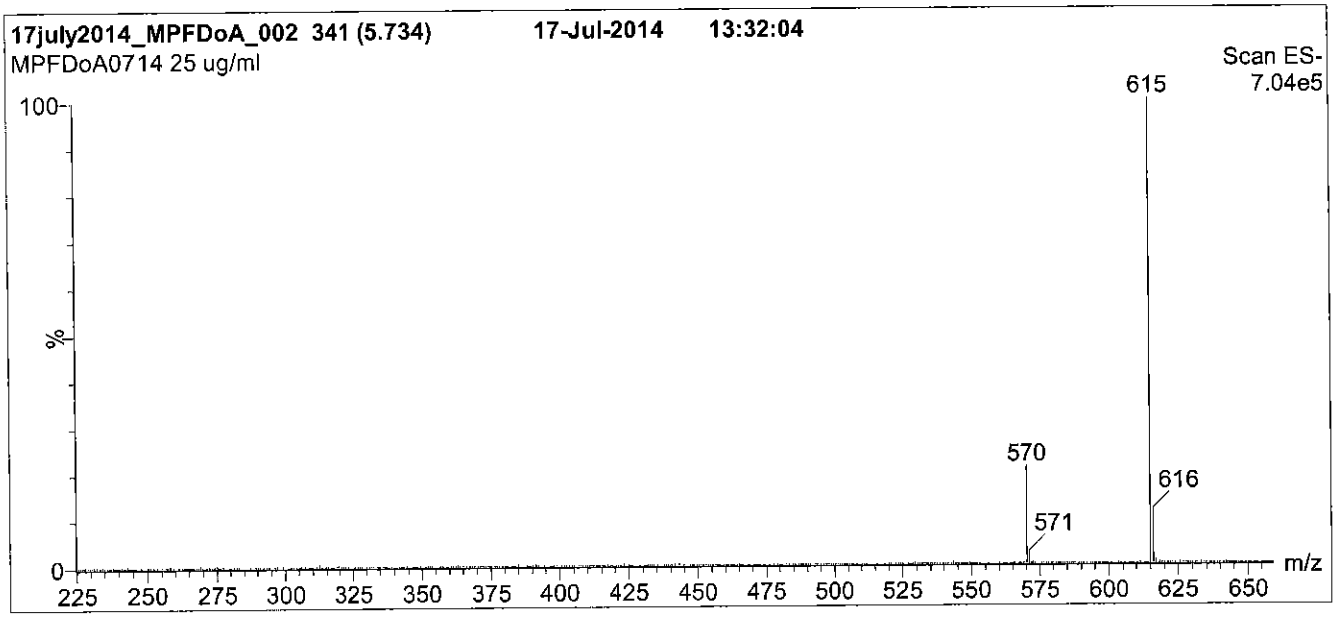
CALA Testing Accreditation No. A 1226

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

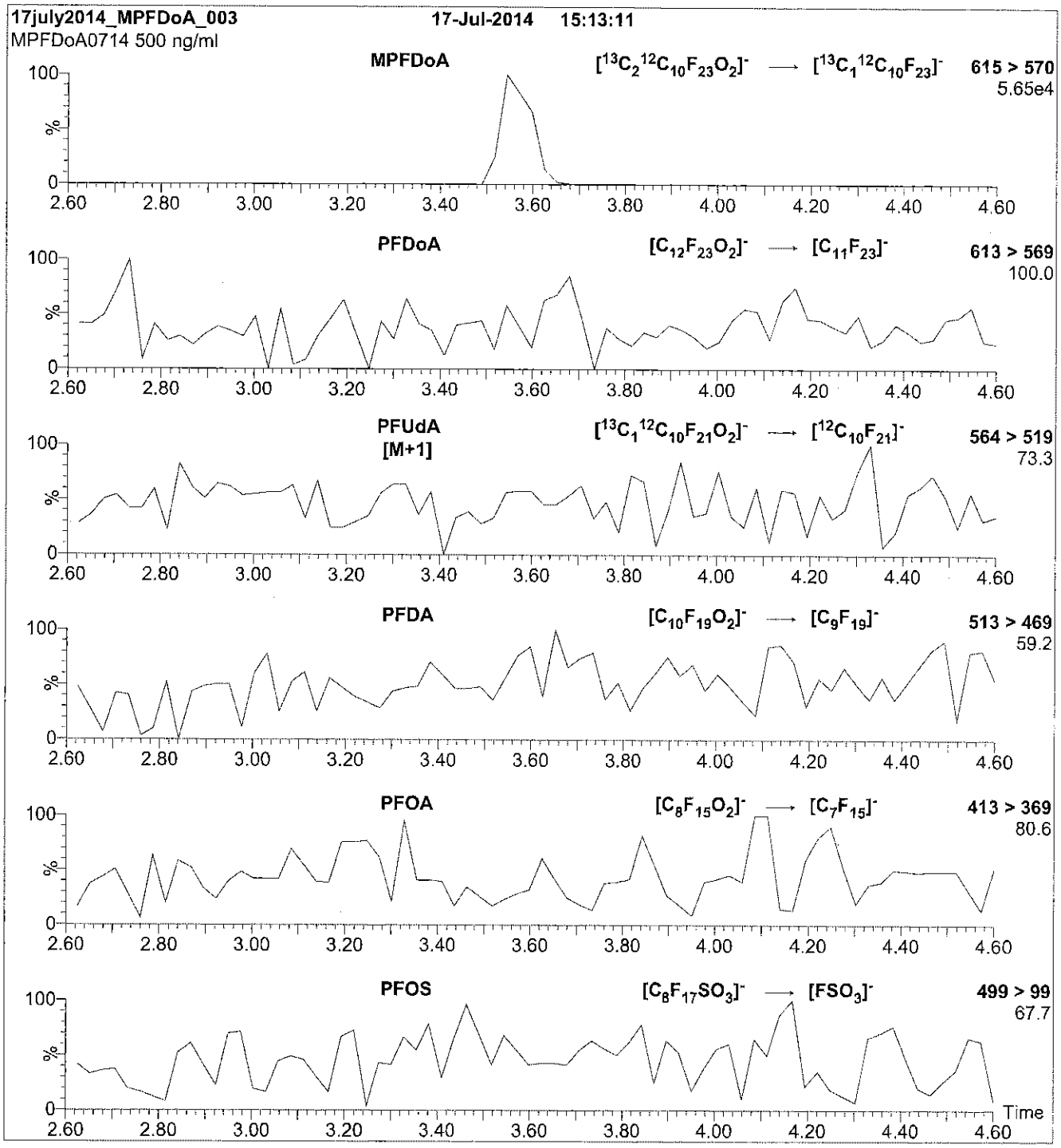
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 13

Reagent

LCMPFDoA_00004

V : 14/10/15 JKV

WELLINGTON LABORATORIES

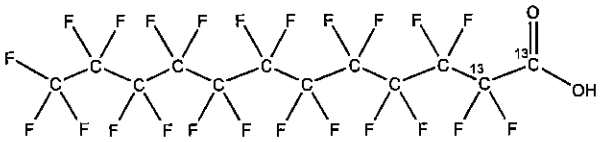
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFDoA0714

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
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: _____ **Date:** 04/01/2015 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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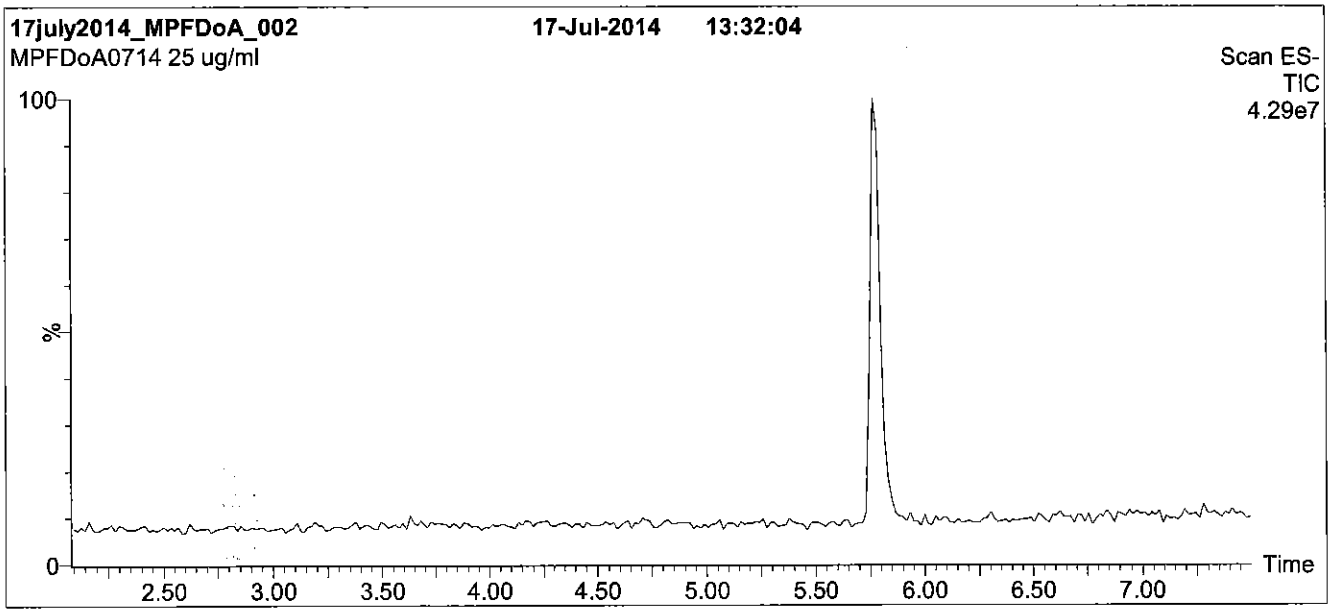
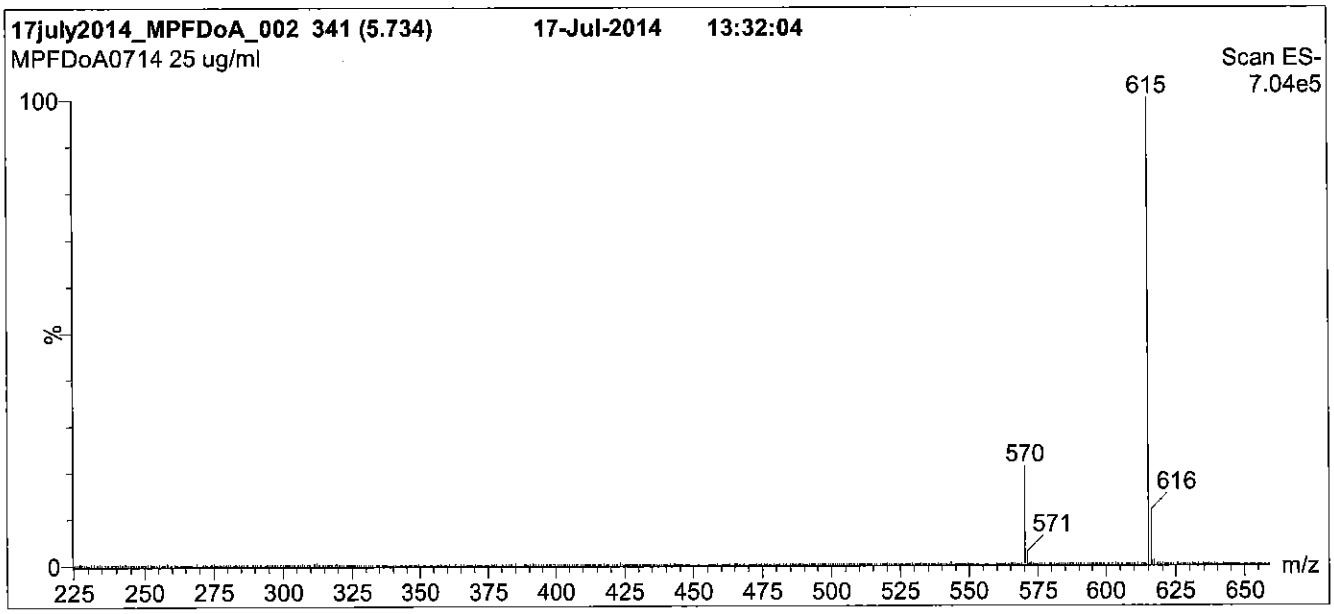
Figure 1: **MPFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

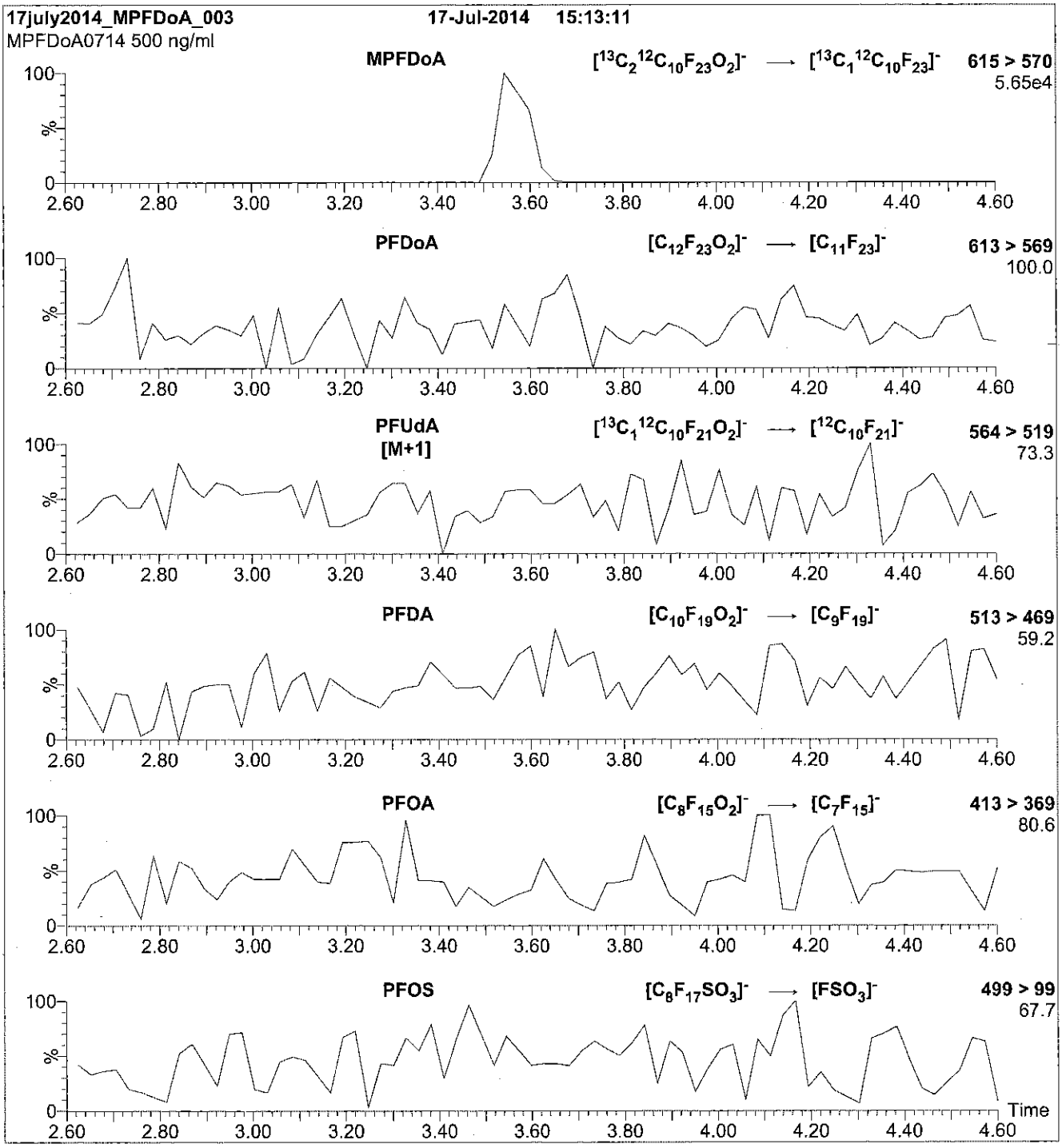
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00006

P: 4/15/15 SKV

WELLINGTON LABORATORIES

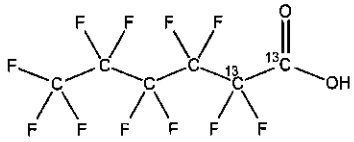
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFHxA0414

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_4HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of 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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA Testing Accreditation No. A 0226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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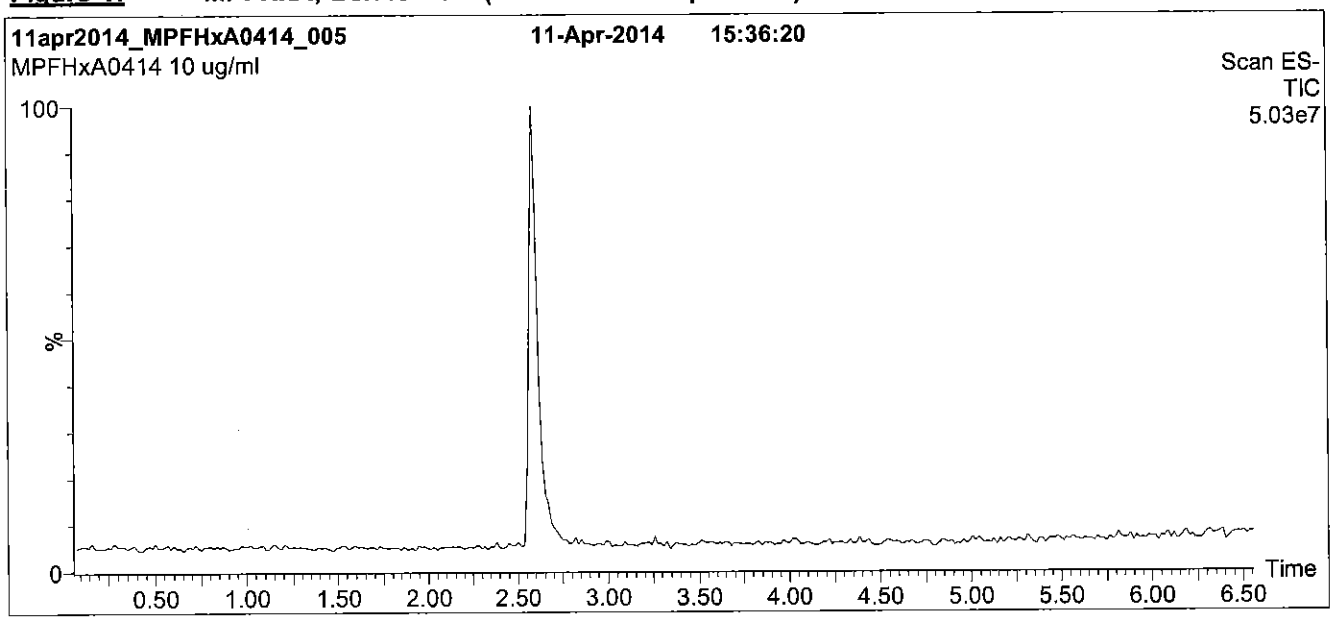
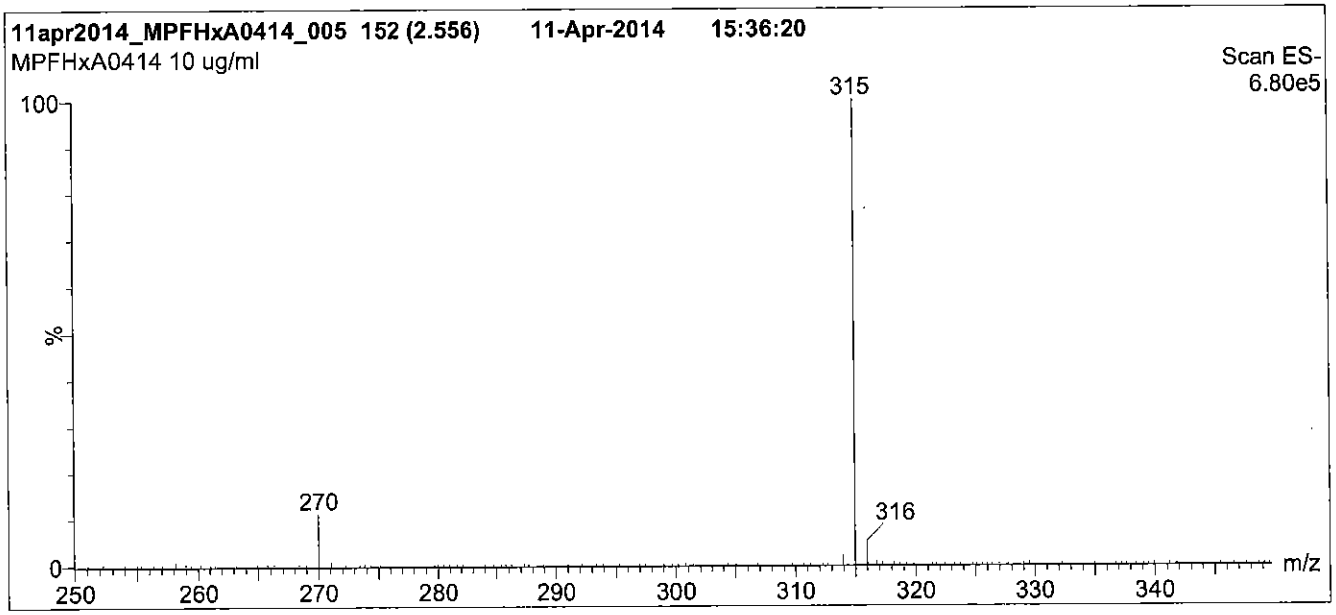
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





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

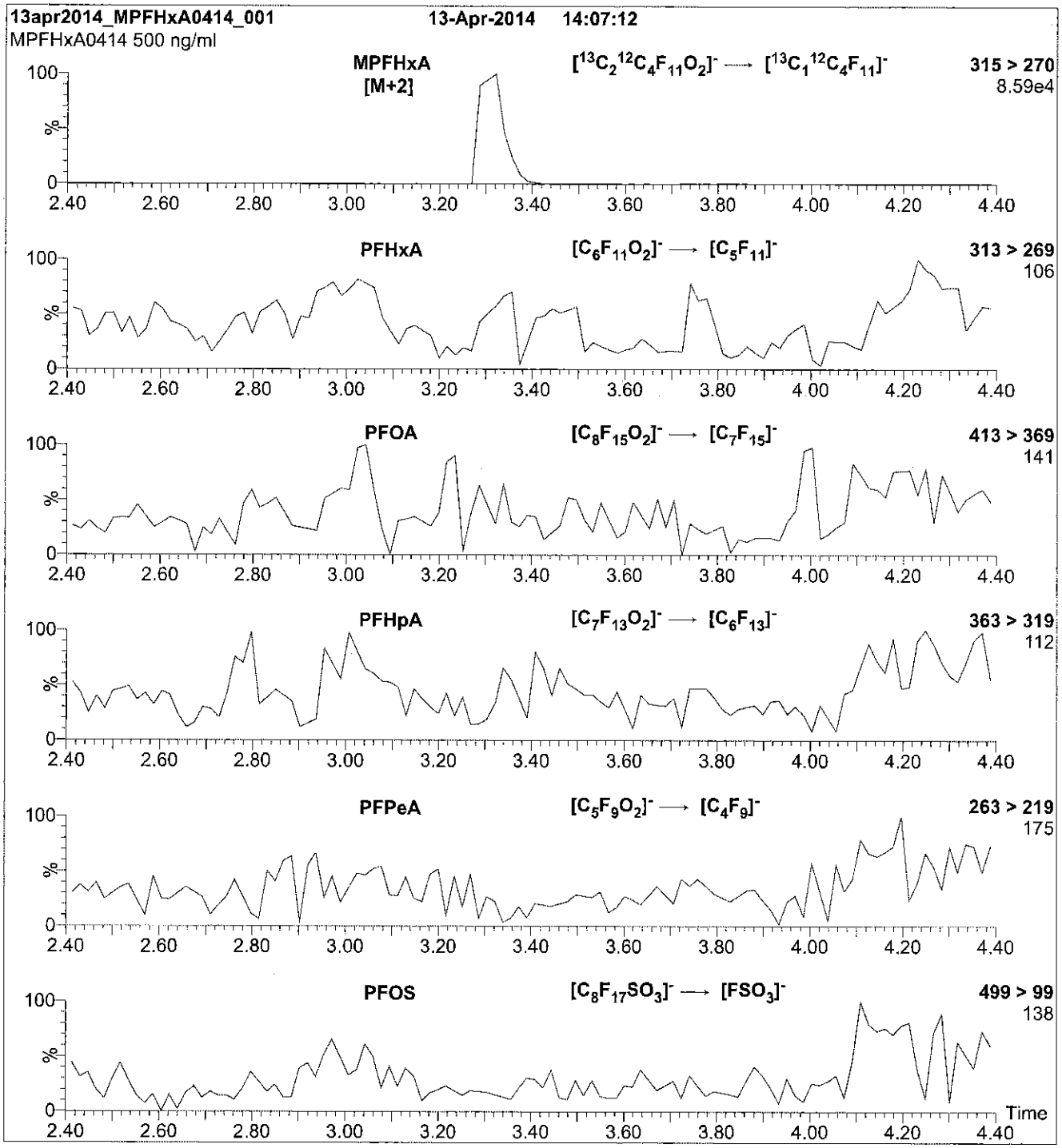
Flow: 300 µl/min

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

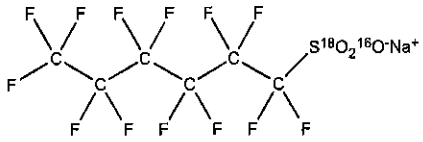
Reagent

LCMPFHxS_00004

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: _____ **Date:** 03/30/2015 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

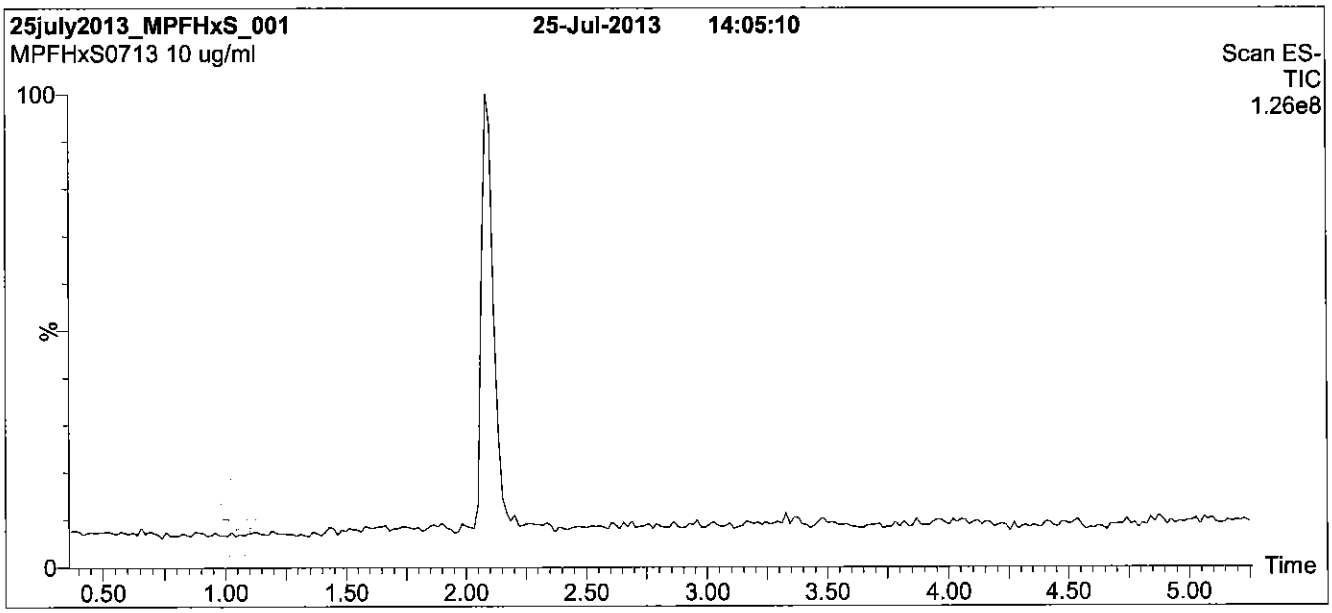
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

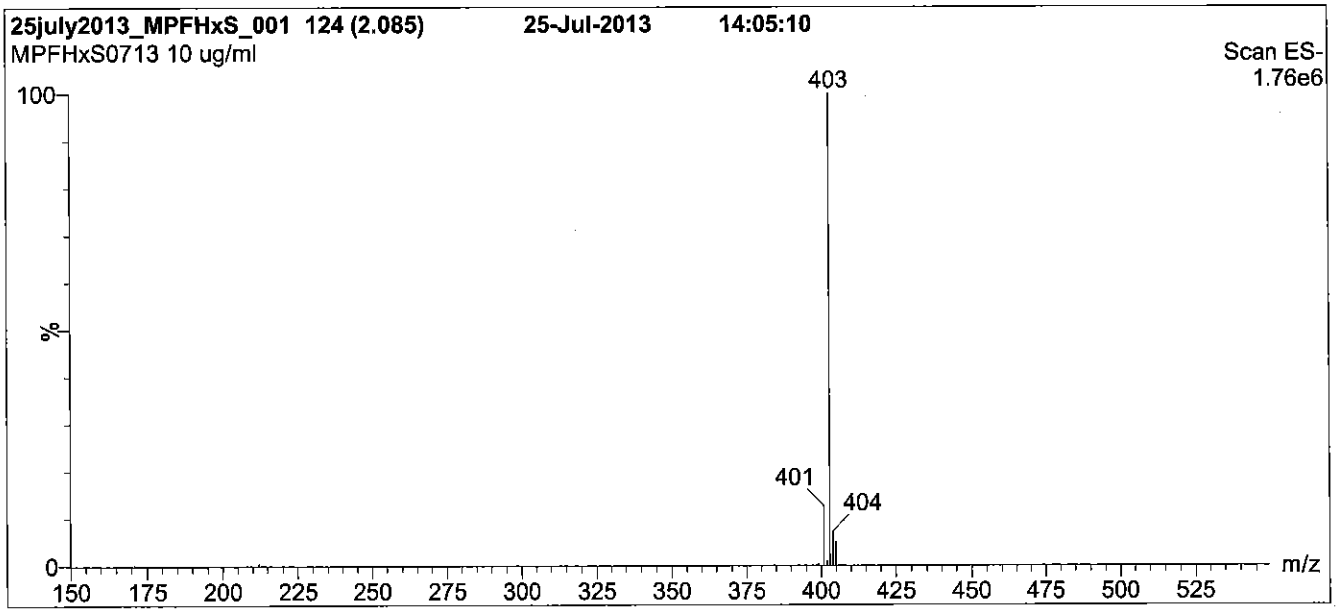
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

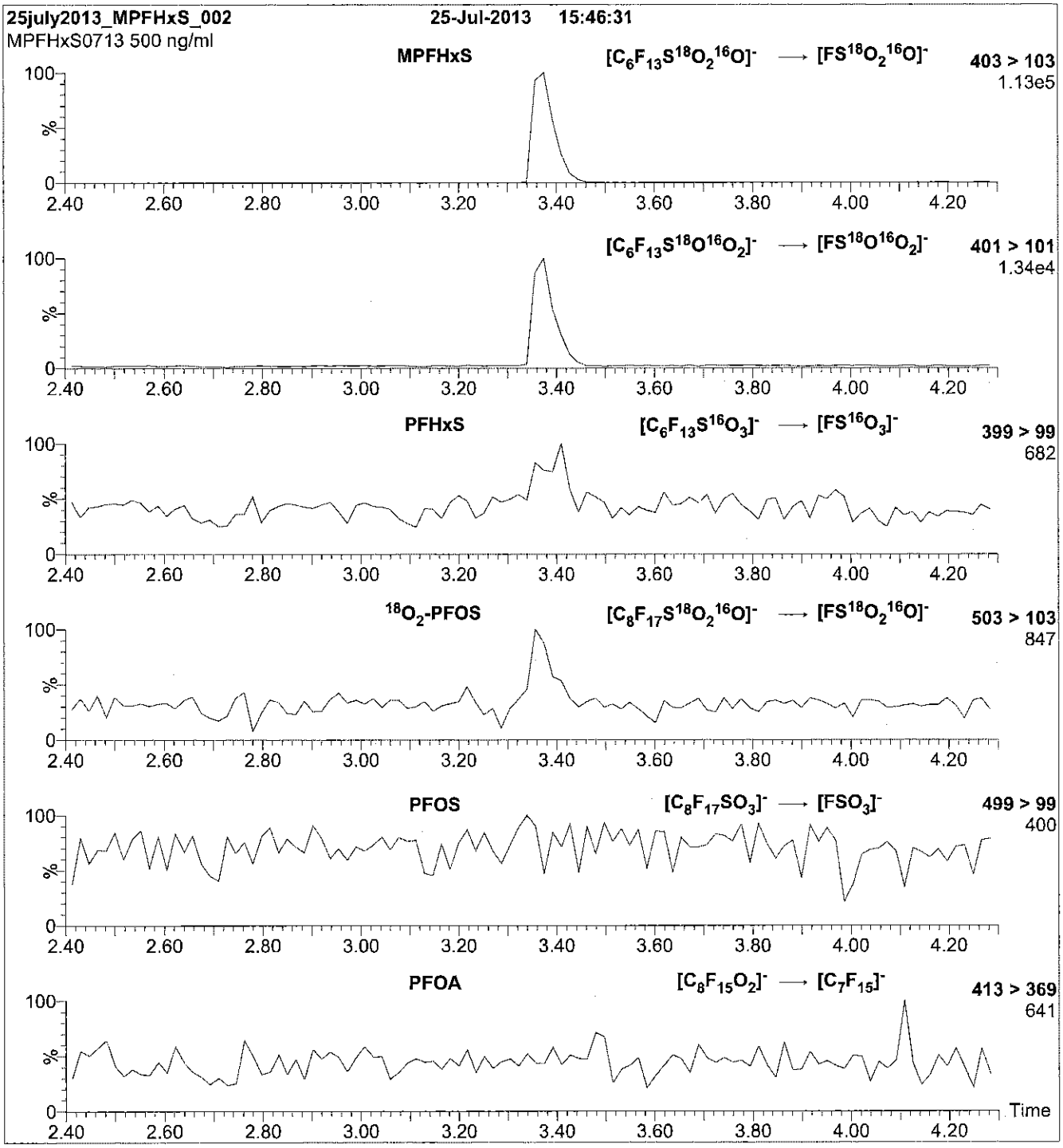
Flow: 300 µl/min

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_00003

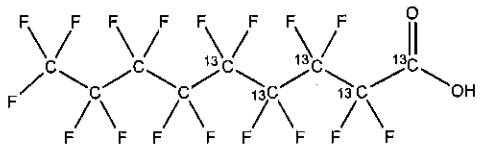
V- 2/11/15 SV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFNA
LOT NUMBER: MPFNA0414
COMPOUND: Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid

STRUCTURE:
CAS #: Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/13/2014 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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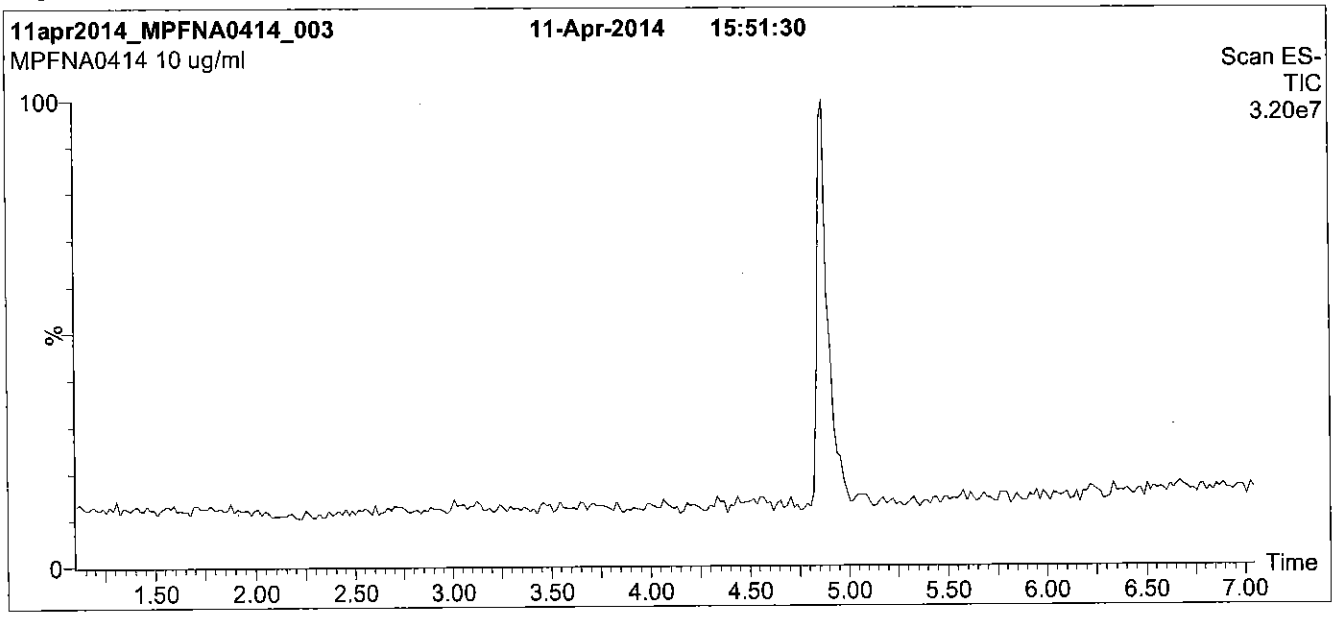
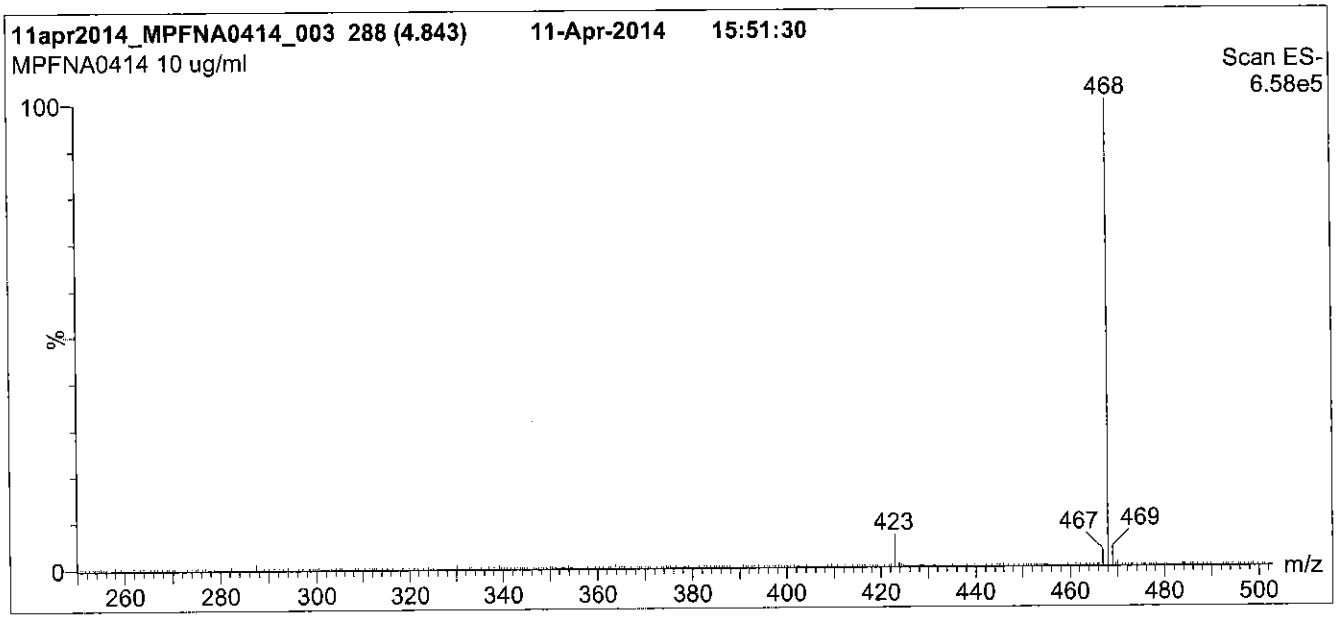
Figure 1: **MPFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

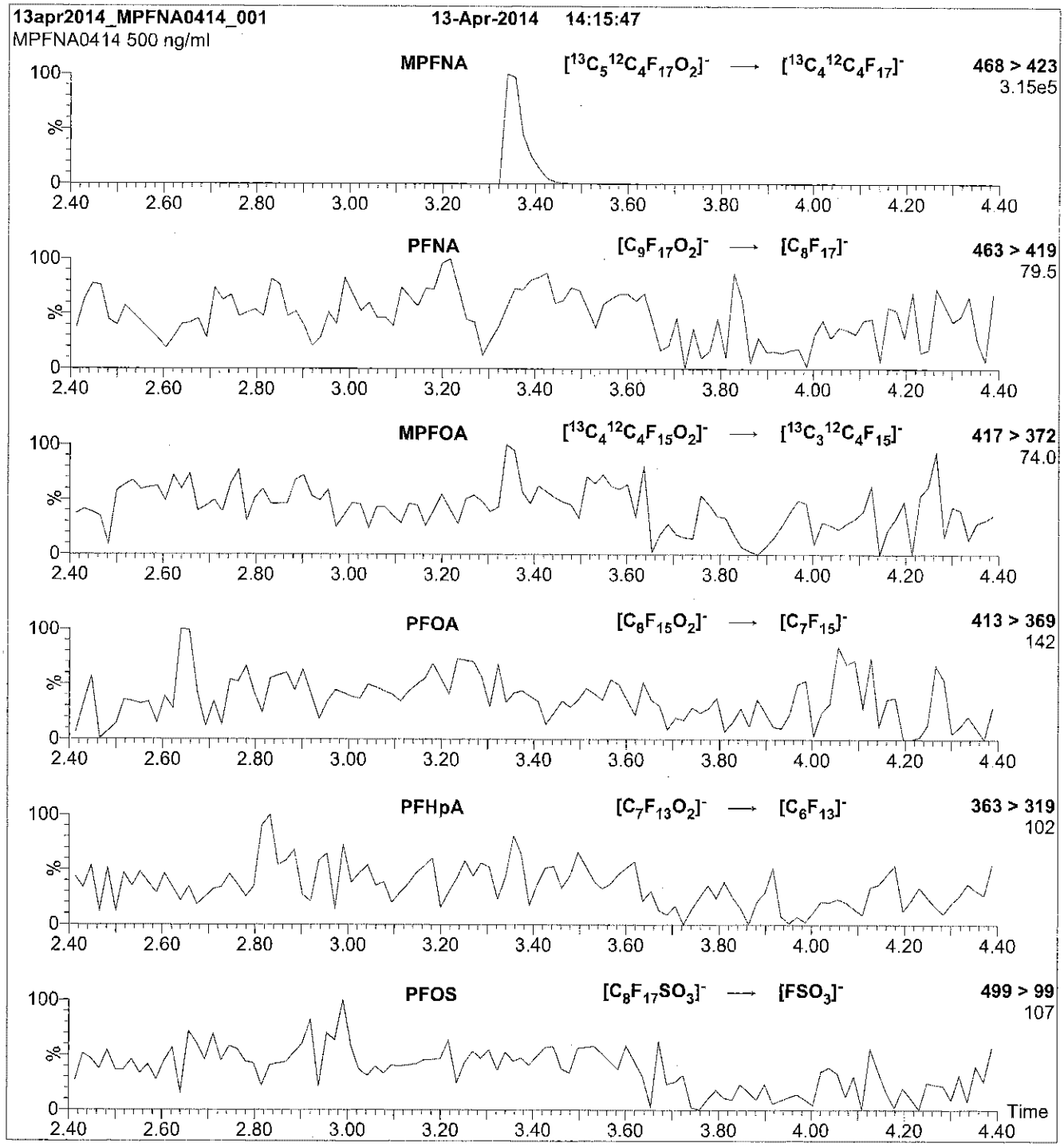
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00007

V: 9/15/15 BV

WELLINGTON LABORATORIES

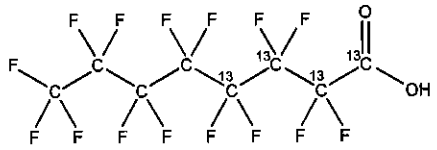
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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-$^{13}C_4$)

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

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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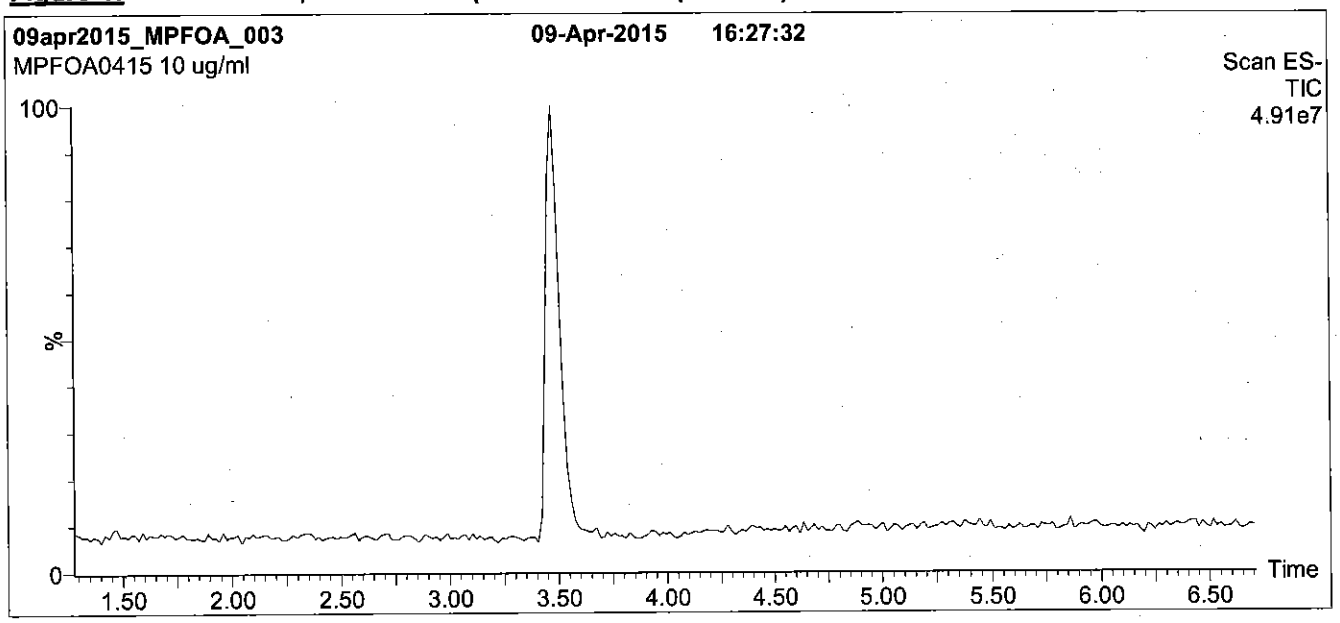
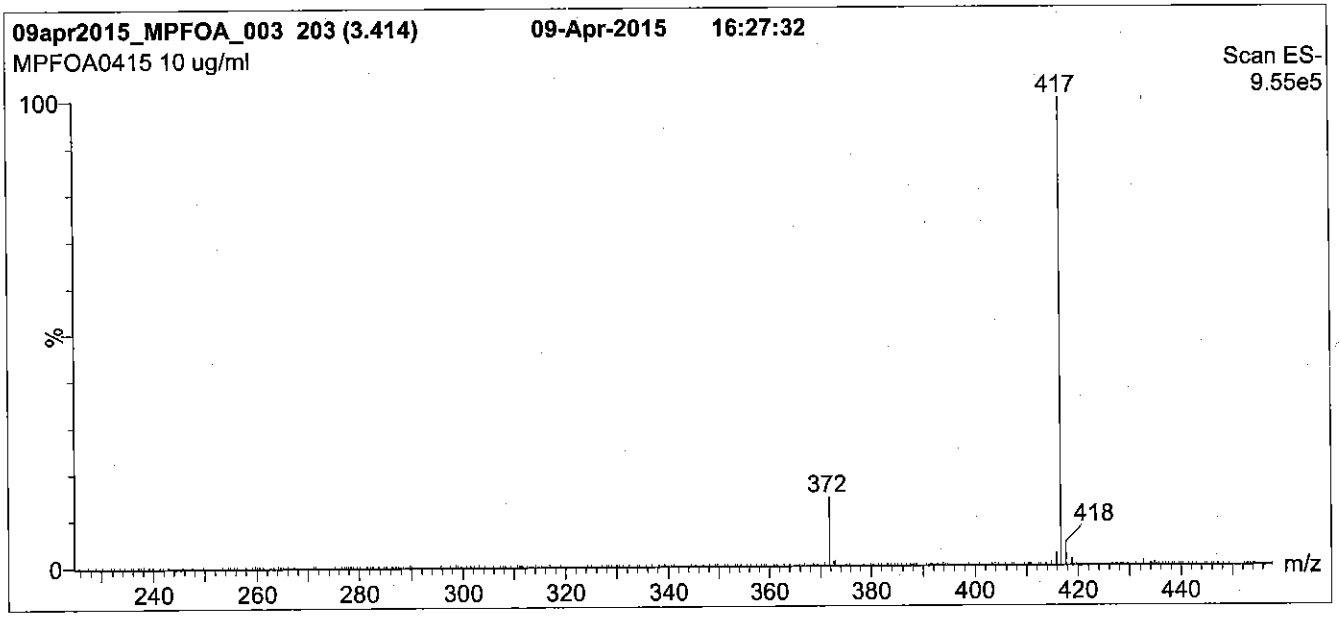
Figure 1: **MPFOA; LC/MS Data (TIC and Mass Spectrum)**





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

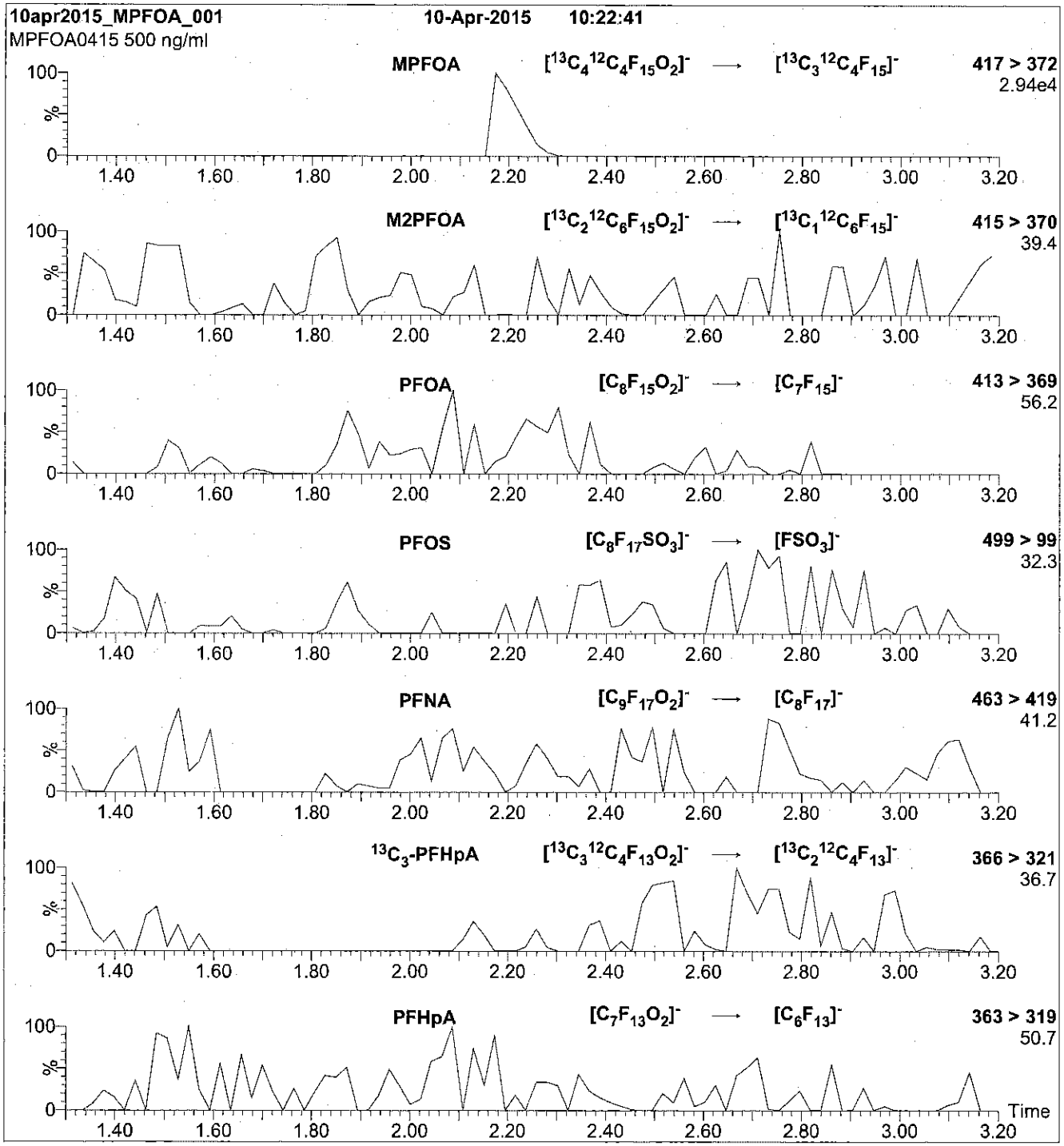
Flow: 300 µl/min

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

LCMPFOA_00008

572885
ID: LCMPFOA_00008
Exp 04/10/20 Prpd: CBW
13C4-Perfluorooctanoic ac

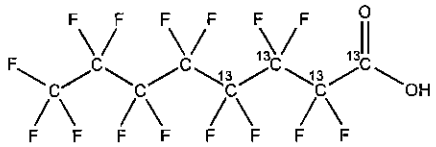
R: 1/25/16
S:

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOA
LOT NUMBER: MPFOA0415
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4HF_{15}O_2$	**MOLECULAR WEIGHT:**	418.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	04/10/2015		
EXPIRY DATE: (mm/dd/yyyy)	04/10/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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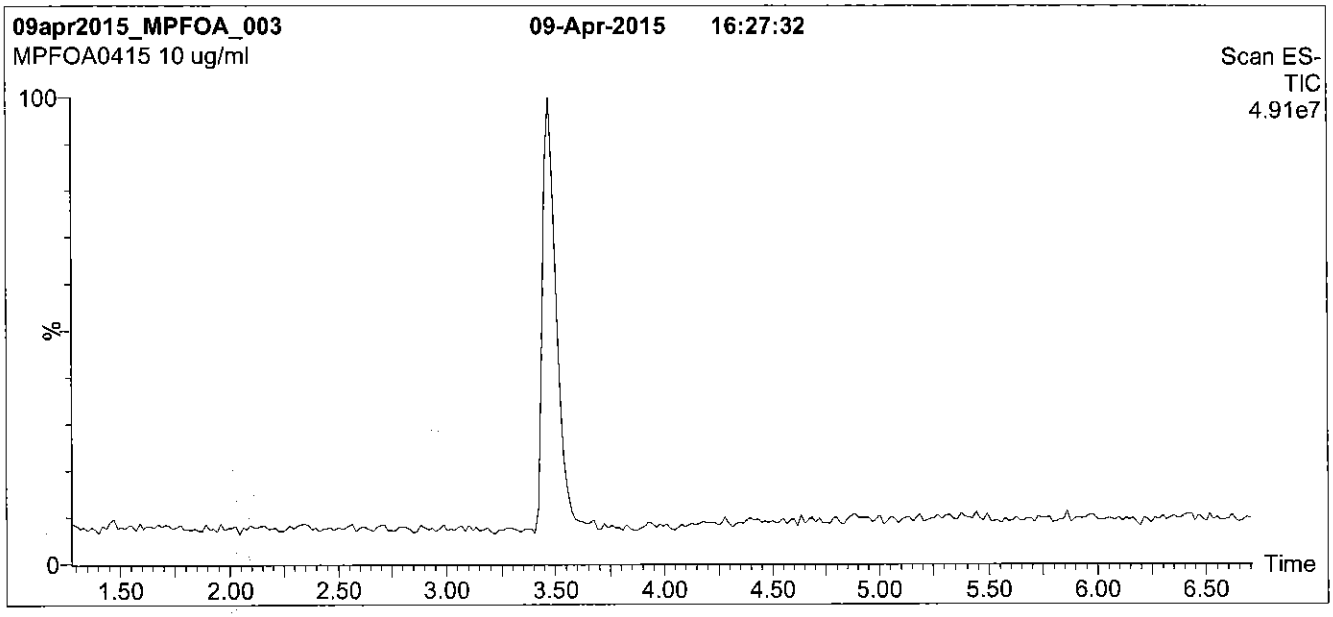
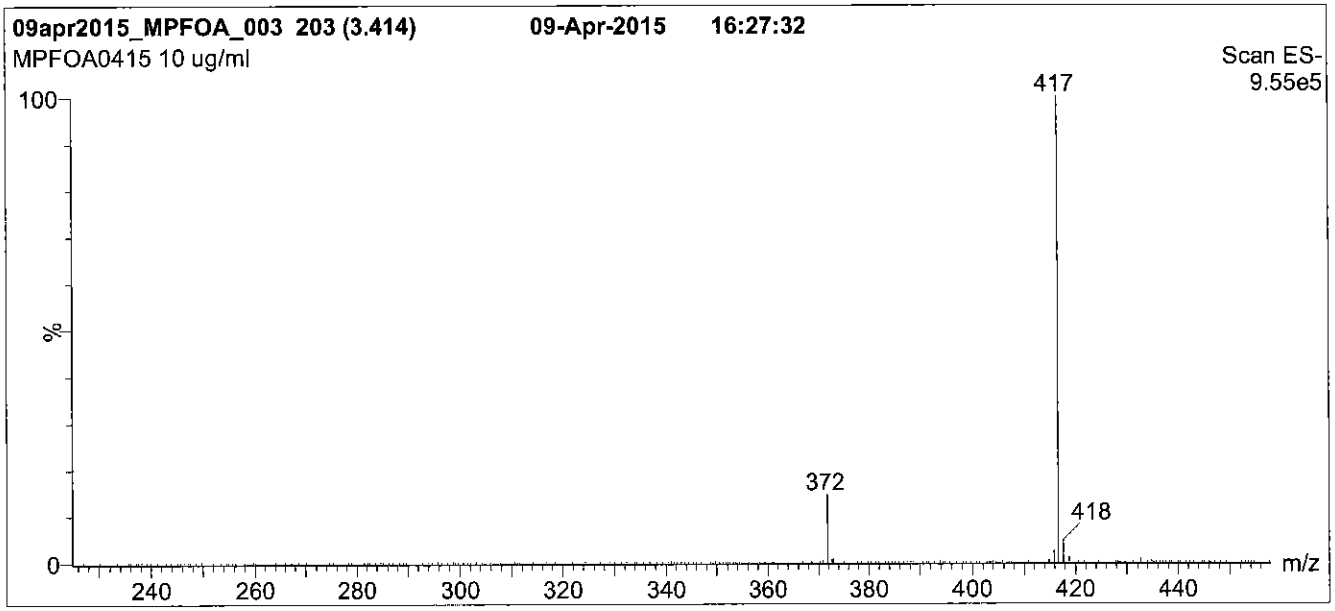
Figure 1: **MPFOA; LC/MS Data (TIC and Mass Spectrum)**





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

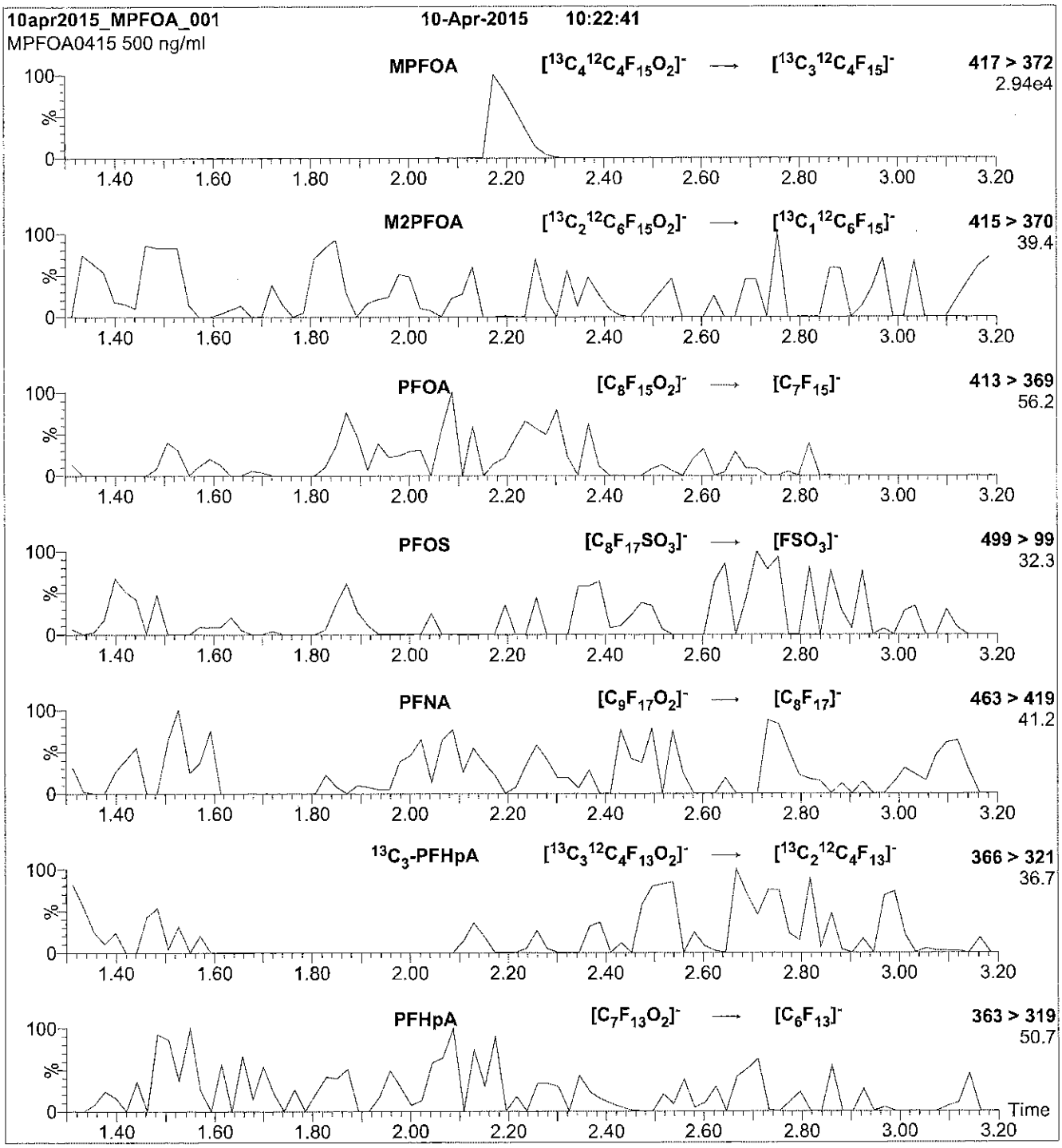
Flow: 300 µl/min

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_00009

V: 9/15/15 GV

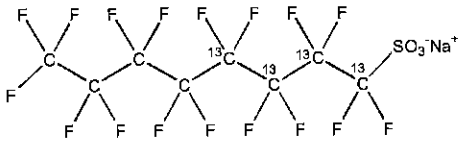
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0515

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 ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/15/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/15/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% 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:** 05/28/2015 (mm/dd/yyyy)

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

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

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CALA Testing Accreditation No.: A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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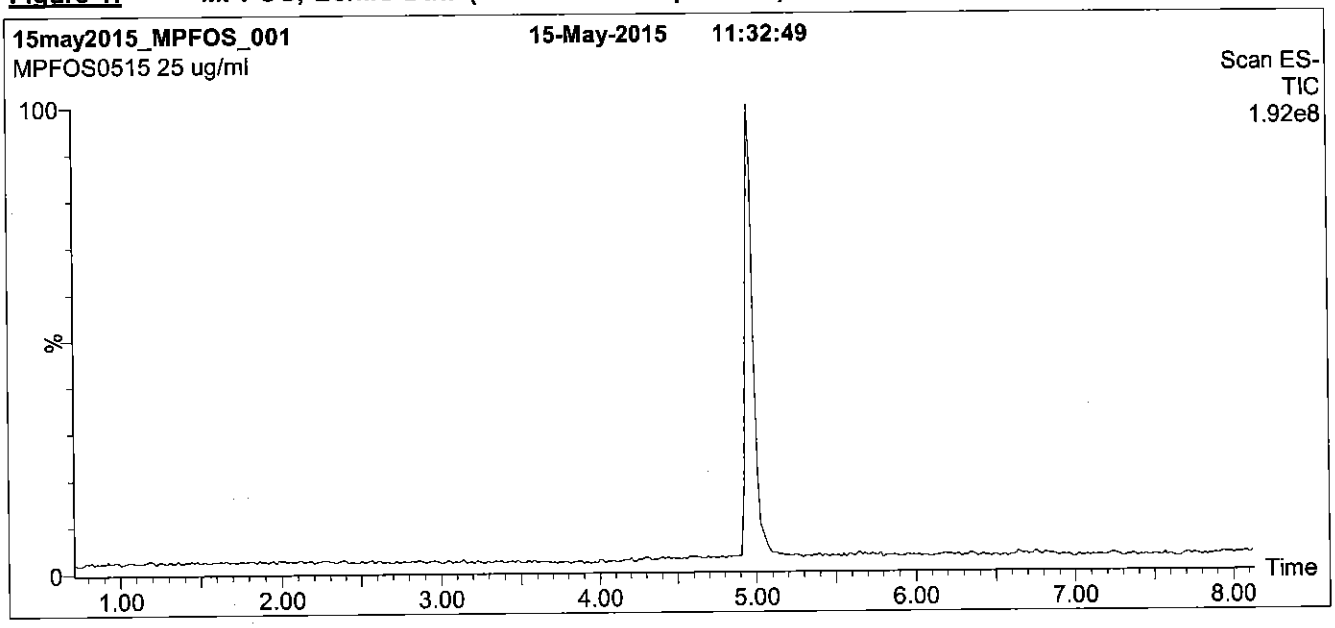
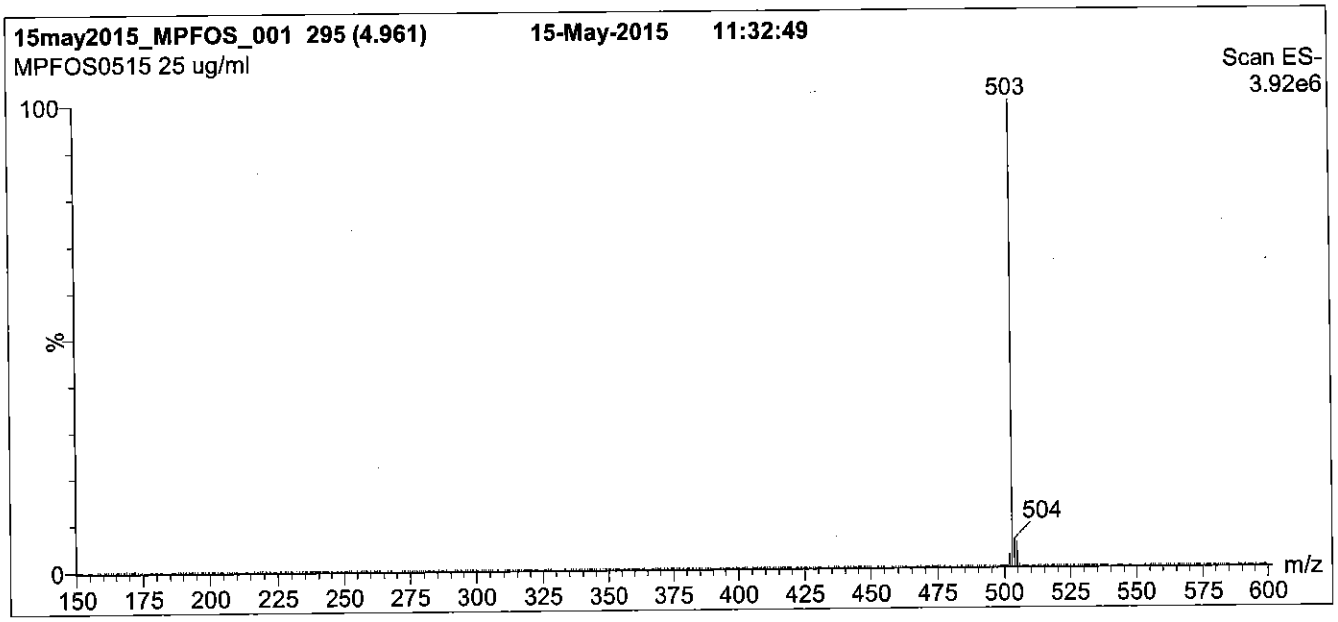




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

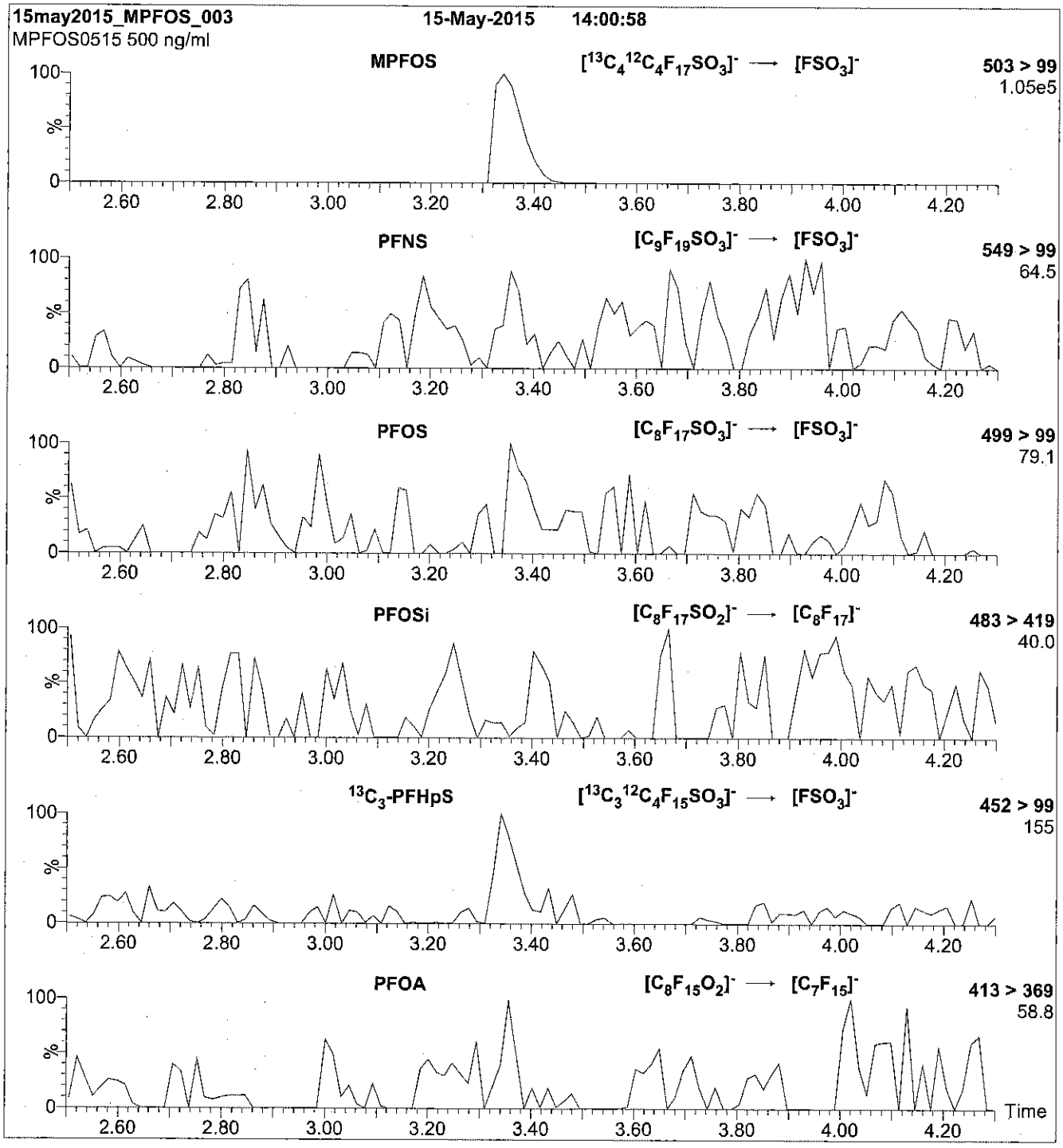
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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) = 3.35e-3
Collision Energy (eV) = 40

Reagent

LCMPFOS_00010

572886
ID: LCMPFOS_00010
Exp: 05/15/20 Prpd: CBW
13C4-Perfluorooctanesulfo

R: 1/25/16
S:

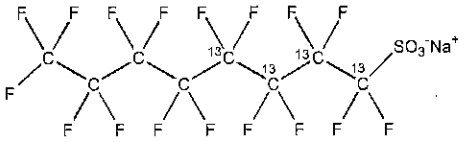
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0515

COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate

STRUCTURE: **CAS #:** Not available



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CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/15/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/15/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/28/2015 (mm/dd/yyyy)
B.G. Chittim

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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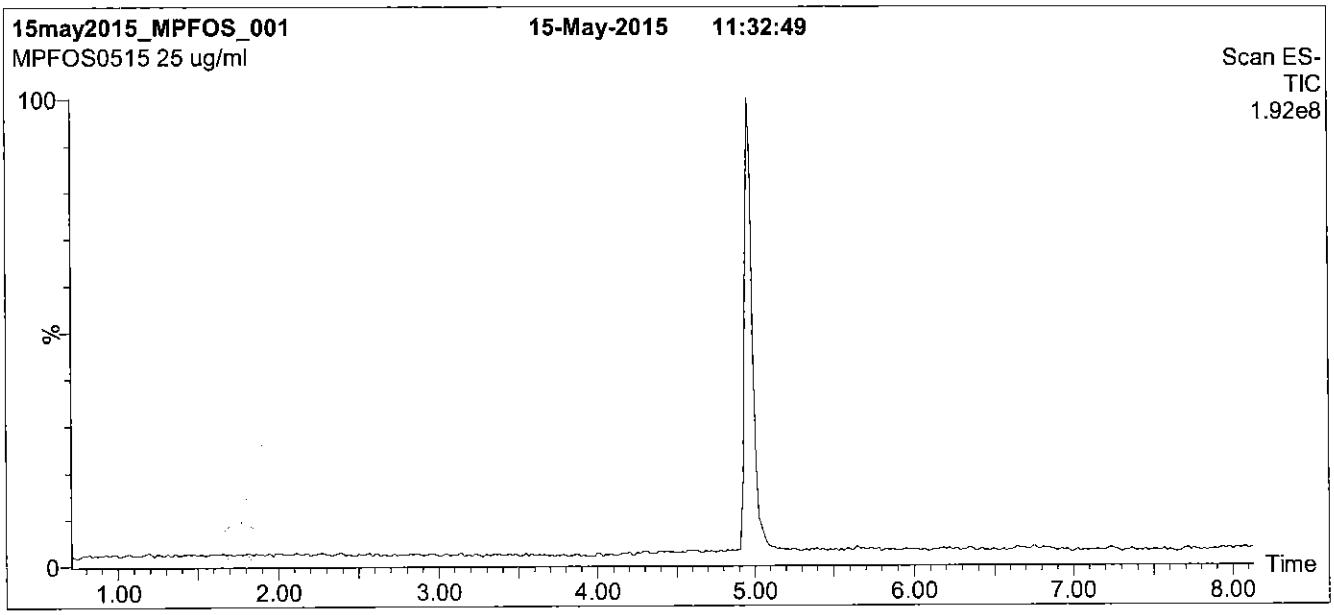
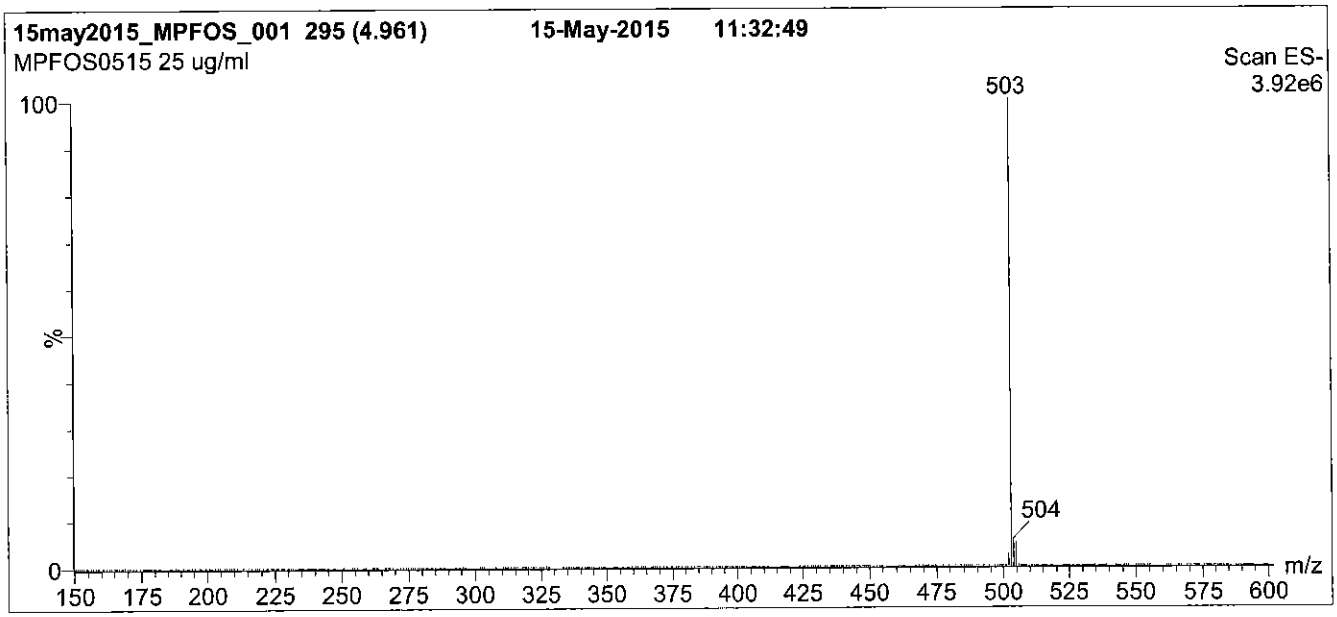




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

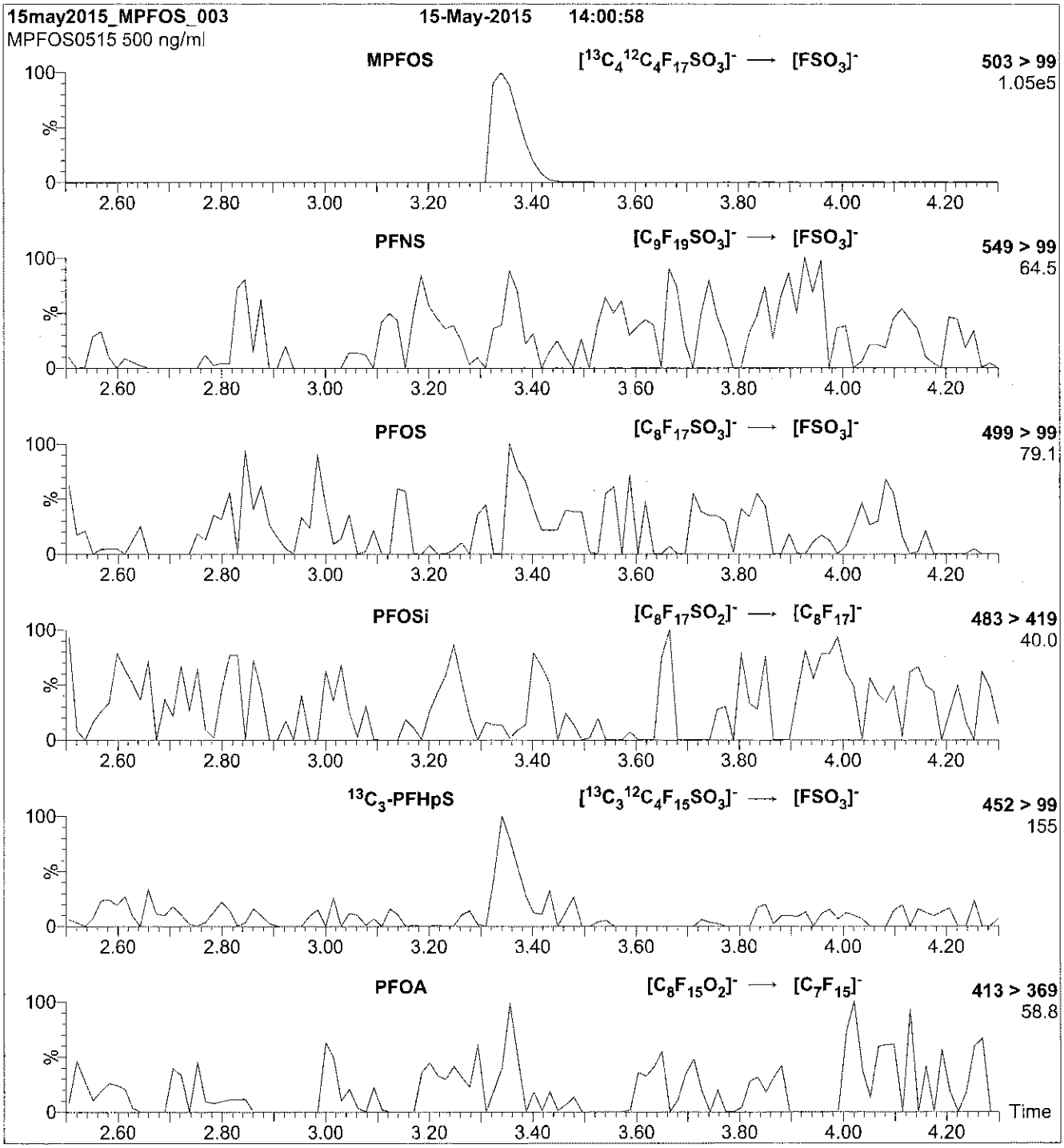
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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) = 3.35e-3
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00004

r: 4/15/15 SKU

WELLINGTON LABORATORIES

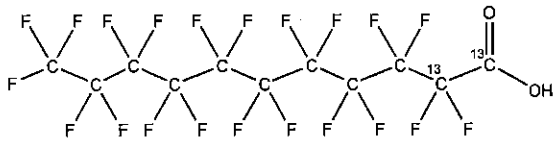
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFUdA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	**MOLECULAR WEIGHT:**	566.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	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: _____ **Date:** 11/03/2014 (mm/dd/yyyy)
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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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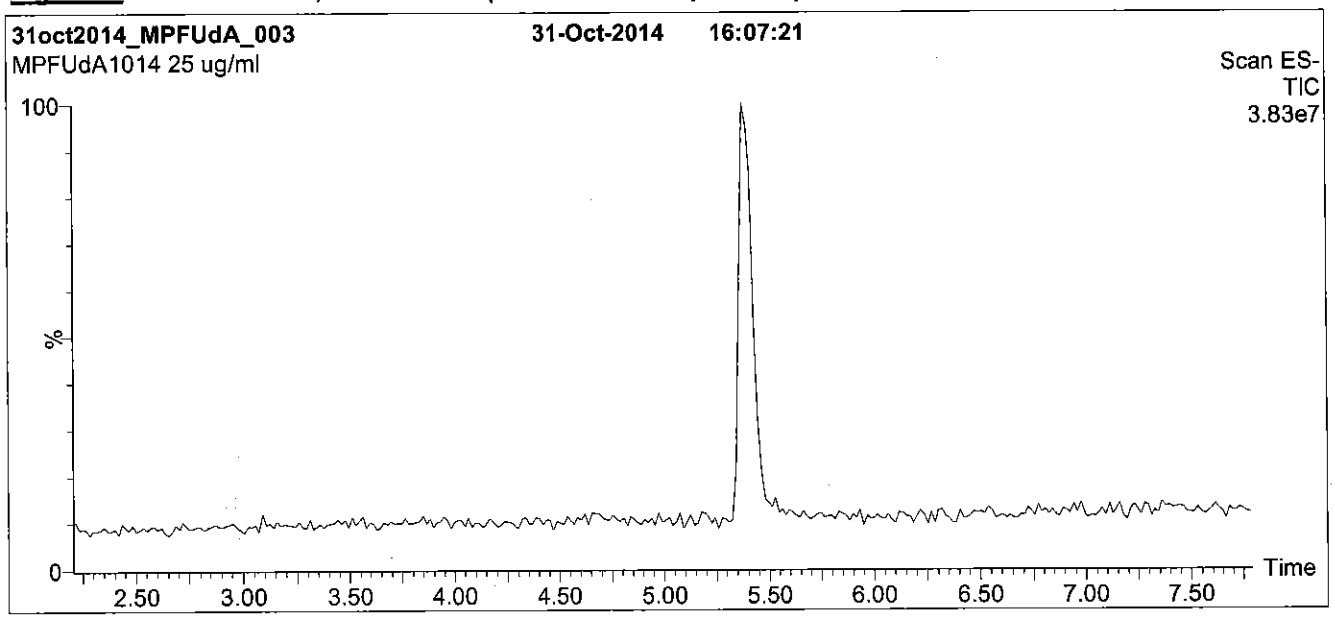
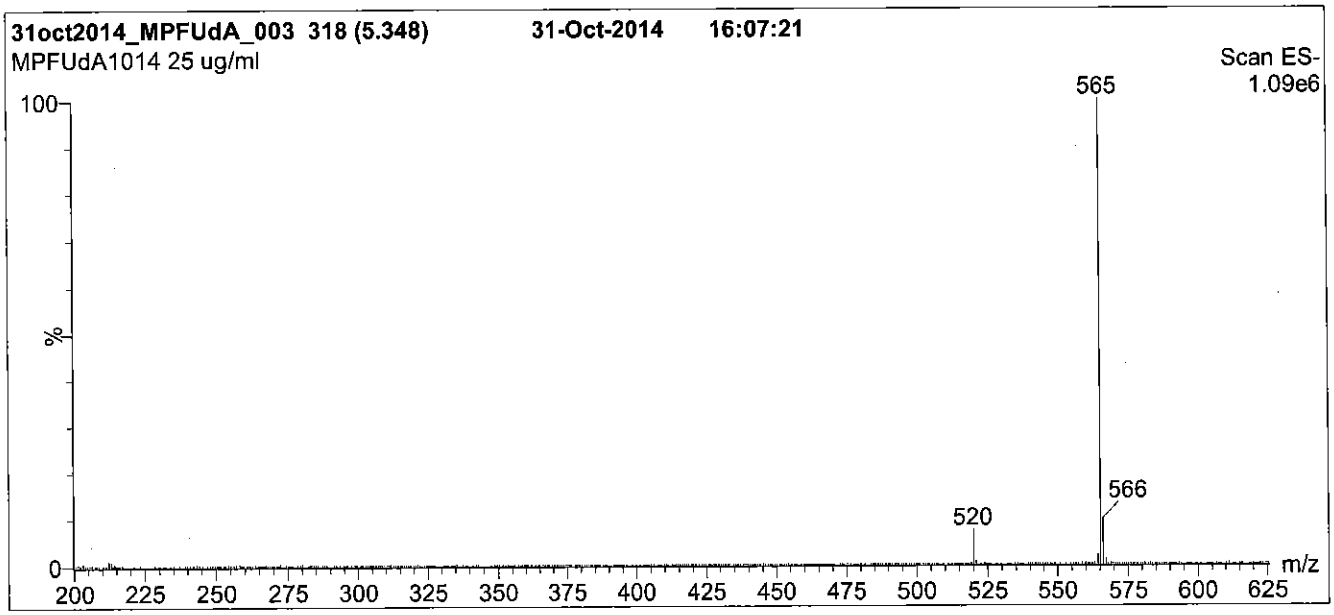
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

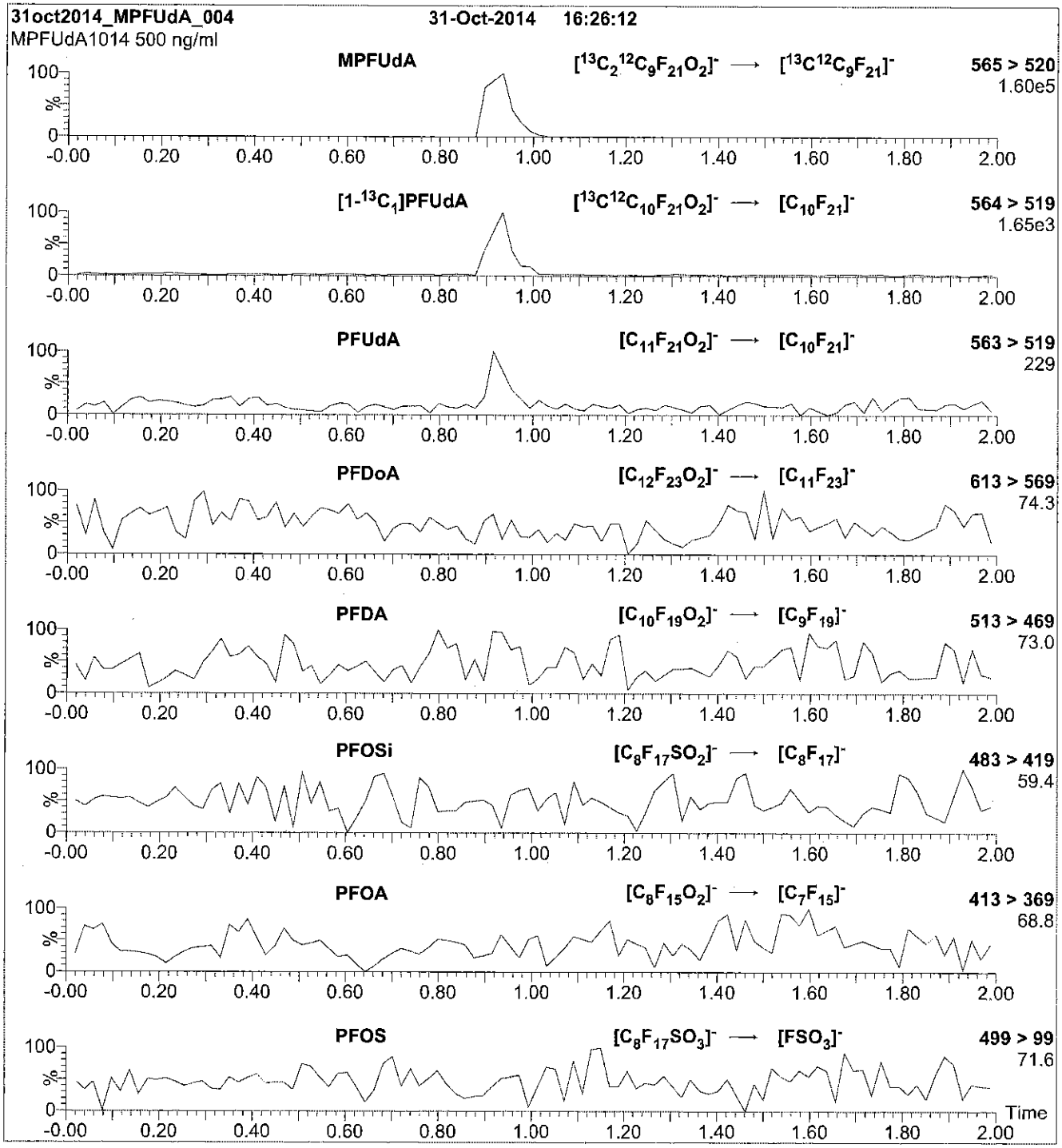
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCMPFUdA_00005

R: 12/9/15 SEV

WELLINGTON LABORATORIES

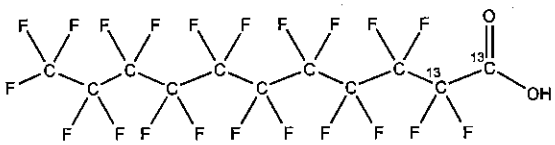
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFUdA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	**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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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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.

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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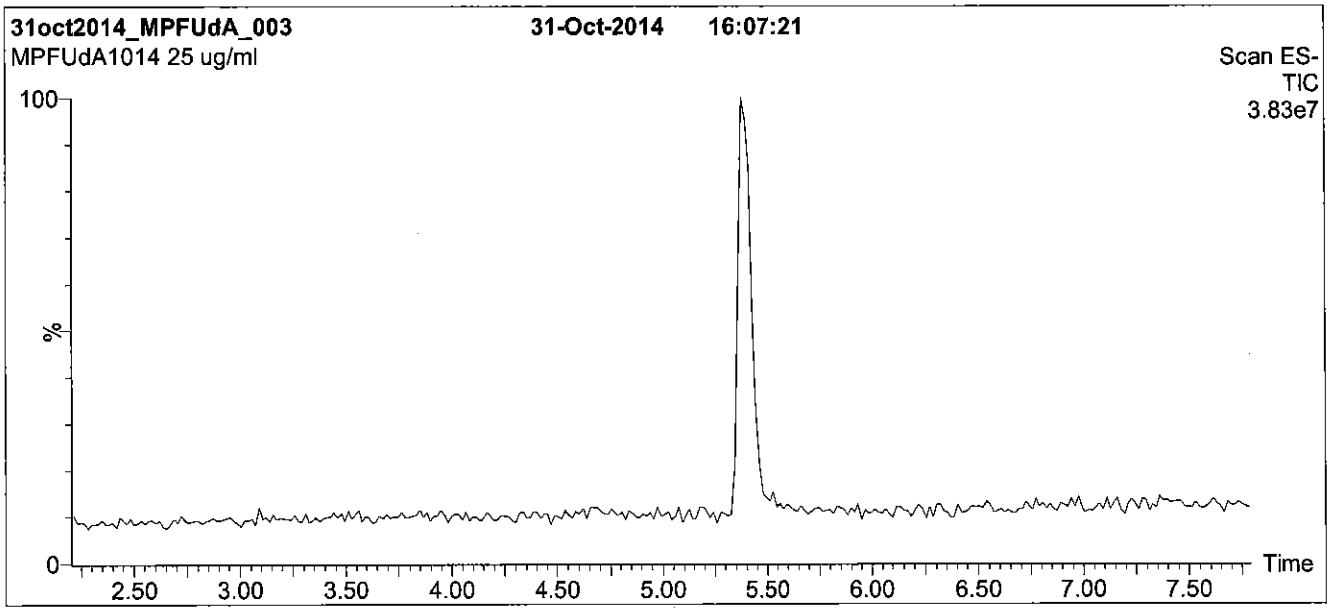
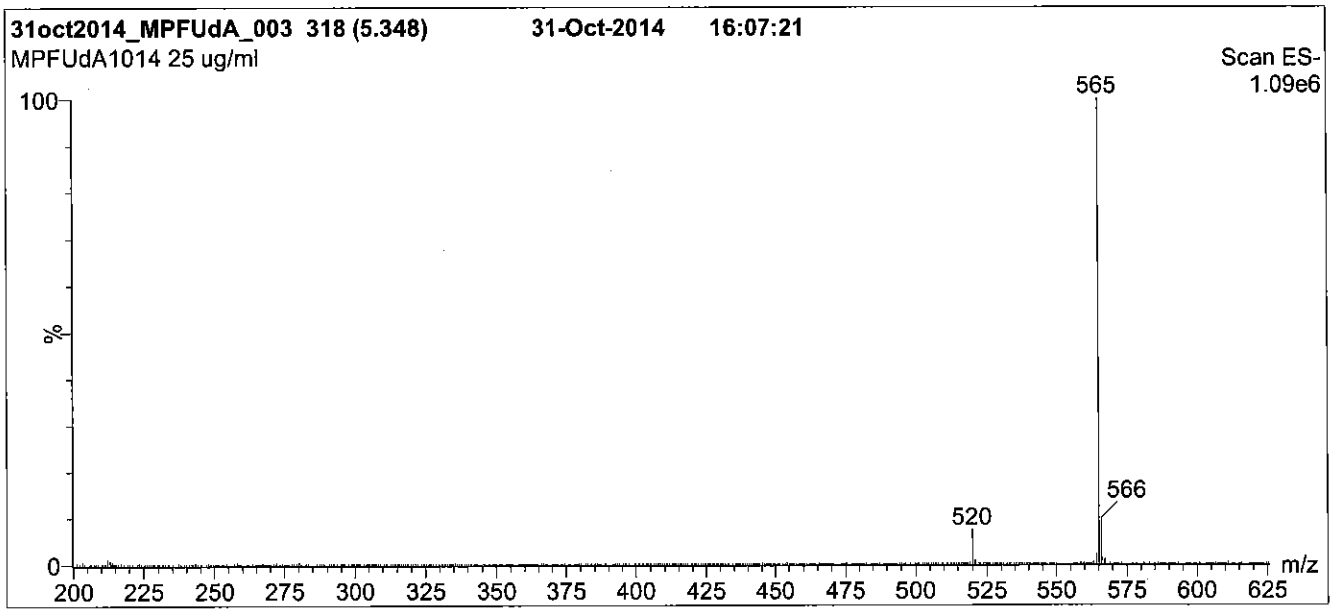
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





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

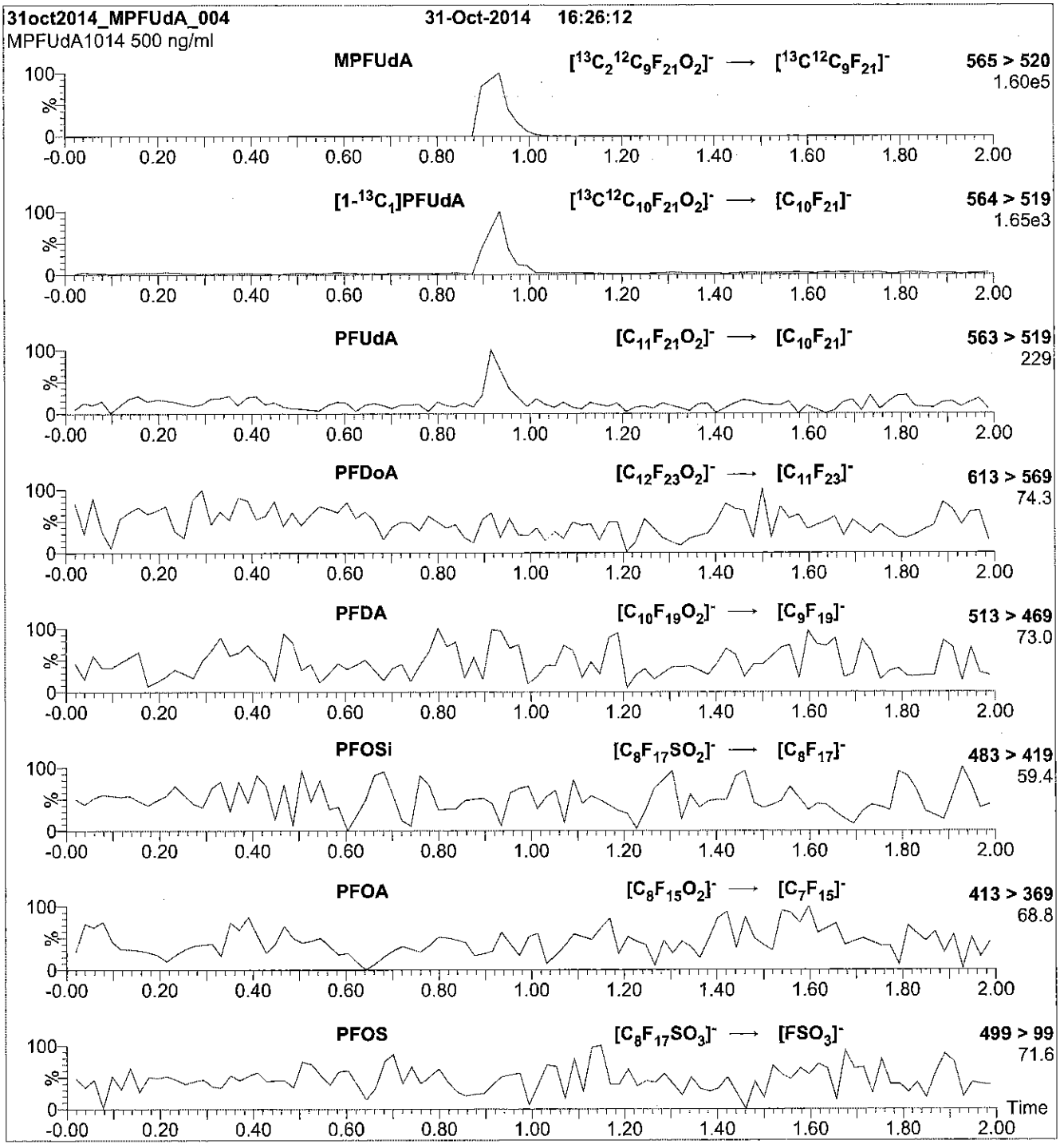
Flow: 300 µl/min

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

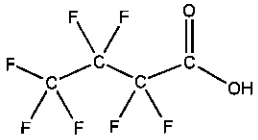
LCPFBA_00003

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/06/2013 (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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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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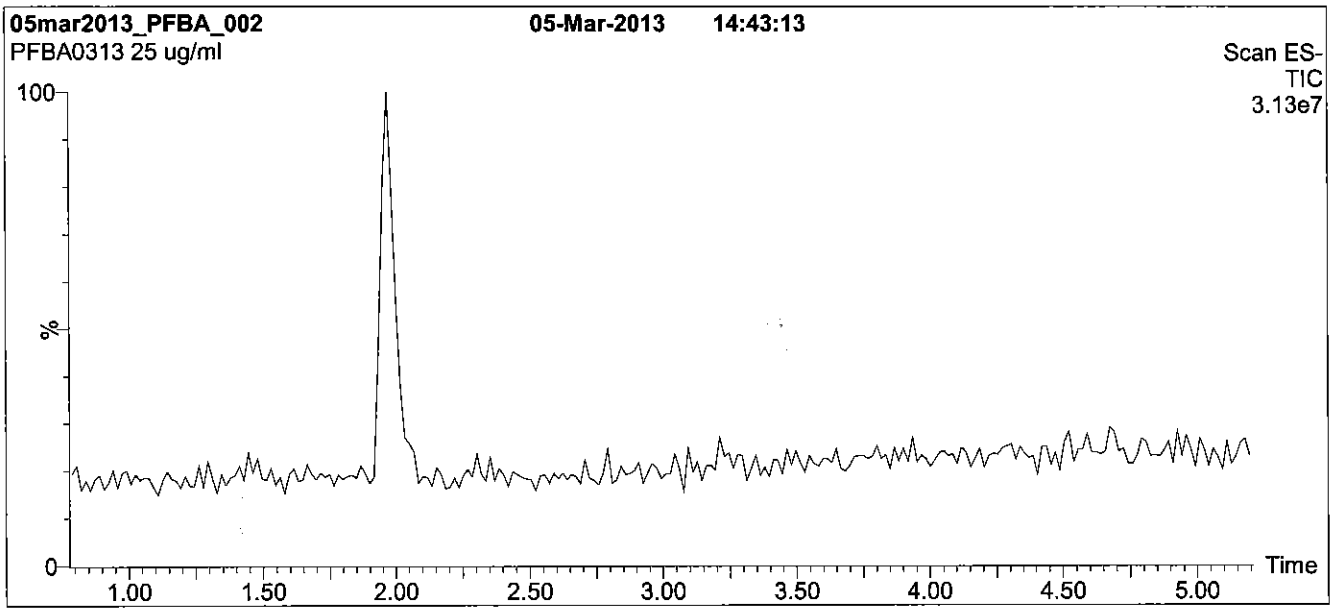
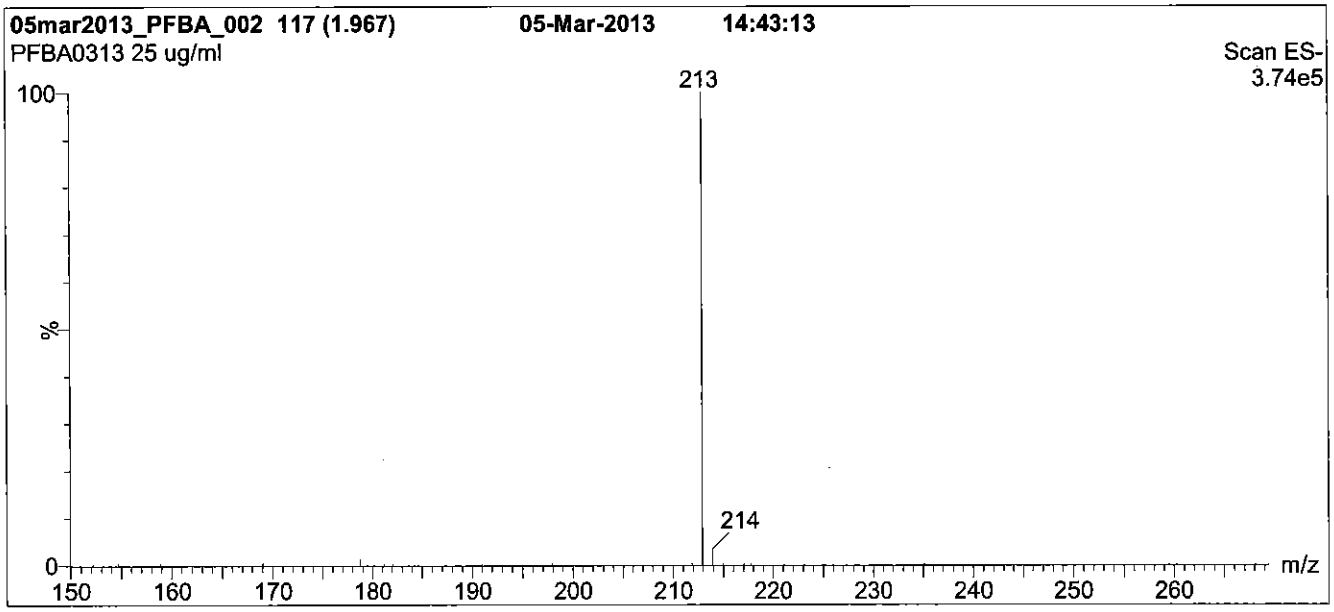
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

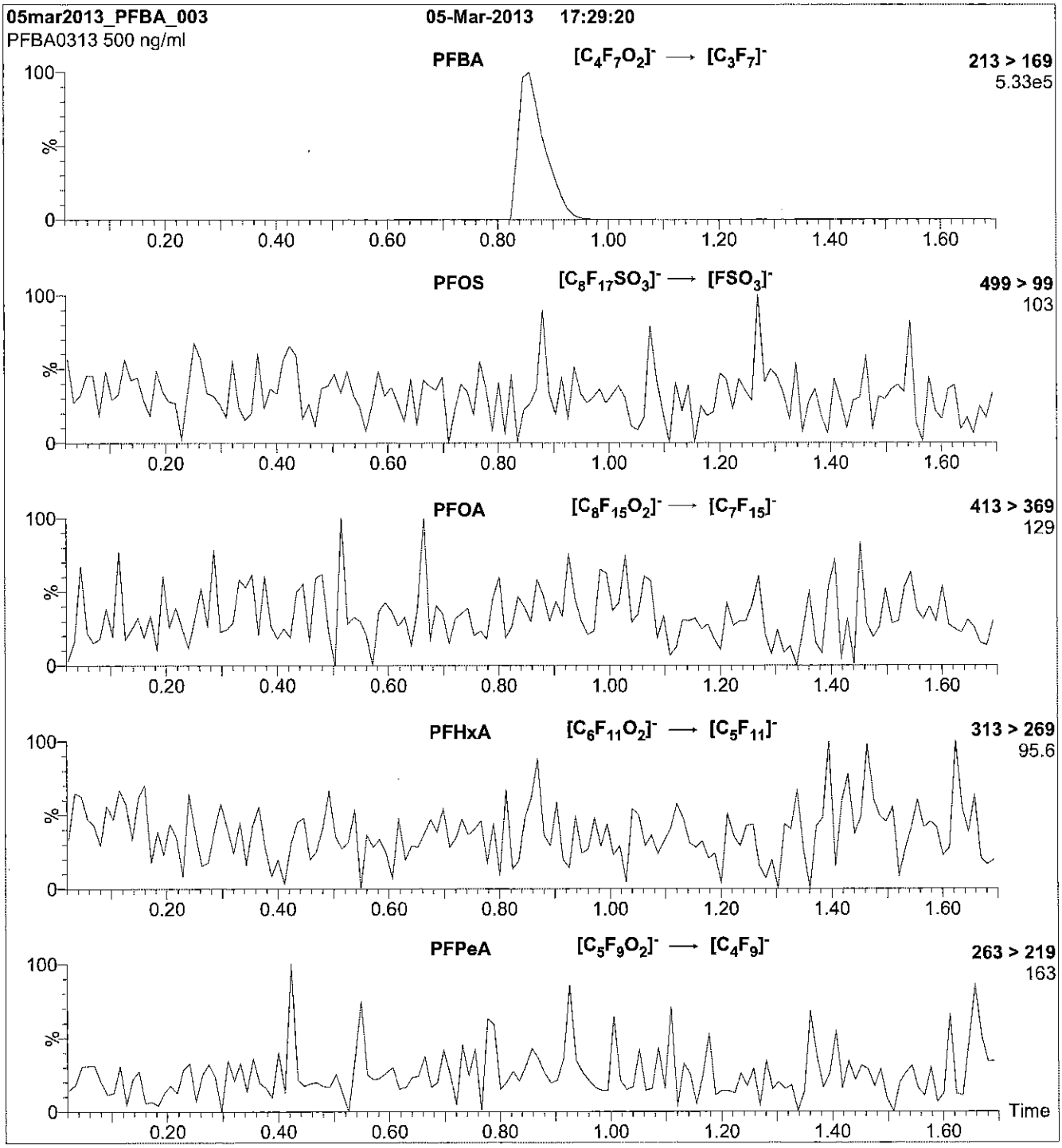
Flow: 300 µl/min

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

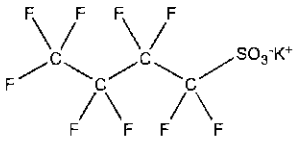
LCPFBS_00003

r. 2/11/15

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	L-PFBS	**LOT NUMBER:**	LPFBS1014
COMPOUND:	Potassium perfluoro-1-butanesulfonate		
STRUCTURE:		**CAS #:**	29420-49-3



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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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

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CALA Testing Accreditation No: A 1226

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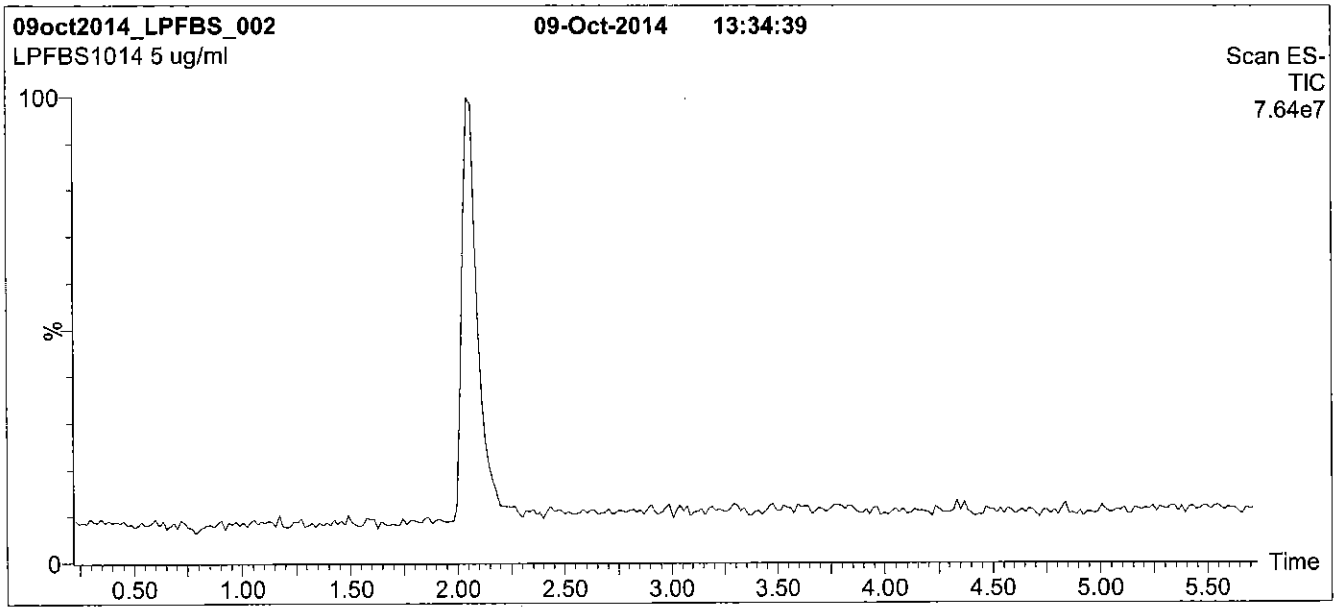
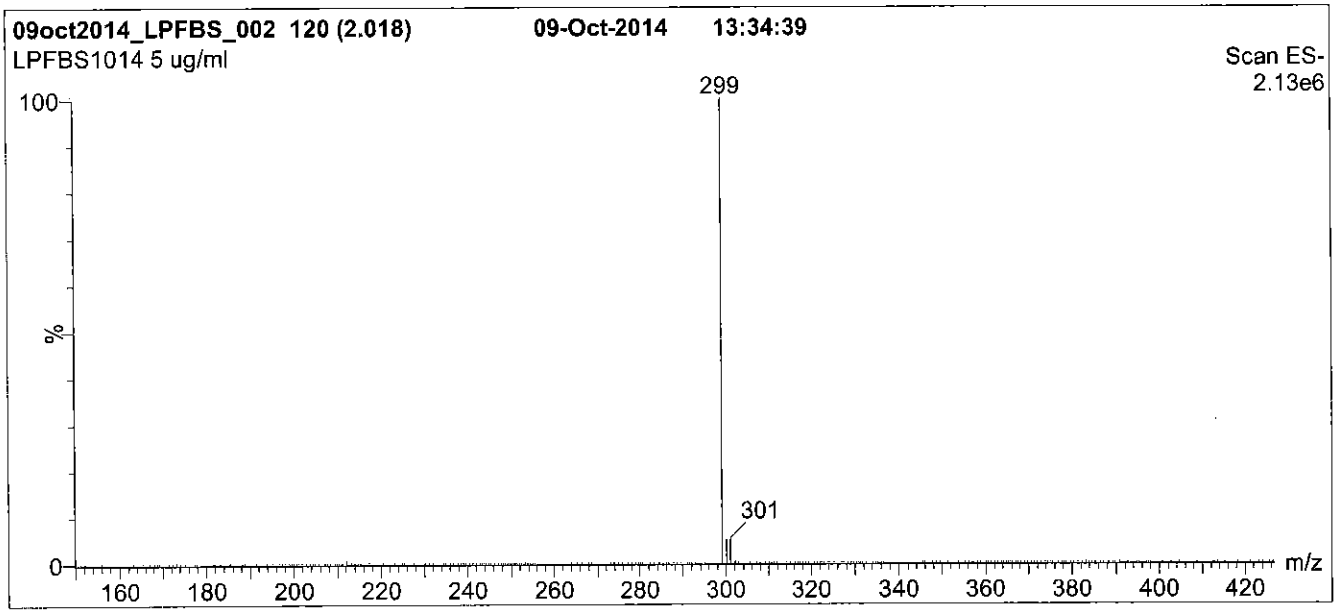
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 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

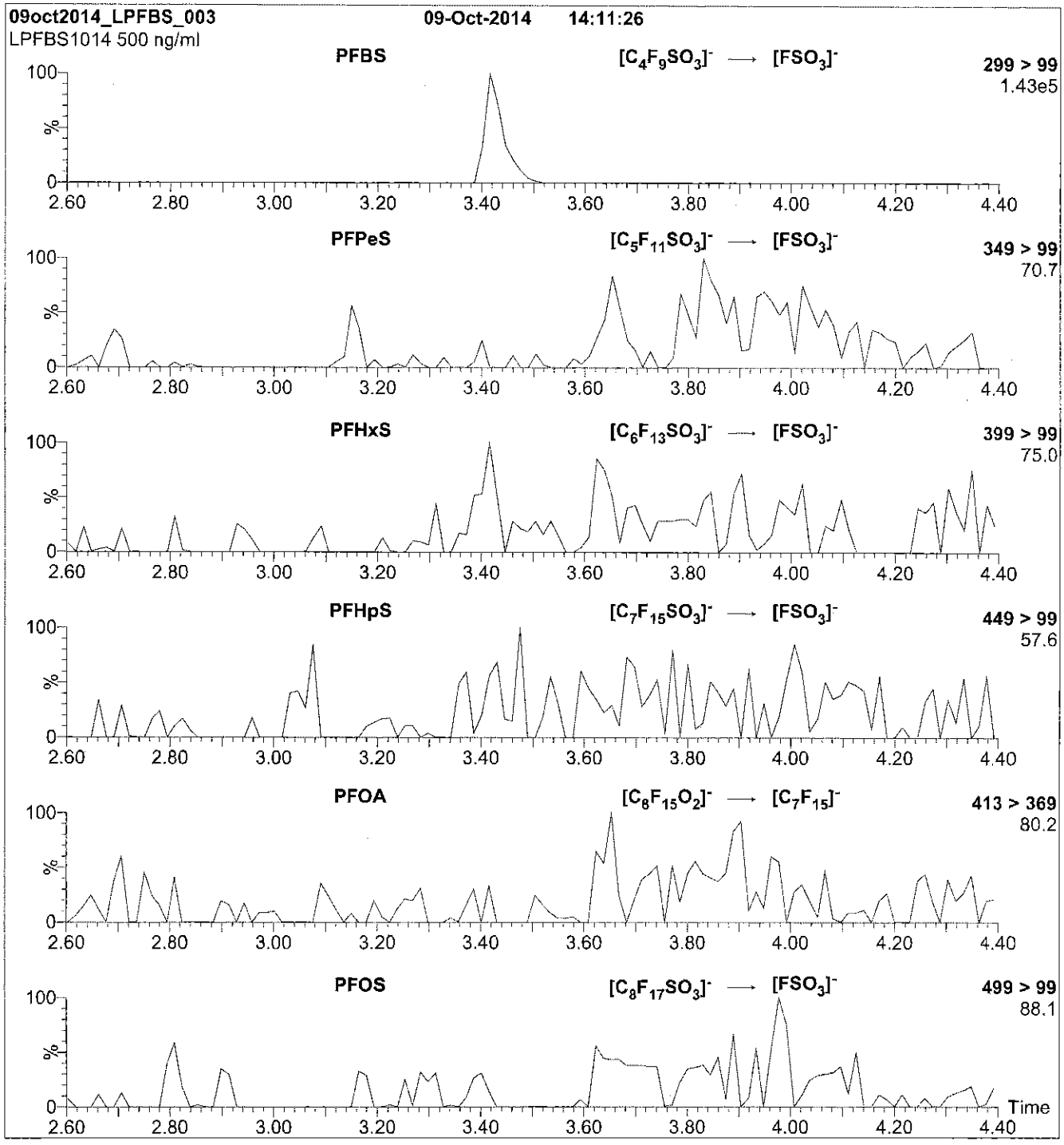
Flow: 300 µl/min

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

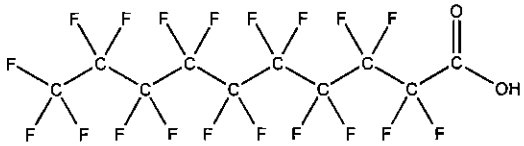
rec 7/16/14

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

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.

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All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 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:

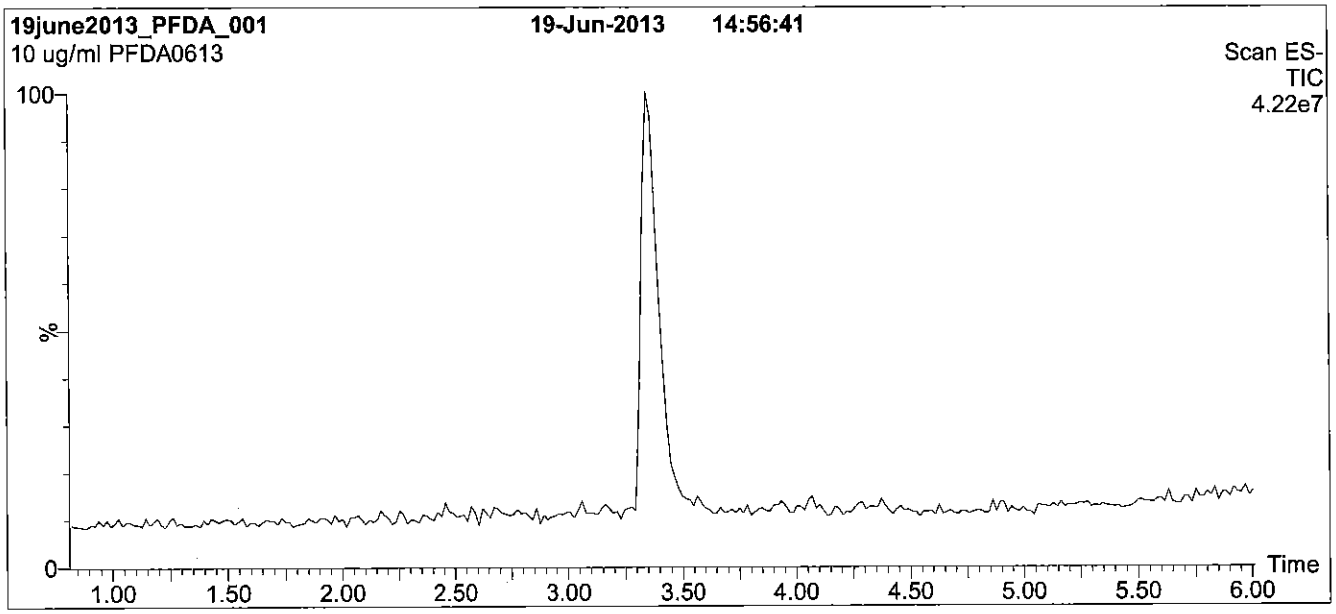
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

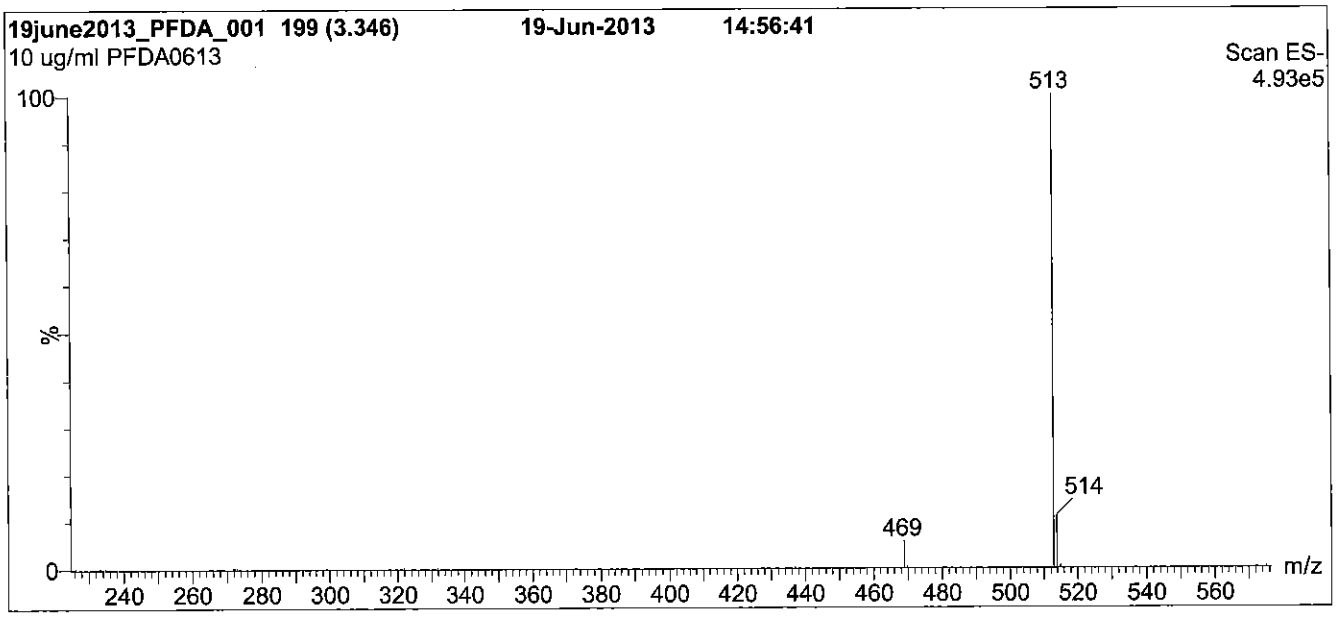
CALA Testing Accreditation No. A1226

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: **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

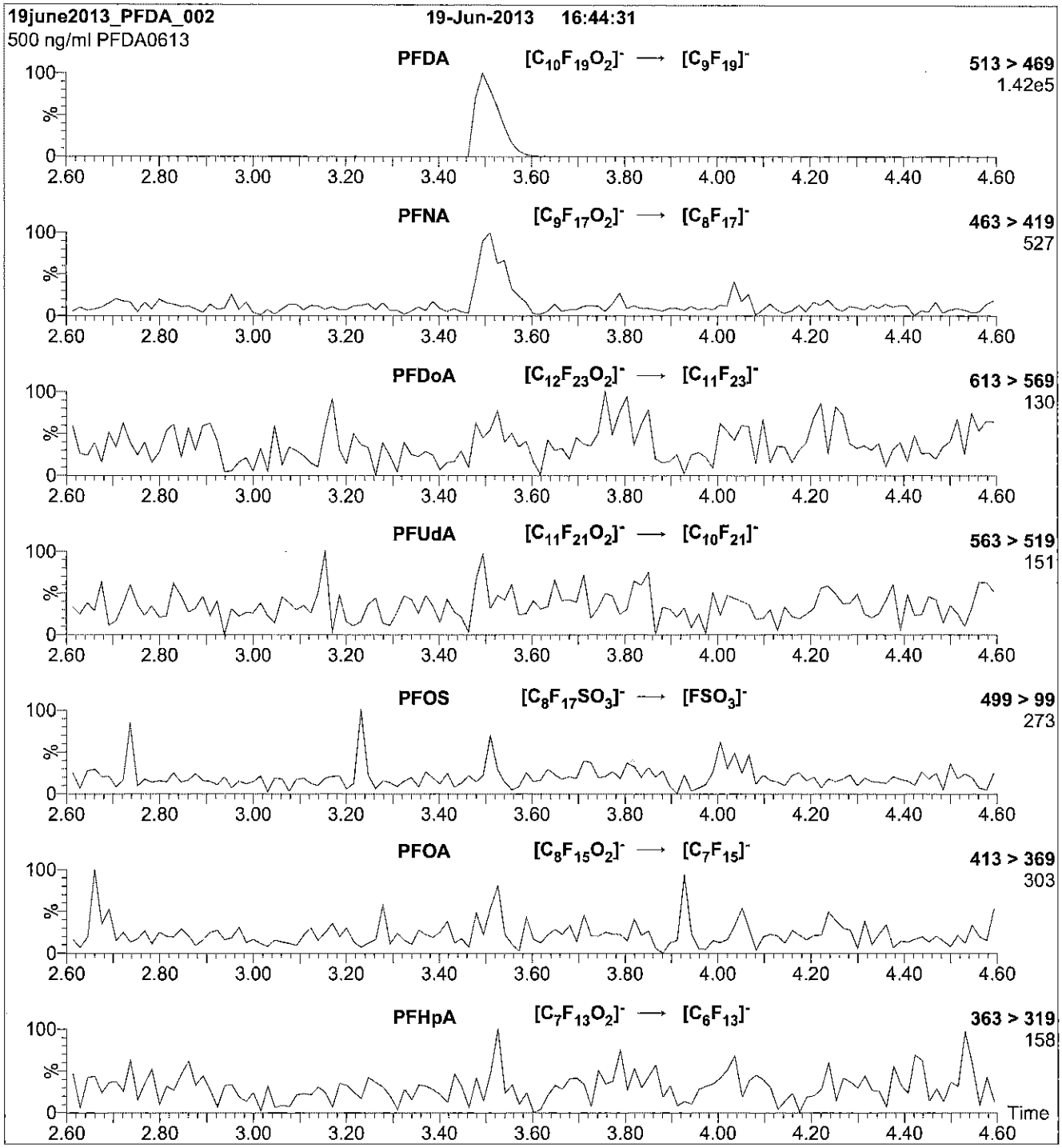
Flow: 300 µl/min

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

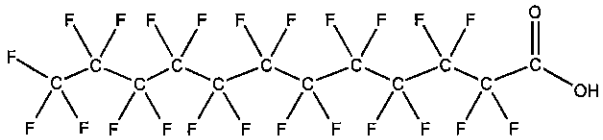
Rec 7/14/15

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:

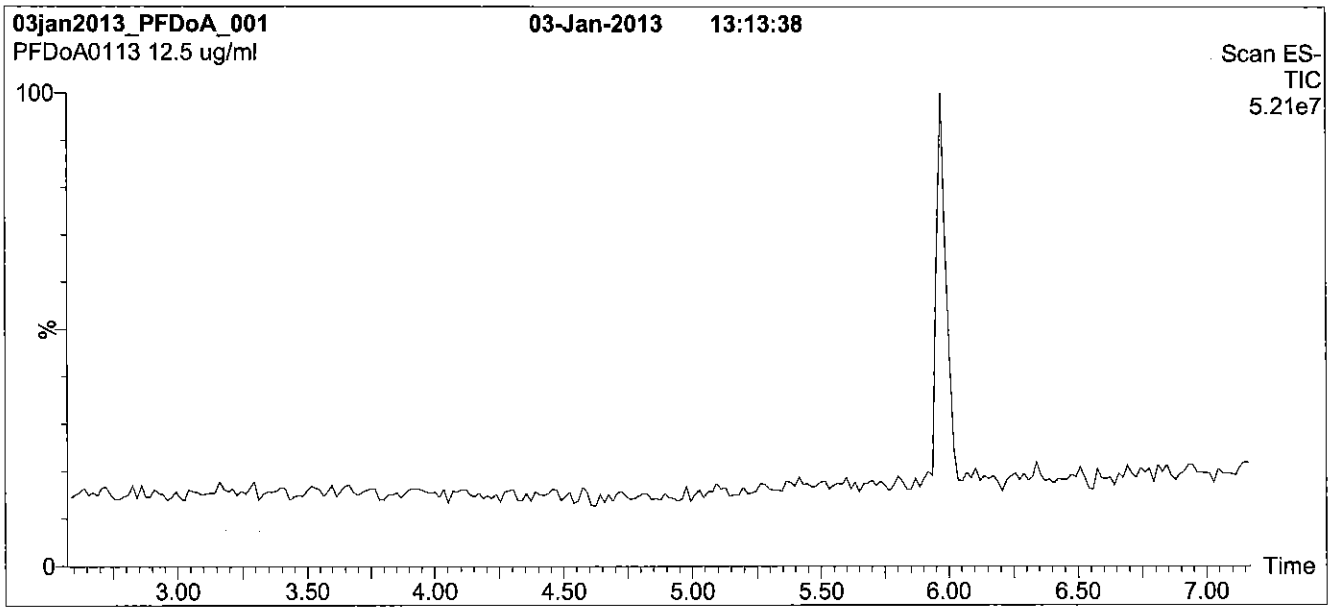
- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

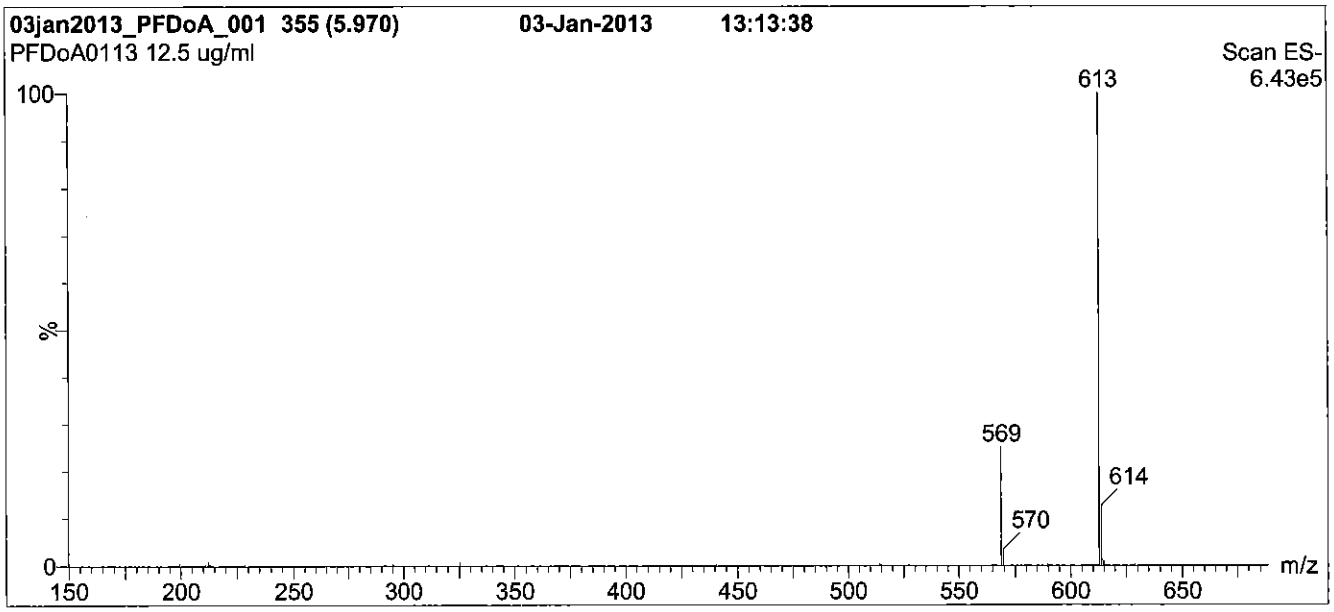
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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:

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

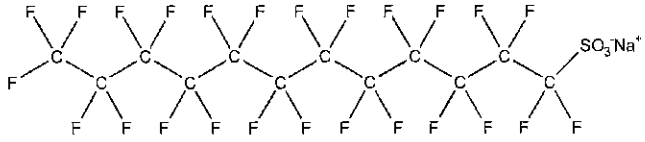
Y. 2/11/15 BV

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)	**SOLVENT(S):**	Methanol
	48.4 ± 2.4 µg/ml (PFDoS anion)		
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)

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:

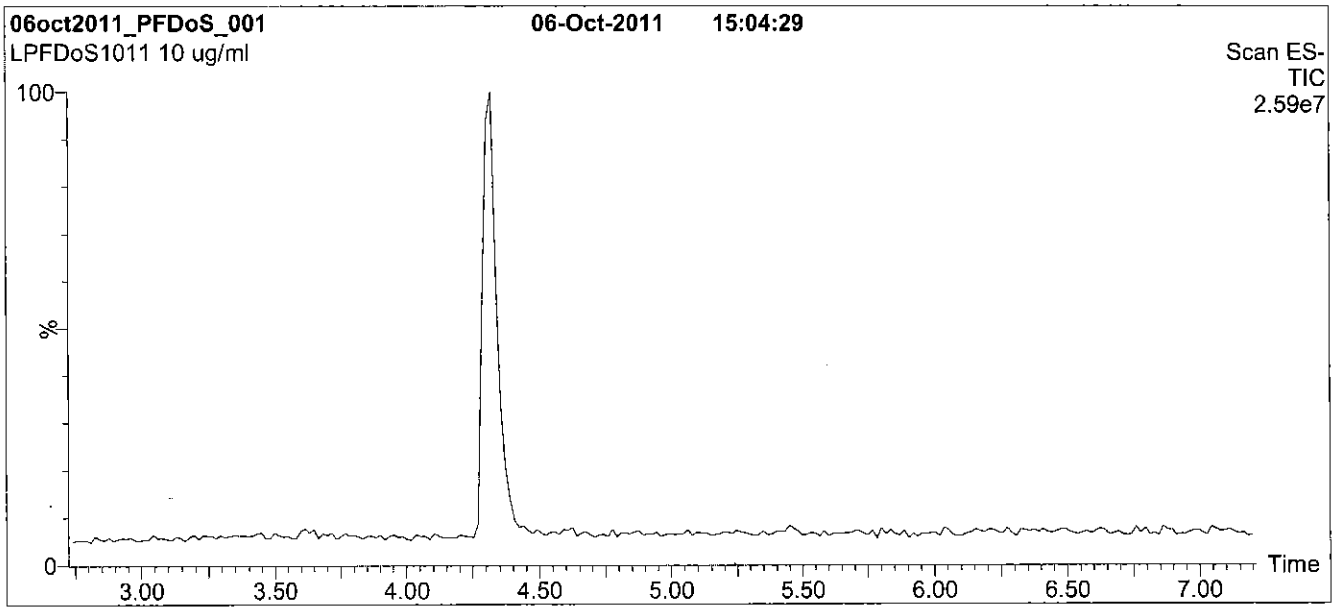
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

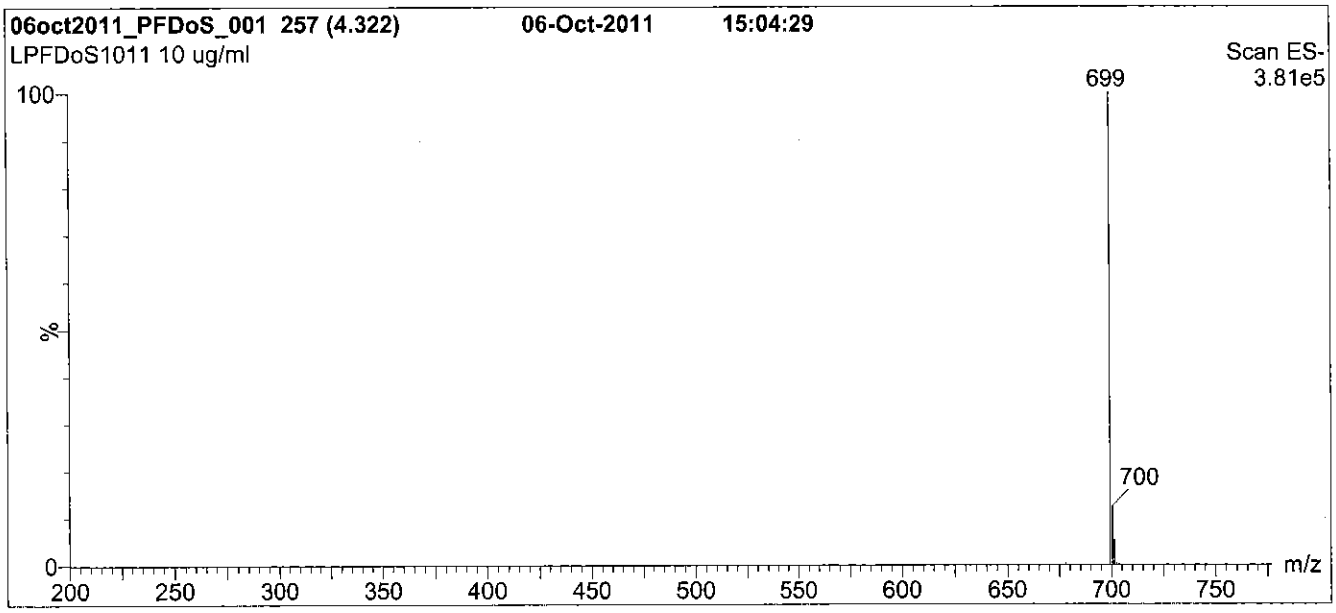
CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

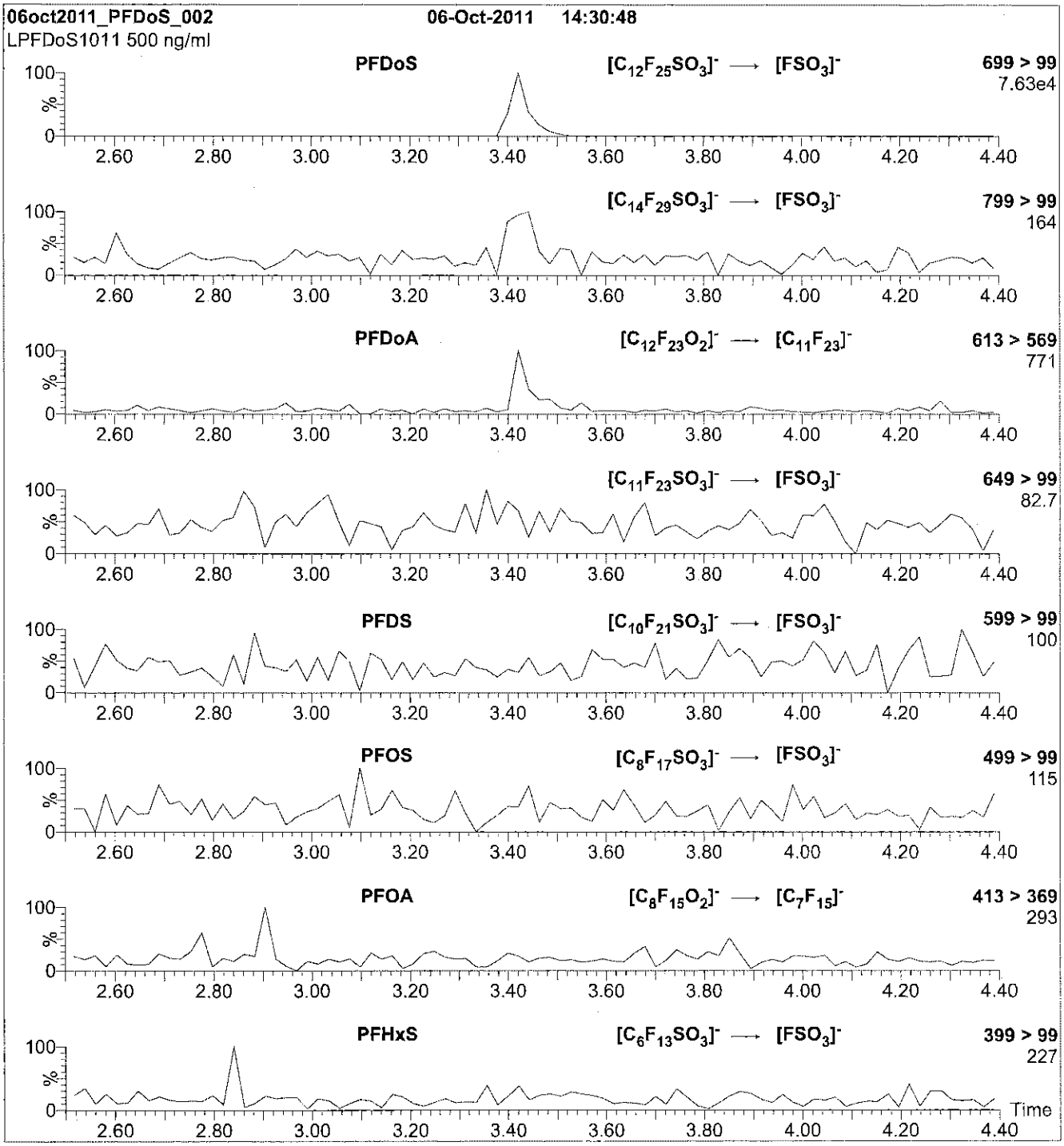
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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

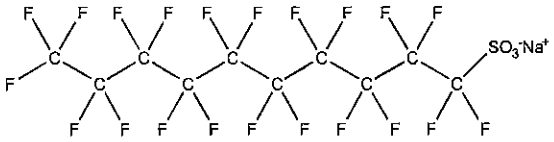
LCPFDS_00003

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:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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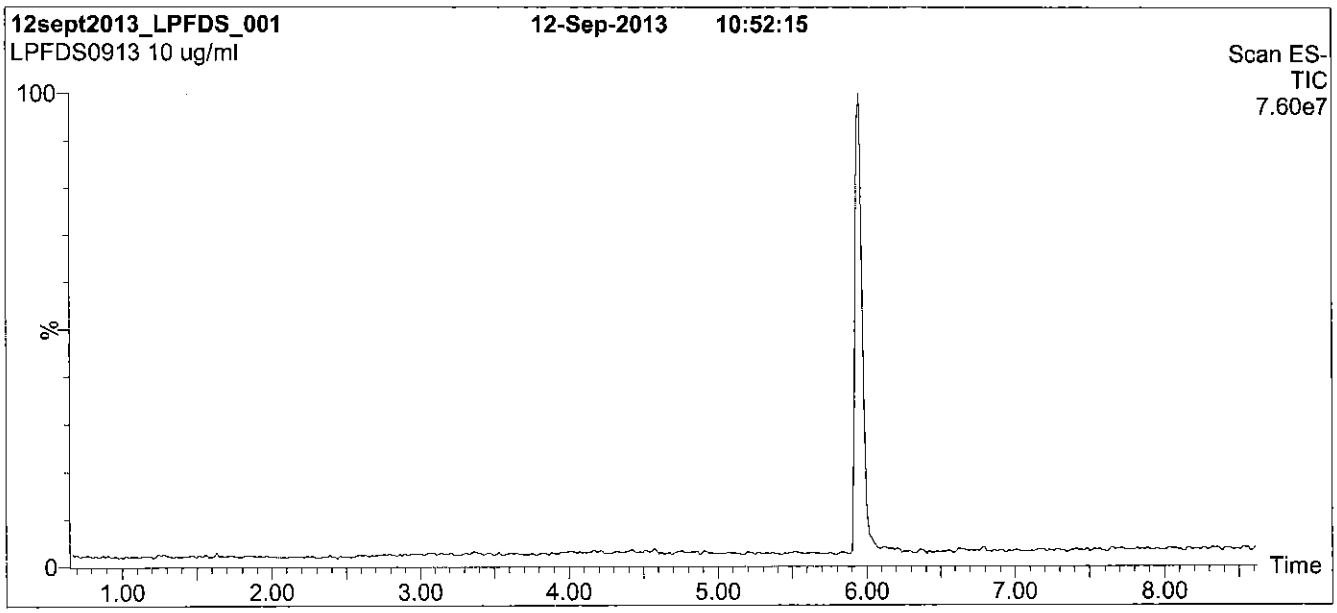
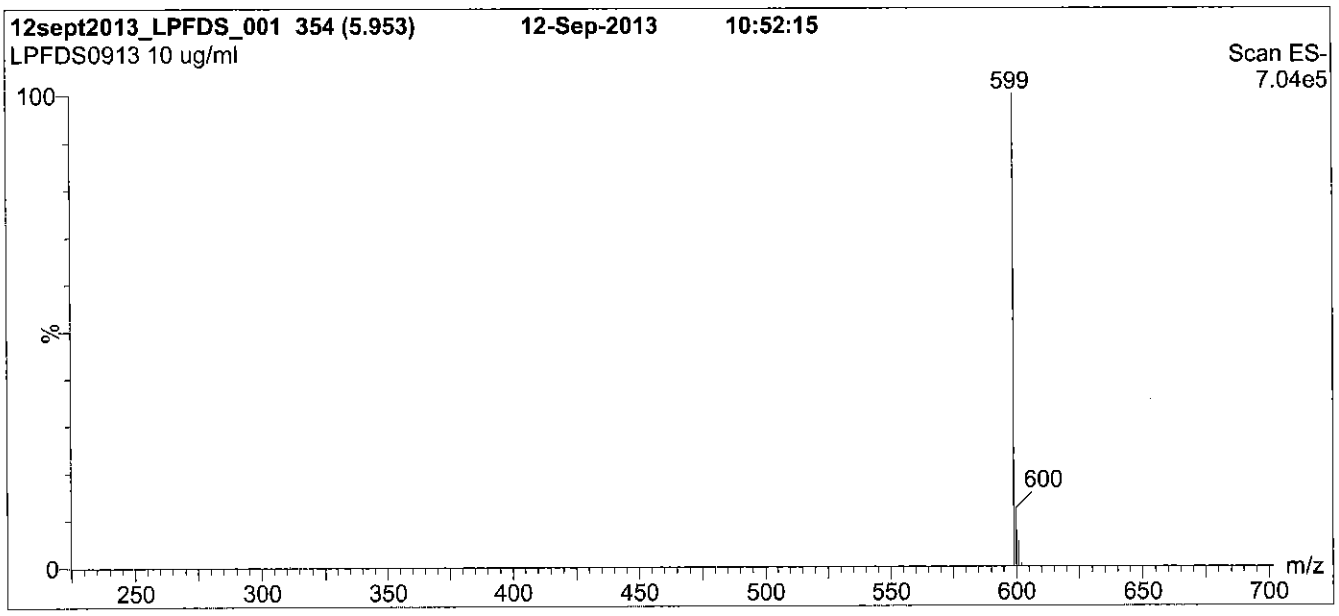
Figure 1: **L-PFDS; LC/MS Data (TIC and Mass Spectrum)**





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

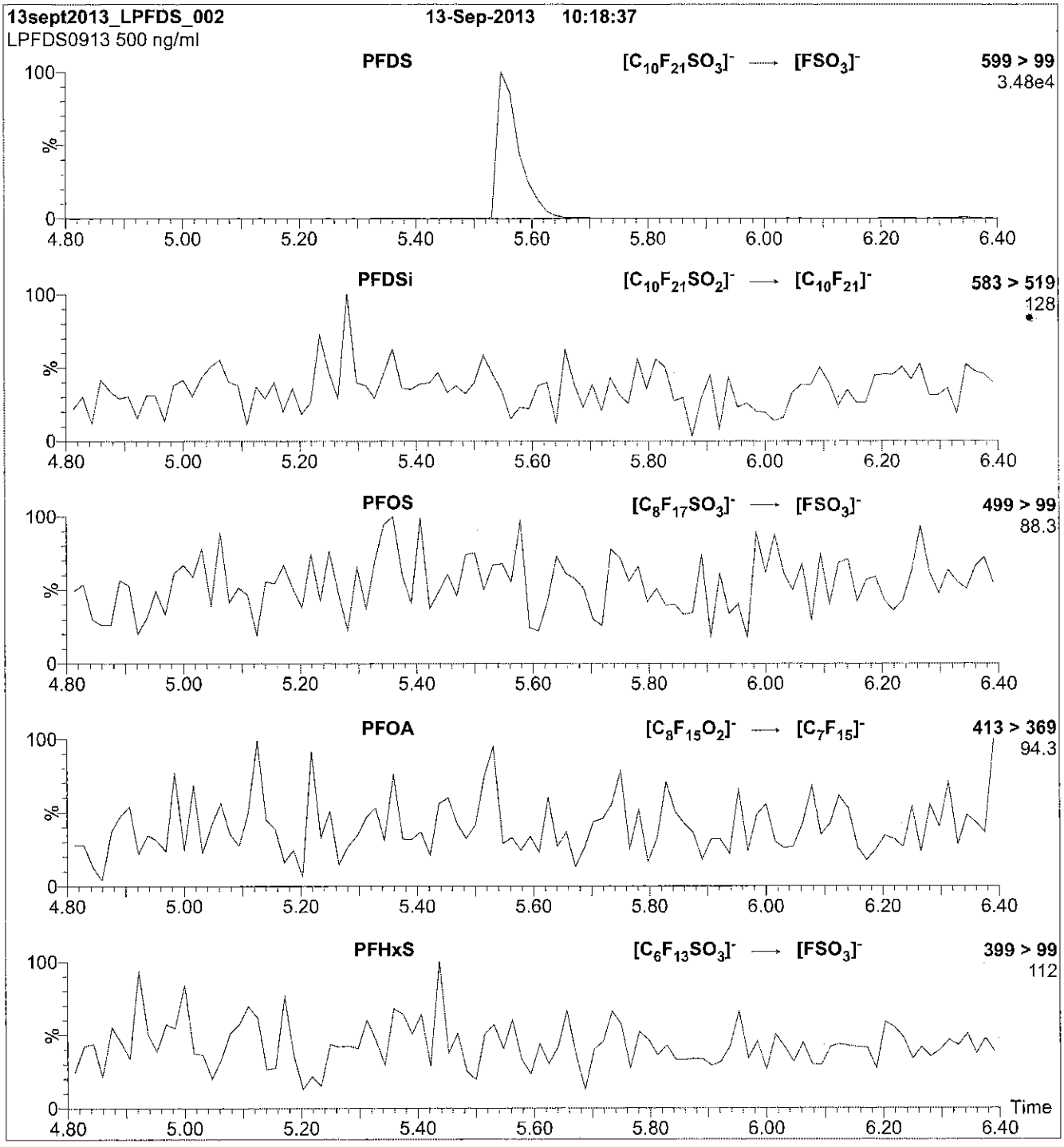
Flow: 300 µl/min

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

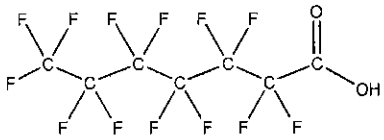
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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)

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:

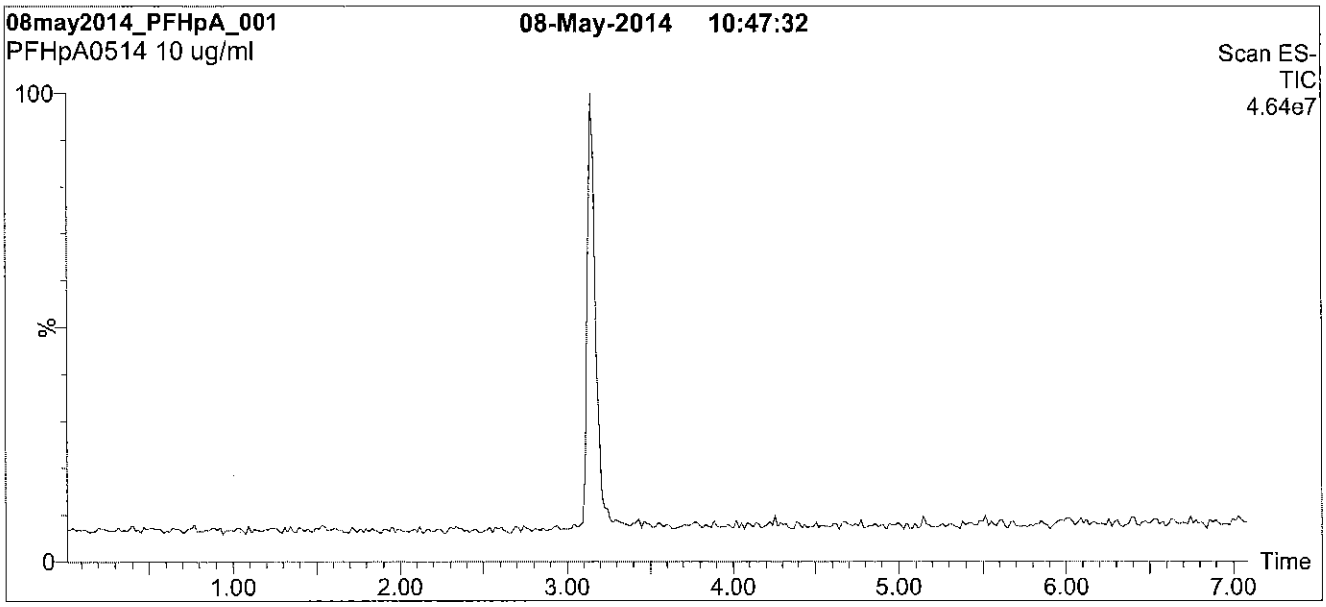
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

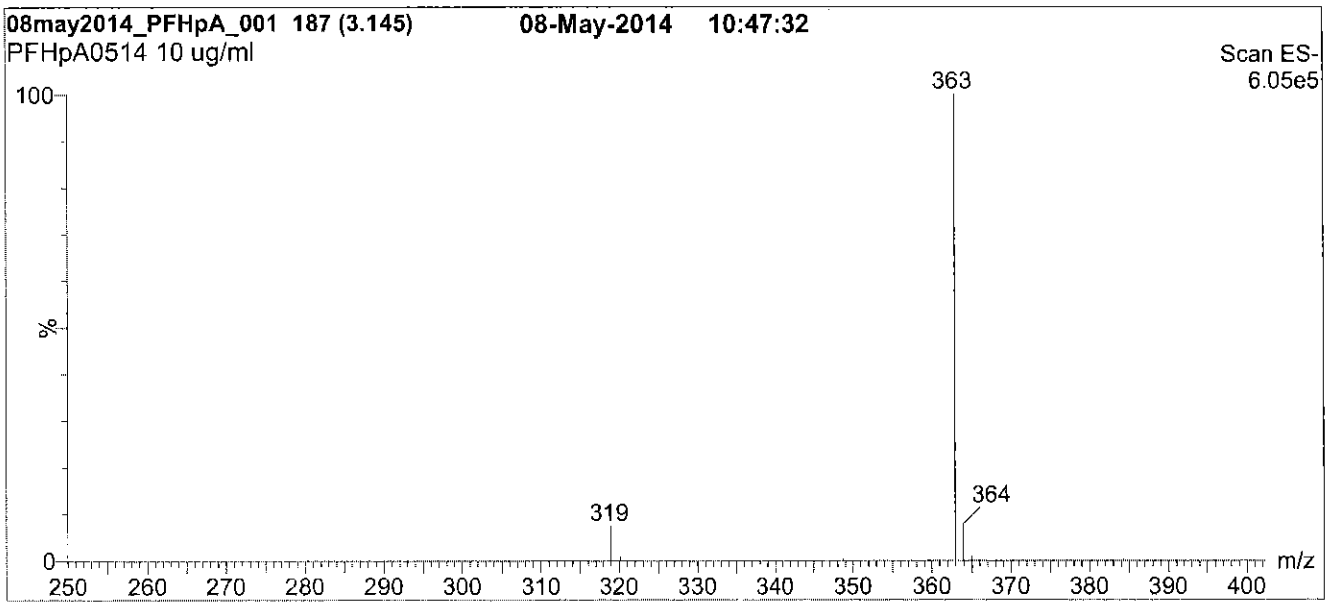
CALA Testing Accreditation No. A1226

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: **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

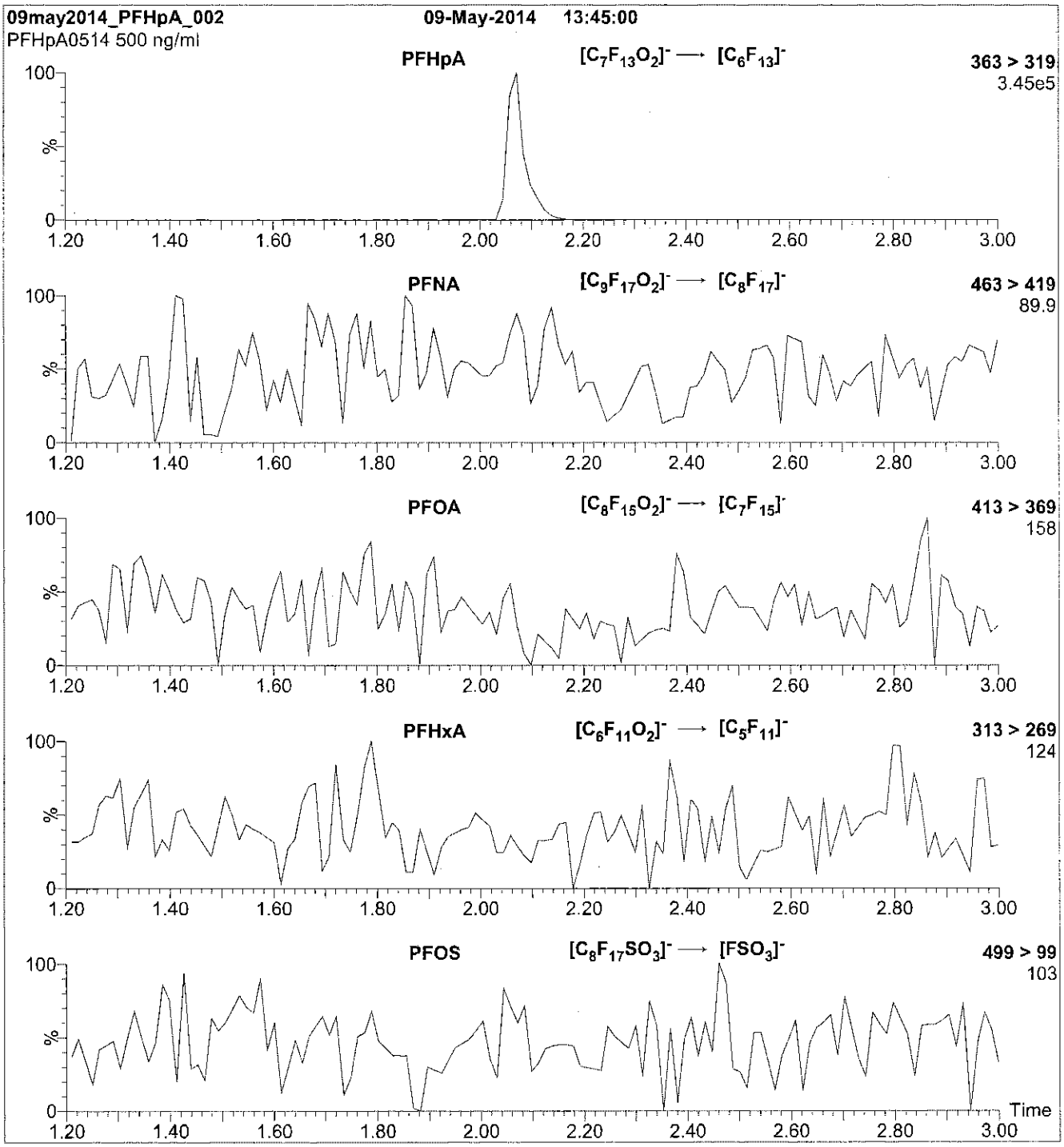
Flow: 300 µl/min

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_00005

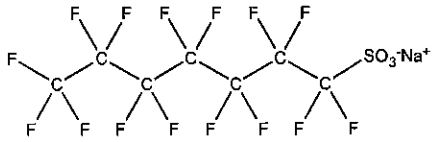
R: 4/15/15 SK

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate
LOT NUMBER: LPFHpS0114

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/28/2014		
EXPIRY DATE: (mm/dd/yyyy)	01/28/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- 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:** 03/27/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

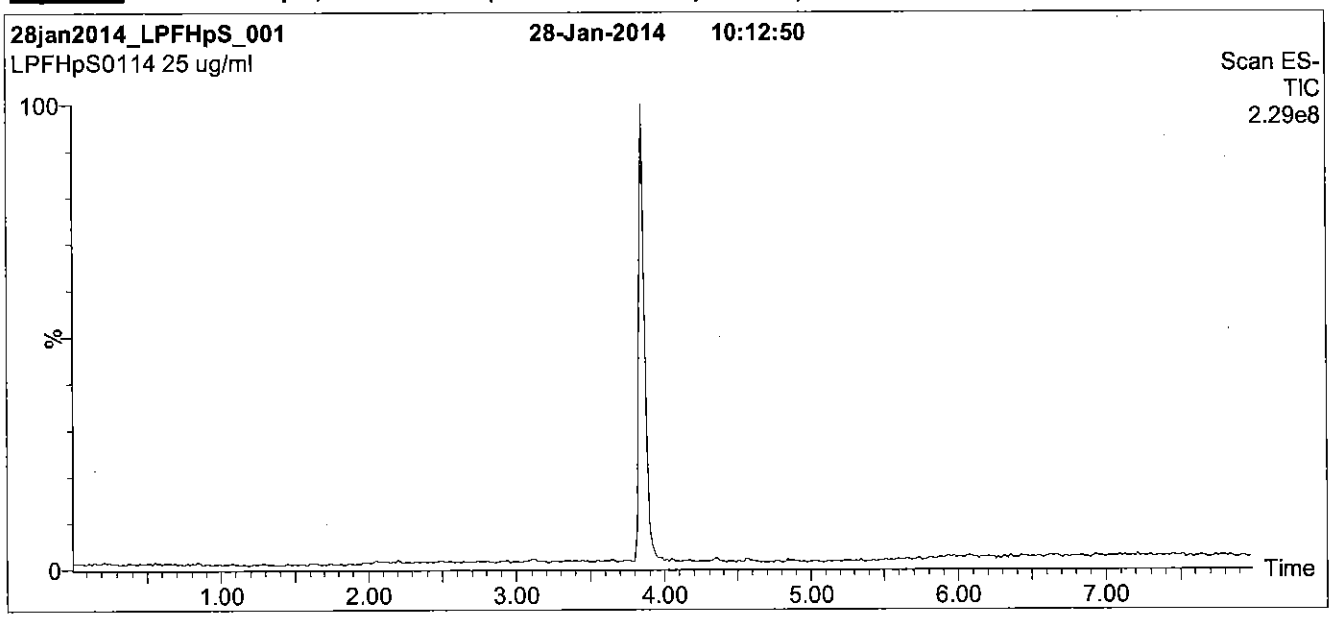
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

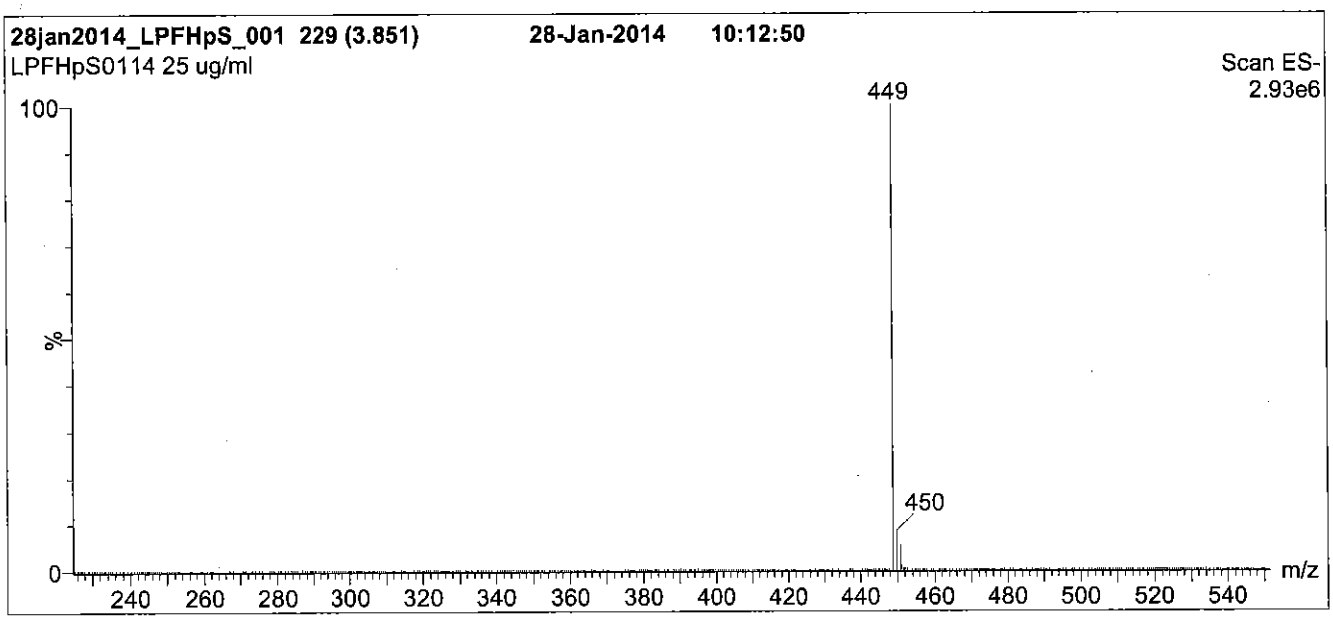
CALA Testing Accreditation No: A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

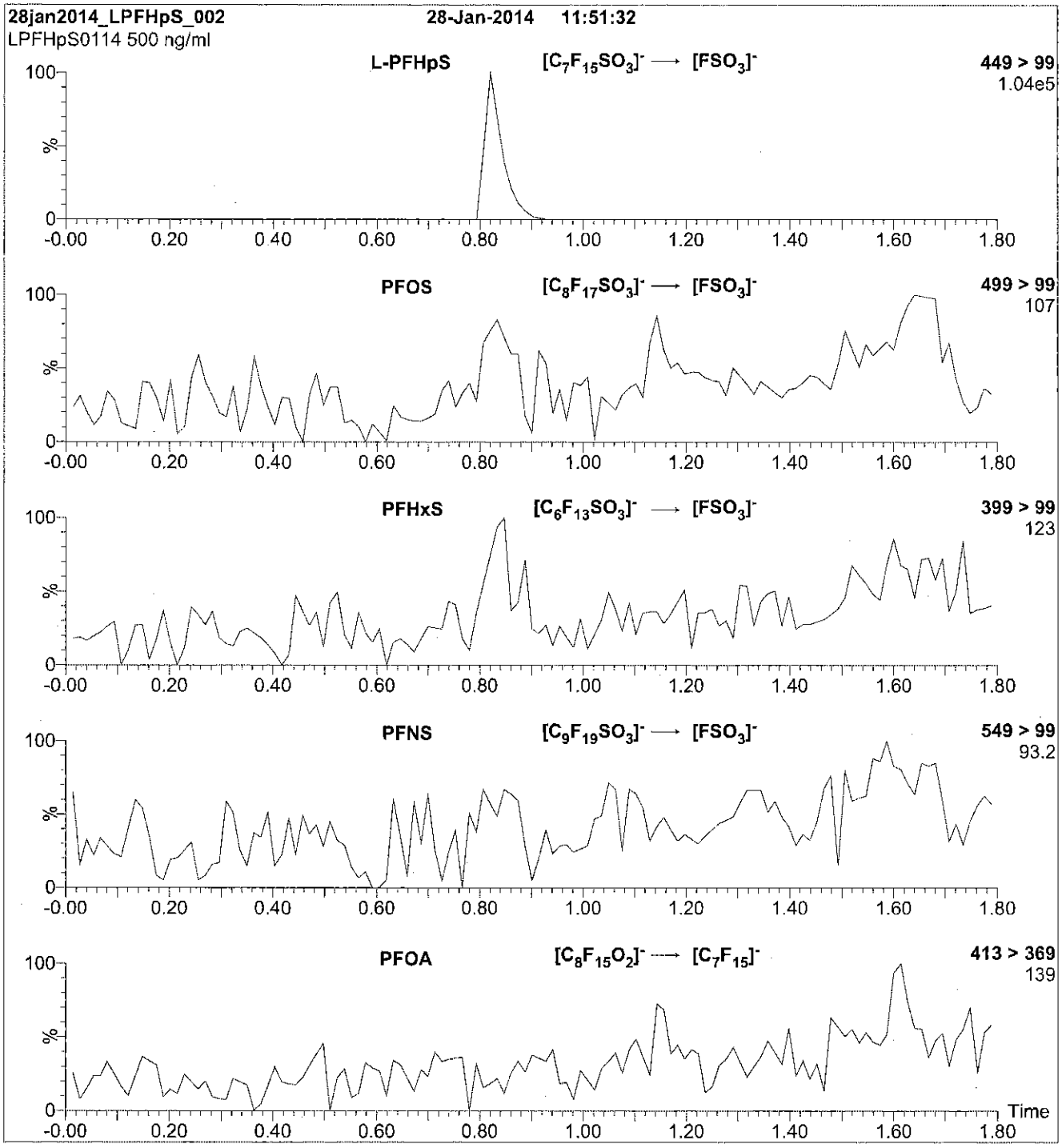
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00003

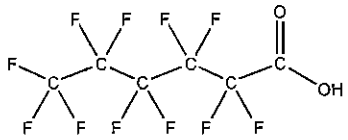
V: 2/11/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:
CAS #: 307-24-4



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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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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:

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

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

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

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TRACEABILITY:

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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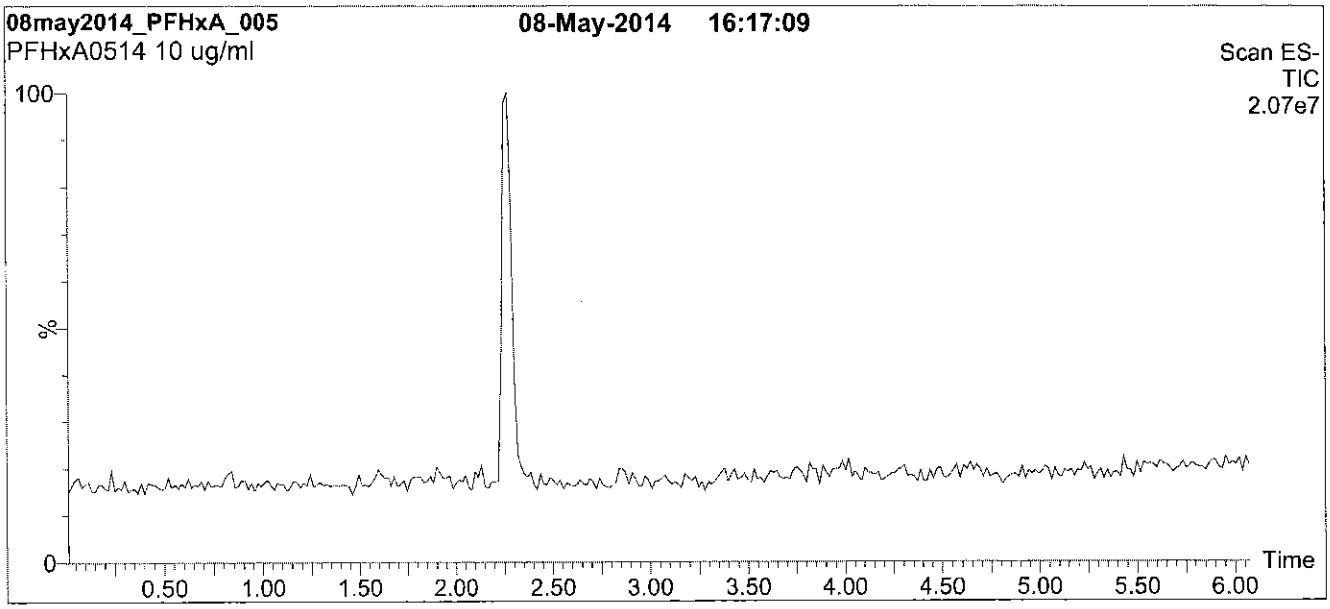
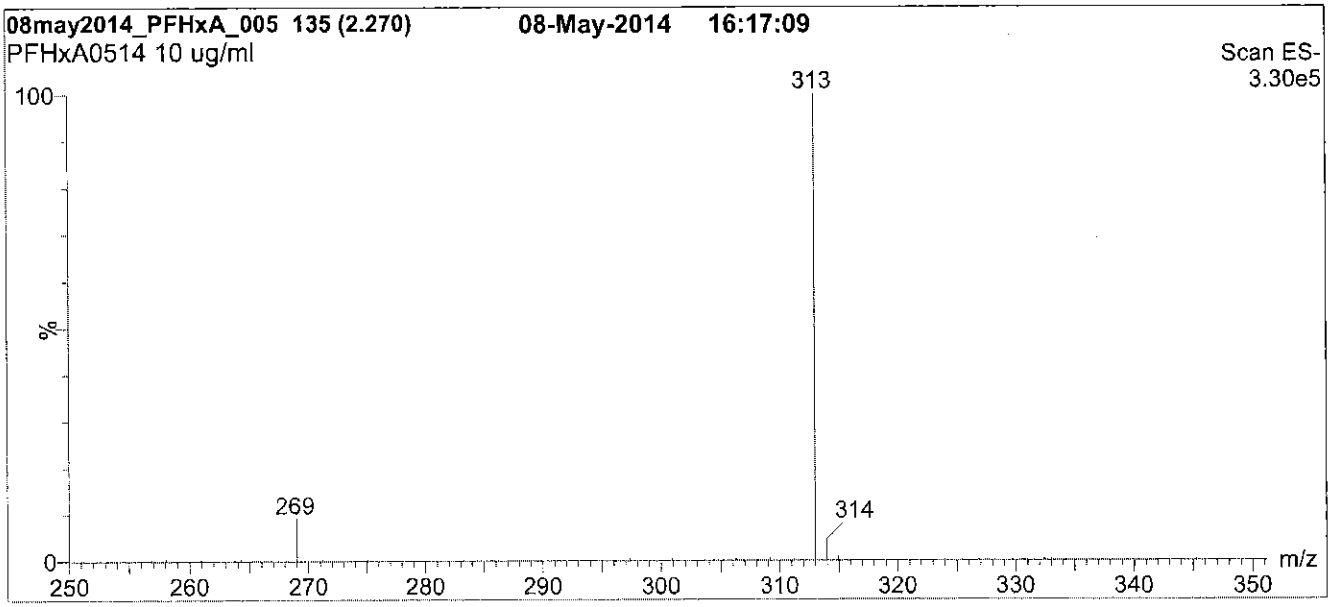
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

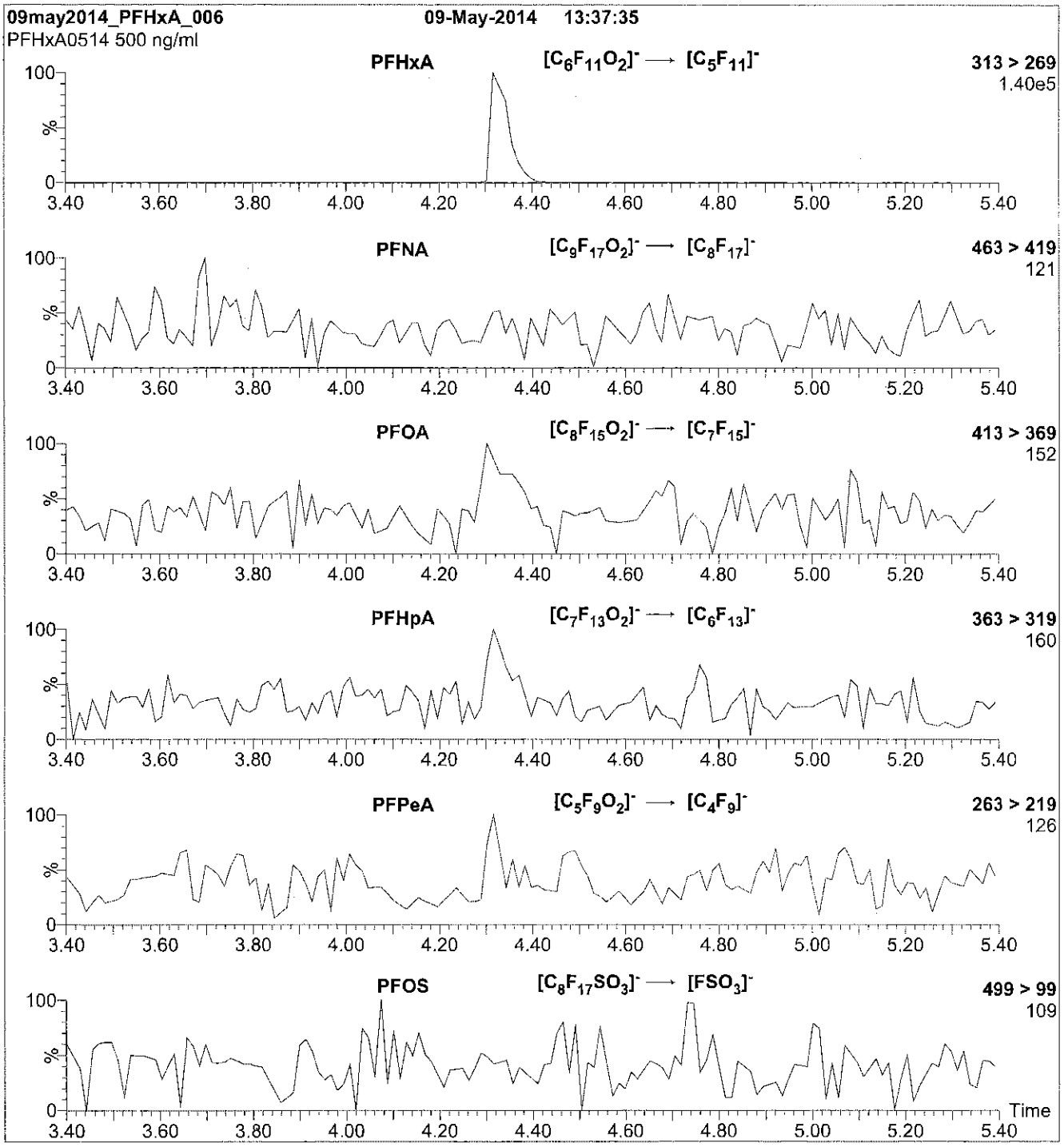
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 10

Reagent

LCPFHxS_00003

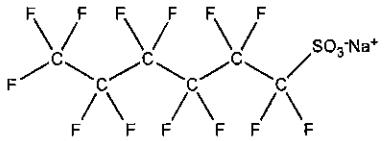
VR 2/11/15 GV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHxS
LOT NUMBER: LPFHxS0514
COMPOUND: Sodium perfluoro-1-hexanesulfonate

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)	**SOLVENT(S):**	Methanol
	47.3 ± 2.4 µg/ml (PFHxS anion)		
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.

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:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

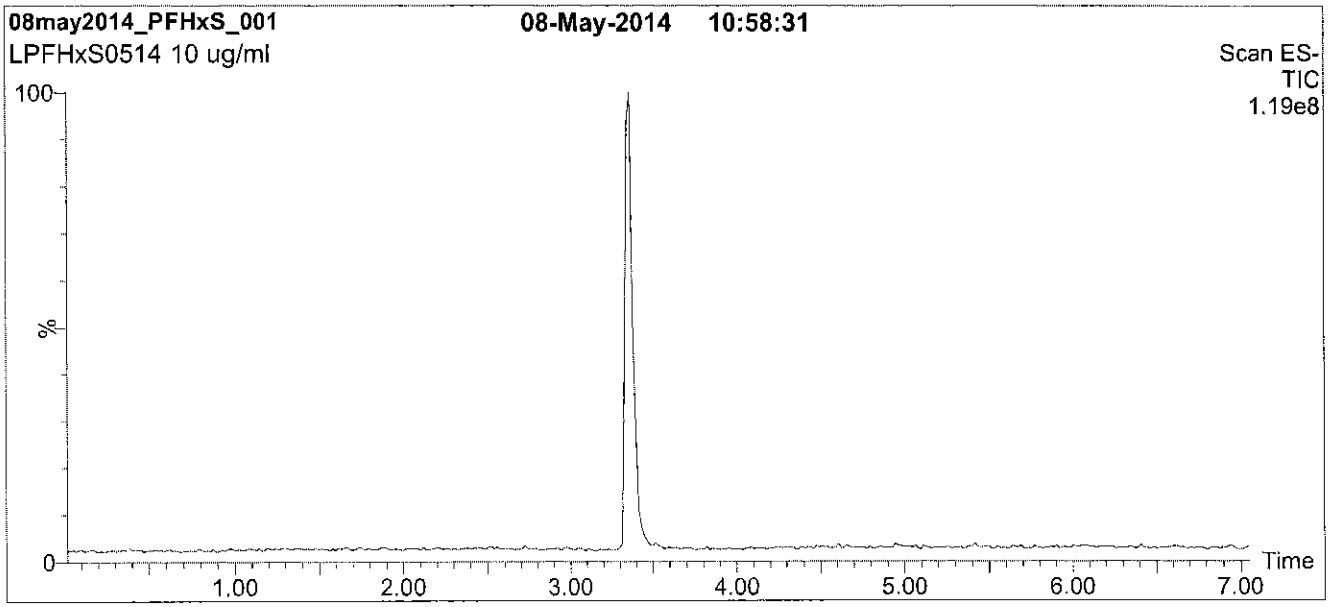
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

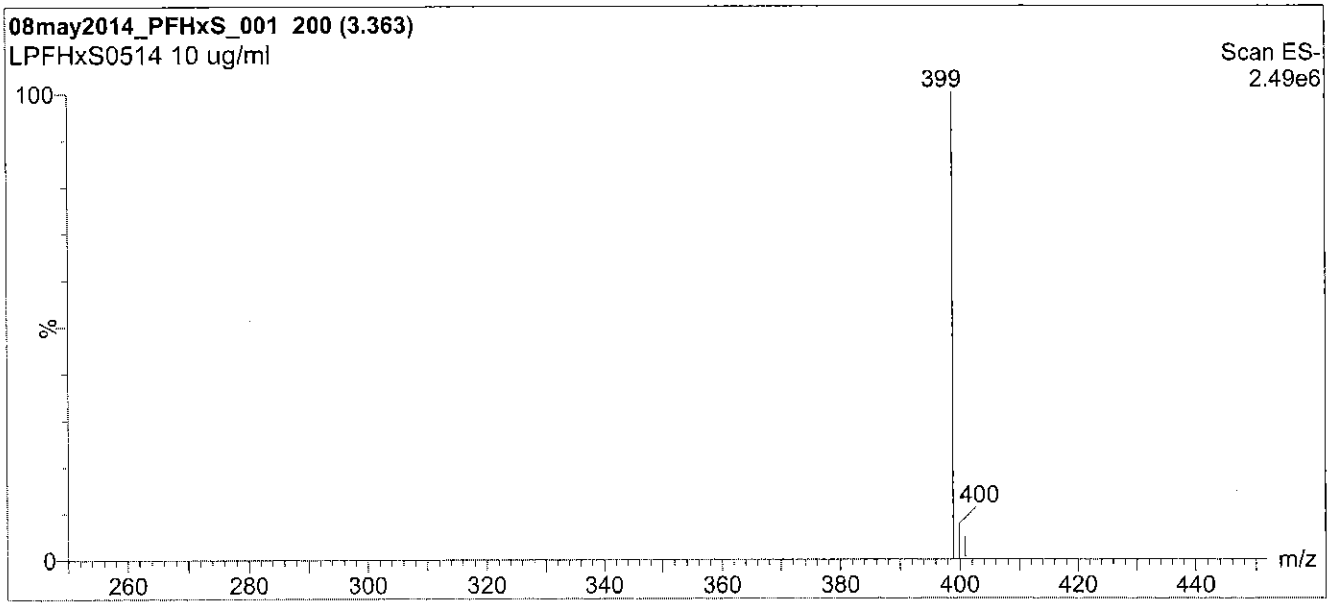
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **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

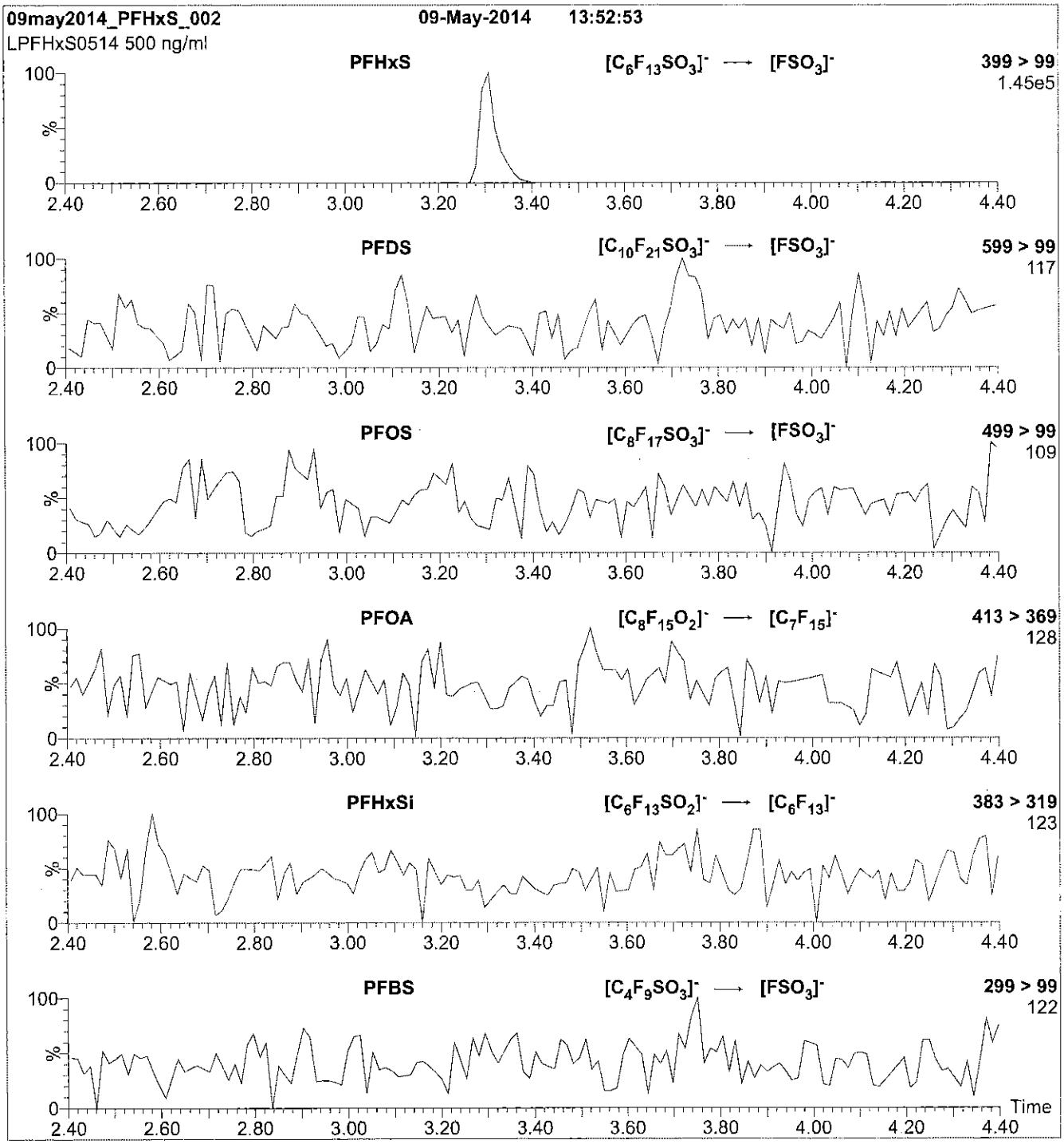
Flow: 300 µl/min

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

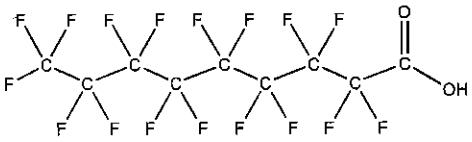
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

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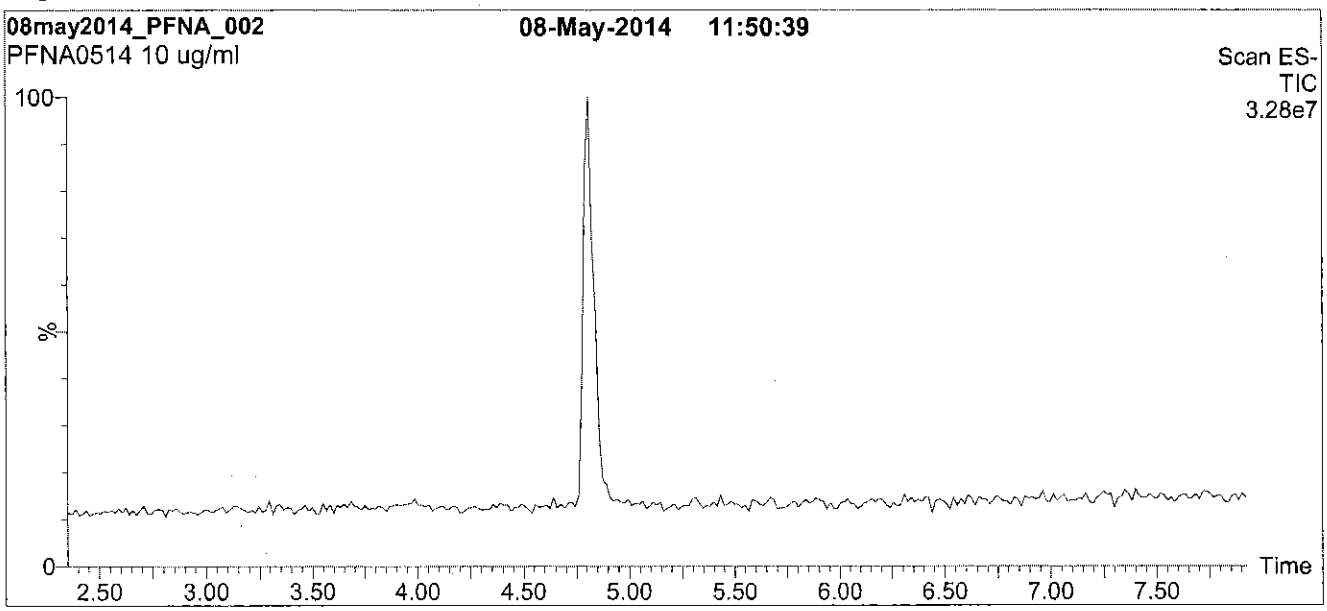
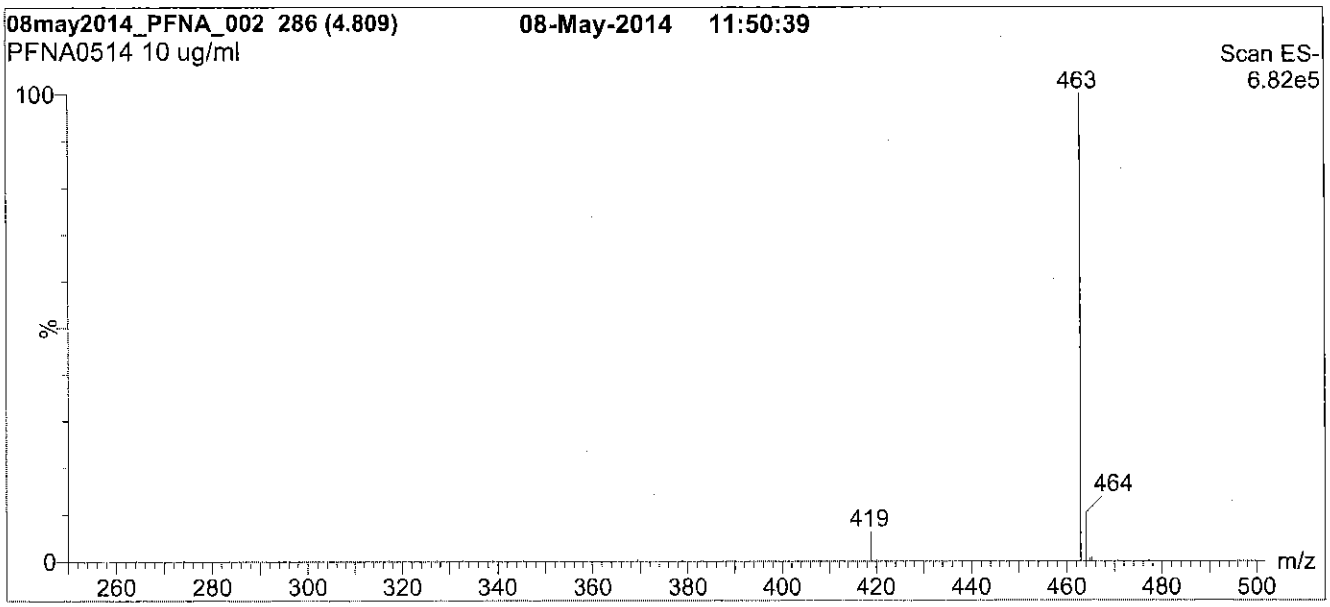
Figure 1: **PFNA; LC/MS Data (TIC and Mass Spectrum)**





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

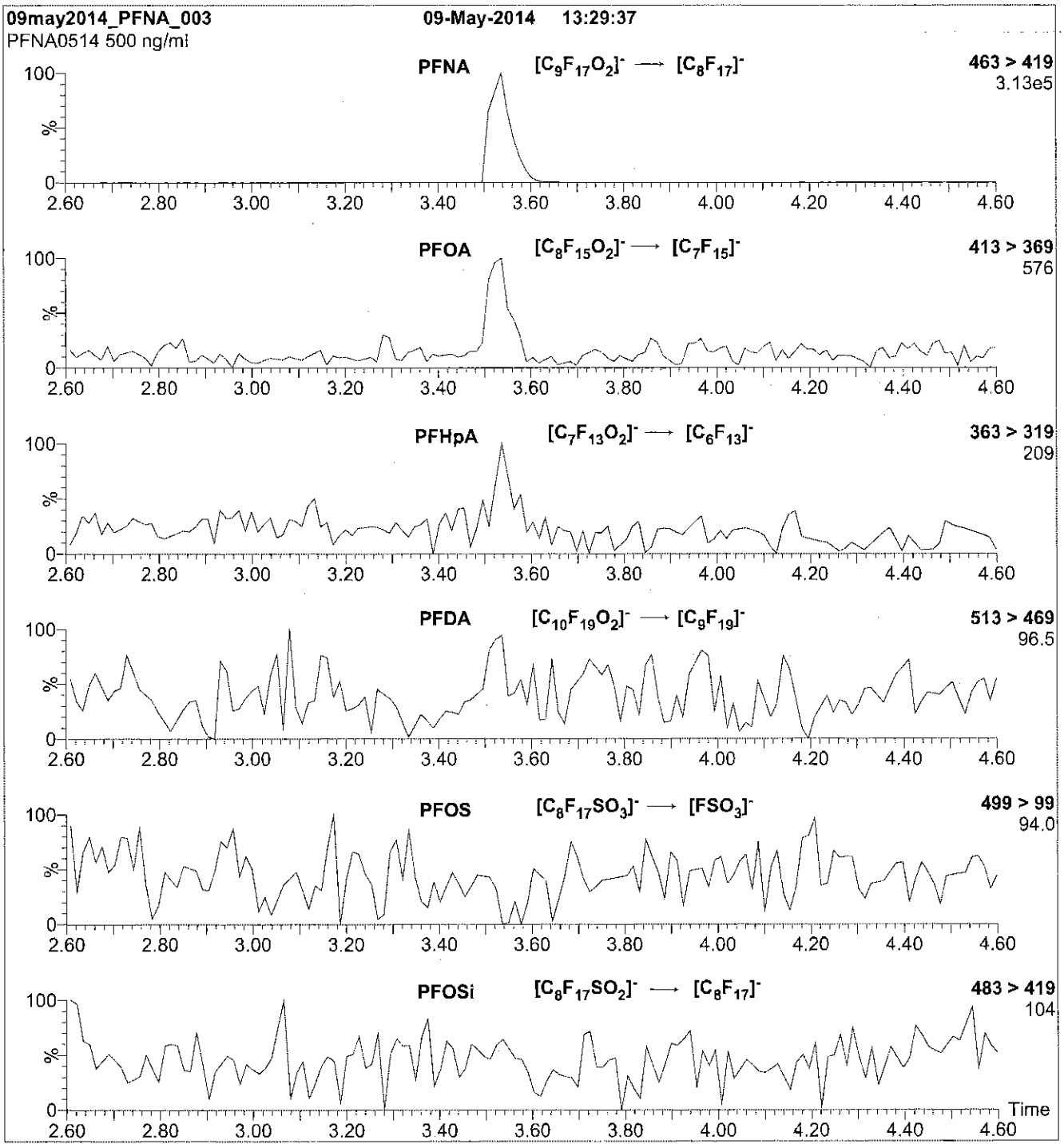
Flow: 300 µl/min

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

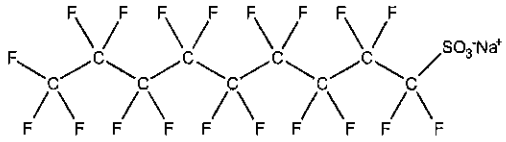
LCPFNS_00002

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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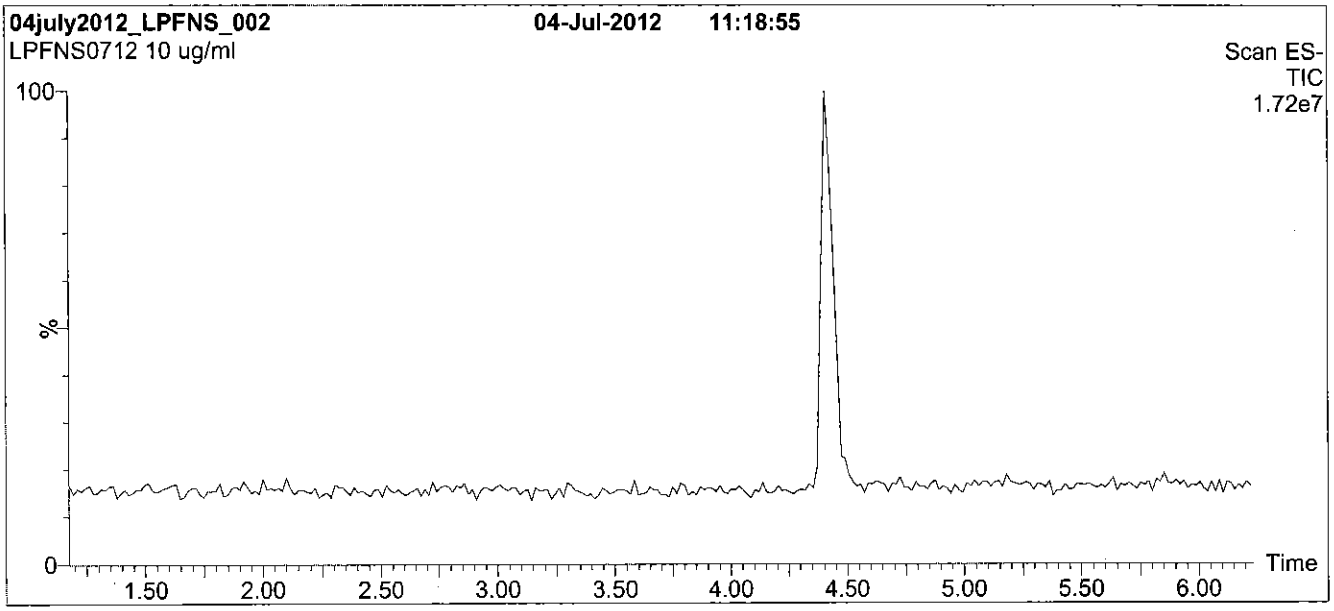
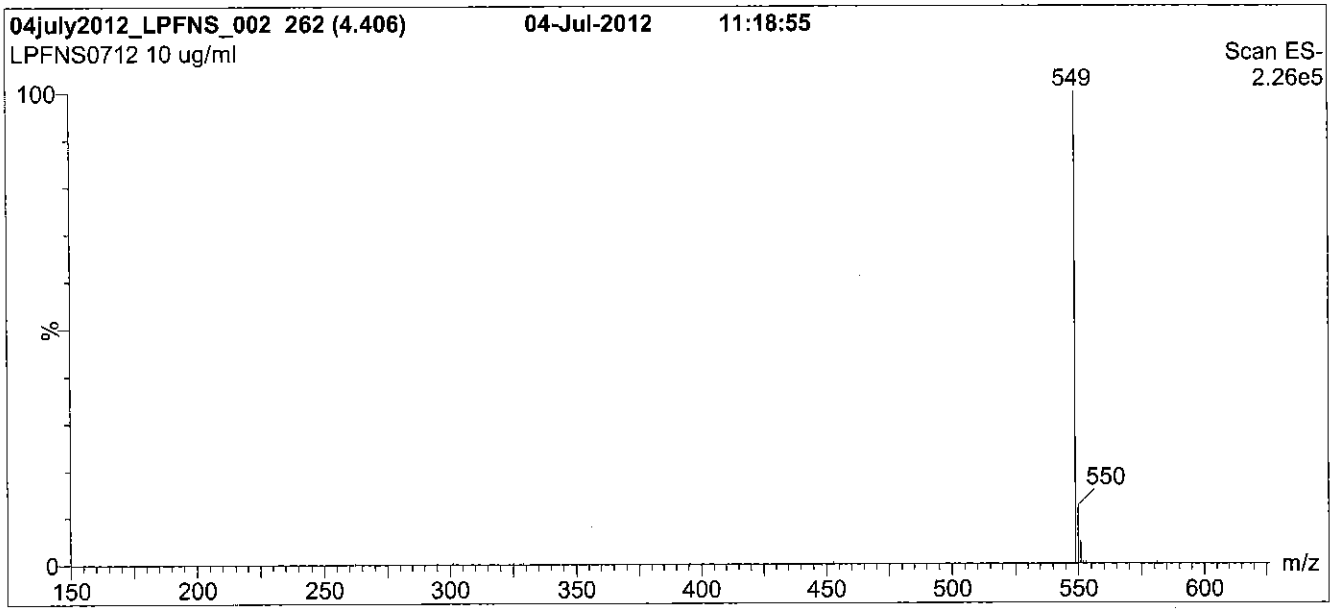
Figure 1: **L-PFNS; LC/MS Data (TIC and Mass Spectrum)**





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

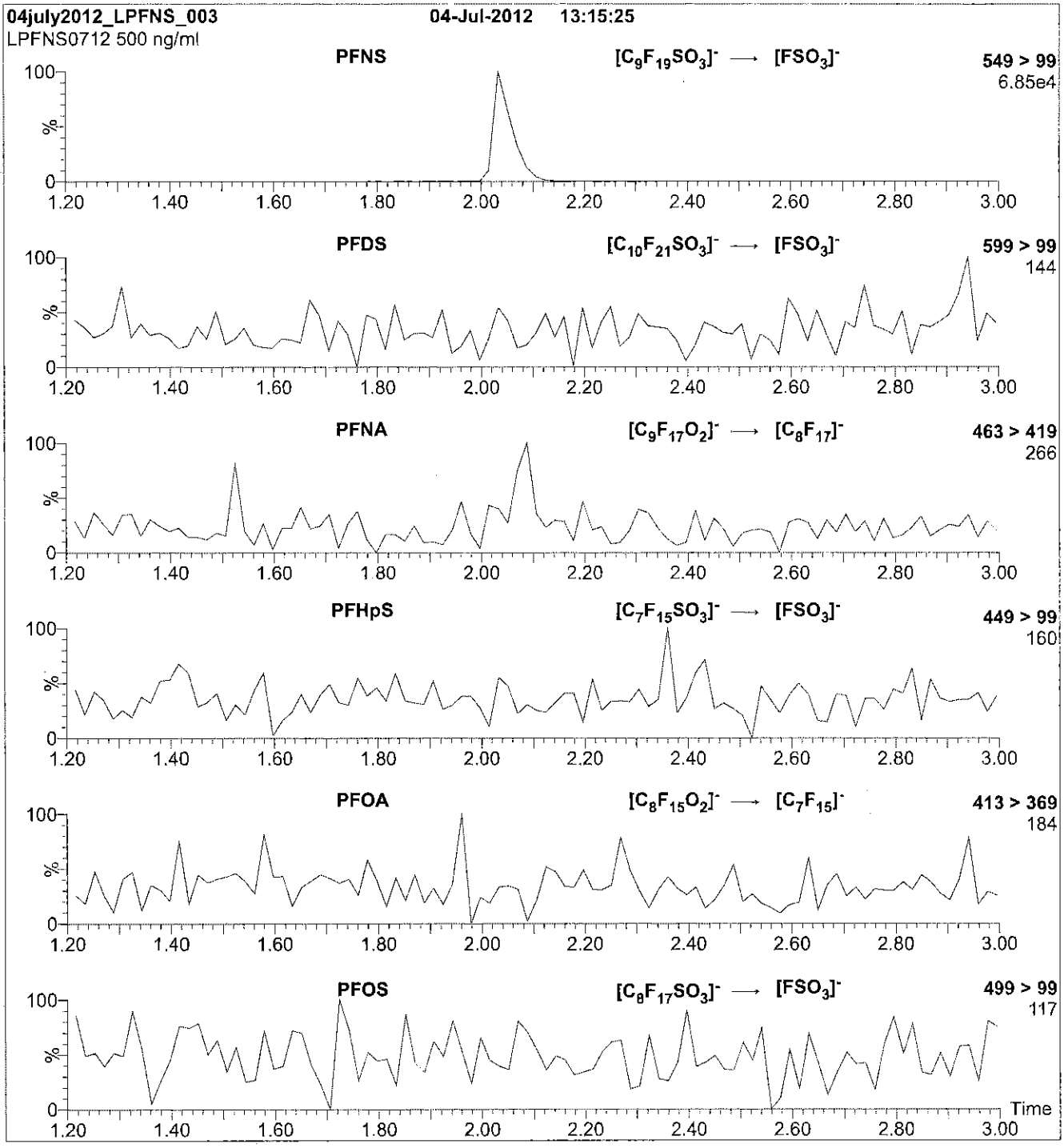
Flow: 300 µl/min

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

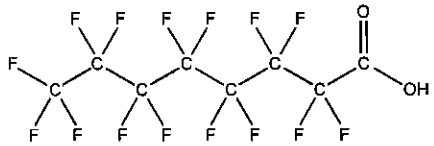
Rec 7/15/14

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/18/2013 (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

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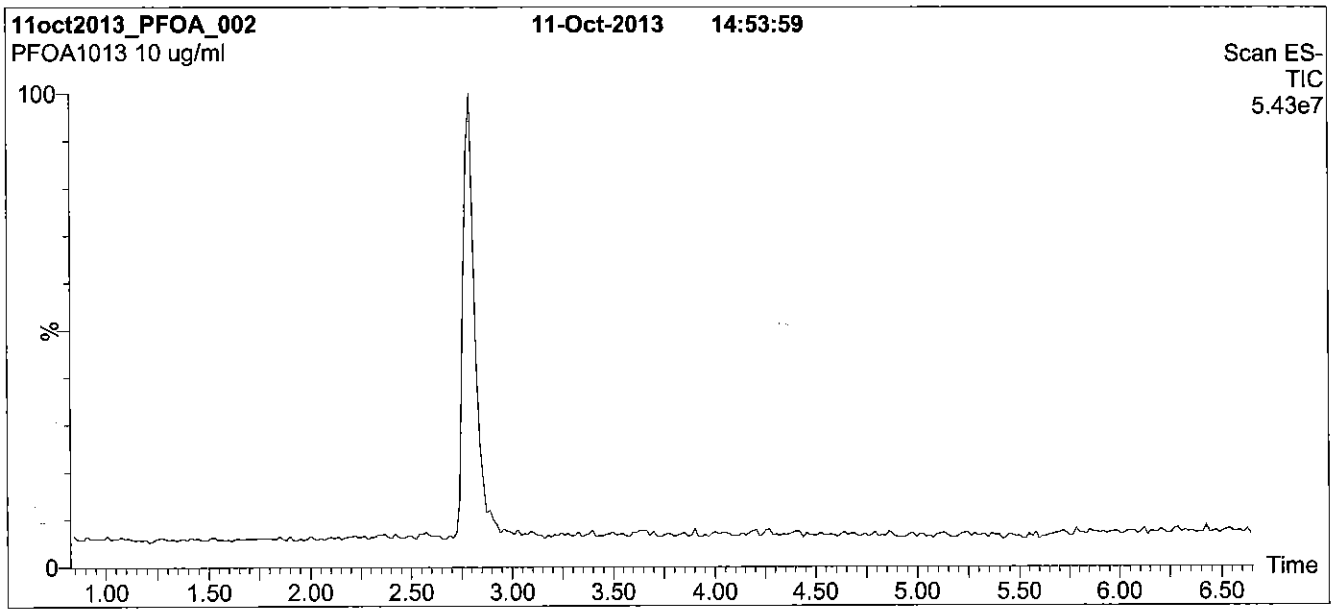
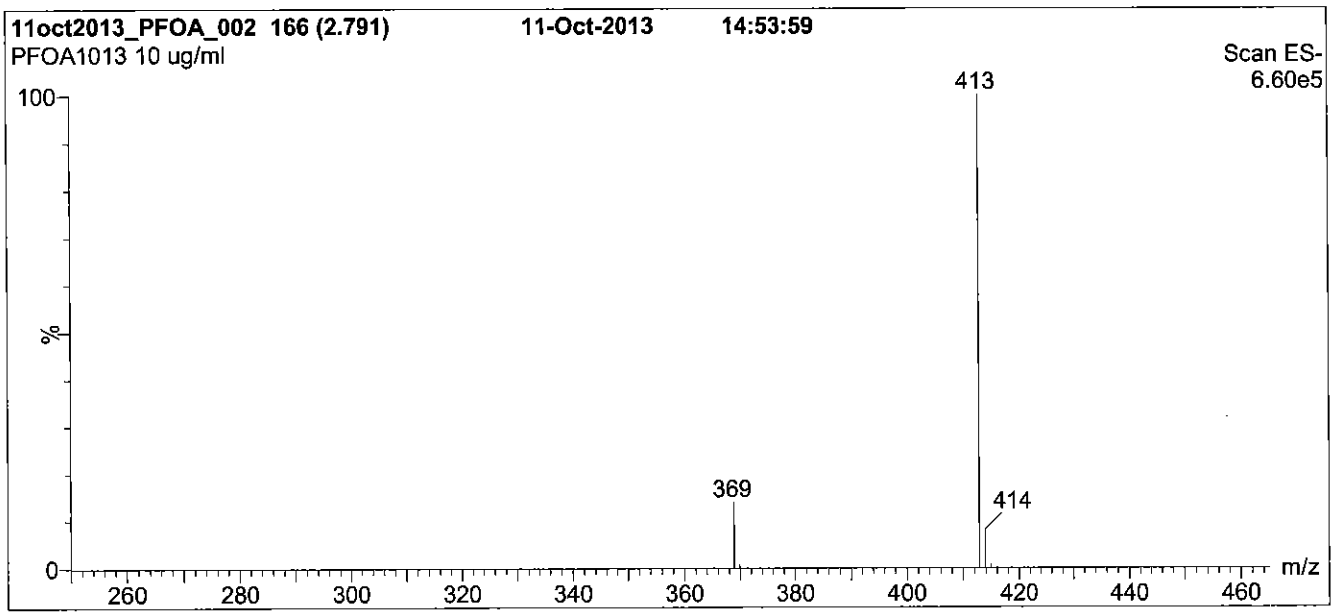
Figure 1: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





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

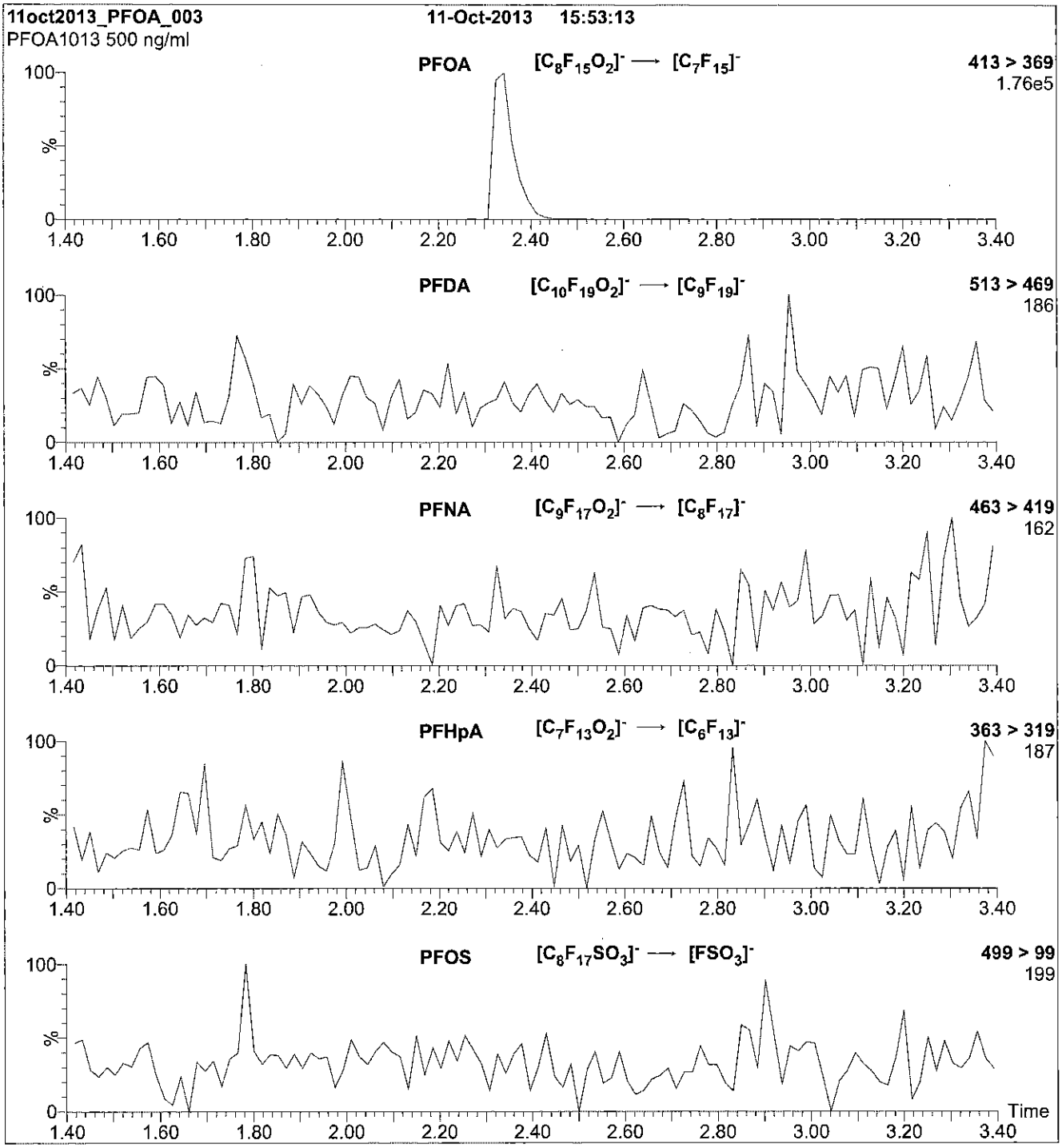
Flow: 300 µl/min

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

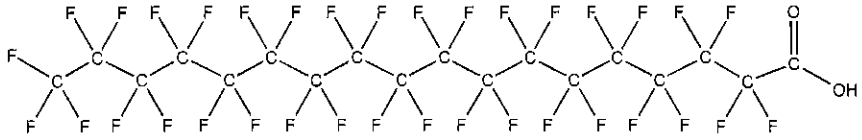
P: 24/15 RJ

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA
LOT NUMBER: PFODA0807
COMPOUND: Perfluoro-n-octadecanoic acid

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
MOLECULAR WEIGHT: 914.15
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (4%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/25/2014
EXPIRY DATE: (mm/dd/yyyy) 04/25/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/28/2014 (mm/dd/yyyy)

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

INTENDED USE:

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:

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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:

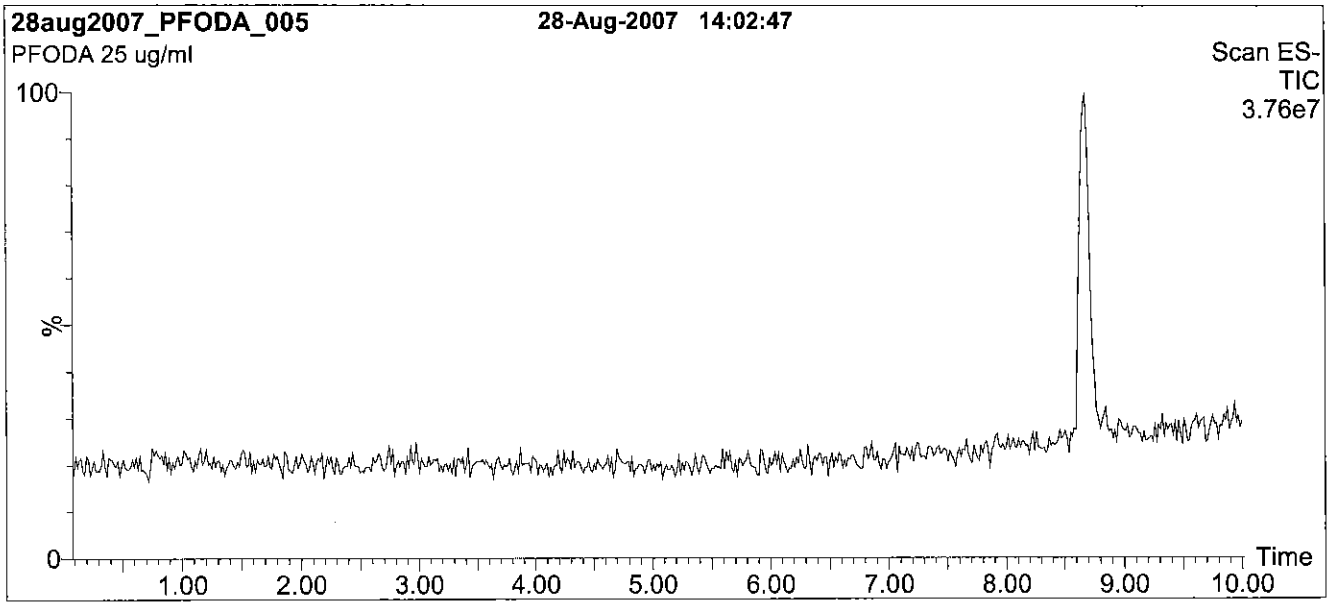
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

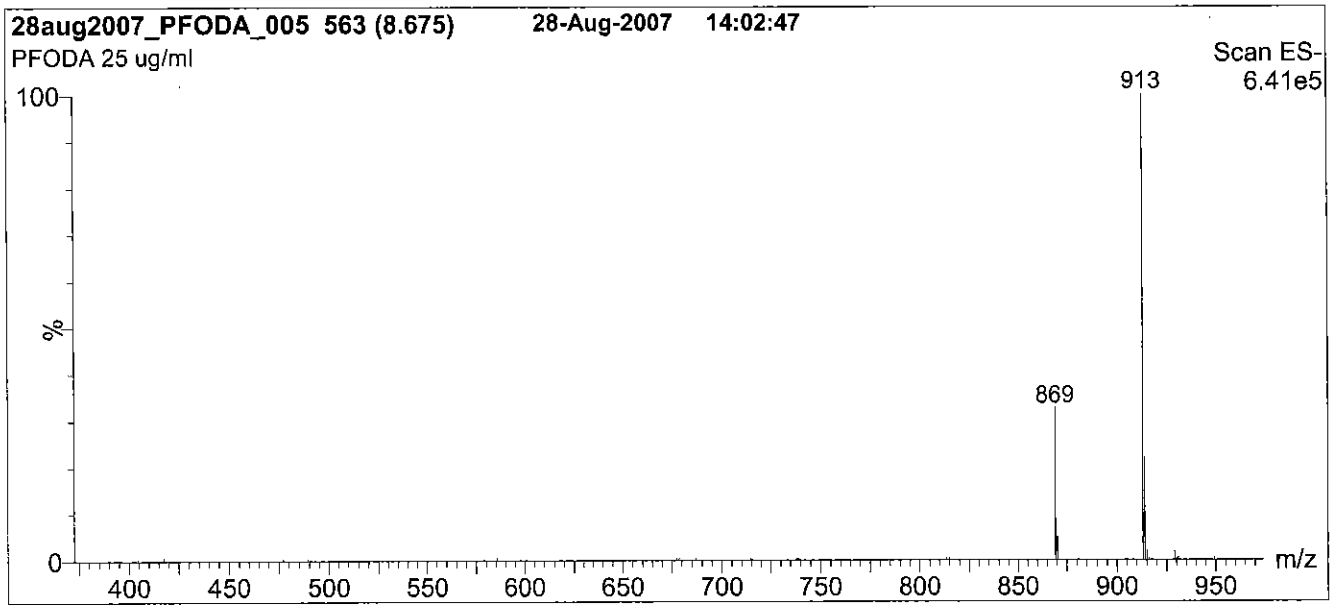
CALA Testing Accredited Mobile No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 75% (80:20 MeOH:ACN) / 25% H_2O
(both with 10 mM NH_4OAc buffer)
Hold 5 min. Ramp to 100% organic over 6 min.
Hold 3 min before returning to initial conditions.
Time: 16 min

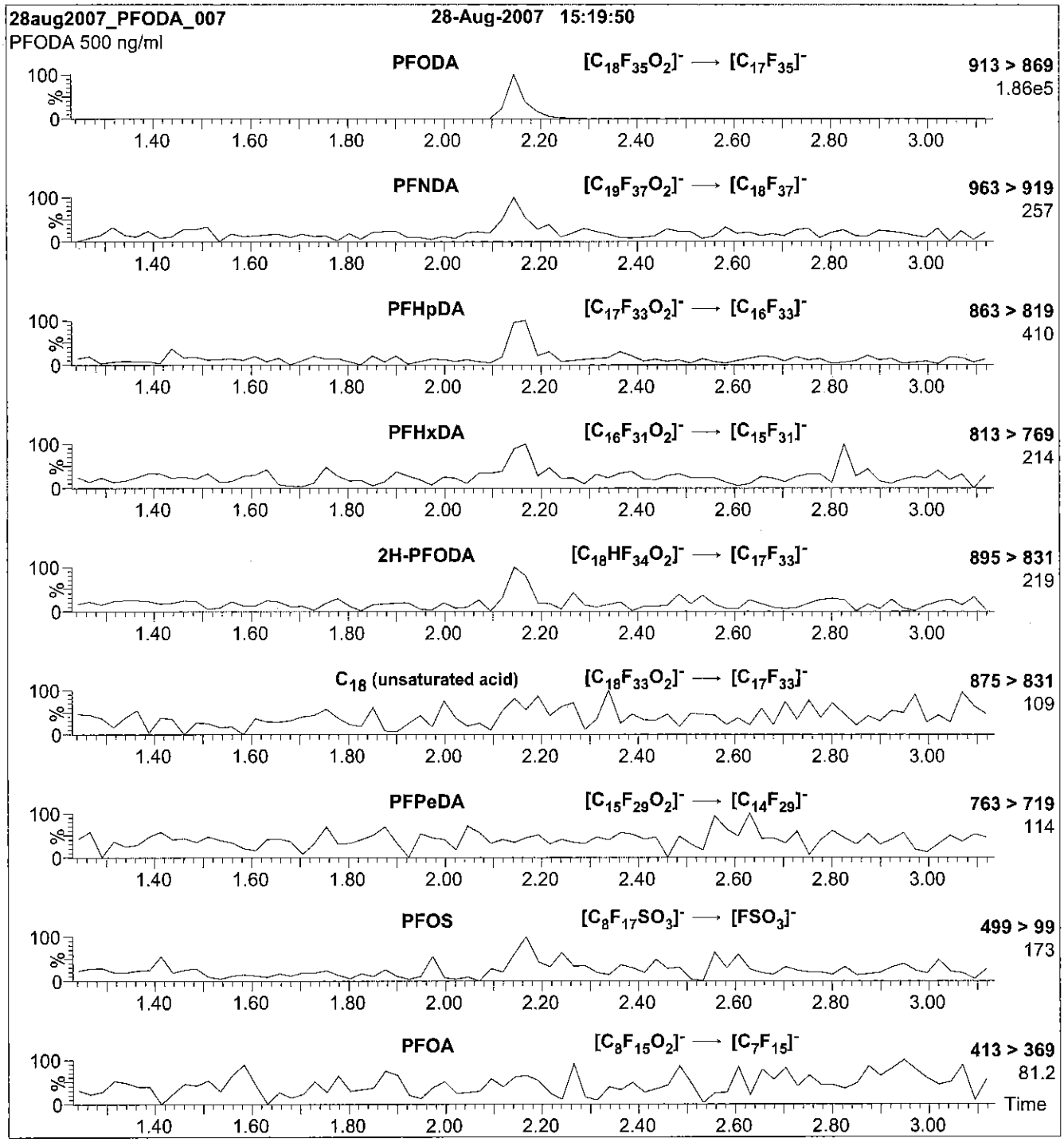
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1100 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 75% (80:20 MeOH:ACN) / 25% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 15

Reagent

LCPFOS_00004

C 3/17/15 SV

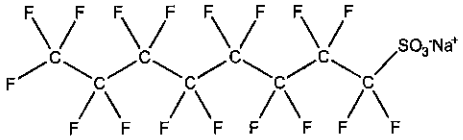
WELLINGTON LABORATORIES

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: _____ **Date:** 10/27/2014 (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:

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UNCERTAINTY:

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

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

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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. A 1226

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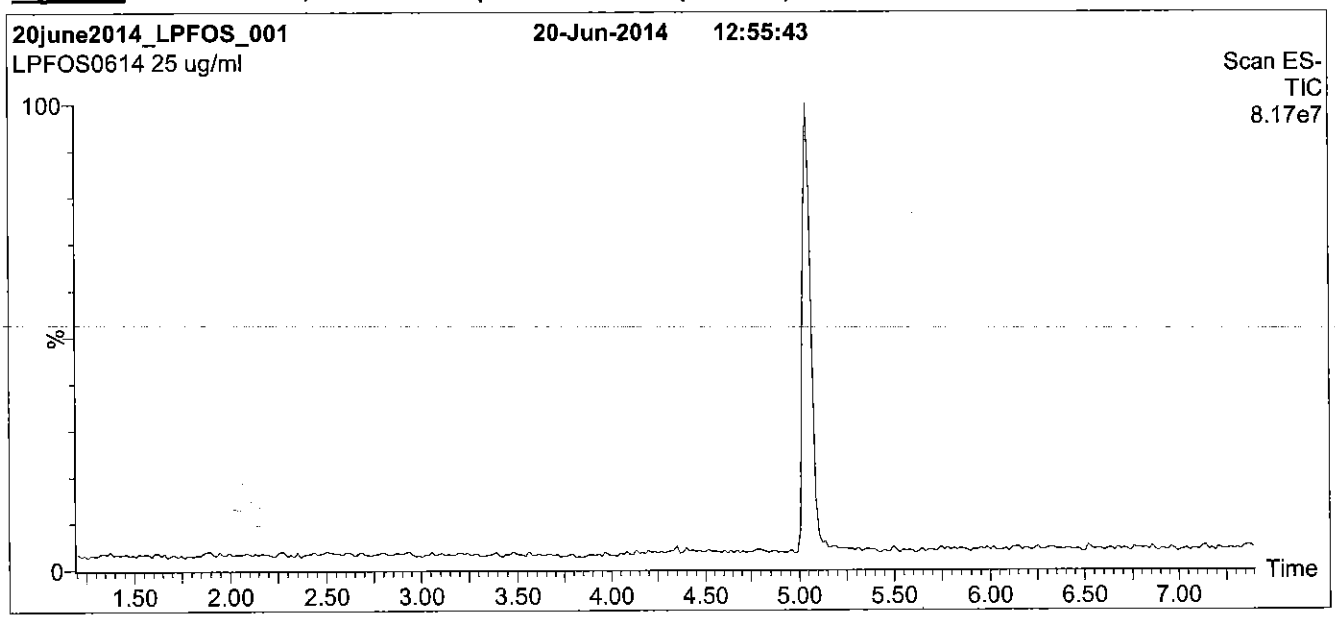
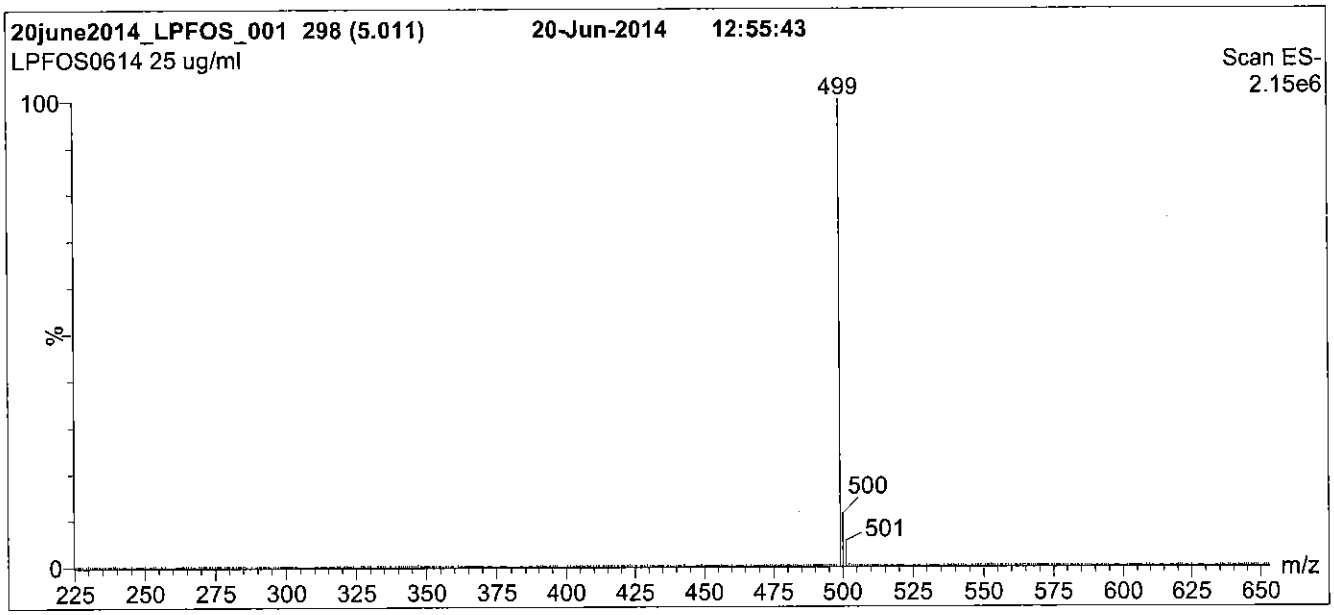
Figure 1: **L-PFOS; LC/MS Data (TIC and Mass Spectrum)**





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

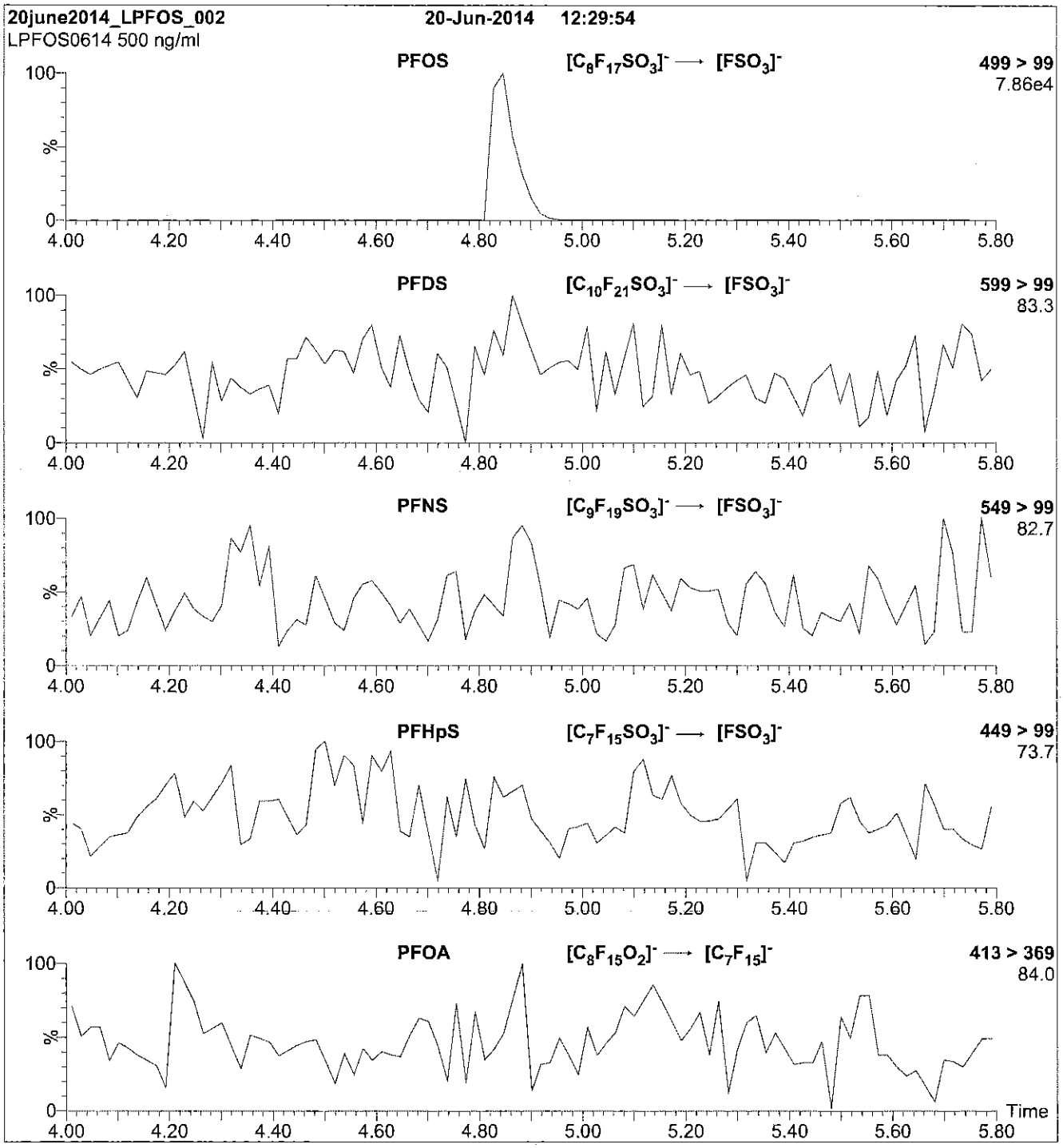
Flow: 300 µl/min

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

WELLINGTON LABORATORIES

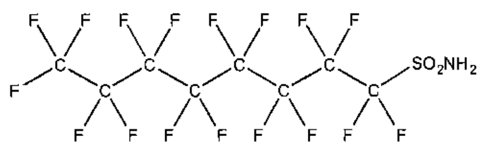
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FOSA-I

COMPOUND: Perfluoro-1-octanesulfonamide

LOT NUMBER: FOSA0714I

STRUCTURE:



CAS #: 754-91-6

MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$
CONCENTRATION:	50 ± 2.5 µg/ml
CHEMICAL PURITY:	>98%
LAST TESTED: (mm/dd/yyyy)	07/31/2014
EXPIRY DATE: (mm/dd/yyyy)	Stability studies ongoing
RECOMMENDED STORAGE:	Refrigerate ampoule
MOLECULAR WEIGHT:	499.14
SOLVENT(S):	Isopropanol

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:** 08/05/2014 (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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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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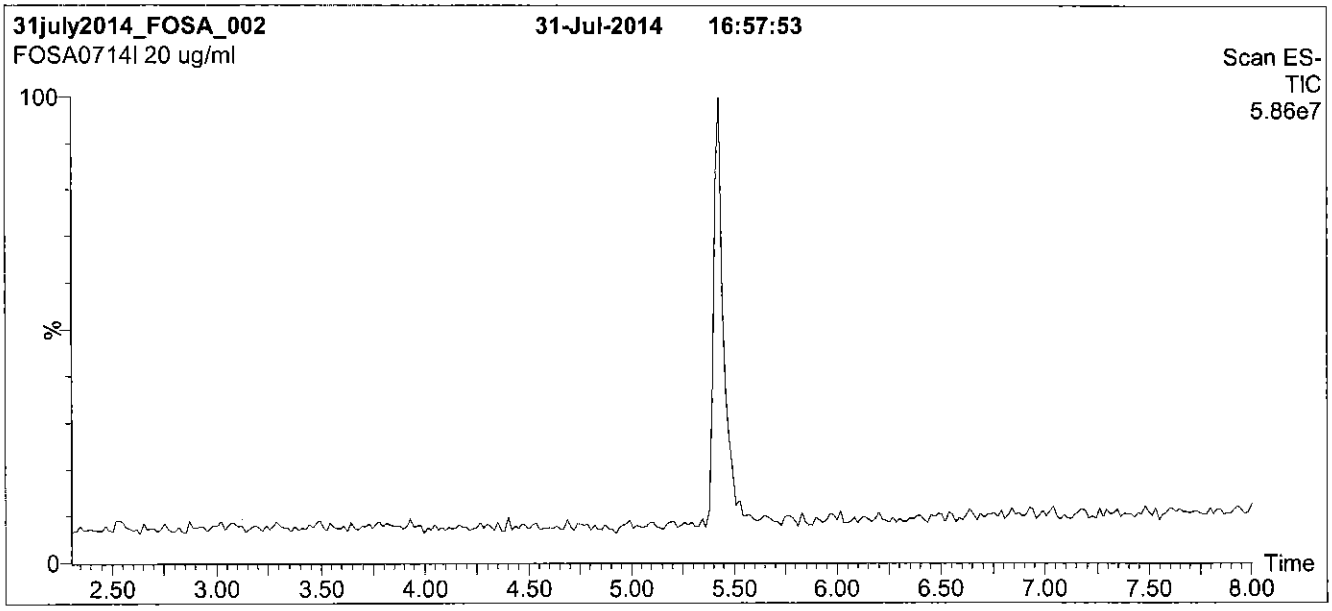
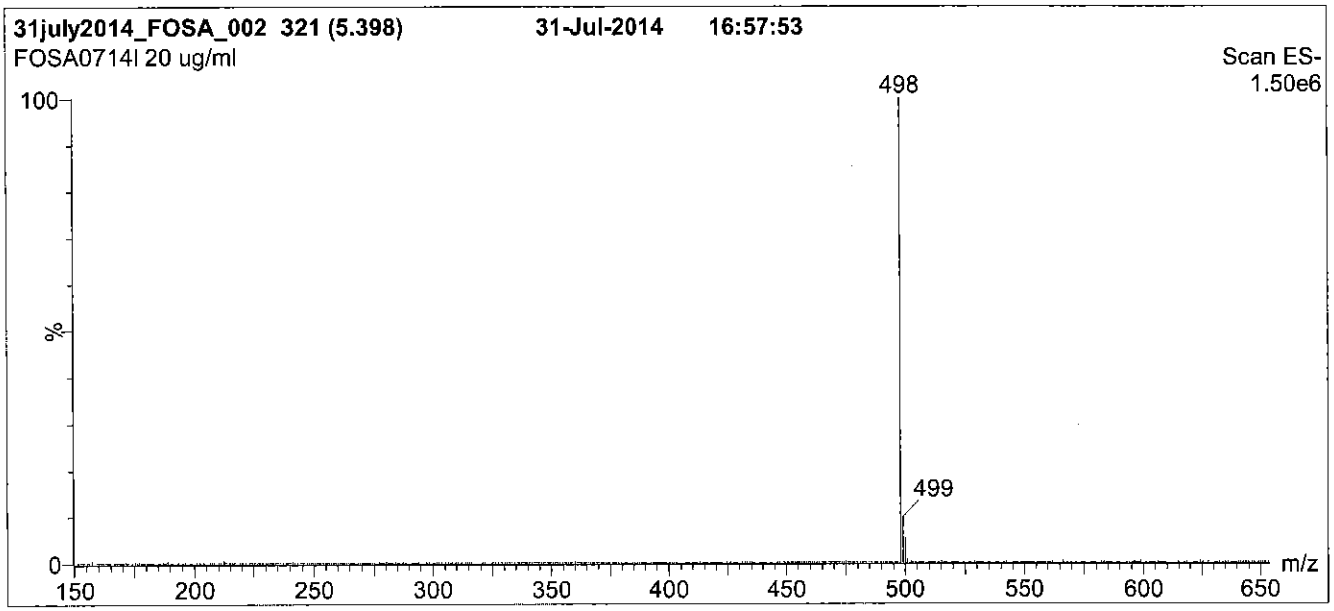
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH 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

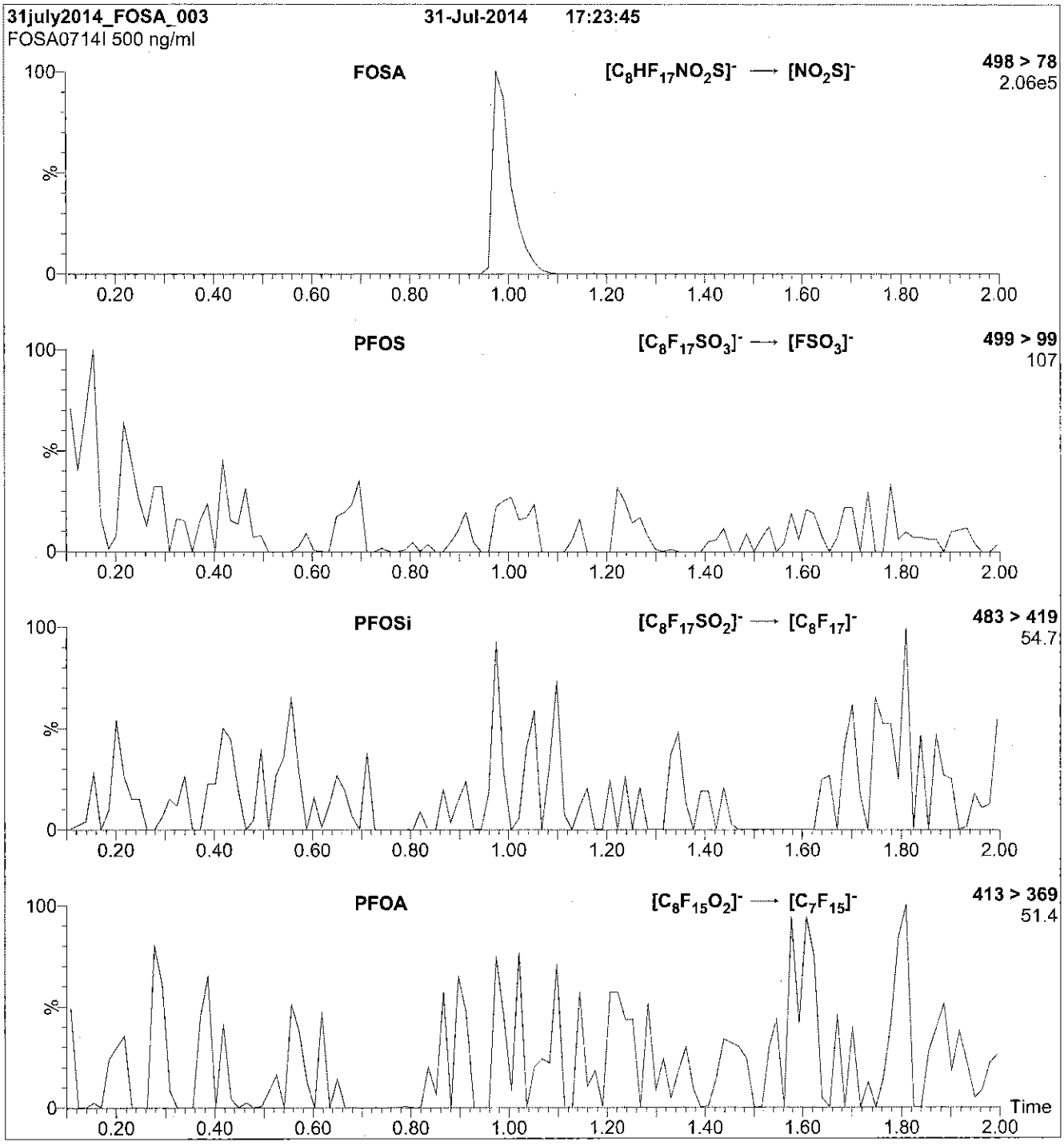
Flow: 300 µl/min

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

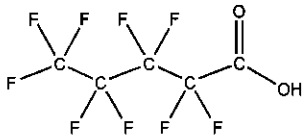
Rec 7/15/14

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 $x_1, x_2, \ldots x_n$ 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. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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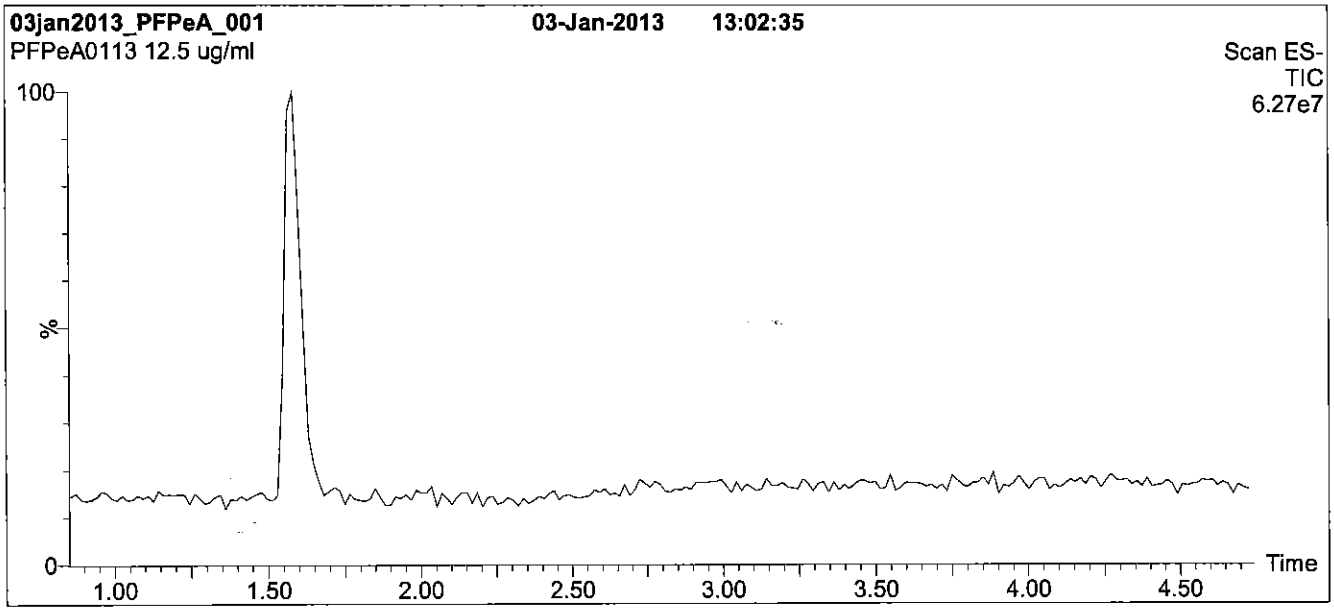
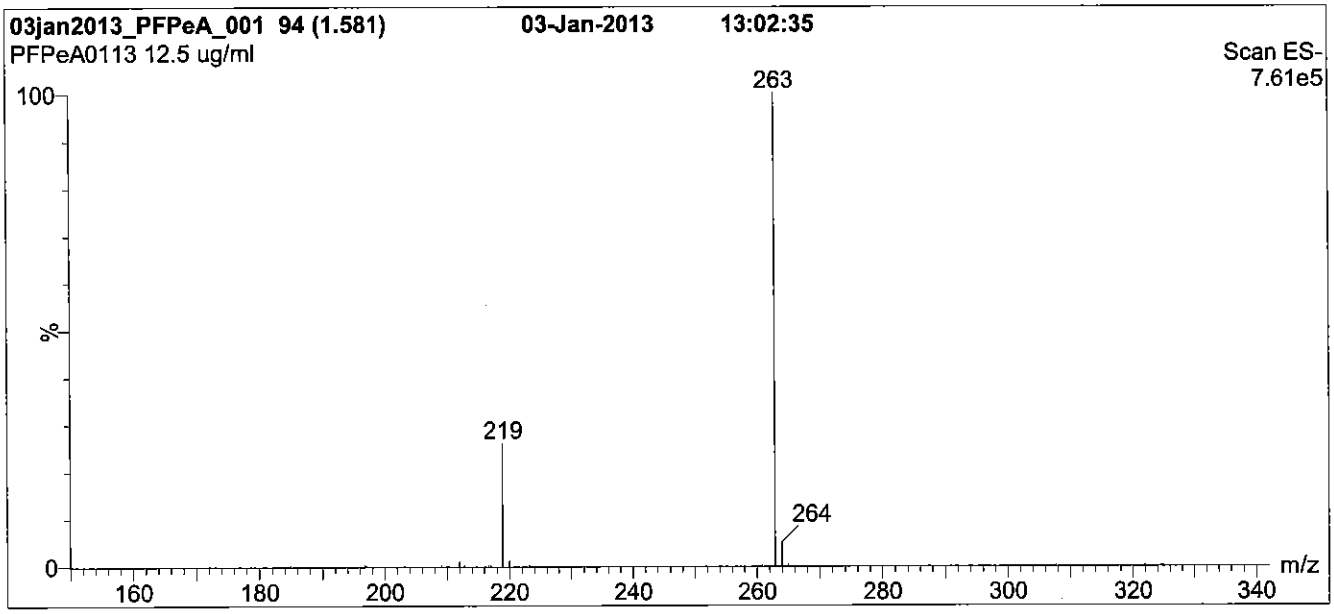
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





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

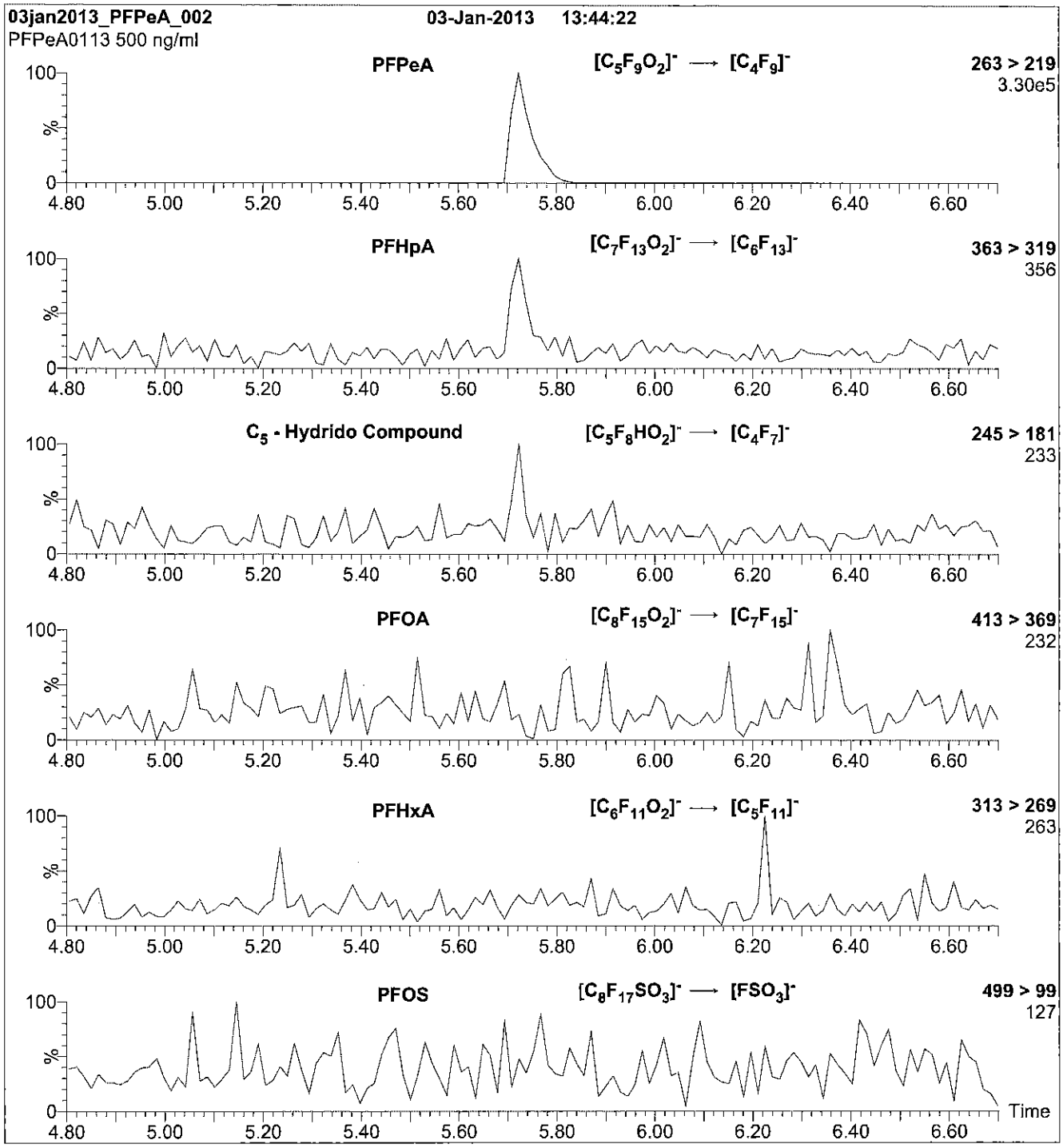
Flow: 300 µl/min

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

R 2/4/15 [illegible]

WELLINGTON LABORATORIES

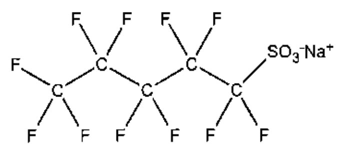
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS

LOT NUMBER: LPFPeS0712

COMPOUND: Sodium perfluoro-1-pentanesulfonate

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $C_5F_{11}SO_3Na$

MOLECULAR WEIGHT: 372.09

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

SOLVENT(S): Methanol

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 07/04/2012

EXPIRY DATE: (mm/dd/yyyy) 07/04/2017

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: [signature] 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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where x is expressed as a relative standard uncertainty of the individual parameter.

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CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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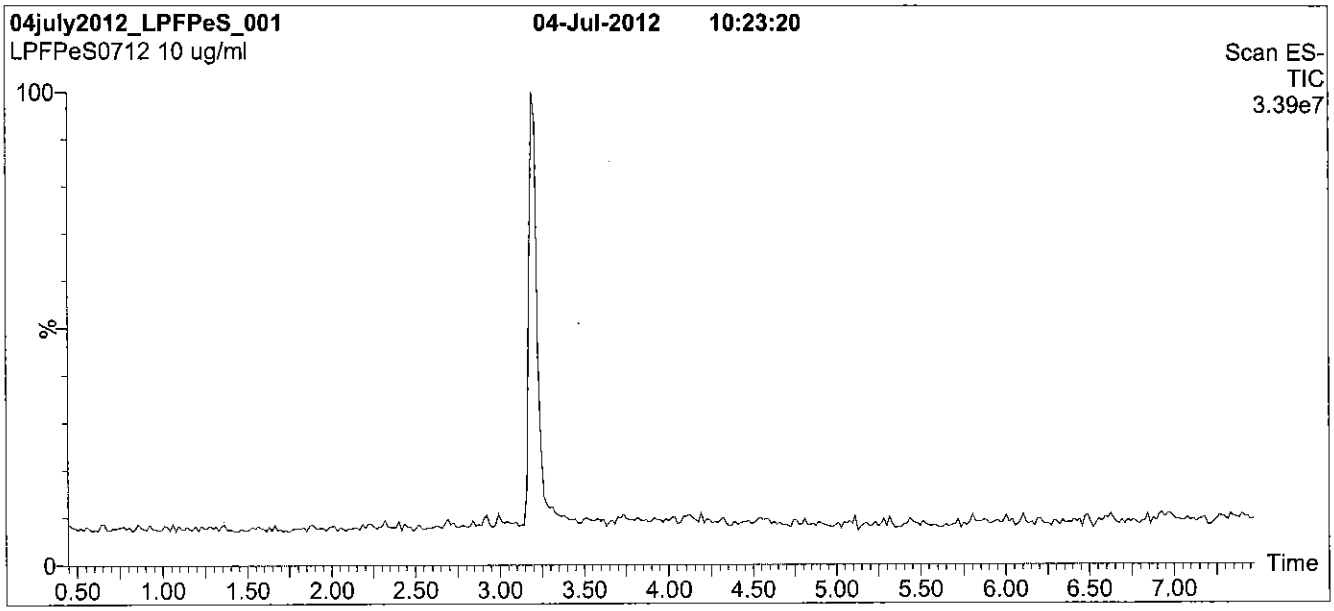
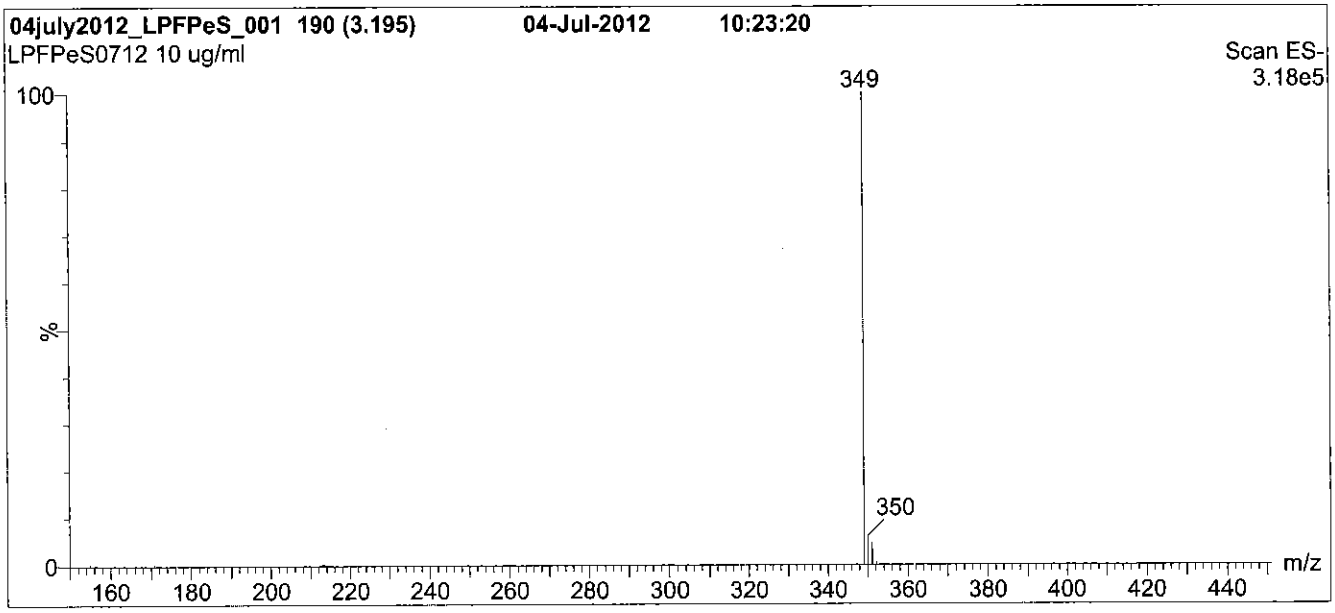
Figure 1: **L-PFPeS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

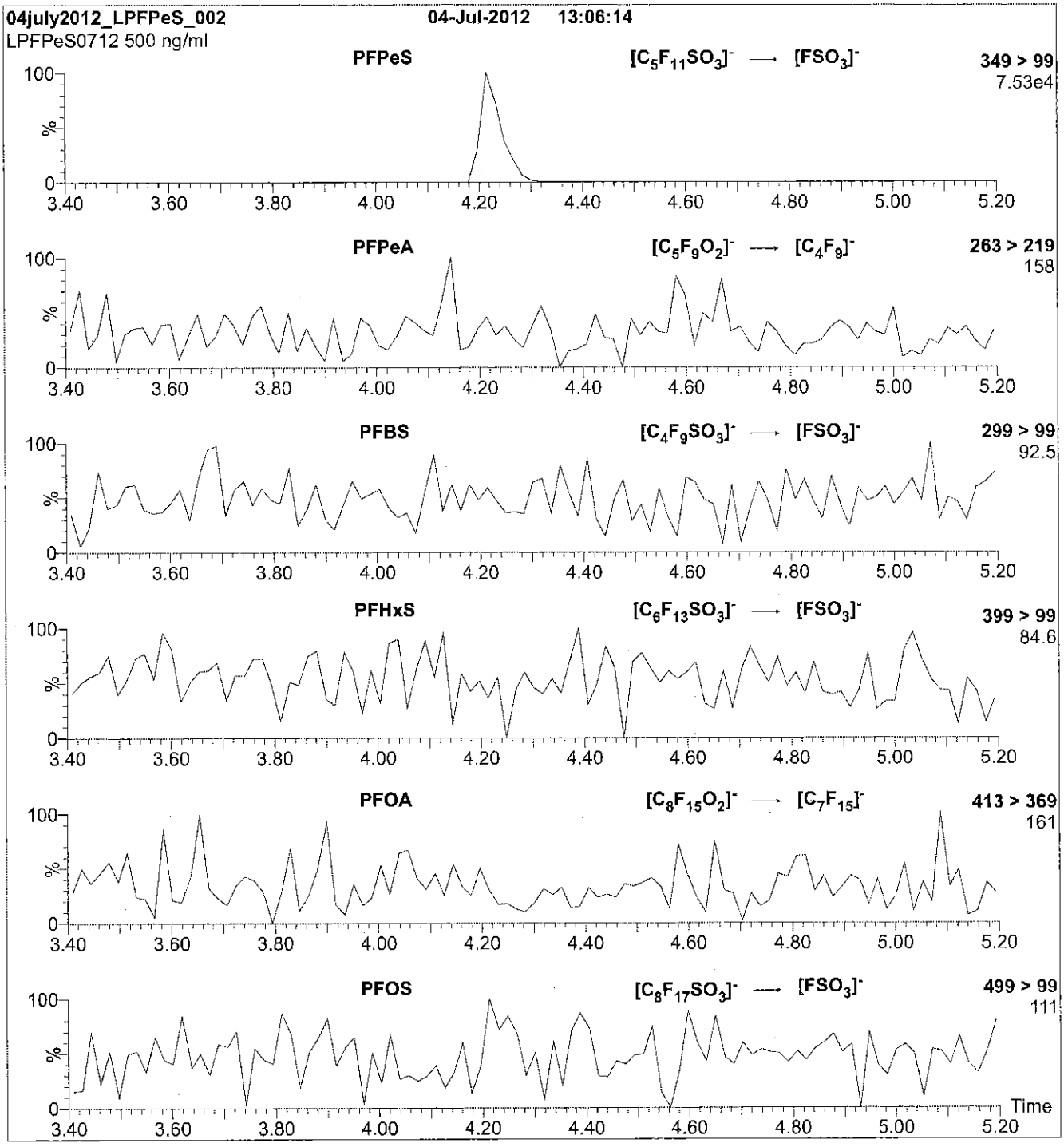
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 30

Reagent

LCPFTeDA_00003

V: 2/11/15 SRV

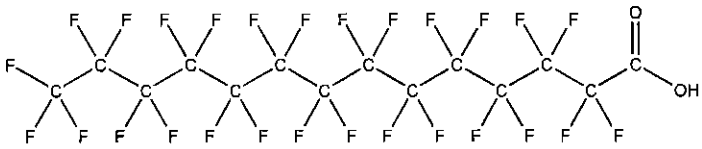
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0613
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:

CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/17/2013 (mm/dd/yyyy)

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 Accredited Laboratory No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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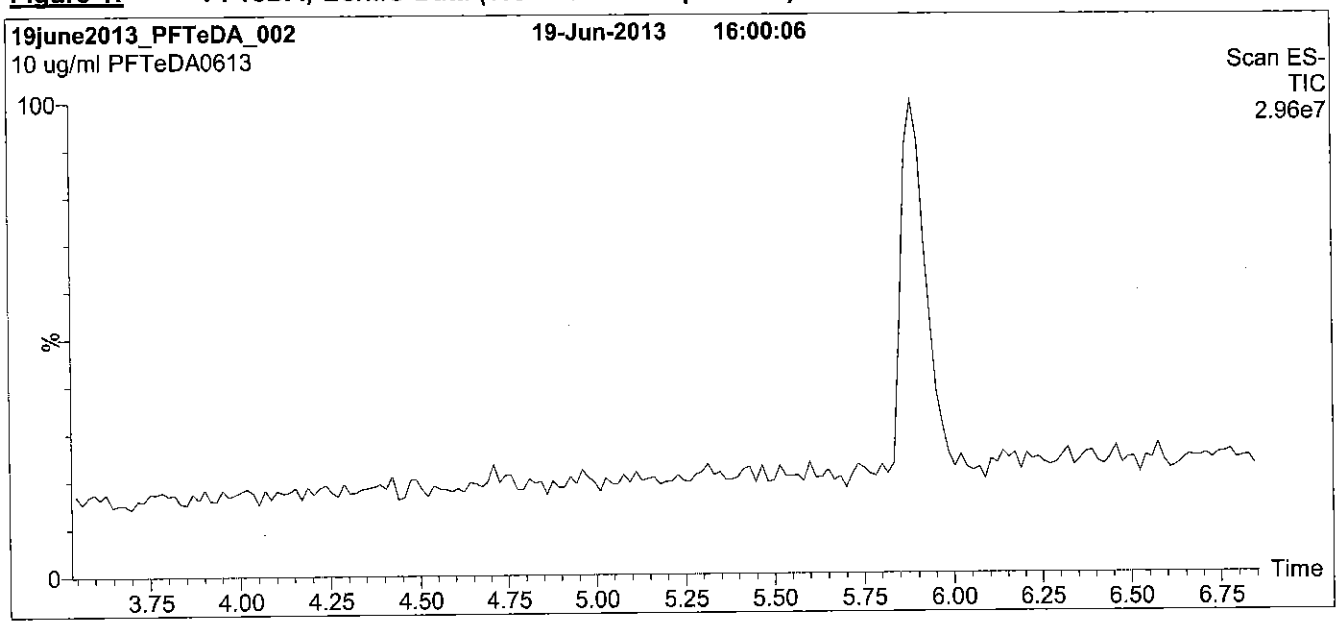
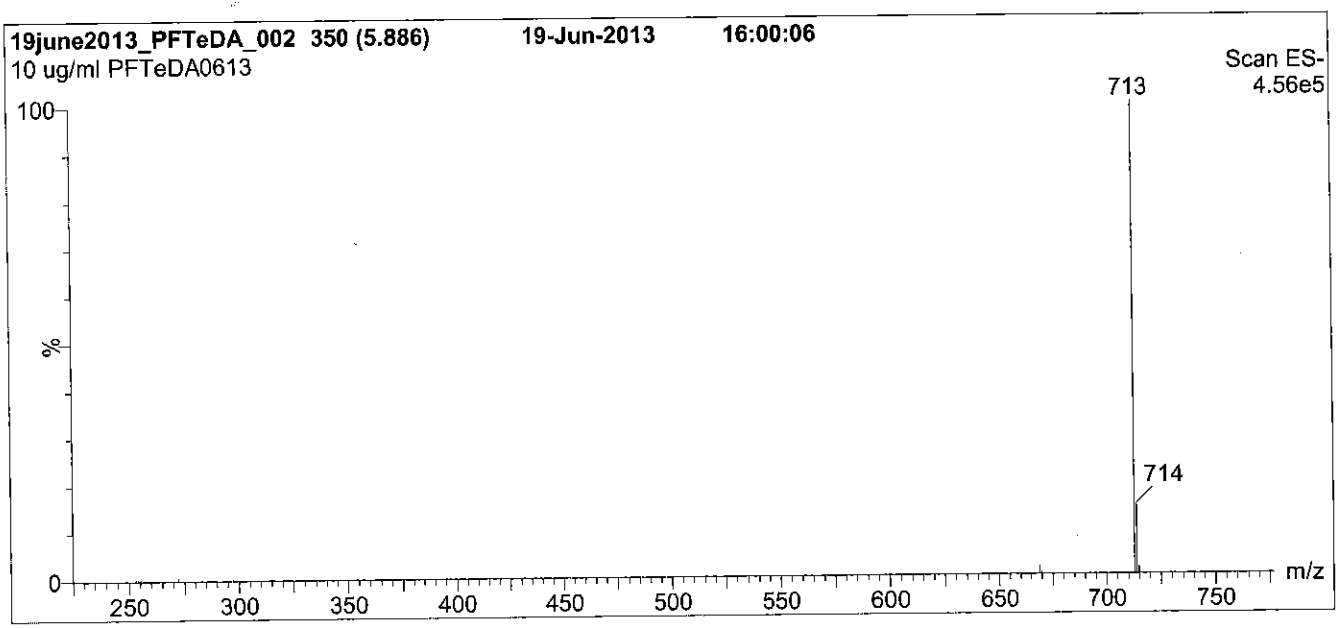
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





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

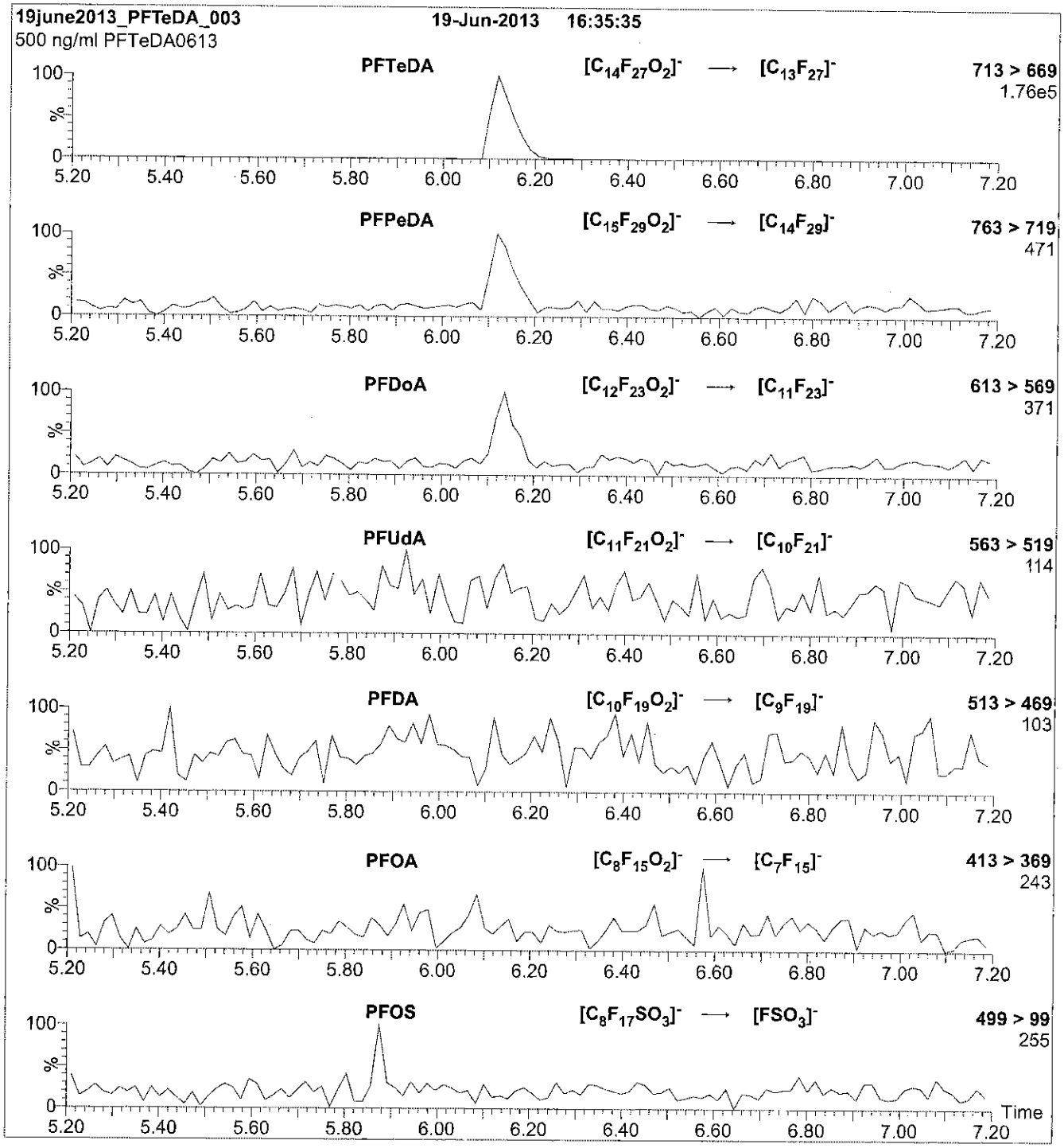
Flow: 300 µl/min

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

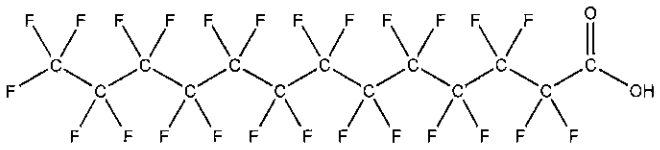
V. 2/11/15 CTN

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:
CAS #: 72629-94-8



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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
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Certified By: B.G. Chittim **Date:** 12/11/2013 (mm/dd/yyyy)

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LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

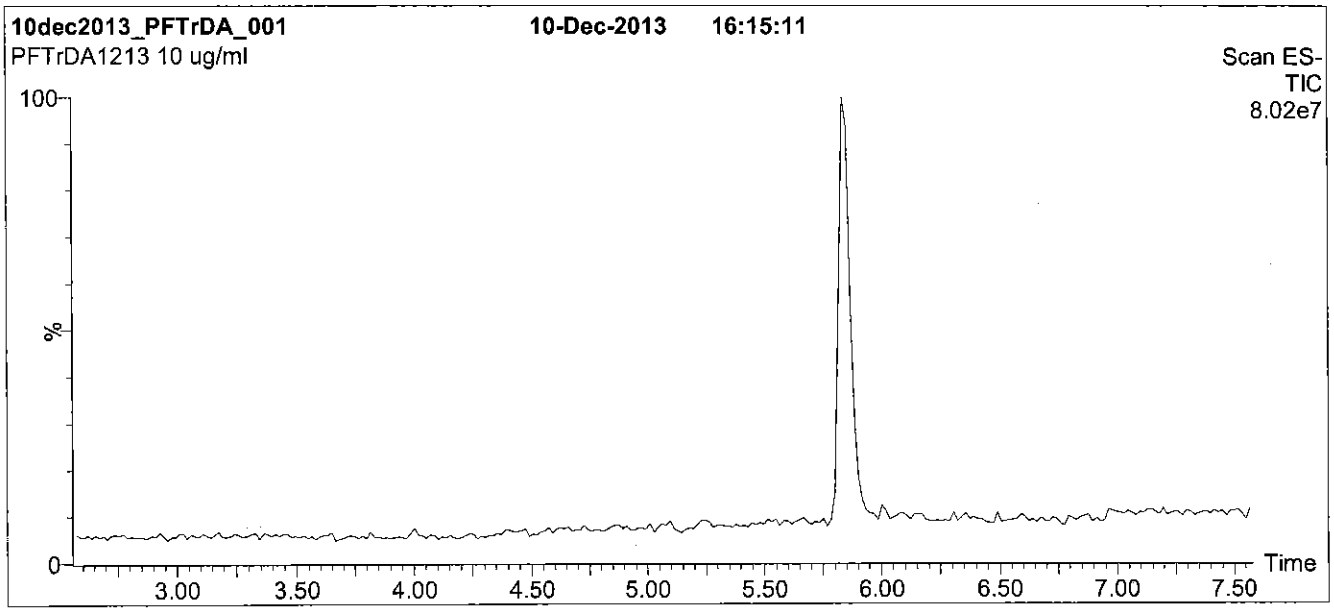
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

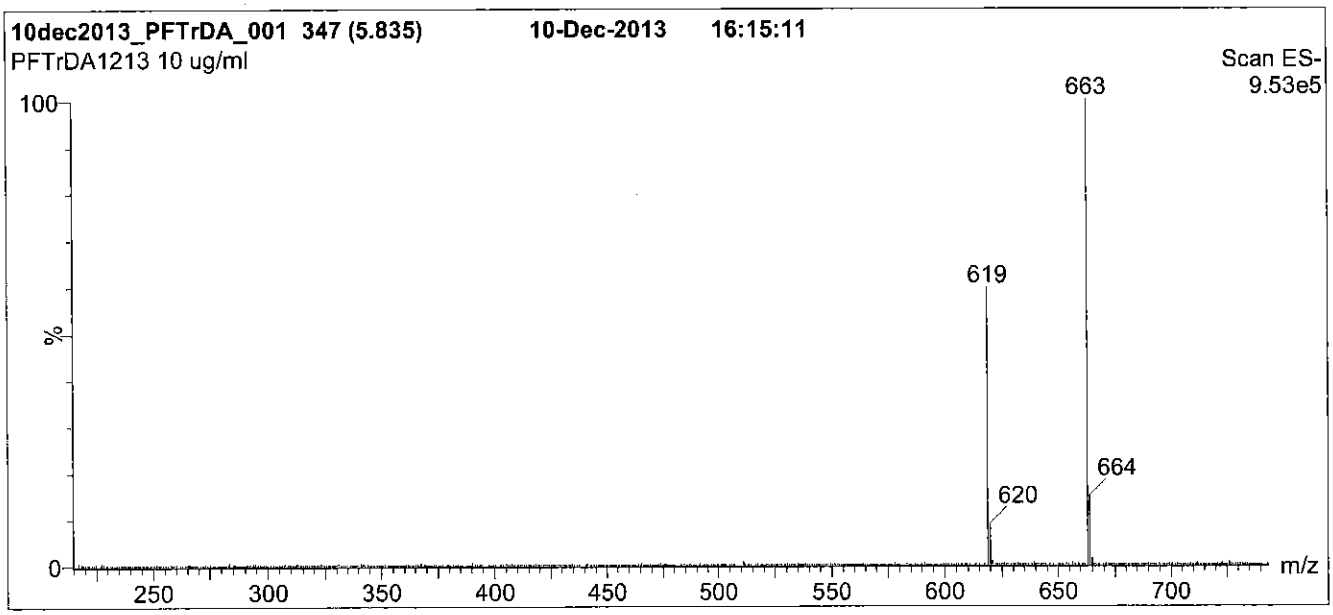
CALA Testing

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

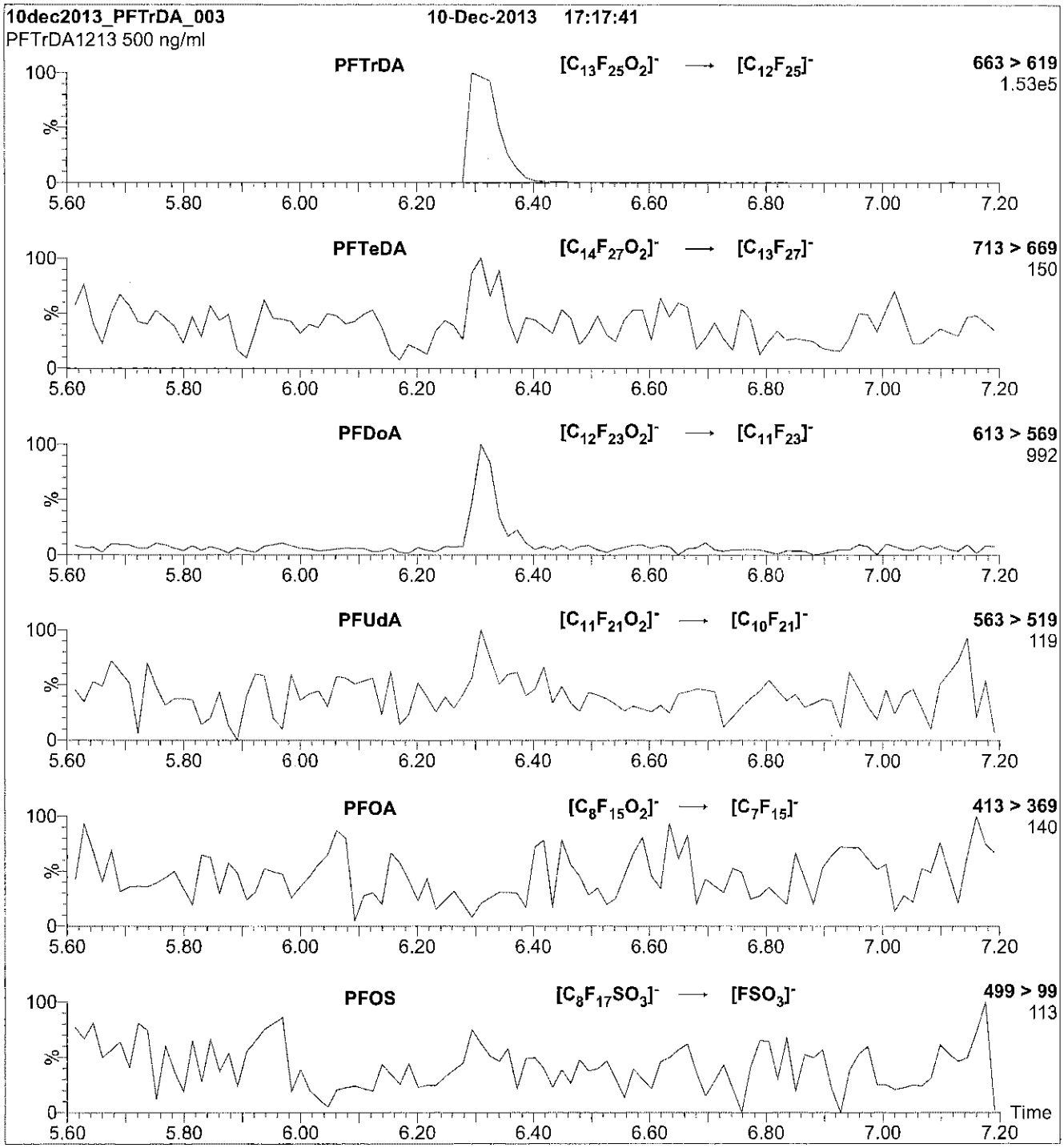
Flow: 300 µl/min

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

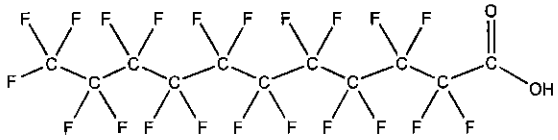
R 2/11/15 SFV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid
LOT NUMBER: PFUdA0613

STRUCTURE:
CAS #: 2058-94-8



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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/03/2013 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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CALA Testing Accreditation No. A1226

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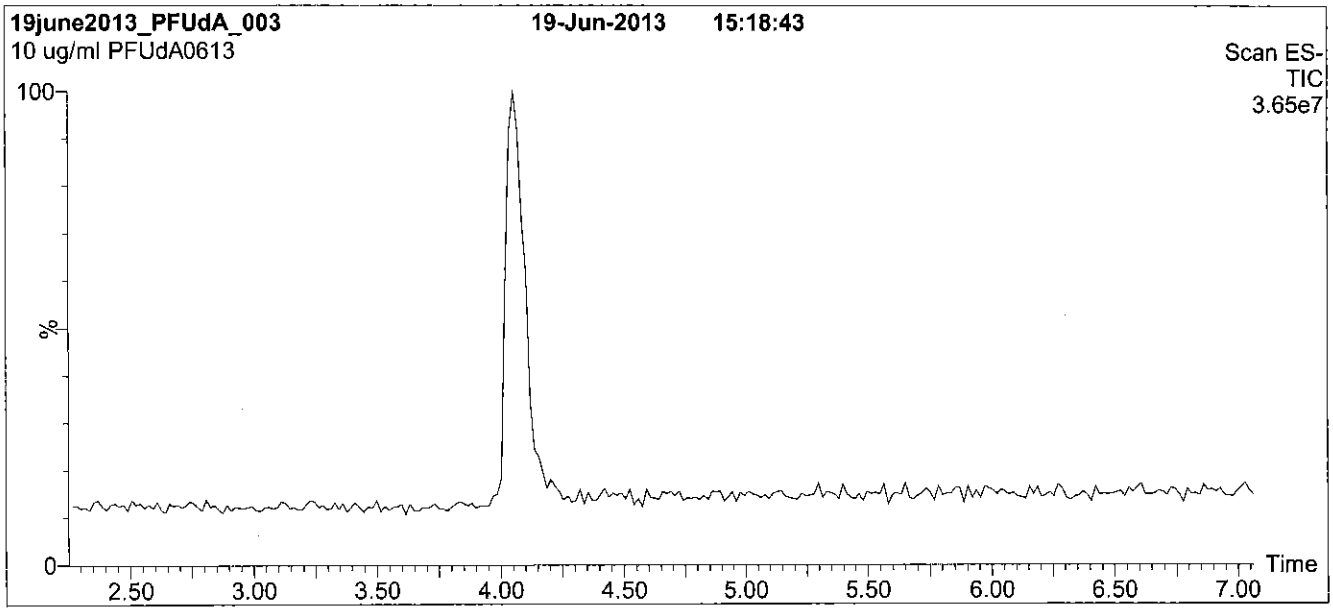
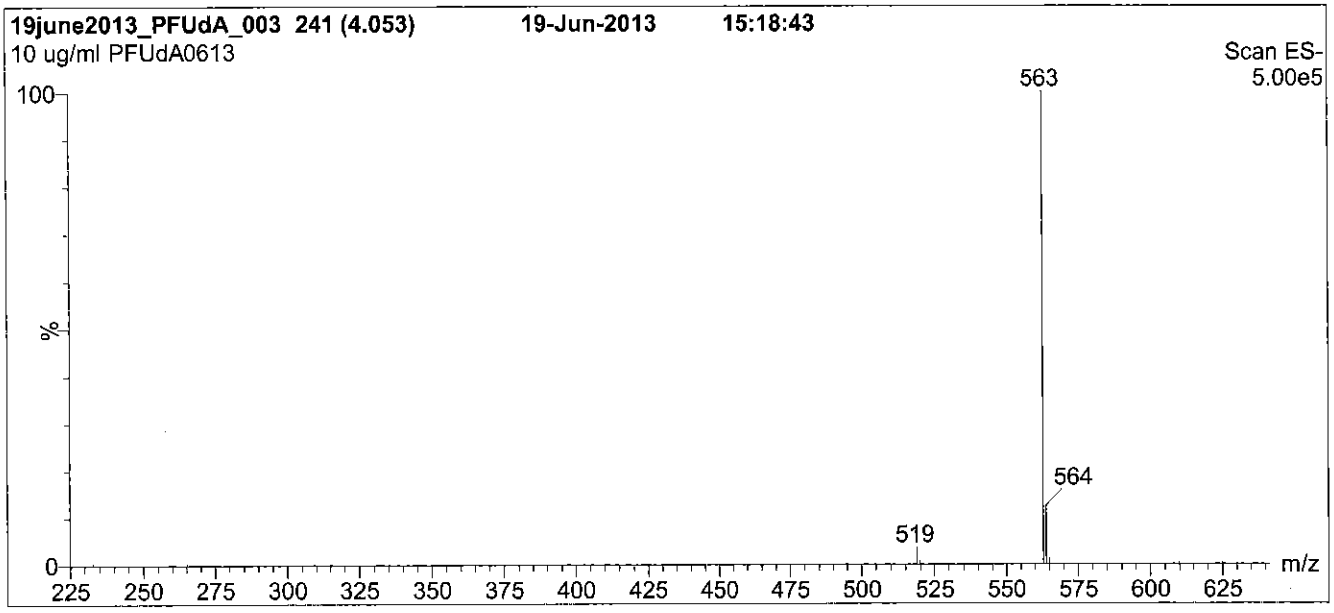
Figure 1: **PFUdA; LC/MS Data (TIC and Mass Spectrum)**





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

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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

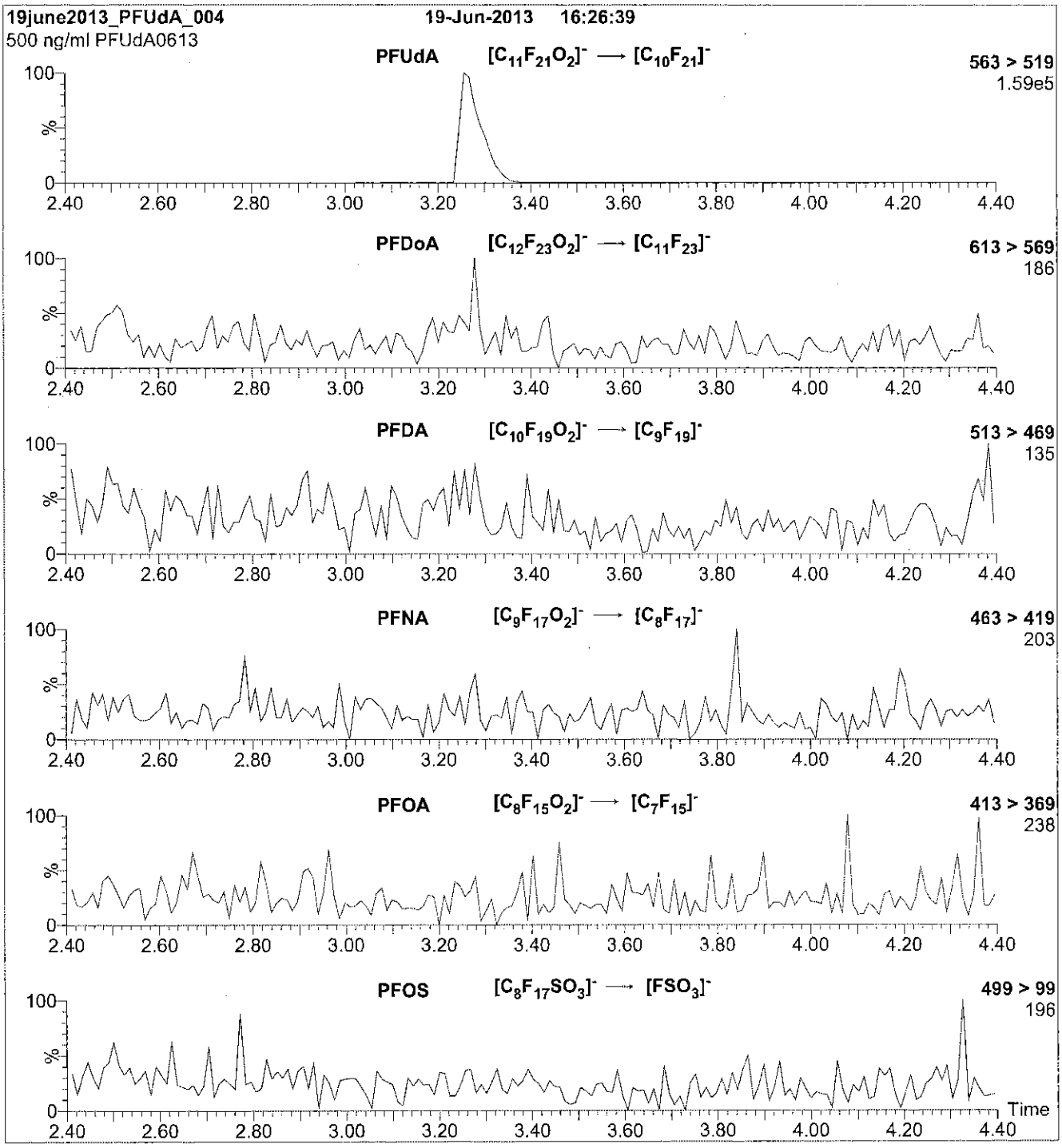
Flow: 300 µl/min

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

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS)
by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
BC2_19_16	320-17363-1	101	119	98	114	95	100
DW-57	320-17363-2	68	71	96	52	87	34
DW-57FB	320-17363-3	100	120	92	109	96	96
DW-48	320-17363-4	87	104	104	88	99	71
DW-48FB	320-17363-5	97	115	92	106	99	103
DW-59	320-17363-6	84	91	94	77	94	67
DW-59FB	320-17363-7	97	111	89	109	94	104
DW-88	320-17363-8	91	104	92	97	92	83
DW-88FB	320-17363-9	105	119	96	117	95	103
DW-10	320-17363-10	86	95	100	85	95	69
DW-10FB	320-17363-11	101	115	94	114	96	105
DW-63	320-17363-12	83	95	98	76	99	51
DW-63FB	320-17363-13	95	117	93	113	99	102
DW-87	320-17363-14	93	108	93	98	93	81
DW-87FB	320-17363-15	100	124	91	114	97	105
DW-23	320-17363-16	90	96	93	79	98	70
DW-23FB	320-17363-17	99	113	95	111	96	109
DUP-021916	320-17363-18	83	100	89	89	91	76
	MB 320-101153/1-A	100	120	104	110	101	104
	LCS 320-101153/2-A	95	110	102	102	91	102
	LCSD 320-101153/3-A	95	109	95	97	87	93

	QC LIMITS
PFHxA = 13C2 PFHxA	25-150
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 23FEB2016A6A_029.d

Lab ID: LCS 320-101153/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
13C2 PFHxA	100	94.6	95	25-150	
13C4 PFOA	100	102	102	25-150	
13C4 PFOS	95.6	87.4	91	25-150	
13C4-PFHpA	100	110	110	25-150	
13C5 PFNA	100	102	102	25-150	
18O2 PFHxS	94.6	96.5	102	25-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	33.4	94	50-150	
Perfluoroheptanoic acid (PFHpA)	40.0	34.2	86	60-140	
Perfluorohexanesulfonic acid (PFHxS)	37.8	32.7	86	60-140	
Perfluorononanoic acid (PFNA)	40.0	37.7	94	60-140	
Perfluorooctanesulfonic acid (PFOS)	38.2	41.7	109	60-140	
Perfluorooctanoic acid (PFOA)	40.0	38.7	97	60-140	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 23FEB2016A6A_030.d

Lab ID: LCSD 320-101153/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C2 PFHxA	100	94.8	95			25-150	
13C4 PFOA	100	96.9	97			25-150	
13C4 PFOS	95.6	82.9	87			25-150	
13C4-PFHpA	100	109	109			25-150	
13C5 PFNA	100	93.3	93			25-150	
18O2 PFHxS	94.6	89.4	95			25-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	33.2	94	1	30	50-150	
Perfluoroheptanoic acid (PFHpA)	40.0	36.9	92	8	30	60-140	
Perfluorohexanesulfonic acid (PFHxS)	37.8	32.3	85	1	30	60-140	
Perfluorononanoic acid (PFNA)	40.0	43.6	109	14	30	60-140	
Perfluorooctanesulfonic acid (PFOS)	38.2	42.9	112	3	30	60-140	
Perfluorooctanoic acid (PFOA)	40.0	40.3	101	4	30	60-140	

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.: 320-17363-1

SDG No.:

Lab File ID: 23FEB2016A6A_028.d Lab Sample ID: MB 320-101153/1-A

Matrix: Water Date Extracted: 02/22/2016 13:35

Instrument ID: A6 Date Analyzed: 02/23/2016 22:54

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-101153/2-A	23FEB2016A6_029.d	02/23/2016 23:16
	LCSD 320-101153/3-A	23FEB2016A6_030.d	02/23/2016 23:37
BC2_19_16	320-17363-1	23FEB2016A6_031.d	02/23/2016 23:58
DW-57	320-17363-2	23FEB2016A6_032.d	02/24/2016 00:19
DW-57FB	320-17363-3	23FEB2016A6_033.d	02/24/2016 00:41
DW-48	320-17363-4	23FEB2016A6_034.d	02/24/2016 01:02
DW-48FB	320-17363-5	23FEB2016A6_036.d	02/24/2016 01:44
DW-59	320-17363-6	23FEB2016A6_037.d	02/24/2016 02:05
DW-59FB	320-17363-7	23FEB2016A6_038.d	02/24/2016 02:27
DW-88	320-17363-8	23FEB2016A6_039.d	02/24/2016 02:48
DW-88FB	320-17363-9	23FEB2016A6_040.d	02/24/2016 03:09
DW-10	320-17363-10	23FEB2016A6_041.d	02/24/2016 03:30
DW-10FB	320-17363-11	23FEB2016A6_042.d	02/24/2016 03:52
DW-63	320-17363-12	23FEB2016A6_043.d	02/24/2016 04:13
DW-63FB	320-17363-13	23FEB2016A6_044.d	02/24/2016 04:34
DW-87	320-17363-14	23FEB2016A6_045.d	02/24/2016 04:55
DW-87FB	320-17363-15	23FEB2016A6_047.d	02/24/2016 05:38
DW-23	320-17363-16	23FEB2016A6_048.d	02/24/2016 05:59
DW-23FB	320-17363-17	23FEB2016A6_049.d	02/24/2016 06:20
DUP-021916	320-17363-18	23FEB2016A6_050.d	02/24/2016 06:41

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: BC2_19_16 Lab Sample ID: 320-17363-1

Matrix: Water Lab File ID: 23FEB2016A6A_031.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 00:00

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 552.8(mL) Date Analyzed: 02/23/2016 23:58

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.79
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		25-150
STL00990	13C4 PFOA	114		25-150
STL00991	13C4 PFOS	95		25-150
STL01892	13C4-PFHpA	119		25-150
STL00995	13C5 PFNA	100		25-150
STL00994	18O2 PFHxS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_031.d
Lims ID: 320-17363-B-1-A Lab Sample ID: 320-17363-1
Client ID: BC2_19_16
Sample Type: Client
Inject. Date: 23-Feb-2016 23:58:38 ALS Bottle#: 25 Worklist Smp#: 30
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-B-1-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:00:18 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 24-Feb-2016 08:24:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	8.050	-0.065		1683735	50.3		101	25712	
D 8 13C4-PFHpA										
367.0 > 322.0	9.211	9.283	-0.072		2105522	59.6		119	166303	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.199	9.288	-0.089	1.000	1909	0.3479			95.8	
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.319	-0.079		680746	46.5		98.3	53897	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.234	9.324	-0.090	1.000	544	0.4202				
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		2169887	57.2		114	321716	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.342	10.410	-0.068	1.000	5851	0.1392			12.9	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		802164	45.5		95.1	23693	
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1615080	49.8		99.6	116465	

Report Date: 24-Feb-2016 10:07:04 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_031.d

Injection Date: 23-Feb-2016 23:58:38 Instrument ID: A6

Lims ID: 320-17363-B-1-A Lab Sample ID: 320-17363-1

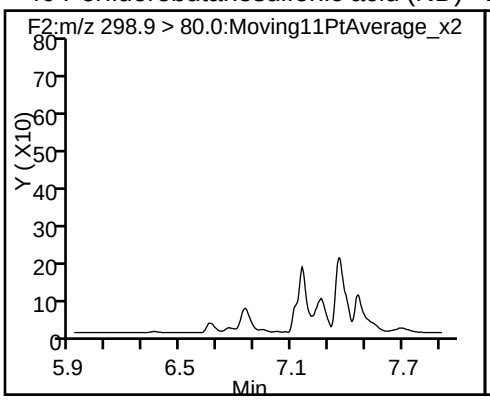
Client ID: BC2_19_16

Operator ID: JRB ALS Bottle#: 25 Worklist Smp#: 30

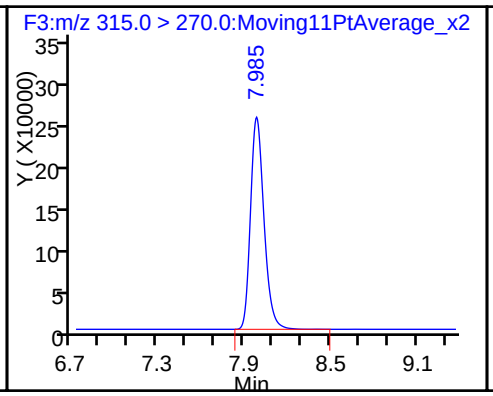
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

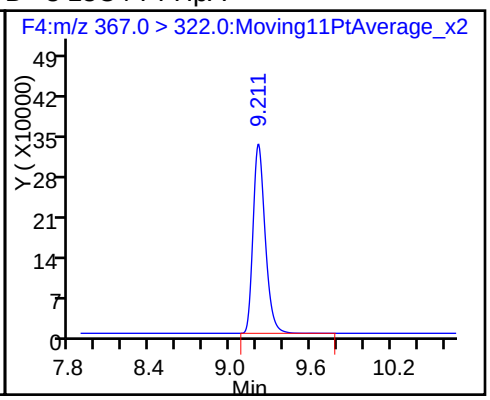
40 Perfluorobutanesulfonic acid (ND)



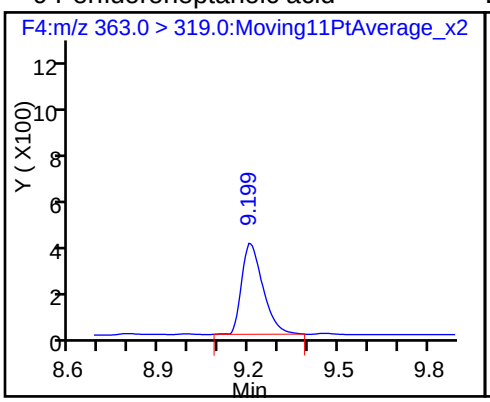
D 6 13C2 PFHxA



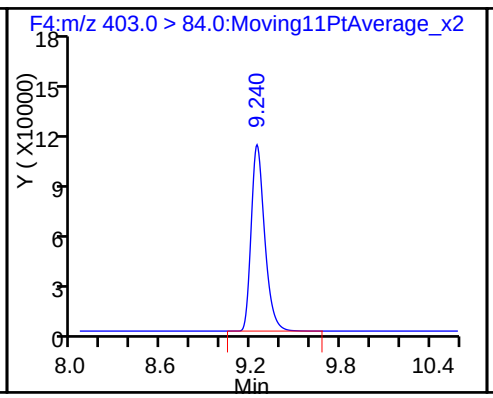
D 8 13C4-PFHpA



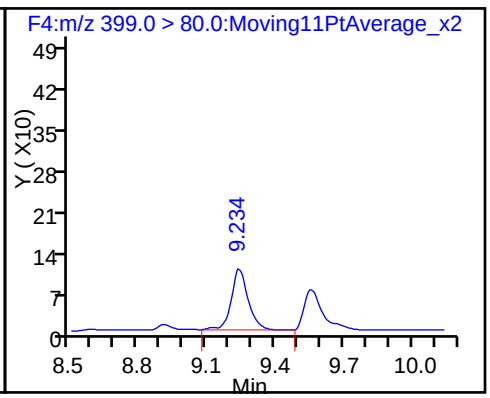
9 Perfluoroheptanoic acid



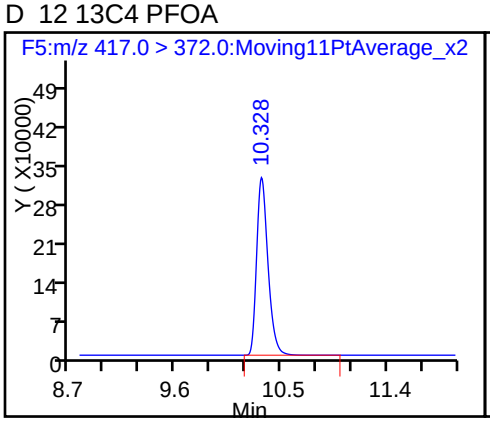
D 11 18O2 PFHxS



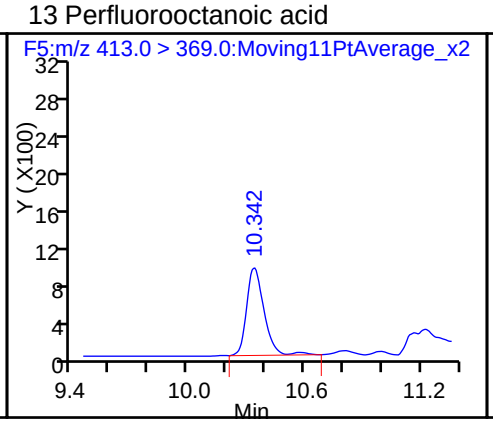
41 Perfluorohexanesulfonic acid



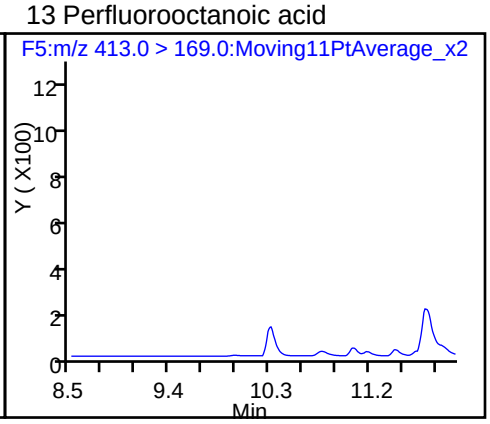
D 12 13C4 PFOA



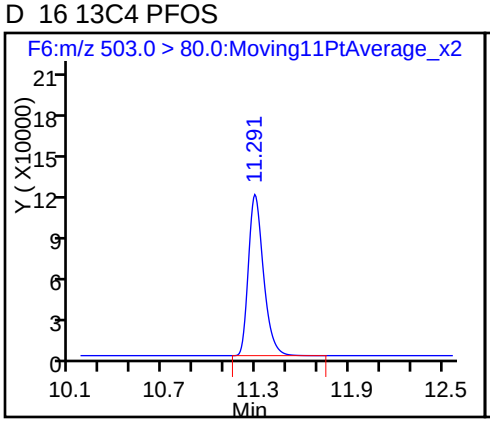
13 Perfluorooctanoic acid



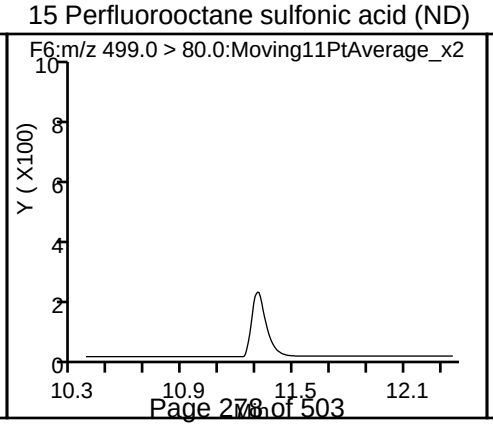
13 Perfluorooctanoic acid



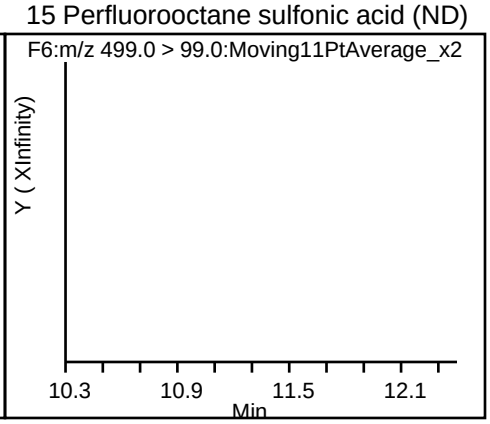
D 16 13C4 PFOS



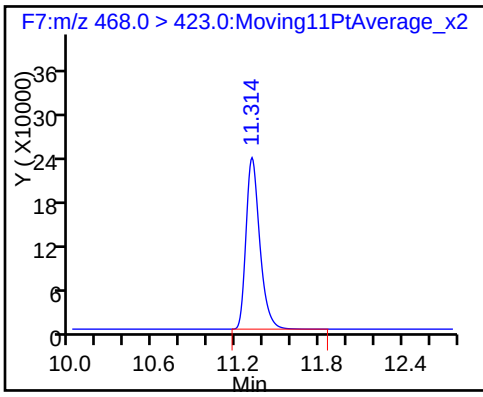
15 Perfluorooctane sulfonic acid (ND)



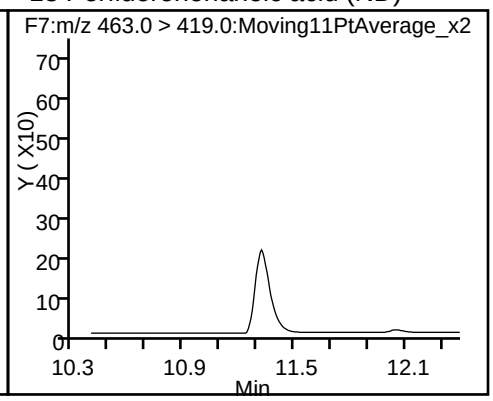
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-57 | Lab Sample ID: 320-17363-2

Matrix: Water | Lab File ID: 23FEB2016A6A_032.d

Analysis Method: WS-LC-0025 | Date Collected: 02/19/2016 14:41

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 523.1(mL) | Date Analyzed: 02/24/2016 00:19

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	J	2.4	1.9	0.88
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.5		2.4	1.9	0.77
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	41	M	2.4	1.9	0.83
375-95-1	Perfluorononanoic acid (PFNA)	3.4		2.4	1.9	0.63
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	200	M	3.8	2.9	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	28		2.4	1.9	0.71

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	68		25-150
STL00990	13C4 PFOA	52		25-150
STL00991	13C4 PFOS	87		25-150
STL01892	13C4-PFHpA	71		25-150
STL00995	13C5 PFNA	34		25-150
STL00994	18O2 PFHxS	96		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_032.d
Lims ID: 320-17363-A-2-A Lab Sample ID: 320-17363-2
Client ID: DW-57
Sample Type: Client
Inject. Date: 24-Feb-2016 00:19:50 ALS Bottle#: 26 Worklist Smp#: 31
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-2-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:00:18 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 09:54:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.863	6.918	-0.055	1.000	8523	0.9339				
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	8.050	-0.070		1134010	33.9		67.8	16887	
D 8 13C4-PFHpA										
367.0 > 322.0	9.200	9.283	-0.083		1254153	35.5		71.0	50868	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.205	9.288	-0.083	1.000	55632	2.38			140	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.319	-0.084		663424	45.3		95.8	35184	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.240	9.324	-0.084	1.000	228164	21.3				M
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		983232	25.9		51.8	73792	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.328	10.410	-0.082	1.000	276654	14.5			151	
413.0 > 169.0	10.328	10.410	-0.082	1.000	68853		4.02(0.00-0.00)		104	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		737626	41.8		87.5	5619	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.291	11.371	-0.080	1.000	1607675	103.4			6.9	M
499.0 > 99.0	11.291	11.371	-0.080	1.000	602554		2.67(0.00-0.00)		38.1	M
D 17 13C5 PFNA										
468.0 > 423.0	11.306	11.390	-0.084		545785	16.8		33.7	26281	
18 Perfluorononanoic acid										
463.0 > 419.0	11.321	11.393	-0.072	1.000	12860	1.76			114	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 24-Feb-2016 10:07:11 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_032.d

Injection Date: 24-Feb-2016 00:19:50 Instrument ID: A6

Lims ID: 320-17363-A-2-A Lab Sample ID: 320-17363-2

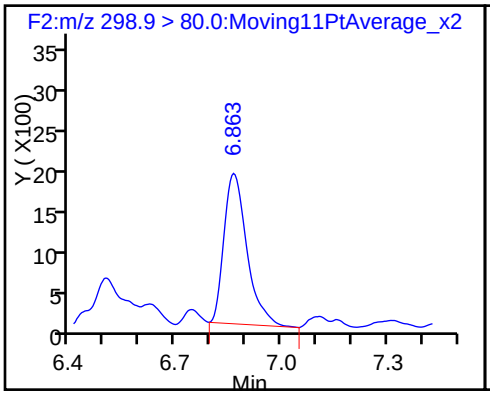
Client ID: DW-57

Operator ID: JRB ALS Bottle#: 26 Worklist Smp#: 31

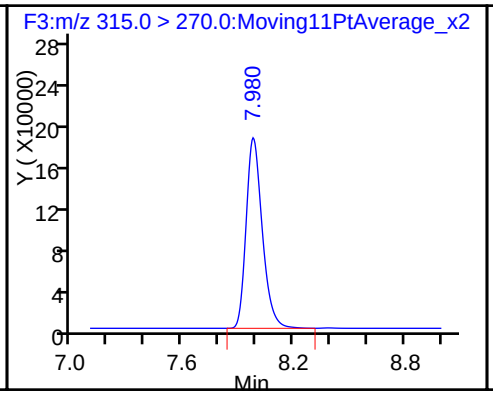
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

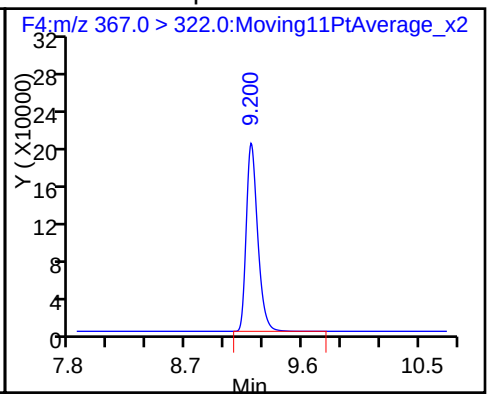
40 Perfluorobutanesulfonic acid



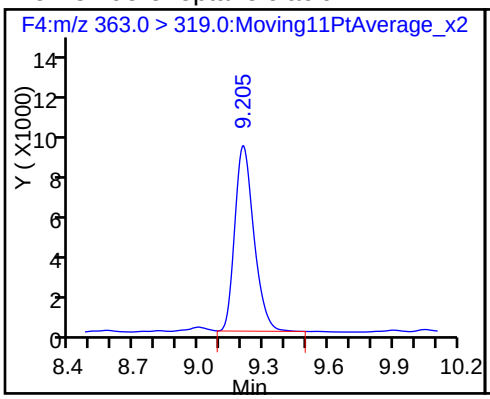
D 6 13C2 PFHxA



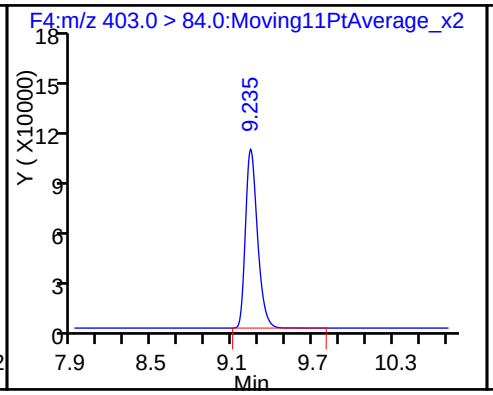
D 8 13C4-PFHpA



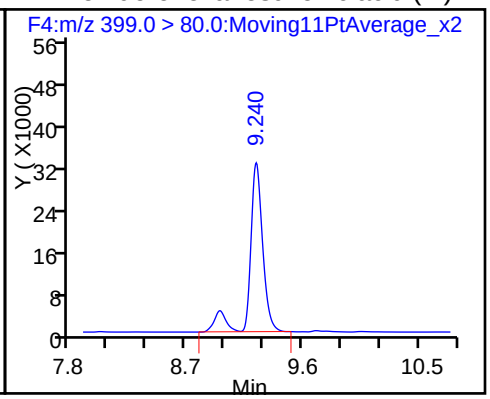
9 Perfluoroheptanoic acid



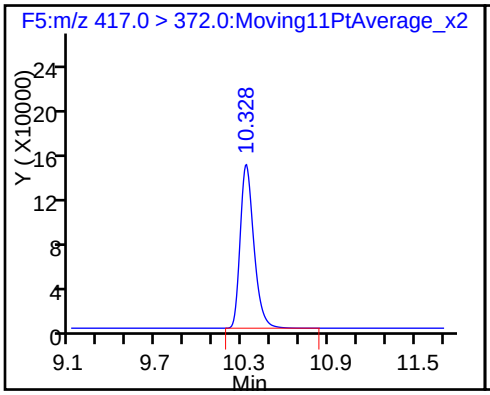
D 11 18O2 PFHxS



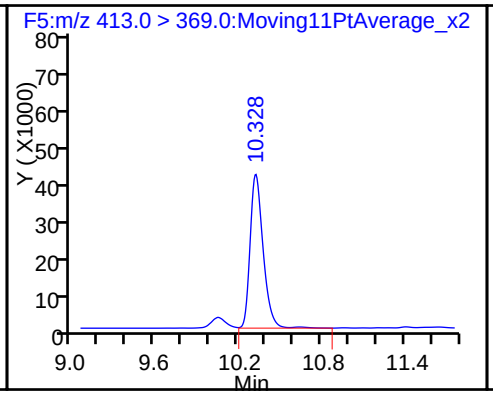
41 Perfluorohexanesulfonic acid (M)



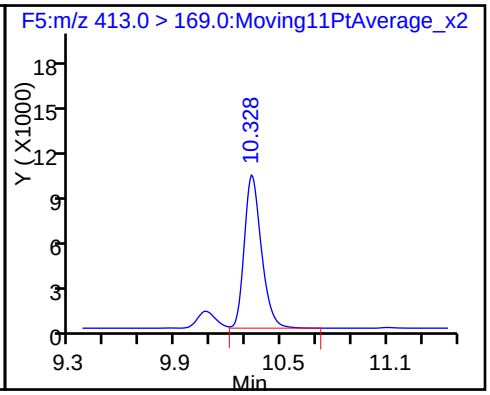
D 12 13C4 PFOA



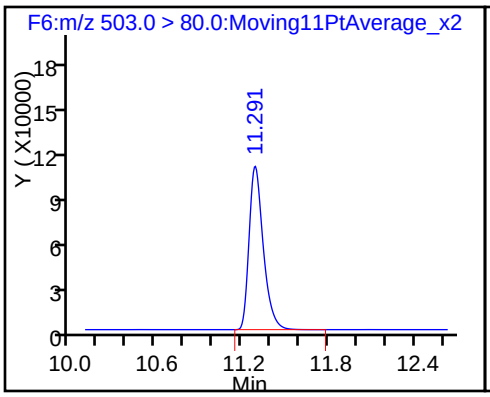
13 Perfluorooctanoic acid



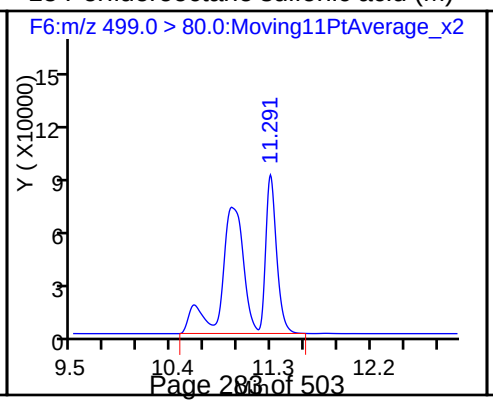
13 Perfluorooctanoic acid



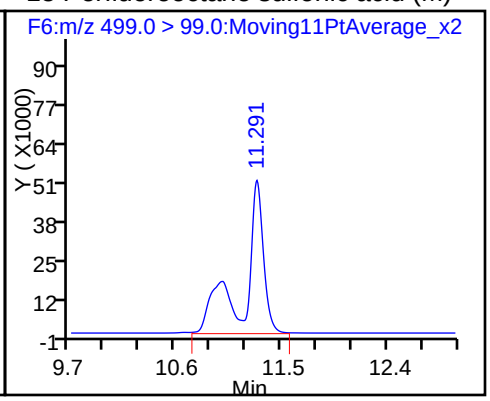
D 16 13C4 PFOS



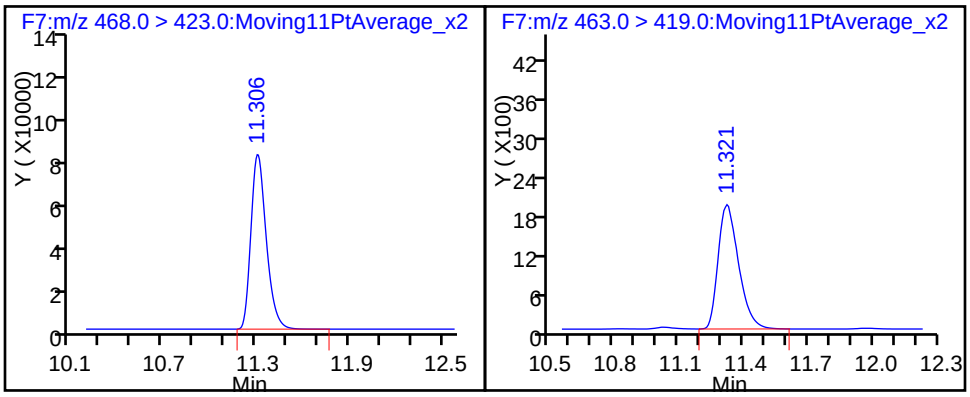
15 Perfluorooctane sulfonic acid (M)



15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid

Manual Integration/User Assign Peak Report

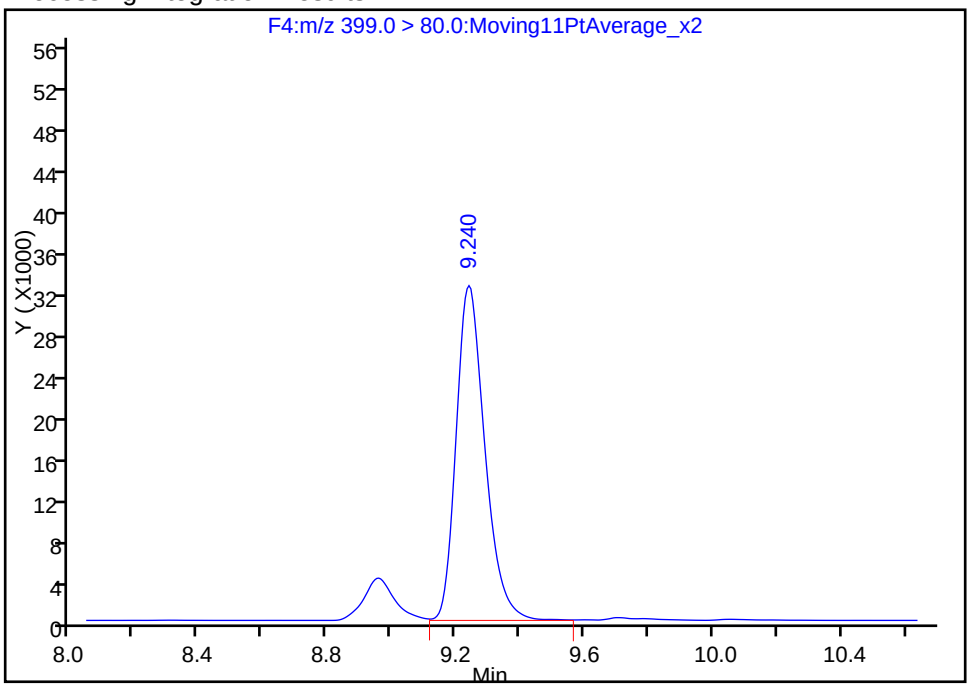
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_032.d				
Injection Date:	24-Feb-2016 00:19:50	Instrument ID:	A6		
Lims ID:	320-17363-A-2-A	Lab Sample ID:	320-17363-2		
Client ID:	DW-57				
Operator ID:	JRB	ALS Bottle#:	26	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

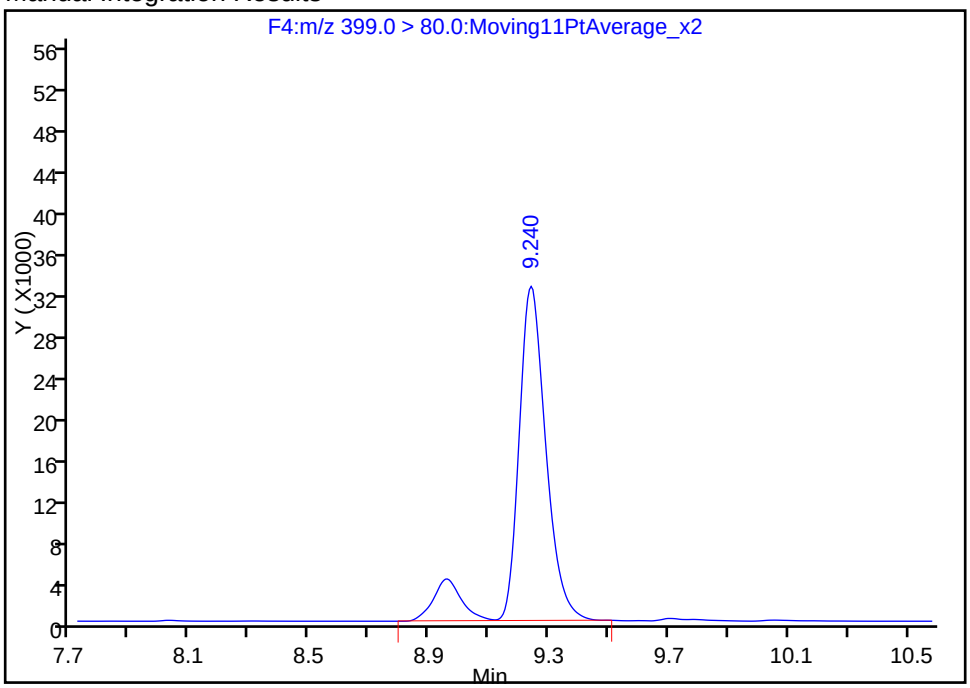
Processing Integration Results

RT: 9.24
Area: 203755
Amount: 19.034259
Amount Units: ng/ml



Manual Integration Results

RT: 9.24
Area: 228164
Amount: 21.269969
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 09:54:47
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

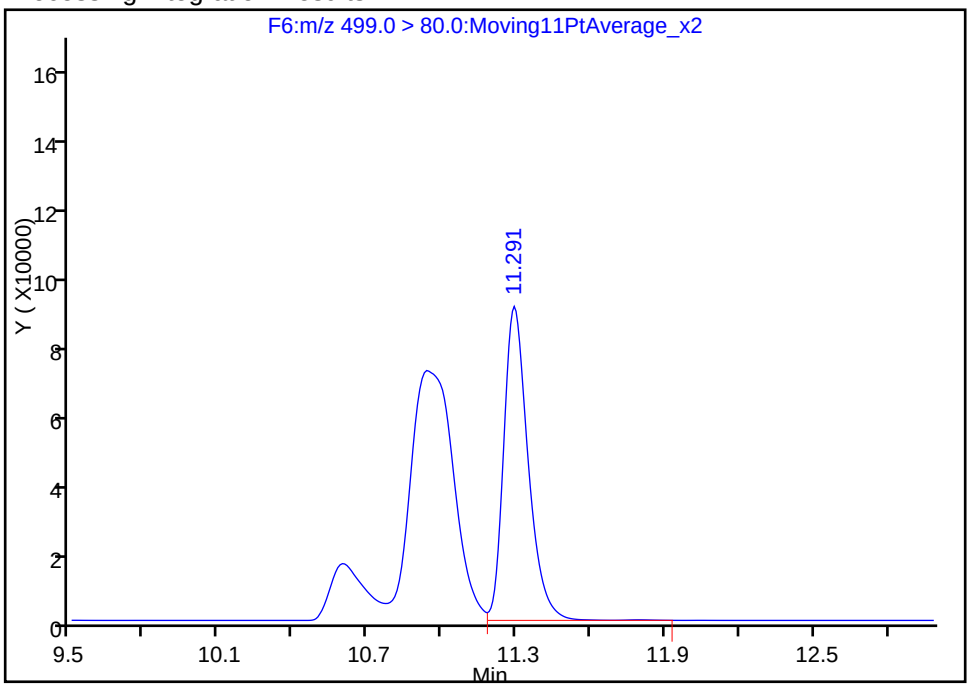
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_032.d				
Injection Date:	24-Feb-2016 00:19:50	Instrument ID:	A6		
Lims ID:	320-17363-A-2-A	Lab Sample ID:	320-17363-2		
Client ID:	DW-57				
Operator ID:	JRB	ALS Bottle#:	26	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

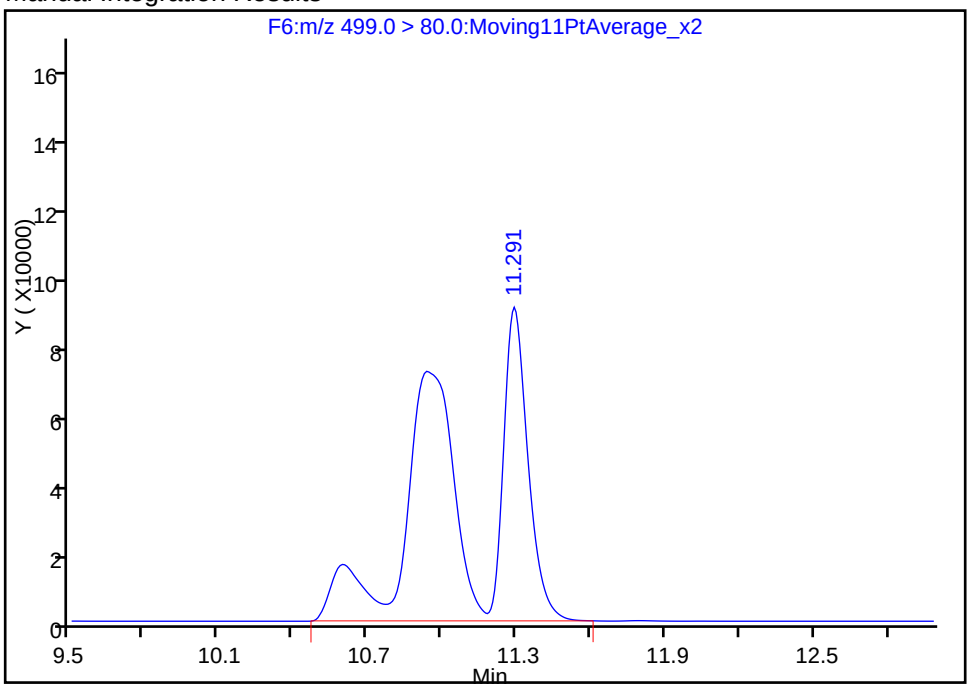
Processing Integration Results

RT: 11.29
Area: 608477
Amount: 39.389216
Amount Units: ng/ml



Manual Integration Results

RT: 11.29
Area: 1607675
Amount: 103.3732
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 09:54:47
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

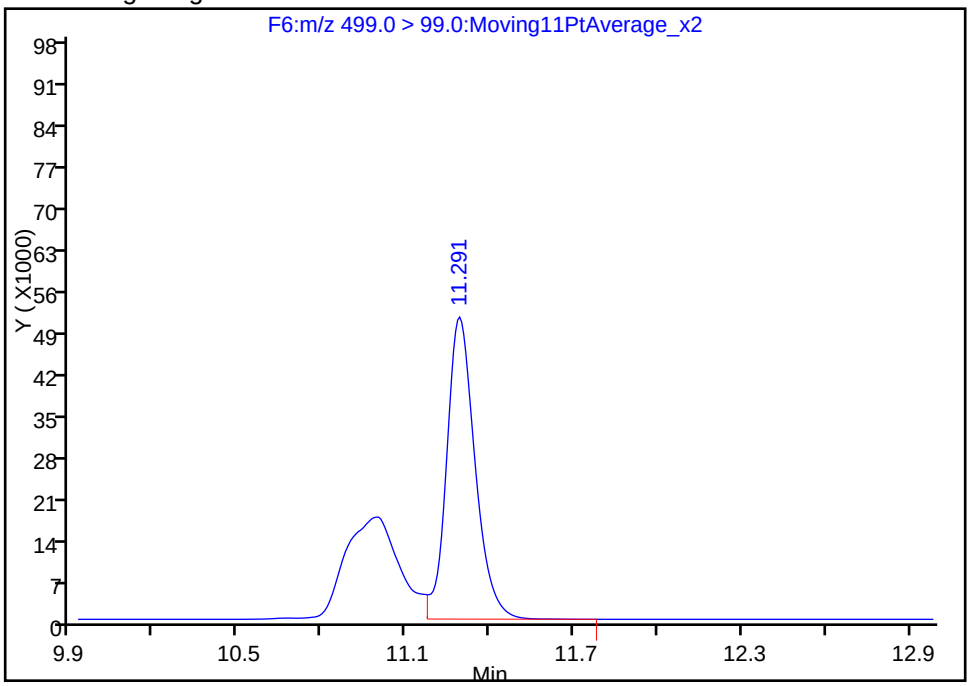
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_032.d				
Injection Date:	24-Feb-2016 00:19:50	Instrument ID:	A6		
Lims ID:	320-17363-A-2-A	Lab Sample ID:	320-17363-2		
Client ID:	DW-57				
Operator ID:	JRB	ALS Bottle#:	26	Worklist Smp#:	31
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

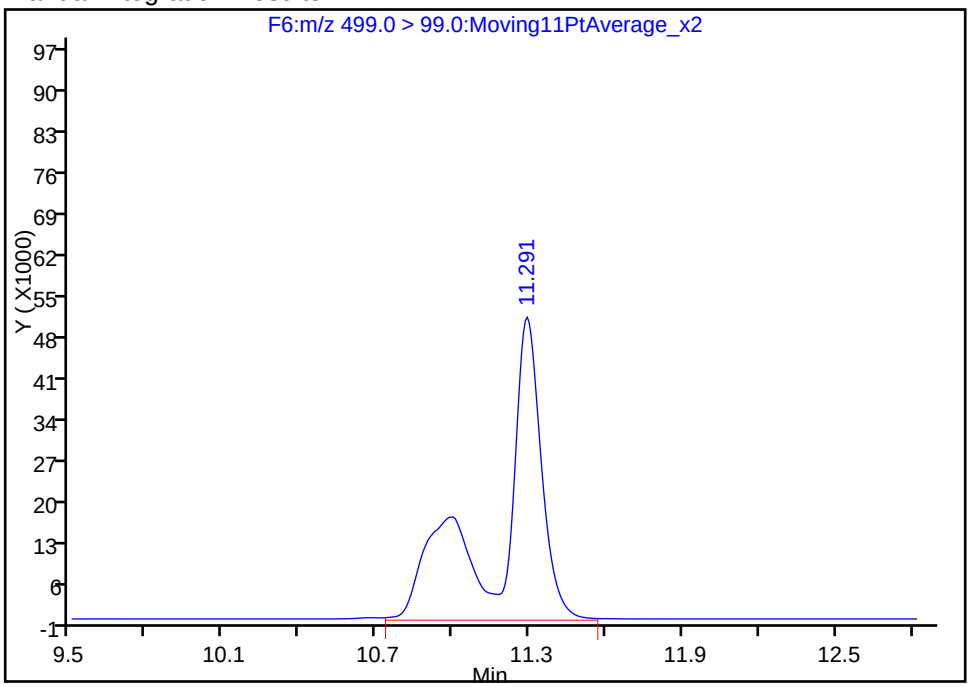
Processing Integration Results

RT: 11.29
Area: 360809
Amount: 39.389216
Amount Units: ng/ml



Manual Integration Results

RT: 11.29
Area: 602554
Amount: 103.3732
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 09:54:47
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-57FB Lab Sample ID: 320-17363-3

Matrix: Water Lab File ID: 23FEB2016A6A_033.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 14:27

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 556(mL) Date Analyzed: 02/24/2016 00:41

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.83
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.2	1.8	0.78
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.7	J M	3.6	2.7	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		25-150
STL00990	13C4 PFOA	109		25-150
STL00991	13C4 PFOS	96		25-150
STL01892	13C4-PFHpA	120		25-150
STL00995	13C5 PFNA	96		25-150
STL00994	18O2 PFHxS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_033.d
Lims ID: 320-17363-A-3-A Lab Sample ID: 320-17363-3
Client ID: DW-57FB
Sample Type: Client
Inject. Date: 24-Feb-2016 00:41:03 ALS Bottle#: 27 Worklist Smp#: 32
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-3-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:00:18 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 09:59:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	8.050	-0.065		1676484	50.1		100	135993	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.283	-0.078		2116780	59.9		120	48638	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.194	9.288	-0.094	1.000	1662	0.3422			33.4	
D 11 18O2 PFHxS										
403.0 > 84.0	9.241	9.319	-0.078		634661	43.3		91.6	51485	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.241	9.324	-0.083	1.000	2715	0.6315				
D 12 13C4 PFOA										
417.0 > 372.0	10.329	10.407	-0.078		2070905	54.6		109	10639	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.321	10.410	-0.089	1.000	7878	0.1964			30.2	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		808349	45.8		95.8	59472	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.284	11.371	-0.087	1.000	9325	0.9701			822	M
499.0 > 99.0	11.284	11.371	-0.087	1.000	3205		2.91(0.00-0.00)		136	
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1554935	48.0		95.9	5869	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 24-Feb-2016 10:07:15 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_033.d

Injection Date: 24-Feb-2016 00:41:03 Instrument ID: A6

Lims ID: 320-17363-A-3-A Lab Sample ID: 320-17363-3

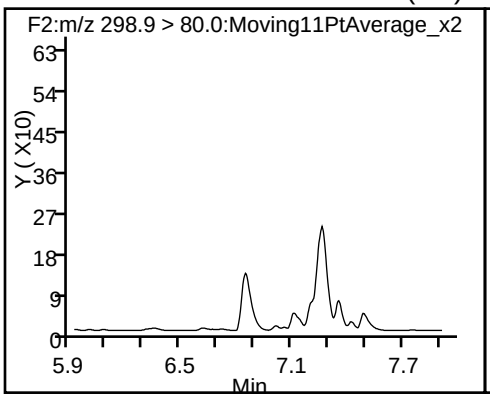
Client ID: DW-57FB

Operator ID: JRB ALS Bottle#: 27 Worklist Smp#: 32

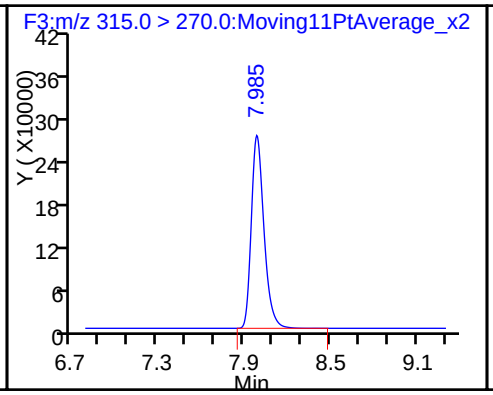
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

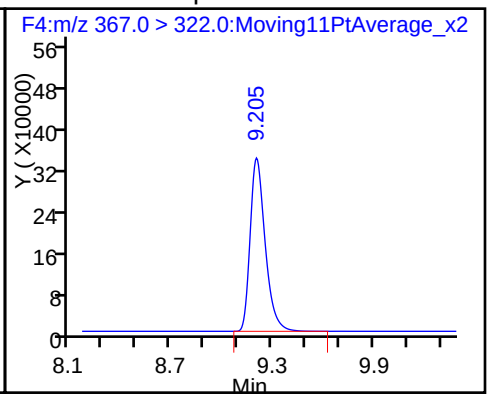
40 Perfluorobutanesulfonic acid (ND)



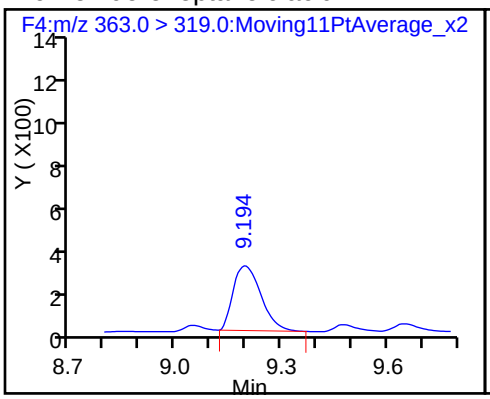
D 6 13C2 PFHxA



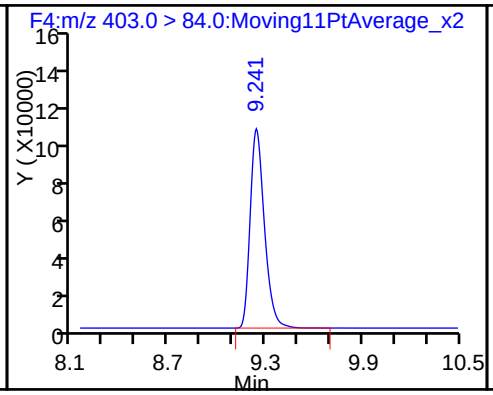
D 8 13C4-PFHpA



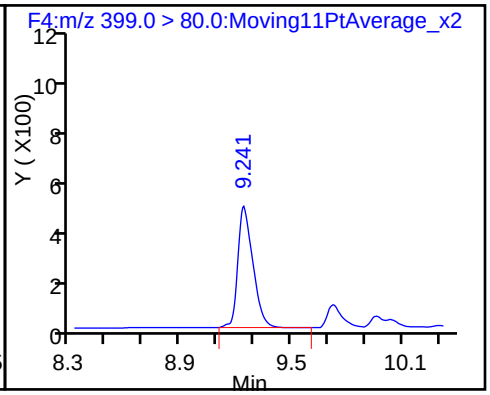
9 Perfluoroheptanoic acid



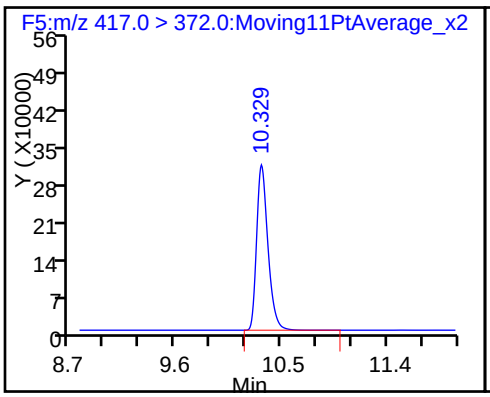
D 11 18O2 PFHxS



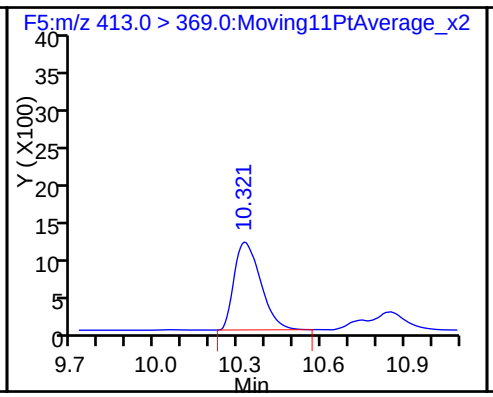
41 Perfluorohexanesulfonic acid



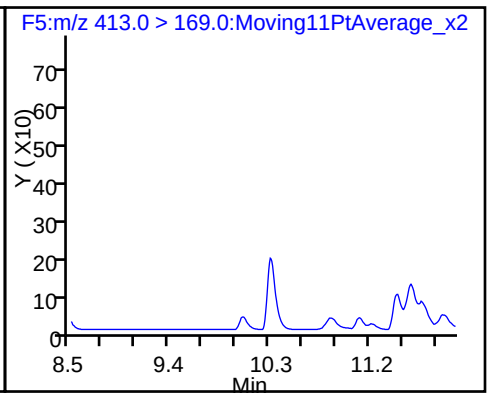
D 12 13C4 PFOA



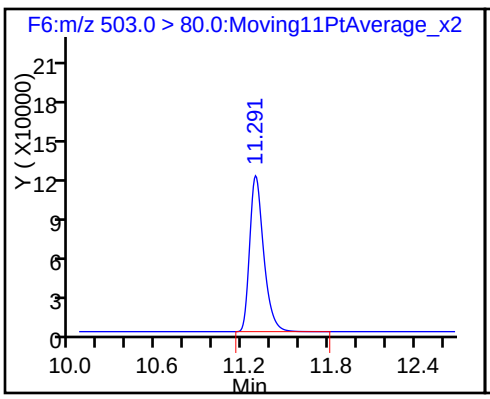
13 Perfluorooctanoic acid



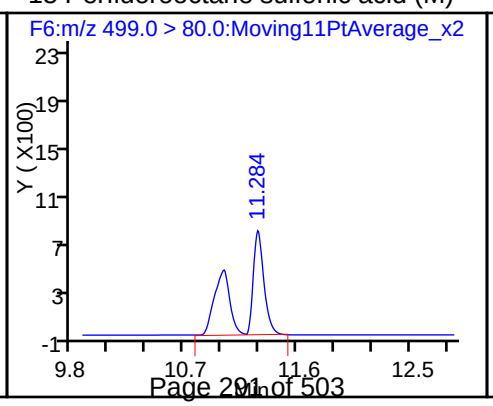
13 Perfluorooctanoic acid



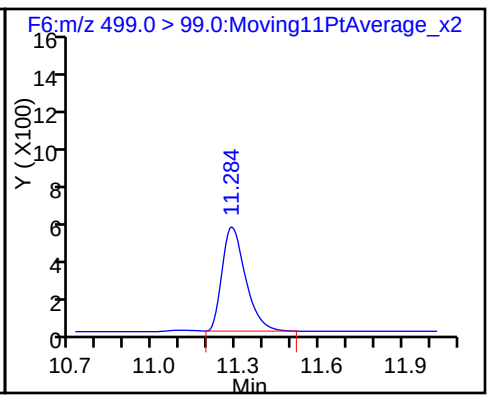
D 16 13C4 PFOS



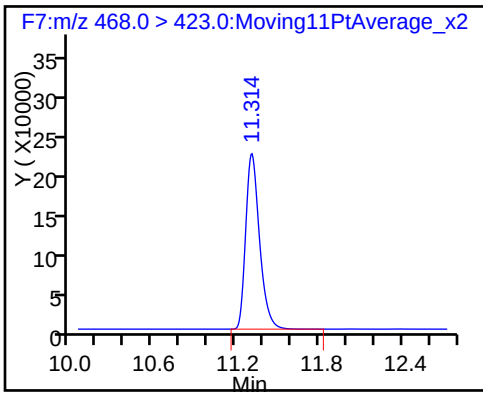
15 Perfluorooctane sulfonic acid (M)



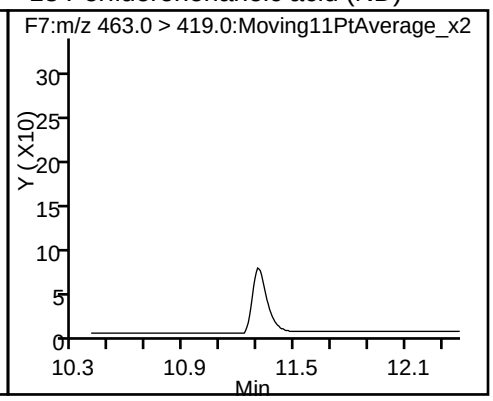
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



Manual Integration/User Assign Peak Report

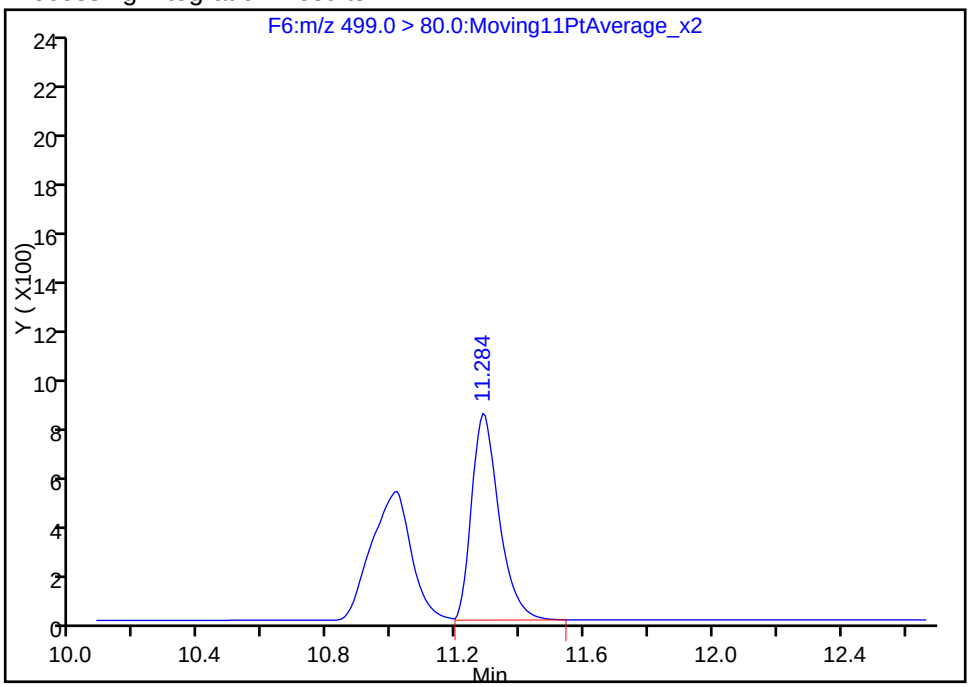
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_033.d				
Injection Date:	24-Feb-2016 00:41:03	Instrument ID:	A6		
Lims ID:	320-17363-A-3-A	Lab Sample ID:	320-17363-3		
Client ID:	DW-57FB				
Operator ID:	JRB	ALS Bottle#:	27	Worklist Smp#:	32
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

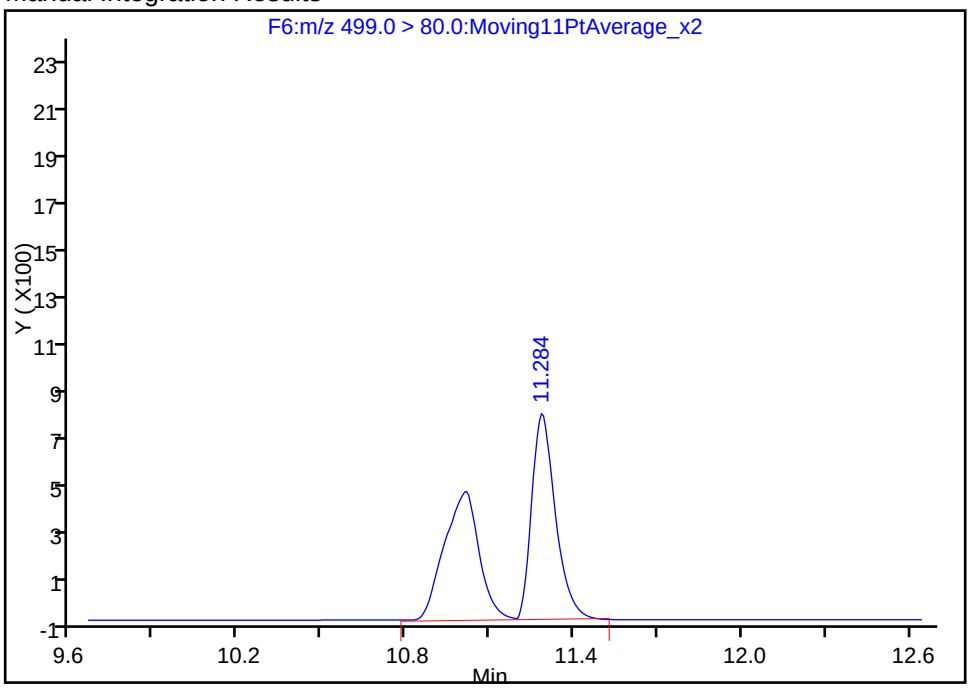
Processing Integration Results

RT: 11.28
Area: 4904
Amount: 0.711733
Amount Units: ng/ml



Manual Integration Results

RT: 11.28
Area: 9325
Amount: 0.970065
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 09:59:27
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-48 Lab Sample ID: 320-17363-4

Matrix: Water Lab File ID: 23FEB2016A6A_034.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 14:11

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 570.4(mL) Date Analyzed: 02/24/2016 01:02

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.80
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.83	J	2.2	1.8	0.76
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		25-150
STL00990	13C4 PFOA	88		25-150
STL00991	13C4 PFOS	99		25-150
STL01892	13C4-PFHpA	104		25-150
STL00995	13C5 PFNA	71		25-150
STL00994	18O2 PFHxS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_034.d
Lims ID: 320-17363-A-4-A Lab Sample ID: 320-17363-4
Client ID: DW-48
Sample Type: Client
Inject. Date: 24-Feb-2016 01:02:16 ALS Bottle#: 28 Worklist Smp#: 33
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-4-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:00:18 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 09:59:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.974	8.050	-0.076		1451634	43.4		86.8	16810	
D 8 13C4-PFHpA										
367.0 > 322.0	9.199	9.283	-0.084		1830308	51.8		104	49233	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.275	9.288	-0.013	1.000	1186	0.3358			9.0	
D 11 18O2 PFHxS										
403.0 > 84.0	9.234	9.319	-0.085		717580	49.0		104	28850	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.240	9.324	-0.084	1.000	1189	0.4723				
D 12 13C4 PFOA										
417.0 > 372.0	10.321	10.407	-0.086		1664719	43.9		87.7	247968	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.314	10.410	-0.096	1.000	2856	0.0886			4.5	
D 16 13C4 PFOS										
503.0 > 80.0	11.283	11.369	-0.086		837699	47.5		99.3	61700	
D 17 13C5 PFNA										
468.0 > 423.0	11.299	11.390	-0.091		1144513	35.3		70.6	0.0	

Report Date: 24-Feb-2016 10:07:16 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_034.d

Injection Date: 24-Feb-2016 01:02:16 Instrument ID: A6

Lims ID: 320-17363-A-4-A Lab Sample ID: 320-17363-4

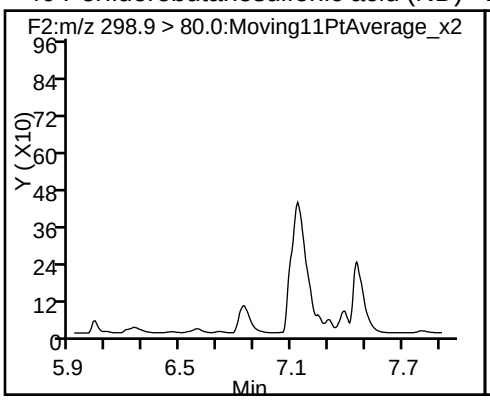
Client ID: DW-48

Operator ID: JRB ALS Bottle#: 28 Worklist Smp#: 33

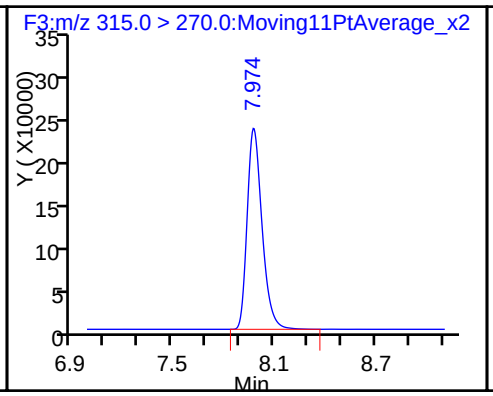
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

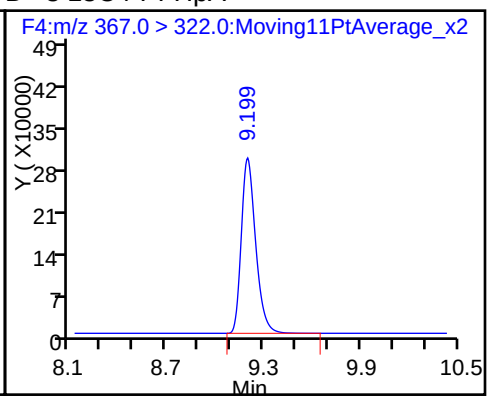
40 Perfluorobutanesulfonic acid (ND)



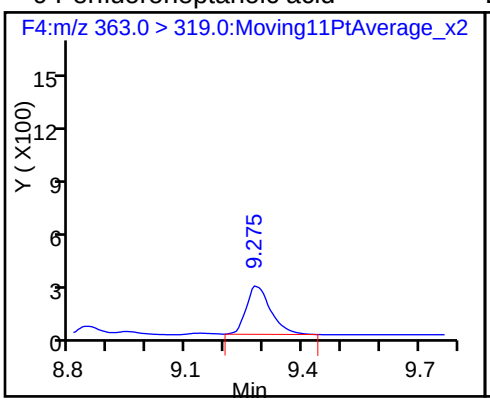
D 6 13C2 PFHxA



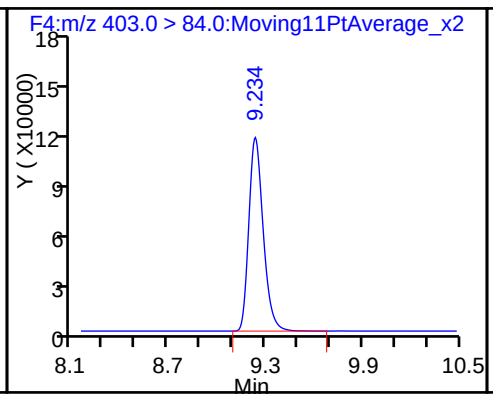
D 8 13C4-PFHpA



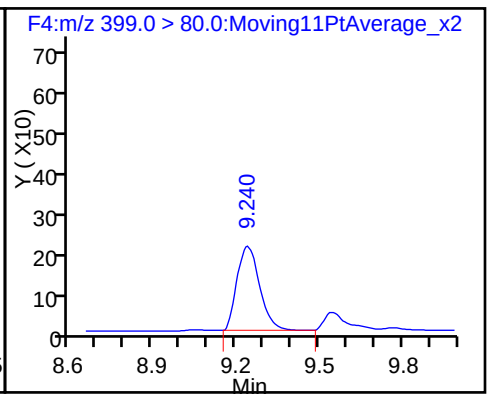
9 Perfluoroheptanoic acid



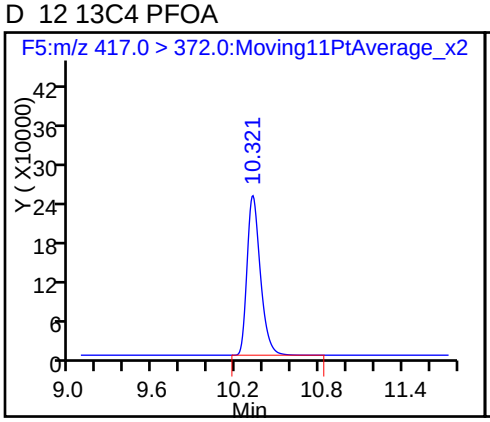
D 11 18O2 PFHxS



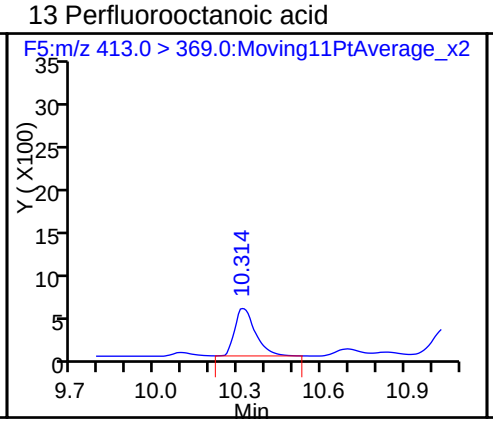
41 Perfluorohexanesulfonic acid



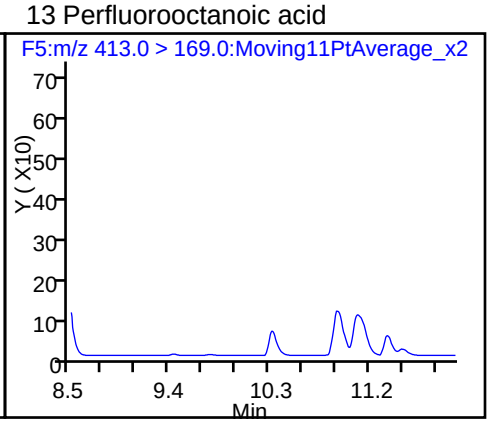
D 12 13C4 PFOA



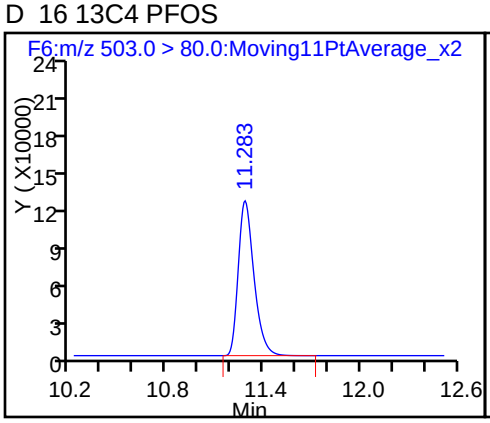
13 Perfluorooctanoic acid



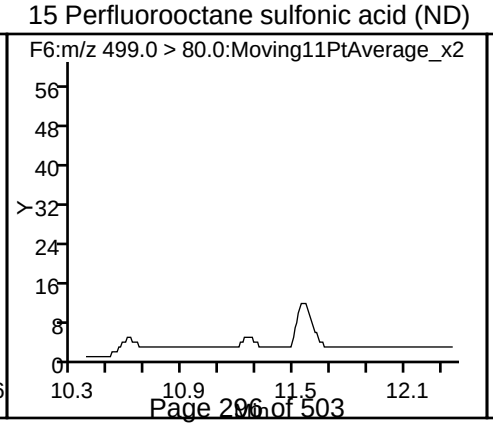
13 Perfluorooctanoic acid



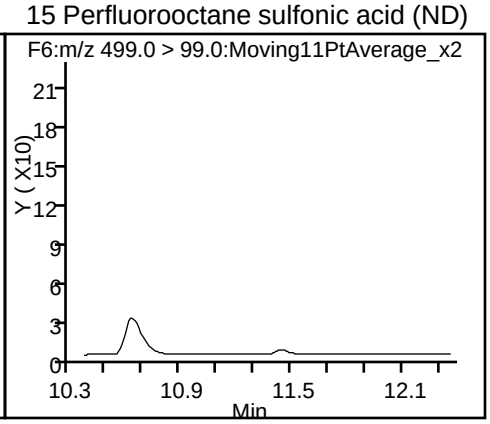
D 16 13C4 PFOS



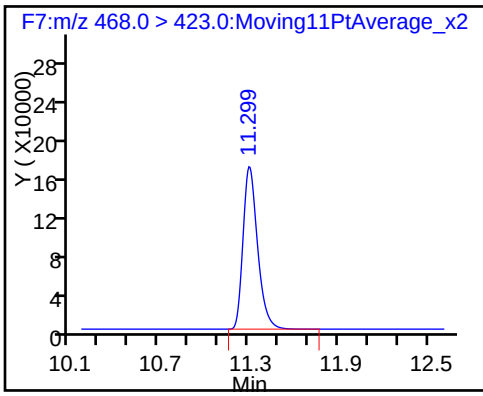
15 Perfluorooctane sulfonic acid (ND)



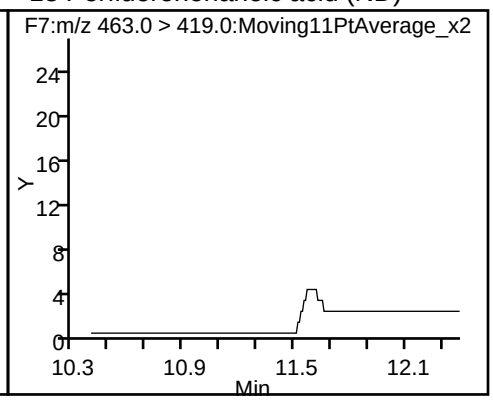
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-48FB | Lab Sample ID: 320-17363-5

Matrix: Water | Lab File ID: 23FEB2016A6A_036.d

Analysis Method: WS-LC-0025 | Date Collected: 02/19/2016 13:52

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 568.9(mL) | Date Analyzed: 02/24/2016 01:44

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.81
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.71	J	2.2	1.8	0.70
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U M	3.5	2.6	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		25-150
STL00990	13C4 PFOA	106		25-150
STL00991	13C4 PFOS	99		25-150
STL01892	13C4-PFHpA	115		25-150
STL00995	13C5 PFNA	103		25-150
STL00994	18O2 PFHxS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_036.d
Lims ID: 320-17363-A-5-A Lab Sample ID: 320-17363-5
Client ID: DW-48FB
Sample Type: Client
Inject. Date: 24-Feb-2016 01:44:43 ALS Bottle#: 29 Worklist Smp#: 38
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-5-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 24-Feb-2016 08:25:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.974	8.050	-0.076		1614667	48.3		96.6	32130	
D 8 13C4-PFHpA										
367.0 > 322.0	9.199	9.283	-0.084		2025361	57.3		115	159764	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.205	9.288	-0.083	1.000	4359	0.4060			305	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.319	-0.084		638229	43.6		92.1	4866	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.246	9.324	-0.078	1.000	212	0.3918				
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		2010453	53.0		106	26843	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.321	10.410	-0.089	1.000	7629	0.1959			24.7	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		832806	47.2		98.7	60954	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.284	11.371	-0.087	1.000	253	0.4395			13.7	M
499.0 > 99.0	11.298	11.371	-0.073	1.001	1262		0.20(0.00-0.00)		101	M
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1666261	51.4		103	79728	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 24-Feb-2016 10:54:07 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_036.d

Injection Date: 24-Feb-2016 01:44:43 Instrument ID: A6

Lims ID: 320-17363-A-5-A Lab Sample ID: 320-17363-5

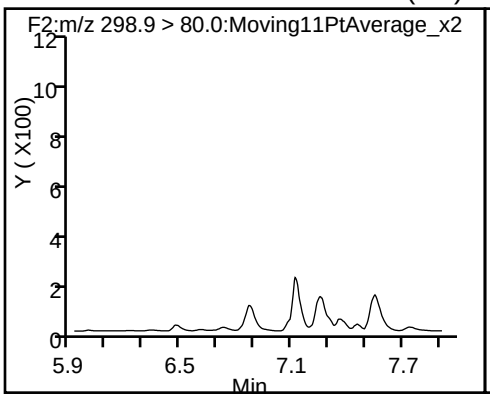
Client ID: DW-48FB

Operator ID: JRB ALS Bottle#: 29 Worklist Smp#: 38

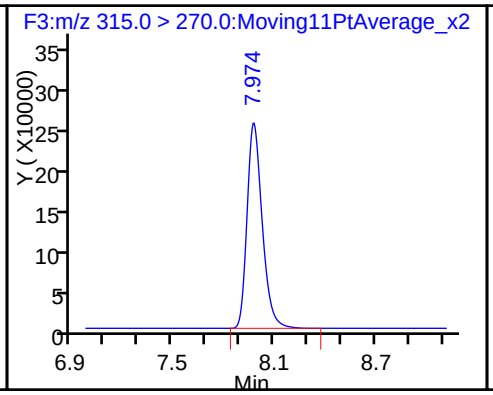
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

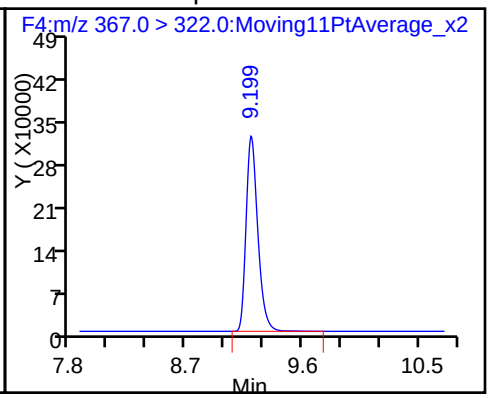
40 Perfluorobutanesulfonic acid (ND)



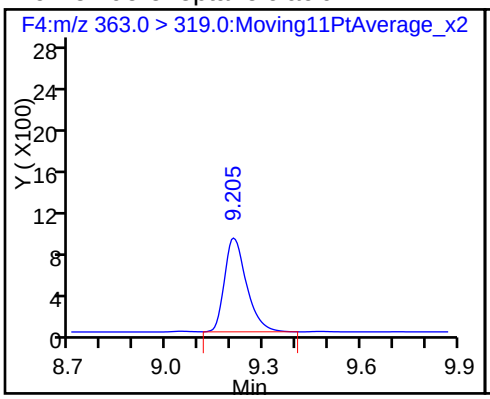
D 6 13C2 PFHxA



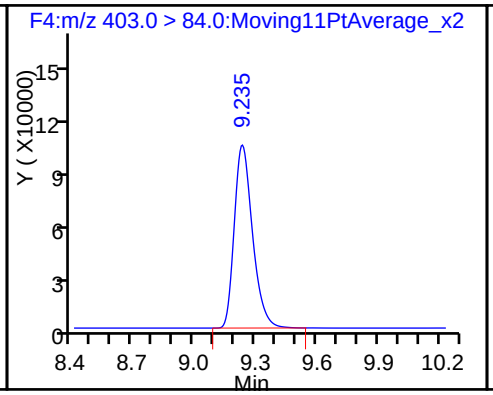
D 8 13C4-PFHpA



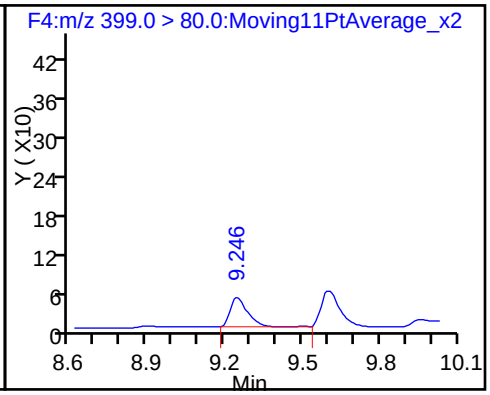
9 Perfluoroheptanoic acid



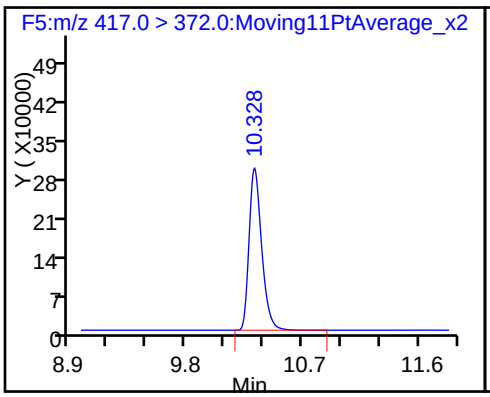
D 11 18O2 PFHxS



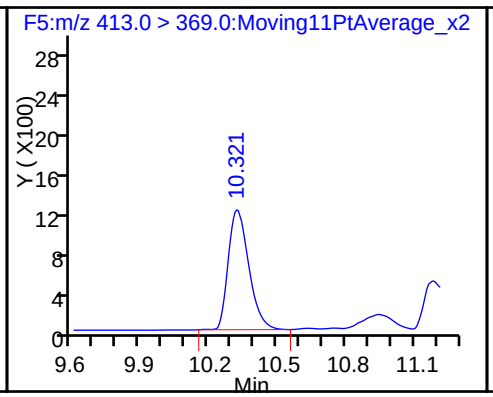
41 Perfluorohexanesulfonic acid



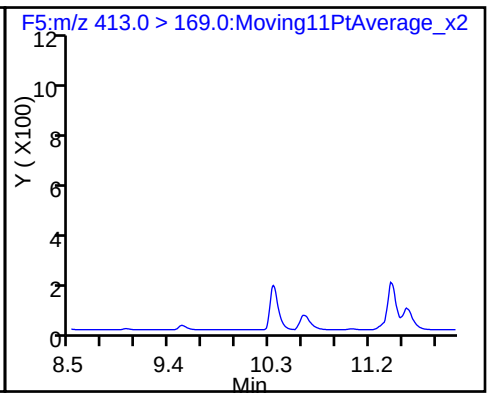
D 12 13C4 PFOA



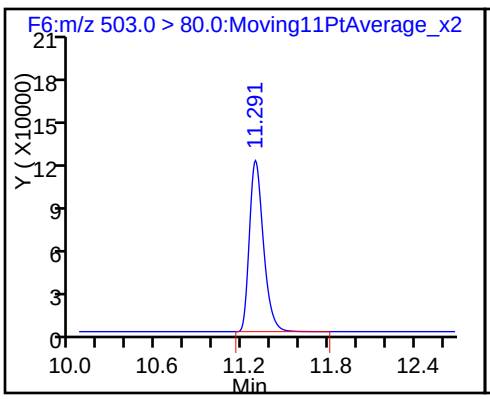
13 Perfluorooctanoic acid



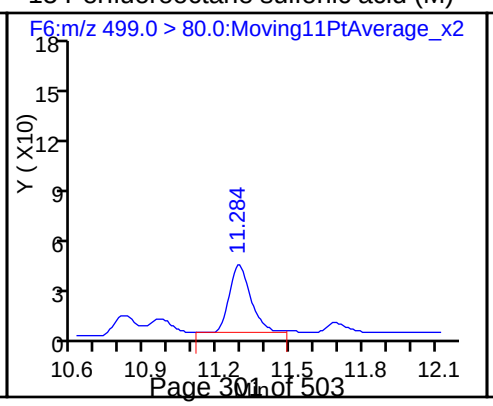
13 Perfluorooctanoic acid



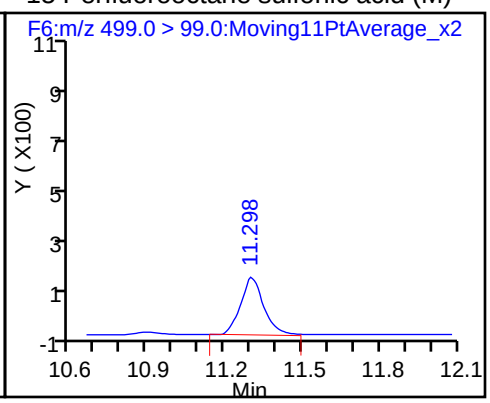
D 16 13C4 PFOS



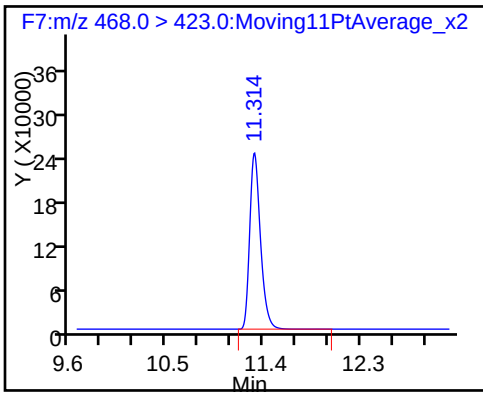
15 Perfluorooctane sulfonic acid (M)



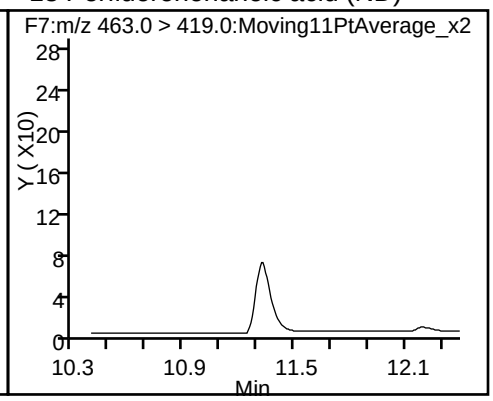
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



Manual Integration/User Assign Peak Report

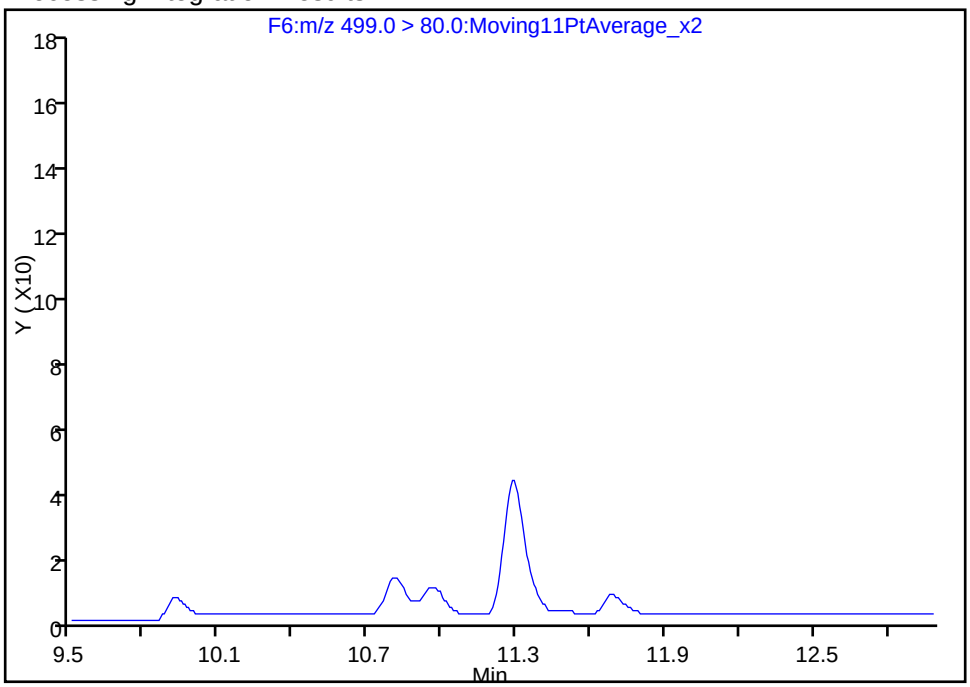
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_036.d				
Injection Date:	24-Feb-2016 01:44:43	Instrument ID:	A6		
Lims ID:	320-17363-A-5-A	Lab Sample ID:	320-17363-5		
Client ID:	DW-48FB				
Operator ID:	JRB	ALS Bottle#:	29	Worklist Smp#:	38
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

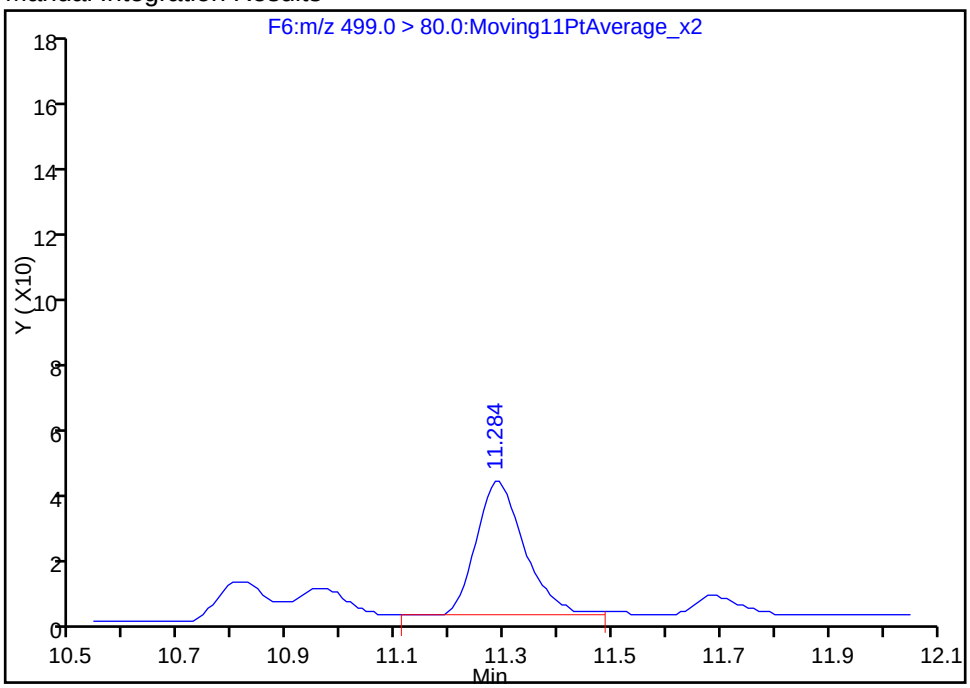
Not Detected
Expected RT: 11.37

Processing Integration Results



Manual Integration Results

RT: 11.28
Area: 253
Amount: 0.439528
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 10:24:06
Audit Action: Manually Integrated
Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

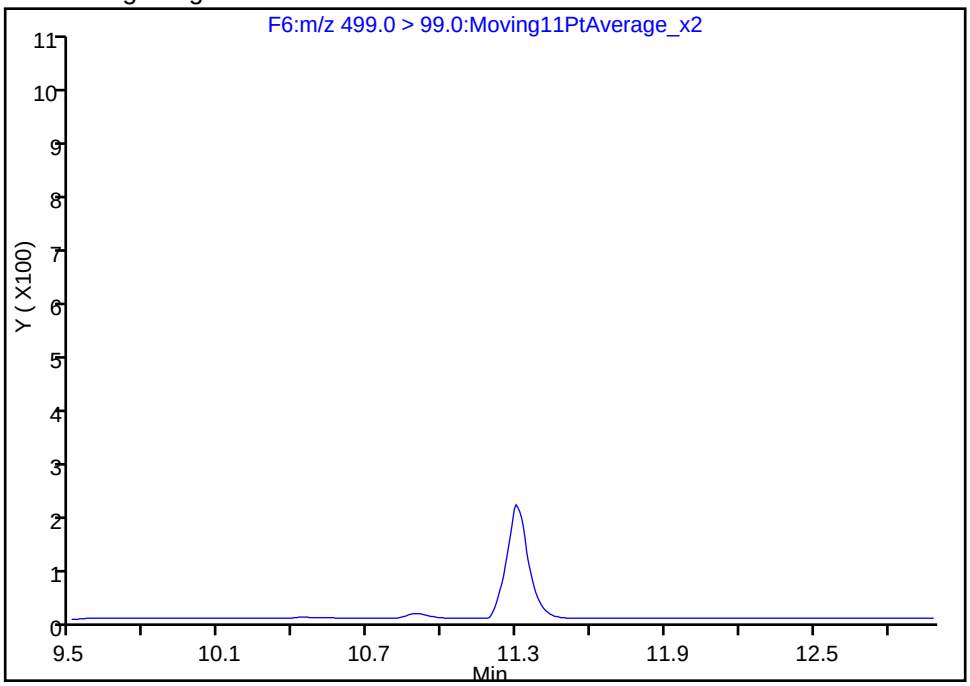
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_036.d				
Injection Date:	24-Feb-2016 01:44:43	Instrument ID:	A6		
Lims ID:	320-17363-A-5-A	Lab Sample ID:	320-17363-5		
Client ID:	DW-48FB				
Operator ID:	JRB	ALS Bottle#:	29	Worklist Smp#:	38
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

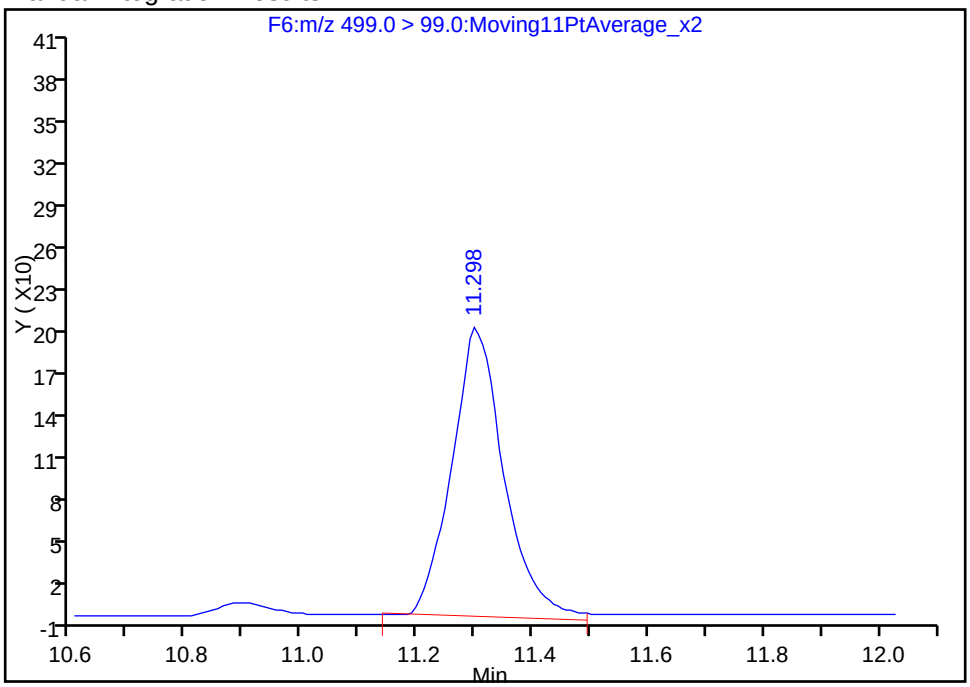
Processing Integration Results

Not Detected
Expected RT: 11.37



Manual Integration Results

RT: 11.30
Area: 1262
Amount: 0.439528
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 10:24:06
Audit Action: Manually Integrated
Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-59 | Lab Sample ID: 320-17363-6

Matrix: Water | Lab File ID: 23FEB2016A6A_037.d

Analysis Method: WS-LC-0025 | Date Collected: 02/19/2016 13:36

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 560.6(mL) | Date Analyzed: 02/24/2016 02:05

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.83	J M	2.2	1.8	0.78
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U M	3.6	2.7	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		25-150
STL00990	13C4 PFOA	77		25-150
STL00991	13C4 PFOS	94		25-150
STL01892	13C4-PFHpA	91		25-150
STL00995	13C5 PFNA	67		25-150
STL00994	18O2 PFHxS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_037.d
Lims ID: 320-17363-A-6-A Lab Sample ID: 320-17363-6
Client ID: DW-59
Sample Type: Client
Inject. Date: 24-Feb-2016 02:05:57 ALS Bottle#: 30 Worklist Smp#: 39
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-6-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:25:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.981	8.050	-0.069		1397102	41.8		83.5	9218	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.283	-0.078		1612341	45.6		91.2	15054	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.319	-0.084		651608	44.5		94.1	20765	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.235	9.324	-0.089	1.000	1002	0.4650				M
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		1458601	38.4		76.9	72775	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		796168	45.1		94.4	58444	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.291	11.371	-0.080	1.000	933	0.4805			81.0	M
499.0 > 99.0	11.276	11.371	-0.095	0.999	711		1.31(0.00-0.00)		25.2	M
D 17 13C5 PFNA										
468.0 > 423.0	11.313	11.390	-0.077		1085007	33.5		66.9	79588	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 24-Feb-2016 10:54:09 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_037.d

Injection Date: 24-Feb-2016 02:05:57 Instrument ID: A6

Lims ID: 320-17363-A-6-A Lab Sample ID: 320-17363-6

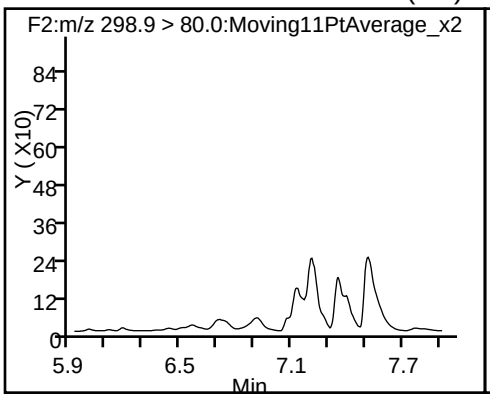
Client ID: DW-59

Operator ID: JRB ALS Bottle#: 30 Worklist Smp#: 39

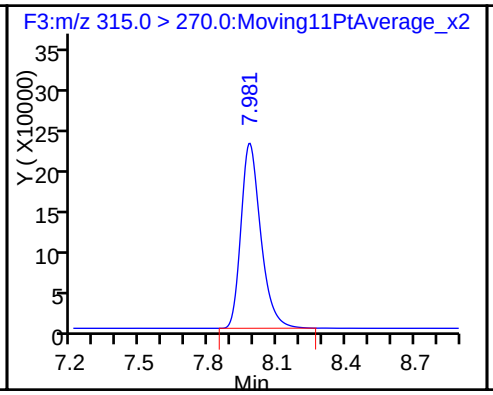
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

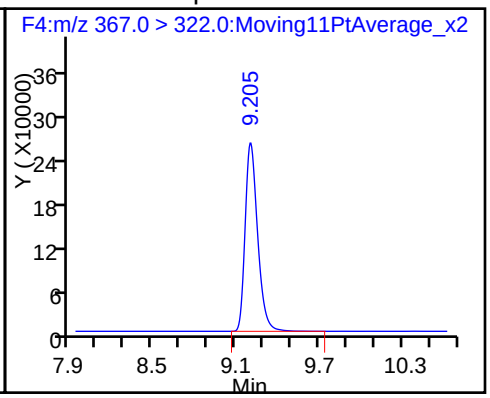
40 Perfluorobutanesulfonic acid (ND)



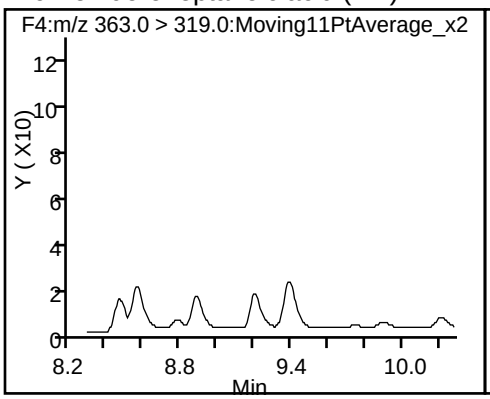
D 6 13C2 PFHxA



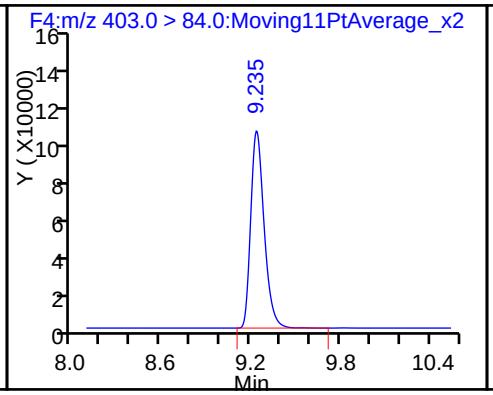
D 8 13C4-PFHpA



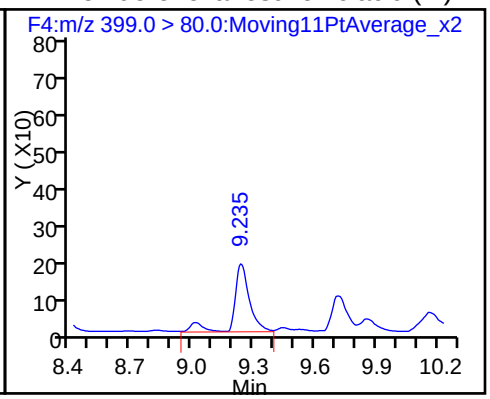
9 Perfluoroheptanoic acid (ND)



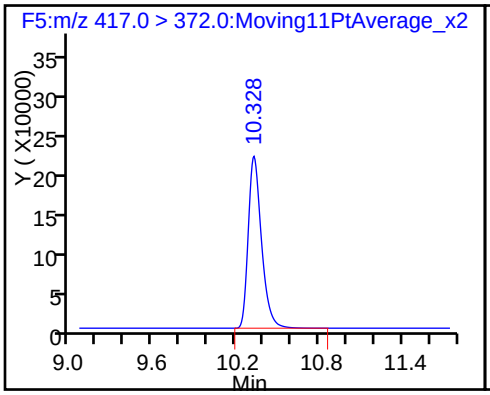
D 11 18O2 PFHxS



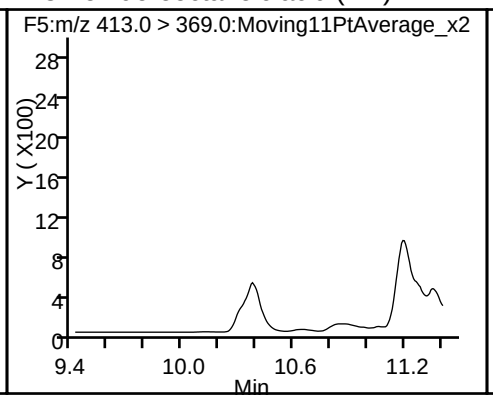
41 Perfluorohexanesulfonic acid (M)



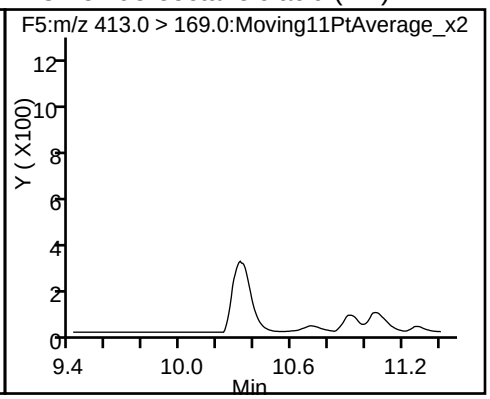
D 12 13C4 PFOA



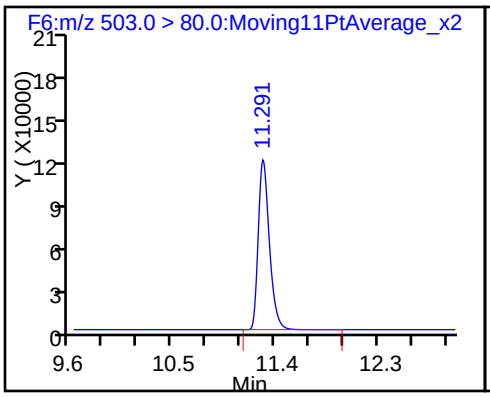
13 Perfluorooctanoic acid (ND)



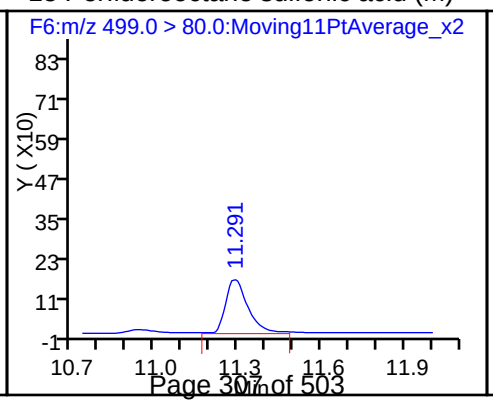
13 Perfluorooctanoic acid (ND)



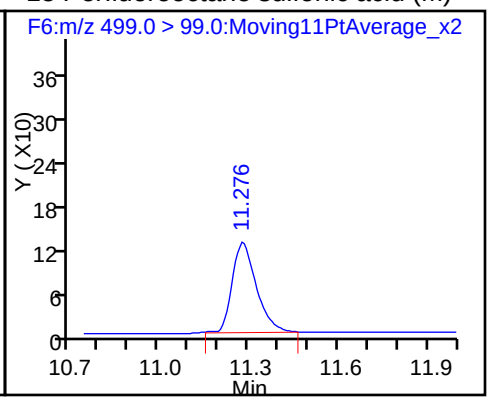
D 16 13C4 PFOS



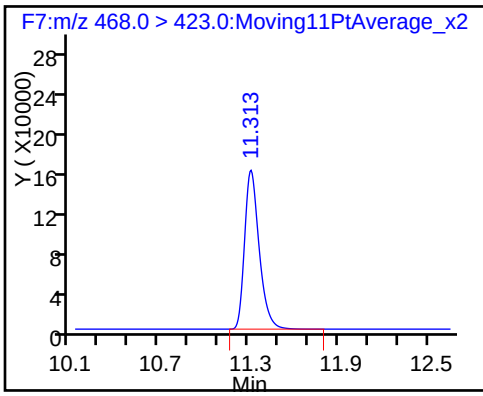
15 Perfluorooctane sulfonic acid (M)



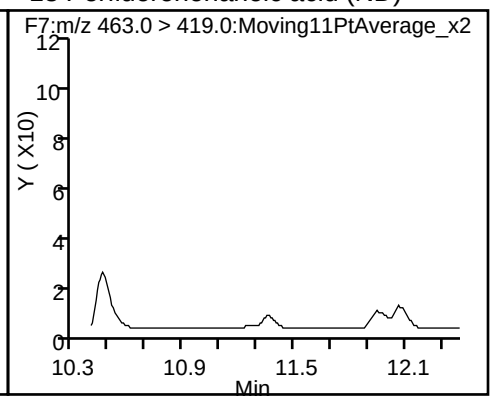
15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



Manual Integration/User Assign Peak Report

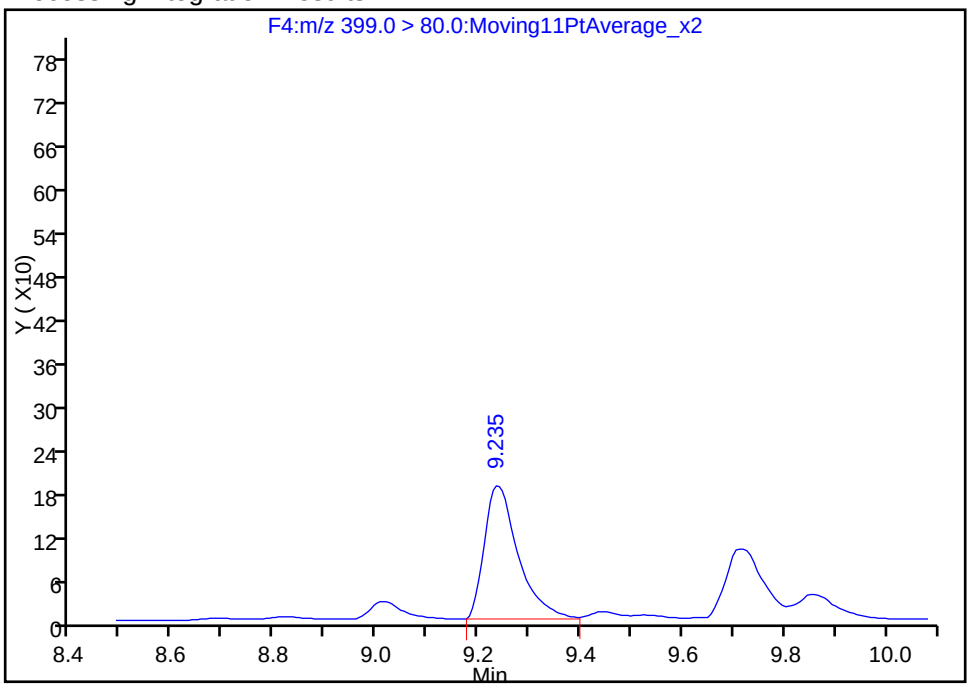
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_037.d				
Injection Date:	24-Feb-2016 02:05:57	Instrument ID:	A6		
Lims ID:	320-17363-A-6-A	Lab Sample ID:	320-17363-6		
Client ID:	DW-59				
Operator ID:	JRB	ALS Bottle#:	30	Worklist Smp#:	39
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

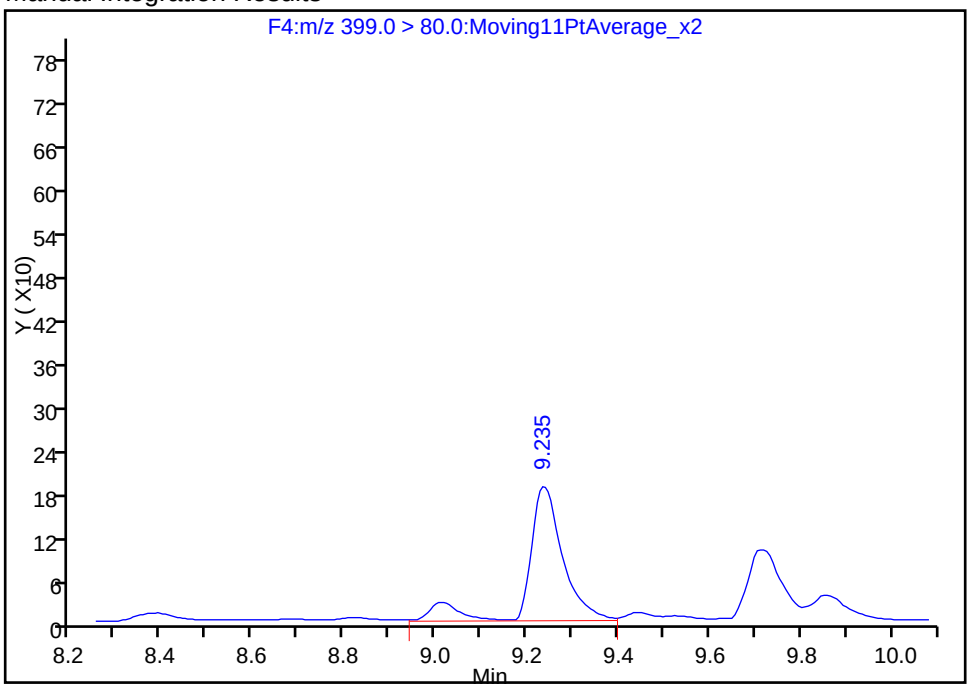
Processing Integration Results

RT: 9.23
Area: 856
Amount: 0.451419
Amount Units: ng/ml



Manual Integration Results

RT: 9.23
Area: 1002
Amount: 0.465035
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 10:25:17
Audit Action: Manually Integrated
Audit Reason: Isomers

Manual Integration/User Assign Peak Report

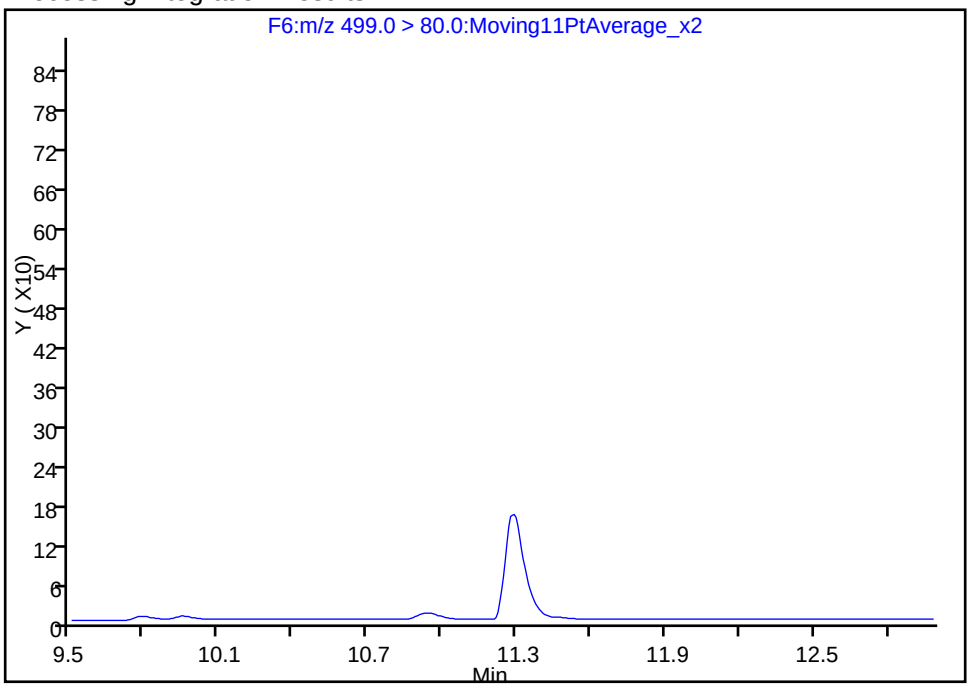
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_037.d				
Injection Date:	24-Feb-2016 02:05:57	Instrument ID:	A6		
Lims ID:	320-17363-A-6-A	Lab Sample ID:	320-17363-6		
Client ID:	DW-59				
Operator ID:	JRB	ALS Bottle#:	30	Worklist Smp#:	39
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

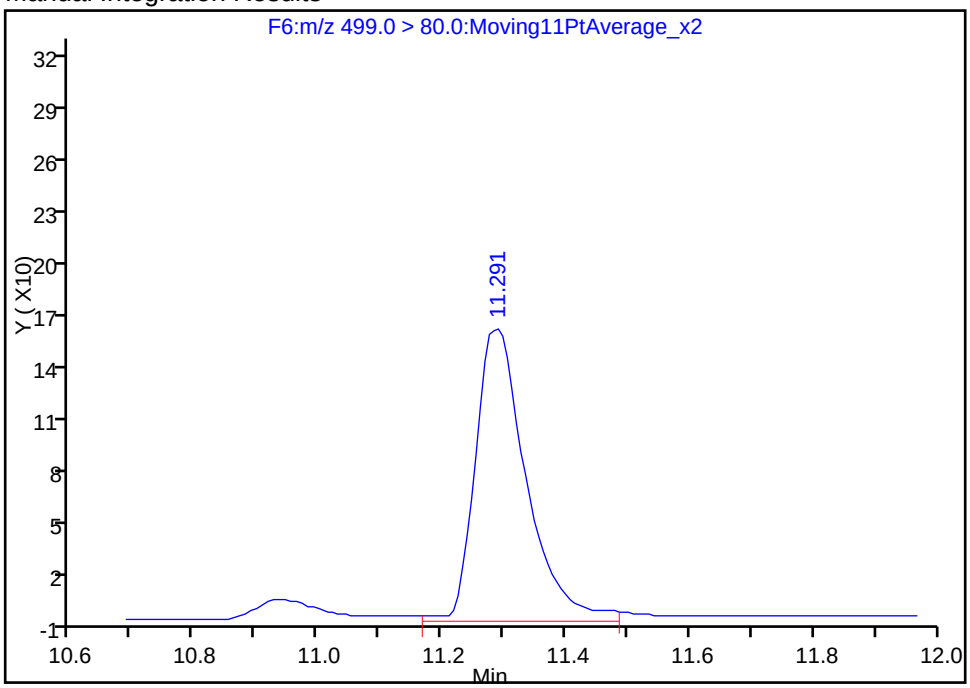
Not Detected
Expected RT: 11.37

Processing Integration Results



Manual Integration Results

RT: 11.29
Area: 933
Amount: 0.480530
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 10:25:17
Audit Action: Manually Integrated
Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

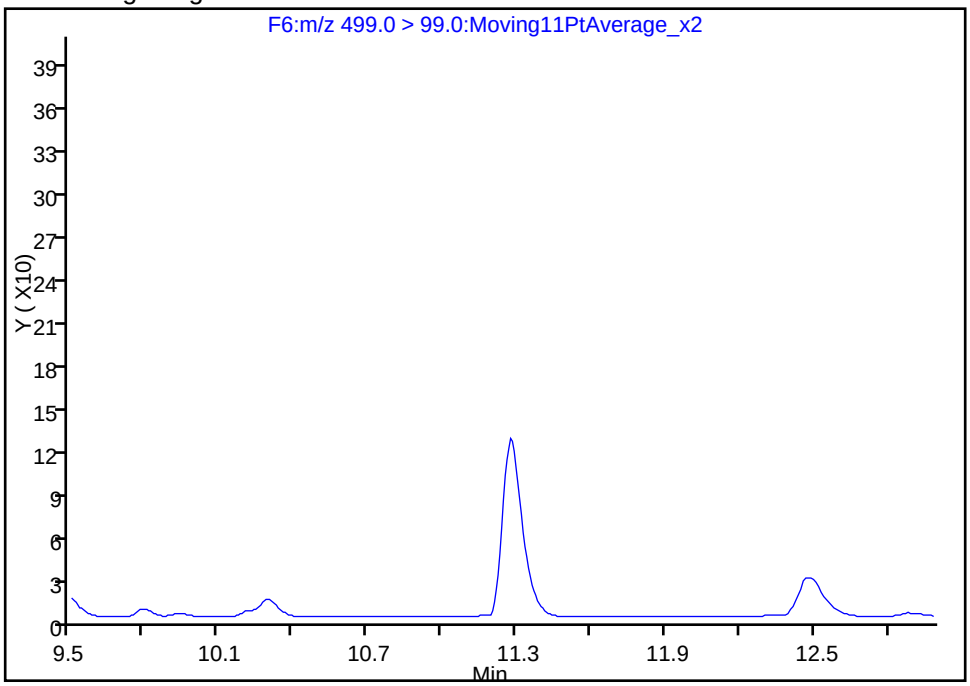
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_037.d				
Injection Date:	24-Feb-2016 02:05:57	Instrument ID:	A6		
Lims ID:	320-17363-A-6-A	Lab Sample ID:	320-17363-6		
Client ID:	DW-59				
Operator ID:	JRB	ALS Bottle#:	30	Worklist Smp#:	39
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F6:MRM		

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

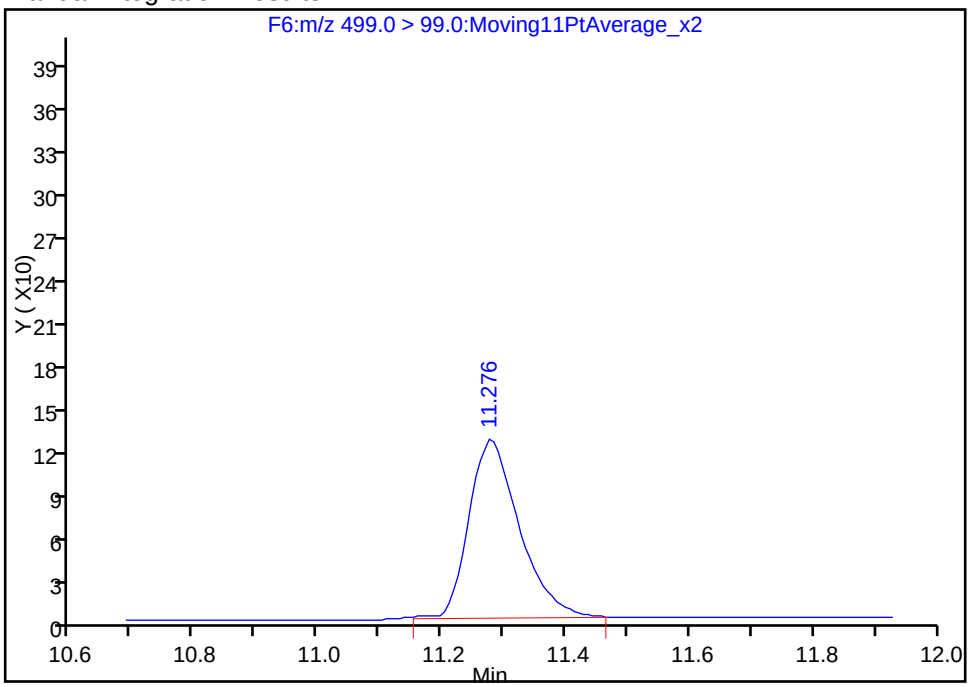
Not Detected
Expected RT: 11.37

Processing Integration Results



Manual Integration Results

RT: 11.28
Area: 711
Amount: 0.480530
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 10:25:17
Audit Action: Manually Integrated
Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-59FB | Lab Sample ID: 320-17363-7

Matrix: Water | Lab File ID: 23FEB2016A6A_038.d

Analysis Method: WS-LC-0025 | Date Collected: 02/19/2016 13:27

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 569.7(mL) | Date Analyzed: 02/24/2016 02:27

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.81
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		25-150
STL00990	13C4 PFOA	109		25-150
STL00991	13C4 PFOS	94		25-150
STL01892	13C4-PFHpA	111		25-150
STL00995	13C5 PFNA	104		25-150
STL00994	18O2 PFHxS	89		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_038.d
Lims ID: 320-17363-B-7-A Lab Sample ID: 320-17363-7
Client ID: DW-59FB
Sample Type: Client
Inject. Date: 24-Feb-2016 02:27:11 ALS Bottle#: 31 Worklist Smp#: 40
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-B-7-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:25:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	8.050	-0.065		1620621	48.5		96.9	18791	
D 8 13C4-PFHpA										
367.0 > 322.0	9.201	9.283	-0.082		1965554	55.6		111	104270	
D 11 18O2 PFHxS										
403.0 > 84.0	9.236	9.319	-0.083		614915	42.0		88.8	49476	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.230	9.324	-0.094	1.000	105	0.3820				
D 12 13C4 PFOA										
417.0 > 372.0	10.323	10.407	-0.084		2072646	54.6		109	103498	
D 16 13C4 PFOS										
503.0 > 80.0	11.285	11.369	-0.084		789422	44.7		93.6	115329	
D 17 13C5 PFNA										
468.0 > 423.0	11.301	11.390	-0.089		1683231	51.9		104	24579	

Report Date: 24-Feb-2016 10:54:10 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_038.d

Injection Date: 24-Feb-2016 02:27:11 Instrument ID: A6

Lims ID: 320-17363-B-7-A Lab Sample ID: 320-17363-7

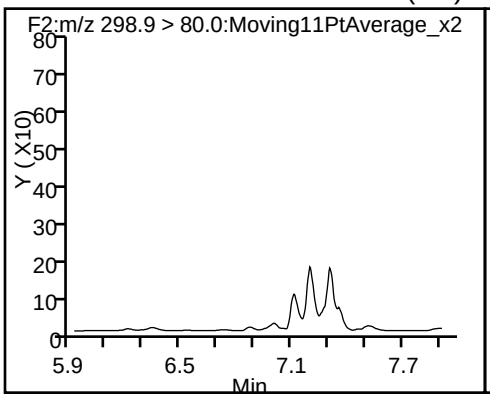
Client ID: DW-59FB

Operator ID: JRB ALS Bottle#: 31 Worklist Smp#: 40

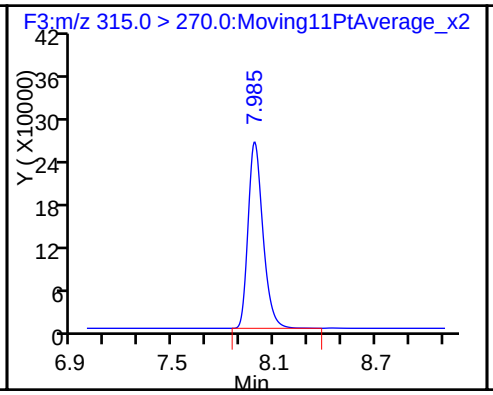
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

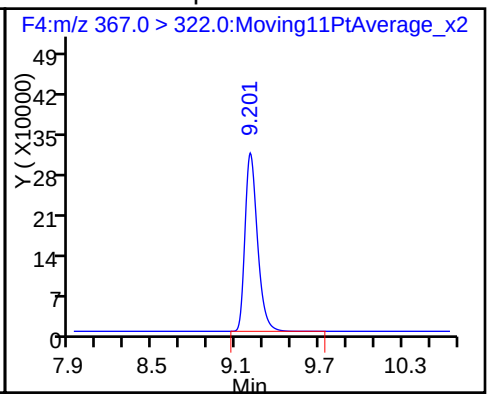
40 Perfluorobutanesulfonic acid (ND)



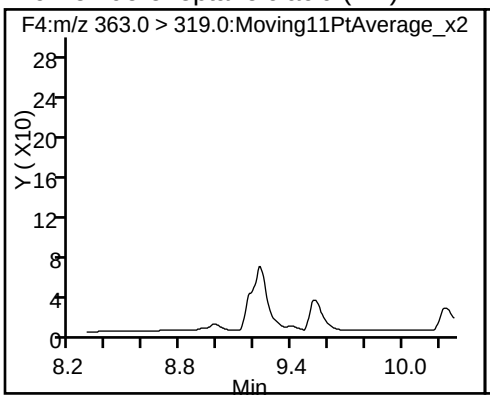
D 6 13C2 PFHxA



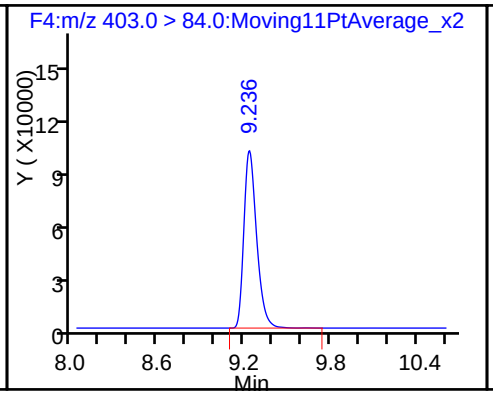
D 8 13C4-PFHpA



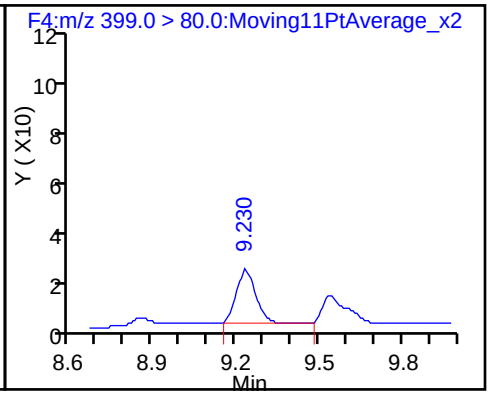
9 Perfluoroheptanoic acid (ND)



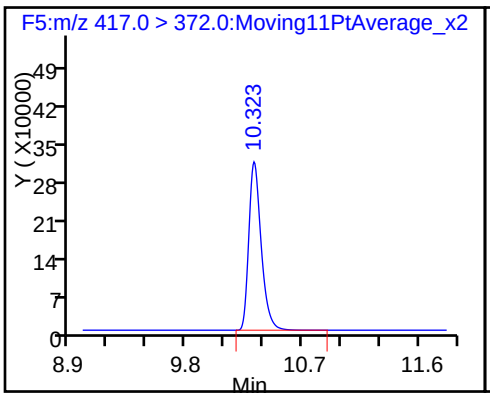
D 11 18O2 PFHxS



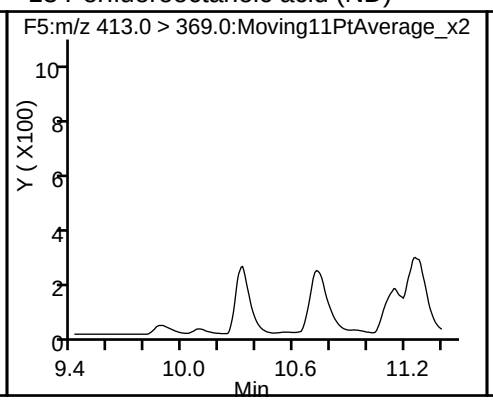
41 Perfluorohexanesulfonic acid



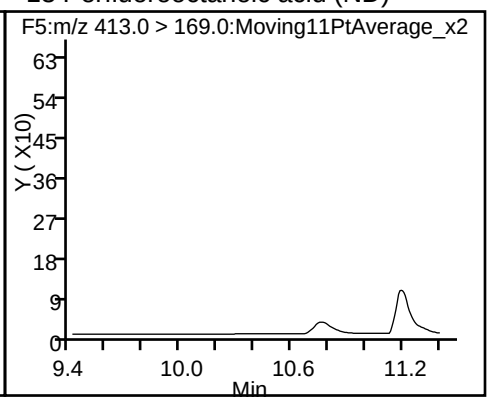
D 12 13C4 PFOA



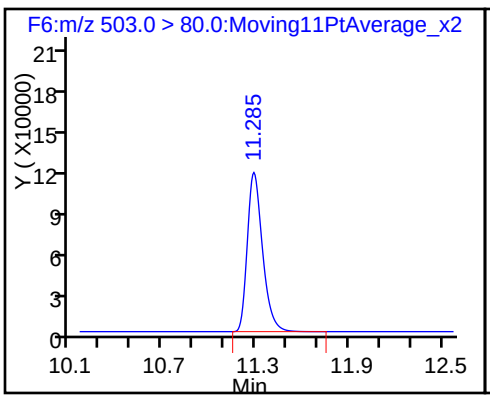
13 Perfluorooctanoic acid (ND)



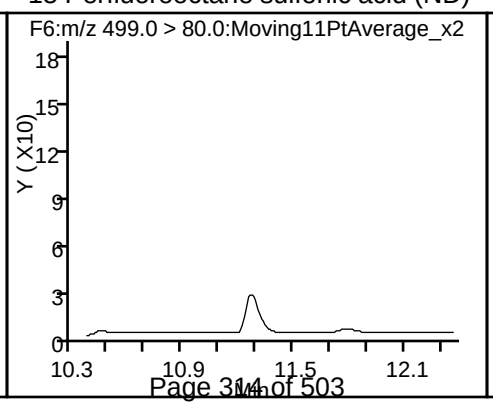
13 Perfluorooctanoic acid (ND)



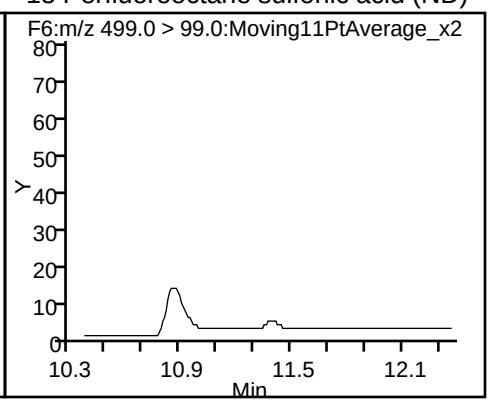
D 16 13C4 PFOS



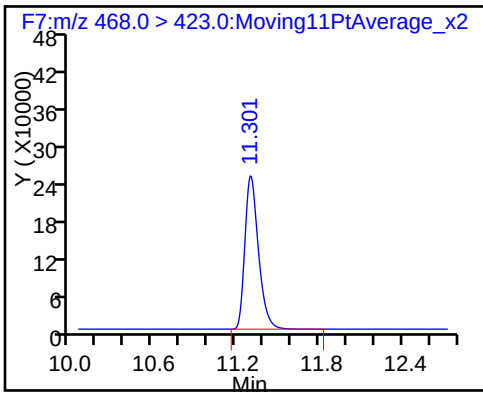
15 Perfluorooctane sulfonic acid (ND)



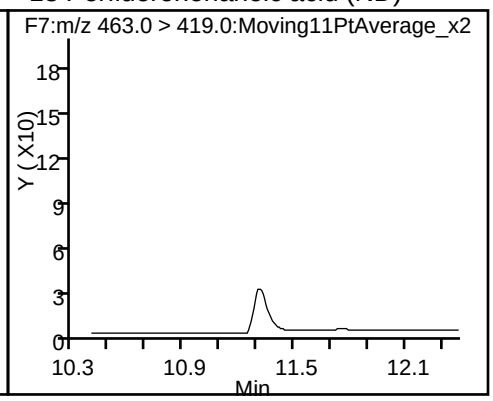
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-88 Lab Sample ID: 320-17363-8

Matrix: Water Lab File ID: 23FEB2016A6A_039.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 13:11

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 570.8(mL) Date Analyzed: 02/24/2016 02:48

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.80
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		25-150
STL00990	13C4 PFOA	97		25-150
STL00991	13C4 PFOS	92		25-150
STL01892	13C4-PFHpA	104		25-150
STL00995	13C5 PFNA	83		25-150
STL00994	18O2 PFHxS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_039.d
Lims ID: 320-17363-B-8-A Lab Sample ID: 320-17363-8
Client ID: DW-88
Sample Type: Client
Inject. Date: 24-Feb-2016 02:48:25 ALS Bottle#: 32 Worklist Smp#: 41
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-B-8-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:38:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	8.050	-0.070		1516348	45.3		90.7	82485	
D 8 13C4-PFHpA										
367.0 > 322.0	9.199	9.283	-0.084		1839612	52.0		104	73009	
D 11 18O2 PFHxS										
403.0 > 84.0	9.234	9.319	-0.085		635989	43.4		91.8	50448	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.486	9.324	0.162	1.000	26	0.3741				
D 12 13C4 PFOA										
417.0 > 372.0	10.321	10.407	-0.086		1849714	48.7		97.5	30701	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.335	10.410	-0.075	1.000	1519	0.0424			4.0	
D 16 13C4 PFOS										
503.0 > 80.0	11.284	11.369	-0.085		772922	43.8		91.6	56914	
D 17 13C5 PFNA										
468.0 > 423.0	11.306	11.390	-0.084		1348506	41.6		83.2	38993	

Report Date: 24-Feb-2016 10:54:12 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_039.d

Injection Date: 24-Feb-2016 02:48:25 Instrument ID: A6

Lims ID: 320-17363-B-8-A Lab Sample ID: 320-17363-8

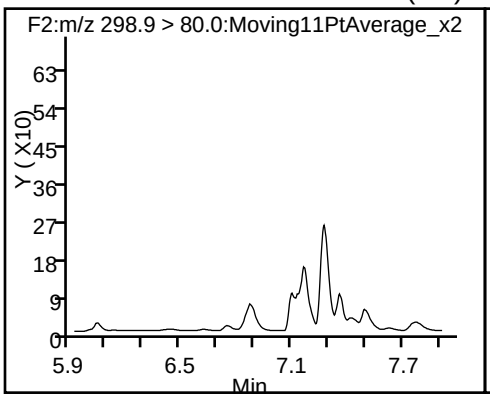
Client ID: DW-88

Operator ID: JRB ALS Bottle#: 32 Worklist Smp#: 41

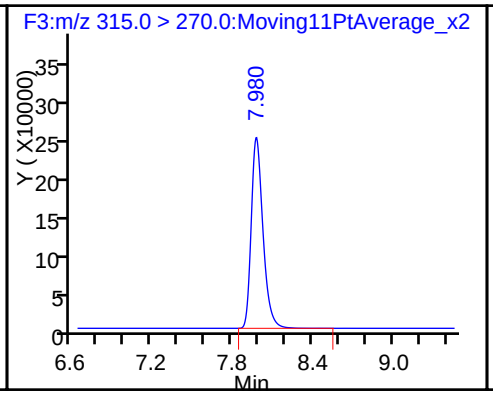
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

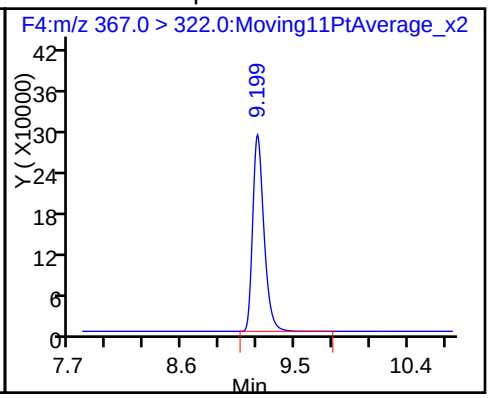
40 Perfluorobutanesulfonic acid (ND)



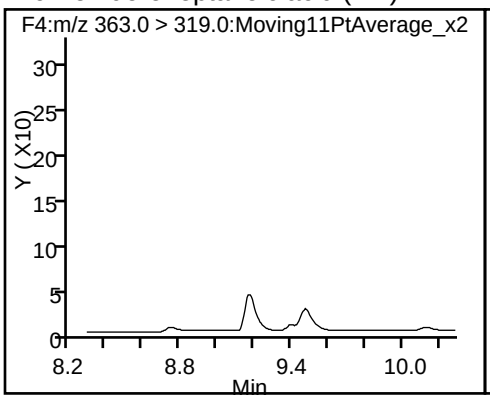
D 6 13C2 PFHxA



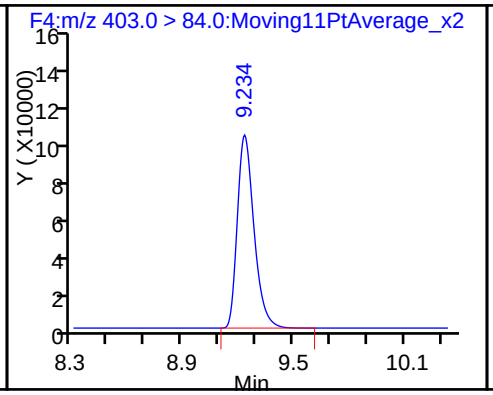
D 8 13C4-PFHpA



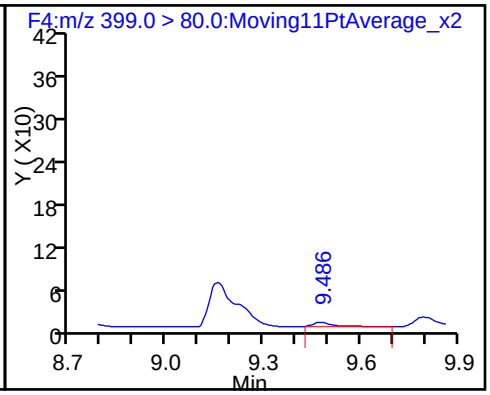
9 Perfluoroheptanoic acid (ND)



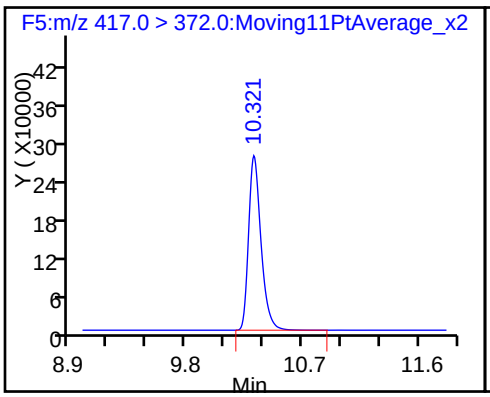
D 11 18O2 PFHxS



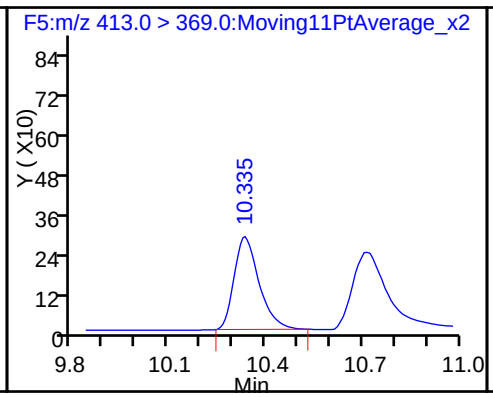
41 Perfluorohexanesulfonic acid



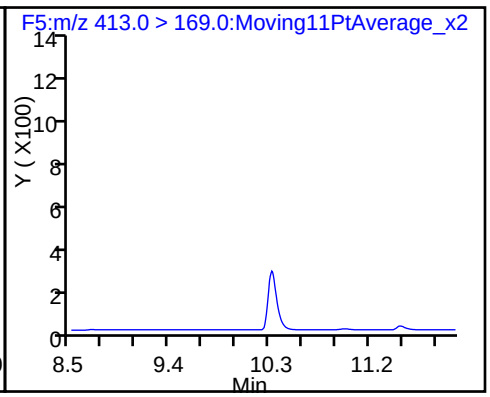
D 12 13C4 PFOA



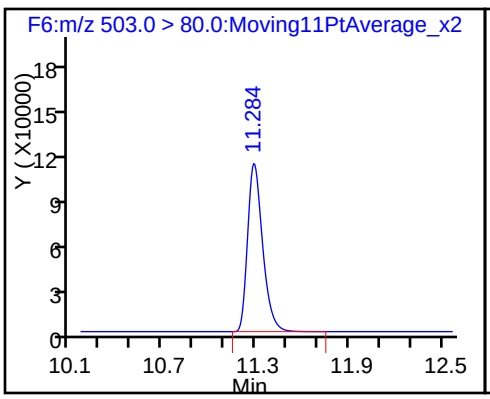
13 Perfluorooctanoic acid



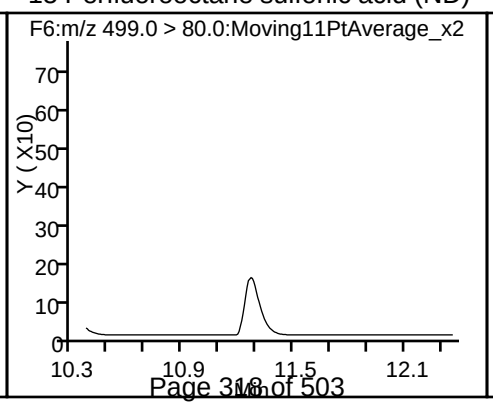
13 Perfluorooctanoic acid



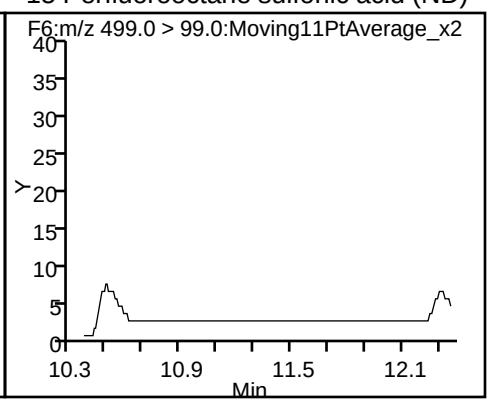
D 16 13C4 PFOS



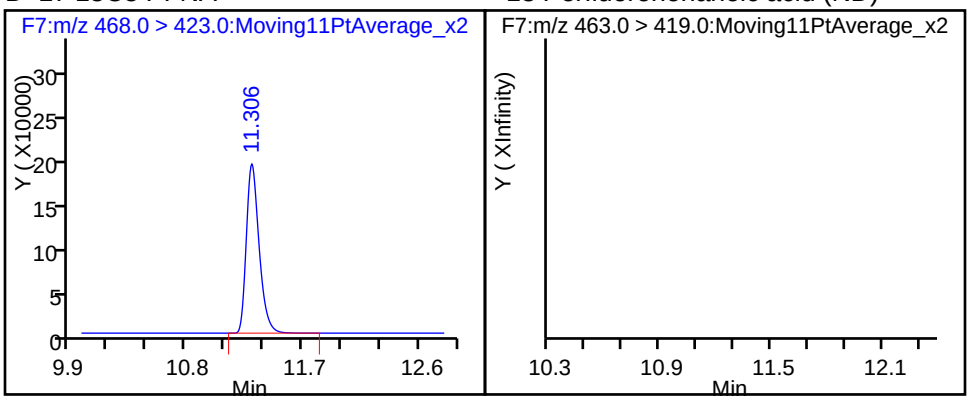
15 Perfluorooctane sulfonic acid (ND)



15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA 18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-88FB Lab Sample ID: 320-17363-9

Matrix: Water Lab File ID: 23FEB2016A6A_040.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 12:57

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 543.8(mL) Date Analyzed: 02/24/2016 03:09

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.84
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.74
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.80
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.60
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.69

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		25-150
STL00990	13C4 PFOA	117		25-150
STL00991	13C4 PFOS	95		25-150
STL01892	13C4-PFHpA	119		25-150
STL00995	13C5 PFNA	103		25-150
STL00994	18O2 PFHxS	96		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_040.d
Lims ID: 320-17363-A-9-A Lab Sample ID: 320-17363-9
Client ID: DW-88FB
Sample Type: Client
Inject. Date: 24-Feb-2016 03:09:39 ALS Bottle#: 33 Worklist Smp#: 42
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-9-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:39:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	8.050	-0.070		1761348	52.7		105	35020	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.283	-0.078		2106342	59.6		119	27204	
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.319	-0.079		661679	45.2		95.5	26564	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.205	9.324	-0.119	1.000	73	0.3783				
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		2210767	58.3		117	165133	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		803333	45.5		95.2	58638	
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1663480	51.3		103	47795	

Report Date: 24-Feb-2016 10:54:14 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_040.d

Injection Date: 24-Feb-2016 03:09:39 Instrument ID: A6

Lims ID: 320-17363-A-9-A Lab Sample ID: 320-17363-9

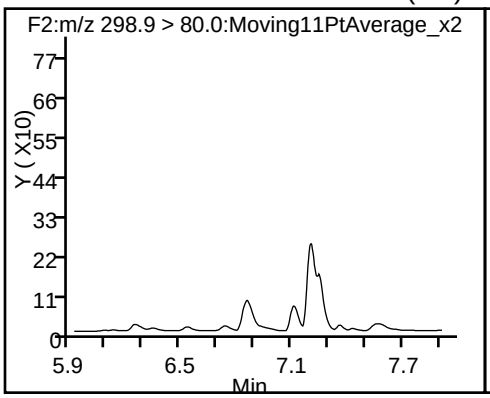
Client ID: DW-88FB

Operator ID: JRB ALS Bottle#: 33 Worklist Smp#: 42

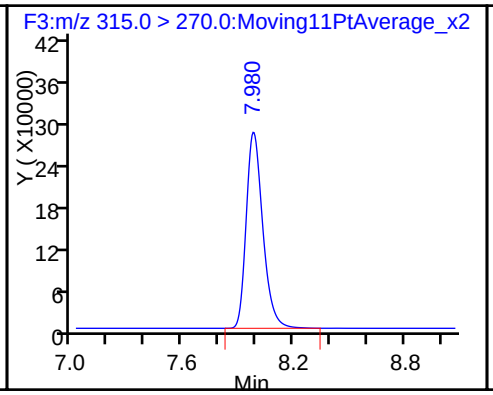
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

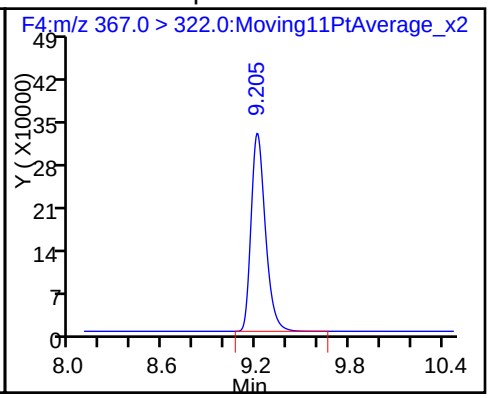
40 Perfluorobutanesulfonic acid (ND)



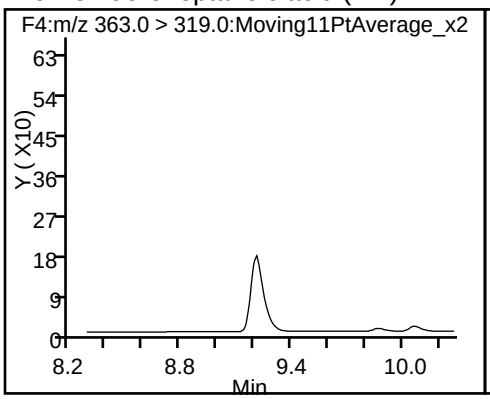
D 6 13C2 PFHxA



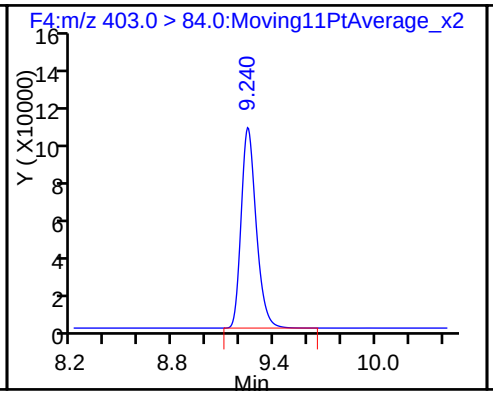
D 8 13C4-PFHpA



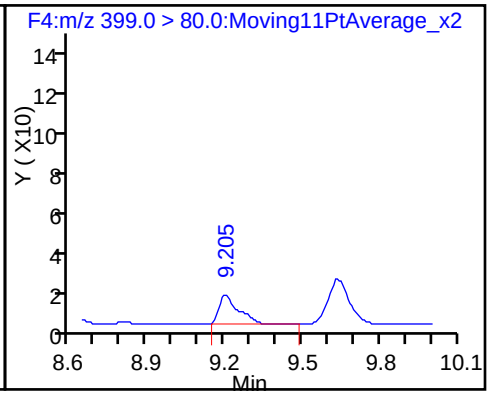
9 Perfluoroheptanoic acid (ND)



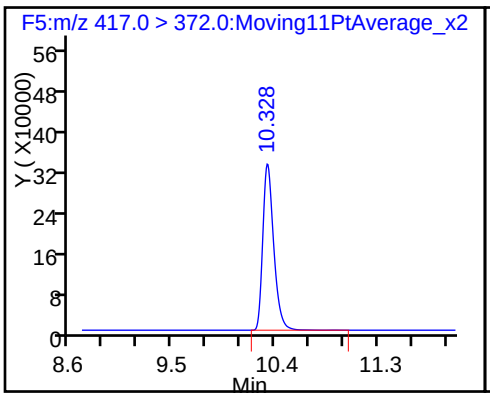
D 11 18O2 PFHxS



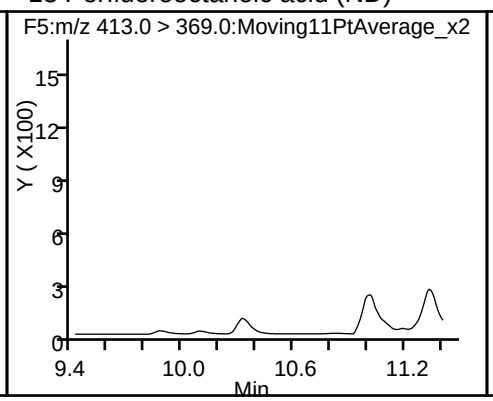
41 Perfluorohexanesulfonic acid



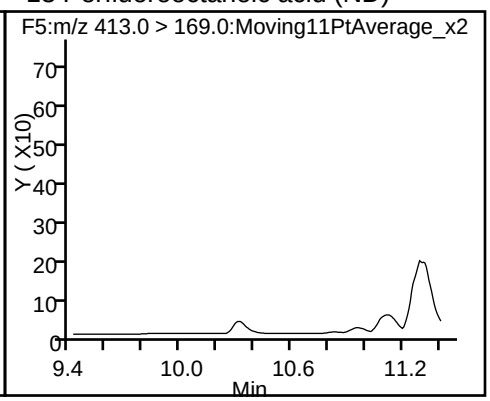
D 12 13C4 PFOA



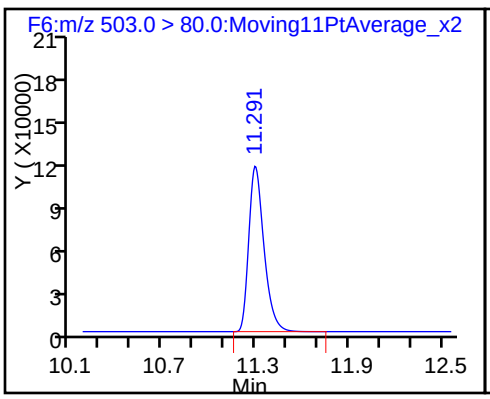
13 Perfluorooctanoic acid (ND)



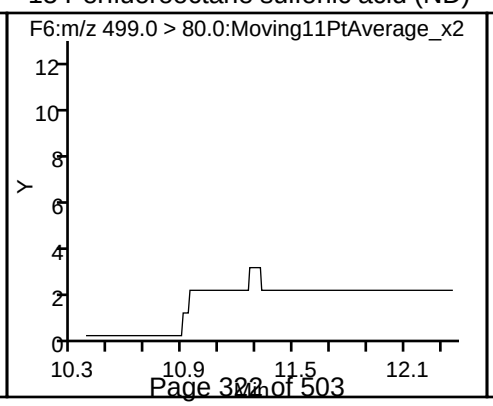
13 Perfluorooctanoic acid (ND)



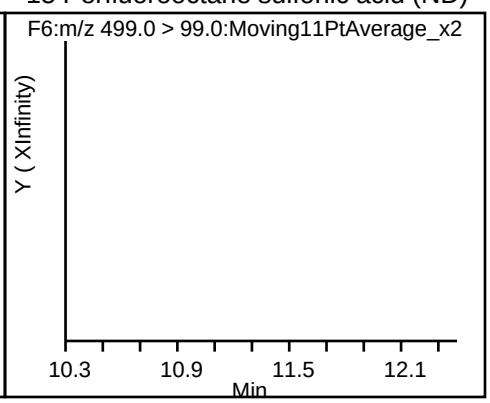
D 16 13C4 PFOS



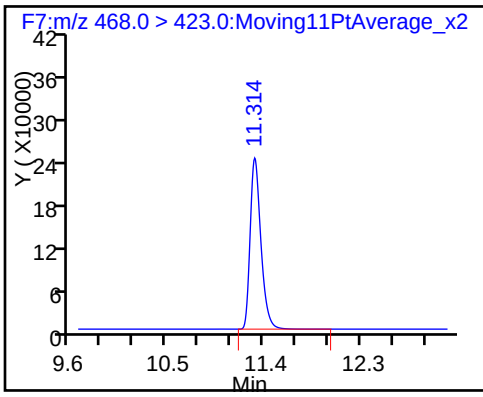
15 Perfluorooctane sulfonic acid (ND)



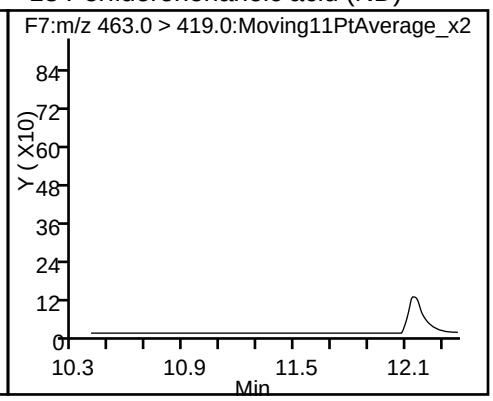
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-10 Lab Sample ID: 320-17363-10

Matrix: Water Lab File ID: 23FEB2016A6A_041.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 10:31

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 518.8(mL) Date Analyzed: 02/24/2016 03:30

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	1.9	0.88
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	1.9	0.77
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U M	2.4	1.9	0.84
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.63
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	2.9	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U	2.4	1.9	0.72

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		25-150
STL00990	13C4 PFOA	85		25-150
STL00991	13C4 PFOS	95		25-150
STL01892	13C4-PFHpA	95		25-150
STL00995	13C5 PFNA	69		25-150
STL00994	18O2 PFHxS	100		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_041.d
Lims ID: 320-17363-B-10-A Lab Sample ID: 320-17363-10
Client ID: DW-10
Sample Type: Client
Inject. Date: 24-Feb-2016 03:30:52 ALS Bottle#: 34 Worklist Smp#: 43
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-B-10-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:40:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	8.050	-0.065		1434835	42.9		85.8	77759	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.283	-0.078		1678282	47.5		94.9	53080	
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.319	-0.079		694496	47.4		100	6201	
41 Perfluorohexanesulfonic acid										M
399.0 > 80.0	9.270	9.324	-0.054	1.000	651	0.4286				M
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		1604387	42.3		84.6	59154	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		798991	45.3		94.7	117218	
D 17 13C5 PFNA										
468.0 > 423.0	11.306	11.390	-0.084		1111941	34.3		68.6	32250	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 24-Feb-2016 10:54:16 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_041.d

Injection Date: 24-Feb-2016 03:30:52 Instrument ID: A6

Lims ID: 320-17363-B-10-A Lab Sample ID: 320-17363-10

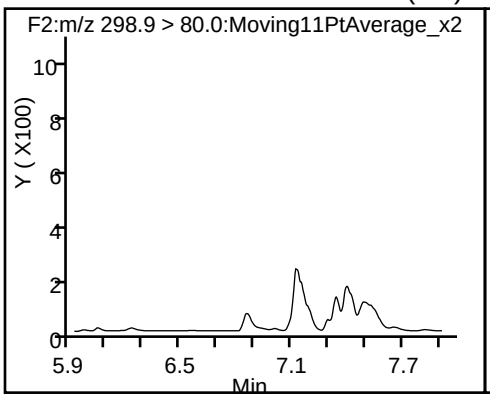
Client ID: DW-10

Operator ID: JRB ALS Bottle#: 34 Worklist Smp#: 43

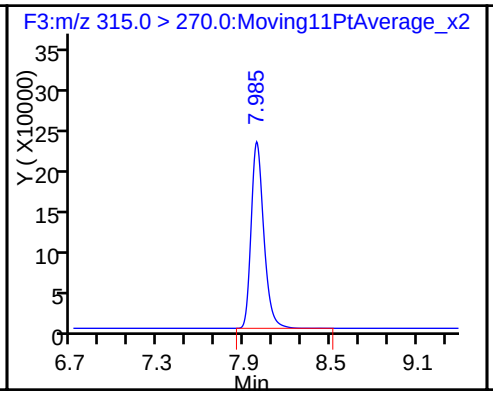
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

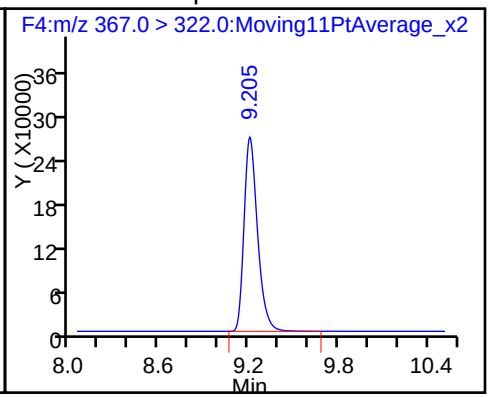
40 Perfluorobutanesulfonic acid (ND)



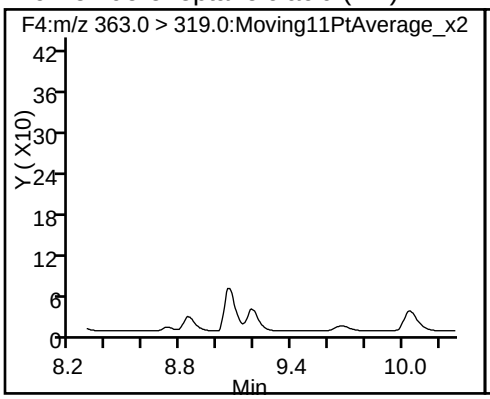
D 6 13C2 PFHxA



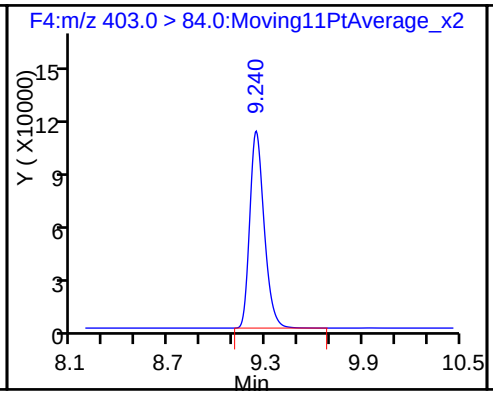
D 8 13C4-PFHpA



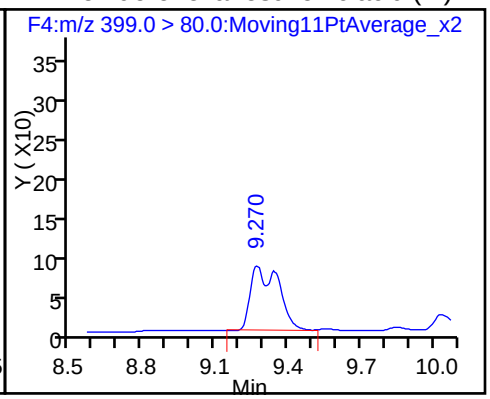
9 Perfluoroheptanoic acid (ND)



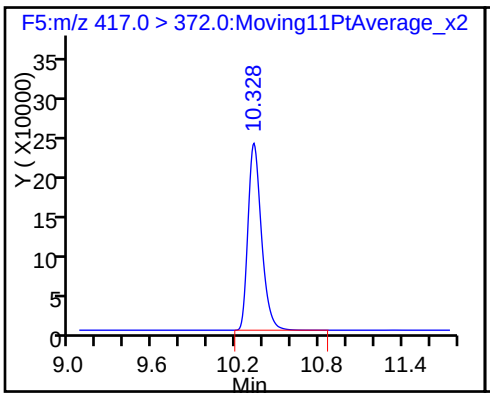
D 11 18O2 PFHxS



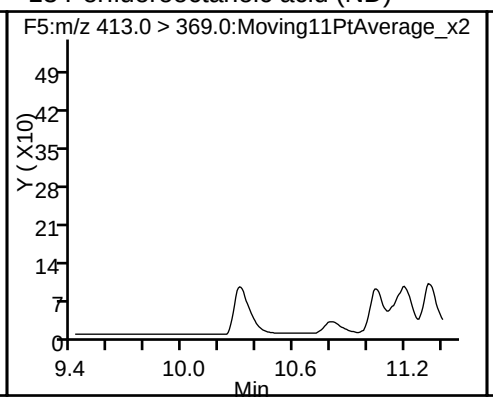
41 Perfluorohexanesulfonic acid (M)



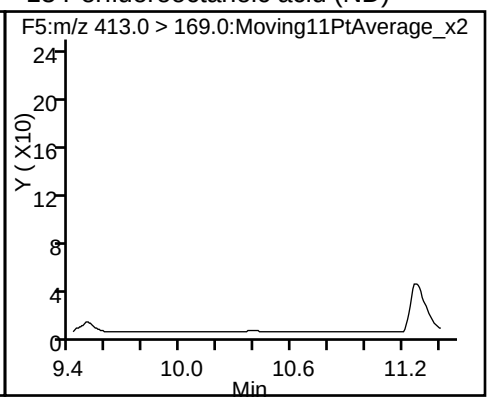
D 12 13C4 PFOA



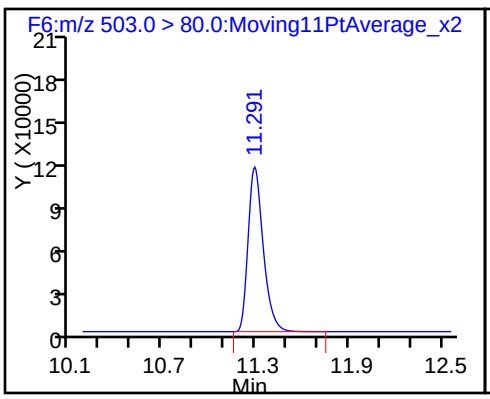
13 Perfluorooctanoic acid (ND)



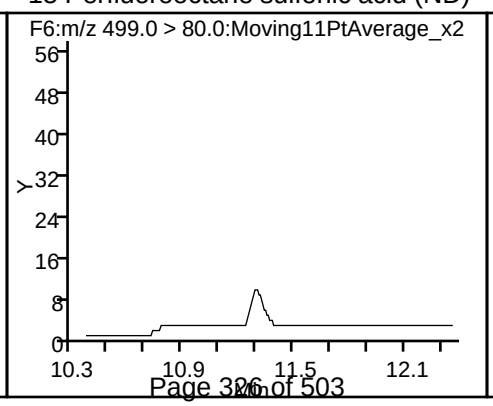
13 Perfluorooctanoic acid (ND)



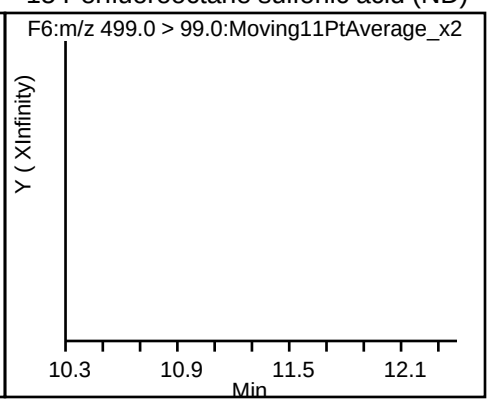
D 16 13C4 PFOS



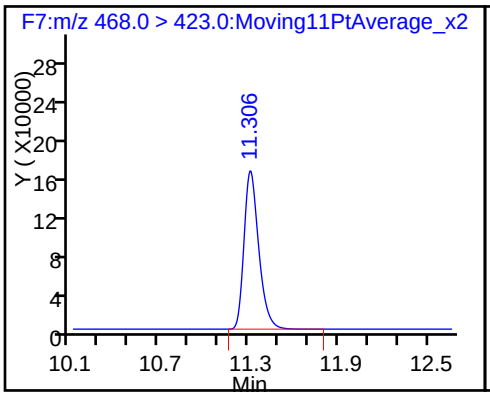
15 Perfluorooctane sulfonic acid (ND)



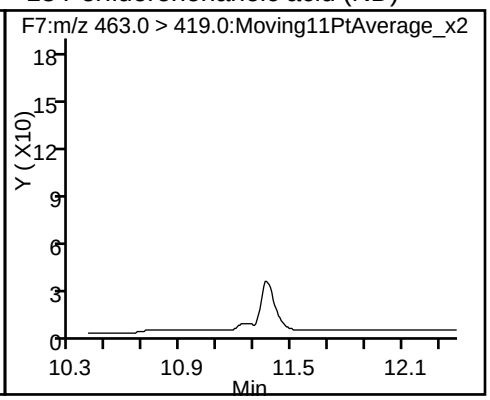
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



Manual Integration/User Assign Peak Report

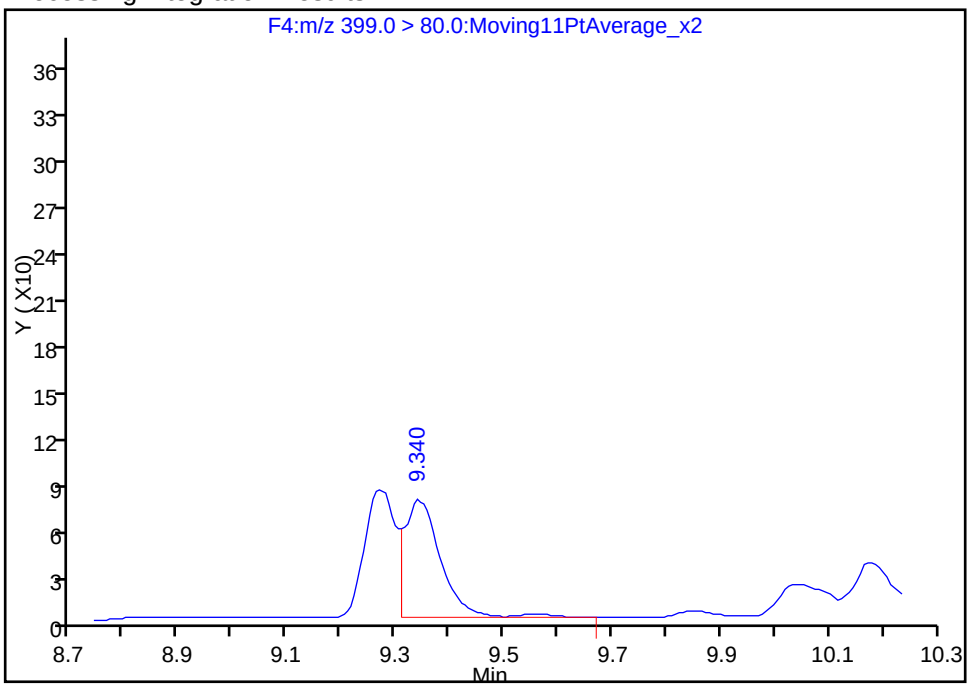
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_041.d				
Injection Date:	24-Feb-2016 03:30:52	Instrument ID:	A6		
Lims ID:	320-17363-B-10-A	Lab Sample ID:	320-17363-10		
Client ID:	DW-10				
Operator ID:	JRB	ALS Bottle#:	34	Worklist Smp#:	43
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		
Column:	Acquity BEH C18 (2.10 mm)	Detector	F4:MRM		

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

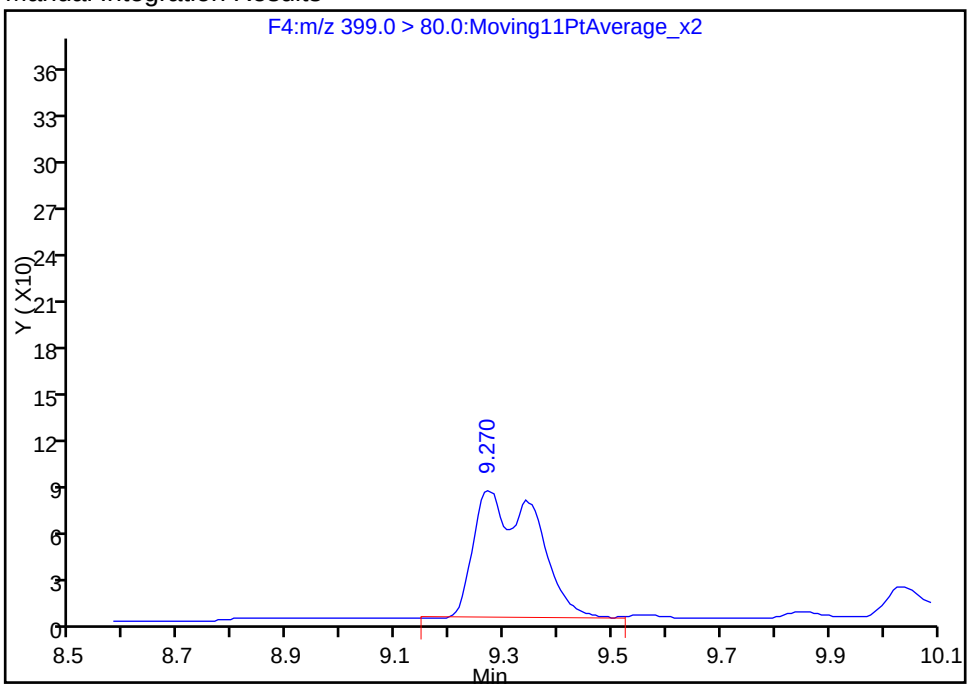
Processing Integration Results

RT: 9.34
Area: 344
Amount: 0.401692
Amount Units: ng/ml



Manual Integration Results

RT: 9.27
Area: 651
Amount: 0.428553
Amount Units: ng/ml



Reviewer: barnettj, 24-Feb-2016 10:40:00
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-10FB Lab Sample ID: 320-17363-11

Matrix: Water Lab File ID: 23FEB2016A6A_042.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 10:12

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 556.4(mL) Date Analyzed: 02/24/2016 03:52

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.80	J	2.2	1.8	0.78
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		25-150
STL00990	13C4 PFOA	114		25-150
STL00991	13C4 PFOS	96		25-150
STL01892	13C4-PFHpA	115		25-150
STL00995	13C5 PFNA	105		25-150
STL00994	18O2 PFHxS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_042.d
Lims ID: 320-17363-A-11-A Lab Sample ID: 320-17363-11
Client ID: DW-10FB
Sample Type: Client
Inject. Date: 24-Feb-2016 03:52:04 ALS Bottle#: 35 Worklist Smp#: 44
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-11-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:40:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.991	8.050	-0.059		1690939	50.6		101	44682	
D 8 13C4-PFHpA										
367.0 > 322.0	9.211	9.283	-0.072		2034706	57.6		115	15078	
D 11 18O2 PFHxS										
403.0 > 84.0	9.246	9.319	-0.073		654196	44.7		94.5	34146	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.229	9.324	-0.095	1.000	817	0.4475				
D 12 13C4 PFOA										
417.0 > 372.0	10.335	10.407	-0.072		2168677	57.1		114	35616	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		812160	46.0		96.3	59268	
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1700553	52.5		105	121600	

Report Date: 24-Feb-2016 10:54:18 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_042.d

Injection Date: 24-Feb-2016 03:52:04 Instrument ID: A6

Lims ID: 320-17363-A-11-A Lab Sample ID: 320-17363-11

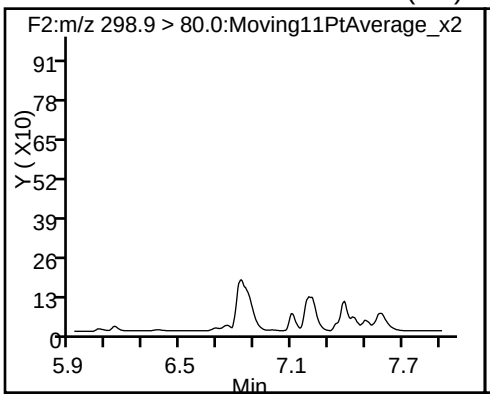
Client ID: DW-10FB

Operator ID: JRB ALS Bottle#: 35 Worklist Smp#: 44

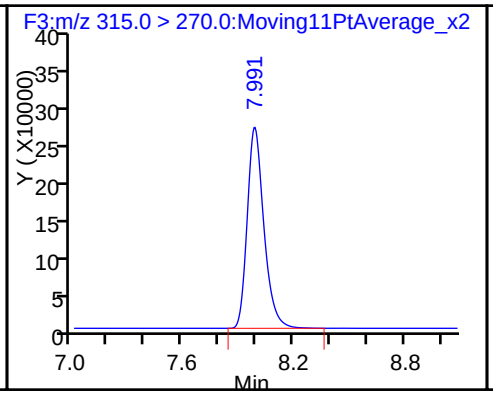
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

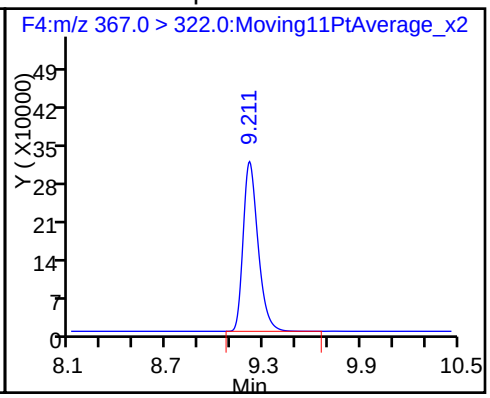
40 Perfluorobutanesulfonic acid (ND)



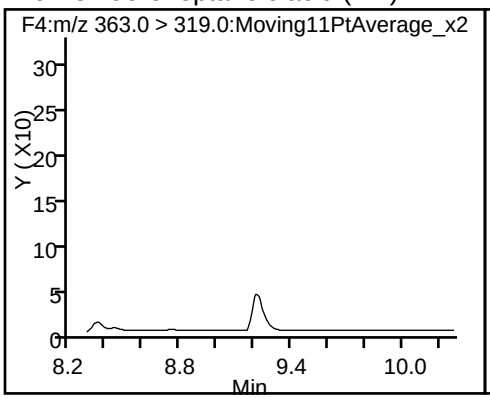
D 6 13C2 PFHxA



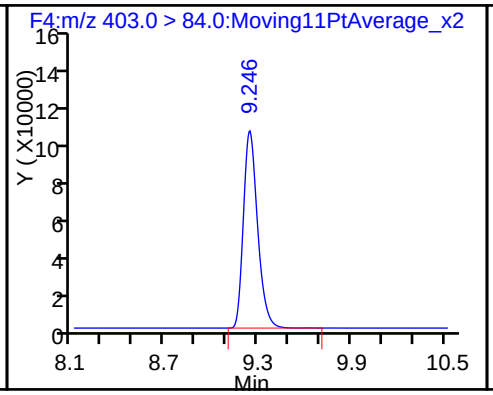
D 8 13C4-PFHpA



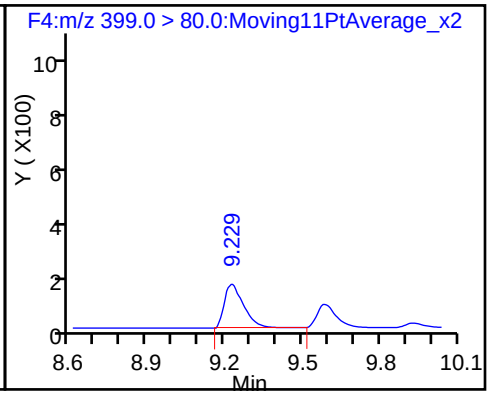
9 Perfluoroheptanoic acid (ND)



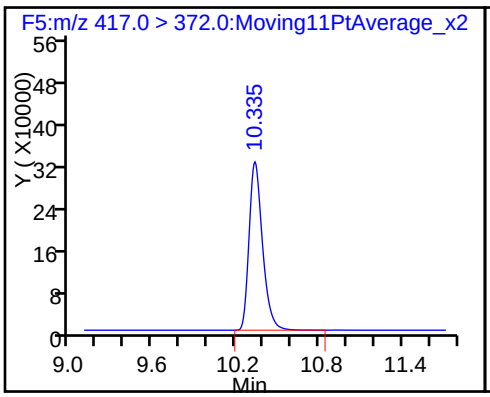
D 11 18O2 PFHxS



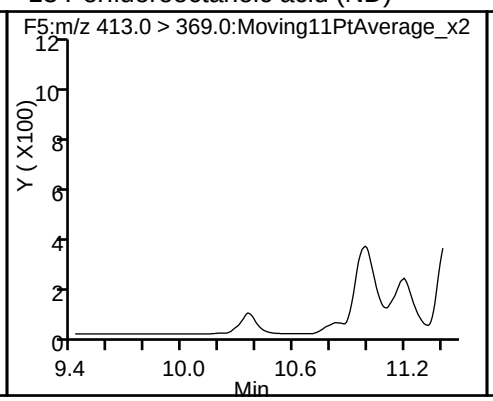
41 Perfluorohexanesulfonic acid



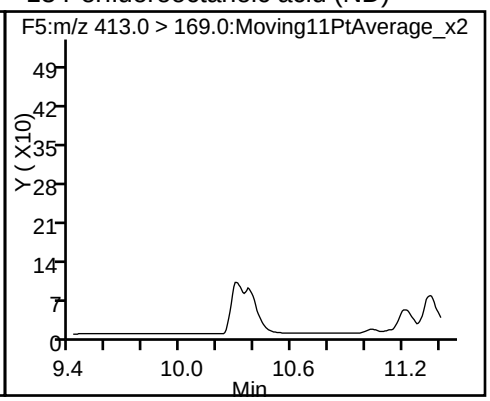
D 12 13C4 PFOA



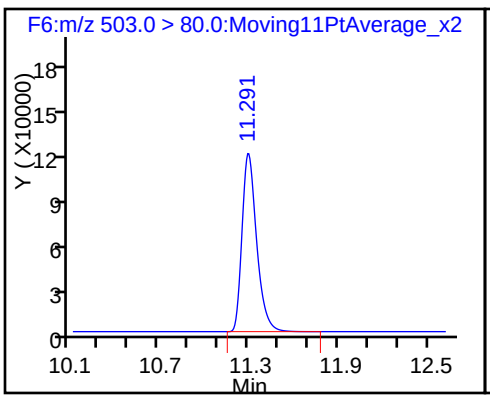
13 Perfluorooctanoic acid (ND)



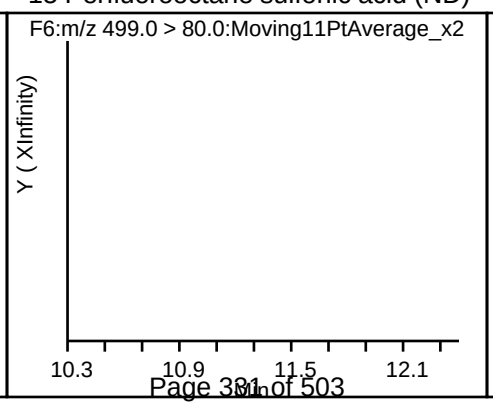
13 Perfluorooctanoic acid (ND)



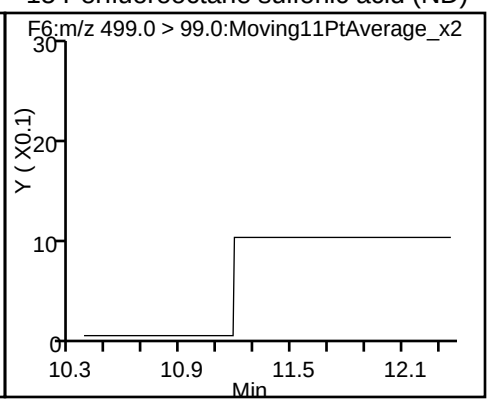
D 16 13C4 PFOS



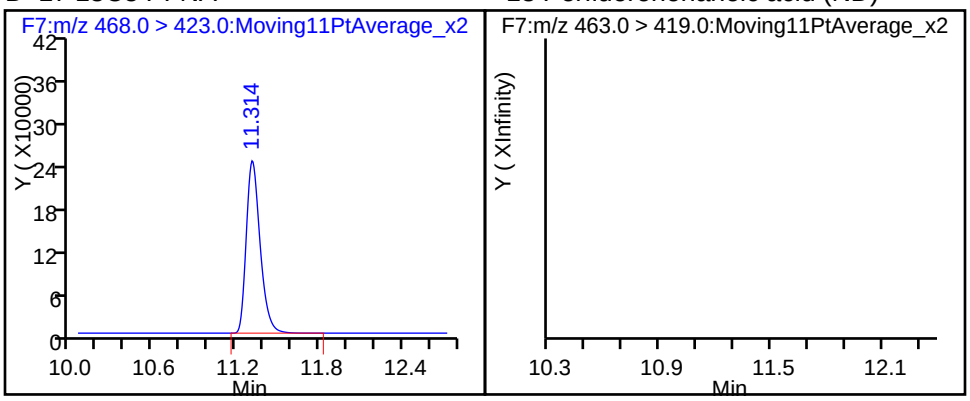
15 Perfluorooctane sulfonic acid (ND)



15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA 18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-63 Lab Sample ID: 320-17363-12

Matrix: Water Lab File ID: 23FEB2016A6A_043.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 11:06

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 556.2(mL) Date Analyzed: 02/24/2016 04:13

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.83
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.78
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		25-150
STL00990	13C4 PFOA	76		25-150
STL00991	13C4 PFOS	99		25-150
STL01892	13C4-PFHpA	95		25-150
STL00995	13C5 PFNA	51		25-150
STL00994	18O2 PFHxS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_043.d
Lims ID: 320-17363-B-12-A Lab Sample ID: 320-17363-12
Client ID: DW-63
Sample Type: Client
Inject. Date: 24-Feb-2016 04:13:17 ALS Bottle#: 36 Worklist Smp#: 45
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-B-12-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:40:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	8.050	-0.065		1383400	41.4		82.7	43519	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.283	-0.078		1672957	47.3		94.6	88232	
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.319	-0.079		680076	46.4		98.2	21956	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.188	9.324	-0.136	1.000	30	0.3743				
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		1435594	37.8		75.7	106122	
D 16 13C4 PFOS										
503.0 > 80.0	11.290	11.369	-0.079		838861	47.5		99.5	62408	
D 17 13C5 PFNA										
468.0 > 423.0	11.313	11.390	-0.077		828219	25.5		51.1	59419	

Report Date: 24-Feb-2016 10:54:20 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_043.d

Injection Date: 24-Feb-2016 04:13:17 Instrument ID: A6

Lims ID: 320-17363-B-12-A Lab Sample ID: 320-17363-12

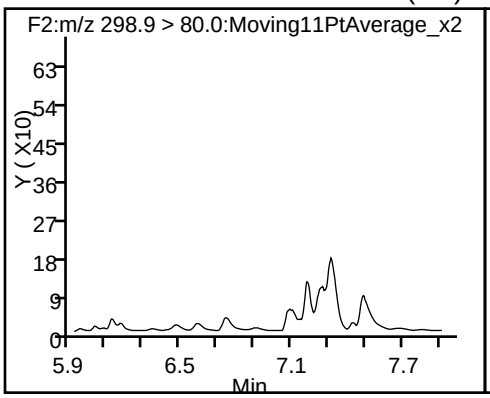
Client ID: DW-63

Operator ID: JRB ALS Bottle#: 36 Worklist Smp#: 45

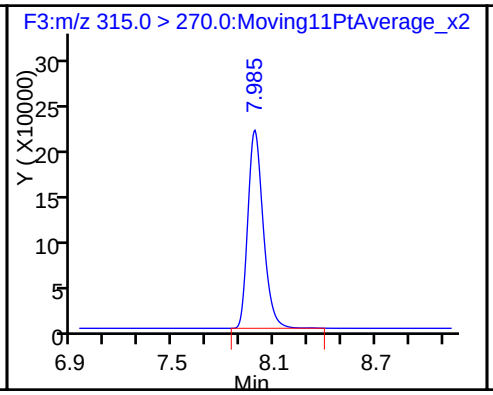
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

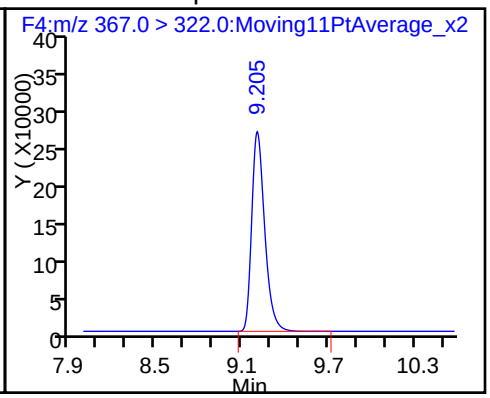
40 Perfluorobutanesulfonic acid (ND)



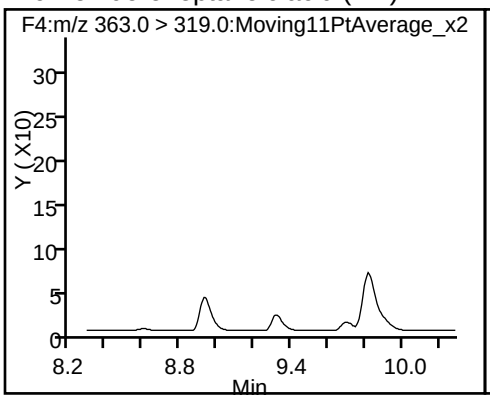
D 6 13C2 PFHxA



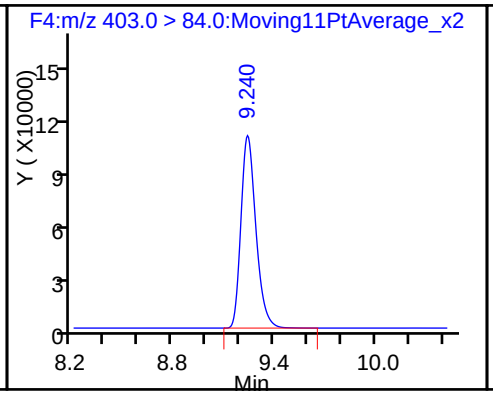
D 8 13C4-PFHpA



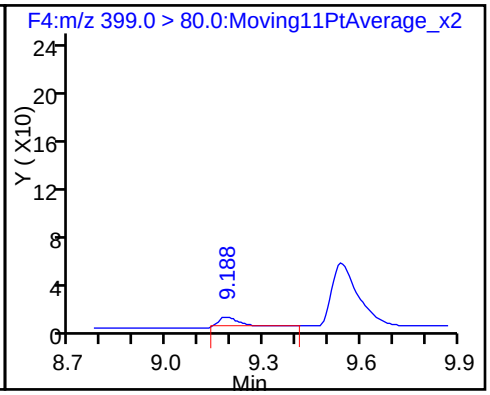
9 Perfluoroheptanoic acid (ND)



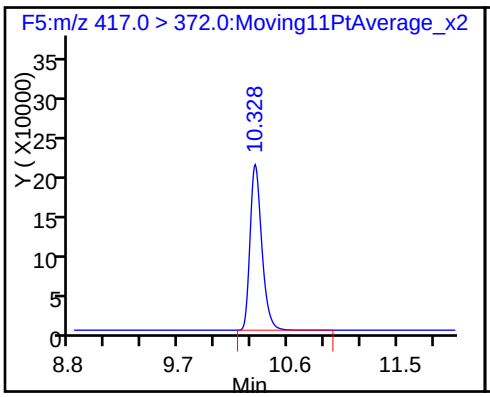
D 11 18O2 PFHxS



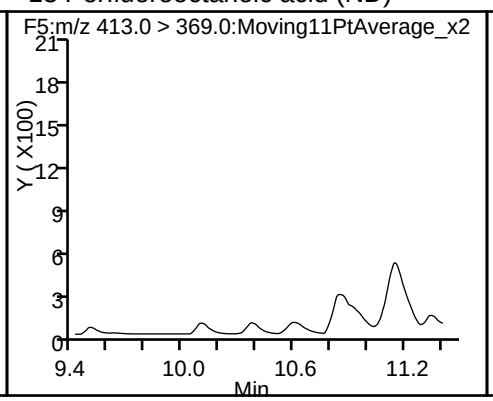
41 Perfluorohexanesulfonic acid



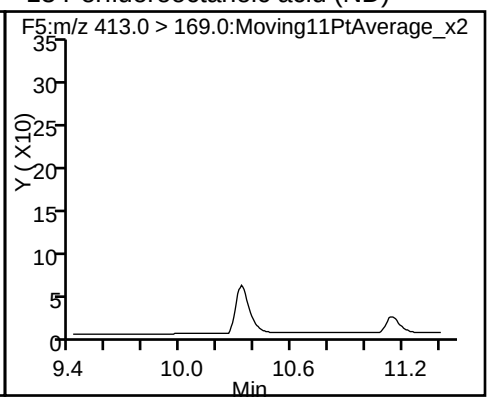
D 12 13C4 PFOA



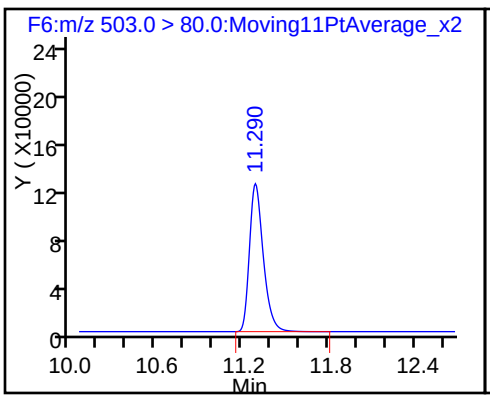
13 Perfluorooctanoic acid (ND)



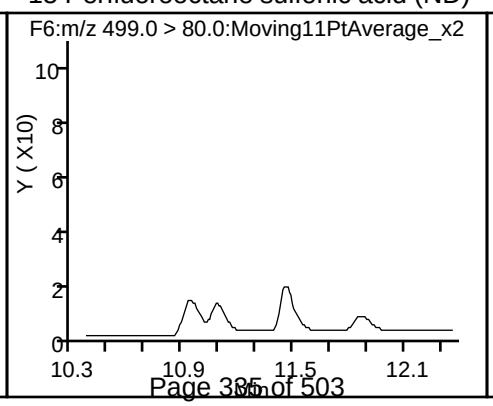
13 Perfluorooctanoic acid (ND)



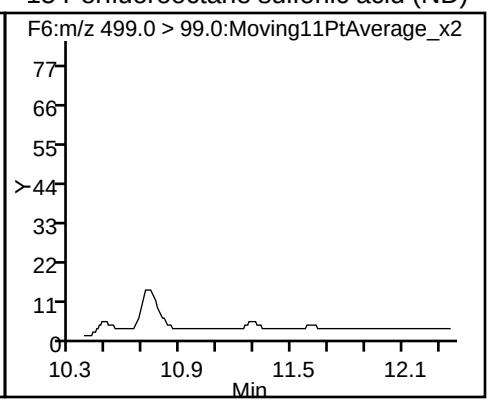
D 16 13C4 PFOS



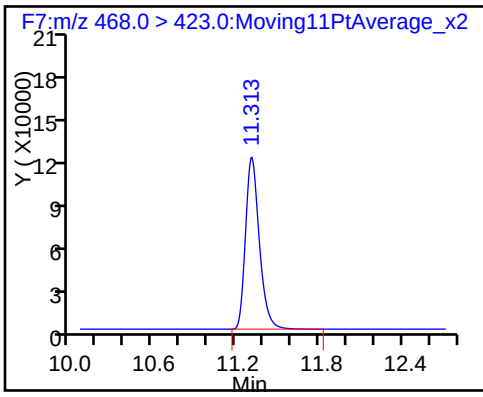
15 Perfluorooctane sulfonic acid (ND)



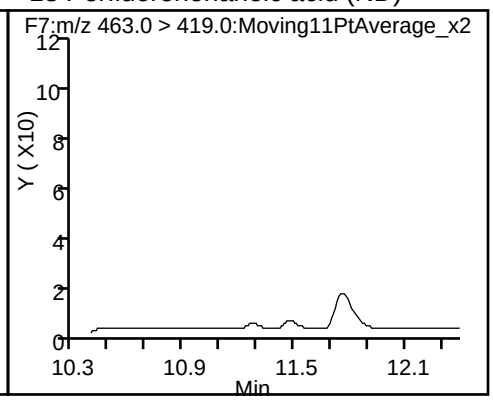
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-63FB Lab Sample ID: 320-17363-13

Matrix: Water Lab File ID: 23FEB2016A6A_044.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 10:47

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 552.5(mL) Date Analyzed: 02/24/2016 04:34

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.79
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		25-150
STL00990	13C4 PFOA	113		25-150
STL00991	13C4 PFOS	99		25-150
STL01892	13C4-PFHpA	117		25-150
STL00995	13C5 PFNA	102		25-150
STL00994	18O2 PFHxS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_044.d
Lims ID: 320-17363-A-13-A Lab Sample ID: 320-17363-13
Client ID: DW-63FB
Sample Type: Client
Inject. Date: 24-Feb-2016 04:34:29 ALS Bottle#: 37 Worklist Smp#: 46
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-13-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:41:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	8.050	-0.065		1583865	47.4		94.7	35840	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.283	-0.078		2068815	58.5		117	16117	
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.319	-0.079		642317	43.9		92.7	9229	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.234	9.324	-0.090	1.000	239	0.3942				
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		2149670	56.6		113	319390	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.335	10.410	-0.075	1.000	3634	0.0873			5.0	
D 16 13C4 PFOS										
503.0 > 80.0	11.290	11.369	-0.079		834014	47.3		98.9	61228	
D 17 13C5 PFNA										
468.0 > 423.0	11.313	11.390	-0.077		1650702	50.9		102	79760	

Report Date: 24-Feb-2016 10:54:22 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_044.d

Injection Date: 24-Feb-2016 04:34:29 Instrument ID: A6

Lims ID: 320-17363-A-13-A Lab Sample ID: 320-17363-13

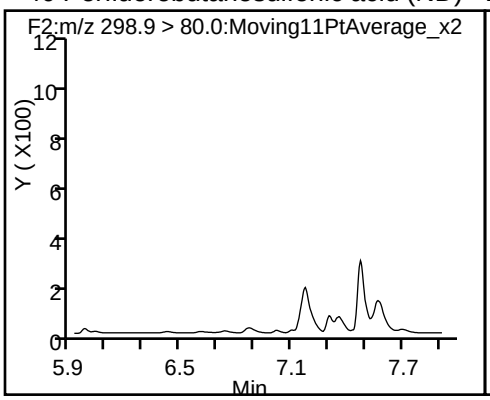
Client ID: DW-63FB

Operator ID: JRB ALS Bottle#: 37 Worklist Smp#: 46

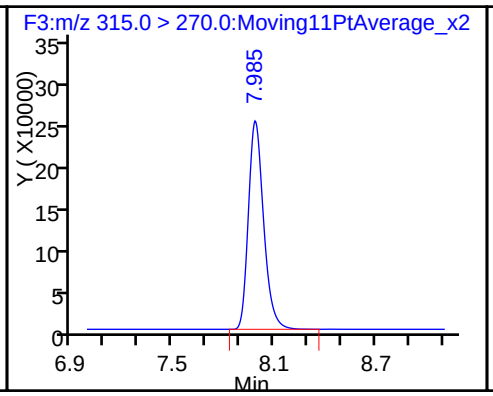
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

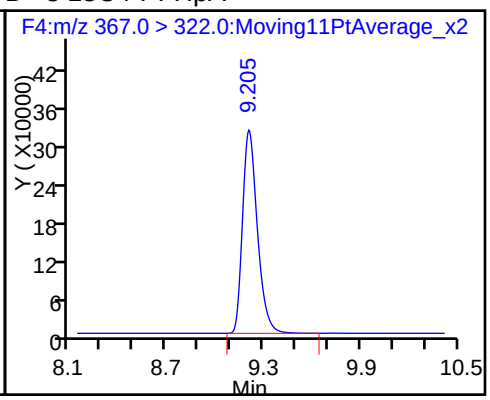
40 Perfluorobutanesulfonic acid (ND)



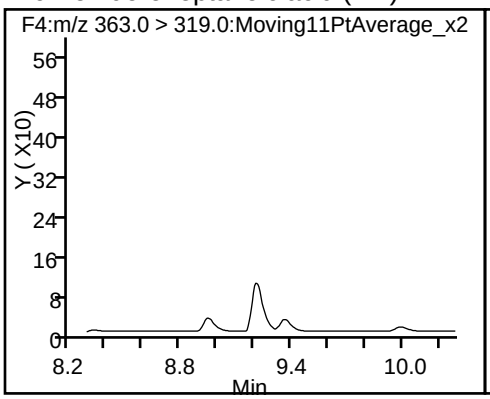
D 6 13C2 PFHxA



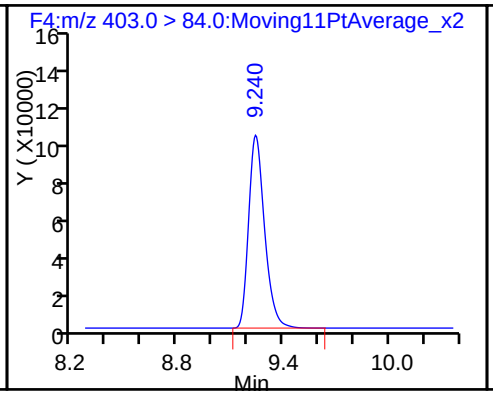
D 8 13C4-PFHpA



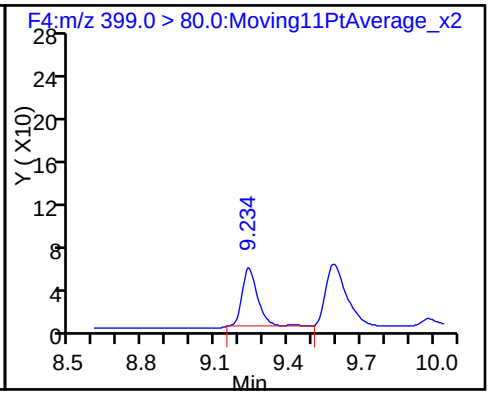
9 Perfluoroheptanoic acid (ND)



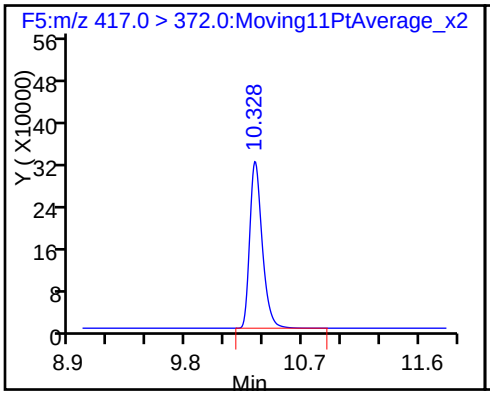
D 11 18O2 PFHxS



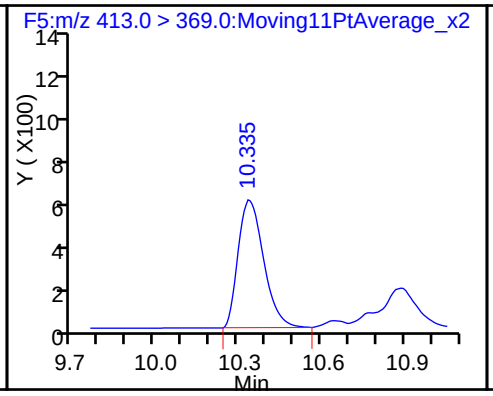
41 Perfluorohexanesulfonic acid



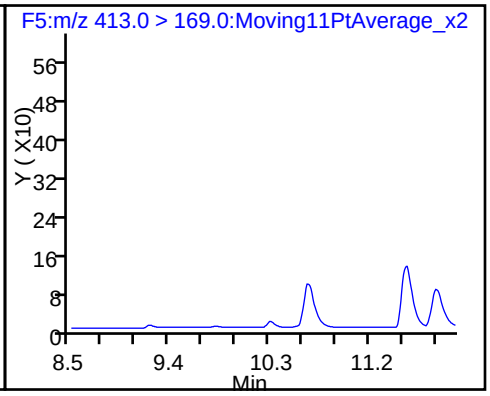
D 12 13C4 PFOA



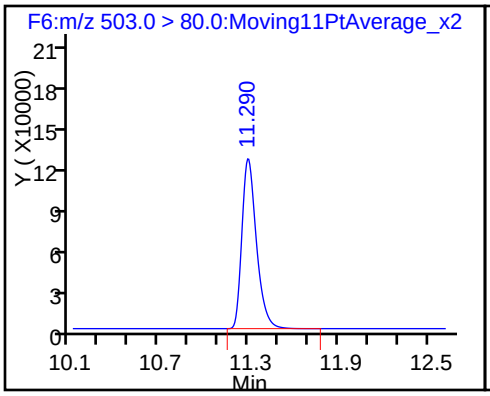
13 Perfluorooctanoic acid



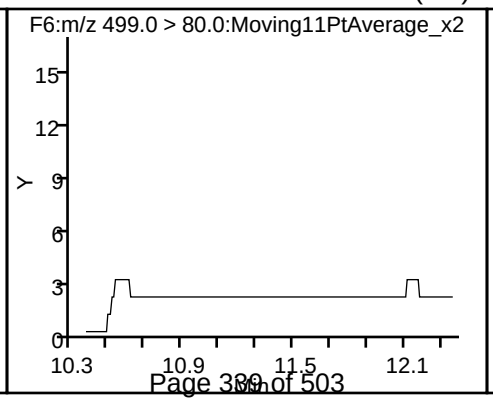
13 Perfluorooctanoic acid



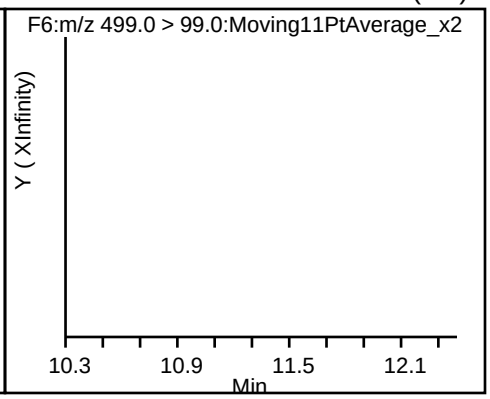
D 16 13C4 PFOS



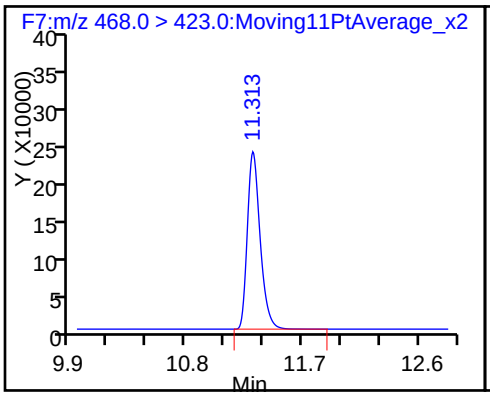
15 Perfluorooctane sulfonic acid (ND)



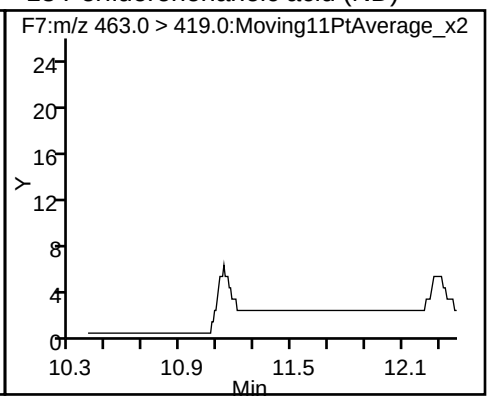
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-87 Lab Sample ID: 320-17363-14

Matrix: Water Lab File ID: 23FEB2016A6A_045.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 12:36

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 555.3(mL) Date Analyzed: 02/24/2016 04:55

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.86	J	2.3	1.8	0.83
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.72
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.78
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.67

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		25-150
STL00990	13C4 PFOA	98		25-150
STL00991	13C4 PFOS	93		25-150
STL01892	13C4-PFHpA	108		25-150
STL00995	13C5 PFNA	81		25-150
STL00994	18O2 PFHxS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_045.d
Lims ID: 320-17363-B-14-A Lab Sample ID: 320-17363-14
Client ID: DW-87
Sample Type: Client
Inject. Date: 24-Feb-2016 04:55:42 ALS Bottle#: 38 Worklist Smp#: 47
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-B-14-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:44:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:50:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.126	6.918	0.208	1.000	820	0.4758				
D 6 13C2 PFHxA										
315.0 > 270.0	7.990	8.050	-0.060		1553965	46.5		92.9	128680	
D 8 13C4-PFHpA										
367.0 > 322.0	9.211	9.283	-0.072		1900643	53.8		108	303801	
D 11 18O2 PFHxS										
403.0 > 84.0	9.246	9.319	-0.073		644111	44.0		93.0	34177	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.240	9.324	-0.084	1.000	355	0.4051				
D 12 13C4 PFOA										
417.0 > 372.0	10.335	10.407	-0.072		1859273	49.0		98.0	23262	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.328	10.410	-0.082	1.000	1595	0.0443			3.8	
D 16 13C4 PFOS										
503.0 > 80.0	11.298	11.369	-0.071		783529	44.4		92.9	116987	
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1314411	40.5		81.1	32234	

Report Date: 24-Feb-2016 10:54:23 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_045.d

Injection Date: 24-Feb-2016 04:55:42 Instrument ID: A6

Lims ID: 320-17363-B-14-A Lab Sample ID: 320-17363-14

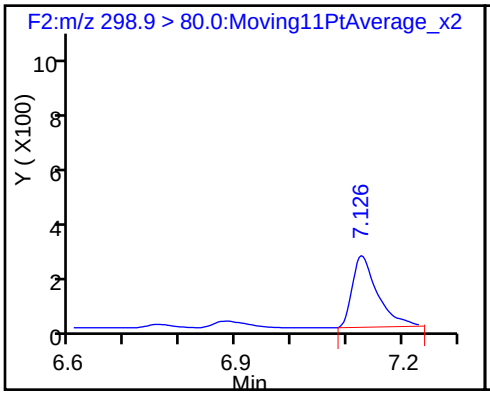
Client ID: DW-87

Operator ID: JRB ALS Bottle#: 38 Worklist Smp#: 47

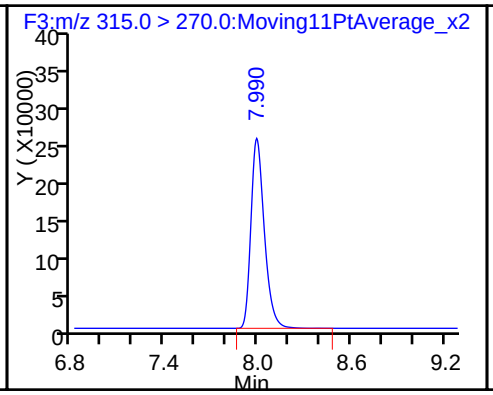
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

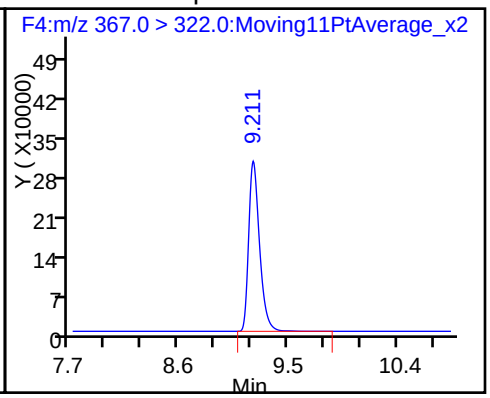
40 Perfluorobutanesulfonic acid



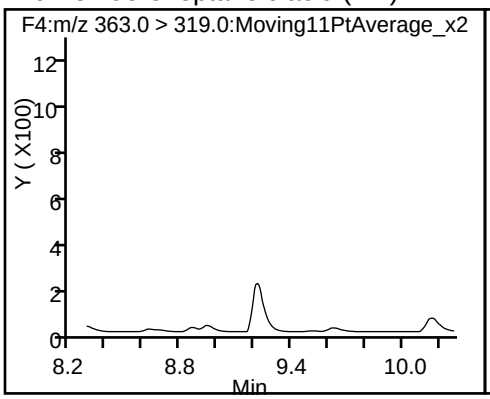
D 6 13C2 PFHxA



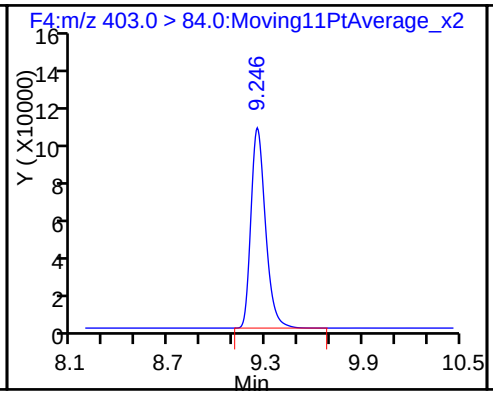
D 8 13C4-PFHpA



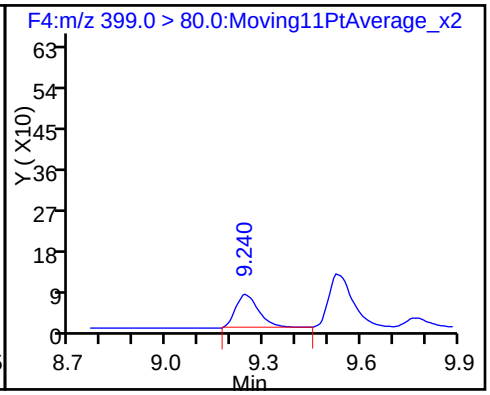
9 Perfluoroheptanoic acid (ND)



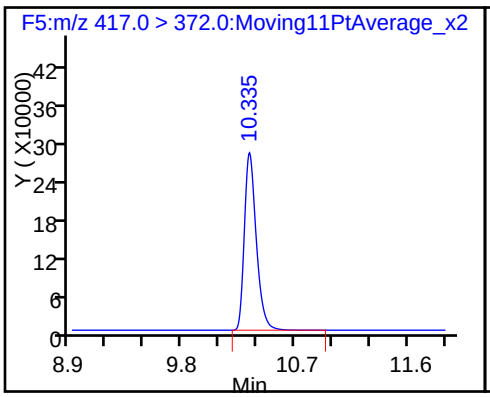
D 11 18O2 PFHxS



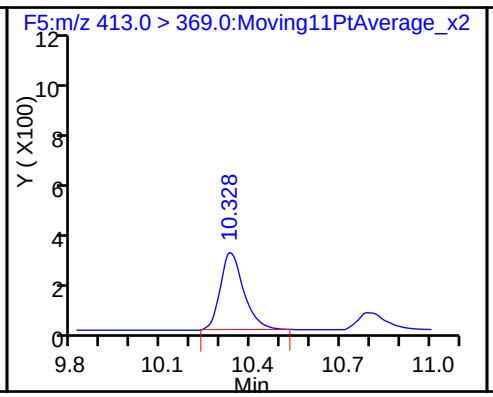
41 Perfluorohexanesulfonic acid



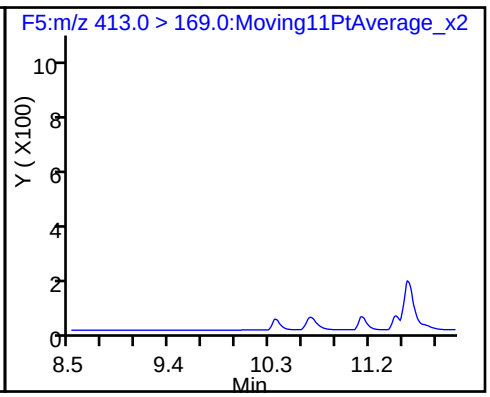
D 12 13C4 PFOA



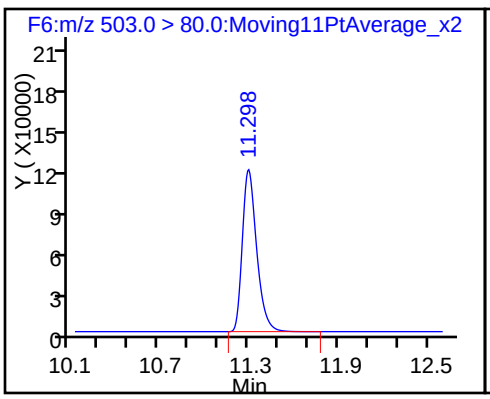
13 Perfluorooctanoic acid



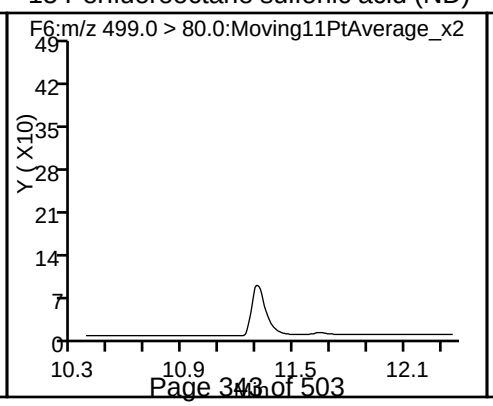
13 Perfluorooctanoic acid



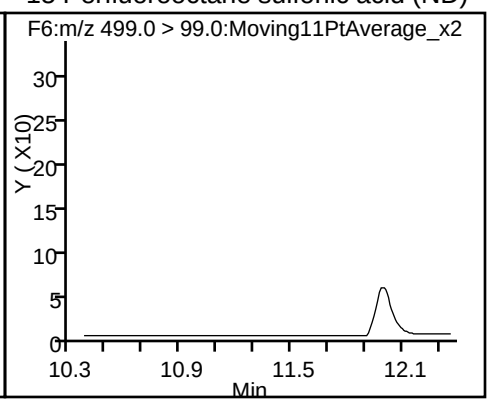
D 16 13C4 PFOS



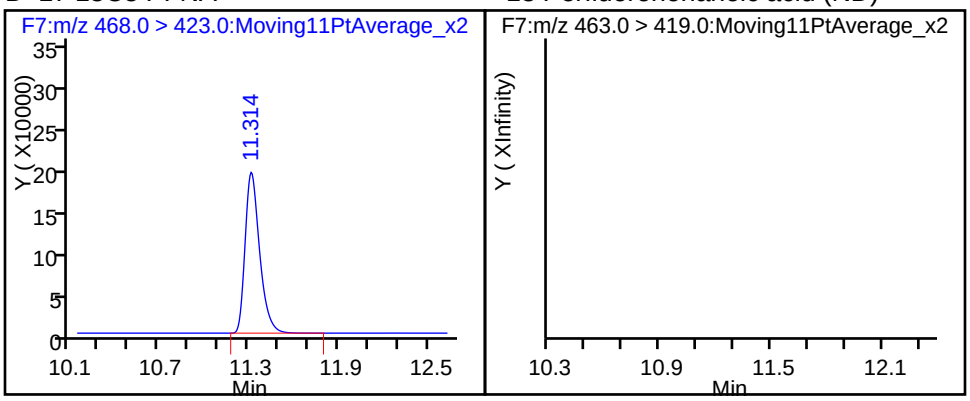
15 Perfluorooctane sulfonic acid (ND)



15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-87FB Lab Sample ID: 320-17363-15

Matrix: Water Lab File ID: 23FEB2016A6A_047.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 12:27

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 553.1(mL) Date Analyzed: 02/24/2016 05:38

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.86	J	2.3	1.8	0.79
375-95-1	Perfluorononanoic acid (PFNA)	0.78	J	2.3	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		25-150
STL00990	13C4 PFOA	114		25-150
STL00991	13C4 PFOS	97		25-150
STL01892	13C4-PFHpA	124		25-150
STL00995	13C5 PFNA	105		25-150
STL00994	18O2 PFHxS	91		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_047.d
Lims ID: 320-17363-A-15-A Lab Sample ID: 320-17363-15
Client ID: DW-87FB
Sample Type: Client
Inject. Date: 24-Feb-2016 05:38:09 ALS Bottle#: 39 Worklist Smp#: 49
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-15-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:54:25 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:51:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.986	8.050	-0.064		1667720	49.9		99.7	43671	
D 8 13C4-PFHpA										
367.0 > 322.0	9.211	9.283	-0.072		2184989	61.8		124	15807	
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.319	-0.079		629095	43.0		90.8	50244	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.258	9.324	-0.066	1.000	1102	0.4780				
D 12 13C4 PFOA										
417.0 > 372.0	10.335	10.407	-0.072		2155245	56.8		114	159515	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.328	10.410	-0.082	1.000	13506	0.3235			45.7	
D 16 13C4 PFOS										
503.0 > 80.0	11.298	11.369	-0.071		822070	46.6		97.5	60832	
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1703972	52.6		105	18972	
18 Perfluorononanoic acid										
463.0 > 419.0	11.314	11.393	-0.079	1.000	2133	0.4314			0.0	

Report Date: 24-Feb-2016 10:54:27 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_047.d

Injection Date: 24-Feb-2016 05:38:09 Instrument ID: A6

Lims ID: 320-17363-A-15-A Lab Sample ID: 320-17363-15

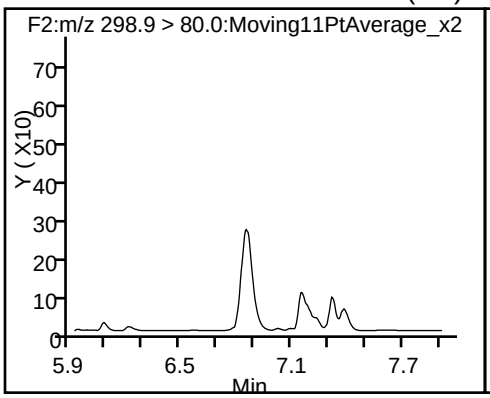
Client ID: DW-87FB

Operator ID: JRB ALS Bottle#: 39 Worklist Smp#: 49

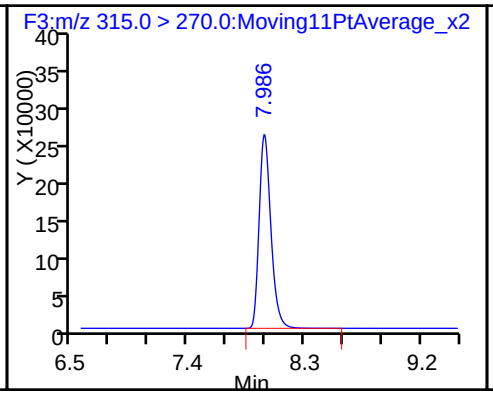
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

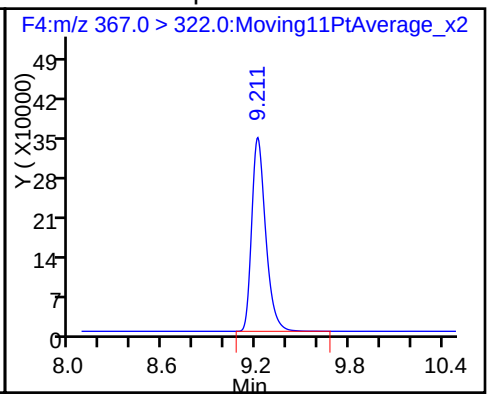
40 Perfluorobutanesulfonic acid (ND)



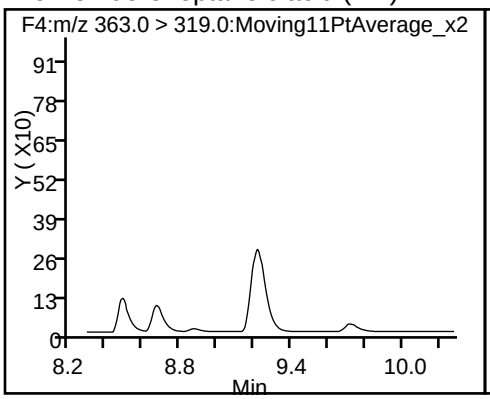
D 6 13C2 PFHxA



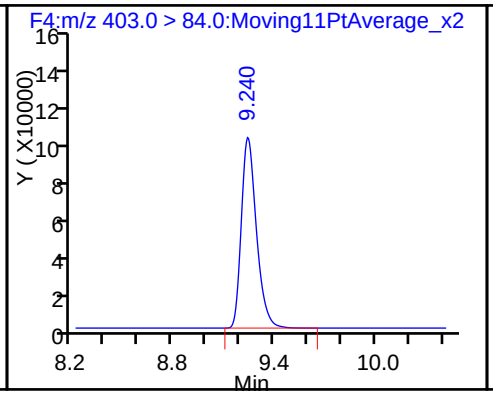
D 8 13C4-PFHpA



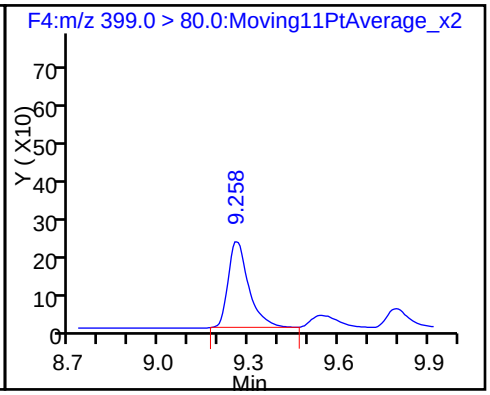
9 Perfluoroheptanoic acid (ND)



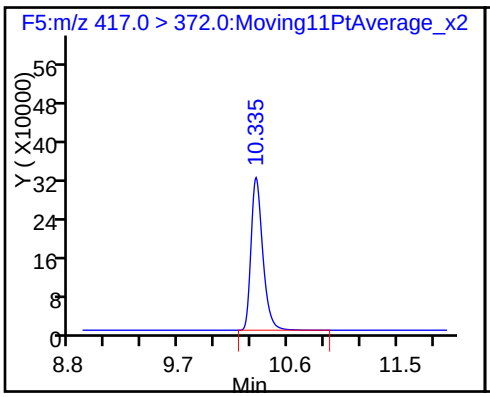
D 11 18O2 PFHxS



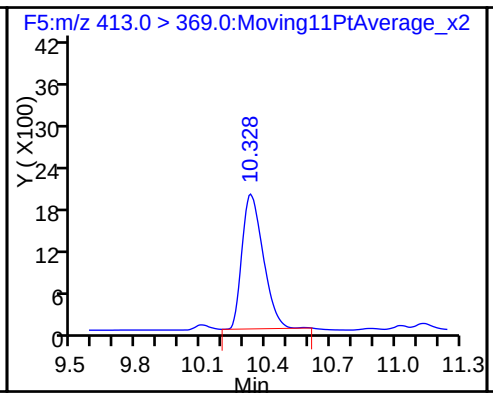
41 Perfluorohexanesulfonic acid



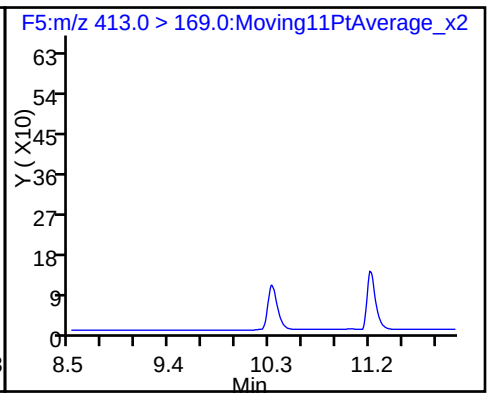
D 12 13C4 PFOA



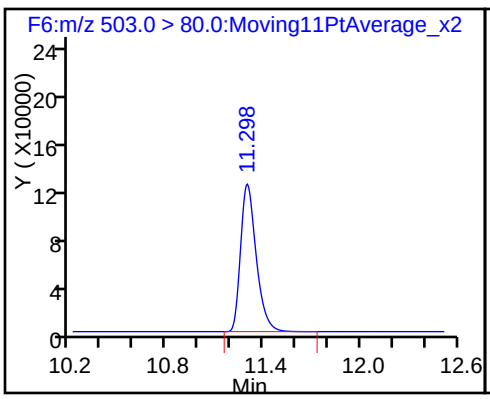
13 Perfluorooctanoic acid



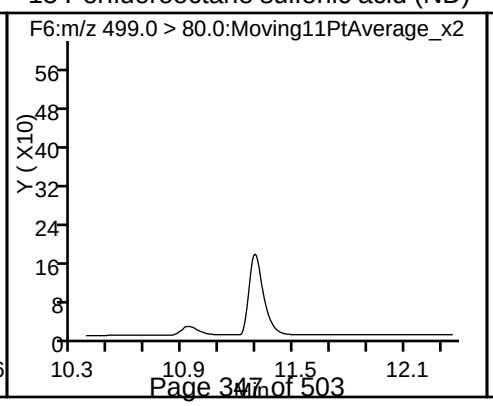
13 Perfluorooctanoic acid



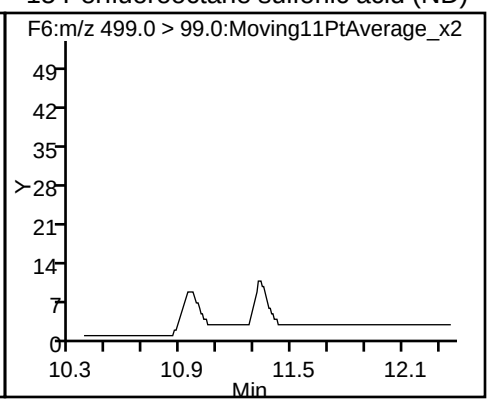
D 16 13C4 PFOS



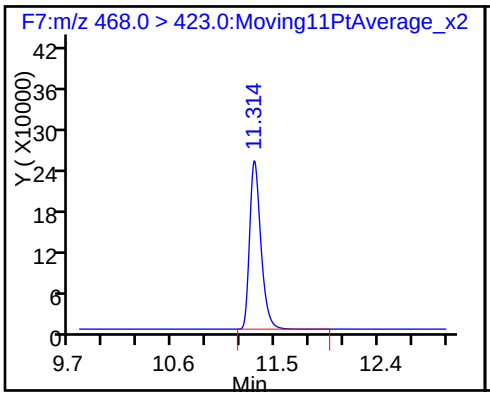
15 Perfluorooctane sulfonic acid (ND)



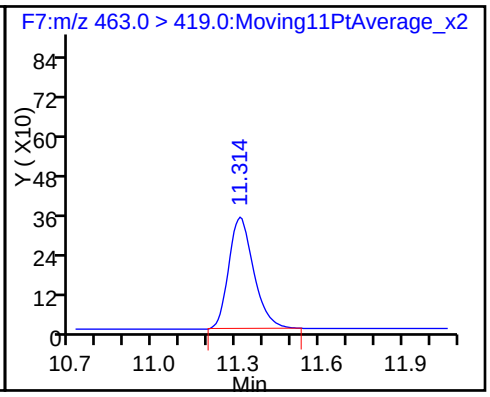
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-23 | Lab Sample ID: 320-17363-16

Matrix: Water | Lab File ID: 23FEB2016A6A_048.d

Analysis Method: WS-LC-0025 | Date Collected: 02/19/2016 12:06

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 554(mL) | Date Analyzed: 02/24/2016 05:59

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.72
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.79
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		25-150
STL00990	13C4 PFOA	79		25-150
STL00991	13C4 PFOS	98		25-150
STL01892	13C4-PFHpA	96		25-150
STL00995	13C5 PFNA	70		25-150
STL00994	18O2 PFHxS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_048.d
Lims ID: 320-17363-B-16-A Lab Sample ID: 320-17363-16
Client ID: DW-23
Sample Type: Client
Inject. Date: 24-Feb-2016 05:59:24 ALS Bottle#: 40 Worklist Smp#: 50
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-B-16-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:54:25 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 24-Feb-2016 08:27:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.979	8.050	-0.071		1504769	45.0		90.0	10006	
D 8 13C4-PFHpA										
367.0 > 322.0	9.195	9.283	-0.088		1699673	48.1		96.2	134173	
D 11 18O2 PFHxS										
403.0 > 84.0	9.230	9.319	-0.089		645728	44.1		93.2	9399	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.230	9.324	-0.094	1.000	41	0.3755				
D 12 13C4 PFOA										
417.0 > 372.0	10.323	10.407	-0.084		1493669	39.4		78.7	110461	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.337	10.410	-0.073	1.000	4232	0.1463			10.6	
413.0 > 169.0	10.323	10.410	-0.087	0.999	1850		2.29(0.00-0.00)		68.2	
D 16 13C4 PFOS										
503.0 > 80.0	11.278	11.369	-0.091		825360	46.8		97.9	60227	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.270	11.371	-0.101	1.000	2980	0.5957			62.9	
D 17 13C5 PFNA										
468.0 > 423.0	11.301	11.390	-0.089		1130363	34.9		69.7	83347	

Report Date: 24-Feb-2016 10:54:28 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_048.d

Injection Date: 24-Feb-2016 05:59:24 Instrument ID: A6

Lims ID: 320-17363-B-16-A Lab Sample ID: 320-17363-16

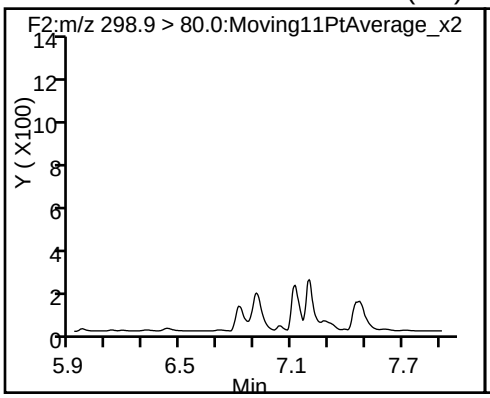
Client ID: DW-23

Operator ID: JRB ALS Bottle#: 40 Worklist Smp#: 50

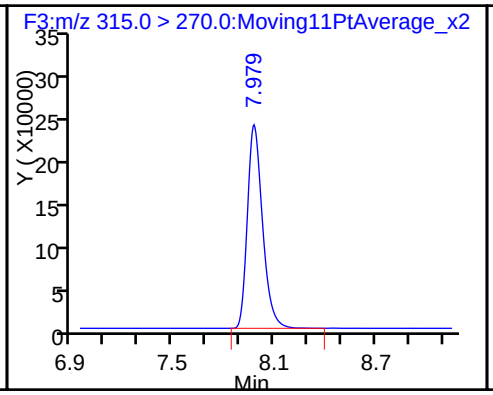
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

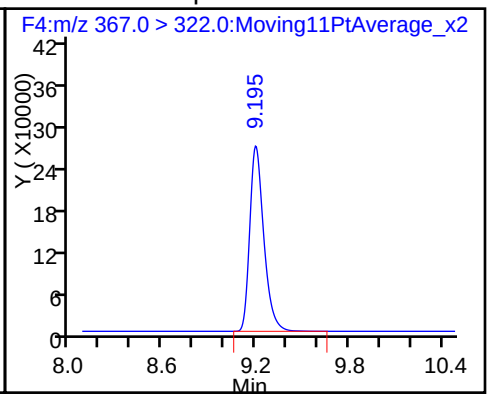
40 Perfluorobutanesulfonic acid (ND)



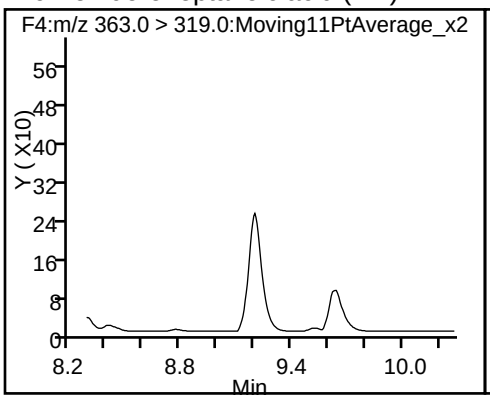
D 6 13C2 PFHxA



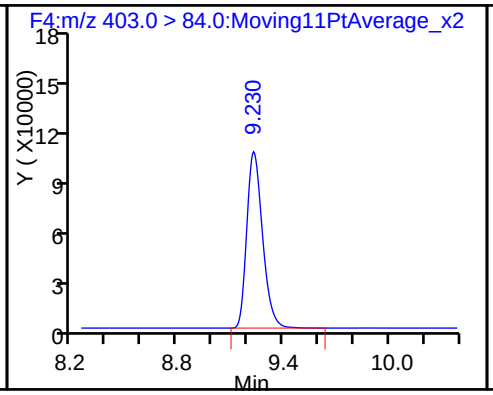
D 8 13C4-PFHpA



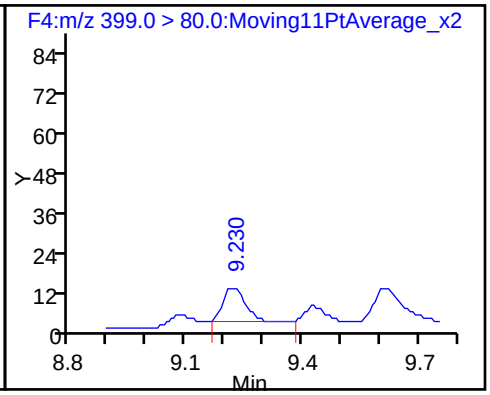
9 Perfluoroheptanoic acid (ND)



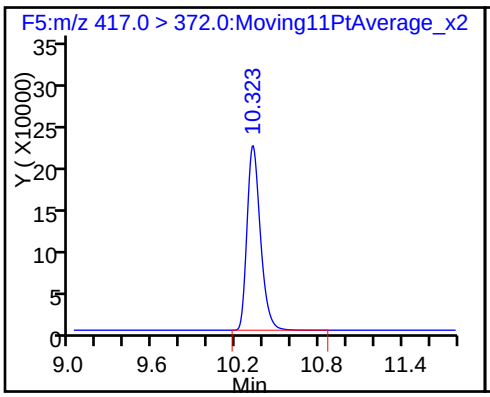
D 11 18O2 PFHxS



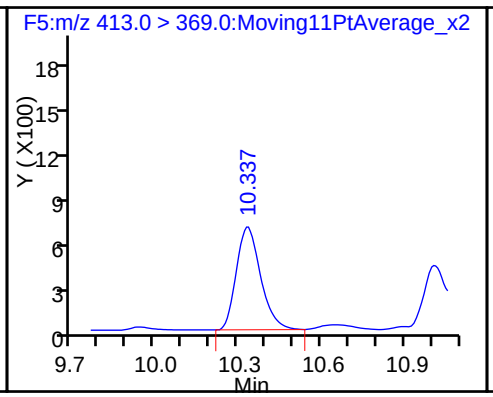
41 Perfluorohexanesulfonic acid



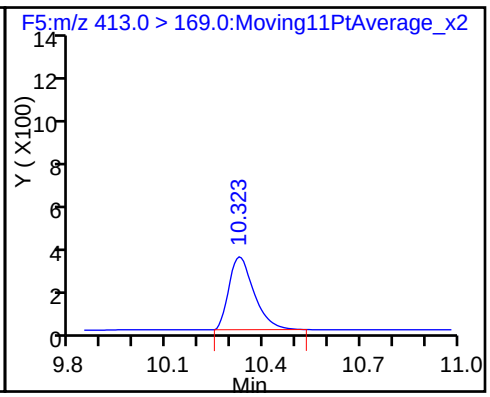
D 12 13C4 PFOA



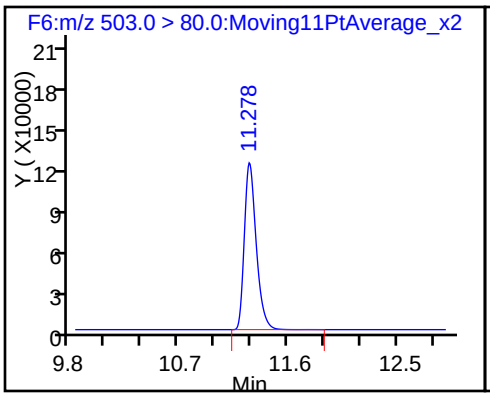
13 Perfluorooctanoic acid



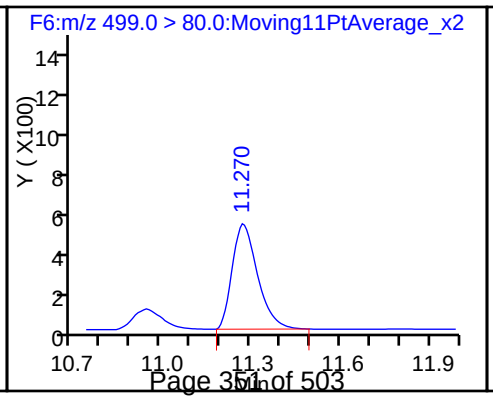
13 Perfluorooctanoic acid



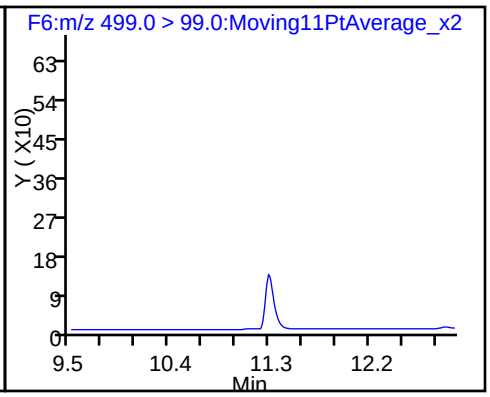
D 16 13C4 PFOS



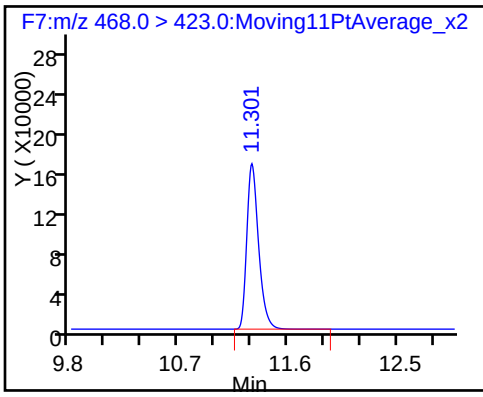
15 Perfluorooctane sulfonic acid



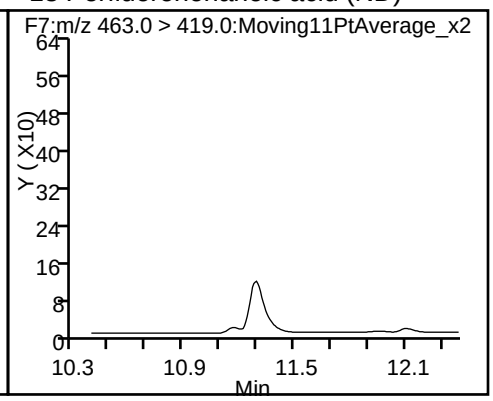
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Client Sample ID: DW-23FB Lab Sample ID: 320-17363-17

Matrix: Water Lab File ID: 23FEB2016A6A_049.d

Analysis Method: WS-LC-0025 Date Collected: 02/19/2016 10:47

Extraction Method: 3535 Date Extracted: 02/22/2016 13:35

Sample wt/vol: 558.8(mL) Date Analyzed: 02/24/2016 06:20

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

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.72
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.78
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.59
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		25-150
STL00990	13C4 PFOA	111		25-150
STL00991	13C4 PFOS	96		25-150
STL01892	13C4-PFHpA	113		25-150
STL00995	13C5 PFNA	109		25-150
STL00994	18O2 PFHxS	95		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_049.d
Lims ID: 320-17363-A-17-A Lab Sample ID: 320-17363-17
Client ID: DW-23FB
Sample Type: Client
Inject. Date: 24-Feb-2016 06:20:39 ALS Bottle#: 41 Worklist Smp#: 51
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-17-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:54:25 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:52:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.979	8.050	-0.071		1650767	49.4		98.7	86489	
D 8 13C4-PFHpA										
367.0 > 322.0	9.207	9.283	-0.076		2001537	56.6		113	78348	
D 11 18O2 PFHxS										
403.0 > 84.0	9.242	9.319	-0.077		658217	45.0		95.0	26550	
D 12 13C4 PFOA										
417.0 > 372.0	10.330	10.407	-0.077		2113719	55.7		111	51843	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.336	10.410	-0.074	1.000	2424	0.0592			2.0	
D 16 13C4 PFOS										
503.0 > 80.0	11.299	11.369	-0.070		808268	45.8		95.8	59634	
D 17 13C5 PFNA										
468.0 > 423.0	11.315	11.390	-0.075		1760145	54.3		109	126594	

Report Date: 24-Feb-2016 10:54:28 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_049.d

Injection Date: 24-Feb-2016 06:20:39 Instrument ID: A6

Lims ID: 320-17363-A-17-A Lab Sample ID: 320-17363-17

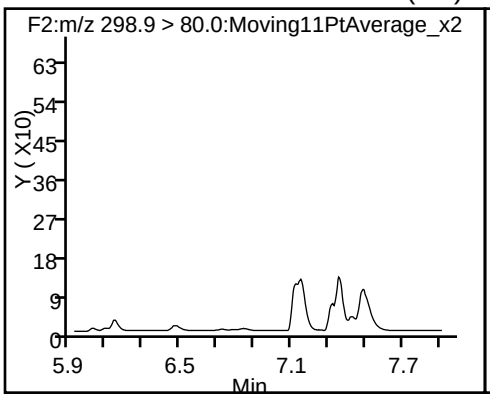
Client ID: DW-23FB

Operator ID: JRB ALS Bottle#: 41 Worklist Smp#: 51

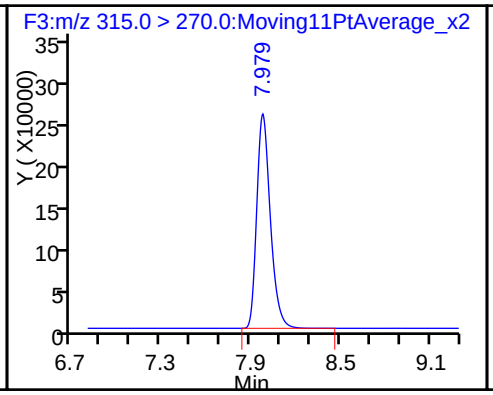
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

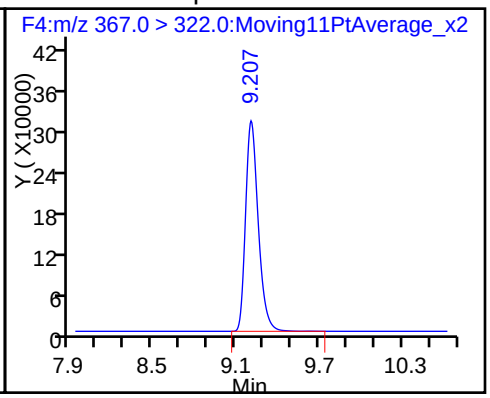
40 Perfluorobutanesulfonic acid (ND)



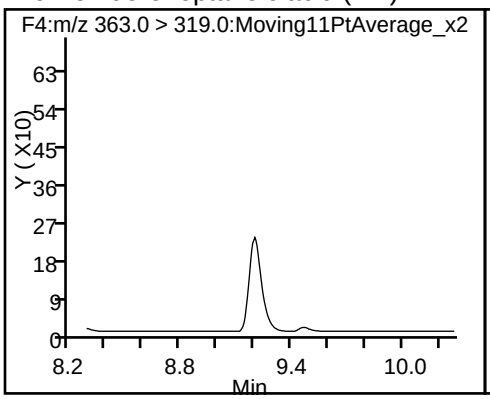
D 6 13C2 PFHxA



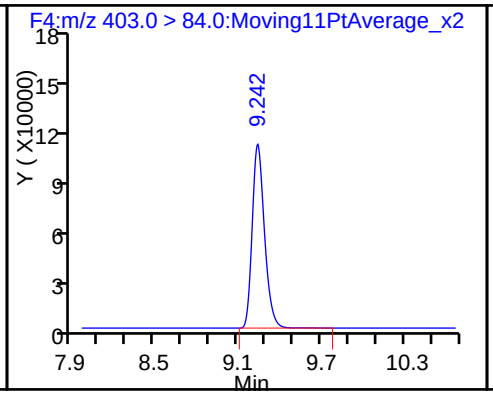
D 8 13C4-PFHpA



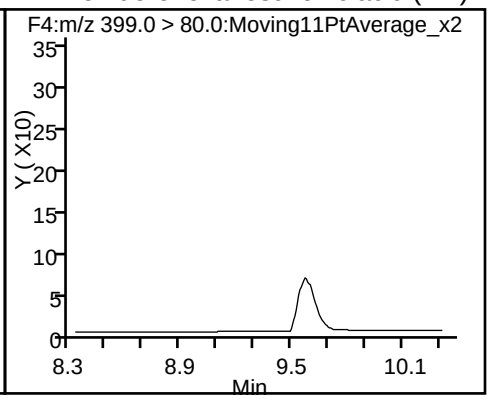
9 Perfluoroheptanoic acid (ND)



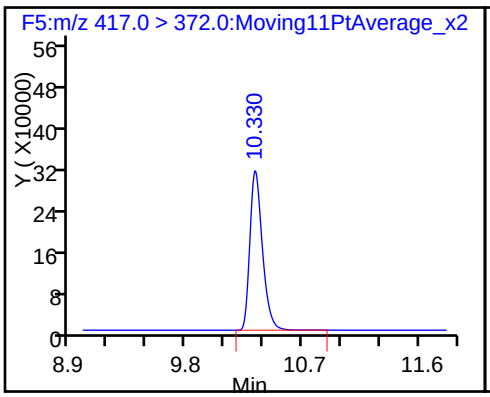
D 11 18O2 PFHxS



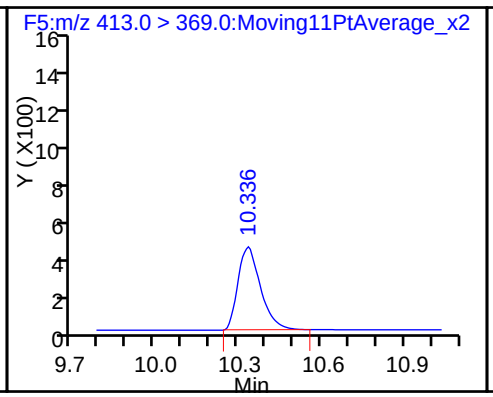
41 Perfluorohexanesulfonic acid (ND)



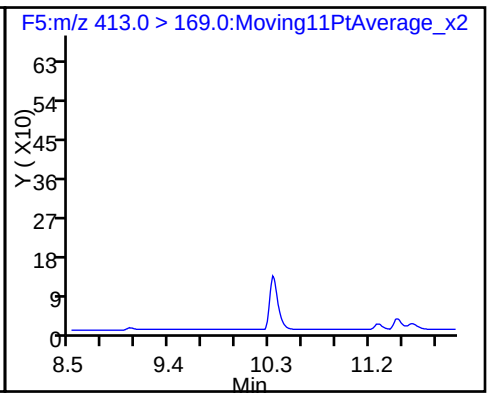
D 12 13C4 PFOA



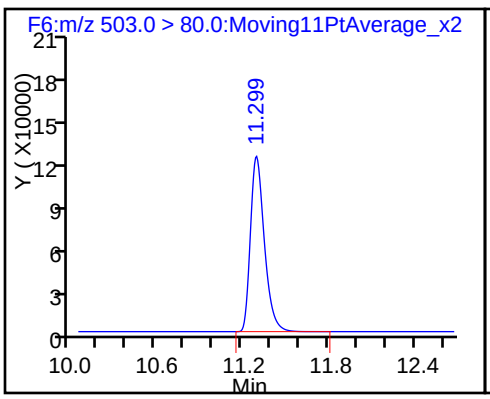
13 Perfluorooctanoic acid



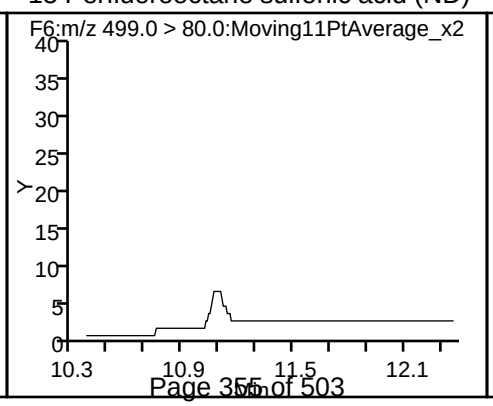
13 Perfluorooctanoic acid



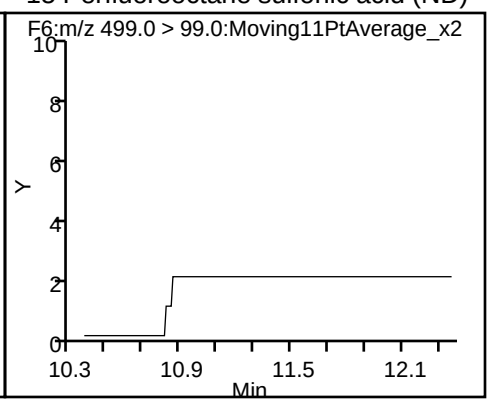
D 16 13C4 PFOS



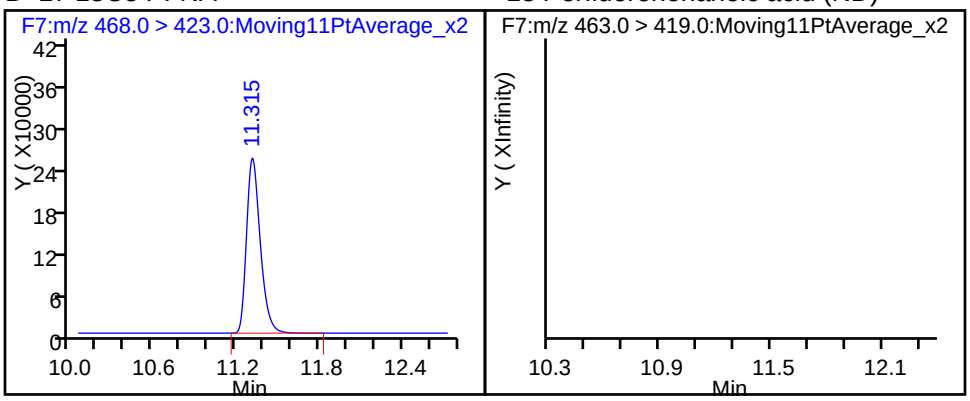
15 Perfluorooctane sulfonic acid (ND)



15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA 18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: DUP-021916 | Lab Sample ID: 320-17363-18

Matrix: Water | Lab File ID: 23FEB2016A6A_050.d

Analysis Method: WS-LC-0025 | Date Collected: 02/19/2016 12:06

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 496.7(mL) | Date Analyzed: 02/24/2016 06:41

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.81
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.88
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.66
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		25-150
STL00990	13C4 PFOA	89		25-150
STL00991	13C4 PFOS	91		25-150
STL01892	13C4-PFHpA	100		25-150
STL00995	13C5 PFNA	76		25-150
STL00994	18O2 PFHxS	89		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_050.d
Lims ID: 320-17363-A-18-A Lab Sample ID: 320-17363-18
Client ID: DUP-021916
Sample Type: Client
Inject. Date: 24-Feb-2016 06:41:52 ALS Bottle#: 42 Worklist Smp#: 52
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17363-A-18-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:54:25 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 10:52:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	8.050	-0.070		1396350	41.7		83.5	75364	
D 8 13C4-PFHpA										
367.0 > 322.0	9.200	9.283	-0.083		1763443	49.9		99.8	56698	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.319	-0.084		617251	42.2		89.1	5522	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.211	9.324	-0.113	1.000	520	0.4228				
D 12 13C4 PFOA										
417.0 > 372.0	10.321	10.407	-0.086		1693724	44.6		89.3	123128	
D 16 13C4 PFOS										
503.0 > 80.0	11.284	11.369	-0.085		765099	43.4		90.7	55647	
D 17 13C5 PFNA										
468.0 > 423.0	11.306	11.390	-0.084		1236748	38.2		76.3	90787	

Report Date: 24-Feb-2016 10:54:29 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_050.d

Injection Date: 24-Feb-2016 06:41:52 Instrument ID: A6

Lims ID: 320-17363-A-18-A Lab Sample ID: 320-17363-18

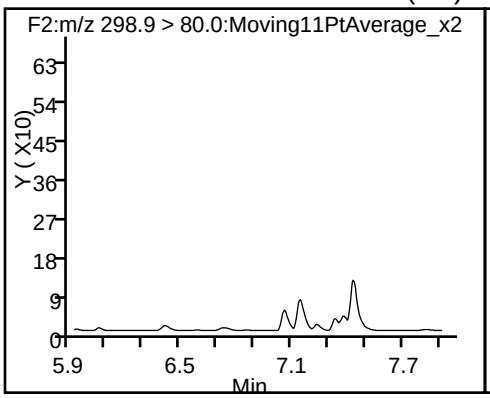
Client ID: DUP-021916

Operator ID: JRB ALS Bottle#: 42 Worklist Smp#: 52

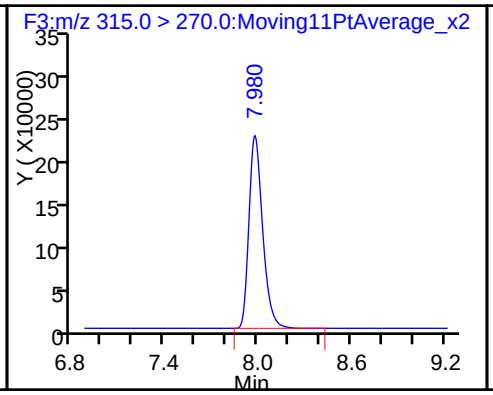
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

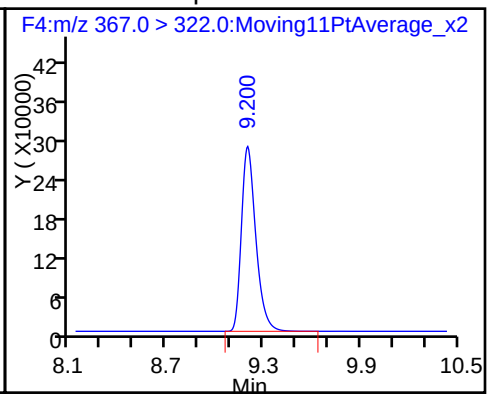
40 Perfluorobutanesulfonic acid (ND)



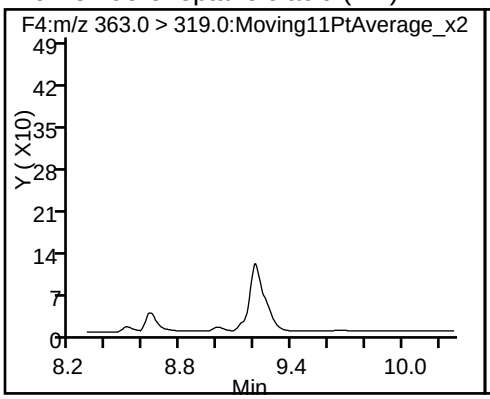
D 6 13C2 PFHxA



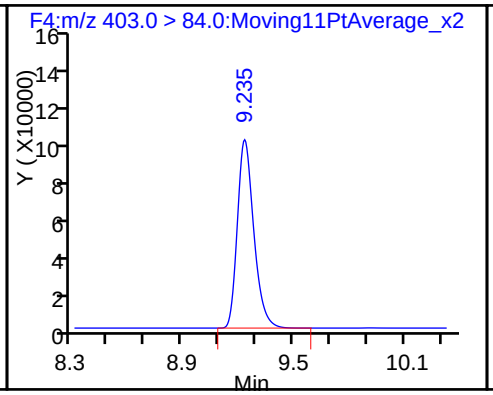
D 8 13C4-PFHpA



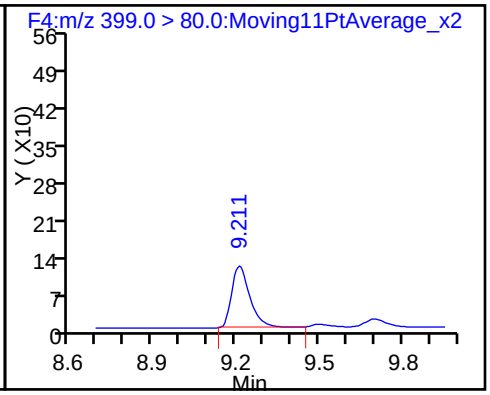
9 Perfluoroheptanoic acid (ND)



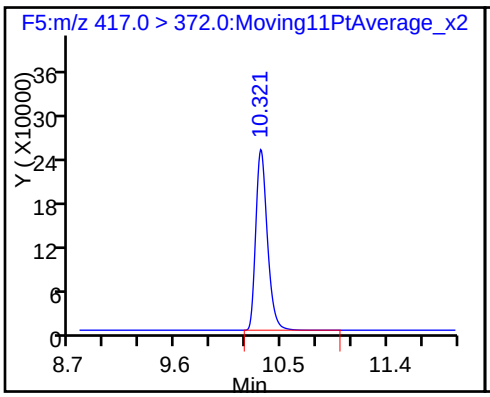
D 11 18O2 PFHxS



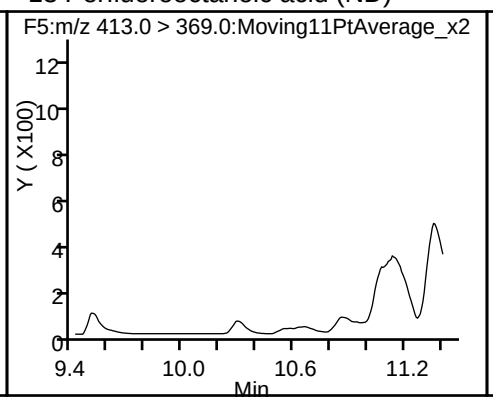
41 Perfluorohexanesulfonic acid



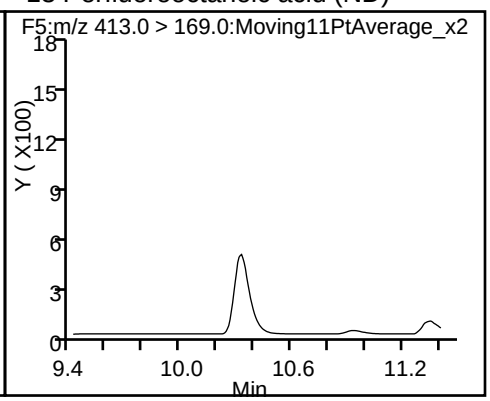
D 12 13C4 PFOA



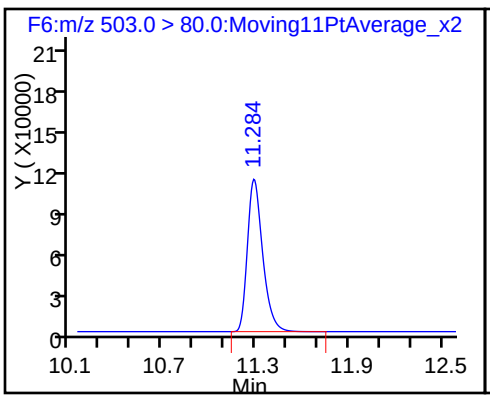
13 Perfluorooctanoic acid (ND)



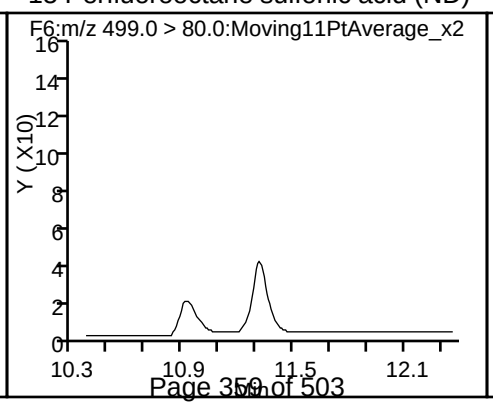
13 Perfluorooctanoic acid (ND)



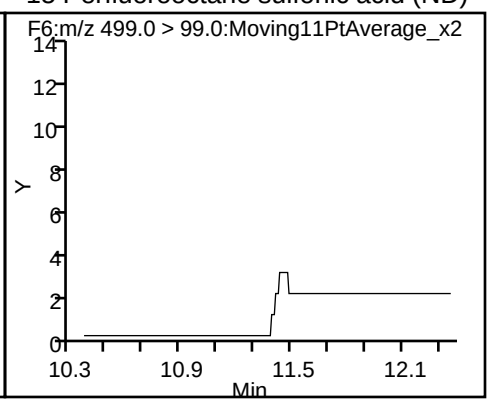
D 16 13C4 PFOS



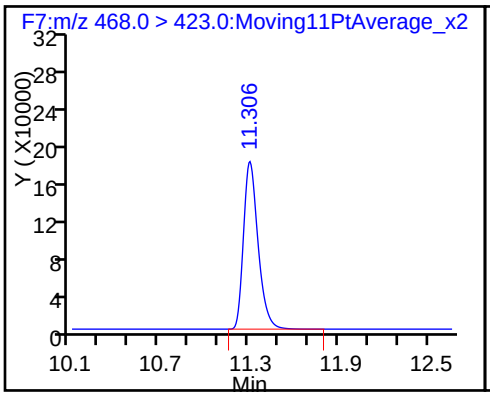
15 Perfluorooctane sulfonic acid (ND)



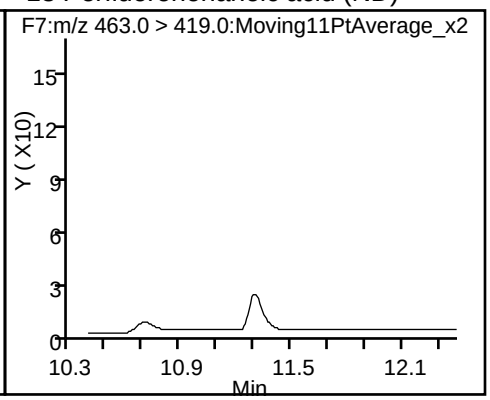
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM VI

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA

RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1 Analy Batch No.: 101158

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/22/2016 11:29 Calibration End Date: 02/22/2016 13:36 Calibration ID: 19233

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101158/2	22FEB2016A6A_004.d
Level 2	STD 320-101158/3	22FEB2016A6A_005.d
Level 3	STD 320-101158/4	22FEB2016A6A_006.d
Level 4	STD 320-101158/5	22FEB2016A6A_007.d
Level 5	STD 320-101158/6	22FEB2016A6A_008.d
Level 6	STD 320-101158/7	22FEB2016A6A_009.d
Level 7	STD 320-101158/8	22FEB2016A6A_010.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	5.705	5.687	5.699	5.699	5.696	5.696	5.699				5.447 - 5.947	5.697
Perfluoropentanoic acid (PFPeA)	6.813	6.794	6.812	6.808	6.804	6.803	6.799				6.555 - 7.055	6.805
Perfluorobutanesulfonic acid (PFBS)	+++++	6.932	6.927	6.918	6.918	6.914	6.909				6.668 - 7.168	6.920
Perfluorohexanoic acid (PFHxA)	+++++	8.067	8.050	8.050	8.045	8.050	8.040				7.803 - 8.303	8.050
Perfluoroheptanoic acid (PFHpA)	+++++	9.299	9.293	9.287	9.282	9.277	9.276				9.038 - 9.538	9.286
Perfluorohexanesulfonic acid (PFHxS)	+++++	9.334	9.322	9.317	9.317	9.318	9.311				9.074 - 9.574	9.320
Perfluorooctanoic acid (PFOA)	10.426	10.412	10.412	10.412	10.405	10.406	10.398				10.160 - 10.660	10.410
Perfluoroheptanesulfonic Acid (PFHpS)	10.419	10.419	10.419	10.412	10.412	10.406	10.405				10.164 - 10.664	10.413
Perfluorooctanesulfonic acid (PFOS)	+++++	11.371	11.370	11.370	11.363	11.364	11.363				11.121 - 11.621	11.367
Perfluorononanoic acid (PFNA)	+++++	11.401	11.393	11.393	11.386	11.387	11.386				11.143 - 11.643	11.391
Perfluorodecanoic acid (PFDA)	+++++	12.245	12.235	12.235	12.224	12.228	12.224				11.984 - 12.484	12.232
Perfluorooctane Sulfonamide (FOSA)	+++++	12.774	12.784	12.773	12.774	12.767	12.774				12.524 - 13.024	12.774
Perfluorodecane Sulfonic acid	+++++	12.930	12.910	12.909	12.909	12.902	+++++				12.663 - 13.163	12.912
Perfluoroundecanoic acid (PFUnA)	12.961	12.961	12.961	12.961	12.951	12.954	12.951				12.707 - 13.207	12.957
Perfluorododecanoic acid (PFDoA)	13.579	13.579	13.570	13.570	13.570	13.565	13.561				13.321 - 13.821	13.571
Perfluorotridecanoic Acid (PFTriA)	14.102	14.095	14.087	14.087	14.087	14.090	14.087				13.841 - 14.341	14.091
Perfluorotetradecanoic acid (PFTeA)	14.547	14.534	14.533	14.533	14.527	14.530	14.527				14.283 - 14.783	14.533
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	15.181	15.181	15.176	15.176	15.174	15.176				14.929 - 15.429	15.177
Perfluoro-n-octandecanoic acid (PFODA)	15.523	15.518	15.517	15.512	15.512	15.511	15.508				15.264 - 15.764	15.514
13C4 PFBA	5.702	5.702	5.702	5.696	5.693	5.696	5.699				5.448 - 5.948	5.699
13C5-PFPeA	6.808	6.808	6.808	6.803	6.804	6.799	6.799				6.554 - 7.054	6.804
13C2 PFHxA	8.056	8.056	8.056	8.050	8.045	8.045	8.040				7.800 - 8.300	8.050
13C4-PFHpA	9.293	9.287	9.287	9.281	9.276	9.277	9.276				9.033 - 9.533	9.282
18O2 PFHxS	9.328	9.322	9.322	9.322	9.311	9.318	9.311				9.069 - 9.569	9.319
13C4 PFOA	10.419	10.412	10.412	10.405	10.405	10.399	10.398				10.157 - 10.657	10.407
13C4 PFOS	11.378	11.378	11.370	11.370	11.363	11.364	11.356				11.119 - 11.619	11.368
13C5 PFNA	11.401	11.393	11.393	11.393	11.386	11.387	11.379				11.140 - 11.640	11.390
13C2 PFDA	12.245	12.235	12.235	12.235	12.224	12.228	12.224				11.982 - 12.482	12.232
13C8 FOSA	12.784	12.774	12.774	12.773	12.774	12.767	12.774				12.524 - 13.024	12.774
13C2 PFUnA	12.961	12.961	12.961	12.961	12.951	12.954	12.951				12.707 - 13.207	12.957
13C2 PFDoA	13.579	13.579	13.570	13.570	13.561	13.565	13.561				13.319 - 13.819	13.569
13C2-PFTeDA	14.540	14.540	14.533	14.533	14.527	14.530	14.527				14.283 - 14.783	14.533
13C2-PFHxDA	15.186	15.181	15.181	15.176	15.176	15.174	15.171				14.928 - 15.428	15.178

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1 Analy Batch No.: 101158

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/22/2016 11:29 Calibration End Date: 02/22/2016 13:36 Calibration ID: 19233

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101158/2	22FEB2016A6A_004.d
Level 2	STD 320-101158/3	22FEB2016A6A_005.d
Level 3	STD 320-101158/4	22FEB2016A6A_006.d
Level 4	STD 320-101158/5	22FEB2016A6A_007.d
Level 5	STD 320-101158/6	22FEB2016A6A_008.d
Level 6	STD 320-101158/7	22FEB2016A6A_009.d
Level 7	STD 320-101158/8	22FEB2016A6A_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	18853 17957	21139 16591	19072 15509	20462	Ave		18511.9400				10.8		50.0			
13C5-PFPeA	38699 34518	41982 30779	37476 28454	39363	Ave		35895.8486				13.6		50.0			
13C2 PFHxA	35393 31899	39600 28463	34722 25458	38590	Ave		33446.3743				15.5		50.0			
13C4-PFHpA	38083 32878	40300 30665	37774 26875	40881	Ave		35350.9743				15.0		50.0			
18O2 PFHxS	15244 13394	17448 12382	16021 11289	16723	Ave		14642.8813				15.9		50.0			
13C4 PFOA	43309 34431	45369 30462	41022 27664	43377	Ave		37947.6686				18.5		50.0			
13C4 PFOS	18920 15987	21575 14187	20259 12551	20031	Ave		17644.3545				19.4		50.0			
13C5 PFNA	35331 30562	37077 26182	35027 25142	37597	Ave		32417.0829				15.9		50.0			
13C2 PFDA	33929 28331	35824 22672	32265 21048	31505	Ave		29367.6743				19.2		50.0			
13C8 FOSA	52584 45272	52286 41508	49181 36254	55264	Ave		47478.4629				14.4		50.0			
13C2 PFUnA	44076 34130	45576 29222	40991 26743	44090	Ave		37832.6914				20.4		50.0			
13C2 PFDoA	45011 44106	47105 37481	46065 33123	49960	Ave		43264.5343				13.6		50.0			
13C2-PFTeDA	37633 35935	41335 31112	39517 31506	45892	Ave		37561.3086				14.1		50.0			
13C2-PFHxDA	40282 38945	49494 38397	46091 37414	50740	Ave		43052.1286				13.0		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1 Analy Batch No.: 101158

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/22/2016 11:29 Calibration End Date: 02/22/2016 13:36 Calibration ID: 19233

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)	9196.0 23642	20305 21382	27245	28622	25409	L2ID	-0.469	1.4332							0.9990		0.9900
Perfluoropentanoic acid (PFPeA)	37062 30675	47219 27083	38985	40098	33798	AveID		1.0099				5.9		35.0			
Perfluorobutanesulfonic acid (PFBS)	+++++ 14858	11199 13049	15287	19874	17357	L2ID	-0.509	1.1952							0.9950		0.9900
Perfluorohexanoic acid (PFHxA)	+++++ 31141	33586 28294	37073	40857	36013	AveID		1.0515				9.8		35.0			
Perfluoroheptanoic acid (PFHpA)	+++++ 30790	29705 26927	38513	46408	36623	L2ID	-0.327	1.0717							0.9960		0.9900
Perfluorohexanesulfonic acid (PFHxS)	+++++ 9284.8	8107.8 8368.9	12162	12329	11084	L2ID	-0.289	0.7784							0.9970		0.9900
Perfluorooctanoic acid (PFOA)	44530 29239	36786 26127	42322	42366	35410	AveID		0.9686				8.1		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	3682.8 9143.1	8821.4 8076.8	13567	13884	11601	L2ID	-0.238	0.6856							0.9970		0.9900
Perfluorooctanesulfonic acid (PFOS)	+++++ 13750	11996 12005	19096	20151	17053	L2ID	-0.430	1.0120							0.9980		0.9900
Perfluorononanoic acid (PFNA)	+++++ 21995	19848 20797	27653	32361	24154	L2ID	-0.299	0.8374							0.9990		0.9900
Perfluorodecanoic acid (PFDA)	+++++ 22833	30484 19510	32578	31113	26106	L2ID	-0.112	0.9745							0.9980		0.9900
Perfluorooctane Sulfonamide (FOSA)	+++++ 35223	34491 30540	43979	46964	37039	AveID		0.8188				10.0		35.0			
Perfluorodecane Sulfonic acid	+++++ 8347.9	6018.7 +++++	10921	13605	10656	L1ID	-0.231	0.6115							0.9960		0.9900
Perfluoroundecanoic acid (PFUnA)	88958 25516	63288 22568	41831	38794	31054	L1ID	0.5941	0.8553							1.0000		0.9900
Perfluorododecanoic acid (PFDoA)	28946 29633	33333 24297	34968	37725	33145	AveID		0.7344				6.5		35.0			
Perfluorotridecanoic Acid (PFTriA)	49026 30869	41714 25110	48430	48782	39378	AveID		0.9253				13.0		50.0			
Perfluorotetradecanoic acid (PFTeA)	38914 21593	36871 19116	31014	29101	23371	L2ID	0.1548	0.5827							0.9940		0.9900
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 36789	286691 32660	96155	61719	40209	L2ID	5.1557	0.9503							0.9920		0.9900
Perfluoro-n-octandecanoic acid (PFODA)	35444 35833	47660 35401	43102	49581	38781	AveID		0.9473				9.8		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1 Analy Batch No.: 101158

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/22/2016 11:29 Calibration End Date: 02/22/2016 13:36 Calibration ID: 19233

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101158/2	22FEB2016A6A_004.d
Level 2	STD 320-101158/3	22FEB2016A6A_005.d
Level 3	STD 320-101158/4	22FEB2016A6A_006.d
Level 4	STD 320-101158/5	22FEB2016A6A_007.d
Level 5	STD 320-101158/6	22FEB2016A6A_008.d
Level 6	STD 320-101158/7	22FEB2016A6A_009.d
Level 7	STD 320-101158/8	22FEB2016A6A_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	942660 829539	1056943 775450	953614	1023111	897862	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	1934960 1538970	2099093 1422684	1873781	1968141	1725918	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	1769642 1423156	1979988 1272922	1736102	1929477	1594944	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	1904169 1533225	2015006 1343761	1888722	2044047	1643911	50.0 50.0	50.0 50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	721018 585676	825299 533958	757770	791012	633525	47.3 47.3	47.3 47.3	47.3	47.3	47.3
13C4 PFOA	Ave	2165463 1523118	2268429 1383190	2051094	2168856	1721534	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	904387 678157	1031265 599935	968392	957490	764175	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	1766572 1309110	1853872 1257099	1751372	1879859	1528095	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDA	Ave	1696439 1133606	1791206 1052389	1613233	1575243	1416570	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	2629208 2075409	2614291 1812696	2459056	2763188	2263614	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	2203796 1461092	2278776 1337174	2049566	2204516	1706522	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	2250571 1874034	2355267 1656156	2303249	2498007	2205303	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	1881633 1555603	2066739 1575276	1975845	2294604	1796758	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	2014105 1919864	2474686 1870719	2304574	2537023	1947274	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:
Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1 Analy Batch No.: 101158

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/22/2016 11:29 Calibration End Date: 02/22/2016 13:36 Calibration ID: 19233

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101158/2	22FEB2016A6A_004.d
Level 2	STD 320-101158/3	22FEB2016A6A_005.d
Level 3	STD 320-101158/4	22FEB2016A6A_006.d
Level 4	STD 320-101158/5	22FEB2016A6A_007.d
Level 5	STD 320-101158/6	22FEB2016A6A_008.d
Level 6	STD 320-101158/7	22FEB2016A6A_009.d
Level 7	STD 320-101158/8	22FEB2016A6A_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)		L2ID	4598 4728448	20305 8552867	136225	572436	1270474	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	18531 6135097	47219 10833318	194923	801953	1689876	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		L2ID	+++++ 2626929	9900 4614137	67569	351381	767158	+++++ 177	0.884 354	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	+++++ 6228146	33586 11317524	185366	817133	1800628	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		L2ID	+++++ 6158092	29705 10770989	192566	928168	1831158	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		L2ID	+++++ 1756685	7670 3166801	57525	233265	524276	+++++ 189	0.946 378	4.73	18.9	47.3
Perfluorooctanoic acid (PFOA)		AveID	22265 5847741	36786 10450696	211611	847325	1770485	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		L2ID	1753 1740838	8398 3075653	64580	264344	552187	0.476 190	0.952 381	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		L2ID	+++++ 2628935	11468 4590626	91281	385293	815115	+++++ 191	0.956 382	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		L2ID	+++++ 4398963	19848 8318606	138266	647229	1207699	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecanoic acid (PFDA)		L2ID	+++++ 4566633	30484 7803927	162888	622261	1305289	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	+++++ 7044639	34491 12216183	219897	939289	1851972	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecane Sulfonic acid		L1ID	+++++ 1609473	5802 +++++	52637	262305	513625	+++++ 193	0.964 +++++	4.82	19.3	48.2
Perfluoroundecanoic acid (PFUnA)		L1ID	44479 5103271	63288 9027216	209156	775880	1552675	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	14473 5926643	33333 9718806	174838	754498	1657254	0.500 200	1.00 400	5.00	20.0	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1 Analy Batch No.: 101158

SDG No.:

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/22/2016 11:29 Calibration End Date: 02/22/2016 13:36 Calibration ID: 19233

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorotridecanoic Acid (PFTriA)		AveID	24513 6173731	41714 10044074	242152	975639	1968881	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		L2ID	19457 4318677	36871 7646557	155068	582019	1168530	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 7357700	286691 13063875	480775	1234377	2010426	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-octandecanoic acid (PFODA)		AveID	17722 7166602	47660 14160566	215510	991628	1939064	0.500 200	1.00 400	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L1ID = Linear 1/conc IsoDil
L2ID = Linear 1/conc^2 IsoDil

Report Date: 23-Feb-2016 09:43:21 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_004.d
Lims ID: Std L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 22-Feb-2016 11:29:23 ALS Bottle#: 9 Worklist Smp#: 2
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L1
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Feb-2016 09:43:20 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Feb-2016 14:40:46

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	5.705	5.697	0.008	1.000	4598	0.4976		99.5	280	
D 1 13C4 PFBA										
217.0 > 172.0	5.702	5.698	0.004		942660	50.9		102	6862	
D 3 13C5-PFPeA										
267.9 > 223.0	6.808	6.804	0.004		1934960	53.9		108	19109	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.813	6.805	0.008	1.000	18531	0.4742		94.8	2.9	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.909	6.918	-0.009	1.000	5144	NC			85.3	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.909	6.918	-0.009	1.000	5144	0.7078		160		
D 6 13C2 PFHxA										
315.0 > 270.0	8.056	8.050	0.006		1769642	52.9		106	137095	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.067	8.053	0.014	1.000	22363	0.6009		120	1940	
D 8 13C4-PFHpA										
367.0 > 322.0	9.293	9.283	0.010		1904169	53.9		108	18375	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.299	9.288	0.011	1.000	23244	0.8751		175	1873	
D 11 18O2 PFHxS										
403.0 > 84.0	9.328	9.319	0.009		721018	49.2		104	112602	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.346	9.324	0.022	1.000	3374	NC			29.1	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.346	9.324	0.022	1.000	3374	0.6559		139		
D 12 13C4 PFOA										
417.0 > 372.0	10.419	10.407	0.012		2165463	57.1		114	22302	

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	10.426	10.410	0.016	1.000	22265	0.5308		106	14.2	
413.0 > 169.0	10.405	10.410	-0.005	0.998	8658		2.57(0.00-0.00)	106	59.9	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.419	10.414	0.005	1.000	1753	NC			122	
38 Perfluoroheptanesulfonic Acid										M
449.0 > 80.0	10.419	10.414	0.005	1.000	1753	0.4823		101		M
D 16 13C4 PFOS										
503.0 > 80.0	11.378	11.369	0.009		904387	51.3		107	64803	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.392	11.371	0.021	1.000	6534	0.7664		160	267	
499.0 > 99.0	11.378	11.371	0.007	0.999	5229		1.25(0.00-0.00)	160	157	
D 17 13C5 PFNA										
468.0 > 423.0	11.401	11.390	0.011		1766572	54.5		109	125605	
18 Perfluorononanoic acid										
463.0 > 419.0	11.408	11.393	0.015	1.000	11038	0.7297		146	818	
D 19 13C2 PFDA										
515.0 > 470.0	12.245	12.232	0.013		1696439	57.8		116	101107	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.245	12.234	0.011	1.000	24888	0.8677		174	1541	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.774	12.774	0.0	1.000	19799	0.4598		92.0	1203	
D 23 13C8 FOSA										
506.0 > 78.0	12.784	12.774	0.010		2629208	55.4		111	5079	
25 Perfluorodecane Sulfonate										M
599.0 > 80.0	12.920	12.913	0.007	1.000	1059	NC			60.0	M
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.920	12.913	0.007	1.000	1059	0.4688		97.3		
D 26 13C2 PFUnA										
565.0 > 520.0	12.961	12.957	0.004		2203796	58.3		117	132319	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.961	12.957	0.004	1.000	44479	0.4853		97.1	188	
D 28 13C2 PFDoA										
615.0 > 570.0	13.579	13.569	0.010		2250571	52.0		104	47534	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.579	13.571	0.008	1.000	14473	0.4378		87.6	2.2	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.102	14.091	0.011	1.000	24513	0.5886		118	6.8	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.540	14.533	0.007		1881633	50.1		100	75813	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.547	14.533	0.014	1.000	19457	0.4761		95.2	20.0	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.186	15.178	0.008		2014105	46.8		93.6	45803	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.186	15.179	0.007	1.000	246298	0.3328		66.6	476	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.523	15.514	0.009	1.000	17722	0.4156		83.1	32.2	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L1_00018 Amount Added: 1.00 Units: mL

Report Date: 23-Feb-2016 09:43:21 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_004.d

Injection Date: 22-Feb-2016 11:29:23 Instrument ID: A6

Lims ID: Std L1

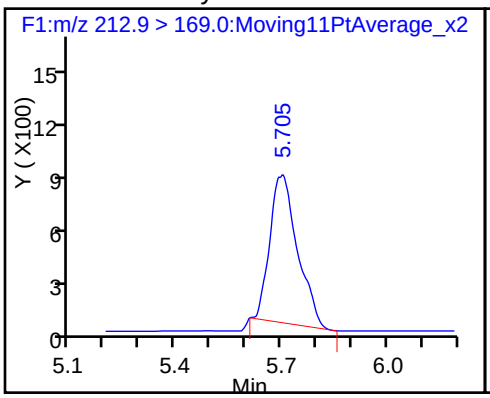
Client ID:

Operator ID: JRB ALS Bottle#: 9 Worklist Smp#: 2

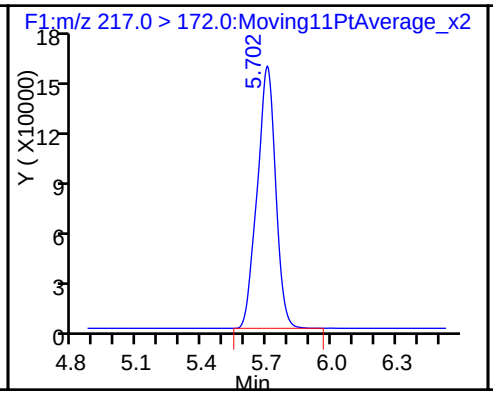
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

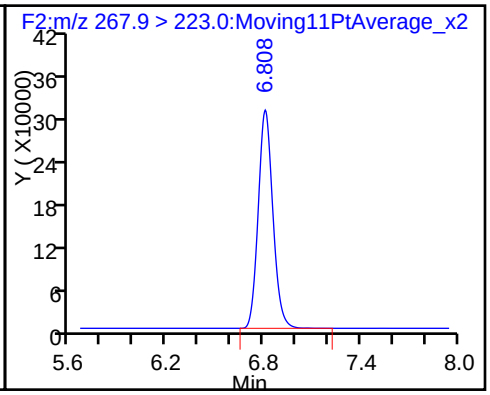
2 Perfluorobutyric acid



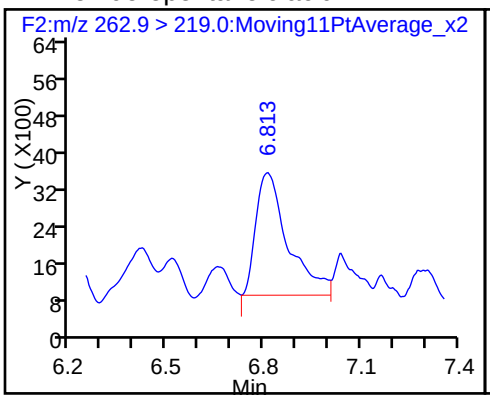
D 1 13C4 PFBA



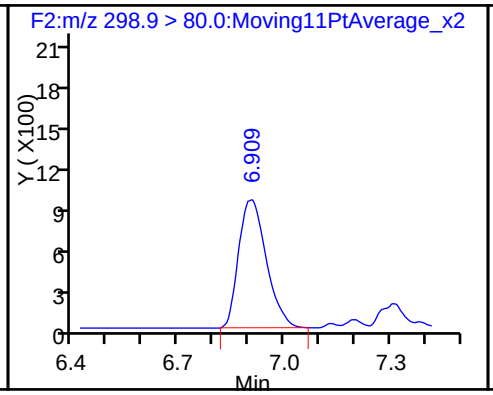
D 3 13C5-PFPeA



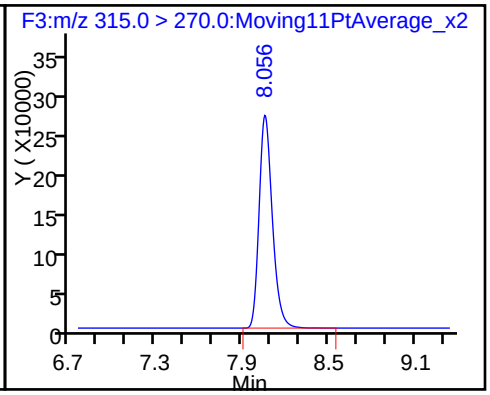
4 Perfluoropentanoic acid



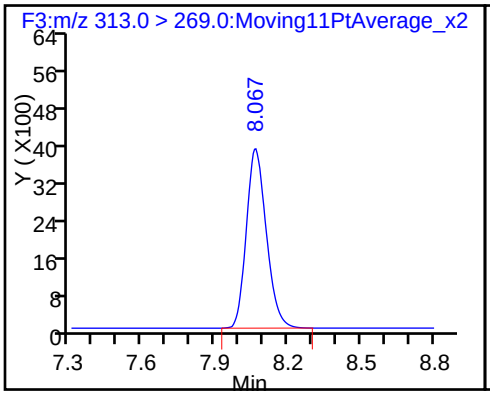
40 Perfluorobutanesulfonic acid



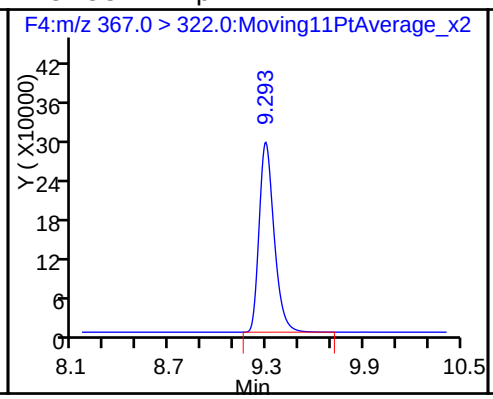
D 6 13C2 PFHxA



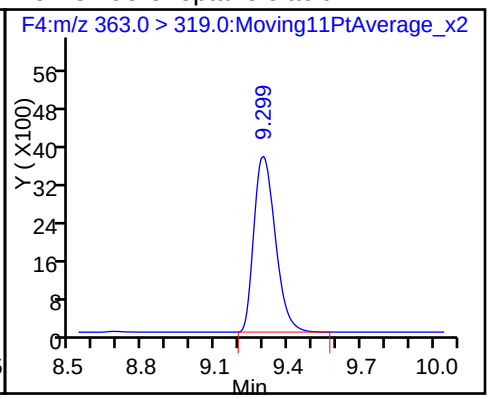
7 Perfluorohexanoic acid



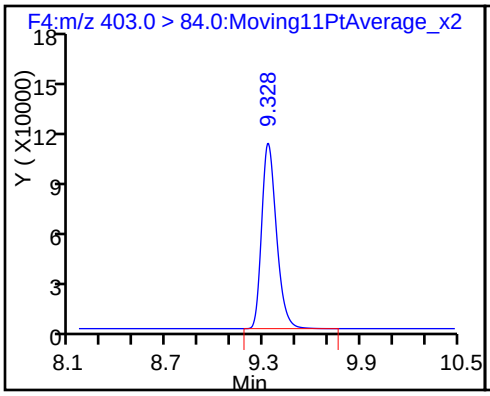
D 8 13C4-PFHpA



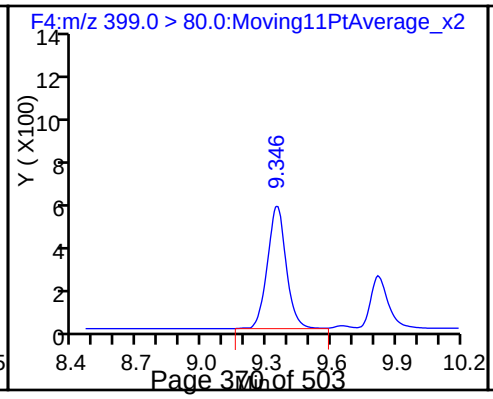
9 Perfluoroheptanoic acid



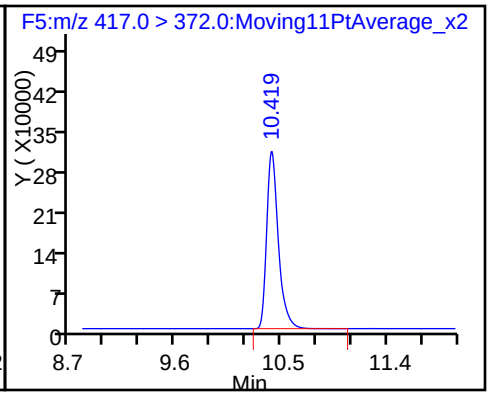
D 11 18O2 PFHxS



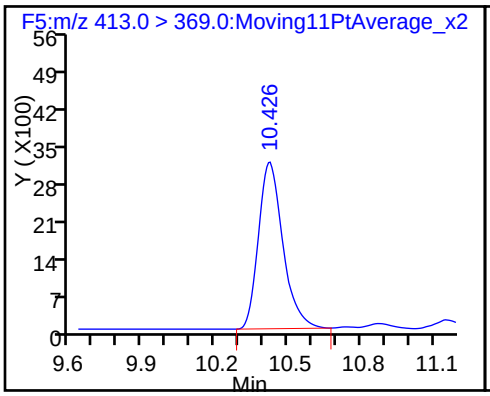
41 Perfluorohexanesulfonic acid



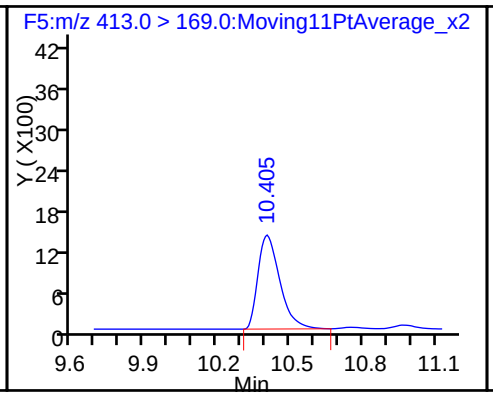
D 12 13C4 PFOA



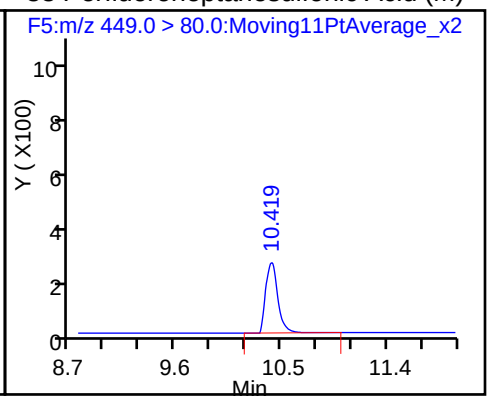
13 Perfluorooctanoic acid



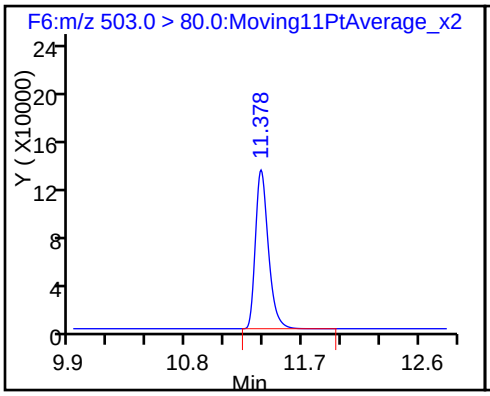
13 Perfluorooctanoic acid



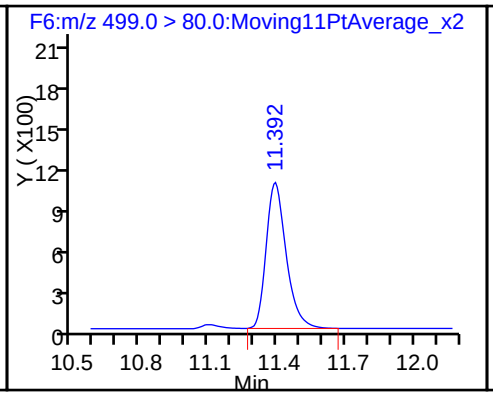
38 Perfluoroheptanesulfonic Acid (M)



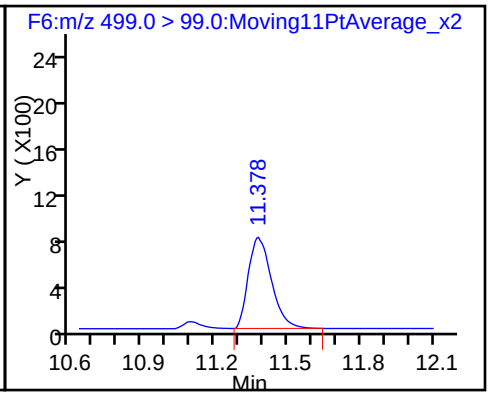
D 16 13C4 PFOS



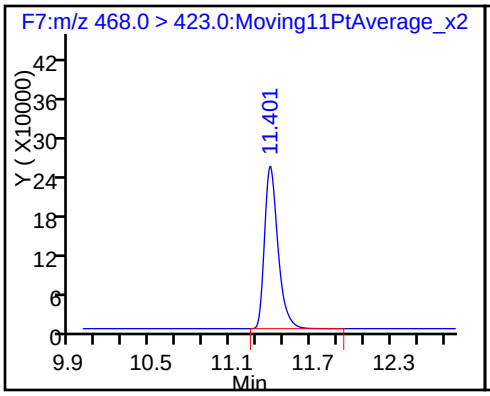
15 Perfluorooctane sulfonic acid



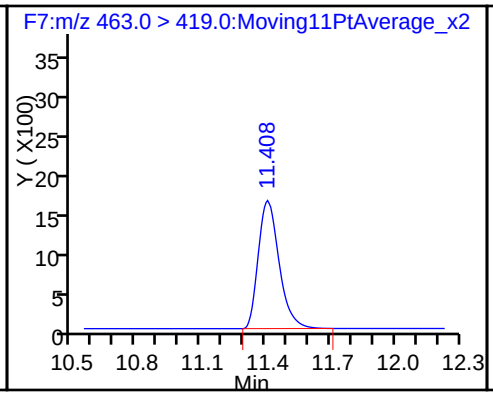
15 Perfluorooctane sulfonic acid



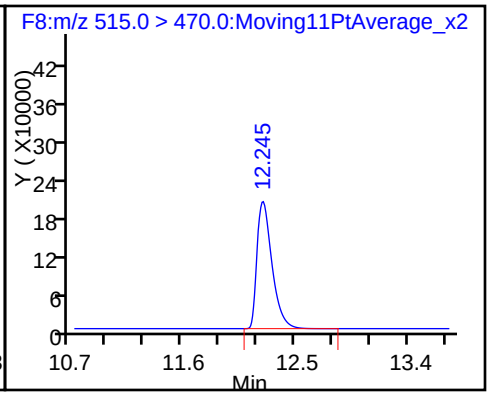
D 17 13C5 PFNA



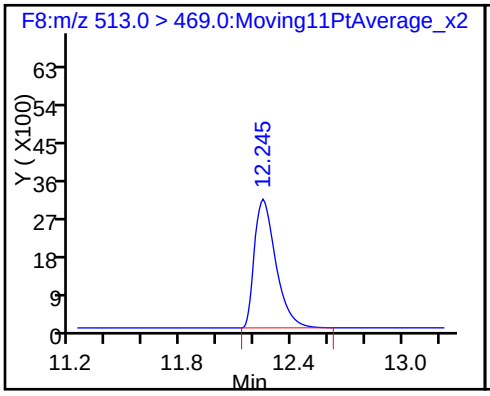
18 Perfluorononanoic acid



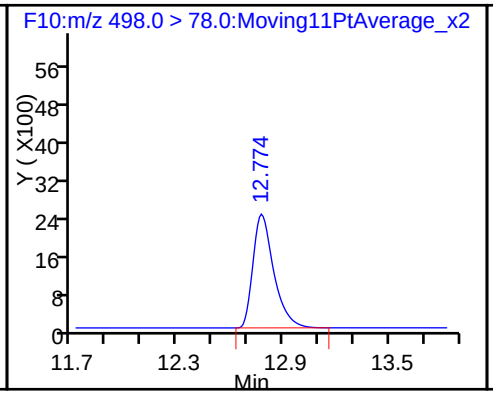
D 19 13C2 PFDA



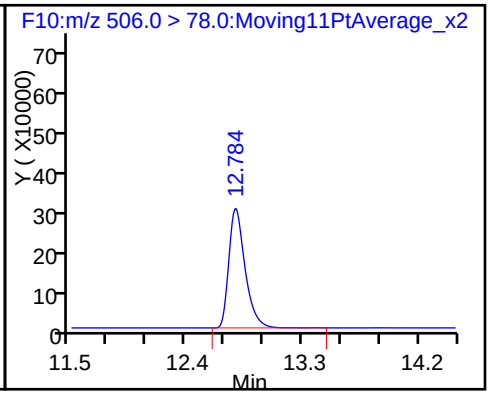
20 Perfluorodecanoic acid



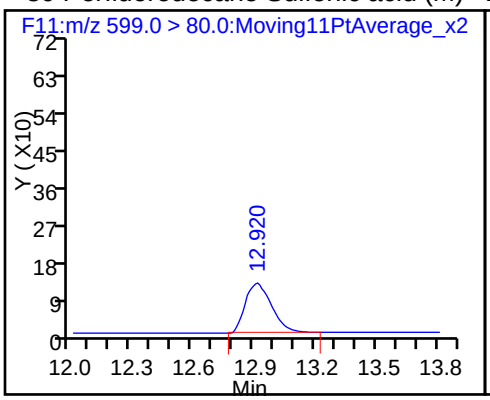
24 Perfluorooctane Sulfonamide



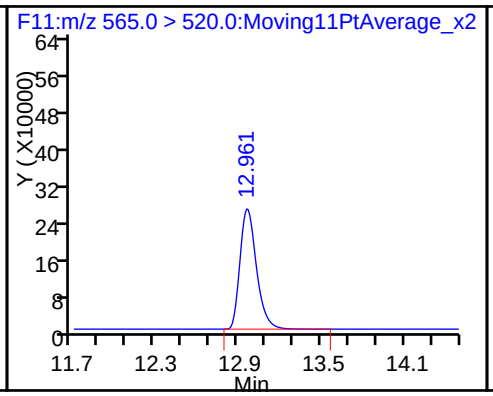
D 23 13C8 FOSA



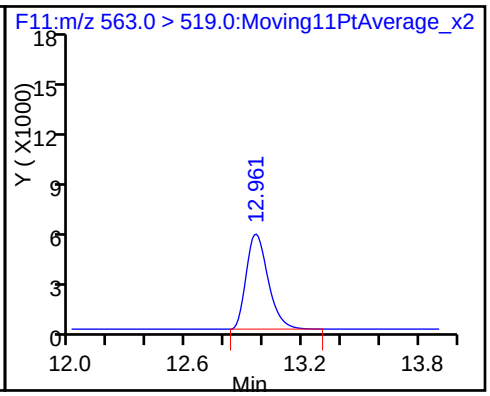
39 Perfluorodecane Sulfonic acid (M)



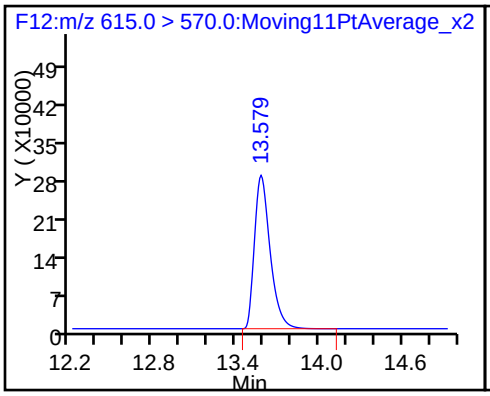
D 26 13C2 PFUnA



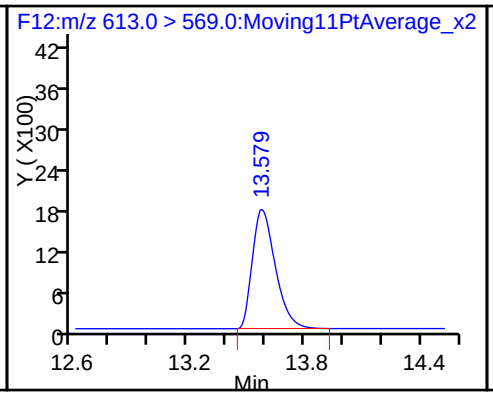
27 Perfluoroundecanoic acid



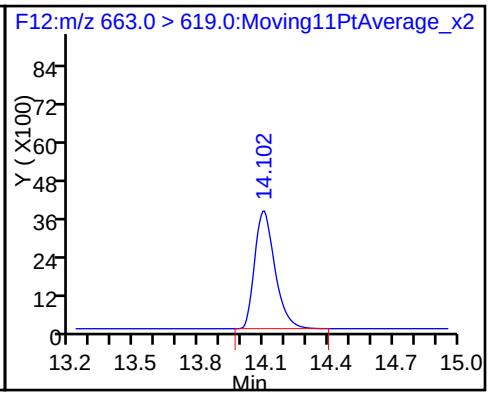
D 28 13C2 PFDoA



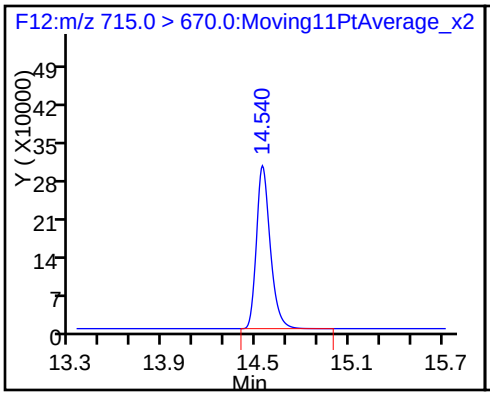
29 Perfluorododecanoic acid



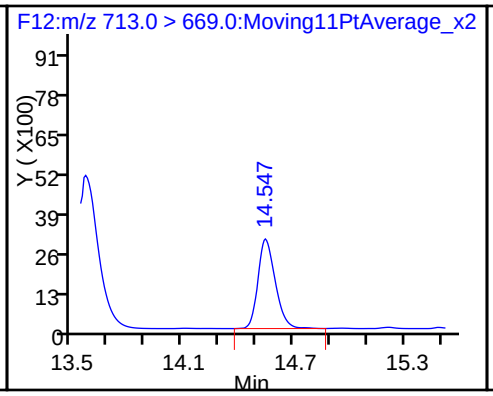
30 Perfluorotridecanoic acid



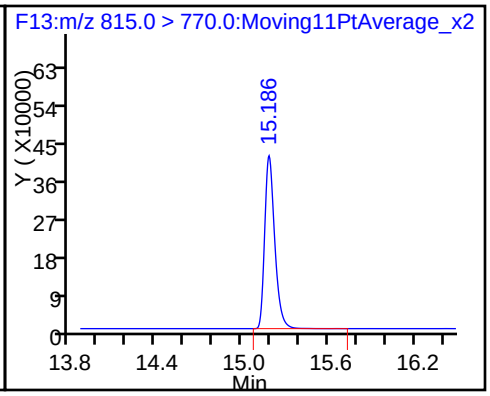
D 33 13C2-PFTeDA



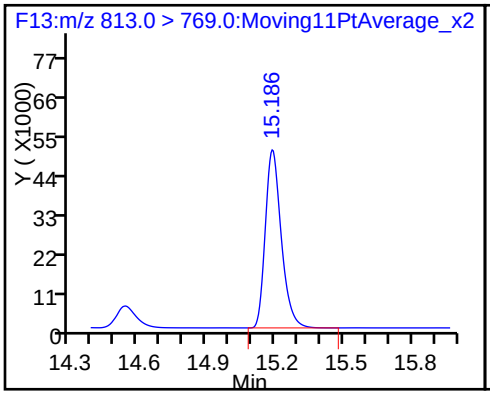
32 Perfluorotetradecanoic acid



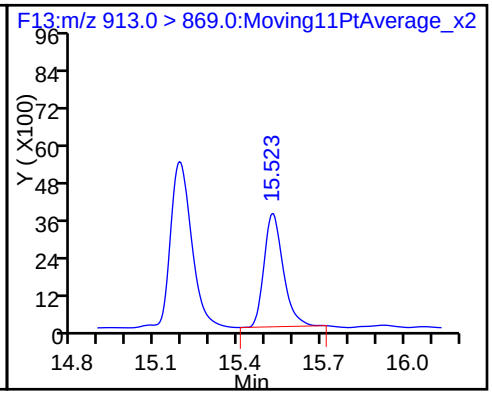
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



Manual Integration/User Assign Peak Report

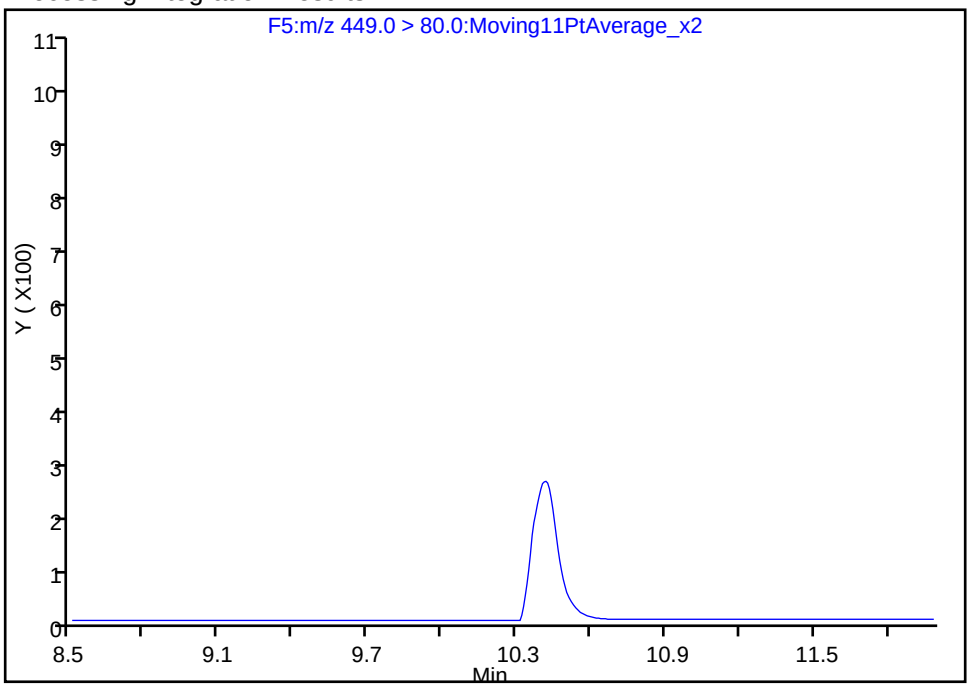
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_004.d
Injection Date: 22-Feb-2016 11:29:23 Instrument ID: A6
Lims ID: Std L1
Client ID:
Operator ID: JRB ALS Bottle#: 9 Worklist Smp#: 2
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F5:MRM

38 Perfluoroheptanesulfonic Acid, CAS: 375-92-8

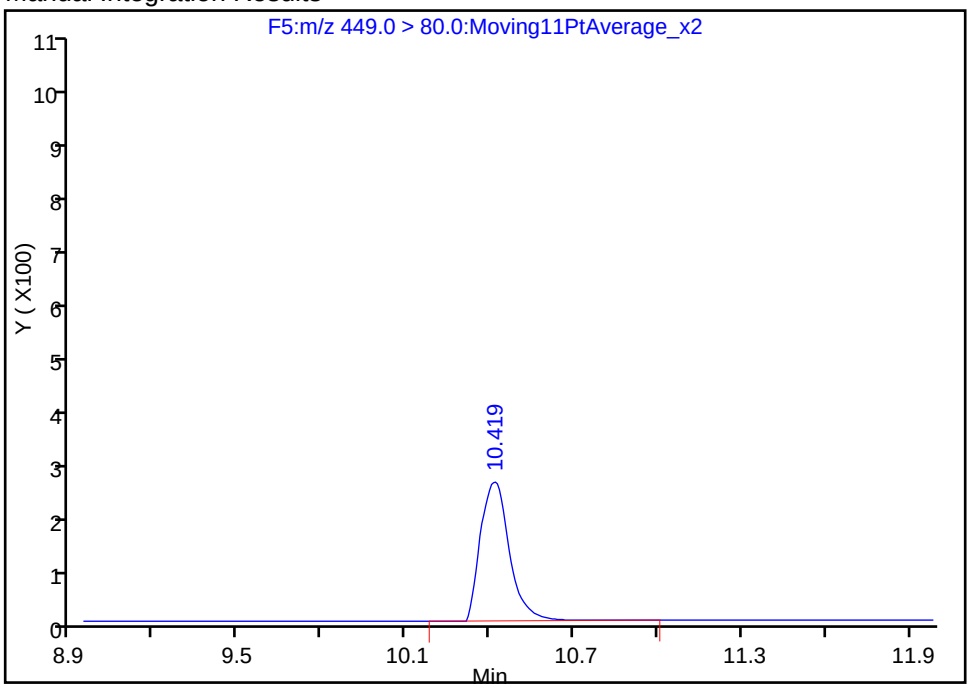
Not Detected
Expected RT: 10.41

Processing Integration Results



Manual Integration Results

RT: 10.42
Area: 1753
Amount: 0.482349
Amount Units: ng/ml



Reviewer: westendorfc, 22-Feb-2016 14:40:46
Audit Action: Manually Integrated
Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_005.d
Lims ID: Std L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 22-Feb-2016 11:50:37 ALS Bottle#: 10 Worklist Smp#: 3
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L2
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Feb-2016 09:43:23 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.687	5.697	-0.010	1.000	20305	1.00		99.8	1718	
D 1 13C4 PFBA										
217.0 > 172.0	5.702	5.698	0.004		1056943	57.1		114	7979	
D 3 13C5-PFPeA										
267.9 > 223.0	6.808	6.804	0.004		2099093	58.5		117	8040	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.794	6.805	-0.011	1.000	47219	1.11		111	8.2	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.932	6.918	0.014	1.000	9900	NC			85.5	
298.9 > 99.0	6.923	6.918	0.005	0.999	4830		2.05(0.00-0.00)		116	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.932	6.918	0.014	1.000	9900	0.9002		102		
D 6 13C2 PFHxA										
315.0 > 270.0	8.056	8.050	0.006		1979988	59.2		118	99483	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.067	8.053	0.014	1.000	33586	0.8066		80.7	1842	
D 8 13C4-PFHpA										
367.0 > 322.0	9.287	9.283	0.004		2015006	57.0		114	13822	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.299	9.288	0.011	1.000	29705	0.99		99.3	2436	
D 11 18O2 PFHxS										
403.0 > 84.0	9.322	9.319	0.003		825299	56.4		119	64127	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.334	9.324	0.010	1.000	7670	NC			80.3	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.334	9.324	0.010	1.000	7670	0.9363		99.0		
D 12 13C4 PFOA										
417.0 > 372.0	10.412	10.407	0.005		2268429	59.8		120	79733	

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	10.412	10.410	0.002	1.000	36786	0.8371		83.7	23.5	
413.0 > 169.0	10.412	10.410	0.002	1.000	9480		3.88(0.00-0.00)	83.7	47.3	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.419	10.417	0.002	1.000	8398	NC			570	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.419	10.417	0.002	1.000	8398	0.9149		96.1		
D 16 13C4 PFOS										
503.0 > 80.0	11.378	11.369	0.009		1031265	58.4		122	8754	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.371	11.371	0.0	1.000	11468	0.9504		99.4	846	
499.0 > 99.0	11.371	11.371	0.0	1.000	11123		1.03(0.00-0.00)	99.4	809	
D 17 13C5 PFNA										
468.0 > 423.0	11.393	11.390	0.003		1853872	57.2		114	131657	
18 Perfluorononanoic acid										
463.0 > 419.0	11.401	11.393	0.008	1.000	19848	1.00		99.6	1363	
D 19 13C2 PFDA										
515.0 > 470.0	12.235	12.232	0.003		1791206	61.0		122	43047	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.245	12.234	0.011	1.000	30484	0.9882		98.8	1798	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.774	12.774	0.0	1.000	34491	0.8056		80.6	2003	
D 23 13C8 FOSA										
506.0 > 78.0	12.774	12.774	0.0		2614291	55.1		110	4018	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.930	12.920	0.010	1.000	5802	NC			359	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.930	12.920	0.010	1.000	5802	0.8171		84.8		
D 26 13C2 PFUnA										
565.0 > 520.0	12.961	12.957	0.004		2278776	60.2		120	136173	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.961	12.957	0.004	1.000	63288	0.9290		92.9	7848	
D 28 13C2 PFDoA										
615.0 > 570.0	13.579	13.569	0.010		2355267	54.4		109	11568	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.579	13.571	0.008	1.000	33333	0.9636		96.4	9.9	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.095	14.091	0.004	1.000	41714	0.9571		95.7	25.4	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.540	14.533	0.007		2066739	55.0		110	22184	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.534	14.533	0.001	1.000	36871	1.08		108	28.7	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.181	15.178	0.003		2474686	57.5		115	12606	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.181	15.179	0.002	1.000	286691	0.9792		97.9	509	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.518	15.514	0.004	1.000	47660	1.07		107	66.2	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00019 Amount Added: 1.00 Units: mL

Report Date: 23-Feb-2016 09:43:24 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_005.d

Injection Date: 22-Feb-2016 11:50:37 Instrument ID: A6

Lims ID: Std L2

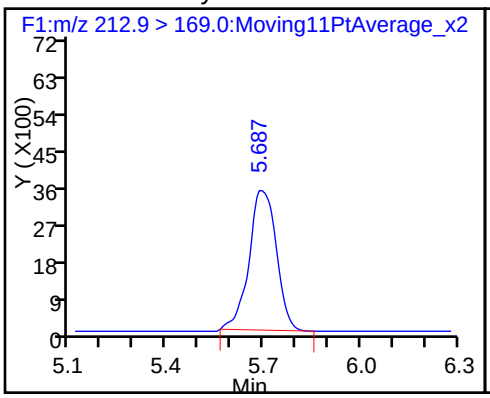
Client ID:

Operator ID: JRB ALS Bottle#: 10 Worklist Smp#: 3

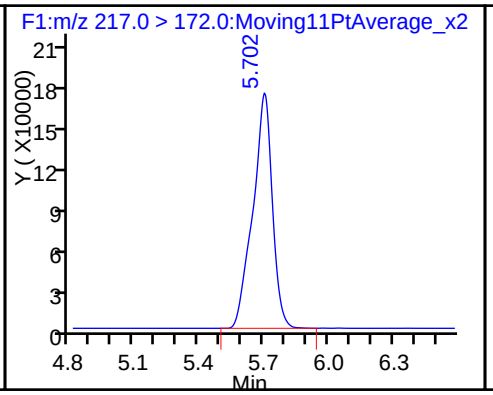
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

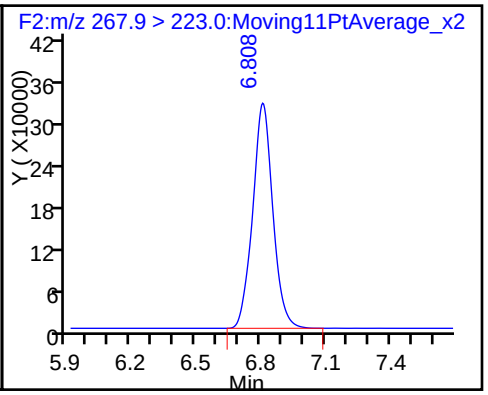
2 Perfluorobutyric acid



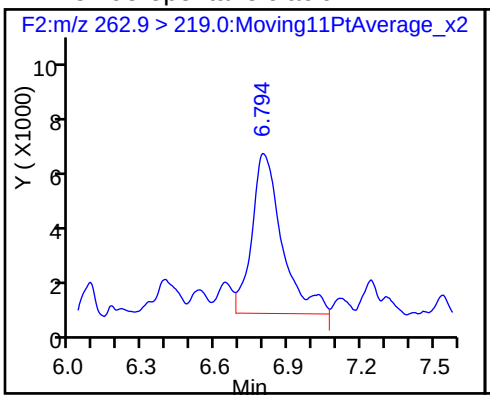
D 1 13C4 PFBA



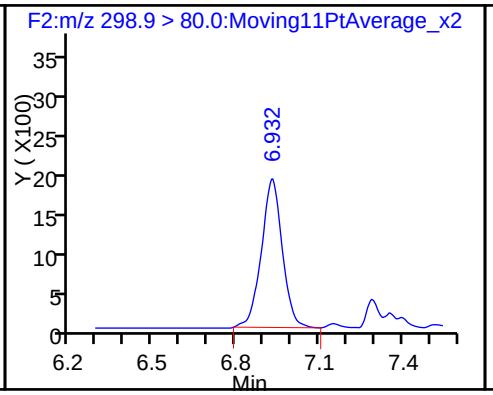
D 3 13C5-PFPeA



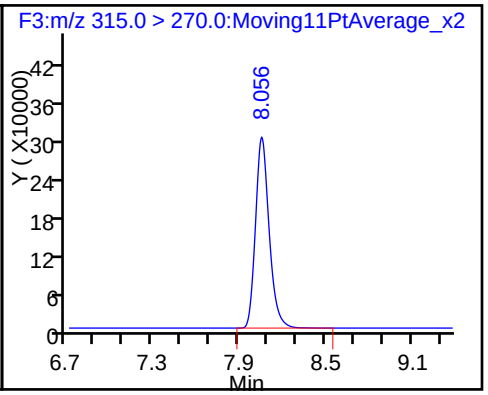
4 Perfluoropentanoic acid



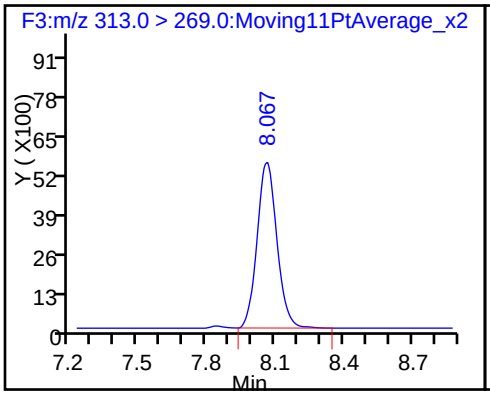
40 Perfluorobutanesulfonic acid



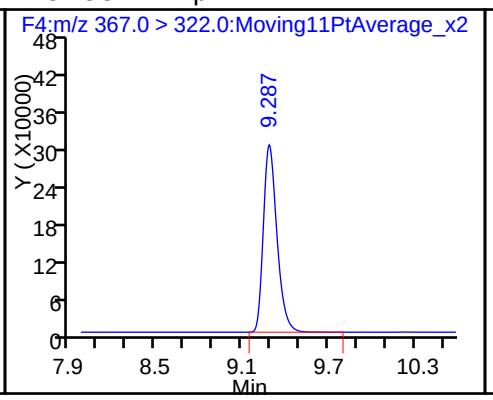
D 6 13C2 PFHxA



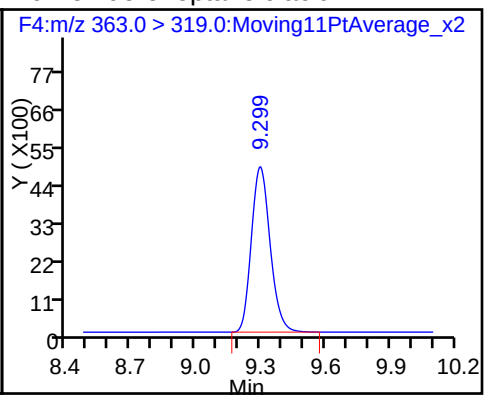
7 Perfluorohexanoic acid



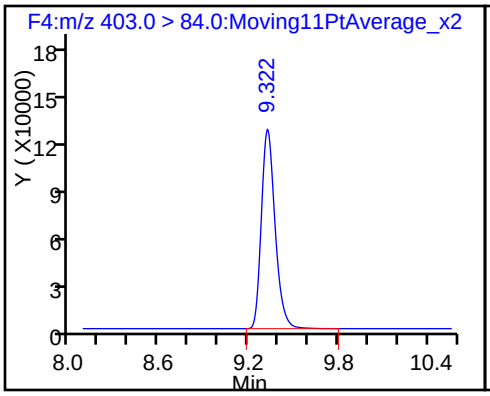
D 8 13C4-PFHpA



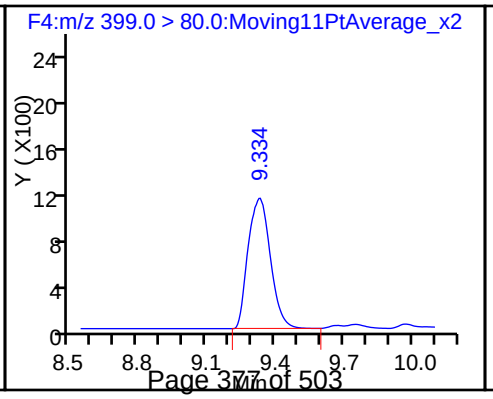
9 Perfluoroheptanoic acid



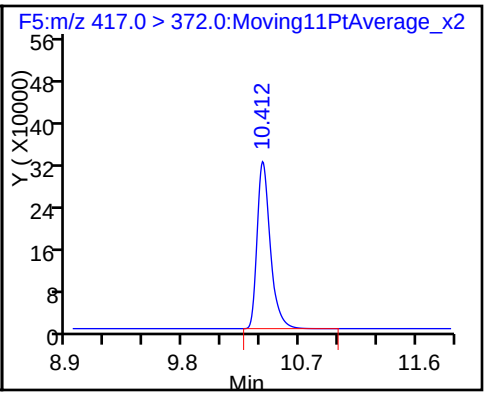
D 11 18O2 PFHxS



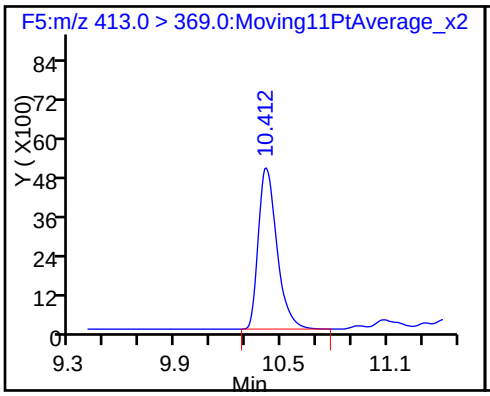
41 Perfluorohexanesulfonic acid



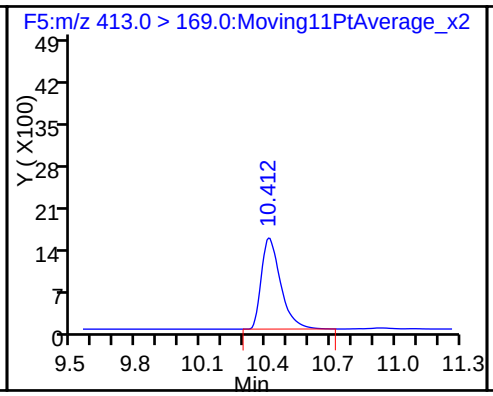
D 12 13C4 PFOA



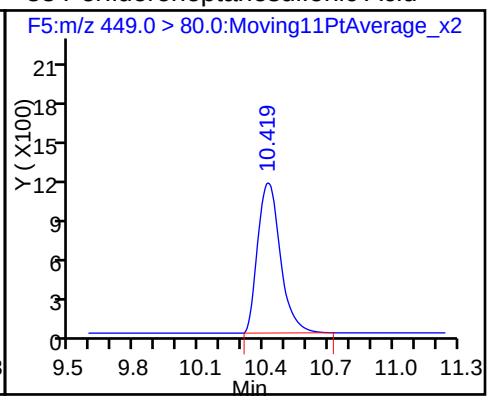
13 Perfluorooctanoic acid



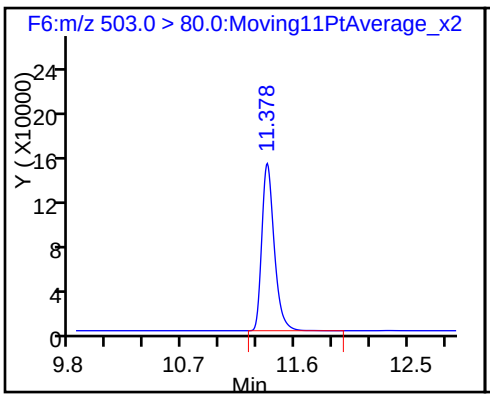
13 Perfluorooctanoic acid



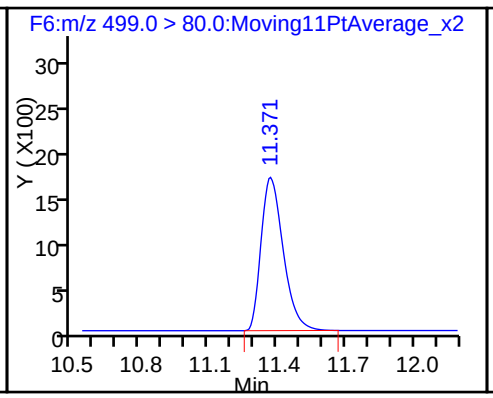
38 Perfluoroheptanesulfonic Acid



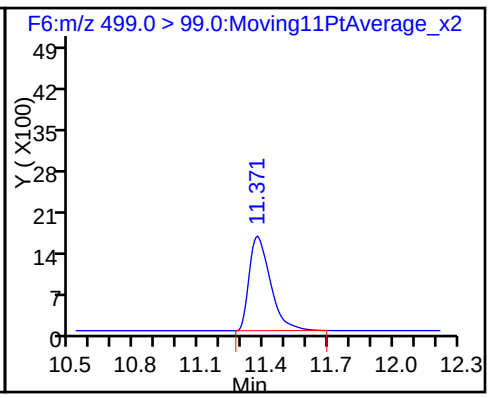
D 16 13C4 PFOS



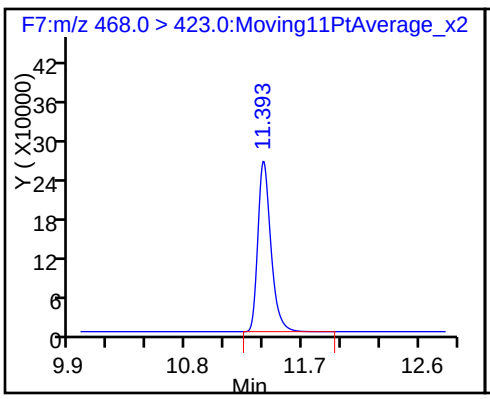
15 Perfluorooctane sulfonic acid



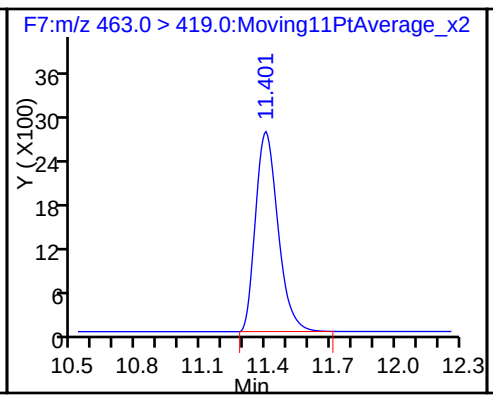
15 Perfluorooctane sulfonic acid



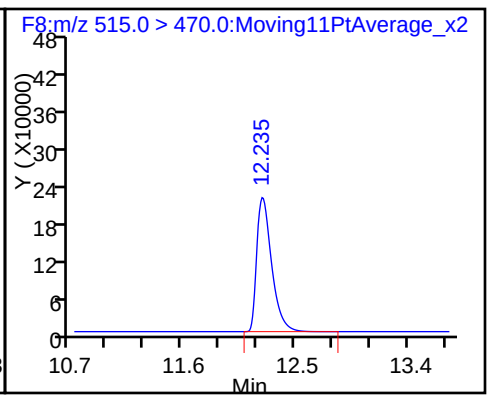
D 17 13C5 PFNA



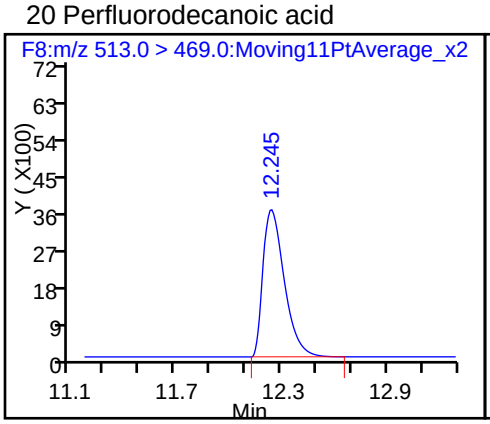
18 Perfluorononanoic acid



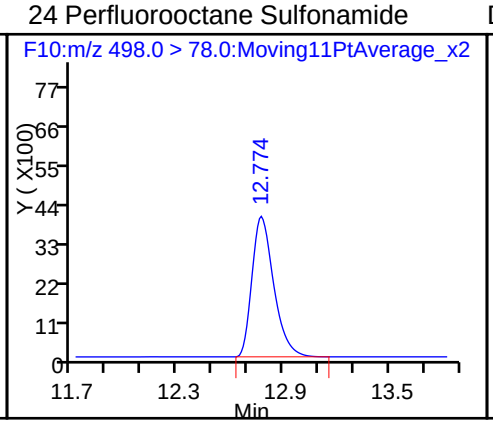
D 19 13C2 PFDA



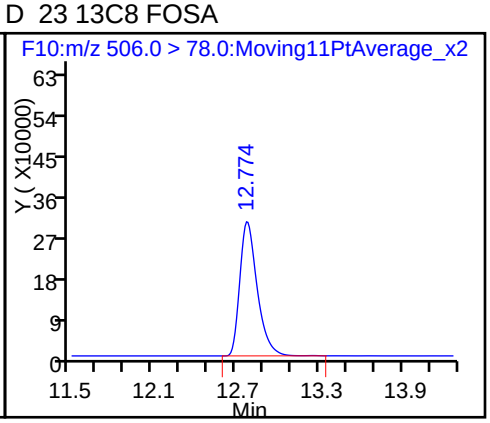
20 Perfluorodecanoic acid



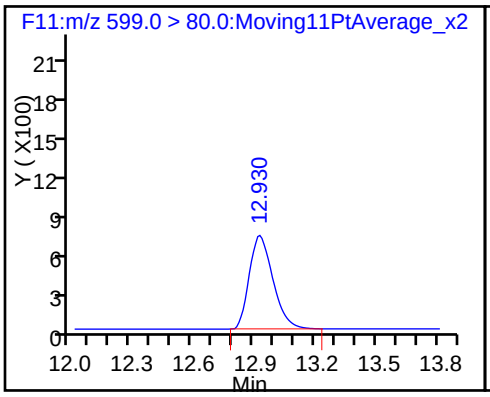
24 Perfluorooctane Sulfonamide



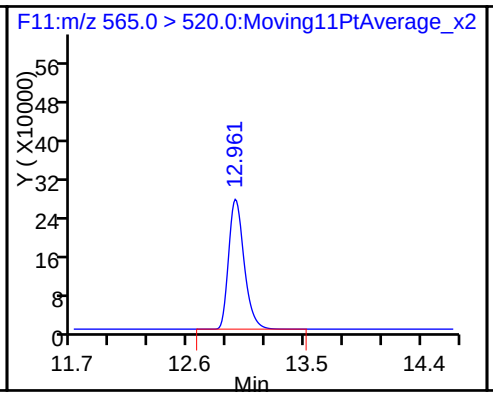
D 23 13C8 FOSA



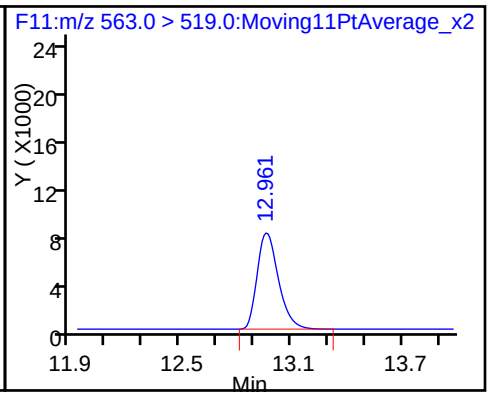
39 Perfluorodecane Sulfonic acid



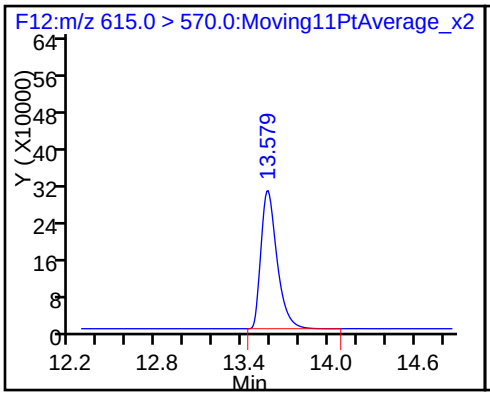
D 26 13C2 PFUnA



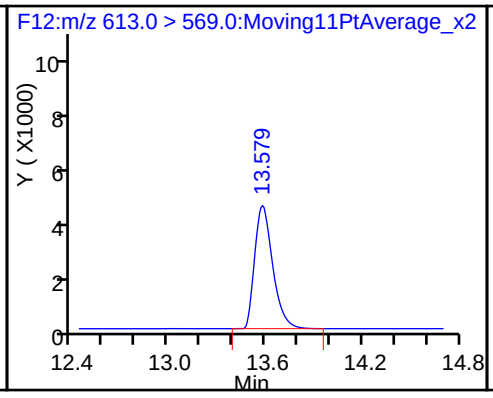
27 Perfluoroundecanoic acid



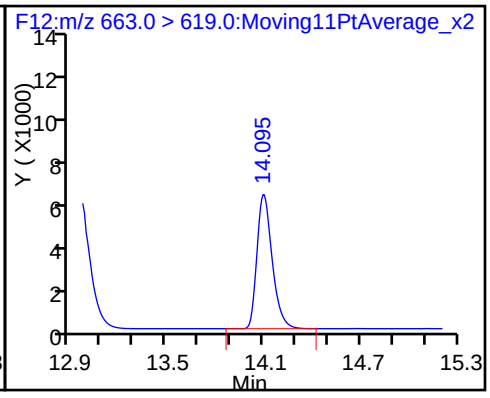
D 28 13C2 PFDoA



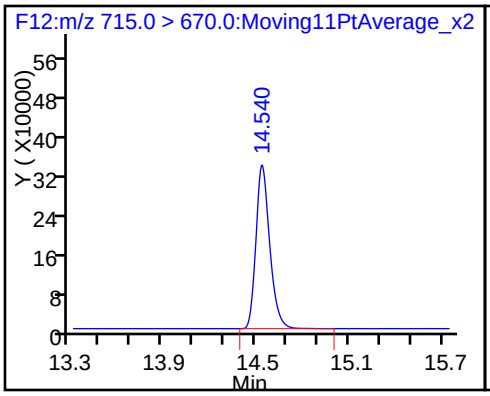
29 Perfluorododecanoic acid



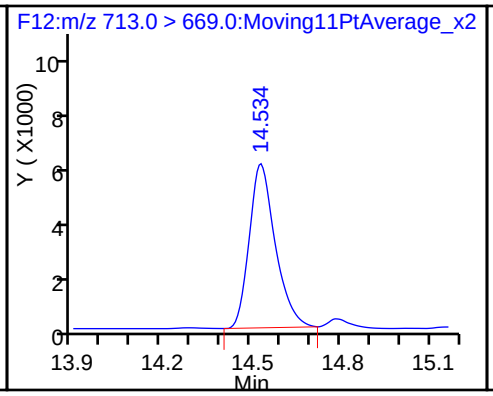
30 Perfluorotridecanoic acid



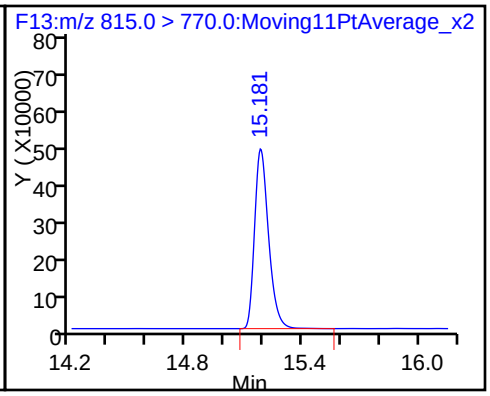
D 33 13C2-PFTeDA



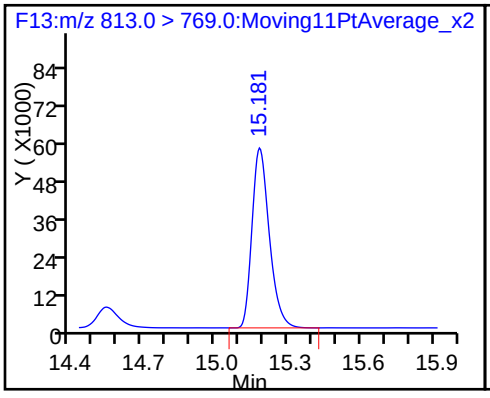
32 Perfluorotetradecanoic acid



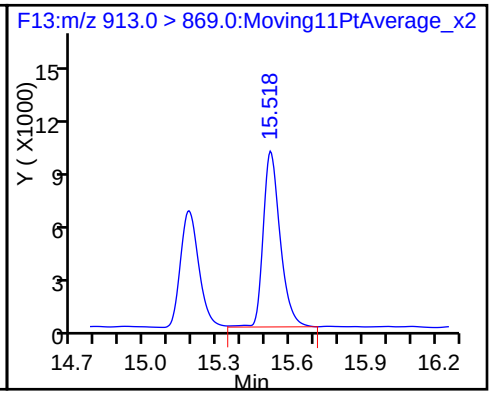
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_006.d
Lims ID: Std L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 22-Feb-2016 12:11:50 ALS Bottle#: 11 Worklist Smp#: 4
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L3
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Feb-2016 09:43:25 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.699	5.697	0.002	1.000	136225	5.31		106	7882	
D 1 13C4 PFBA										
217.0 > 172.0	5.702	5.698	0.004		953614	51.5		103	54827	
D 3 13C5-PFPeA										
267.9 > 223.0	6.808	6.804	0.004		1873781	52.2		104	59858	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.812	6.805	0.007	1.000	194923	5.15		103	35.6	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.927	6.918	0.009	1.000	67569	NC			458	
298.9 > 99.0	6.923	6.918	0.005	0.999	36112		1.87(0.00-0.00)		489	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.927	6.918	0.009	1.000	67569	3.95		89.5		
D 6 13C2 PFHxA										
315.0 > 270.0	8.056	8.050	0.006		1736102	51.9		104	134752	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.050	8.053	-0.003	1.000	185366	5.08		102	1001	
D 8 13C4-PFHpA										
367.0 > 322.0	9.287	9.283	0.004		1888722	53.4		107	144152	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.293	9.288	0.005	1.000	192566	5.06		101	13997	
D 11 18O2 PFHxS										
403.0 > 84.0	9.322	9.319	0.003		757770	51.8		109	29617	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.322	9.324	-0.002	1.000	57525	NC			1243	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.322	9.324	-0.002	1.000	57525	4.98		105		
D 12 13C4 PFOA										
417.0 > 372.0	10.412	10.407	0.005		2051094	54.1		108	98539	

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	10.412	10.410	0.002	1.000	211611	5.33		107	365	
413.0 > 169.0	10.412	10.410	0.002	1.000	63338		3.34(0.00-0.00)	107	312	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.419	10.417	0.002	1.000	64580	NC			4719	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.419	10.417	0.002	1.000	64580	5.00		105		
D 16 13C4 PFOS										
503.0 > 80.0	11.370	11.369	0.001		968392	54.9		115	70083	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.370	11.371	-0.001	1.000	91281	4.88		102	865	
499.0 > 99.0	11.378	11.371	0.007	1.001	48961		1.86(0.00-0.00)	102	3569	
D 17 13C5 PFNA										
468.0 > 423.0	11.393	11.390	0.003		1751372	54.0		108	36085	
18 Perfluorononanoic acid										
463.0 > 419.0	11.393	11.393	0.0	1.000	138266	5.07		101	10368	
D 19 13C2 PFDA										
515.0 > 470.0	12.235	12.232	0.003		1613233	54.9		110	98176	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.235	12.234	0.001	1.000	162888	5.30		106	9917	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.784	12.774	0.010	1.000	219897	5.46		109	5007	
D 23 13C8 FOSA										
506.0 > 78.0	12.774	12.774	0.0		2459056	51.8		104	3262	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.910	12.917	-0.007	1.000	52637	NC			2152	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.910	12.917	-0.007	1.000	52637	4.63		96.0		
D 26 13C2 PFUnA										
565.0 > 520.0	12.961	12.957	0.004		2049566	54.2		108	35007	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.961	12.957	0.004	1.000	209156	5.27		105	12662	
D 28 13C2 PFDoA										
615.0 > 570.0	13.570	13.569	0.001		2303249	53.2		106	73620	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.570	13.571	-0.001	1.000	174838	5.17		103	111	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.087	14.091	-0.004	1.000	242152	5.68		114	308	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.533	14.533	0.0		1975845	52.6		105	19811	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.533	14.533	0.0	1.000	155068	5.51		110	123	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.181	15.178	0.003		2304574	53.5		107	11122	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.181	15.179	0.002	1.000	480775	5.56		111	675	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.517	15.514	0.003	1.000	215510	4.94		98.8	220	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L3_00016 Amount Added: 1.00 Units: mL

Report Date: 23-Feb-2016 09:43:26 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_006.d

Injection Date: 22-Feb-2016 12:11:50 Instrument ID: A6

Lims ID: Std L3

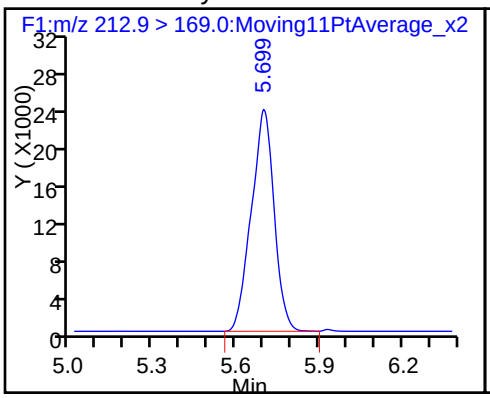
Client ID:

Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 4

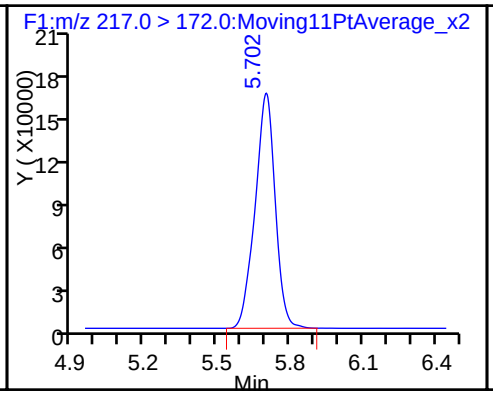
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

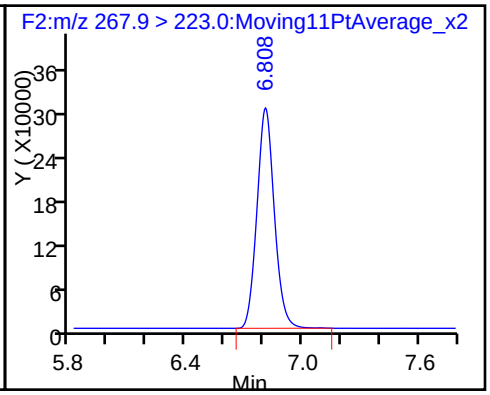
2 Perfluorobutyric acid



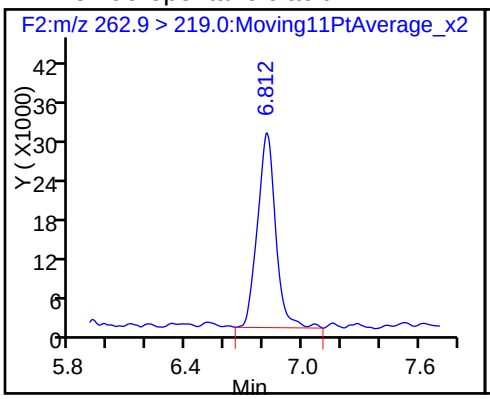
D 1 13C4 PFBA



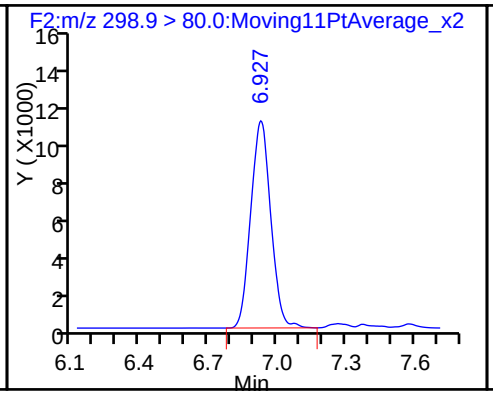
D 3 13C5-PFPeA



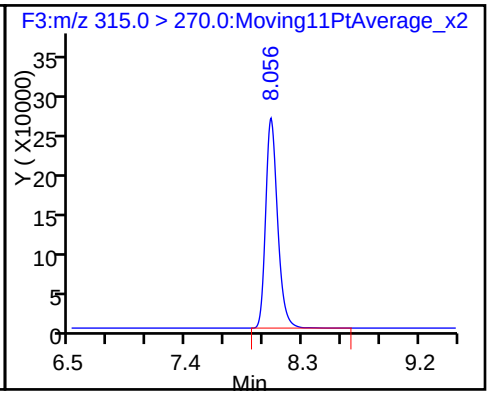
4 Perfluoropentanoic acid



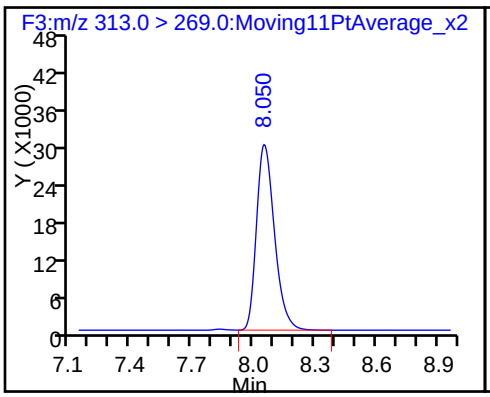
40 Perfluorobutanesulfonic acid



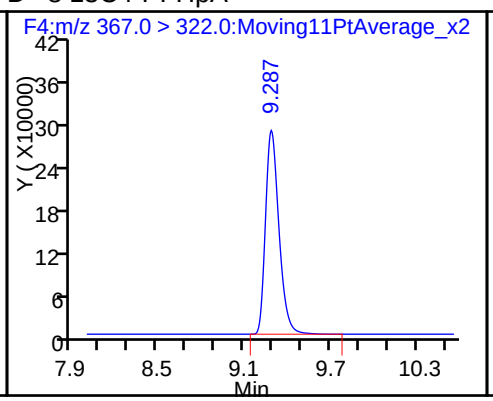
D 6 13C2 PFHxA



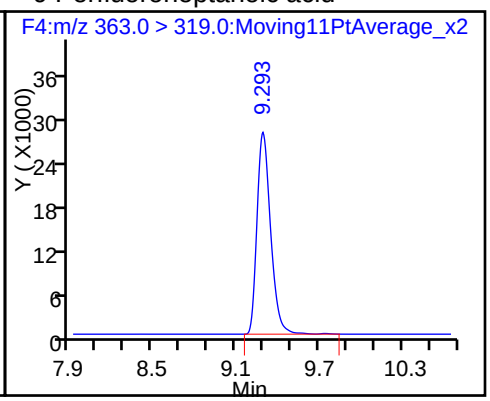
7 Perfluorohexanoic acid



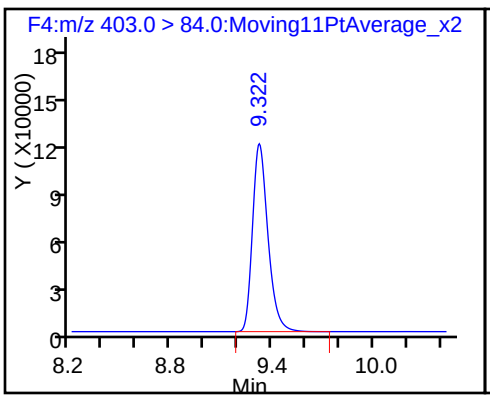
D 8 13C4-PFHpA



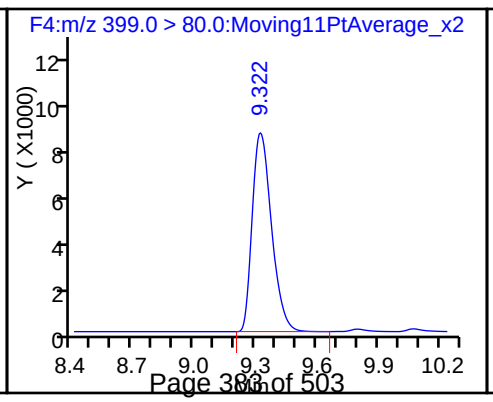
9 Perfluoroheptanoic acid



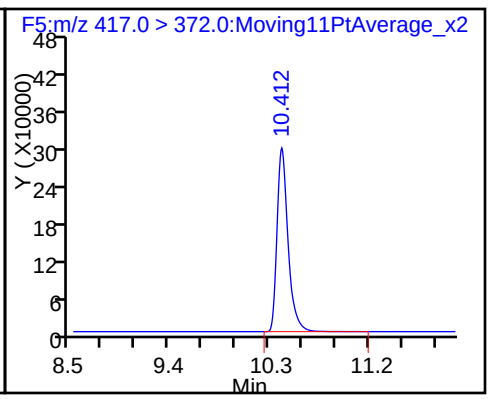
D 11 18O2 PFHxS



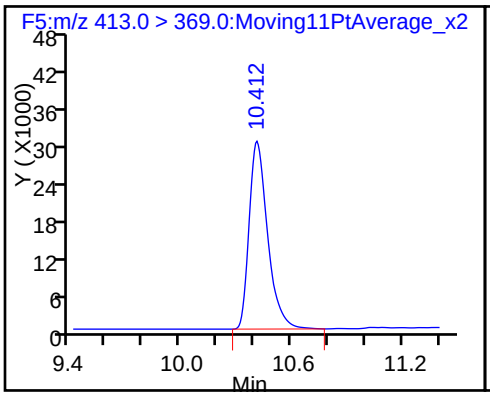
41 Perfluorohexanesulfonic acid



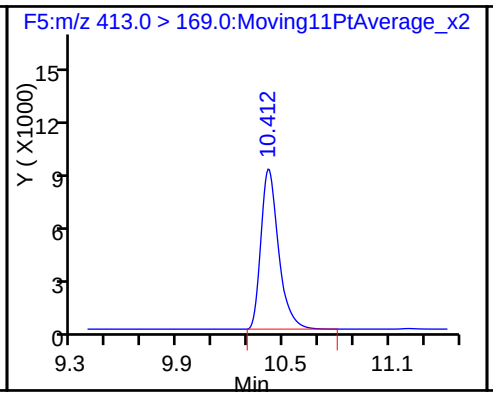
D 12 13C4 PFOA



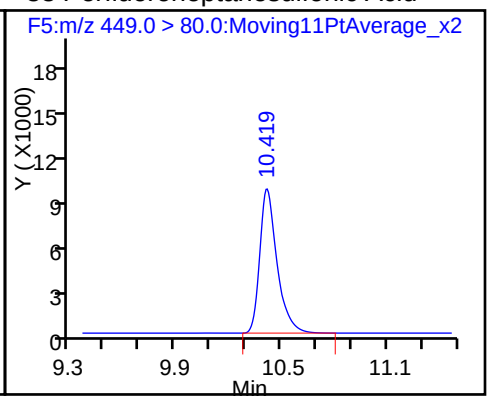
13 Perfluorooctanoic acid



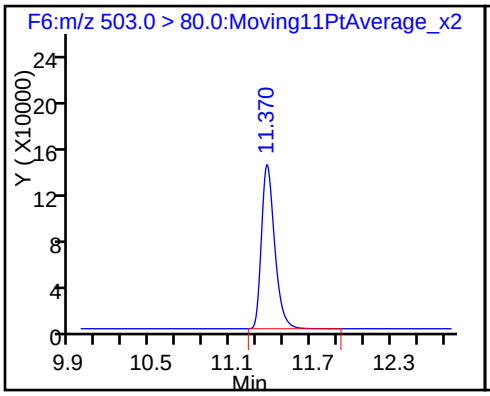
13 Perfluorooctanoic acid



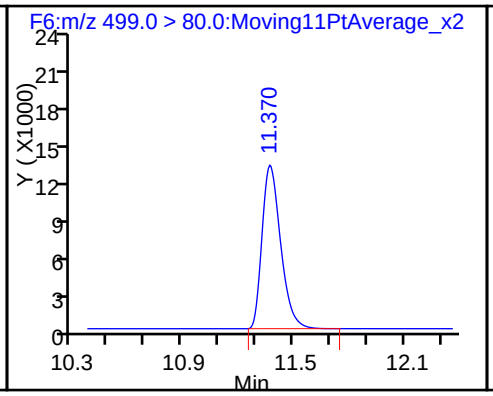
38 Perfluoroheptanesulfonic Acid



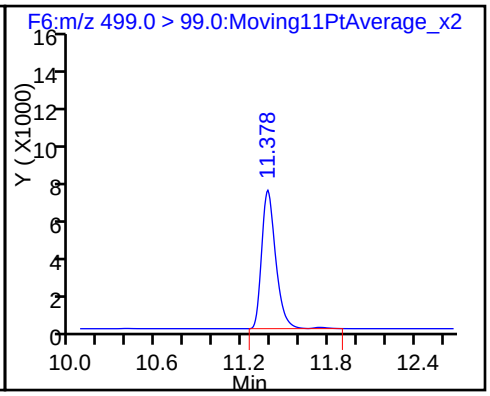
D 16 13C4 PFOS



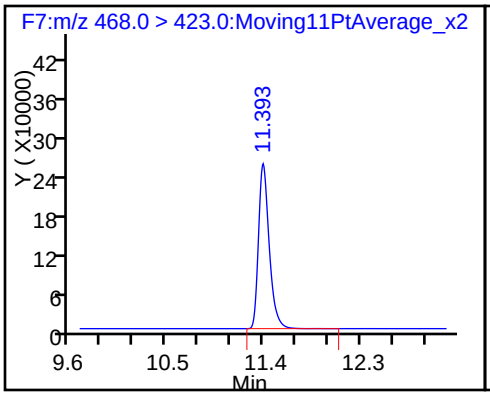
15 Perfluorooctane sulfonic acid



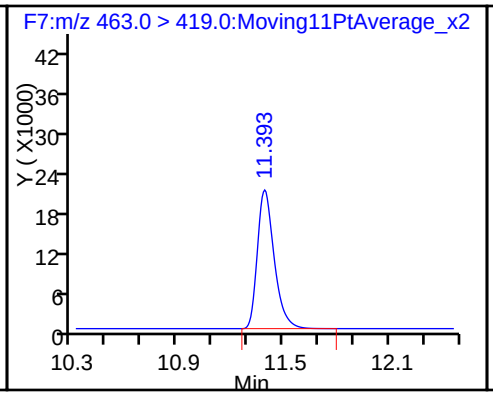
15 Perfluorooctane sulfonic acid



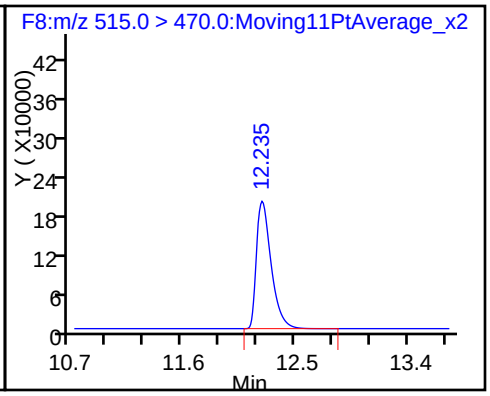
D 17 13C5 PFNA



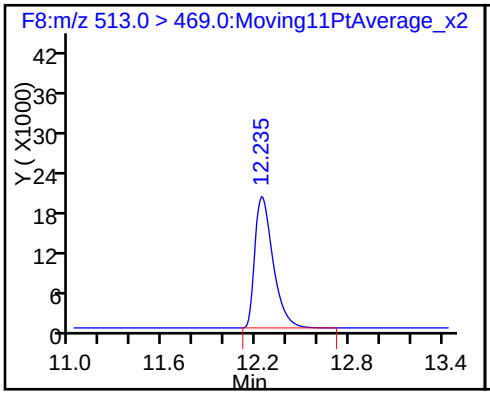
18 Perfluorononanoic acid



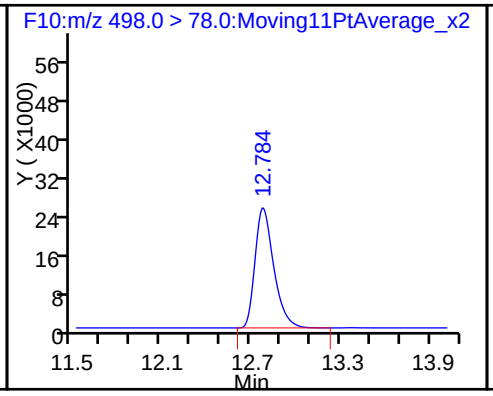
D 19 13C2 PFDA



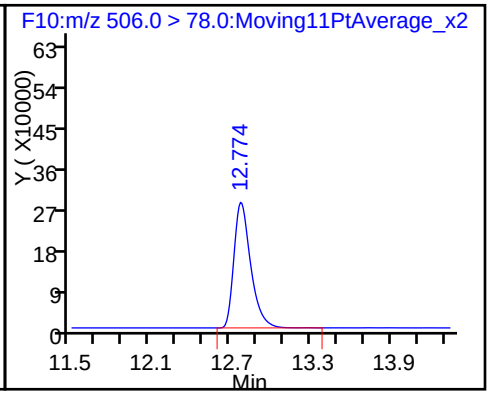
20 Perfluorodecanoic acid



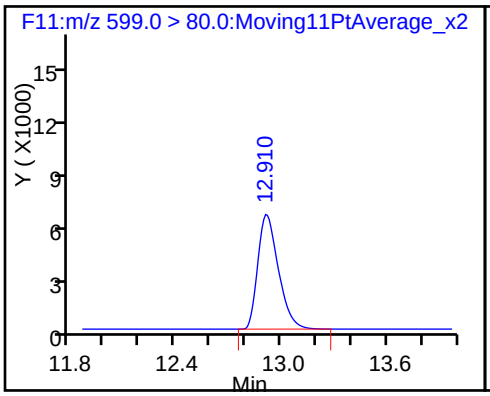
24 Perfluorooctane Sulfonamide



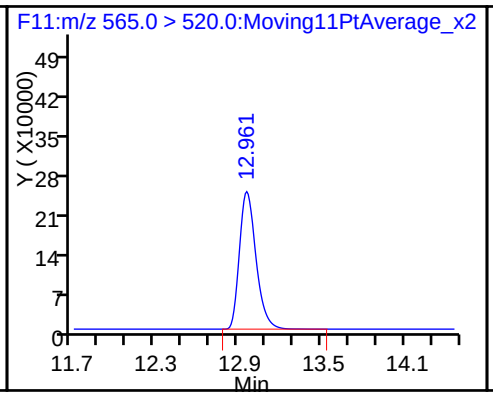
D 23 13C8 FOSA



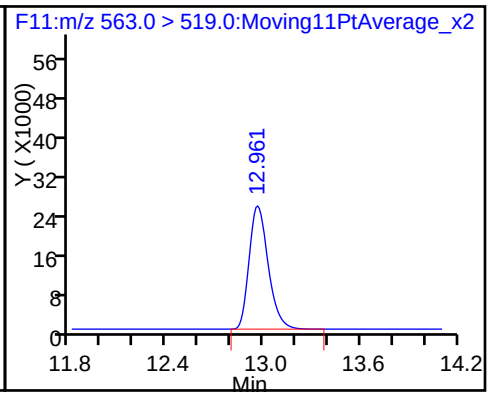
39 Perfluorodecane Sulfonic acid



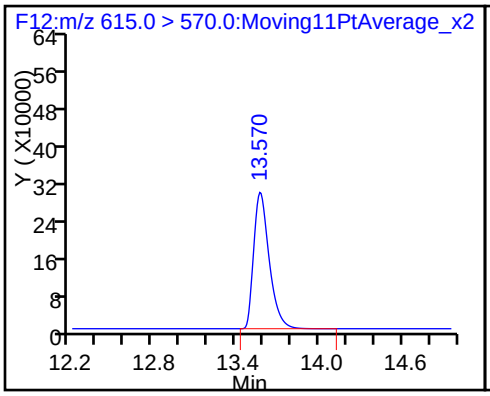
D 26 13C2 PFUnA



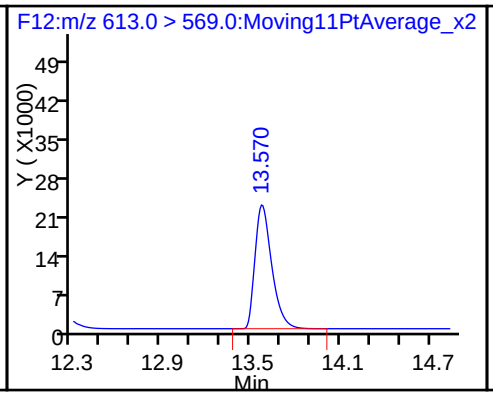
27 Perfluoroundecanoic acid



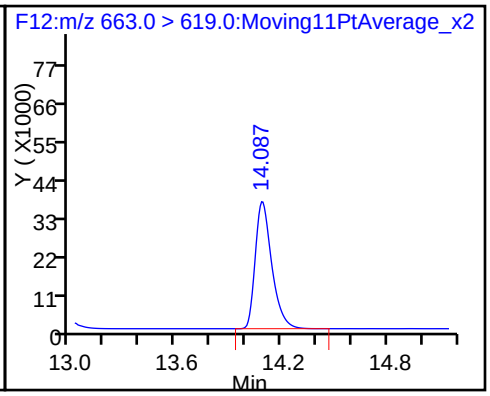
D 28 13C2 PFDoA



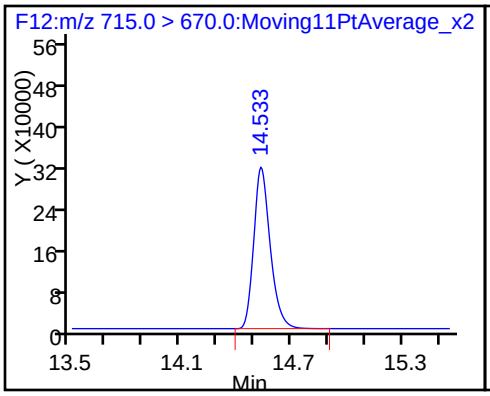
29 Perfluorododecanoic acid



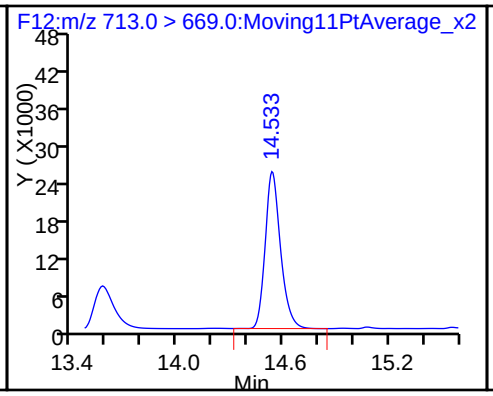
30 Perfluorotridecanoic acid



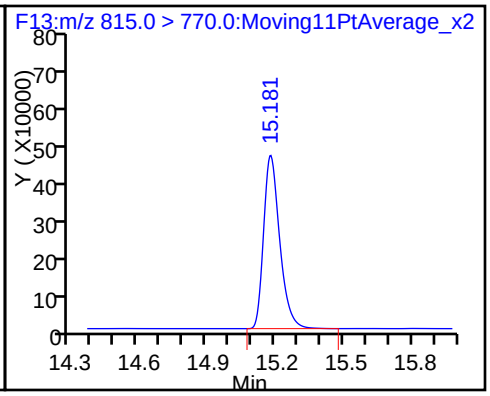
D 33 13C2-PFTeDA



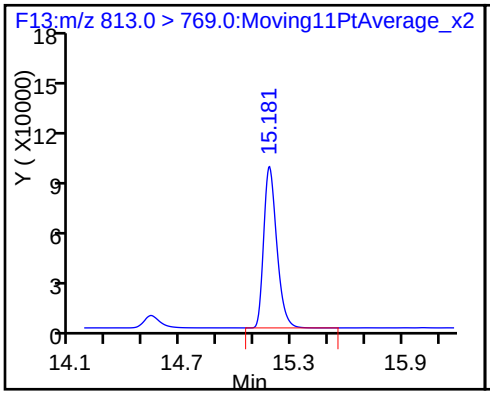
32 Perfluorotetradecanoic acid



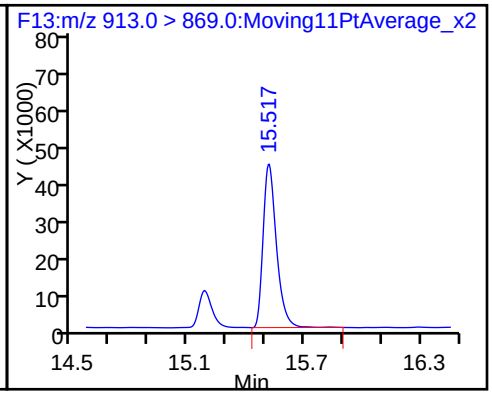
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_007.d
Lims ID: Std L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 22-Feb-2016 12:33:02 ALS Bottle#: 12 Worklist Smp#: 5
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Feb-2016 09:43:28 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 23-Feb-2016 08:03:35

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	5.699	5.697	0.002	1.000	572436	19.8		99.2	30886	
D 1 13C4 PFBA										
217.0 > 172.0	5.696	5.698	-0.002		1023111	55.3		111	53699	
D 3 13C5-PFPeA										
267.9 > 223.0	6.803	6.804	-0.001		1968141	54.8		110	5831	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.808	6.805	0.003	1.000	801953	20.2		101	172	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.918	6.918	0.0	1.000	351381	NC			2255	
298.9 > 99.0	6.918	6.918	0.0	1.000	187802		1.87(0.00-0.00)		2319	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.918	6.918	0.0	1.000	351381	18.0		102		
D 6 13C2 PFHxA										
315.0 > 270.0	8.050	8.050	0.0		1929477	57.7		115	19904	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.050	8.053	-0.003	1.000	817133	20.1		101	5548	
D 8 13C4-PFHpA										
367.0 > 322.0	9.281	9.283	-0.002		2044047	57.8		116	16587	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.287	9.288	-0.001	1.000	928168	21.5		107	46226	
D 11 18O2 PFHxS										
403.0 > 84.0	9.322	9.319	0.003		791012	54.0		114	30640	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.317	9.324	-0.007	1.000	233265	NC			2007	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.317	9.324	-0.007	1.000	233265	18.3		96.7		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.405	10.407	-0.002		2168856	57.2		114	150373	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.412	10.410	0.002	1.000	847325	20.2		101	1180	
413.0 > 169.0	10.412	10.410	0.002	1.000	314194		2.70(0.00-0.00)	101	4444	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.412	10.416	-0.004	1.000	264344	NC			12762	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.412	10.416	-0.004	1.000	264344	19.6		103		
D 16 13C4 PFOS										
503.0 > 80.0	11.370	11.369	0.001		957490	54.3		114	19815	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.370	11.371	-0.001	1.000	385293	19.4		102	222	
499.0 > 99.0	11.370	11.371	-0.001	1.000	209217		1.84(0.00-0.00)	102	10033	
D 17 13C5 PFNA										
468.0 > 423.0	11.393	11.390	0.003		1879859	58.0		116	89270	
18 Perfluorononanoic acid										
463.0 > 419.0	11.393	11.393	0.0	1.000	647229	20.9		105	3480	
D 19 13C2 PFDA										
515.0 > 470.0	12.235	12.232	0.003		1575243	53.6		107	63354	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.235	12.234	0.001	1.000	622261	20.4		102	18743	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.773	12.774	-0.001	1.000	939289	20.8		104	11962	
D 23 13C8 FOSA										
506.0 > 78.0	12.773	12.774	-0.001		2763188	58.2		116	2858	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.909	12.916	-0.007	1.000	262305	NC			31661	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.909	12.916	-0.007	1.000	262305	21.8		113		
D 26 13C2 PFUnA										
565.0 > 520.0	12.961	12.957	0.004		2204516	58.3		117	33097	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.961	12.957	0.004	1.000	775880	19.9		99.4	46423	
D 28 13C2 PFDoA										
615.0 > 570.0	13.570	13.569	0.001		2498007	57.7		115	12174	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.570	13.571	-0.001	1.000	754498	20.6		103	330	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.087	14.091	-0.004	1.000	975639	21.1		106	1112	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.533	14.533	0.0		2294604	61.1		122	16717	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.533	14.533	0.0	1.000	582019	19.7		98.6	467	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.176	15.178	-0.002		2537023	58.9		118	14014	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.176	15.179	-0.003	1.000	1234377	20.6		103	1585	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.512	15.514	-0.002	1.000	991628	21.0		105	1081	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017 Amount Added: 1.00 Units: mL

Report Date: 23-Feb-2016 09:43:29 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_007.d

Injection Date: 22-Feb-2016 12:33:02 Instrument ID: A6

Lims ID: Std L4

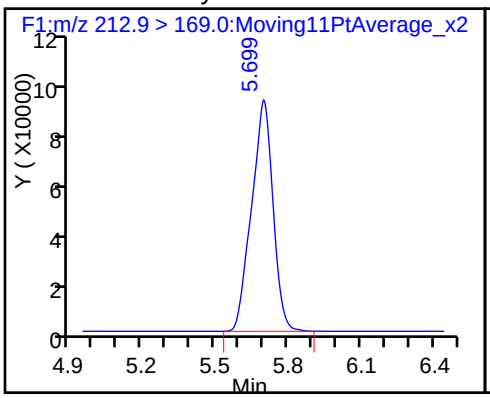
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 5

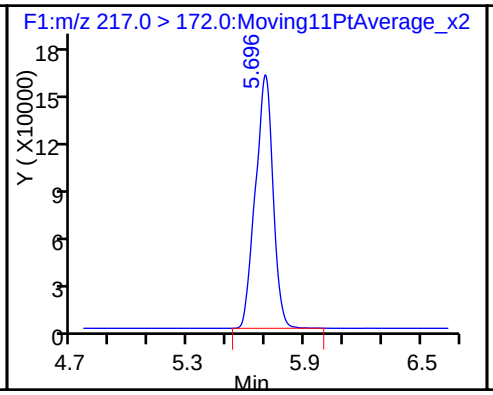
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

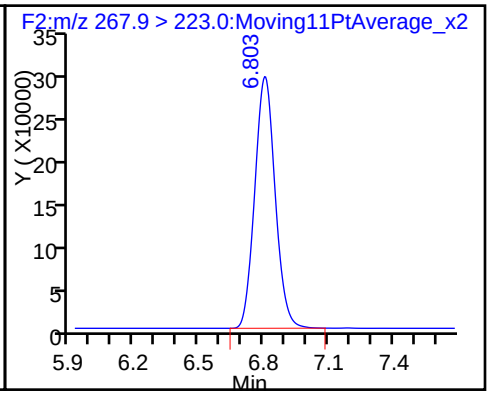
2 Perfluorobutyric acid



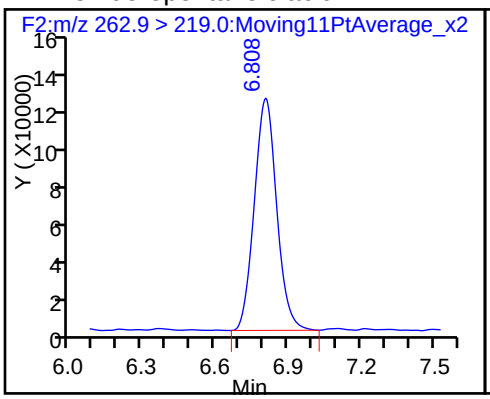
D 1 13C4 PFBA



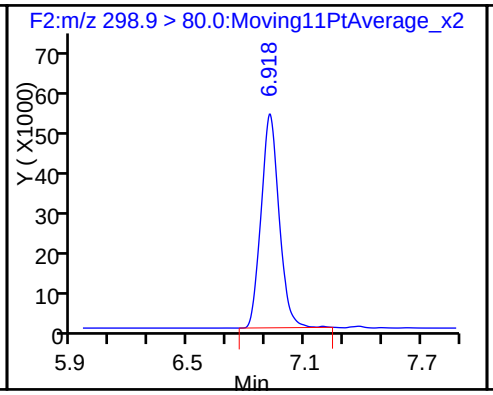
D 3 13C5-PFPeA



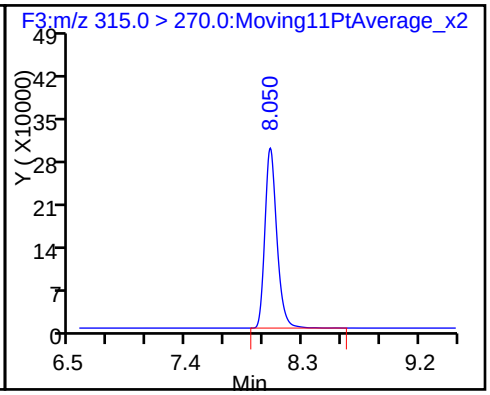
4 Perfluoropentanoic acid



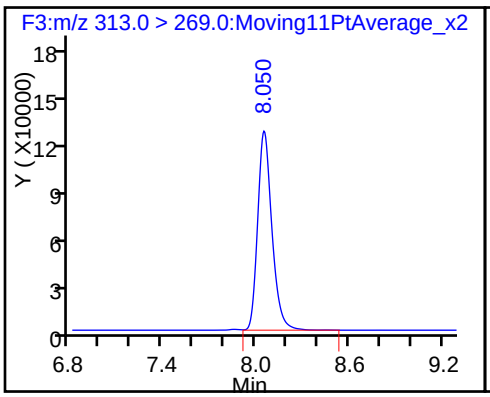
40 Perfluorobutanesulfonic acid



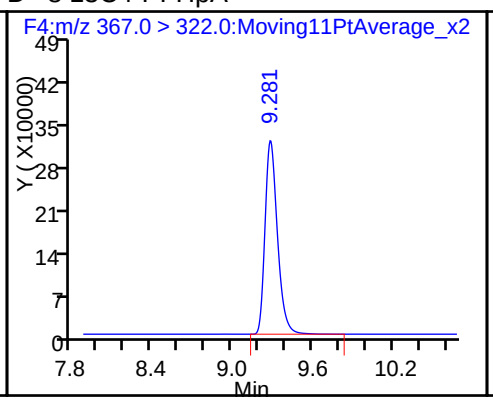
D 6 13C2 PFHxA



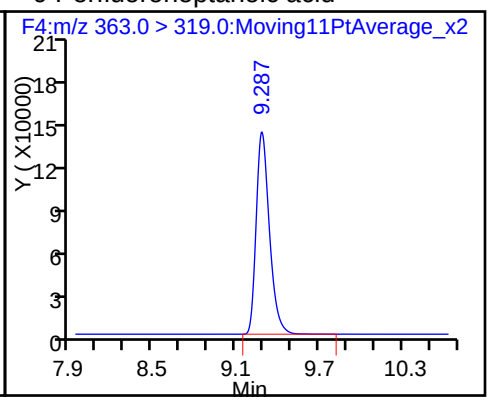
7 Perfluorohexanoic acid



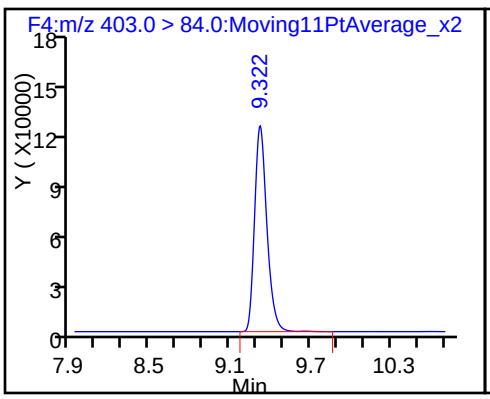
D 8 13C4-PFHpA



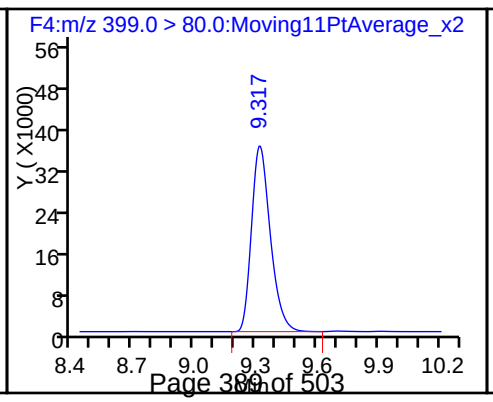
9 Perfluoroheptanoic acid



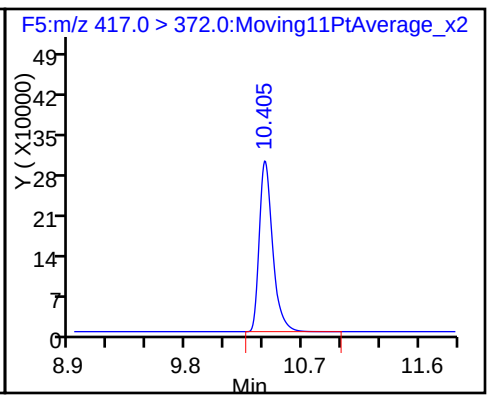
D 11 18O2 PFHxS



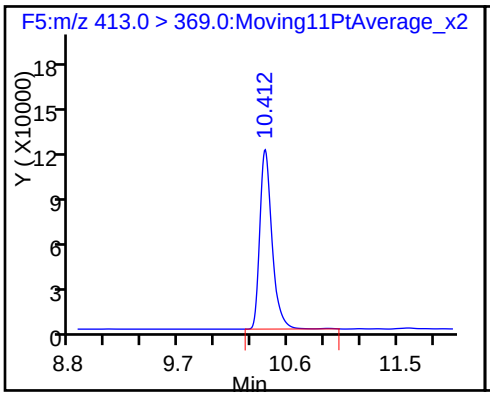
41 Perfluorohexanesulfonic acid



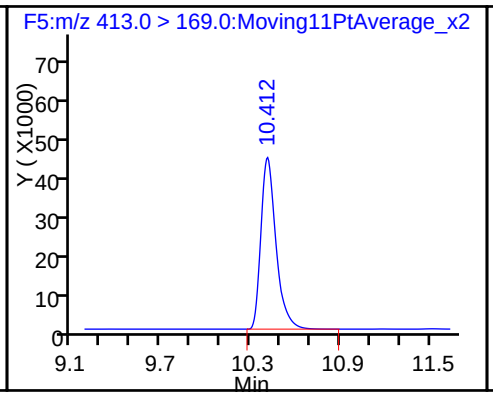
D 12 13C4 PFOA



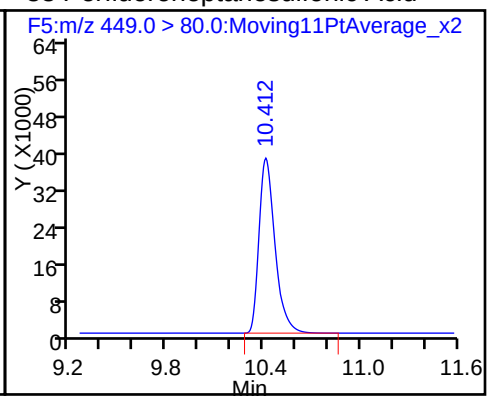
13 Perfluorooctanoic acid



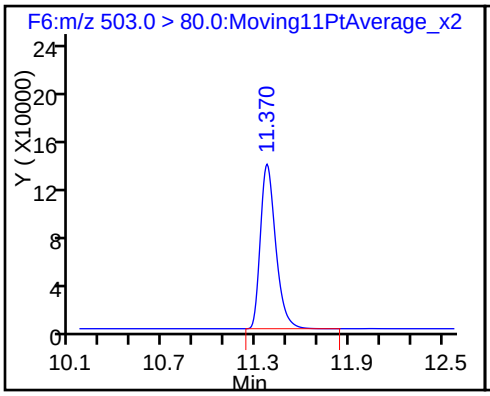
13 Perfluorooctanoic acid



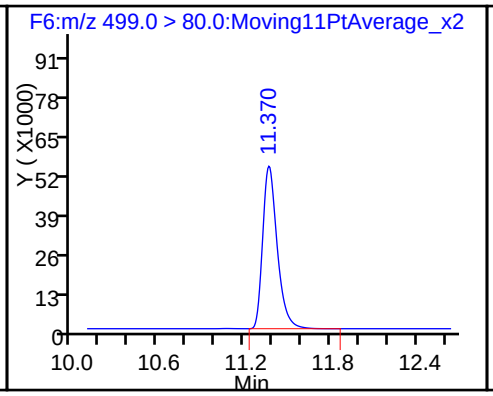
38 Perfluoroheptanesulfonic Acid



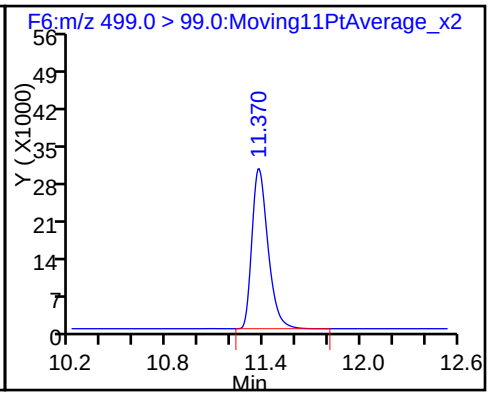
D 16 13C4 PFOS



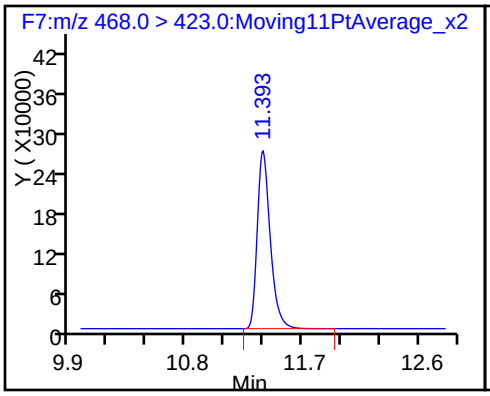
15 Perfluorooctane sulfonic acid



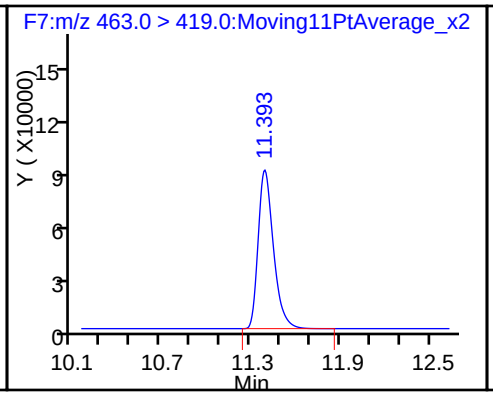
15 Perfluorooctane sulfonic acid



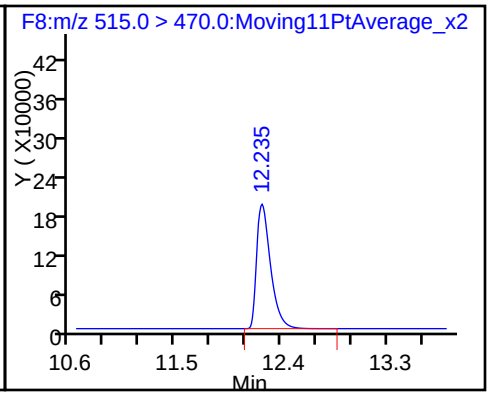
D 17 13C5 PFNA



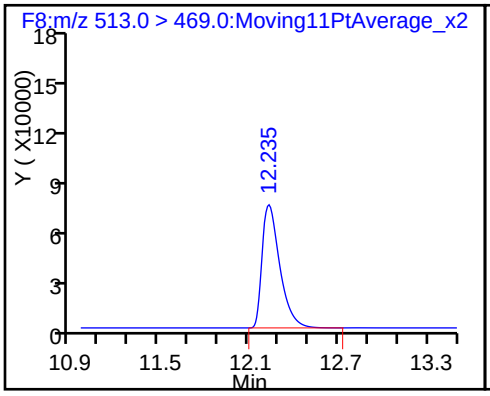
18 Perfluorononanoic acid



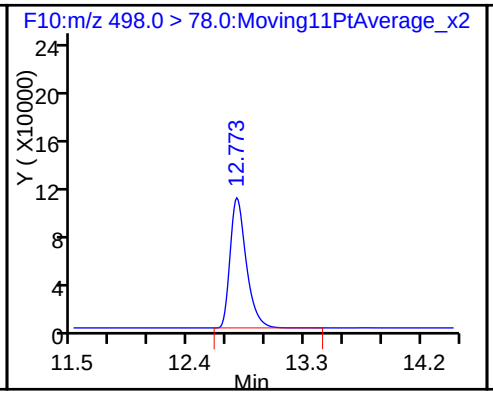
D 19 13C2 PFDA



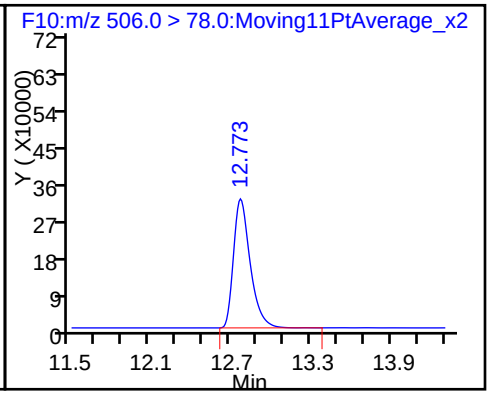
20 Perfluorodecanoic acid



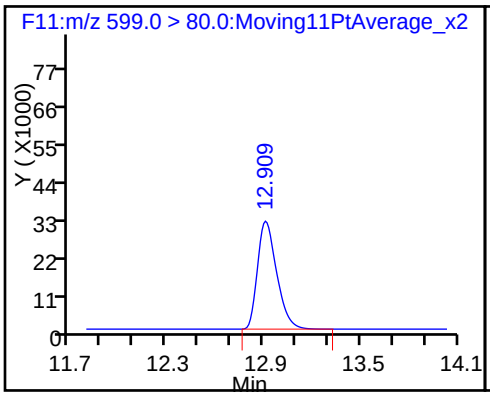
24 Perfluorooctane Sulfonamide



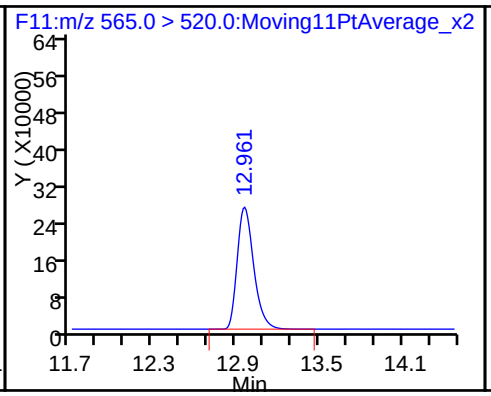
D 23 13C8 FOSA



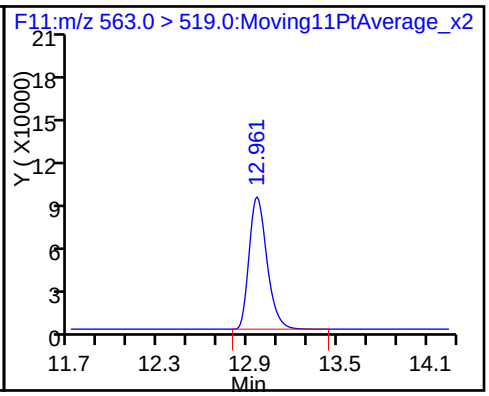
39 Perfluorodecane Sulfonic acid



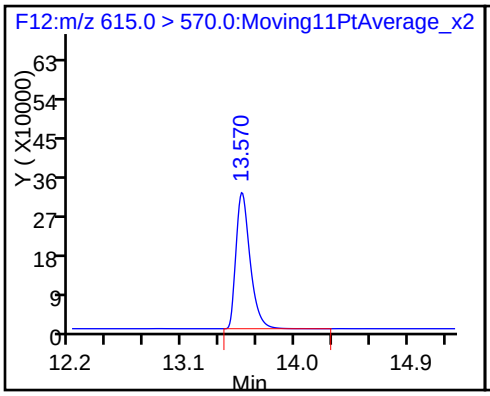
D 26 13C2 PFUnA



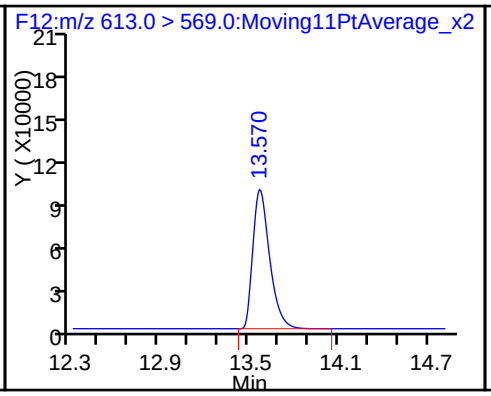
27 Perfluoroundecanoic acid



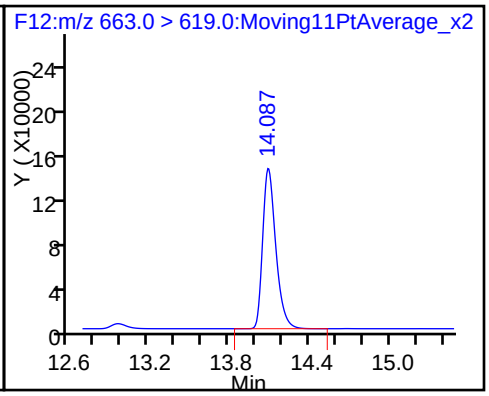
D 28 13C2 PFDoA



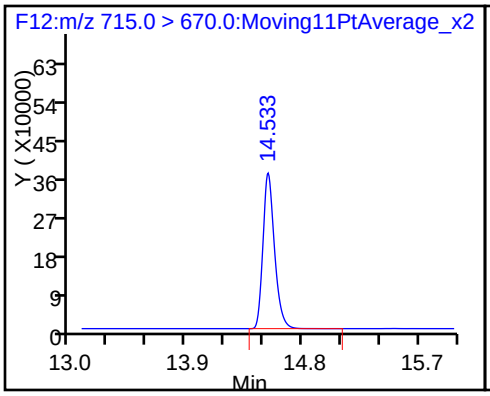
29 Perfluorododecanoic acid



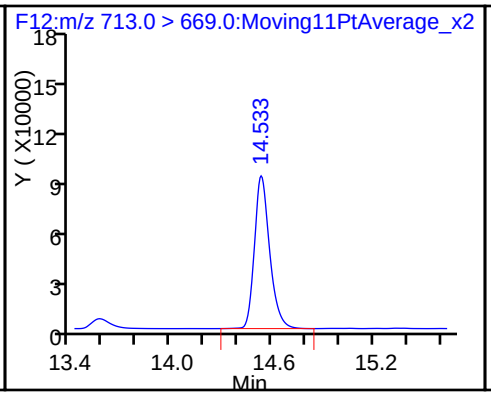
30 Perfluorotridecanoic acid



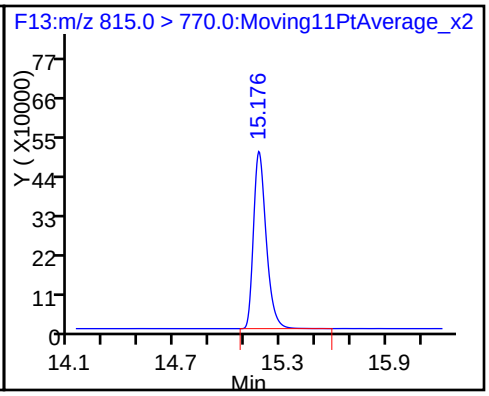
D 33 13C2-PFTeDA



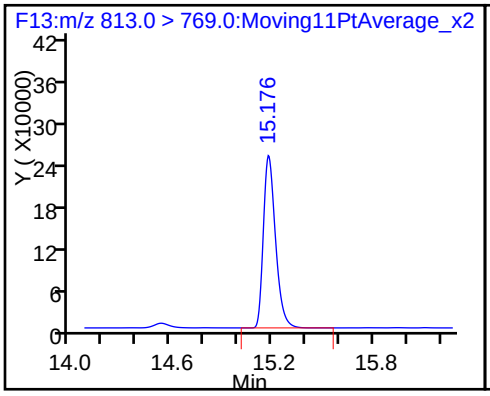
32 Perfluorotetradecanoic acid



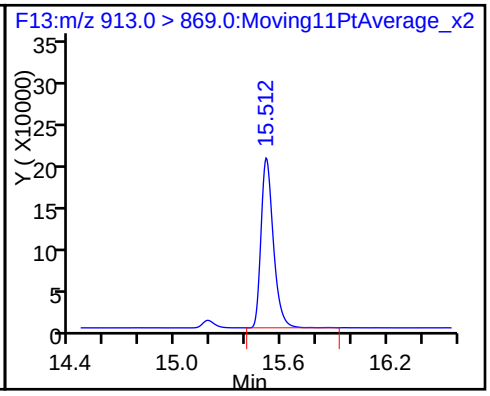
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_008.d
Lims ID: Std L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 22-Feb-2016 12:54:16 ALS Bottle#: 13 Worklist Smp#: 6
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Feb-2016 09:43:31 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

First Level Reviewer: westendorfc Date: 22-Feb-2016 14:32:11

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	5.696	5.697	-0.001	1.000	1270474	49.7		99.4	55488	
D 1 13C4 PFBA										
217.0 > 172.0	5.693	5.698	-0.005		897862	48.5		97.0	78478	
D 3 13C5-PFPeA										
267.9 > 223.0	6.804	6.804	0.0		1725918	48.1		96.2	46637	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.804	6.805	-0.001	1.000	1689876	48.5		97.0	404	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.918	6.918	0.0	1.000	767158	NC			1574	
298.9 > 99.0	6.918	6.918	0.0	1.000	387672		1.98(0.00-0.00)		1285	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.918	6.918	0.0	1.000	767158	48.3		109		
D 6 13C2 PFHxA										
315.0 > 270.0	8.045	8.050	-0.005		1594944	47.7		95.4	8041	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.045	8.053	-0.008	1.000	1800628	53.7		107	4650	
D 8 13C4-PFHpA										
367.0 > 322.0	9.276	9.283	-0.007		1643911	46.5		93.0	125170	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.282	9.288	-0.006	1.000	1831158	52.3		105	14199	
D 11 18O2 PFHxS										
403.0 > 84.0	9.311	9.319	-0.008		633525	43.3		91.5	8144	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.317	9.324	-0.007	1.000	524276	NC			5592	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.317	9.324	-0.007	1.000	524276	50.7		107		

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	10.405	10.407	-0.002		1721534	45.4		90.7	121249	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.405	10.410	-0.005	1.000	1770485	53.1		106	1976	
413.0 > 169.0	10.405	10.410	-0.005	1.000	617791		2.87(0.00-0.00)	106	2416	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.412	10.416	-0.004	1.000	552187	NC			77033	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.412	10.416	-0.004	1.000	552187	50.7		107		
D 16 13C4 PFOS										
503.0 > 80.0	11.363	11.369	-0.006		764175	43.3		90.6	54023	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.363	11.371	-0.008	1.000	815115	50.8		106	225	
499.0 > 99.0	11.363	11.371	-0.008	1.000	433755		1.88(0.00-0.00)	106	12372	
D 17 13C5 PFNA										
468.0 > 423.0	11.386	11.390	-0.004		1528095	47.1		94.3	42906	
18 Perfluorononanoic acid										
463.0 > 419.0	11.386	11.393	-0.007	1.000	1207699	47.5		95.1	42033	
D 19 13C2 PFDA										
515.0 > 470.0	12.224	12.232	-0.008		1416570	48.2		96.5	87041	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.224	12.234	-0.010	1.000	1305289	47.4		94.8	78561	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.774	12.774	0.0	1.000	1851972	50.0		99.9	1762	
D 23 13C8 FOSA										
506.0 > 78.0	12.774	12.774	0.0		2263614	47.7		95.4	2452	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.909	12.916	-0.007	1.000	513625	NC			15389	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.909	12.916	-0.007	1.000	513625	52.9		110		
D 26 13C2 PFUnA										
565.0 > 520.0	12.951	12.957	-0.006		1706522	45.1		90.2	100808	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.951	12.957	-0.006	1.000	1552675	52.5		105	8398	
D 28 13C2 PFDoA										
615.0 > 570.0	13.561	13.569	-0.008		2205303	51.0		102	12742	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.570	13.571	-0.001	1.000	1657254	51.2		102	312	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.087	14.091	-0.004	1.000	1968881	48.2		96.5	2286	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.527	14.533	-0.006		1796758	47.8		95.7	31431	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.527	14.533	-0.006	1.000	1168530	45.2		90.4	695	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.176	15.178	-0.002		1947274	45.2		90.5	9908	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.176	15.179	-0.003	1.000	2010426	42.5		85.1	2518	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.512	15.514	-0.002	1.000	1939064	46.4		92.8	2351	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016 Amount Added: 1.00 Units: mL

Report Date: 23-Feb-2016 09:43:31 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_008.d

Injection Date: 22-Feb-2016 12:54:16 Instrument ID: A6

Lims ID: Std L5

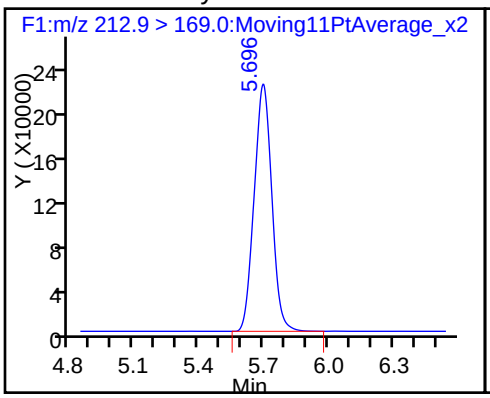
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 6

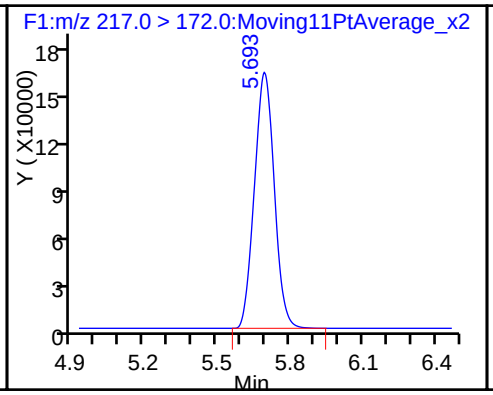
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

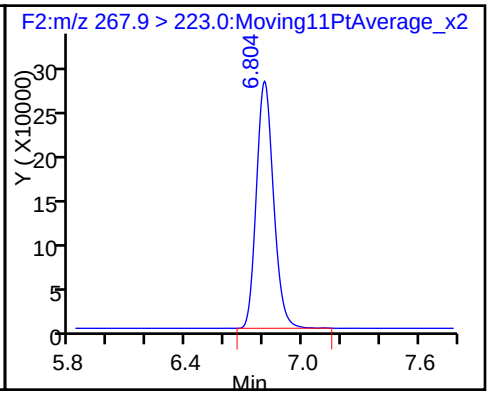
2 Perfluorobutyric acid



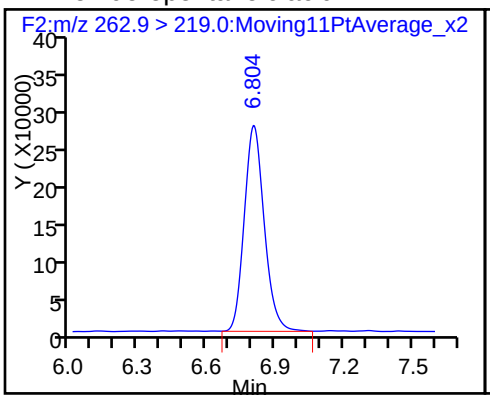
D 1 13C4 PFBA



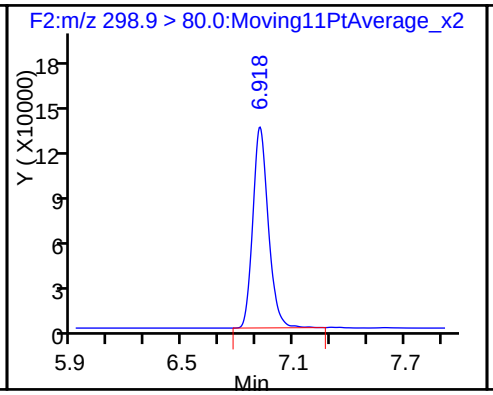
D 3 13C5-PFPeA



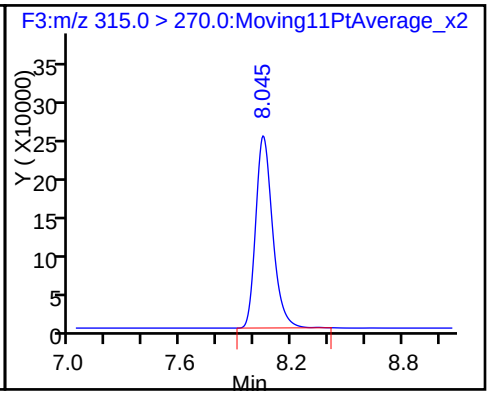
4 Perfluoropentanoic acid



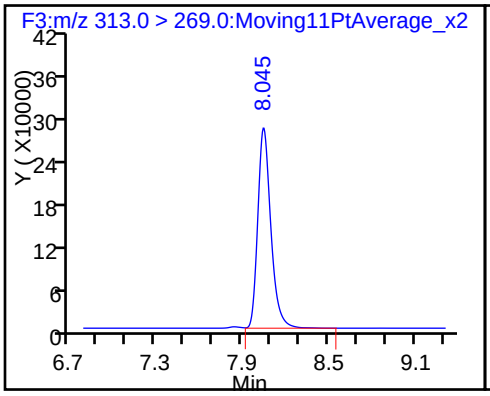
40 Perfluorobutanesulfonic acid



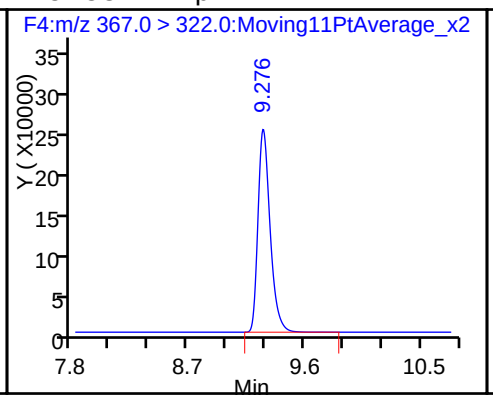
D 6 13C2 PFHxA



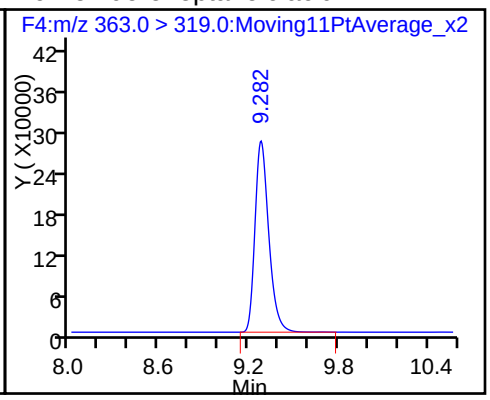
7 Perfluorohexanoic acid



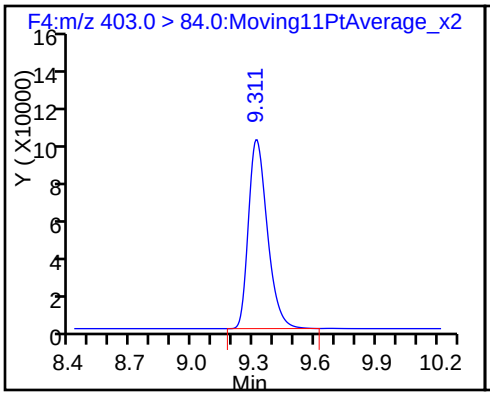
D 8 13C4-PFHpA



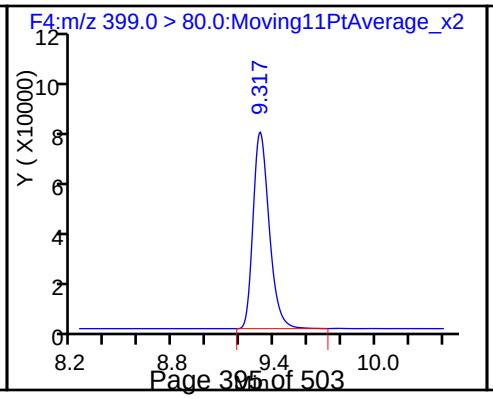
9 Perfluoroheptanoic acid



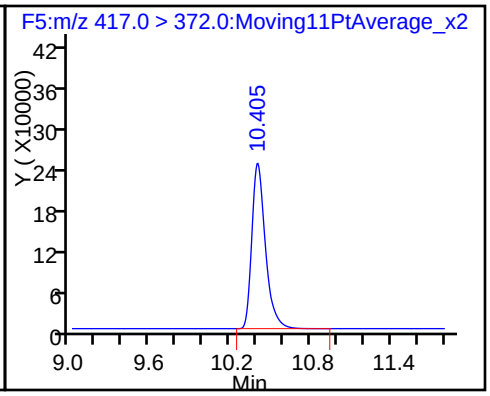
D 11 18O2 PFHxS



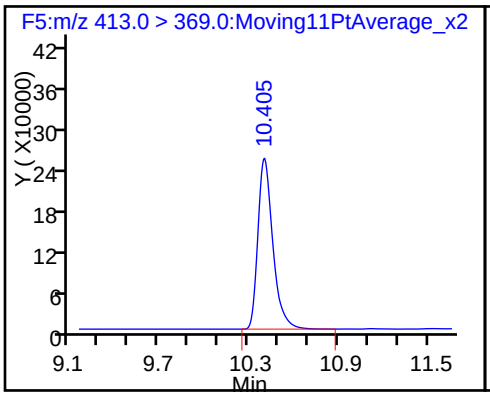
41 Perfluorohexanesulfonic acid



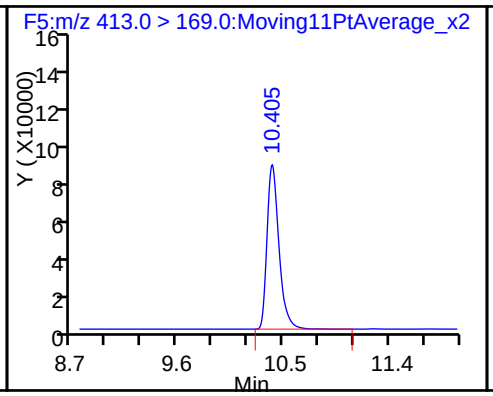
D 12 13C4 PFOA



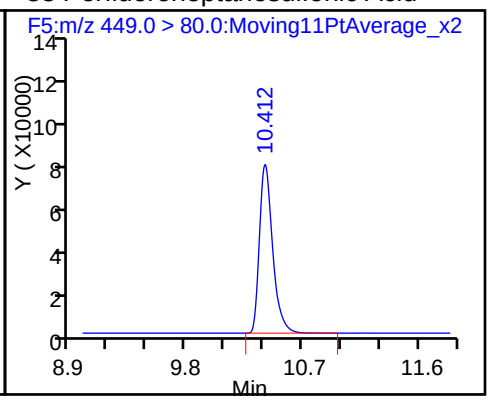
13 Perfluorooctanoic acid



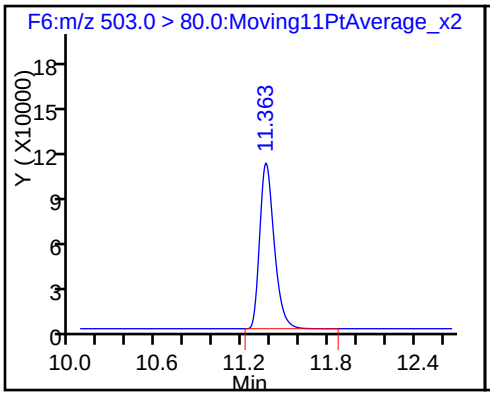
13 Perfluorooctanoic acid



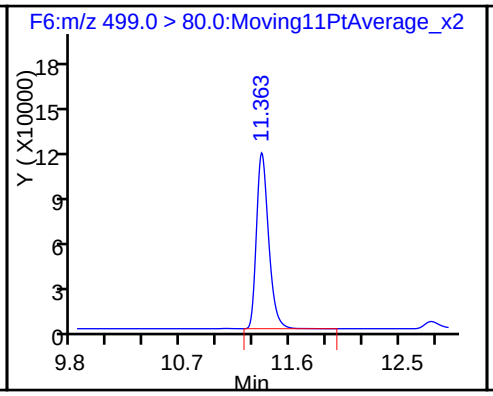
38 Perfluoroheptanesulfonic Acid



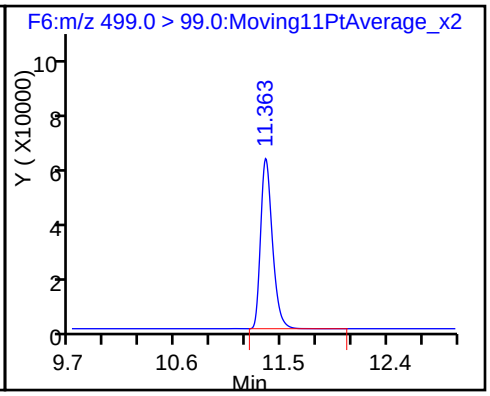
D 16 13C4 PFOS



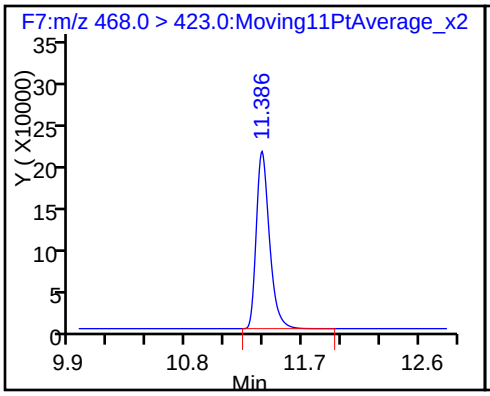
15 Perfluorooctane sulfonic acid



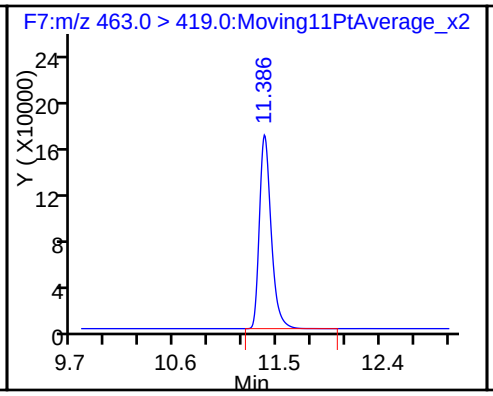
15 Perfluorooctane sulfonic acid



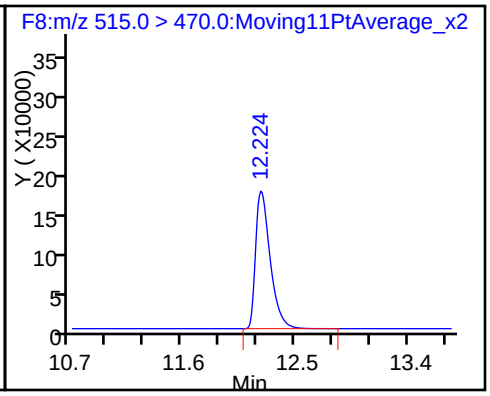
D 17 13C5 PFNA



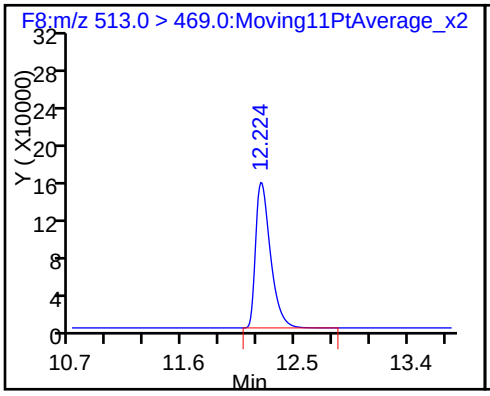
18 Perfluorononanoic acid



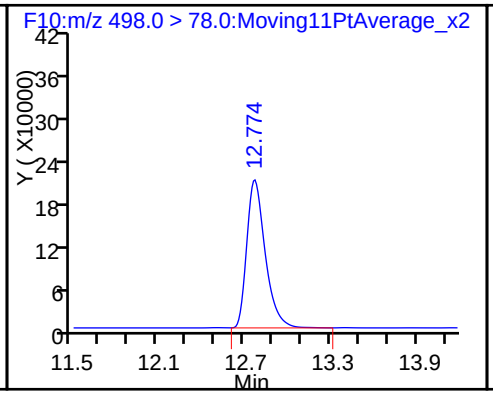
D 19 13C2 PFDA



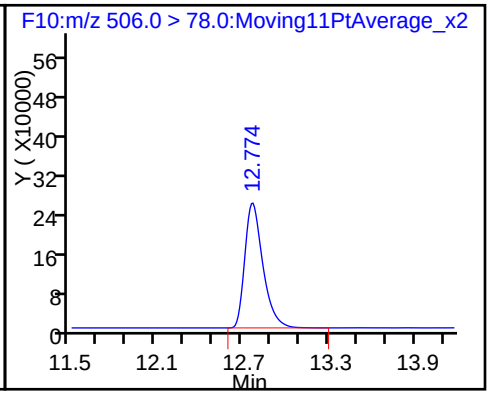
20 Perfluorodecanoic acid



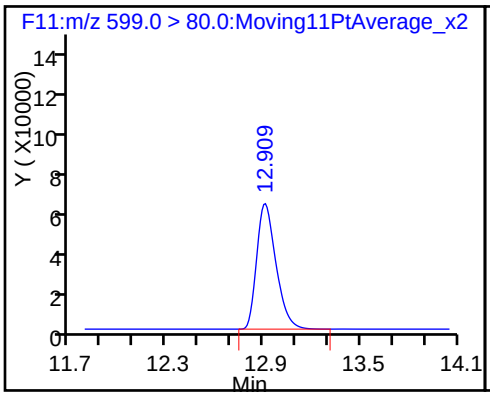
24 Perfluorooctane Sulfonamide



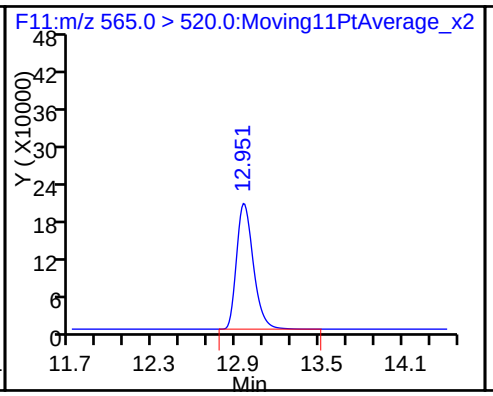
D 23 13C8 FOSA



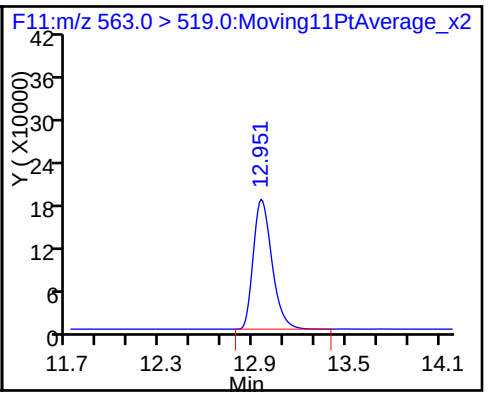
39 Perfluorodecane Sulfonic acid



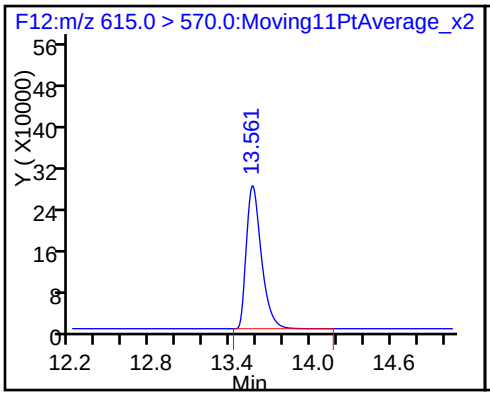
D 26 13C2 PFUnA



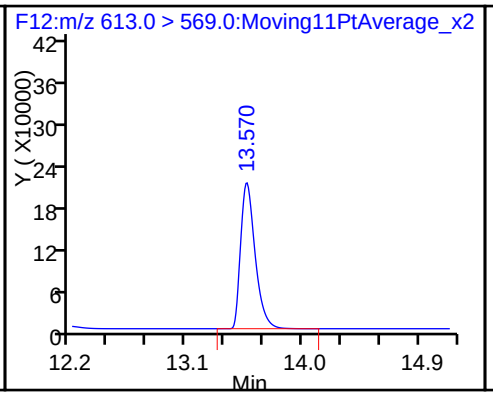
27 Perfluoroundecanoic acid



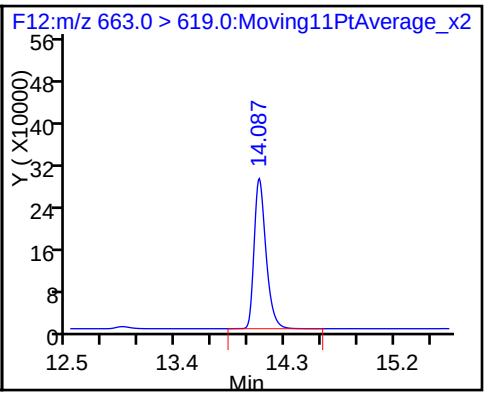
D 28 13C2 PFDoA



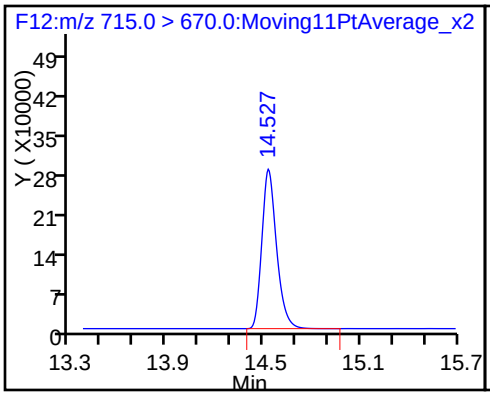
29 Perfluorododecanoic acid



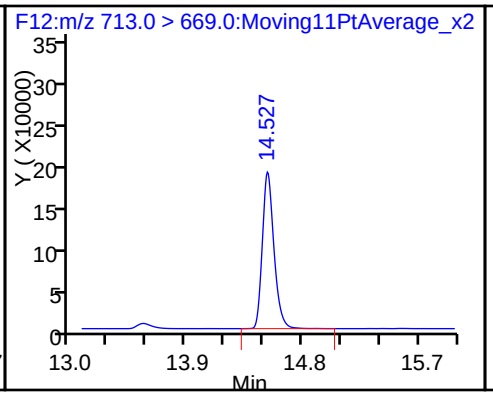
30 Perfluorotridecanoic acid



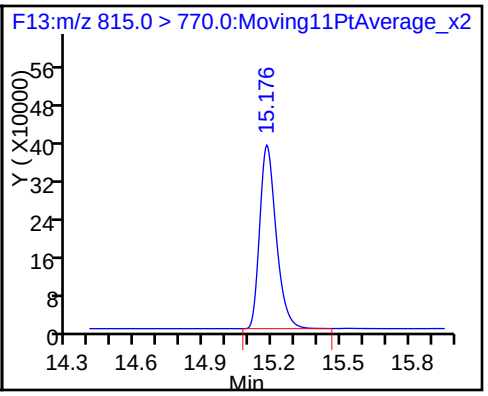
D 33 13C2-PFTeDA



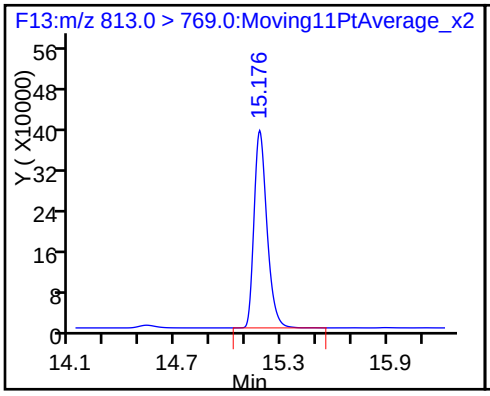
32 Perfluorotetradecanoic acid



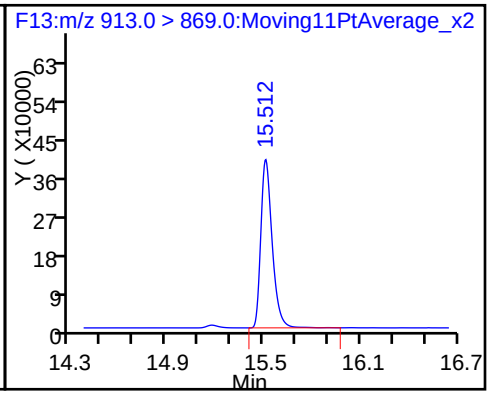
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_009.d
Lims ID: Std L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 22-Feb-2016 13:15:30 ALS Bottle#: 14 Worklist Smp#: 7
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L6
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Feb-2016 09:43:34 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.696	5.697	-0.001	1.000	4728448	199.2		99.6	50449	
D 1 13C4 PFBA										
217.0 > 172.0	5.696	5.698	-0.002		829539	44.8		89.6	68797	
D 3 13C5-PFPeA										
267.9 > 223.0	6.799	6.804	-0.005		1538970	42.9		85.7	20330	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.803	6.805	-0.002	1.000	6135097	197.4		98.7	1120	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.914	6.918	-0.004	1.000	2626929	NC			5434	
298.9 > 99.0	6.918	6.918	0.0	1.001	1364910		1.92(0.00-0.00)		6654	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.914	6.918	-0.004	1.000	2626929	177.9		101		
D 6 13C2 PFHxA										
315.0 > 270.0	8.045	8.050	-0.005		1423156	42.6		85.1	43630	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.050	8.053	-0.003	1.000	6228146	208.1		104	2382	
D 8 13C4-PFHpA										
367.0 > 322.0	9.277	9.283	-0.006		1533225	43.4		86.7	115238	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.277	9.288	-0.011	1.000	6158092	187.7		93.8	6549	
D 11 18O2 PFHxS										
403.0 > 84.0	9.318	9.319	-0.001		585676	40.0		84.6	1917	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.318	9.324	-0.006	1.000	1756685	NC			3015	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.318	9.324	-0.006	1.000	1756685	182.6		96.5		
D 12 13C4 PFOA										
417.0 > 372.0	10.399	10.407	-0.008		1523118	40.1		80.3	105158	

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	10.406	10.410	-0.004	1.000	5847741	198.2		99.1	6790	
413.0 > 169.0	10.406	10.410	-0.004	1.000	1982234		2.95(0.00-0.00)	99.1	7650	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.406	10.416	-0.010	1.000	1740838	NC			18459	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.406	10.416	-0.010	1.000	1740838	179.3		94.2		
D 16 13C4 PFOS										
503.0 > 80.0	11.364	11.369	-0.005		678157	38.4		80.4	47634	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.364	11.371	-0.007	1.000	2628935	183.5		96.0	140	
499.0 > 99.0	11.364	11.371	-0.007	1.000	1415772		1.86(0.00-0.00)	96.0	7822	
D 17 13C5 PFNA										
468.0 > 423.0	11.387	11.390	-0.003		1309110	40.4		80.8	90435	
18 Perfluorononanoic acid										
463.0 > 419.0	11.387	11.393	-0.006	1.000	4398963	201.0		100	122006	
D 19 13C2 PFDA										
515.0 > 470.0	12.228	12.232	-0.004		1133606	38.6		77.2	16762	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.228	12.234	-0.006	1.000	4566633	206.8		103	13174	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.767	12.774	-0.007	1.000	7044639	207.3		104	1347	
D 23 13C8 FOSA										
506.0 > 78.0	12.767	12.774	-0.007		2075409	43.7		87.4	12223	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.902	12.916	-0.014	1.000	1609473	NC			8916	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.902	12.916	-0.014	1.000	1609473	185.9		96.4		
D 26 13C2 PFUnA										
565.0 > 520.0	12.954	12.957	-0.003		1461092	38.6		77.2	42717	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.954	12.957	-0.003	1.000	5103271	203.5		102	59842	
D 28 13C2 PFDoA										
615.0 > 570.0	13.565	13.569	-0.004		1874034	43.3		86.6	23504	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.565	13.571	-0.006	1.000	5926643	215.3		108	10721	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.090	14.091	-0.001	1.000	6173731	178.0		89.0	9042	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.530	14.533	-0.003		1555603	41.4		82.8	29986	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.530	14.533	-0.003	1.000	4318677	197.5		98.7	3186	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.174	15.178	-0.004		1919864	44.6		89.2	9263	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.174	15.179	-0.005	1.000	7357700	201.2		101	5500	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.511	15.514	-0.003	1.000	7166602	201.8		101	4877	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L6_00015 Amount Added: 1.00 Units: mL

Report Date: 23-Feb-2016 09:43:34 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_009.d

Injection Date: 22-Feb-2016 13:15:30 Instrument ID: A6

Lims ID: Std L6

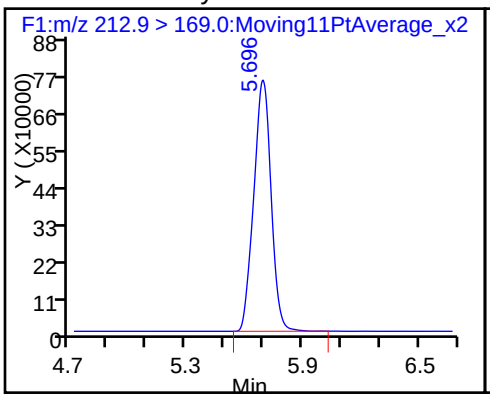
Client ID:

Operator ID: JRB ALS Bottle#: 14 Worklist Smp#: 7

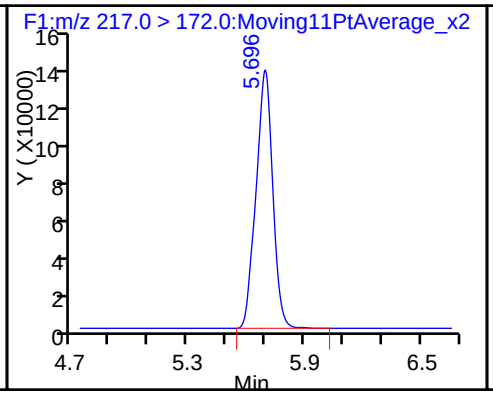
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

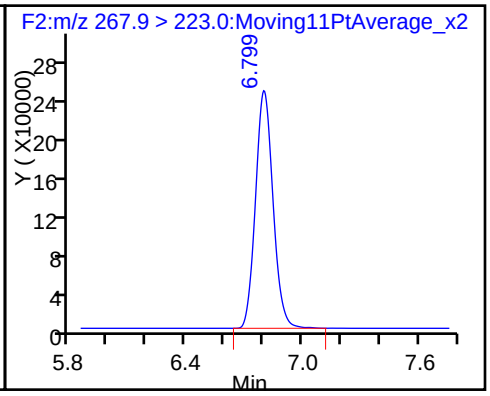
2 Perfluorobutyric acid



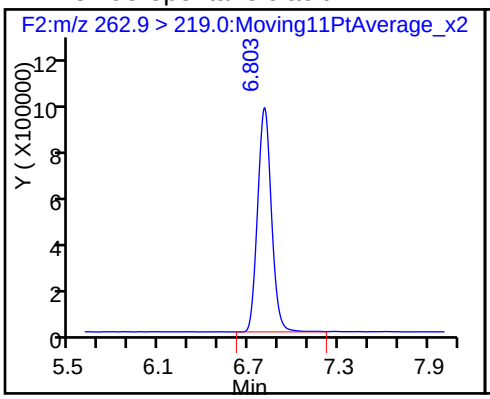
D 1 13C4 PFBA



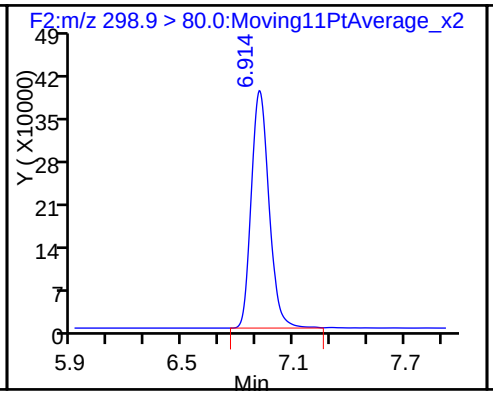
D 3 13C5-PFPeA



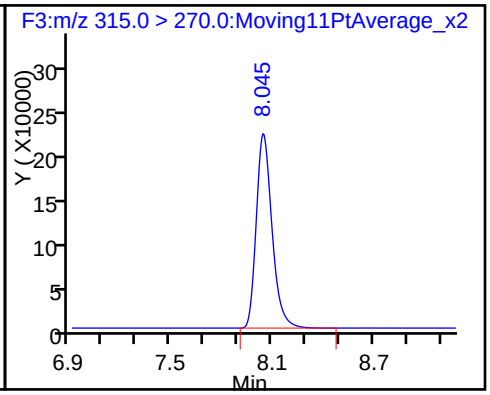
4 Perfluoropentanoic acid



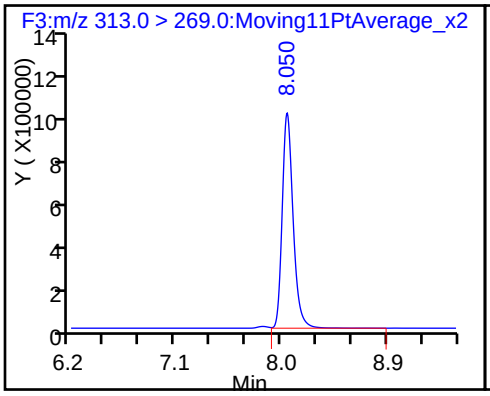
40 Perfluorobutanesulfonic acid



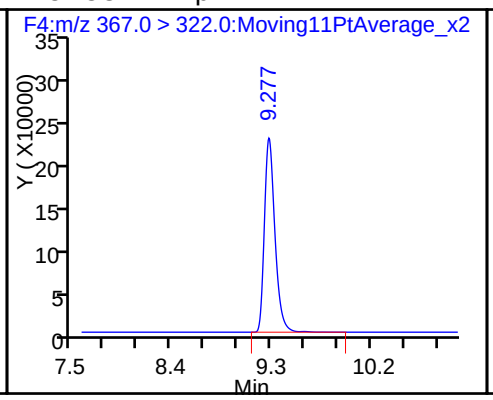
D 6 13C2 PFHxA



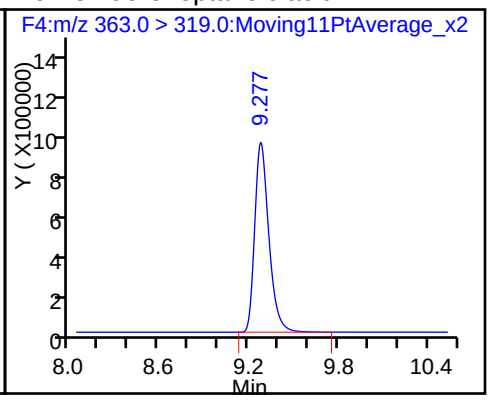
7 Perfluorohexanoic acid



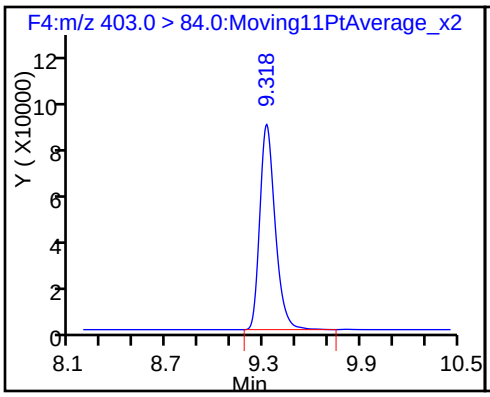
D 8 13C4-PFHpA



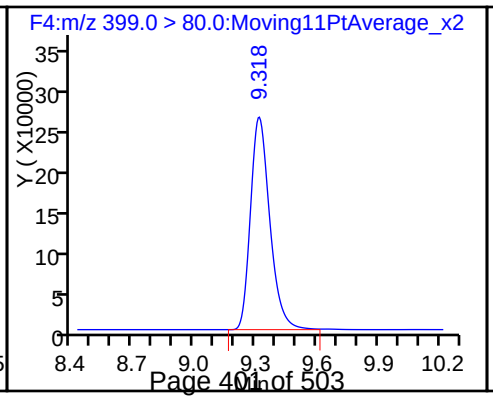
9 Perfluoroheptanoic acid



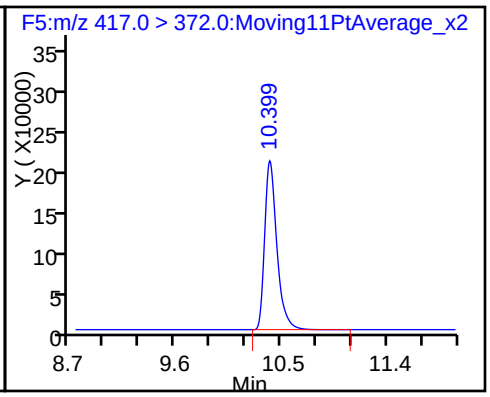
D 11 18O2 PFHxS



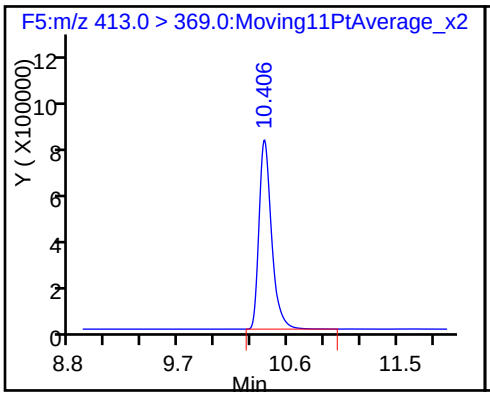
41 Perfluorohexanesulfonic acid



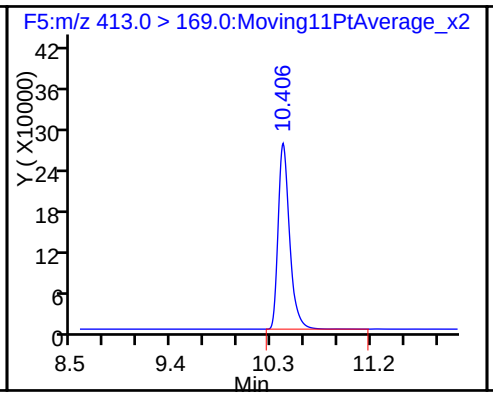
D 12 13C4 PFOA



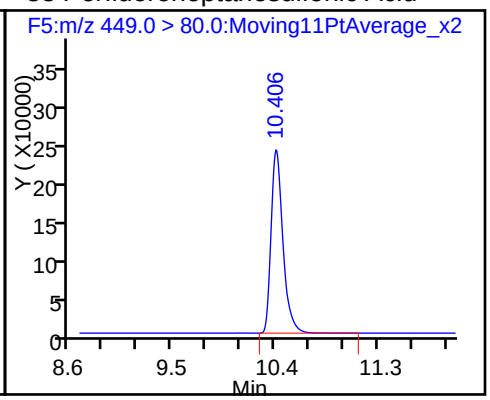
13 Perfluorooctanoic acid



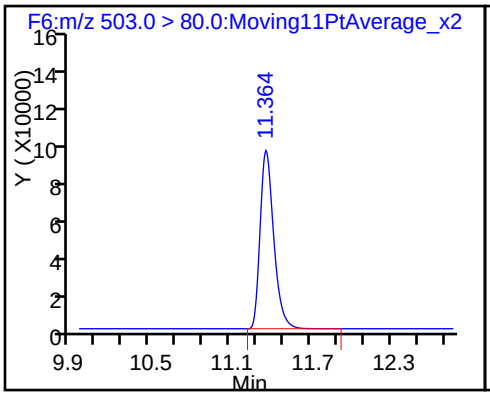
13 Perfluorooctanoic acid



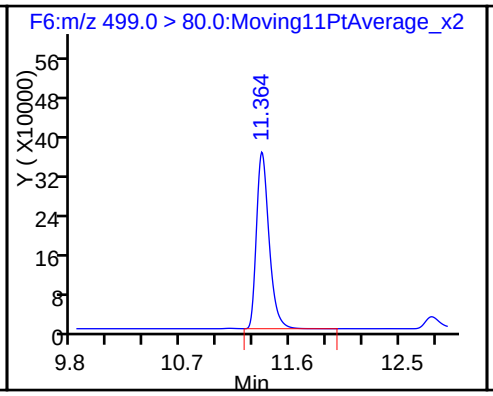
38 Perfluoroheptanesulfonic Acid



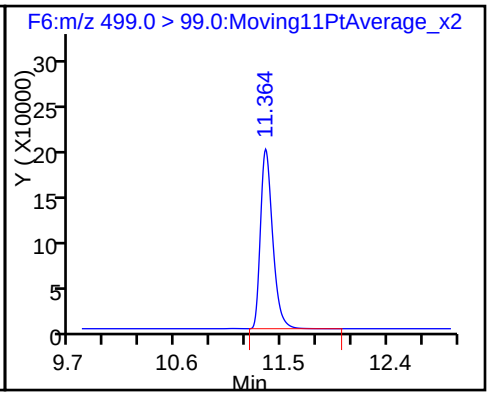
D 16 13C4 PFOS



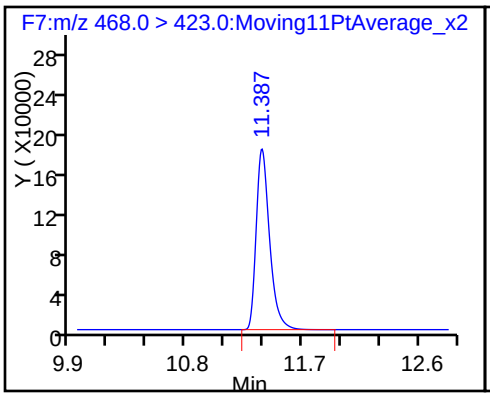
15 Perfluorooctane sulfonic acid



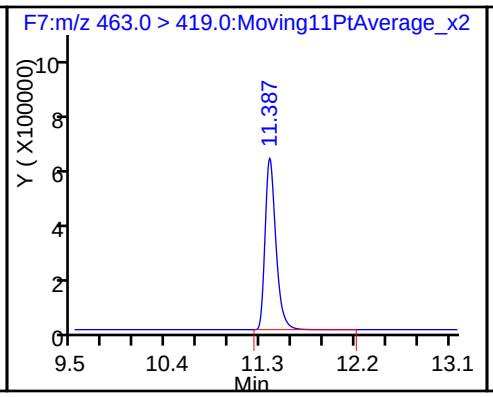
15 Perfluorooctane sulfonic acid



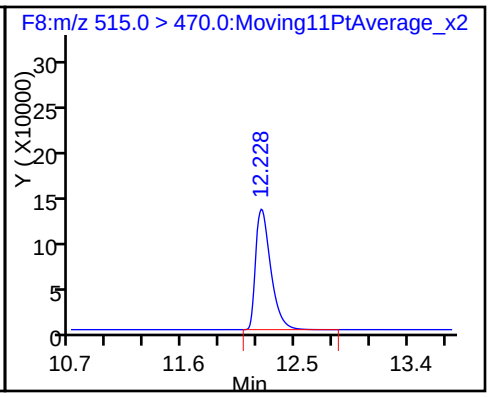
D 17 13C5 PFNA



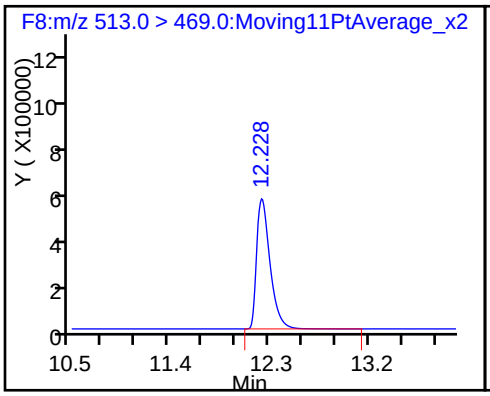
18 Perfluorononanoic acid



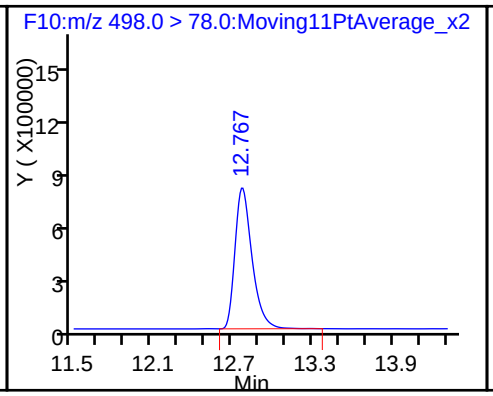
D 19 13C2 PFDA



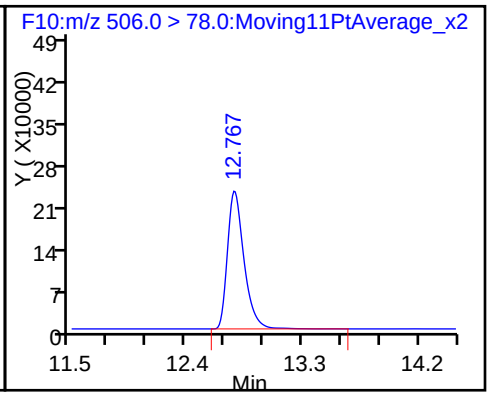
20 Perfluorodecanoic acid



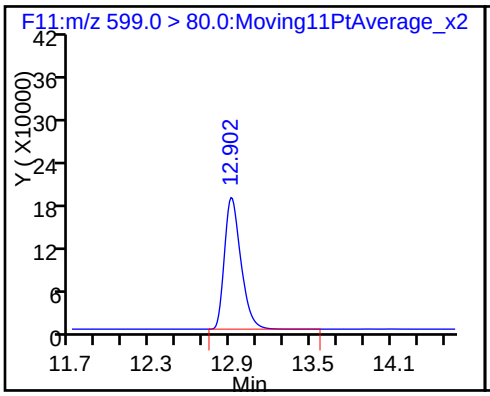
24 Perfluorooctane Sulfonamide



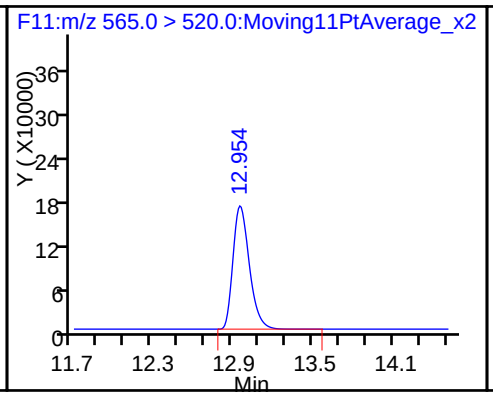
D 23 13C8 FOSA



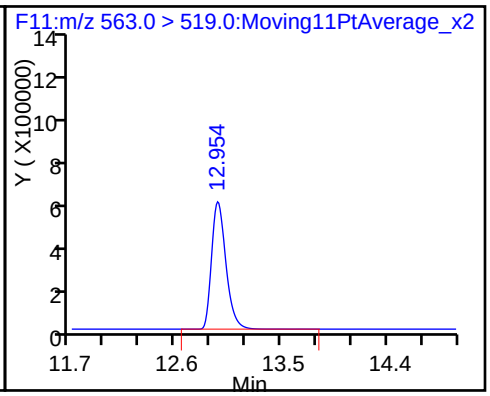
39 Perfluorodecane Sulfonic acid



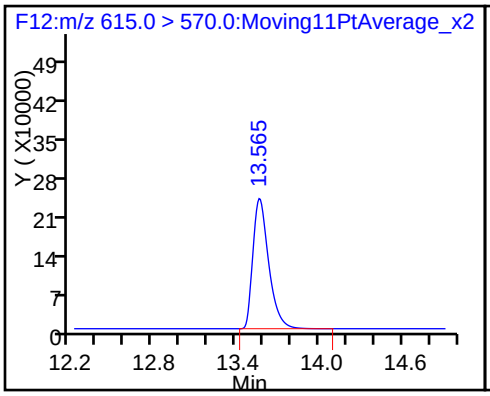
D 26 13C2 PFUnA



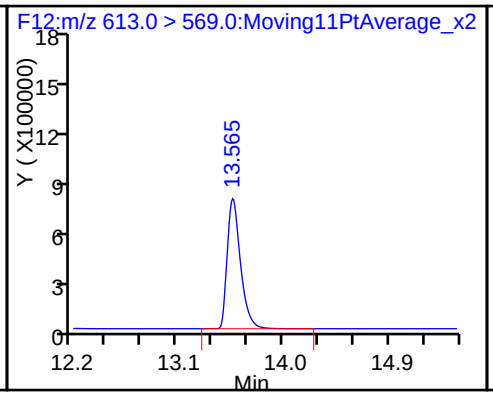
27 Perfluoroundecanoic acid



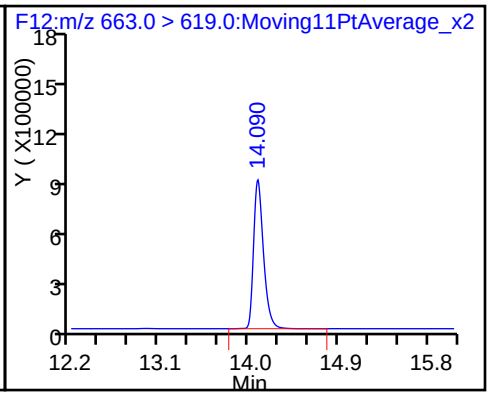
D 28 13C2 PFDoA



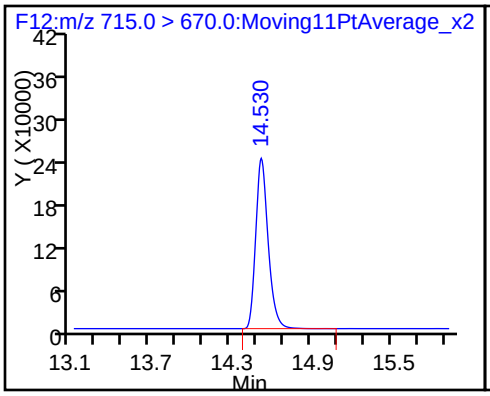
29 Perfluorododecanoic acid



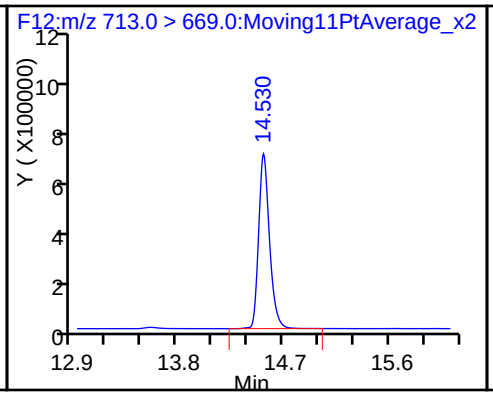
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA



32 Perfluorotetradecanoic acid



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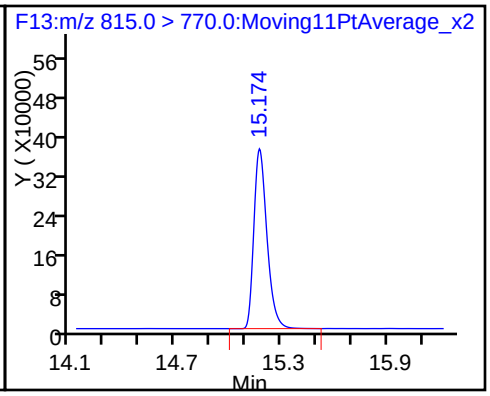
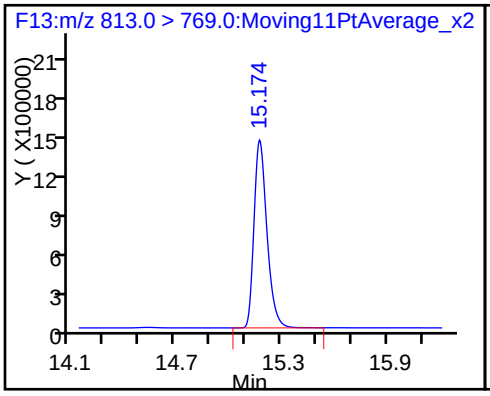
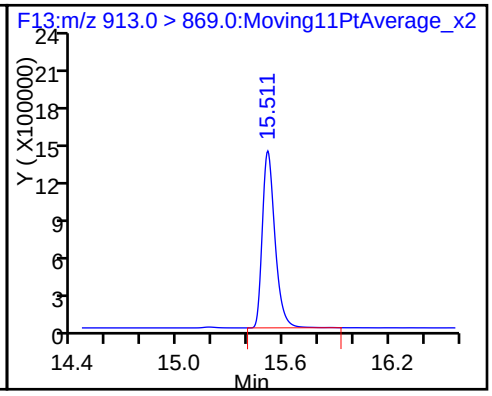


34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d
Lims ID: Std L7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 22-Feb-2016 13:36:43 ALS Bottle#: 15 Worklist Smp#: 8
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L7
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Feb-2016 09:43:36 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.699	5.697	0.002	1.000	8552867	385.1		96.3	21640	
D 1 13C4 PFBA										
217.0 > 172.0	5.699	5.698	0.001		775450	41.9		83.8	38469	
D 3 13C5-PFPeA										
267.9 > 223.0	6.799	6.804	-0.005		1422684	39.6		79.3	20747	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.799	6.805	-0.006	1.000	10833318	377.0		94.3	1569	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.909	6.918	-0.009	1.000	4614137	NC			8769	
298.9 > 99.0	6.909	6.918	-0.009	1.000	2471263		1.87(0.00-0.00)		49306	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.909	6.918	-0.009	1.000	4614137	342.4		96.8		
D 6 13C2 PFHxA										
315.0 > 270.0	8.040	8.050	-0.010		1272922	38.1		76.1	31674	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.040	8.053	-0.013	1.000	11317524	422.8		106	1869	
D 8 13C4-PFHpA										
367.0 > 322.0	9.276	9.283	-0.007		1343761	38.0		76.0	25267	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.276	9.288	-0.012	1.000	10770989	374.3		93.6	25977	
D 11 18O2 PFHxS										
403.0 > 84.0	9.311	9.319	-0.008		533958	36.5		77.1	38979	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.311	9.324	-0.013	1.000	3166801	NC			5376	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.311	9.324	-0.013	1.000	3166801	360.8		95.3		
D 12 13C4 PFOA										
417.0 > 372.0	10.398	10.407	-0.009		1383190	36.4		72.9	37318	

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	10.398	10.410	-0.012	1.000	10450696	390.0		97.5	7688	
413.0 > 169.0	10.398	10.410	-0.012	1.000	3731401		2.80(0.00-0.00)	97.5	5637	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.405	10.415	-0.010	1.000	3075653	NC			18759	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.405	10.415	-0.010	1.000	3075653	357.8		93.9		
D 16 13C4 PFOS										
503.0 > 80.0	11.356	11.369	-0.013		599935	34.0		71.1	20129	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.363	11.371	-0.008	1.000	4590626	361.9		94.6	97.3	
499.0 > 99.0	11.363	11.371	-0.008	1.000	2425848		1.89(0.00-0.00)	94.6	3210	
D 17 13C5 PFNA										
468.0 > 423.0	11.379	11.390	-0.011		1257099	38.8		77.6	86216	
18 Perfluorononanoic acid										
463.0 > 419.0	11.386	11.393	-0.007	1.000	8318606	395.4		98.9	47835	
D 19 13C2 PFDA										
515.0 > 470.0	12.224	12.232	-0.008		1052389	35.8		71.7	31439	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.224	12.234	-0.010	1.000	7803927	380.6		95.2	16895	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.774	12.774	0.0	1.000	12216183	411.5		103	590	
D 23 13C8 FOSA										
506.0 > 78.0	12.774	12.774	0.0		1812696	38.2		76.4	2118	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.899	12.913	-0.014	1.000	2376219	NC			14244	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.899	12.913	-0.014	1.000	2376219	310.0		80.4		
D 26 13C2 PFUnA										
565.0 > 520.0	12.951	12.957	-0.006		1337174	35.3		70.7	1970	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.951	12.957	-0.006	1.000	9027216	394.0		98.5	18707	
D 28 13C2 PFDoA										
615.0 > 570.0	13.561	13.569	-0.008		1656156	38.3		76.6	20500	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.561	13.571	-0.010	1.000	9718806	399.5		99.9	14229	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.087	14.091	-0.004	1.000	10044074	327.7		81.9	6258	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.527	14.533	-0.006		1575276	41.9		83.9	22114	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.527	14.533	-0.006	1.000	7646557	395.9		99.0	4669	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.171	15.178	-0.007		1870719	43.5		86.9	6672	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.176	15.179	-0.003	1.000	13063875	409.6		102	4294	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.508	15.514	-0.006	1.000	14160566	451.3		113	4807	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L7_00015 Amount Added: 1.00 Units: mL

Report Date: 23-Feb-2016 09:43:37 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Injection Date: 22-Feb-2016 13:36:43 Instrument ID: A6

Lims ID: Std L7

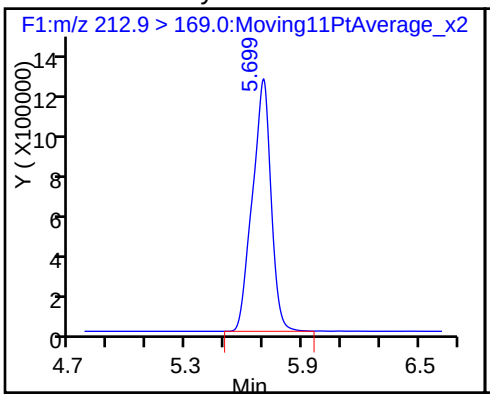
Client ID:

Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 8

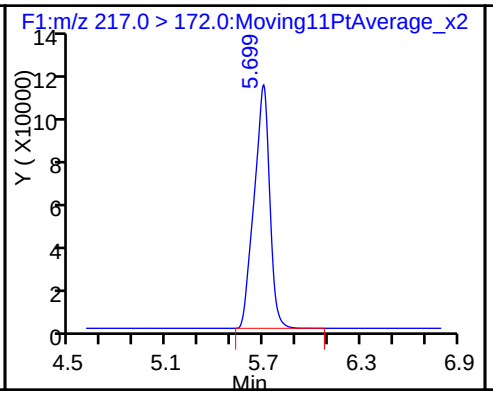
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

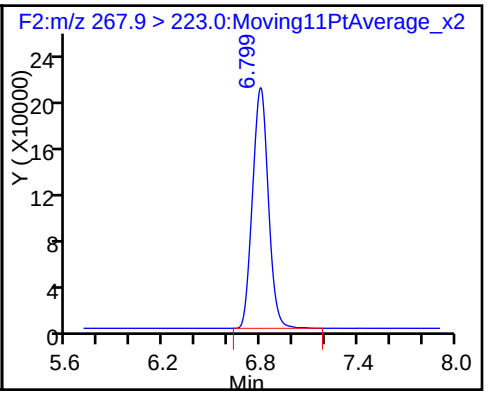
2 Perfluorobutyric acid



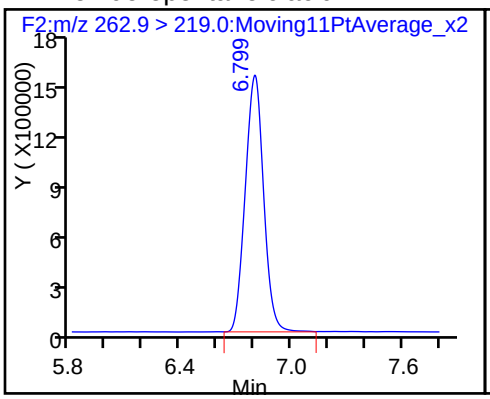
D 1 13C4 PFBA



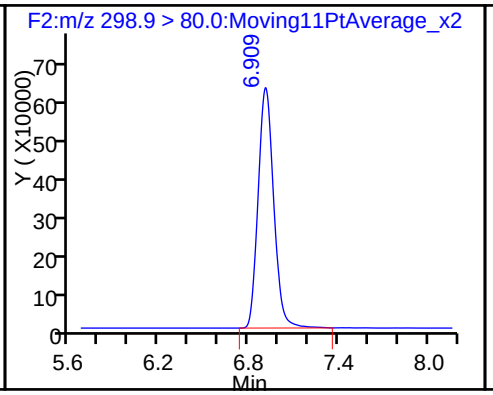
D 3 13C5-PFPeA



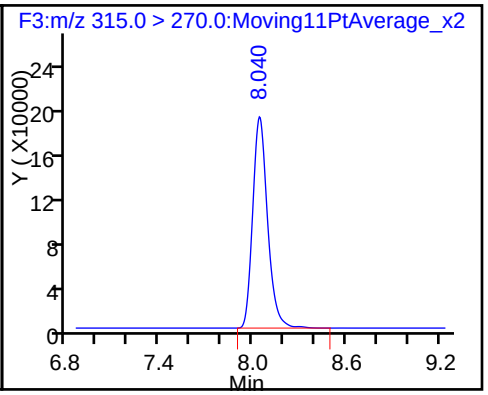
4 Perfluoropentanoic acid



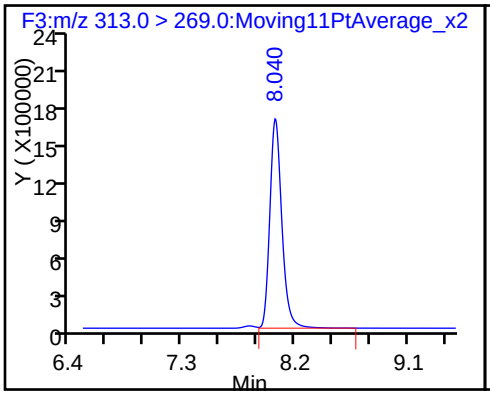
40 Perfluorobutanesulfonic acid



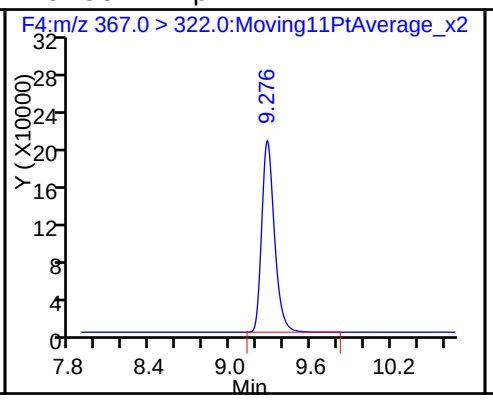
D 6 13C2 PFHxA



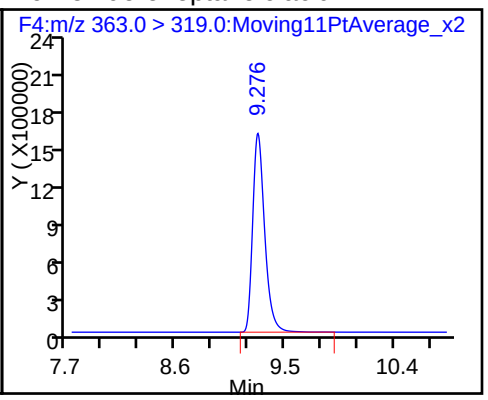
7 Perfluorohexanoic acid



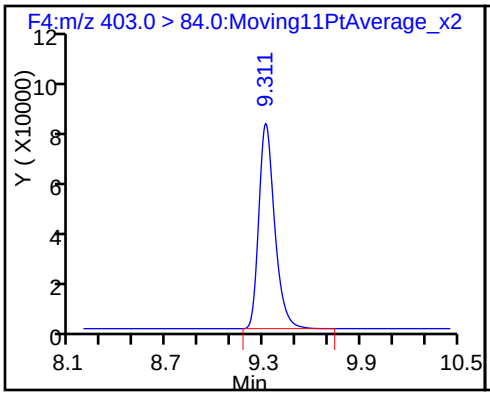
D 8 13C4-PFHpA



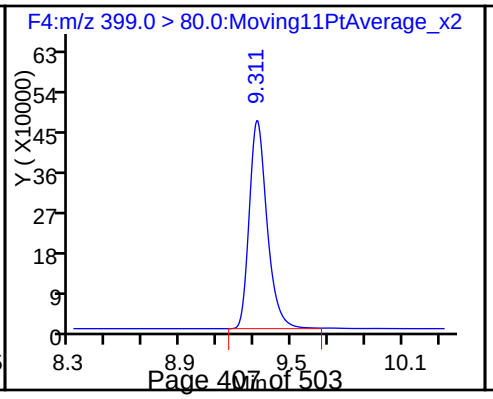
9 Perfluoroheptanoic acid



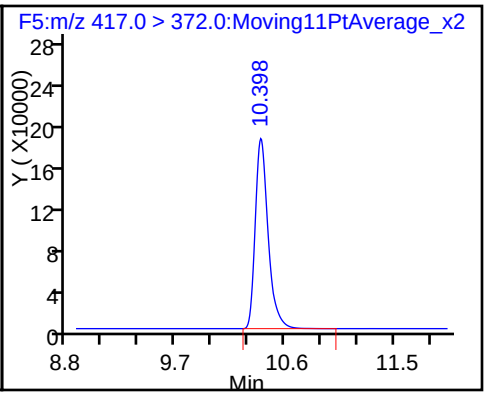
D 11 18O2 PFHxS



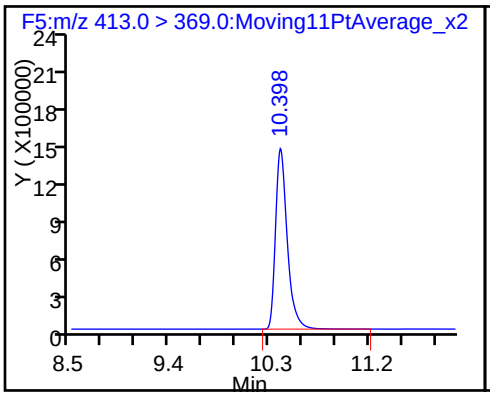
41 Perfluorohexanesulfonic acid



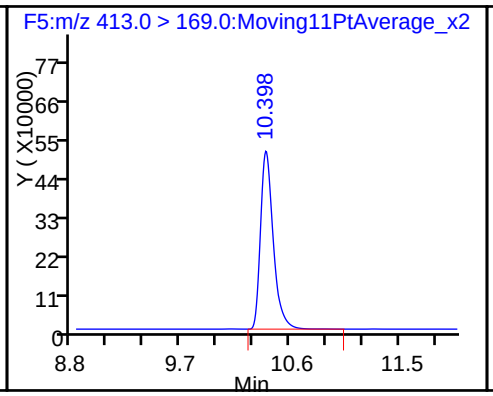
D 12 13C4 PFOA



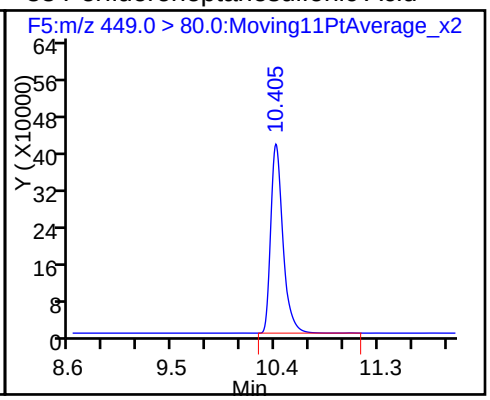
13 Perfluorooctanoic acid



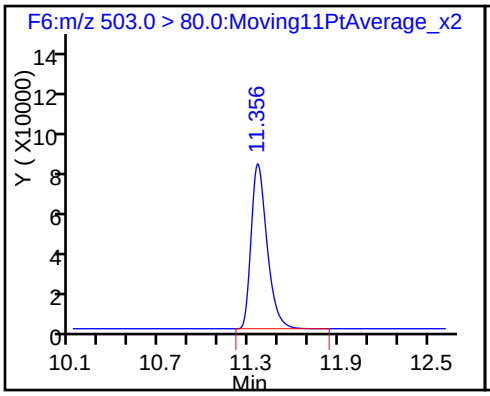
13 Perfluorooctanoic acid



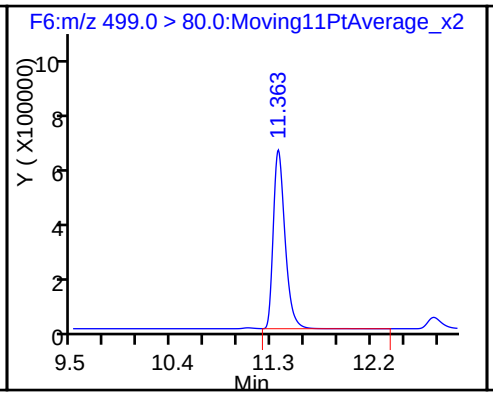
38 Perfluoroheptanesulfonic Acid



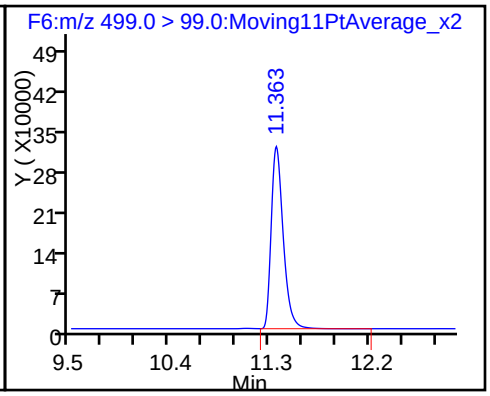
D 16 13C4 PFOS



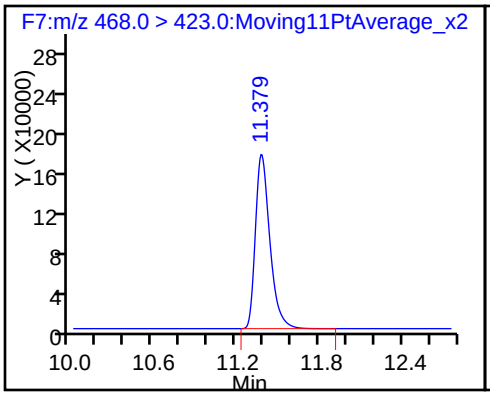
15 Perfluorooctane sulfonic acid



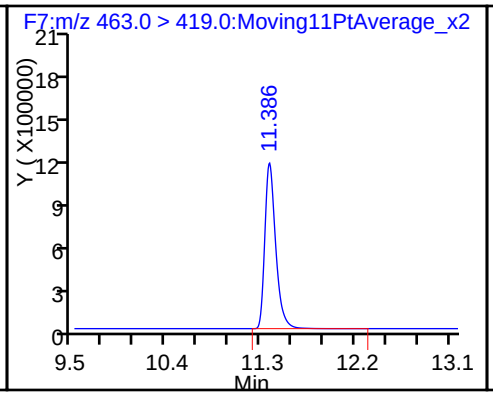
15 Perfluorooctane sulfonic acid



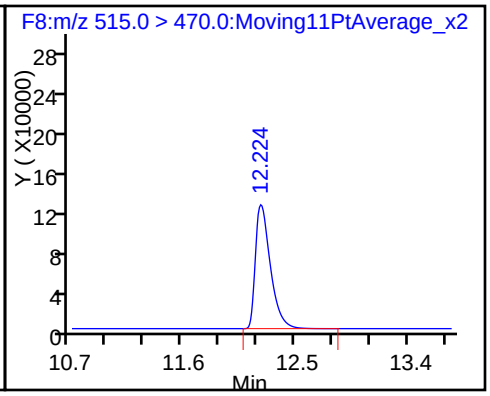
D 17 13C5 PFNA



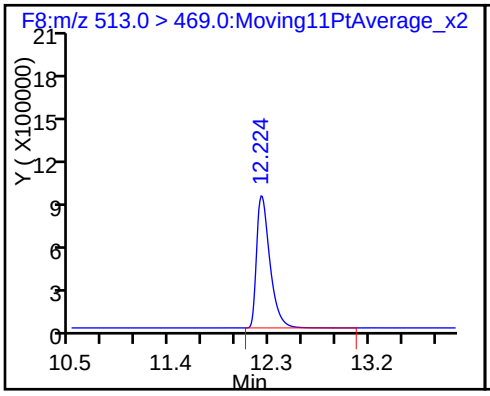
18 Perfluorononanoic acid



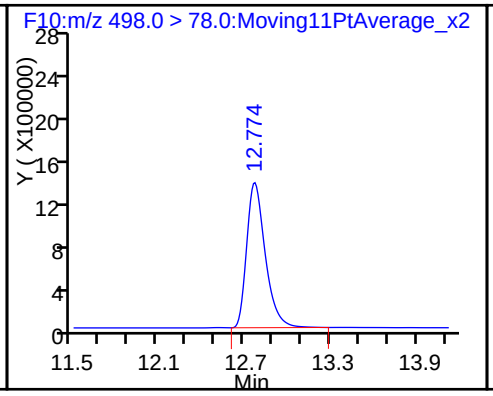
D 19 13C2 PFDA



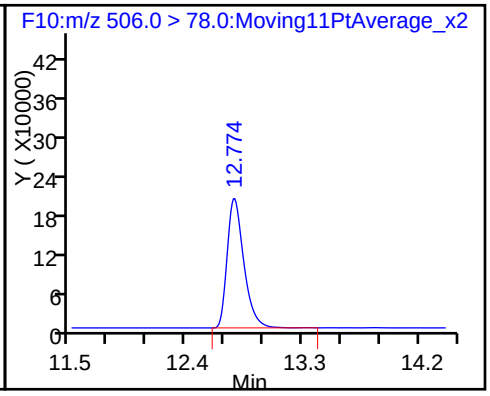
20 Perfluorodecanoic acid



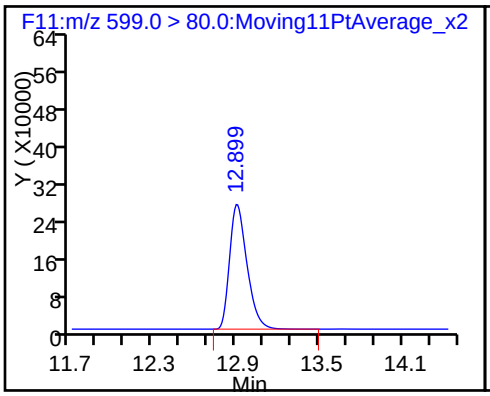
24 Perfluorooctane Sulfonamide



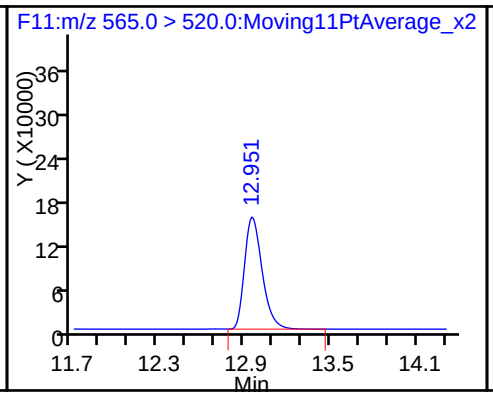
D 23 13C8 FOSA



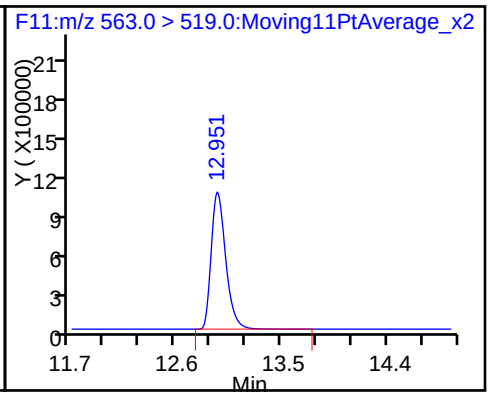
39 Perfluorodecane Sulfonic acid



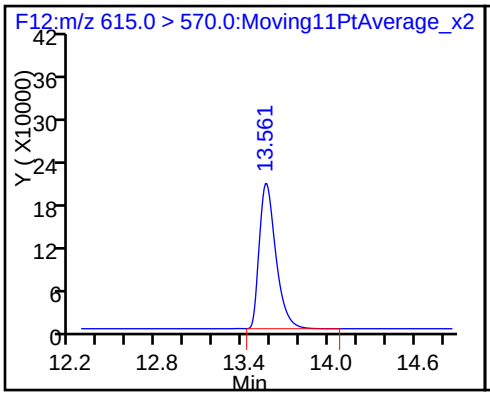
D 26 13C2 PFUnA



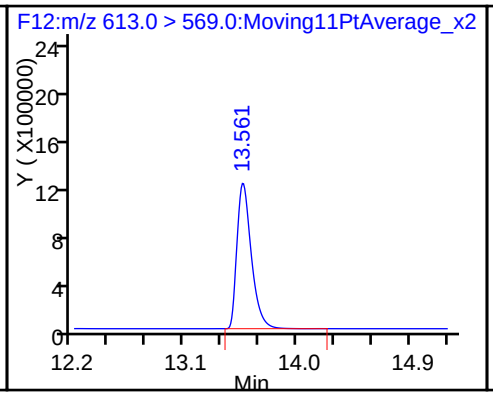
27 Perfluoroundecanoic acid



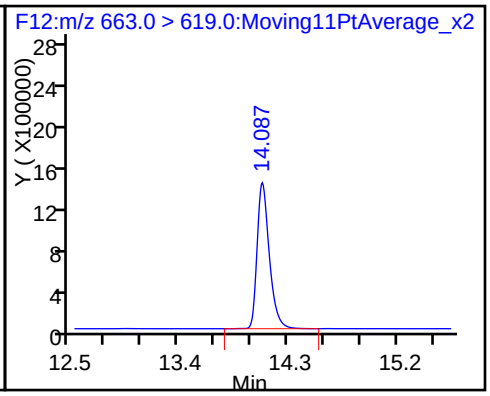
D 28 13C2 PFDoA



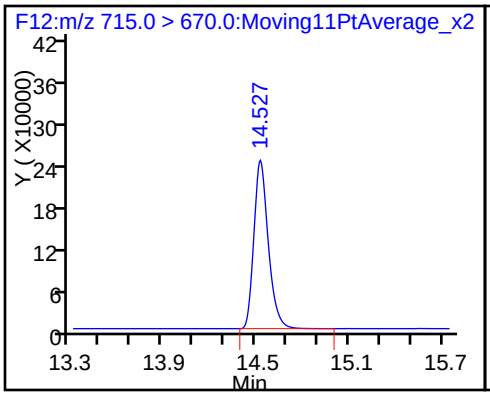
29 Perfluorododecanoic acid



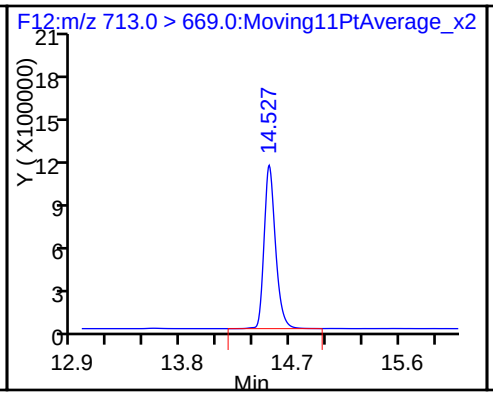
30 Perfluorotridecanoic acid



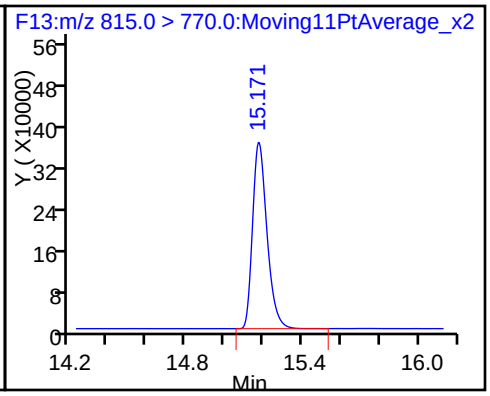
D 33 13C2-PFTeDA



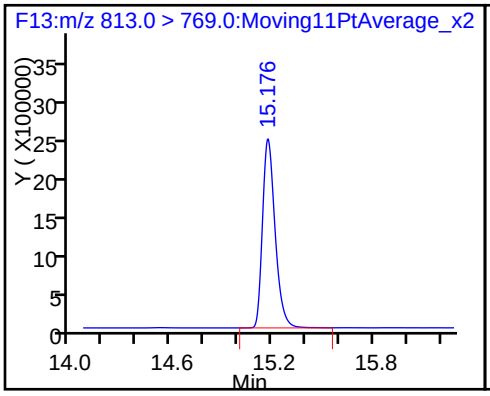
32 Perfluorotetradecanoic acid



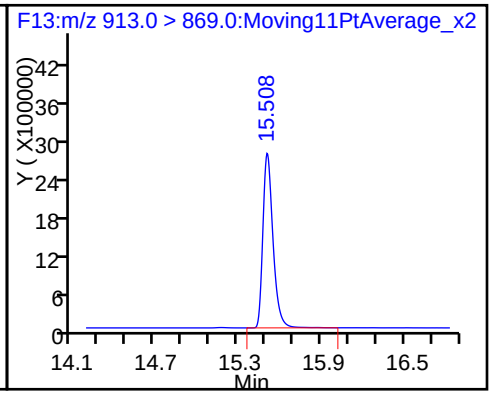
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Lab Sample ID: ICV 320-101158/10 Calibration Date: 02/22/2016 14:31

Instrument ID: A6 Calib Start Date: 02/22/2016 11:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/22/2016 13:36

Lab File ID: 22FEB2016A6A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.569		55.1	50.0	10.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	1.079		53.4	50.0	6.8	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.246		46.6	44.3	5.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.052	1.146		54.5	50.0	9.0	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		1.079		50.6	50.0	1.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.8182		50.0	47.3	5.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.7344		51.3	47.6	7.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9686	1.024		52.9	50.0	5.8	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		1.154		54.9	47.8	15.0	25.0
Perfluorononanoic acid (PFNA)	L2ID		0.8680		52.2	50.0	4.4	25.0
Perfluorodecanoic acid (PFDA)	L2ID		1.031		53.0	50.0	6.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8188	0.8926		54.5	50.0	9.0	25.0
Perfluorodecane Sulfonic acid	L1ID		0.7502		59.6	48.3	23.5	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.9494		54.8	50.0	9.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7344	0.8620		58.7	50.0	17.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9253	1.120		60.5	50.0	21.1	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.7052		60.3	50.0	20.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.239		59.8	50.0	19.6	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.9473	1.126		59.5	50.0	18.9	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_012.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 22-Feb-2016 14:31:56 ALS Bottle#: 16 Worklist Smp#: 10
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A4*sub6

Method: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Feb-2016 09:43:41 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.696	5.697	-0.001	1.000	1328044	55.1			76191	
D 1 13C4 PFBA										
217.0 > 172.0	5.693	5.698	-0.005		846602	45.7		91.5	142695	
D 3 13C5-PFPeA										
267.9 > 223.0	6.803	6.804	-0.001		1656355	46.1		92.3	29413	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.803	6.805	-0.002	1.000	1786622	53.4			392	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.918	6.918	0.0	1.000	726881	NC			2840	
298.9 > 99.0	6.914	6.918	-0.004	0.999	365881		1.99(0.00-0.00)		1224	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.918	6.918	0.0	1.000	726881	46.6				
D 6 13C2 PFHxA										
315.0 > 270.0	8.045	8.050	-0.005		1557733	46.6		93.1	122111	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.051	8.053	-0.002	1.000	1785577	54.5			2520	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.121	8.158	-0.037	0.872	496934	NC			11521	
D 8 13C4-PFHpA										
367.0 > 322.0	9.282	9.283	-0.001		1655718	46.8		93.7	251697	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.282	9.288	-0.006	1.000	1786208	50.6			24561	
D 11 18O2 PFHxS										
403.0 > 84.0	9.317	9.319	-0.002		623493	42.6		90.0	48205	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.317	9.324	-0.007	1.000	509579	NC			2657	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.317	9.324	-0.007	1.000	509579	50.0				

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	10.405	10.407	-0.002		1645933	43.4		86.7	115142	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.405	10.410	-0.005	1.000	1686163	52.9			1755	
413.0 > 169.0	10.405	10.410	-0.005	1.000	574684		2.93(0.00-0.00)		9033	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.405	10.413	-0.008	1.000	494561	NC			34423	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.405	10.413	-0.008	1.000	494561	51.3				
D 16 13C4 PFOS										
503.0 > 80.0	11.364	11.369	-0.005		676298	38.3		80.2	47362	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.364	11.371	-0.007	1.000	779828	54.9			210	
499.0 > 99.0	11.364	11.371	-0.007	1.000	432872		1.80(0.00-0.00)		15102	
D 17 13C5 PFNA										
468.0 > 423.0	11.386	11.390	-0.004		1431713	44.2		88.3	14263	
18 Perfluorononanoic acid										
463.0 > 419.0	11.386	11.393	-0.007	1.000	1242673	52.2			21912	
D 19 13C2 PFDA										
515.0 > 470.0	12.228	12.232	-0.004		1276849	43.5		87.0	77800	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.228	12.234	-0.006	1.000	1316792	53.0			8373	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.189	12.249	-0.060	1.000	442888	NC			28532	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.767	12.774	-0.007	1.000	1886737	54.5			11846	
D 23 13C8 FOSA										
506.0 > 78.0	12.767	12.774	-0.007		2113773	44.5		89.0	4855	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.902	12.911	-0.009	1.000	512133	NC			30136	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.902	12.911	-0.009	1.000	512133	59.6				
D 26 13C2 PFUnA										
565.0 > 520.0	12.954	12.957	-0.003		1617540	42.8		85.5	47380	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.954	12.957	-0.003	1.000	1535608	54.8			61122	
D 28 13C2 PFDoA										
615.0 > 570.0	13.565	13.569	-0.004		1857960	42.9		85.9	29394	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.565	13.571	-0.006	1.000	1601600	58.7			413	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	14.029	14.083	-0.054	1.000	518749	NC			36989	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.083	14.091	-0.008	1.000	2081398	60.5			5384	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.530	14.533	-0.003		1990869	53.0		106	25928	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.530	14.533	-0.003	1.000	1310303	60.3			1531	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.174	15.178	-0.004		2164811	50.3		101	21311	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.174	15.179	-0.005	1.000	2302836	59.8			3951	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.511	15.514	-0.003	1.000	2092813	59.5			2511	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_00016 Amount Added: 1.00 Units: mL

Report Date: 23-Feb-2016 09:43:42 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_012.d

Injection Date: 22-Feb-2016 14:31:56 Instrument ID: A6

Lims ID: ICV

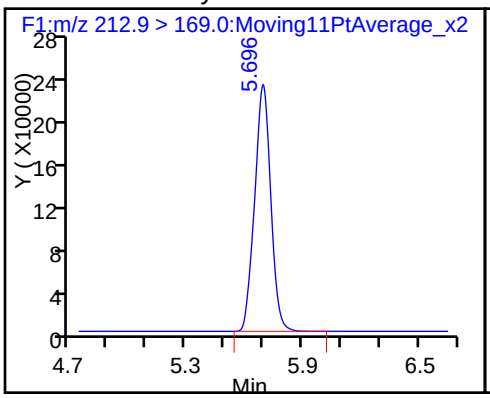
Client ID:

Operator ID: JRB ALS Bottle#: 16 Worklist Smp#: 10

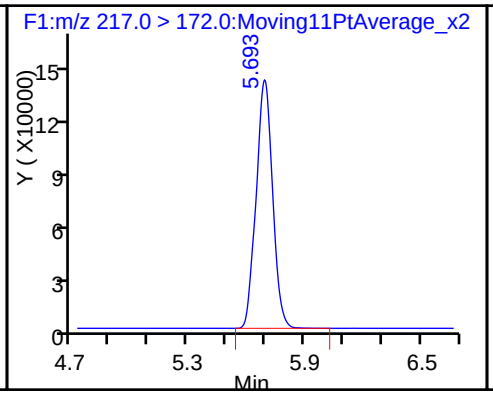
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

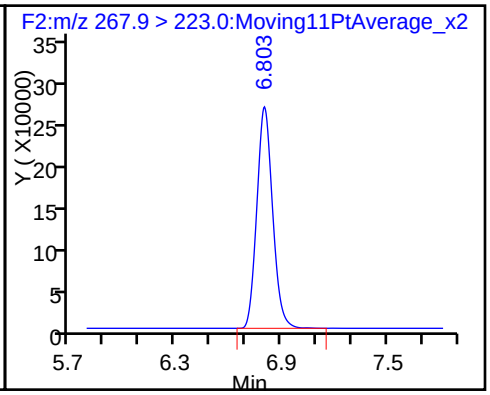
2 Perfluorobutyric acid



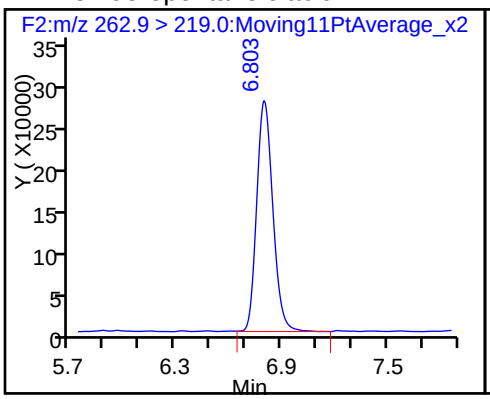
D 1 13C4 PFBA



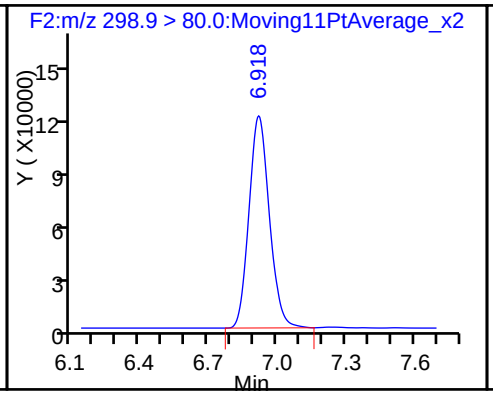
D 3 13C5-PFPeA



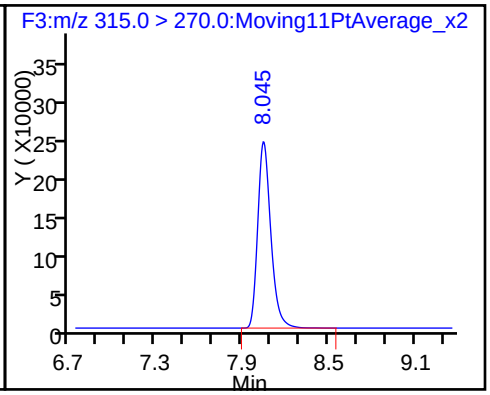
4 Perfluoropentanoic acid



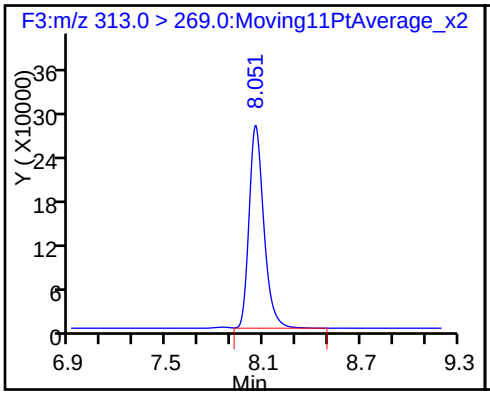
40 Perfluorobutanesulfonic acid



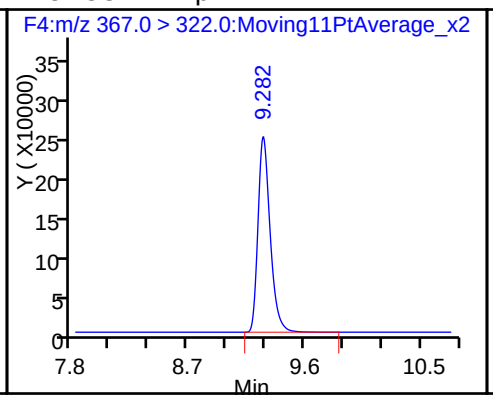
D 6 13C2 PFHxA



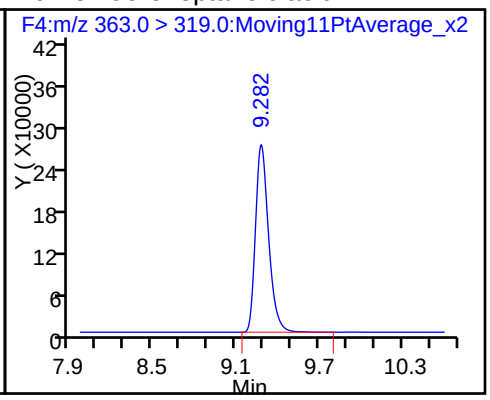
7 Perfluorohexanoic acid



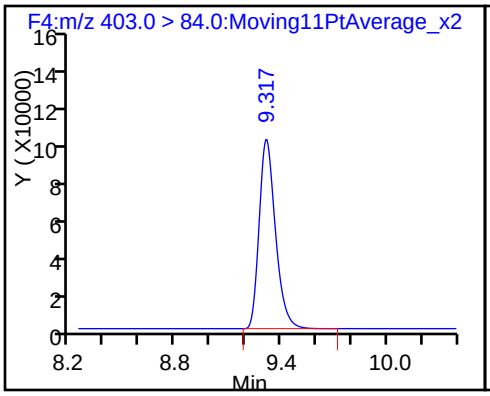
D 8 13C4-PFHpA



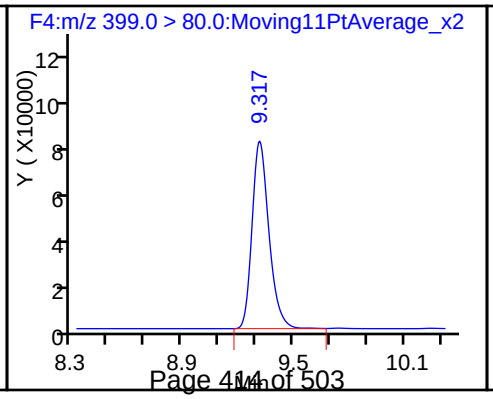
9 Perfluoroheptanoic acid



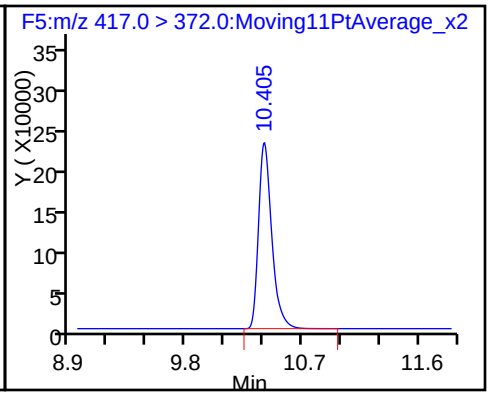
D 11 18O2 PFHxS



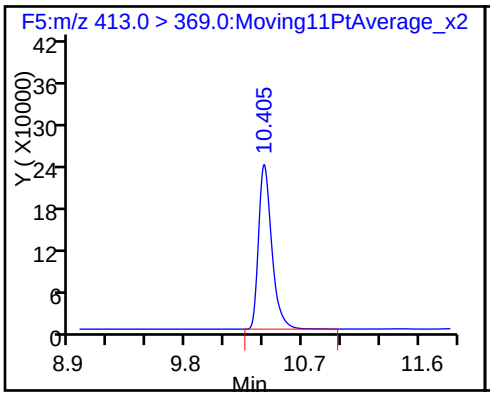
41 Perfluorohexanesulfonic acid



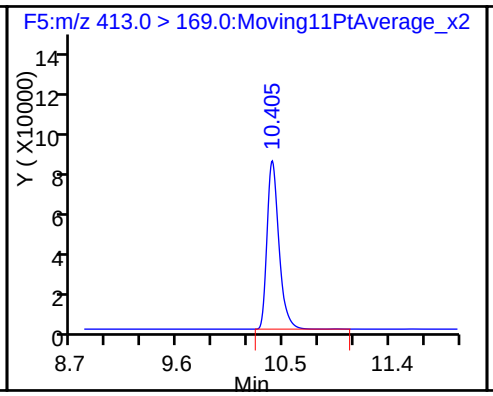
D 12 13C4 PFOA



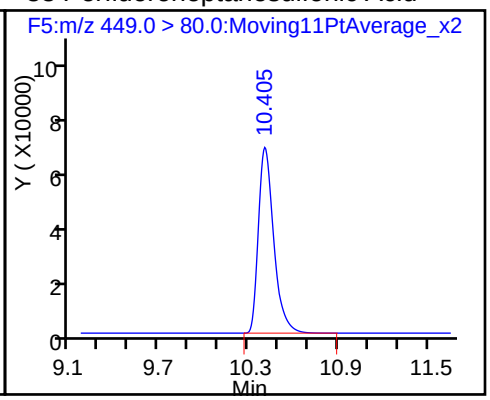
13 Perfluorooctanoic acid



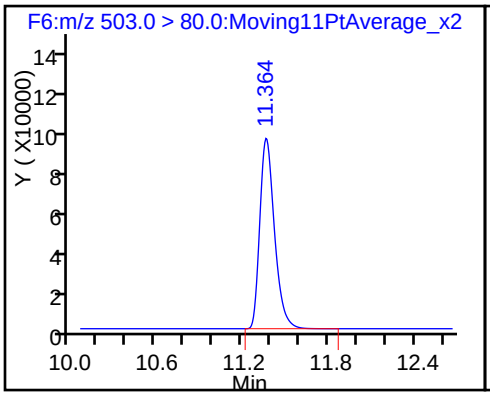
13 Perfluorooctanoic acid



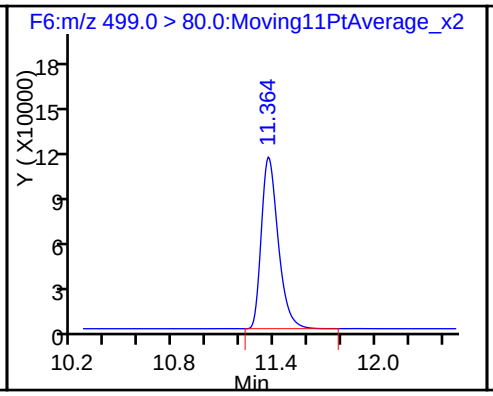
38 Perfluoroheptanesulfonic Acid



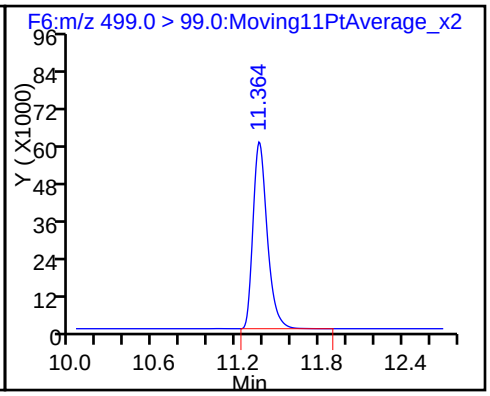
D 16 13C4 PFOS



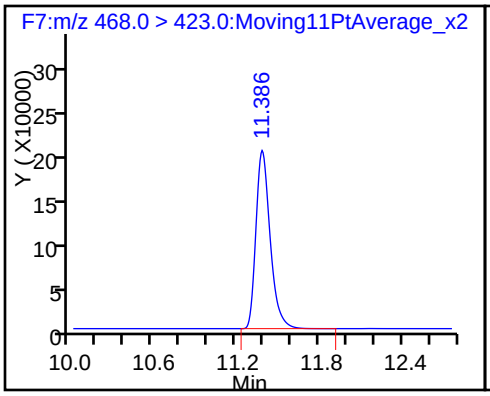
15 Perfluorooctane sulfonic acid



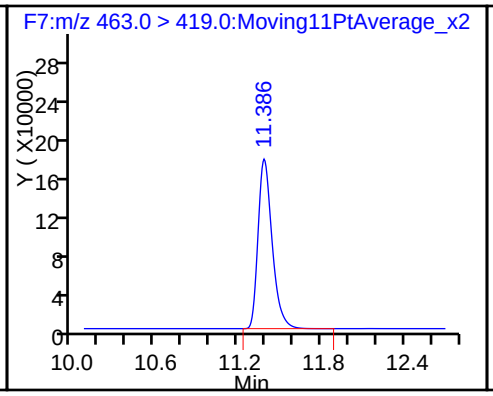
15 Perfluorooctane sulfonic acid



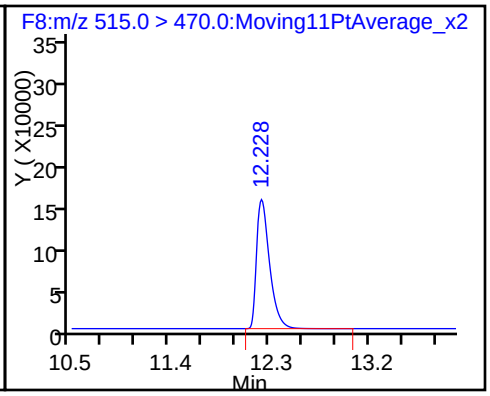
D 17 13C5 PFNA



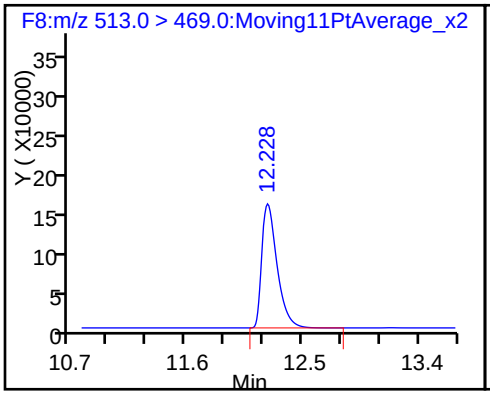
18 Perfluorononanoic acid



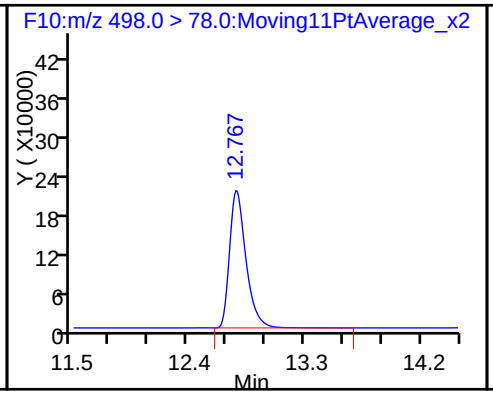
D 19 13C2 PFDA



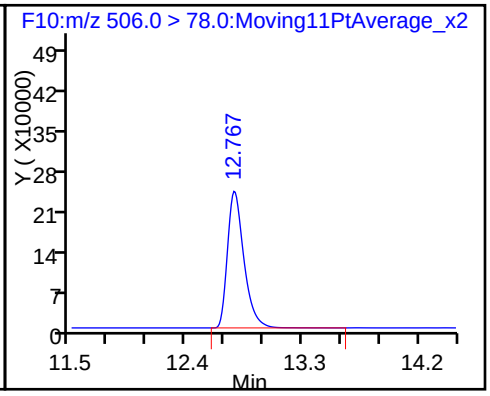
20 Perfluorodecanoic acid



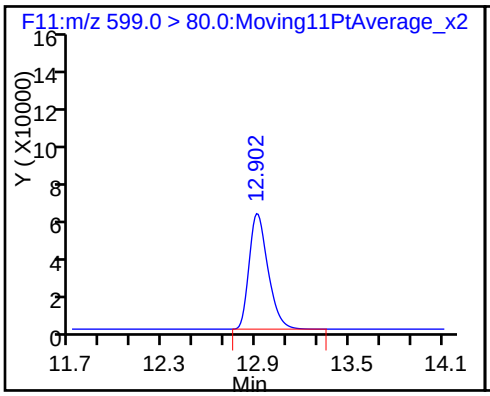
24 Perfluorooctane Sulfonamide



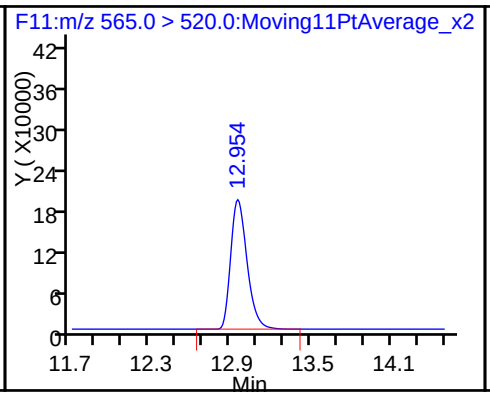
D 23 13C8 FOSA



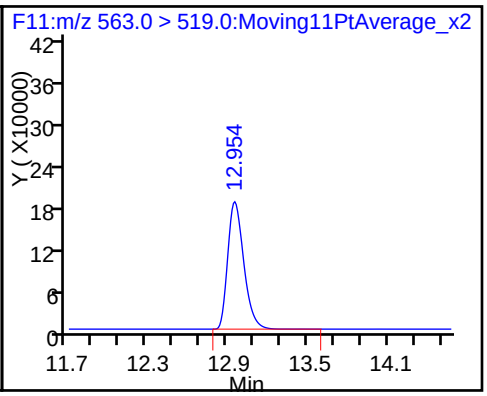
39 Perfluorodecane Sulfonic acid



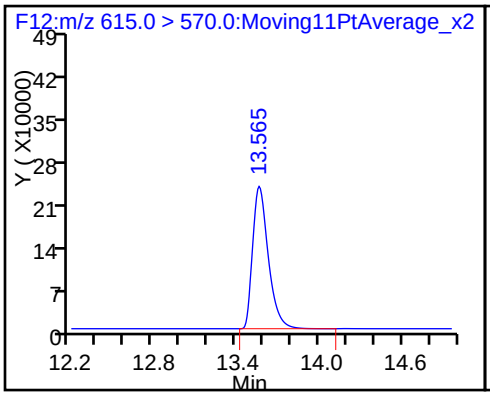
D 26 13C2 PFUnA



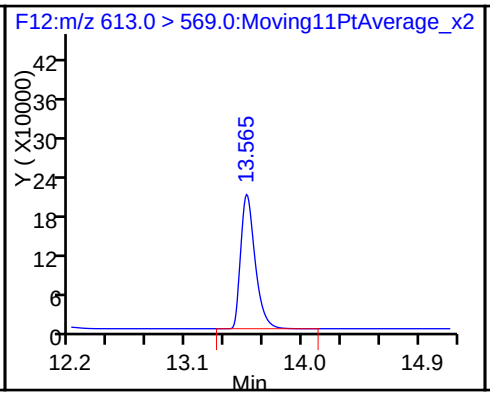
27 Perfluoroundecanoic acid



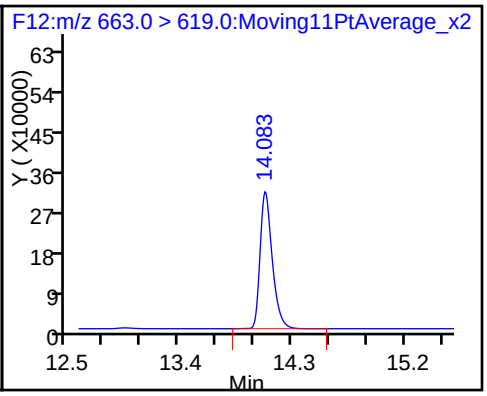
D 28 13C2 PFDoA



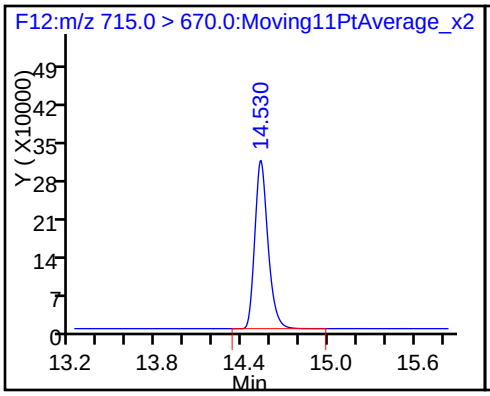
29 Perfluorododecanoic acid



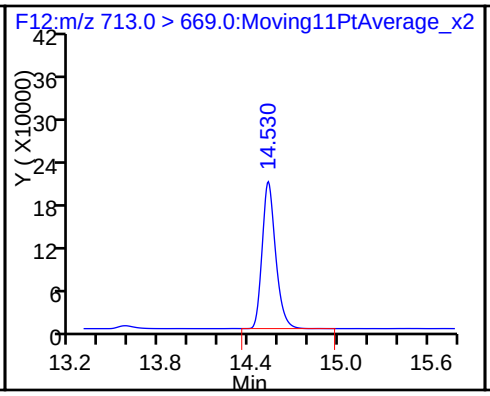
30 Perfluorotridecanoic acid



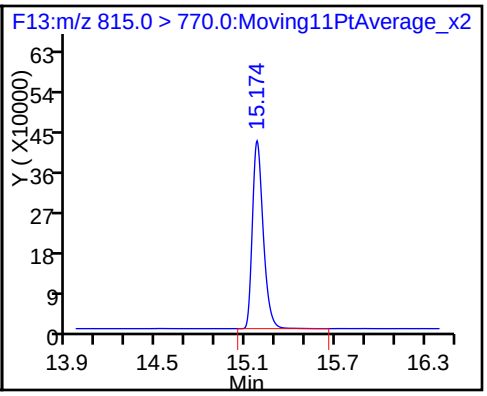
D 33 13C2-PFTeDA



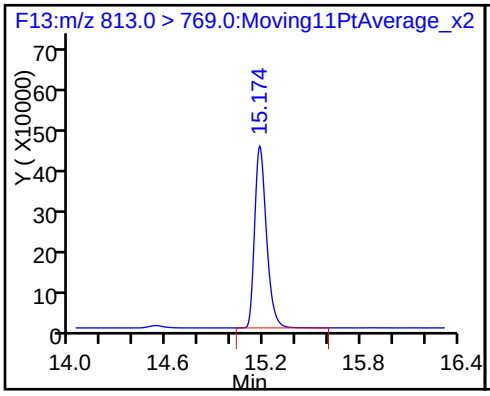
32 Perfluorotetradecanoic acid



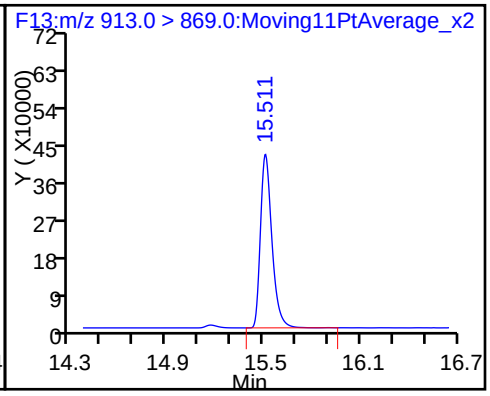
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Lab Sample ID: CCV 320-101347/3 Calibration Date: 02/23/2016 13:55

Instrument ID: A6 Calib Start Date: 02/22/2016 11:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/22/2016 13:36

Lab File ID: 23FEB2016A6A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.009		1.03	1.00	3.1	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	0.7187		0.712	1.00	-28.8	50.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		0.4805		0.781	0.884	-11.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.052	1.012		0.963	1.00	-3.7	50.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.7447		1.00	1.00	0.0	50.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.5127		0.995	0.946	5.1	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.4576		0.983	0.952	3.2	50.0
Perfluorooctanoic acid (PFOA)	AveID	0.9686	0.8447		0.872	1.00	-12.8	50.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		0.8656		1.24	0.956	30.0	50.0
Perfluorononanoic acid (PFNA)	L2ID		0.6343		1.11	1.00	11.4	50.0
Perfluorodecanoic acid (PFDA)	L2ID		1.263		1.41	1.00	41.1	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8188	0.7665		0.936	1.00	-6.4	50.0
Perfluorodecane Sulfonic acid	L1ID		0.2954		0.843	0.964	-12.5	50.0
Perfluoroundecanoic acid (PFUnA)	L1ID		1.488		1.05	1.00	4.5	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7344	0.4570		0.622	1.00	-37.8	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9253	0.9814		1.06	1.00	6.1	50.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.9608		1.38	1.00	38.3	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		12.36		7.58	1.00	658.1*	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.9473	1.125		1.19	1.00	18.8	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_003.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 23-Feb-2016 13:55:29 ALS Bottle#: 10 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: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 09:54:52 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

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	5.696	5.697	-0.001	1.000	18203	1.03		103	1166	
D 1 13C4 PFBA										
217.0 > 172.0	5.686	5.698	-0.012		902402	48.7		97.5	22730	
D 3 13C5-PFPeA										
267.9 > 223.0	6.789	6.804	-0.015		1851329	51.6		103	38399	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.785	6.805	-0.020	1.000	26611	0.7117		71.2	7.2	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.904	6.918	-0.014	1.000	6715	NC			117	
298.9 > 99.0	6.891	6.918	-0.027	0.998	6397		1.05(0.00-0.00)		266	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.904	6.918	-0.014	1.000	6715	0.7809		88.3		
D 6 13C2 PFHxA										
315.0 > 270.0	8.040	8.050	-0.010		1581846	47.3		94.6	123662	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.034	8.053	-0.019	1.000	32030	0.9628		96.3	261	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.105	8.158	-0.053	0.872	6727	NC			620	
D 8 13C4-PFHpA										
367.0 > 322.0	9.264	9.283	-0.019		1825350	51.6		103	42048	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.270	9.288	-0.018	1.000	27185	1.00		100	1122	
D 11 18O2 PFHxS										
403.0 > 84.0	9.299	9.319	-0.020		747742	51.1		108	23961	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.299	9.324	-0.025	1.000	7667	NC			723	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.299	9.324	-0.025	1.000	7667	0.99		105		

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	10.391	10.407	-0.016		1992237	52.5		105	74421	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.398	10.410	-0.012	1.000	33655	0.8720		87.2	91.1	
413.0 > 169.0	10.398	10.410	-0.012	1.000	10001		3.37(0.00-0.00)		55.2	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.391	10.413	-0.022	1.000	8214	NC			615	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.391	10.413	-0.022	1.000	8214	0.9826		103		
D 16 13C4 PFOS										
503.0 > 80.0	11.356	11.369	-0.013		901320	51.1		107	16554	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.356	11.371	-0.015	1.000	15603	1.24		130	402	
499.0 > 99.0	11.370	11.371	-0.001	1.001	6421		2.43(0.00-0.00)		480	
D 17 13C5 PFNA										
468.0 > 423.0	11.379	11.390	-0.011		1679132	51.8		104	122527	
18 Perfluorononanoic acid										
463.0 > 419.0	11.379	11.393	-0.014	1.000	21300	1.11		111	1719	
D 19 13C2 PFDA										
515.0 > 470.0	12.225	12.232	-0.007		1525591	51.9		104	94700	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.225	12.234	-0.009	1.000	38536	1.41		141	2526	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.189	12.249	-0.060	1.000	11776	NC			860	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.763	12.774	-0.011	1.000	33864	0.9361		93.6	1979	
D 23 13C8 FOSA										
506.0 > 78.0	12.763	12.774	-0.011		2209032	46.5		93.1	7505	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.899	12.911	-0.012	1.000	5370	NC			343	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.899	12.911	-0.012	1.000	5370	0.8431		87.5		
D 26 13C2 PFUnA										
565.0 > 520.0	12.940	12.957	-0.017		2025555	53.5		107	48479	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.940	12.957	-0.017	1.000	60288	1.05		105	2537	
D 28 13C2 PFDoA										
615.0 > 570.0	13.561	13.569	-0.008		2100707	48.6		97.1	16069	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.561	13.571	-0.010	1.000	19199	0.6223		62.2	6.0	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	14.018	14.083	-0.065	1.000	9310	NC			213	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.079	14.091	-0.012	1.000	41232	1.06		106	18.4	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.527	14.533	-0.006		1904469	50.7		101	25456	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.527	14.533	-0.006	1.000	40369	1.38		138	28.2	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.171	15.178	-0.007		2288286	53.2		106	10227	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.171	15.179	-0.008	1.000	519284	7.58		758	551	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.503	15.514	-0.011	1.000	47265	1.19		119	63.4	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00019 Amount Added: 1.00 Units: mL

Report Date: 24-Feb-2016 09:54:53 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_003.d

Injection Date: 23-Feb-2016 13:55:29 Instrument ID: A6

Lims ID: CCV L2

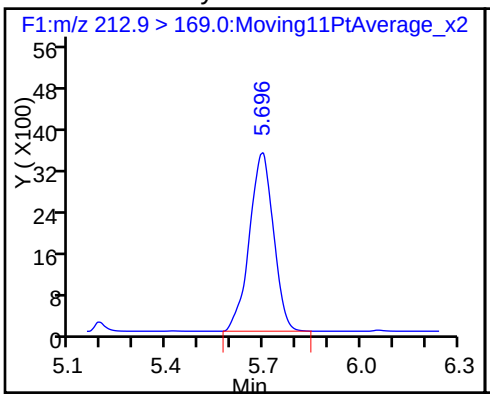
Client ID:

Operator ID: JRB ALS Bottle#: 10 Worklist Smp#: 3

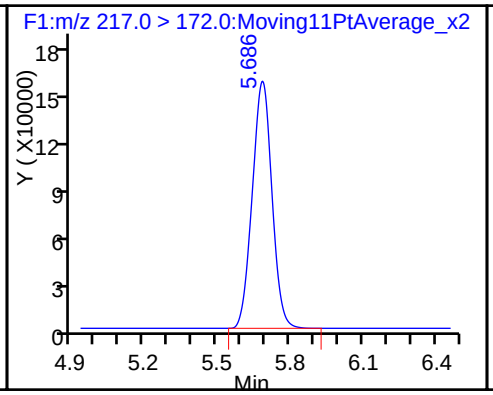
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

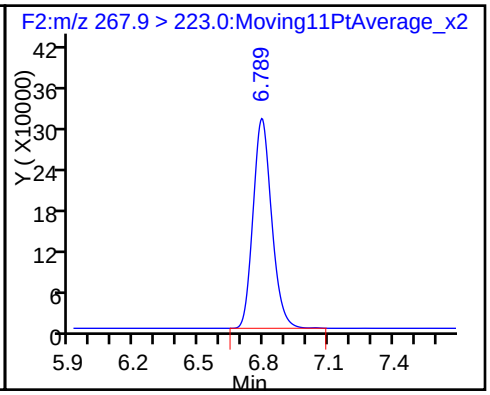
2 Perfluorobutyric acid



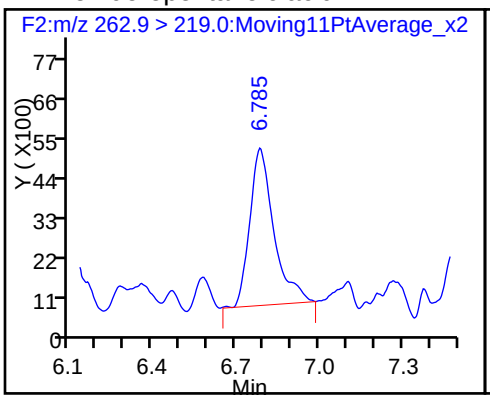
D 1 13C4 PFBA



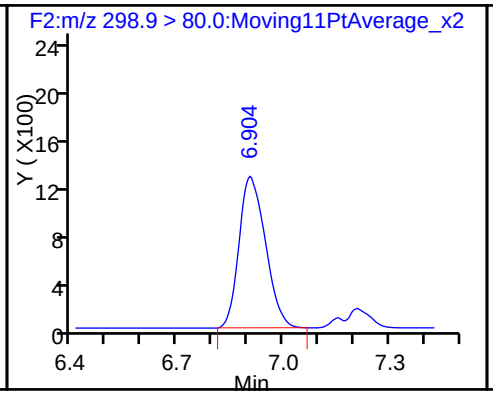
D 3 13C5-PFPeA



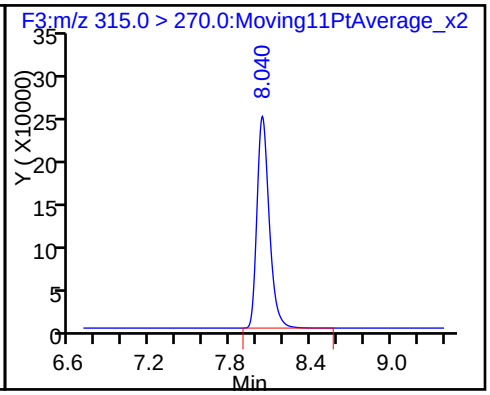
4 Perfluoropentanoic acid



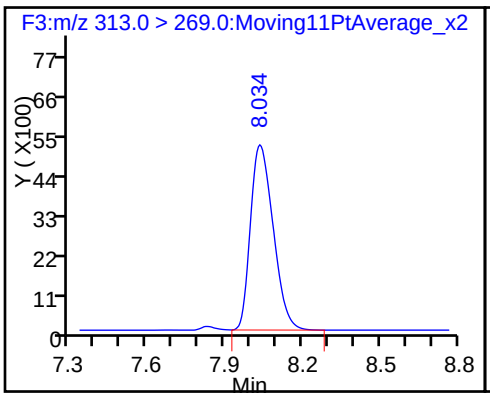
40 Perfluorobutanesulfonic acid



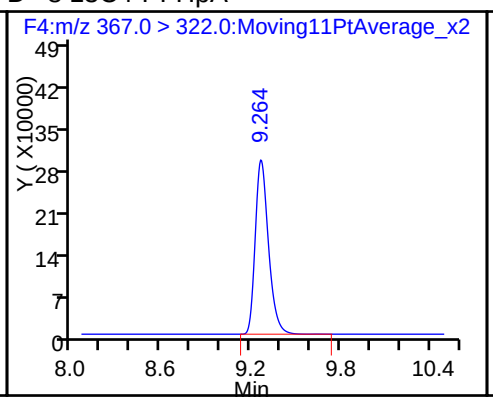
D 6 13C2 PFHxA



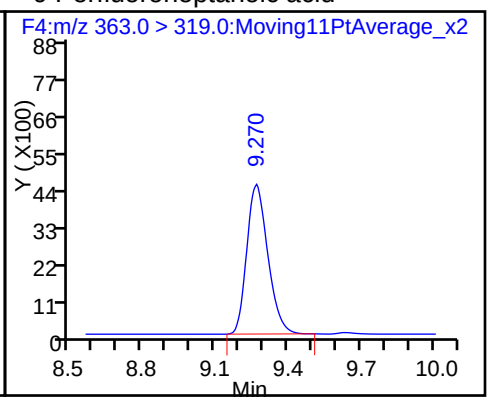
7 Perfluorohexanoic acid



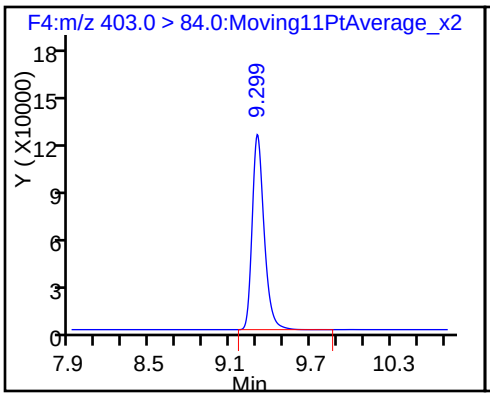
D 8 13C4-PFHpA



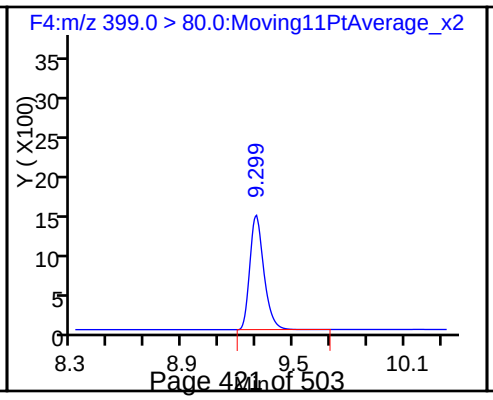
9 Perfluoroheptanoic acid



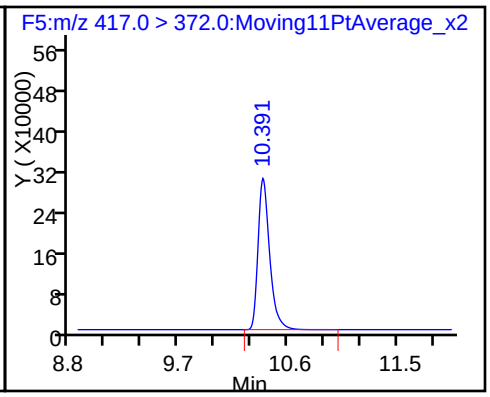
D 11 18O2 PFHxS



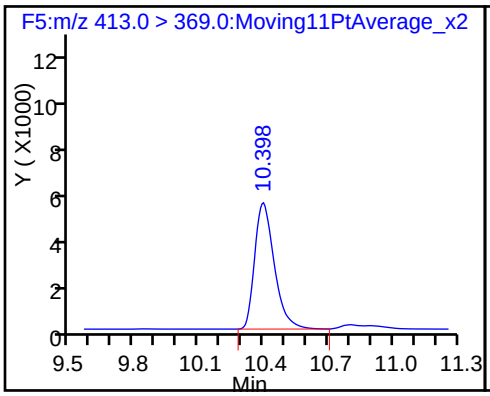
41 Perfluorohexanesulfonic acid



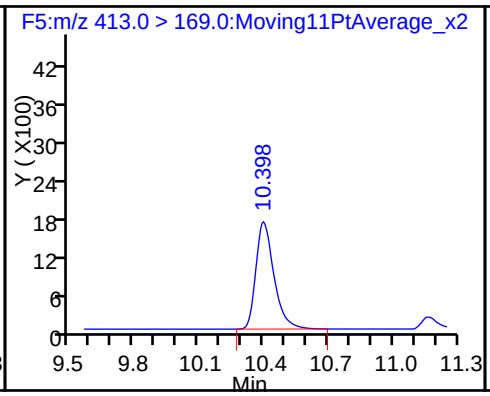
D 12 13C4 PFOA



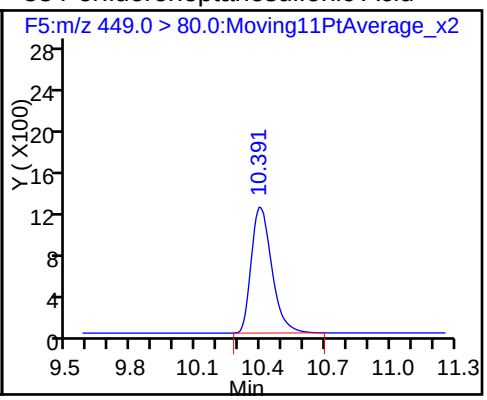
13 Perfluorooctanoic acid



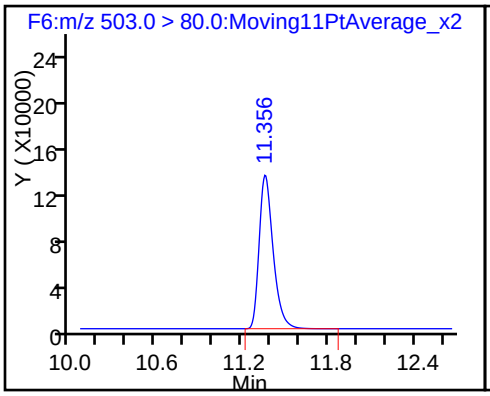
13 Perfluorooctanoic acid



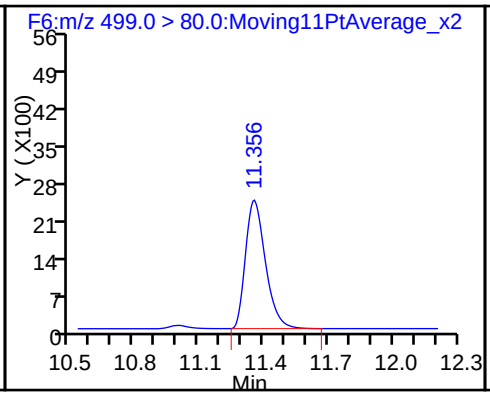
38 Perfluoroheptanesulfonic Acid



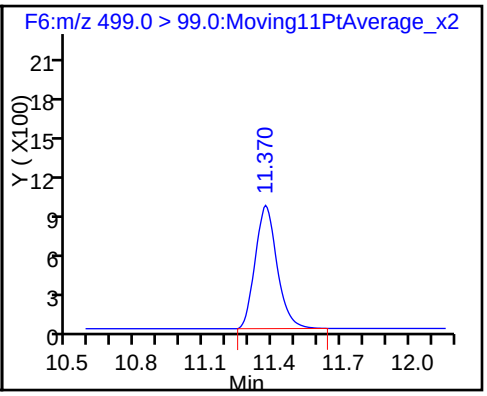
D 16 13C4 PFOS



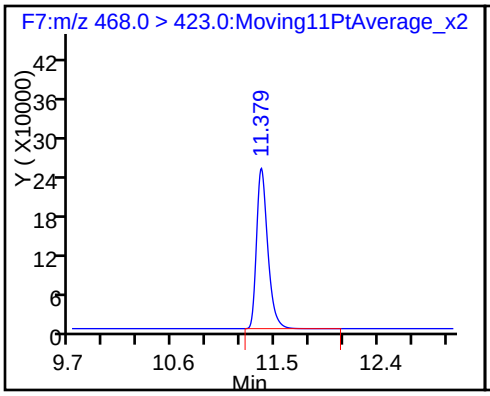
15 Perfluorooctane sulfonic acid



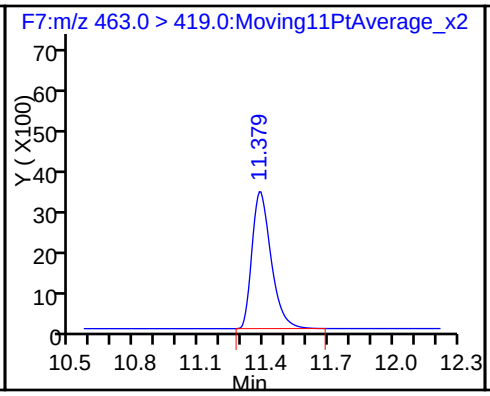
15 Perfluorooctane sulfonic acid



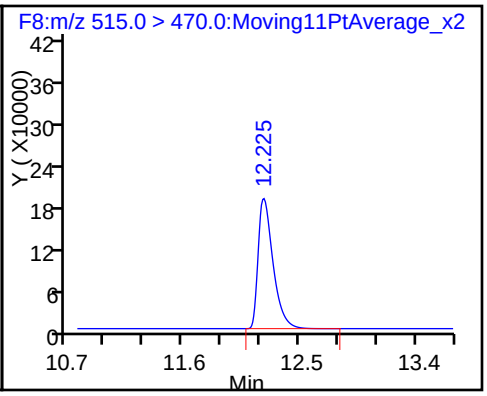
D 17 13C5 PFNA



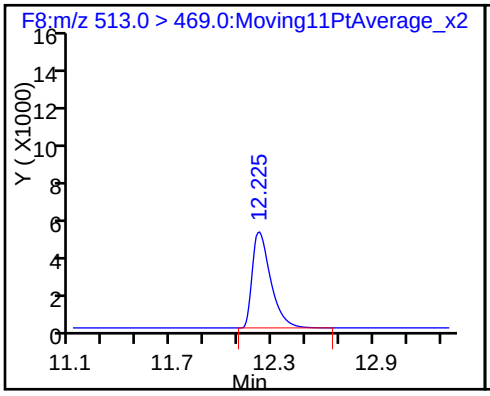
18 Perfluorononanoic acid



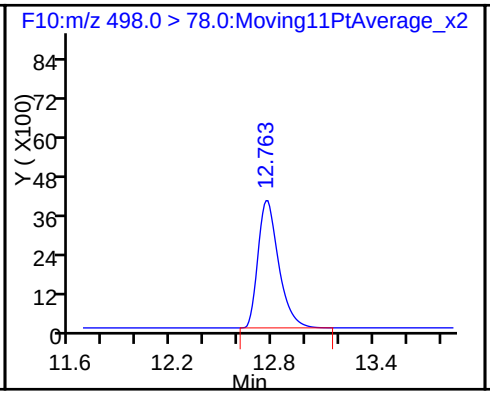
D 19 13C2 PFDA



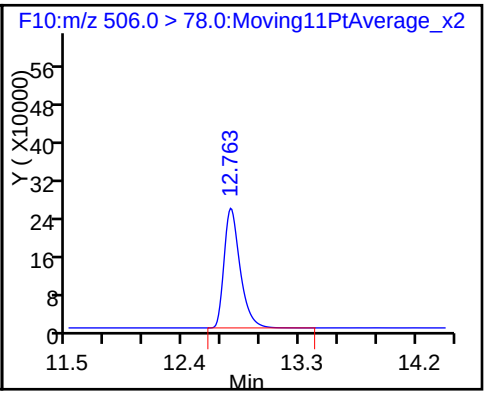
20 Perfluorodecanoic acid



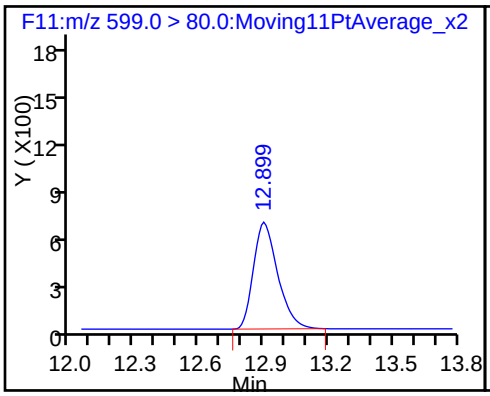
24 Perfluorooctane Sulfonamide



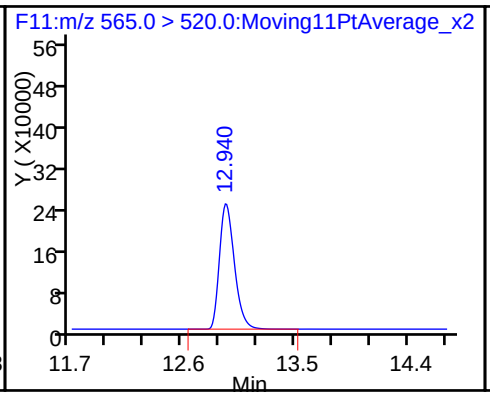
D 23 13C8 FOSA



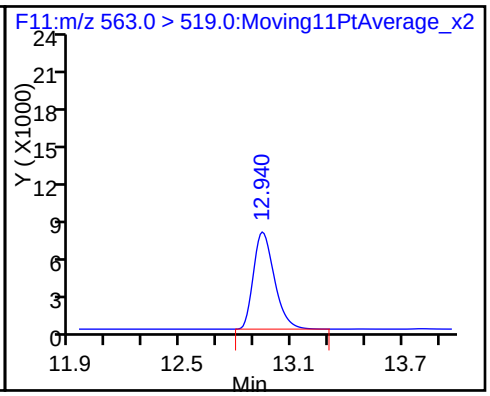
39 Perfluorodecane Sulfonic acid



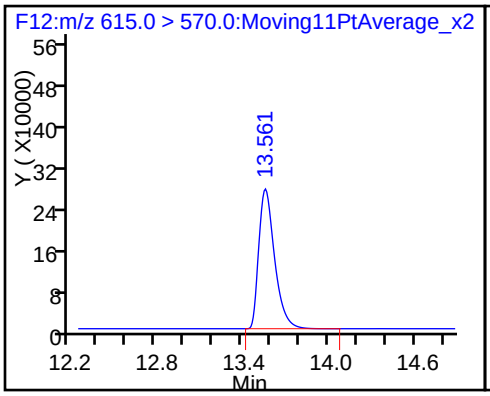
D 26 13C2 PFUnA



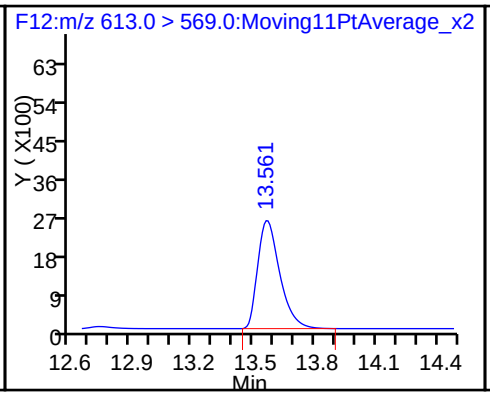
27 Perfluoroundecanoic acid



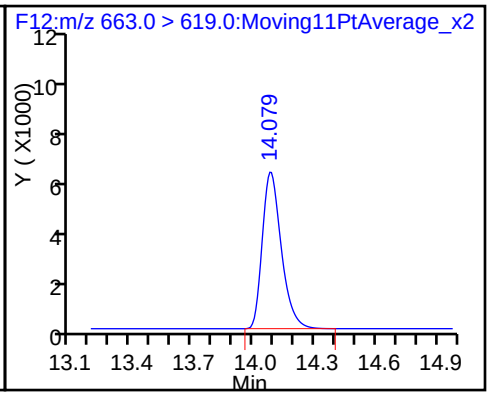
D 28 13C2 PFDoA



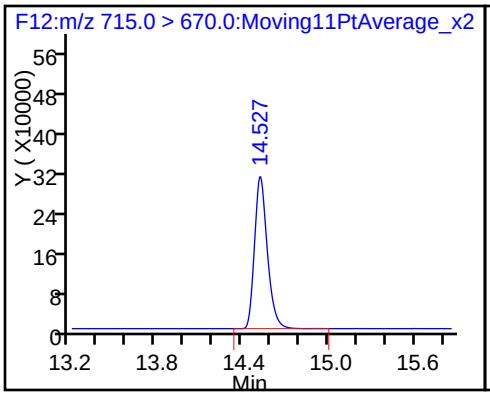
29 Perfluorododecanoic acid



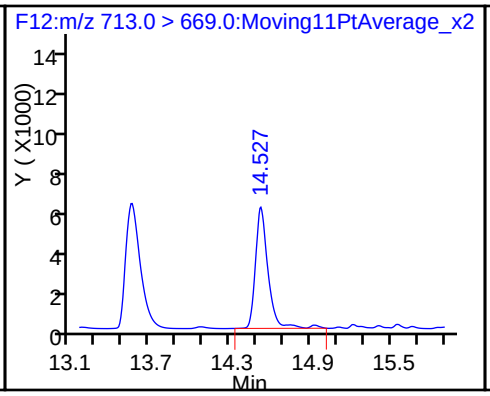
30 Perfluorotridecanoic acid



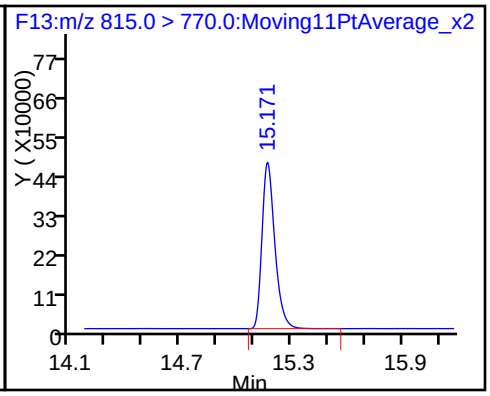
D 33 13C2-PFTeDA



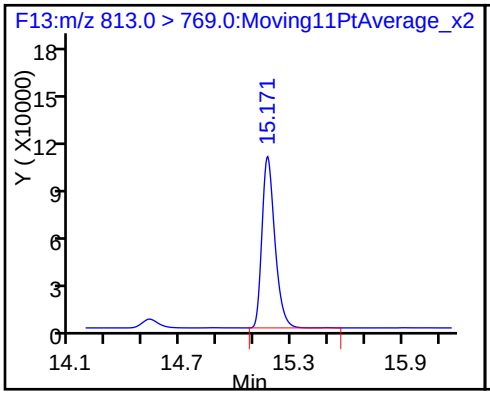
32 Perfluorotetradecanoic acid



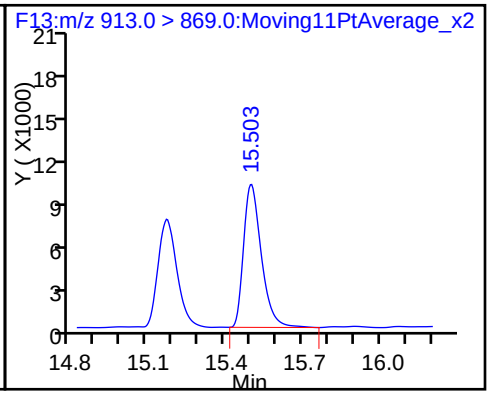
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Lab Sample ID: CCV 320-101347/23 Calibration Date: 02/23/2016 21:30

Instrument ID: A6 Calib Start Date: 02/22/2016 11:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/22/2016 13:36

Lab File ID: 23FEB2016A6A_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.437		50.5	50.0	0.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	1.014		50.2	50.0	0.4	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.153		43.1	44.2	-2.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.052	1.065		50.7	50.0	1.3	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		1.037		48.7	50.0	-2.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.7015		43.0	47.3	-9.1	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.6440		45.1	47.6	-5.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9686	0.9894		51.1	50.0	2.1	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		1.020		48.6	47.8	1.7	25.0
Perfluorononanoic acid (PFNA)	L2ID		0.8589		51.6	50.0	3.3	25.0
Perfluorodecanoic acid (PFDA)	L2ID		1.020		52.4	50.0	4.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8188	0.9491		58.0	50.0	15.9	25.0
Perfluorodecane Sulfonic acid	L1ID		0.6178		49.1	48.2	1.8	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.8926		51.5	50.0	3.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7344	0.7471		50.9	50.0	1.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9253	1.005		54.3	50.0	8.7	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.6002		51.2	50.0	2.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.112		53.1	50.0	6.2	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.9473	1.005		53.1	50.0	6.1	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_024.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 23-Feb-2016 21:30:04 ALS Bottle#: 13 Worklist Smp#: 23
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*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 09:55:33 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

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	5.697	-0.032	1.000	1170423	50.5		101	65516	
D 1 13C4 PFBA										
217.0 > 172.0	5.662	5.698	-0.036		814616	44.0		88.0	138707	
D 3 13C5-PFPeA										
267.9 > 223.0	6.753	6.804	-0.051		1679425	46.8		93.6	10975	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.753	6.805	-0.052	1.000	1702653	50.2		100	406	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.863	6.918	-0.055	1.000	668973	NC			2440	
298.9 > 99.0	6.868	6.918	-0.050	1.001	353095		1.89(0.00-0.00)		14062	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.863	6.918	-0.055	1.000	668973	43.1		97.4		
D 6 13C2 PFHxA										
315.0 > 270.0	7.990	8.050	-0.060		1504817	45.0		90.0	80135	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.990	8.053	-0.063	1.000	1603089	50.7		101	4318	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.067	8.158	-0.091	0.872	450098	NC			18301	
D 8 13C4-PFHpA										
367.0 > 322.0	9.217	9.283	-0.066		1618854	45.8		91.6	125676	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.217	9.288	-0.071	1.000	1678236	48.7		97.3	25844	
D 11 18O2 PFHxS										
403.0 > 84.0	9.252	9.319	-0.067		620839	42.4		89.6	33054	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.252	9.324	-0.072	1.000	435498	NC			11493	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.252	9.324	-0.072	1.000	435498	43.0		90.9		

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	10.342	10.407	-0.065		1663600	43.8		87.7	120164	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.342	10.410	-0.068	1.000	1645917	51.1		102	3237	
413.0 > 169.0	10.342	10.410	-0.068	1.000	564836		2.91(0.00-0.00)		2993	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.342	10.413	-0.071	1.000	466075	NC			34432	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.342	10.413	-0.071	1.000	466075	45.1		94.7		
D 16 13C4 PFOS										
503.0 > 80.0	11.305	11.369	-0.064		726716	41.2		86.2	34815	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.305	11.371	-0.066	1.000	741358	48.6		102	173	
499.0 > 99.0	11.305	11.371	-0.066	1.000	406083		1.83(0.00-0.00)		7345	
D 17 13C5 PFNA										
468.0 > 423.0	11.321	11.390	-0.069		1422653	43.9		87.8	69083	
18 Perfluorononanoic acid										
463.0 > 419.0	11.321	11.393	-0.072	1.000	1221909	51.6		103	87947	
D 19 13C2 PFDA										
515.0 > 470.0	12.166	12.232	-0.066		1435059	48.9		97.7	7104	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.166	12.234	-0.068	1.000	1463272	52.4		105	64928	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.136	12.249	-0.113	1.000	454388	NC			32299	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.711	12.774	-0.063	1.000	1781102	58.0		116	6399	
D 23 13C8 FOSA										
506.0 > 78.0	12.711	12.774	-0.063		1876662	39.5		79.1	10786	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.847	12.911	-0.064	1.000	452735	NC			26868	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.847	12.911	-0.064	1.000	452735	49.1		102		
D 26 13C2 PFUnA										
565.0 > 520.0	12.889	12.957	-0.068		1673701	44.2		88.5	98717	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.889	12.957	-0.068	1.000	1493955	51.5		103	24991	
D 28 13C2 PFDoA										
615.0 > 570.0	13.506	13.569	-0.063		2001205	46.3		92.5	45178	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.498	13.571	-0.073	1.000	1495075	50.9		102	3379	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.966	14.083	-0.117	1.000	464803	NC			31694	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.025	14.091	-0.066	1.000	2012051	54.3		109	1231	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.462	14.533	-0.071		1780936	47.4		94.8	30012	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.462	14.533	-0.071	1.000	1201140	51.2		102	667	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.121	15.178	-0.057		1996146	46.4		92.7	20221	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.121	15.179	-0.058	1.000	2226232	53.1		106	3173	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.463	15.514	-0.051	1.000	2011577	53.1		106	2081	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016 Amount Added: 1.00 Units: mL

Report Date: 24-Feb-2016 09:55:33 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_024.d

Injection Date: 23-Feb-2016 21:30:04 Instrument ID: A6

Lims ID: CCV L5

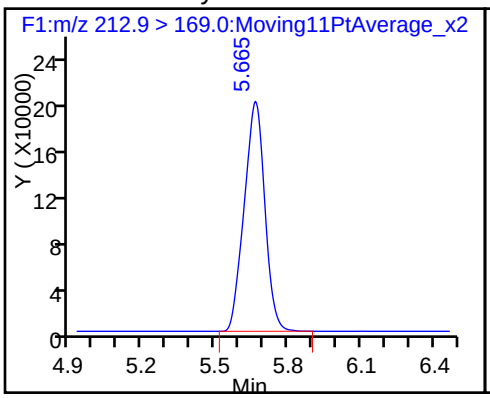
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 23

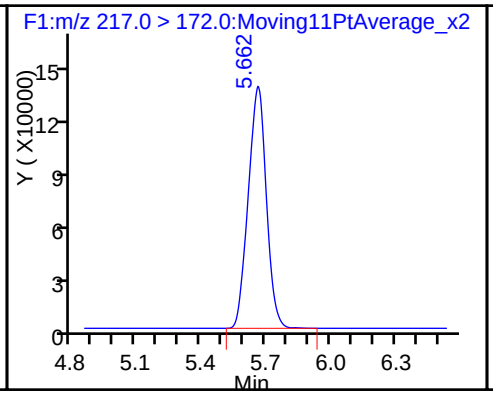
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

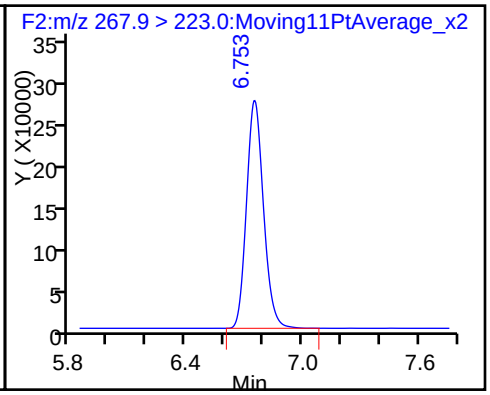
2 Perfluorobutyric acid



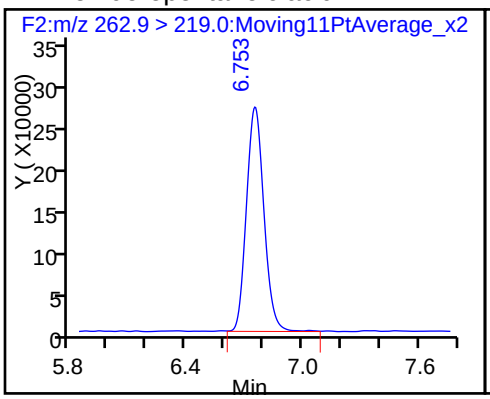
D 1 13C4 PFBA



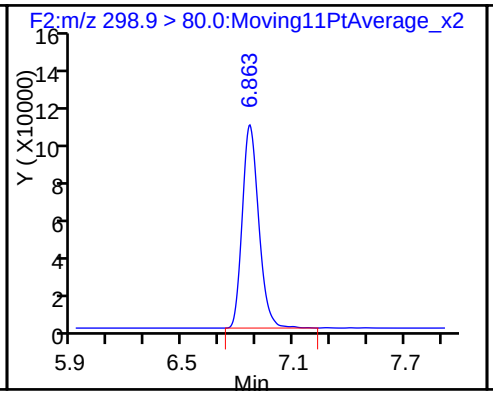
D 3 13C5-PFPeA



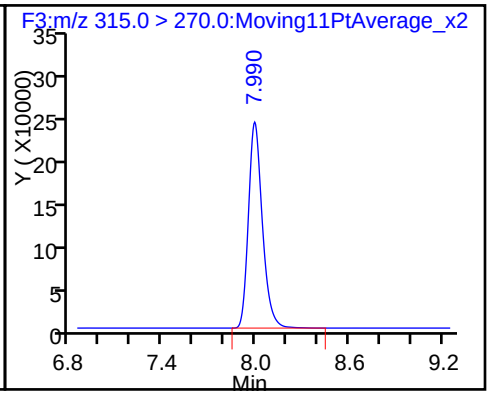
4 Perfluoropentanoic acid



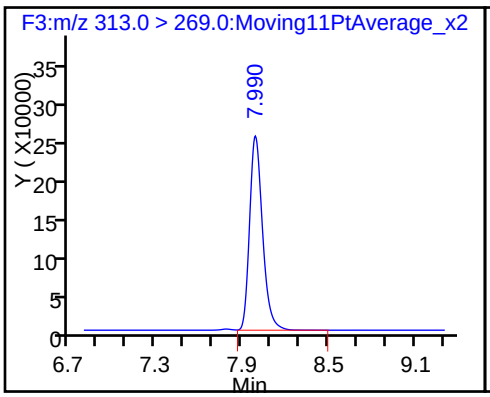
40 Perfluorobutanesulfonic acid



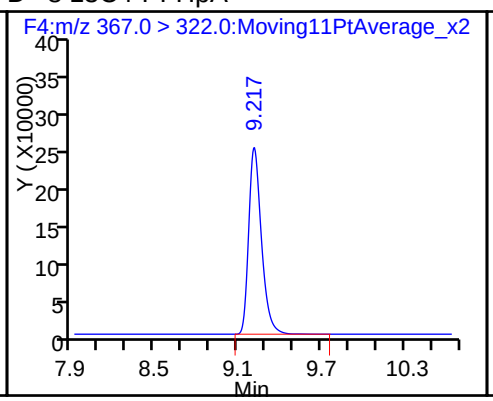
D 6 13C2 PFHxA



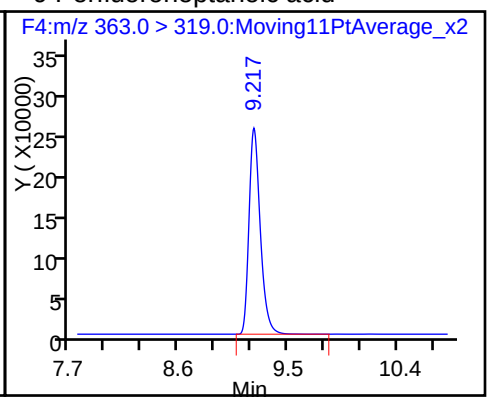
7 Perfluorohexanoic acid



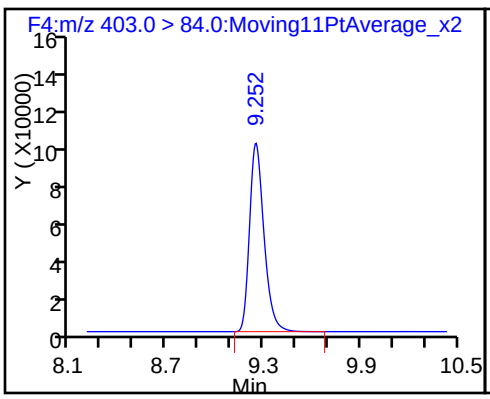
D 8 13C4-PFHpA



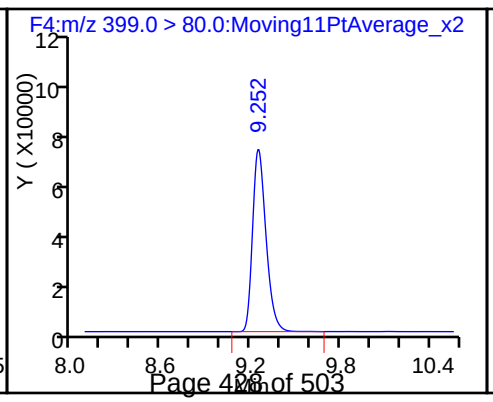
9 Perfluoroheptanoic acid



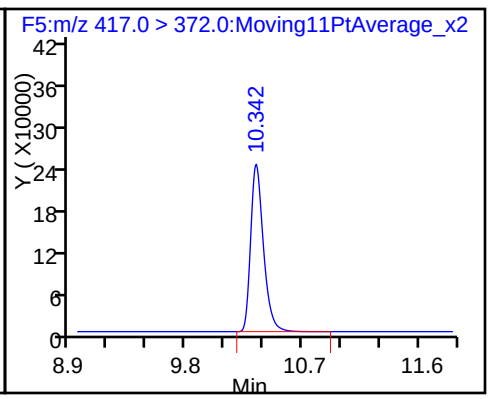
D 11 18O2 PFHxS



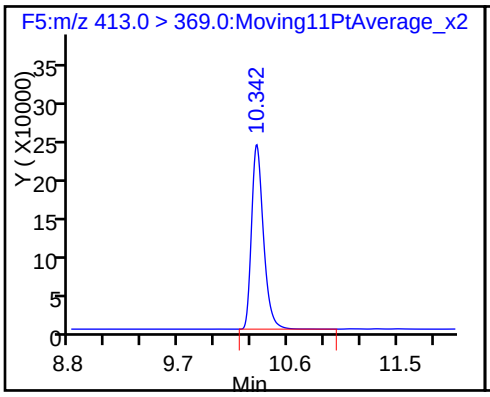
41 Perfluorohexanesulfonic acid



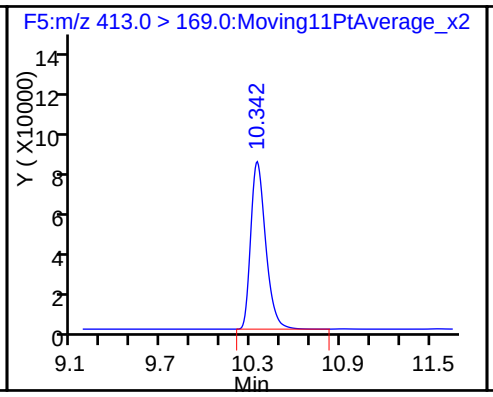
D 12 13C4 PFOA



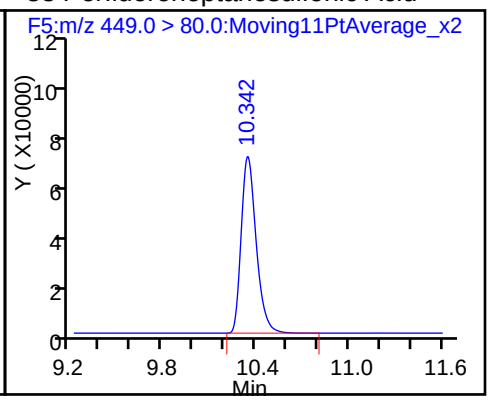
13 Perfluorooctanoic acid



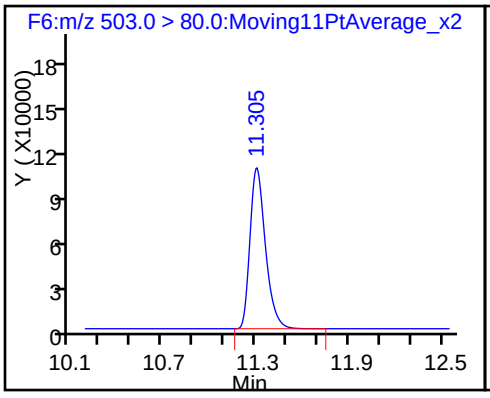
13 Perfluorooctanoic acid



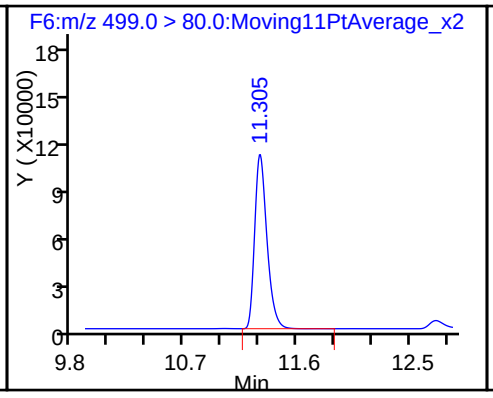
38 Perfluoroheptanesulfonic Acid



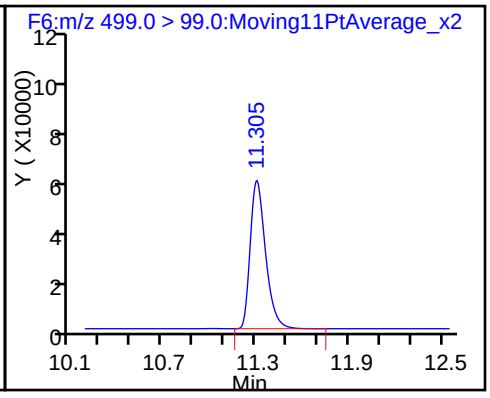
D 16 13C4 PFOS



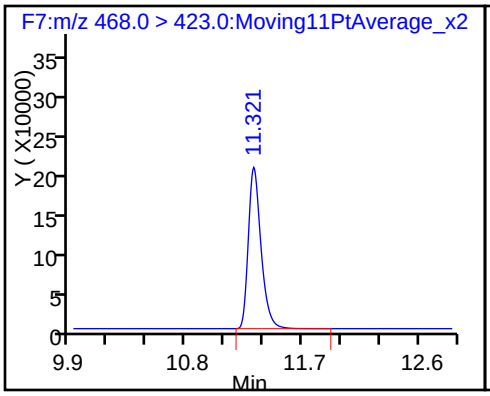
15 Perfluorooctane sulfonic acid



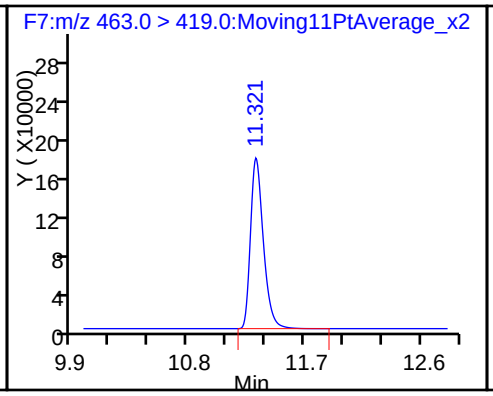
15 Perfluorooctane sulfonic acid



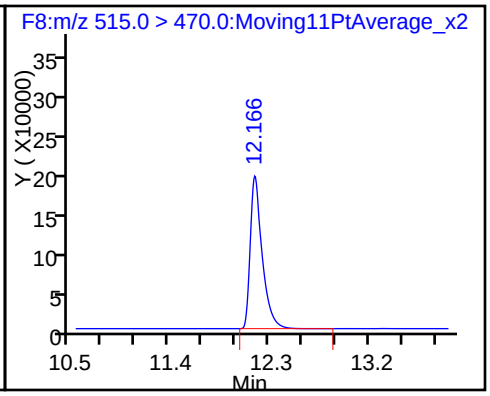
D 17 13C5 PFNA



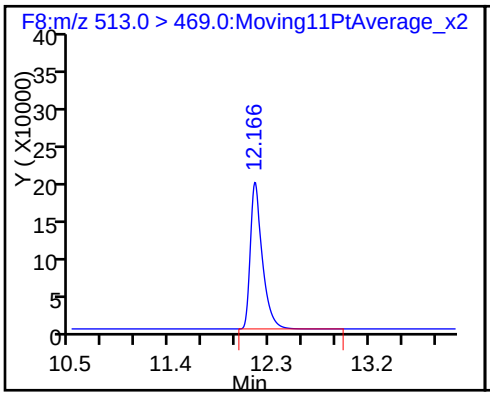
18 Perfluorononanoic acid



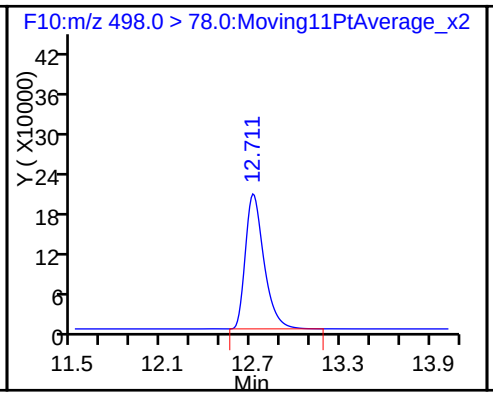
D 19 13C2 PFDA



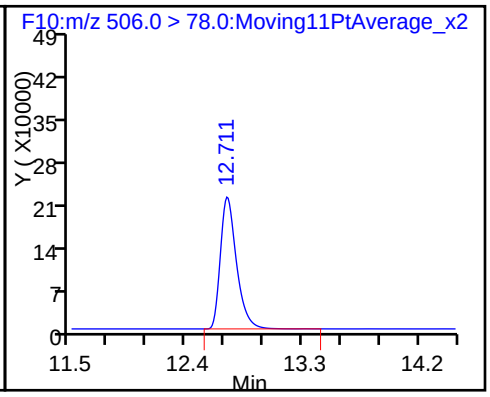
20 Perfluorodecanoic acid



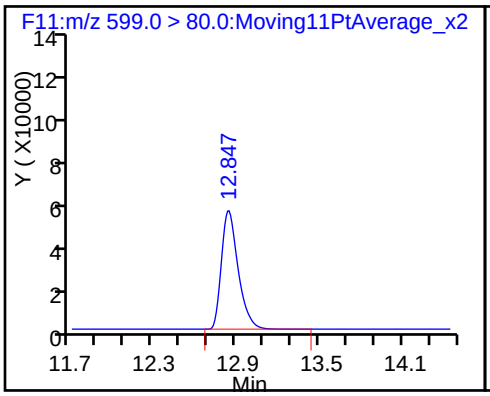
24 Perfluorooctane Sulfonamide



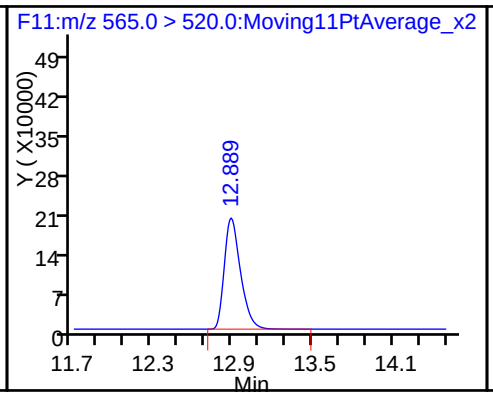
D 23 13C8 FOSA



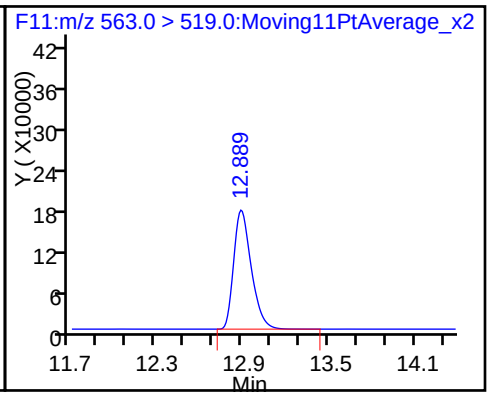
39 Perfluorodecane Sulfonic acid



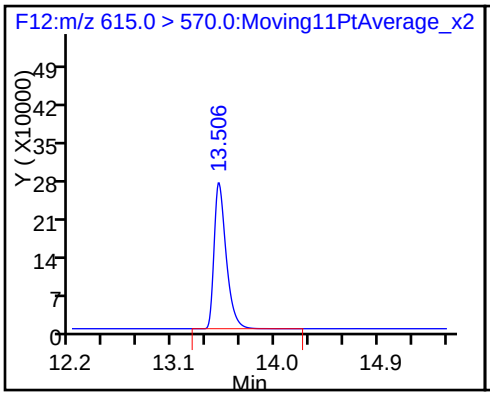
D 26 13C2 PFUnA



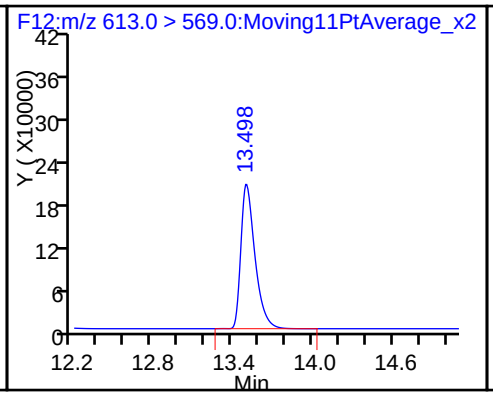
27 Perfluoroundecanoic acid



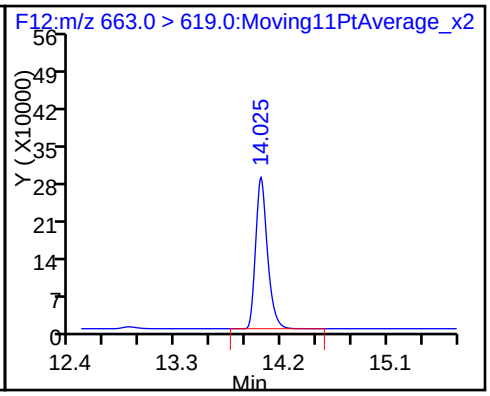
D 28 13C2 PFDoA



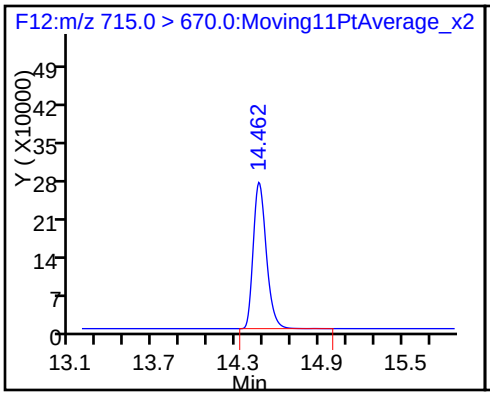
29 Perfluorododecanoic acid



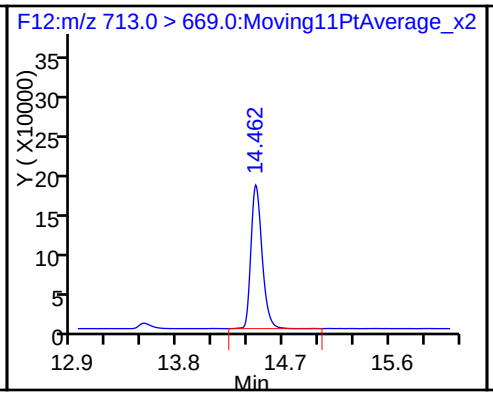
30 Perfluorotridecanoic acid



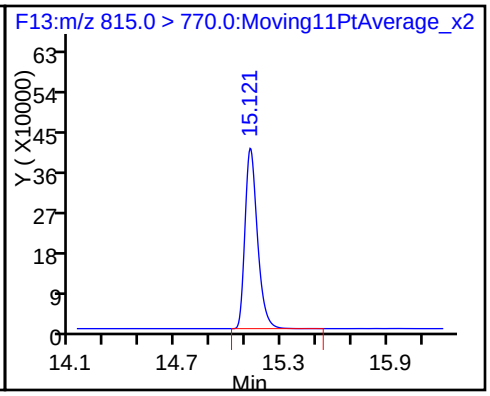
D 33 13C2-PFTeDA



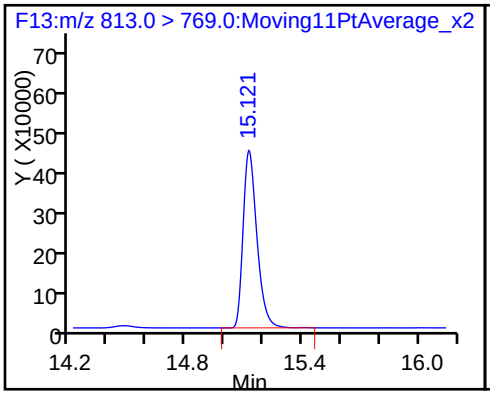
32 Perfluorotetradecanoic acid



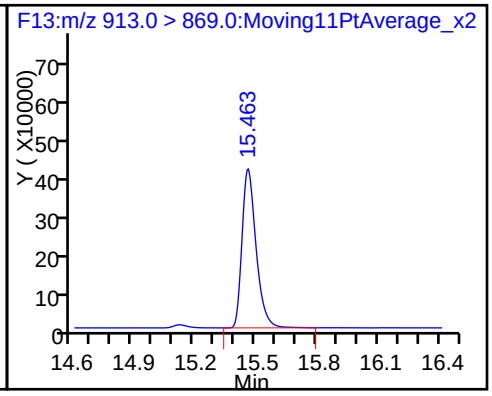
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Lab Sample ID: CCV 320-101347/37 Calibration Date: 02/24/2016 01:23

Instrument ID: A6 Calib Start Date: 02/22/2016 11:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/22/2016 13:36

Lab File ID: 23FEB2016A6A_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.459		20.7	20.0	3.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	0.9757		19.3	20.0	-3.4	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.053		16.0	17.7	-9.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.052	1.107		21.0	20.0	5.2	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		1.174		22.2	20.0	11.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.6280		15.6	18.9	-17.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9686	1.014		20.9	20.0	4.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.5649		16.0	19.0	-15.8	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		0.8860		17.2	19.1	-10.2	25.0
Perfluorononanoic acid (PFNA)	L2ID		0.8557		20.8	20.0	4.0	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9354		19.3	20.0	-3.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8188	0.9586		23.4	20.0	17.1	25.0
Perfluorodecane Sulfonic acid	L1ID		0.4924		15.9	19.3	-17.5	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.9150		20.7	20.0	3.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7344	0.7470		20.3	20.0	1.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9253	1.076		23.3	20.0	16.3	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.5590		18.9	20.0	-5.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.189		19.6	20.0	-2.0	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.9473	0.9570		20.2	20.0	1.0	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_035.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 24-Feb-2016 01:23:30 ALS Bottle#: 12 Worklist Smp#: 37
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*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:07:21 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

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	5.697	-0.032	1.000	488976	20.7		103	28795	
D 1 13C4 PFBA										
217.0 > 172.0	5.665	5.698	-0.033		837916	45.3		90.5	24244	
D 3 13C5-PFPeA										
267.9 > 223.0	6.748	6.804	-0.056		1912307	53.3		107	25397	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.752	6.805	-0.053	1.000	746351	19.3		96.6	170	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.867	6.918	-0.051	1.000	265797	NC			1711	
298.9 > 99.0	6.863	6.918	-0.055	0.999	143175		1.86(0.00-0.00)		2539	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.867	6.918	-0.051	1.000	265797	16.0		90.5		
D 6 13C2 PFHxA										
315.0 > 270.0	7.979	8.050	-0.071		1660118	49.6		99.3	24172	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.979	8.053	-0.074	1.000	734771	21.0		105	3122	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.055	8.158	-0.103	0.872	171752	NC			8994	
D 8 13C4-PFHpA										
367.0 > 322.0	9.201	9.283	-0.082		1935995	54.8		110	151245	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.201	9.288	-0.087	1.000	908930	22.2		111	28159	
D 11 18O2 PFHxS										
403.0 > 84.0	9.236	9.319	-0.083		675513	46.1		97.5	54166	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.236	9.324	-0.088	1.000	169678	NC			4699	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.236	9.324	-0.088	1.000	169678	15.6		82.6		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.323	10.407	-0.084		1977588	52.1		104	143239	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.323	10.410	-0.087	1.000	801898	20.9		105	1303	
413.0 > 169.0	10.323	10.410	-0.087	1.000	267568		3.00(0.00-0.00)		2835	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.330	10.413	-0.083	1.000	182781	NC			13645	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.330	10.413	-0.083	1.000	182781	16.0		84.2		
D 16 13C4 PFOS										
503.0 > 80.0	11.285	11.369	-0.084		812258	46.0		96.3	60022	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.285	11.371	-0.086	1.000	287876	17.2		89.8	512	
499.0 > 99.0	11.285	11.371	-0.086	1.000	164080		1.75(0.00-0.00)		11856	
D 17 13C5 PFNA										
468.0 > 423.0	11.308	11.390	-0.082		1663523	51.3		103	118866	
18 Perfluorononanoic acid										
463.0 > 419.0	11.308	11.393	-0.085	1.000	569370	20.8		104	41127	
D 19 13C2 PFDA										
515.0 > 470.0	12.153	12.232	-0.079		1789425	60.9		122	30484	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.153	12.234	-0.081	1.000	669545	19.3		96.6	46510	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.115	12.249	-0.134	1.000	193991	NC			13837	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.696	12.774	-0.078	1.000	746653	23.4		117	17233	
D 23 13C8 FOSA										
506.0 > 78.0	12.696	12.774	-0.078		1947190	41.0		82.0	3723	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.831	12.911	-0.080	1.000	161307	NC			9475	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.831	12.911	-0.080	1.000	161307	15.9		82.5		
D 26 13C2 PFUnA										
565.0 > 520.0	12.873	12.957	-0.084		2055164	54.3		109	80841	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.873	12.957	-0.084	1.000	752202	20.7		104	12679	
D 28 13C2 PFDoA										
615.0 > 570.0	13.485	13.569	-0.084		2242003	51.8		104	17229	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.492	13.571	-0.079	1.000	669872	20.3		102	1640	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.949	14.083	-0.134	1.000	176549	NC			4787	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.012	14.091	-0.079	1.000	964906	23.3		116	1128	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.449	14.533	-0.084		1823518	48.5		97.1	13212	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.449	14.533	-0.084	1.000	501307	18.9		94.6	243	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.112	15.178	-0.066		2067786	48.0		96.1	12644	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.112	15.179	-0.067	1.000	1066163	19.6		98.0	1747	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.454	15.514	-0.060	1.000	858263	20.2		101	812	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017 Amount Added: 1.00 Units: mL

Report Date: 24-Feb-2016 10:07:22 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_035.d

Injection Date: 24-Feb-2016 01:23:30 Instrument ID: A6

Lims ID: CCV L4

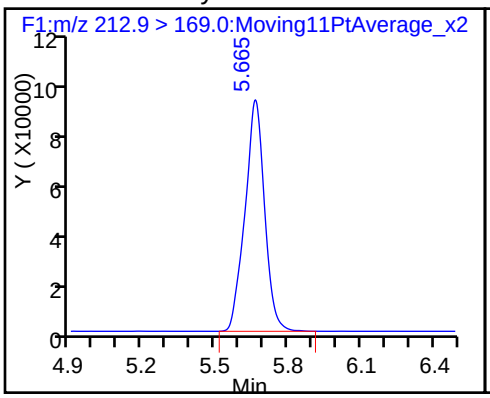
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 37

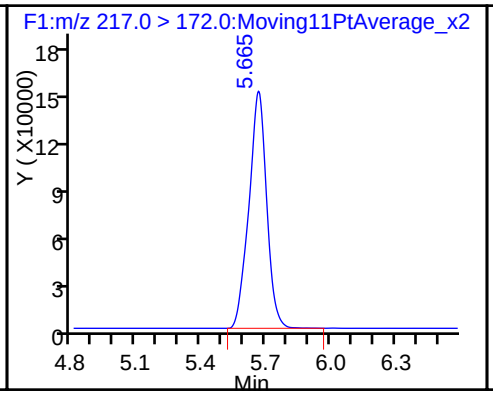
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

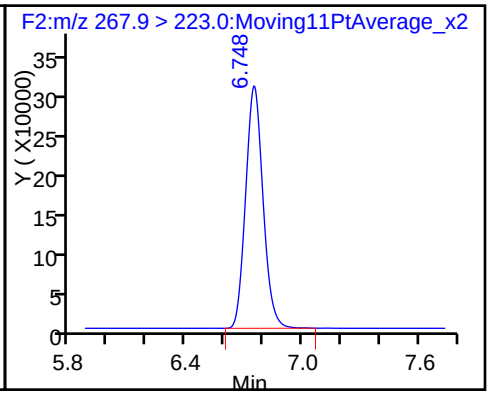
2 Perfluorobutyric acid



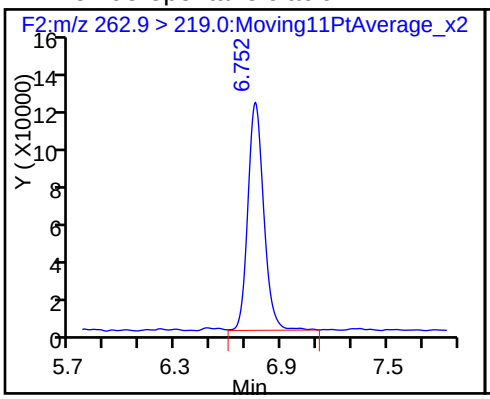
D 1 13C4 PFBA



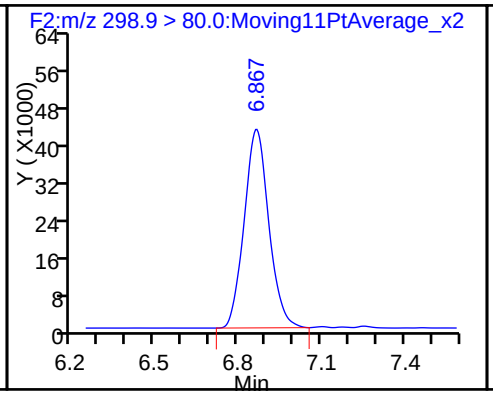
D 3 13C5-PFPeA



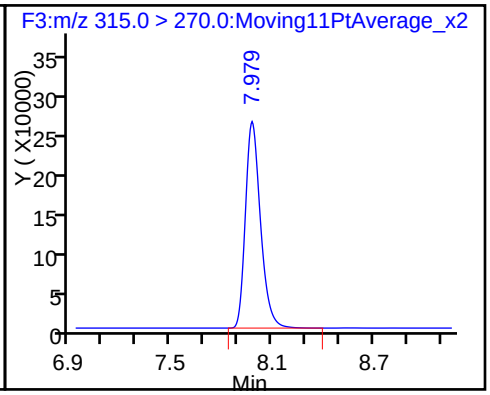
4 Perfluoropentanoic acid



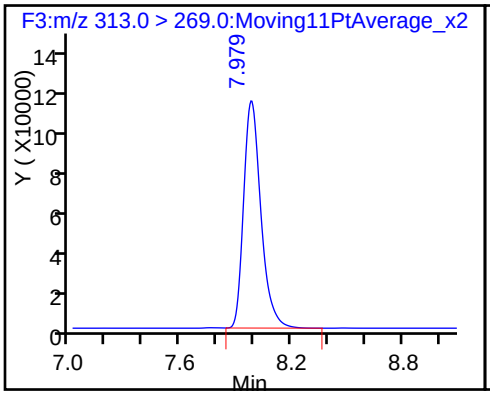
40 Perfluorobutanesulfonic acid



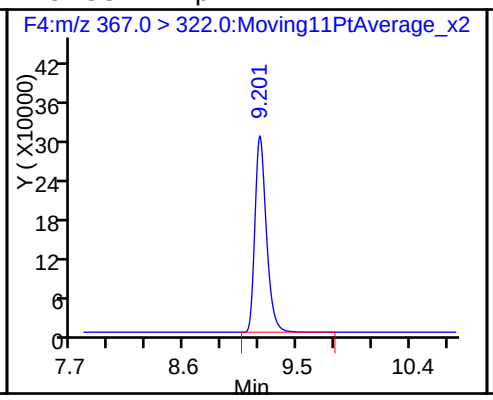
D 6 13C2 PFHxA



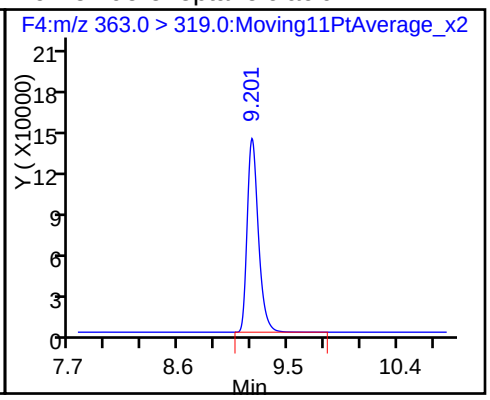
7 Perfluorohexanoic acid



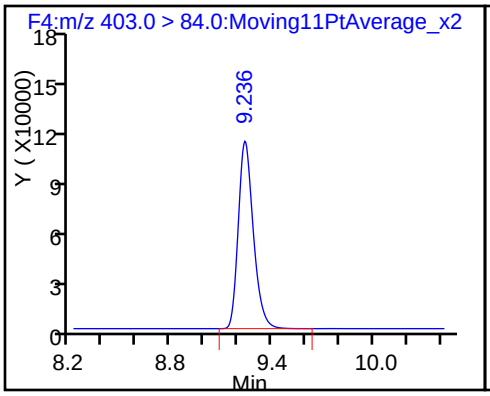
D 8 13C4-PFHpA



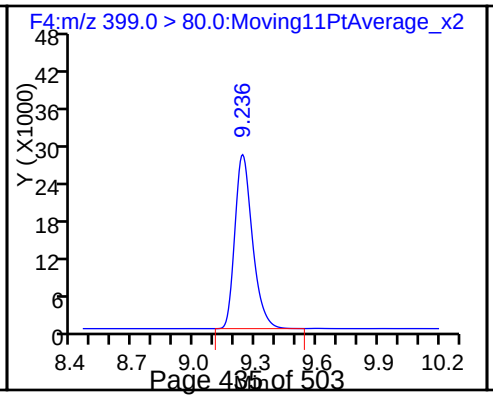
9 Perfluoroheptanoic acid



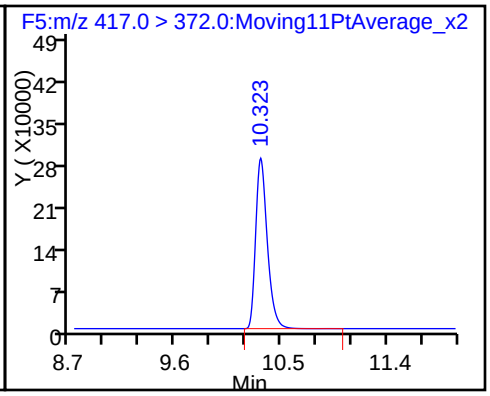
D 11 18O2 PFHxS



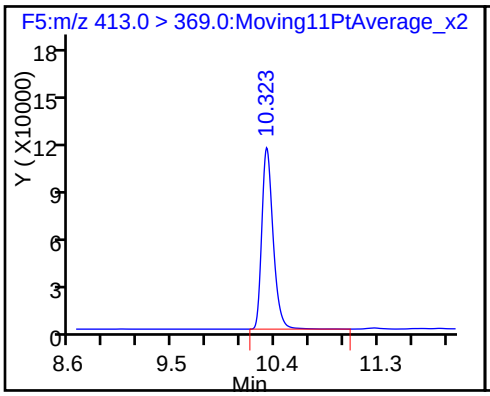
41 Perfluorohexanesulfonic acid



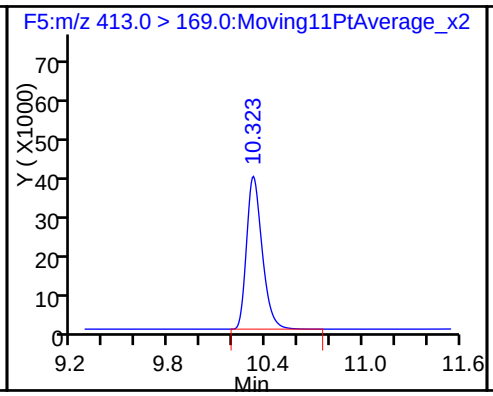
D 12 13C4 PFOA



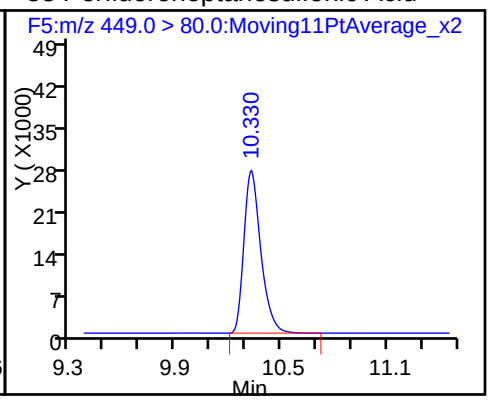
13 Perfluorooctanoic acid



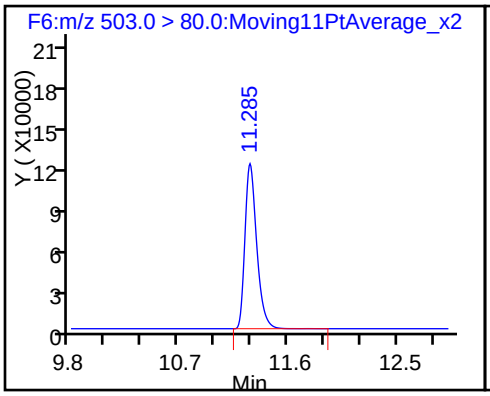
13 Perfluorooctanoic acid



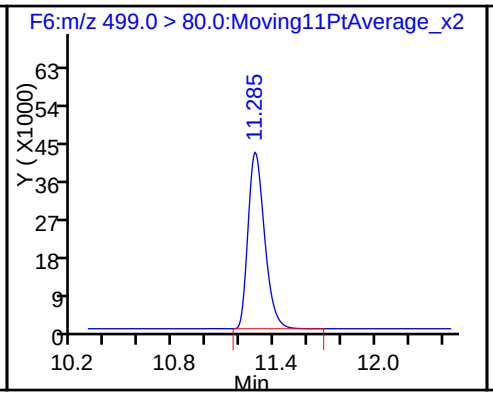
38 Perfluoroheptanesulfonic Acid



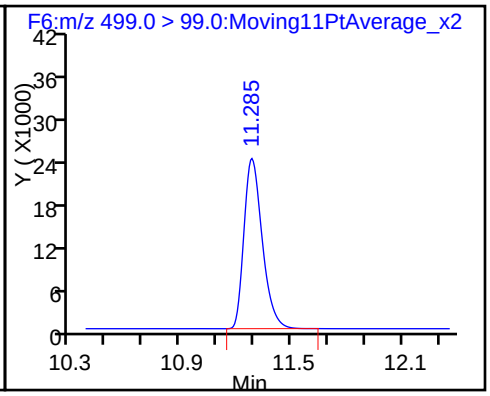
D 16 13C4 PFOS



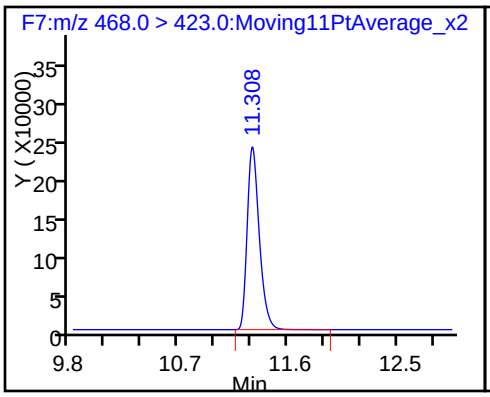
15 Perfluorooctane sulfonic acid



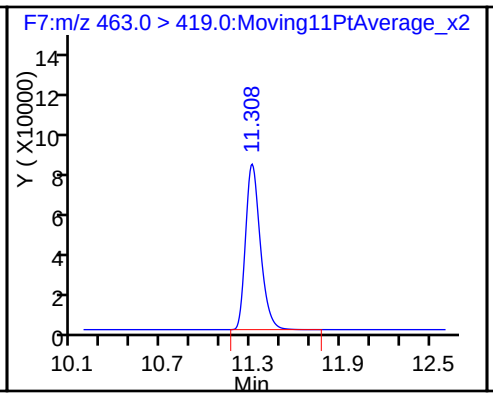
15 Perfluorooctane sulfonic acid



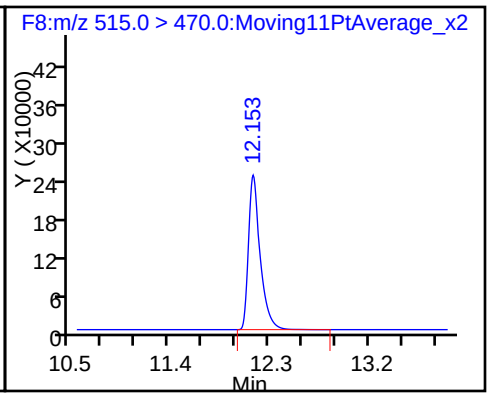
D 17 13C5 PFNA



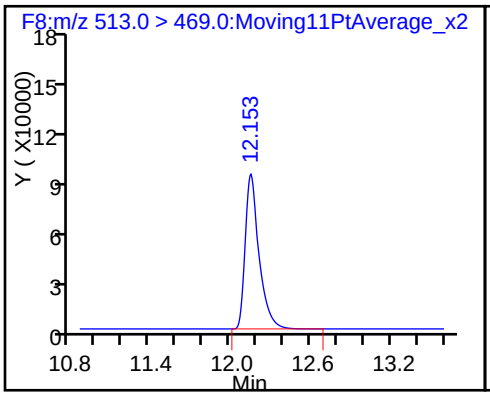
18 Perfluorononanoic acid



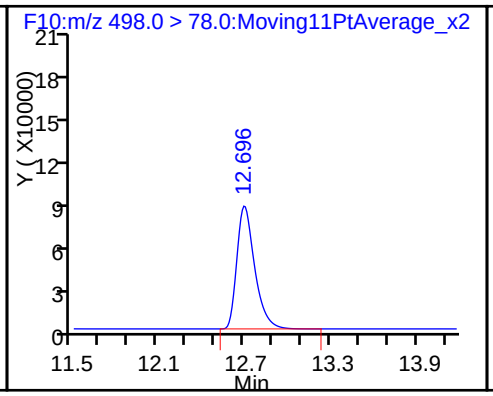
D 19 13C2 PFDA



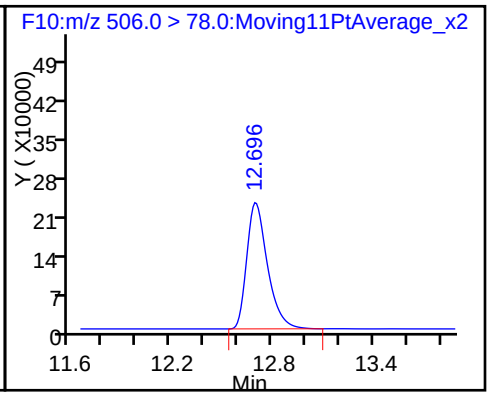
20 Perfluorodecanoic acid



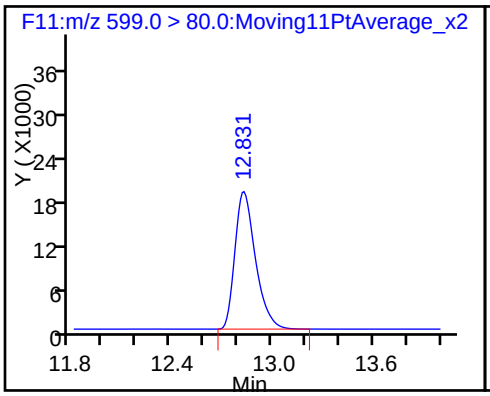
24 Perfluorooctane Sulfonamide



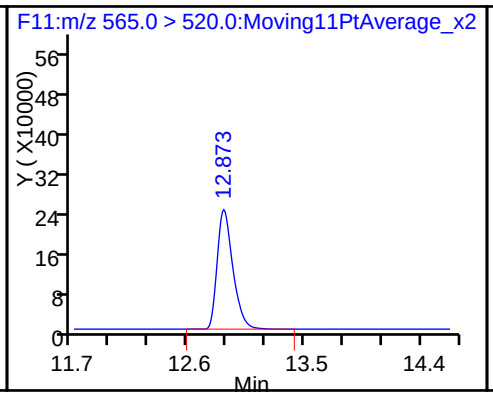
D 23 13C8 FOSA



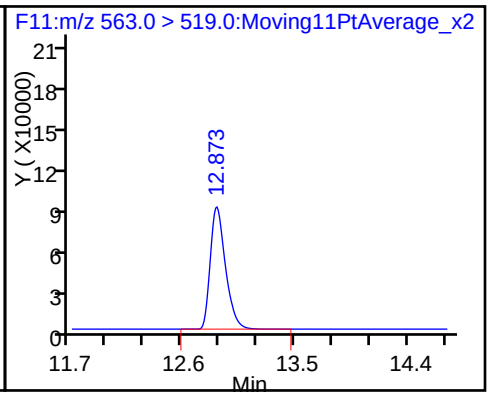
39 Perfluorodecane Sulfonic acid



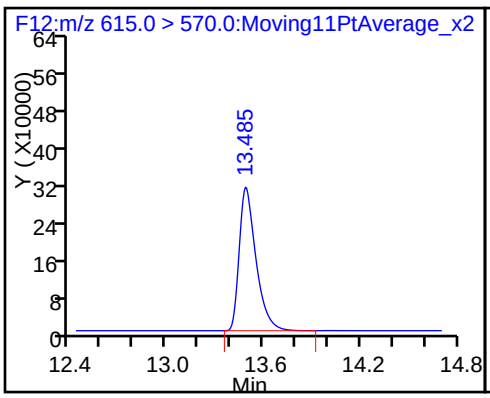
D 26 13C2 PFUnA



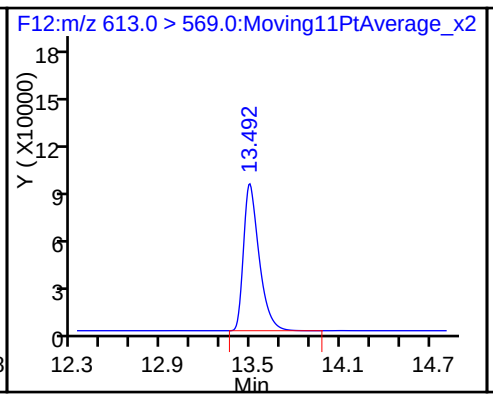
27 Perfluoroundecanoic acid



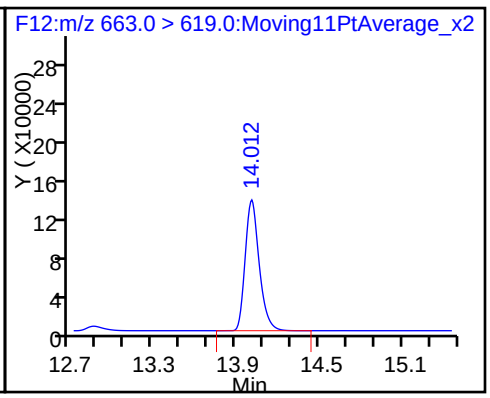
D 28 13C2 PFDoA



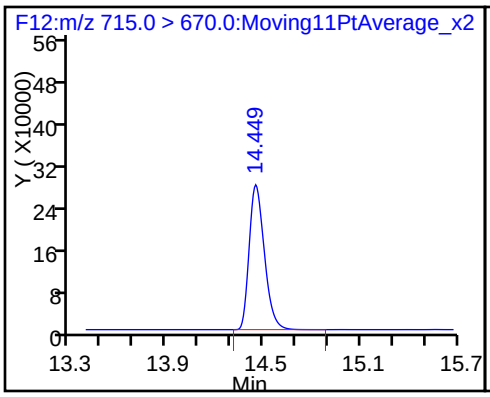
29 Perfluorododecanoic acid



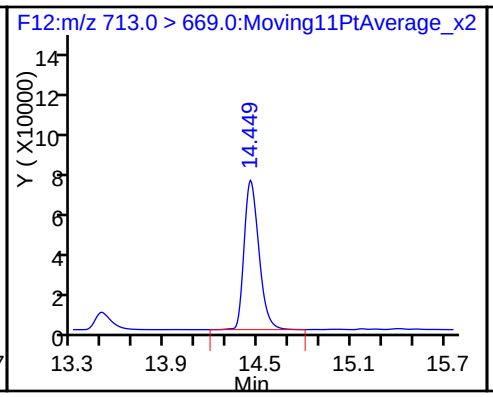
30 Perfluorotridecanoic acid



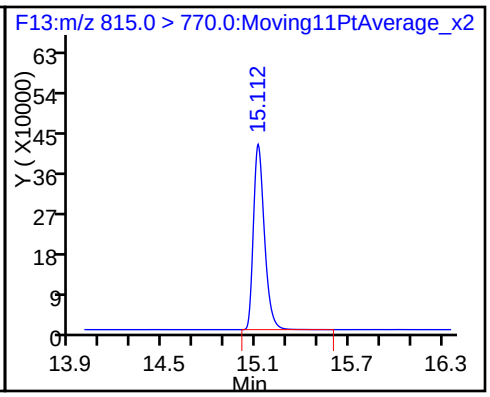
D 33 13C2-PFTeDA



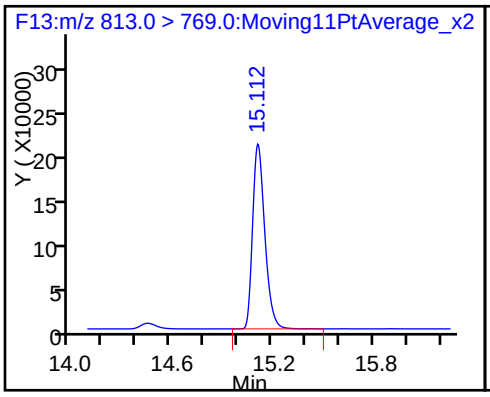
32 Perfluorotetradecanoic acid



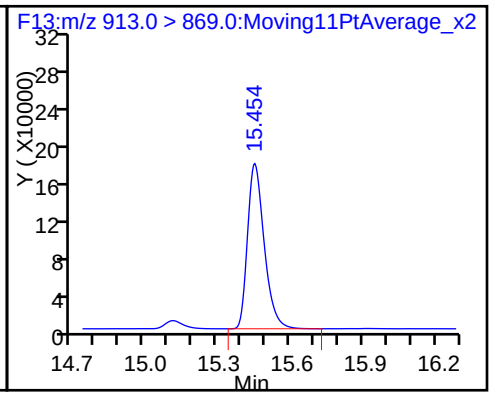
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Lab Sample ID: CCV 320-101347/48 Calibration Date: 02/24/2016 05:16

Instrument ID: A6 Calib Start Date: 02/22/2016 11:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/22/2016 13:36

Lab File ID: 23FEB2016A6A_046.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.368		48.0	50.0	-3.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	0.9882		48.9	50.0	-2.1	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.042		39.0	44.2	-11.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.052	1.072		51.0	50.0	2.0	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.996		46.8	50.0	-6.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.6162		37.8	47.3	-20.1	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9686	1.039		53.6	50.0	7.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.5575		39.0	47.6	-18.0	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		0.9711		46.3	47.8	-3.1	25.0
Perfluorononanoic acid (PFNA)	L2ID		0.8587		51.6	50.0	3.2	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9902		50.9	50.0	1.8	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8188	0.9829		60.0	50.0	20.0	25.0
Perfluorodecane Sulfonic acid	L1ID		0.5576		44.3	48.2	-8.0	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.8486		48.9	50.0	-2.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7344	0.7939		54.1	50.0	8.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9253	1.033		55.8	50.0	11.7	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.5669		48.4	50.0	-3.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.095		52.2	50.0	4.4	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.9473	1.002		52.9	50.0	5.8	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_046.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 24-Feb-2016 05:16:56 ALS Bottle#: 13 Worklist Smp#: 48
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*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:54:25 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

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	5.697	-0.032	1.000	1125168	48.0		96.1	34213	
D 1 13C4 PFBA										
217.0 > 172.0	5.662	5.698	-0.036		822613	44.4		88.9	38406	
D 3 13C5-PFPeA										
267.9 > 223.0	6.748	6.804	-0.056		1845250	51.4		103	27821	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.748	6.805	-0.057	1.000	1823428	48.9		97.9	347	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.858	6.918	-0.060	1.000	595259	NC			9123	
298.9 > 99.0	6.858	6.918	-0.060	1.000	341582		1.74(0.00-0.00)		4580	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.858	6.918	-0.060	1.000	595259	39.0		88.2		
D 6 13C2 PFHxA										
315.0 > 270.0	7.974	8.050	-0.076		1643841	49.1		98.3	38516	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.979	8.053	-0.074	1.000	1762894	51.0		102	2684	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.055	8.158	-0.103	0.872	405574	NC			16612	
D 8 13C4-PFHpA										
367.0 > 322.0	9.199	9.283	-0.084		1882041	53.2		106	152303	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.199	9.288	-0.089	1.000	1875422	46.8		93.6	13564	
D 11 18O2 PFHxS										
403.0 > 84.0	9.234	9.319	-0.085		611223	41.7		88.2	24400	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.234	9.324	-0.090	1.000	376619	NC			4619	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.234	9.324	-0.090	1.000	376619	37.8		79.9		

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	10.328	10.407	-0.079		1828670	48.2		96.4	87554	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.328	10.410	-0.082	1.000	1900490	53.6		107	4351	
413.0 > 169.0	10.328	10.410	-0.082	1.000	554923		3.42(0.00-0.00)		4684	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.335	10.413	-0.078	1.000	407474	NC			30539	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.335	10.413	-0.078	1.000	407474	39.0		82.0		
D 16 13C4 PFOS										
503.0 > 80.0	11.290	11.369	-0.079		733987	41.6		87.0	52956	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.298	11.371	-0.073	1.000	712805	46.3		96.9	177	
499.0 > 99.0	11.290	11.371	-0.081	0.999	387165		1.84(0.00-0.00)		28291	
D 17 13C5 PFNA										
468.0 > 423.0	11.313	11.390	-0.077		1599905	49.4		98.7	115801	
18 Perfluorononanoic acid										
463.0 > 419.0	11.313	11.393	-0.080	1.000	1373765	51.6		103	38993	
D 19 13C2 PFDA										
515.0 > 470.0	12.166	12.232	-0.066		1683702	57.3		115	113331	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.166	12.234	-0.068	1.000	1667142	50.9		102	113490	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.128	12.249	-0.121	1.000	387545	NC			3072	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.711	12.774	-0.063	1.000	1751442	60.0		120	8708	
D 23 13C8 FOSA										
506.0 > 78.0	12.711	12.774	-0.063		1781850	37.5		75.1	6053	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.836	12.911	-0.075	1.000	412675	NC			16119	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.836	12.911	-0.075	1.000	412675	44.3		92.0		
D 26 13C2 PFUnA										
565.0 > 520.0	12.888	12.957	-0.069		1978210	52.3		105	58121	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.888	12.957	-0.069	1.000	1678661	48.9		97.8	39790	
D 28 13C2 PFDoA										
615.0 > 570.0	13.497	13.569	-0.072		2107972	48.7		97.4	16019	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.497	13.571	-0.074	1.000	1673557	54.1		108	3185	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.965	14.083	-0.118	1.000	420952	NC			9489	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.025	14.091	-0.066	1.000	2177971	55.8		112	2594	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.461	14.533	-0.072		1897110	50.5		101	32019	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.461	14.533	-0.072	1.000	1195063	48.4		96.8	536	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.120	15.178	-0.058		2162567	50.2		100	6932	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.125	15.179	-0.054	1.000	2309114	52.2		104	2594	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.462	15.514	-0.052	1.000	2112236	52.9		106	1908	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016 Amount Added: 1.00 Units: mL

Report Date: 24-Feb-2016 10:54:26 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_046.d

Injection Date: 24-Feb-2016 05:16:56 Instrument ID: A6

Lims ID: CCV L5

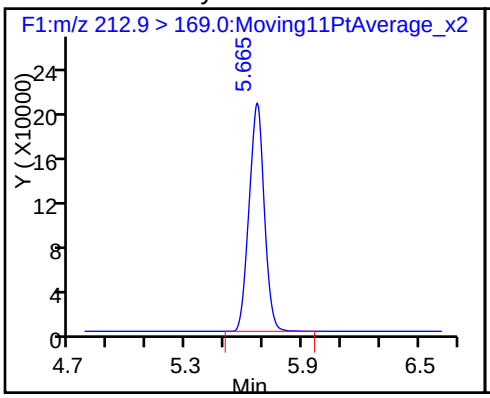
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 48

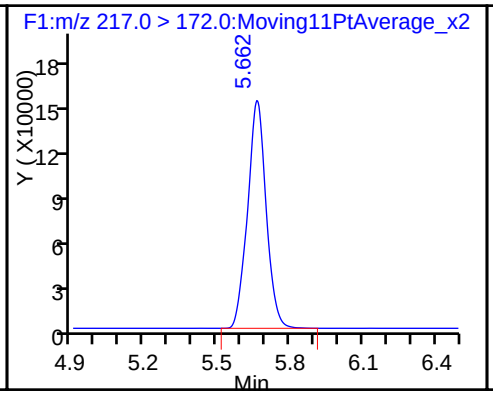
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

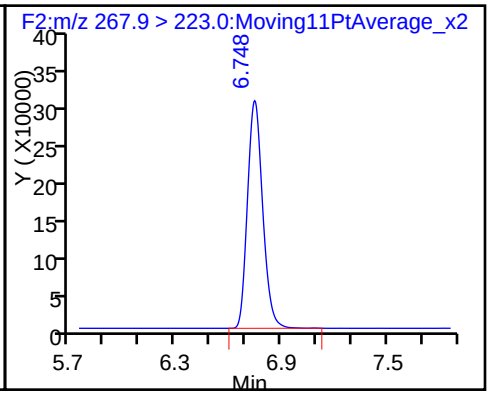
2 Perfluorobutyric acid



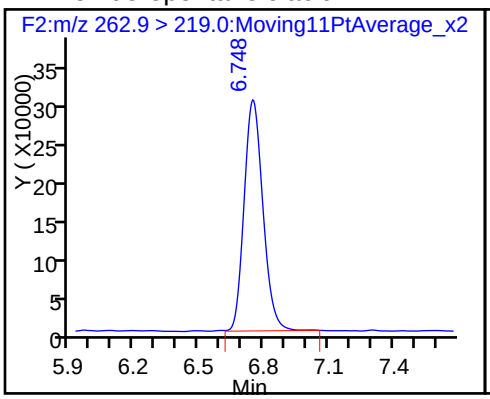
D 1 13C4 PFBA



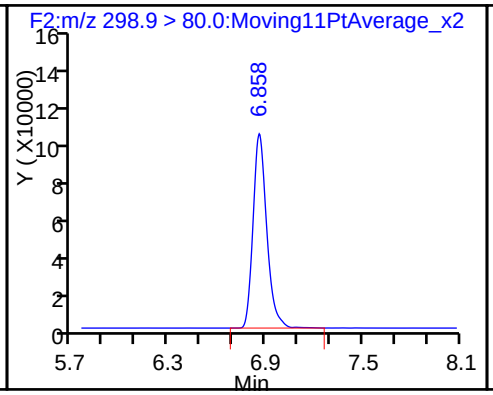
D 3 13C5-PFPeA



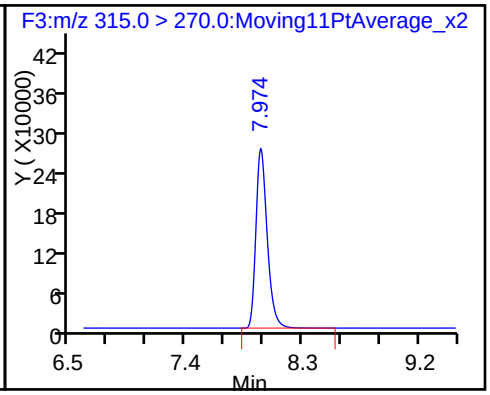
4 Perfluoropentanoic acid



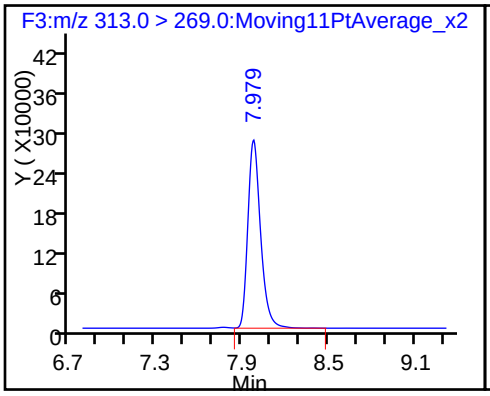
40 Perfluorobutanesulfonic acid



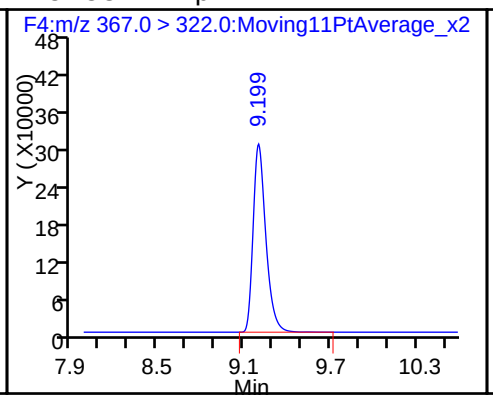
D 6 13C2 PFHxA



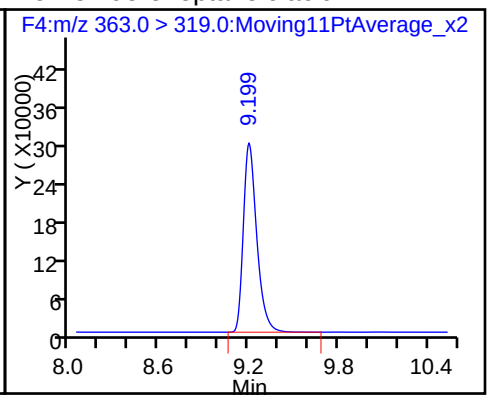
7 Perfluorohexanoic acid



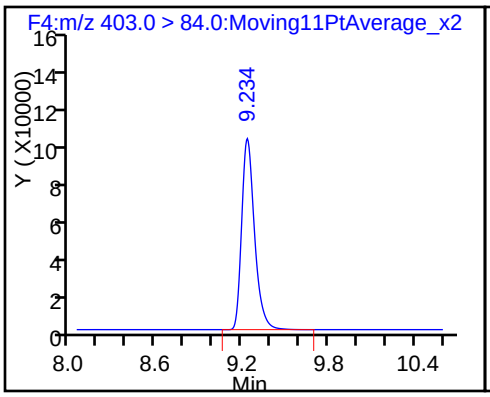
D 8 13C4-PFHpA



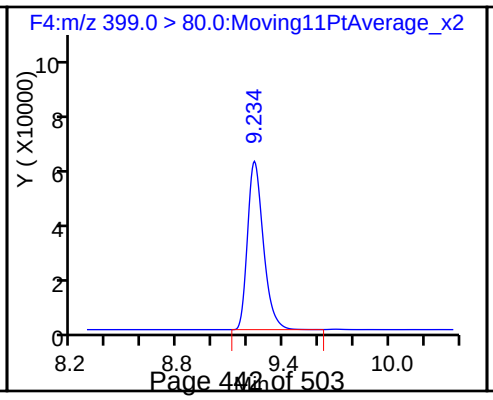
9 Perfluoroheptanoic acid



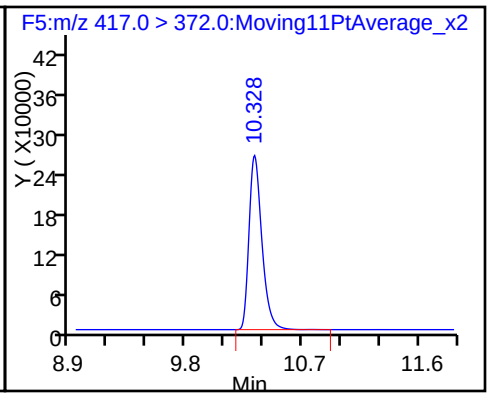
D 11 18O2 PFHxS



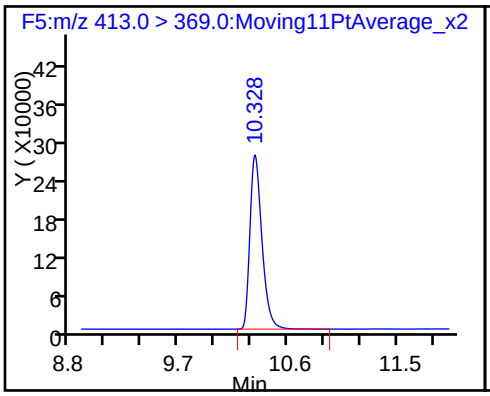
41 Perfluorohexanesulfonic acid



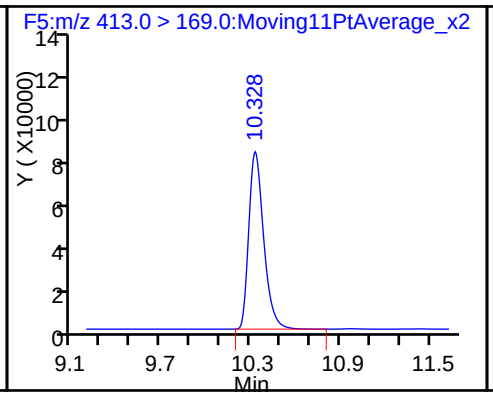
D 12 13C4 PFOA



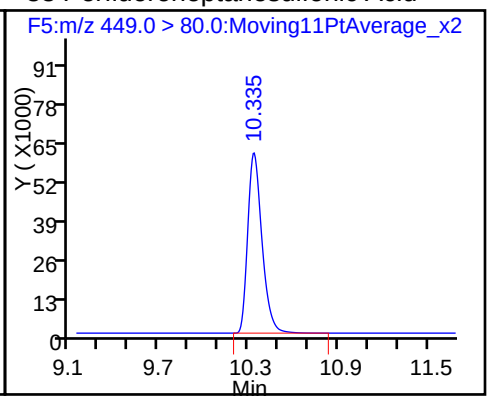
13 Perfluorooctanoic acid



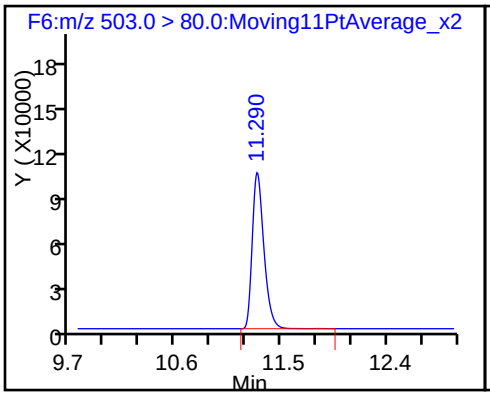
13 Perfluorooctanoic acid



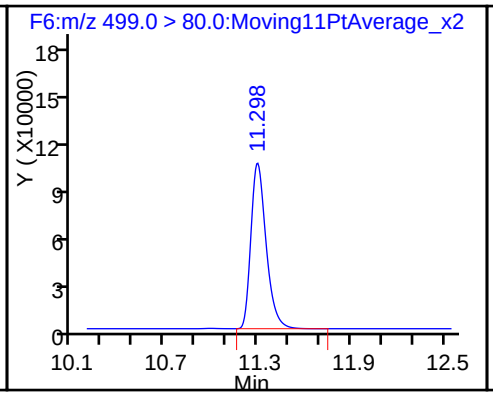
38 Perfluoroheptanesulfonic Acid



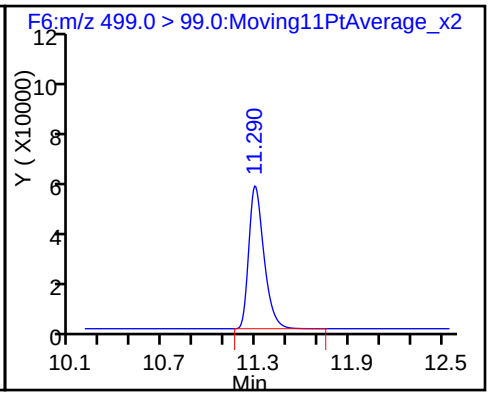
D 16 13C4 PFOS



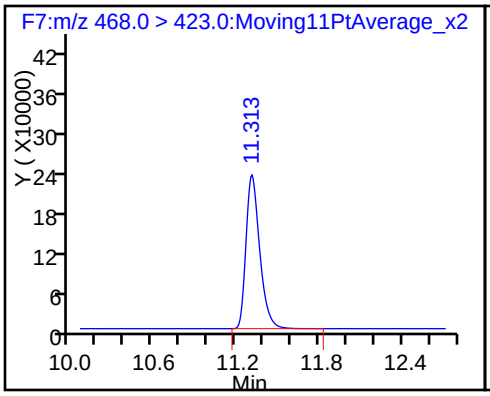
15 Perfluorooctane sulfonic acid



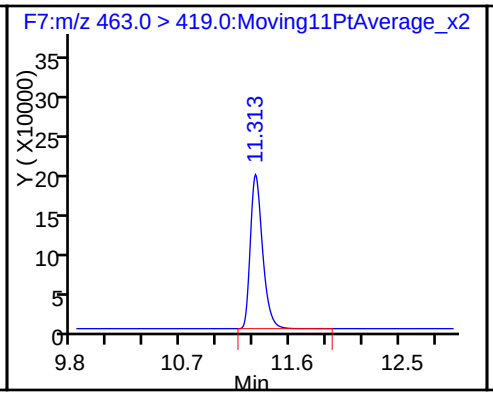
15 Perfluorooctane sulfonic acid



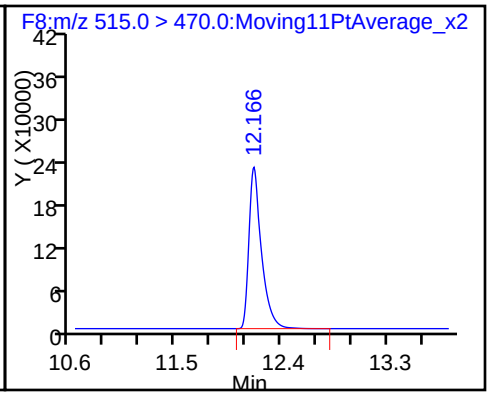
D 17 13C5 PFNA



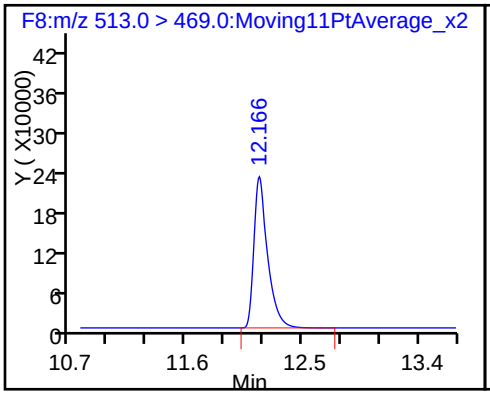
18 Perfluorononanoic acid



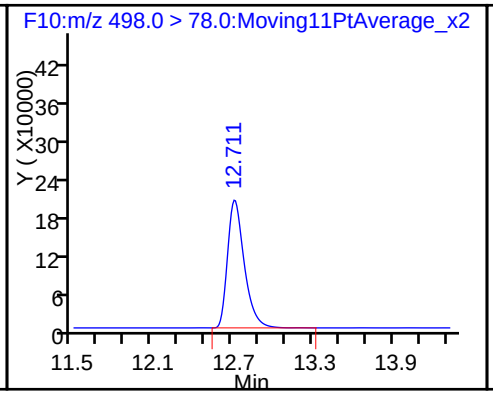
D 19 13C2 PFDA



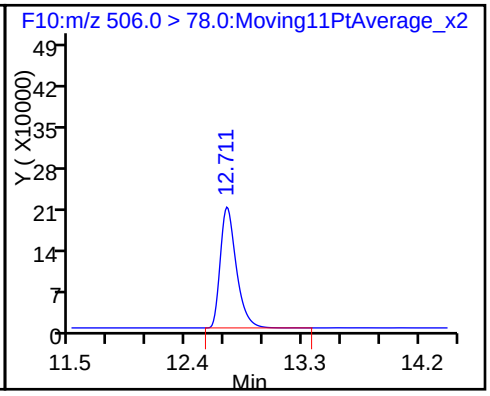
20 Perfluorodecanoic acid



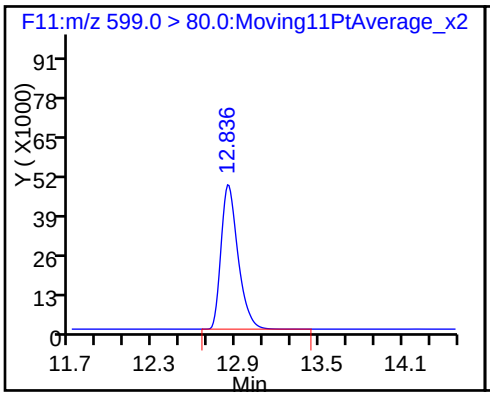
24 Perfluorooctane Sulfonamide



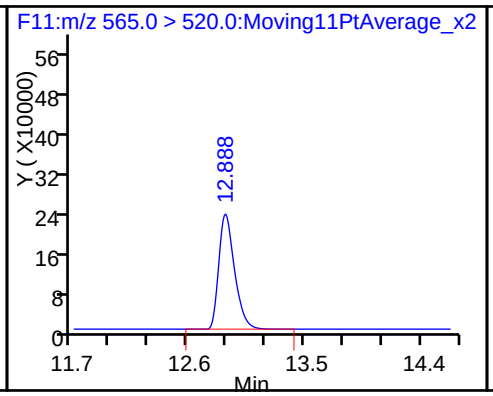
D 23 13C8 FOSA



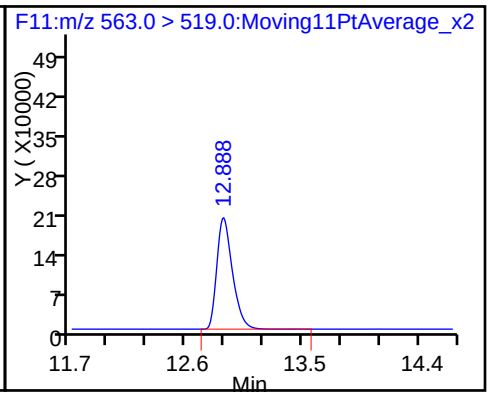
39 Perfluorodecane Sulfonic acid



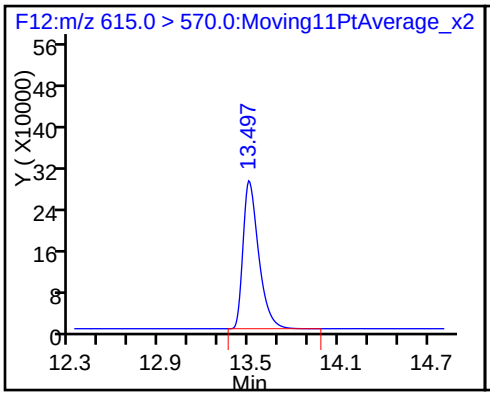
D 26 13C2 PFUnA



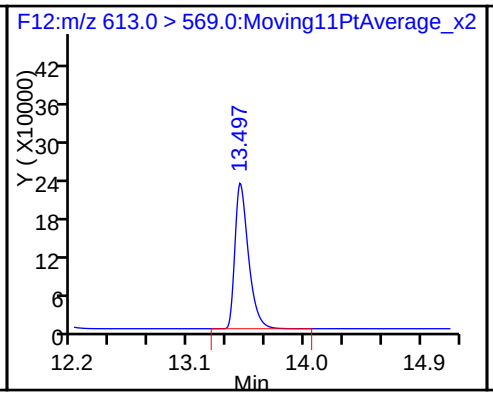
27 Perfluoroundecanoic acid



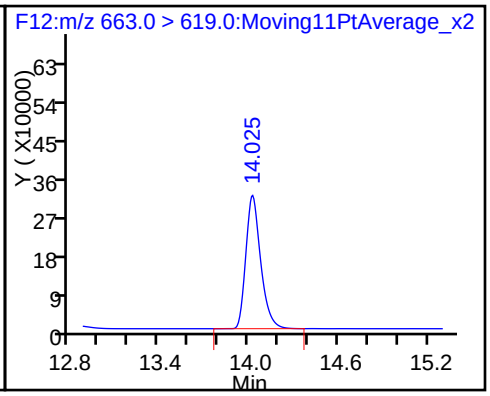
D 28 13C2 PFDoA



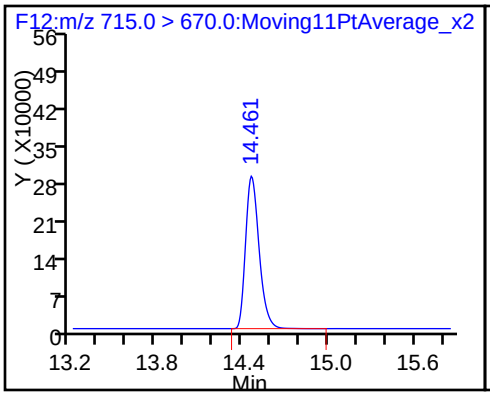
29 Perfluorododecanoic acid



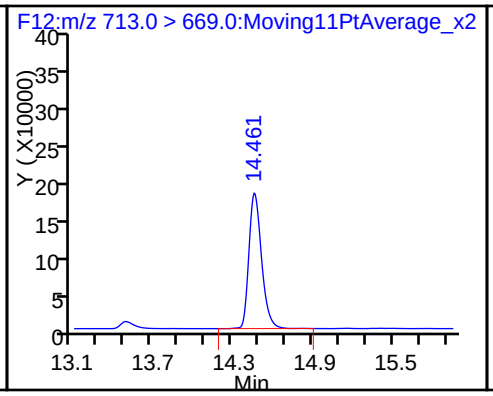
30 Perfluorotridecanoic acid



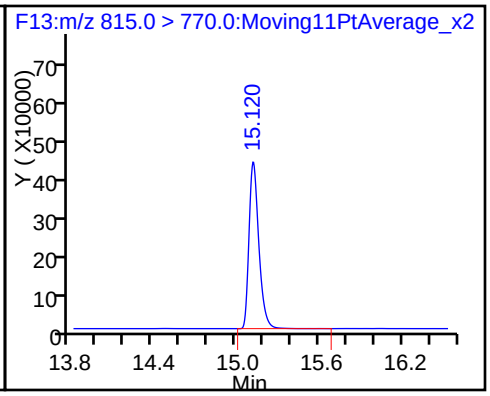
D 33 13C2-PFTeDA



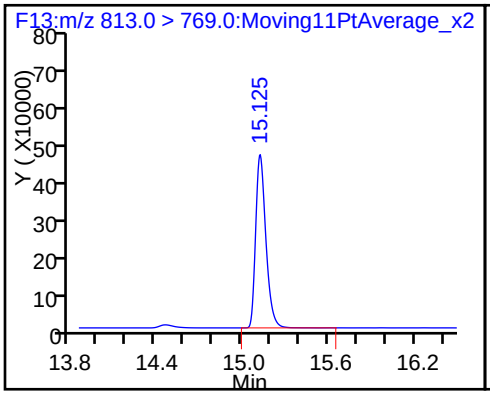
32 Perfluorotetradecanoic acid



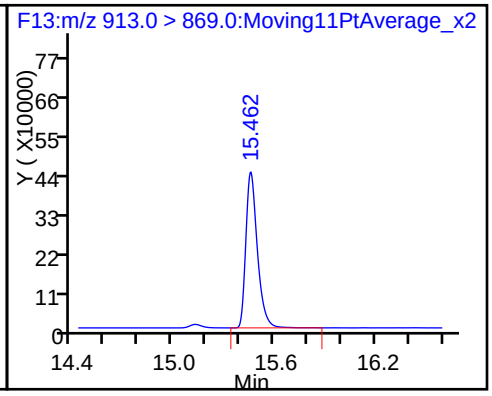
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Lab Sample ID: CCV 320-101347/53 Calibration Date: 02/24/2016 07:03

Instrument ID: A6 Calib Start Date: 02/22/2016 11:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/22/2016 13:36

Lab File ID: 23FEB2016A6A_051.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.404		19.9	20.0	-0.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	0.9907		19.6	20.0	-1.9	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.004		15.3	17.7	-13.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.052	1.119		21.3	20.0	6.4	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		1.157		21.9	20.0	9.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.6334		15.8	18.9	-16.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.5059		14.4	19.0	-24.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9686	1.074		22.2	20.0	10.8	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		0.9449		18.3	19.1	-4.4	25.0
Perfluorononanoic acid (PFNA)	L2ID		0.8396		20.4	20.0	2.0	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9571		19.8	20.0	-1.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8188	0.9267		22.6	20.0	13.2	25.0
Perfluorodecane Sulfonic acid	L1ID		0.5000		16.1	19.3	-16.3	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.9191		20.8	20.0	4.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7344	0.7750		21.1	20.0	5.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9253	1.088		23.5	20.0	17.6	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.6048		20.5	20.0	2.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.280		21.5	20.0	7.6	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	0.9473	0.9549		20.2	20.0	0.8	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_051.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 24-Feb-2016 07:03:03 ALS Bottle#: 12 Worklist Smp#: 53
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*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 15:17:12 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

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	5.697	-0.032	1.000	472084	19.9		99.6	26975	
D 1 13C4 PFBA										
217.0 > 172.0	5.662	5.698	-0.036		840314	45.4		90.8	49245	
D 3 13C5-PFPeA										
267.9 > 223.0	6.744	6.804	-0.060		1896941	52.8		106	37791	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.748	6.805	-0.057	1.000	751699	19.6		98.1	142	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.863	6.918	-0.055	1.000	245109	NC			1884	
298.9 > 99.0	6.863	6.918	-0.055	1.000	137537		1.78(0.00-0.00)		3044	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.863	6.918	-0.055	1.000	245109	15.3		86.4		
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	8.050	-0.070		1650813	49.4		98.7	88121	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.980	8.053	-0.073	1.000	738849	21.3		106	19148	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.056	8.158	-0.102	0.872	153117	NC			3935	
D 8 13C4-PFHpA										
367.0 > 322.0	9.199	9.283	-0.084		1903614	53.8		108	58421	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.199	9.288	-0.089	1.000	880723	21.9		109	10467	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.319	-0.084		653112	44.6		94.3	50502	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.229	9.324	-0.095	1.000	165463	NC			1756	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.229	9.324	-0.095	1.000	165463	15.8		83.3		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.321	10.407	-0.086		1954826	51.5		103	138165	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.321	10.410	-0.089	1.000	839437	22.2		111	1814	
413.0 > 169.0	10.328	10.410	-0.082	1.001	264850		3.17(0.00-0.00)		1404	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.321	10.413	-0.092	1.000	162474	NC			12212	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.321	10.413	-0.092	1.000	162474	14.4		75.6		
D 16 13C4 PFOS										
503.0 > 80.0	11.284	11.369	-0.085		806259	45.7		95.6	57511	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.284	11.371	-0.087	1.000	304724	18.3		95.6	348	
499.0 > 99.0	11.291	11.371	-0.080	1.001	180760		1.69(0.00-0.00)		4350	
D 17 13C5 PFNA										
468.0 > 423.0	11.306	11.390	-0.084		1731289	53.4		107	83157	
18 Perfluorononanoic acid										
463.0 > 419.0	11.306	11.393	-0.087	1.000	581404	20.4		102	8191	
D 19 13C2 PFDA										
515.0 > 470.0	12.151	12.232	-0.081		1841235	62.7		125	31513	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.151	12.234	-0.083	1.000	704918	19.8		98.8	95433	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.113	12.249	-0.136	1.000	159776	NC			22709	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.701	12.774	-0.073	1.000	729464	22.6		113	9252	
D 23 13C8 FOSA										
506.0 > 78.0	12.701	12.774	-0.073		1967861	41.4		82.9	20586	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.826	12.911	-0.085	1.000	162585	NC			18902	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.826	12.911	-0.085	1.000	162585	16.1		83.7		
D 26 13C2 PFUnA										
565.0 > 520.0	12.868	12.957	-0.089		2130706	56.3		113	82928	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.878	12.957	-0.079	1.000	783354	20.8		104	4121	
D 28 13C2 PFDoA										
615.0 > 570.0	13.490	13.569	-0.079		2309024	53.4		107	39764	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.490	13.571	-0.081	1.000	715830	21.1		106	2105	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.956	14.083	-0.127	1.000	183510	NC			8307	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.010	14.091	-0.081	1.000	1004627	23.5		118	937	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.454	14.533	-0.079		2086563	55.6		111	52401	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.454	14.533	-0.079	1.000	558557	20.5		102	214	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.115	15.178	-0.063		2324324	54.0		108	13000	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.115	15.179	-0.064	1.000	1182625	21.5		108	1507	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.452	15.514	-0.062	1.000	881930	20.2		101	770	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017 Amount Added: 1.00 Units: mL

Report Date: 24-Feb-2016 15:17:13 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_051.d

Injection Date: 24-Feb-2016 07:03:03 Instrument ID: A6

Lims ID: CCV L4

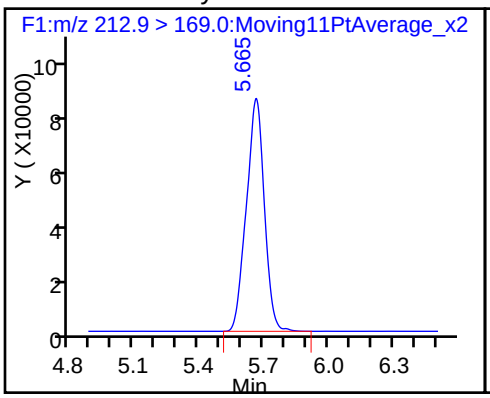
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 53

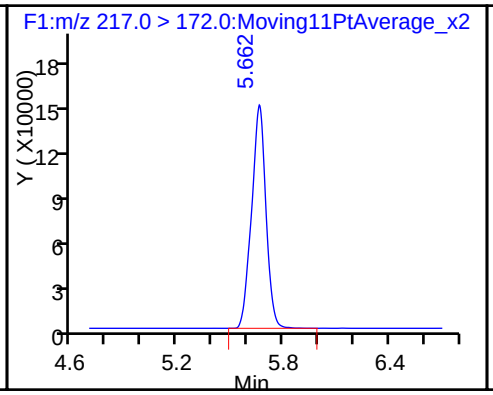
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

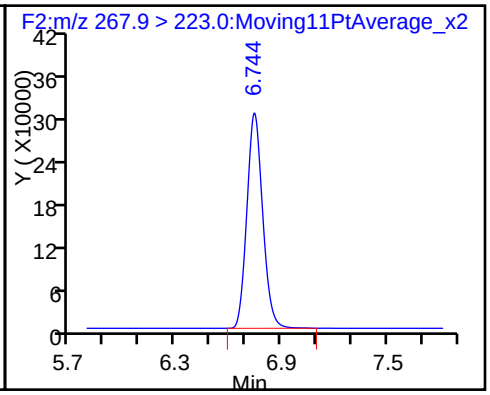
2 Perfluorobutyric acid



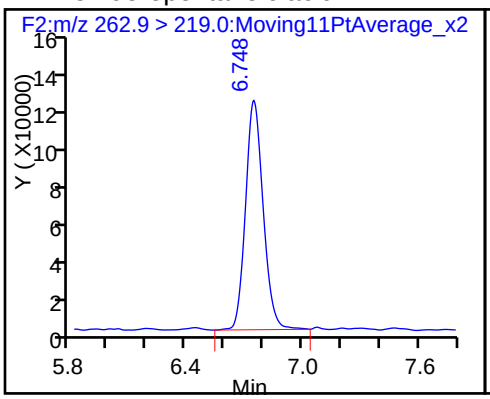
D 1 13C4 PFBA



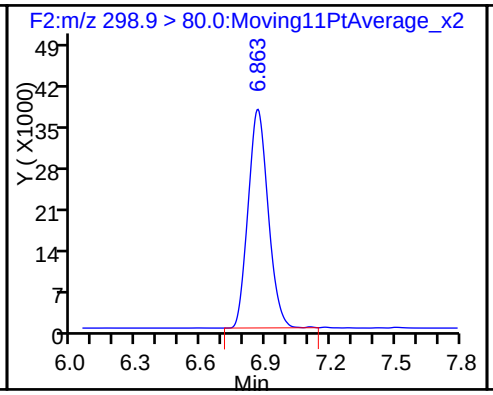
D 3 13C5-PFPeA



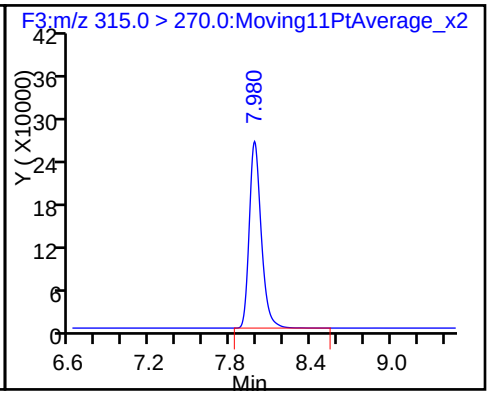
4 Perfluoropentanoic acid



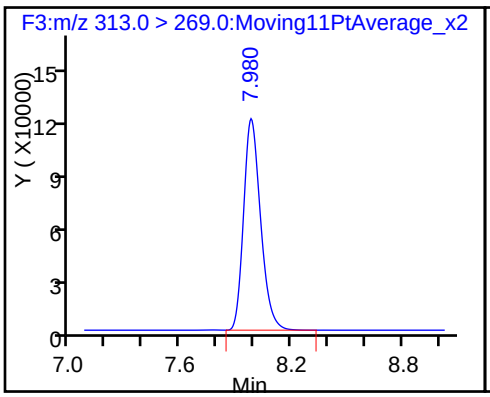
40 Perfluorobutanesulfonic acid



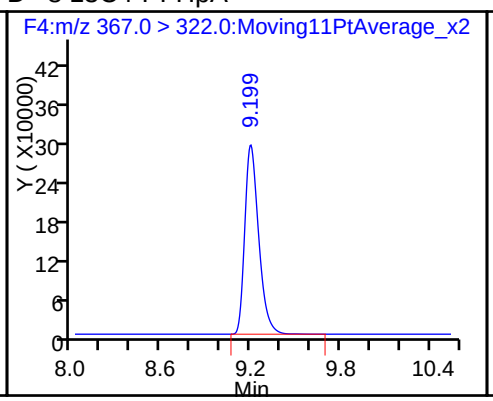
D 6 13C2 PFHxA



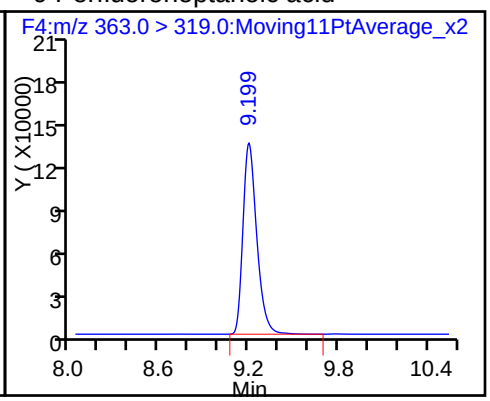
7 Perfluorohexanoic acid



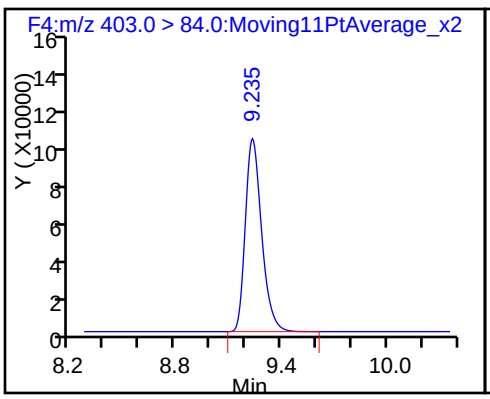
D 8 13C4-PFHpA



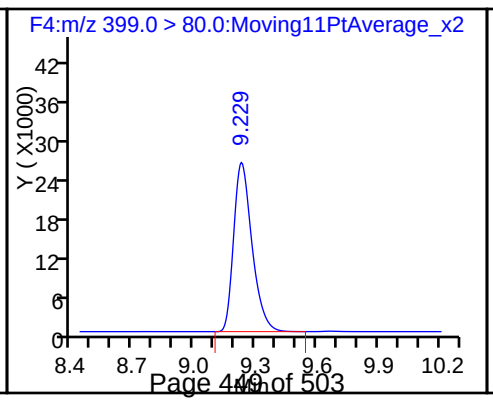
9 Perfluoroheptanoic acid



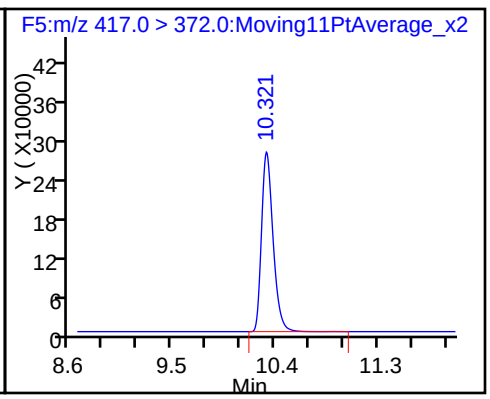
D 11 18O2 PFHxS



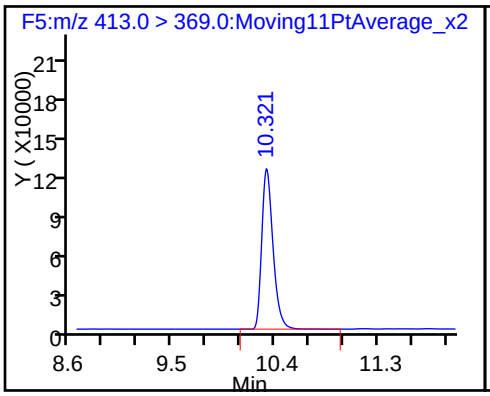
41 Perfluorohexanesulfonic acid



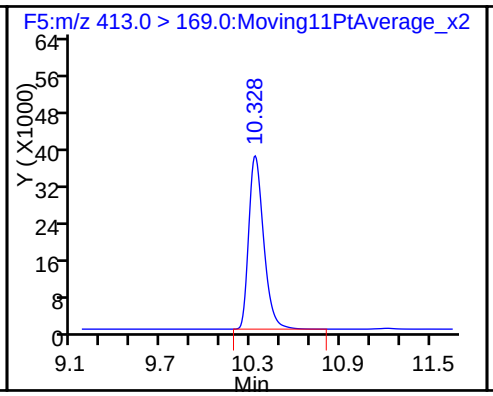
D 12 13C4 PFOA



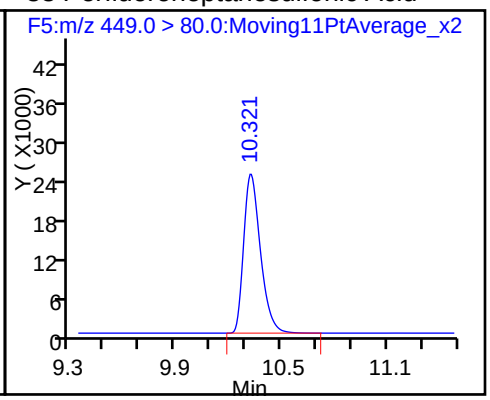
13 Perfluorooctanoic acid



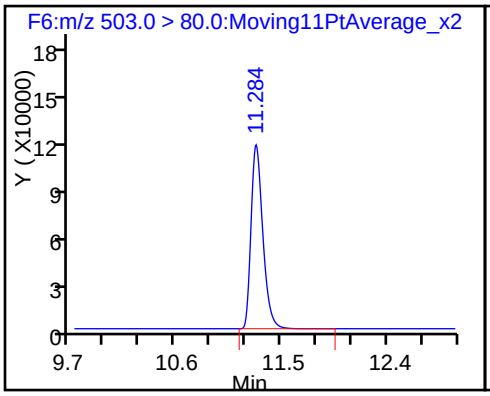
13 Perfluorooctanoic acid



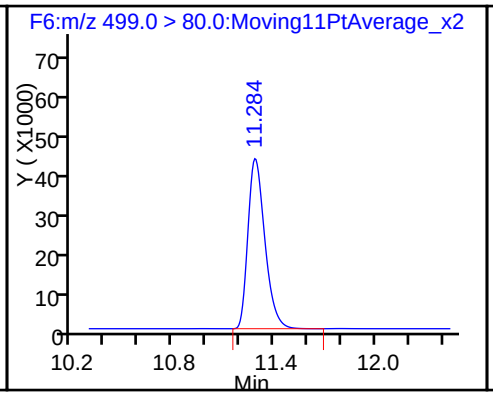
38 Perfluoroheptanesulfonic Acid



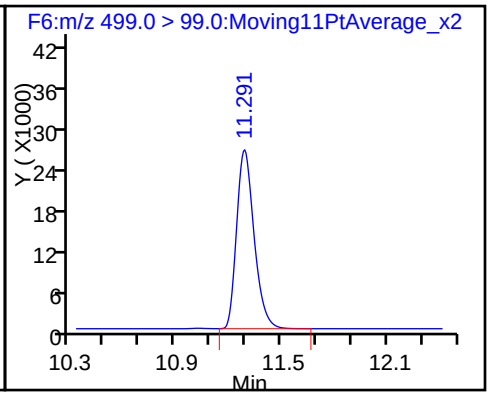
D 16 13C4 PFOS



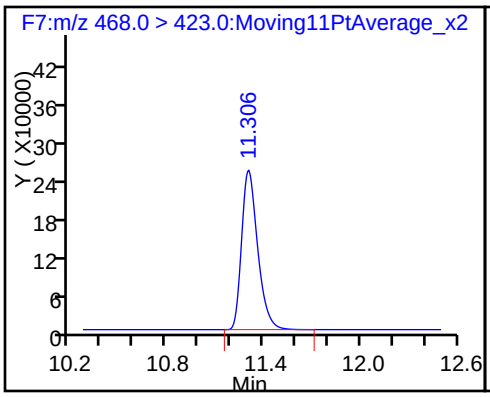
15 Perfluorooctane sulfonic acid



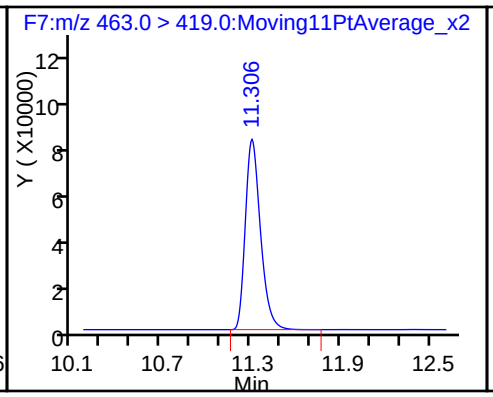
15 Perfluorooctane sulfonic acid



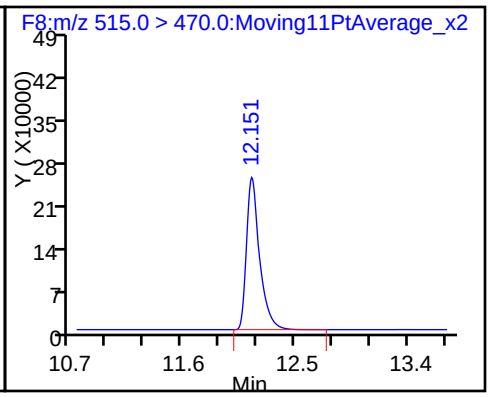
D 17 13C5 PFNA



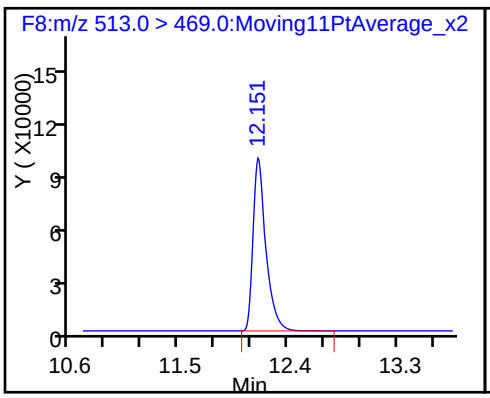
18 Perfluorononanoic acid



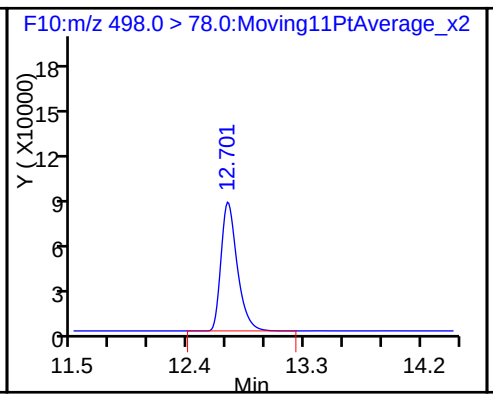
D 19 13C2 PFDA



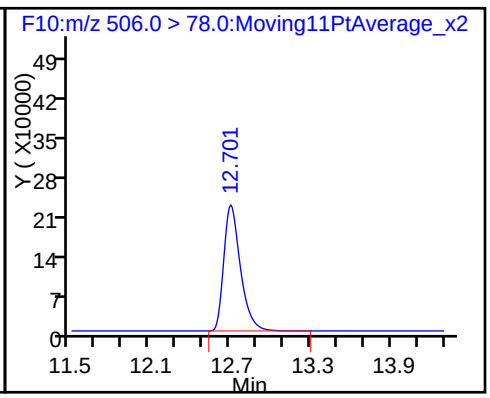
20 Perfluorodecanoic acid



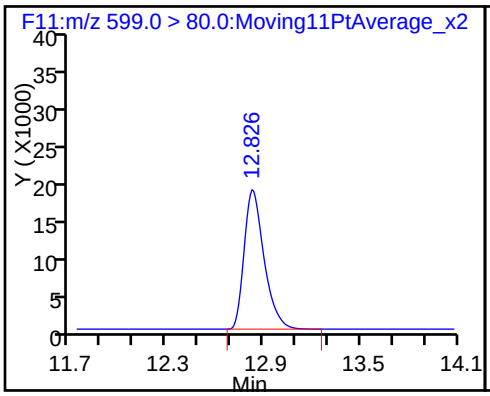
24 Perfluorooctane Sulfonamide



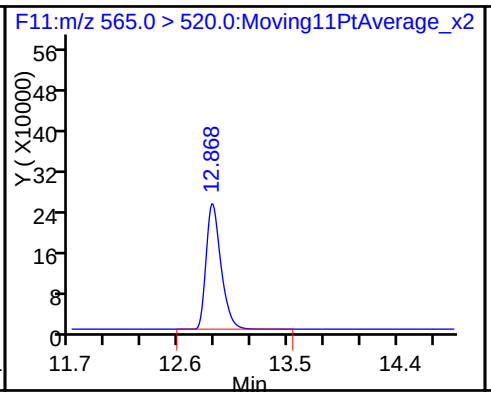
D 23 13C8 FOSA



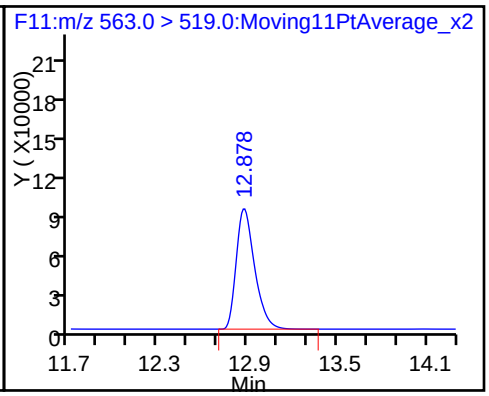
39 Perfluorodecane Sulfonic acid



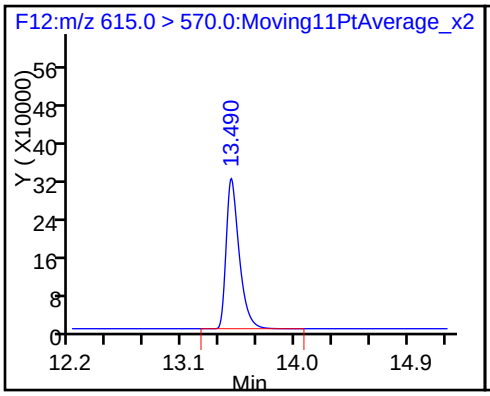
D 26 13C2 PFUnA



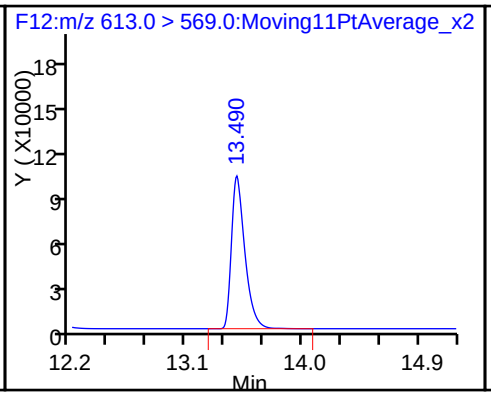
27 Perfluoroundecanoic acid



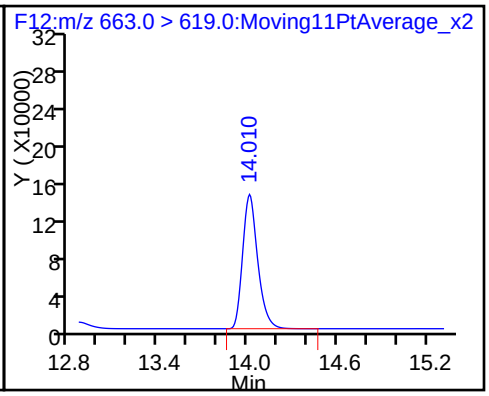
D 28 13C2 PFDoA



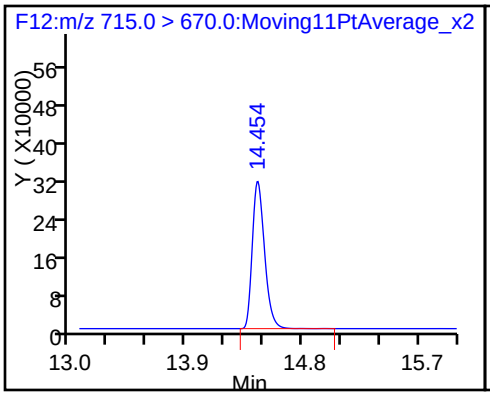
29 Perfluorododecanoic acid



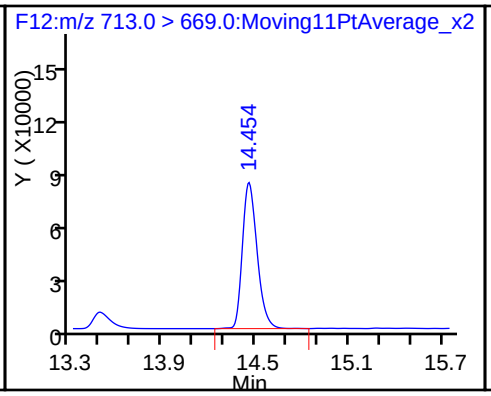
30 Perfluorotridecanoic acid



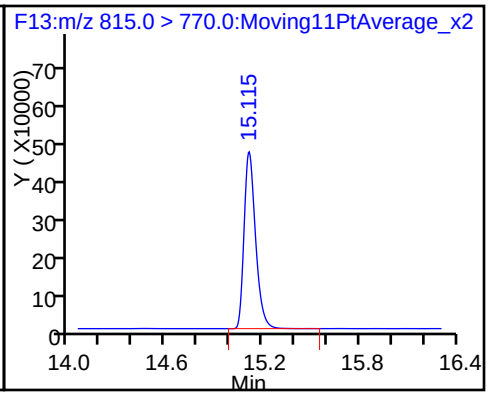
D 33 13C2-PFTeDA



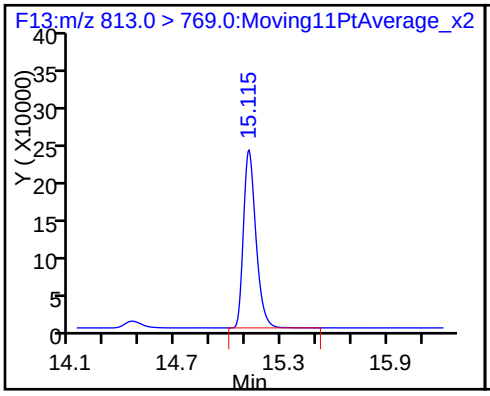
32 Perfluorotetradecanoic acid



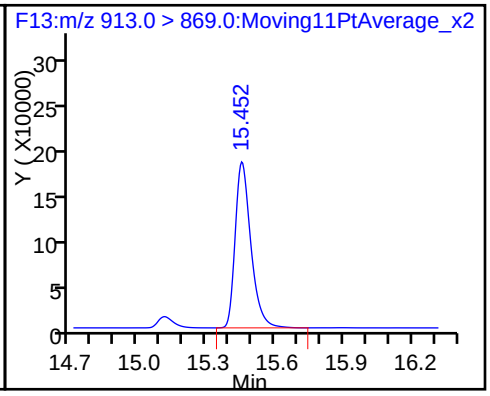
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-101153/1-A

Matrix: Water | Lab File ID: 23FEB2016A6A_028.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 500(mL) | Date Analyzed: 02/23/2016 22:54

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		25-150
STL00990	13C4 PFOA	110		25-150
STL00991	13C4 PFOS	101		25-150
STL01892	13C4-PFHpA	120		25-150
STL00995	13C5 PFNA	104		25-150
STL00994	18O2 PFHxS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_028.d
Lims ID: MB 320-101153/1-A
Client ID:
Sample Type: MB
Inject. Date: 23-Feb-2016 22:54:56 ALS Bottle#: 22 Worklist Smp#: 27
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: MB 320-101153/1-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:00:18 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 09:52:46

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	5.662	5.697	-0.035	1.000	7122	0.5911			176	
D 1 13C4 PFBA										
217.0 > 172.0	5.662	5.698	-0.036		942470	50.9		102	29781	
D 3 13C5-PFPeA										
267.9 > 223.0	6.744	6.804	-0.060		2046908	57.0		114	38705	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.891	6.805	0.086	1.000	1262	0.0305			0.7	
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	8.050	-0.070		1676243	50.1		100	126347	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.975	8.053	-0.078	1.000	3905	0.1108			218	
D 8 13C4-PFHpA										
367.0 > 322.0	9.200	9.283	-0.083		2124722	60.1		120	47630	
D 11 18O2 PFHxS										
403.0 > 84.0	9.235	9.319	-0.084		717924	49.0		104	56745	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.270	9.324	-0.054	1.000	489	NC			31.0	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.270	9.324	-0.054	1.000	489	0.4130				
D 12 13C4 PFOA										
417.0 > 372.0	10.322	10.407	-0.085		2088517	55.0		110	14061	
D 16 13C4 PFOS										
503.0 > 80.0	11.284	11.369	-0.085		847985	48.1		101	41170	
D 17 13C5 PFNA										
468.0 > 423.0	11.307	11.390	-0.083		1684376	52.0		104	121536	
D 19 13C2 PFDA										
515.0 > 470.0	12.152	12.232	-0.080		1888101	64.3		129	51257	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
20 Perfluorodecanoic acid										
513.0 > 469.0	12.152	12.234	-0.082	1.000	5295	0.2589			400	
D 23 13C8 FOSA										
506.0 > 78.0	12.694	12.774	-0.080		1064194	22.4		44.8	6494	
D 26 13C2 PFUnA										
565.0 > 520.0	12.871	12.957	-0.086		2042814	54.0		108	34376	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.871	12.957	-0.086	1.000	21236	-0.0868			521	
D 28 13C2 PFDoA										
615.0 > 570.0	13.485	13.569	-0.084		2137066	49.4		98.8	29751	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.450	14.533	-0.083		1704662	45.4		90.8	25928	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.443	14.533	-0.090	1.000	10409	0.1522			4.8	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.114	15.178	-0.064		2079356	48.3		96.6	10030	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.114	15.179	-0.065	1.000	330893	2.72			817	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 24-Feb-2016 10:06:42 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_028.d

Injection Date: 23-Feb-2016 22:54:56 Instrument ID: A6

Lims ID: MB 320-101153/1-A

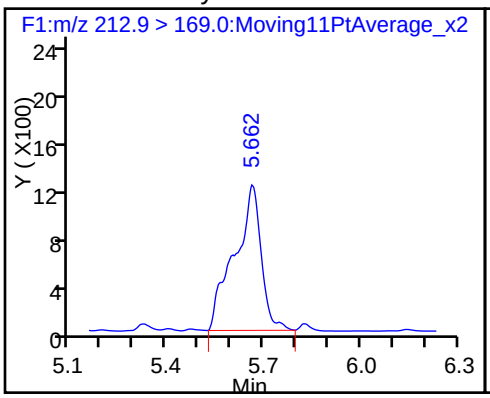
Client ID:

Operator ID: JRB ALS Bottle#: 22 Worklist Smp#: 27

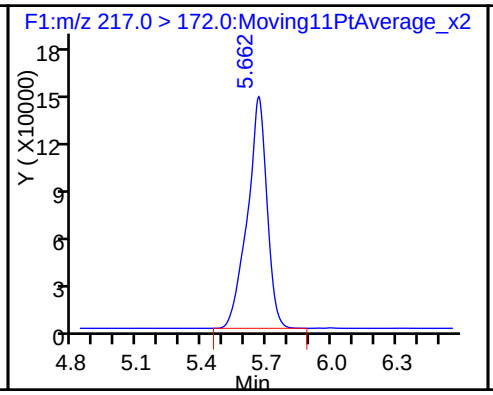
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

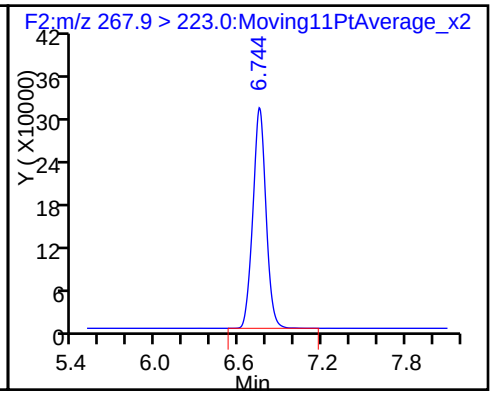
2 Perfluorobutyric acid



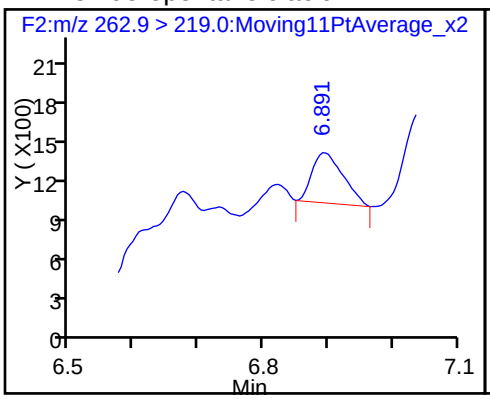
D 1 13C4 PFBA



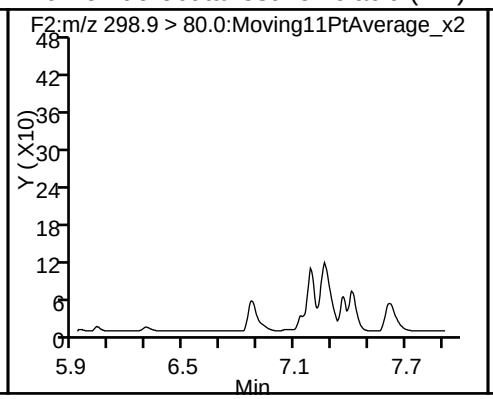
D 3 13C5-PFPeA



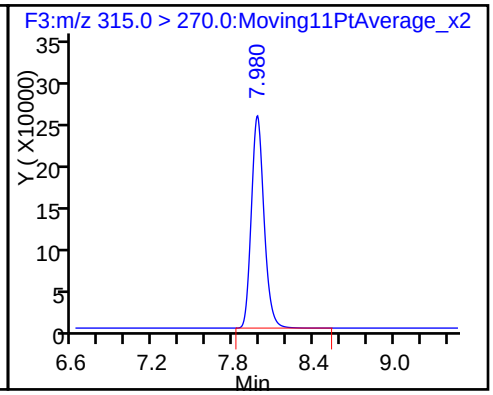
4 Perfluoropentanoic acid



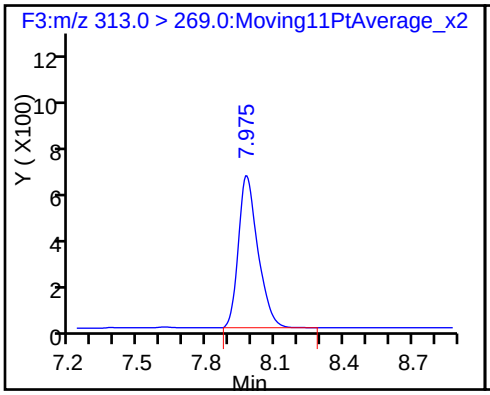
40 Perfluorobutanesulfonic acid (ND)



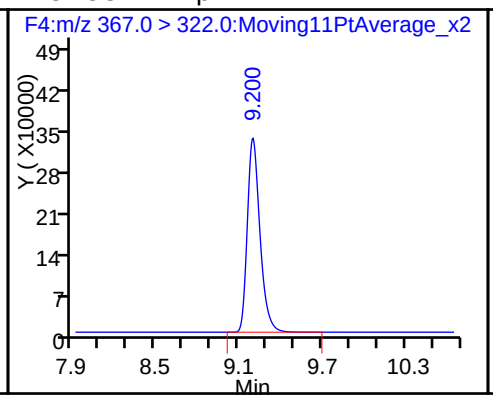
D 6 13C2 PFHxA



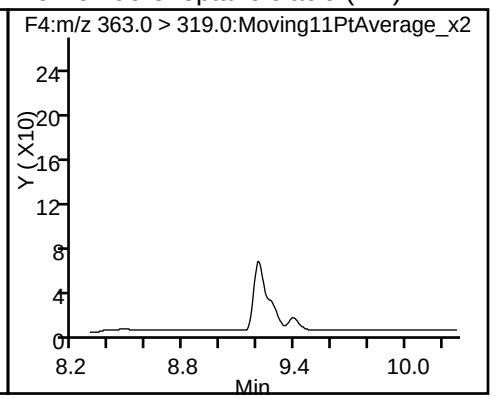
7 Perfluorohexanoic acid



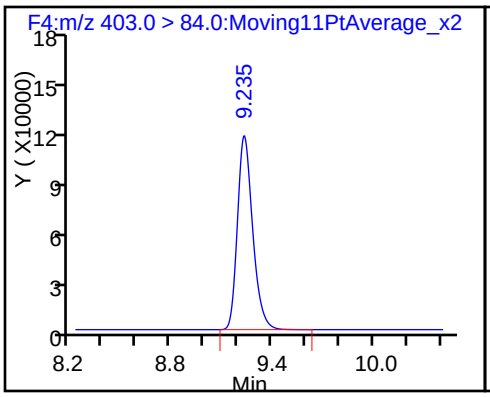
D 8 13C4-PFHpA



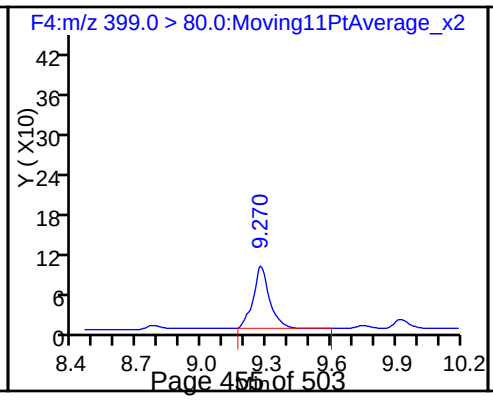
9 Perfluoroheptanoic acid (ND)



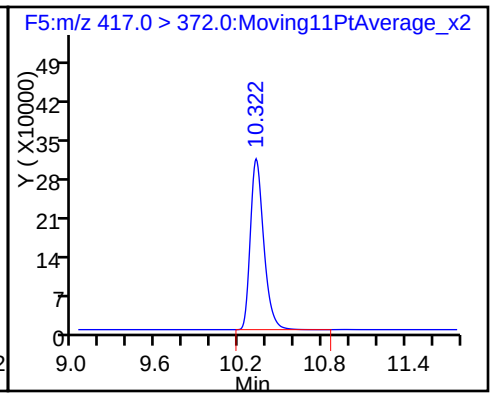
D 11 18O2 PFHxS



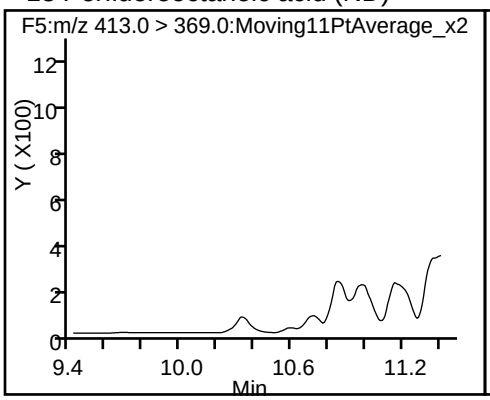
41 Perfluorohexanesulfonic acid



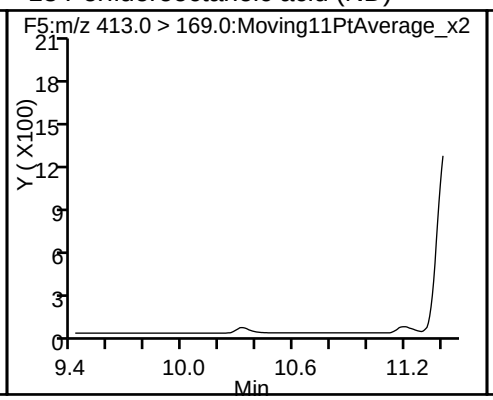
D 12 13C4 PFOA



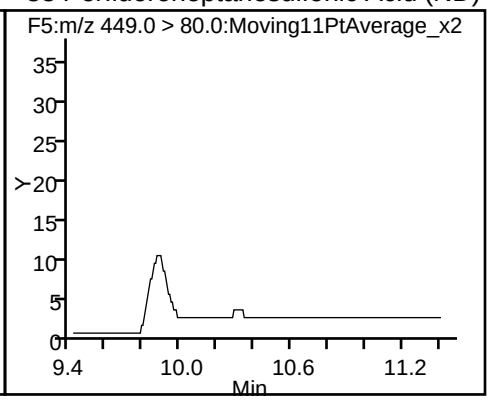
13 Perfluorooctanoic acid (ND)



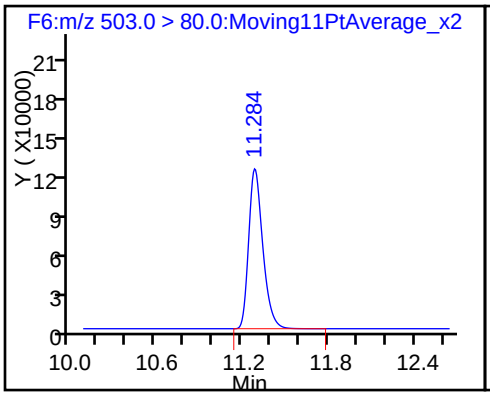
13 Perfluorooctanoic acid (ND)



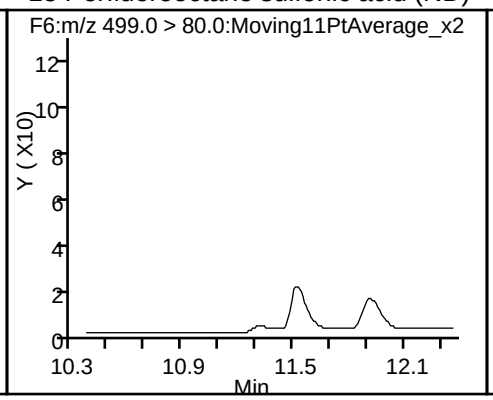
38 Perfluoroheptanesulfonic Acid (ND)



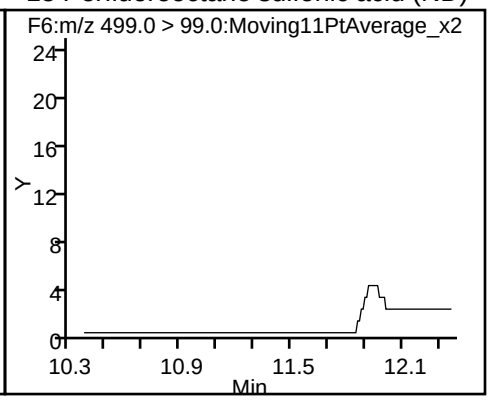
D 16 13C4 PFOS



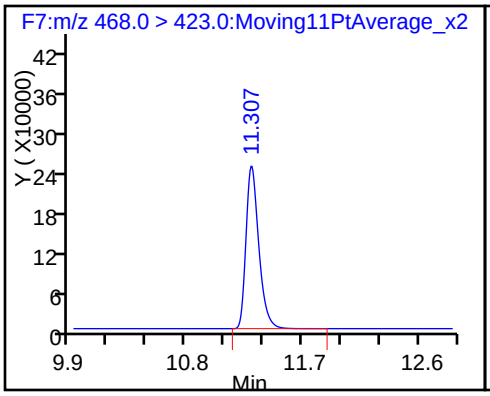
15 Perfluorooctane sulfonic acid (ND)



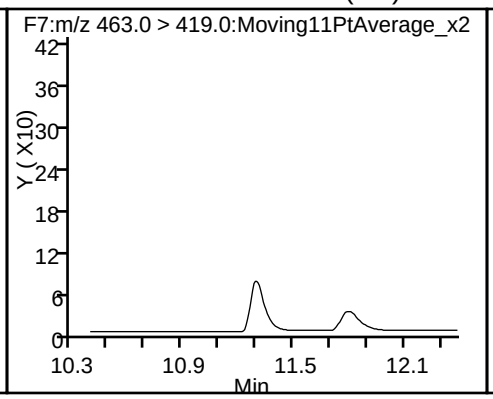
15 Perfluorooctane sulfonic acid (ND)



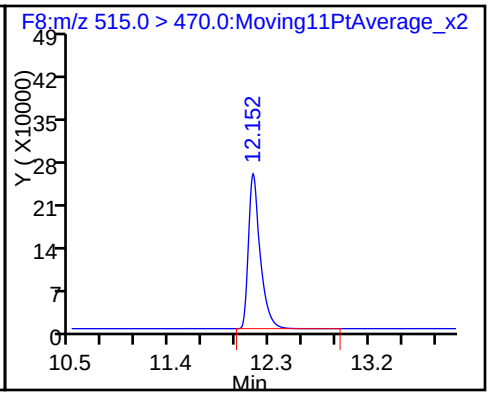
D 17 13C5 PFNA



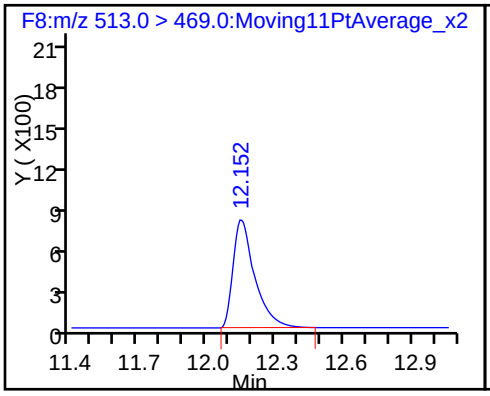
18 Perfluorononanoic acid (ND)



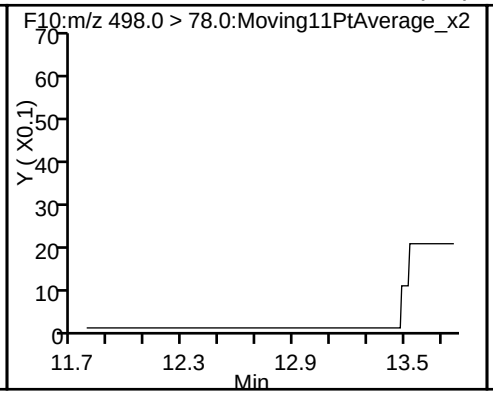
D 19 13C2 PFDA



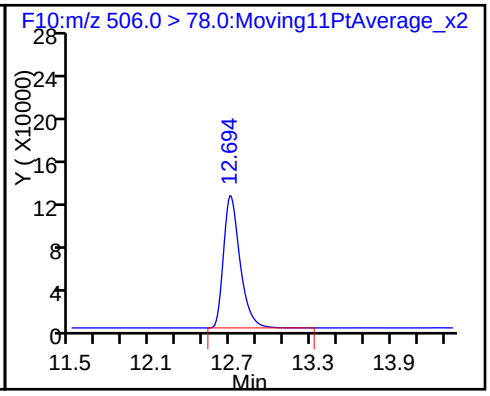
20 Perfluorodecanoic acid



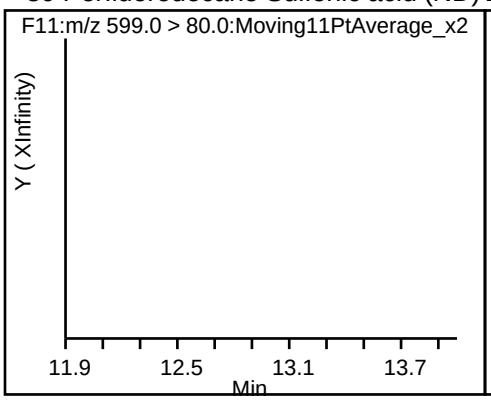
24 Perfluorooctane Sulfonamide (ND)



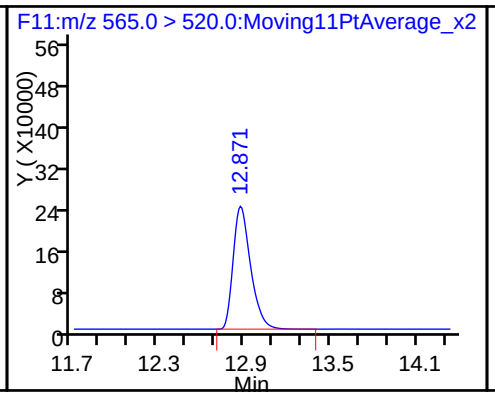
D 23 13C8 FOSA



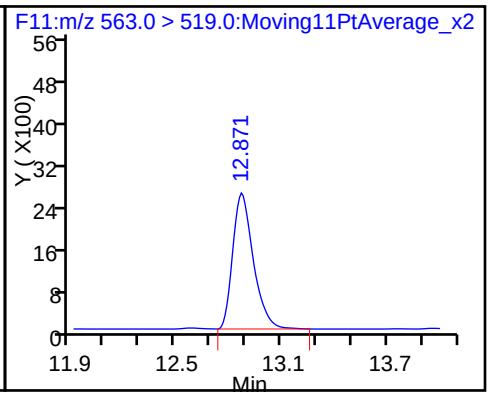
39 Perfluorodecane Sulfonic acid (ND)



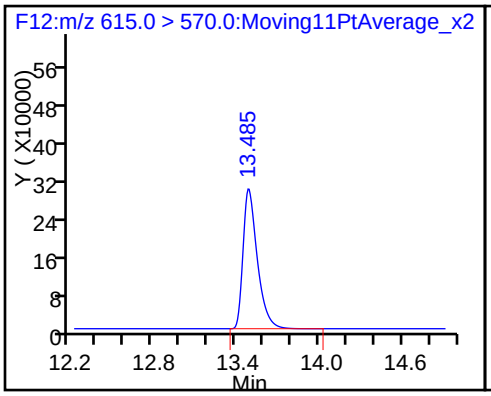
D 26 13C2 PFUnA



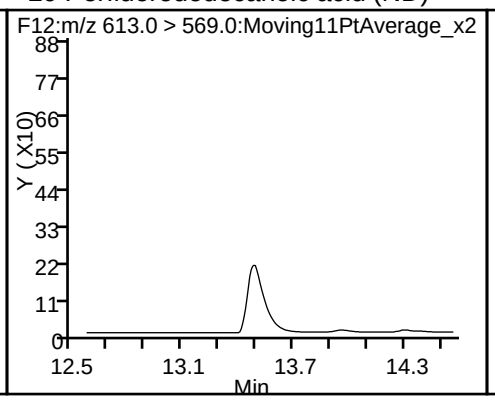
27 Perfluoroundecanoic acid



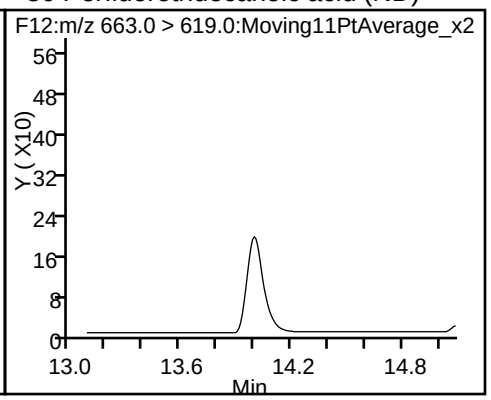
D 28 13C2 PFDoA



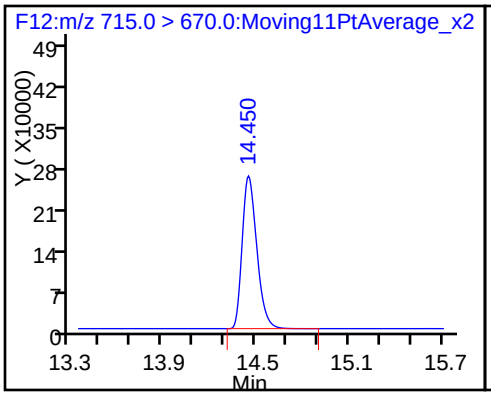
29 Perfluorododecanoic acid (ND)



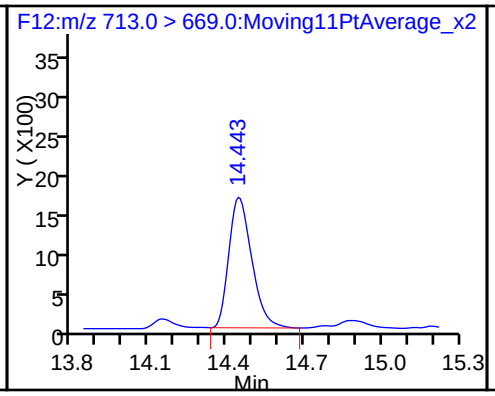
30 Perfluorotridecanoic acid (ND)



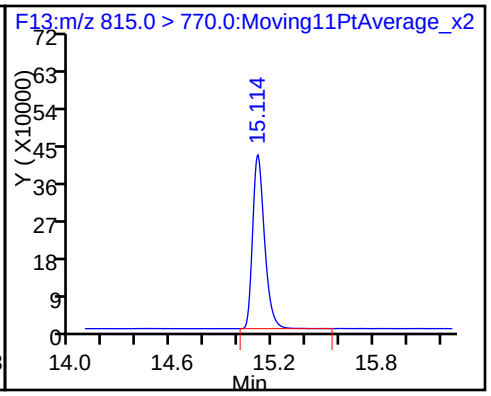
D 33 13C2-PFTeDA



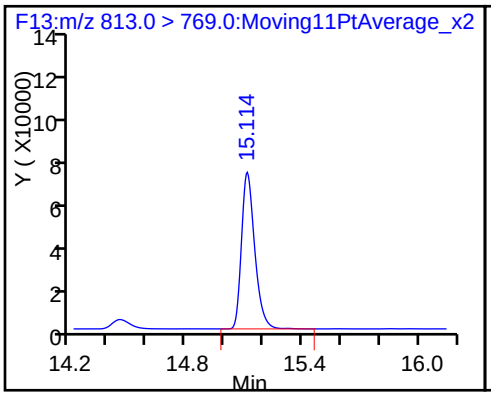
32 Perfluorotetradecanoic acid



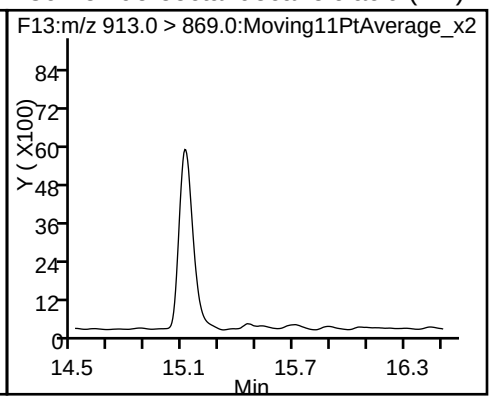
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-101153/2-A

Matrix: Water | Lab File ID: 23FEB2016A6A_029.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 500(mL) | Date Analyzed: 02/23/2016 23:16

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33.4		2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	34.2		2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32.7		2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	37.7		2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.7		4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	38.7		2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		25-150
STL00990	13C4 PFOA	102		25-150
STL00991	13C4 PFOS	91		25-150
STL01892	13C4-PFHpA	110		25-150
STL00995	13C5 PFNA	102		25-150
STL00994	18O2 PFHxS	102		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_029.d
Lims ID: LCS 320-101153/2-A
Client ID:
Sample Type: LCS
Inject. Date: 23-Feb-2016 23:16:09 ALS Bottle#: 23 Worklist Smp#: 28
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: LCS 320-101153/2-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:00:18 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 09:53:20

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	5.672	5.697	-0.025	1.000	486269	20.4		102	4758	
D 1 13C4 PFBA										
217.0 > 172.0	5.672	5.698	-0.026		844033	45.6		91.2	71784	
D 3 13C5-PFPeA										
267.9 > 223.0	6.753	6.804	-0.051		1836741	51.2		102	43173	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.757	6.805	-0.048	1.000	724278	19.5		97.6	176	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.868	6.918	-0.050	1.000	290690	NC			1423	
298.9 > 99.0	6.868	6.918	-0.050	1.000	156089		1.86(0.00-0.00)		2425	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.868	6.918	-0.050	1.000	290690	16.7		94.5		
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	8.050	-0.065		1582185	47.3		94.6	49951	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	8.053	-0.068	1.000	704907	21.2		106	2231	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.061	8.158	-0.097	0.872	198193	NC			16115	
D 8 13C4-PFHpA										
367.0 > 322.0	9.211	9.283	-0.072		1943034	55.0		110	101583	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.205	9.288	-0.083	1.000	699564	17.1		85.5	36194	
D 11 18O2 PFHxS										
403.0 > 84.0	9.241	9.319	-0.078		706630	48.3		102	57360	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.241	9.324	-0.083	1.000	185986	NC			5235	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.241	9.324	-0.083	1.000	185986	16.4		86.5		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.329	10.407	-0.078		1944352	51.2		102	94923	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.329	10.410	-0.081	1.000	729688	19.4		96.9	1264	
413.0 > 169.0	10.329	10.410	-0.081	1.000	248735		2.93(0.00-0.00)		2803	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.336	10.413	-0.077	1.000	164587	NC			3496	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.336	10.413	-0.077	1.000	164587	15.2		80.0		
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		771032	43.7		91.4	56421	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.298	11.371	-0.073	1.000	333143	20.8		109	517	
499.0 > 99.0	11.298	11.371	-0.073	1.000	160827		2.07(0.00-0.00)		5771	
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1658444	51.2		102	238460	
18 Perfluorononanoic acid										
463.0 > 419.0	11.314	11.393	-0.079	1.000	513633	18.8		94.2	36935	
D 19 13C2 PFDA										
515.0 > 470.0	12.159	12.232	-0.073		1679361	57.2		114	14251	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.159	12.234	-0.075	1.000	647399	19.9		99.5	44428	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.129	12.249	-0.120	1.000	205961	NC			14904	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.712	12.774	-0.062	1.000	344254	20.1		100	13384	
D 23 13C8 FOSA										
506.0 > 78.0	12.702	12.774	-0.072		1046551	22.0		44.1	10976	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.837	12.911	-0.074	1.000	167532	NC			6674	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.837	12.911	-0.074	1.000	167532	17.4		90.1		
D 26 13C2 PFUnA										
565.0 > 520.0	12.879	12.957	-0.078		1904538	50.3		101	11802	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.879	12.957	-0.078	1.000	739894	22.0		110	2718	
D 28 13C2 PFDoA										
615.0 > 570.0	13.498	13.569	-0.071		2003705	46.3		92.6	30908	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.498	13.571	-0.073	1.000	566886	19.3		96.3	743	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.957	14.083	-0.126	1.000	162547	NC			7332	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.018	14.091	-0.073	1.000	737920	19.9		99.5	787	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.455	14.533	-0.078		1644091	43.8		87.5	25201	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.455	14.533	-0.078	1.000	432350	18.3		91.3	163	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.116	15.178	-0.062		1993584	46.3		92.6	10184	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.116	15.179	-0.063	1.000	1059860	22.4		112	3034	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.457	15.514	-0.057	1.000	842359	22.2		111	1057	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 24-Feb-2016 10:06:49 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_029.d

Injection Date: 23-Feb-2016 23:16:09 Instrument ID: A6

Lims ID: LCS 320-101153/2-A

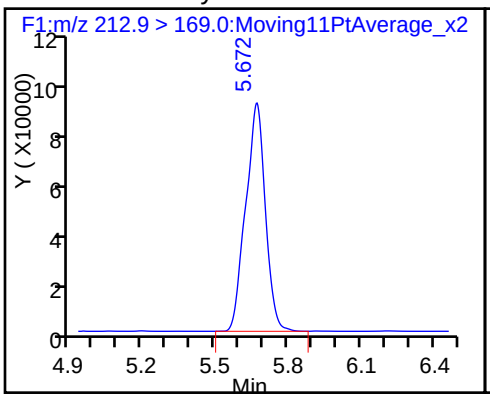
Client ID:

Operator ID: JRB ALS Bottle#: 23 Worklist Smp#: 28

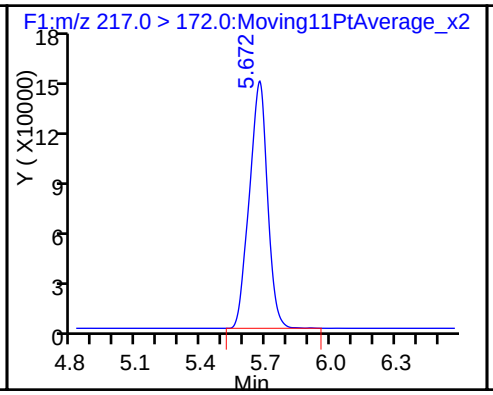
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

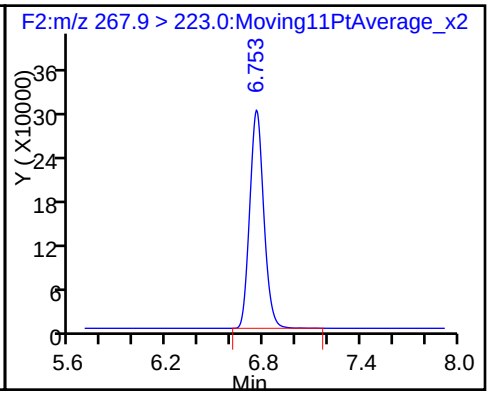
2 Perfluorobutyric acid



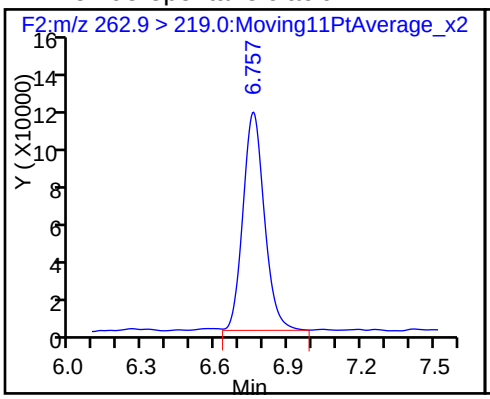
D 1 13C4 PFBA



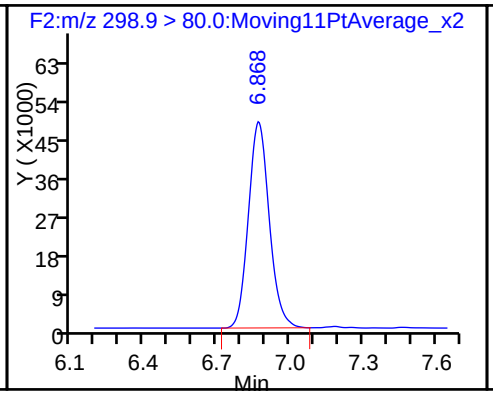
D 3 13C5-PFPeA



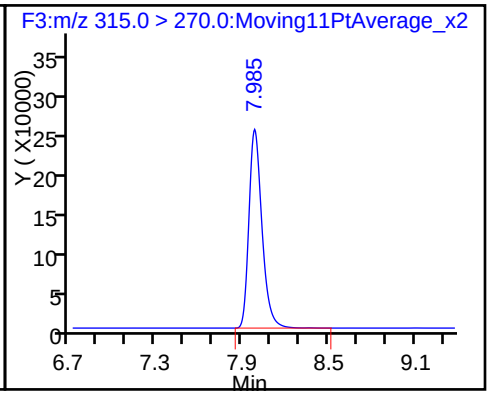
4 Perfluoropentanoic acid



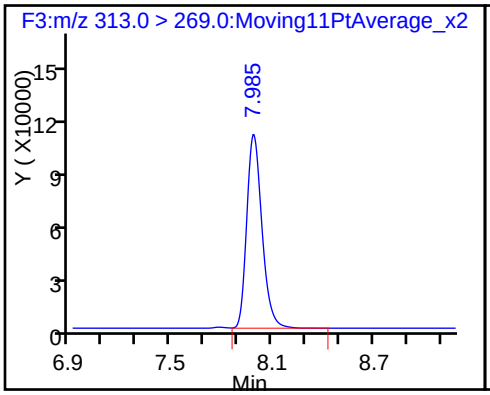
40 Perfluorobutanesulfonic acid



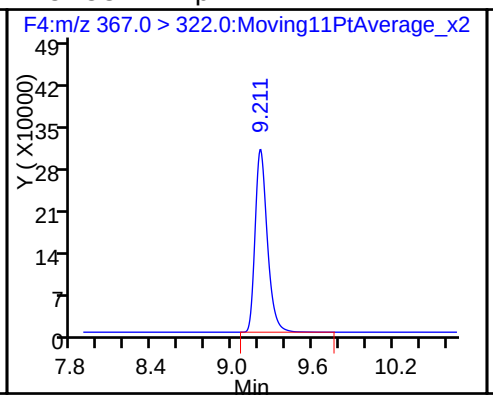
D 6 13C2 PFHxA



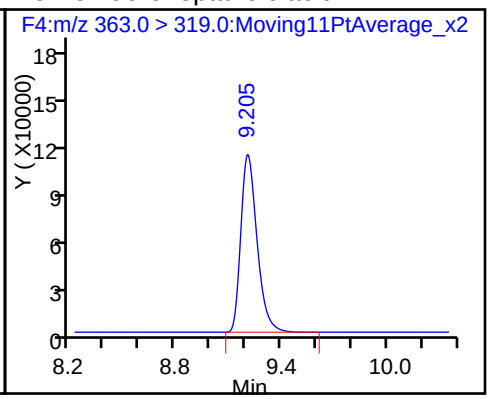
7 Perfluorohexanoic acid



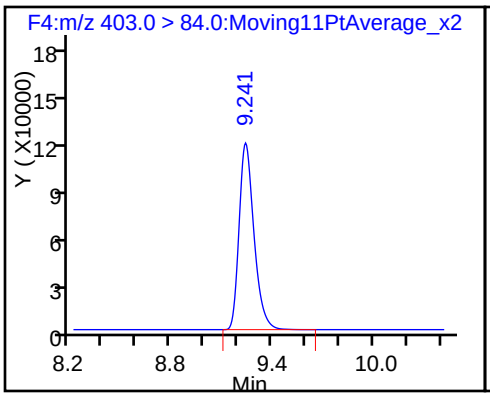
D 8 13C4-PFHpA



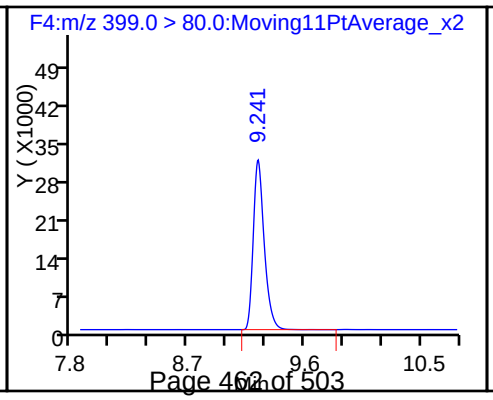
9 Perfluoroheptanoic acid



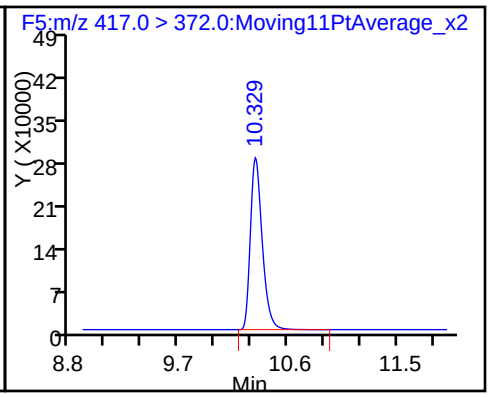
D 11 18O2 PFHxS



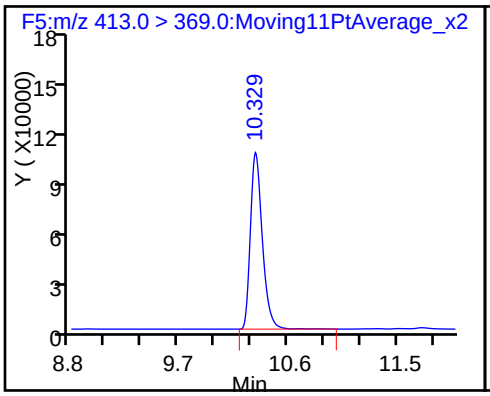
41 Perfluorohexanesulfonic acid



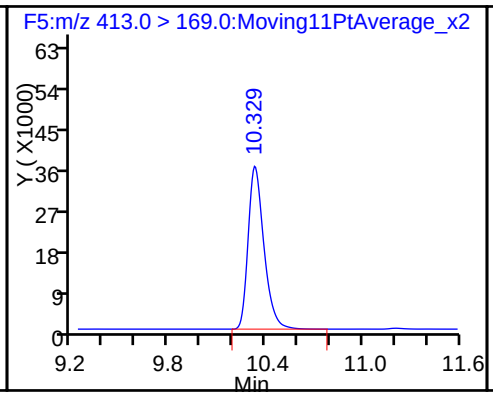
D 12 13C4 PFOA



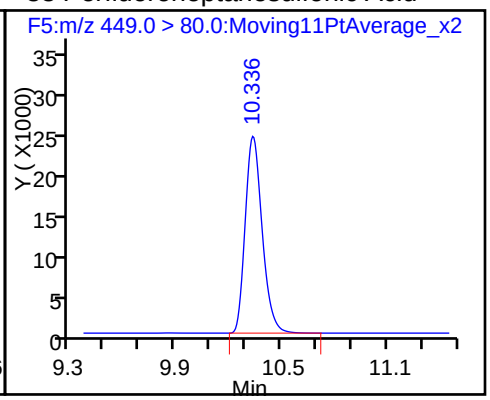
13 Perfluorooctanoic acid



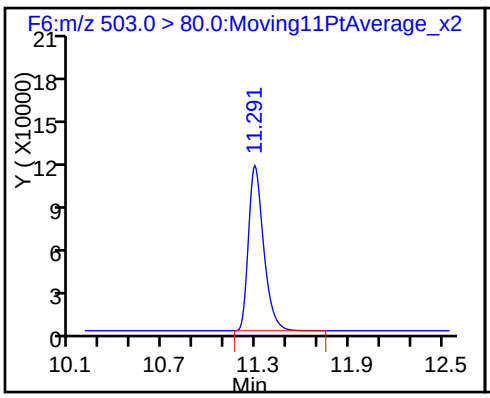
13 Perfluorooctanoic acid



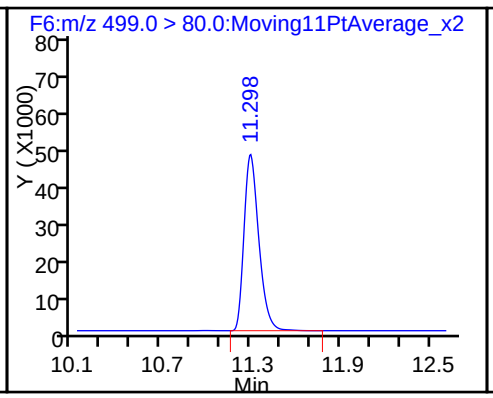
38 Perfluoroheptanesulfonic Acid



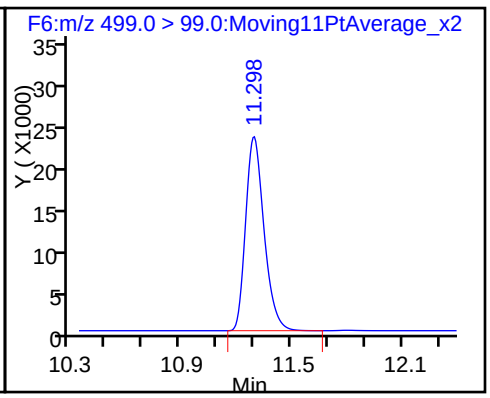
D 16 13C4 PFOS



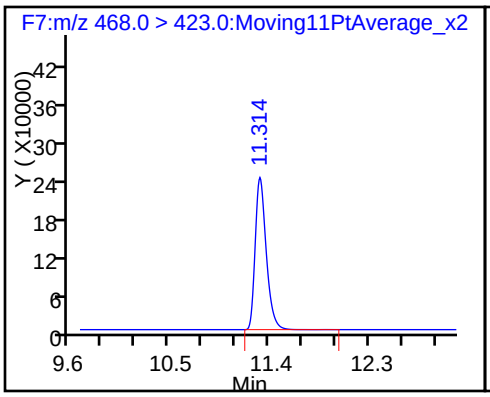
15 Perfluorooctane sulfonic acid



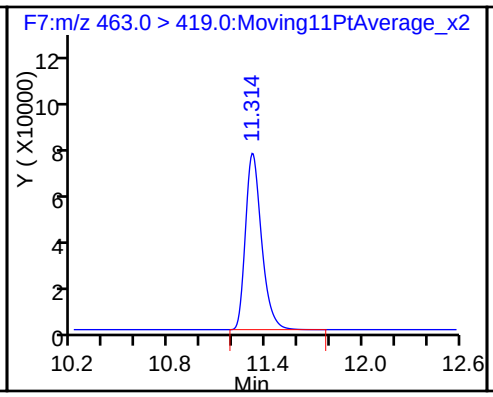
15 Perfluorooctane sulfonic acid



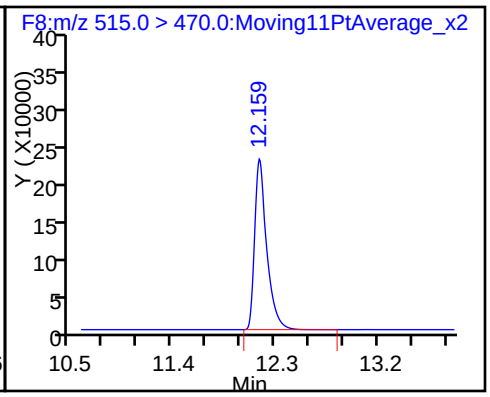
D 17 13C5 PFNA



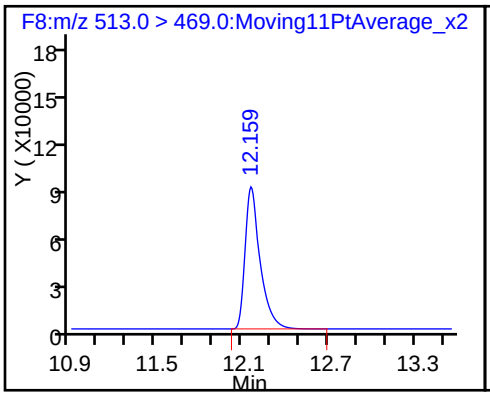
18 Perfluorononanoic acid



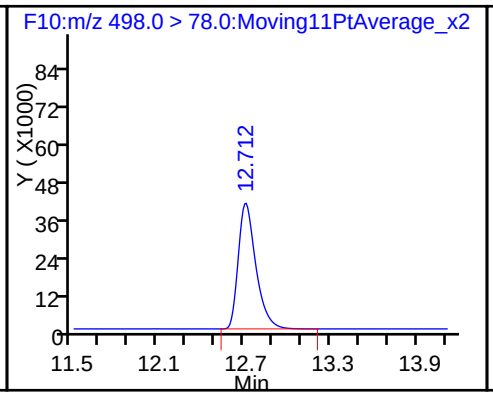
D 19 13C2 PFDA



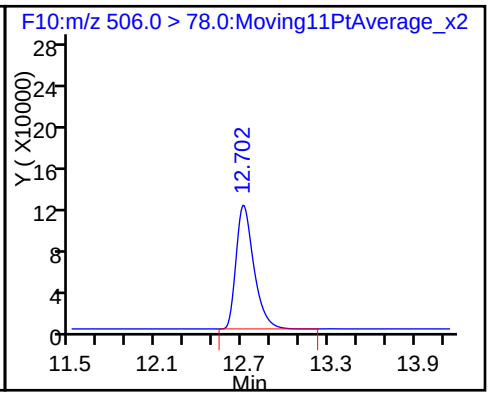
20 Perfluorodecanoic acid



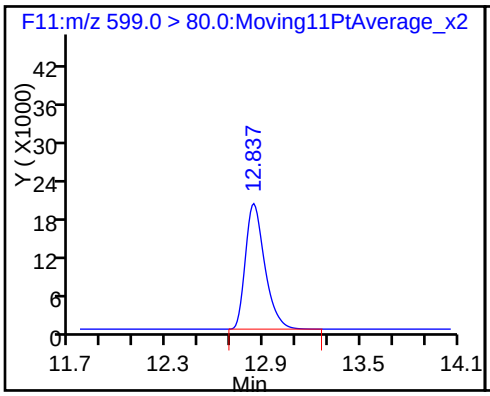
24 Perfluorooctane Sulfonamide



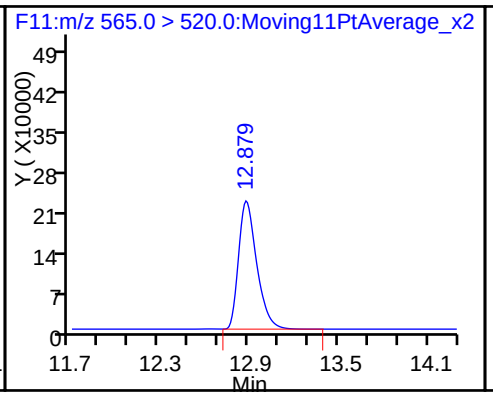
D 23 13C8 FOSA



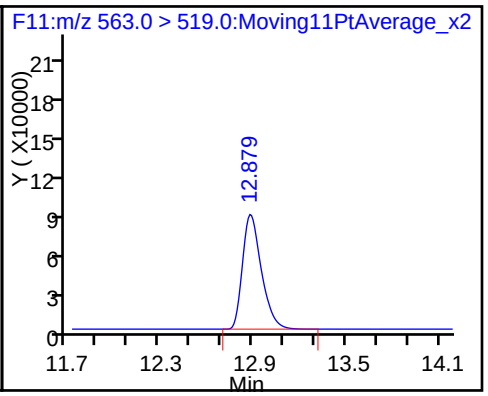
39 Perfluorodecane Sulfonic acid



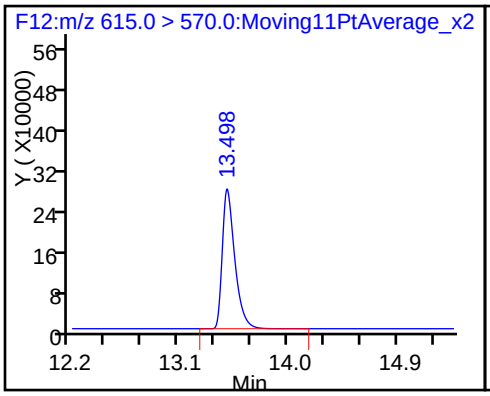
D 26 13C2 PFUnA



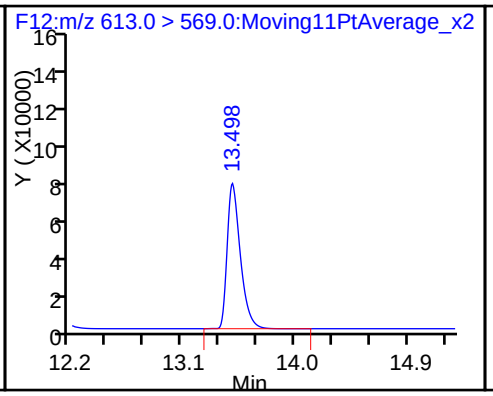
27 Perfluoroundecanoic acid



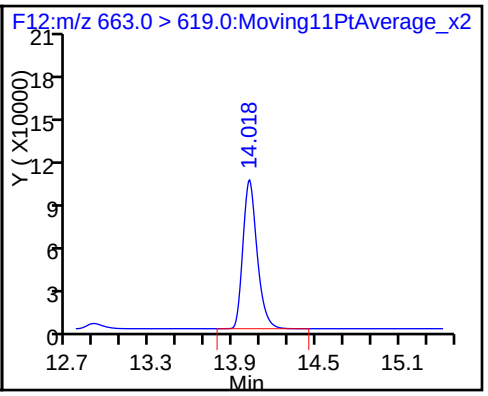
D 28 13C2 PFDoA



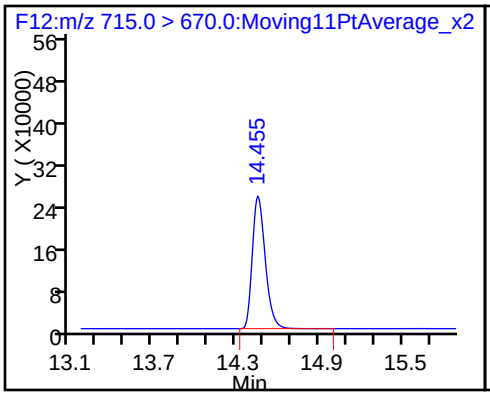
29 Perfluorododecanoic acid



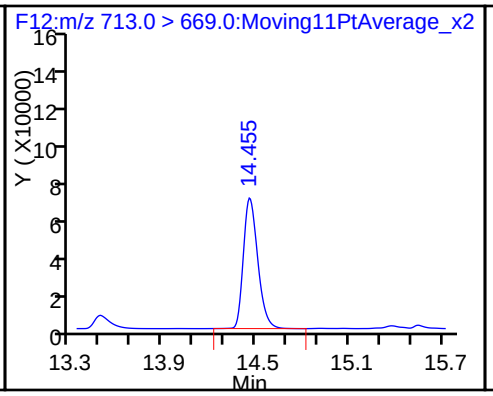
30 Perfluorotridecanoic acid



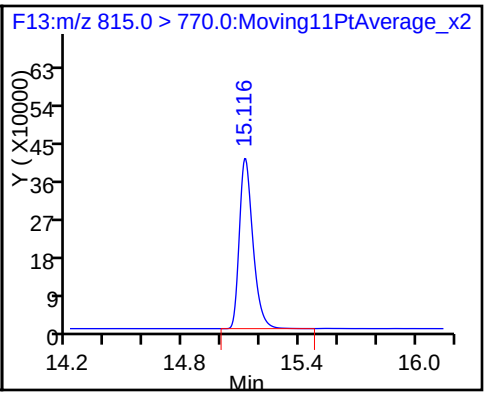
D 33 13C2-PFTeDA



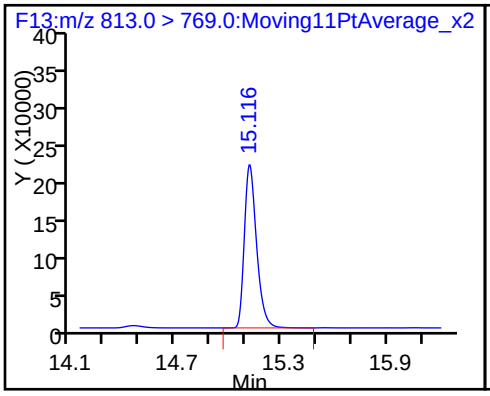
32 Perfluorotetradecanoic acid



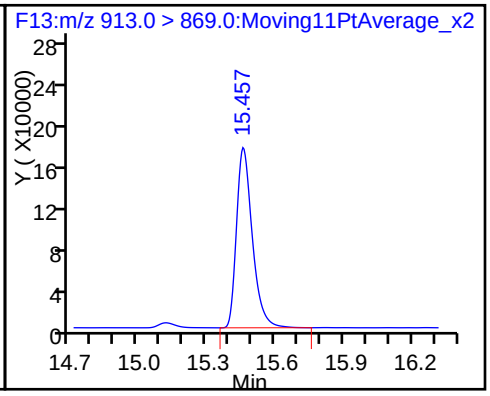
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17363-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 320-101153/3-A

Matrix: Water | Lab File ID: 23FEB2016A6A_030.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 02/22/2016 13:35

Sample wt/vol: 500(mL) | Date Analyzed: 02/23/2016 23:37

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 101347 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33.2		2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	36.9		2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32.3		2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	43.6		2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42.9		4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	40.3		2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		25-150
STL00990	13C4 PFOA	97		25-150
STL00991	13C4 PFOS	87		25-150
STL01892	13C4-PFHpA	109		25-150
STL00995	13C5 PFNA	93		25-150
STL00994	18O2 PFHxS	95		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_030.d
Lims ID: LCSD 320-101153/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 23-Feb-2016 23:37:24 ALS Bottle#: 24 Worklist Smp#: 29
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 320-101153/3-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 24-Feb-2016 10:00:18 Calib Date: 22-Feb-2016 13:36:43
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160222-28555.b\22FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK011

First Level Reviewer: barnettj Date: 24-Feb-2016 09:53:43

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	5.666	5.697	-0.031	1.000	486900	20.8		104	8598	
D 1 13C4 PFBA										
217.0 > 172.0	5.663	5.698	-0.035		831501	44.9		89.8	48166	
D 3 13C5-PFPeA										
267.9 > 223.0	6.748	6.804	-0.056		1792815	49.9		99.9	26723	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.748	6.805	-0.057	1.000	723055	20.0		99.8	116	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.859	6.918	-0.059	1.000	267868	NC			2040	
298.9 > 99.0	6.863	6.918	-0.055	1.001	128505		2.08(0.00-0.00)		2635	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.859	6.918	-0.059	1.000	267868	16.6		94.0		
D 6 13C2 PFHxA										
315.0 > 270.0	7.985	8.050	-0.065		1585836	47.4		94.8	50394	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.985	8.053	-0.068	1.000	672872	20.2		101	1764	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.056	8.158	-0.102	0.872	200766	NC			16510	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.283	-0.078		1926953	54.5		109	99832	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.205	9.288	-0.083	1.000	750331	18.5		92.4	14879	
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.319	-0.079		654780	44.7		94.5	9573	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.240	9.324	-0.084	1.000	170111	NC			5376	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.240	9.324	-0.084	1.000	170111	16.2		85.4		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.328	10.407	-0.079		1838459	48.4		96.9	9823	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.328	10.410	-0.082	1.000	717873	20.2		101	508	
413.0 > 169.0	10.328	10.410	-0.082	1.000	226968		3.16(0.00-0.00)		4828	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.335	10.413	-0.078	1.000	181664	NC			13689	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.335	10.413	-0.078	1.000	181664	17.7		92.8		
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.369	-0.078		731459	41.5		86.7	26695	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.298	11.371	-0.073	1.000	325737	21.5		112	1367	
499.0 > 99.0	11.291	11.371	-0.080	0.999	168357		1.93(0.00-0.00)		12529	
D 17 13C5 PFNA										
468.0 > 423.0	11.314	11.390	-0.076		1512570	46.7		93.3	109475	
18 Perfluorononanoic acid										
463.0 > 419.0	11.314	11.393	-0.079	1.000	542711	21.8		109	26319	
D 19 13C2 PFDA										
515.0 > 470.0	12.159	12.232	-0.073		1776576	60.5		121	122562	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.159	12.234	-0.075	1.000	684586	19.9		99.4	46863	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.129	12.249	-0.120	1.000	160978	NC			7525	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.712	12.774	-0.062	1.000	417082	22.8		114	24230	
D 23 13C8 FOSA										
506.0 > 78.0	12.712	12.774	-0.062		1118473	23.6		47.1	43027	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.837	12.911	-0.074	1.000	190987	NC			7645	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.837	12.911	-0.074	1.000	190987	20.8		108		
D 26 13C2 PFUnA										
565.0 > 520.0	12.879	12.957	-0.078		2094536	55.4		111	49703	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.879	12.957	-0.078	1.000	800464	21.6		108	18938	
D 28 13C2 PFDoA										
615.0 > 570.0	13.498	13.569	-0.071		2488285	57.5		115	114676	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.498	13.571	-0.073	1.000	777012	21.3		106	1697	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	13.957	14.083	-0.126	1.000	165704	NC			11417	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.018	14.091	-0.073	1.000	915901	19.9		99.5	1005	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.455	14.533	-0.078		1723834	45.9		91.8	52277	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.455	14.533	-0.078	1.000	493570	16.8		83.8	275	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.116	15.178	-0.062		2089861	48.5		97.1	7836	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.116	15.179	-0.063	1.000	1145161	18.8		93.9	2052	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.457	15.514	-0.057	1.000	934755	19.8		99.1	975	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 24-Feb-2016 10:06:56 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160223-28593.b\23FEB2016A6A_030.d

Injection Date: 23-Feb-2016 23:37:24 Instrument ID: A6

Lims ID: LCSD 320-101153/3-A

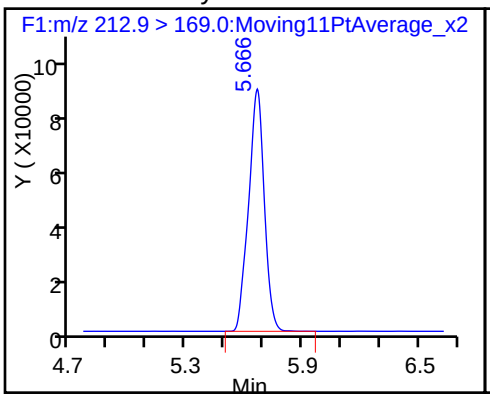
Client ID:

Operator ID: JRB ALS Bottle#: 24 Worklist Smp#: 29

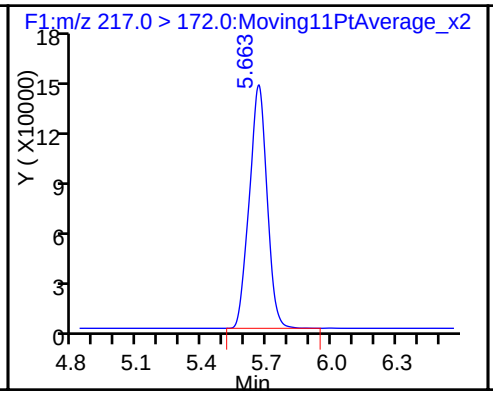
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

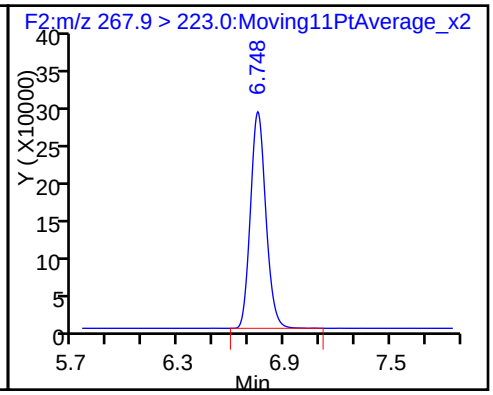
2 Perfluorobutyric acid



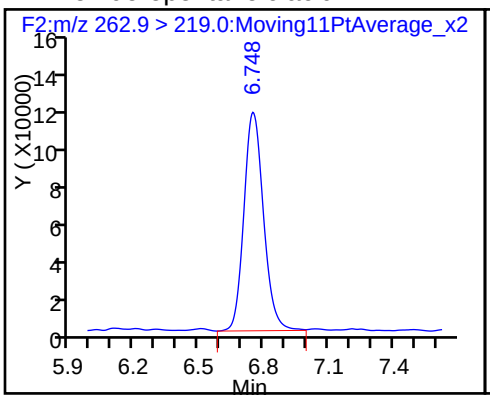
D 1 13C4 PFBA



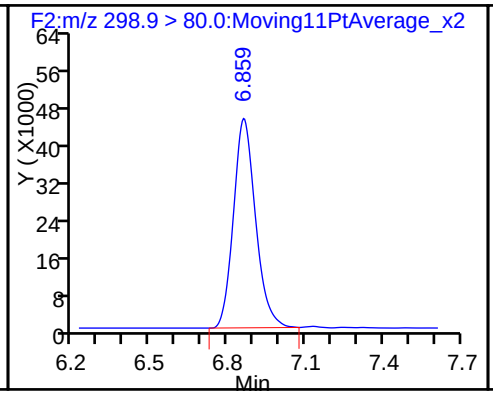
D 3 13C5-PFPeA



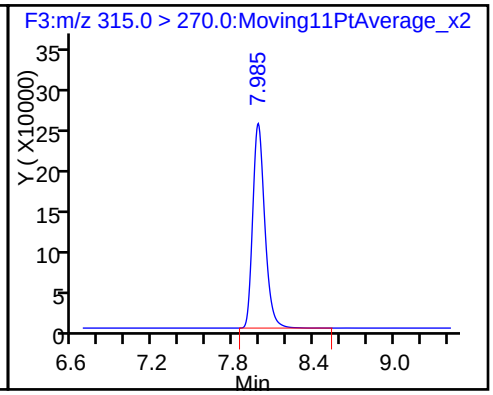
4 Perfluoropentanoic acid



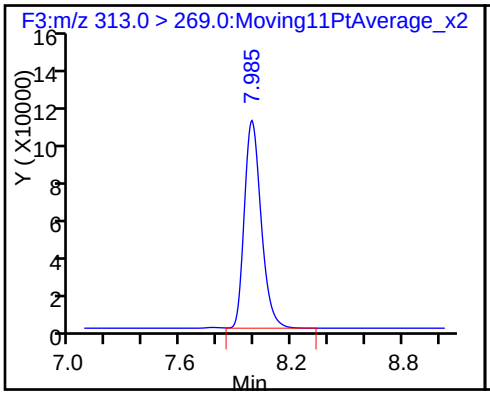
40 Perfluorobutanesulfonic acid



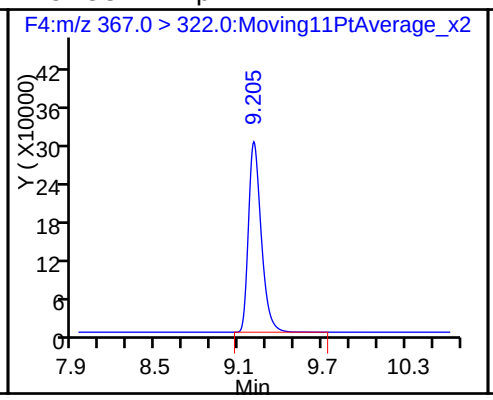
D 6 13C2 PFHxA



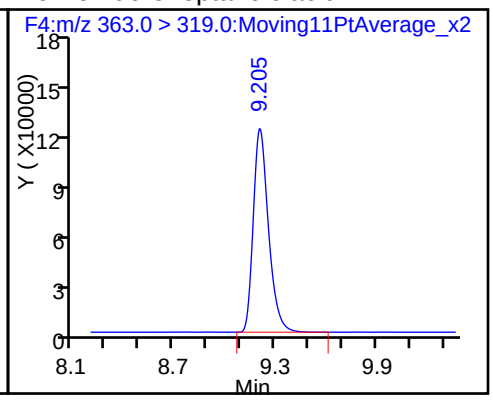
7 Perfluorohexanoic acid



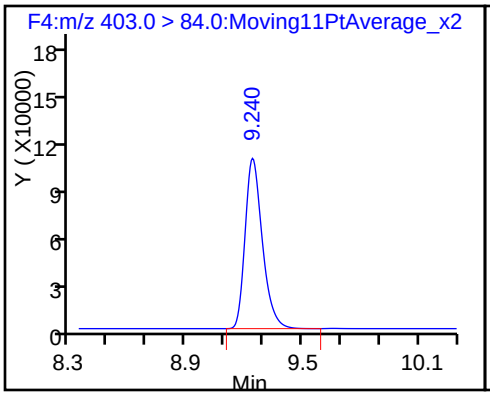
D 8 13C4-PFHpA



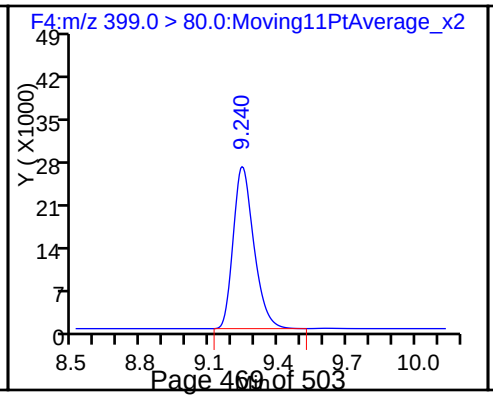
9 Perfluoroheptanoic acid



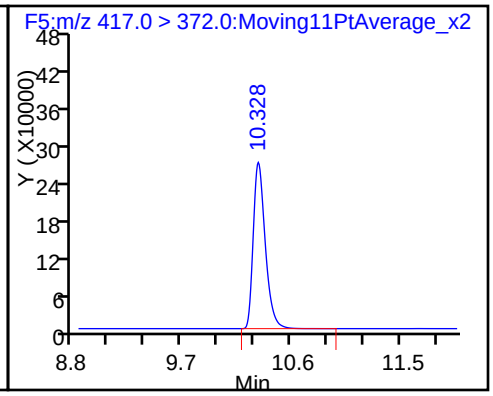
D 11 18O2 PFHxS



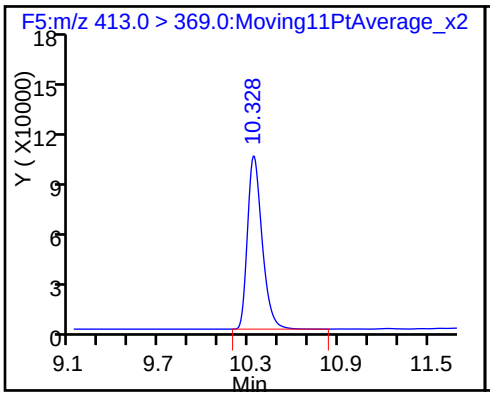
41 Perfluorohexanesulfonic acid



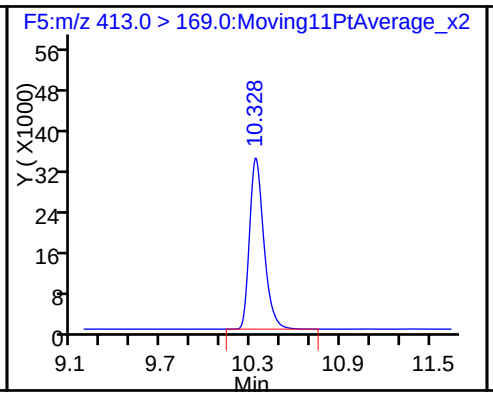
D 12 13C4 PFOA



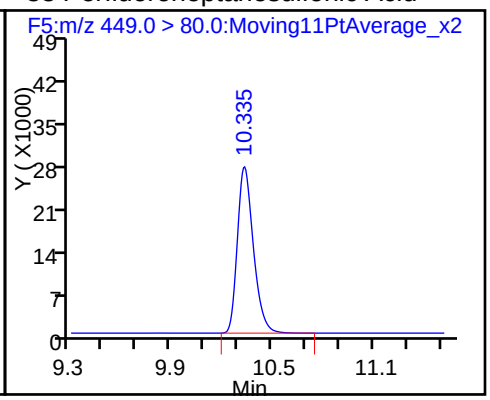
13 Perfluorooctanoic acid



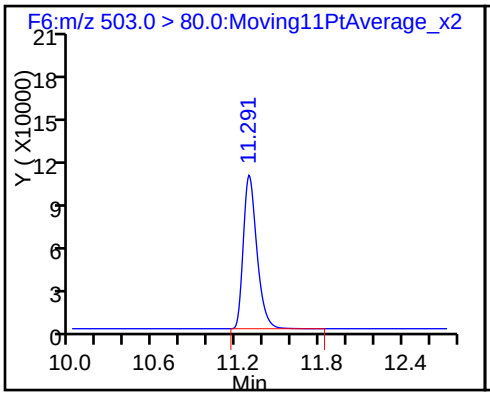
13 Perfluorooctanoic acid



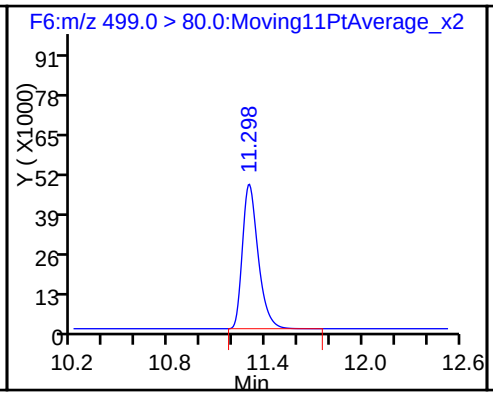
38 Perfluoroheptanesulfonic Acid



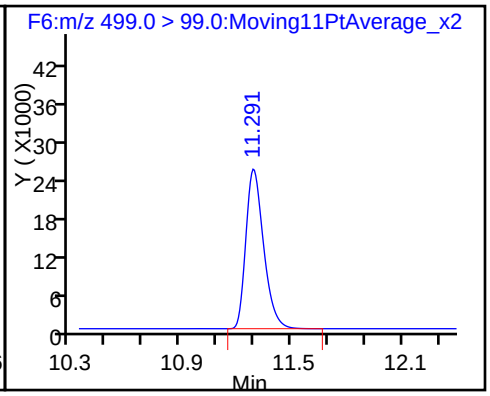
D 16 13C4 PFOS



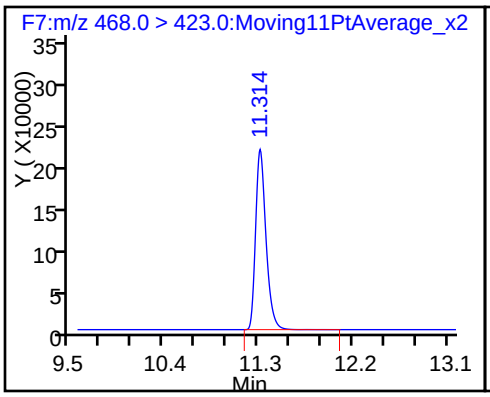
15 Perfluorooctane sulfonic acid



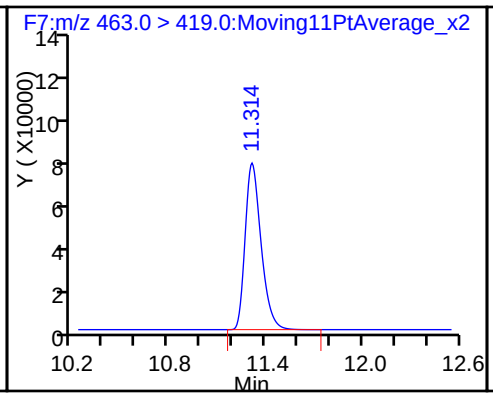
15 Perfluorooctane sulfonic acid



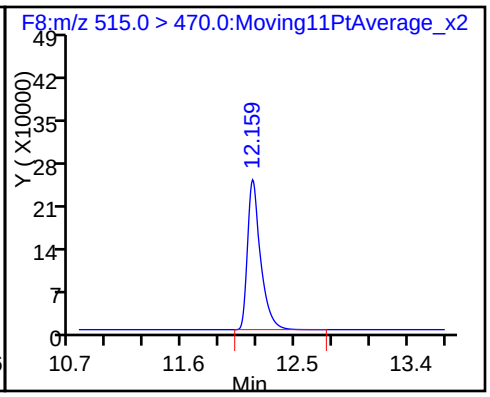
D 17 13C5 PFNA



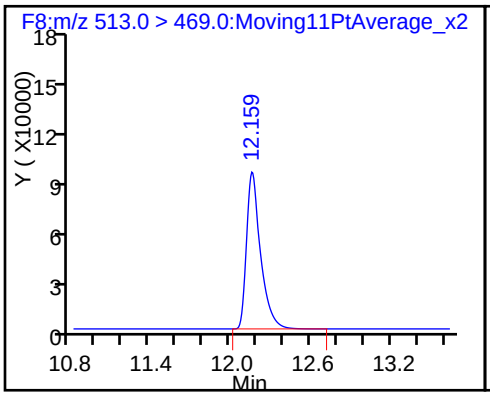
18 Perfluorononanoic acid



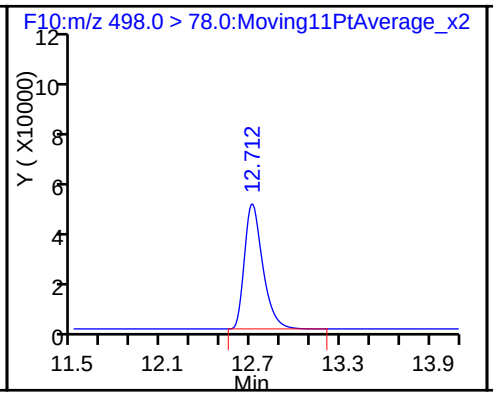
D 19 13C2 PFDA



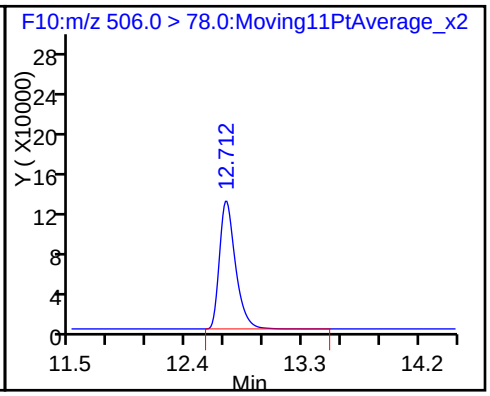
20 Perfluorodecanoic acid



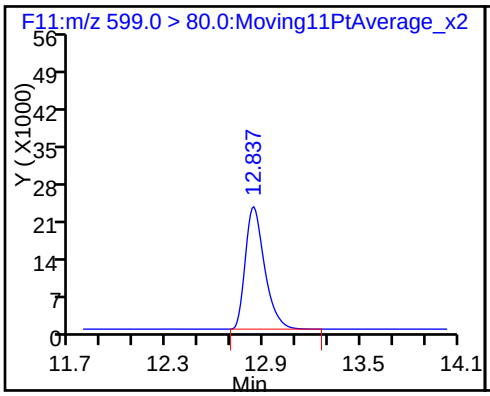
24 Perfluorooctane Sulfonamide



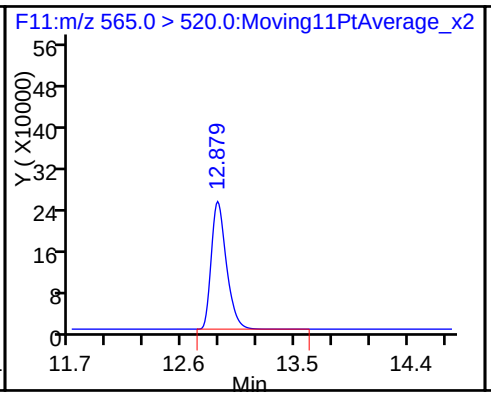
D 23 13C8 FOSA



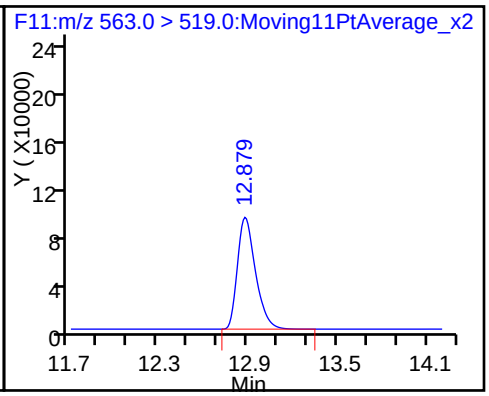
39 Perfluorodecane Sulfonic acid



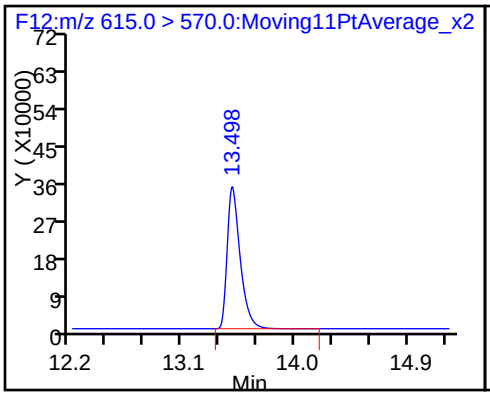
D 26 13C2 PFUnA



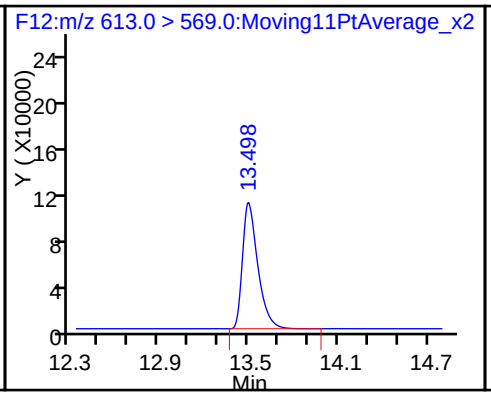
27 Perfluoroundecanoic acid



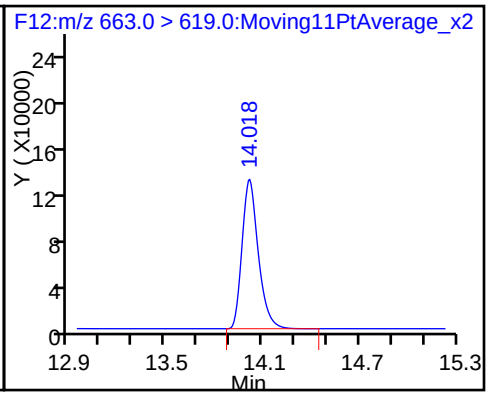
D 28 13C2 PFDoA



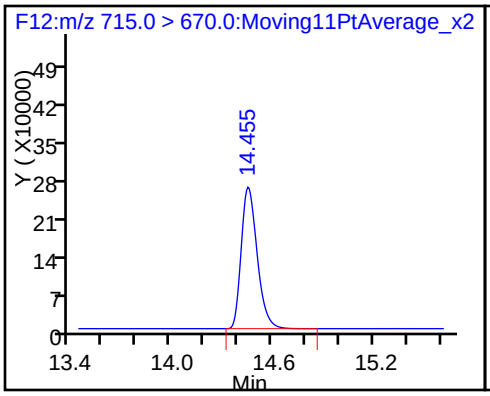
29 Perfluorododecanoic acid



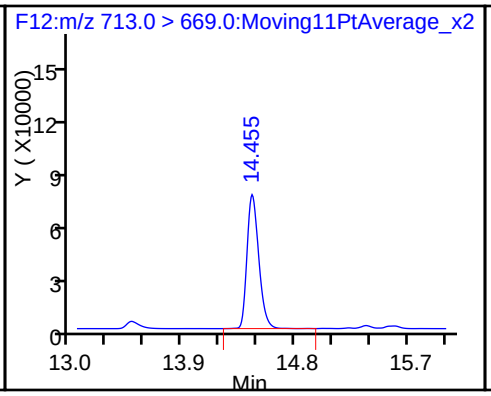
30 Perfluorotridecanoic acid



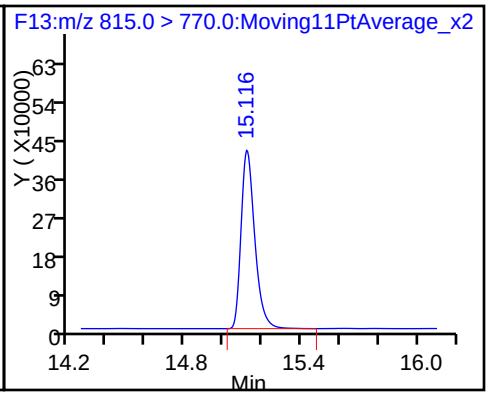
D 33 13C2-PFTeDA



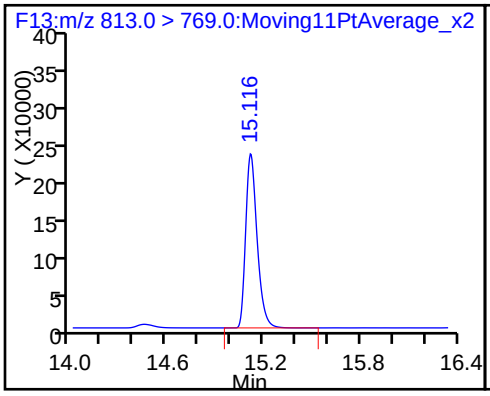
32 Perfluorotetradecanoic acid



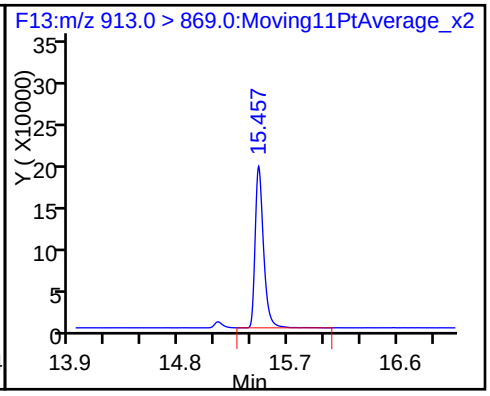
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Instrument ID: A6 Start Date: 02/22/2016 11:29

Analysis Batch Number: 101158 End Date: 02/22/2016 14:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-101158/2 IC		02/22/2016 11:29	1	22FEB2016A6A_004.d	Acquity 2.1(mm)
STD 320-101158/3 IC		02/22/2016 11:50	1	22FEB2016A6A_005.d	Acquity 2.1(mm)
STD 320-101158/4 IC		02/22/2016 12:11	1	22FEB2016A6A_006.d	Acquity 2.1(mm)
STD 320-101158/5 IC		02/22/2016 12:33	1	22FEB2016A6A_007.d	Acquity 2.1(mm)
STD 320-101158/6 IC		02/22/2016 12:54	1	22FEB2016A6A_008.d	Acquity 2.1(mm)
STD 320-101158/7 IC		02/22/2016 13:15	1	22FEB2016A6A_009.d	Acquity 2.1(mm)
STD 320-101158/8 IC		02/22/2016 13:36	1	22FEB2016A6A_010.d	Acquity 2.1(mm)
ZZZZZ		02/22/2016 14:10	1		Acquity 2.1(mm)
ICV 320-101158/10		02/22/2016 14:31	1	22FEB2016A6A_012.d	Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Instrument ID: A6 Start Date: 02/23/2016 13:55

Analysis Batch Number: 101347 End Date: 02/24/2016 07:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-101347/3 CCVL		02/23/2016 13:55	1	23FEB2016A6A_003.d	Acquity 2.1(mm)
CCV 320-101347/12		02/23/2016 17:33	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 17:57	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 18:19	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 18:40	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 19:01	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 19:22	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 19:43	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 20:05	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 20:26	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 20:47	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 21:08	1		Acquity 2.1(mm)
CCV 320-101347/23		02/23/2016 21:30	1	23FEB2016A6A_024.d	Acquity 2.1(mm)
ZZZZZ		02/23/2016 21:51	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 22:12	1		Acquity 2.1(mm)
ZZZZZ		02/23/2016 22:33	1		Acquity 2.1(mm)
MB 320-101153/1-A		02/23/2016 22:54	1	23FEB2016A6A_028.d	Acquity 2.1(mm)
LCS 320-101153/2-A		02/23/2016 23:16	1	23FEB2016A6A_029.d	Acquity 2.1(mm)
LCSD 320-101153/3-A		02/23/2016 23:37	1	23FEB2016A6A_030.d	Acquity 2.1(mm)
320-17363-1		02/23/2016 23:58	1	23FEB2016A6A_031.d	Acquity 2.1(mm)
320-17363-2		02/24/2016 00:19	1	23FEB2016A6A_032.d	Acquity 2.1(mm)
320-17363-3		02/24/2016 00:41	1	23FEB2016A6A_033.d	Acquity 2.1(mm)
320-17363-4		02/24/2016 01:02	1	23FEB2016A6A_034.d	Acquity 2.1(mm)
CCV 320-101347/37		02/24/2016 01:23	1	23FEB2016A6A_035.d	Acquity 2.1(mm)
320-17363-5		02/24/2016 01:44	1	23FEB2016A6A_036.d	Acquity 2.1(mm)
320-17363-6		02/24/2016 02:05	1	23FEB2016A6A_037.d	Acquity 2.1(mm)
320-17363-7		02/24/2016 02:27	1	23FEB2016A6A_038.d	Acquity 2.1(mm)
320-17363-8		02/24/2016 02:48	1	23FEB2016A6A_039.d	Acquity 2.1(mm)
320-17363-9		02/24/2016 03:09	1	23FEB2016A6A_040.d	Acquity 2.1(mm)
320-17363-10		02/24/2016 03:30	1	23FEB2016A6A_041.d	Acquity 2.1(mm)
320-17363-11		02/24/2016 03:52	1	23FEB2016A6A_042.d	Acquity 2.1(mm)
320-17363-12		02/24/2016 04:13	1	23FEB2016A6A_043.d	Acquity 2.1(mm)
320-17363-13		02/24/2016 04:34	1	23FEB2016A6A_044.d	Acquity 2.1(mm)
320-17363-14		02/24/2016 04:55	1	23FEB2016A6A_045.d	Acquity 2.1(mm)
CCV 320-101347/48		02/24/2016 05:16	1	23FEB2016A6A_046.d	Acquity 2.1(mm)
320-17363-15		02/24/2016 05:38	1	23FEB2016A6A_047.d	Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Instrument ID: A6 Start Date: 02/23/2016 13:55

Analysis Batch Number: 101347 End Date: 02/24/2016 07:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
320-17363-16		02/24/2016 05:59	1	23FEB2016A6A_048.d	Acquity 2.1(mm)
320-17363-17		02/24/2016 06:20	1	23FEB2016A6A_049.d	Acquity 2.1(mm)
320-17363-18		02/24/2016 06:41	1	23FEB2016A6A_050.d	Acquity 2.1(mm)
CCV 320-101347/53		02/24/2016 07:03	1	23FEB2016A6A_051.d	Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Batch Number: 101153 Batch Start Date: 02/22/16 13:34 Batch Analyst: Arauz, Horacio J

Batch Method: 3535 Batch End Date: 02/23/16 12:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00027	LCPFCSP 00041
MB 320-101153/1		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	
LCS 320-101153/2		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
LCSD 320-101153/3		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
320-17363-B-1	BC2_19_16	3535, WS-LC-0025	T	599.15 g	46.40 g	552.8 mL	1.00 mL	50 uL	
320-17363-A-2	DW-57	3535, WS-LC-0025	T	567.80 g	44.69 g	523.1 mL	1.00 mL	50 uL	
320-17363-A-3	DW-57FB	3535, WS-LC-0025	T	600.52 g	44.56 g	556 mL	1.00 mL	50 uL	
320-17363-A-4	DW-48	3535, WS-LC-0025	T	616.6 g	46.16 g	570.4 mL	1.00 mL	50 uL	
320-17363-A-5	DW-48FB	3535, WS-LC-0025	T	612.8 g	43.86 g	568.9 mL	1.00 mL	50 uL	
320-17363-A-6	DW-59	3535, WS-LC-0025	T	604.6 g	43.97 g	560.6 mL	1.00 mL	50 uL	
320-17363-B-7	DW-59FB	3535, WS-LC-0025	T	615.8 g	46.14 g	569.7 mL	1.00 mL	50 uL	
320-17363-B-8	DW-88	3535, WS-LC-0025	T	614.6 g	43.84 g	570.8 mL	1.00 mL	50 uL	
320-17363-A-9	DW-88FB	3535, WS-LC-0025	T	587.80 g	44.05 g	543.8 mL	1.00 mL	50 uL	
320-17363-B-10	DW-10	3535, WS-LC-0025	T	563.13 g	44.37 g	518.8 mL	1.00 mL	50 uL	
320-17363-A-11	DW-10FB	3535, WS-LC-0025	T	602.8 g	46.43 g	556.4 mL	1.00 mL	50 uL	
320-17363-B-12	DW-63	3535, WS-LC-0025	T	602.5 g	46.32 g	556.2 mL	1.00 mL	50 uL	
320-17363-A-13	DW-63FB	3535, WS-LC-0025	T	598.91 g	46.41 g	552.5 mL	1.00 mL	50 uL	
320-17363-B-14	DW-87	3535, WS-LC-0025	T	600.41 g	45.14 g	555.3 mL	1.00 mL	50 uL	
320-17363-A-15	DW-87FB	3535, WS-LC-0025	T	599.57 g	46.44 g	553.1 mL	1.00 mL	50 uL	
320-17363-B-16	DW-23	3535, WS-LC-0025	T	600.26 g	46.24 g	554 mL	1.00 mL	50 uL	
320-17363-A-17	DW-23FB	3535, WS-LC-0025	T	603.3 g	44.47 g	558.8 mL	1.00 mL	50 uL	
320-17363-A-18	DUP-021916	3535, WS-LC-0025	T	540.65 g	43.94 g	496.7 mL	1.00 mL	50 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17363-1

SDG No.:

Batch Number: 101153 Batch Start Date: 02/22/16 13:34 Batch Analyst: Arauz, Horacio J

Batch Method: 3535 Batch End Date: 02/23/16 12:50

Batch Notes	
Balance ID	QA-070
Batch Comment	Hexane 0000116331; 1N Sodium Hydrox/H2O 585462; MeOH 582956
H2O Lot used	2/19/16
Pipette ID	EC15219
Analyst who added reagent	HJA
SU Reagent Drop	HJA
SU Reagent Drop Witness	SNE
Solvent Lot #	585662
Solvent Name	0.3% Ammonium hydroxide/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	Wax 500mg
Solid Phase Extraction Disk Lot Number	002635307A

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
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West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 320-17140, 320-17363 Work List ID(s): 28593

Extraction Batch: 100277 Analysis Batch(es): 101347

Delivery Rank 4 Due Date: 2/13/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 101158	✓	✓	
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: 2/24/16

2nd Level Reviewer: MWM Date: 2/24/2016

Box 23

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101153

Analyst: Arauz, Horacio J

Batch Open: 2/22/2016 1:34:41PM

Method Code: 320-3535_IVWT-320

Batch End: 2/23/16 12:50

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-101153/1 N/A	N/A		500 mL				N/A	N/A	N/A		MB 320-101153/1-A
				1.00 mL								
2	LCS~320-101153/2 N/A	N/A		500 mL				N/A	N/A	N/A		LCS 320-101153/2-A
				1.00 mL								
3	LCSD~320-101153/3 N/A	N/A		500 mL				N/A	N/A	N/A		LCSD 320-101153/3-A
				1.00 mL								
	320-17363-B-1 (PFC_IDA_DOD5)	N/A (320-17363-1)	599.15 g	552.8 mL				2/26/16	7_Day_Rush	4		320-17363-B-1-A
			46.40 g	1.00 mL								
	320-17363-A-2 (PFC_IDA_DOD5)	N/A (320-17363-1)	567.80 g	523.1 mL				2/26/16	7_Day_Rush	4		320-17363-A-2-A
			44.69 g	1.00 mL								
6	320-17363-A-3 (PFC_IDA_DOD5)	N/A (320-17363-1)	600.52 g	556 mL				2/26/16	7_Day_Rush	4		320-17363-A-3-A
			44.56 g	1.00 mL								
7	320-17363-A-4 (PFC_IDA_DOD5)	N/A (320-17363-1)	616.6 g	570.4 mL				2/26/16	7_Day_Rush	4		320-17363-A-4-A
			46.16 g	1.00 mL								
8	320-17363-A-5 (PFC_IDA_DOD5)	N/A (320-17363-1)	612.8 g	568.9 mL				2/26/16	7_Day_Rush	4		320-17363-A-5-A
			43.86 g	1.00 mL								
9	320-17363-A-6 (PFC_IDA_DOD5)	N/A (320-17363-1)	604.6 g	560.6 mL				2/26/16	7_Day_Rush	4		320-17363-A-6-A
			43.97 g	1.00 mL								
10	320-17363-B-7 (PFC_IDA_DOD5)	N/A (320-17363-1)	615.8 g	569.7 mL				2/26/16	7_Day_Rush	4		320-17363-B-7-A
			46.14 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101153 Analyst: Arauz, Horacio J Batch Open: 2/22/2016 1:34:41PM

Method Code: 320-3535_IVWT-320 Batch End:

11	320-17363-B-8 (PFC_IDA_DOD5)	N/A (320-17363-1)	614.6 g 43.84 g	570.8 mL 1.00 mL				2/26/16	7_Day_Rush	4	
12	320-17363-A-9 (PFC_IDA_DOD5)	N/A (320-17363-1)	587.80 g 44.05 g	543.8 mL 1.00 mL				2/26/16	7_Day_Rush	4	
13	320-17363-B-10 (PFC_IDA_DOD5)	N/A (320-17363-1)	563.13 g 44.37 g	518.8 mL 1.00 mL				2/26/16	7_Day_Rush	4	
14	320-17363-A-11 (PFC_IDA_DOD5)	N/A (320-17363-1)	602.8 g 46.43 g	556.4 mL 1.00 mL				2/26/16	7_Day_Rush	4	
15	320-17363-B-12 (PFC_IDA_DOD5)	N/A (320-17363-1)	602.5 g 46.32 g	556.2 mL 1.00 mL				2/26/16	7_Day_Rush	4	
16	320-17363-A-13 (PFC_IDA_DOD5)	N/A (320-17363-1)	598.91 g 46.41 g	552.5 mL 1.00 mL				2/26/16	7_Day_Rush	4	
17	320-17363-B-14 (PFC_IDA_DOD5)	N/A (320-17363-1)	600.41 g 45.14 g	555.3 mL 1.00 mL				2/26/16	7_Day_Rush	4	
18	320-17363-A-15 (PFC_IDA_DOD5)	N/A (320-17363-1)	599.57 g 46.44 g	553.1 mL 1.00 mL				2/26/16	7_Day_Rush	4	
19	320-17363-B-16 (PFC_IDA_DOD5)	N/A (320-17363-1)	600.26 g 46.24 g	554 mL 1.00 mL				2/26/16	7_Day_Rush	4	
20	320-17363-A-17 (PFC_IDA_DOD5)	N/A (320-17363-1)	603.3 g 44.47 g	558.8 mL 1.00 mL				2/26/16	7_Day_Rush	4	
21	320-17363-A-18 (PFC_IDA_DOD5)	N/A (320-17363-1)	540.65 g 43.94 g	496.7 mL 1.00 mL				2/26/16	7_Day_Rush	4	
22	N/A	N/A						N/A	N/A	N/A	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101153 Analyst: Arauz, Horacio J Batch Open: 2/22/2016 1:34:41PM

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	002635307A
H2O Lot used	2/19/16
Pipette ID	EC15219
Solvent Name	0.3% Ammonium hydroxide/MeOH
Solvent Lot #	585662
Analyst who added reagent	HJA
SU Reagent Drop	HJA
SU Reagent Drop Witness	SNE
Acid Name	NA
Acid Lot	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl Lot #	NA
SOP Number	WS-LC-0025
Batch Comment	Hexane 0000116331; 1N Sodium Hydrox/H2O 585462; MeOH 582956

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101153 Analyst: Arauz, Horacio J Batch Open: 2/22/2016 1:34:41PM

Method Code: 320-3535_IVWT-320 Batch End:

Comments

320-17363-B-1	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-2	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-3	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-4	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-5	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-6	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-B-7	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-B-8	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-9	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-B-10	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-11	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-B-12	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-13	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-B-14	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-15	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-B-16	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-17	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17363-A-18	Method Comments:	Q5Rev111213_StdVarApp_30day disposal

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101153 Analyst: Arauz, Horacio J Batch Open: 2/22/2016 1:34:41PM

Method Code: 320-3535_IVWT-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-101153/1	LCMPFCSU_00027	50 uL	1.00 mL	HJA 2-22-16	SNE 2/22/16
LCS 320-101153/2	LCMPFCSU_00027	50 uL	1.00 mL		
LCS 320-101153/2	LCPFCSP_00041	20 uL	1.00 mL		
LCSD 320-101153/3	LCMPFCSU_00027	50 uL	1.00 mL		
LCSD 320-101153/3	LCPFCSP_00041	20 uL	1.00 mL		
320-17363-B-1	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-2	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-3	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-4	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-5	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-6	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-B-7	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-B-8	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-9	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-B-10	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-11	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-B-12	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-13	LCMPFCSU_00027	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101153 Analyst: Arauz, Horacio J Batch Open: 2/22/2016 1:34:41PM

Method Code: 320-3535_IVWT-320 Batch End:

320-17363-B-14	LCMPFCSU_00027	50 uL	1.00 mL	HJA 2-22-16	SNE 2/22/16
320-17363-A-15	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-B-16	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-17	LCMPFCSU_00027	50 uL	1.00 mL		
320-17363-A-18	LCMPFCSU_00027	50 uL	1.00 mL		
HJA 2-22-16 ~~320-17252-A-1~~	~~LCMPFCSU_00026~~	~~50 uL~~	~~1.00 mL~~		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
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Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-101153 Test: PFC-L

Earliest Holding Time: 2-25-16 / 2-26-16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: HJA Date: 2-23-16

2nd Level Reviewer: SNE Date: 2/23/16

Comments:

20

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100277
Analyst: Arauz, Horacio J
Batch Open: 2/12/2016 6:14:23AM
Method Code: 320-3535_IVWT-320
Batch End: 2/15/16 20:20

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-100277/1 N/A	N/A		500 mL				N/A	N/A	N/A		MB 320-100277/1-A
				1.00 mL								
2	LCS~320-100277/2 N/A	N/A		500 mL				N/A	N/A	N/A		LCS 320-100277/2-A
				1.00 mL								
3	320-17190-A-1 (PFC_IDA_DOD5)	N/A (320-17190-1)	595.01 g	550.8 mL				2/13/16	6_Day_Rush	4		320-17190-A-1-A
			44.18 g	1.00 mL								
4	320-17190-A-2 (PFC_IDA_DOD5)	N/A (320-17190-1)	603.6 g	557.9 mL				2/13/16	6_Day_Rush	4		320-17190-A-2-A
			45.71 g	1.00 mL								
5	320-17190-A-2~MS (PFC_IDA_DOD5)	N/A (320-17190-1)	576.04 g	530.9 mL				2/13/16	6_Day_Rush	4		320-17190-A-2-B MS
			45.11 g	1.00 mL								
6	320-17190-A-2~MSD (PFC_IDA_DOD5)	N/A (320-17190-1)	592.53 g	547.2 mL				2/13/16	6_Day_Rush	4		320-17190-A-2-C MSD
			45.35 g	1.00 mL								
7	320-17190-A-3 (PFC_IDA_DOD5)	N/A (320-17190-1)	580.43 g	535.8 mL				2/13/16	6_Day_Rush	4		320-17190-A-3-A
			44.67 g	1.00 mL								
8	320-17190-A-4 (PFC_IDA_DOD5)	N/A (320-17190-1)	587.05 g	542 mL				2/13/16	6_Day_Rush	4		320-17190-A-4-A
			45.07 g	1.00 mL								
9	320-17190-A-5 (PFC_IDA_DOD5)	N/A (320-17190-1)	579.89 g	534.3 mL				2/13/16	6_Day_Rush	4		320-17190-A-5-A
			45.61 g	1.00 mL								
10	320-17190-A-6 (PFC_IDA_DOD5)	N/A (320-17190-1)	590.53 g	546.6 mL				2/13/16	6_Day_Rush	4		320-17190-A-6-A
			43.89 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100277 Analyst: Arauz, Horacio J Batch Open: 2/12/2016 6:14:23AM

Method Code: 320-3535_IVWT-320 Batch End:

11	320-17190-A-7 (PFC_IDA_DOD5)	N/A (320-17190-1)	607.8 g 46.51 g	561.3 mL 1.00 mL				2/13/16	6_Day_Rush	4	
12	320-17190-A-8 (PFC_IDA_DOD5)	N/A (320-17190-1)	588.23 g 43.74 g	544.5 mL 1.00 mL				2/13/16	6_Day_Rush	4	
13	320-17190-A-9 (PFC_IDA_DOD5)	N/A (320-17190-1)	580.01 g 45.40 g	534.6 mL 1.00 mL				2/13/16	6_Day_Rush	4	
14	320-17219-A-1 (PFC_IDA_DOD5)	N/A (320-17219-1)	583.48 g 46.06 g	537.4 mL 1.00 mL				2/13/16	5_Days	4	
15	320-17219-A-2 (PFC_IDA_DOD5)	N/A (320-17219-1)	605.1 g 47.12 g	558 mL 1.00 mL				2/13/16	5_Days	4	
16	320-17219-A-3 (PFC_IDA_DOD5)	N/A (320-17219-1)	565.05 g 44.68 g	520.4 mL 1.00 mL				2/13/16	5_Days	4	
17	320-17219-A-4 (PFC_IDA_DOD5)	N/A (320-17219-1)	585.34 g 45.52 g	539.8 mL 1.00 mL				2/13/16	5_Days	4	
18	320-17219-A-5 (PFC_IDA_DOD5)	N/A (320-17219-1)	602.9 g 45.97 g	556.9 mL 1.00 mL				2/13/16	5_Days	4	
19	320-17219-A-6 (PFC_IDA_DOD5)	N/A (320-17219-1)	568.89 g 44.77 g	524.1 mL 1.00 mL				2/13/16	5_Days	4	
20	320-17236-A-1 (PFC_IDA_DOD5)	N/A (320-17236-1)	596.13 g 44.21 g	551.9 mL 1.00 mL				2/14/16	5_Day_RUSH	4	
21	320-17236-A-2 (PFC_IDA_DOD5)	N/A (320-17236-1)	580.10 g 46.58 g	533.5 mL 1.00 mL				2/14/16	5_Day_RUSH	4	
22	320-17236-A-3 (PFC_IDA_DOD5)	N/A (320-17236-1)	587.04 g 46.18 g	540.9 mL 1.00 mL				2/14/16	5_Day_RUSH	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100277 Analyst: Arauz, Horacio J Batch Open: 2/12/2016 6:14:23AM

Method Code: 320-3535_IVWT-320 Batch End:

23	320-17236-A-4 (PFC_IDA_DOD5)	N/A (320-17236-1)	583.37 g	539 mL				2/14/16	5_Day_RUSH	4	
			44.37 g	1.00 mL							
24	320-17236-A-5 (PFC_IDA_DOD5)	N/A (320-17236-1)	571.05 g	524.2 mL				2/14/16	5_Day_RUSH	4	
			46.85 g	1.00 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100277 Analyst: Arauz, Horacio J Batch Open: 2/12/2016 6:14:23AM

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	002635307A
H2O Lot used	02-10-16
Pipette ID	EC15219
Solvent Name	0.3% Ammonium hydroxide/MeOH
Solvent Lot #	581268
Analyst who added reagent	HJA
SU Reagent Drop	HJA
SU Reagent Drop Witness	MEL
Acid Name	NA
Acid Lot	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl Lot #	NA
SOP Number	WS-LC-0025
Batch Comment	0.1N Sodium Hydrox./H2O 581504; MeOH 572660; J.T.B Hexane 0000101243

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100277

Analyst: Arauz, Horacio J

Batch Open: 2/12/2016 6:14:23AM

Method Code: 320-3535_IVWT-320

Batch End:

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100277
Analyst: Arauz, Horacio J
Batch Open: 2/12/2016 6:14:23AM
Method Code: 320-3535_IVWT-320
Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-100277/1	LCMPFCSU_00026	50 uL	1.00 mL	HJA 2-12-16	MEL 2/12/16
LCS 320-100277/2	LCMPFCSU_00026	50 uL	1.00 mL		
LCS 320-100277/2	LCPFCSP_00039	20 uL	1.00 mL		
320-17190-A-1	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-2	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-2 MS	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-2 MS	LCPFCSP_00039	20 uL	1.00 mL		
320-17190-A-2 MSD	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-2 MSD	LCPFCSP_00039	20 uL	1.00 mL		
320-17190-A-3	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-4	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-5	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-6	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-7	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-8	LCMPFCSU_00026	50 uL	1.00 mL		
320-17190-A-9	LCMPFCSU_00026	50 uL	1.00 mL		
320-17219-A-1	LCMPFCSU_00026	50 uL	1.00 mL		
320-17219-A-2	LCMPFCSU_00026	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100277 Analyst: Arauz, Horacio J Batch Open: 2/12/2016 6:14:23AM

Method Code: 320-3535_IVWT-320 Batch End:

320-17219-A-3	LCMPFCSU_00026	50 uL	1.00 mL	HSA 2-12-16	MEC 2/12/16
320-17219-A-4	LCMPFCSU_00026	50 uL	1.00 mL		
320-17219-A-5	LCMPFCSU_00026	50 uL	1.00 mL		
320-17219-A-6	LCMPFCSU_00026	50 uL	1.00 mL		
320-17236-A-1	LCMPFCSU_00026	50 uL	1.00 mL		
320-17236-A-2	LCMPFCSU_00026	50 uL	1.00 mL		
320-17236-A-3	LCMPFCSU_00026	50 uL	1.00 mL		
320-17236-A-4	LCMPFCSU_00026	50 uL	1.00 mL		
320-17236-A-5	LCMPFCSU_00026	50 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-100277 Test: PFC

Earliest Holding Time: 2-12-16 / 2-15-16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	
All necessary NCMs filed (including holding time)	NA	
Method/sample/login/QAS checked and correct	✓	
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA ✓	
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	
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: 2/15/16

2nd Level Reviewer: [signature] Date: _____

Comments: _____

Shipping and Receiving Documents

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica

Client Information	Sampler: Tom Lesinski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075 1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page 1 of 1
Company: Earth Toxics, Inc				Job #:

Address: PO BOX 3382	Due Date Requested:	Analysis Requested	Preservation Codes:
City: Logan	TAT Requested (days):		A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
State, Zip: UT, 84321			
Phone:	PO #: Purchase Order Requested		Other:
Email: mdryden@earthtoxics.com	WO #:		
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493		
Site:	SSOW#:		

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	DV-LC-0012 (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS)	Total Number of containers	Special Instructions/Note:
			Preservation Code:					
BC2_19_16	2-19-16	—	6	W		X		

320-17363 Chain of Custody

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

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

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	2-19-16	TestAmerica		2/20/16 1020	TAS
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact. Δ Yes Δ No	Custody Seal No..	Cooler Temperature(s)°C and Other Remarks
		2.0°C, 0.2°C

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica

Client Information	Sampler: Tom Lesnski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075 1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page of
Company: Earth Toxics, Inc				Job #:
Address: PO BOX 3382	Due Date Requested:			
City: Logan	TAT Requested (days): 7 DAY			
State, Zip: UT, 84321				
Phone:	PO #: Purchase Order Requested			
Email: mdryden@earthtoxics.com	WO #:			
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493			
Site:	SSOW#:			

Analysis Requested

Field Filtered Sample (Yes or No)

637 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento

Perform MS/MSD (Yes or No)

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code	Field Filtered Sample (Yes or No)	637 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Perform MS/MSD (Yes or No)	Special Instructions/Note:
DW-57	2-19-16	1441	G	W			X		
DW-57FB	2-19-16	1427	G	W			X		

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

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

Deliverable Requested: I, II, III, IV, Other (specify)

Empty Kit Relinquished by:	Date	Time	Method of Shipment

	Date/Time	Company	Received by	Date/Time	Company
Relinquished by:	2-19-16	TestAmerica	Kim Nelson	2/20/16 1020	TAES
Relinquished by:	Date/Time	Company	Received by	Date/Time	Company
Relinquished by:	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks: 2.0°C, 0.2°C

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica

Client Information	Sampler: Tom Lesinski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075.1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page of
Company: Earth Toxics, Inc				Job #:
Address: PO BOX 3382	Due Date Requested:	Analysis Requested		Preservation Codes:
City: Logan	TAT Requested (days): 7 DAY			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
State, Zip: UT, 84321	PO #: Purchase Order Requested			
Phone:	WO #:			Other:
Email: mdryden@earthtoxics.com	Project #: 28014493			
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	SSOW#:			
Site:				

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Total Number of containers	Special Instructions/Note:
			Preservation Code:			N		
DW-48	2-19-16	1411	G	W		X		
DW-48FB	2-19-16	1352	G	W		X		

Page 496 of 503

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological
Deliverable Requested: I, II, III, IV, Other (specify)

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

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	[signature]	2-19-16	TestAmerica	[signature]	2/20/16 1020	TAS
	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	Relinquished by:	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No :
Cooler Temperature(s)°C and Other Remarks: 2.0°C, 0.2°C

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica

Client Information	Sampler: Tom Lesinski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075 1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page of
Company: Earth Toxics, Inc				Job #:

Address	Due Date Requested:
PO BOX 3382	
City: Logan	TAT Requested (days): 7 DAY
State, Zip: UT, 84321	
Phone	PO #: Purchase Order Requested
Email: mdryden@earthtoxics.com	WO #
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493
Site	SSOW#

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Total Number of containers	Special Instructions/Note:
			Preservation Code:			N		
DW-59	2-19-16	1336	6	W		X		
DW-59FB	2-19-16	1327	6	W		X		

Page 497 of 503

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

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

Deliverable Requested: I, II, III, IV, Other (specify)

Empty Kit Relinquished by:	Date	Time:	Method of Shipment

Relinquished by:	Date/Time: 2-19-16	Company: TestAmerica	Received by: Jim Nelson	Date/Time: 2/20/16 1020	Company: TAMS
Relinquished by:	Date/Time	Company	Received by:	Date/Time	Company
Relinquished by	Date/Time	Company	Received by:	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No :	Cooler Temperature(s) °C and Other Remarks

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica

Client Information	Sampler: Tom Lesinski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075.1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page 1 of 1
Company: Earth Toxics, Inc				Job #:
Address: PO BOX 3382	Due Date Requested:	Analysis Requested		Preservation Codes:
City: Logan	TAT Requested (days): 7 DAY			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
State, Zip: UT, 84321				
Phone:	PO #: Purchase Order Requested			Other:
Email: mdryden@earthtoxics.com	WO #:			
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493			
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Total Number of containers	Special Instructions/Note:
			Preservation Code:			N		
DW-08	2-19-16	1311	G	W		X		
DW-08FB	2-19-16	1257	G	W		X		

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Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological
Deliverable Requested: I, II, III, IV, Other (specify)

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

Empty Kit Relinquished by:		Date:		Time		Method of Shipment	
Relinquished by:	Date/Time: 2-19-16	Company: TestAmerica	Received by: Kim Nelson	Date/Time: 2/20/16 1020	Company: TAL		
Relinquished by:	Date/Time	Company	Received by:	Date/Time	Company		
Relinquished by:	Date/Time	Company	Received by	Date/Time	Company		

Custody Seals Intact: Δ Yes Δ No	Custody Seal No..	Cooler Temperature(s) °C and Other Remarks

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica

Client Information	Sampler: Tom Lesinski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075 1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page 1 of 1
Company: Earth Toxics, Inc				Job #:
Address: PO BOX 3382	Due Date Requested:			
City: Logan	TAT Requested (days): 7 DAY			
State, Zip: UT, 84321				
Phone:	PO #: Purchase Order Requested			
Email: mdryden@earthtoxics.com	WO #:			
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493			
Site:	SSOW#:			

Analysis Requested

Field Filtered Sample (Yes or No)

537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento

Total Number of Containers

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Total Number of Containers	Special Instructions/Note:
			Preservation Code:			N		
DW-10	2-19-16	1031	G	W		X		
DW-10FB	2-19-16	1012	G	W		X		

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Empty Kit Relinquished by:	Date	Time	Method of Shipment

	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	2-19-16	TestAmerica	Kim Nelson	2/20/16 1020	TAMS
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by:	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks.

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Chain of Custody Record

TestAmerica

Client Information	Sampler: Tom Lesinski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075 1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page of
Company: Earth Toxics, Inc				Job #:
Address: PO BOX 3382	Due Date Requested:			
City: Logan	TAT Requested (days): 7 DAY			
State, Zip: UT, 84321				
Phone:	PO #: Purchase Order Requested			
Email: mdryden@earthtoxics.com	WO #:			
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Total Number of containers	Special Instructions/Note:
	Preservation Code:							
DW-63	2-19-16	1106	6	W		X		
DW-63FB	2-19-16	1047	6	W		X		

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Possible Hazard Identification
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☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

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Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		2-19-16	TestAmerica		2/20/16 1020	TAD
2	Relinquished by:	Date/Time	Company	Received by	Date/Time	Company
3	Relinquished by	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

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Chain of Custody Record

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City: Logan	TAT Requested (days): 7 DAY			
State, Zip: UT, 84321				
Phone:	PO #: Purchase Order Requested			
Email: mdryden@earthtoxics.com	WO #:			
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Perform MS/MSD (Yes or No)	Special Instructions/Note:
			Preservation Code:			N		
DW-07	2-19-16	1236	6	W		X		
DW-07FB	2-19-16	1227	6	W		X		

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Empty Kit Relinquished by:	Date	Time	Method of Shipment

	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	2-19-16	TestAmer.	Tom Nelson	1020 2/20/16	TAL-DEN
Relinquished by	Date/Time	Company	Received by:	Date/Time	Company
Relinquished by	Date/Time:	Company	Received by	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks

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Chain of Custody Record

TestAmerica

Client Information	Sampler: Tom Lesinski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075 1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page 1 of 1
Company: Earth Toxics, Inc				Job #:
Address: PO BOX 3382	Due Date Requested:			
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State, Zip: UT, 84321				
Phone:	PO #: Purchase Order Requested			
Email: mdryden@earthtoxics.com	WO #:			
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493			
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Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Total Number of containers	Special Instructions/Note:
			Preservation Code:			N		
DW-23	2-19-16	1206	G	W		X		
DW-23FB	2-19-16	1047	G	W		X		
DUP-021916	2-19-16	1206	G	W		X		

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Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	2-19-16	TestAmerica	Jim Nelson	2/20/16 1020	TAL
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by:	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks

Login Sample Receipt Checklist

Client: Earth Toxics, Inc

Job Number: 320-17363-1

Login Number: 17363

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

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

Sample	Sample Name	Specific Method	CAS Number	Analyte	Result	Units	Qualifier	Limit	Reports To	Dilution	Result Basis	Batch	Sampled	Prepared	Analyzed	Analysis
320-17363-1	BC2_19_16	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.83	MDL	1.0	Total	101347	2/19/2016 12:00 AM	2/22/2016 1:35 PM	2/23/2016 11:58 PM	Perfluorinated Hydrocarbons
320-17363-1	BC2_19_16	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.73	MDL	1.0	Total	101347	2/19/2016 12:00 AM	2/22/2016 1:35 PM	2/23/2016 11:58 PM	Perfluorinated Hydrocarbons
320-17363-1	BC2_19_16	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.79	MDL	1.0	Total	101347	2/19/2016 12:00 AM	2/22/2016 1:35 PM	2/23/2016 11:58 PM	Perfluorinated Hydrocarbons
320-17363-1	BC2_19_16	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.59	MDL	1.0	Total	101347	2/19/2016 12:00 AM	2/22/2016 1:35 PM	2/23/2016 11:58 PM	Perfluorinated Hydrocarbons
320-17363-1	BC2_19_16	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.2	MDL	1.0	Total	101347	2/19/2016 12:00 AM	2/22/2016 1:35 PM	2/23/2016 11:58 PM	Perfluorinated Hydrocarbons
320-17363-1	BC2_19_16	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.68	MDL	1.0	Total	101347	2/19/2016 12:00 AM	2/22/2016 1:35 PM	2/23/2016 11:58 PM	Perfluorinated Hydrocarbons
320-17363-2	DW-57	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	**1.8**	ng/L	J	0.88	MDL	1.0	Total	101347	2/19/2016 2:41 PM	2/22/2016 1:35 PM	2/24/2016 12:19 AM	Perfluorinated Hydrocarbons
320-17363-2	DW-57	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	**4.5**	ng/L		0.77	MDL	1.0	Total	101347	2/19/2016 2:41 PM	2/22/2016 1:35 PM	2/24/2016 12:19 AM	Perfluorinated Hydrocarbons
320-17363-2	DW-57	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	**41**	ng/L	M	0.83	MDL	1.0	Total	101347	2/19/2016 2:41 PM	2/22/2016 1:35 PM	2/24/2016 12:19 AM	Perfluorinated Hydrocarbons
320-17363-2	DW-57	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	**3.4**	ng/L		0.63	MDL	1.0	Total	101347	2/19/2016 2:41 PM	2/22/2016 1:35 PM	2/24/2016 12:19 AM	Perfluorinated Hydrocarbons
320-17363-2	DW-57	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	**200**	ng/L	M	1.2	MDL	1.0	Total	101347	2/19/2016 2:41 PM	2/22/2016 1:35 PM	2/24/2016 12:19 AM	Perfluorinated Hydrocarbons
320-17363-2	DW-57	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	**28**	ng/L		0.71	MDL	1.0	Total	101347	2/19/2016 2:41 PM	2/22/2016 1:35 PM	2/24/2016 12:19 AM	Perfluorinated Hydrocarbons
320-17363-3	DW-57FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.83	MDL	1.0	Total	101347	2/19/2016 2:27 PM	2/22/2016 1:35 PM	2/24/2016 12:41 AM	Perfluorinated Hydrocarbons
320-17363-3	DW-57FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.72	MDL	1.0	Total	101347	2/19/2016 2:27 PM	2/22/2016 1:35 PM	2/24/2016 12:41 AM	Perfluorinated Hydrocarbons
320-17363-3	DW-57FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	**1.1**	ng/L	J	0.78	MDL	1.0	Total	101347	2/19/2016 2:27 PM	2/22/2016 1:35 PM	2/24/2016 12:41 AM	Perfluorinated Hydrocarbons
320-17363-3	DW-57FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.59	MDL	1.0	Total	101347	2/19/2016 2:27 PM	2/22/2016 1:35 PM	2/24/2016 12:41 AM	Perfluorinated Hydrocarbons
320-17363-3	DW-57FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	**1.7**	ng/L	J M	1.1	MDL	1.0	Total	101347	2/19/2016 2:27 PM	2/22/2016 1:35 PM	2/24/2016 12:41 AM	Perfluorinated Hydrocarbons
320-17363-3	DW-57FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.67	MDL	1.0	Total	101347	2/19/2016 2:27 PM	2/22/2016 1:35 PM	2/24/2016 12:41 AM	Perfluorinated Hydrocarbons
320-17363-4	DW-48	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.80	MDL	1.0	Total	101347	2/19/2016 2:11 PM	2/22/2016 1:35 PM	2/24/2016 1:02 AM	Perfluorinated Hydrocarbons
320-17363-4	DW-48	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.70	MDL	1.0	Total	101347	2/19/2016 2:11 PM	2/22/2016 1:35 PM	2/24/2016 1:02 AM	Perfluorinated Hydrocarbons
320-17363-4	DW-48	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	**0.83**	ng/L	J	0.76	MDL	1.0	Total	101347	2/19/2016 2:11 PM	2/22/2016 1:35 PM	2/24/2016 1:02 AM	Perfluorinated Hydrocarbons
320-17363-4	DW-48	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.57	MDL	1.0	Total	101347	2/19/2016 2:11 PM	2/22/2016 1:35 PM	2/24/2016 1:02 AM	Perfluorinated Hydrocarbons
320-17363-4	DW-48	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U	1.1	MDL	1.0	Total	101347	2/19/2016 2:11 PM	2/22/2016 1:35 PM	2/24/2016 1:02 AM	Perfluorinated Hydrocarbons
320-17363-4	DW-48	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.66	MDL	1.0	Total	101347	2/19/2016 2:11 PM	2/22/2016 1:35 PM	2/24/2016 1:02 AM	Perfluorinated Hydrocarbons
320-17363-5	DW-48FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.81	MDL	1.0	Total	101347	2/19/2016 1:52 PM	2/22/2016 1:35 PM	2/24/2016 1:44 AM	Perfluorinated Hydrocarbons
320-17363-5	DW-48FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	**0.71**	ng/L	J	0.70	MDL	1.0	Total	101347	2/19/2016 1:52 PM	2/22/2016 1:35 PM	2/24/2016 1:44 AM	Perfluorinated Hydrocarbons
320-17363-5	DW-48FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.76	MDL	1.0	Total	101347	2/19/2016 1:52 PM	2/22/2016 1:35 PM	2/24/2016 1:44 AM	Perfluorinated Hydrocarbons
320-17363-5	DW-48FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.57	MDL	1.0	Total	101347	2/19/2016 1:52 PM	2/22/2016 1:35 PM	2/24/2016 1:44 AM	Perfluorinated Hydrocarbons
320-17363-5	DW-48FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U M	1.1	MDL	1.0	Total	101347	2/19/2016 1:52 PM	2/22/2016 1:35 PM	2/24/2016 1:44 AM	Perfluorinated Hydrocarbons
320-17363-5	DW-48FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.66	MDL	1.0	Total	101347	2/19/2016 1:52 PM	2/22/2016 1:35 PM	2/24/2016 1:44 AM	Perfluorinated Hydrocarbons
320-17363-6	DW-59	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.82	MDL	1.0	Total	101347	2/19/2016 1:36 PM	2/22/2016 1:35 PM	2/24/2016 2:05 AM	Perfluorinated Hydrocarbons
320-17363-6	DW-59	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.72	MDL	1.0	Total	101347	2/19/2016 1:36 PM	2/22/2016 1:35 PM	2/24/2016 2:05 AM	Perfluorinated Hydrocarbons
320-17363-6	DW-59	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	**0.83**	ng/L	J M	0.78	MDL	1.0	Total	101347	2/19/2016 1:36 PM	2/22/2016 1:35 PM	2/24/2016 2:05 AM	Perfluorinated Hydrocarbons
320-17363-6	DW-59	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.58	MDL	1.0	Total	101347	2/19/2016 1:36 PM	2/22/2016 1:35 PM	2/24/2016 2:05 AM	Perfluorinated Hydrocarbons
320-17363-6	DW-59	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U M	1.1	MDL	1.0	Total	101347	2/19/2016 1:36 PM	2/22/2016 1:35 PM	2/24/2016 2:05 AM	Perfluorinated Hydrocarbons
320-17363-6	DW-59	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.67	MDL	1.0	Total	101347	2/19/2016 1:36 PM	2/22/2016 1:35 PM	2/24/2016 2:05 AM	Perfluorinated Hydrocarbons
320-17363-7	DW-59FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.81	MDL	1.0	Total	101347	2/19/2016 1:27 PM	2/22/2016 1:35 PM	2/24/2016 2:27 AM	Perfluorinated Hydrocarbons
320-17363-7	DW-59FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.70	MDL	1.0	Total	101347	2/19/2016 1:27 PM	2/22/2016 1:35 PM	2/24/2016 2:27 AM	Perfluorinated Hydrocarbons
320-17363-7	DW-59FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.76	MDL	1.0	Total	101347	2/19/2016 1:27 PM	2/22/2016 1:35 PM	2/24/2016 2:27 AM	Perfluorinated Hydrocarbons
320-17363-7	DW-59FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.57	MDL	1.0	Total	101347	2/19/2016 1:27 PM	2/22/2016 1:35 PM	2/24/2016 2:27 AM	Perfluorinated Hydrocarbons
320-17363-7	DW-59FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U	1.1	MDL	1.0	Total	101347	2/19/2016 1:27 PM	2/22/2016 1:35 PM	2/24/2016 2:27 AM	Perfluorinated Hydrocarbons
320-17363-7	DW-59FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.66	MDL	1.0	Total	101347	2/19/2016 1:27 PM	2/22/2016 1:35 PM	2/24/2016 2:27 AM	Perfluorinated Hydrocarbons
320-17363-8	DW-88	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.80	MDL	1.0	Total	101347	2/19/2016 1:11 PM	2/22/2016 1:35 PM	2/24/2016 2:48 AM	Perfluorinated Hydrocarbons
320-17363-8	DW-88	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.70	MDL	1.0	Total	101347	2/19/2016 1:11 PM	2/22/2016 1:35 PM	2/24/2016 2:48 AM	Perfluorinated Hydrocarbons
320-17363-8	DW-88	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.76	MDL	1.0	Total	101347	2/19/2016 1:11 PM	2/22/2016 1:35 PM	2/24/2016 2:48 AM	Perfluorinated Hydrocarbons
320-17363-8	DW-88	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.57	MDL	1.0	Total	101347	2/19/2016 1:11 PM	2/22/2016 1:35 PM	2/24/2016 2:48 AM	Perfluorinated Hydrocarbons
320-17363-8	DW-88	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U	1.1	MDL	1.0	Total	101347	2/19/2016 1:11 PM	2/22/2016 1:35 PM	2/24/2016 2:48 AM	Perfluorinated Hydrocarbons
320-17363-8	DW-88	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.66	MDL	1.0	Total	101347	2/19/2016 1:11 PM	2/22/2016 1:35 PM	2/24/2016 2:48 AM	Perfluorinated Hydrocarbons
320-17363-9	DW-88FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.84	MDL	1.0	Total	101347	2/19/2016 12:57 PM	2/22/2016 1:35 PM	2/24/2016 3:09 AM	Perfluorinated Hydrocarbons
320-17363-9	DW-88FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.74	MDL	1.0	Total	101347	2/19/2016 12:57 PM	2/22/2016 1:35 PM	2/24/2016 3:09 AM	Perfluorinated Hydrocarbons
320-17363-9	DW-88FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.80	MDL	1.0	Total	101347	2/19/2016 12:57 PM	2/22/2016 1:35 PM	2/24/2016 3:09 AM	Perfluorinated Hydrocarbons
320-17363-9	DW-88FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.60	MDL	1.0	Total	101347	2/19/2016 12:57 PM	2/22/2016 1:35 PM	2/24/2016 3:09 AM	Perfluorinated Hydrocarbons
320-17363-9	DW-88FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	ng/L	U	1.2	MDL	1.0	Total	101347	2/19/2016 12:57 PM	2/22/2016 1:35 PM	2/24/2016 3:09 AM	Perfluorinated Hydrocarbons
320-17363-9	DW-88FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.69	MDL	1.0	Total	101347	2/19/2016 12:57 PM	2/22/2016 1:35 PM	2/24/2016 3:09 AM	Perfluorinated Hydrocarbons
320-17363-10	DW-10	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	ng/L	U	0.88	MDL	1.0	Total	101347	2/19/2016 10:31 AM	2/22/2016 1:35 PM	2/24/2016 3:30 AM	Perfluorinated Hydrocarbons
320-17363-10	DW-10	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	ng/L	U	0.77	MDL	1.0	Total	101347	2/19/2016 10:31 AM	2/22/2016 1:35 PM	2/24/2016 3:30 AM	Perfluorinated Hydrocarbons
320-17363-10	DW-10	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	ng/L	U M	0.84	MDL	1.0	Total	101347	2/19/2016 10:31 AM	2/22/2016 1:35 PM	2/24/2016 3:30 AM	Perfluorinated Hydrocarbons
320-17363-10	DW-10	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.9	ng/L	U	0.63	MDL	1.0	Total	101347	2/19/2016 10:31 AM	2/22/2016 1:35 PM	2/24/2016 3:30 AM	Perfluorinated Hydrocarbons
320-17363-10	DW-10	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	ng/L	U	1.2	MDL	1.0	Total	101347	2/19/2016 10:31 AM	2/22/2016 1:35 PM	2/24/2016 3:30 AM	Perfluorinated Hydrocarbons
320-17363-10	DW-10	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.9	ng/L	U	0.72	MDL	1.0	Total	101347	2/19/2016 10:31 AM	2/22/2016 1:35 PM	2/24/2016 3:30 AM	Perfluorinated Hydrocarbons
320-17363-11	DW-10FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.82	MDL	1.0	Total	101347	2/19/2016 10:12 AM	2/22/2016 1:35 PM	2/24/2016 3:52 AM	Perfluorinated Hydrocarbons
320-17363-11	DW-10FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.72	MDL	1.0	Total	101347	2/19/2016 10:12 AM	2/22/2016 1:35 PM	2/24/2016 3:52 AM	Perfluorinated Hydrocarbons
320-17363-11	DW-10FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	**0.80**	ng/L	J	0.78	MDL	1.0	Total	101347	2/19/2016 10:12 AM	2/22/2016 1:35 PM	2/24/2016 3:52 AM	Perfluorinated Hydrocarbons
320-17363-11	DW-10FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.59	MDL	1.0	Total	101347	2/19/2016 10:12 AM	2/22/2016 1:35 PM	2/24/2016 3:52 AM	Perfluorinated Hydrocarbons
320-17363-11	DW-10FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.1	MDL	1.0	Total	101347	2/19/2016 10:12 AM	2/22/2016 1:35 PM	2/24/2016 3:52 AM	Perfluorinated Hydrocarbons
320-17363-11	DW-10FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.67	MDL	1.0	Total	101347	2/19/2016 10:12 AM	2/22/2016 1:35 PM	2/24/2016 3:52 AM	Perfluorinated Hydrocarbons
320-17363-12	DW-63	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.83	MDL	1.0	Total	101347	2/19/2016 11:06 AM	2/22/2016 1:35 PM	2/24/2016 4:13 AM	Perfluorinated Hydrocarbons
320-17363-12	DW-63	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.72	MDL	1.0	Total	101347	2/19/2016 11:06 AM	2/22/2016 1:35 PM	2/24/2016 4:13 AM	Perfluorinated Hydrocarbons

Sample	Sample Name	Specific Method	CAS Number	Analyte	Result	Units	Qualifier	Limit	Reports To	Dilution	Result Basis	Batch	Sampled	Prepared	Analyzed	Analysis
320-17363-12	DW-63	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.78	MDL	1.0	Total	101347	2/19/2016 11:06 AM	2/22/2016 1:35 PM	2/24/2016 4:13 AM	Perfluorinated Hydrocarbons
320-17363-12	DW-63	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.59	MDL	1.0	Total	101347	2/19/2016 11:06 AM	2/22/2016 1:35 PM	2/24/2016 4:13 AM	Perfluorinated Hydrocarbons
320-17363-12	DW-63	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.1	MDL	1.0	Total	101347	2/19/2016 11:06 AM	2/22/2016 1:35 PM	2/24/2016 4:13 AM	Perfluorinated Hydrocarbons
320-17363-12	DW-63	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.67	MDL	1.0	Total	101347	2/19/2016 11:06 AM	2/22/2016 1:35 PM	2/24/2016 4:13 AM	Perfluorinated Hydrocarbons
320-17363-13	DW-63FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.83	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 4:34 AM	Perfluorinated Hydrocarbons
320-17363-13	DW-63FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.73	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 4:34 AM	Perfluorinated Hydrocarbons
320-17363-13	DW-63FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.79	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 4:34 AM	Perfluorinated Hydrocarbons
320-17363-13	DW-63FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.59	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 4:34 AM	Perfluorinated Hydrocarbons
320-17363-13	DW-63FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.2	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 4:34 AM	Perfluorinated Hydrocarbons
320-17363-13	DW-63FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.68	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 4:34 AM	Perfluorinated Hydrocarbons
320-17363-14	DW-87	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	**0.86**	ng/L	J	0.83	MDL	1.0	Total	101347	2/19/2016 12:36 PM	2/22/2016 1:35 PM	2/24/2016 4:55 AM	Perfluorinated Hydrocarbons
320-17363-14	DW-87	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.72	MDL	1.0	Total	101347	2/19/2016 12:36 PM	2/22/2016 1:35 PM	2/24/2016 4:55 AM	Perfluorinated Hydrocarbons
320-17363-14	DW-87	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.78	MDL	1.0	Total	101347	2/19/2016 12:36 PM	2/22/2016 1:35 PM	2/24/2016 4:55 AM	Perfluorinated Hydrocarbons
320-17363-14	DW-87	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.59	MDL	1.0	Total	101347	2/19/2016 12:36 PM	2/22/2016 1:35 PM	2/24/2016 4:55 AM	Perfluorinated Hydrocarbons
320-17363-14	DW-87	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.1	MDL	1.0	Total	101347	2/19/2016 12:36 PM	2/22/2016 1:35 PM	2/24/2016 4:55 AM	Perfluorinated Hydrocarbons
320-17363-14	DW-87	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.67	MDL	1.0	Total	101347	2/19/2016 12:36 PM	2/22/2016 1:35 PM	2/24/2016 4:55 AM	Perfluorinated Hydrocarbons
320-17363-15	DW-87FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.83	MDL	1.0	Total	101347	2/19/2016 12:27 PM	2/22/2016 1:35 PM	2/24/2016 5:38 AM	Perfluorinated Hydrocarbons
320-17363-15	DW-87FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.73	MDL	1.0	Total	101347	2/19/2016 12:27 PM	2/22/2016 1:35 PM	2/24/2016 5:38 AM	Perfluorinated Hydrocarbons
320-17363-15	DW-87FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	**0.86**	ng/L	J	0.79	MDL	1.0	Total	101347	2/19/2016 12:27 PM	2/22/2016 1:35 PM	2/24/2016 5:38 AM	Perfluorinated Hydrocarbons
320-17363-15	DW-87FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	**0.78**	ng/L	J	0.59	MDL	1.0	Total	101347	2/19/2016 12:27 PM	2/22/2016 1:35 PM	2/24/2016 5:38 AM	Perfluorinated Hydrocarbons
320-17363-15	DW-87FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.2	MDL	1.0	Total	101347	2/19/2016 12:27 PM	2/22/2016 1:35 PM	2/24/2016 5:38 AM	Perfluorinated Hydrocarbons
320-17363-15	DW-87FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.68	MDL	1.0	Total	101347	2/19/2016 12:27 PM	2/22/2016 1:35 PM	2/24/2016 5:38 AM	Perfluorinated Hydrocarbons
320-17363-16	DW-23	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.83	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 5:59 AM	Perfluorinated Hydrocarbons
320-17363-16	DW-23	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.72	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 5:59 AM	Perfluorinated Hydrocarbons
320-17363-16	DW-23	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.79	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 5:59 AM	Perfluorinated Hydrocarbons
320-17363-16	DW-23	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.59	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 5:59 AM	Perfluorinated Hydrocarbons
320-17363-16	DW-23	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.2	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 5:59 AM	Perfluorinated Hydrocarbons
320-17363-16	DW-23	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.68	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 5:59 AM	Perfluorinated Hydrocarbons
320-17363-17	DW-23FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.82	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 6:20 AM	Perfluorinated Hydrocarbons
320-17363-17	DW-23FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.72	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 6:20 AM	Perfluorinated Hydrocarbons
320-17363-17	DW-23FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.78	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 6:20 AM	Perfluorinated Hydrocarbons
320-17363-17	DW-23FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.59	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 6:20 AM	Perfluorinated Hydrocarbons
320-17363-17	DW-23FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.1	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 6:20 AM	Perfluorinated Hydrocarbons
320-17363-17	DW-23FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.67	MDL	1.0	Total	101347	2/19/2016 10:47 AM	2/22/2016 1:35 PM	2/24/2016 6:20 AM	Perfluorinated Hydrocarbons
320-17363-18	DUP-021916	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.92	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 6:41 AM	Perfluorinated Hydrocarbons
320-17363-18	DUP-021916	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.81	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 6:41 AM	Perfluorinated Hydrocarbons
320-17363-18	DUP-021916	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.88	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 6:41 AM	Perfluorinated Hydrocarbons
320-17363-18	DUP-021916	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.66	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 6:41 AM	Perfluorinated Hydrocarbons
320-17363-18	DUP-021916	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	ng/L	U	1.3	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 6:41 AM	Perfluorinated Hydrocarbons
320-17363-18	DUP-021916	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U	0.75	MDL	1.0	Total	101347	2/19/2016 12:06 PM	2/22/2016 1:35 PM	2/24/2016 6:41 AM	Perfluorinated Hydrocarbons

Naval Installation Restoration Information Solution (NIRIS)
Environmental Restoration Program (ERP) Records
Transmittal Form

Purpose

Complete one copy of this form to accompany the paper and electronic versions of Environmental Restoration Program (ERP) records submitted for inclusion to NIRIS.

Submitted By:

Name: Jennifer O'Keefe

Organization: Resolution Consultants

Email: jokeefe@ensafe.com **Phone:** 609-610-2721

Record Information:

Installation: NWS Earle

Program: (•) ERN ( ) BRAC **Supporting:** [ ] MRP [ ] LUC [ ] RAD [ ] POL

Document Title: Data Validation Report

AOC, SITE, SWMU, UST, UXO: Site 46 Military Sealift Command Fire School

Sample Delivery Groups (SDGs): 320-17363-1, 320-17376-1, 32017406-1, and 320-17463-1

Document Date: March 2016 **Number of Pages:** 13

Contract Number: N62470-11-D-8013 **CTO/DO Number:** WE09

Author/Affiliation: Jennifer O'Keefe/Resolution Consultants

Distribution/Availability Statement: [■] A [ ] B [ ] C [ ] D [ ] E [ ] F

Sensitive Content ( ) Yes (•) No **Cite Pages:**

Recommended File Type: ( ) Administrative Record ( ) Post Decision (•) Site File

Notes:

DATA VALIDATION REPORT

Site Name:	Naval Weapons Station Earle, Colts Neck, New Jersey, Site 46 — Military Sealift Command Firefighting School
Laboratory:	TestAmerica, Sacramento, California.
Sample Delivery Groups:	320-17363-1, 320-17376-1, 32017406-1, and 320-17463-1
Matrix:	Potable Water
Data Quality Level:	Stage 4, Electronic and Manual
Analysis:	Select perfluorinated compounds (PFCs) via Method 537 Modified

This report summarizes data review findings for potable water samples collected in February 2016 using the following reference documents:

- *Internal Draft Perfluorinated Compound Groundwater Investigation Sampling and Analysis Plan, Site 46 Military Sealift Command, Naval Weapons Station Earle Newport, Colts Neck, New Jersey*, Resolution Consultants (December 2015).

- Laboratory standard operating procedure (SOP) *Perfluorinated Compounds (PFCs) in Water, Soils, Sediments, and Tissue [Method 37 Modified],* TestAmerica, Sacramento, California, WS-LC-0025, Revision 1.5, (November 2015).

- *Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data review,* United States Environmental Protection Agency*,* (September 2011).

- *Department of Defense Quality Systems Manual for Environmental Laboratories*, Version 5.0. (July 2013).

Validation was performed on potable water and quality control (QC) samples, summarized in Attachment A, Table A-1. Samples discussed in this validation report were analyzed and reported as definitive data. A full deliverable data packages, QC summaries and raw data, were submitted for data review.

The data were evaluated based on the following review elements:

- * Data completeness
- Sample receipt and preservation
- * Holding times
- * Initial calibration
- * Initial calibration verification
- Continuing calibration verification
- * Laboratory control sample/laboratory control sample duplicate results
- Isotope dilution recoveries
- Laboratory method blanks
- Field and trip blanks
- * Field duplicate precision
- Sample reporting issues
- * Sample result transcriptions/recalculations

Acceptable data parameters for which all criteria were met, as indicated above with an asterisk (*), are not discussed further.

Sample Receipt and Preservation

All samples were received by the laboratory in good condition, properly preserved, and at the proper temperature of less than 4 degrees Celsius.

The chain-of-custody form for sample delivery group (SDG) 320-1736-1 did not document the collection time for DW-3; the time was corrected by the laboratory based on sampler's instructions the same day. In addition, the requested sample analyses, sample type, and matrix were inadvertently omitted for samples DW-84 and DW-84B. The laboratory logged these samples as specified on the purchase order/scope of work.

For SDG 320-17463-1, the requested sample analysis was omitted and the laboratory logged these samples as specified on the purchase order/scope of work.

No adverse effects to data quality are anticipated do to these chain-of-custody form oversights.

Continuing Calibration Outliers

Initial calibration demonstrates that the instrument is capable of acceptable performance and the results are used to quantitate sample values. Initial and continuing calibration verification checks satisfactory performance of the instrument on a day-to-day basis. If calibration results are close to the expected values, the reported analyte concentrations are assumed to be accurate. All initial calibration and initial calibration verification criteria were met.

The perfluorooctane sulfonic acid (PFOS) continuing calibration (CCV 320-101820/43) had a percent recovery of 27.2%, which was above the <25% control limit. The laboratory reanalyzed all samples associated with this calibration. The reanalyzed sample results met all QC criteria and are reported for interpretation.

Isotope Dilution Recoveries

The isotope dilution analytes consist of carbon-13 labeled analogs, oxygen-18 labeled analogs, or deuterated analogs of the compounds of interest, and they are spiked into every standard and sample at the time of extraction. This provides a correction for recovery of each corresponding native compound because the native compound and its labeled compound exhibit similar effects upon extraction, concentration, and analysis. By determining the ratio of these amounts, both the quantity and mass of the compound can be ascertained.

The field blank DW-80FB isotope dilution percent recovery (%R) for $^{13}C_4$-PFOS was 156%, which was above the 25-150% control limit. Since associated compound PFOS was not detected, no qualification transpired because the elevated %R indicated a high result bias.

All isotope dilution analytes were below the 25-150% control limit for sample DW-55 during an initial analysis. However, this sample was reanalyzed due to a PFOS calibration outlier and this was the only analyte reported from the reanalysis. The data reviewer contacted the laboratory and requested the reanalyzed sample results be reported for all analytes. The reanalyzed sample results met all QC criteria and are reported for interpretation.

Blanks

Blanks help determine how much, if any, contamination was introduced in the laboratory or the field. All results associated with a particular laboratory blank were evaluated to determine whether there was an inherent variability in the data, or if a problem was an isolated occurrence that did not affect the data.

Laboratory method blanks were analyzed with samples to assess contamination imparted by sample preparation and/or analysis. All results associated with a particular laboratory blank were evaluated to determine whether there was an inherent variability in the data, or if a problem was an isolated occurrence that did not affect the data.

For this project, two types of field-derived blanks were collected: trip blank and field blank. The trip blank, which was placed in every shipping cooler and never opened in the field, consisted of the same source water as the laboratory method blank and was primarily used to measure possible cross contamination of samples during shipping to and from the site. Field blanks consisted of laboratory blank water bottles that were opened in the field and transferred into another container at each sampling location; they were used to assess potential ambient conditions cross-contamination that could potentially affect the quality of the associated samples. The primary purpose of this type of blank was to provide an additional check on possible sources of contamination beyond that which was intended for trip blanks.

Laboratory Method Blank Outliers

Laboratory method blank MB 320-102166/1-A contained perfluorobutanesulfonic acid (PFBS) at a concentration of 1.37 nanograms per liter (ng/L). PFBS was detected below the limit of quantitation and was qualified as undetected "U" in the following samples due to laboratory blank contamination: BC_02_26_16, DUP_022616, DW-18, DW-18FB, DW-78, DW-78FB, DW-100, and DW-100FB.

Trip Blanks and Field Blanks

Table 1 summarizes sample results qualified due to trip blank and field blank artifacts per the validation guidelines. Sample results that were either undetected or greater than the limit of quantitation were not qualified when blank outliers were observed.

Table 1
Trip and Field Blank Outliers

Blank	Blank Type	Analyte	Result (ng/L)	LOQ (ng/L)	Samples Qualified Undetected "U"
BC_02_26_16	Trip	Perfluorobutanesulfonic Acid (PFBS)	1.4	2.1	DUP_022616, DW-100, DW-100FB, DW-18, DW-18FB, DW-78, DW-78FB
BC_02_26_16	Trip	Perfluorononanoic Acid (PFNA)	0.64	2.1	DW-100FB
BC_2_20_16	Trip	Perfluorononanoic Acid (PFNA)	0.67	2.2	DW-3
DW-10FB	Field	Perfluorohexanesulfonic Acid (PFHXS)	0.80	2.2	None (a)
DW-18FB	Field	Perfluorobutanesulfonic Acid (PFBS)	1.3	2.3	DW-18
DW-29FB	Field	Perfluorobutanesulfonic Acid (PFBS)	1.7	2.3	None (a)
DW-48FB	Field	Perfluoroheptanoic Acid (PFHPA)	0.71	2.2	None (a)
DW-57FB	Field	Perfluorohexanesulfonic Acid (PFHXS)	1.1	2.2	None (b)

Table 1
Trip and Field Blank Outliers

Blank	Blank Type	Analyte	Result (ng/L)	LOQ (ng/L)	Samples Qualified Undetected "U"
DW-57FB	Field	Perfluorooctane Sulfonic Acid	1.7	3.6	None (b)
DW-78FB	Field	Perfluorobutanesulfonic Acid (PFBS)	1.2	2.2	DW-78
DW-87FB	Field	Perfluorohexanesulfonic Acid (PFHXS)	0.86	2.3	None (a)
DW-87FB	Field	Perfluorononanoic Acid (PFNA)	0.78	2.3	None (a)
DW-100FB	Field	Perfluorobutanesulfonic Acid (PFBS)	1.3	2.3	DW-100
DW-100FB	Field	Perfluorononanoic Acid (PFNA)	0.63	2.3	None (a)

Notes:
ng/L = Nanograms per liter
LOQ = Limit of quantitation
(a) = The associated sample result was undetected and no adverse effects to data is expected.
(b) = The associated sample result was greater than the limit of quantitation and was not qualified.

Sample Reporting Issues

Raw analytical data were reviewed with particular attention to manual integration. As stated in the laboratory's SOP, *commercial sources of PFOS may produce several peaks in the PFOS chromatogram. These adjacent peaks are either completely resolved or not resolved but with a profound deflection that can be resolved during peak integration. The later of the peaks matches the retention time of the single labeled PFOS peak. Earlier peaks are branched isomers of PFOS, rather than a result of peak splitting. The earlier peak is included during peak integration.*

The data reviewer noticed that three of the PFOS manual integrations were not performed consistently in accordance with the SOP and requested that the laboratory reassess the data. Based on this inquiry, PFOs for sample DW-68 and DW-95 were reintegrated and re-reported. The third sample (DW-57) was reported correctly and results were not changed.

Overall Assessment

The data from SDGs 320-17363-1, 320-17376-1, 32017406-1, and 320-17463-1 were reviewed independently from the laboratory to assess data quality. Several analytes were flagged as undetected during data review due to suspected cross-contamination from laboratory and/or field sources. The remaining results were acceptable without qualification; therefore, the data are usable for their intended purpose, according to U.S. Environmental Protection Agency and Department of Defense guidelines. Attachment B provides final results after data review.

Attachment A
Sample and Analysis Summary

Table A-1 Sample Summary				
Sample Delivery Group	**Laboratory Identification**	**Sample Date**	**Sample Identification**	**Sample Type**
320173631	320-17363-1	2/19/2016	BC2_19_16	Trip Blank
320173631	320-17363-10	2/19/2016	DW-10	Potable Water
320173631	320-17363-11	2/19/2016	DW-10FB	Field Blank
320173631	320-17363-12	2/19/2016	DW-63	Potable Water
320173631	320-17363-13	2/19/2016	DW-63FB	Field Blank
320173631	320-17363-14	2/19/2016	DW-87	Potable Water
320173631	320-17363-15	2/19/2016	DW-87FB	Field Blank
320173631	320-17363-16	2/19/2016	DW-23	Potable Water
320173631	320-17363-17	2/19/2016	DW-23FB	Field Blank
320173631	320-17363-18	2/19/2016	DUP-021916	Duplicate of DW-23
320173631	320-17363-2	2/19/2016	DW-57	Potable Water
320173631	320-17363-3	2/19/2016	DW-57FB	Field Blank
320173631	320-17363-4	2/19/2016	DW-48	Potable Water
320173631	320-17363-5	2/19/2016	DW-48FB	Field Blank
320173631	320-17363-6	2/19/2016	DW-59	Potable Water
320173631	320-17363-7	2/19/2016	DW-59FB	Field Blank
320173631	320-17363-8	2/19/2016	DW-88	Potable Water
320173631	320-17363-9	2/19/2016	DW-88FB	Field Blank
320173761	320-17376-1	2/20/2016	BC_2_20_16	Trip Blank
320173761	320-17376-10	2/20/2016	DW-84	Potable Water
320173761	320-17376-11	2/20/2016	DW-84FB	Field Blank
320173761	320-17376-12	2/20/2016	DW-91	Potable Water
320173761	320-17376-13	2/20/2016	DW-91FB	Field Blank
320173761	320-17376-14	2/20/2016	DUP022016	Duplicate of DW-91
320173761	320-17376-2	2/20/2016	DW-29	Potable Water
320173761	320-17376-3	2/20/2016	DW-29FB	Field Blank
320173761	320-17376-4	2/20/2016	DW-13	Potable Water
320173761	320-17376-5	2/20/2016	DW-13FB	Field Blank
320173761	320-17376-6	2/20/2016	DW-3	Potable Water
320173761	320-17376-7	2/20/2016	DW-3FB	Field Blank
320173761	320-17376-8	2/20/2016	DW-71	Potable Water
320173761	320-17376-9	2/20/2016	DW-71FB	Field Blank
320174061	320-17406-1	2/22/2016	BC_2_22_16	Trip Blank
320174061	320-17406-10	2/22/2016	DW-15	Potable Water
320174061	320-17406-11	2/22/2016	DW-15FB	Field Blank
320174061	320-17406-12	2/22/2016	DW-19	Potable Water
320174061	320-17406-13	2/22/2016	DW-19FB	Field Blank
320174061	320-17406-14	2/22/2016	DW-68	Potable Water
320174061	320-17406-15	2/22/2016	DW-68FB	Field Blank
320174061	320-17406-16	2/22/2016	DW-55	Potable Water
320174061	320-17406-17	2/22/2016	DW-55FB	Field Blank
320174061	320-17406-18	2/22/2016	DW-95	Potable Water
320174061	320-17406-19	2/22/2016	DW-95FB	Field Blank
320174061	320-17406-2	2/22/2016	DW-1	Potable Water
320174061	320-17406-20	2/22/2016	DW-6	Potable Water

Table A-1 Sample Summary				
Sample Delivery Group	**Laboratory Identification**	**Sample Date**	**Sample Identification**	**Sample Type**
320174061	320-17406-21	2/22/2016	DW-6FB	Field Blank
320174061	320-17406-22	2/22/2016	DW-37	Potable Water
320174061	320-17406-23	2/22/2016	DW-37FB	Field Blank
320174061	320-17406-24	2/22/2016	DUP-022216	Duplicate of DW-37
320174061	320-17406-3	2/22/2016	DW-1FB	Field Blank
320174061	320-17406-4	2/22/2016	DW-56	Potable Water
320174061	320-17406-5	2/22/2016	DW-56FB	Field Blank
320174061	320-17406-6	2/22/2016	DW-80	Potable Water
320174061	320-17406-7	2/22/2016	DW-80FB	Field Blank
320174061	320-17406-8	2/22/2016	DW-44	Potable Water
320174061	320-17406-9	2/22/2016	DW-44FB	Field Blank
320174631	320-17463-1	2/26/2016	BC_02_26_16	Trip Blank
320174631	320-17463-2	2/26/2016	DW-18	Potable Water
320174631	320-17463-3	2/26/2016	DW-18FB	Field Blank
320174631	320-17463-4	2/26/2016	DW-78	Potable Water
320174631	320-17463-5	2/26/2016	DW-78FB	Field Blank
320174631	320-17463-6	2/26/2016	DW-100	Potable Water
320174631	320-17463-7	2/26/2016	DW-100FB	Field Blank
320174631	320-17463-8	2/26/2016	DUP_022616	Duplicate of DW-100

Notes:

All samples were analyzed via laboratory standard operating procedure *Perfluorinated Compounds (PFCs) in Water, Soils, Sediments, and Tissue [Method 37 Modified],* TestAmerica, Sacramento, California, WS-LC-0025, Revision 1.5, (November 2015) for the following select list of analytes: Perfluorobutanesulfonic Acid (PFBS), Perfluoroheptanoic Acid (PFHPA), Perfluorohexanesulfonic Acid (PFHXS), Perfluorononanoic Acid (PFNA), Perfluorooctane Sulfonic Acid (PFOS), and Perfluorooctanoic Acid (PFOA).

Attachment B

Final Validated Results after Data Review

Table B-1
Perfluorinated Compound Results – February 2016

Sample Delivery Group			320173631			320173631			320173631			320173631			320173631		
Lab ID			320-17363-1			320-17363-10			320-17363-11			320-17363-12			320-17363-13		
Sample ID			BC2_19_16			DW-10			DW-10FB			DW-63			DW-63FB		
Sample Date			2/19/2016			2/19/2016			2/19/2016			2/19/2016			2/19/2016		
Sample Type			Trip Blank			Potable Water			Field Blank			Potable Water			Field Blank		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.9	U		1.8	U		1.8	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.9	U		1.8	U		1.8	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.9	U		0.8	J		1.8	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.9	U		1.8	U		1.8	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.9	U		2.7	U		2.7	U		2.7	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.9	U		1.8	U		1.8	U		1.8	U	

Sample Delivery Group			320173631			320173631			320173631			320173631			320173631		
Lab ID			320-17363-14			320-17363-15			320-17363-16			320-17363-17			320-17363-18		
Sample ID			DW-87			DW-87FB			DW-23			DW-23FB			DUP-021916		
Sample Date			2/19/2016			2/19/2016			2/19/2016			2/19/2016			2/19/2016		
Sample Type			Potable Water			Field Blank			Potable Water			Field Blank			Duplicate (DW-23)		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	0.86	J		1.8	U		1.8	U		1.8	U		2	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		2	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		0.86	J		1.8	U		1.8	U		2	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		0.78	J		1.8	U		1.8	U		2	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.7	U		2.7	U		2.7	U		3	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		2	U	

Sample Delivery Group			320173631			320173631			320173631			320173631			320173631		
Lab ID			320-17363-2			320-17363-3			320-17363-4			320-17363-5			320-17363-6		
Sample ID			DW-57			DW-57FB			DW-48			DW-48FB			DW-59		
Sample Date			2/19/2016			2/19/2016			2/19/2016			2/19/2016			2/19/2016		
Sample Type			Potable Water			Field Blank			Potable Water			Field Blank			Potable Water		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	J		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	4.5			1.8	U		1.8	U		0.71	J		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	41			1.1	J		0.83	J		1.8	U		0.83	J	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	3.4			1.8	U		1.8	U		1.8	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	200			1.7	J		2.6	U		2.6	U		2.7	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	28			1.8	U		1.8	U		1.8	U		1.8	U	

Table B-1
Perfluorinated Compound Results – February 2016

Sample Delivery Group			320173631			320173631			320173631			320173761			320173761		
Lab ID			320-17363-7			320-17363-8			320-17363-9			320-17376-1			320-17376-10		
Sample ID			DW-59FB			DW-88			DW-88FB			BC_2_20_16			DW-84		
Sample Date			2/19/2016			2/19/2016			2/19/2016			2/20/2016			2/20/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Trip Blank			Potable Water		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.8	U		1.8	U		0.67	J		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.6	U		2.6	U		2.8	U		2.7	U		2.6	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	

Sample Delivery Group			320173761			320173761			320173761			320173761			320173761		
Lab ID			320-17376-11			320-17376-12			320-17376-13			320-17376-14			320-17376-2		
Sample ID			DW-84FB			DW-91			DW-91FB			DUP022016			DW-29		
Sample Date			2/20/2016			2/20/2016			2/20/2016			2/20/2016			2/20/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Duplicate (DW-91)			Potable Water		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.8	U		2.6	U		2.8	U		2.7	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	

Sample Delivery Group			320173761			320173761			320173761			320173761			320173761		
Lab ID			320-17376-3			320-17376-4			320-17376-5			320-17376-6			320-17376-7		
Sample ID			DW-29FB			DW-13			DW-13FB			DW-3			DW-3FB		
Sample Date			2/20/2016			2/20/2016			2/20/2016			2/20/2016			2/20/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Potable Water			Field Blank		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.7	J		1.8	U		1.8	U		1.4	J		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.8	U		1.8	U		0.97	J		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.8	U		1.8	U		1.8	U	bf	1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.7	U		2.7	U		16			2.7	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		1.8	U		2	J		1.8	U	

Table B-1
Perfluorinated Compound Results – February 2016

Sample Delivery Group			320173761			320173761			320174061			320174061			320174061		
Lab ID			320-17376-8			320-17376-9			320-17406-1			320-17406-10			320-17406-11		
Sample ID			DW-71			DW-71FB			BC_2_22_16			DW-15			DW-15FB		
Sample Date			2/20/2016			2/20/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Potable Water			Field Blank			Trip Blank			Potable Water			Field Blank		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.6	U		2.8	U		3.1	U		2.6	U		3	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	

Sample Delivery Group			320174061			320174061			320174061			320174061			320174061		
Lab ID			320-17406-12			320-17406-13			320-17406-14			320-17406-15			320-17406-16		
Sample ID			DW-19			DW-19FB			DW-68			DW-68FB			DW-55		
Sample Date			2/22/2016			2/22/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Potable Water			Field Blank			Potable Water			Field Blank			Potable Water		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.9	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		6.1			1.8	U		1.9	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.8	U		4.7			1.8	U		1.1	J	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.8	U		2.7			1.8	U		1.9	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.7	U		18			2.6	U		2.8	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		27			1.8	U		1.9	U	

Sample Delivery Group			320174061			320174061			320174061			320174061			320174061		
Lab ID			320-17406-17			320-17406-18			320-17406-19			320-17406-2			320-17406-20		
Sample ID			DW-55FB			DW-95			DW-95FB			DW-1			DW-6		
Sample Date			2/22/2016			2/22/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Potable Water			Potable Water		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.9	J		2.3	U		1.8	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		9.9			2.3	U		1.8	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		5.2			2.3	U		1.8	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.5	J		2.3	U		1.8	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.6	U		28			3.5	U		2.7	U		2.6	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		42			2.3	U		1.8	U		1.8	U	

Table B-1
Perfluorinated Compound Results – February 2016

Sample Delivery Group			320174061			320174061			320174061			320174061			320174061		
Lab ID			320-17406-21			320-17406-22			320-17406-23			320-17406-24			320-17406-3		
Sample ID			DW-6FB			DW-37			DW-37FB			DUP-022216			DW-1FB		
Sample Date			2/22/2016			2/22/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Duplicate (DW-37)			Field Blank		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	3.4	U		3	U		3	U		2.8	U		3	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	

Sample Delivery Group			320174061			320174061			320174061			320174061			320174061		
Lab ID			320-17406-4			320-17406-5			320-17406-6			320-17406-7			320-17406-8		
Sample ID			DW-56			DW-56FB			DW-80			DW-80FB			DW-44		
Sample Date			2/22/2016			2/22/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Potable Water			Field Blank			Potable Water			Field Blank			Potable Water		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.9	U		2	U		1.8	U		2	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	J		2	U		1.8	U		2	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.9	U		2	U		1.8	U		2	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.9	U		2	U		1.8	U		2	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.8	U		3	U		2.7	U		3	U		2.6	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.9	U		2	U		1.8	U		2	U		2.6		

Sample Delivery Group			320174061			320174631			320174631			320174631			320174631		
Lab ID			320-17406-9			320-17463-1			320-17463-2			320-17463-3			320-17463-4		
Sample ID			DW-44FB			BC_02_26_16			DW-18			DW-18FB			DW-78		
Sample Date			2/22/2016			2/26/2016			2/26/2016			2/26/2016			2/26/2016		
Sample Type			Field Blank			Trip Blank			Potable Water			Field Blank			Potable Water		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	2	U		1.7	U	bl	1.8	U	bl	1.8	U	bl	1.9	U	bl
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	2	U		1.7	U		1.8	U		1.8	U		1.9	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	2	U		1.7	U		1.8	U		1.8	U		1.9	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	2	U		0.64	J		1.8	U		1.8	U		1.9	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	3	U		2.6	U		2.7	U		2.7	U		2.9	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	2	U		1.7	U		1.8	U		1.8	U		1.9	U	

Table B-1
Perfluorinated Compound Results – February 2016

Sample Delivery Group			320174631			320174631			320174631			320174631		
Lab ID			320-17463-5			320-17463-6			320-17463-7			320-17463-8		
Sample ID			DW-78FB			DW-100			DW-100FB			DUP_022616		
Sample Date			2/26/2016			2/26/2016			2/26/2016			2/26/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Duplicate (DW-100)		
Analyte	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.7	U	bl	2	U	bl	1.9	U	bl	1.9	U	bl
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.7	U		2	U		1.9	U		1.9	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.7	U		2	U		1.9	U		1.9	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.7	U		2	U		1.9	U	bf	1.9	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.6	U		2.9	U		2.8	U		2.9	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.7	U		2	U		1.9	U		1.9	U	

Notes:

ID = Identification
ng/L = Nanograms per liter
Qual = Final qualifier
RC = Data qualification reason code
U = ***Undetected*** — The parameter was analyzed but undetected or was qualified as undetected during data review due to blank artifacts.
J = ***Estimated Value*** — The analyte concentration was less than the limit of quantitation.

Qualification Reason Codes

bf = Result qualified as undetected due to field-derived blank results
bl = Result qualified as undetected due to laboratory blank results

Naval Weapons Station Earle

Approximate Existing Public Water Distribution System

Approximate Groundwater Flow

One Half Mile Area Designated for Drinking Water Sampling (Potable Well Source)

NWS Earle Property Boundary

0 450 900 Feet

NWS EARLE OFFBASE PFC INVESTIGATION
POTABLE WELL SAMPLE AREA
COLTS NECK, NEW JERSEY

NAVFAC Naval Facilities Engineering Command

RESOLUTION CONSULTANTS

REQUESTED BY: J. O'KEEFE	DATE: 2/3/2016
DRAWN BY: M. SENNE	TASK ORDER NUMBER: XXXXX

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