



**Groundwater Sample Results,
Level 2 Laboratory Report, Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Report, SDG J20928-1**

*Naval Surface Warfare Center Dahlgren
Dahlgren, Virginia*

July 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 320-20928-1
Client Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

For:
CH2M Hill, Inc.
2411 Dulles Corner Park
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Herndon, Virginia 20171

Attn: Mr. Michael Zamboni



Authorized for release by:
9/7/2016 2:23:39 PM

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

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

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

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Definitions/Glossary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Qualifiers

LCMS

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

Case Narrative

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Job ID: 320-20928-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: CH2M Hill, Inc.

Project: Navy CLEAN 8012-CTO-JU25 Dahlgren

Report Number: 320-20928-1

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

TestAmerica West Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica West Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

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

RECEIPT

The samples were received on 08/13/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.8 C.

PFAS

Samples GW20-05GW-0816 (320-20928-1), GW20-21SGW-0816 (320-20928-2), GW20-14GW-0816 (320-20928-3), GW20-06GW-0816 (320-20928-4), GW20-21DGW-0816 (320-20928-5), GW20-10GW-0816 (320-20928-6), GW20-10GWP-0816 (320-20928-7), GW20-08GW-0816 (320-20928-8), GW20-07GW-0816 (320-20928-9), GW20-EB01-081216-GW (320-20928-10), GW20-FB01-081216 (320-20928-11), GW20-17DGW-0816 (320-20928-12), GW20-13GW-0816 (320-20928-13), GW20-22GW-0816 (320-20928-14), GW20-17SGW-0816 (320-20928-15), GW20-13DGW-0816 (320-20928-16), GW20-13DGWP-0816 (320-20928-17) and GW20-20GW-0816 (320-20928-18) were analyzed for PFAs in accordance with 537 Modified. The samples were prepared on 08/17/2016 and analyzed on 08/23/2016.

The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Case Narrative

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Job ID: 320-20928-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

The injection times in the LIM system do not match the injection times listed on the instrument printout. The instrument printout listing the injection times can be found at the end of the run log section. GW20-05GW-0816 (320-20928-1), GW20-21SGW-0816 (320-20928-2), GW20-14GW-0816 (320-20928-3), GW20-14GW-0816 (320-20928-3[MS]), GW20-14GW-0816 (320-20928-3[MSD]), GW20-06GW-0816 (320-20928-4), GW20-21DGW-0816 (320-20928-5), GW20-10GW-0816 (320-20928-6), GW20-10GWP-0816 (320-20928-7), GW20-08GW-0816 (320-20928-8), GW20-07GW-0816 (320-20928-9), GW20-EB01-081216-GW (320-20928-10), GW20-FB01-081216 (320-20928-11), GW20-17DGW-0816 (320-20928-12), GW20-13GW-0816 (320-20928-13), GW20-22GW-0816 (320-20928-14), GW20-17SGW-0816 (320-20928-15), GW20-13DGW-0816 (320-20928-16), GW20-13DGWP-0816 (320-20928-17), GW20-20GW-0816 (320-20928-18), (CCV 320-123794/14), (CCV 320-123794/2), (CCV 320-123794/28), (CCV 320-123794/3), (CCV 320-123794/40), (LCS 320-122573/2-A) and (MB 320-122573/1-A)

Samples GW20-14GW-0816 (320-20928-3), GW20-14GW-0816 (320-20928-3[MS]) and GW20-14GW-0816 (320-20928-3[MSD]) had a red thick sediment and before extracting the samples were centrifuged.

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

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-05GW-0816

Lab Sample ID: 320-20928-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	7.3	M	2.2	0.67	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.7		3.6	1.1	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-21SGW-0816

Lab Sample ID: 320-20928-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.0	J M	2.5	0.76	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J	4.1	1.3	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-14GW-0816

Lab Sample ID: 320-20928-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	18	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-06GW-0816

Lab Sample ID: 320-20928-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	4.2	M	2.3	0.70	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.7	J	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-21DGW-0816

Lab Sample ID: 320-20928-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.4	J M	2.3	0.70	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.0	J	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-10GW-0816

Lab Sample ID: 320-20928-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	12	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-10GWP-0816

Lab Sample ID: 320-20928-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	11	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-08GW-0816

Lab Sample ID: 320-20928-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	31	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	170	M	3.6	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-07GW-0816

Lab Sample ID: 320-20928-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	10	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	61	M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-EB01-081216-GW

Lab Sample ID: 320-20928-10

No Detections.

Client Sample ID: GW20-FB01-081216

Lab Sample ID: 320-20928-11

No Detections.

Client Sample ID: GW20-17DGW-0816

Lab Sample ID: 320-20928-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.2	M	2.5	0.75	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	9.8		4.0	1.3	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-13GW-0816

Lab Sample ID: 320-20928-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	17	M	2.3	0.69	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	33	M	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-22GW-0816

Lab Sample ID: 320-20928-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.8		3.7	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-17SGW-0816

Lab Sample ID: 320-20928-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	6.9	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.6	M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-13DGW-0816

Lab Sample ID: 320-20928-16

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	7.0	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.2		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-13DGWP-0816

Lab Sample ID: 320-20928-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	7.2	M	2.3	0.70	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.1		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-20GW-0816

Lab Sample ID: 320-20928-18

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	14	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	18		3.6	1.2	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
 Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-05GW-0816

Date Collected: 08/11/16 09:55

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-1

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.3	M	2.2	0.67	ng/L		08/17/16 08:42	08/23/16 12:16	1
Perfluorooctanesulfonic acid (PFOS)	7.7		3.6	1.1	ng/L		08/17/16 08:42	08/23/16 12:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	79		25 - 150				08/17/16 08:42	08/23/16 12:16	1
13C4 PFOS	120		25 - 150				08/17/16 08:42	08/23/16 12:16	1

Client Sample ID: GW20-21SGW-0816

Date Collected: 08/11/16 10:45

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-2

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.0	J M	2.5	0.76	ng/L		08/17/16 08:42	08/23/16 12:24	1
Perfluorooctanesulfonic acid (PFOS)	1.4	J	4.1	1.3	ng/L		08/17/16 08:42	08/23/16 12:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	96		25 - 150				08/17/16 08:42	08/23/16 12:24	1
13C4 PFOS	128		25 - 150				08/17/16 08:42	08/23/16 12:24	1

Client Sample ID: GW20-14GW-0816

Date Collected: 08/11/16 10:55

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-3

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	18	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 12:31	1
Perfluorooctanesulfonic acid (PFOS)	16		3.8	1.2	ng/L		08/17/16 08:42	08/23/16 12:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	82		25 - 150				08/17/16 08:42	08/23/16 12:31	1
13C4 PFOS	113		25 - 150				08/17/16 08:42	08/23/16 12:31	1

Client Sample ID: GW20-06GW-0816

Date Collected: 08/11/16 11:30

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-4

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	4.2	M	2.3	0.70	ng/L		08/17/16 08:42	08/23/16 12:54	1
Perfluorooctanesulfonic acid (PFOS)	1.7	J	3.7	1.2	ng/L		08/17/16 08:42	08/23/16 12:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	81		25 - 150				08/17/16 08:42	08/23/16 12:54	1
13C4 PFOS	124		25 - 150				08/17/16 08:42	08/23/16 12:54	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-21DGW-0816

Date Collected: 08/11/16 12:05

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-5

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.4	J M	2.3	0.70	ng/L	-	08/17/16 08:42	08/23/16 13:31	1
Perfluorooctanesulfonic acid (PFOS)	3.0	J	3.8	1.2	ng/L	-	08/17/16 08:42	08/23/16 13:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	85		25 - 150				08/17/16 08:42	08/23/16 13:31	1
13C4 PFOS	114		25 - 150				08/17/16 08:42	08/23/16 13:31	1

Client Sample ID: GW20-10GW-0816

Date Collected: 08/11/16 15:05

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-6

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	12	M	2.4	0.71	ng/L	-	08/17/16 08:42	08/23/16 13:39	1
Perfluorooctanesulfonic acid (PFOS)	13		3.8	1.2	ng/L	-	08/17/16 08:42	08/23/16 13:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	80		25 - 150				08/17/16 08:42	08/23/16 13:39	1
13C4 PFOS	116		25 - 150				08/17/16 08:42	08/23/16 13:39	1

Client Sample ID: GW20-10GWP-0816

Date Collected: 08/11/16 15:10

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-7

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	11	M	2.4	0.71	ng/L	-	08/17/16 08:42	08/23/16 13:46	1
Perfluorooctanesulfonic acid (PFOS)	12		3.8	1.2	ng/L	-	08/17/16 08:42	08/23/16 13:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	93		25 - 150				08/17/16 08:42	08/23/16 13:46	1
13C4 PFOS	121		25 - 150				08/17/16 08:42	08/23/16 13:46	1

Client Sample ID: GW20-08GW-0816

Date Collected: 08/11/16 15:20

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-8

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	31	M	2.3	0.68	ng/L	-	08/17/16 08:42	08/23/16 13:54	1
Perfluorooctanesulfonic acid (PFOS)	170	M	3.6	1.2	ng/L	-	08/17/16 08:42	08/23/16 13:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	85		25 - 150				08/17/16 08:42	08/23/16 13:54	1
13C4 PFOS	127		25 - 150				08/17/16 08:42	08/23/16 13:54	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-07GW-0816

Date Collected: 08/11/16 16:15

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-9

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	10	M	2.4	0.71	ng/L	-	08/17/16 08:42	08/23/16 14:01	1
Perfluorooctanesulfonic acid (PFOS)	61	M	3.8	1.2	ng/L	-	08/17/16 08:42	08/23/16 14:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	88		25 - 150				08/17/16 08:42	08/23/16 14:01	1
13C4 PFOS	115		25 - 150				08/17/16 08:42	08/23/16 14:01	1

Client Sample ID: GW20-EB01-081216-GW

Date Collected: 08/12/16 16:30

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-10

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	0.69	ng/L	-	08/17/16 08:42	08/23/16 14:09	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U M	3.7	1.2	ng/L	-	08/17/16 08:42	08/23/16 14:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	135		25 - 150				08/17/16 08:42	08/23/16 14:09	1
13C4 PFOS	125		25 - 150				08/17/16 08:42	08/23/16 14:09	1

Client Sample ID: GW20-FB01-081216

Date Collected: 08/12/16 16:35

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-11

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.8	U M	2.3	0.68	ng/L	-	08/17/16 08:42	08/23/16 14:16	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.7	1.2	ng/L	-	08/17/16 08:42	08/23/16 14:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	133		25 - 150				08/17/16 08:42	08/23/16 14:16	1
13C4 PFOS	119		25 - 150				08/17/16 08:42	08/23/16 14:16	1

Client Sample ID: GW20-17DGW-0816

Date Collected: 08/12/16 09:05

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-12

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.2	M	2.5	0.75	ng/L	-	08/17/16 08:42	08/23/16 14:24	1
Perfluorooctanesulfonic acid (PFOS)	9.8		4.0	1.3	ng/L	-	08/17/16 08:42	08/23/16 14:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	79		25 - 150				08/17/16 08:42	08/23/16 14:24	1
13C4 PFOS	119		25 - 150				08/17/16 08:42	08/23/16 14:24	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-13GW-0816

Date Collected: 08/12/16 09:10

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-13

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	17	M	2.3	0.69	ng/L		08/17/16 08:42	08/23/16 14:31	1
Perfluorooctanesulfonic acid (PFOS)	33	M	3.7	1.2	ng/L		08/17/16 08:42	08/23/16 14:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	62		25 - 150				08/17/16 08:42	08/23/16 14:31	1
13C4 PFOS	132		25 - 150				08/17/16 08:42	08/23/16 14:31	1

Client Sample ID: GW20-22GW-0816

Date Collected: 08/12/16 09:20

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-14

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.8	U M	2.3	0.69	ng/L		08/17/16 08:42	08/23/16 14:39	1
Perfluorooctanesulfonic acid (PFOS)	3.8		3.7	1.2	ng/L		08/17/16 08:42	08/23/16 14:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	83		25 - 150				08/17/16 08:42	08/23/16 14:39	1
13C4 PFOS	126		25 - 150				08/17/16 08:42	08/23/16 14:39	1

Client Sample ID: GW20-17SGW-0816

Date Collected: 08/12/16 10:15

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-15

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	6.9	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 15:16	1
Perfluorooctanesulfonic acid (PFOS)	8.6	M	3.8	1.2	ng/L		08/17/16 08:42	08/23/16 15:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	41		25 - 150				08/17/16 08:42	08/23/16 15:16	1
13C4 PFOS	122		25 - 150				08/17/16 08:42	08/23/16 15:16	1

Client Sample ID: GW20-13DGW-0816

Date Collected: 08/12/16 10:25

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-16

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.0	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 15:24	1
Perfluorooctanesulfonic acid (PFOS)	4.2		3.8	1.2	ng/L		08/17/16 08:42	08/23/16 15:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	82		25 - 150				08/17/16 08:42	08/23/16 15:24	1
13C4 PFOS	126		25 - 150				08/17/16 08:42	08/23/16 15:24	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
 Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-13DGWP-0816

Date Collected: 08/12/16 10:30

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-17

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.2	M	2.3	0.70	ng/L		08/17/16 08:42	08/23/16 15:31	1
Perfluorooctanesulfonic acid (PFOS)	4.1		3.8	1.2	ng/L		08/17/16 08:42	08/23/16 15:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	88		25 - 150				08/17/16 08:42	08/23/16 15:31	1
¹³ C4 PFOS	129		25 - 150				08/17/16 08:42	08/23/16 15:31	1

Client Sample ID: GW20-20GW-0816

Date Collected: 08/12/16 10:55

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-18

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	14	M	2.3	0.68	ng/L		08/17/16 08:42	08/23/16 15:39	1
Perfluorooctanesulfonic acid (PFOS)	18		3.6	1.2	ng/L		08/17/16 08:42	08/23/16 15:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	63		25 - 150				08/17/16 08:42	08/23/16 15:39	1
¹³ C4 PFOS	129		25 - 150				08/17/16 08:42	08/23/16 15:39	1

Isotope Dilution Summary

Client: CH2M Hill, Inc.
 Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	¹³ C4 PFO/ (25-150)	¹³ C4 PFO: (25-150)
320-20928-1	GW20-05GW-0816	79	120
320-20928-2	GW20-21SGW-0816	96	128
320-20928-3	GW20-14GW-0816	82	113
320-20928-3 MS	GW20-14GW-0816	69	114
320-20928-3 MSD	GW20-14GW-0816	65	111
320-20928-4	GW20-06GW-0816	81	124
320-20928-5	GW20-21DGW-0816	85	114
320-20928-6	GW20-10GW-0816	80	116
320-20928-7	GW20-10GWP-0816	93	121
320-20928-8	GW20-08GW-0816	85	127
320-20928-9	GW20-07GW-0816	88	115
320-20928-10	GW20-EB01-081216-GW	135	125
320-20928-11	GW20-FB01-081216	133	119
320-20928-12	GW20-17DGW-0816	79	119
320-20928-13	GW20-13GW-0816	62	132
320-20928-14	GW20-22GW-0816	83	126
320-20928-15	GW20-17SGW-0816	41	122
320-20928-16	GW20-13DGW-0816	82	126
320-20928-17	GW20-13DGWP-0816	88	129
320-20928-18	GW20-20GW-0816	63	129
LCS 320-122573/2-A	Lab Control Sample	135	126
MB 320-122573/1-A	Method Blank	141	129

Surrogate Legend

¹³C4 PFOA = ¹³C4 PFOA

¹³C4 PFOS = ¹³C4 PFOS

QC Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-122573/1-A
Matrix: Water
Analysis Batch: 123794

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 122573

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	0.75	ng/L		08/17/16 08:42	08/23/16 12:01	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.3	ng/L		08/17/16 08:42	08/23/16 12:01	1
Isotope Dilution		MB MB		Limits	Prepared		Analyzed		Dil Fac
	%Recovery	Qualifier							
13C4 PFOA	141		25 - 150			08/17/16 08:42	08/23/16 12:01	1	
13C4 PFOS	129		25 - 150			08/17/16 08:42	08/23/16 12:01	1	

Lab Sample ID: LCS 320-122573/2-A
Matrix: Water
Analysis Batch: 123794

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 122573

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorooctanoic acid (PFOA)	40.0	38.9		ng/L		97	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	32.2	M	ng/L		87	60 - 140
Isotope Dilution		LCS LCS		Limits	Prepared		Dil Fac
	%Recovery	Qualifier					
13C4 PFOA	135		25 - 150				
13C4 PFOS	126		25 - 150				

Lab Sample ID: 320-20928-3 MS
Matrix: Water
Analysis Batch: 123794

Client Sample ID: GW20-14GW-0816
Prep Type: Total/NA
Prep Batch: 122573

Analyte	Sample Sample		Spike Added	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Perfluorooctanoic acid (PFOA)	18	M	38.0	47.3	M	ng/L		78	60 - 140
Perfluorooctanesulfonic acid (PFOS)	16		35.2	39.2	M	ng/L		65	60 - 140
Isotope Dilution		MS MS		Limits	Prepared		Dil Fac		
	%Recovery	Qualifier							
13C4 PFOA	69		25 - 150						
13C4 PFOS	114		25 - 150						

Lab Sample ID: 320-20928-3 MSD
Matrix: Water
Analysis Batch: 123794

Client Sample ID: GW20-14GW-0816
Prep Type: Total/NA
Prep Batch: 122573

Analyte	Sample Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	
	Result	Qualifier		Result	Qualifier					RPD	Limit
Perfluorooctanoic acid (PFOA)	18	M	37.4	51.6	M	ng/L		91	60 - 140	9	30
Perfluorooctanesulfonic acid (PFOS)	16		34.7	42.0	M	ng/L		75	60 - 140	7	30
Isotope Dilution		MSD MSD		Limits	Prepared		Dil Fac				
	%Recovery	Qualifier									
13C4 PFOA	65		25 - 150								
13C4 PFOS	111		25 - 150								

TestAmerica Sacramento

QC Association Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

LCMS

Prep Batch: 122573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20928-1	GW20-05GW-0816	Total/NA	Water	3535	
320-20928-2	GW20-21SGW-0816	Total/NA	Water	3535	
320-20928-3	GW20-14GW-0816	Total/NA	Water	3535	
320-20928-4	GW20-06GW-0816	Total/NA	Water	3535	
320-20928-5	GW20-21DGW-0816	Total/NA	Water	3535	
320-20928-6	GW20-10GW-0816	Total/NA	Water	3535	
320-20928-7	GW20-10GWP-0816	Total/NA	Water	3535	
320-20928-8	GW20-08GW-0816	Total/NA	Water	3535	
320-20928-9	GW20-07GW-0816	Total/NA	Water	3535	
320-20928-10	GW20-EB01-081216-GW	Total/NA	Water	3535	
320-20928-11	GW20-FB01-081216	Total/NA	Water	3535	
320-20928-12	GW20-17DGW-0816	Total/NA	Water	3535	
320-20928-13	GW20-13GW-0816	Total/NA	Water	3535	
320-20928-14	GW20-22GW-0816	Total/NA	Water	3535	
320-20928-15	GW20-17SGW-0816	Total/NA	Water	3535	
320-20928-16	GW20-13DGW-0816	Total/NA	Water	3535	
320-20928-17	GW20-13DGWP-0816	Total/NA	Water	3535	
320-20928-18	GW20-20GW-0816	Total/NA	Water	3535	
MB 320-122573/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-122573/2-A	Lab Control Sample	Total/NA	Water	3535	
320-20928-3 MS	GW20-14GW-0816	Total/NA	Water	3535	
320-20928-3 MSD	GW20-14GW-0816	Total/NA	Water	3535	

Analysis Batch: 123794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20928-1	GW20-05GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-2	GW20-21SGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-3	GW20-14GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-4	GW20-06GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-5	GW20-21DGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-6	GW20-10GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-7	GW20-10GWP-0816	Total/NA	Water	537 (Modified)	122573
320-20928-8	GW20-08GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-9	GW20-07GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-10	GW20-EB01-081216-GW	Total/NA	Water	537 (Modified)	122573
320-20928-11	GW20-FB01-081216	Total/NA	Water	537 (Modified)	122573
320-20928-12	GW20-17DGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-13	GW20-13GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-14	GW20-22GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-15	GW20-17SGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-16	GW20-13DGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-17	GW20-13DGWP-0816	Total/NA	Water	537 (Modified)	122573
320-20928-18	GW20-20GW-0816	Total/NA	Water	537 (Modified)	122573
MB 320-122573/1-A	Method Blank	Total/NA	Water	537 (Modified)	122573
LCS 320-122573/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	122573
320-20928-3 MS	GW20-14GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-3 MSD	GW20-14GW-0816	Total/NA	Water	537 (Modified)	122573

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-05GW-0816

Date Collected: 08/11/16 09:55

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.7 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 12:16	JRB	TAL SAC

Client Sample ID: GW20-21SGW-0816

Date Collected: 08/11/16 10:45

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246.3 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 12:24	JRB	TAL SAC

Client Sample ID: GW20-14GW-0816

Date Collected: 08/11/16 10:55

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.7 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 12:31	JRB	TAL SAC

Client Sample ID: GW20-06GW-0816

Date Collected: 08/11/16 11:30

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.1 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 12:54	JRB	TAL SAC

Client Sample ID: GW20-21DGW-0816

Date Collected: 08/11/16 12:05

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 13:31	JRB	TAL SAC

Client Sample ID: GW20-10GW-0816

Date Collected: 08/11/16 15:05

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.6 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 13:39	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-10GWP-0816

Lab Sample ID: 320-20928-7

Date Collected: 08/11/16 15:10

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.7 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 13:46	JRB	TAL SAC

Client Sample ID: GW20-08GW-0816

Lab Sample ID: 320-20928-8

Date Collected: 08/11/16 15:20

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			275.3 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 13:54	JRB	TAL SAC

Client Sample ID: GW20-07GW-0816

Lab Sample ID: 320-20928-9

Date Collected: 08/11/16 16:15

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 14:01	JRB	TAL SAC

Client Sample ID: GW20-EB01-081216-GW

Lab Sample ID: 320-20928-10

Date Collected: 08/12/16 16:30

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.6 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 14:09	JRB	TAL SAC

Client Sample ID: GW20-FB01-081216

Lab Sample ID: 320-20928-11

Date Collected: 08/12/16 16:35

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.3 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 14:16	JRB	TAL SAC

Client Sample ID: GW20-17DGW-0816

Lab Sample ID: 320-20928-12

Date Collected: 08/12/16 09:05

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			247.7 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 14:24	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-13GW-0816

Lab Sample ID: 320-20928-13

Date Collected: 08/12/16 09:10

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 14:31	JRB	TAL SAC

Client Sample ID: GW20-22GW-0816

Lab Sample ID: 320-20928-14

Date Collected: 08/12/16 09:20

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			270.8 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 14:39	JRB	TAL SAC

Client Sample ID: GW20-17SGW-0816

Lab Sample ID: 320-20928-15

Date Collected: 08/12/16 10:15

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.4 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 15:16	JRB	TAL SAC

Client Sample ID: GW20-13DGW-0816

Lab Sample ID: 320-20928-16

Date Collected: 08/12/16 10:25

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.8 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 15:24	JRB	TAL SAC

Client Sample ID: GW20-13DGWP-0816

Lab Sample ID: 320-20928-17

Date Collected: 08/12/16 10:30

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.2 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 15:31	JRB	TAL SAC

Client Sample ID: GW20-20GW-0816

Lab Sample ID: 320-20928-18

Date Collected: 08/12/16 10:55

Matrix: Water

Date Received: 08/13/16 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.4 mL	0.5 mL	122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123794	08/23/16 15:39	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Laboratory References:

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

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Certification Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

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

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Method Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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



Sample Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-20928-1	GW20-05GW-0816	Water	08/11/16 09:55	08/13/16 09:20
320-20928-2	GW20-21SGW-0816	Water	08/11/16 10:45	08/13/16 09:20
320-20928-3	GW20-14GW-0816	Water	08/11/16 10:55	08/13/16 09:20
320-20928-4	GW20-06GW-0816	Water	08/11/16 11:30	08/13/16 09:20
320-20928-5	GW20-21DGW-0816	Water	08/11/16 12:05	08/13/16 09:20
320-20928-6	GW20-10GW-0816	Water	08/11/16 15:05	08/13/16 09:20
320-20928-7	GW20-10GWP-0816	Water	08/11/16 15:10	08/13/16 09:20
320-20928-8	GW20-08GW-0816	Water	08/11/16 15:20	08/13/16 09:20
320-20928-9	GW20-07GW-0816	Water	08/11/16 16:15	08/13/16 09:20
320-20928-10	GW20-EB01-081216-GW	Water	08/12/16 16:30	08/13/16 09:20
320-20928-11	GW20-FB01-081216	Water	08/12/16 16:35	08/13/16 09:20
320-20928-12	GW20-17DGW-0816	Water	08/12/16 09:05	08/13/16 09:20
320-20928-13	GW20-13GW-0816	Water	08/12/16 09:10	08/13/16 09:20
320-20928-14	GW20-22GW-0816	Water	08/12/16 09:20	08/13/16 09:20
320-20928-15	GW20-17SGW-0816	Water	08/12/16 10:15	08/13/16 09:20
320-20928-16	GW20-13DGW-0816	Water	08/12/16 10:25	08/13/16 09:20
320-20928-17	GW20-13DGWP-0816	Water	08/12/16 10:30	08/13/16 09:20
320-20928-18	GW20-20GW-0816	Water	08/12/16 10:55	08/13/16 09:20


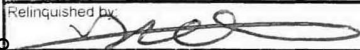
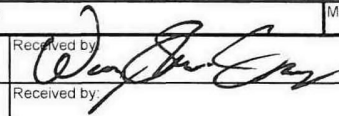
TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client Information		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:					
Client Contact: Mr. Michael Zamboni		Phone:	Kellmann, Jill		320-12234-2765.4					
Company: CH2M Hill, Inc.			E-Mail: jill.kellmann@testamericainc.com		Page: 1 of 2 Page 2 of 2					
Address: 2411 Dulles Corner Park Suite 500		Analysis Requested			Job #:					
City: Herndon		Due Date Requested:	 320-20928 Chain of Custody		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 - Na2S2O3 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)					
State, Zip: VA, 20171		TAT Requested (days):								
Phone: 703-376-5301(Tel)		PO #: 10006-7-105420 CLEAN 8012 JM05								
Email: mzamboni@ch2m.com		WO #:								
Project Name: Navy CLEAN 8012-CTO-JU25 Dahlgren		Project #: 32008186	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) PFC_IDA_D06 - PFOA/PFOS		Total Number of containers					
Site: SSOW#:		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)	Perform MS/MSD (Yes or No)	PFC_IDA_D06 - PFOA/PFOS	Total Number of containers	Special Instructions/Note:
GW20-05GW-0816		8/11/16	0955	G	Water		X		2	
GW20-215GW-0816		8/11/16	1045	G	Water		X		2	
GW20-14GW-0816		8/11/16	1055	G	Water	X	X		2	
GW20-06GW-0816		8/11/16	1130	G	Water		X		2	
GW20-21D6GW-0816		8/11/16	1205	G	Water		X		2	
GW20-10GW-0816		8/11/16	1505	G	Water		X		2	
GW20-10GWP-0816		8/11/16	1510	G	Water		X		2	
GW20-08GW-0816		8/11/16	1520	G	Water		X		2	
GW20-07GW-0816		8/11/16	1615	G	Water		X		2	
GW20-EB01-081216		8/12/16	1630	G	Water		X		2	
GW20-FB01-081216		8/12/16	1635	G	Water		X		2	
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: 8/12/16 1645	Company: CERDM	Received by: 			Date/Time: 8/13/16 0920	Company: TRWS	
Relinquished by:			Date/Time:	Company:	Received by:			Date/Time:	Company:	
Relinquished by:			Date/Time:	Company:	Received by:			Date/Time:	Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks: 1.8					

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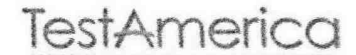
9/7/2016



TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: <u>L. Raternic</u>	Lab PM: Kellmann, Jill	Carrier Tracking No(s):	COC No: 320-12234-2765.5
Client Contact: Mr. Michael Zamboni	Phone: <u>666 581 3828</u>	E-Mail: jill.kellmann@testamericainc.com		Page: <u>2</u> Page <u>3</u> of <u>3</u>

Company: CH2M Hill, Inc.	Analysis Requested				Job #:
Address: 2411 Dulles Corner Park Suite 500	Due Date Requested:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA_D006 - PFOA/PFOS	Total Number of containers
City: Herndon	TAT Requested (days):				
State, Zip: VA, 20171	PO #: 10006-7-105420 CLEAN 8012 JM05				
Phone: 703-376-5301(Tel)	WO #:				
Email: mzamboni@ch2m.com	Project #: 32008186				
Project Name: Navy CLEAN 8012-CTO-JU25 Dahlgren	SSOW#:				

- 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 - Na2S2O3
 - 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)	Perform MS/MSD (Yes or No)	PFC_IDA_D006 - PFOA/PFOS	Total Number of containers	Special Instructions/Note:
				Preservation Code:	X	X	N		
GW20-17D GW-0816	8/12/16	0905	GW	Water		X		2	
GW20-13GW-0816	8/12/16	0910	GW	Water		X		2	
GW20-22GW-0816	8/12/16	0920	GW	Water		X		2	
GW20-17S GW-0816	8/12/16	1015	GW	Water		X		2	
GW20-13D GW-0816	8/12/16	1025	GW	Water		X		2	
GW20-13D GWP-0816	8/12/16	1030	GW	Water		X		2	
GW20-20GW-0816	8/12/16	1055	GW	Water		X		2	
				Water					
				Water					
				Water					
				Water					

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by: <u>[Signature]</u>	Date: 8/12/16 1645	Company: <u>[Signature]</u>	Received by: <u>[Signature]</u>	Date/Time: 8/15/16 0920	Company: <u>[Signature]</u>
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: <u>1.8</u>
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9/7/2016



Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-20928-1

Login Number: 20928

List Source: TestAmerica Sacramento

List Number: 1

Creator: Hytrek, Cheryl

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	Present on 1/2 COCs
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Job Number: 320-20928-1

Job Description: Navy CLEAN 8012-CTO-JU25 Dahlgren

For:

CH2M Hill, Inc.

2411 Dulles Corner Park

Suite 500

Herndon, VA 20171

Attention: Mr. Michael Zamboni



Approved for release.
Jill Kellmann
Manager of Project Management
9/7/2016 2:27 PM

Jill Kellmann, Manager of Project Management
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4402
jill.kellmann@testamericainc.com
09/07/2016

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Definitions/Glossary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Qualifiers

LCMS

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

CASE NARRATIVE

Client: CH2M Hill, Inc.

Project: Navy CLEAN 8012-CTO-JU25 Dahlgren

Report Number: 320-20928-1

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

TestAmerica West Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica West Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

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

RECEIPT

The samples were received on 08/13/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.8 C.

PFAS

Samples GW20-05GW-0816 (320-20928-1), GW20-21SGW-0816 (320-20928-2), GW20-14GW-0816 (320-20928-3), GW20-06GW-0816 (320-20928-4), GW20-21DGW-0816 (320-20928-5), GW20-10GW-0816 (320-20928-6), GW20-10GWP-0816 (320-20928-7), GW20-08GW-0816 (320-20928-8), GW20-07GW-0816 (320-20928-9), GW20-EB01-081216-GW (320-20928-10), GW20-FB01-081216 (320-20928-11), GW20-17DGW-0816 (320-20928-12), GW20-13GW-0816 (320-20928-13), GW20-22GW-0816 (320-20928-14), GW20-17SGW-0816 (320-20928-15), GW20-13DGW-0816 (320-20928-16), GW20-13DGWP-0816 (320-20928-17) and GW20-20GW-0816 (320-20928-18) were analyzed for PFAs in accordance with 537 Modified. The samples were prepared on 08/17/2016 and analyzed on 08/23/2016.

The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

The injection times in the LIM system do not match the injection times listed on the instrument printout. The instrument printout listing the injection times can be found at the end of the run log section. GW20-05GW-0816 (320-20928-1), GW20-21SGW-0816 (320-20928-2), GW20-14GW-0816 (320-20928-3), GW20-14GW-0816 (320-20928-3[MS]), GW20-14GW-0816 (320-20928-3[MSD]), GW20-06GW-0816 (320-20928-4), GW20-21DGW-0816 (320-20928-5), GW20-10GW-0816 (320-20928-6), GW20-10GWP-0816 (320-20928-7), GW20-08GW-0816 (320-20928-8), GW20-07GW-0816 (320-20928-9), GW20-EB01-081216-GW (320-20928-10), GW20-FB01-081216 (320-20928-11), GW20-17DGW-0816 (320-20928-12), GW20-13GW-0816 (320-20928-13), GW20-22GW-0816 (320-20928-14), GW20-17SGW-0816 (320-20928-15), GW20-13DGW-0816 (320-20928-16), GW20-13DGWP-0816 (320-20928-17), GW20-20GW-0816 (320-20928-18), (CCV 320-123794/14), (CCV 320-123794/2), (CCV 320-123794/28), (CCV 320-123794/3), (CCV 320-123794/40), (LCS 320-122573/2-A) and (MB 320-122573/1-A)

Samples GW20-14GW-0816 (320-20928-3), GW20-14GW-0816 (320-20928-3[MS]) and GW20-14GW-0816 (320-20928-3[MSD]) had a red thick sediment and before extracting the samples were centrifuged.

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

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-05GW-0816

Lab Sample ID: 320-20928-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	7.3	M	2.2	0.67	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.7		3.6	1.1	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-21SGW-0816

Lab Sample ID: 320-20928-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.0	J M	2.5	0.76	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J	4.1	1.3	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-14GW-0816

Lab Sample ID: 320-20928-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	18	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-06GW-0816

Lab Sample ID: 320-20928-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	4.2	M	2.3	0.70	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.7	J	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-21DGW-0816

Lab Sample ID: 320-20928-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.4	J M	2.3	0.70	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.0	J	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-10GW-0816

Lab Sample ID: 320-20928-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	12	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-10GWP-0816

Lab Sample ID: 320-20928-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	11	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-08GW-0816

Lab Sample ID: 320-20928-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	31	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	170	M	3.6	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-07GW-0816

Lab Sample ID: 320-20928-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	10	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	61	M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-EB01-081216-GW

Lab Sample ID: 320-20928-10

No Detections.

Client Sample ID: GW20-FB01-081216

Lab Sample ID: 320-20928-11

No Detections.

Client Sample ID: GW20-17DGW-0816

Lab Sample ID: 320-20928-12

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.2	M	2.5	0.75	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	9.8		4.0	1.3	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-13GW-0816

Lab Sample ID: 320-20928-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	17	M	2.3	0.69	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	33	M	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-22GW-0816

Lab Sample ID: 320-20928-14

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.8		3.7	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-17SGW-0816

Lab Sample ID: 320-20928-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	6.9	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.6	M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-13DGW-0816

Lab Sample ID: 320-20928-16

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	7.0	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.2		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-13DGWP-0816

Lab Sample ID: 320-20928-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	7.2	M	2.3	0.70	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.1		3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW20-20GW-0816

Lab Sample ID: 320-20928-18

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	14	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	18		3.6	1.2	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-05GW-0816

Date Collected: 08/11/16 09:55
Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-1

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.3	M	2.2	0.67	ng/L		08/17/16 08:42	08/23/16 12:16	1
Perfluorooctanesulfonic acid (PFOS)	7.7		3.6	1.1	ng/L		08/17/16 08:42	08/23/16 12:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	79		25 - 150				08/17/16 08:42	08/23/16 12:16	1
¹³ C4 PFOS	120		25 - 150				08/17/16 08:42	08/23/16 12:16	1

Client Sample ID: GW20-21SGW-0816

Date Collected: 08/11/16 10:45
Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-2

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.0	J M	2.5	0.76	ng/L		08/17/16 08:42	08/23/16 12:24	1
Perfluorooctanesulfonic acid (PFOS)	1.4	J	4.1	1.3	ng/L		08/17/16 08:42	08/23/16 12:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	96		25 - 150				08/17/16 08:42	08/23/16 12:24	1
¹³ C4 PFOS	128		25 - 150				08/17/16 08:42	08/23/16 12:24	1

Client Sample ID: GW20-14GW-0816

Date Collected: 08/11/16 10:55
Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-3

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	18	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 12:31	1
Perfluorooctanesulfonic acid (PFOS)	16		3.8	1.2	ng/L		08/17/16 08:42	08/23/16 12:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	82		25 - 150				08/17/16 08:42	08/23/16 12:31	1
¹³ C4 PFOS	113		25 - 150				08/17/16 08:42	08/23/16 12:31	1

Client Sample ID: GW20-06GW-0816

Date Collected: 08/11/16 11:30
Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-4

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	4.2	M	2.3	0.70	ng/L		08/17/16 08:42	08/23/16 12:54	1
Perfluorooctanesulfonic acid (PFOS)	1.7	J	3.7	1.2	ng/L		08/17/16 08:42	08/23/16 12:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	81		25 - 150				08/17/16 08:42	08/23/16 12:54	1
¹³ C4 PFOS	124		25 - 150				08/17/16 08:42	08/23/16 12:54	1

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-21DGW-0816

Lab Sample ID: 320-20928-5

Date Collected: 08/11/16 12:05

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.4	J M	2.3	0.70	ng/L		08/17/16 08:42	08/23/16 13:31	1
Perfluorooctanesulfonic acid (PFOS)	3.0	J	3.8	1.2	ng/L		08/17/16 08:42	08/23/16 13:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	85		25 - 150				08/17/16 08:42	08/23/16 13:31	1
¹³ C4 PFOS	114		25 - 150				08/17/16 08:42	08/23/16 13:31	1

Client Sample ID: GW20-10GW-0816

Lab Sample ID: 320-20928-6

Date Collected: 08/11/16 15:05

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	12	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 13:39	1
Perfluorooctanesulfonic acid (PFOS)	13		3.8	1.2	ng/L		08/17/16 08:42	08/23/16 13:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	80		25 - 150				08/17/16 08:42	08/23/16 13:39	1
¹³ C4 PFOS	116		25 - 150				08/17/16 08:42	08/23/16 13:39	1

Client Sample ID: GW20-10GWP-0816

Lab Sample ID: 320-20928-7

Date Collected: 08/11/16 15:10

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	11	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 13:46	1
Perfluorooctanesulfonic acid (PFOS)	12		3.8	1.2	ng/L		08/17/16 08:42	08/23/16 13:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	93		25 - 150				08/17/16 08:42	08/23/16 13:46	1
¹³ C4 PFOS	121		25 - 150				08/17/16 08:42	08/23/16 13:46	1

Client Sample ID: GW20-08GW-0816

Lab Sample ID: 320-20928-8

Date Collected: 08/11/16 15:20

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	31	M	2.3	0.68	ng/L		08/17/16 08:42	08/23/16 13:54	1
Perfluorooctanesulfonic acid (PFOS)	170	M	3.6	1.2	ng/L		08/17/16 08:42	08/23/16 13:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	85		25 - 150				08/17/16 08:42	08/23/16 13:54	1
¹³ C4 PFOS	127		25 - 150				08/17/16 08:42	08/23/16 13:54	1

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-07GW-0816

Lab Sample ID: 320-20928-9

Date Collected: 08/11/16 16:15

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	10	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 14:01	1
Perfluorooctanesulfonic acid (PFOS)	61	M	3.8	1.2	ng/L		08/17/16 08:42	08/23/16 14:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	88		25 - 150				08/17/16 08:42	08/23/16 14:01	1
13C4 PFOS	115		25 - 150				08/17/16 08:42	08/23/16 14:01	1

Client Sample ID: GW20-EB01-081216-GW

Lab Sample ID: 320-20928-10

Date Collected: 08/12/16 16:30

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	0.69	ng/L		08/17/16 08:42	08/23/16 14:09	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U M	3.7	1.2	ng/L		08/17/16 08:42	08/23/16 14:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	135		25 - 150				08/17/16 08:42	08/23/16 14:09	1
13C4 PFOS	125		25 - 150				08/17/16 08:42	08/23/16 14:09	1

Client Sample ID: GW20-FB01-081216

Lab Sample ID: 320-20928-11

Date Collected: 08/12/16 16:35

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.8	U M	2.3	0.68	ng/L		08/17/16 08:42	08/23/16 14:16	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.7	1.2	ng/L		08/17/16 08:42	08/23/16 14:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	133		25 - 150				08/17/16 08:42	08/23/16 14:16	1
13C4 PFOS	119		25 - 150				08/17/16 08:42	08/23/16 14:16	1

Client Sample ID: GW20-17DGW-0816

Lab Sample ID: 320-20928-12

Date Collected: 08/12/16 09:05

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.2	M	2.5	0.75	ng/L		08/17/16 08:42	08/23/16 14:24	1
Perfluorooctanesulfonic acid (PFOS)	9.8		4.0	1.3	ng/L		08/17/16 08:42	08/23/16 14:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	79		25 - 150				08/17/16 08:42	08/23/16 14:24	1
13C4 PFOS	119		25 - 150				08/17/16 08:42	08/23/16 14:24	1

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-13GW-0816

Lab Sample ID: 320-20928-13

Date Collected: 08/12/16 09:10

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	17	M	2.3	0.69	ng/L		08/17/16 08:42	08/23/16 14:31	1
Perfluorooctanesulfonic acid (PFOS)	33	M	3.7	1.2	ng/L		08/17/16 08:42	08/23/16 14:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	62		25 - 150				08/17/16 08:42	08/23/16 14:31	1
13C4 PFOS	132		25 - 150				08/17/16 08:42	08/23/16 14:31	1

Client Sample ID: GW20-22GW-0816

Lab Sample ID: 320-20928-14

Date Collected: 08/12/16 09:20

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.8	U M	2.3	0.69	ng/L		08/17/16 08:42	08/23/16 14:39	1
Perfluorooctanesulfonic acid (PFOS)	3.8		3.7	1.2	ng/L		08/17/16 08:42	08/23/16 14:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	83		25 - 150				08/17/16 08:42	08/23/16 14:39	1
13C4 PFOS	126		25 - 150				08/17/16 08:42	08/23/16 14:39	1

Client Sample ID: GW20-17SGW-0816

Lab Sample ID: 320-20928-15

Date Collected: 08/12/16 10:15

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	6.9	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 15:16	1
Perfluorooctanesulfonic acid (PFOS)	8.6	M	3.8	1.2	ng/L		08/17/16 08:42	08/23/16 15:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	41		25 - 150				08/17/16 08:42	08/23/16 15:16	1
13C4 PFOS	122		25 - 150				08/17/16 08:42	08/23/16 15:16	1

Client Sample ID: GW20-13DGW-0816

Lab Sample ID: 320-20928-16

Date Collected: 08/12/16 10:25

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.0	M	2.4	0.71	ng/L		08/17/16 08:42	08/23/16 15:24	1
Perfluorooctanesulfonic acid (PFOS)	4.2		3.8	1.2	ng/L		08/17/16 08:42	08/23/16 15:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	82		25 - 150				08/17/16 08:42	08/23/16 15:24	1
13C4 PFOS	126		25 - 150				08/17/16 08:42	08/23/16 15:24	1

Client Sample Results

Client: CH2M Hill, Inc.
 Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-13DGWP-0816

Lab Sample ID: 320-20928-17

Date Collected: 08/12/16 10:30

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.2	M	2.3	0.70	ng/L		08/17/16 08:42	08/23/16 15:31	1
Perfluorooctanesulfonic acid (PFOS)	4.1		3.8	1.2	ng/L		08/17/16 08:42	08/23/16 15:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	88		25 - 150				08/17/16 08:42	08/23/16 15:31	1
¹³ C4 PFOS	129		25 - 150				08/17/16 08:42	08/23/16 15:31	1

Client Sample ID: GW20-20GW-0816

Lab Sample ID: 320-20928-18

Date Collected: 08/12/16 10:55

Matrix: Water

Date Received: 08/13/16 09:20

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	14	M	2.3	0.68	ng/L		08/17/16 08:42	08/23/16 15:39	1
Perfluorooctanesulfonic acid (PFOS)	18		3.6	1.2	ng/L		08/17/16 08:42	08/23/16 15:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	63		25 - 150				08/17/16 08:42	08/23/16 15:39	1
¹³ C4 PFOS	129		25 - 150				08/17/16 08:42	08/23/16 15:39	1

Default Detection Limits

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorooctanesulfonic acid (PFOS)	4.0	1.3	ng/L	537 (Modified)
Perfluorooctanoic acid (PFOA)	2.5	0.75	ng/L	537 (Modified)

Isotope Dilution Summary

Client: CH2M Hill, Inc.
 Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)	
		3C4 PFO/ (25-150)	3C4 PFO: (25-150)
320-20928-1	GW20-05GW-0816	79	120
320-20928-2	GW20-21SGW-0816	96	128
320-20928-3	GW20-14GW-0816	82	113
320-20928-3 MS	GW20-14GW-0816	69	114
320-20928-3 MSD	GW20-14GW-0816	65	111
320-20928-4	GW20-06GW-0816	81	124
320-20928-5	GW20-21DGW-0816	85	114
320-20928-6	GW20-10GW-0816	80	116
320-20928-7	GW20-10GWP-0816	93	121
320-20928-8	GW20-08GW-0816	85	127
320-20928-9	GW20-07GW-0816	88	115
320-20928-10	GW20-EB01-081216-GW	135	125
320-20928-11	GW20-FB01-081216	133	119
320-20928-12	GW20-17DGW-0816	79	119
320-20928-13	GW20-13GW-0816	62	132
320-20928-14	GW20-22GW-0816	83	126
320-20928-15	GW20-17SGW-0816	41	122
320-20928-16	GW20-13DGW-0816	82	126
320-20928-17	GW20-13DGWP-0816	88	129
320-20928-18	GW20-20GW-0816	63	129
LCS 320-122573/2-A	Lab Control Sample	135	126
MB 320-122573/1-A	Method Blank	141	129

Surrogate Legend

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

QC Sample Results

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-122573/1-A
Matrix: Water
Analysis Batch: 123794

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 122573

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	0.75	ng/L		08/17/16 08:42	08/23/16 12:01	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.3	ng/L		08/17/16 08:42	08/23/16 12:01	1
Isotope Dilution	MB	MB	Limits				Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
13C4 PFOA	141		25 - 150				08/17/16 08:42	08/23/16 12:01	1
13C4 PFOS	129		25 - 150				08/17/16 08:42	08/23/16 12:01	1

Lab Sample ID: LCS 320-122573/2-A
Matrix: Water
Analysis Batch: 123794

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 122573

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorooctanoic acid (PFOA)	40.0	38.9		ng/L		97	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	32.2	M	ng/L		87	60 - 140
Isotope Dilution	LCS	LCS	Limits				
	%Recovery	Qualifier					
13C4 PFOA	135		25 - 150				
13C4 PFOS	126		25 - 150				

Lab Sample ID: 320-20928-3 MS
Matrix: Water
Analysis Batch: 123794

Client Sample ID: GW20-14GW-0816
Prep Type: Total/NA
Prep Batch: 122573

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Perfluorooctanoic acid (PFOA)	18	M	38.0	47.3	M	ng/L		78	60 - 140
Perfluorooctanesulfonic acid (PFOS)	16		35.2	39.2	M	ng/L		65	60 - 140
Isotope Dilution	MS	MS	Limits						
	%Recovery	Qualifier							
13C4 PFOA	69		25 - 150						
13C4 PFOS	114		25 - 150						

Lab Sample ID: 320-20928-3 MSD
Matrix: Water
Analysis Batch: 123794

Client Sample ID: GW20-14GW-0816
Prep Type: Total/NA
Prep Batch: 122573

Analyte	Sample	Sample	Spike Added	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Perfluorooctanoic acid (PFOA)	18	M	37.4	51.6	M	ng/L		91	60 - 140	9	30
Perfluorooctanesulfonic acid (PFOS)	16		34.7	42.0	M	ng/L		75	60 - 140	7	30
Isotope Dilution	MSD	MSD	Limits								
	%Recovery	Qualifier									
13C4 PFOA	65		25 - 150								
13C4 PFOS	111		25 - 150								

QC Association Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

LCMS

Prep Batch: 122573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20928-1	GW20-05GW-0816	Total/NA	Water	3535	
320-20928-2	GW20-21SGW-0816	Total/NA	Water	3535	
320-20928-3	GW20-14GW-0816	Total/NA	Water	3535	
320-20928-4	GW20-06GW-0816	Total/NA	Water	3535	
320-20928-5	GW20-21DGW-0816	Total/NA	Water	3535	
320-20928-6	GW20-10GW-0816	Total/NA	Water	3535	
320-20928-7	GW20-10GWP-0816	Total/NA	Water	3535	
320-20928-8	GW20-08GW-0816	Total/NA	Water	3535	
320-20928-9	GW20-07GW-0816	Total/NA	Water	3535	
320-20928-10	GW20-EB01-081216-GW	Total/NA	Water	3535	
320-20928-11	GW20-FB01-081216	Total/NA	Water	3535	
320-20928-12	GW20-17DGW-0816	Total/NA	Water	3535	
320-20928-13	GW20-13GW-0816	Total/NA	Water	3535	
320-20928-14	GW20-22GW-0816	Total/NA	Water	3535	
320-20928-15	GW20-17SGW-0816	Total/NA	Water	3535	
320-20928-16	GW20-13DGW-0816	Total/NA	Water	3535	
320-20928-17	GW20-13DGWP-0816	Total/NA	Water	3535	
320-20928-18	GW20-20GW-0816	Total/NA	Water	3535	
MB 320-122573/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-122573/2-A	Lab Control Sample	Total/NA	Water	3535	
320-20928-3 MS	GW20-14GW-0816	Total/NA	Water	3535	
320-20928-3 MSD	GW20-14GW-0816	Total/NA	Water	3535	

Analysis Batch: 123794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20928-1	GW20-05GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-2	GW20-21SGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-3	GW20-14GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-4	GW20-06GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-5	GW20-21DGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-6	GW20-10GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-7	GW20-10GWP-0816	Total/NA	Water	537 (Modified)	122573
320-20928-8	GW20-08GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-9	GW20-07GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-10	GW20-EB01-081216-GW	Total/NA	Water	537 (Modified)	122573
320-20928-11	GW20-FB01-081216	Total/NA	Water	537 (Modified)	122573
320-20928-12	GW20-17DGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-13	GW20-13GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-14	GW20-22GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-15	GW20-17SGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-16	GW20-13DGW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-17	GW20-13DGWP-0816	Total/NA	Water	537 (Modified)	122573
320-20928-18	GW20-20GW-0816	Total/NA	Water	537 (Modified)	122573
MB 320-122573/1-A	Method Blank	Total/NA	Water	537 (Modified)	122573
LCS 320-122573/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	122573
320-20928-3 MS	GW20-14GW-0816	Total/NA	Water	537 (Modified)	122573
320-20928-3 MSD	GW20-14GW-0816	Total/NA	Water	537 (Modified)	122573

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-05GW-0816

Date Collected: 08/11/16 09:55

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 12:16	JRB	TAL SAC

Client Sample ID: GW20-21SGW-0816

Date Collected: 08/11/16 10:45

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 12:24	JRB	TAL SAC

Client Sample ID: GW20-14GW-0816

Date Collected: 08/11/16 10:55

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 12:31	JRB	TAL SAC

Client Sample ID: GW20-06GW-0816

Date Collected: 08/11/16 11:30

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 12:54	JRB	TAL SAC

Client Sample ID: GW20-21DGW-0816

Date Collected: 08/11/16 12:05

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 13:31	JRB	TAL SAC

Client Sample ID: GW20-10GW-0816

Date Collected: 08/11/16 15:05

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 13:39	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-10GWP-0816

Date Collected: 08/11/16 15:10

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 13:46	JRB	TAL SAC

Client Sample ID: GW20-08GW-0816

Date Collected: 08/11/16 15:20

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 13:54	JRB	TAL SAC

Client Sample ID: GW20-07GW-0816

Date Collected: 08/11/16 16:15

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 14:01	JRB	TAL SAC

Client Sample ID: GW20-EB01-081216-GW

Date Collected: 08/12/16 16:30

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 14:09	JRB	TAL SAC

Client Sample ID: GW20-FB01-081216

Date Collected: 08/12/16 16:35

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 14:16	JRB	TAL SAC

Client Sample ID: GW20-17DGW-0816

Date Collected: 08/12/16 09:05

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 14:24	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Client Sample ID: GW20-13GW-0816

Date Collected: 08/12/16 09:10

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 14:31	JRB	TAL SAC

Client Sample ID: GW20-22GW-0816

Date Collected: 08/12/16 09:20

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 14:39	JRB	TAL SAC

Client Sample ID: GW20-17SGW-0816

Date Collected: 08/12/16 10:15

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 15:16	JRB	TAL SAC

Client Sample ID: GW20-13DGW-0816

Date Collected: 08/12/16 10:25

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 15:24	JRB	TAL SAC

Client Sample ID: GW20-13DGWP-0816

Date Collected: 08/12/16 10:30

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 15:31	JRB	TAL SAC

Client Sample ID: GW20-20GW-0816

Date Collected: 08/12/16 10:55

Date Received: 08/13/16 09:20

Lab Sample ID: 320-20928-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122573	08/17/16 08:42	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123794	08/23/16 15:39	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.

TestAmerica Job ID: 320-20928-1

Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

Laboratory References:

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

Certification Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

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

Method Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: CH2M Hill, Inc.
Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

TestAmerica Job ID: 320-20928-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-20928-1	GW20-05GW-0816	Water	08/11/16 09:55	08/13/16 09:20
320-20928-2	GW20-21SGW-0816	Water	08/11/16 10:45	08/13/16 09:20
320-20928-3	GW20-14GW-0816	Water	08/11/16 10:55	08/13/16 09:20
320-20928-4	GW20-06GW-0816	Water	08/11/16 11:30	08/13/16 09:20
320-20928-5	GW20-21DGW-0816	Water	08/11/16 12:05	08/13/16 09:20
320-20928-6	GW20-10GW-0816	Water	08/11/16 15:05	08/13/16 09:20
320-20928-7	GW20-10GWP-0816	Water	08/11/16 15:10	08/13/16 09:20
320-20928-8	GW20-08GW-0816	Water	08/11/16 15:20	08/13/16 09:20
320-20928-9	GW20-07GW-0816	Water	08/11/16 16:15	08/13/16 09:20
320-20928-10	GW20-EB01-081216-GW	Water	08/12/16 16:30	08/13/16 09:20
320-20928-11	GW20-FB01-081216	Water	08/12/16 16:35	08/13/16 09:20
320-20928-12	GW20-17DGW-0816	Water	08/12/16 09:05	08/13/16 09:20
320-20928-13	GW20-13GW-0816	Water	08/12/16 09:10	08/13/16 09:20
320-20928-14	GW20-22GW-0816	Water	08/12/16 09:20	08/13/16 09:20
320-20928-15	GW20-17SGW-0816	Water	08/12/16 10:15	08/13/16 09:20
320-20928-16	GW20-13DGW-0816	Water	08/12/16 10:25	08/13/16 09:20
320-20928-17	GW20-13DGWP-0816	Water	08/12/16 10:30	08/13/16 09:20
320-20928-18	GW20-20GW-0816	Water	08/12/16 10:55	08/13/16 09:20

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123741

Lab Sample ID: IC 320-123741/4 Client Sample ID: _____

Date Analyzed: 08/22/16 16:38 Lab File ID: 22AUG2016A_006_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.15	Isomers	westendorfc	08/24/16 10:17

Lab Sample ID: IC 320-123741/5 Client Sample ID: _____

Date Analyzed: 08/22/16 16:46 Lab File ID: 22AUG2016A_007_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.16	Isomers	westendorfc	08/24/16 10:17

Lab Sample ID: IC 320-123741/8 Client Sample ID: _____

Date Analyzed: 08/22/16 17:08 Lab File ID: 22AUG2016A_010_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.06	Isomers	westendorfc	08/24/16 10:18

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123794

Lab Sample ID: LCS 320-122573/2-A Client Sample ID: _____

Date Analyzed: 08/23/16 12:09 Lab File ID: 22AUG2016D_044_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.10	Isomers	chandrase nas	08/30/16 17:16

Lab Sample ID: 320-20928-1 Client Sample ID: GW20-05GW-0816

Date Analyzed: 08/23/16 12:16 Lab File ID: 22AUG2016D_045_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Isomers	barnettj	08/30/16 17:36

Lab Sample ID: 320-20928-2 Client Sample ID: GW20-21SGW-0816

Date Analyzed: 08/23/16 12:24 Lab File ID: 22AUG2016D_046_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.74	Isomers	barnettj	08/30/16 17:37

Lab Sample ID: 320-20928-3 Client Sample ID: GW20-14GW-0816

Date Analyzed: 08/23/16 12:31 Lab File ID: 22AUG2016D_047_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.74	Isomers	barnettj	08/30/16 17:38

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123794

Lab Sample ID: 320-20928-3 MS Client Sample ID: GW20-14GW-0816 MS

Date Analyzed: 08/23/16 12:39 Lab File ID: 22AUG2016D_048_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Isomers	barnettj	08/30/16 17:40
Perfluorooctanesulfonic acid (PFOS)	3.12	Isomers	barnettj	08/30/16 17:40

Lab Sample ID: 320-20928-3 MSD Client Sample ID: GW20-14GW-0816 MSD

Date Analyzed: 08/23/16 12:46 Lab File ID: 22AUG2016D_049_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.74	Isomers	barnettj	08/30/16 17:41
Perfluorooctanesulfonic acid (PFOS)	3.11	Isomers	barnettj	08/30/16 17:41

Lab Sample ID: 320-20928-4 Client Sample ID: GW20-06GW-0816

Date Analyzed: 08/23/16 12:54 Lab File ID: 22AUG2016D_050_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.67	Isomers	barnettj	08/30/16 17:43

Lab Sample ID: 320-20928-5 Client Sample ID: GW20-21DGW-0816

Date Analyzed: 08/23/16 13:31 Lab File ID: 22AUG2016D_055_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.73	Isomers	barnettj	08/30/16 17:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123794

Lab Sample ID: 320-20928-6 Client Sample ID: GW20-10GW-0816

Date Analyzed: 08/23/16 13:39 Lab File ID: 22AUG2016D_056_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.73	Isomers	barnettj	08/30/16 17:47

Lab Sample ID: 320-20928-7 Client Sample ID: GW20-10GWP-0816

Date Analyzed: 08/23/16 13:46 Lab File ID: 22AUG2016D_057_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Isomers	barnettj	08/30/16 17:48

Lab Sample ID: 320-20928-8 Client Sample ID: GW20-08GW-0816

Date Analyzed: 08/23/16 13:54 Lab File ID: 22AUG2016D_058_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.74	Isomers	barnettj	08/30/16 17:50
Perfluorooctanesulfonic acid (PFOS)	3.11	Isomers	barnettj	08/30/16 17:50

Lab Sample ID: 320-20928-9 Client Sample ID: GW20-07GW-0816

Date Analyzed: 08/23/16 14:01 Lab File ID: 22AUG2016D_059_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Isomers	barnettj	08/30/16 17:51
Perfluorooctanesulfonic acid (PFOS)	3.11	Isomers	barnettj	08/30/16 17:51

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123794

Lab Sample ID: 320-20928-10 Client Sample ID: GW20-EB01-081216-GW

Date Analyzed: 08/23/16 14:09 Lab File ID: 22AUG2016D_060_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.12	Missed Peak	barnettj	08/30/16 17:52

Lab Sample ID: 320-20928-11 Client Sample ID: GW20-FB01-081216

Date Analyzed: 08/23/16 14:16 Lab File ID: 22AUG2016D_061_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Baseline	barnettj	08/30/16 17:53

Lab Sample ID: 320-20928-12 Client Sample ID: GW20-17DGW-0816

Date Analyzed: 08/23/16 14:24 Lab File ID: 22AUG2016D_062_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Isomers	barnettj	08/30/16 17:54

Lab Sample ID: 320-20928-13 Client Sample ID: GW20-13GW-0816

Date Analyzed: 08/23/16 14:31 Lab File ID: 22AUG2016D_063_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.74	Isomers	barnettj	08/30/16 17:55
Perfluorooctanesulfonic acid (PFOS)	3.11	Isomers	barnettj	08/30/16 17:55

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123794

Lab Sample ID: 320-20928-14 Client Sample ID: GW20-22GW-0816

Date Analyzed: 08/23/16 14:39 Lab File ID: 22AUG2016D_064_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.67	Isomers	barnettj	08/30/16 17:56

Lab Sample ID: 320-20928-15 Client Sample ID: GW20-17SGW-0816

Date Analyzed: 08/23/16 15:16 Lab File ID: 22AUG2016D_069_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Isomers	barnettj	08/31/16 09:37
Perfluorooctanesulfonic acid (PFOS)	3.12	Isomers	barnettj	08/31/16 09:37

Lab Sample ID: 320-20928-16 Client Sample ID: GW20-13DGW-0816

Date Analyzed: 08/23/16 15:24 Lab File ID: 22AUG2016D_070_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.74	Isomers	barnettj	08/31/16 09:38

Lab Sample ID: 320-20928-17 Client Sample ID: GW20-13DGWP-0816

Date Analyzed: 08/23/16 15:31 Lab File ID: 22AUG2016D_071_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.74	Isomers	barnettj	08/31/16 09:39

Lab Sample ID: 320-20928-18 Client Sample ID: GW20-20GW-0816

Date Analyzed: 08/23/16 15:39 Lab File ID: 22AUG2016D_072_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Isomers	barnettj	08/31/16 09:39

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00043	12/02/16	06/02/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
LCMPFUDA_00008	1000 uL	13C2 PFUnA	1 ug/mL					
.LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL	
.LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL	
.LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpa0515		(Purchased Reagent)		13C4-PFHpA	50 ug/mL	
.LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL	
.LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL	
.LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL	
.LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL	
.LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL	
.LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL	
.LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL	
.LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL	
.LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL	
.LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL	
.LCMPFUDA_00008	10/31/19	Wellington Laboratories, Lot MPFUDA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL	
LCPPFC-L1_00021	12/28/16	08/03/16	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00057	25 uL	Perfluorobutyric acid	0.5 ng/mL
					Perfluorobutanesulfonic acid		0.442 ng/mL	
					Perfluorodecanoic acid		0.5 ng/mL	
Perfluorododecanoic acid	0.5 ng/mL							

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorodecane Sulfonic acid	0.482 ng/mL
							Perfluoroheptanoic acid	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid	0.455 ng/mL
							Perfluorononanoic acid	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.464 ng/mL
							Perfluorooctane Sulfonamide	0.5 ng/mL
							Perfluoropentanoic acid	0.5 ng/mL
							Perfluorotetradecanoic acid	0.5 ng/mL
							Perfluorotridecanoic acid	0.5 ng/mL
							Perfluoroundecanoic acid	0.5 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTEDA_00006	1000 uL	13C2-PFTEDA	1 ug/mL
					LCM4PFHFA_00006	1000 uL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTEDA_00006	12/07/20		Wellington Laboratories, Lot M2PFTEDA1115		(Purchased Reagent)		13C2-PFTEDA	50 ug/mL
..LCM4PFHFA_00006	05/22/20		Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00007	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00057	02/01/17	08/03/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00056	1000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA 00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS 00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA 00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS 00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA 00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS 00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA 00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA 00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA 00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA 00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA 00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA 00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA 00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA 00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA 00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS 00004	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
...LCPFDA 00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA 00005	01/30/20		Wellington Laboratories, Lot PFD0A0115		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS 00005	07/02/20		Wellington Laboratories, Lot LPFDS0615		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA 00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHpS 00008	11/06/20		Wellington Laboratories, Lot LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA 00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA 00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br 00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
...LCPFNA 00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFOA 00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA 00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA 00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA 00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA 00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA 00004	12/10/18		Wellington Laboratories, Lot PFTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA 00004	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L2_00022	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
					13C2 PFUnA	50 ng/mL		
					LCPFCSP_00057	50 uL	Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid	0.964 ng/mL
							Perfluoroheptanoic acid	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
Perfluorohexanesulfonic acid	0.91 ng/mL							
Perfluorononanoic acid	1 ng/mL							
Perfluorooctanoic acid (PFOA)	1 ng/mL							
Perfluorooctadecanoic acid	1 ng/mL							
Perfluorooctanesulfonic acid (PFOS)	0.928 ng/mL							
Perfluorooctane Sulfonamide	1 ng/mL							
Perfluoropentanoic acid	1 ng/mL							
Perfluorotetradecanoic acid	1 ng/mL							
Perfluorotridecanoic acid	1 ng/mL							
Perfluoroundecanoic acid	1 ng/mL							
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20		Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20		Wellington Laboratories, Lot M4PFHPa0515		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00007	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00008	10/31/19		Wellington Laboratories, Lot MPFUDa1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00057	02/01/17	08/03/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00056	1000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCMPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCMPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHps_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00004	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
...LCPFDA_00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00005	01/30/20		Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHps_00008	11/06/20		Wellington Laboratories, Lot LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
...LCPFNA_00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFOA_00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00004	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00004	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L3_00019	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
					LCPFCSU_00057	250 uL	13C4 PFOS	47.8 ng/mL		
							13C2 PFUnA	50 ng/mL		
							Perfluorobutyric acid	5 ng/mL		
							Perfluorobutanesulfonic acid	4.42 ng/mL		
							Perfluorodecanoic acid	5 ng/mL		
							Perfluorododecanoic acid	5 ng/mL		
							Perfluorodecane Sulfonic acid	4.82 ng/mL		
							Perfluoroheptanoic acid	5 ng/mL		
							Perfluoroheptanesulfonic Acid	4.76 ng/mL		
							Perfluorohexanoic acid	5 ng/mL		
							Perfluorohexadecanoic acid	5 ng/mL		
							Perfluorohexanesulfonic acid	4.55 ng/mL		
							Perfluorononanoic acid	5 ng/mL		
							Perfluorooctanoic acid (PFOA)	5 ng/mL		
							Perfluorooctadecanoic acid	5 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	4.64 ng/mL		
							Perfluorooctane Sulfonamide	5 ng/mL		
Perfluoropentanoic acid	5 ng/mL									
Perfluorotetradecanoic acid	5 ng/mL									
Perfluorotridecanoic acid	5 ng/mL									
Perfluoroundecanoic acid	5 ng/mL									
..LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL		
							LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
							LCM4PFHFA_00006	1000 uL	13C4-PFHFA	1 ug/mL
							LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
							LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
							LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
							LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
							LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
							LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
							LCMPFHxS_00007	1000 uL	1802 PFHxS	0.946 ug/mL
							LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
							LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
							LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
							LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL			
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL			
..LCM4PFHFA_00006	05/22/20	Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHFA	50 ug/mL			
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL			
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL			
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL			
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL			
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL			
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL			
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL			
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL			

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOA 00011	01/22/21		Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)	13C4 PFOA	50 ug/mL
..LCMPFOS 00015	01/22/21		Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL
..LCMPFUdA 00008	10/31/19		Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)	13C2 PFUnA	50 ug/mL
.LCPFCSP_00057	02/01/17	08/03/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00056	1000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA 00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS 00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA 00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS 00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA 00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS 00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA 00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA 00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br 00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA 00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA 00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA 00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br 00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA 00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA 00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA 00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA 00004	01/30/20		Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)	Perfluorobutyric acid	50 ug/mL
...LCPFBS 00004	10/09/19		Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)	Perfluorobutanesulfonic acid	44.2 ug/mL
...LCPFDA 00005	07/02/20		Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)	Perfluorodecanoic acid	50 ug/mL
...LCPFDoA 00005	01/30/20		Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)	Perfluorododecanoic acid	50 ug/mL
...LCPFDS 00005	07/02/20		Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)	Perfluorodecane Sulfonic acid	48.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFHpA 00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHpS 00008	11/06/20		Wellington Laboratories, Lot LPFHps1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA 00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA 00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br 00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
...LCPFNA 00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFOA 00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA 00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA 00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonylamide	50 ug/mL
...LCPFPeA 00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA 00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTTrDA 00004	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA 00004	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L4_00022	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCMPFCSP_00056	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid	18.2 ng/mL
							Perfluorononanoic acid	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
Perfluorooctadecanoic acid	20 ng/mL							
Perfluorooctanesulfonic acid (PFOS)	18.56 ng/mL							
Perfluorooctane Sulfonylamide	20 ng/mL							
Perfluoropentanoic acid	20 ng/mL							
Perfluorotetradecanoic acid	20 ng/mL							
Perfluorotridecanoic acid	20 ng/mL							

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	Perfluoroundecanoic acid	20 ng/mL
							13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL					
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)	13C2-PFHxDA	50 ug/mL	
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)	13C2-PFTeDA	50 ug/mL	
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpa0515			(Purchased Reagent)	13C4-PFHpa	50 ug/mL	
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)	13C5-PFPeA	50 ug/mL	
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)	13C8 FOSA	50 ug/mL	
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)	13C4 PFBA	50 ug/mL	
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)	13C2 PFDA	50 ug/mL	
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)	13C2 PFDoA	50 ug/mL	
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)	13C2 PFHxA	50 ug/mL	
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)	1802 PFHxS	47.3 ug/mL	
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)	13C5 PFNA	50 ug/mL	
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)	13C4 PFOA	50 ug/mL	
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL	
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)	13C2 PFUnA	50 ug/mL	
.LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpa_00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHps_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOdA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUDa_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00004	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20		Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00008	11/06/20		Wellington Laboratories, Lot LPFHPS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHXS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHXS0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00004	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUDa_00004	08/19/20		Wellington Laboratories, Lot PFUDa0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L5_00020	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCPFCFSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHXS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid	45.5 ng/mL
							Perfluorononanoic acid	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctadecanoic acid	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	46.4 ng/mL
							Perfluorooctane Sulfonamide	50 ng/mL
							Perfluoropentanoic acid	50 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
							Perfluoroundecanoic acid	50 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00006	1000 uL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20		Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00006	05/22/20		Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00007	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHFA_00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHFS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-dr_00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00004	10/09/19		Wellington Laboratories, Lot LPPBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20		Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPPDS0615		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00008	11/06/20		Wellington Laboratories, Lot LPPHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPPeA_00005	01/30/20		Wellington Laboratories, Lot PPeA0115		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00004	12/10/18		Wellington Laboratories, Lot PFTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00004	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L6_00019	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCPMFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	1000 uL	Perfluorobutyric acid	200 ng/mL
							Perfluorobutanesulfonic acid	176.8 ng/mL
							Perfluorodecanoic acid	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							Perfluorodecane Sulfonic acid	192.8 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid	182 ng/mL
							Perfluorononanoic acid	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	185.6 ng/mL
							Perfluorooctane Sulfonamide	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							Perfluorotetradecanoic acid	200 ng/mL
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20		Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20		Wellington Laboratories, Lot M4PFHPA0515		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00007	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHXS-br_00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUDA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00004	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20		Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00008	11/06/20		Wellington Laboratories, Lot LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHXS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHXS0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00004	12/10/18		Wellington Laboratories, Lot PFTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUDA_00004	08/19/20		Wellington Laboratories, Lot PFUDA0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L7_00019	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHXS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
					LCPFCSU_00056	2000 uL	13C4 PFOS	47.8 ng/mL		
							13C2 PFUnA	50 ng/mL		
							Perfluorobutyric acid	400 ng/mL		
							Perfluorobutanesulfonic acid	353.6 ng/mL		
							Perfluorodecanoic acid	400 ng/mL		
							Perfluorododecanoic acid	400 ng/mL		
							Perfluorodecane Sulfonic acid	385.6 ng/mL		
							Perfluoroheptanoic acid	400 ng/mL		
							Perfluoroheptanesulfonic Acid	380.8 ng/mL		
							Perfluorohexanoic acid	400 ng/mL		
							Perfluorohexadecanoic acid	400 ng/mL		
							Perfluorohexanesulfonic acid	364 ng/mL		
							Perfluorononanoic acid	400 ng/mL		
							Perfluorooctanoic acid (PFOA)	400 ng/mL		
							Perfluorooctadecanoic acid	400 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	371.2 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_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL		
							LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
							LCM4PFHFA_00006	1000 uL	13C4-PFHFA	1 ug/mL
							LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
							LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
							LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
							LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
							LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
							LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
							LCMPFHxS_00007	1000 uL	1802 PFHxS	0.946 ug/mL
							LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
							LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
							LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
							LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
							..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112	
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL			
..LCM4PFHFA_00006	05/22/20	Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHFA	50 ug/mL			
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL			
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL			
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL			
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL			
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL			
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL			
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL			
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL			

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOA 00011	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00015	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA 00008	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA 00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS 00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA 00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS 00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA 00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS 00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA 00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA 00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br 00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA 00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA 00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA 00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA 00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTEdA 00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA 00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA 00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS 00004	10/09/19		Wellington Laboratories, Lot LPPBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA 00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA 00005	01/30/20		Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS 00005	07/02/20		Wellington Laboratories, Lot LPPDS0615		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA 00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS 00008	11/06/20		Wellington Laboratories, Lot LPPHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA 00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA 00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br 00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA 00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA 00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA 00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA 00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA 00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTEdA 00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA 00004	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA 00004	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC2-L1_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NetFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFC2SP_00014	25 uL	M2-8:2FTS	47.9 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	0.5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
							MeFOSA	0.5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M 00001	200 uL	d-N-EtFOSA-M	1 ug/mL
							LCd-NMeFOSA-M 00001	1 ug/mL
							LCd3-NMeFOSAA 00001	1 ug/mL
							LCd5-NEtFOSAA 00001	1 ug/mL
							LCM2-6:FtS 00001	0.95 ug/mL
							LCM2-8:2FtS 00001	0.958 ug/mL
..LCd-NEtFOSA-M 00001	03/10/19		WELLINGTON, Lot dNEtFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M 00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA 00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA 00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FtS 00001	07/15/17		WELLINGTON, Lot M262FtS0714		(Purchased Reagent)		M2-6:2FtS	47.5 ug/mL
..LCM2-8:2FtS 00001	04/13/17		WELLINGTON, Lot M282FtS0414		(Purchased Reagent)		M2-8:2FtS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FtS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
							LC8:2FtS_00001	0.958 ug/mL
							LCN-EtFOSA-M_00002	1 ug/mL
							LCN-EtFOSAA_00001	1 ug/mL
							LCN-MeFOSA-M_00001	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NETFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NETFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L2_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
					M2-8:2FTS	47.9 ng/mL		
					LCPFC2SP_00014	50 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	1 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
MeFOSA	1 ng/mL							
N-methyl perfluorooctane sulfonamidoacetic acid	1 ng/mL							
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NETFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETFOSAA_00001	200 uL	d5-NETFOSAA	1 ug/mL
					LCM2-6:FOS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FOS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NETFOSA-M_00001	03/10/19		WELLINGTON, Lot dNETFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00001	05/08/20		WELLINGTON, Lot d5NETFOSAA0515		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FOS_00001	07/15/17		WELLINGTON, Lot M262FOS0714		(Purchased Reagent)		M2-6:2FOS	47.5 ug/mL
..LCM2-8:2FOS_00001	04/13/17		WELLINGTON, Lot M282FOS0414		(Purchased Reagent)		M2-8:2FOS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014			(Purchased Reagent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014			(Purchased Reagent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NETFOSA0714M			(Purchased Reagent)	N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NETFOSAA0113			(Purchased Reagent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)	MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L3_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	4.74 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	4.79 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							MeFOSA	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M 00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M 00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA 00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA 00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FtS 00001	200 uL	M2-6:2FtS	0.95 ug/mL
					LCM2-8:2FtS 00001	200 uL	M2-8:2FtS	0.958 ug/mL
..LCd-NEtFOSA-M 00001	03/10/19		WELLINGTON, Lot dNetFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M 00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA 00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA 00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FtS 00001	07/15/17		WELLINGTON, Lot M262FtS0714		(Purchased Reagent)		M2-6:2FtS	47.5 ug/mL
..LCM2-8:2FtS 00001	04/13/17		WELLINGTON, Lot M282FtS0414		(Purchased Reagent)		M2-8:2FtS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfoamide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FtS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FtS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfoamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M 00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FtS_00001	10/03/17		WELLINGTON, Lot 62FtS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FtS_00001	10/03/17		WELLINGTON, Lot 82FtS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NETFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NETFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L4_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
					LCPFC2SP_00013	100 uL	M2-8:2FTS	47.9 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	18.96 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	19.16 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	20 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETFOSAA_00001	200 uL	d5-NETFOSAA	1 ug/mL
					LCM2-6:Fts_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2Fts_00001	200 uL	M2-8:2FTS	0.958 ug/mL
					..LCd-NEtFOSA-M_00001	03/10/19		WELLINGTON, Lot dNEtFOSA0314M
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)	d-N-MeFOSA-M	50 ug/mL	
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)	d3-NMeFOSAA	50 ug/mL	
..LCd5-NETFOSAA_00001	05/08/20		WELLINGTON, Lot d5NETFOSAA0515		(Purchased Reagent)	d5-NETFOSAA	50 ug/mL	
..LCM2-6:Fts_00001	07/15/17		WELLINGTON, Lot M262Fts0714		(Purchased Reagent)	M2-6:2Fts	47.5 ug/mL	
..LCM2-8:2Fts_00001	04/13/17		WELLINGTON, Lot M282Fts0414		(Purchased Reagent)	M2-8:2Fts	47.9 ug/mL	
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2Fts_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2Fts_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NETFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NETFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L5_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
					M2-8:2FTS	47.9 ng/mL		
					LCPFC2SP_00013	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	50 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
MeFOSA	50 ng/mL							
N-methyl perfluorooctane sulfonamidoacetic acid	50 ng/mL							
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NETFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
							LCd-NMeFOSA-M_00001	1 ug/mL
							LCd3-NMeFOSAA_00001	1 ug/mL
							LCd5-NETFOSAA_00001	1 ug/mL
							LCM2-6:FOS_00001	0.95 ug/mL
							LCM2-8:2FOS_00001	0.958 ug/mL
..LCd-NETFOSA-M_00001	03/10/19		WELLINGTON, Lot dNETFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00001	05/08/20		WELLINGTON, Lot d5NETFOSAA0515		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FOS_00001	07/15/17		WELLINGTON, Lot M262FOS0714		(Purchased Reagent)		M2-6:2FOS	47.5 ug/mL
..LCM2-8:2FOS_00001	04/13/17		WELLINGTON, Lot M282FOS0414		(Purchased Reagent)		M2-8:2FOS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FOS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NETFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NETFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPPFC2-L6_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPPFC2SP_00013	1000 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	189.6 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	191.6 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	200 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
							MeFOSA	200 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NETFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETFOSAA_00001	200 uL	d5-NETFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NETFOSA-M_00001	03/10/19		WELLINGTON, Lot dNETFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)	d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)	d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)	d5-NEtFOSAA	50 ug/mL
..LCM2-6:FtS_00001	07/15/17		WELLINGTON, Lot M262FtS0714			(Purchased Reagent)	M2-6:2FtS	47.5 ug/mL
..LCM2-8:2FtS_00001	04/13/17		WELLINGTON, Lot M282FtS0414			(Purchased Reagent)	M2-8:2FtS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FtS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FtS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FtS_00001	10/03/17		WELLINGTON, Lot 62FtS1014			(Purchased Reagent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FtS_00001	10/03/17		WELLINGTON, Lot 82FtS1014			(Purchased Reagent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)	MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L7_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FtS	47.5 ng/mL
							M2-8:2FtS	47.9 ng/mL
					LCPFC2SP_00013	2000 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	379.2 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	383.2 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	400 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	400 ng/mL
MeFOSA	400 ng/mL							

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-methyl perfluorooctane sulfonamidoacetic acid	400 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M 00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M 00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA 00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA 00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FtS 00001	200 uL	M2-6:2FtS	0.95 ug/mL
					LCM2-8:2FtS 00001	200 uL	M2-8:2FtS	0.958 ug/mL
..LCd-NEtFOSA-M 00001	03/10/19		WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)	d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M 00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)	d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA 00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)	d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA 00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)	d5-NEtFOSAA	50 ug/mL
..LCM2-6:FtS 00001	07/15/17		WELLINGTON, Lot M262FtS0714			(Purchased Reagent)	M2-6:2FtS	47.5 ug/mL
..LCM2-8:2FtS 00001	04/13/17		WELLINGTON, Lot M282FtS0414			(Purchased Reagent)	M2-8:2FtS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FtS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FtS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FtS_00001	10/03/17		WELLINGTON, Lot 62FtS1014			(Purchased Reagent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FtS_00001	10/03/17		WELLINGTON, Lot 82FtS1014			(Purchased Reagent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)	N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)	MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCIC_00019	12/02/16	06/25/16	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00043	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFtEDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration							
					Reagent ID	Volume Added									
							18O2 PFHxS	47.3 ng/mL							
							13C5 PFNA	50 ng/mL							
							13C4 PFOA	50 ng/mL							
							13C4 PFOS	47.8 ng/mL							
							13C2 PFUnA	50 ng/mL							
							LCPFACMXB_00007	125 uL	Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL					
.LCMPFCSU_00043	12/02/16	06/02/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	Perfluorooctanoic acid (PFOA)	50 ng/mL							
							13C2-PFHxDA	1 ug/mL							
							LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL					
							LCM4PFHFA_00006	1000 uL	13C4-PFHFA	1 ug/mL					
							LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL					
							LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL					
							LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL					
							LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL					
							LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL					
							LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL					
							LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL					
							LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL					
							LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL					
							LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL					
							LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL					
							..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
							..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00006	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C4-PFHFA	50 ug/mL							
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL							
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL							
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL							
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL							
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL							
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL							
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL							
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL							
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL							
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL							
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL							
..LCPFACMXB_00007	11/06/20	Wellington Laboratories, Lot PFCMXB1115			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL							
							Perfluorooctanoic acid (PFOA)	2 ug/mL							
LCPFCSU_00053	01/06/17	07/06/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	100 uL	Perfluorobutyric acid	0.5 ug/mL							
							LCPFBS_00003	100 uL	Perfluorobutane Sulfonate	0.442 ug/mL					
							LCPFBSA_00001	100 uL	Perfluorobutanesulfonic acid	0.442 ug/mL					
							LCPFDA_00004	100 uL	Perfluorodecanoic acid	0.5 ug/mL					
							LCPFDoA_00004	100 uL	Perfluorododecanoic acid	0.5 ug/mL					
							LCPFDS_00005	100 uL	Perfluorodecane Sulfonate	0.482 ug/mL					
									Perfluorodecane Sulfonic acid	0.482 ug/mL					
							LCPFHFA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL					

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHps_00008	100 uL	Perfluoroheptane Sulfonate	0.476 ug/mL
							Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA 00004	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA 00004	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00001	100 uL	Perfluorohexane Sulfonate	0.455 ug/mL
							Perfluorohexanesulfonic acid	0.455 ug/mL
					LCPFNA 00005	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFNS_00002	100 uL	PFNS (Perflouro-1-nonanesulfonate)	0.48 ug/mL
					LCPFOA 00005	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA 00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00001	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA 00006	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA 00004	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFPeS_00002	100 uL	PFPeS (Perflouro-1-pentanesulfonate)	0.469 ug/mL
					LCPFTeDA 00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA 00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUda 00004	100 uL	Perfluoroundecanoic acid	0.5 ug/mL
.LCPFBA 00004	01/30/20		Wellington Laboratories, Lot PFBA0115				(Purchased Reagent) Perfluorobutyric acid	50 ug/mL
.LCPFBS 00003	10/09/19		Wellington Laboratories, Lot LPFBS1014				(Purchased Reagent) Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFBSA 00001	10/09/19		Wellington Laboratories, Lot LPFBS1014				(Purchased Reagent) Perfluorobutanesulfonic acid	44.2 ug/mL
.LCPFDA 00004	07/02/20		Wellington Laboratories, Lot PFDA0615				(Purchased Reagent) Perfluorodecanoic acid	50 ug/mL
.LCPFDoA 00004	01/30/20		Wellington Laboratories, Lot PFDoA0115				(Purchased Reagent) Perfluorododecanoic acid	50 ug/mL
.LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615				(Purchased Reagent) Perfluorodecane Sulfonate Perfluorodecane Sulfonic acid	48.2 ug/mL 48.2 ug/mL
.LCPFHpA 00005	01/22/21		Wellington Laboratories, Lot PFHpA0116				(Purchased Reagent) Perfluoroheptanoic acid	50 ug/mL
.LCPFHps_00008	11/06/20		Wellington Laboratories, Lot LPFHps1115				(Purchased Reagent) Perfluoroheptane Sulfonate Perfluoroheptanesulfonic Acid	47.6 ug/mL 47.6 ug/mL
.LCPFHxA 00004	12/22/20		Wellington Laboratories, Lot PFHxA1215				(Purchased Reagent) Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA 00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707				(Purchased Reagent) Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615				(Purchased Reagent) Perfluorohexane Sulfonate Perfluorohexanesulfonic acid	45.5 ug/mL 45.5 ug/mL
.LCPFNA 00005	10/23/20		Wellington Laboratories, Lot PFNA1015				(Purchased Reagent) Perfluorononanoic acid	50 ug/mL
.LCPFNS_00002	07/04/17		Wellington Laboratories, Lot LPFNS0712				(Purchased Reagent) PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
.LCPFOA 00005	11/06/20		Wellington Laboratories, Lot PFOA1115				(Purchased Reagent) Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA 00005	01/30/20		Wellington Laboratories, Lot PFODA0115				(Purchased Reagent) Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015				(Purchased Reagent) Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA 00006	09/02/17		Wellington Laboratories, Lot FOSA0815I				(Purchased Reagent) Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA 00004	01/30/20		Wellington Laboratories, Lot PFPeA0115				(Purchased Reagent) Perfluoropentanoic acid	50 ug/mL
.LCPFPeS_00002	07/04/17		Wellington Laboratories, Lot LPFPeS0712				(Purchased Reagent) PFPeS (Perflouro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA 00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215				(Purchased Reagent) Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA 00004	12/10/18		Wellington Laboratories, Lot PFTTrDA1213				(Purchased Reagent) Perfluorotridecanoic acid	50 ug/mL
.LCPFUda 00004	08/19/20		Wellington Laboratories, Lot PFUda0815				(Purchased Reagent) Perfluoroundecanoic acid	50 ug/mL

Reagent

LC6:2FTS_00001

r: 7hclis ev
s: 7h2015sw

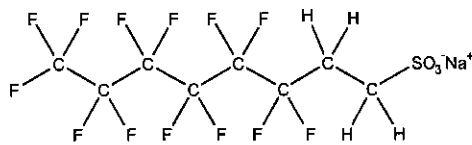


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS1014
COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₈H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 450.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.4 ± 2.4 µg/ml (6:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/03/2014
EXPIRY DATE: (mm/dd/yyyy) 10/03/2017
RECOMMENDED STORAGE: Refrigerate ampoule

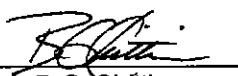
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
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, \dots, x_n on which it depends is:

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

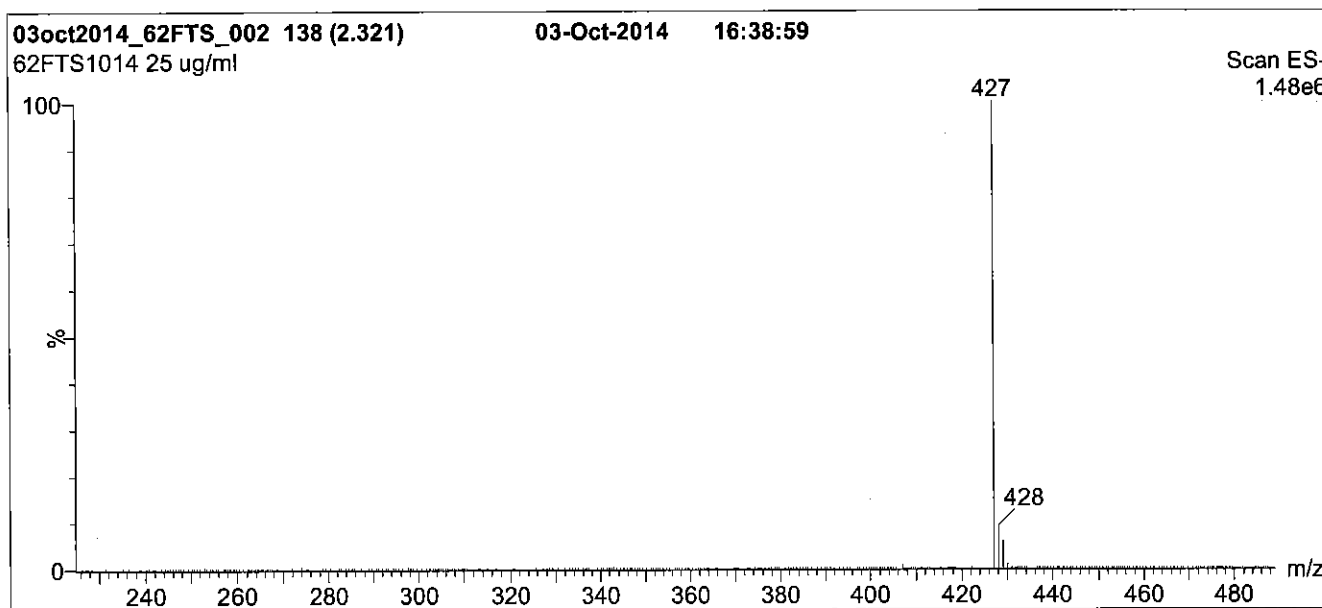
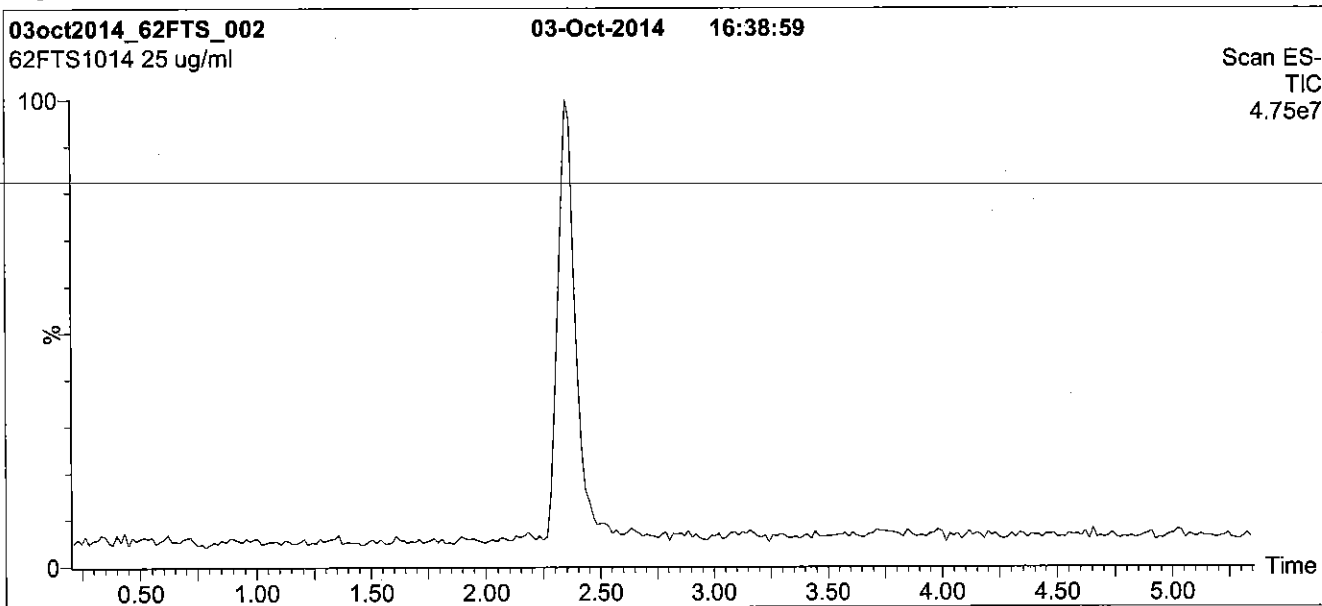
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

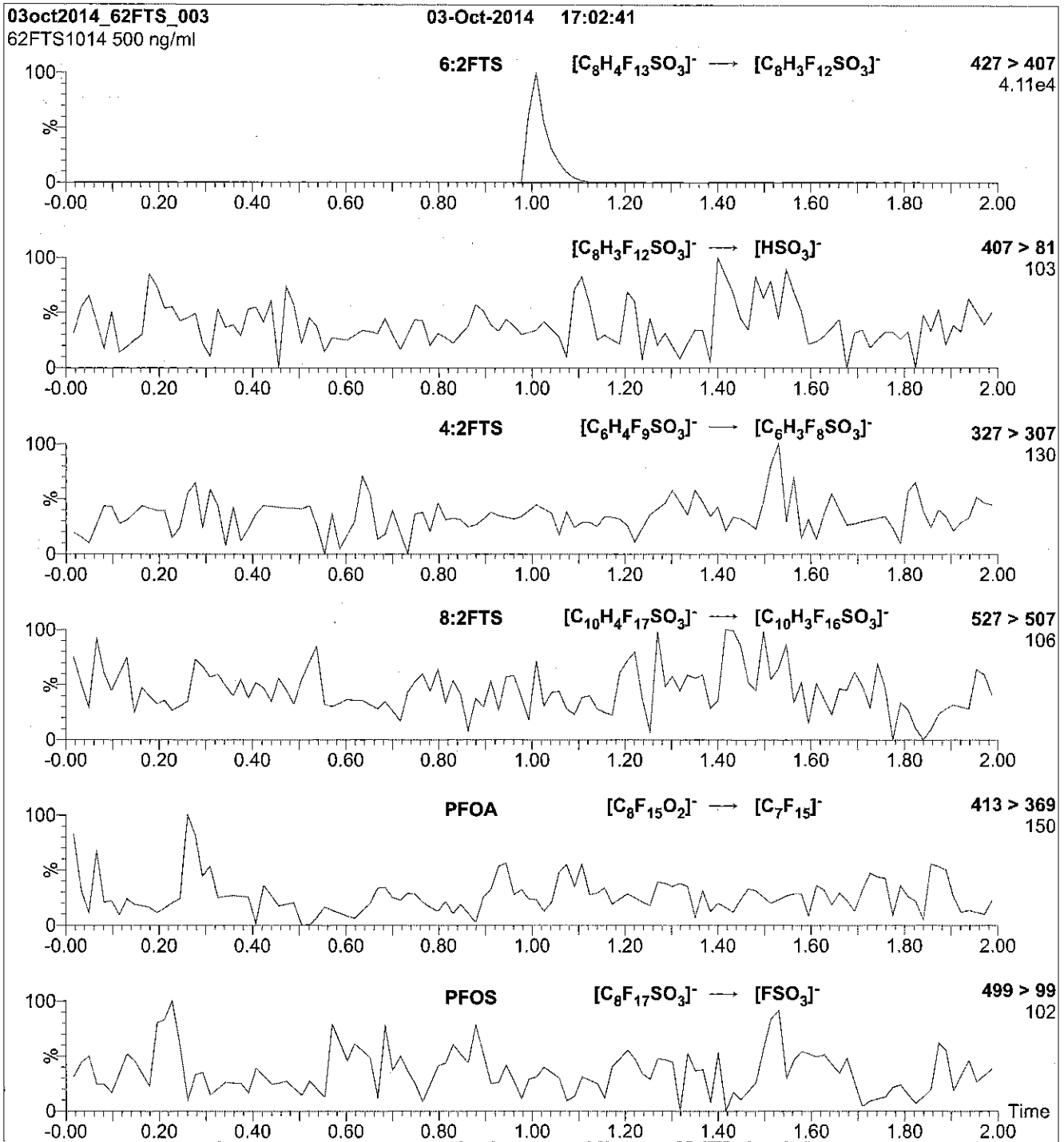
Column: Acquity UPLC BEH Shield RP₁₈, 1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
 Start: 55% (80:20 MeOH:ACN) / 45% H₂O (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 30.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LC8 : 2FTS _ 00001

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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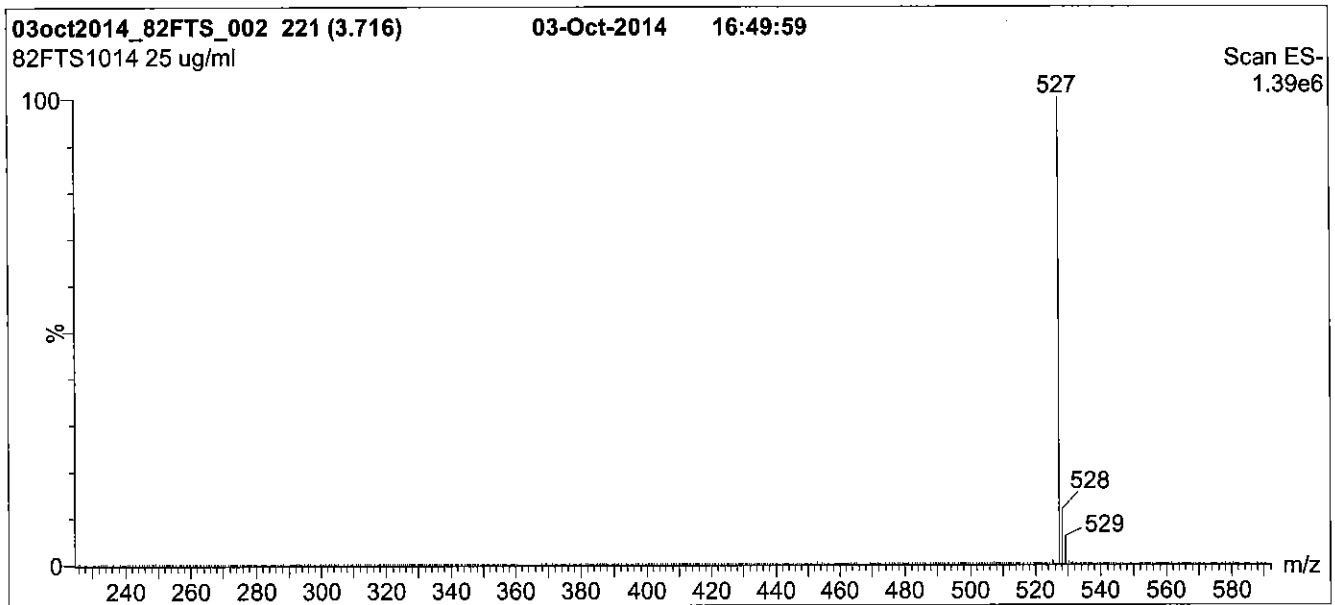
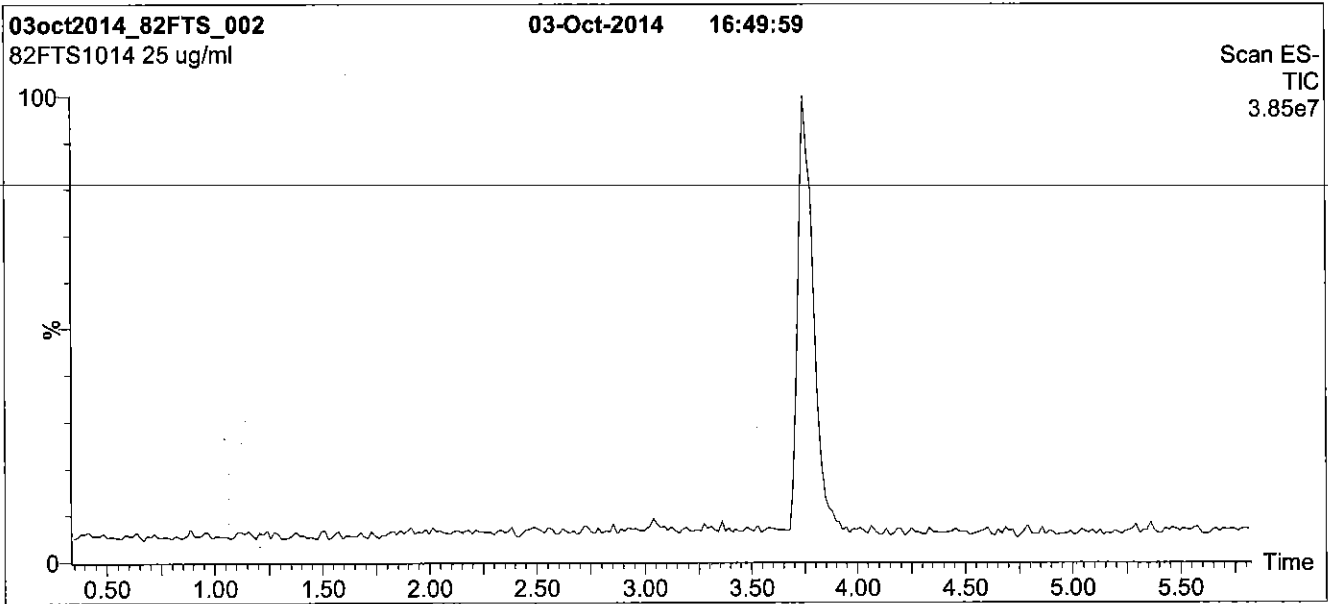
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min.
Return to initial conditions in 0.5 min.
Time: 10 min

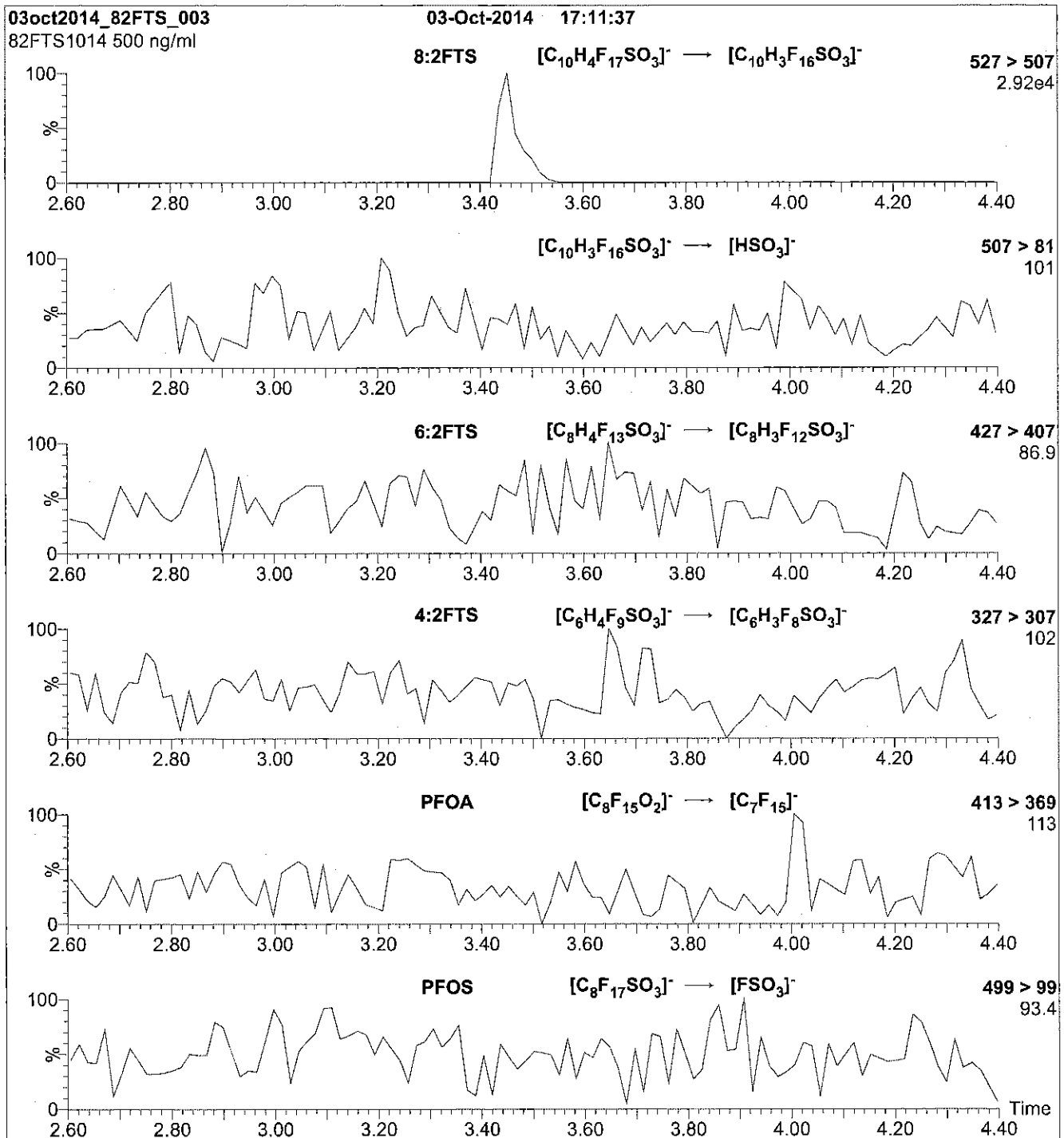
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCd-NEtFOSA-M_00001

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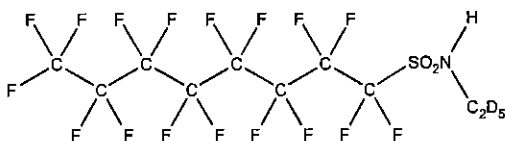
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d₅-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA0314M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₁₀D₅HF₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/10/2014
EXPIRY DATE: (mm/dd/yyyy) 03/10/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 532.23
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥98% ²H₅

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim

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

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

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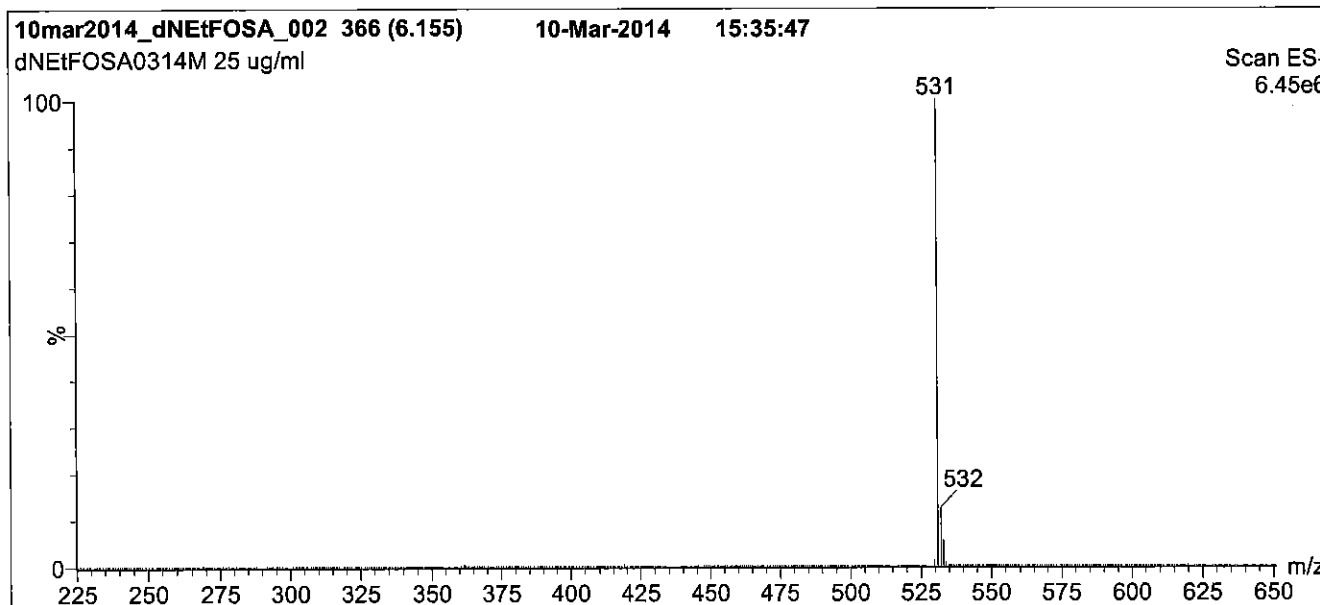
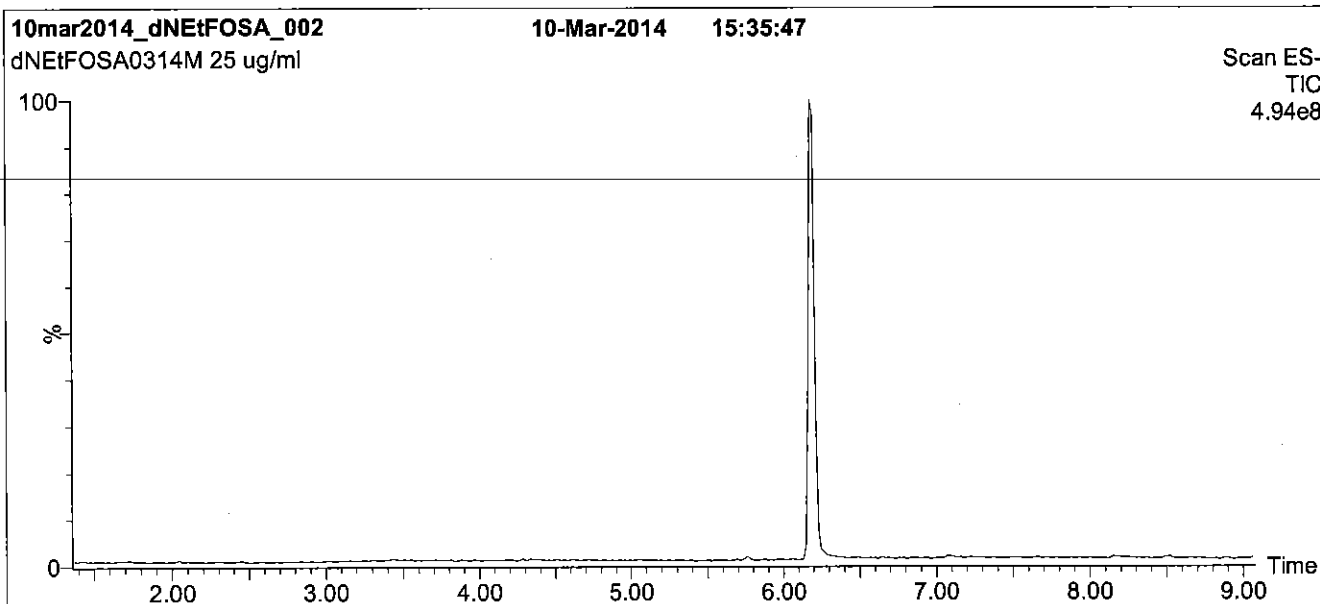
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 40% H₂O / 60% (80:20 MeOH:ACN)
 (both with 10mM NH₄OAc 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

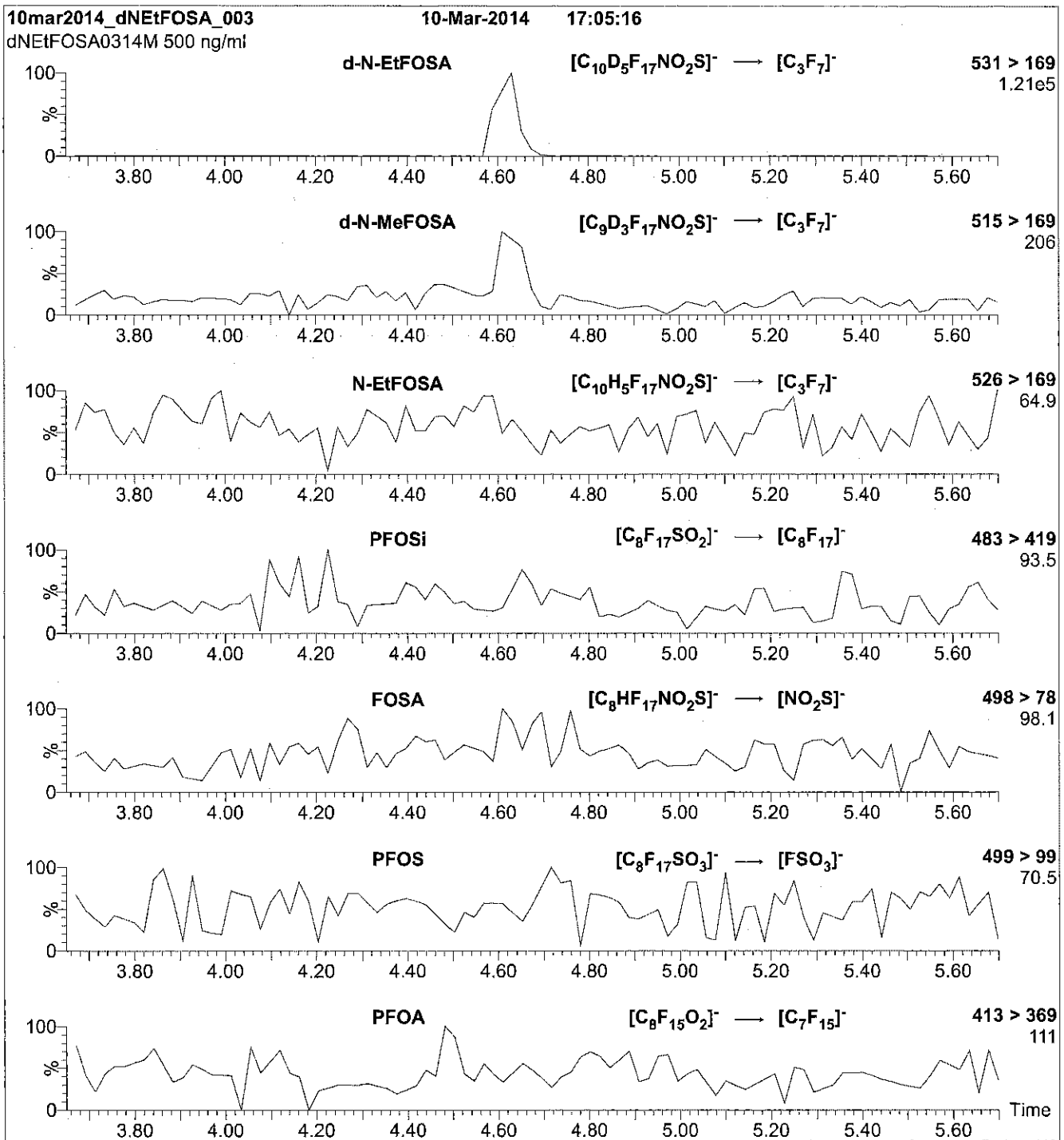
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCd-NMeFOSA-M_00001

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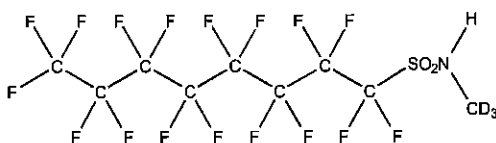
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
COMPOUND: N-methyl-d₃-perfluoro-1-octanesulfonamide

LOT NUMBER: dNMeFOSA0114M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₉D₃HF₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
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

MOLECULAR WEIGHT: 516.19
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥98% ²H₃

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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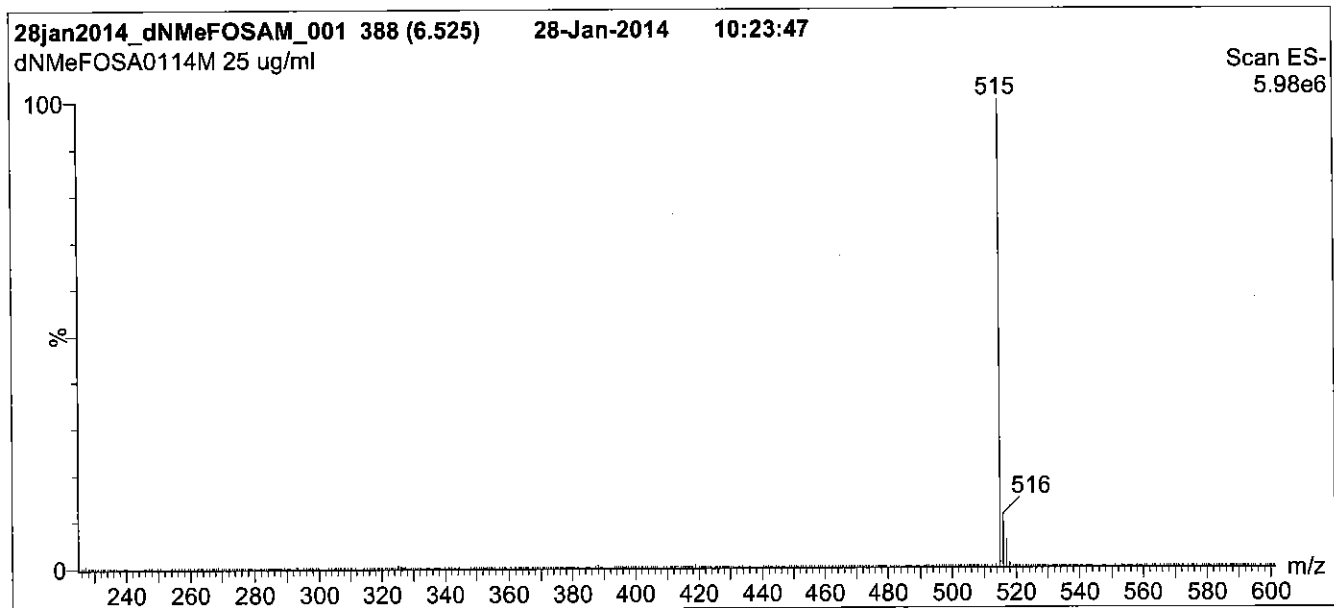
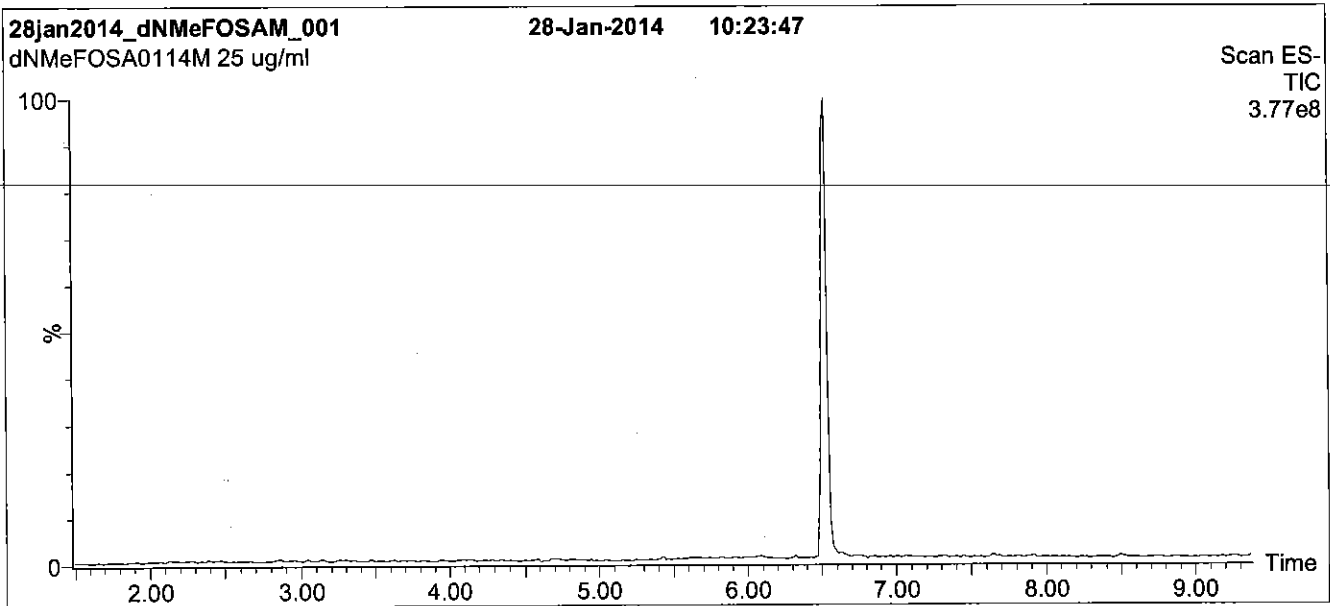
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% H₂O / 50% (80:20 MeOH:ACN)
 (both with 10mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for
 1.5 min. Return to initial conditions over 0.5 min.
 Time: 10 min

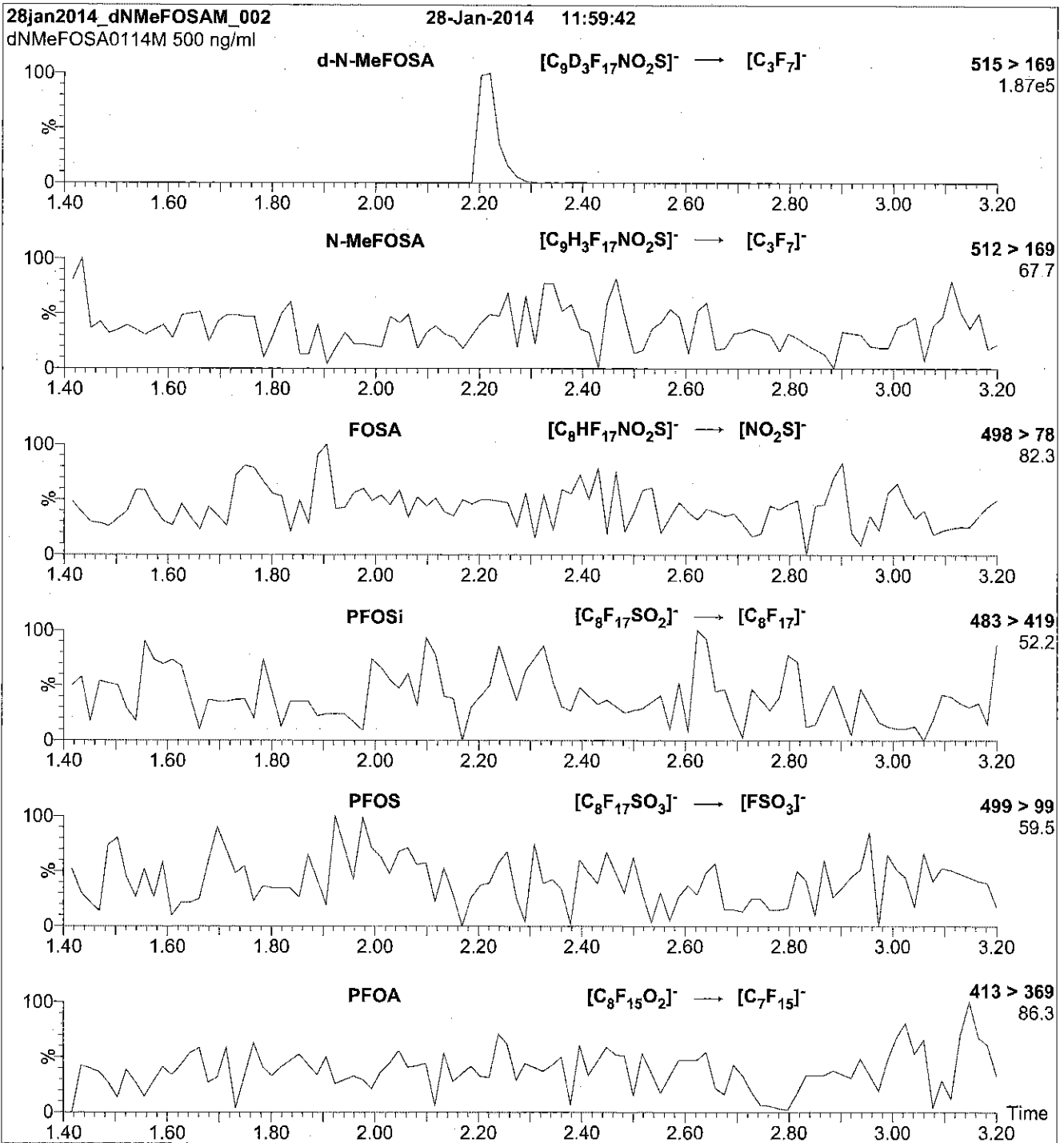
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCd3-NMeFOSAA_00001

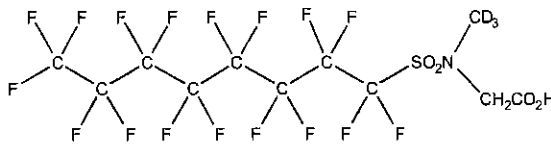


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0113
COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₁D₃H₃F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 574.23
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/31/2013
EXPIRY DATE: (mm/dd/yyyy) 01/31/2018
RECOMMENDED STORAGE: Refrigerate ampoule

ISOTOPIC PURITY: ≥98% ²H₃

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim

Date: 04/06/2015
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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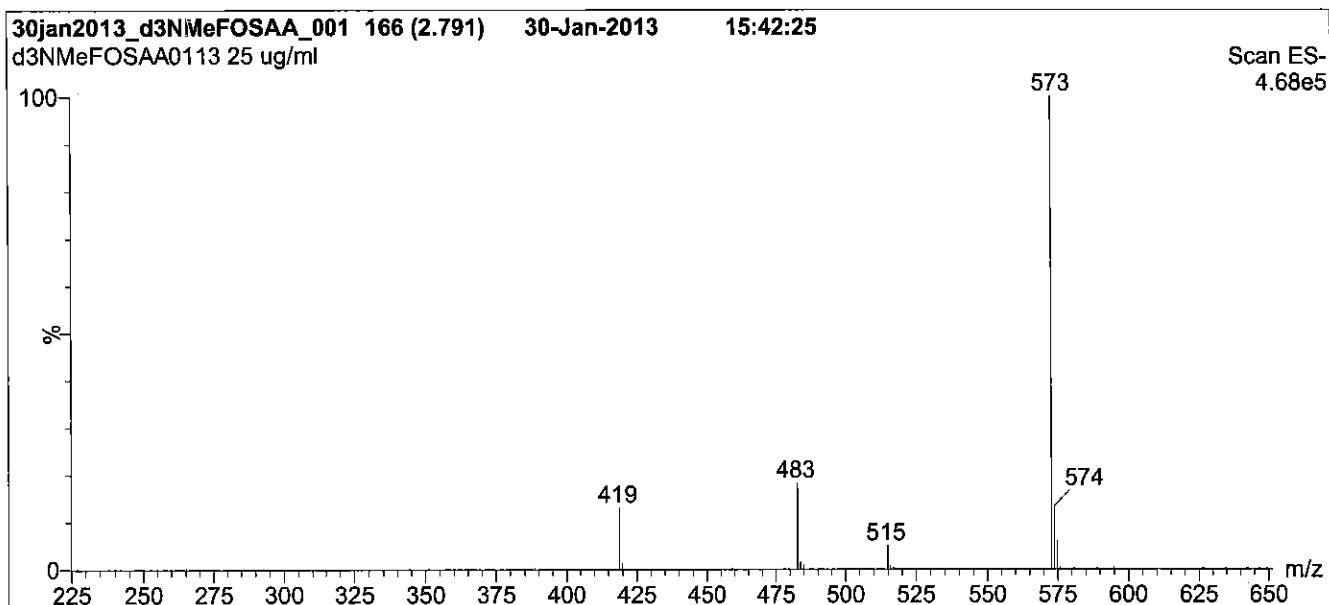
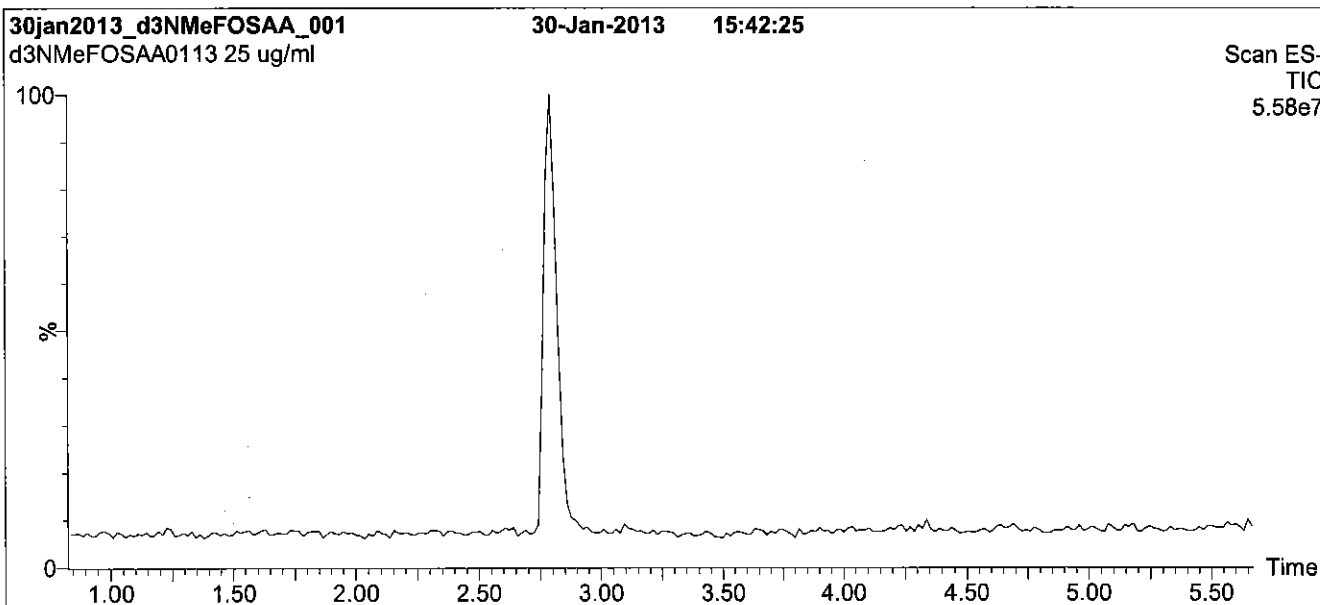
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Figure 1: d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc 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

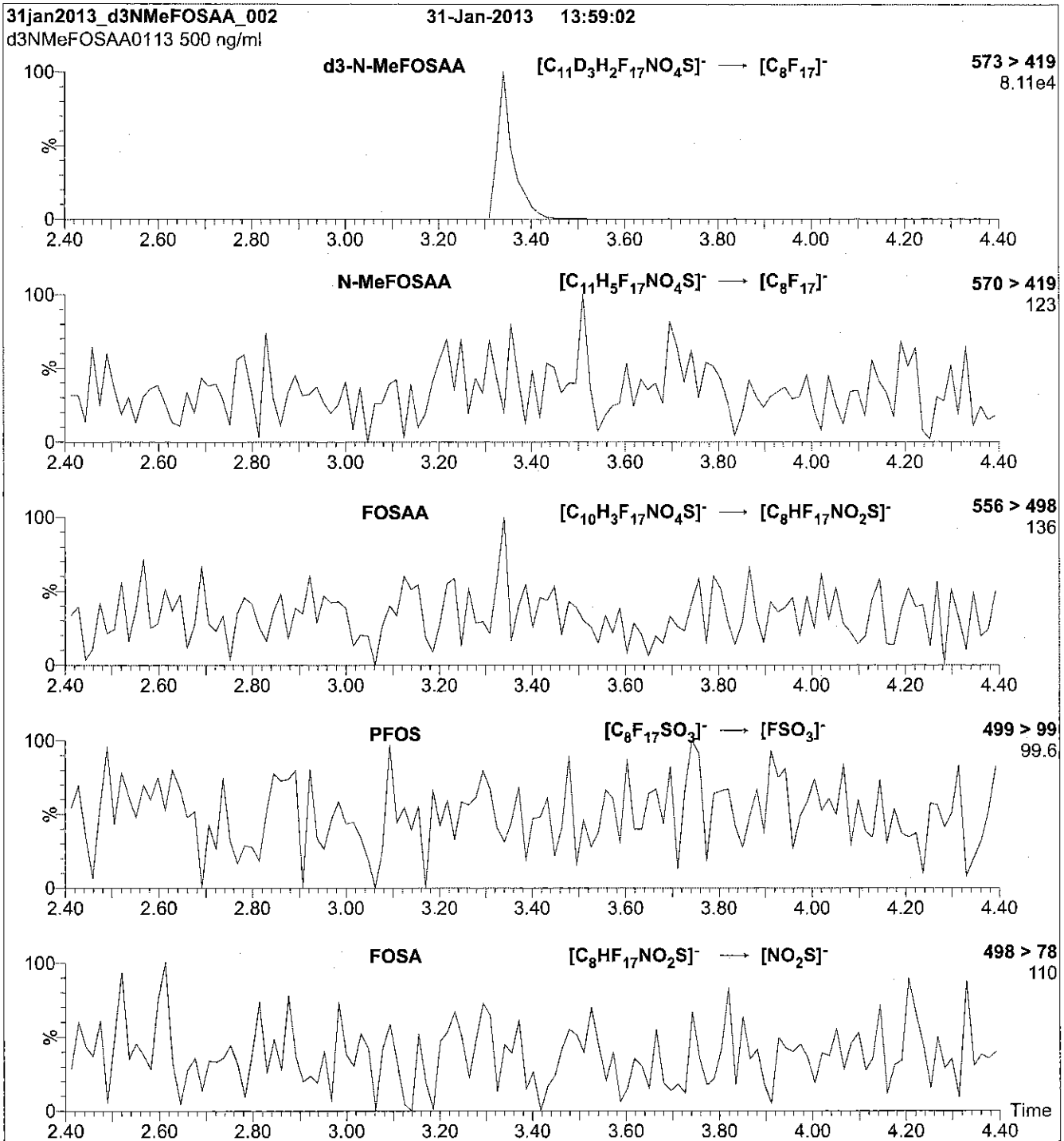
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCd5-NEtFOSAA_00001

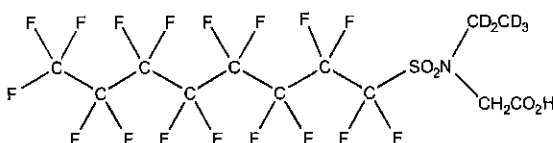


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA0515
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₂D₅H₃F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 590.27
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/08/2015
EXPIRY DATE: (mm/dd/yyyy) 05/08/2020
RECOMMENDED STORAGE: Refrigerate ampoule

ISOTOPIC PURITY: ≥98% ²H₅

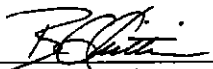
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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.

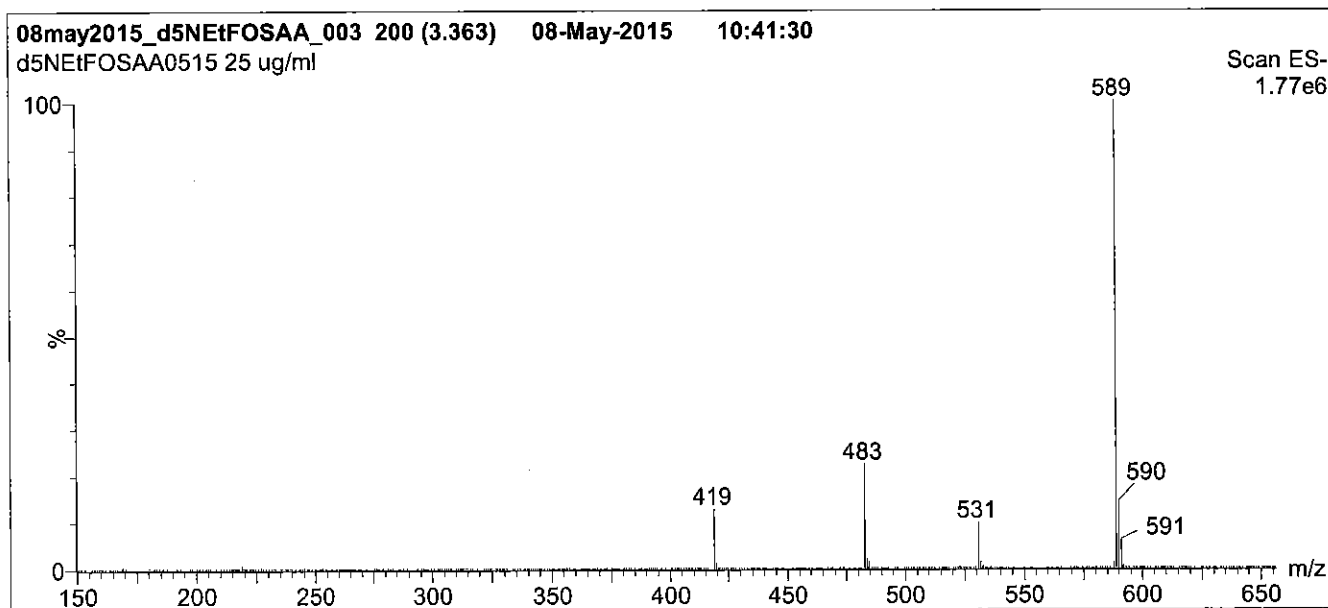
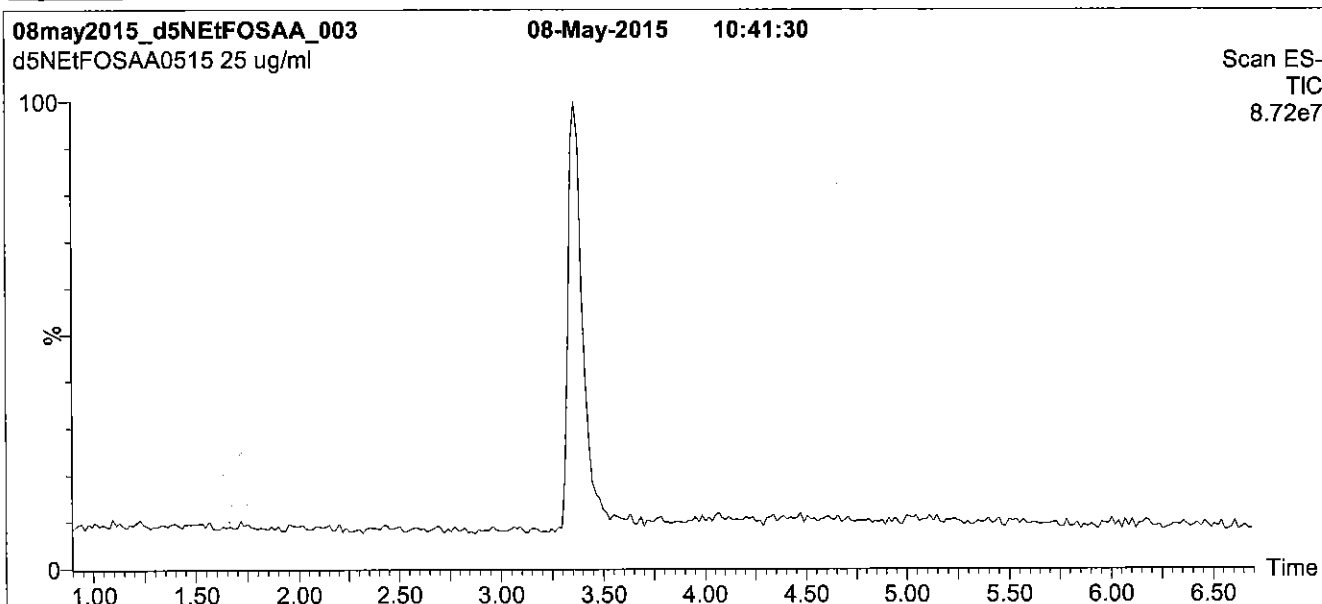
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 65% (80:20 MeOH:ACN) / 35% H₂O
 (both with 10 mM NH₄OAc 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

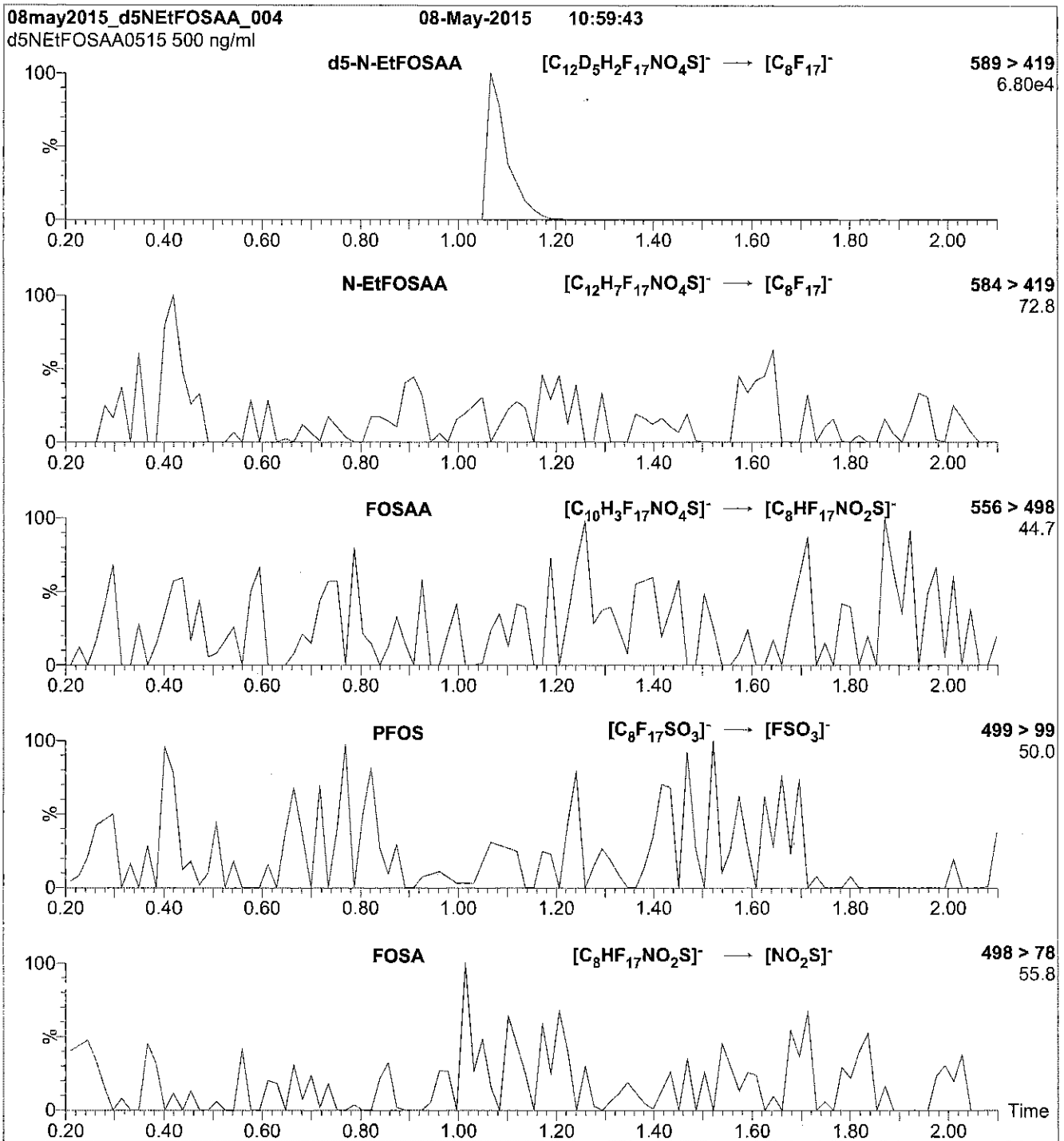
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d5-N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCM2-6:FTS_00001

R: 7/16/15 SW
S: 7/20/15 SW

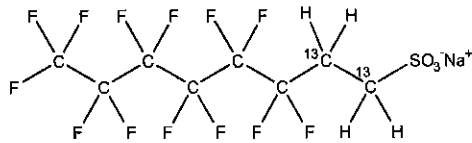


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0714
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.5 ± 2.4 µg/ml (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 07/15/2014 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 07/15/2017
RECOMMENDED STORAGE: Refrigerate ampoule

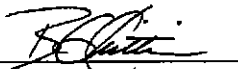
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 03/27/2015
(mm/dd/yyyy)

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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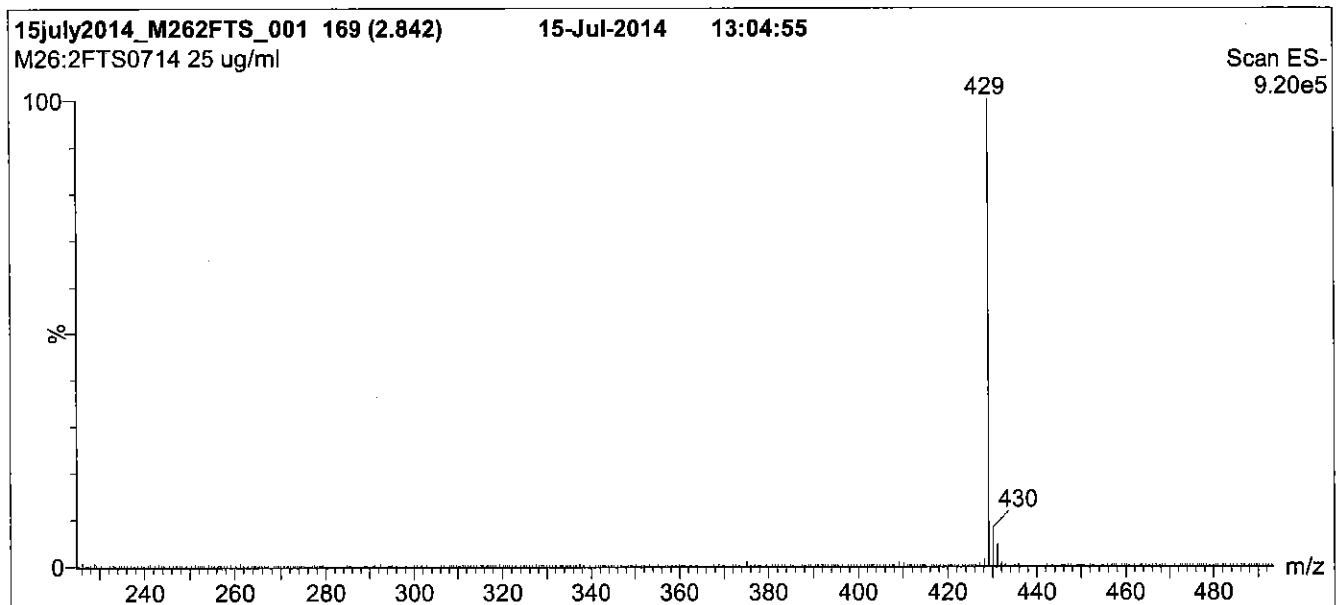
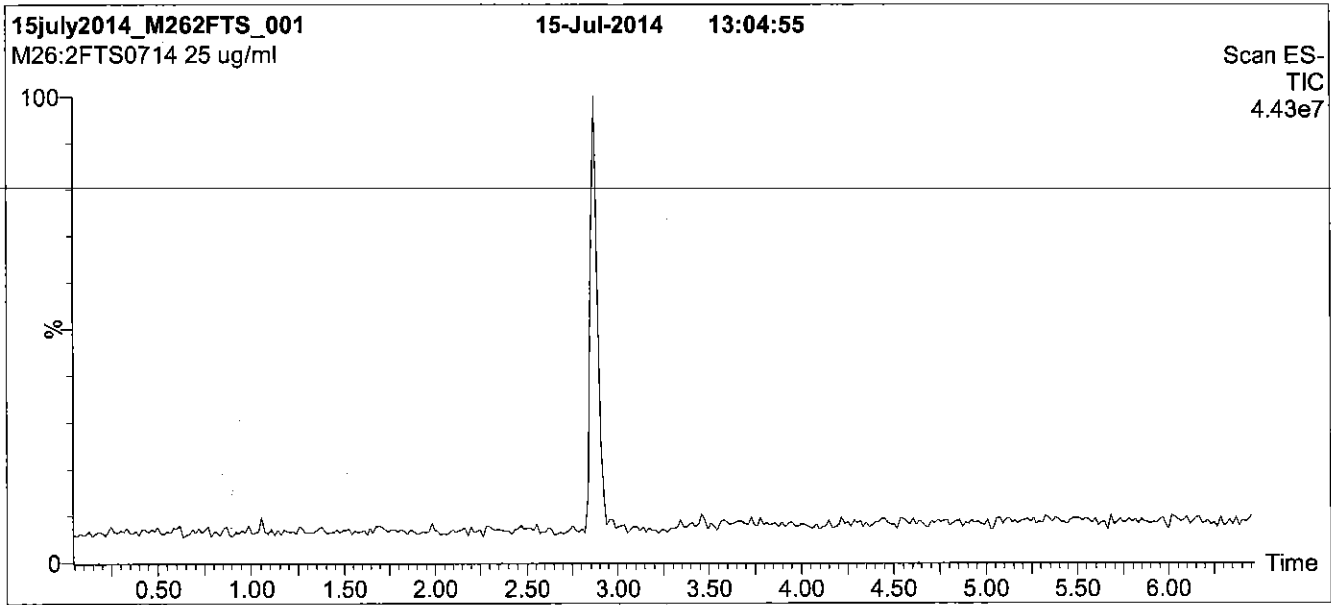
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc 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

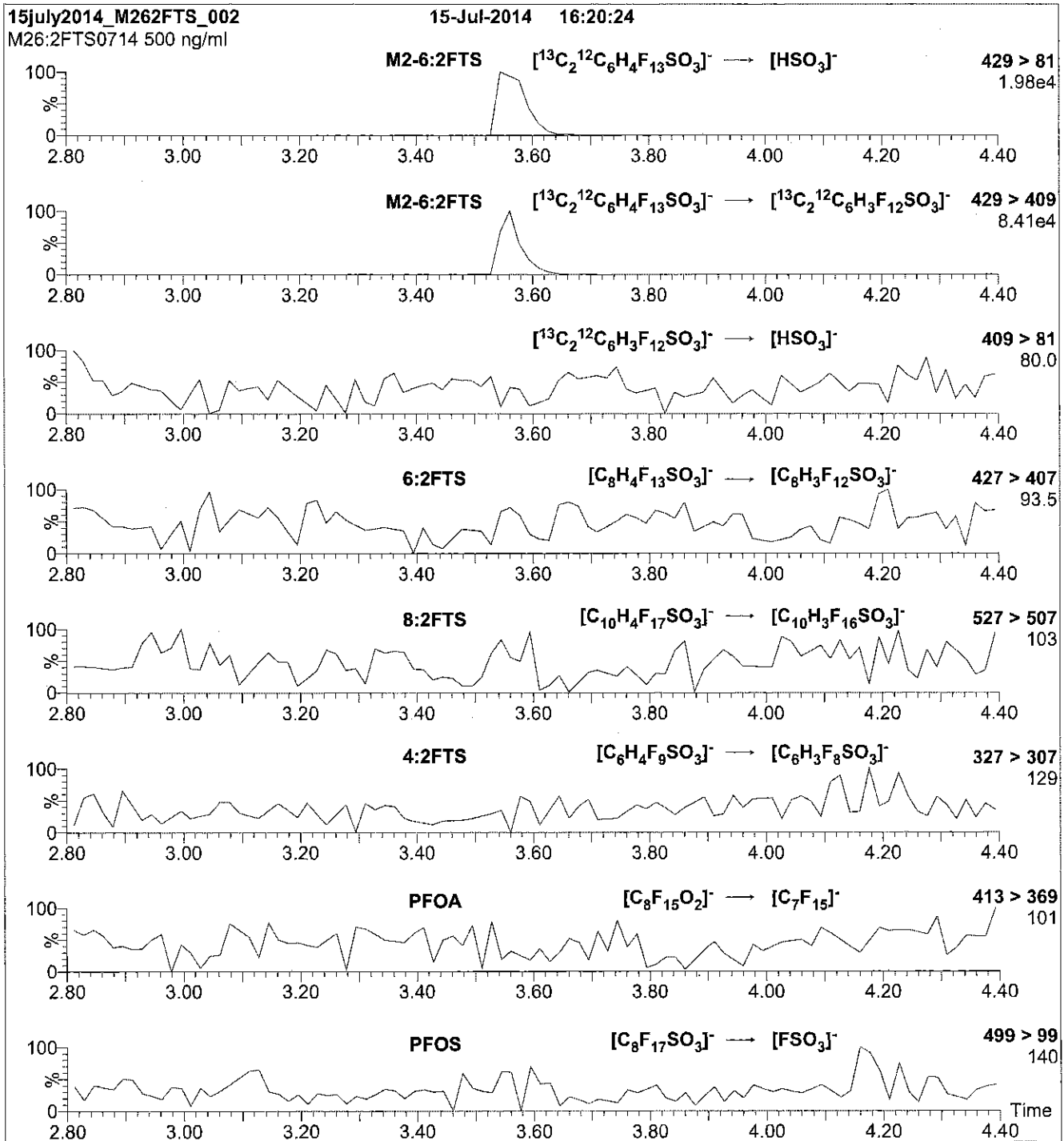
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-6:2FTS)

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

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

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

Reagent

LCM2-8:2FTS_00001

r: 7/16/15 ✓
s: 7/22/15 STV

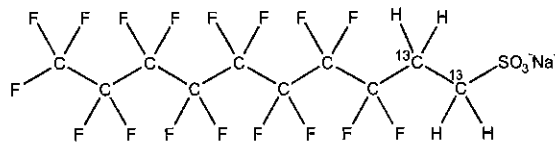


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0414
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 552.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.9 ± 2.4 µg/ml (M2-8:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 04/13/2014 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 04/13/2017
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 03/27/2015
(mm/dd/yyyy)

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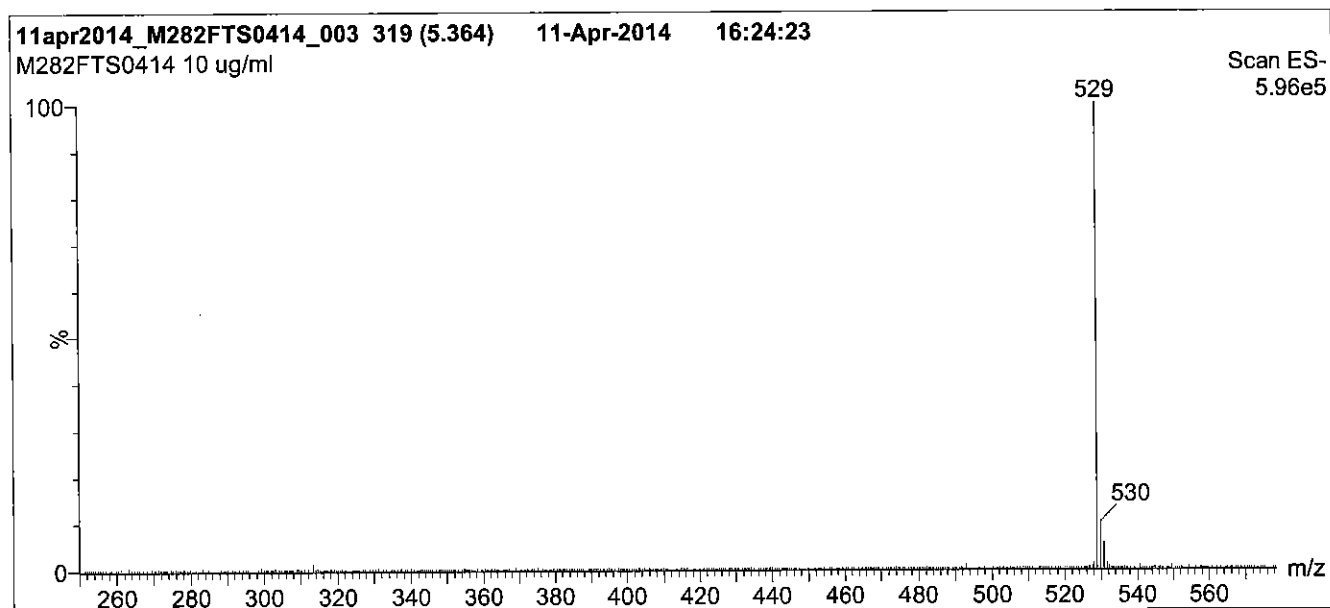
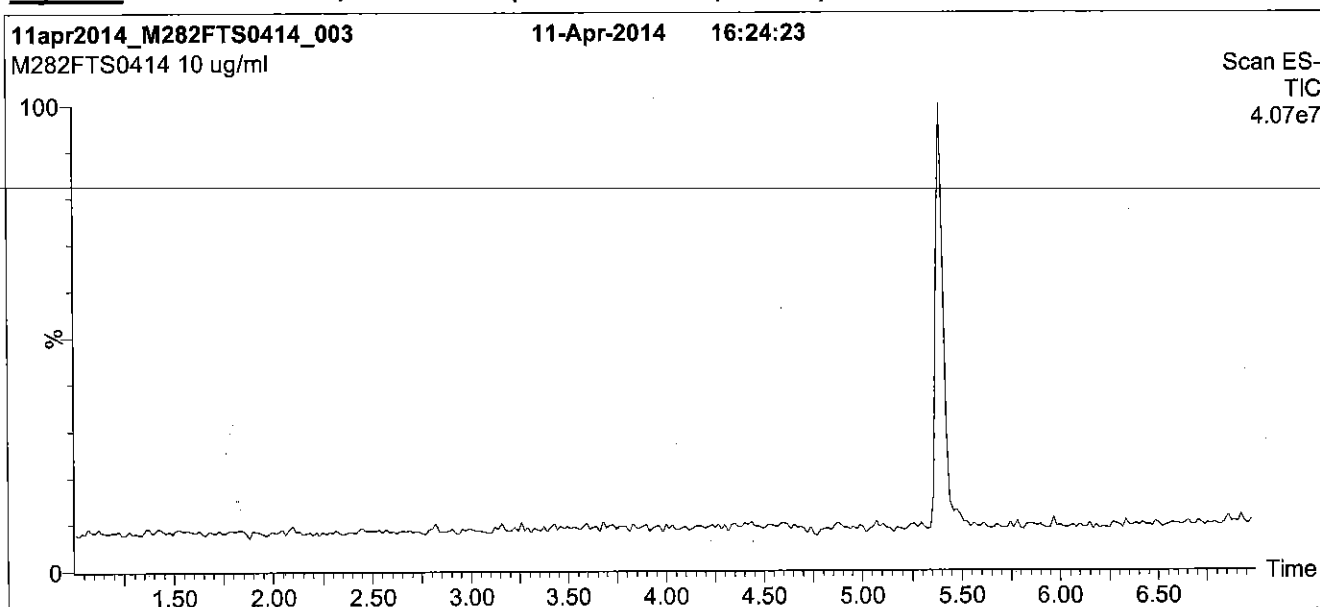
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc 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

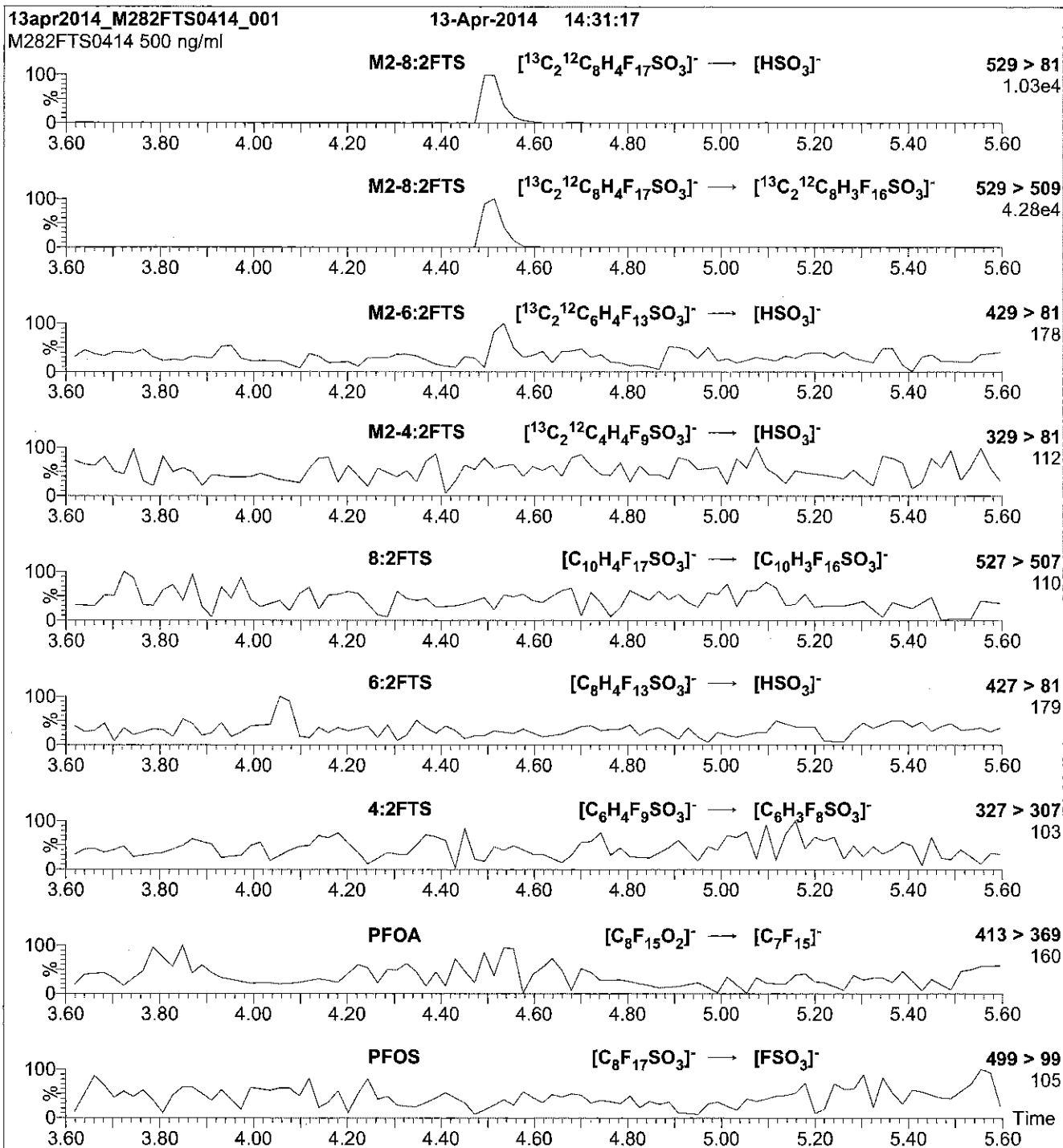
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 µl (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-EtFOSA-M_00002

P: 7/16/15 SW



WELLINGTON LABORATORIES

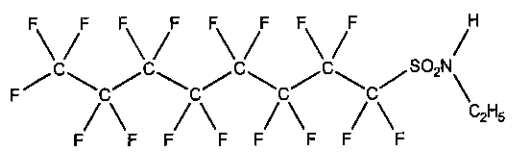
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEIFOSA0714M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA: C₁₀H₆F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/14/2014
EXPIRY DATE: (mm/dd/yyyy) 07/14/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 527.20
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

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

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

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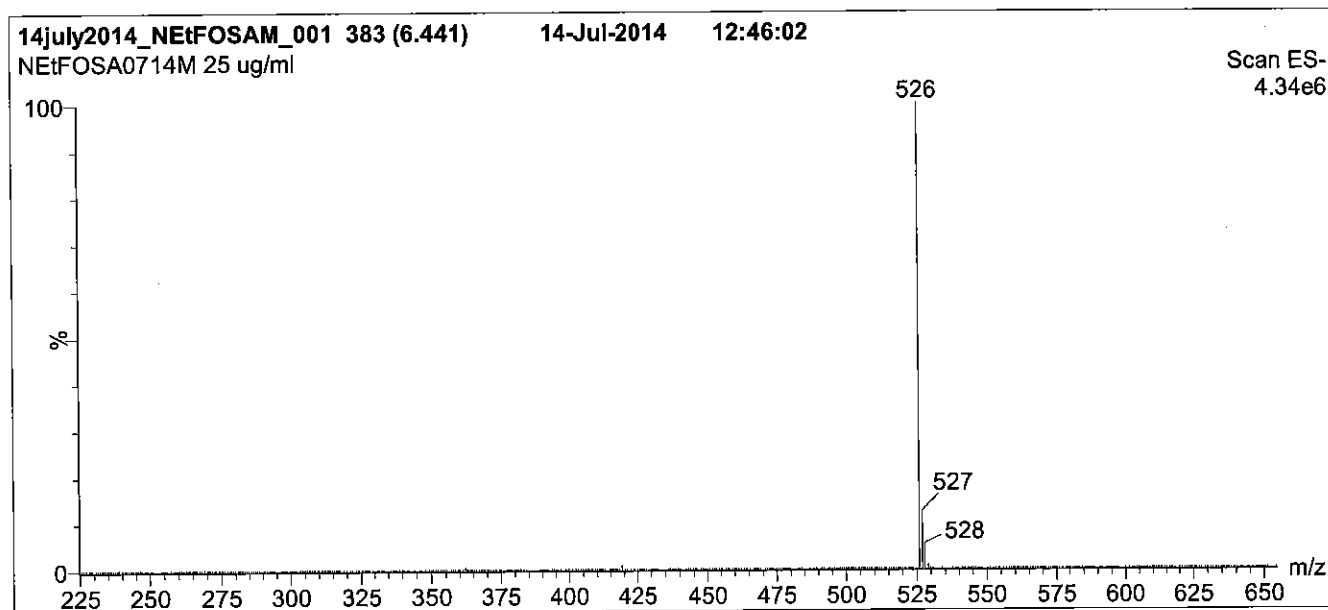
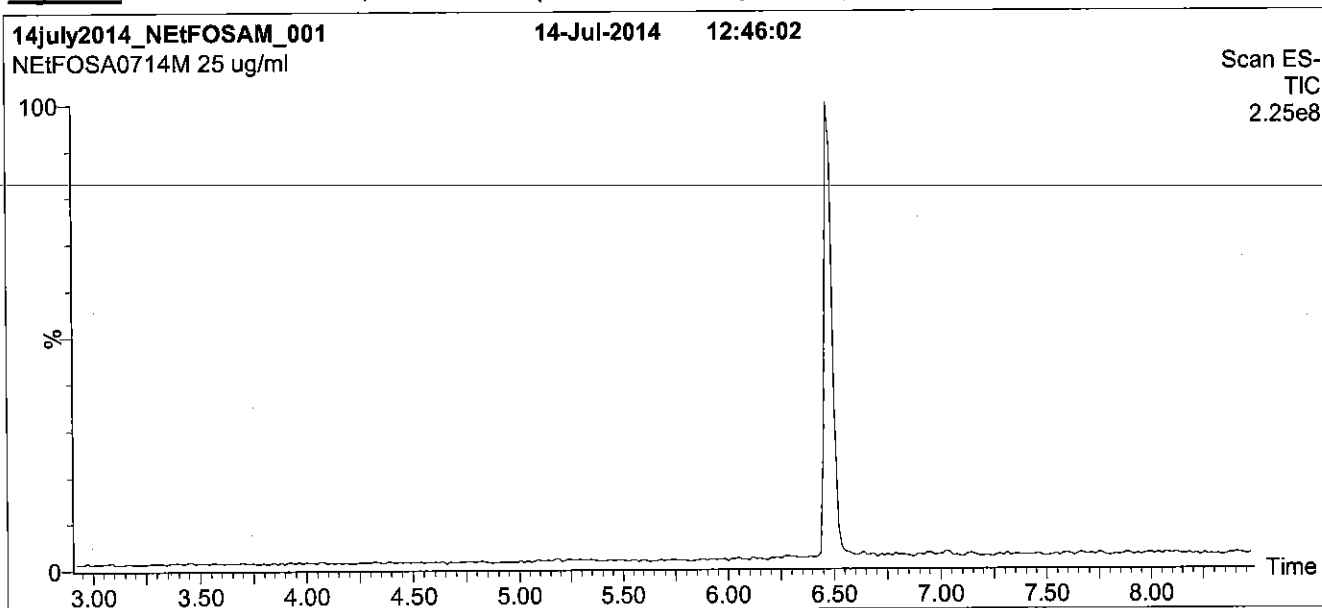
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 45% H₂O / 55% (80:20 MeOH:ACN)
 (both with 10 mM NH₄OAc 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

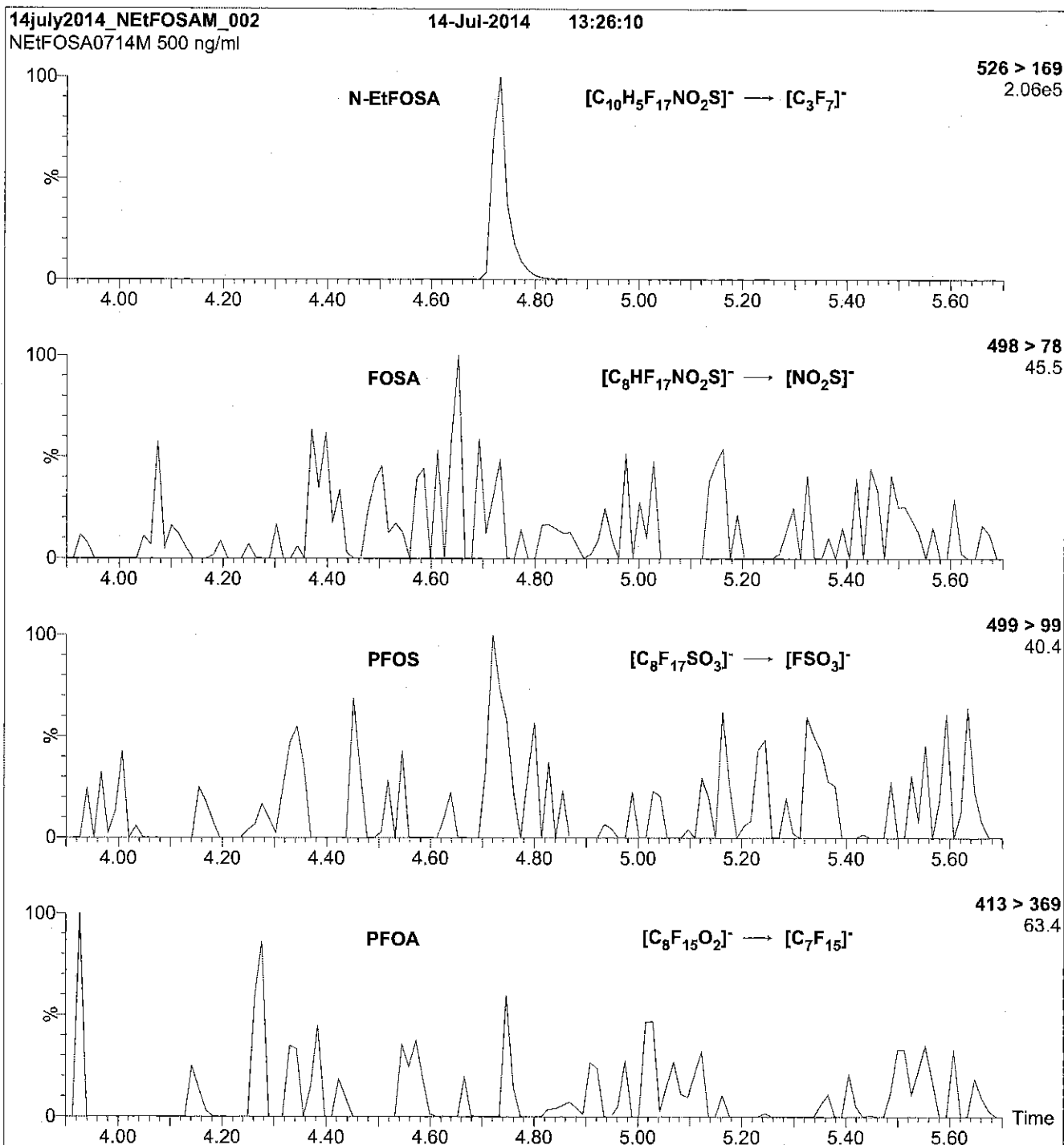
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml N-EtFOA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

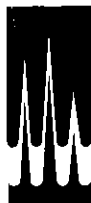
Flow: 300 μ l/min

MS Parameters

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

Reagent

LCN-ETFOSAA_00001

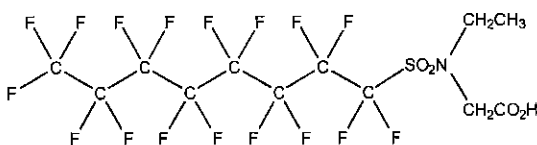


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0113
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: C₁₂H₈F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 585.23
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/29/2013
EXPIRY DATE: (mm/dd/yyyy) 01/29/2018
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/06/2015
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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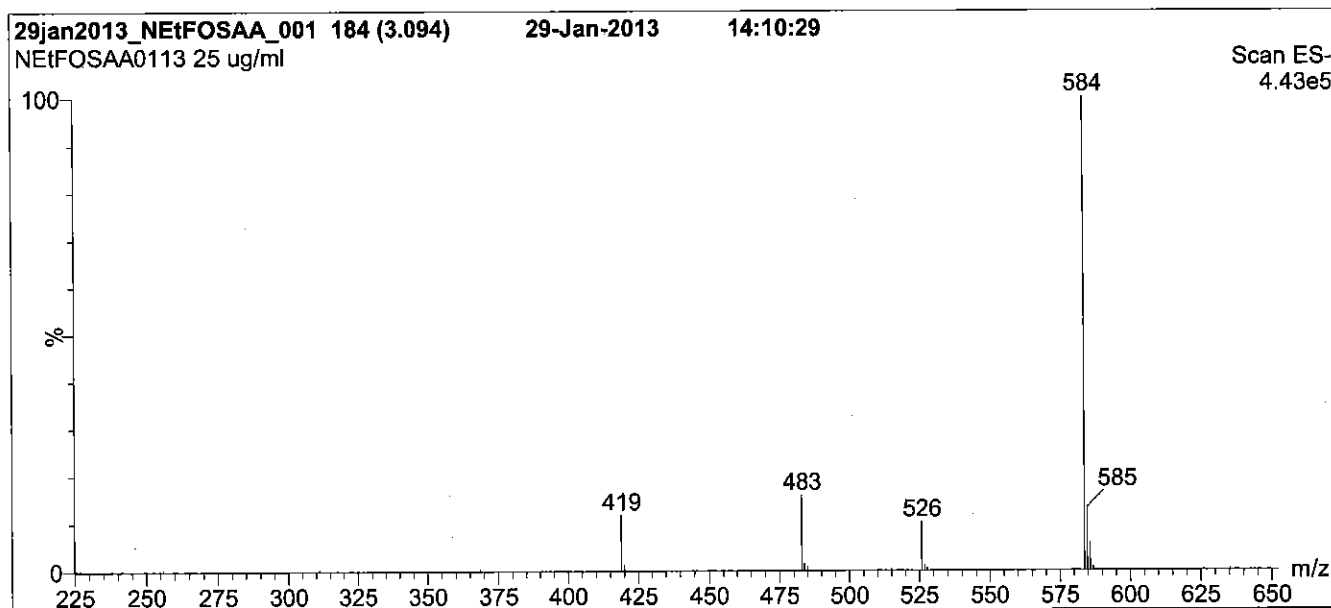
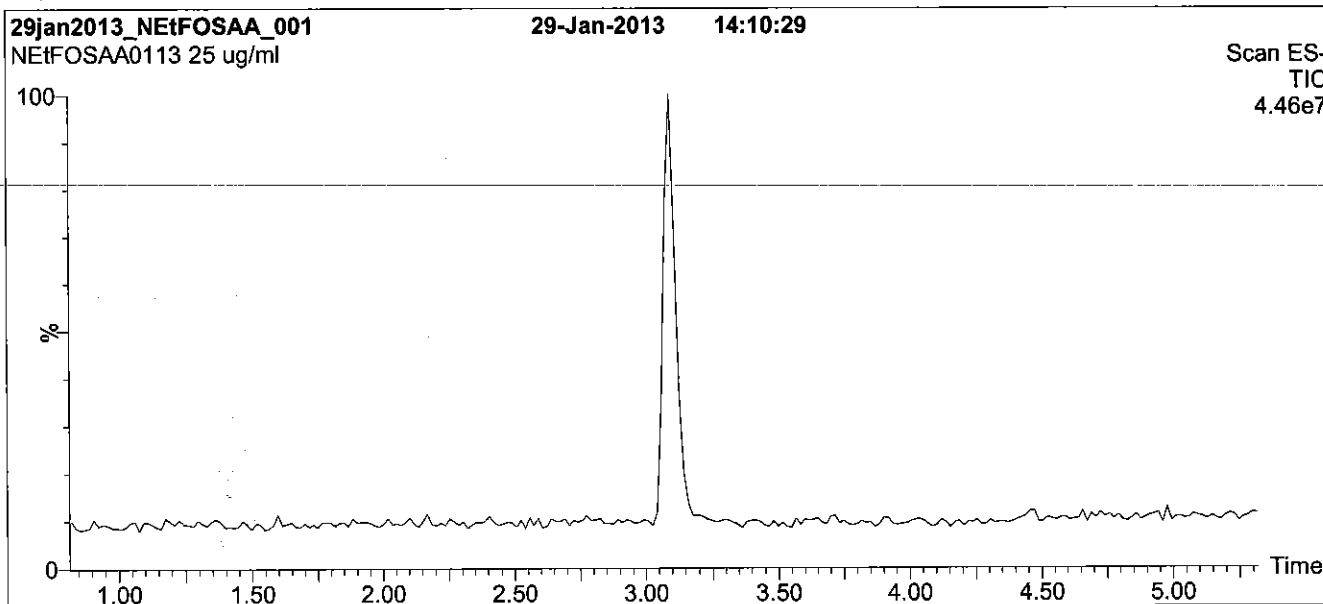
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 65% (80:20 MeOH:ACN) / 35% H₂O
 (both with 10 mM NH₄OAc 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

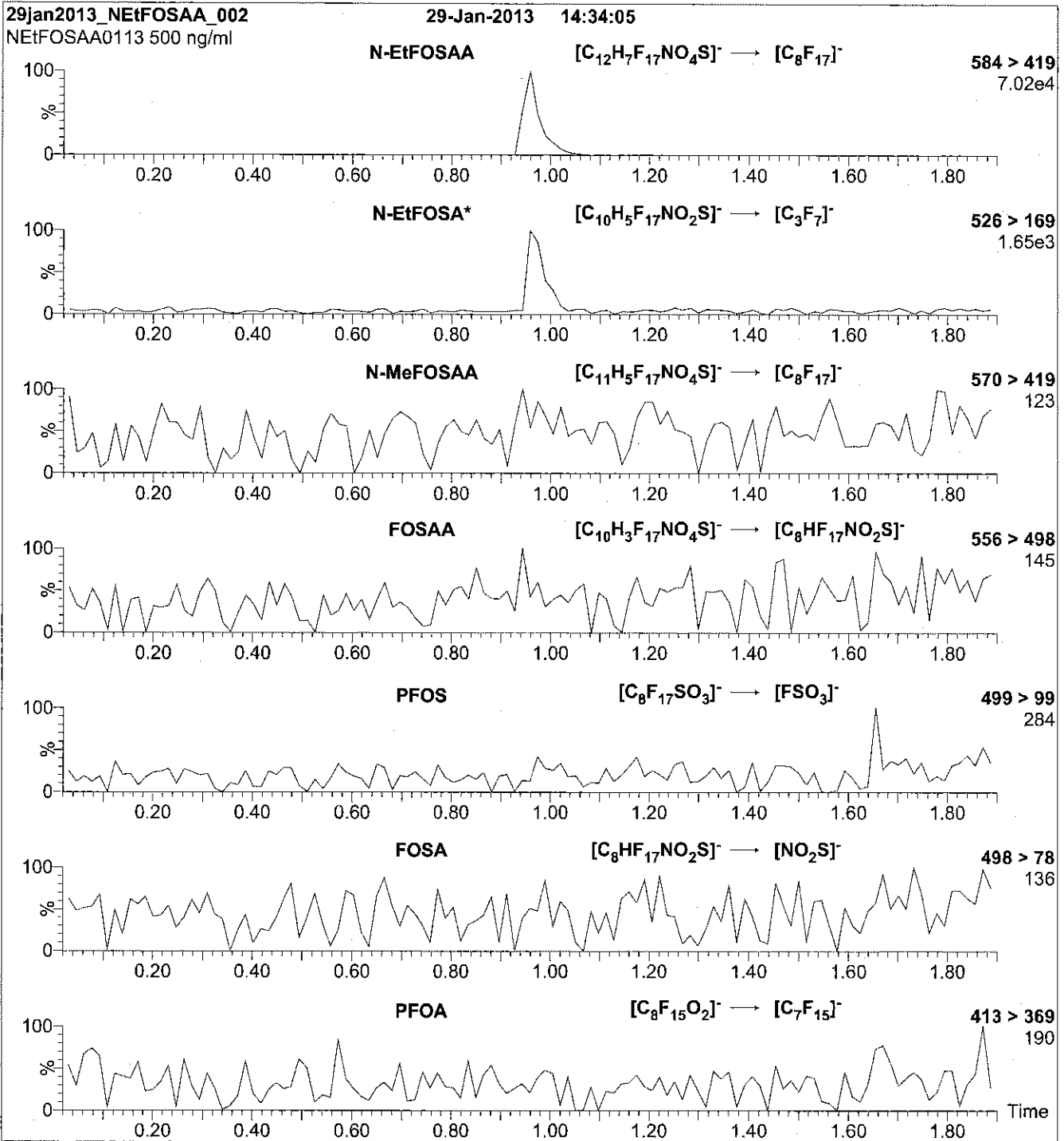
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



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

Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCN-MeFOSA-M_00001

V: 7/16/15 SPW



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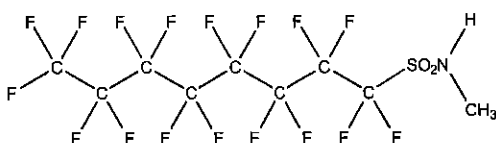
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA0714M

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA: C₉H₄F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/15/2014
EXPIRY DATE: (mm/dd/yyyy) 07/15/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015

(mm/dd/yyyy)

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

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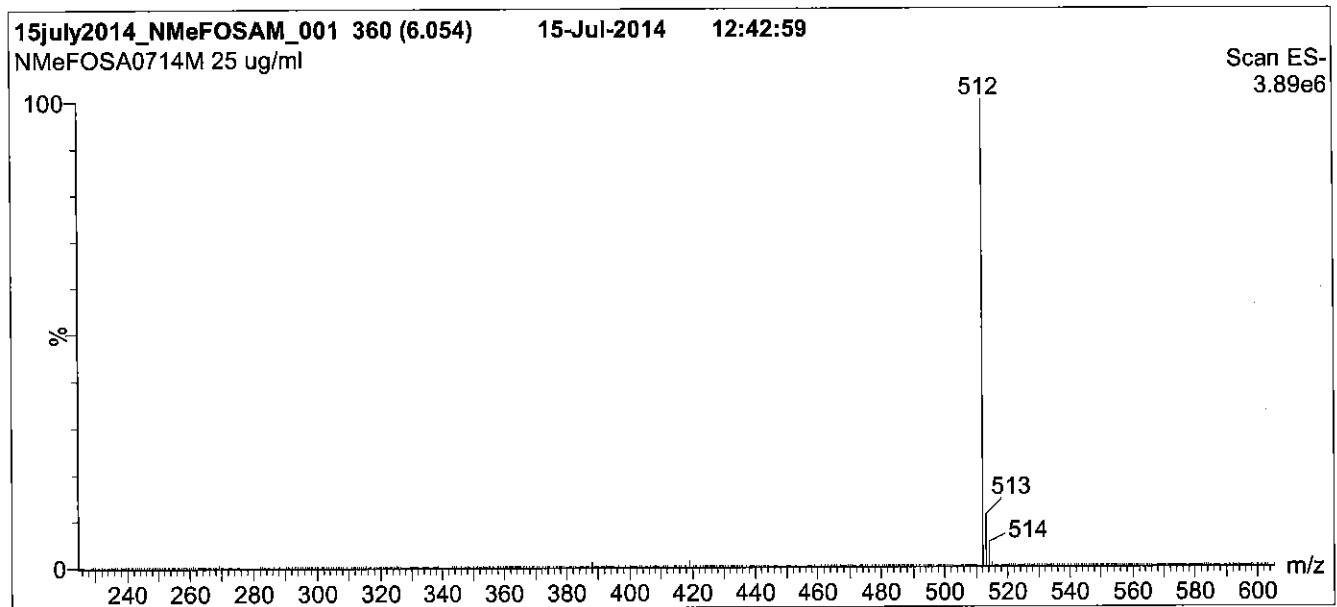
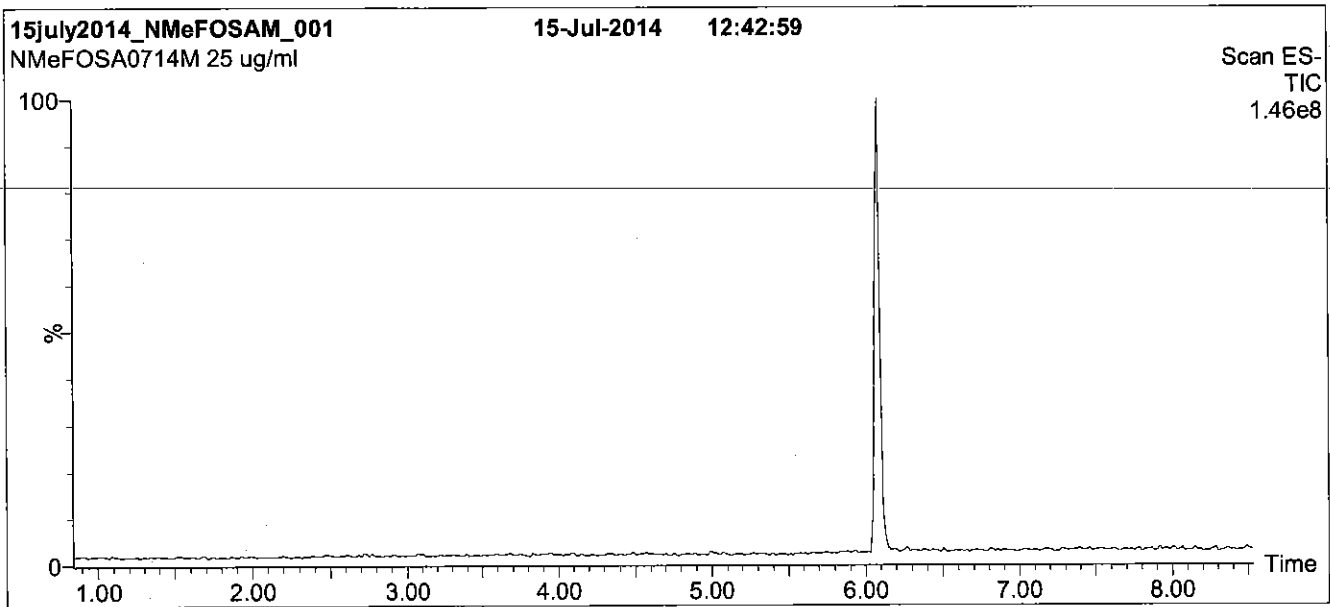
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Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 45% H₂O / 55% (80:20 MeOH:ACN)
 (both with 10 mM NH₄OAc 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

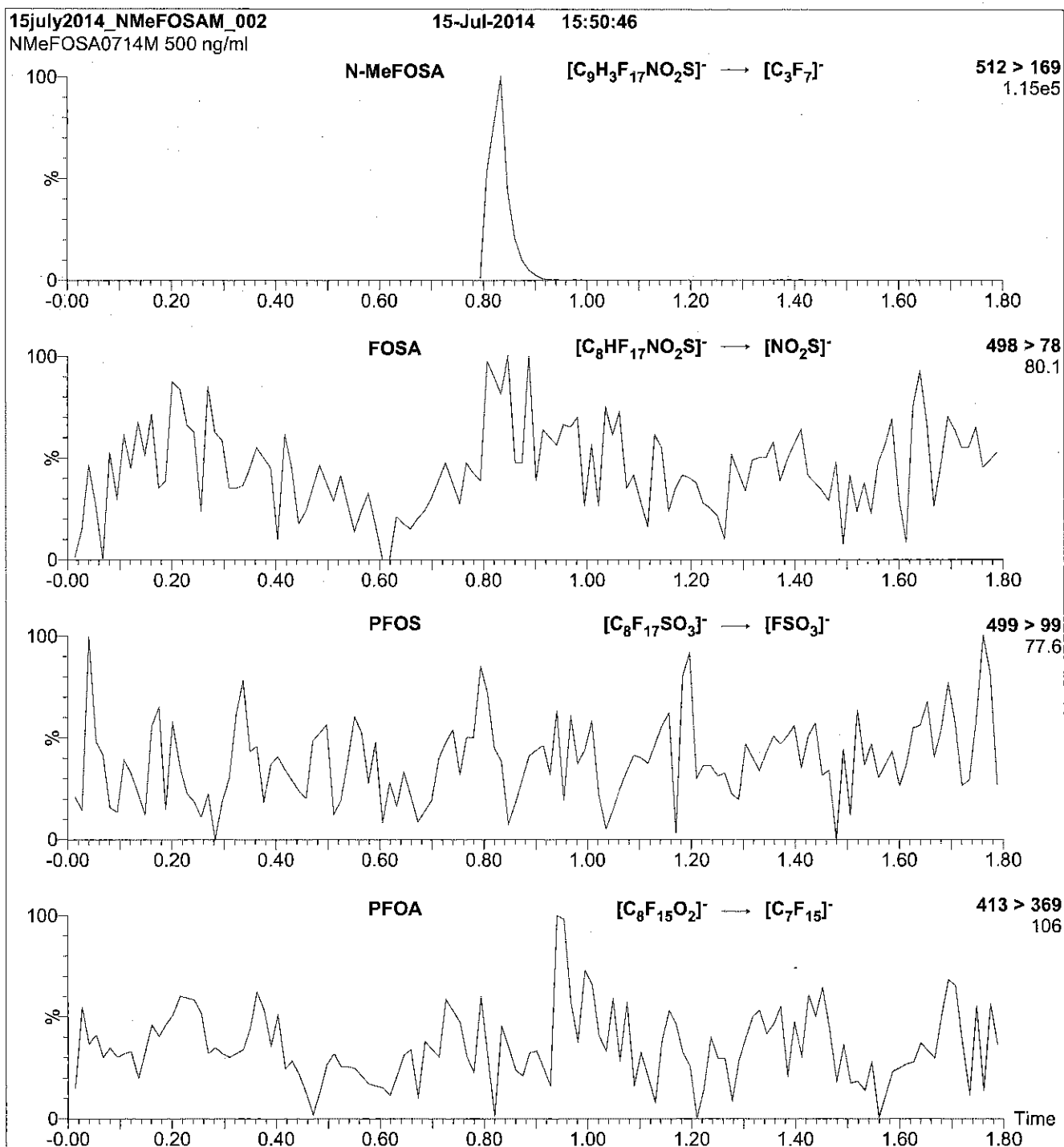
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCN-MeFOSAA_00001

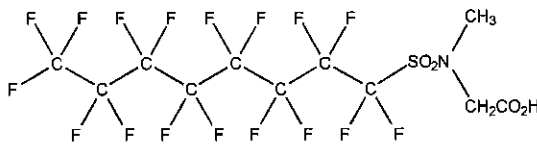


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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA1214
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

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



MOLECULAR FORMULA: C₁₁H₆F₁₇NO₄S **MOLECULAR WEIGHT:** 571.21
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2014
EXPIRY DATE: (mm/dd/yyyy) 12/09/2019
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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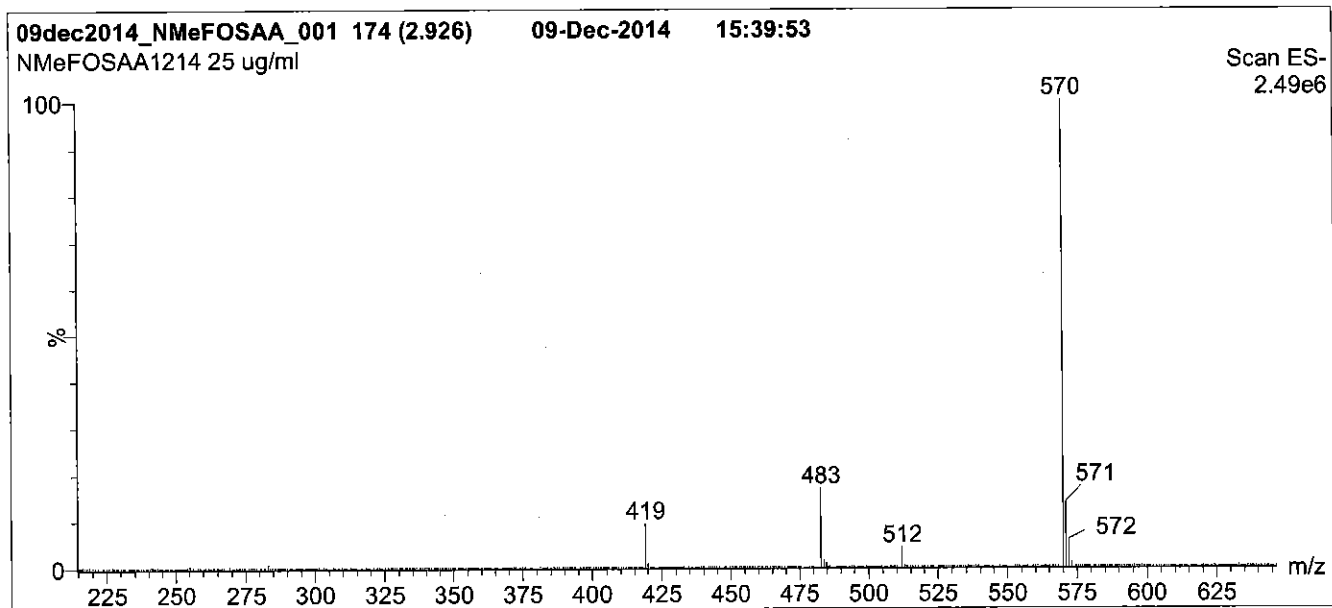
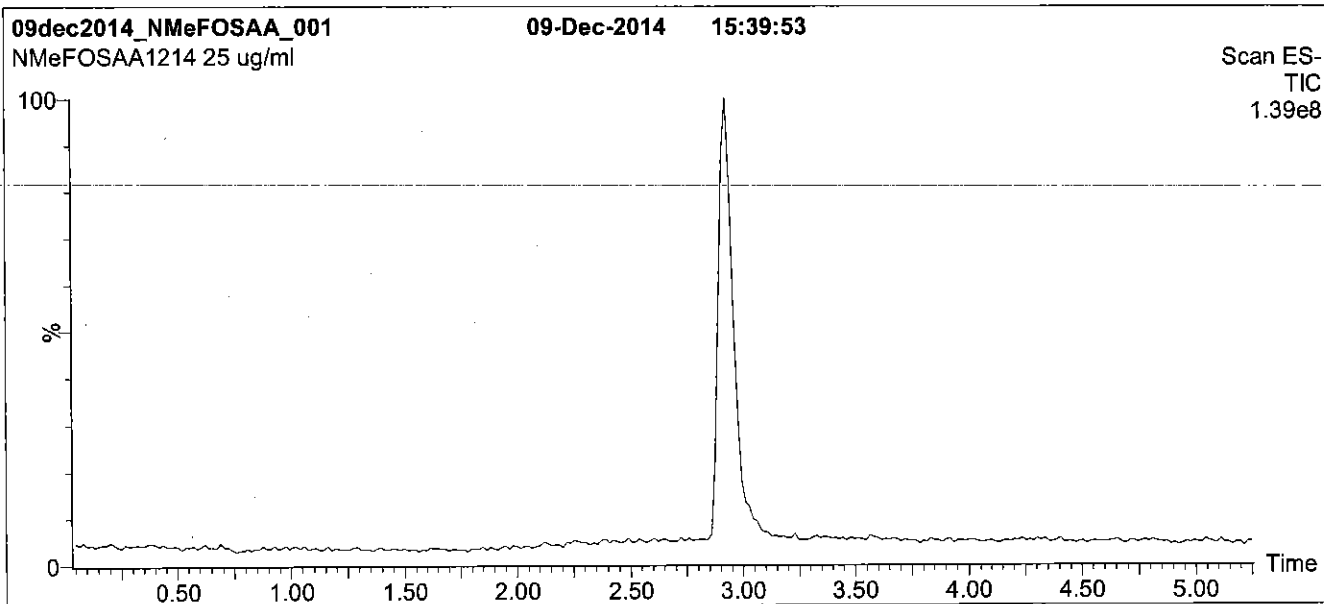
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 65% (80:20 MeOH:ACN) / 35% H₂O
 (both with 10 mM NH₄OAc 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

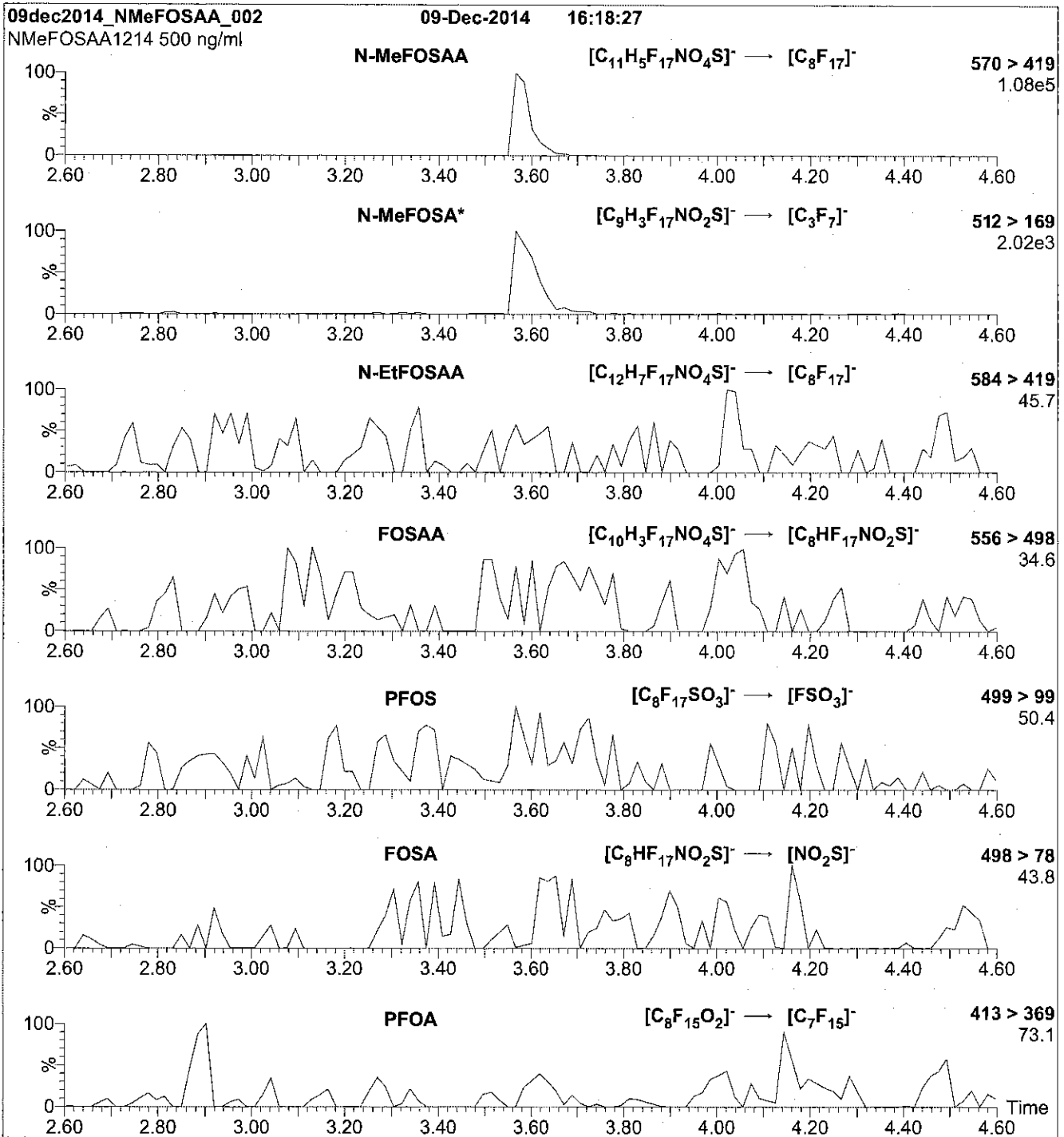
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

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

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



*Note: N-MeFOSA is formed by fragmentation of N-MeFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

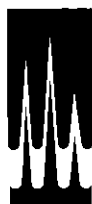
Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFACMXB_00007



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXB

**Solution/Mixture of Native
Perfluoroalkylcarboxylic Acids and
Native Perfluoroalkylsulfonates**

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

DESCRIPTION:

PFAC-MXB is a solution/mixture of thirteen native perfluoroalkylcarboxylic acids (C₄-C₁₄, C₁₆, and C₁₈) and four native perfluoroalkylsulfonates (C₄, C₆, C₈ and C₁₀). The full name, abbreviation and concentration for each of the components are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 $\pm 5\%$ (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).



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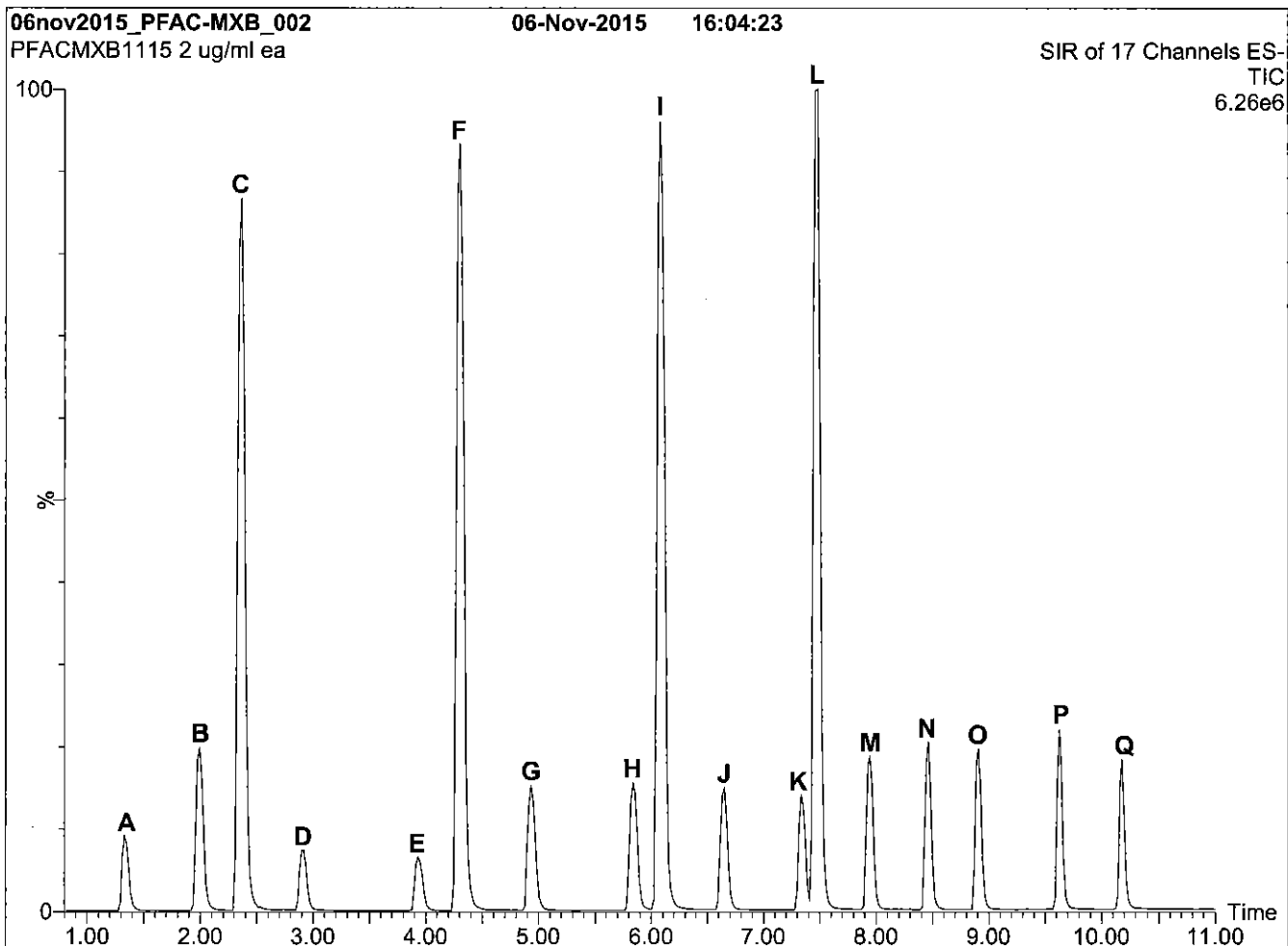
Table A: PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))

Name	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Perfluoro-n-butanoic acid	PFBA	2000		A
Perfluoro-n-pentanoic acid	PFPeA	2000		B
Perfluoro-n-hexanoic acid	PFHxA	2000		D
Perfluoro-n-heptanoic acid	PFHpA	2000		E
Perfluoro-n-octanoic acid	PFOA	2000		G
Perfluoro-n-nonanoic acid	PFNA	2000		H
Perfluoro-n-decanoic acid	PFDA	2000		J
Perfluoro-n-undecanoic acid	PFUdA	2000		K
Perfluoro-n-dodecanoic acid	PFDoA	2000		M
Perfluoro-n-tridecanoic acid	PFTrDA	2000		N
Perfluoro-n-tetradecanoic acid	PFTeDA	2000		O
Perfluoro-n-hexadecanoic acid	PFHxDA	2000		P
Perfluoro-n-octadecanoic acid	PFODA	2000		Q
Name	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanesulfonate	L-PFBS	2000	1770	C
Sodium perfluoro-1-hexanesulfonate	L-PFHxS	2000	1890	F
Sodium perfluoro-1-octanesulfonate	L-PFOS	2000	1910	I
Sodium perfluoro-1-decanesulfonate	L-PFDS	2000	1930	L

Certified By: 
 B.G. Chittim

Date: 11/11/2015
(mm/dd/yyyy)

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% H₂O / 45% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 10 min and hold for 1 min
before returning to initial conditions in 0.5 min.

Time: 12 min

Flow: 300 μ l/min

MS Parameters

Experiment: SIR of 17 Channels

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

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

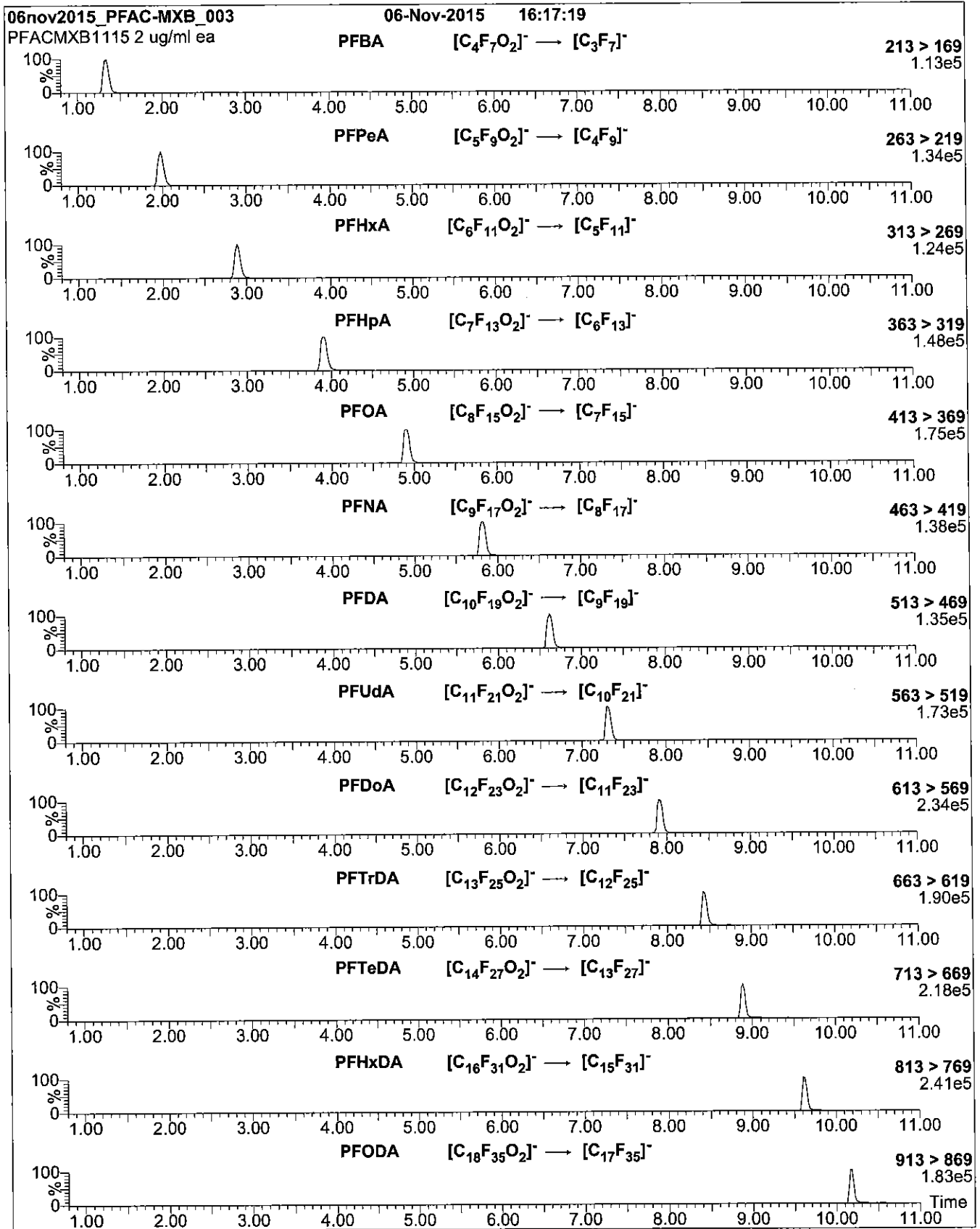
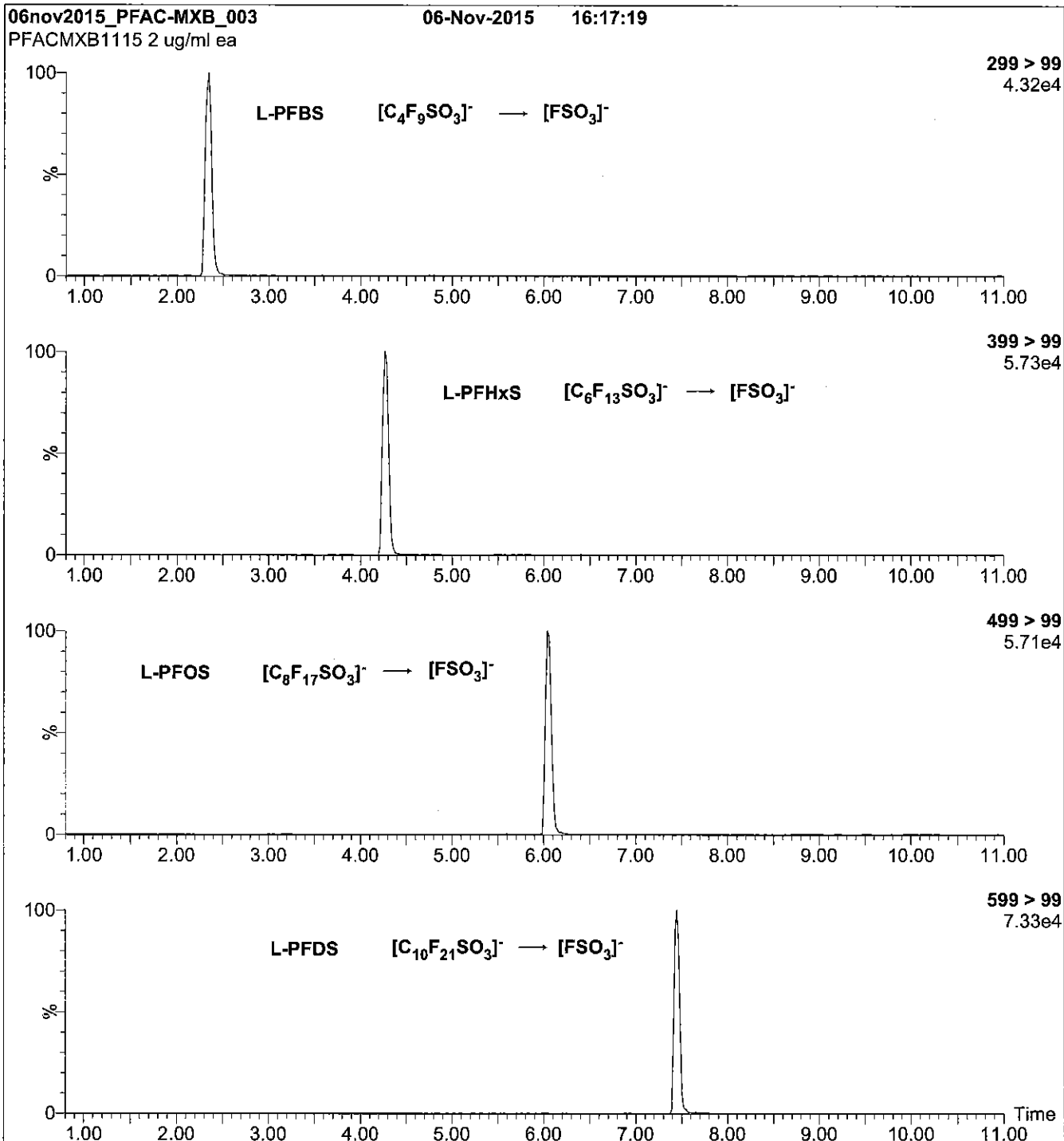


Figure 3: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figures 2 and 3:

Injection: on-column (PFAC-MXB)
 Mobile phase: Same as Figure 1
 Flow: 300 μ /min

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

Reagent

LCPFBA_00004



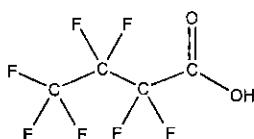
R: 2125/16 CBW

587895

ID: LCPFBA_00004

Exp: 01/30/20 Prep: CBW

PF-n-butanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFBA **LOT NUMBER:** PFBA0115
COMPOUND: Perfluoro-n-butanoic acid**STRUCTURE:** **CAS #:** 375-22-4

MOLECULAR FORMULA:	C ₄ HF ₇ O ₂	MOLECULAR WEIGHT:	214.04
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/30/2015		
EXPIRY DATE: (mm/dd/yyyy)	01/30/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

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

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

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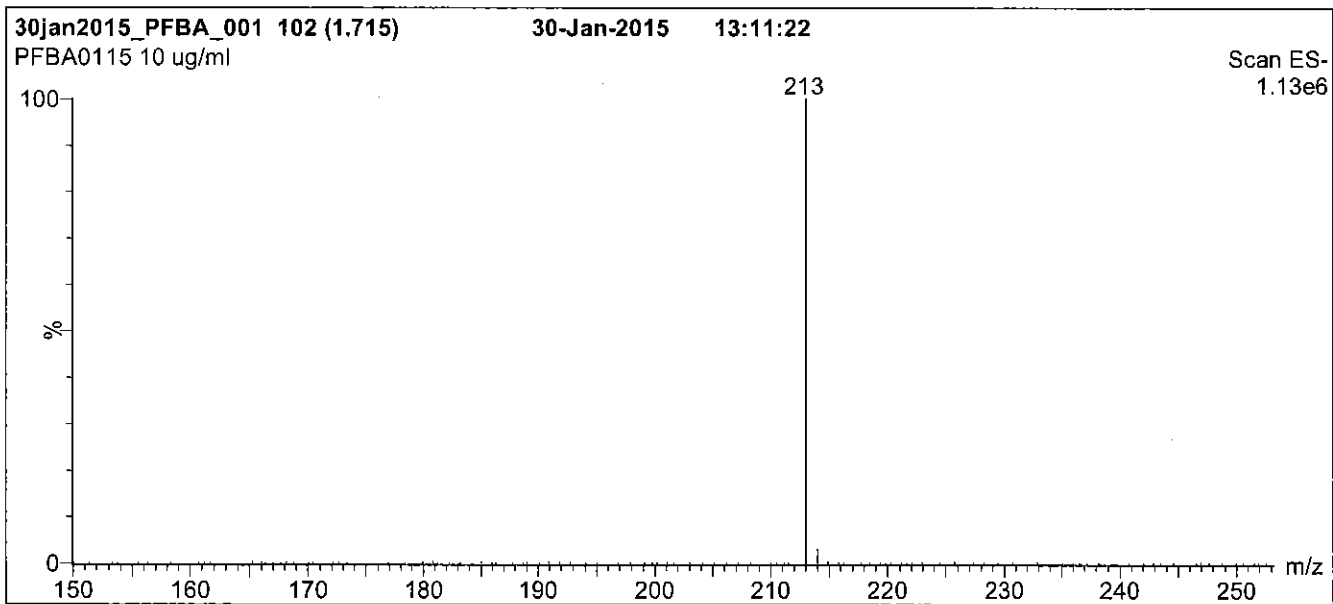
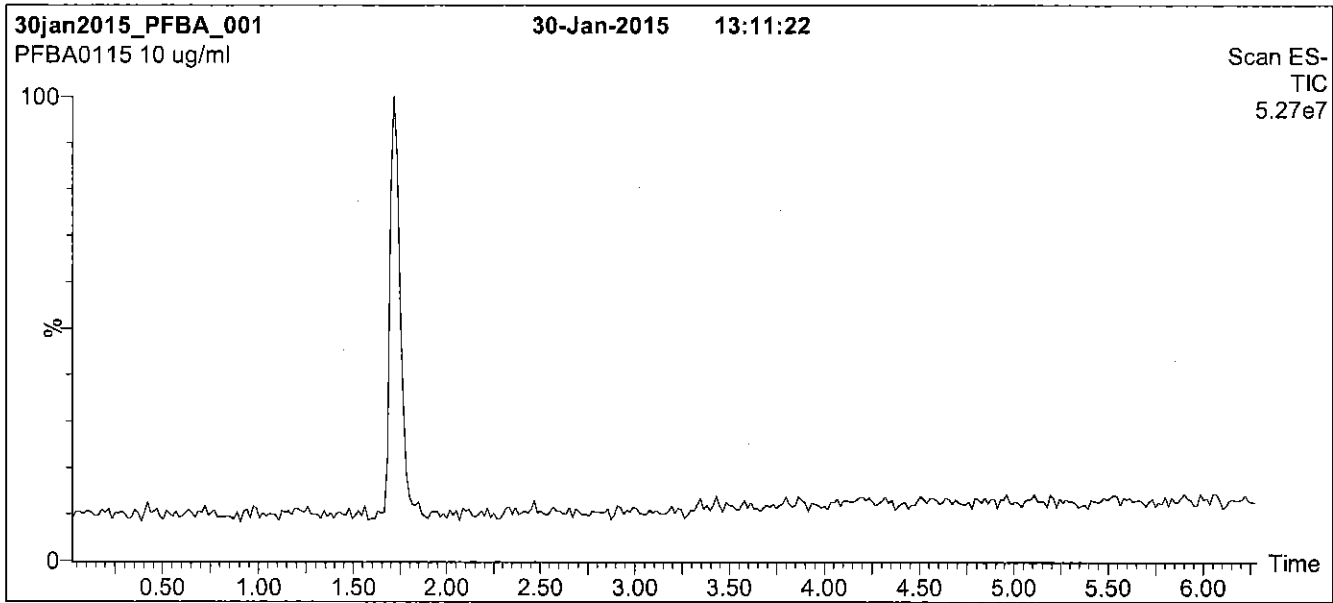
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc 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

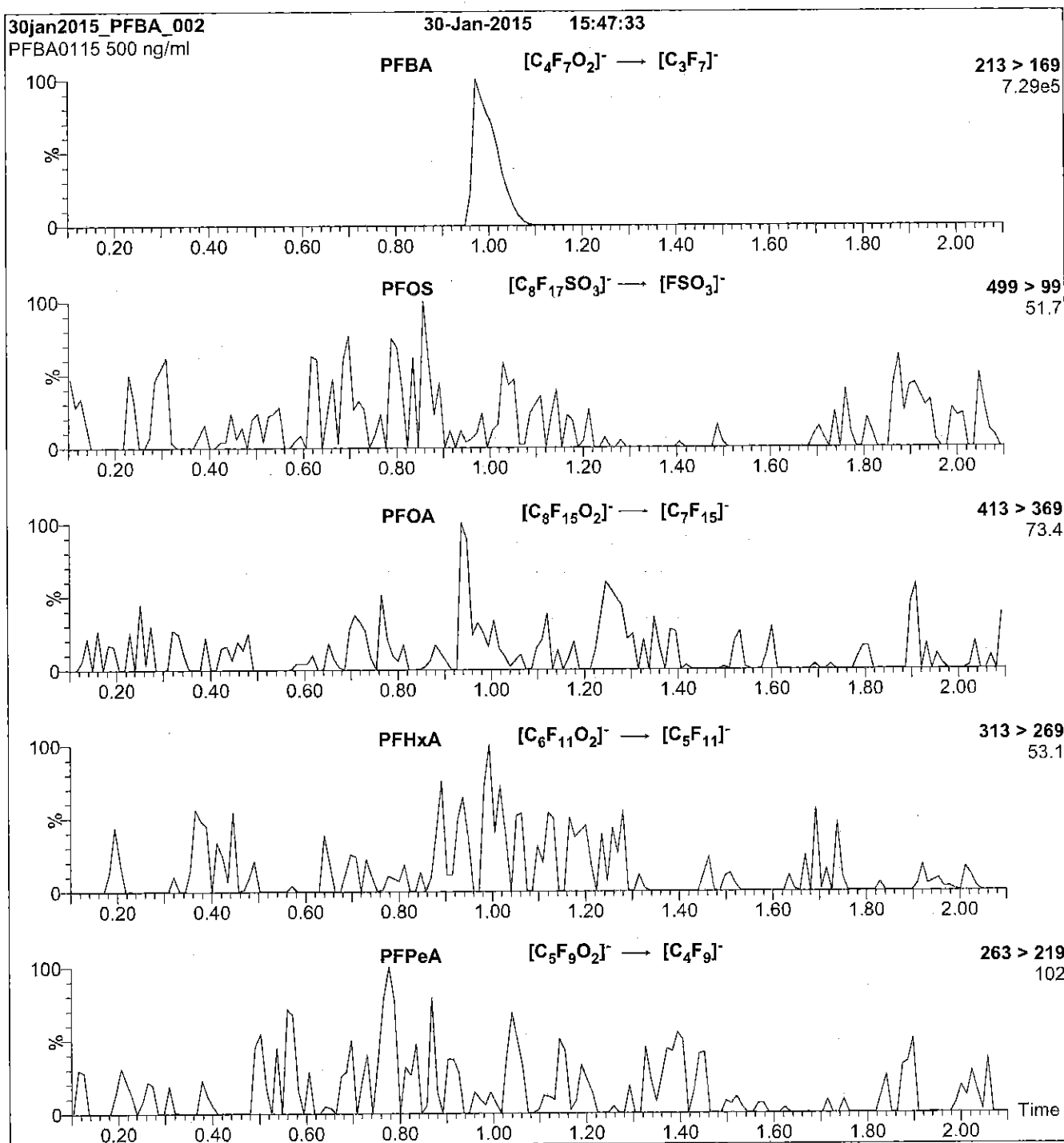
Flow: 300 μ l/min

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 μ l (500 ng/ml PFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

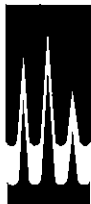
Flow: 300 μ l/min

MS Parameters

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

Reagent

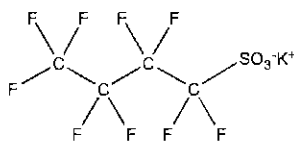
LCPFBS_00003



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: C₄F₉SO₃K **MOLECULAR WEIGHT:** 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol
44.2 ± 2.2 µg/ml (PFBS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/09/2014
EXPIRY DATE: (mm/dd/yyyy) 10/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/17/2014
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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

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

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TRACEABILITY:

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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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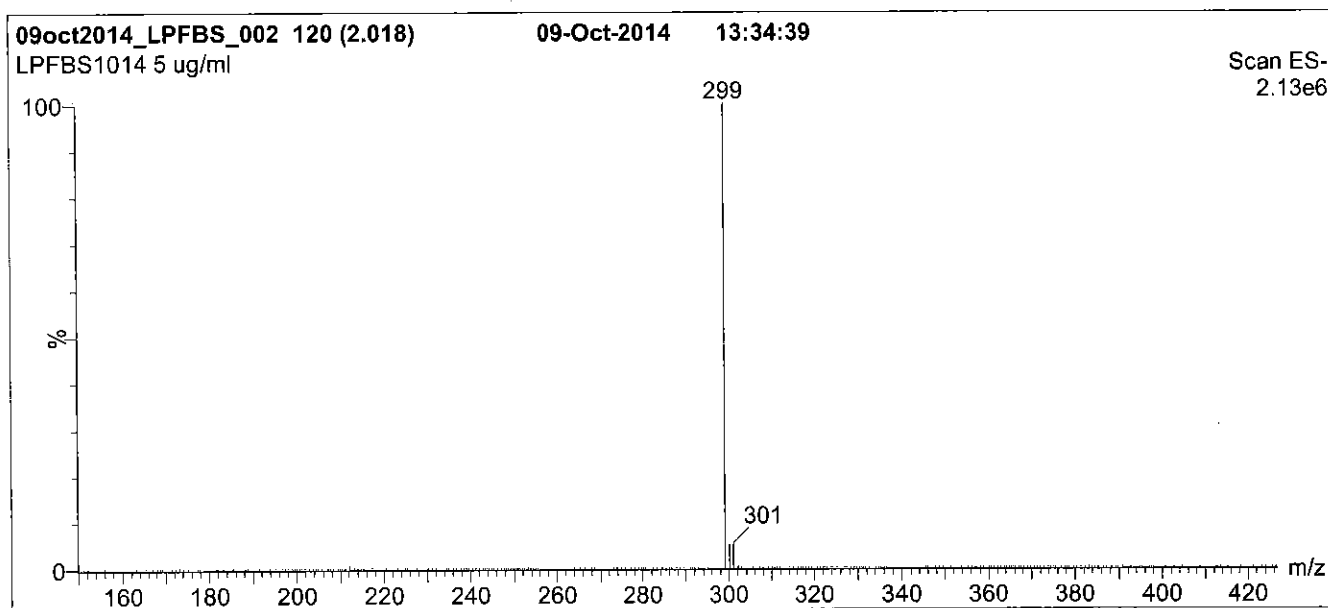
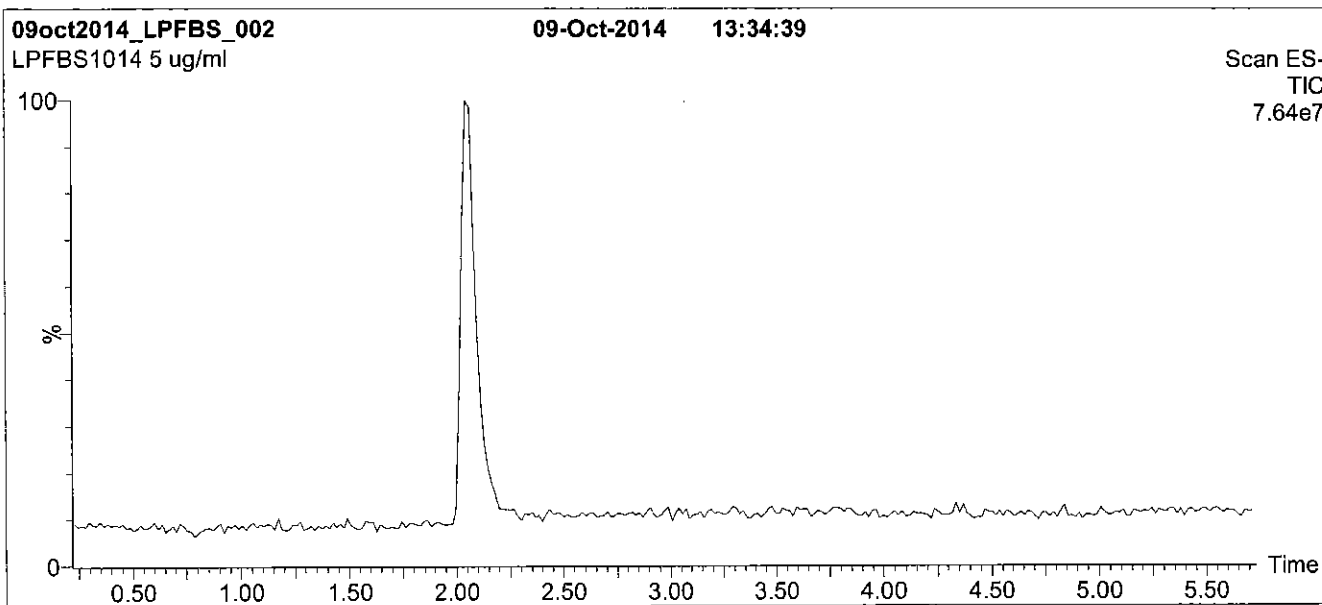
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc 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

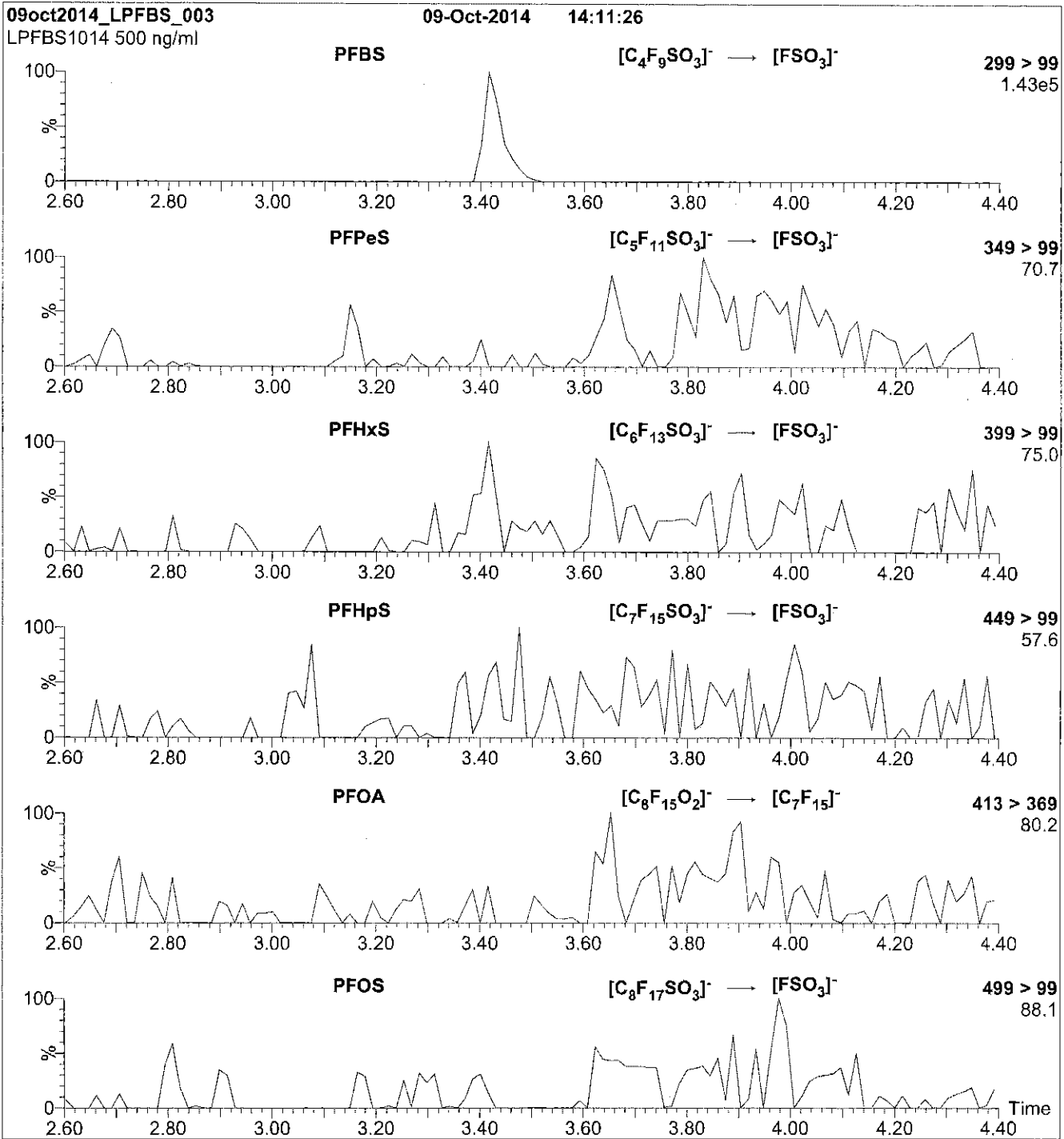
Flow: 300 μ l/min

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 μ l (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFBS_00004



Rec. 3/29/16 JRB ✓

605236

ID: LCPFBS_00004

Exp: 10/09/19 Prpd: CBW

PF-1-butanesulfonate K sa



WELLINGTON LABORATORIES

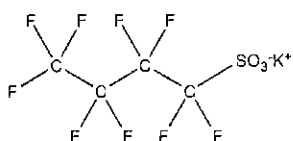
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
COMPOUND: Potassium perfluoro-1-butanesulfonate

LOT NUMBER: LPFBS1014

STRUCTURE:

CAS #: 29420-49-3



MOLECULAR FORMULA: C₄F₉SO₃K
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)

MOLECULAR WEIGHT: 338.19
SOLVENT(S): Methanol

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/09/2014
EXPIRY DATE: (mm/dd/yyyy) 10/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

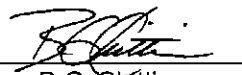
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 04/02/2015
(mm/dd/yyyy)

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

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

LIMITED WARRANTY:

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

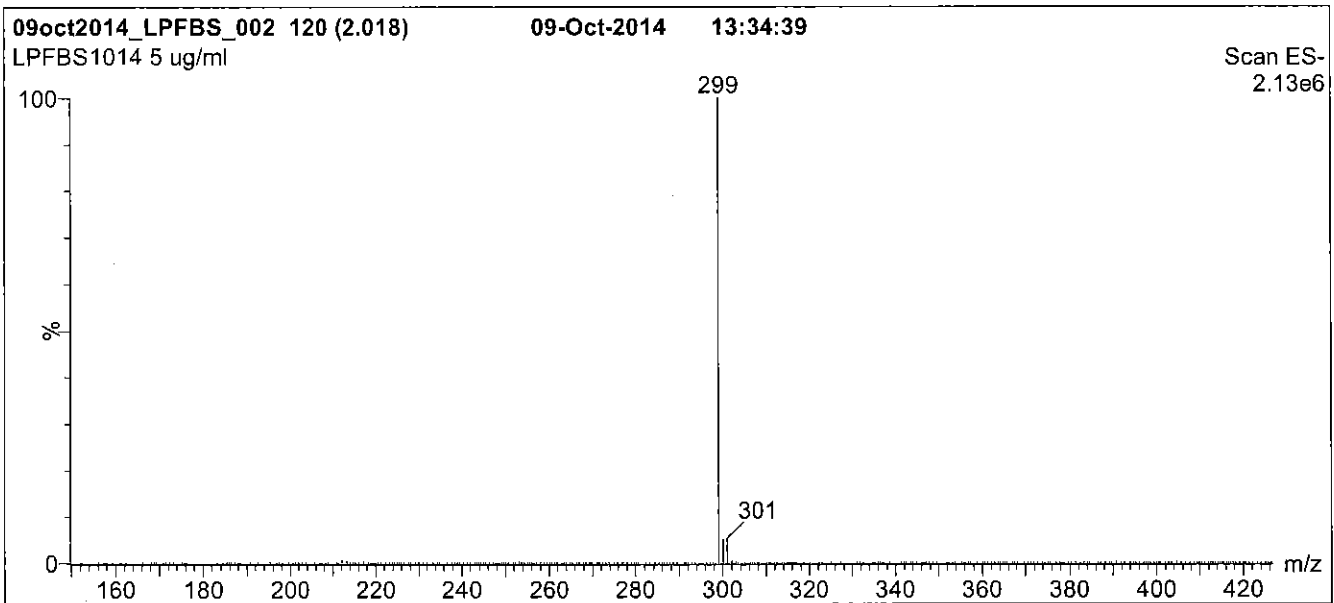
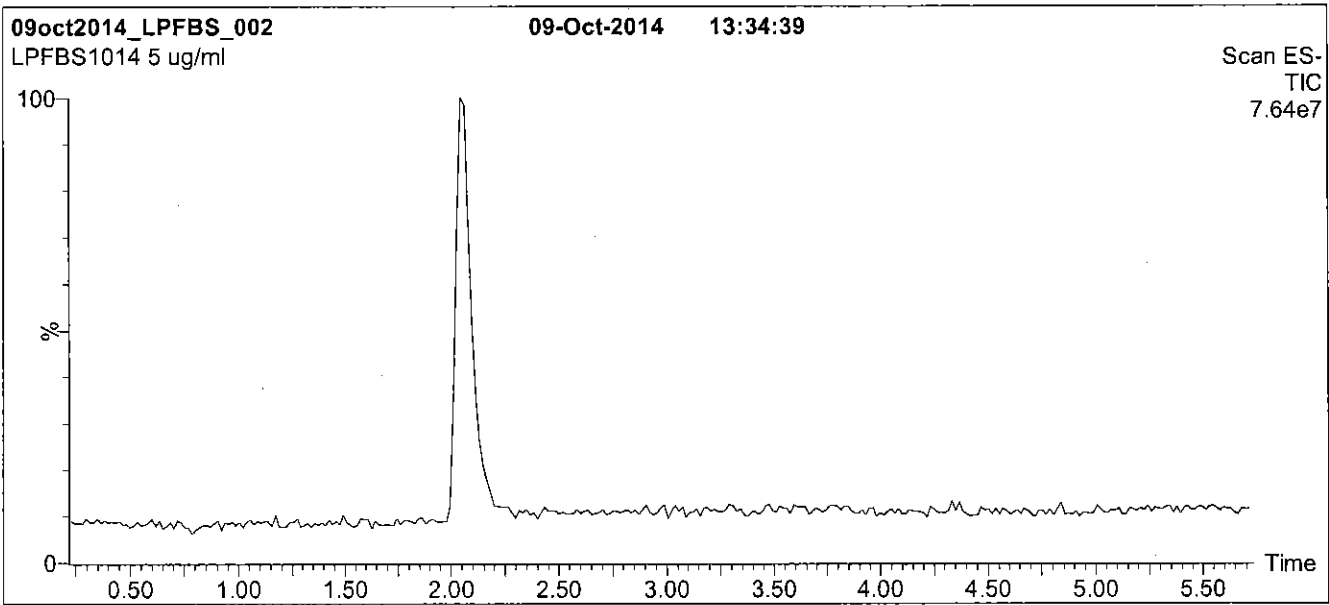
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc 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

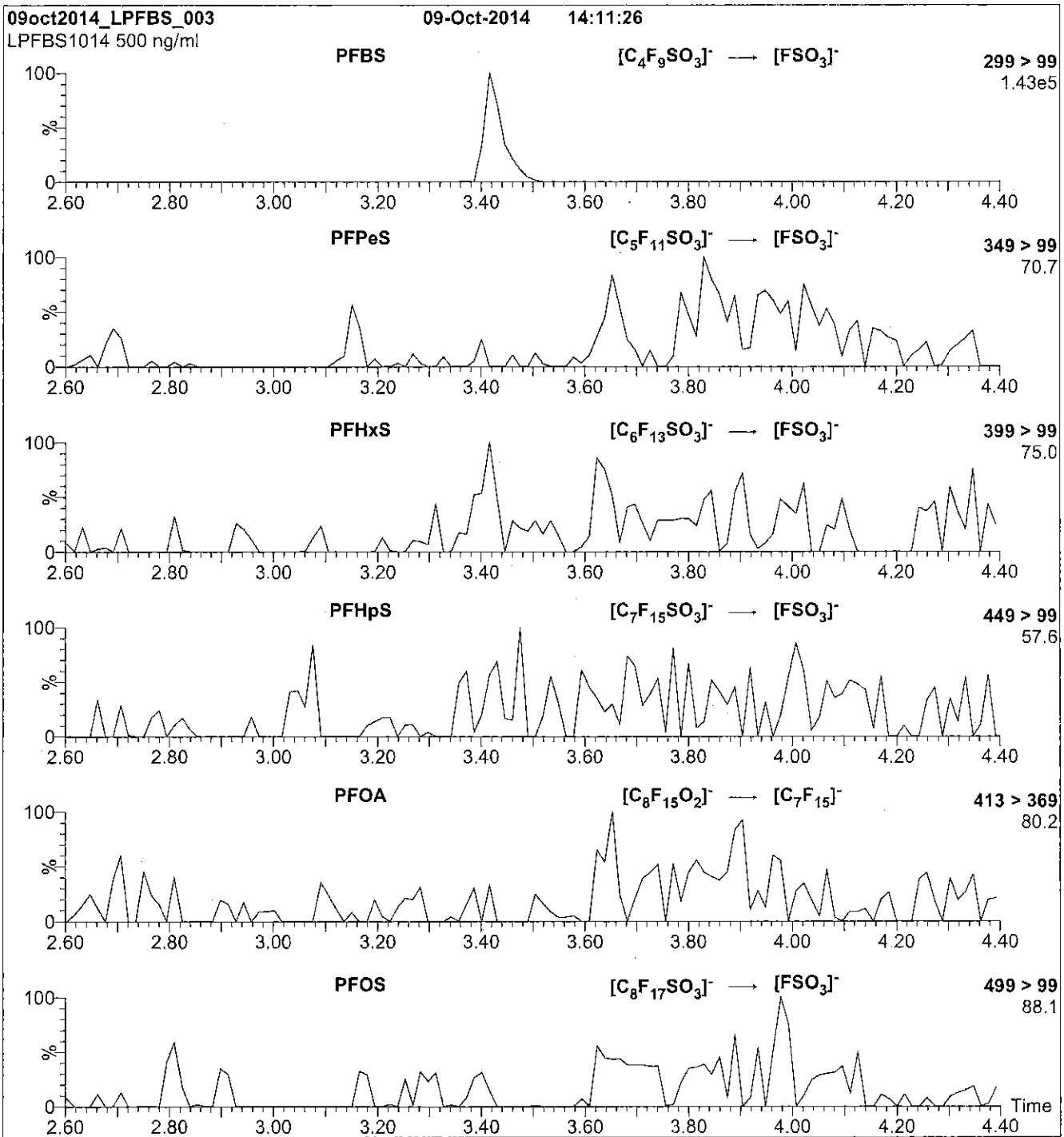
Flow: 300 μ l/min

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 μ l (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFDA_00004

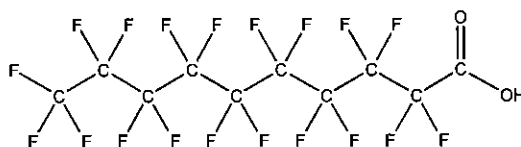


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{18}O_2$ **MOLECULAR WEIGHT:** 514.08
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/02/2015
EXPIRY DATE: (mm/dd/yyyy) 07/02/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____


 B.G. Chittim

Date: 07/24/2015
 (mm/dd/yyyy)

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

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, \dots, x_n on which it depends is:

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

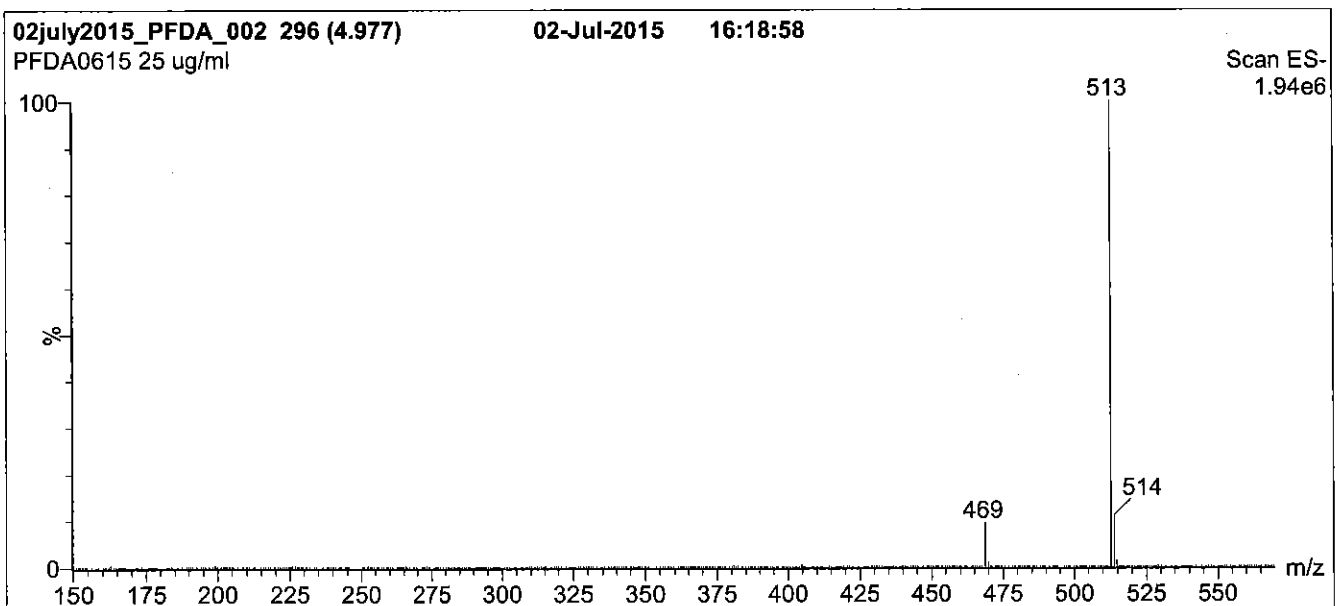
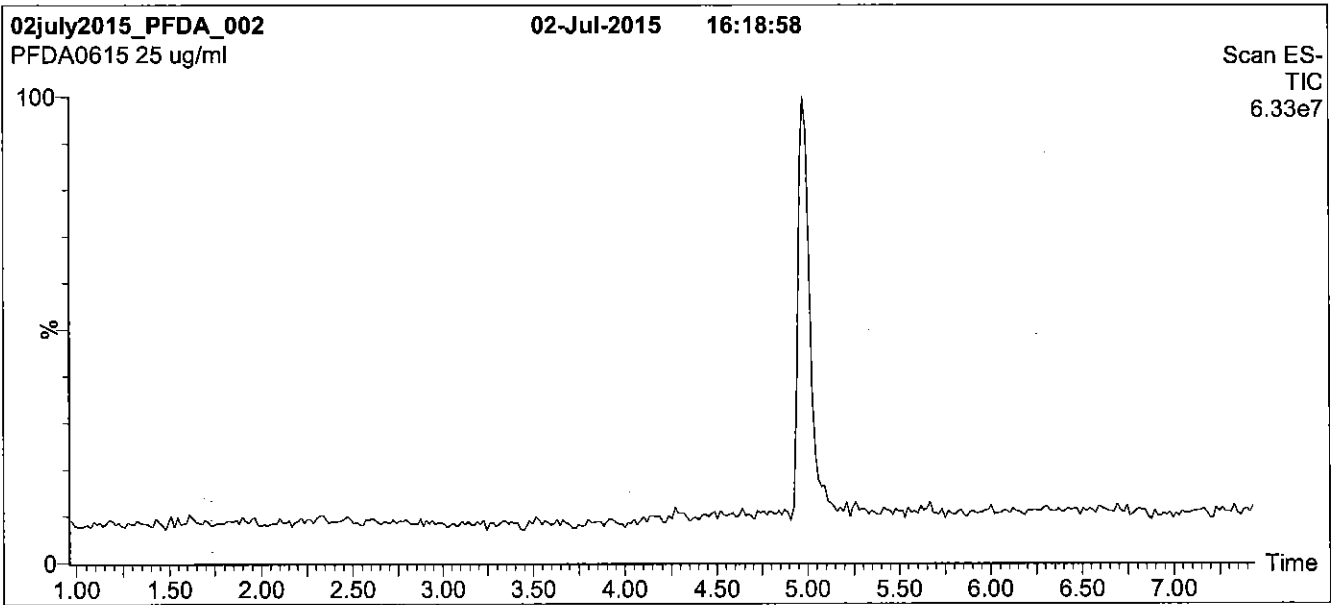
QUALITY MANAGEMENT:

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



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

Figure 1: 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 RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc 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

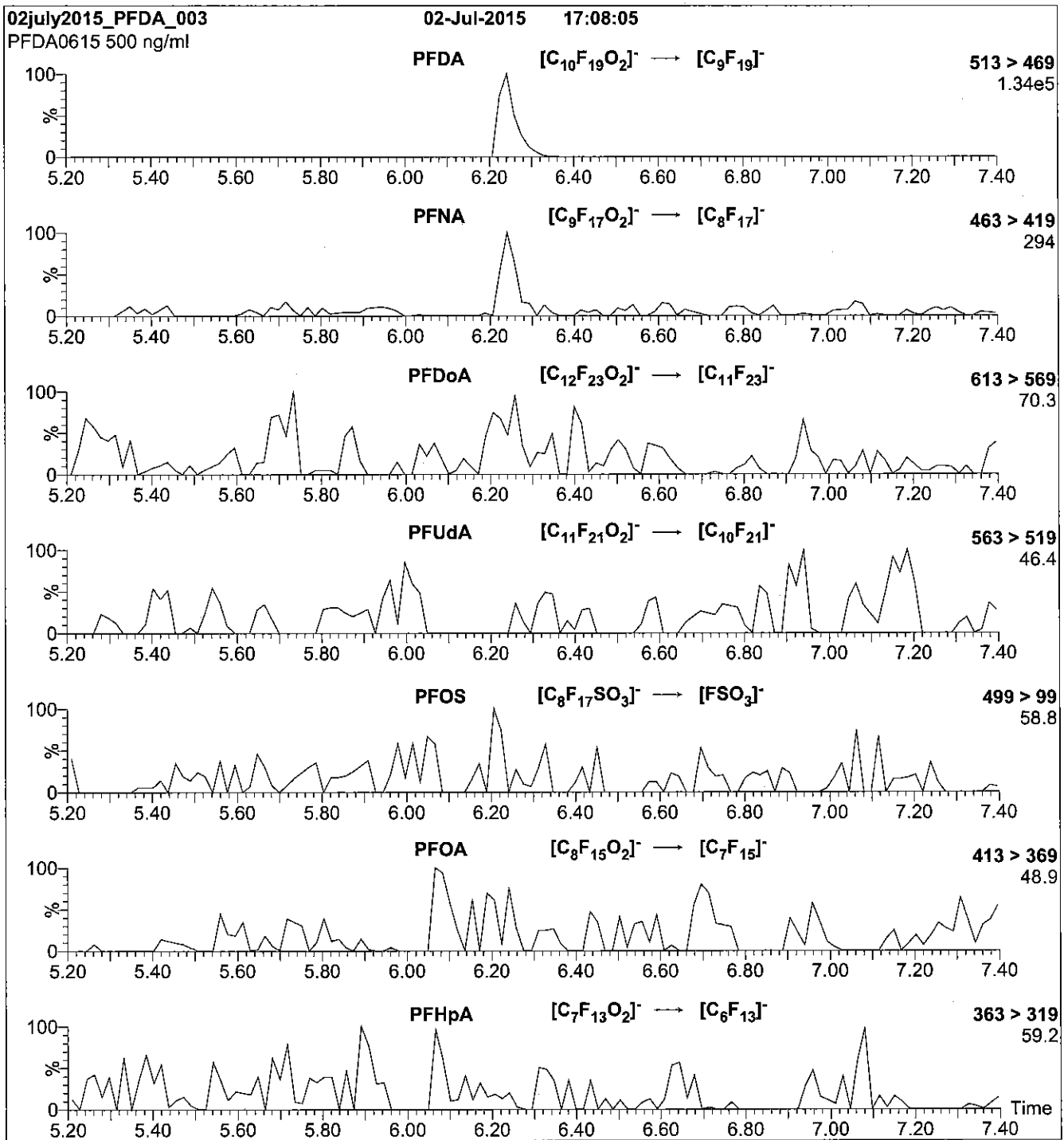
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

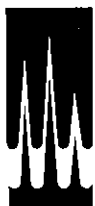
Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFDoA_00004

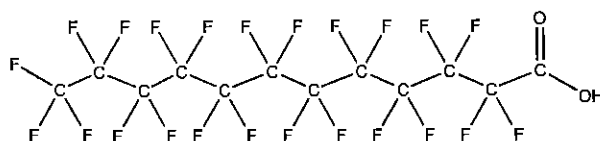


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFD0A **LOT NUMBER:** PFD0A0115
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE: **CAS #:** 307-55-1



MOLECULAR FORMULA: $C_{12}H_{23}O_2$ **MOLECULAR WEIGHT:** 614.10
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/30/2015
EXPIRY DATE: (mm/dd/yyyy) 01/30/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim

Date: 03/25/2015
 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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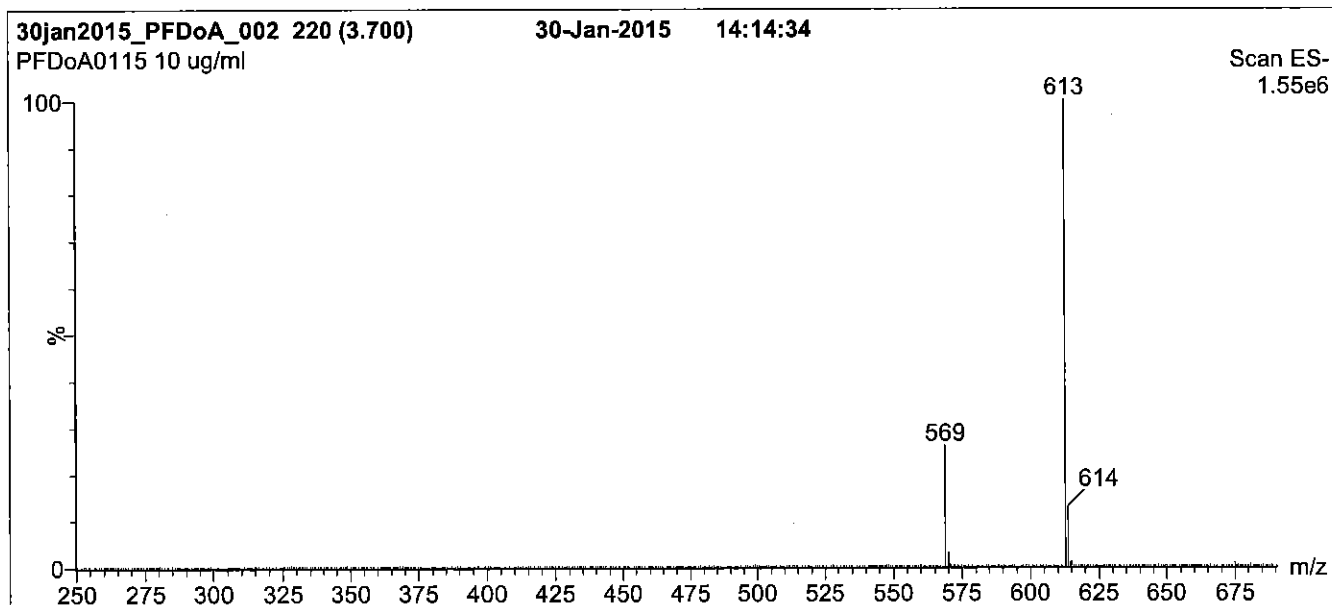
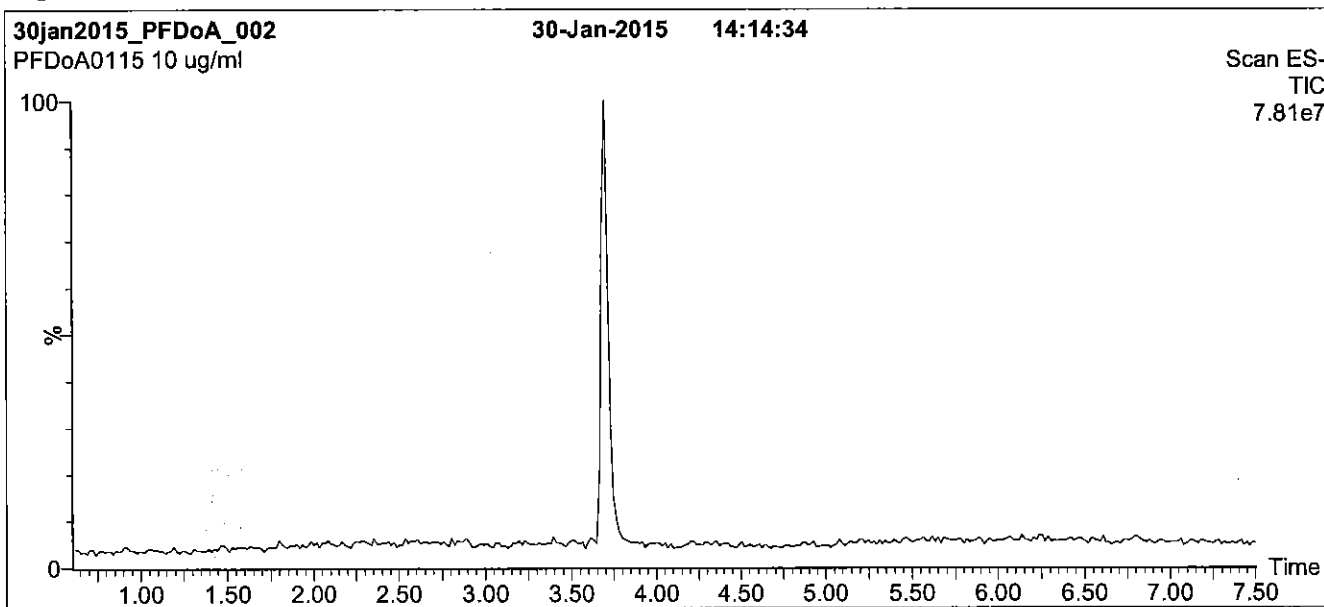
QUALITY MANAGEMENT:

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



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Figure 1: PFD_oA; 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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc 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

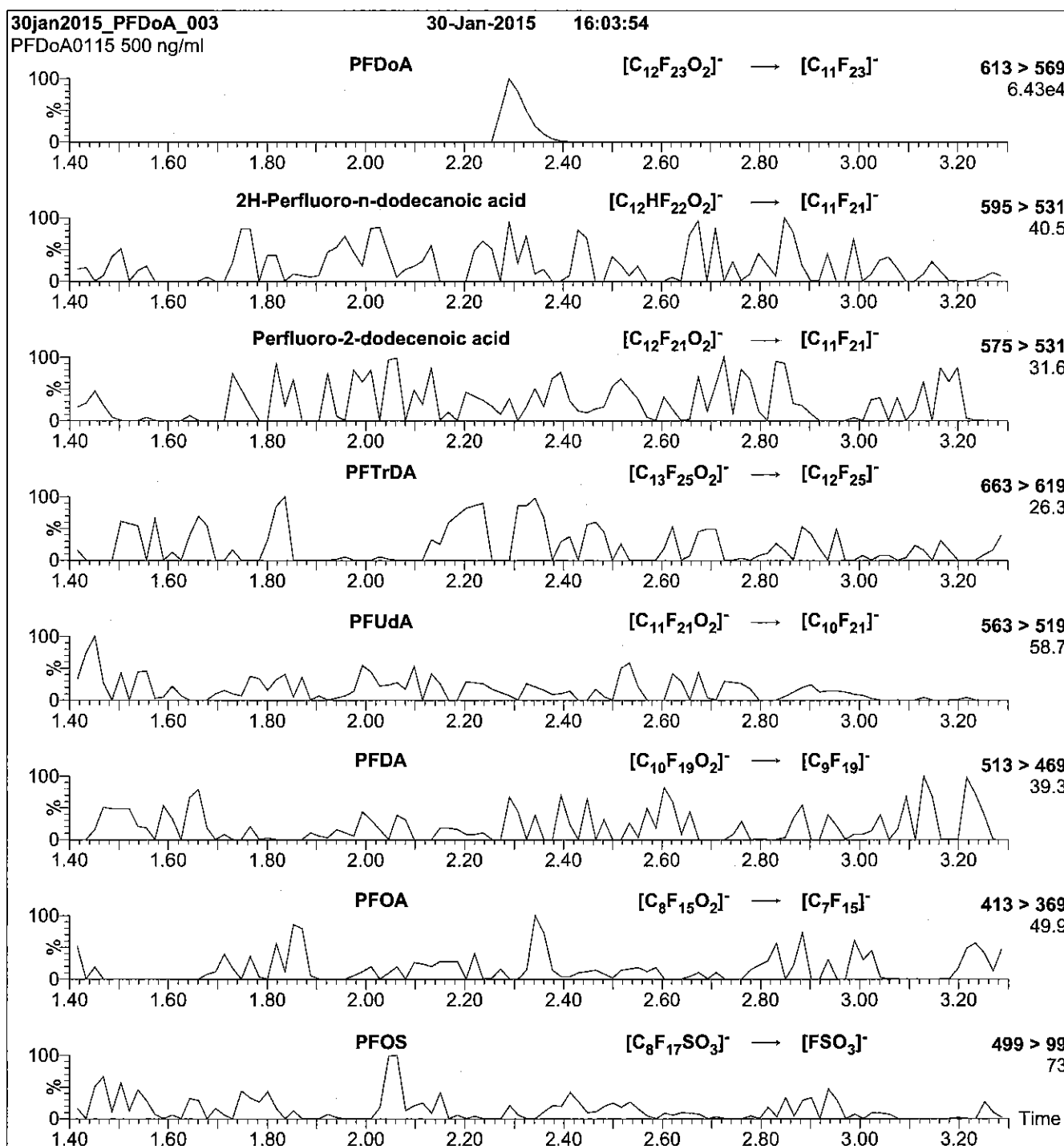
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFD0A)

MS Parameters

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

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

Flow: 300 μ l/min

Reagent

LCPFDS_00005



605240
 ID: LCPFDS_00005
 Exp: 07/02/20 Prpd: CBW
 PF-1-decanesulfonate sodi

Rec. 3/29/16 JRB

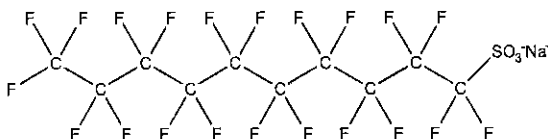


WELLINGTON
 LABORATORIES

CERTIFICATE OF ANALYSIS
 DOCUMENTATION

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

STRUCTURE: **CAS #:** 2806-15-7



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

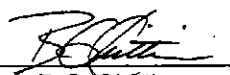
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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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, 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:

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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, \dots, x_n on which it depends is:

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

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TRACEABILITY:

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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.

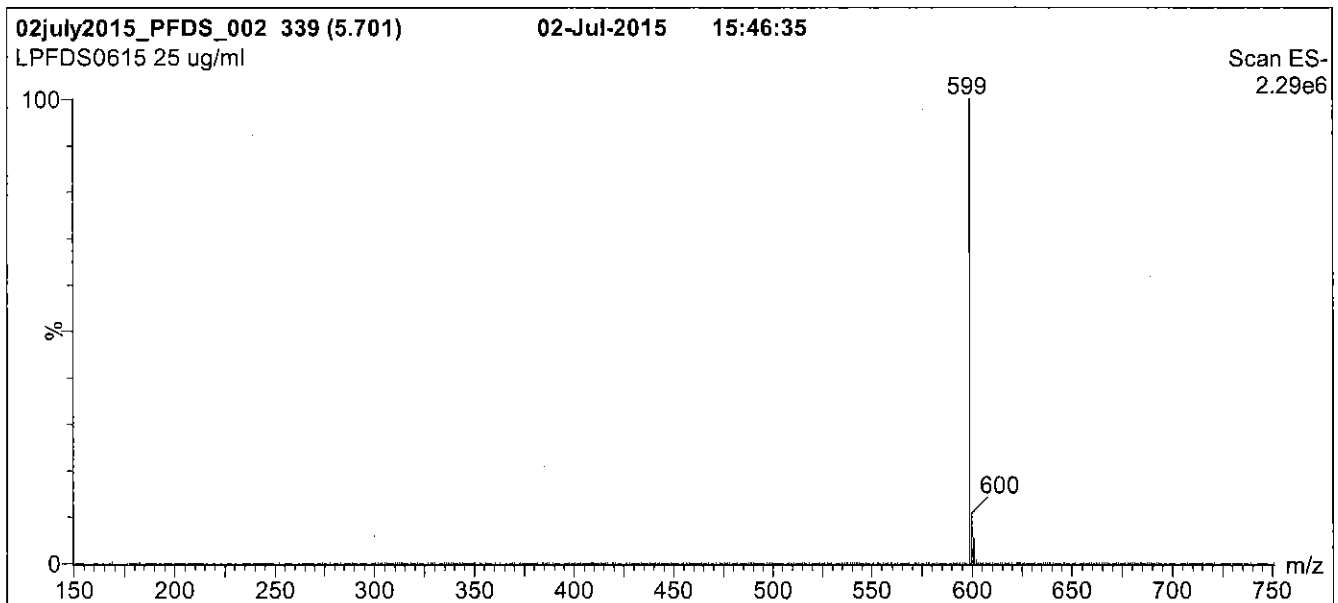
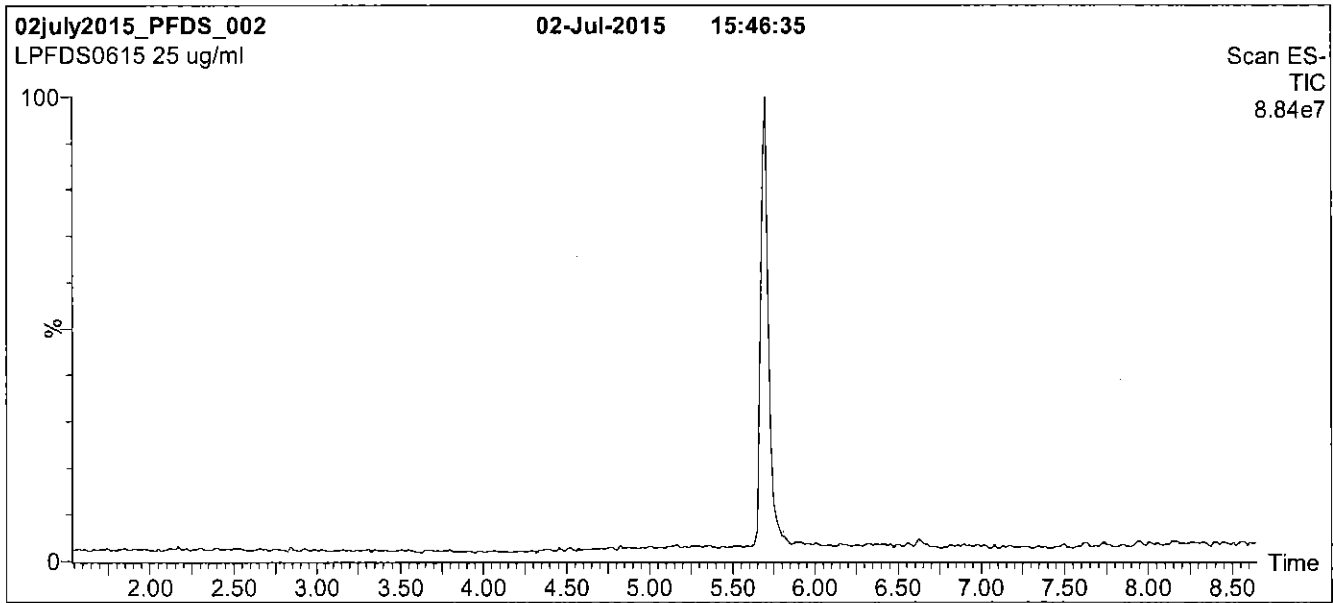
QUALITY MANAGEMENT:

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

Figure 1: 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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc 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

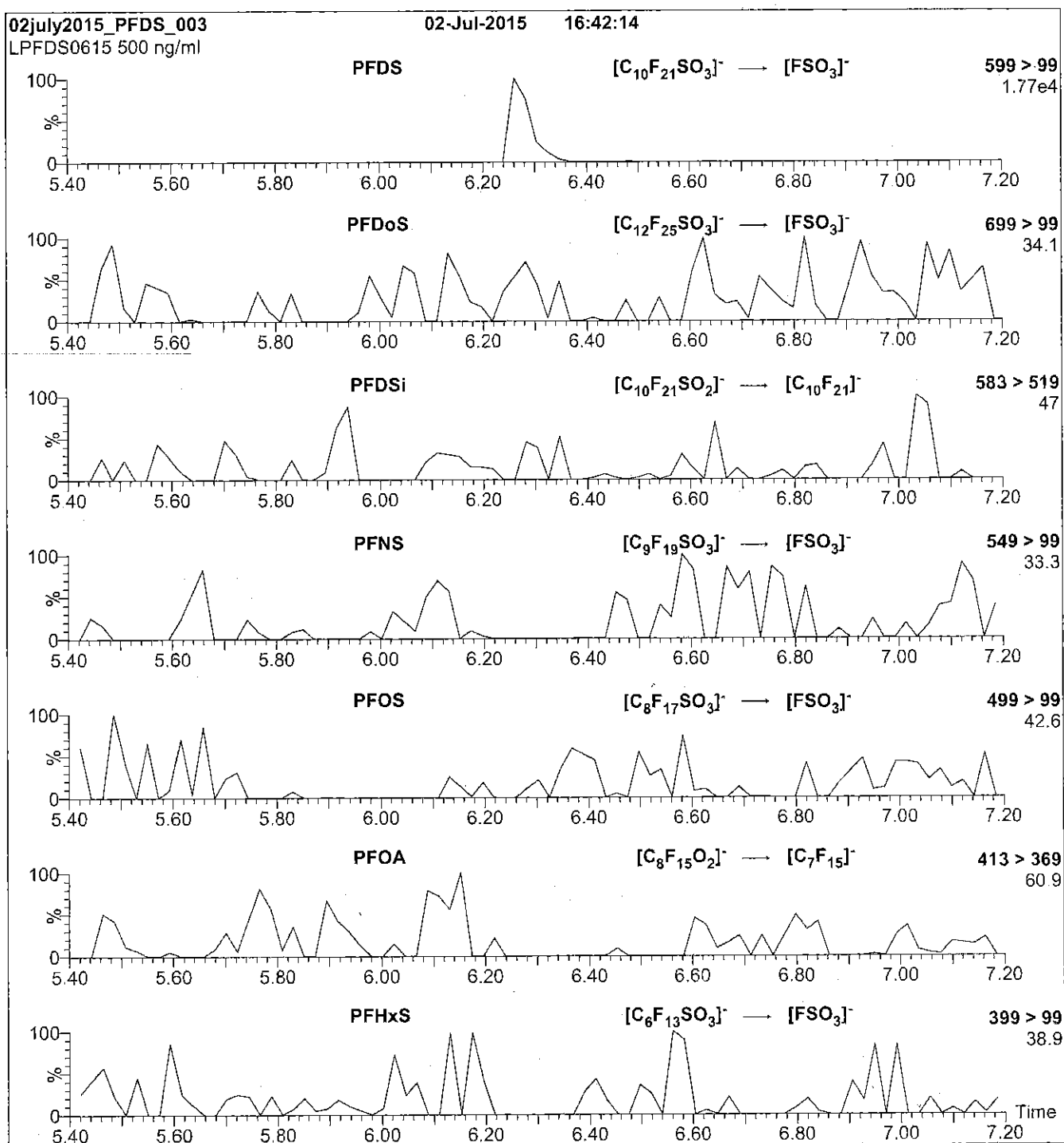
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHpA_00005



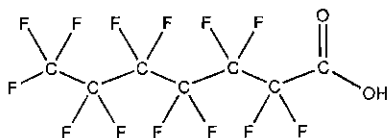
609639

ID: LCPFHpA_00005

Exp: 01/22/21 Prpd: CBW

PF-n-heptanoic acid

R: 4/7/16 CBW

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFHpA
COMPOUND: Perfluoro-n-heptanoic acid**LOT NUMBER:** PFHpA0116**STRUCTURE:****CAS #:** 375-85-9**MOLECULAR FORMULA:** C₇H₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml**MOLECULAR WEIGHT:** 364.06
SOLVENT(S): Methanol
Water (<1%)**CHEMICAL PURITY:** >98%
LAST TESTED: (mm/dd/yyyy) 01/22/2016
EXPIRY DATE: (mm/dd/yyyy) 01/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place**DOCUMENTATION/ DATA ATTACHED:**Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)**ADDITIONAL INFORMATION:**

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/02/2016

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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

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LIMITED WARRANTY:

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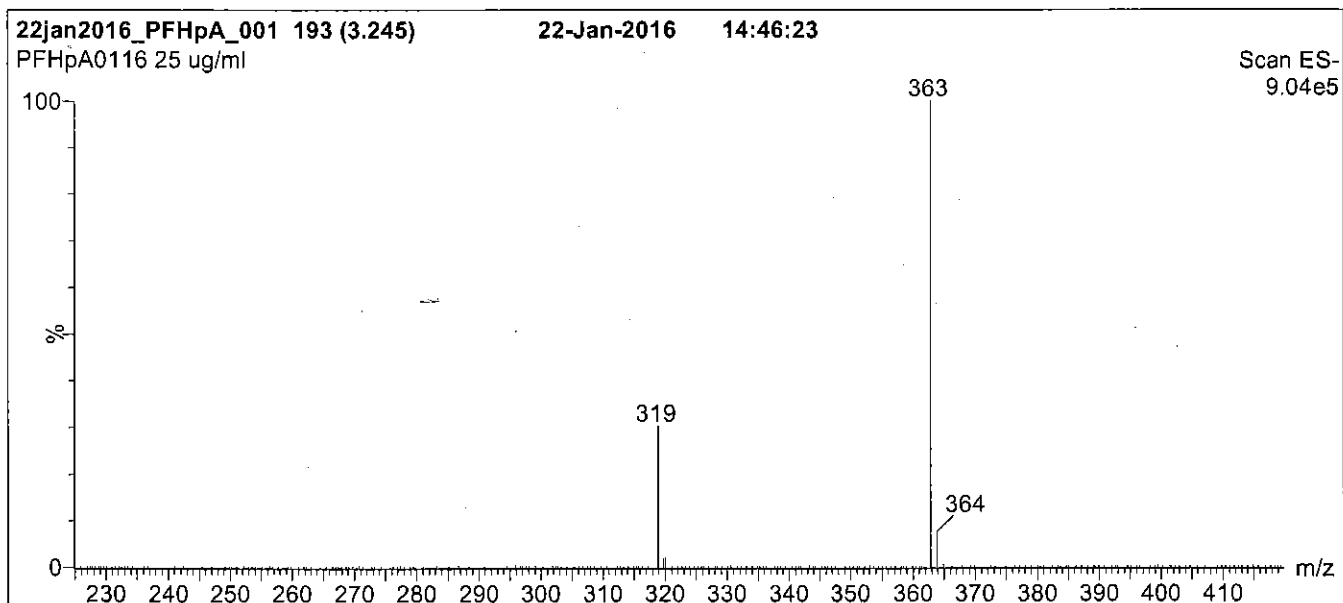
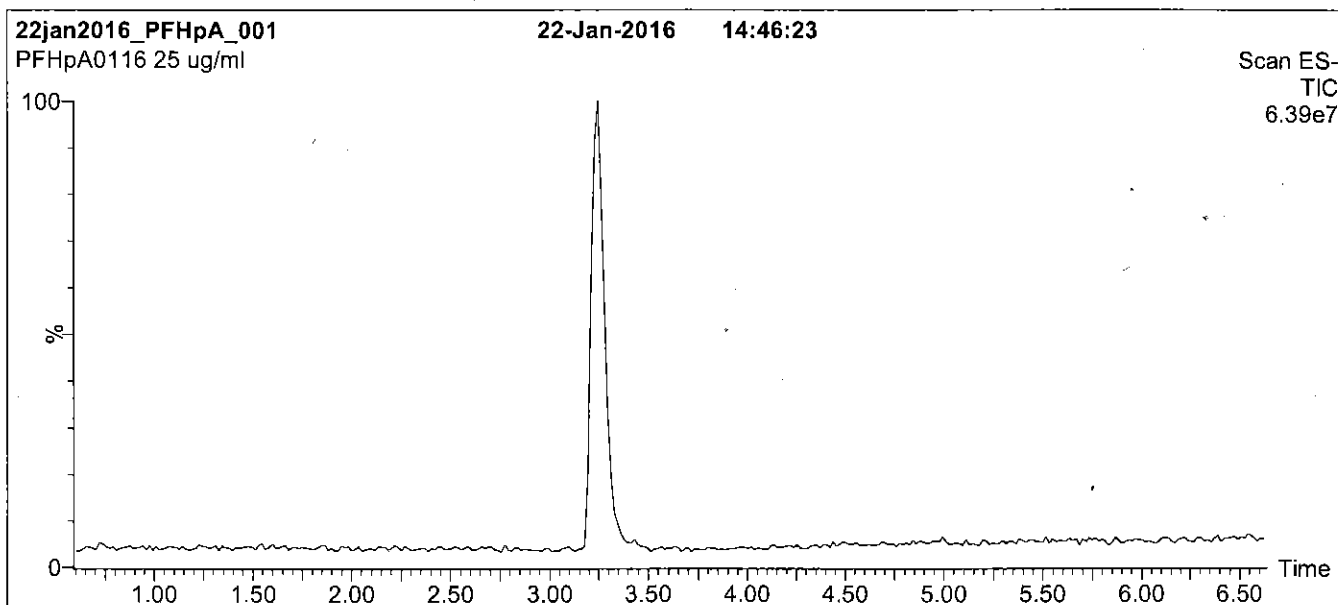
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc 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

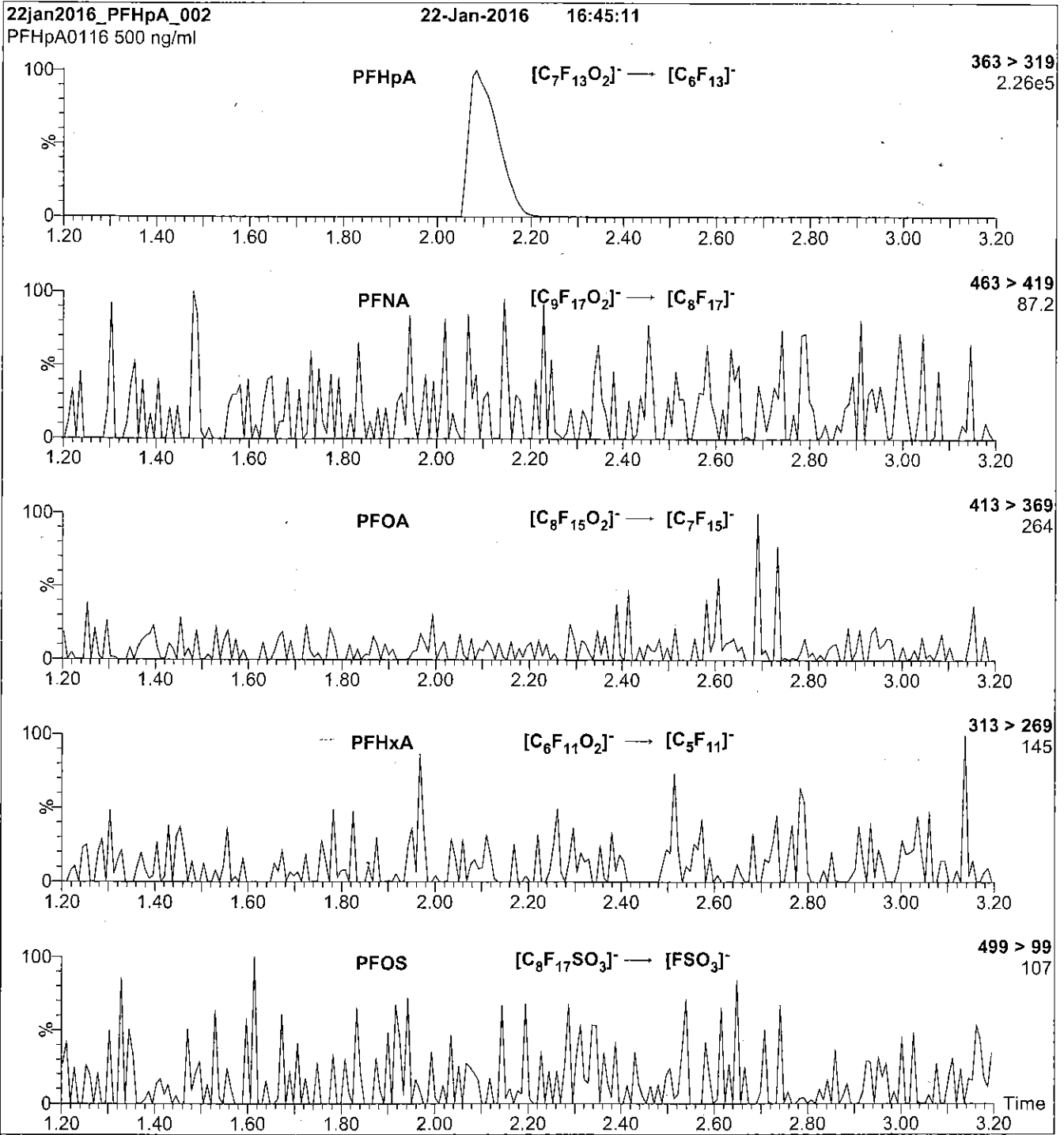
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

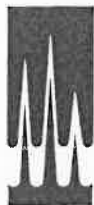
Reagent

LCPFHpS_00008



627751
 ID: LCPFHPS_00008
 Exp: 11/06/20 Ppt: CBW
 PFHpS at 47.6ug/ml

R: 5/10/16 CBW

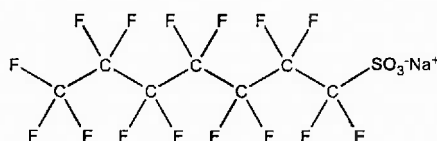


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS **LOT NUMBER:** LPFHPS1115
COMPOUND: Sodium perfluoro-1-heptanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₇F₁₅SO₃Na **MOLECULAR WEIGHT:** 472.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.6 ± 2.4 µg/ml (PFHpS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

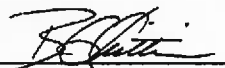
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.1% of L-PFHxS (C₆F₁₃SO₃Na) and ~ 0.2% of L-PFOS (C₈F₁₇SO₃Na).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 11/09/2015
 (mm/dd/yyyy)

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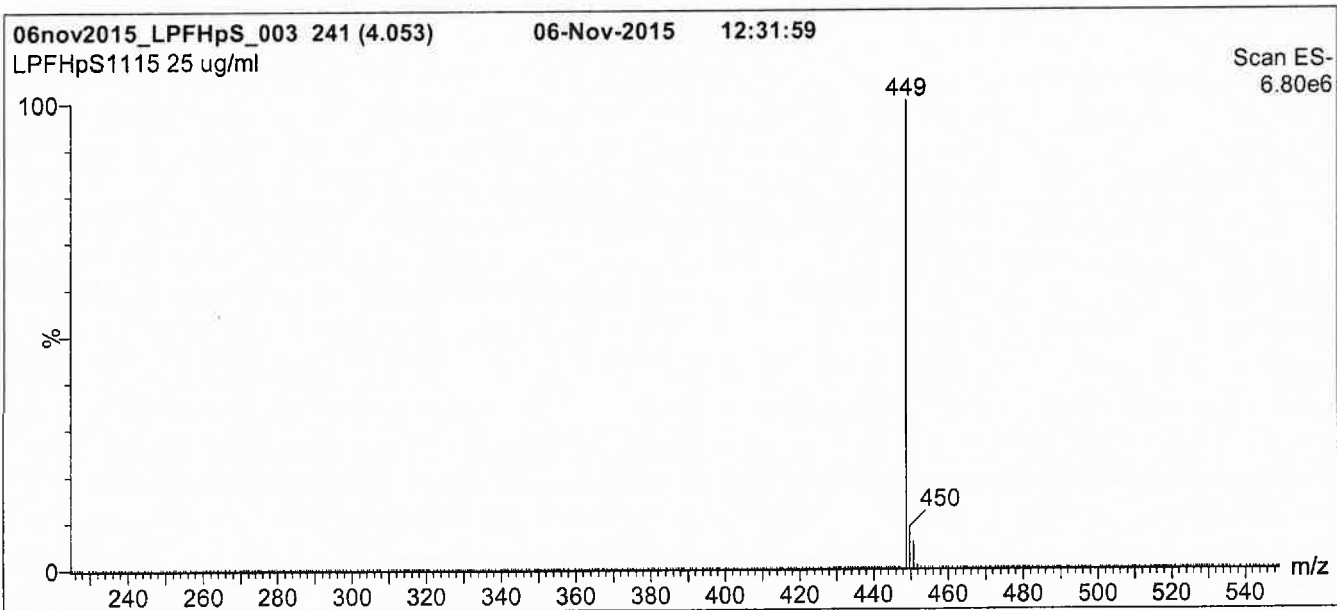
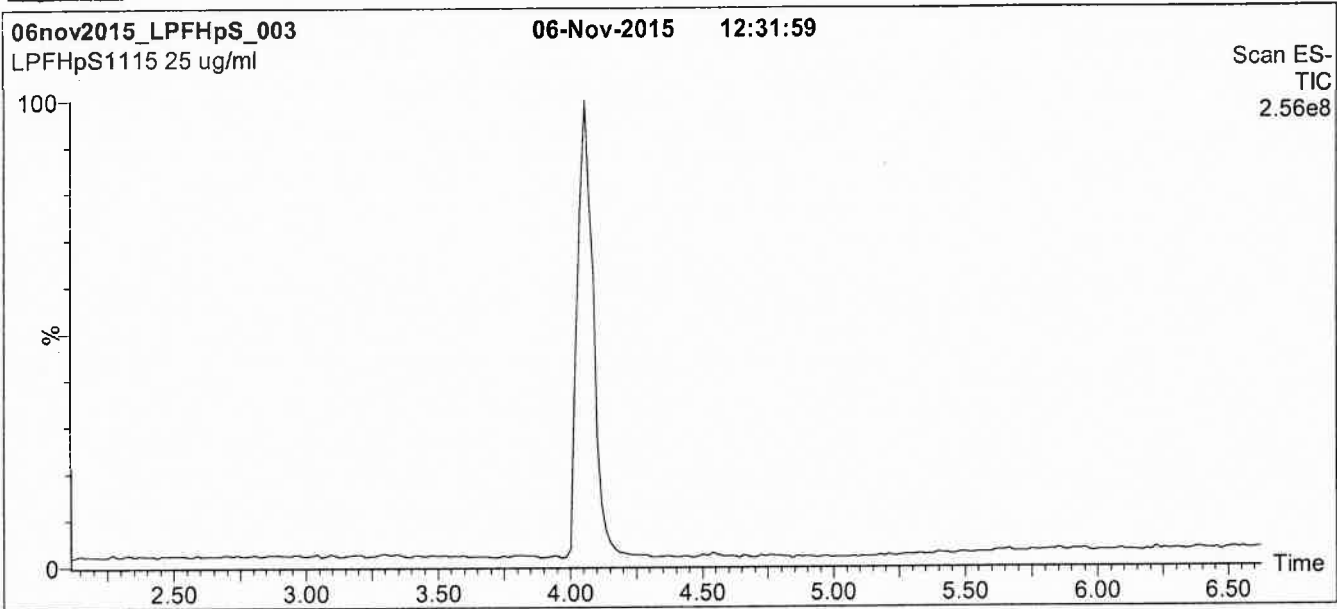
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μm, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold
 for 2 min before returning to initial conditions in 0.5 min.
 Time: 10 min

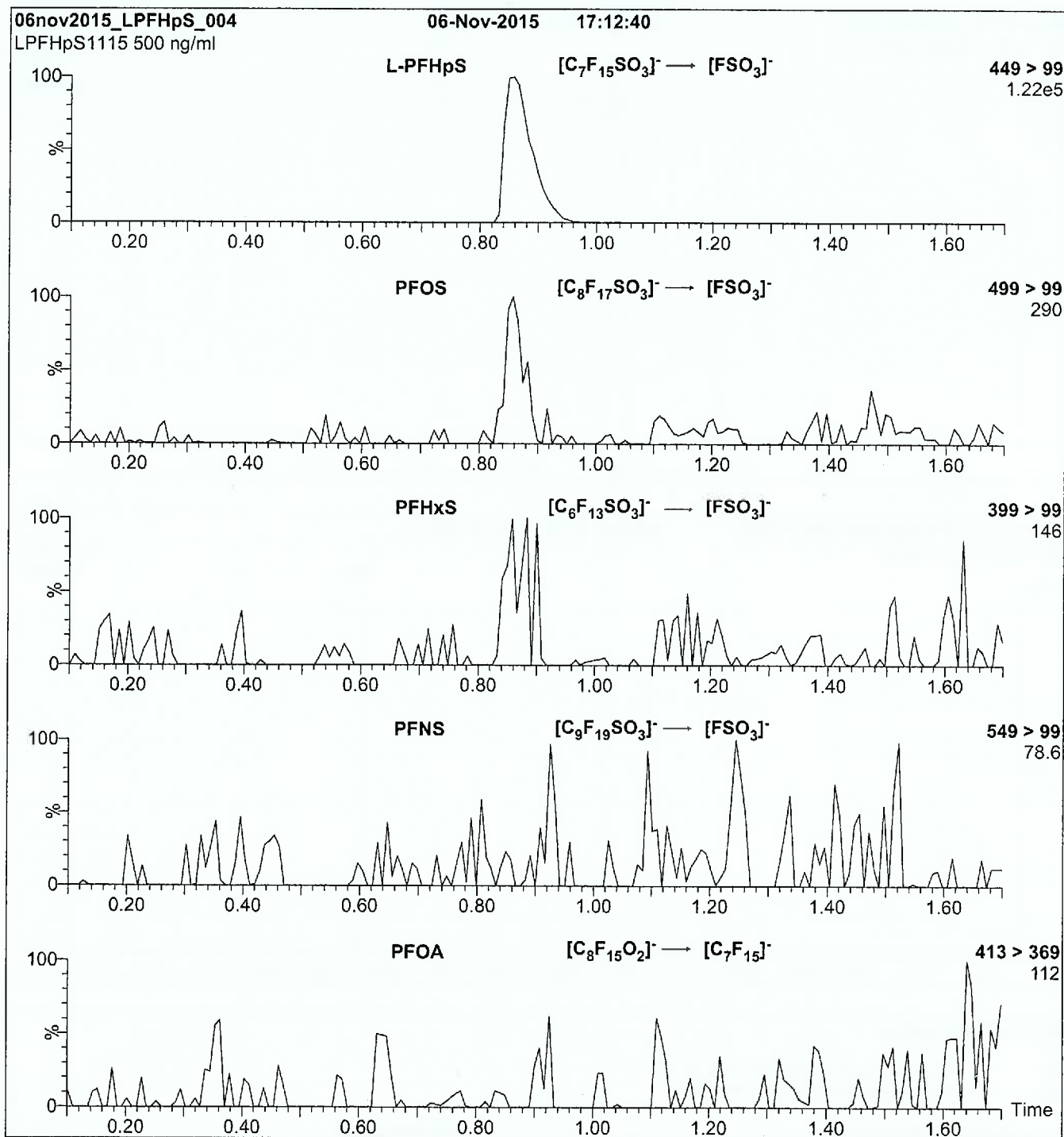
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00004



R: 4/7/16 CBW

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

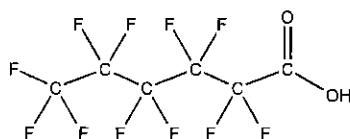


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxA **LOT NUMBER:** PFHxA1215
COMPOUND: Perfluoro-n-hexanoic acid

STRUCTURE: **CAS #:** 307-24-4



MOLECULAR FORMULA: C₆H₁₁F₁₁O₂ **MOLECULAR WEIGHT:** 314.05
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  Date: 12/23/2015
B.G. Crittitt (mm/dd/yyyy)

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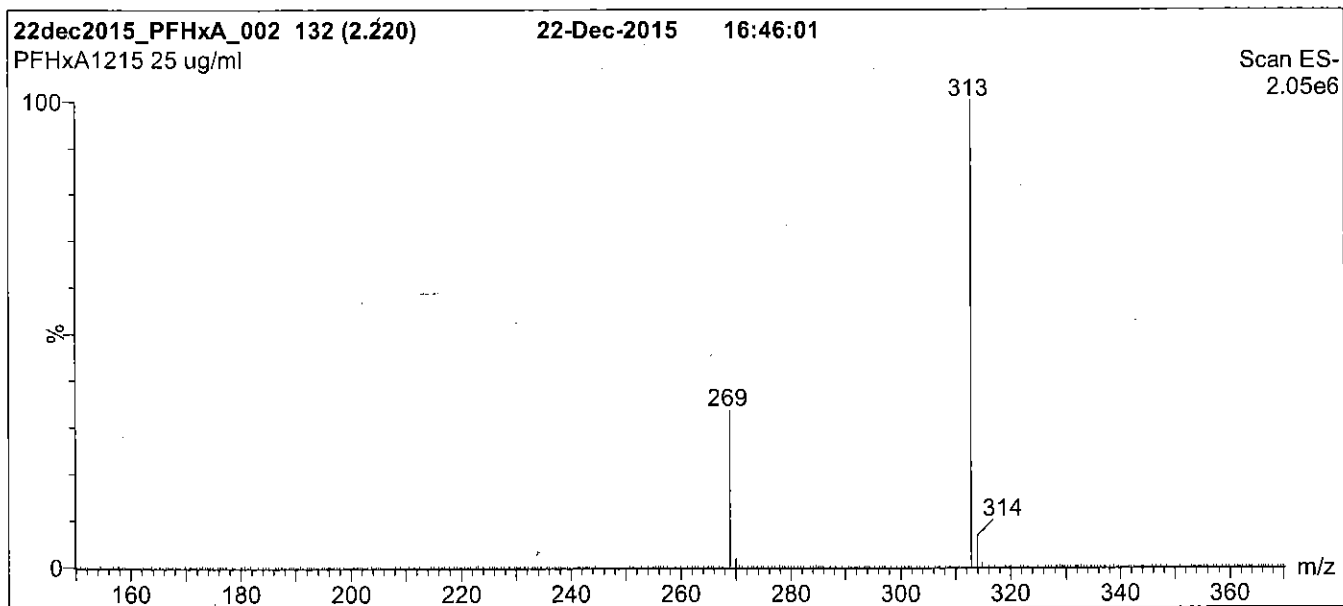
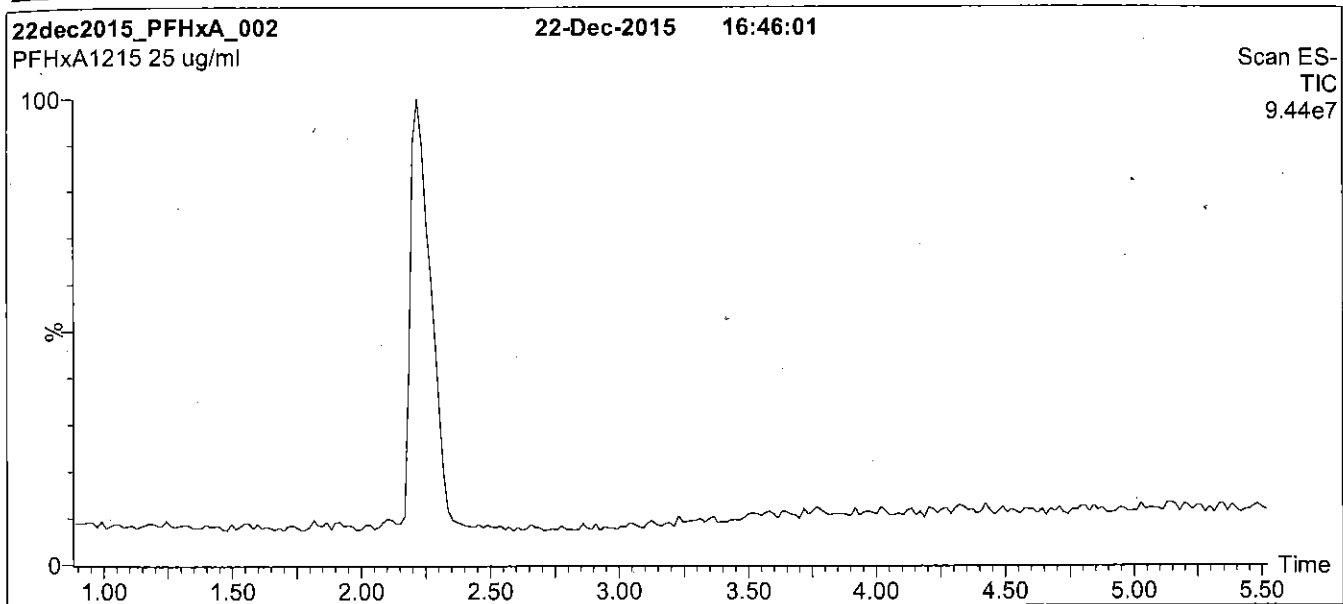
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Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

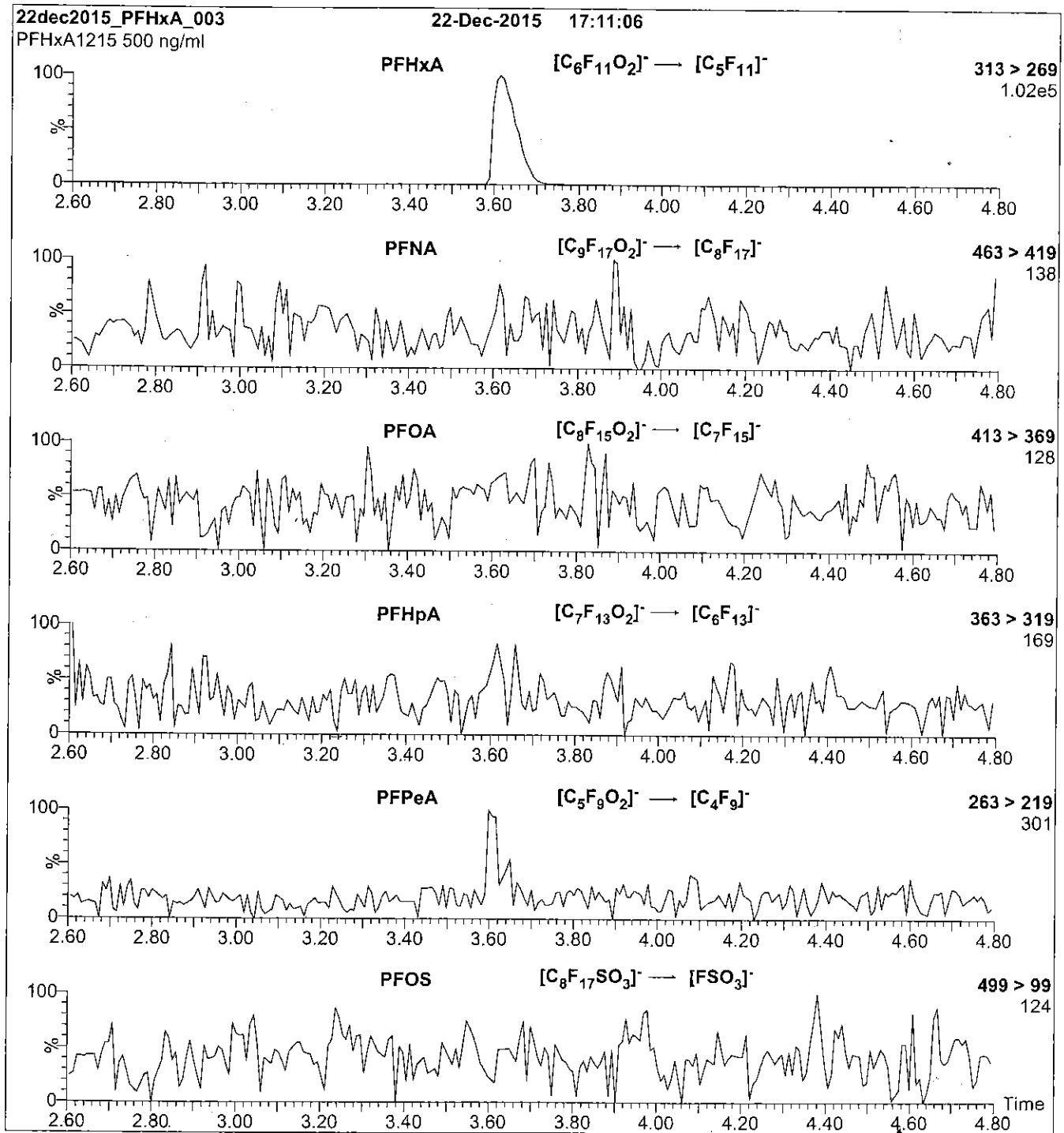
Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
 Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHxS-br_00001



PS 12/9/15 SW

566007
ID: LCPFHxS-br_00001
Exp: 07/03/20 Pppl: CBW
Potassium Perfluorohexane



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

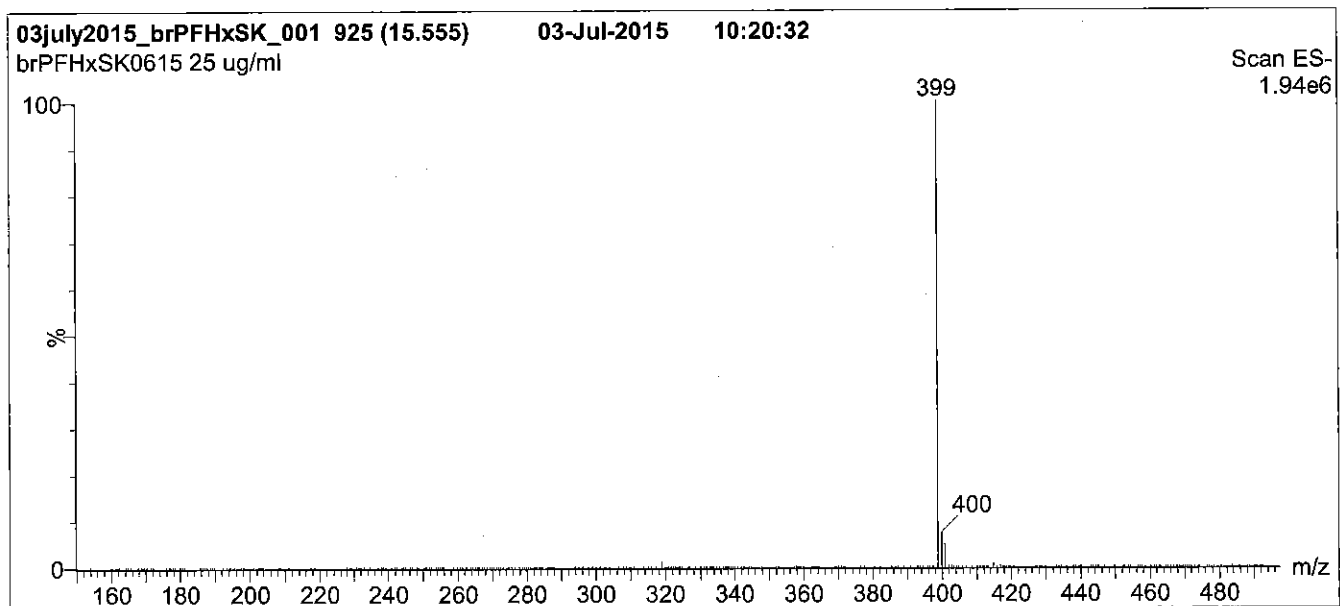
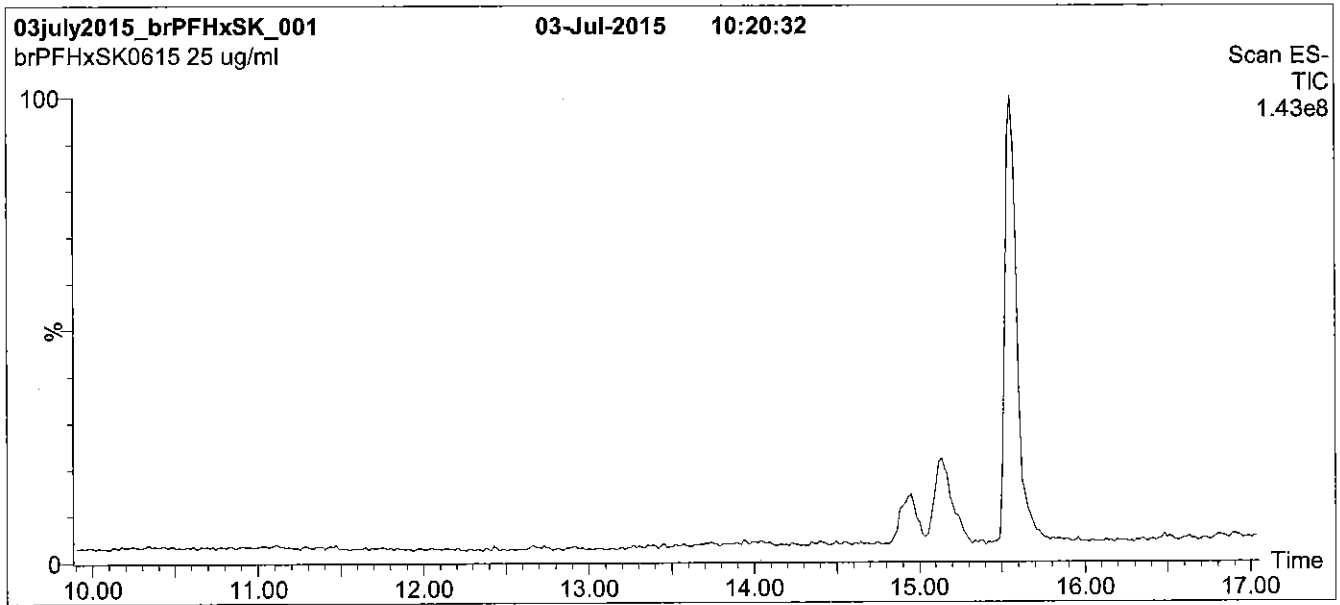
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{CCF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
 ** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 07/15/2015
(mm/dd/yyyy)

Figure 1: br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

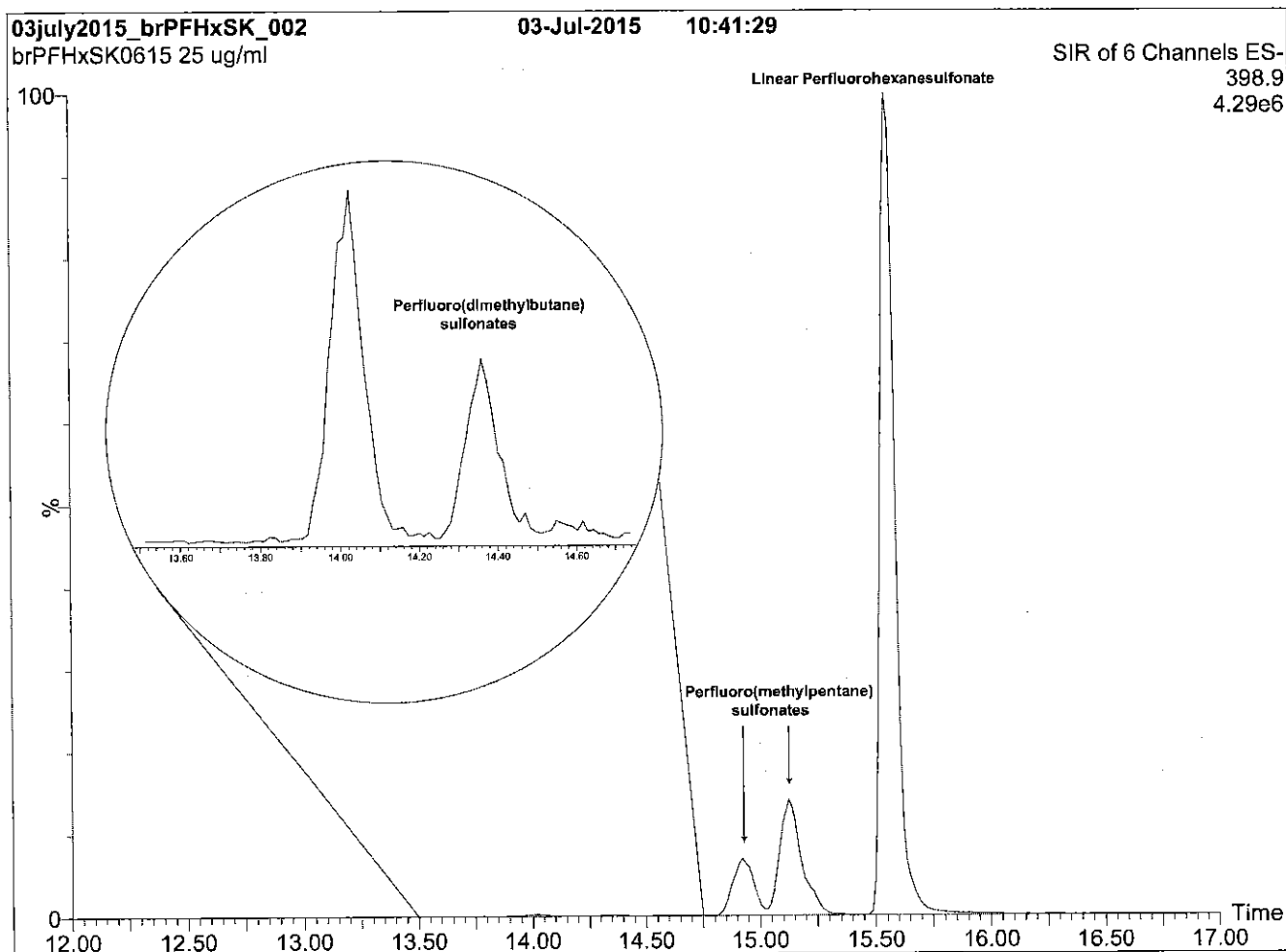
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: br-PFHxSK; LC/MS Data



Conditions for Figure 2:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μm, 2.1 x 100 mm

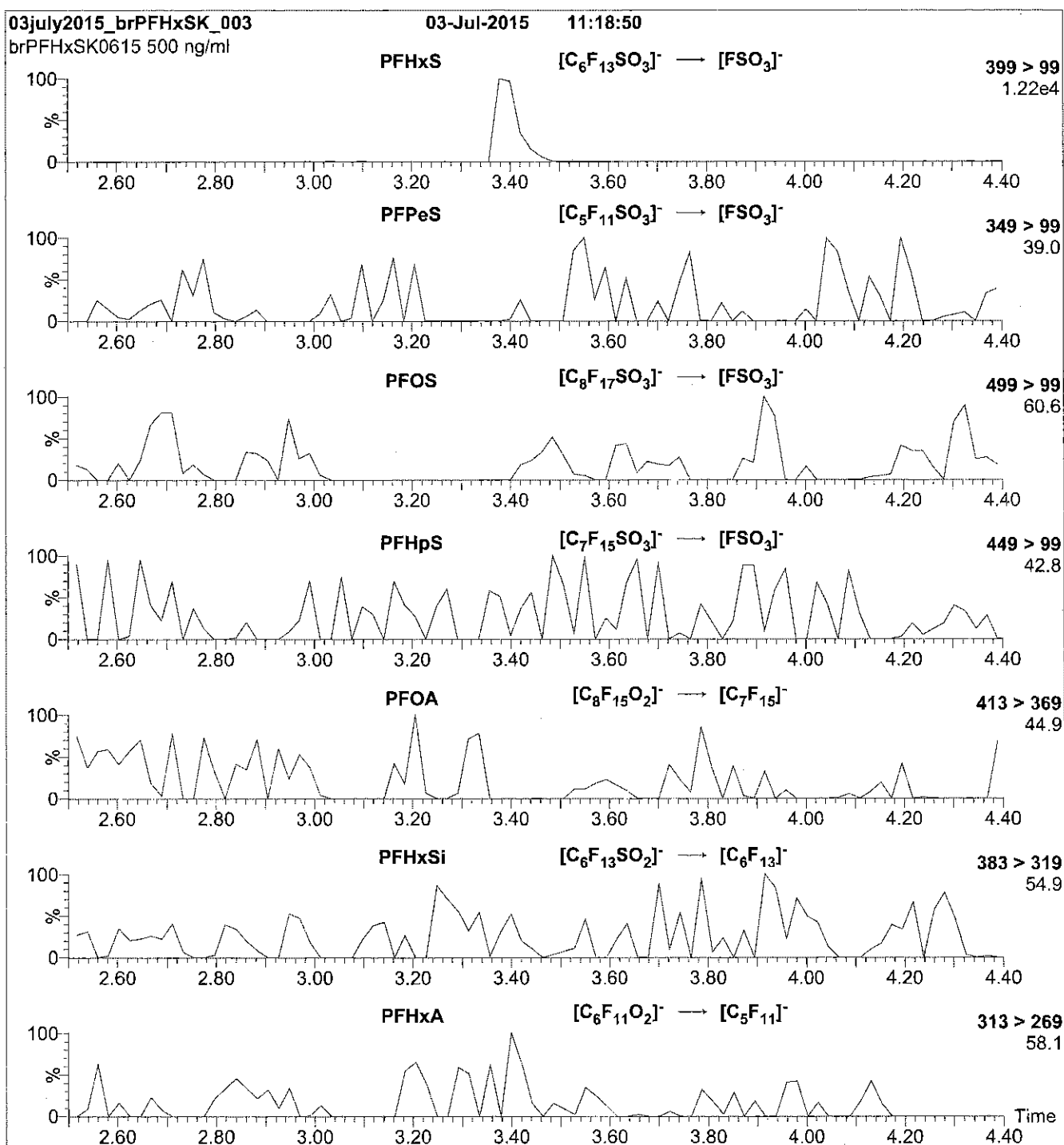
Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

Flow: 300 μl/min

MS Parameters

Experiment: SIR (6 channels)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
10 μ l (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFNA_00005



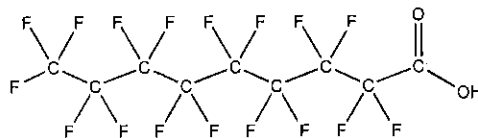
R: 4/7/16 CBW

609703

ID: LCPFNA_00005

Exp: 10/23/20 Prod: CBW

PF-n-nonanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFNA **LOT NUMBER:** PFNA1015
COMPOUND: Perfluoro-n-nonanoic acid**STRUCTURE:** **CAS #:** 375-95-1

MOLECULAR FORMULA:	$C_9H_{17}O_2$	MOLECULAR WEIGHT:	464.08
CONCENTRATION:	$50 \pm 2.5 \mu\text{g/ml}$	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/23/2015		
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/30/2015

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

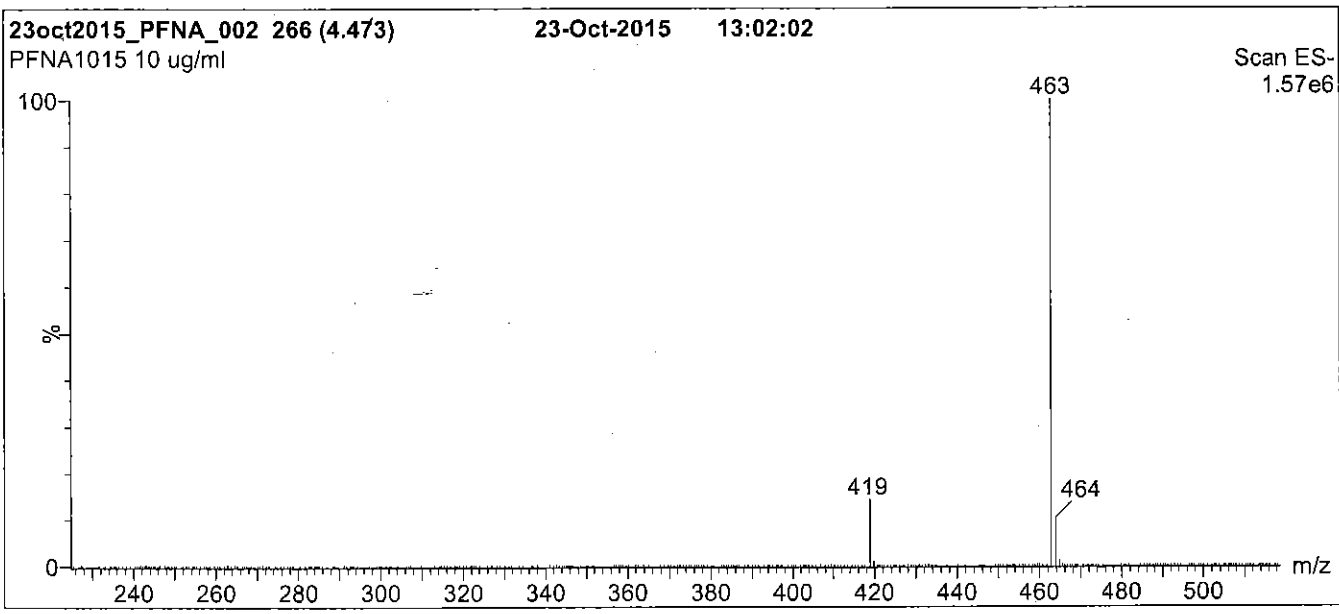
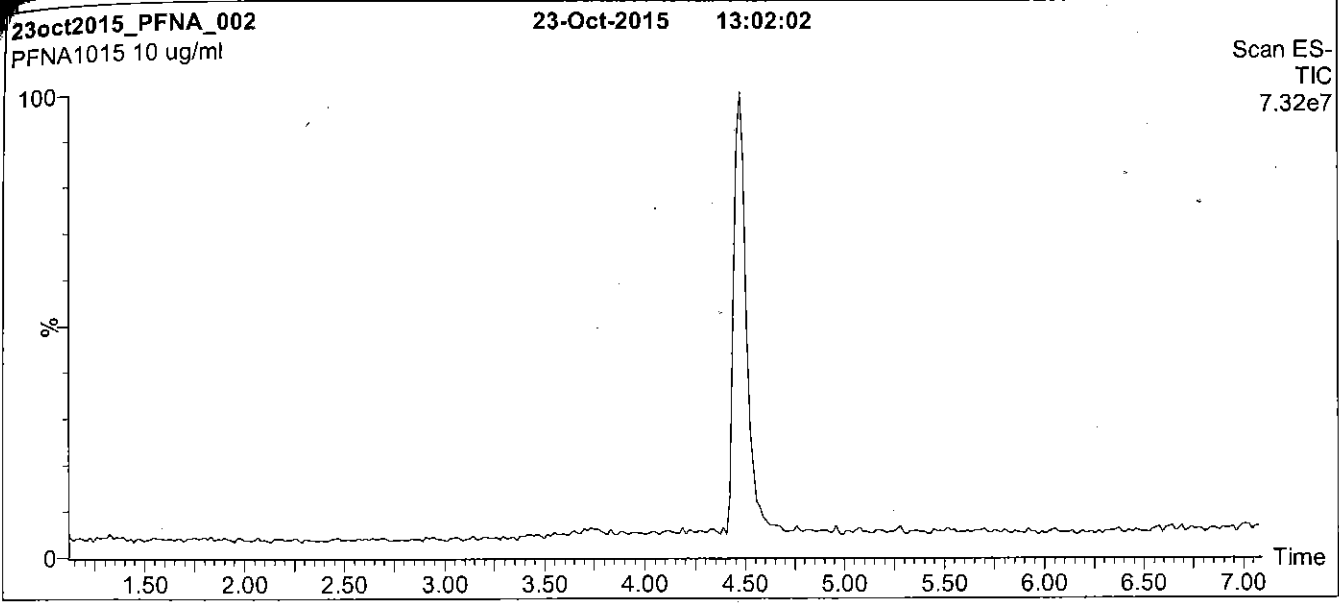
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc 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

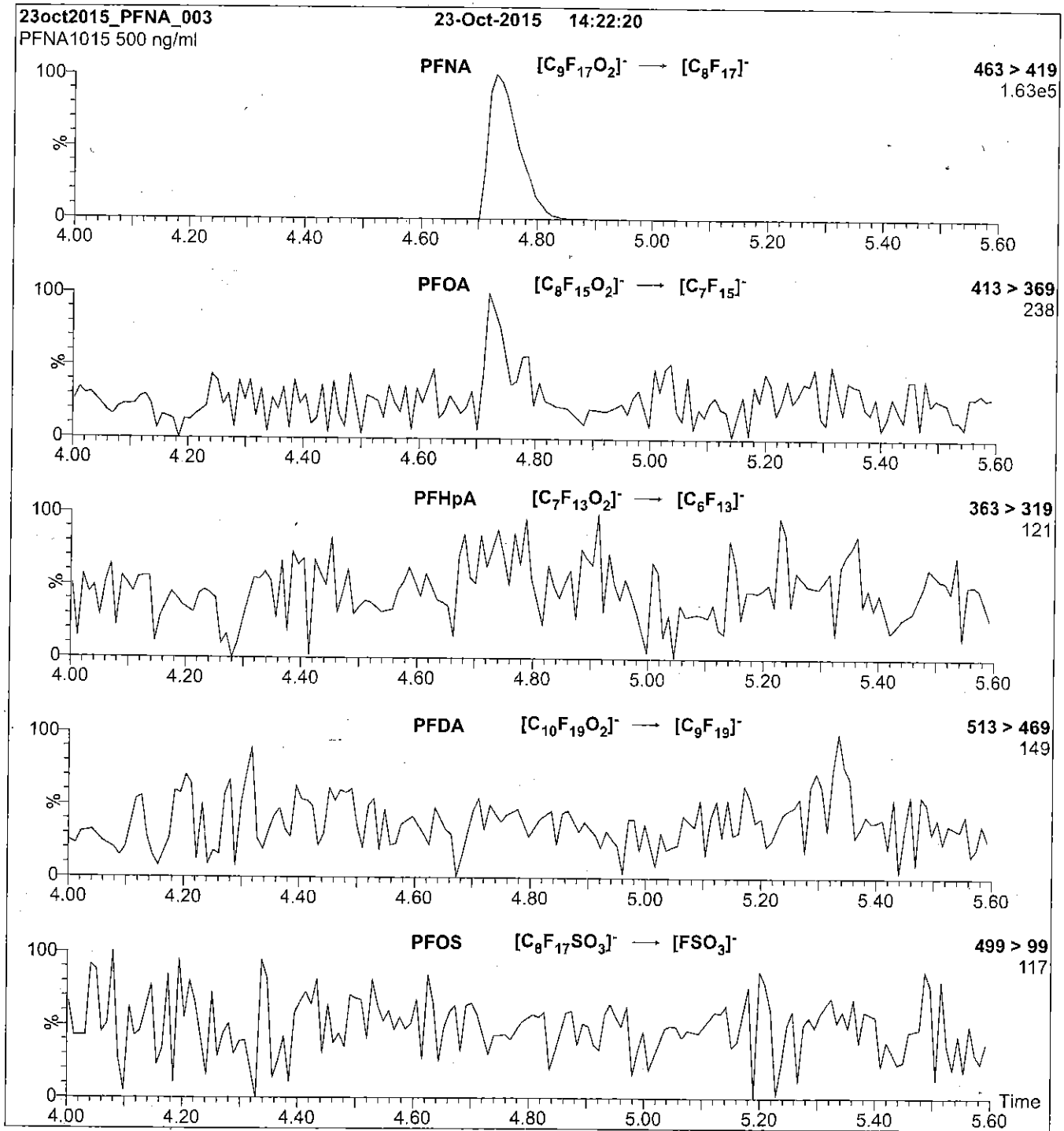
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

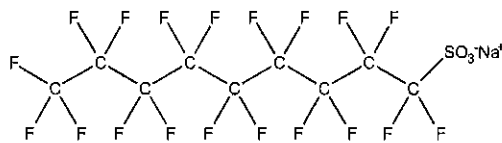
LCPFNS_00002



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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



MOLECULAR FORMULA: C₉F₁₉SO₃Na **MOLECULAR WEIGHT:** 572.12
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 48.0 ± 2.4 µg/ml (PFNS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/04/2012
EXPIRY DATE: (mm/dd/yyyy) 07/04/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 $\pm 5\%$ (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.

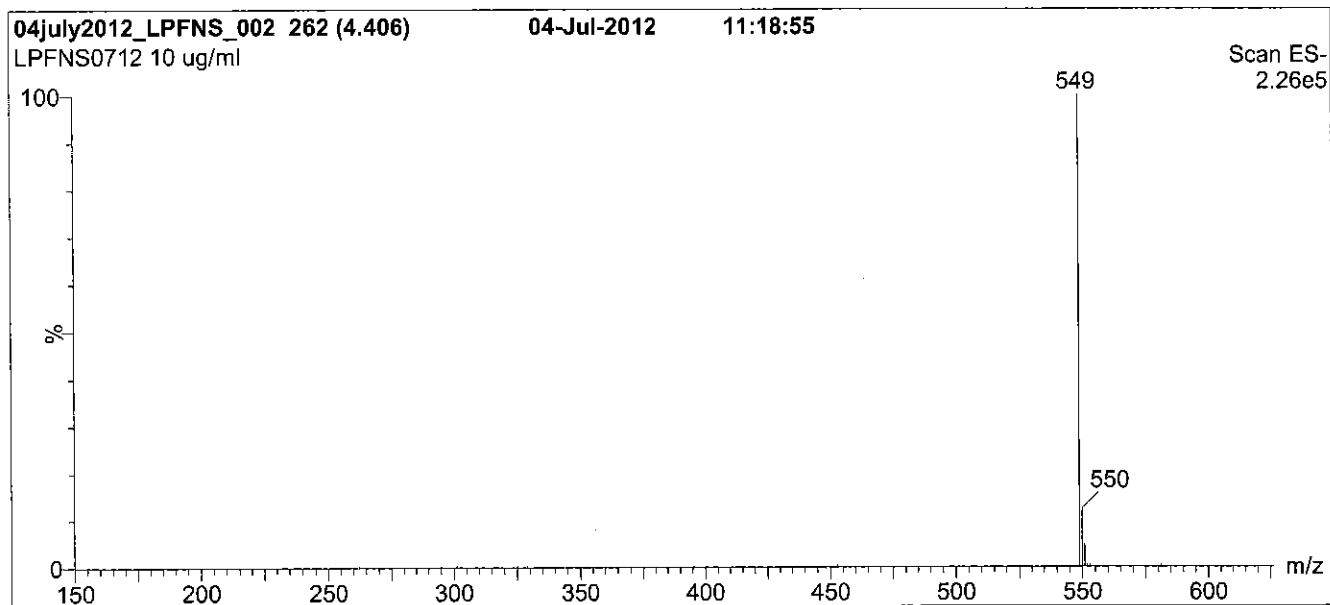
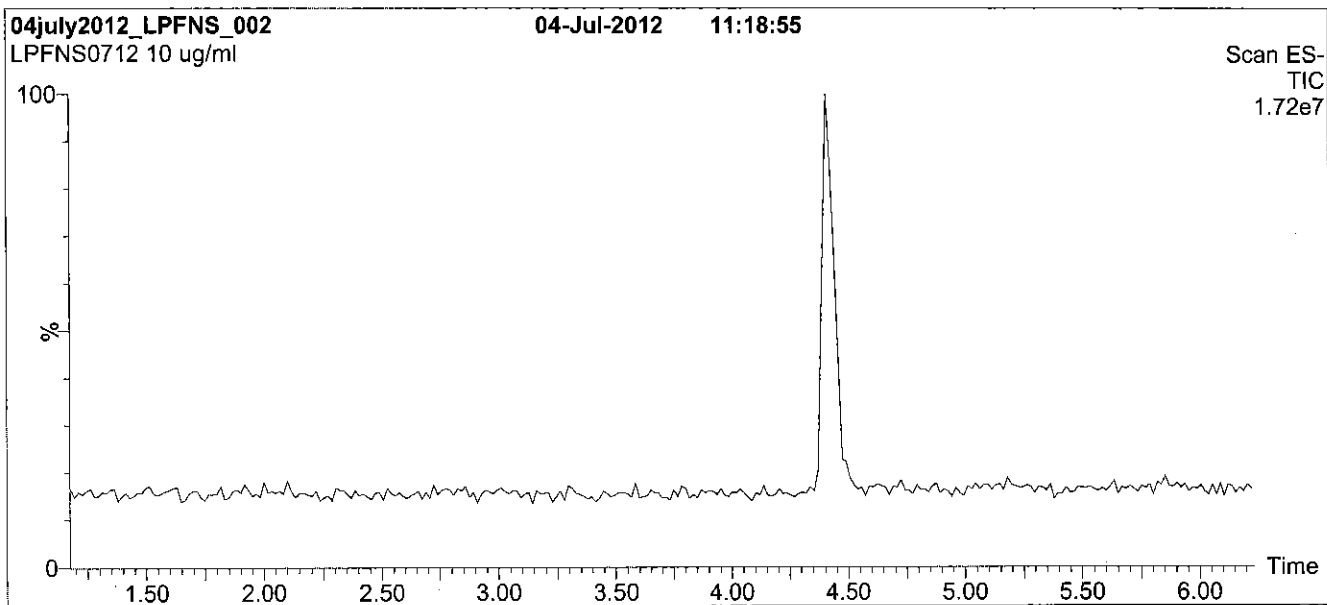
QUALITY MANAGEMENT:

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).



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc 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

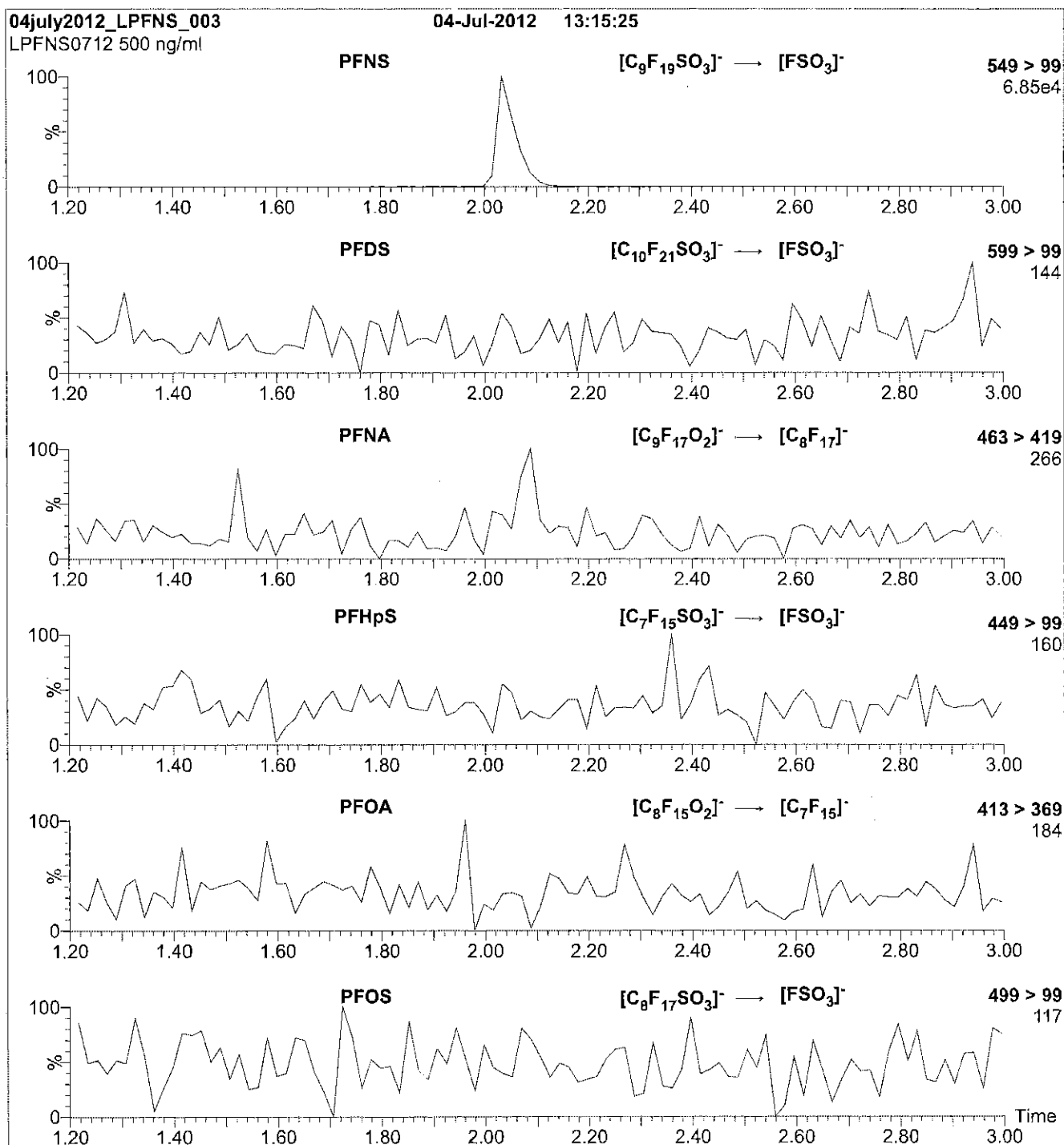
Flow: 300 μ l/min

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 μ l (500 ng/ml L-PFNS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
 Collision Energy (eV) = 45

Reagent

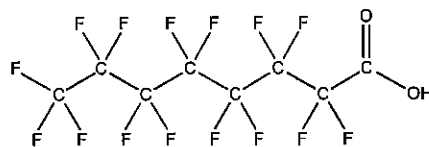
LCPFOA_00005



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid
LOT NUMBER: PFOA1115
STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: $C_8H_{16}F_{16}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$
MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim

Date: 11/11/2015

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

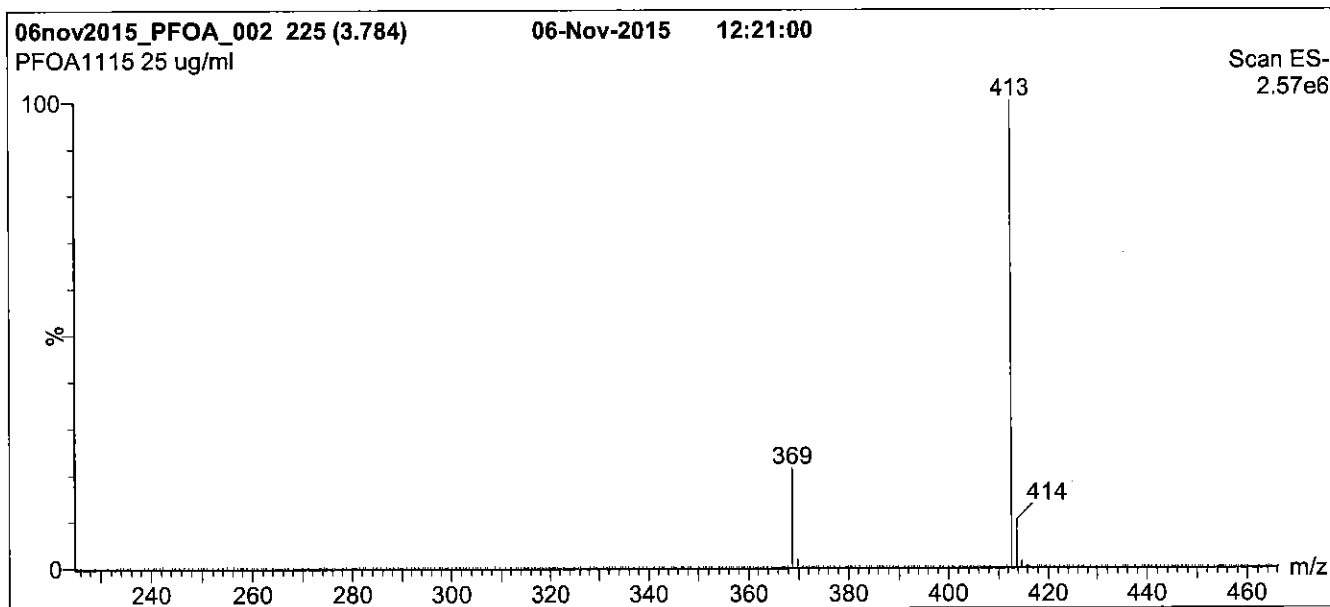
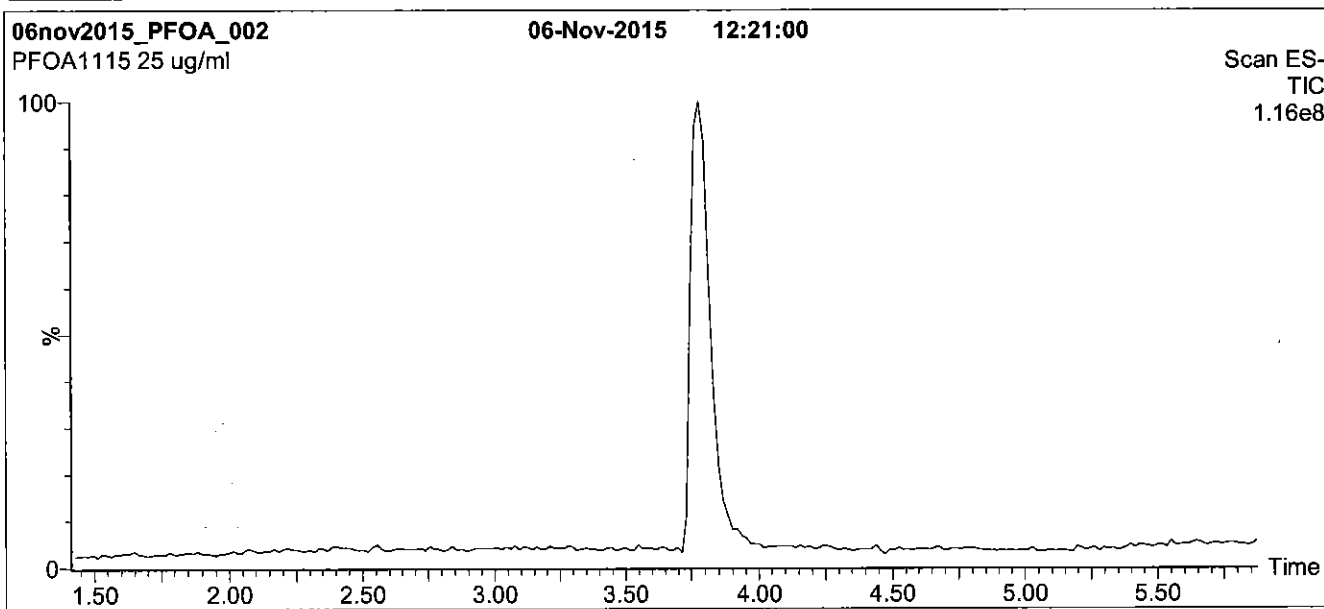
QUALITY MANAGEMENT:

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



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

Figure 1: 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 RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc 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

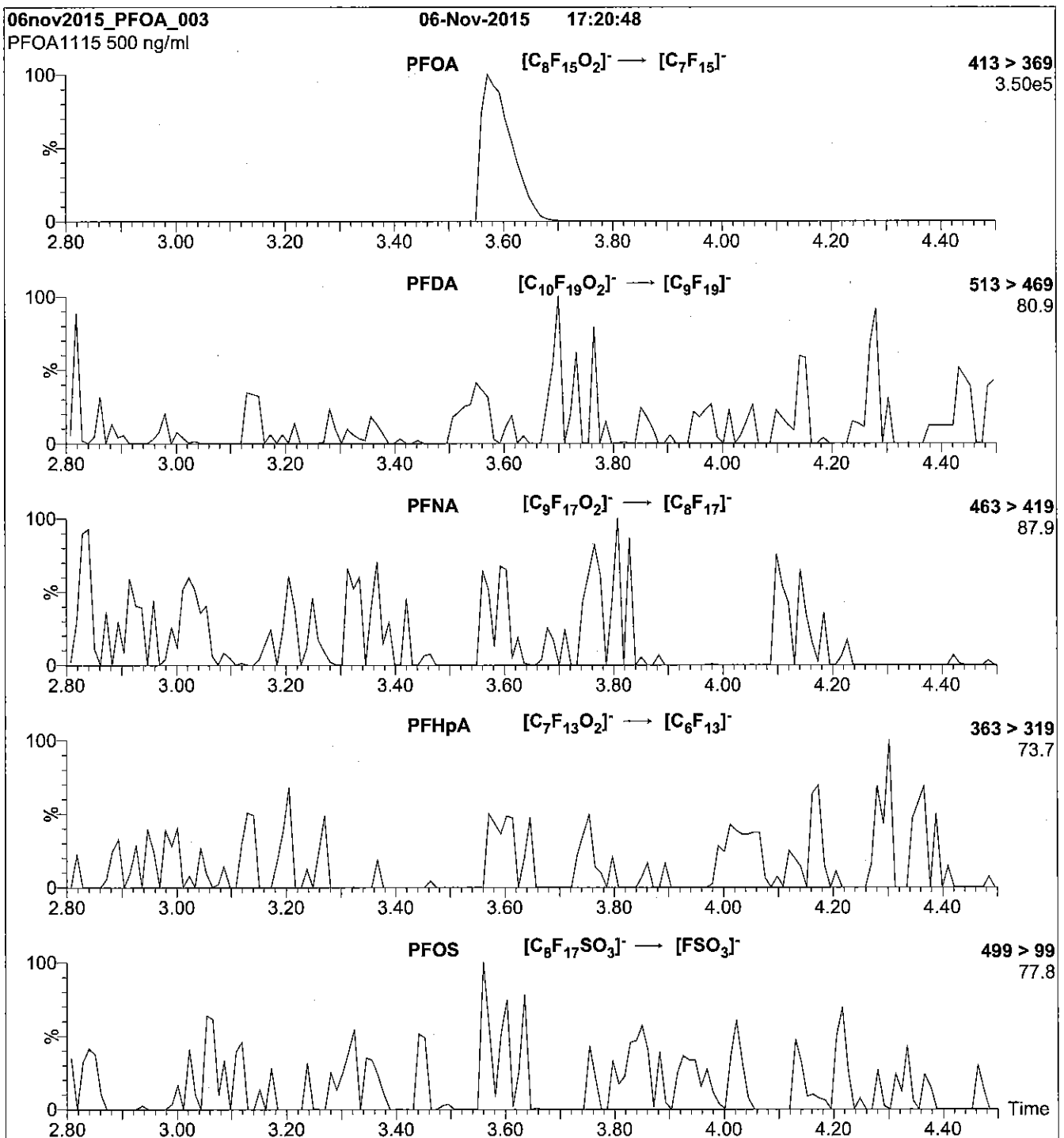
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 10

Reagent

LCPFODA_00005

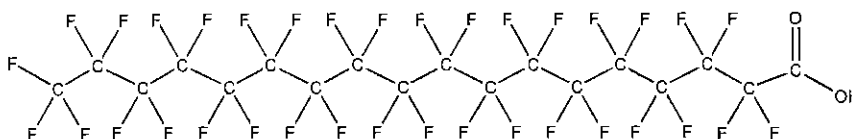


605234

ID: LCPFODA_00005

Exp: 01/30/20 Prod: CBW
PFODA stock 50ug/ml

Rec. 3/20/16 JRB

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFODA **LOT NUMBER:** PFODA0115
COMPOUND: Perfluoro-n-octadecanoic acid**STRUCTURE:** **CAS #:** 16517-11-6

MOLECULAR FORMULA:	$C_{18}H_{35}O_2$	MOLECULAR WEIGHT:	914.14
CONCENTRATION:	$50 \pm 2.5 \mu\text{g/ml}$	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/30/2015		
EXPIRY DATE: (mm/dd/yyyy)	01/30/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/25/2015

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 $\pm 5\%$ (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.

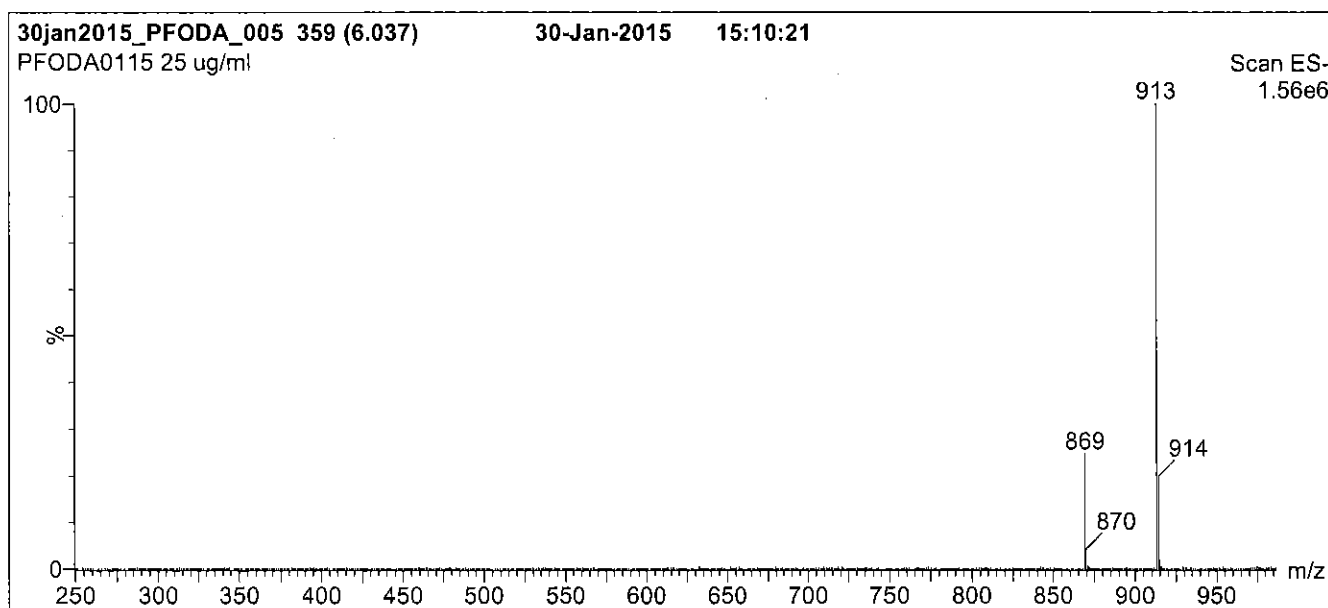
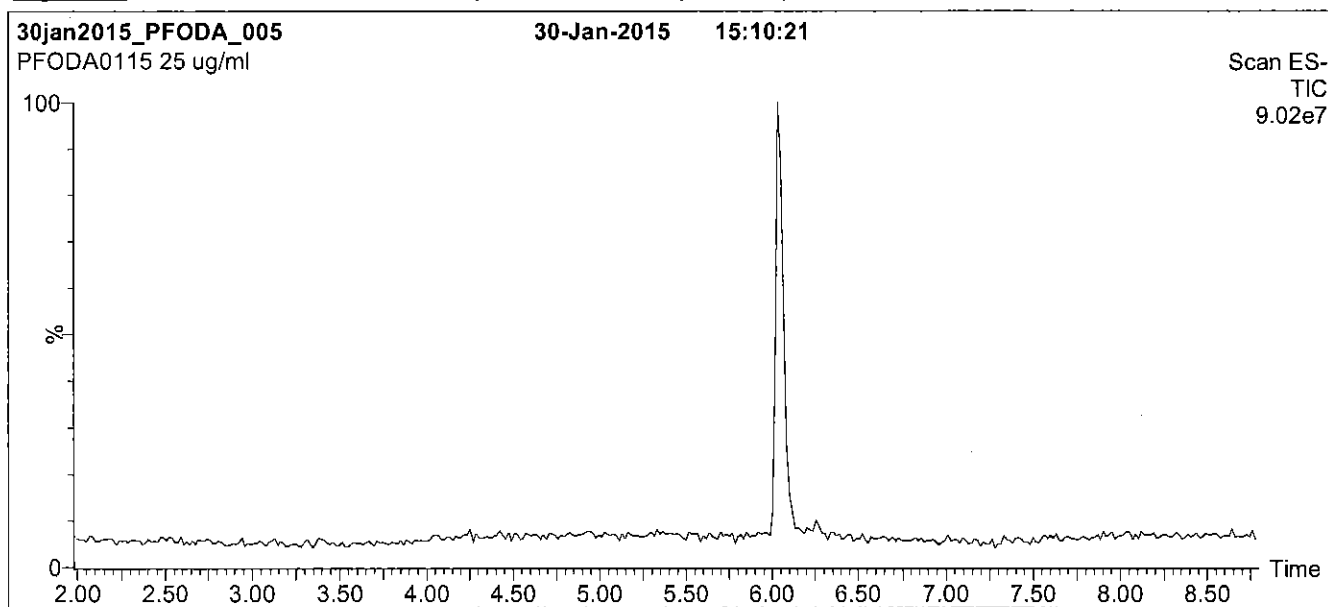
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc 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

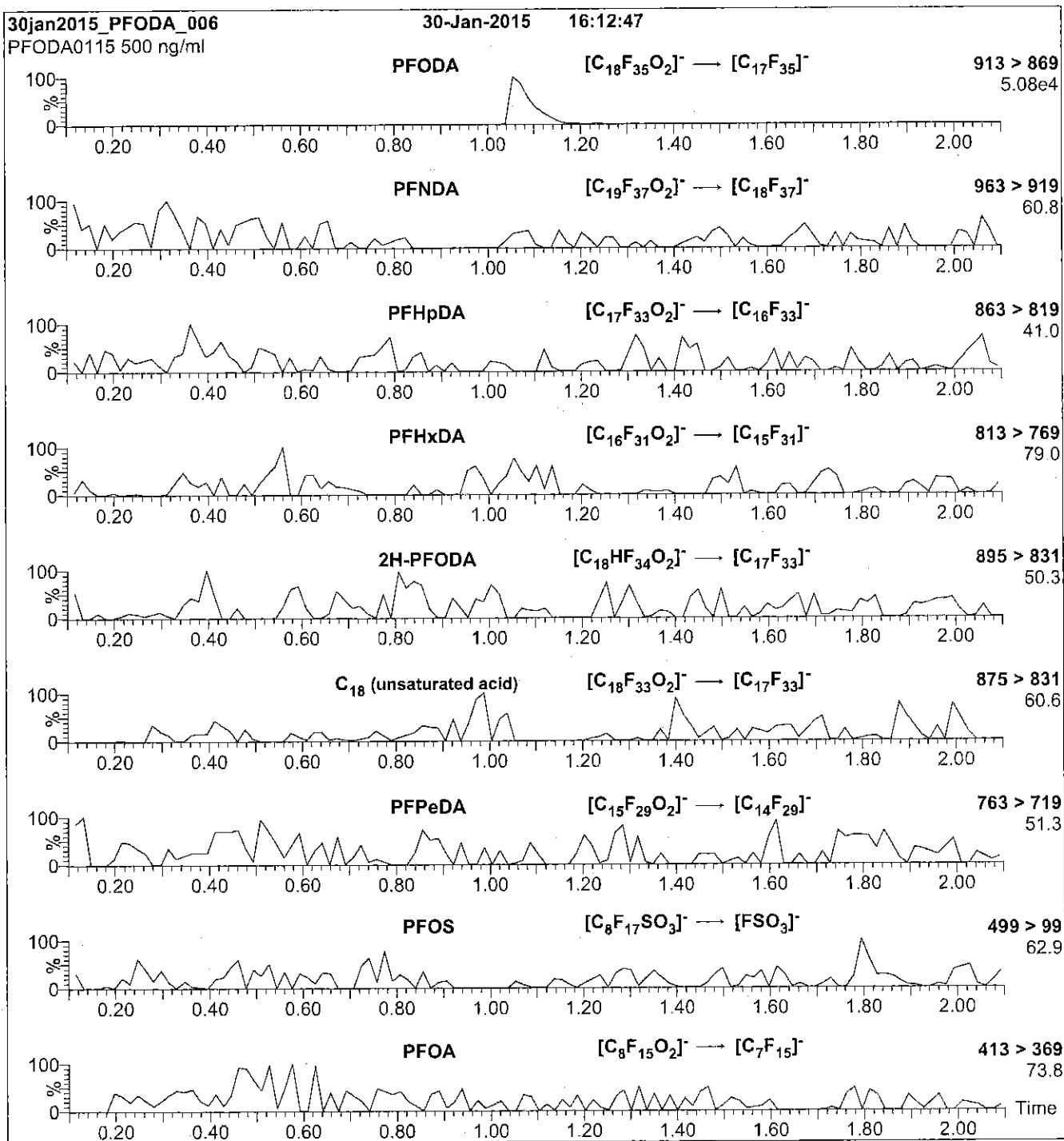
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
 Collision Energy (eV) = 15

Reagent

LCPFOS-br_00001



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

br-PFOSK

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

PRODUCT CODE: br-PFOSK
LOT NUMBER: brPFOSK1015
CONCENTRATION: 50 ± 2.5 µg/ml (total potassium salt)
46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 10/13/2015
LAST TESTED: (mm/dd/yyyy) 10/14/2015
EXPIRY DATE: (mm/dd/yyyy) 10/14/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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

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Table A: br-PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

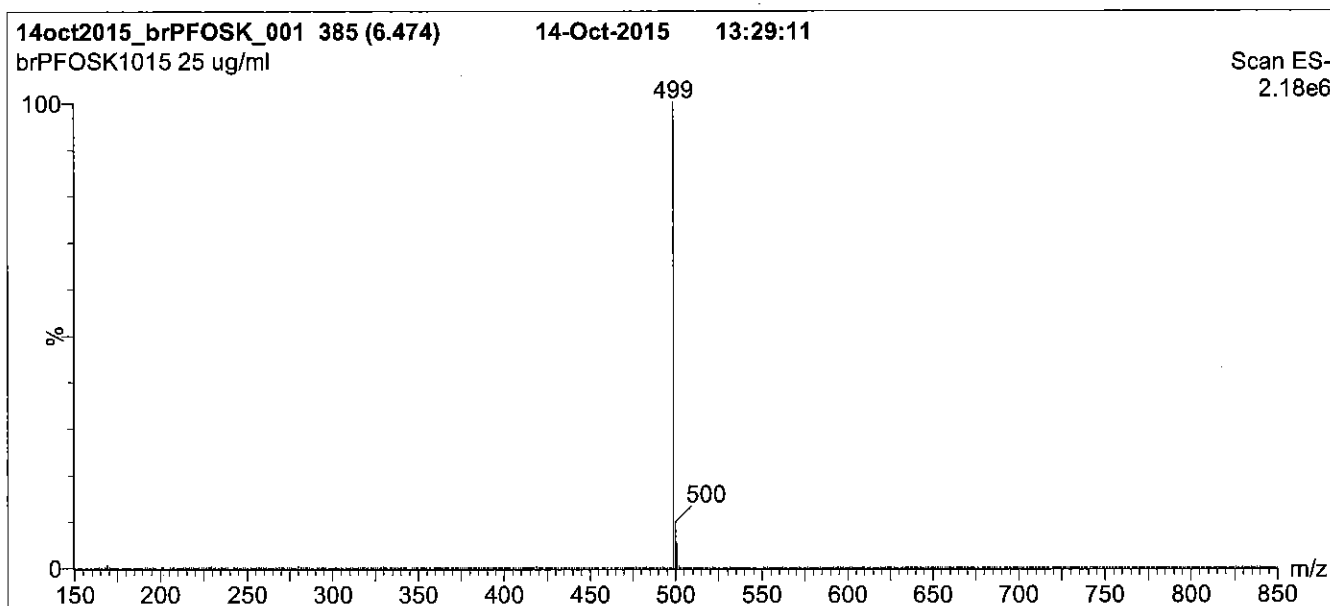
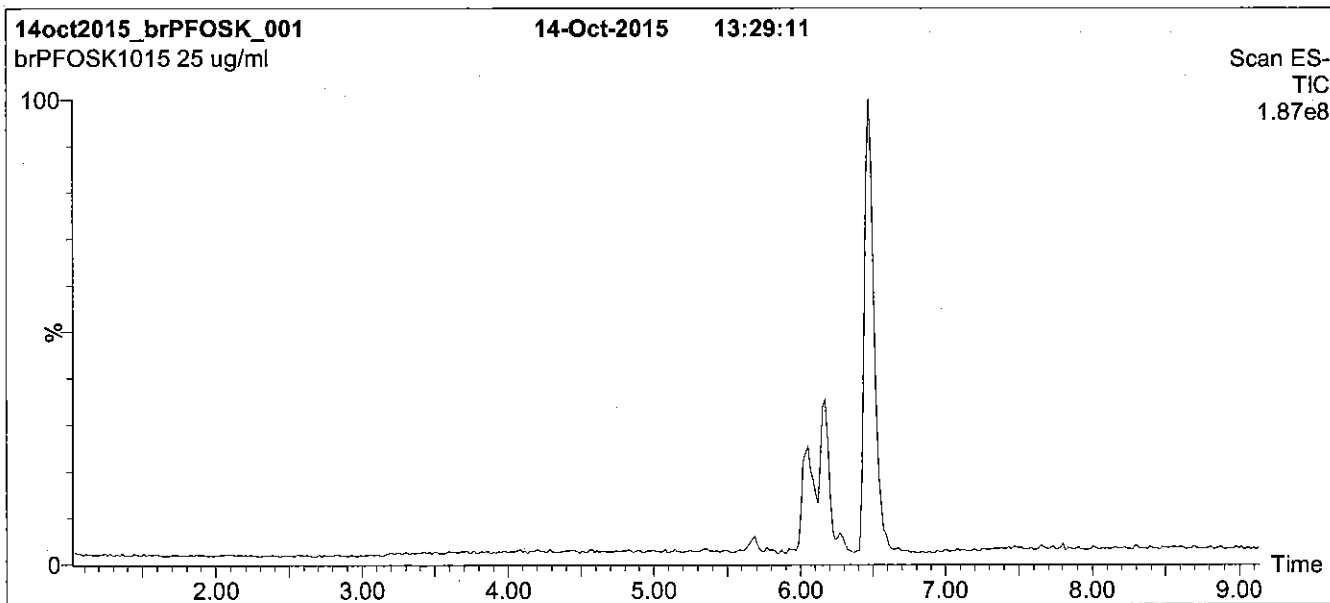
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-C(CF_3)(CF_3)-CF_2CF_2CF_2CF_2SO_3K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)(CF_3)-CF_2CF_2CF_2SO_3K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 10/15/2015
(mm/dd/yyyy)

Figure 1: br-PFOSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 45% (80:20 MeOH:ACN) / 55% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 12 min and hold for 2 min.
 Return to initial conditions over 0.5 min.
 Time: 16 min

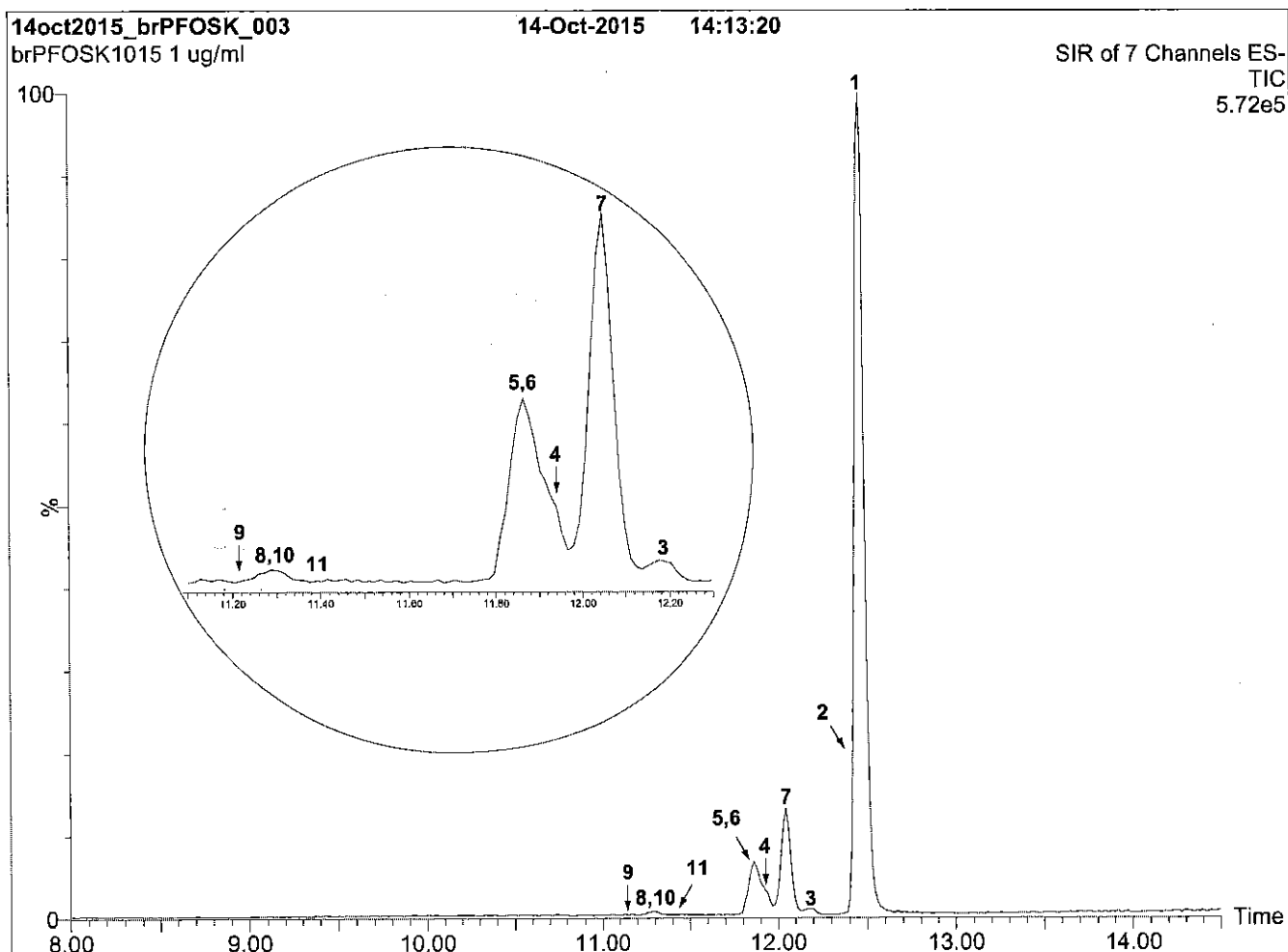
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 60.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFOSK; LC/MS Data (SIR)



Conditions for Figure 2:

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

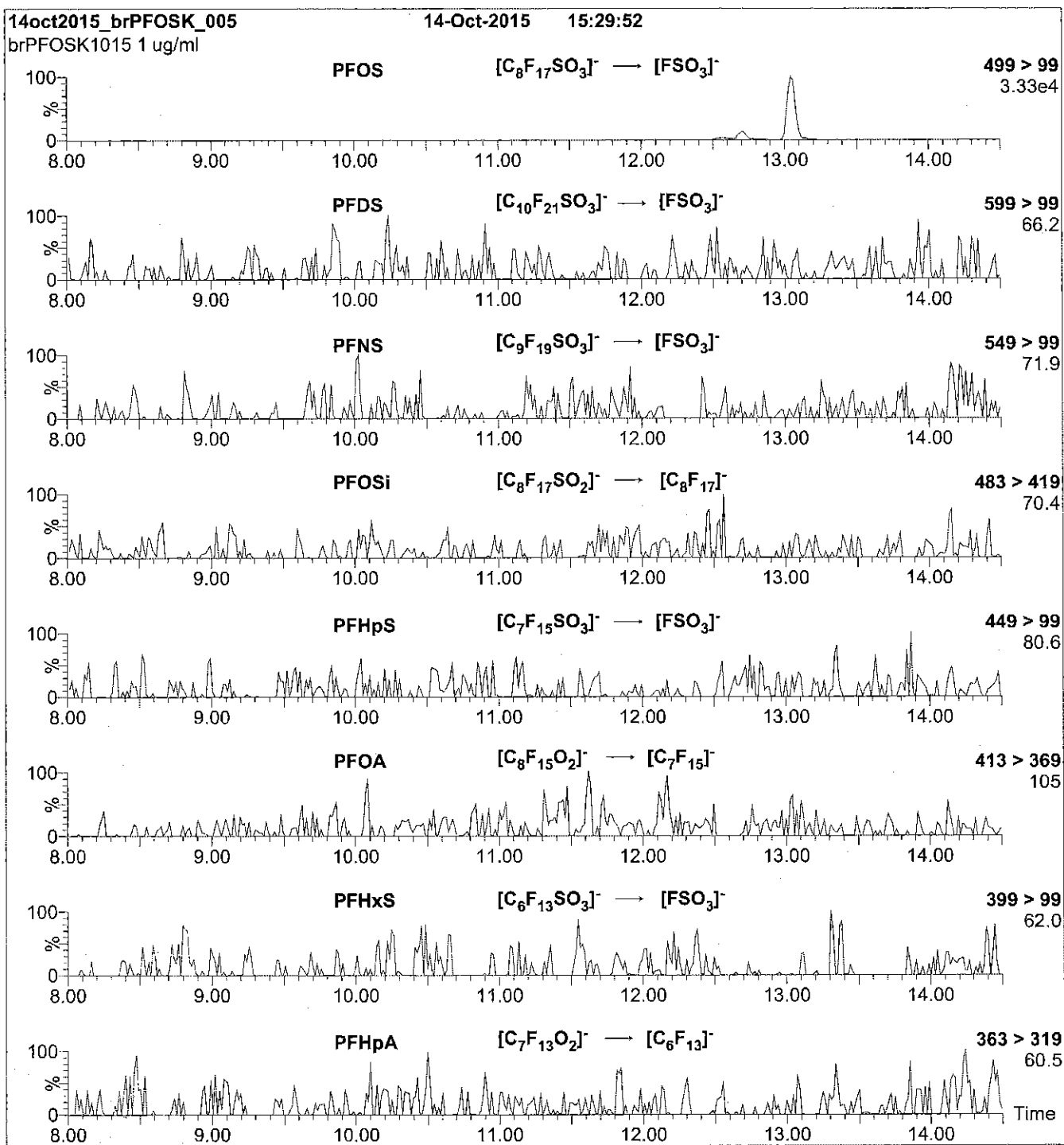
Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈ (1.7 μ m, 2.1 x 100 mm)
Injection: 1.0 μ g/ml of br-PFOSK
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H₂O (both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min
Flow: 300 μ l/min

MS Conditions:

SIR (ES⁻)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: On-column
 Mobile phase: Same as Figure 2
 Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.06e-3
 Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00006

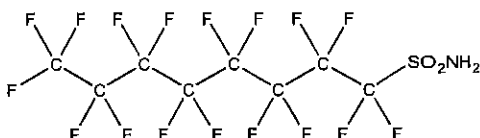


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I **LOT NUMBER:** FOSA0815I
COMPOUND: Perfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 754-91-6



MOLECULAR FORMULA: $C_8H_2F_{17}NO_2S$ **MOLECULAR WEIGHT:** 499.14
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Isopropanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/02/2015
EXPIRY DATE: (mm/dd/yyyy) 09/02/2017
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____


 B.G. Chittim

Date: 09/11/2015
 (mm/dd/yyyy)

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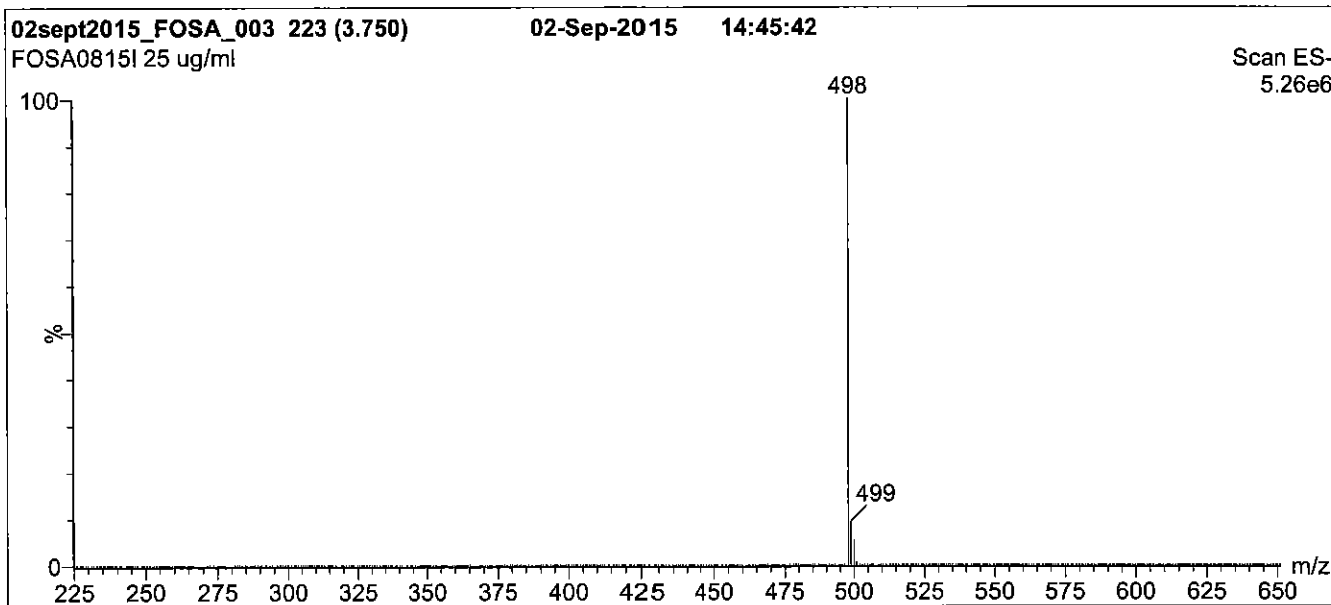
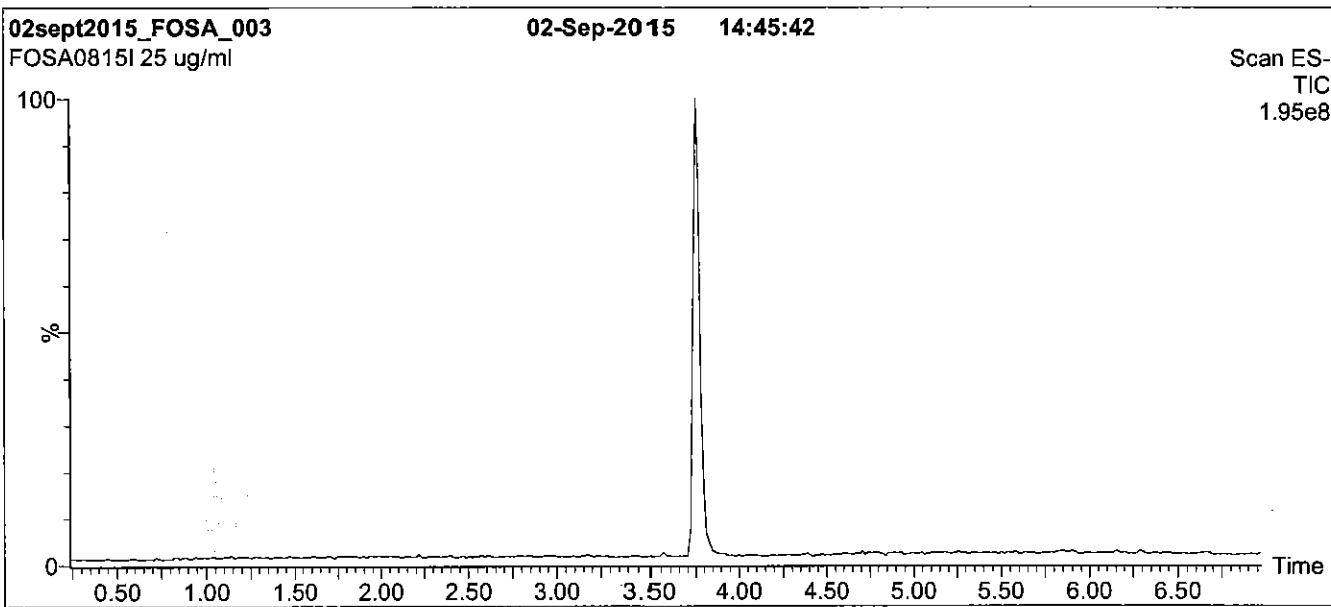
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Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μm, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

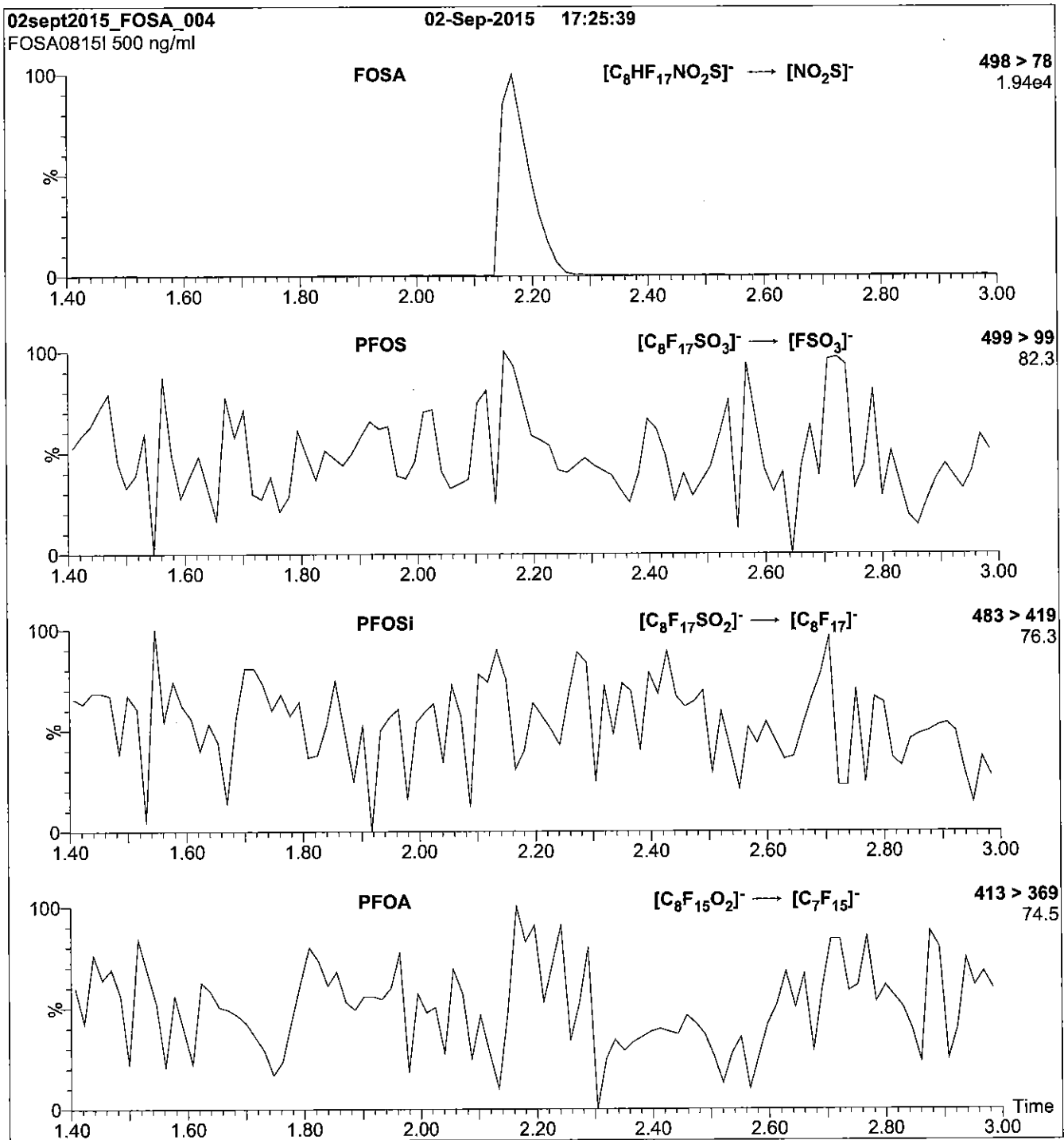
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

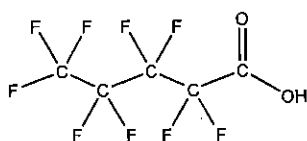
LCFPeA_00004



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFPeA **LOT NUMBER:** PFPeA0115
COMPOUND: Perfluoro-n-pentanoic acid
STRUCTURE: **CAS #:** 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$ **MOLECULAR WEIGHT:** 264.05
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/30/2015
EXPIRY DATE: (mm/dd/yyyy) 01/30/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 03/26/2015
 (mm/dd/yyyy)

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

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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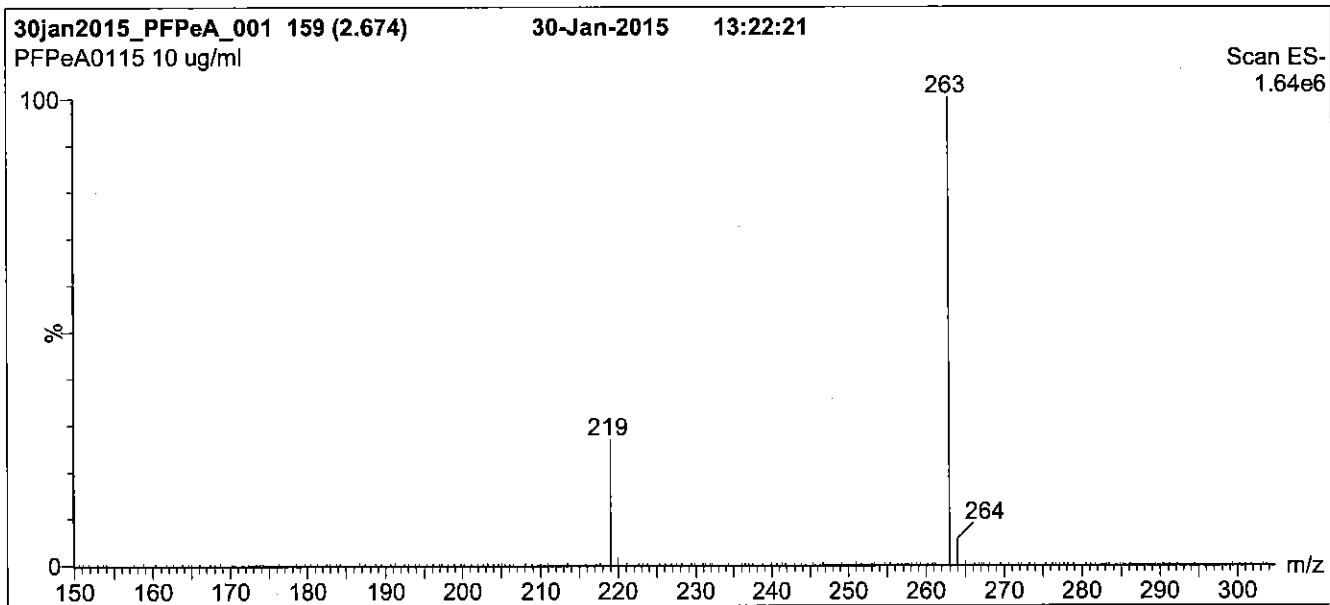
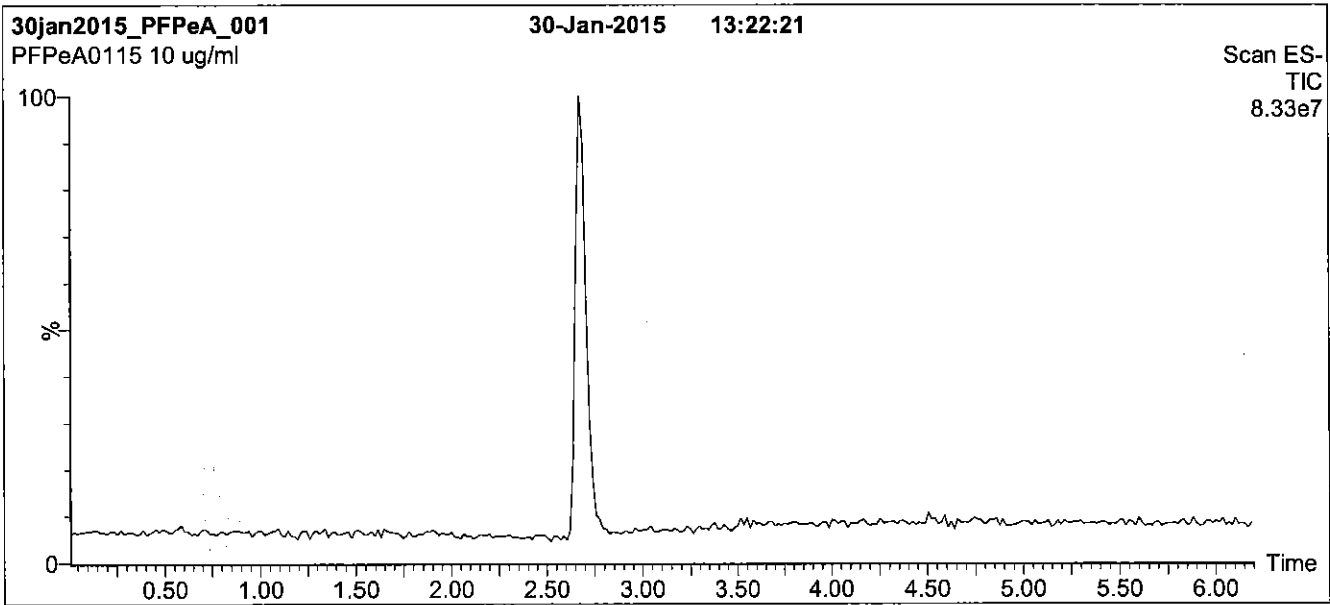
QUALITY MANAGEMENT:

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



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Figure 1: 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 RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 30% (80:20 MeOH:ACN) / 70% H₂O
 (both with 10 mM NH₄OAc 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

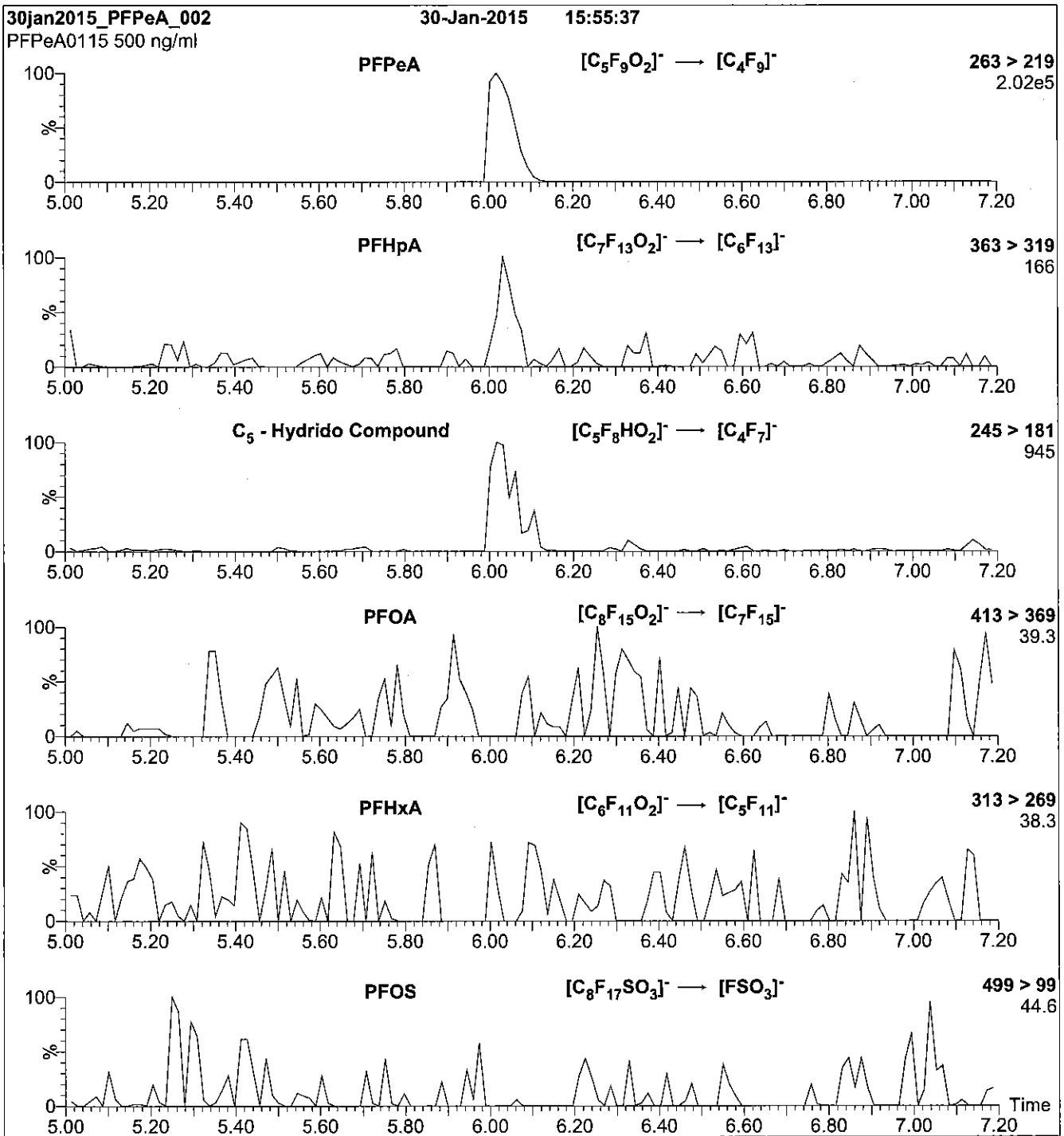
Flow: 300 μ l/min

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 μ l (500 ng/ml PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCFPeS_00002

R 2445 2



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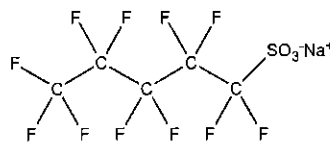
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS
COMPOUND: Sodium perfluoro-1-pentanesulfonate

LOT NUMBER: LPFPeS0712

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₅F₁₁SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
 46.9 ± 2.3 µg/ml (PFPeS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/04/2012
EXPIRY DATE: (mm/dd/yyyy) 07/04/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 372.09
SOLVENT(S): Methanol

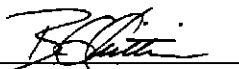
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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LIMITED WARRANTY:

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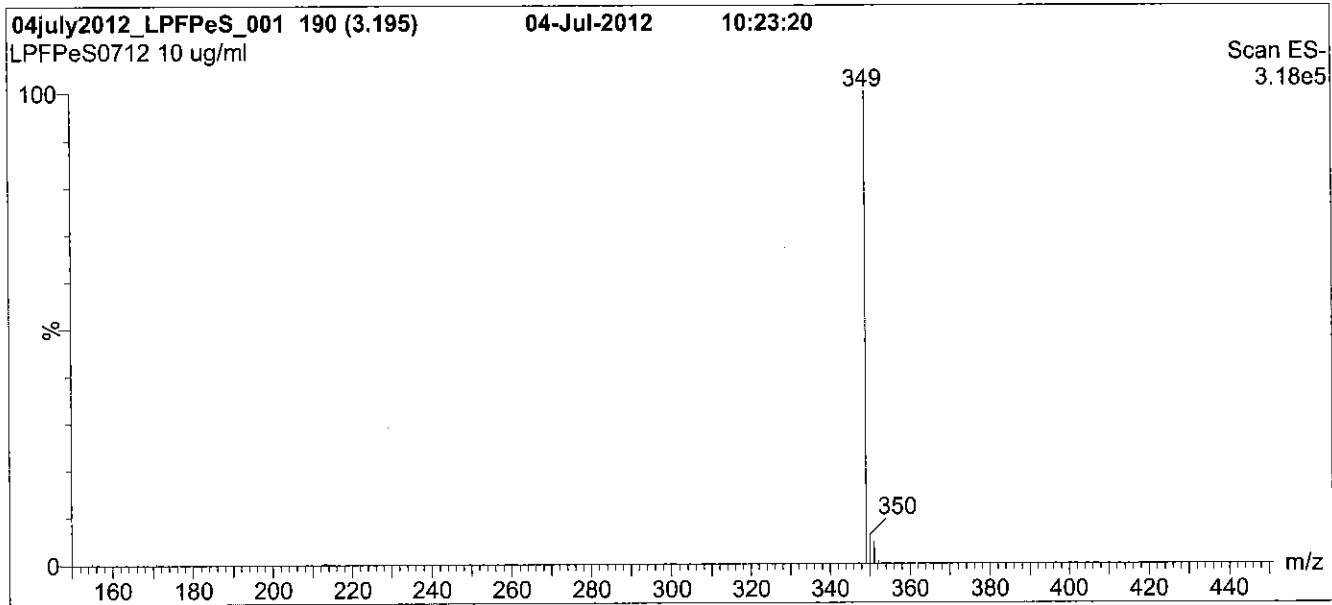
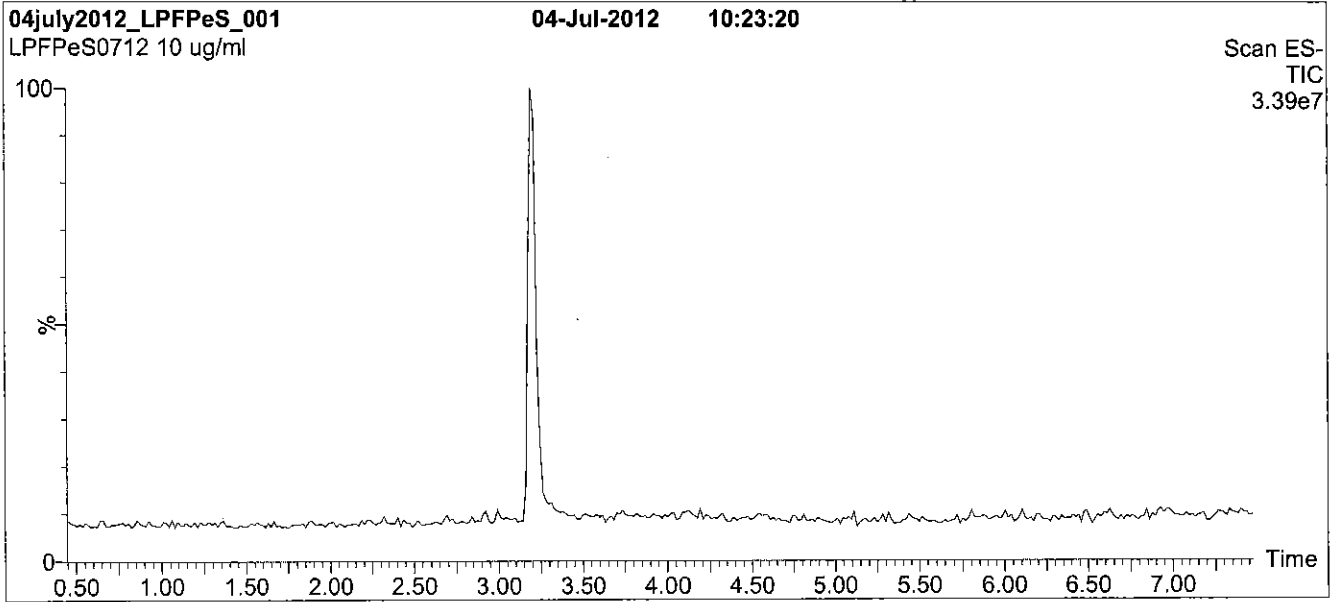
QUALITY MANAGEMENT:

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



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-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 RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc 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

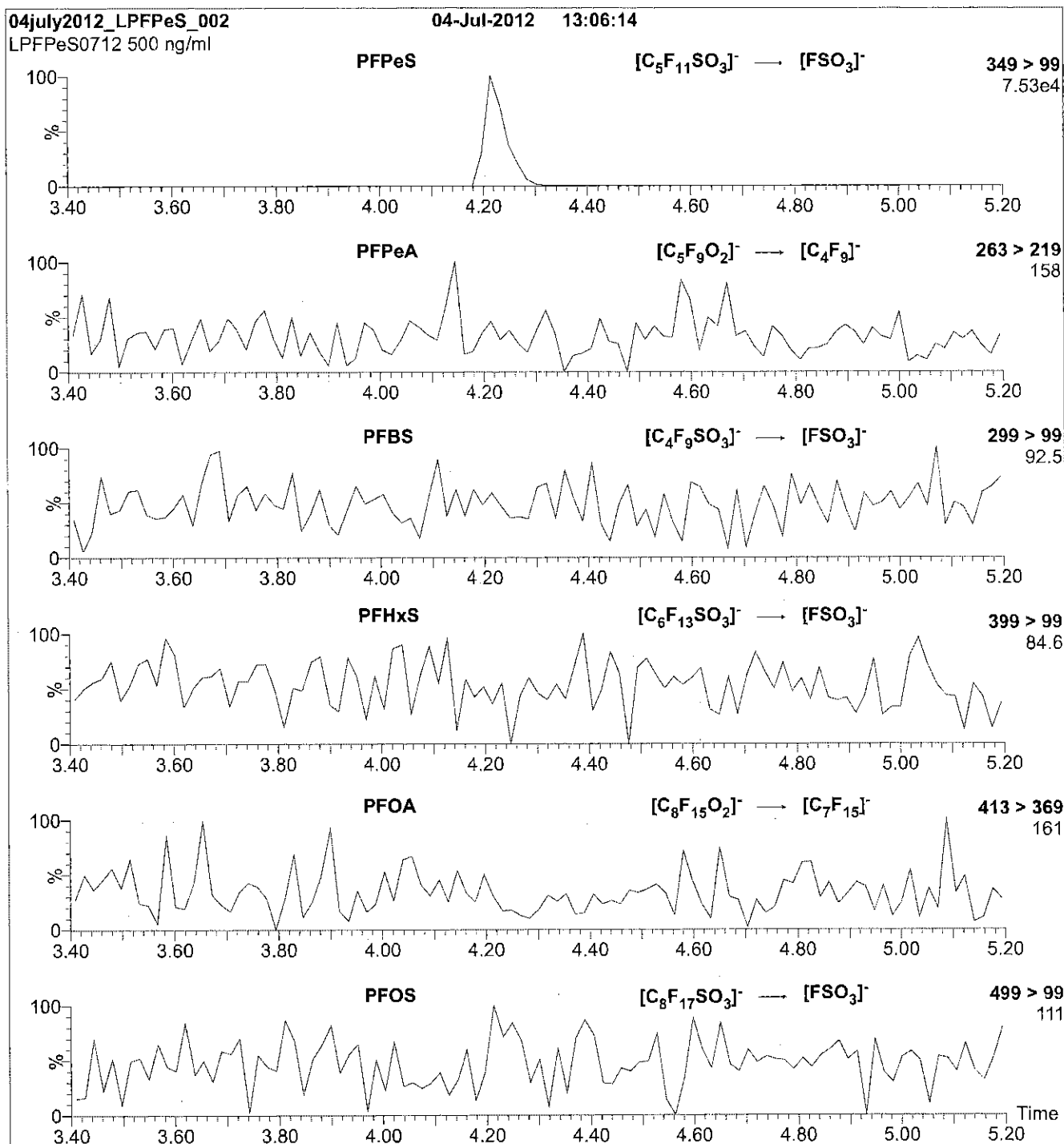
Flow: 300 μ l/min

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 μ l (500 ng/ml L-PFPeS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFTeDA_00004



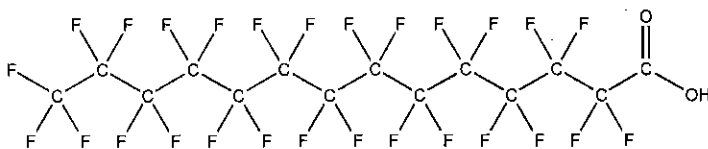
R: 4/7/16 CBW

609636

ID: LCPFTeDA_00004

Exp: 12/09/20 Pripd: CBW

PF-n-tetradecanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFTeDA **LOT NUMBER:** PFTeDA1215
COMPOUND: Perfluoro-n-tetradecanoic acid**STRUCTURE:** **CAS #:** 376-06-7

MOLECULAR FORMULA:	$C_{14}H_{27}O_2$	MOLECULAR WEIGHT:	714.11
CONCENTRATION:	$50 \pm 2.5 \mu\text{g/ml}$	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/09/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/09/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim
Date: 12/09/2015
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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LIMITED WARRANTY:

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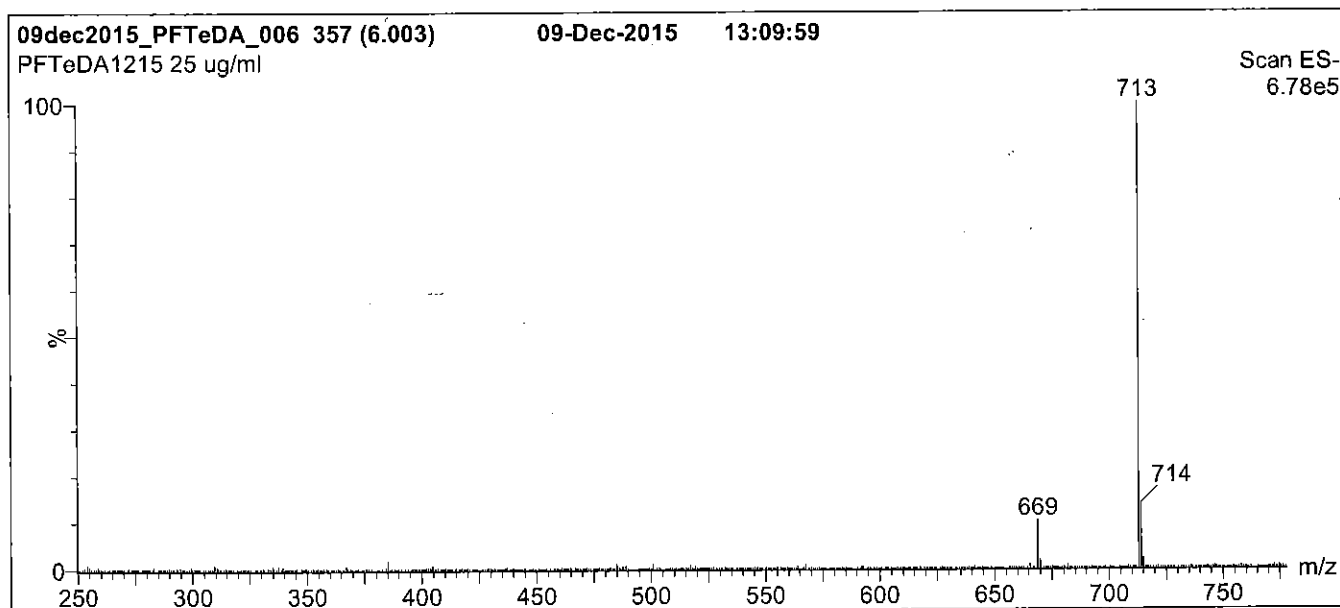
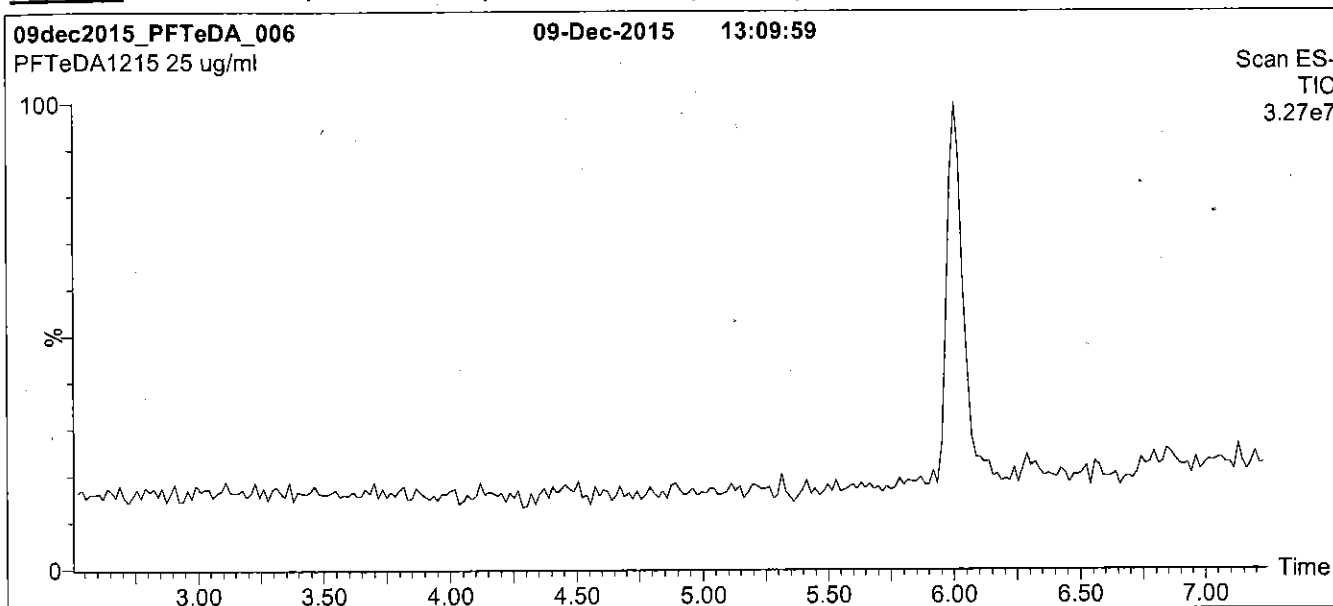
QUALITY MANAGEMENT:

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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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc 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

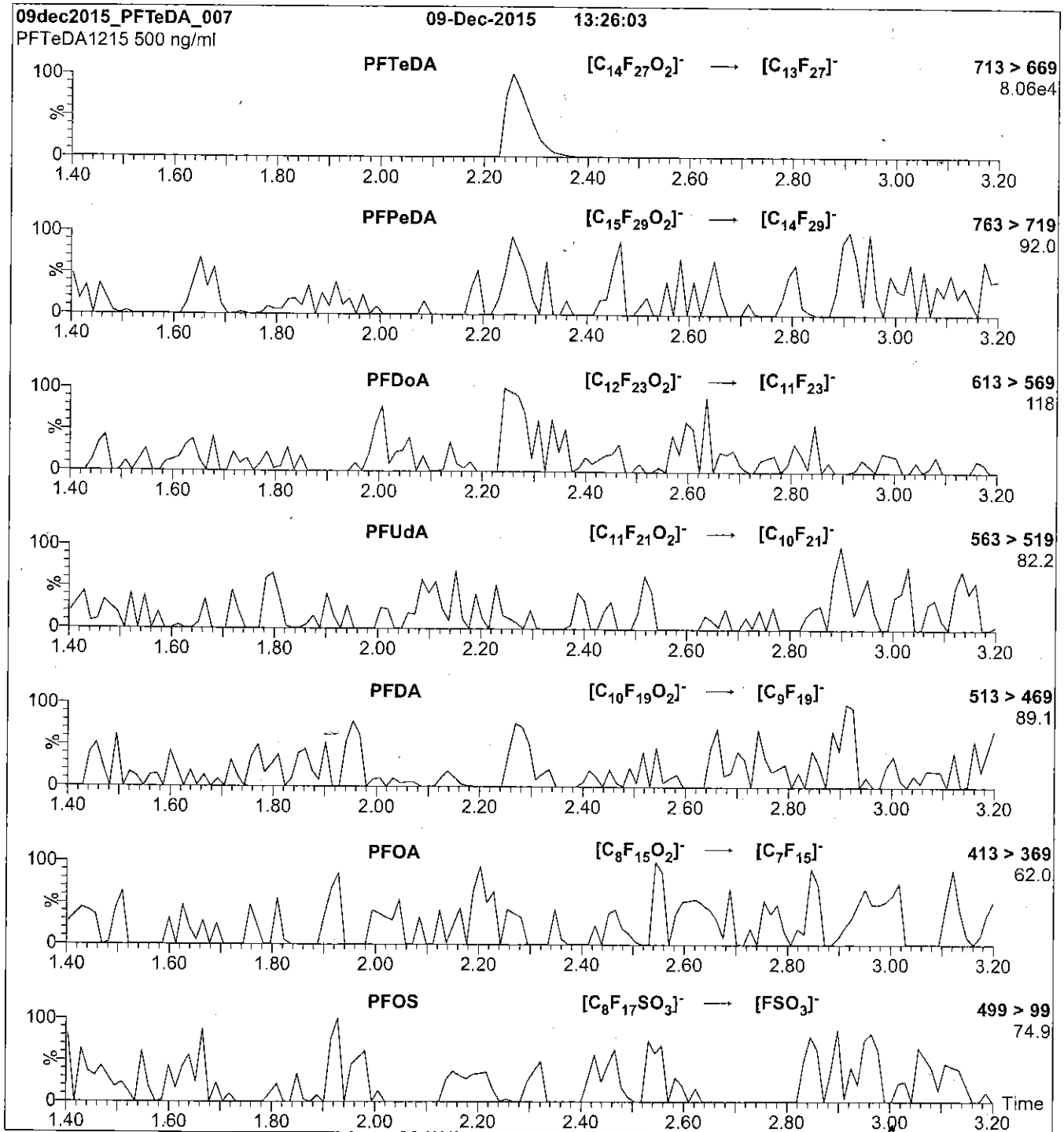
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFT_rDA_00004



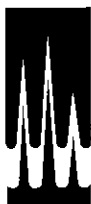
R: 4/7/16 CBW

609697

ID: LCPFTrDA_00004

Exp: 12/10/18 Ppdt: CBW

PF-n-tridecanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

PFTTrDA

LOT NUMBER:

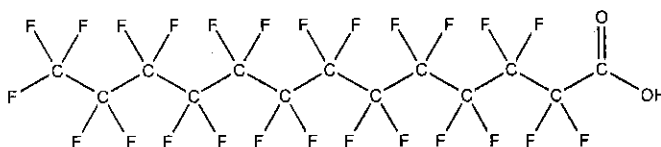
PFTTrDA1213

COMPOUND:

Perfluoro-n-tridecanoic acid

STRUCTURE:**CAS #:**

72629-94-8

**MOLECULAR FORMULA:** $C_{13}HF_{25}O_2$ **MOLECULAR WEIGHT:**

664.11

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**Methanol
Water (<1%)**CHEMICAL PURITY:**

>98%

LAST TESTED: (mm/dd/yyyy)

12/10/2013

EXPIRY DATE: (mm/dd/yyyy)

12/10/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$); ~ 0.4% of PFDaA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

03/25/2015
(mm/dd/yyyy)Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON 'N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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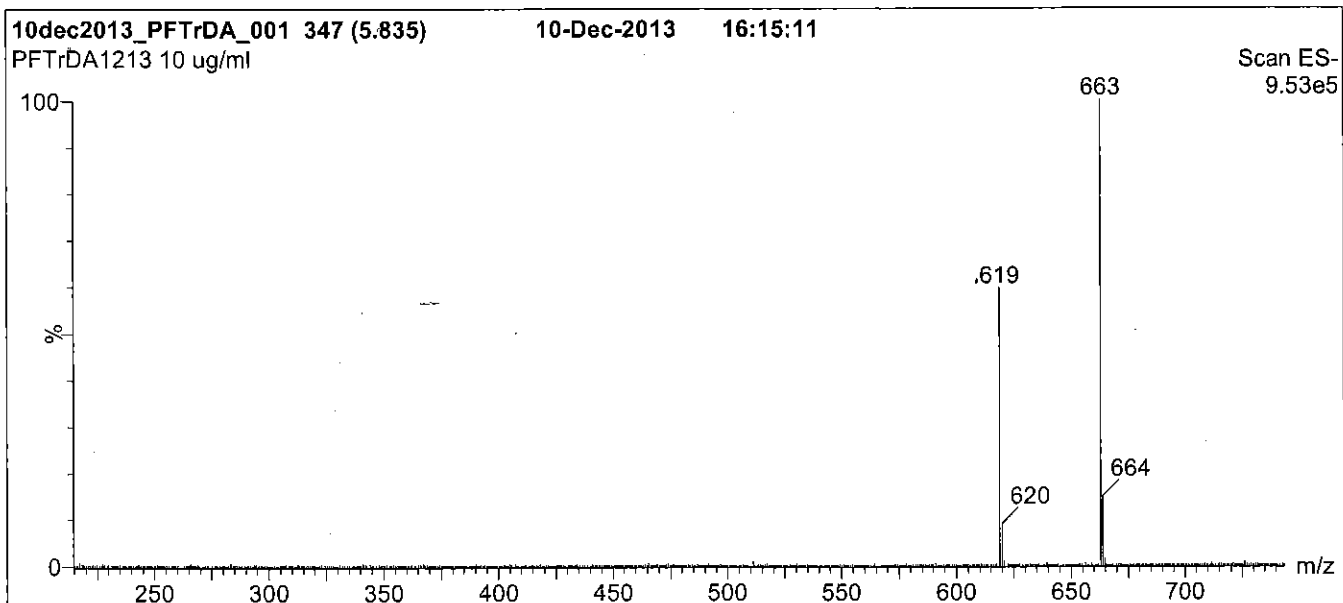
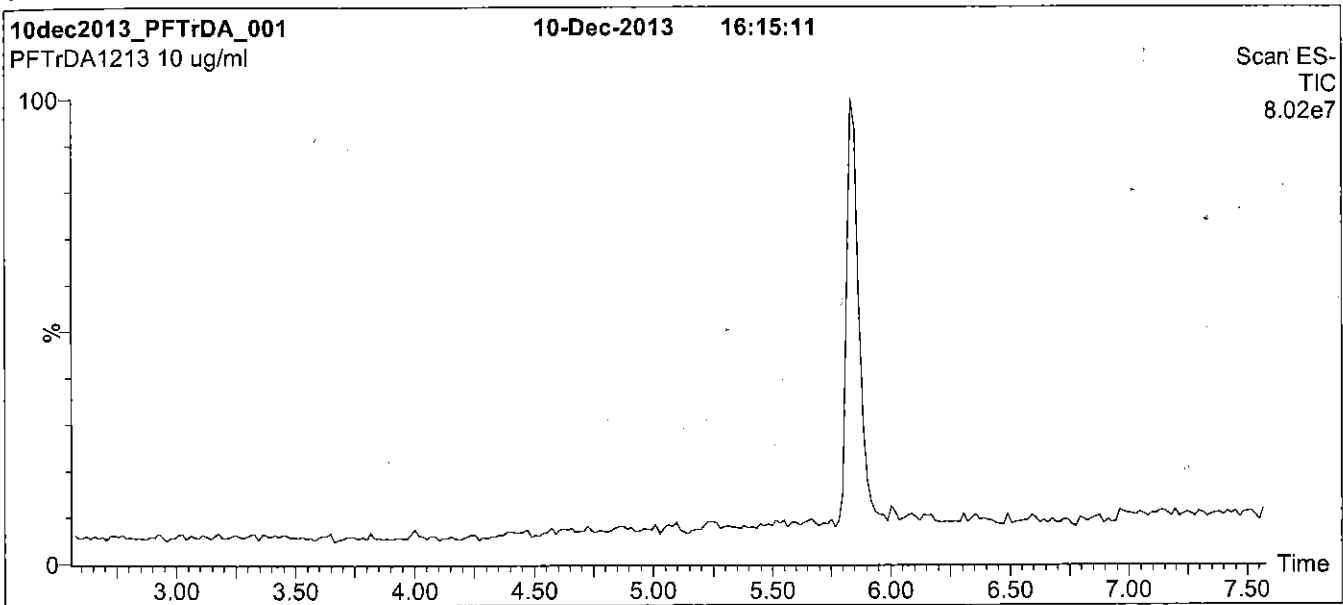
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Figure 1: PFTrDA; LC/MS Data (TIC and Mass Spectrum)



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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc 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

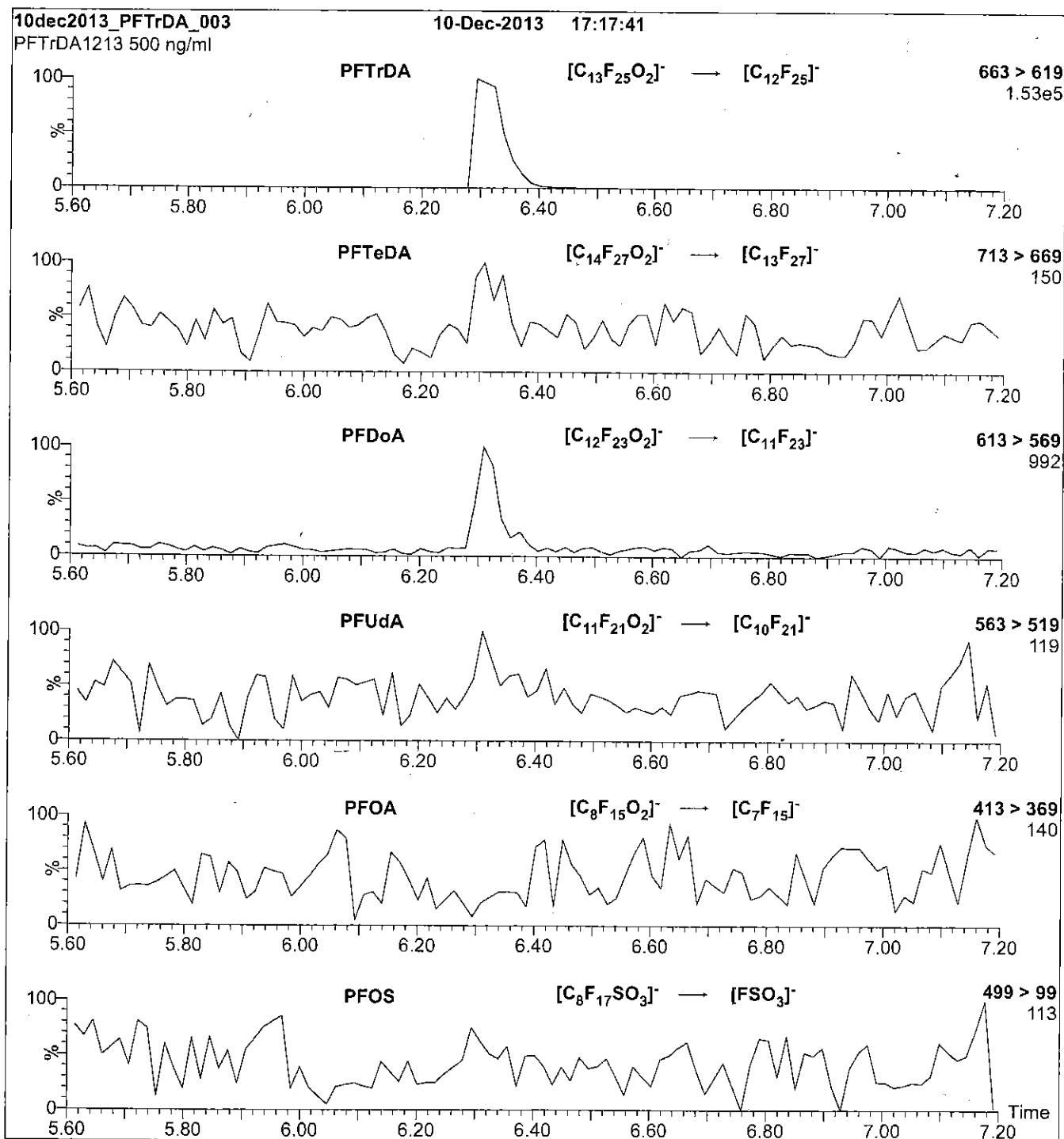
Flow: 300 μ l/min

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 μ l (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00004

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, \dots, x_n on which it depends is:

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

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 $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

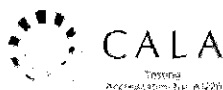
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

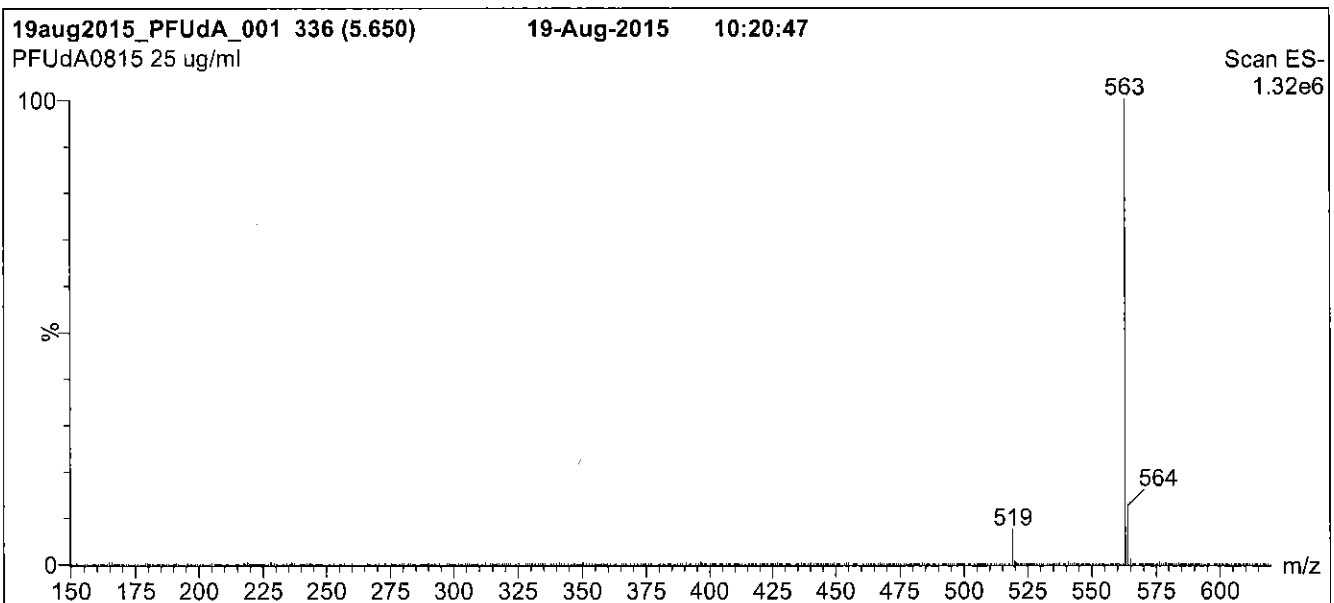
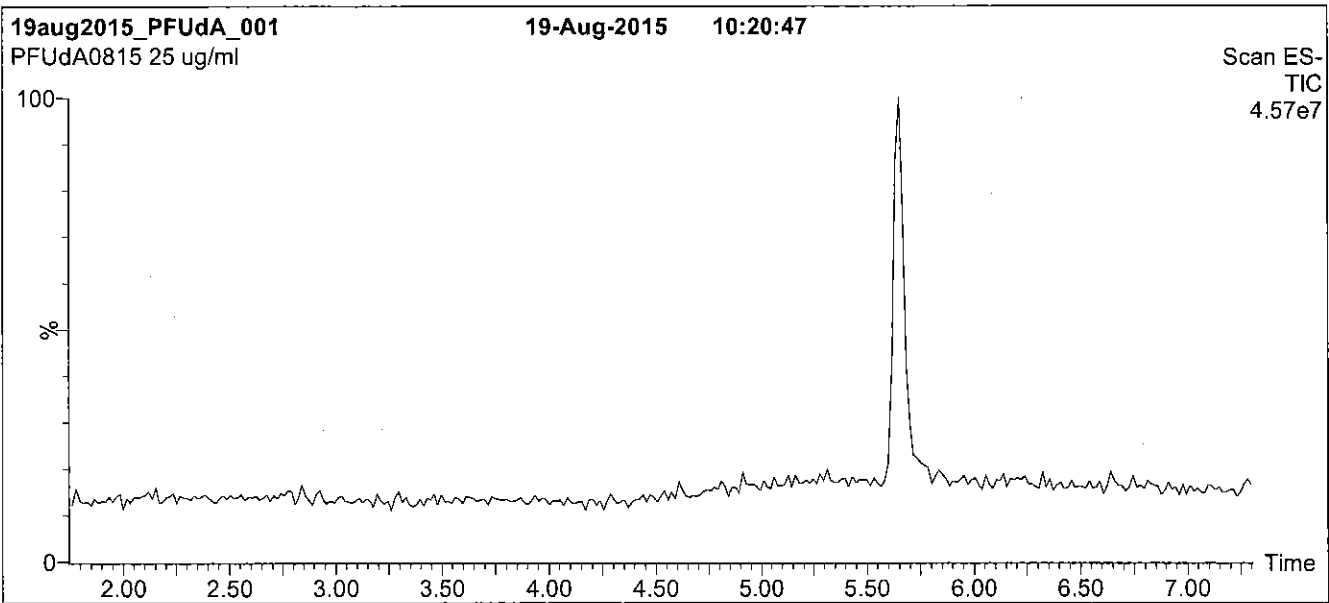
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc 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

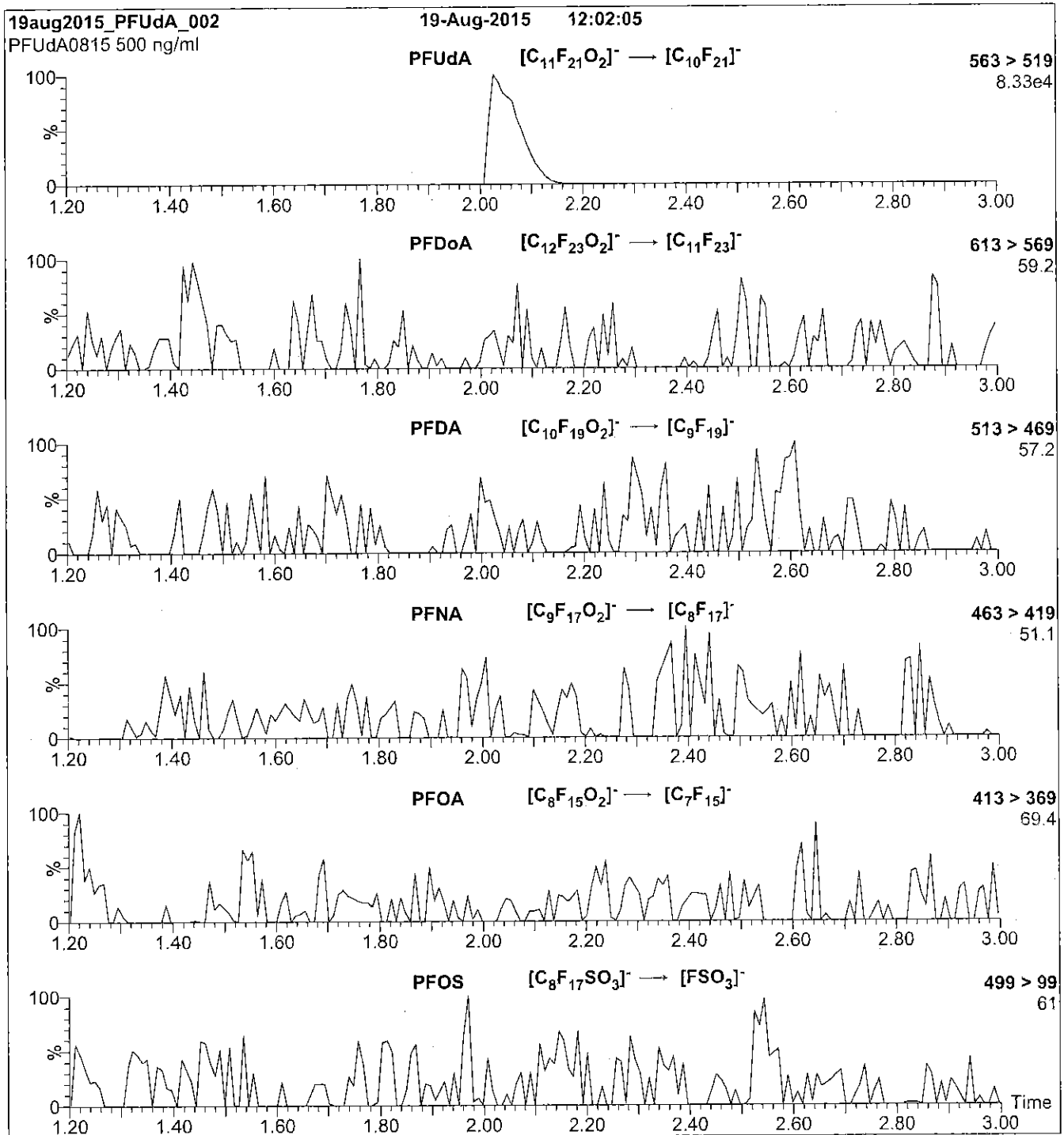
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
 Collision Energy (eV) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS)
by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-20928-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
GW20-05GW-0816	320-20928-1	79	120
GW20-21SGW-0816	320-20928-2	96	128
GW20-14GW-0816	320-20928-3	82	113
GW20-06GW-0816	320-20928-4	81	124
GW20-21DGW-0816	320-20928-5	85	114
GW20-10GW-0816	320-20928-6	80	116
GW20-10GWP-0816	320-20928-7	93	121
GW20-08GW-0816	320-20928-8	85	127
GW20-07GW-0816	320-20928-9	88	115
GW20-EB01-081216-G W	320-20928-10	135	125
GW20-FB01-081216	320-20928-11	133	119
GW20-17DGW-0816	320-20928-12	79	119
GW20-13GW-0816	320-20928-13	62	132
GW20-22GW-0816	320-20928-14	83	126
GW20-17SGW-0816	320-20928-15	41	122
GW20-13DGW-0816	320-20928-16	82	126
GW20-13DGWP-0816	320-20928-17	88	129
GW20-20GW-0816	320-20928-18	63	129
	MB 320-122573/1-A	141	129
	LCS 320-122573/2-A	135	126
GW20-14GW-0816 MS	320-20928-3 MS	69	114
GW20-14GW-0816 MSD	320-20928-3 MSD	65	111

PFOA = 13C4 PFOA
PFOS = 13C4 PFOS

QC LIMITS
25-150
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 22AUG2016D_044_p1_e1.d
 Lab ID: LCS 320-122573/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	40.0	38.9	97	60-140	
Perfluorooctanesulfonic acid (PFOS)	37.1	32.2	87	60-140	M
13C4 PFOA	100	135	135	25-150	
13C4 PFOS	95.6	121	126	25-150	

Column to be used to flag recovery and RPD values
 FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 22AUG2016D_048_p1_e1.d
 Lab ID: 320-20928-3 MS Client ID: GW20-14GW-0816 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	38.0	18	47.3	78	60-140	M
Perfluorooctanesulfonic acid (PFOS)	35.2	16	39.2	65	60-140	M
13C4 PFOA	94.9	77	65.1	69	25-150	
13C4 PFOS	90.7	100	104	114	25-150	

Column to be used to flag recovery and RPD values
 FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 22AUG2016D_049_p1_e1.d
 Lab ID: 320-20928-3 MSD Client ID: GW20-14GW-0816 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanoic acid (PFOA)	37.4	51.6	91	9	30	60-140	M
Perfluorooctanesulfonic acid (PFOS)	34.7	42.0	75	7	30	60-140	M
13C4 PFOA	93.6	60.6	65			25-150	
13C4 PFOS	89.4	98.9	111			25-150	

Column to be used to flag recovery and RPD values
 FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Lab File ID: 22AUG2016D_043_p1_e1.d Lab Sample ID: MB 320-122573/1-A
 Matrix: Water Date Extracted: 08/17/2016 08:42
 Instrument ID: A8 Date Analyzed: 08/23/2016 12:01
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-122573/2-A	22AUG2016D_044_p1_e1.d	08/23/2016 12:09
GW20-05GW-0816	320-20928-1	22AUG2016D_045_p1_e1.d	08/23/2016 12:16
GW20-21SGW-0816	320-20928-2	22AUG2016D_046_p1_e1.d	08/23/2016 12:24
GW20-14GW-0816	320-20928-3	22AUG2016D_047_p1_e1.d	08/23/2016 12:31
GW20-14GW-0816 MS	320-20928-3 MS	22AUG2016D_048_p1_e1.d	08/23/2016 12:39
GW20-14GW-0816 MSD	320-20928-3 MSD	22AUG2016D_049_p1_e1.d	08/23/2016 12:46
GW20-06GW-0816	320-20928-4	22AUG2016D_050_p1_e1.d	08/23/2016 12:54
GW20-21DGW-0816	320-20928-5	22AUG2016D_055_p1_e1.d	08/23/2016 13:31
GW20-10GW-0816	320-20928-6	22AUG2016D_056_p1_e1.d	08/23/2016 13:39
GW20-10GWP-0816	320-20928-7	22AUG2016D_057_p1_e1.d	08/23/2016 13:46
GW20-08GW-0816	320-20928-8	22AUG2016D_058_p1_e1.d	08/23/2016 13:54
GW20-07GW-0816	320-20928-9	22AUG2016D_059_p1_e1.d	08/23/2016 14:01
GW20-EB01-081216-GW	320-20928-10	22AUG2016D_060_p1_e1.d	08/23/2016 14:09
GW20-FB01-081216	320-20928-11	22AUG2016D_061_p1_e1.d	08/23/2016 14:16
GW20-17DGW-0816	320-20928-12	22AUG2016D_062_p1_e1.d	08/23/2016 14:24
GW20-13GW-0816	320-20928-13	22AUG2016D_063_p1_e1.d	08/23/2016 14:31
GW20-22GW-0816	320-20928-14	22AUG2016D_064_p1_e1.d	08/23/2016 14:39
GW20-17SGW-0816	320-20928-15	22AUG2016D_069_p1_e1.d	08/23/2016 15:16
GW20-13DGW-0816	320-20928-16	22AUG2016D_070_p1_e1.d	08/23/2016 15:24
GW20-13DGWP-0816	320-20928-17	22AUG2016D_071_p1_e1.d	08/23/2016 15:31
GW20-20GW-0816	320-20928-18	22AUG2016D_072_p1_e1.d	08/23/2016 15:39

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-05GW-0816 Lab Sample ID: 320-20928-1
 Matrix: Water Lab File ID: 22AUG2016D_045_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 09:55
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 279.7(mL) Date Analyzed: 08/23/2016 12:16
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	M	2.2	1.8	0.67
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.7		3.6	2.7	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	79		25-150
STL00991	13C4 PFOS	120		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_045_p1_e1.d
 Lims ID: 320-20928-A-1-A
 Client ID: GW20-05GW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 12:16:00 ALS Bottle#: 0 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:57:12 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:36:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.749	2.798	-0.049	1.000	333329	4.09			1693	M
413 > 169.0	2.749	2.798	-0.049	1.000	225633		1.48(0.90-1.10)		19645	M
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		3821780	39.7		79.4	256096	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.000	3.110	-0.109	1.000	469003	4.29			70336	
499 > 99.0	3.008	3.110	-0.101	1.003	81945		5.72(0.90-1.10)		3524	
D 17 13C4 PFOS										
503 > 80.0	3.121	3.177	-0.056		4706951	57.4			120	133800

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_045_p1_e1.d

Injection Date: 23-Aug-2016 12:16:00

Instrument ID: A8

Lims ID: 320-20928-A-1-A

Lab Sample ID: 320-20928-1

Client ID: GW20-05GW-0816

Operator ID: A8

ALS Bottle#: 0

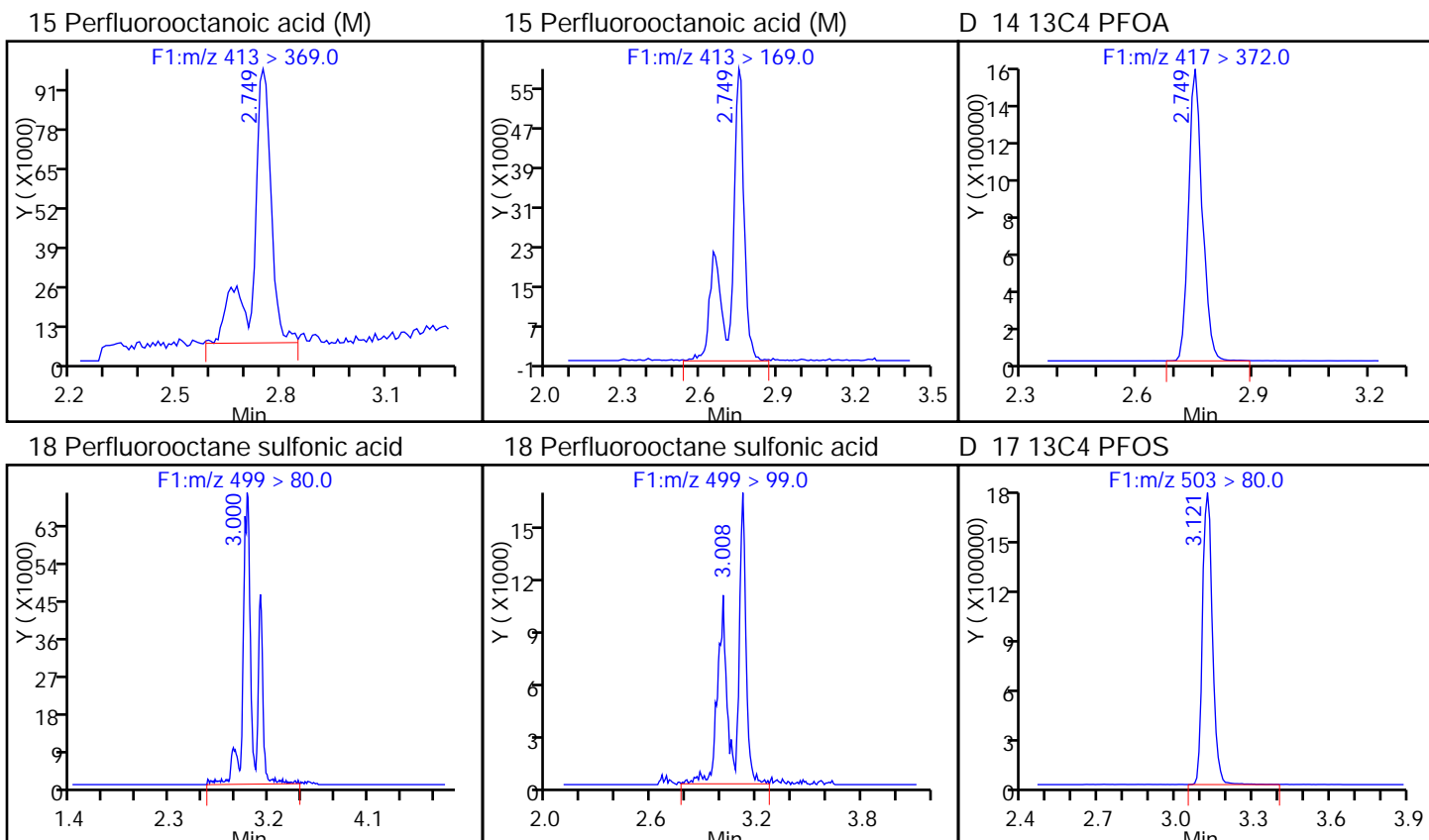
Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

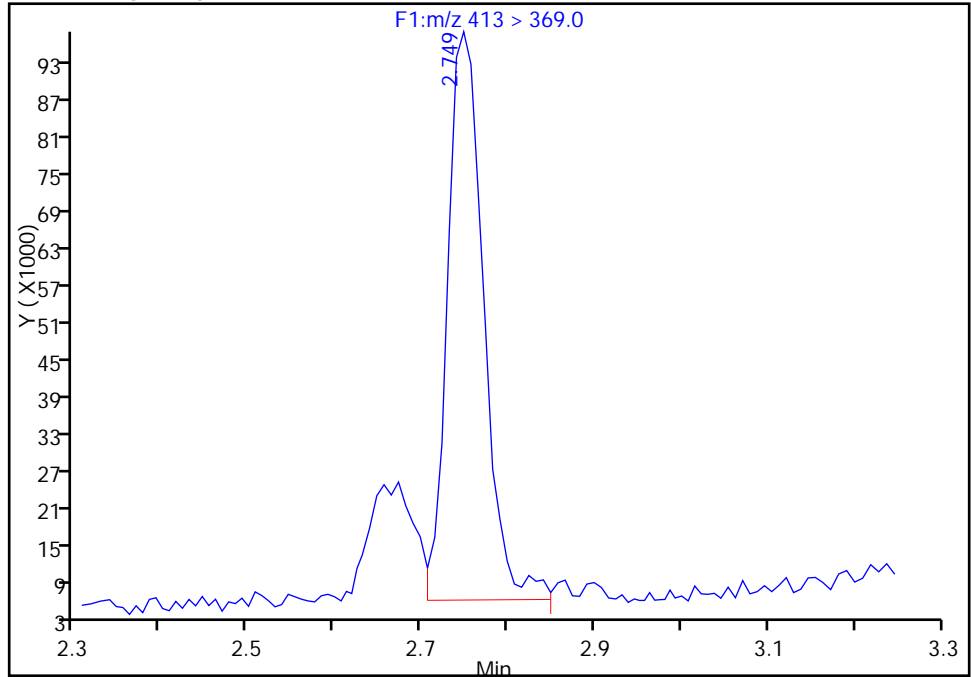
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_045_p1_e1.d
Injection Date: 23-Aug-2016 12:16:00 Instrument ID: A8
Lims ID: 320-20928-A-1-A Lab Sample ID: 320-20928-1
Client ID: GW20-05GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

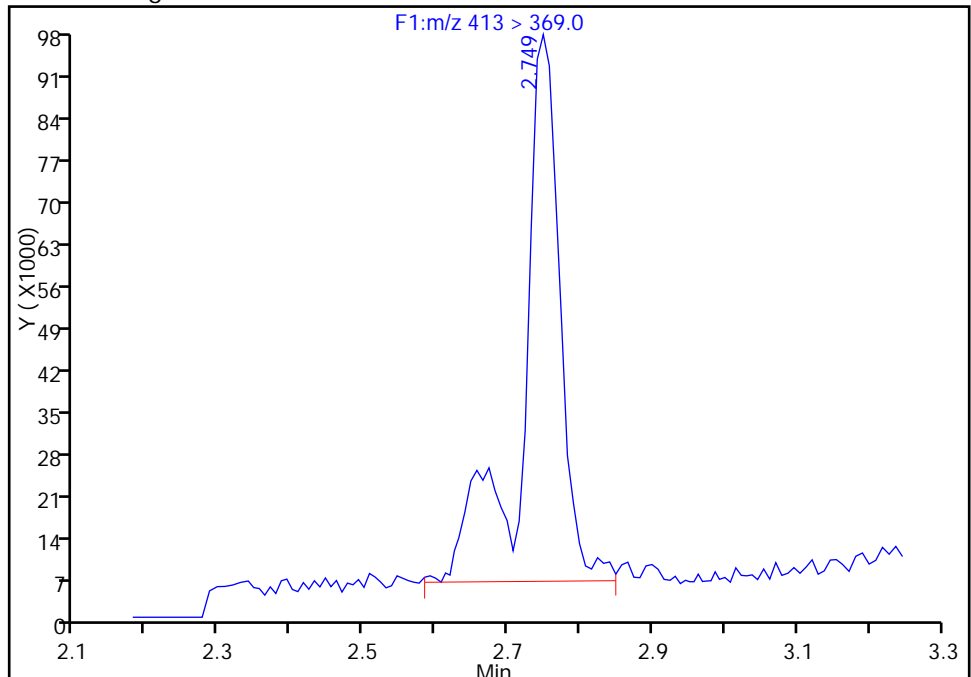
RT: 2.75
Area: 264288
Amount: 3.186079
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 333329
Amount: 4.093527
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:36:17
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

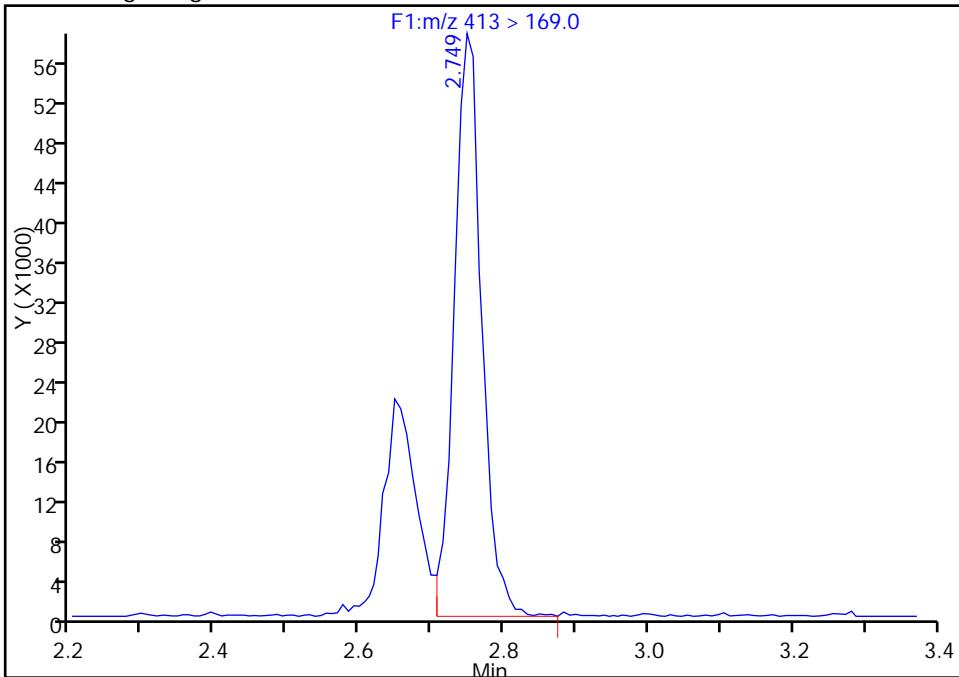
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_045_p1_e1.d
Injection Date: 23-Aug-2016 12:16:00 Instrument ID: A8
Lims ID: 320-20928-A-1-A Lab Sample ID: 320-20928-1
Client ID: GW20-05GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

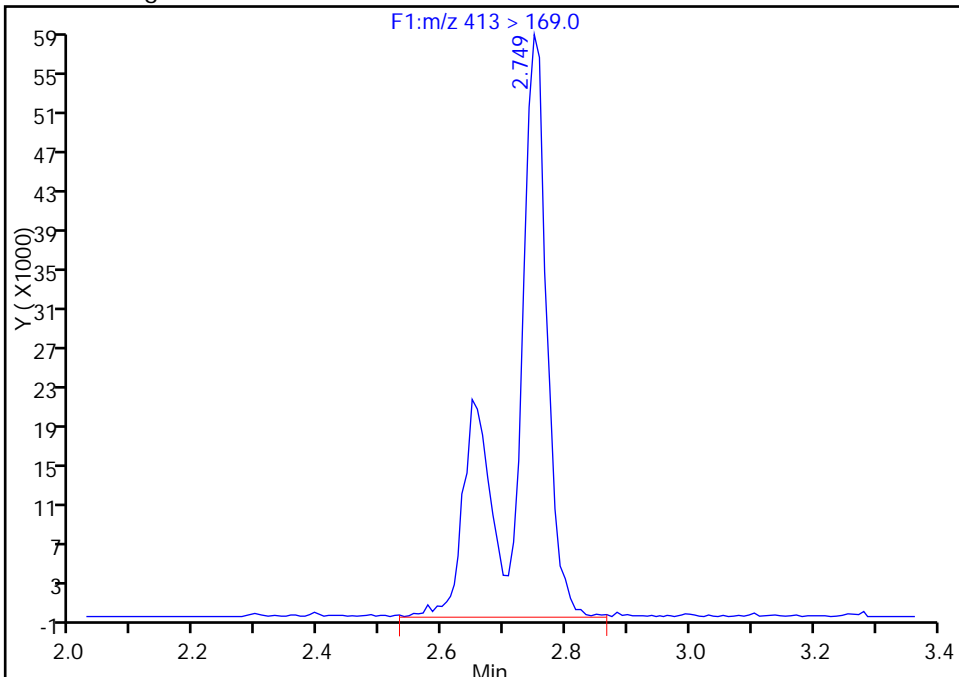
RT: 2.75
Area: 154908
Amount: 3.186079
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 225633
Amount: 4.093527
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-21SGW-0816 Lab Sample ID: 320-20928-2
 Matrix: Water Lab File ID: 22AUG2016D_046_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 10:45
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 246.3 (mL) Date Analyzed: 08/23/2016 12:24
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.0	J M	2.5	2.0	0.76
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.4	J	4.1	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	96		25-150
STL00991	13C4 PFOS	128		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_046_p1_e1.d
 Lims ID: 320-20928-A-2-A
 Client ID: GW20-21SGW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 12:24:00 ALS Bottle#: 0 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:57:12 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:37:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.740	2.798	-0.058	1.000	73946	0.5132			283	M
413 > 169.0	2.740	2.798	-0.058	1.000	41223		1.79(0.90-1.10)		2320	M
D 14 13C4 PFOA										
417 > 372.0	2.740	2.798	-0.058		4638585	48.2		96.3	303957	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.000	3.110	-0.109	1.000	82420	0.7099			4404	
499 > 99.0	3.000	3.110	-0.109	1.000	10367		7.95(0.90-1.10)		482	
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		5003998	61.0			128	273386

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_046_p1_e1.d

Injection Date: 23-Aug-2016 12:24:00

Instrument ID: A8

Lims ID: 320-20928-A-2-A

Lab Sample ID: 320-20928-2

Client ID: GW20-21SGW-0816

Operator ID: A8

ALS Bottle#: 0

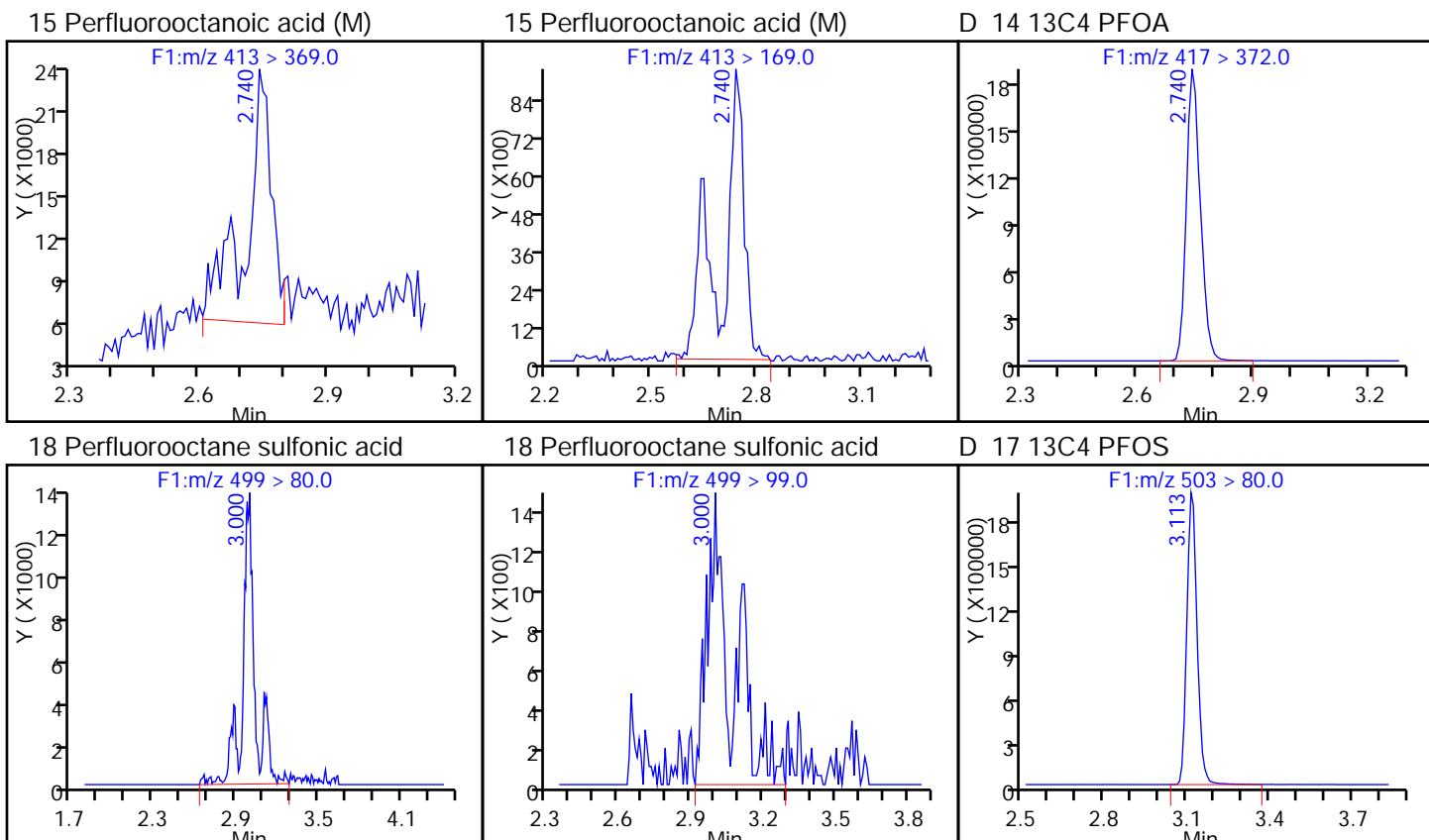
Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

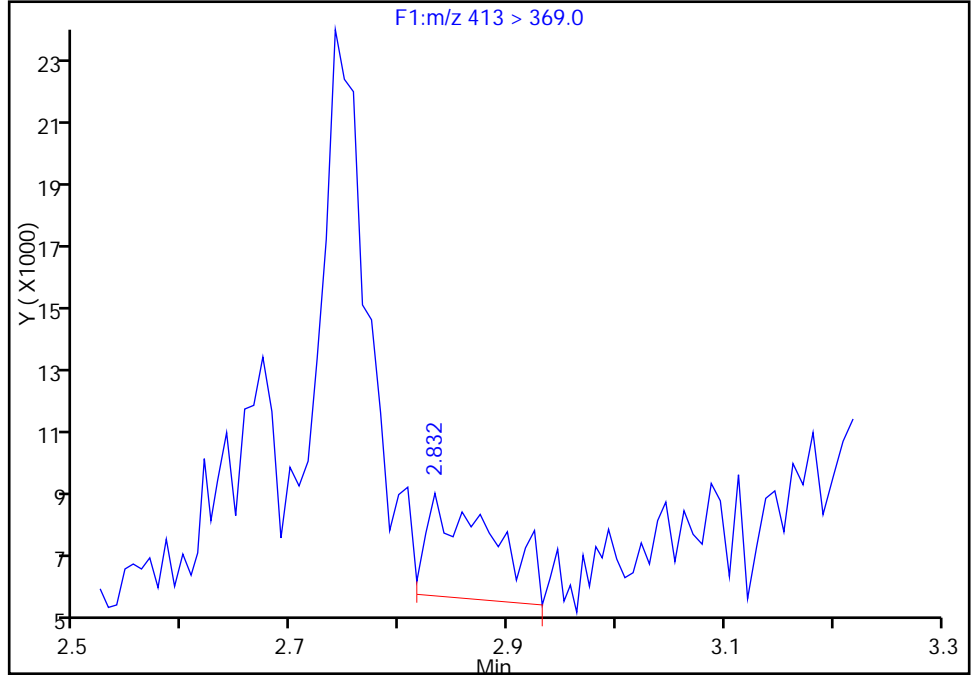
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_046_p1_e1.d
Injection Date: 23-Aug-2016 12:24:00 Instrument ID: A8
Lims ID: 320-20928-A-2-A Lab Sample ID: 320-20928-2
Client ID: GW20-21SGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

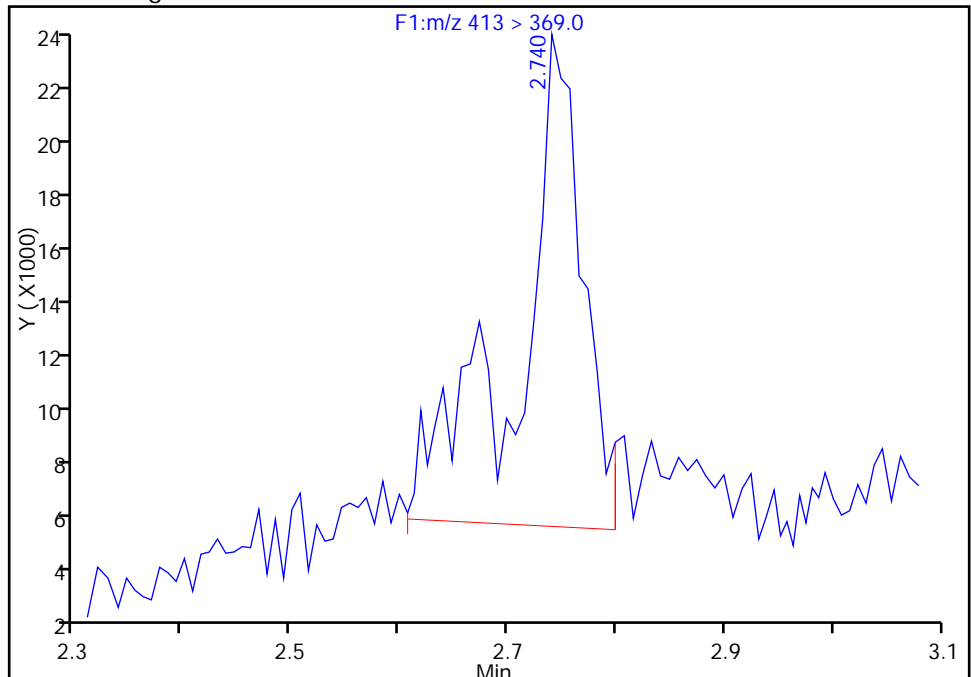
RT: 2.83
Area: 13974
Amount: -0.136290
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 73946
Amount: 0.513156
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:37:45
Audit Action: Assigned Compound ID

Audit Reason: Wrong peak

TestAmerica Sacramento

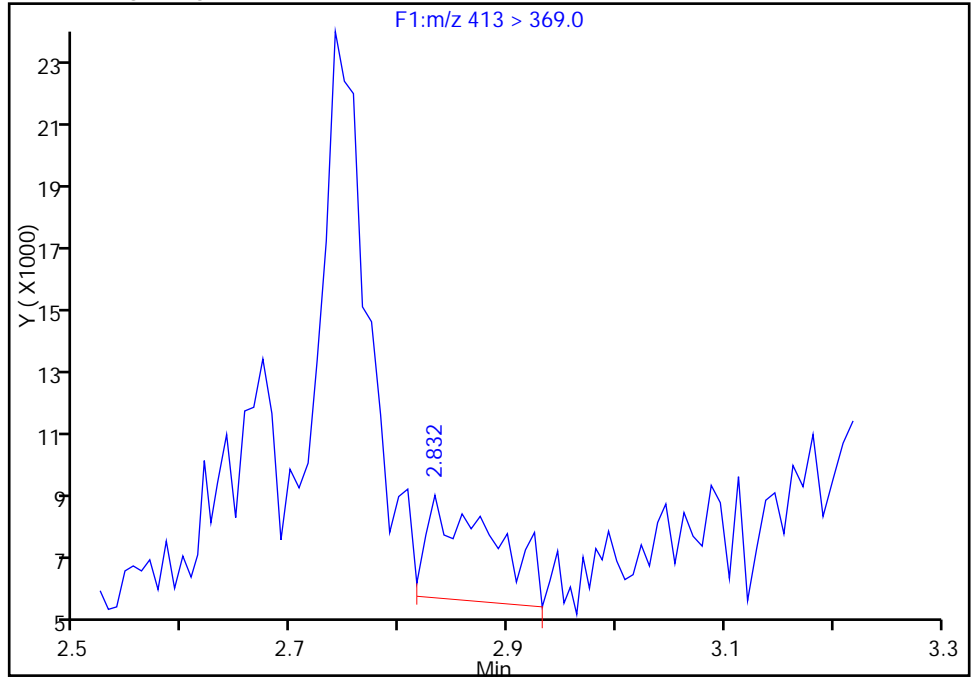
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_046_p1_e1.d
Injection Date: 23-Aug-2016 12:24:00 Instrument ID: A8
Lims ID: 320-20928-A-2-A Lab Sample ID: 320-20928-2
Client ID: GW20-21SGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

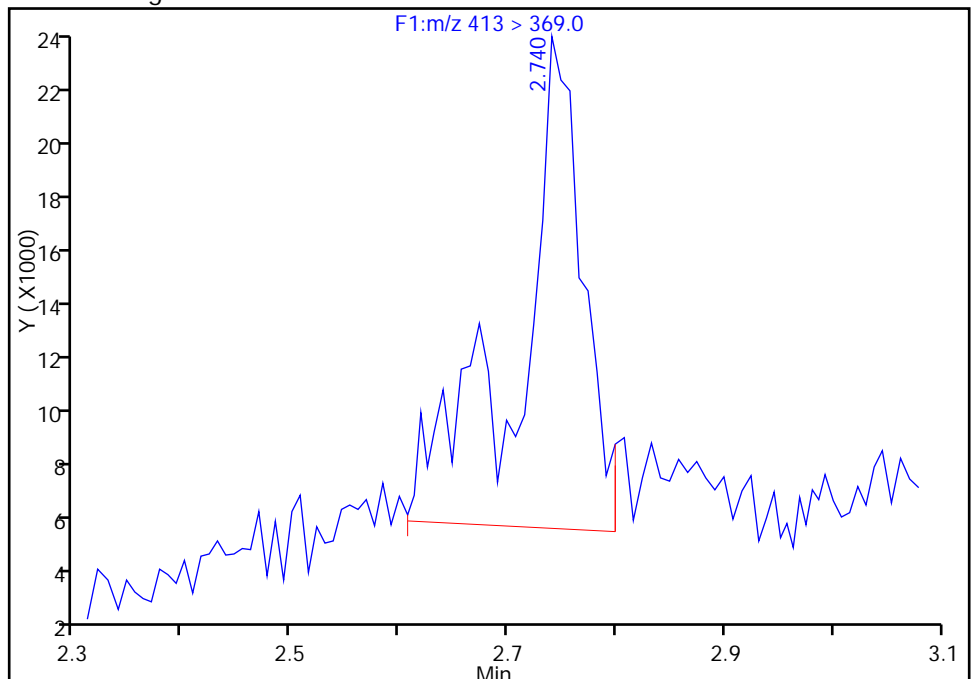
RT: 2.83
Area: 13974
Amount: -0.136290
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 73946
Amount: 0.513156
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:37:45

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

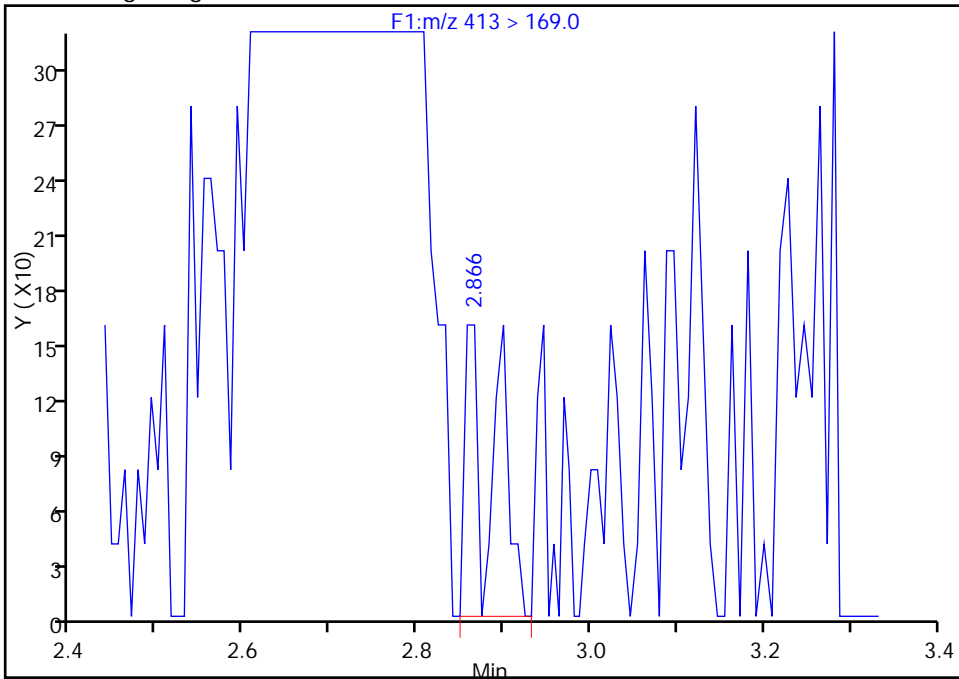
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_046_p1_e1.d
Injection Date: 23-Aug-2016 12:24:00 Instrument ID: A8
Lims ID: 320-20928-A-2-A Lab Sample ID: 320-20928-2
Client ID: GW20-21SGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

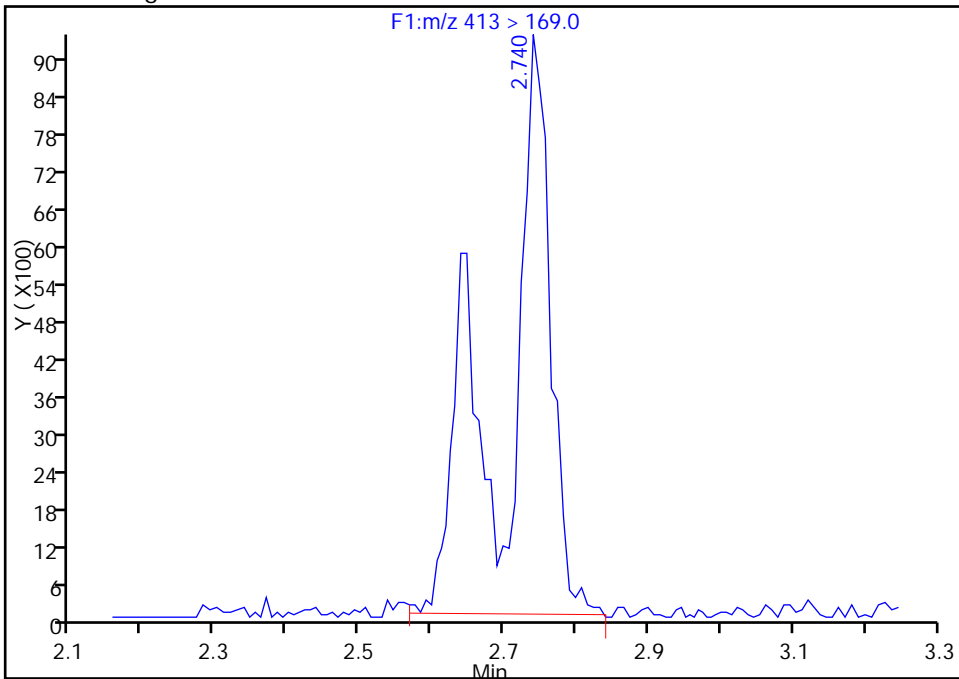
RT: 2.87
Area: 354
Amount: -0.136290
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 41223
Amount: 0.513156
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-14GW-0816 Lab Sample ID: 320-20928-3
 Matrix: Water Lab File ID: 22AUG2016D_047_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 10:55
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 264.7(mL) Date Analyzed: 08/23/2016 12:31
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	18	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16		3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	82		25-150
STL00991	13C4 PFOS	113		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_047_p1_e1.d

Lims ID: 320-20928-A-3-A

Client ID: GW20-14GW-0816

Sample Type: Client

Inject. Date: 23-Aug-2016 12:31:00

ALS Bottle#: 0

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Sample Info:

Operator ID: A8

Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m

Limit Group: LC PFC_DOD ICAL

Last Update: 30-Aug-2016 17:57:12

Calib Date: 22-Aug-2016 18:23:00

Integrator: Picker

Quant Method: Isotopic Dilution

Quant By: Initial Calibration

Last ICAL File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d

Column 1 :

Det: F1(0.00 :6.60)

Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 30-Aug-2016 17:38:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
--------	----	--------	--------	--------	----------	--------------	---------------	------	-----	-------

D 2 13C4 PFBA

217 > 172.0 1.508 1.522 -0.014 4233648 31.2 62.4 305095

1 Perfluorobutyric acid

212.9 > 169.0 1.508 1.524 -0.016 1.000 167629 2.29 1118

D 4 13C5-PFPeA

267.9 > 223.0 1.768 1.797 -0.029 5302636 49.2 98.4 414055

3 Perfluoropentanoic acid

262.9 > 219.0 1.777 1.797 -0.020 1.000 332968 3.07 1910

5 Perfluorobutanesulfonic acid

298.9 > 80.0 1.735 1.837 -0.102 1.000 545500 2.53

298.9 > 99.0 1.802 1.837 -0.035 1.039 195948 2.78(0.00-0.00)

D 6 13C2 PFHxA

315 > 270.0 2.052 2.089 -0.037 4107272 42.3 84.7 343505

7 Perfluorohexanoic acid

313 > 269.0 2.052 2.090 -0.038 1.000 350433 4.41 2352

12 Perfluoroheptanoic acid

363 > 319.0 2.380 2.427 -0.047 1.000 231173 2.62 1900

D 11 13C4-PFHpA

367 > 322.0 2.380 2.430 -0.050 4219277 43.7 87.5 344857

9 Perfluorohexanesulfonic acid

399 > 80.0 2.395 2.446 -0.051 1.000 2243209 14.5

D 10 18O2 PFHxS

403 > 84.0 2.395 2.446 -0.051 6576673 58.5 124 339467

15 Perfluorooctanoic acid

413 > 369.0 2.740 2.798 -0.058 1.000 748303 9.28 4440 M

413 > 169.0 2.740 2.798 -0.058 1.000 496496 1.51(0.90-1.10) 43716 M

D 14 13C4 PFOA

417 > 372.0 2.740 2.798 -0.058 3930199 40.8 81.6 219606

13 Perfluoroheptanesulfonic Acid

449 > 80.0 2.857 2.807 0.050 1.000 6623 of 526 0.006117

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.993	3.110	-0.116	1.000	881552	8.55			34676	
499 > 99.0	3.000	3.110	-0.109	1.003	125361		7.03(0.90-1.10)		4247	
D 19 13C5 PFNA										
468 > 423.0	3.113	3.177	-0.064		2780093	35.0		69.9	172271	
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		4443168	54.1		113	138196	
D 21 13C8 FOSA										
506 > 78.0	3.451	3.474	-0.023		416729	2.78		5.6	53618	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.443	3.475	-0.032	1.000	2853	0.3719			304	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.451	3.504	-0.053	1.000	376	NR				
D 23 13C2 PFDA										
515 > 470.0	3.474	3.546	-0.072		2153361	29.6		59.2	397289	
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.607	3.675	-0.068	1.000	1438	NR				
D 46 d5-NEtFOSAA										
589 > 419.0	3.791	3.843	-0.052		2398	0.0828		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.791	3.844	-0.053	1.000	4014	NR				
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.746	3.863	-0.117	1.000	931	0.0163				
D 27 13C2 PFUnA										
565 > 520.0	3.800	3.880	-0.080		1578744	28.4		56.7	190902	
D 51 d-N-EtFOSA-M										
531 > 169.0	4.154	4.147	0.007		287	0.007740		0.0		
D 30 13C2 PFDaA										
615 > 570.0	4.097	4.183	-0.086		1522902	28.6		57.3	142246	
29 Perfluorododecanoic acid										
613 > 569.0	4.154	4.185	-0.031	1.000	668	0.0221			36.2	
D 32 13C2-PFTeDA										
715 > 670.0	4.596	4.697	-0.101		1485825	31.5		63.0	288195	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.634	4.701	-0.067	1.000	153167	5.99			5968	
713 > 169.0	4.605	4.701	-0.096	0.994	1795		85.33(0.00-0.00)		783	
D 34 13C2-PFHxDA										
815 > 770.0	5.009	5.125	-0.116		1370960	20.8		41.6	281350	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.020	5.127	-0.107	1.000	15387	0.4073			228	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.363	5.509	-0.146	1.000	1401	0.4168			27.2	

[QC Flag Legend](#)

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_047_p1_e1.d

Injection Date: 23-Aug-2016 12:31:00

Instrument ID: A8

Lims ID: 320-20928-A-3-A

Lab Sample ID: 320-20928-3

Client ID: GW20-14GW-0816

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

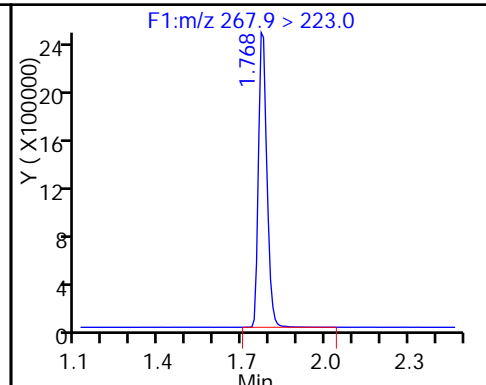
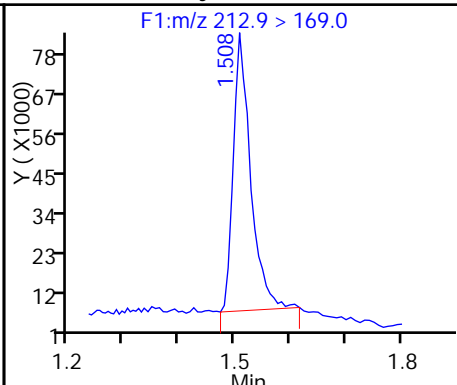
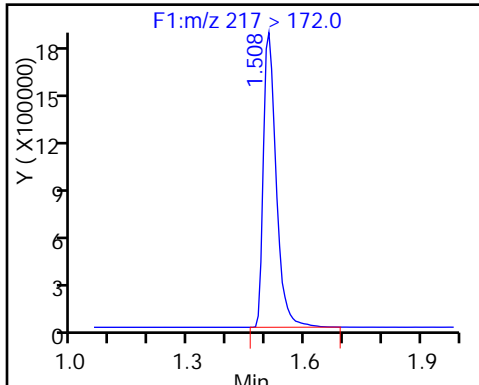
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

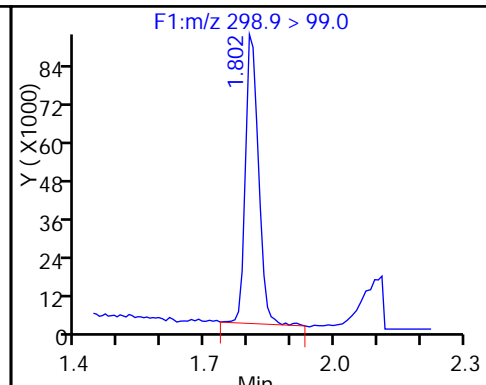
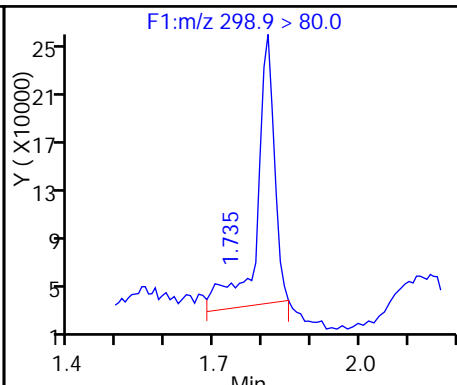
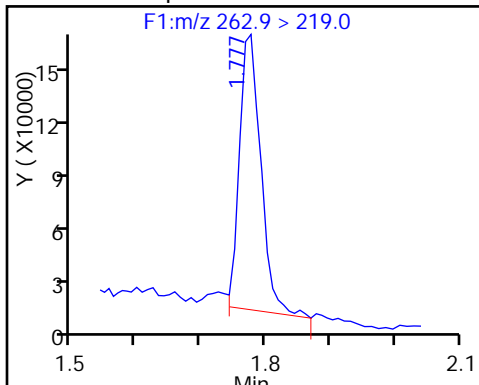
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

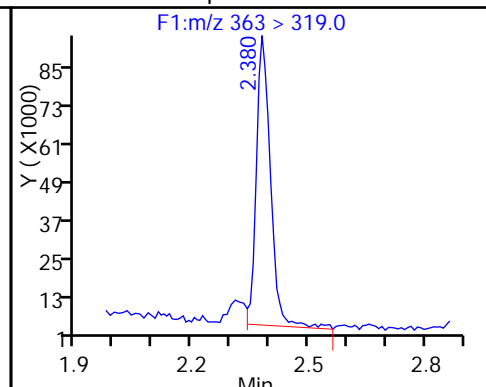
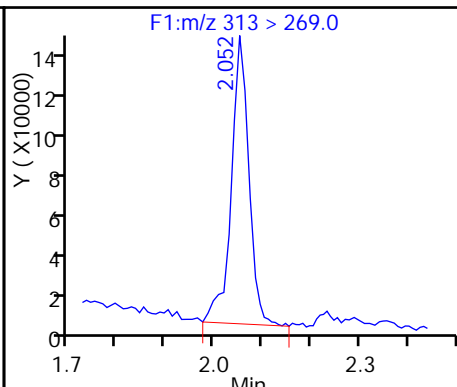
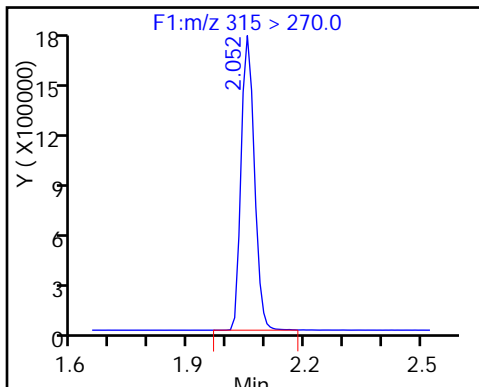
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

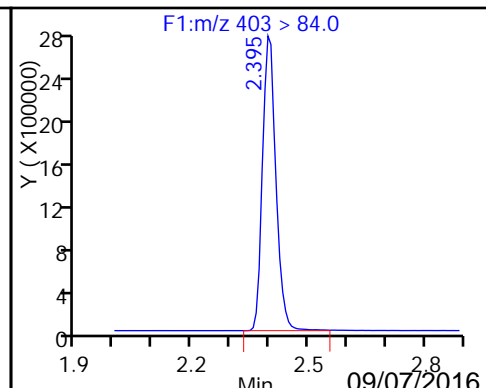
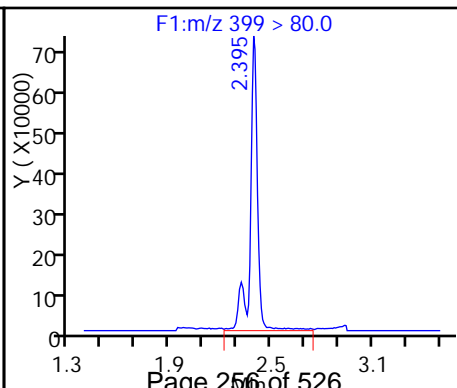
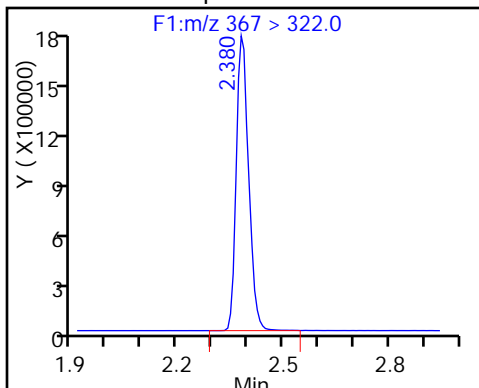
12 Perfluoroheptanoic acid



D 11 13C4-PFHpA

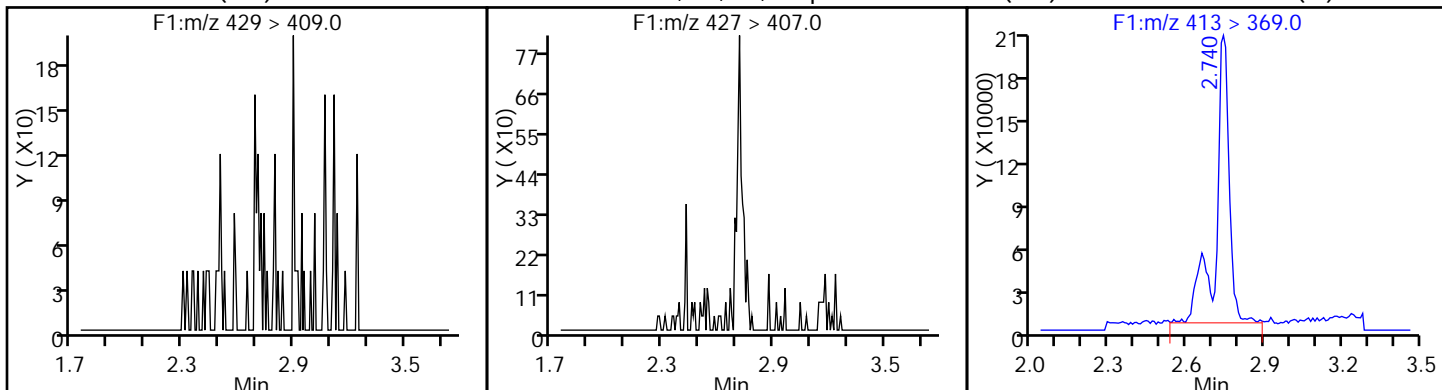
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS



D 47 M2-6:2FTS (ND)

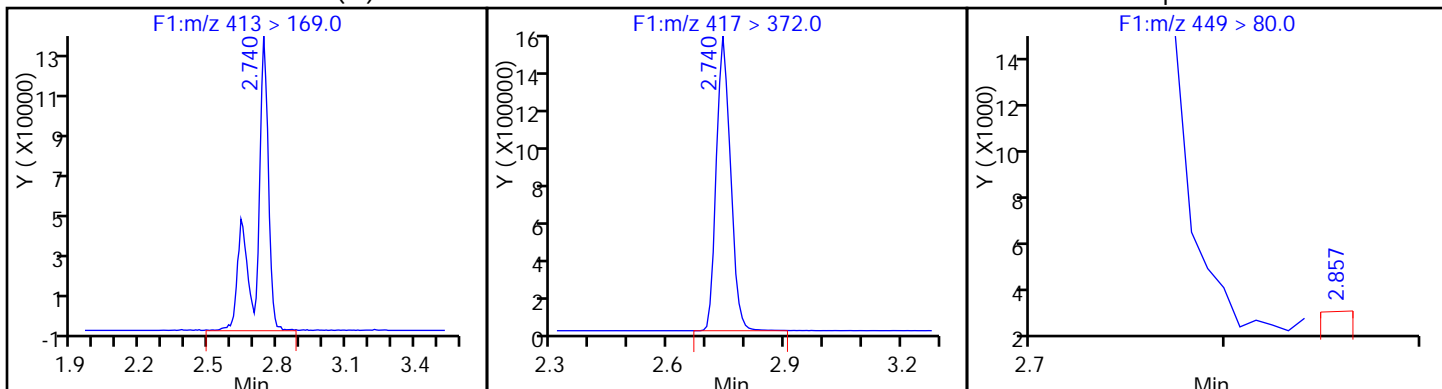
48 Sodium 1H,1H,2H,2H-perfluorooctane(SF)perfluorooctanoic acid (M)



15 Perfluorooctanoic acid (M)

D 14 13C4 PFOA

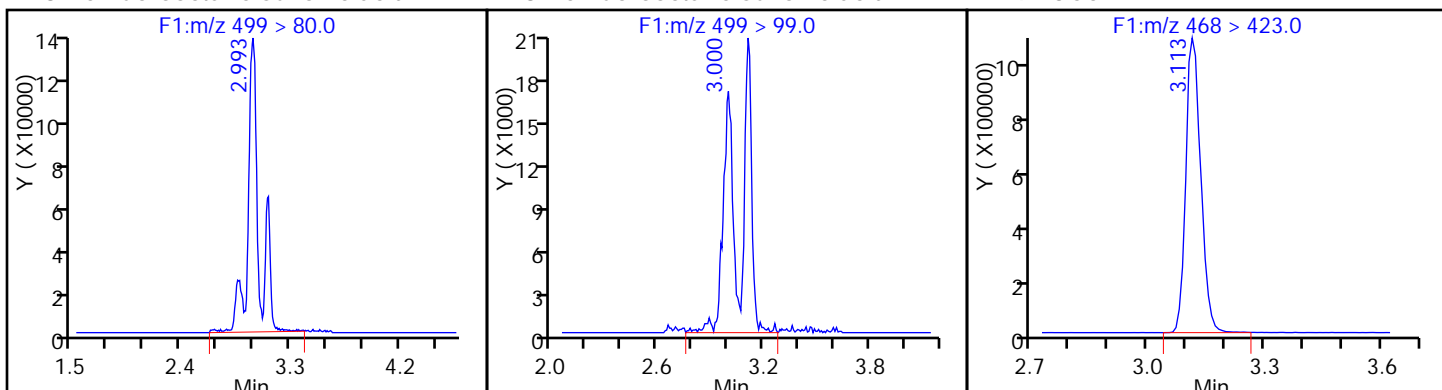
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

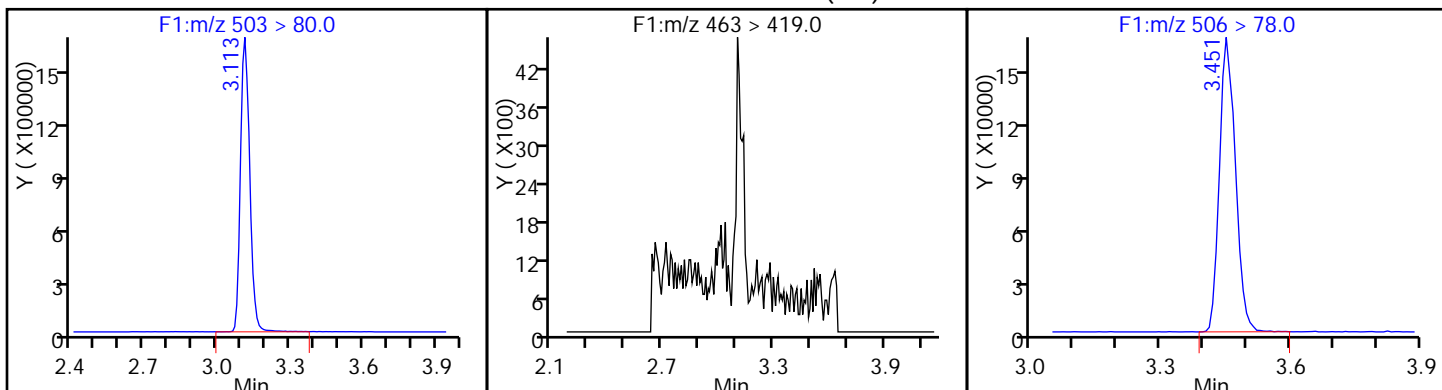
D 19 13C5 PFNA

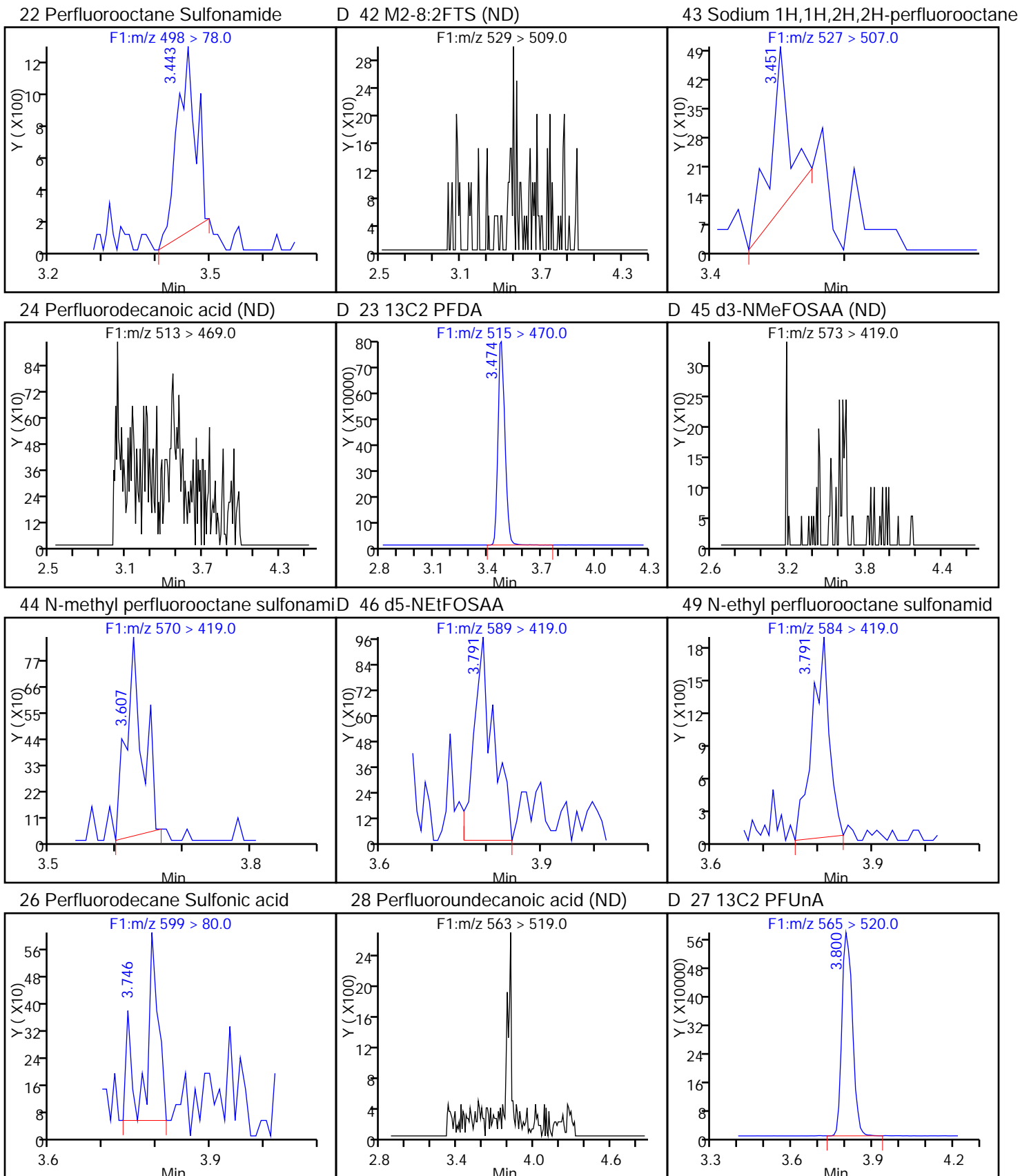


D 17 13C4 PFOS

20 Perfluorononanoic acid (ND)

D 21 13C8 FOSA

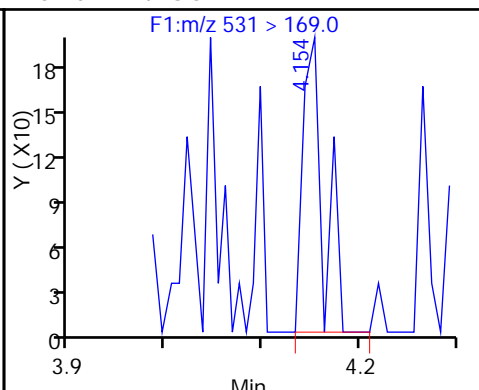
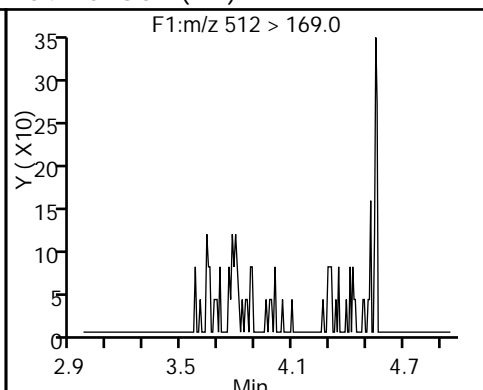
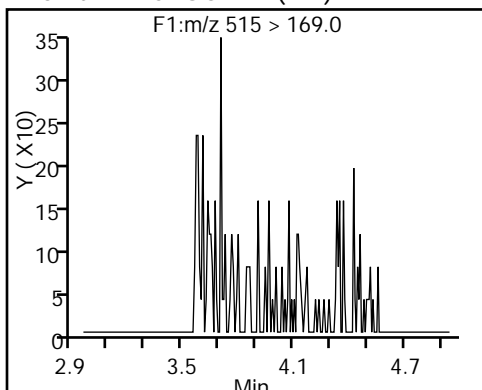




D 52 d-N-MeFOSA-M (ND)

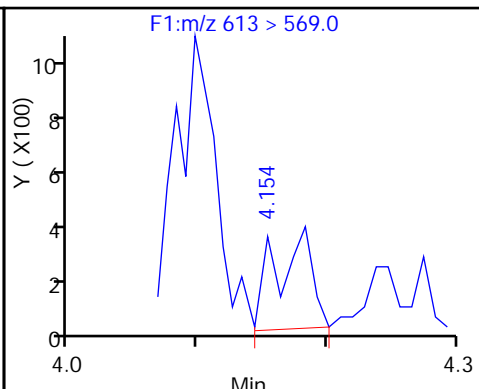
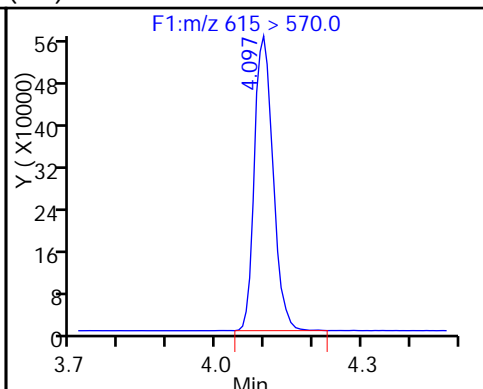
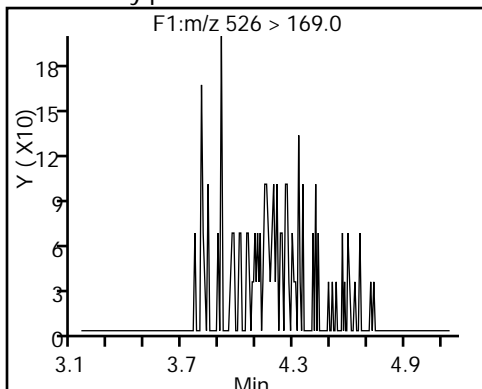
54 MeFOSA (ND)

D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami (ND) 13C2 PFDaA

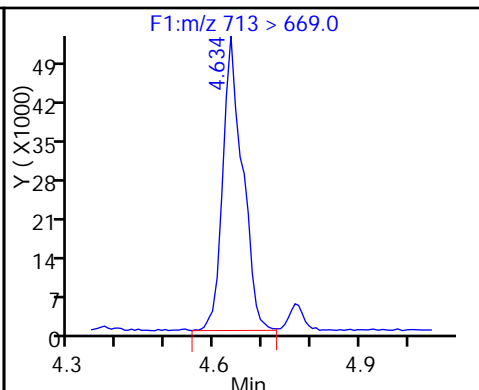
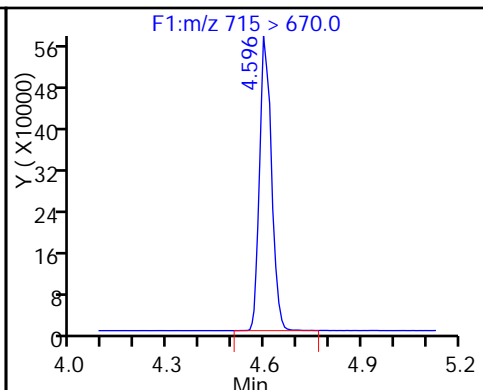
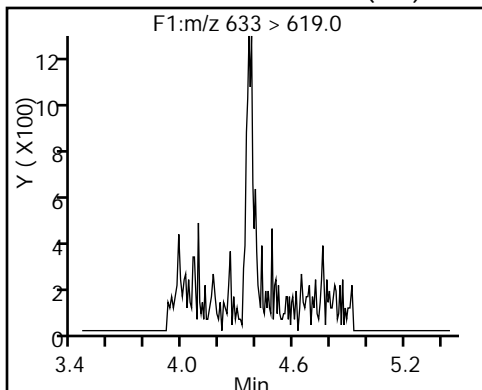
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid (ND)

D 32 13C2-PFTeDA

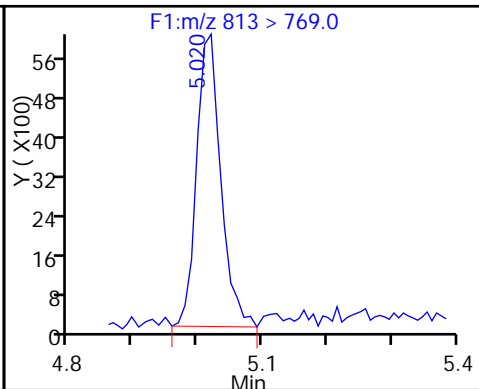
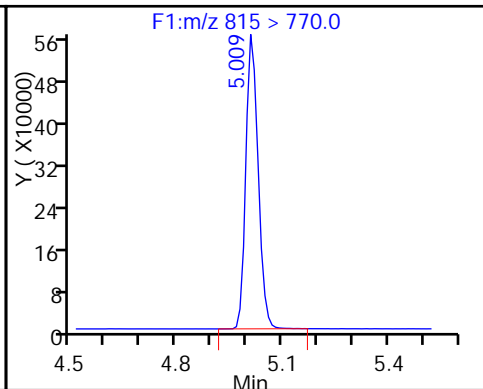
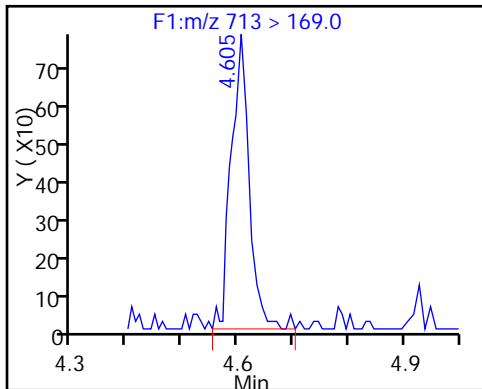
33 Perfluorotetradecanoic acid



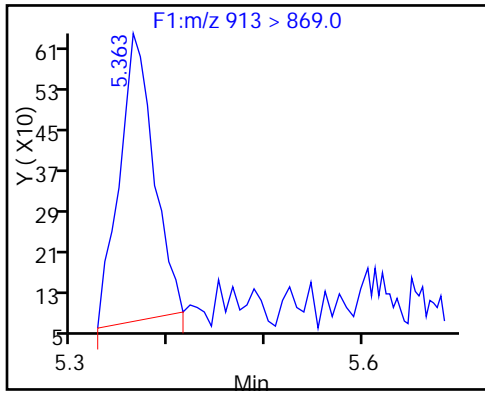
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

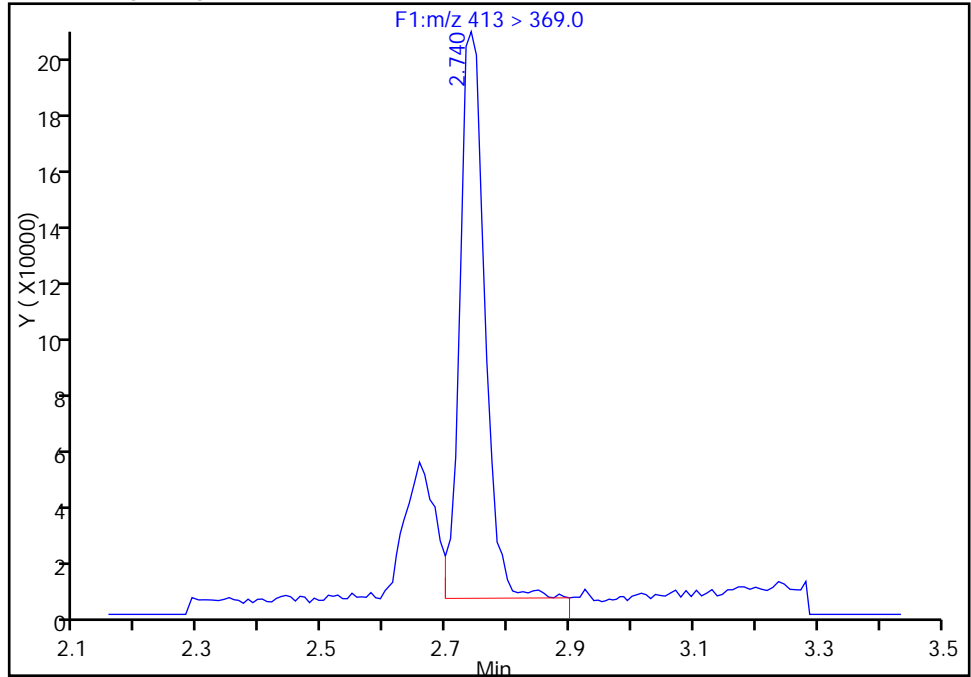
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_047_p1_e1.d
Injection Date: 23-Aug-2016 12:31:00 Instrument ID: A8
Lims ID: 320-20928-A-3-A Lab Sample ID: 320-20928-3
Client ID: GW20-14GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

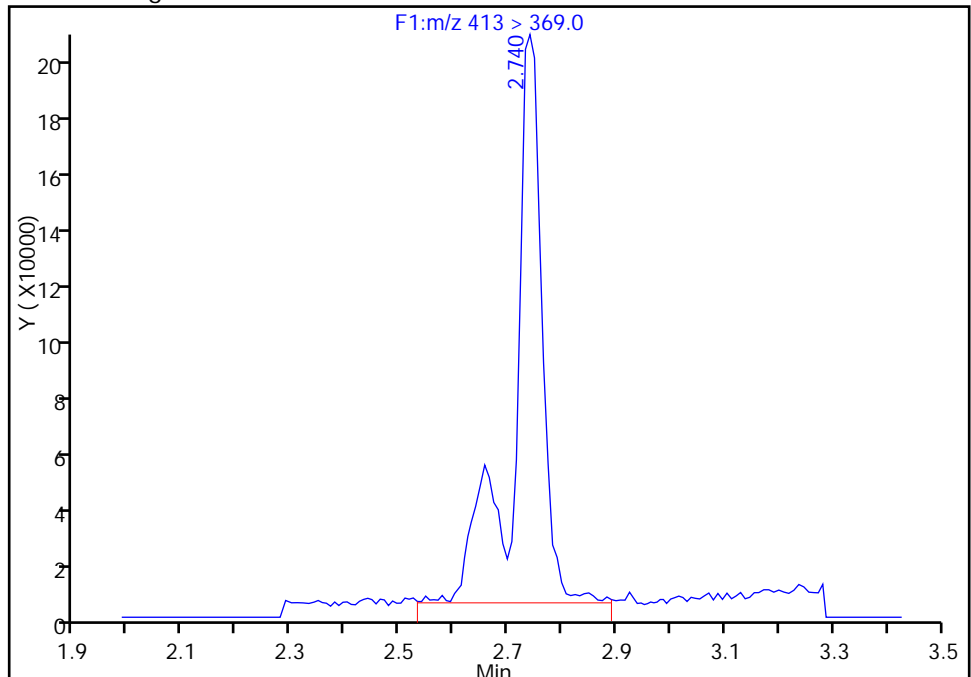
RT: 2.74
Area: 567992
Amount: 6.971901
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 748303
Amount: 9.276459
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:38:41
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

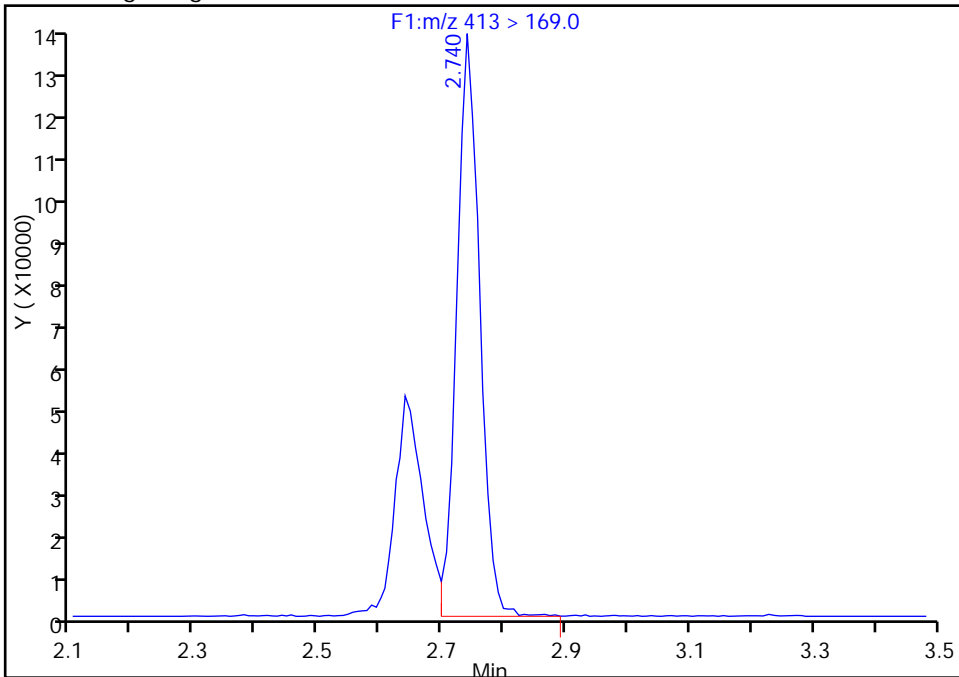
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_047_p1_e1.d
Injection Date: 23-Aug-2016 12:31:00 Instrument ID: A8
Lims ID: 320-20928-A-3-A Lab Sample ID: 320-20928-3
Client ID: GW20-14GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

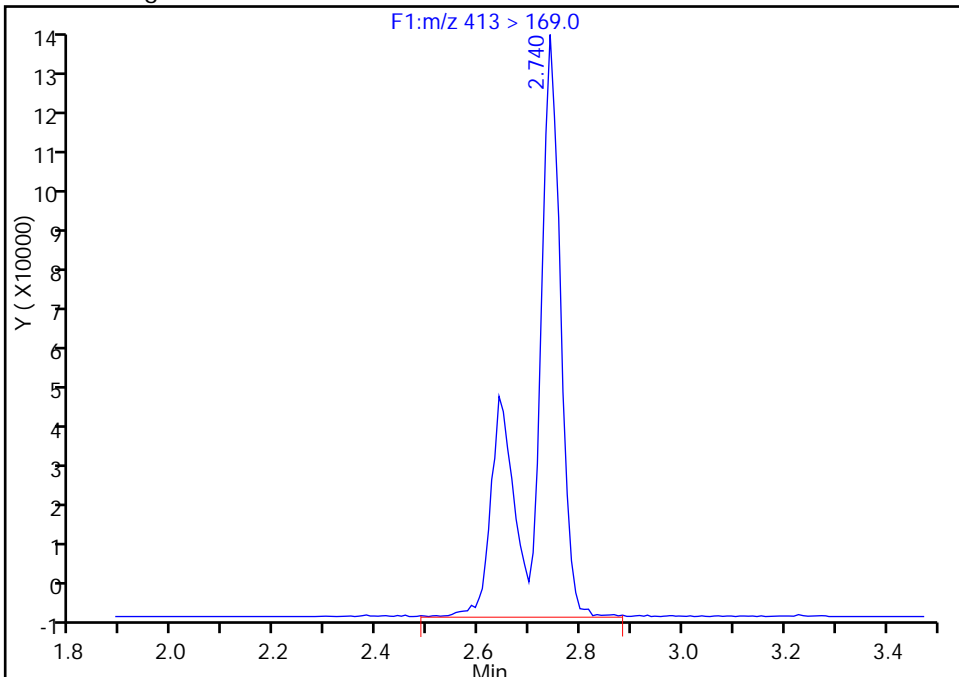
RT: 2.74
Area: 336345
Amount: 6.971901
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 496496
Amount: 9.276459
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-06GW-0816 Lab Sample ID: 320-20928-4
 Matrix: Water Lab File ID: 22AUG2016D_050_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 11:30
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 267.1(mL) Date Analyzed: 08/23/2016 12:54
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	4.2	M	2.3	1.9	0.70
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.7	J	3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	81		25-150
STL00991	13C4 PFOS	124		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_050_p1_e1.d
 Lims ID: 320-20928-A-4-A
 Client ID: GW20-06GW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 12:54:00 ALS Bottle#: 0 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:58:18 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:43:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.668	2.798	-0.130	1.000	199155	2.27			709	M
413 > 169.0	2.751	2.798	-0.047	1.031	39178		5.08(0.90-1.10)		2983	
D 14 13C4 PFOA										
417 > 372.0	2.743	2.798	-0.055		3916708	40.7		81.3	310108	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.002	3.110	-0.107	1.000	101149	0.8989			2332	
499 > 99.0	2.994	3.110	-0.115	0.997	21095		4.79(0.90-1.10)		576	
D 17 13C4 PFOS										
503 > 80.0	3.114	3.177	-0.063		4850215	59.1			124	178732

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_050_p1_e1.d

Injection Date: 23-Aug-2016 12:54:00

Instrument ID: A8

Lims ID: 320-20928-A-4-A

Lab Sample ID: 320-20928-4

Client ID: GW20-06GW-0816

Operator ID: A8

ALS Bottle#: 0

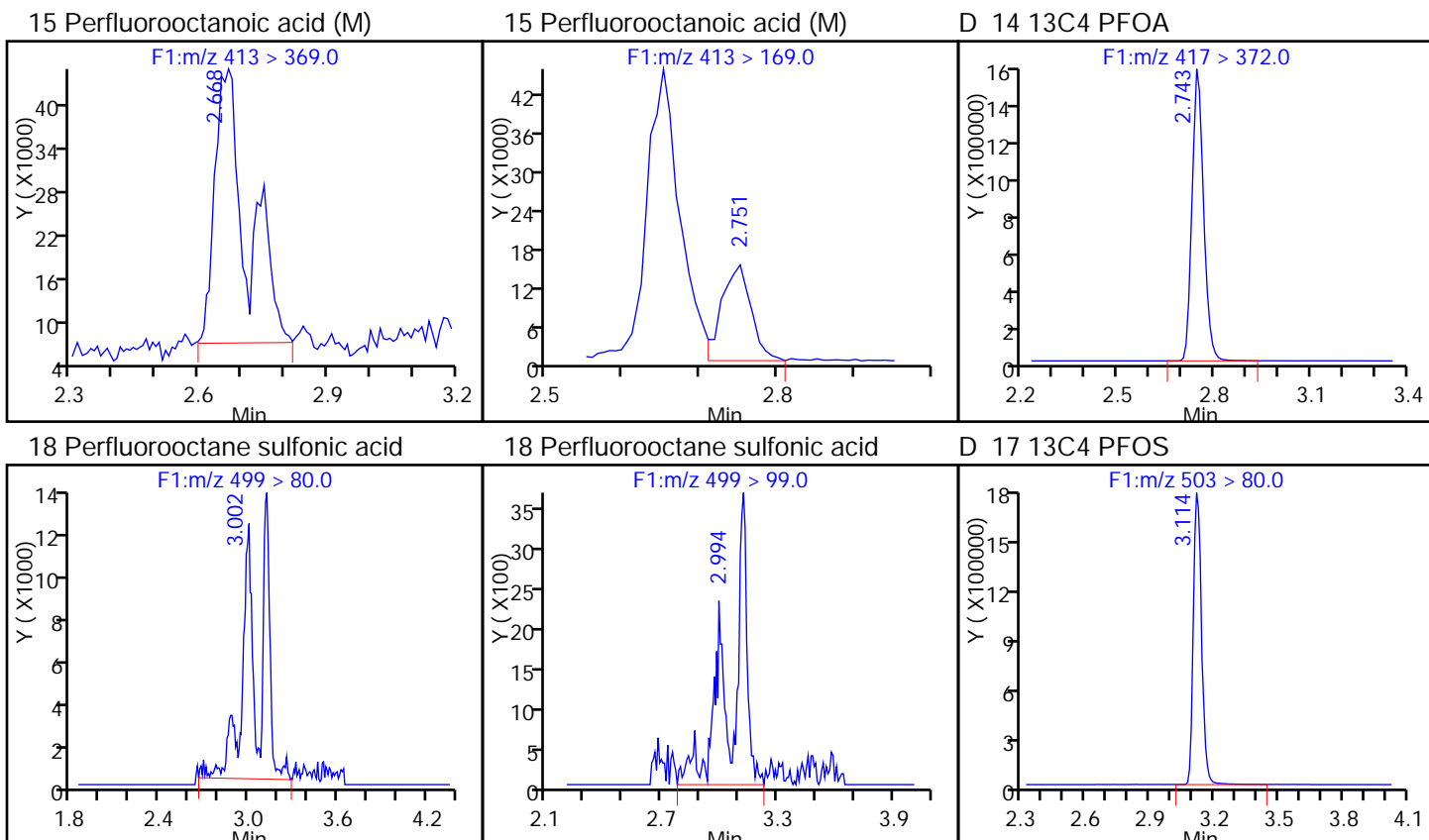
Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

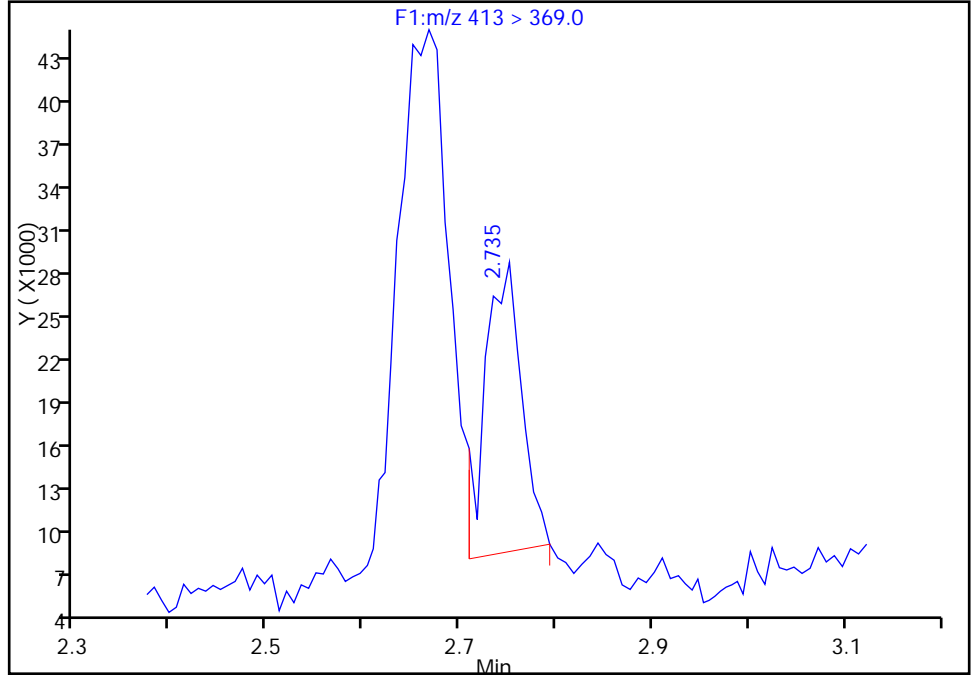
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_050_p1_e1.d
Injection Date: 23-Aug-2016 12:54:00 Instrument ID: A8
Lims ID: 320-20928-A-4-A Lab Sample ID: 320-20928-4
Client ID: GW20-06GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

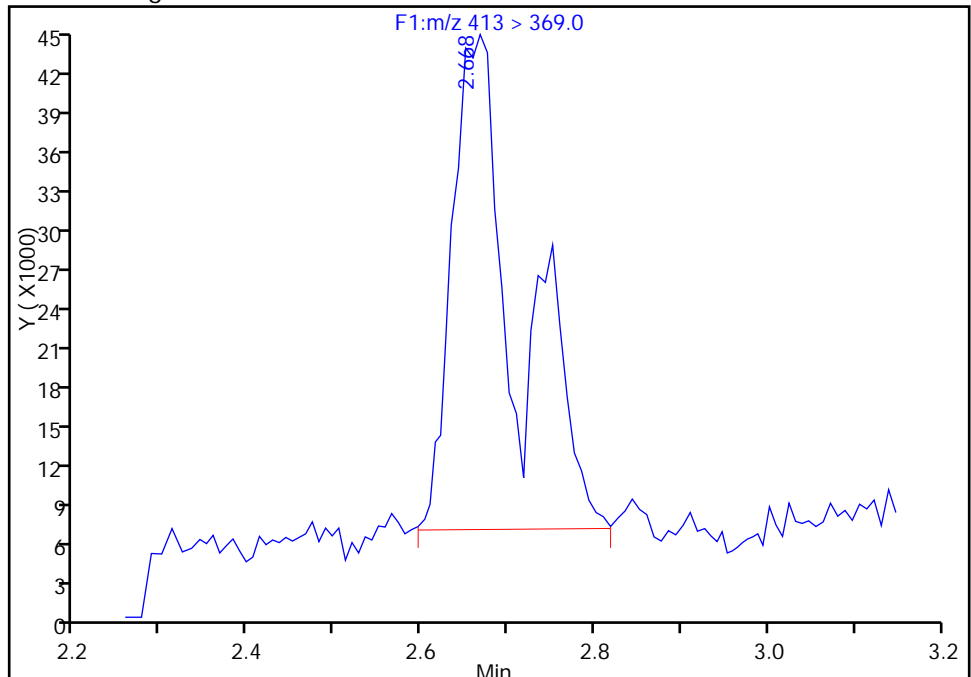
RT: 2.73
Area: 51559
Amount: 0.373630
Amount Units: ng/ml

Processing Integration Results



RT: 2.67
Area: 199155
Amount: 2.266555
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:43:57
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

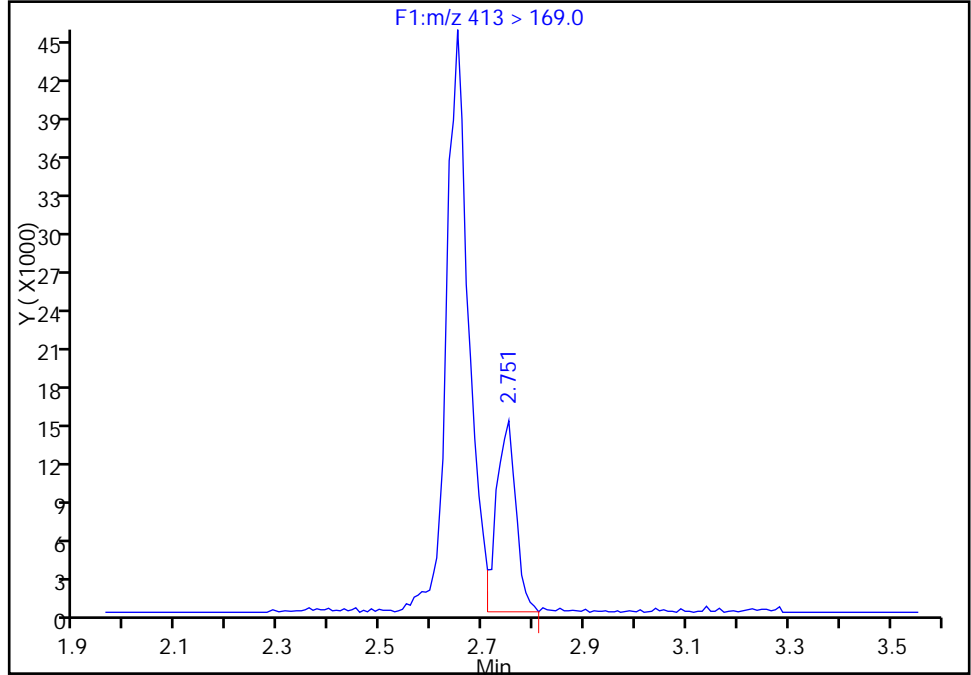
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_050_p1_e1.d
Injection Date: 23-Aug-2016 12:54:00 Instrument ID: A8
Lims ID: 320-20928-A-4-A Lab Sample ID: 320-20928-4
Client ID: GW20-06GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

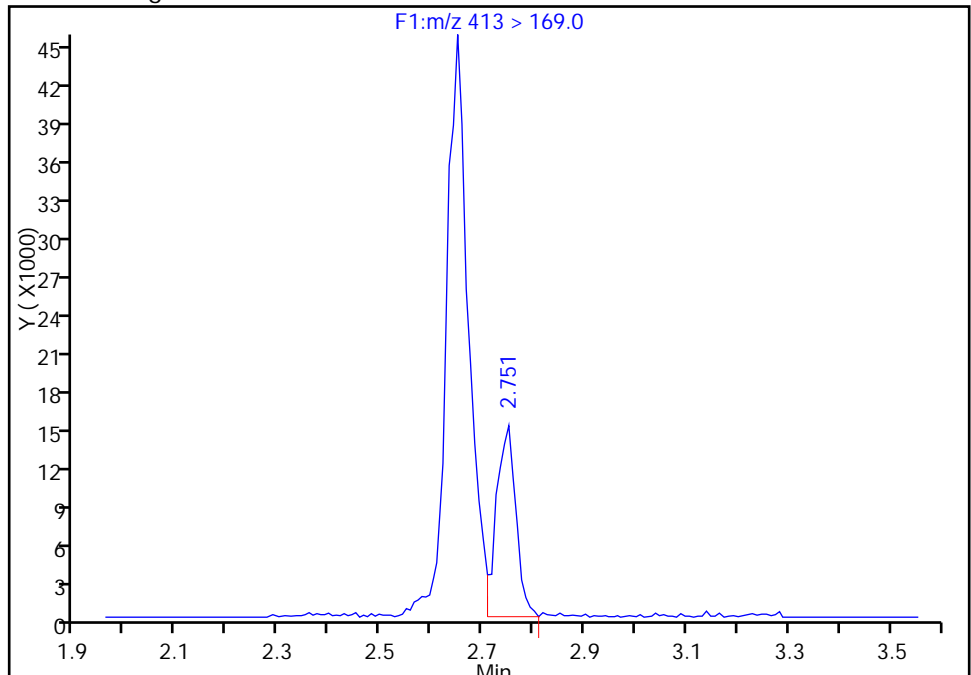
RT: 2.75
Area: 39178
Amount: 0.373630
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 39178
Amount: 2.266555
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:43:57

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-21DGW-0816 Lab Sample ID: 320-20928-5
 Matrix: Water Lab File ID: 22AUG2016D_055_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 12:05
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 266(mL) Date Analyzed: 08/23/2016 13:31
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.4	J M	2.3	1.9	0.70
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	J	3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	85		25-150
STL00991	13C4 PFOS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_055_p1_e1.d
 Lims ID: 320-20928-A-5-A
 Client ID: GW20-21DGW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 13:31:00 ALS Bottle#: 0 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:58:33 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:45:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.732	2.798	-0.066	1.000	85022	0.7510			368	M
413 > 169.0	2.749	2.798	-0.049	1.006	47352		1.80(0.90-1.10)		3199	M
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		4112010	42.7		85.4	370663	
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.981	3.110	-0.128	1.000	165365	1.59			4559	
499 > 99.0	3.008	3.110	-0.101	1.009	36339		4.55(0.90-1.10)		506	
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		4490791	54.7			114	203399

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_055_p1_e1.d

Injection Date: 23-Aug-2016 13:31:00

Instrument ID: A8

Lims ID: 320-20928-A-5-A

Lab Sample ID: 320-20928-5

Client ID: GW20-21DGW-0816

Operator ID: A8

ALS Bottle#: 0

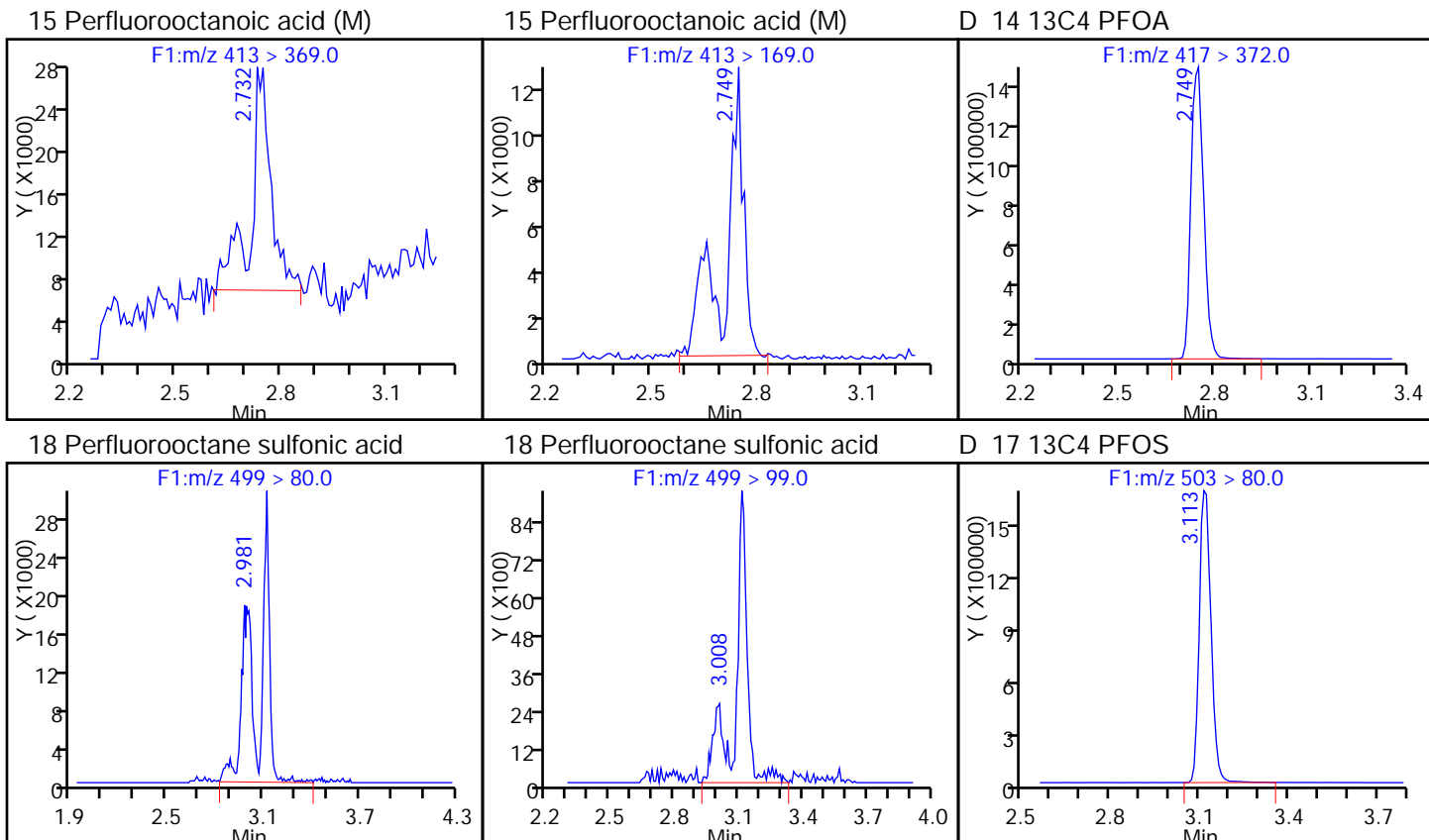
Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

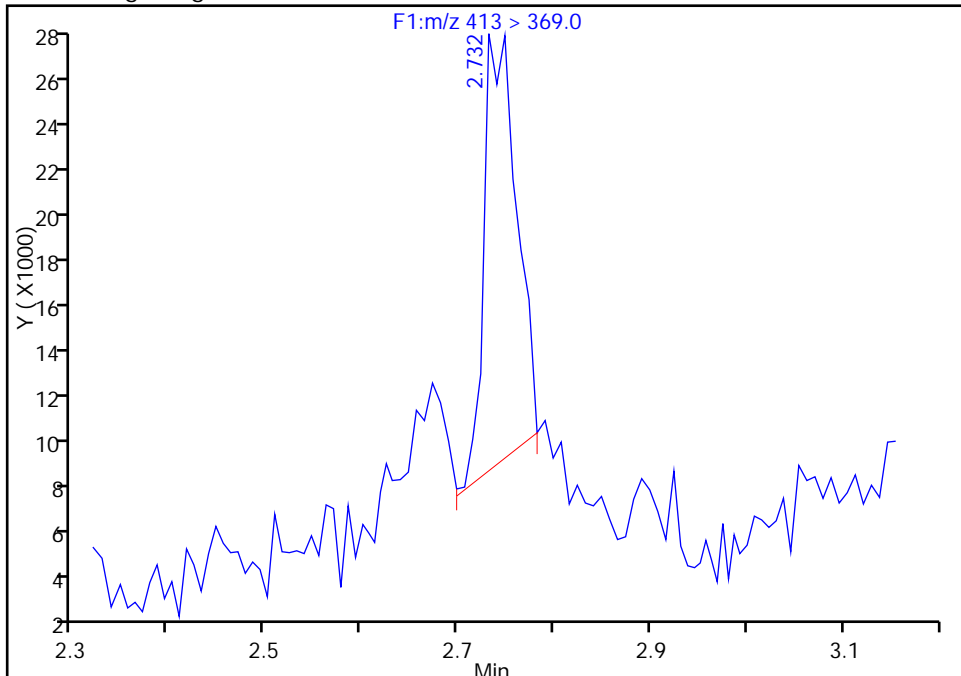
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_055_p1_e1.d
Injection Date: 23-Aug-2016 13:31:00 Instrument ID: A8
Lims ID: 320-20928-A-5-A Lab Sample ID: 320-20928-5
Client ID: GW20-21DGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

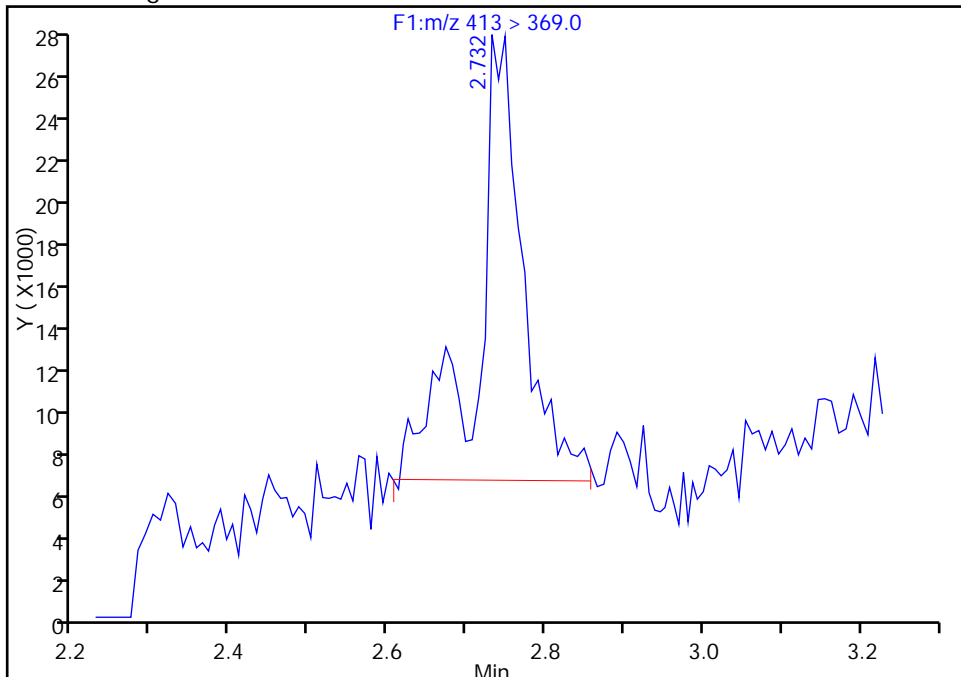
RT: 2.73
Area: 42166
Amount: 0.227480
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 85022
Amount: 0.751005
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:45:19
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

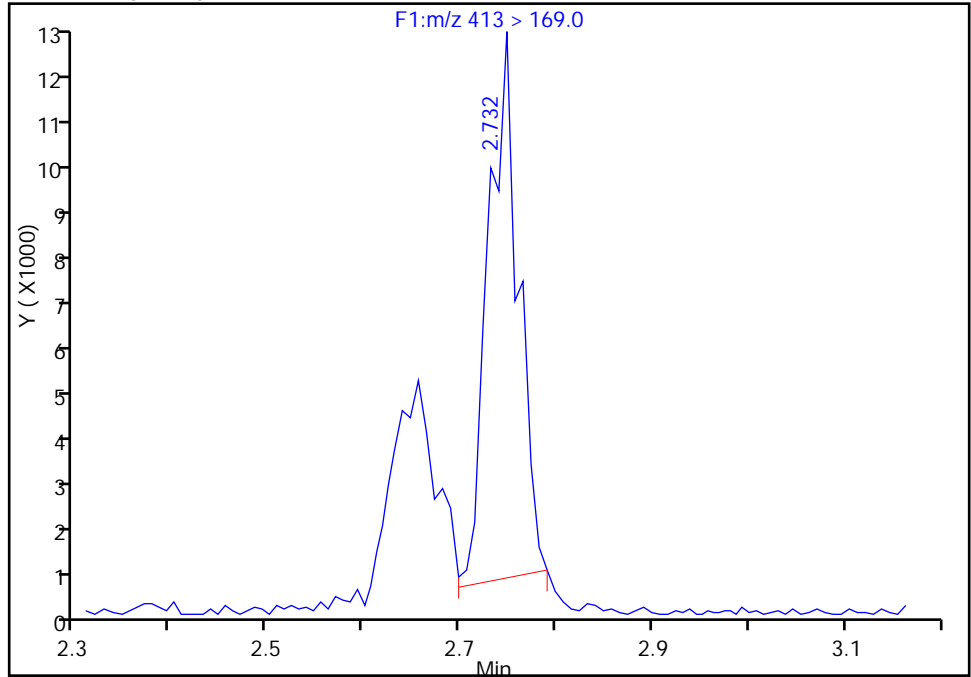
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_055_p1_e1.d
Injection Date: 23-Aug-2016 13:31:00 Instrument ID: A8
Lims ID: 320-20928-A-5-A Lab Sample ID: 320-20928-5
Client ID: GW20-21DGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

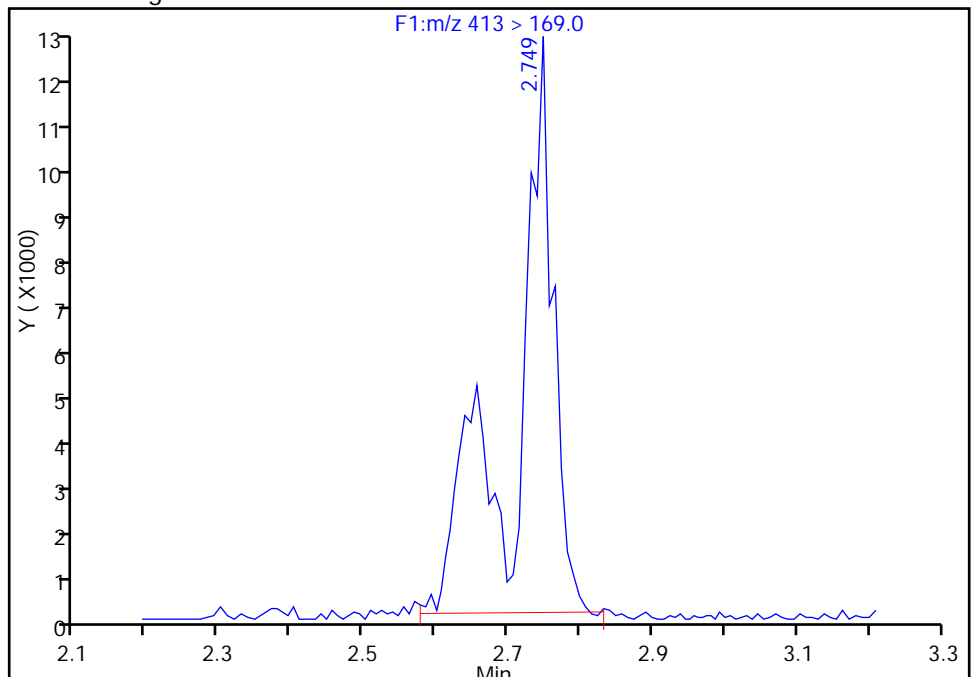
RT: 2.73
Area: 26576
Amount: 0.227480
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 47352
Amount: 0.751005
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:45:19

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-10GW-0816 Lab Sample ID: 320-20928-6
 Matrix: Water Lab File ID: 22AUG2016D_056_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 15:05
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 262.6(mL) Date Analyzed: 08/23/2016 13:39
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	12	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	13		3.8	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	80		25-150
STL00991	13C4 PFOS	116		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_056_p1_e1.d
 Lims ID: 320-20928-A-6-A
 Client ID: GW20-10GW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 13:39:00 ALS Bottle#: 0 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:58:33 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:47:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.732	2.798	-0.066	1.000	509816	6.36			3048	M
413 > 169.0	2.732	2.798	-0.066	1.000	322690		1.58(0.90-1.10)		21874	M
D 14 13C4 PFOA										
417 > 372.0	2.740	2.798	-0.058		3851087	40.0		80.0	362475	
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.987	3.110	-0.122	1.000	715422	6.76			14123	
499 > 99.0	3.000	3.110	-0.109	1.005	118255		6.05(0.90-1.10)		3389	
D 17 13C4 PFOS										
503 > 80.0	3.112	3.177	-0.065		4558991	55.5			116	112844

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_056_p1_e1.d

Injection Date: 23-Aug-2016 13:39:00

Instrument ID: A8

Lims ID: 320-20928-A-6-A

Lab Sample ID: 320-20928-6

Client ID: GW20-10GW-0816

Operator ID: A8

ALS Bottle#: 0

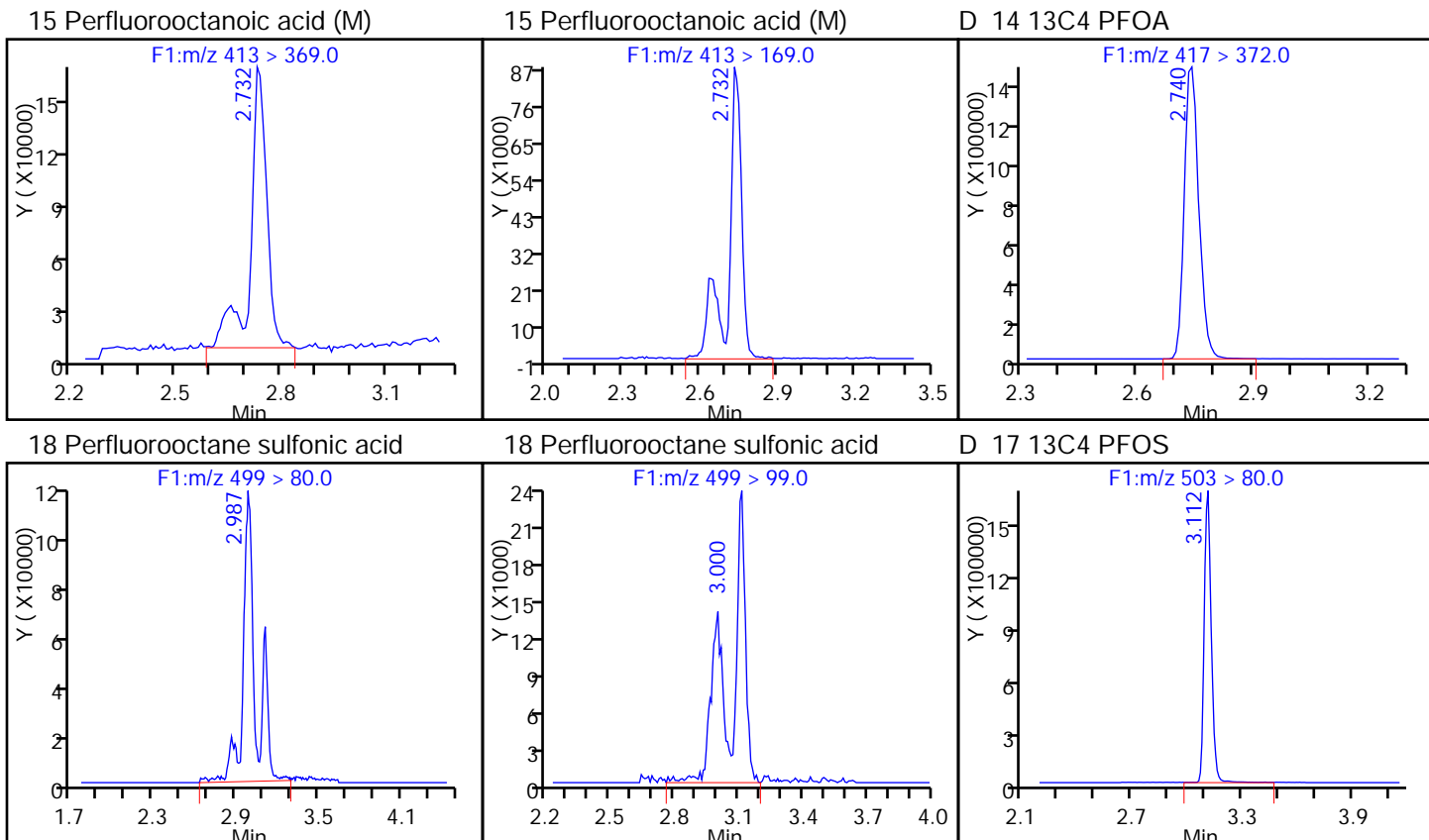
Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

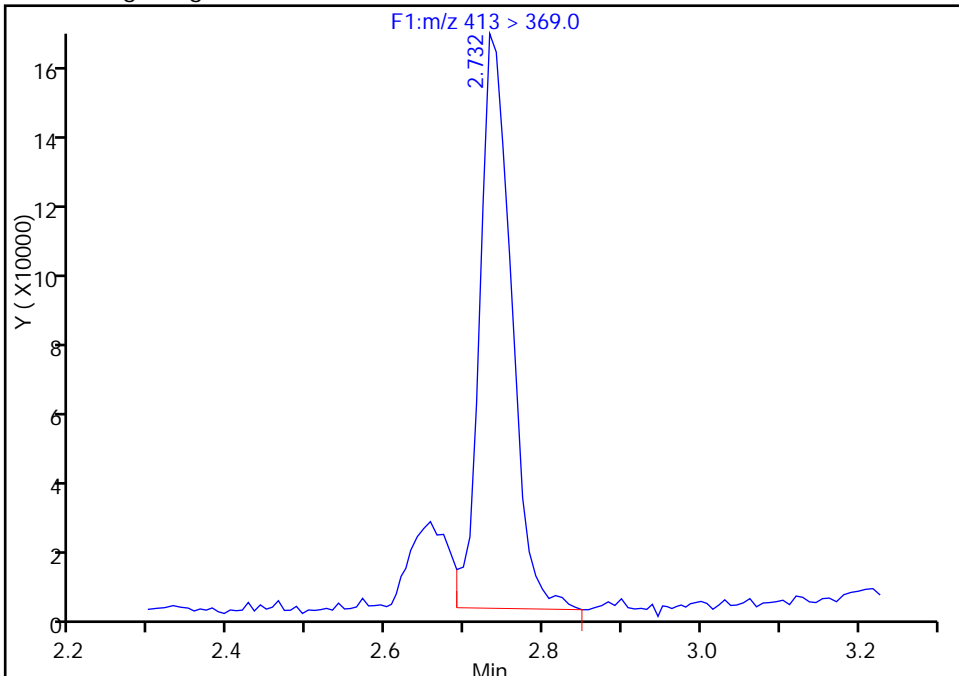
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_056_p1_e1.d
Injection Date: 23-Aug-2016 13:39:00 Instrument ID: A8
Lims ID: 320-20928-A-6-A Lab Sample ID: 320-20928-6
Client ID: GW20-10GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

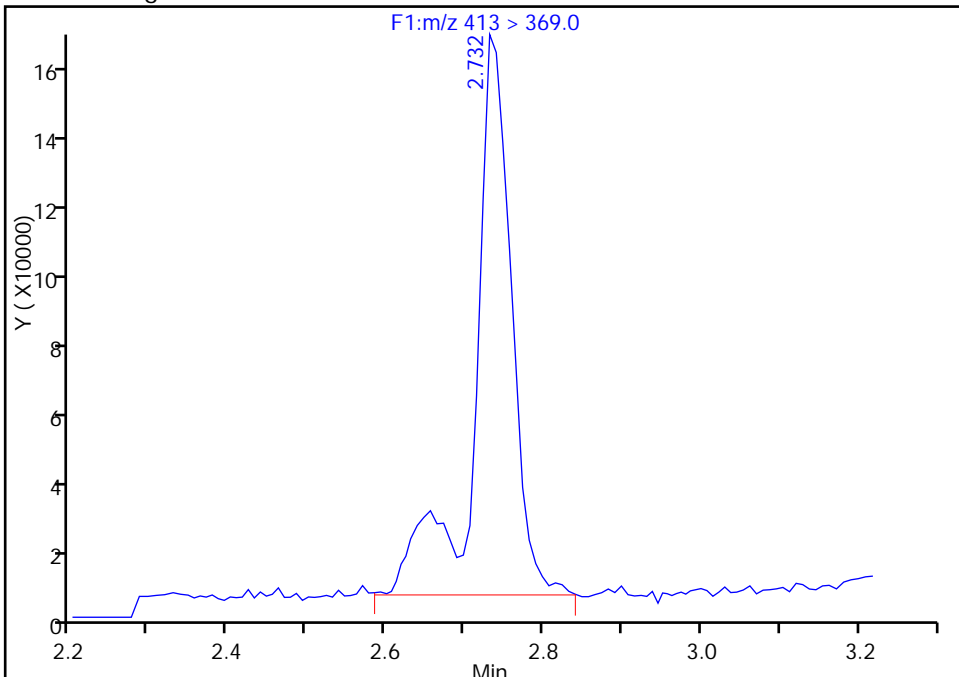
RT: 2.73
Area: 433274
Amount: 5.363826
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 509816
Amount: 6.362208
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:47:50
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_056_p1_e1.d

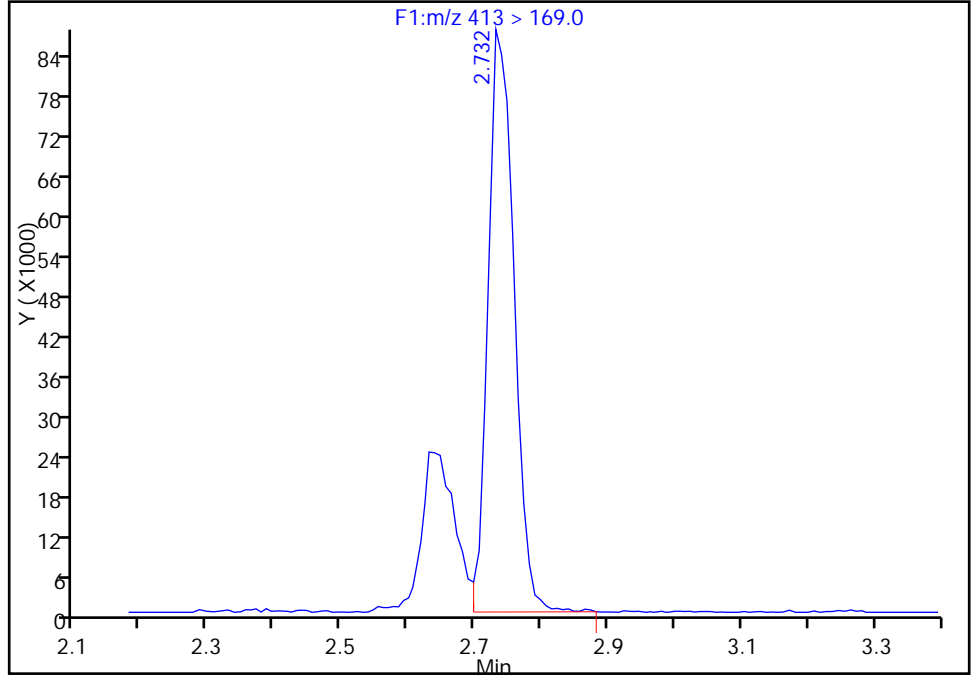
Injection Date:	23-Aug-2016 13:39:00	Instrument ID:	A8	Worklist Smp#:	18
Lims ID:	320-20928-A-6-A	Lab Sample ID:	320-20928-6		
Client ID:	GW20-10GW-0816				
Operator ID:	A8	ALS Bottle#:	0		
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector:	F1(0.00 :6.60)		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

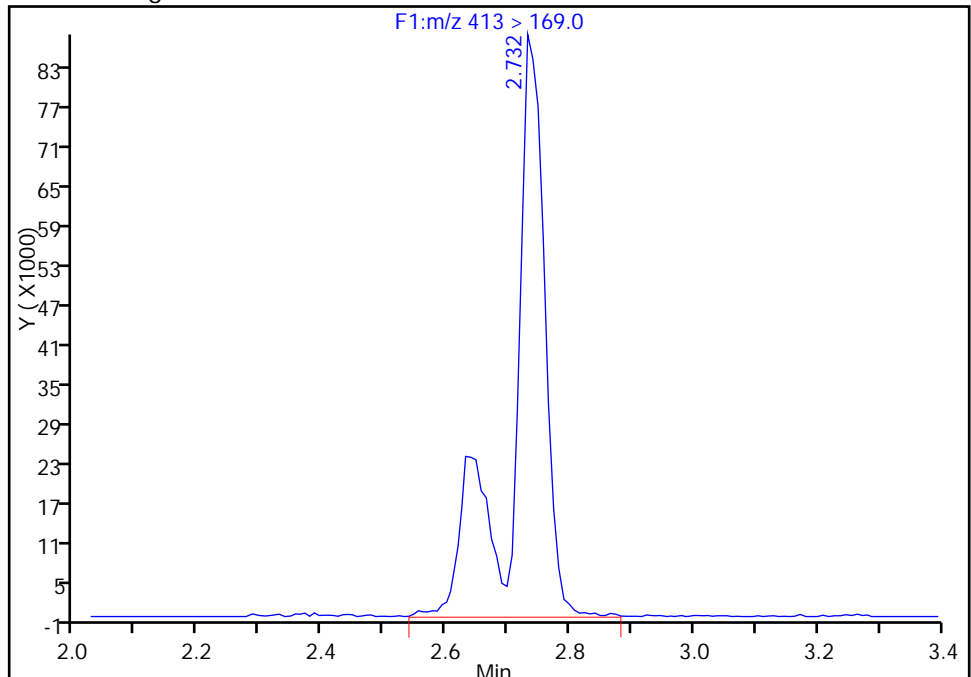
RT: 2.73
Area: 235784
Amount: 5.363826
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 322690
Amount: 6.362208
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:47:50

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-10GWP-0816 Lab Sample ID: 320-20928-7
 Matrix: Water Lab File ID: 22AUG2016D_057_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 15:10
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 263.7(mL) Date Analyzed: 08/23/2016 13:46
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	11	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12		3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	93		25-150
STL00991	13C4 PFOS	121		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_057_p1_e1.d
 Lims ID: 320-20928-A-7-A
 Client ID: GW20-10GWP-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 13:46:00 ALS Bottle#: 0 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:58:33 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:48:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.746	2.798	-0.052	1.000	537006	5.75			3538	M
413 > 169.0	2.746	2.798	-0.052	1.000	339862		1.58(0.90-1.10)		19128	M
D 14 13C4 PFOA										
417 > 372.0	2.746	2.798	-0.052		4464559	46.4		92.7	304862	
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.995	3.110	-0.114	1.000	703838	6.40			19777	
499 > 99.0	2.995	3.110	-0.114	1.000	117737		5.98(0.90-1.10)		3547	
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		4736924	57.7			121	107836

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_057_p1_e1.d

Injection Date: 23-Aug-2016 13:46:00

Instrument ID: A8

Lims ID: 320-20928-A-7-A

Lab Sample ID: 320-20928-7

Client ID: GW20-10GWP-0816

Operator ID: A8

ALS Bottle#: 0

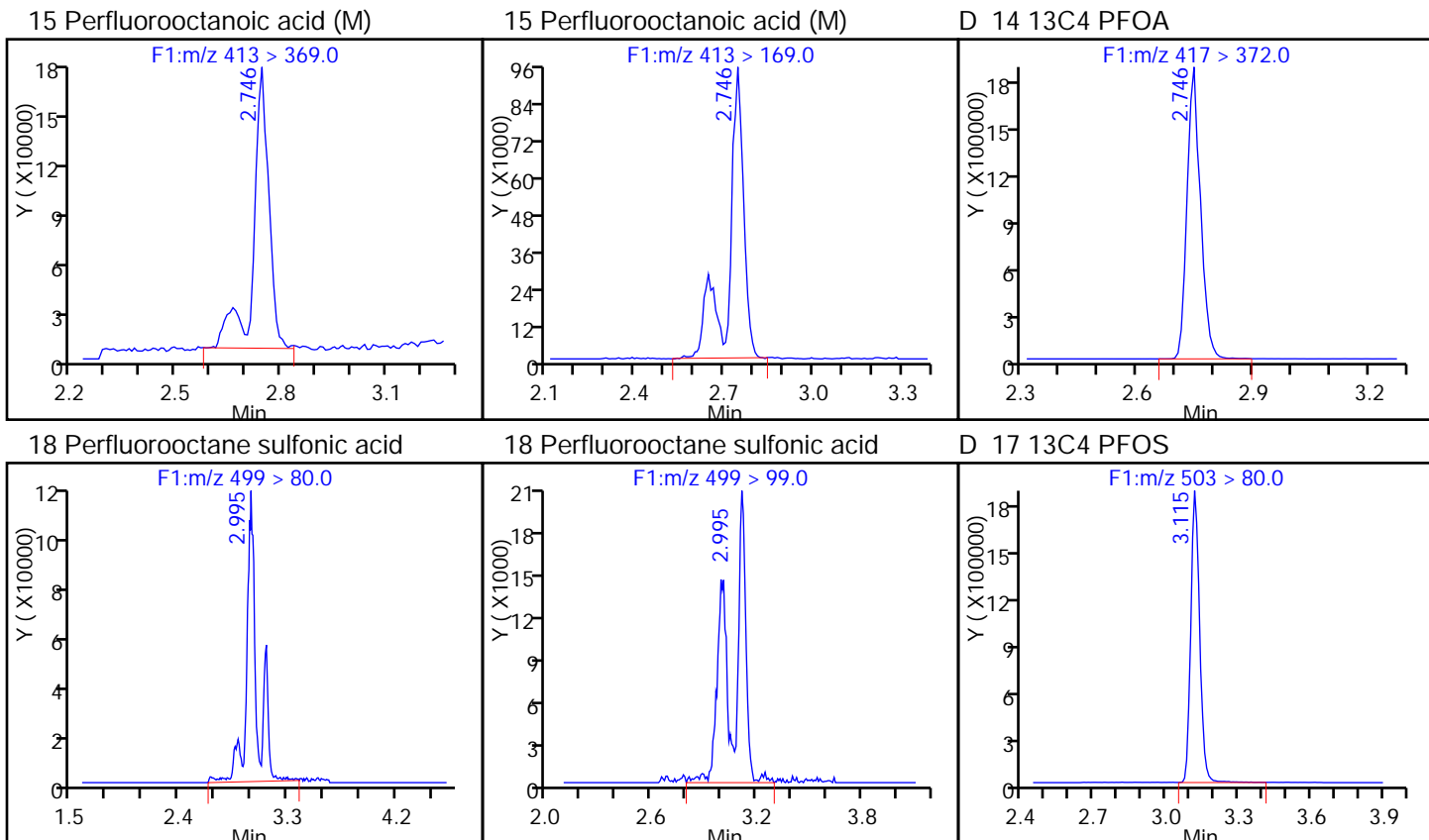
Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

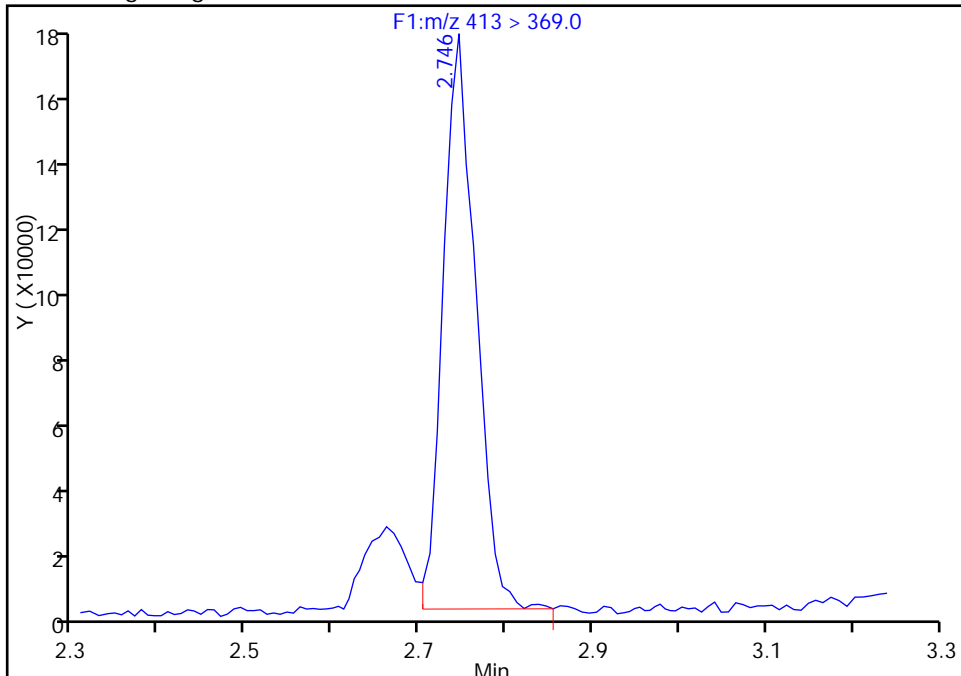
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_057_p1_e1.d
Injection Date: 23-Aug-2016 13:46:00 Instrument ID: A8
Lims ID: 320-20928-A-7-A Lab Sample ID: 320-20928-7
Client ID: GW20-10GWP-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

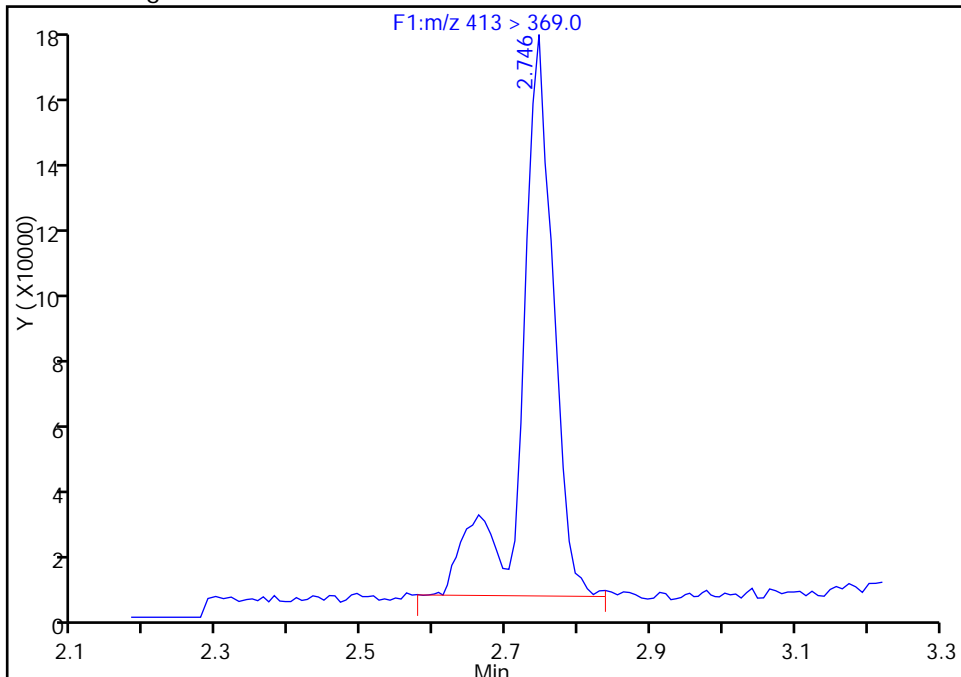
RT: 2.75
Area: 450724
Amount: 4.783600
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 537006
Amount: 5.754382
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:48:39
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

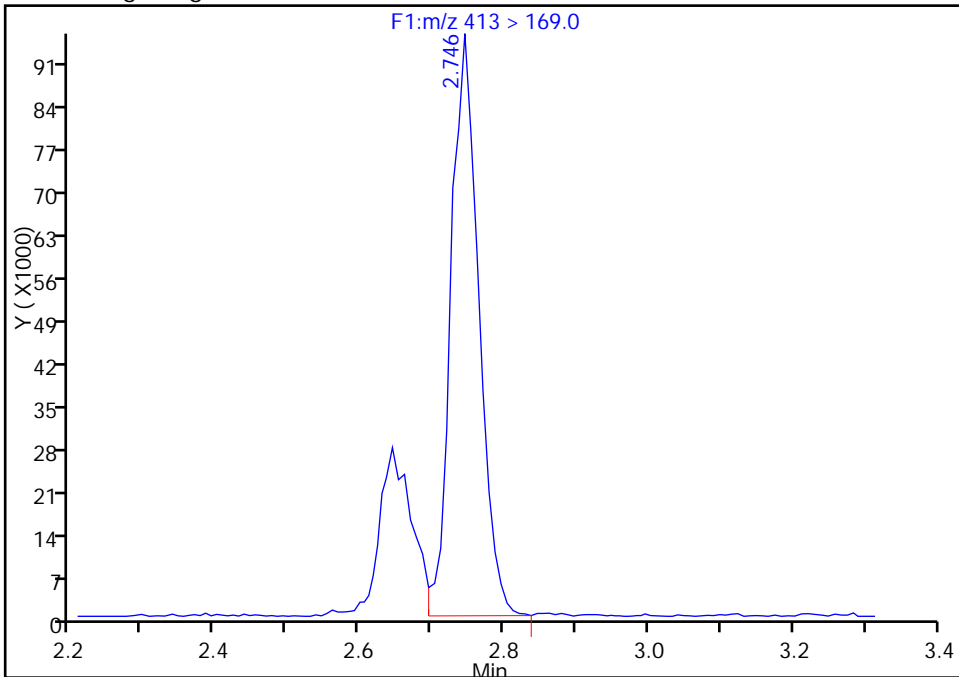
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_057_p1_e1.d
Injection Date: 23-Aug-2016 13:46:00 Instrument ID: A8
Lims ID: 320-20928-A-7-A Lab Sample ID: 320-20928-7
Client ID: GW20-10GWP-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

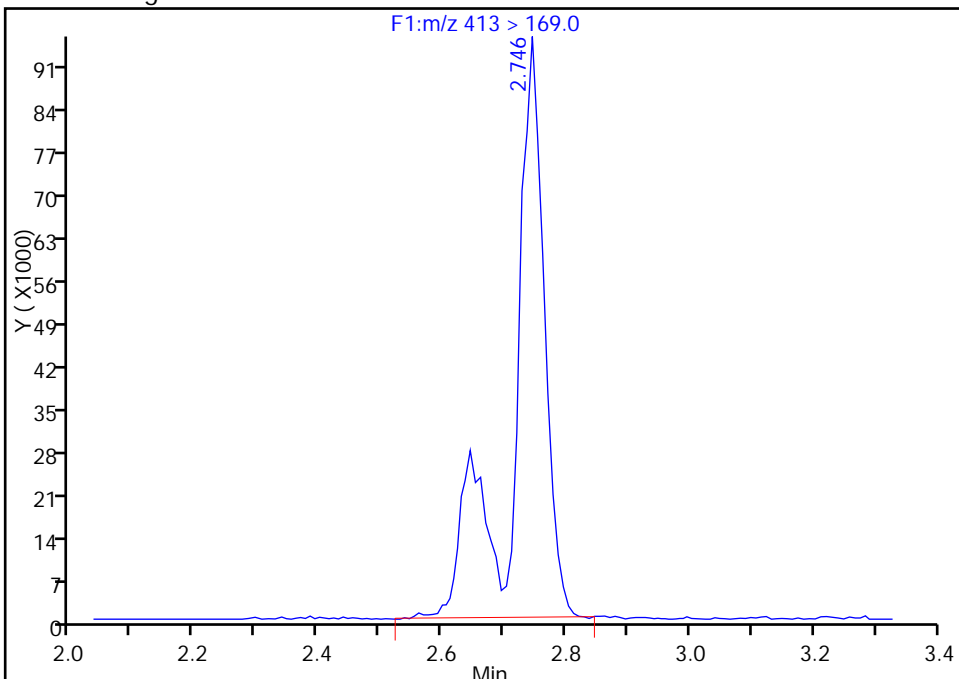
RT: 2.75
Area: 257308
Amount: 4.783600
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 339862
Amount: 5.754382
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:48:39

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-08GW-0816 Lab Sample ID: 320-20928-8
 Matrix: Water Lab File ID: 22AUG2016D_058_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 15:20
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 275.3(mL) Date Analyzed: 08/23/2016 13:54
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	31	M	2.3	1.8	0.68
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	170	M	3.6	2.7	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	85		25-150
STL00991	13C4 PFOS	127		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_058_p1_e1.d
 Lims ID: 320-20928-A-8-A
 Client ID: GW20-08GW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 13:54:00 ALS Bottle#: 0 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 18:01:20 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:50:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.743	2.798	-0.055	1.000	1409552	17.1			7487	M
413 > 169.0	2.743	2.798	-0.055	1.000	927452		1.52(0.90-1.10)		65333	M
D 14 13C4 PFOA										
417 > 372.0	2.743	2.798	-0.055		4075174	42.3		84.6	312105	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.114	3.110	0.005	1.000	10800990	93.7			220181	M
499 > 99.0	3.009	3.110	-0.100	0.966	2017921		5.35(0.90-1.10)		23258	
D 17 13C4 PFOS										
503 > 80.0	3.114	3.177	-0.063		4965872	60.5			127	110617

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_058_p1_e1.d

Injection Date: 23-Aug-2016 13:54:00

Instrument ID: A8

Lims ID: 320-20928-A-8-A

Lab Sample ID: 320-20928-8

Client ID: GW20-08GW-0816

Operator ID: A8

ALS Bottle#: 0

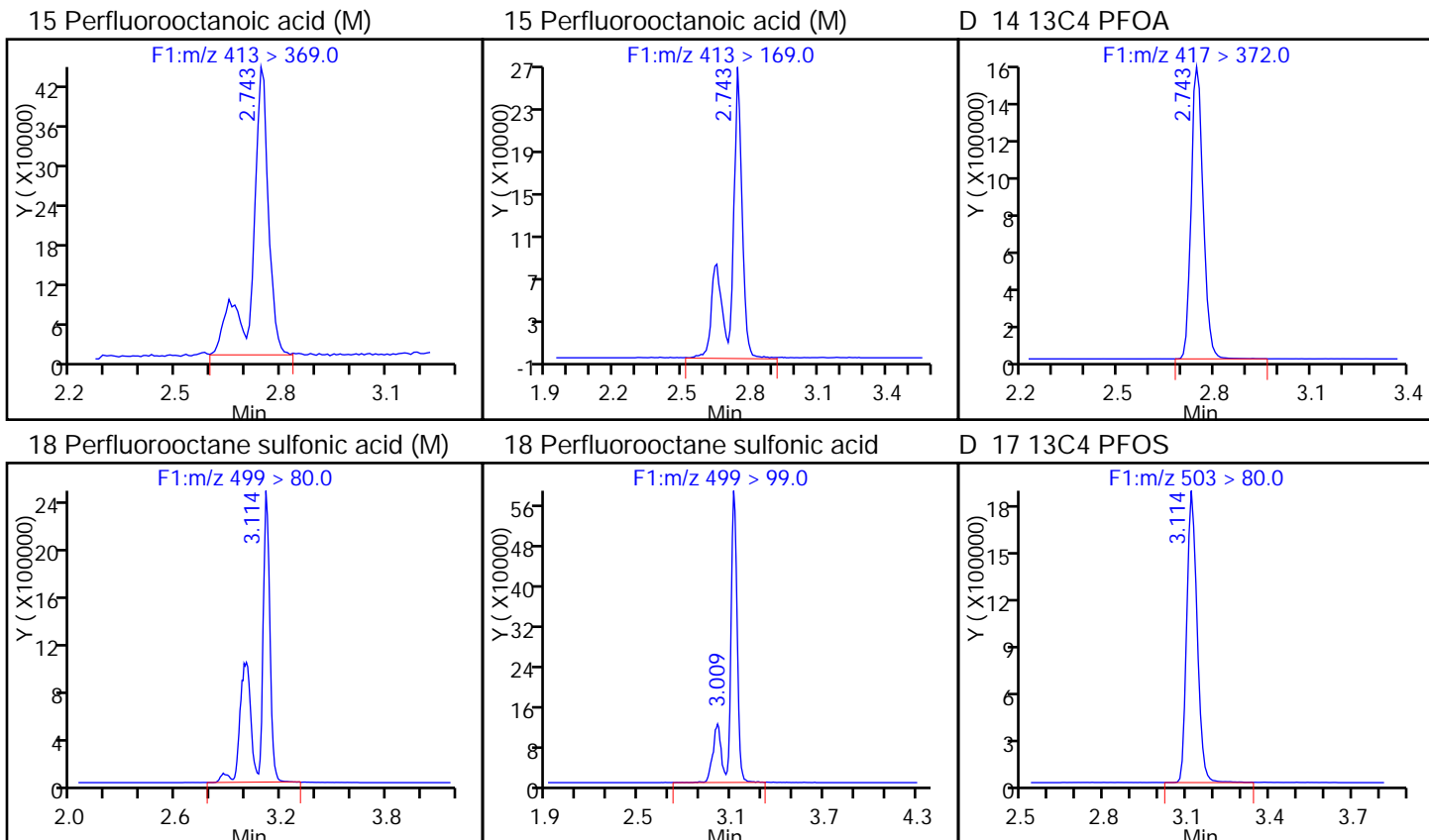
Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

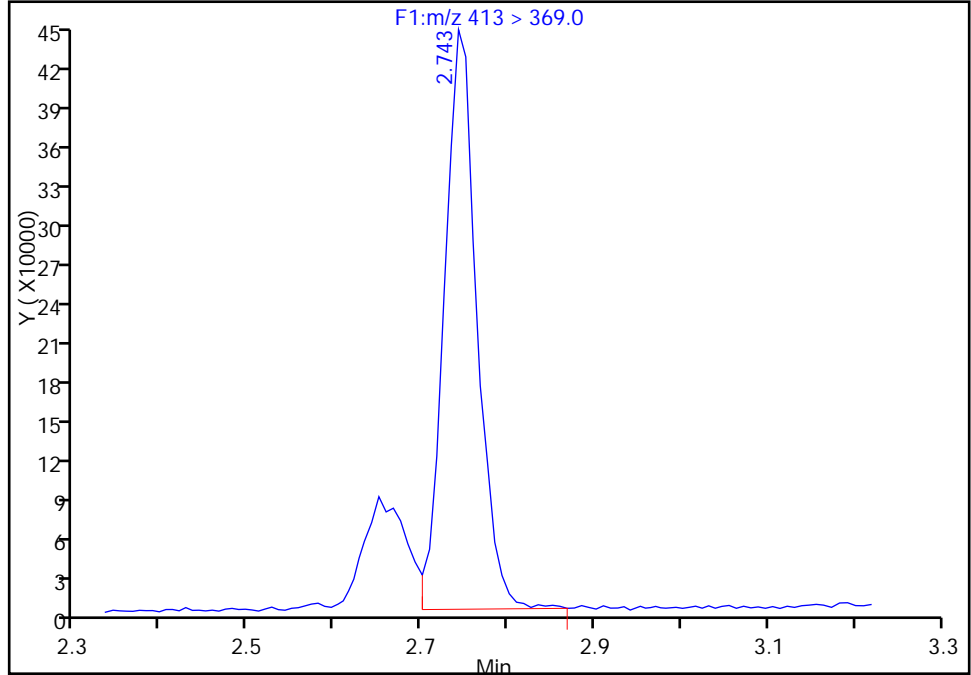
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_058_p1_e1.d
Injection Date: 23-Aug-2016 13:54:00 Instrument ID: A8
Lims ID: 320-20928-A-8-A Lab Sample ID: 320-20928-8
Client ID: GW20-08GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

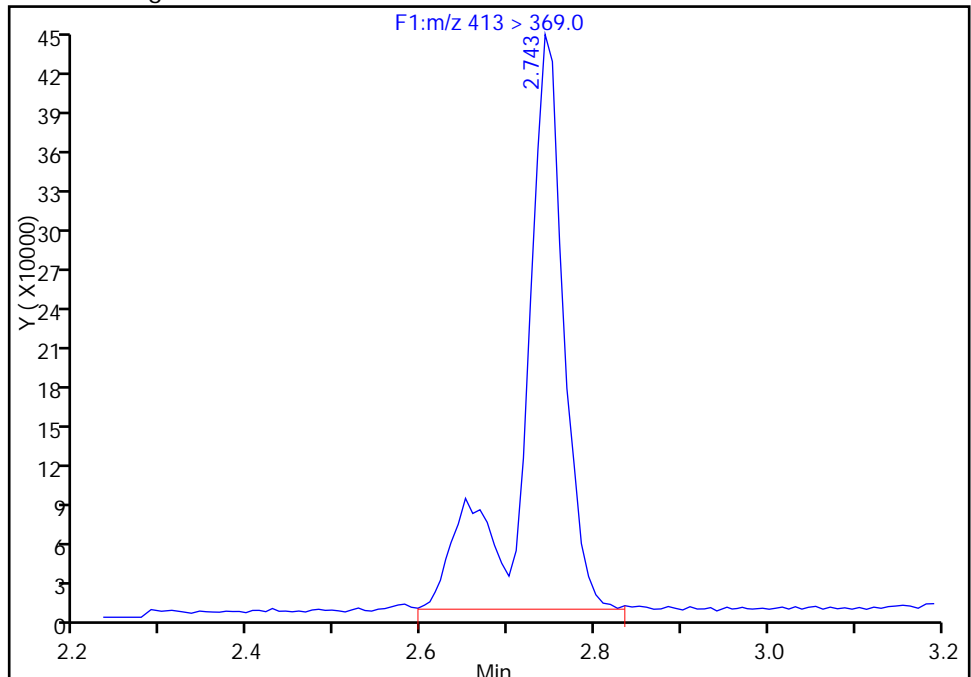
RT: 2.74
Area: 1136894
Amount: 13.726118
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 1409552
Amount: 17.086991
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:50:11
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

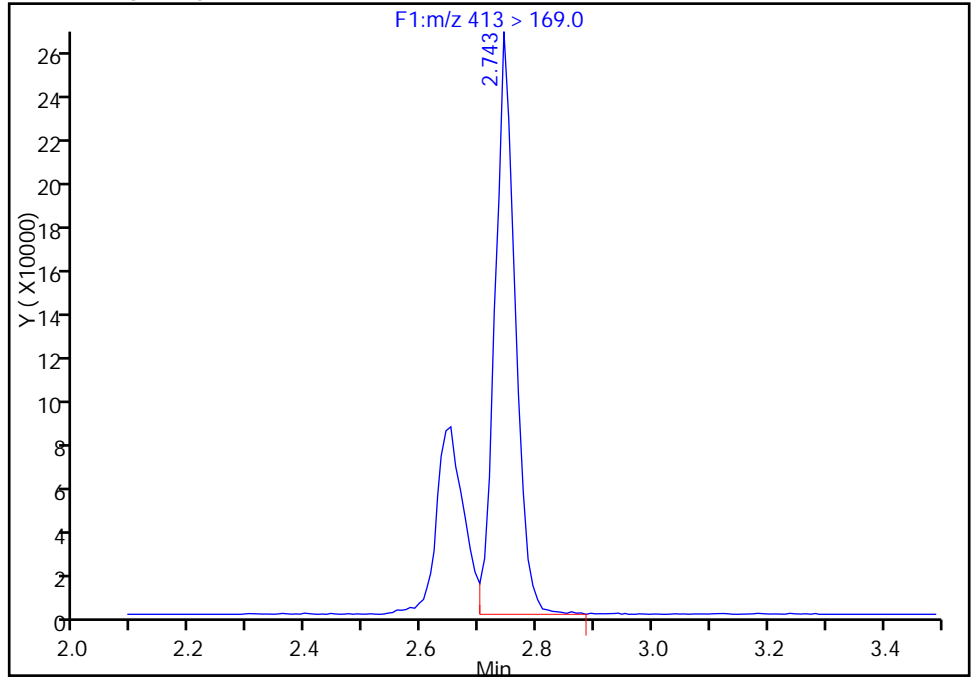
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_058_p1_e1.d
Injection Date: 23-Aug-2016 13:54:00 Instrument ID: A8
Lims ID: 320-20928-A-8-A Lab Sample ID: 320-20928-8
Client ID: GW20-08GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

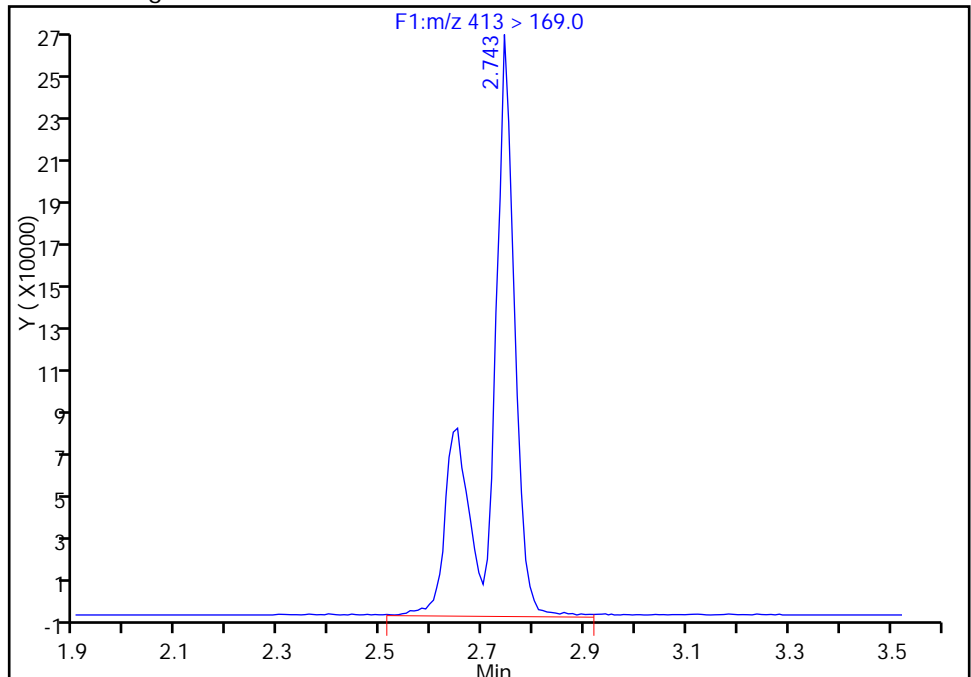
RT: 2.74
Area: 634875
Amount: 13.726118
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 927452
Amount: 17.086991
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:50:11

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

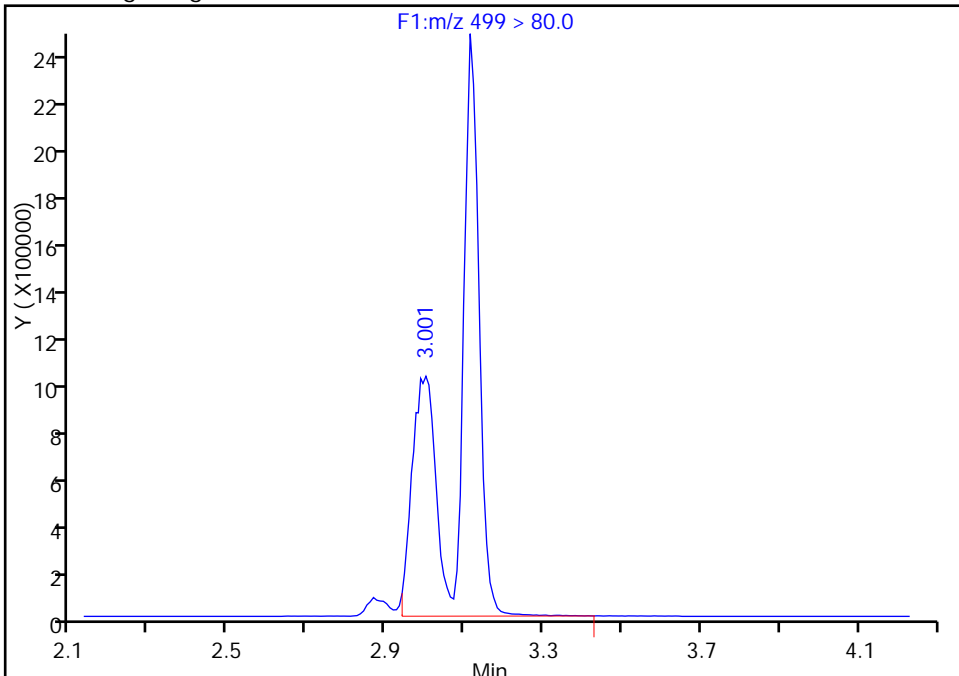
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_058_p1_e1.d
Injection Date: 23-Aug-2016 13:54:00 Instrument ID: A8
Lims ID: 320-20928-A-8-A Lab Sample ID: 320-20928-8
Client ID: GW20-08GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

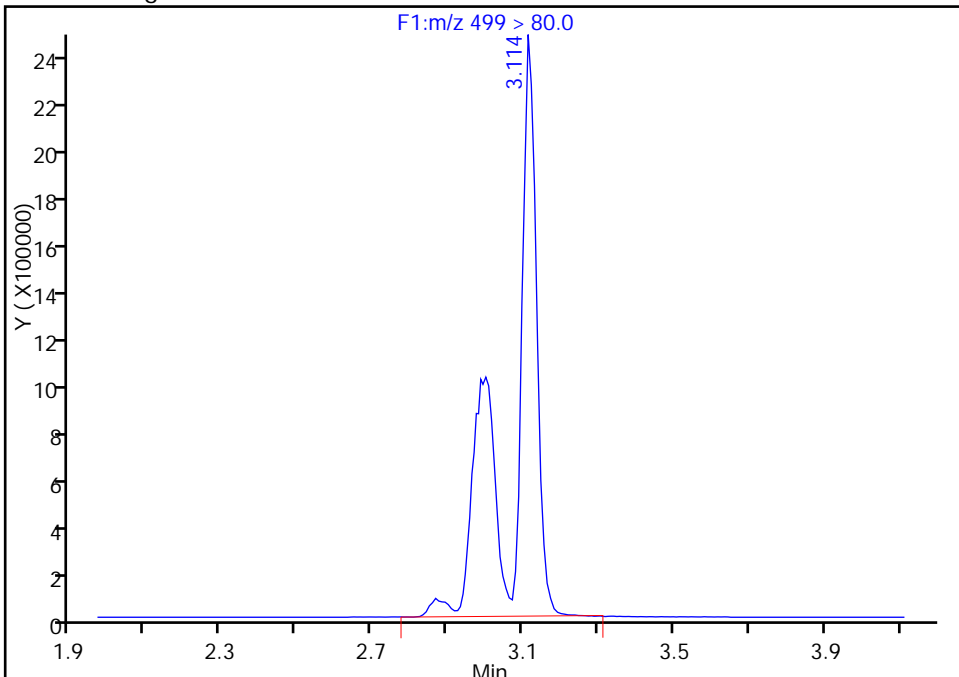
RT: 3.00
Area: 10592073
Amount: 91.934204
Amount Units: ng/ml

Processing Integration Results



RT: 3.11
Area: 10800990
Amount: 93.747505
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:50:11
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-07GW-0816 Lab Sample ID: 320-20928-9
 Matrix: Water Lab File ID: 22AUG2016D_059_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 16:15
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 262 (mL) Date Analyzed: 08/23/2016 14:01
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	10	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	61	M	3.8	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	88		25-150
STL00991	13C4 PFOS	115		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_059_p1_e1.d
 Lims ID: 320-20928-A-9-A
 Client ID: GW20-07GW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 14:01:00 ALS Bottle#: 0 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 18:01:20 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:51:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.749	2.798	-0.049	1.000	475848	5.37			2963	M
413 > 169.0	2.741	2.798	-0.057	0.997	310153		1.53(0.90-1.10)		22162	M
D 14 13C4 PFOA										
417 > 372.0	2.741	2.798	-0.057		4221305	43.8		87.7	343060	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.113	3.110	0.004	1.000	3318411	31.7			87006	M
499 > 99.0	3.113	3.110	0.004	1.000	818410		4.05(0.90-1.10)		37599	M
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		4510981	55.0			115	149410

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_059_p1_e1.d

Injection Date: 23-Aug-2016 14:01:00

Instrument ID: A8

Lims ID: 320-20928-A-9-A

Lab Sample ID: 320-20928-9

Client ID: GW20-07GW-0816

Operator ID: A8

ALS Bottle#: 0

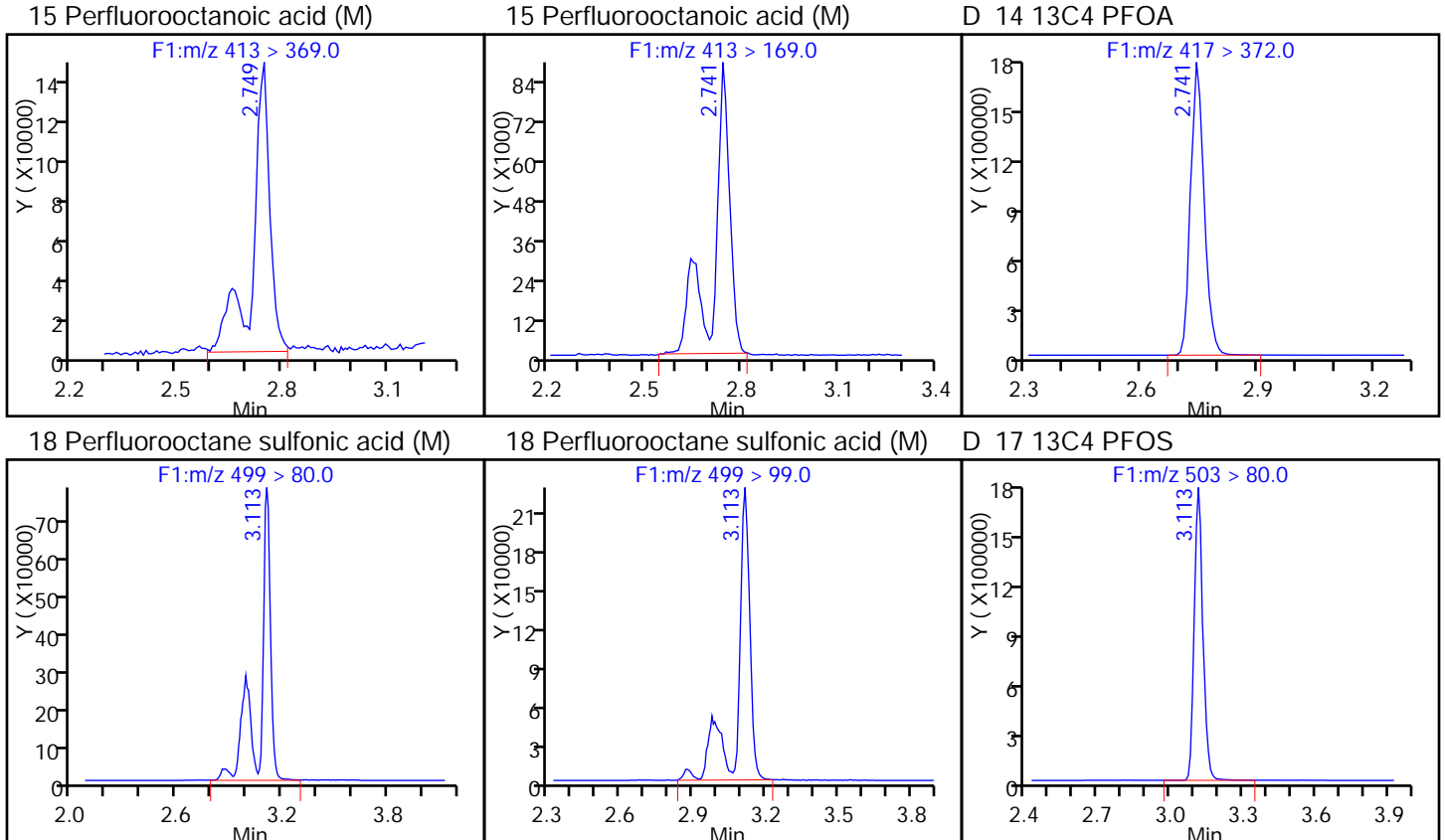
Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

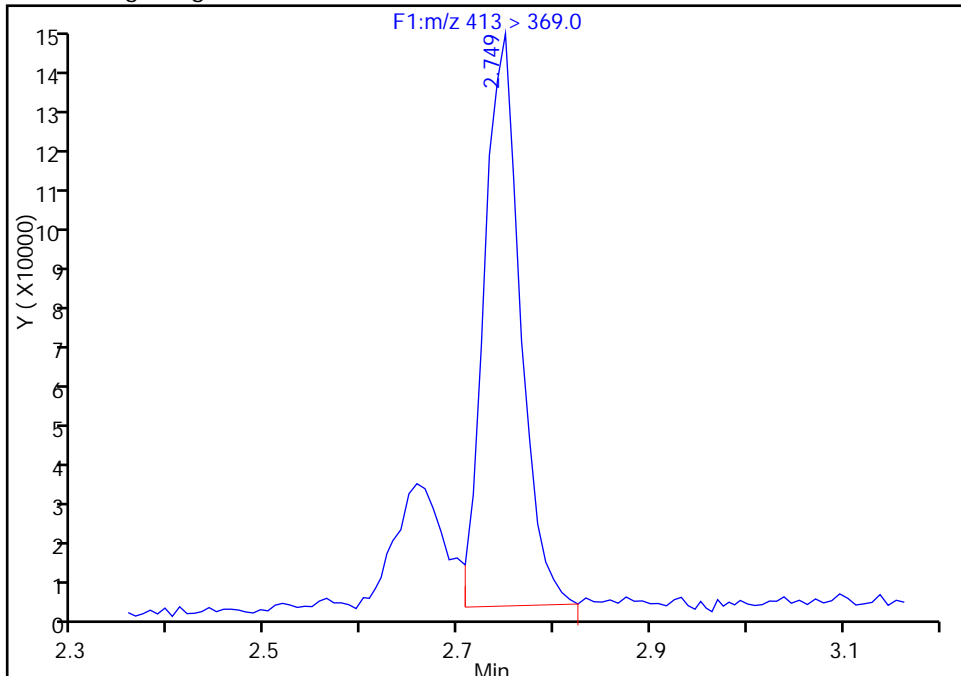
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_059_p1_e1.d
Injection Date: 23-Aug-2016 14:01:00 Instrument ID: A8
Lims ID: 320-20928-A-9-A Lab Sample ID: 320-20928-9
Client ID: GW20-07GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

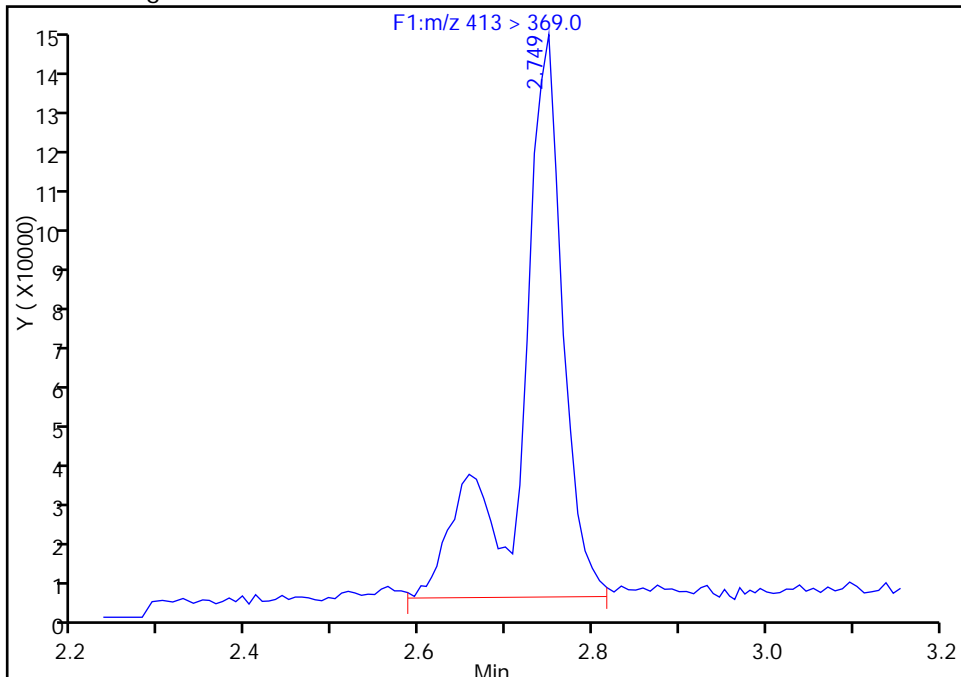
RT: 2.75
Area: 360390
Amount: 4.000890
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 475848
Amount: 5.374797
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:51:32
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

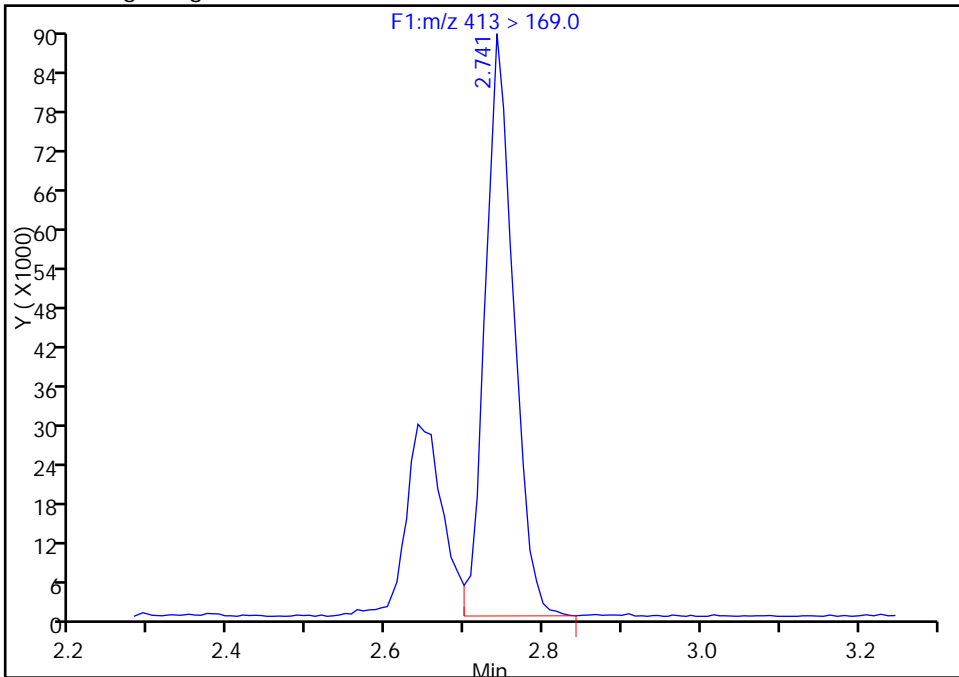
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_059_p1_e1.d
Injection Date: 23-Aug-2016 14:01:00 Instrument ID: A8
Lims ID: 320-20928-A-9-A Lab Sample ID: 320-20928-9
Client ID: GW20-07GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

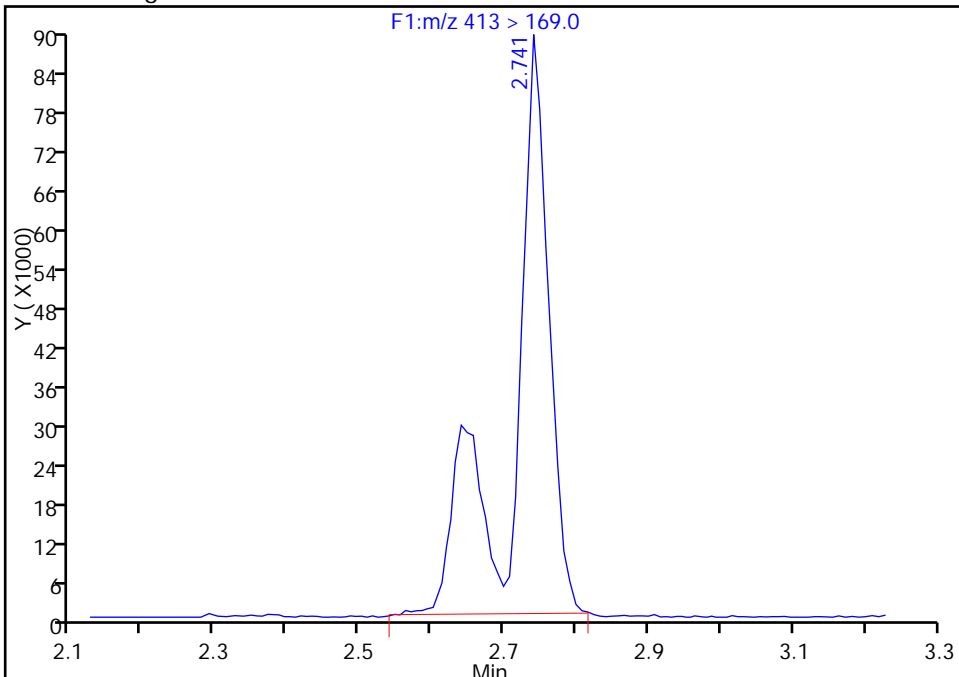
RT: 2.74
Area: 222701
Amount: 4.000890
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 310153
Amount: 5.374797
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:51:32

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

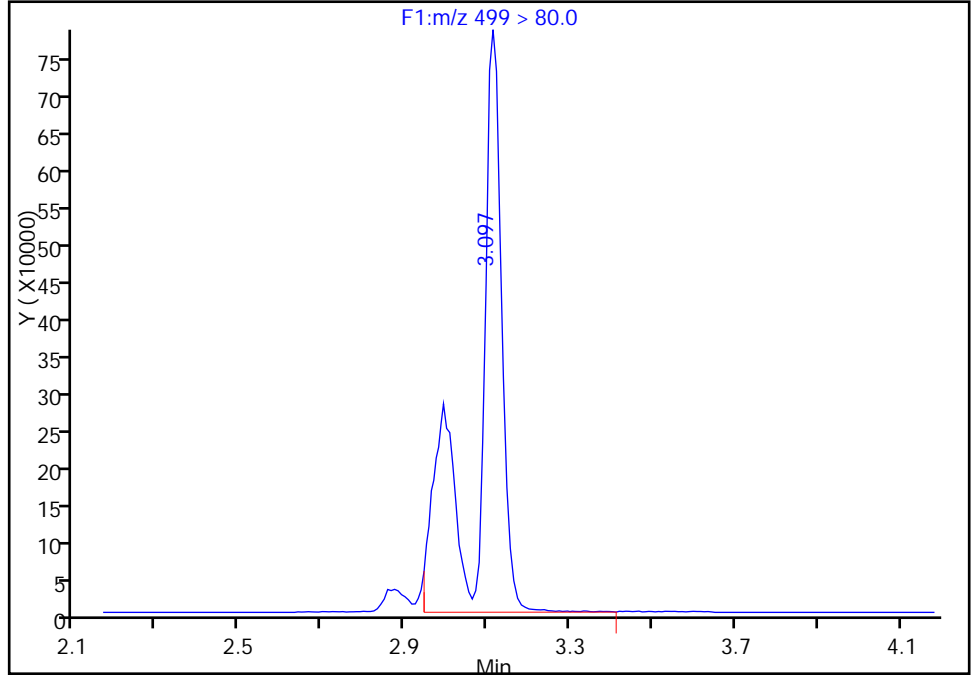
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_059_p1_e1.d
Injection Date: 23-Aug-2016 14:01:00 Instrument ID: A8
Lims ID: 320-20928-A-9-A Lab Sample ID: 320-20928-9
Client ID: GW20-07GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

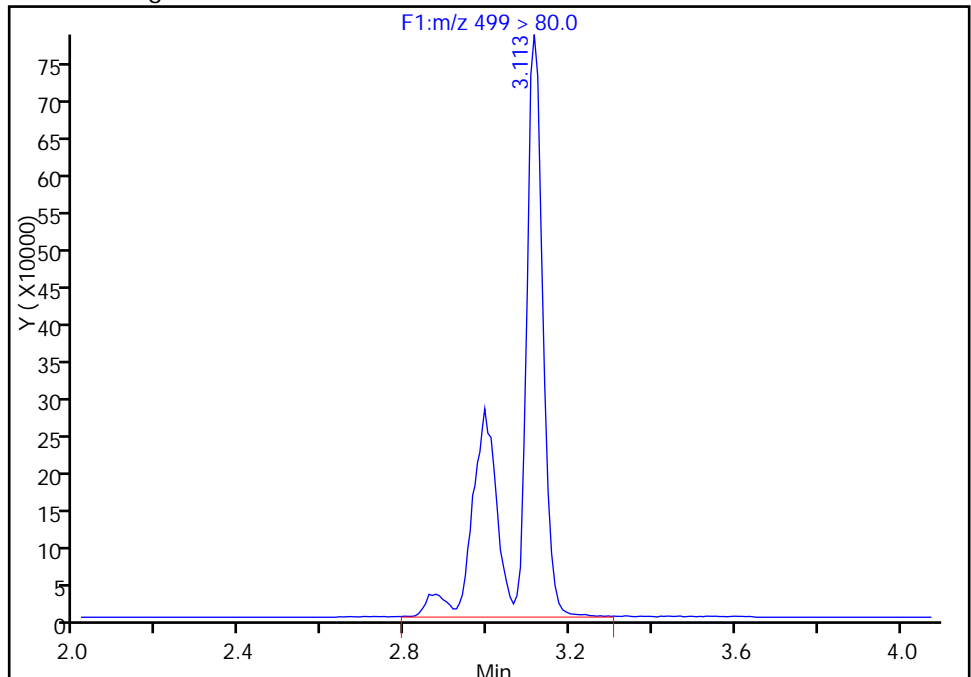
RT: 3.10
Area: 3171228
Amount: 30.300385
Amount Units: ng/ml

Processing Integration Results



RT: 3.11
Area: 3318411
Amount: 31.706686
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:51:32
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

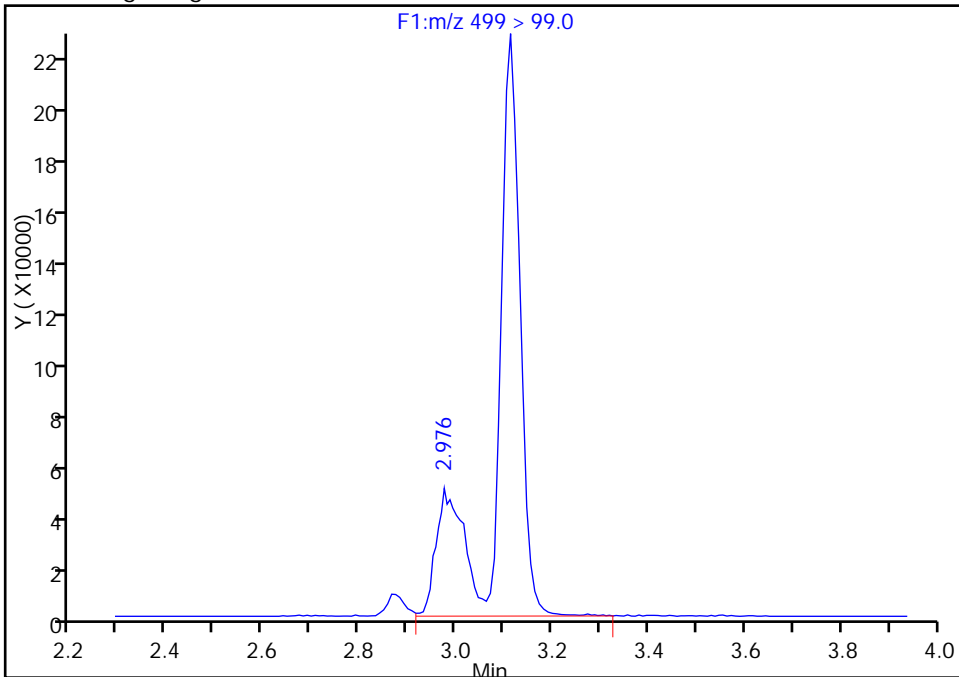
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_059_p1_e1.d
Injection Date: 23-Aug-2016 14:01:00 Instrument ID: A8
Lims ID: 320-20928-A-9-A Lab Sample ID: 320-20928-9
Client ID: GW20-07GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

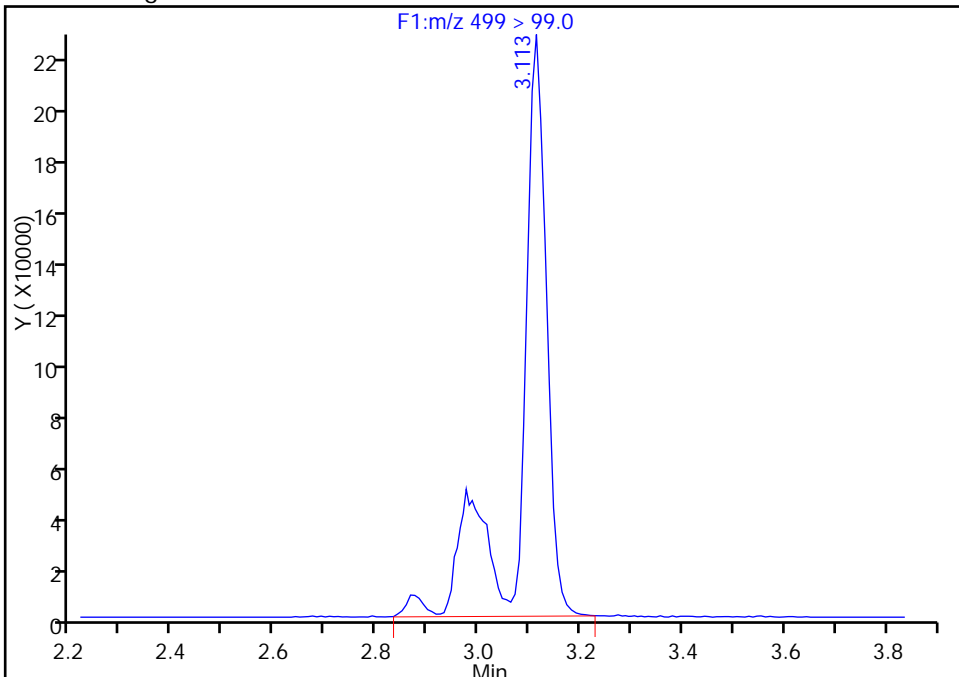
RT: 2.98
Area: 804153
Amount: 30.300385
Amount Units: ng/ml

Processing Integration Results



RT: 3.11
Area: 818410
Amount: 31.706686
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:51:32

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-EB01-081216-GW Lab Sample ID: 320-20928-10
 Matrix: Water Lab File ID: 22AUG2016D_060_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 16:30
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 270.6(mL) Date Analyzed: 08/23/2016 14:09
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U M	3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	135		25-150
STL00991	13C4 PFOS	125		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_060_p1_e1.d
 Lims ID: 320-20928-A-10-A
 Client ID: GW20-EB01-081216-GW
 Sample Type: Client
 Inject. Date: 23-Aug-2016 14:09:00 ALS Bottle#: 0 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 18:01:20 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:52:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.754	2.798	-0.044	1.000	14961	-0.1720			58.0	
413 > 169.0	2.737	2.798	-0.061	0.994	6110		2.45(0.90-1.10)		560	
D 14 13C4 PFOA										
417 > 372.0	2.745	2.798	-0.053		6502631	67.5		135	332814	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.123	3.110	0.014	1.000	10070	0.0886			1313	M
499 > 99.0	3.123	3.110	0.014	1.000	1735		5.80(0.90-1.10)		125	M
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		4897968	59.7		125	626829	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_060_p1_e1.d

Injection Date: 23-Aug-2016 14:09:00

Instrument ID: A8

Lims ID: 320-20928-A-10-A

Lab Sample ID: 320-20928-10

Client ID: GW20-EB01-081216-GW

Operator ID: A8

ALS Bottle#: 0

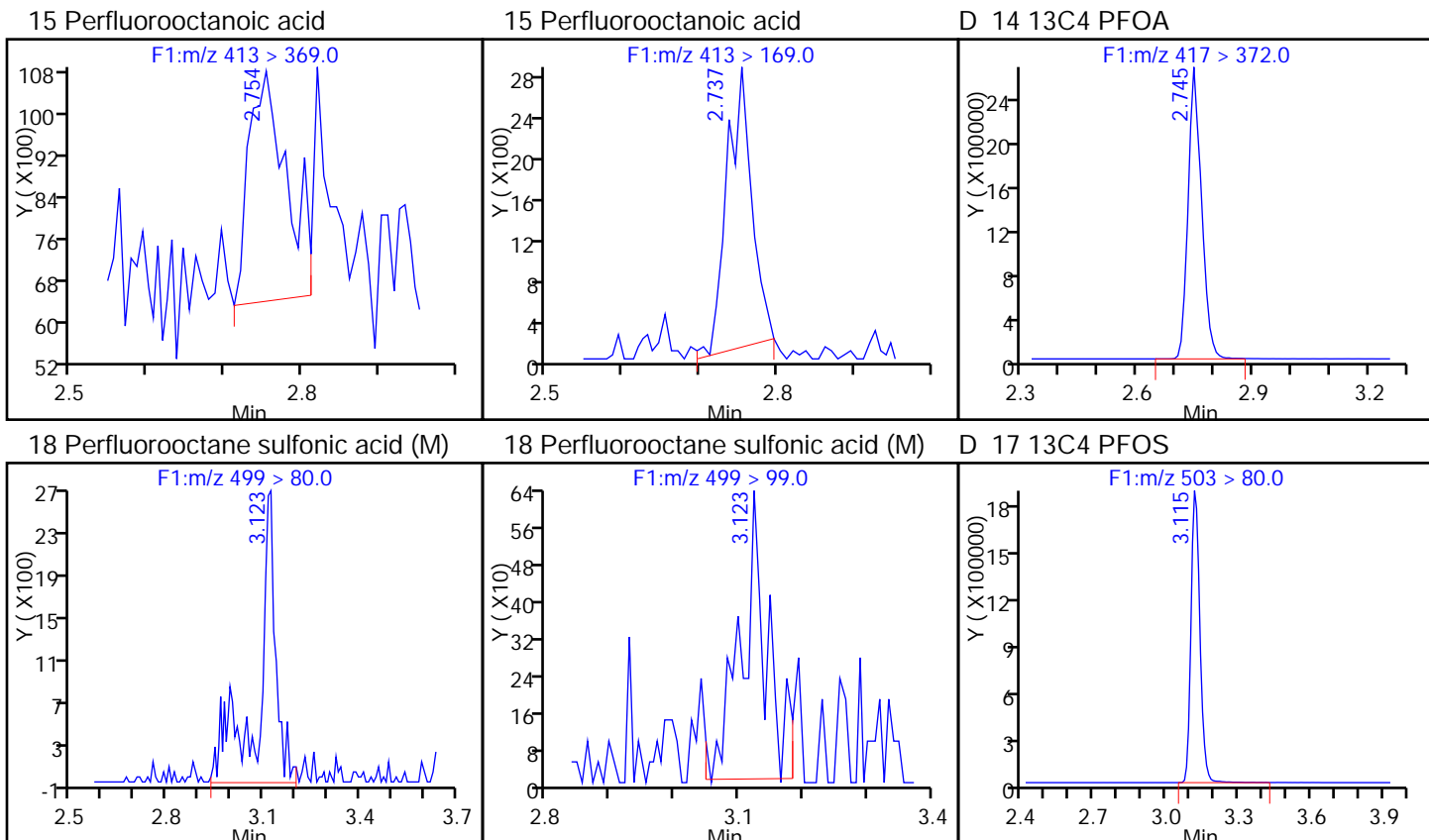
Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

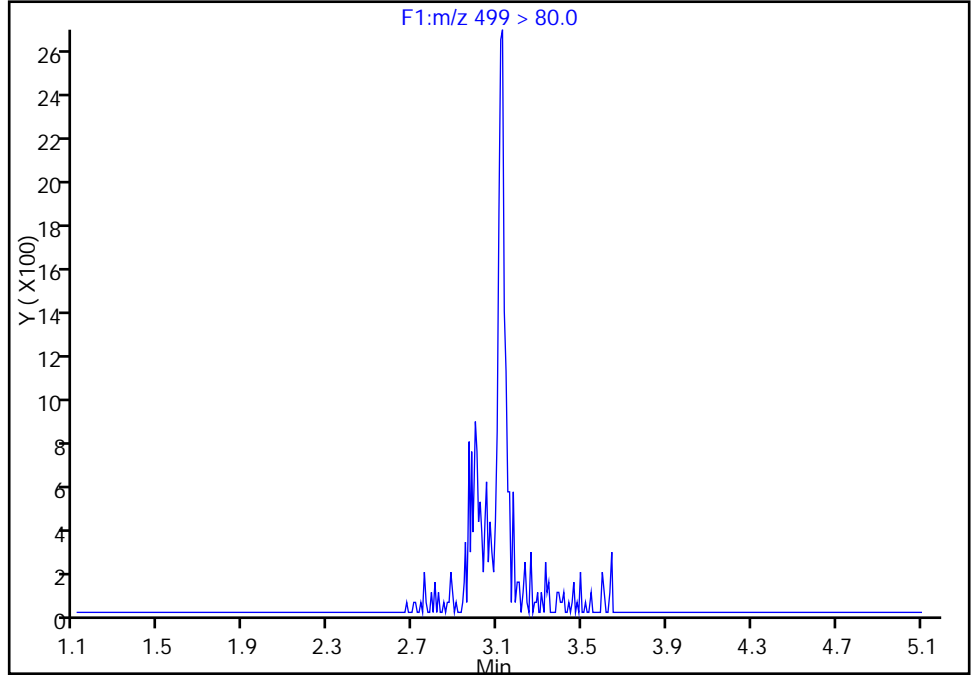
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_060_p1_e1.d
Injection Date: 23-Aug-2016 14:09:00 Instrument ID: A8
Lims ID: 320-20928-A-10-A Lab Sample ID: 320-20928-10
Client ID: GW20-EB01-081216-GW
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

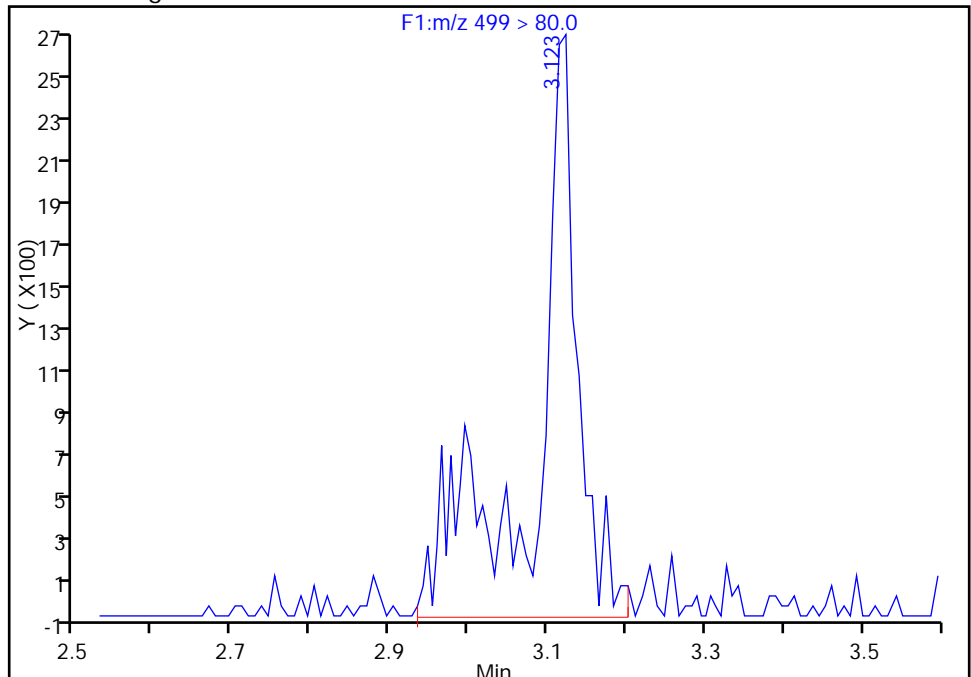
Not Detected
Expected RT: 3.11

Processing Integration Results



Manual Integration Results

RT: 3.12
Area: 10070
Amount: 0.088615
Amount Units: ng/ml



Reviewer: barnettj, 30-Aug-2016 17:52:37
Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento

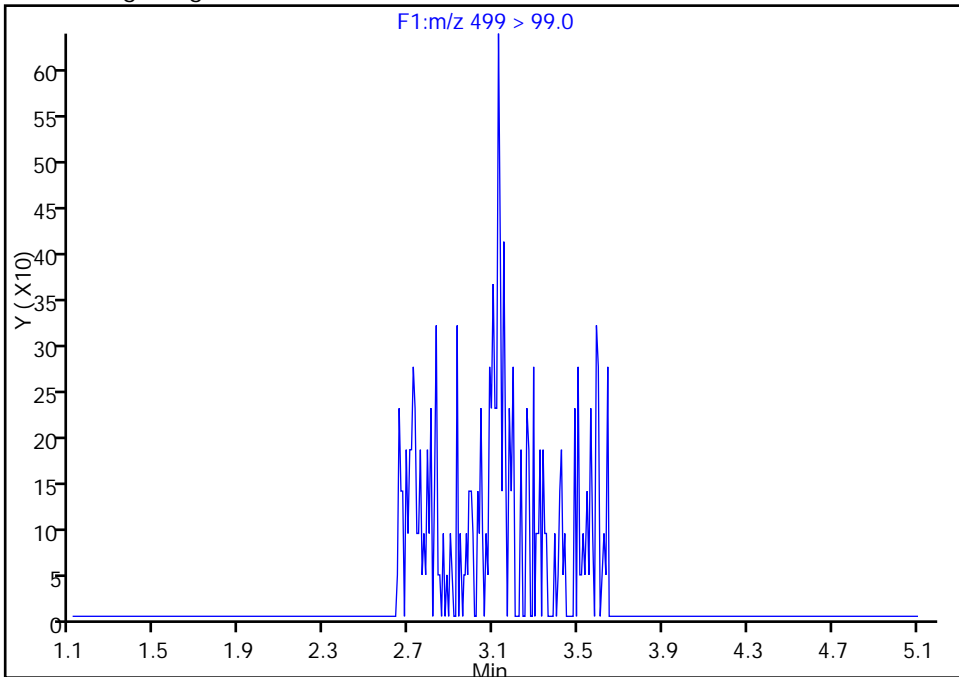
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_060_p1_e1.d
Injection Date: 23-Aug-2016 14:09:00 Instrument ID: A8
Lims ID: 320-20928-A-10-A Lab Sample ID: 320-20928-10
Client ID: GW20-EB01-081216-GW
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

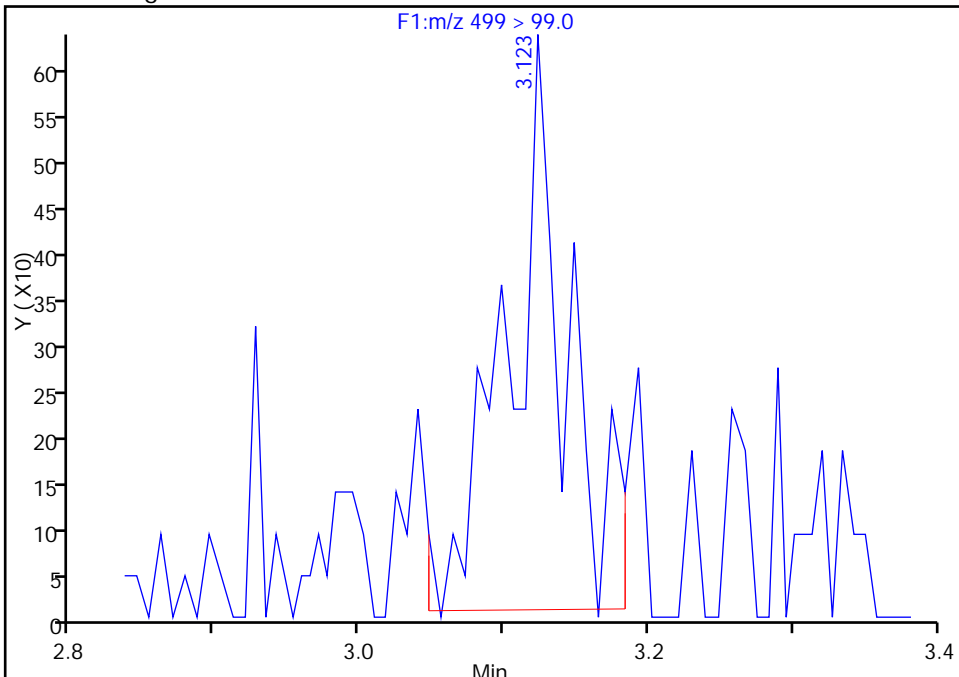
Not Detected
Expected RT: 3.11

Processing Integration Results



Manual Integration Results

RT: 3.12
Area: 1735
Amount: 0.088615
Amount Units: ng/ml



Reviewer: barnettj, 30-Aug-2016 17:52:37

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-FB01-081216 Lab Sample ID: 320-20928-11
 Matrix: Water Lab File ID: 22AUG2016D_061_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 16:35
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 273.3(mL) Date Analyzed: 08/23/2016 14:16
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U M	2.3	1.8	0.68
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.7	2.7	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	133		25-150
STL00991	13C4 PFOS	119		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_061_p1_e1.d
 Lims ID: 320-20928-A-11-A
 Client ID: GW20-FB01-081216
 Sample Type: Client
 Inject. Date: 23-Aug-2016 14:16:00 ALS Bottle#: 0 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 18:01:20 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:53:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413 > 369.0	2.754	2.798	-0.044	1.000	8052	-0.2245			81.1	M
413 > 169.0	2.737	2.798	-0.061	0.994	7238		1.11(0.90-1.10)		630	
D 14 13C4 PFOA										
417 > 372.0	2.745	2.798	-0.053		6407511	66.5		133	410938	
D 17 13C4 PFOS										
503 > 80.0	3.107	3.177	-0.070		4673267	56.9		119	364783	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_061_p1_e1.d

Injection Date: 23-Aug-2016 14:16:00

Instrument ID: A8

Lims ID: 320-20928-A-11-A

Lab Sample ID: 320-20928-11

Client ID: GW20-FB01-081216

Operator ID: A8

ALS Bottle#: 0

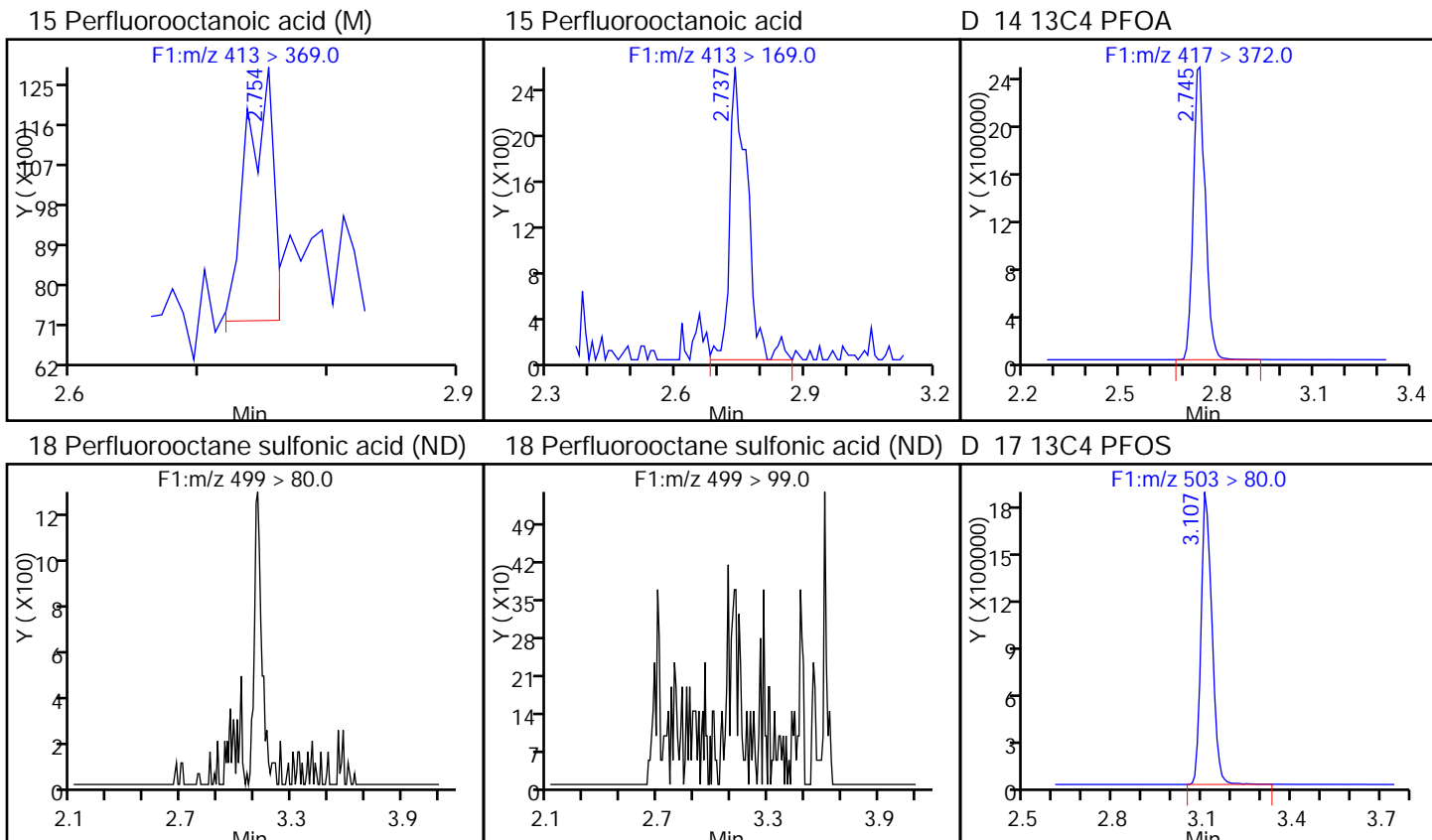
Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

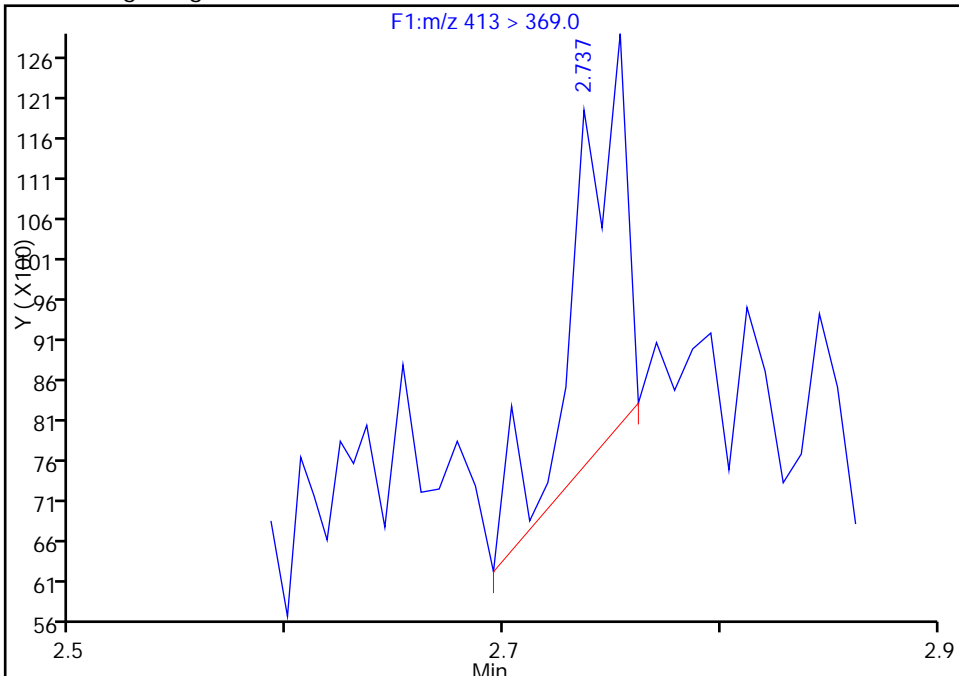
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_061_p1_e1.d
Injection Date: 23-Aug-2016 14:16:00 Instrument ID: A8
Lims ID: 320-20928-A-11-A Lab Sample ID: 320-20928-11
Client ID: GW20-FB01-081216
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

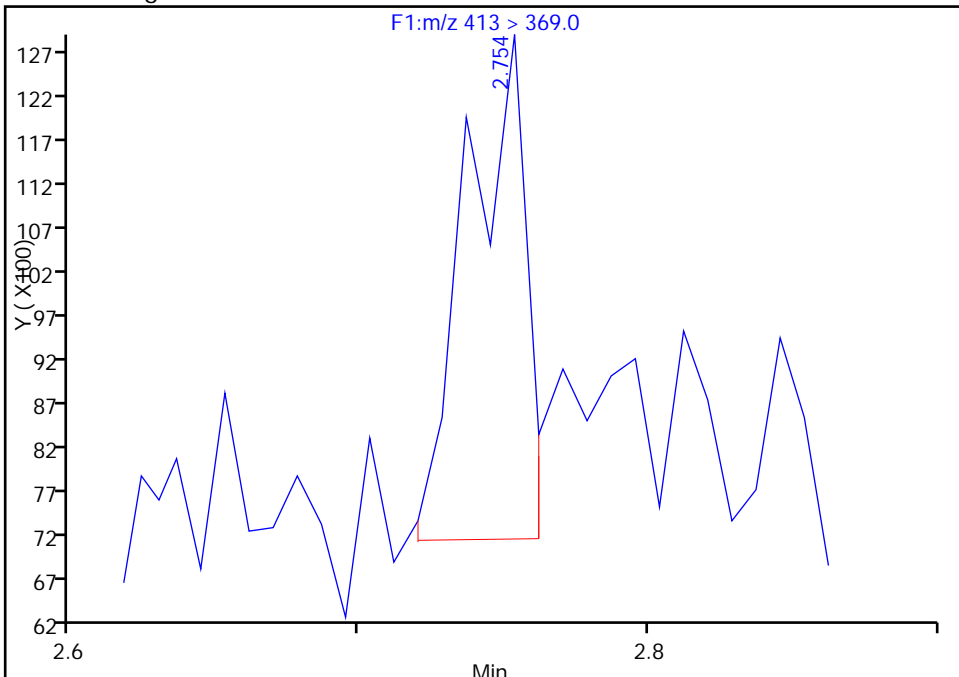
RT: 2.74
Area: 7713
Amount: -0.227150
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 8052
Amount: -0.224493
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:53:31
Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-17DGW-0816 Lab Sample ID: 320-20928-12
 Matrix: Water Lab File ID: 22AUG2016D_062_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 09:05
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 247.7(mL) Date Analyzed: 08/23/2016 14:24
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	3.2	M	2.5	2.0	0.75
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.8		4.0	3.0	1.3

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_062_p1_e1.d
 Lims ID: 320-20928-A-12-A
 Client ID: GW20-17DGW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 14:24:00 ALS Bottle#: 0 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 18:01:20 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:54:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.748	2.798	-0.050	1.000	140413	1.57			646	M
413 > 169.0	2.740	2.798	-0.058	0.997	81579		1.72(0.90-1.10)		6174	M
D 14 13C4 PFOA										
417 > 372.0	2.740	2.798	-0.058		3788351	39.3		78.7	357899	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.000	3.110	-0.109	1.000	525056	4.84			77867	
499 > 99.0	3.000	3.110	-0.109	1.000	102703		5.11(0.90-1.10)		2537	
D 17 13C4 PFOS										
503 > 80.0	3.112	3.177	-0.065		4673604	56.9			119	240619

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_062_p1_e1.d

Injection Date: 23-Aug-2016 14:24:00

Instrument ID: A8

Lims ID: 320-20928-A-12-A

Lab Sample ID: 320-20928-12

Client ID: GW20-17DGW-0816

Operator ID: A8

ALS Bottle#: 0

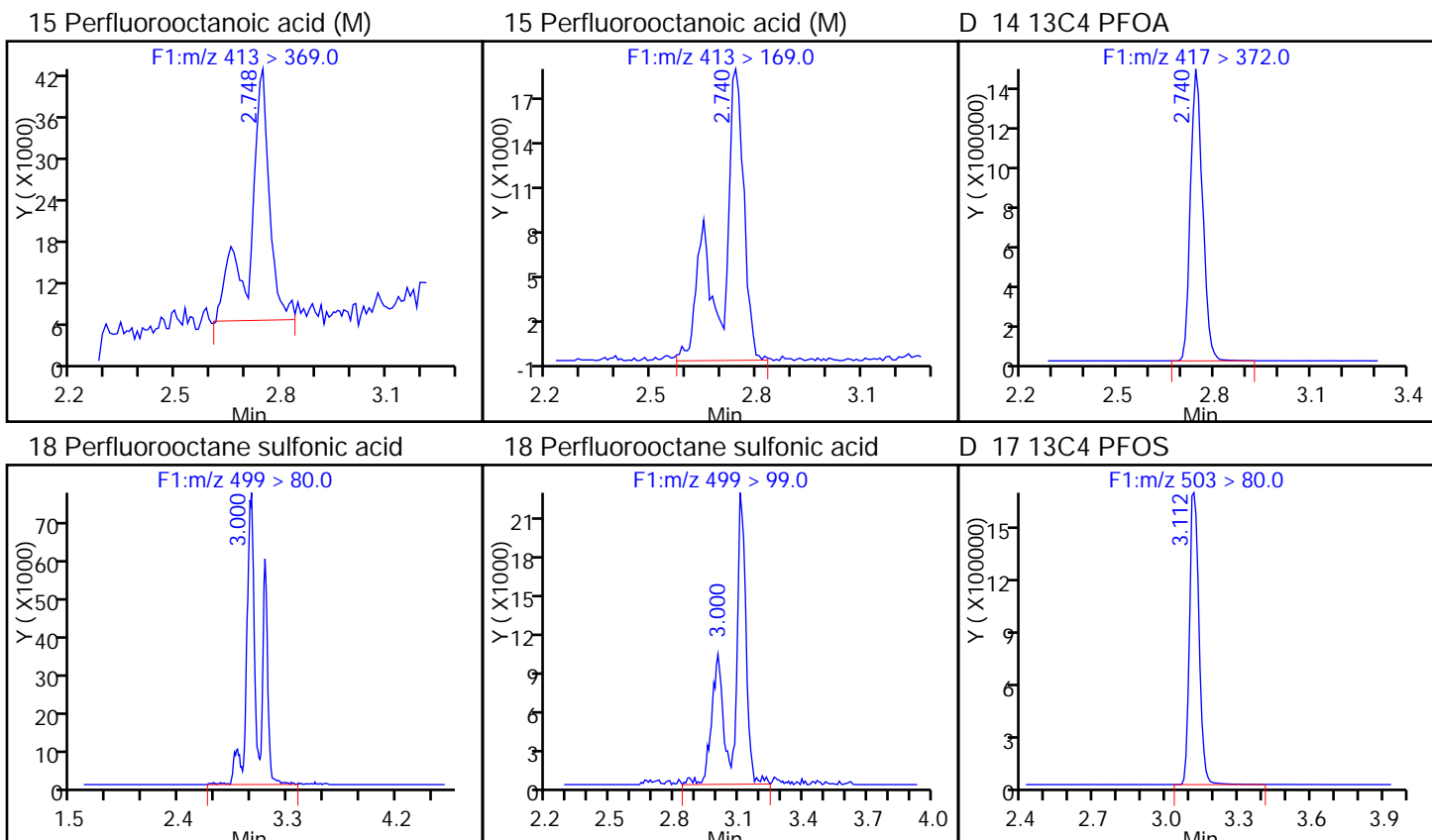
Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

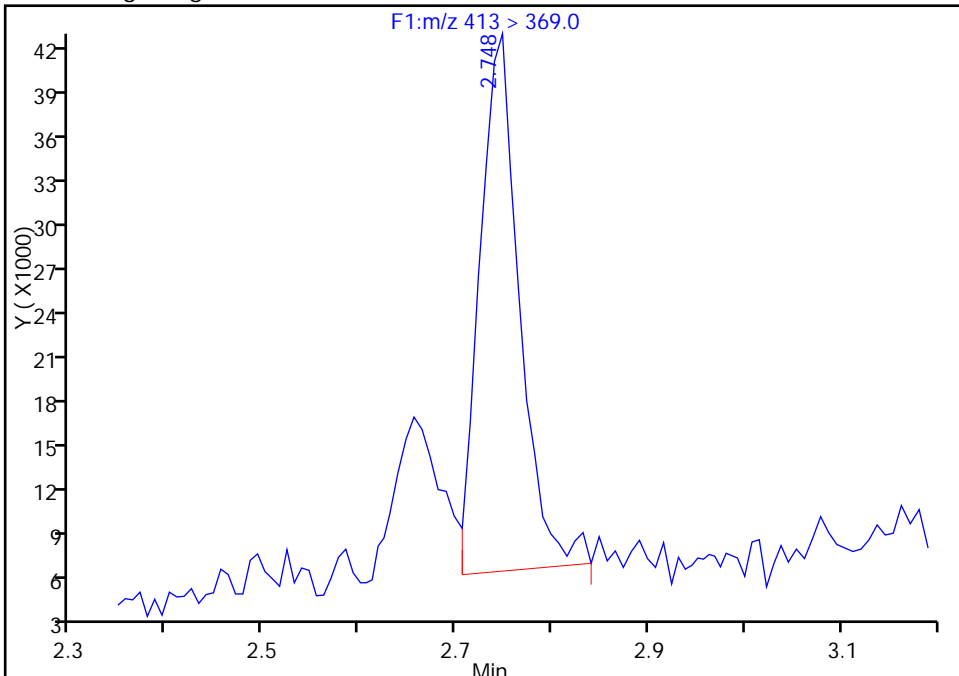
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_062_p1_e1.d
Injection Date: 23-Aug-2016 14:24:00 Instrument ID: A8
Lims ID: 320-20928-A-12-A Lab Sample ID: 320-20928-12
Client ID: GW20-17DGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

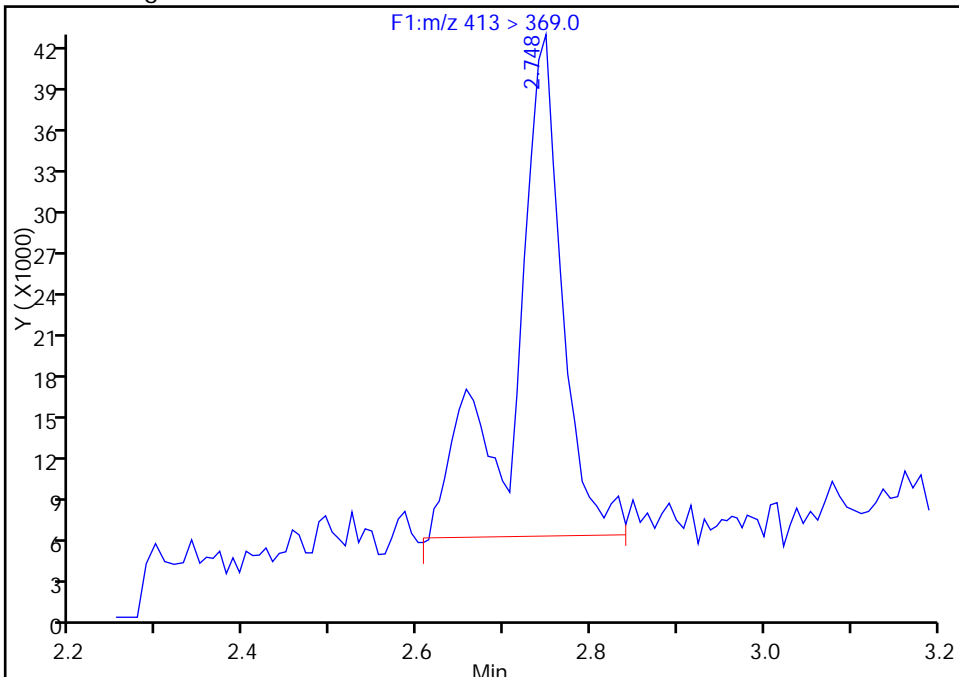
RT: 2.75
Area: 102463
Amount: 1.071000
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 140413
Amount: 1.574201
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:54:23
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

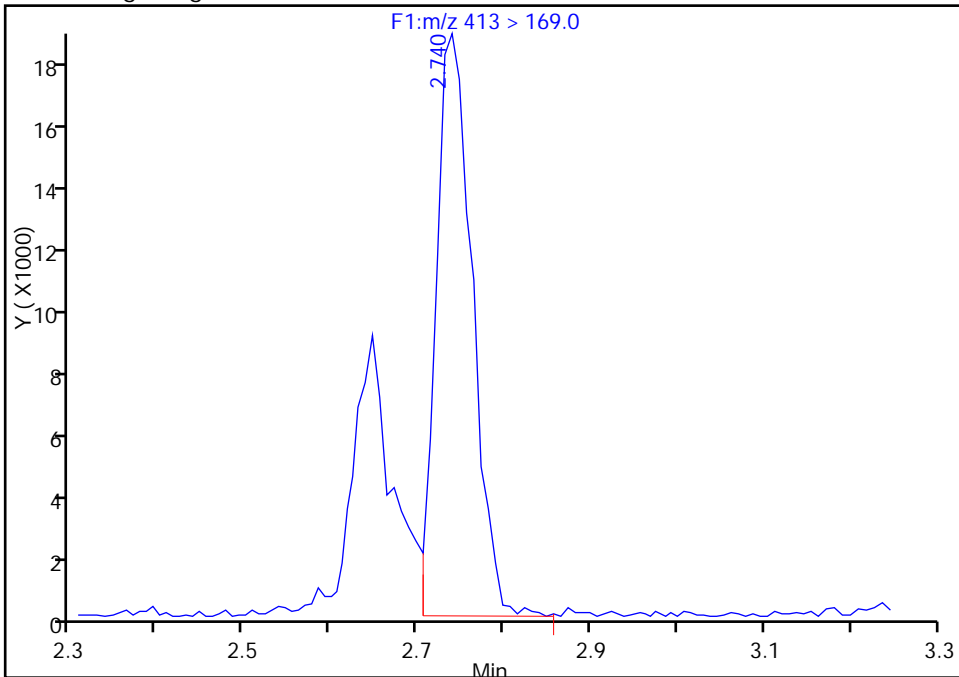
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_062_p1_e1.d
Injection Date: 23-Aug-2016 14:24:00 Instrument ID: A8
Lims ID: 320-20928-A-12-A Lab Sample ID: 320-20928-12
Client ID: GW20-17DGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

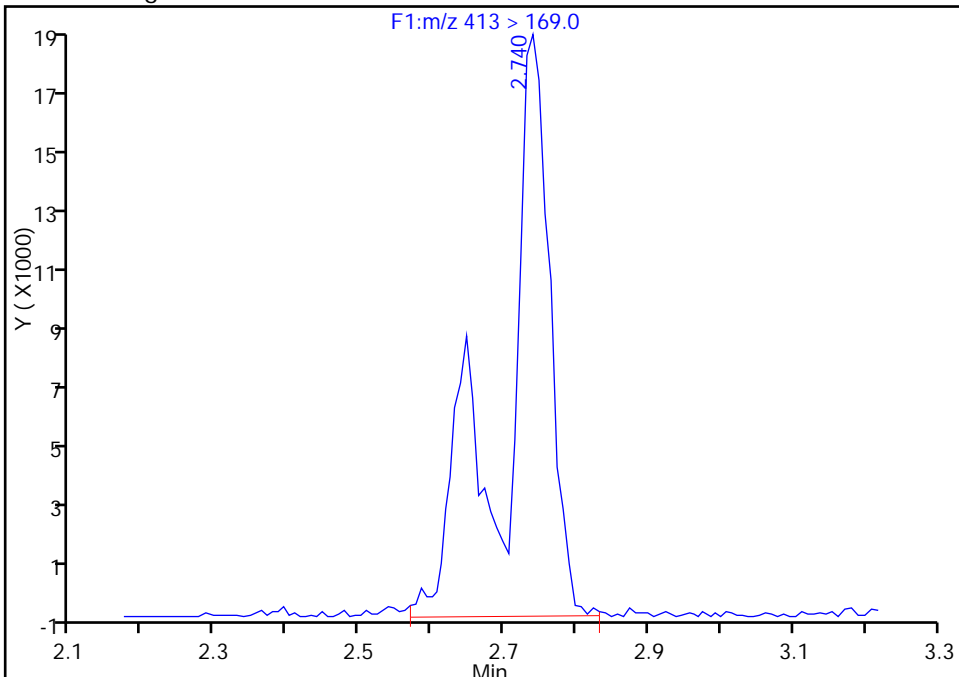
RT: 2.74
Area: 53279
Amount: 1.071000
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 81579
Amount: 1.574201
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:54:23

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-13GW-0816 Lab Sample ID: 320-20928-13
 Matrix: Water Lab File ID: 22AUG2016D_063_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 09:10
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 270 (mL) Date Analyzed: 08/23/2016 14:31
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	17	M	2.3	1.9	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	33	M	3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	62		25-150
STL00991	13C4 PFOS	132		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_063_p1_e1.d
 Lims ID: 320-20928-A-13-A
 Client ID: GW20-13GW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 14:31:00 ALS Bottle#: 0 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 18:04:10 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:55:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.743	2.798	-0.055	1.000	569850	9.24			3271	M
413 > 169.0	2.743	2.798	-0.055	1.000	332266		1.72(0.90-1.10)		28512	M
D 14 13C4 PFOA										
417 > 372.0	2.743	2.798	-0.055		3005622	31.2		62.4	226210	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.106	3.110	-0.003	1.000	2123988	17.7			22619	M
499 > 99.0	3.009	3.110	-0.100	0.969	428838		4.95(0.90-1.10)		8163	
D 17 13C4 PFOS										
503 > 80.0	3.114	3.177	-0.063		5163513	62.9			132	103084

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_063_p1_e1.d

Injection Date: 23-Aug-2016 14:31:00

Instrument ID: A8

Lims ID: 320-20928-A-13-A

Lab Sample ID: 320-20928-13

Client ID: GW20-13GW-0816

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

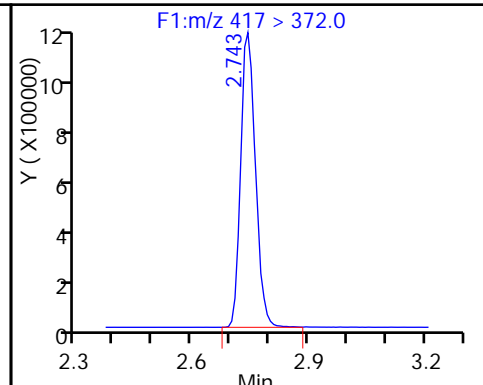
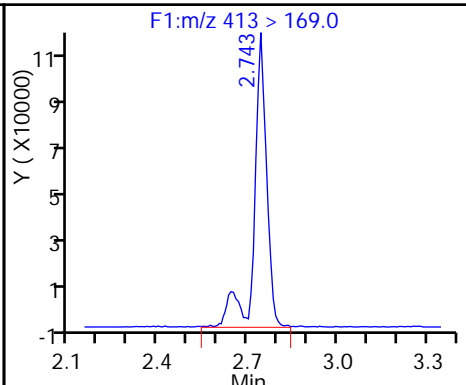
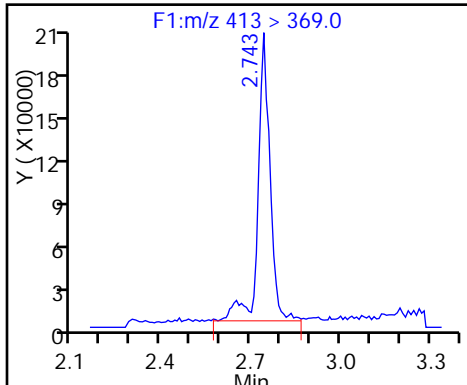
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

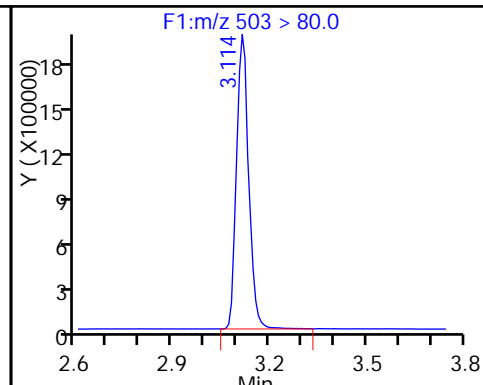
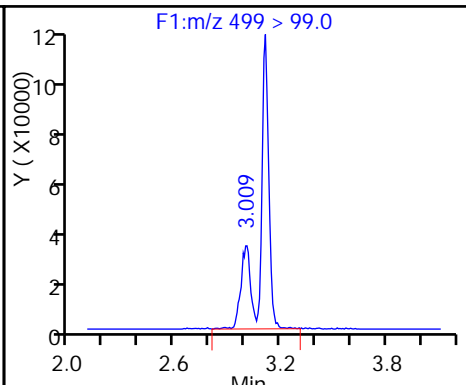
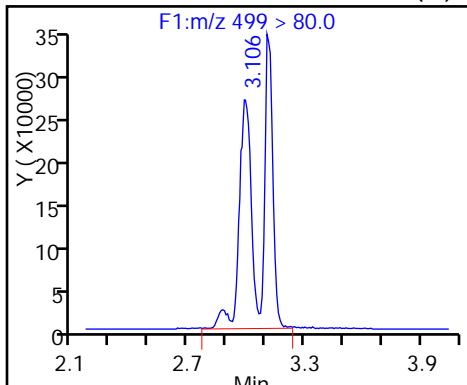
D 14 13C4 PFOA



18 Perfluorooctane sulfonic acid (M)

18 Perfluorooctane sulfonic acid

D 17 13C4 PFOS



TestAmerica Sacramento

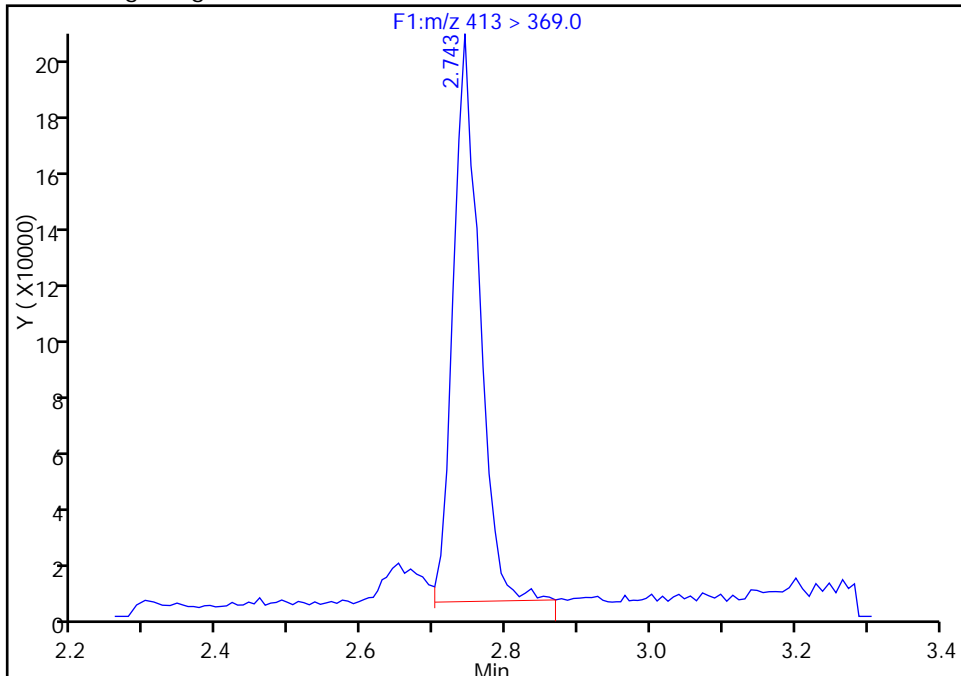
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_063_p1_e1.d
Injection Date: 23-Aug-2016 14:31:00 Instrument ID: A8
Lims ID: 320-20928-A-13-A Lab Sample ID: 320-20928-13
Client ID: GW20-13GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

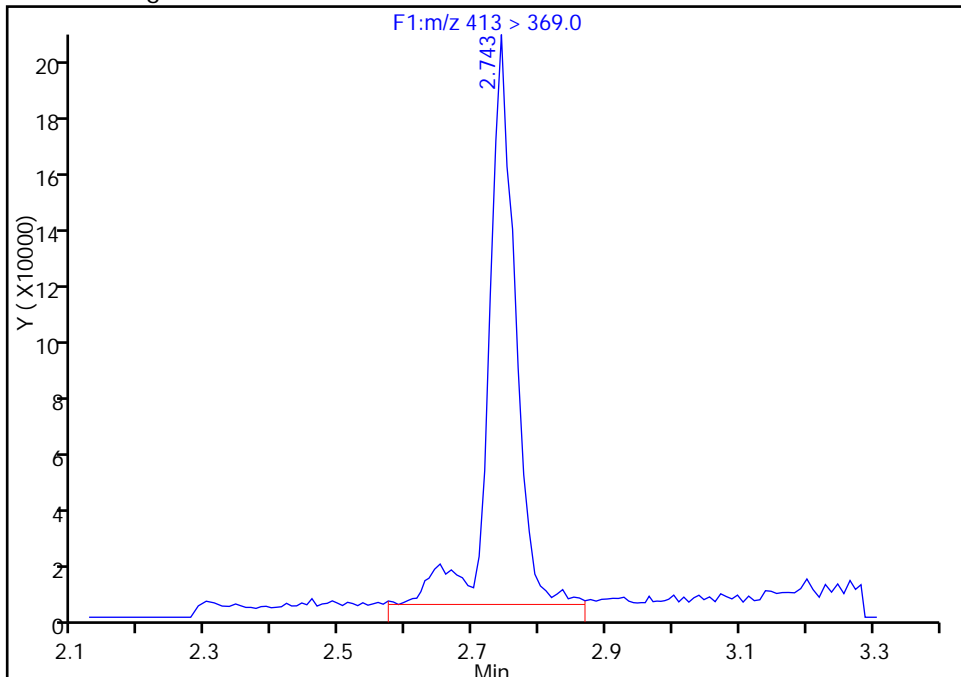
RT: 2.74
Area: 508858
Amount: 8.216757
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 569850
Amount: 9.236095
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:55:27
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

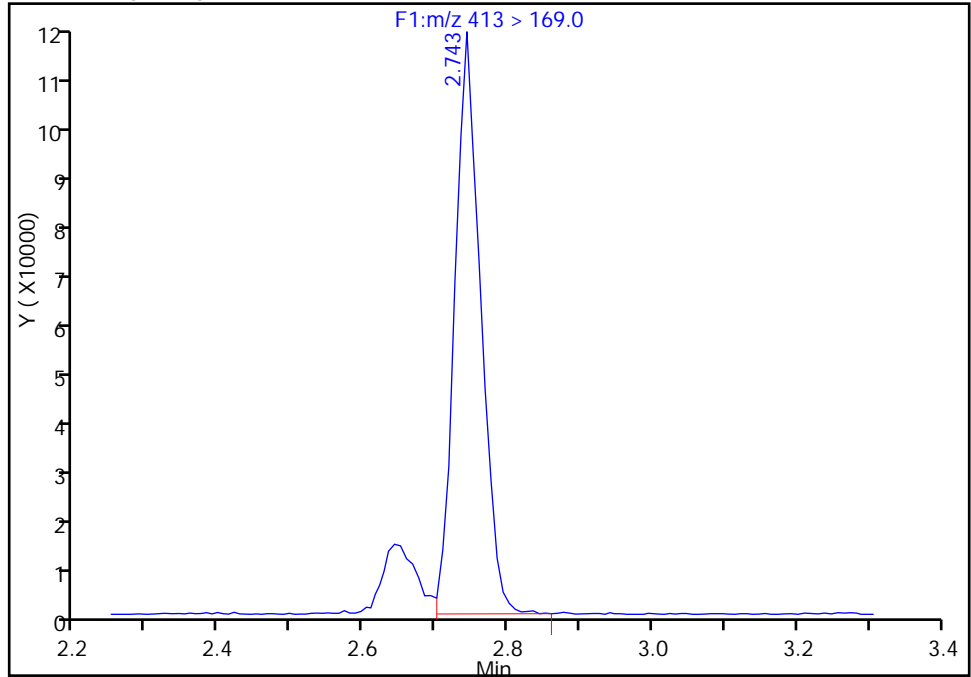
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_063_p1_e1.d
Injection Date: 23-Aug-2016 14:31:00 Instrument ID: A8
Lims ID: 320-20928-A-13-A Lab Sample ID: 320-20928-13
Client ID: GW20-13GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

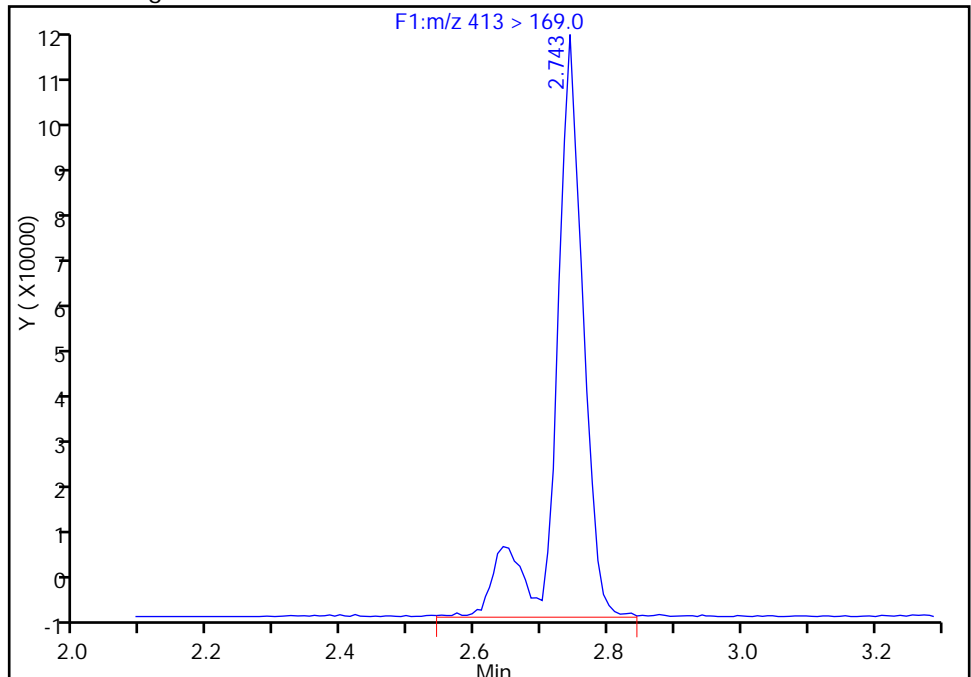
RT: 2.74
Area: 283177
Amount: 8.216757
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 332266
Amount: 9.236095
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:55:27

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

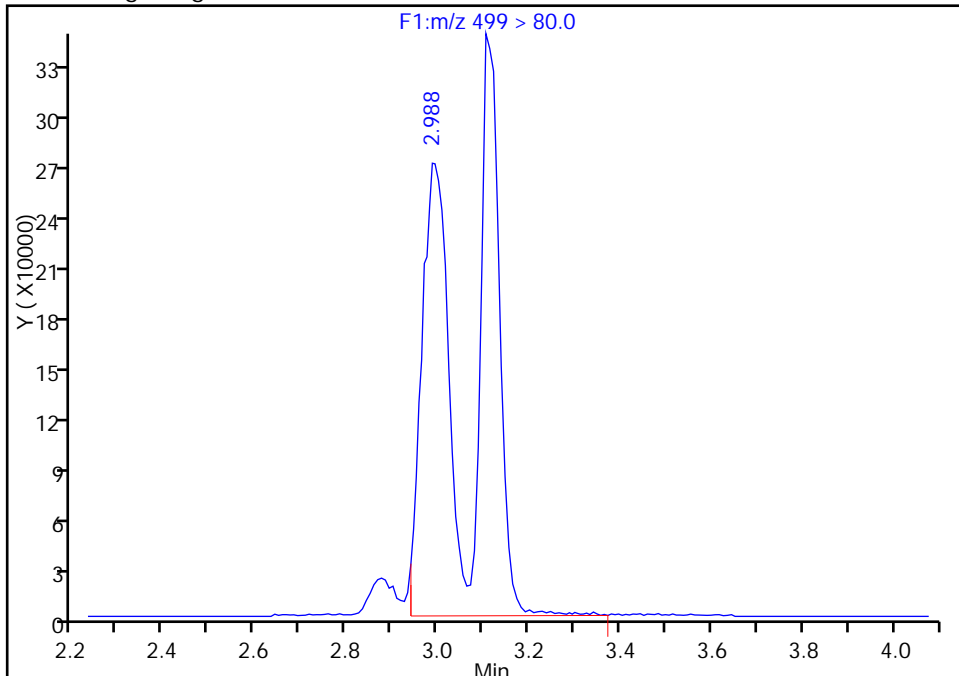
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_063_p1_e1.d
Injection Date: 23-Aug-2016 14:31:00 Instrument ID: A8
Lims ID: 320-20928-A-13-A Lab Sample ID: 320-20928-13
Client ID: GW20-13GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

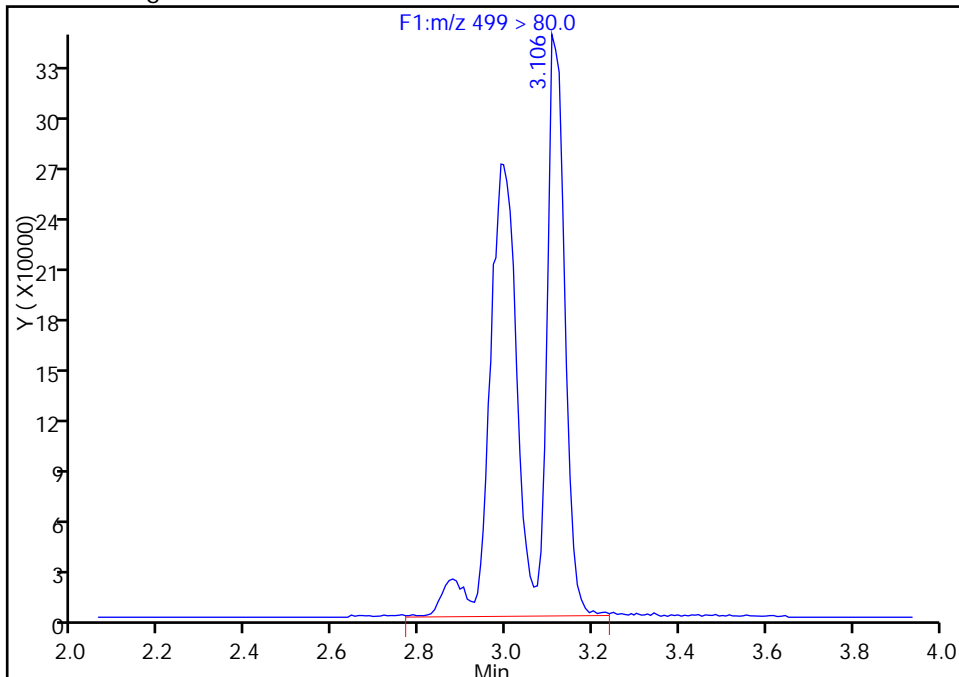
RT: 2.99
Area: 2039920
Amount: 17.027839
Amount Units: ng/ml

Processing Integration Results



RT: 3.11
Area: 2123988
Amount: 17.729581
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:55:27
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-22GW-0816 Lab Sample ID: 320-20928-14
 Matrix: Water Lab File ID: 22AUG2016D_064_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 09:20
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 270.8 (mL) Date Analyzed: 08/23/2016 14:39
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U M	2.3	1.8	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.8		3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	83		25-150
STL00991	13C4 PFOS	126		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_064_p1_e1.d
 Lims ID: 320-20928-A-14-A
 Client ID: GW20-22GW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 14:39:00 ALS Bottle#: 0 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 18:04:10 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:56:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.670	2.798	-0.128	1.000	31846	0.1131			188	M
413 > 169.0	2.645	2.798	-0.153	0.991	46193		0.69(0.90-1.10)		2612	M
D 14 13C4 PFOA										
417 > 372.0	2.745	2.798	-0.053		3992345	41.4		82.9	254129	
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.995	3.110	-0.114	1.000	238822	2.08			7282	
499 > 99.0	3.082	3.110	-0.027	1.029	55343		4.32(0.90-1.10)		571	
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		4951191	60.3			126	217396

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_064_p1_e1.d

Injection Date: 23-Aug-2016 14:39:00

Instrument ID: A8

Lims ID: 320-20928-A-14-A

Lab Sample ID: 320-20928-14

Client ID: GW20-22GW-0816

Operator ID: A8

ALS Bottle#: 0

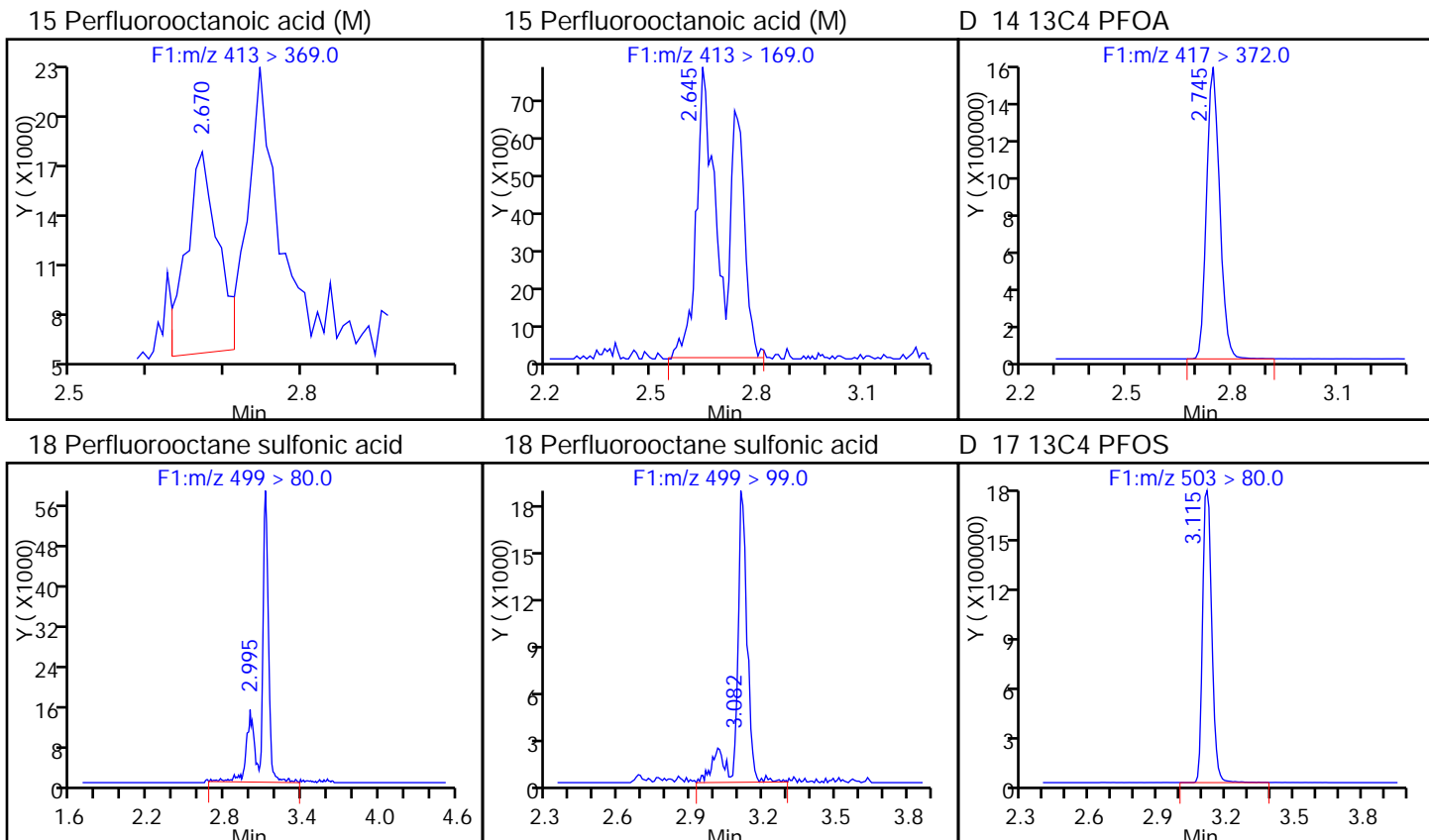
Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

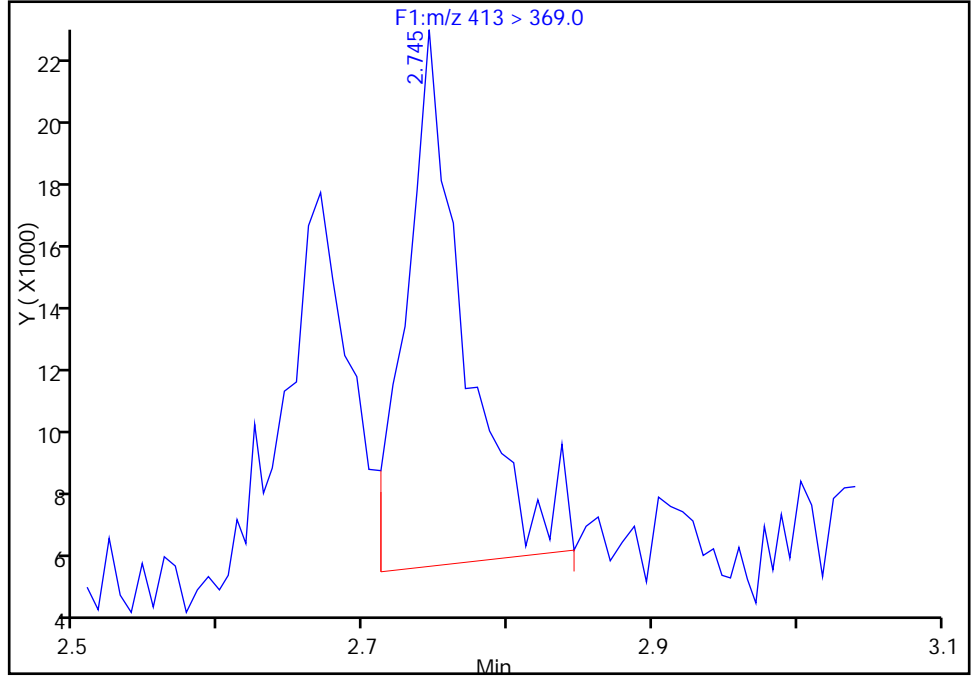
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_064_p1_e1.d
Injection Date: 23-Aug-2016 14:39:00 Instrument ID: A8
Lims ID: 320-20928-A-14-A Lab Sample ID: 320-20928-14
Client ID: GW20-22GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

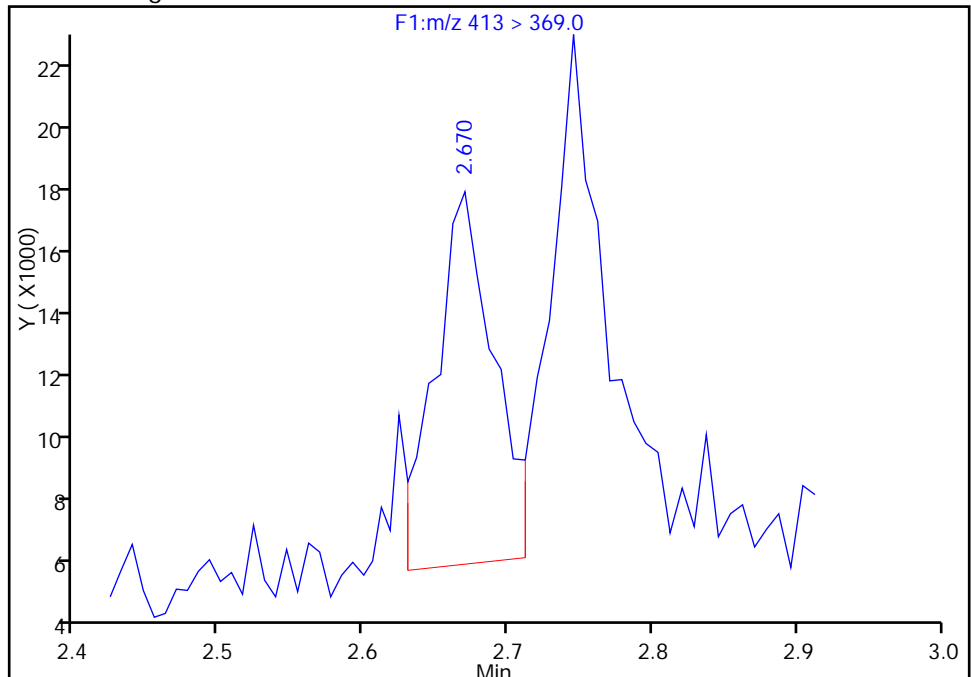
RT: 2.75
Area: 44393
Amount: 0.270939
Amount Units: ng/ml

Processing Integration Results



RT: 2.67
Area: 31846
Amount: 0.113072
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:56:24
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

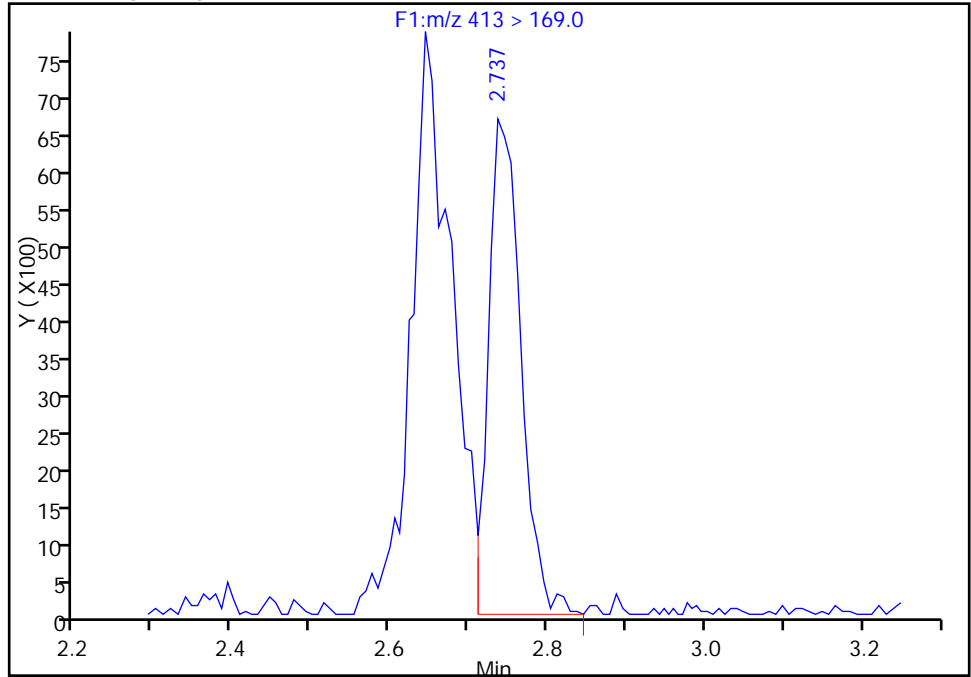
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_064_p1_e1.d
Injection Date: 23-Aug-2016 14:39:00 Instrument ID: A8
Lims ID: 320-20928-A-14-A Lab Sample ID: 320-20928-14
Client ID: GW20-22GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

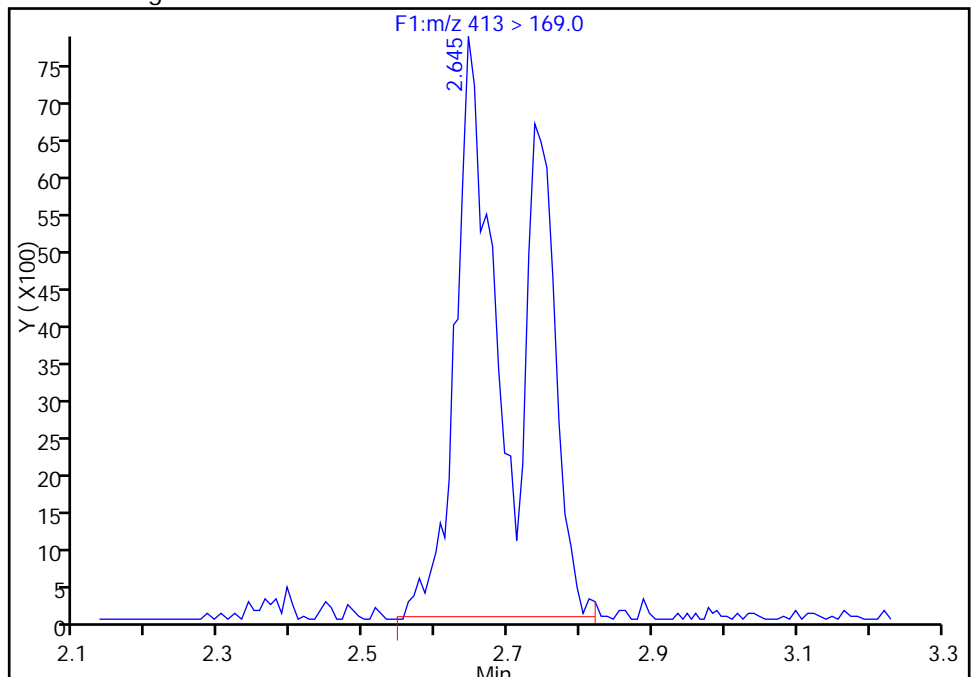
RT: 2.74
Area: 18841
Amount: 0.270939
Amount Units: ng/ml

Processing Integration Results



RT: 2.65
Area: 46193
Amount: 0.113072
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:56:24

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-17SGW-0816 Lab Sample ID: 320-20928-15
 Matrix: Water Lab File ID: 22AUG2016D_069_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 10:15
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 264.4 (mL) Date Analyzed: 08/23/2016 15:16
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	6.9	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.6	M	3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	41		25-150
STL00991	13C4 PFOS	122		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_069_p1_e1.d
 Lims ID: 320-20928-A-15-A
 Client ID: GW20-17SGW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 15:16:00 ALS Bottle#: 0 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:39:53 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 31-Aug-2016 09:37:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.751	2.798	-0.047	1.000	155601	3.67			1126	M
413 > 169.0	2.751	2.798	-0.047	1.000	93867		1.66(0.90-1.10)		6399	M
D 14 13C4 PFOA										
417 > 372.0	2.751	2.798	-0.047		1974896	20.5		41.0	248228	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.122	3.110	0.013	1.000	509125	4.57			8166	M
499 > 99.0	3.122	3.110	0.013	1.000	82564		6.17(0.90-1.10)		6782	M
D 17 13C4 PFOS										
503 > 80.0	3.114	3.177	-0.063		4797883	58.5			122	179257

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_069_p1_e1.d

Injection Date: 23-Aug-2016 15:16:00

Instrument ID: A8

Lims ID: 320-20928-A-15-A

Lab Sample ID: 320-20928-15

Client ID: GW20-17SGW-0816

Operator ID: A8

ALS Bottle#: 0

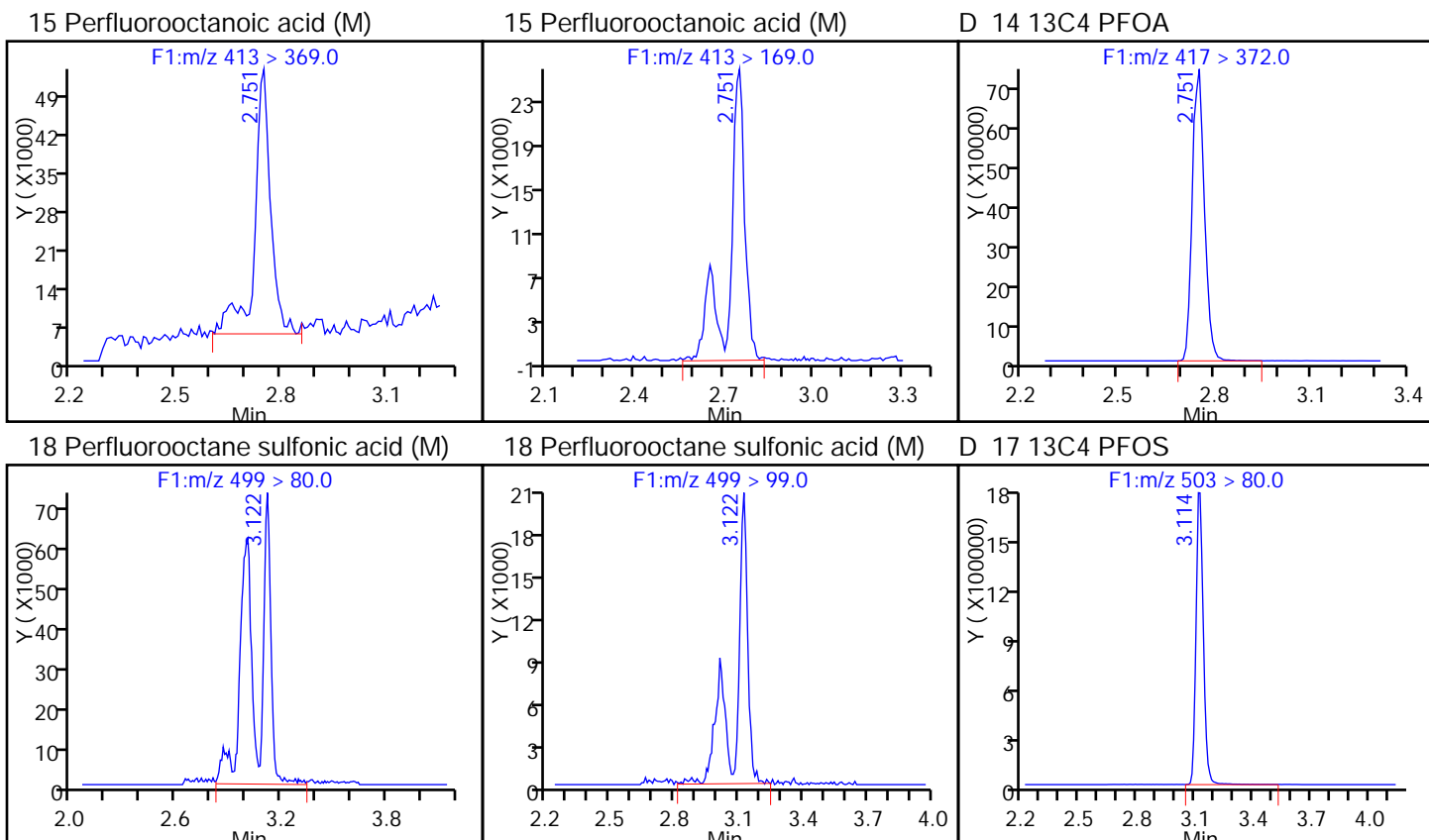
Worklist Smp#: 31

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

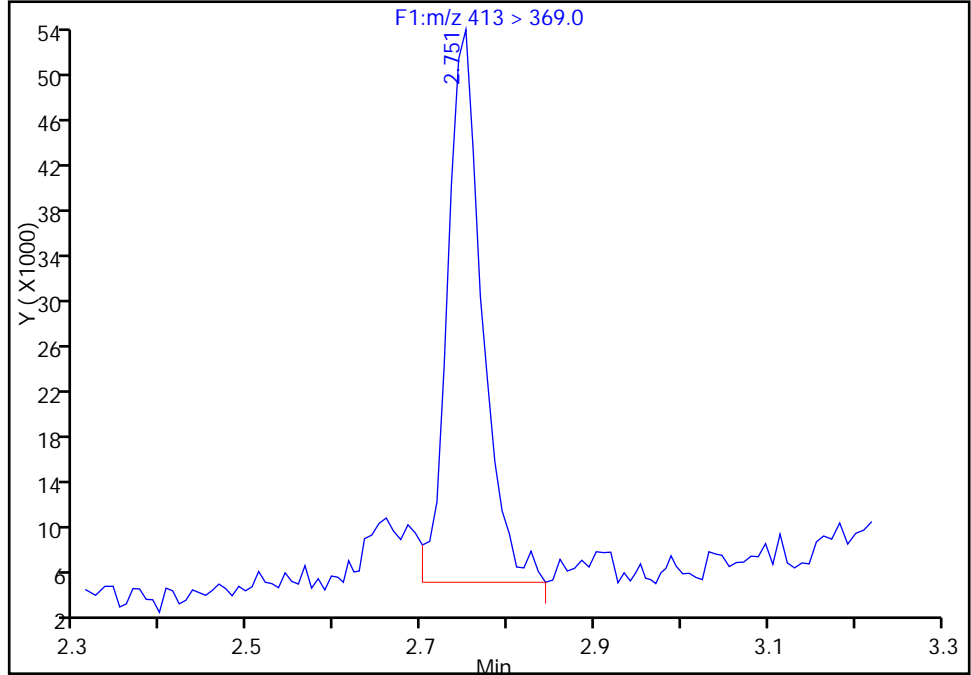
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_069_p1_e1.d
Injection Date: 23-Aug-2016 15:16:00 Instrument ID: A8
Lims ID: 320-20928-A-15-A Lab Sample ID: 320-20928-15
Client ID: GW20-17SGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

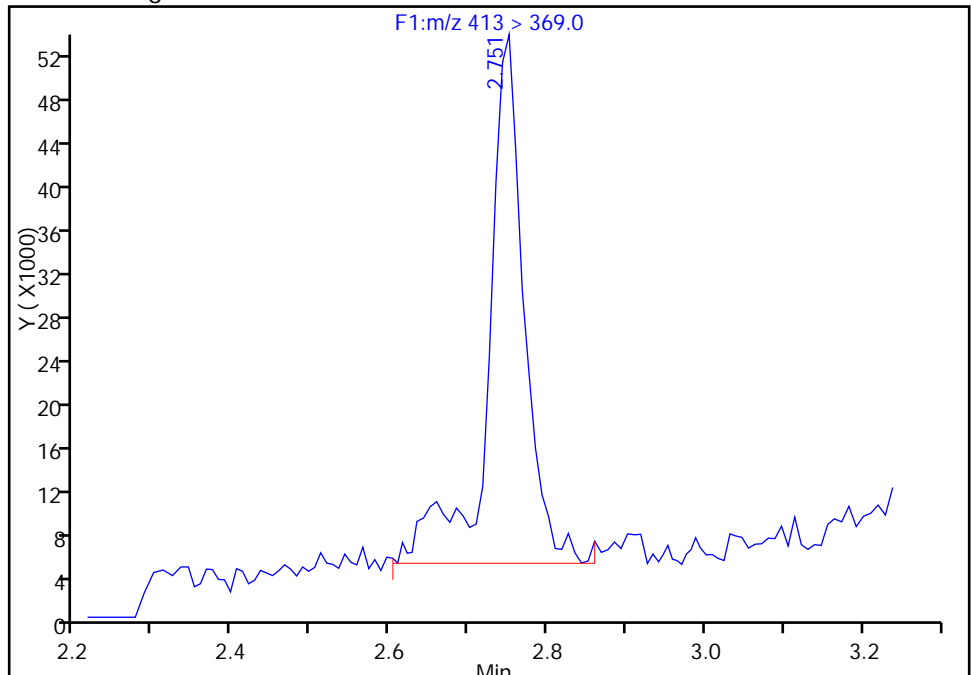
RT: 2.75
Area: 134488
Amount: 3.133118
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 155601
Amount: 3.670132
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Aug-2016 09:37:21
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

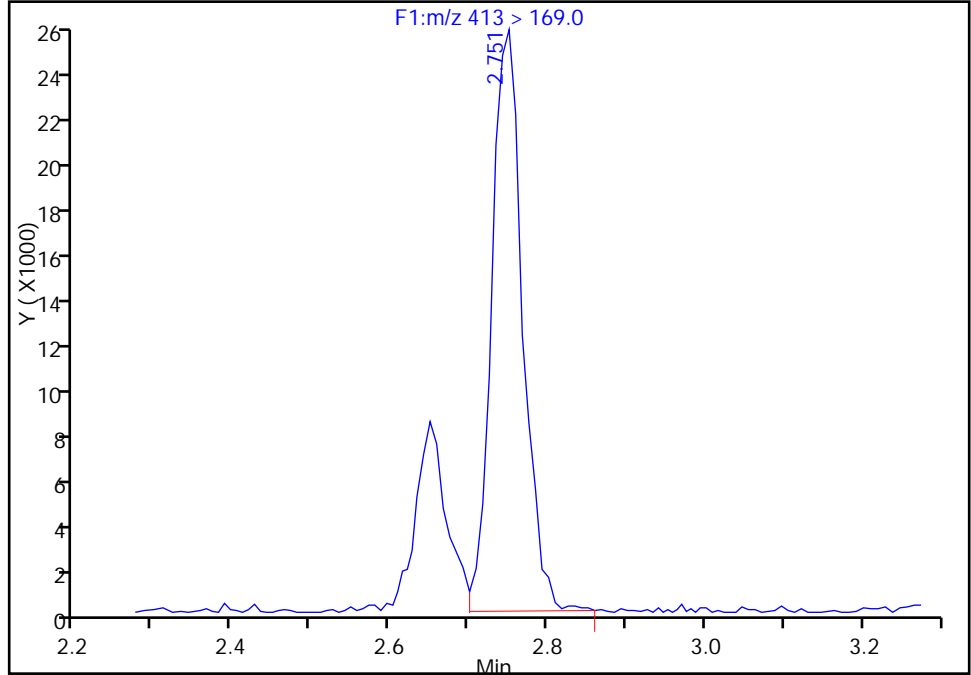
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_069_p1_e1.d
Injection Date: 23-Aug-2016 15:16:00 Instrument ID: A8
Lims ID: 320-20928-A-15-A Lab Sample ID: 320-20928-15
Client ID: GW20-17SGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

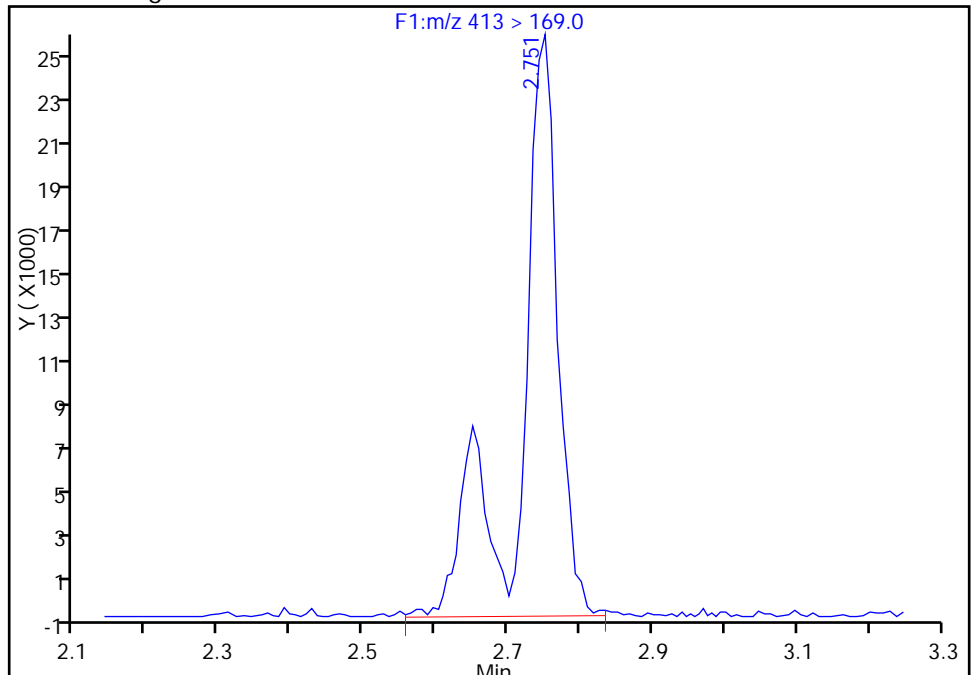
RT: 2.75
Area: 70196
Amount: 3.133118
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 93867
Amount: 3.670132
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

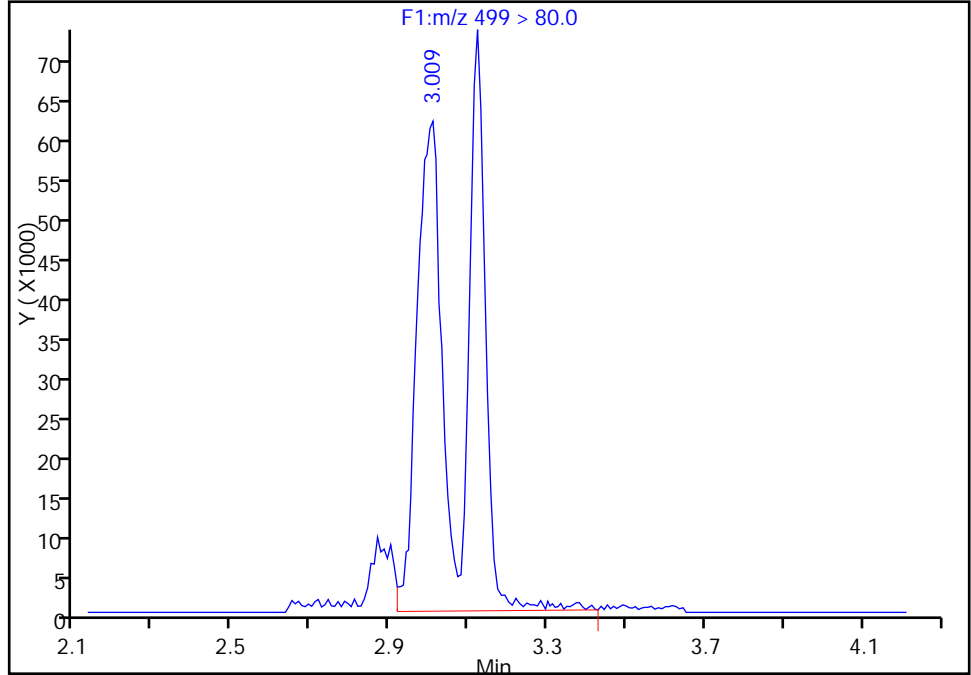
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_069_p1_e1.d
Injection Date: 23-Aug-2016 15:16:00 Instrument ID: A8
Lims ID: 320-20928-A-15-A Lab Sample ID: 320-20928-15
Client ID: GW20-17SGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

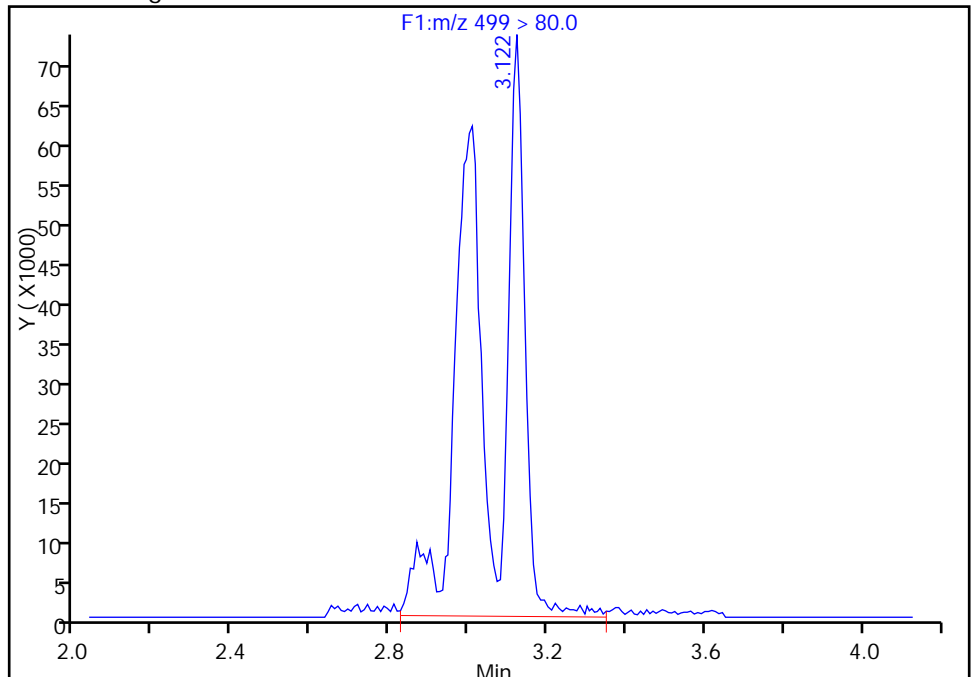
RT: 3.01
Area: 476975
Amount: 4.284870
Amount Units: ng/ml

Processing Integration Results



RT: 3.12
Area: 509125
Amount: 4.573687
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Aug-2016 09:37:21
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

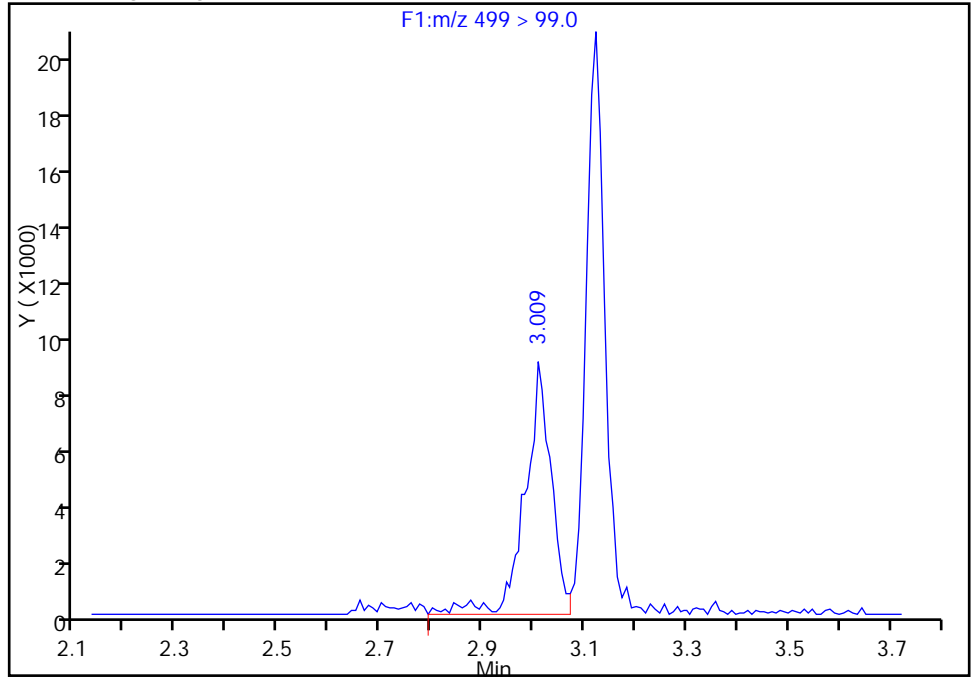
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_069_p1_e1.d
Injection Date: 23-Aug-2016 15:16:00 Instrument ID: A8
Lims ID: 320-20928-A-15-A Lab Sample ID: 320-20928-15
Client ID: GW20-17SGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

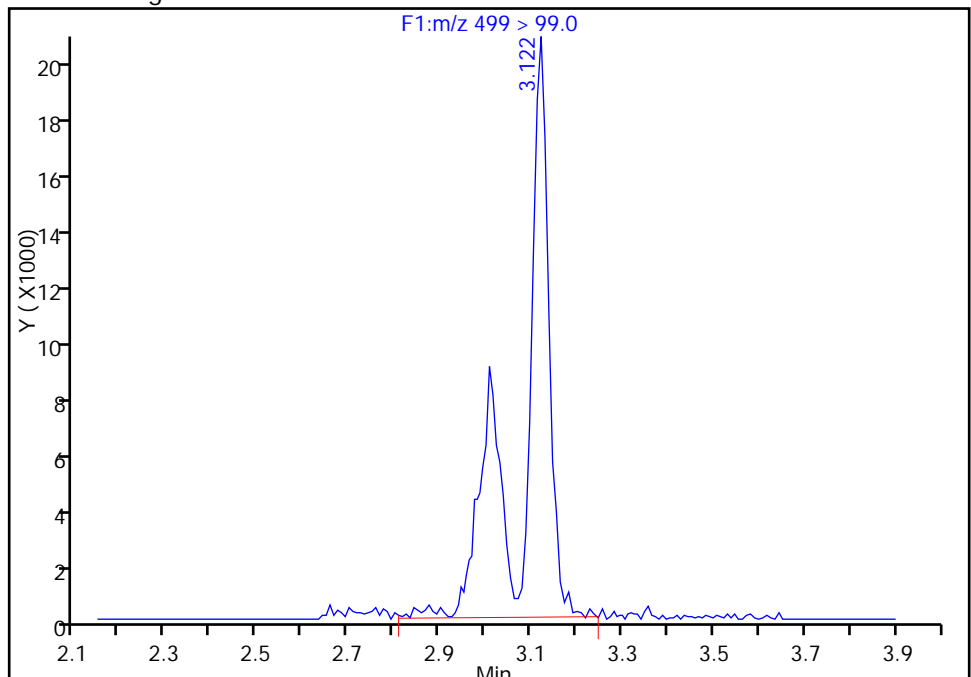
RT: 3.01
Area: 31707
Amount: 4.284870
Amount Units: ng/ml

Processing Integration Results



RT: 3.12
Area: 82564
Amount: 4.573687
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-13DGW-0816 Lab Sample ID: 320-20928-16
 Matrix: Water Lab File ID: 22AUG2016D_070_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 10:25
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 262.8 (mL) Date Analyzed: 08/23/2016 15:24
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.2		3.8	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	82		25-150
STL00991	13C4 PFOS	126		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_070_p1_e1.d
 Lims ID: 320-20928-A-16-A
 Client ID: GW20-13DGW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 15:24:00 ALS Bottle#: 0 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:39:53 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 31-Aug-2016 09:38:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.744	2.798	-0.054	1.000	313258	3.69			1744	M
413 > 169.0	2.744	2.798	-0.054	1.000	219749		1.43(0.90-1.10)		12380	M
D 14 13C4 PFOA										
417 > 372.0	2.744	2.798	-0.054		3959148	41.1		82.2	309276	
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.954	3.110	-0.155	1.000	255623	2.23			1695	
499 > 99.0	2.995	3.110	-0.114	1.014	29899		8.55(0.90-1.10)		2033	
D 17 13C4 PFOS										
503 > 80.0	3.124	3.177	-0.053		4939175	60.2			126	158211

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_070_p1_e1.d

Injection Date: 23-Aug-2016 15:24:00

Instrument ID: A8

Lims ID: 320-20928-A-16-A

Lab Sample ID: 320-20928-16

Client ID: GW20-13DGW-0816

Operator ID: A8

ALS Bottle#: 0

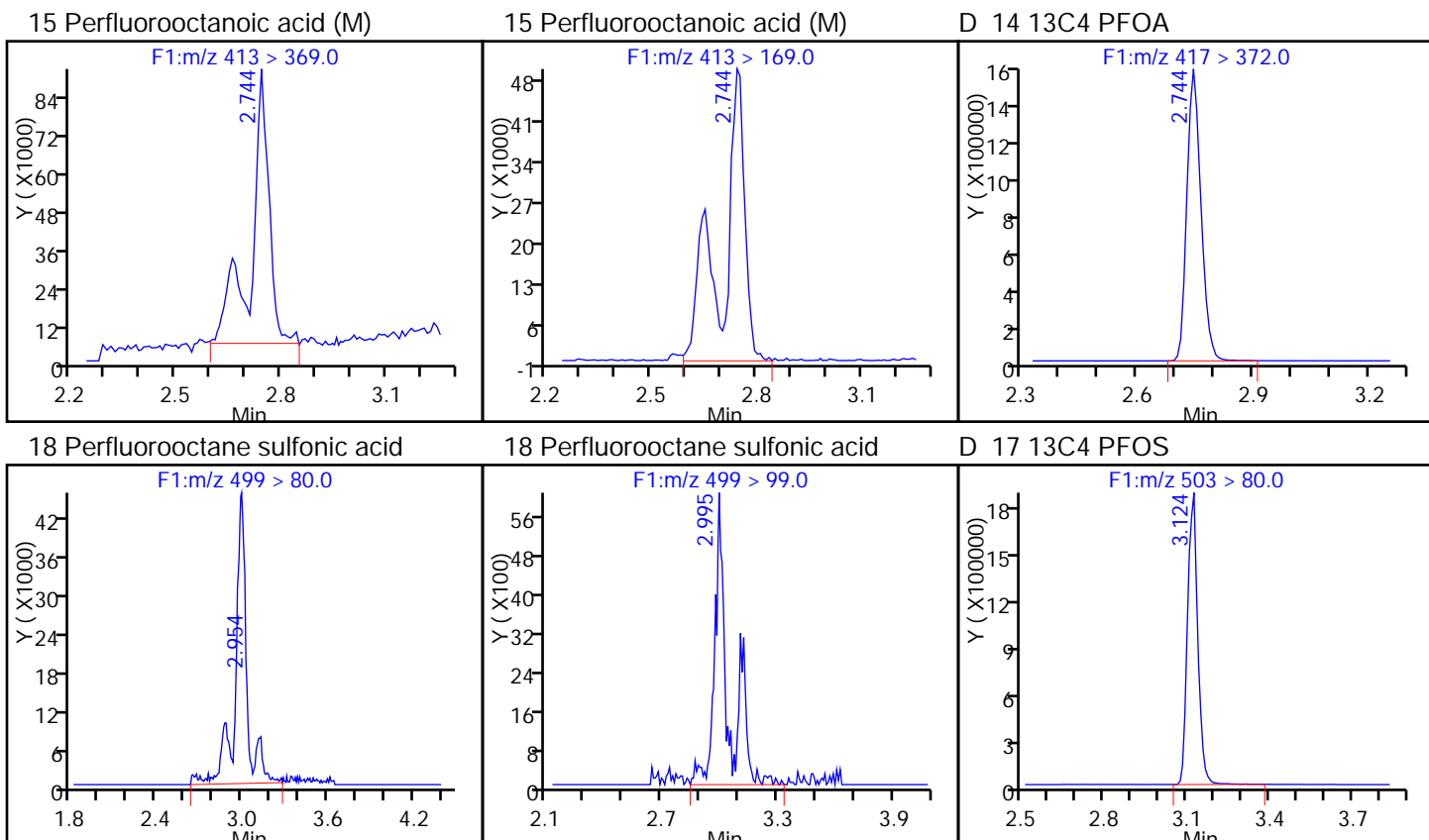
Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

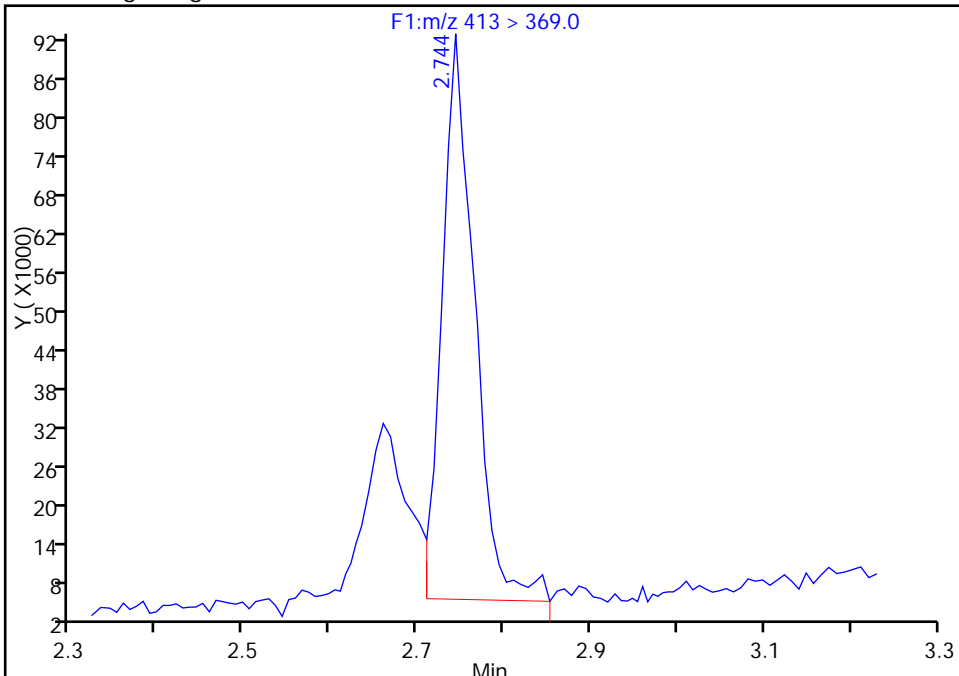
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_070_p1_e1.d
Injection Date: 23-Aug-2016 15:24:00 Instrument ID: A8
Lims ID: 320-20928-A-16-A Lab Sample ID: 320-20928-16
Client ID: GW20-13DGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

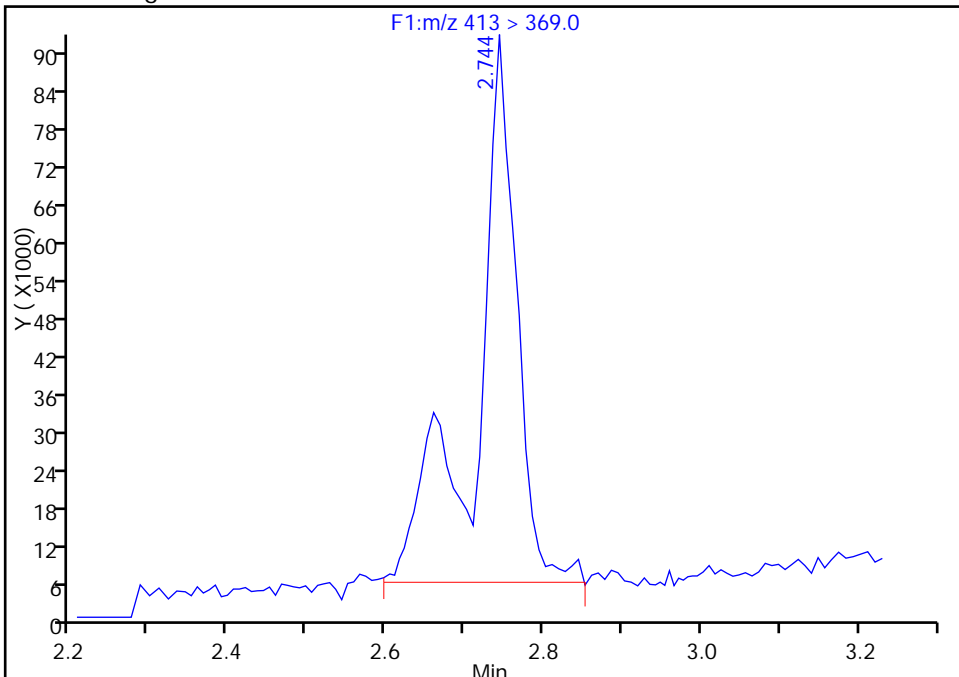
RT: 2.74
Area: 225320
Amount: 2.571146
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 313258
Amount: 3.686865
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Aug-2016 09:38:16
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

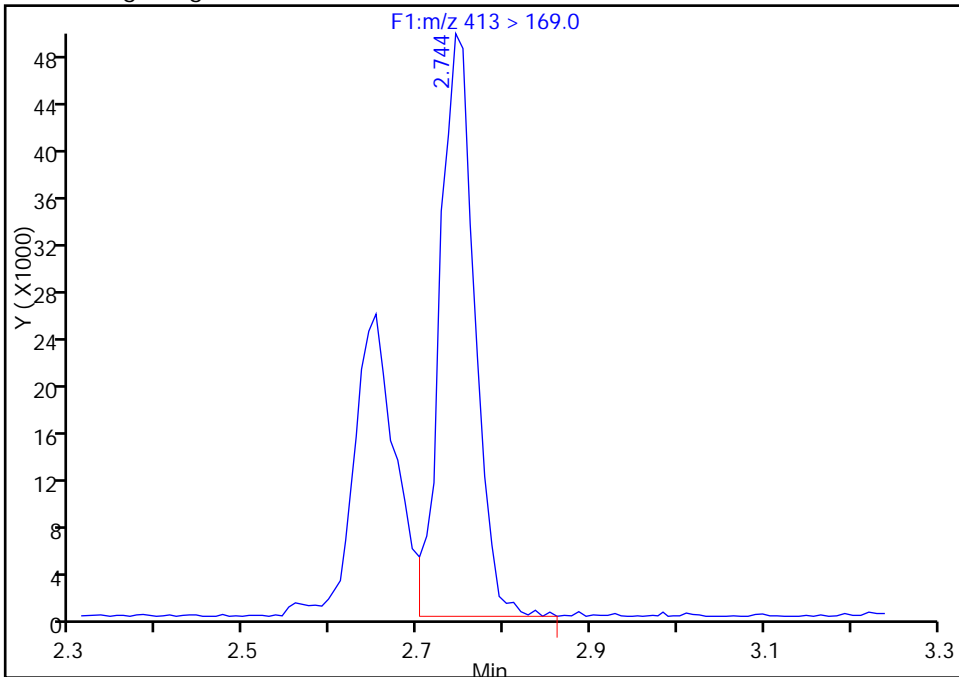
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_070_p1_e1.d
Injection Date: 23-Aug-2016 15:24:00 Instrument ID: A8
Lims ID: 320-20928-A-16-A Lab Sample ID: 320-20928-16
Client ID: GW20-13DGW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

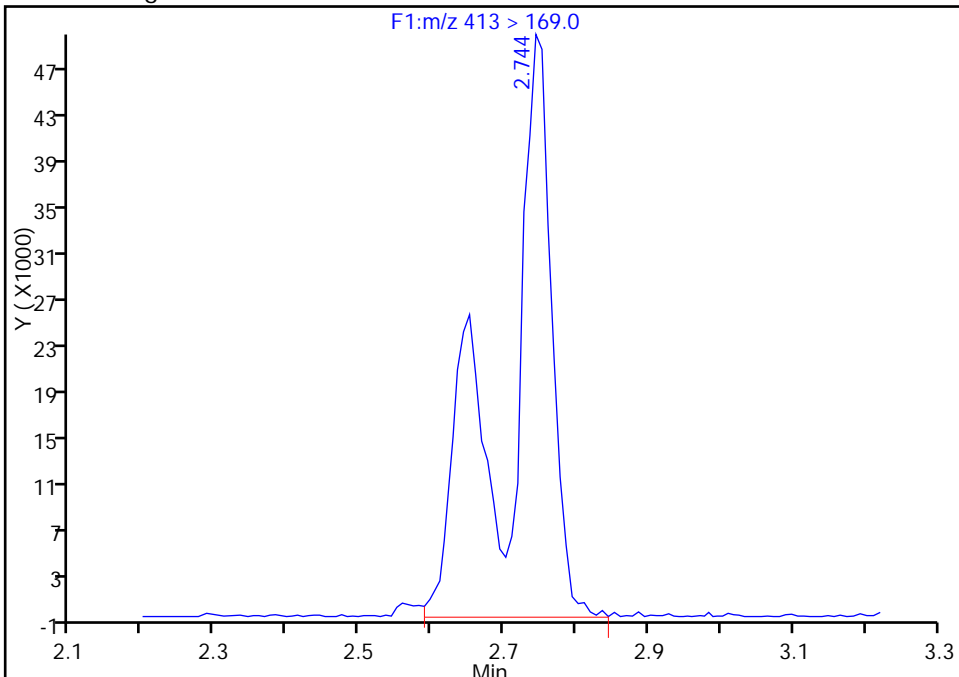
RT: 2.74
Area: 136538
Amount: 2.571146
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 219749
Amount: 3.686865
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Aug-2016 09:38:16

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-13DGWP-0816 Lab Sample ID: 320-20928-17
 Matrix: Water Lab File ID: 22AUG2016D_071_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 10:30
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 266.2 (mL) Date Analyzed: 08/23/2016 15:31
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	M	2.3	1.9	0.70
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.1		3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	88		25-150
STL00991	13C4 PFOS	129		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_071_p1_e1.d
 Lims ID: 320-20928-A-17-A
 Client ID: GW20-13DGWP-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 15:31:00 ALS Bottle#: 0 Worklist Smp#: 33
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:39:53 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 31-Aug-2016 09:39:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.744	2.798	-0.054	1.000	345898	3.81			1535	M
413 > 169.0	2.752	2.798	-0.046	1.003	221269		1.56(0.90-1.10)		16340	M
D 14 13C4 PFOA										
417 > 372.0	2.752	2.798	-0.046		4239326	44.0		88.0	255421	
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.878	3.110	-0.231	1.000	258518	2.20			1473	
499 > 99.0	2.990	3.110	-0.119	1.039	35450		7.29(0.90-1.10)		2123	
D 17 13C4 PFOS										
503 > 80.0	3.116	3.177	-0.061		5075871	61.8			129	143116

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_071_p1_e1.d

Injection Date: 23-Aug-2016 15:31:00

Instrument ID: A8

Lims ID: 320-20928-A-17-A

Lab Sample ID: 320-20928-17

Client ID: GW20-13DGWP-0816

Operator ID: A8

ALS Bottle#: 0

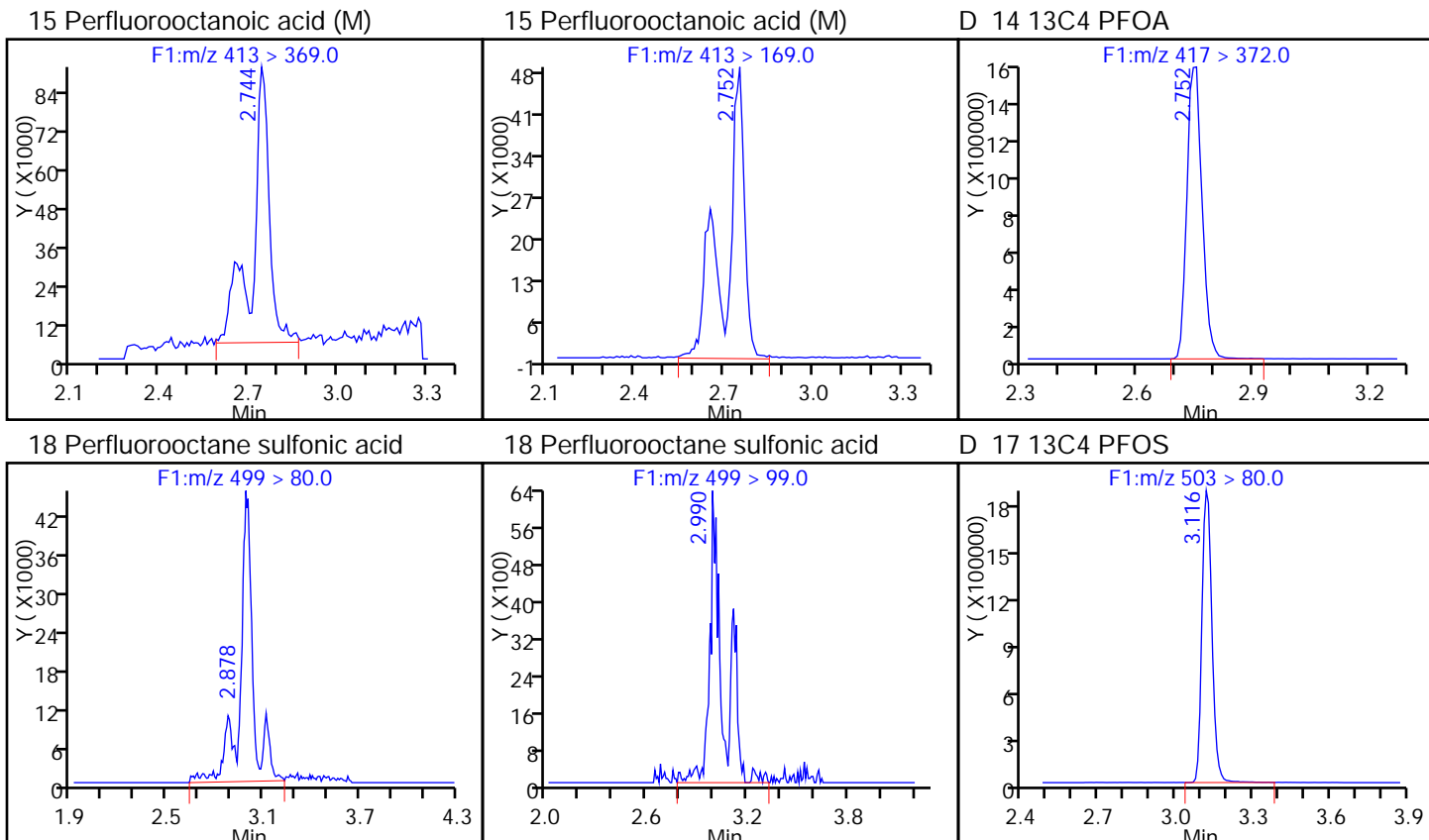
Worklist Smp#: 33

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

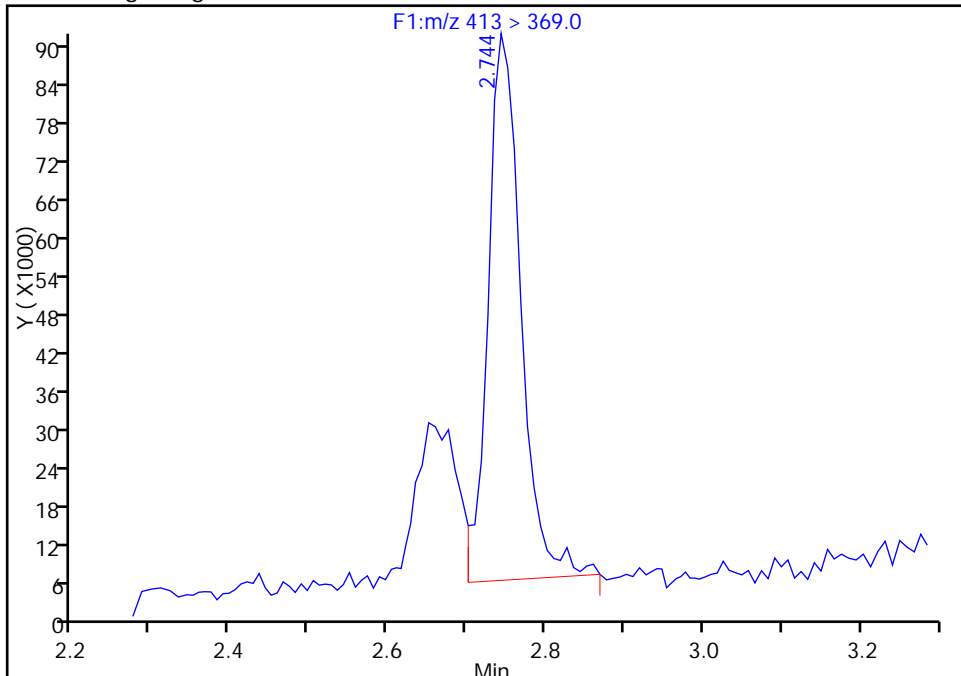
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_071_p1_e1.d
Injection Date: 23-Aug-2016 15:31:00 Instrument ID: A8
Lims ID: 320-20928-A-17-A Lab Sample ID: 320-20928-17
Client ID: GW20-13DGWP-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

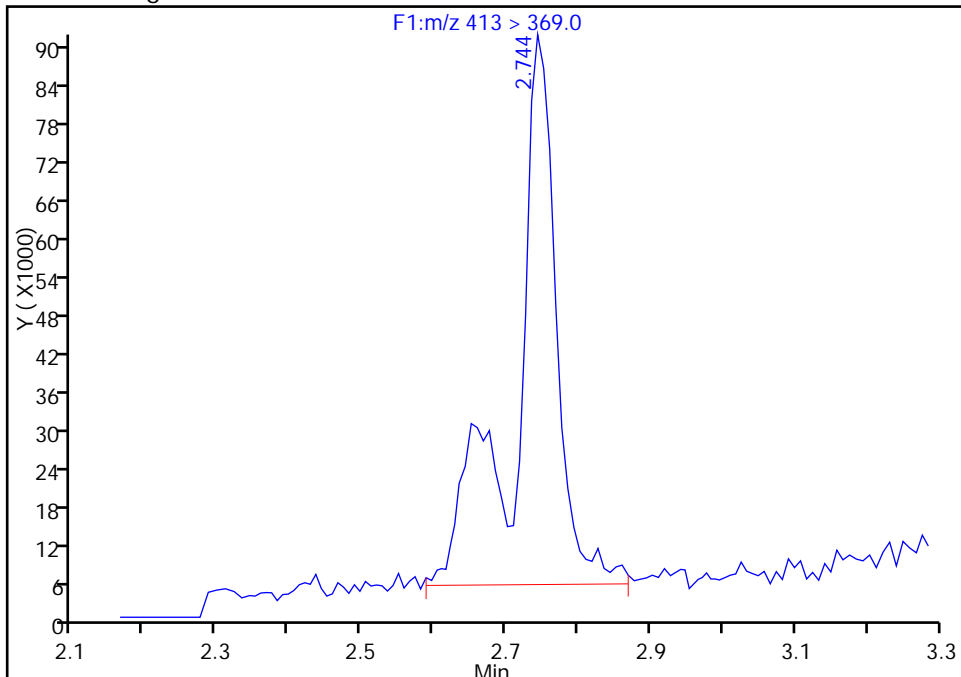
RT: 2.74
Area: 245916
Amount: 2.626252
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 345898
Amount: 3.810943
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Aug-2016 09:39:08
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_071_p1_e1.d

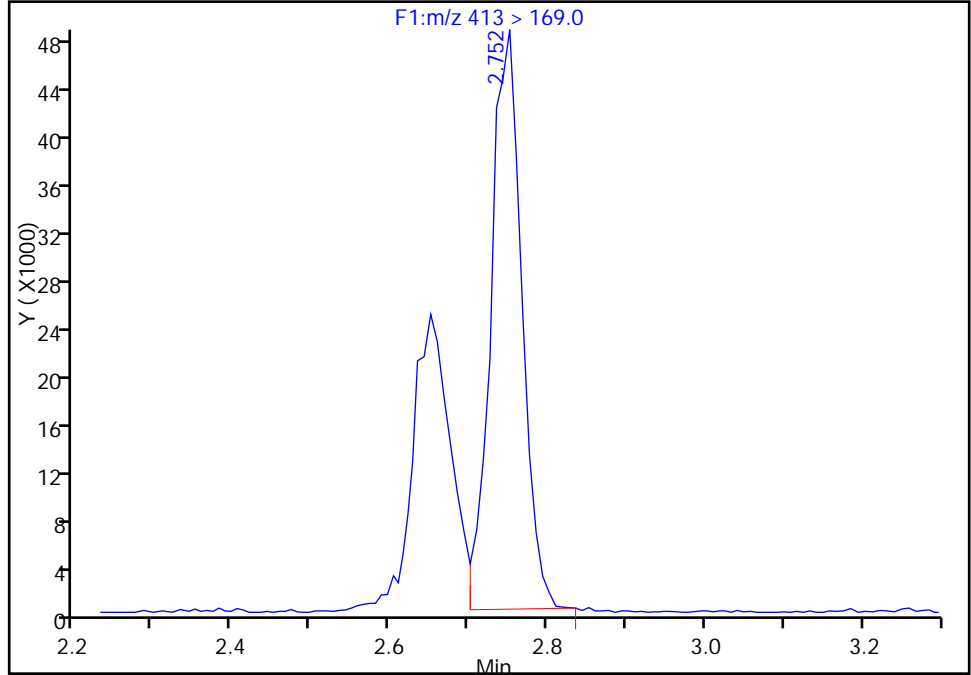
Injection Date: 23-Aug-2016 15:31:00 Instrument ID: A8
Lims ID: 320-20928-A-17-A Lab Sample ID: 320-20928-17
Client ID: GW20-13DGWP-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

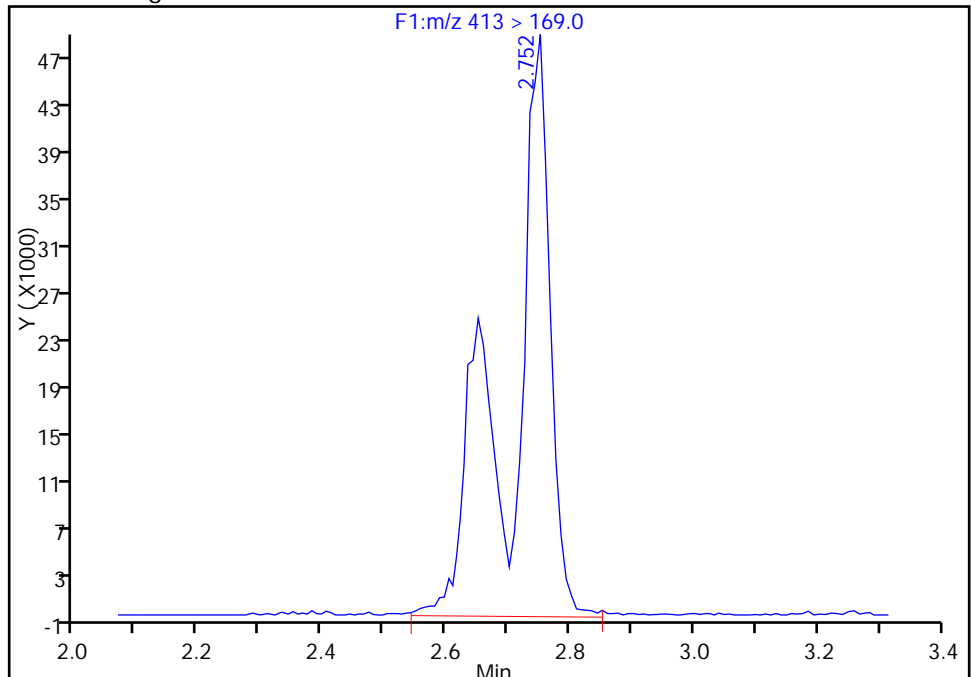
RT: 2.75
Area: 132371
Amount: 2.626252
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 221269
Amount: 3.810943
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Aug-2016 09:39:08

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-20GW-0816 Lab Sample ID: 320-20928-18
 Matrix: Water Lab File ID: 22AUG2016D_072_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/12/2016 10:55
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 276.4 (mL) Date Analyzed: 08/23/2016 15:39
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	14	M	2.3	1.8	0.68
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	18		3.6	2.7	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	63		25-150
STL00991	13C4 PFOS	129		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_072_p1_e1.d
 Lims ID: 320-20928-A-18-A
 Client ID: GW20-20GW-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 15:39:00 ALS Bottle#: 0 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:39:53 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 31-Aug-2016 09:39:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.749	2.798	-0.049	1.000	478889	7.65			4059	M
413 > 169.0	2.749	2.798	-0.049	1.000	293087		1.63(0.90-1.10)		25801	M
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		3031918	31.5		63.0	245738	
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.993	3.110	-0.116	1.000	1170118	9.93			34783	
499 > 99.0	3.008	3.110	-0.101	1.005	199849		5.86(0.90-1.10)		5445	
D 17 13C4 PFOS										
503 > 80.0	3.121	3.177	-0.056		5076736	61.9			129	102724

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_072_p1_e1.d

Injection Date: 23-Aug-2016 15:39:00

Instrument ID: A8

Lims ID: 320-20928-A-18-A

Lab Sample ID: 320-20928-18

Client ID: GW20-20GW-0816

Operator ID: A8

ALS Bottle#: 0

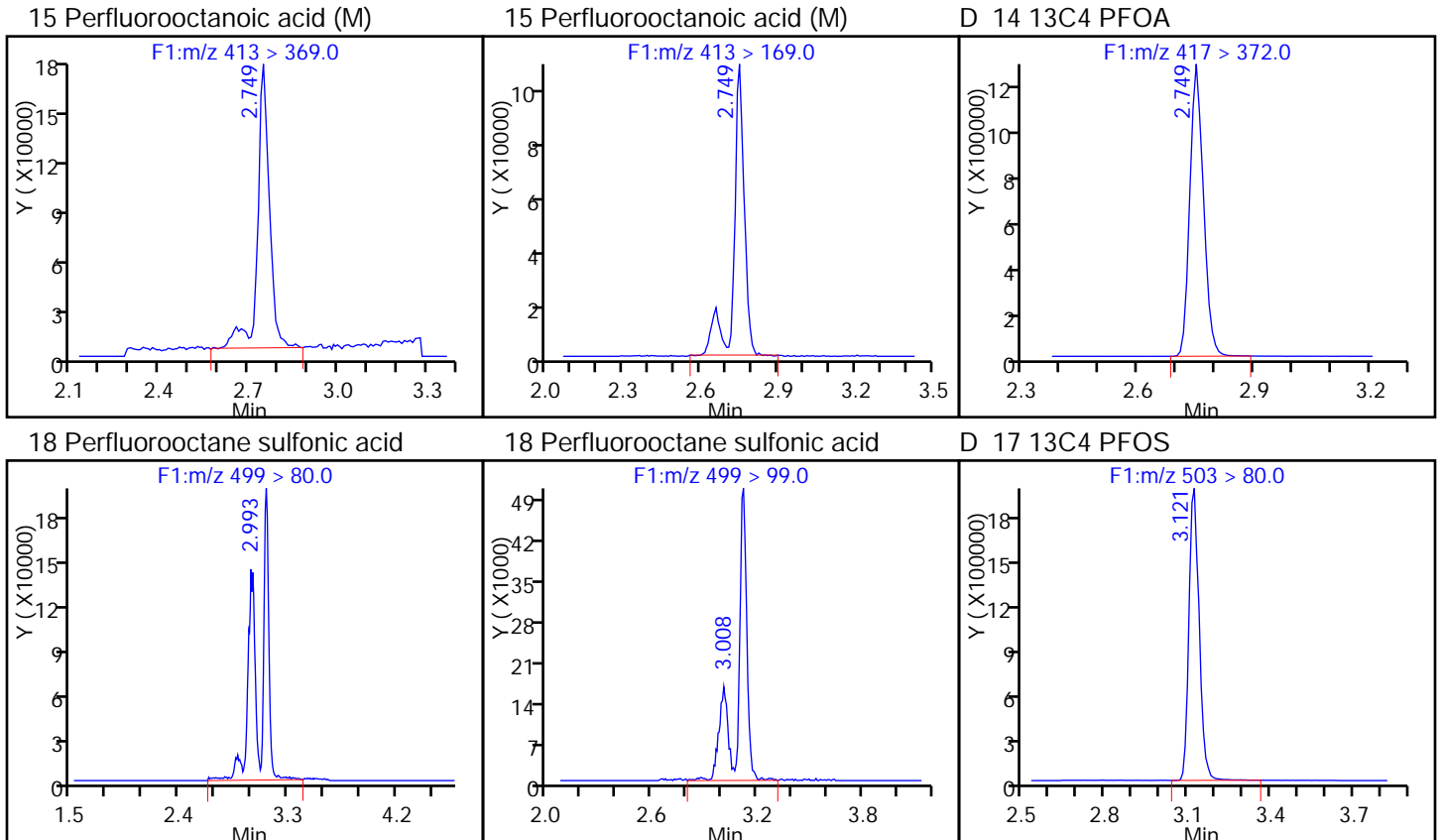
Worklist Smp#: 34

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

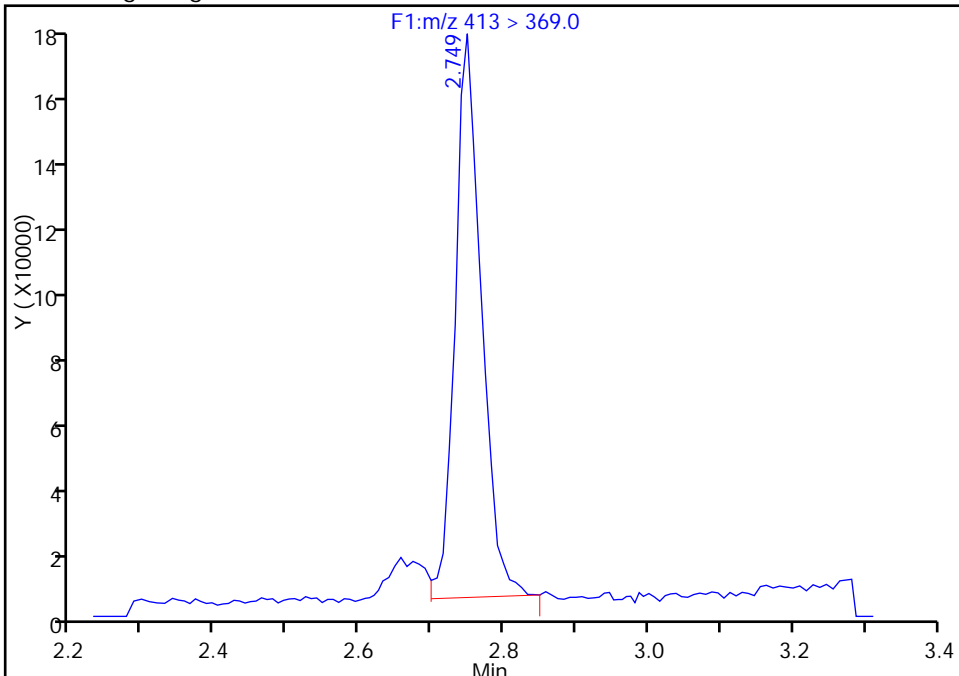
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_072_p1_e1.d
Injection Date: 23-Aug-2016 15:39:00 Instrument ID: A8
Lims ID: 320-20928-A-18-A Lab Sample ID: 320-20928-18
Client ID: GW20-20GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

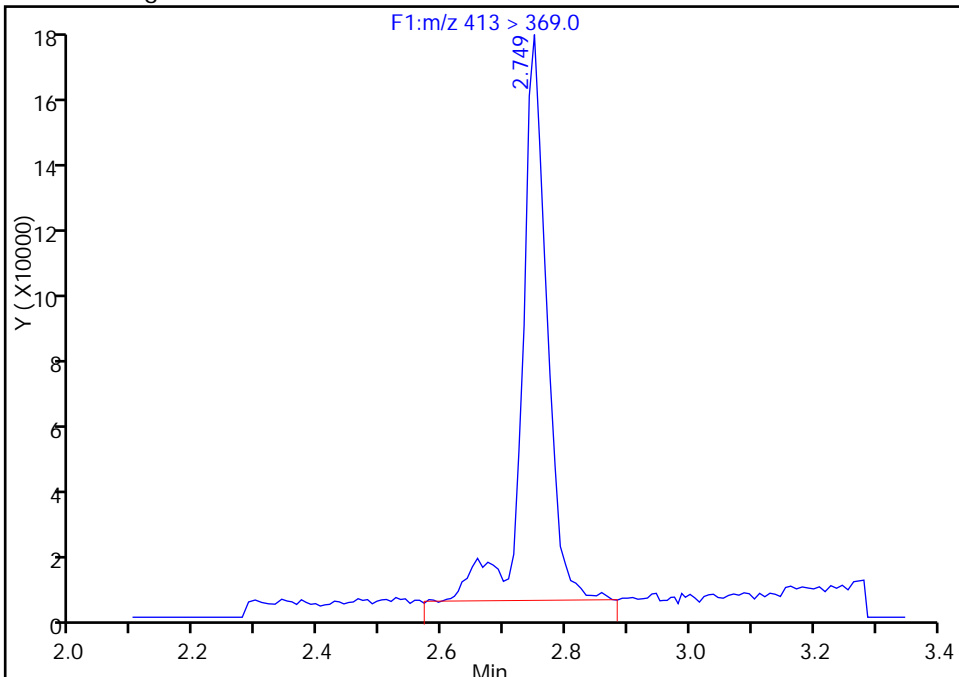
RT: 2.75
Area: 427865
Amount: 6.801129
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 478889
Amount: 7.646480
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 31-Aug-2016 09:39:53
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

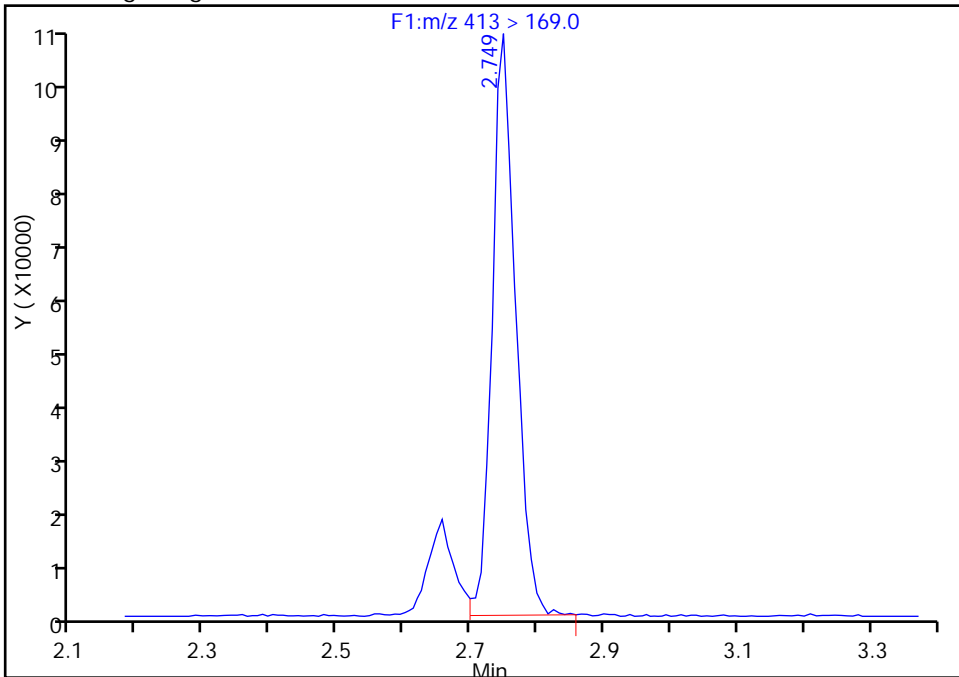
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_072_p1_e1.d
Injection Date: 23-Aug-2016 15:39:00 Instrument ID: A8
Lims ID: 320-20928-A-18-A Lab Sample ID: 320-20928-18
Client ID: GW20-20GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

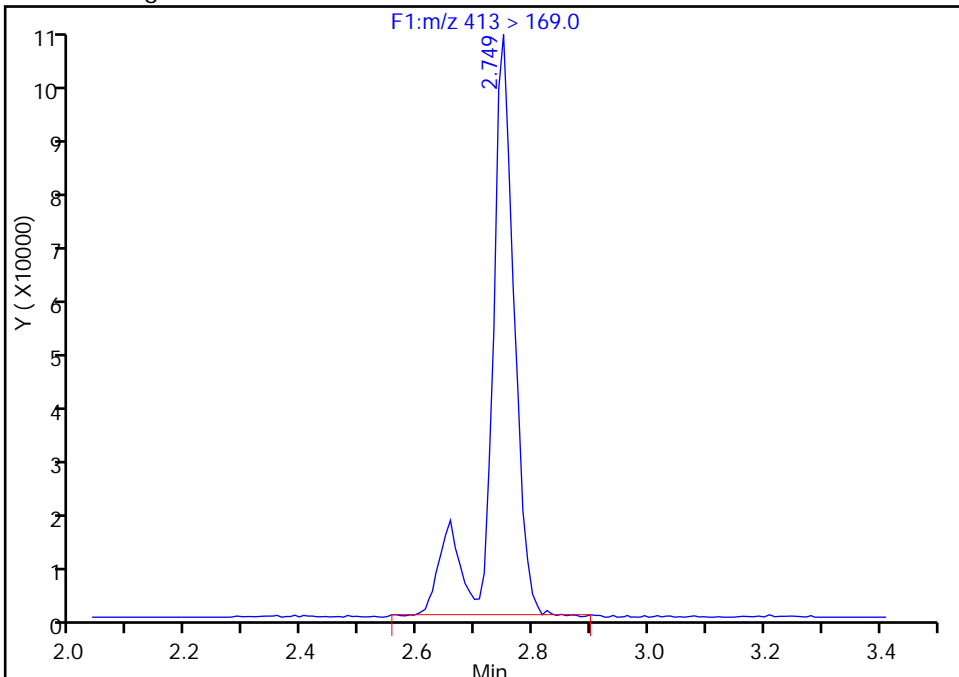
RT: 2.75
Area: 252830
Amount: 6.801129
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 293087
Amount: 7.646480
Amount Units: ng/ml

Manual Integration Results



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-123741/2	22AUG2016A_004_p1_el.d
Level 2	IC 320-123741/12	22AUG2016A_014_p1_el.d
Level 3	IC 320-123741/3	22AUG2016A_005_p1_el.d
Level 4	IC 320-123741/13	22AUG2016A_015_p1_el.d
Level 5	IC 320-123741/4	22AUG2016A_006_p1_el.d
Level 6	IC 320-123741/14	22AUG2016A_016_p1_el.d
Level 7	IC 320-123741/5	22AUG2016A_007_p1_el.d
Level 8	IC 320-123741/15	22AUG2016A_017_p1_el.d
Level 9	IC 320-123741/6	22AUG2016A_008_p1_el.d
Level 10	IC 320-123741/16	22AUG2016A_018_p1_el.d
Level 11	IC 320-123741/7	22AUG2016A_009_p1_el.d
Level 12	IC 320-123741/17	22AUG2016A_019_p1_el.d
Level 13	IC 320-123741/8	22AUG2016A_010_p1_el.d
Level 14	IC 320-123741/18	22AUG2016A_020_p1_el.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
	LVL 11	LVL 12	LVL 13	LVL 14								
Perfluorobutanoic acid (PFBA)	1.527 1.520		1.527 ++++		1.520		1.527		1.521		1.274 - 1.774	1.524
Perfluoropentanoic acid (PFPeA)	1.808 1.791		1.800 ++++		1.799		1.799		1.792		1.547 - 2.047	1.798
Perfluorobutanesulfonic acid (PFBS)	1.842 1.833		1.842 ++++		1.833		1.842		1.834		1.657 - 2.017	1.838
Perfluorohexanoic acid (PFHxA)	2.099 2.079		2.091 ++++		2.090		2.090		2.090		1.840 - 2.340	2.090
Perfluoroheptanoic acid (PFHpA)	2.441 2.420		2.439 ++++		2.425		2.428		2.423		2.177 - 2.677	2.429
Perfluorohexanesulfonic acid (PFHxS)	2.456 2.443		2.455 ++++		2.440		2.444		2.446		2.196 - 2.696	2.447
6:2FTS		2.754 2.745		2.765 ++++		2.749		2.749		2.743	2.501 - 3.001	2.751
Perfluorooctanoic acid (PFOA)	2.818 2.786		2.808 2.785		2.799		2.794		2.796		2.548 - 3.048	2.798
Perfluoroheptanesulfonic Acid (PFHpS)	2.827 2.803		2.816 2.793		2.807		2.802		2.804		2.557 - 3.057	2.807
Perfluorooctanesulfonic acid (PFOS)	3.201 3.061		3.070 3.059		3.153		3.156		3.067		2.860 - 3.360	3.110
Perfluorononanoic acid (PFNA)	3.210 3.171		3.190 3.168		3.180		3.183		3.177		2.933 - 3.433	3.183
Perfluorooctane Sulfonamide (FOSA)	3.480 3.470		3.477 ++++		3.478		3.479		3.472		3.225 - 3.725	3.476
8:2FTS		3.501 3.493		3.506 3.509		3.506		3.514		3.499	3.254 - 3.754	3.504

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
	LVL 11	LVL 12	LVL 13	LVL 14								
Perfluorodecanoic acid (PFDA)	3.560 3.534		3.556 3.531		3.549		3.550		3.543		3.296 - 3.796	3.546
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		3.677 3.669		3.682 3.677		3.675		3.674		3.668	3.425 - 3.925	3.675
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		3.840 3.840		3.845 3.849		3.845		3.845		3.846	3.594 - 4.094	3.844
Perfluorodecanesulfonic acid (PFDS)	3.878 3.853		3.873 3.852		3.864		3.866		3.860		3.613 - 4.113	3.864
Perfluoroundecanoic acid (PFUnA)	3.896 3.871		3.891 ++++		3.882		3.875		3.878		3.630 - 4.130	3.882
MeFOSA		3.961 3.961		3.966 3.971		3.967		3.967		3.958	3.714 - 4.214	3.964
N-EtFOSA-M		4.157 4.148		4.154 4.161		4.154		4.154		4.145	3.903 - 4.403	4.153
Perfluorododecanoic acid (PFDoA)	4.212 4.171		4.199 4.168		4.187		4.181		4.176		3.935 - 4.435	4.185
Perfluorotridecanoic Acid (PFTriA)	4.482 4.441		4.465 4.433		4.455		4.452		4.440		4.202 - 4.702	4.453
Perfluorotetradecanoic acid (PFTeA)	4.723 4.689		4.720 4.679		4.706		4.703		4.689		4.451 - 4.951	4.701
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 5.110		5.142 5.111		5.127		5.121		5.119		4.877 - 5.377	5.122
Perfluoro-n-octadecanoic acid (PFODA)	++++ 5.484		5.532 5.479		5.515		5.502		5.503		5.259 - 5.759	5.503
13C4 PFBA	1.527 1.520		1.521 1.521		1.520		1.520		1.521		1.272 - 1.772	1.521
13C5-PFPeA	1.808 1.791		1.800 1.792		1.799		1.799		1.792		1.547 - 2.047	1.797
13C2 PFHxA	2.099 2.079		2.091 2.081		2.090		2.090		2.090		1.839 - 2.339	2.089
13C4-PFHpA	2.441 2.420		2.439 ++++		2.425		2.428		2.431		2.180 - 2.680	2.431
18O2 PFHxS	2.456 2.443		2.455 2.440		2.440		2.444		2.446		2.196 - 2.696	2.446
M2-6:2FTS		2.754 2.745		2.757 2.750		2.740		2.757		2.743	2.499 - 2.999	2.749
13C4 PFOA	2.818 2.786		2.808 2.785		2.799		2.794		2.796		2.548 - 3.048	2.798
13C4 PFOS	3.201 3.161		3.190 3.168		3.180		3.174		3.167		2.927 - 3.427	3.177
13C5 PFNA	3.192 3.161		3.190 3.168		3.180		3.183		3.167		2.927 - 3.427	3.177
13C8 FOSA	3.480 3.470		3.477 3.476		3.470		3.471		3.472		3.224 - 3.724	3.474

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741
 SDG No.: _____
 Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
	LVL 11	LVL 12	LVL 13	LVL 14								
M2-8:2FTS		3.501 3.501		3.514 3.509		3.498		3.506		3.499	3.254 - 3.754	3.504
13C2 PFDA	3.560 3.534		3.556 3.531		3.557		3.542		3.543		3.296 - 3.796	3.546
d3-NMeFOSAA		3.669 3.661		3.682 3.669		3.667		3.674		3.668	3.420 - 3.920	3.670
d5-NEtFOSAA		3.840 3.840		3.854 3.849		3.845		3.845		3.828	3.593 - 4.093	3.843
13C2 PFUnA	3.896 3.871		3.891 3.870		3.882		3.875		3.878		3.633 - 4.133	3.880
d-N-MeFOSA-M		3.951 3.952		3.966 3.961		3.957		3.957		3.958	3.707 - 4.207	3.957
d-N-EtFOSA-M		4.147 4.138		4.154 4.151		4.144		4.154		4.145	3.897 - 4.397	4.148
13C2 PFDoA	4.202 4.171		4.199 4.168		4.187		4.181		4.176		3.933 - 4.433	4.183
13C2-PFTeDA	4.723 4.689		4.712 4.679		4.697		4.695		4.689		4.447 - 4.947	4.698
13C2-PFHxDA	5.155 5.110		5.142 5.101		5.127		5.121		5.119		4.875 - 5.375	5.125

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-123741/2	22AUG2016A_004_p1_el.d
Level 2	IC 320-123741/12	22AUG2016A_014_p1_el.d
Level 3	IC 320-123741/3	22AUG2016A_005_p1_el.d
Level 4	IC 320-123741/13	22AUG2016A_015_p1_el.d
Level 5	IC 320-123741/4	22AUG2016A_006_p1_el.d
Level 6	IC 320-123741/14	22AUG2016A_016_p1_el.d
Level 7	IC 320-123741/5	22AUG2016A_007_p1_el.d
Level 8	IC 320-123741/15	22AUG2016A_017_p1_el.d
Level 9	IC 320-123741/6	22AUG2016A_008_p1_el.d
Level 10	IC 320-123741/16	22AUG2016A_018_p1_el.d
Level 11	IC 320-123741/7	22AUG2016A_009_p1_el.d
Level 12	IC 320-123741/17	22AUG2016A_019_p1_el.d
Level 13	IC 320-123741/8	22AUG2016A_010_p1_el.d
Level 14	IC 320-123741/18	22AUG2016A_020_p1_el.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9 LVL 13	LVL 2 LVL 6 LVL 10 LVL 14	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C4 PFBA	136387 141817 140763 116377		140339 146123 127699		Ave		135643.534			7.6			50.0			
13C5-PFPeA	111955 111922 111856 92170		114282 112518 99651		Ave		107764.851			7.8			50.0			
13C2 PFHxA	98074 99927 98624 81502		103386 106332 91109		Ave		96993.4000			8.6			50.0			
13C4-PFHpA	97869 97640 96486 ++++		102604 102022 82298		Ave		96486.3633			7.7			50.0			
18O2 PFHxS	108974 115227 114376 100782		120421 119488 107683		Ave		112421.776			6.2			50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9 LVL 13	LVL 2 LVL 6 LVL 10 LVL 14	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
M2-6:2FTS		48357 48193 56894 67188		52547 54361 60871	Ave		55487.2481			12.4			50.0			
13C4 PFOA	101908 105916 98590 73196		101074 106738 86801		Ave		96317.5771			12.6			50.0			
13C4 PFOS	80543 83476 86151 74470		83754 86559 79551		Ave		82072.0652			5.2			50.0			
13C5 PFNA	81485 81358 81420 64219		87670 88946 71656		Ave		79536.4057			11.0			50.0			
13C8 FOSA	149512 157906 153377 129156		156542 158749 144228		Ave		149924.289			7.0			50.0			
M2-8:2FTS		42974 45857 51209 62017		46325 46717 57692	Ave		50398.6370			13.9			50.0			
13C2 PFDA	75903 72729 73680 66099		74551 77588 68575		Ave		72732.3000			5.6			50.0			
d3-NMeFOSAA		24882 26556 27369 26484		25988 26555 27905	Ave		26534.2486			3.6			50.0			
d5-NEtFOSAA		26978 29090 29668 28222		28604 30574 29599	Ave		28961.8571			4.0			50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9 LVL 13	LVL 2 LVL 6 LVL 10 LVL 14	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C2 PFUnA	60030 59175 56159 44668		59643 59992 49822		Ave	55641.0600				10.9		50.0				
d-N-MeFOSA-M		34778 37382 41079 38971		35890 38357 42144	Ave	38371.5371				6.9		50.0				
d-N-EtFOSA-M		34877 36492 39636 38172		33721 36421 40251	Ave	37081.3971				6.5		50.0				
13C2 PFDoA	52965 53875 54174 48244		57637 55799 49583		Ave	53182.3543				6.2		50.0				
13C2-PFTeDA	47399 48881 48538 40691		49194 49605 45971		Ave	47182.6800				6.6		50.0				
13C2-PFHxDA	58492 69283 69066 61494		69192 67514 65825		Ave	65837.8114				6.5		50.0				

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-20928-1Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8GC Column: Acquity ID: 2.1 (mm)Heated Purge: (Y/N) NCalibration Start Date: 08/22/2016 16:24Calibration End Date: 08/22/2016 18:23Calibration ID: 24558

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10												
Perfluorobutanoic acid (PFBA)	119218		120361		119981	AveID		0.8640			2.9		35.0				
	105603	130471	++++	124751													
Perfluoropentanoic acid (PFPeA)	120100		117248		115166	AveID		1.0225			4.7		35.0				
	92815	118251	++++	114663													
Perfluorobutanesulfonic acid (PFBS)	181127		175791		170633	AveID		1.5525			7.3		50.0				
	152092	195243	++++	190563													
Perfluorohexanoic acid (PFHxA)	105844		96488		93818	AveID		0.9664			6.2		35.0				
	84767	98723	++++	97483													
Perfluoroheptanoic acid (PFHpA)	117296		101560		99284	AveID		1.0458			7.6		35.0				
	83180	108541	++++	95980													
Perfluorohexanesulfonic acid (PFHxS)	156152		136986		116271	AveID		1.1130			14.8		35.0				
	108284	127798	++++	117053													
6:2FTS		60458		61841		L1ID	0.3095	0.7802						0.9970		0.9900	
	39005	46220		50293	47174												
Perfluorooctanoic acid (PFOA)	152560		129758		106912	L1ID	0.2863	0.9954						0.9990		0.9900	
	88906	110188		71073	107285												
Perfluoroheptanesulfonic Acid (PFHpS)	99250		93841		102064	AveID		1.1660			5.2		50.0				
	93410	104163		79372	98477												
Perfluorooctanesulfonic acid (PFOS)	102032		89494		90309	AveID		1.1090			6.7		35.0				
	87386	95584		82646	89025												
Perfluorononanoic acid (PFNA)	81208		85388		80735	AveID		0.9990			1.8		35.0				
	73396	90175		62982	82316												
Perfluorooctane Sulfonamide (FOSA)	150948		141802		140317	AveID		0.9205			6.6		35.0				
	119787	151179		143561													

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-20928-1Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8GC Column: Acquity ID: 2.1 (mm)Heated Purge: (Y/N) NCalibration Start Date: 08/22/2016 16:24Calibration End Date: 08/22/2016 18:23Calibration ID: 24558

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10												
8:2FTS	33490	35923	42064	32819	41129	AveID	0.7774			9.3	35.0						
Perfluorodecanoic acid (PFDA)	74996	43450	76186	44077	70417	AveID	0.9838			3.2	35.0						
	68195	78290	61174	72145													
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	18555	19716	24487	20837	23810	AveID	0.8655			12.8	35.0						
		26358	27258														
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	18270	18186	24224	19720	22141	AveID	0.7548			13.3	35.0						
		24939	25707														
Perfluorodecanesulfonic acid (PFDS)	48015	53302	51235	51891	49921	AveID	0.6130			2.6	50.0						
	50611		46961														
Perfluoroundecanoic acid (PFUnA)	73076	61665	65283	59671	62493	AveID	1.0839			6.4	35.0						
	52062		++++														
MeFOSA	26946	27938	33725	29431	33822	AveID	0.8408			9.2	35.0						
		36528	37879														
N-EtFOSA-M	26233	26172	32940	27827	32871	AveID	0.8479			11.2	35.0						
		37389	37343														
Perfluorododecanoic acid (PFDoA)	55978	53421	57201	53270	53124	AveID	0.9906			3.4	35.0						
	49598		46220														
Perfluorotridecanoic Acid (PFTriA)	53948	54893	54948	52303	52505	AveID	0.9798			3.3	50.0						
	50835		45232														
Perfluorotetradecanoic acid (PFTeA)	50682	46132	47138	43821	43525	AveID	0.8401			6.4	50.0						
	42200		39135														
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++	61938	90454	63086	65252	AveID	1.2403			13.5	50.0						
	61583		55238														
Perfluoro-n-octadecanoic acid (PFODA)	++++	54915	57967	55706	55451	L1ID	-0.438	1.1603					0.9980		0.9900		
	58937		56298														

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.: 320-20928-1 Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-123741/2	22AUG2016A_004_p1_el.d
Level 2	IC 320-123741/12	22AUG2016A_014_p1_el.d
Level 3	IC 320-123741/3	22AUG2016A_005_p1_el.d
Level 4	IC 320-123741/13	22AUG2016A_015_p1_el.d
Level 5	IC 320-123741/4	22AUG2016A_006_p1_el.d
Level 6	IC 320-123741/14	22AUG2016A_016_p1_el.d
Level 7	IC 320-123741/5	22AUG2016A_007_p1_el.d
Level 8	IC 320-123741/15	22AUG2016A_017_p1_el.d
Level 9	IC 320-123741/6	22AUG2016A_008_p1_el.d
Level 10	IC 320-123741/16	22AUG2016A_018_p1_el.d
Level 11	IC 320-123741/7	22AUG2016A_009_p1_el.d
Level 12	IC 320-123741/17	22AUG2016A_019_p1_el.d
Level 13	IC 320-123741/8	22AUG2016A_010_p1_el.d
Level 14	IC 320-123741/18	22AUG2016A_020_p1_el.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
		LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
13C4 PFBA	Ave	6819363	7306157	7016950	7038133	7090858	50.0	50.0	50.0	50.0	50.0
		6384927		5818849		5596088	50.0		50.0		50.0
13C5-PFPeA	Ave	5597748	5625905	5714097	5592794	5596088	50.0	50.0	50.0	50.0	50.0
		4982565		4608501		50.0	50.0		50.0		
13C2 PFHxA	Ave	4903718	5316587	5169310	4931190	4996335	50.0	50.0	50.0	50.0	50.0
		4555434		4075116		50.0	50.0		50.0		
13C4-PFHpA	Ave	4893456	5101082	5130213	4824282	4882001	50.0	50.0	50.0	50.0	50.0
		4114875		+++++		50.0	+++++		50.0		
18O2 PFHxS	Ave	5154474	5651800	5695921	5409997	5450240	47.3	47.3	47.3	47.3	47.3
		5093422		4766996		47.3	47.3		47.3		
M2-6:2FTS	Ave	2296963	2289167	2582138	3191432	2702461	47.5	47.5	47.5	47.5	47.5
		2891381		2495968		47.5	47.5		47.5		
13C4 PFOA	Ave	5095403	5336887	5053694	4929513	5295788	50.0	50.0	50.0	50.0	50.0
		4340061		3659806		50.0	50.0		50.0		

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
		LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
13C4 PFOS	Ave	3849977	4137497	4003442	4118007	3990173	47.8	47.8	47.8	47.8	47.8
		3802550		3559667		47.8	47.8				
13C5 PFNA	Ave	4074257	4447308	4383507	4071019	4067908	50.0	50.0	50.0	50.0	50.0
		3582792		3210951		50.0	50.0				
13C8 FOSA	Ave	7475619	7937448	7827103	7668839	7895310	50.0	50.0	50.0	50.0	50.0
		7211392		6457790		50.0	50.0				
M2-8:2FTS	Ave	2196550	2058452	2237725	2218968	2452934	47.9	47.9	47.9	47.9	47.9
		2763434		2970600		47.9	47.9				
13C2 PFDA	Ave	3795163	3879401	3727566	3684002	3636462	50.0	50.0	50.0	50.0	50.0
		3428764		3304947		50.0	50.0				
d3-NMeFOSAA	Ave	1327821	1244115	1327730	1299408	1368468	50.0	50.0	50.0	50.0	50.0
		1395248		1324197		50.0	50.0				
d5-NEtFOSAA	Ave	1454482	1348877	1528680	1430197	1483381	50.0	50.0	50.0	50.0	50.0
		1479945		1411088		50.0	50.0				
13C2 PFUnA	Ave	3001492	2999584	2982170	2807932	2958732	50.0	50.0	50.0	50.0	50.0
		2491079		2233382		50.0	50.0				
d-N-MeFOSA-M	Ave	1869114	1738900	1917858	1794486	2053938	50.0	50.0	50.0	50.0	50.0
		2107210		1948532		50.0	50.0				
d-N-EtFOSA-M	Ave	1824624	1743838	1821038	1686037	1981818	50.0	50.0	50.0	50.0	50.0
		2012551		1908583		50.0	50.0				
13C2 PFDoA	Ave	2648230	2789964	2881865	2708698	2693738	50.0	50.0	50.0	50.0	50.0
		2479154		2412175		50.0	50.0				
13C2-PFTeDA	Ave	2369944	2480257	2459707	2426876	2444058	50.0	50.0	50.0	50.0	50.0
		2298526		2034570		50.0	50.0				
13C2-PFHxDA	Ave	2924589	3375677	3459600	3453314	3464142	50.0	50.0	50.0	50.0	50.0
		3291230		3074682		50.0	50.0				

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741
SDG No.: _____
Instrument ID: A8 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N
Calibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

Curve Type Legend:

Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1 Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 08/22/2016 16:24 Calibration End Date: 08/22/2016 18:23 Calibration ID: 24558

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-123741/2	22AUG2016A_004_p1_el.d
Level 2	IC 320-123741/12	22AUG2016A_014_p1_el.d
Level 3	IC 320-123741/3	22AUG2016A_005_p1_el.d
Level 4	IC 320-123741/13	22AUG2016A_015_p1_el.d
Level 5	IC 320-123741/4	22AUG2016A_006_p1_el.d
Level 6	IC 320-123741/14	22AUG2016A_016_p1_el.d
Level 7	IC 320-123741/5	22AUG2016A_007_p1_el.d
Level 8	IC 320-123741/15	22AUG2016A_017_p1_el.d
Level 9	IC 320-123741/6	22AUG2016A_008_p1_el.d
Level 10	IC 320-123741/16	22AUG2016A_018_p1_el.d
Level 11	IC 320-123741/7	22AUG2016A_009_p1_el.d
Level 12	IC 320-123741/17	22AUG2016A_019_p1_el.d
Level 13	IC 320-123741/8	22AUG2016A_010_p1_el.d
Level 14	IC 320-123741/18	22AUG2016A_020_p1_el.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
Perfluorobutanoic acid (PFBA)		AveID	59609		120361		599906	0.500		1.00		5.00
			21120689	2609410	++++	6237536		200	20.0	++++	50.0	
Perfluoropentanoic acid (PFPeA)		AveID	60050		117248		575829	0.500		1.00		5.00
			18563095	2365012	++++	5733147		200	20.0	++++	50.0	
Perfluorobutanesulfonic acid (PFBS)		AveID	80058		155399		754197	0.442		0.884		4.42
			26889800	3451896	++++	8422867		177	17.7	++++	44.2	
Perfluorohexanoic acid (PFHxA)		AveID	52922		96488		469088	0.500		1.00		5.00
			16953344	1974462	++++	4874133		200	20.0	++++	50.0	
Perfluoroheptanoic acid (PFHpA)		AveID	58648		101560		496420	0.500		1.00		5.00
			16635911	2170824	++++	4799000		200	20.0	++++	50.0	
Perfluorohexanesulfonic acid (PFHxS)		AveID	71049		124657		529034	0.455		0.910		4.55
			19707602	2325915	++++	5325904		182	18.2	++++	45.5	
6:2FTS		L1ID	184885	28657	58625			4.74	0.474		0.948	
			8763302	953559	++++	2236049		190	19.0	++++	47.4	

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-20928-1Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8GC Column: AcquityID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 08/22/2016 16:24Calibration End Date: 08/22/2016 18:23Calibration ID: 24558

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
			LVL 11	LVL 12	LVL 13	LVL 14		LVL 11	LVL 12	LVL 13	LVL 14	LVL 10
Perfluorooctanoic acid (PFOA)		L1ID	76280	2203768	129758	5364240	534559	0.500	20.0	1.00	50.0	5.00
			17781219		28429006			200		400		
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	47243	1983261	89337	4687508	485823	0.476	19.0	0.952	47.6	4.76
			17785212		30224767			190		381		
Perfluorooctanesulfonic acid (PFOS)		AveID	47343	1774033	83050	4130746	419034	0.464	18.6	0.928	46.4	4.64
			16218841		30678315			186		371		
Perfluorononanoic acid (PFNA)		AveID	40604	1803496	85388	4115794	403677	0.500	20.0	1.00	50.0	5.00
			14679162		25192622			200		400		
Perfluorooctane Sulfonamide (FOSA)		AveID	75474	3023571	141802	7178073	701587	0.500	20.0	1.00	50.0	5.00
			23957395		+++++			200		+++++		
8:2FTS		AveID	160417	17207	805944	31441	1970057	4.79	0.479	19.2	0.958	47.9
				8325021		16890474			192		383	
Perfluorodecanoic acid (PFDA)		AveID	37498	1565796	76186	3607247	352085	0.500	20.0	1.00	50.0	5.00
			13639089		24469701			200		400		
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	92774	9858	489734	20837	1190511	5.00	0.500	20.0	1.00	50.0
				5271643		10903399			200		400	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	91349	9093	484482	19720	1107026	5.00	0.500	20.0	1.00	50.0
				4987775		10282683			200		400	
Perfluorodecanesulfonic acid (PFDS)		AveID	23143	1027660	49391	2501158	240619	0.482	19.3	0.964	48.2	4.82
			9757829		18108114			193		386		
Perfluoroundecanoic acid (PFUnA)		AveID	36538	1233304	65283	2983565	312466	0.500	20.0	1.00	50.0	5.00
			10412322		+++++			200		+++++		
MeFOSA		AveID	134729	13969	674490	29431	1691110	5.00	0.500	20.0	1.00	50.0
				7305572		15151517			200		400	
N-EtFOSA-M		AveID	131165	13086	658792	27827	1643536	5.00	0.500	20.0	1.00	50.0
				7477876		14937252			200		400	

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-20928-1Analy Batch No.: 123741

SDG No.: _____

Instrument ID: A8GC Column: AcquityID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 08/22/2016 16:24Calibration End Date: 08/22/2016 18:23Calibration ID: 24558

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
Perfluorododecanoic acid (PFDoA)		AveID	27989		57201		265619	0.500		1.00		5.00
			9919508	1068419	18487887	2663493	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	
Perfluorotridecanoic Acid (PFTriA)		AveID	26974		54948		262523	0.500		1.00		5.00
			10167082	1097864	18092756	2615170	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	
Perfluorotetradecanoic acid (PFTeA)		AveID	25341		47138		217626	0.500		1.00		5.00
			8439988	922649	15654064	2191064	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	
Perfluoro-n-hexadecanoic acid (PFHxDA)		AveID	++++		90454		326259	++++		1.00		5.00
			12316500	1238761	22095352	3154285	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	
Perfluoro-n-octadecanoic acid (PFODA)		L1ID	++++		57967		277255	++++		1.00		5.00
			11787356	1098298	22519325	2785296	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	

Curve Type Legend:

AveID = Average isotope dilution
L1ID = Linear 1/conc IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_004_p1_e1.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 22-Aug-2016 16:24:00 ALS Bottle#: 0 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:46:35 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 24-Aug-2016 08:02:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA										
217 > 172.0	1.527	1.522	0.005		6819363	50.3		101	582978	
1 Perfluorobutyric acid										
212.9 > 169.0	1.527	1.524	0.003	1.000	59609	0.5059		101	567	
D 4 13C5-PFPeA										
267.9 > 223.0	1.808	1.797	0.011		5597748	51.9		104	495526	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.808	1.797	0.011	1.000	60050	0.5246		105	1171	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.842	1.837	0.005	1.000	80058	0.4732		107		
298.9 > 99.0	1.842	1.837	0.005	1.000	34143		2.34(0.00-0.00)	107		
D 6 13C2 PFHxA										
315 > 270.0	2.099	2.089	0.010		4903718	50.6		101	260893	
7 Perfluorohexanoic acid										
313 > 269.0	2.099	2.090	0.009	1.000	52922	0.5584		112	2967	
12 Perfluoroheptanoic acid										
363 > 319.0	2.441	2.427	0.014	1.000	58648	0.5730		115	2258	
D 11 13C4-PFHpA										
367 > 322.0	2.441	2.430	0.011		4893456	50.7		101	401779	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.456	2.446	0.010	1.000	71049	0.5858		129		
D 10 18O2 PFHxS										
403 > 84.0	2.456	2.446	0.010		5154474	45.8		96.9	399231	
15 Perfluorooctanoic acid										
413 > 369.0	2.818	2.798	0.020	1.000	76280	0.4644		92.9	381	
413 > 169.0	2.818	2.798	0.020	1.000	38469		1.98(0.90-1.10)	92.9	4683	
D 14 13C4 PFOA										
417 > 372.0	2.818	2.798	0.020		5095403	52.9		106	317072	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.827	2.807	0.020	1.000	47243	0.5031		106		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.201	3.110	0.092	1.000	47343	0.5300		114	7590	
499 > 99.0	3.192	3.110	0.083	0.997	12270		3.86(0.90-1.10)	114	3298	
D 19 13C5 PFNA										
468 > 423.0	3.192	3.177	0.015		4074257	51.2		102	297820	
D 17 13C4 PFOS										
503 > 80.0	3.201	3.177	0.024		3849977	46.9		98.1	247883	
20 Perfluorononanoic acid										
463 > 419.0	3.210	3.183	0.027	1.000	40604	0.4988		99.8	1803	
D 21 13C8 FOSA										
506 > 78.0	3.480	3.474	0.006		7475619	49.9		99.7	405641	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.480	3.475	0.005	1.000	75474	0.5484		110	5552	
24 Perfluorodecanoic acid										
513 > 469.0	3.560	3.546	0.014	1.000	37498	0.5022		100	3205	
D 23 13C2 PFDA										
515 > 470.0	3.560	3.546	0.014		3795163	52.2		104	681576	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.878	3.863	0.015	1.000	23143	0.4688		97.3		
D 27 13C2 PFUnA										
565 > 520.0	3.896	3.883	0.013		3001492	53.9		108	338255	
28 Perfluoroundecanoic acid										
563 > 519.0	3.896	3.880	0.016	1.000	36538	0.5616		112	1918	
D 30 13C2 PFDaA										
615 > 570.0	4.202	4.183	0.019		2648230	49.8		99.6	341859	
29 Perfluorododecanoic acid										
613 > 569.0	4.212	4.185	0.027	1.000	27989	0.5334		107	1855	
31 Perfluorotridecanoic acid										
633 > 619.0	4.482	4.452	0.030	1.000	26974	0.5198		104	304	
D 32 13C2-PFTeDA										
715 > 670.0	4.723	4.697	0.026		2369944	50.2		100	859601	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.723	4.701	0.022	1.000	25341	0.5695		114	241	
713 > 169.0	4.723	4.701	0.022	1.000	8897		2.85(0.00-0.00)	114	1890	
D 34 13C2-PFHxDA										
815 > 770.0	5.155	5.125	0.030		2924589	44.4		88.8	392815	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.162	5.127	0.035	1.000	54346	0.8273		165	485	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.545	5.509	0.036	1.000	17636	0.6641		133	195	

Reagents:

LCPFC-L1_00021

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_004_p1_e1.d

Injection Date: 22-Aug-2016 16:24:00

Instrument ID: A8

Lims ID: IC L1

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

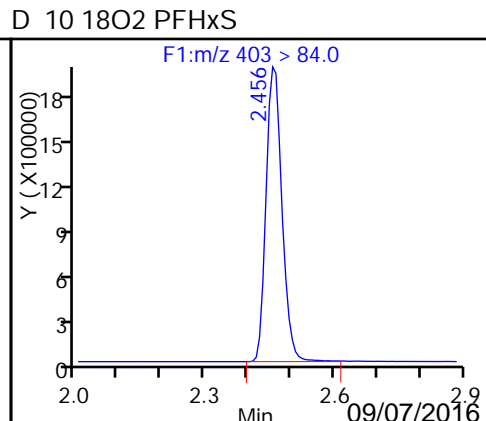
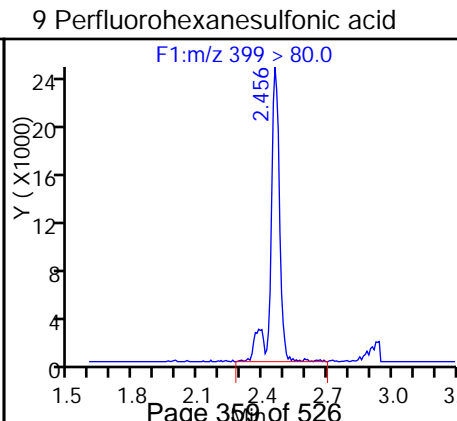
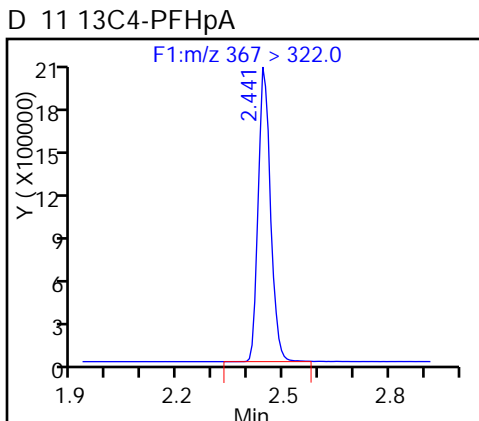
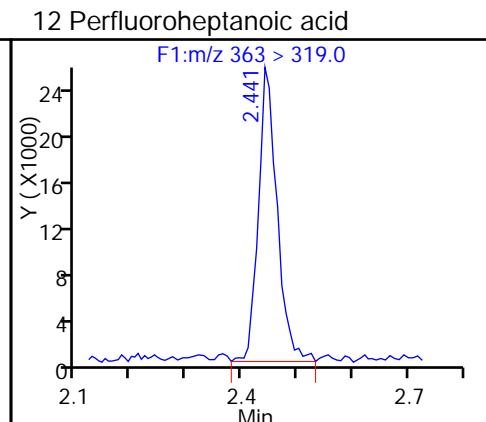
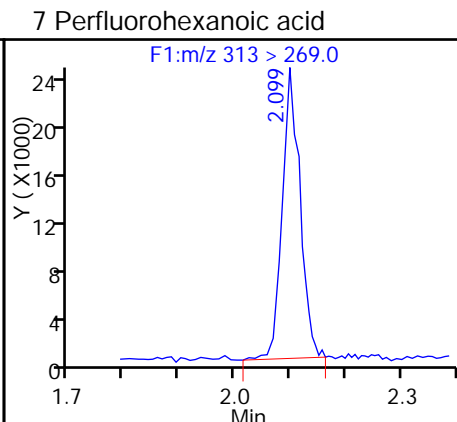
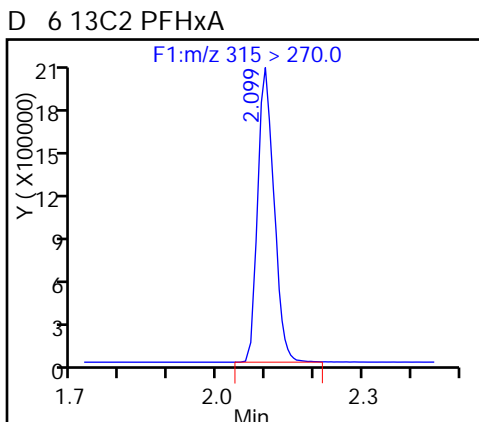
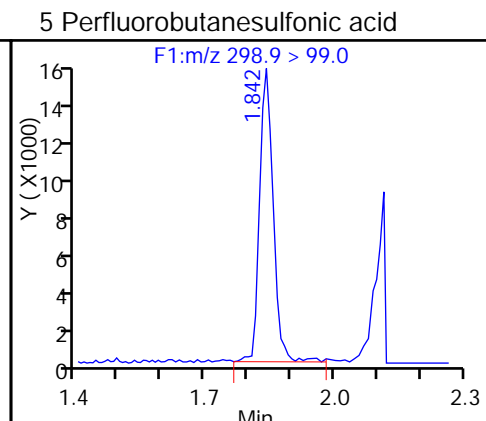
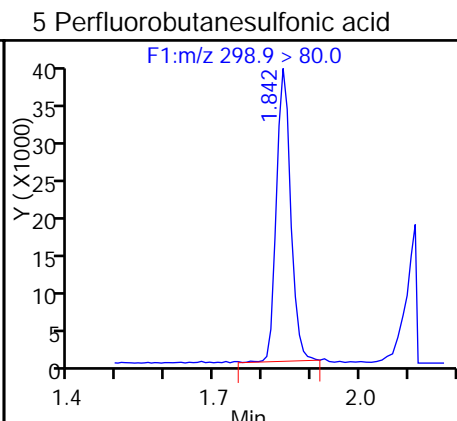
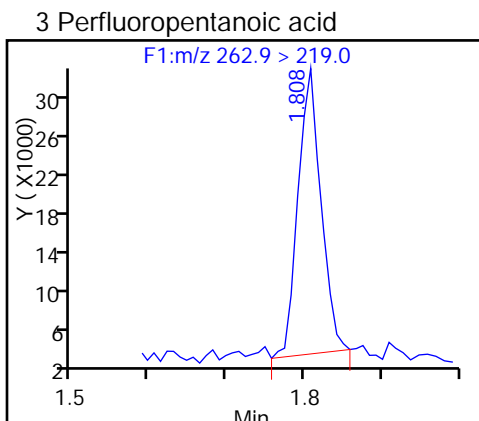
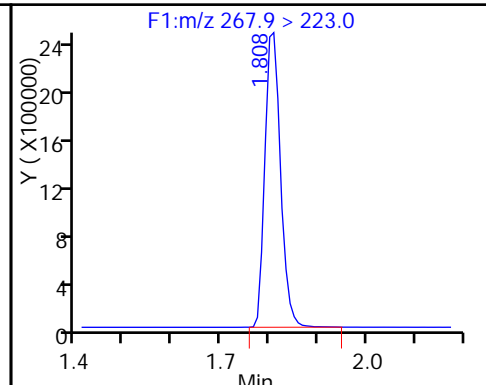
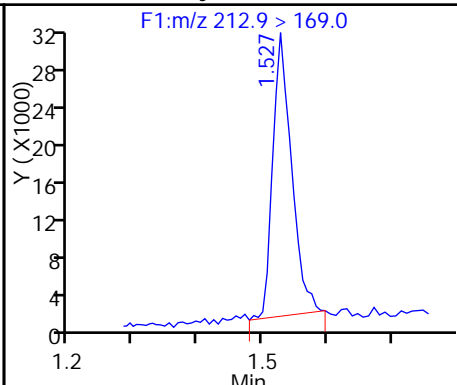
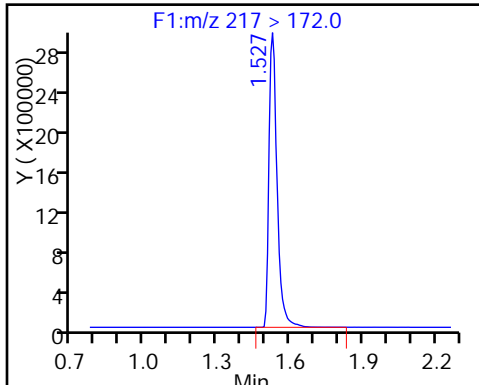
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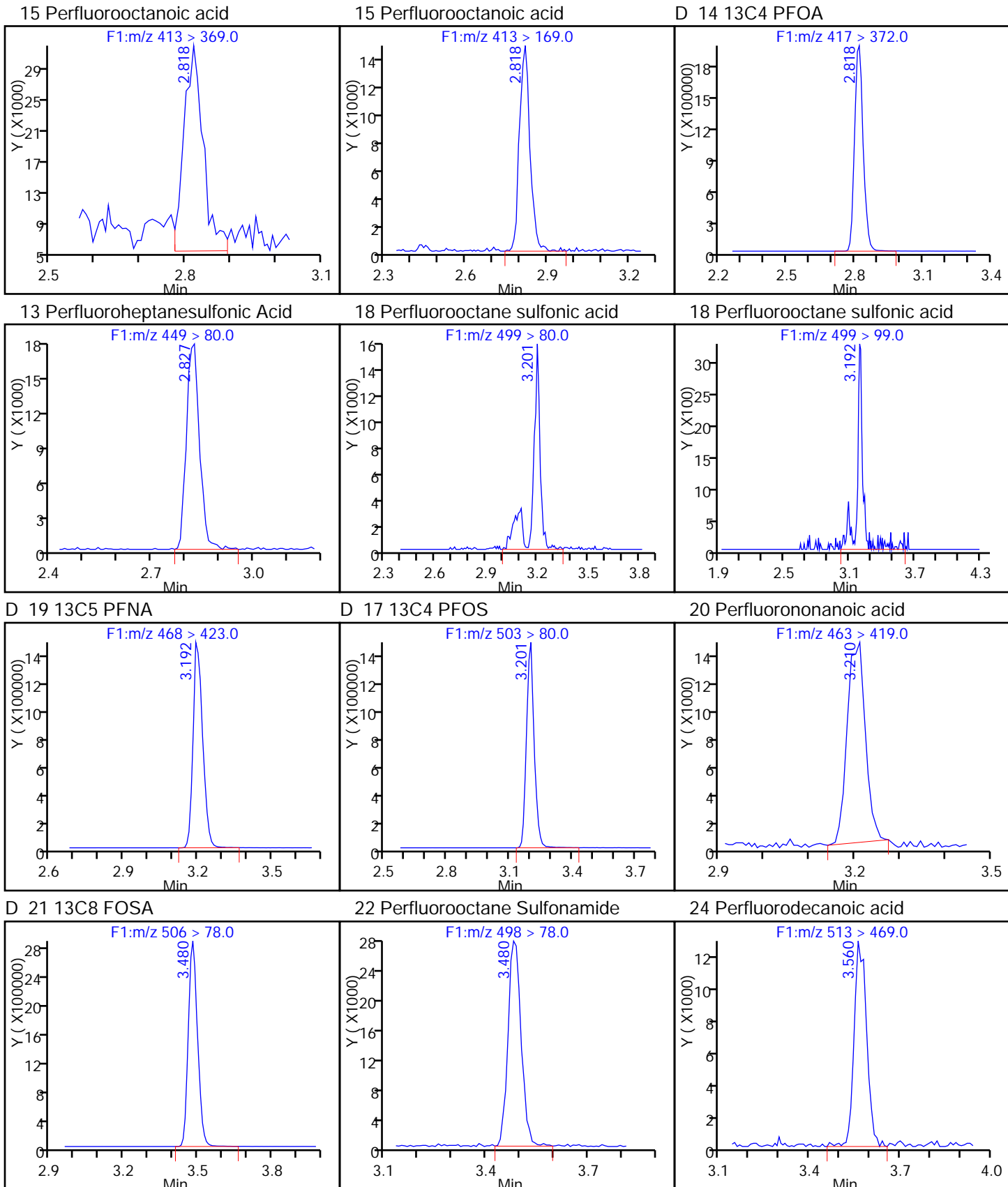
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

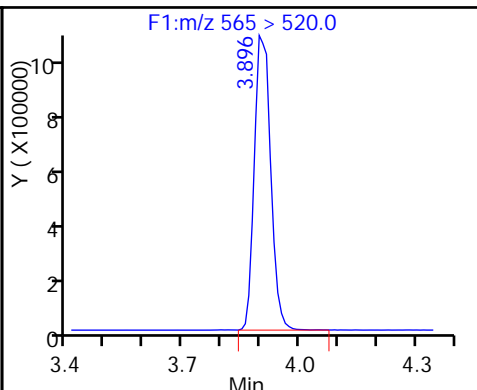
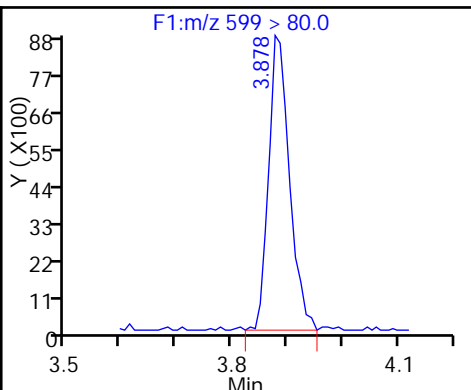
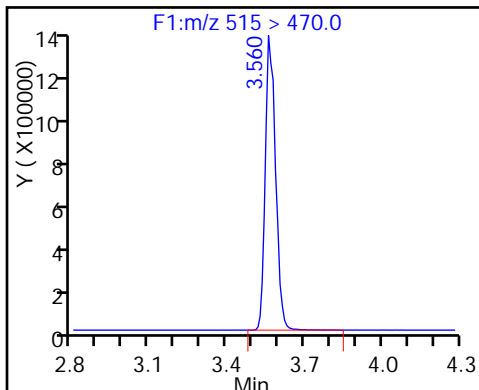




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

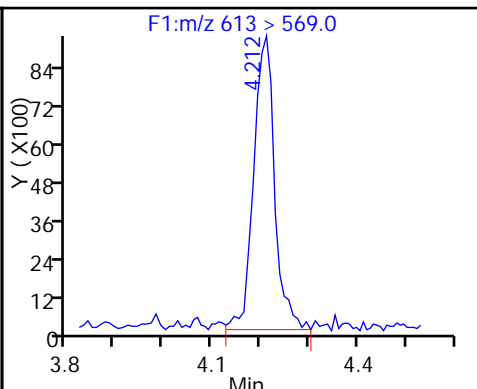
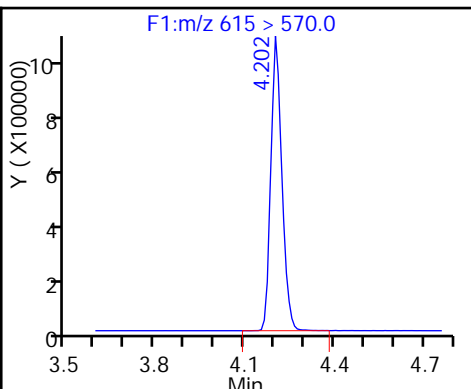
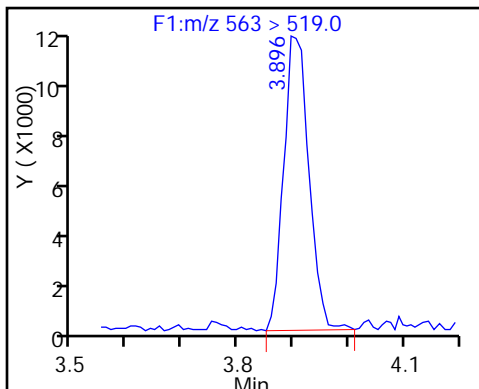
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

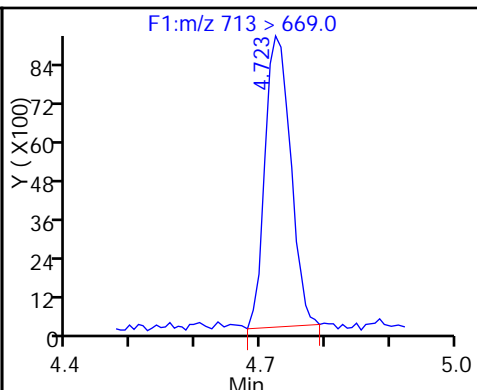
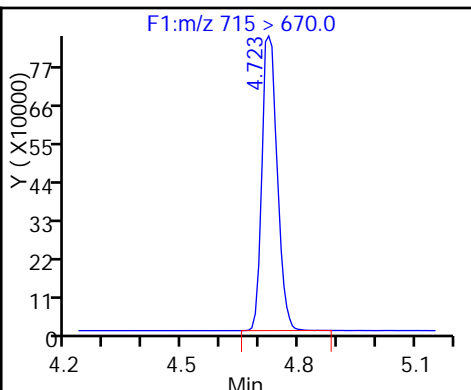
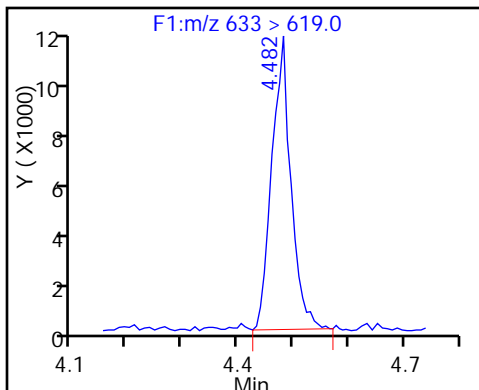
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

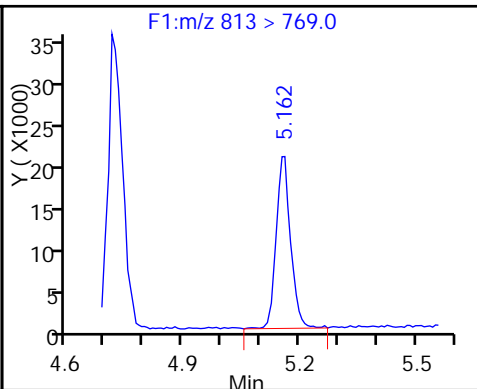
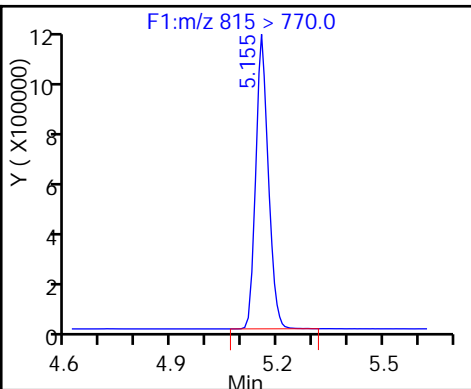
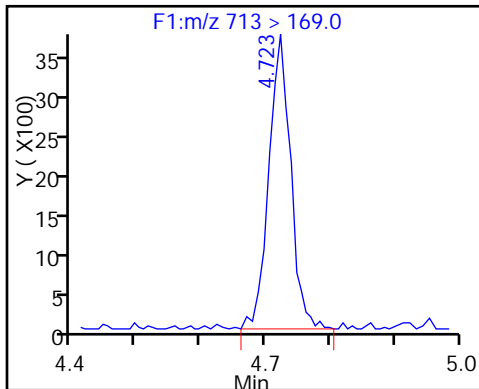
33 Perfluorotetradecanoic acid



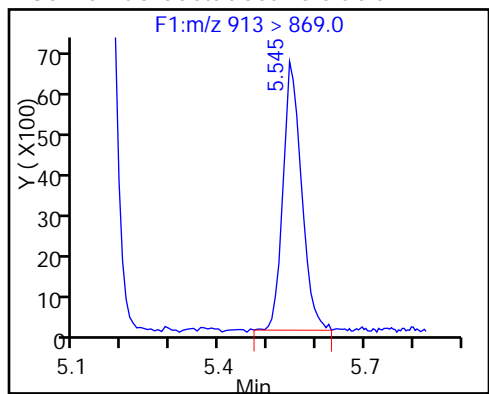
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_005_p1_e1.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 22-Aug-2016 16:31:00 ALS Bottle#: 0 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:46:49 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 24-Aug-2016 08:03:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.521	1.522	-0.001		7016950	51.7		103	594195	
1 Perfluorobutyric acid										
212.9 > 169.0	1.527	1.524	0.003	1.000	120361	0.99		99.3	1119	
D 4 13C5-PFPeA										
267.9 > 223.0	1.800	1.797	0.003		5714097	53.0		106	670338	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.800	1.797	0.003	1.000	117248	1.00		100	2084	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.842	1.837	0.005	1.000	155399	0.8312		94.0		
298.9 > 99.0	1.833	1.837	-0.004	0.995	62984		2.47(0.00-0.00)	94.0		
D 6 13C2 PFHxA										
315 > 270.0	2.091	2.089	0.002		5169310	53.3		107	450484	
7 Perfluorohexanoic acid										
313 > 269.0	2.091	2.090	0.001	1.000	96488	0.9657		96.6	5664	
12 Perfluoroheptanoic acid										
363 > 319.0	2.439	2.427	0.012	1.000	101560	0.9465		94.7	3132	
D 11 13C4-PFHpA										
367 > 322.0	2.439	2.430	0.009		5130213	53.2		106	502532	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.455	2.446	0.009	1.000	124657	0.9301		102		
D 10 18O2 PFHxS										
403 > 84.0	2.455	2.446	0.009		5695921	50.7		107	447514	
15 Perfluorooctanoic acid										
413 > 369.0	2.808	2.798	0.010	1.000	129758	1.00		100	605	
413 > 169.0	2.808	2.798	0.010	1.000	67300		1.93(0.90-1.10)	100	6159	
D 14 13C4 PFOA										
417 > 372.0	2.808	2.798	0.010		5053694	52.5		105	361343	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.816	2.807	0.009	1.000	89337	0.9148		96.1		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.070	3.110	-0.039	1.000	83050	0.8941		96.3	5150	
499 > 99.0	3.181	3.110	0.072	1.036	19300		4.30(0.90-1.10)	96.3	3908	
D 19 13C5 PFNA										
468 > 423.0	3.190	3.177	0.013		4383507	55.1		110	397439	
D 17 13C4 PFOS										
503 > 80.0	3.190	3.177	0.013		4003442	48.8		102	502489	
20 Perfluorononanoic acid										
463 > 419.0	3.190	3.183	0.007	1.000	85388	0.9750		97.5	3962	
D 21 13C8 FOSA										
506 > 78.0	3.477	3.474	0.003		7827103	52.2		104	409492	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.477	3.475	0.002	1.000	141802	0.9841		98.4	18373	
24 Perfluorodecanoic acid										
513 > 469.0	3.556	3.546	0.010	1.000	76186	1.04		104	5535	
D 23 13C2 PFDA										
515 > 470.0	3.556	3.546	0.010		3727566	51.3		103	1315410	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.873	3.863	0.010	1.000	49391	0.9621		99.8		
D 27 13C2 PFUnA										
565 > 520.0	3.891	3.884	0.007		2982170	53.6		107	357551	
28 Perfluoroundecanoic acid										
563 > 519.0	3.891	3.880	0.011	1.000	65283	1.01		101	4161	
D 30 13C2 PFDoA										
615 > 570.0	4.199	4.183	0.016		2881865	54.2		108	268300	
29 Perfluorododecanoic acid										
613 > 569.0	4.199	4.185	0.014	1.000	57201	1.00		100	3738	
31 Perfluorotridecanoic acid										
633 > 619.0	4.465	4.452	0.013	1.000	54948	0.9730		97.3	1573	
D 32 13C2-PFTeDA										
715 > 670.0	4.712	4.697	0.015		2459707	52.1		104	476745	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.720	4.701	0.019	1.000	47138	0.9735		97.4	468	
713 > 169.0	4.712	4.701	0.011	0.998	17105		2.76(0.00-0.00)	97.4	3397	
D 34 13C2-PFHxDA										
815 > 770.0	5.142	5.125	0.017		3459600	52.5		105	709351	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.142	5.127	0.015	1.000	90454	1.27		127	842	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.532	5.509	0.023	1.000	57967	1.24		124	575	

Reagents:

LCPFC-L2_00022

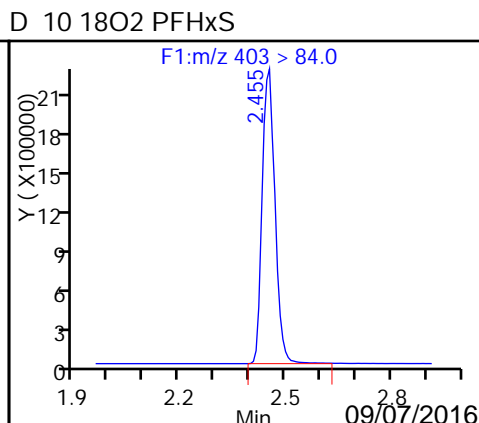
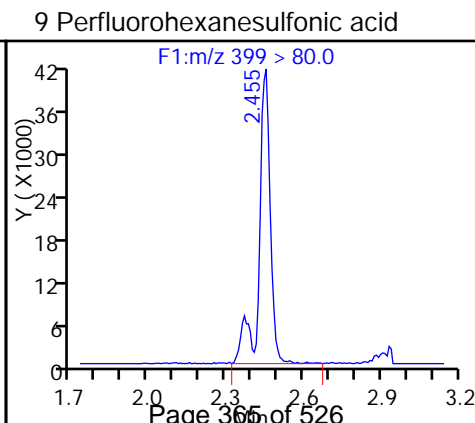
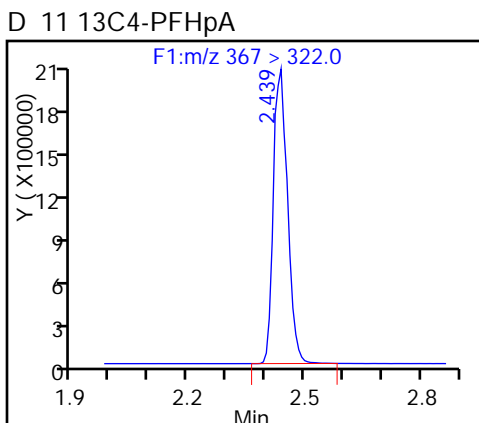
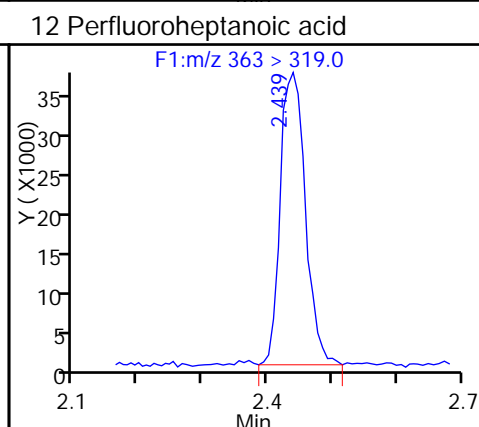
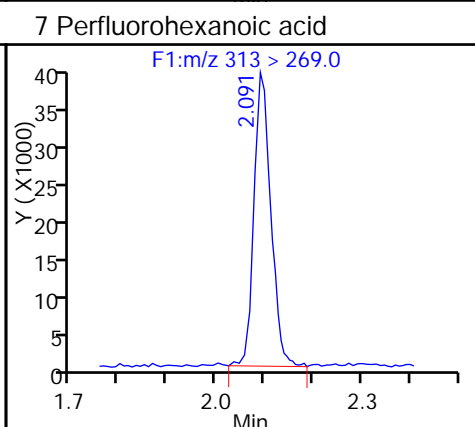
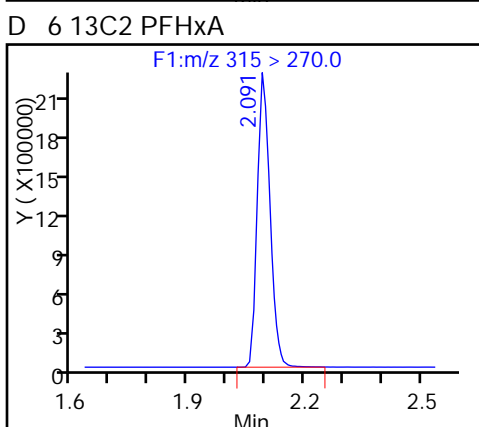
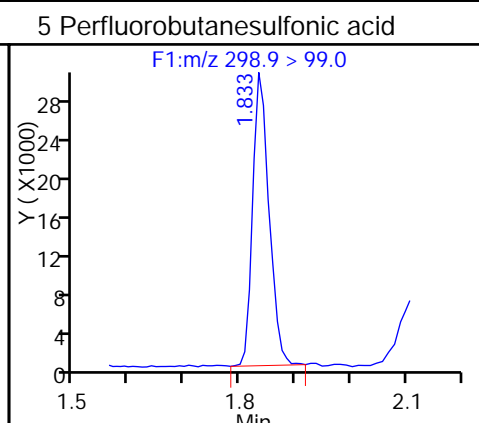
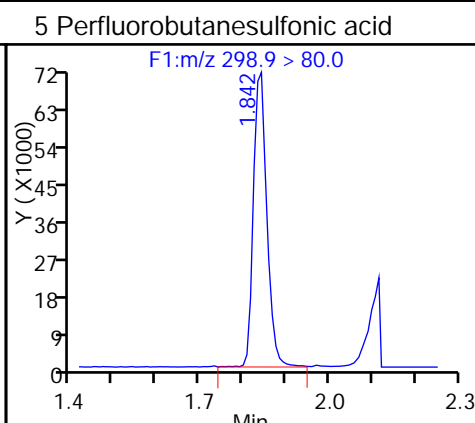
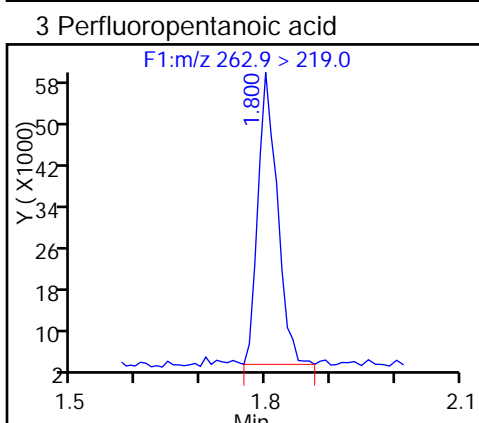
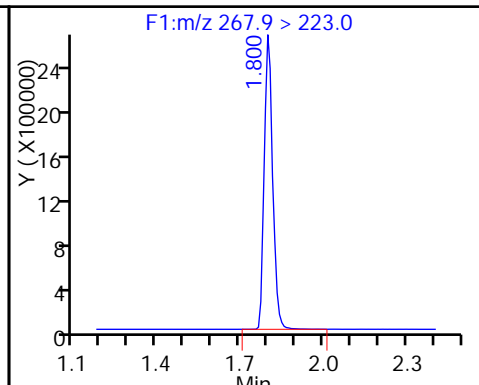
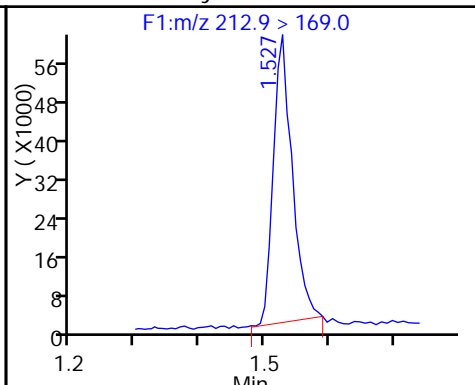
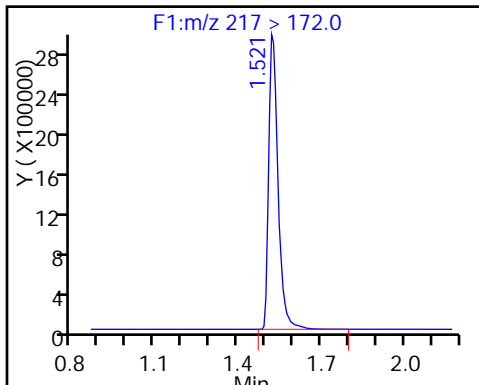
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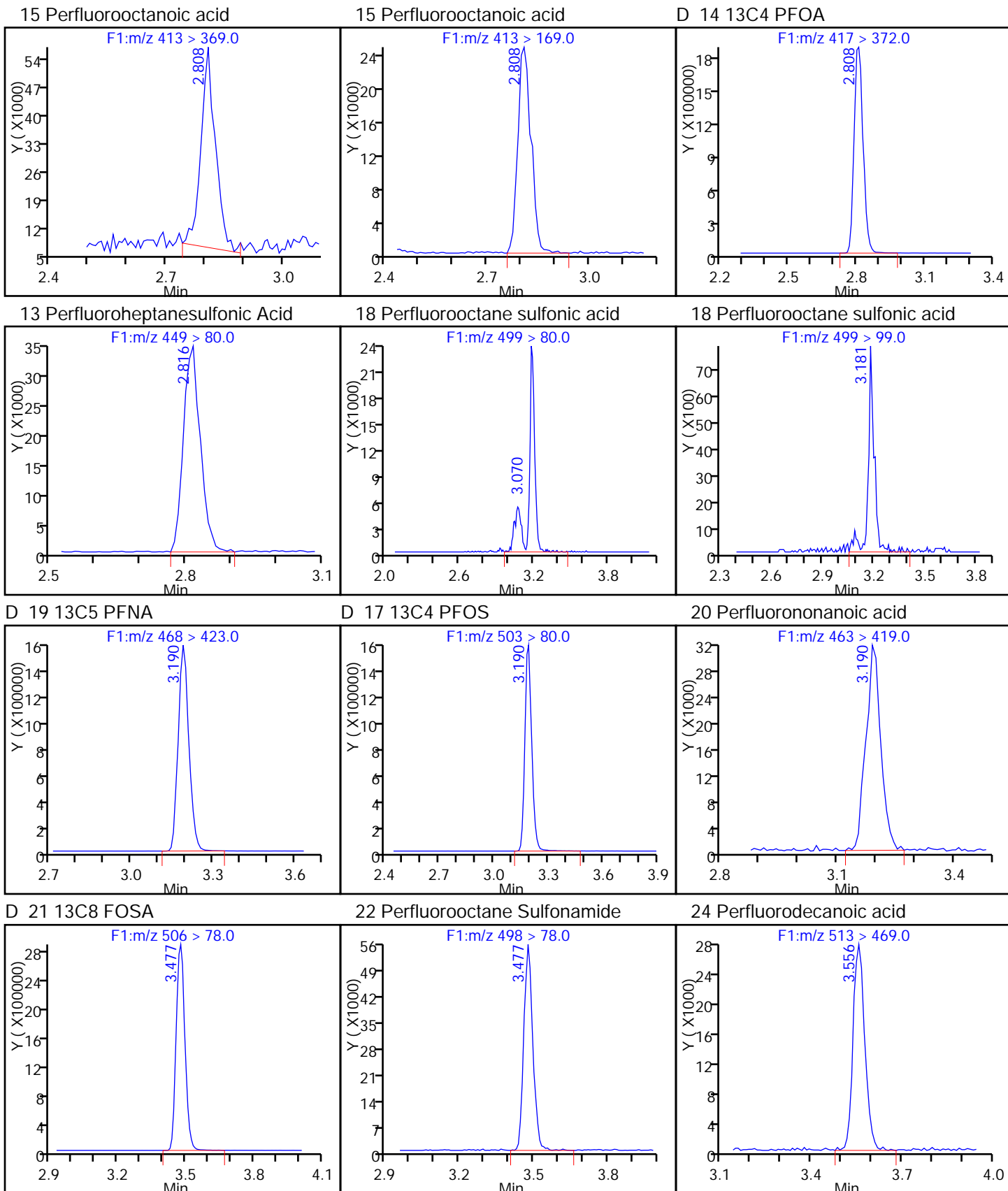
Units: mL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

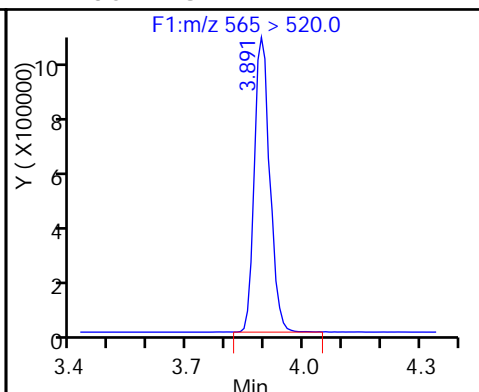
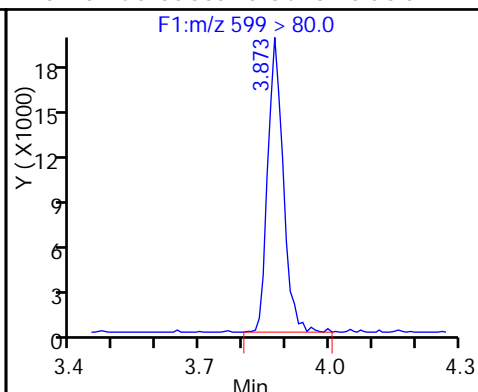
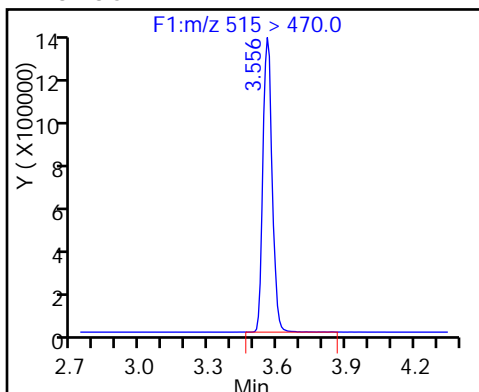




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

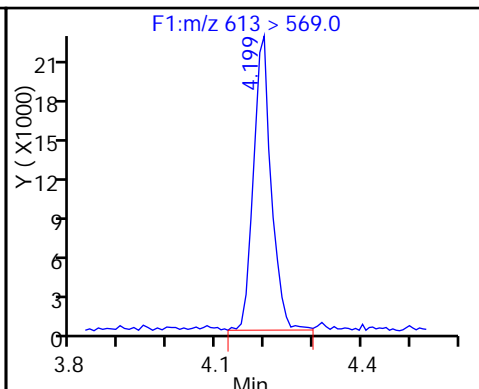
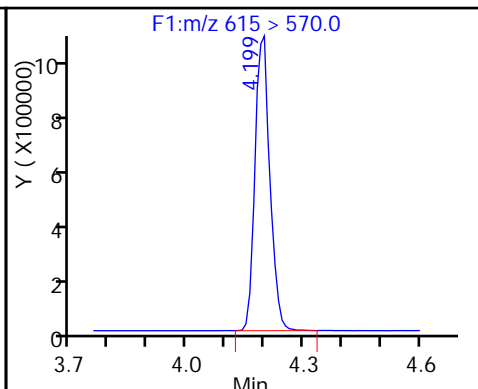
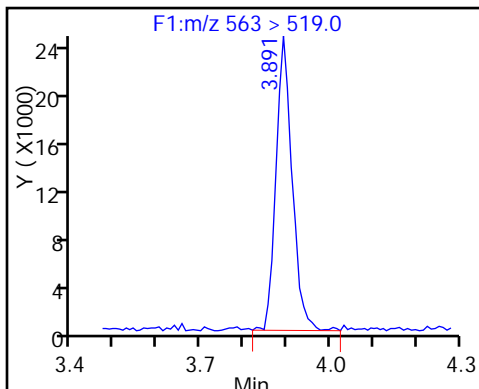
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

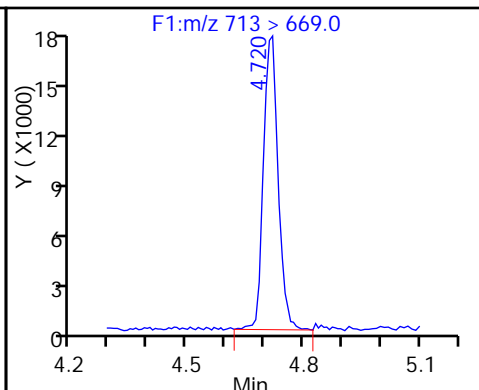
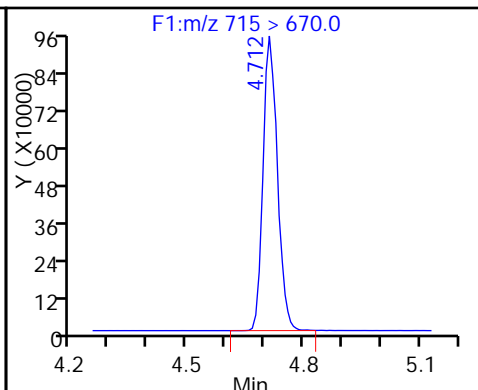
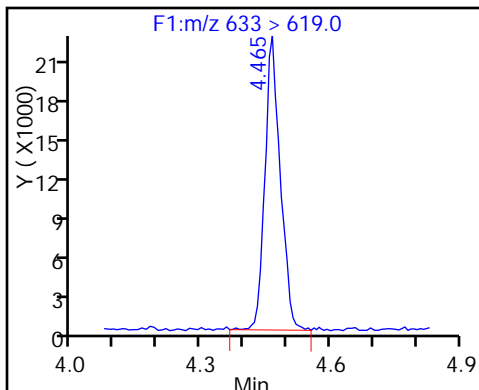
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

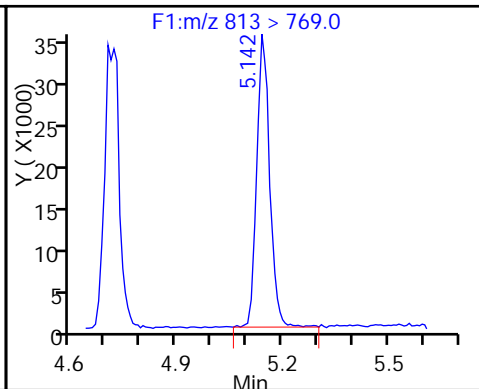
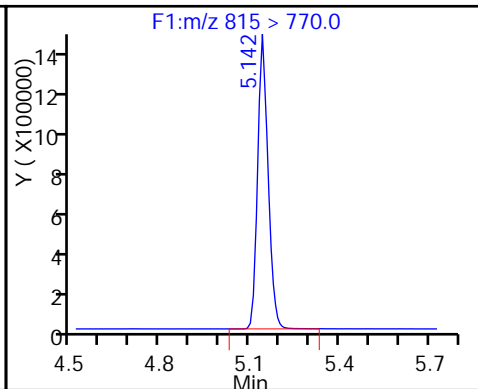
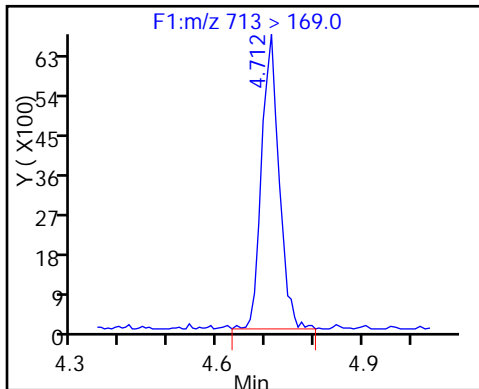
33 Perfluorotetradecanoic acid



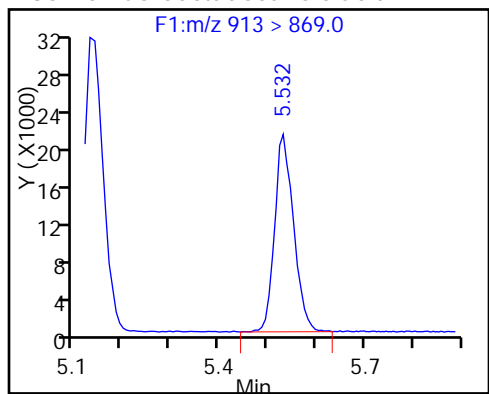
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_006_p1_e1.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 22-Aug-2016 16:38:00 ALS Bottle#: 0 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 10:17:27 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 24-Aug-2016 08:03:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.520	1.522	-0.002		7090858	52.3		105	647120	
1 Perfluorobutyric acid										
212.9 > 169.0	1.520	1.524	-0.004	1.000	599906	4.90		97.9	5648	
D 4 13C5-PFPeA										
267.9 > 223.0	1.799	1.797	0.002		5596088	51.9		104	828600	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.799	1.797	0.002	1.000	575829	5.03		101	9330	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.833	1.837	-0.004	1.000	754197	4.22		95.4		
298.9 > 99.0	1.833	1.837	-0.004	1.000	332029		2.27(0.00-0.00)	95.4		
D 6 13C2 PFHxA										
315 > 270.0	2.090	2.089	0.001		4996335	51.5		103	745544	
7 Perfluorohexanoic acid										
313 > 269.0	2.090	2.090	0.0	1.000	469088	4.86		97.1	29136	
12 Perfluoroheptanoic acid										
363 > 319.0	2.425	2.427	-0.002	1.000	496420	4.86		97.2	17807	
D 11 13C4-PFHpA										
367 > 322.0	2.425	2.430	-0.005		4882001	50.6		101	393174	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.440	2.446	-0.006	1.000	529034	4.13		90.7		
D 10 18O2 PFHxS										
403 > 84.0	2.440	2.446	-0.006		5450240	48.5		102	443448	
15 Perfluorooctanoic acid										
413 > 369.0	2.799	2.798	0.001	1.000	534559	4.78		95.7	2795	
413 > 169.0	2.799	2.798	0.001	1.000	319971		1.67(0.90-1.10)	95.7	29388	
D 14 13C4 PFOA										
417 > 372.0	2.799	2.798	0.001		5295788	55.0		110	394323	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.807	2.807	0.0	1.000	485823	4.99		105		
D 18 Perfluorooctane sulfonic acid										
499 > 80.0	3.153	3.110	0.044	1.000	419034	4.53		97.6	29096	M
499 > 99.0	3.180	3.110	0.071	1.009	91895		4.56(0.90-1.10)	97.6	10610	M
D 19 13C5 PFNA										
468 > 423.0	3.180	3.177	0.003		4067908	51.1		102	278641	
D 17 13C4 PFOS										
503 > 80.0	3.180	3.177	0.003		3990173	48.6		102	353580	
D 20 Perfluorononanoic acid										
463 > 419.0	3.180	3.183	-0.003	1.000	403677	4.97		99.3	17625	
D 21 13C8 FOSA										
506 > 78.0	3.470	3.474	-0.004		7895310	52.7		105	376152	
D 22 Perfluorooctane Sulfonamide										
498 > 78.0	3.478	3.475	0.003	1.000	701587	4.83		96.5	52629	
D 24 Perfluorodecanoic acid										
513 > 469.0	3.549	3.546	0.003	1.000	352085	4.92		98.4	32452	
D 23 13C2 PFDA										
515 > 470.0	3.557	3.546	0.011		3636462	50.0		100	309646	
D 26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.864	3.863	0.001	1.000	240619	4.70		97.6		
D 28 Perfluoroundecanoic acid										
563 > 519.0	3.882	3.880	0.002	1.000	312466	4.87		97.4	19910	
D 27 13C2 PFUnA										
565 > 520.0	3.882	3.880	0.002		2958732	53.2		106	371474	
D 30 13C2 PFDoA										
615 > 570.0	4.187	4.183	0.004		2693738	50.7		101	208645	
D 29 Perfluorododecanoic acid										
613 > 569.0	4.187	4.185	0.002	1.000	265619	4.98		99.5	14463	
D 31 Perfluorotridecanoic acid										
633 > 619.0	4.455	4.452	0.003	1.000	262523	4.97		99.5	10158	
D 32 13C2-PFTeDA										
715 > 670.0	4.697	4.697	0.0		2444058	51.8		104	304107	
D 33 Perfluorotetradecanoic acid										
713 > 669.0	4.706	4.701	0.005	1.000	217626	4.81		96.2	2021	
713 > 169.0	4.697	4.701	-0.004	0.998	72103		3.02(0.00-0.00)	96.2	26553	
D 34 13C2-PFHxDA										
815 > 770.0	5.127	5.125	0.002		3464142	52.6		105	339084	
D 35 Perfluorohexadecanoic acid										
813 > 769.0	5.127	5.127	0.0	1.000	326259	4.88		97.6	2931	
D 36 Perfluorooctadecanoic acid										
913 > 869.0	5.515	5.509	0.006	1.000	277255	4.81		96.2	2846	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L3_00019

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_006_p1_e1.d

Injection Date: 22-Aug-2016 16:38:00

Instrument ID: A8

Lims ID: IC L3

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

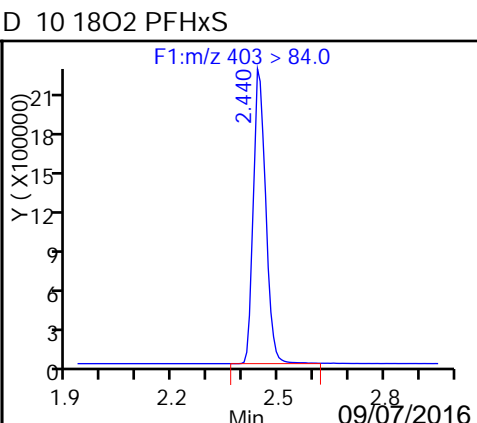
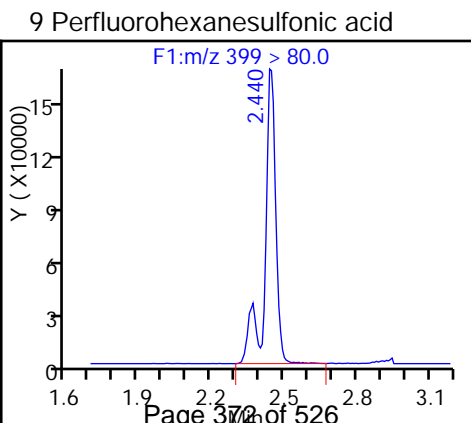
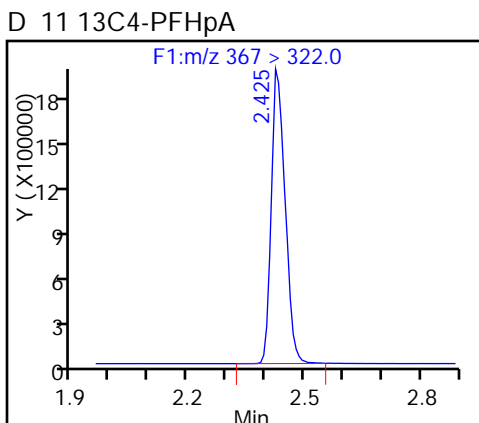
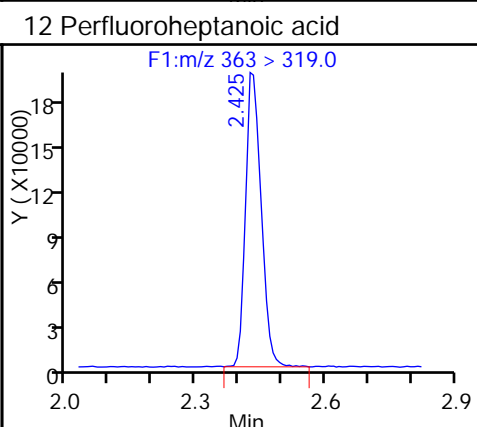
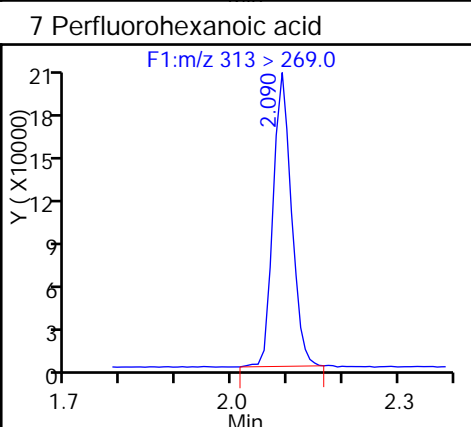
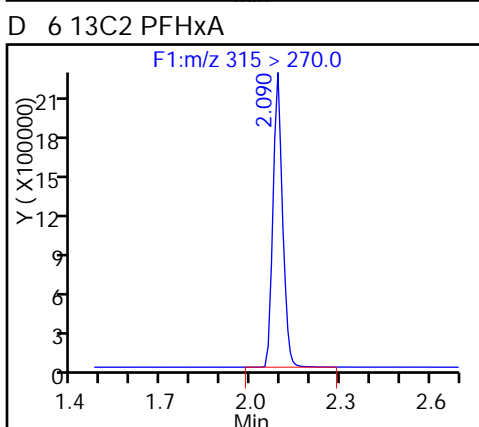
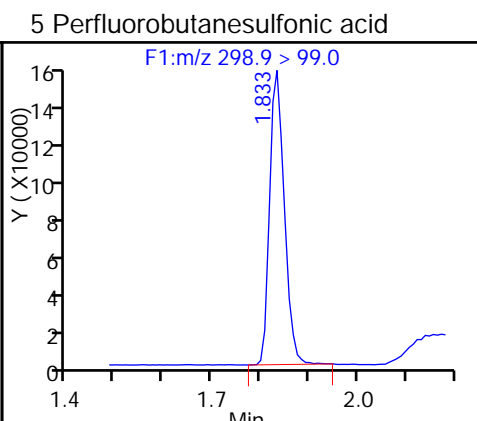
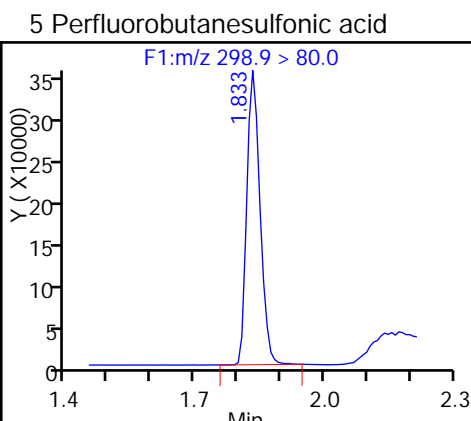
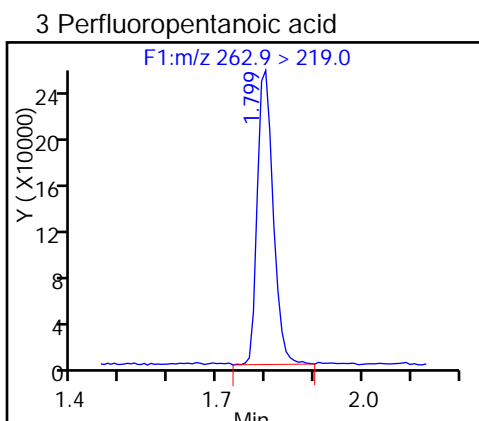
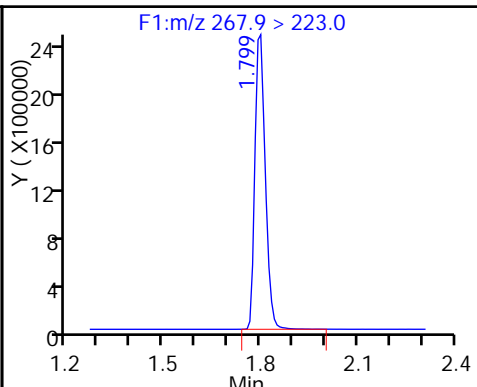
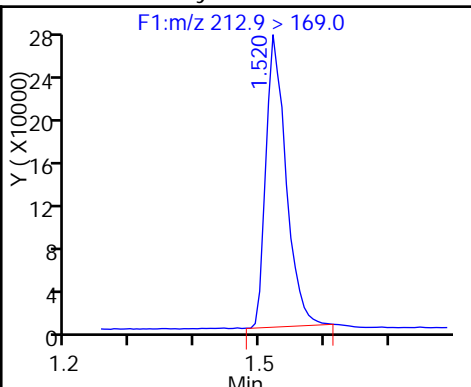
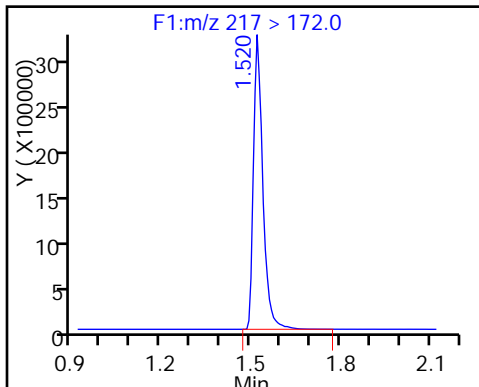
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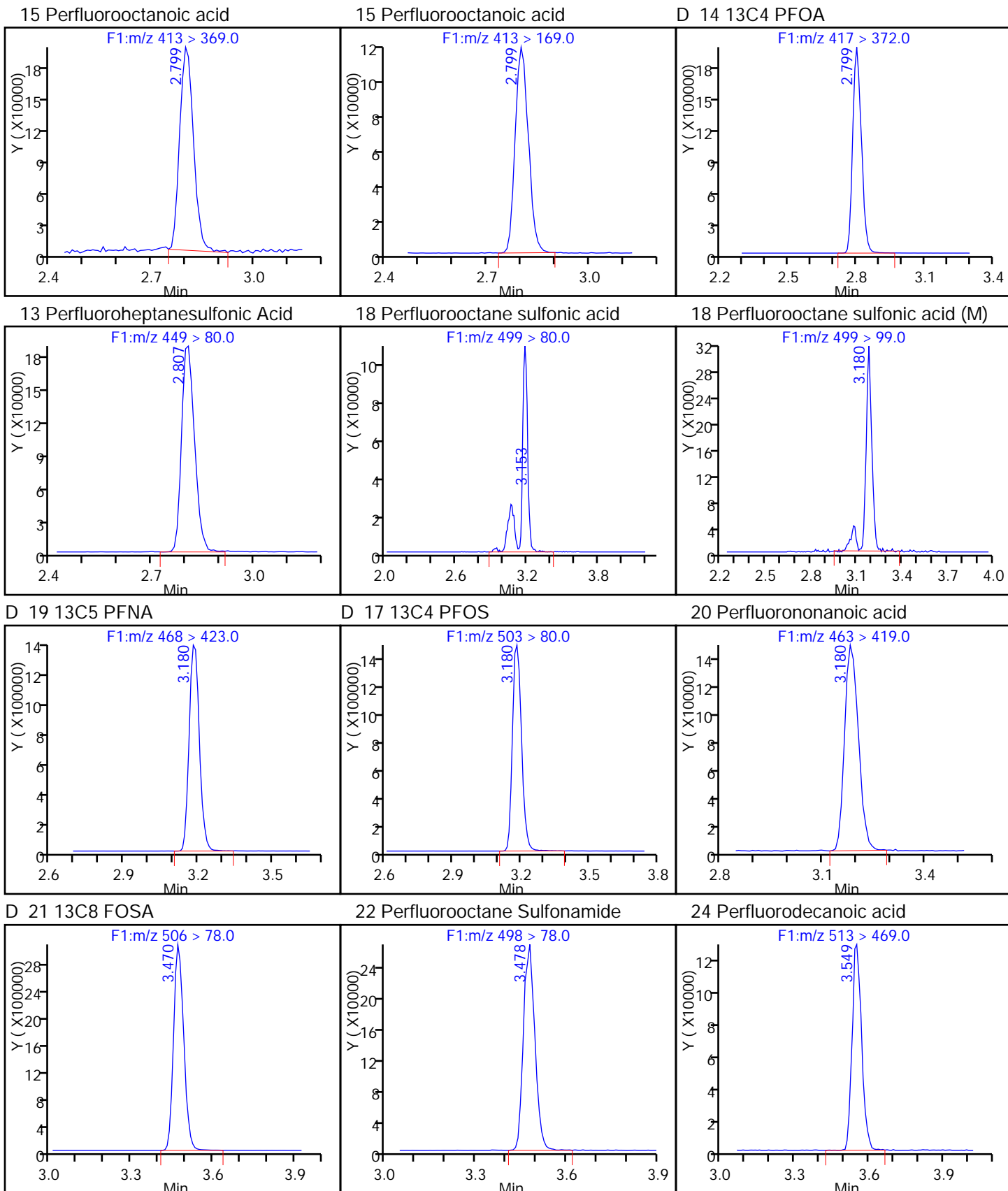
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

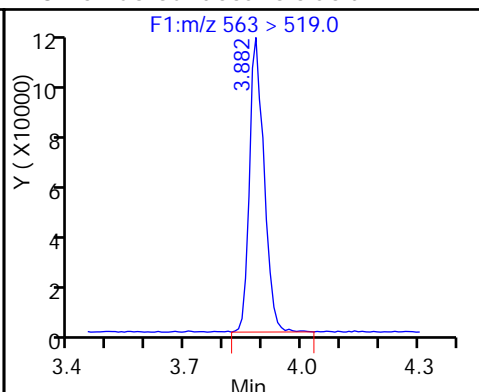
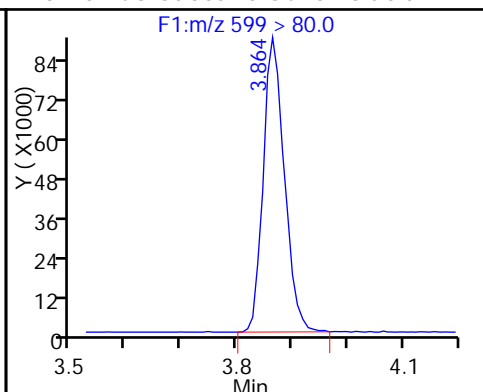
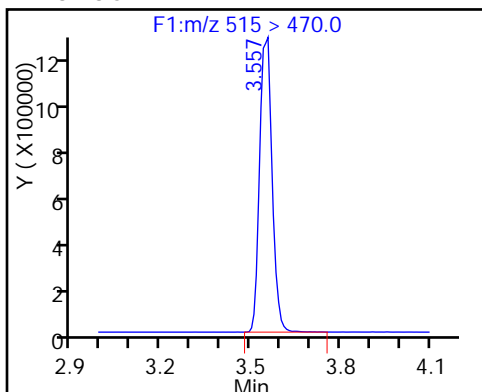




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

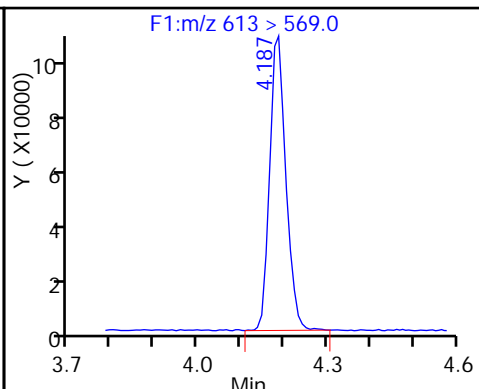
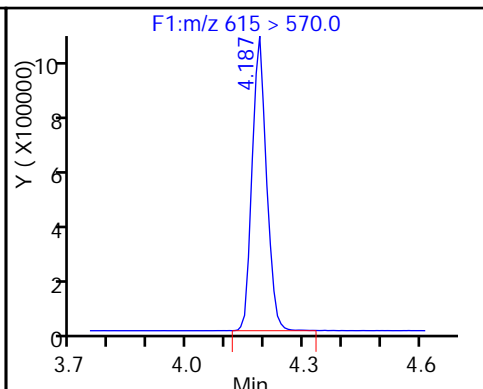
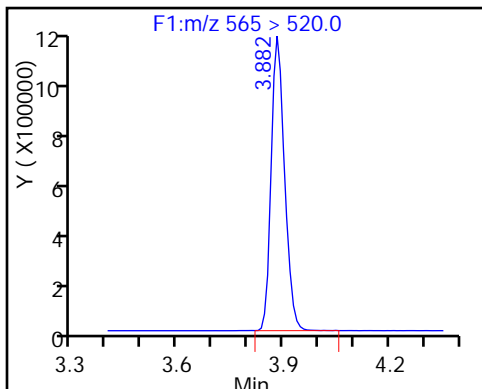
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

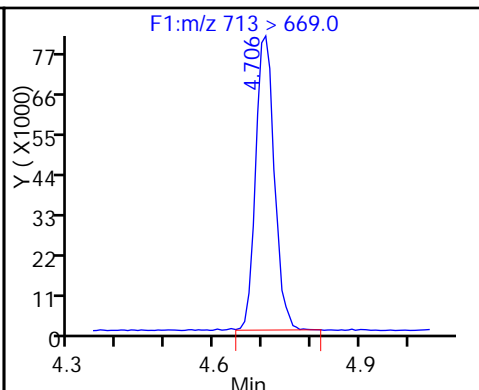
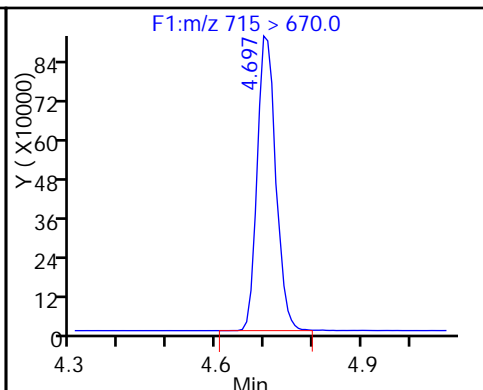
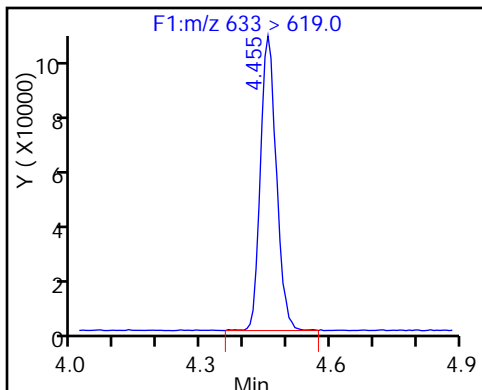
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

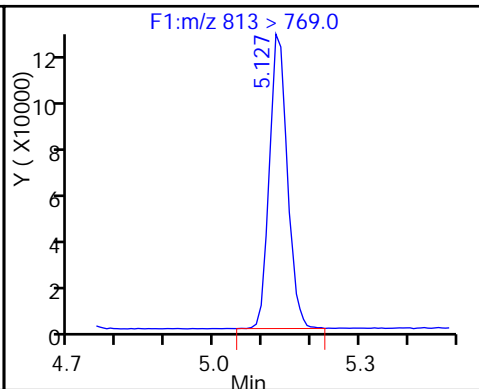
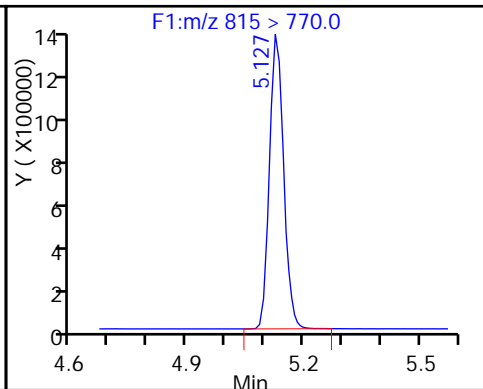
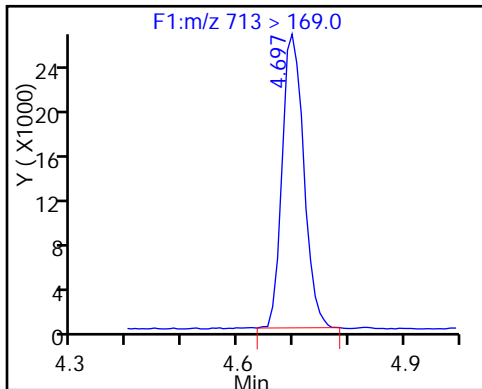
33 Perfluorotetradecanoic acid



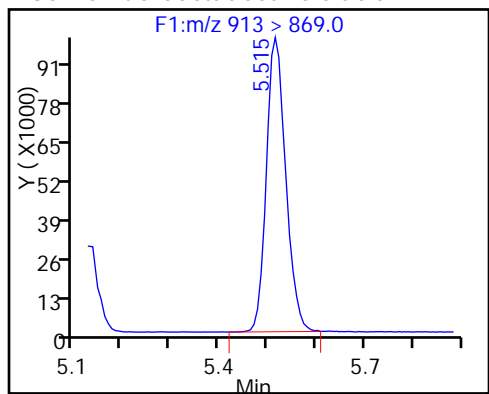
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

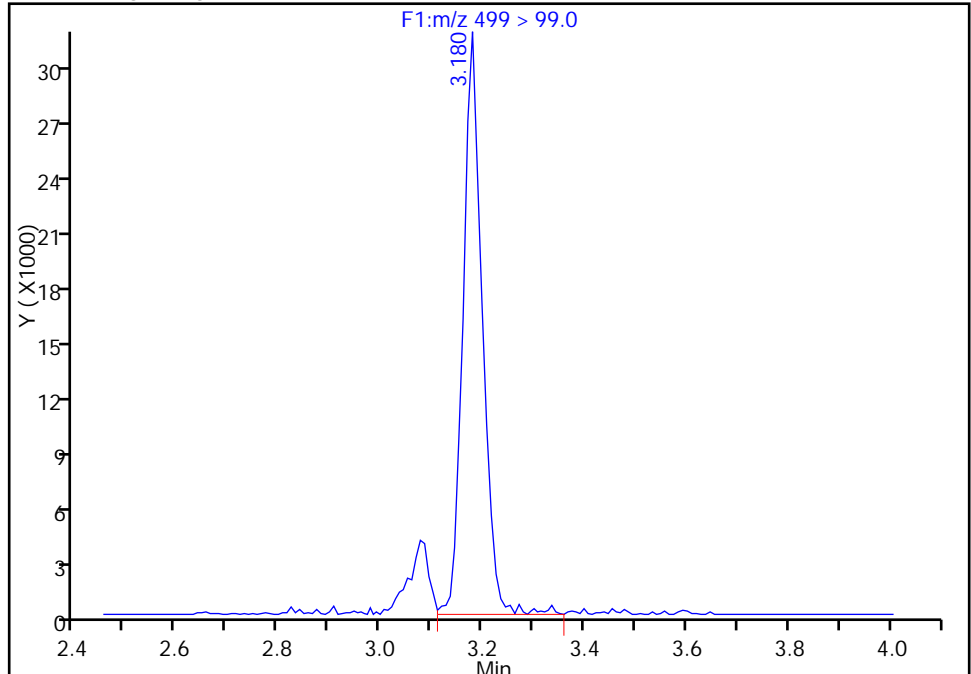
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Injection Date: 22-Aug-2016 16:38:00 Instrument ID: A8
Lims ID: IC L3
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

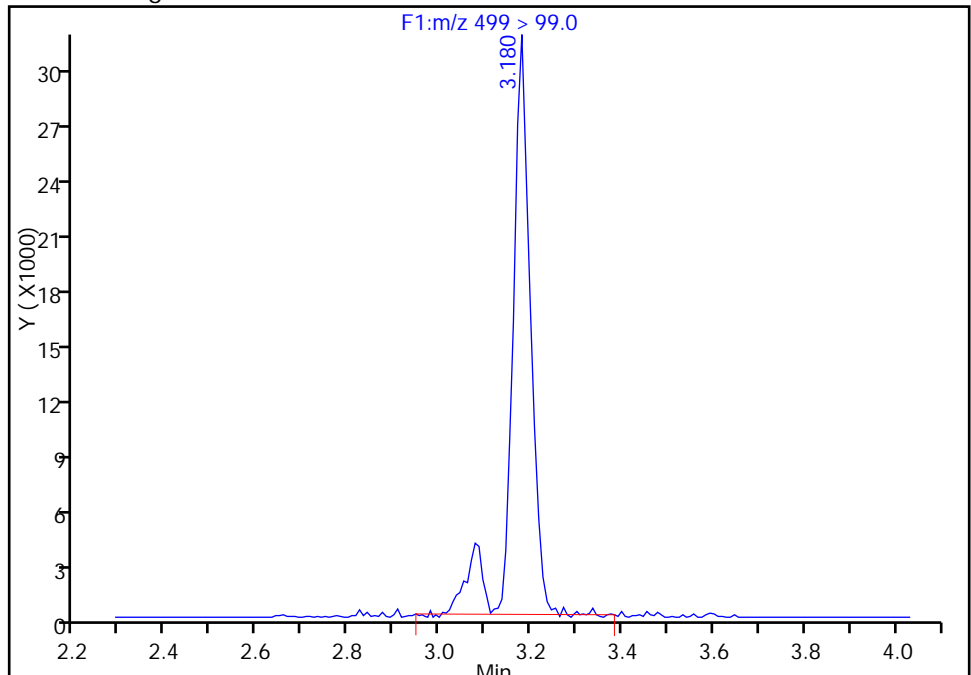
RT: 3.18
Area: 84307
Amount: 4.526361
Amount Units: ng/ml

Processing Integration Results



RT: 3.18
Area: 91895
Amount: 4.526361
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 24-Aug-2016 10:17:26
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_007_p1_e1.d
 Lims ID: IC L4
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 22-Aug-2016 16:46:00 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 10:17:56 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 23-Aug-2016 17:55:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.520	1.522	-0.002		7306157	53.9		108	531990	
1 Perfluorobutyric acid										
212.9 > 169.0	1.527	1.524	0.003	1.000	2609410	20.7		103	21476	
D 4 13C5-PFPeA										
267.9 > 223.0	1.799	1.797	0.002		5625905	52.2		104	843870	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.799	1.797	0.002	1.000	2365012	20.6		103	48791	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.842	1.837	0.005	1.000	3451896	18.6		105		
298.9 > 99.0	1.833	1.837	-0.004	0.995	1436290		2.40(0.00-0.00)	105		
D 6 13C2 PFHxA										
315 > 270.0	2.090	2.089	0.001		5316587	54.8		110	606020	
7 Perfluorohexanoic acid										
313 > 269.0	2.090	2.090	0.0	1.000	1974462	19.2		96.1	120207	
12 Perfluoroheptanoic acid										
363 > 319.0	2.428	2.427	0.001	1.000	2170824	20.3		102	68741	
D 11 13C4-PFHpA										
367 > 322.0	2.428	2.430	-0.002		5101082	52.9		106	527626	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.444	2.446	-0.002	1.000	2325915	17.5		96.1		
D 10 18O2 PFHxS										
403 > 84.0	2.444	2.446	-0.002		5651800	50.3		106	381394	
15 Perfluorooctanoic acid										
413 > 369.0	2.794	2.798	-0.004	1.000	2203768	20.5		102	11977	
413 > 169.0	2.794	2.798	-0.004	1.000	1315437		1.68(0.90-1.10)	102	101772	
D 14 13C4 PFOA										
417 > 372.0	2.794	2.798	-0.004		5336887	55.4		111	414230	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.802	2.807	-0.005	1.000	1983261	19.7		103		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.156	3.110	0.047	1.000	1774033	18.5		99.6	32662	M
499 > 99.0	3.183	3.110	0.074	1.009	388066		4.57(0.90-1.10)	99.6	41007	M
D 19 13C5 PFNA										
468 > 423.0	3.183	3.177	0.006		4447308	55.9		112	345891	
D 17 13C4 PFOS										
503 > 80.0	3.174	3.177	-0.003		4137497	50.4		105	323955	
20 Perfluorononanoic acid										
463 > 419.0	3.183	3.183	0.0	1.000	1803496	20.3		101	85439	
D 21 13C8 FOSA										
506 > 78.0	3.471	3.474	-0.003		7937448	52.9		106	307522	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.479	3.475	0.004	1.000	3023571	20.7		103	163207	
24 Perfluorodecanoic acid										
513 > 469.0	3.550	3.546	0.004	1.000	1565796	20.5		103	142013	
D 23 13C2 PFDA										
515 > 470.0	3.542	3.546	-0.004		3879401	53.3		107	482291	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.866	3.863	0.003	1.000	1027660	19.4		100		
28 Perfluoroundecanoic acid										
563 > 519.0	3.875	3.880	-0.005	1.000	1233304	19.0		94.8	54365	
D 27 13C2 PFUnA										
565 > 520.0	3.875	3.880	-0.005		2999584	53.9		108	273835	
D 30 13C2 PFDaA										
615 > 570.0	4.181	4.183	-0.002		2789964	52.5		105	217814	
29 Perfluorododecanoic acid										
613 > 569.0	4.181	4.185	-0.004	1.000	1068419	19.3		96.6	57394	
31 Perfluorotridecanoic acid										
633 > 619.0	4.452	4.452	-0.001	1.000	1097864	20.1		100	34397	
D 32 13C2-PFTeDA										
715 > 670.0	4.695	4.697	-0.002		2480257	52.6		105	324788	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.703	4.701	0.002	1.000	922649	19.7		98.4	7670	
713 > 169.0	4.695	4.701	-0.006	0.998	298530		3.09(0.00-0.00)	98.4	55607	
D 34 13C2-PFHxDA										
815 > 770.0	5.121	5.125	-0.004		3375677	51.3		103	321501	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.121	5.127	-0.006	1.000	1238761	17.9		89.5	9568	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.502	5.509	-0.007	1.000	1098298	17.3		86.7	9144	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L4_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_007_p1_e1.d

Injection Date: 22-Aug-2016 16:46:00

Instrument ID: A8

Lims ID: IC L4

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

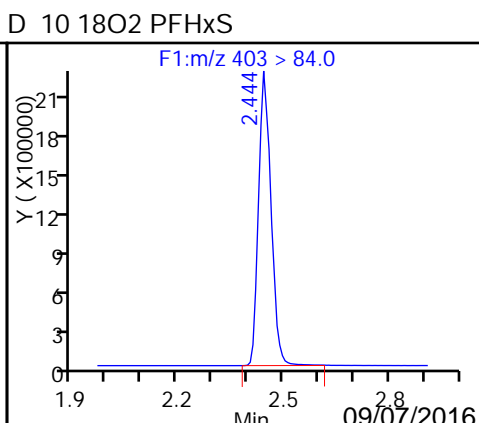
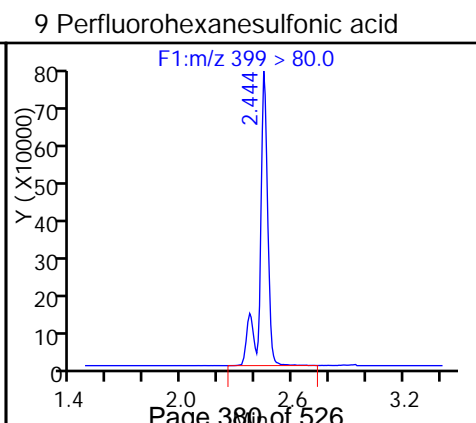
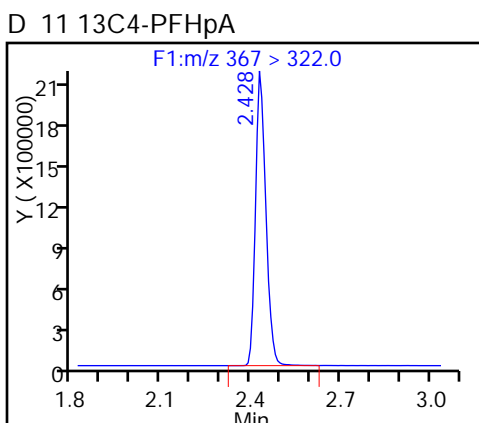
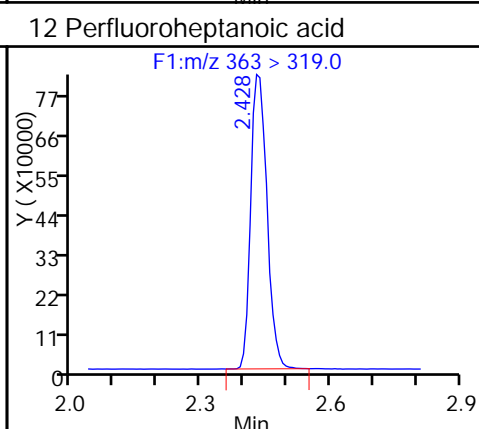
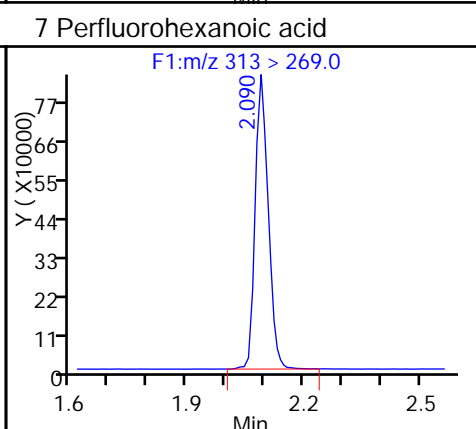
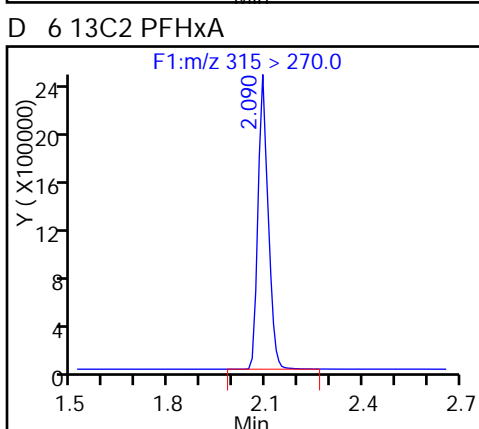
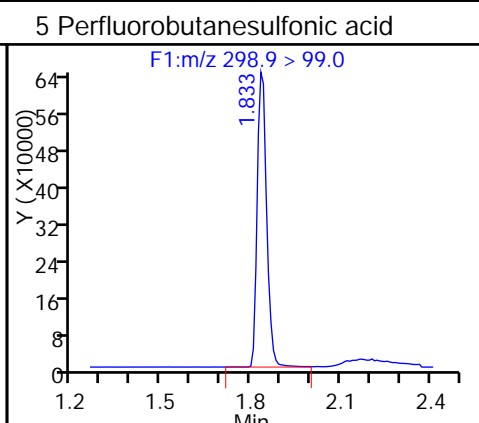
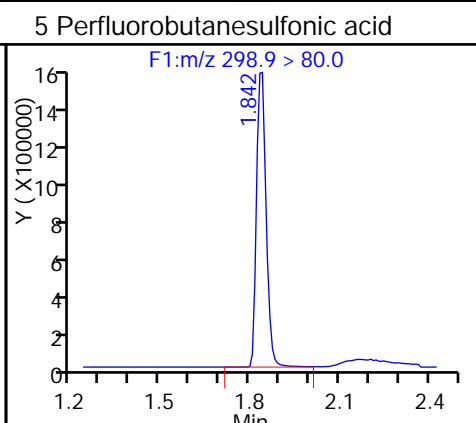
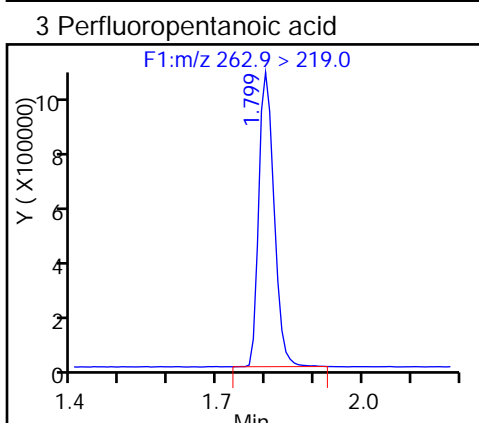
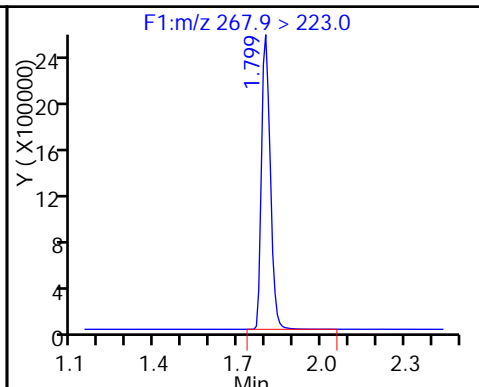
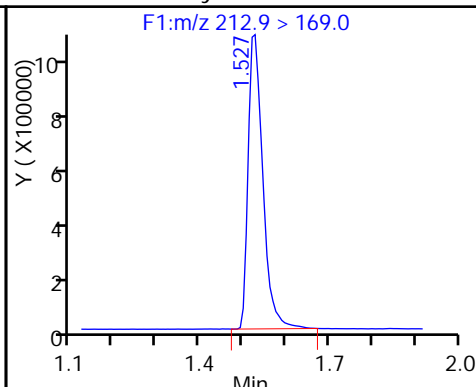
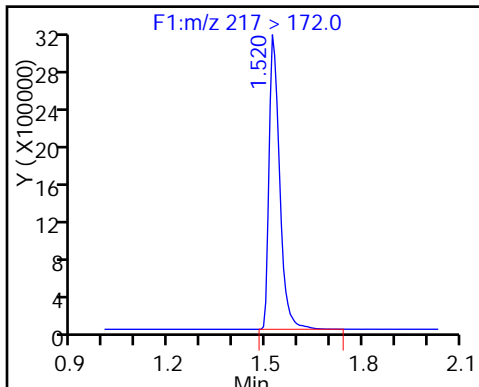
Method: PFC_A8_Full

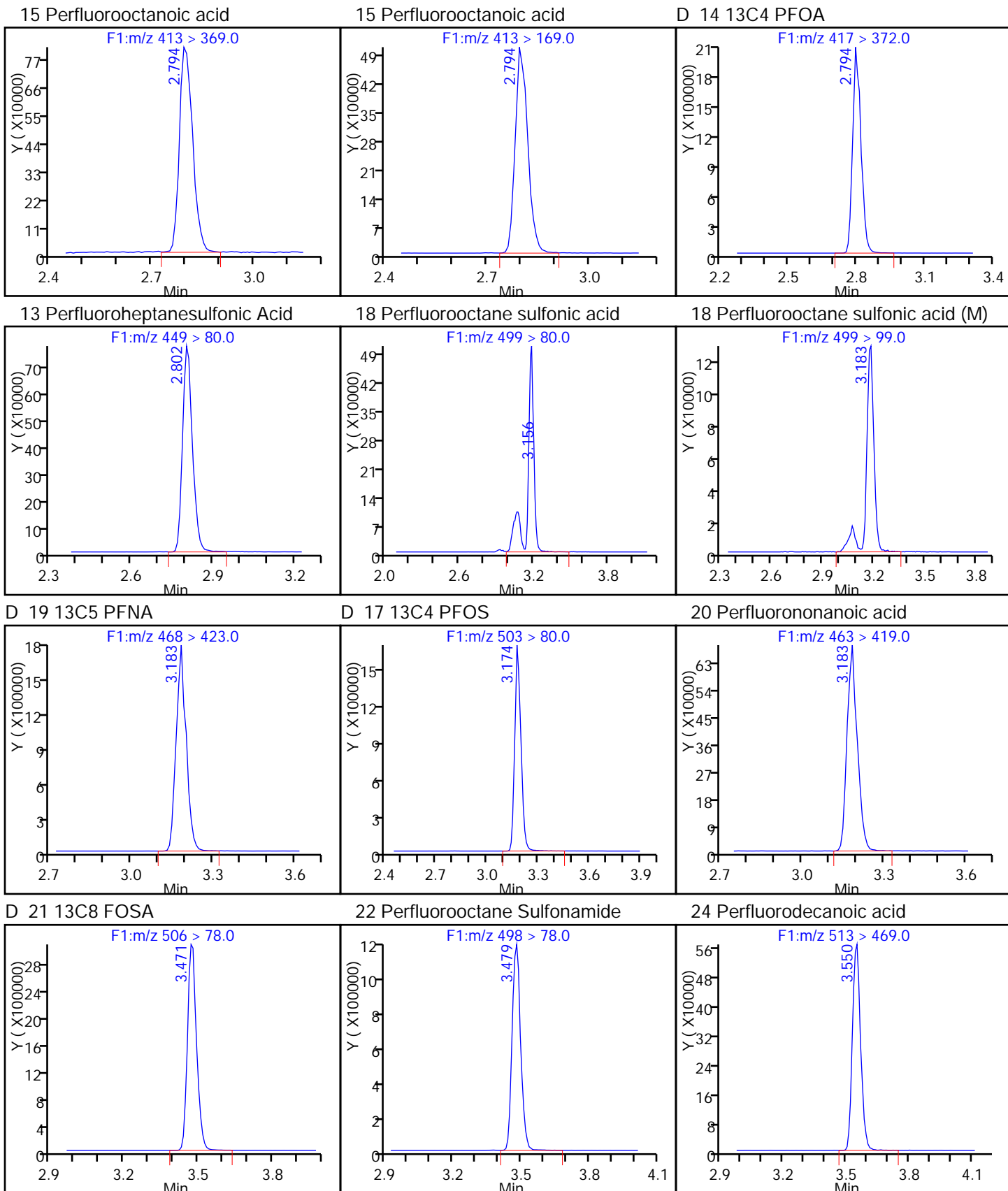
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

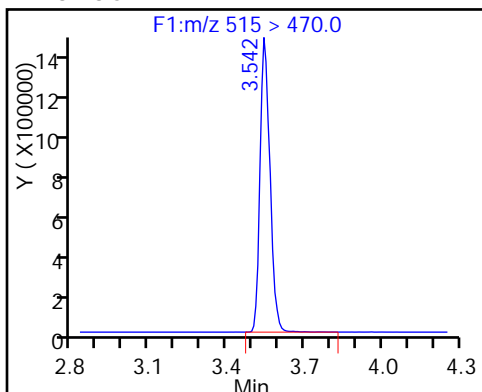
1 Perfluorobutyric acid

D 4 13C5-PFPeA

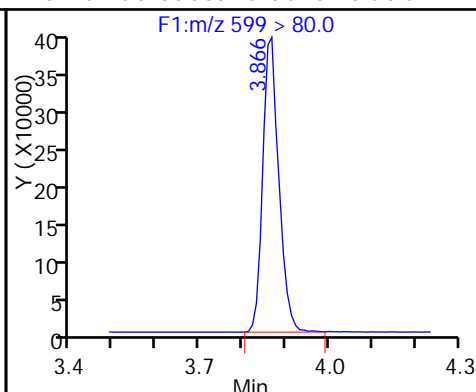




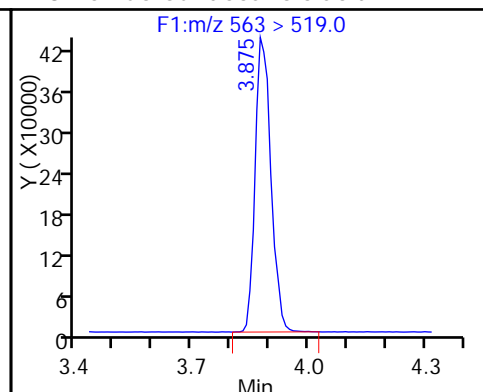
D 23 13C2 PFDA



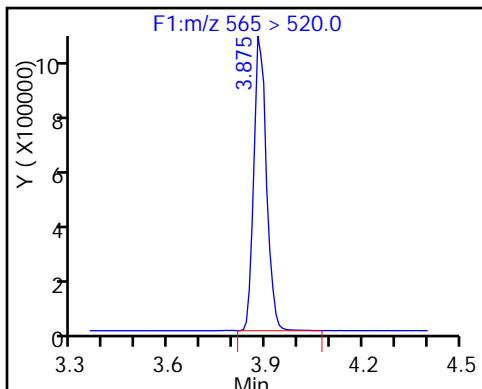
26 Perfluorodecane Sulfonic acid



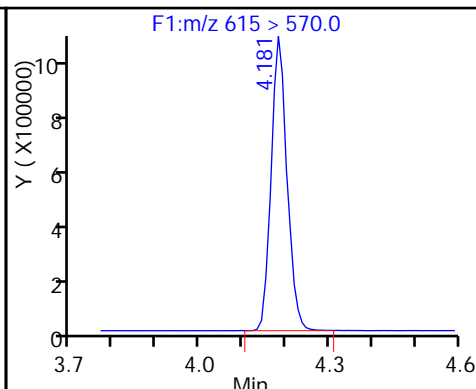
28 Perfluoroundecanoic acid



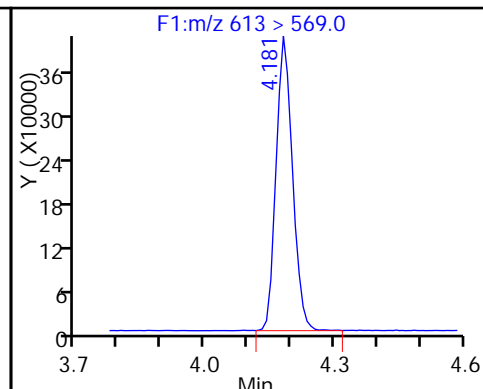
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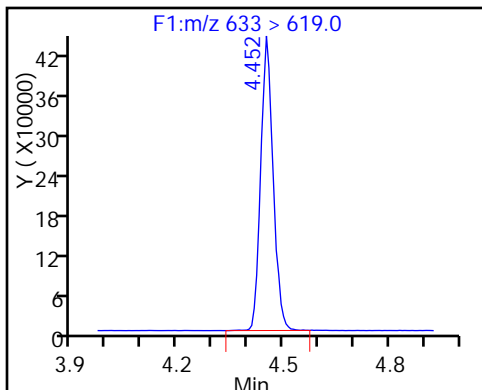
D 30 13C2 PFDa



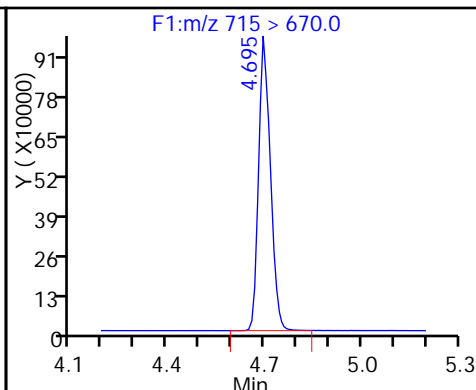
29 Perfluorododecanoic acid



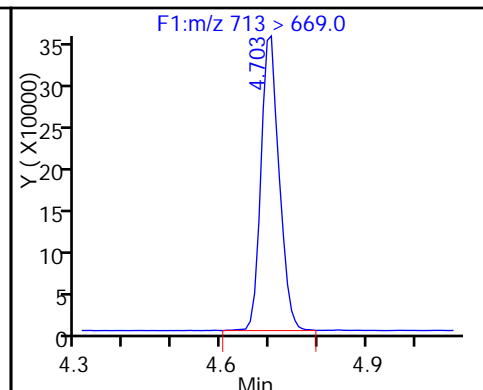
31 Perfluorotridecanoic acid



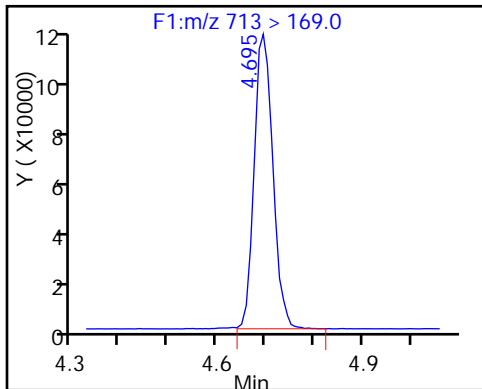
D 32 13C2-PFTeDA



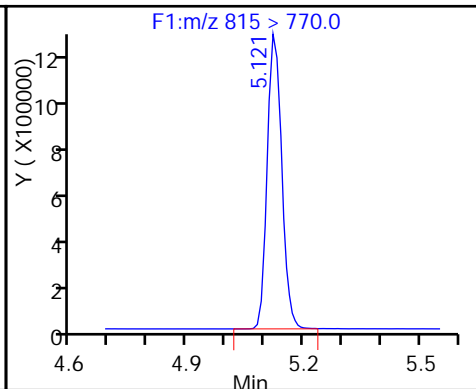
33 Perfluorotetradecanoic acid



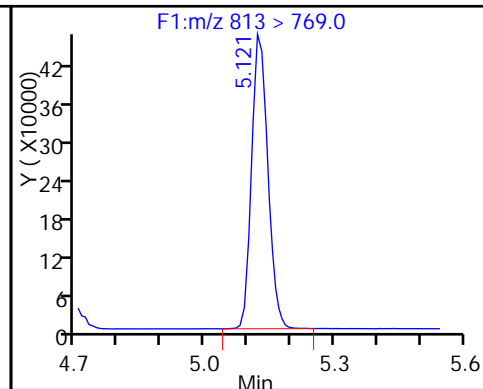
33 Perfluorotetradecanoic acid



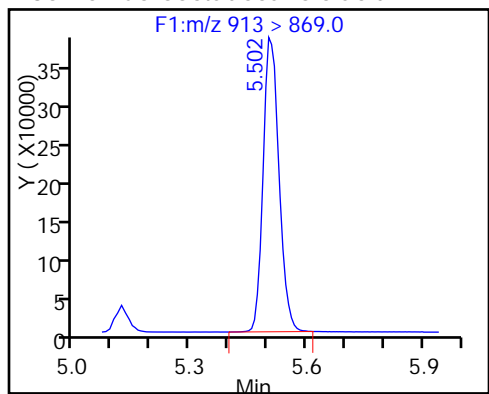
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

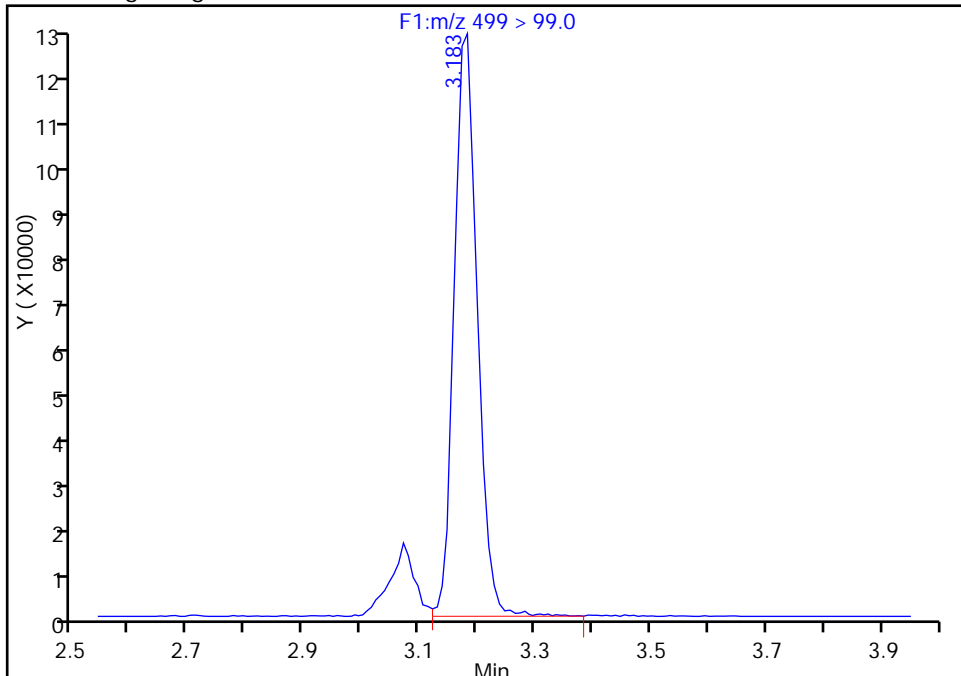
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_007_p1_e1.d
Injection Date: 22-Aug-2016 16:46:00 Instrument ID: A8
Lims ID: IC L4
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

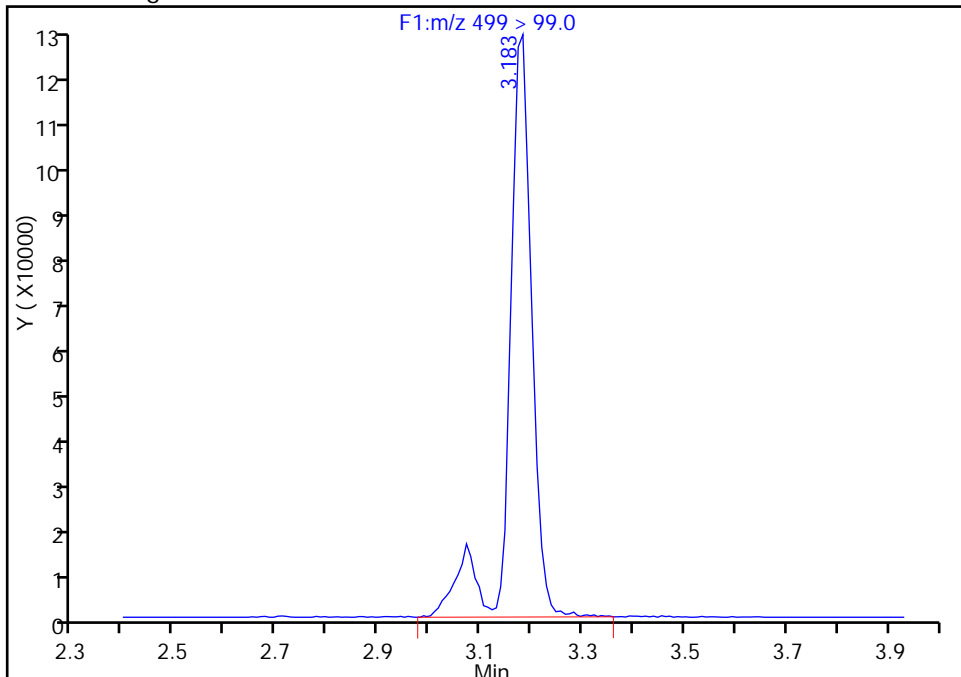
RT: 3.18
Area: 343079
Amount: 18.480583
Amount Units: ng/ml

Processing Integration Results



RT: 3.18
Area: 388066
Amount: 18.480583
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 24-Aug-2016 10:17:56
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_008_p1_e1.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 22-Aug-2016 16:53:00 ALS Bottle#: 0 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:47:23 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 23-Aug-2016 17:48:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA										
217 > 172.0	1.521	1.522	-0.001		7038133	51.9		104	625252	
1 Perfluorobutyric acid										
212.9 > 169.0	1.521	1.524	-0.003	1.000	6237536	51.3		103	54620	
D 4 13C5-PFPeA										
267.9 > 223.0	1.792	1.797	-0.005		5592794	51.9		104	625040	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.792	1.797	-0.005	1.000	5733147	50.1		100	111861	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.834	1.837	-0.003	1.000	8422867	47.4		107		
298.9 > 99.0	1.834	1.837	-0.003	1.000	3669053		2.30(0.00-0.00)	107		
D 6 13C2 PFHxA										
315 > 270.0	2.090	2.089	0.001		4931190	50.8		102	511552	
7 Perfluorohexanoic acid										
313 > 269.0	2.090	2.090	0.0	1.000	4874133	51.1		102	343730	
12 Perfluoroheptanoic acid										
363 > 319.0	2.423	2.427	-0.004	1.000	4799000	47.6		95.1	138817	
D 11 13C4-PFHpA										
367 > 322.0	2.431	2.430	0.001		4824282	50.0		100	620426	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.446	2.446	0.0	1.000	5325904	41.8		91.9		
D 10 18O2 PFHxS										
403 > 84.0	2.446	2.446	0.0		5409997	48.1		102	547314	
15 Perfluorooctanoic acid										
413 > 369.0	2.796	2.798	-0.002	1.000	5364240	54.4		109	29790	
413 > 169.0	2.796	2.798	-0.002	1.000	3074454		1.74(0.90-1.10)	109	193459	
D 14 13C4 PFOA										
417 > 372.0	2.796	2.798	-0.002		4929513	51.2		102	379310	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.804	2.807	-0.003	1.000	4687508	46.7		98.0		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.067	3.110	-0.042	1.000	4130746	43.2		93.2	18124	
499 > 99.0	3.075	3.110	-0.034	1.003	910579		4.54(0.90-1.10)	93.2	9816	
D 19 13C5 PFNA										
468 > 423.0	3.167	3.177	-0.010		4071019	51.2		102	340809	
D 17 13C4 PFOS										
503 > 80.0	3.167	3.177	-0.010		4118007	50.2		105	260219	
20 Perfluorononanoic acid										
463 > 419.0	3.177	3.183	-0.006	1.000	4115794	50.6		101	127545	
D 21 13C8 FOSA										
506 > 78.0	3.472	3.474	-0.002		7668839	51.2		102	375166	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.472	3.475	-0.003	1.000	7178073	50.8		102	362793	
24 Perfluorodecanoic acid										
513 > 469.0	3.543	3.546	-0.003	1.000	3607247	49.8		99.5	307384	
D 23 13C2 PFDA										
515 > 470.0	3.543	3.546	-0.003		3684002	50.7		101	649617	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.860	3.863	-0.003	1.000	2501158	47.4		98.3		
28 Perfluoroundecanoic acid										
563 > 519.0	3.878	3.880	-0.002	1.000	2983565	49.0		98.0	143761	
D 27 13C2 PFUnA										
565 > 520.0	3.878	3.882	-0.004		2807932	50.5		101	247997	
D 30 13C2 PFDoA										
615 > 570.0	4.176	4.183	-0.007		2708698	50.9		102	355954	
29 Perfluorododecanoic acid										
613 > 569.0	4.176	4.185	-0.009	1.000	2663493	49.6		99.3	173710	
31 Perfluorotridecanoic acid										
633 > 619.0	4.440	4.452	-0.012	1.000	2615170	49.3		98.5	111094	
D 32 13C2-PFTeDA										
715 > 670.0	4.689	4.697	-0.008		2426876	51.4		103	482152	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.689	4.701	-0.012	1.000	2191064	48.1		96.3	22788	
713 > 169.0	4.681	4.701	-0.020	0.998	772063		2.84(0.00-0.00)	96.3	147742	
D 34 13C2-PFHxDA										
815 > 770.0	5.119	5.125	-0.006		3453314	52.5		105	683760	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.119	5.127	-0.008	1.000	3154285	46.9		93.9	27997	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.503	5.509	-0.006	1.000	2785296	44.7		89.4	26248	

Reagents:

LCPFC-L5_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_008_p1_e1.d

Injection Date: 22-Aug-2016 16:53:00

Instrument ID: A8

Lims ID: IC L5

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

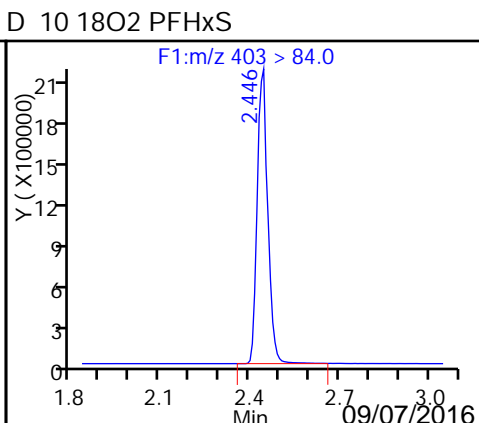
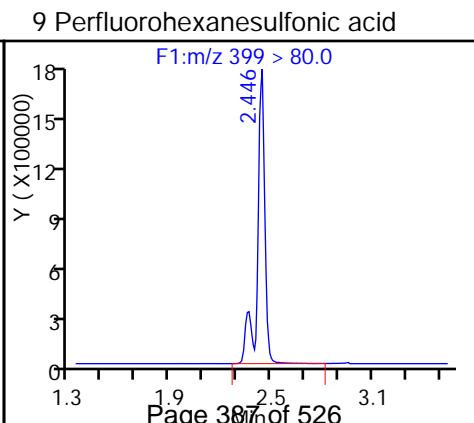
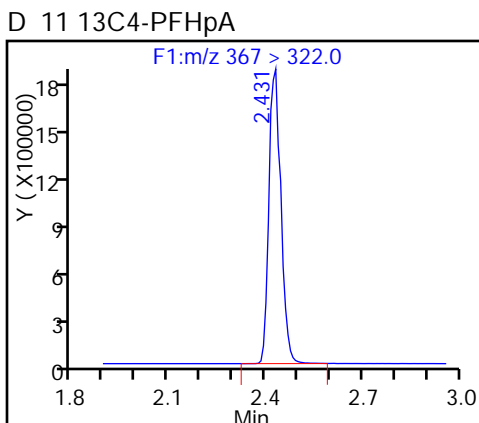
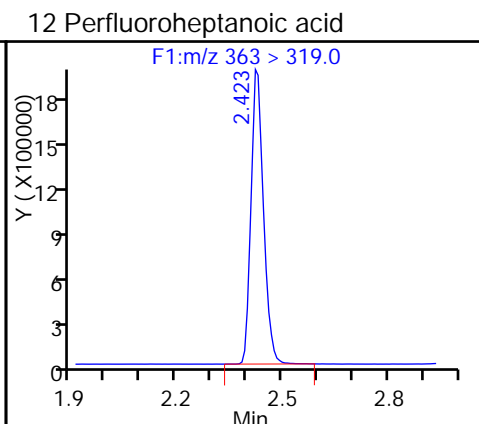
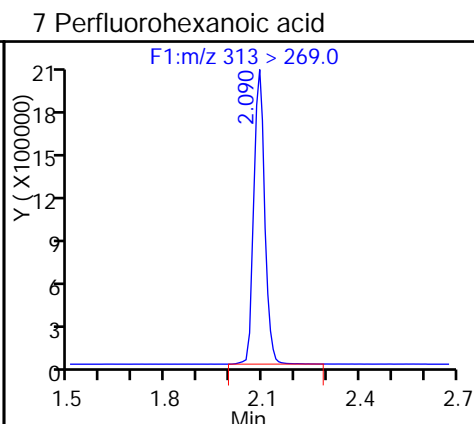
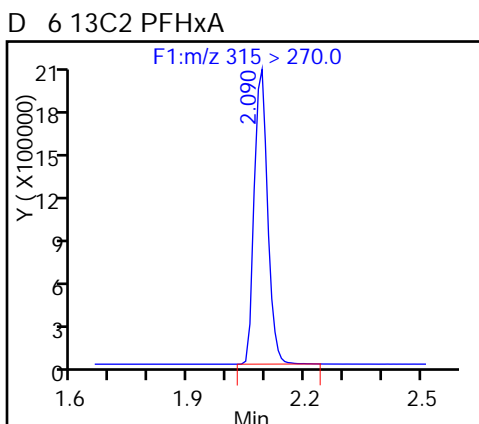
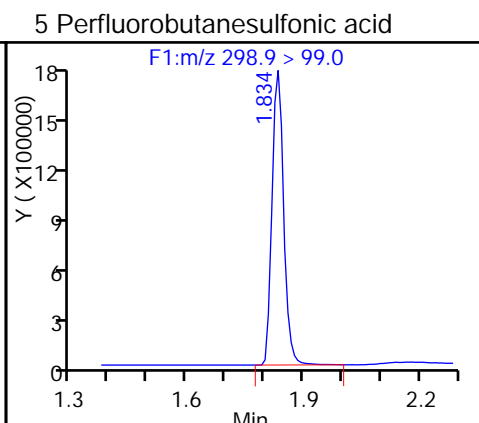
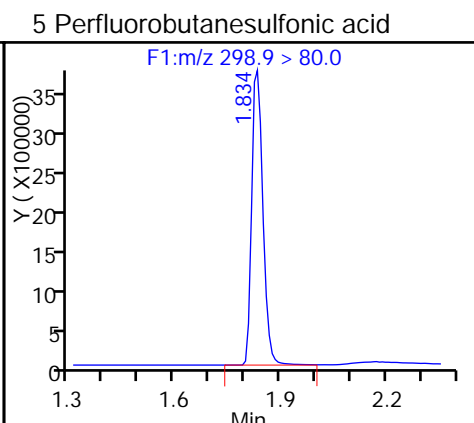
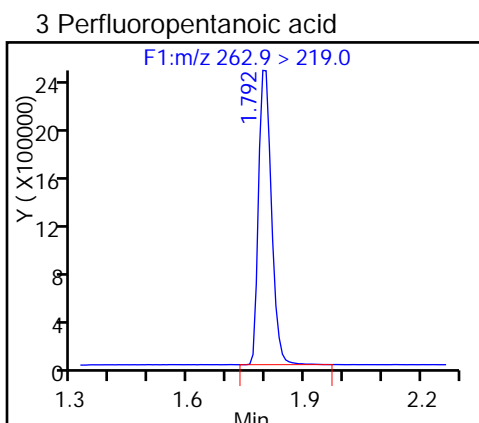
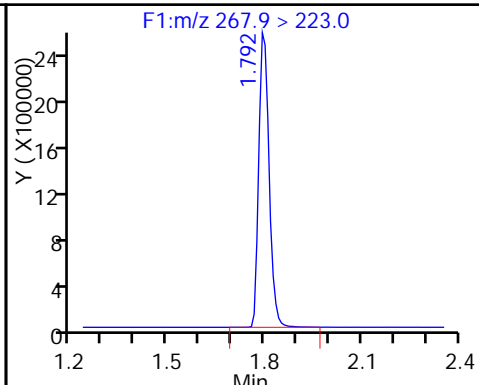
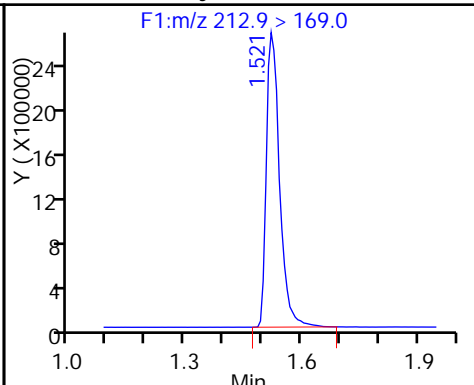
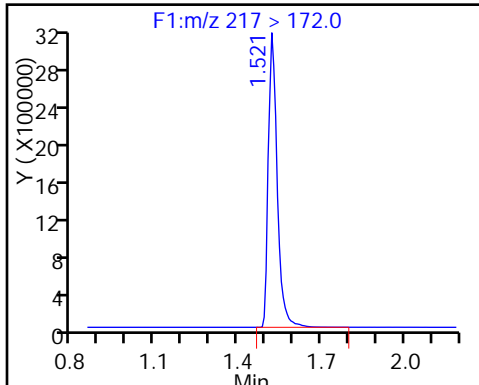
Method: PFC_A8_Full

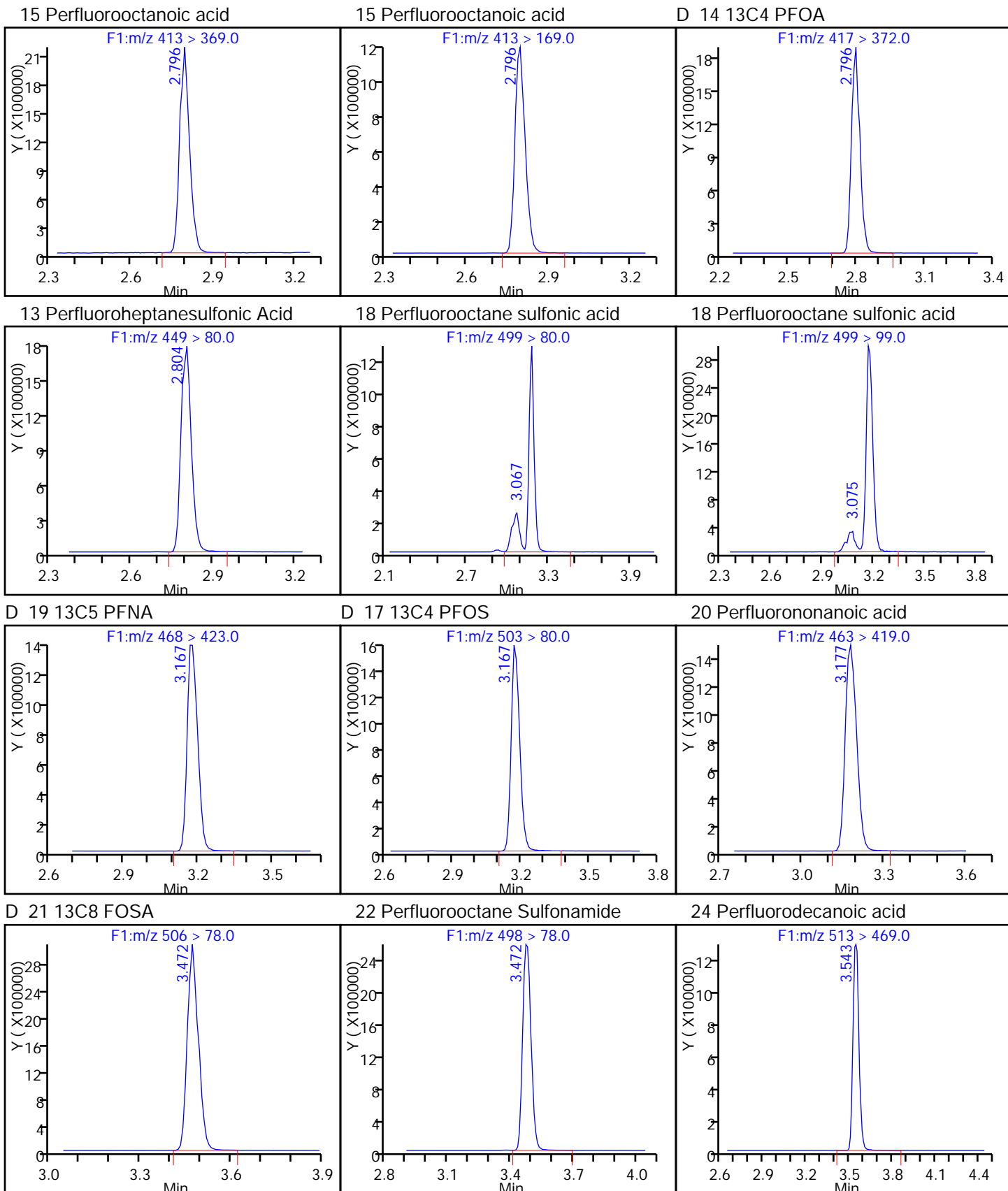
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

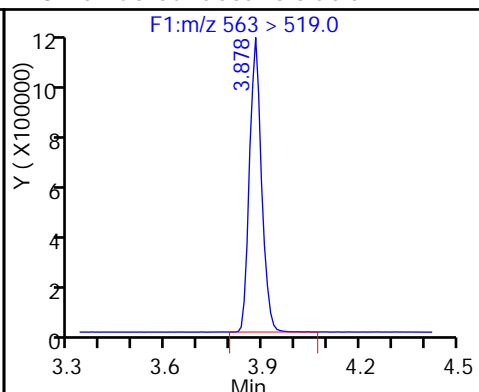
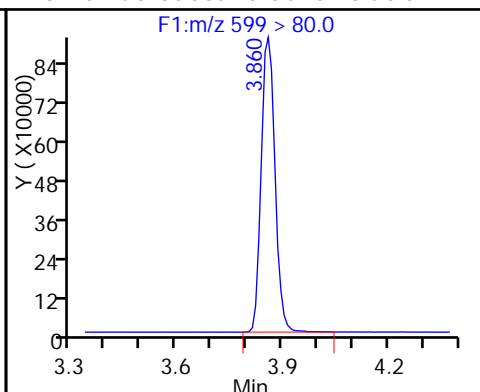
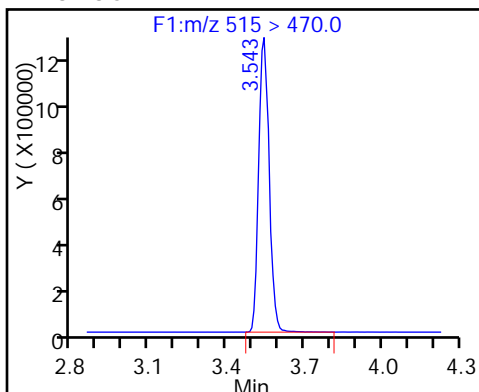




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

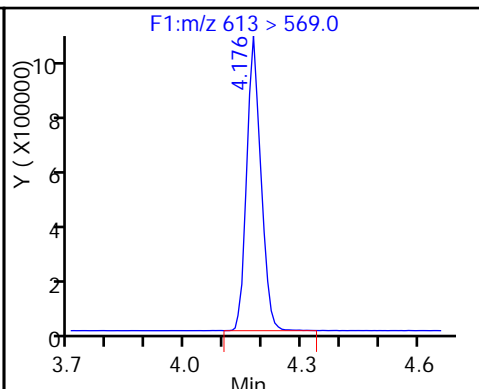
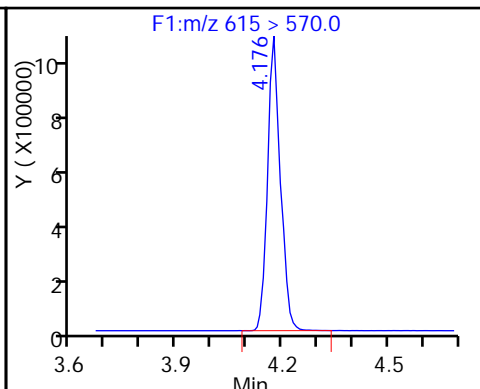
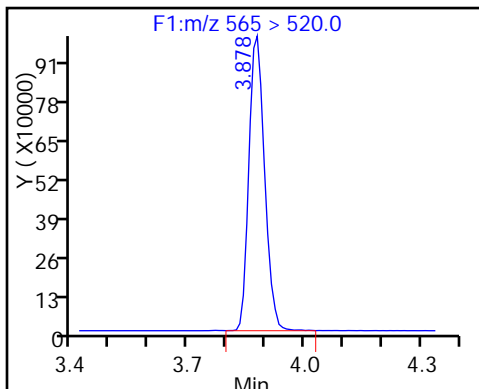
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

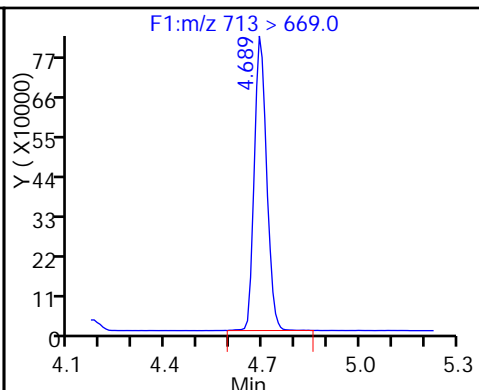
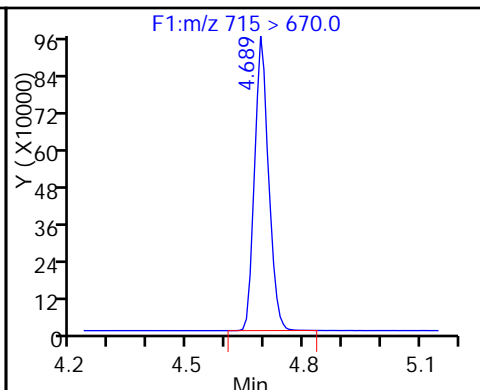
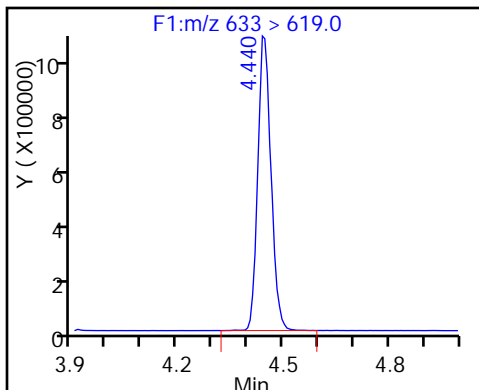
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

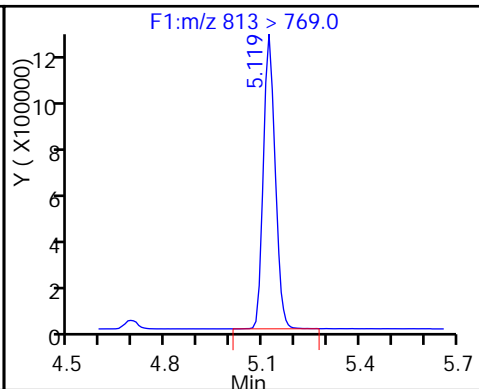
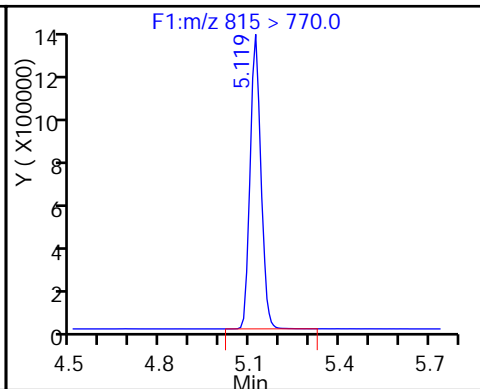
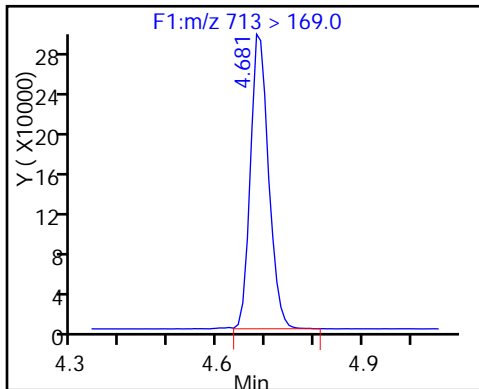
33 Perfluorotetradecanoic acid



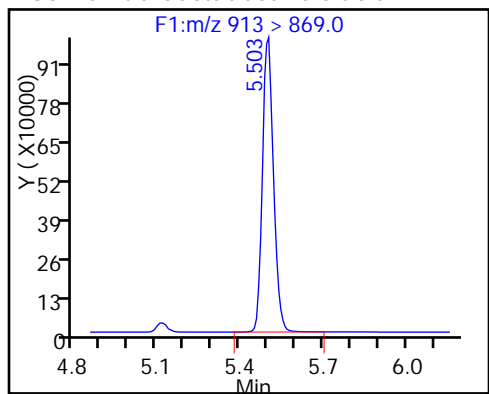
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_009_p1_e1.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 22-Aug-2016 17:01:00 ALS Bottle#: 0 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:47:34 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 24-Aug-2016 08:04:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.520	1.522	-0.002		6384927	47.1		94.1	423069	
1 Perfluorobutyric acid										
212.9 > 169.0	1.520	1.524	-0.004	1.000	21120689	191.4		95.7	214894	
D 4 13C5-PFPeA										
267.9 > 223.0	1.791	1.797	-0.006		4982565	46.2		92.5	543988	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.791	1.797	-0.006	1.000	18563095	182.2		91.1	313747	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.833	1.837	-0.004	1.000	26889800	160.8		91.0		
298.9 > 99.0	1.833	1.837	-0.004	1.000	13801510		1.95(0.00-0.00)	91.0		
D 6 13C2 PFHxA										
315 > 270.0	2.079	2.089	-0.010		4555434	47.0		93.9	608242	
7 Perfluorohexanoic acid										
313 > 269.0	2.079	2.090	-0.011	1.000	16953344	192.5		96.3	645927	
12 Perfluoroheptanoic acid										
363 > 319.0	2.420	2.427	-0.007	1.000	16635911	193.3		96.6	252998	
D 11 13C4-PFHpA										
367 > 322.0	2.420	2.430	-0.010		4114875	42.6		85.3	403044	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.443	2.446	-0.003	1.000	19707602	164.4		90.3		
D 10 18O2 PFHxS										
403 > 84.0	2.443	2.446	-0.003		5093422	45.3		95.8	389906	
15 Perfluorooctanoic acid										
413 > 369.0	2.786	2.798	-0.012	1.000	17781219	205.5		103	81006	
413 > 169.0	2.786	2.798	-0.012	1.000	10661957		1.67(0.90-1.10)	103	392254	
D 14 13C4 PFOA										
417 > 372.0	2.786	2.798	-0.012		4340061	45.1		90.1	261640	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.803	2.807	-0.004	1.000	17785212	191.7		101		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.061	3.110	-0.048	1.000	16218841	183.8		99.1	194392	
499 > 99.0	3.136	3.110	0.027	1.025	3612557		4.49(0.90-1.10)	99.1	27150	
D 19 13C5 PFNA										
468 > 423.0	3.161	3.177	-0.016		3582792	45.0		90.1	287035	
D 17 13C4 PFOS										
503 > 80.0	3.161	3.177	-0.016		3802550	46.3		96.9	151188	
20 Perfluorononanoic acid										
463 > 419.0	3.171	3.183	-0.012	1.000	14679162	205.1		103	306074	
D 21 13C8 FOSA										
506 > 78.0	3.470	3.474	-0.004		7211392	48.1		96.2	262430	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.470	3.475	-0.005	1.000	23957395	180.5		90.2	272027	
24 Perfluorodecanoic acid										
513 > 469.0	3.534	3.546	-0.013	1.000	13639089	202.2		101	608361	
D 23 13C2 PFDA										
515 > 470.0	3.534	3.546	-0.013		3428764	47.1		94.3	408853	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.853	3.863	-0.010	1.000	9757829	200.1		104		
28 Perfluoroundecanoic acid										
563 > 519.0	3.871	3.880	-0.009	1.000	10412322	192.8		96.4	368790	
D 27 13C2 PFUnA										
565 > 520.0	3.871	3.882	-0.011		2491079	44.8		89.5	463886	
D 30 13C2 PFDoA										
615 > 570.0	4.171	4.183	-0.012		2479154	46.6		93.2	228680	
29 Perfluorododecanoic acid										
613 > 569.0	4.171	4.185	-0.014	1.000	9919508	202.0		101	278723	
31 Perfluorotridecanoic acid										
633 > 619.0	4.441	4.452	-0.011	1.000	10167082	209.3		105	646505	
D 32 13C2-PFTeDA										
715 > 670.0	4.689	4.697	-0.008		2298526	48.7		97.4	423389	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.689	4.701	-0.012	1.000	8439988	202.6		101	82990	
713 > 169.0	4.680	4.701	-0.021	0.998	2897305		2.91(0.00-0.00)	101	274566	
D 34 13C2-PFHxDA										
815 > 770.0	5.110	5.125	-0.015		3291230	50.0		100.0	423242	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.110	5.127	-0.017	1.000	12316500	200.3		100	89576	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.484	5.509	-0.025	1.000	11787356	205.3		103	79586	

Reagents:

LCPFC-L6_00019

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_009_p1_e1.d

Injection Date: 22-Aug-2016 17:01:00

Instrument ID: A8

Lims ID: IC L6

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

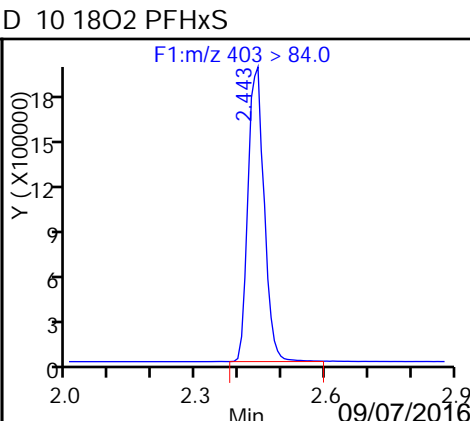
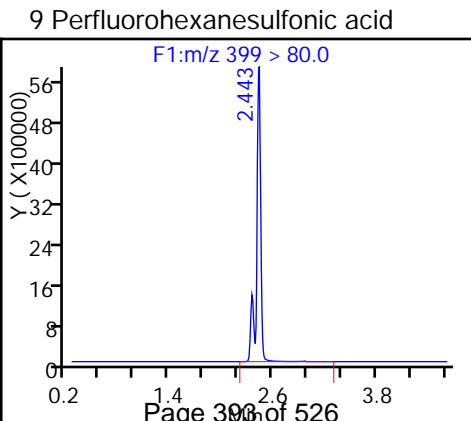
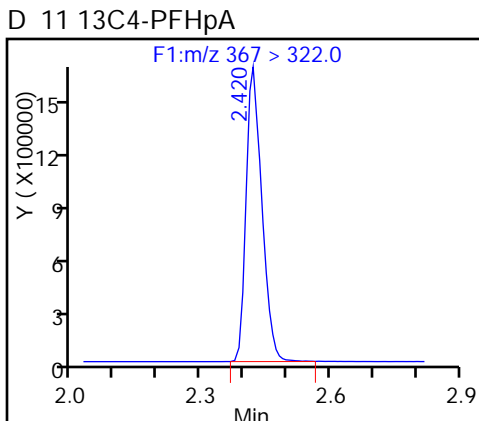
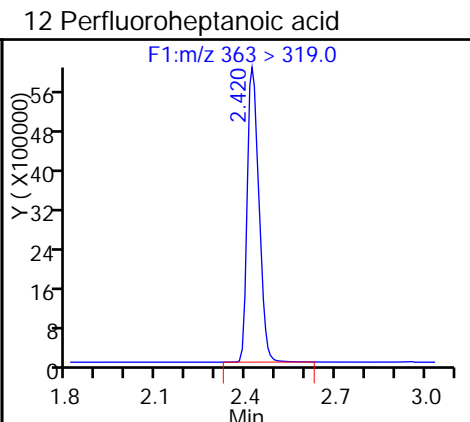
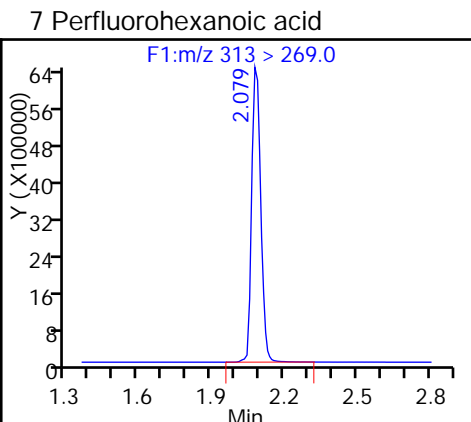
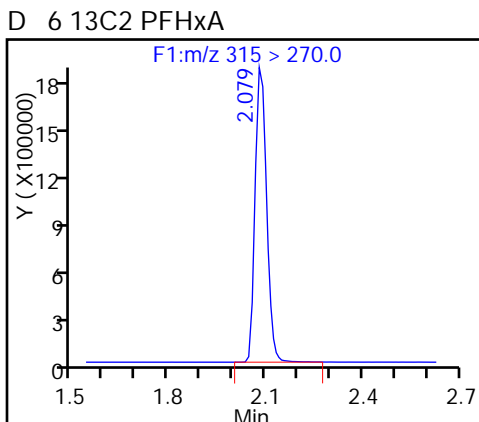
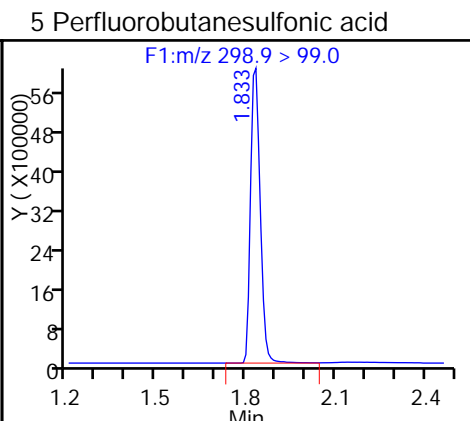
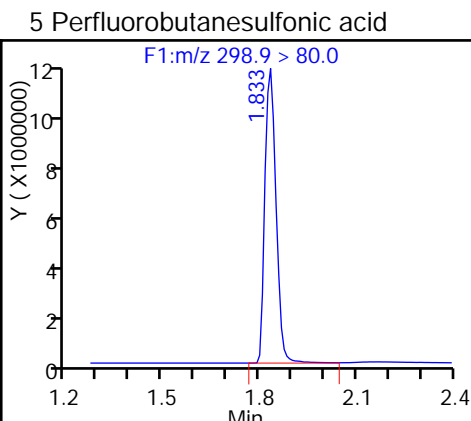
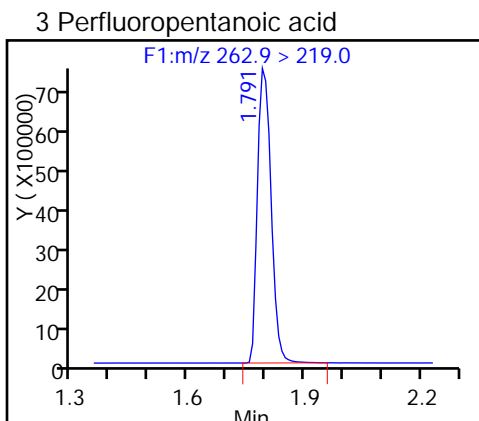
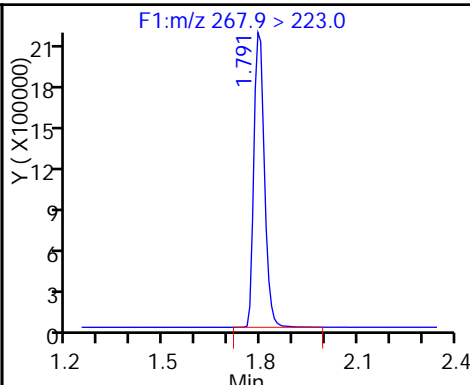
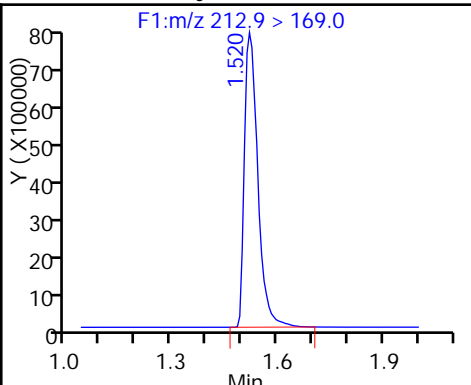
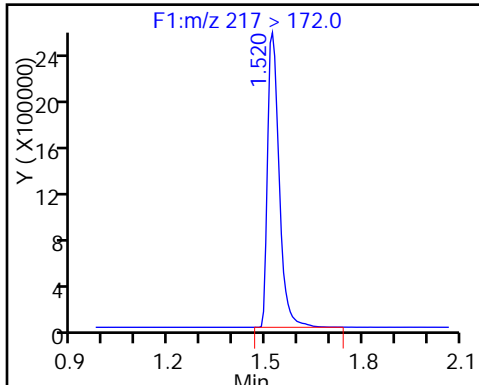
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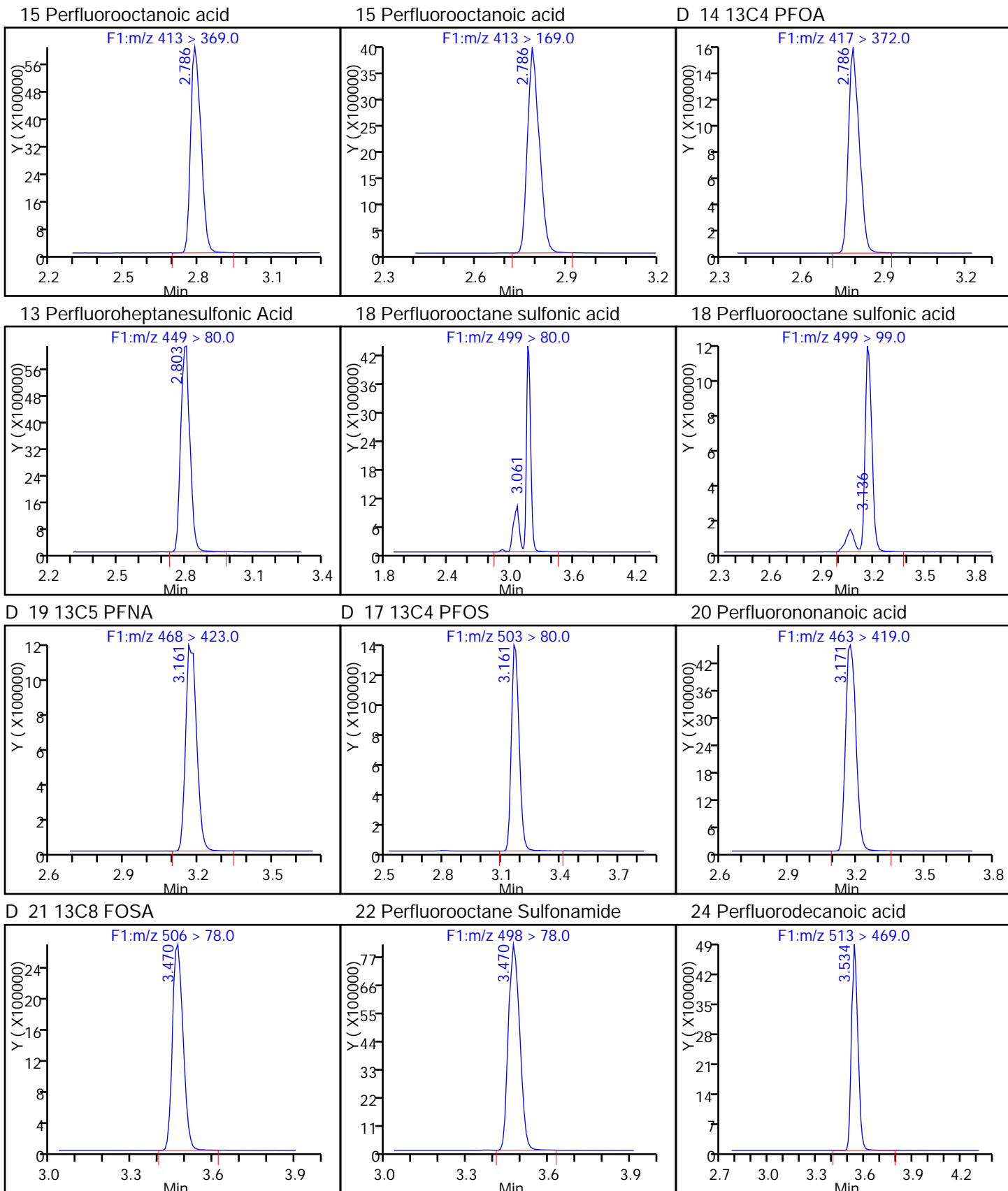
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

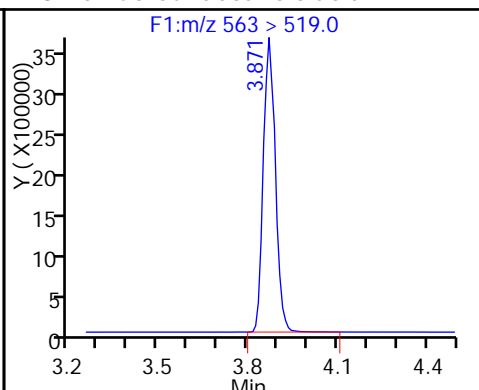
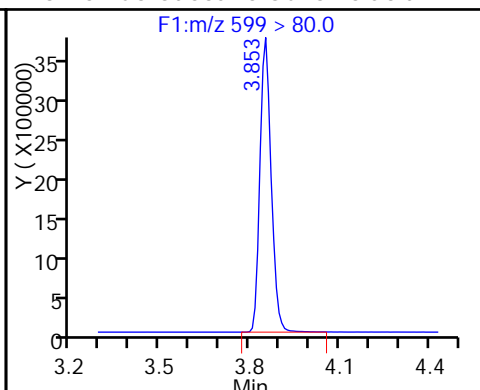
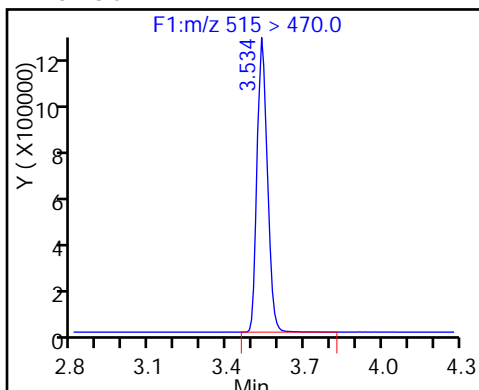




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

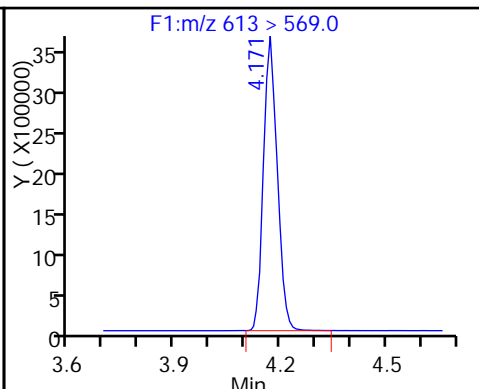
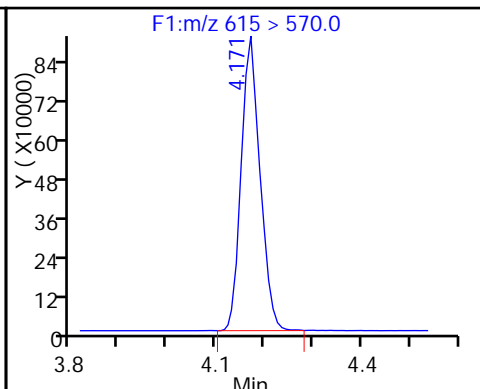
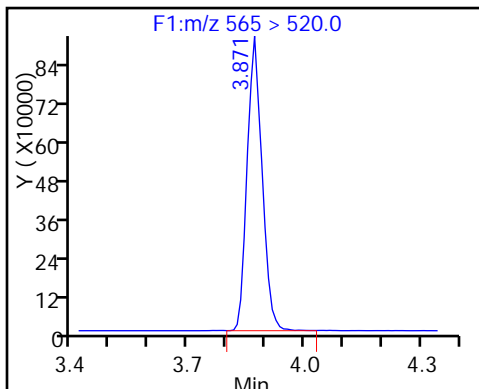
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

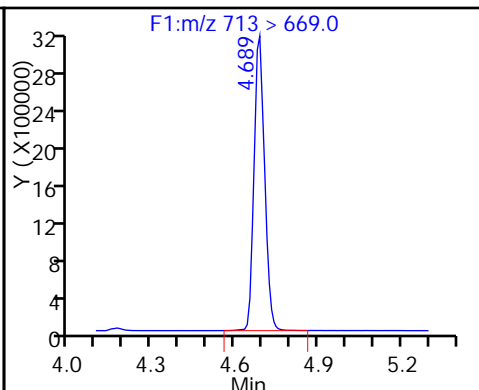
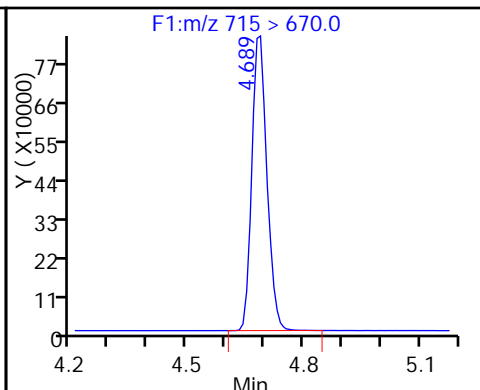
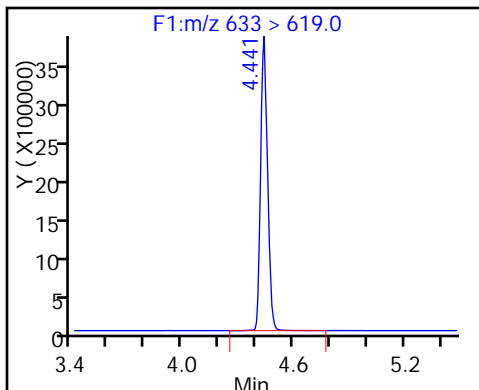
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

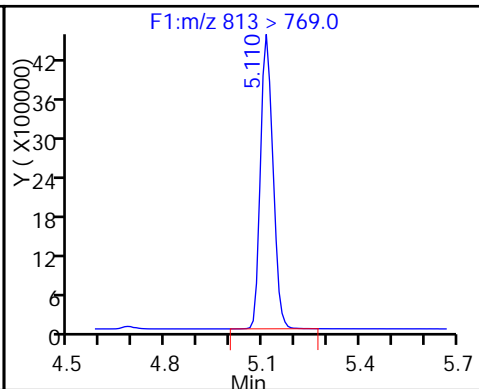
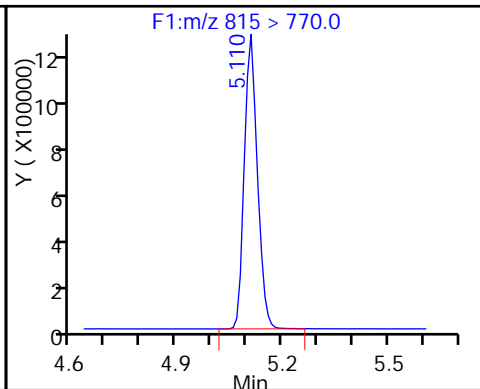
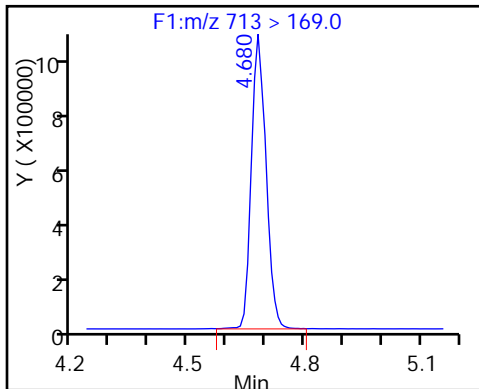
33 Perfluorotetradecanoic acid



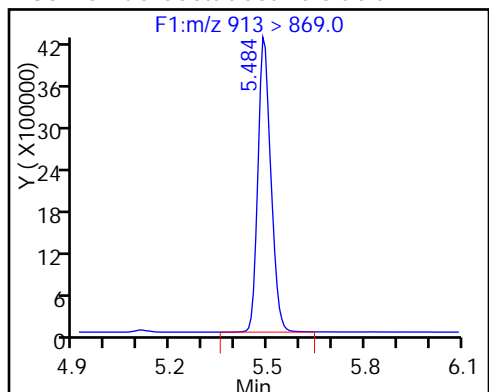
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_010_p1_e1.d
 Lims ID: IC L7
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 22-Aug-2016 17:08:00 ALS Bottle#: 0 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 10:18:31 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 24-Aug-2016 08:04:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.521	1.522	-0.001		5818849	42.9		85.8	384945	
1 Perfluorobutyric acid										
212.9 > 169.0	1.521	1.524	-0.003	1.000	33298214	331.2		82.8	287375	
D 4 13C5-PFPeA										
267.9 > 223.0	1.792	1.797	-0.005		4608501	42.8		85.5	506845	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.792	1.797	-0.005	1.000	29031018	308.0		77.0	359302	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.834	1.837	-0.003	1.000	42223335	269.9		76.3		
298.9 > 99.0	1.826	1.837	-0.011	0.995	22549802		1.87(0.00-0.00)	76.3		
D 6 13C2 PFHxA										
315 > 270.0	2.081	2.089	-0.009		4075116	42.0		84.0	404318	
7 Perfluorohexanoic acid										
313 > 269.0	2.090	2.090	0.0	1.000	27770123	352.6		88.1	609053	
12 Perfluoroheptanoic acid										
363 > 319.0	2.415	2.427	-0.012	1.000	26746116	361.0		90.3	278384	
D 11 13C4-PFHpA										
367 > 322.0	2.424	2.430	-0.006		3542212	36.7		73.4	321731	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.440	2.446	-0.006	1.000	34879704	310.9		85.4		
D 10 18O2 PFHxS										
403 > 84.0	2.440	2.446	-0.006		4766996	42.4		89.6	372785	
15 Perfluorooctanoic acid										
413 > 369.0	2.785	2.798	-0.013	1.000	28429006	389.9		97.5	126522	
413 > 169.0	2.785	2.798	-0.013	1.000	17718268		1.60(0.90-1.10)	97.5	353464	
D 14 13C4 PFOA										
417 > 372.0	2.785	2.798	-0.013		3659806	38.0		76.0	247659	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.793	2.807	-0.014	1.000	30224767	348.1		91.4		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.059	3.110	-0.050	1.000	30678315	371.5		100	224265	M
499 > 99.0	3.160	3.110	0.051	1.033	7179107		4.27(0.90-1.10)	100	421781	M
D 19 13C5 PFNA										
468 > 423.0	3.168	3.177	-0.009		3210951	40.4		80.7	168214	
D 17 13C4 PFOS										
503 > 80.0	3.168	3.177	-0.009		3559667	43.4		90.7	92382	
20 Perfluorononanoic acid										
463 > 419.0	3.168	3.183	-0.015	1.000	25192622	392.7		98.2	356318	
D 21 13C8 FOSA										
506 > 78.0	3.476	3.474	0.002		6457790	43.1		86.1	277869	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.468	3.475	-0.007	1.000	39549928	332.7		83.2	288258	
24 Perfluorodecanoic acid										
513 > 469.0	3.531	3.546	-0.015	1.000	24469701	376.3		94.1	498970	
D 23 13C2 PFDA										
515 > 470.0	3.531	3.546	-0.015		3304947	45.4		90.9	1221005	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.852	3.863	-0.011	1.000	18108114	396.7		103		
28 Perfluoroundecanoic acid										
563 > 519.0	3.870	3.880	-0.010	1.000	17749907	366.6		91.7	505586	
D 27 13C2 PFUnA										
565 > 520.0	3.870	3.880	-0.010		2233382	40.1		80.3	264182	
D 30 13C2 PFDoA										
615 > 570.0	4.168	4.183	-0.015		2412175	45.4		90.7	272384	
29 Perfluorododecanoic acid										
613 > 569.0	4.168	4.185	-0.017	1.000	18487887	386.8		96.7	410236	
31 Perfluorotridecanoic acid										
633 > 619.0	4.433	4.452	-0.019	1.000	18092756	382.8		95.7	568753	
D 32 13C2-PFTeDA										
715 > 670.0	4.679	4.697	-0.018		2034570	43.1		86.2	354290	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.679	4.701	-0.022	1.000	15654064	386.2		96.6	132382	
713 > 169.0	4.679	4.701	-0.022	1.000	5294012		2.96(0.00-0.00)	96.6	370289	
D 34 13C2-PFHxDA										
815 > 770.0	5.101	5.125	-0.024		3074682	46.7		93.4	554047	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.111	5.127	-0.016	1.000	22095352	369.2		92.3	164922	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.479	5.509	-0.030	1.000	22519325	402.7		101	117426	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L7_00019

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_010_p1_e1.d

Injection Date: 22-Aug-2016 17:08:00

Instrument ID: A8

Lims ID: IC L7

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

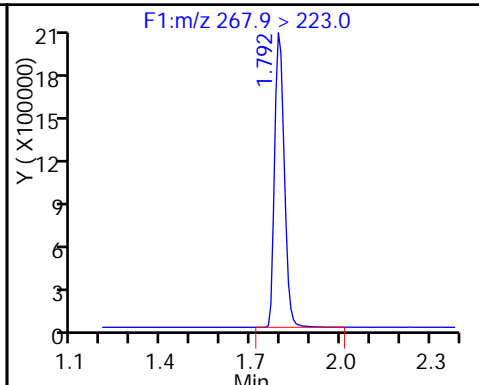
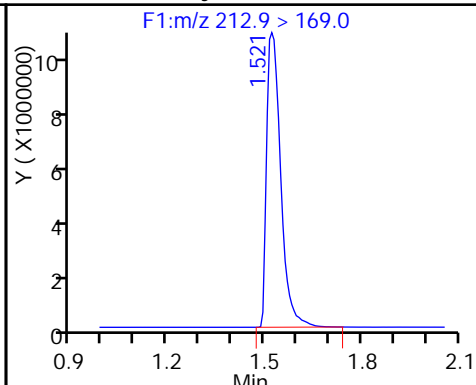
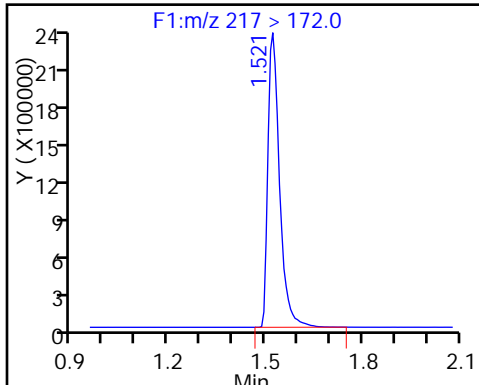
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

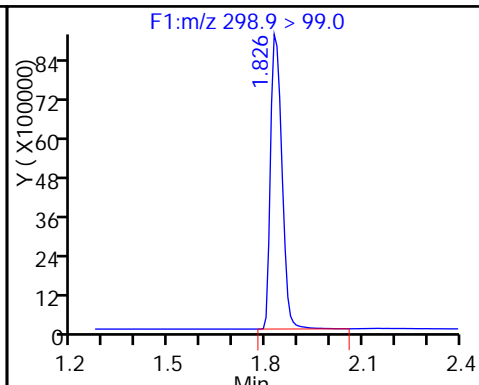
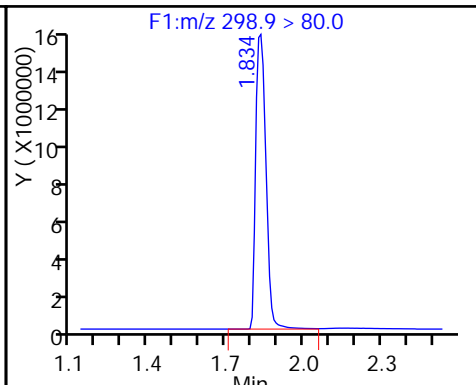
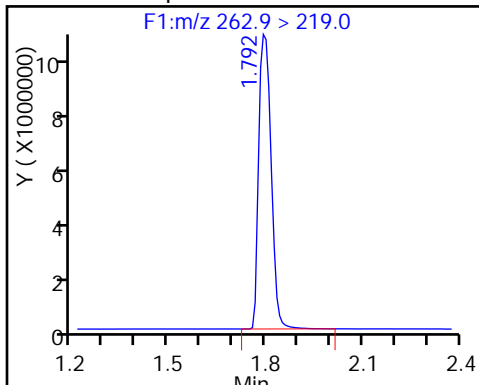
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

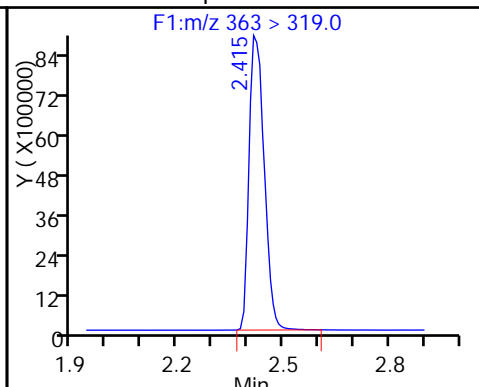
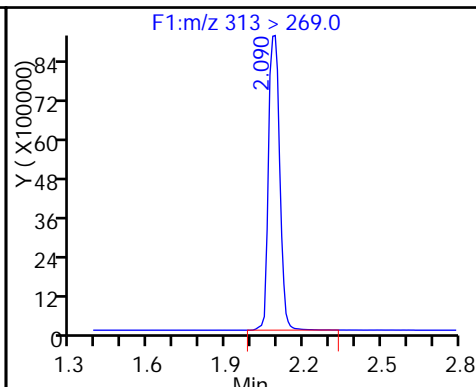
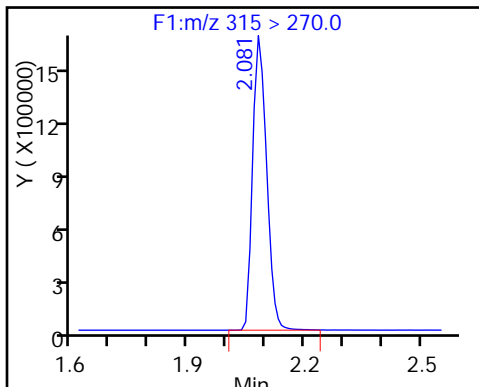
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

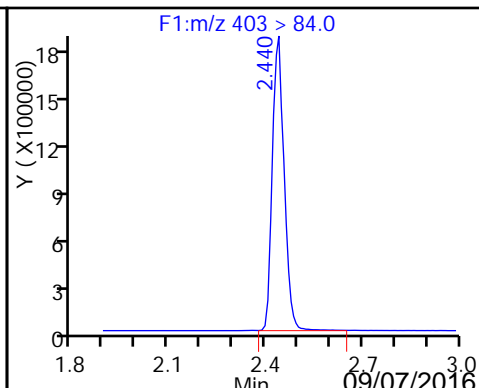
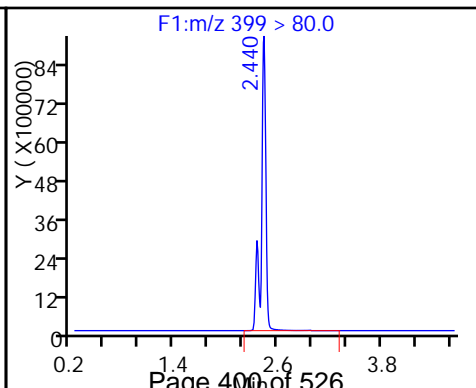
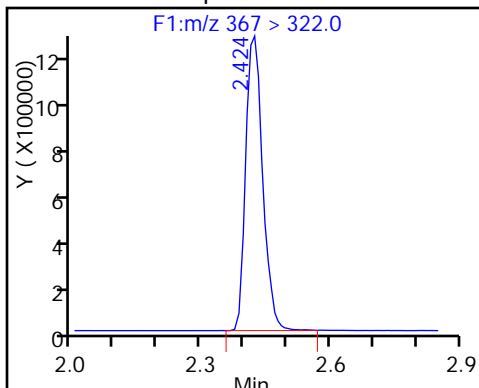
12 Perfluoroheptanoic acid

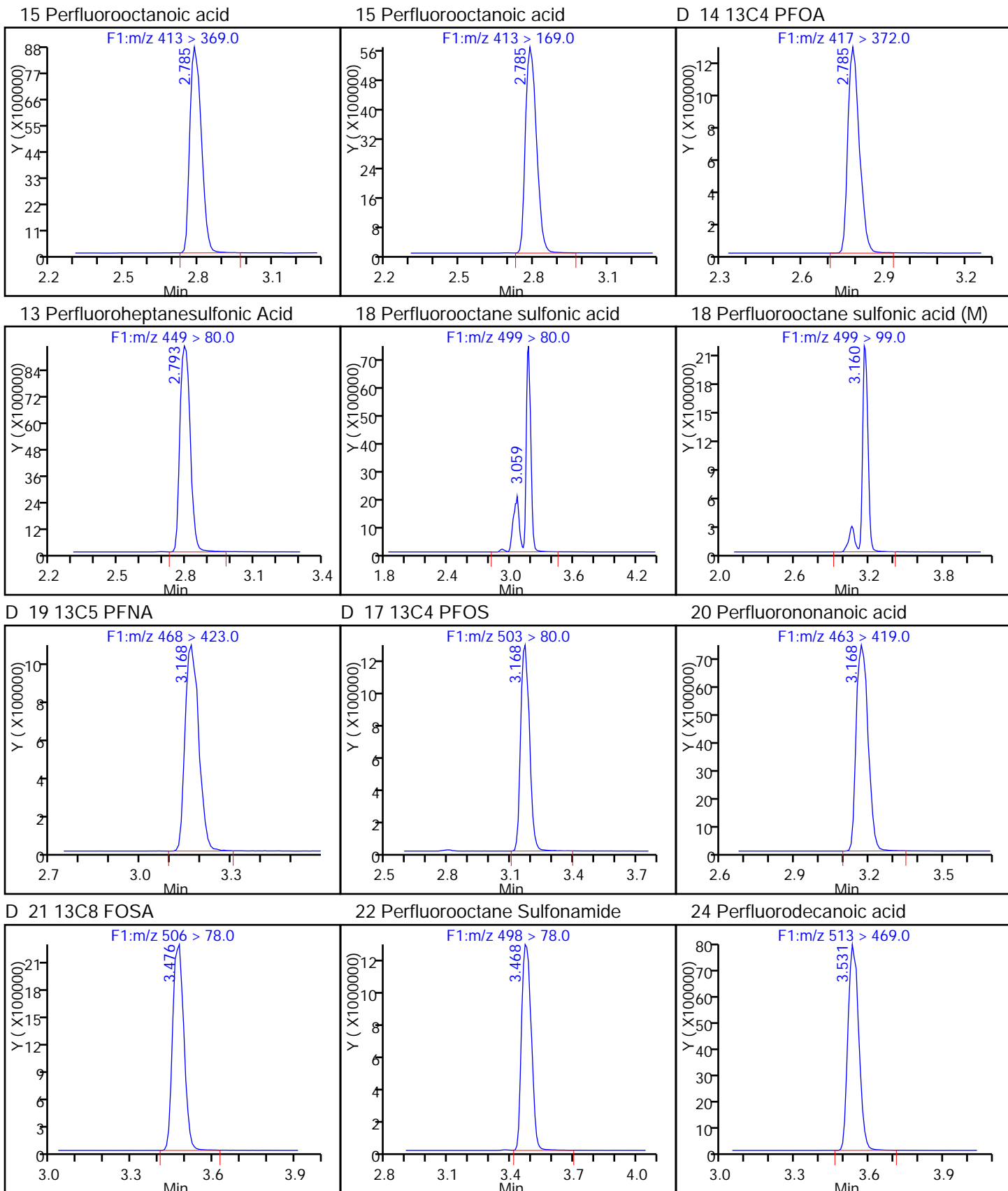


D 11 13C4-PFHpA

9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

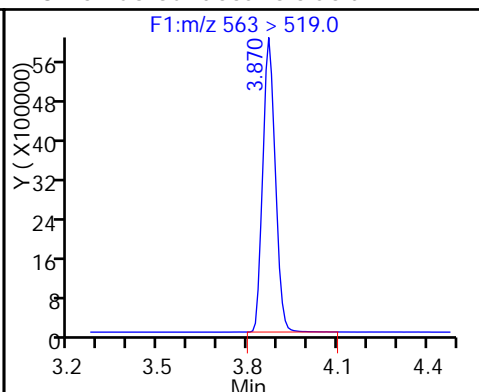
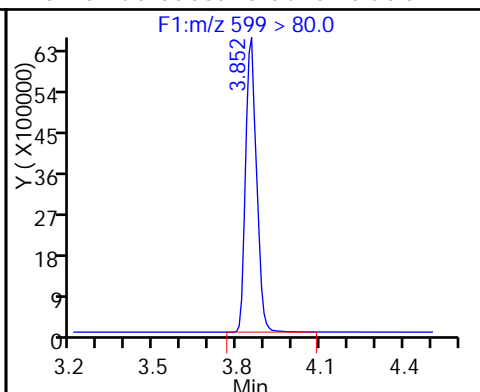
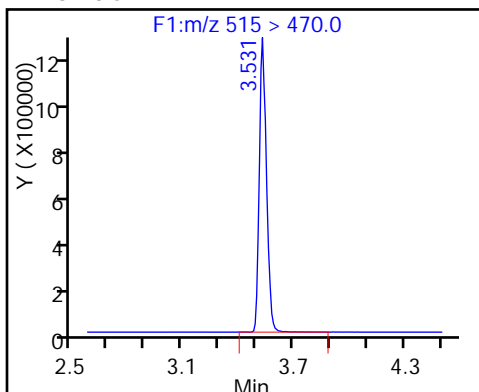




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

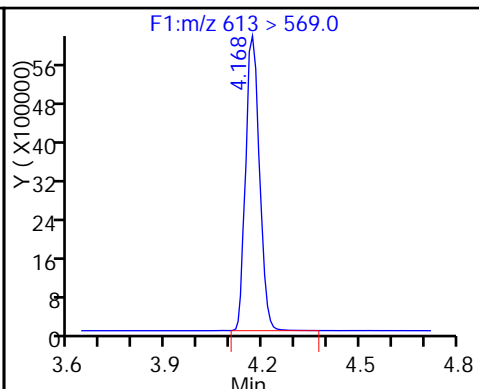
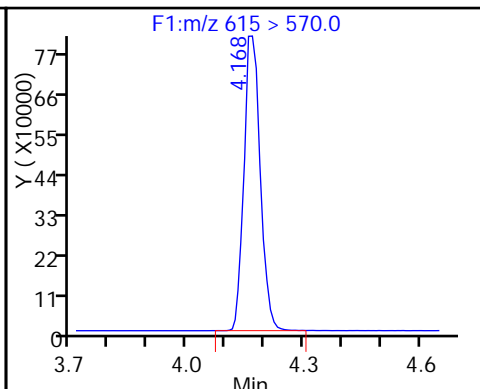
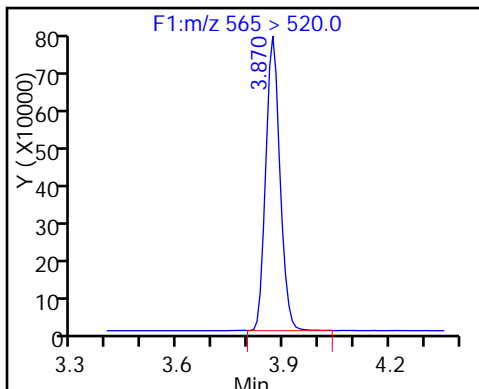
28 Perfluoroundecanoic acid



D 27 13C2 PFUnA

D 30 13C2 PFDaA

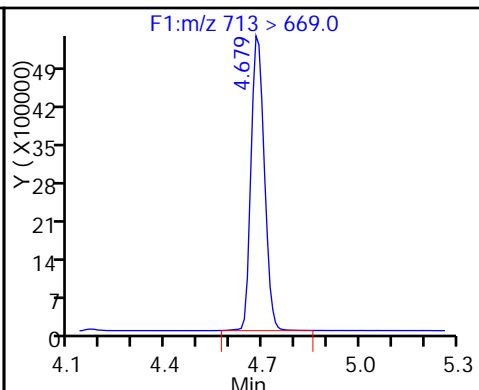
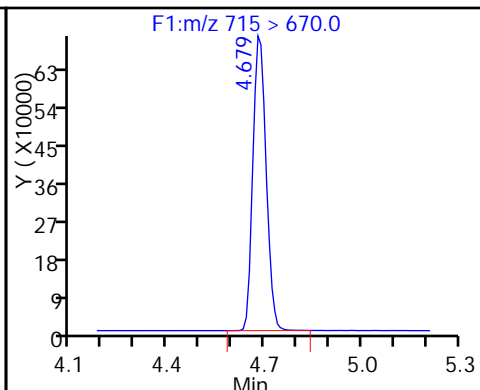
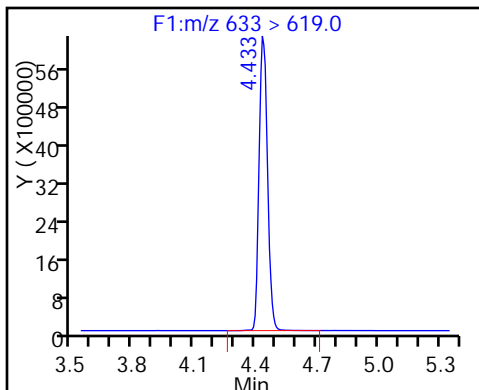
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

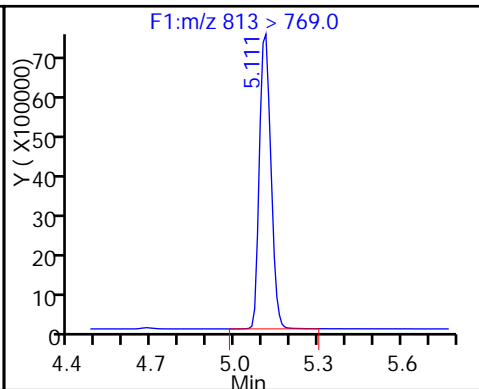
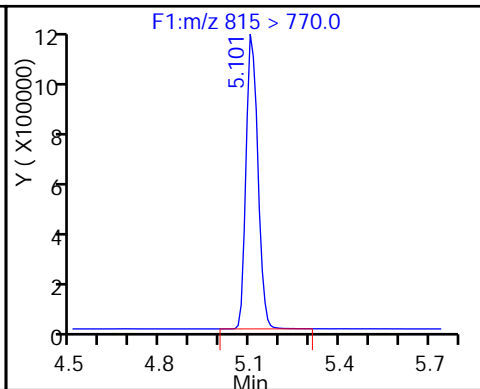
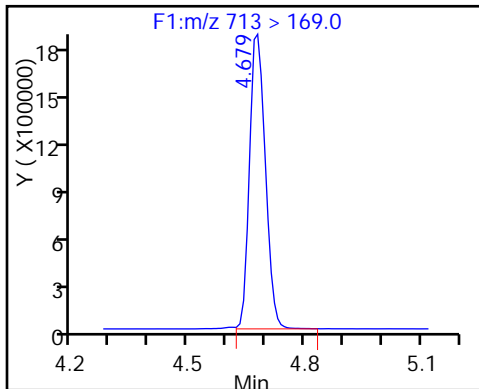
33 Perfluorotetradecanoic acid



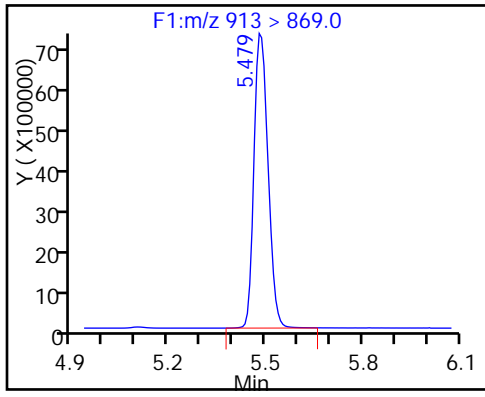
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

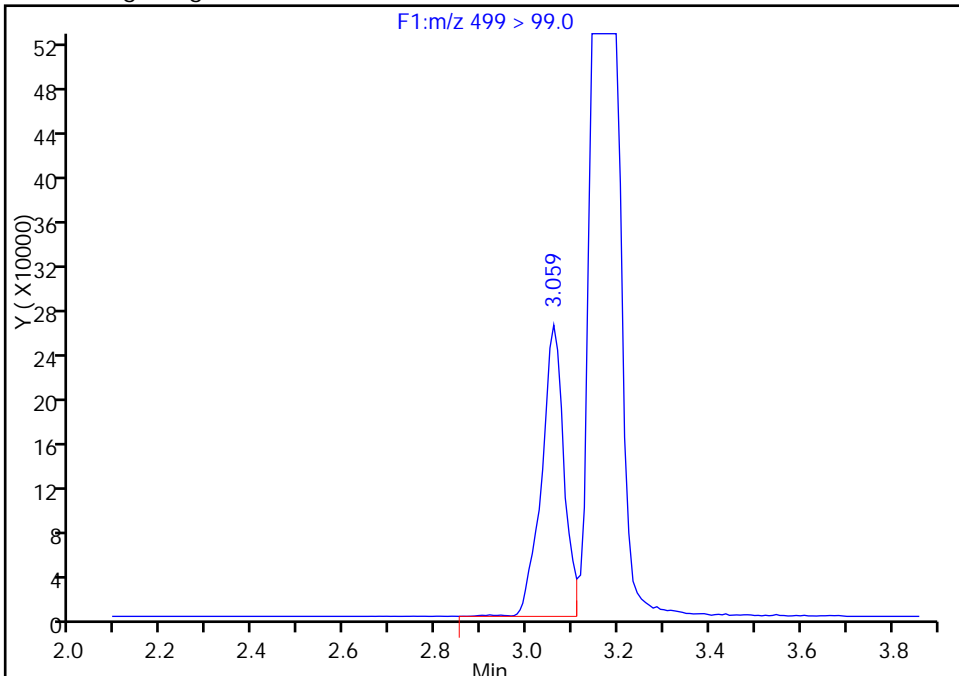
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Injection Date: 22-Aug-2016 17:08:00 Instrument ID: A8
Lims ID: IC L7
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

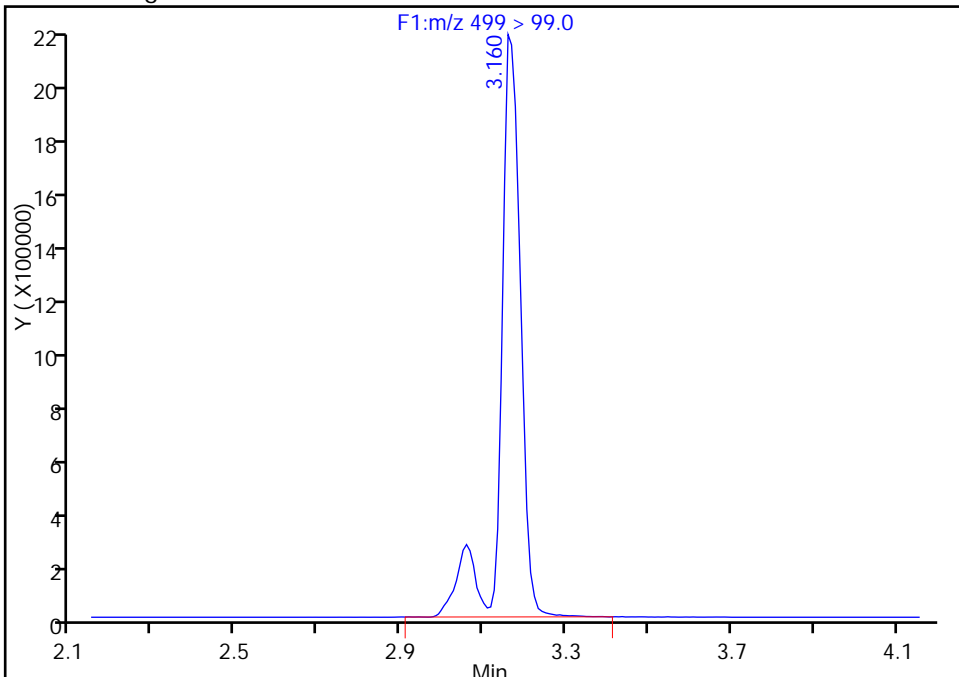
RT: 3.06
Area: 889436
Amount: 371.4615
Amount Units: ng/ml

Processing Integration Results



RT: 3.16
Area: 7179107
Amount: 371.4615
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 24-Aug-2016 10:18:31
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_014_p1_e1.d
 Lims ID: IC L1 Add-on
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 22-Aug-2016 17:38:00 ALS Bottle#: 0 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:49:35 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.754	2.749	0.005		2296963	41.4		87.1		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.754	2.751	0.003	1.000	28657	0.3629		76.6		
D 42 M2-8:2FTS										
529 > 509.0	3.501	3.504	-0.003		2058452	40.8		85.3		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.501	3.504	-0.003	1.000	17207	0.5150		108		
D 45 d3-NMeFOSAA										
573 > 419.0	3.669	3.670	-0.001		1244115	46.9		93.8		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.677	3.675	0.002	1.002	9858	0.4577		91.5		
D 46 d5-NEtFOSAA										
589 > 419.0	3.840	3.843	-0.003		1348877	46.6		93.1		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.840	3.844	-0.004	1.000	9093	0.4466		89.3		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.951	3.957	-0.006		1738900	45.3		90.6		
54 MeFOSA										
512 > 169.0	3.961	3.964	-0.003	1.000	13969	0.4777		95.5		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.147	4.147	0.0		1743838	47.0		94.1		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.157	4.153	0.004	1.000	13086	0.4425		88.5		

Reagents:

LCPFC2-L1_00002 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_014_p1_e1.d

Injection Date: 22-Aug-2016 17:38:00

Instrument ID: A8

Lims ID: IC L1 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 12

Injection Vol: 2.0 ul

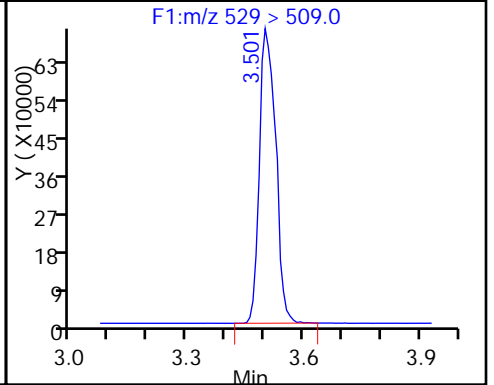
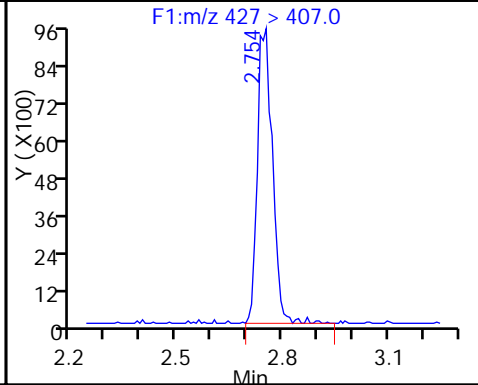
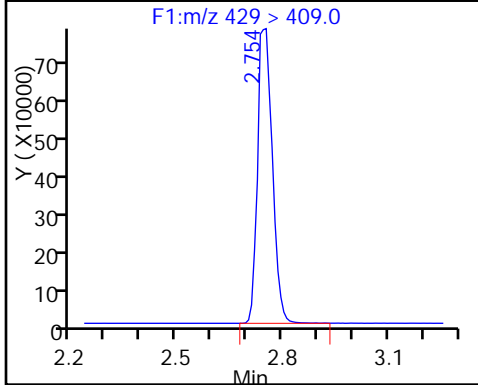
Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

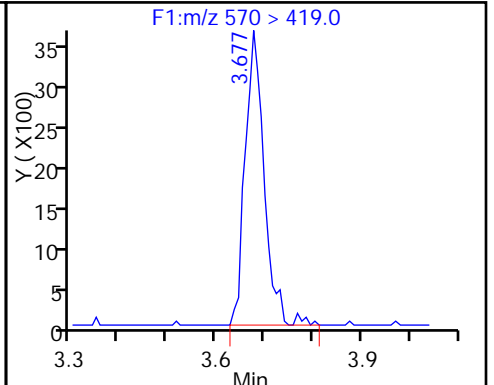
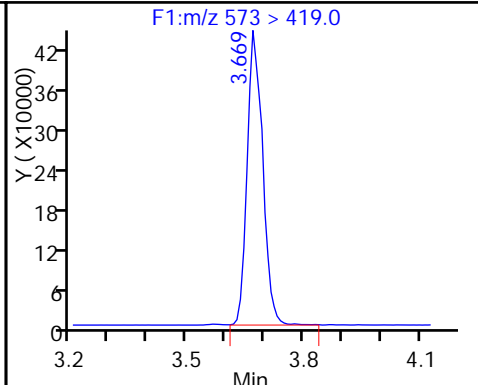
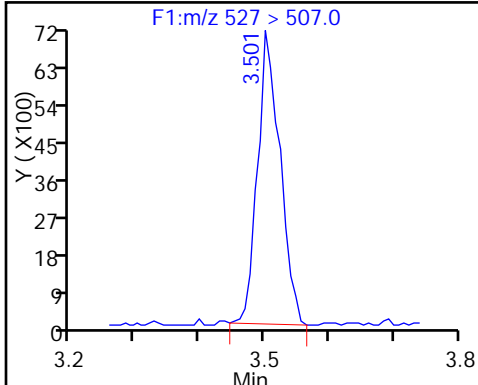
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

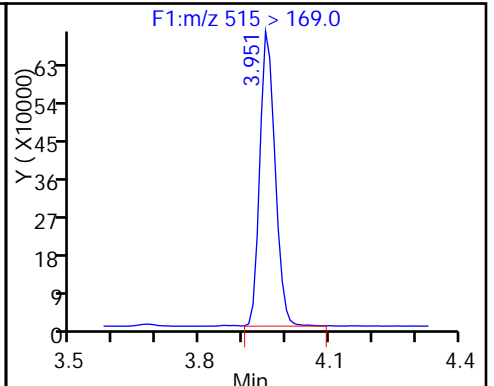
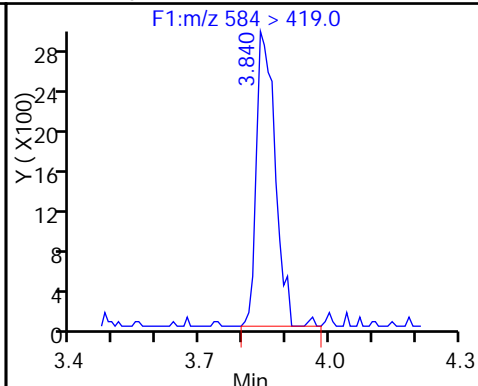
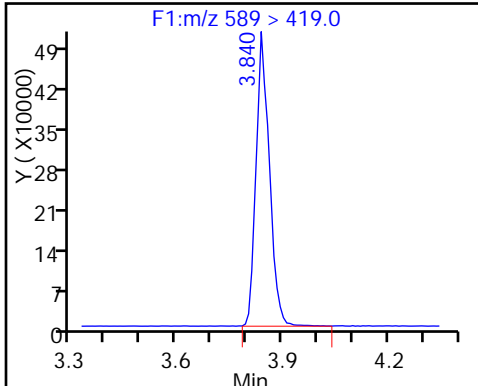
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

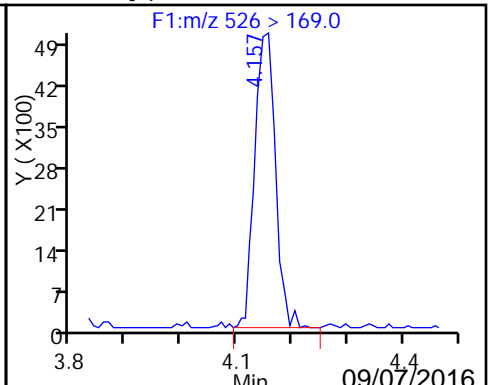
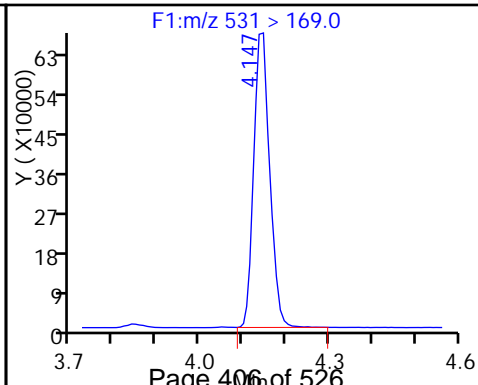
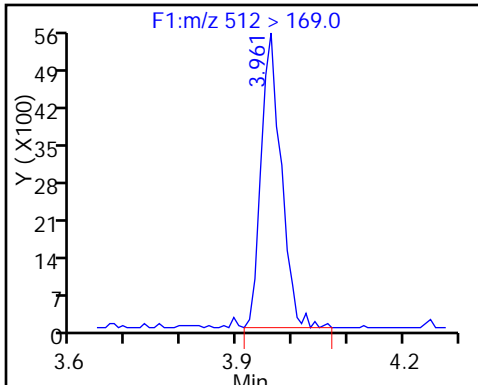
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_015_p1_e1.d
 Lims ID: IC L2 Add-on
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 22-Aug-2016 17:46:00 ALS Bottle#: 0 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:49:42 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

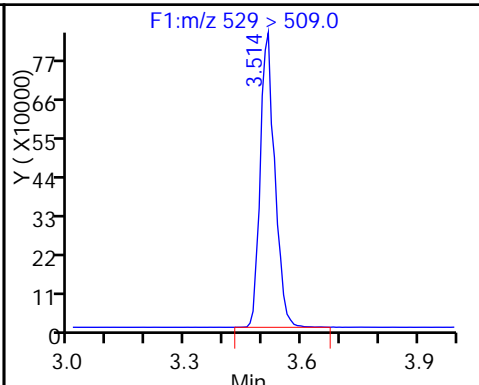
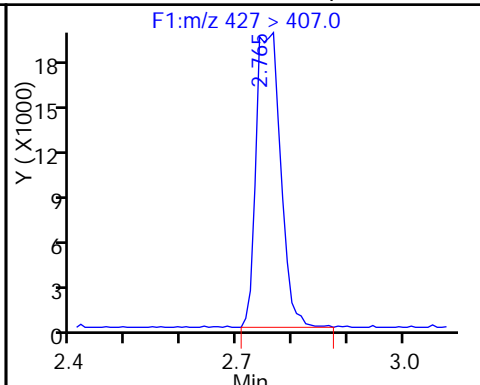
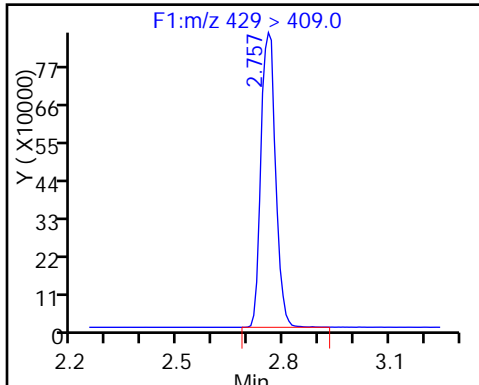
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.757	2.749	0.008		2495968	45.0		94.7		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.765	2.751	0.014	1.000	58625	1.03		109		
D 42 M2-8:2FTS										
529 > 509.0	3.514	3.504	0.010		2218968	44.0		91.9		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.506	3.504	0.002	0.998	31441	0.8730		91.1		
D 45 d3-NMeFOSAA										
573 > 419.0	3.682	3.670	0.012		1299408	49.0		97.9		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.682	3.675	0.007	1.000	20837	0.9263		92.6		
D 46 d5-NEtFOSAA										
589 > 419.0	3.854	3.843	0.011		1430197	49.4		98.8		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.845	3.844	0.001	0.998	19720	0.9134		91.3		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.966	3.957	0.009		1794486	46.8		93.5		
54 MeFOSA										
512 > 169.0	3.966	3.964	0.002	1.000	29431	0.9753		97.5		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.154	4.147	0.007		1686037	45.5		90.9		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.154	4.153	0.001	1.000	27827	0.9732		97.3		

Reagents:

LCPFC2-L2_00002 Amount Added: 1.00 Units: mL

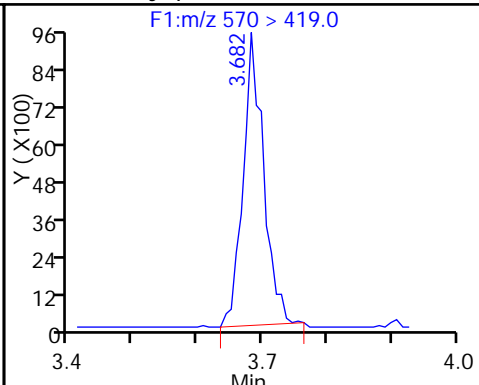
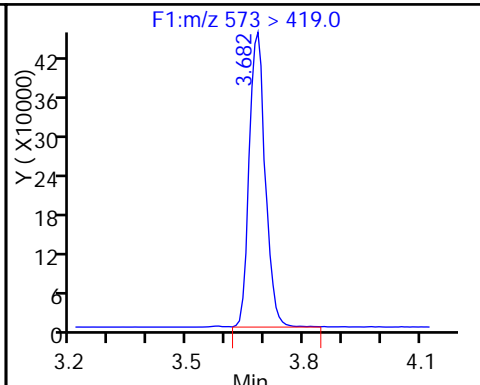
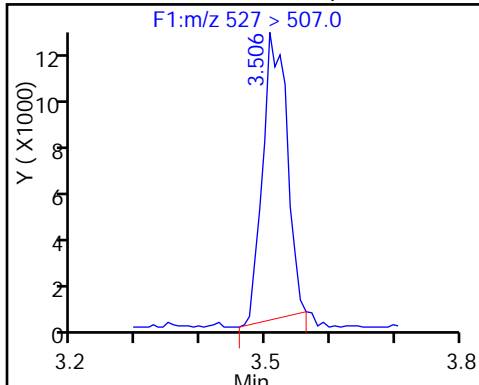
D 47 M2-6:2FTS

48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



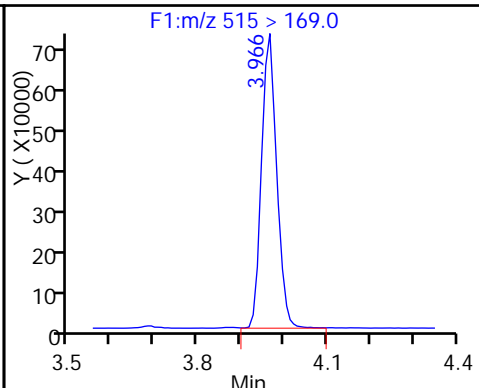
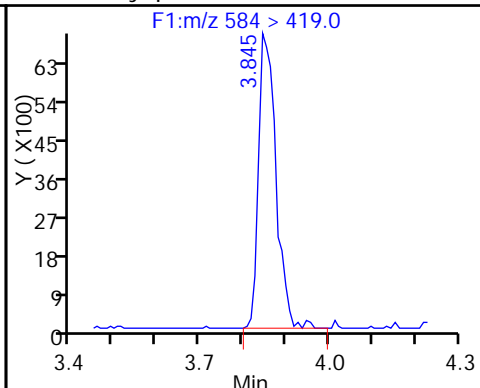
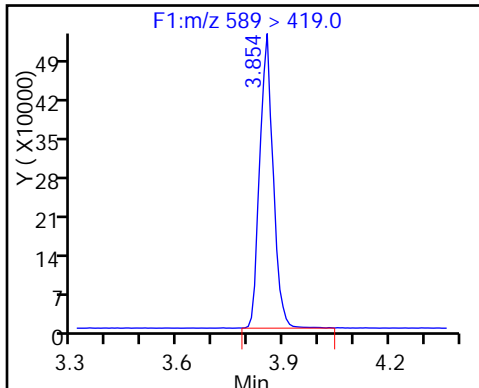
43 Sodium 1H,1H,2H,2H-perfluorooctane D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

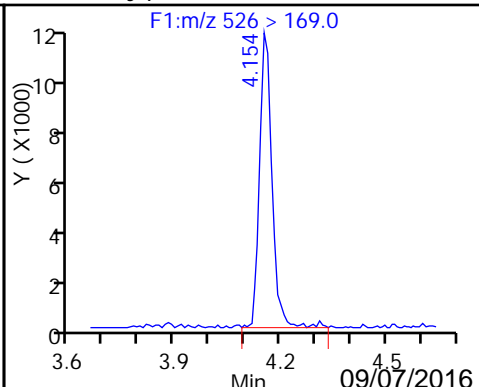
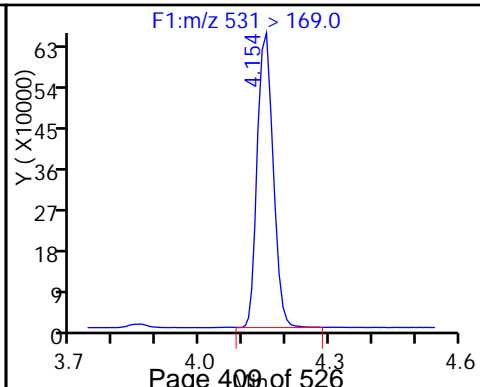
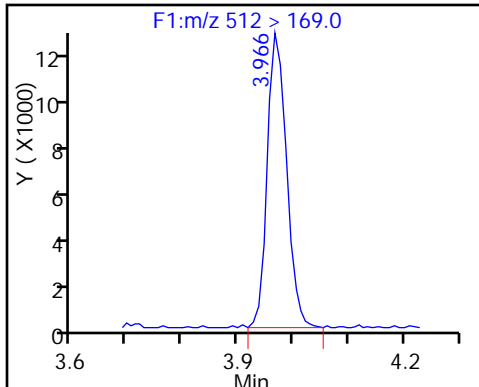
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_016_p1_e1.d
 Lims ID: IC L3 Add-on
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 22-Aug-2016 17:53:00 ALS Bottle#: 0 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:49:53 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.740	2.749	-0.009		2289167	41.3		86.9		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.749	2.751	-0.002	1.000	184885	4.52		95.4		
D 42 M2-8:2FTS										
529 > 509.0	3.498	3.504	-0.006		2196550	43.6		91.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.506	3.504	0.002	1.002	160417	4.50		93.9		
D 45 d3-NMeFOSAA										
573 > 419.0	3.667	3.670	-0.003		1327821	50.0		100		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.675	3.675	0.0	1.002	92774	4.04		80.7		
D 46 d5-NEtFOSAA										
589 > 419.0	3.845	3.843	0.002		1454482	50.2		100		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.845	3.844	0.001	1.000	91349	4.16		83.2		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.957	3.957	0.0		1869114	48.7		97.4		
54 MeFOSA										
512 > 169.0	3.967	3.964	0.003	1.000	134729	4.29		85.7		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.144	4.147	-0.003		1824624	49.2		98.4		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.154	4.153	0.001	1.000	131165	4.24		84.8		

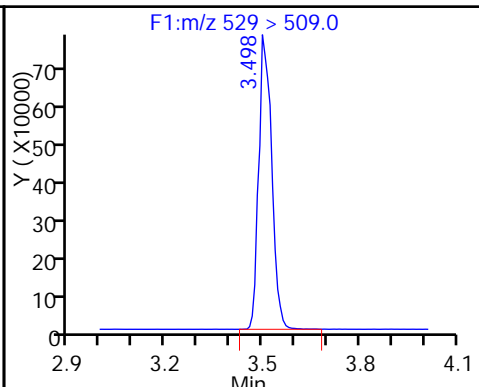
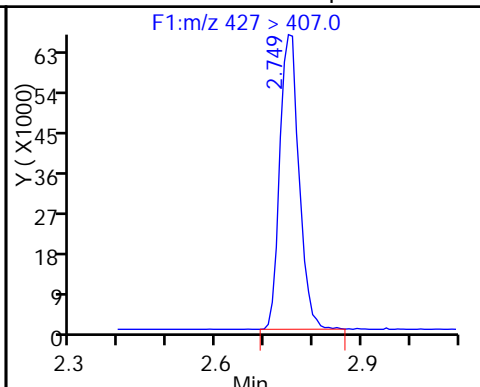
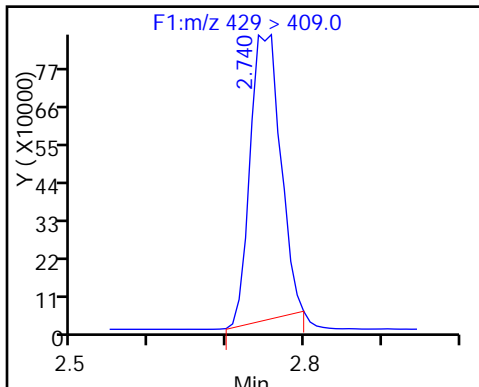
Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

D 47 M2-6:2FTS

48 Sodium 1H,1H,2H,2H-perfluorooctane

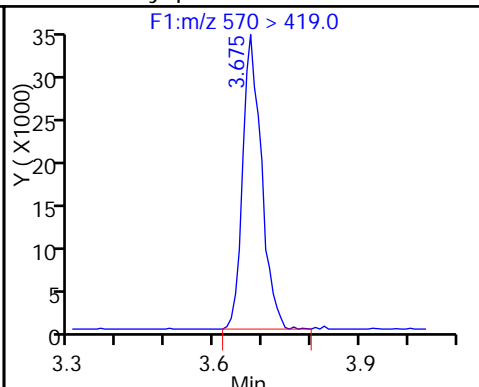
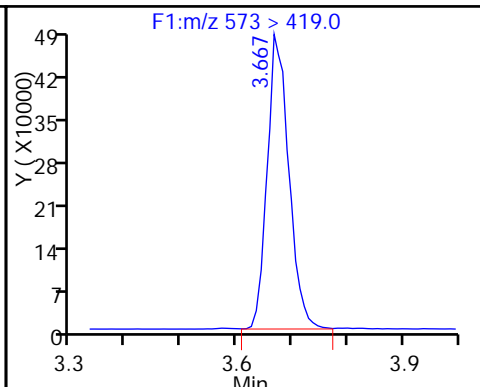
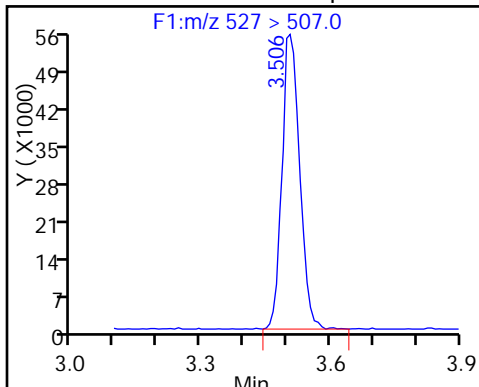
D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

D 45 d3-NMeFOSAA

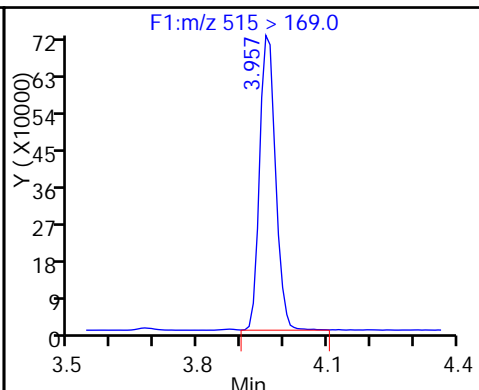
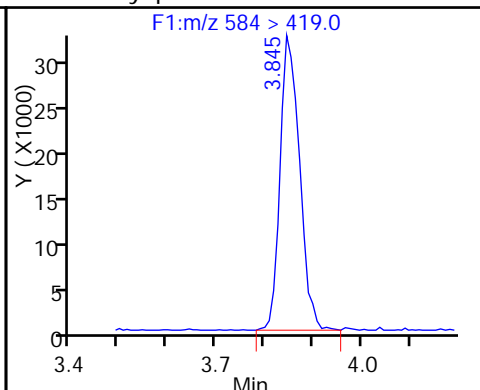
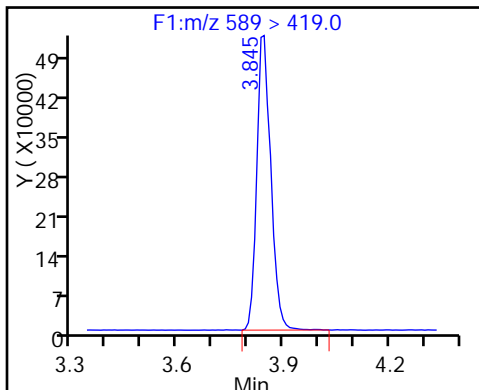
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

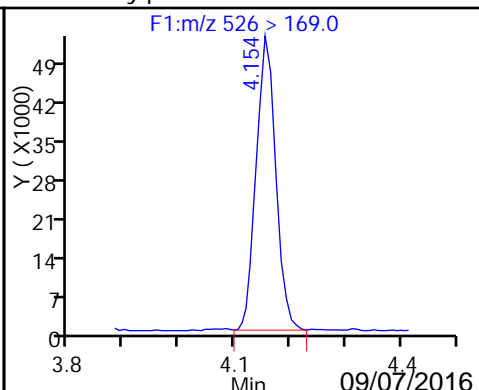
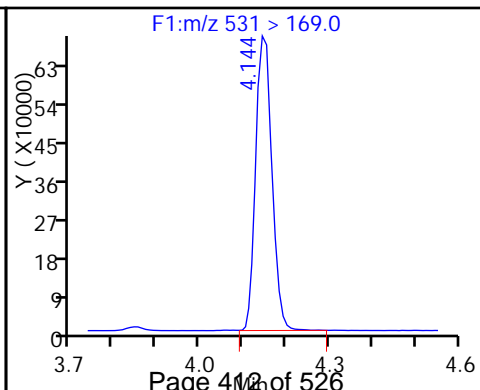
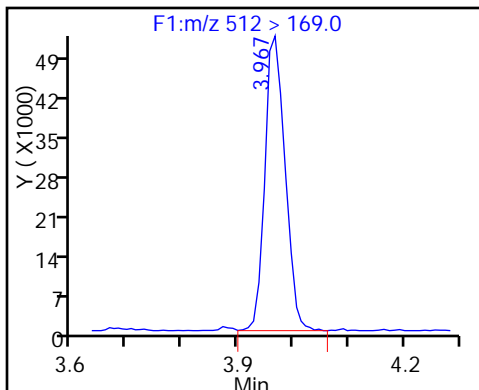
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_017_p1_e1.d
 Lims ID: IC L4 Add-on
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 22-Aug-2016 18:01:00 ALS Bottle#: 0 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:50:07 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 23-Aug-2016 17:59:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.757	2.749	0.008		2582138	46.5		98.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.749	2.751	-0.002	1.000	953559	22.1		116		
D 42 M2-8:2FTS										
529 > 509.0	3.506	3.504	0.002		2237725	44.4		92.7		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.514	3.504	0.010	1.002	805944	22.2		116		
D 45 d3-NMeFOSAA										
573 > 419.0	3.674	3.670	0.004		1327730	50.0		100		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.674	3.675	-0.001	1.000	489734	21.3		107		
D 46 d5-NEtFOSAA										
589 > 419.0	3.845	3.843	0.002		1528680	52.8		106		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.845	3.844	0.001	1.000	484482	21.0		105		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.957	3.957	0.0		1917858	50.0		100.0		
54 MeFOSA										
512 > 169.0	3.967	3.964	0.003	1.000	674490	20.9		105		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.154	4.147	0.007		1821038	49.1		98.2		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.154	4.153	0.001	1.000	658792	21.3		107		

Reagents:

LCPFC2-L4_00002

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_017_p1_e1.d

Injection Date: 22-Aug-2016 18:01:00

Instrument ID: A8

Lims ID: IC L4 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

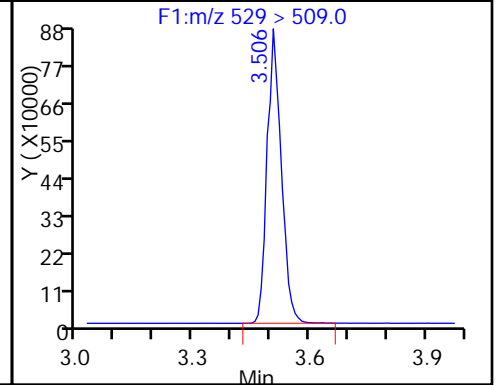
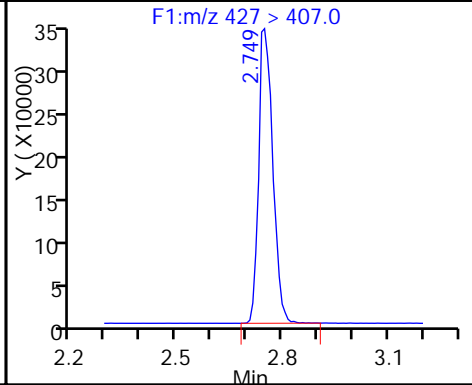
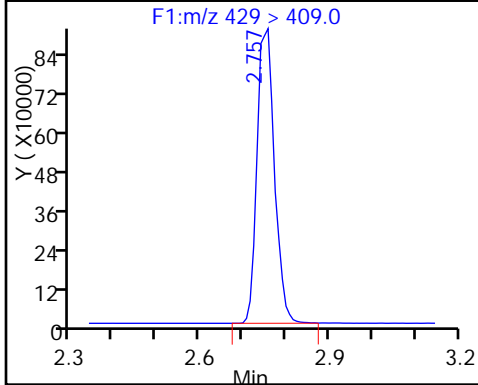
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

48 Sodium 1H,1H,2H,2H-perfluorooctane

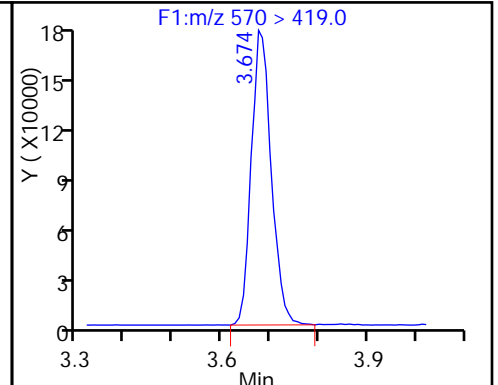
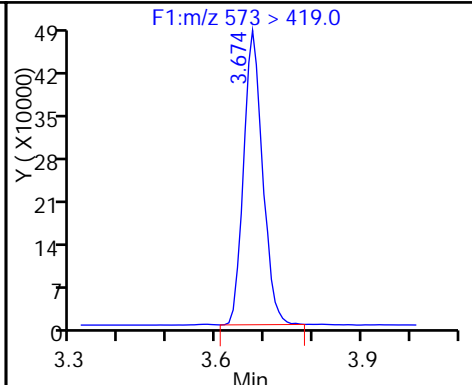
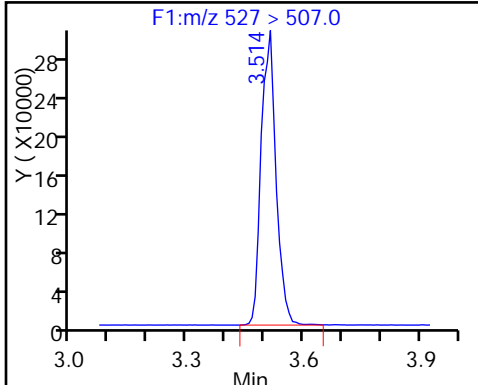
D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

D 45 d3-NMeFOSAA

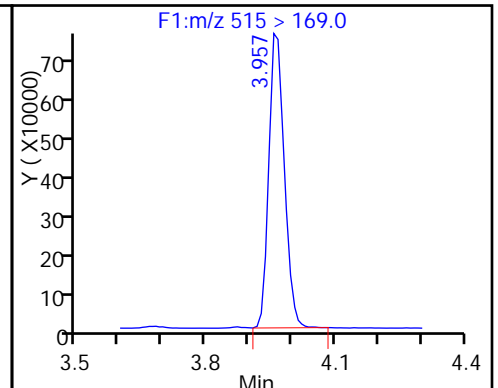
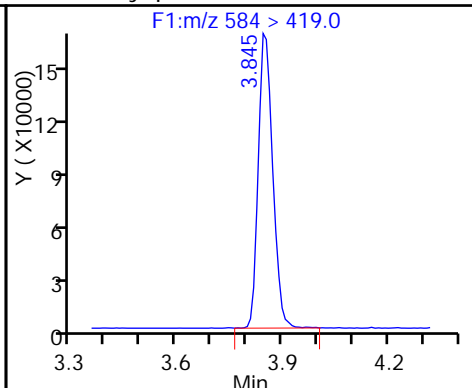
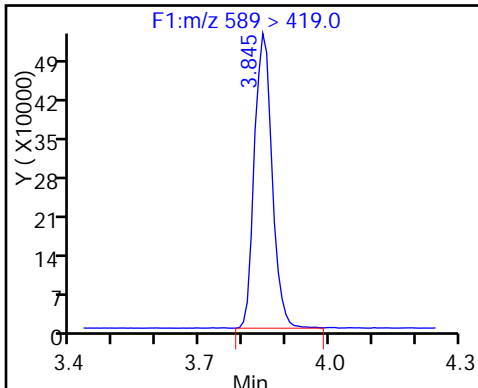
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

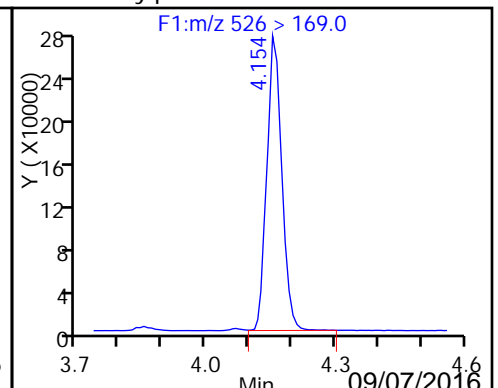
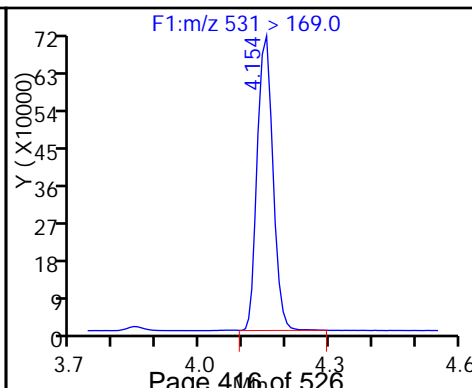
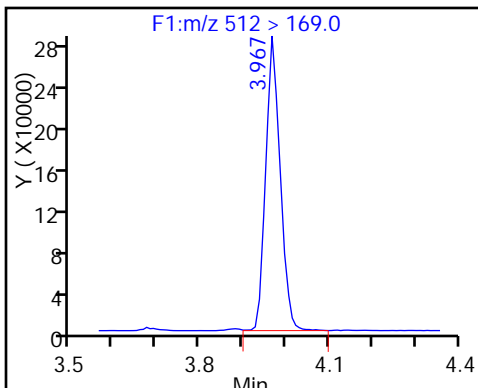
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_018_p1_e1.d
 Lims ID: IC L5 Add-on
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 22-Aug-2016 18:08:00 ALS Bottle#: 0 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:50:18 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.743	2.749	-0.006		2702461	48.7		103		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.743	2.751	-0.008	1.000	2236049	50.0		105		
D 42 M2-8:2FTS										
529 > 509.0	3.499	3.504	-0.005		2452934	48.7		102		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.499	3.504	-0.005	1.000	1970057	49.5		103		
D 45 d3-NMeFOSAA										
573 > 419.0	3.668	3.670	-0.002		1368468	51.6		103		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.668	3.675	-0.007	1.000	1190511	50.3		101		
D 46 d5-NEtFOSAA										
589 > 419.0	3.828	3.843	-0.015		1483381	51.2		102		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.846	3.844	0.002	1.005	1107026	49.4		98.9		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.958	3.957	0.001		2053938	53.5		107		
54 MeFOSA										
512 > 169.0	3.958	3.964	-0.006	1.000	1691110	49.0		97.9		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.145	4.147	-0.002		1981818	53.4		107		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.145	4.153	-0.008	1.000	1643536	48.9		97.8		

Reagents:

LCPFC2-L5_00002 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_018_p1_e1.d

Injection Date: 22-Aug-2016 18:08:00

Instrument ID: A8

Lims ID: IC L5 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

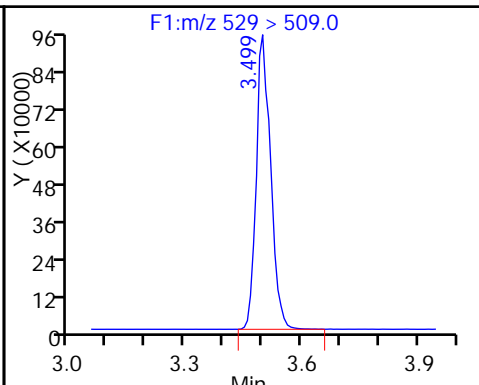
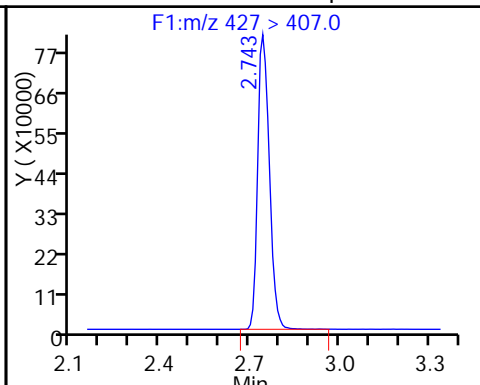
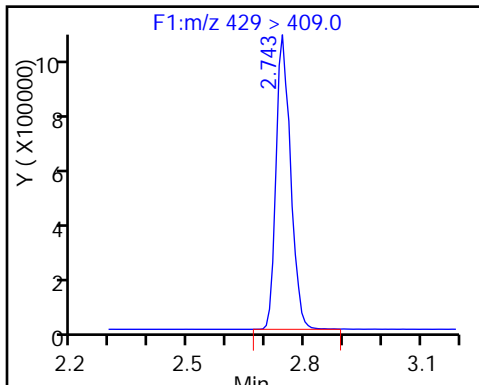
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

48 Sodium 1H,1H,2H,2H-perfluorooctane

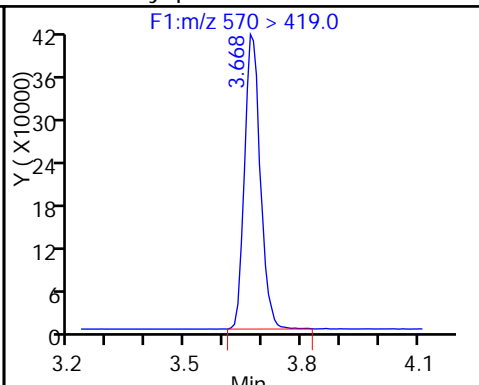
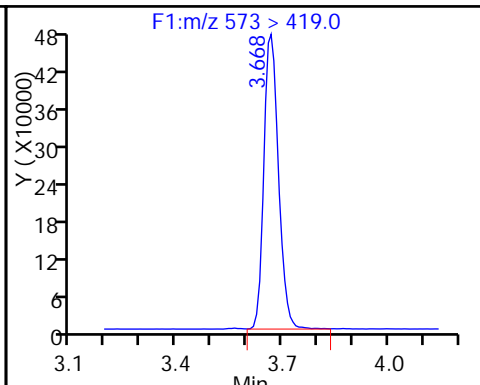
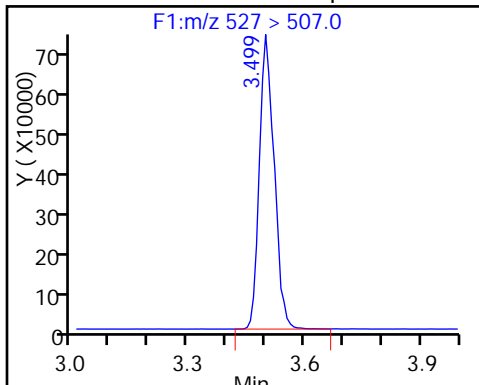
D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

D 45 d3-NMeFOSAA

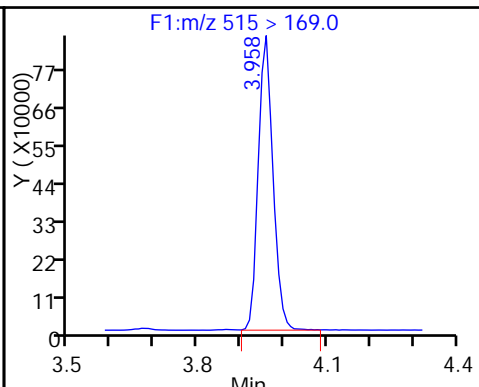
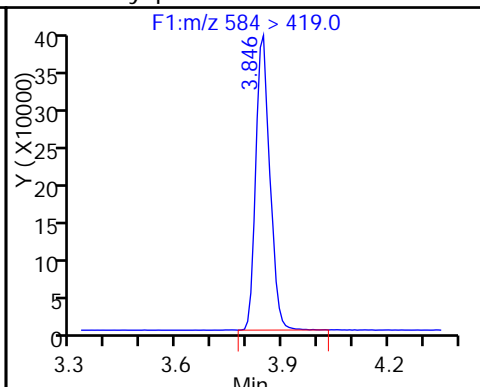
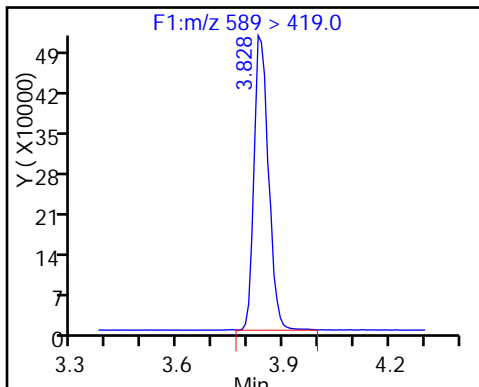
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

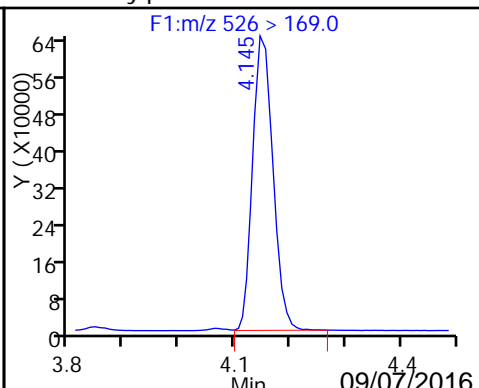
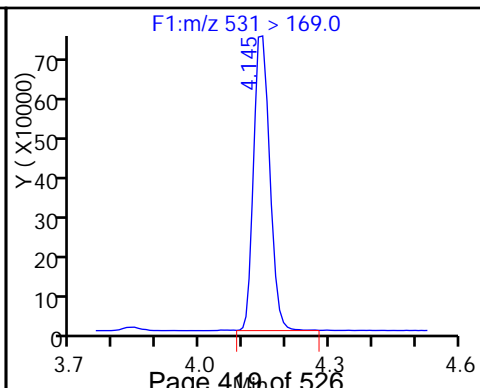
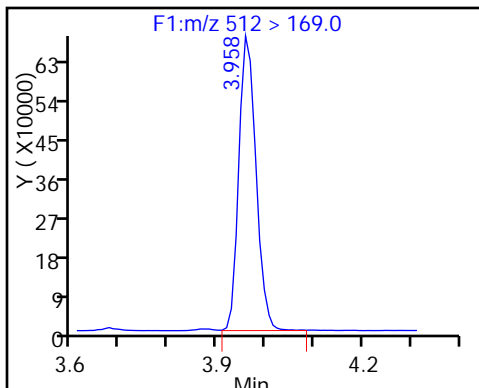
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_019_p1_e1.d
 Lims ID: IC L6 Add-on
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 22-Aug-2016 18:16:00 ALS Bottle#: 0 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:50:26 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.745	2.749	-0.004		2891381	52.1		110		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.745	2.751	-0.006	1.000	8763302	184.1		97.1		
D 42 M2-8:2FTS										
529 > 509.0	3.501	3.504	-0.003		2763434	54.8		114		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.493	3.504	-0.011	0.998	8325021	185.6		96.9		
D 45 d3-NMeFOSAA										
573 > 419.0	3.661	3.670	-0.009		1395248	52.6		105		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.669	3.675	-0.006	1.002	5271643	218.3		109		
D 46 d5-NEtFOSAA										
589 > 419.0	3.840	3.843	-0.003		1479945	51.1		102		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.840	3.844	-0.004	1.000	4987775	223.3		112		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.952	3.957	-0.005		2107210	54.9		110		
54 MeFOSA										
512 > 169.0	3.961	3.964	-0.003	1.000	7305572	206.2		103		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.138	4.147	-0.009		2012551	54.3		109		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.148	4.153	-0.005	1.000	7477876	219.1		110		

Reagents:

LCPFC2-L6_00002 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_019_p1_e1.d

Injection Date: 22-Aug-2016 18:16:00

Instrument ID: A8

Lims ID: IC L6 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

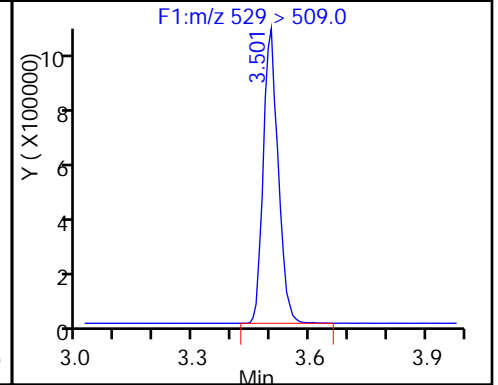
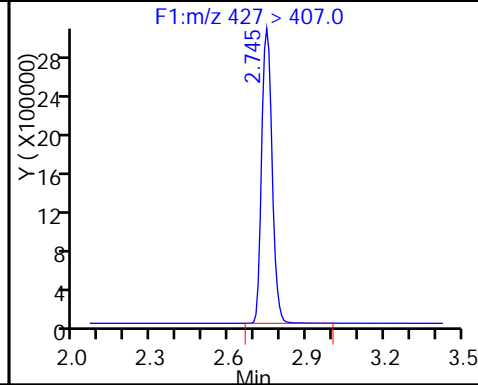
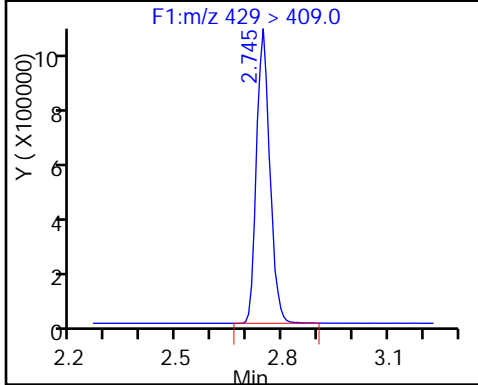
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

48 Sodium 1H,1H,2H,2H-perfluorooctane

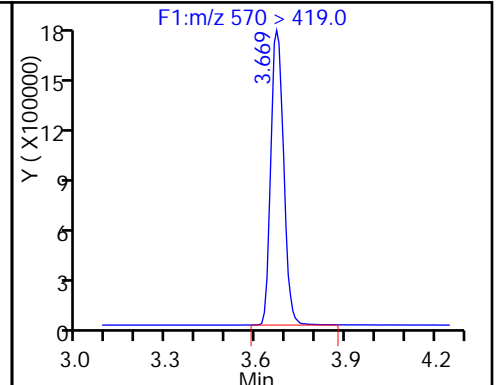
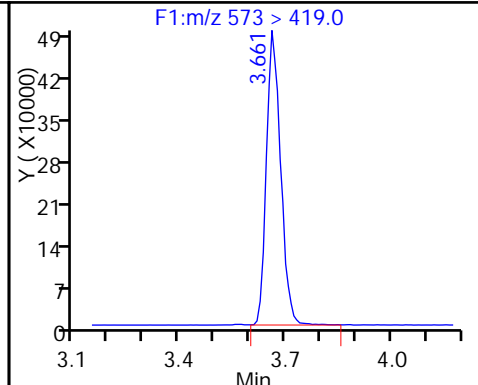
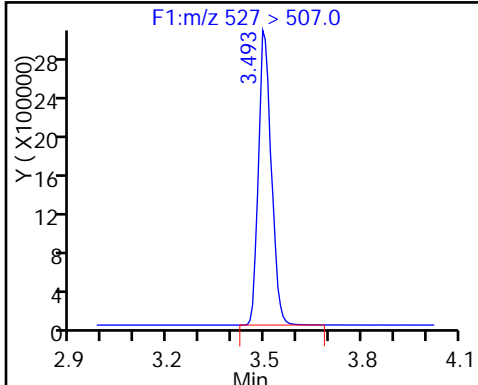
D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

D 45 d3-NMeFOSAA

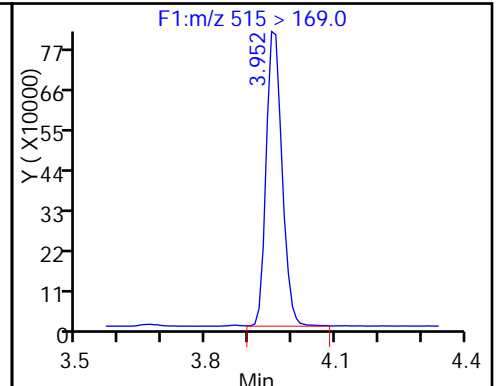
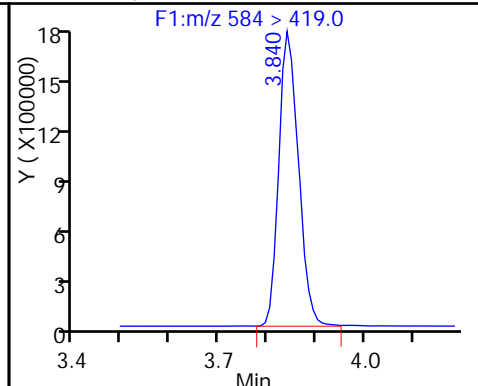
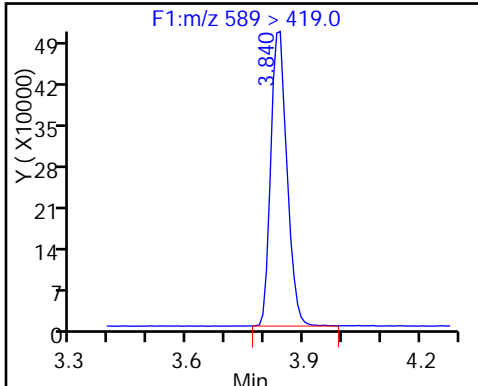
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

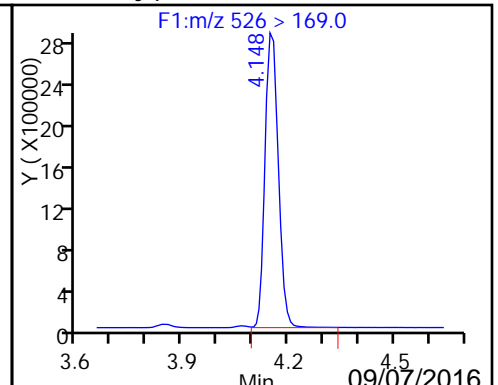
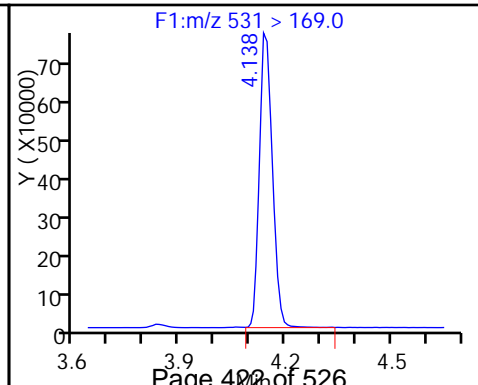
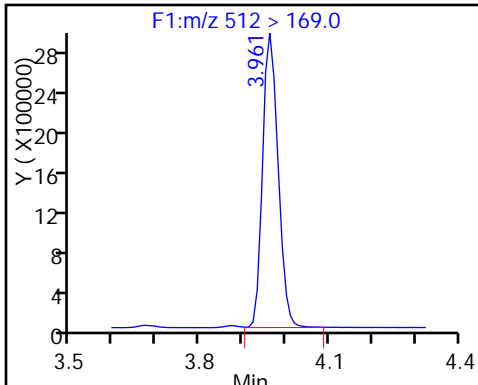
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Lims ID: IC L7 Add-on
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 22-Aug-2016 18:23:00 ALS Bottle#: 0 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub4
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:50:36 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.750	2.749	0.001		3191432	57.5		121		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.750	2.751	-0.001	1.000	17306540	329.8		87.0		
D 42 M2-8:2FTS										
529 > 509.0	3.509	3.504	0.005		2970600	58.9		123		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.509	3.504	0.005	1.000	16890474	350.3		91.4		
D 45 d3-NMeFOSAA										
573 > 419.0	3.669	3.670	-0.001		1324197	49.9		99.8		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.677	3.675	0.002	1.002	10903399	475.7		119		
D 46 d5-NEtFOSAA										
589 > 419.0	3.849	3.843	0.006		1411088	48.7		97.4		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.849	3.844	0.005	1.000	10282683	482.7		121		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.961	3.957	0.004		1948532	50.8		102		
54 MeFOSA										
512 > 169.0	3.971	3.964	0.007	1.000	15151517	462.4		116		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.151	4.147	0.004		1908583	51.5		103		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.161	4.153	0.008	1.000	14937252	461.5		115		

Reagents:

LCPFC2-L7_00002 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d

Injection Date: 22-Aug-2016 18:23:00

Instrument ID: A8

Lims ID: IC L7 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 18

Injection Vol: 2.0 ul

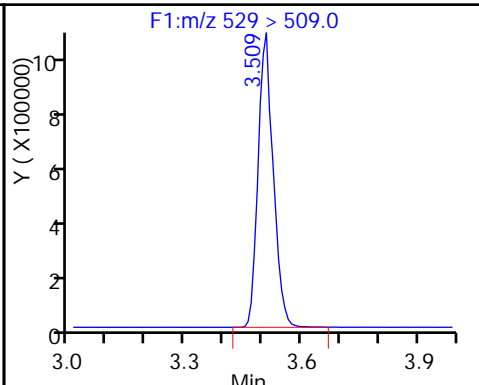
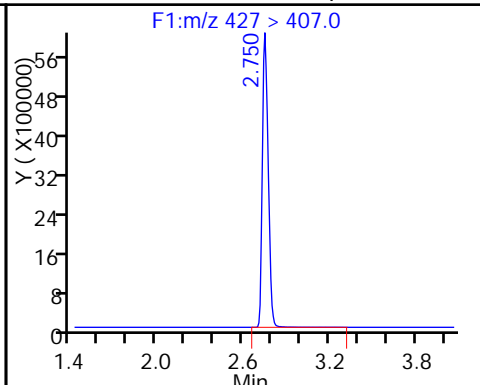
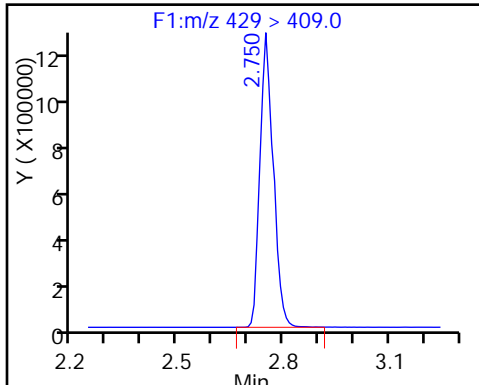
Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

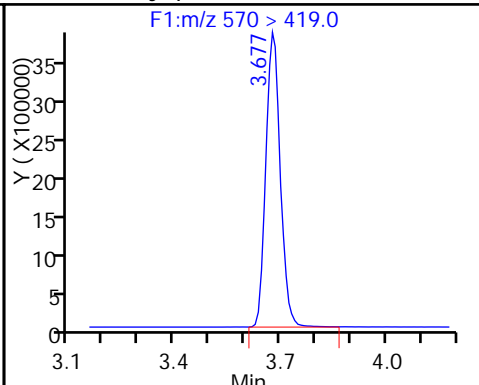
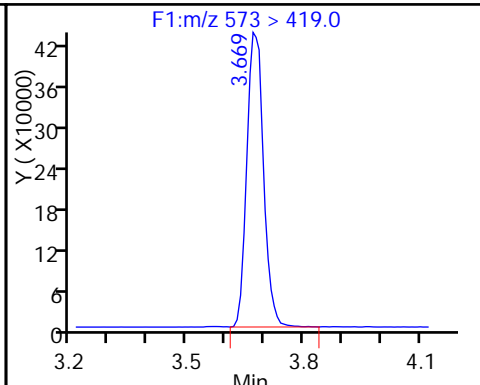
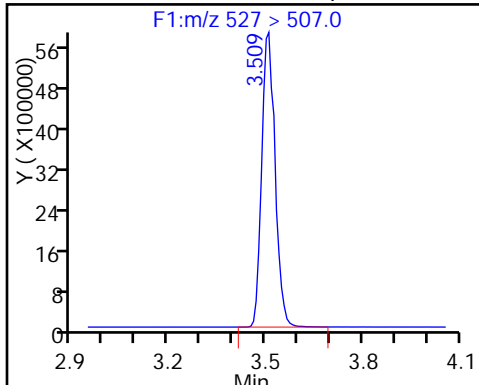
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

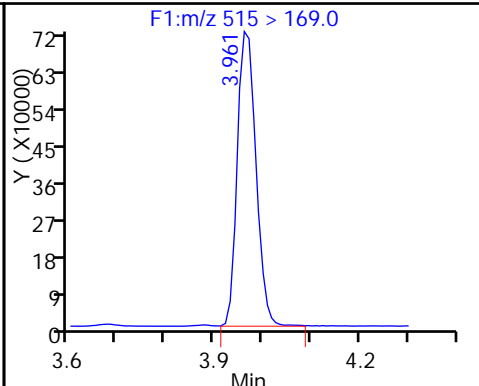
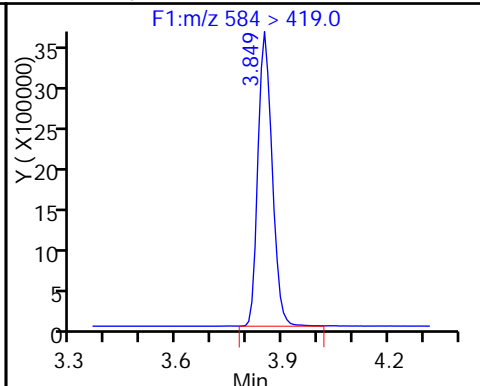
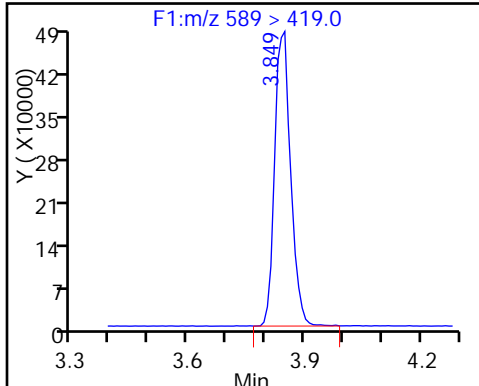
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

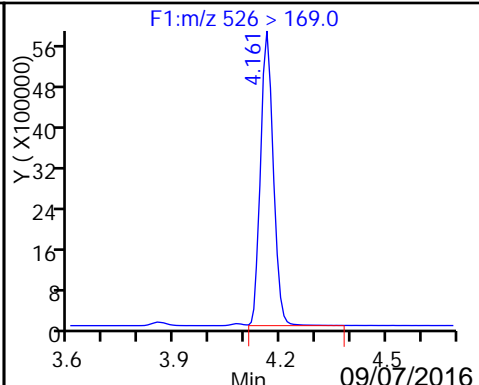
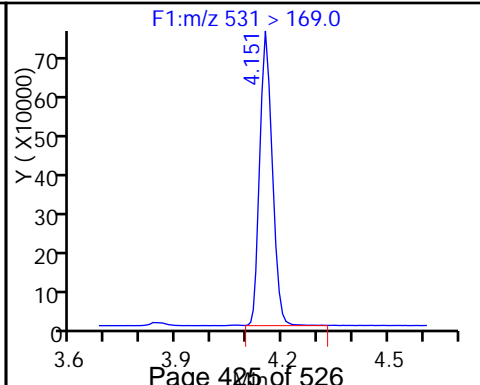
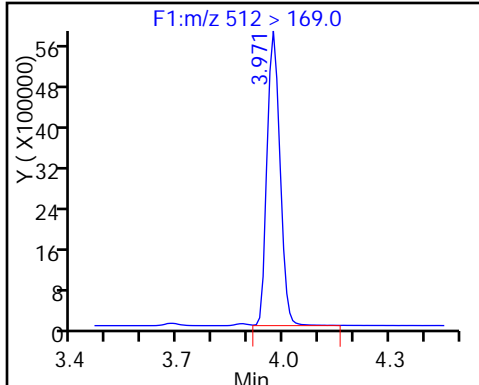
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Lab Sample ID: ICV 320-123741/10 Calibration Date: 08/22/2016 17:23
 Instrument ID: A8 Calib Start Date: 08/22/2016 16:24
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/22/2016 18:23
 Lab File ID: 22AUG2016A_012_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8640	0.9408		54.4	50.0	8.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.040		50.9	50.0	1.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.803		51.4	44.3	16.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	1.030		53.3	50.0	6.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.152		55.1	50.0	10.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.104		46.9	47.3	-0.8	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.146		57.3	50.0	14.6	25.0
Perfluorooheptanesulfonic Acid (PFHpS)	AveID	1.166	1.215		49.6	47.6	4.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.033		51.7	50.0	3.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.065		45.9	47.8	-4.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9916		53.9	50.0	7.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	1.074		54.6	50.0	9.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.6498		51.1	48.3	6.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.063		49.0	50.0	-1.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	1.045		52.7	50.0	5.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	1.043		53.2	50.0	6.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8433		50.2	50.0	0.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.166		47.0	50.0	-6.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9920		43.1	50.0	-13.8	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_012_p1_e1.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 22-Aug-2016 17:23:00 ALS Bottle#: 0 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist:
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 24-Aug-2016 08:49:05 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 23-Aug-2016 17:57:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.521	1.522	-0.001		7289635	53.7		107	645518	
1 Perfluorobutyric acid										
212.9 > 169.0	1.521	1.524	-0.003	1.000	6858125	54.4			83509	
D 4 13C5-PFPeA										
267.9 > 223.0	1.792	1.797	-0.005		5958573	55.3		111	694323	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.792	1.797	-0.005	1.000	6199484	50.9			103549	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.834	1.837	-0.003	1.000	9566868	51.4				
298.9 > 99.0	1.834	1.837	-0.003	1.000	4141086		2.31(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.080	2.089	-0.009		5025353	51.8		104	521201	
7 Perfluorohexanoic acid										
313 > 269.0	2.080	2.090	-0.010	1.000	5177414	53.3			318345	
12 Perfluoroheptanoic acid										
363 > 319.0	2.423	2.427	-0.004	1.000	5669007	55.1			115952	
D 11 13C4-PFHpA										
367 > 322.0	2.415	2.430	-0.015		4922220	51.0		102	463385	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.430	2.446	-0.016	1.000	6254681	46.9				
D 10 18O2 PFHxS										
403 > 84.0	2.430	2.446	-0.016		5671374	50.4		107	591468	
15 Perfluorooctanoic acid										
413 > 369.0	2.779	2.798	-0.019	1.000	6101214	57.3			25420	
413 > 169.0	2.787	2.798	-0.011	1.003	3399696		1.79(0.90-1.10)		211150	
D 14 13C4 PFOA										
417 > 372.0	2.787	2.798	-0.011		5321747	55.3		111	508887	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.787	2.807	-0.020	1.000	5052147	49.6				
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.166	3.110	0.057	1.000	4444026	45.9			524037	
499 > 99.0	3.166	3.110	0.057	1.000	1040588		4.27(0.90-1.10)		185340	
D 19 13C5 PFNA										
468 > 423.0	3.158	3.177	-0.019		4515776	56.8		114	308665	
D 17 13C4 PFOS										
503 > 80.0	3.166	3.177	-0.011		4177159	50.9		106	211786	
20 Perfluorononanoic acid										
463 > 419.0	3.158	3.183	-0.025	1.000	4664095	51.7			119915	
D 21 13C8 FOSA										
506 > 78.0	3.476	3.474	0.002		7844476	52.3		105	286400	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.468	3.475	-0.007	1.000	7778751	53.9			263354	
24 Perfluorodecanoic acid										
513 > 469.0	3.532	3.546	-0.014	1.000	3969234	54.6			205338	
D 23 13C2 PFDA										
515 > 470.0	3.524	3.546	-0.022		3695904	50.8		102	669719	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.846	3.863	-0.017	1.000	2739816	51.1				
28 Perfluoroundecanoic acid										
563 > 519.0	3.864	3.880	-0.016	1.000	3271004	49.0			151149	
D 27 13C2 PFUnA										
565 > 520.0	3.864	3.880	-0.016		3077415	55.3		111	395923	
D 30 13C2 PFDoA										
615 > 570.0	4.158	4.183	-0.025		2933765	55.2		110	357774	
29 Perfluorododecanoic acid										
613 > 569.0	4.168	4.185	-0.017	1.000	3065324	52.7			125272	
31 Perfluorotridecanoic acid										
633 > 619.0	4.430	4.452	-0.022	1.000	3059491	53.2			200152	
D 32 13C2-PFTeDA										
715 > 670.0	4.677	4.697	-0.020		2511793	53.2		106	480828	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.677	4.701	-0.024	1.000	2474099	50.2			19102	
713 > 169.0	4.677	4.701	-0.024	1.000	831755		2.97(0.00-0.00)		160080	
D 34 13C2-PFHxDA										
815 > 770.0	5.101	5.125	-0.024		3447174	52.4		105	432164	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.101	5.127	-0.026	1.000	3421758	47.0			26734	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.473	5.509	-0.036	1.000	2910135	43.1			21746	

Reagents:

LCPFCIC_00019

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_012_p1_e1.d

Injection Date: 22-Aug-2016 17:23:00

Instrument ID: A8

Lims ID: ICV

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

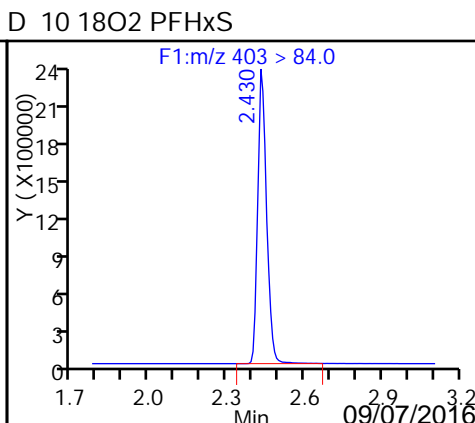
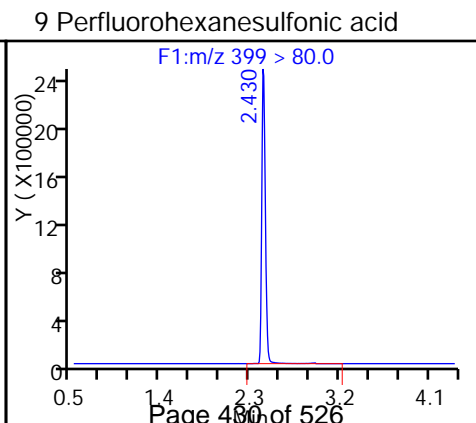
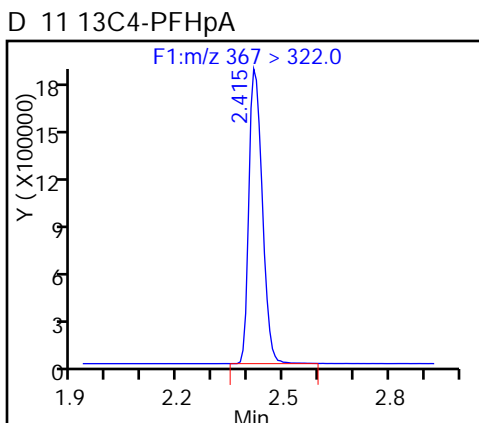
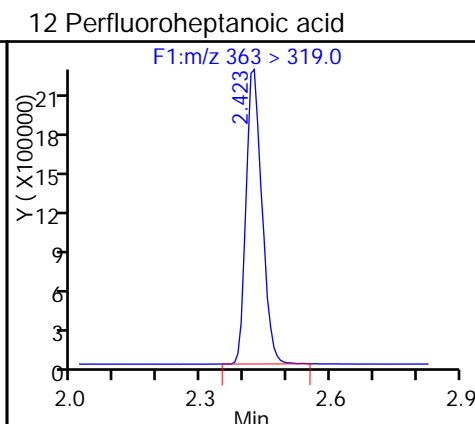
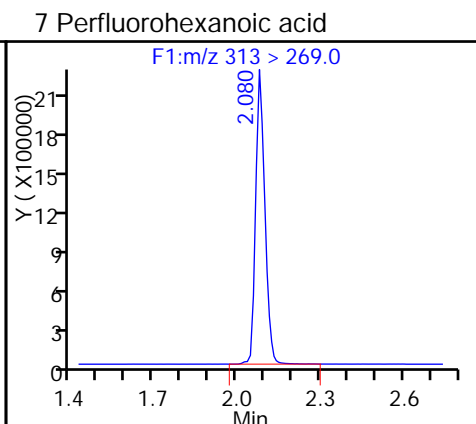
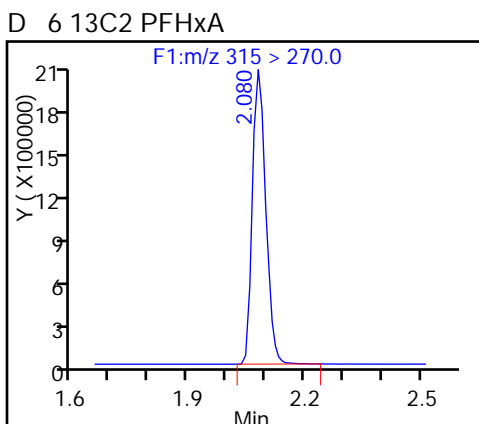
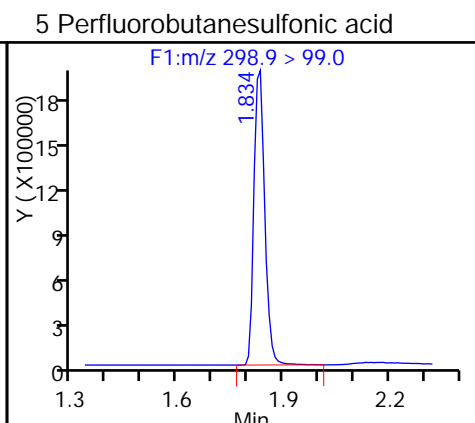
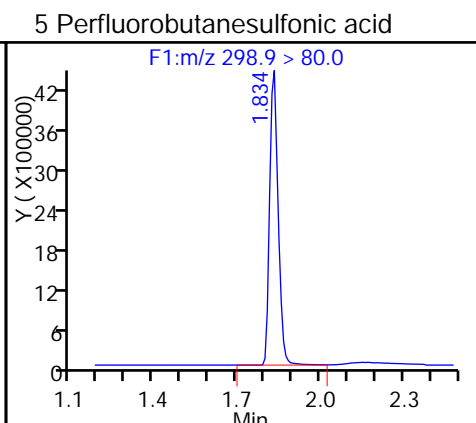
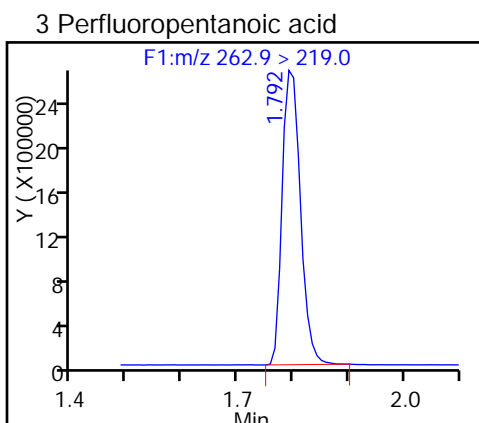
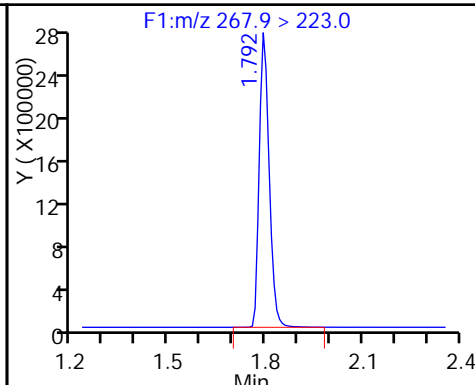
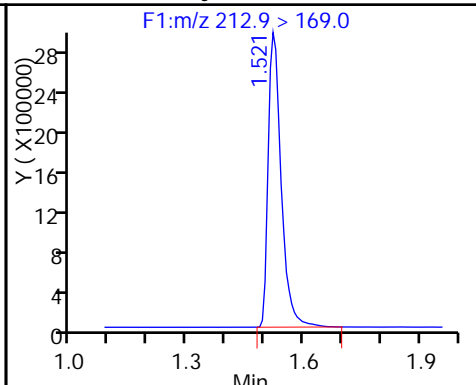
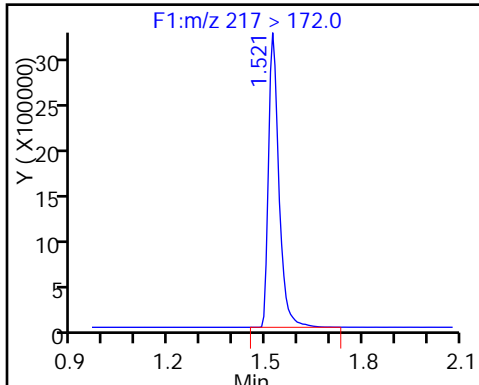
Method: PFC_A8_Full

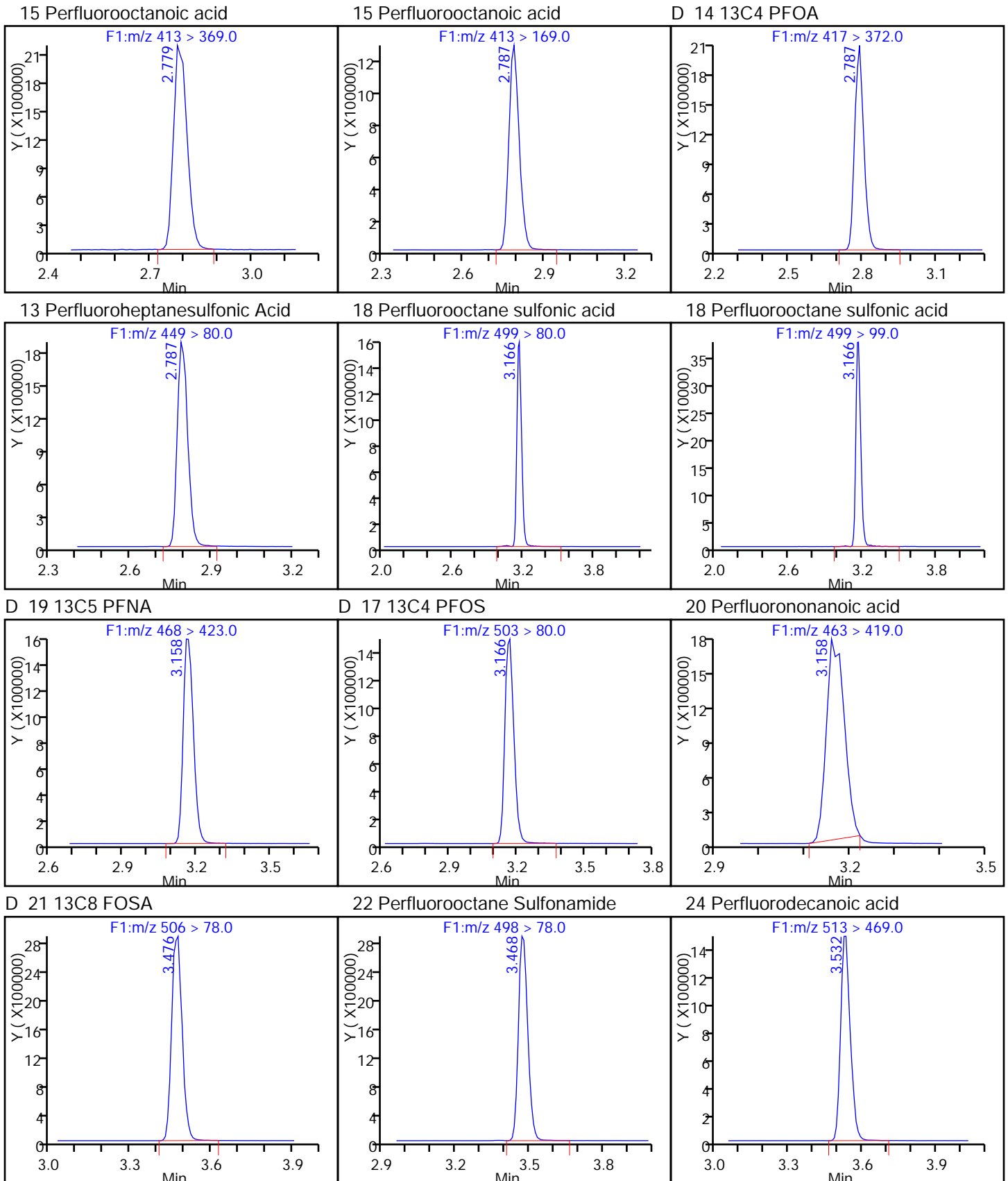
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

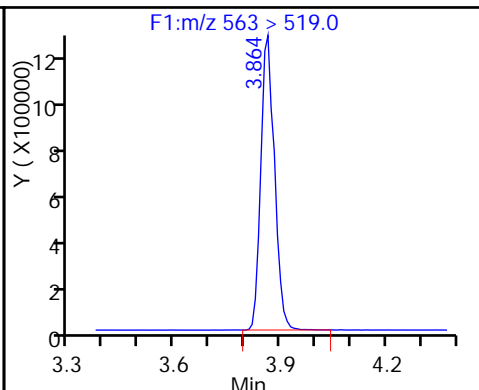
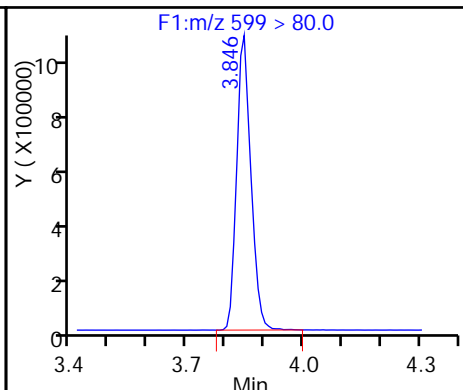
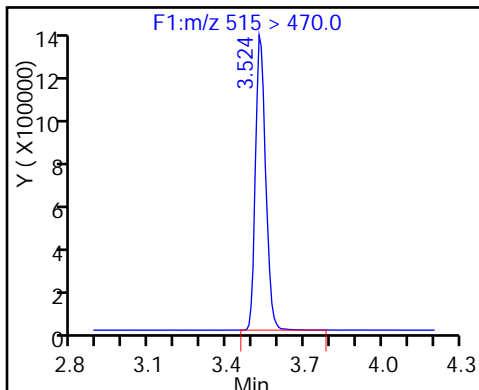




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

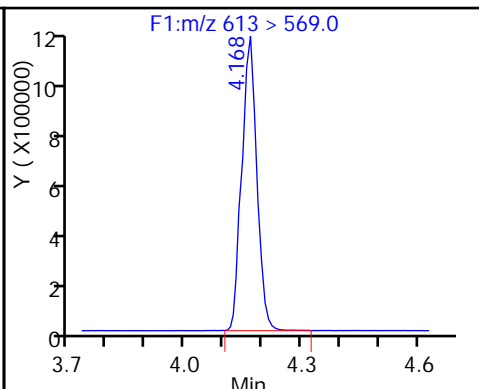
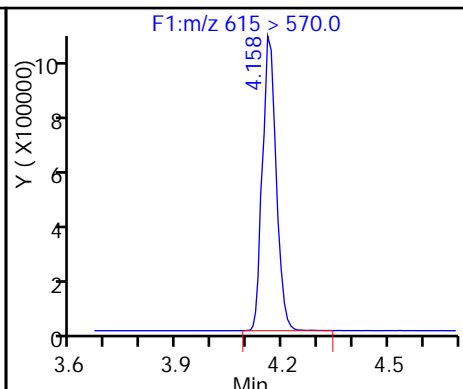
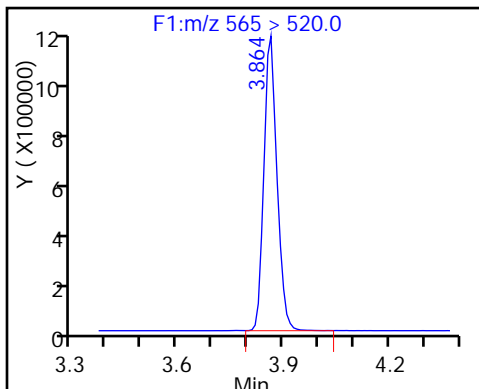
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

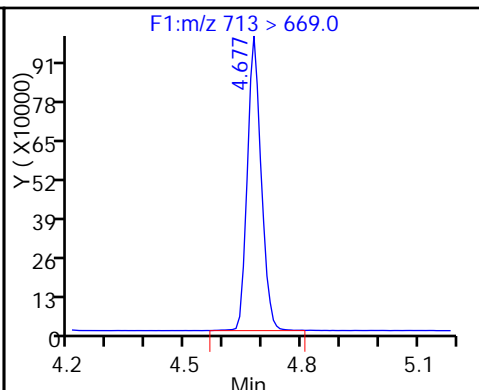
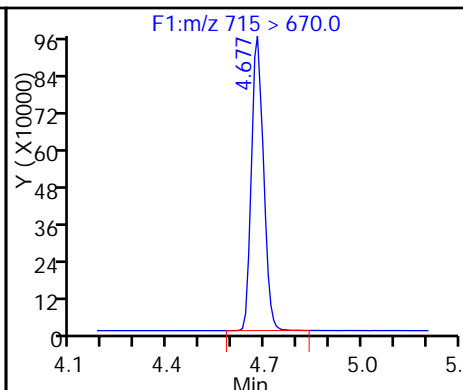
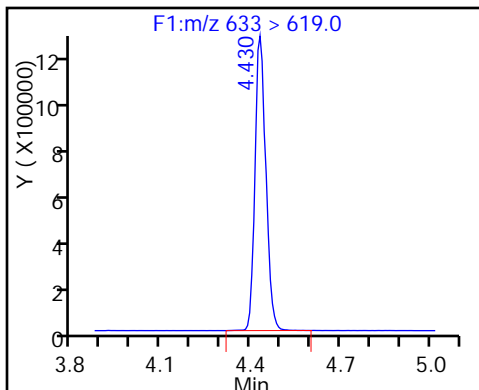
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

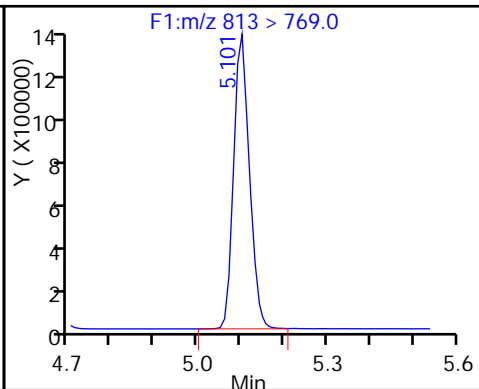
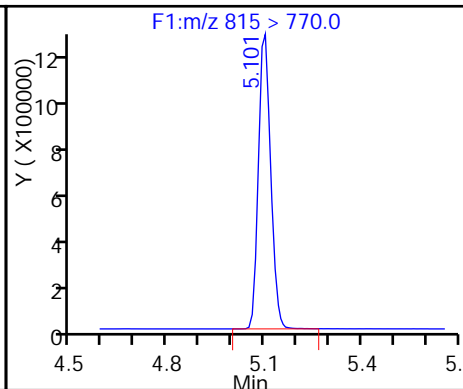
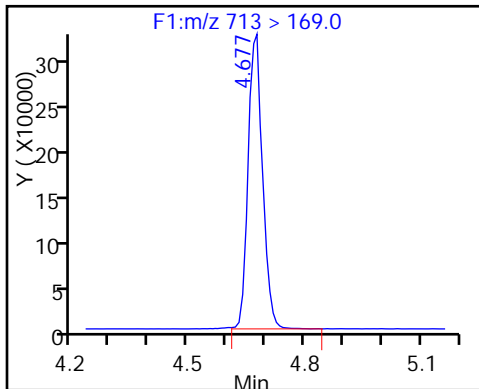
33 Perfluorotetradecanoic acid



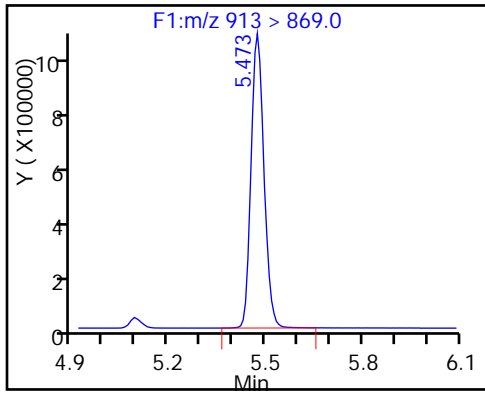
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Lab Sample ID: CCV 320-123794/2 Calibration Date: 08/23/2016 11:39
 Instrument ID: A8 Calib Start Date: 08/22/2016 16:24
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/22/2016 18:23
 Lab File ID: 22AUG2016D_086_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8640	0.9196		21.3	20.0	6.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.052		20.6	20.0	2.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.596		18.2	17.7	2.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9796		20.3	20.0	1.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.024		19.6	20.0	-2.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.042		17.0	18.2	-6.4	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.095		21.7	20.0	8.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.259		20.6	19.0	8.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.116		18.7	18.6	0.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.013		20.3	20.0	1.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9565		20.8	20.0	3.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	0.9879		20.1	20.0	0.4	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.6098		19.2	19.3	-0.5	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.021		18.8	20.0	-5.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	1.003		20.2	20.0	1.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9871		20.1	20.0	0.7	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8601		20.5	20.0	2.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.028		16.6	20.0	-17.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9575		16.9	20.0	-15.6	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_086_p1_e1.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Aug-2016 11:39:00 ALS Bottle#: 0 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub2
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 16:59:39 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK009

First Level Reviewer: chandrasenas Date: 30-Aug-2016 16:59:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA										
217 > 172.0	1.507	1.522	-0.015		7634853	56.3		113	555099	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	2808451	21.3		106	30609	
D 4 13C5-PFPeA										
267.9 > 223.0	1.774	1.797	-0.023		5739281	53.3		107	875325	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.774	1.797	-0.023	1.000	2415431	20.6		103	44378	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	3557879	18.2		103		
298.9 > 99.0	1.817	1.837	-0.020	1.000	1503418		2.37(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		5321421	54.9		110	537705	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	2085038	20.3		101	186336	
12 Perfluoroheptanoic acid										
363 > 319.0	2.387	2.427	-0.040	1.000	2132130	19.6		97.9	38303	
D 11 13C4-PFHpA										
367 > 322.0	2.387	2.430	-0.043		5203912	53.9		108	345454	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.402	2.446	-0.044	1.000	2390554	17.0		93.6		
D 10 18O2 PFHxS										
403 > 84.0	2.402	2.446	-0.044		5962504	53.0		112	425315	
15 Perfluorooctanoic acid										
413 > 369.0	2.744	2.798	-0.054	1.000	2449644	21.7		109	16635	
413 > 169.0	2.744	2.798	-0.054	1.000	1373930		1.78(0.90-1.10)		103247	
D 14 13C4 PFOA										
417 > 372.0	2.744	2.798	-0.054		5591833	58.1		116	439563	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.753	2.807	-0.054	1.000	2137111	20.6		108		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.099	3.110	-0.010	1.000	1845828	18.7		101	142686	
499 > 99.0	3.011	3.110	-0.098	0.972	403737		4.57(0.90-1.10)		7410	
D 19 13C5 PFNA										
468 > 423.0	3.116	3.177	-0.061		4621838	58.1		116	273743	
D 17 13C4 PFOS										
503 > 80.0	3.116	3.177	-0.061		4260714	51.9		109	390866	
20 Perfluorononanoic acid										
463 > 419.0	3.124	3.183	-0.059	1.000	1872802	20.3		101	85511	
D 21 13C8 FOSA										
506 > 78.0	3.454	3.474	-0.020		8184648	54.6		109	398206	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.454	3.475	-0.021	1.000	3131529	20.8		104	200894	
24 Perfluorodecanoic acid										
513 > 469.0	3.469	3.546	-0.077	1.000	1642291	20.1		100	151352	
D 23 13C2 PFDA										
515 > 470.0	3.469	3.546	-0.077		4156054	57.1		114	399194	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.786	3.863	-0.077	1.000	1048044	19.2		99.5		
28 Perfluoroundecanoic acid										
563 > 519.0	3.804	3.880	-0.076	1.000	1333814	18.8		94.2	65641	
D 27 13C2 PFUnA										
565 > 520.0	3.804	3.880	-0.076		3264592	58.7		117	325261	
D 30 13C2 PFDoA										
615 > 570.0	4.093	4.183	-0.090		2983793	56.1		112	237315	
29 Perfluorododecanoic acid										
613 > 569.0	4.093	4.185	-0.092	1.000	1196986	20.2		101	78044	
31 Perfluorotridecanoic acid										
633 > 619.0	4.368	4.452	-0.084	1.000	1178097	20.1		101	111873	
D 32 13C2-PFTeDA										
715 > 670.0	4.602	4.697	-0.095		2891200	61.3		123	532270	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.602	4.701	-0.099	1.000	1026522	20.5		102	53298	
713 > 169.0	4.602	4.701	-0.099	1.000	329506		3.12(0.00-0.00)		132296	
D 34 13C2-PFHxDA										
815 > 770.0	5.018	5.125	-0.107		3240369	49.2		98.4	449190	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.018	5.127	-0.109	1.000	1226787	16.6		82.9	6539	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.371	5.509	-0.138	1.000	1142841	16.9		84.4	9122	

Reagents:

LCPFC-L4_00022

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_086_p1_e1.d

Injection Date: 23-Aug-2016 11:39:00

Instrument ID: A8

Lims ID: CCV L4

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

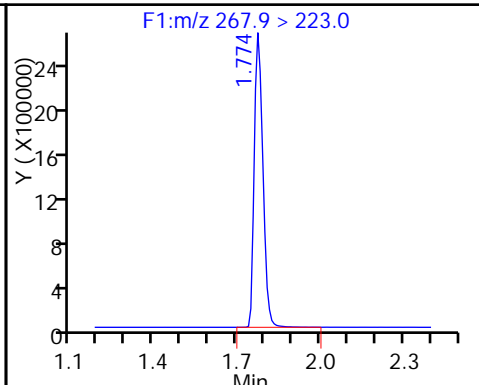
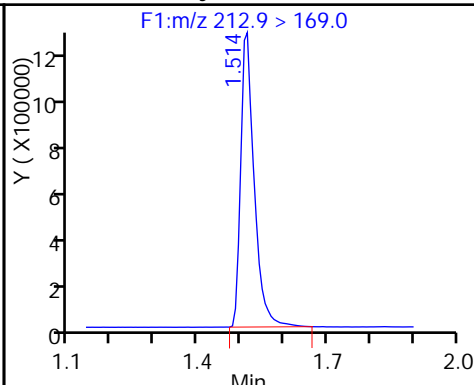
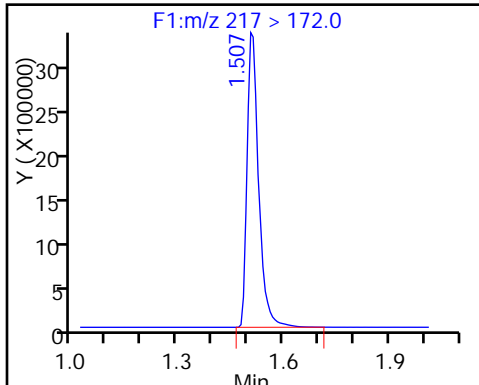
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

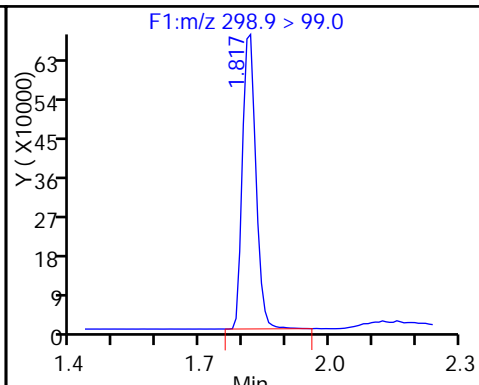
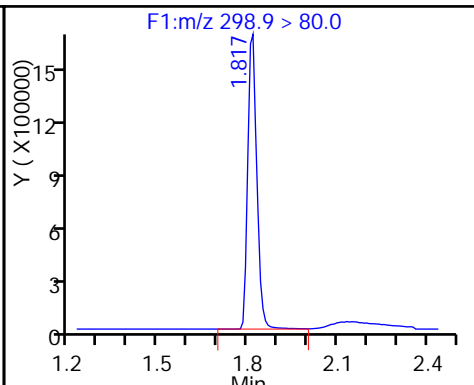
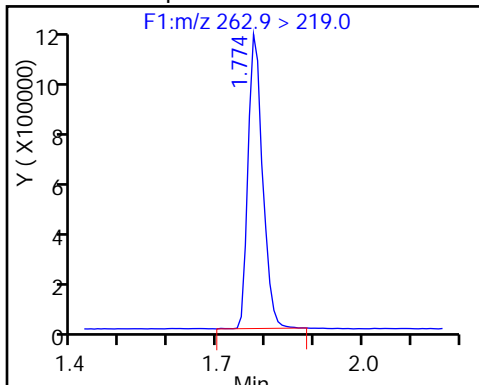
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

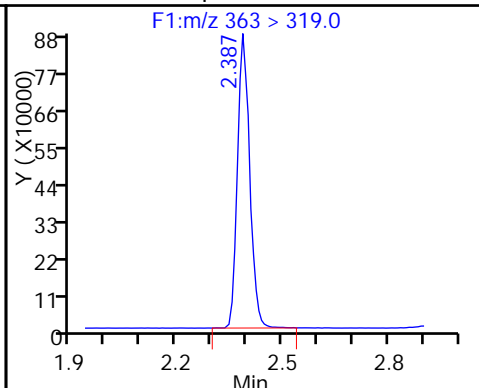
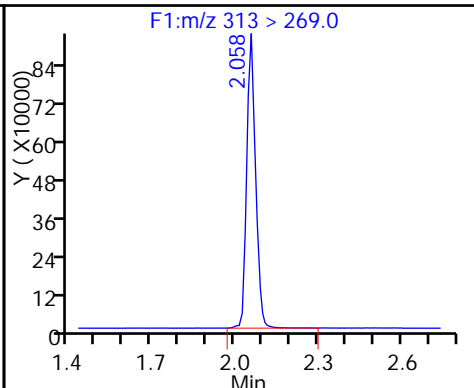
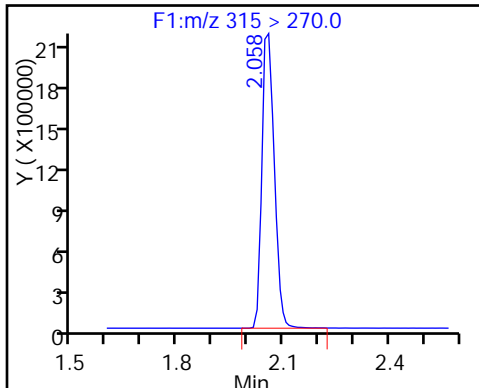
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

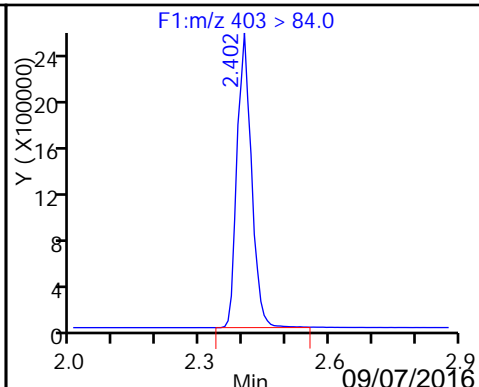
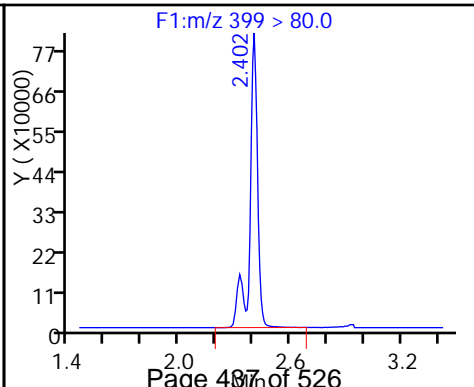
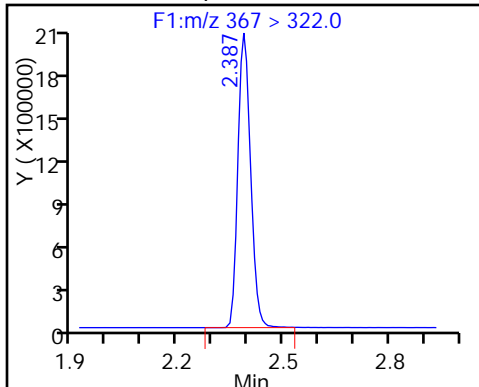
12 Perfluoroheptanoic acid

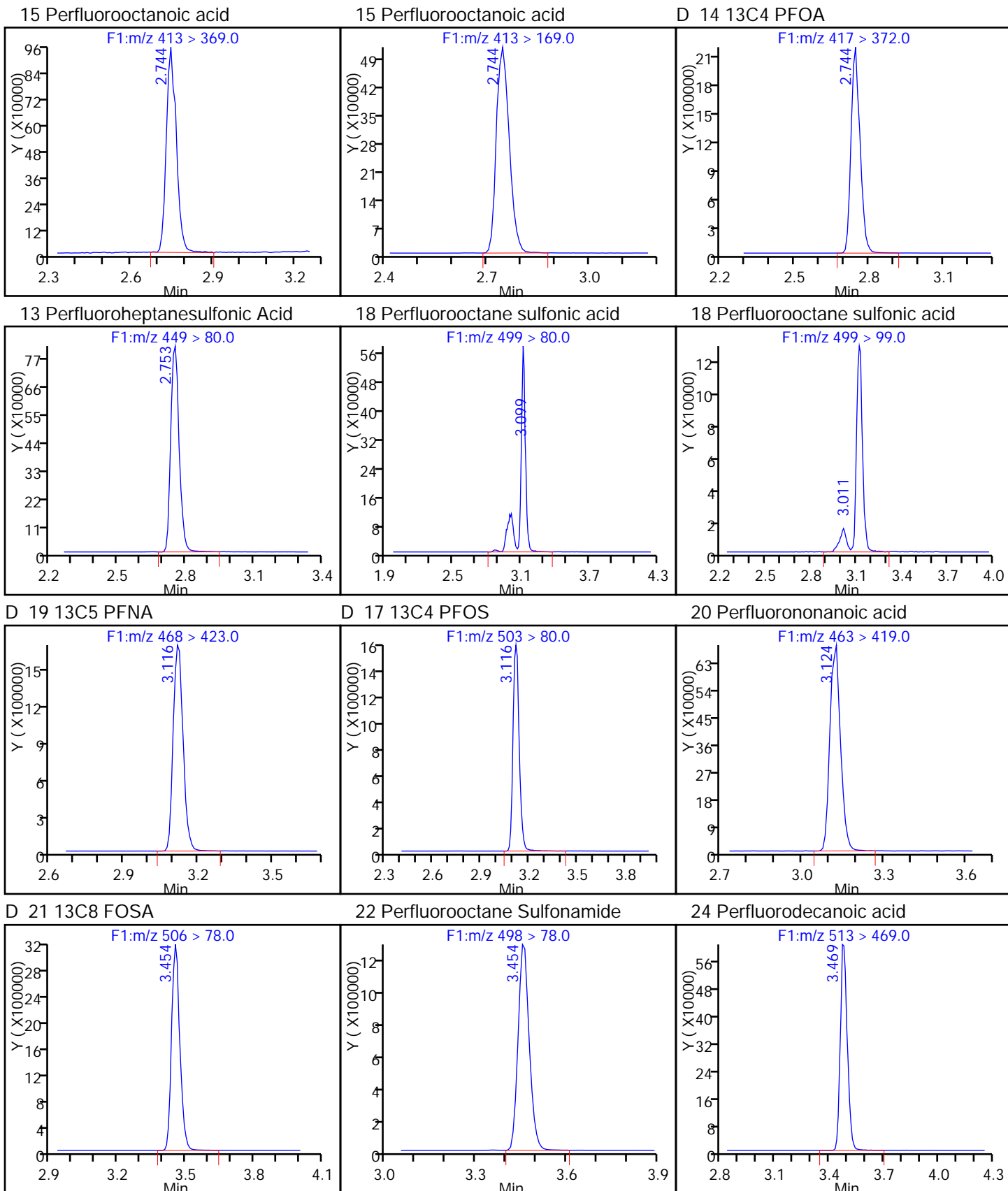


D 11 13C4-PFHpA

9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

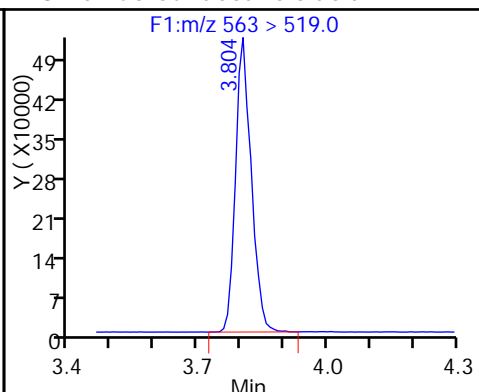
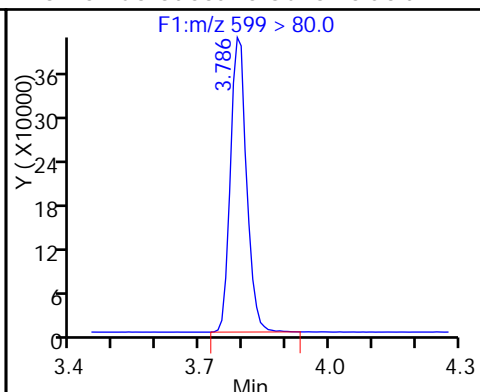
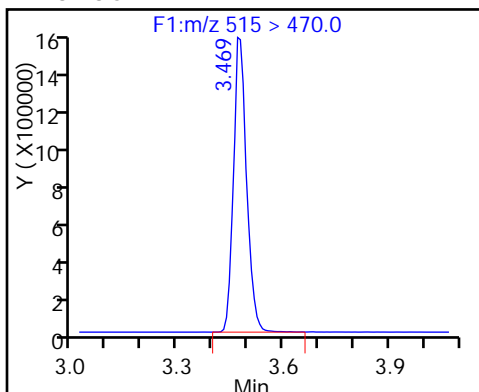




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

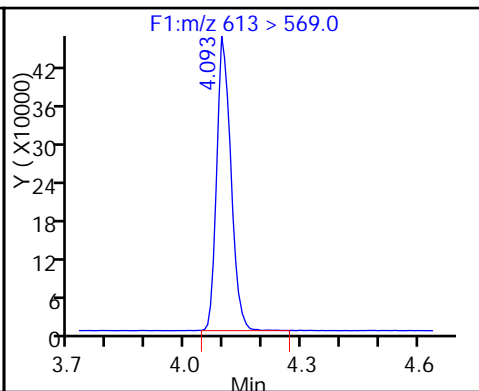
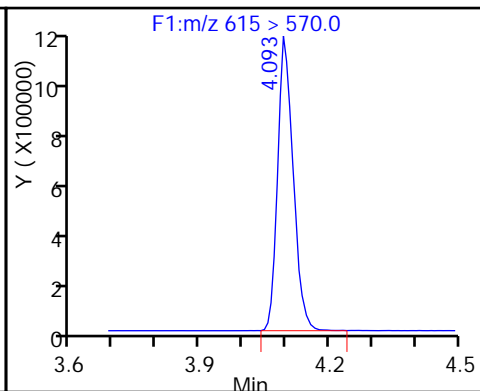
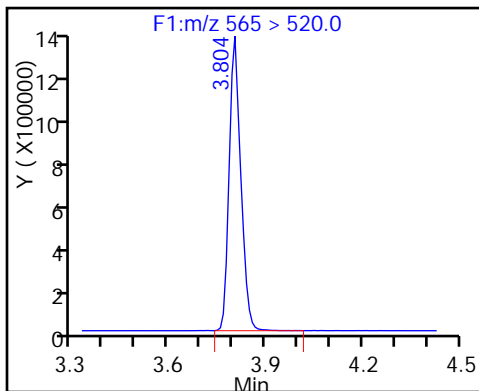
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

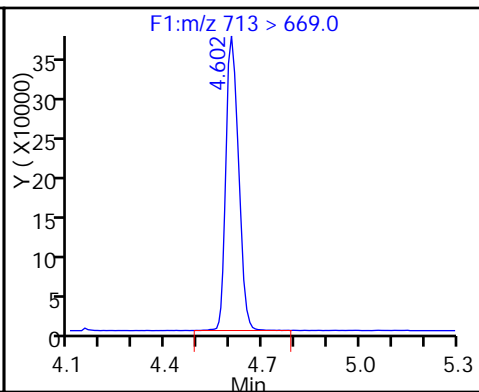
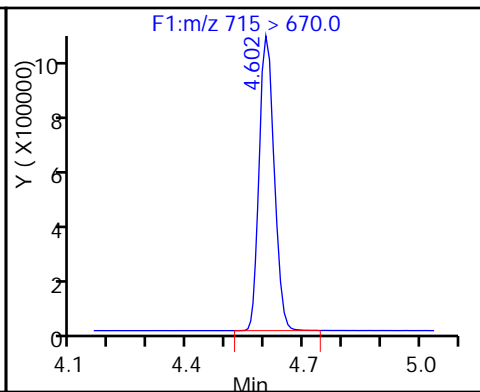
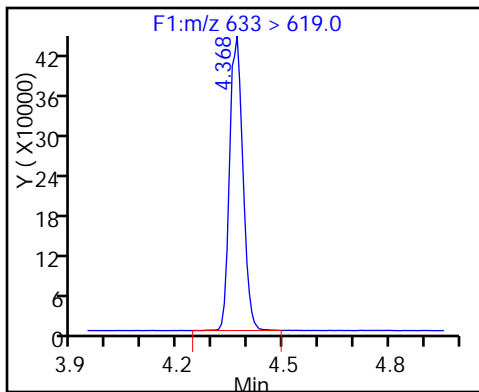
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

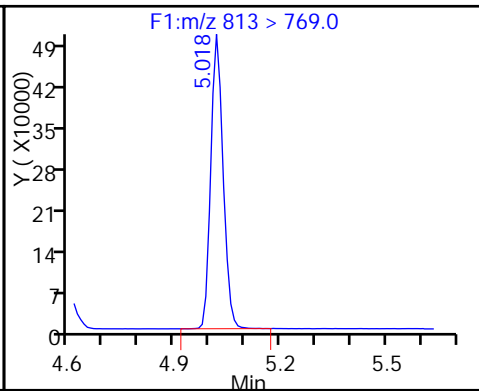
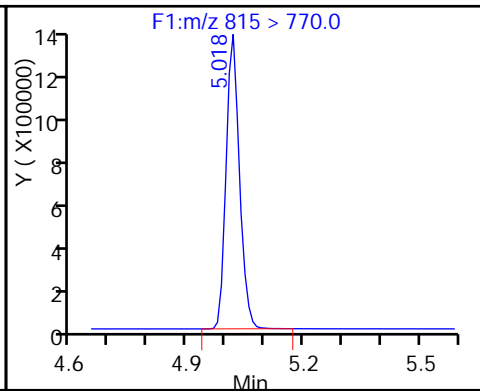
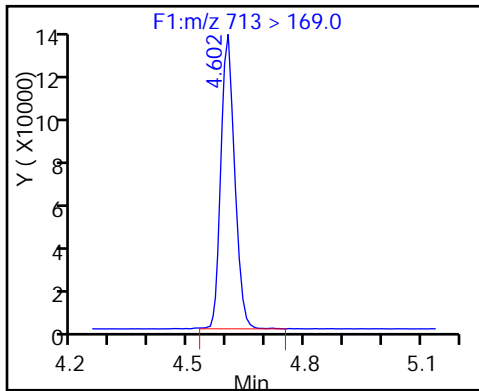
33 Perfluorotetradecanoic acid



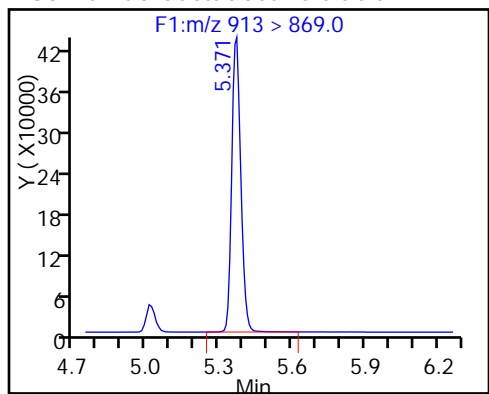
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Lab Sample ID: CCV 320-123794/14 Calibration Date: 08/23/2016 13:09
 Instrument ID: A8 Calib Start Date: 08/22/2016 16:24
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/22/2016 18:23
 Lab File ID: 22AUG2016D_052_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8640	0.8932		51.7	50.0	3.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.010		49.4	50.0	-1.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.664		47.4	44.2	7.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9517		49.2	50.0	-1.5	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.004		48.0	50.0	-4.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.048		42.8	45.5	-5.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.250		51.0	47.6	7.2	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.068		53.4	50.0	6.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.089		45.6	46.4	-1.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.029		51.5	50.0	3.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9405		51.1	50.0	2.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	0.9748		49.5	50.0	-0.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.5992		47.1	48.2	-2.2	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.008		46.5	50.0	-7.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	0.9434		47.6	50.0	-4.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9784		49.9	50.0	-0.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8785		52.3	50.0	4.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.111		44.8	50.0	-10.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9925		43.1	50.0	-13.7	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_052_p1_e1.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Aug-2016 13:09:00 ALS Bottle#: 0 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub2
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:58:33 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:44:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.514	1.522	-0.008		7245722	53.4		107	612658	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	6471687	51.7		103	53928	
D 4 13C5-PFPeA										
267.9 > 223.0	1.783	1.797	-0.014		5710306	53.0		106	663561	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.783	1.797	-0.014	1.000	5768677	49.4		98.8	106794	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	8823466	47.4		107		
298.9 > 99.0	1.817	1.837	-0.020	1.000	3754488		2.35(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		5076500	52.3		105	721047	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	4831132	49.2		98.5	265213	
12 Perfluoroheptanoic acid										
363 > 319.0	2.389	2.427	-0.038	1.000	5023530	48.0		96.0	84177	
D 11 13C4-PFHpA										
367 > 322.0	2.389	2.430	-0.041		5002891	51.9		104	329303	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.405	2.446	-0.041	1.000	5719027	42.8		94.1		
D 10 18O2 PFHxS										
403 > 84.0	2.405	2.446	-0.041		5673632	50.5		107	316209	
15 Perfluorooctanoic acid										
413 > 369.0	2.751	2.798	-0.047	1.000	5628746	53.4		107	34549	
413 > 169.0	2.751	2.798	-0.047	1.000	3202628		1.76(0.90-1.10)		123658	
D 14 13C4 PFOA										
417 > 372.0	2.743	2.798	-0.055		5270507	54.7		109	374703	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.751	2.807	-0.056	1.000	5070470	51.0		107		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.097	3.110	-0.012	1.000	4309224	45.6		98.2	36681	
499 > 99.0	3.009	3.110	-0.100	0.972	954640		4.51(0.90-1.10)		11450	
D 19 13C5 PFNA										
468 > 423.0	3.122	3.177	-0.055		4381625	55.1		110	273705	
D 17 13C4 PFOS										
503 > 80.0	3.114	3.177	-0.063		4074602	49.6		104	226335	
20 Perfluorononanoic acid										
463 > 419.0	3.122	3.183	-0.061	1.000	4510199	51.5		103	149154	
D 21 13C8 FOSA										
506 > 78.0	3.460	3.474	-0.014		7637535	50.9		102	354907	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.460	3.475	-0.015	1.000	7182708	51.1		102	275066	
24 Perfluorodecanoic acid										
513 > 469.0	3.475	3.546	-0.071	1.000	3763934	49.5		99.1	344109	
D 23 13C2 PFDA										
515 > 470.0	3.475	3.546	-0.071		3861218	53.1		106	315046	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.792	3.863	-0.071	1.000	2461996	47.1		97.8		
28 Perfluoroundecanoic acid										
563 > 519.0	3.810	3.880	-0.070	1.000	2990855	46.5		93.0	150479	
D 27 13C2 PFUnA										
565 > 520.0	3.810	3.880	-0.070		2967406	53.3		107	227560	
D 30 13C2 PFDoA										
615 > 570.0	4.098	4.183	-0.085		2850105	53.6		107	213468	
29 Perfluorododecanoic acid										
613 > 569.0	4.106	4.185	-0.079	1.000	2688827	47.6		95.2	165506	
31 Perfluorotridecanoic acid										
633 > 619.0	4.366	4.452	-0.086	1.000	2788493	49.9		99.9	222656	
D 32 13C2-PFTeDA										
715 > 670.0	4.610	4.697	-0.087		2770577	58.7		117	338099	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.610	4.701	-0.091	1.000	2503706	52.3		105	90578	
713 > 169.0	4.600	4.701	-0.101	0.998	771675		3.24(0.00-0.00)		145542	
D 34 13C2-PFHxDA										
815 > 770.0	5.016	5.125	-0.109		3641052	55.3		111	475826	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.016	5.127	-0.111	1.000	3166028	44.8		89.6	21340	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.369	5.509	-0.140	1.000	2828750	43.1		86.3	22191	

Reagents:

LCPFC-L5_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_052_p1_e1.d

Injection Date: 23-Aug-2016 13:09:00

Instrument ID: A8

Lims ID: CCV L5

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

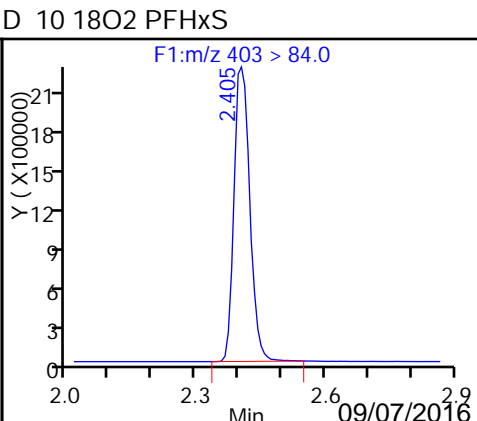
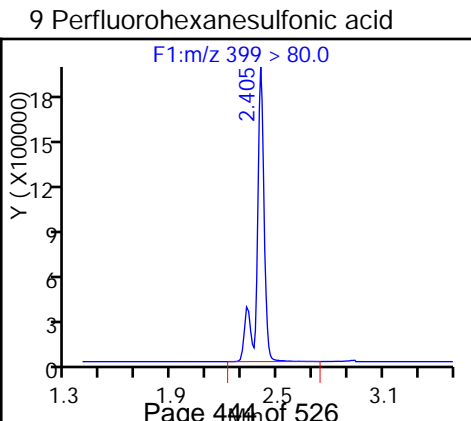
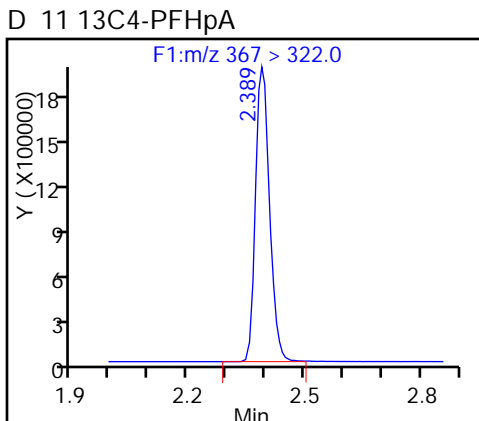
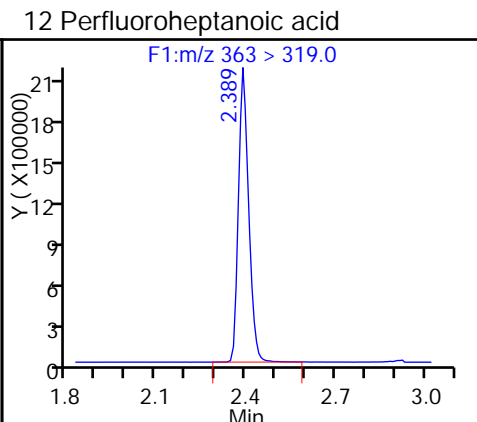
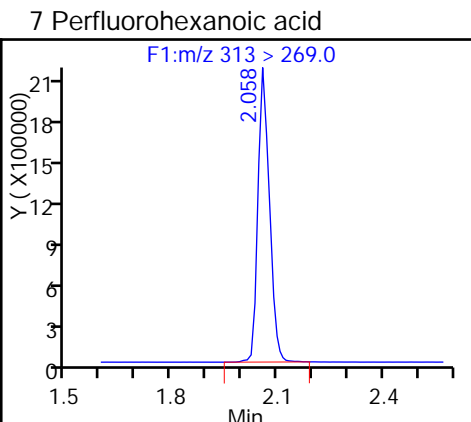
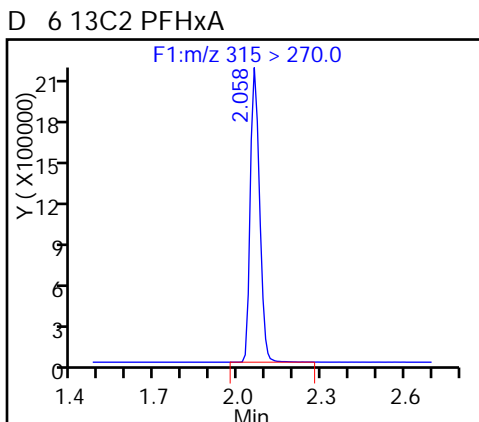
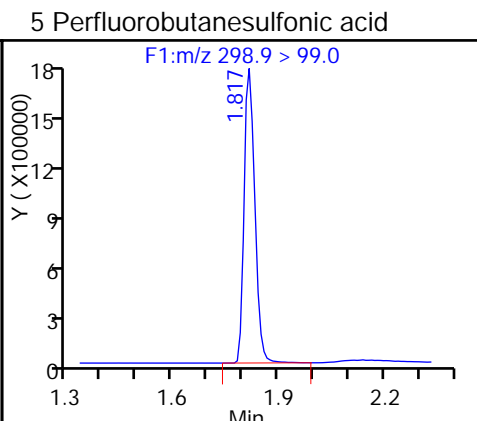
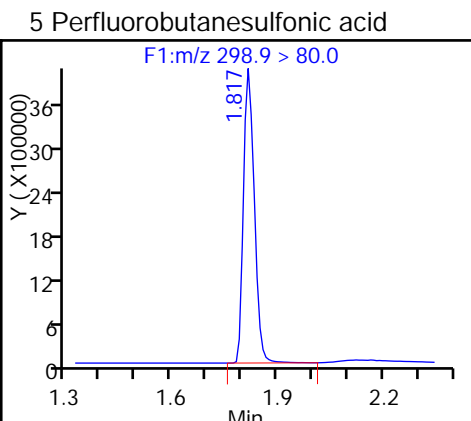
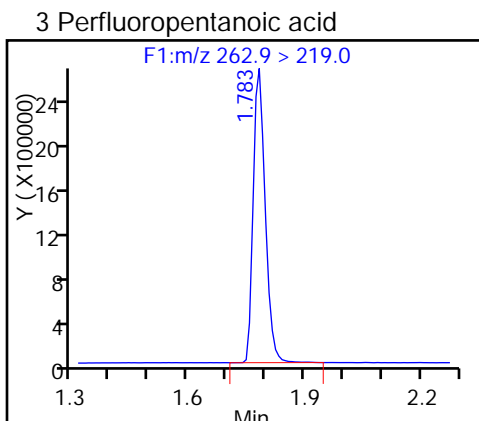
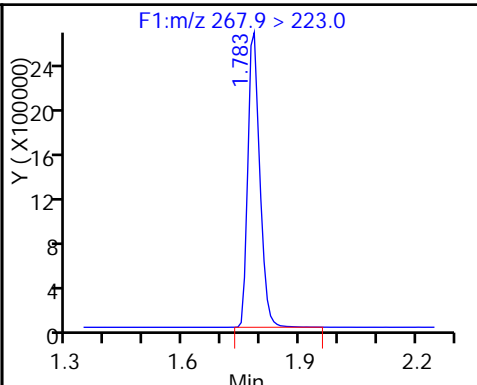
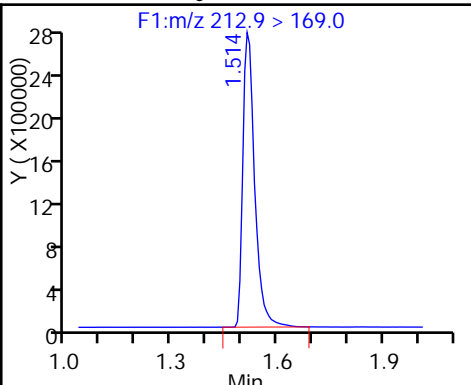
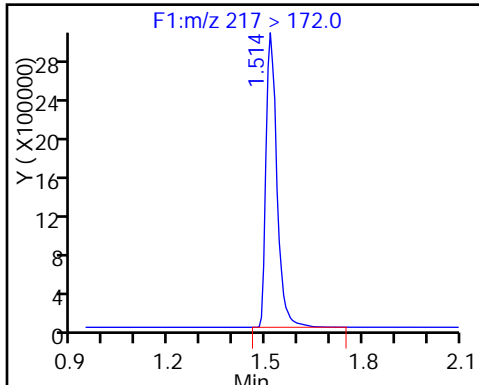
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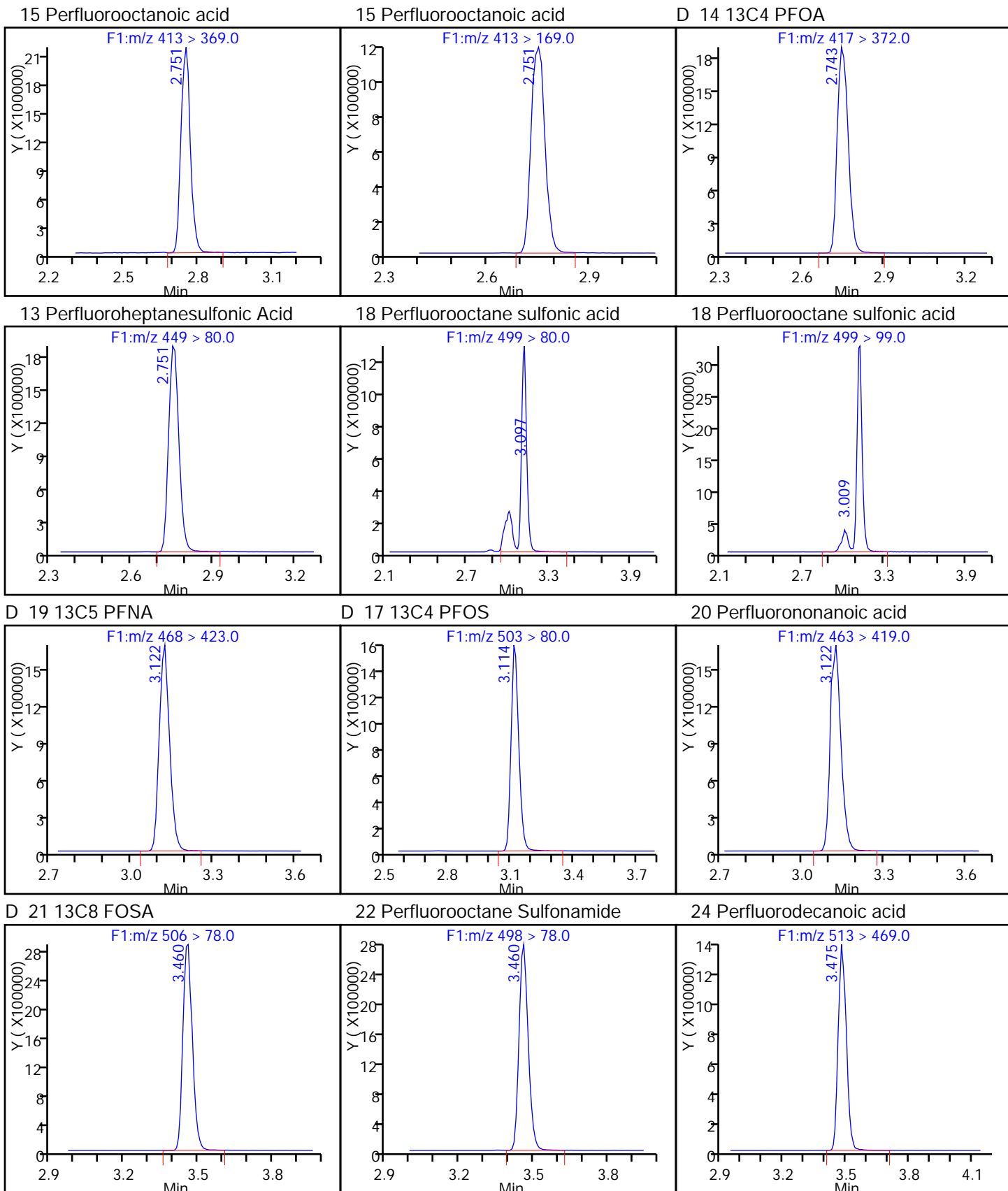
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

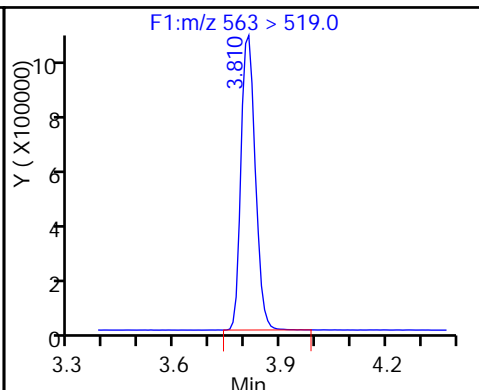
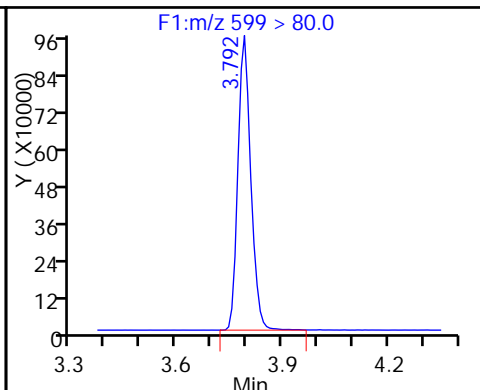
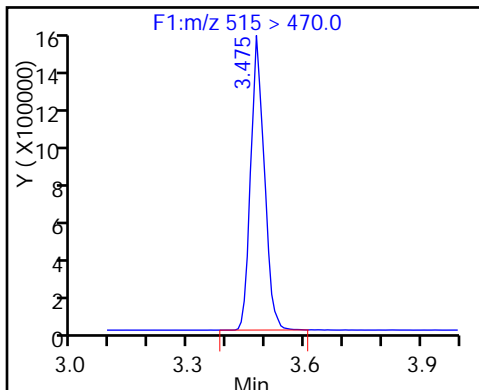




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

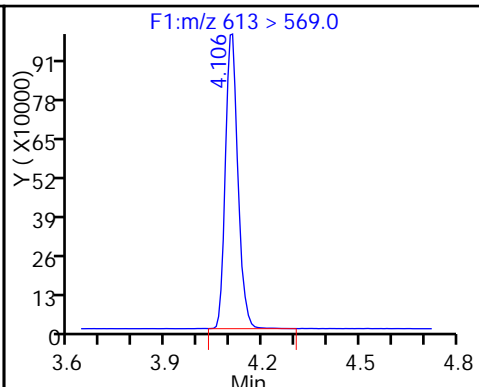
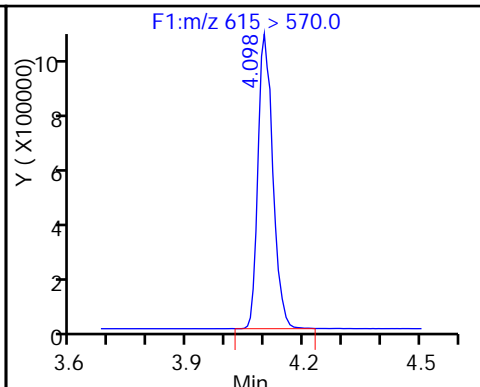
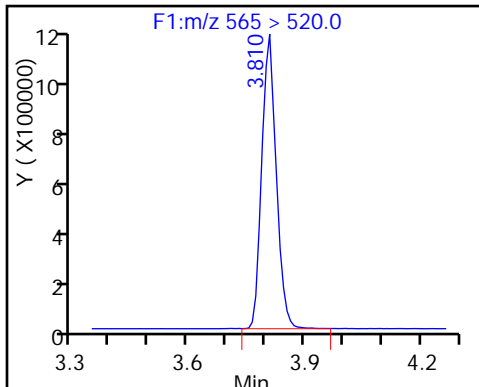
28 Perfluoroundecanoic acid



D 27 13C2 PFuNA

D 30 13C2 PFDaA

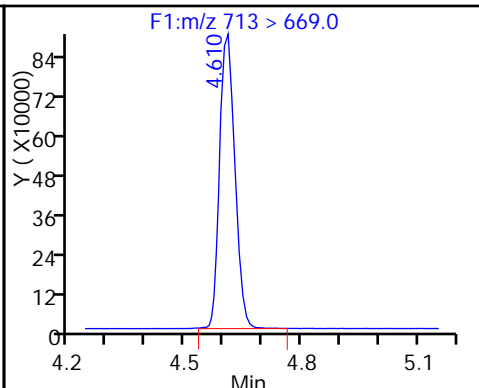
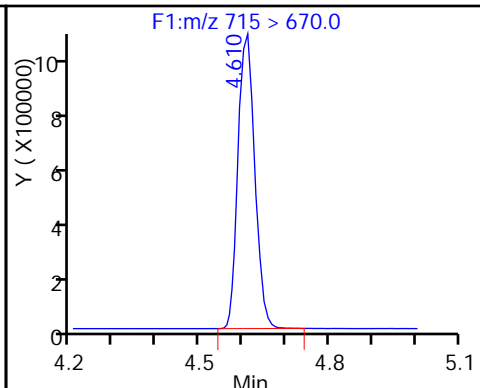
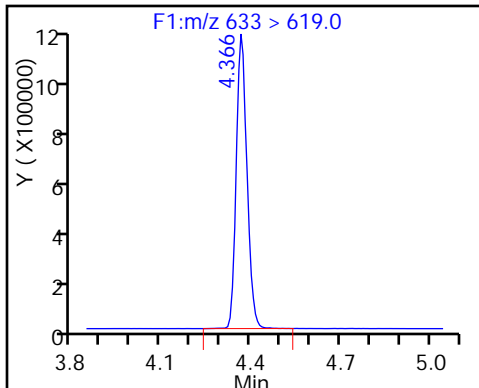
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

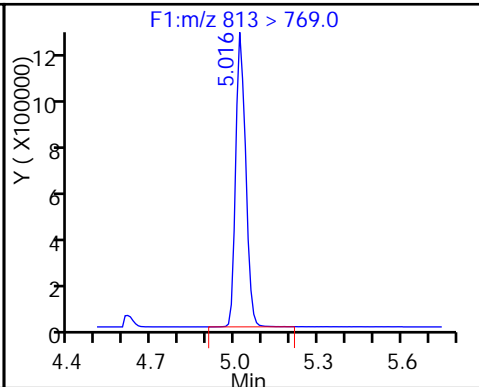
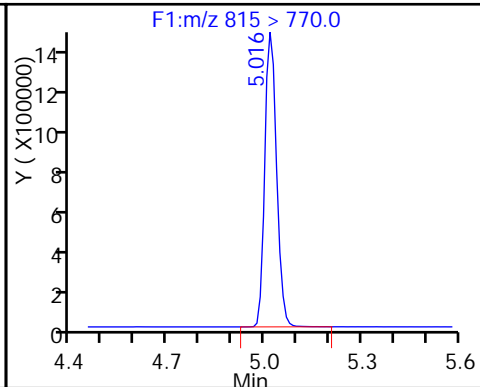
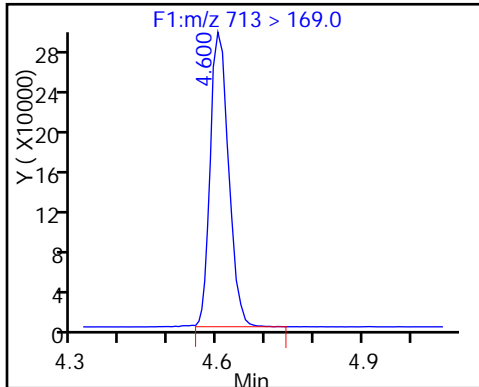
33 Perfluorotetradecanoic acid



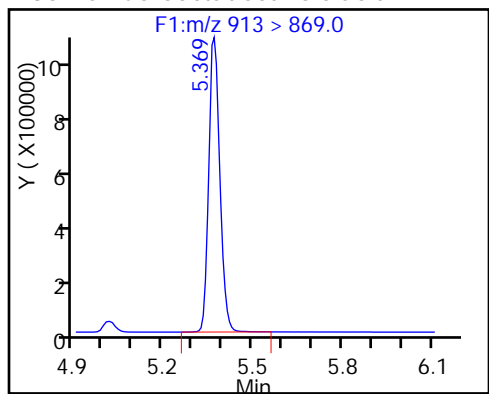
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Lab Sample ID: CCV 320-123794/28 Calibration Date: 08/23/2016 14:54
 Instrument ID: A8 Calib Start Date: 08/22/2016 16:24
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/22/2016 18:23
 Lab File ID: 22AUG2016D_066_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8640	0.9122		21.1	20.0	5.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.056		20.7	20.0	3.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.615		18.4	17.7	4.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9724		20.1	20.0	0.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.027		19.6	20.0	-1.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.028		16.8	18.2	-7.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.234		20.2	19.0	5.8	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.118		22.2	20.0	10.9	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.068		17.9	18.6	-3.7	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.058		21.2	20.0	5.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9325		20.3	20.0	1.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	0.9731		19.8	20.0	-1.1	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.5963		18.8	19.3	-2.7	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.025		18.9	20.0	-5.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	0.9518		19.2	20.0	-3.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9596		19.6	20.0	-2.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8813		21.0	20.0	4.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.000		16.1	20.0	-19.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9362		16.5	20.0	-17.4	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_066_p1_e1.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Aug-2016 14:54:00 ALS Bottle#: 0 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub2
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 18:09:10 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:57:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.515	1.522	-0.007		7719259	56.9		114	654227	
1 Perfluorobutyric acid										
212.9 > 169.0	1.515	1.524	-0.009	1.000	2816563	21.1		106	31018	
D 4 13C5-PFPeA										
267.9 > 223.0	1.775	1.797	-0.022		5928796	55.0		110	943484	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.775	1.797	-0.022	1.000	2503989	20.7		103	49440	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.818	1.837	-0.019	1.000	3691464	18.4		104		
298.9 > 99.0	1.818	1.837	-0.019	1.000	1510279		2.44(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.059	2.089	-0.030		5133453	52.9		106	549406	
7 Perfluorohexanoic acid										
313 > 269.0	2.059	2.090	-0.031	1.000	1996702	20.1		101	163922	
12 Perfluoroheptanoic acid										
363 > 319.0	2.387	2.427	-0.040	1.000	2168232	19.6		98.2	39801	
D 11 13C4-PFHpA										
367 > 322.0	2.387	2.430	-0.043		5280121	54.7		109	426632	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.402	2.446	-0.044	1.000	2419376	16.8		92.4		
D 10 18O2 PFHxS										
403 > 84.0	2.402	2.446	-0.044		6113632	54.4		115	362061	
15 Perfluorooctanoic acid										
413 > 369.0	2.748	2.798	-0.050	1.000	2457499	22.2		111	15768	
413 > 169.0	2.748	2.798	-0.050	1.000	1363394		1.80(0.90-1.10)		106610	
D 14 13C4 PFOA										
417 > 372.0	2.748	2.798	-0.050		5496192	57.1		114	384657	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.748	2.807	-0.059	1.000	2192649	20.2		106		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.007	3.110	-0.102	1.000	1849605	17.9		96.3	12972	
499 > 99.0	3.015	3.110	-0.094	1.003	414649		4.46(0.90-1.10)		5191	
D 19 13C5 PFNA										
468 > 423.0	3.112	3.177	-0.065		4638170	58.3		117	276860	
D 17 13C4 PFOS										
503 > 80.0	3.112	3.177	-0.065		4460356	54.3		114	435214	
20 Perfluorononanoic acid										
463 > 419.0	3.120	3.183	-0.063	1.000	1962346	21.2		106	88505	
D 21 13C8 FOSA										
506 > 78.0	3.456	3.474	-0.018		8156089	54.4		109	308542	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.456	3.475	-0.019	1.000	3042352	20.3		101	222586	
24 Perfluorodecanoic acid										
513 > 469.0	3.472	3.546	-0.074	1.000	1648543	19.8		98.9	123820	
D 23 13C2 PFDA										
515 > 470.0	3.480	3.546	-0.066		4235174	58.2		116	487087	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.787	3.863	-0.076	1.000	1072727	18.8		97.3		
28 Perfluoroundecanoic acid										
563 > 519.0	3.805	3.880	-0.075	1.000	1329577	18.9		94.5	71715	
D 27 13C2 PFUnA										
565 > 520.0	3.805	3.880	-0.075		3243874	58.3		117	241776	
D 30 13C2 PFDoA										
615 > 570.0	4.101	4.183	-0.082		3040193	57.2		114	295872	
29 Perfluorododecanoic acid										
613 > 569.0	4.101	4.185	-0.084	1.000	1157410	19.2		96.1	76679	
31 Perfluorotridecanoic acid										
633 > 619.0	4.369	4.452	-0.083	1.000	1166964	19.6		97.9	85449	
D 32 13C2-PFTeDA										
715 > 670.0	4.603	4.697	-0.094		2874110	60.9		122	527611	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.603	4.701	-0.098	1.000	1071753	21.0		105	54970	
713 > 169.0	4.603	4.701	-0.098	1.000	341969		3.13(0.00-0.00)		133049	
D 34 13C2-PFHxDA										
815 > 770.0	5.017	5.125	-0.108		3325407	50.5		101	438177	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.017	5.127	-0.110	1.000	1216401	16.1		80.6	7819	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.371	5.509	-0.138	1.000	1138428	16.5		82.6	11373	

Reagents:

LCPFC-L4_00022

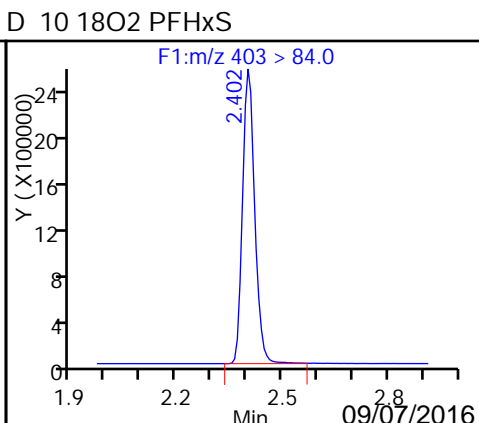
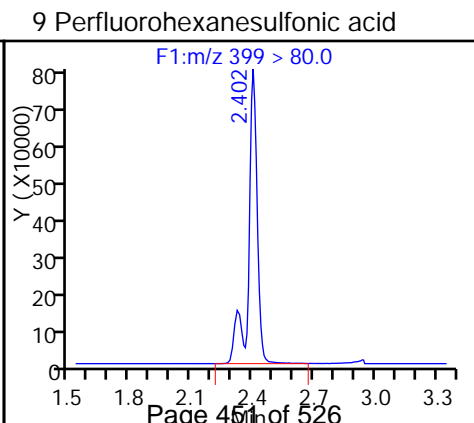
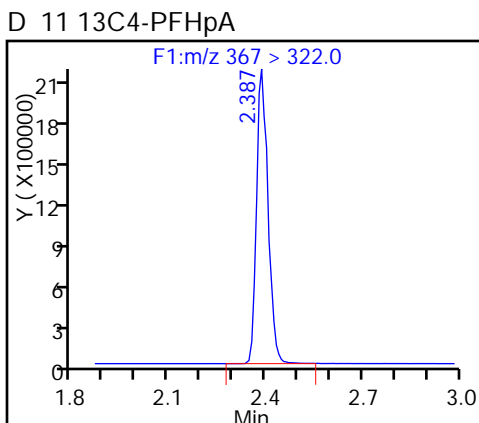
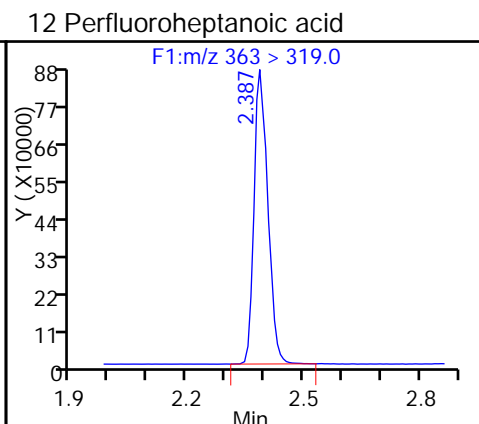
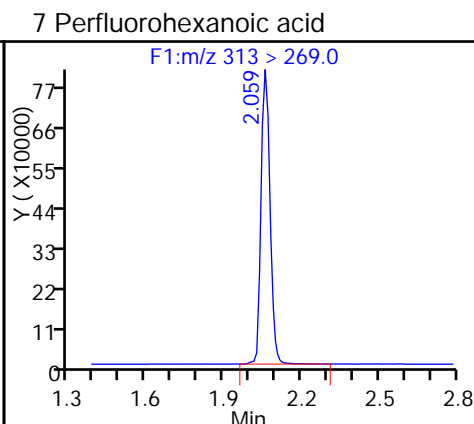
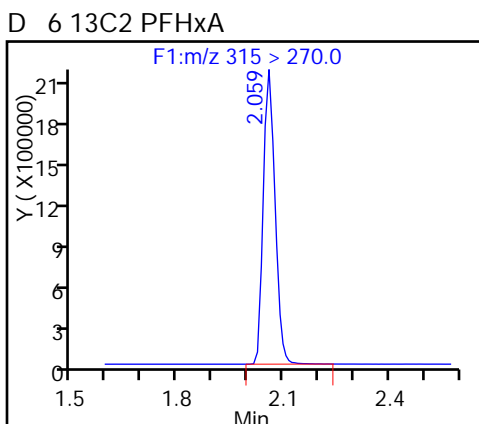
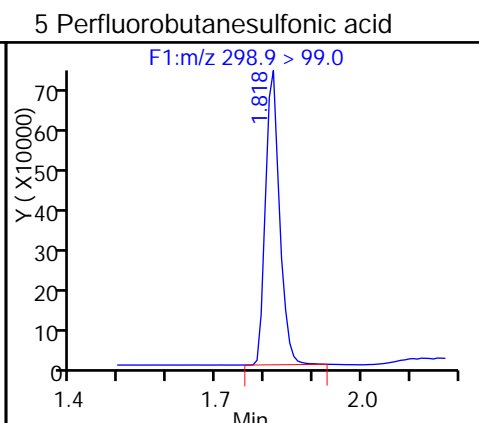
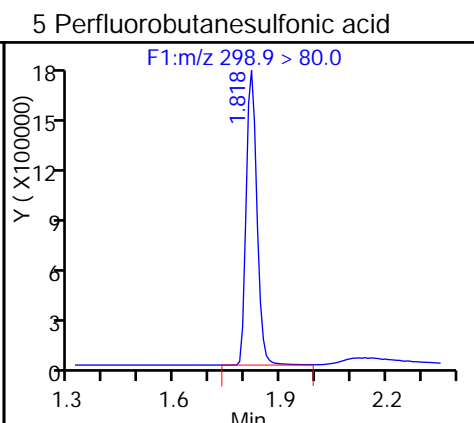
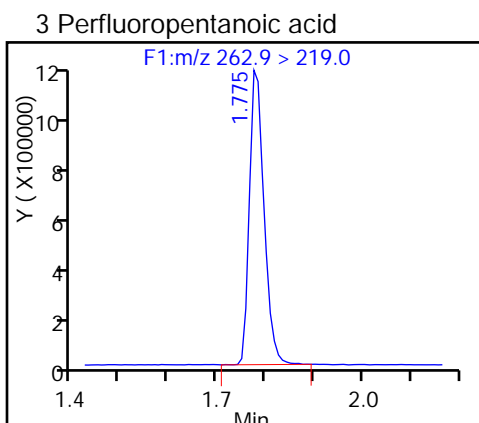
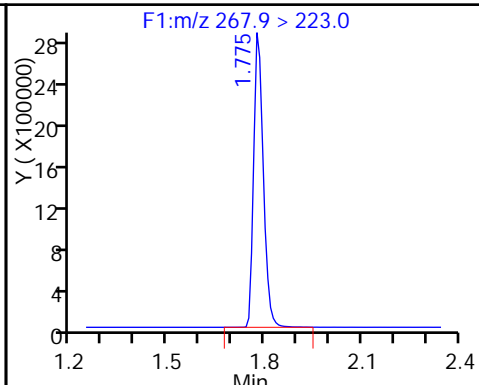
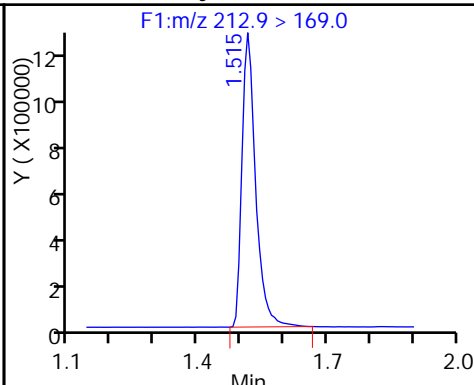
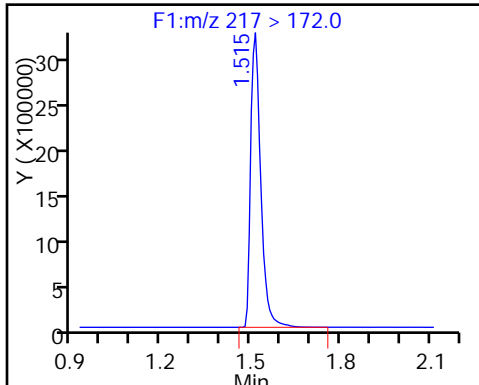
Amount Added: 1.00

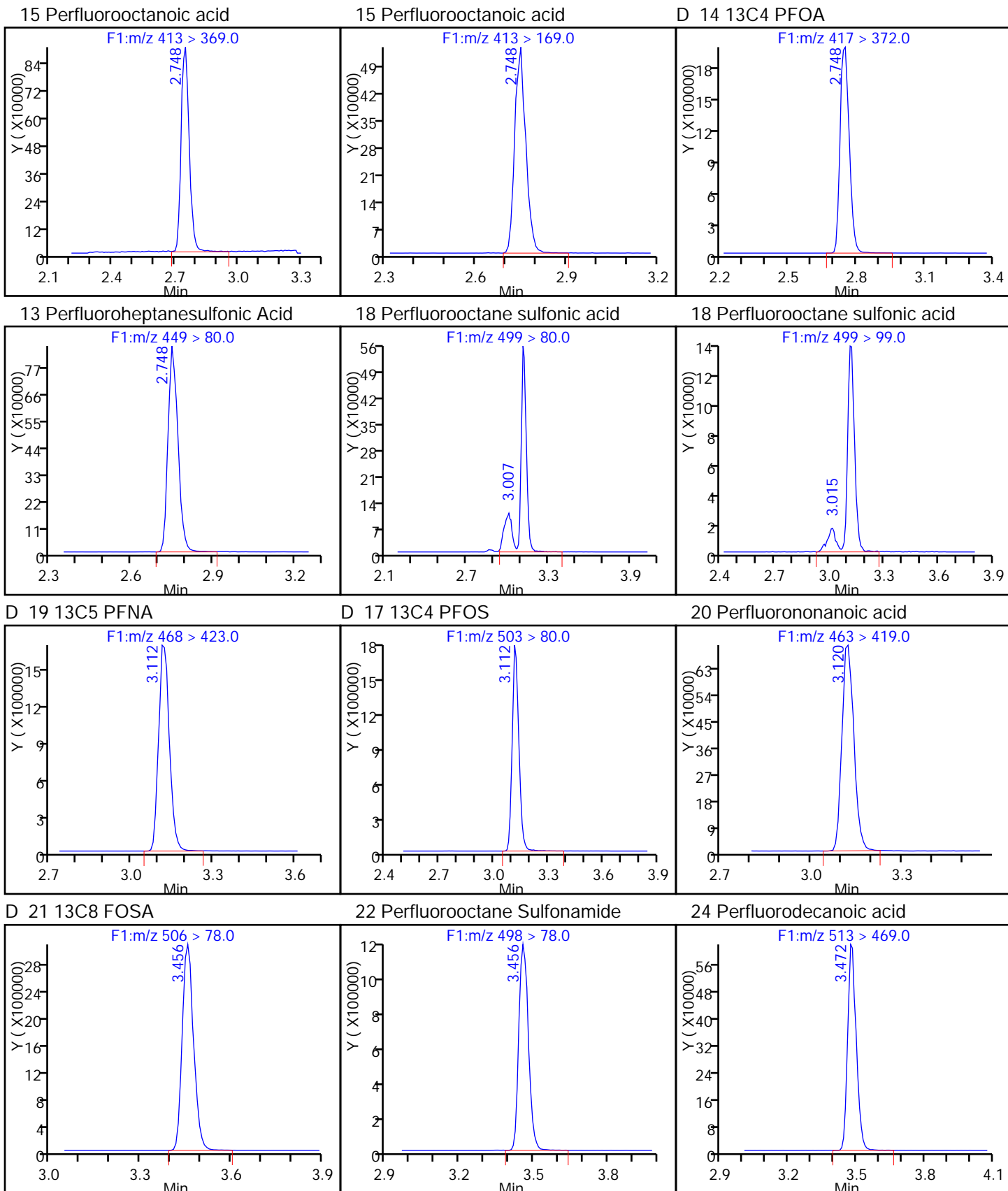
Units: mL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

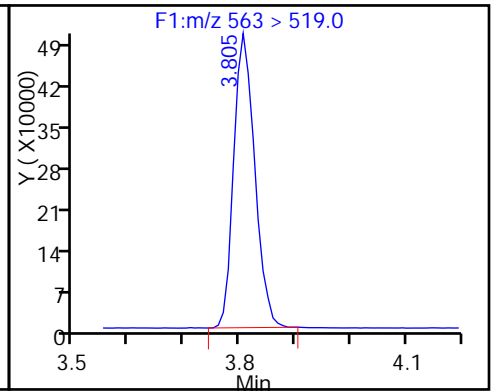
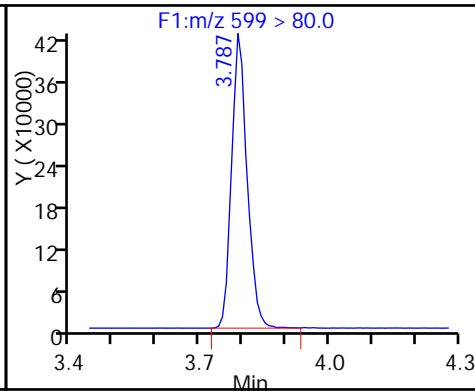
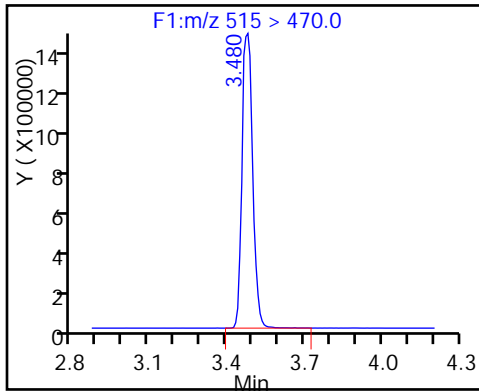




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

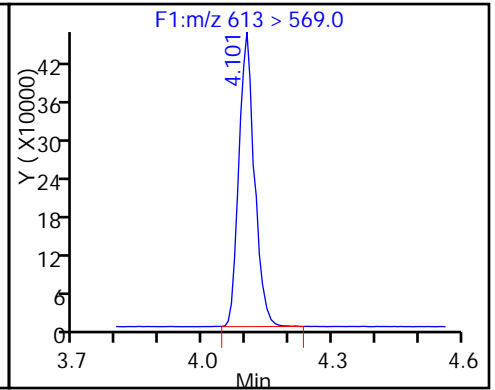
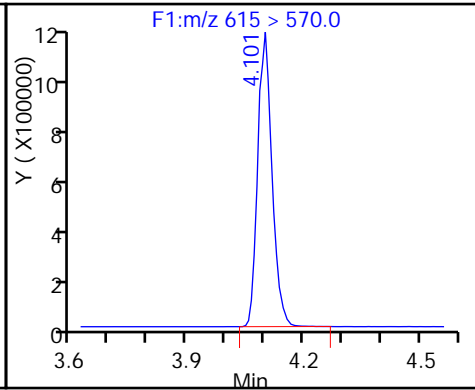
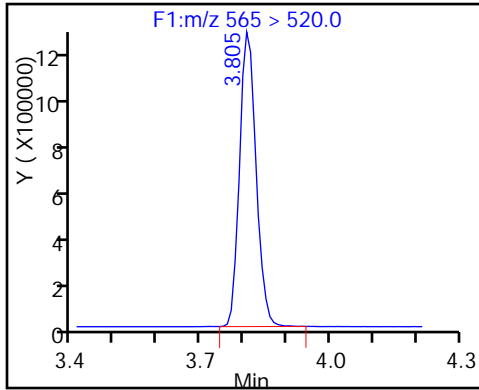
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

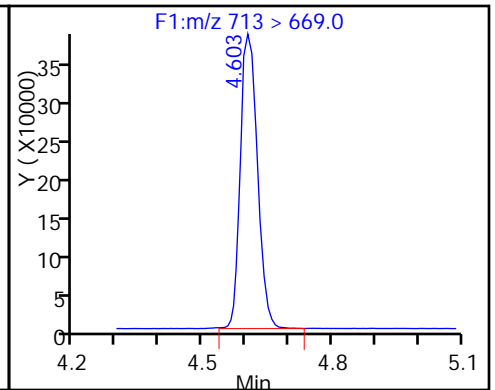
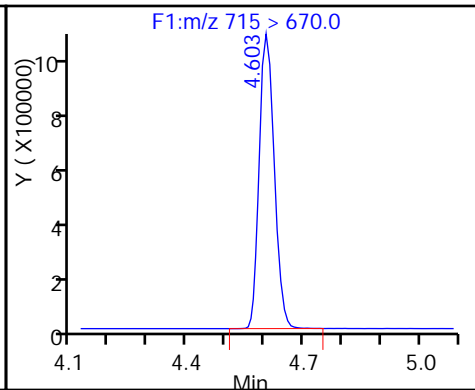
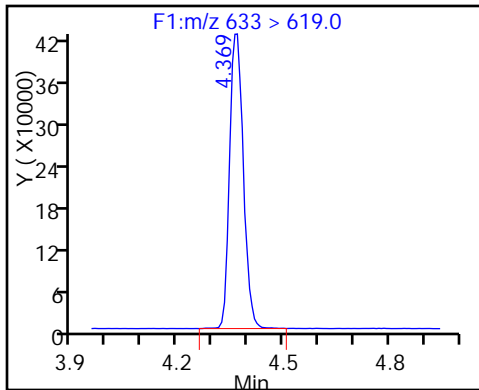
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

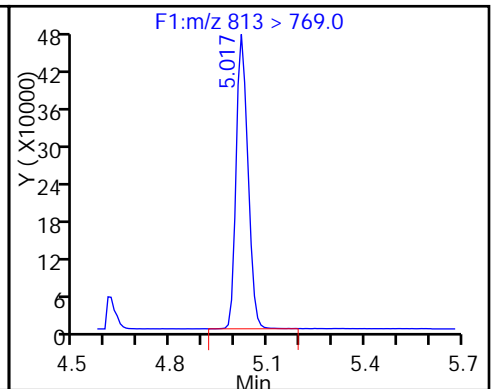
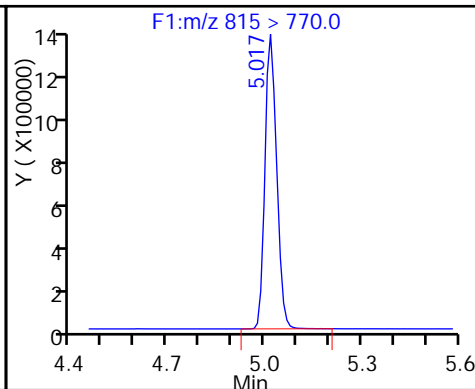
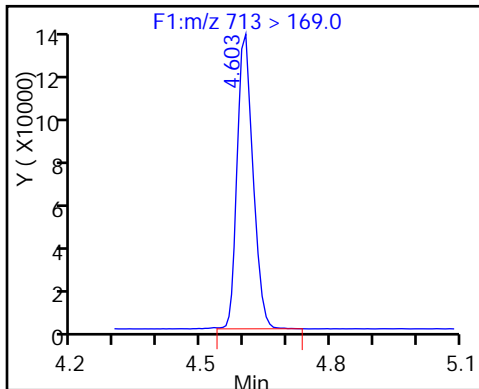
33 Perfluorotetradecanoic acid



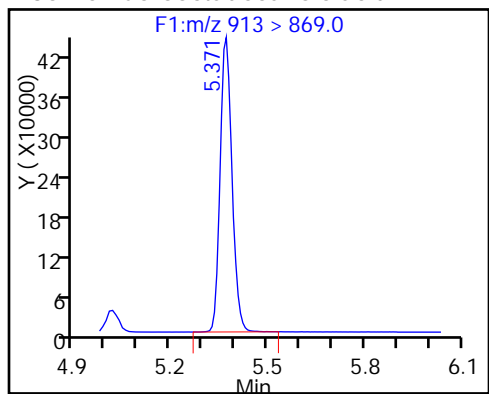
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Lab Sample ID: CCV 320-123794/40 Calibration Date: 08/23/2016 16:24
 Instrument ID: A8 Calib Start Date: 08/22/2016 16:24
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/22/2016 18:23
 Lab File ID: 22AUG2016D_078_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8640	0.9184		53.1	50.0	6.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.009		49.3	50.0	-1.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.660		47.3	44.2	6.9	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9409		48.7	50.0	-2.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.040		49.7	50.0	-0.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.044		42.7	45.5	-6.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.232		50.3	47.6	5.6	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.022		51.1	50.0	2.1	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.072		44.9	46.4	-3.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.060		53.1	50.0	6.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9848		53.5	50.0	7.0	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	1.011		51.4	50.0	2.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.5874		46.2	48.2	-4.2	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.041		48.0	50.0	-4.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	0.9812		49.5	50.0	-0.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9789		50.0	50.0	-0.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8976		53.4	50.0	6.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.102		44.4	50.0	-11.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9370		40.8	50.0	-18.5	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_078_p1_e1.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Aug-2016 16:24:00 ALS Bottle#: 0 Worklist Smp#: 40
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Sublist: chrom-PFC_A8_Full*sub2
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:55:14 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 31-Aug-2016 09:54:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA										
217 > 172.0	1.507	1.522	-0.015		7108296	52.4		105	515709	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	6527906	53.1		106	62896	
D 4 13C5-PFPeA										
267.9 > 223.0	1.775	1.797	-0.022		5716401	53.0		106	632347	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.775	1.797	-0.022	1.000	5765403	49.3		98.6	121202	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.809	1.837	-0.028	1.000	8854929	47.3		107		
298.9 > 99.0	1.809	1.837	-0.028	1.000	3955599		2.24(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.047	2.089	-0.042		5056496	52.1		104	675626	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	4757606	48.7		97.4	281081	
12 Perfluoroheptanoic acid										
363 > 319.0	2.380	2.427	-0.047	1.000	5075696	49.7		99.5	99498	
D 11 13C4-PFHpA										
367 > 322.0	2.380	2.430	-0.050		4879459	50.6		101	508797	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.403	2.446	-0.043	1.000	5730747	42.7		93.8		
D 10 18O2 PFHxS										
403 > 84.0	2.403	2.446	-0.043		5709103	50.8		107	465353	
15 Perfluorooctanoic acid										
413 > 369.0	2.741	2.798	-0.057	1.000	5317053	51.1		102	36941	
413 > 169.0	2.741	2.798	-0.057	1.000	3149630		1.69(0.90-1.10)		208547	
D 14 13C4 PFOA										
417 > 372.0	2.741	2.798	-0.057		5202092	54.0		108	386579	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.741	2.807	-0.066	1.000	5270510	50.3		106		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.088	3.110	-0.021	1.000	4472685	44.9		96.7	31171	
499 > 99.0	3.008	3.110	-0.101	0.974	1015297		4.41(0.90-1.10)		12357	
D 19 13C5 PFNA										
468 > 423.0	3.113	3.177	-0.064		4224573	53.1		106	312356	
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		4296589	52.4		110	275937	
20 Perfluorononanoic acid										
463 > 419.0	3.113	3.183	-0.070	1.000	4478932	53.1		106	167331	
D 21 13C8 FOSA										
506 > 78.0	3.451	3.474	-0.023		7702685	51.4		103	372328	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.451	3.475	-0.024	1.000	7585564	53.5		107	320933	
24 Perfluorodecanoic acid										
513 > 469.0	3.467	3.546	-0.079	1.000	3831695	51.4		103	288820	
D 23 13C2 PFDA										
515 > 470.0	3.467	3.546	-0.079		3788760	52.1		104	678652	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.782	3.863	-0.081	1.000	2544917	46.2		95.8		
28 Perfluoroundecanoic acid										
563 > 519.0	3.800	3.880	-0.080	1.000	2953137	48.0		96.0	134398	
D 27 13C2 PFUnA										
565 > 520.0	3.800	3.880	-0.080		2837388	51.0		102	197144	
D 30 13C2 PFDoA										
615 > 570.0	4.098	4.183	-0.085		2835936	53.3		107	271595	
29 Perfluorododecanoic acid										
613 > 569.0	4.098	4.185	-0.087	1.000	2782691	49.5		99.1	136781	
31 Perfluorotridecanoic acid										
633 > 619.0	4.365	4.452	-0.087	1.000	2776122	50.0		99.9	267810	
D 32 13C2-PFTeDA										
715 > 670.0	4.596	4.697	-0.101		2721360	57.7		115	471089	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.596	4.701	-0.105	1.000	2545394	53.4		107	112780	
713 > 169.0	4.596	4.701	-0.105	1.000	798562		3.19(0.00-0.00)		156271	
D 34 13C2-PFHxDA										
815 > 770.0	5.010	5.125	-0.115		3502676	53.2		106	473954	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.010	5.127	-0.117	1.000	3126516	44.4		88.9	23001	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.363	5.509	-0.146	1.000	2657396	40.8		81.5	22971	

Reagents:

LCPFC-L5_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_078_p1_e1.d

Injection Date: 23-Aug-2016 16:24:00

Instrument ID: A8

Lims ID: CCV L5

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 40

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

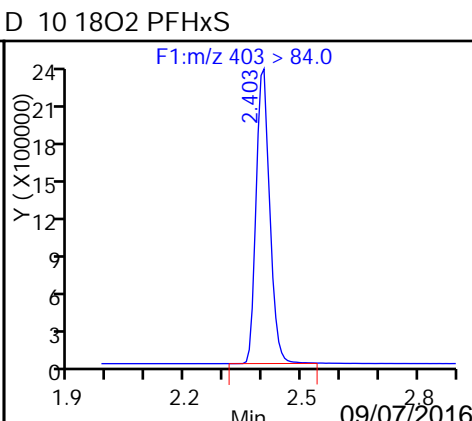
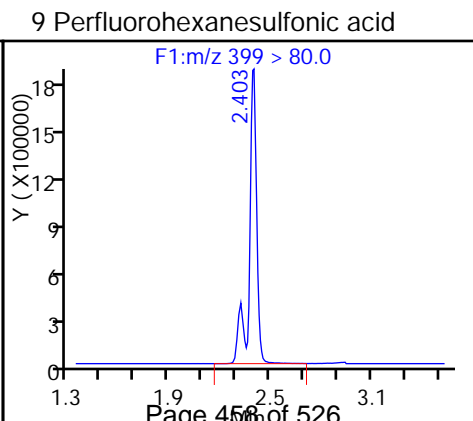
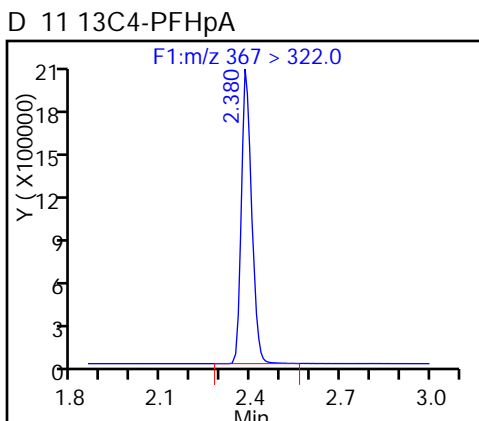
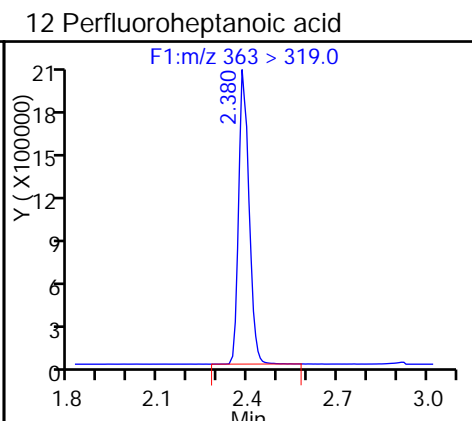
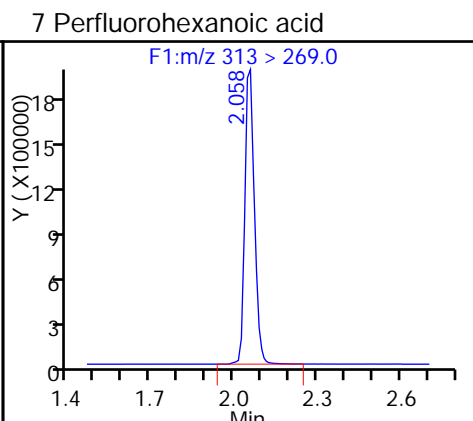
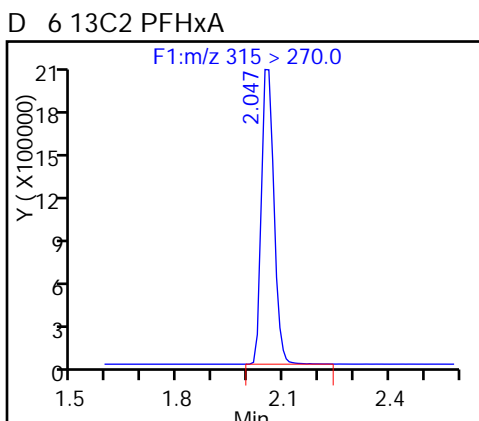
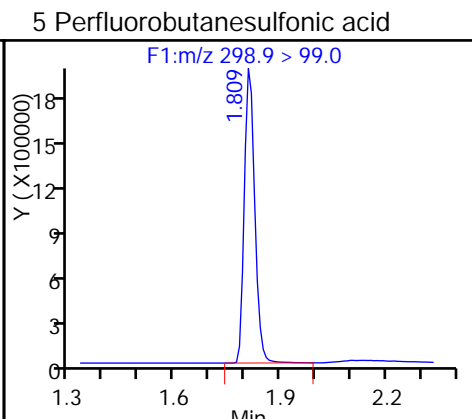
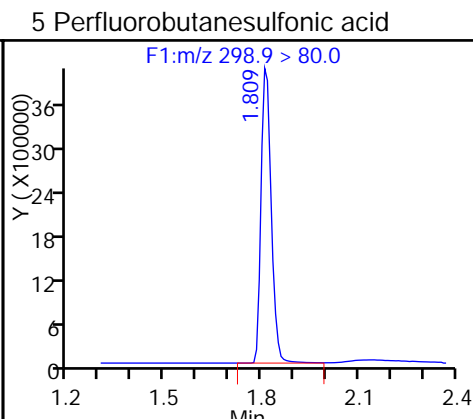
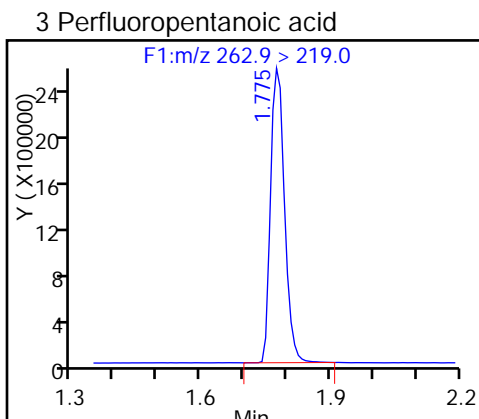
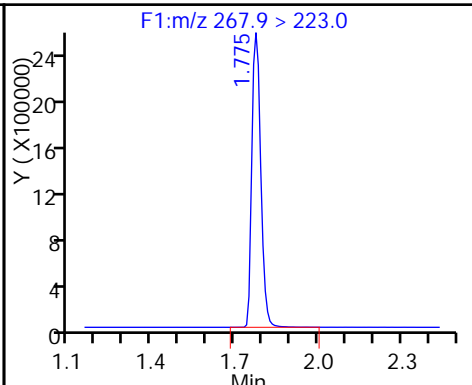
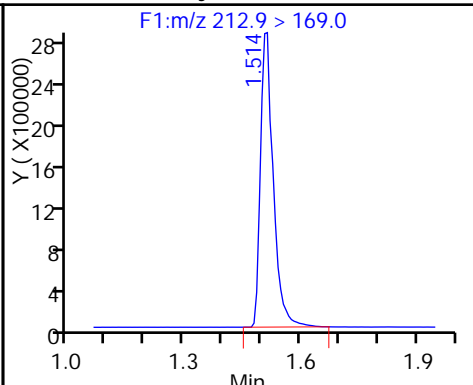
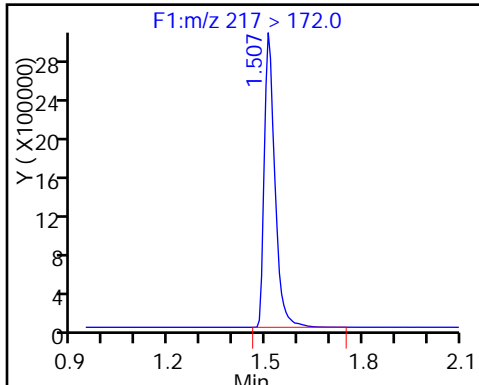
Method: PFC_A8_Full

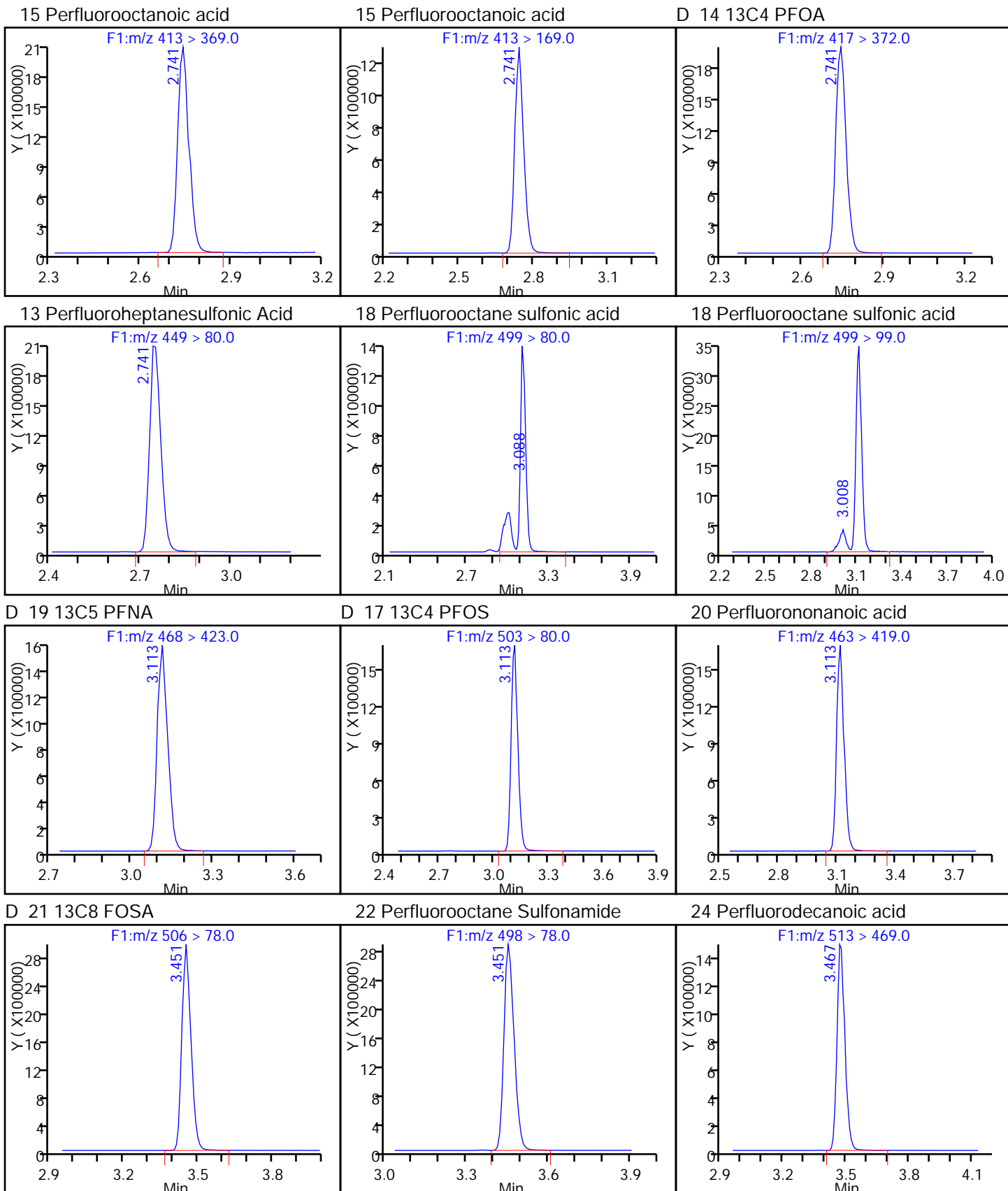
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

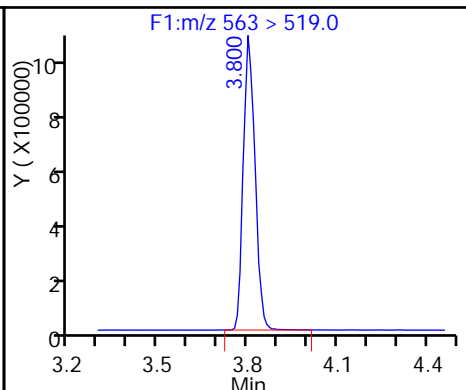
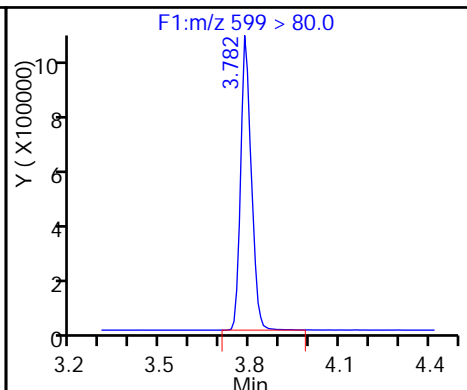
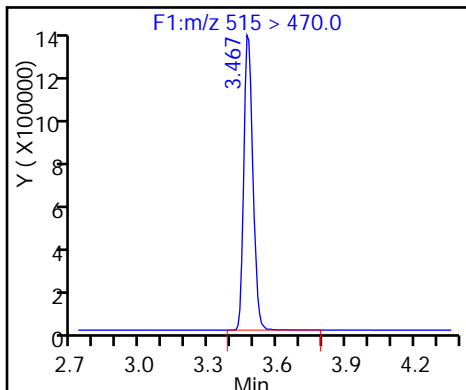




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

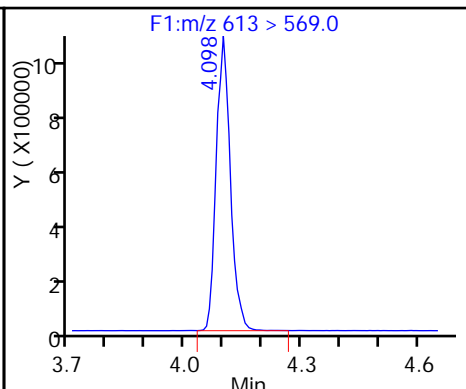
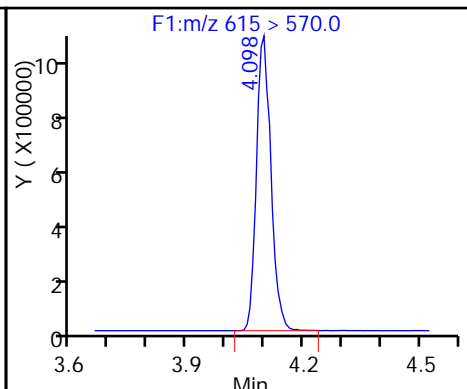
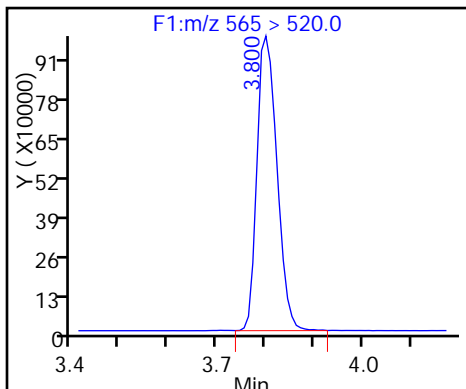
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

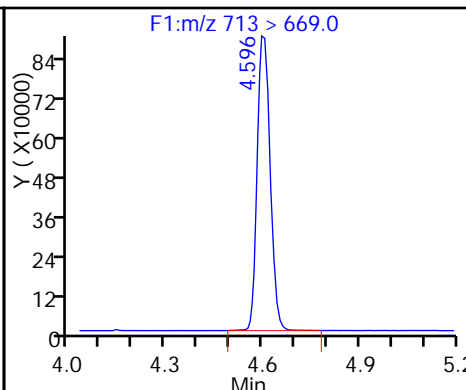
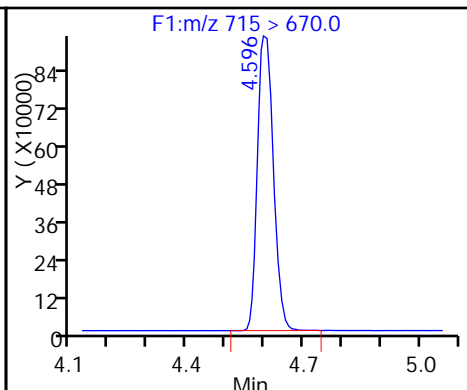
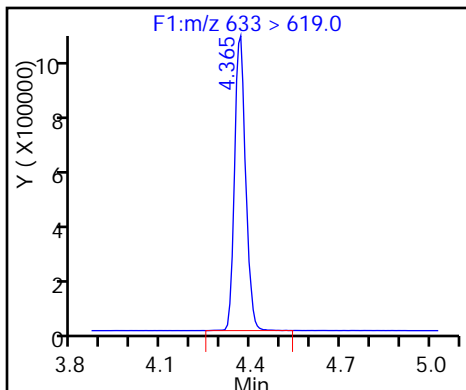
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDa

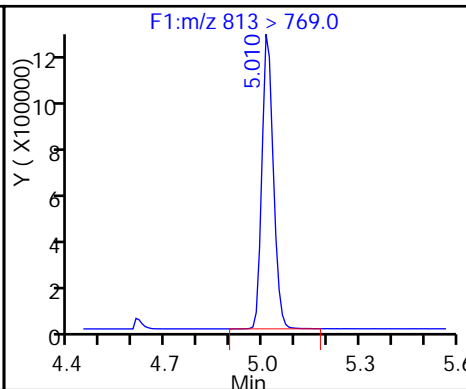
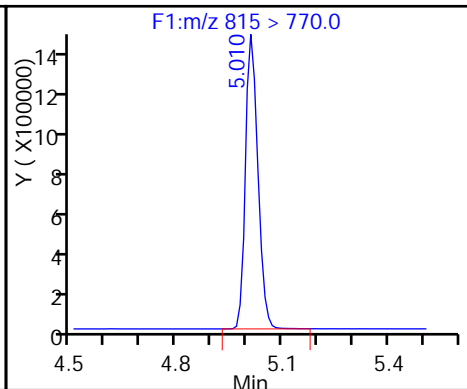
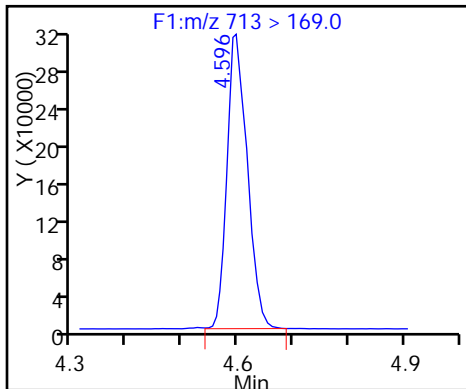
33 Perfluorotetradecanoic acid



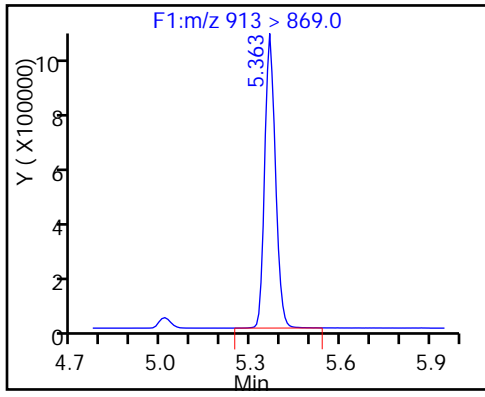
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDa

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-122573/1-A
 Matrix: Water Lab File ID: 22AUG2016D_043_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 250 (mL) Date Analyzed: 08/23/2016 12:01
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	141		25-150
STL00991	13C4 PFOS	129		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_043_p1_e1.d
 Lims ID: MB 320-122573/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 23-Aug-2016 12:01:00 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:39:45 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: chandrasenas Date: 30-Aug-2016 17:14:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.514	1.522	-0.008		8901480	65.6		131	655484	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	20287	0.1319			214	
D 4 13C5-PFPeA										
267.9 > 223.0	1.775	1.797	-0.022		7202802	66.8		134	531945	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.783	1.797	-0.014	1.000	9207	0.0625			148	
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		5944893	61.3		123	321137	
12 Perfluoroheptanoic acid										
363 > 319.0	2.394	2.427	-0.033	1.000	5695	0.0421			131	
D 11 13C4-PFHpA										
367 > 322.0	2.386	2.430	-0.044		6471422	67.1		134	370633	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.402	2.446	-0.044	1.000	24208	0.1476				
D 10 18O2 PFHxS										
403 > 84.0	2.402	2.446	-0.044		6971424	62.0		131	323085	
D 14 13C4 PFOA										
417 > 372.0	2.745	2.798	-0.053		6793480	70.5		141	348047	
D 19 13C5 PFNA										
468 > 423.0	3.115	3.177	-0.062		5346433	67.2		134	280880	
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		5060517	61.7		129	477570	
D 21 13C8 FOSA										
506 > 78.0	3.461	3.474	-0.013		4518845	30.1		60.3	285178	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.461	3.475	-0.014	1.000	5628	0.0677			1169	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515 > 470.0	3.477	3.546	-0.069		4709149	64.7		129	880713	
D 45 d3-NMeFOSAA										
573 > 419.0	3.610	3.670	-0.060		1166	0.0439		0.0		
D 46 d5-NEtFOSAA										
589 > 419.0	3.866	3.843	0.023		728	0.0251		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.794	3.844	-0.050	0.981	777	NR				
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.794	3.863	-0.069	1.000	1279	0.0197				
28 Perfluoroundecanoic acid										
563 > 519.0	3.803	3.880	-0.077	1.000	8160	0.1033			564	
D 27 13C2 PFUnA										
565 > 520.0	3.812	3.880	-0.068		3645130	65.5		131	344517	
D 30 13C2 PFDaA										
615 > 570.0	4.100	4.183	-0.083		3213176	60.4		121	325468	
29 Perfluorododecanoic acid										
613 > 569.0	4.093	4.185	-0.092	1.000	4679	0.0735			233	
31 Perfluorotridecanoic acid										
633 > 619.0	4.368	4.452	-0.084	1.000	7105	0.1128			562	
D 32 13C2-PFTeDA										
715 > 670.0	4.612	4.697	-0.085		3256129	69.0		138	628475	
D 34 13C2-PFHxDA										
815 > 770.0	5.018	5.125	-0.107		4257271	64.7		129	434075	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.018	5.127	-0.109	1.000	42031	0.5273			247	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.363	5.509	-0.146	1.000	2628	0.4124			16.7	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_043_p1_e1.d

Injection Date: 23-Aug-2016 12:01:00

Instrument ID: A8

Lims ID: MB 320-122573/1-A

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

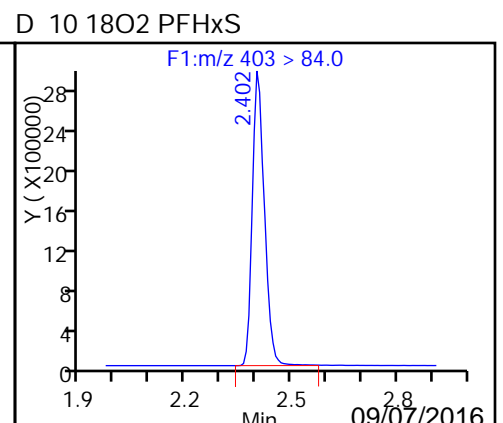
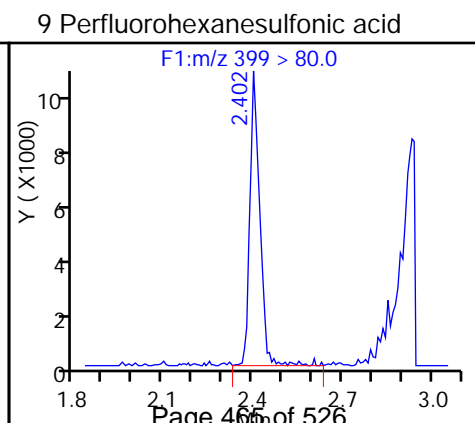
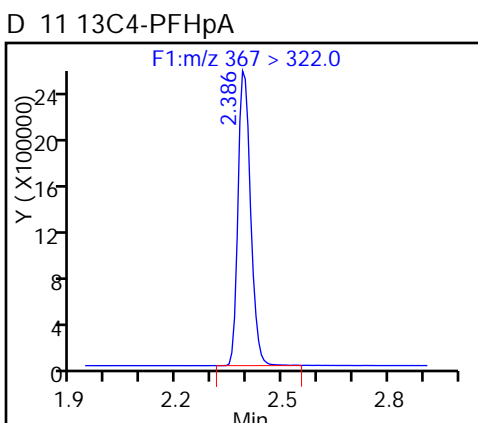
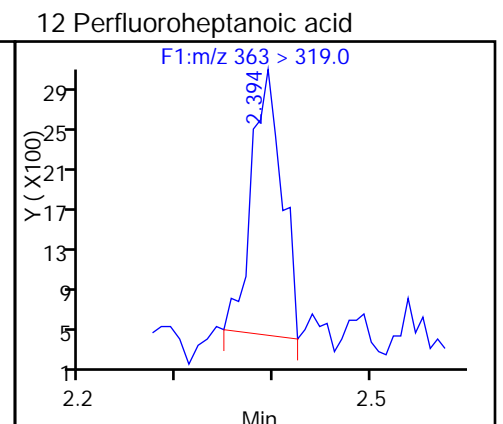
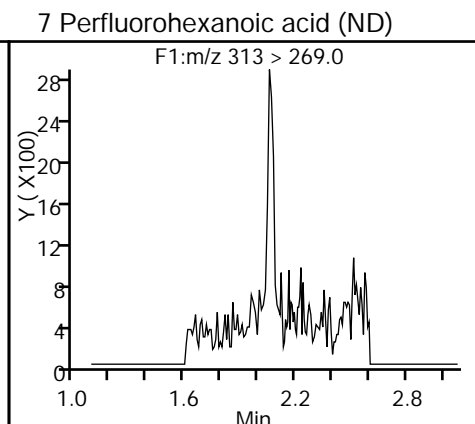
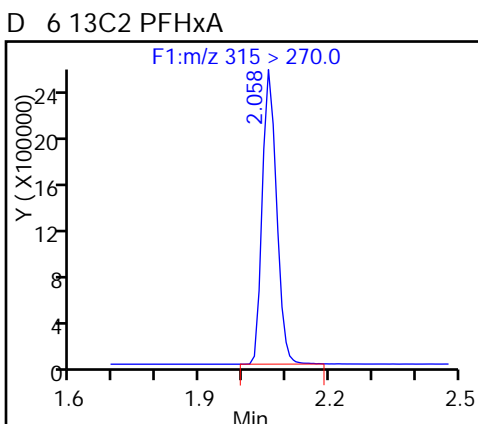
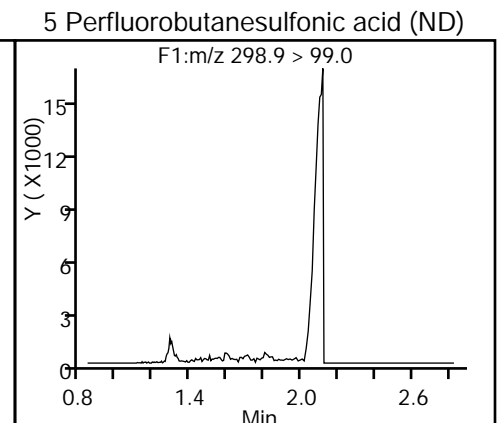
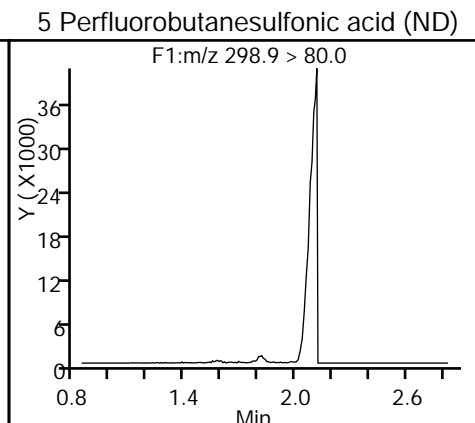
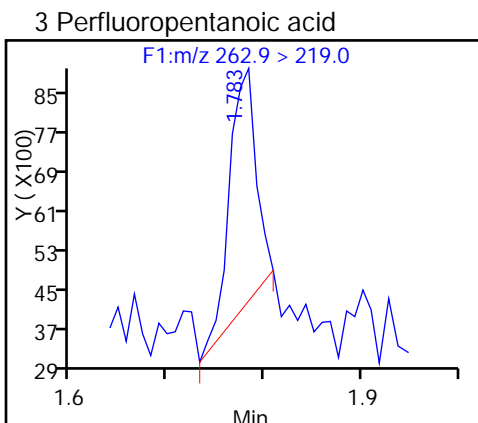
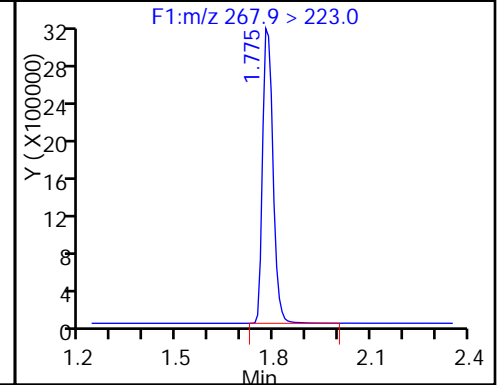
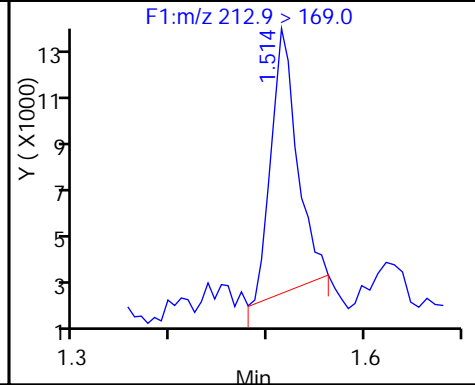
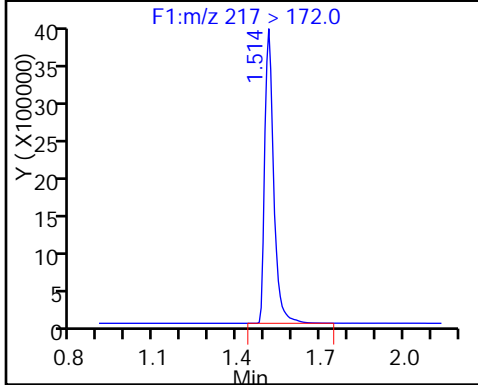
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Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

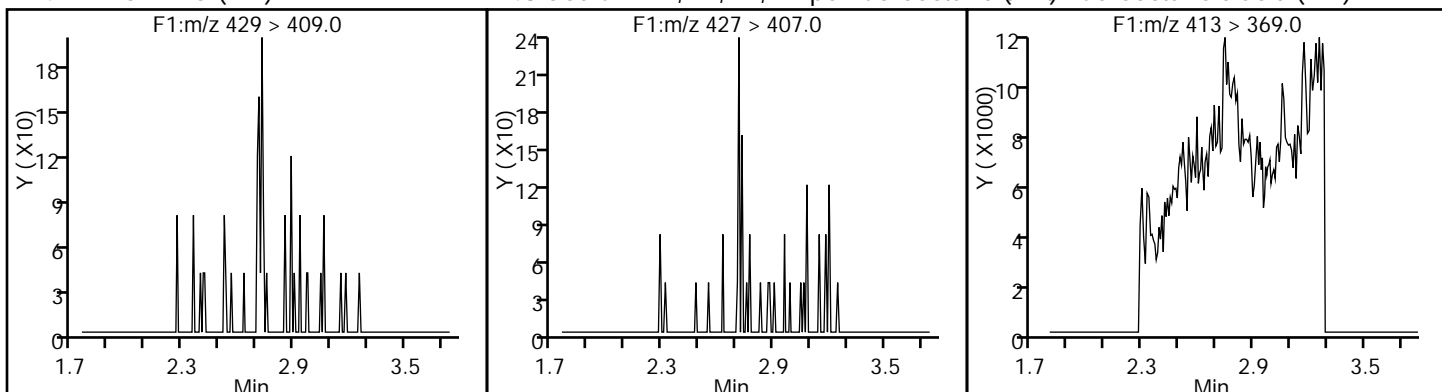
1 Perfluorobutyric acid

D 4 13C5-PFPeA



D 47 M2-6:2FTS (ND)

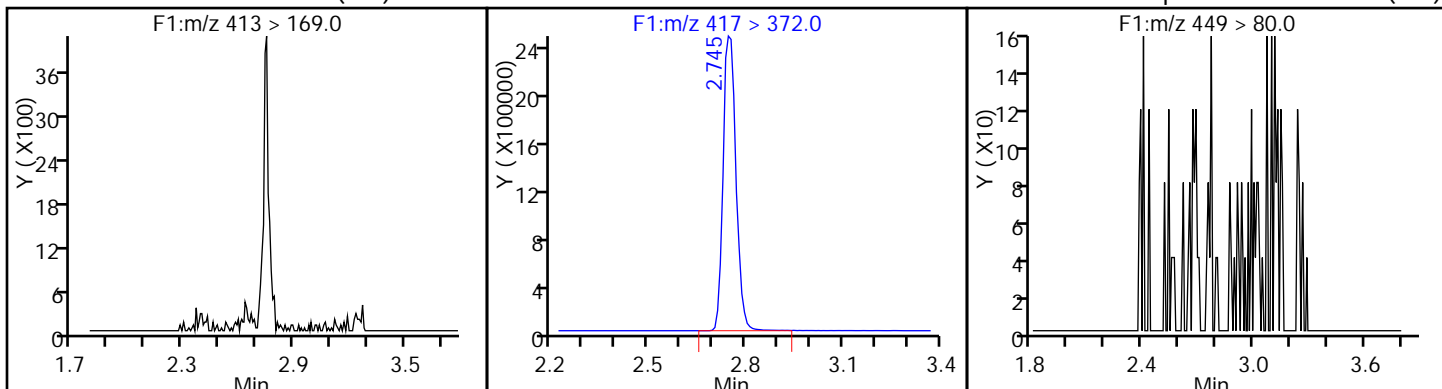
48 Sodium 1H,1H,2H,2H-perfluorooctane sulfonic acid (ND)



15 Perfluorooctanoic acid (ND)

D 14 13C4 PFOA

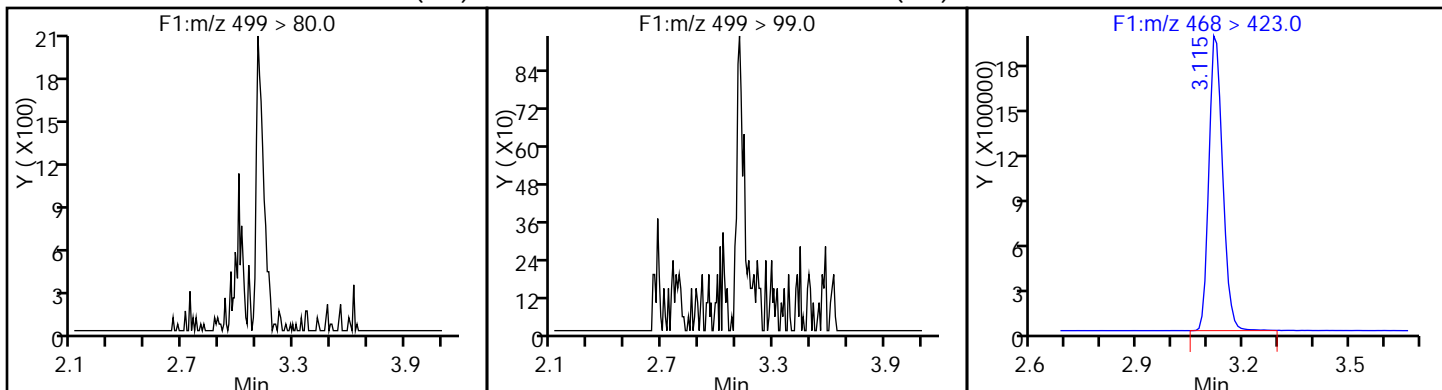
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

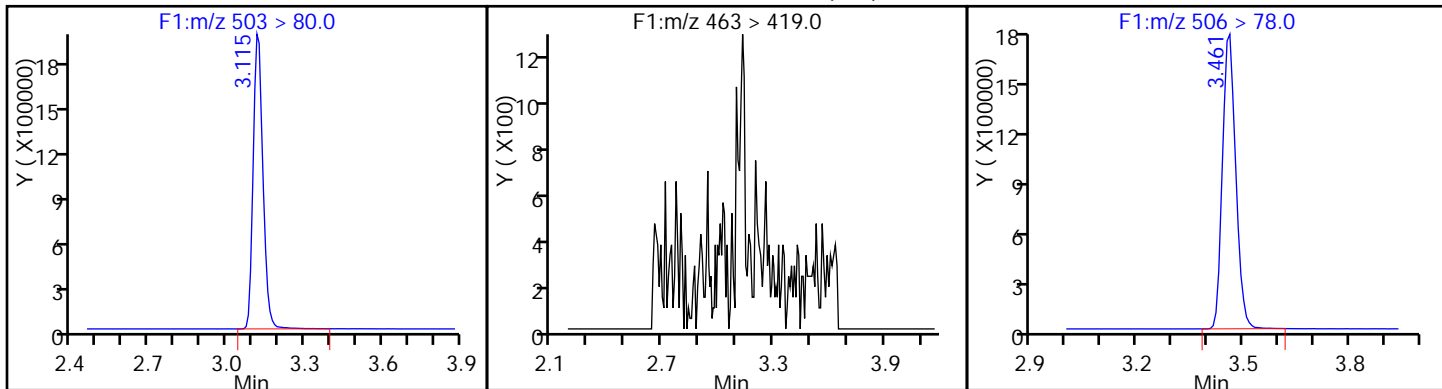
D 19 13C5 PFNA



D 17 13C4 PFOS

20 Perfluorononanoic acid (ND)

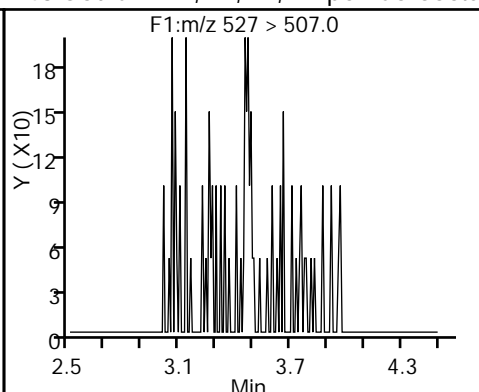
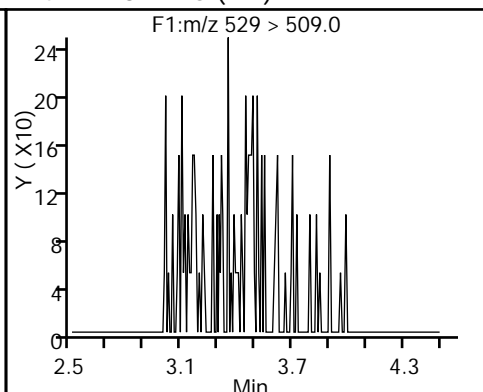
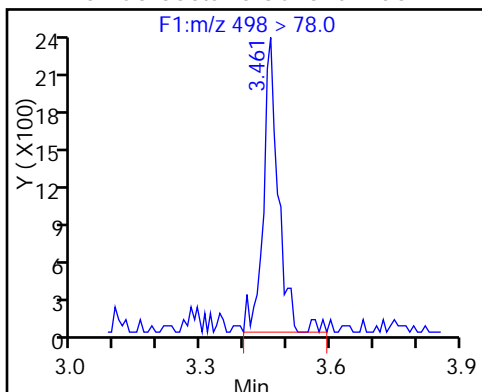
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 42 M2-8:2FTS (ND)

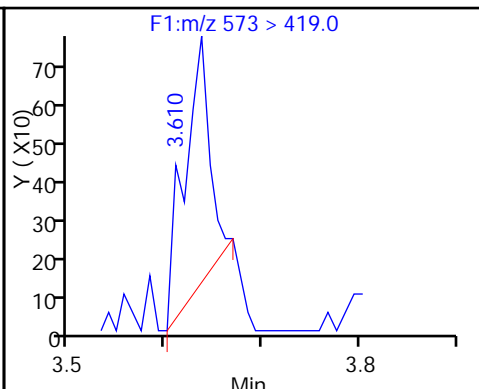
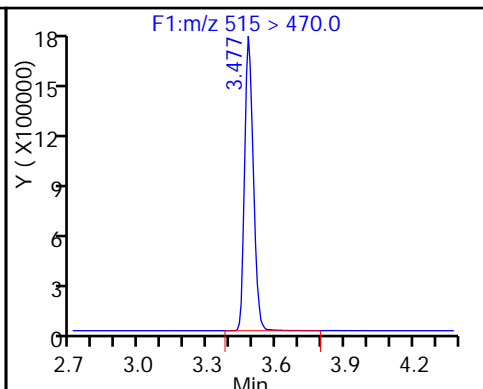
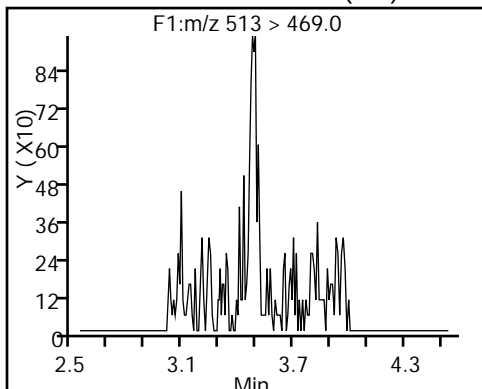
43 Sodium 1H,1H,2H,2H-perfluorooctane (ND)



24 Perfluorodecanoic acid (ND)

D 23 13C2 PFDA

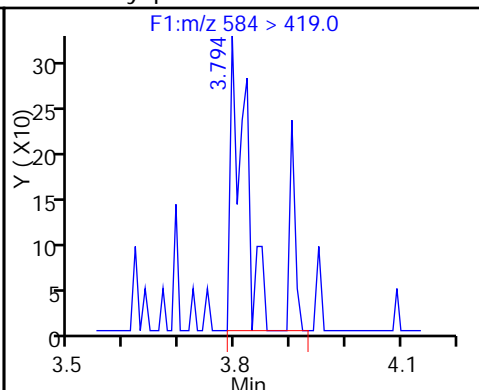
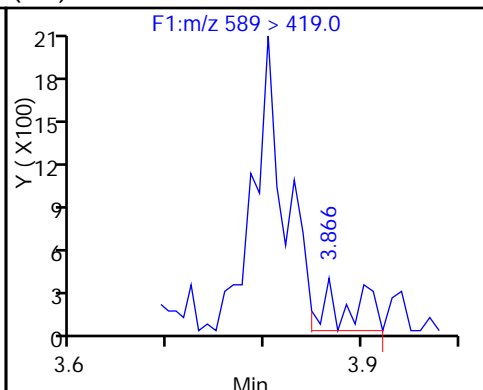
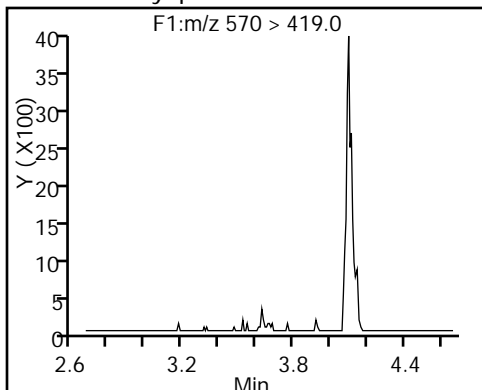
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamide (ND)

D 46 d5-NEtFOSAA

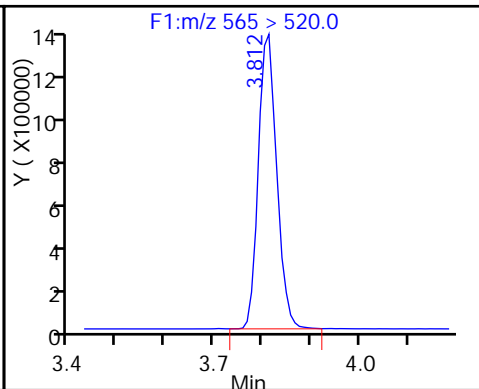
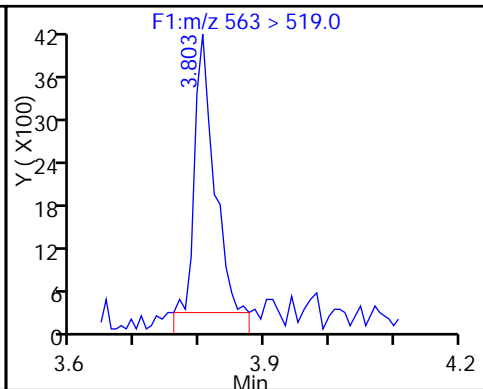
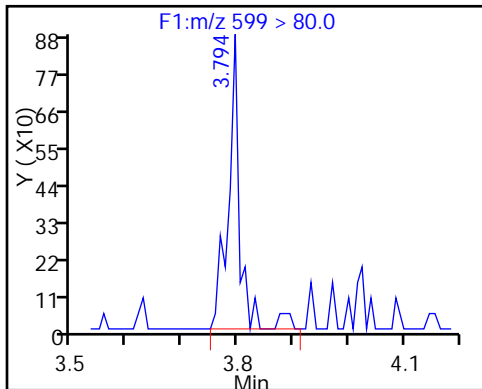
49 N-ethyl perfluorooctane sulfonamid



26 Perfluorodecane Sulfonic acid

28 Perfluoroundecanoic acid

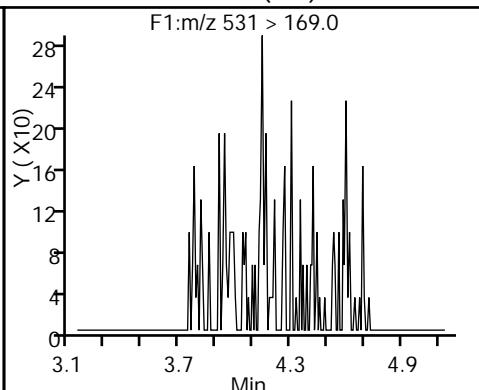
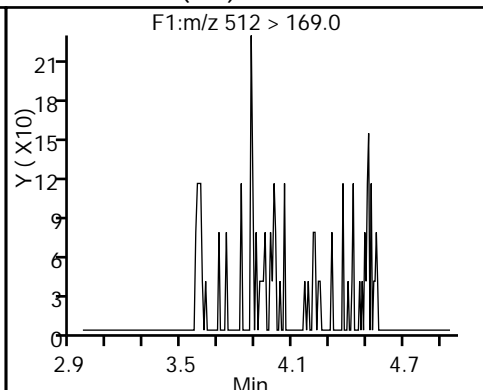
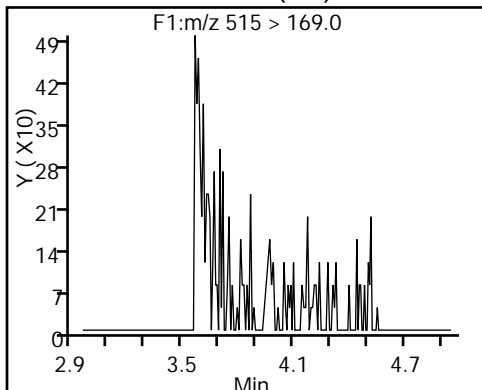
D 27 13C2 PFUnA



D 52 d-N-MeFOSA-M (ND)

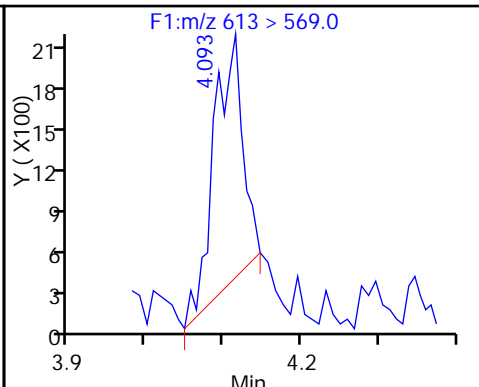
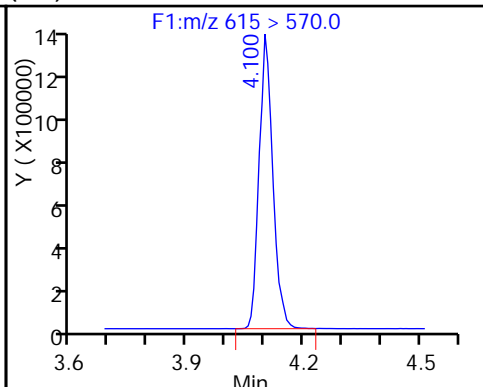
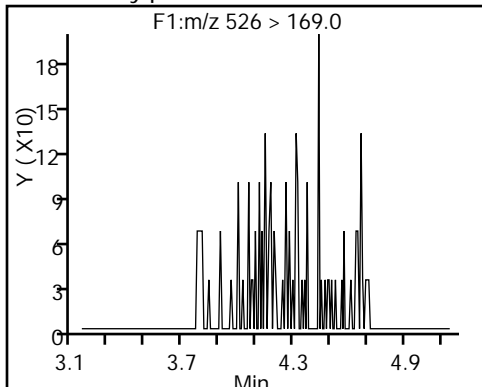
54 MeFOSA (ND)

D 51 d-N-EtFOSA-M (ND)



53 N-ethylperfluoro-1-octanesulfonami (ND) 13C2 PFDaA

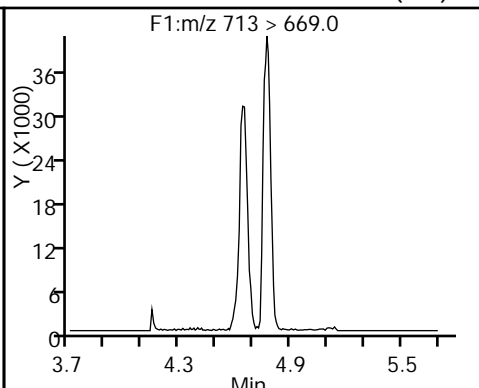
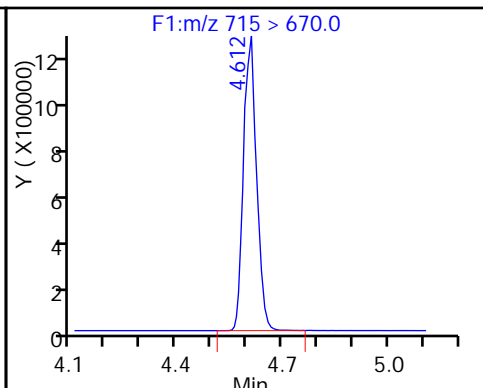
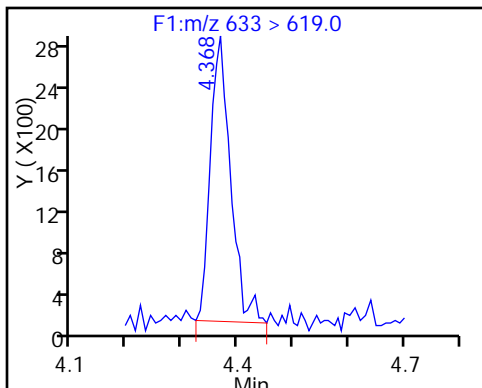
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

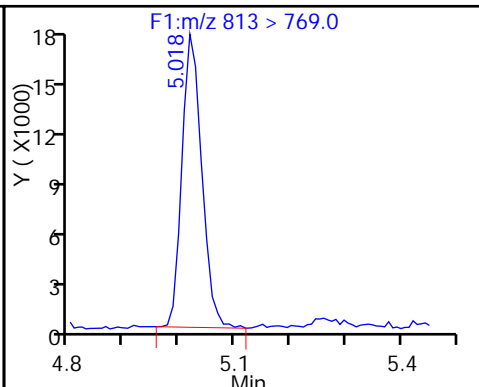
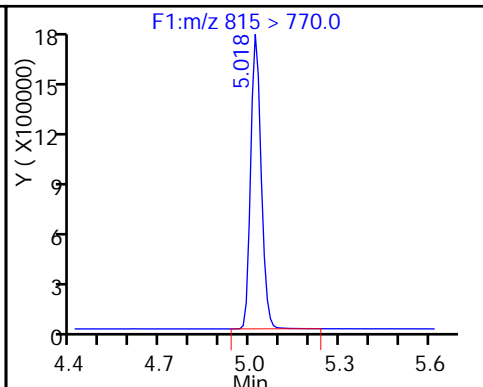
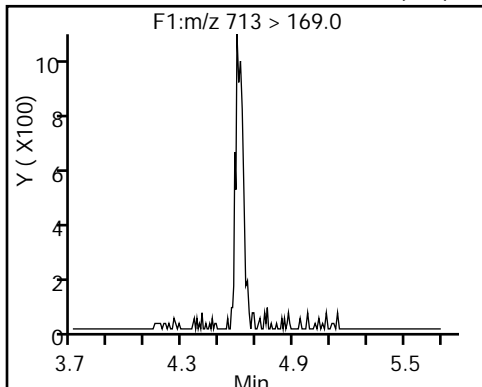
33 Perfluorotetradecanoic acid (ND)



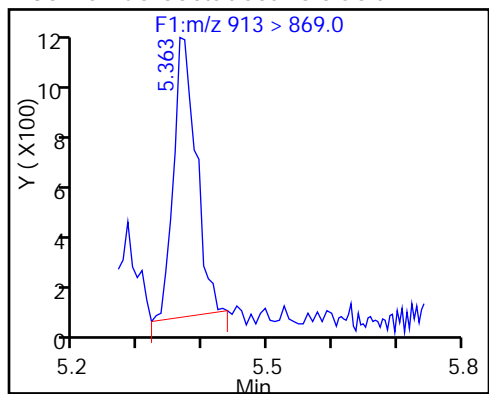
33 Perfluorotetradecanoic acid (ND)

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-122573/2-A
 Matrix: Water Lab File ID: 22AUG2016D_044_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 250 (mL) Date Analyzed: 08/23/2016 12:09
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	38.9		2.5	2.0	0.75
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	32.2	M	4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	135		25-150
STL00991	13C4 PFOS	126		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_044_p1_e1.d

Lims ID: LCS 320-122573/2-A

Client ID:

Sample Type: LCS

Inject. Date: 23-Aug-2016 12:09:00

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Sample Info:

Operator ID: A8

Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m

Limit Group: LC PFC_DOD ICAL

Last Update: 30-Aug-2016 17:38:41

Calib Date: 22-Aug-2016 18:23:00

Integrator: Picker

Quant Method: Isotopic Dilution

Quant By: Initial Calibration

Last ICAL File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d

Column 1 :

Det: F1(0.00 :6.60)

Process Host: XAWRK003

First Level Reviewer: barnettj

Date: 30-Aug-2016 17:39:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA

217 > 172.0 1.513 1.522 -0.009 8823207 65.0 130 637501

1 Perfluorobutyric acid

212.9 > 169.0 1.513 1.524 -0.011 1.000 2927838 19.2 96.0 25277

D 4 13C5-PFPeA

267.9 > 223.0 1.783 1.797 -0.014 7053326 65.5 131 835284

3 Perfluoropentanoic acid

262.9 > 219.0 1.783 1.797 -0.014 1.000 2440409 16.9 84.6 45350

5 Perfluorobutanesulfonic acid

298.9 > 80.0 1.816 1.837 -0.021 1.000 3936203 17.8 101 M

298.9 > 99.0 1.816 1.837 -0.021 1.000 1652271 2.38(0.00-0.00) M

D 6 13C2 PFHxA

315 > 270.0 2.069 2.089 -0.020 6146527 63.4 127 837716

7 Perfluorohexanoic acid

313 > 269.0 2.069 2.090 -0.021 1.000 2103772 17.7 88.5 107455

12 Perfluoroheptanoic acid

363 > 319.0 2.394 2.427 -0.033 1.000 2367835 18.6 92.9 45797

D 11 13C4-PFHpA

367 > 322.0 2.394 2.430 -0.036 6093004 63.1 126 354746

9 Perfluorohexanesulfonic acid

399 > 80.0 2.410 2.446 -0.036 1.000 2459192 15.6 85.5

D 10 18O2 PFHxS

403 > 84.0 2.402 2.446 -0.044 6718714 59.8 126 325937

15 Perfluorooctanoic acid

413 > 369.0 2.748 2.798 -0.050 1.000 2550994 19.5 97.4 15611

413 > 169.0 2.748 2.798 -0.050 1.000 1492743 1.71(0.90-1.10) 112015

D 14 13C4 PFOA

417 > 372.0 2.757 2.798 -0.041 6484773 67.3 135 497521

13 Perfluoroheptanesulfonic Acid

449 > 80.0 2.757 2.807 -0.050 1.000 2320560 19.2 101 09/07/2016

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										M
499 > 80.0	3.095	3.110	-0.014	1.000	1851445	16.1		86.8	18297	
499 > 99.0	3.129	3.110	0.020	1.011	403481		4.59(0.90-1.10)		45038	M
D 19 13C5 PFNA										
468 > 423.0	3.129	3.177	-0.048		5353519	67.3		135	384176	
D 17 13C4 PFOS										
503 > 80.0	3.121	3.177	-0.056		4954205	60.4		126	359483	
20 Perfluorononanoic acid										
463 > 419.0	3.121	3.183	-0.062	1.000	1994723	18.6		93.2	75393	
D 21 13C8 FOSA										
506 > 78.0	3.457	3.474	-0.017		1347156	8.99		18.0	138834	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.465	3.475	-0.010	1.000	472952	19.1		95.4	46558	
24 Perfluorodecanoic acid										
513 > 469.0	3.481	3.546	-0.065	1.000	1656607	17.3		86.3	122475	
D 23 13C2 PFDA										
515 > 470.0	3.481	3.546	-0.065		4880512	67.1		134	935078	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.789	3.863	-0.074	1.000	1052978	16.6		86.0		
28 Perfluoroundecanoic acid										
563 > 519.0	3.816	3.880	-0.064	1.000	1365520	16.8		83.9	85291	
D 27 13C2 PFUnA										
565 > 520.0	3.807	3.880	-0.073		3752838	67.4		135	344212	
D 30 13C2 PFDoA										
615 > 570.0	4.103	4.183	-0.080		3376860	63.5		127	422769	
29 Perfluorododecanoic acid										
613 > 569.0	4.103	4.185	-0.082	1.000	1235493	18.5		92.3	66463	
31 Perfluorotridecanoic acid										
633 > 619.0	4.371	4.452	-0.081	1.000	1121334	16.9		84.7	93876	
D 32 13C2-PFTeDA										
715 > 670.0	4.606	4.697	-0.091		3126234	66.3		133	599630	
D 34 13C2-PFHxDA										
815 > 770.0	5.020	5.125	-0.105		4294401	65.2		130	339932	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.020	5.127	-0.107	1.000	1499880	17.9		89.5	9388	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.370	5.509	-0.139	1.000	1559080	20.3		101	9865	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_044_p1_e1.d

Injection Date: 23-Aug-2016 12:09:00

Instrument ID: A8

Lims ID: LCS 320-122573/2-A

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

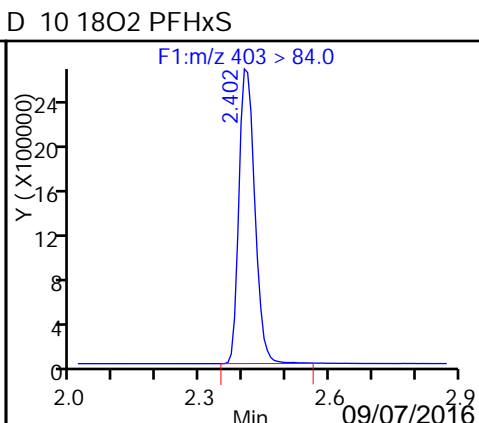
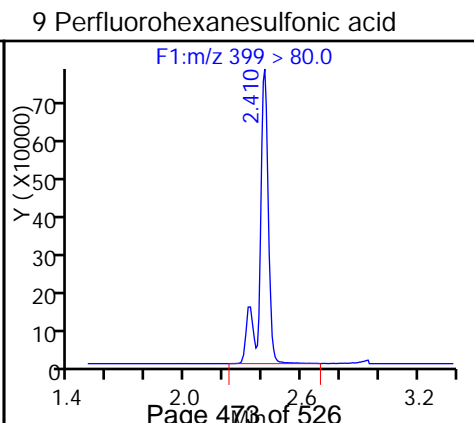
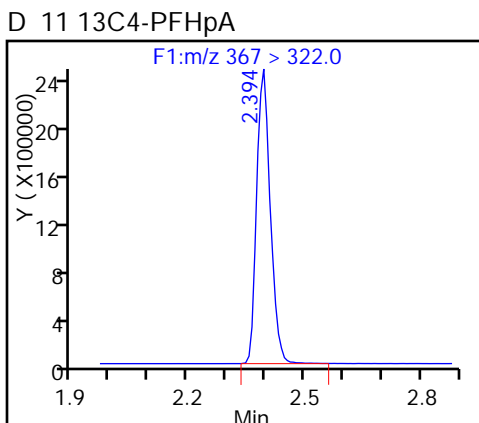
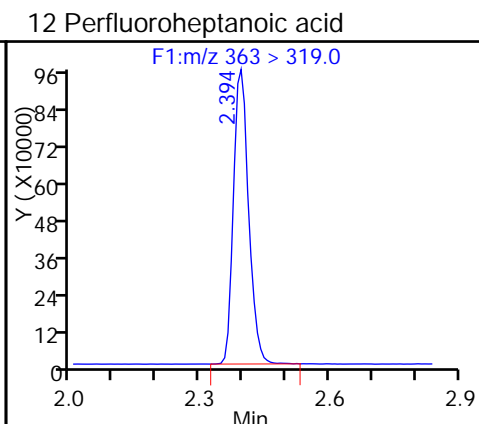
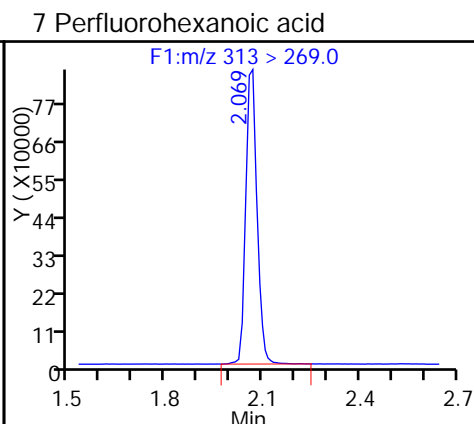
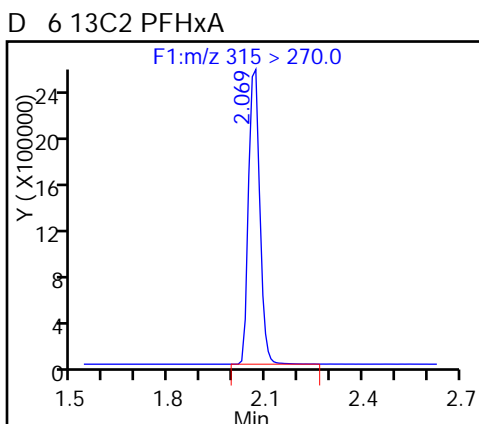
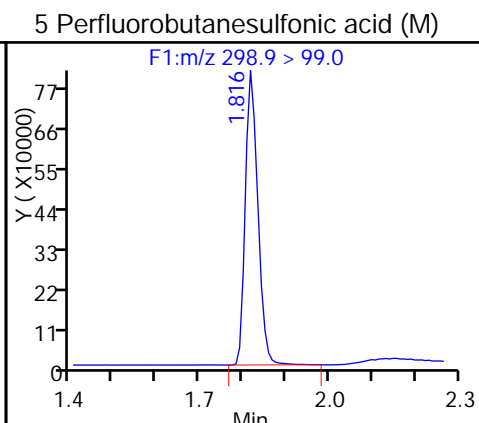
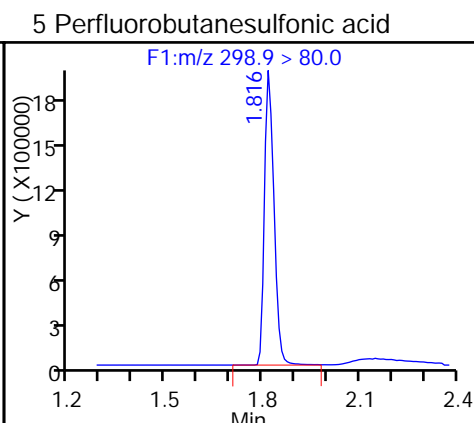
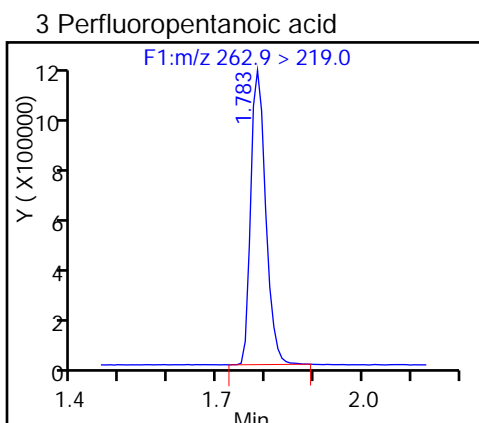
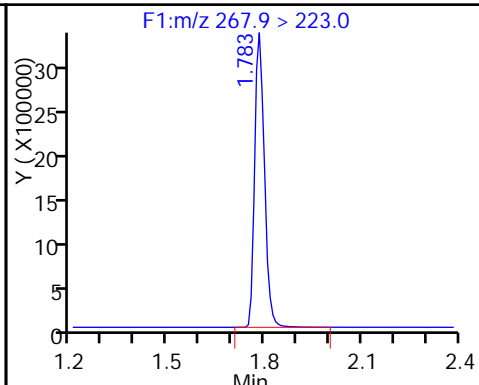
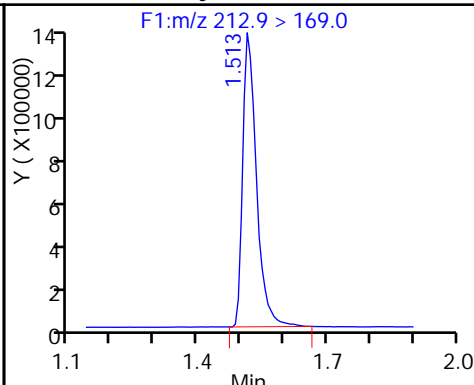
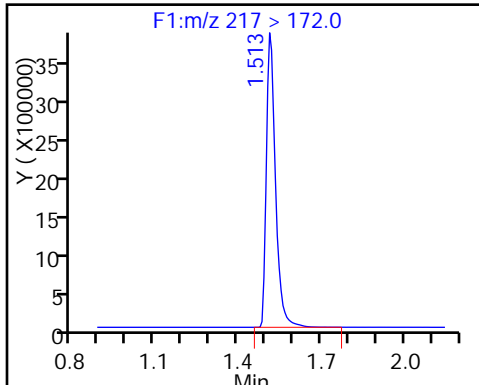
Method: PFC_A8_Full

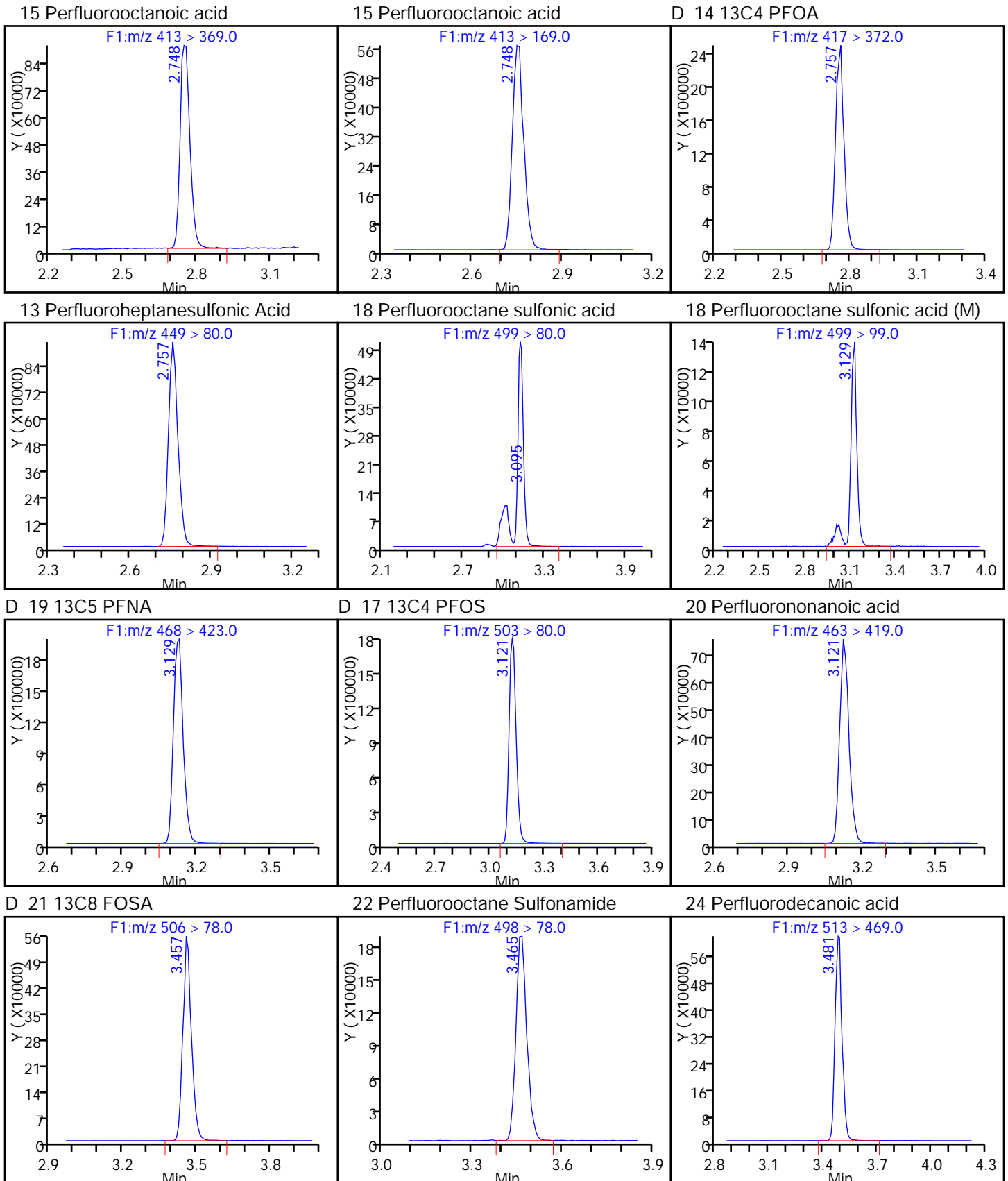
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

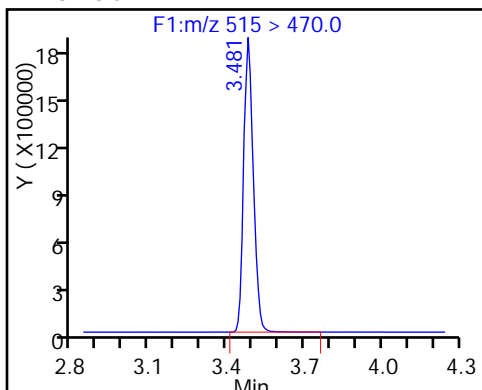
1 Perfluorobutyric acid

D 4 13C5-PFPeA

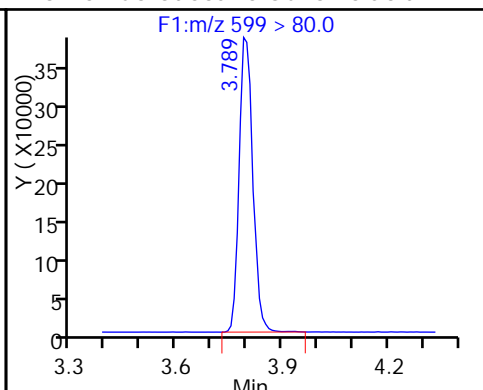




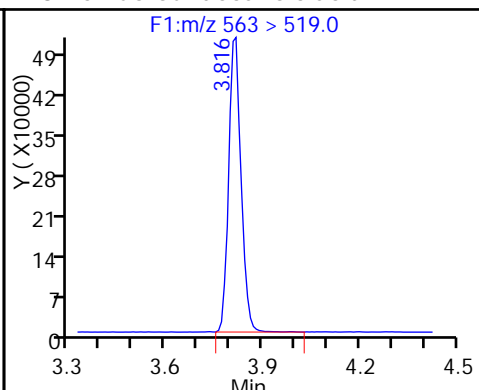
D 23 13C2 PFDA



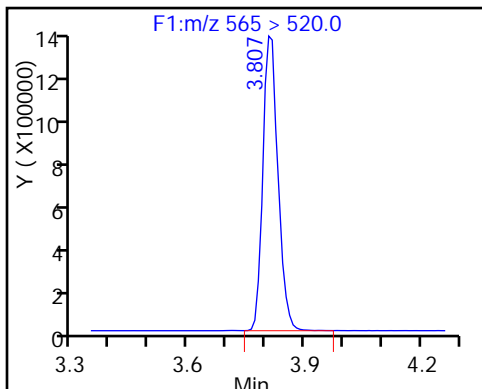
26 Perfluorodecane Sulfonic acid



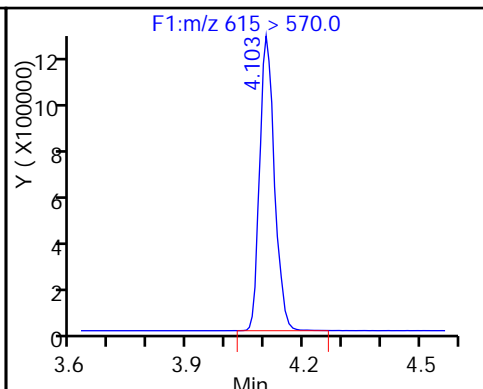
28 Perfluoroundecanoic acid



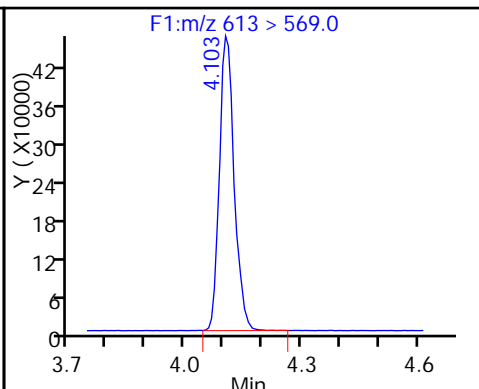
D 27 13C2 PFUa



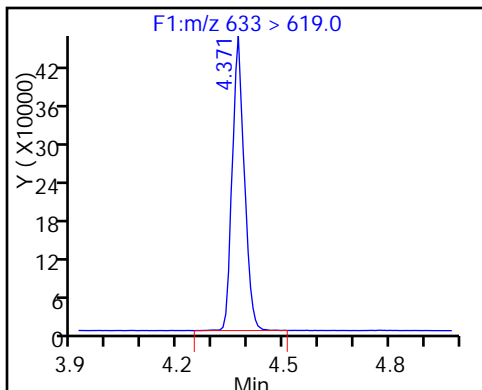
D 30 13C2 PFDa



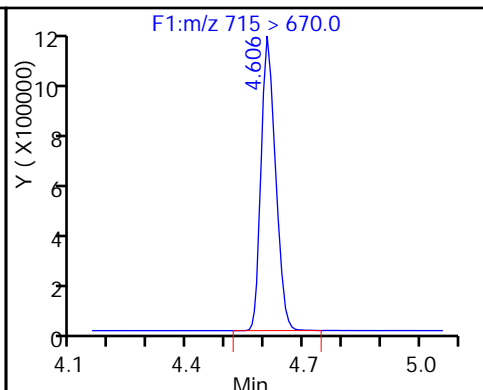
29 Perfluorododecanoic acid



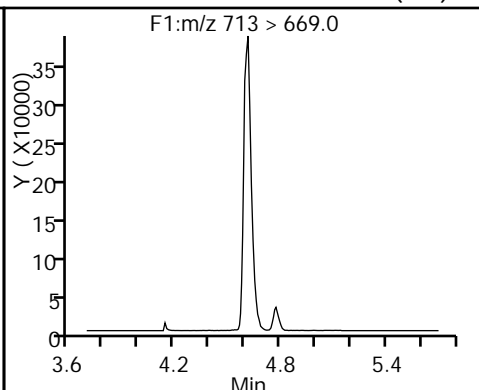
31 Perfluorotridecanoic acid



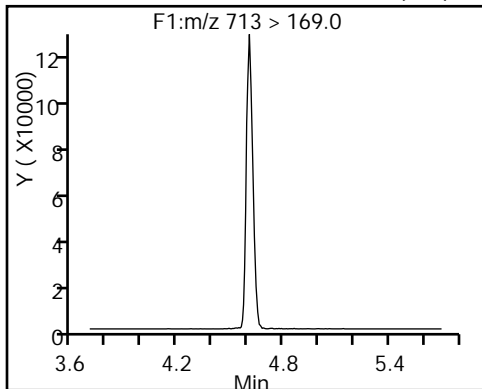
D 32 13C2-PFTeDA



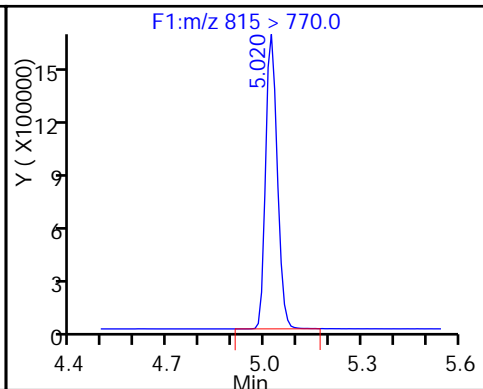
33 Perfluorotetradecanoic acid (ND)



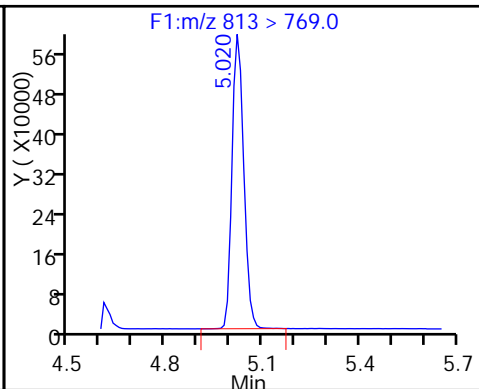
33 Perfluorotetradecanoic acid (ND)



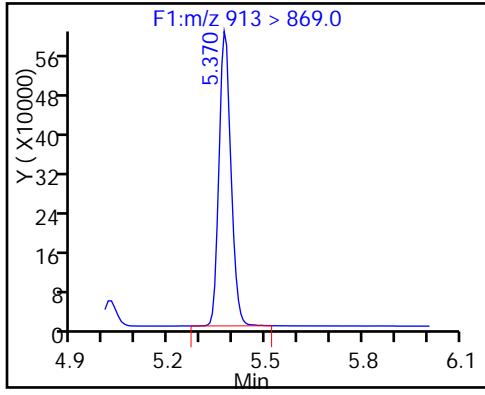
D 34 13C2-PFHxDa



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

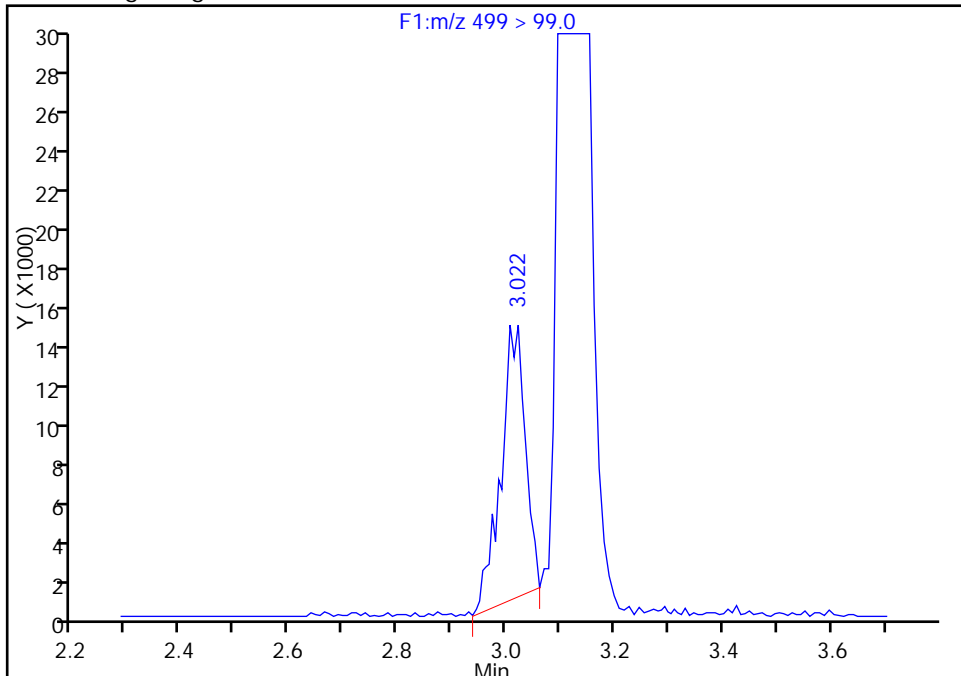
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_044_p1_e1.d
Injection Date: 23-Aug-2016 12:09:00 Instrument ID: A8
Lims ID: LCS 320-122573/2-A
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

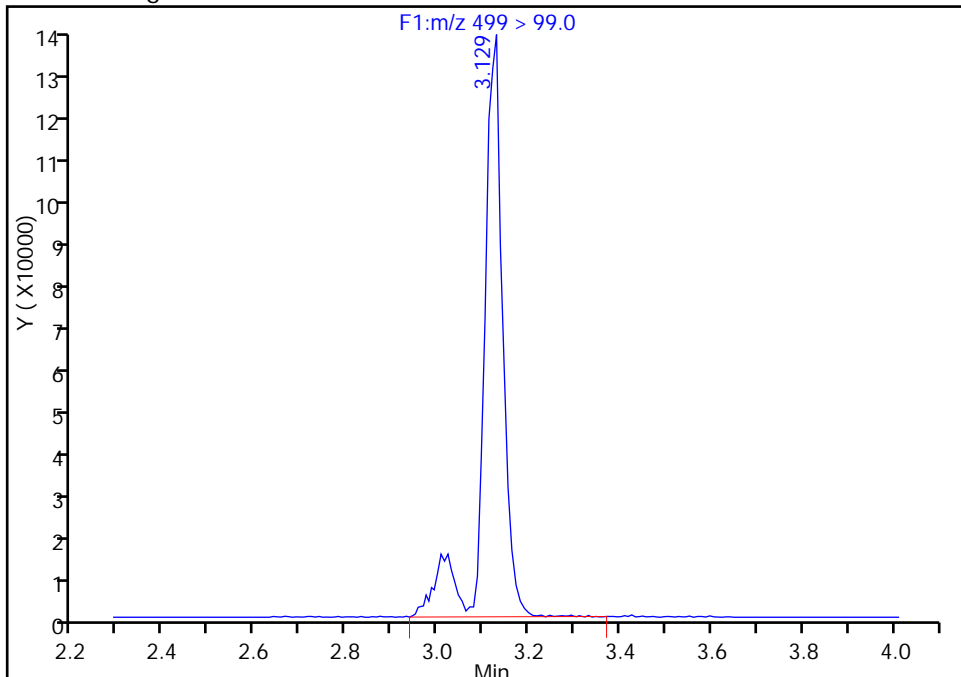
RT: 3.02
Area: 43012
Amount: 16.107514
Amount Units: ng/ml

Processing Integration Results



RT: 3.13
Area: 403481
Amount: 16.107514
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 30-Aug-2016 17:16:00
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-14GW-0816 MS Lab Sample ID: 320-20928-3 MS
 Matrix: Water Lab File ID: 22AUG2016D_048_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 10:55
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 263.4 (mL) Date Analyzed: 08/23/2016 12:39
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	47.3	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	39.2	M	3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	69		25-150
STL00991	13C4 PFOS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_048_p1_e1.d
 Lims ID: 320-20928-A-3-B MS
 Client ID: GW20-14GW-0816
 Sample Type: MS
 Inject. Date: 23-Aug-2016 12:39:00 ALS Bottle#: 0 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:57:12 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:40:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.514	1.522	-0.008		3732755	27.5		55.0	270447	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	1133582	17.6		87.9	7429	
D 4 13C5-PFPeA										
267.9 > 223.0	1.783	1.797	-0.014		4406796	40.9		81.8	299578	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.783	1.797	-0.014	1.000	1468306	16.3		81.5	9771	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.816	1.837	-0.021	1.000	4246502	19.0		108		
298.9 > 99.0	1.816	1.837	-0.021	1.000	1570239		2.70(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		3637344	37.5		75.0	390061	
7 Perfluorohexanoic acid										
313 > 269.0	2.069	2.090	-0.021	1.000	1368877	19.5		97.4	10916	
12 Perfluoroheptanoic acid										
363 > 319.0	2.388	2.427	-0.039	1.000	1282795	17.3		86.5	11743	
D 11 13C4-PFHpA										
367 > 322.0	2.388	2.430	-0.042		3547248	36.8		73.5	312832	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.403	2.446	-0.043	1.000	4362095	27.3		150		
D 10 18O2 PFHxS										
403 > 84.0	2.403	2.446	-0.043		6794145	60.4		128	432099	
15 Perfluorooctanoic acid										M
413 > 369.0	2.749	2.798	-0.049	1.000	1657261	24.9		124	12900	M
413 > 169.0	2.749	2.798	-0.049	1.000	1049745		1.58(0.90-1.10)		91870	M
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		3305183	34.3		68.6	221134	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.758	2.807	-0.049	1.000	1825799	16.7		87.6		09/07/2016

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										M
499 > 80.0	3.122	3.110	0.013	1.000	2147694	20.6		111	47641	M
499 > 99.0	3.016	3.110	-0.093	0.966	410140		5.24(0.90-1.10)		4874	
D 19 13C5 PFNA										
468 > 423.0	3.122	3.177	-0.055		2548642	32.0		64.1	231108	
D 17 13C4 PFOS										
503 > 80.0	3.122	3.177	-0.055		4488314	54.7		114	94254	
20 Perfluorononanoic acid										
463 > 419.0	3.122	3.183	-0.061	1.000	776762	15.3		76.3	19932	
D 21 13C8 FOSA										
506 > 78.0	3.459	3.474	-0.015		169848	1.13		2.3	32279	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.467	3.475	-0.008	1.000	47695	15.3		76.3	9072	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.475	3.504	-0.029	1.000	1178	NR		0.0		
24 Perfluorodecanoic acid										
513 > 469.0	3.483	3.546	-0.063	1.000	589670	14.2		70.8	30864	
D 23 13C2 PFDA										
515 > 470.0	3.483	3.546	-0.063		2115106	29.1		58.2	401806	
D 45 d3-NMeFOSAA										
573 > 419.0	3.629	3.670	-0.041		5533	0.2085		0.0		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.620	3.675	-0.055	0.998	2327	NR		0.0		
D 46 d5-NEtFOSAA										
589 > 419.0	3.805	3.843	-0.038		10326	0.3565		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.805	3.844	-0.039	1.000	6314	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.796	3.863	-0.067	1.000	512513	8.90		46.2		
28 Perfluoroundecanoic acid										
563 > 519.0	3.814	3.880	-0.066	1.000	445554	14.4		72.0	20235	
D 27 13C2 PFUnA										
565 > 520.0	3.814	3.880	-0.066		1427864	25.7		51.3	174755	
D 30 13C2 PFDaA										
615 > 570.0	4.101	4.183	-0.082		1280437	24.1		48.2	166913	
29 Perfluorododecanoic acid										
613 > 569.0	4.251	4.185	0.066	1.000	1537	0.0606		0.3	2.6	
31 Perfluorotridecanoic acid										
633 > 619.0	4.375	4.452	-0.077	1.000	392612	15.6		78.2	38881	
D 32 13C2-PFTeDA										
715 > 670.0	4.612	4.697	-0.085		1283952	27.2		54.4	243566	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.612	4.701	-0.089	1.000	486834	22.6		113	14395	
713 > 169.0	4.603	4.701	-0.099	0.998	108526		4.49(0.00-0.00)		43531	
D 34 13C2-PFHxDA										
815 > 770.0	5.017	5.125	-0.108		1528006	23.2		46.4	292430	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.186	5.127	0.059	1.000	395	0.0124		0.1	0.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913 > 869.0	5.370	5.509	-0.139	1.000	495342	17.0	85.2	7127	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_048_p1_e1.d

Injection Date: 23-Aug-2016 12:39:00

Instrument ID: A8

Lims ID: 320-20928-A-3-B MS

Client ID: GW20-14GW-0816

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

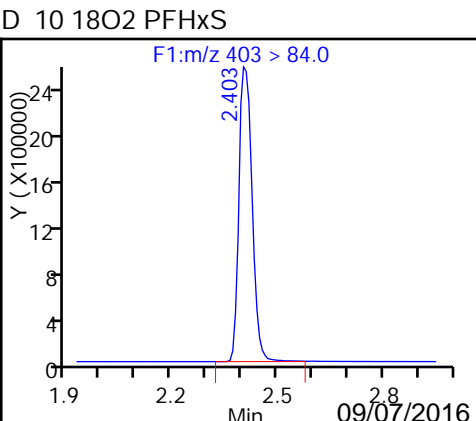
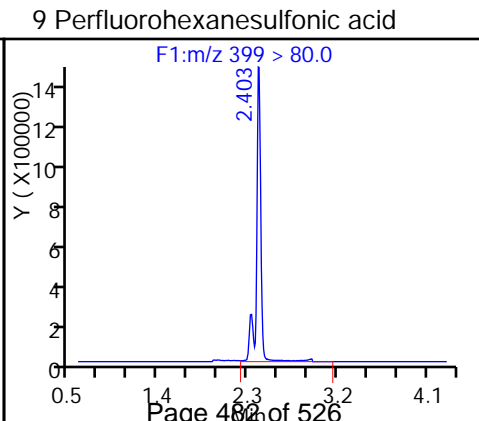
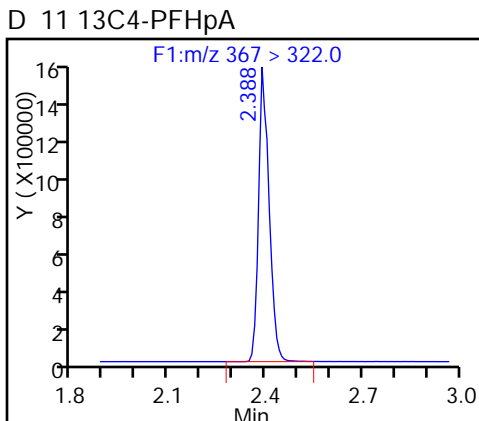
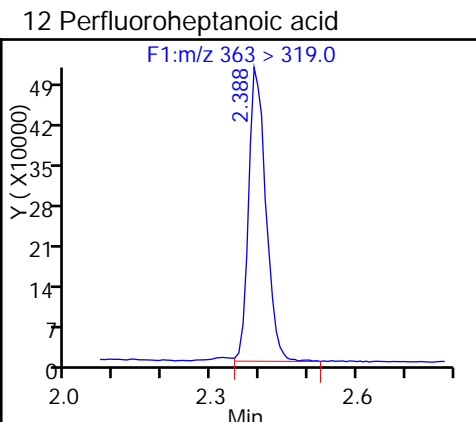
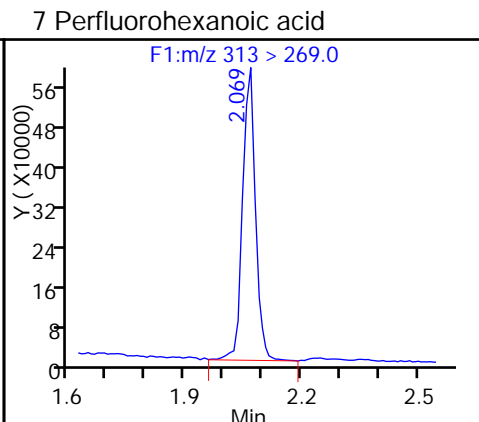
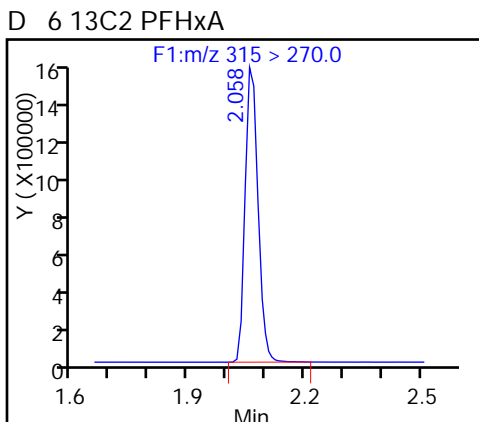
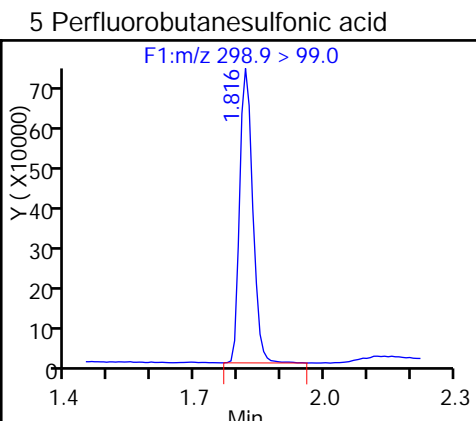
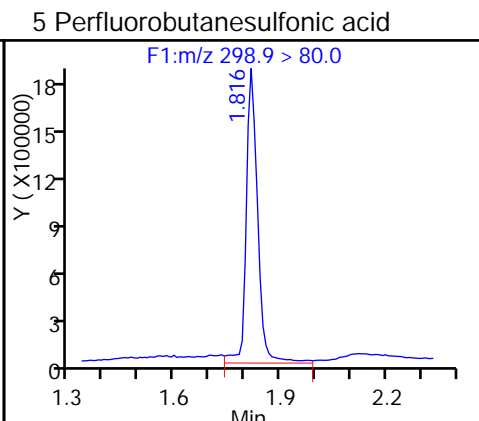
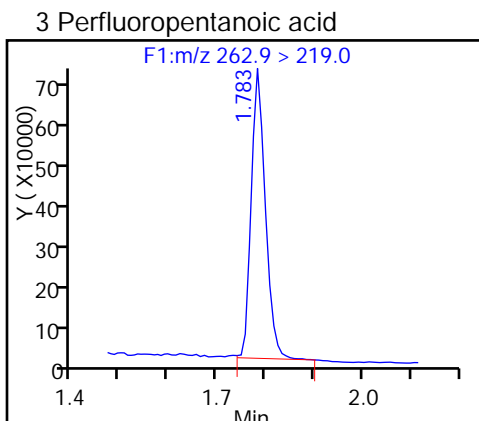
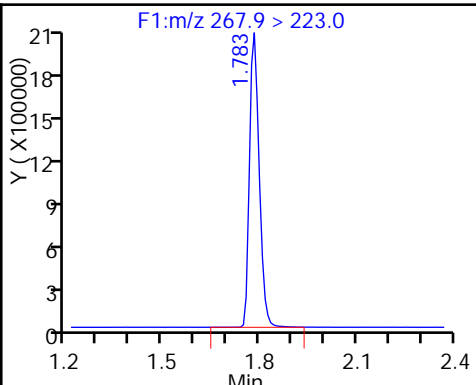
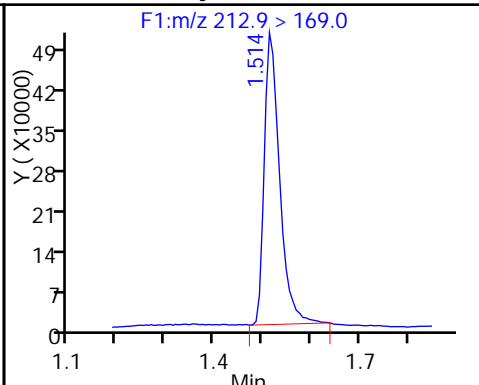
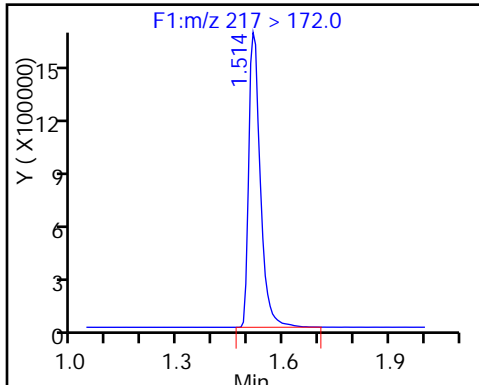
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

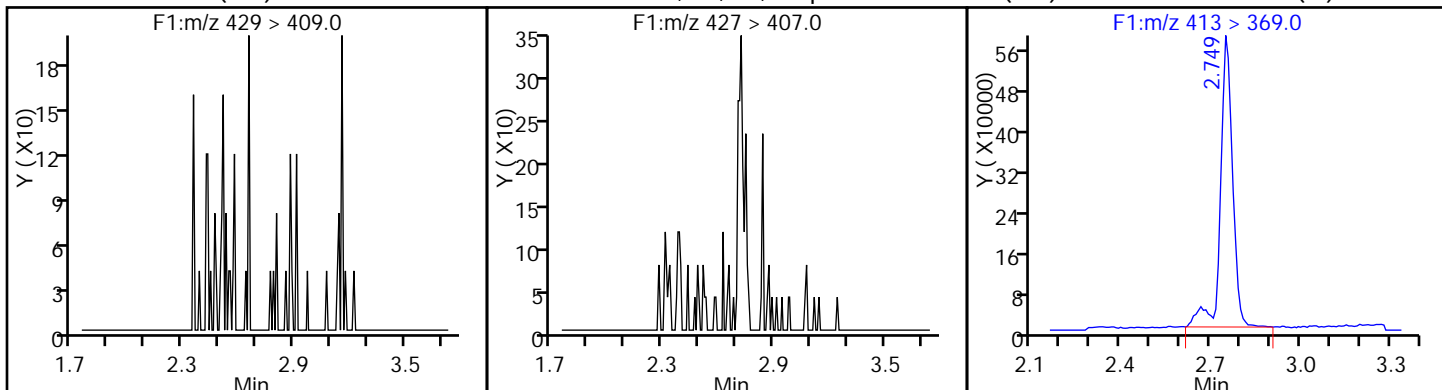
1 Perfluorobutyric acid

D 4 13C5-PFPeA



D 47 M2-6:2F5 (ND)

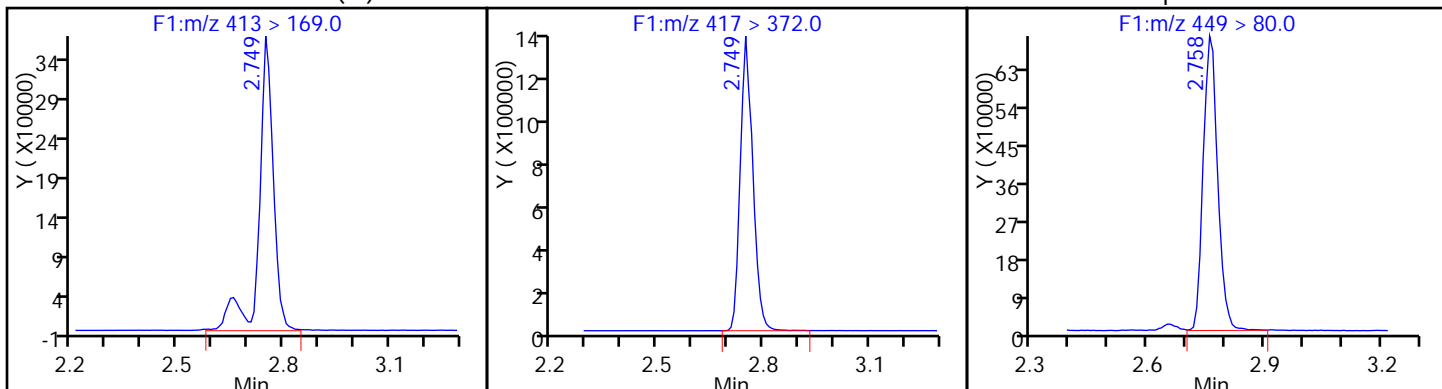
48 Sodium 1H,1H,2H,2H-perfluorooctane(SF)perfluorooctanoic acid (M)



15 Perfluorooctanoic acid (M)

D 14 13C4 PFOA

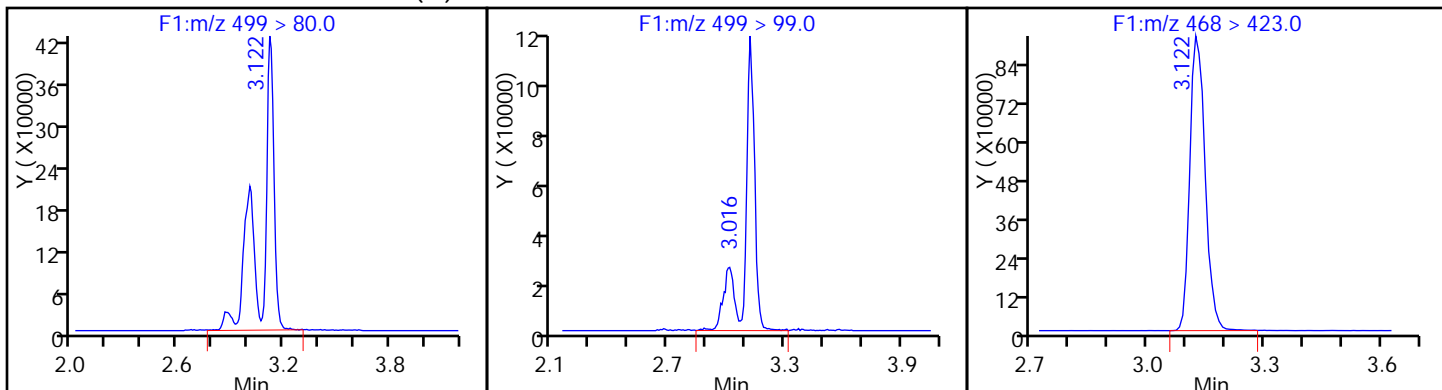
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid (M)

18 Perfluorooctane sulfonic acid

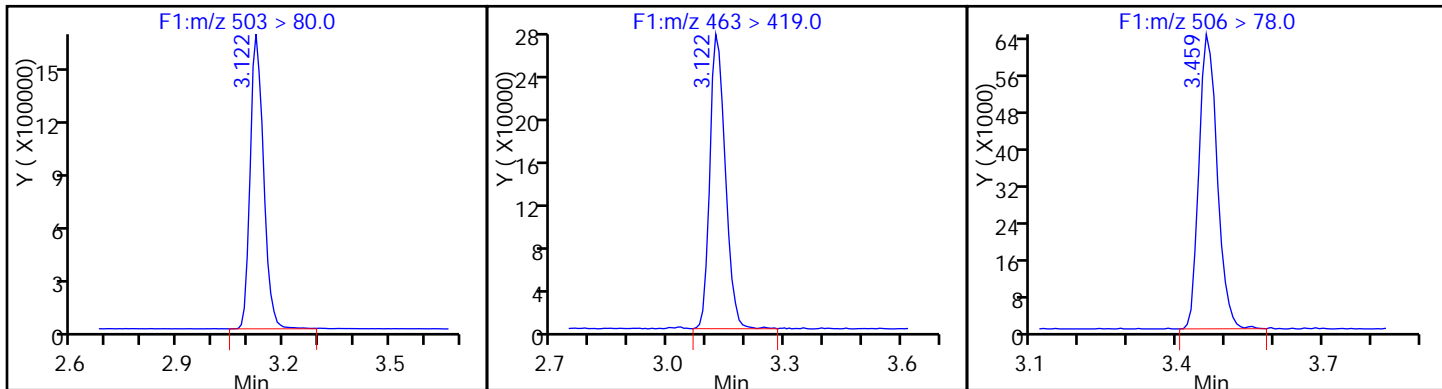
D 19 13C5 PFNA



D 17 13C4 PFOS

20 Perfluorononanoic acid

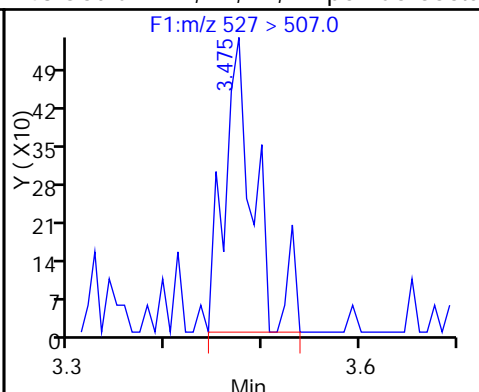
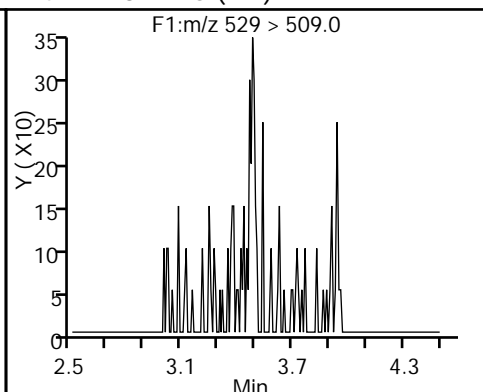
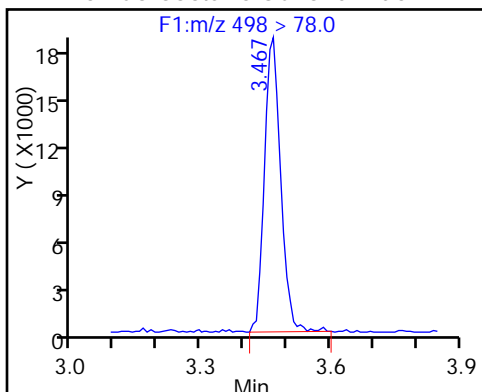
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 42 M2-8:2FTS (ND)

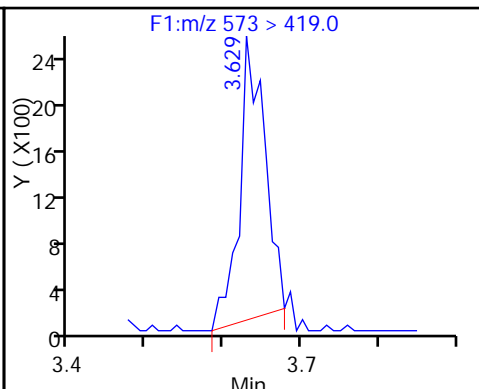
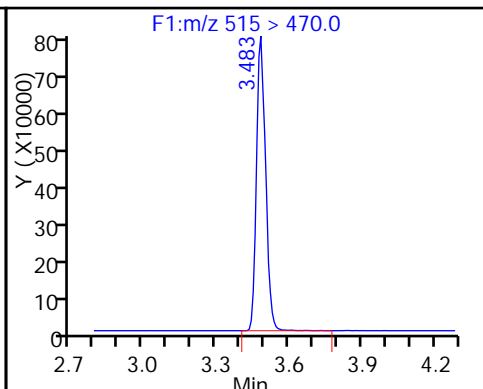
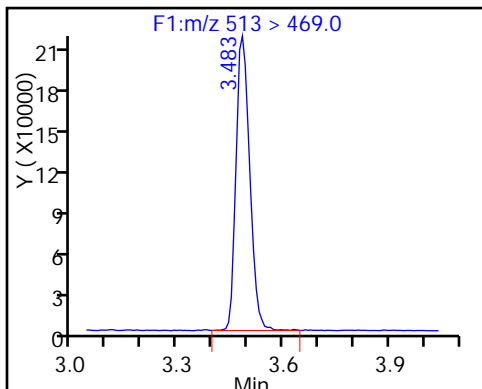
43 Sodium 1H,1H,2H,2H-perfluorooctane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

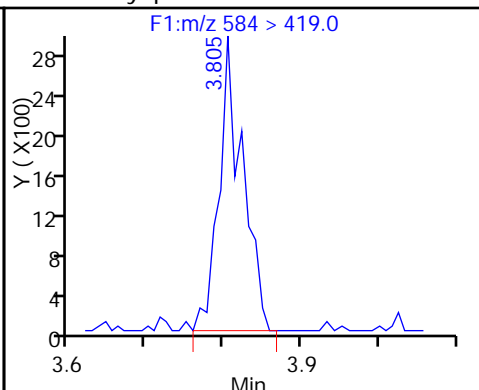
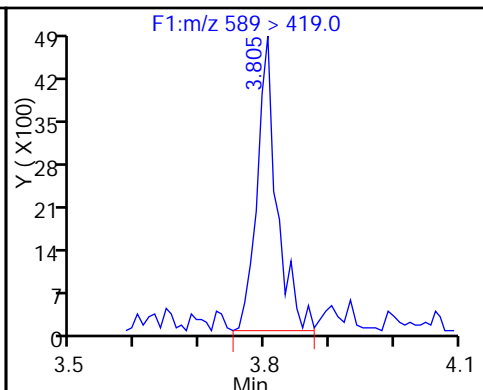
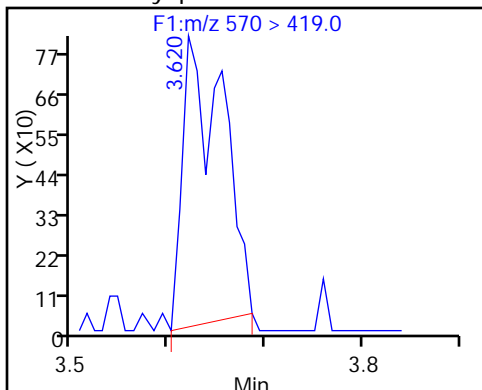
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamid

46 d5-NEtFOSAA

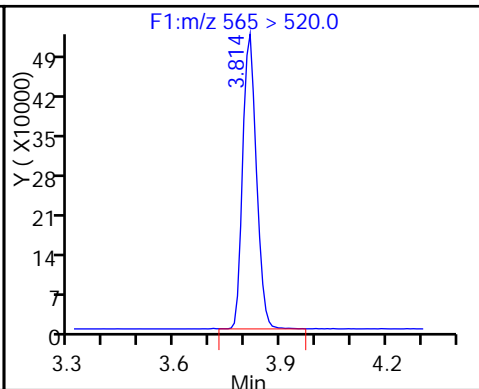
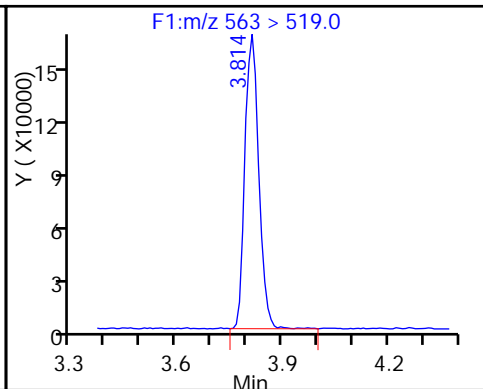
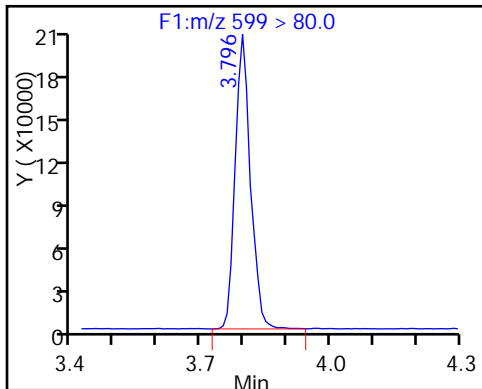
49 N-ethyl perfluorooctane sulfonamid



26 Perfluorodecane Sulfonic acid

28 Perfluoroundecanoic acid

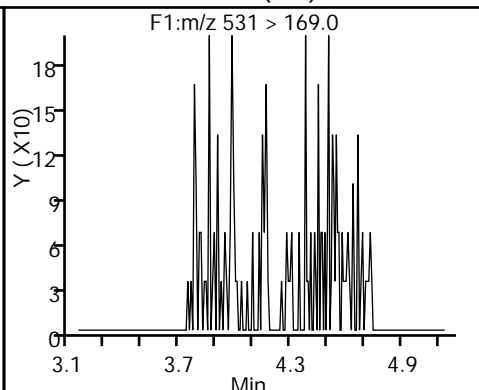
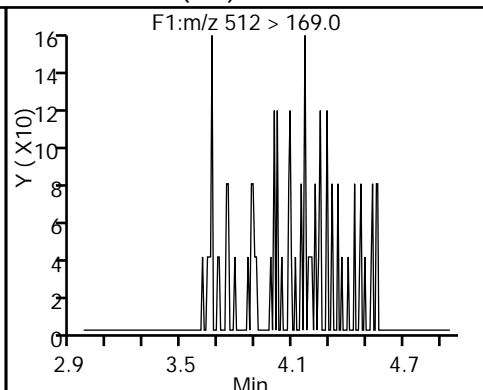
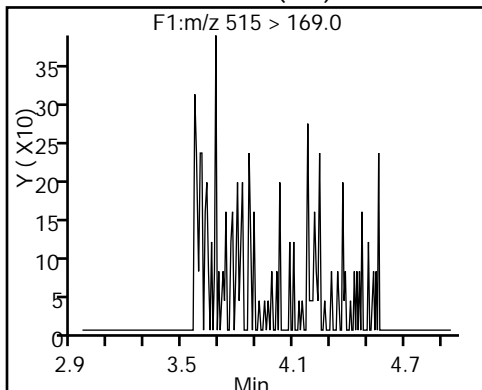
D 27 13C2 PFUnA



D 52 d-N-MeFOSA-M (ND)

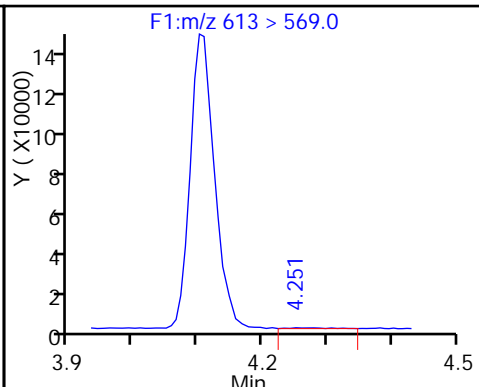
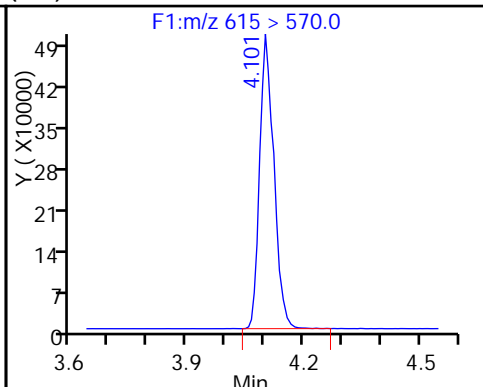
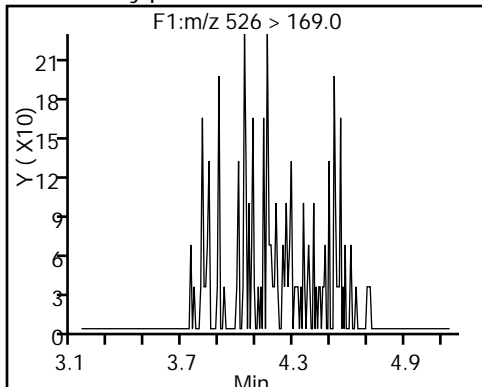
54 MeFOSA (ND)

D 51 d-N-EtFOSA-M (ND)



53 N-ethylperfluoro-1-octanesulfonami (ND) 13C2 PFDaA

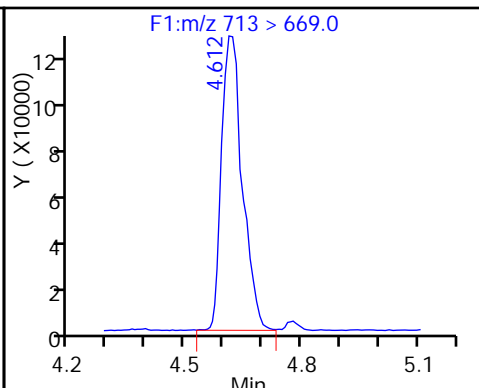
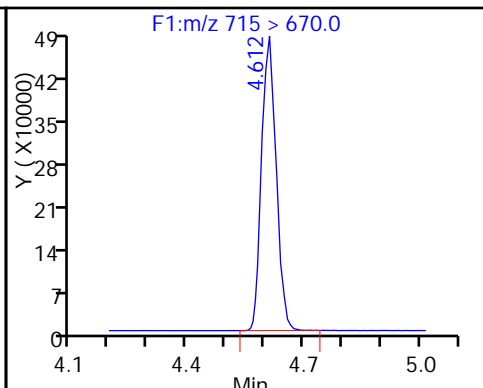
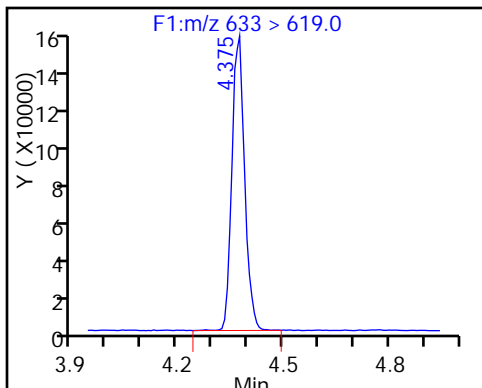
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

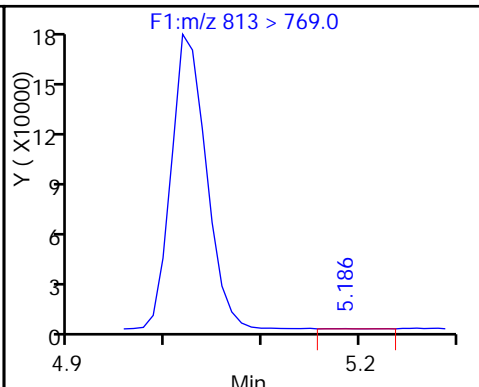
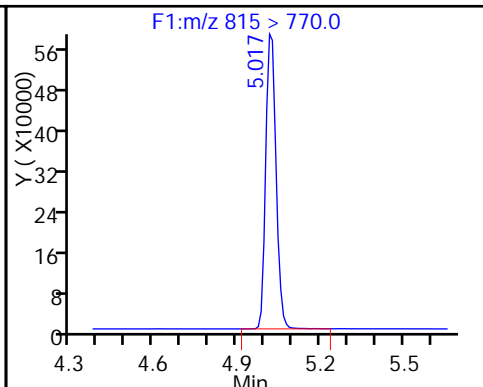
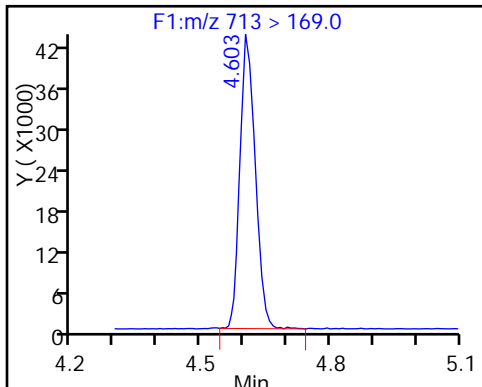
33 Perfluorotetradecanoic acid



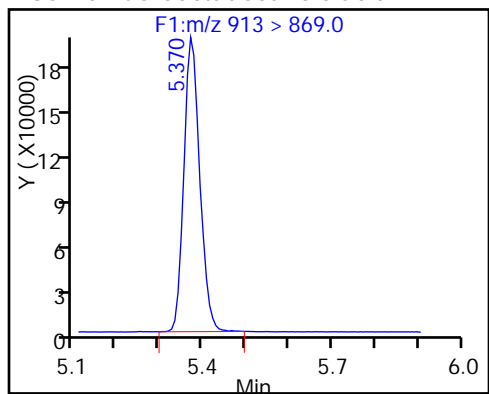
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

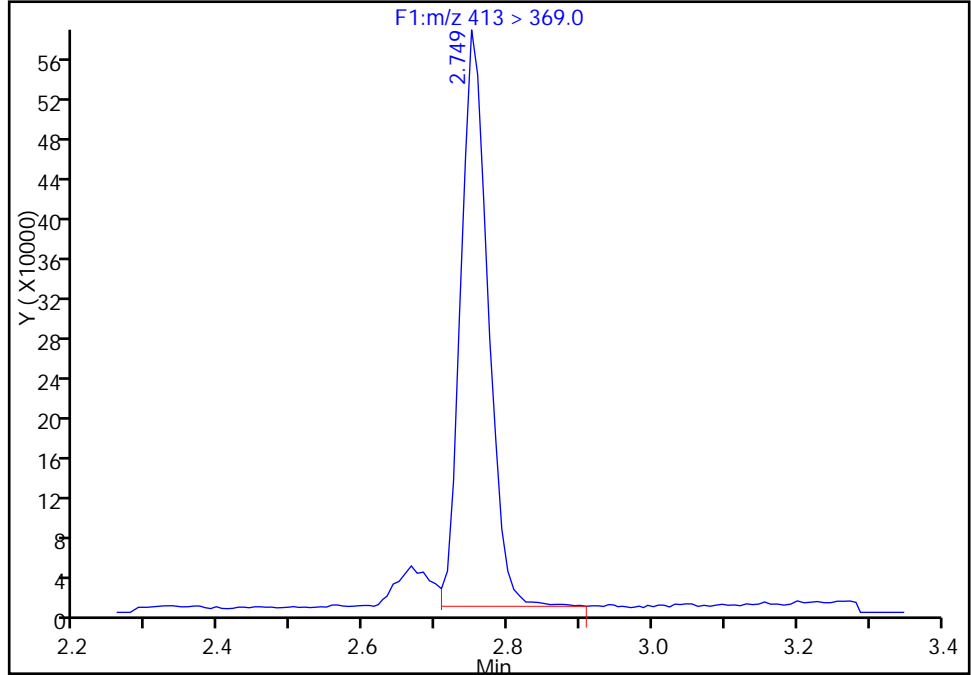
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Injection Date: 23-Aug-2016 12:39:00 Instrument ID: A8
Lims ID: 320-20928-A-3-B MS
Client ID: GW20-14GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

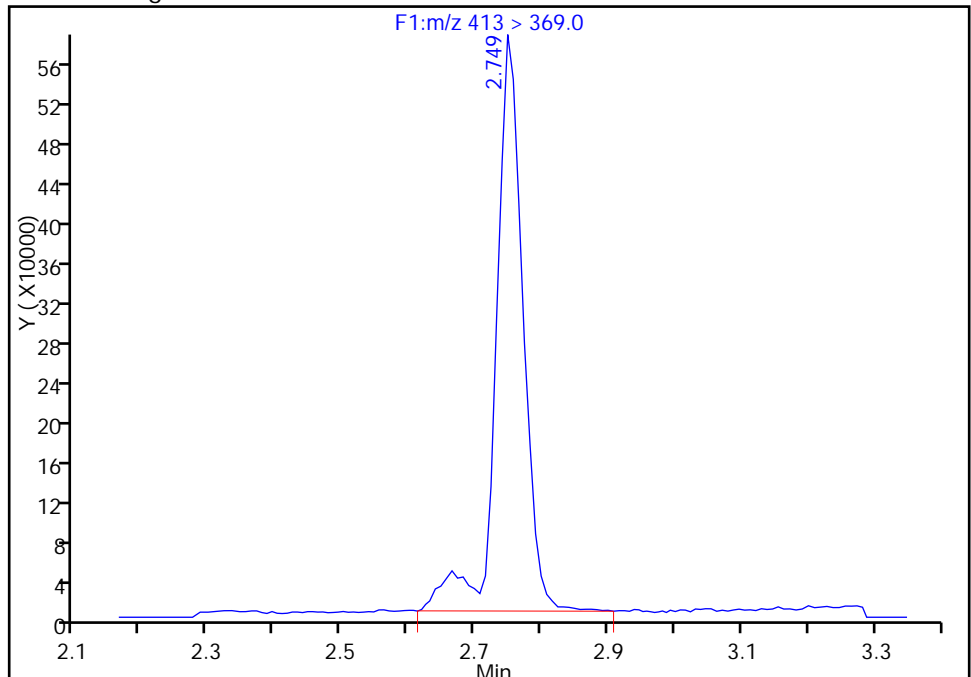
RT: 2.75
Area: 1528288
Amount: 22.939203
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 1657261
Amount: 24.899326
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:40:43
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

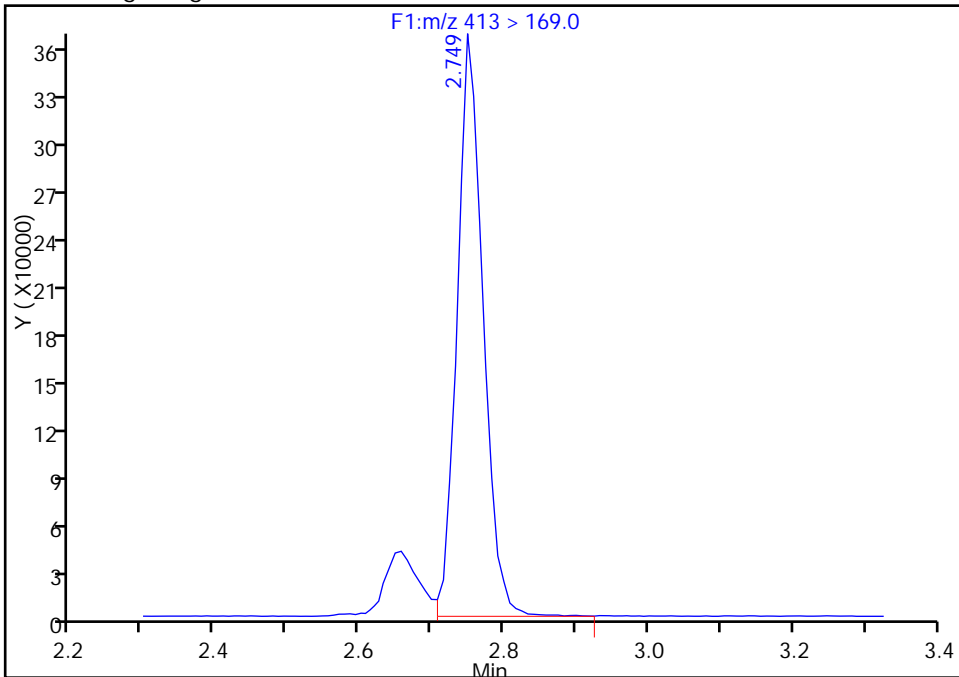
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Injection Date: 23-Aug-2016 12:39:00 Instrument ID: A8
Lims ID: 320-20928-A-3-B MS
Client ID: GW20-14GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

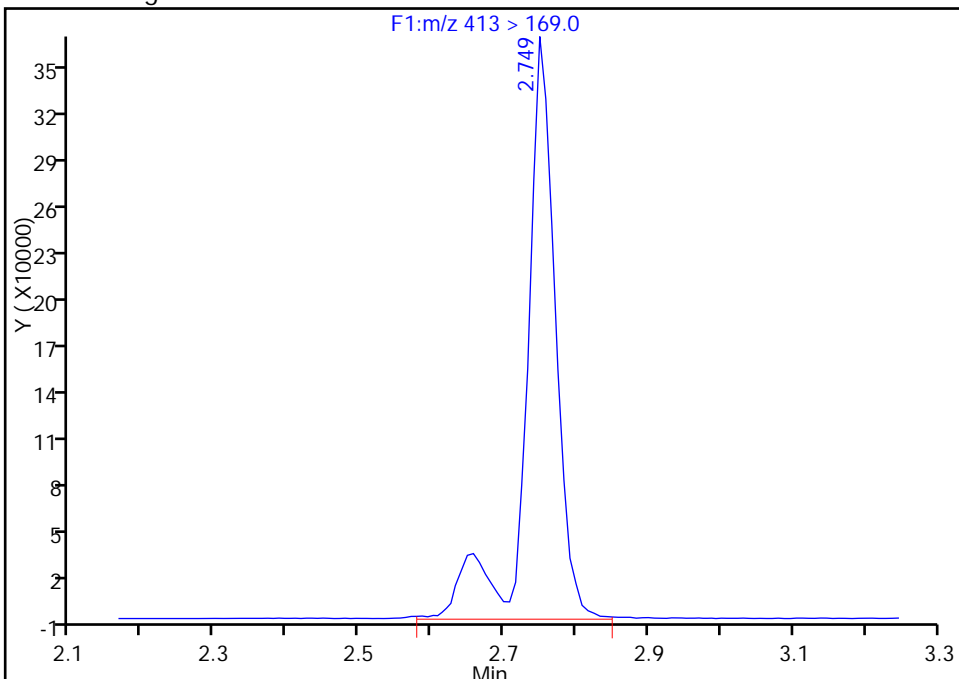
RT: 2.75
Area: 911618
Amount: 22.939203
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 1049745
Amount: 24.899326
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:40:43

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

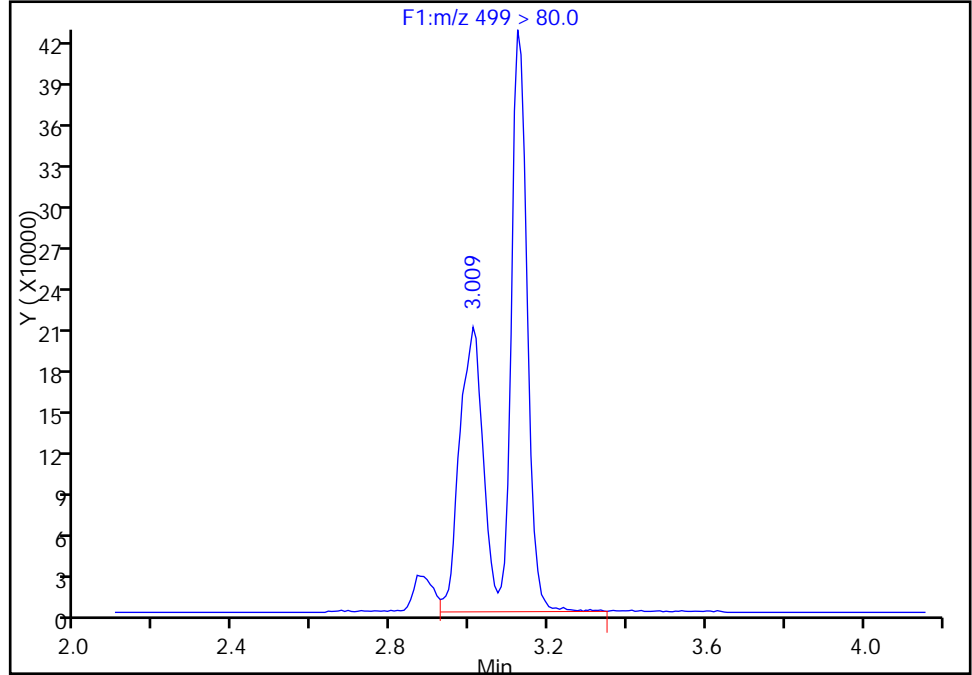
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Injection Date: 23-Aug-2016 12:39:00 Instrument ID: A8
Lims ID: 320-20928-A-3-B MS
Client ID: GW20-14GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

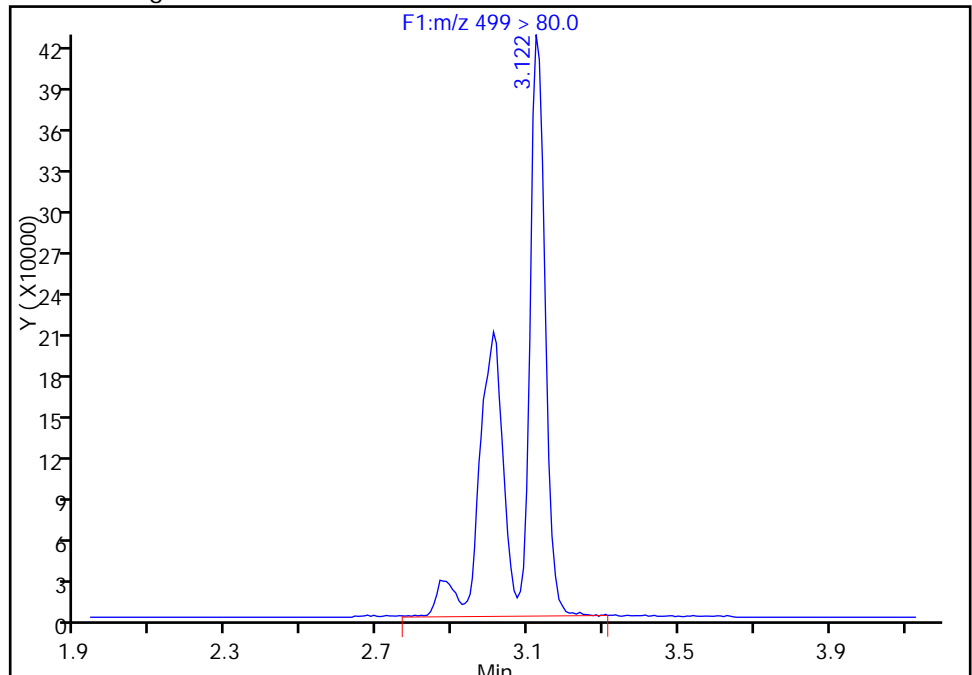
RT: 3.01
Area: 2060276
Amount: 19.784899
Amount Units: ng/ml

Processing Integration Results



RT: 3.12
Area: 2147694
Amount: 20.624377
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:40:43
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1
 SDG No.: _____
 Client Sample ID: GW20-14GW-0816 MSD Lab Sample ID: 320-20928-3 MSD
 Matrix: Water Lab File ID: 22AUG2016D_049_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/11/2016 10:55
 Extraction Method: 3535 Date Extracted: 08/17/2016 08:42
 Sample wt/vol: 267.2 (mL) Date Analyzed: 08/23/2016 12:46
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 123794 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	51.6	M	2.3	1.9	0.70
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42.0	M	3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	65		25-150
STL00991	13C4 PFOS	111		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_049_p1_e1.d
 Lims ID: 320-20928-A-3-C MSD
 Client ID: GW20-14GW-0816
 Sample Type: MSD
 Inject. Date: 23-Aug-2016 12:46:00 ALS Bottle#: 0 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 30-Aug-2016 17:57:12 Calib Date: 22-Aug-2016 18:23:00
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_020_p1_e1.d
 Column 1 : Det: F1(0.00 :6.60)
 Process Host: XAWRK003

First Level Reviewer: barnettj Date: 30-Aug-2016 17:41:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.514	1.522	-0.008		3361666	24.8		49.6	364214	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	1196583	20.6		103	8353	
D 4 13C5-PFPeA										
267.9 > 223.0	1.774	1.797	-0.023		3913454	36.3		72.6	296942	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.783	1.797	-0.014	1.000	1444372	18.0		90.2	10711	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.808	1.837	-0.029	1.000	4351170	20.5		116		
298.9 > 99.0	1.817	1.837	-0.021	1.005	1733957		2.51(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		3339877	34.4		68.9	292624	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	1353327	21.0		105	10951	
12 Perfluoroheptanoic acid										
363 > 319.0	2.387	2.427	-0.040	1.000	1294343	19.3		96.6	12470	
D 11 13C4-PFHpA										
367 > 322.0	2.387	2.430	-0.043		3202008	33.2		66.4	274292	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.402	2.446	-0.044	1.000	4455755	29.3		161		
D 10 18O2 PFHxS										
403 > 84.0	2.402	2.446	-0.044		6461016	57.5		122	314105	
15 Perfluorooctanoic acid										M
413 > 369.0	2.740	2.798	-0.058	1.000	1732419	27.6		138	12473	M
413 > 169.0	2.740	2.798	-0.058	1.000	1031048		1.68(0.90-1.10)		69943	M
D 14 13C4 PFOA										
417 > 372.0	2.740	2.798	-0.058		3121673	32.4		64.8	294505	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.757	2.807	-0.050	1.000	2012571	19.0		99.9		09/07/2016

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										M
499 > 80.0	3.112	3.110	0.003	1.000	2260087	22.5		121	53750	M
499 > 99.0	3.015	3.110	-0.094	0.969	434226		5.20(0.90-1.10)		6531	
D 19 13C5 PFNA										
468 > 423.0	3.121	3.177	-0.056		2367255	29.8		59.5	195380	
D 17 13C4 PFOS										
503 > 80.0	3.112	3.177	-0.065		4336733	52.8		111	134961	
20 Perfluorononanoic acid										
463 > 419.0	3.121	3.183	-0.062	1.000	841311	17.8		88.9	20471	
D 21 13C8 FOSA										
506 > 78.0	3.458	3.474	-0.016		248017	1.65		3.3	94521	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.458	3.475	-0.017	1.000	80662	17.7		88.3	14850	
24 Perfluorodecanoic acid										
513 > 469.0	3.474	3.546	-0.072	1.000	569679	16.2		80.9	26907	
D 23 13C2 PFDA										
515 > 470.0	3.482	3.546	-0.064		1790397	24.6		49.2	5712	
D 45 d3-NMeFOSAA										
573 > 419.0	3.625	3.670	-0.045		552	0.0208		0.0		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.643	3.675	-0.032	1.005	524	NR		0.0		
D 46 d5-NEtFOSAA										
589 > 419.0	3.853	3.843	0.010		770	0.0266		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.790	3.844	-0.054	0.984	3916	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.781	3.863	-0.082	1.000	491059	8.83		45.8		
28 Perfluoroundecanoic acid										
563 > 519.0	3.799	3.880	-0.081	1.000	440997	16.4		81.9	20337	
D 27 13C2 PFUnA										
565 > 520.0	3.808	3.880	-0.072		1242699	22.3		44.7	236830	
D 30 13C2 PFDoA										
615 > 570.0	4.097	4.183	-0.086		1095783	20.6		41.2	135224	
29 Perfluorododecanoic acid										
613 > 569.0	4.097	4.185	-0.088	1.000	384856	17.7		88.6	25655	
31 Perfluorotridecanoic acid										
633 > 619.0	4.365	4.452	-0.087	1.000	364598	17.0		84.9	35089	
D 32 13C2-PFTeDA										
715 > 670.0	4.606	4.697	-0.091		1053168	22.3		44.6	193766	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.606	4.701	-0.095	1.000	473070	25.7		128	9799	
713 > 169.0	4.596	4.701	-0.105	0.998	101873		4.64(0.00-0.00)		40192	
D 34 13C2-PFHxDA										
815 > 770.0	5.020	5.125	-0.105		1324980	20.1		40.2	257756	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.020	5.127	-0.107	1.000	405848	14.9		74.7	8057	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.366	5.509	-0.143	1.000	429984	17.3		86.4	7897	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b\22AUG2016D_049_p1_e1.d

Injection Date: 23-Aug-2016 12:46:00 Instrument ID: A8

Lims ID: 320-20928-A-3-C MSD

Client ID: GW20-14GW-0816

Operator ID: A8

ALS Bottle#: 0 Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

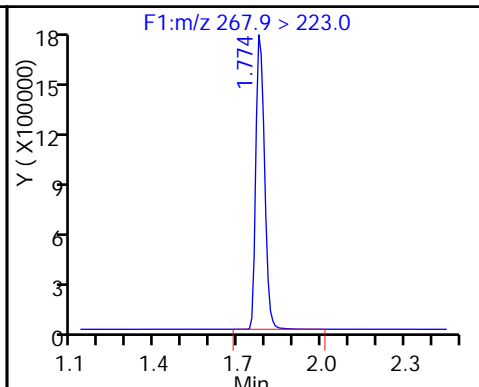
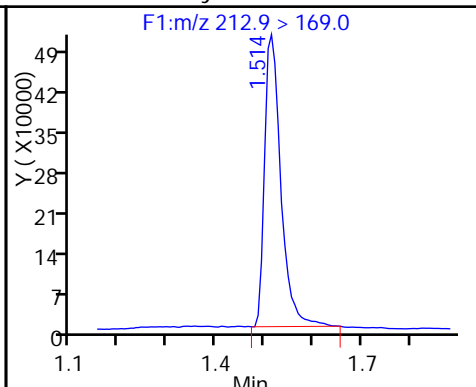
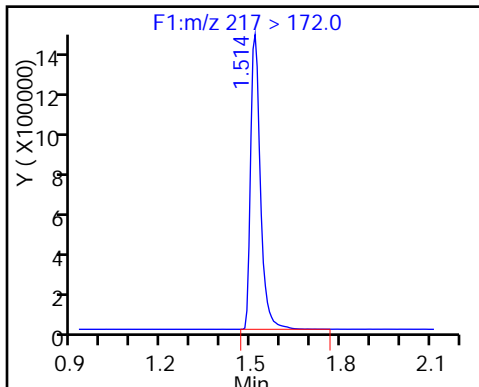
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

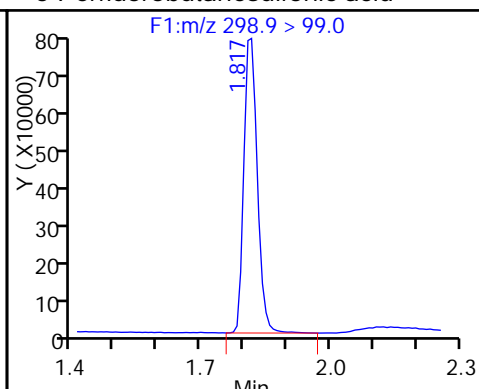
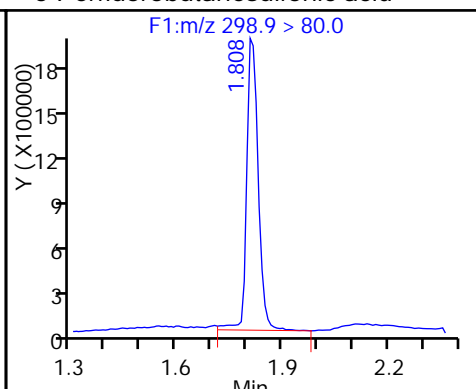
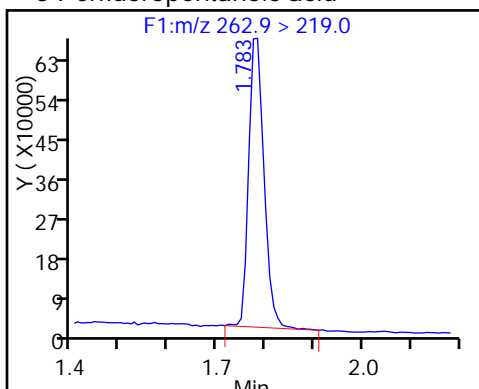
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

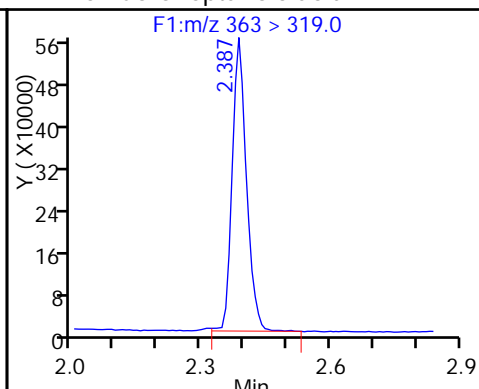
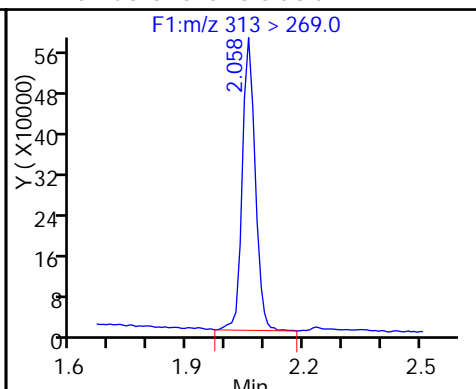
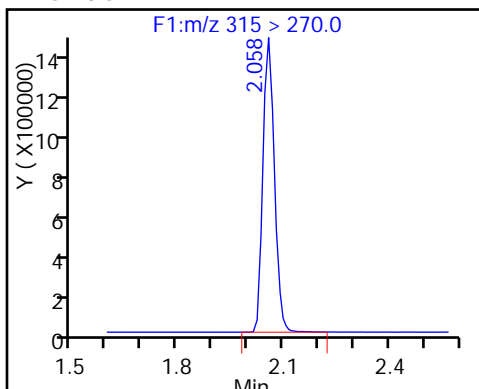
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

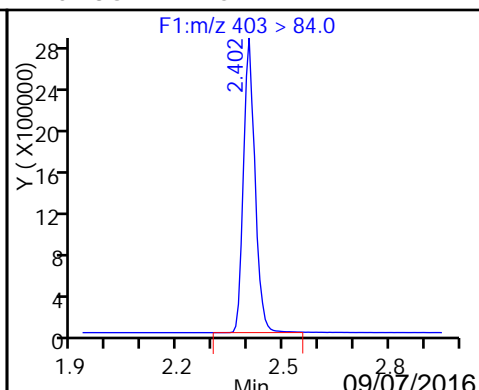
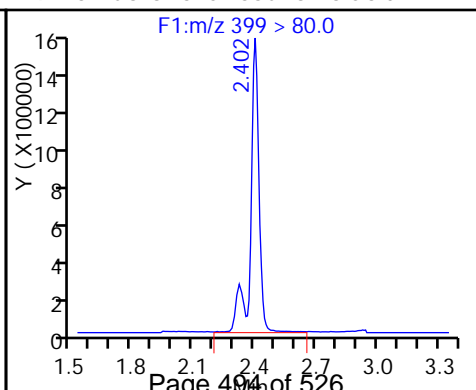
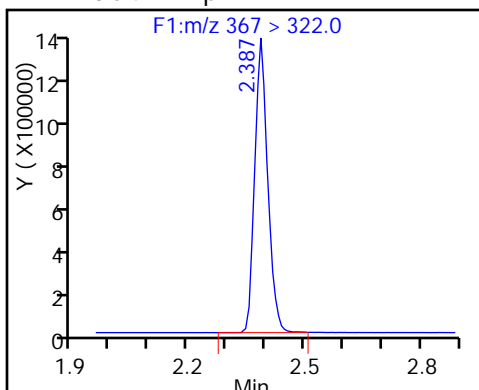
12 Perfluoroheptanoic acid



D 11 13C4-PFHpA

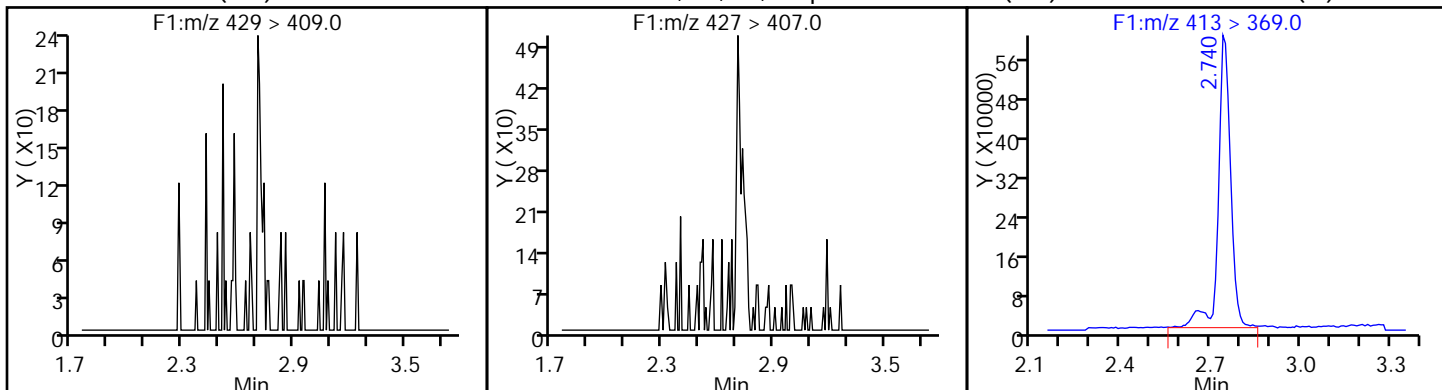
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS



D 47 M2-6:2FTS (ND)

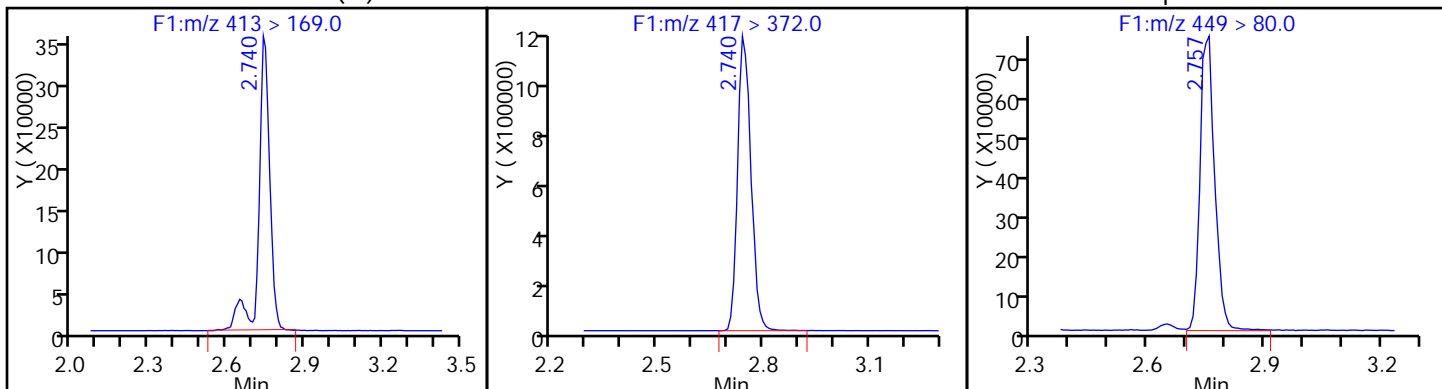
48 Sodium 1H,1H,2H,2H-perfluorooctane(SF)
11 Perfluorooctanoic acid (M)



15 Perfluorooctanoic acid (M)

D 14 13C4 PFOA

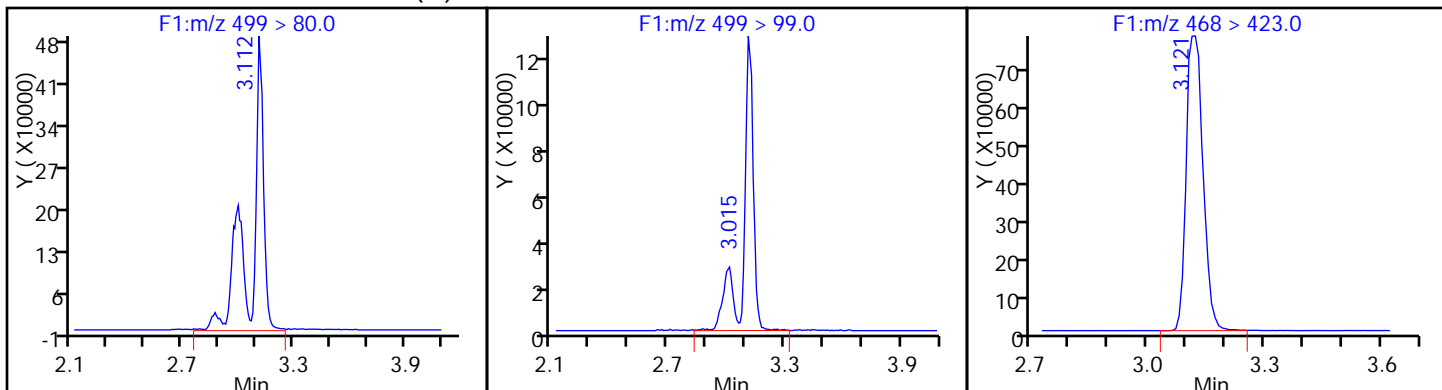
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid (M)

18 Perfluorooctane sulfonic acid

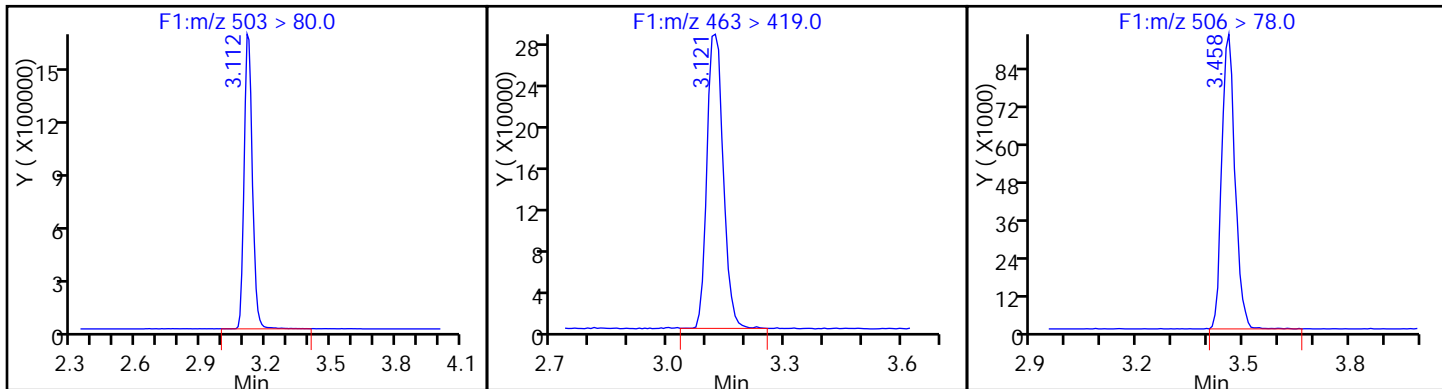
D 19 13C5 PFNA



D 17 13C4 PFOS

20 Perfluorononanoic acid

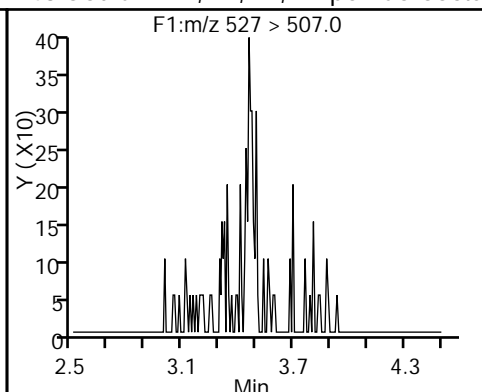
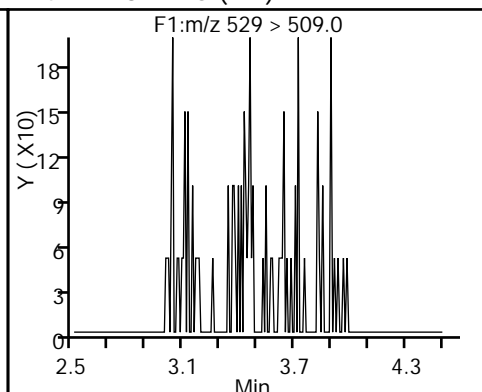
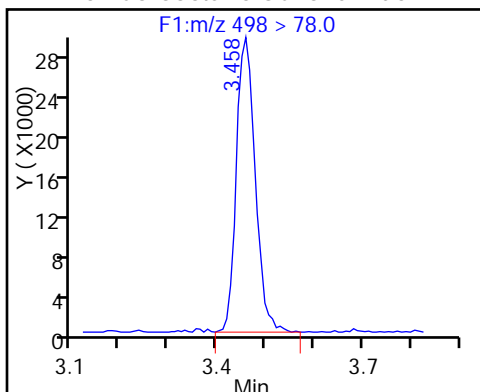
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 42 M2-8:2FTS (ND)

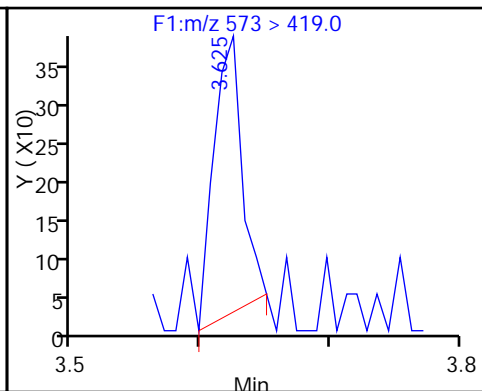
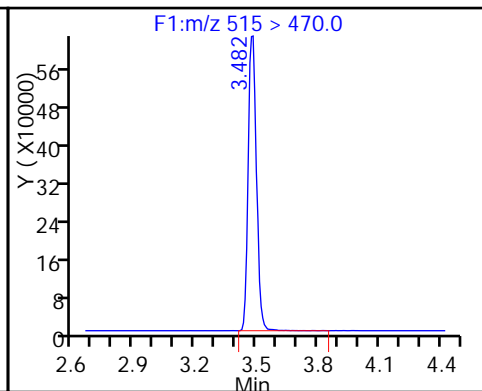
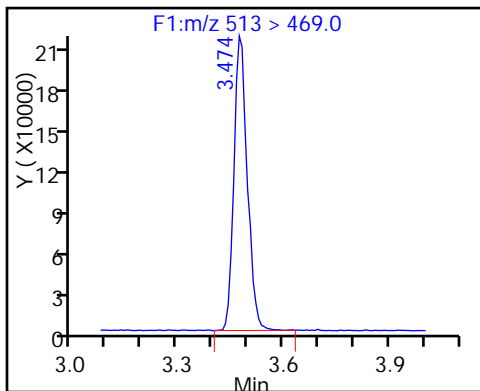
43 Sodium 1H,1H,2H,2H-perfluorooctane (ND)



24 Perfluorodecanoic acid

D 23 13C2 PFDA

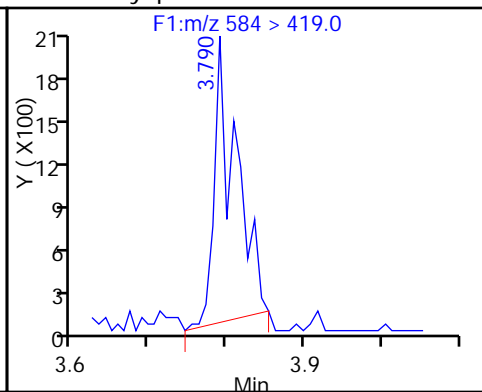
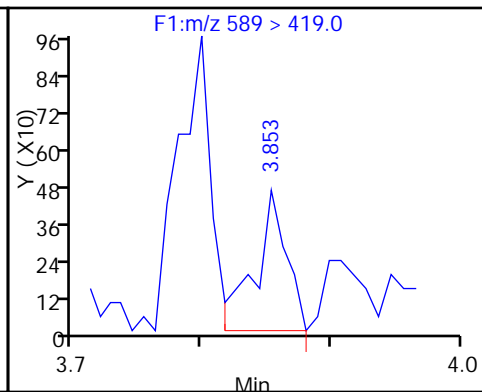
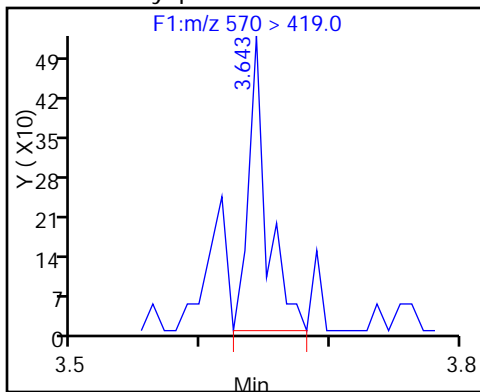
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamid

46 d5-NEtFOSAA

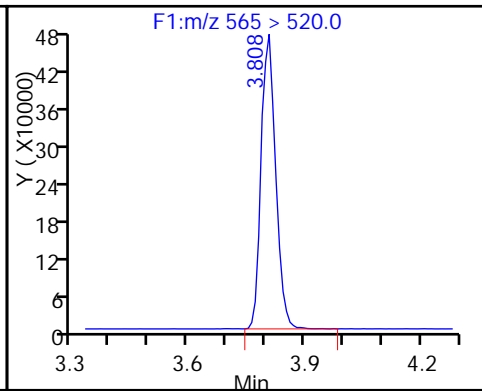
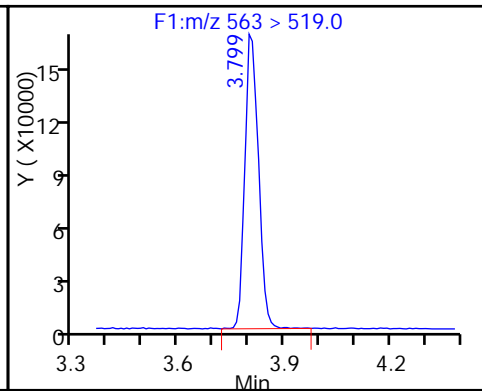
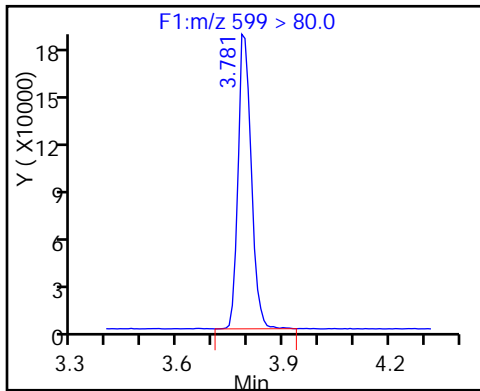
49 N-ethyl perfluorooctane sulfonamid



26 Perfluorodecane Sulfonic acid

28 Perfluoroundecanoic acid

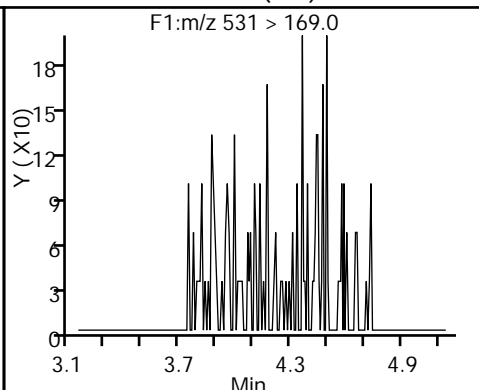
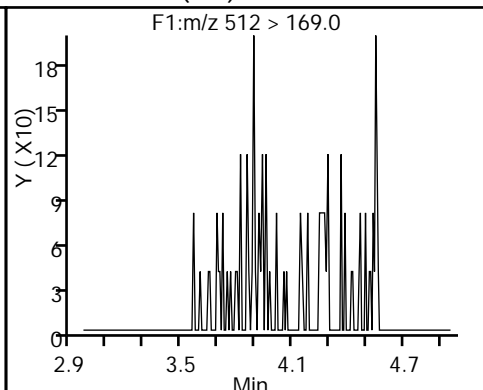
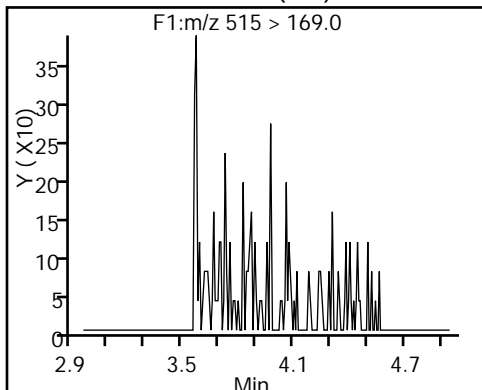
D 27 13C2 PFUnA



D 52 d-N-MeFOSA-M (ND)

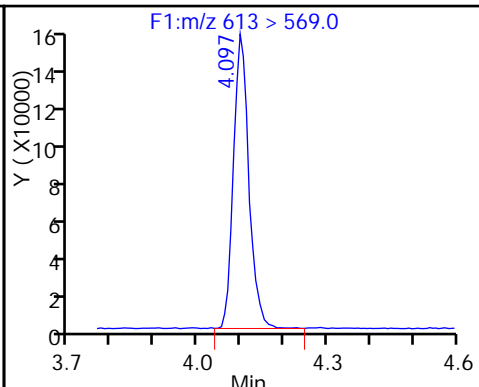
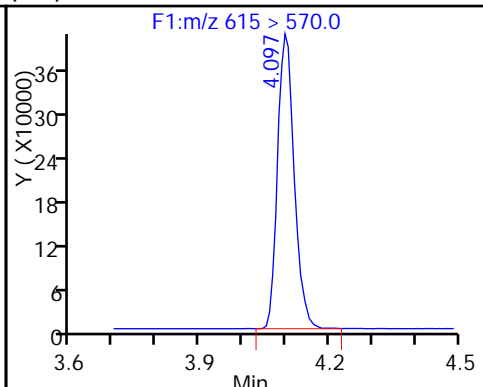
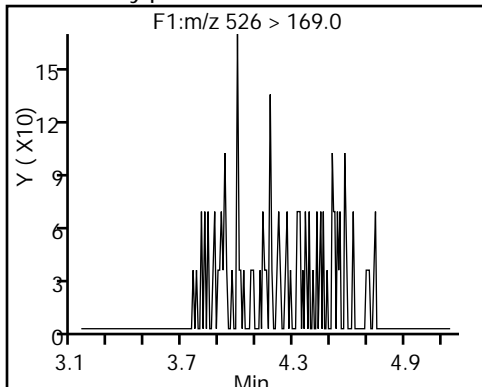
54 MeFOSA (ND)

D 51 d-N-EtFOSA-M (ND)



53 N-ethylperfluoro-1-octanesulfonami (ND) 13C2 PFDaA

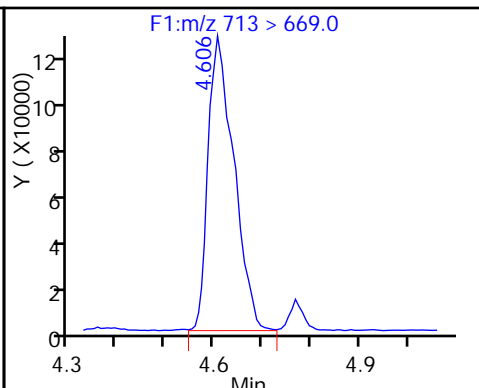
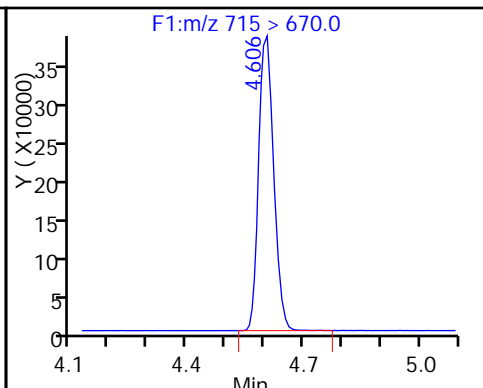
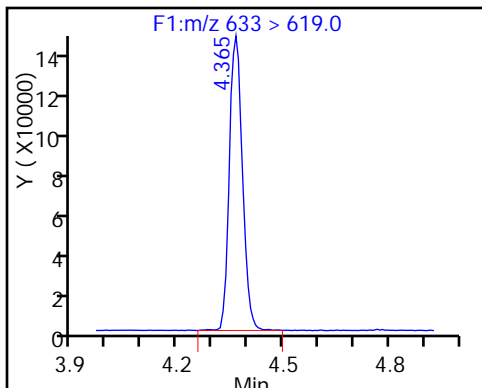
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

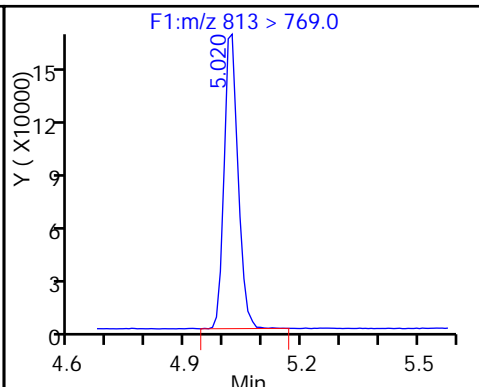
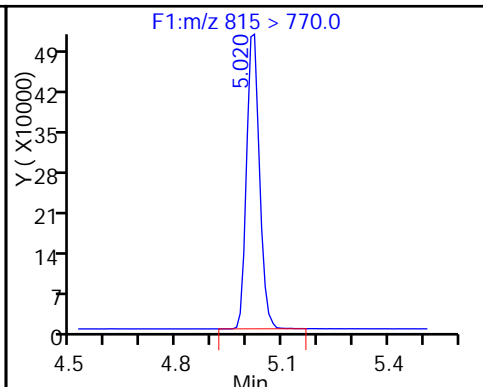
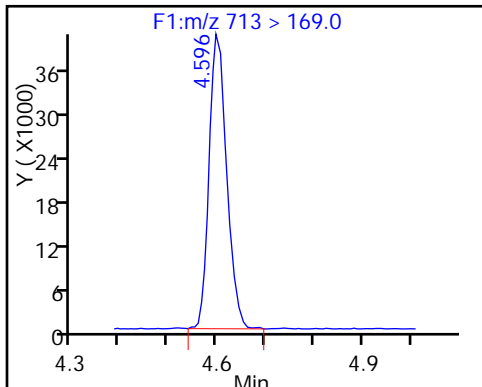
33 Perfluorotetradecanoic acid



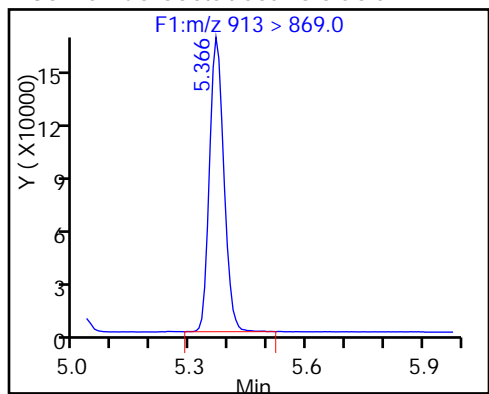
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

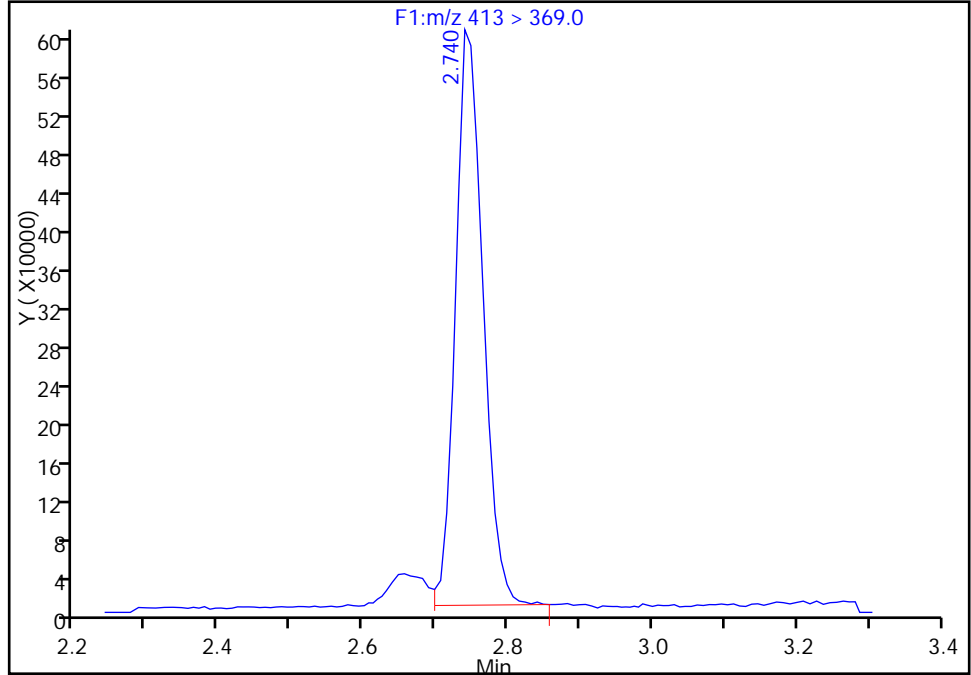
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Injection Date: 23-Aug-2016 12:46:00 Instrument ID: A8
Lims ID: 320-20928-A-3-C MSD
Client ID: GW20-14GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

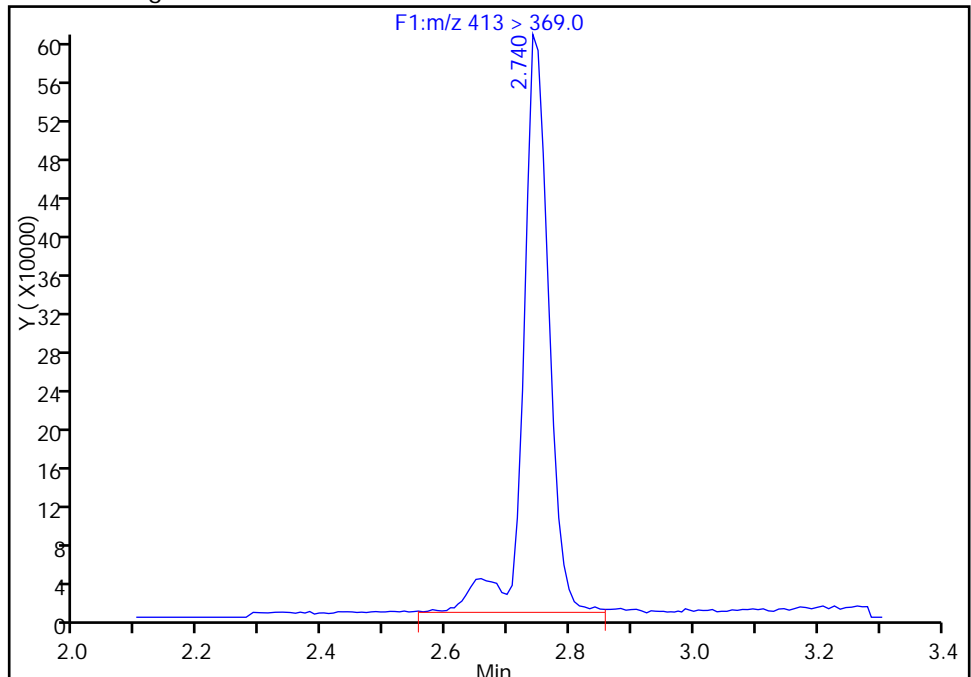
RT: 2.74
Area: 1574966
Amount: 25.055723
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 1732419
Amount: 27.589355
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:41:56
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

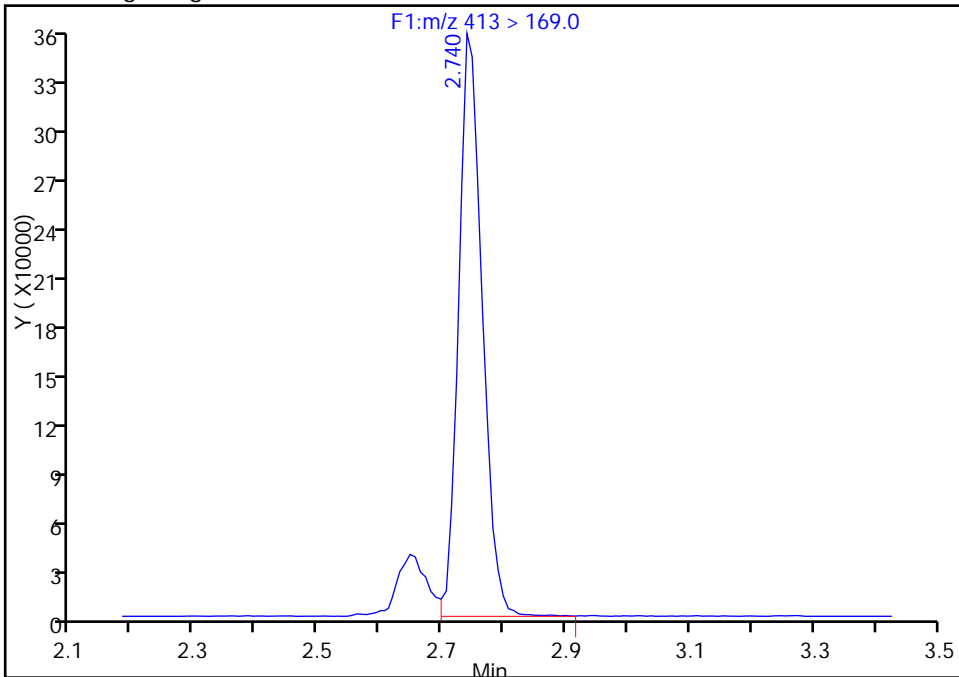
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Injection Date: 23-Aug-2016 12:46:00 Instrument ID: A8
Lims ID: 320-20928-A-3-C MSD
Client ID: GW20-14GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

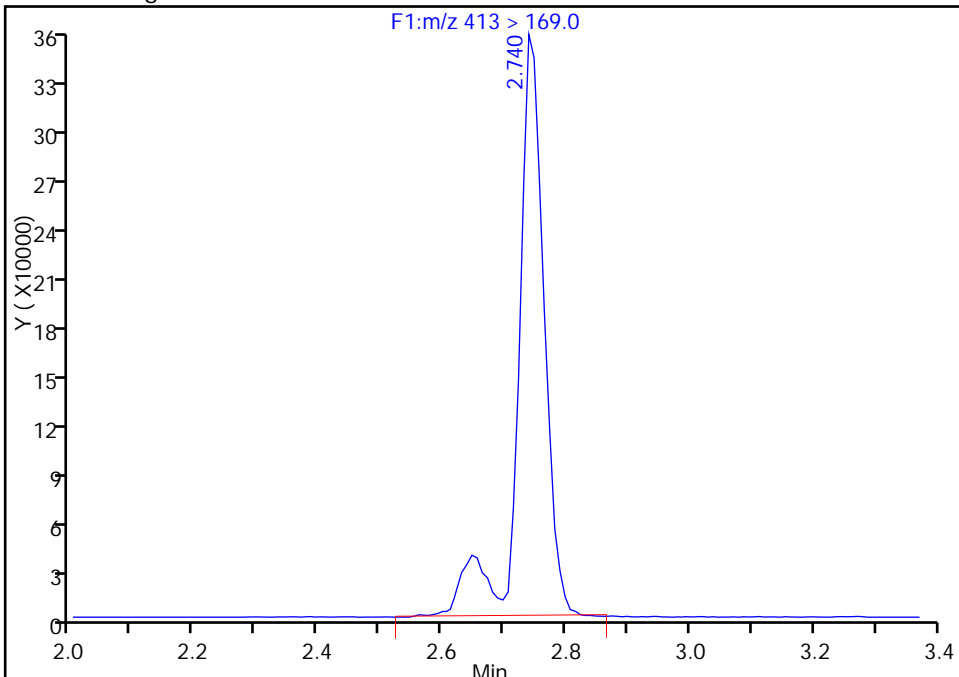
RT: 2.74
Area: 928939
Amount: 25.055723
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 1031048
Amount: 27.589355
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

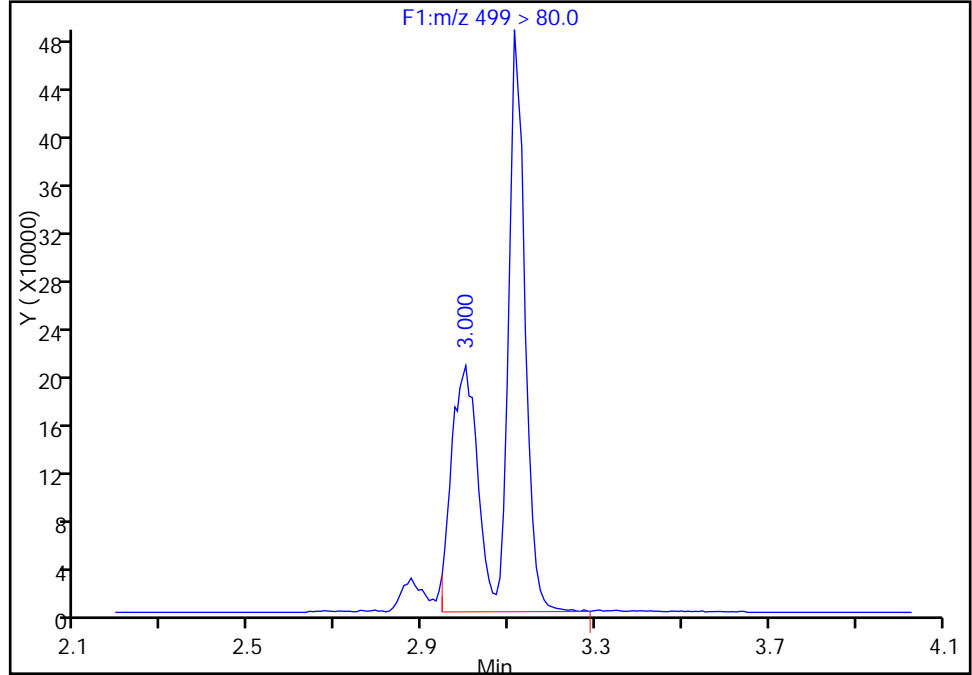
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Injection Date: 23-Aug-2016 12:46:00 Instrument ID: A8
Lims ID: 320-20928-A-3-C MSD
Client ID: GW20-14GW-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

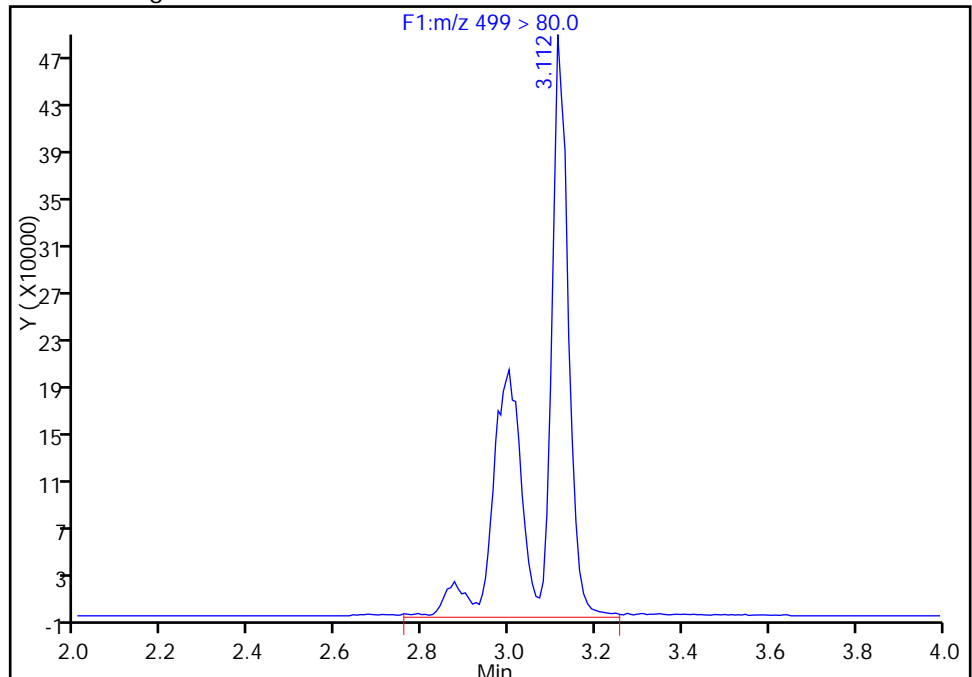
RT: 3.00
Area: 2095425
Amount: 20.825772
Amount Units: ng/ml

Processing Integration Results



RT: 3.11
Area: 2260087
Amount: 22.462296
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 30-Aug-2016 17:41:56
Audit Action: Manually Integrated

Audit Reason: Isomers

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Start Date: 08/22/2016 16:24

Analysis Batch Number: 123741 End Date: 08/23/2016 00:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-123741/2		08/22/2016 16:24	1	22AUG2016A_004_p1_el.d	Acquity 2.1(mm)
IC 320-123741/3		08/22/2016 16:31	1	22AUG2016A_005_p1_el.d	Acquity 2.1(mm)
IC 320-123741/4		08/22/2016 16:38	1	22AUG2016A_006_p1_el.d	Acquity 2.1(mm)
IC 320-123741/5		08/22/2016 16:46	1	22AUG2016A_007_p1_el.d	Acquity 2.1(mm)
IC 320-123741/6		08/22/2016 16:53	1	22AUG2016A_008_p1_el.d	Acquity 2.1(mm)
IC 320-123741/7		08/22/2016 17:01	1	22AUG2016A_009_p1_el.d	Acquity 2.1(mm)
IC 320-123741/8		08/22/2016 17:08	1	22AUG2016A_010_p1_el.d	Acquity 2.1(mm)
ZZZZZ		08/22/2016 17:16	1		Acquity 2.1(mm)
ICV 320-123741/10		08/22/2016 17:23	1	22AUG2016A_012_p1_el.d	Acquity 2.1(mm)
ZZZZZ		08/22/2016 17:31	1		Acquity 2.1(mm)
IC 320-123741/12		08/22/2016 17:38	1	22AUG2016A_014_p1_el.d	Acquity 2.1(mm)
IC 320-123741/13		08/22/2016 17:46	1	22AUG2016A_015_p1_el.d	Acquity 2.1(mm)
IC 320-123741/14		08/22/2016 17:53	1	22AUG2016A_016_p1_el.d	Acquity 2.1(mm)
IC 320-123741/15		08/22/2016 18:01	1	22AUG2016A_017_p1_el.d	Acquity 2.1(mm)
IC 320-123741/16		08/22/2016 18:08	1	22AUG2016A_018_p1_el.d	Acquity 2.1(mm)
IC 320-123741/17		08/22/2016 18:16	1	22AUG2016A_019_p1_el.d	Acquity 2.1(mm)
IC 320-123741/18		08/22/2016 18:23	1	22AUG2016A_020_p1_el.d	Acquity 2.1(mm)
ZZZZZ		08/22/2016 18:31	1		Acquity 2.1(mm)
ICV 320-123741/20		08/22/2016 18:38	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 20:08	1		Acquity 2.1(mm)
CCV 320-123741/74		08/22/2016 20:16	1		Acquity 2.1(mm)
CCV 320-123741/75		08/22/2016 20:23	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 20:31	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 21:23	1		Acquity 2.1(mm)
CCV 320-123741/80		08/22/2016 21:31	1		Acquity 2.1(mm)
CCV 320-123741/82		08/22/2016 21:38	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 21:46	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 21:53	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 22:01	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 22:08	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 22:16	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 22:23	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 22:31	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 22:38	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 22:46	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 22:53	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 23:01	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 23:08	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Start Date: 08/22/2016 16:24

Analysis Batch Number: 123741 End Date: 08/23/2016 00:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-123741/97		08/22/2016 23:16	1		Acquity 2.1(mm)
CCV 320-123741/98		08/22/2016 23:23	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 23:31	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 23:38	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 23:46	1		Acquity 2.1(mm)
ZZZZZ		08/22/2016 23:53	1		Acquity 2.1(mm)
ZZZZZ		08/23/2016 00:01	1		Acquity 2.1(mm)
CCV 320-123741/101		08/23/2016 00:08	1		Acquity 2.1(mm)
CCV 320-123741/102		08/23/2016 00:16	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Instrument ID: A8 Start Date: 08/23/2016 11:39

Analysis Batch Number: 123794 End Date: 08/23/2016 16:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-123794/2		08/23/2016 11:39	1	22AUG2016D_086_p1_el.d	Acquity 2.1(mm)
CCV 320-123794/3		08/23/2016 11:46	1		Acquity 2.1(mm)
MB 320-122573/1-A		08/23/2016 12:01	1	22AUG2016D_043_p1_el.d	Acquity 2.1(mm)
LCS 320-122573/2-A		08/23/2016 12:09	1	22AUG2016D_044_p1_el.d	Acquity 2.1(mm)
320-20928-1		08/23/2016 12:16	1	22AUG2016D_045_p1_el.d	Acquity 2.1(mm)
320-20928-2		08/23/2016 12:24	1	22AUG2016D_046_p1_el.d	Acquity 2.1(mm)
320-20928-3		08/23/2016 12:31	1	22AUG2016D_047_p1_el.d	Acquity 2.1(mm)
320-20928-3 MS		08/23/2016 12:39	1	22AUG2016D_048_p1_el.d	Acquity 2.1(mm)
320-20928-3 MSD		08/23/2016 12:46	1	22AUG2016D_049_p1_el.d	Acquity 2.1(mm)
320-20928-4		08/23/2016 12:54	1	22AUG2016D_050_p1_el.d	Acquity 2.1(mm)
CCV 320-123794/14		08/23/2016 13:09	1	22AUG2016D_052_p1_el.d	Acquity 2.1(mm)
320-20928-5		08/23/2016 13:31	1	22AUG2016D_055_p1_el.d	Acquity 2.1(mm)
320-20928-6		08/23/2016 13:39	1	22AUG2016D_056_p1_el.d	Acquity 2.1(mm)
320-20928-7		08/23/2016 13:46	1	22AUG2016D_057_p1_el.d	Acquity 2.1(mm)
320-20928-8		08/23/2016 13:54	1	22AUG2016D_058_p1_el.d	Acquity 2.1(mm)
320-20928-9		08/23/2016 14:01	1	22AUG2016D_059_p1_el.d	Acquity 2.1(mm)
320-20928-10		08/23/2016 14:09	1	22AUG2016D_060_p1_el.d	Acquity 2.1(mm)
320-20928-11		08/23/2016 14:16	1	22AUG2016D_061_p1_el.d	Acquity 2.1(mm)
320-20928-12		08/23/2016 14:24	1	22AUG2016D_062_p1_el.d	Acquity 2.1(mm)
320-20928-13		08/23/2016 14:31	1	22AUG2016D_063_p1_el.d	Acquity 2.1(mm)
320-20928-14		08/23/2016 14:39	1	22AUG2016D_064_p1_el.d	Acquity 2.1(mm)
CCV 320-123794/28		08/23/2016 14:54	1	22AUG2016D_066_p1_el.d	Acquity 2.1(mm)
320-20928-15		08/23/2016 15:16	1	22AUG2016D_069_p1_el.d	Acquity 2.1(mm)
320-20928-16		08/23/2016 15:24	1	22AUG2016D_070_p1_el.d	Acquity 2.1(mm)
320-20928-17		08/23/2016 15:31	1	22AUG2016D_071_p1_el.d	Acquity 2.1(mm)
320-20928-18		08/23/2016 15:39	1	22AUG2016D_072_p1_el.d	Acquity 2.1(mm)
CCV 320-123794/40		08/23/2016 16:24	1	22AUG2016D_078_p1_el.d	Acquity 2.1(mm)

Sample Name	Acquisition Date & Time
RB	8/22/2016 15:41
RB	8/22/2016 15:49
RB_b	8/22/2016 15:56
L1_b	8/22/2016 16:04
L2_b	8/22/2016 16:11
L3_b	8/22/2016 16:18
L4_b	8/22/2016 16:26
L5_b	8/22/2016 16:33
L6_b	8/22/2016 16:41
L7_b	8/22/2016 16:48
RB_b	8/22/2016 16:56
ICV_b	8/22/2016 17:03
RB_b	8/22/2016 17:11
L1 ADD ON	8/22/2016 17:18
L2 ADD ON	8/22/2016 17:26
L3 ADD ON	8/22/2016 17:33
L4 ADD ON	8/22/2016 17:41
L5 ADD ON	8/22/2016 17:48
L6 ADD ON	8/22/2016 17:56
L7 ADD ON	8/22/2016 18:03
RB	8/22/2016 18:11
ICV ADD ON	8/22/2016 18:18
RB	8/22/2016 18:26
320-20990-a-1-a	8/22/2016 18:33
320-20990-a-2-a	8/22/2016 18:41
320-20990-a-4-a	8/22/2016 18:48
320-20990-a-5-a	8/22/2016 18:56
320-20990-a-7-a	8/22/2016 19:03
320-20990-a-8-a	8/22/2016 19:11
320-20990-a-10-a	8/22/2016 19:18
320-20990-a-11-a	8/22/2016 19:26
320-20990-a-13-a	8/22/2016 19:33
320-20990-a-14-a	8/22/2016 19:41
RB	8/22/2016 19:48
CCV L4	8/22/2016 19:56
CCV L4 ADD ON	8/22/2016 20:03
RB	8/22/2016 20:11
320-20990-a-16-a	8/22/2016 20:18
320-20990-a-17-a	8/22/2016 20:26
320-20990-a-19-a	8/22/2016 20:33
320-20990-a-20-a	8/22/2016 20:41
320-20990-a-22-a	8/22/2016 20:48
320-20990-a-23-a	8/22/2016 20:56
RB	8/22/2016 21:03

CCV L5	8/22/2016 21:11
CCV L5 ADD ON	8/22/2016 21:18
RB	8/22/2016 21:26
mb 320-122484/1-a	8/22/2016 21:33
lcs 320-122484/2-a	8/22/2016 21:41
320-20866-a-1-a	8/22/2016 21:48
320-20866-a-2-a	8/22/2016 21:56
320-20866-a-3-a	8/22/2016 22:03
320-20866-a-3-b ms	8/22/2016 22:11
320-20866-a-3-c msd	8/22/2016 22:18
320-20866-a-4-a	8/22/2016 22:26
320-20866-a-5-a	8/22/2016 22:33
320-20866-a-6-a	8/22/2016 22:41
RB	8/22/2016 22:48
CCV L4	8/22/2016 22:56
CCV L4 ADD ON	8/22/2016 23:03
RB	8/22/2016 23:11
320-20866-a-7-a	8/22/2016 23:18
320-20866-a-8-a	8/22/2016 23:26
320-20866-a-9-a	8/22/2016 23:33
RB	8/22/2016 23:41
CCV L5	8/22/2016 23:48
CCV L5 ADD ON	8/22/2016 23:56
RB	8/23/2016 0:03
RB	8/23/2016 0:11
CCV L4	8/23/2016 0:18
CCV L4 ADD ON	8/23/2016 0:26
RB	8/23/2016 0:33
mb 320-122543/1-a	8/23/2016 0:41
lcs 320-122543/2-a	8/23/2016 0:48
lcsd 320-122543/3-a	8/23/2016 0:56
320-20908-a-1-a	8/23/2016 1:03
320-20908-a-2-a	8/23/2016 1:11
320-20908-b-3-a	8/23/2016 1:18
320-20908-a-4-a	8/23/2016 1:26
320-20908-a-5-a	8/23/2016 1:33
320-20908-a-6-a	8/23/2016 1:41
320-20908-a-7-a	8/23/2016 1:49
RB	8/23/2016 1:56
CCV L5	8/23/2016 2:04
CCV L5 ADD ON	8/23/2016 2:11
RB	8/23/2016 2:19
320-20908-a-8-a	8/23/2016 2:26
320-20908-a-9-a	8/23/2016 2:34
RB	8/23/2016 2:41
mb 320-122794/1-a	8/23/2016 2:49
lcs 320-122794/2-a	8/23/2016 2:56

320-20970-a-1-a	8/23/2016 3:04
320-20970-a-2-a	8/23/2016 3:11
320-20970-a-2-b ms	8/23/2016 3:19
320-20970-b-2-a msd	8/23/2016 3:26
320-20970-a-3-a	8/23/2016 3:34
RB	8/23/2016 3:41
CCV L4	8/23/2016 3:49
CCV L4 ADD ON	8/23/2016 3:56
RB	8/23/2016 4:04
320-20970-a-4-a	8/23/2016 4:11
320-20970-a-5-a	8/23/2016 4:19
RB	8/23/2016 4:26
CCV L5	8/23/2016 4:34
CCV L5 ADD ON	8/23/2016 4:41
RB	8/23/2016 4:49
RB	8/23/2016 4:56
CCV L4	8/23/2016 5:04
CCV L4 ADD ON	8/23/2016 5:11
RB	8/23/2016 5:19
mb 320-123019/1-a	8/23/2016 5:26
lcs 320-123019/2-a	8/23/2016 5:34
lcsd 320-123019/3-a	8/23/2016 5:41
320-21059-a-1-a 10X	8/23/2016 5:49
RB	8/23/2016 5:56
mb 320-122455/1-a	8/23/2016 6:04
lcs 320-122455/2-a	8/23/2016 6:11
320-20867-a-1-a	8/23/2016 6:19
320-20867-a-2-a	8/23/2016 6:26
320-20867-a-3-a	8/23/2016 6:34
RB	8/23/2016 6:41
CCV L4	8/23/2016 6:49
CCV L4 ADD ON	8/23/2016 6:56
RB	8/23/2016 7:04
320-20867-a-3-b ms	8/23/2016 7:11
320-20867-a-3-c msd	8/23/2016 7:19
320-20867-a-4-a	8/23/2016 7:26
320-20867-a-5-a	8/23/2016 7:34
320-20867-a-6-a	8/23/2016 7:41
320-20867-a-7-a	8/23/2016 7:49
320-20867-a-8-a	8/23/2016 7:56
320-20867-a-9-a	8/23/2016 8:04
320-20867-a-10-a	8/23/2016 8:11
RB	8/23/2016 8:19
CCV L5	8/23/2016 8:26
CCV L5 ADD ON	8/23/2016 8:34
RB	8/23/2016 8:41
mb 320-122544/1-a	8/23/2016 8:49

lcs 320-122544/2-a	8/23/2016 8:56
lcsd 320-122544/3-a	8/23/2016 9:04
320-20915-a-1-a 10X	8/23/2016 9:11
320-20915-a-2-a	8/23/2016 9:19
320-20915-a-3-a	8/23/2016 9:26
320-20915-a-4-a	8/23/2016 9:34
320-20915-a-5-a	8/23/2016 9:41
320-20915-a-6-a	8/23/2016 9:49
320-20915-a-7-a	8/23/2016 9:56
RB	8/23/2016 10:04
CCV L4	8/23/2016 10:11
CCV L4 ADD ON	8/23/2016 10:19
RB	8/23/2016 10:26
320-20915-a-8-a	8/23/2016 10:34
mb 320-122573/1-a	8/23/2016 11:41
lcs 320-122573/2-a	8/23/2016 11:49
320-20928-a-1-a	8/23/2016 11:56
320-20928-a-2-a	8/23/2016 12:04
320-20928-a-3-a	8/23/2016 12:11
320-20928-a-3-b ms	8/23/2016 12:19
320-20928-a-3-c msd	8/23/2016 12:26
320-20928-a-4-a	8/23/2016 12:34
RB	8/23/2016 12:41
CCV L5	8/23/2016 12:49
CCV L5 ADD ON	8/23/2016 12:56
RB	8/23/2016 13:04
320-20928-a-5-a	8/23/2016 13:11
320-20928-a-6-a	8/23/2016 13:19
320-20928-a-7-a	8/23/2016 13:26
320-20928-a-8-a	8/23/2016 13:34
320-20928-a-9-a	8/23/2016 13:41
320-20928-a-10-a	8/23/2016 13:49
320-20928-a-11-a	8/23/2016 13:56
320-20928-a-12-a	8/23/2016 14:04
320-20928-a-13-a	8/23/2016 14:11
320-20928-a-14-a	8/23/2016 14:19
RB	8/23/2016 14:26
CCV L4	8/23/2016 14:34
CCV L4 ADD ON	8/23/2016 14:41
RB	8/23/2016 14:49
320-20928-a-15-a	8/23/2016 14:56
320-20928-a-16-a	8/23/2016 15:04
320-20928-a-17-a	8/23/2016 15:11
320-20928-a-18-a	8/23/2016 15:19
RB	8/23/2016 15:26
320-21059-a-1-a	8/23/2016 15:34
RB	8/23/2016 15:41

320-20915-a-1-a	8/23/2016 15:49
RB	8/23/2016 15:56
CCV L5	8/23/2016 16:04
CCV L5 ADD ON	8/23/2016 16:11

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Batch Number: 122573 Batch Start Date: 08/17/16 08:42 Batch Analyst: Sharifi, Nooshin

Batch Method: 3535 Batch End Date: 08/18/16 11:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00043	LCPFCSP 00053
MB 320-122573/1		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	
LCS 320-122573/2		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
320-20928-A-1	GW20-05GW-0816	3535, 537 (Modified)	T	307.33 g	27.60 g	279.7 mL	0.5 mL	25 uL	
320-20928-A-2	GW20-21SGW-0816	3535, 537 (Modified)	T	273.69 g	27.42 g	246.3 mL	0.5 mL	25 uL	
320-20928-A-3	GW20-14GW-0816	3535, 537 (Modified)	T	292.41 g	27.67 g	264.7 mL	0.5 mL	25 uL	
320-20928-A-3 MS	GW20-14GW-0816	3535, 537 (Modified)	T	291.39 g	27.98 g	263.4 mL	0.5 mL	25 uL	20 uL
320-20928-A-3 MSD	GW20-14GW-0816	3535, 537 (Modified)	T	295.27 g	28.11 g	267.2 mL	0.5 mL	25 uL	20 uL
320-20928-A-4	GW20-06GW-0816	3535, 537 (Modified)	T	295.03 g	27.91 g	267.1 mL	0.5 mL	25 uL	
320-20928-A-5	GW20-21DGW-0816	3535, 537 (Modified)	T	293.52 g	27.52 g	266 mL	0.5 mL	25 uL	
320-20928-A-6	GW20-10GW-0816	3535, 537 (Modified)	T	291.01 g	28.40 g	262.6 mL	0.5 mL	25 uL	
320-20928-A-7	GW20-10GWP-0816	3535, 537 (Modified)	T	292.08 g	28.39 g	263.7 mL	0.5 mL	25 uL	
320-20928-A-8	GW20-08GW-0816	3535, 537 (Modified)	T	303.06 g	27.72 g	275.3 mL	0.5 mL	25 uL	
320-20928-A-9	GW20-07GW-0816	3535, 537 (Modified)	T	289.55 g	27.55 g	262 mL	0.5 mL	25 uL	
320-20928-A-10	GW20-EB01-081216 -GW	3535, 537 (Modified)	T	297.84 g	27.23 g	270.6 mL	0.5 mL	25 uL	
320-20928-A-11	GW20-FB01-081216	3535, 537 (Modified)	T	300.47 g	27.17 g	273.3 mL	0.5 mL	25 uL	
320-20928-A-12	GW20-17DGW-0816	3535, 537 (Modified)	T	275.55 g	27.82 g	247.7 mL	0.5 mL	25 uL	
320-20928-A-13	GW20-13GW-0816	3535, 537 (Modified)	T	297.61 g	27.57 g	270 mL	0.5 mL	25 uL	
320-20928-A-14	GW20-22GW-0816	3535, 537 (Modified)	T	297.87 g	27.07 g	270.8 mL	0.5 mL	25 uL	
320-20928-A-15	GW20-17SGW-0816	3535, 537 (Modified)	T	291.56 g	27.18 g	264.4 mL	0.5 mL	25 uL	
320-20928-A-16	GW20-13DGW-0816	3535, 537 (Modified)	T	290.17 g	27.42 g	262.8 mL	0.5 mL	25 uL	
320-20928-A-17	GW20-13DGWP-0816	3535, 537 (Modified)	T	293.42 g	27.18 g	266.2 mL	0.5 mL	25 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

537 (Modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20928-1

SDG No.: _____

Batch Number: 122573 Batch Start Date: 08/17/16 08:42 Batch Analyst: Sharifi, Nooshin

Batch Method: 3535 Batch End Date: 08/18/16 11:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00043	LCPFCSU 00053
320-20928-A-18	GW20-20GW-0816	3535, 537 (Modified)	T	303.58 g	27.20 g	276.4 mL	0.5 mL	25 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1% NaOH/H2O: 645197
H2O ID	8/6/16
Hexane ID	0000135581
Manifold ID	2,4
Methanol ID	697384
Pipette ID	EC15219
Analyst ID - Reagent Drop	VPM
Analyst ID - SU Reagent Drop	VPM
Analyst ID - SU Reagent Drop Witness	HJA
Solvent Lot #	702940
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002736075A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

HPLC/LCMS Data Review Checklist

Job Number(s): 20928
 Extraction Batch: 122573
 Delivery Rank: 4

Work List ID(s): 33802
 Analysis Batch(es): 123794
 Due Date: 9-7-16

A. Calibration/Instrument Run QC	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>123741</u>	✓	✓	
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# <u>101992</u>	✓	✓	
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: 8-31-16

2nd Level Reviewer: Mway

Date: 9/6/2016

* runlog already scanned

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 22AUG2016D_PFC
Instrument Name: A8
Data Directory: \\ChromNA\Sacramento\ChromData\A8\20160823-33802.b
QC Batching: Disabled

Worklist Number: 33802
Chrom Method: PFC_A8_Full
Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 123794	LC PFC ICAL Raw Batch: 123795	LC PFAS ICAL Raw Batch: 123796
# 1 RB	# 1 RB	# 1 RB	
# 2 CCV L4	# 2 CCV L4	# 2 CCV L4	# 2 CCV L4
# 3 CCV L4 Add-on	# 3 CCV L4 Add-on	# 3 CCV L4 Add-on	# 3 CCV L4 Add-on
# 4 RB	# 4 RB	# 4 RB	
# 5 MB 320-122573/1-A	# 5 MB 320-122573/1-A		
# 6 LCS 320-122573/2-A	# 6 LCS 320-122573/2-A		
# 7 320-20928-A-1-A	# 7 320-20928-A-1-A		
# 8 320-20928-A-2-A	# 8 320-20928-A-2-A		
# 9 320-20928-A-3-A	# 9 320-20928-A-3-A		
#10 320-20928-A-3-B MS	#10 320-20928-A-3-B MS		
#11 320-20928-A-3-C MSD	#11 320-20928-A-3-C MSD		
#12 320-20928-A-4-A	#12 320-20928-A-4-A		
#13 RB	#13 RB	#13 RB	
#14 CCV L5	#14 CCV L5	#14 CCV L5	#14 CCV L5
#15 CCV L5 Add-on	#15 CCV L5 Add-on	#15 CCV L5 Add-on	#15 CCV L5 Add-on
#16 RB	#16 RB	#16 RB	
#17 320-20928-A-5-A	#17 320-20928-A-5-A		
#18 320-20928-A-6-A	#18 320-20928-A-6-A		
#19 320-20928-A-7-A	#19 320-20928-A-7-A		
#20 320-20928-A-8-A	#20 320-20928-A-8-A		
#21 320-20928-A-9-A	#21 320-20928-A-9-A		
#22 320-20928-A-10-A	#22 320-20928-A-10-A		
#23 320-20928-A-11-A	#23 320-20928-A-11-A		
#24 320-20928-A-12-A	#24 320-20928-A-12-A		
#25 320-20928-A-13-A	#25 320-20928-A-13-A		
#26 320-20928-A-14-A	#26 320-20928-A-14-A		
#27 RB	#27 RB	#27 RB	
#28 CCV L4	#28 CCV L4	#28 CCV L4	#28 CCV L4
#29 CCV L4 Add-on	#29 CCV L4 Add-on	#29 CCV L4 Add-on	#29 CCV L4 Add-on
#30 RB	#30 RB	#30 RB	
#31 320-20928-A-15-A	#31 320-20928-A-15-A		
#32 320-20928-A-16-A	#32 320-20928-A-16-A		
#33 320-20928-A-17-A	#33 320-20928-A-17-A		
#34 320-20928-A-18-A	#34 320-20928-A-18-A		
#35 RB	#35 RB	#35 RB	
#36 320-21059-A-1-A	#36 320-21059-A-1-A	#36 320-21059-A-1-A	#36 320-21059-A-1-A
#37 RB	#37 RB	#37 RB	
#38 320-20915-A-1-A	#38 320-20915-A-1-A	#38 320-20915-A-1-A	#38 320-20915-A-1-A
#39 RB	#39 RB	#39 RB	
#40 CCV L5	#40 CCV L5	#40 CCV L5	#40 CCV L5
#41 CCV L5 Add-on	#41 CCV L5 Add-on	#41 CCV L5 Add-on	#41 CCV L5 Add-on
#42 RB	#42 RB	#42 RB	

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122573











Analyst: Sharifi, Nooshin

Batch Open: 8/17/2016 8:42:22AM

Method Code: 320-3535_IVWT-320

Batch End: 8-18-16 11:54 Am

Solid-Phase Extraction (SPE)

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-122573/1 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.5 mL								
2 LCS-320-122573/2 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.5 mL								
3 320-20928-A-1 (PFC_IDA_DOD5)	N/A (320-20928-1)	307.33 g	279.7 mL				8/19/16	23_Days	4		
		27.60 g	0.5 mL								
4 320-20928-A-2 (PFC_IDA_DOD5)	N/A (320-20928-1)	273.69 g	246.3 mL				8/19/16	23_Days	4		
		27.42 g	0.5 mL								
5 320-20928-A-3 (PFC_IDA_DOD5)	N/A (320-20928-1)	292.41 g	264.7 mL				8/19/16	23_Days	4		
		27.67 g	0.5 mL								
6 320-20928-A-3-MS (PFC_IDA_DOD5)	N/A (320-20928-1)	291.39 g	263.4 mL				8/19/16	23_Days	4		
		27.98 g	0.5 mL								
7 320-20928-A-3-MSD (PFC_IDA_DOD5)	N/A (320-20928-1)	295.27 g	267.2 mL				8/19/16	23_Days	4		
		28.11 g	0.5 mL								
8 320-20928-A-4 (PFC_IDA_DOD5)	N/A (320-20928-1)	295.03 g	267.1 mL				8/19/16	23_Days	4		
		27.91 g	0.5 mL								
9 320-20928-A-5 (PFC_IDA_DOD5)	N/A (320-20928-1)	293.52 g	266 mL				8/19/16	23_Days	4		
		27.52 g	0.5 mL								
10 320-20928-A-6 (PFC_IDA_DOD5)	N/A (320-20928-1)	291.01 g	262.6 mL				8/19/16	23_Days	4		
		28.40 g	0.5 mL								

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)













Batch Number: 320-122573

Analyst: Sharifi, Nooshin

Batch Open: 8/17/2016 8:42:22AM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-20928-A-7 (PFC_IDA_DOD5)	N/A (320-20928-1)	292.08 g	263.7 mL				8/19/16	23_Days	4	
			28.39 g	0.5 mL							
12	320-20928-A-8 (PFC_IDA_DOD5)	N/A (320-20928-1)	303.06 g	275.3 mL				8/19/16	23_Days	4	
			27.72 g	0.5 mL							
13	320-20928-A-9 (PFC_IDA_DOD5)	N/A (320-20928-1)	289.55 g	262 mL				8/19/16	23_Days	4	
			27.55 g	0.5 mL							
14	320-20928-A-10 (PFC_IDA_DOD5)	N/A (320-20928-1)	297.84 g	270.6 mL				8/19/16	23_Days	4	
			27.23 g	0.5 mL							
15	320-20928-A-11 (PFC_IDA_DOD5)	N/A (320-20928-1)	300.47 g	273.3 mL				8/19/16	23_Days	4	
			27.17 g	0.5 mL							
16	320-20928-A-12 (PFC_IDA_DOD5)	N/A (320-20928-1)	275.55 g	247.7 mL				8/19/16	23_Days	4	
			27.82 g	0.5 mL							
17	320-20928-A-13 (PFC_IDA_DOD5)	N/A (320-20928-1)	297.61 g	270 mL				8/19/16	23_Days	4	
			27.57 g	0.5 mL							
18	320-20928-A-14 (PFC_IDA_DOD5)	N/A (320-20928-1)	297.87 g	270.8 mL				8/19/16	23_Days	4	
			27.07 g	0.5 mL							
19	320-20928-A-15 (PFC_IDA_DOD5)	N/A (320-20928-1)	291.56 g	264.4 mL				8/19/16	23_Days	4	
			27.18 g	0.5 mL							
20	320-20928-A-16 (PFC_IDA_DOD5)	N/A (320-20928-1)	290.17 g	262.8 mL				8/19/16	23_Days	4	
			27.42 g	0.5 mL							
21	320-20928-A-17 (PFC_IDA_DOD5)	N/A (320-20928-1)	293.42 g	266.2 mL				8/19/16	23_Days	4	
			27.18 g	0.5 mL							
22	320-20928-A-18 (PFC_IDA_DOD5)	N/A (320-20928-1)	303.58 g	276.4 mL				8/19/16	23_Days	4	
			27.20 g	0.5 mL							

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122573

Analyst: Sharifi, Nooshin

Batch Open: 8/17/2016 8:42:22AM

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

Manifold ID	2,4
Methanol ID	697384
Hexane ID	0000135581
Sodium Hypochlorite ID	NA
First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002736075A
H2O ID	8/6/16
Pipette ID	EC15219
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	702940
Analyst ID - Reagent Drop	VPM
Analyst ID - SU Reagent Drop	VPM
Analyst ID - SU Reagent Drop Witness	HJA
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122573

Analyst: Sharifi, Nooshin

Batch Open: 8/17/2016 8:42:22AM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1% NaOH/H2O: 645197

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122573

Analyst: Sharifi, Nooshin

Batch Open: 8/17/2016 8:42:22AM

Method Code: 320-3535_IVWT-320

Batch End:

Comments

320-20928-A-1	Method Comments: DOD site, Screen-caution
320-20928-A-2	Method Comments: DOD site, Screen-caution
320-20928-A-3	Method Comments: DOD site, Screen-caution
320-20928-A-3~MS	Method Comments: DOD site, Screen-caution
320-20928-A-3~MSD	Method Comments: DOD site, Screen-caution
320-20928-A-4	Method Comments: DOD site, Screen-caution
320-20928-A-5	Method Comments: DOD site, Screen-caution
320-20928-A-6	Method Comments: DOD site, Screen-caution
320-20928-A-7	Method Comments: DOD site, Screen-caution
320-20928-A-8	Method Comments: DOD site, Screen-caution
320-20928-A-9	Method Comments: DOD site, Screen-caution
320-20928-A-10	Method Comments: DOD site, Screen-caution
320-20928-A-11	Method Comments: DOD site, Screen-caution
320-20928-A-12	Method Comments: DOD site, Screen-caution
320-20928-A-13	Method Comments: DOD site, Screen-caution
320-20928-A-14	Method Comments: DOD site, Screen-caution
320-20928-A-15	Method Comments: DOD site, Screen-caution
320-20928-A-16	Method Comments: DOD site, Screen-caution
320-20928-A-17	Method Comments: DOD site, Screen-caution

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122573

Analyst: Sharifi, Nooshin

Batch Open: 8/17/2016 8:42:22AM

Method Code: 320-3535_IVWT-320

Batch End:

320-20928-A-18 Method Comments: DOD site, Screen-caution

Method Comments: DOD site, Screen-caution

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122573

Analyst: Sharifi, Nooshin

Batch Open: 8/17/2016 8:42:22AM

Method Code: 320-3535_IVWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-122573/1	LCMPFCSU_00043	25 uL	0.5 mL	VPM 8/17/16	HJA 8-17-16
LCS 320-122573/2	LCMPFCSU_00043	25 uL	0.5 mL	↓	↓
LCS 320-122573/2	LCPFCSU_00053	20 uL	0.5 mL		
320-20928-A-1	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-2	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-3	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-3 MS	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-3 MS	LCPFCSU_00053	20 uL	0.5 mL		
320-20928-A-3 MSD	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-3 MSD	LCPFCSU_00053	20 uL	0.5 mL		
320-20928-A-4	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-5	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-6	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-7	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-8	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-9	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-10	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-11	LCMPFCSU_00043	25 uL	0.5 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122573

Analyst: Sharifi, Nooshin

Batch Open: 8/17/2016 8:42:22AM

Method Code: 320-3535_IVWT-320

Batch End:

320-20928-A-12	LCMPFCSU_00043	25 uL	0.5 mL	VPM 8-17-16	MSA 8-17-16
320-20928-A-13	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-14	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-15	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-16	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-17	LCMPFCSU_00043	25 uL	0.5 mL		
320-20928-A-18	LCMPFCSU_00043	25 uL	0.5 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

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NSH

Preparation Batch Number(s): ~~8-18~~ 122573 Test: PFC
 Earliest Holding Time: 8-18-16

Sample List Tab		1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method		/	✓
All necessary NCMs filed (including holding time)		/	✓
Method/sample/login/QAS checked and correct		/	✓
Worksheet Tab		1 st Level Reviewer	2 nd 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		1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS		/	✓
All spike amounts correct and added to necessary samples and QC		/	✓
Batch Information		1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly		/	✓
All necessary 'batch information' complete and entered into TALS correctly		/	✓

1st Level Reviewer: VPM
 2nd Level Reviewer: ERLW
 Comments: _____

Date: 8/18/16
 Date: 8/18/16

Shipping and Receiving Documents

TestAmerica Sacramento

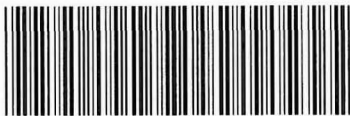
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Kellmann, Jill	Lab PM: Kellmann, Jill	Carrier Tracking No(s):	COC No: 320-12234-2765.4
Client Contact: Mr. Michael Zamboni	Phone:	E-Mail: jill.kellmann@testamericainc.com		Page: 1 of 3

Company: CH2M Hill, Inc.	Analysis Requested			Job #:
Address: 2411 Dulles Corner Park Suite 500	Due Date Requested:	 320-20928 Chain of Custody		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 - Na2S2O3 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)
City: Herndon	TAT Requested (days):			
State, Zip: VA, 20171	PO #: 10006-7-105420 CLEAN 8012 JM05			
Phone: 703-376-5301(Tel)	WO #:			
Email: mzamboni@ch2m.com	Project #: 32008186			Other:
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)	Perform MS/MSD (Yes or No)	PFC_IDA_D0D6 - PFOA/PFOS	Total Number of containers	Special Instructions/Note:
GW20-05GW-0816	8/11/16	0955	G	Water		X		2	
GW20-21SGW-0816	8/11/16	1045	G	Water		X		2	
GW20-14GW-0816	8/11/16	1055	G	Water	X	X		2	
GW20-06GW-0816	8/11/16	1130	G	Water		X		2	
GW20-21DGW-0816	8/11/16	1205	G	Water		X		2	
GW20-10GW-0816	8/11/16	1505	G	Water		X		2	
GW20-10GWP-0816	8/11/16	1510	G	Water		X		2	
GW20-08GW-0816	8/11/16	1520	G	Water		X		2	
GW20-07GW-0816	8/11/16	1615	G	Water		X		2	
GW20-EB01-081216	8/12/16	1630	G	Water		X		2	
GW20-FB01-081216	8/12/16	1635	G	Water		X		2	

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>[Signature]</i>	Date/Time: 8/12/16 1645	Company: CH2M	Received by: <i>[Signature]</i>
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:

Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.8
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TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: <u>L. Raternic</u>	Lab PM: Kellmann, Jill	Carrier Tracking No(s):
Client Contact: Mr. Michael Zamboni	Phone: <u>666 581 3828</u>	E-Mail: <u>jill.kellmann@testamericainc.com</u>	COC No: 320-12234-2765.5
Company: CH2M Hill, Inc.			Page: <u>2</u> Page <u>2</u> of <u>2</u>

Address: 2411 Dulles Corner Park Suite 500	Due Date Requested:	Analysis Requested				Job #:
City: Herndon	TAT Requested (days):	Field Filtered Sample (Yes or No) Perform: MS/MSD (Yes or No) PFC_IDA_D0B6 - PFOA/PFOS	Total Number of containers			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 - Na2S2O3 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)
State, Zip: VA, 20171	PO #: 10006-7-105420 CLEAN 8012 JM05					
Phone: 703-376-5301(Tel)	WO #:					
Email: mzamboni@ch2m.com	Project #: 32008186					
Project Name: Navy CLEAN 8012-CTO-JU25 Dahlgren	SSOW#:					
Site:						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)	Perform: MS/MSD (Yes or No)	PFC_IDA_D0B6 - PFOA/PFOS	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N		
GW20-17DGW-0816	8/12/16	0905	GW	Water			X	2	
GW20-13GW-0816	8/12/16	0910	GW	Water			X	2	
GW20-22GW-0816	8/12/16	0920	GW	Water			X	2	
GW20-17SGW-0816	8/12/16	1015	GW	Water			X	2	
GW20-13DGW-0816	8/12/16	1025	GW	Water			X	2	
GW20-13DGWP-0816	8/12/16	1030	GW	Water			X	2	
GW20-20GW-0816	8/12/16	1055	GW	Water			X	2	
				Water					
				Water					
				Water					
				Water					

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <u>[Signature]</u>	Date/Time: <u>8/12/16 1645</u>	Company: <u>ZHDM</u>	Received by: <u>[Signature]</u>
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: <u>1.8</u>
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Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-20928-1

Login Number: 20928
List Number: 1
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	Present on 1/2 COCs
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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Contact_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CH2M_Code	Analysis_Group	Analytical_Method	PRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Site	Extraction_Method	Result_Type	Lab_OC_Type	Sample_Medium	OC_Level	Date/Time_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Rst_Number	Percent_Moisture	Percent_Liquid	Chem_Name	Analysis_ID	Analysis_Value	Original_Analysis_Value	Result_Limits	Lab_Qualifier	Validator_Qualifier	OC_Column_Type	Analysis_Result_Type	Result_Narrative	OC_Control_Limit_Code	OC_Accuracy_Upper	OC_Accuracy_Lower	Control_Limit_Date	OC_Narrative	MDL	Detector_Limit	OCM_Version	DL	LOD	LOQ	SSC	Analysis_Batch	Validator_Name	Val_Date									
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	MSD	W	4	08/17/2016	18:30	08/20/2016		20160822	13:56:00	20160828	22:52:00	320-22093-2	1	1			Perfluoroacetic acid (PFOA)	335-67-1	92	92		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	0.75	1.9	2.4	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	MSD	W	4	08/17/2016	18:30	08/20/2016		20160822	13:56:00	20160828	22:52:00	320-22093-2	1	1			Perfluoroacetic acid (PFOA)	335-67-1	148	148		PCT_REC	I	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.8	3.8	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	MSD	W	4	08/17/2016	18:30	08/20/2016		20160822	13:56:00	20160828	22:52:00	320-22093-2	1	1			Perfluoroacetic acid (PFOA)	335-67-1	81	81		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.8	3.8	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	MSD	W	4	08/17/2016	18:30	08/20/2016		20160822	13:56:00	20160828	22:52:00	320-22093-2	1	1			Perfluoroacetic acid (PFOA)	335-67-1	114	114		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.8	3.8	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	MSD	W	4	08/17/2016	18:30	08/20/2016		20160822	13:56:00	20160828	22:52:00	320-22093-2	1	1			Perfluoroacetic acid (PFOA)	335-67-1	6.2	6.2		MSL_1	M	PR	TRG		MSF	140	60	00000000			5.0	0.70	1.9	2.3	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	11:10	08/20/2016		20160822	13:56:00	20160828	23:00:00	320-22093-3	1	1			Perfluoroacetic acid (PFOA)	335-67-1	14	14		MSL_1	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.8	3.7	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	11:10	08/20/2016		20160822	13:56:00	20160828	23:00:00	320-22093-3	1	1			Perfluoroacetic acid (PFOA)	335-67-1	139	139		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.8	3.7	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	11:10	08/20/2016		20160822	13:56:00	20160828	23:00:00	320-22093-3	1	1			Perfluoroacetic acid (PFOA)	335-67-1	2.4	2.4		MSL_1	M	PR	TRG		MSF	140	60	00000000			5.0	0.72	1.9	2.4	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:15	08/20/2016		20160822	13:56:00	20160828	23:07:00	320-22093-4	1	1			Perfluoroacetic acid (PFOA)	335-67-1	8.0	8.0		MSL_1	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.9	3.8	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:15	08/20/2016		20160822	13:56:00	20160828	23:07:00	320-22093-4	1	1			Perfluoroacetic acid (PFOA)	335-67-1	92	92		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.9	3.8	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:15	08/20/2016		20160822	13:56:00	20160828	23:07:00	320-22093-4	1	1			Perfluoroacetic acid (PFOA)	335-67-1	115	115		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.9	3.8	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:15	08/20/2016		20160822	13:56:00	20160828	23:07:00	320-22093-4	1	1			Perfluoroacetic acid (PFOA)	335-67-1	3.1	3.1		MSL_1	M	PR	TRG		MSF	140	60	00000000			5.0	0.68	1.8	2.3	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:20	08/20/2016		20160822	13:56:00	20160828	23:15:00	320-22093-5	1	1			Perfluoroacetic acid (PFOA)	335-67-1	6.5	6.5		MSL_1	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.7	3.7	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:20	08/20/2016		20160822	13:56:00	20160828	23:15:00	320-22093-5	1	1			Perfluoroacetic acid (PFOA)	335-67-1	97	97		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.7	3.7	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:20	08/20/2016		20160822	13:56:00	20160828	23:15:00	320-22093-5	1	1			Perfluoroacetic acid (PFOA)	335-67-1	119	119		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.7	3.7	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:20	08/20/2016		20160822	13:56:00	20160828	23:22:00	320-22093-6	1	1			Perfluoroacetic acid (PFOA)	335-67-1	13	13		MSL_1	M	PR	TRG		MSF	140	60	00000000			5.0	0.69	1.9	2.3	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:20	08/20/2016		20160822	13:56:00	20160828	23:22:00	320-22093-6	1	1			Perfluoroacetic acid (PFOA)	335-67-1	38	38		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.8	3.7	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:20	08/20/2016		20160822	13:56:00	20160828	23:22:00	320-22093-6	1	1			Perfluoroacetic acid (PFOA)	335-67-1	108	108		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.8	3.7	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:20	08/20/2016		20160822	13:56:00	20160828	23:22:00	320-22093-6	1	1			Perfluoroacetic acid (PFOA)	335-67-1	127	127		PCT_REC	M	PR	TRG		MSF	140	60	00000000			5.0	1.2	2.8	3.7	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD	NONE	SVGA	TA_W5LC-0225	SVGA	TAMER	Tad America	NONE	NA	SW3535	000	REG	W	4	08/17/2016	14:20	08/20/2016		20160822	13:56:00	20160828	23:30:00	320-22093-7	1	1			Perfluoroacetic acid (PFOA)	335-67-1	68	68		MSL_1	M	PR	TRG		MSF	140	60	00000000			5.0	0.75	1.9	2.4	320-22093-1	320-124651												
N64701108012	AJ25		DANIELSEN_NW95	GW20-120W-0816-SD																																																												

Data Validation Summary

Dahlgren CTO-JU25, Sites 14 and 20/23

TO: Mike Zamboni/WDC
Anita Dodson/VBO

FROM: Tiffany Davis/GNV

CC: Herb Kelly/GNV

DATE: May 5, 2017

Introduction

The following data validation report discusses the data validation process and findings for Test America for the Sample Delivery Groups (SDGs) listed below.

SDG	Sample Name	Matrix
320-20867-1	GW14-01R-0816	Water
320-20867-1	GW14-01RP-0816	Water
320-20867-1	GW14-02R-0816	Water
320-20867-1	GW14-EB01-081016-GW	Water
320-20867-1	GW14-FB01-081016	Water
320-20867-1	GW14-06R-0816	Water
320-20867-1	GW14-03R-0816	Water
320-20867-1	GW14-05-0816	Water
320-20867-1	GW14-07-0816	Water
320-20867-1	GW14-08-0816	Water
320-20867-1	GW14-08-0816	Water
320-20928-1	GW20-05GW-0816	Water
320-20928-1	GW20-21SGW-0816	Water
320-20928-1	GW20-14GW-0816	Water
320-20928-1	GW20-06GW-0816	Water
320-20928-1	GW20-21DGW-0816	Water
320-20928-1	GW20-10GW-0816	Water
320-20928-1	GW20-10GWP-0816	Water
320-20928-1	GW20-08GW-0816	Water
320-20928-1	GW20-07GW-0816	Water
320-20928-1	GW20-EB01-081216-GW	Water

SDG	Sample Name	Matrix
320-20928-1	GW20-FB01-081216	Water
320-20928-1	GW20-17DGW-0816	Water
320-20928-1	GW20-13GW-0816	Water
320-20928-1	GW20-22GW-0816	Water
320-20928-1	GW20-17SGW-0816	Water
320-20928-1	GW20-13DGW-0816	Water
320-20928-1	GW20-13DGWP-0816	Water
320-20928-1	GW20-20GW-0816	Water
320-20928-1	GW20-20GW-0816	Water
320-21000-1	GW23-17SGW-0816	Water
320-21000-1	GW23-16GW-0816	Water
320-21000-1	GW23-17DGW-0816	Water
320-21000-1	GW23-17DGWP-0816	Water
320-21000-1	GW23-13GW-0816	Water
320-21000-1	GW23-07GW-0816	Water
320-21000-1	GW23-09GW-0816	Water
320-21000-1	GW23-11GW-0816	Water
320-21000-1	GW23-12GW-0816	Water
320-21000-1	GW23-15GW-0816	Water
320-21000-1	GW23-14GW-0816	Water
320-21000-1	GW23-14GW-0816	Water
320-21093-1	GW20-16SGW-0816	Water
320-21093-1	GW20-12GW-0816	Water
320-21093-1	GW20-16DGW-0816	Water
320-21093-1	GW20-11GW-0816	Water
320-21093-1	GW20-11GWP-0816	Water
320-21093-1	GW20-15GW-0816	Water
320-21093-1	GW20-19GW-0816	Water
320-21093-1	GW20-18GW-0816	Water
320-21093-1	14SD-08WN-081816	Water

Samples were analyzed using the following analytical method:

- TA_WS-LC-0025 Semivolatiles

Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Uniform Federal Policy Sampling and Analysis Plan for Site 14 Remedy Refinement and Sites 20 and 23 Remedial Action Monitoring Naval Support Facility Dahlgren, Virginia CTO JU25 (June 2016) and EPA National Functional Guidelines for

Superfund Organic Methods Data Review (September 2016), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Mass Calibration/Instrument Tuning
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Laboratory Control Samples
- Matrix Spike Recoveries
- Surrogate Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

Overall Evaluation of Data/Potential Usability Issues

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

Data Completeness

The SDGs were received complete and intact.

Technical Holding Times

According to the chain of custody records, sampling was performed on 8/10/16 through 8/18/16. Samples were received at the laboratory on 8/11/16 through 8/19/16. All sample preparation and analysis were performed within holding time requirements.

Matrix Spike/Spike Duplicate

For spiked sample GW14-02R-0816, perfluorooctanoic acid (PFOA) exhibited low recoveries in the MS/MSD.

For spiked sample GW20-12GW-0816, perfluorooctane sulfonate (PFOS) exhibited high recoveries in the MS/MSD.

Affected data are summarized in **Attachment 1**.

Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,

Tiffany Davis

Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

Qualifier Code Reference

Value	Description
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

LOCATION_NAME	SITE_NAME	INSTALLATION_ID	LOCATION_TYPE	LOCATION_TYPE_DESC	SDG	COORD_X	COORD_Y	ANALYTICAL_METHOD_GRP_DESC	SAMPLE_NAME	SAMPLE_MATRIX	SAMPLE_MATRIX_DESC	COLLECT_DATE
GW20-06	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904439.9	6805537.4	Perfluoroalkyl Compounds	GW20-06GW-0816	WG	Ground water	11-Aug-16
GW20-17S	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11905130.2	6806215.32	Perfluoroalkyl Compounds	GW20-17SGW-0816	WG	Ground water	12-Aug-16
		DAHLGREN_NSWC			320-20928-1			Perfluoroalkyl Compounds	GW20-FB01-081216	WQ	Water for QC samples	12-Aug-16
GW20-08	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904578.4	6805579.7	Perfluoroalkyl Compounds	GW20-08GW-0816	WG	Ground water	11-Aug-16
GW20-17D	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11905130.2	6806215.32	Perfluoroalkyl Compounds	GW20-17DGW-0816	WG	Ground water	12-Aug-16
GW20-22	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904815.7	6805543	Perfluoroalkyl Compounds	GW20-22GW-0816	WG	Ground water	12-Aug-16
GW20-05	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904514	6805561.57	Perfluoroalkyl Compounds	GW20-05GW-0816	WG	Ground water	11-Aug-16
GW20-22	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904815.7	6805543	Perfluoroalkyl Compounds	GW20-22GW-0816	WG	Ground water	12-Aug-16
GW20-08	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904578.4	6805579.7	Perfluoroalkyl Compounds	GW20-08GW-0816	WG	Ground water	11-Aug-16
GW20-10	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904605.3	6805728.42	Perfluoroalkyl Compounds	GW20-10GW-0816	WG	Ground water	11-Aug-16
GW20-21D	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904666.8	6805577.81	Perfluoroalkyl Compounds	GW20-21DGW-0816	WG	Ground water	11-Aug-16
GW20-21S	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904666.8	6805577.81	Perfluoroalkyl Compounds	GW20-21SGW-0816	WG	Ground water	11-Aug-16
GW20-13D	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904560	6805941.59	Perfluoroalkyl Compounds	GW20-13DGW-0816	WG	Ground water	12-Aug-16
GW20-05	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904514	6805561.57	Perfluoroalkyl Compounds	GW20-05GW-0816	WG	Ground water	11-Aug-16
		DAHLGREN_NSWC			320-20928-1			Perfluoroalkyl Compounds	GW20-EB01-081216-GW	WQ	Water for QC samples	12-Aug-16
GW20-21S	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904666.8	6805577.81	Perfluoroalkyl Compounds	GW20-21SGW-0816	WG	Ground water	11-Aug-16
GW20-06	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904439.9	6805537.4	Perfluoroalkyl Compounds	GW20-06GW-0816	WG	Ground water	11-Aug-16
GW20-07	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904482.8	6805657.63	Perfluoroalkyl Compounds	GW20-07GW-0816	WG	Ground water	11-Aug-16
GW20-10	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904605.3	6805728.42	Perfluoroalkyl Compounds	GW20-10GWP-0816	WG	Ground water	11-Aug-16
GW20-13	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904509.1	6805936.62	Perfluoroalkyl Compounds	GW20-13GW-0816	WG	Ground water	12-Aug-16
GW20-14	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904826.6	6805668.91	Perfluoroalkyl Compounds	GW20-14GW-0816	WG	Ground water	11-Aug-16
GW20-10	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904605.3	6805728.42	Perfluoroalkyl Compounds	GW20-10GW-0816	WG	Ground water	11-Aug-16
GW20-07	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904482.8	6805657.63	Perfluoroalkyl Compounds	GW20-07GW-0816	WG	Ground water	11-Aug-16
GW20-13D	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904560	6805941.59	Perfluoroalkyl Compounds	GW20-13DGWP-0816	WG	Ground water	12-Aug-16
GW20-13D	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904560	6805941.59	Perfluoroalkyl Compounds	GW20-13DGWP-0816	WG	Ground water	12-Aug-16
GW20-17D	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11905130.2	6806215.32	Perfluoroalkyl Compounds	GW20-17DGW-0816	WG	Ground water	12-Aug-16
		DAHLGREN_NSWC			320-20928-1			Perfluoroalkyl Compounds	GW20-EB01-081216-GW	WQ	Water for QC samples	12-Aug-16
GW20-13D	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904560	6805941.59	Perfluoroalkyl Compounds	GW20-13DGW-0816	WG	Ground water	12-Aug-16

LOCATION_NAME	SITE_NAME	INSTALLATION_ID	LOCATION_TYPE	LOCATION_TYPE_DESC	SDG	COORD_X	COORD_Y	ANALYTICAL_METHOD_GRP_DESC	SAMPLE_NAME	SAMPLE_MATRIX	SAMPLE_MATRIX_DESC	COLLECT_DATE
		DAHLGREN_NSWC			320-20928-1			Perfluoroalkyl Compounds	GW20-FB01-081216	WQ	Water for QC samples	12-Aug-16
GW20-20	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904693.2	6805857.55	Perfluoroalkyl Compounds	GW20-20GW-0816	WG	Ground water	12-Aug-16
GW20-17S	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11905130.2	6806215.32	Perfluoroalkyl Compounds	GW20-17SGW-0816	WG	Ground water	12-Aug-16
GW20-14	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904826.6	6805668.91	Perfluoroalkyl Compounds	GW20-14GW-0816	WG	Ground water	11-Aug-16
GW20-13	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904509.1	6805936.62	Perfluoroalkyl Compounds	GW20-13GW-0816	WG	Ground water	12-Aug-16
GW20-20	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904693.2	6805857.55	Perfluoroalkyl Compounds	GW20-20GW-0816	WG	Ground water	12-Aug-16
GW20-21D	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904666.8	6805577.81	Perfluoroalkyl Compounds	GW20-21DGW-0816	WG	Ground water	11-Aug-16
GW20-10	SITE 00020	DAHLGREN_NSWC	WLM	Monitoring well	320-20928-1	11904605.3	6805728.42	Perfluoroalkyl Compounds	GW20-10GWP-0816	WG	Ground water	11-Aug-16