



**Groundwater Sample Results,
Level 2 Laboratory Report, Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Report, SDG J20867-1**

*Naval Surface Warfare Center Dahlgren
Dahlgren, Virginia*

July 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 320-20867-1
Client Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

For:
CH2M Hill, Inc.
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Attn: Mr. Michael Zamboni



Authorized for release by:
8/31/2016 4:13:28 PM

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LINKS

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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.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	6
Client Sample Results	7
Isotope Dilution Summary	10
QC Sample Results	11
QC Association Summary	12
Lab Chronicle	13
Certification Summary	15
Method Summary	16
Sample Summary	17
Chain of Custody	18
Receipt Checklists	19

Definitions/Glossary

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

TestAmerica Job ID: 320-20867-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
U	Undetected at the Limit of Detection.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

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: 320-20867-1

Job ID: 320-20867-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: CH2M Hill, Inc.

Project: Navy CLEAN 8012-CTO-JU25 Dahlgren

Report Number: 320-20867-1

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 08/11/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.2 C.

PFAS

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

The matrix spike (MS) recovery for Perfluorooctanesulfonic acid (PFOS) in preparation batch 122455 and analytical batch 123791 was outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

The injection times displayed in chrom/TALS do not match the injection times listed on A8 instrument printouts. The instrument printout listing the injection times can be found at the end of the run log section. GW14-01R-0816 (320-20867-1), GW14-01RP-0816 (320-20867-2), GW14-02R-0816 (320-20867-3), GW14-02R-0816 MS (320-20867-3[MS]), GW14-02R-0816 MSD (320-20867-3[MSD]), GW14-EB01-081016-GW (320-20867-4), GW14-FB01-081016 (320-20867-5), GW14-06R-0816 (320-20867-6), GW14-03R-0816

Case Narrative

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

TestAmerica Job ID: 320-20867-1

Job ID: 320-20867-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

(320-20867-7), GW14-05-0816 (320-20867-8), GW14-07-0816 (320-20867-9), GW14-08-0816 (320-20867-10), (CCV 320-123791/16), (CCV 320-123791/17), (CCV 320-123791/2), (CCV 320-123791/29), (CCV 320-123791/3), (CCV 320-123791/30), (ICV 320-123741/10), (ICV 320-123741/20), (LCS 320-122455/2-A) and (MB 320-122455/1-A)

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

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Detection Summary

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-01R-0816

Lab Sample ID: 320-20867-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.2	J M	2.5	0.74	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.7		3.9	1.3	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-01RP-0816

Lab Sample ID: 320-20867-2

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

Client Sample ID: GW14-02R-0816

Lab Sample ID: 320-20867-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.6	M	2.6	0.77	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16	J	4.1	1.3	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-EB01-081016-GW

Lab Sample ID: 320-20867-4

No Detections.

Client Sample ID: GW14-FB01-081016

Lab Sample ID: 320-20867-5

No Detections.

Client Sample ID: GW14-06R-0816

Lab Sample ID: 320-20867-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.7	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.2	J M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-03R-0816

Lab Sample ID: 320-20867-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	4.7	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.2	M	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-05-0816

Lab Sample ID: 320-20867-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.6	J M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-07-0816

Lab Sample ID: 320-20867-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.7	M	2.2	0.67	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		3.6	1.1	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-08-0816

Lab Sample ID: 320-20867-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	4.5	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	39	M	3.7	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: 320-20867-1

Client Sample ID: GW14-01R-0816

Date Collected: 08/10/16 10:30

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-1

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.2	J M	2.5	0.74	ng/L		08/16/16 14:29	08/23/16 06:39	1
Perfluorooctanesulfonic acid (PFOS)	6.7		3.9	1.3	ng/L		08/16/16 14:29	08/23/16 06:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	78		25 - 150				08/16/16 14:29	08/23/16 06:39	1
13C4 PFOS	112		25 - 150				08/16/16 14:29	08/23/16 06:39	1

Client Sample ID: GW14-01RP-0816

Date Collected: 08/10/16 10:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-2

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		08/16/16 14:29	08/23/16 06:46	1
Perfluorooctanesulfonic acid (PFOS)	3.6	M	3.6	1.2	ng/L		08/16/16 14:29	08/23/16 06:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	70		25 - 150				08/16/16 14:29	08/23/16 06:46	1
13C4 PFOS	117		25 - 150				08/16/16 14:29	08/23/16 06:46	1

Client Sample ID: GW14-02R-0816

Date Collected: 08/10/16 10:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-3

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.6	M	2.6	0.77	ng/L		08/16/16 14:29	08/23/16 06:54	1
Perfluorooctanesulfonic acid (PFOS)	16	J	4.1	1.3	ng/L		08/16/16 14:29	08/23/16 06:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	85		25 - 150				08/16/16 14:29	08/23/16 06:54	1
13C4 PFOS	97		25 - 150				08/16/16 14:29	08/23/16 06:54	1

Client Sample ID: GW14-EB01-081016-GW

Date Collected: 08/10/16 11:40

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-4

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U	2.4	0.71	ng/L		08/16/16 14:29	08/23/16 07:46	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.8	1.2	ng/L		08/16/16 14:29	08/23/16 07:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	119		25 - 150				08/16/16 14:29	08/23/16 07:46	1
13C4 PFOS	114		25 - 150				08/16/16 14:29	08/23/16 07:46	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-FB01-081016

Date Collected: 08/10/16 12:00

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-5

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U	2.4	0.72	ng/L		08/16/16 14:29	08/23/16 07:54	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.8	1.2	ng/L		08/16/16 14:29	08/23/16 07:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	128		25 - 150				08/16/16 14:29	08/23/16 07:54	1
13C4 PFOS	118		25 - 150				08/16/16 14:29	08/23/16 07:54	1

Client Sample ID: GW14-06R-0816

Date Collected: 08/10/16 10:10

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-6

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.7	M	2.4	0.71	ng/L		08/16/16 14:29	08/23/16 08:01	1
Perfluorooctanesulfonic acid (PFOS)	2.2	J M	3.8	1.2	ng/L		08/16/16 14:29	08/23/16 08:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	73		25 - 150				08/16/16 14:29	08/23/16 08:01	1
13C4 PFOS	111		25 - 150				08/16/16 14:29	08/23/16 08:01	1

Client Sample ID: GW14-03R-0816

Date Collected: 08/10/16 11:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-7

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	4.7	M	2.3	0.68	ng/L		08/16/16 14:29	08/23/16 08:09	1
Perfluorooctanesulfonic acid (PFOS)	8.2	M	3.7	1.2	ng/L		08/16/16 14:29	08/23/16 08:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	59		25 - 150				08/16/16 14:29	08/23/16 08:09	1
13C4 PFOS	116		25 - 150				08/16/16 14:29	08/23/16 08:09	1

Client Sample ID: GW14-05-0816

Date Collected: 08/10/16 15:10

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-8

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U	2.4	0.71	ng/L		08/16/16 14:29	08/23/16 08:16	1
Perfluorooctanesulfonic acid (PFOS)	3.6	J M	3.8	1.2	ng/L		08/16/16 14:29	08/23/16 08:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	80		25 - 150				08/16/16 14:29	08/23/16 08:16	1
13C4 PFOS	114		25 - 150				08/16/16 14:29	08/23/16 08:16	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-07-0816

Date Collected: 08/10/16 14:55

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-9

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.7	M	2.2	0.67	ng/L		08/16/16 14:29	08/23/16 08:24	1
Perfluorooctanesulfonic acid (PFOS)	12		3.6	1.1	ng/L		08/16/16 14:29	08/23/16 08:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	87		25 - 150				08/16/16 14:29	08/23/16 08:24	1
¹³ C4 PFOS	114		25 - 150				08/16/16 14:29	08/23/16 08:24	1

Client Sample ID: GW14-08-0816

Date Collected: 08/10/16 14:50

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-10

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	4.5	M	2.3	0.68	ng/L		08/16/16 14:29	08/23/16 08:31	1
Perfluorooctanesulfonic acid (PFOS)	39	M	3.7	1.2	ng/L		08/16/16 14:29	08/23/16 08:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	71		25 - 150				08/16/16 14:29	08/23/16 08:31	1
¹³ C4 PFOS	121		25 - 150				08/16/16 14:29	08/23/16 08:31	1

Isotope Dilution Summary

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

TestAmerica Job ID: 320-20867-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	3C4 PFO ₂ (25-150)	3C4 PFO ₃ (25-150)
320-20867-1	GW14-01R-0816	78	112
320-20867-2	GW14-01RP-0816	70	117
320-20867-3	GW14-02R-0816	85	97
320-20867-3 MS	GW14-02R-0816 MS	80	108
320-20867-3 MSD	GW14-02R-0816 MSD	84	107
320-20867-4	GW14-EB01-081016-GW	119	114
320-20867-5	GW14-FB01-081016	128	118
320-20867-6	GW14-06R-0816	73	111
320-20867-7	GW14-03R-0816	59	116
320-20867-8	GW14-05-0816	80	114
320-20867-9	GW14-07-0816	87	114
320-20867-10	GW14-08-0816	71	121
LCS 320-122455/2-A	Lab Control Sample	123	120
MB 320-122455/1-A	Method Blank	118	111

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: 320-20867-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-122455/1-A
Matrix: Water
Analysis Batch: 123791

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 122455

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		08/16/16 14:29	08/23/16 06:24	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.3	ng/L		08/16/16 14:29	08/23/16 06:24	1
Isotope Dilution	MB MB		Limits			D	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
13C4 PFOA	118		25 - 150				08/16/16 14:29	08/23/16 06:24	1
13C4 PFOS	111		25 - 150				08/16/16 14:29	08/23/16 06:24	1

Lab Sample ID: LCS 320-122455/2-A
Matrix: Water
Analysis Batch: 123791

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 122455

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorooctanoic acid (PFOA)	40.0	39.6		ng/L		99	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	33.3		ng/L		90	60 - 140
Isotope Dilution	LCS LCS		Limits			%Rec	Limits
	%Recovery	Qualifier					
13C4 PFOA	123		25 - 150				
13C4 PFOS	120		25 - 150				

Lab Sample ID: 320-20867-3 MS
Matrix: Water
Analysis Batch: 123791

Client Sample ID: GW14-02R-0816 MS
Prep Type: Total/NA
Prep Batch: 122455

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Perfluorooctanoic acid (PFOA)	3.6	M	39.7	38.4	M	ng/L		88	60 - 140
Perfluorooctanesulfonic acid (PFOS)	16	J	36.8	36.6	J	ng/L		57	60 - 140
Isotope Dilution	MS MS		Limits			D	%Rec	Limits	
	%Recovery	Qualifier							
13C4 PFOA	80		25 - 150						
13C4 PFOS	108		25 - 150						

Lab Sample ID: 320-20867-3 MSD
Matrix: Water
Analysis Batch: 123791

Client Sample ID: GW14-02R-0816 MSD
Prep Type: Total/NA
Prep Batch: 122455

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	
	Result	Qualifier		Result	Qualifier					Limit	Limit
Perfluorooctanoic acid (PFOA)	3.6	M	39.5	41.5		ng/L		96	60 - 140	8	30
Perfluorooctanesulfonic acid (PFOS)	16	J	36.6	41.0	M	ng/L		69	60 - 140	11	30
Isotope Dilution	MSD MSD		Limits			D	%Rec	Limits	RPD		
	%Recovery	Qualifier									
13C4 PFOA	84		25 - 150								
13C4 PFOS	107		25 - 150								

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-20867-1

LCMS

Prep Batch: 122455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20867-1	GW14-01R-0816	Total/NA	Water	3535	
320-20867-2	GW14-01RP-0816	Total/NA	Water	3535	
320-20867-3	GW14-02R-0816	Total/NA	Water	3535	
320-20867-4	GW14-EB01-081016-GW	Total/NA	Water	3535	
320-20867-5	GW14-FB01-081016	Total/NA	Water	3535	
320-20867-6	GW14-06R-0816	Total/NA	Water	3535	
320-20867-7	GW14-03R-0816	Total/NA	Water	3535	
320-20867-8	GW14-05-0816	Total/NA	Water	3535	
320-20867-9	GW14-07-0816	Total/NA	Water	3535	
320-20867-10	GW14-08-0816	Total/NA	Water	3535	
MB 320-122455/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-122455/2-A	Lab Control Sample	Total/NA	Water	3535	
320-20867-3 MS	GW14-02R-0816 MS	Total/NA	Water	3535	
320-20867-3 MSD	GW14-02R-0816 MSD	Total/NA	Water	3535	

Analysis Batch: 123791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20867-1	GW14-01R-0816	Total/NA	Water	537 (Modified)	122455
320-20867-2	GW14-01RP-0816	Total/NA	Water	537 (Modified)	122455
320-20867-3	GW14-02R-0816	Total/NA	Water	537 (Modified)	122455
320-20867-4	GW14-EB01-081016-GW	Total/NA	Water	537 (Modified)	122455
320-20867-5	GW14-FB01-081016	Total/NA	Water	537 (Modified)	122455
320-20867-6	GW14-06R-0816	Total/NA	Water	537 (Modified)	122455
320-20867-7	GW14-03R-0816	Total/NA	Water	537 (Modified)	122455
320-20867-8	GW14-05-0816	Total/NA	Water	537 (Modified)	122455
320-20867-9	GW14-07-0816	Total/NA	Water	537 (Modified)	122455
320-20867-10	GW14-08-0816	Total/NA	Water	537 (Modified)	122455
MB 320-122455/1-A	Method Blank	Total/NA	Water	537 (Modified)	122455
LCS 320-122455/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	122455
320-20867-3 MS	GW14-02R-0816 MS	Total/NA	Water	537 (Modified)	122455
320-20867-3 MSD	GW14-02R-0816 MSD	Total/NA	Water	537 (Modified)	122455

Lab Chronicle

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-01R-0816

Date Collected: 08/10/16 10:30

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-1

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			254.2 mL	0.5 mL	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 06:39	SBC	TAL SAC

Client Sample ID: GW14-01RP-0816

Date Collected: 08/10/16 10:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-2

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			275.6 mL	0.5 mL	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 06:46	SBC	TAL SAC

Client Sample ID: GW14-02R-0816

Date Collected: 08/10/16 10:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-3

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			243.1 mL	0.5 mL	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 06:54	SBC	TAL SAC

Client Sample ID: GW14-EB01-081016-GW

Date Collected: 08/10/16 11:40

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-4

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			261.7 mL	0.5 mL	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 07:46	SBC	TAL SAC

Client Sample ID: GW14-FB01-081016

Date Collected: 08/10/16 12:00

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-5

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			260.4 mL	0.5 mL	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 07:54	SBC	TAL SAC

Client Sample ID: GW14-06R-0816

Date Collected: 08/10/16 10:10

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-6

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			262.3 mL	0.5 mL	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 08:01	SBC	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-03R-0816

Lab Sample ID: 320-20867-7

Date Collected: 08/10/16 11:35

Matrix: Water

Date Received: 08/11/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.5 mL	0.5 mL	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 08:09	SBC	TAL SAC

Client Sample ID: GW14-05-0816

Lab Sample ID: 320-20867-8

Date Collected: 08/10/16 15:10

Matrix: Water

Date Received: 08/11/16 09:30

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	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 08:16	SBC	TAL SAC

Client Sample ID: GW14-07-0816

Lab Sample ID: 320-20867-9

Date Collected: 08/10/16 14:55

Matrix: Water

Date Received: 08/11/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.9 mL	0.5 mL	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 08:24	SBC	TAL SAC

Client Sample ID: GW14-08-0816

Lab Sample ID: 320-20867-10

Date Collected: 08/10/16 14:50

Matrix: Water

Date Received: 08/11/16 09:30

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	122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			123791	08/23/16 08:31	SBC	TAL SAC

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: 320-20867-1

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

1

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Method Summary

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

TestAmerica Job ID: 320-20867-1

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: 320-20867-1


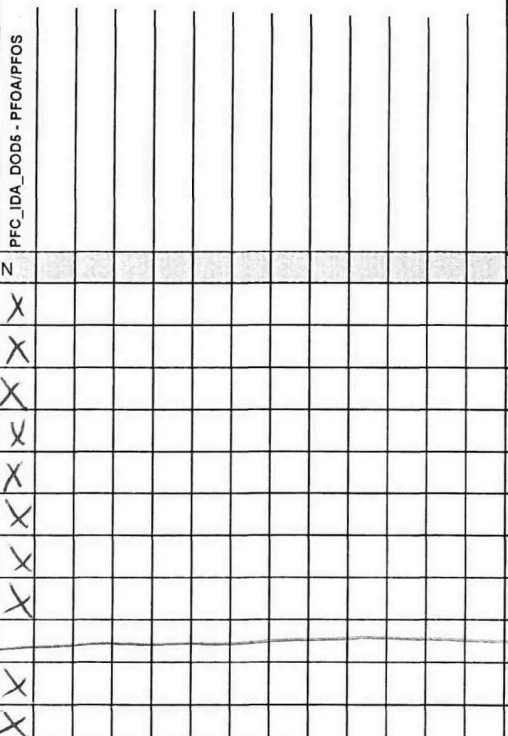
Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-20867-1	GW14-01R-0816	Water	08/10/16 10:30	08/11/16 09:30
320-20867-2	GW14-01RP-0816	Water	08/10/16 10:35	08/11/16 09:30
320-20867-3	GW14-02R-0816	Water	08/10/16 10:35	08/11/16 09:30
320-20867-4	GW14-EB01-081016-GW	Water	08/10/16 11:40	08/11/16 09:30
320-20867-5	GW14-FB01-081016	Water	08/10/16 12:00	08/11/16 09:30
320-20867-6	GW14-06R-0816	Water	08/10/16 10:10	08/11/16 09:30
320-20867-7	GW14-03R-0816	Water	08/10/16 11:35	08/11/16 09:30
320-20867-8	GW14-05-0816	Water	08/10/16 15:10	08/11/16 09:30
320-20867-9	GW14-07-0816	Water	08/10/16 14:55	08/11/16 09:30
320-20867-10	GW14-08-0816	Water	08/10/16 14:50	08/11/16 09:30

TestAmerica Sacramento

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

Chain of Custody Record



Client Information		Sampler: <u>L. Raterink</u>		Lab PM: Kellmann, Jill		Carrier Tracking No(s):		COC No: 320-12234-2765.6																					
Client Contact: Mr. Michael Zamboni		Phone: <u>(916) 581-3828</u>		E-Mail: jill.kellmann@testamericainc.com				Page: <u>1</u> of <u>6</u>																					
Company: CH2M Hill, Inc.						Analysis Requested		Job #:																					
Address: 2411 Dulles Corner Park Suite 500		Due Date Requested:		 320-20867 Chain of Custody				Preservation Codes:																					
City: Herndon		TAT Requested (days): <u>21 days</u>						Field Filtered Sample (Yes or No)		Perform: MS/MSD (Yes or No)		PFC_IDA_D066 - PFOA/PFOS		Total Number of containers		A - HCL		M - Hexane											
State, Zip: VA, 20171		PO #: 10006-7-105420 CLEAN 8012 JM05														B - NaOH		N - None											
Phone: 703-376-5301(Tel)		WO #:														C - Zn Acetate		O - AsNaO2											
Email: mzamboni@ch2m.com		Project #: 32008186		BT=Tissue, A=Air				D - Nitric Acid		P - Na2O4S		E - NaHSO4		Q - Na2SO3															
Project Name: Navy CLEAN 8012-CTO-JU25 Dahlgren		SSOW#:						F - MeOH		R - Na2S2O3		G - Amchlor		S - H2SO4															
Site: <u>Dahlgren, VA</u>								H - Ascorbic Acid		T - TSP Dodecahydrate		I - Ice		U - Acetone															
								J - DI Water		V - MCAA		K - EDTA		W - ph 4-5															
								L - EDA		Z - other (specify)		Other:																	
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil)		Field Filtered Sample (Yes or No)		Perform: MS/MSD (Yes or No)		PFC_IDA_D066 - PFOA/PFOS		Total Number of containers		Special Instructions/Note:											
<u>GW14-01R-0816</u>		<u>8/10/16</u>		<u>1030</u>		<u>G</u>		<u>Water</u>				<u>X</u>				<u>2</u>													
<u>GW14-01RP-0816</u>		<u>8/10/16</u>		<u>1035</u>		<u>G</u>		<u>Water</u>				<u>X</u>				<u>2</u>													
<u>GW14-02R-0816</u>		<u>8/10/16</u>		<u>1035</u>		<u>G</u>		<u>W</u>		<u>X</u>		<u>X</u>				<u>6</u>													
<u>GW14-EB01-081016-GW</u>		<u>8/10/16</u>		<u>1140</u>		<u>G</u>		<u>W</u>				<u>X</u>				<u>2</u>													
<u>GW14-FB01-08016</u>		<u>8/10/16</u>		<u>1200</u>		<u>G</u>		<u>W</u>				<u>X</u>				<u>2</u>													
<u>GW14-06R-0816</u>		<u>8/10/16</u>		<u>1010</u>		<u>G</u>		<u>W</u>				<u>X</u>				<u>2</u>													
<u>GW14-03R-0816</u>		<u>8/10/16</u>		<u>1135</u>		<u>G</u>		<u>W</u>				<u>X</u>				<u>2</u>													
<u>GW14-05-0816</u>		<u>8/10/16</u>		<u>1510</u>		<u>G</u>		<u>W</u>				<u>X</u>				<u>2</u>													
<u>GW14-07</u>																													
<u>GW14-07-0816</u>		<u>8/10/16</u>		<u>1455</u>		<u>G</u>		<u>W</u>				<u>X</u>				<u>2</u>													
<u>GW14-08-0816</u>		<u>8/10/16</u>		<u>1450</u>		<u>G</u>		<u>W</u>				<u>X</u>				<u>2</u>													
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: <u>[Signature]</u>					Date/Time: <u>8/10/16 1120</u>					Company: <u>CH2M</u>					Received by: <u>[Signature]</u>					Date/Time: <u>8/10/16 0930</u>					Company: <u>TAWS</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 type="checkbox"/> No					Custody Seal No.:					Cooler Temperature(s) °C and Other Remarks: <u>2.2</u>																			

Page 18 of 19

8/31/2016



Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-20867-1

Login Number: 20867

List Number: 1

Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Job Number: 320-20867-1

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
8/31/2016 4:15 PM

Jill Kellmann, Manager of Project Management
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4402
jill.kellmann@testamericainc.com
08/31/2016

Table of Contents

Cover Title Page	1
Data Summaries	4
Definitions	4
Case Narrative	5
Detection Summary	6
Client Sample Results	7
Default Detection Limits	10
Isotope Dilution Summary	11
QC Sample Results	12
QC Association	13
Chronicle	14
Certification Summary	16
Method Summary	17
Sample Summary	18
Manual Integration Summary	19
Reagent Traceability	23
COAs	51
Organic Sample Data	227
LCMS	227
Method PFC DOD	227
Method PFC DOD QC Summary	228
Method PFC DOD Sample Data	233
Standards Data	289
Method PFC DOD ICAL Data	289
Method PFC DOD CCAL Data	373
Raw QC Data	401

Table of Contents

Method PFC DOD Blank Data	401
Method PFC DOD LCS/LCSD Data	409
Method PFC DOD MS/MSD Data	416
Method PFC DOD Run Logs	436
Method PFC DOD Prep Data	444
Shipping and Receiving Documents	467
Client Chain of Custody	468
Sample Receipt Checklist	469

Definitions/Glossary

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

TestAmerica Job ID: 320-20867-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
U	Undetected at the Limit of Detection.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

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: 320-20867-1

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 08/11/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.2 C.

PFAS

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

The matrix spike (MS) recovery for Perfluorooctanesulfonic acid (PFOS) in preparation batch 122455 and analytical batch 123791 was outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

The injection times displayed in chrom/TALS do not match the injection times listed on A8 instrument printouts. The instrument printout listing the injection times can be found at the end of the run log section. GW14-01R-0816 (320-20867-1), GW14-01RP-0816 (320-20867-2), GW14-02R-0816 (320-20867-3), GW14-02R-0816 MS (320-20867-3[MS]), GW14-02R-0816 MSD (320-20867-3[MSD]), GW14-EB01-081016-GW (320-20867-4), GW14-FB01-081016 (320-20867-5), GW14-06R-0816 (320-20867-6), GW14-03R-0816 (320-20867-7), GW14-05-0816 (320-20867-8), GW14-07-0816 (320-20867-9), GW14-08-0816 (320-20867-10), (CCV 320-123791/16), (CCV 320-123791/17), (CCV 320-123791/2), (CCV 320-123791/29), (CCV 320-123791/3), (CCV 320-123791/30), (ICV 320-123741/10), (ICV 320-123741/20), (LCS 320-122455/2-A) and (MB 320-122455/1-A)

No additional 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: 320-20867-1

Client Sample ID: GW14-01R-0816

Lab Sample ID: 320-20867-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.2	J M	2.5	0.74	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.7		3.9	1.3	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-01RP-0816

Lab Sample ID: 320-20867-2

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

Client Sample ID: GW14-02R-0816

Lab Sample ID: 320-20867-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.6	M	2.6	0.77	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16	J	4.1	1.3	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-EB01-081016-GW

Lab Sample ID: 320-20867-4

No Detections.

Client Sample ID: GW14-FB01-081016

Lab Sample ID: 320-20867-5

No Detections.

Client Sample ID: GW14-06R-0816

Lab Sample ID: 320-20867-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.7	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.2	J M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-03R-0816

Lab Sample ID: 320-20867-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	4.7	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.2	M	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-05-0816

Lab Sample ID: 320-20867-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.6	J M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-07-0816

Lab Sample ID: 320-20867-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.7	M	2.2	0.67	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12		3.6	1.1	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: GW14-08-0816

Lab Sample ID: 320-20867-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	4.5	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	39	M	3.7	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: 320-20867-1

Client Sample ID: GW14-01R-0816

Date Collected: 08/10/16 10:30

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-1

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.2	J M	2.5	0.74	ng/L		08/16/16 14:29	08/23/16 06:39	1
Perfluorooctanesulfonic acid (PFOS)	6.7		3.9	1.3	ng/L		08/16/16 14:29	08/23/16 06:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	78		25 - 150				08/16/16 14:29	08/23/16 06:39	1
¹³ C4 PFOS	112		25 - 150				08/16/16 14:29	08/23/16 06:39	1

Client Sample ID: GW14-01RP-0816

Date Collected: 08/10/16 10:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-2

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		08/16/16 14:29	08/23/16 06:46	1
Perfluorooctanesulfonic acid (PFOS)	3.6	M	3.6	1.2	ng/L		08/16/16 14:29	08/23/16 06:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	70		25 - 150				08/16/16 14:29	08/23/16 06:46	1
¹³ C4 PFOS	117		25 - 150				08/16/16 14:29	08/23/16 06:46	1

Client Sample ID: GW14-02R-0816

Date Collected: 08/10/16 10:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-3

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.6	M	2.6	0.77	ng/L		08/16/16 14:29	08/23/16 06:54	1
Perfluorooctanesulfonic acid (PFOS)	16	J	4.1	1.3	ng/L		08/16/16 14:29	08/23/16 06:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	85		25 - 150				08/16/16 14:29	08/23/16 06:54	1
¹³ C4 PFOS	97		25 - 150				08/16/16 14:29	08/23/16 06:54	1

Client Sample ID: GW14-EB01-081016-GW

Date Collected: 08/10/16 11:40

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-4

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U	2.4	0.71	ng/L		08/16/16 14:29	08/23/16 07:46	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.8	1.2	ng/L		08/16/16 14:29	08/23/16 07:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	119		25 - 150				08/16/16 14:29	08/23/16 07:46	1
¹³ C4 PFOS	114		25 - 150				08/16/16 14:29	08/23/16 07:46	1

Client Sample Results

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-FB01-081016

Lab Sample ID: 320-20867-5

Date Collected: 08/10/16 12:00

Matrix: Water

Date Received: 08/11/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U	2.4	0.72	ng/L		08/16/16 14:29	08/23/16 07:54	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.8	1.2	ng/L		08/16/16 14:29	08/23/16 07:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	128		25 - 150				08/16/16 14:29	08/23/16 07:54	1
¹³ C4 PFOS	118		25 - 150				08/16/16 14:29	08/23/16 07:54	1

Client Sample ID: GW14-06R-0816

Lab Sample ID: 320-20867-6

Date Collected: 08/10/16 10:10

Matrix: Water

Date Received: 08/11/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.7	M	2.4	0.71	ng/L		08/16/16 14:29	08/23/16 08:01	1
Perfluorooctanesulfonic acid (PFOS)	2.2	J M	3.8	1.2	ng/L		08/16/16 14:29	08/23/16 08:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	73		25 - 150				08/16/16 14:29	08/23/16 08:01	1
¹³ C4 PFOS	111		25 - 150				08/16/16 14:29	08/23/16 08:01	1

Client Sample ID: GW14-03R-0816

Lab Sample ID: 320-20867-7

Date Collected: 08/10/16 11:35

Matrix: Water

Date Received: 08/11/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	4.7	M	2.3	0.68	ng/L		08/16/16 14:29	08/23/16 08:09	1
Perfluorooctanesulfonic acid (PFOS)	8.2	M	3.7	1.2	ng/L		08/16/16 14:29	08/23/16 08:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	59		25 - 150				08/16/16 14:29	08/23/16 08:09	1
¹³ C4 PFOS	116		25 - 150				08/16/16 14:29	08/23/16 08:09	1

Client Sample ID: GW14-05-0816

Lab Sample ID: 320-20867-8

Date Collected: 08/10/16 15:10

Matrix: Water

Date Received: 08/11/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U	2.4	0.71	ng/L		08/16/16 14:29	08/23/16 08:16	1
Perfluorooctanesulfonic acid (PFOS)	3.6	J M	3.8	1.2	ng/L		08/16/16 14:29	08/23/16 08:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	80		25 - 150				08/16/16 14:29	08/23/16 08:16	1
¹³ C4 PFOS	114		25 - 150				08/16/16 14:29	08/23/16 08:16	1

Client Sample Results

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-07-0816

Lab Sample ID: 320-20867-9

Date Collected: 08/10/16 14:55

Matrix: Water

Date Received: 08/11/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.7	M	2.2	0.67	ng/L		08/16/16 14:29	08/23/16 08:24	1
Perfluorooctanesulfonic acid (PFOS)	12		3.6	1.1	ng/L		08/16/16 14:29	08/23/16 08:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	87		25 - 150				08/16/16 14:29	08/23/16 08:24	1
¹³ C4 PFOS	114		25 - 150				08/16/16 14:29	08/23/16 08:24	1

Client Sample ID: GW14-08-0816

Lab Sample ID: 320-20867-10

Date Collected: 08/10/16 14:50

Matrix: Water

Date Received: 08/11/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	4.5	M	2.3	0.68	ng/L		08/16/16 14:29	08/23/16 08:31	1
Perfluorooctanesulfonic acid (PFOS)	39	M	3.7	1.2	ng/L		08/16/16 14:29	08/23/16 08:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOA	71		25 - 150				08/16/16 14:29	08/23/16 08:31	1
¹³ C4 PFOS	121		25 - 150				08/16/16 14:29	08/23/16 08:31	1

Default Detection Limits

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

TestAmerica Job ID: 320-20867-1

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: 320-20867-1

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)
320-20867-1	GW14-01R-0816	78	112
320-20867-2	GW14-01RP-0816	70	117
320-20867-3	GW14-02R-0816	85	97
320-20867-3 MS	GW14-02R-0816 MS	80	108
320-20867-3 MSD	GW14-02R-0816 MSD	84	107
320-20867-4	GW14-EB01-081016-GW	119	114
320-20867-5	GW14-FB01-081016	128	118
320-20867-6	GW14-06R-0816	73	111
320-20867-7	GW14-03R-0816	59	116
320-20867-8	GW14-05-0816	80	114
320-20867-9	GW14-07-0816	87	114
320-20867-10	GW14-08-0816	71	121
LCS 320-122455/2-A	Lab Control Sample	123	120
MB 320-122455/1-A	Method Blank	118	111

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: 320-20867-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-122455/1-A
Matrix: Water
Analysis Batch: 123791

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 122455

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		08/16/16 14:29	08/23/16 06:24	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.3	ng/L		08/16/16 14:29	08/23/16 06:24	1
Isotope Dilution	MB	MB	Limits				Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
13C4 PFOA	118		25 - 150				08/16/16 14:29	08/23/16 06:24	1
13C4 PFOS	111		25 - 150				08/16/16 14:29	08/23/16 06:24	1

Lab Sample ID: LCS 320-122455/2-A
Matrix: Water
Analysis Batch: 123791

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 122455

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorooctanoic acid (PFOA)	40.0	39.6		ng/L		99	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	33.3		ng/L		90	60 - 140
Isotope Dilution	LCS	LCS	Limits				
	%Recovery	Qualifier					
13C4 PFOA	123		25 - 150				
13C4 PFOS	120		25 - 150				

Lab Sample ID: 320-20867-3 MS
Matrix: Water
Analysis Batch: 123791

Client Sample ID: GW14-02R-0816 MS
Prep Type: Total/NA
Prep Batch: 122455

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Perfluorooctanoic acid (PFOA)	3.6	M	39.7	38.4	M	ng/L		88	60 - 140
Perfluorooctanesulfonic acid (PFOS)	16	J	36.8	36.6	J	ng/L		57	60 - 140
Isotope Dilution	MS	MS	Limits						
	%Recovery	Qualifier							
13C4 PFOA	80		25 - 150						
13C4 PFOS	108		25 - 150						

Lab Sample ID: 320-20867-3 MSD
Matrix: Water
Analysis Batch: 123791

Client Sample ID: GW14-02R-0816 MSD
Prep Type: Total/NA
Prep Batch: 122455

Analyte	Sample	Sample	Spike Added	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Perfluorooctanoic acid (PFOA)	3.6	M	39.5	41.5		ng/L		96	60 - 140	8	30
Perfluorooctanesulfonic acid (PFOS)	16	J	36.6	41.0	M	ng/L		69	60 - 140	11	30
Isotope Dilution	MSD	MSD	Limits								
	%Recovery	Qualifier									
13C4 PFOA	84		25 - 150								
13C4 PFOS	107		25 - 150								

QC Association Summary

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

TestAmerica Job ID: 320-20867-1

LCMS

Prep Batch: 122455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20867-1	GW14-01R-0816	Total/NA	Water	3535	
320-20867-2	GW14-01RP-0816	Total/NA	Water	3535	
320-20867-3	GW14-02R-0816	Total/NA	Water	3535	
320-20867-4	GW14-EB01-081016-GW	Total/NA	Water	3535	
320-20867-5	GW14-FB01-081016	Total/NA	Water	3535	
320-20867-6	GW14-06R-0816	Total/NA	Water	3535	
320-20867-7	GW14-03R-0816	Total/NA	Water	3535	
320-20867-8	GW14-05-0816	Total/NA	Water	3535	
320-20867-9	GW14-07-0816	Total/NA	Water	3535	
320-20867-10	GW14-08-0816	Total/NA	Water	3535	
MB 320-122455/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-122455/2-A	Lab Control Sample	Total/NA	Water	3535	
320-20867-3 MS	GW14-02R-0816 MS	Total/NA	Water	3535	
320-20867-3 MSD	GW14-02R-0816 MSD	Total/NA	Water	3535	

Analysis Batch: 123791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20867-1	GW14-01R-0816	Total/NA	Water	537 (Modified)	122455
320-20867-2	GW14-01RP-0816	Total/NA	Water	537 (Modified)	122455
320-20867-3	GW14-02R-0816	Total/NA	Water	537 (Modified)	122455
320-20867-4	GW14-EB01-081016-GW	Total/NA	Water	537 (Modified)	122455
320-20867-5	GW14-FB01-081016	Total/NA	Water	537 (Modified)	122455
320-20867-6	GW14-06R-0816	Total/NA	Water	537 (Modified)	122455
320-20867-7	GW14-03R-0816	Total/NA	Water	537 (Modified)	122455
320-20867-8	GW14-05-0816	Total/NA	Water	537 (Modified)	122455
320-20867-9	GW14-07-0816	Total/NA	Water	537 (Modified)	122455
320-20867-10	GW14-08-0816	Total/NA	Water	537 (Modified)	122455
MB 320-122455/1-A	Method Blank	Total/NA	Water	537 (Modified)	122455
LCS 320-122455/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	122455
320-20867-3 MS	GW14-02R-0816 MS	Total/NA	Water	537 (Modified)	122455
320-20867-3 MSD	GW14-02R-0816 MSD	Total/NA	Water	537 (Modified)	122455

Lab Chronicle

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-01R-0816

Date Collected: 08/10/16 10:30

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 06:39	SBC	TAL SAC

Client Sample ID: GW14-01RP-0816

Date Collected: 08/10/16 10:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 06:46	SBC	TAL SAC

Client Sample ID: GW14-02R-0816

Date Collected: 08/10/16 10:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 06:54	SBC	TAL SAC

Client Sample ID: GW14-EB01-081016-GW

Date Collected: 08/10/16 11:40

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 07:46	SBC	TAL SAC

Client Sample ID: GW14-FB01-081016

Date Collected: 08/10/16 12:00

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 07:54	SBC	TAL SAC

Client Sample ID: GW14-06R-0816

Date Collected: 08/10/16 10:10

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 08:01	SBC	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-20867-1

Client Sample ID: GW14-03R-0816

Date Collected: 08/10/16 11:35

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 08:09	SBC	TAL SAC

Client Sample ID: GW14-05-0816

Date Collected: 08/10/16 15:10

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 08:16	SBC	TAL SAC

Client Sample ID: GW14-07-0816

Date Collected: 08/10/16 14:55

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 08:24	SBC	TAL SAC

Client Sample ID: GW14-08-0816

Date Collected: 08/10/16 14:50

Date Received: 08/11/16 09:30

Lab Sample ID: 320-20867-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			122455	08/16/16 14:29	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	123791	08/23/16 08:31	SBC	TAL SAC

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: 320-20867-1

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: 320-20867-1

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: 320-20867-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-20867-1	GW14-01R-0816	Water	08/10/16 10:30	08/11/16 09:30
320-20867-2	GW14-01RP-0816	Water	08/10/16 10:35	08/11/16 09:30
320-20867-3	GW14-02R-0816	Water	08/10/16 10:35	08/11/16 09:30
320-20867-4	GW14-EB01-081016-GW	Water	08/10/16 11:40	08/11/16 09:30
320-20867-5	GW14-FB01-081016	Water	08/10/16 12:00	08/11/16 09:30
320-20867-6	GW14-06R-0816	Water	08/10/16 10:10	08/11/16 09:30
320-20867-7	GW14-03R-0816	Water	08/10/16 11:35	08/11/16 09:30
320-20867-8	GW14-05-0816	Water	08/10/16 15:10	08/11/16 09:30
320-20867-9	GW14-07-0816	Water	08/10/16 14:55	08/11/16 09:30
320-20867-10	GW14-08-0816	Water	08/10/16 14:50	08/11/16 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1

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.: 320-20867-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123791

Lab Sample ID: 320-20867-1 Client Sample ID: GW14-01R-0816

Date Analyzed: 08/23/16 06:39 Lab File ID: 22AUG2016D_008_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	chandrase nas	08/26/16 15:53

Lab Sample ID: 320-20867-2 Client Sample ID: GW14-01RP-0816

Date Analyzed: 08/23/16 06:46 Lab File ID: 22AUG2016D_009_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	chandrase nas	08/26/16 15:56
Perfluorooctanesulfonic acid (PFOS)	3.11	Isomers	chandrase nas	08/29/16 14:16

Lab Sample ID: 320-20867-3 Client Sample ID: GW14-02R-0816

Date Analyzed: 08/23/16 06:54 Lab File ID: 22AUG2016D_010_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	chandrase nas	08/26/16 16:00

Lab Sample ID: 320-20867-3 MS Client Sample ID: GW14-02R-0816 MS MS

Date Analyzed: 08/23/16 07:31 Lab File ID: 22AUG2016D_015_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	chandrase nas	08/29/16 16:12

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123791

Lab Sample ID: 320-20867-3 MSD Client Sample ID: GW14-02R-0816 MSD MSD

Date Analyzed: 08/23/16 07:39 Lab File ID: 22AUG2016D_016_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.12	Isomers	chandrase nas	08/31/16 09:26

Lab Sample ID: 320-20867-6 Client Sample ID: GW14-06R-0816

Date Analyzed: 08/23/16 08:01 Lab File ID: 22AUG2016D_019_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	chandrase nas	08/29/16 16:20
Perfluorooctanesulfonic acid (PFOS)	2.99	Isomers	chandrase nas	08/31/16 09:27

Lab Sample ID: 320-20867-7 Client Sample ID: GW14-03R-0816

Date Analyzed: 08/23/16 08:09 Lab File ID: 22AUG2016D_020_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	chandrase nas	08/29/16 16:26
Perfluorooctanesulfonic acid (PFOS)	3.00	Isomers	chandrase nas	08/31/16 09:28

Lab Sample ID: 320-20867-8 Client Sample ID: GW14-05-0816

Date Analyzed: 08/23/16 08:16 Lab File ID: 22AUG2016D_021_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.12	Isomers	chandrase nas	08/31/16 09:29

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1

SDG No.: _____

Instrument ID: A8 Analysis Batch Number: 123791

Lab Sample ID: 320-20867-9 Client Sample ID: GW14-07-0816

Date Analyzed: 08/23/16 08:24 Lab File ID: 22AUG2016D_022_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	chandrase nas	08/29/16 16:23

Lab Sample ID: 320-20867-10 Client Sample ID: GW14-08-0816

Date Analyzed: 08/23/16 08:31 Lab File ID: 22AUG2016D_023_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	chandrase nas	08/29/16 16:27
Perfluorooctanesulfonic acid (PFOS)	3.12	Isomers	chandrase nas	08/31/16 09:30

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20867-1

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	
LCPFCL-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
					LCPFCLSP_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.: 320-20867-1

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.: 320-20867-1

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 LFPBS1014		(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 PFDaA0115		(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.: 320-20867-1

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.: 320-20867-1

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
..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
							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.: 320-20867-1

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 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-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.: 320-20867-1

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-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			
..LCM4PFHFA_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			

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20867-1

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.: 320-20867-1

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 PFOA0115		(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
					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.: 320-20867-1

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
					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_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-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.: 320-20867-1

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	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	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.: 320-20867-1

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	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_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.: 320-20867-1

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
					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 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.: 320-20867-1

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.: 320-20867-1

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 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.: 320-20867-1

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		(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.: 320-20867-1

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 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
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.: 320-20867-1

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.: 320-20867-1

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-octanesulfoamide	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-octanesulfoamide	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:FOSAA_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FOSAA_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:FOSAA_00001	07/15/17		WELLINGTON, Lot M262FOS0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FOSAA_00001	04/13/17		WELLINGTON, Lot M282FOS0414		(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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20867-1

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-NMeFOSAA	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.: 320-20867-1

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.: 320-20867-1

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.: 320-20867-1

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	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_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.: 320-20867-1

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-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
LCPF2-L6_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	1000 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	189.6 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	191.6 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	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.: 320-20867-1

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.: 320-20867-1

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	13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 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	LCMPFOA_00011	1000 uL	Perfluorooctanoic acid (PFOA)	50 ng/mL
							13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
..LCMPFOA_00011	01/22/21		Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)	13C4 PFOA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-20867-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOS 00015	01/22/21		Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL
.LCPFACMXB_00007	11/06/20		Wellington Laboratories, Lot PFACMXB1115			(Purchased Reagent)	Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_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
					LCPFHpA 00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					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
					LCPFNNS_00002	100 uL	PFNS (Perfluoro-1-nonanesulfonate)	0.48 ug/mL
					LCPFOA 00005	100 uL	Perfluorooctadecanoic 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 (Perfluoro-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	48.2 ug/mL
							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)	Perfluoroheptane Sulfonate	47.6 ug/mL
							Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA 00004	12/22/20		Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)	Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA 00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)	Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)	Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid	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.: 320-20867-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFNS_00002	07/04/17		Wellington Laboratories, Lot LPFNS0712		(Purchased Reagent)		PFNS (Perfluoro-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 LFPPeS0712		(Purchased Reagent)		PFPeS (Perfluoro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA 00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA 00004	12/10/18		Wellington Laboratories, Lot PFTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUda_00004	08/19/20		Wellington Laboratories, Lot PFUda0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LC6:2FTS_00001

r: 7hclis &v
S: 7h2015sw

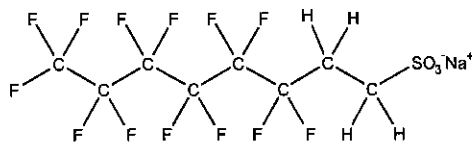


WELLINGTON LABORATORIES

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

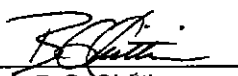
DOCUMENTATION/ DATA ATTACHED:

- 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.

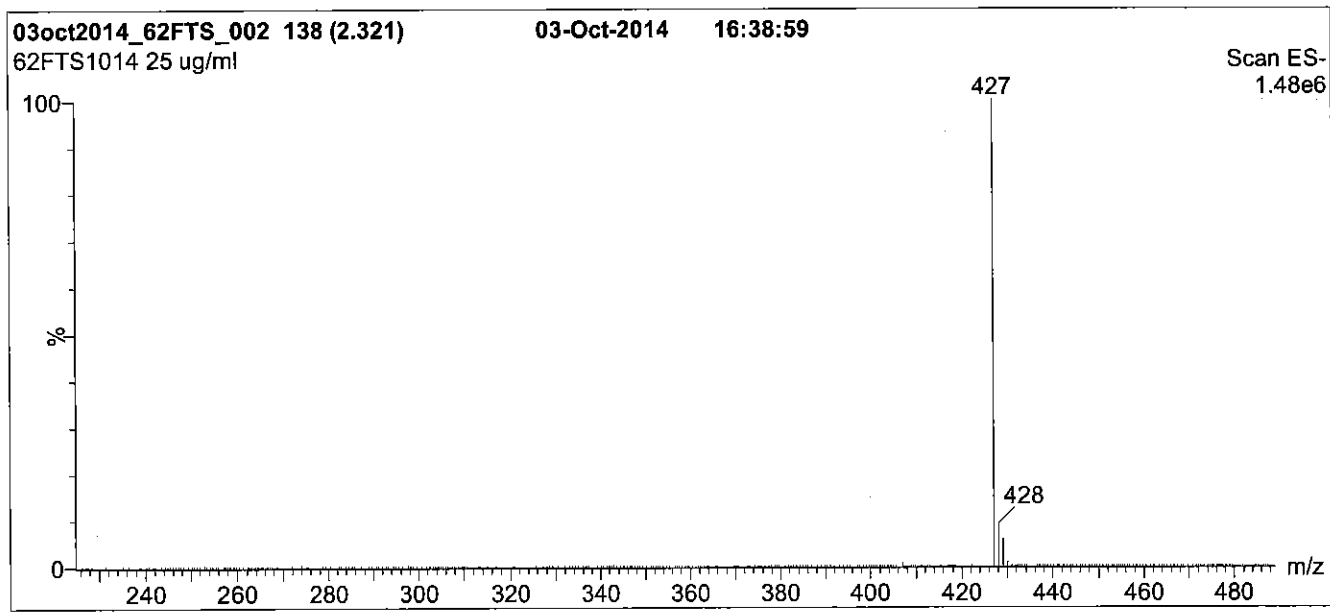
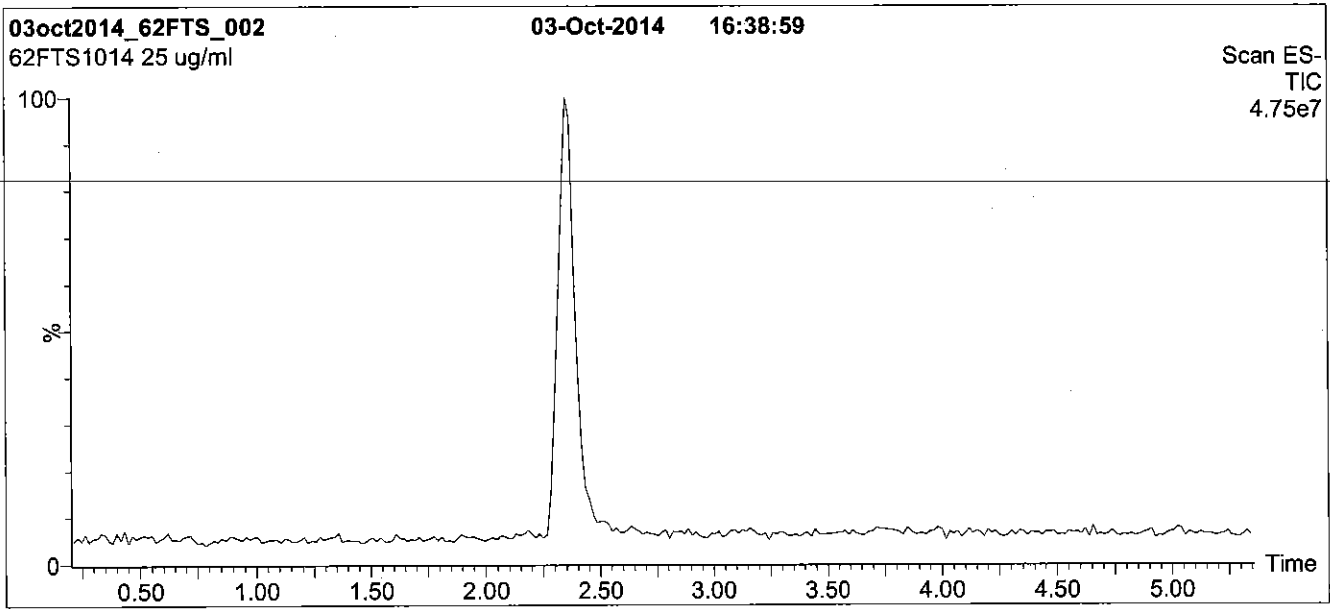
QUALITY MANAGEMENT:

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

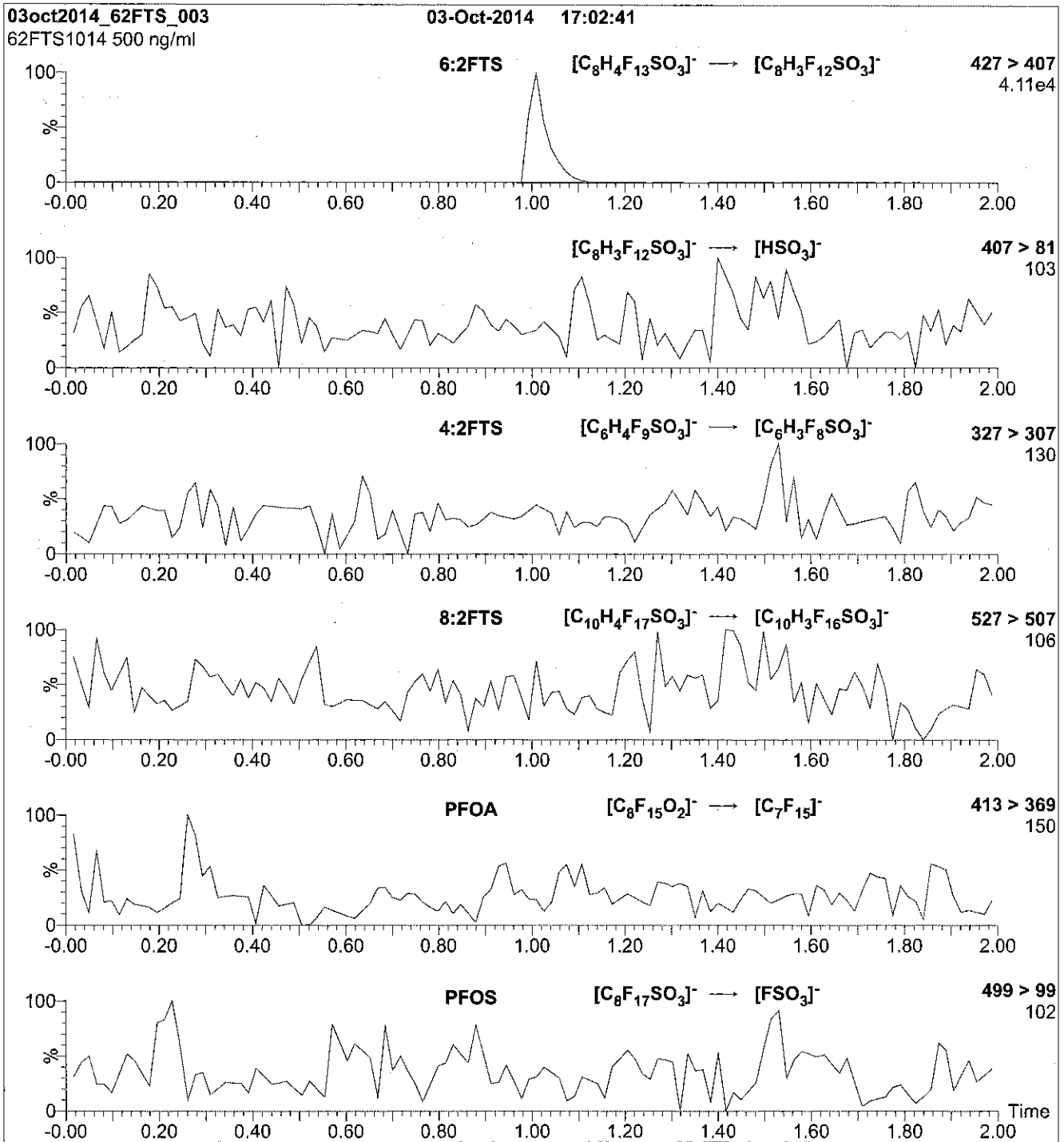
Column: Acquity UPLC BEH Shield RP₁₈, 1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
 Start: 55% (80:20 MeOH:ACN) / 45% H₂O (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
 Time: 10 min

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

r: 7/16/15 sv
s: 7/22/15 sv

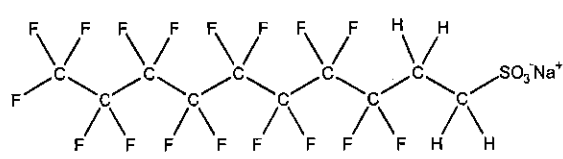


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1014
COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₀H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 550.16
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.9 ± 2.4 µg/ml (8:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/03/2014
EXPIRY DATE: (mm/dd/yyyy) 10/03/2017
RECOMMENDED STORAGE: Refrigerate ampoule

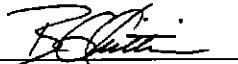
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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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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LIMITED WARRANTY:

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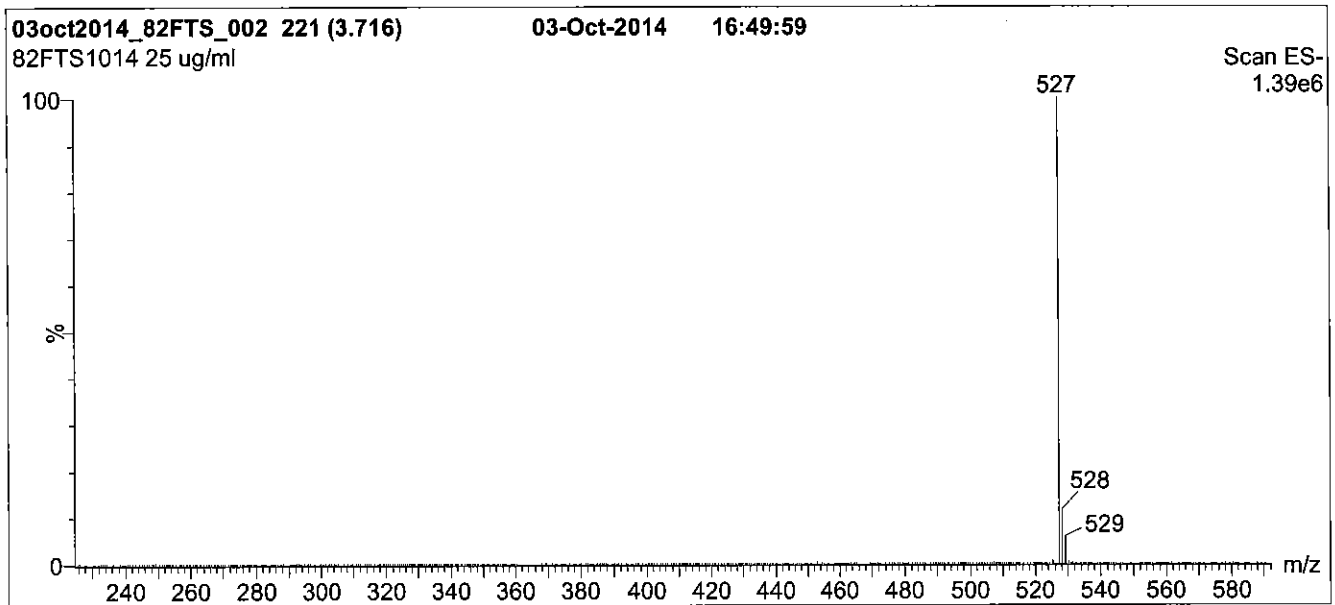
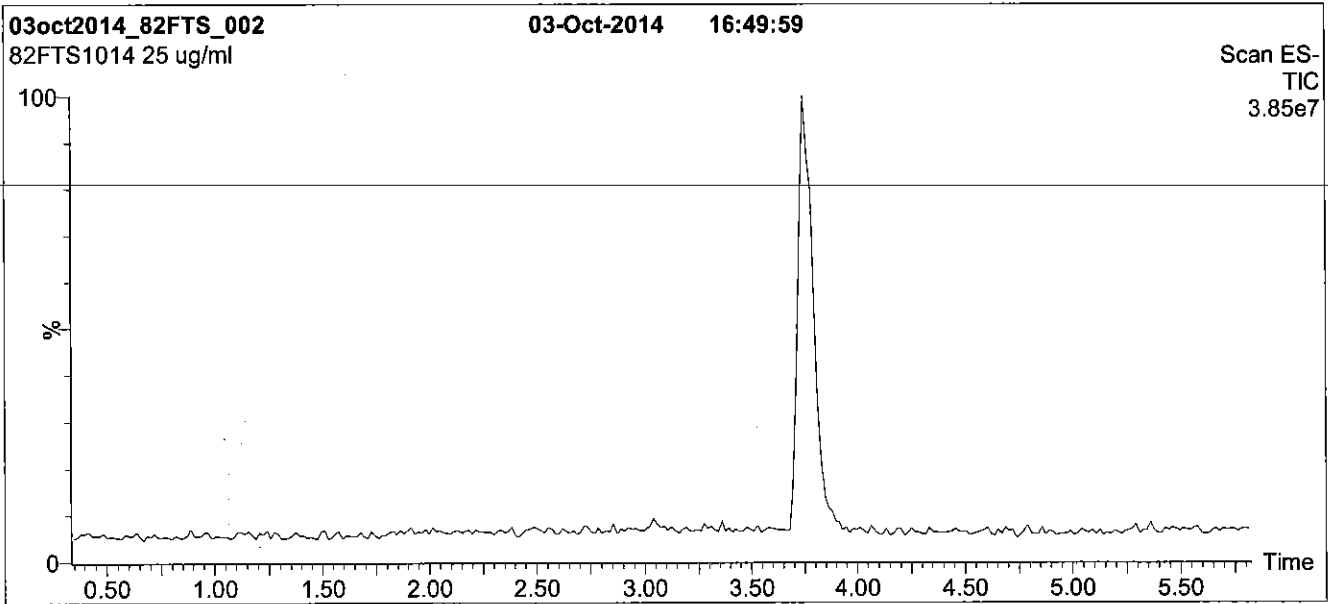
QUALITY MANAGEMENT:

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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

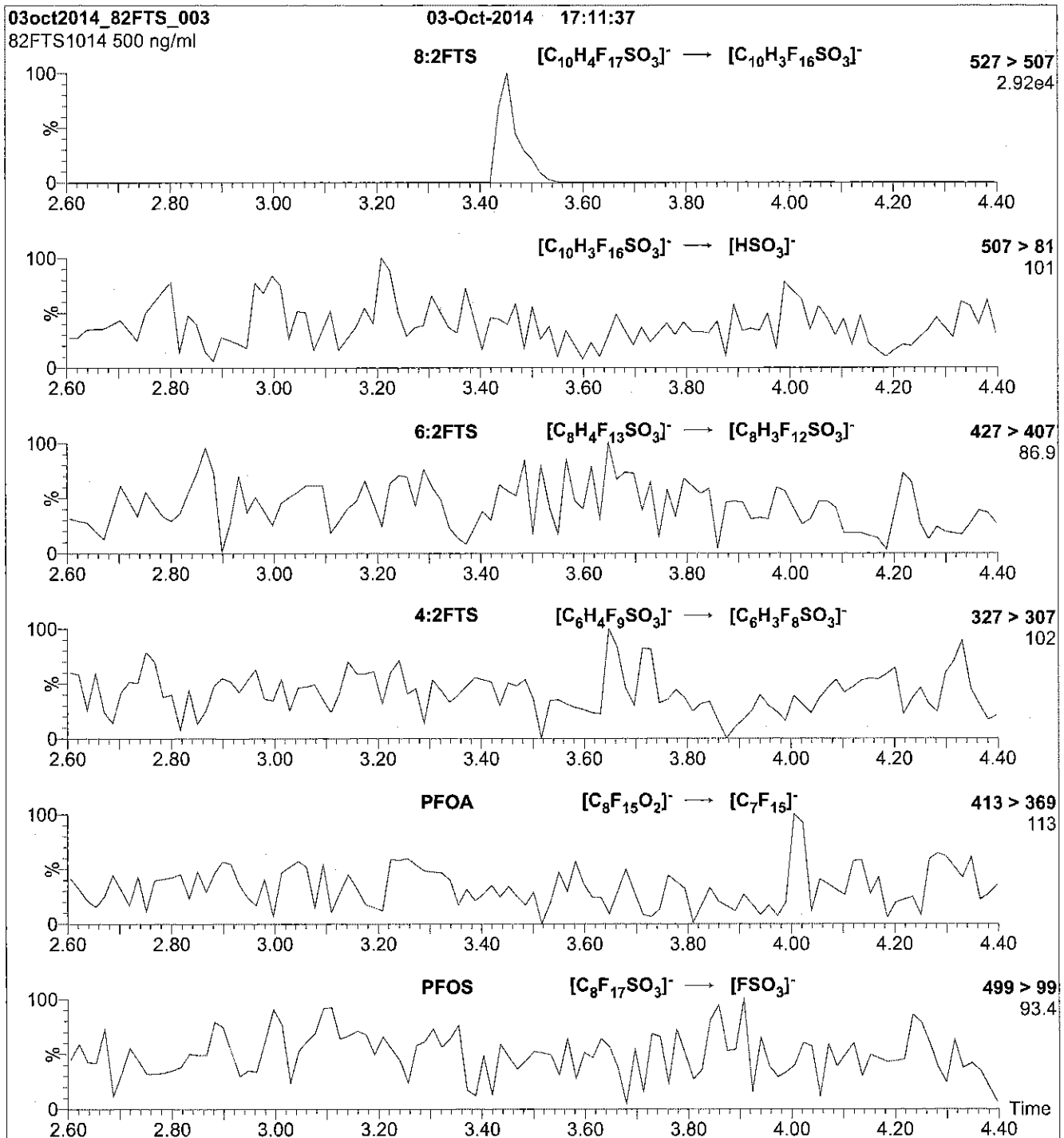
Flow: 300 μ l/min

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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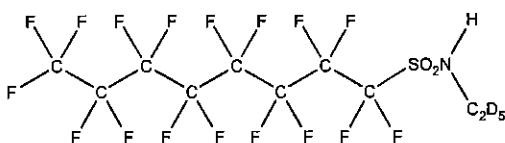
CERTIFICATE OF ANALYSIS DOCUMENTATION

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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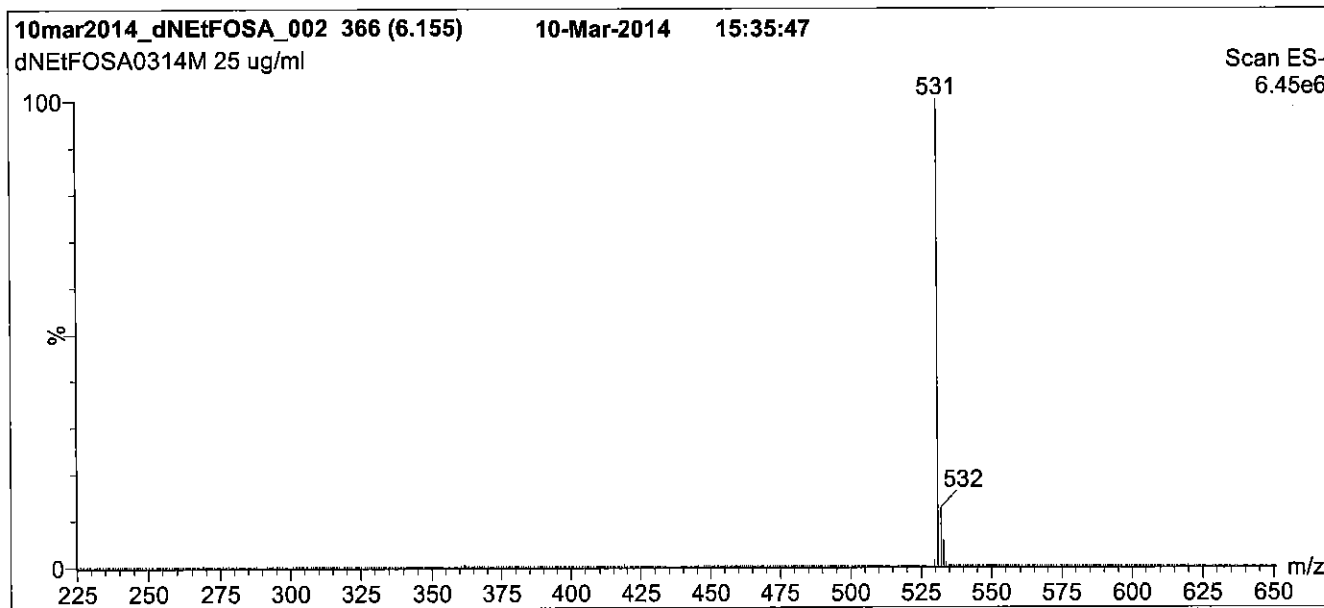
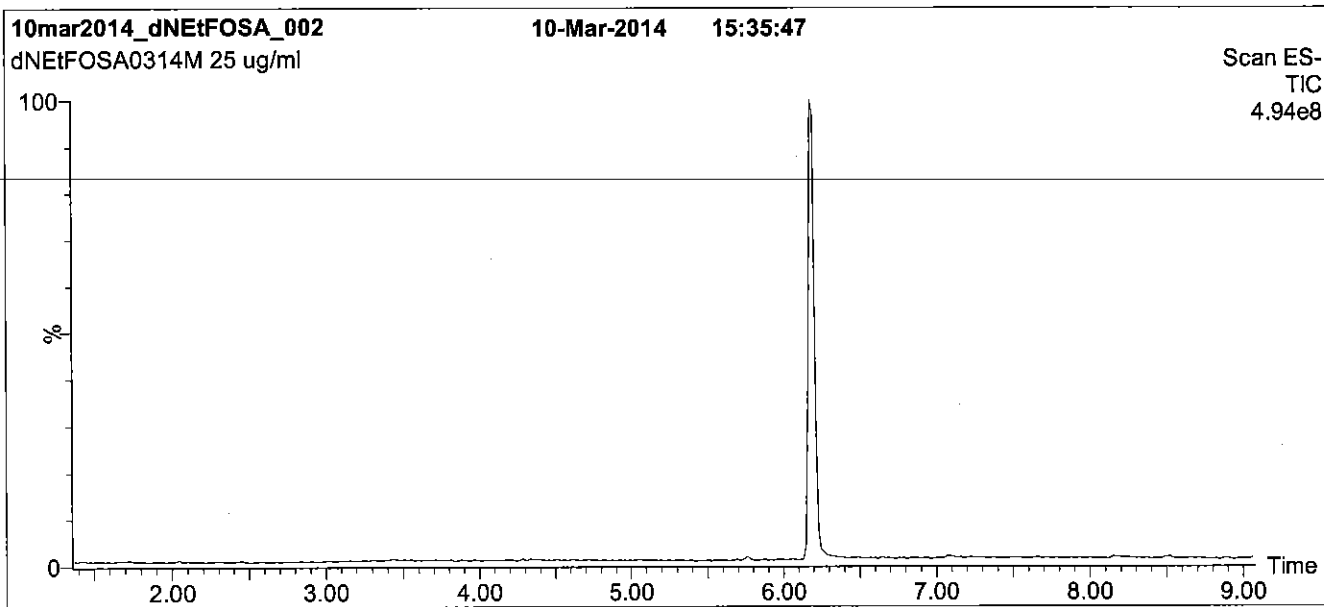
QUALITY MANAGEMENT:

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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

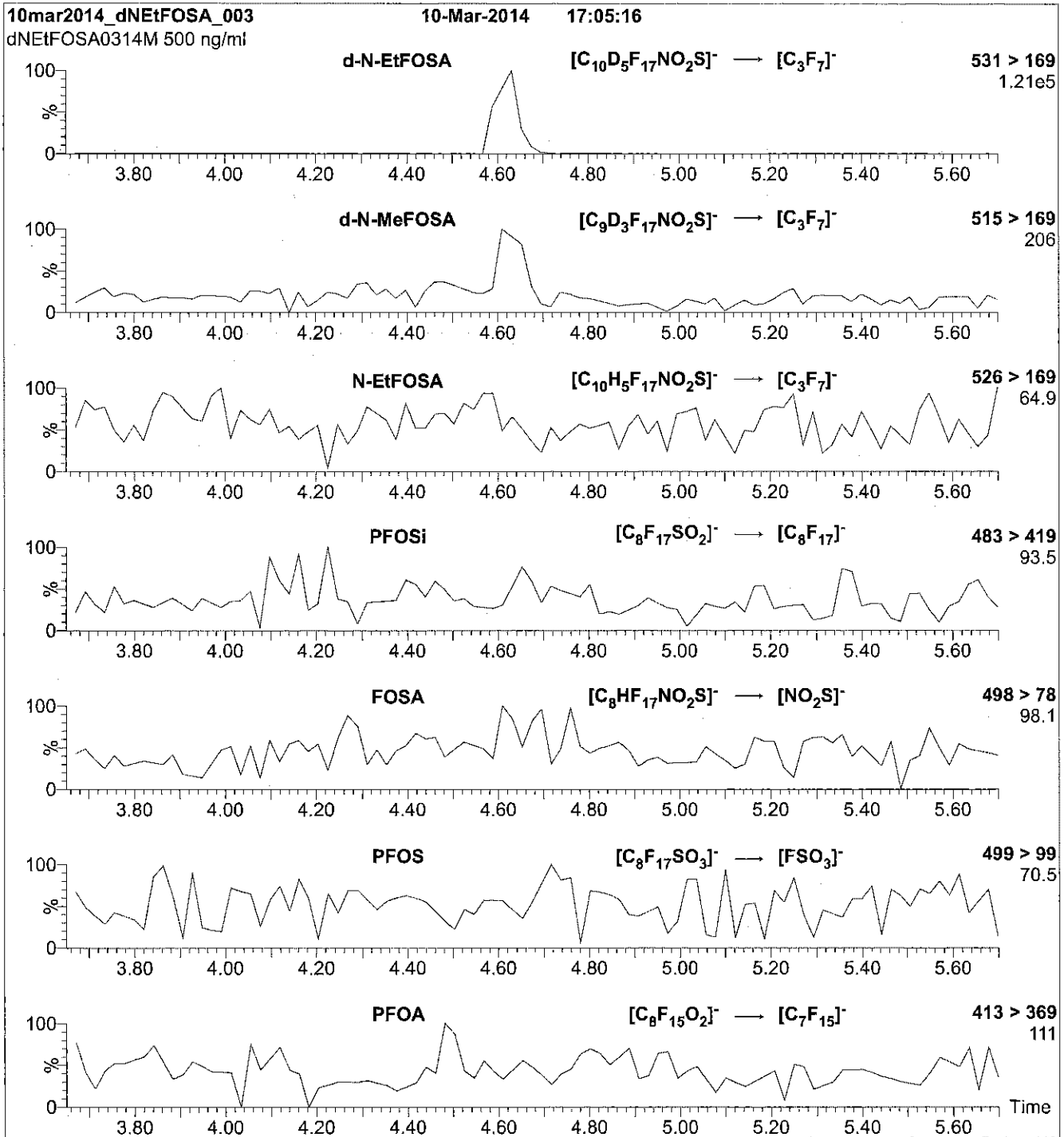
Flow: 300 μ l/min

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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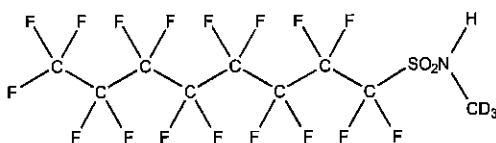


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M **LOT NUMBER:** dNMeFOSA0114M
COMPOUND: N-methyl-d₃-perfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₉D₃HF₁₇NO₂S **MOLECULAR WEIGHT:** 516.19
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% ²H₃
LAST TESTED: (mm/dd/yyyy) 01/28/2014
EXPIRY DATE: (mm/dd/yyyy) 01/28/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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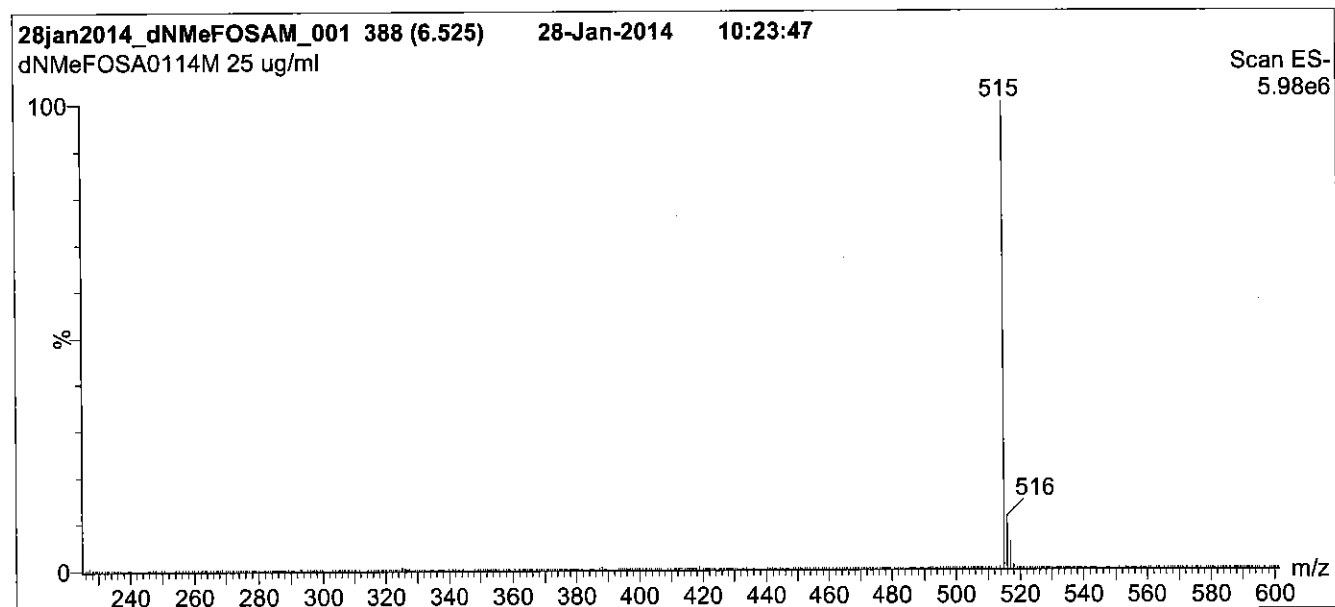
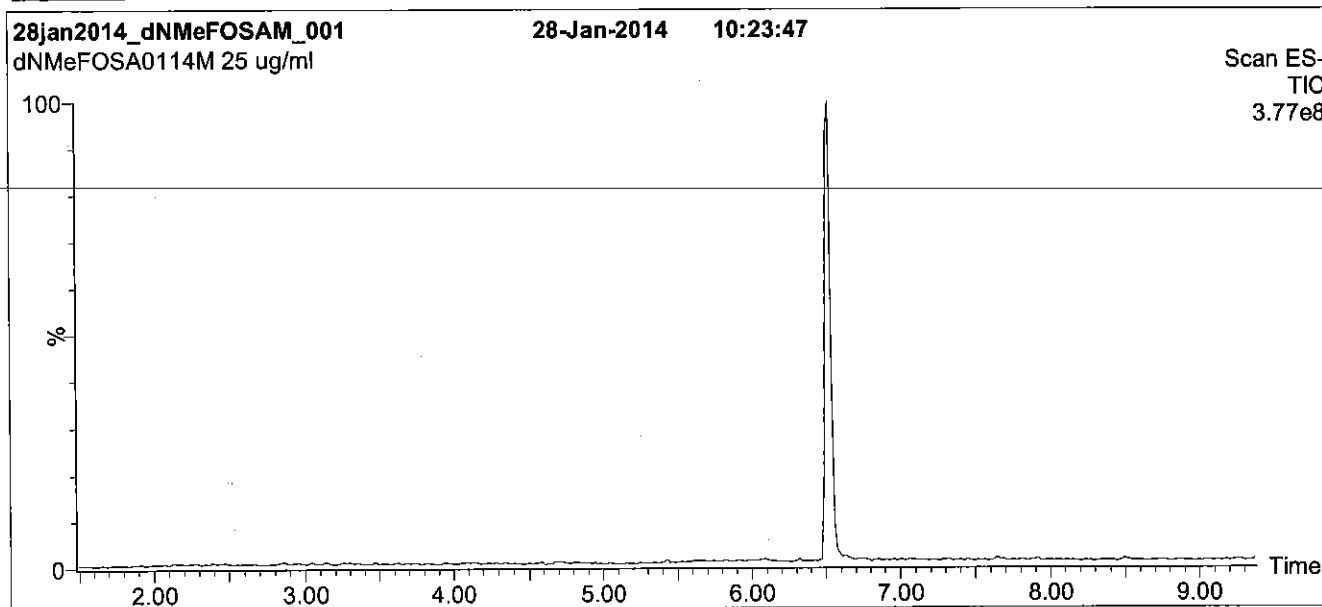
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Figure 1: d-N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



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

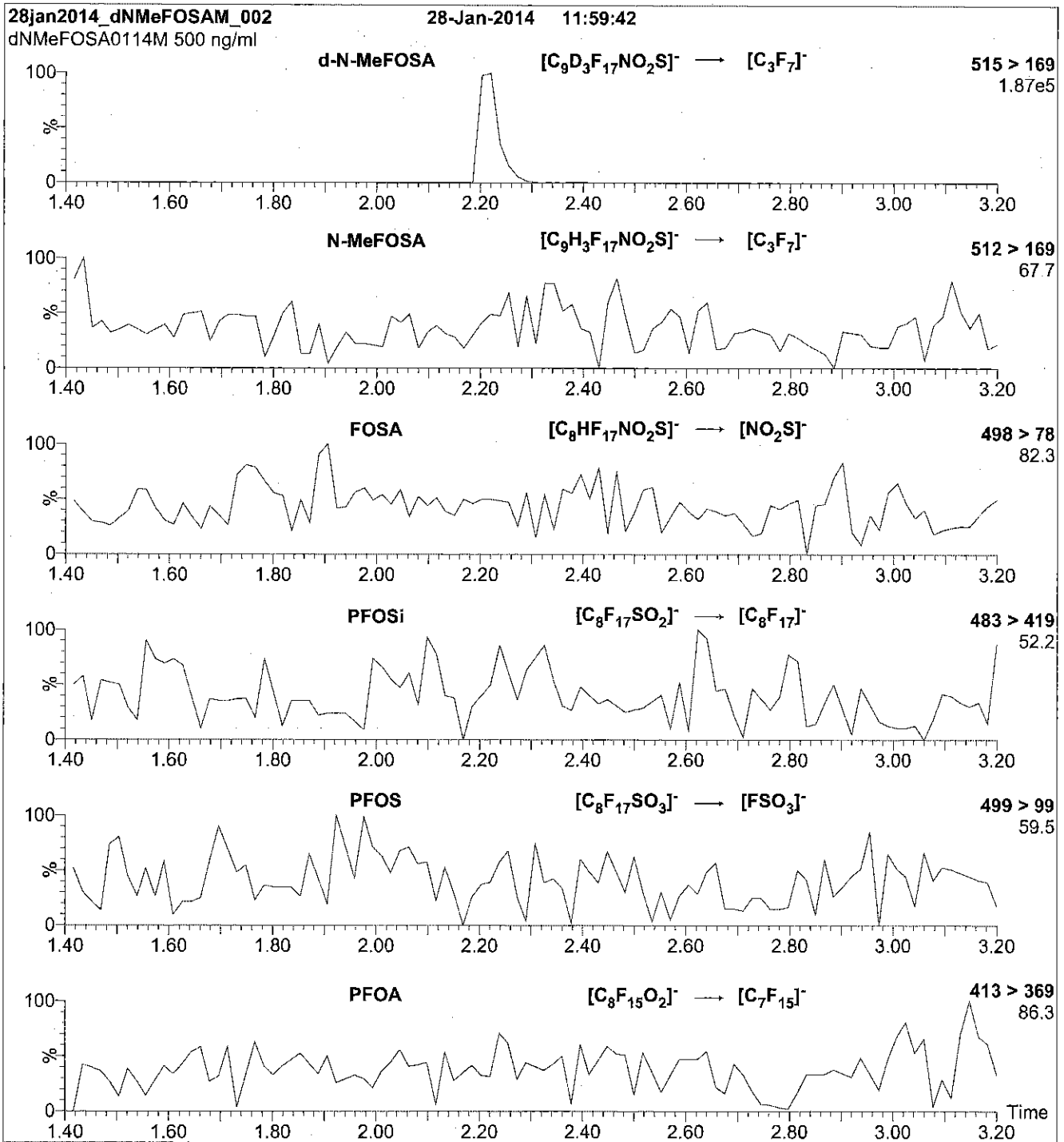
Flow: 300 μ l/min

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

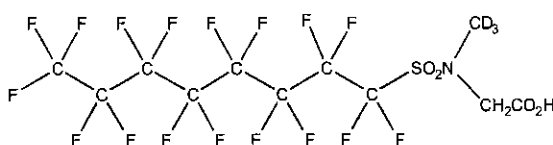
LCd3-NMeFOSAA_00001



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0113
COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₁D₃H₃F₁₇NO₄S **MOLECULAR WEIGHT:** 574.23
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% ²H₃
LAST TESTED: (mm/dd/yyyy) 01/31/2013
EXPIRY DATE: (mm/dd/yyyy) 01/31/2018
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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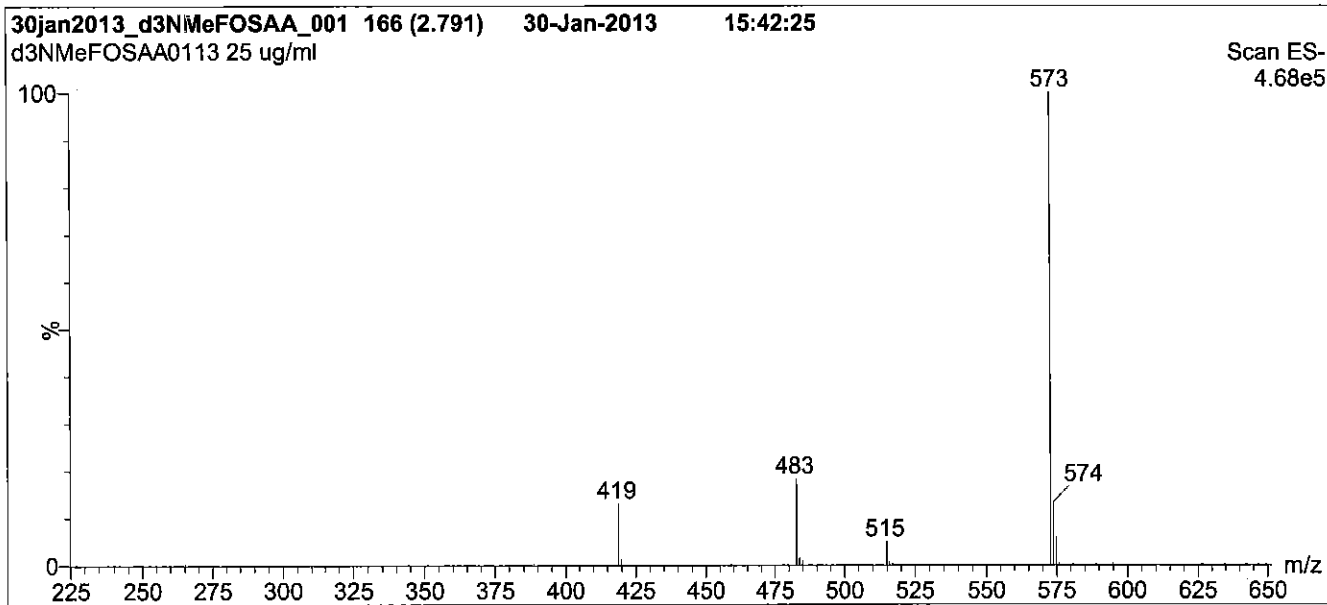
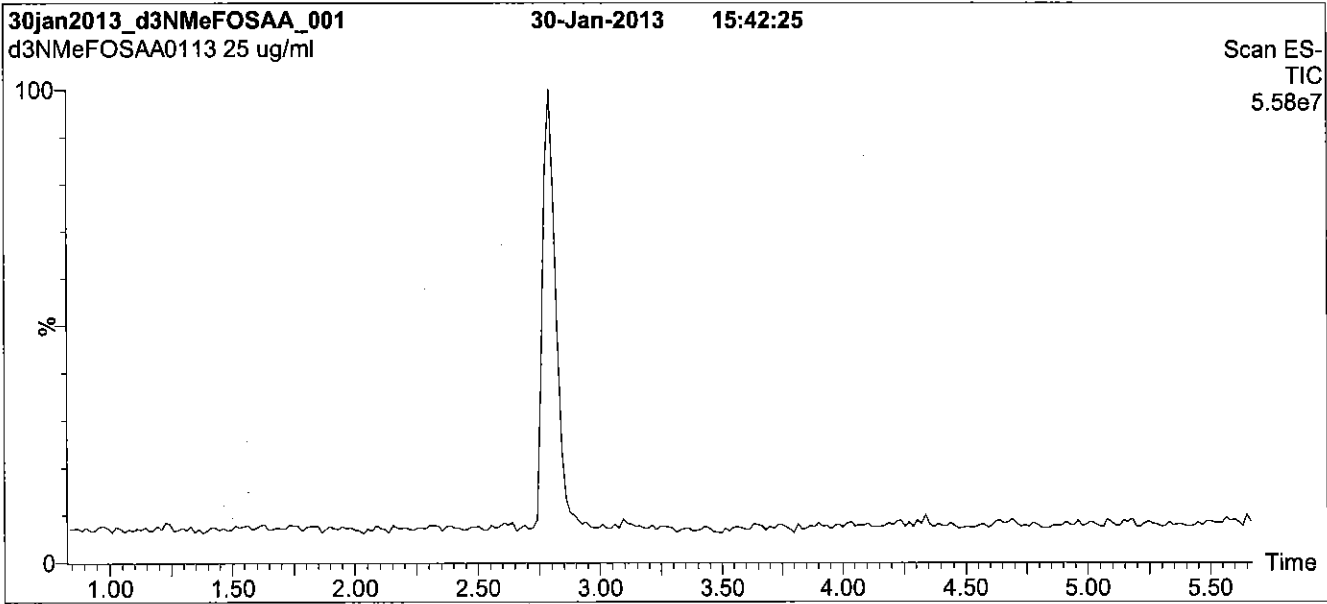
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Figure 1: d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



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

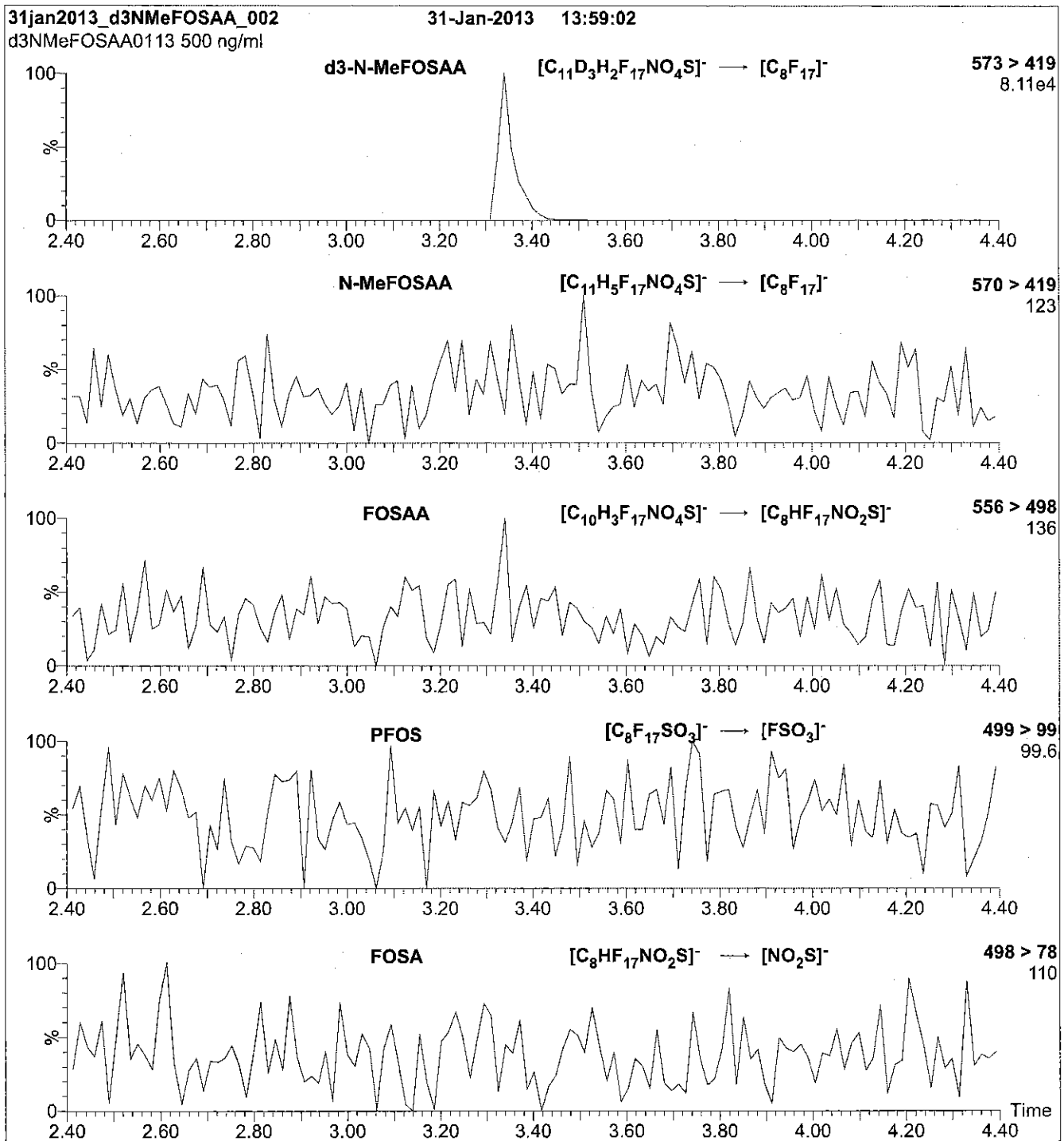
Flow: 300 μ l/min

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

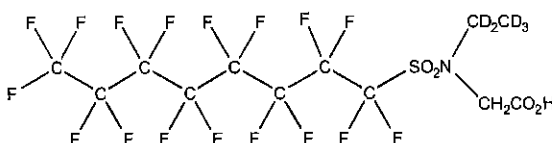


WELLINGTON LABORATORIES

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

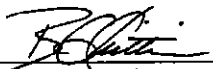
DOCUMENTATION/ DATA ATTACHED:

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:

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HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \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.

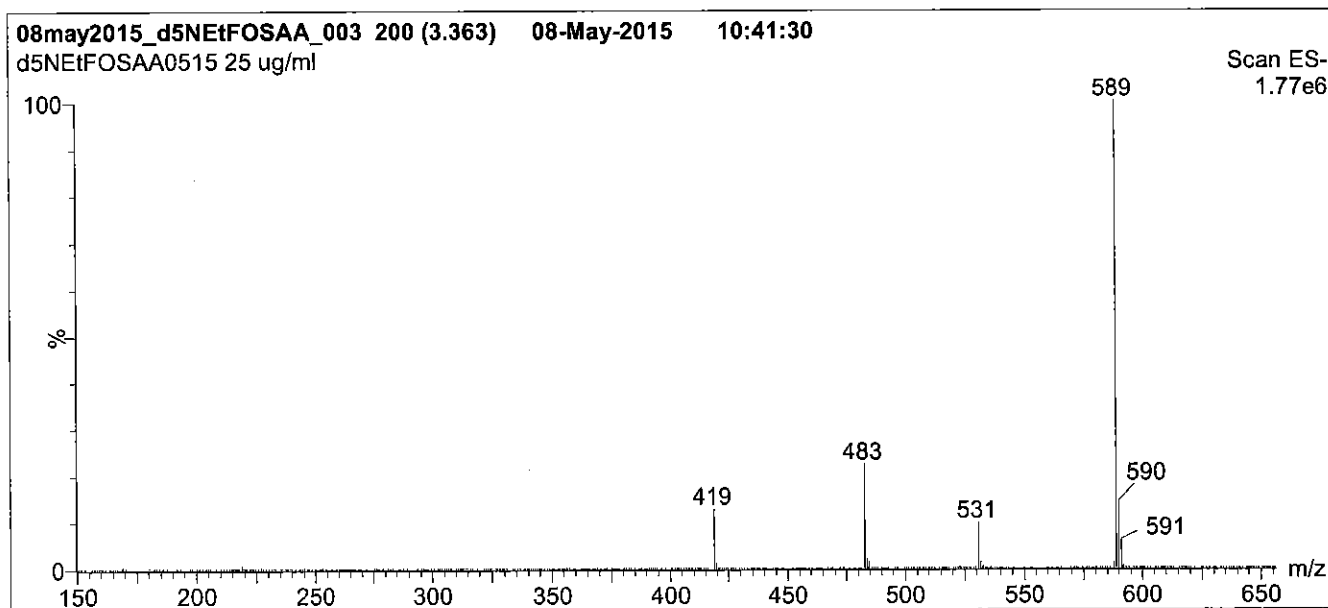
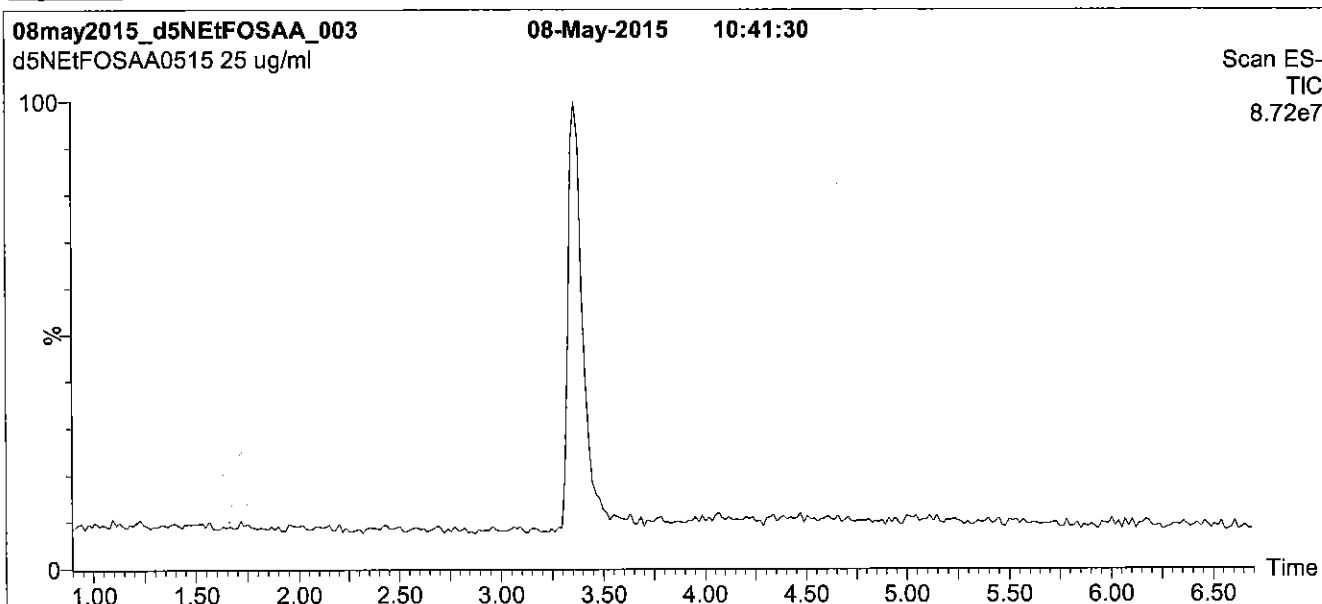
QUALITY MANAGEMENT:

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

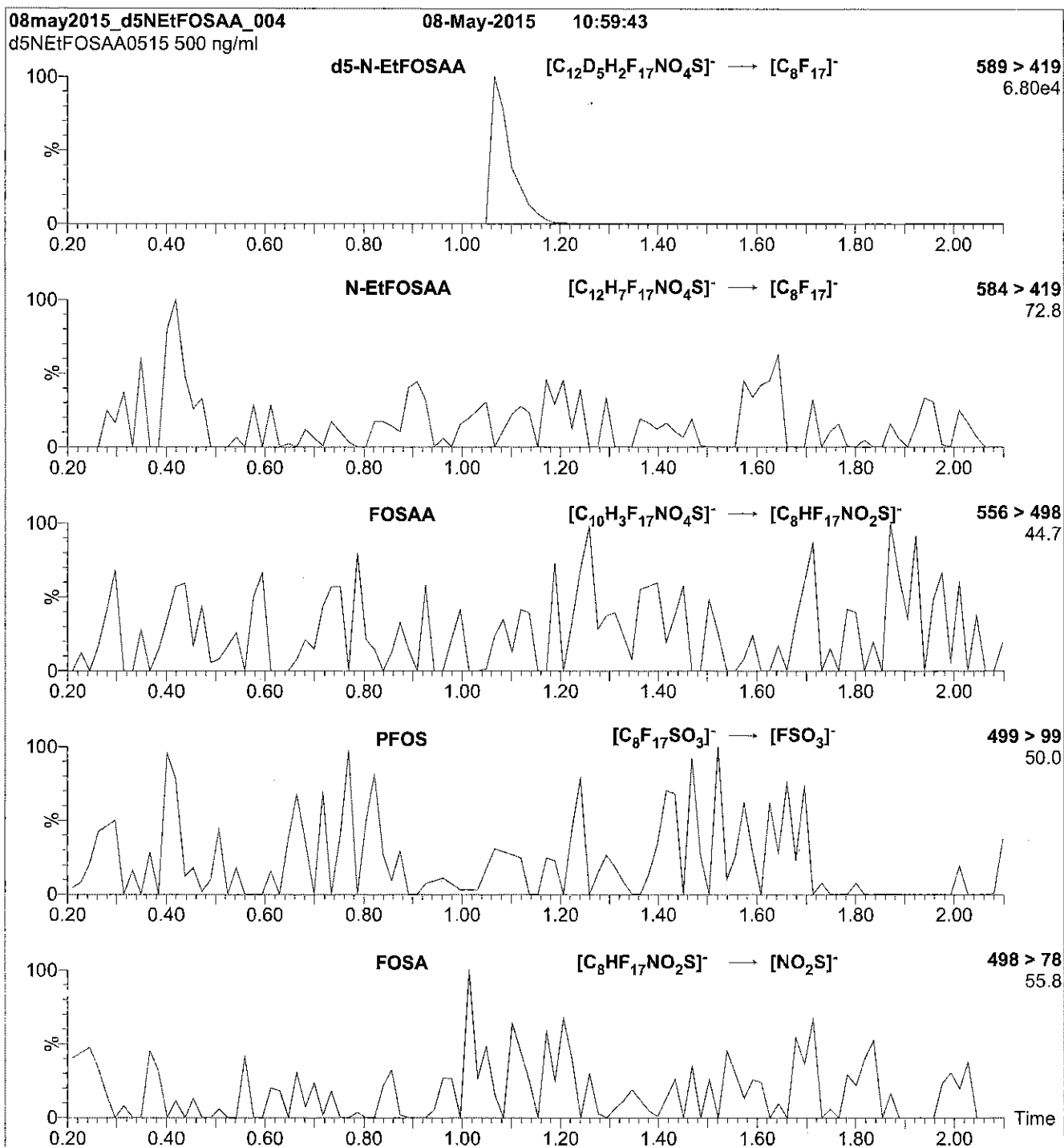
Flow: 300 μ l/min

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

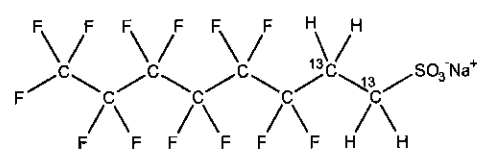


WELLINGTON LABORATORIES

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

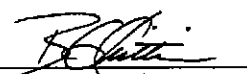
DOCUMENTATION/ DATA ATTACHED:

- 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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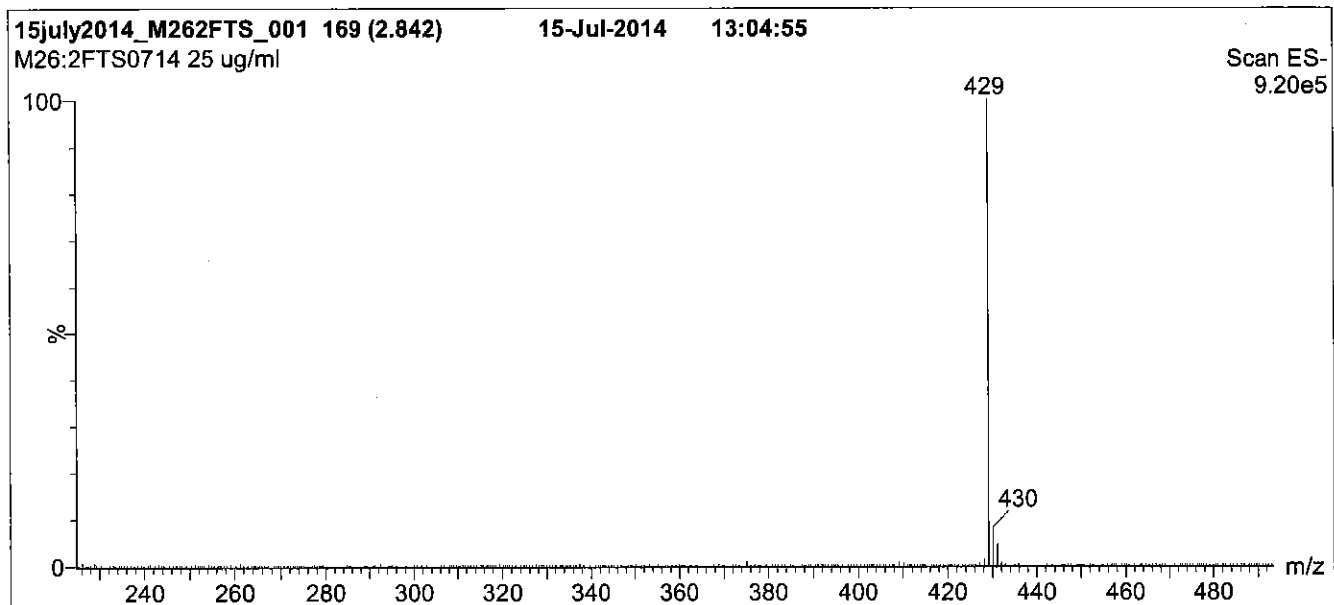
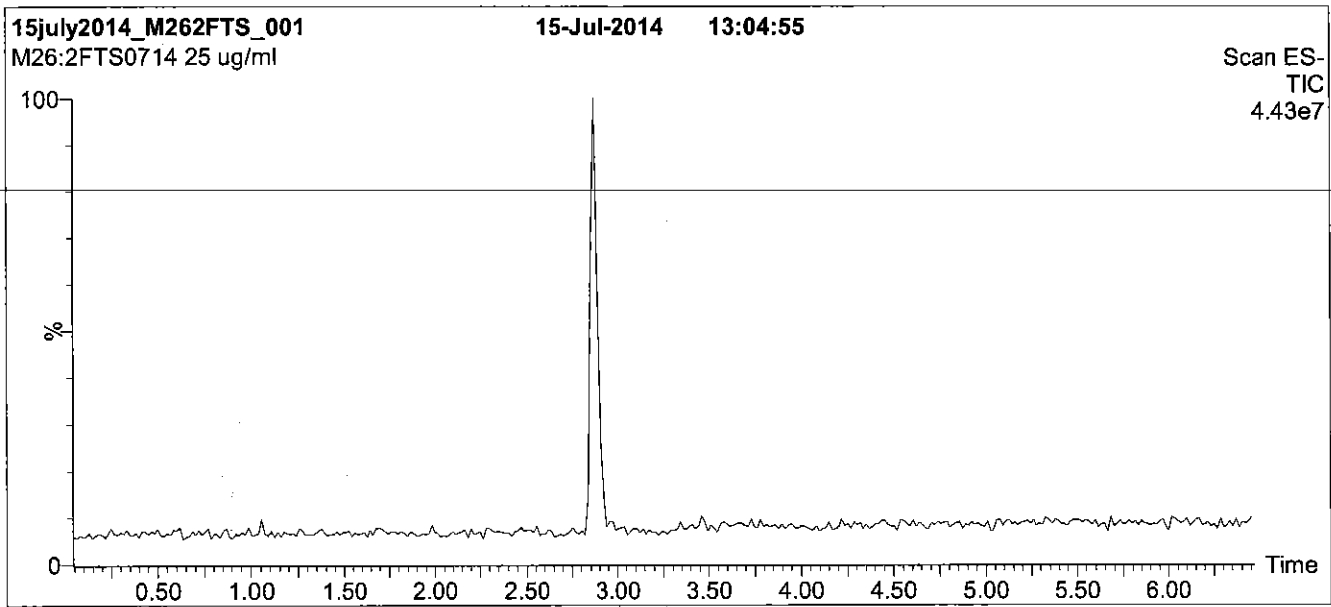
QUALITY MANAGEMENT:

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

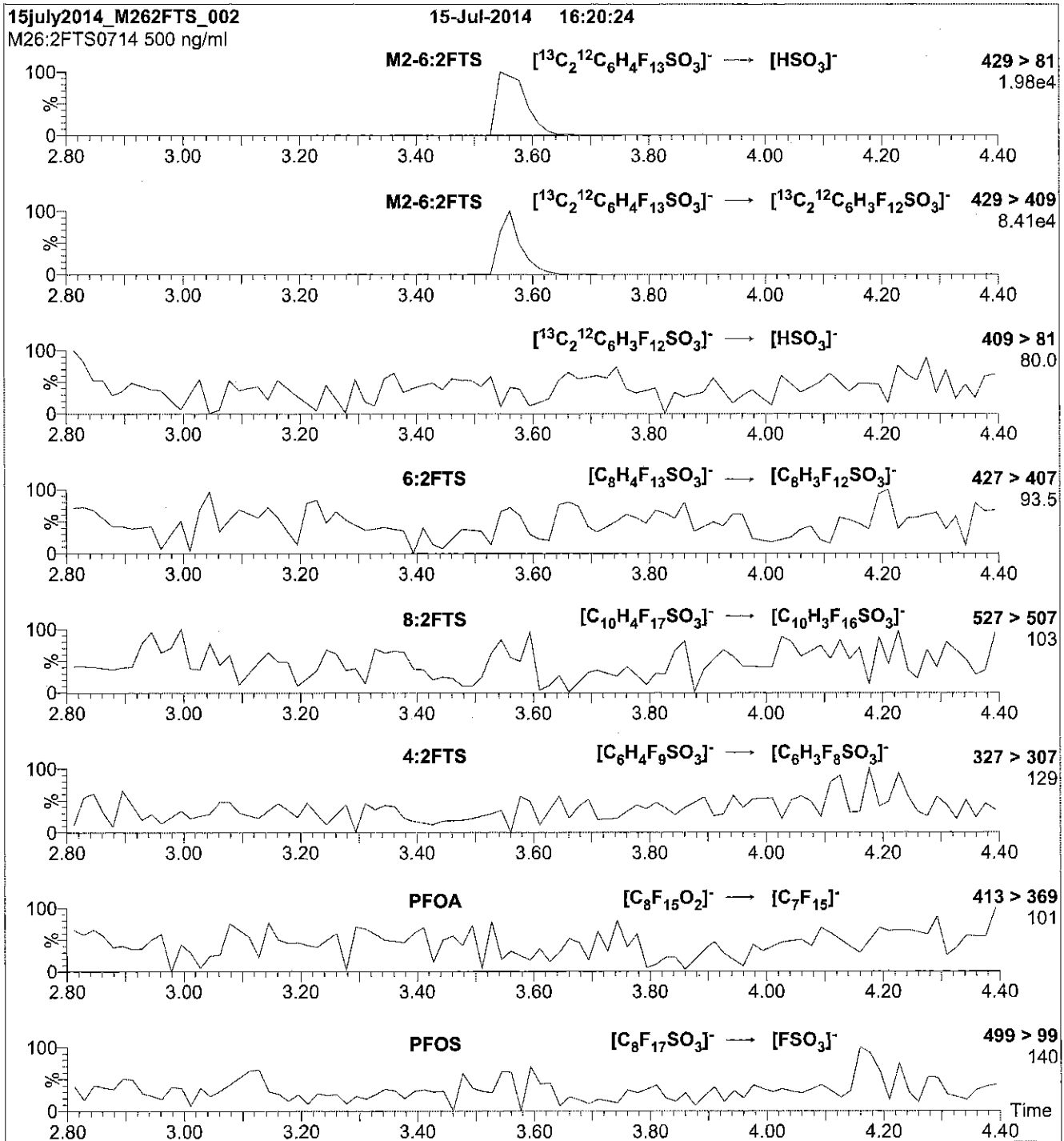
Flow: 300 μ l/min

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

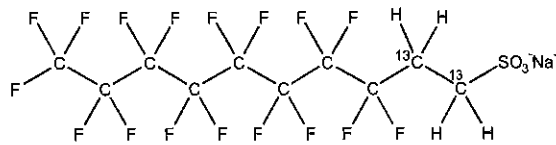


WELLINGTON LABORATORIES

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)

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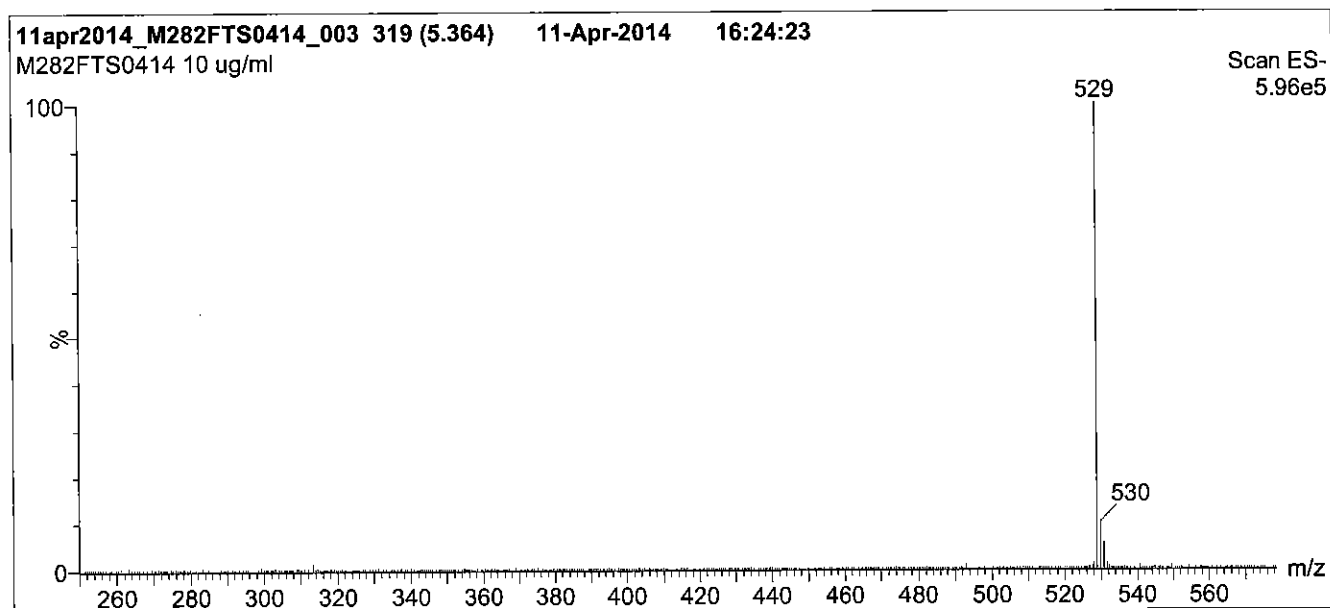
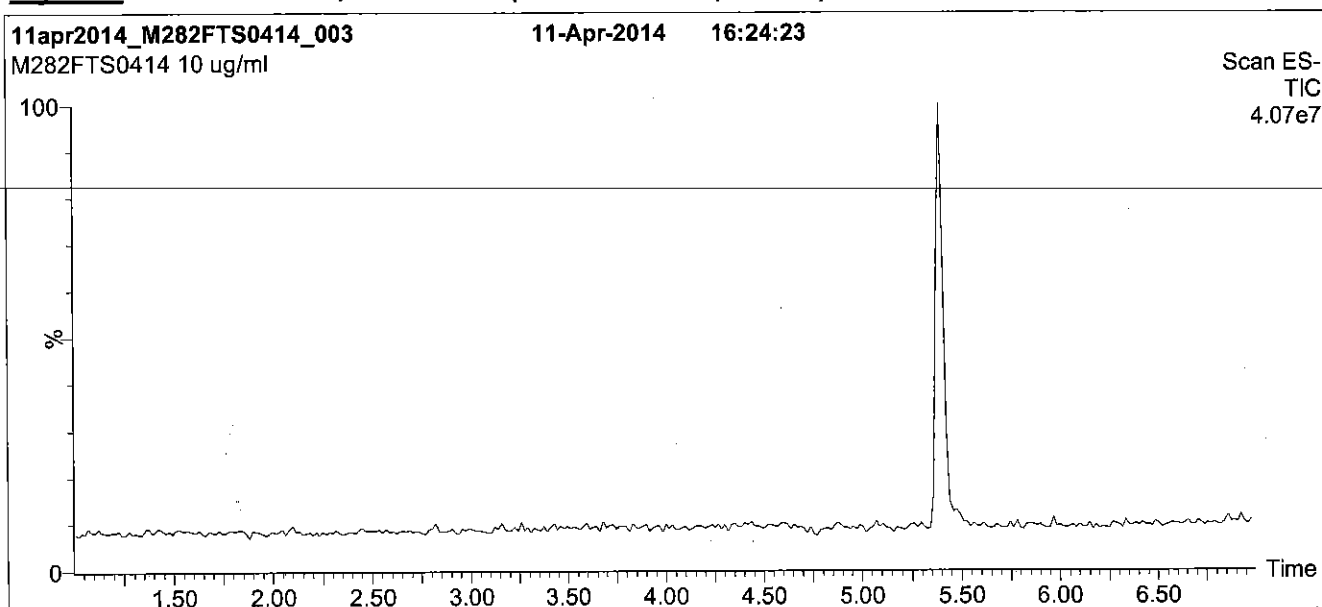
QUALITY MANAGEMENT:

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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

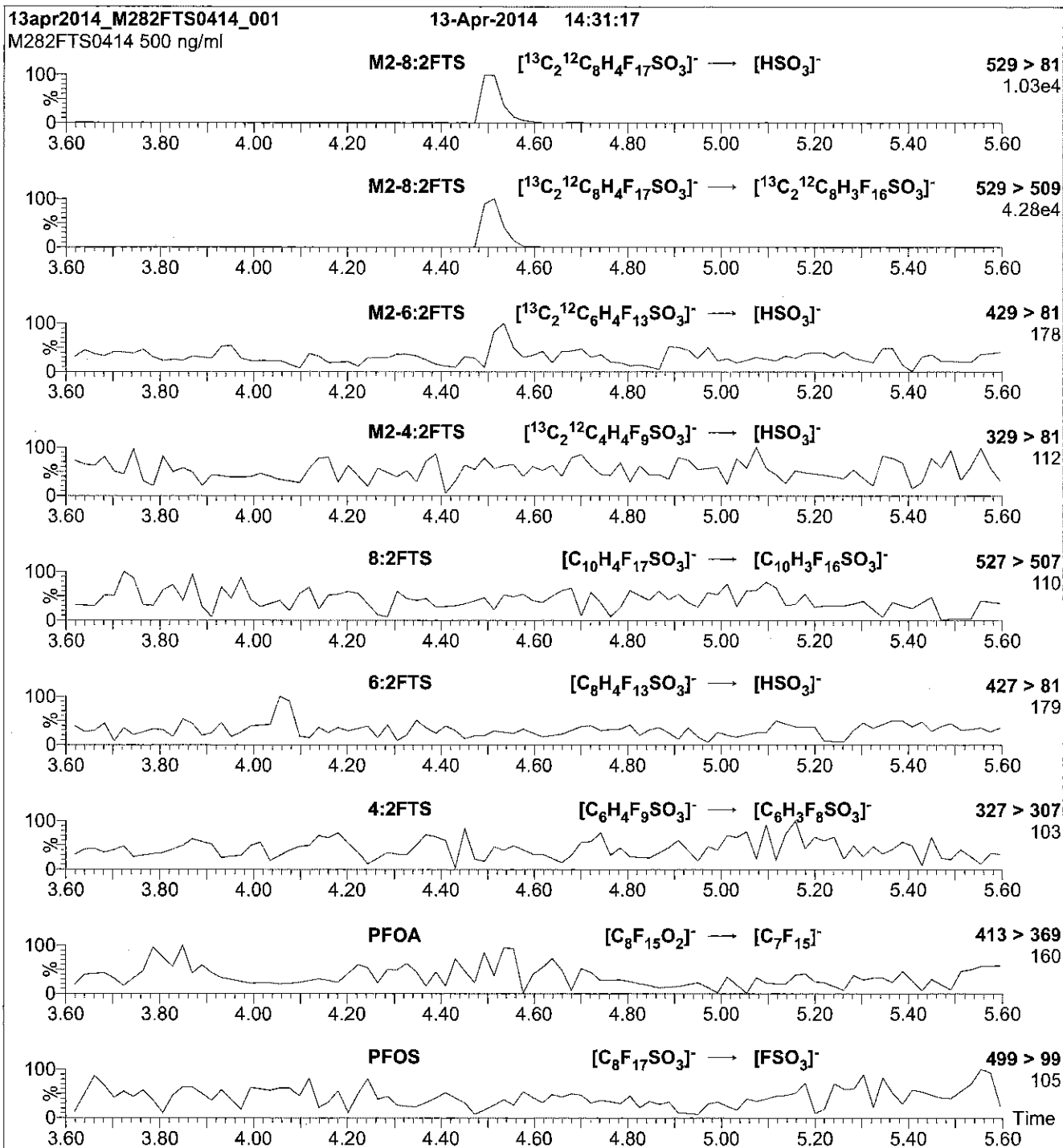
Flow: 300 μ l/min

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% H_2O
 (both with 10 mM NH_4OAc buffer)

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

MS Parameters

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

Reagent

LCN-EtFOSA-M_00002

P: 7/16/15 SW



WELLINGTON LABORATORIES

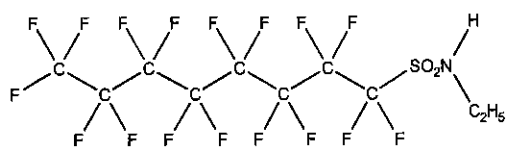
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: NEtFOSA0714M

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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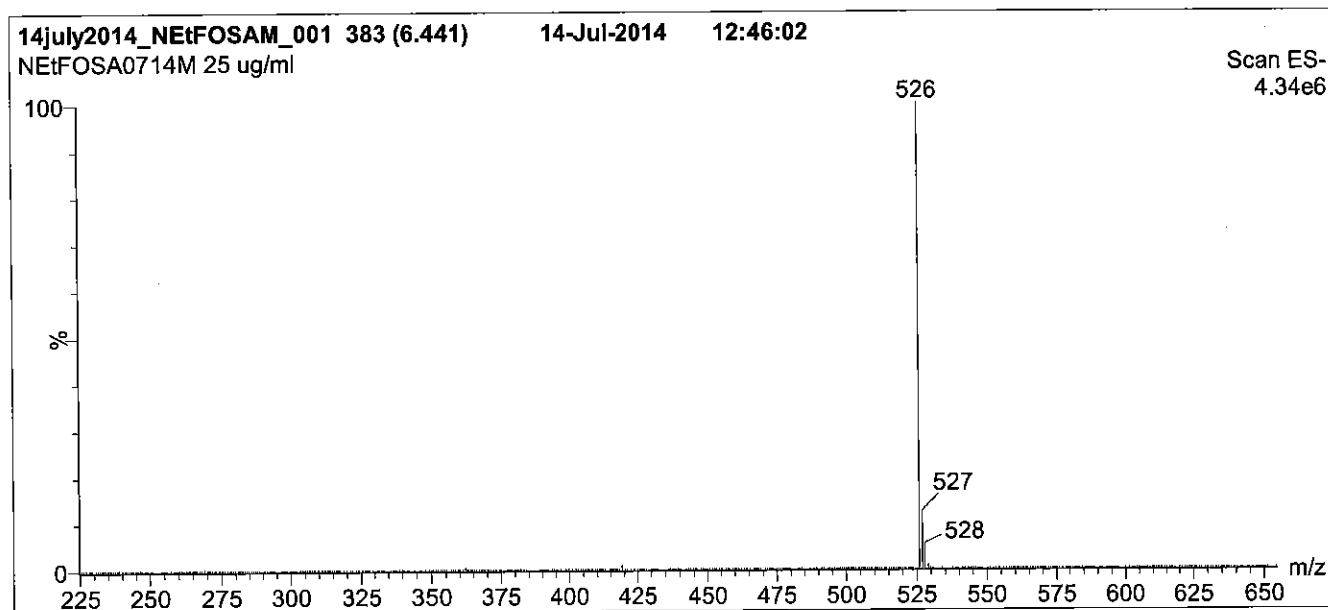
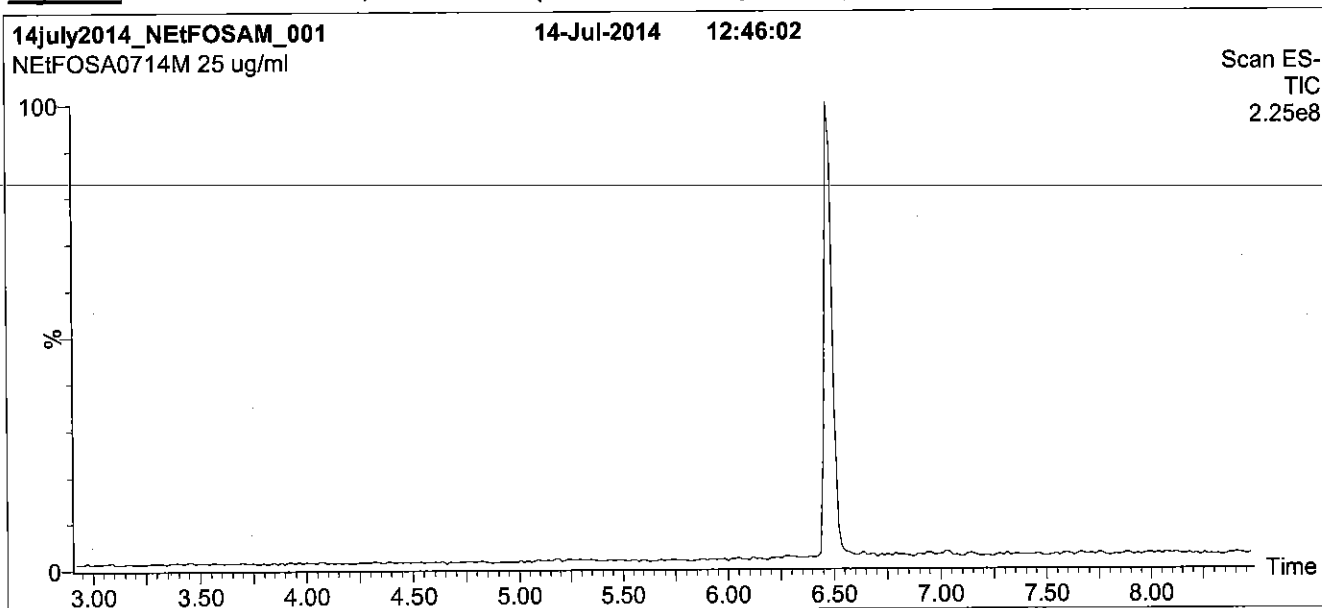
QUALITY MANAGEMENT:

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

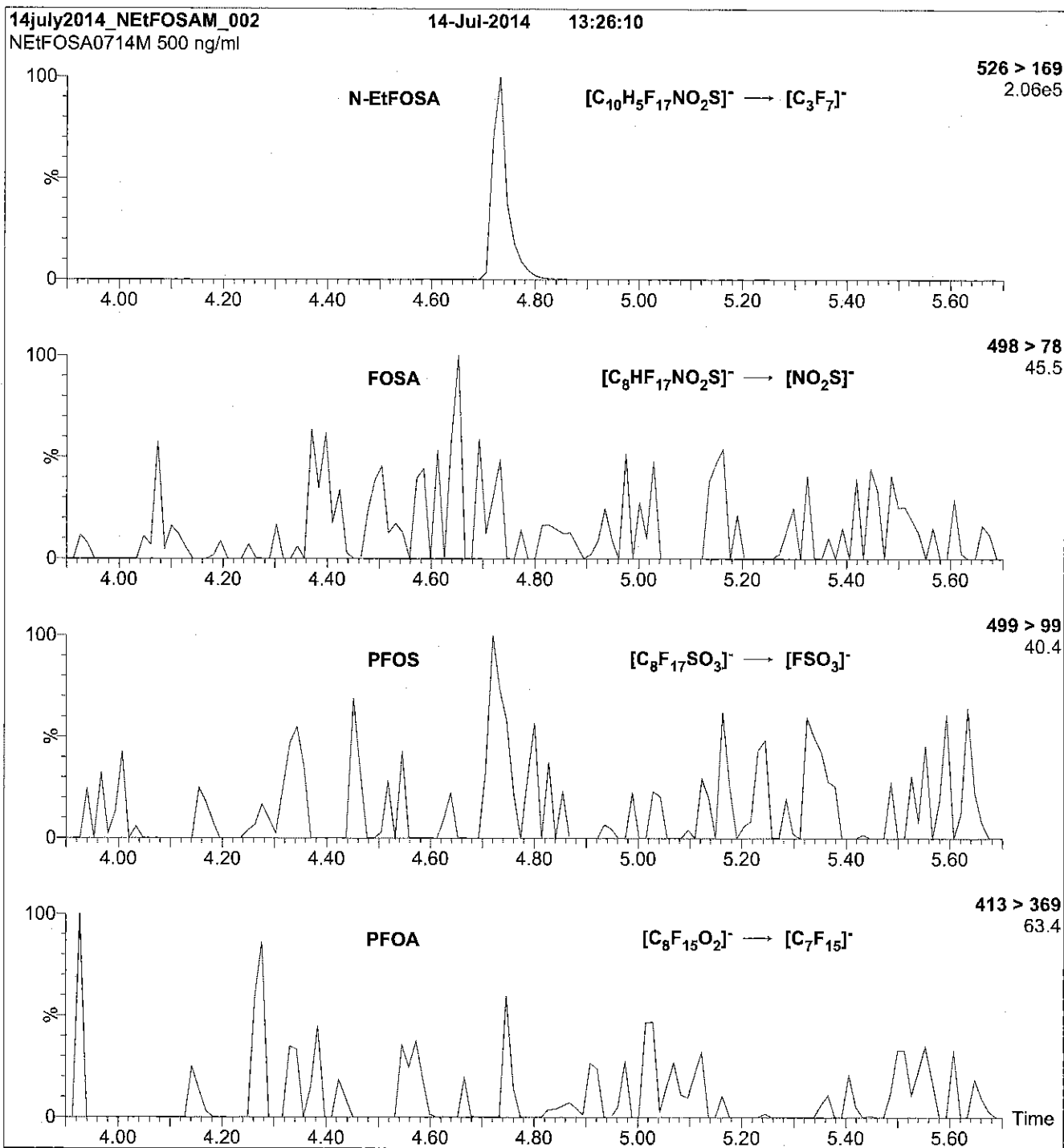
Flow: 300 μ l/min

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)

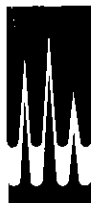
Flow: 300 μ l/min

MS Parameters

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

Reagent

LCN-ETFOSAA_00001

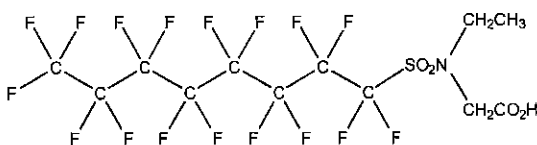


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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:

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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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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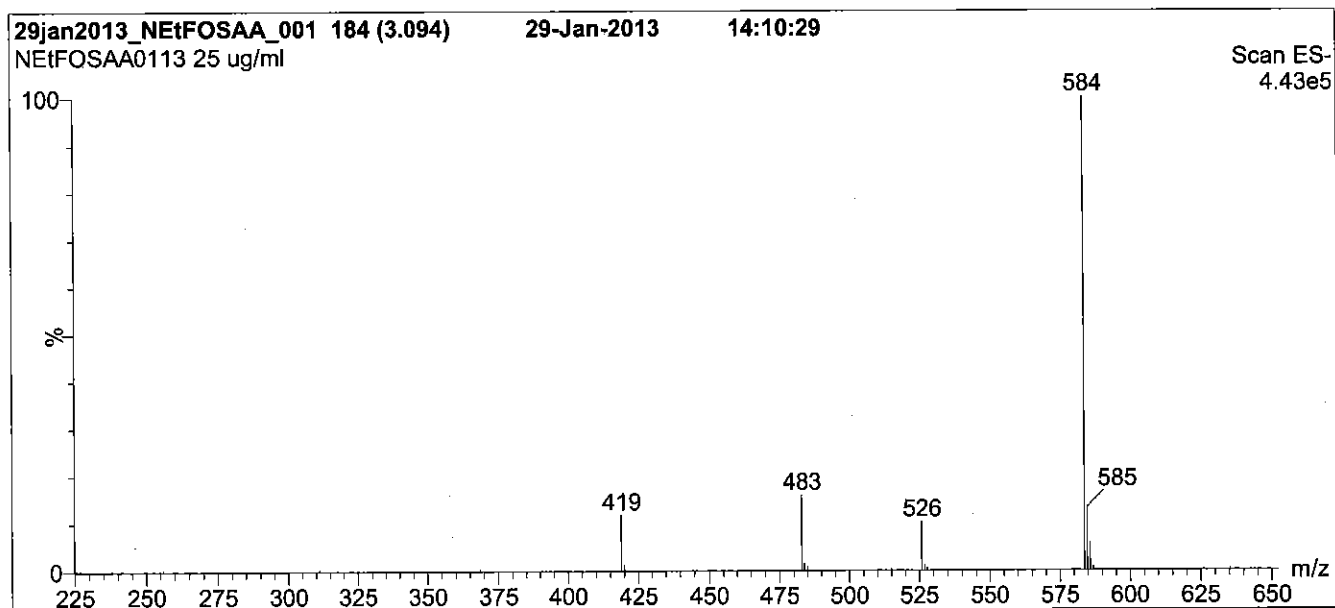
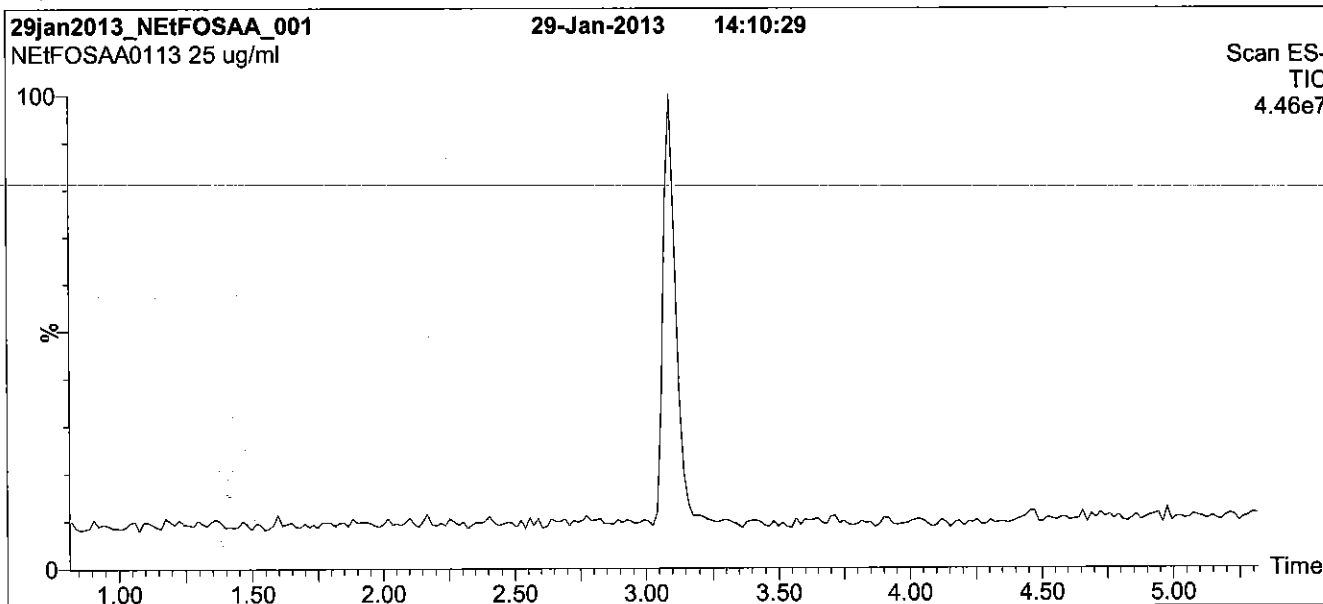
QUALITY MANAGEMENT:

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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

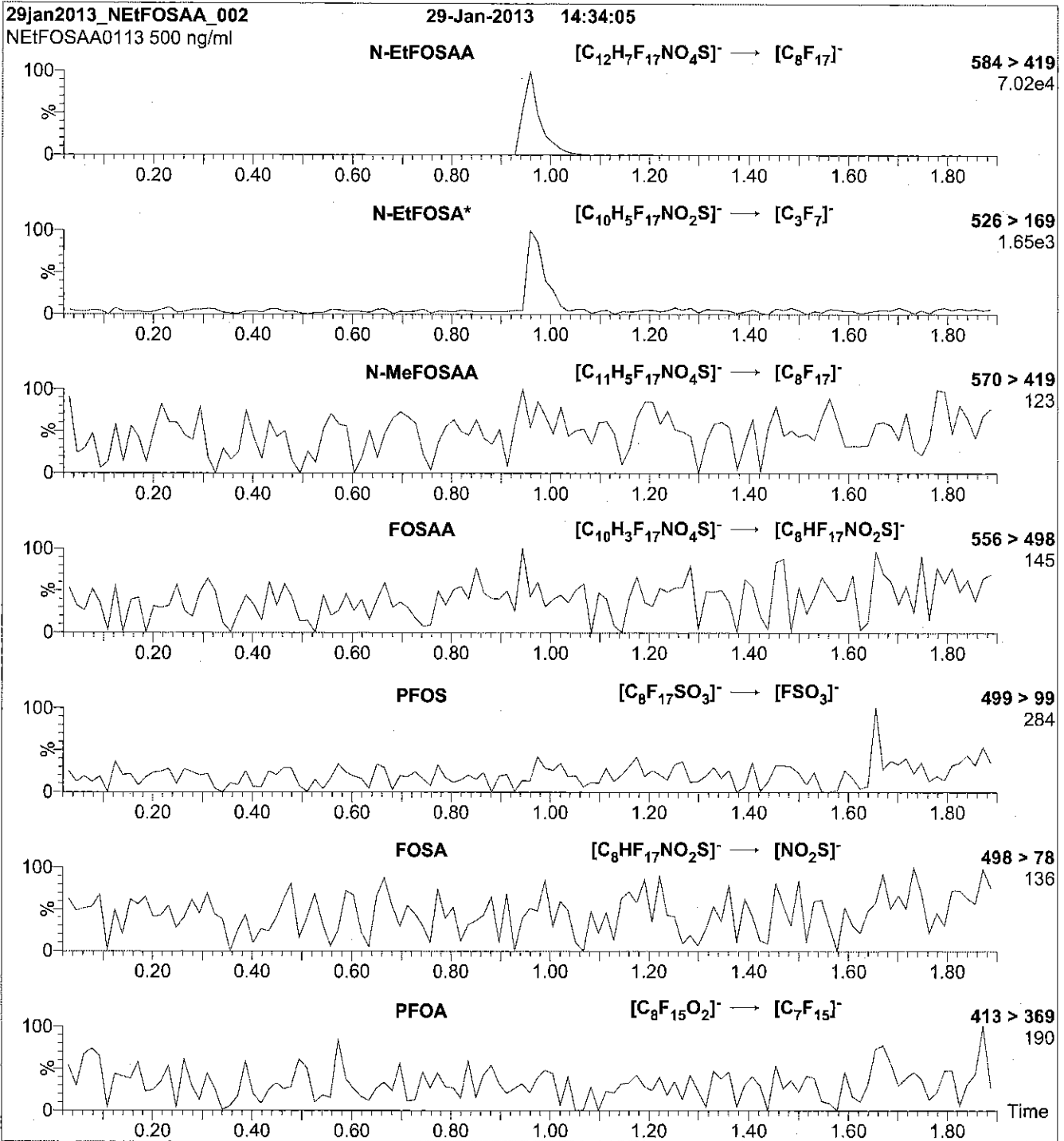
Flow: 300 μ l/min

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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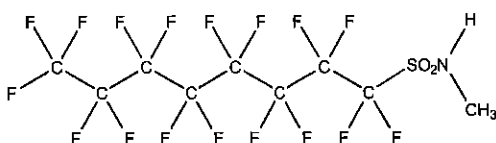
CERTIFICATE OF ANALYSIS DOCUMENTATION

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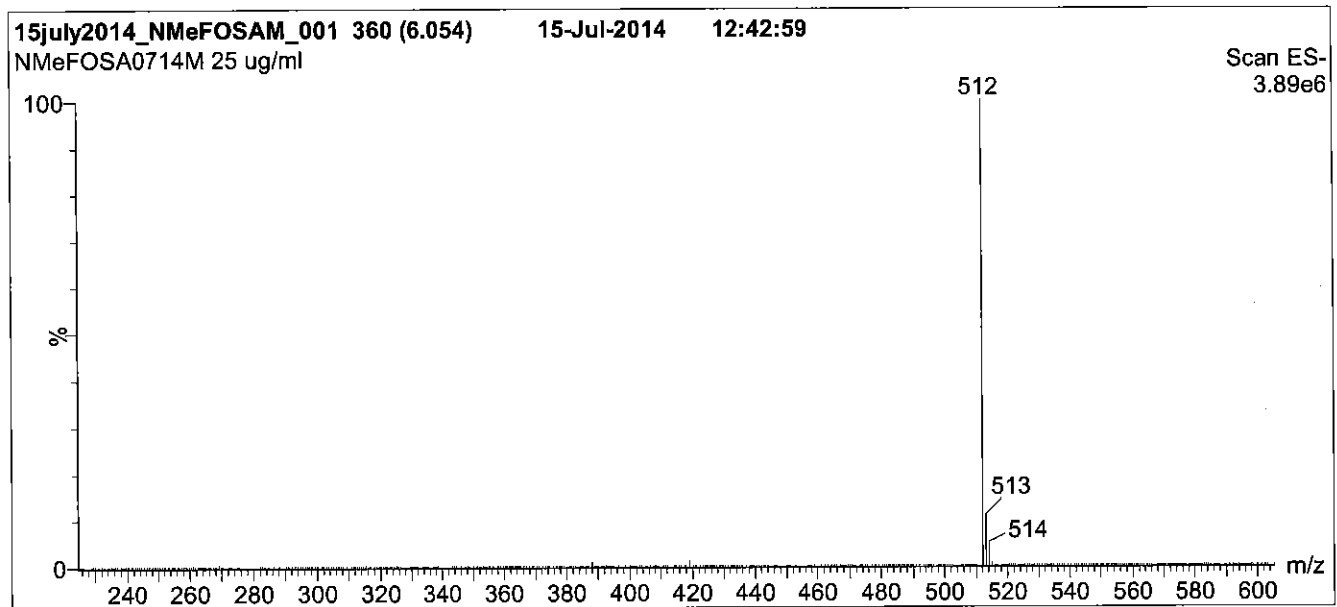
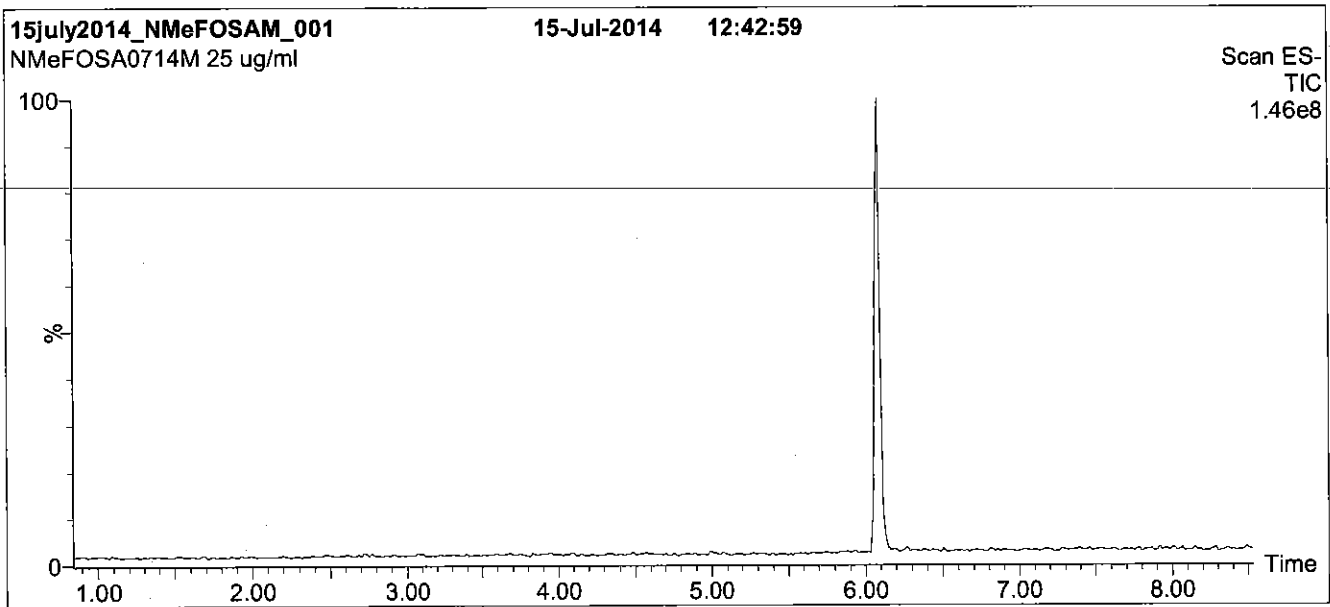
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Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



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

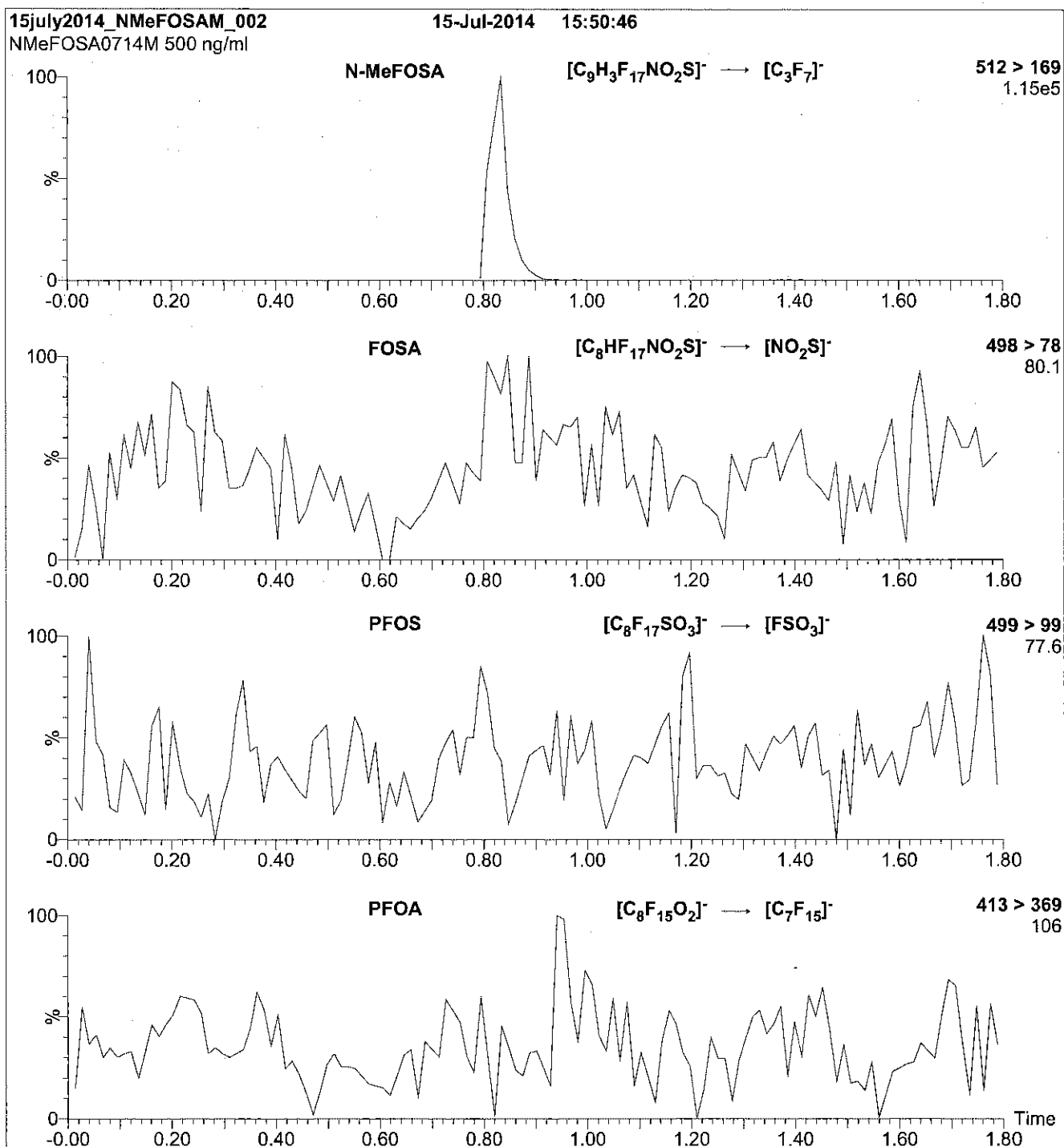
Flow: 300 μ l/min

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

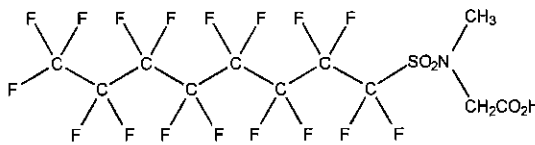


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CERTIFICATE OF ANALYSIS
DOCUMENTATION

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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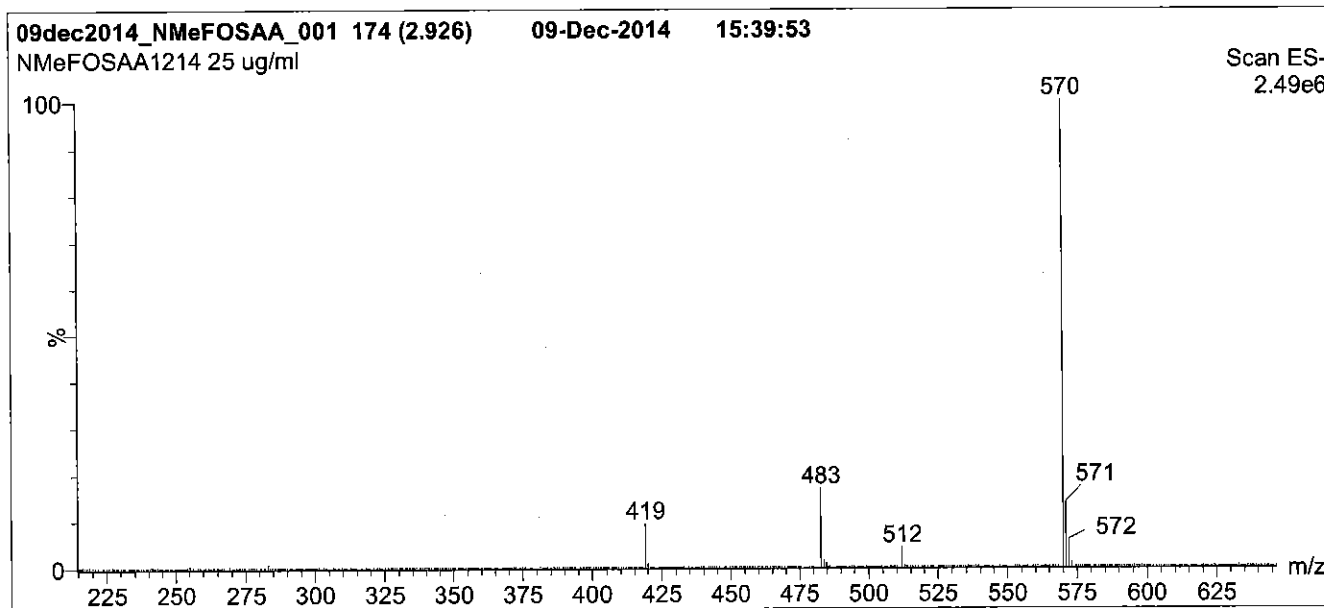
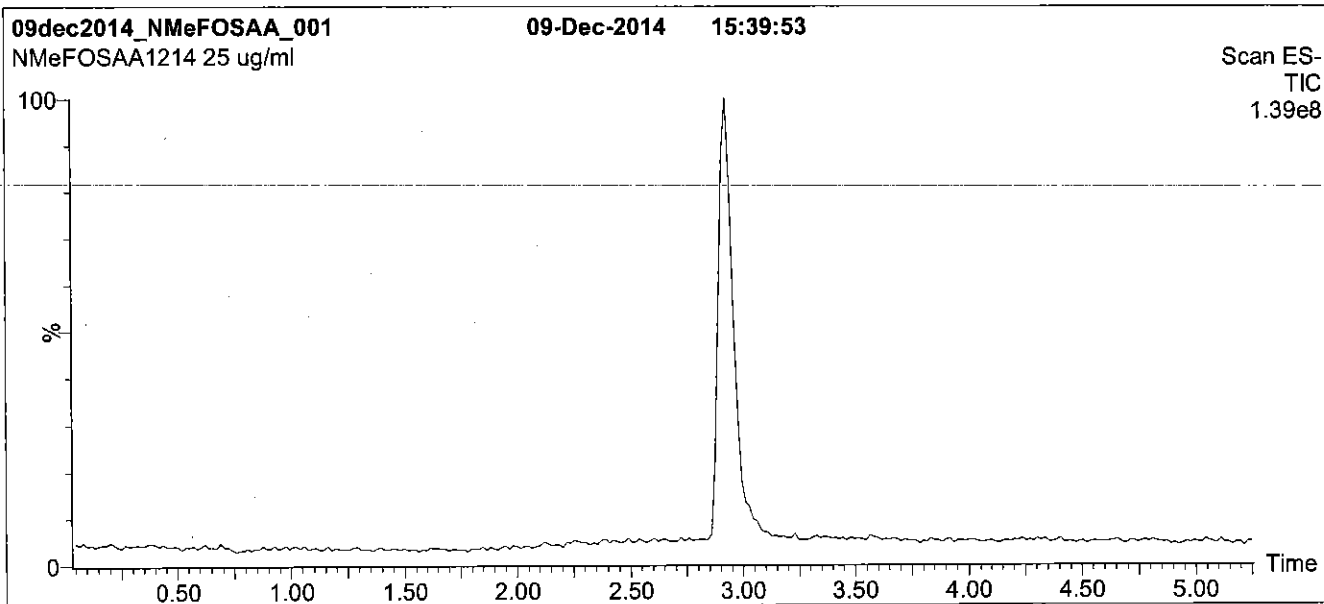
QUALITY MANAGEMENT:

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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

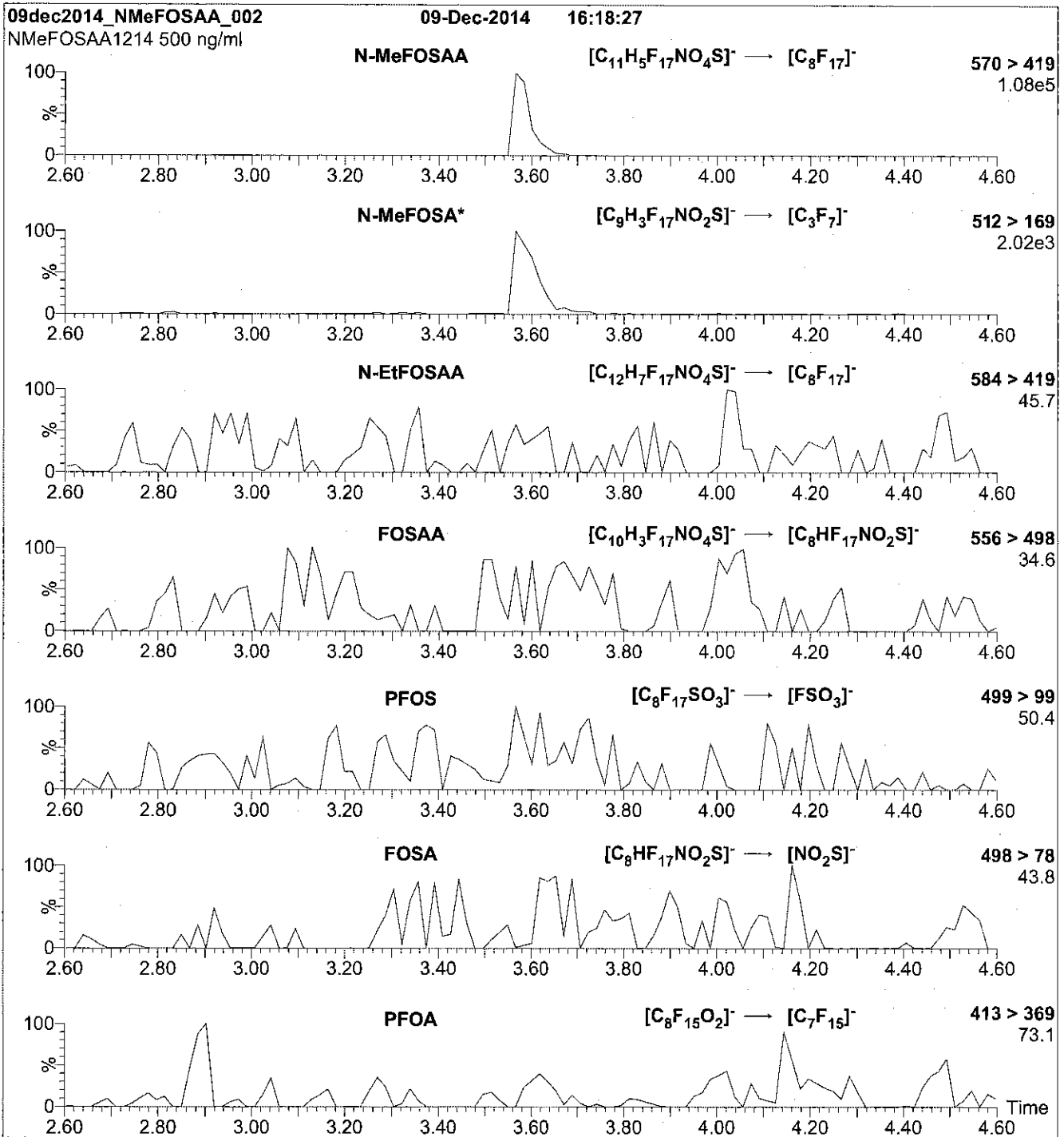
Flow: 300 μ l/min

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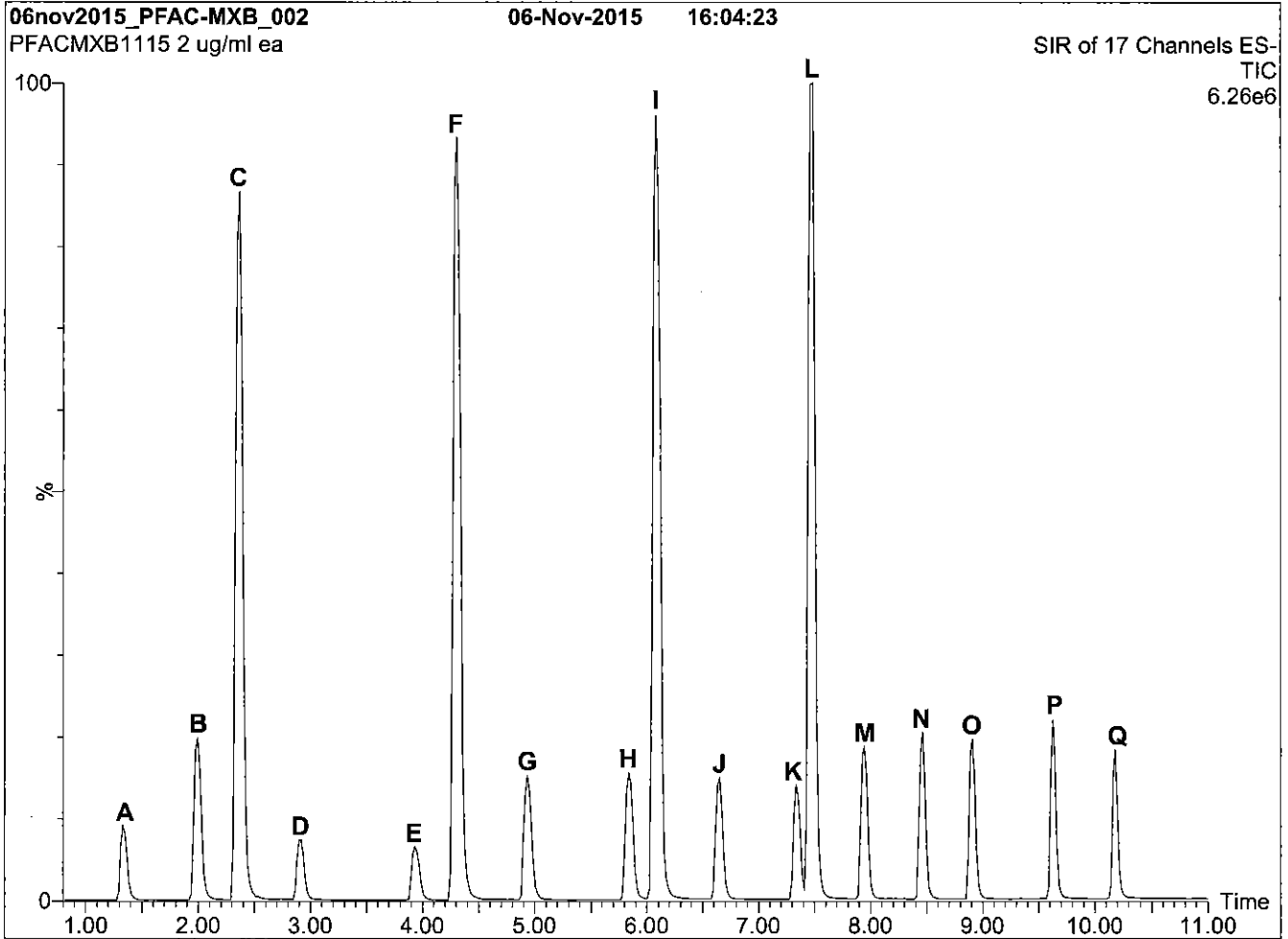
Table A: PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))

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)

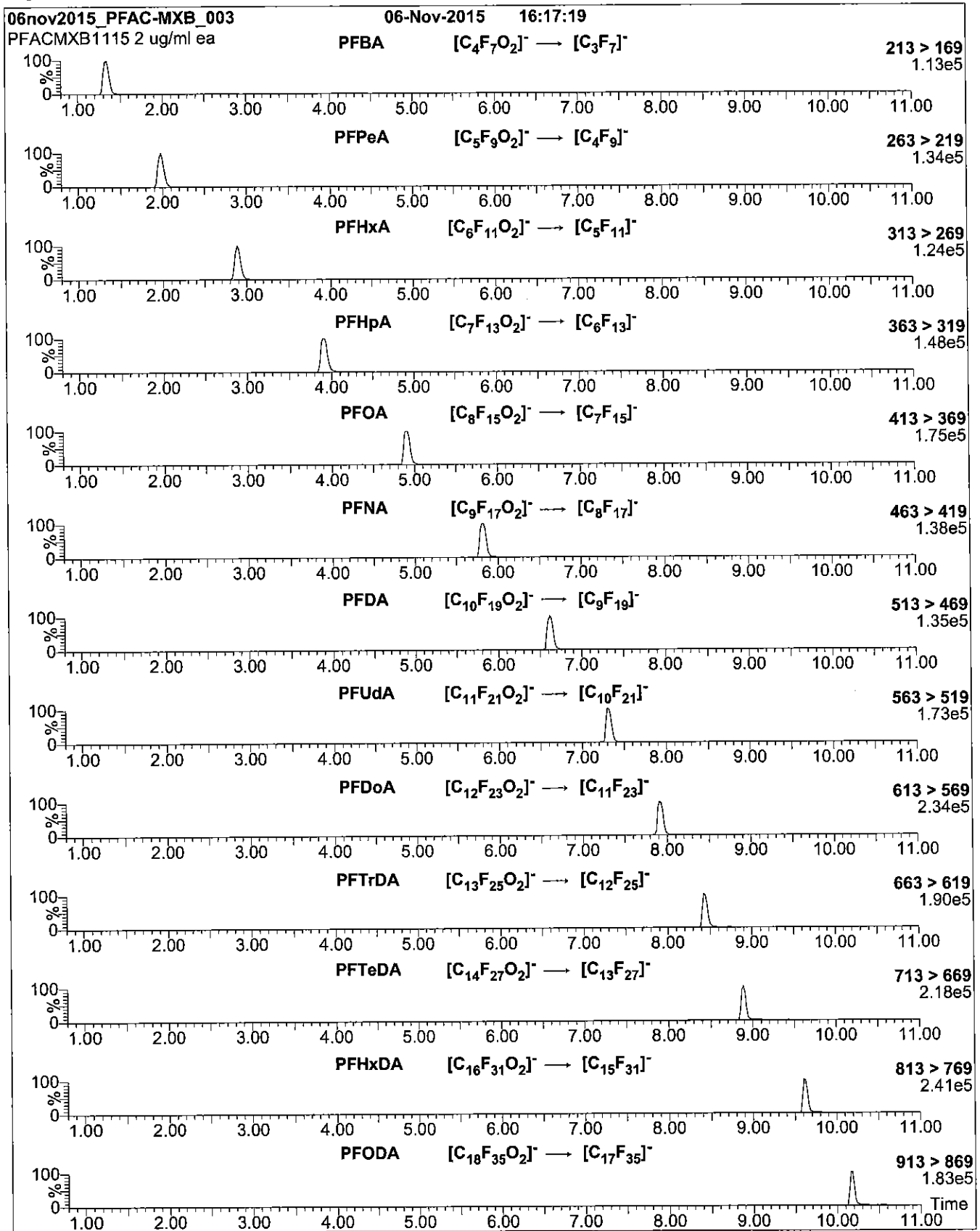
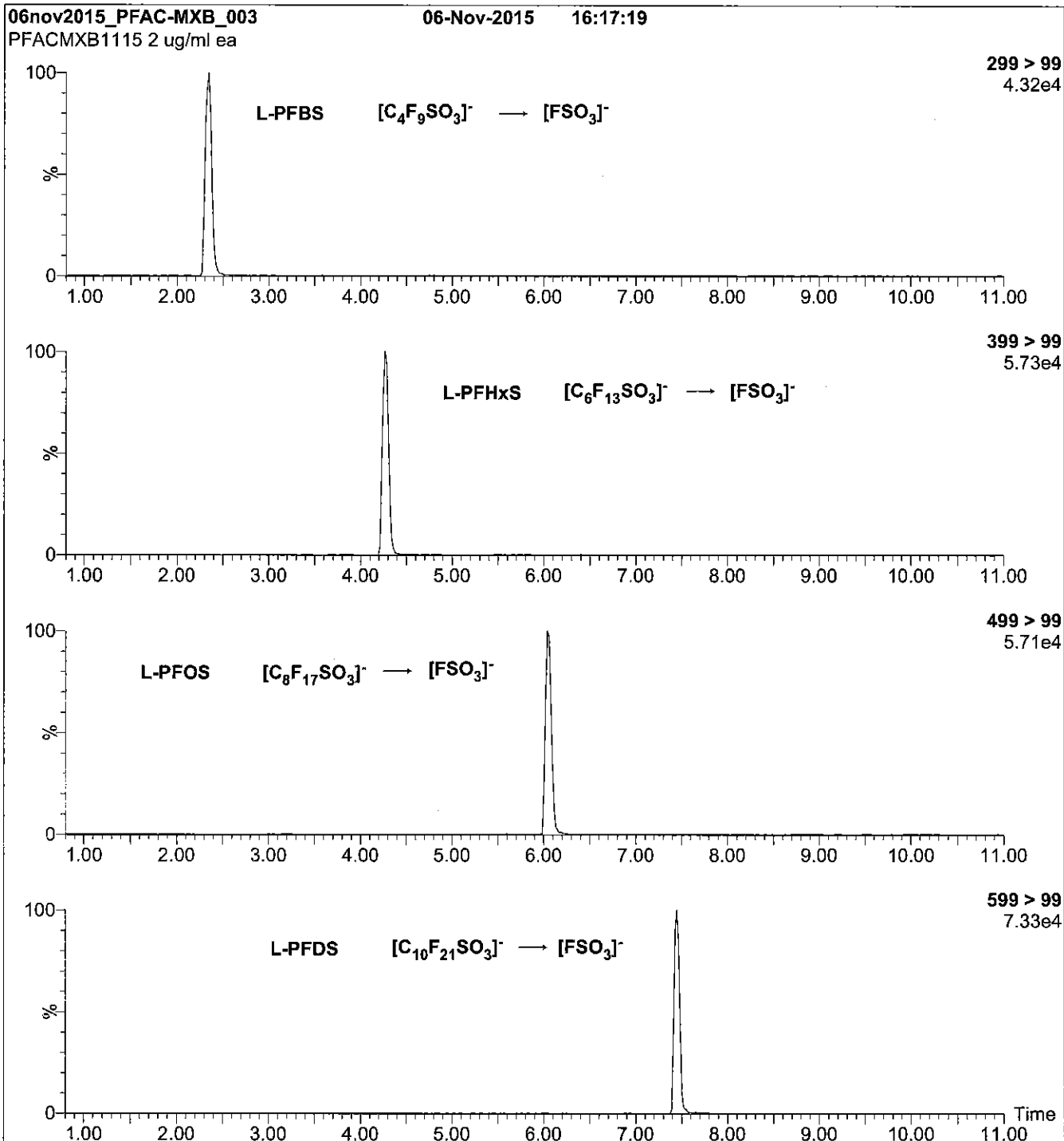


Figure 3: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)



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



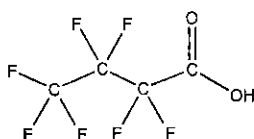
R: 2125/16 CBW

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
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LIMITED WARRANTY:

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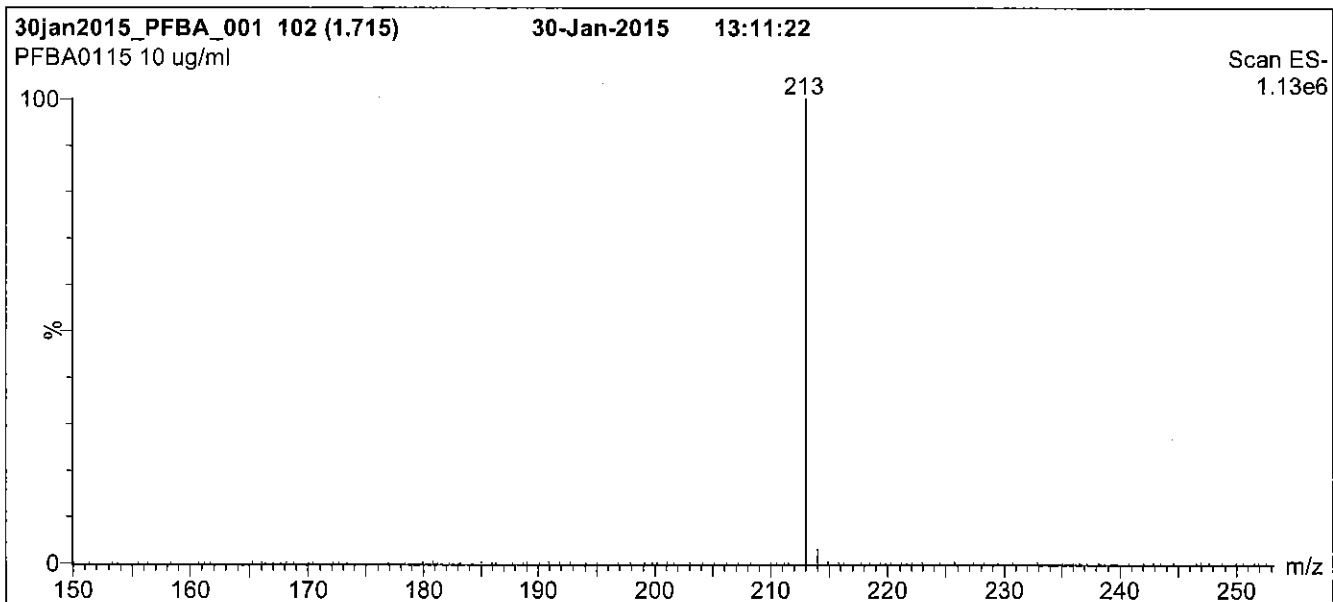
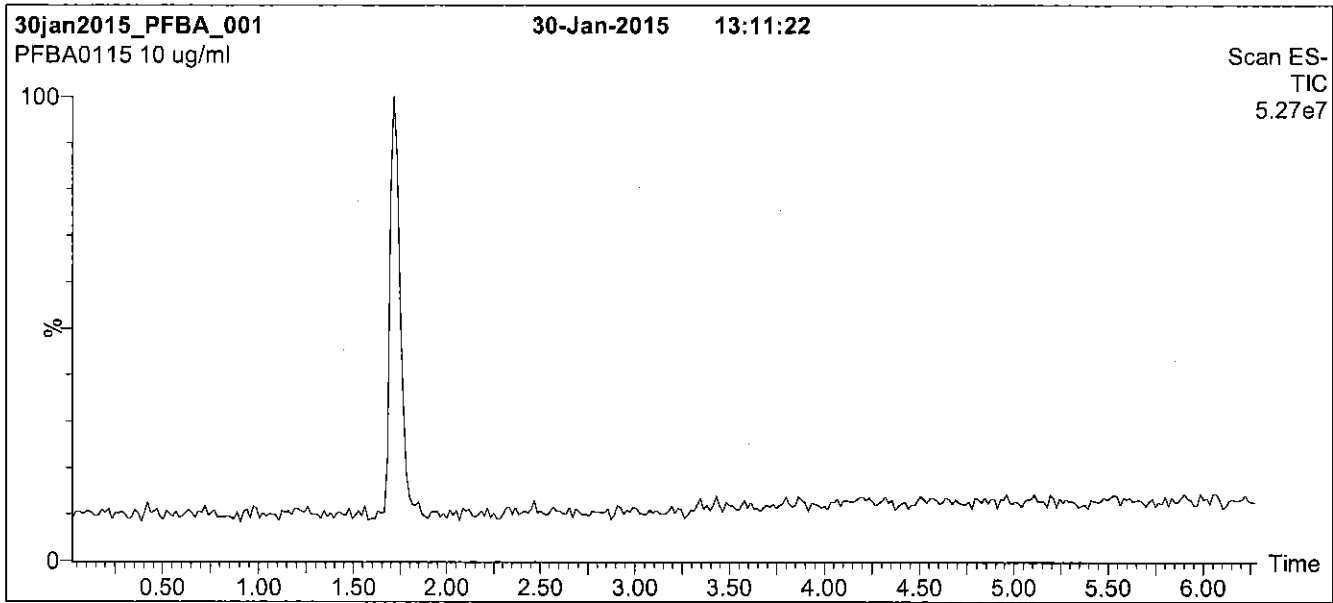
QUALITY MANAGEMENT:

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: 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

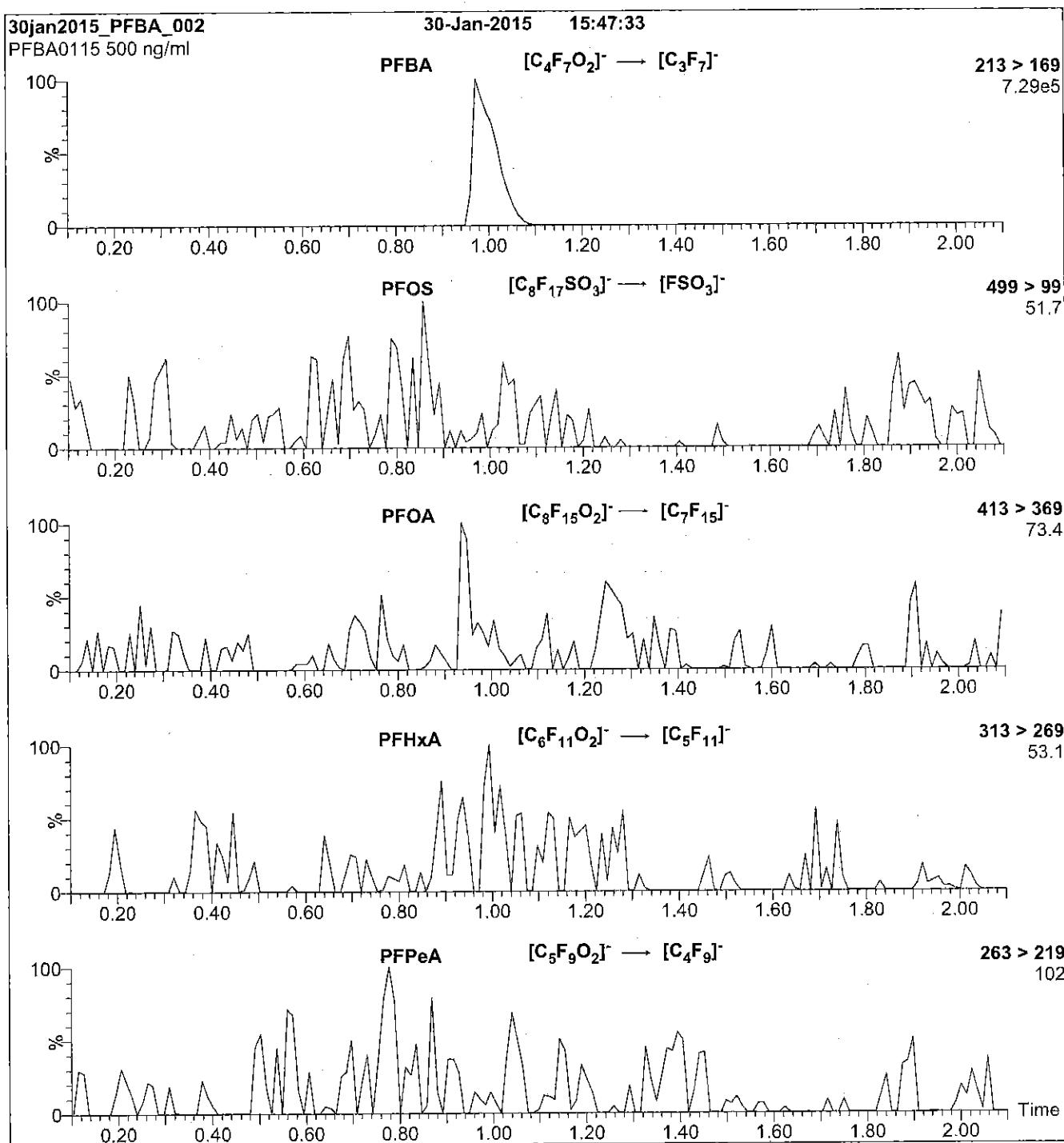
Flow: 300 μ l/min

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

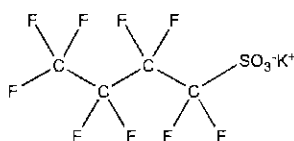
LCPFBS_00003



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:

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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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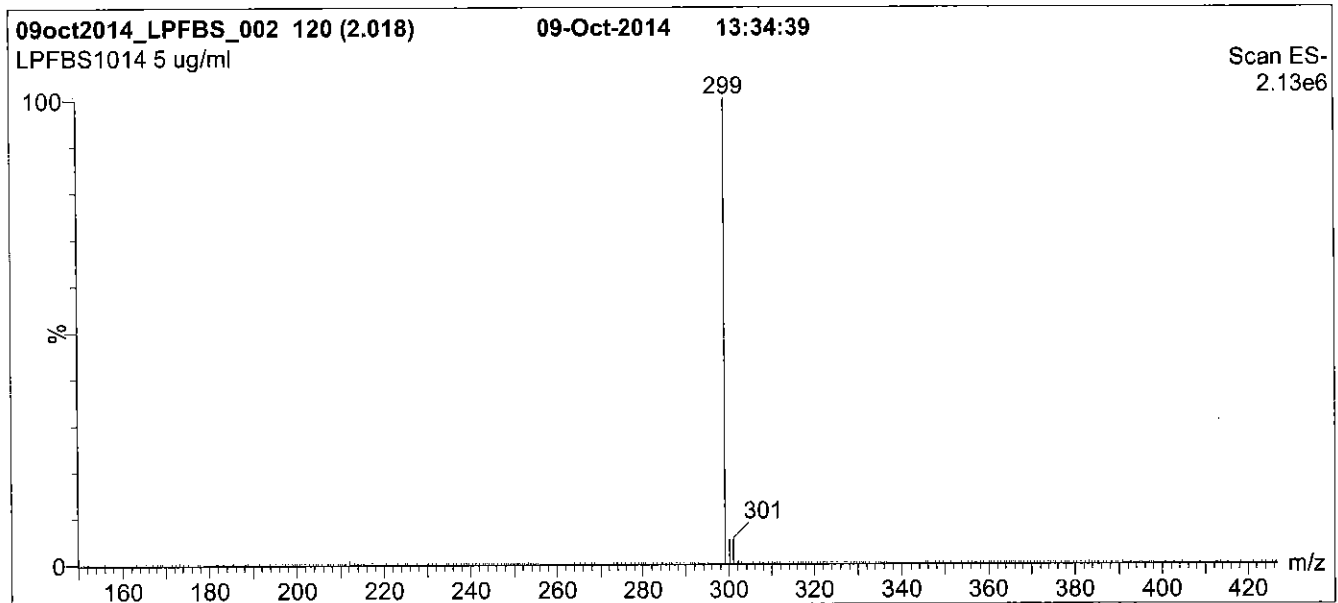
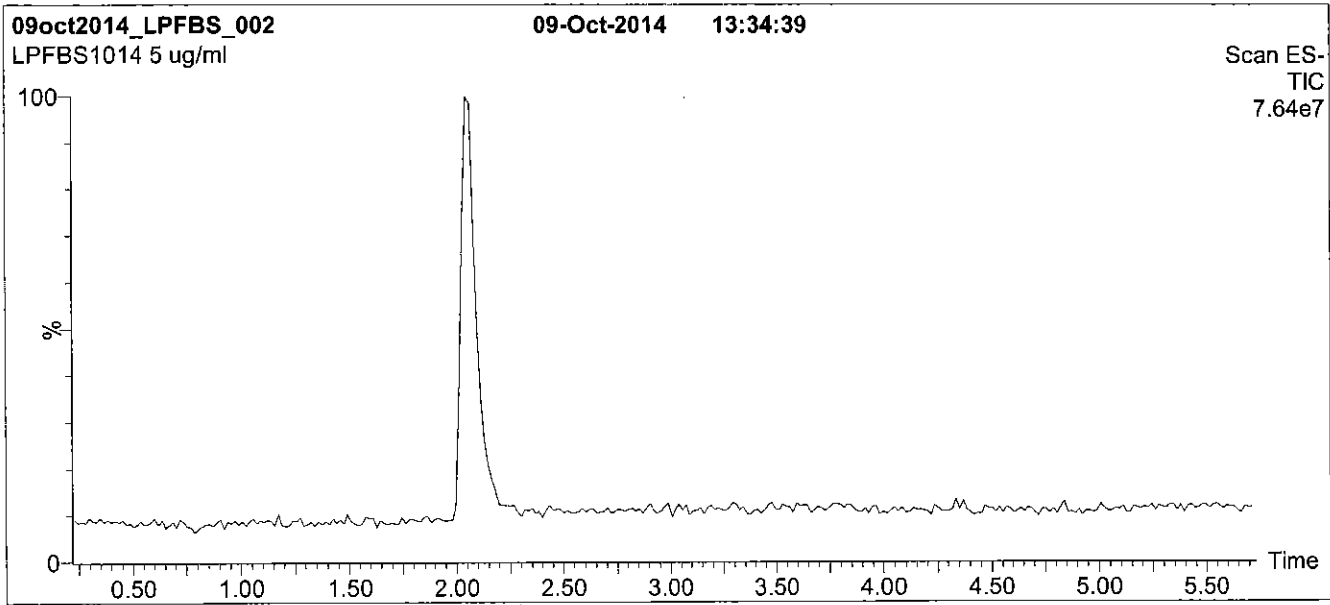
QUALITY MANAGEMENT:

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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

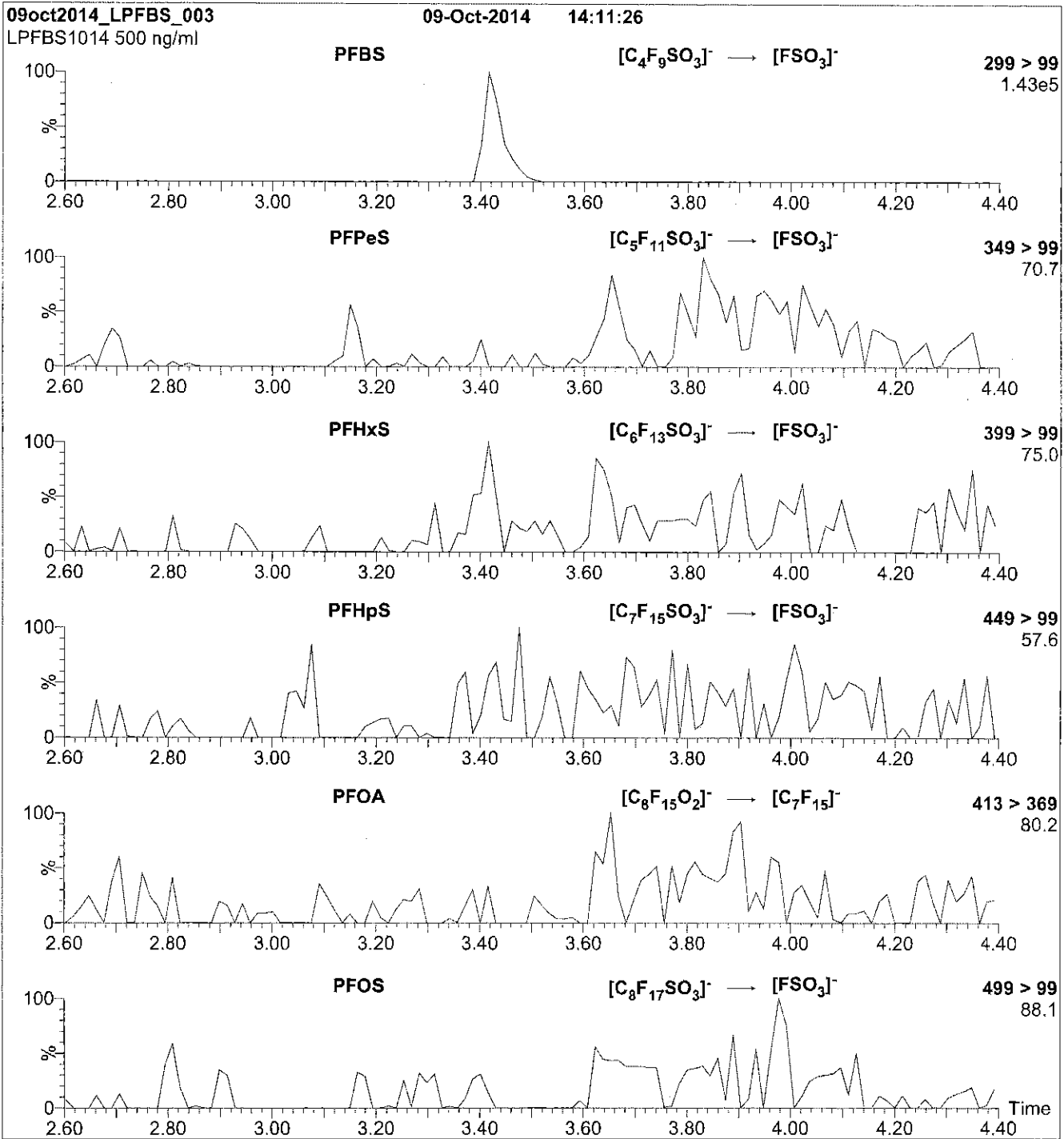
Flow: 300 μ l/min

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



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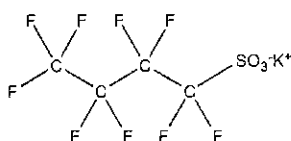
CERTIFICATE OF ANALYSIS DOCUMENTATION

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
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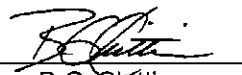
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim

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

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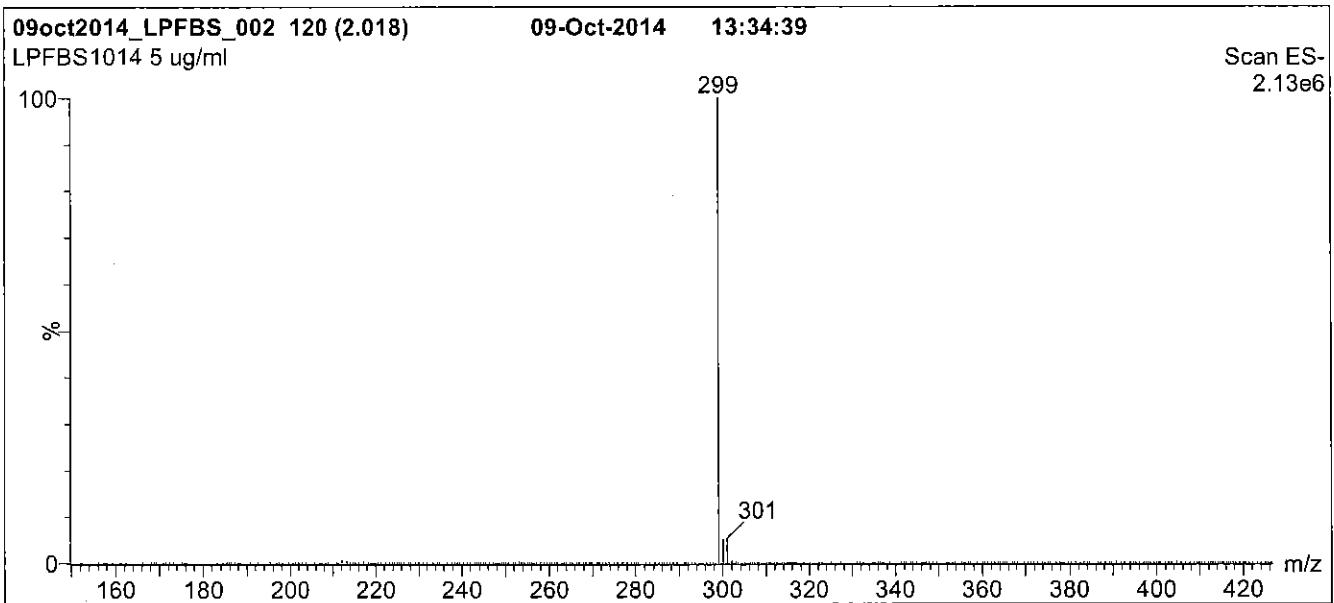
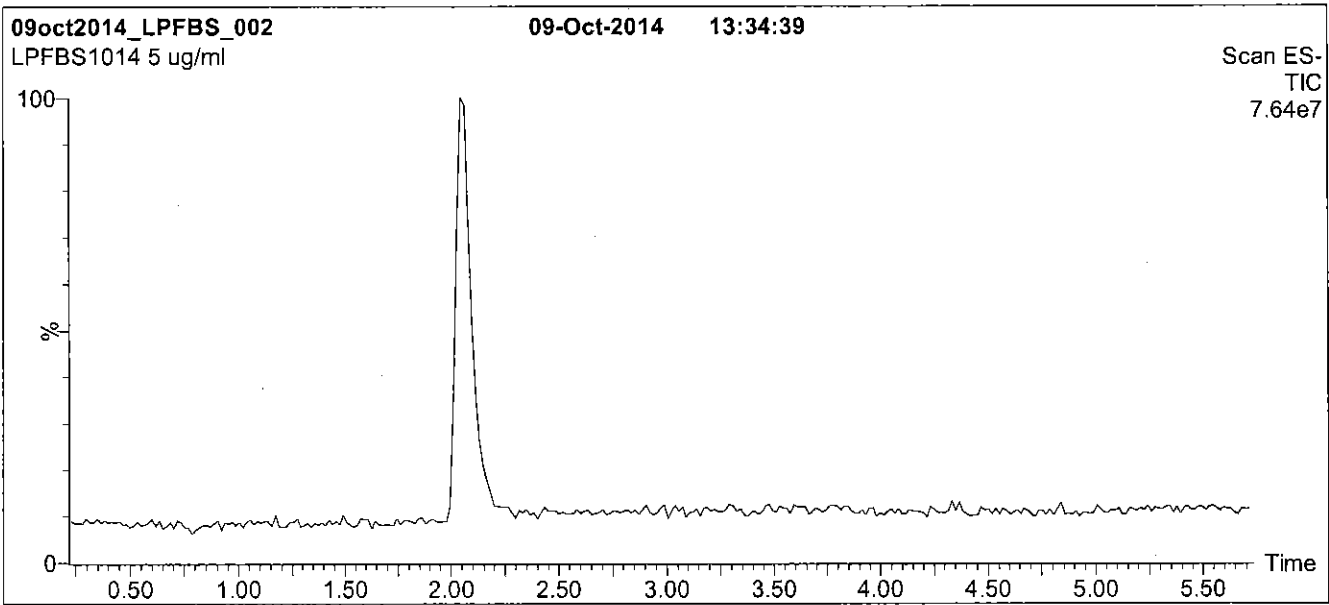
QUALITY MANAGEMENT:

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: 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

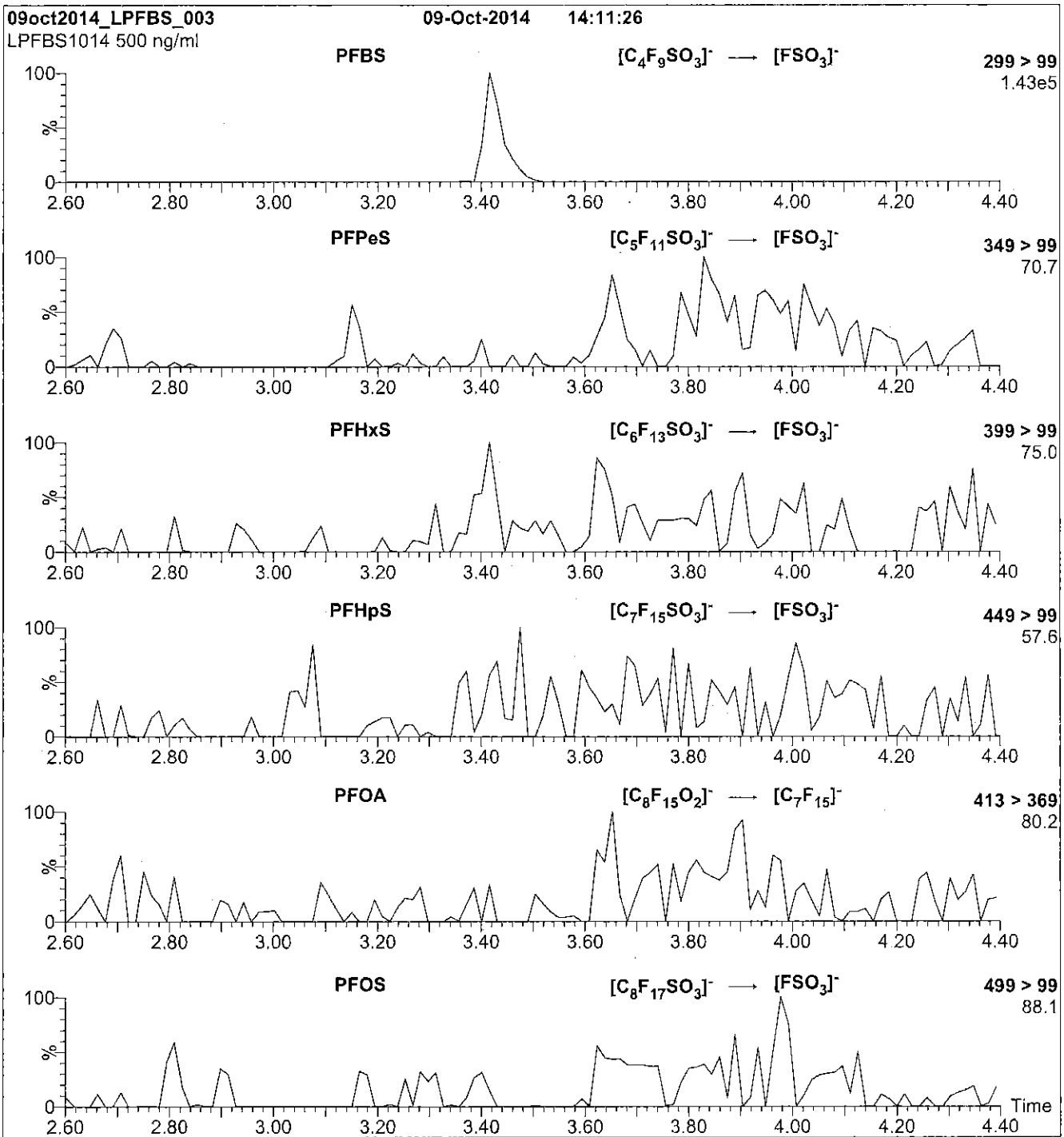
Flow: 300 μ l/min

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

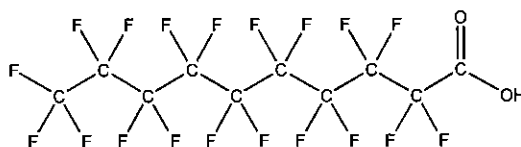


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



MOLECULAR FORMULA: $C_{10}H_{18}O_2$ **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.

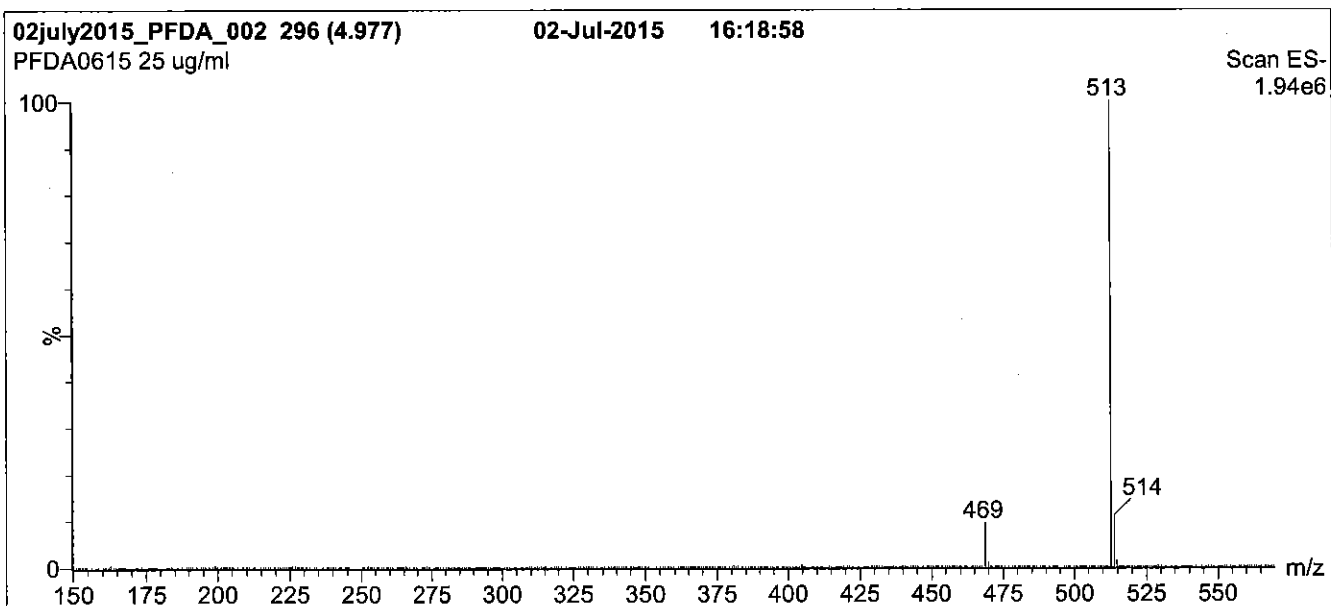
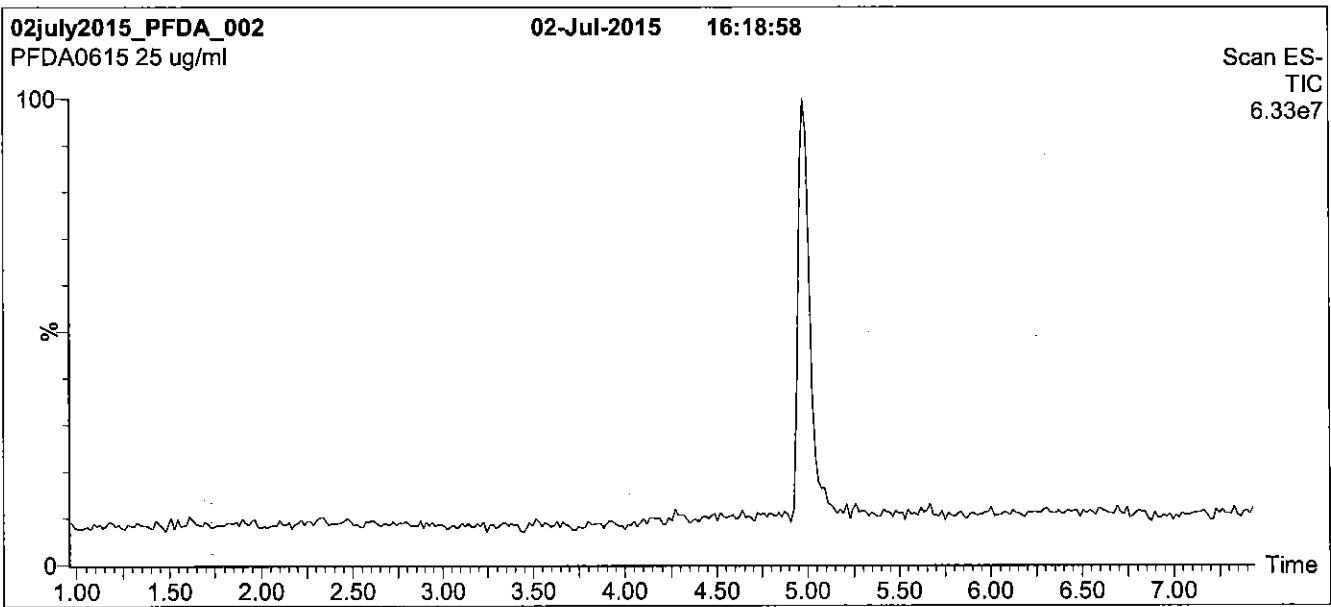
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

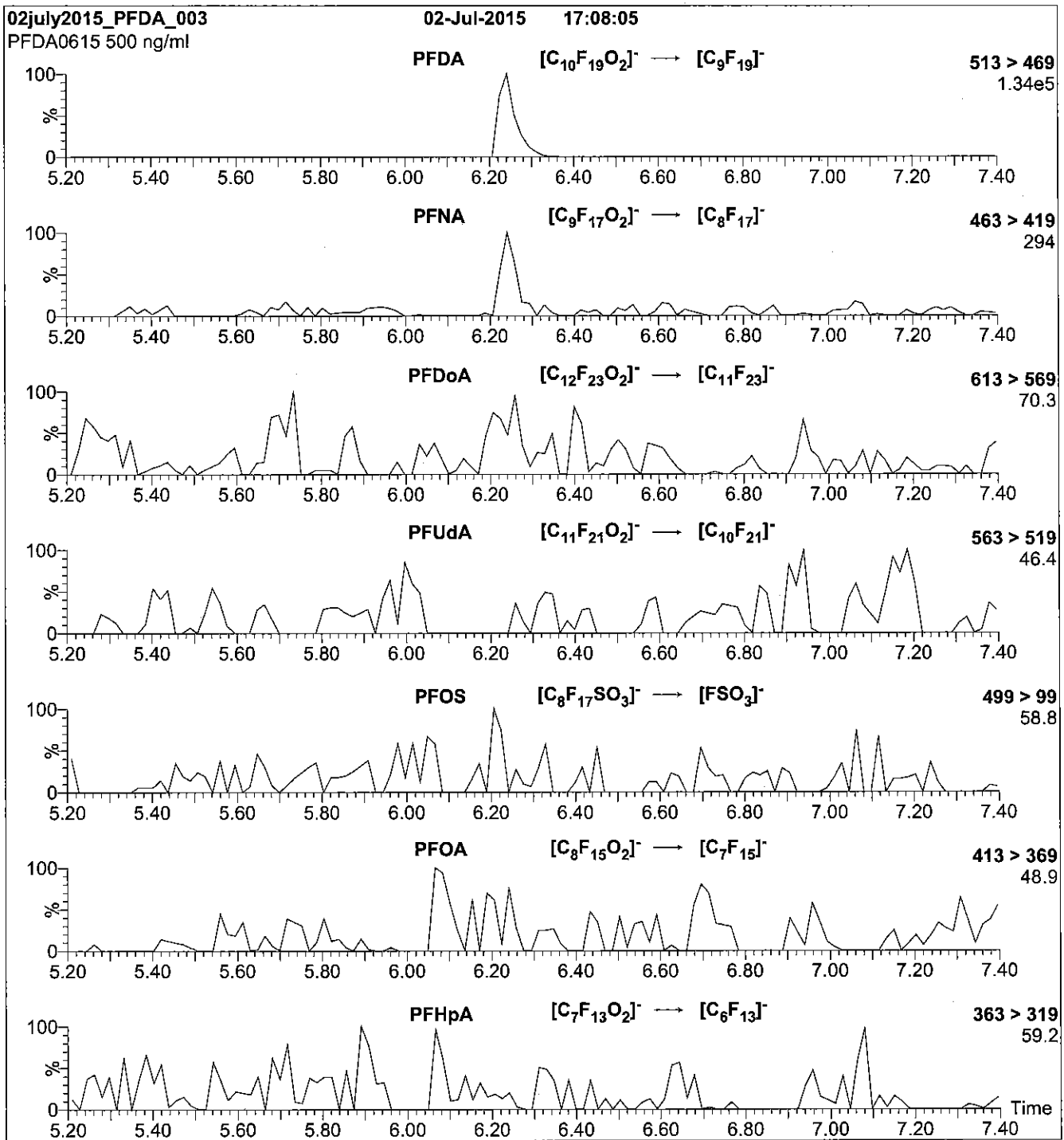
Flow: 300 μ l/min

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

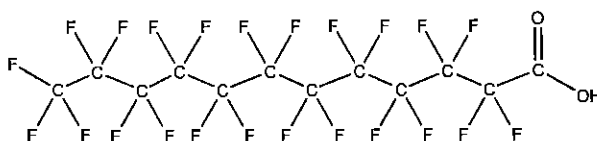
LCPFDoA_00004



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFD0A **LOT NUMBER:** PFD0A0115
COMPOUND: Perfluoro-n-dodecanoic acid
STRUCTURE: **CAS #:** 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$ **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:

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.

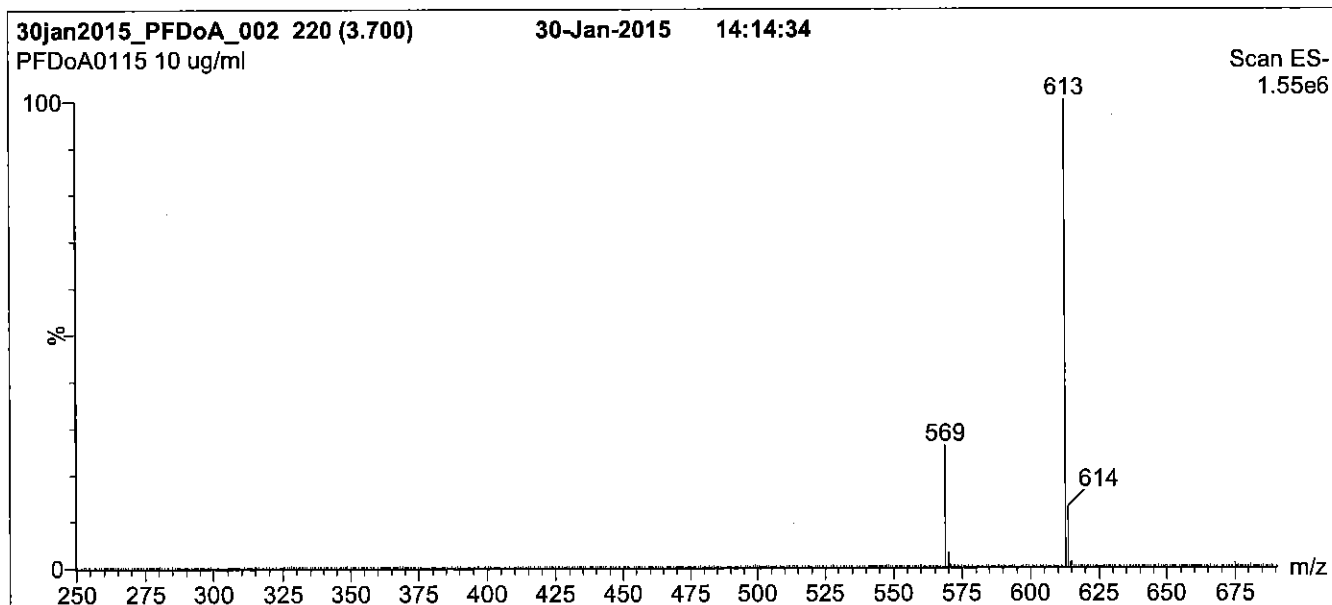
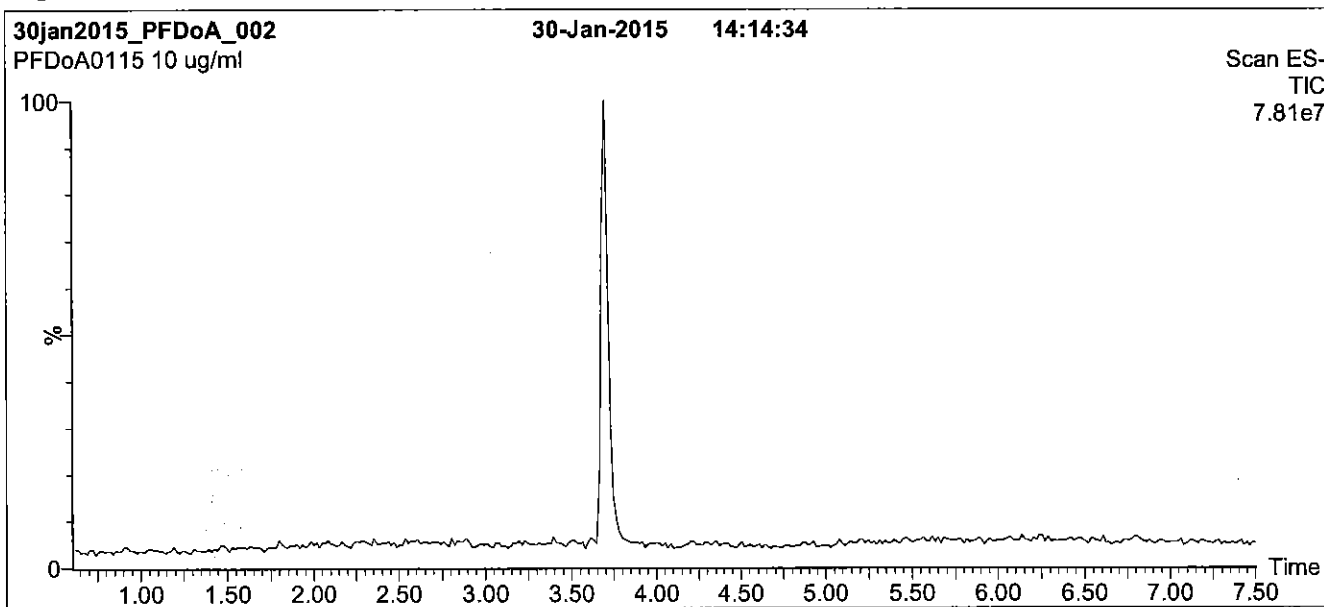
QUALITY MANAGEMENT:

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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

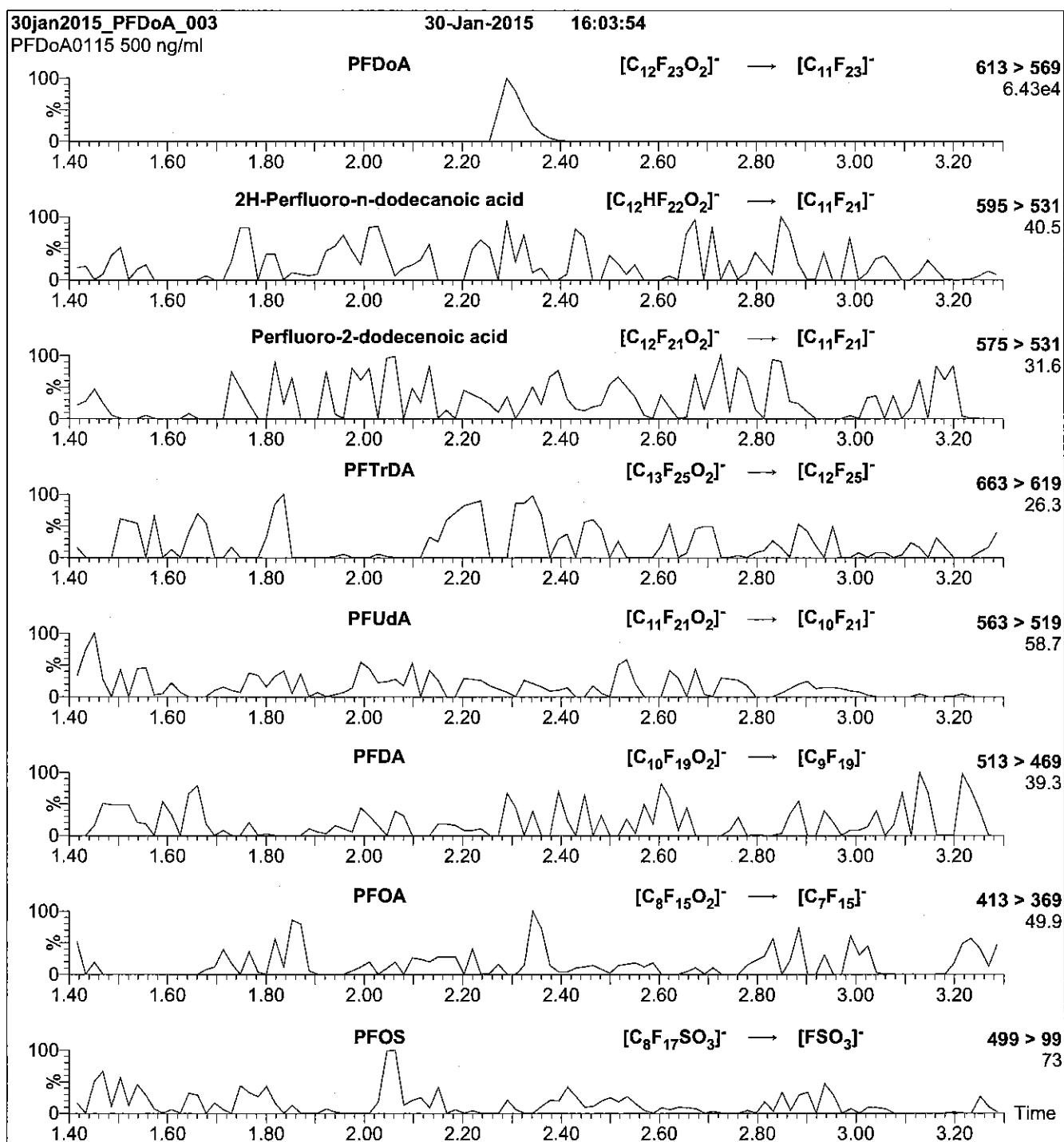
Flow: 300 μ l/min

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 Prep: CBW
 PF-1-decanesulfonate sodi

Rec. 3/29/16 JRB

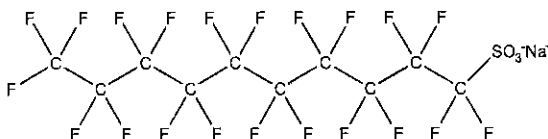


WELLINGTON
 LABORATORIES

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

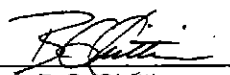
DOCUMENTATION/ DATA ATTACHED:

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:

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.

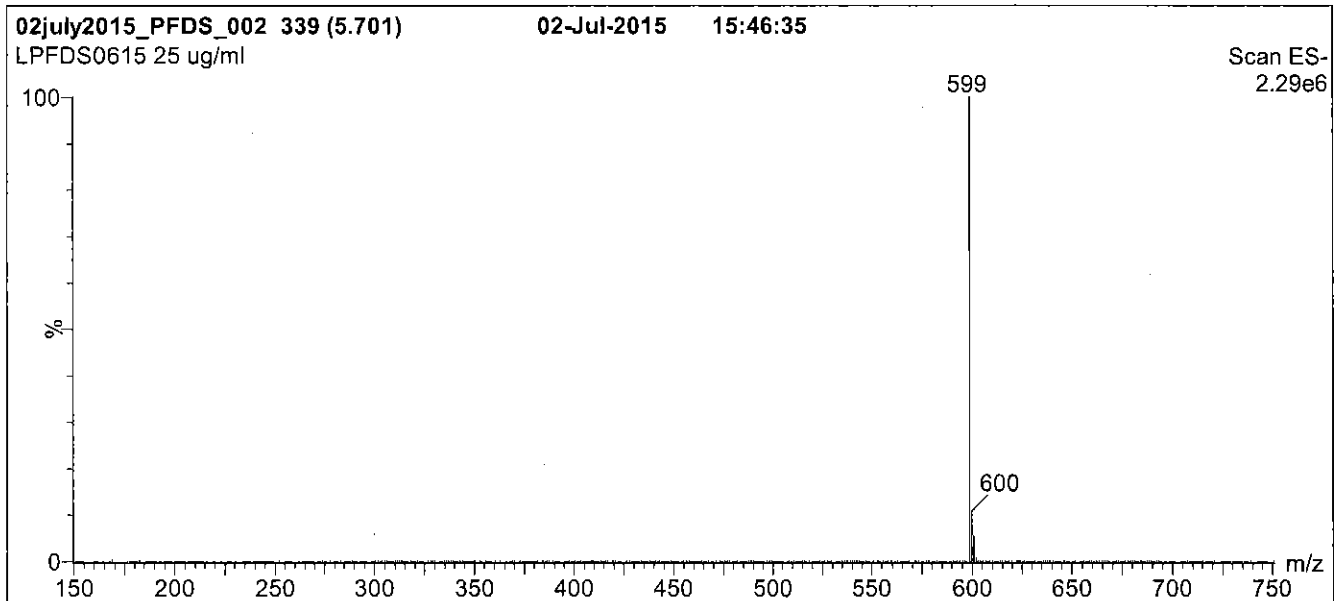
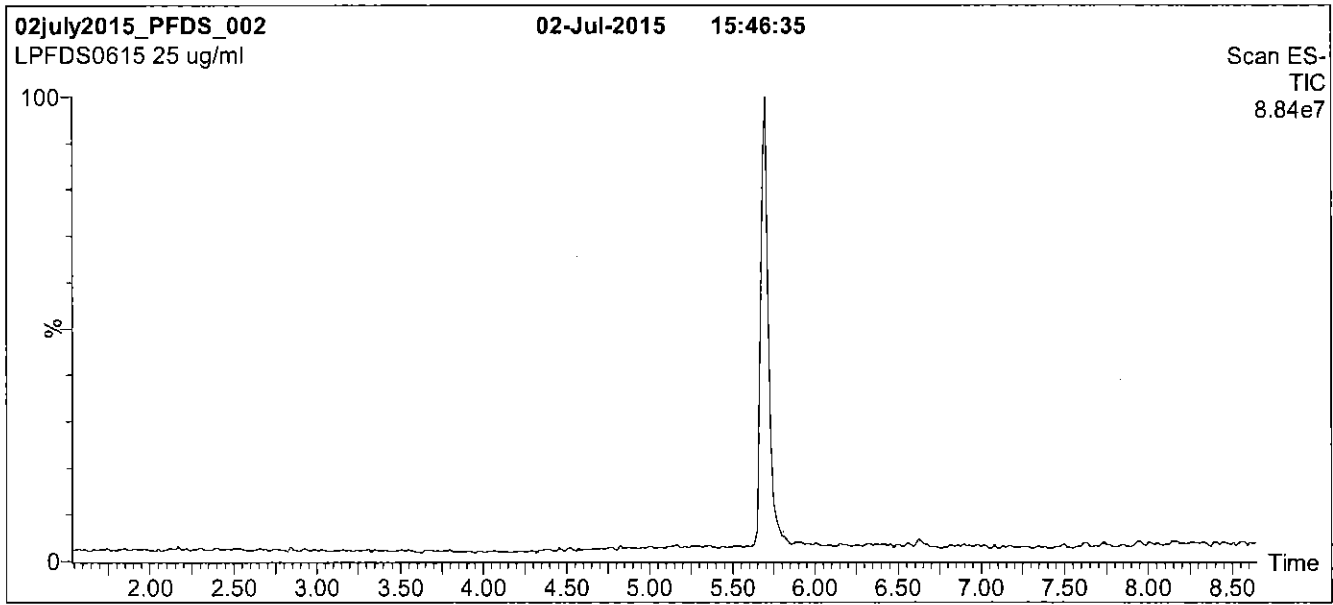
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

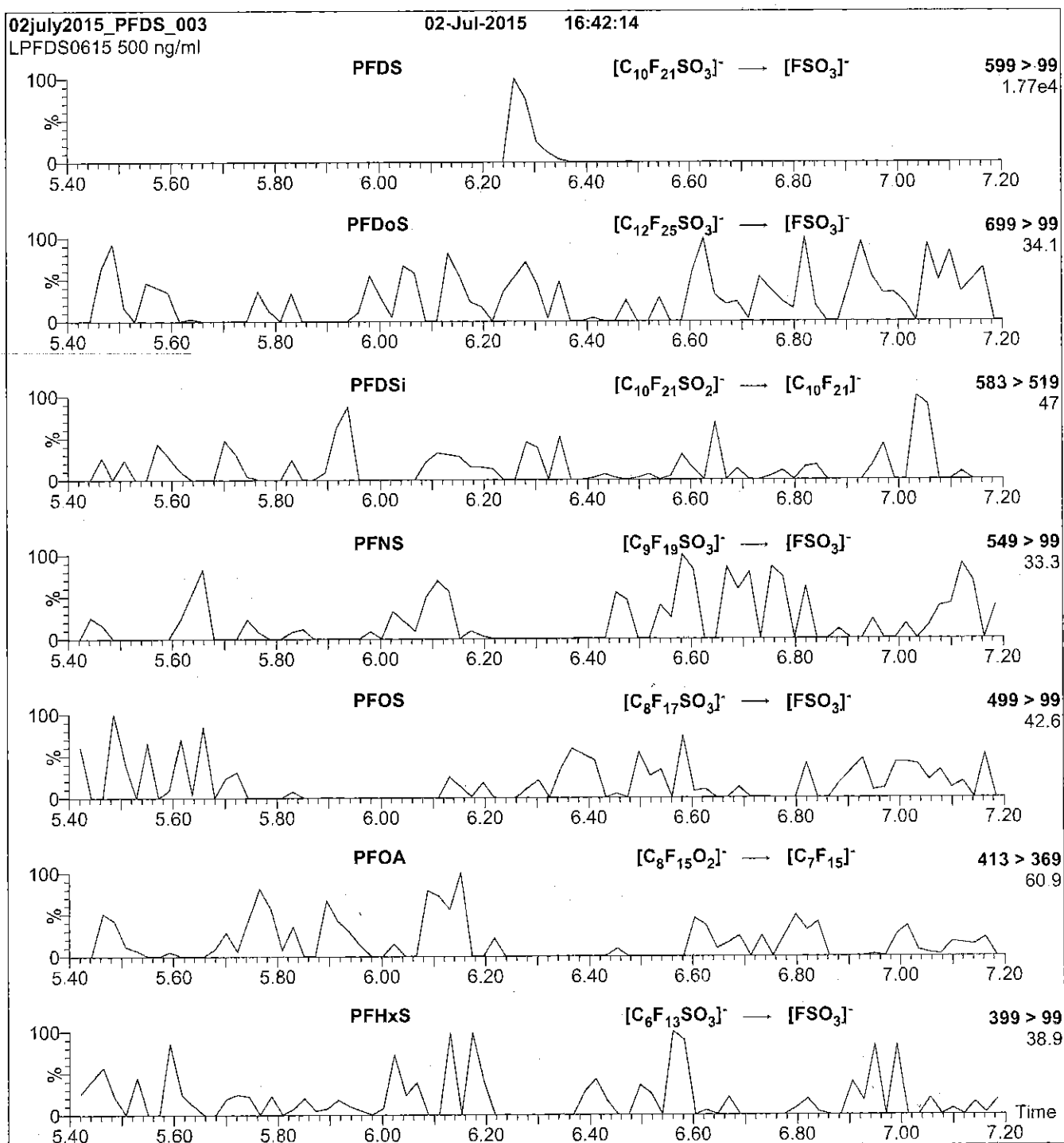
Flow: 300 μ l/min

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



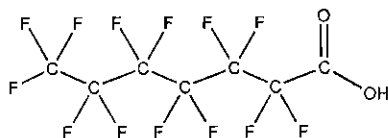
609639

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:

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HOMOGENEITY:

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

UNCERTAINTY:

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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:

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.

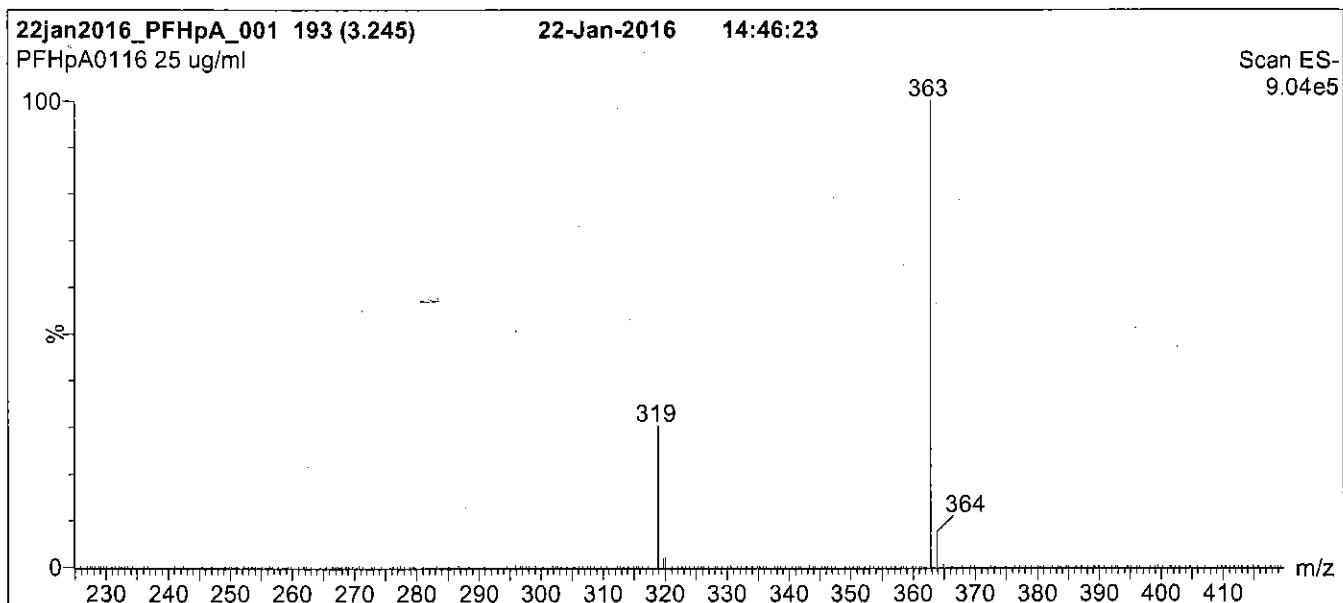
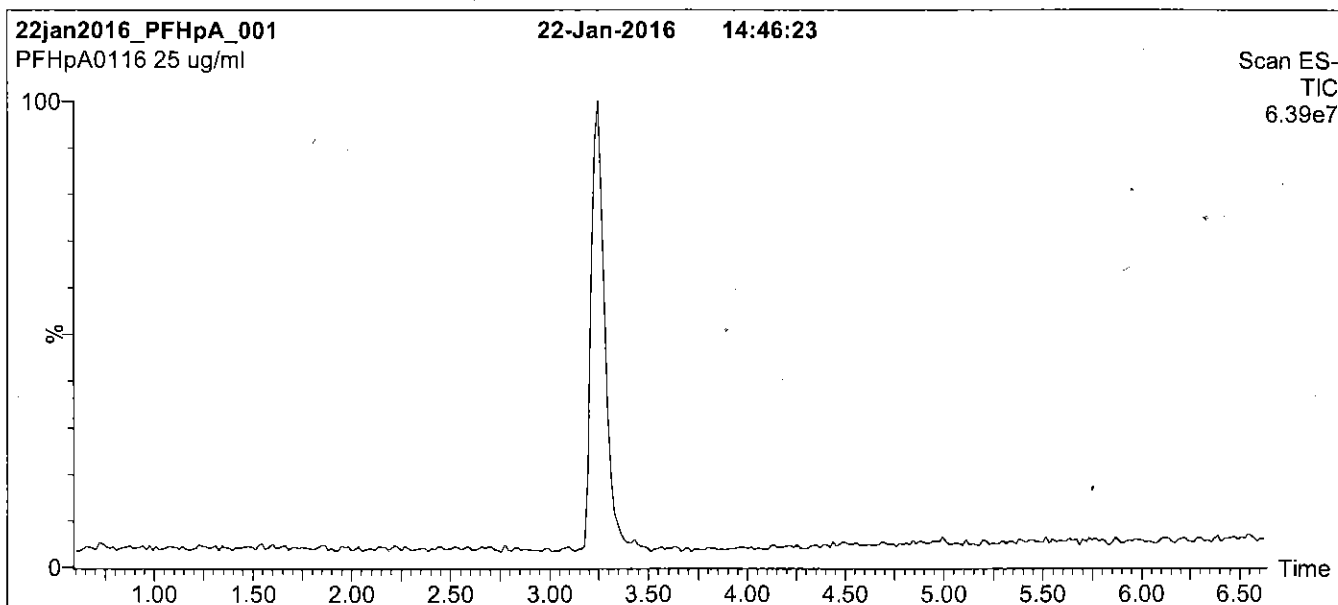
QUALITY MANAGEMENT:

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: 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

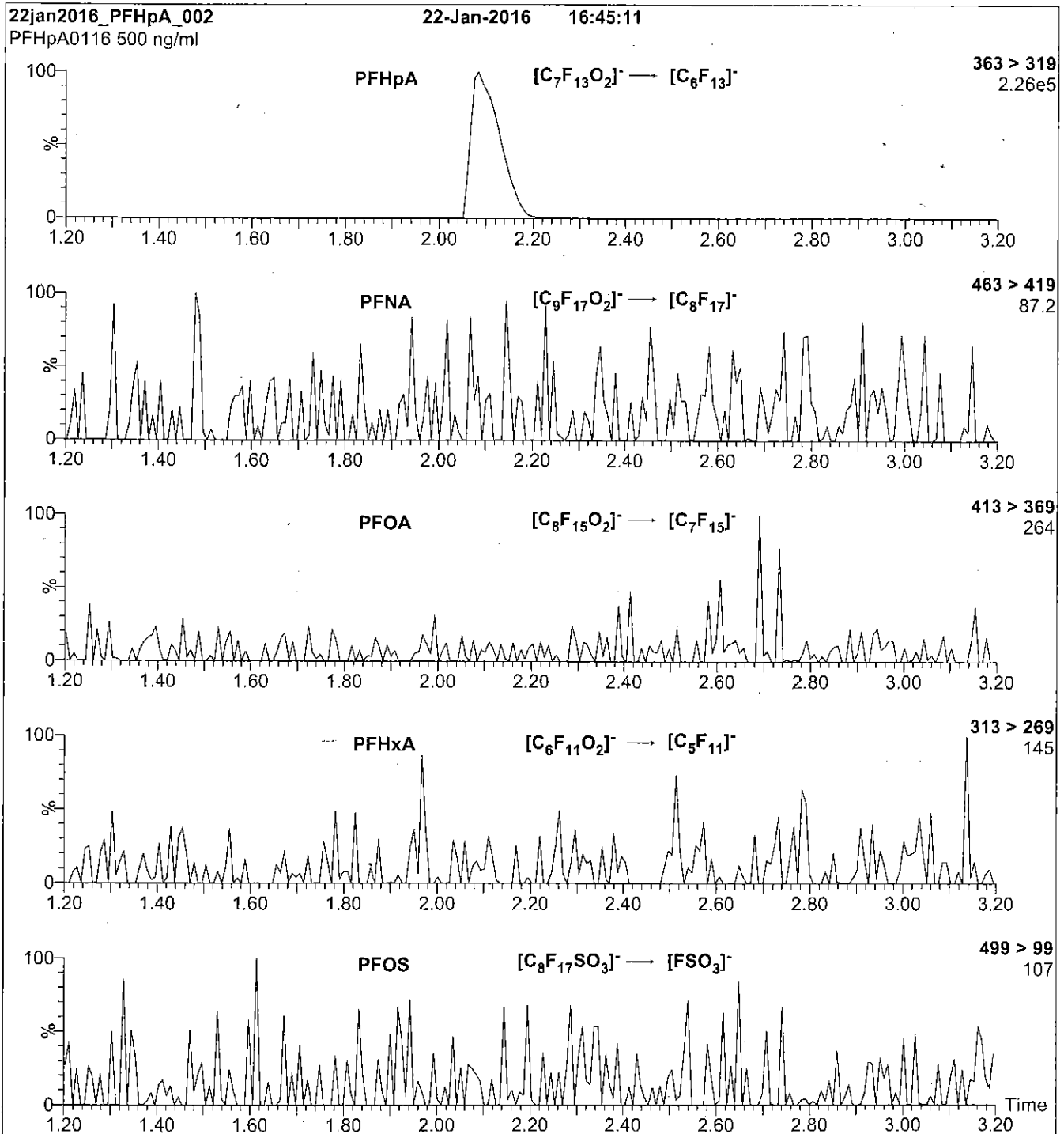
Flow: 300 μ l/min

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

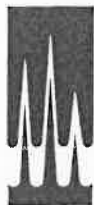
Reagent

LCPFHpS_00008



627751
 ID: LCPFHpS_00008
 Exp: 11/06/20 Ppt: CBW
 PFHpS at 47.6ug/ml

R: 5/10/16 CBW

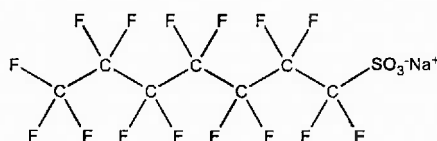


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CERTIFICATE OF ANALYSIS
 DOCUMENTATION

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)

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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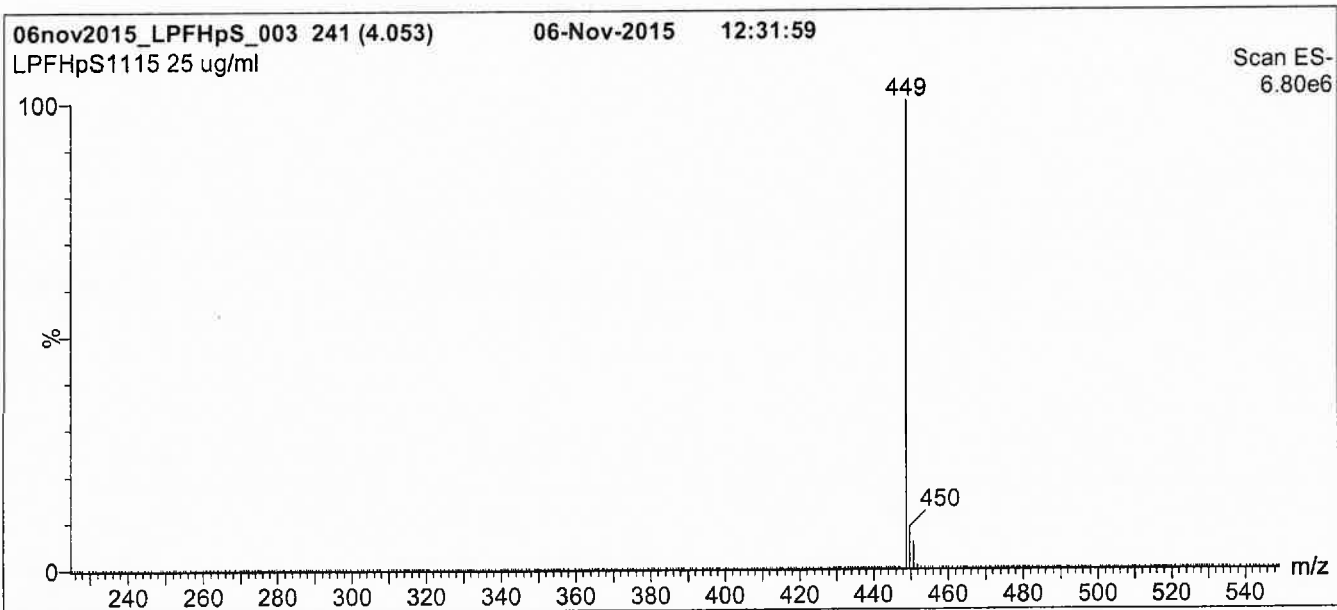
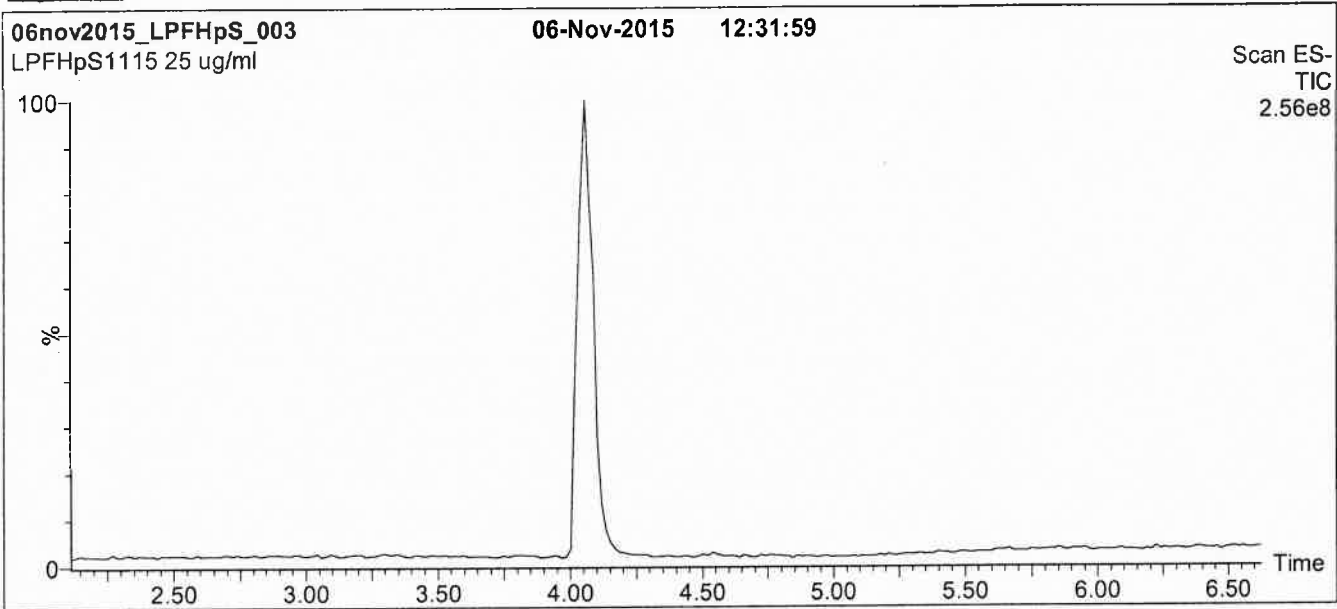
QUALITY MANAGEMENT:

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: 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

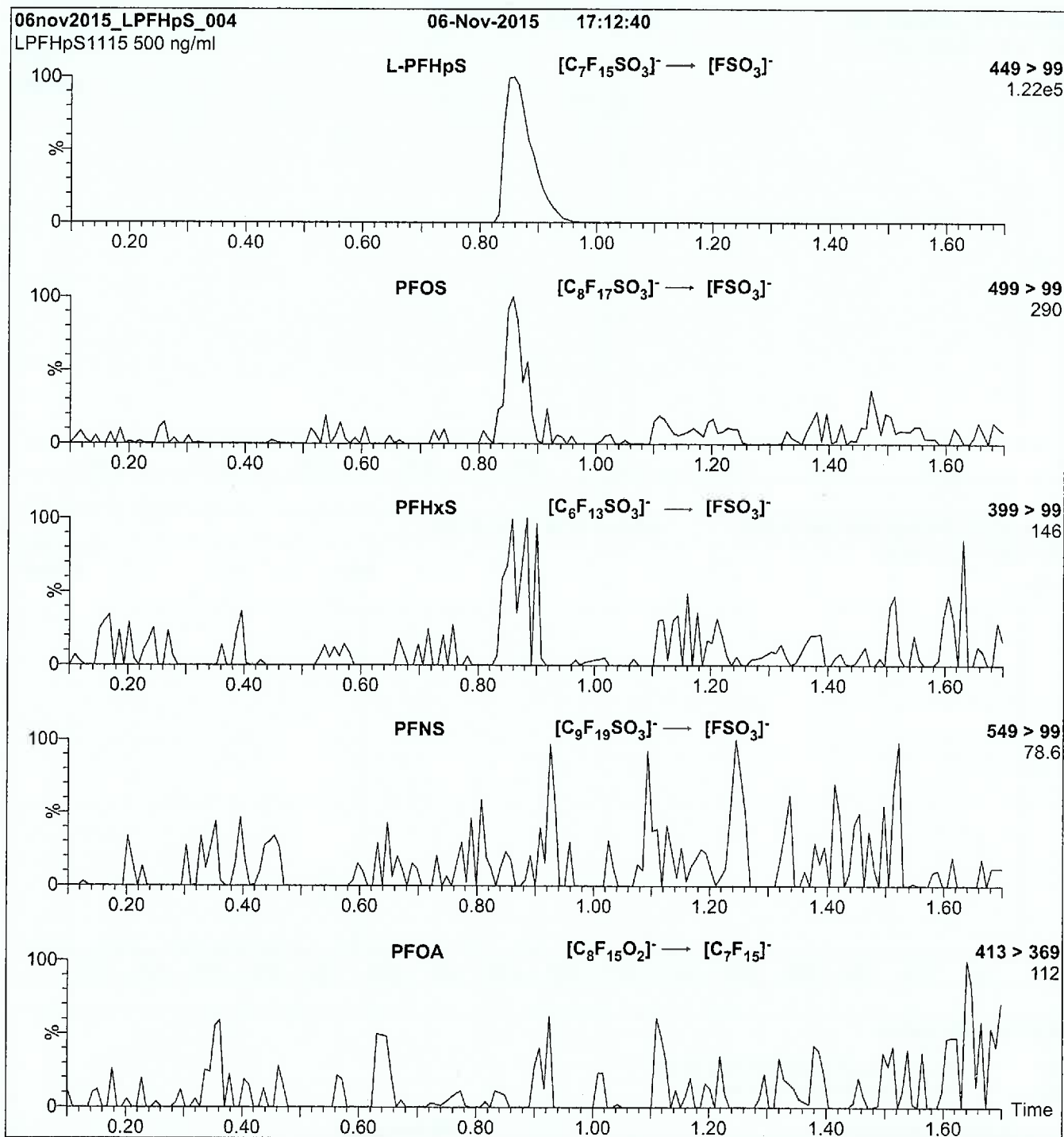
Flow: 300 μl/min

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



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

R: 4/7/16 CBW

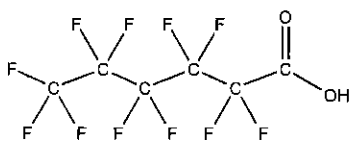


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxA **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

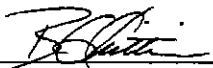
DOCUMENTATION/ DATA ATTACHED:

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. Crittım (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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LIMITED WARRANTY:

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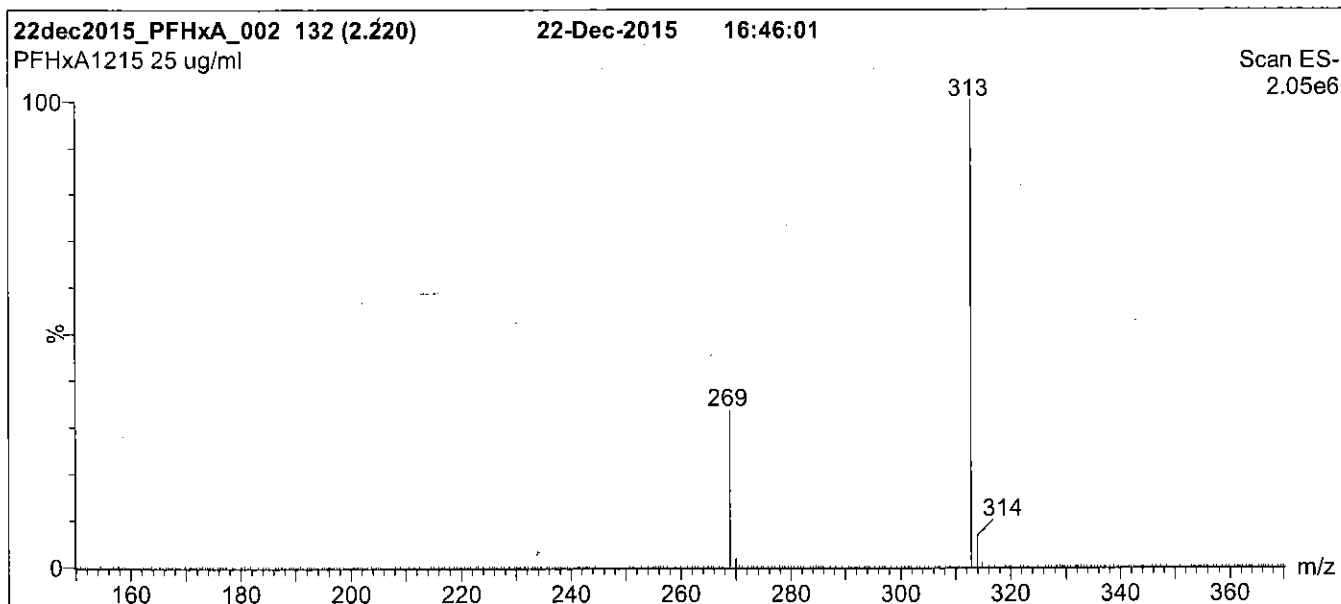
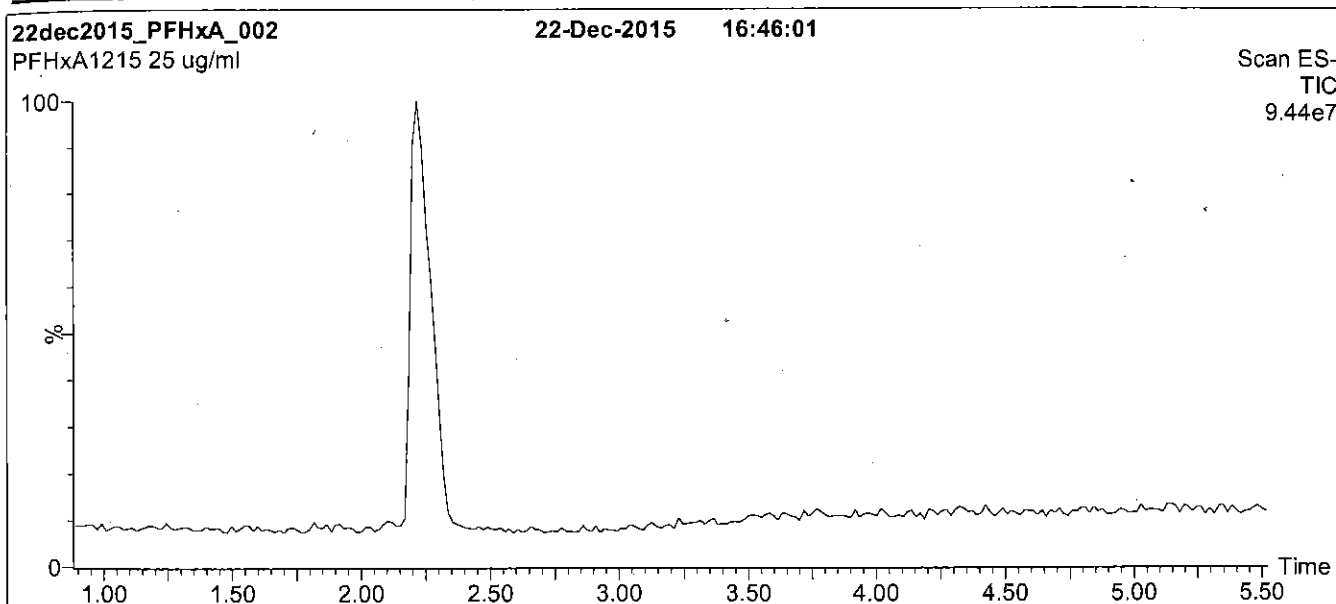
QUALITY MANAGEMENT:

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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

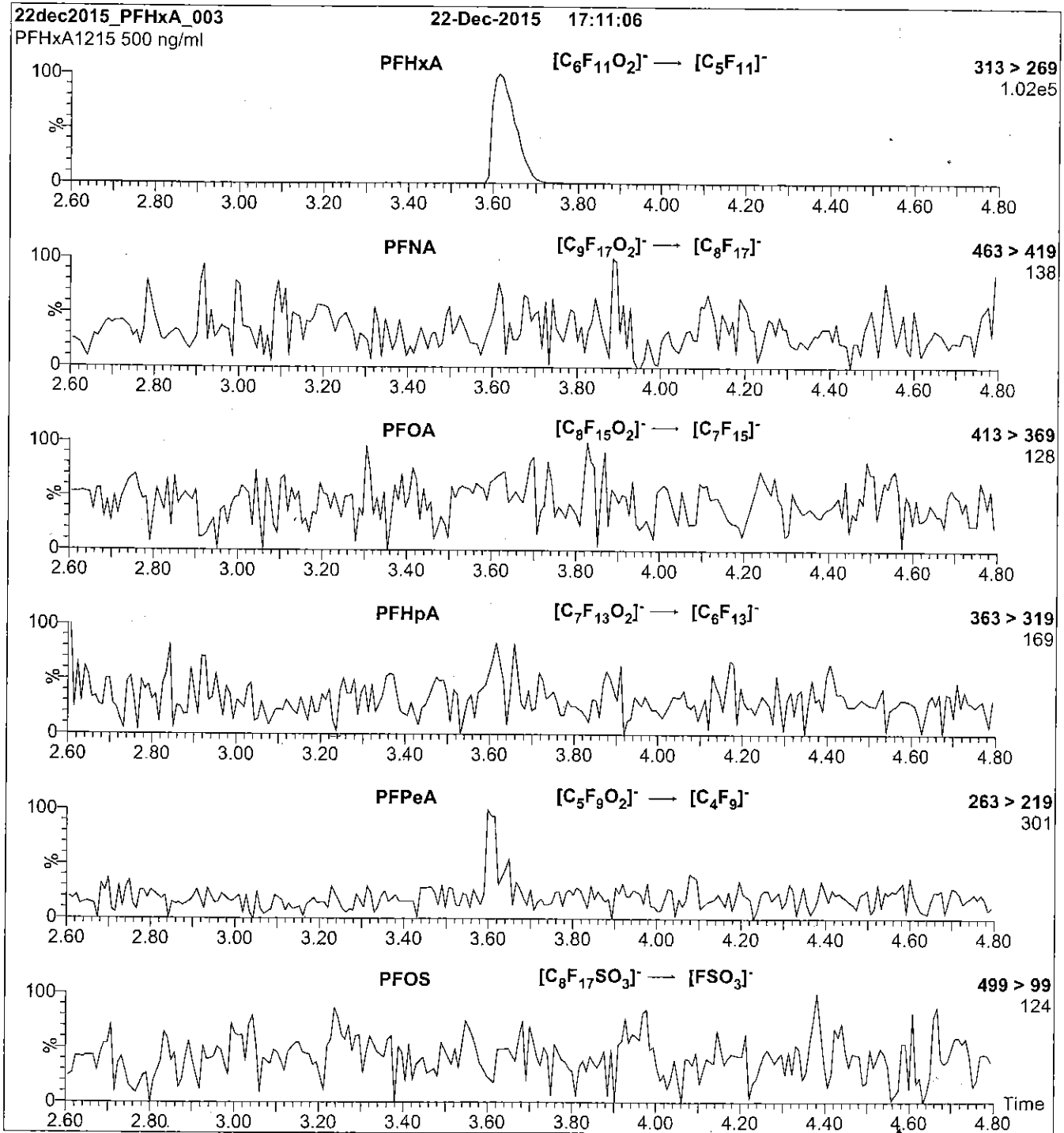
Flow: 300 μ l/min

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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

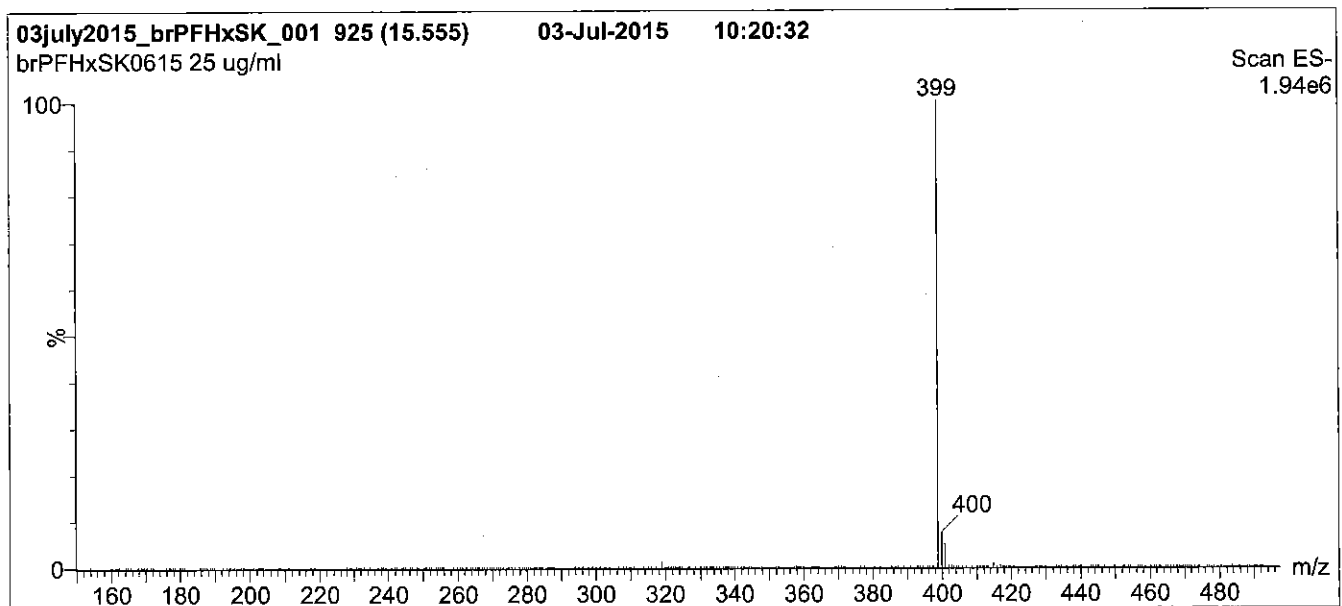
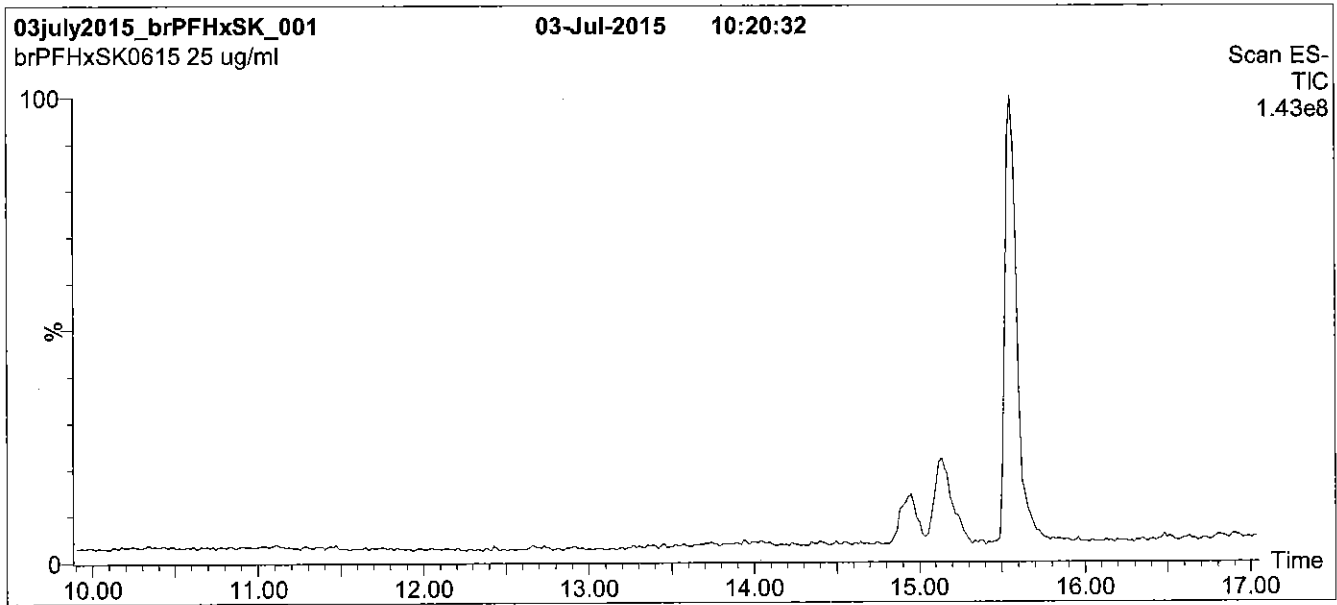
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	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

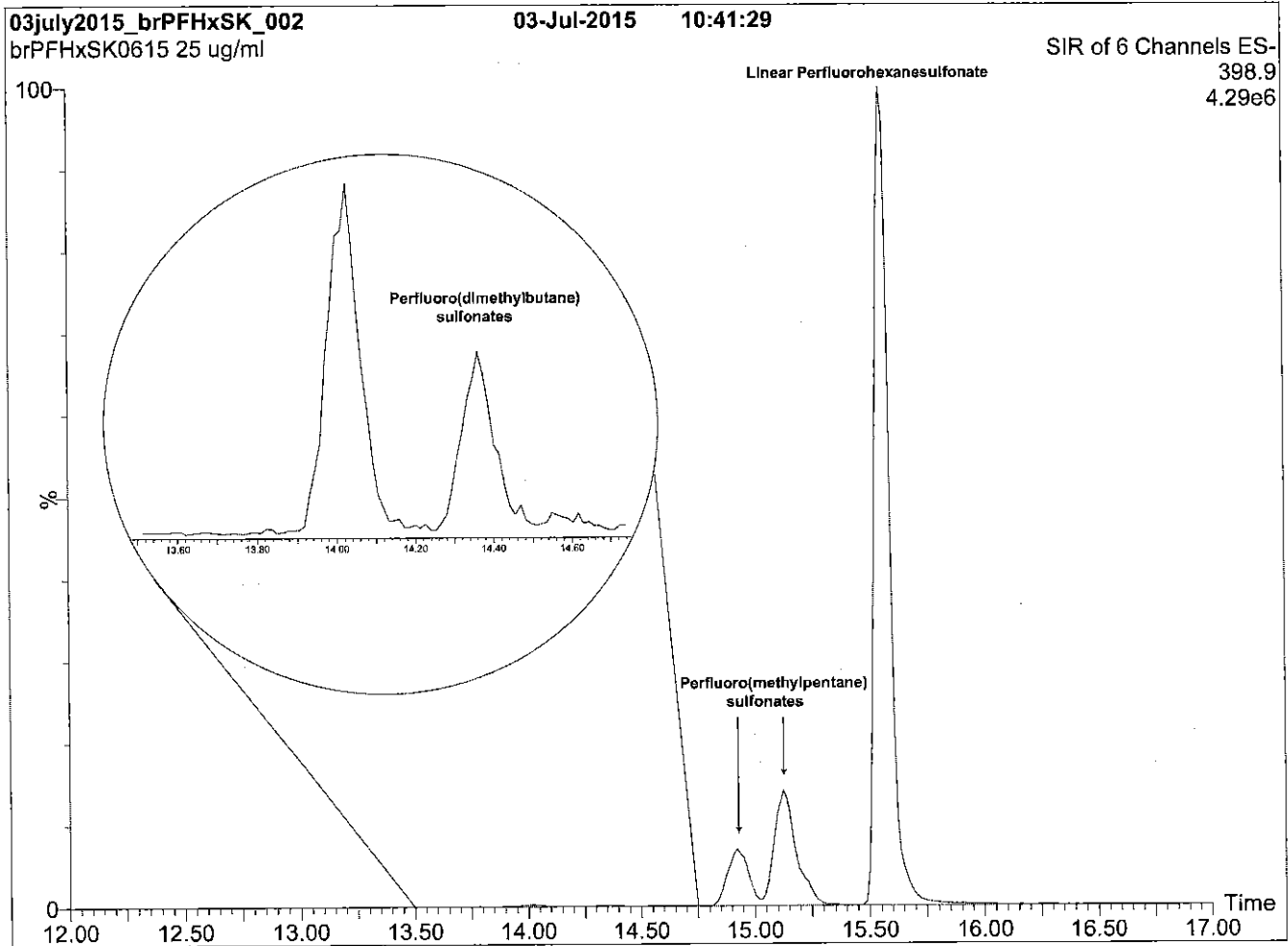
Flow: 300 μ l/min

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

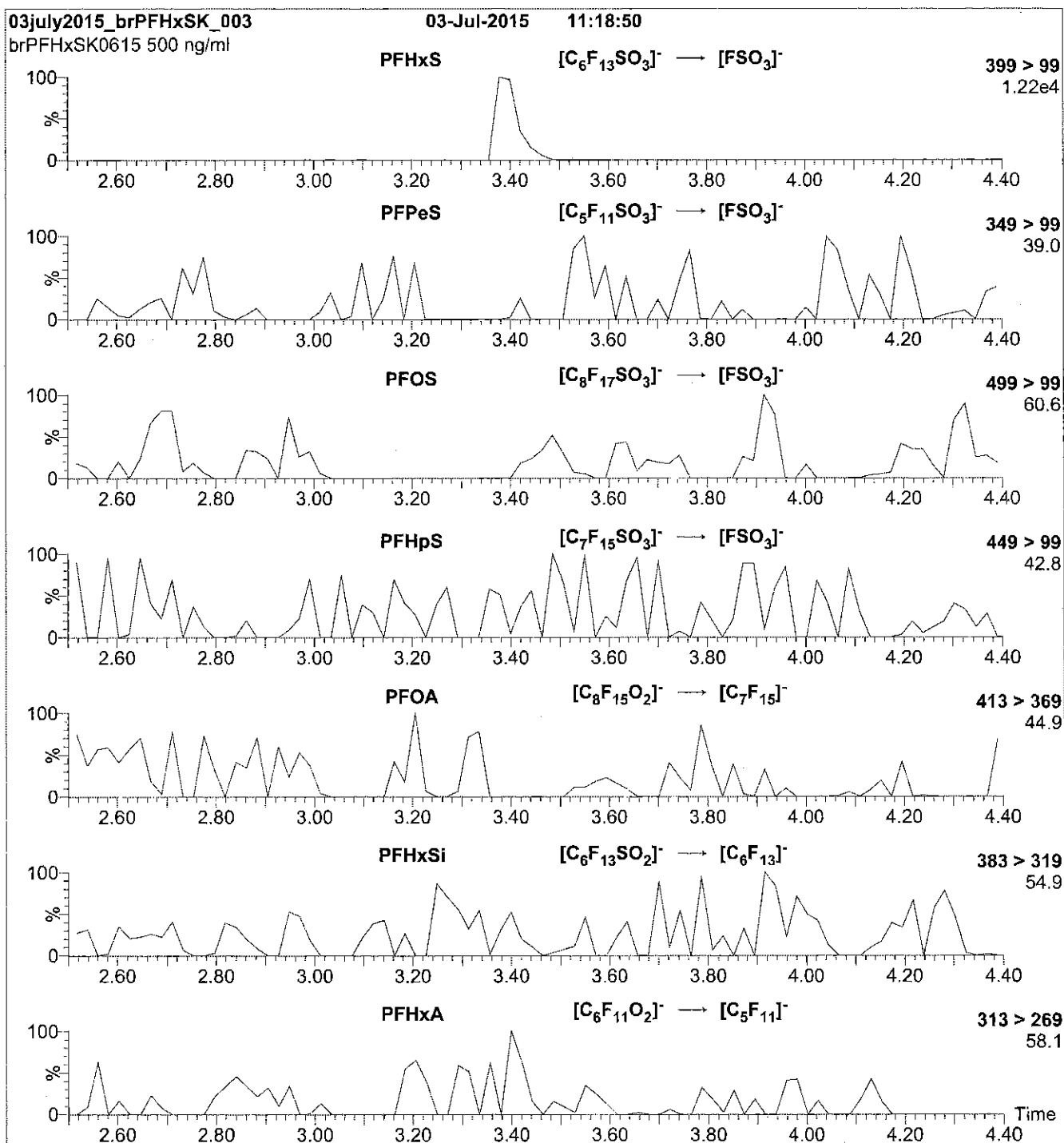
Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

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



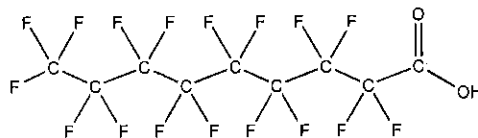
R: 4/7/16 CBW

609703

ID: LCPFNA_00005

Exp: 10/23/20 Prod: CBW

PF-n-nonanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFNA
COMPOUND: Perfluoro-n-nonanoic acid**LOT NUMBER:** PFNA1015**STRUCTURE:****CAS #:** 375-95-1**MOLECULAR FORMULA:** C₉H_{F₁₇}O₂
CONCENTRATION: 50 ± 2.5 µg/ml**MOLECULAR WEIGHT:** 464.08
SOLVENT(S): Methanol
Water (<1%)**CHEMICAL PURITY:** >98%
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place**DOCUMENTATION/ DATA ATTACHED:**Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)**ADDITIONAL INFORMATION:**

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/30/2015

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \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.

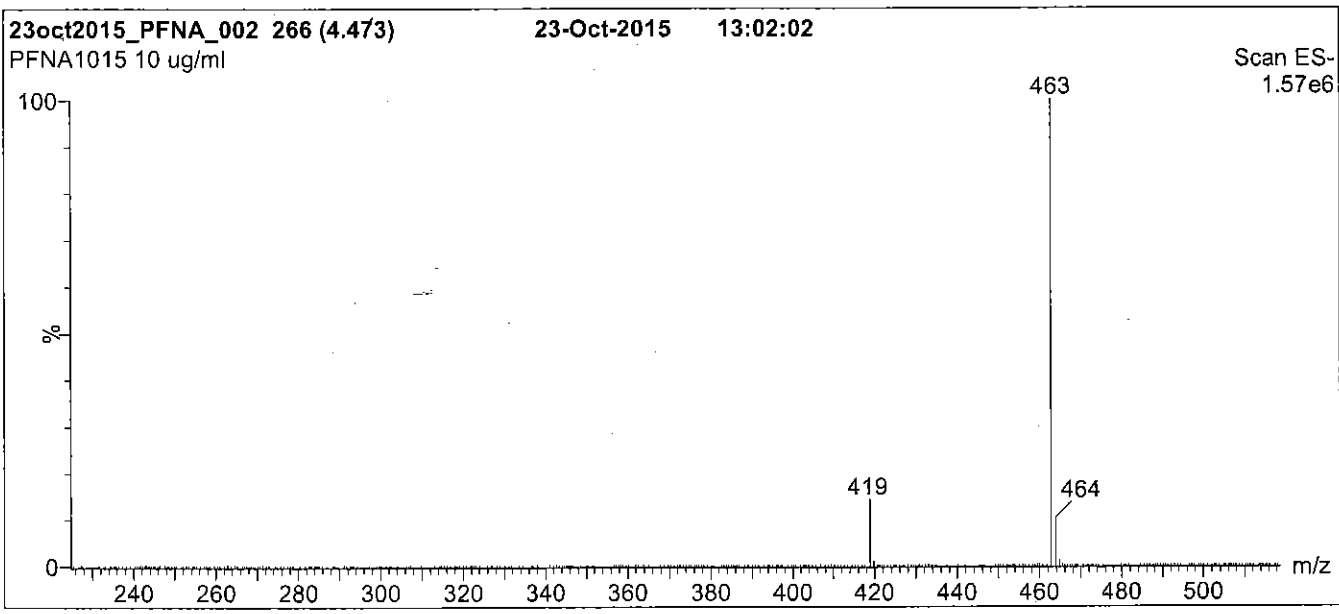
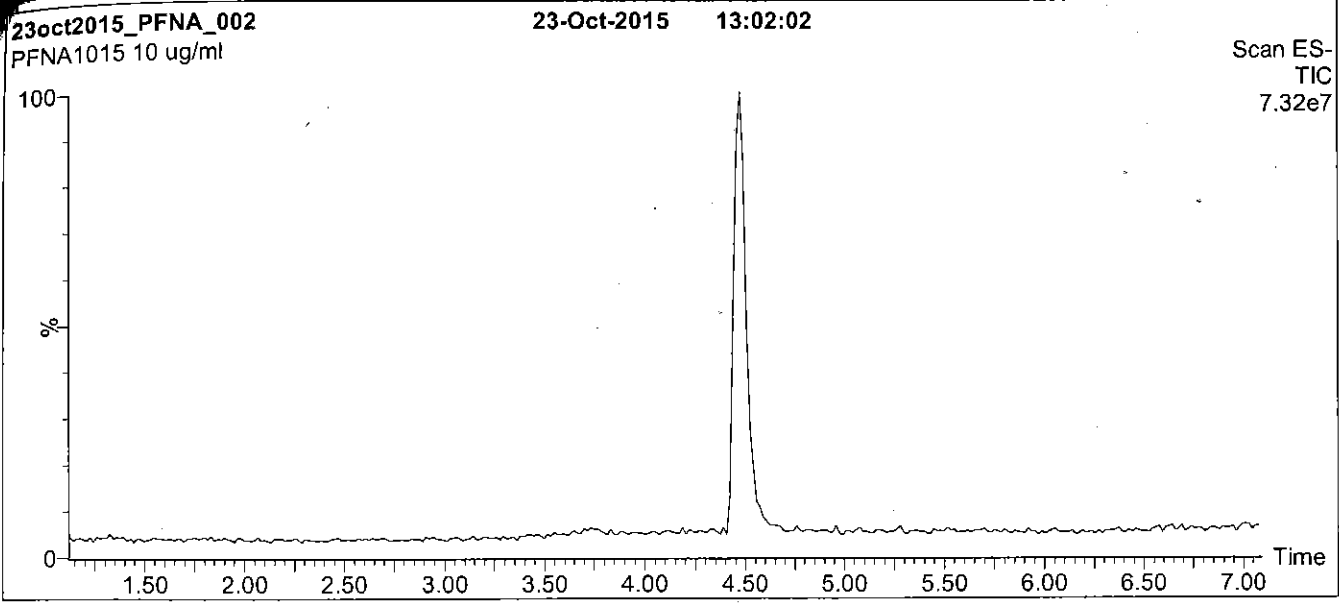
QUALITY MANAGEMENT:

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

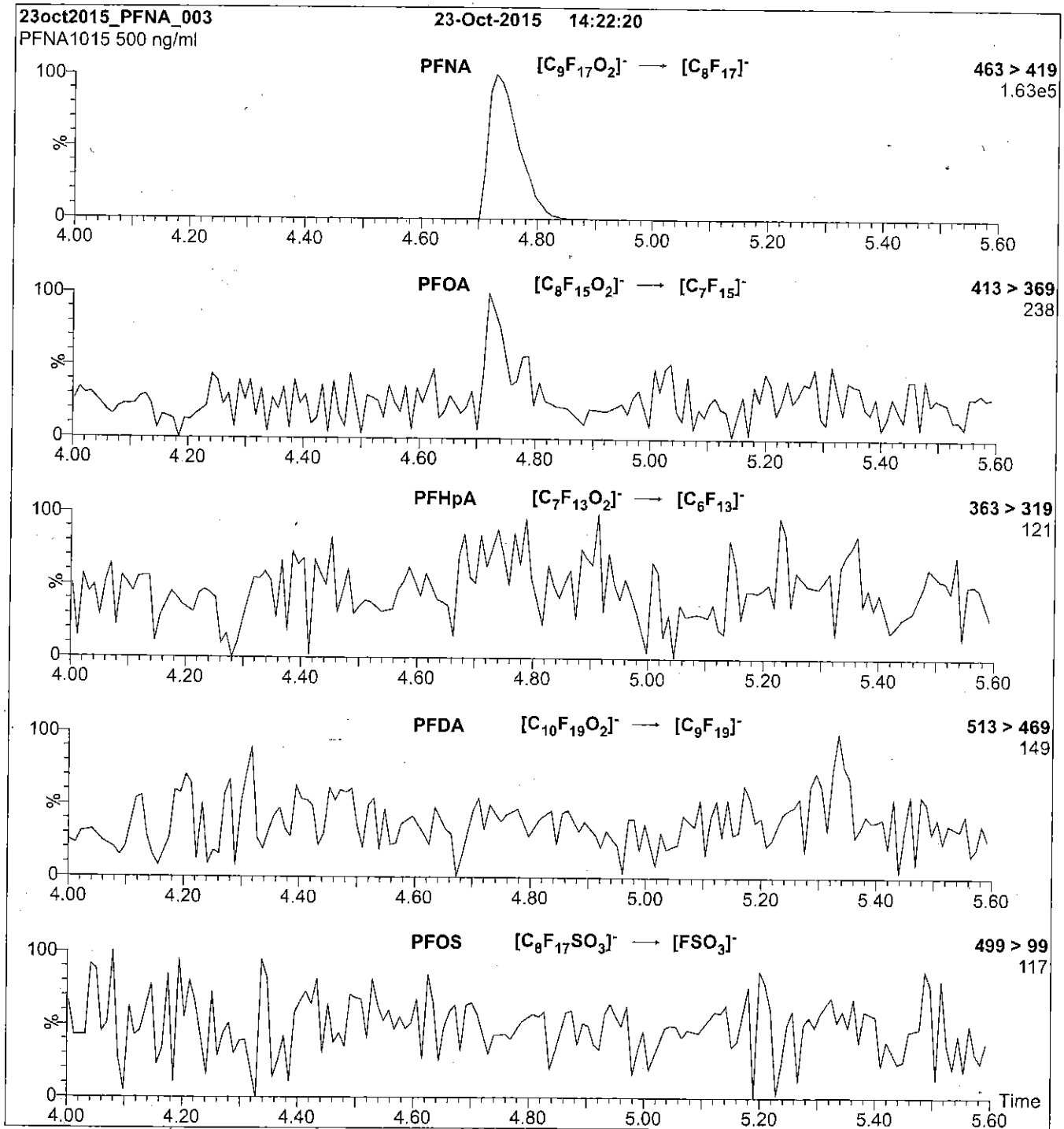
Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC:	Waters Acquity Ultra Performance LC
MS:	Micromass Quattro <i>micro</i> API MS
Chromatographic Conditions	
Column:	Acquity UPLC BEH Shield RP ₁₈ 1.7 μ m, 2.1 x 100 mm
Mobile phase:	Gradient Start: 50% (80:20 MeOH:ACN) / 50% H ₂ O (both with 10 mM NH ₄ OAc 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

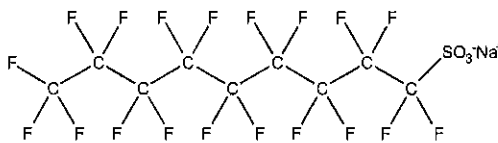
LCPFNS_00002



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.

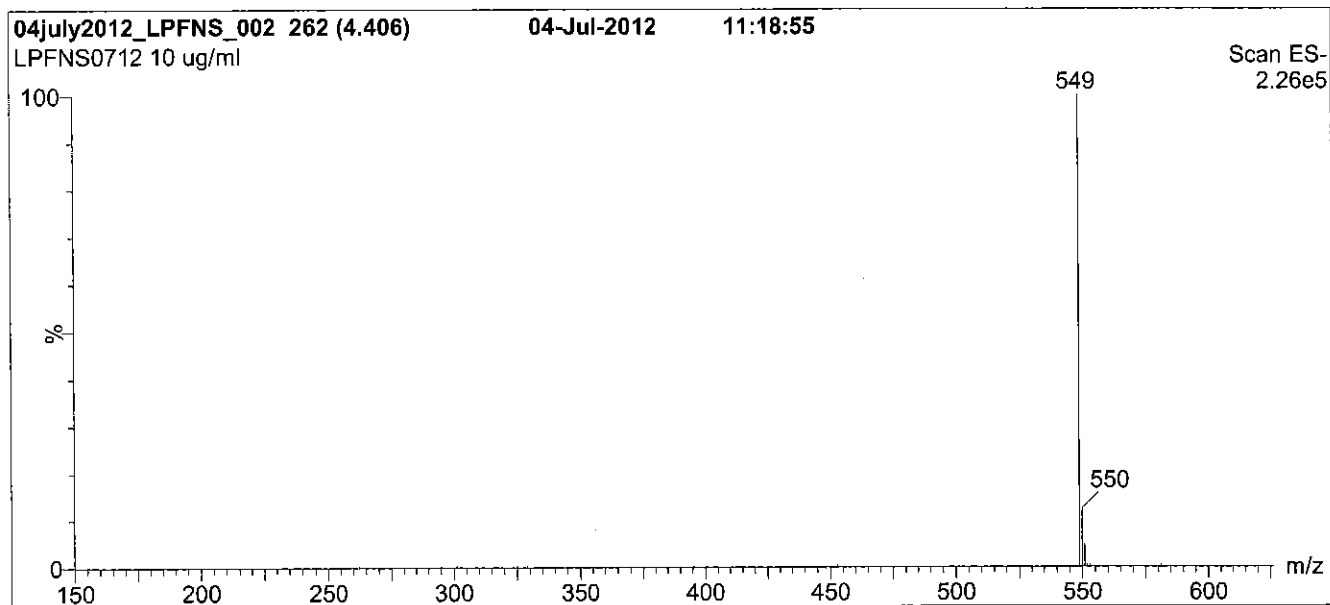
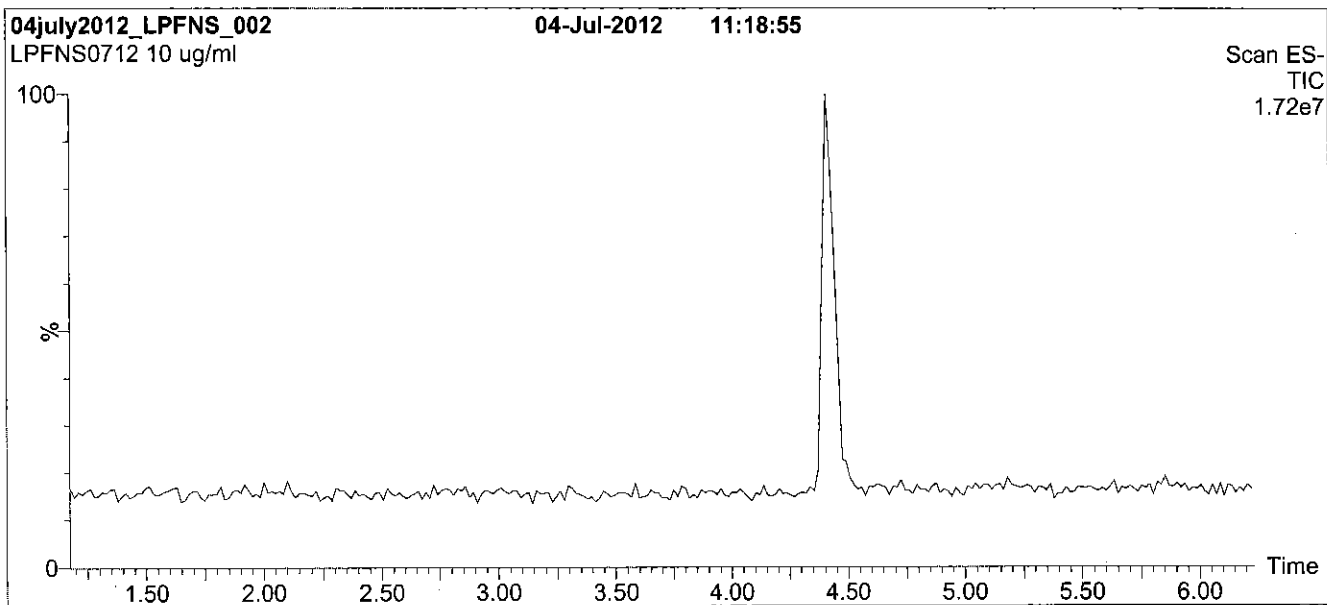
QUALITY MANAGEMENT:

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

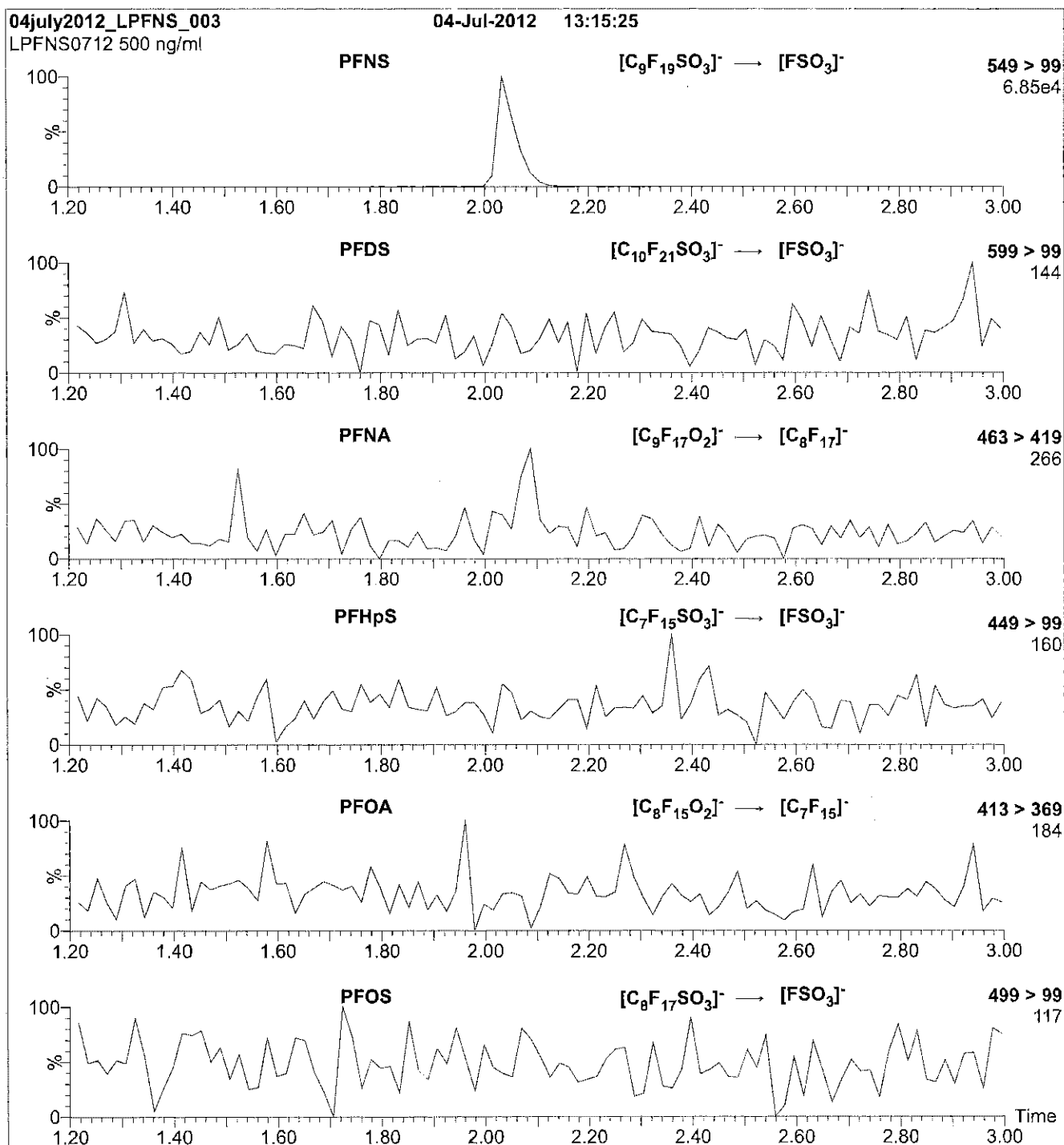
Flow: 300 μ l/min

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

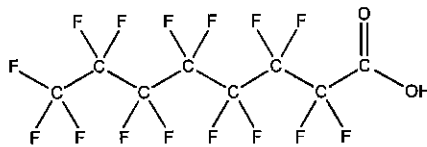
LCPFOA_00005



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid
LOT NUMBER: PFOA1115
STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: C₈HF₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim

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

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

INTENDED USE:

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

HAZARDS:

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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:

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.

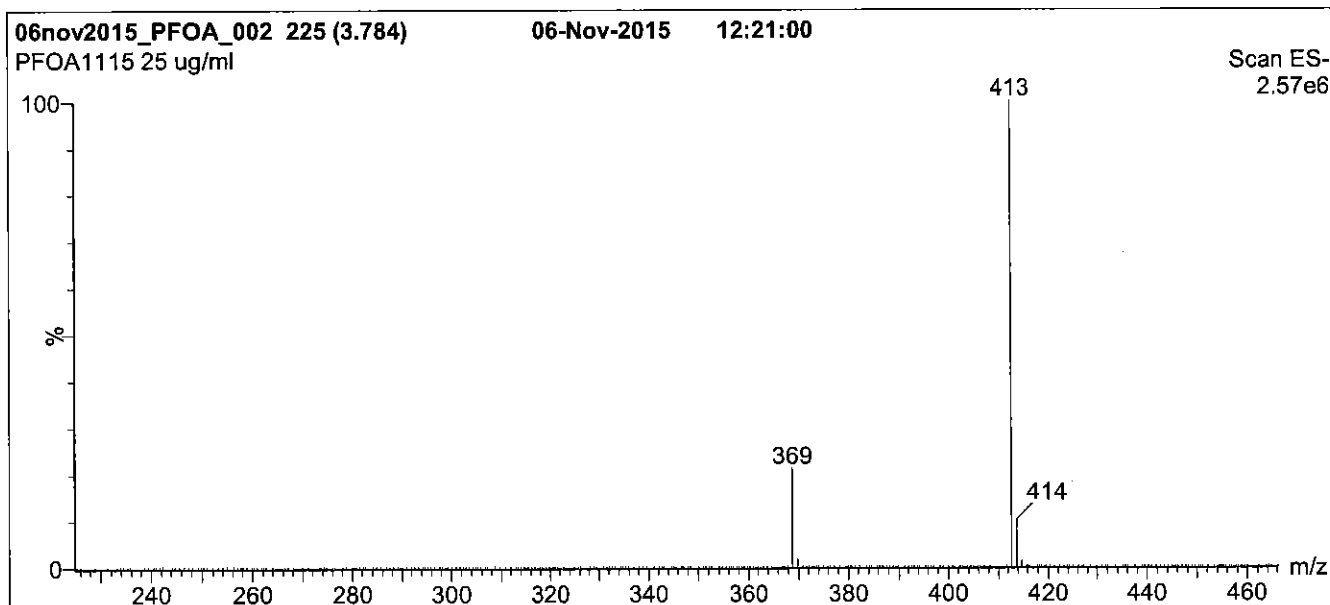
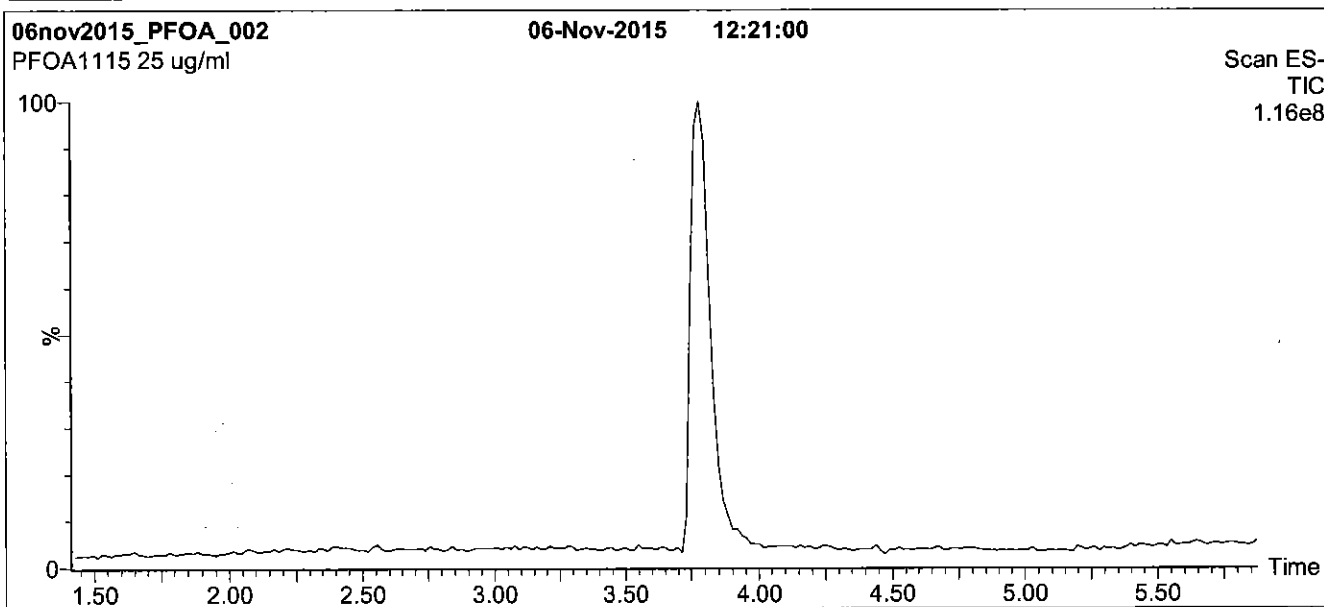
QUALITY MANAGEMENT:

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

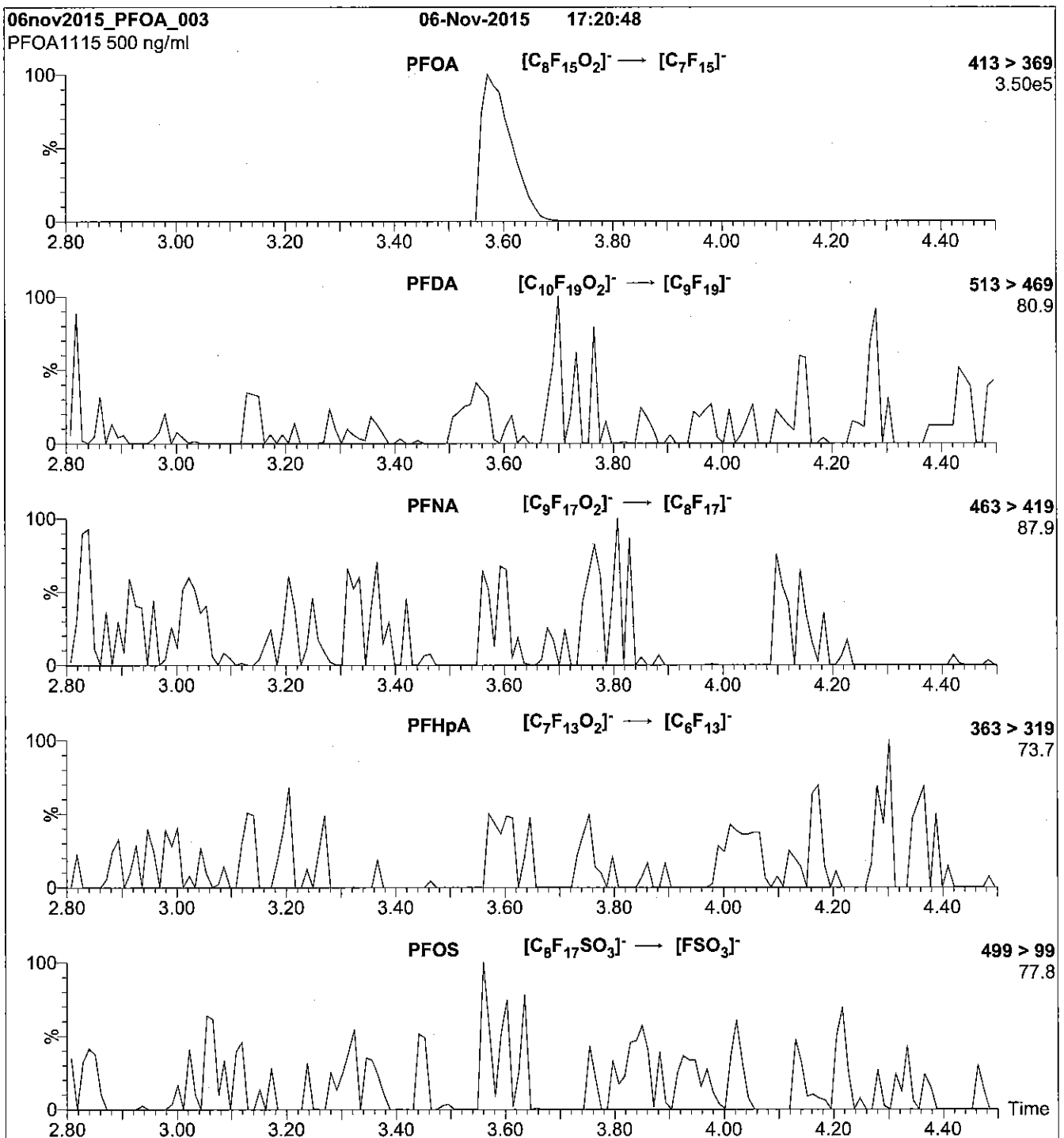
Flow: 300 μ l/min

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

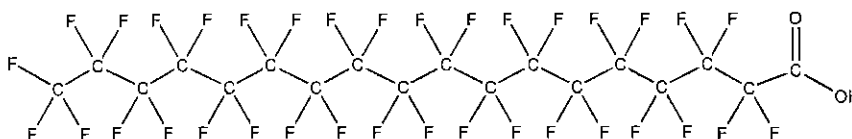


605234

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.

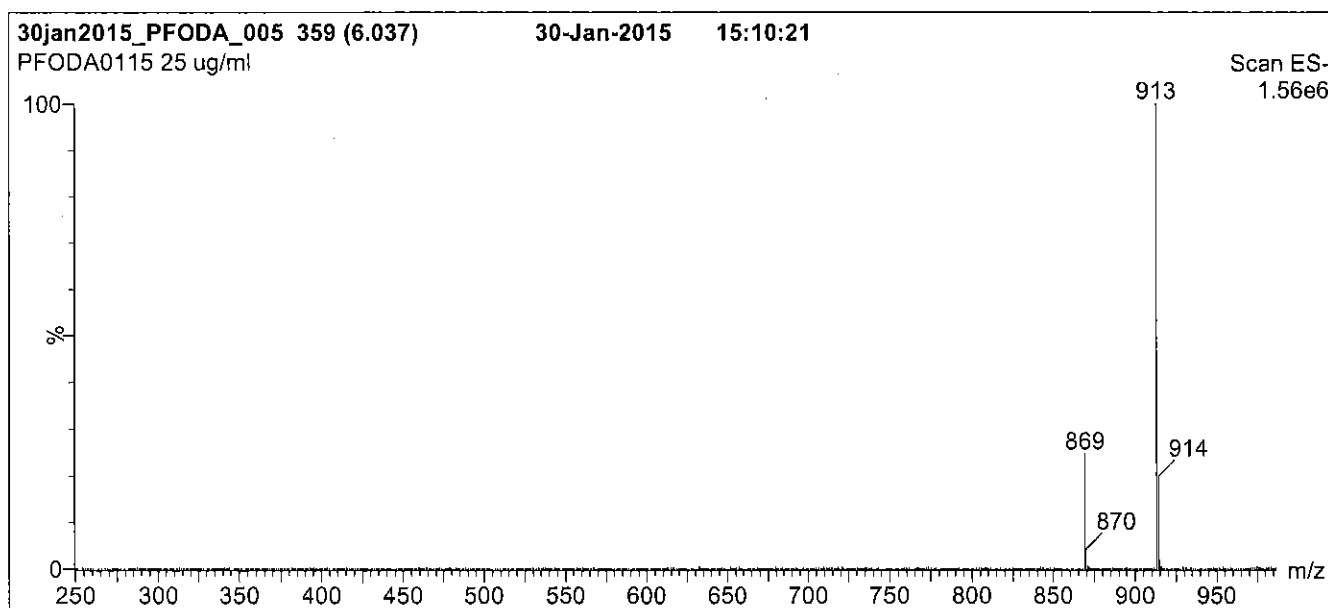
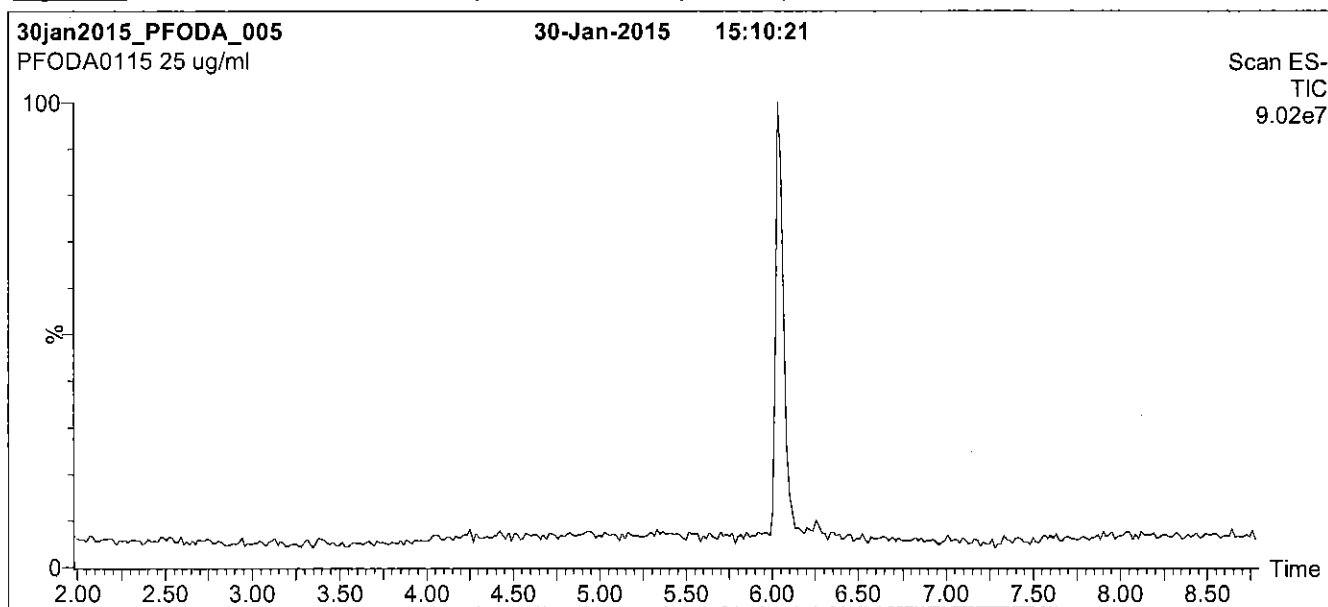
QUALITY MANAGEMENT:

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).



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

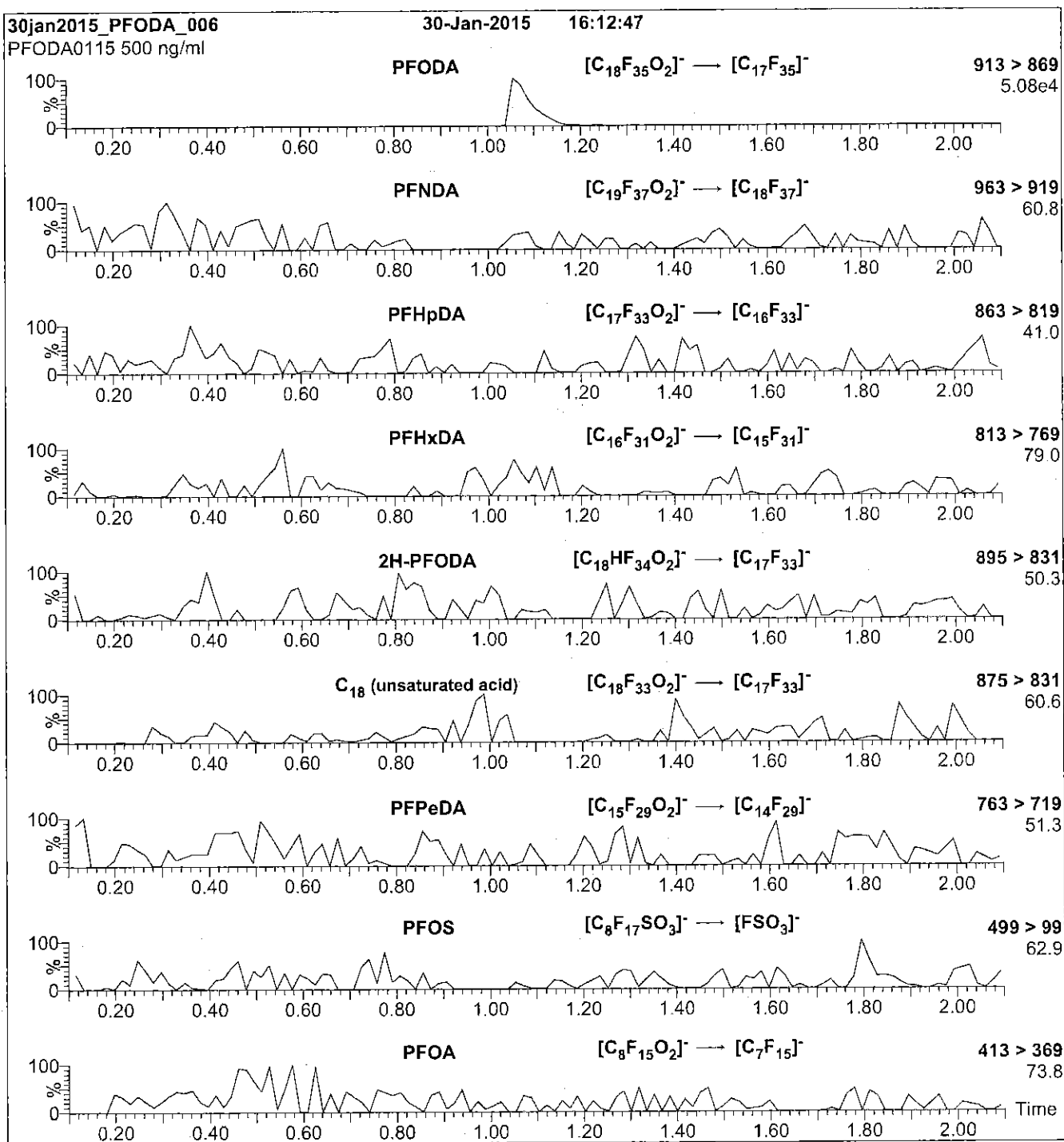
Flow: 300 μ l/min

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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INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (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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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 ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁺	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF(SO ₃)K ⁺ CF ₃	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF(SO ₃)CF ₂ K ⁺ CF ₃	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF(SO ₃)CF ₂ CF ₂ K ⁺ CF ₃	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF(SO ₃)CF ₂ CF ₂ CF ₂ K ⁺ CF ₃	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF(SO ₃)CF ₂ CF ₂ CF ₂ CF ₂ K ⁺ CF ₃	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF(SO ₃)CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ K ⁺ CF ₃	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ -C(CF ₃)CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁺ CF ₃	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ -C(CF ₃)CF ₂ CF ₂ SO ₃ K ⁺ CF ₃	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ -CF(CF ₃)-CF(CF ₃)-CF ₂ CF ₂ SO ₃ K ⁺ CF ₃ CF ₃	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ -CF(CF ₃)-CF ₂ -CF(CF ₃)-CF ₂ SO ₃ K ⁺ CF ₃ CF ₃	0.07

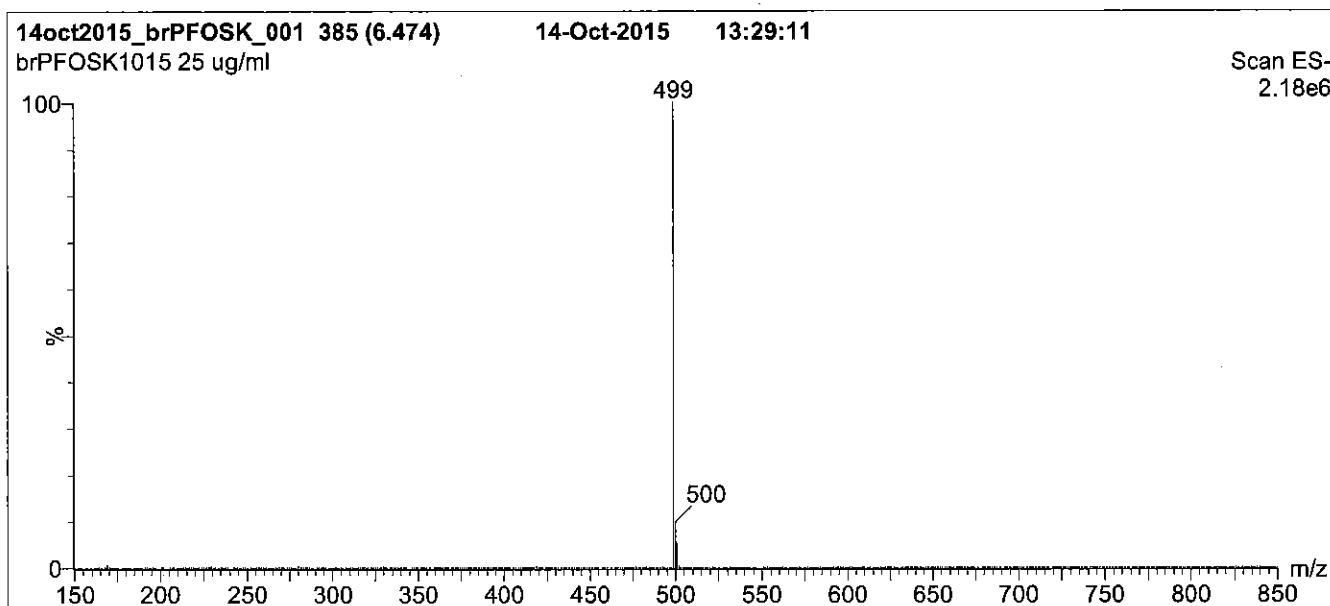
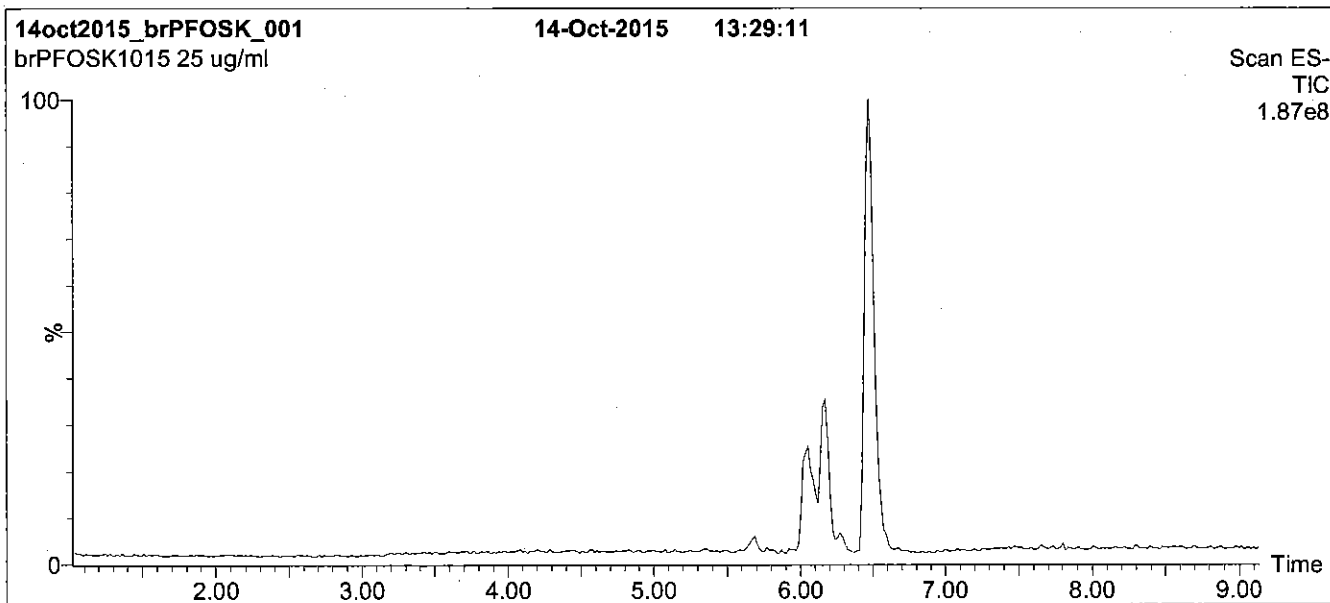
* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.

** 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

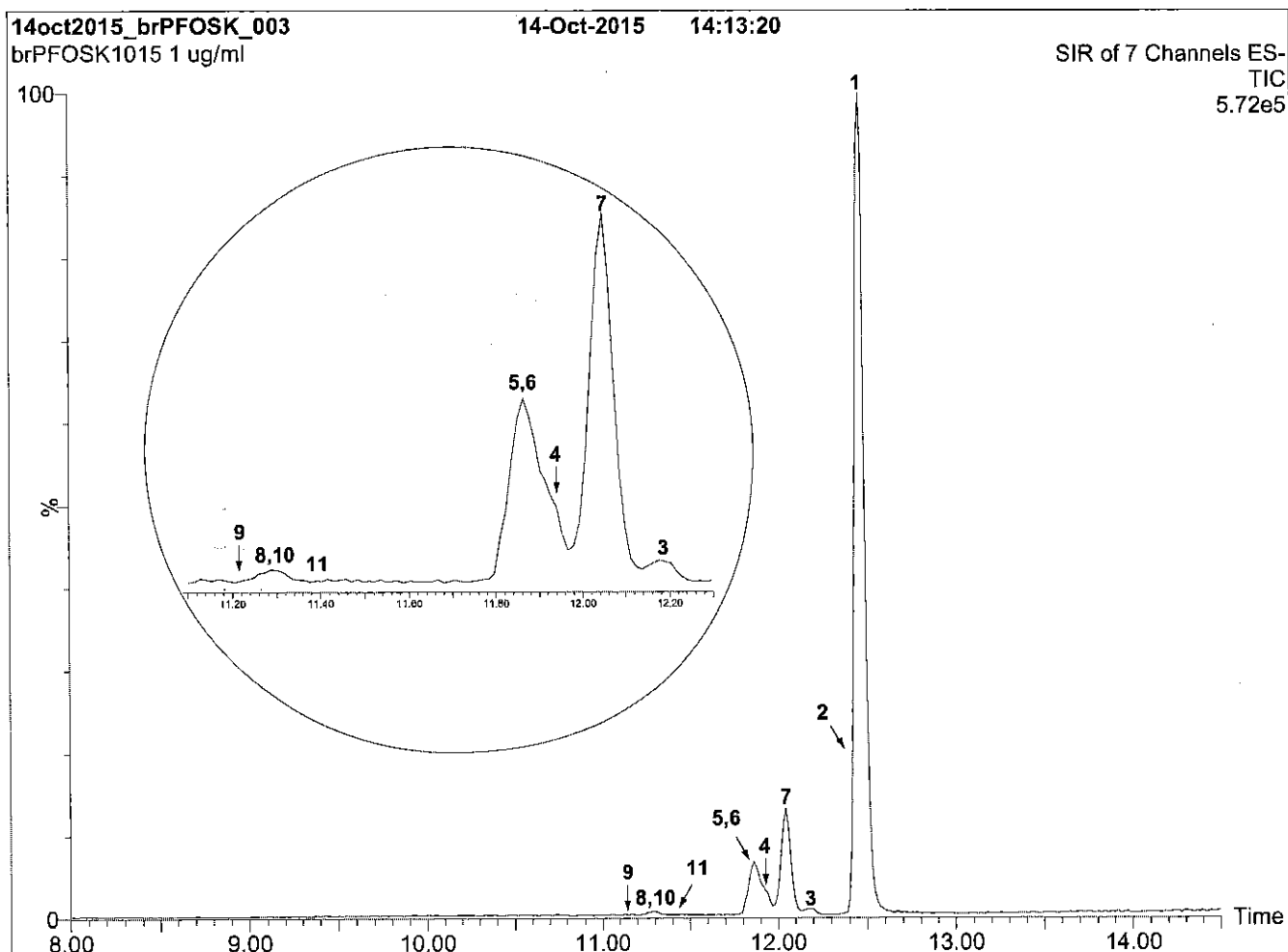
Flow: 300 μ l/min

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

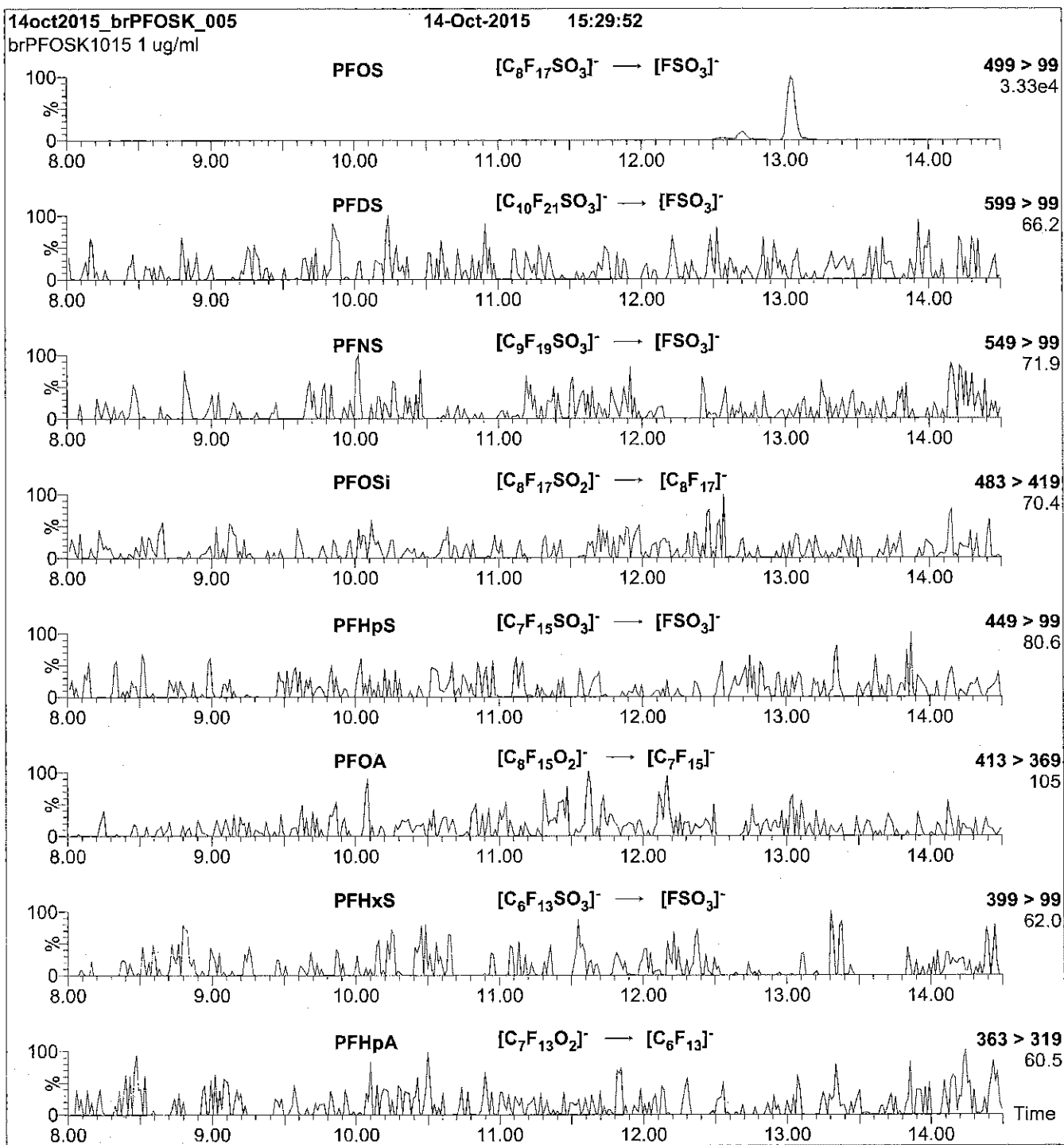
Chromatographic Conditions:

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 $^{\circ}$ C
Desolvation = 325 $^{\circ}$ C
Cone Voltage = 60V

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



Conditions for Figure 3:

Injection: On-column
Mobile phase: Same as Figure 2
Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.06e-3
Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00006

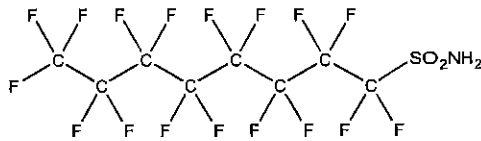


WELLINGTON LABORATORIES

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)

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

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HAZARDS:

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UNCERTAINTY:

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

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

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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:

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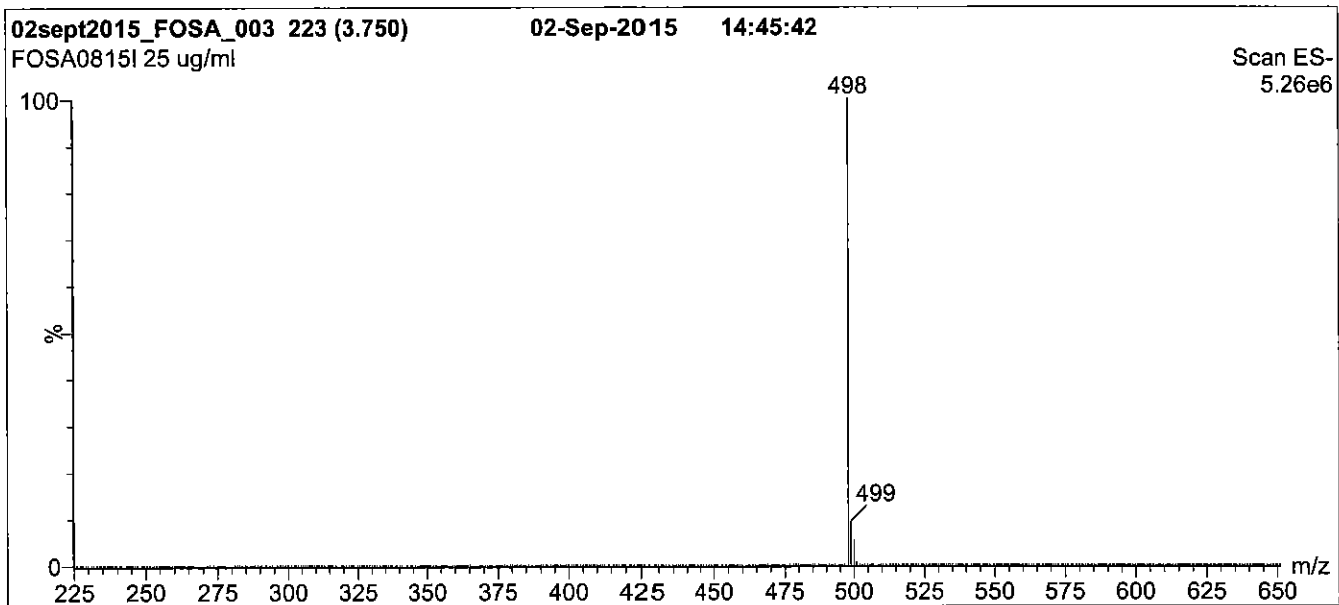
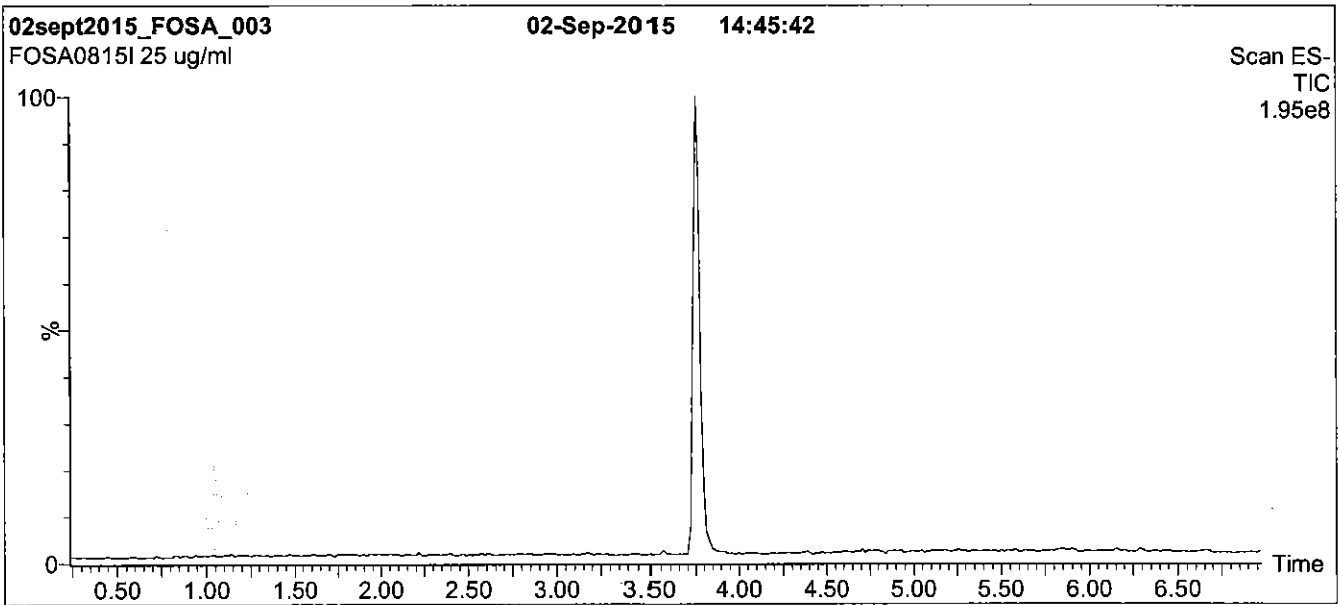
QUALITY MANAGEMENT:

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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 RP_{1a}
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

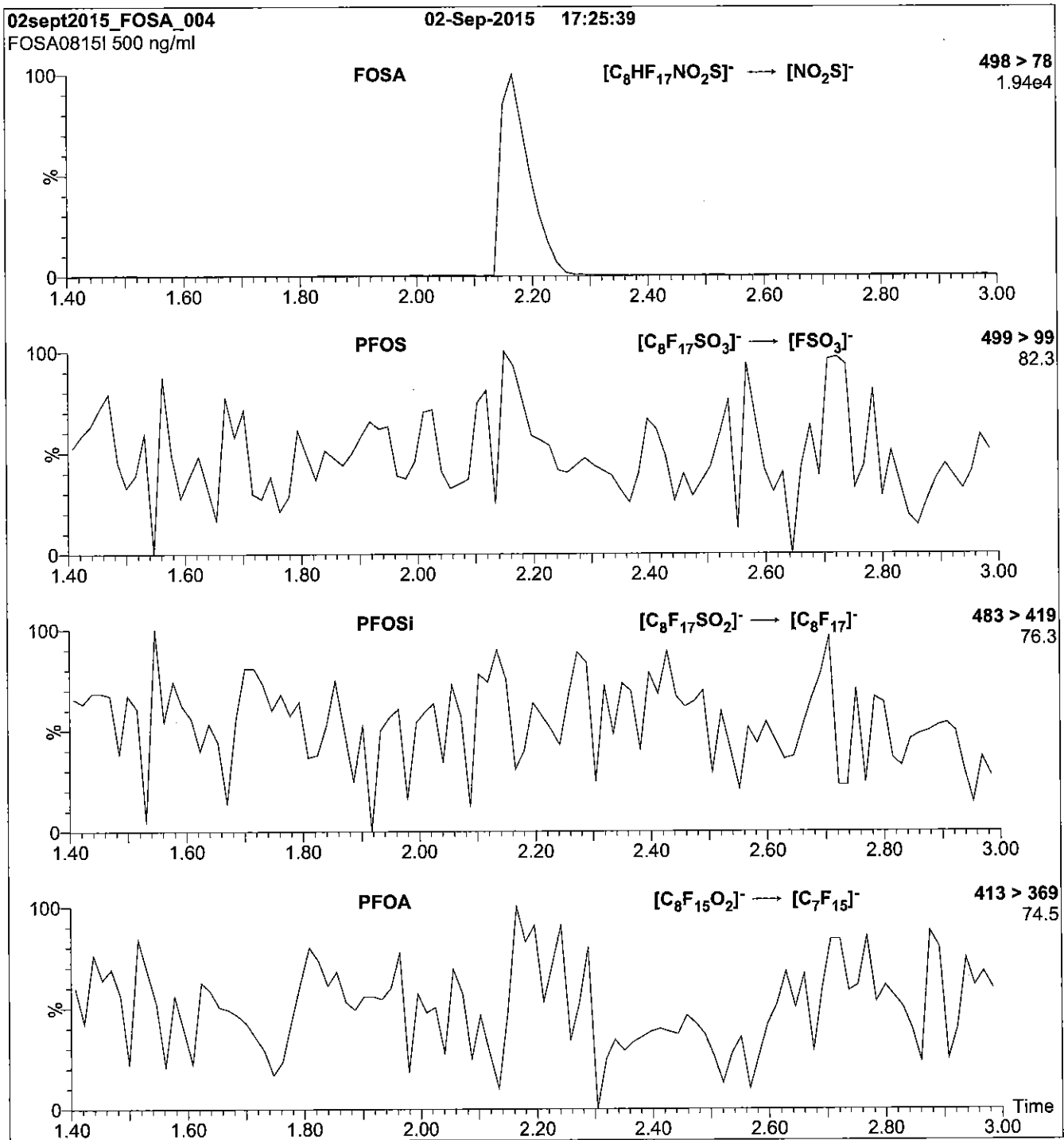
Flow: 300 μl/min

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

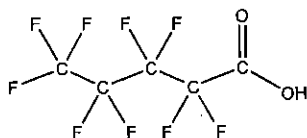
LCFPeA_00004



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)

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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SYNTHESIS / CHARACTERIZATION:

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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:

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.

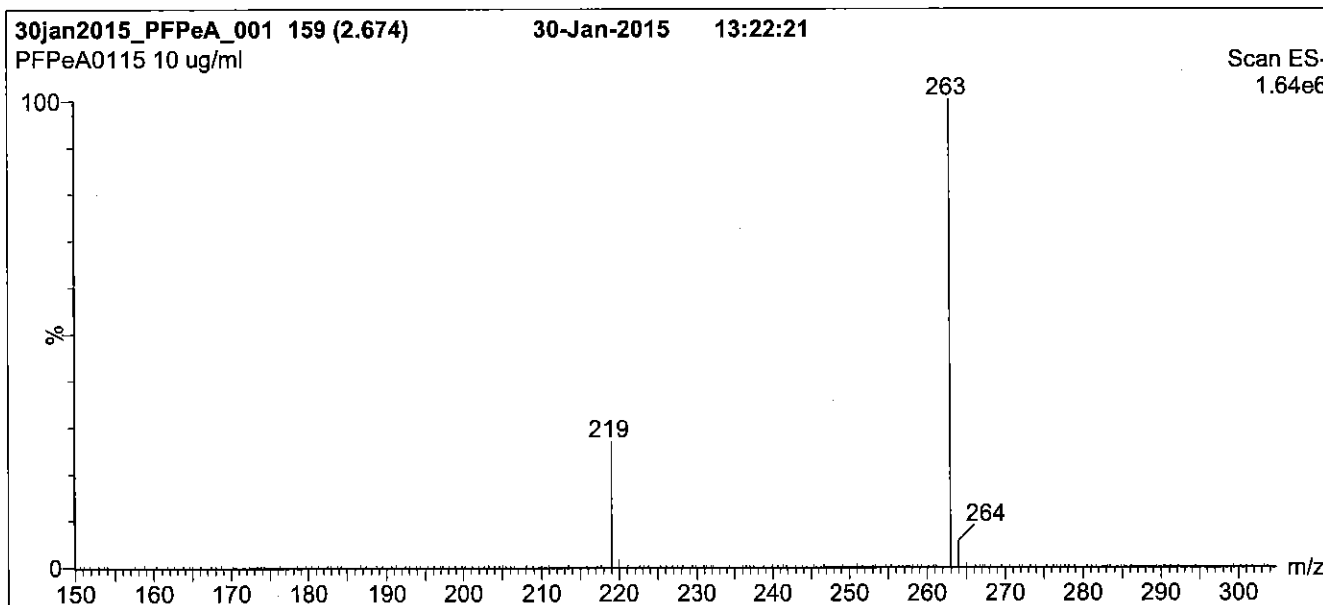
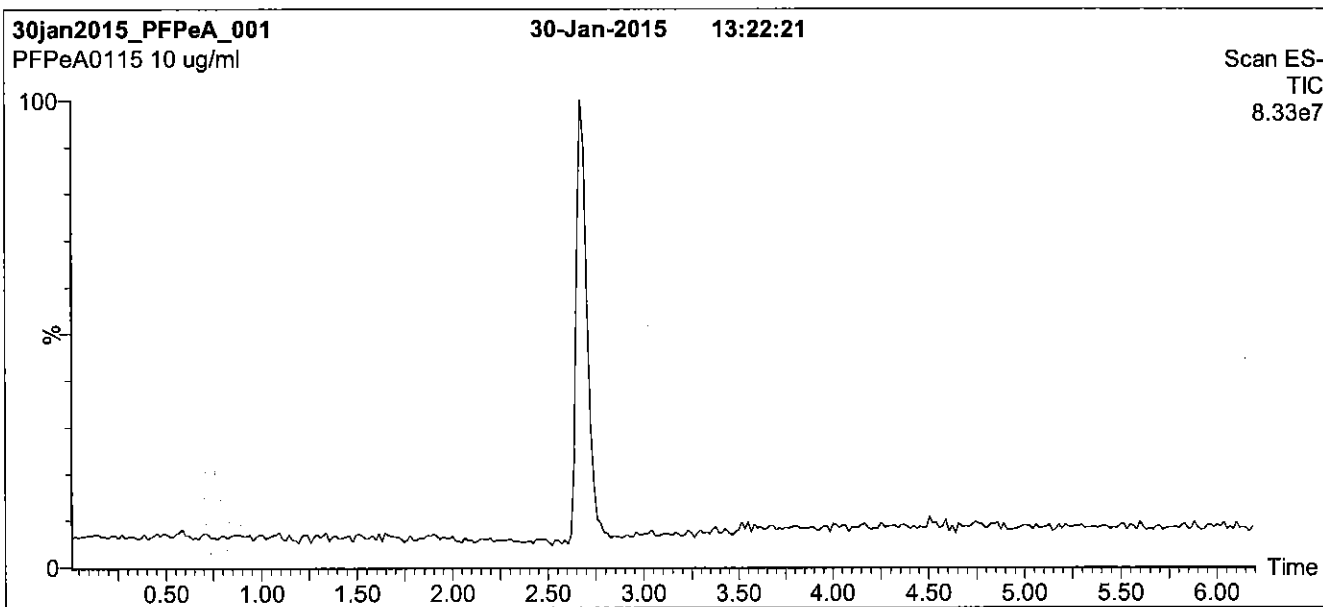
QUALITY MANAGEMENT:

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: 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

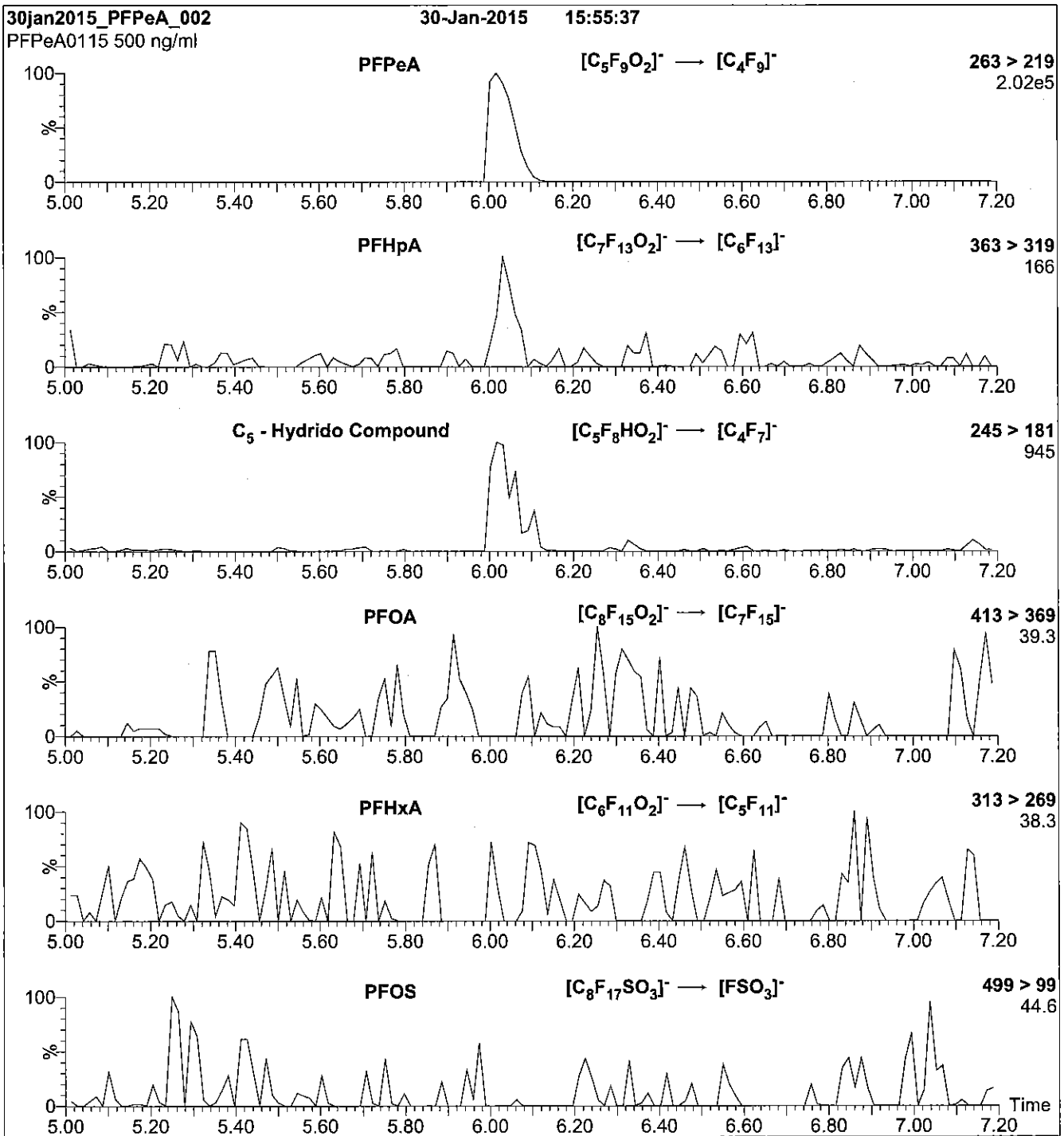
Flow: 300 μ l/min

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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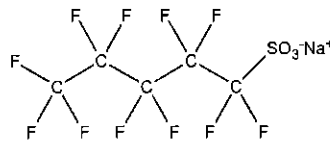
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

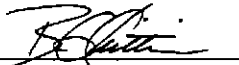
DOCUMENTATION/ DATA ATTACHED:

- 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:

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

HAZARDS:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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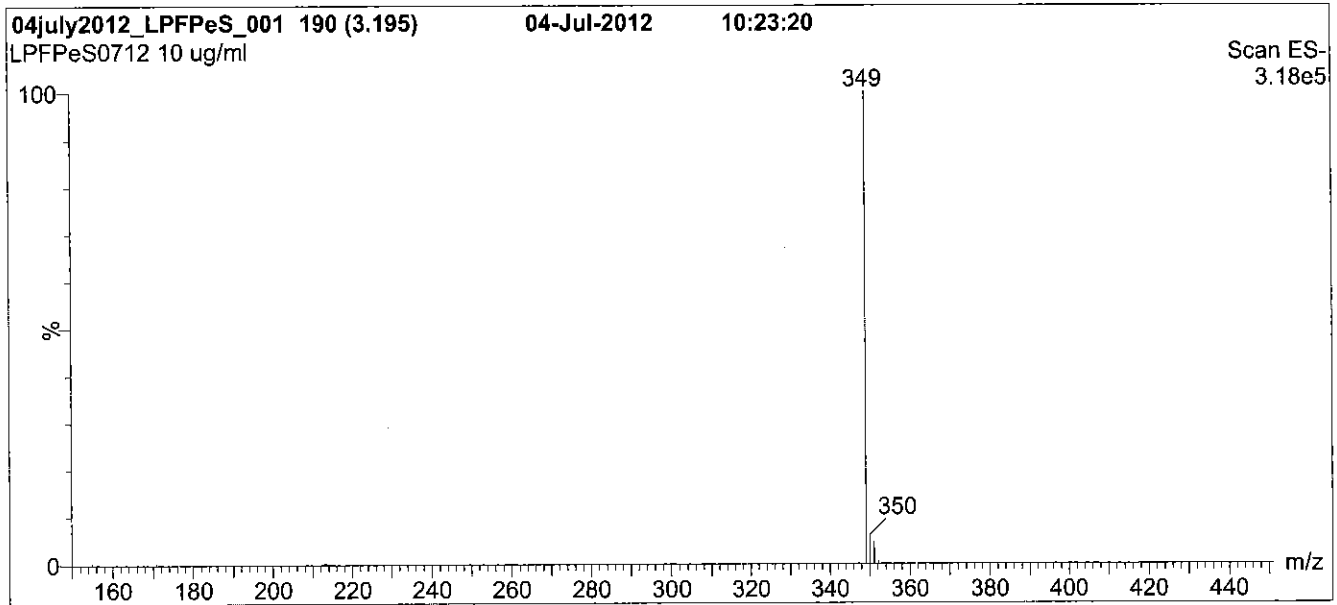
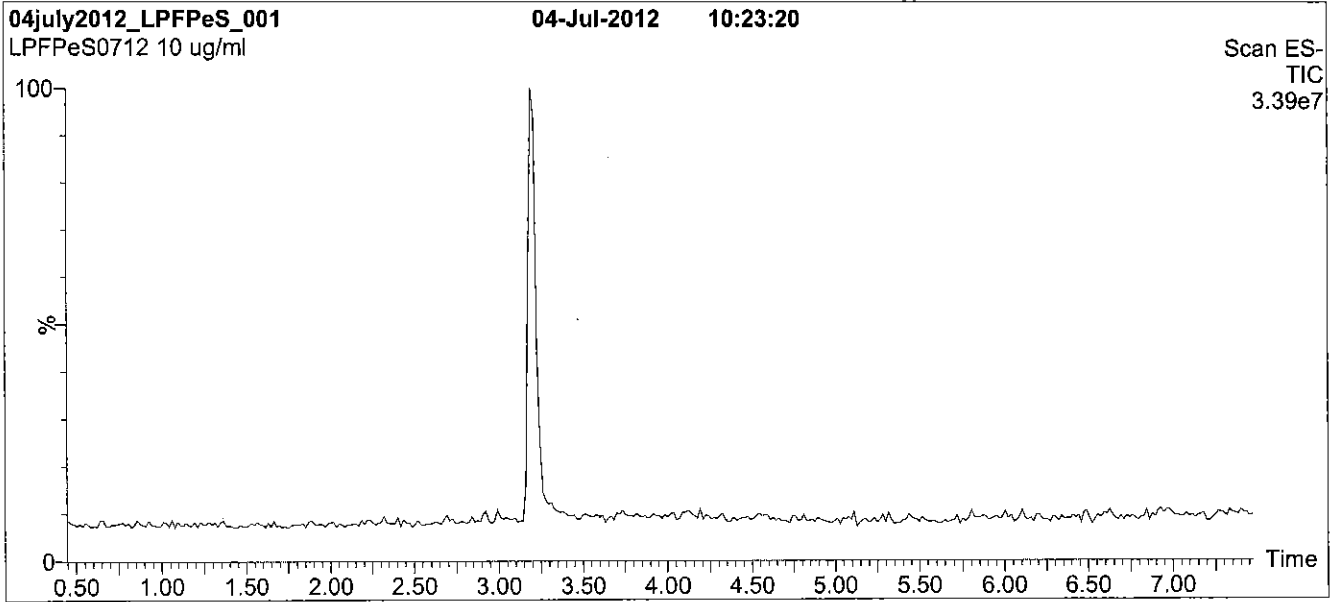
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

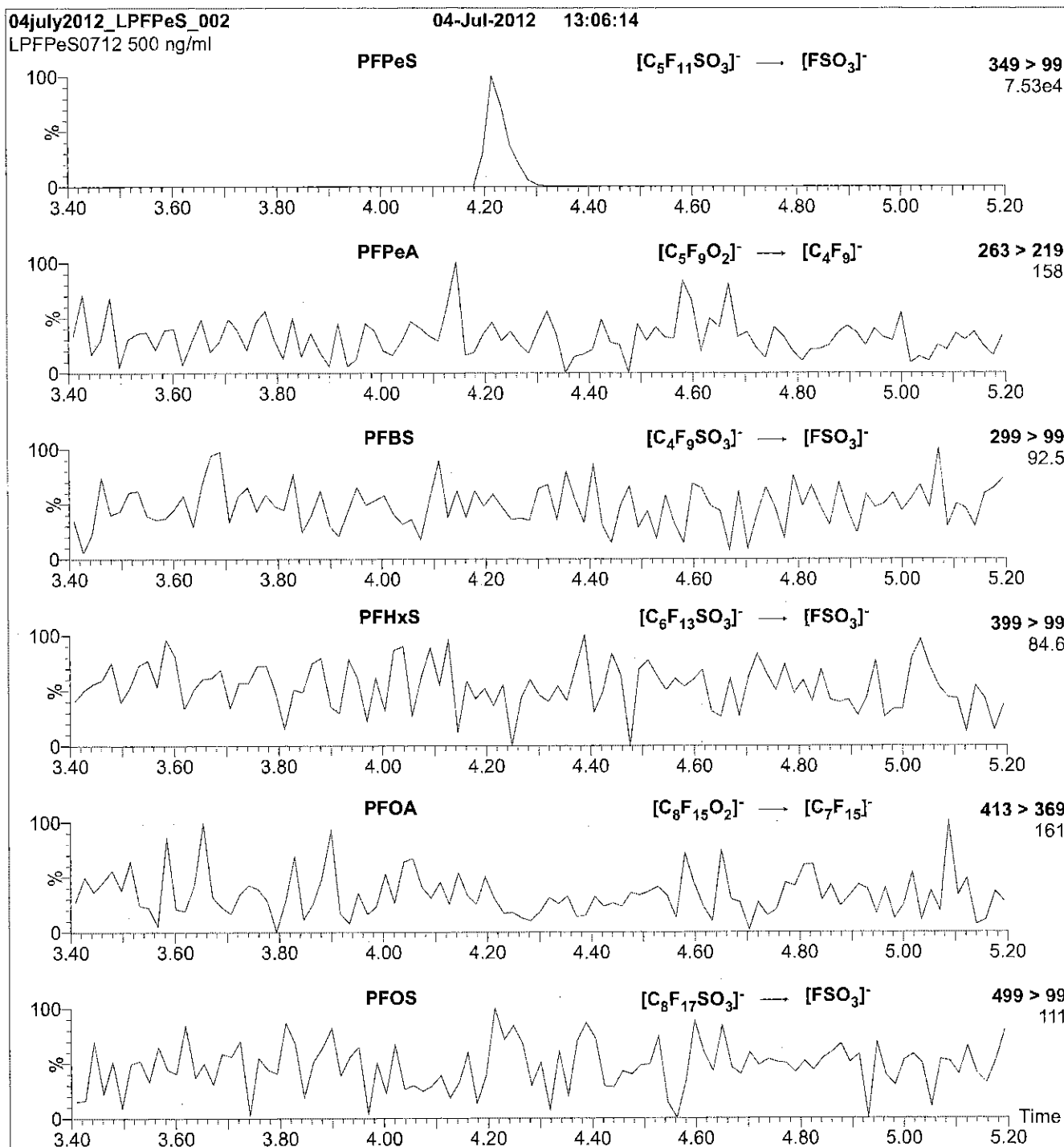
Flow: 300 μ l/min

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

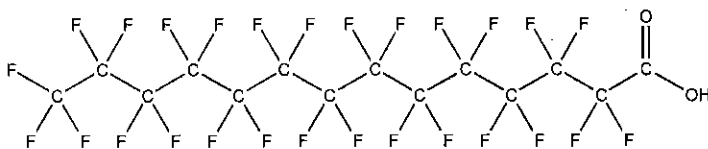


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CERTIFICATE OF ANALYSIS
DOCUMENTATION

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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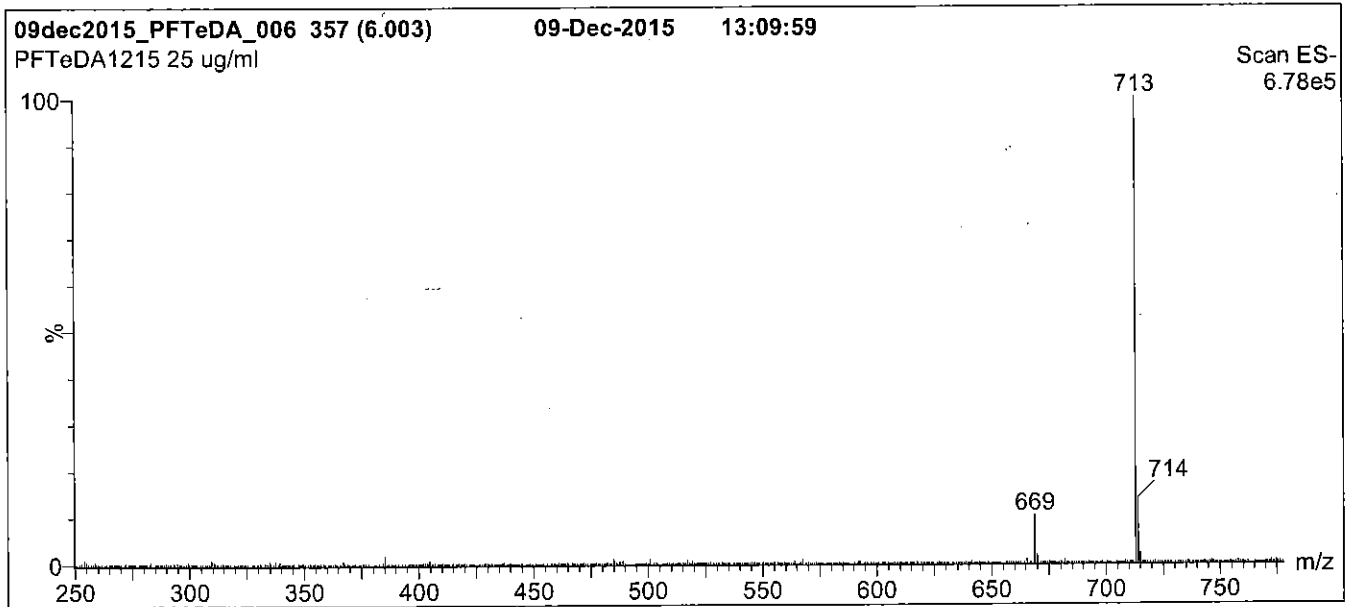
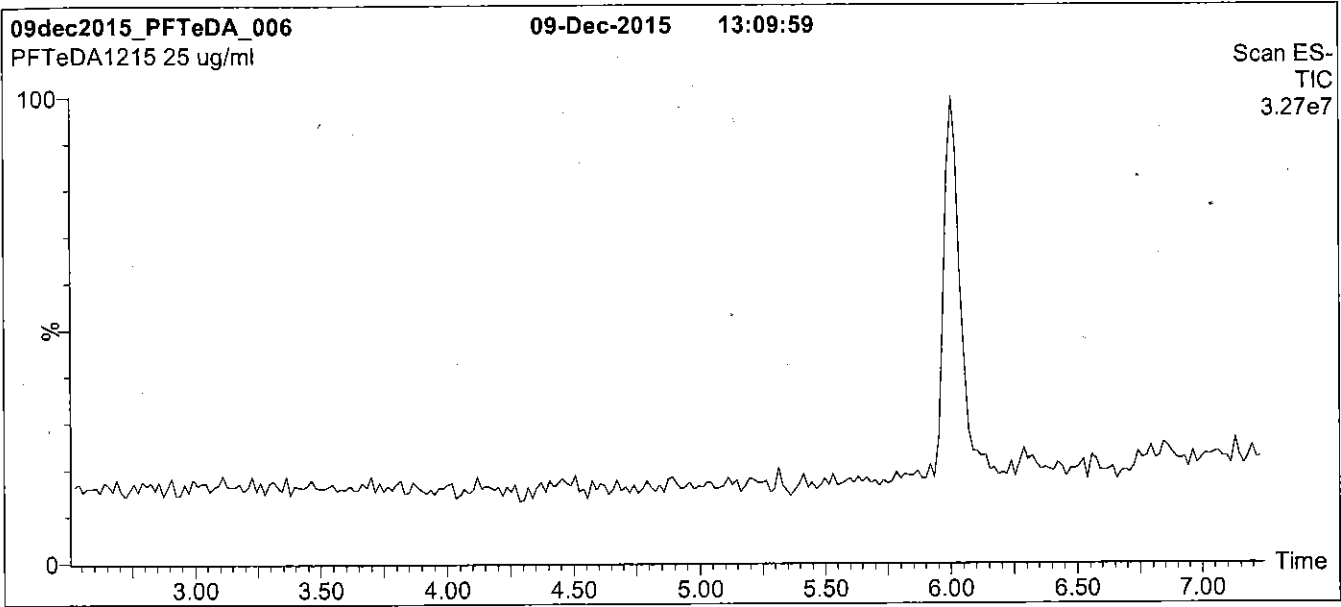
QUALITY MANAGEMENT:

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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 µm, 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

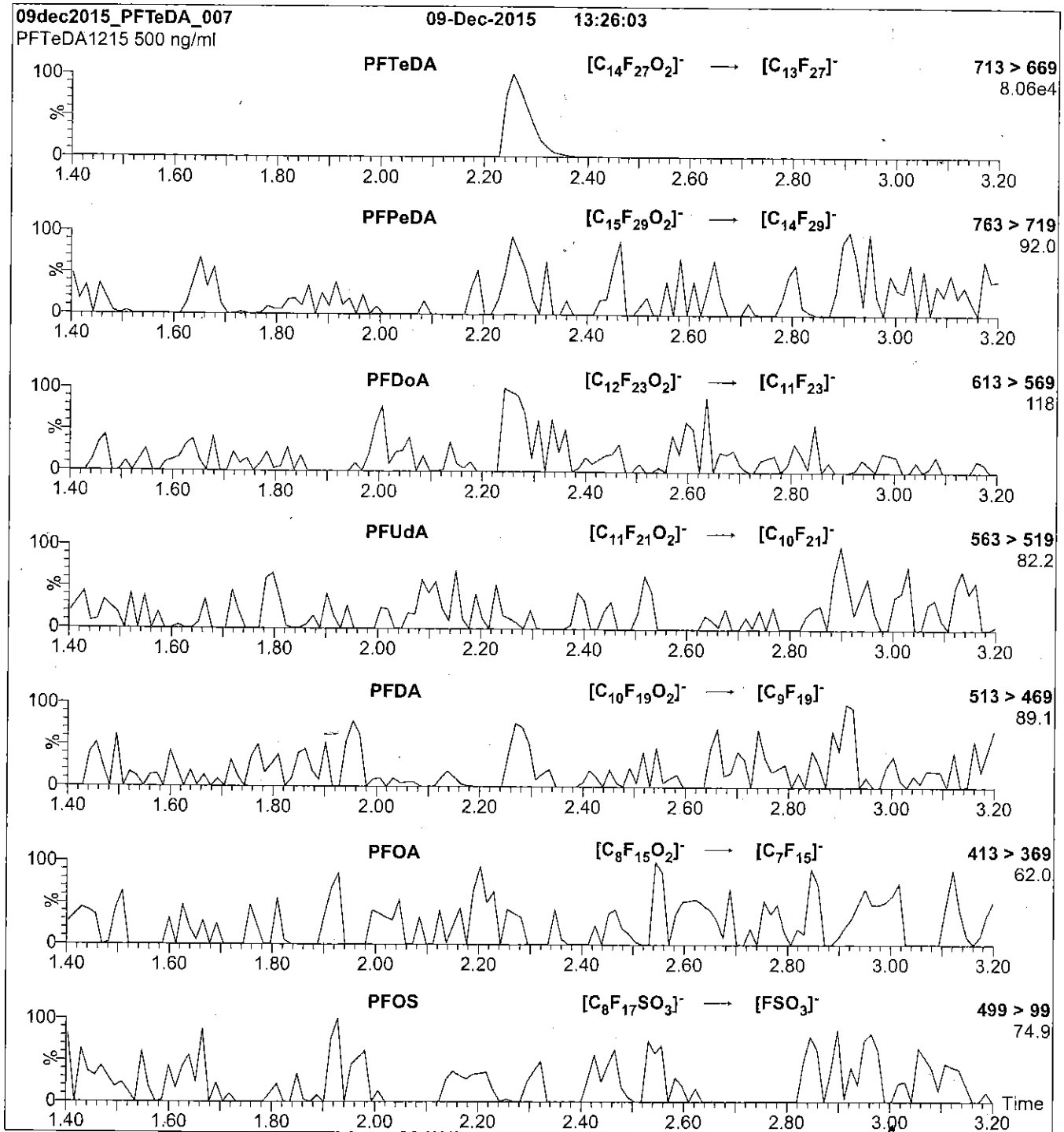
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 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



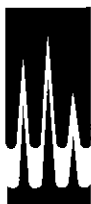
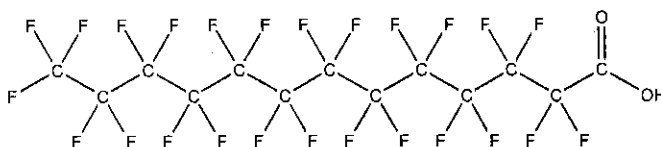
R: 4/7/16 CBW

609697

ID: LCPFTrDA_00004

Exp: 12/10/18 Ppdt: CBW

PF-n-tridecanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFTrDA **LOT NUMBER:** PFTrDA1213
COMPOUND: Perfluoro-n-tridecanoic acid**STRUCTURE:** **CAS #:** 72629-94-8

MOLECULAR FORMULA:	$C_{13}H_1F_{25}O_2$	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 ($C_{11}H_1F_{21}O_2$); ~ 0.4% of PFDaA ($C_{12}H_1F_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}H_1F_{27}O_2$).

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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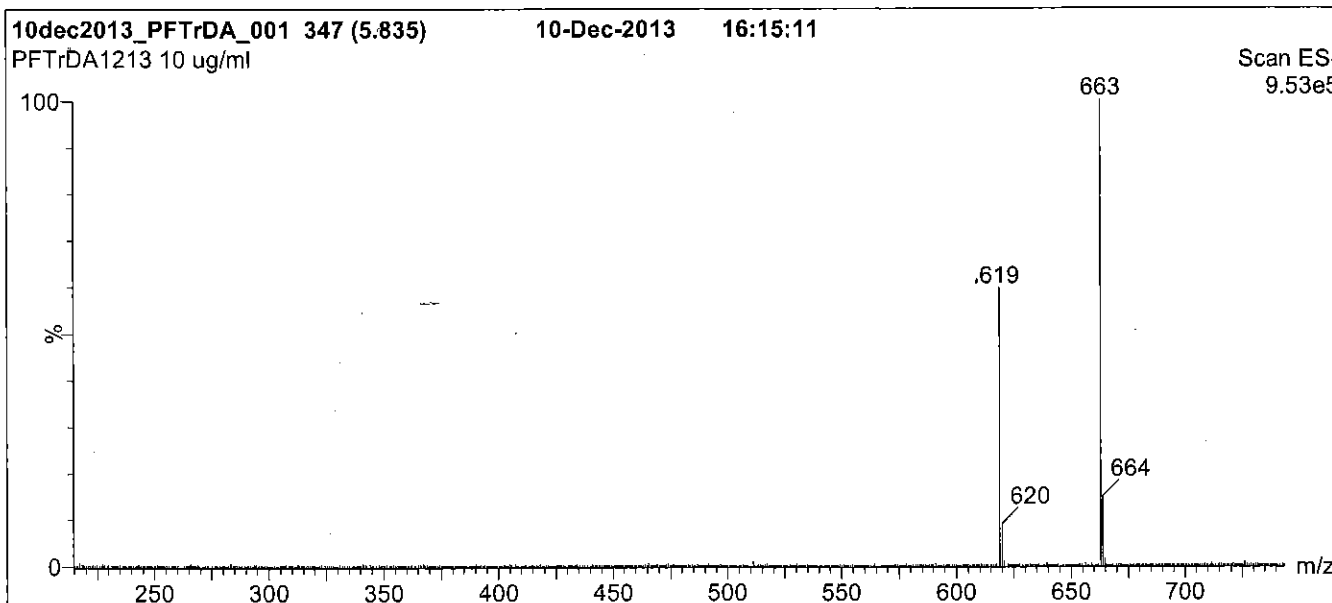
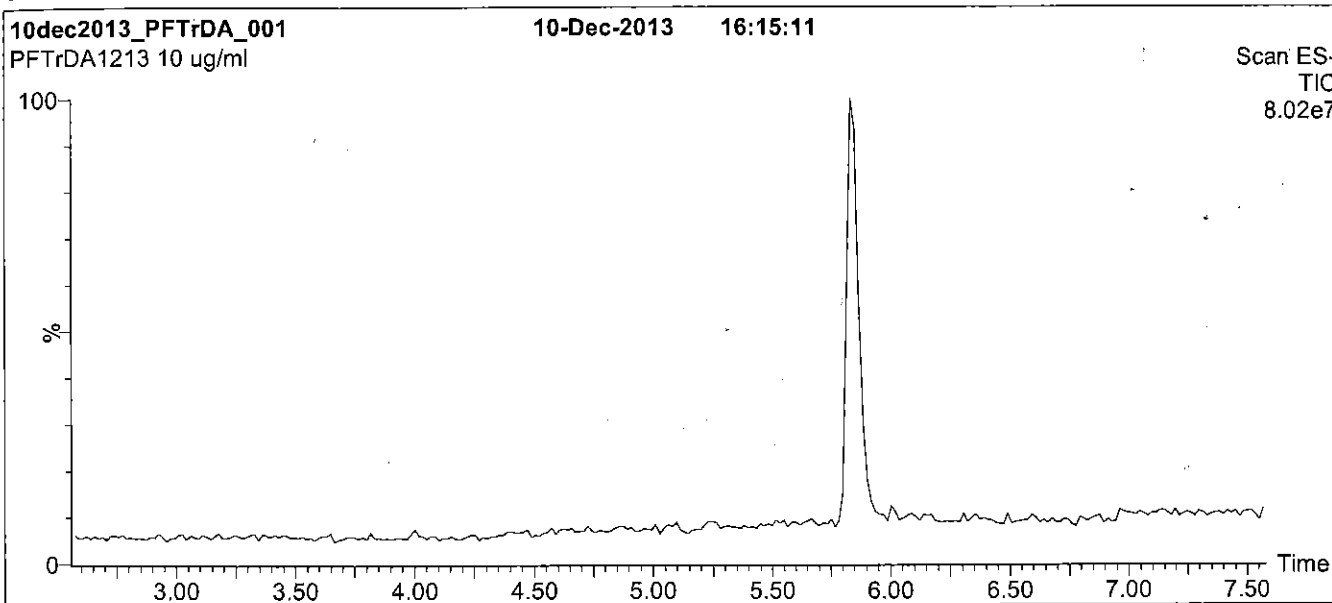
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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)
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 before returning to initial conditions in 0.5 min.
 Time: 10 min

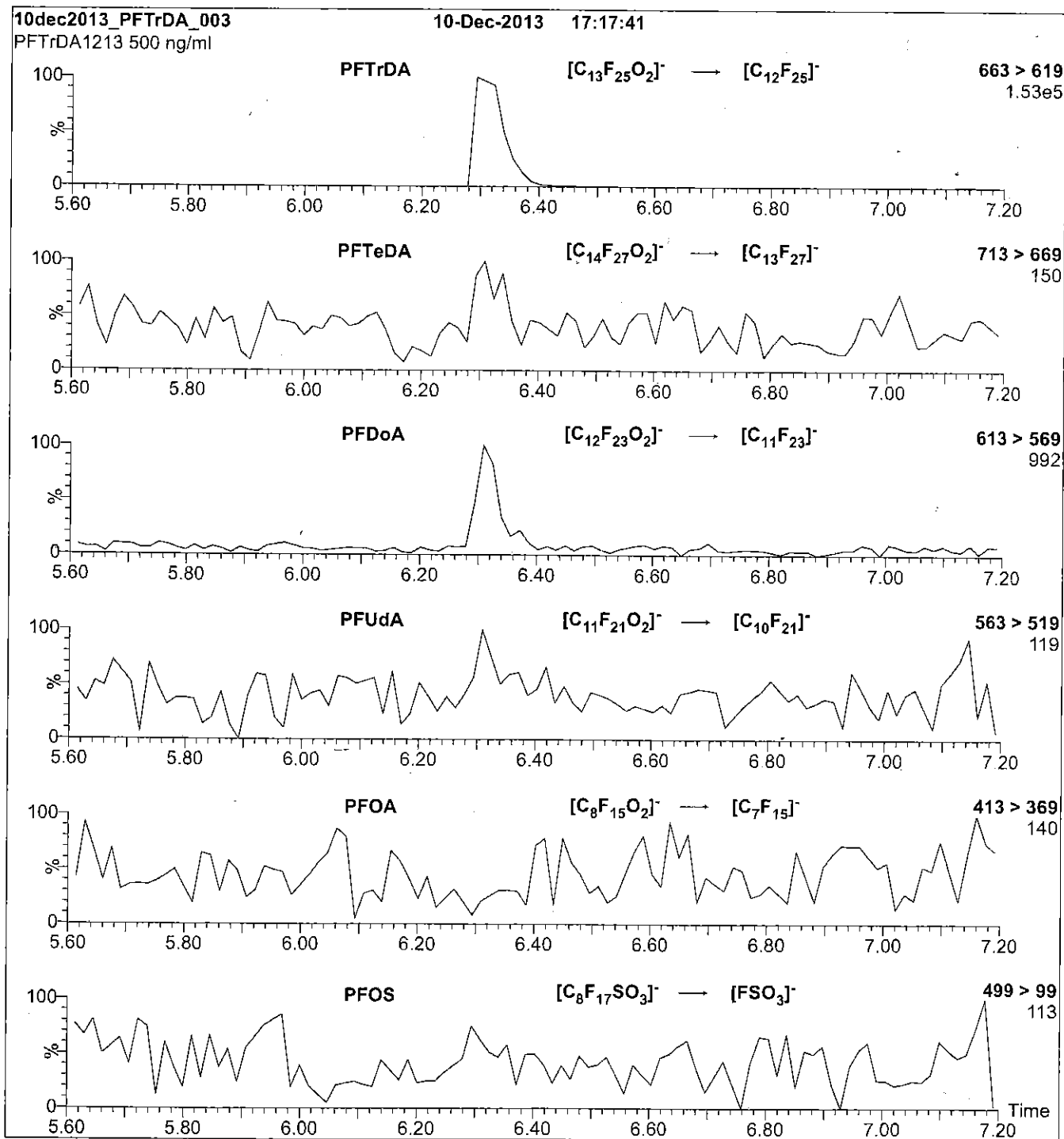
Flow: 300 μ l/min

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

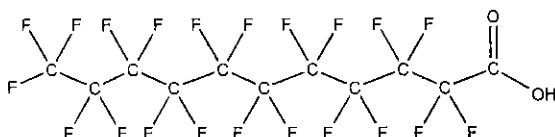


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA **LOT NUMBER:** PFUdA0815
COMPOUND: Perfluoro-n-undecanoic acid

STRUCTURE: **CAS #:** 2058-94-8



MOLECULAR FORMULA: C₁₁H_{F₂₁}O₂ **MOLECULAR WEIGHT:** 564.09
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/19/2015
EXPIRY DATE: (mm/dd/yyyy) 08/19/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

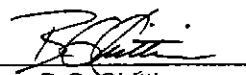
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 08/21/2015
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2, \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.

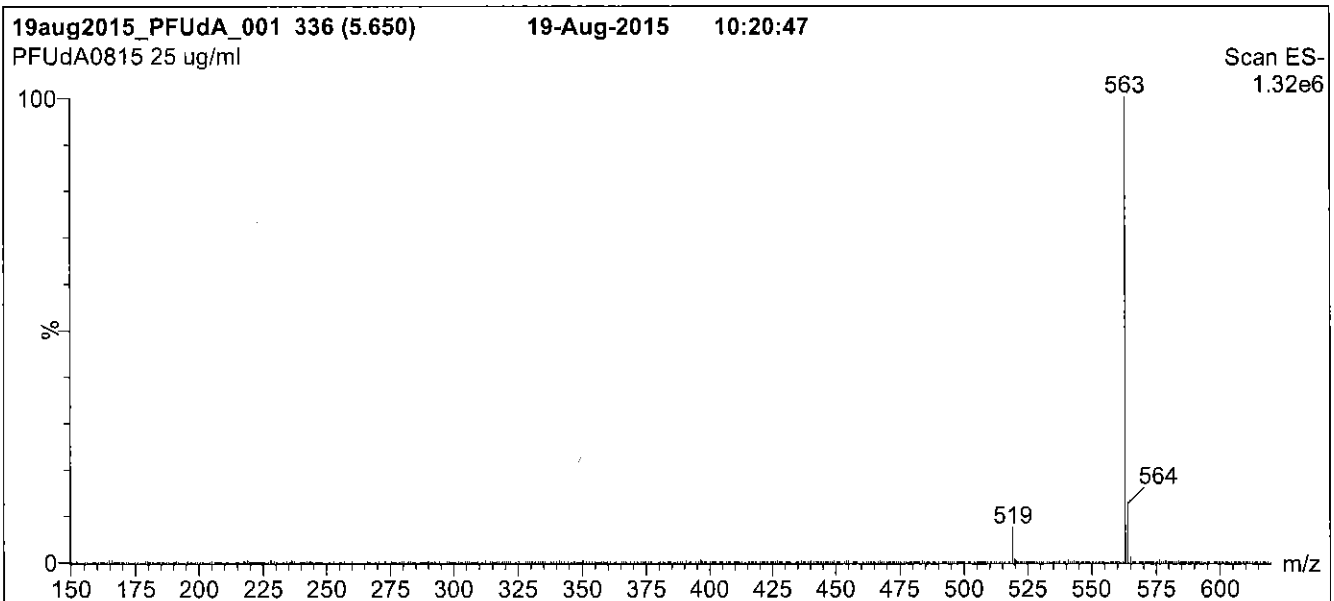
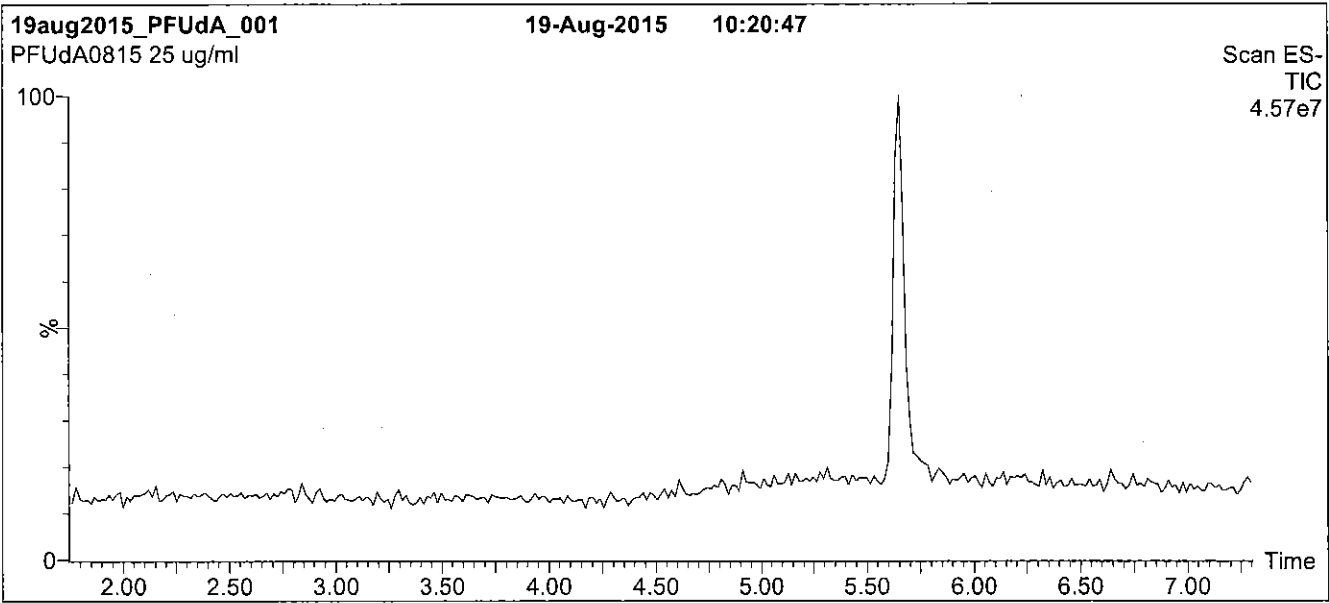
QUALITY MANAGEMENT:

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

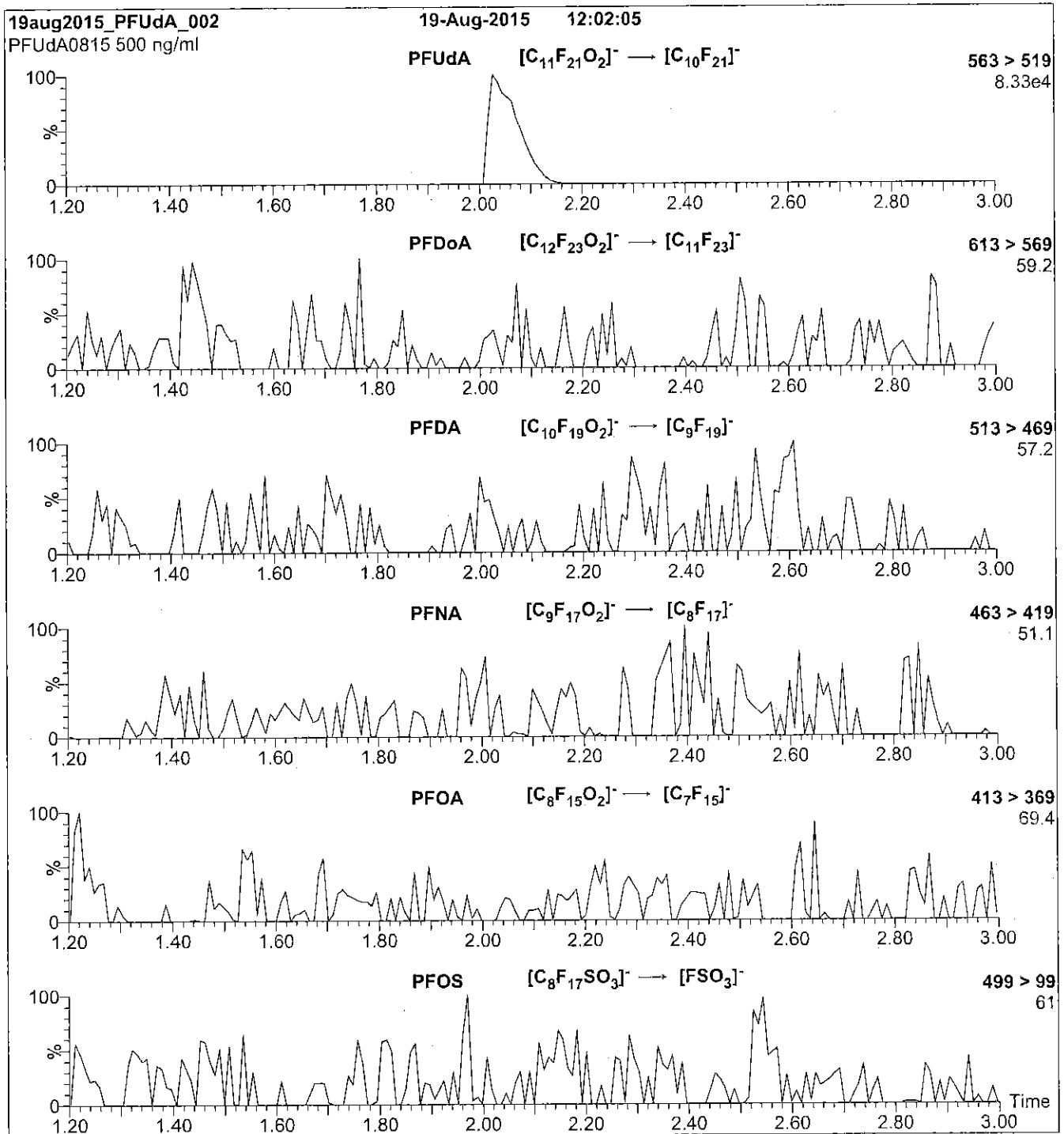
Flow: 300 μ l/min

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.: 320-20867-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
GW14-01R-0816	320-20867-1	78	112
GW14-01RP-0816	320-20867-2	70	117
GW14-02R-0816	320-20867-3	85	97
GW14-EB01-081016-G W	320-20867-4	119	114
GW14-FB01-081016	320-20867-5	128	118
GW14-06R-0816	320-20867-6	73	111
GW14-03R-0816	320-20867-7	59	116
GW14-05-0816	320-20867-8	80	114
GW14-07-0816	320-20867-9	87	114
GW14-08-0816	320-20867-10	71	121
	MB 320-122455/1-A	118	111
	LCS 320-122455/2-A	123	120
GW14-02R-0816 MS MS	320-20867-3 MS	80	108
GW14-02R-0816 MSD MSD	320-20867-3 MSD	84	107

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.: 320-20867-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 22AUG2016D_007_p1_e1.d
 Lab ID: LCS 320-122455/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	40.0	39.6	99	60-140	
Perfluorooctanesulfonic acid (PFOS)	37.1	33.3	90	60-140	
13C4 PFOA	100	123	123	25-150	
13C4 PFOS	95.6	114	120	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.: 320-20867-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 22AUG2016D_015_p1_e1.d
 Lab ID: 320-20867-3 MS Client ID: GW14-02R-0816 MS MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	39.7	3.6	38.4	88	60-140	M
Perfluorooctanesulfonic acid (PFOS)	36.8	16	36.6	57	60-140	J
13C4 PFOA	99.2	87	79.6	80	25-150	
13C4 PFOS	94.8	96	102	108	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.: 320-20867-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 22AUG2016D_016_p1_e1.d
 Lab ID: 320-20867-3 MSD Client ID: GW14-02R-0816 MSD MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanoic acid (PFOA)	39.5	41.5	96	8	30	60-140	
Perfluorooctanesulfonic acid (PFOS)	36.6	41.0	69	11	30	60-140	M
13C4 PFOA	98.7	83.2	84			25-150	
13C4 PFOS	94.3	101	107			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.: 320-20867-1
 SDG No.: _____
 Lab File ID: 22AUG2016D_006_p1_e1.d Lab Sample ID: MB 320-122455/1-A
 Matrix: Water Date Extracted: 08/16/2016 14:29
 Instrument ID: A8 Date Analyzed: 08/23/2016 06:24
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-122455/2-A	22AUG2016D_007_p1_e1.d	08/23/2016 06:31
GW14-01R-0816	320-20867-1	22AUG2016D_008_p1_e1.d	08/23/2016 06:39
GW14-01RP-0816	320-20867-2	22AUG2016D_009_p1_e1.d	08/23/2016 06:46
GW14-02R-0816	320-20867-3	22AUG2016D_010_p1_e1.d	08/23/2016 06:54
GW14-02R-0816 MS MS	320-20867-3 MS	22AUG2016D_015_p1_e1.d	08/23/2016 07:31
GW14-02R-0816 MSD MSD	320-20867-3 MSD	22AUG2016D_016_p1_e1.d	08/23/2016 07:39
GW14-EB01-081016-GW	320-20867-4	22AUG2016D_017_p1_e1.d	08/23/2016 07:46
GW14-FB01-081016	320-20867-5	22AUG2016D_018_p1_e1.d	08/23/2016 07:54
GW14-06R-0816	320-20867-6	22AUG2016D_019_p1_e1.d	08/23/2016 08:01
GW14-03R-0816	320-20867-7	22AUG2016D_020_p1_e1.d	08/23/2016 08:09
GW14-05-0816	320-20867-8	22AUG2016D_021_p1_e1.d	08/23/2016 08:16
GW14-07-0816	320-20867-9	22AUG2016D_022_p1_e1.d	08/23/2016 08:24
GW14-08-0816	320-20867-10	22AUG2016D_023_p1_e1.d	08/23/2016 08:31

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-01R-0816 Lab Sample ID: 320-20867-1
 Matrix: Water Lab File ID: 22AUG2016D_008_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 10:30
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 254.2 (mL) Date Analyzed: 08/23/2016 06:39
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.2	J M	2.5	2.0	0.74
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.7		3.9	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	78		25-150
STL00991	13C4 PFOS	112		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_008_p1_e1.d
 Lims ID: 320-20867-A-1-A
 Client ID: GW14-01R-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 06:39:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 15:33:41 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 14:14:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.747	2.798	-0.051	1.000	68569	0.6269			319	M
413 > 169.0	2.747	2.798	-0.051	1.000	30459		2.25(0.90-1.10)		2597	M
D 14 13C4 PFOA										
417 > 372.0	2.747	2.798	-0.051		3766291	39.1		78.2	310405	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.004	3.110	-0.105	1.000	345044	3.38			7318	
499 > 99.0	3.004	3.110	-0.105	1.000	71193		4.85(0.90-1.10)		734	
D 17 13C4 PFOS										
503 > 80.0	3.117	3.177	-0.060		4393826	53.5			112	178406

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_008_p1_e1.d

Injection Date: 23-Aug-2016 06:39:00

Instrument ID: A8

Lims ID: 320-20867-A-1-A

Lab Sample ID: 320-20867-1

Client ID: GW14-01R-0816

Operator ID: A8

ALS Bottle#: 0

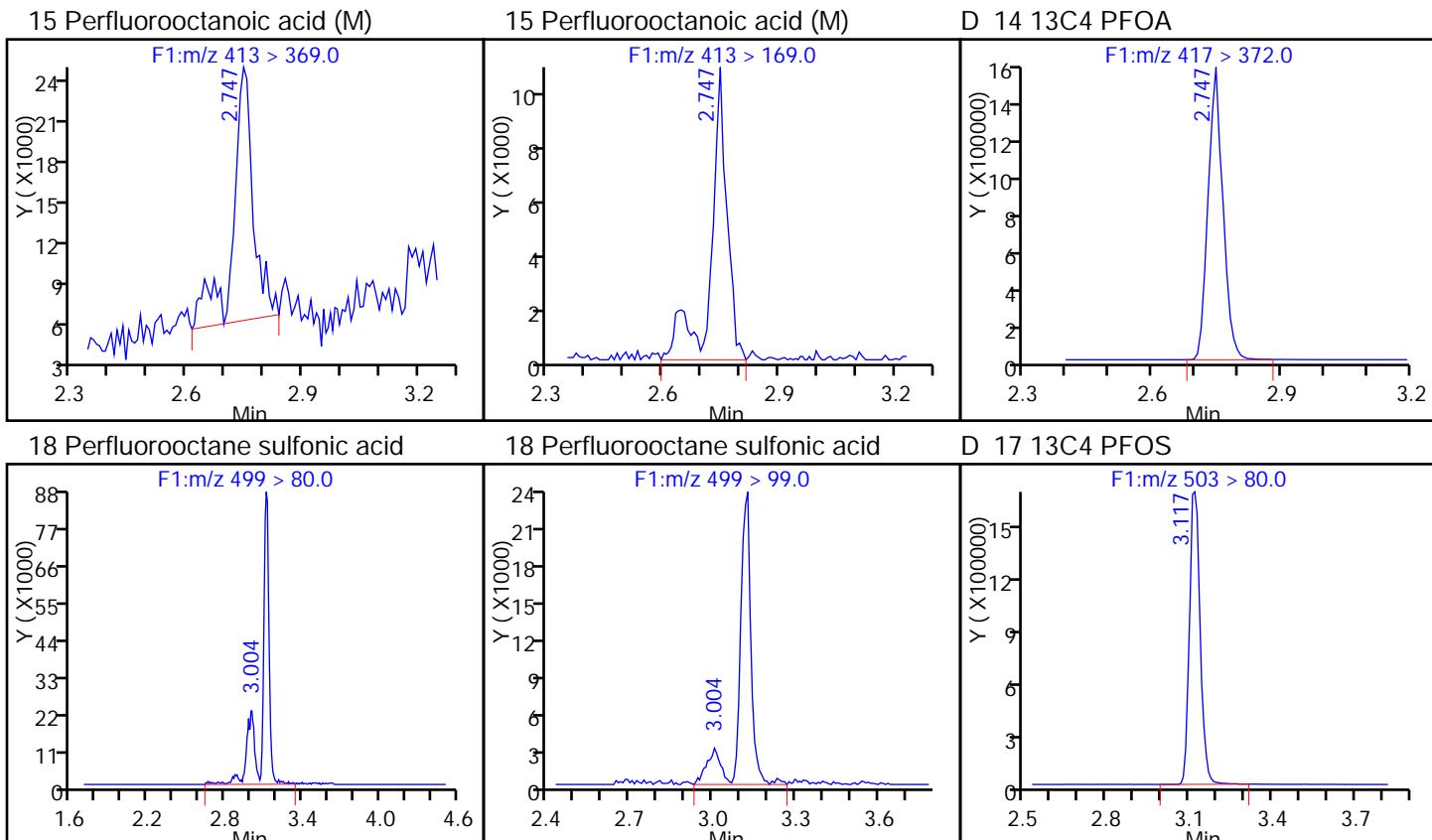
Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

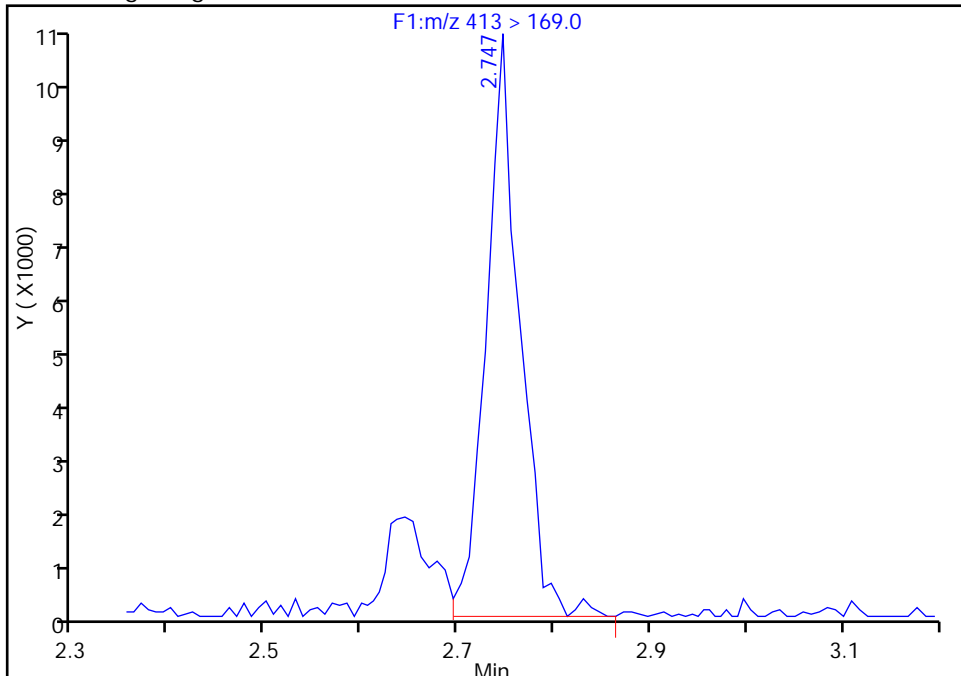
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_008_p1_e1.d
Injection Date: 23-Aug-2016 06:39:00 Instrument ID: A8
Lims ID: 320-20867-A-1-A Lab Sample ID: 320-20867-1
Client ID: GW14-01R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 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

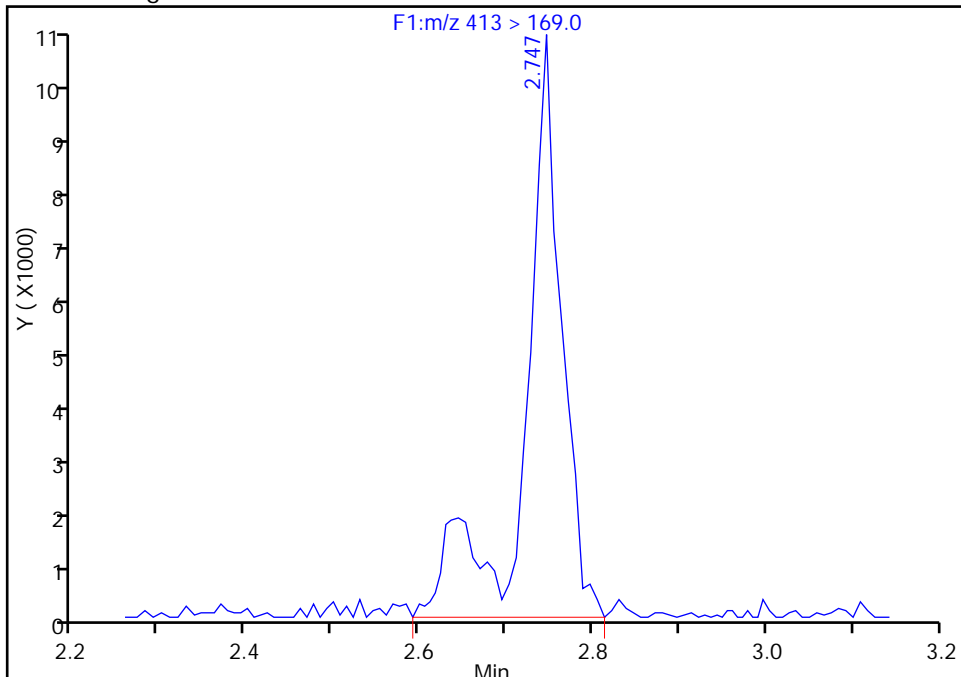
RT: 2.75
Area: 25027
Amount: 0.763491
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 30459
Amount: 0.626905
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 26-Aug-2016 15:53:48
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

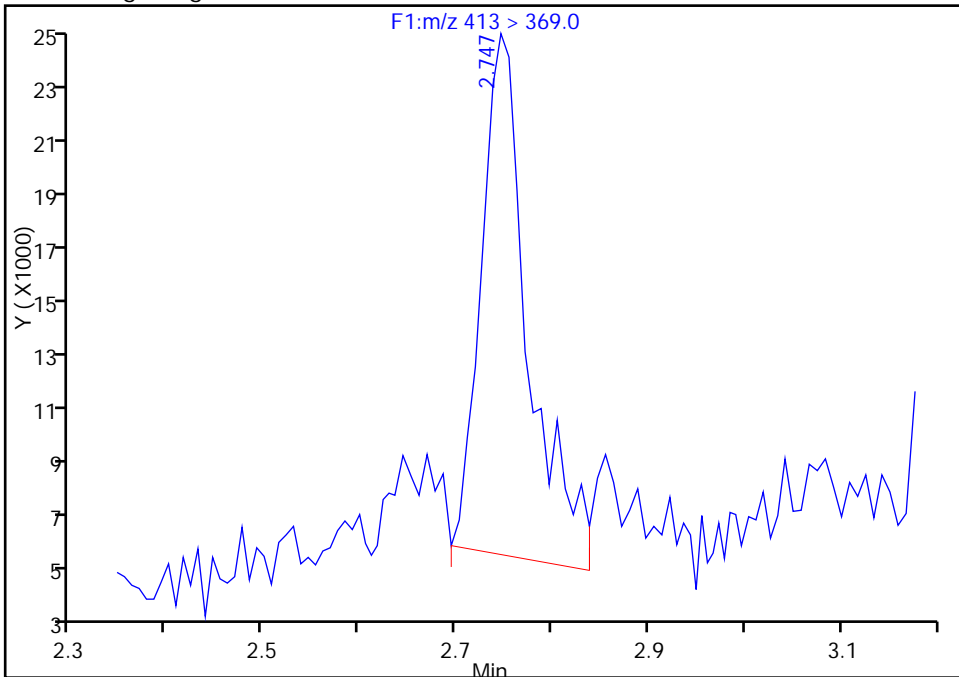
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_008_p1_e1.d
Injection Date: 23-Aug-2016 06:39:00 Instrument ID: A8
Lims ID: 320-20867-A-1-A Lab Sample ID: 320-20867-1
Client ID: GW14-01R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 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

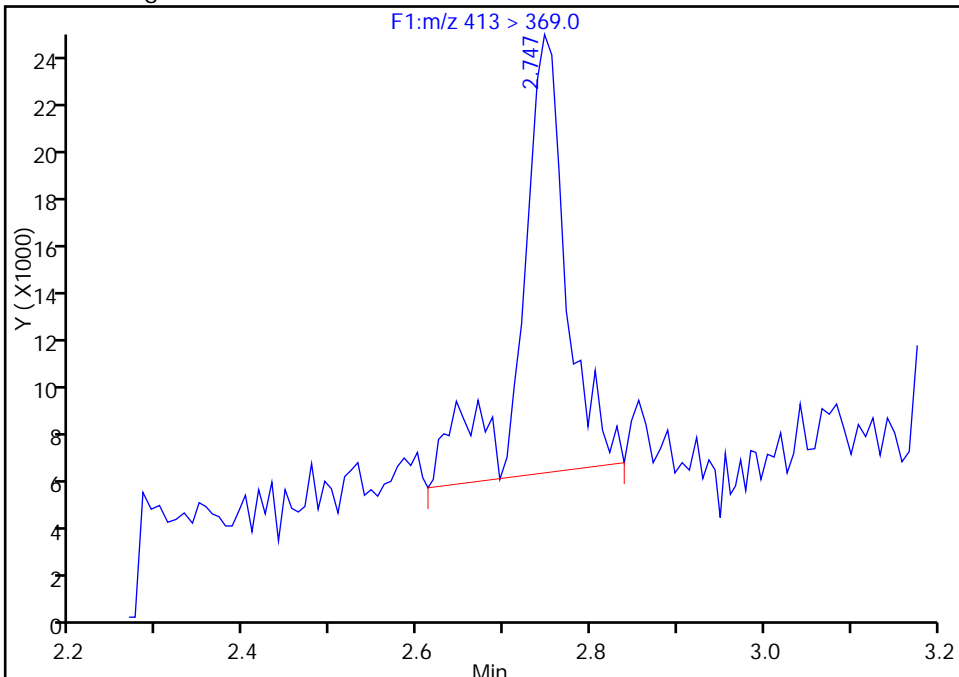
RT: 2.75
Area: 64954
Amount: 0.763491
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 68569
Amount: 0.626905
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-01RP-0816 Lab Sample ID: 320-20867-2
 Matrix: Water Lab File ID: 22AUG2016D_009_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 10:35
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 275.6(mL) Date Analyzed: 08/23/2016 06:46
 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.: 123791 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)	3.6	M	3.6	2.7	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	70		25-150
STL00991	13C4 PFOS	117		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_009_p1_e1.d
 Lims ID: 320-20867-A-2-A
 Client ID: GW14-01RP-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 06:46:00 ALS Bottle#: 0 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 15:33:41 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 14:16:15

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	37945	0.2803			204	M
413 > 169.0	2.741	2.798	-0.057	1.003	31487		1.21(0.90-1.10)		3220	M
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		3356173	34.8		69.7	313176	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.113	3.110	0.004	1.000	212953	2.00			6285	M
499 > 99.0	3.000	3.110	-0.109	0.964	42902		4.96(0.90-1.10)		1205	
D 17 13C4 PFOS										
503 > 80.0	3.121	3.177	-0.056		4578297	55.8			117	169884

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_009_p1_e1.d

Injection Date: 23-Aug-2016 06:46:00

Instrument ID: A8

Lims ID: 320-20867-A-2-A

Lab Sample ID: 320-20867-2

Client ID: GW14-01RP-0816

Operator ID: A8

ALS Bottle#: 0

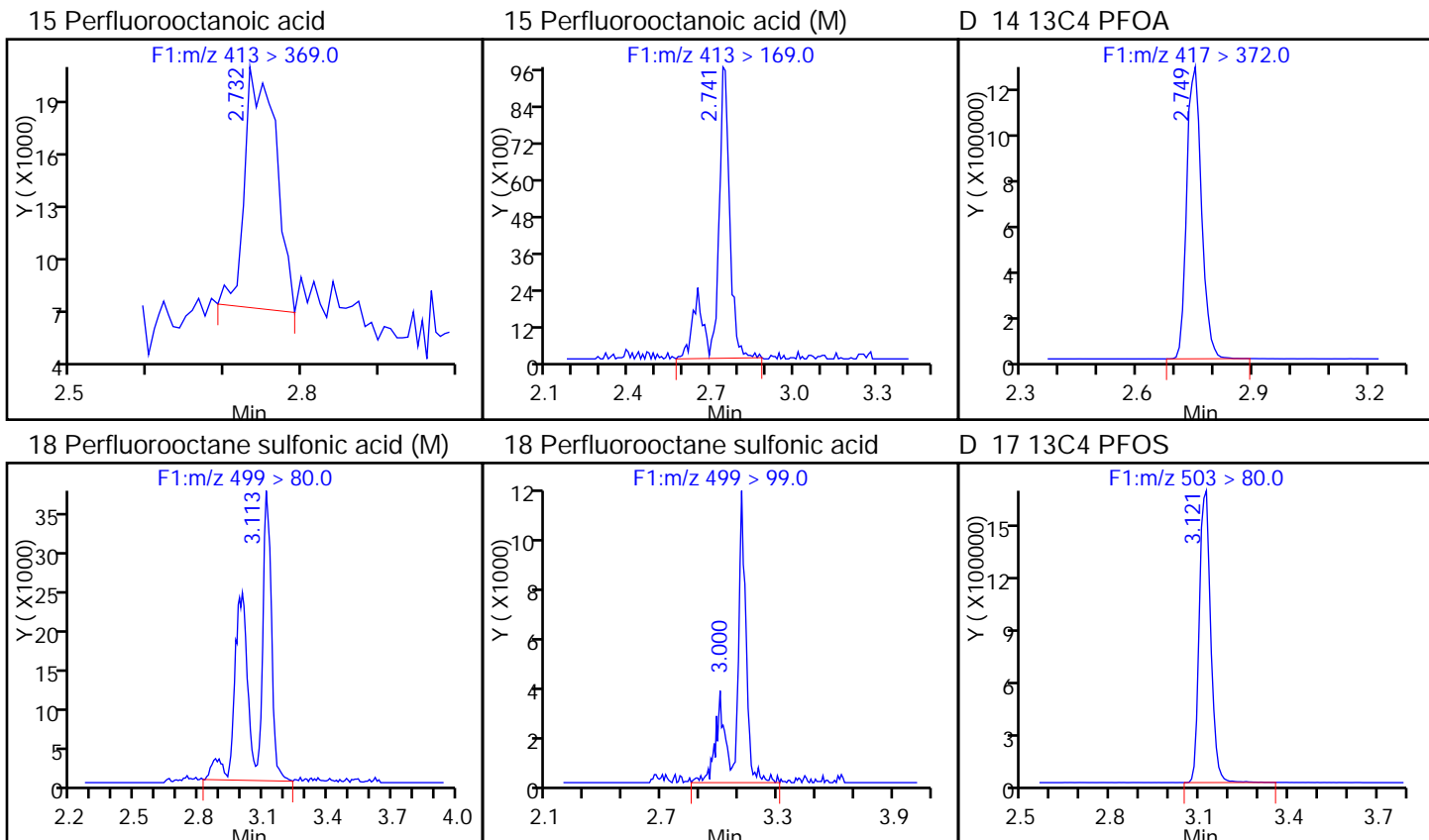
Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

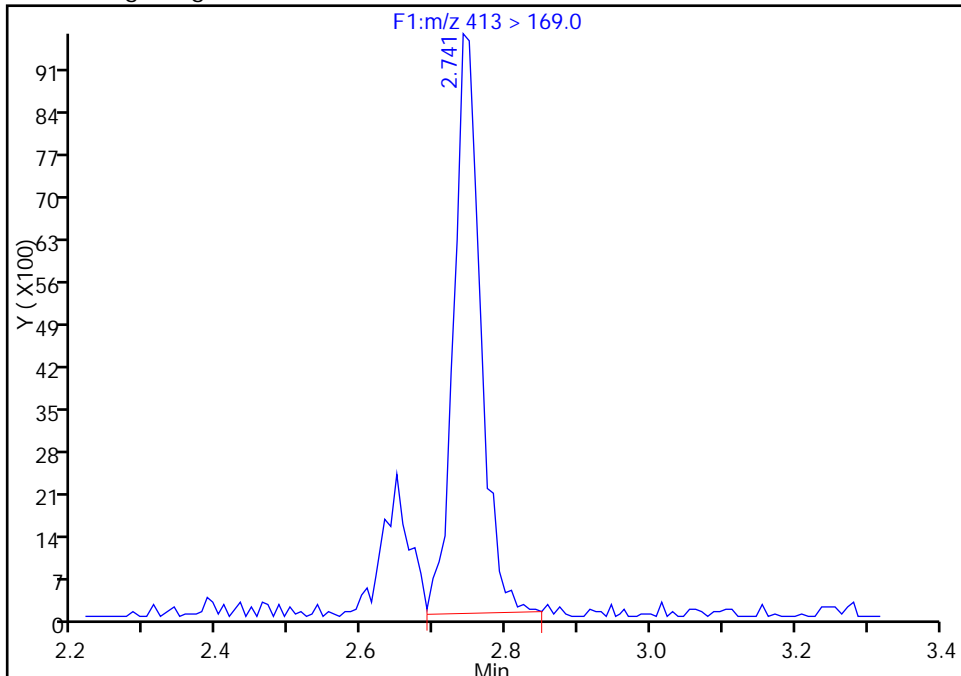
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_009_p1_e1.d
Injection Date: 23-Aug-2016 06:46:00 Instrument ID: A8
Lims ID: 320-20867-A-2-A Lab Sample ID: 320-20867-2
Client ID: GW14-01RP-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 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

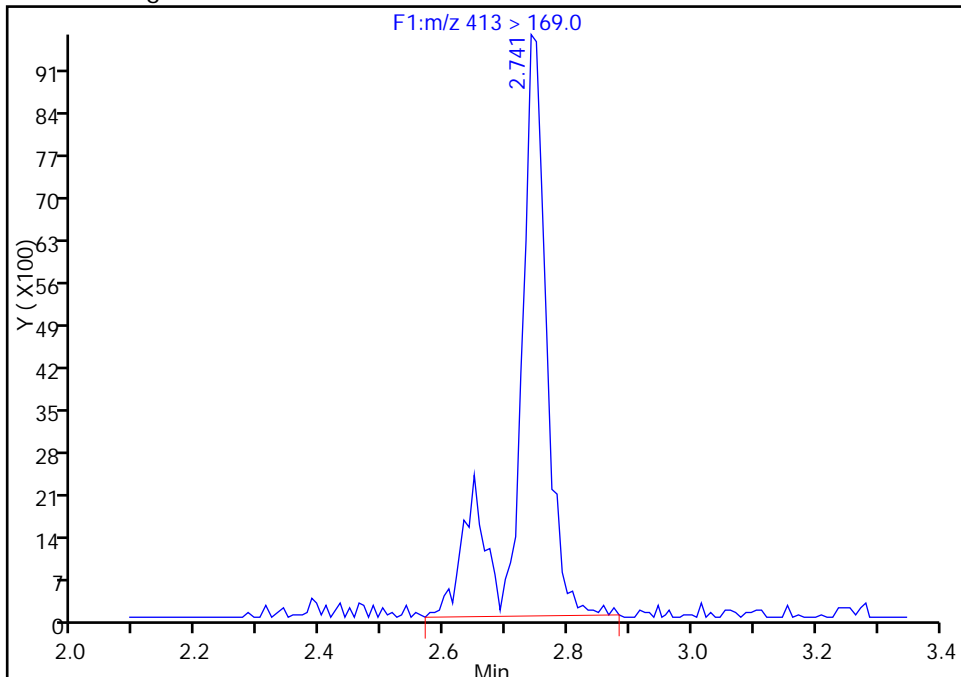
RT: 2.74
Area: 24939
Amount: 0.500521
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 31487
Amount: 0.280307
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 26-Aug-2016 15:56:35
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

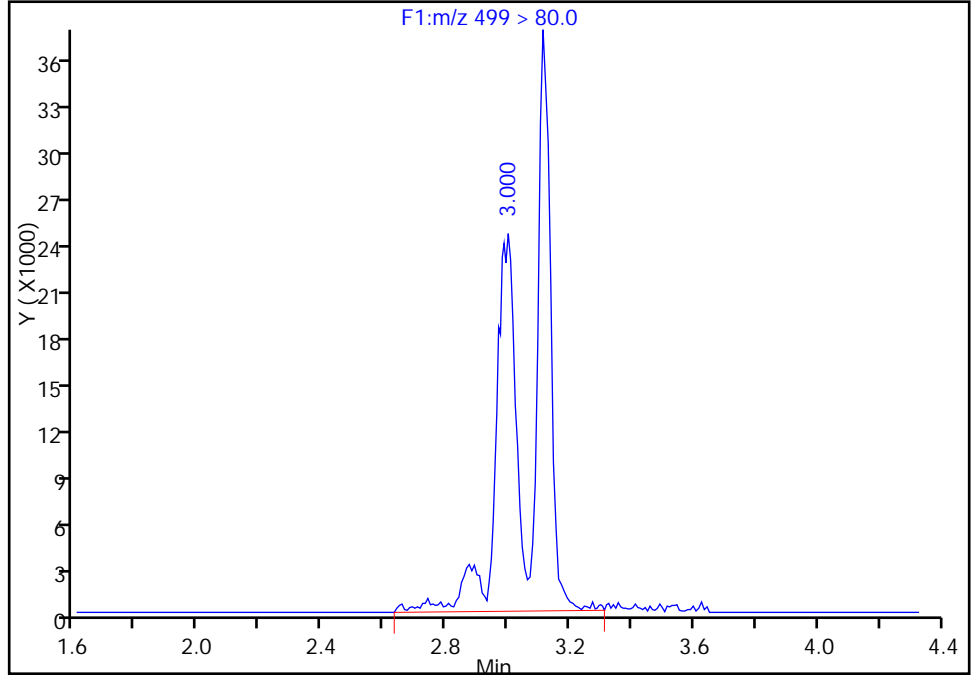
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Injection Date: 23-Aug-2016 06:46:00 Instrument ID: A8
Lims ID: 320-20867-A-2-A Lab Sample ID: 320-20867-2
Client ID: GW14-01RP-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

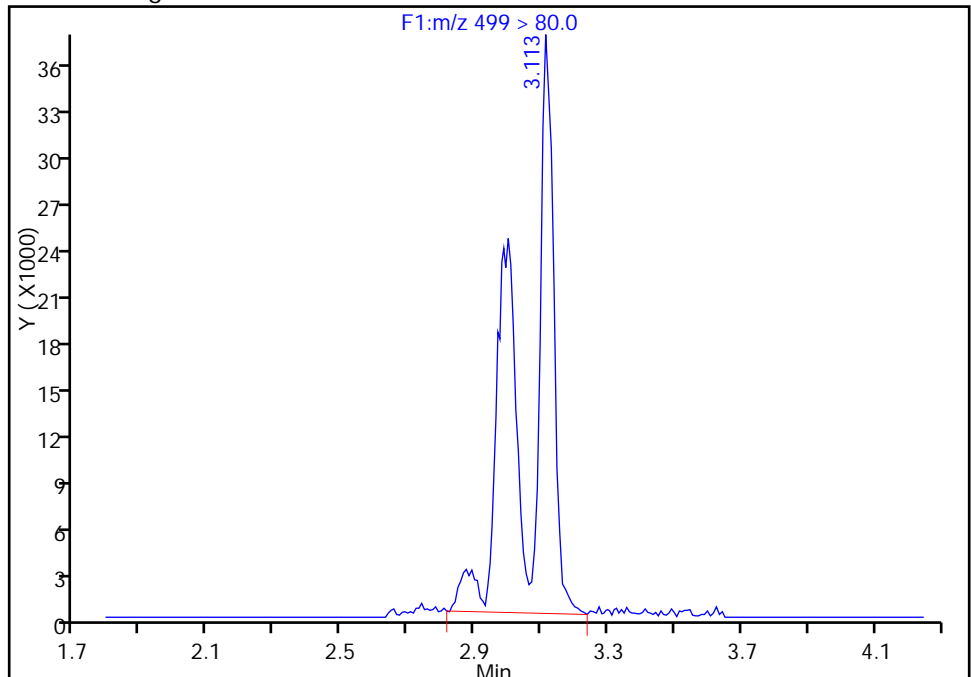
RT: 3.00
Area: 224015
Amount: 2.108943
Amount Units: ng/ml

Processing Integration Results



RT: 3.11
Area: 212953
Amount: 2.004802
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 14:16:15
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-02R-0816 Lab Sample ID: 320-20867-3
 Matrix: Water Lab File ID: 22AUG2016D_010_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 10:35
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 243.1(mL) Date Analyzed: 08/23/2016 06:54
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	3.6	M	2.6	2.1	0.77
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	J	4.1	3.1	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	85		25-150
STL00991	13C4 PFOS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_010_p1_e1.d
 Lims ID: 320-20867-A-3-A
 Client ID: GW14-02R-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 06:54:00 ALS Bottle#: 0 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 15:33:41 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 14:23:46

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	1.513	1.522	-0.009		3880434	28.6		57.2	289878	
1 Perfluorobutyric acid										
212.9 > 169.0	1.513	1.524	-0.011	1.000	56775	0.8467			163	
D 4 13C5-PFPeA										
267.9 > 223.0	1.774	1.797	-0.023		4822405	44.7		89.5	316913	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.774	1.797	-0.023	1.000	65764	0.6668			270	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.808	1.837	-0.029	1.000	62809	0.3151				
298.9 > 99.0	1.808	1.837	-0.029	1.000	27742		2.26(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		4354884	44.9		89.8	262762	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	64019	0.7606			636	
12 Perfluoroheptanoic acid										
363 > 319.0	2.393	2.427	-0.034	1.000	54226	0.6011			508	
D 11 13C4-PFHpA										
367 > 322.0	2.386	2.430	-0.044		4313305	44.7		89.4	292627	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.401	2.446	-0.045	1.000	356085	2.49				
D 10 18O2 PFHxS										
403 > 84.0	2.401	2.446	-0.045		6072985	54.0		114	411849	
D 47 M2-6:2FTS										
429 > 409.0	2.715	2.749	-0.034		854	0.0154		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.724	2.751	-0.027	1.000	9903	NR				

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	2.749	2.798	-0.049	1.000	165719	1.76			780	M
413 > 169.0	2.749	2.798	-0.049	1.000	95094		1.74(0.90-1.10)		6032	M
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		4073376	42.3		84.6	297916	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.749	2.807	-0.058	1.000	20339	0.2184				
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.000	3.110	-0.109	1.000	672356	7.59			34110	
499 > 99.0	3.008	3.110	-0.101	1.003	145223		4.63(0.90-1.10)		2495	
D 19 13C5 PFNA										
468 > 423.0	3.121	3.177	-0.056		2973770	37.4		74.8	217682	
D 17 13C4 PFOS										
503 > 80.0	3.121	3.177	-0.056		3818682	46.5		97.3	195874	
20 Perfluorononanoic acid										
463 > 419.0	3.121	3.183	-0.062	1.000	23554	0.3964			499	
D 21 13C8 FOSA										
506 > 78.0	3.451	3.474	-0.023		381687	2.55		5.1	48808	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.451	3.504	-0.053	1.000	2979	NR				
D 23 13C2 PFDA										
515 > 470.0	3.482	3.546	-0.064		1995915	27.4		54.9	253579	
D 46 d5-NEtFOSAA										
589 > 419.0	3.845	3.843	0.002		733	0.0253		0.0		
D 27 13C2 PFUnA										
565 > 520.0	3.809	3.880	-0.071		1245137	22.4		44.8	229754	
D 52 d-N-MeFOSA-M										
515 > 169.0	3.713	3.957	-0.244		475	0.0124		0.0		
D 30 13C2 PFDoA										
615 > 570.0	4.105	4.183	-0.078		1108521	20.8		41.7	135586	
29 Perfluorododecanoic acid										
613 > 569.0	4.097	4.185	-0.088	1.000	1305	0.0594			85.0	
D 32 13C2-PFTeDA										
715 > 670.0	4.615	4.697	-0.082		1616494	34.3		68.5	280513	
D 34 13C2-PFHxDA										
815 > 770.0	5.020	5.125	-0.105		2547072	38.7		77.4	349759	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.223	5.127	0.096	1.000	362	0.0132			4.8	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.377	5.509	-0.132	1.000	1088	0.4194			12.2	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_010_p1_e1.d

Injection Date: 23-Aug-2016 06:54:00

Instrument ID: A8

Lims ID: 320-20867-A-3-A

Lab Sample ID: 320-20867-3

Client ID: GW14-02R-0816

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

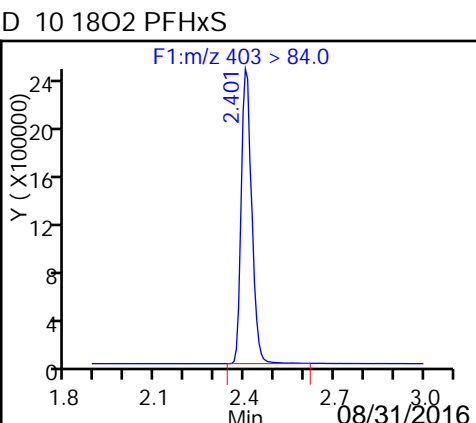
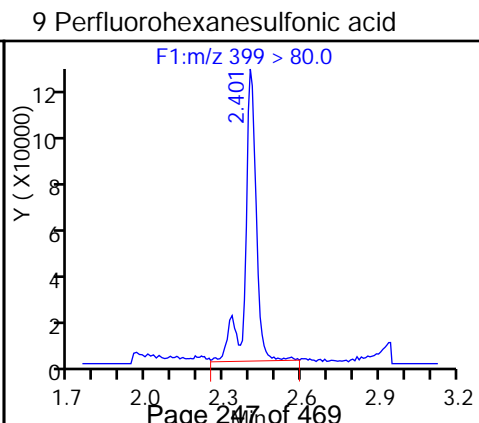
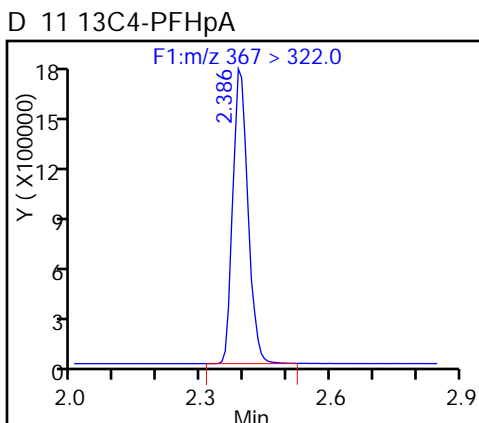
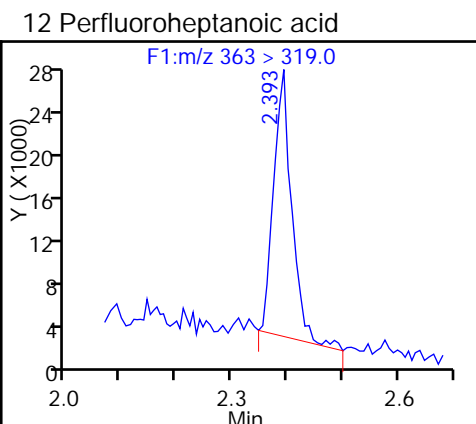
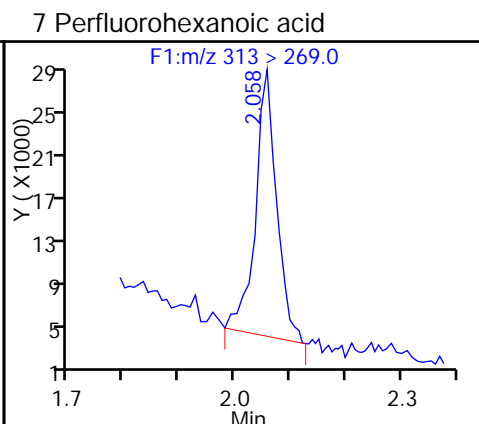
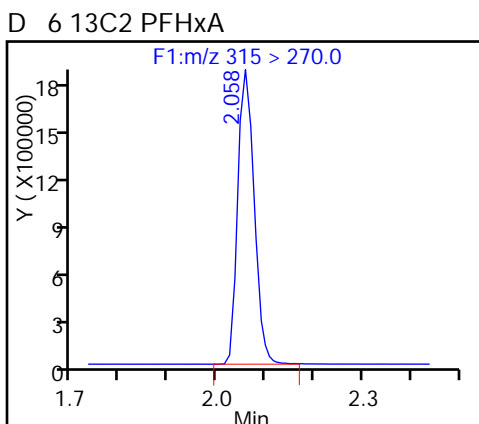
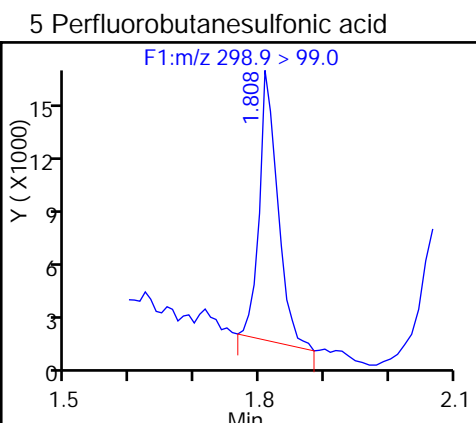
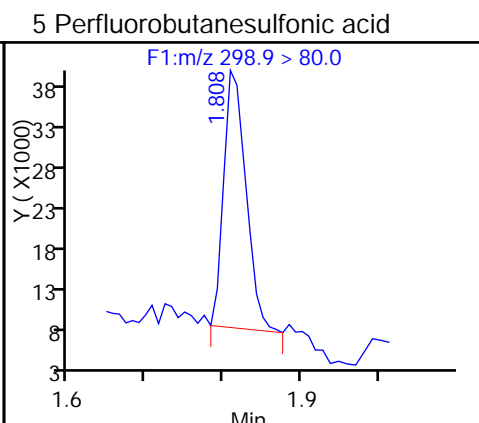
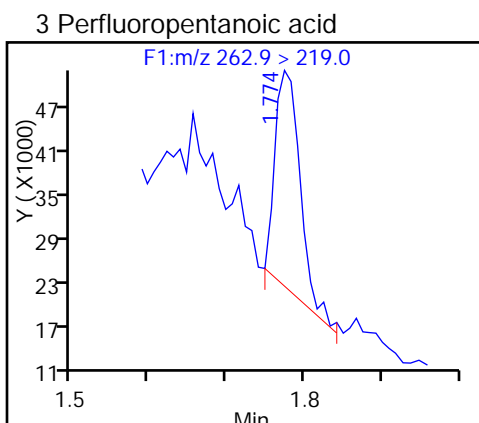
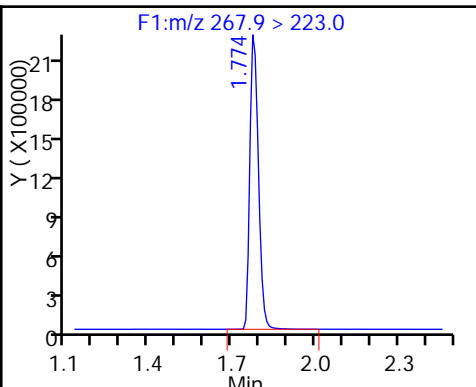
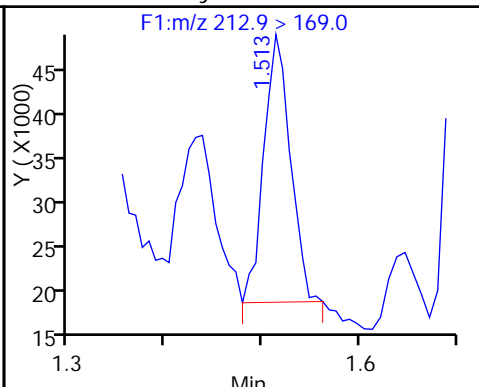
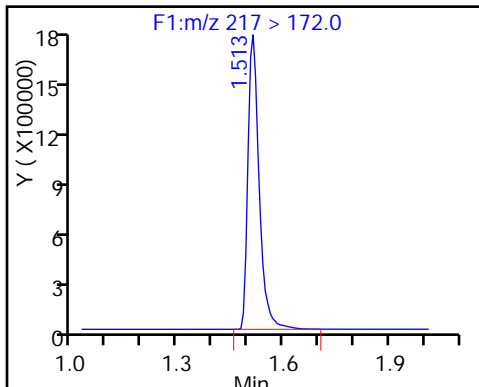
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

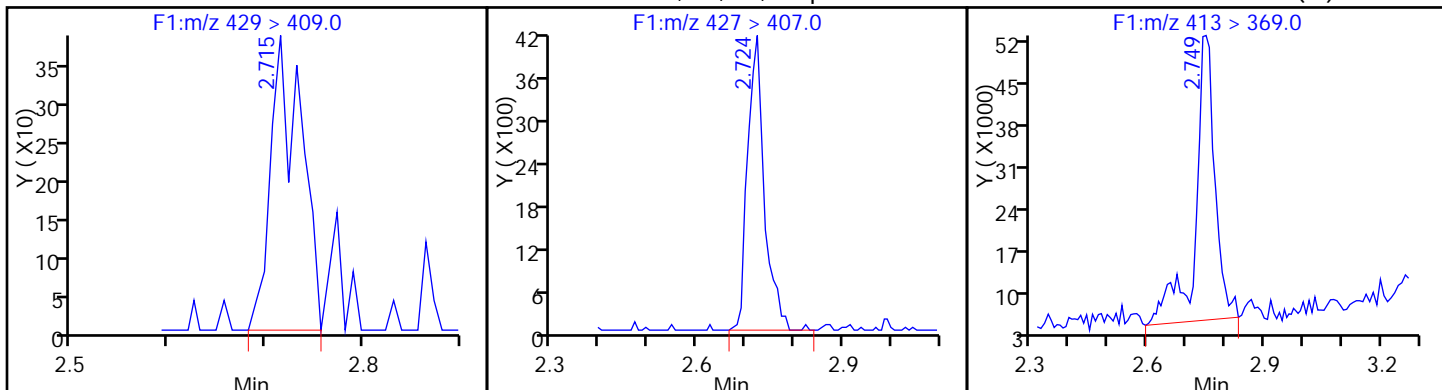
1 Perfluorobutyric acid

D 4 13C5-PFPeA



D 47 M2-6:2FTS

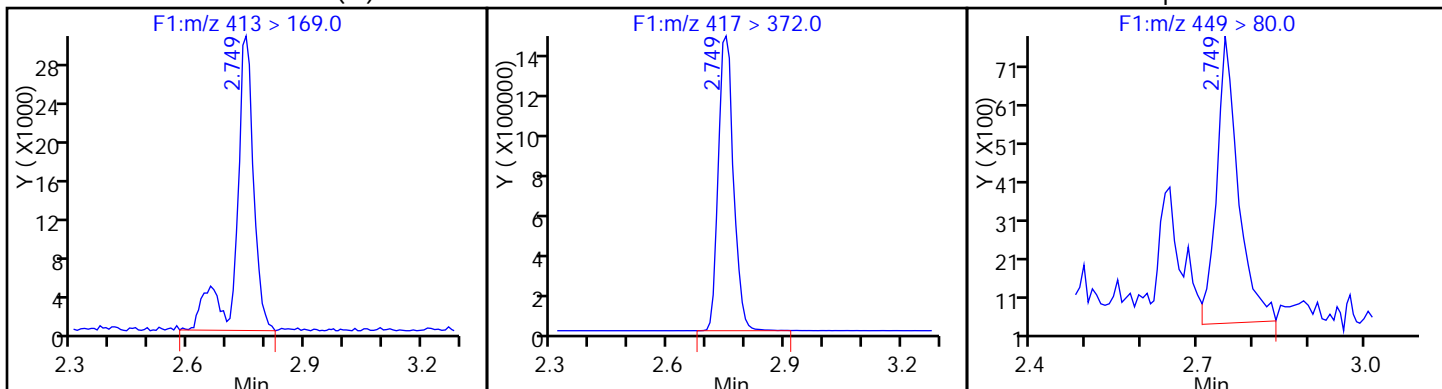
48 Sodium 1H,1H,2H,2H-perfluorooctane15 Perfluorooctanoic acid (M)



15 Perfluorooctanoic acid (M)

D 14 13C4 PFOA

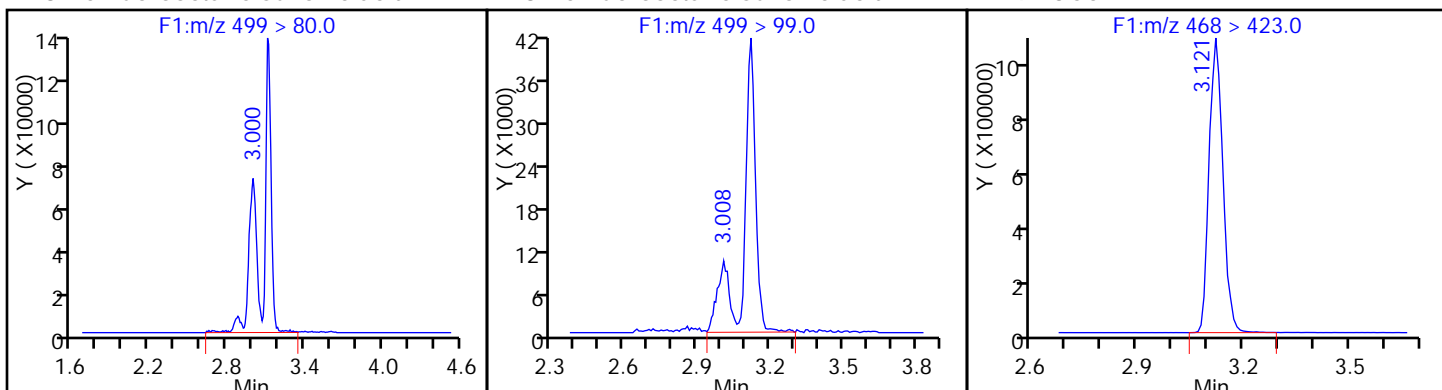
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

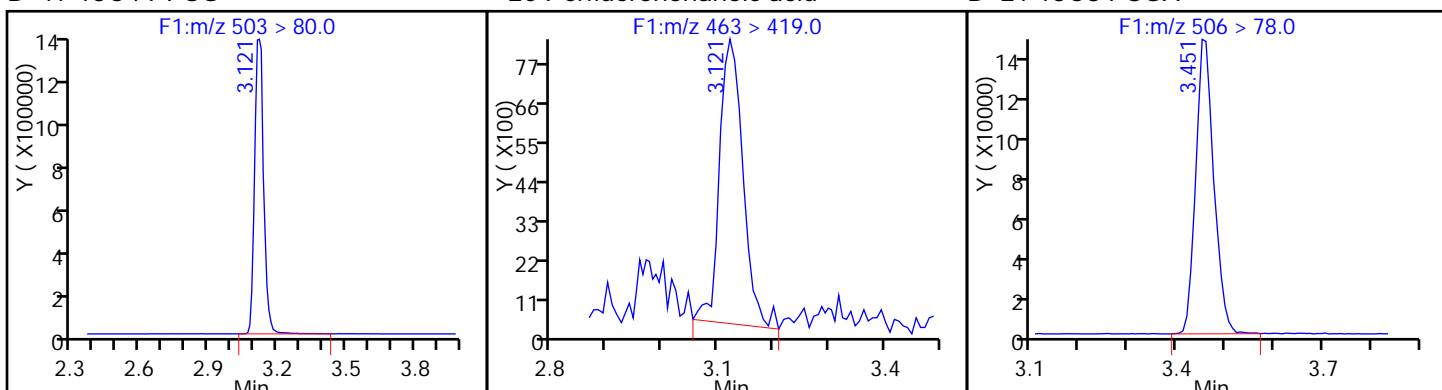
D 19 13C5 PFNA



D 17 13C4 PFOS

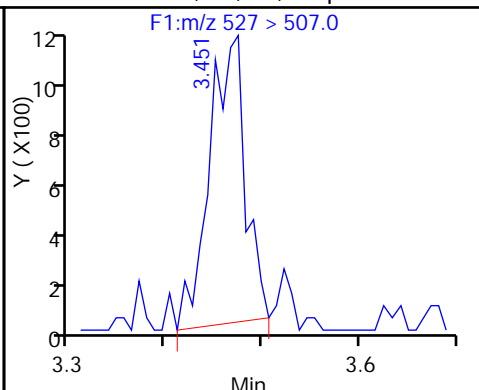
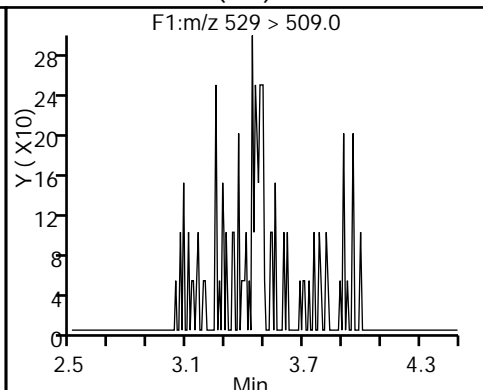
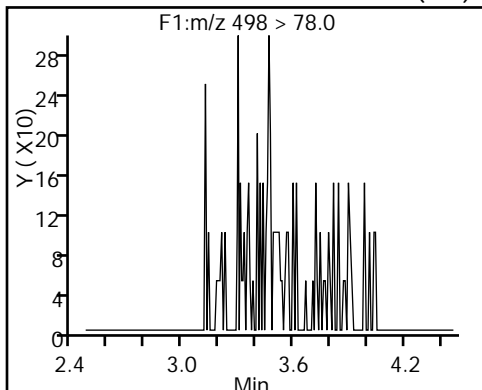
20 Perfluorononanoic acid

D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide (ND) D 42 M2-8:2FTS (ND)

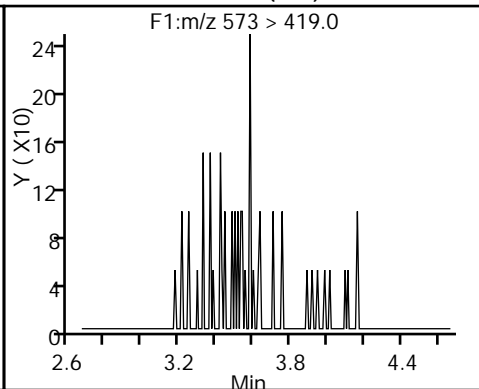
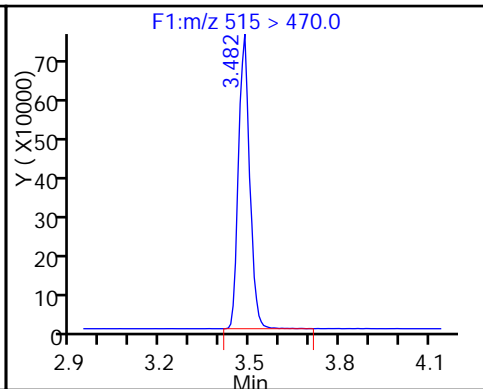
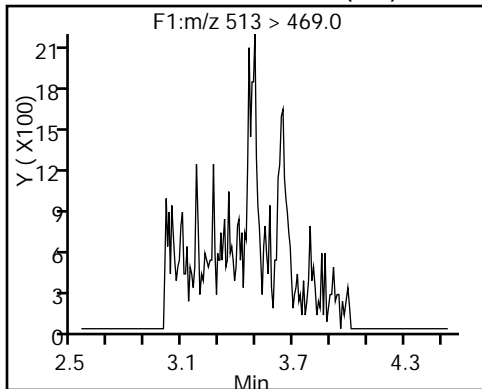
43 Sodium 1H,1H,2H,2H-perfluorooctane



24 Perfluorodecanoic acid (ND)

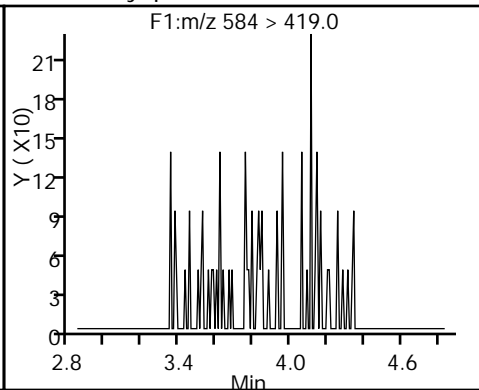
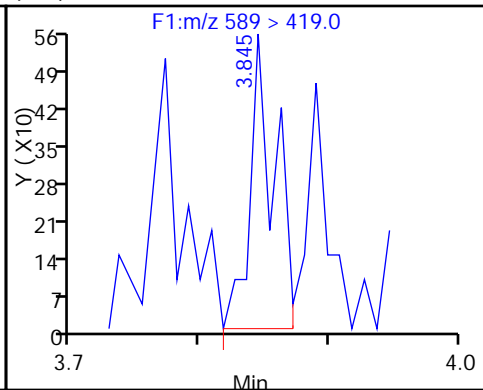
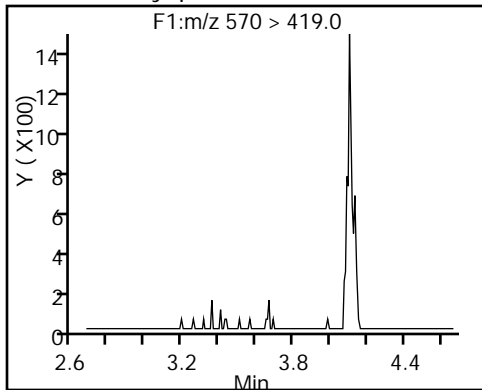
D 23 13C2 PFDA

D 45 d3-NMeFOSAA (ND)



44 N-methyl perfluorooctane sulfonamide (ND) d5-NEtFOSAA

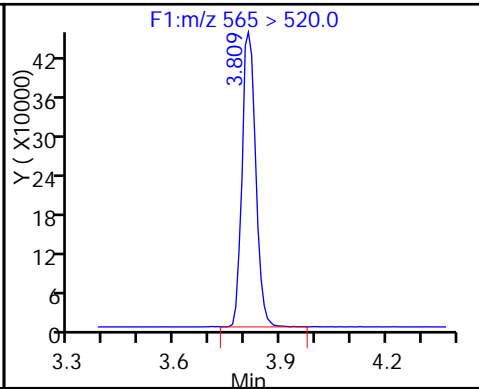
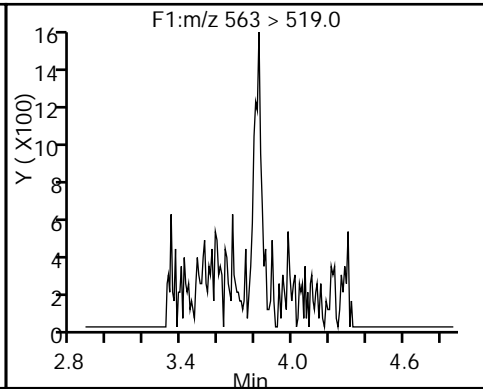
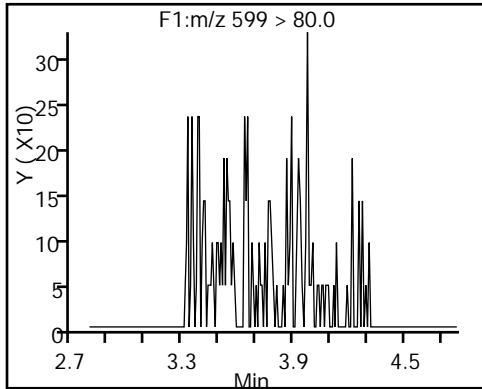
49 N-ethyl perfluorooctane sulfonamide (ND)



26 Perfluorodecane Sulfonic acid (ND)

28 Perfluoroundecanoic acid (ND)

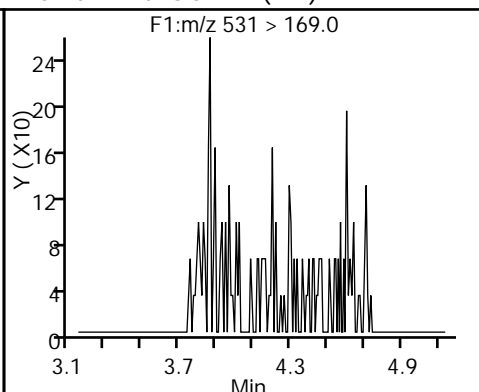
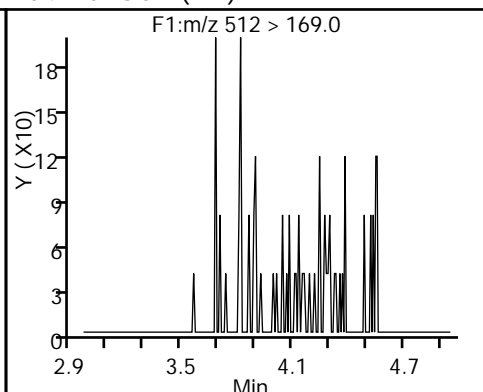
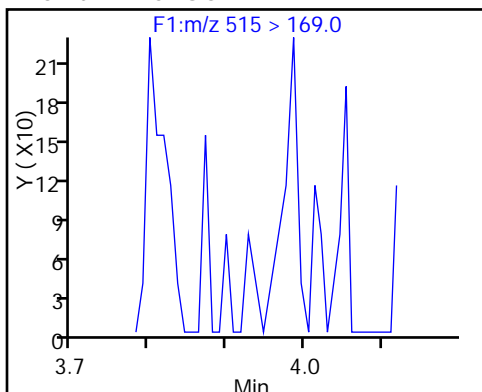
D 27 13C2 PFUnA



D 52 d-N-MeFOSA-M

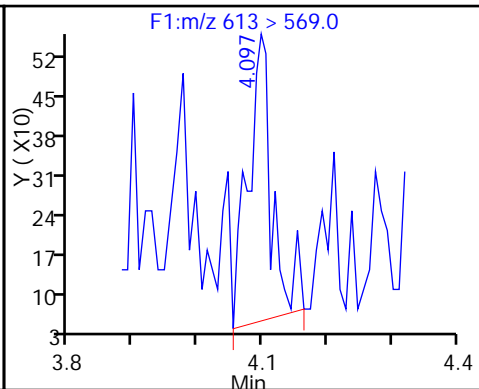
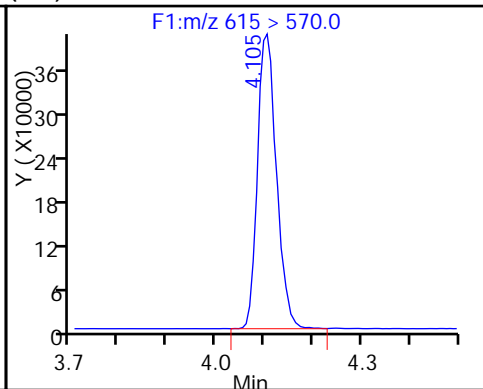
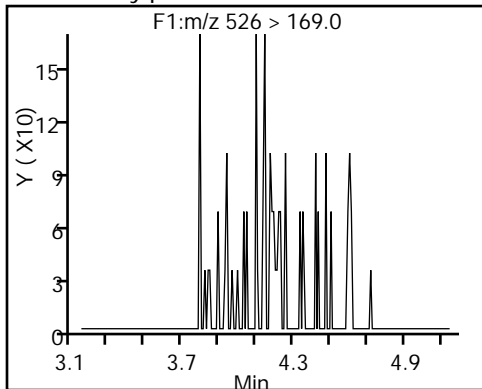
54 MeFOSA (ND)

D 51 d-N-EtFOSA-M (ND)



53 N-ethylperfluoro-1-octanesulfonami (ND) 13C2 PFDaA

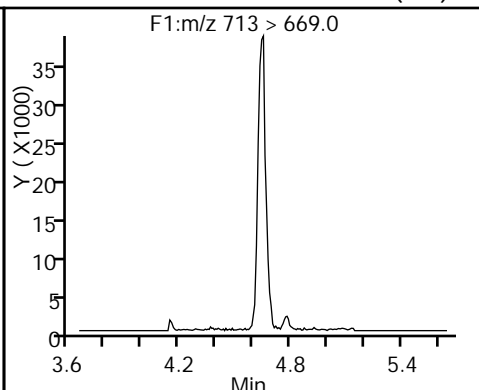
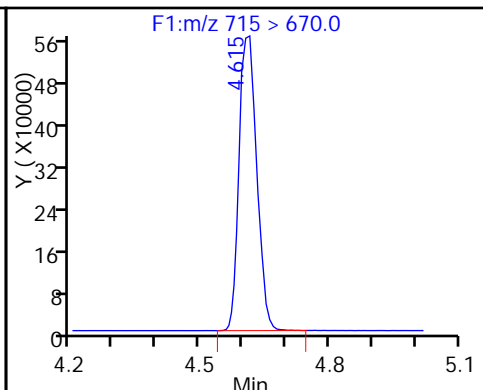
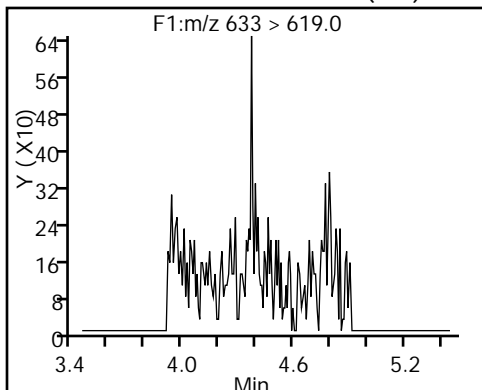
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid (ND)

D 32 13C2-PFTeDA

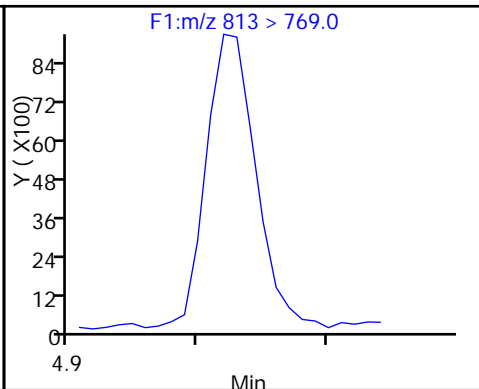
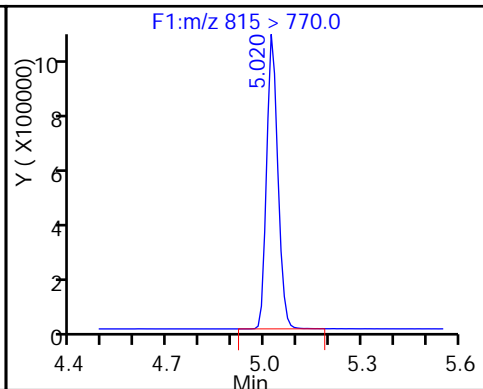
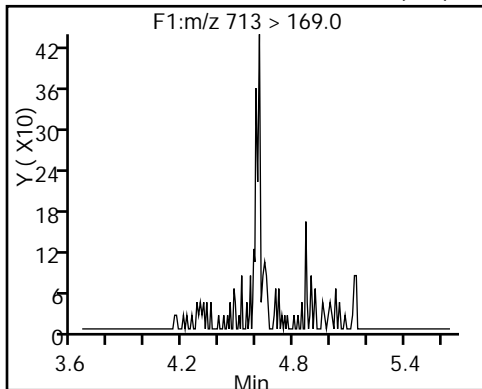
33 Perfluorotetradecanoic acid (ND)



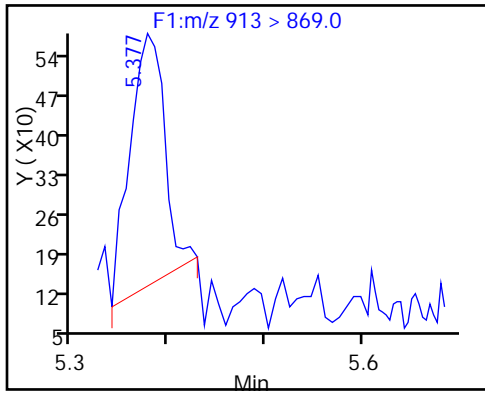
33 Perfluorotetradecanoic acid (ND)

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

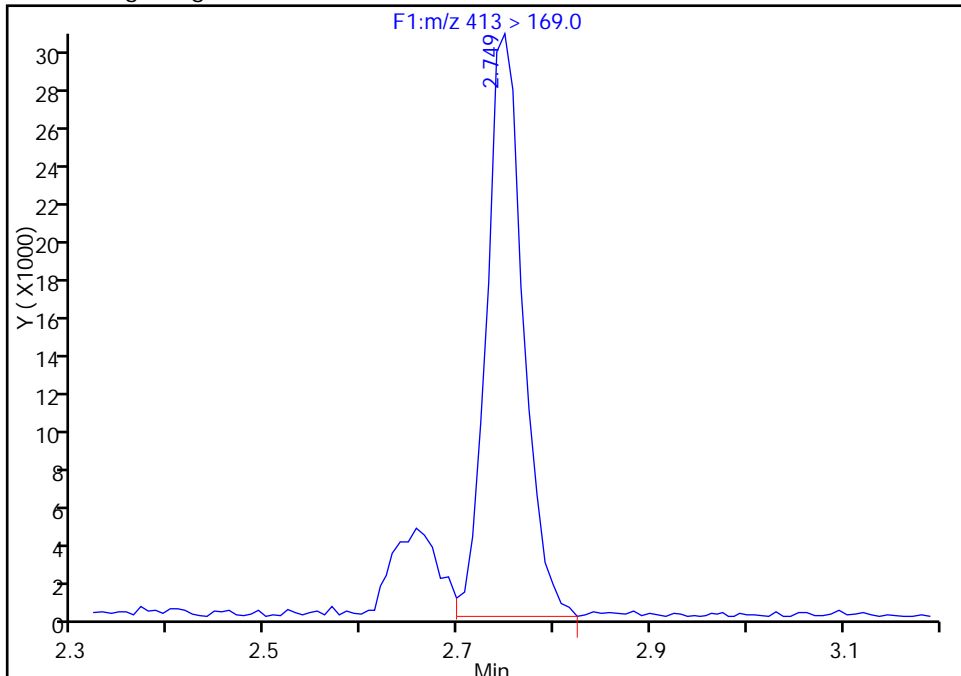
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Injection Date: 23-Aug-2016 06:54:00 Instrument ID: A8
Lims ID: 320-20867-A-3-A Lab Sample ID: 320-20867-3
Client ID: GW14-02R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

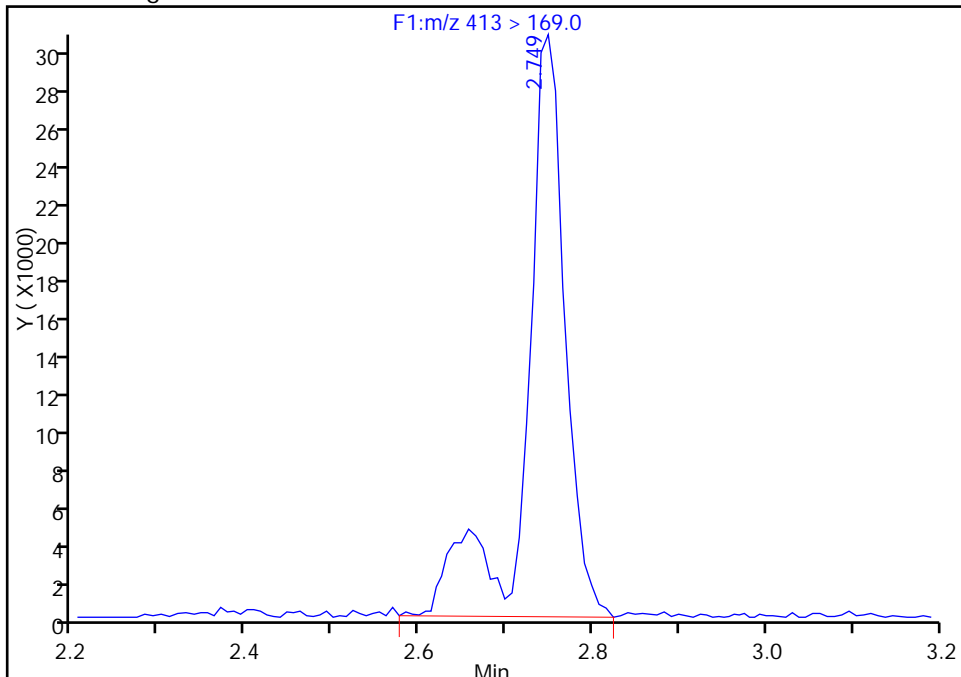
RT: 2.75
Area: 80069
Amount: 1.405622
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 95094
Amount: 1.755993
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 26-Aug-2016 16:00:29
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

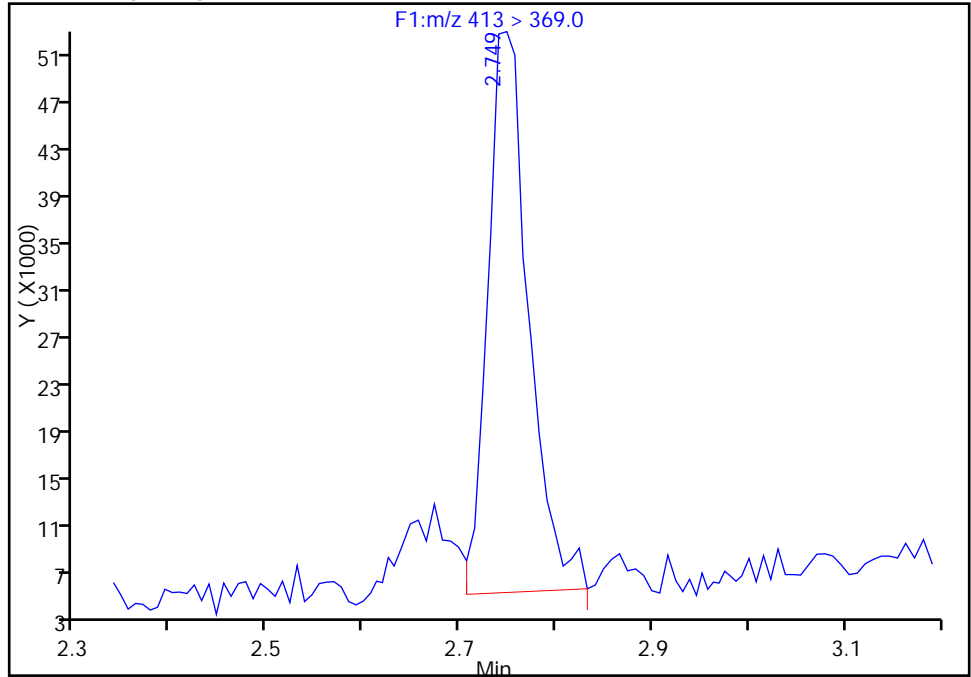
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_010_p1_e1.d
Injection Date: 23-Aug-2016 06:54:00 Instrument ID: A8
Lims ID: 320-20867-A-3-A Lab Sample ID: 320-20867-3
Client ID: GW14-02R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 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

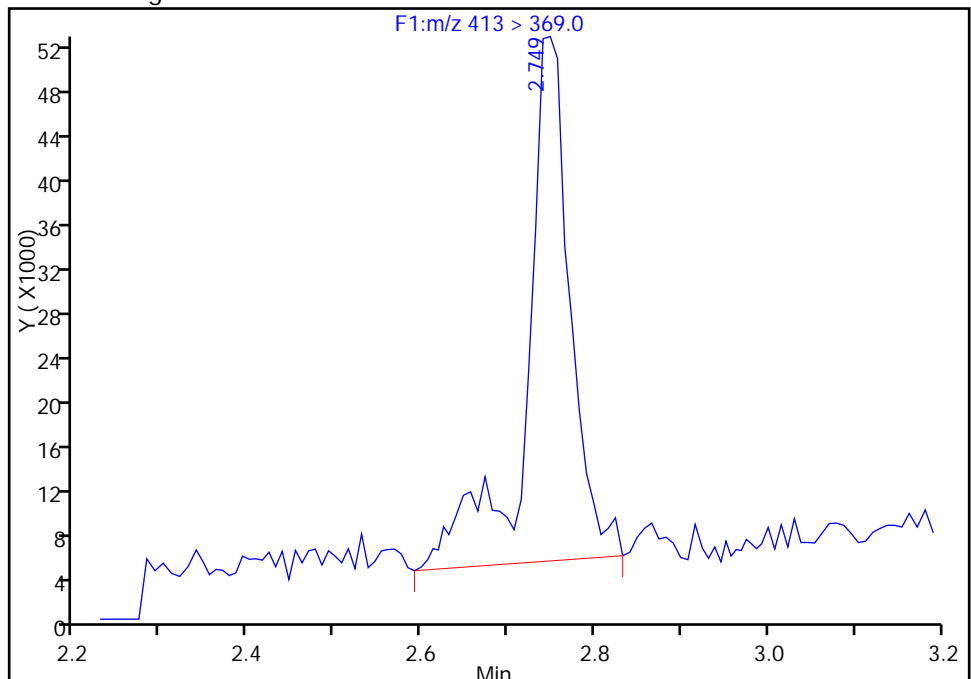
RT: 2.75
Area: 137307
Amount: 1.405622
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 165719
Amount: 1.755993
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 26-Aug-2016 16:00:29

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-EB01-081016-GW Lab Sample ID: 320-20867-4
 Matrix: Water Lab File ID: 22AUG2016D_017_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 11:40
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 261.7(mL) Date Analyzed: 08/23/2016 07:46
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.8	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	119		25-150
STL00991	13C4 PFOS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_017_p1_e1.d
 Lims ID: 320-20867-A-4-A
 Client ID: GW14-EB01-081016-GW
 Sample Type: Client
 Inject. Date: 23-Aug-2016 07:46:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 16:16:59 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:17:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.816	2.798	0.018	1.000	9523	-0.2045			42.7	
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		5753069	59.7		119	326175	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.121	3.110	0.012	1.000	32582	0.3146			4247	
499 > 99.0	3.121	3.110	0.012	1.000	9407		3.46(0.90-1.10)		1175	
D 17 13C4 PFOS										
503 > 80.0	3.121	3.177	-0.056		4463343	54.4		114	548014	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_017_p1_e1.d

Injection Date: 23-Aug-2016 07:46:00

Instrument ID: A8

Lims ID: 320-20867-A-4-A

Lab Sample ID: 320-20867-4

Client ID: GW14-EB01-081016-GW

Operator ID: A8

ALS Bottle#: 0

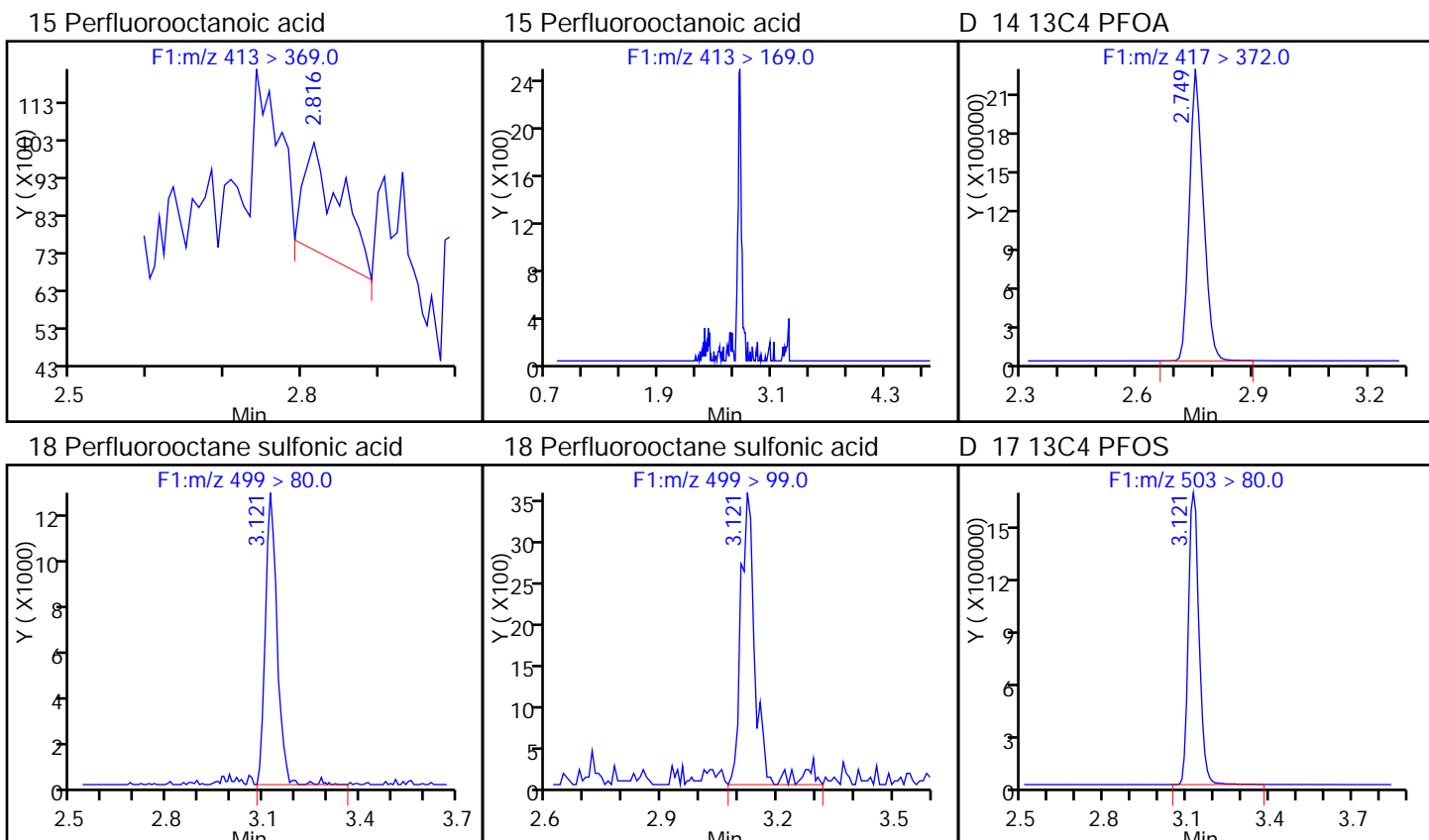
Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-FB01-081016 Lab Sample ID: 320-20867-5
 Matrix: Water Lab File ID: 22AUG2016D_018_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 12:00
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 260.4 (mL) Date Analyzed: 08/23/2016 07:54
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U	2.4	1.9	0.72
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.8	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	128		25-150
STL00991	13C4 PFOS	118		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_018_p1_e1.d
 Lims ID: 320-20867-A-5-A
 Client ID: GW14-FB01-081016
 Sample Type: Client
 Inject. Date: 23-Aug-2016 07:54:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 16:18:30 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:18:30

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	13442	-0.1783			68.2	
413 > 169.0	2.745	2.798	-0.053	0.997	6465		2.08(0.90-1.10)		779	
D 14 13C4 PFOA										
417 > 372.0	2.745	2.798	-0.053		6178880	64.2		128	408987	
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		4610413	56.2		118	582994	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_018_p1_e1.d

Injection Date: 23-Aug-2016 07:54:00

Instrument ID: A8

Lims ID: 320-20867-A-5-A

Lab Sample ID: 320-20867-5

Client ID: GW14-FB01-081016

Operator ID: A8

ALS Bottle#: 0

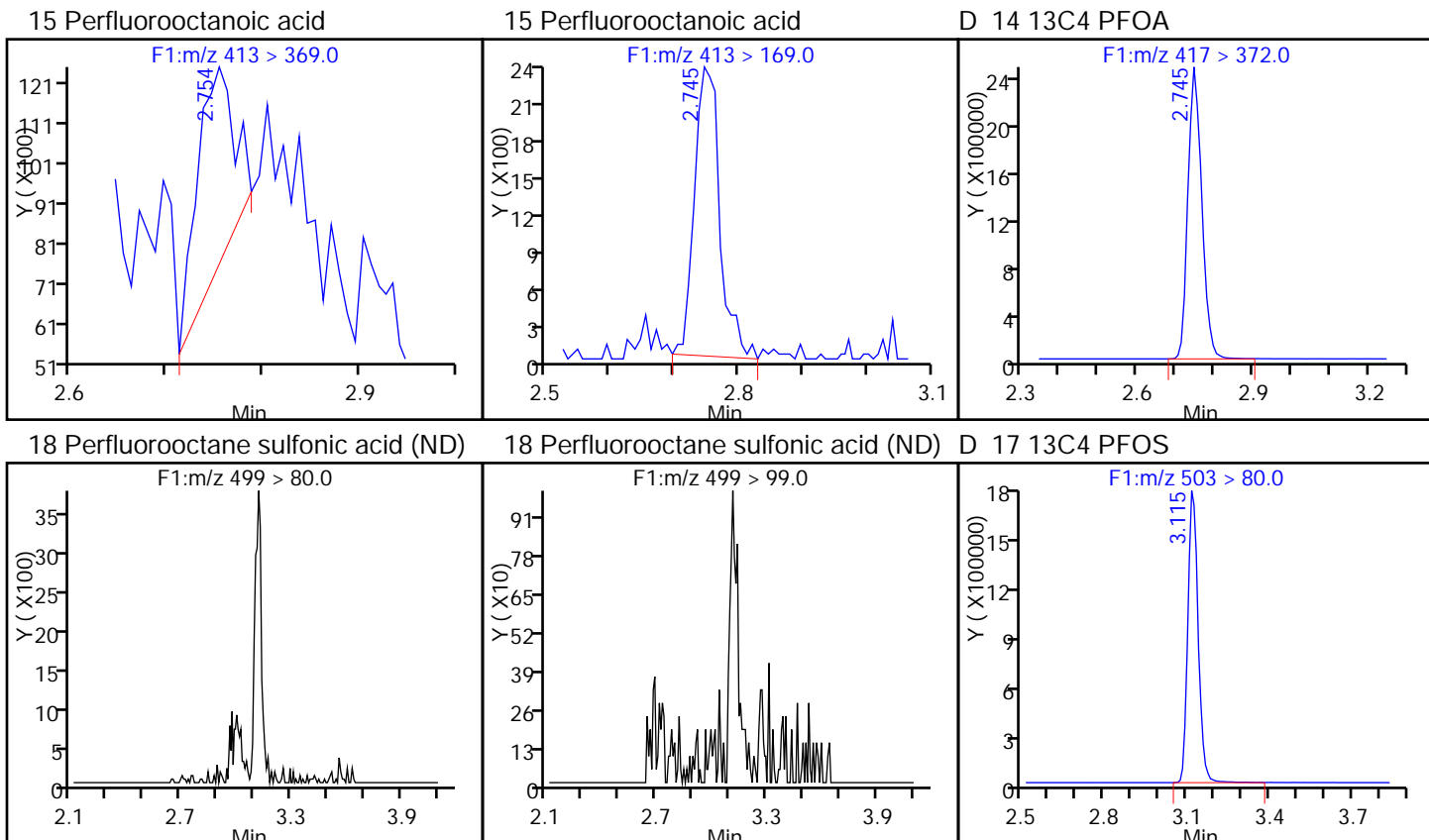
Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-06R-0816 Lab Sample ID: 320-20867-6
 Matrix: Water Lab File ID: 22AUG2016D_019_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 10:10
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 262.3 (mL) Date Analyzed: 08/23/2016 08:01
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	3.7	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.2	J M	3.8	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	73		25-150
STL00991	13C4 PFOS	111		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_019_p1_e1.d
 Lims ID: 320-20867-A-6-A
 Client ID: GW14-06R-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 08:01:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:27:27 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: XAWRK049

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:20:40

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	154608	1.92			930	M
413 > 169.0	2.754	2.798	-0.044	1.000	89532		1.73(0.90-1.10)		6147	M
D 14 13C4 PFOA										
417 > 372.0	2.745	2.798	-0.053		3521176	36.6		73.1	333024	
18 Perfluorooctane sulfonic acid										
499 > 80.0	2.989	3.110	-0.120	1.000	119125	1.18			2436	M
499 > 99.0	3.115	3.110	0.006	1.042	23304		5.11(0.90-1.10)		773	M
D 17 13C4 PFOS										
503 > 80.0	3.124	3.177	-0.053		4351982	53.0			111	170925

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_019_p1_e1.d

Injection Date: 23-Aug-2016 08:01:00

Instrument ID: A8

Lims ID: 320-20867-A-6-A

Lab Sample ID: 320-20867-6

Client ID: GW14-06R-0816

Operator ID: A8

ALS Bottle#: 0

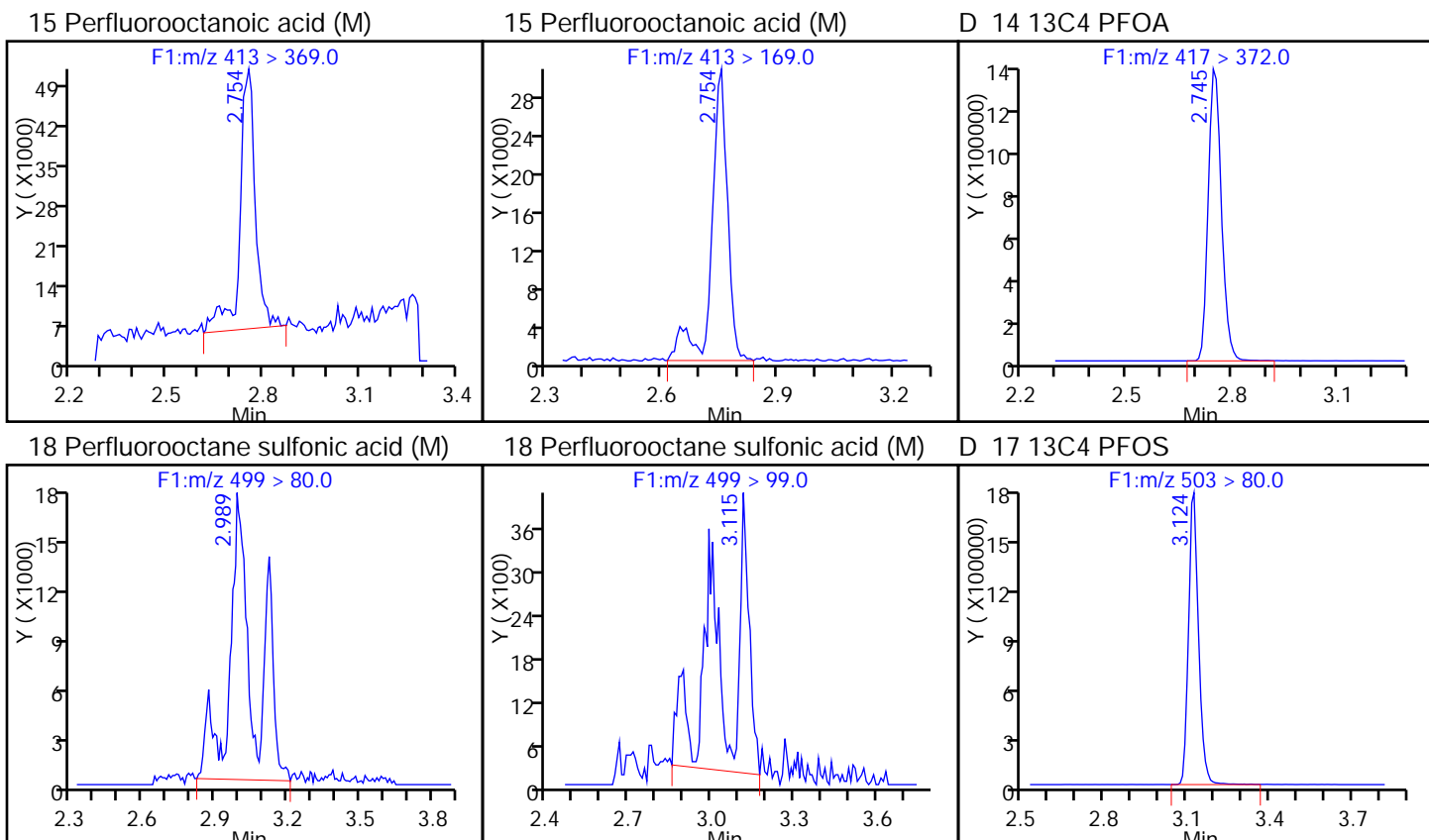
Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

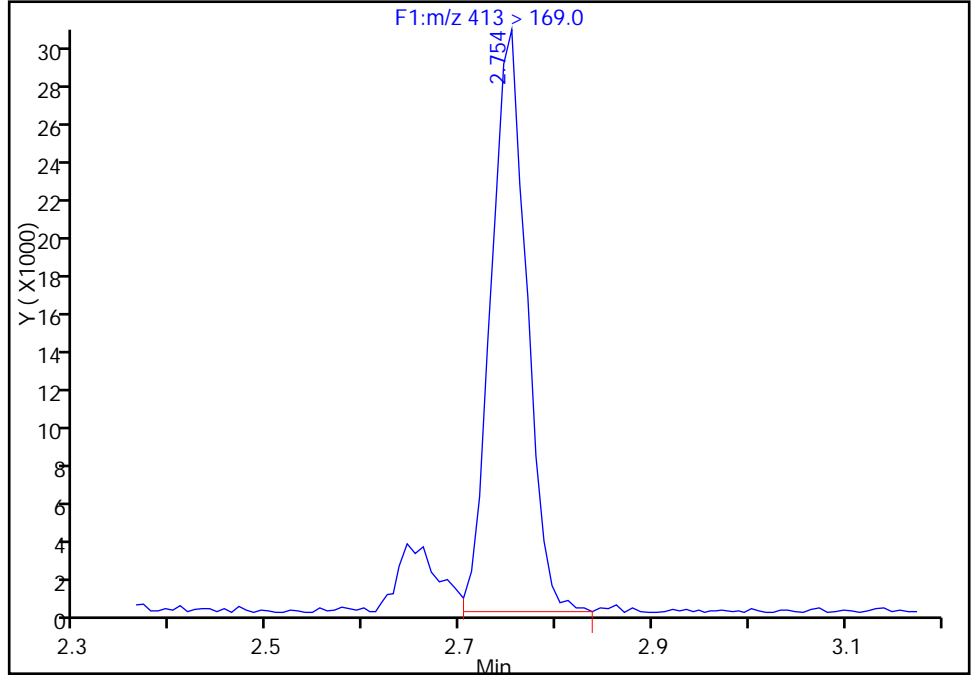
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_019_p1_e1.d
Injection Date: 23-Aug-2016 08:01:00 Instrument ID: A8
Lims ID: 320-20867-A-6-A Lab Sample ID: 320-20867-6
Client ID: GW14-06R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 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: 2

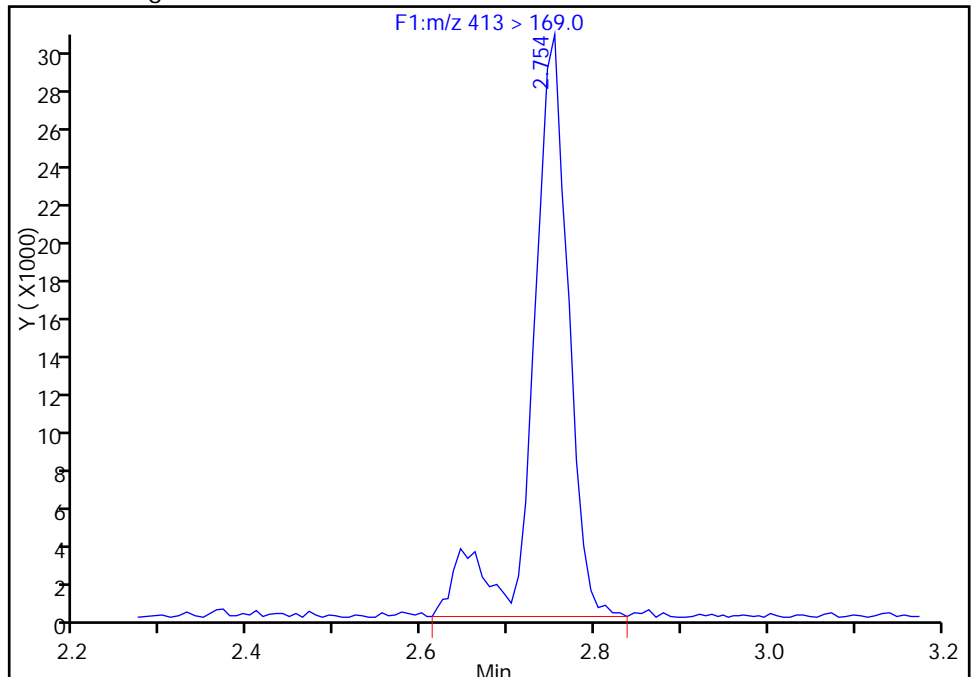
RT: 2.75
Area: 79107
Amount: 1.667423
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 89532
Amount: 1.917971
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:20:40
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

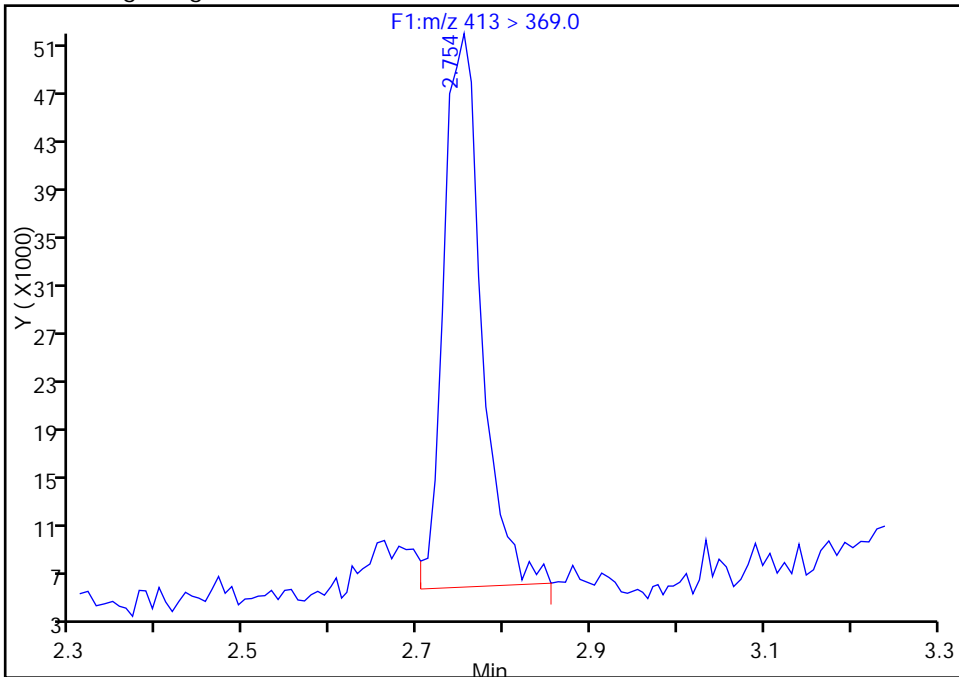
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_019_p1_e1.d
Injection Date: 23-Aug-2016 08:01:00 Instrument ID: A8
Lims ID: 320-20867-A-6-A Lab Sample ID: 320-20867-6
Client ID: GW14-06R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 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

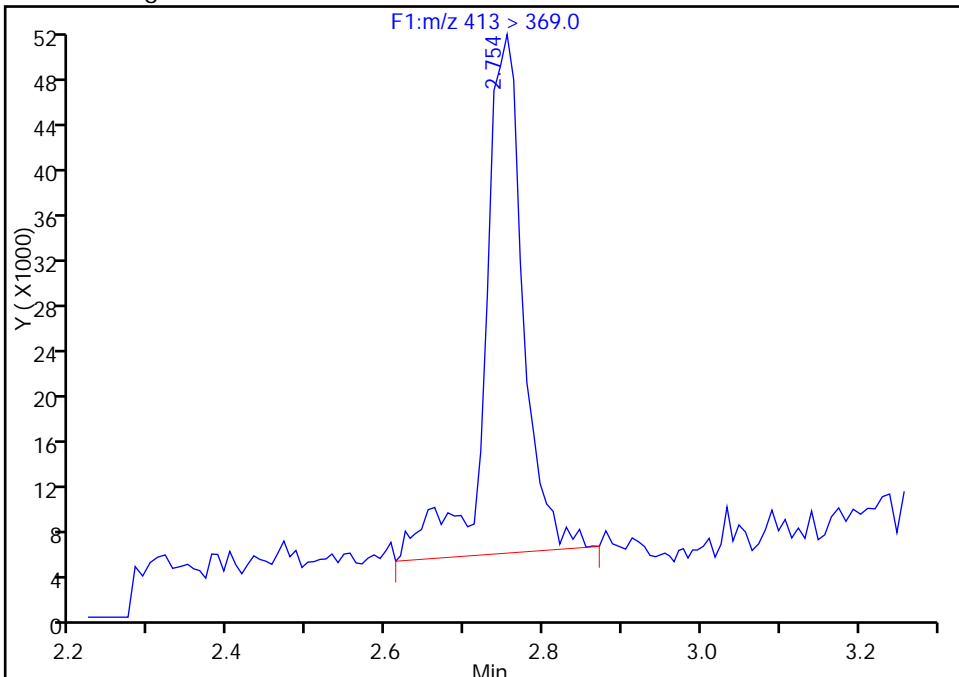
RT: 2.75
Area: 137045
Amount: 1.667423
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 154608
Amount: 1.917971
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:20:40

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

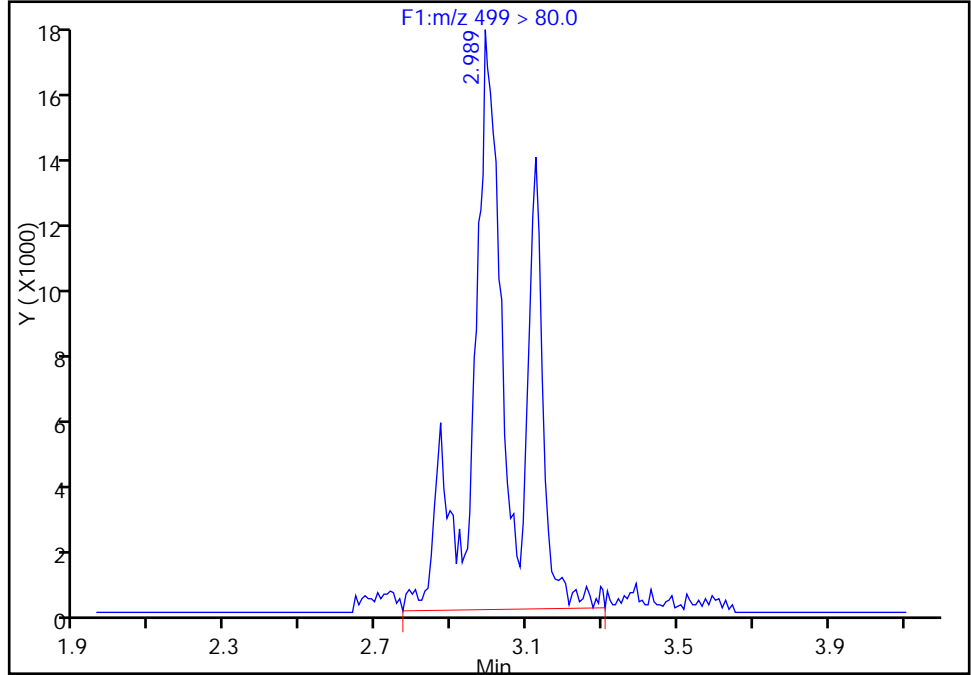
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_019_p1_e1.d
Injection Date: 23-Aug-2016 08:01:00 Instrument ID: A8
Lims ID: 320-20867-A-6-A Lab Sample ID: 320-20867-6
Client ID: GW14-06R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

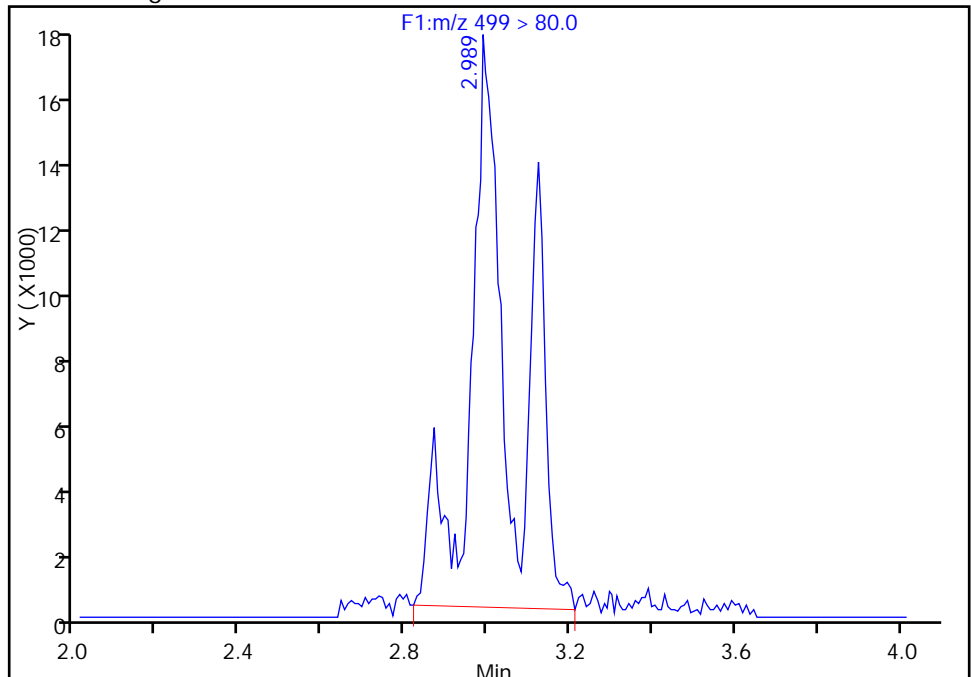
RT: 2.99
Area: 127325
Amount: 1.261009
Amount Units: ng/ml

Processing Integration Results



RT: 2.99
Area: 119125
Amount: 1.179798
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 31-Aug-2016 09:27:27
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

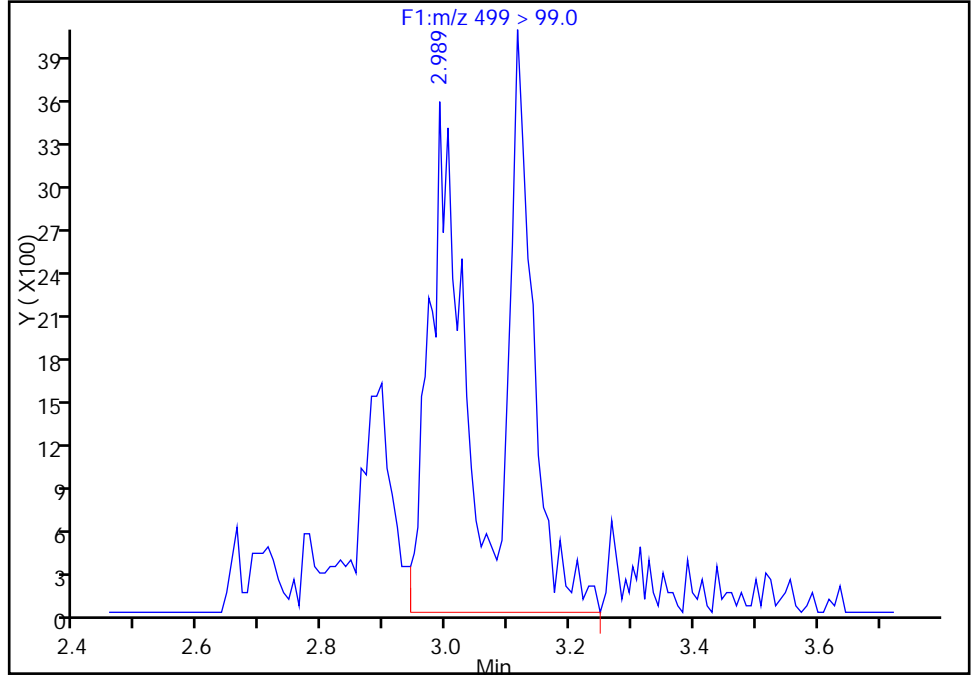
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Injection Date: 23-Aug-2016 08:01:00 Instrument ID: A8
Lims ID: 320-20867-A-6-A Lab Sample ID: 320-20867-6
Client ID: GW14-06R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

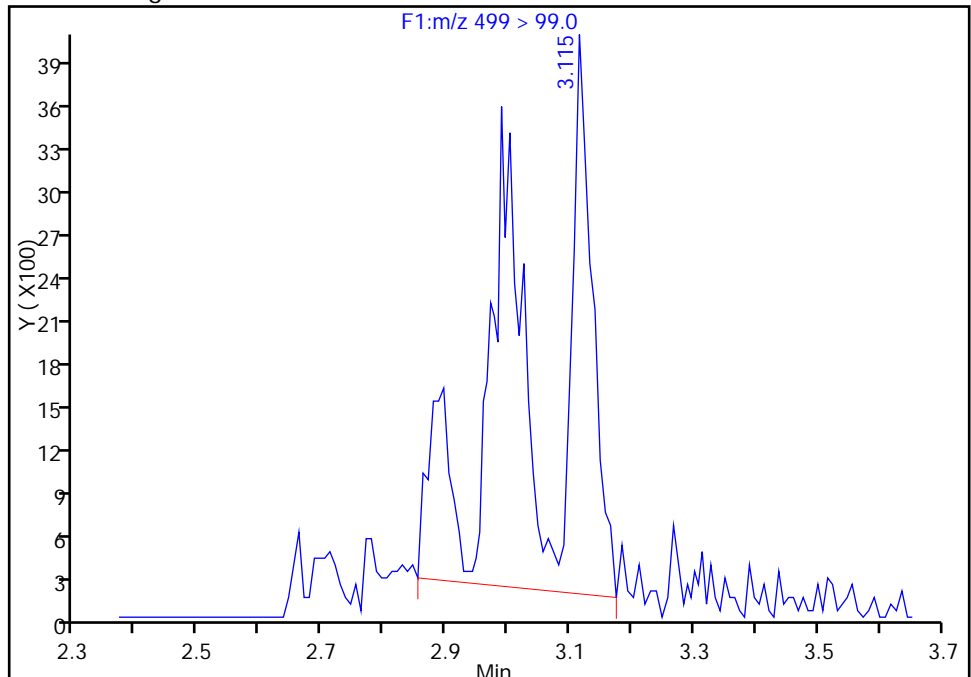
RT: 2.99
Area: 23318
Amount: 1.261009
Amount Units: ng/ml

Processing Integration Results



RT: 3.12
Area: 23304
Amount: 1.179798
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 31-Aug-2016 09:27:27

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-03R-0816 Lab Sample ID: 320-20867-7
 Matrix: Water Lab File ID: 22AUG2016D_020_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 11:35
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 273.5 (mL) Date Analyzed: 08/23/2016 08:09
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	4.7	M	2.3	1.8	0.68
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.2	M	3.7	2.7	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	59		25-150
STL00991	13C4 PFOS	116		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_020_p1_e1.d
 Lims ID: 320-20867-A-7-A
 Client ID: GW14-03R-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 08:09:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:28:44 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: XAWRK049

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:26:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.749	2.798	-0.049	1.000	159674	2.54			951	M
413 > 169.0	2.749	2.798	-0.049	1.000	77012		2.07(0.90-1.10)		6057	M
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		2832850	29.4		58.8	282309	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.001	3.110	-0.108	1.000	476144	4.50			19035	M
499 > 99.0	3.121	3.110	0.012	1.040	101077		4.71(0.90-1.10)		5966	M
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		4561076	55.6			116	169903

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_020_p1_e1.d

Injection Date: 23-Aug-2016 08:09:00

Instrument ID: A8

Lims ID: 320-20867-A-7-A

Lab Sample ID: 320-20867-7

Client ID: GW14-03R-0816

Operator ID: A8

ALS Bottle#: 0

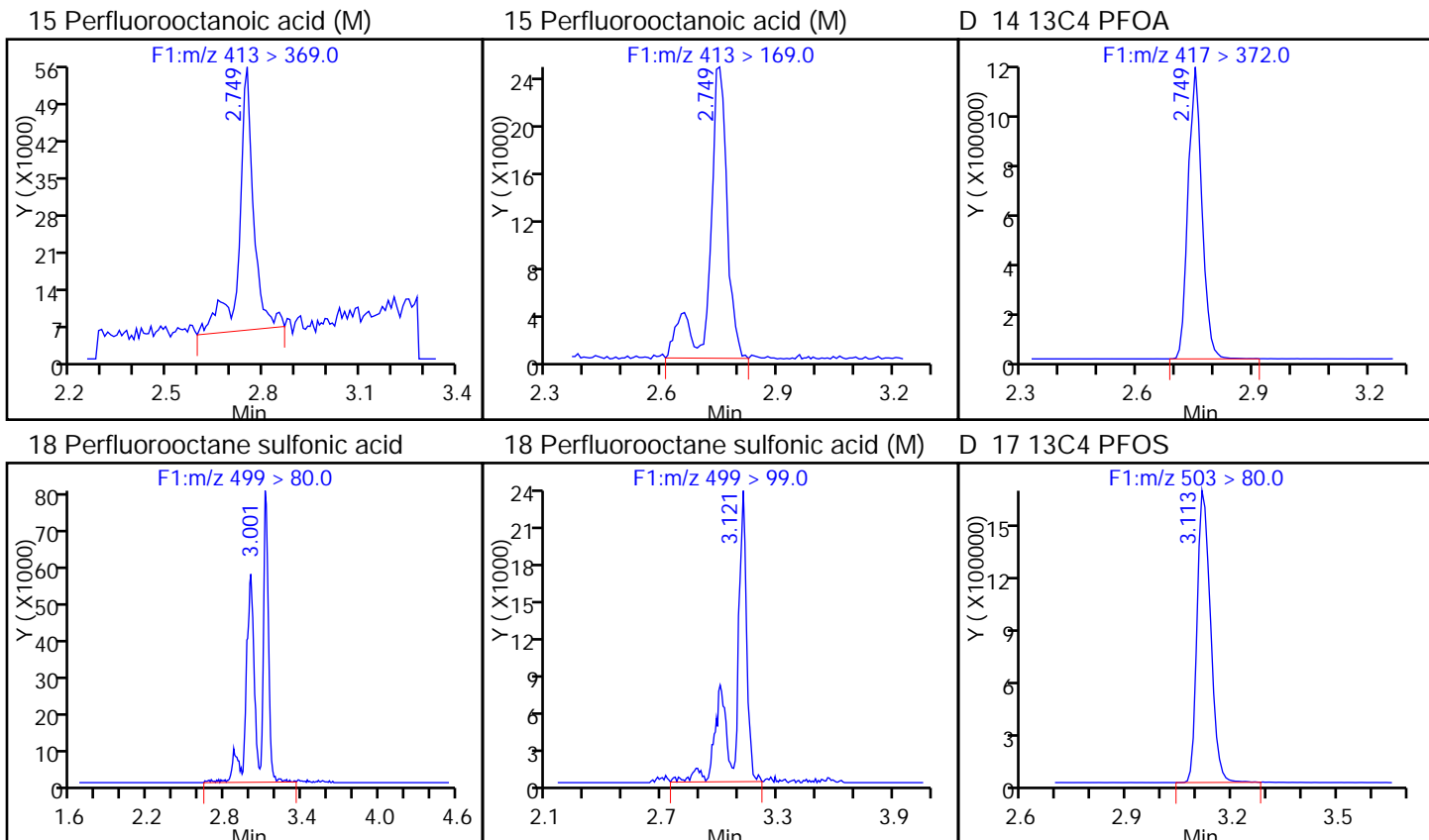
Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

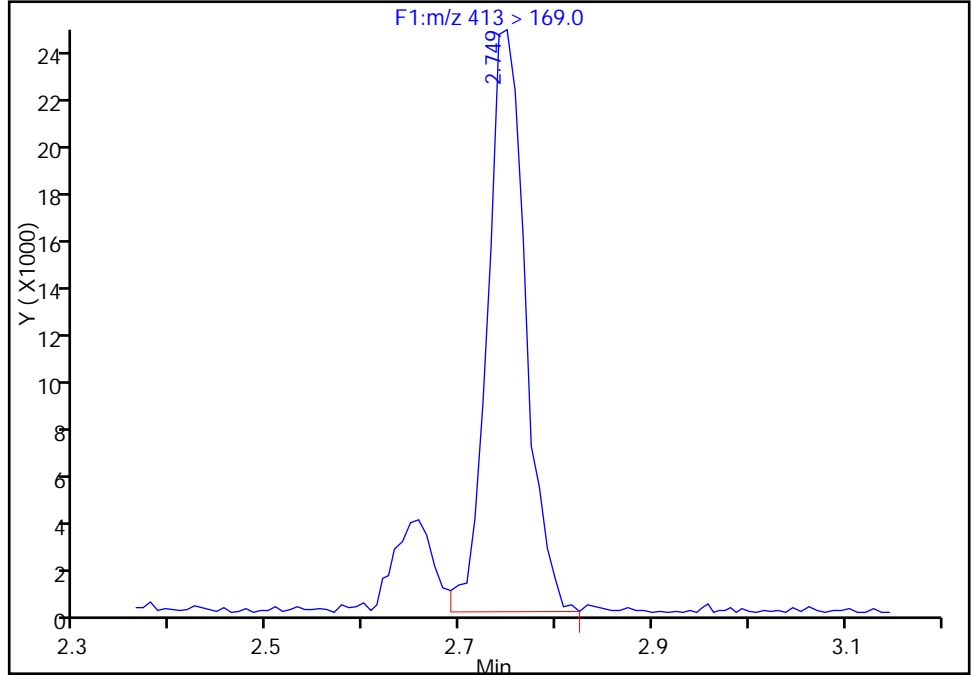
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_020_p1_e1.d
Injection Date: 23-Aug-2016 08:09:00 Instrument ID: A8
Lims ID: 320-20867-A-7-A Lab Sample ID: 320-20867-7
Client ID: GW14-03R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 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

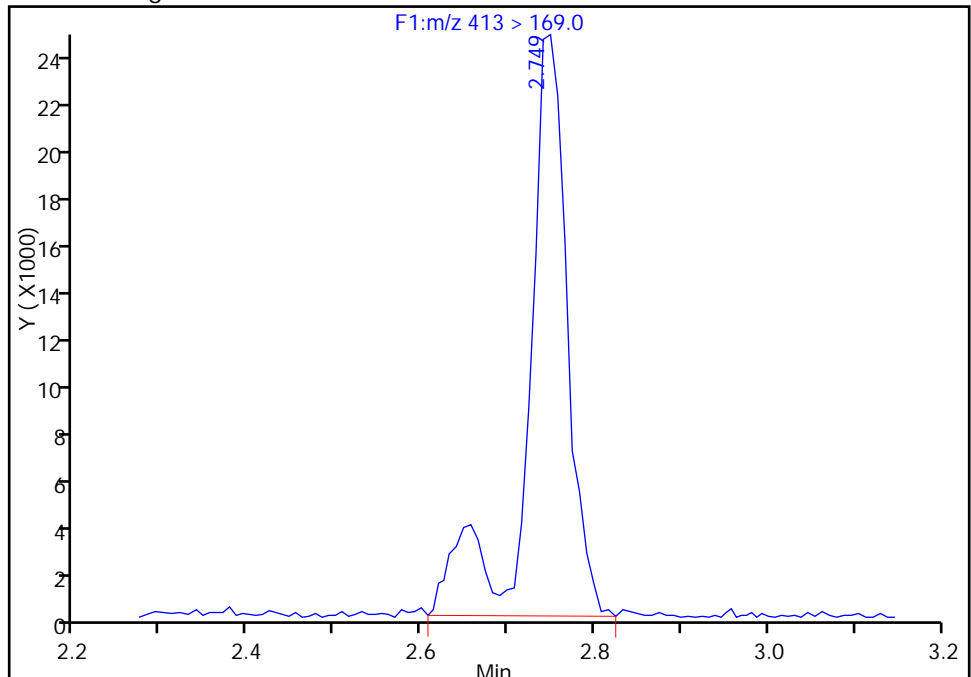
RT: 2.75
Area: 66575
Amount: 1.924781
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 77012
Amount: 2.543715
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:26:27

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

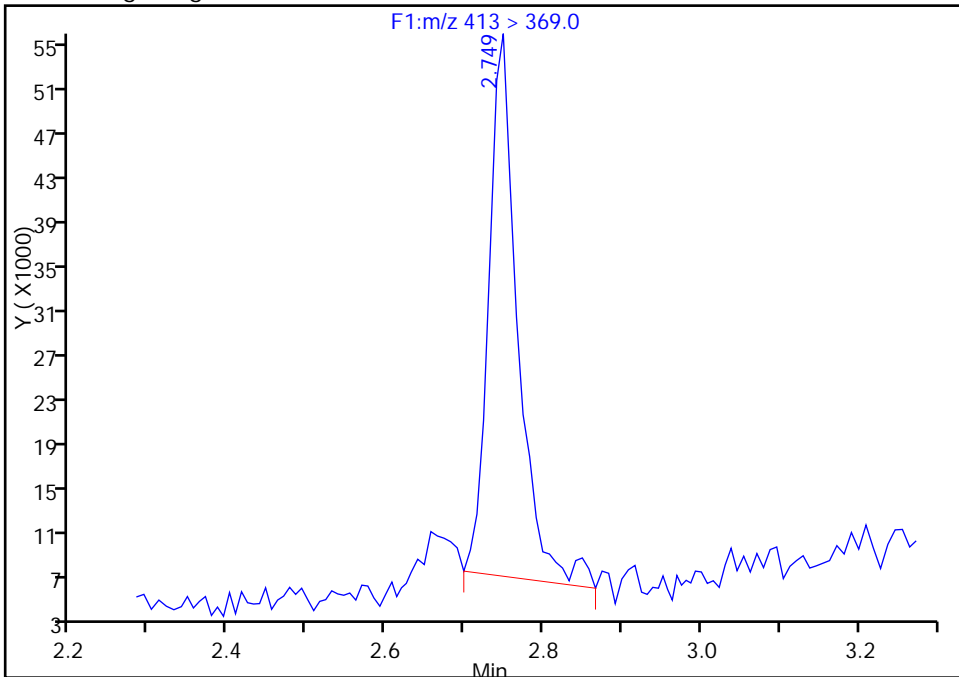
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_020_p1_e1.d
Injection Date: 23-Aug-2016 08:09:00 Instrument ID: A8
Lims ID: 320-20867-A-7-A Lab Sample ID: 320-20867-7
Client ID: GW14-03R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 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

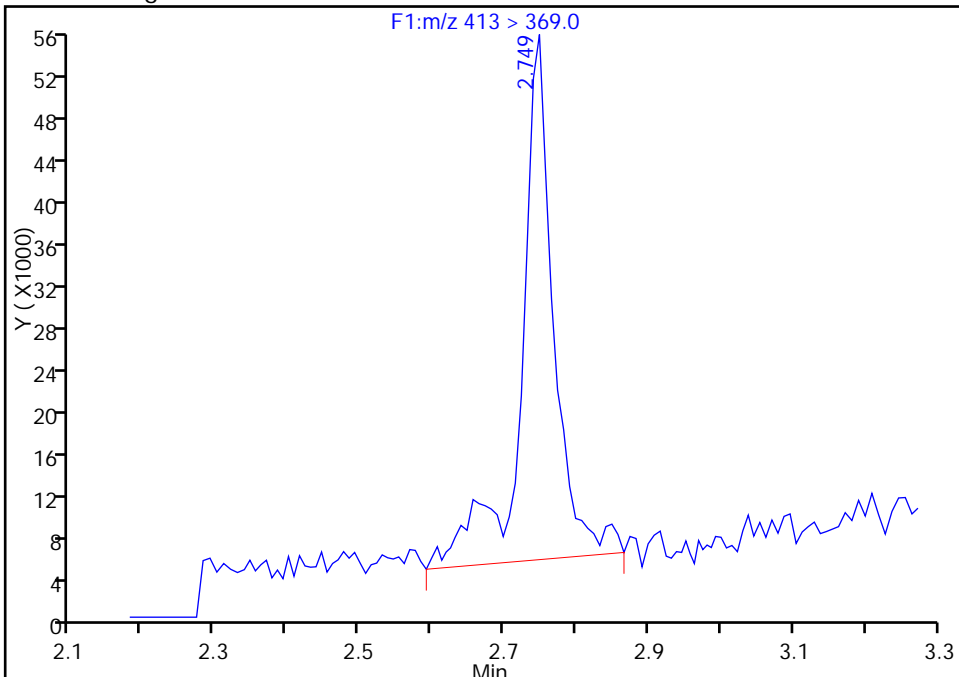
RT: 2.75
Area: 124769
Amount: 1.924781
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 159674
Amount: 2.543715
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:26:27

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

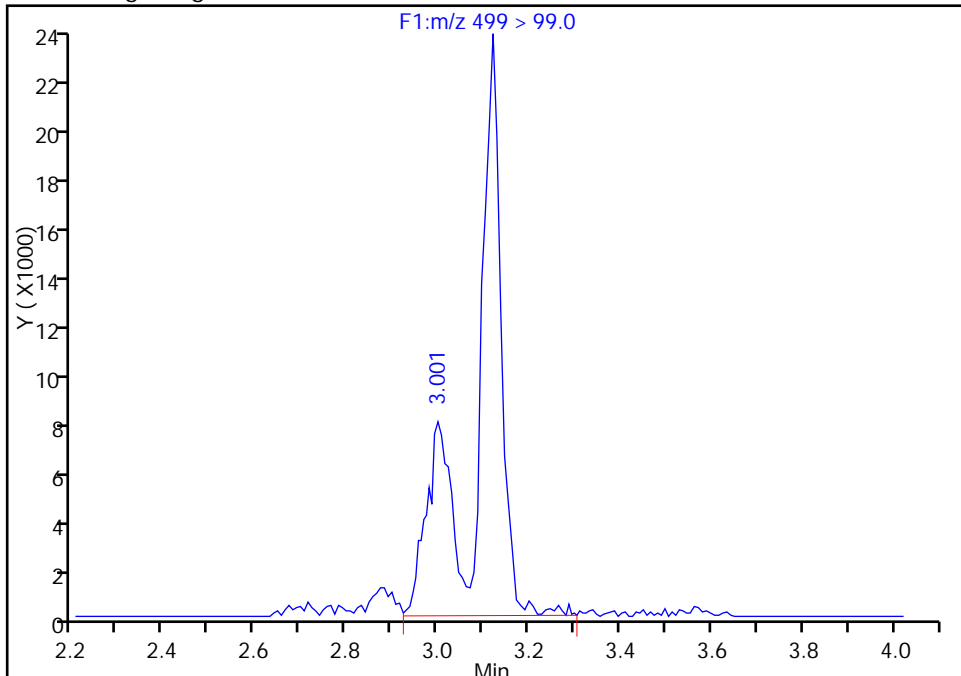
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_020_p1_e1.d
Injection Date: 23-Aug-2016 08:09:00 Instrument ID: A8
Lims ID: 320-20867-A-7-A Lab Sample ID: 320-20867-7
Client ID: GW14-03R-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

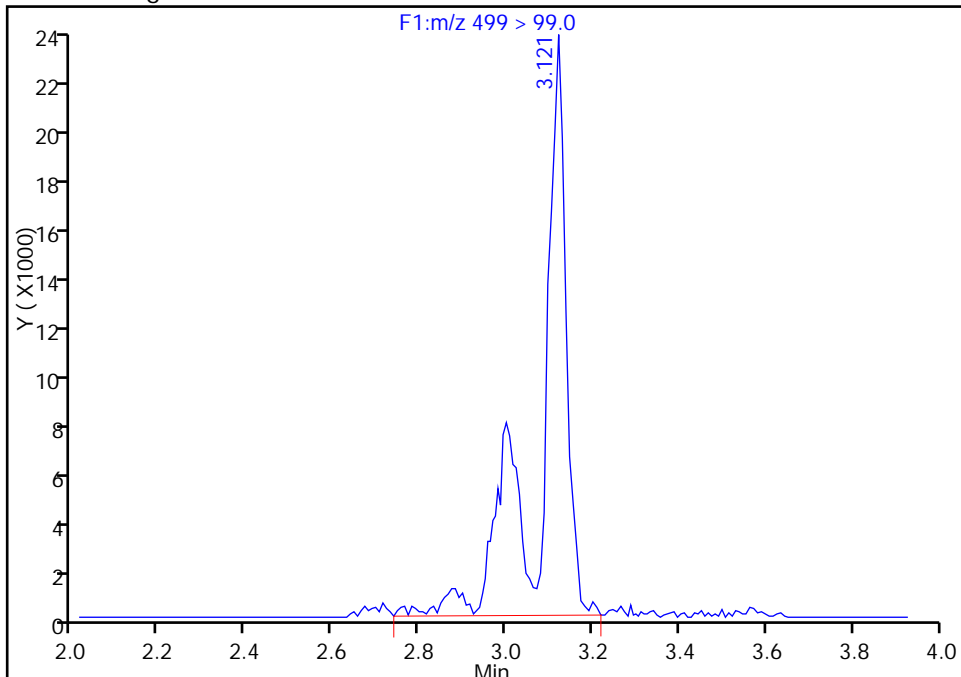
RT: 3.00
Area: 97805
Amount: 4.499484
Amount Units: ng/ml

Processing Integration Results



RT: 3.12
Area: 101077
Amount: 4.499484
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 31-Aug-2016 09:28:44
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-05-0816 Lab Sample ID: 320-20867-8
 Matrix: Water Lab File ID: 22AUG2016D_021_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 15:10
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 262 (mL) Date Analyzed: 08/23/2016 08:16
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.6	J M	3.8	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	80		25-150
STL00991	13C4 PFOS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_021_p1_e1.d
 Lims ID: 320-20867-A-8-A
 Client ID: GW14-05-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 08:16:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:29:39 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: XAWRK049

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:21:55

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	43487	0.2793			180	
413 > 169.0	2.737	2.798	-0.061	0.994	13126		3.31(0.90-1.10)		923	
D 14 13C4 PFOA										
417 > 372.0	2.737	2.798	-0.061		3853281	40.0		80.0	290523	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.115	3.110	0.006	1.000	193811	1.87			9845	M
499 > 99.0	3.115	3.110	0.006	1.000	46534		4.16(0.90-1.10)		2826	M
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		4472292	54.5		114	245044	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_021_p1_e1.d

Injection Date: 23-Aug-2016 08:16:00

Instrument ID: A8

Lims ID: 320-20867-A-8-A

Lab Sample ID: 320-20867-8

Client ID: GW14-05-0816

Operator ID: A8

ALS Bottle#: 0

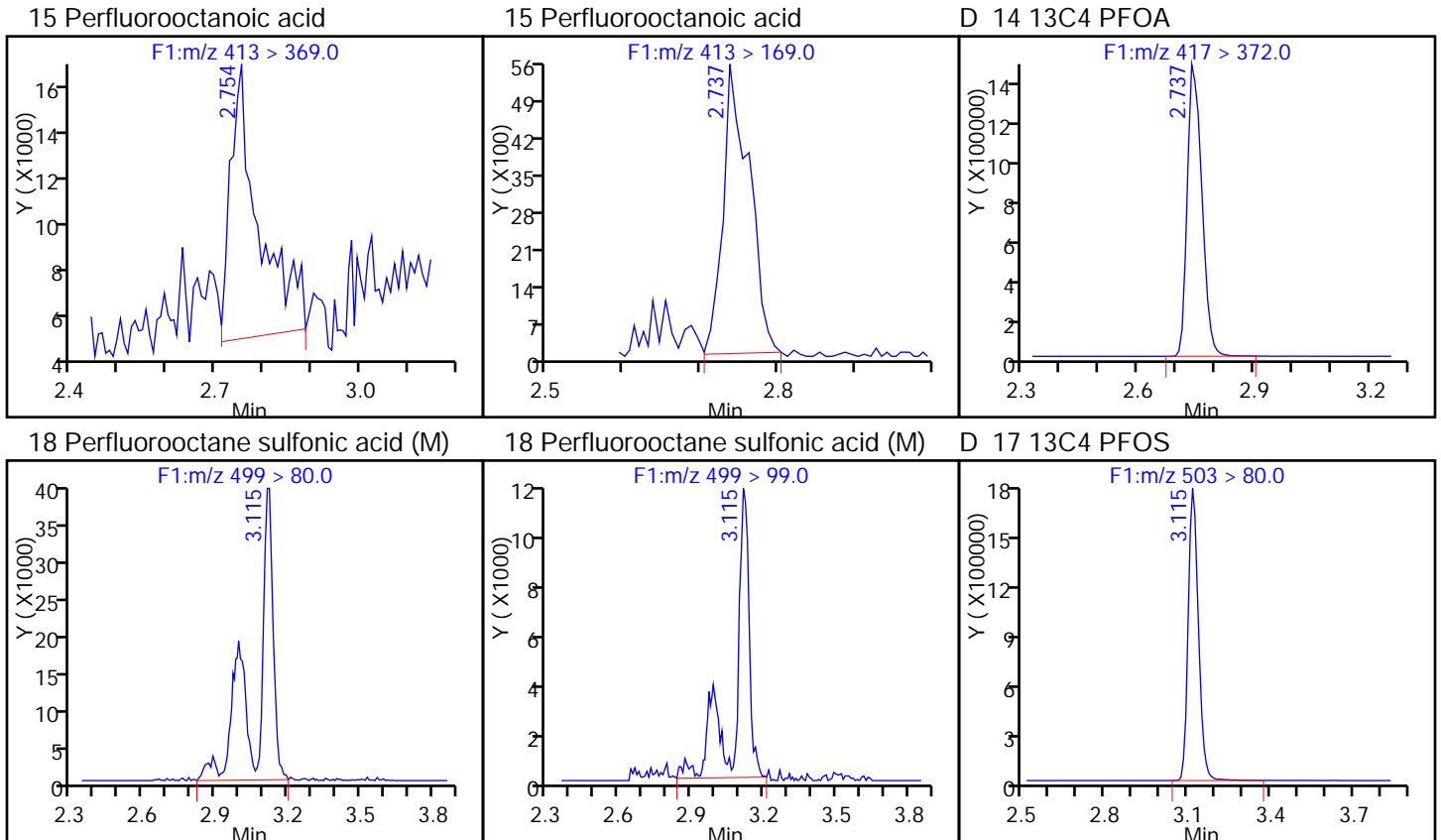
Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

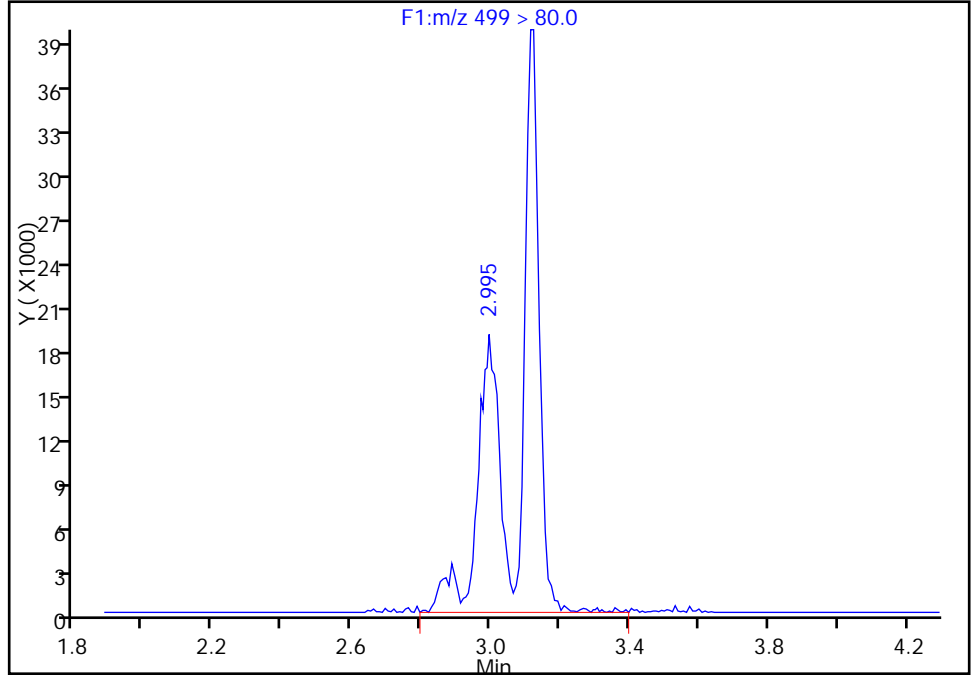
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_021_p1_e1.d
Injection Date: 23-Aug-2016 08:16:00 Instrument ID: A8
Lims ID: 320-20867-A-8-A Lab Sample ID: 320-20867-8
Client ID: GW14-05-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
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

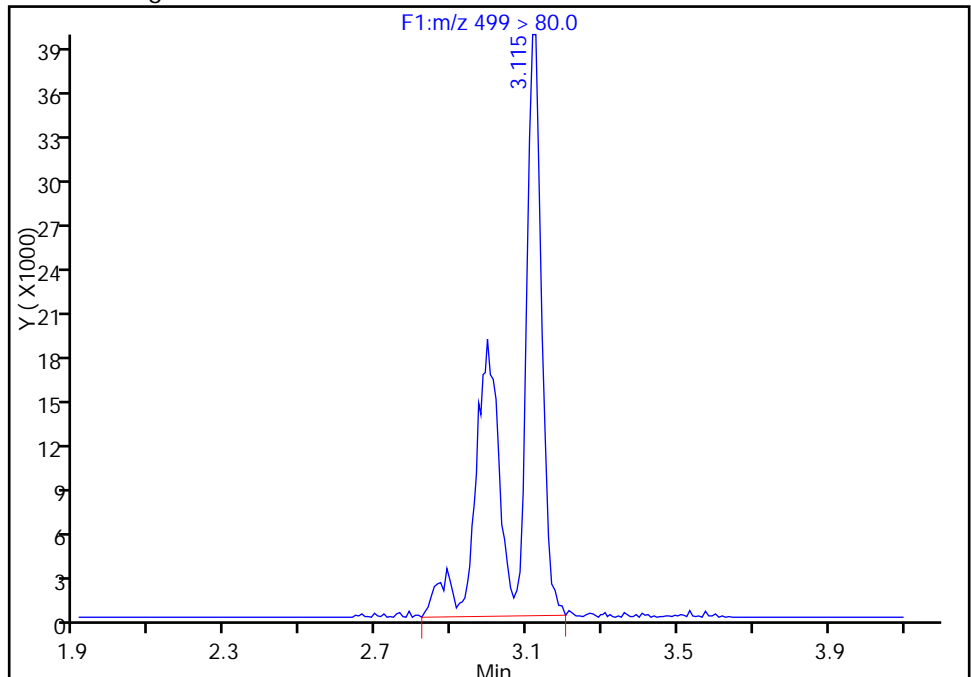
RT: 3.00
Area: 197225
Amount: 1.900743
Amount Units: ng/ml

Processing Integration Results



RT: 3.12
Area: 193811
Amount: 1.867841
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 31-Aug-2016 09:29:39
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_021_p1_e1.d

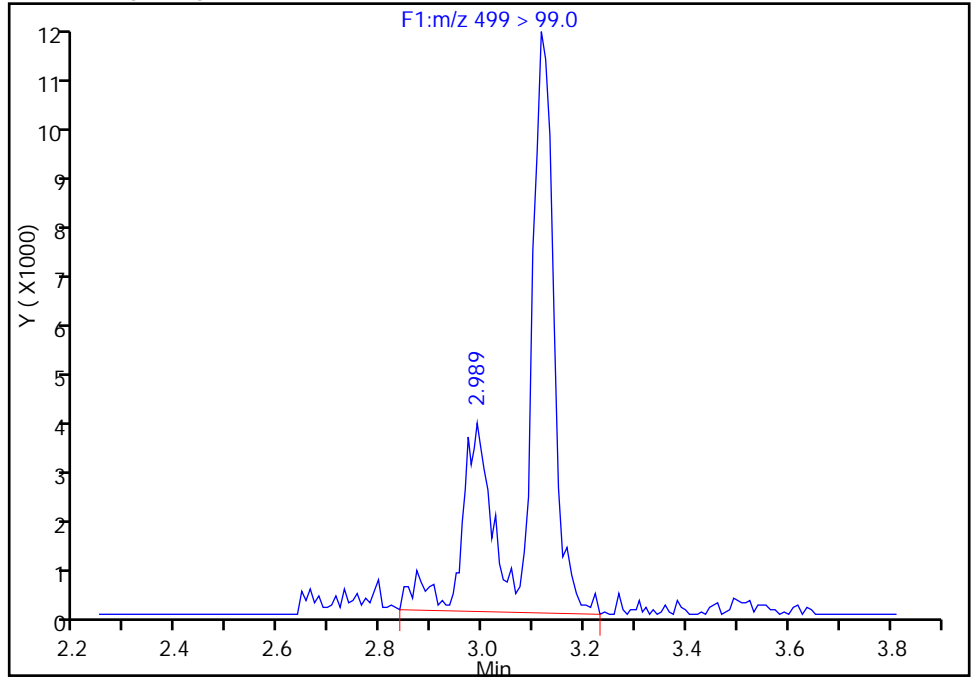
Injection Date:	23-Aug-2016 08:16:00	Instrument ID:	A8	Worklist Smp#:	25
Lims ID:	320-20867-A-8-A	Lab Sample ID:	320-20867-8		
Client ID:	GW14-05-0816				
Operator ID:	A8	ALS Bottle#:	0		
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector:	F1(0.00 :6.60)		

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

Signal: 2

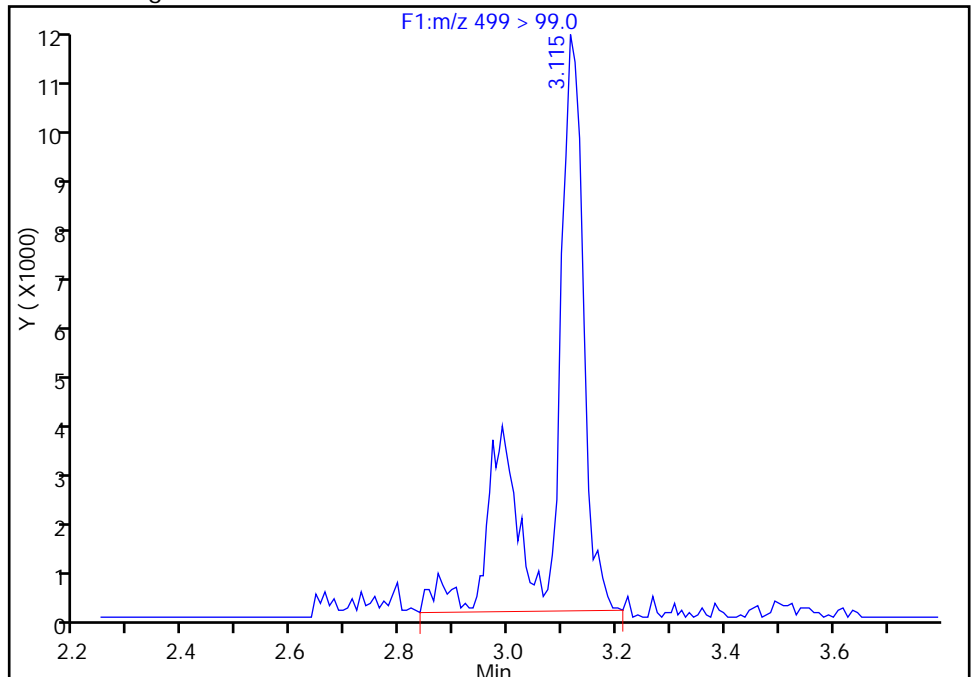
RT: 2.99
Area: 48276
Amount: 1.900743
Amount Units: ng/ml

Processing Integration Results



RT: 3.12
Area: 46534
Amount: 1.867841
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 31-Aug-2016 09:29:39

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-07-0816 Lab Sample ID: 320-20867-9
 Matrix: Water Lab File ID: 22AUG2016D_022_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 14:55
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 277.9(mL) Date Analyzed: 08/23/2016 08:24
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	3.7	M	2.2	1.8	0.67
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12		3.6	2.7	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	87		25-150
STL00991	13C4 PFOS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_022_p1_e1.d
 Lims ID: 320-20867-A-9-A
 Client ID: GW14-07-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 08:24:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 16:23:30 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:23:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.745	2.798	-0.053	1.000	195933	2.06			1038	M
413 > 169.0	2.754	2.798	-0.044	1.003	134814		1.45(0.90-1.10)		13642	M
D 14 13C4 PFOA										
417 > 372.0	2.754	2.798	-0.044		4187423	43.5		87.0	315428	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.003	3.110	-0.106	1.000	667384	6.42			31524	
499 > 99.0	3.010	3.110	-0.099	1.003	142125		4.70(0.90-1.10)		1916	
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		4484040	54.6			114	203919

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_022_p1_e1.d

Injection Date: 23-Aug-2016 08:24:00

Instrument ID: A8

Lims ID: 320-20867-A-9-A

Lab Sample ID: 320-20867-9

Client ID: GW14-07-0816

Operator ID: A8

ALS Bottle#: 0

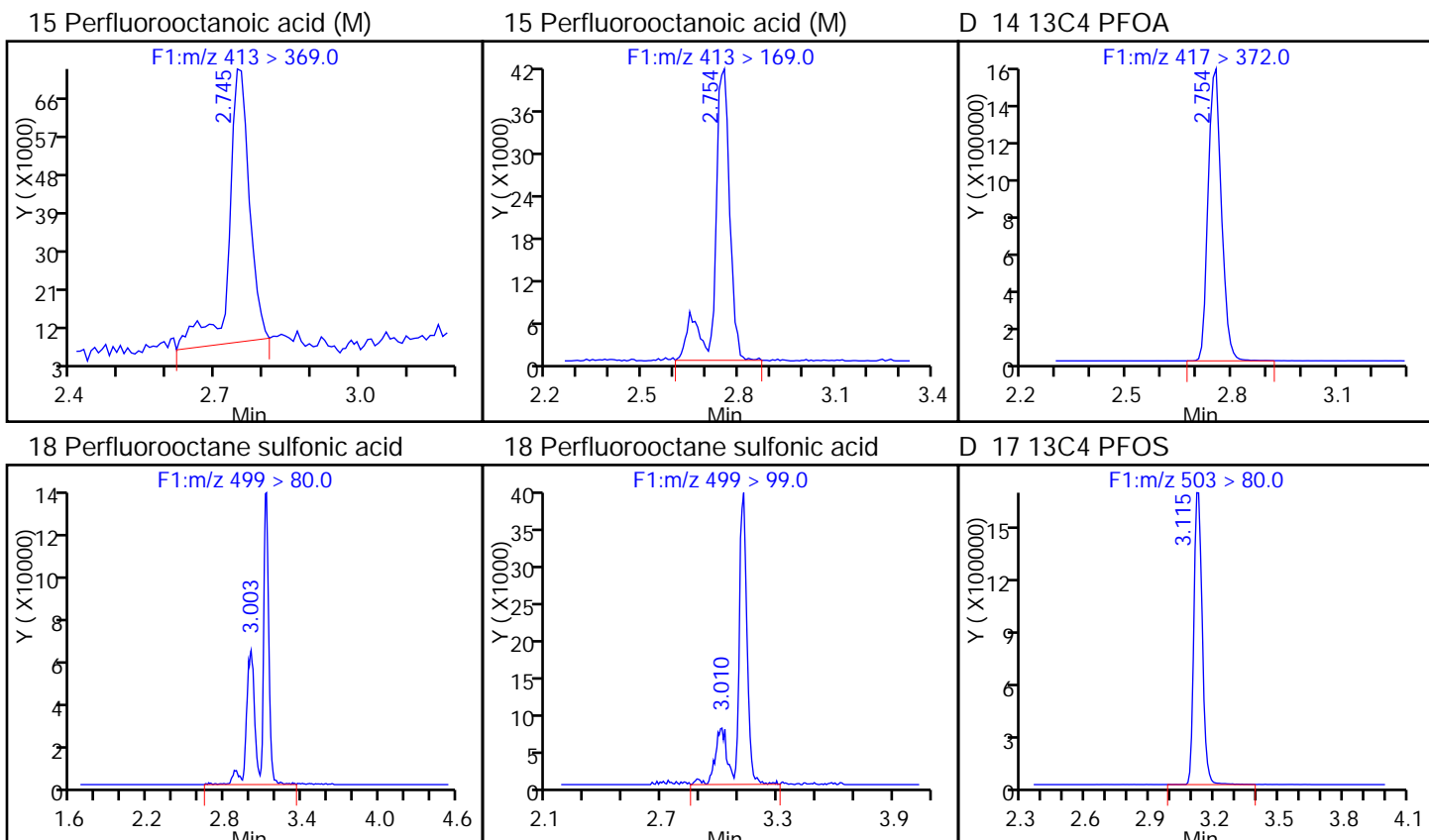
Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL



TestAmerica Sacramento

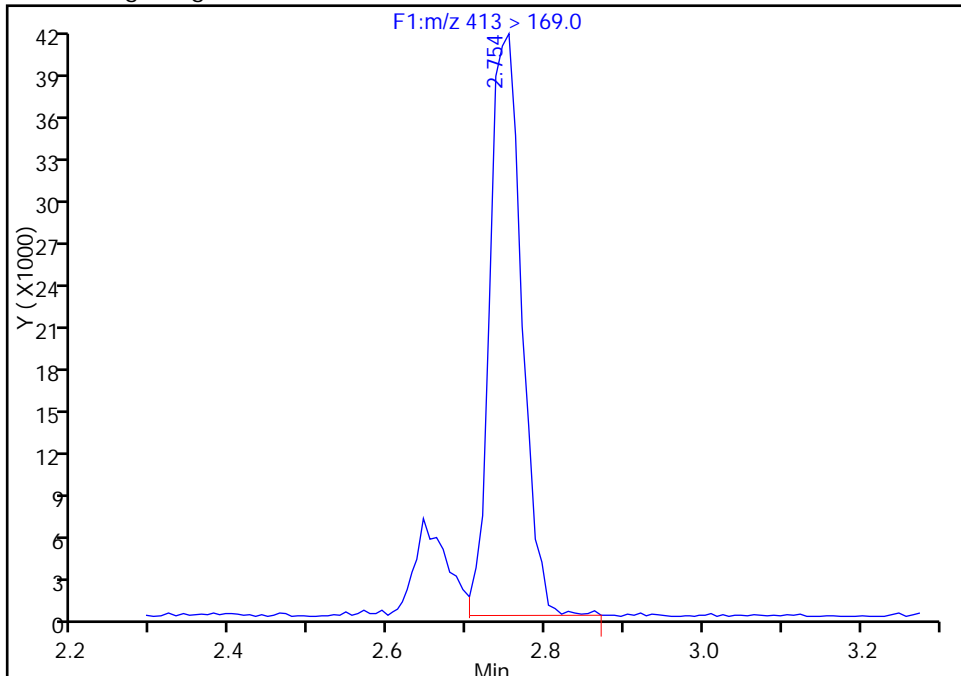
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_022_p1_e1.d
Injection Date: 23-Aug-2016 08:24:00 Instrument ID: A8
Lims ID: 320-20867-A-9-A Lab Sample ID: 320-20867-9
Client ID: GW14-07-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
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

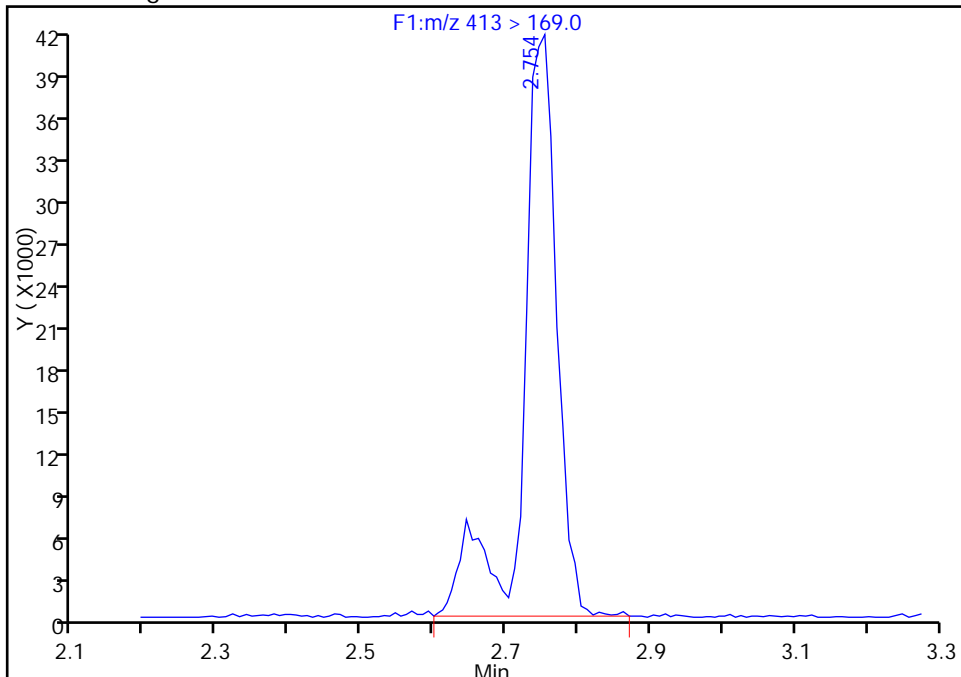
RT: 2.75
Area: 115529
Amount: 1.645368
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 134814
Amount: 2.062778
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:23:30
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

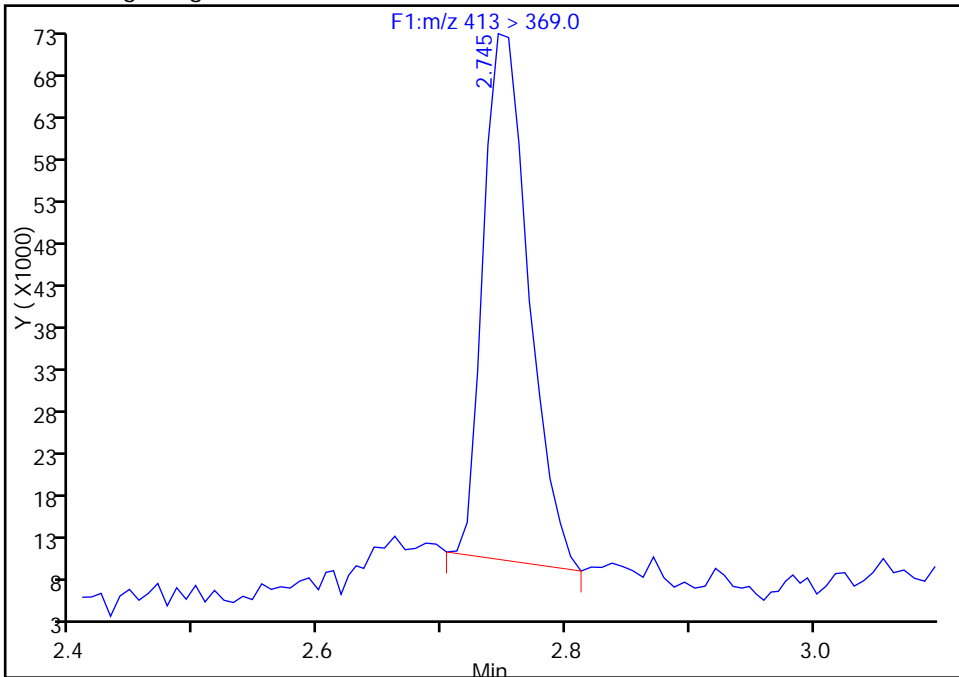
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_022_p1_e1.d
Injection Date: 23-Aug-2016 08:24:00 Instrument ID: A8
Lims ID: 320-20867-A-9-A Lab Sample ID: 320-20867-9
Client ID: GW14-07-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
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

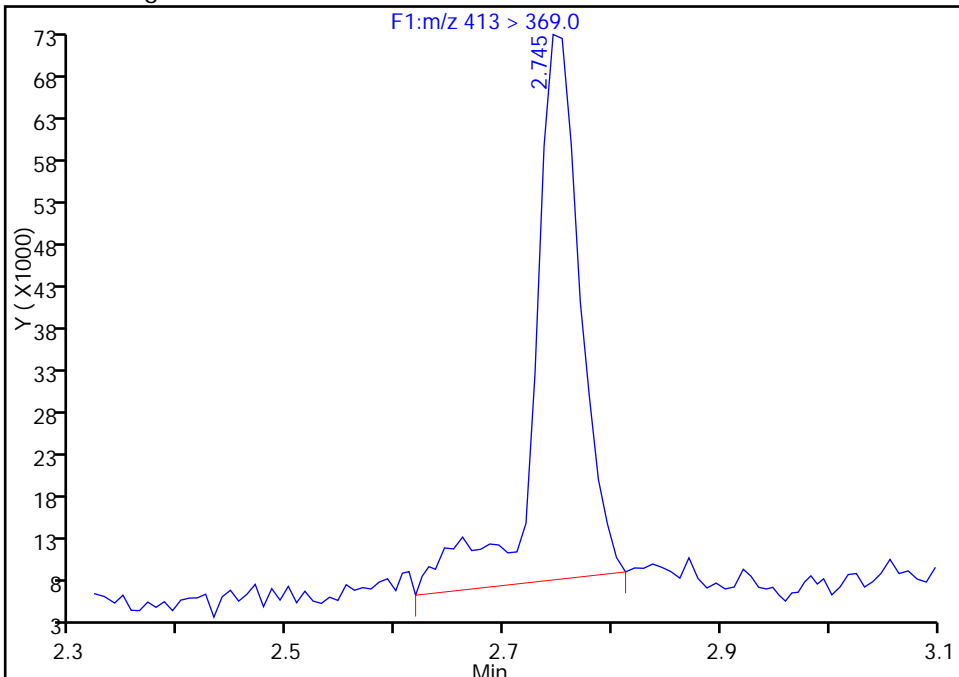
RT: 2.75
Area: 161137
Amount: 1.645368
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 195933
Amount: 2.062778
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:23:30

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-08-0816 Lab Sample ID: 320-20867-10
 Matrix: Water Lab File ID: 22AUG2016D_023_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 14:50
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 273.3(mL) Date Analyzed: 08/23/2016 08:31
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	4.5	M	2.3	1.8	0.68
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	39	M	3.7	2.7	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	71		25-150
STL00991	13C4 PFOS	121		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_023_p1_e1.d
 Lims ID: 320-20867-A-10-A
 Client ID: GW14-08-0816
 Sample Type: Client
 Inject. Date: 23-Aug-2016 08:31:00 ALS Bottle#: 0 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info:
 Operator ID: A8 Instrument ID: A8
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:30:30 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: XAWRK049

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:27:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.745	2.798	-0.053	1.000	184739	2.44			873	M
413 > 169.0	2.745	2.798	-0.053	1.000	112892		1.64(0.90-1.10)		8153	M
D 14 13C4 PFOA										
417 > 372.0	2.745	2.798	-0.053		3401127	35.3		70.6	279905	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.115	3.110	0.006	1.000	2335253	21.3			63933	M
499 > 99.0	3.018	3.110	-0.091	0.969	504322		4.63(0.90-1.10)		13008	
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		4731795	57.7			121	602521

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_023_p1_e1.d

Injection Date: 23-Aug-2016 08:31:00

Instrument ID: A8

Lims ID: 320-20867-A-10-A

Lab Sample ID: 320-20867-10

Client ID: GW14-08-0816

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

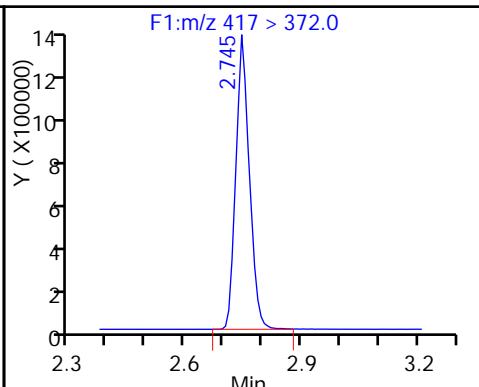
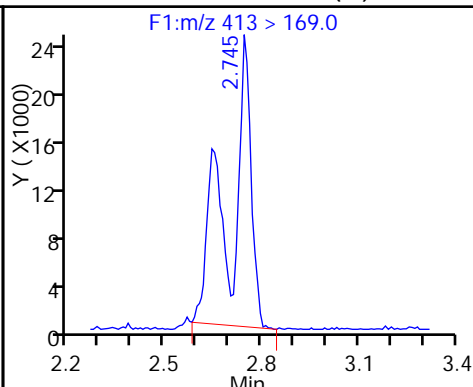
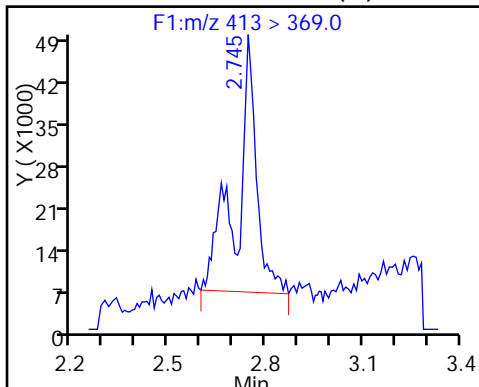
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

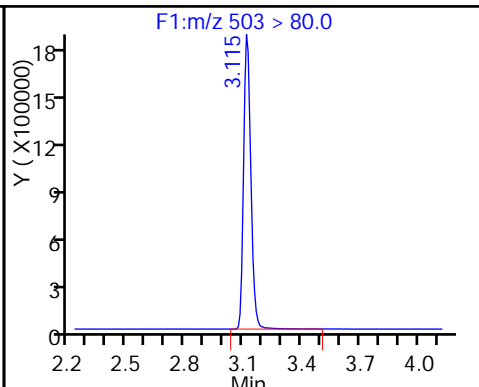
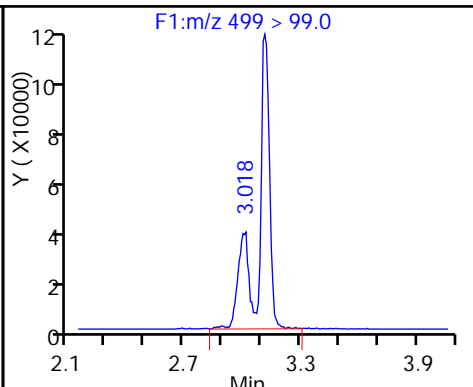
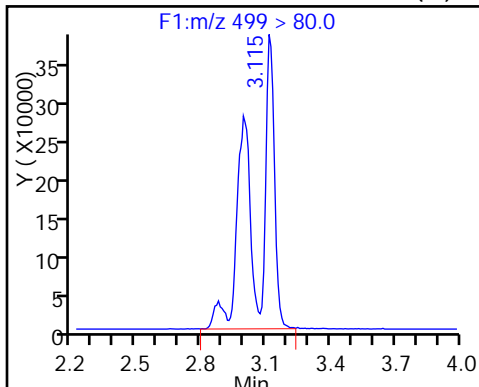
D 14 13C4 PFOA



18 Perfluorooctane sulfonic acid (M)

18 Perfluorooctane sulfonic acid

D 17 13C4 PFOS



TestAmerica Sacramento

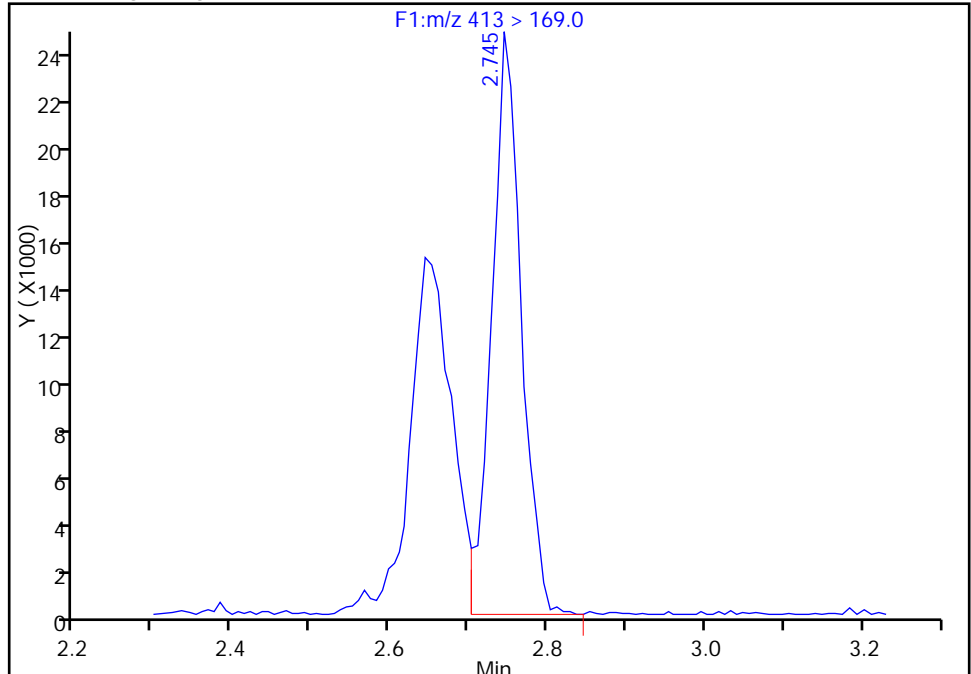
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_023_p1_e1.d
Injection Date: 23-Aug-2016 08:31:00 Instrument ID: A8
Lims ID: 320-20867-A-10-A Lab Sample ID: 320-20867-10
Client ID: GW14-08-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 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

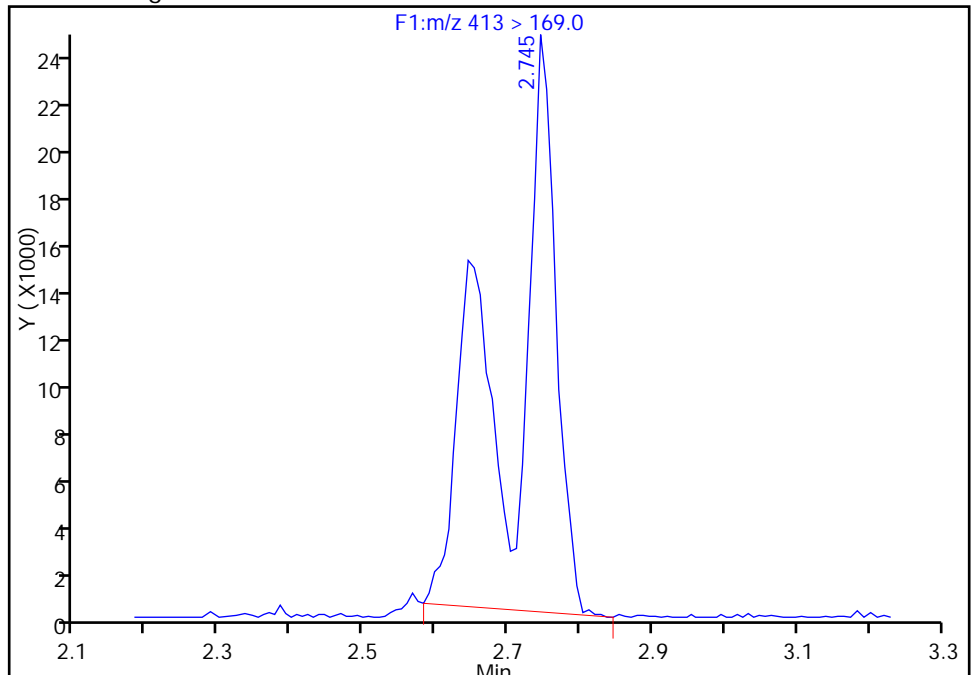
RT: 2.75
Area: 63745
Amount: 1.499768
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 112892
Amount: 2.440832
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:27:43
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_023_p1_e1.d

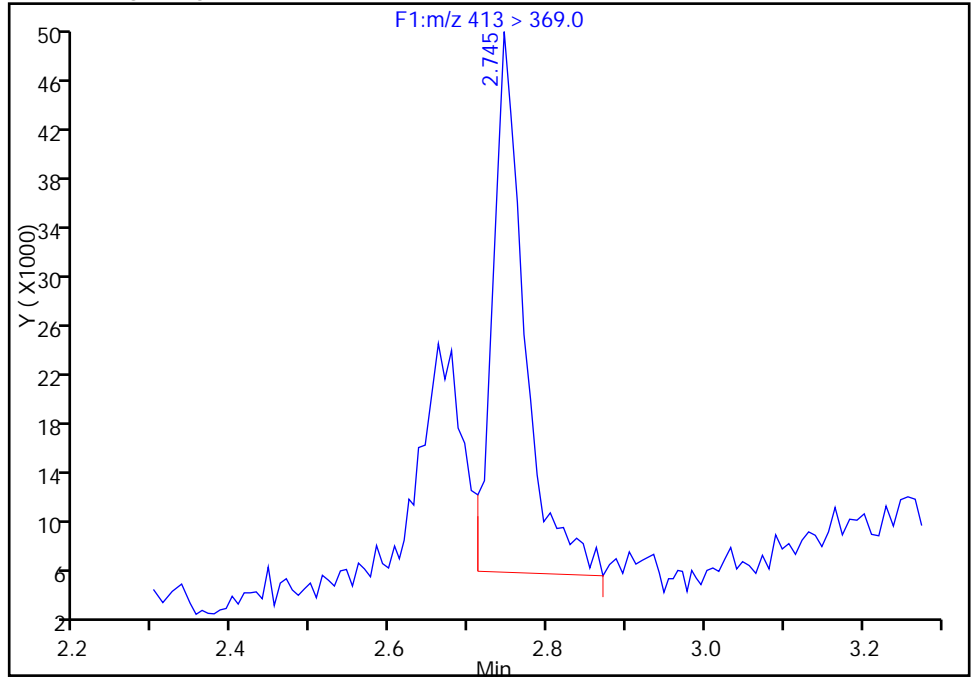
Injection Date: 23-Aug-2016 08:31:00 Instrument ID: A8
Lims ID: 320-20867-A-10-A Lab Sample ID: 320-20867-10
Client ID: GW14-08-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

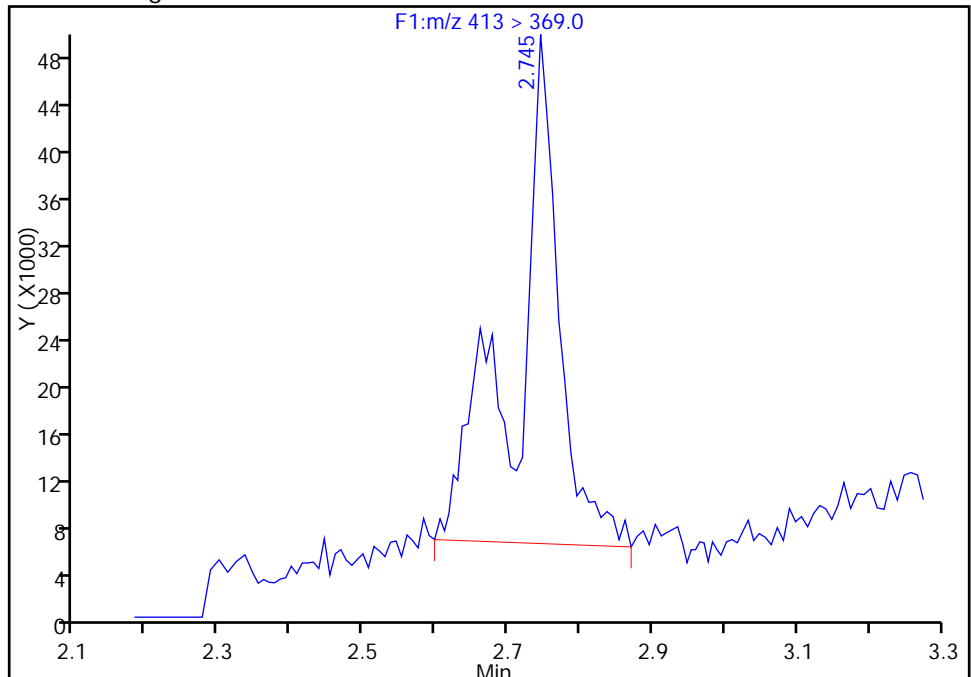
RT: 2.75
Area: 121021
Amount: 1.499768
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 184739
Amount: 2.440832
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:27:43

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

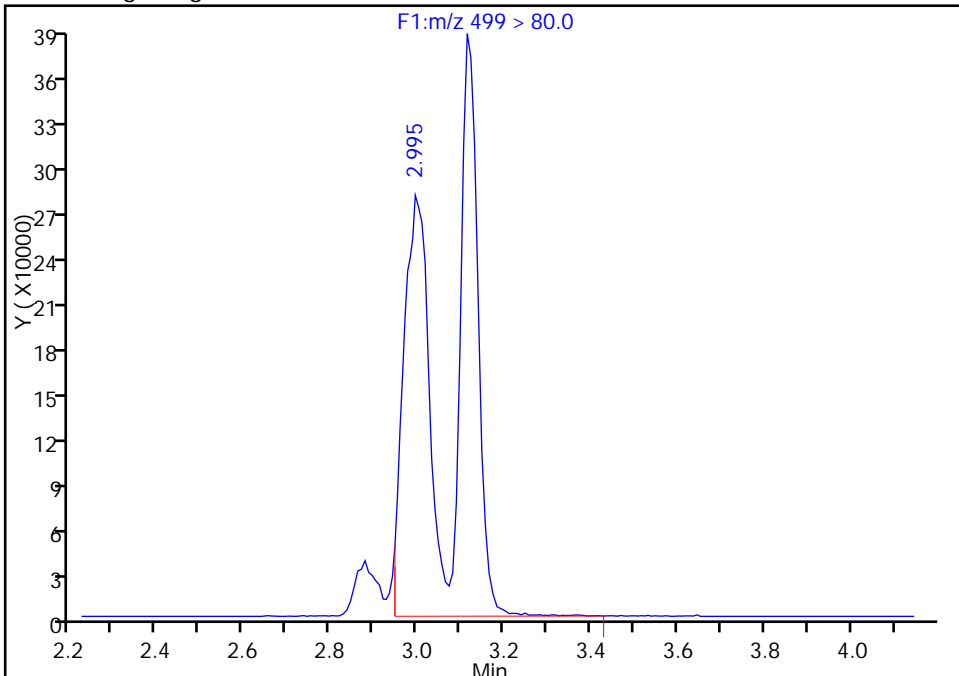
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_023_p1_e1.d
Injection Date: 23-Aug-2016 08:31:00 Instrument ID: A8
Lims ID: 320-20867-A-10-A Lab Sample ID: 320-20867-10
Client ID: GW14-08-0816
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 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

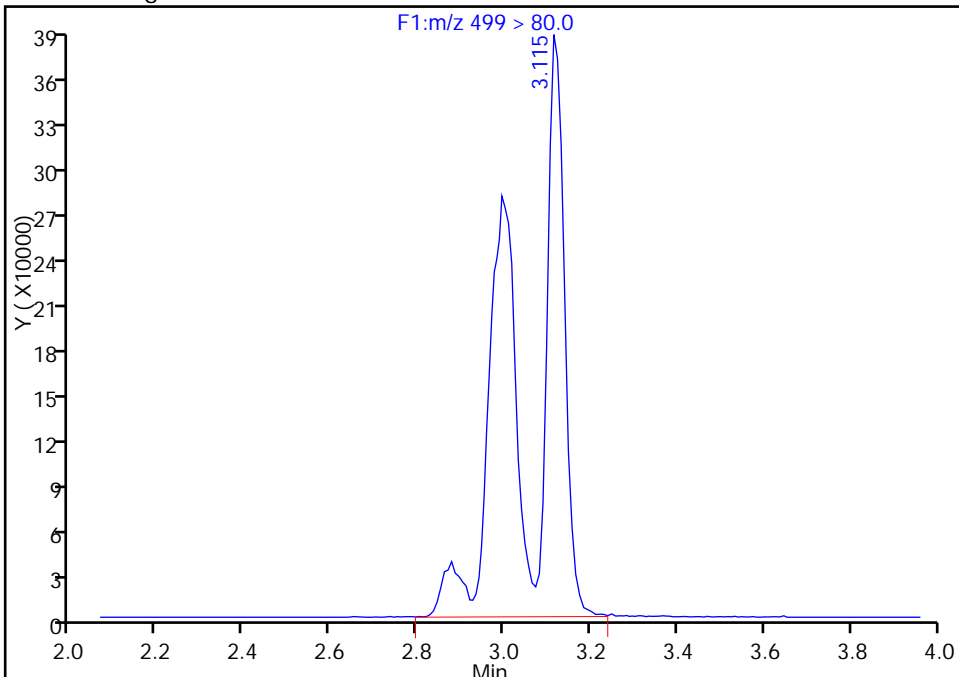
RT: 2.99
Area: 2194142
Amount: 19.986212
Amount Units: ng/ml

Processing Integration Results



RT: 3.11
Area: 2335253
Amount: 21.271577
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 31-Aug-2016 09:30:30
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1 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.: 320-20867-1 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.: 320-20867-1 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.: 320-20867-1 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.: 320-20867-1 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.: 320-20867-1 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.: 320-20867-1Analy 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.: 320-20867-1Analy 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.: 320-20867-1 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
		5597748	5625905	5714097	5592794	5596088	50.0	50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	4982565	5316587	4608501	4931190	4996335	50.0	50.0	50.0	50.0	50.0
		4903718		5169310		4882001	50.0		50.0		50.0
		4555434	5101082	5130213	4824282	4882001	50.0	50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	4893456	5651800	5130213	5409997	4996335	50.0	50.0	50.0	50.0	50.0
		4114875		4075116		4824282	50.0		50.0		+++++
		5154474	5651800	5695921	5409997	5450240	47.3	47.3	47.3	47.3	47.3
1802 PFHxS	Ave	5093422	2296963	4766996	2495968	5450240	47.3	47.5	47.3	47.5	47.3
		2289167		2582138		2702461	47.5		47.5		47.5
		2891381	3191432	2702461	47.5	47.5	47.5	47.5	47.5	47.5	47.5
M2-6:2FTS	Ave	5095403	5336887	5053694	4929513	5295788	50.0	50.0	50.0	50.0	50.0
		4340061		3659806		4929513	50.0		50.0		50.0
		4340061	3659806	3659806	4929513	5295788	50.0	50.0	50.0	50.0	50.0

FORM VI
 LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
 RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1 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
		LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	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.: 320-20867-1 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 SacramentoJob No.: 320-20867-1Analy 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

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		28657		58625			0.474		0.948	
			184885		953559		2236049	4.74		19.0		47.4
				8763302	++++				190	++++		

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-20867-1Analy 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
Perfluorooctanoic acid (PFOA)		L1ID	76280		129758		534559	0.500		1.00		5.00
			17781219	2203768	28429006	5364240		200	20.0	400	50.0	
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	47243		89337		485823	0.476		0.952		4.76
			17785212	1983261	30224767	4687508		190	19.0	381	47.6	
Perfluorooctanesulfonic acid (PFOS)		AveID	47343		83050		419034	0.464		0.928		4.64
			16218841	1774033	30678315	4130746		186	18.6	371	46.4	
Perfluorononanoic acid (PFNA)		AveID	40604		85388		403677	0.500		1.00		5.00
			14679162	1803496	25192622	4115794		200	20.0	400	50.0	
Perfluorooctane Sulfonamide (FOSA)		AveID	75474		141802		701587	0.500		1.00		5.00
			23957395	3023571	+++++	7178073		200	20.0	+++++	50.0	
8:2FTS		AveID	160417		805944		1970057	4.79		19.2		47.9
				17207		31441			0.479		0.958	
Perfluorodecanoic acid (PFDA)		AveID	37498		76186		352085	0.500		1.00		5.00
			13639089	1565796	24469701	3607247		200	20.0	400	50.0	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	92774		489734		1190511	5.00		20.0		50.0
				9858		20837			0.500		1.00	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	91349		484482		1107026	5.00		20.0		50.0
				9093		19720			0.500		1.00	
Perfluorodecanesulfonic acid (PFDS)		AveID	23143		49391		240619	0.482		0.964		4.82
			9757829	1027660	18108114	2501158		193	19.3	386	48.2	
Perfluoroundecanoic acid (PFUnA)		AveID	36538		65283		312466	0.500		1.00		5.00
			10412322	1233304	+++++	2983565		200	20.0	+++++	50.0	
MeFOSA		AveID	134729		674490		1691110	5.00		20.0		50.0
				13969		29431			0.500		1.00	
N-EtFOSA-M		AveID	131165		658792		1643536	5.00		20.0		50.0
				13086		27827			0.500		1.00	
			7477876		14937252			200	400			

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-20867-1Analy 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 PFDoA										
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

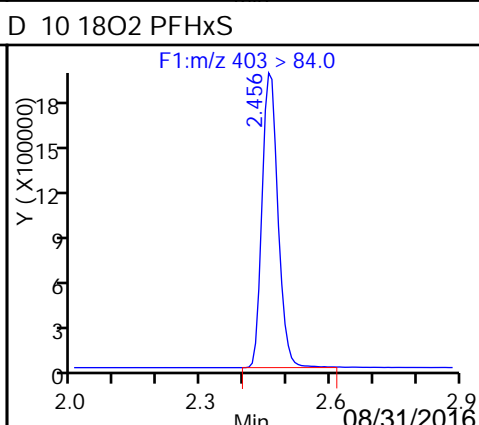
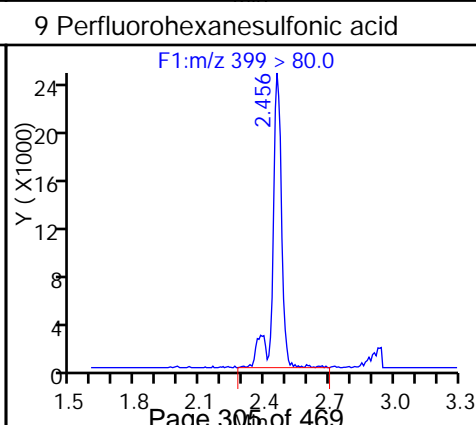
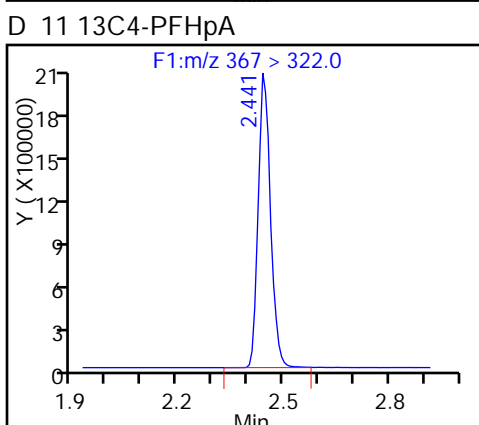
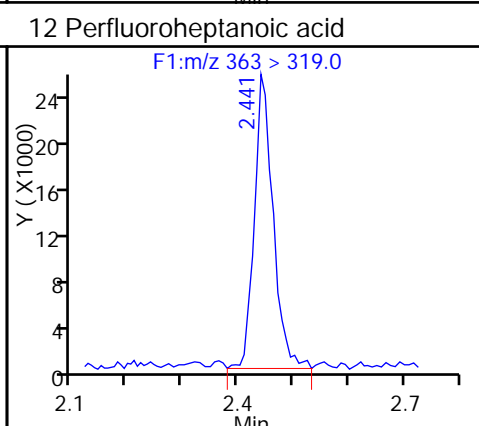
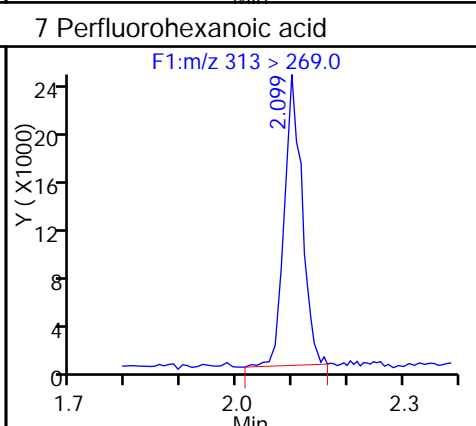
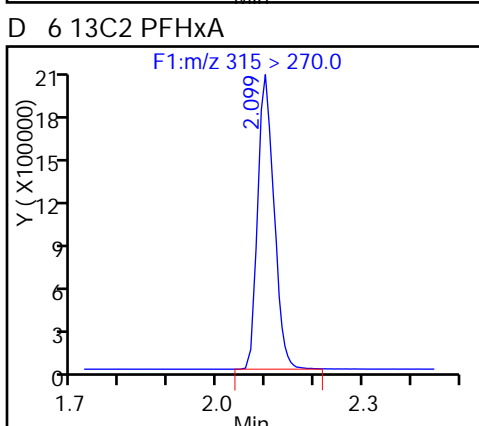
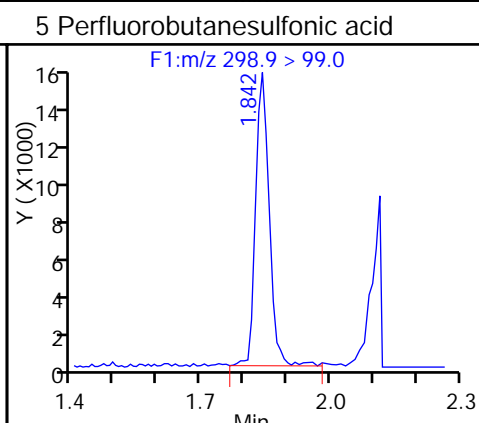
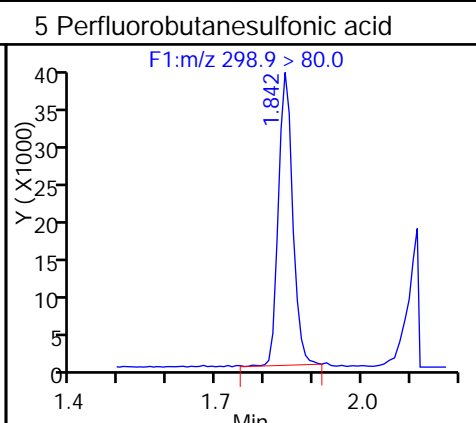
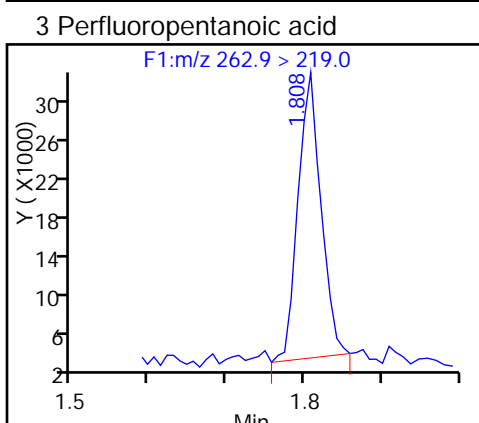
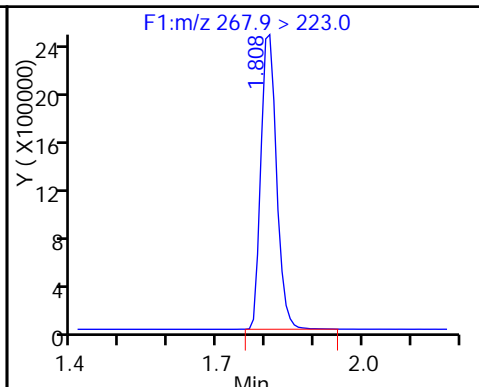
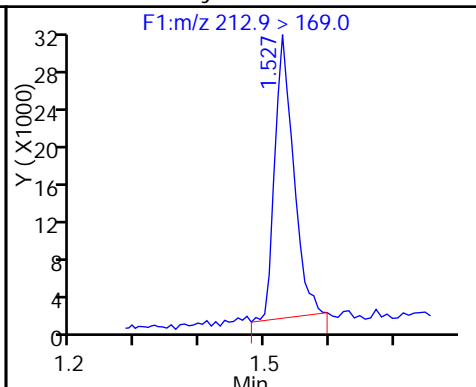
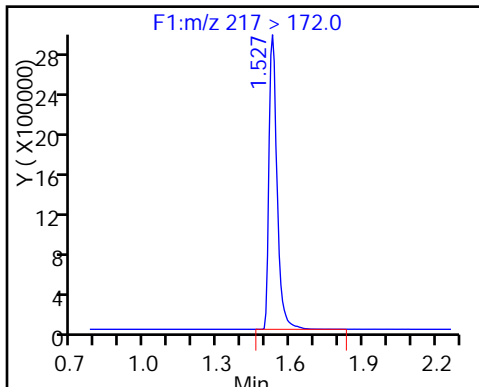
Method: PFC_A8_Full

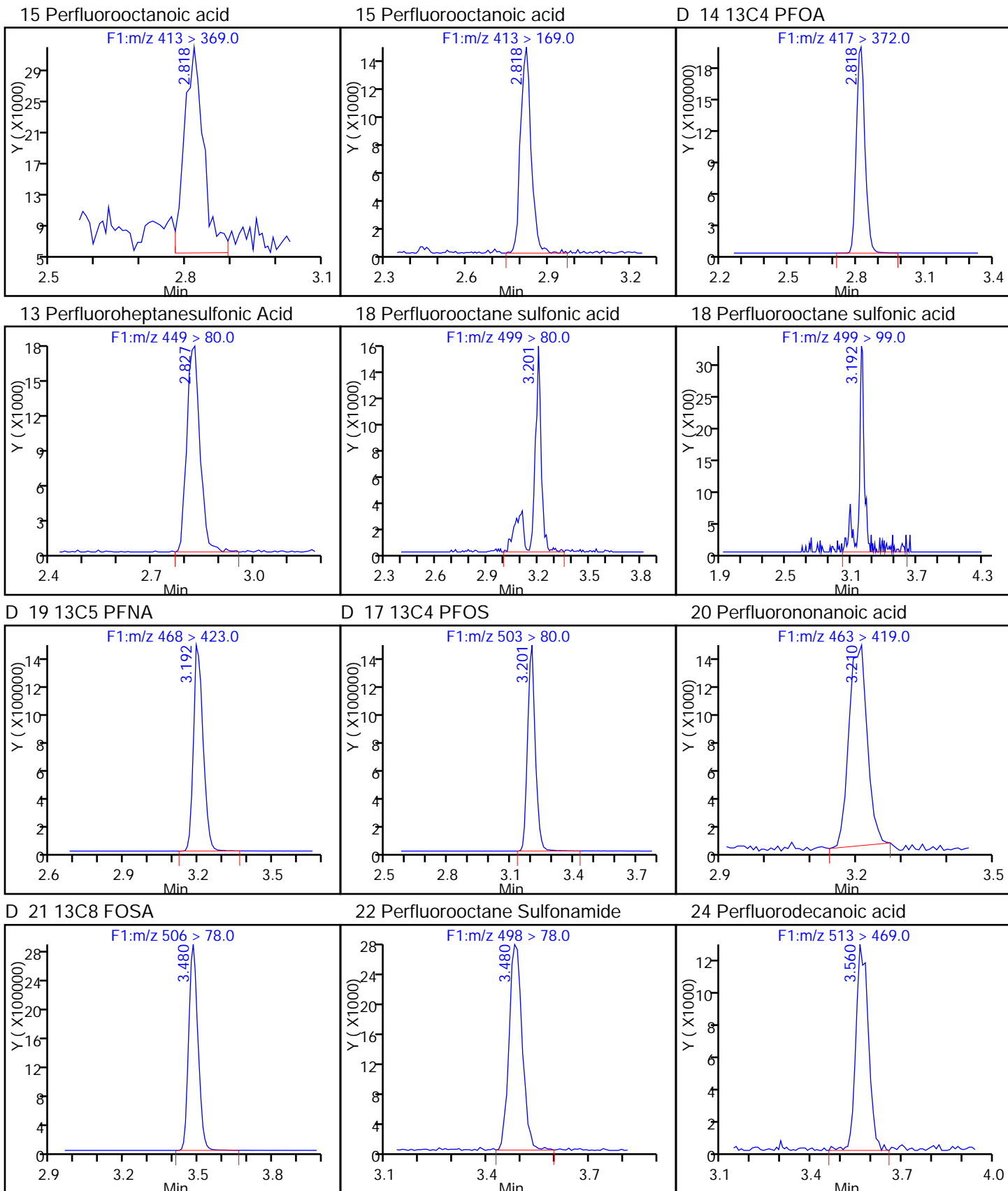
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

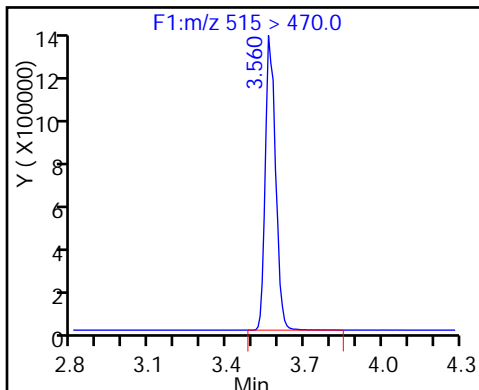
1 Perfluorobutyric acid

D 4 13C5-PFPeA

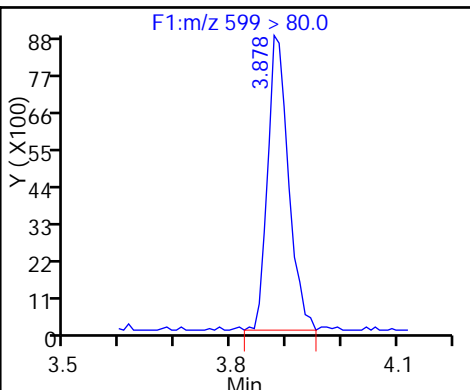




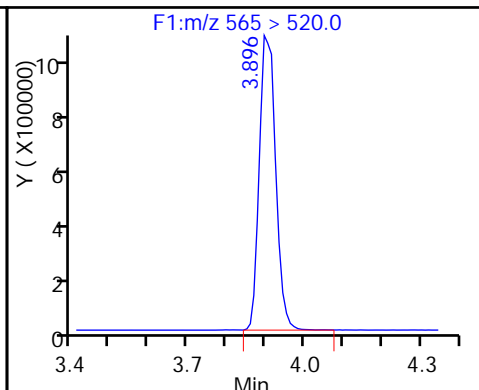
D 23 13C2 PFDA



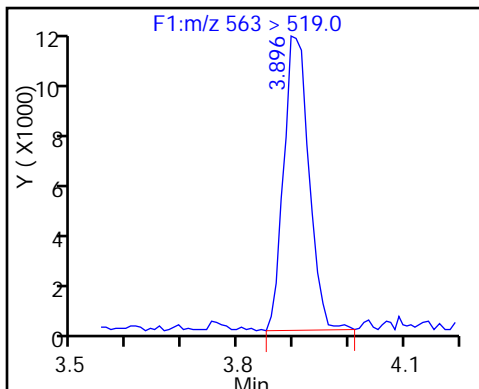
26 Perfluorodecane Sulfonic acid



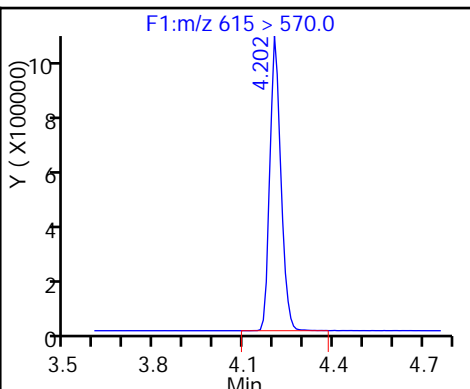
D 27 13C2 PFUnA



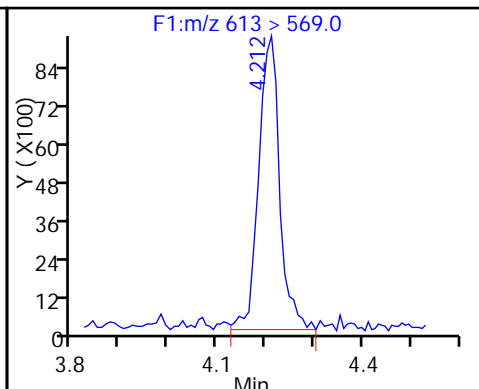
28 Perfluoroundecanoic acid



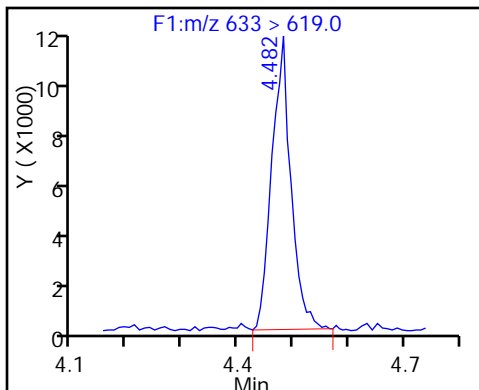
D 30 13C2 PFDaA



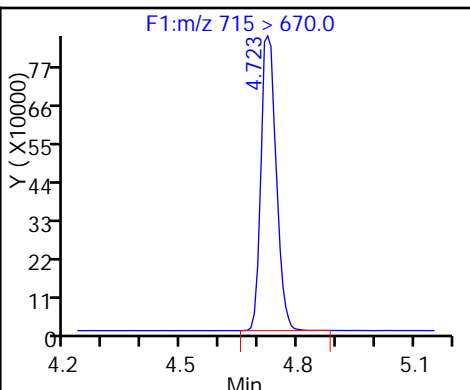
29 Perfluorododecanoic acid



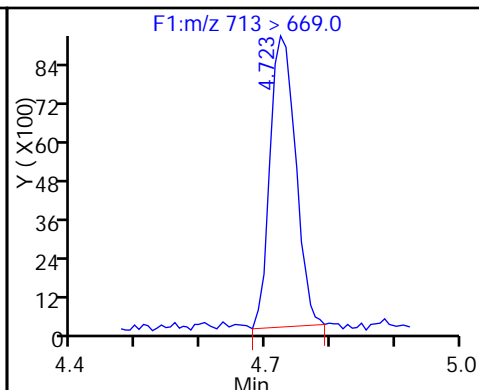
31 Perfluorotridecanoic acid



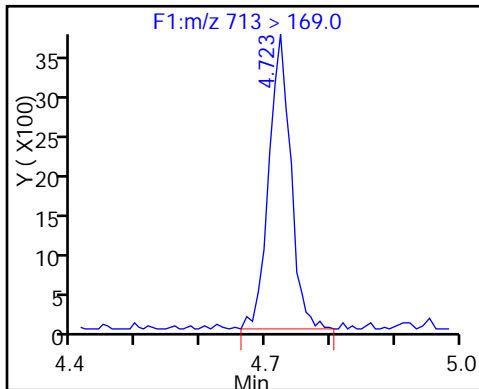
D 32 13C2-PFTeDA



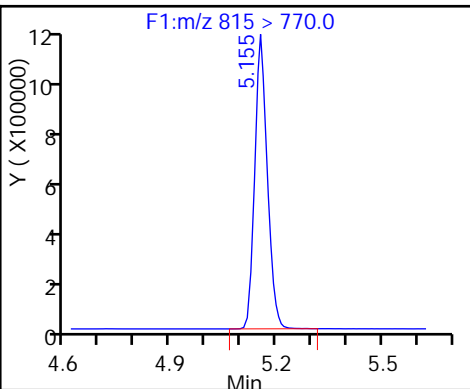
33 Perfluorotetradecanoic acid



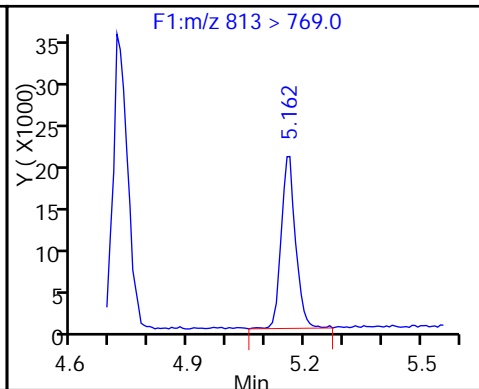
33 Perfluorotetradecanoic acid



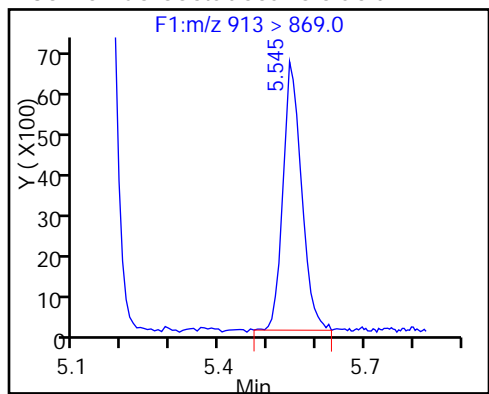
D 34 13C2-PFHxDA



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

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_005_p1_e1.d

Injection Date: 22-Aug-2016 16:31:00

Instrument ID: A8

Lims ID: IC L2

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

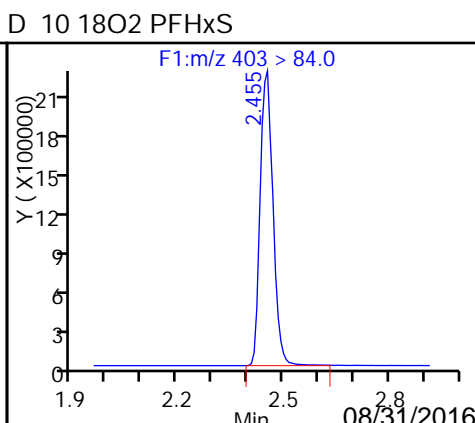
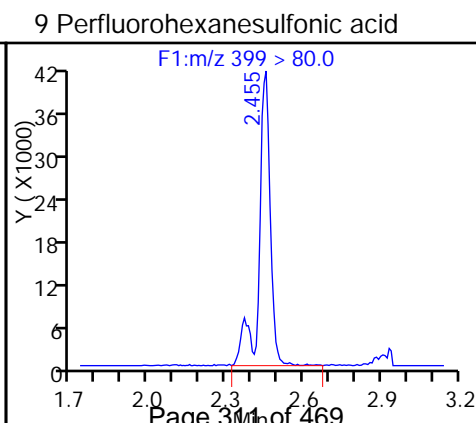
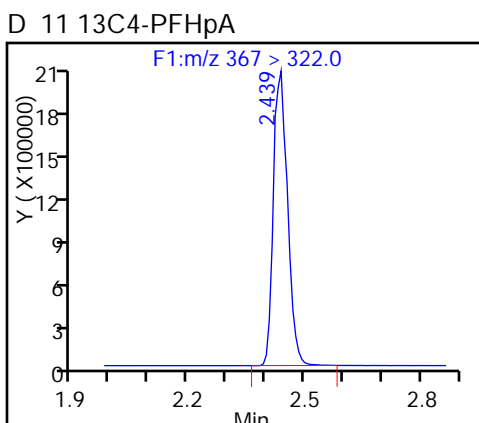
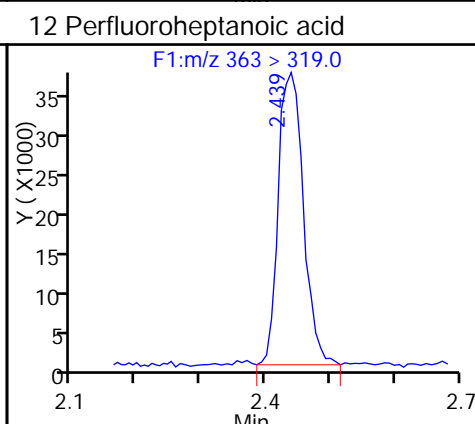
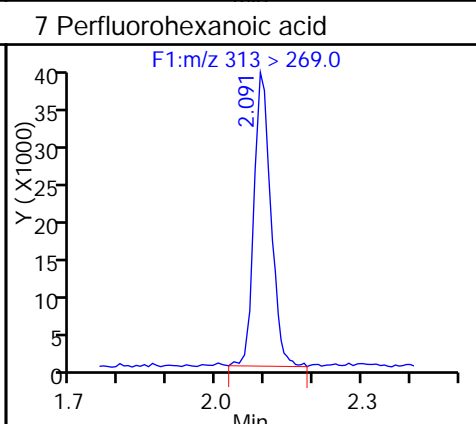
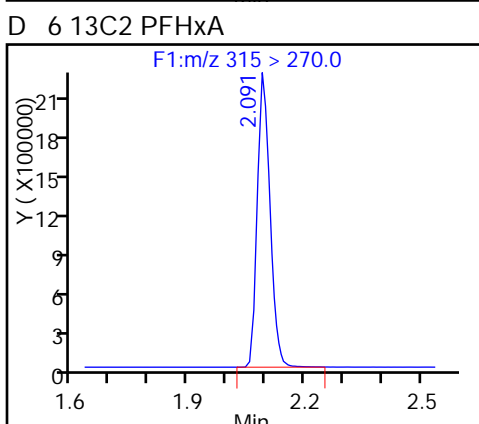
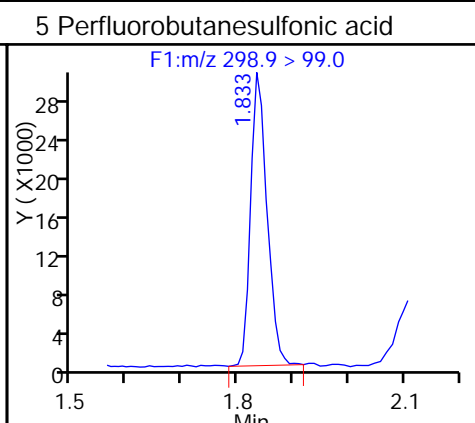
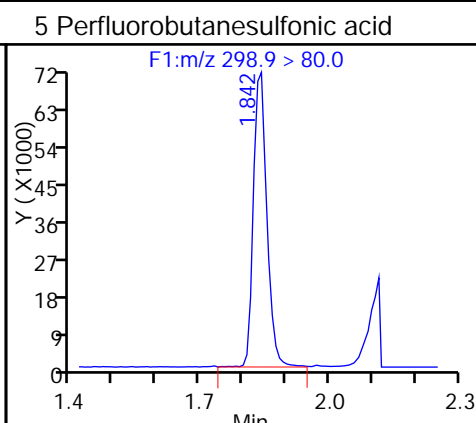
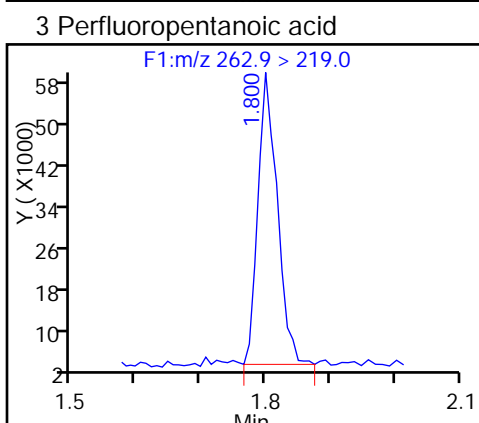
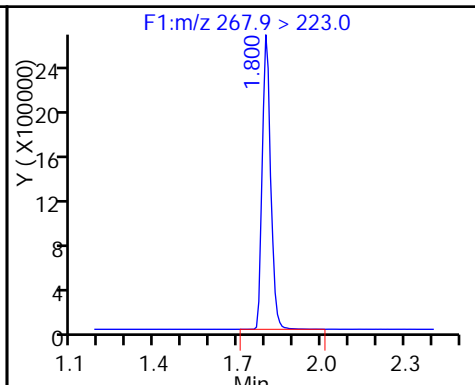
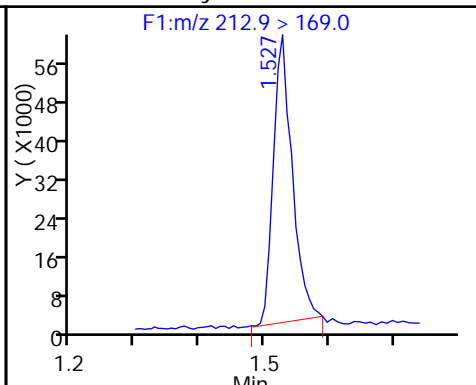
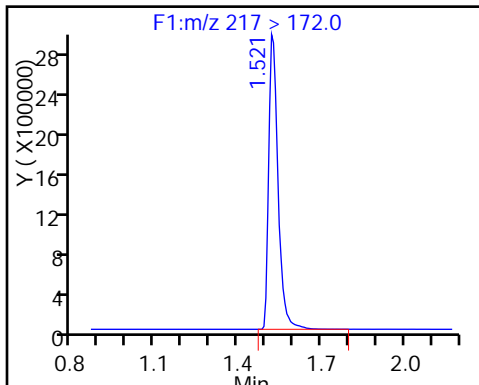
Method: PFC_A8_Full

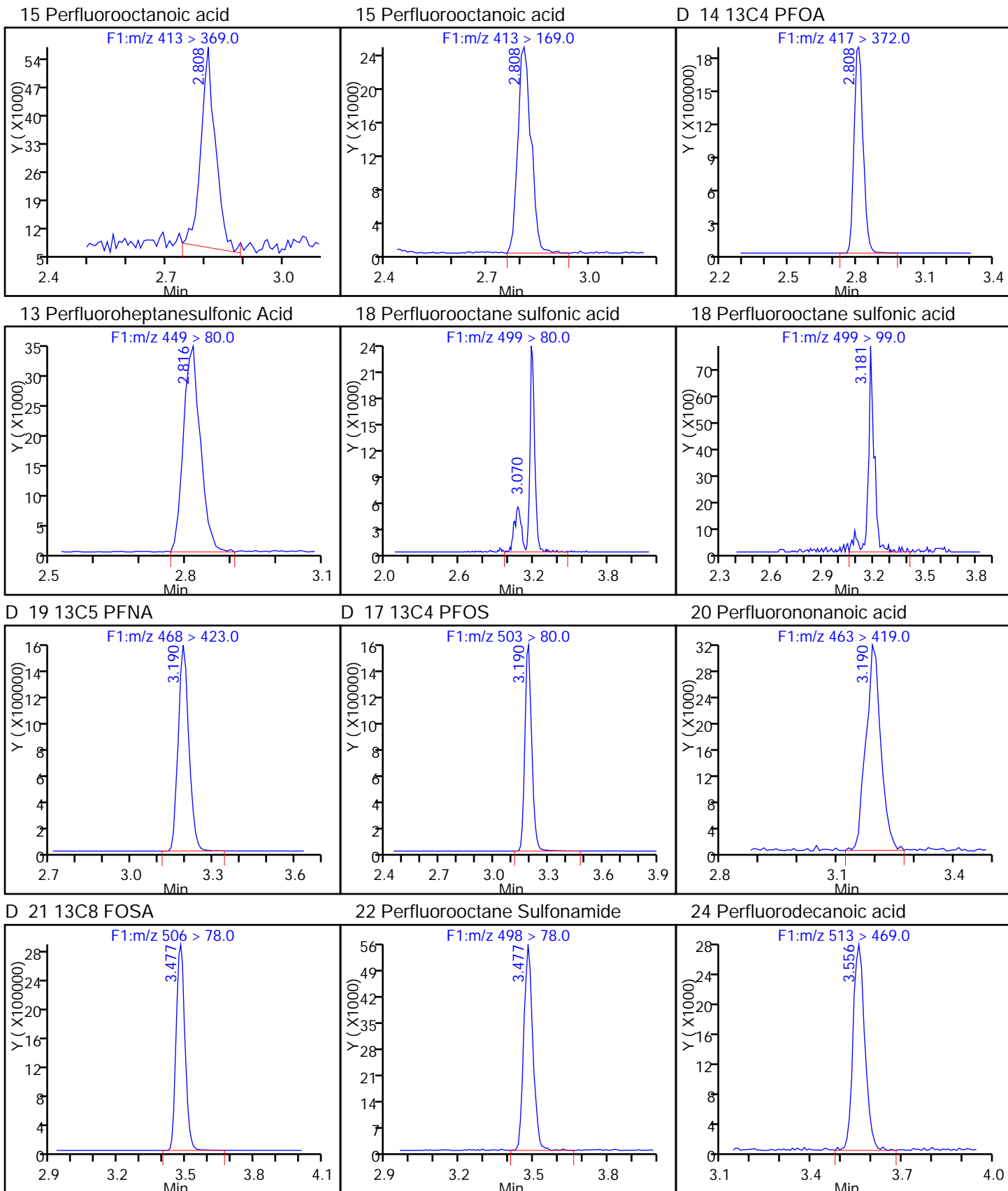
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

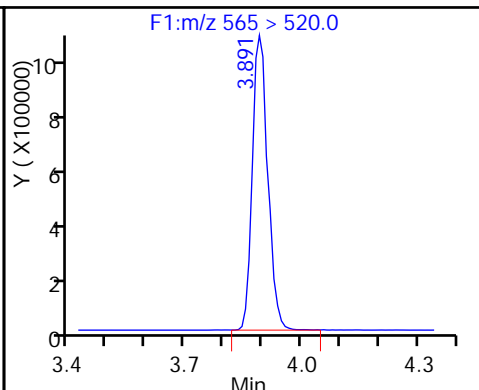
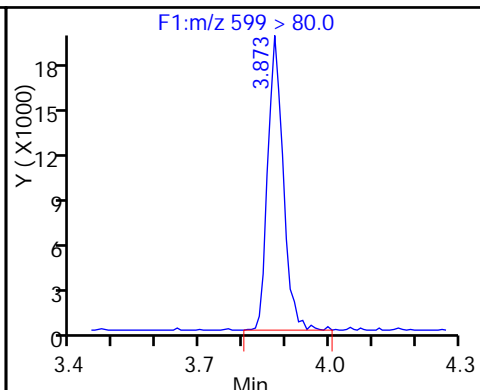
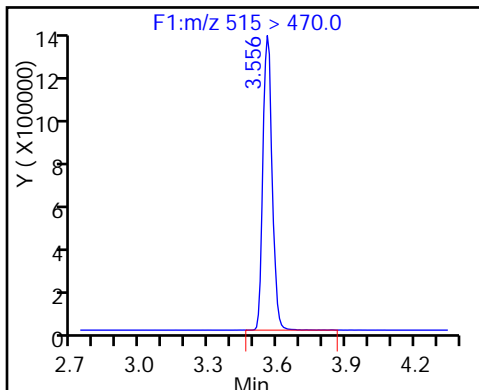




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

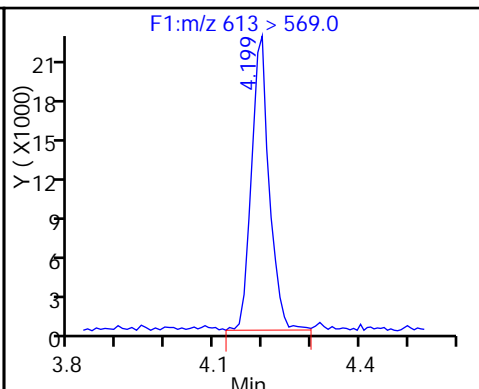
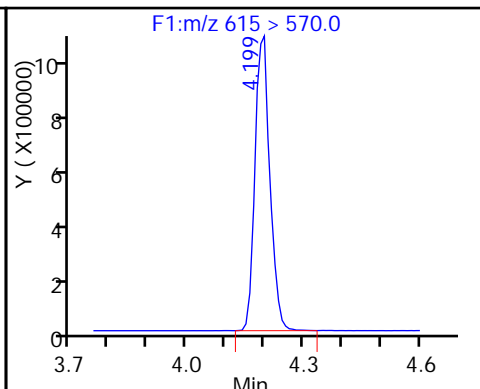
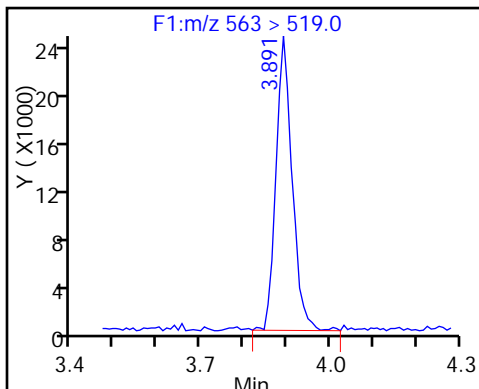
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

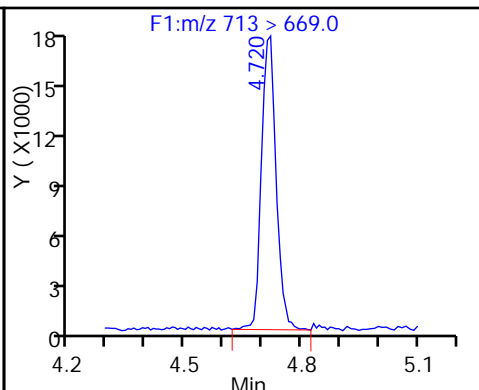
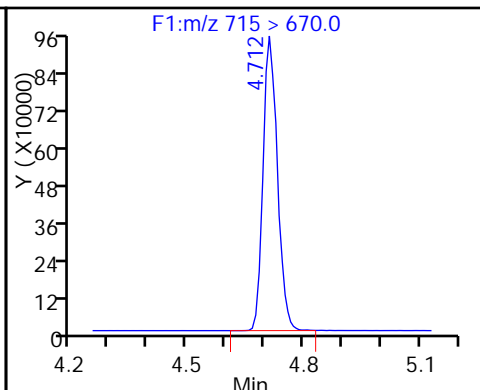
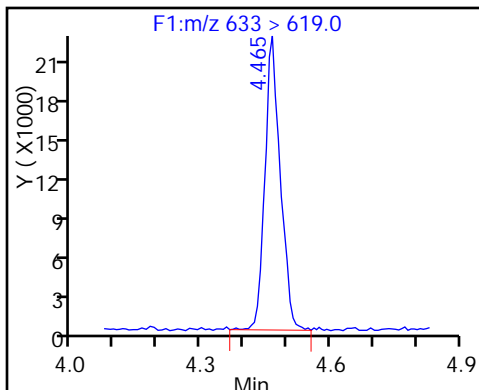
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

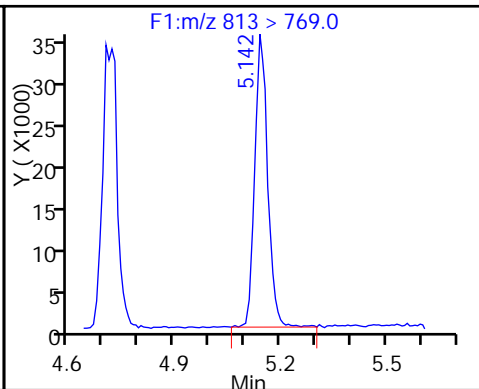
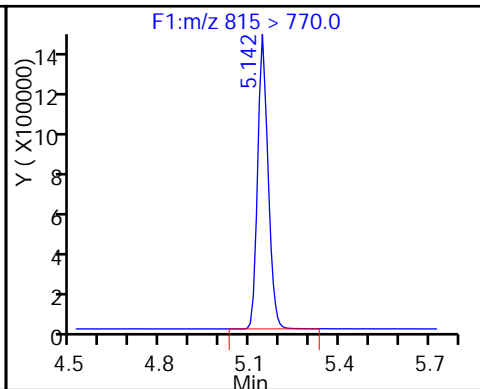
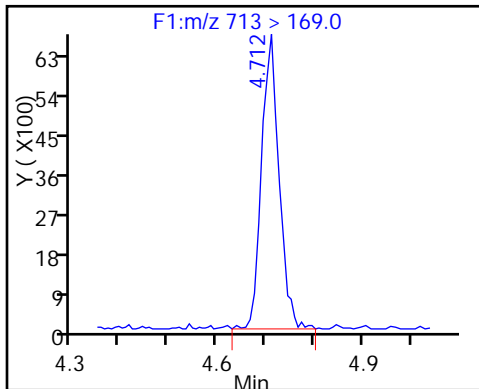
33 Perfluorotetradecanoic acid



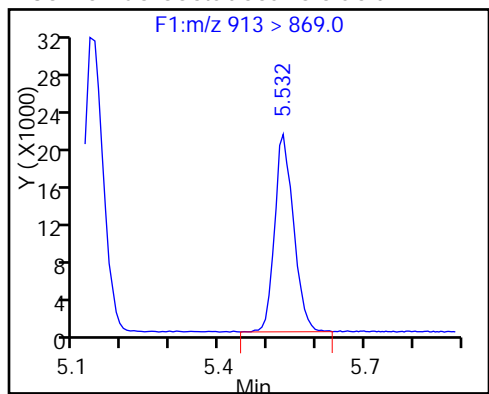
33 Perfluorotetradecanoic acid

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

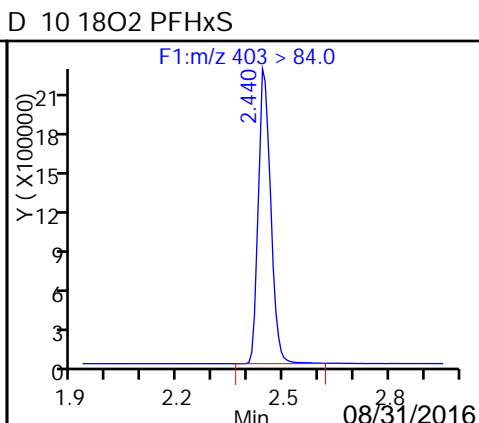
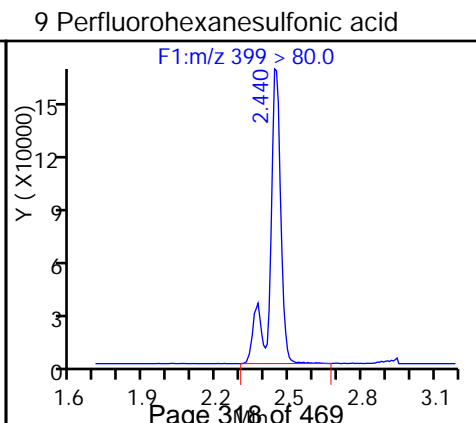
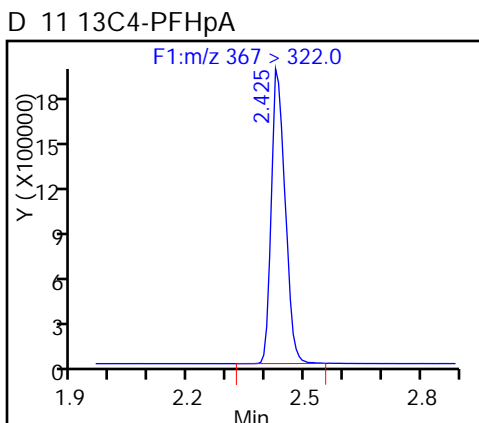
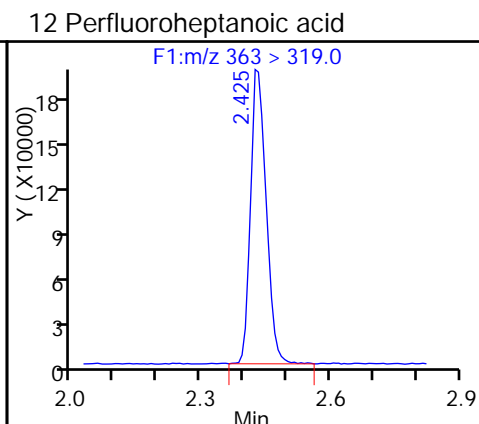
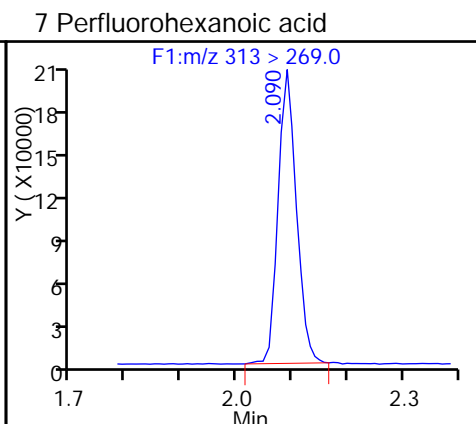
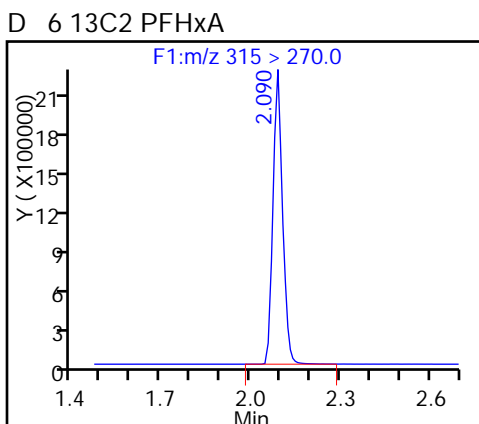
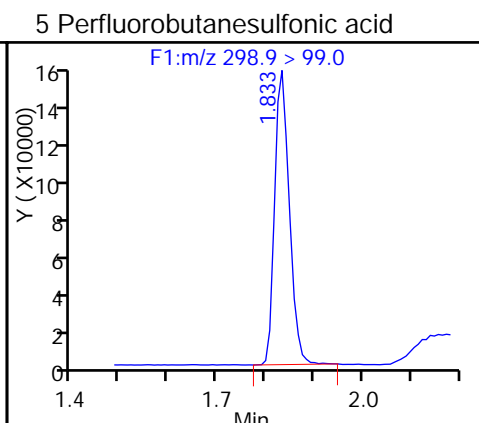
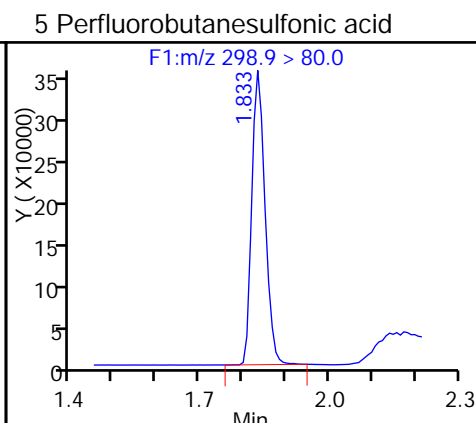
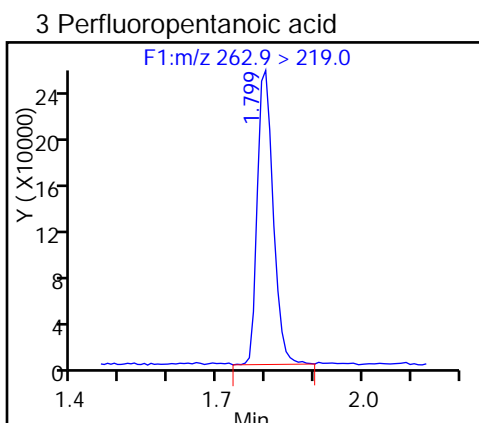
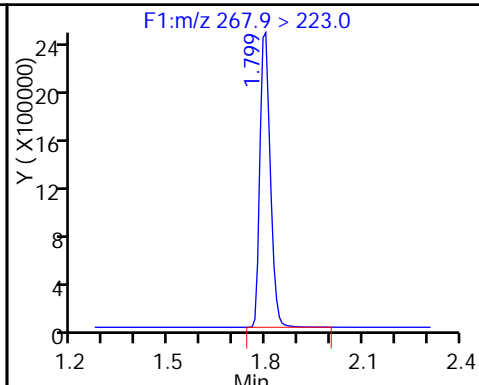
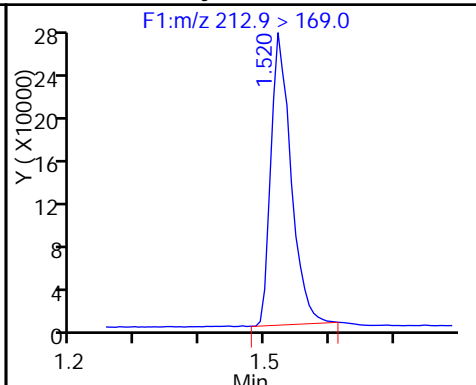
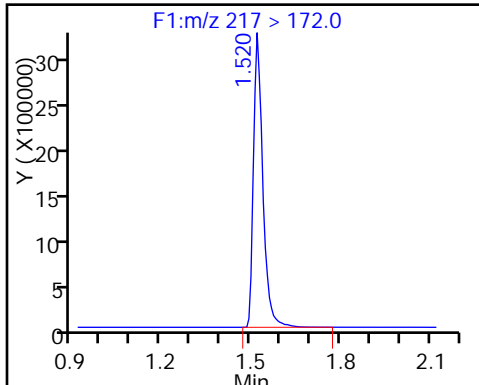
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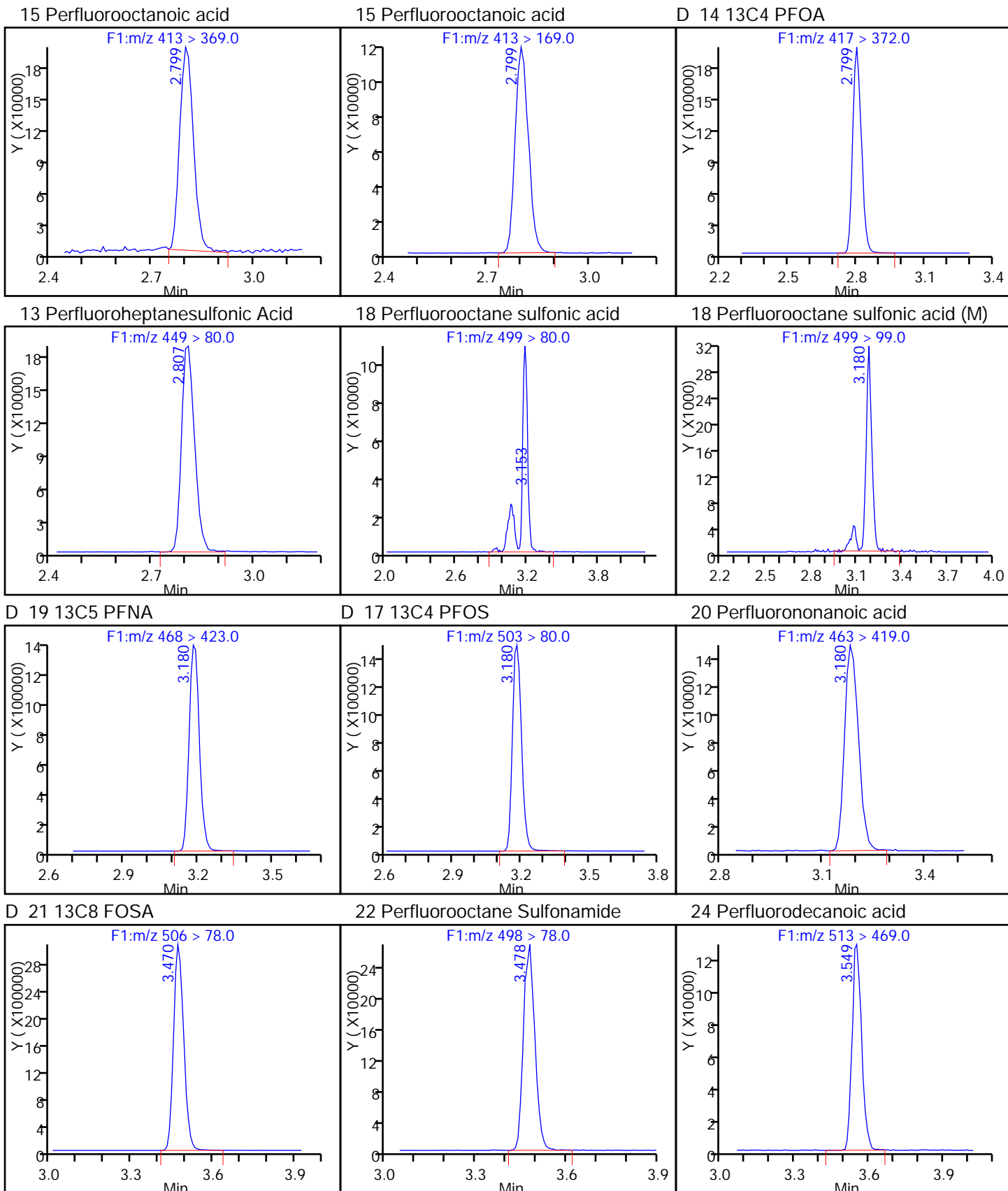
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

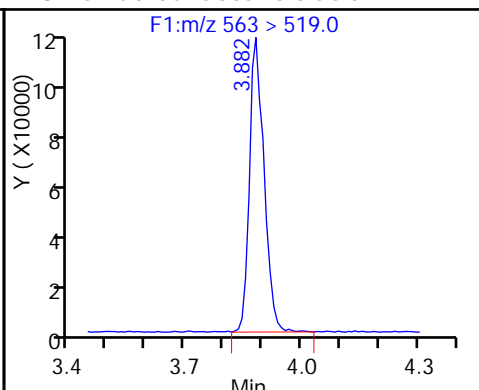
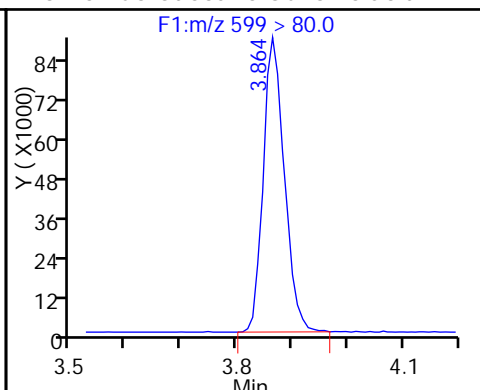
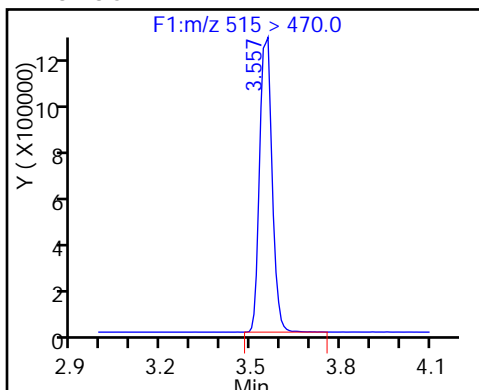




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

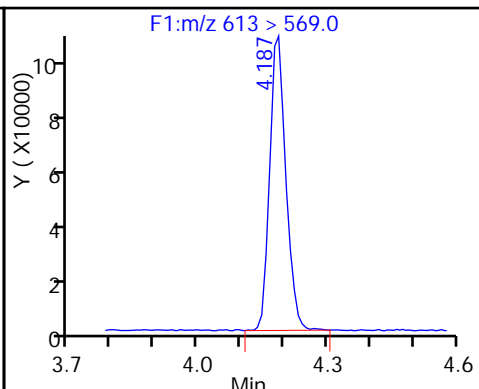
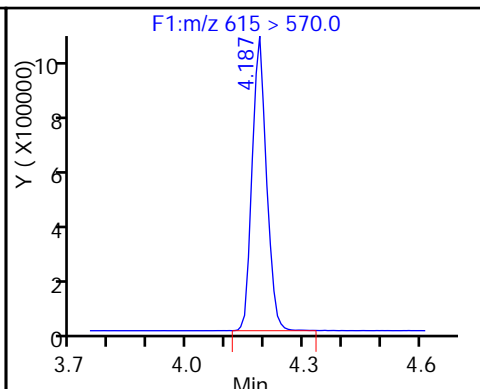
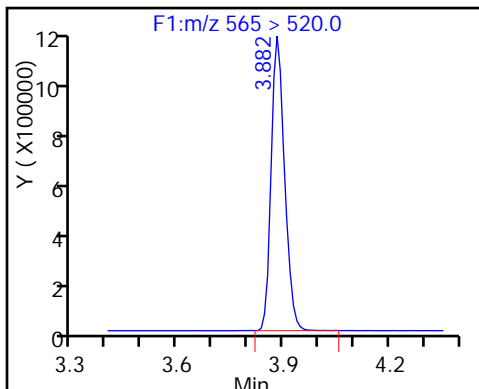
28 Perfluoroundecanoic acid



D 27 13C2 PFuNA

D 30 13C2 PFDaA

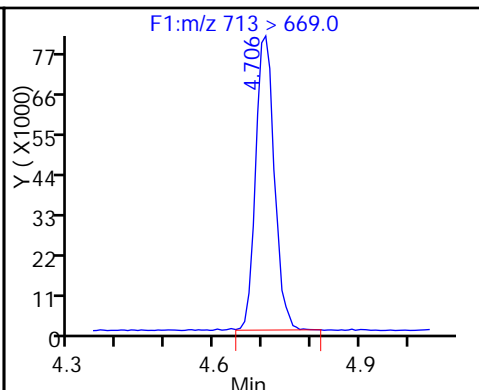
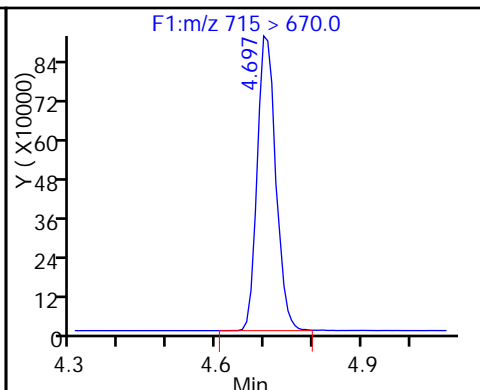
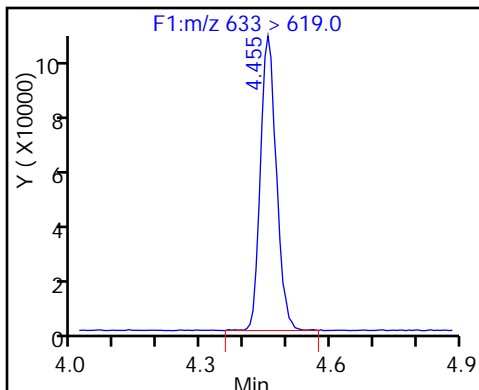
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

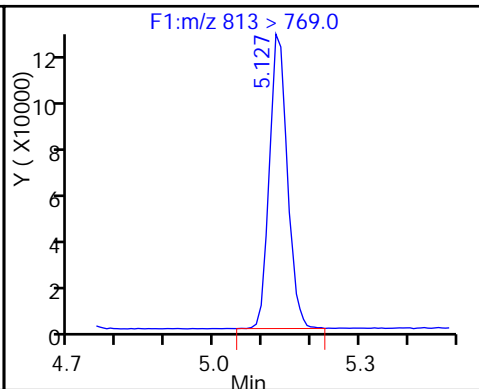
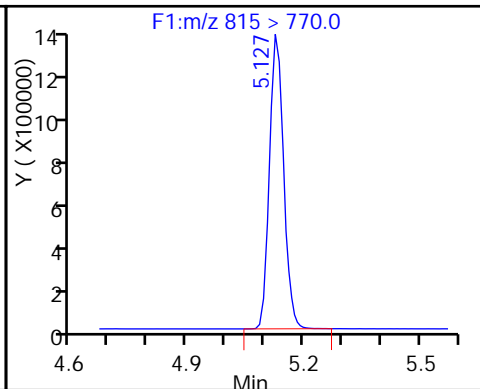
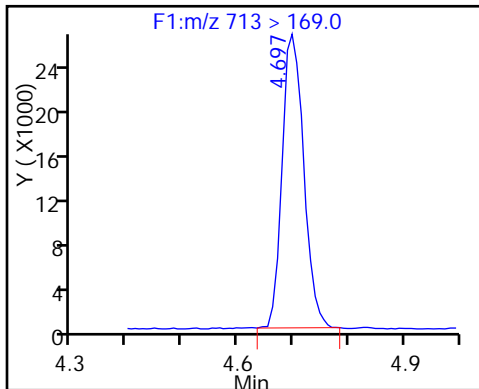
33 Perfluorotetradecanoic acid



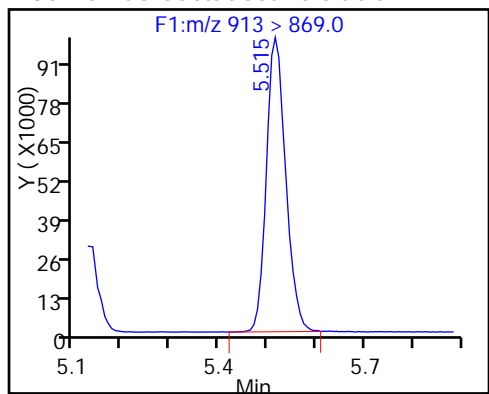
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

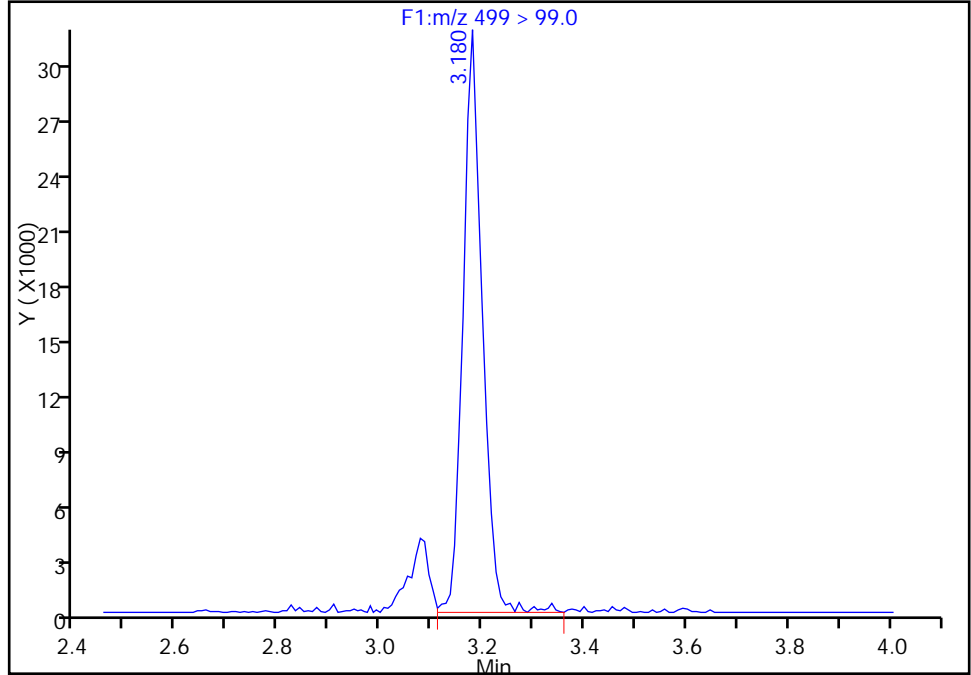
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Injection Date: 22-Aug-2016 16:38:00 Instrument ID: A8
Lims ID: IC L3
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

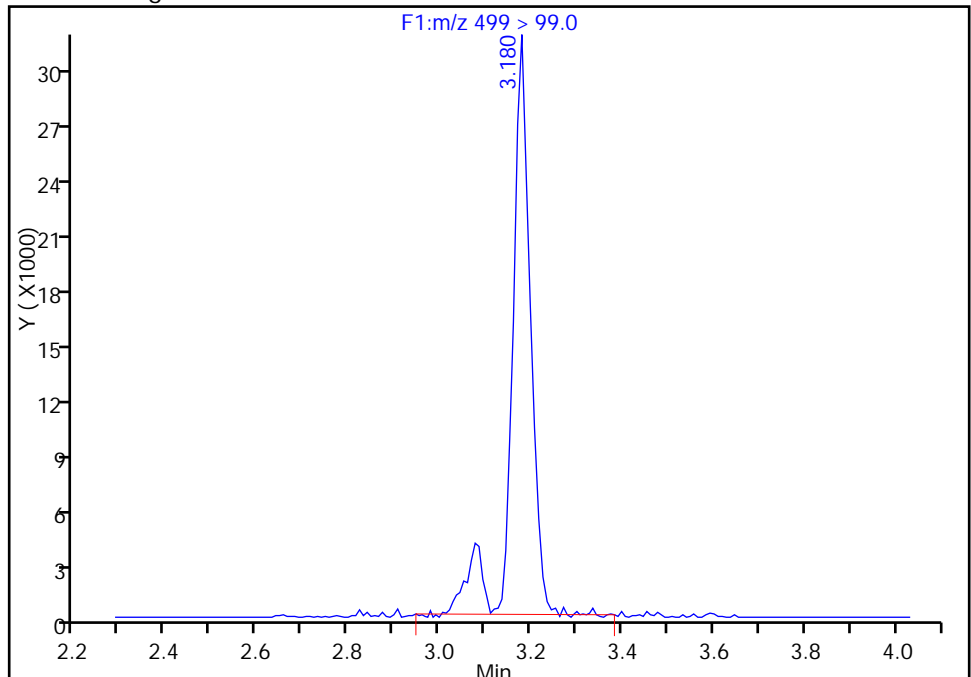
RT: 3.18
Area: 84307
Amount: 4.526361
Amount Units: ng/ml

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 PFDoA										
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

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

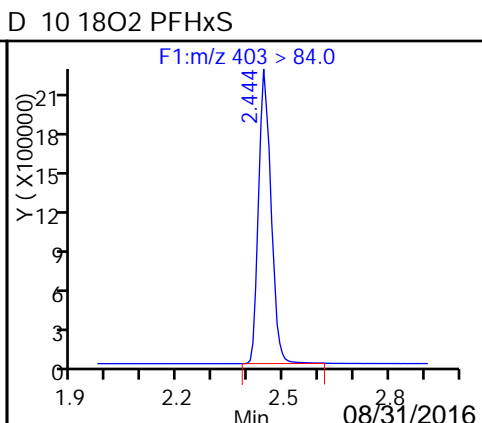
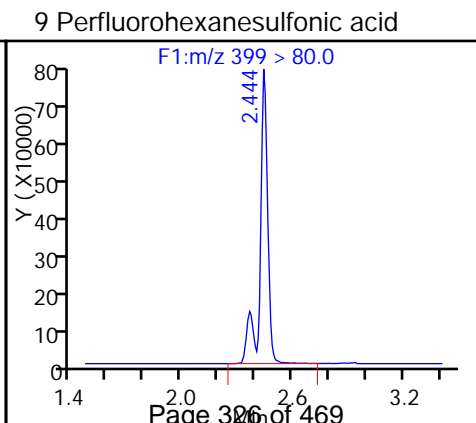
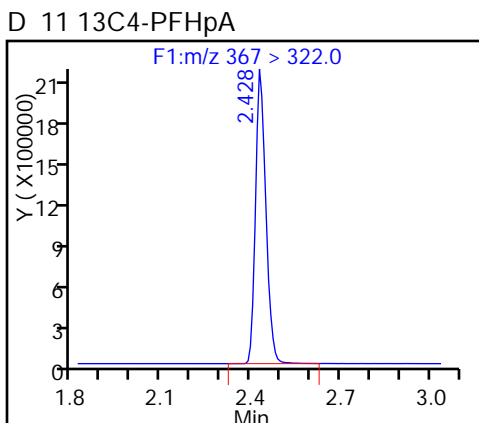
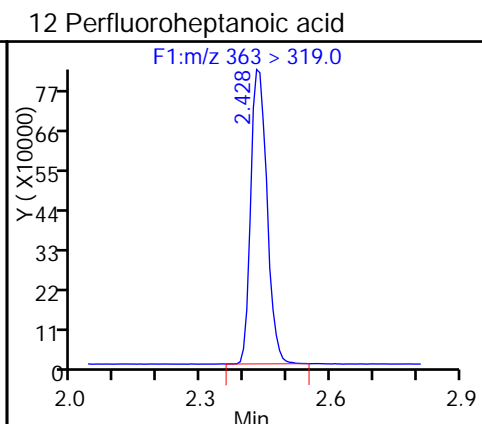
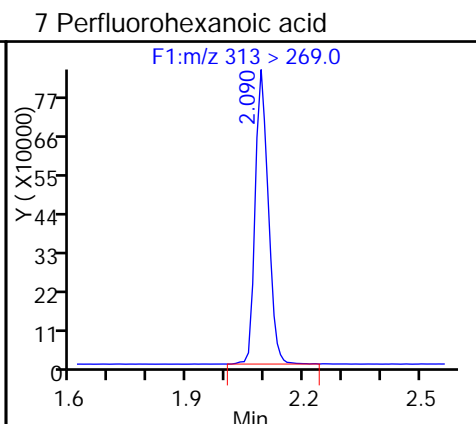
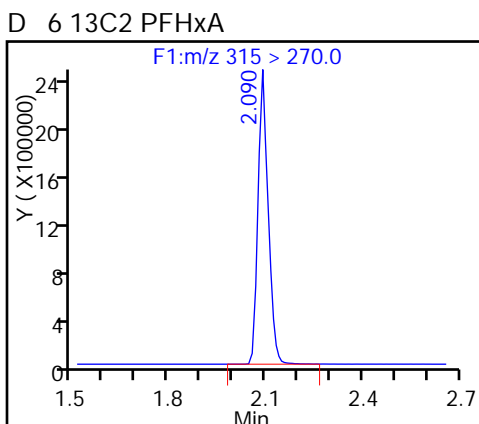
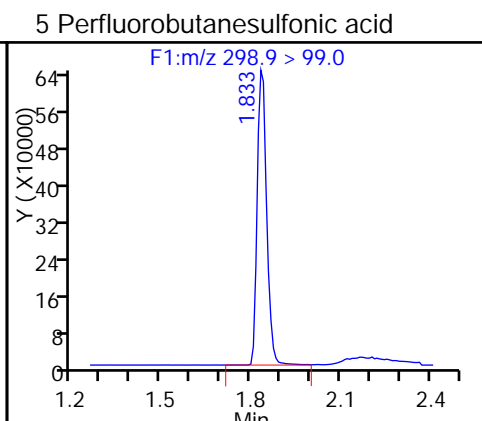
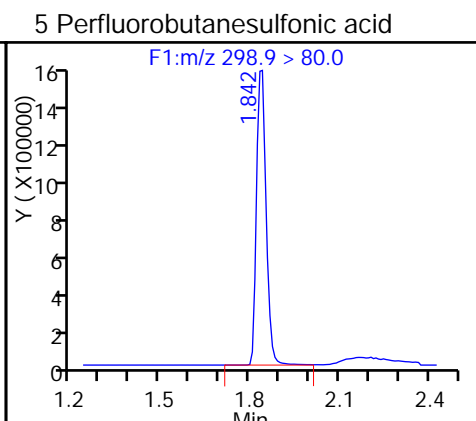
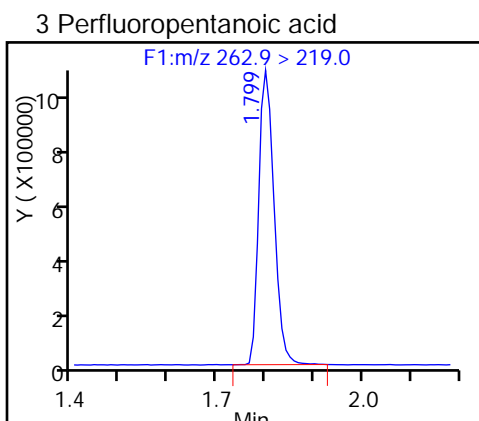
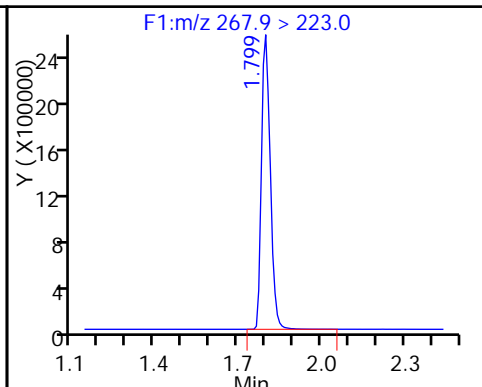
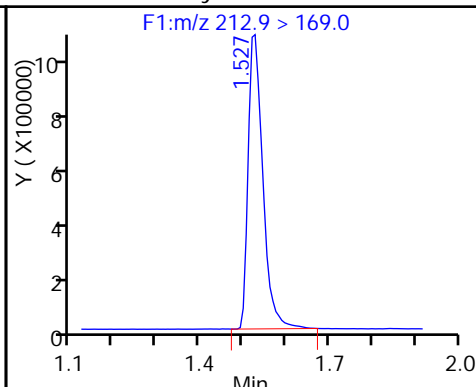
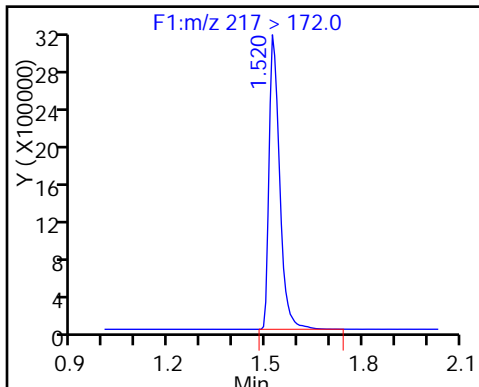
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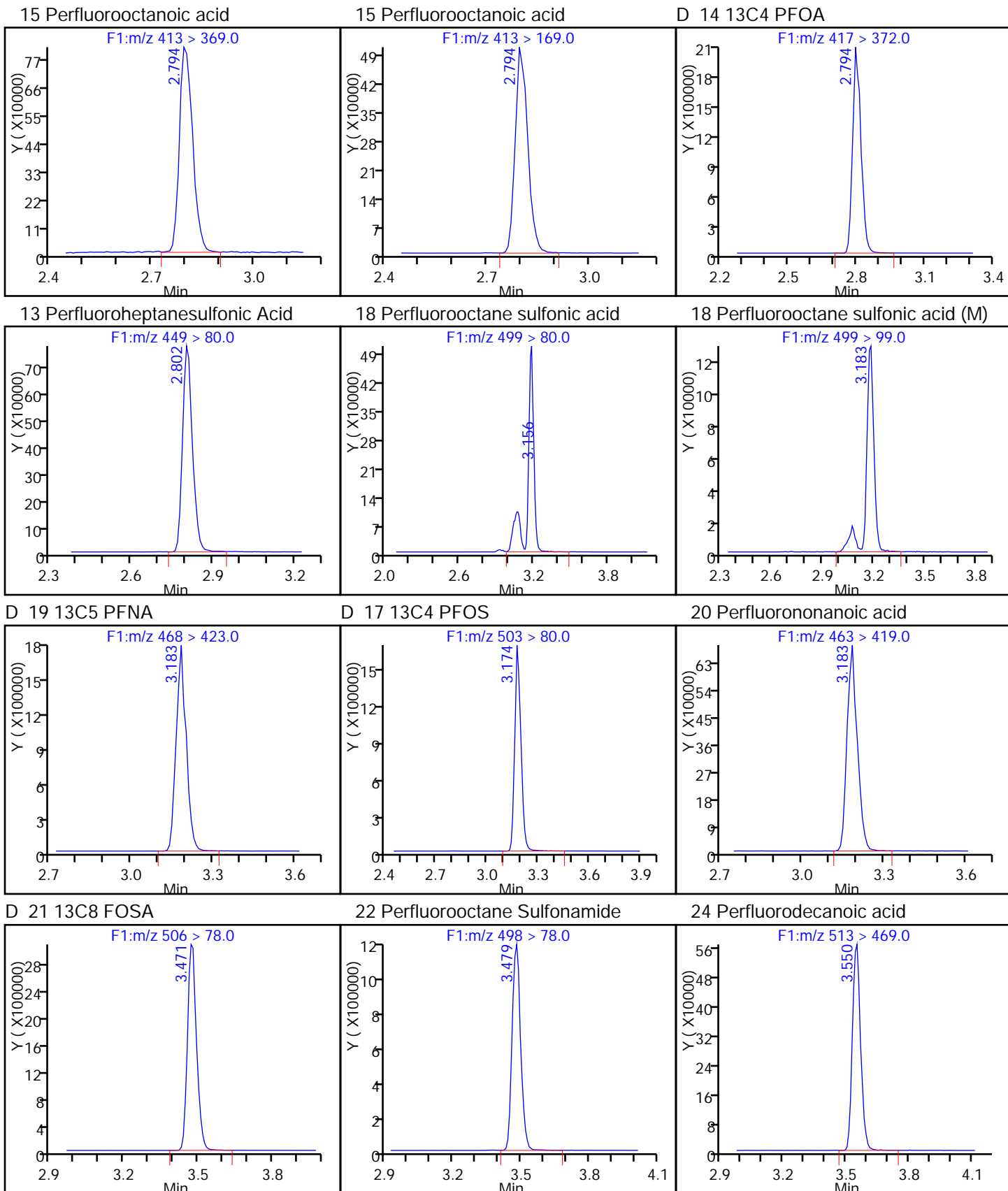
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

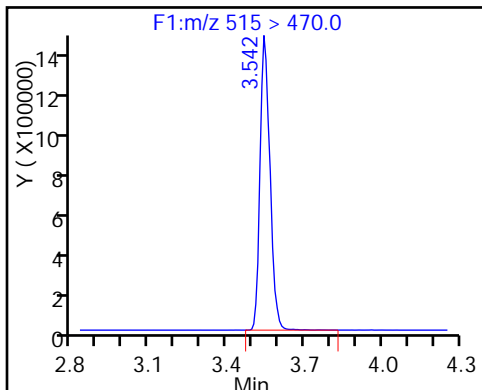
1 Perfluorobutyric acid

D 4 13C5-PFPeA

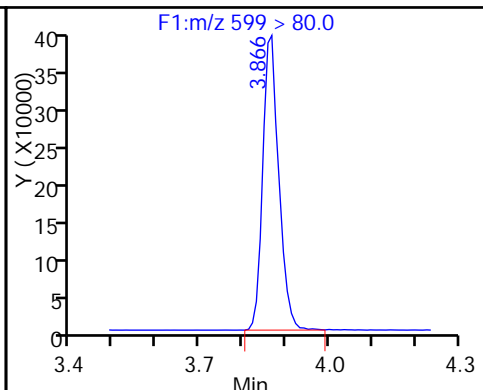




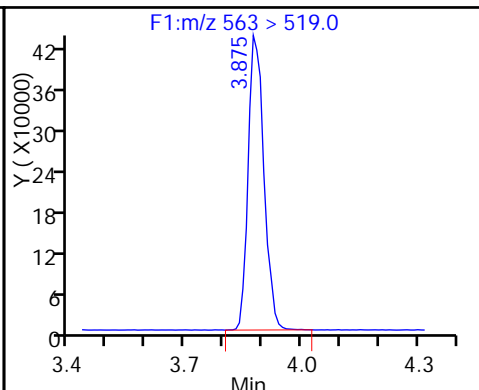
D 23 13C2 PFDA



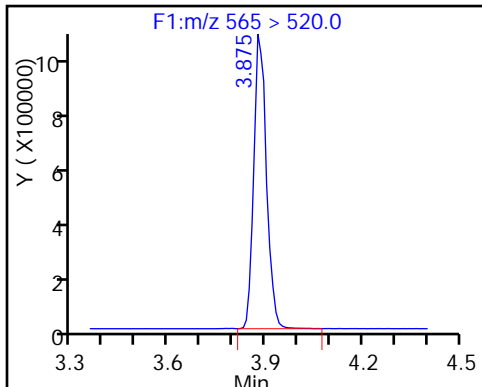
26 Perfluorodecane Sulfonic acid



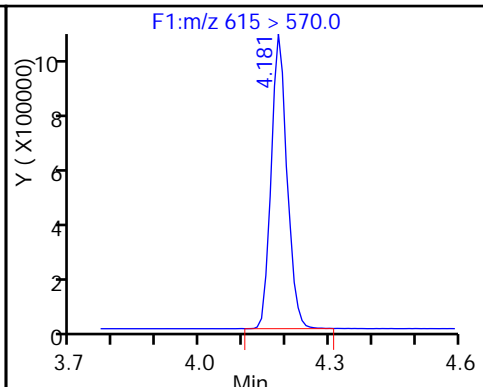
28 Perfluoroundecanoic acid



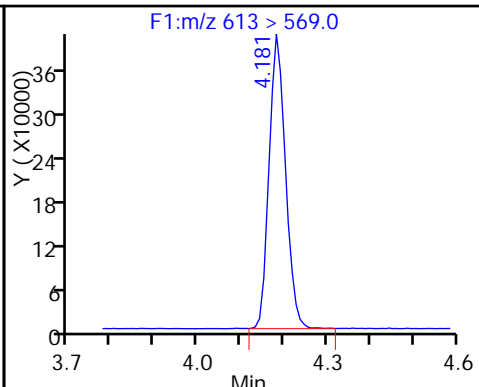
D 27 13C2 PFUa



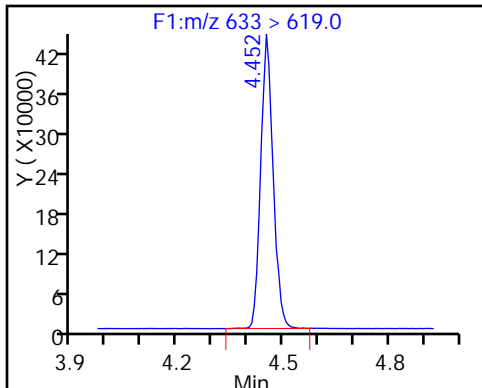
D 30 13C2 PFDa



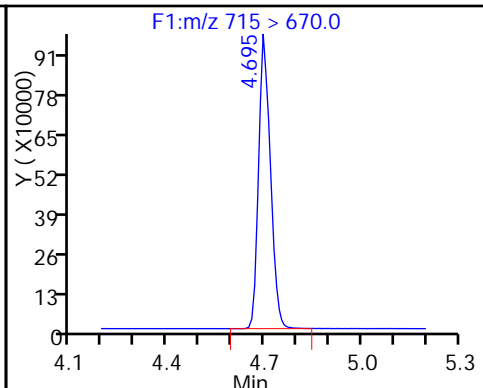
29 Perfluorododecanoic acid



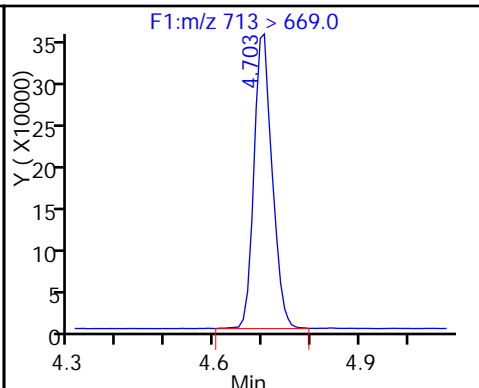
31 Perfluorotridecanoic acid



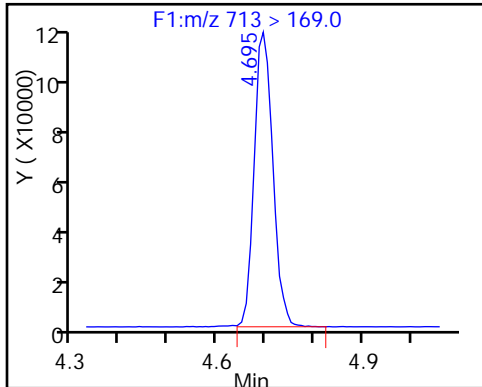
D 32 13C2-PFTeDA



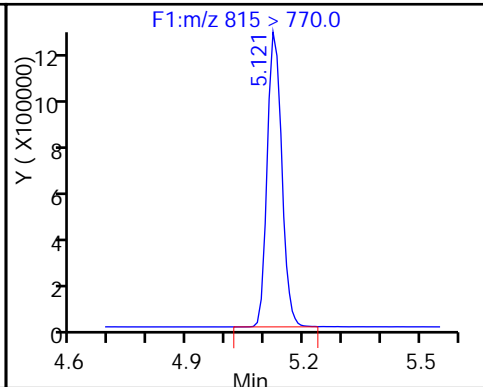
33 Perfluorotetradecanoic acid



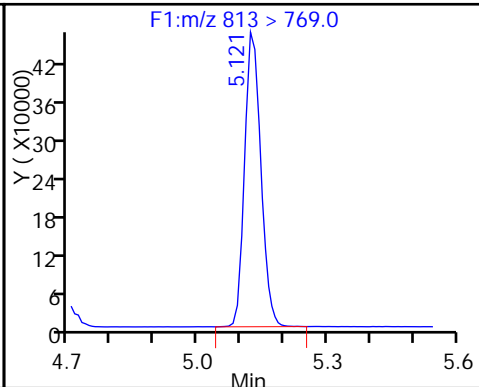
33 Perfluorotetradecanoic acid



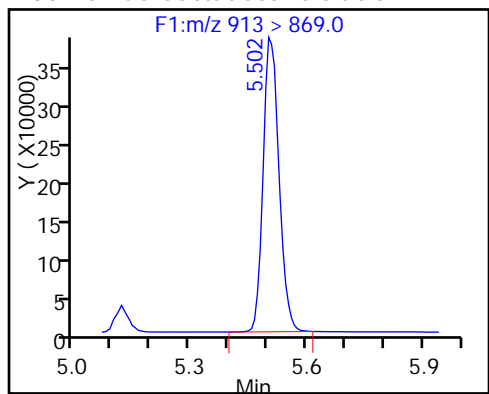
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



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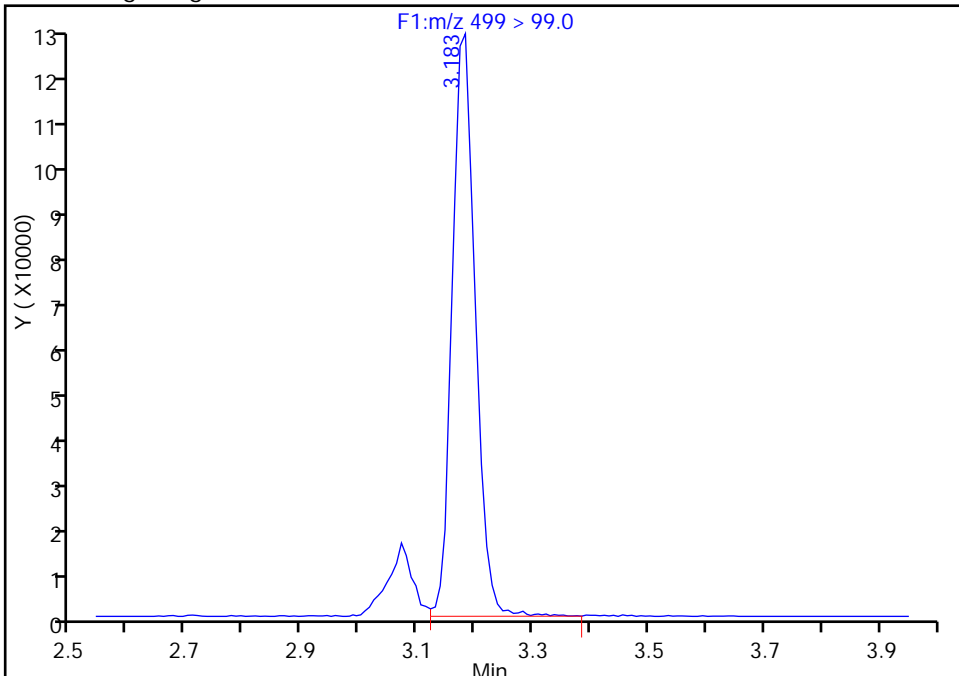
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_007_p1_e1.d
Injection Date: 22-Aug-2016 16:46:00 Instrument ID: A8
Lims ID: IC L4
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

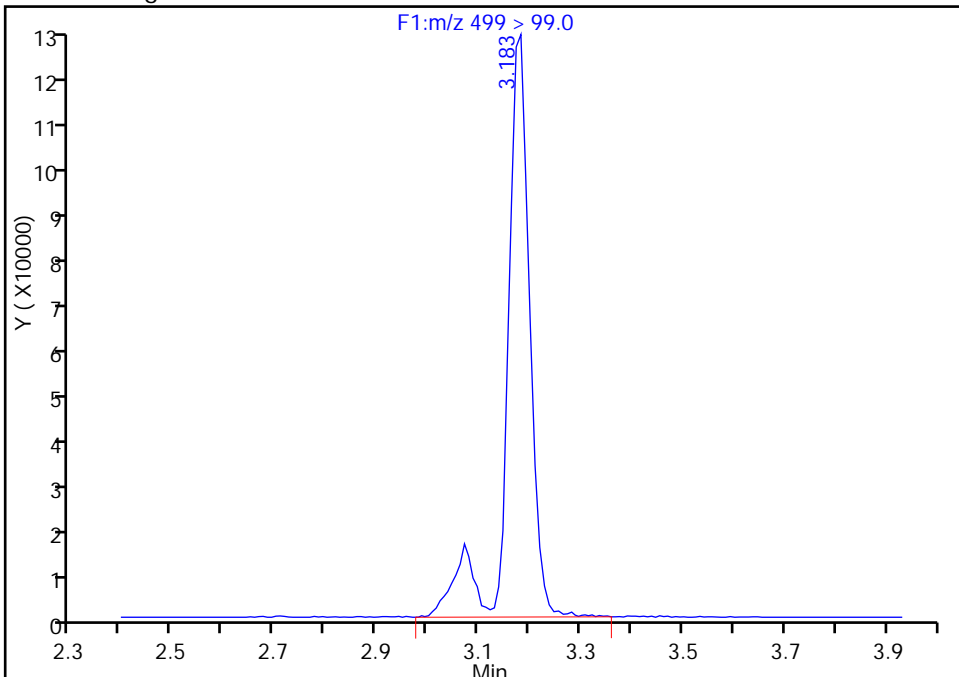
RT: 3.18
Area: 343079
Amount: 18.480583
Amount Units: ng/ml

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

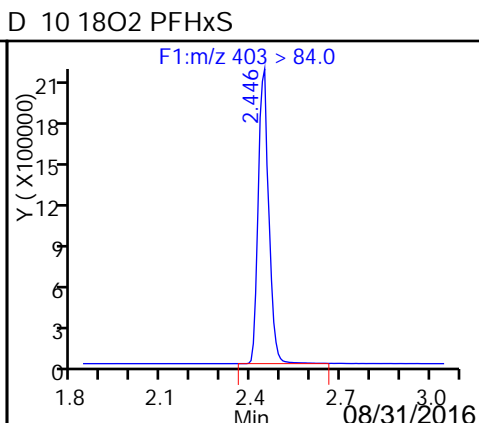
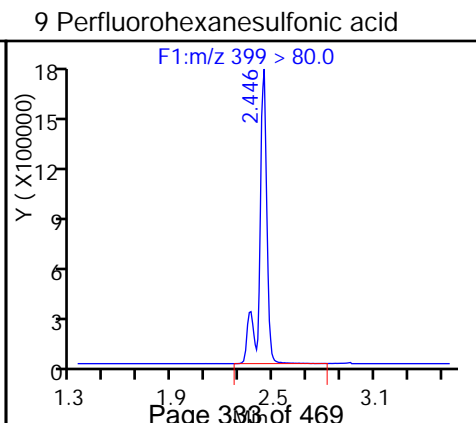
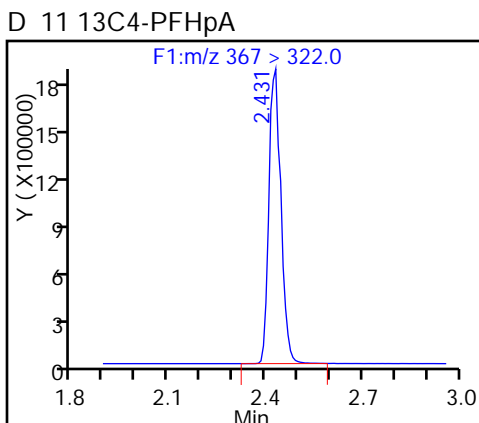
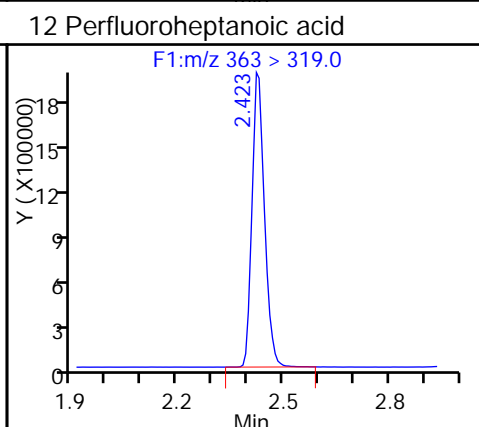
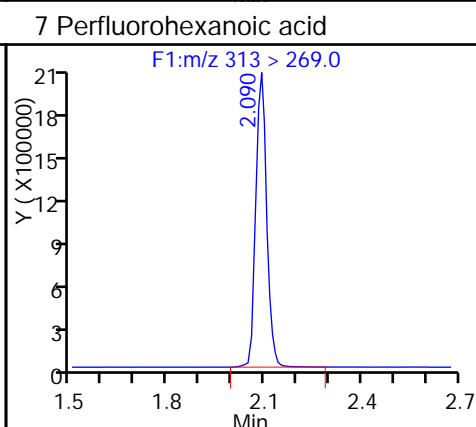
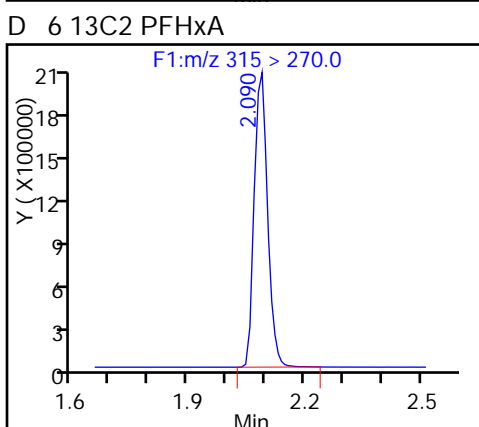
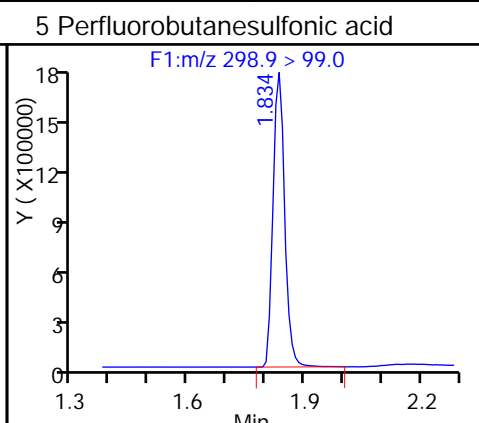
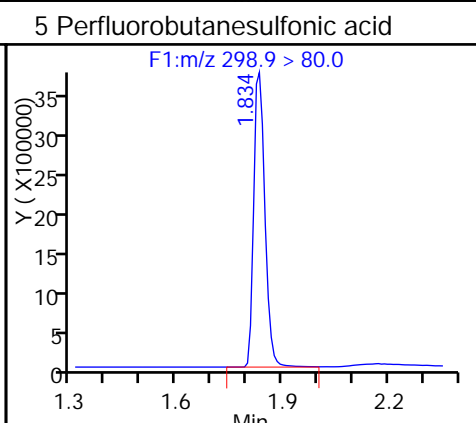
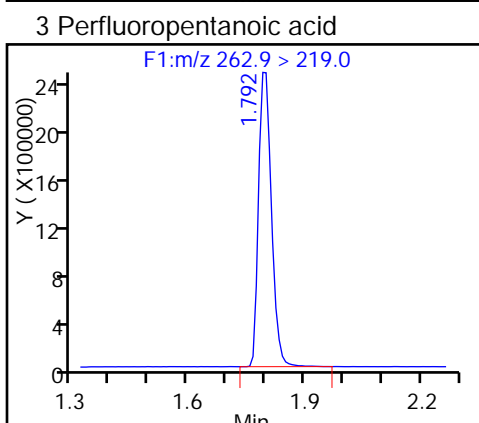
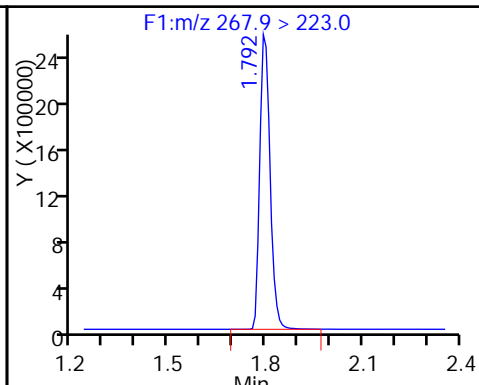
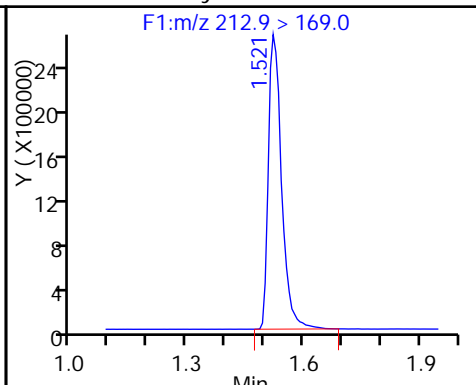
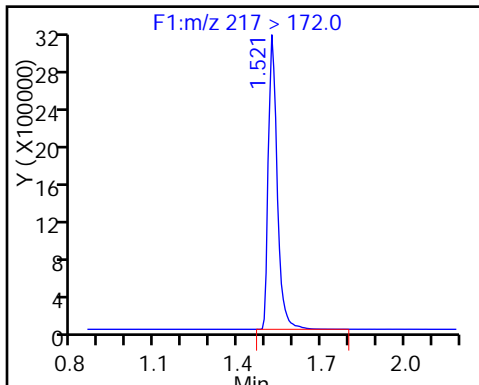
Method: PFC_A8_Full

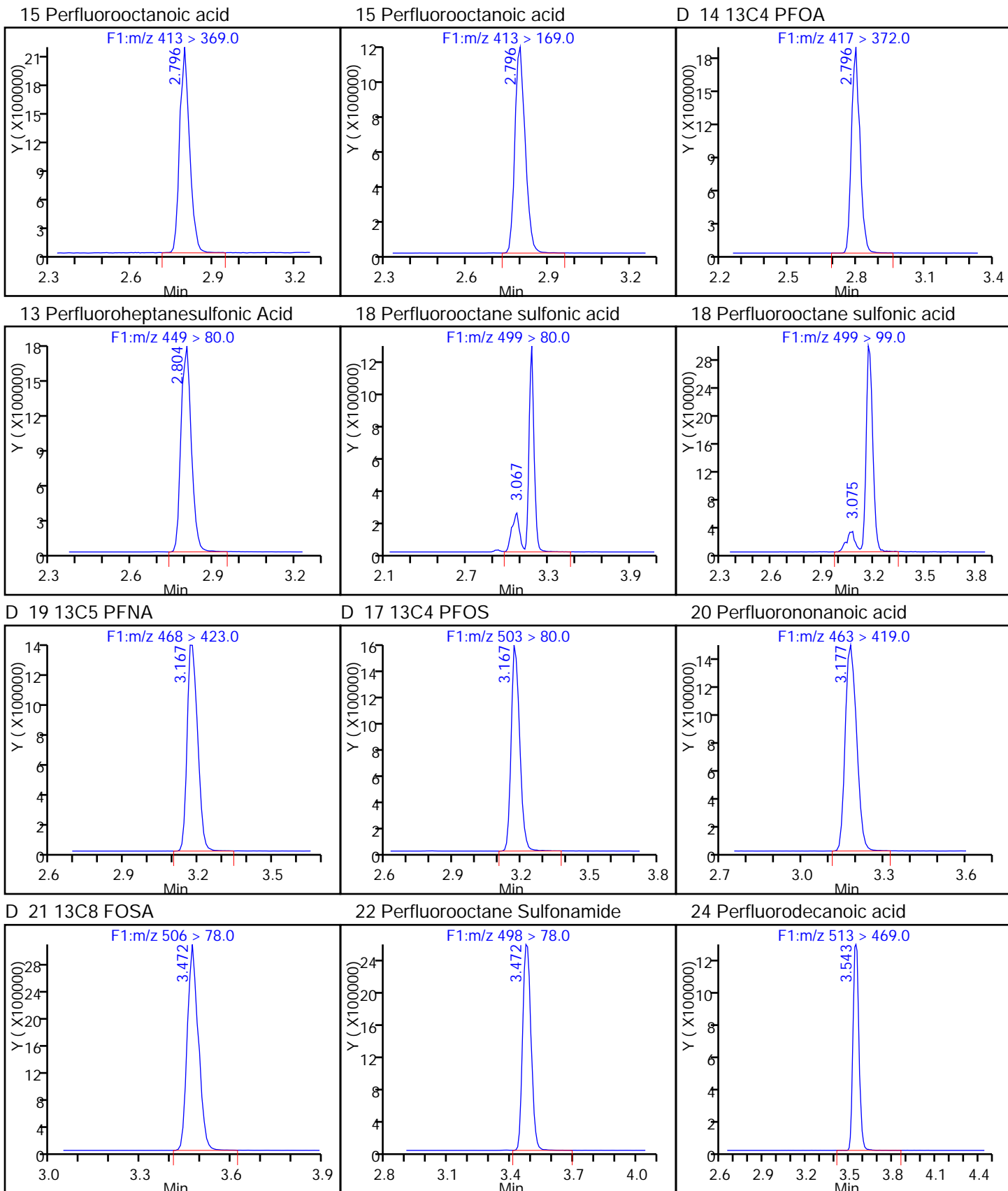
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

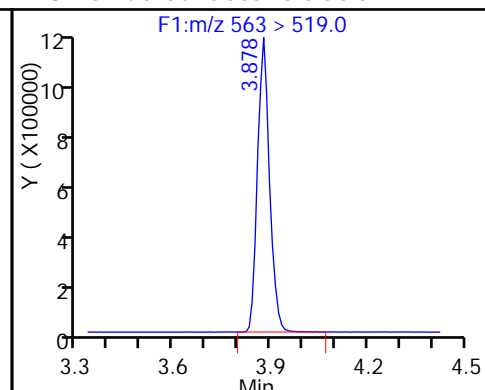
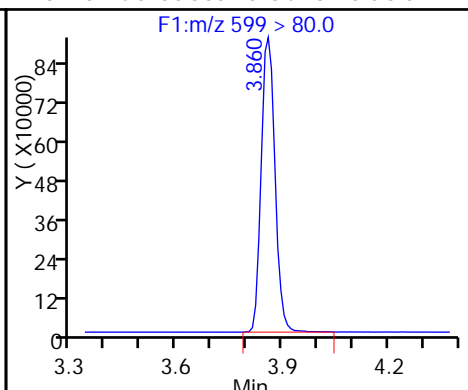
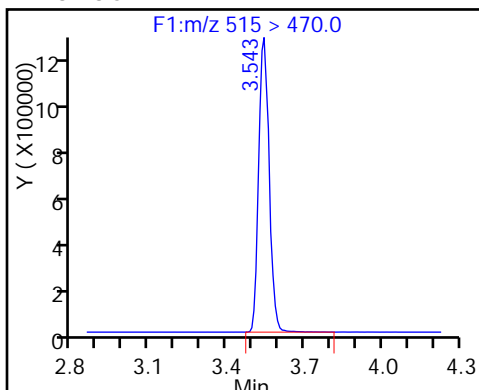




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

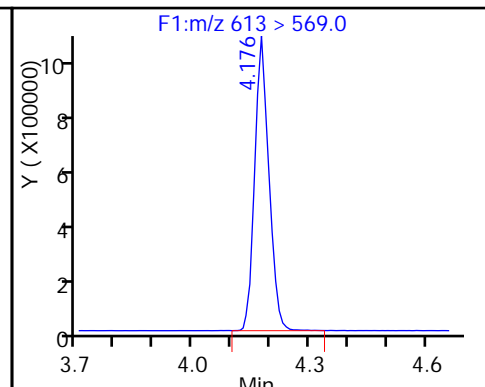
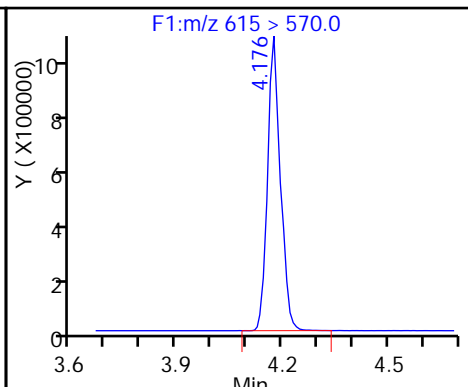
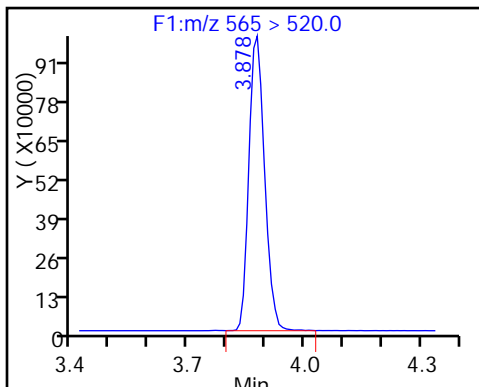
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

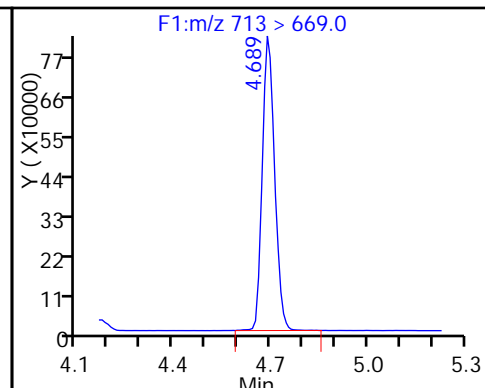
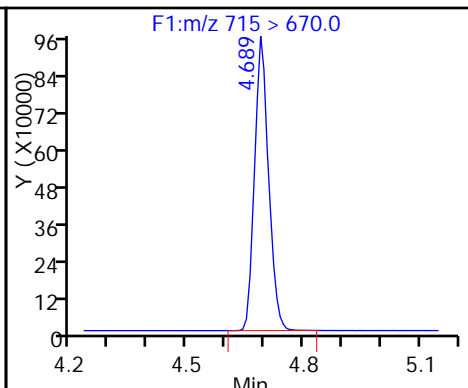
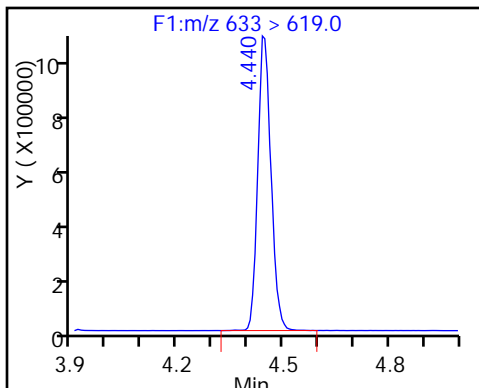
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

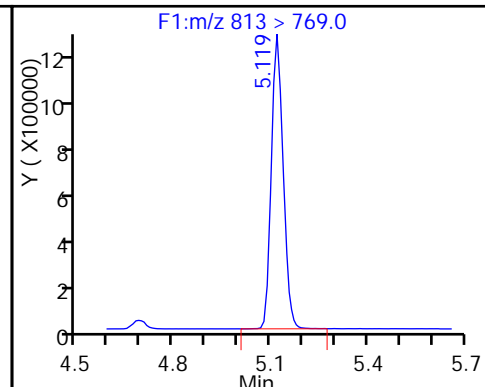
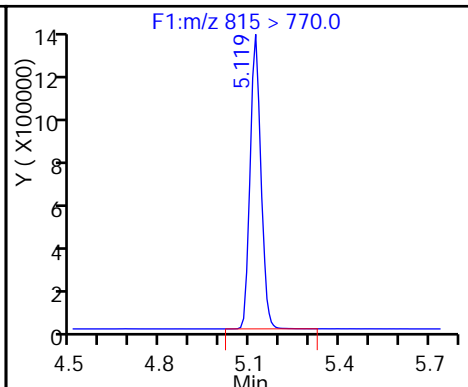
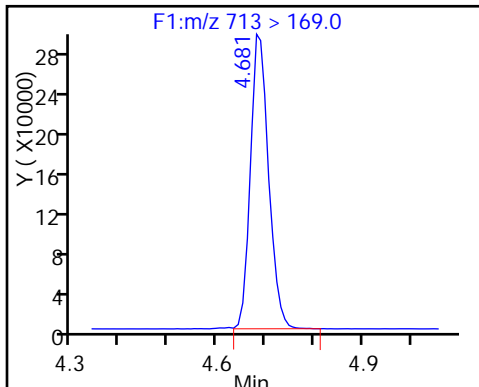
33 Perfluorotetradecanoic acid



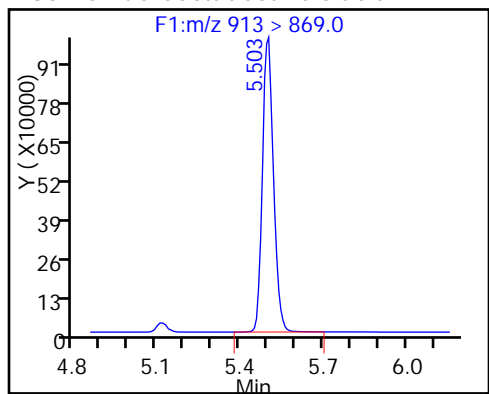
33 Perfluorotetradecanoic acid

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

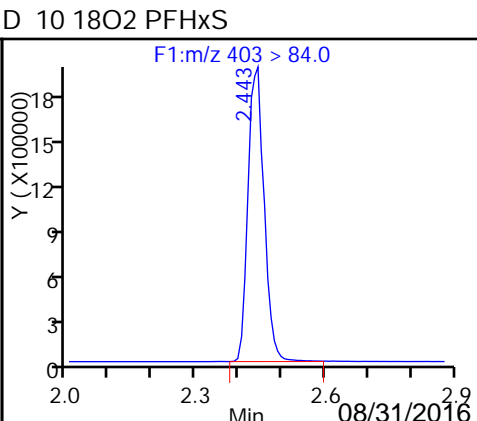
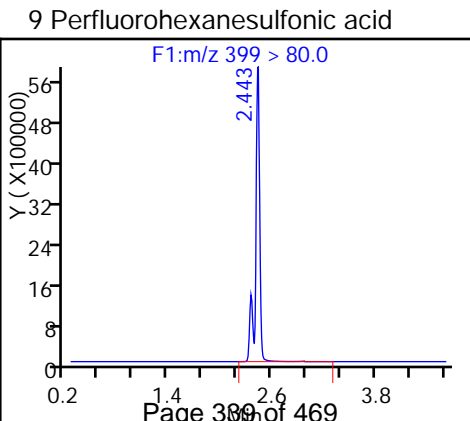
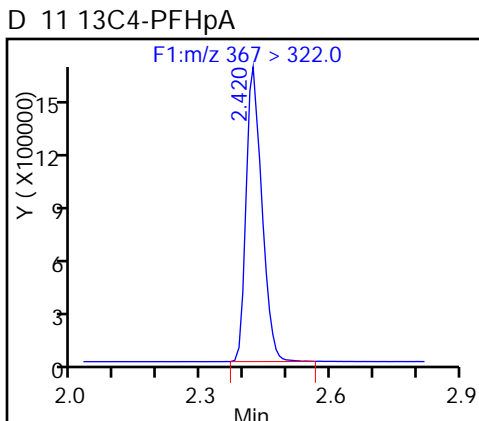
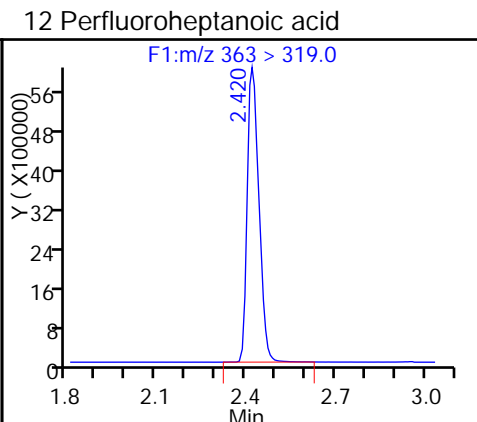
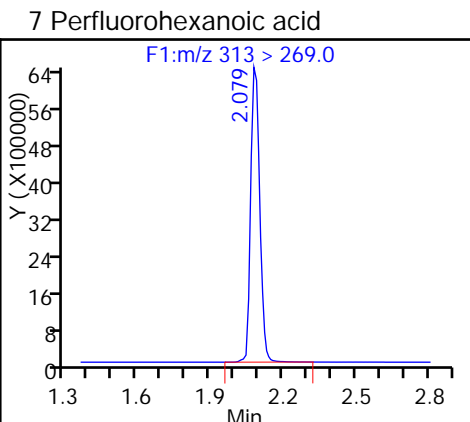
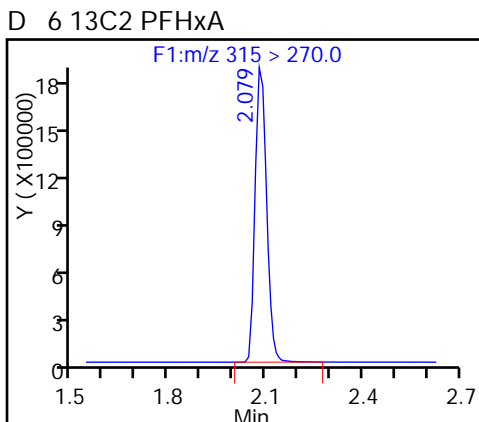
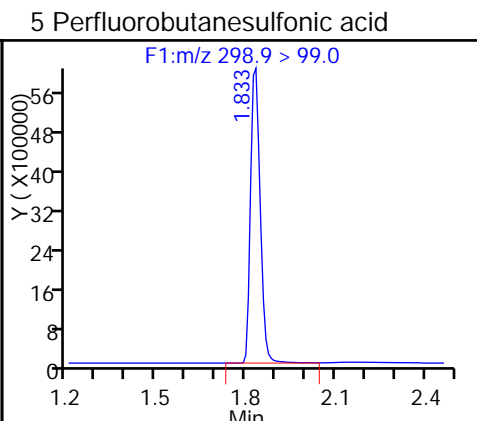
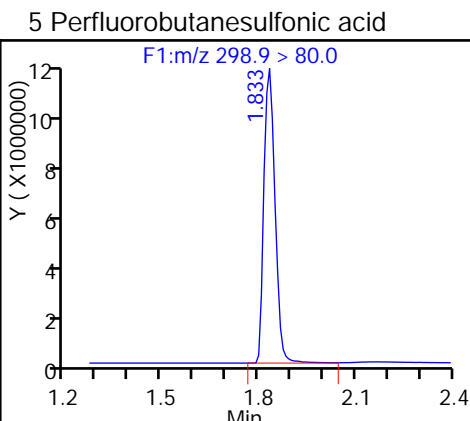
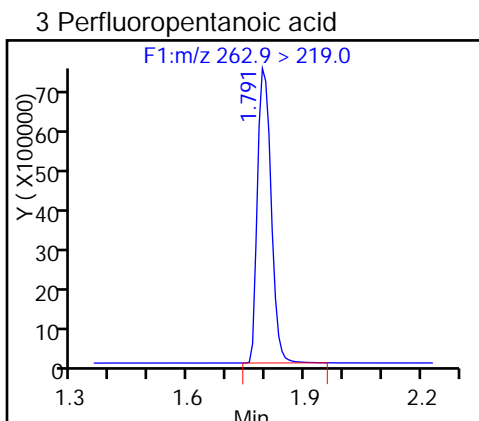
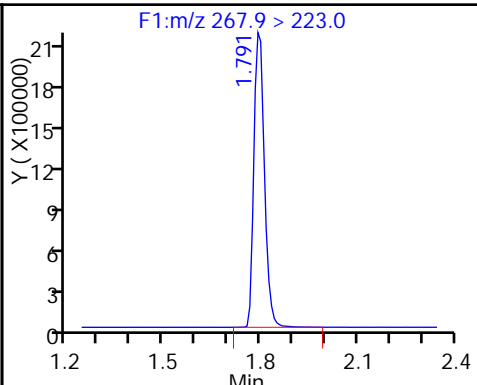
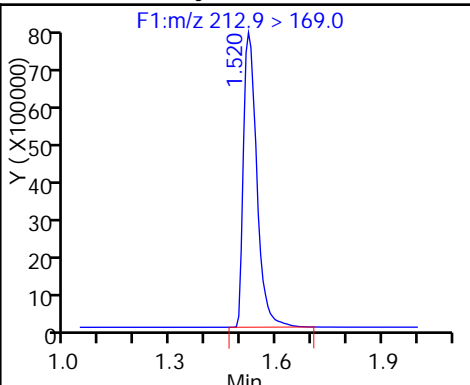
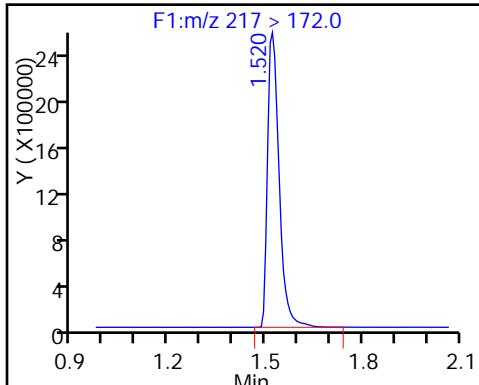
Method: PFC_A8_Full

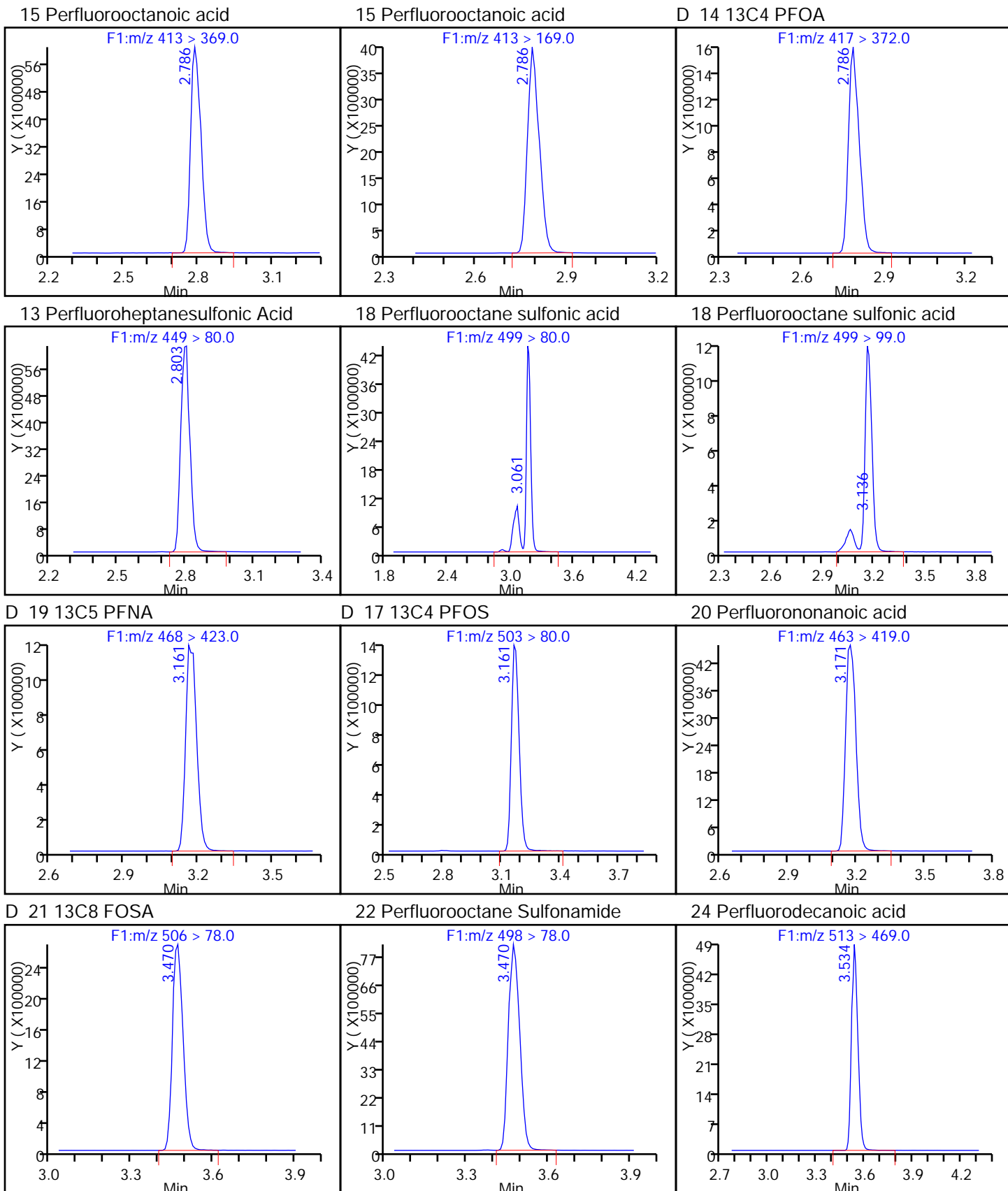
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

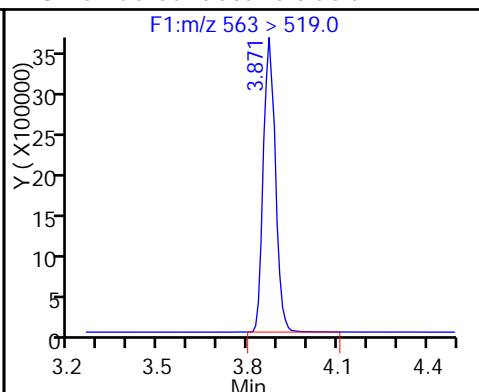
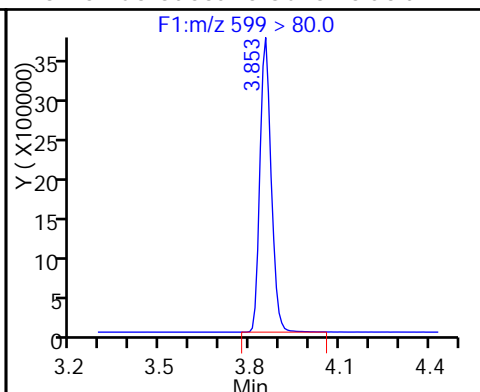
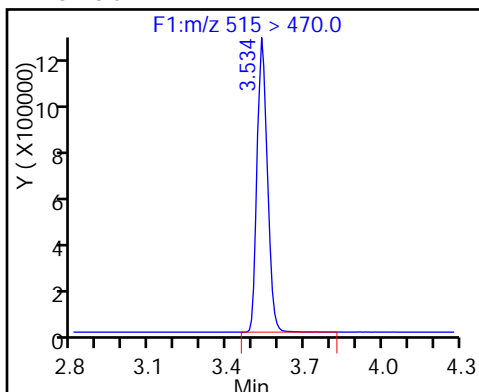




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

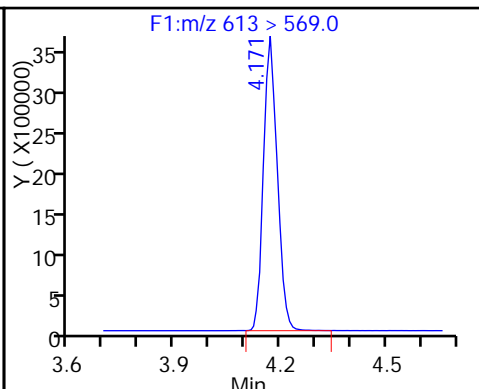
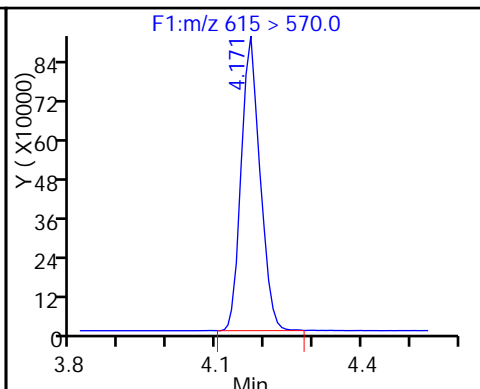
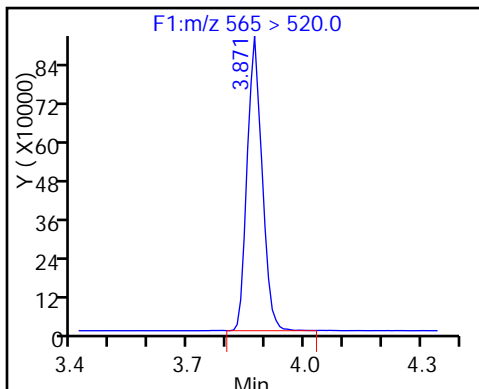
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

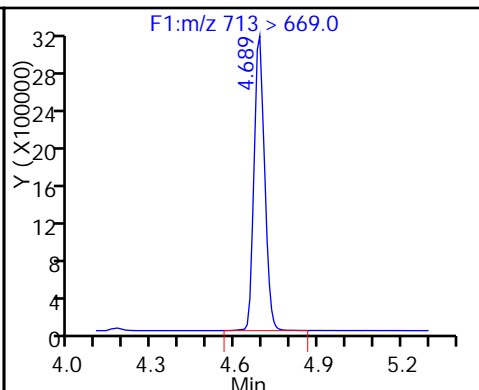
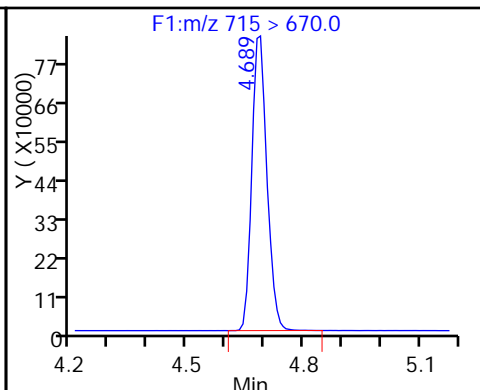
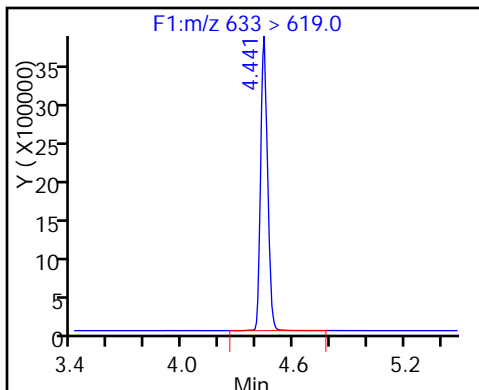
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

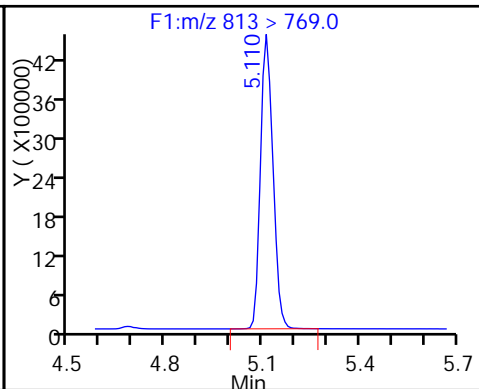
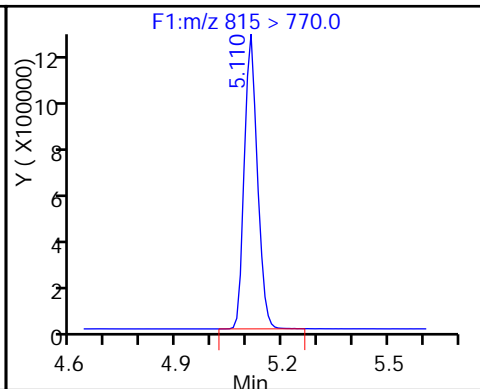
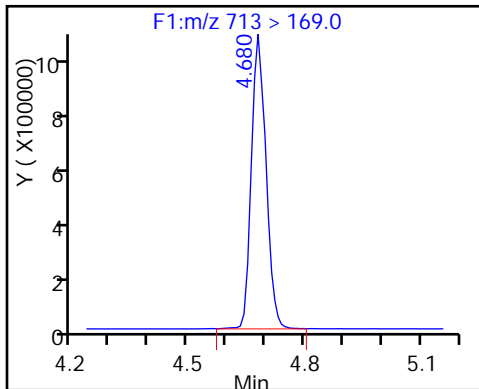
33 Perfluorotetradecanoic acid



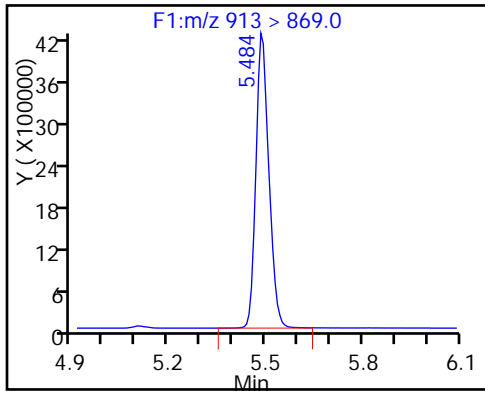
33 Perfluorotetradecanoic acid

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_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

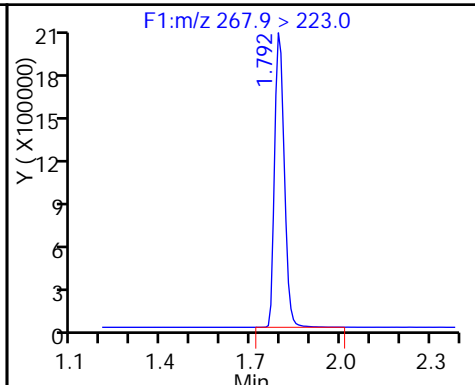
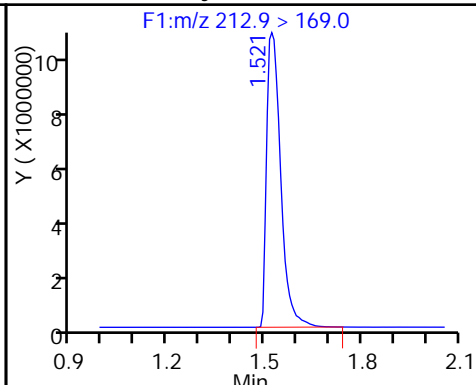
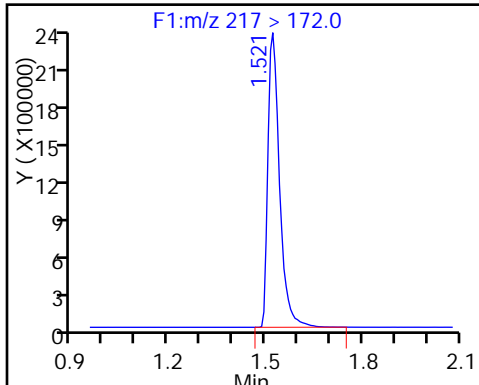
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

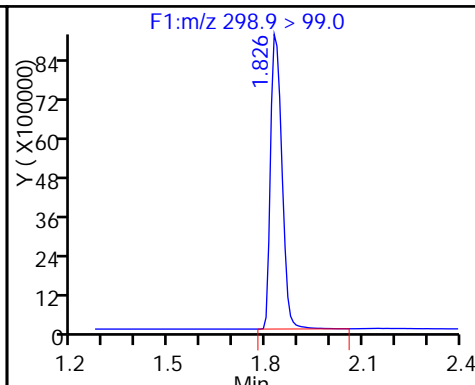
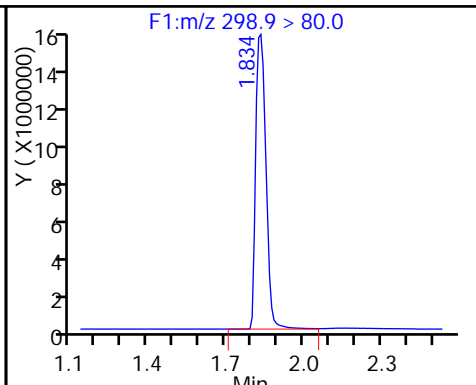
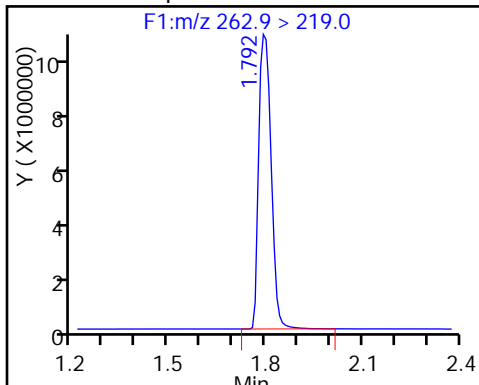
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

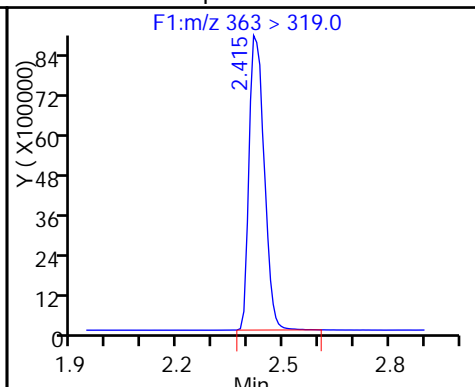
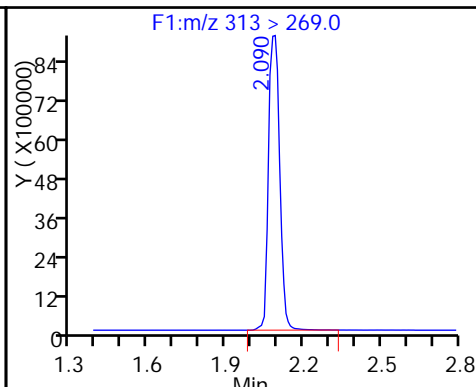
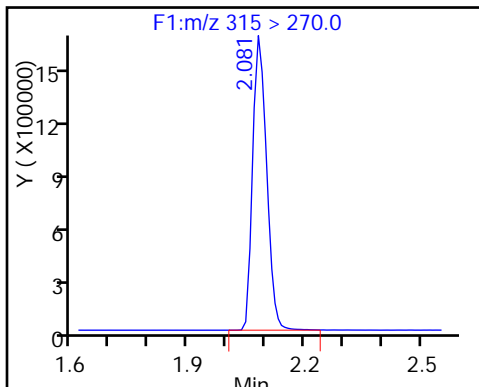
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

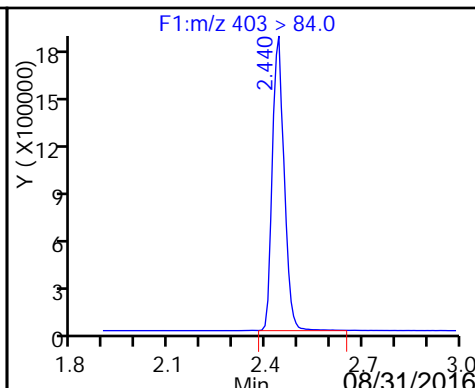
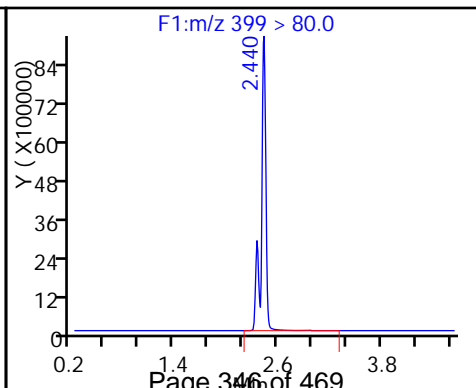
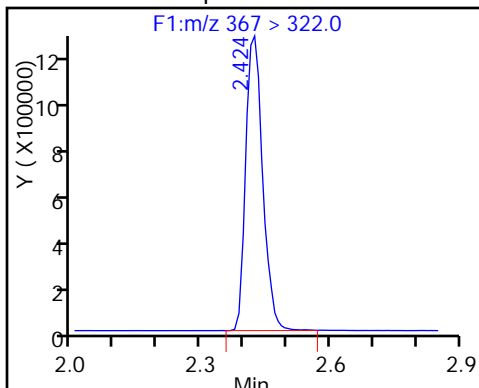
12 Perfluoroheptanoic acid

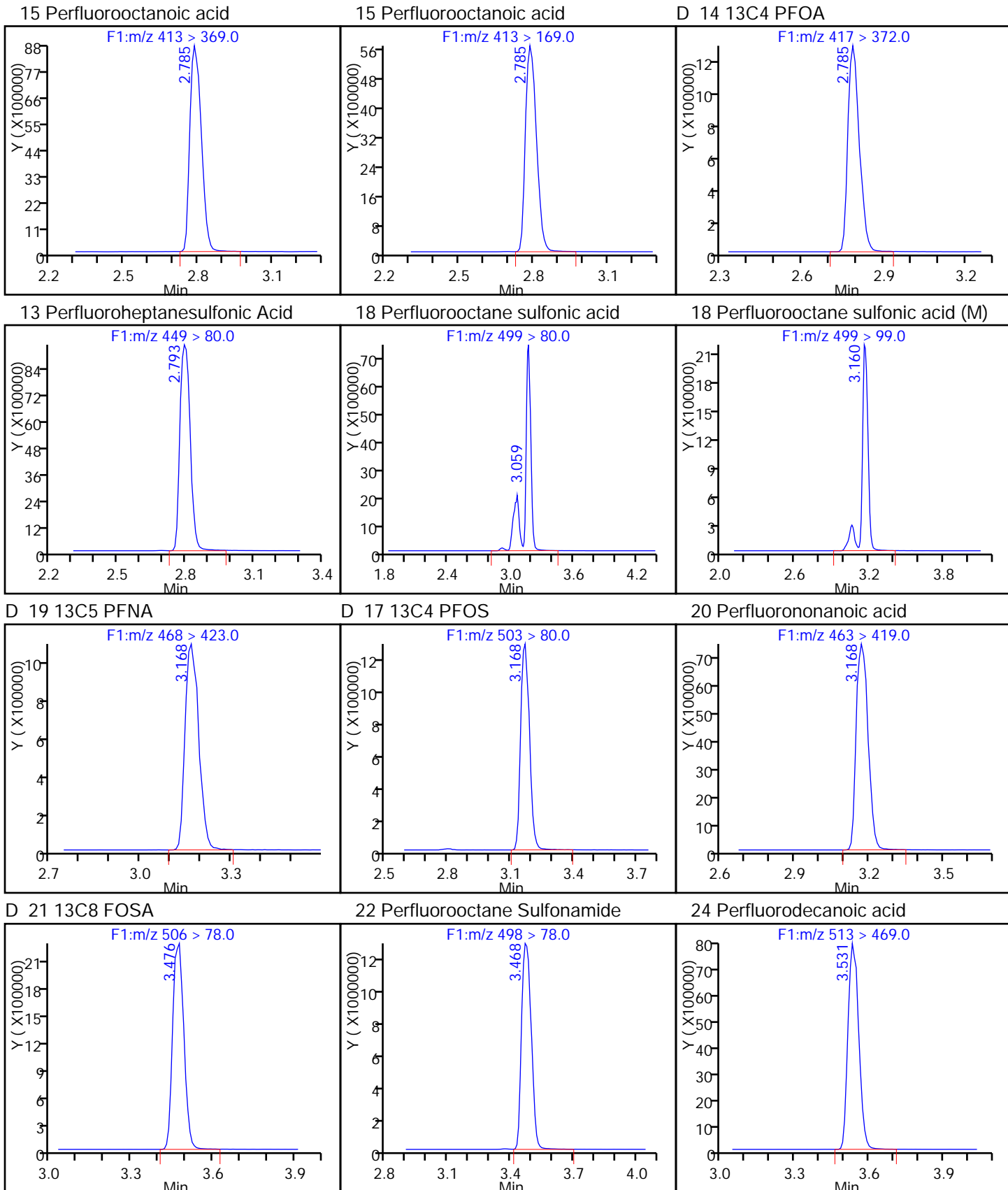


D 11 13C4-PFHpA

9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

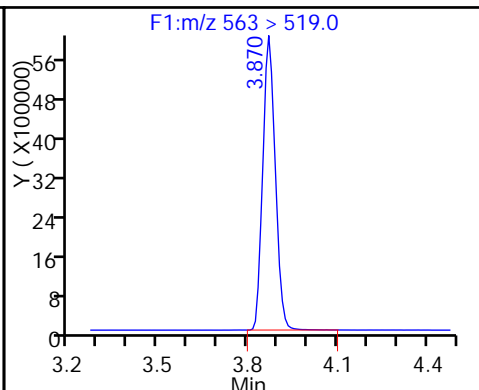
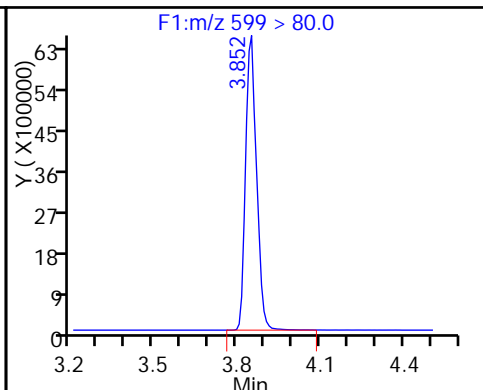
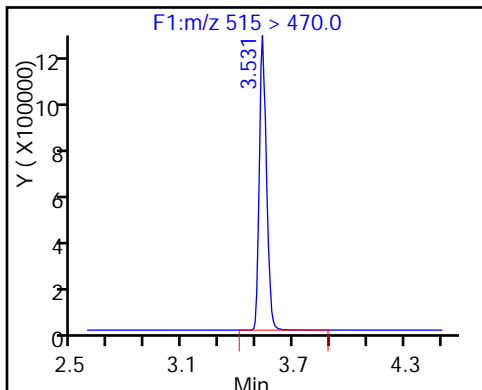




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

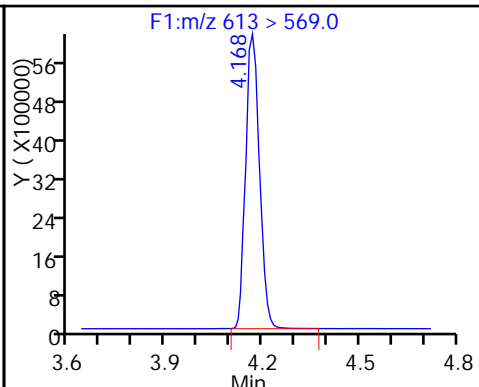
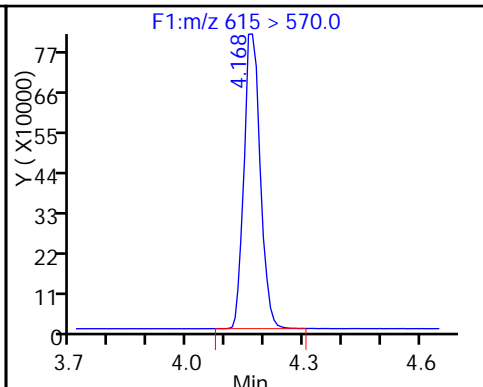
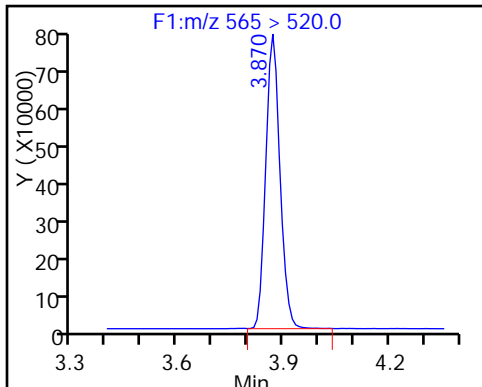
28 Perfluoroundecanoic acid



D 27 13C2 PFUnA

D 30 13C2 PFDaA

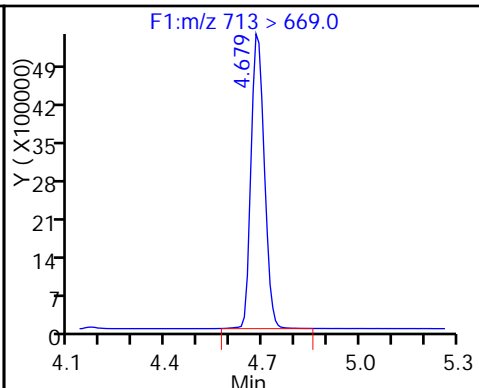
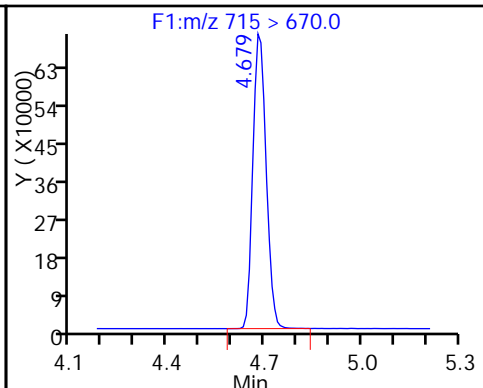
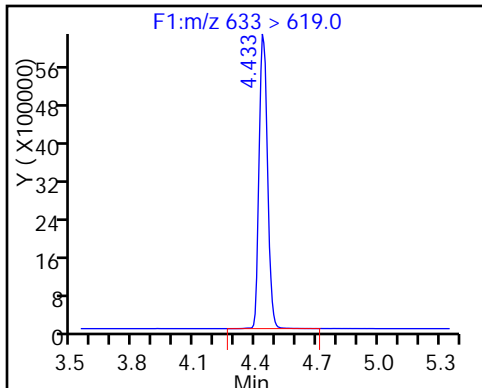
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

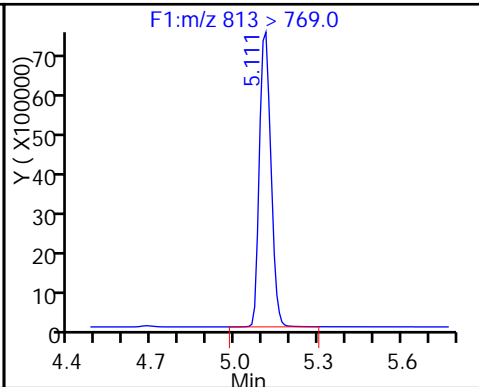
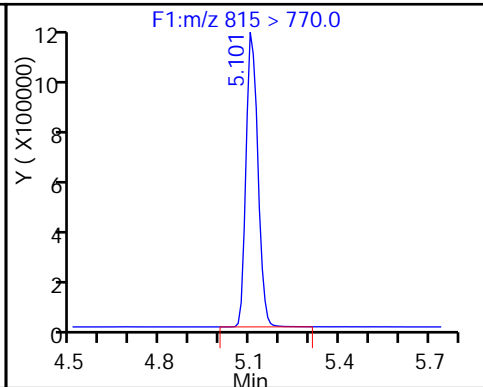
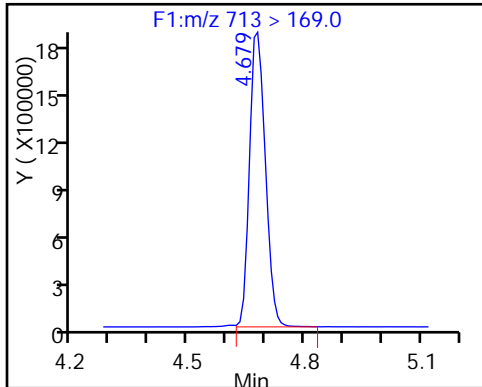
33 Perfluorotetradecanoic acid



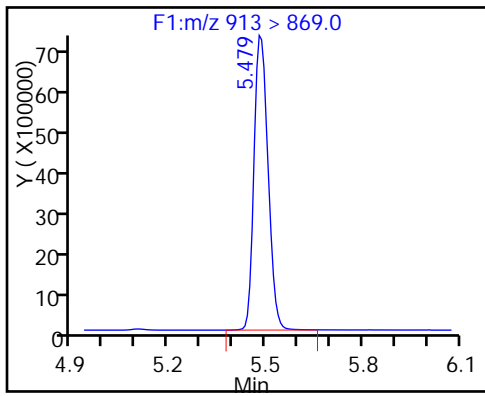
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

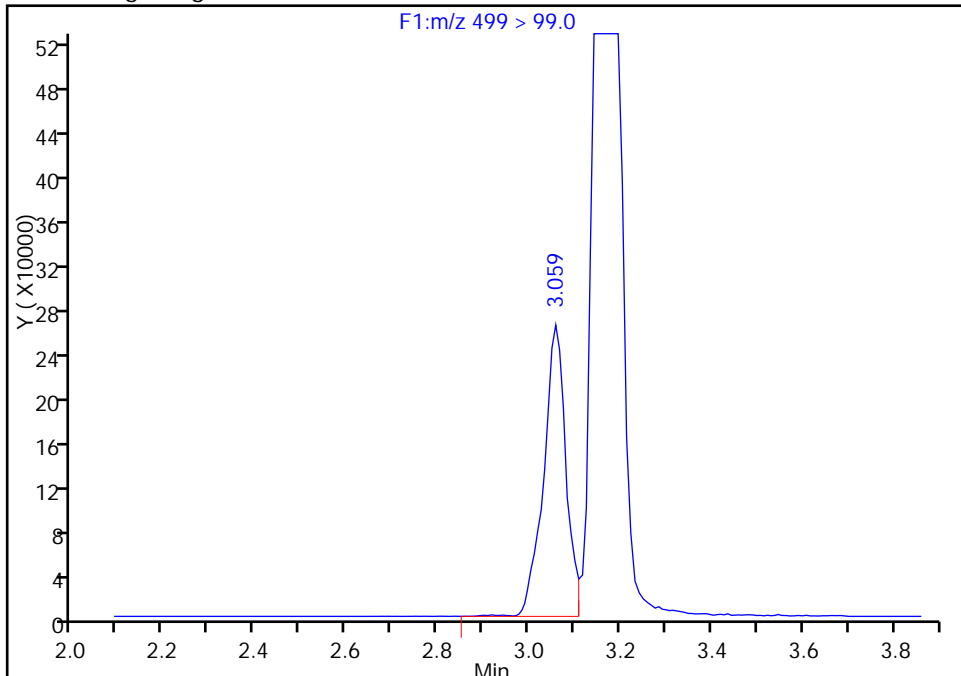
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A_010_p1_e1.d
Injection Date: 22-Aug-2016 17:08:00 Instrument ID: A8
Lims ID: IC L7
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

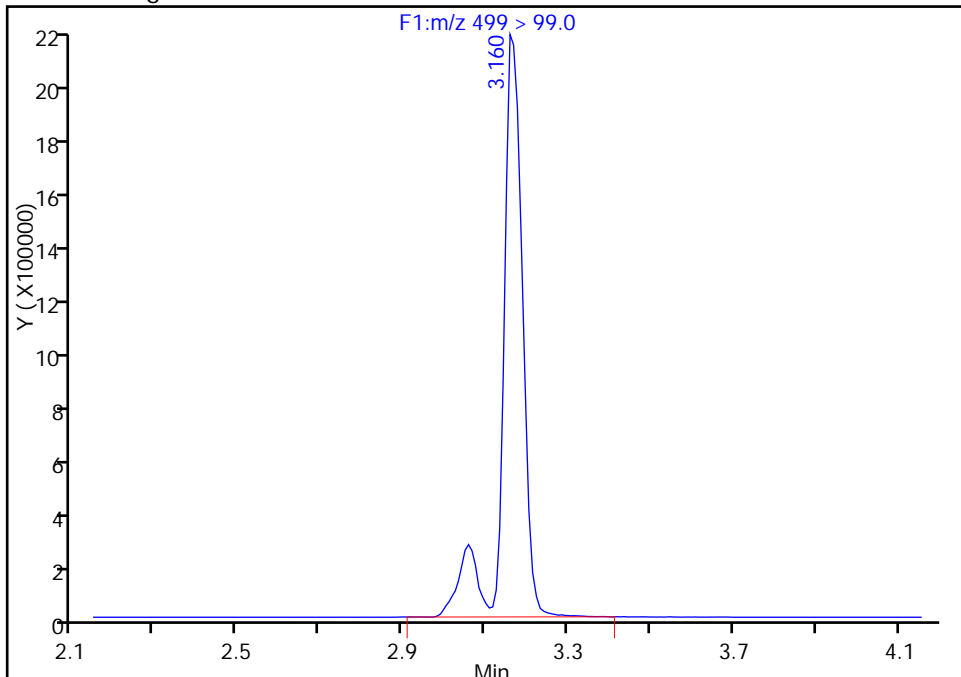
RT: 3.06
Area: 889436
Amount: 371.4615
Amount Units: ng/ml

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

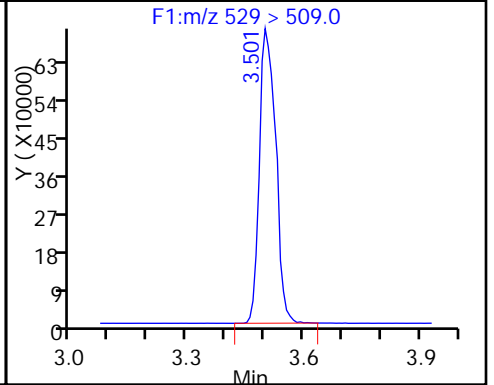
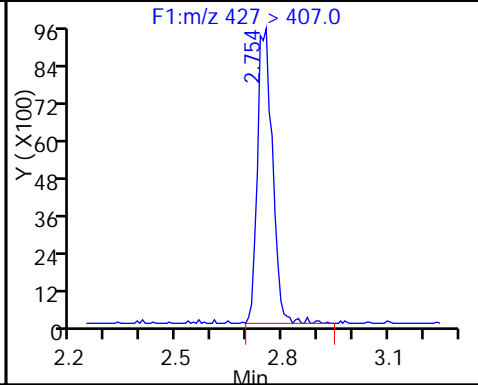
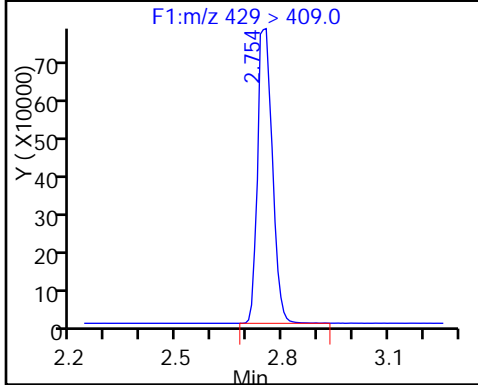
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.754	2.749	0.005		2296963	41.4		87.1		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.754	2.751	0.003	1.000	28657	0.3629		76.6		
D 42 M2-8:2FTS										
529 > 509.0	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

D 47 M2-6:2FTS

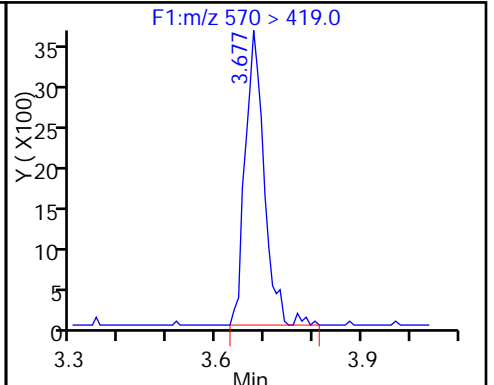
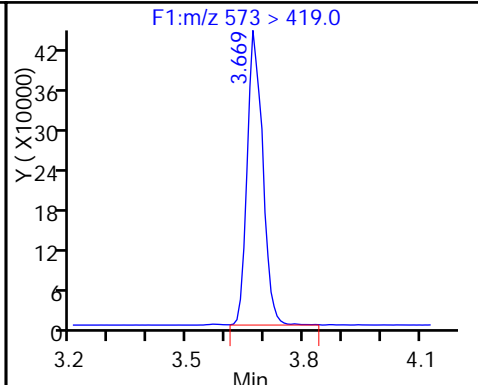
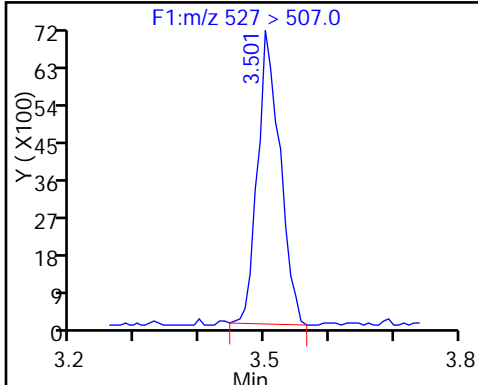
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

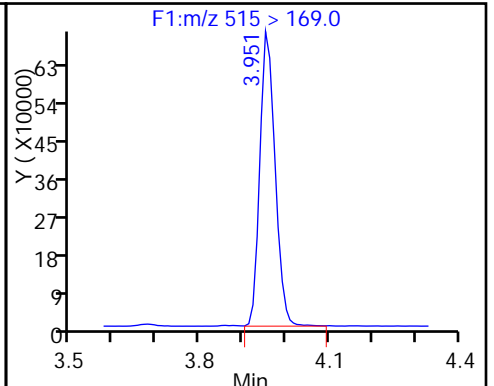
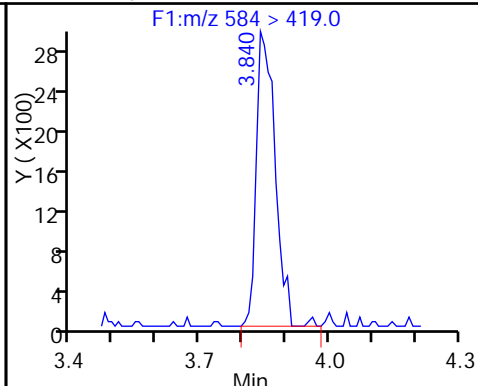
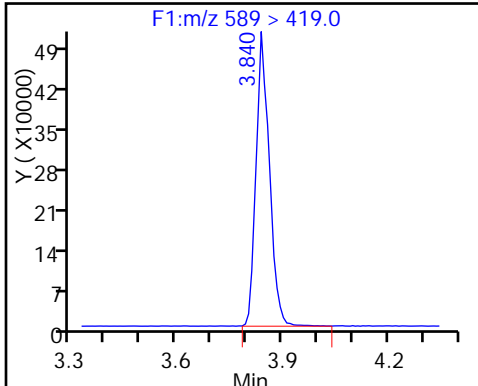
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

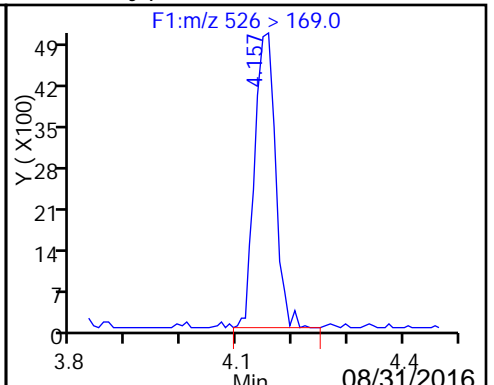
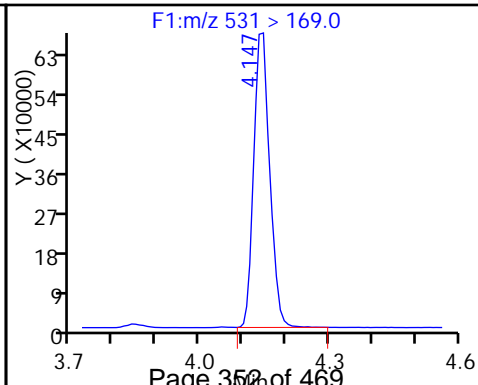
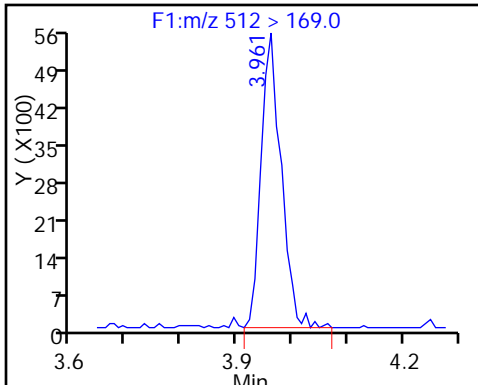
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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

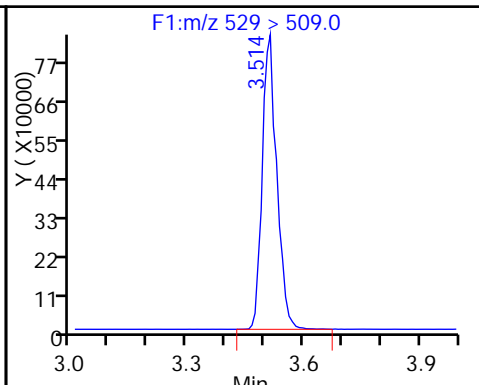
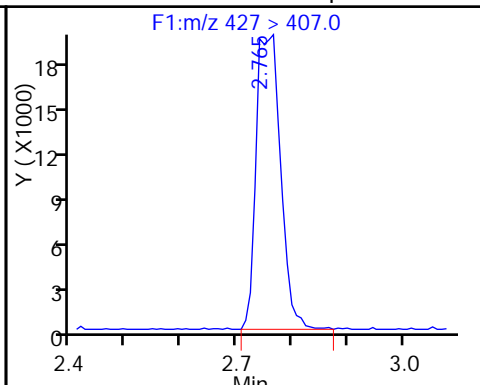
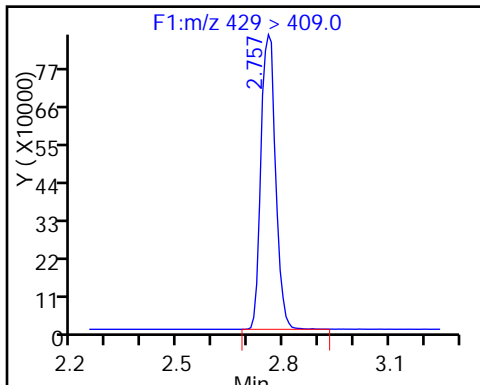
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.757	2.749	0.008		2495968	45.0		94.7		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.765	2.751	0.014	1.000	58625	1.03		109		
D 42 M2-8:2FTS										
529 > 509.0	3.514	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

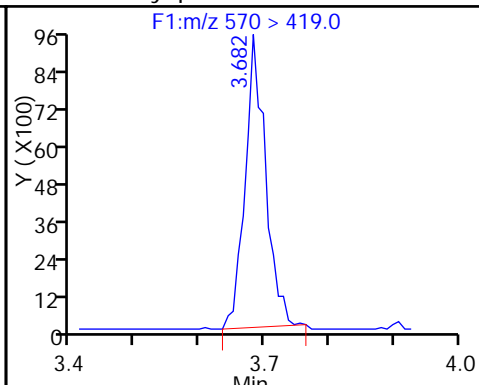
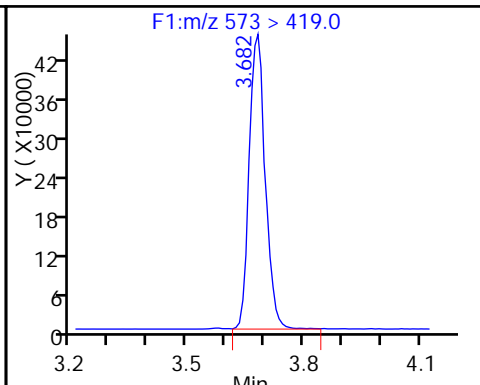
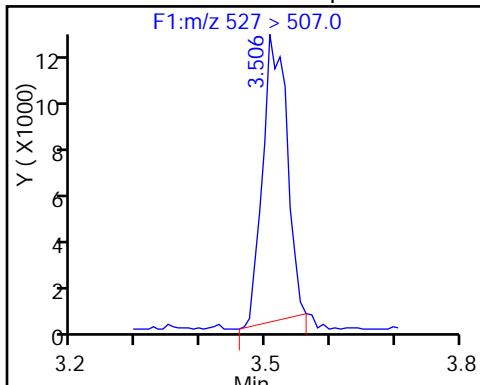
D 47 M2-6:2FTS

48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



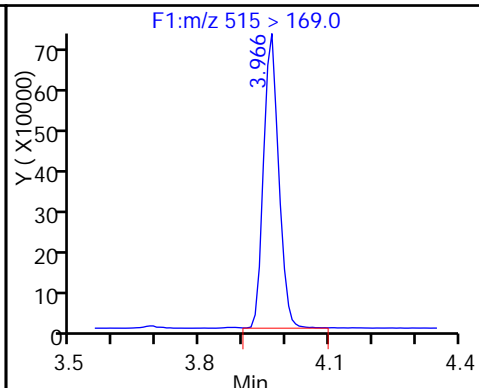
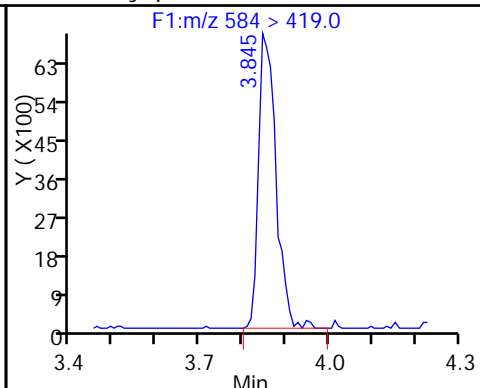
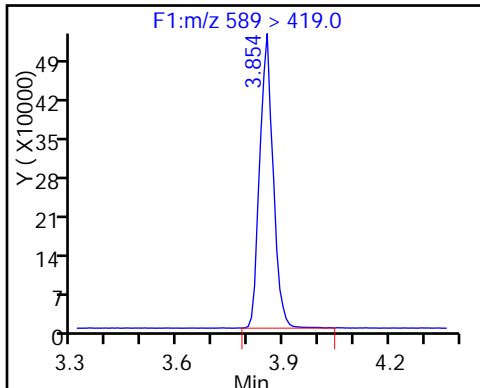
43 Sodium 1H,1H,2H,2H-perfluorooctane D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

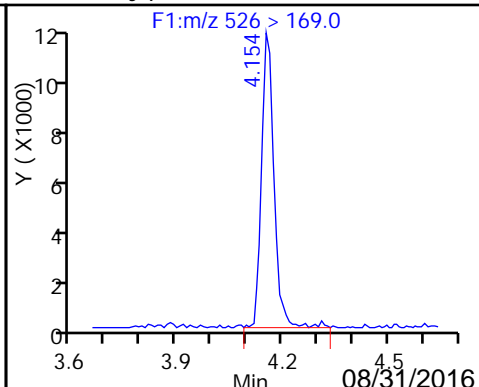
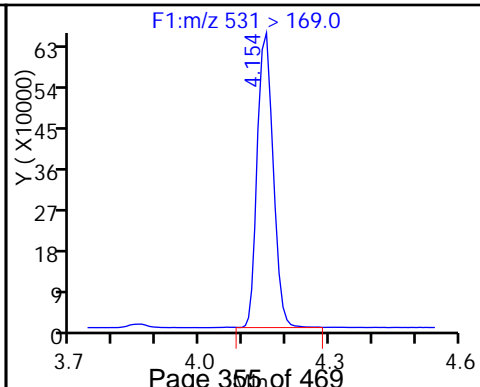
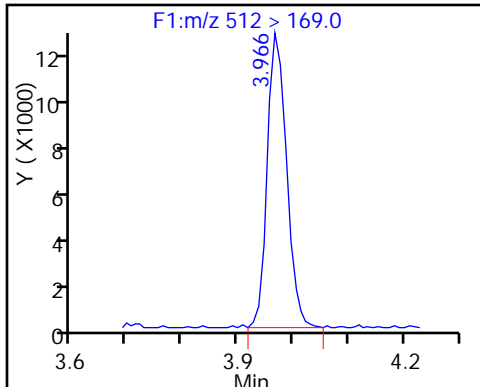
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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		

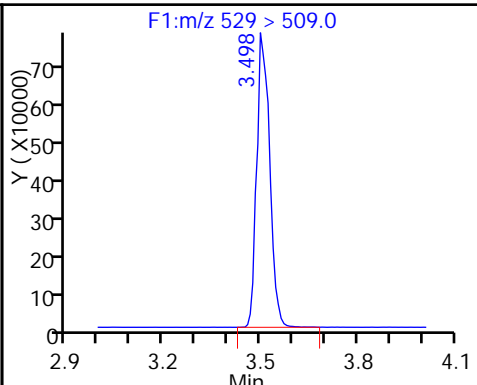
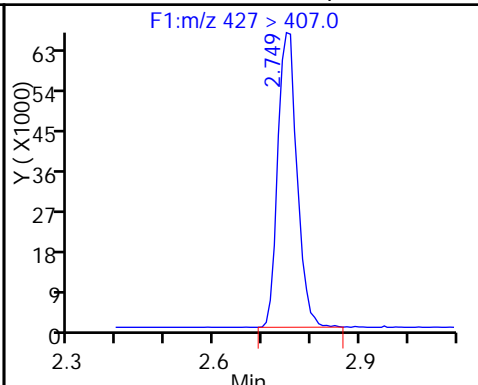
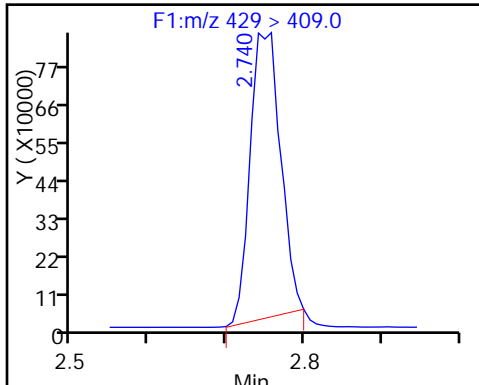
Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

D 47 M2-6:2FTS

48 Sodium 1H,1H,2H,2H-perfluorooctane

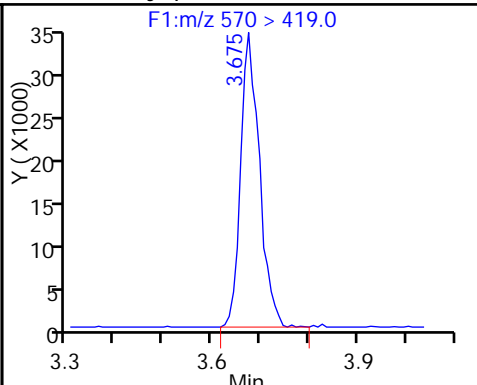
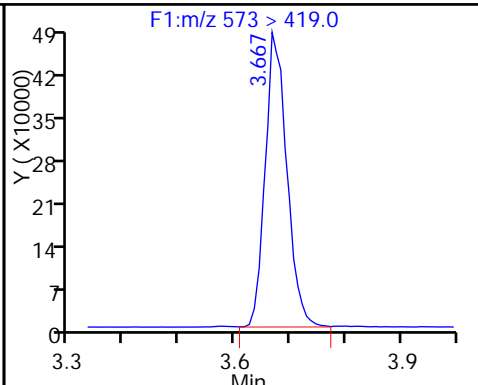
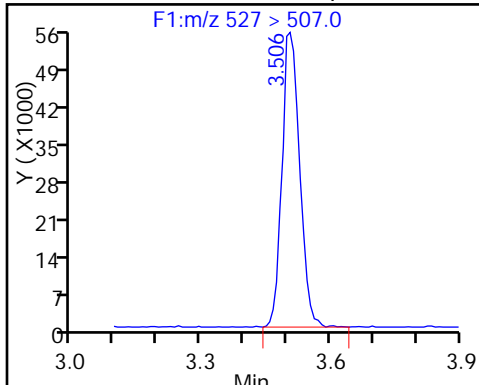
D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

D 45 d3-NMeFOSAA

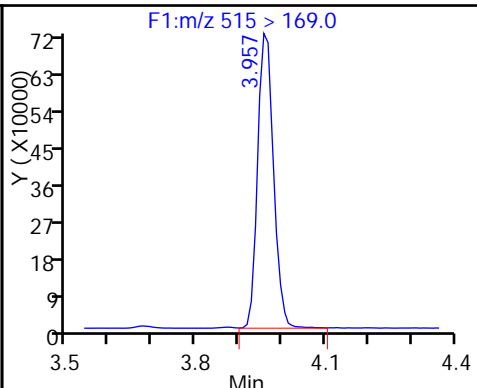
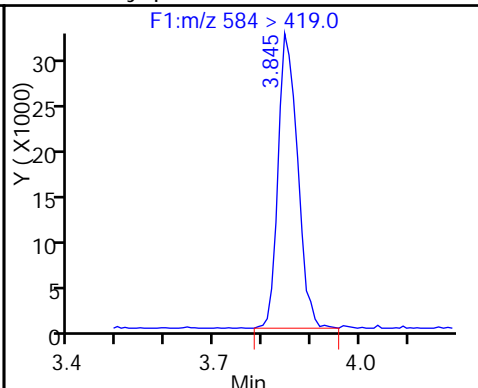
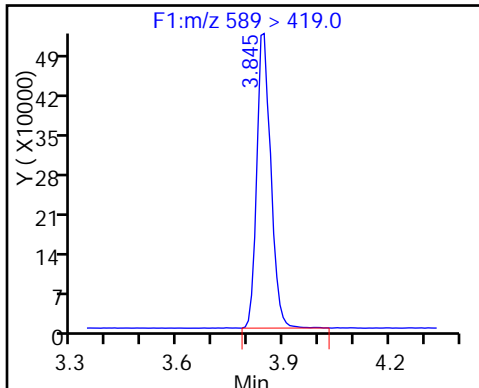
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

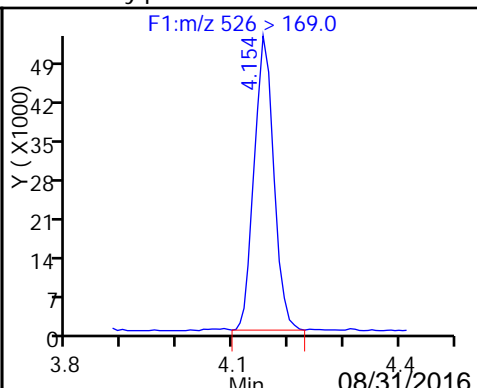
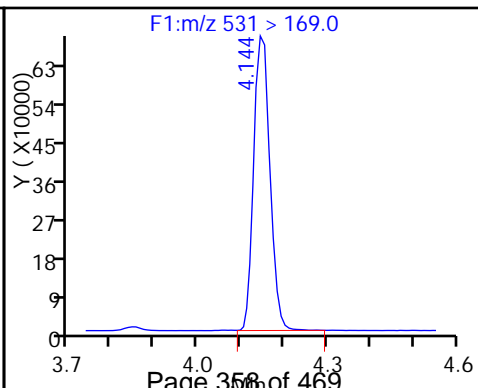
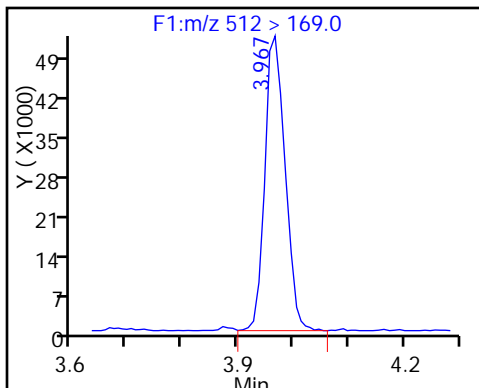
D 52 d-N-MeFOSA-M



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

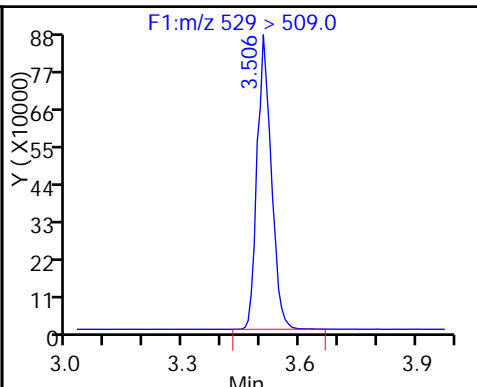
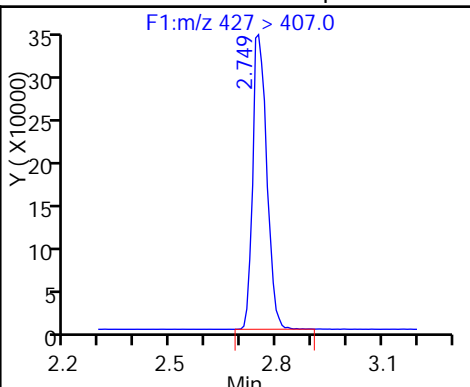
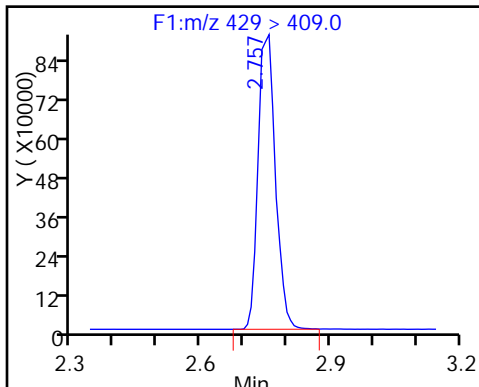
Amount Added: 1.00

Units: mL

D 47 M2-6:2FTS

48 Sodium 1H,1H,2H,2H-perfluorooctane

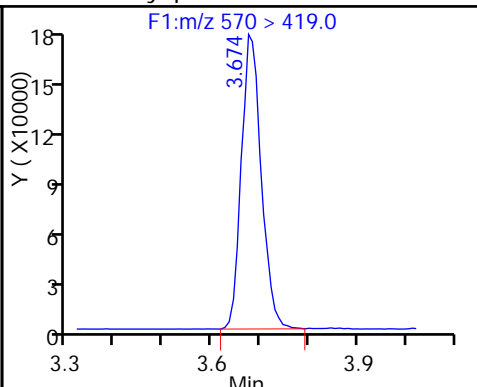
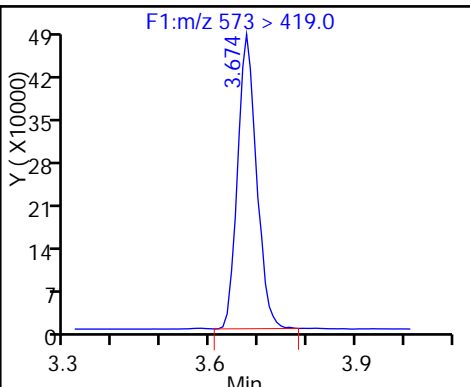
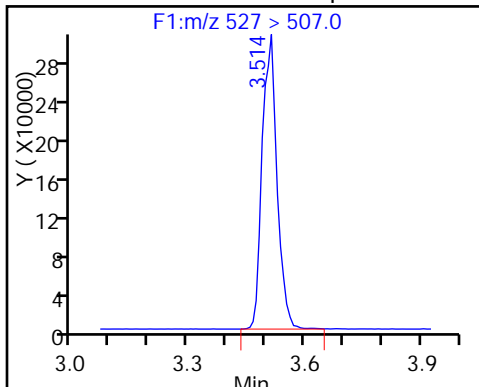
D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

D 45 d3-NMeFOSAA

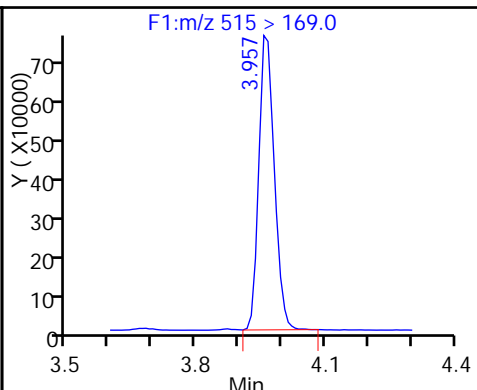
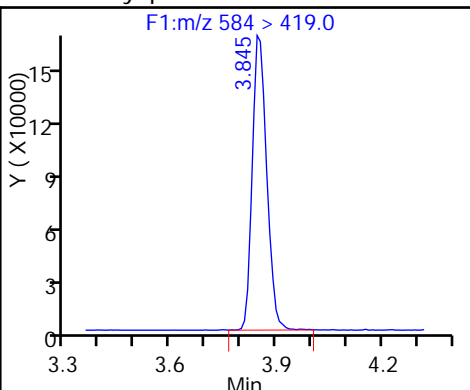
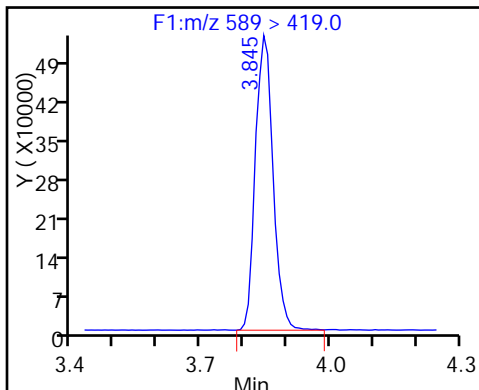
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

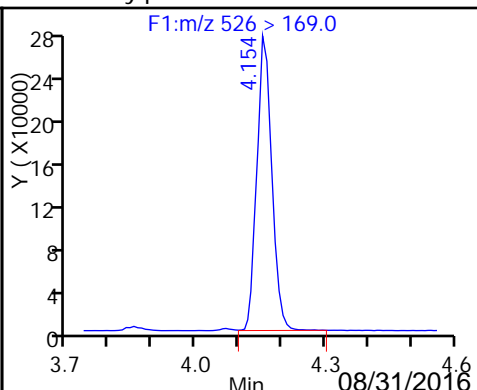
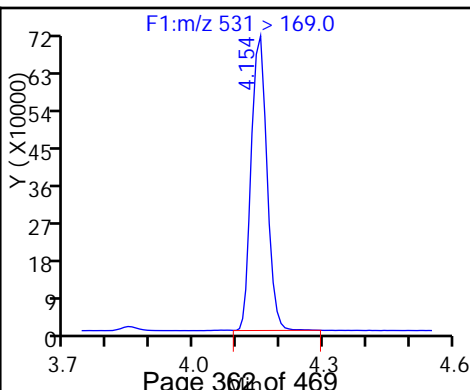
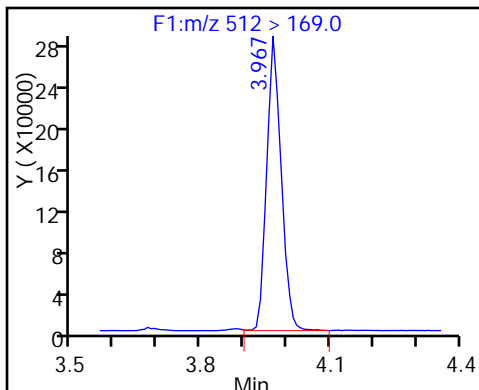
D 52 d-N-MeFOSA-M



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

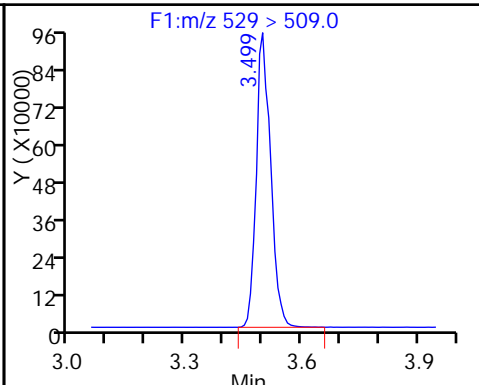
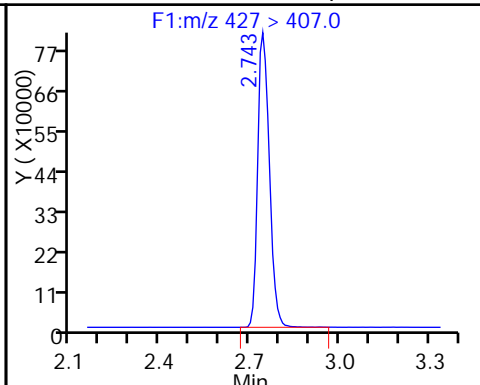
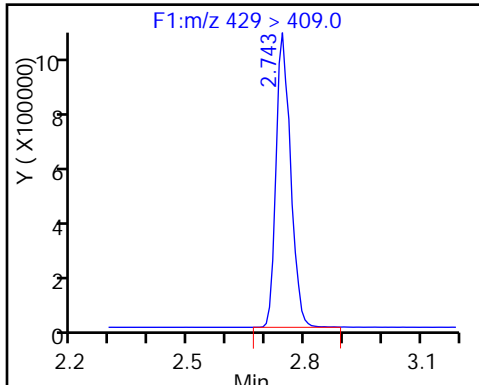
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.743	2.749	-0.006		2702461	48.7		103		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.743	2.751	-0.008	1.000	2236049	50.0		105		
D 42 M2-8:2FTS										
529 > 509.0	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

D 47 M2-6:2FTS

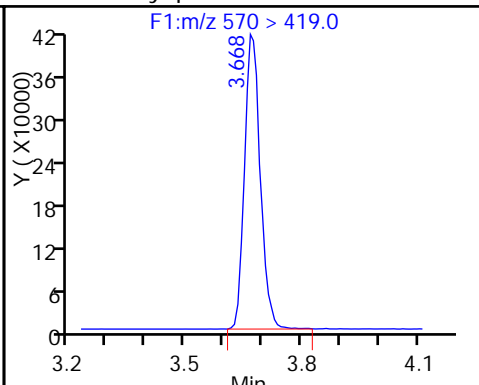
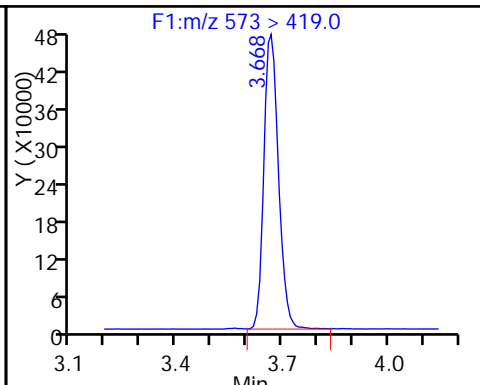
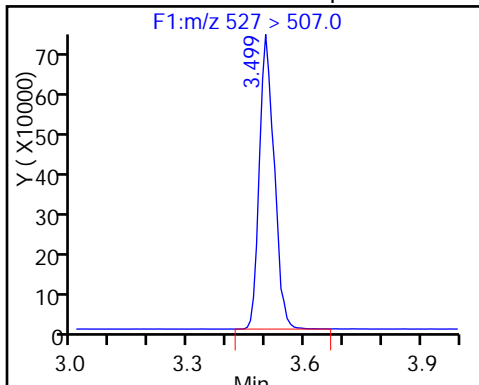
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

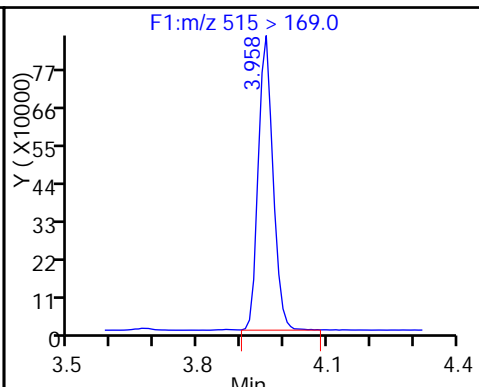
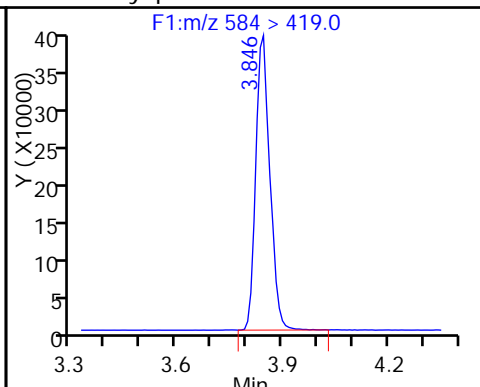
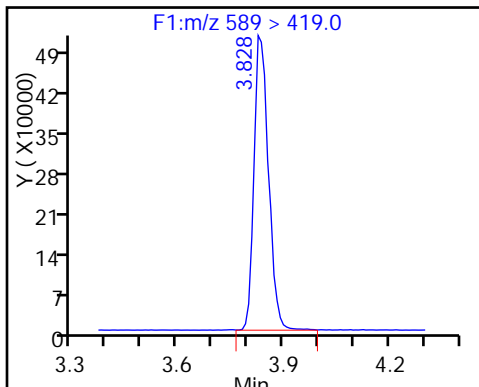
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

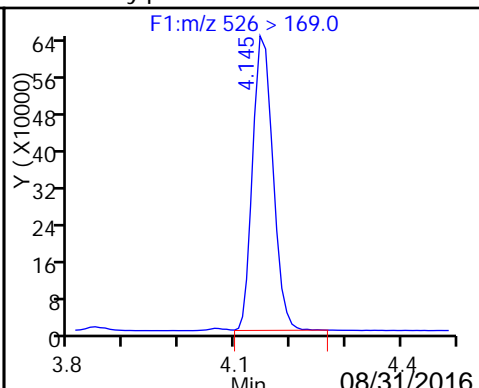
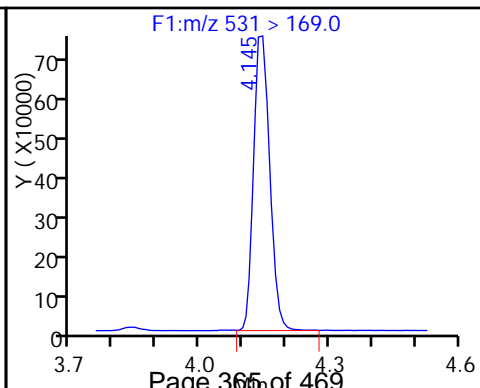
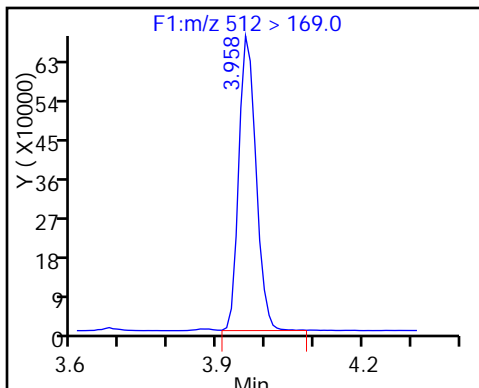
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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

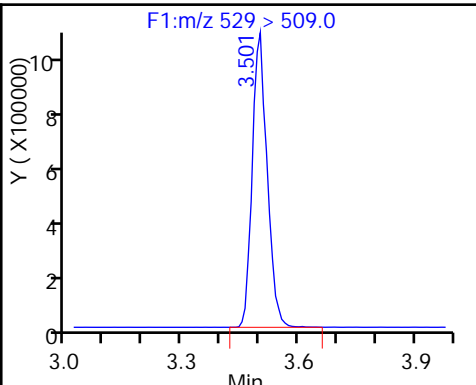
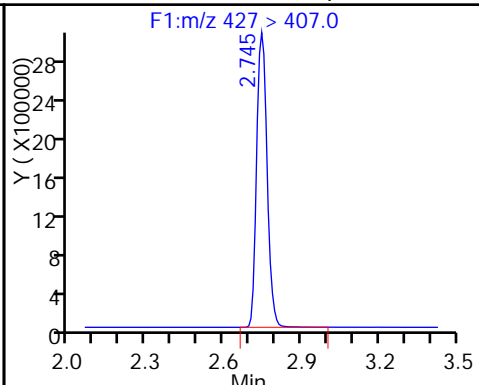
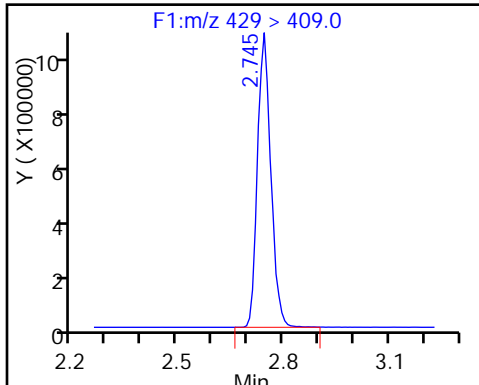
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.745	2.749	-0.004		2891381	52.1		110		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.745	2.751	-0.006	1.000	8763302	184.1		97.1		
D 42 M2-8:2FTS										
529 > 509.0	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

D 47 M2-6:2FTS

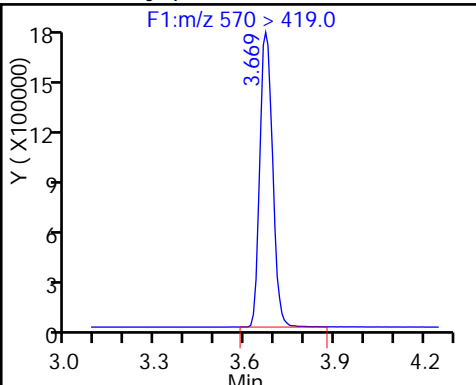
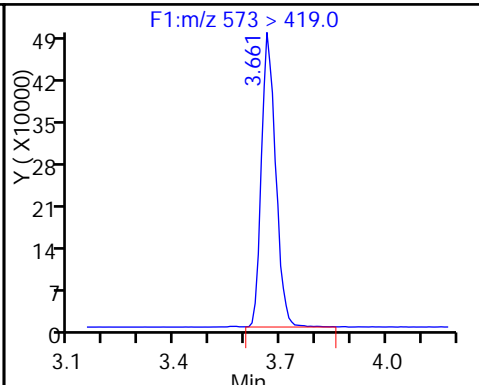
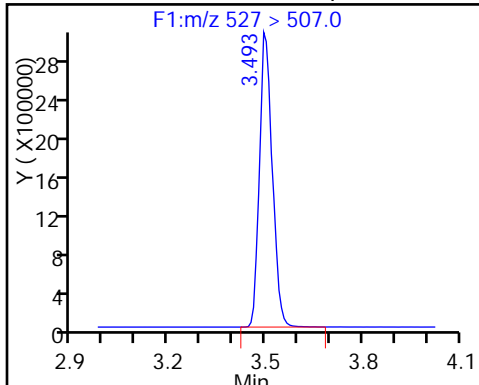
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

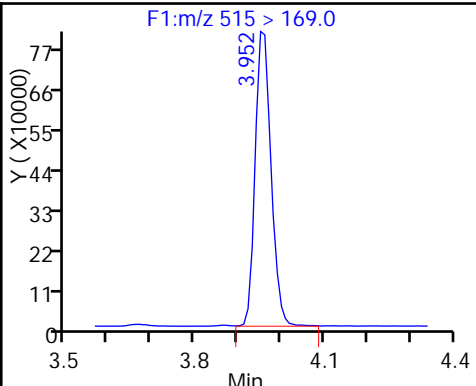
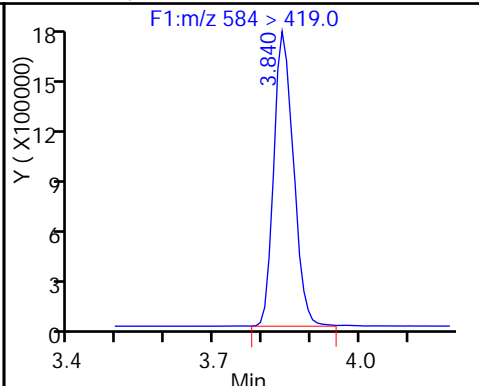
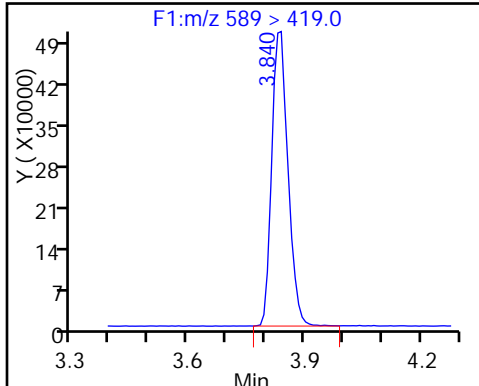
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

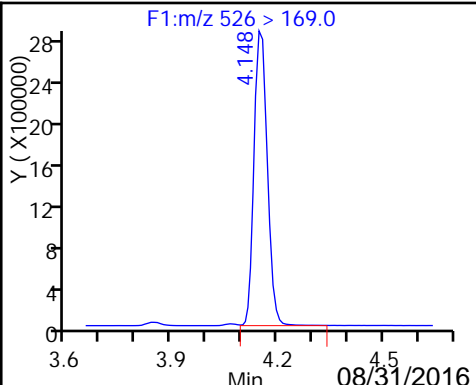
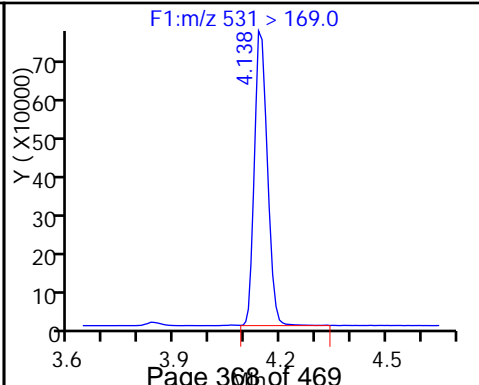
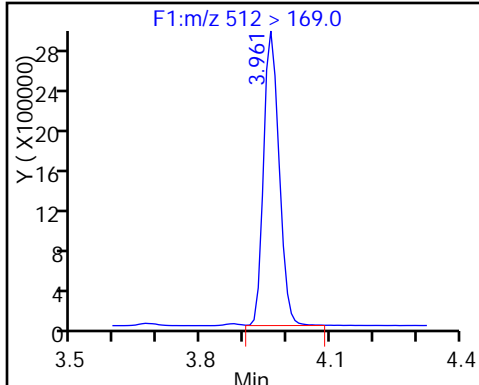
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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

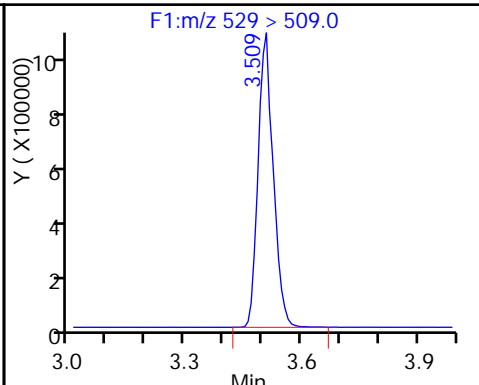
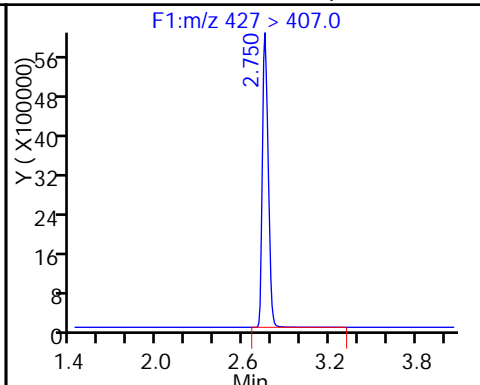
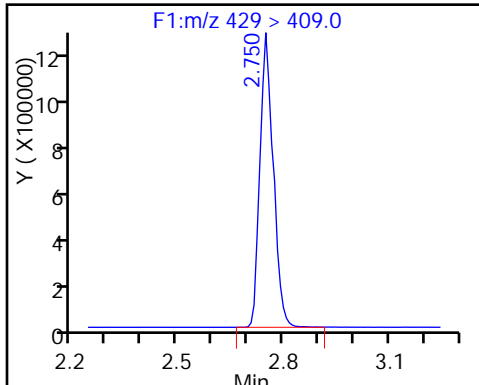
Dil. Factor: 1.0000

Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

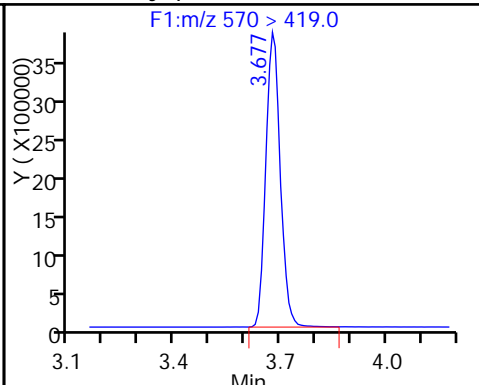
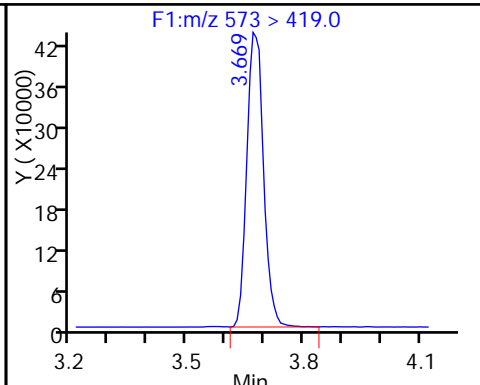
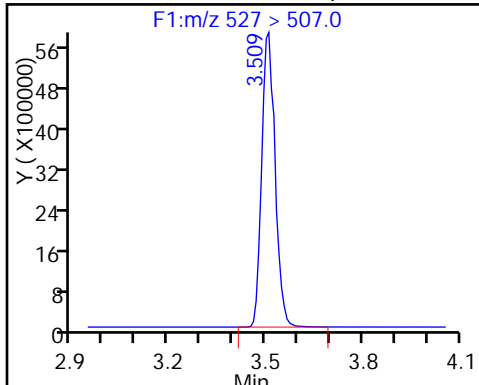
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



43 Sodium 1H,1H,2H,2H-perfluorooctane

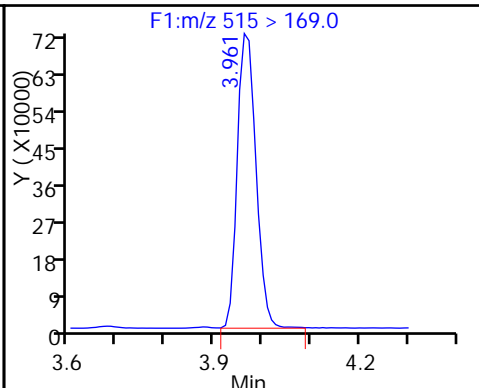
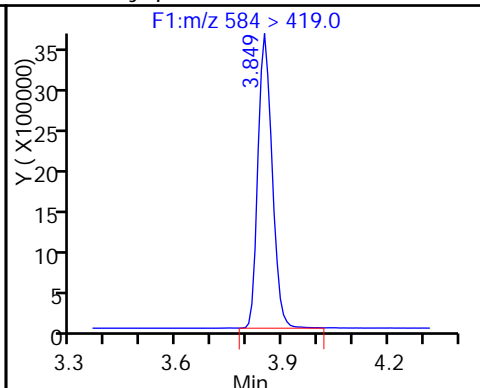
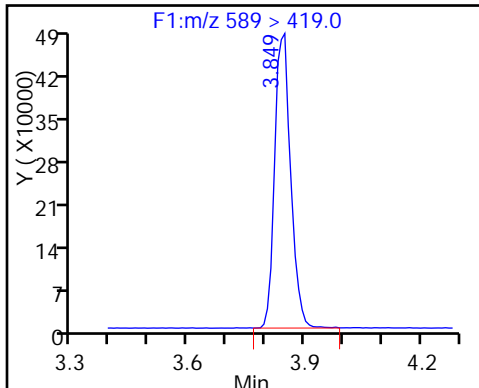
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

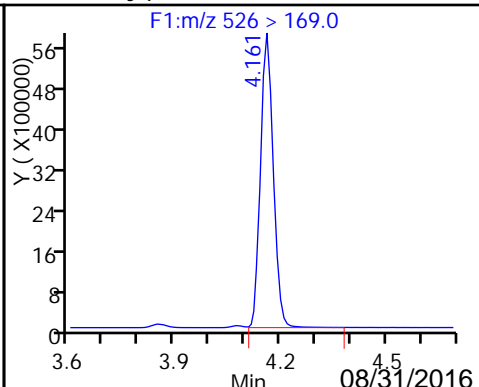
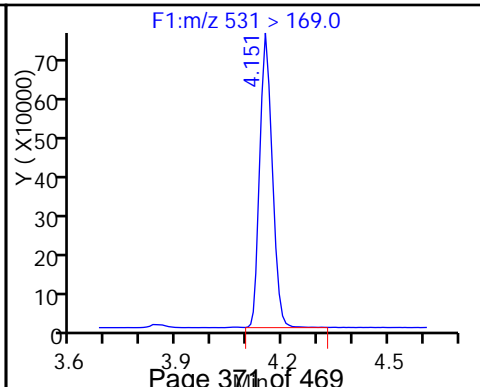
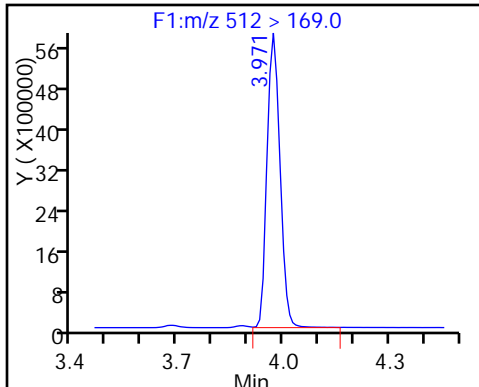
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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.: 320-20867-1
 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

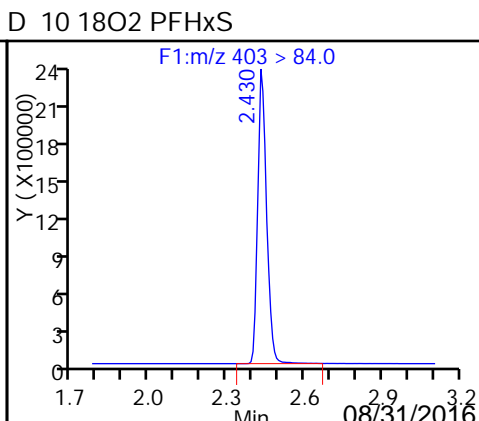
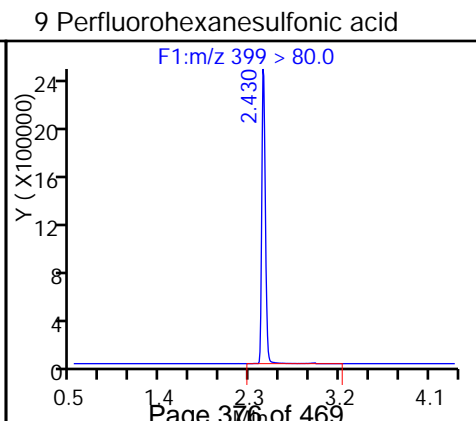
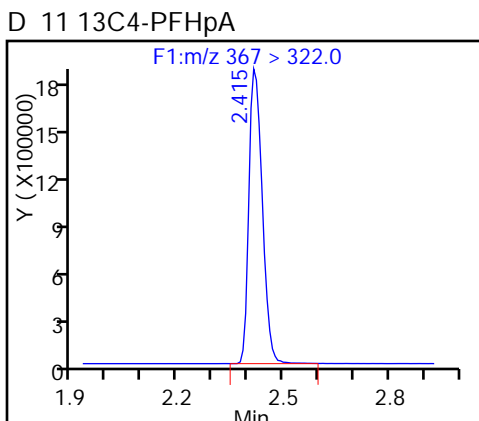
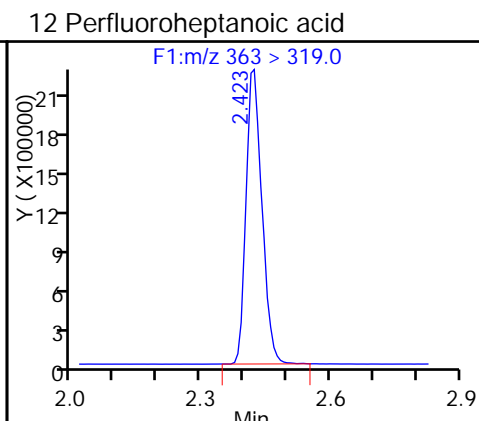
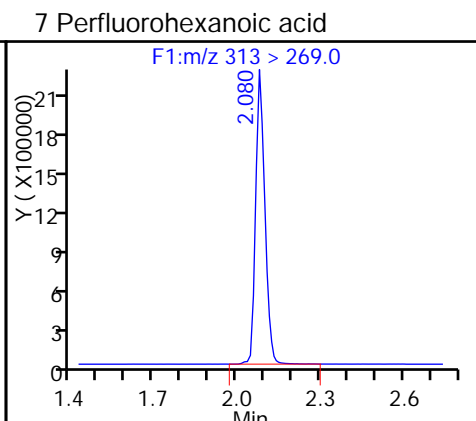
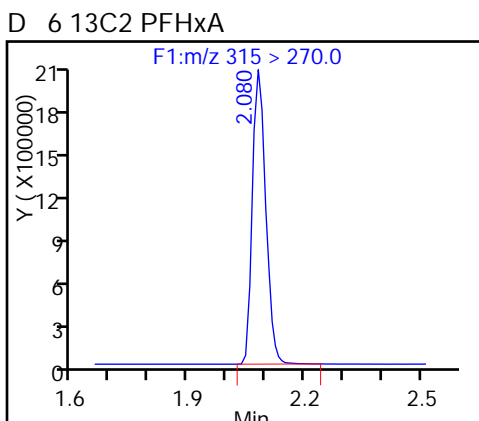
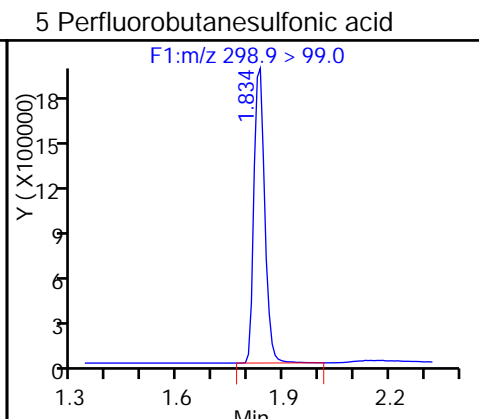
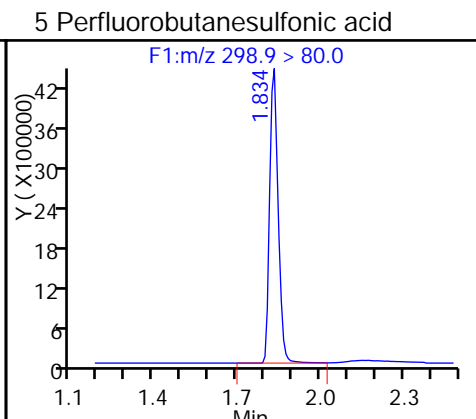
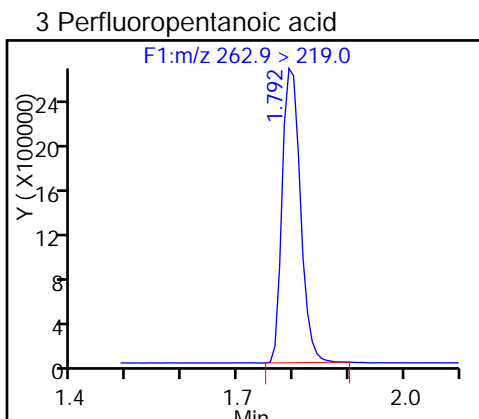
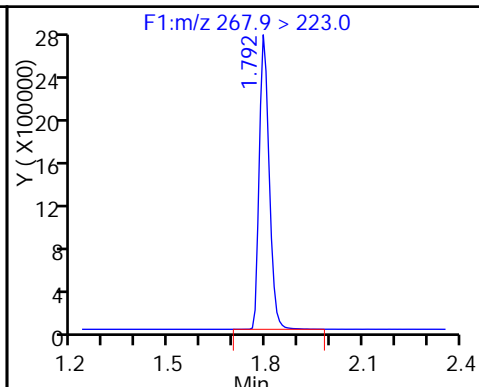
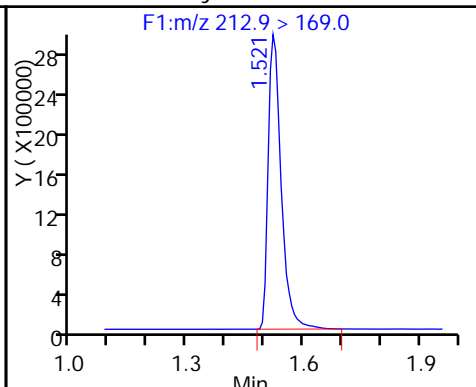
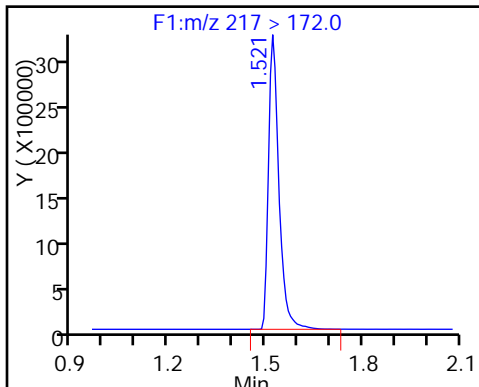
Amount Added: 1.00

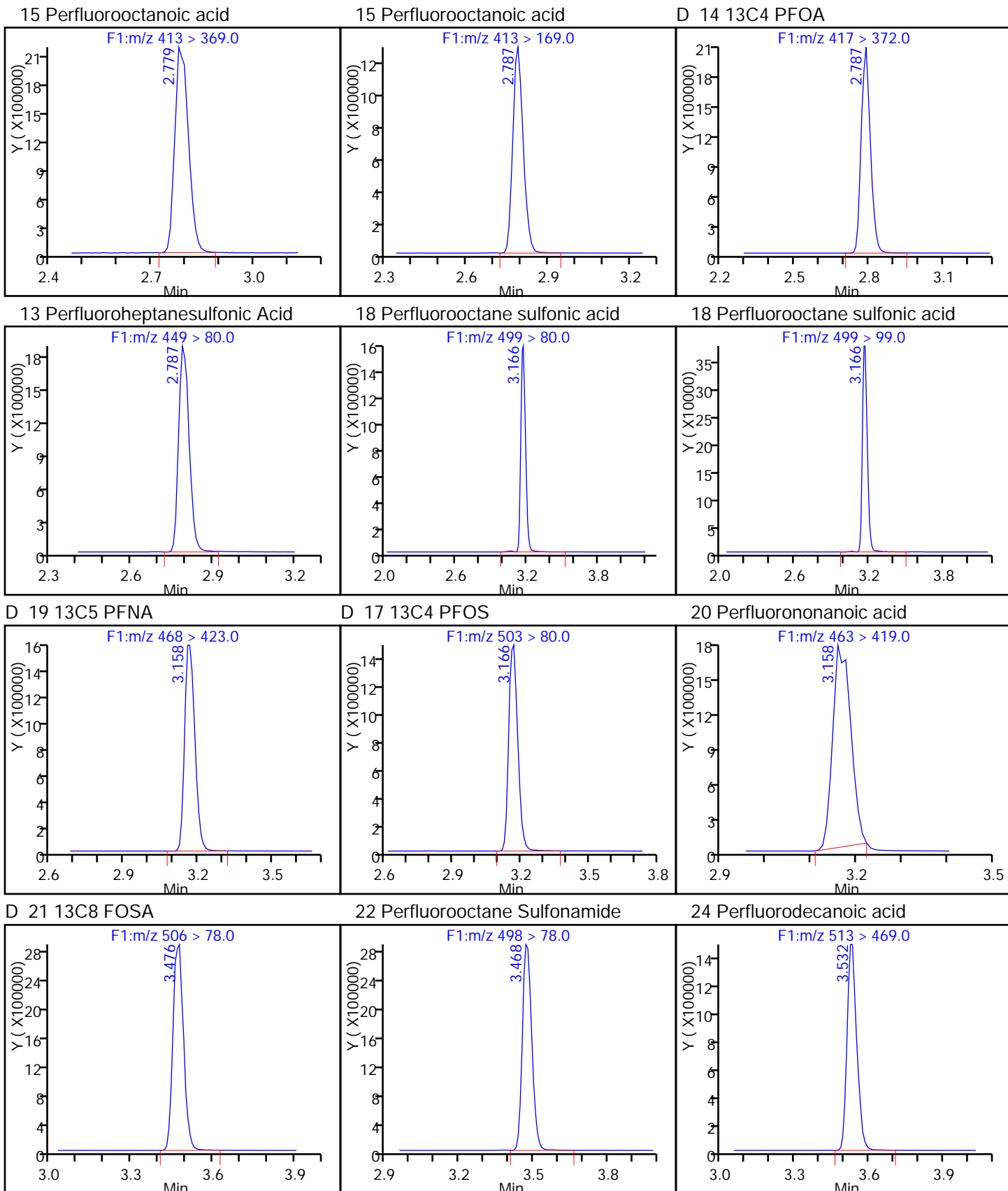
Units: mL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

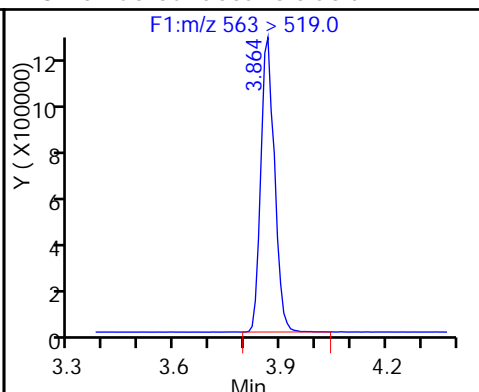
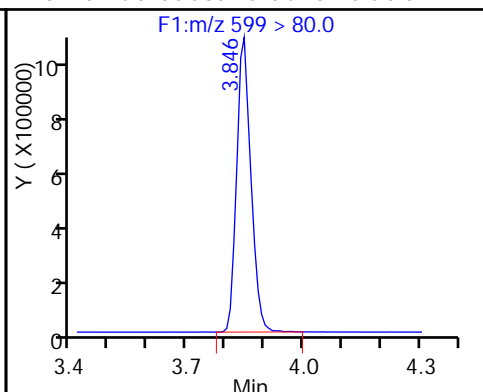
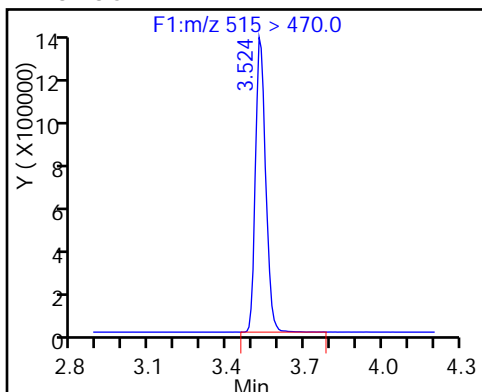




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

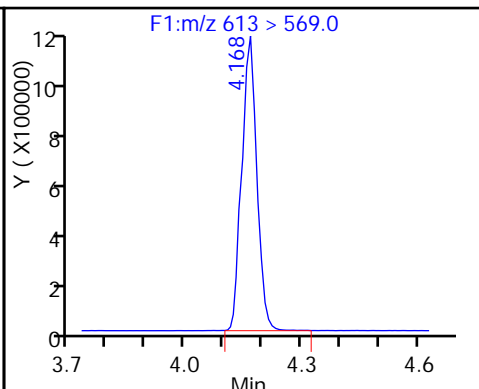
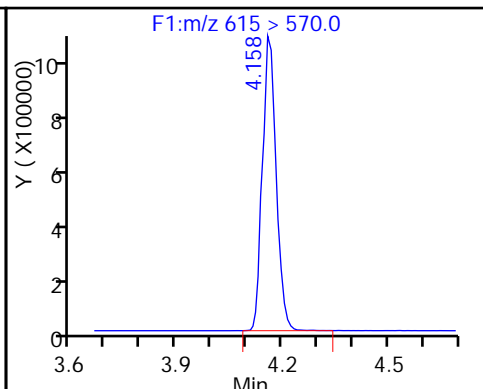
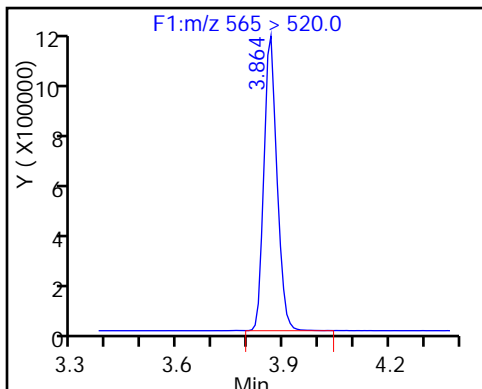
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

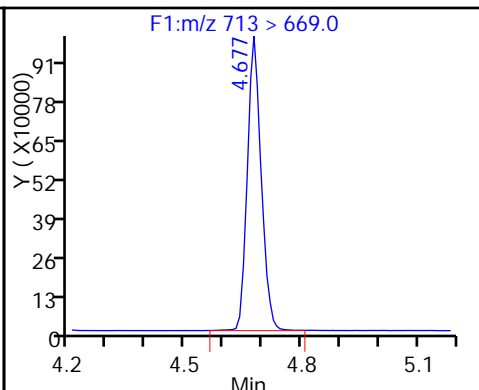
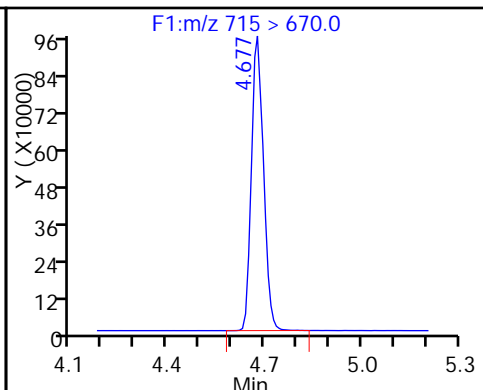
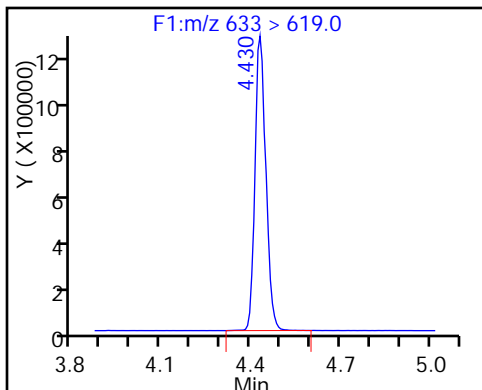
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

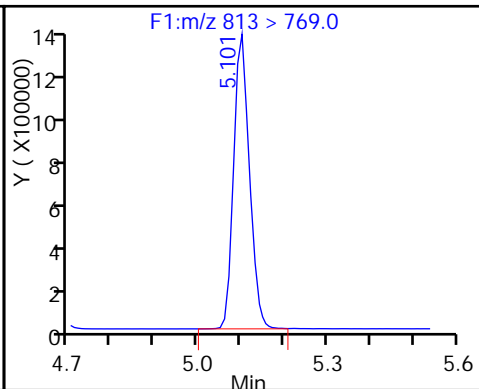
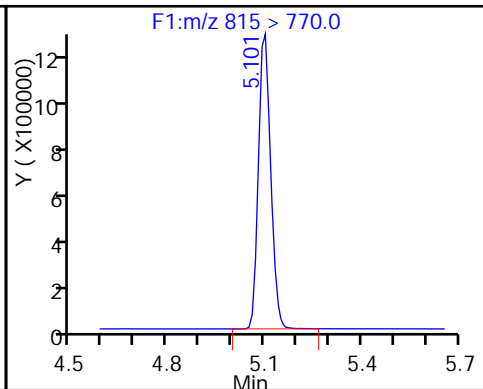
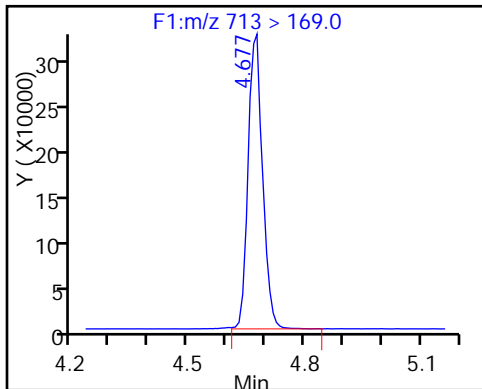
33 Perfluorotetradecanoic acid



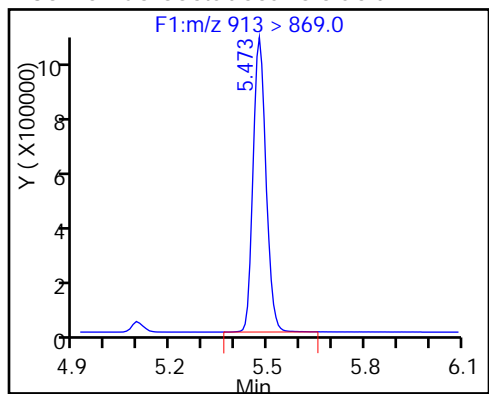
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Lab Sample ID: CCV 320-123791/2 Calibration Date: 08/23/2016 05:24
 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: 22AUG2016C_040_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	0.9093		21.0	20.0	5.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.031		20.2	20.0	0.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.607		18.3	17.7	3.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9268		19.2	20.0	-4.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.052		20.1	20.0	0.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.038		17.0	18.2	-6.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.240		20.2	19.0	6.3	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.066		21.1	20.0	5.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.053		17.6	18.6	-5.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.041		20.8	20.0	4.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9653		21.0	20.0	4.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	0.9902		20.1	20.0	0.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.6350		20.0	19.3	3.6	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.041		19.2	20.0	-3.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	0.9671		19.5	20.0	-2.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9583		19.6	20.0	-2.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8735		20.8	20.0	4.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.015		16.4	20.0	-18.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9458		16.7	20.0	-16.6	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016C_040_p1_e1.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Aug-2016 05:24:00 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*sub2
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 13:48:35 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 13:48:35

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	1.514	1.522	-0.008		7944421	58.6		117	660171	
1 Perfluorobutyric acid										
212.9 > 169.0	1.507	1.524	-0.017	1.000	2889443	21.0		105	36321	
D 4 13C5-PFPeA										
267.9 > 223.0	1.774	1.797	-0.023		6166783	57.2		114	714625	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.774	1.797	-0.023	1.000	2542821	20.2		101	50018	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.808	1.837	-0.029	1.000	3644805	18.3		103		
298.9 > 99.0	1.808	1.837	-0.029	1.000	1545876		2.36(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		5641252	58.2		116	632304	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	2091391	19.2		95.9	149326	
12 Perfluoroheptanoic acid										
363 > 319.0	2.384	2.427	-0.043	1.000	2248881	20.1		101	40456	
D 11 13C4-PFHpA										
367 > 322.0	2.384	2.430	-0.046		5342246	55.4		111	431089	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.400	2.446	-0.046	1.000	2423194	17.0		93.2		
D 10 18O2 PFHxS										
403 > 84.0	2.400	2.446	-0.046		6069436	54.0		114	411900	
15 Perfluorooctanoic acid										
413 > 369.0	2.745	2.798	-0.053	1.000	2447881	21.1		106	14994	
413 > 169.0	2.745	2.798	-0.053	1.000	1425683		1.72(0.90-1.10)		116140	
D 14 13C4 PFOA										
417 > 372.0	2.745	2.798	-0.053		5740774	59.6		119	362837	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.745	2.807	-0.062	1.000	2127180	20.2		106		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.090	3.110	-0.019	1.000	1761652	17.6		95.0	14101	
499 > 99.0	3.010	3.110	-0.099	0.974	389699		4.52(0.90-1.10)		8562	
D 19 13C5 PFNA										
468 > 423.0	3.115	3.177	-0.062		4504472	56.6		113	309648	
D 17 13C4 PFOS										
503 > 80.0	3.115	3.177	-0.062		4308144	52.5		110	427684	
20 Perfluorononanoic acid										
463 > 419.0	3.115	3.183	-0.068	1.000	1875897	20.8		104	76201	
D 21 13C8 FOSA										
506 > 78.0	3.453	3.474	-0.021		8156948	54.4		109	381760	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.453	3.475	-0.022	1.000	3149474	21.0		105	177353	
24 Perfluorodecanoic acid										
513 > 469.0	3.477	3.546	-0.069	1.000	1619535	20.1		101	118942	
D 23 13C2 PFDA										
515 > 470.0	3.469	3.546	-0.077		4088958	56.2		112	785368	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.785	3.863	-0.078	1.000	1103392	20.0		104		
28 Perfluoroundecanoic acid										
563 > 519.0	3.803	3.880	-0.077	1.000	1351454	19.2		96.1	98579	
D 27 13C2 PFUnA										
565 > 520.0	3.803	3.880	-0.077		3245089	58.3		117	401074	
D 30 13C2 PFDoA										
615 > 570.0	4.100	4.183	-0.083		3074524	57.8		116	203570	
29 Perfluorododecanoic acid										
613 > 569.0	4.100	4.185	-0.085	1.000	1189353	19.5		97.6	89143	
31 Perfluorotridecanoic acid										
633 > 619.0	4.368	4.452	-0.084	1.000	1178555	19.6		97.8	110888	
D 32 13C2-PFTeDA										
715 > 670.0	4.602	4.697	-0.095		2876435	61.0		122	1030559	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.611	4.701	-0.090	1.000	1074197	20.8		104	47938	
713 > 169.0	4.602	4.701	-0.099	0.998	334883		3.21(0.00-0.00)		131642	
D 34 13C2-PFHxDA										
815 > 770.0	5.018	5.125	-0.107		3275398	49.7		99.5	422666	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.018	5.127	-0.109	1.000	1248655	16.4		81.9	7385	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.371	5.509	-0.138	1.000	1163169	16.7		83.4	8795	

Reagents:

LCPFC-L4_00022

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016C_040_p1_e1.d

Injection Date: 23-Aug-2016 05:24:00

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

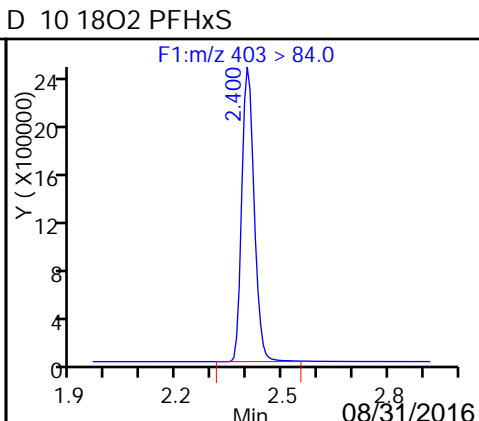
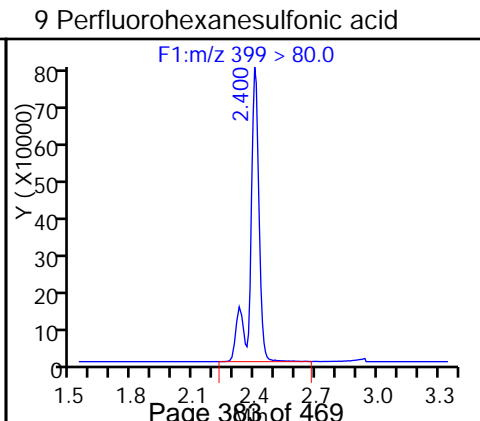
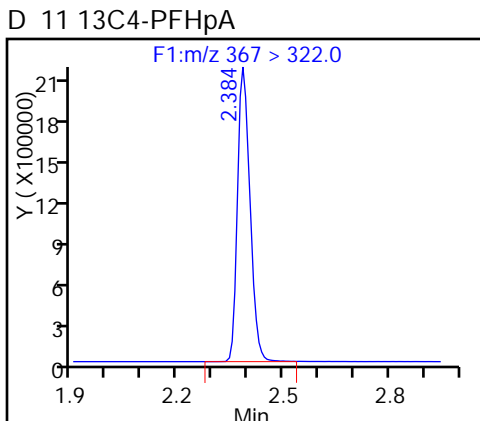
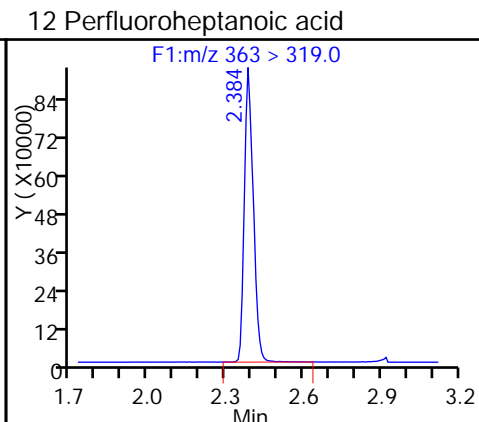
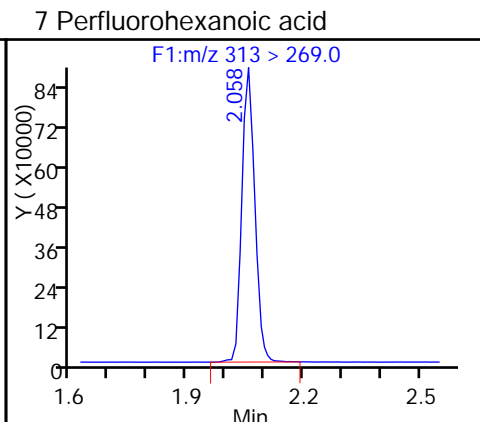
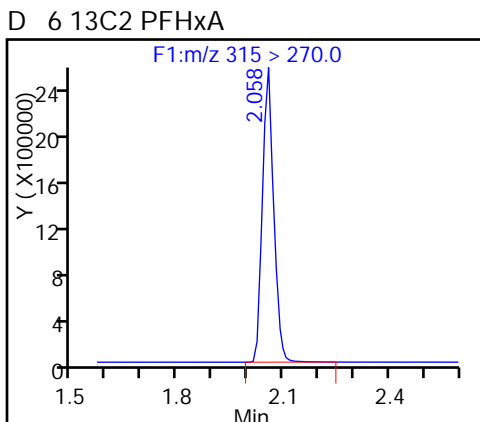
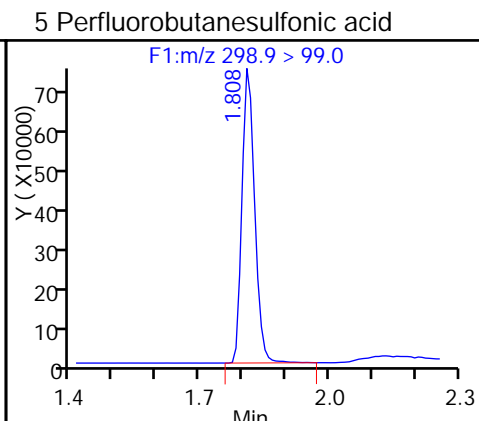
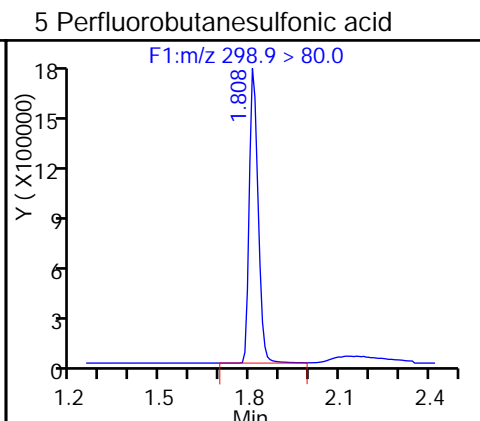
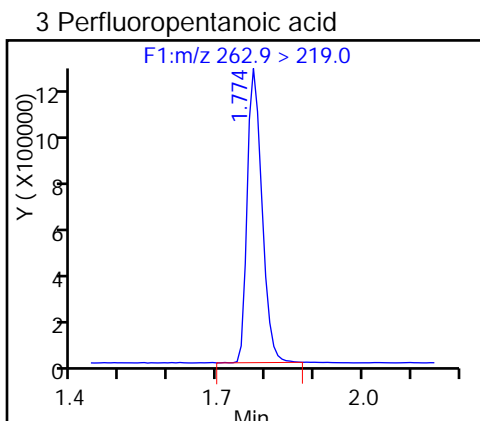
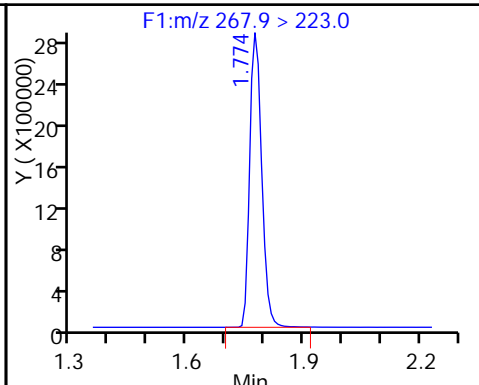
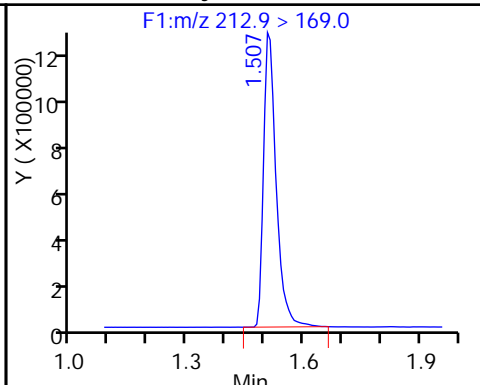
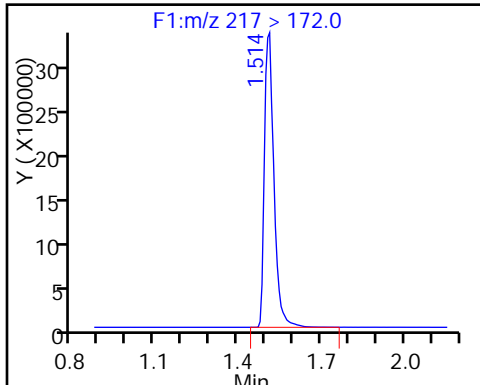
Method: PFC_A8_Full

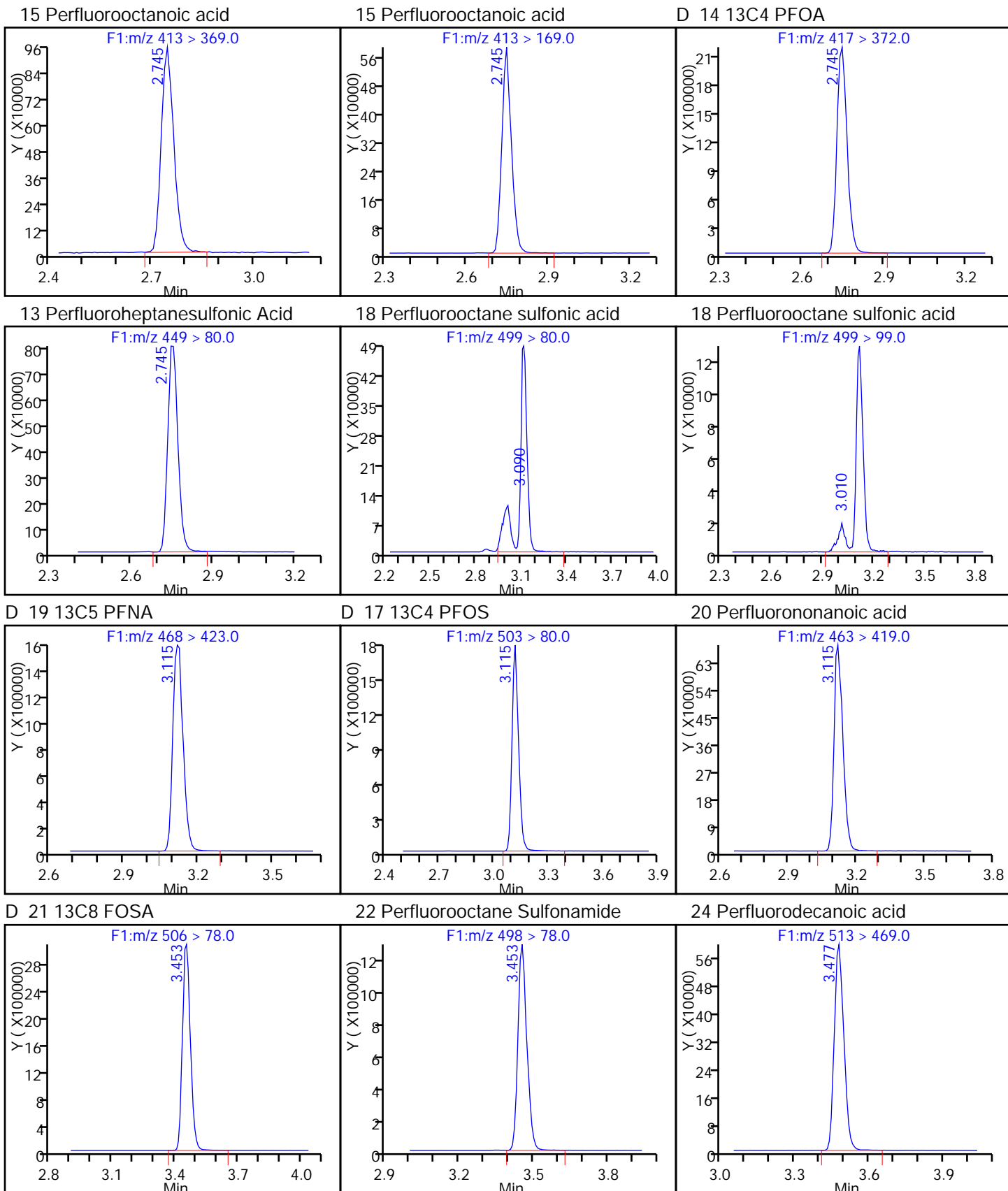
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

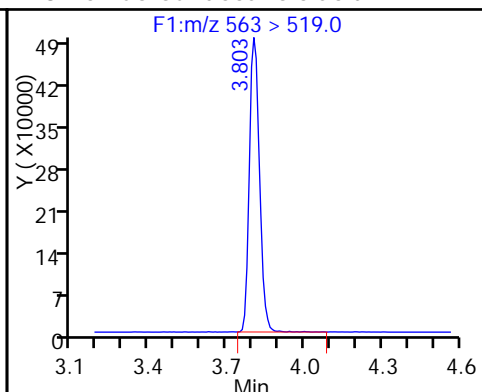
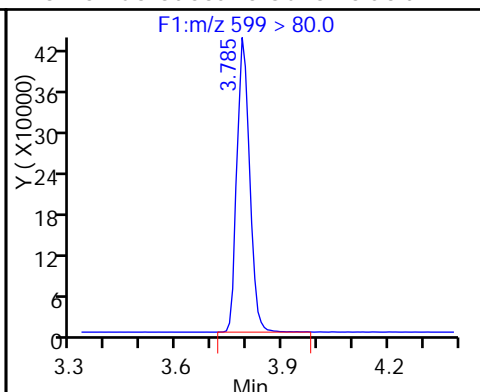
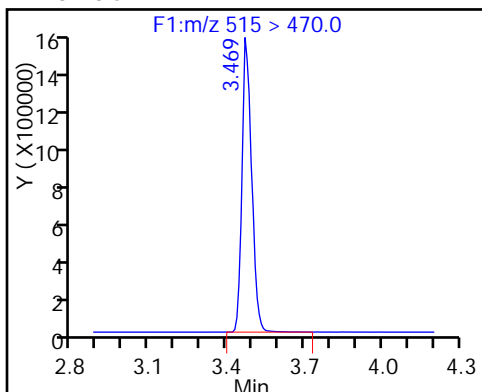




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

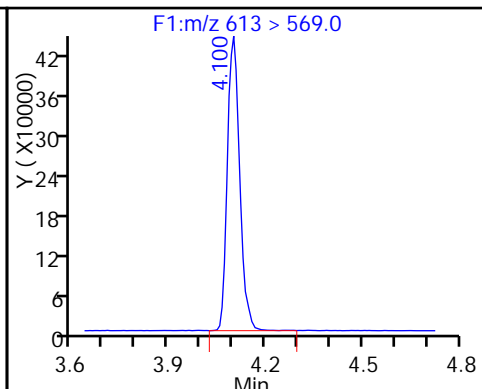
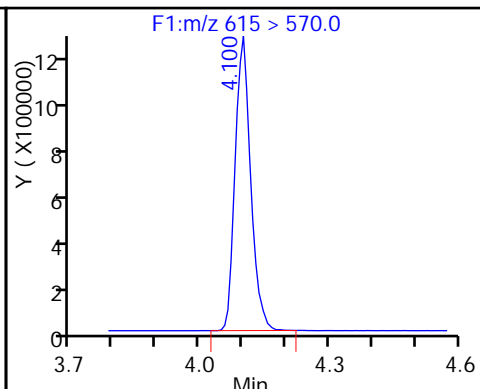
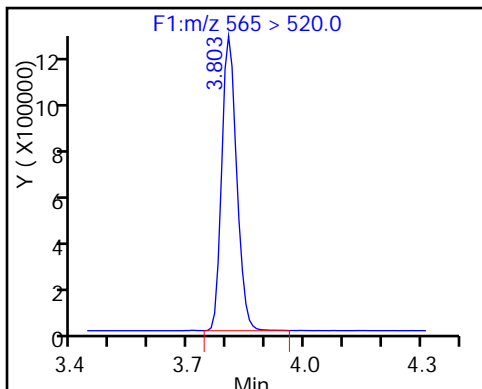
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

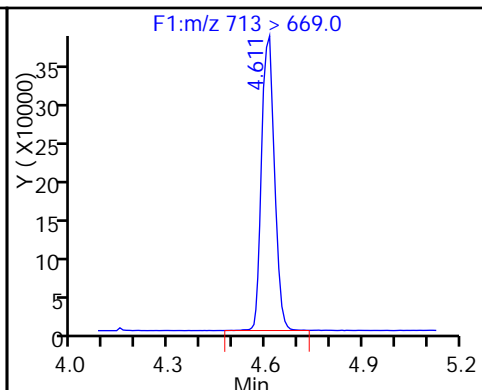
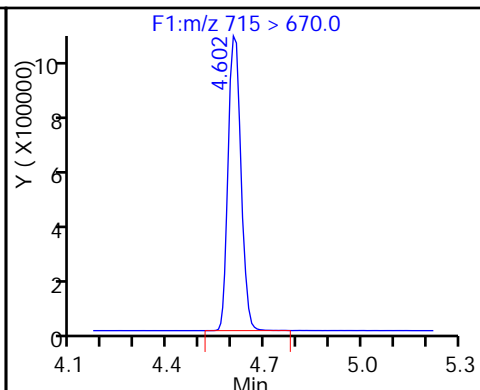
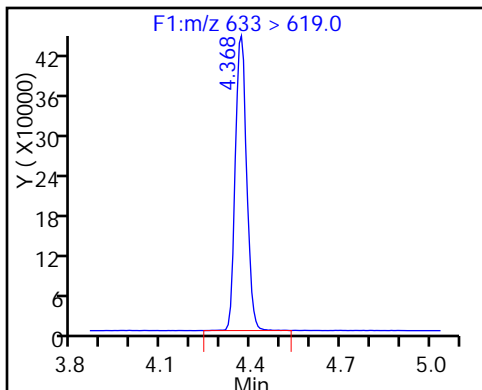
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

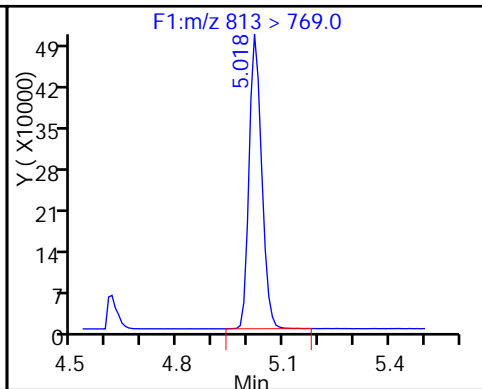
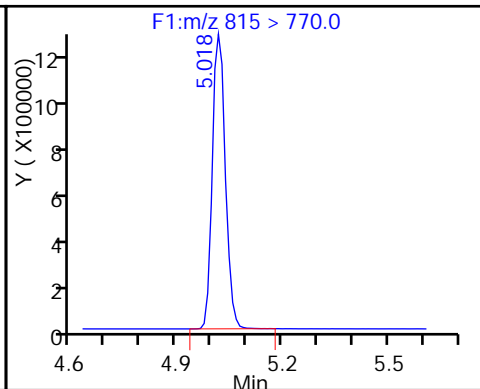
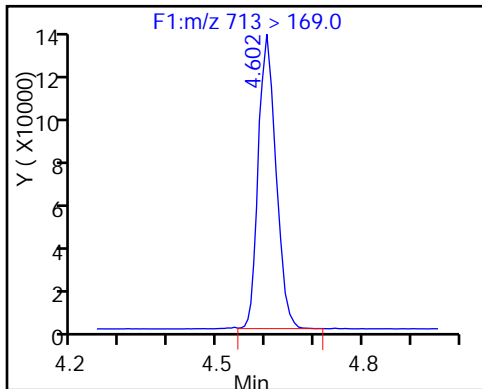
33 Perfluorotetradecanoic acid



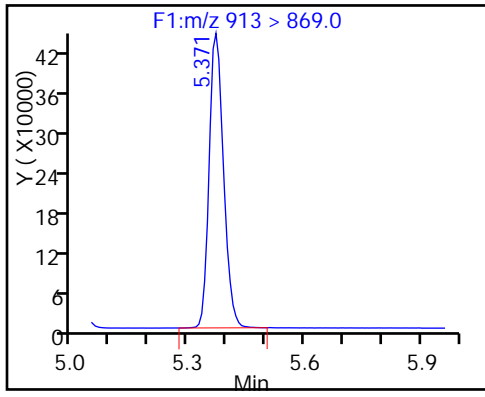
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Lab Sample ID: CCV 320-123791/16 Calibration Date: 08/23/2016 07:09
 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_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	0.9037		20.9	20.0	4.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.005		19.7	20.0	-1.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.605		18.3	17.7	3.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9610		19.9	20.0	-0.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.033		19.8	20.0	-1.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.049		17.2	18.2	-5.7	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.034		20.5	20.0	2.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.233		20.1	19.0	5.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.056		17.7	18.6	-4.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.015		20.3	20.0	1.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9631		20.9	20.0	4.6	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	1.011		20.6	20.0	2.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.6014		18.9	19.3	-1.9	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.054		19.5	20.0	-2.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	0.9563		19.3	20.0	-3.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9669		19.7	20.0	-1.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8343		19.9	20.0	-0.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.017		16.4	20.0	-18.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9647		17.0	20.0	-15.0	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_012_p1_e1.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Aug-2016 07:09:00 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*sub2
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 15:32:10 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 15:32:10

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	1.514	1.522	-0.008		8050669	59.4		119	703211	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	2910027	20.9		105	38587	
D 4 13C5-PFPeA										
267.9 > 223.0	1.774	1.797	-0.023		5943219	55.1		110	903783	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.774	1.797	-0.023	1.000	2388346	19.7		98.3	50418	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	3668287	18.3		103		
298.9 > 99.0	1.817	1.837	-0.020	1.000	1567809		2.34(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		5418582	55.9		112	576597	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	2082950	19.9		99.4	239457	
12 Perfluoroheptanoic acid										
363 > 319.0	2.387	2.427	-0.040	1.000	2231530	19.8		98.8	44112	
D 11 13C4-PFHpA										
367 > 322.0	2.387	2.430	-0.043		5399684	56.0		112	409370	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.410	2.446	-0.036	1.000	2468764	17.2		94.3		
D 10 18O2 PFHxS										
403 > 84.0	2.402	2.446	-0.044		6114629	54.4		115	399483	
15 Perfluorooctanoic acid										
413 > 369.0	2.749	2.798	-0.049	1.000	2364893	20.5		102	13575	
413 > 169.0	2.749	2.798	-0.049	1.000	1439314		1.64(0.90-1.10)		176311	
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		5719919	59.4		119	412241	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.757	2.807	-0.050	1.000	2197129	20.1		106		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.096	3.110	-0.013	1.000	1834353	17.7		95.2	24721	
499 > 99.0	3.008	3.110	-0.101	0.972	413484		4.44(0.90-1.10)		3831	
D 19 13C5 PFNA										
468 > 423.0	3.121	3.177	-0.056		4797828	60.3		121	436400	
D 17 13C4 PFOS										
503 > 80.0	3.121	3.177	-0.056		4473674	54.5		114	297079	
20 Perfluorononanoic acid										
463 > 419.0	3.129	3.183	-0.054	1.000	1948397	20.3		102	61938	
D 21 13C8 FOSA										
506 > 78.0	3.459	3.474	-0.015		8341880	55.6		111	529472	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.459	3.475	-0.016	1.000	3213489	20.9		105	216976	
24 Perfluorodecanoic acid										
513 > 469.0	3.482	3.546	-0.064	1.000	1677088	20.6		103	159073	
D 23 13C2 PFDA										
515 > 470.0	3.482	3.546	-0.064		4145690	57.0		114	332307	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.791	3.863	-0.072	1.000	1085112	18.9		98.1		
28 Perfluoroundecanoic acid										
563 > 519.0	3.809	3.880	-0.071	1.000	1318134	19.5		97.3	68602	
D 27 13C2 PFUnA										
565 > 520.0	3.809	3.880	-0.071		3125913	56.2		112	288355	
D 30 13C2 PFDoA										
615 > 570.0	4.104	4.183	-0.079		3065867	57.6		115	614225	
29 Perfluorododecanoic acid										
613 > 569.0	4.097	4.185	-0.088	1.000	1172810	19.3		96.5	62190	
31 Perfluorotridecanoic acid										
633 > 619.0	4.372	4.452	-0.080	1.000	1185740	19.7		98.7	117282	
D 32 13C2-PFTeDA										
715 > 670.0	4.615	4.697	-0.082		2859087	60.6		121	350221	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.615	4.701	-0.086	1.000	1023170	19.9		99.3	33477	
713 > 169.0	4.605	4.701	-0.096	0.998	340288		3.01(0.00-0.00)		133454	
D 34 13C2-PFHxDA										
815 > 770.0	5.020	5.125	-0.105		3337462	50.7		101	439369	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.020	5.127	-0.107	1.000	1247074	16.4		82.0	7752	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.370	5.509	-0.139	1.000	1183004	17.0		85.0	9245	

Reagents:

LCPFC-L4_00022

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_012_p1_e1.d

Injection Date: 23-Aug-2016 07:09:00

Instrument ID: A8

Lims ID: CCV L4

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

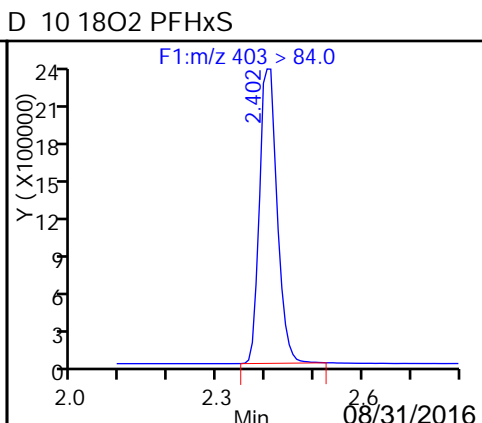
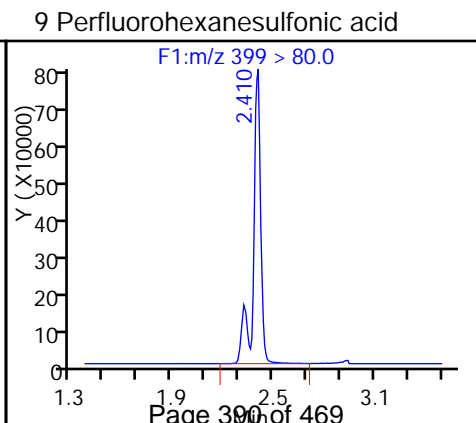
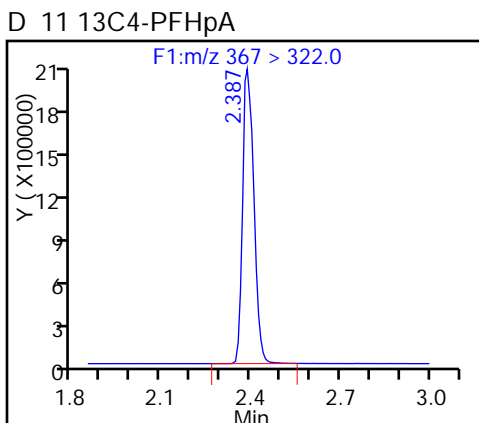
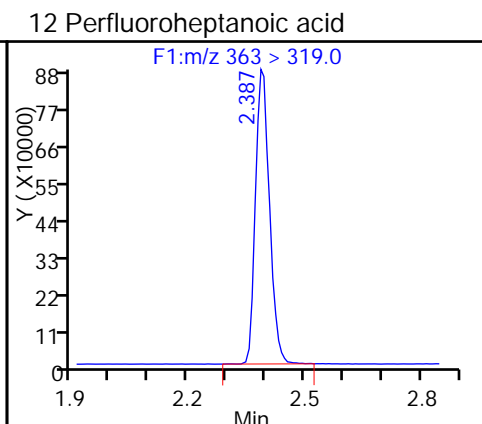
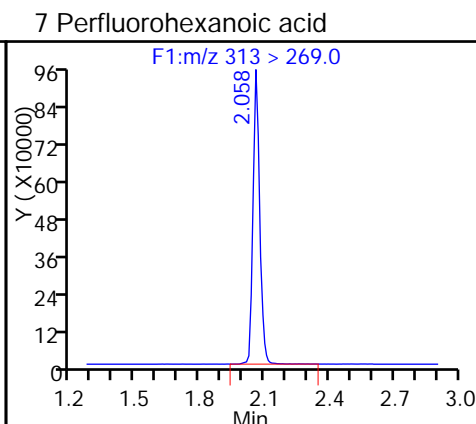
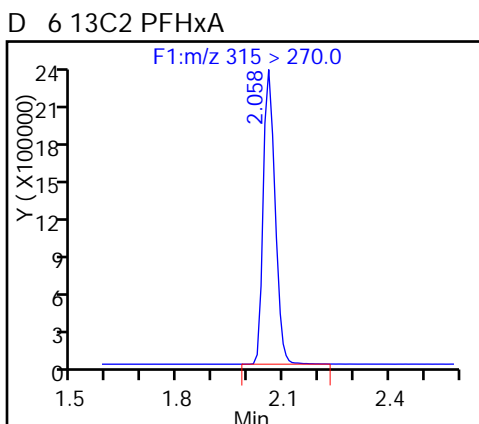
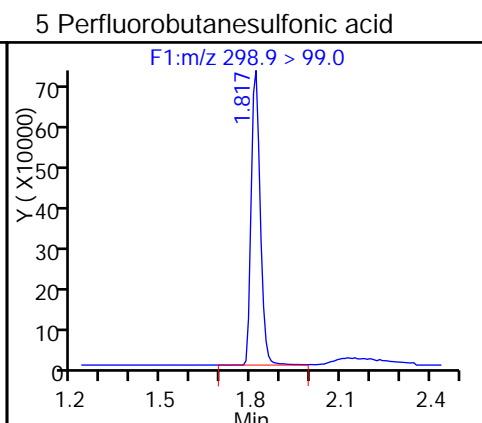
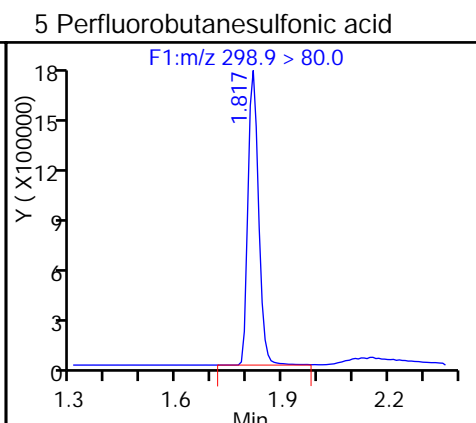
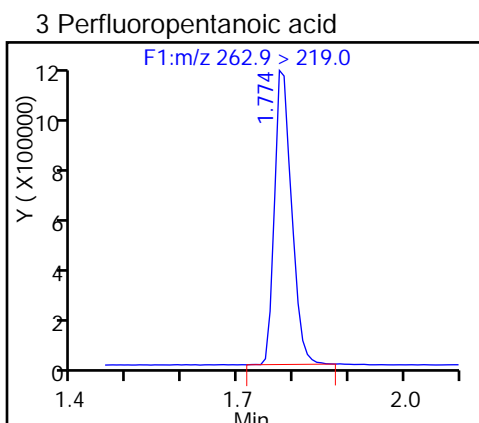
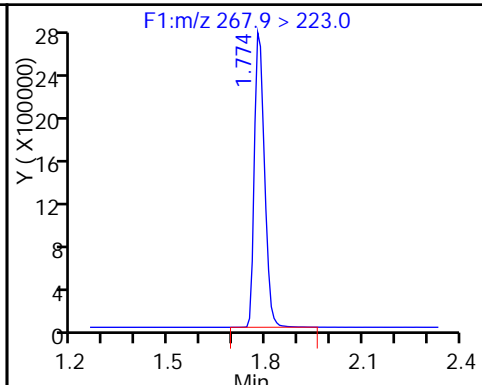
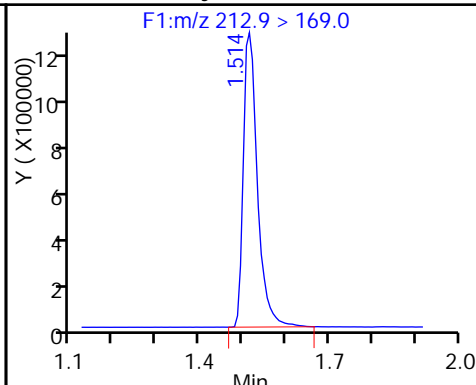
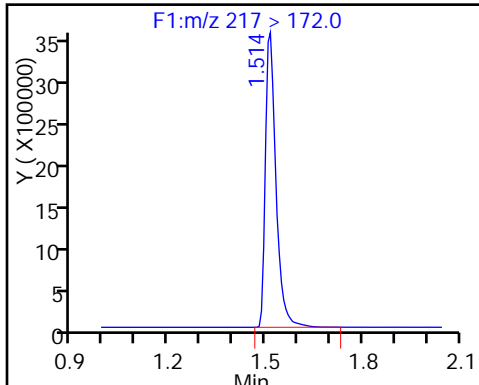
Method: PFC_A8_Full

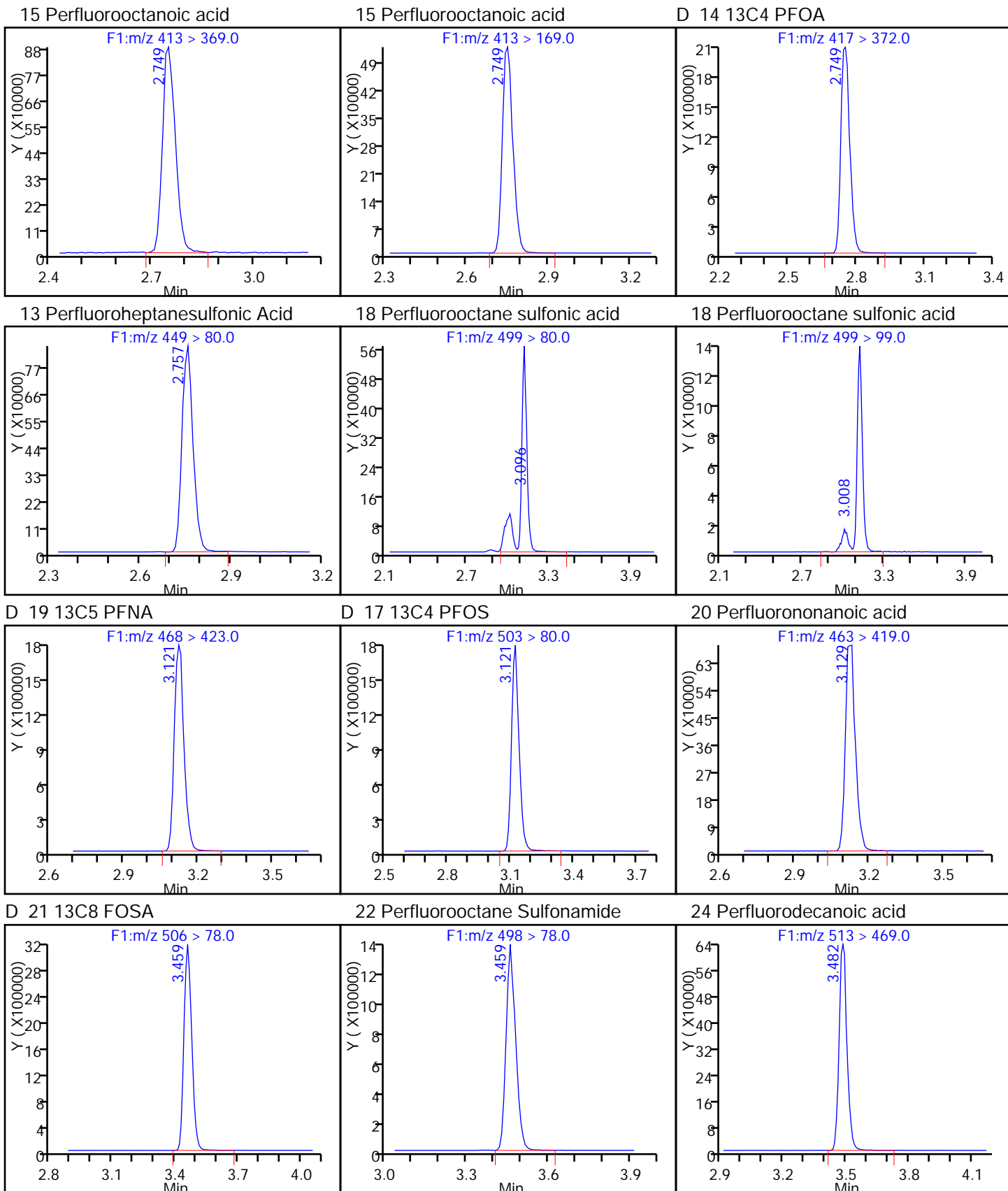
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

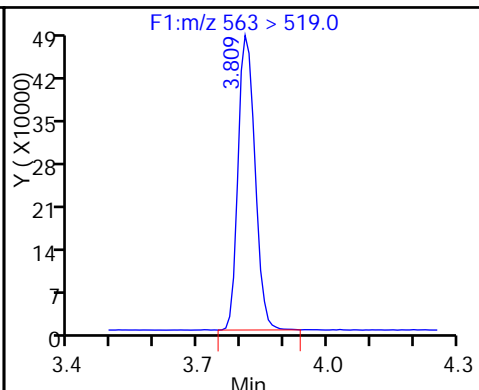
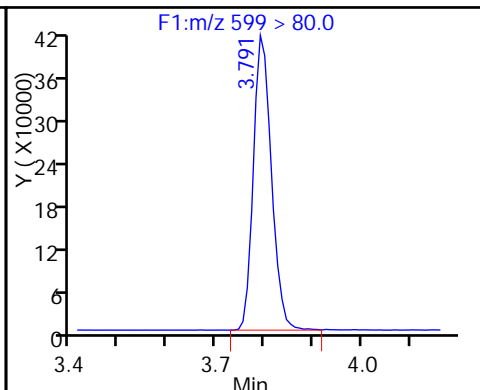
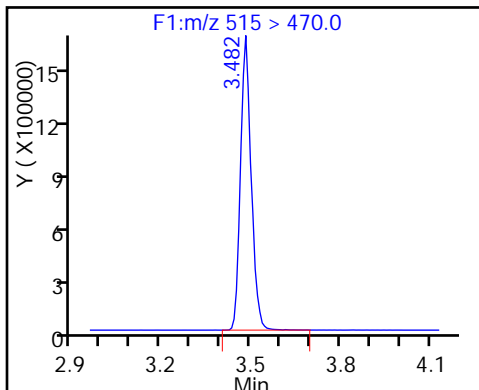




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

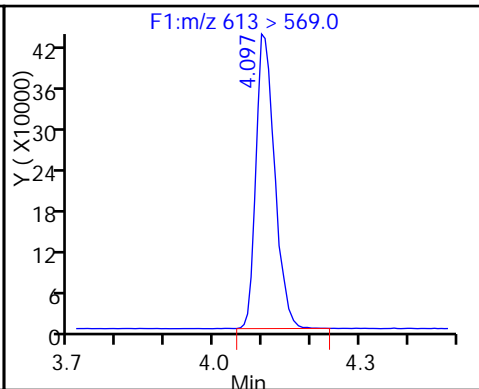
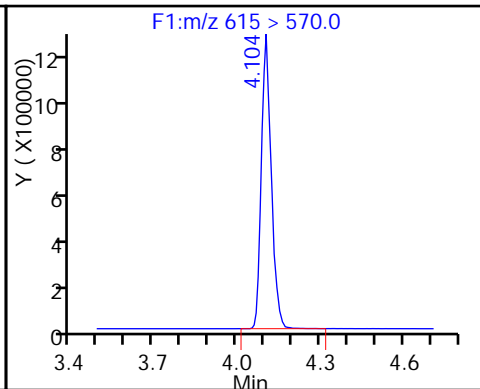
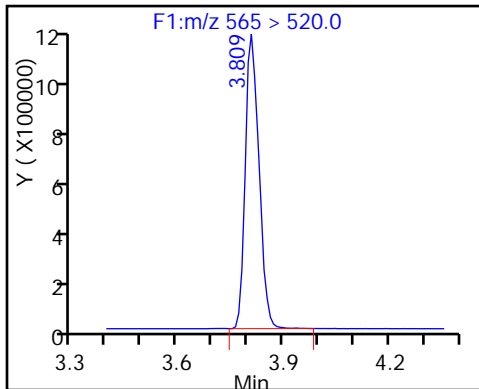
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

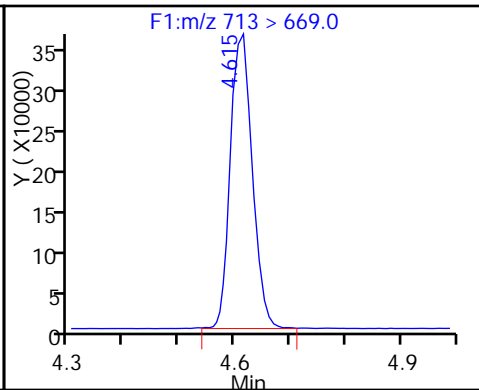
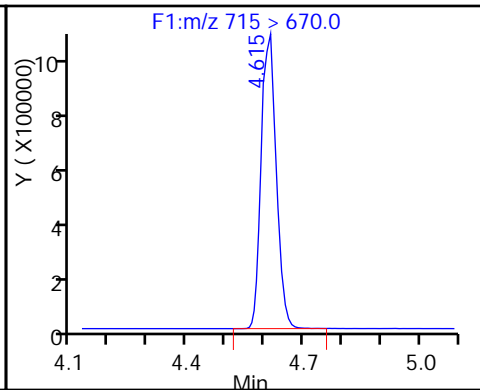
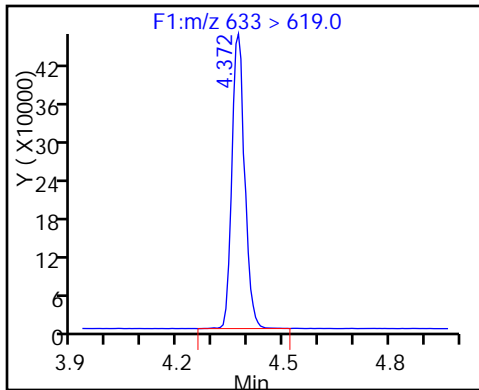
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDa

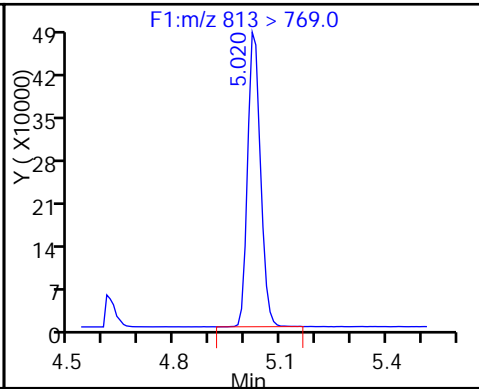
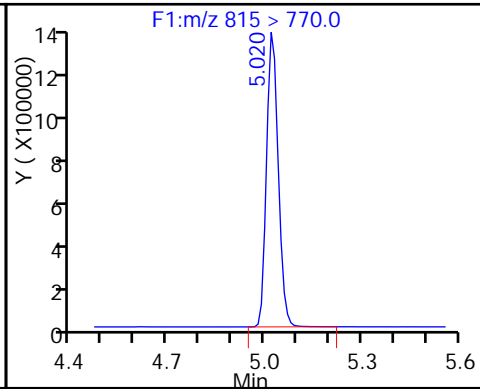
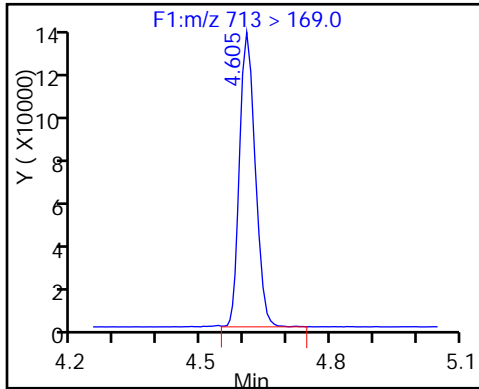
33 Perfluorotetradecanoic acid



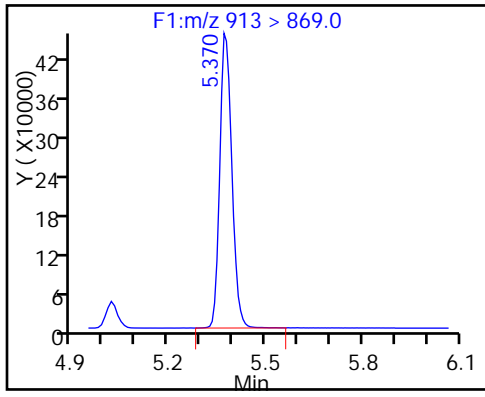
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDa

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Lab Sample ID: CCV 320-123791/29 Calibration Date: 08/23/2016 08:46
 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_025_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	0.9078		52.5	50.0	5.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	0.996		48.7	50.0	-2.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.667		47.5	44.2	7.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9746		50.4	50.0	0.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.014		48.5	50.0	-3.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.046		42.7	45.5	-6.0	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.074		53.6	50.0	7.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.212		49.5	47.6	4.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.094		45.8	46.4	-1.4	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.037		51.9	50.0	3.8	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9745		52.9	50.0	5.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	1.007		51.2	50.0	2.4	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.5832		45.9	48.2	-4.9	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.068		49.3	50.0	-1.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	0.9660		48.8	50.0	-2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	1.001		51.1	50.0	2.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8949		53.3	50.0	6.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.149		46.3	50.0	-7.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9898		43.0	50.0	-13.9	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_025_p1_e1.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 23-Aug-2016 08:46:00 ALS Bottle#: 0 Worklist Smp#: 29
 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 16:27:59 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:27:59

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	1.507	1.522	-0.015		7393179	54.5		109	629724	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	6711388	52.5		105	83735	
D 4 13C5-PFPeA										
267.9 > 223.0	1.775	1.797	-0.022		5796398	53.8		108	875429	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.775	1.797	-0.022	1.000	5772570	48.7		97.4	109702	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	8980619	47.5		107		
298.9 > 99.0	1.808	1.837	-0.029	0.995	3871046		2.32(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		5154946	53.1		106	741664	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	5023993	50.4		101	360599	
12 Perfluoroheptanoic acid										
363 > 319.0	2.390	2.427	-0.037	1.000	5075664	48.5		97.0	92982	
D 11 13C4-PFHpA										
367 > 322.0	2.390	2.430	-0.040		5004193	51.9		104	507285	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.405	2.446	-0.041	1.000	5799448	42.7		94.0		
D 10 18O2 PFHxS										
403 > 84.0	2.405	2.446	-0.041		5765319	51.3		108	385086	
15 Perfluorooctanoic acid										
413 > 369.0	2.743	2.798	-0.055	1.000	5709411	53.6		107	35543	
413 > 169.0	2.743	2.798	-0.055	1.000	3366946		1.70(0.90-1.10)		212443	
D 14 13C4 PFOA										
417 > 372.0	2.743	2.798	-0.055		5317259	55.2		110	408373	

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	5096173	49.5		104		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.097	3.110	-0.012	1.000	4482359	45.8		98.6	289503	
499 > 99.0	3.017	3.110	-0.092	0.974	969942		4.62(0.90-1.10)		12214	
D 19 13C5 PFNA										
468 > 423.0	3.114	3.177	-0.063		4302426	54.1		108	264463	
D 17 13C4 PFOS										
503 > 80.0	3.114	3.177	-0.063		4222255	51.4		108	273021	
20 Perfluorononanoic acid										
463 > 419.0	3.114	3.183	-0.069	1.000	4460640	51.9		104	188370	
D 21 13C8 FOSA										
506 > 78.0	3.452	3.474	-0.022		7726348	51.5		103	359482	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.460	3.475	-0.015	1.000	7529190	52.9		106	275873	
24 Perfluorodecanoic acid										
513 > 469.0	3.476	3.546	-0.070	1.000	3938741	51.2		102	305555	
D 23 13C2 PFDA										
515 > 470.0	3.476	3.546	-0.070		3910009	53.8		108	491384	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.792	3.863	-0.071	1.000	2482808	45.9		95.1		
28 Perfluoroundecanoic acid										
563 > 519.0	3.801	3.880	-0.079	1.000	3199823	49.3		98.6	126558	
D 27 13C2 PFUnA										
565 > 520.0	3.801	3.880	-0.079		2995429	53.8		108	354422	
D 30 13C2 PFDoA										
615 > 570.0	4.106	4.183	-0.077		2852789	53.6		107	378037	
29 Perfluorododecanoic acid										
613 > 569.0	4.106	4.185	-0.079	1.000	2755814	48.8		97.5	147560	
31 Perfluorotridecanoic acid										
633 > 619.0	4.369	4.452	-0.083	1.000	2856231	51.1		102	222341	
D 32 13C2-PFTeDA										
715 > 670.0	4.604	4.697	-0.093		2843397	60.3		121	501231	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.604	4.701	-0.097	1.000	2552826	53.3		107	88759	
713 > 169.0	4.604	4.701	-0.097	1.000	810262		3.15(0.00-0.00)		158835	
D 34 13C2-PFHxDA										
815 > 770.0	5.018	5.125	-0.107		3524800	53.5		107	468304	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.018	5.127	-0.109	1.000	3277469	46.3		92.6	18915	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.368	5.509	-0.141	1.000	2823735	43.0		86.1	23167	

Reagents:

LCPFC-L5_00020

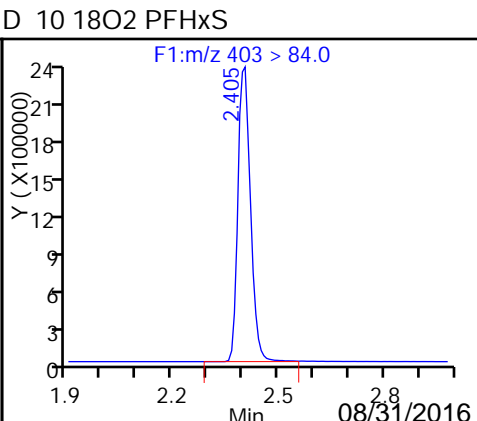
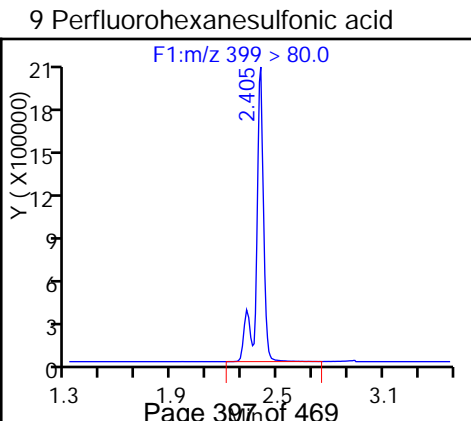
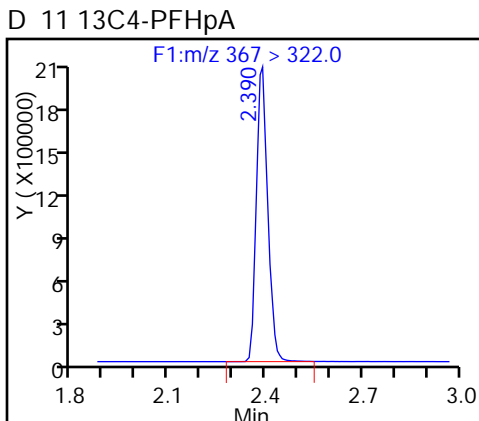
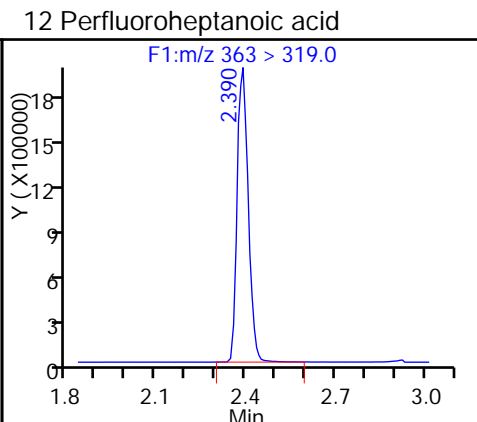
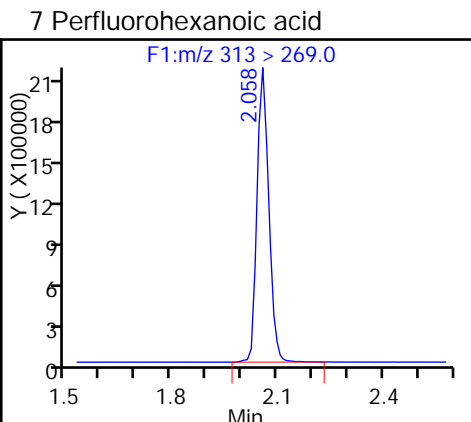
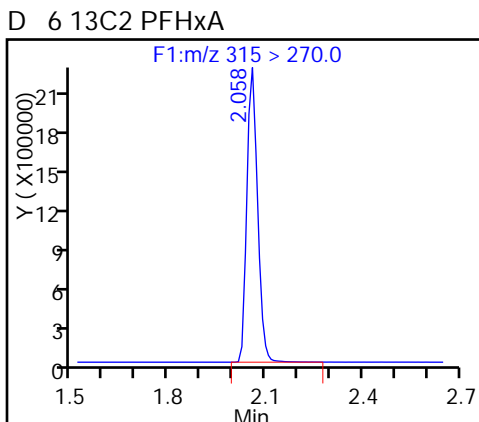
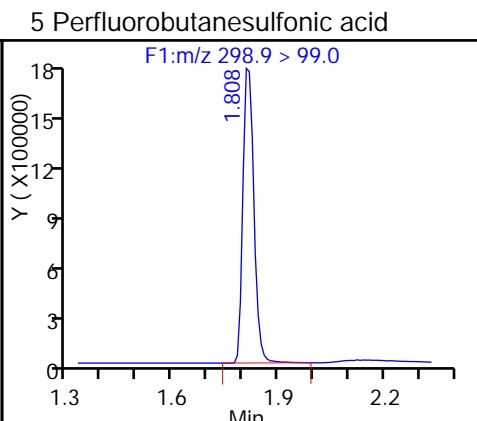
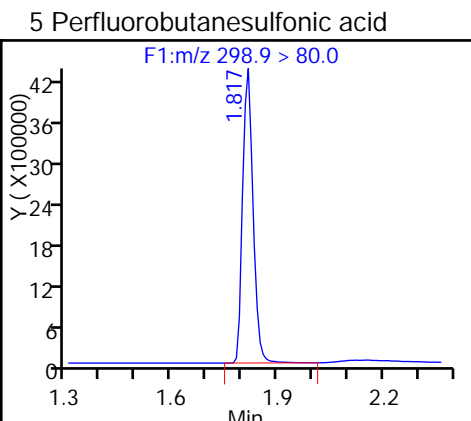
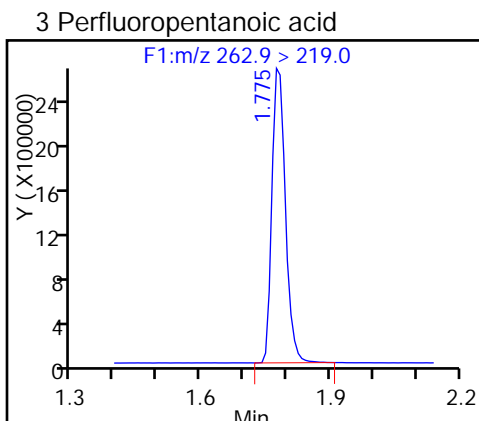
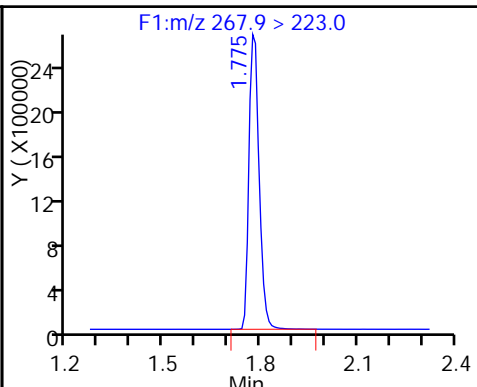
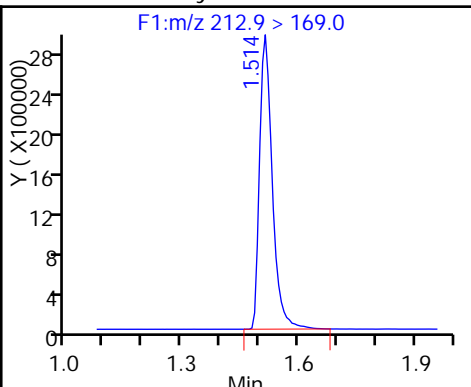
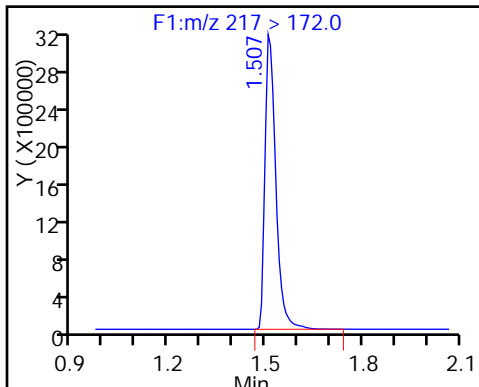
Amount Added: 1.00

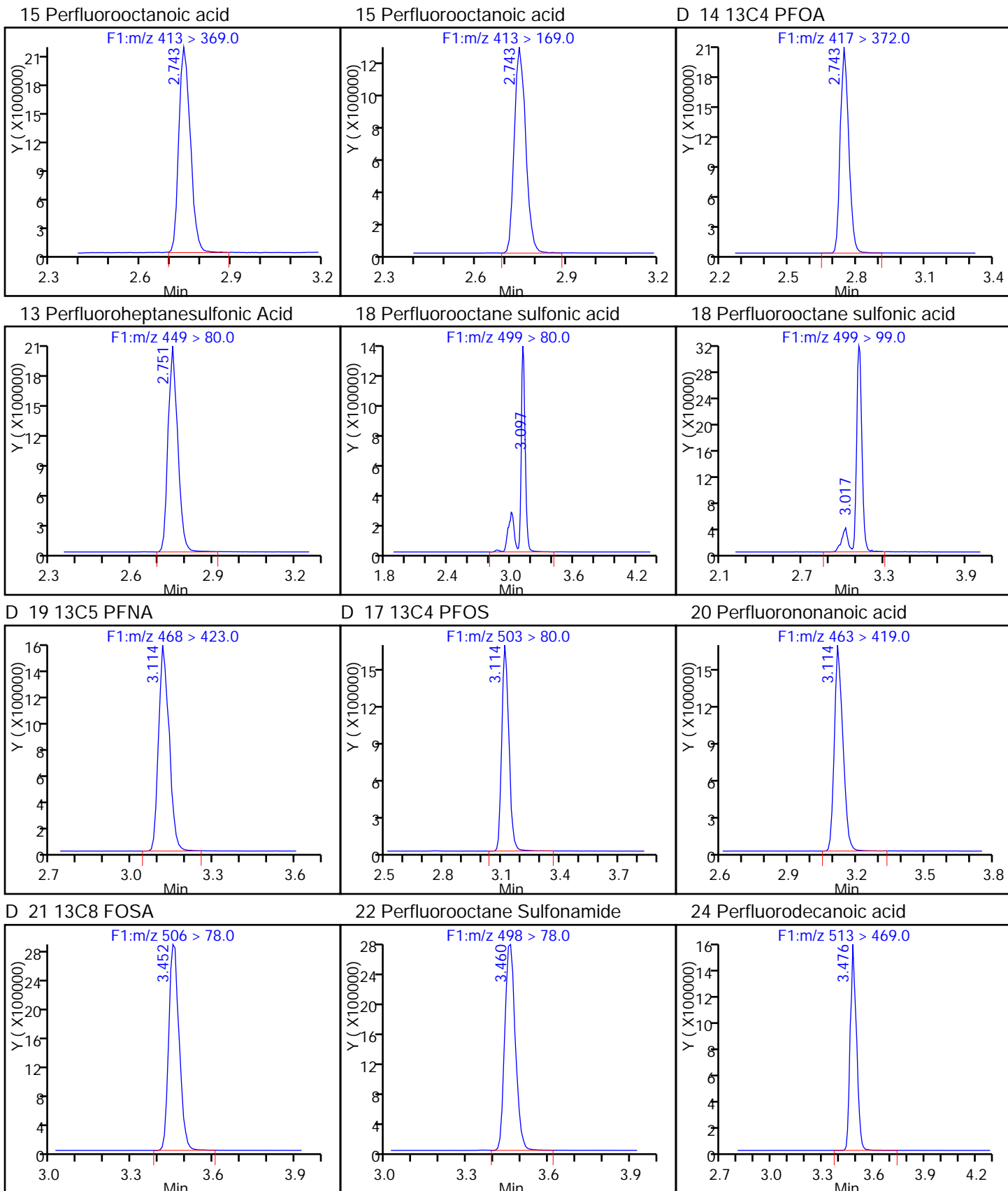
Units: mL

D 2 13C4 PFBA

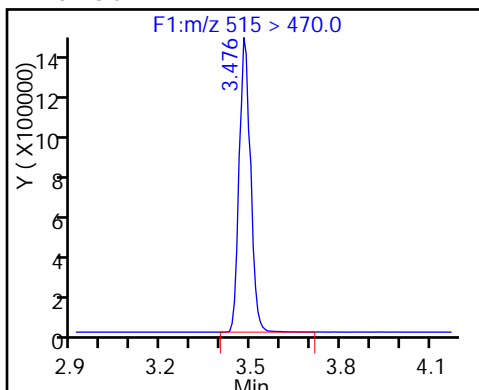
1 Perfluorobutyric acid

D 4 13C5-PFPeA

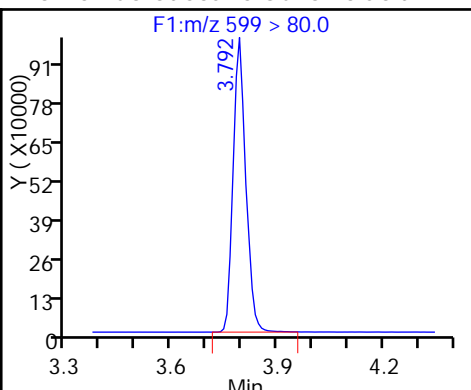




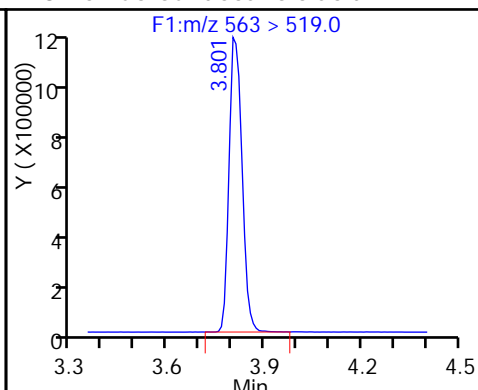
D 23 13C2 PFDA



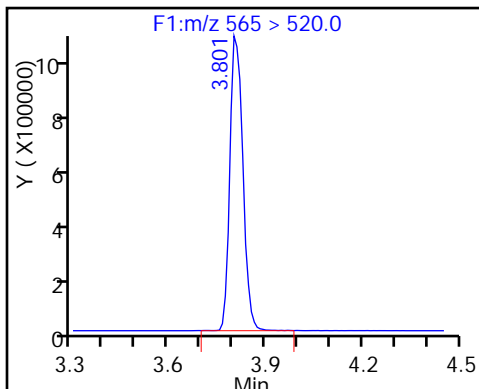
26 Perfluorodecane Sulfonic acid



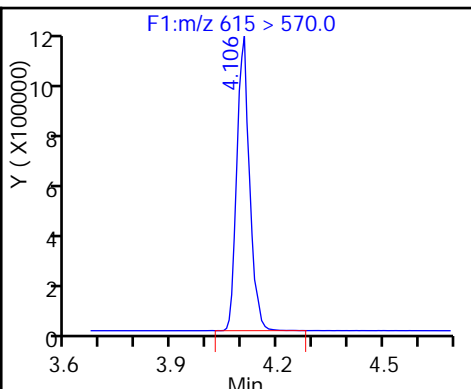
28 Perfluoroundecanoic acid



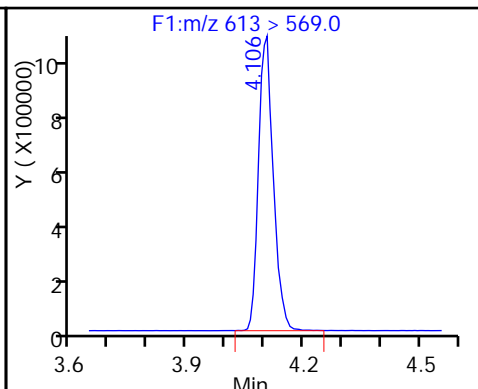
D 27 13C2 PFUa



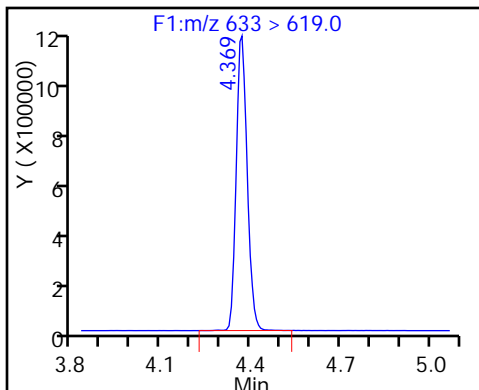
D 30 13C2 PFDa



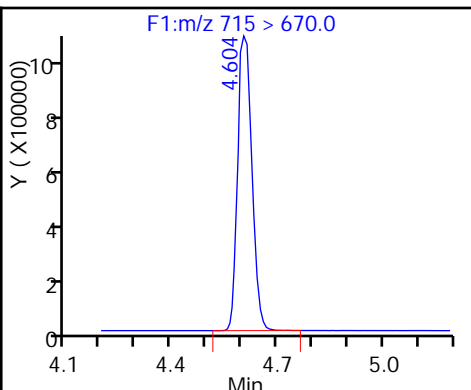
29 Perfluorododecanoic acid



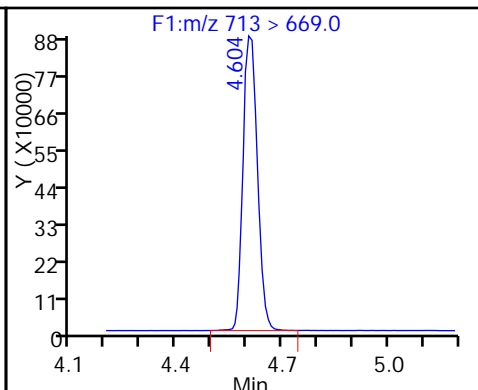
31 Perfluorotridecanoic acid



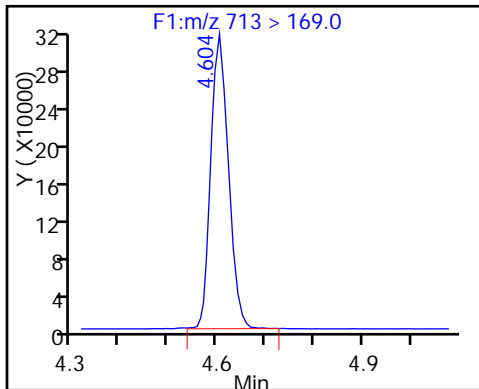
D 32 13C2-PFTeDA



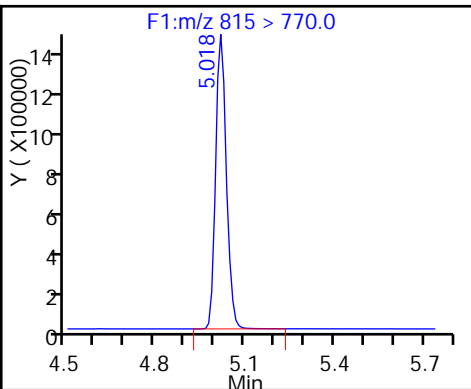
33 Perfluorotetradecanoic acid



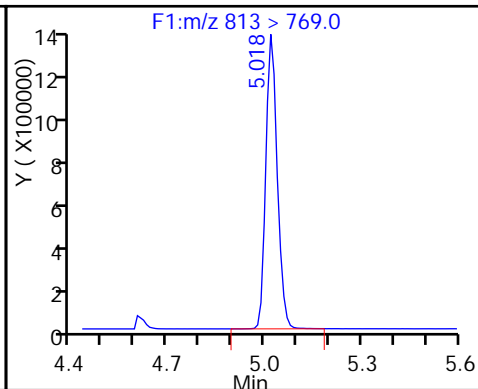
33 Perfluorotetradecanoic acid



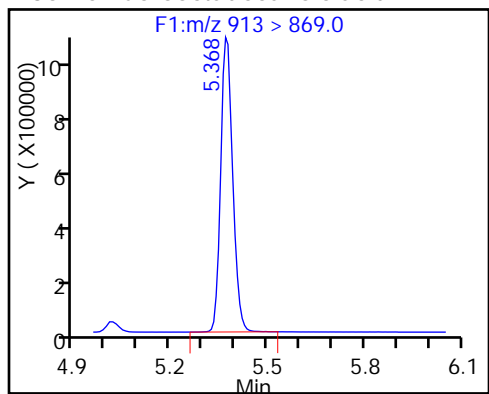
D 34 13C2-PFHxDa



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-122455/1-A
 Matrix: Water Lab File ID: 22AUG2016D_006_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 250 (mL) Date Analyzed: 08/23/2016 06:24
 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.: 123791 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	118		25-150
STL00991	13C4 PFOS	111		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_006_p1_e1.d
 Lims ID: MB 320-122455/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 23-Aug-2016 06:24:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 16:04:01 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 14:10:17

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		7760495	57.2		114	654611	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	14364	0.1071			190	
D 4 13C5-PFPeA										
267.9 > 223.0	1.774	1.797	-0.023		6042749	56.1		112	544024	
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		5352695	55.2		110	487886	
D 11 13C4-PFHpA										
367 > 322.0	2.394	2.430	-0.036		5596697	58.0		116	553711	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.401	2.446	-0.045	1.000	21752	0.1536				
D 10 18O2 PFHxS										
403 > 84.0	2.401	2.446	-0.045		6018942	53.5		113	400689	
15 Perfluorooctanoic acid										
413 > 369.0	2.741	2.798	-0.057	1.000	14547	-0.1594			57.1	
413 > 169.0	2.741	2.798	-0.057	1.000	6357		2.29(0.90-1.10)		1036	
D 14 13C4 PFOA										
417 > 372.0	2.741	2.798	-0.057		5697195	59.2		118	417304	
D 19 13C5 PFNA										
468 > 423.0	3.113	3.177	-0.064		4691169	59.0		118	335531	
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		4373862	53.3		111	331706	
D 21 13C8 FOSA										
506 > 78.0	3.451	3.474	-0.023		2287567	15.3		30.5	123577	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.451	3.475	-0.024	1.000	1060	0.0252			166	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.451	3.504	-0.053	1.000	564	NR				

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	3.475	3.546	-0.071		4140322	56.9		114	520647	
D 46 d5-NEtFOSAA										
589 > 419.0	3.818	3.843	-0.025		671	0.0232		0.0		
D 27 13C2 PFUnA										
565 > 520.0	3.809	3.880	-0.071		2986766	53.7		107	373101	
D 52 d-N-MeFOSA-M										
515 > 169.0	3.755	3.957	-0.202		391	0.0102		0.0		
D 30 13C2 PFDaA										
615 > 570.0	4.098	4.183	-0.085		2684176	50.5		101	333036	
29 Perfluorododecanoic acid										
613 > 569.0	4.266	4.185	0.081	1.000	656	0.0123			39.4	
D 32 13C2-PFTeDA										
715 > 670.0	4.605	4.697	-0.092		2488430	52.7		105	486018	
D 34 13C2-PFHxDA										
815 > 770.0	5.020	5.125	-0.105		3306400	50.2		100	472138	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.020	5.127	-0.107	1.000	31923	0.4794			270	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_006_p1_e1.d

Injection Date: 23-Aug-2016 06:24:00

Instrument ID: A8

Lims ID: MB 320-122455/1-A

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

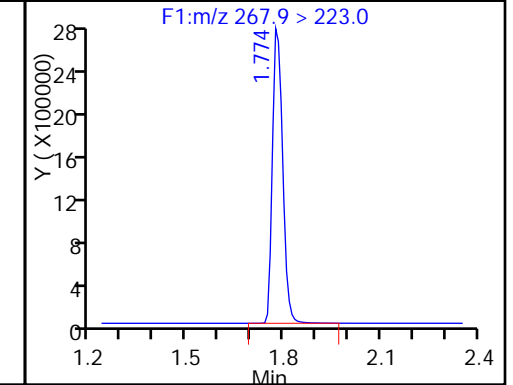
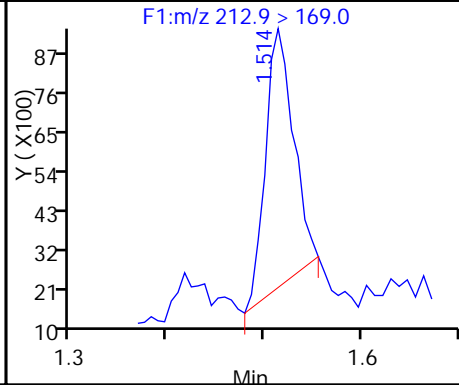
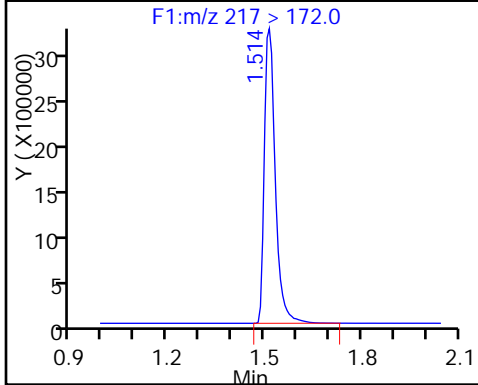
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

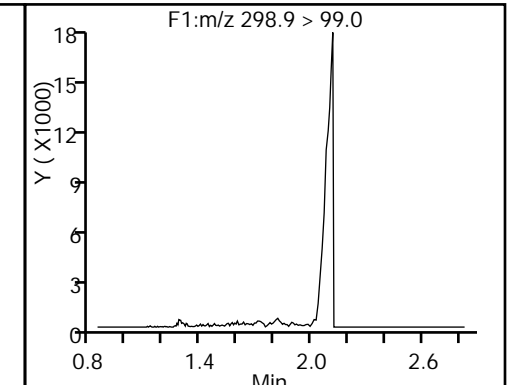
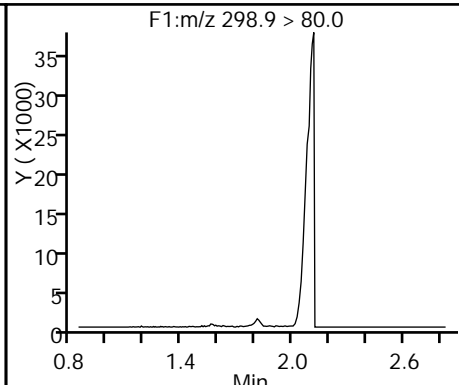
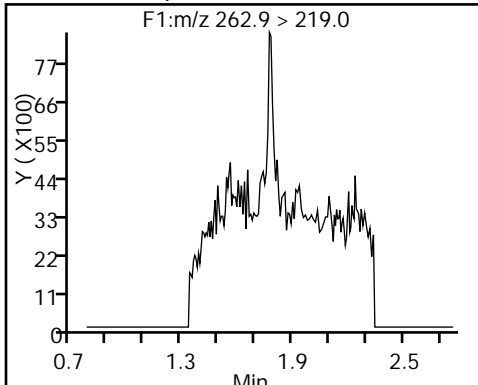
D 4 13C5-PFPeA



3 Perfluoropentanoic acid (ND)

5 Perfluorobutanesulfonic acid (ND)

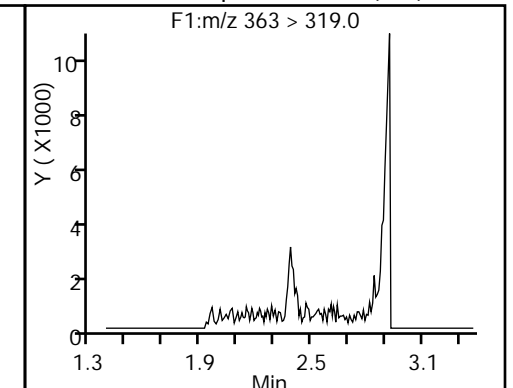
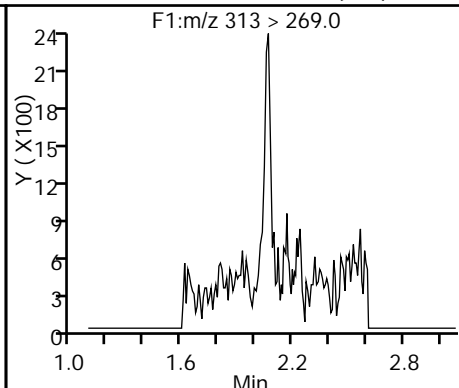
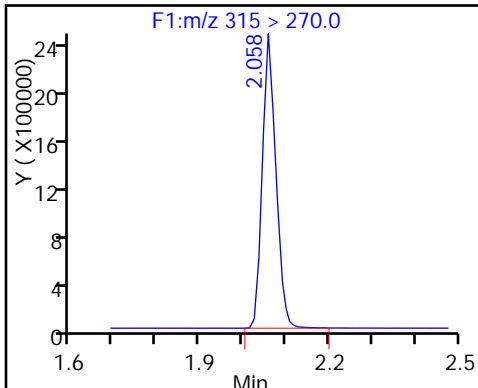
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid (ND)

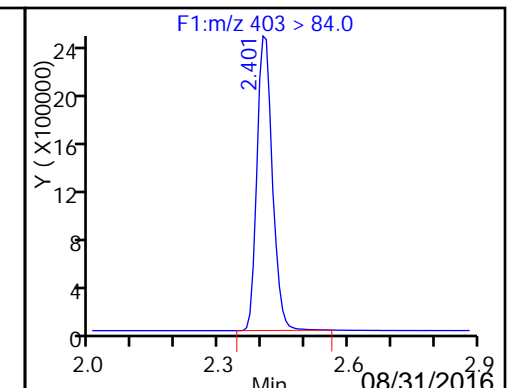
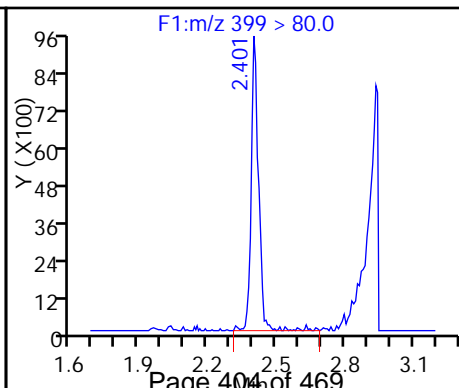
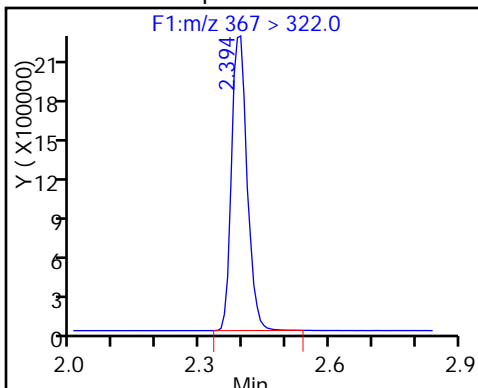
12 Perfluoroheptanoic acid (ND)



D 11 13C4-PFHpA

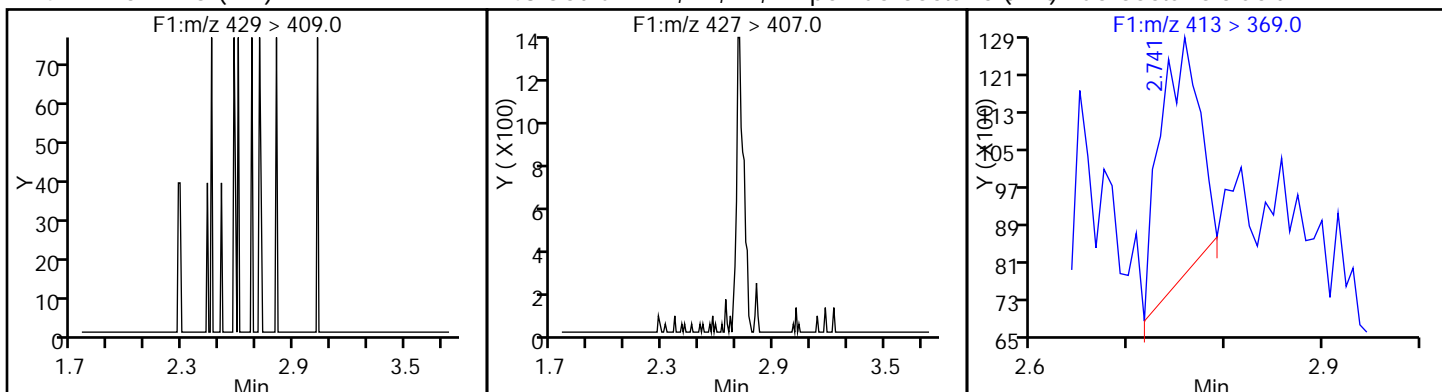
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS



D 47 M2-6:2FTS (ND)

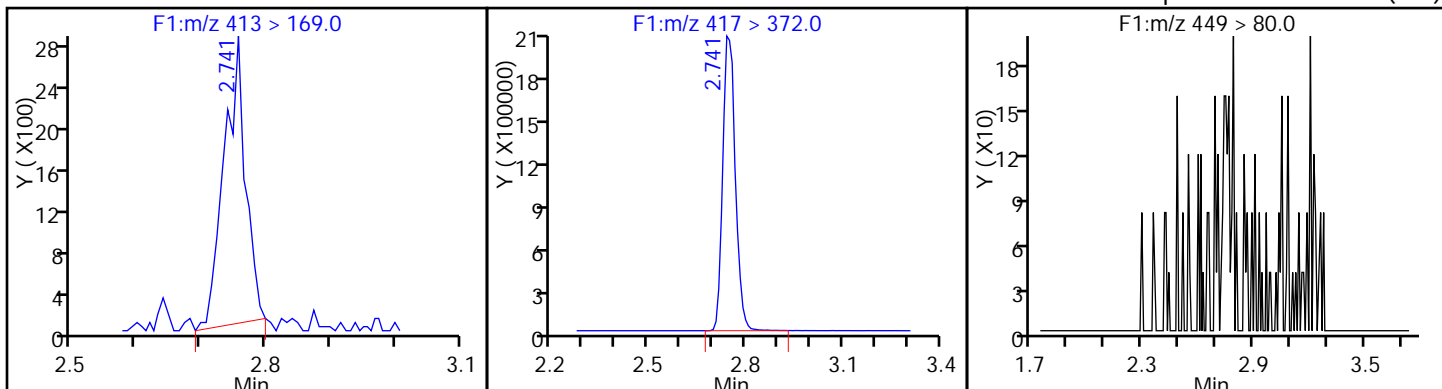
48 Sodium 1H,1H,2H,2H-perfluorooctane sulfonic acid (ND)



15 Perfluorooctanoic acid

D 14 13C4 PFOA

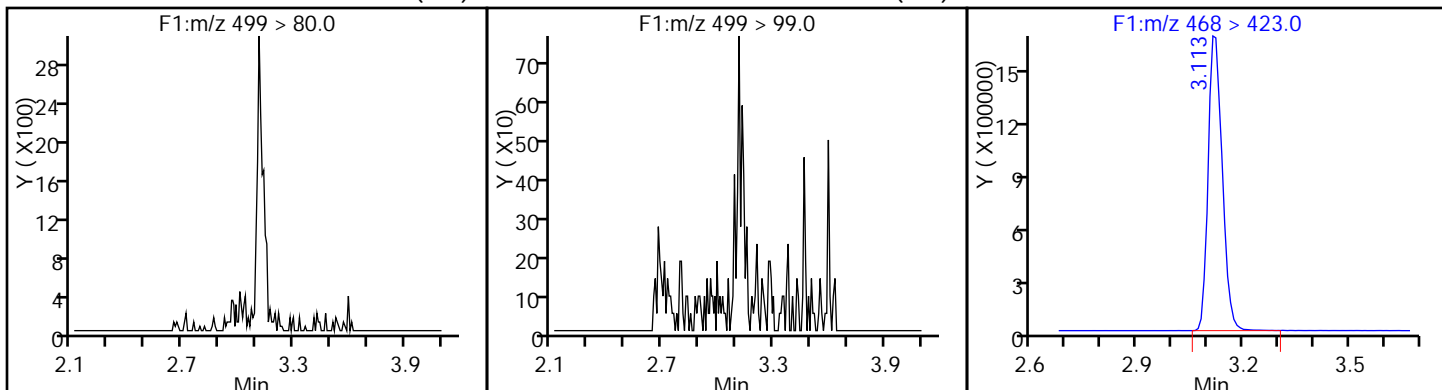
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

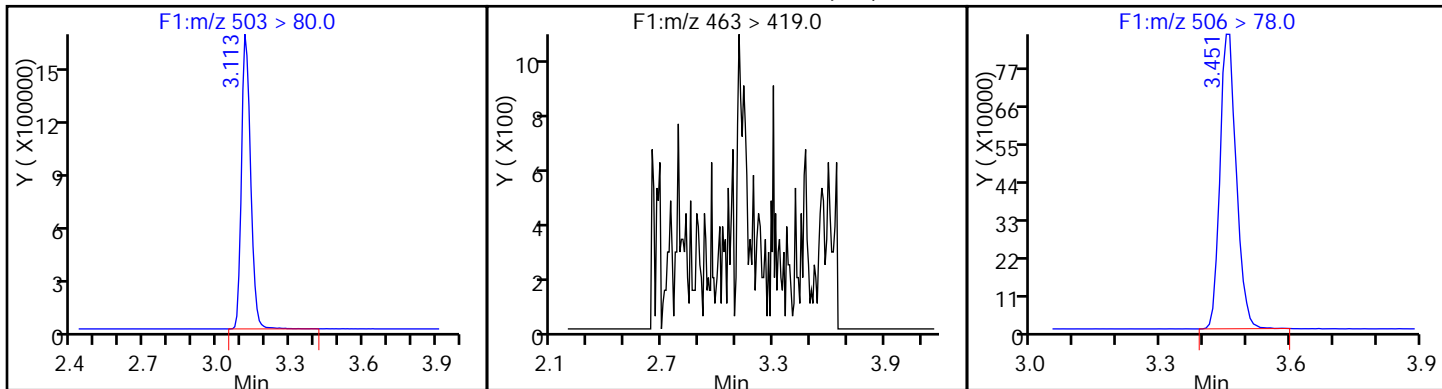
D 19 13C5 PFNA



D 17 13C4 PFOS

20 Perfluorononanoic acid (ND)

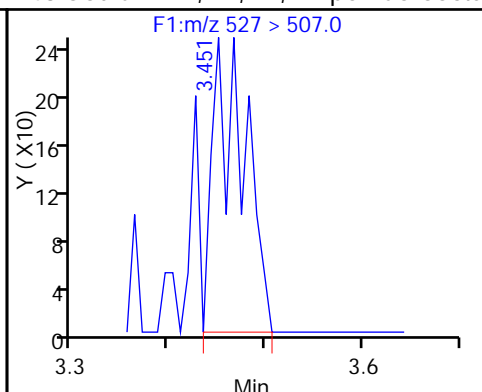
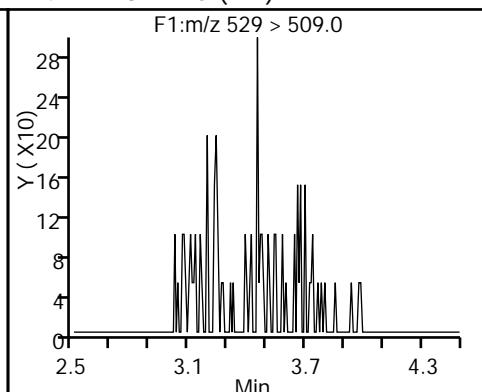
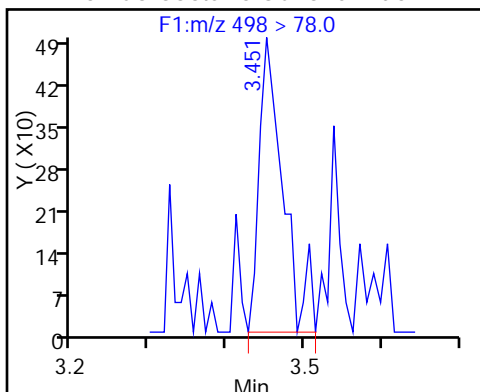
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 42 M2-8:2FTS (ND)

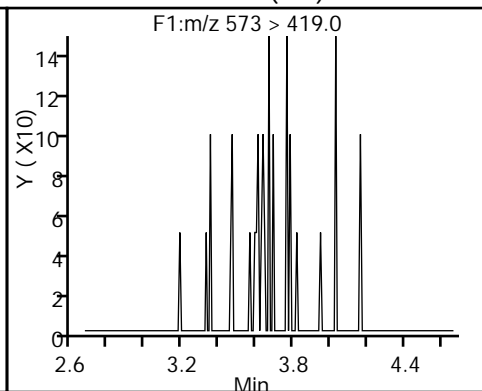
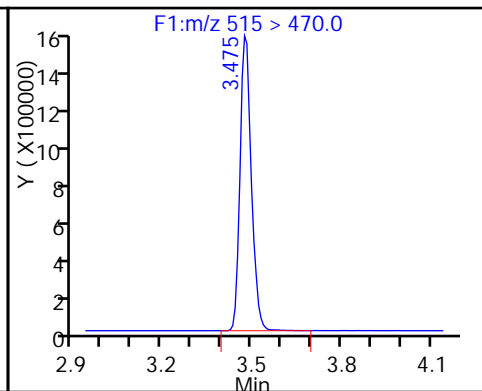
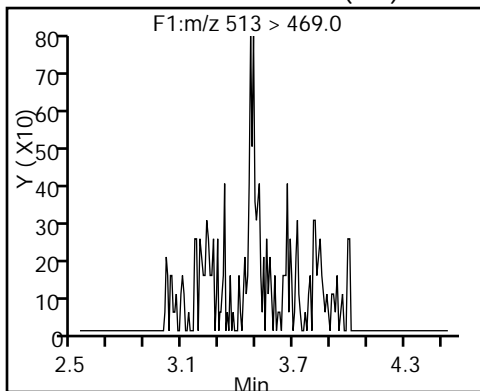
43 Sodium 1H,1H,2H,2H-perfluorooctane



24 Perfluorodecanoic acid (ND)

D 23 13C2 PFDA

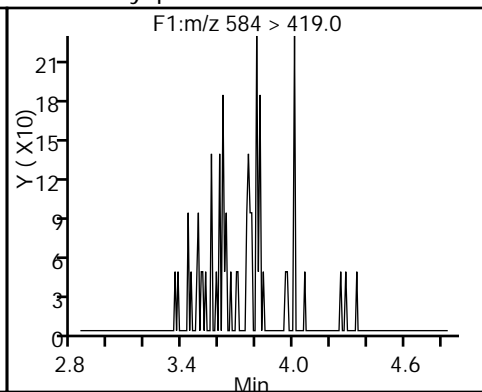
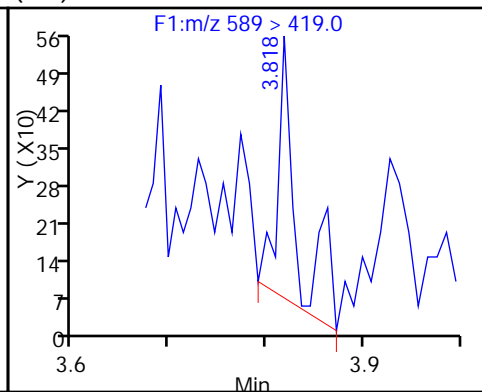
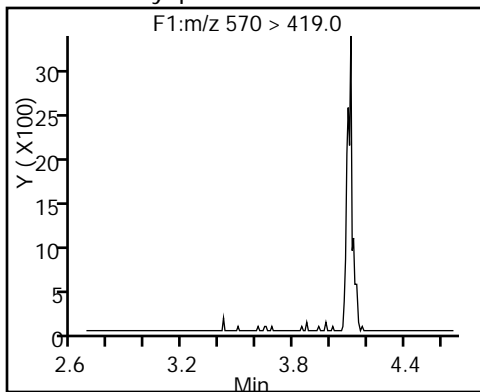
D 45 d3-NMeFOSAA (ND)



44 N-methyl perfluorooctane sulfonamide (ND)

D 46 d5-NEtFOSAA

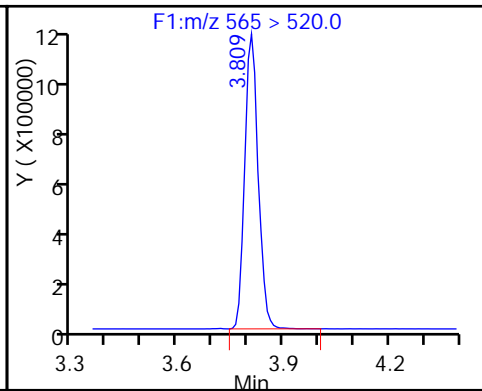
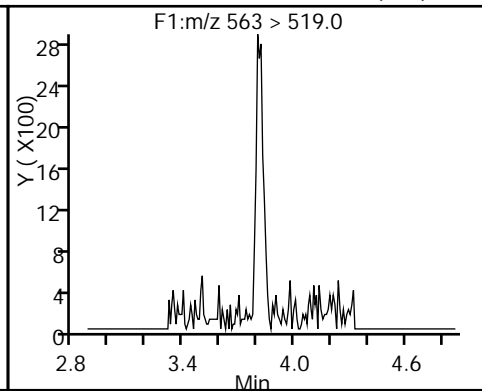
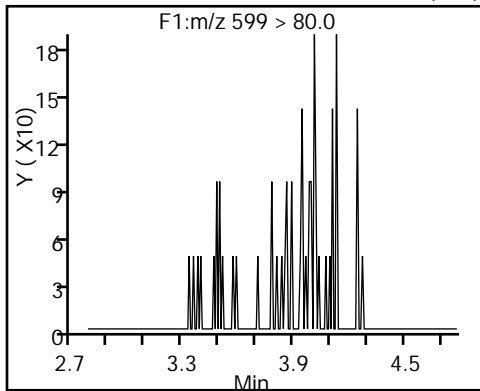
49 N-ethyl perfluorooctane sulfonamide (ND)



26 Perfluorodecane Sulfonic acid (ND)

28 Perfluoroundecanoic acid (ND)

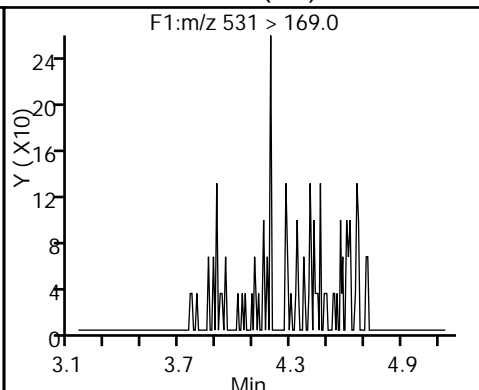
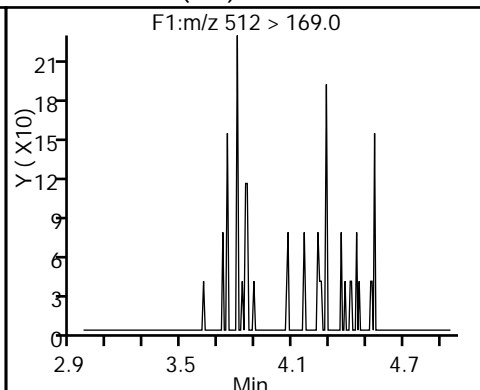
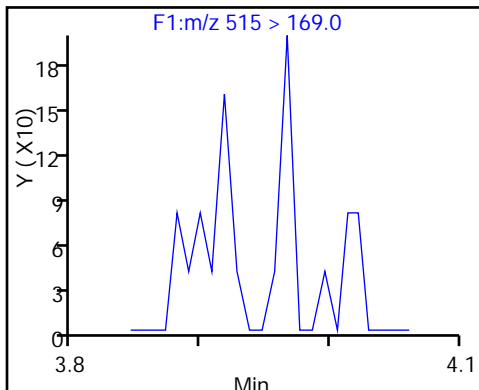
D 27 13C2 PFUnA



D 52 d-N-MeFOSA-M

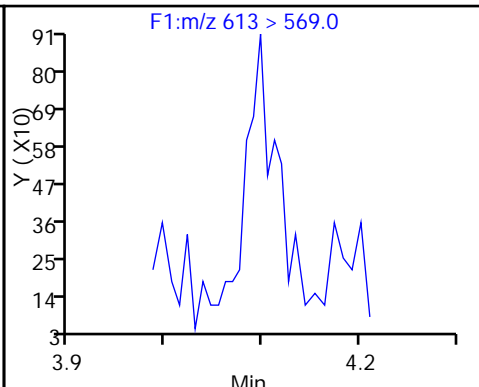
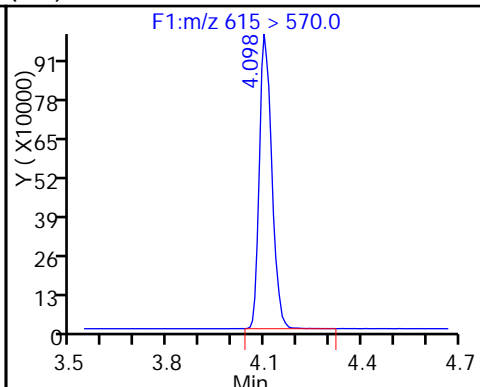
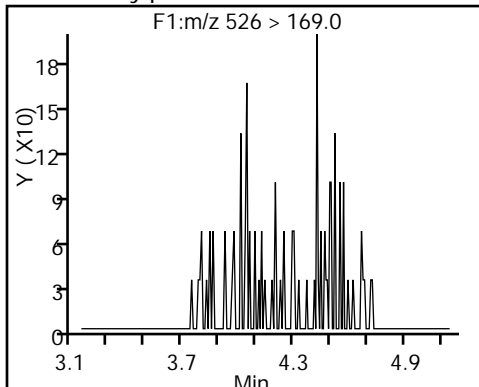
54 MeFOSA (ND)

D 51 d-N-EtFOSA-M (ND)



53 N-ethylperfluoro-1-octanesulfonami (ND) 13C2 PFDaA

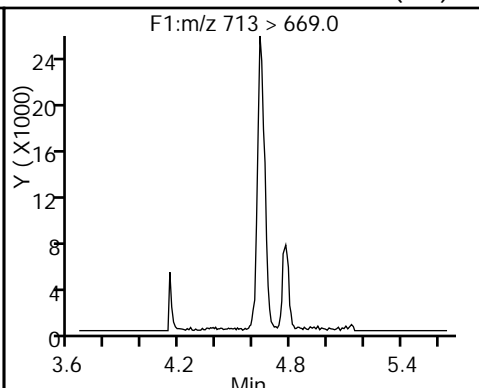
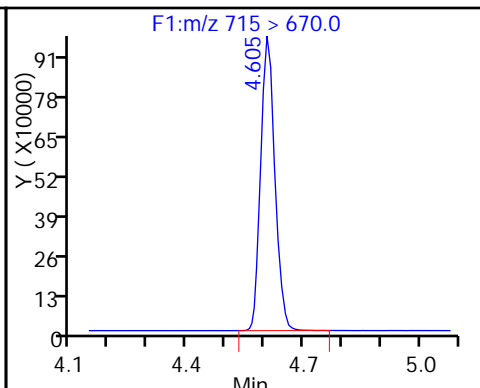
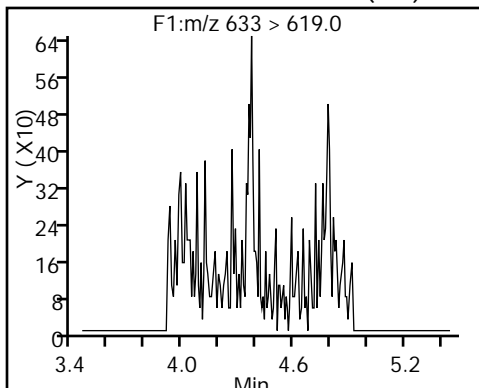
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid (ND)

D 32 13C2-PFTeDA

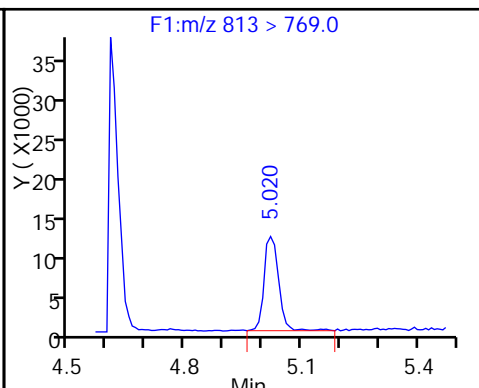
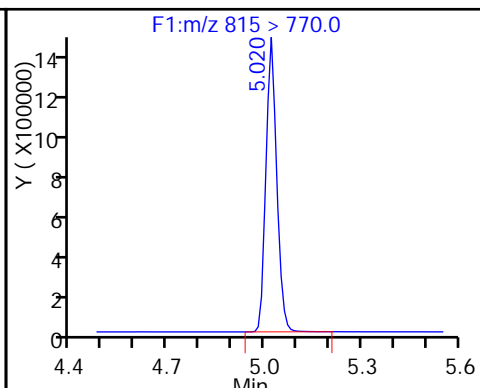
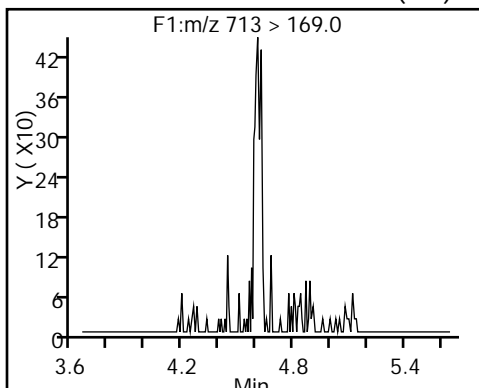
33 Perfluorotetradecanoic acid (ND)



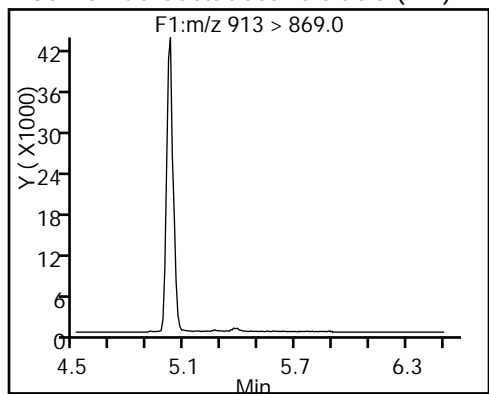
33 Perfluorotetradecanoic acid (ND)

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-122455/2-A
 Matrix: Water Lab File ID: 22AUG2016D_007_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 250 (mL) Date Analyzed: 08/23/2016 06:31
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	39.6		2.5	2.0	0.75
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	33.3		4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	123		25-150
STL00991	13C4 PFOS	120		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_007_p1_e1.d
 Lims ID: LCS 320-122455/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 23-Aug-2016 06:31:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 16:03:38 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 14:12:51

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		7861149	58.0		116	546018	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	2582813	19.0		95.1	27291	
D 4 13C5-PFPeA										
267.9 > 223.0	1.783	1.797	-0.014		6136342	56.9		114	676177	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.783	1.797	-0.014	1.000	2151916	17.1		85.7	43215	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	3640100	17.0		96.1		
298.9 > 99.0	1.817	1.837	-0.020	1.000	1540972		2.36(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		5549653	57.2		114	474537	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	2016800	18.8		94.0	126151	
12 Perfluoroheptanoic acid										
363 > 319.0	2.387	2.427	-0.040	1.000	2091609	17.7		88.7	51630	
D 11 13C4-PFHpA										
367 > 322.0	2.387	2.430	-0.043		5638752	58.4		117	474945	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.403	2.446	-0.043	1.000	2309701	15.0		82.6		
D 10 18O2 PFHxS										
403 > 84.0	2.403	2.446	-0.043		6526575	58.1		123	343860	
15 Perfluorooctanoic acid										
413 > 369.0	2.749	2.798	-0.049	1.000	2368579	19.8		99.1	12946	
413 > 169.0	2.749	2.798	-0.049	1.000	1363490		1.74(0.90-1.10)		136420	
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		5918599	61.4		123	447514	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.757	2.807	-0.050	1.000	2051413	17.9		94.0		08/31/2016

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	3.121	3.110	0.012	1.000	1815387	16.7		89.8	5170	
499 > 99.0	3.015	3.110	-0.094	0.966	399234		4.55(0.90-1.10)		4744	
D 19 13C5 PFNA										
468 > 423.0	3.121	3.177	-0.056		4994268	62.8		126	268874	
D 17 13C4 PFOS										
503 > 80.0	3.121	3.177	-0.056		4695934	57.2		120	587279	
20 Perfluorononanoic acid										
463 > 419.0	3.121	3.183	-0.062	1.000	1840621	18.4		92.2	65599	
D 21 13C8 FOSA										
506 > 78.0	3.459	3.474	-0.015		1723366	11.5		23.0	170667	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.459	3.475	-0.016	1.000	594676	18.7		93.7	47897	
24 Perfluorodecanoic acid										
513 > 469.0	3.475	3.546	-0.071	1.000	1562177	18.1		90.4	147723	
D 23 13C2 PFDA										
515 > 470.0	3.482	3.546	-0.064		4391959	60.4		121	535133	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.791	3.863	-0.072	1.000	920839	15.3		79.3		
28 Perfluoroundecanoic acid										
563 > 519.0	3.809	3.880	-0.071	1.000	1225611	17.0		85.2	76309	
D 27 13C2 PFUnA										
565 > 520.0	3.809	3.880	-0.071		3316024	59.6		119	402741	
D 30 13C2 PFDoA										
615 > 570.0	4.105	4.183	-0.078		2813606	52.9		106	345414	
29 Perfluorododecanoic acid										
613 > 569.0	4.105	4.185	-0.080	1.000	1012960	18.2		90.9	54886	
31 Perfluorotridecanoic acid										
633 > 619.0	4.365	4.452	-0.087	1.000	921865	16.7		83.6	71986	
D 32 13C2-PFTeDA										
715 > 670.0	4.605	4.697	-0.092		2540516	53.8		108	464952	
D 34 13C2-PFHxDA										
815 > 770.0	5.020	5.125	-0.105		3128469	47.5		95.0	434666	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.020	5.127	-0.107	1.000	1089446	15.6		78.0	9017	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.370	5.509	-0.139	1.000	1141397	17.9		89.3	9296	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_007_p1_e1.d

Injection Date: 23-Aug-2016 06:31:00

Instrument ID: A8

Lims ID: LCS 320-122455/2-A

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

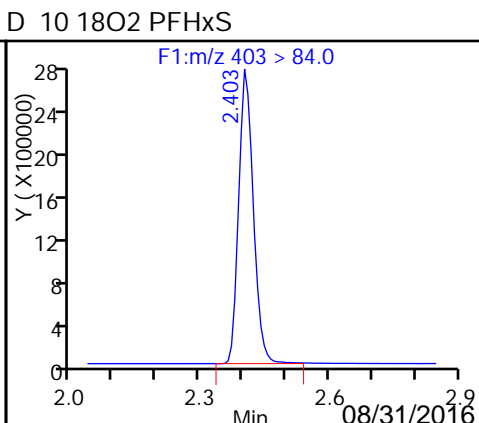
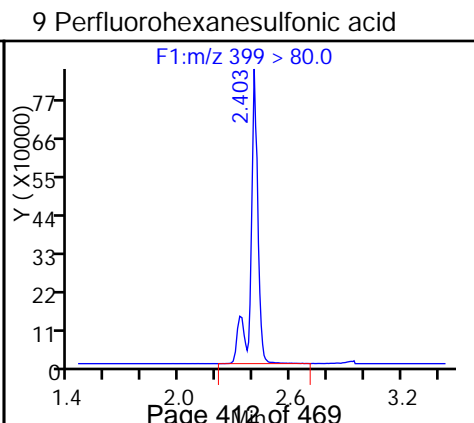
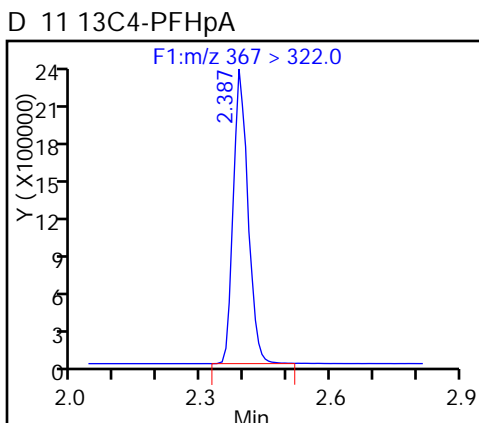
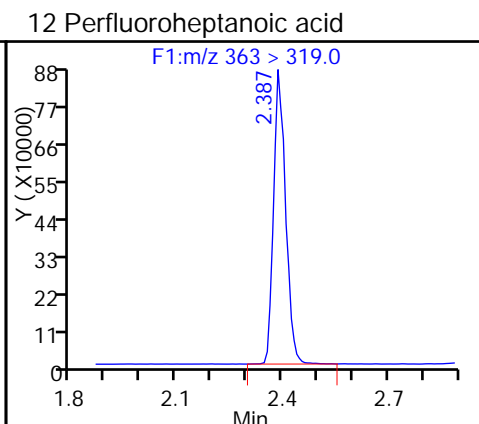
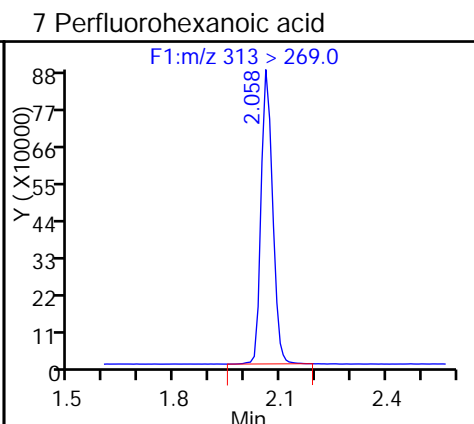
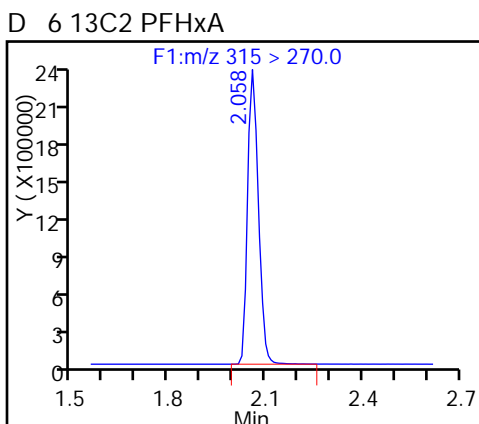
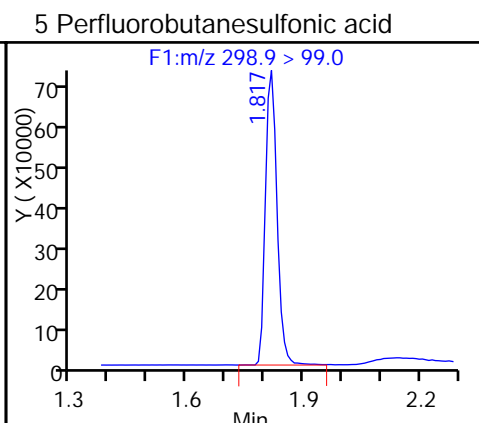
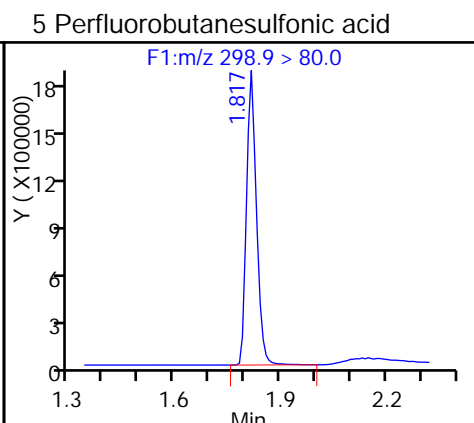
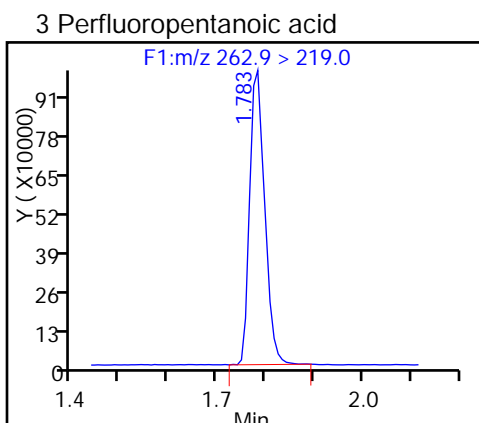
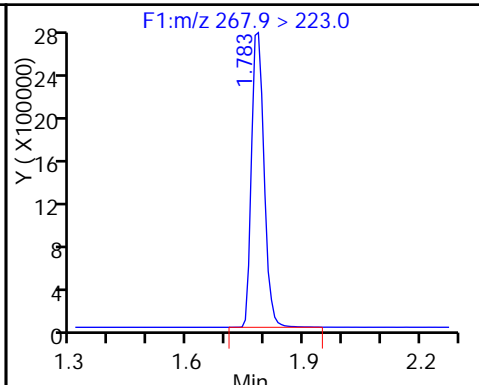
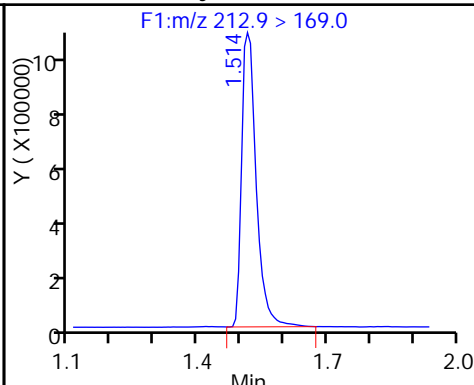
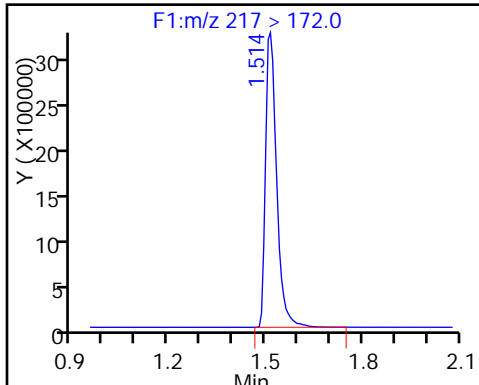
Method: PFC_A8_Full

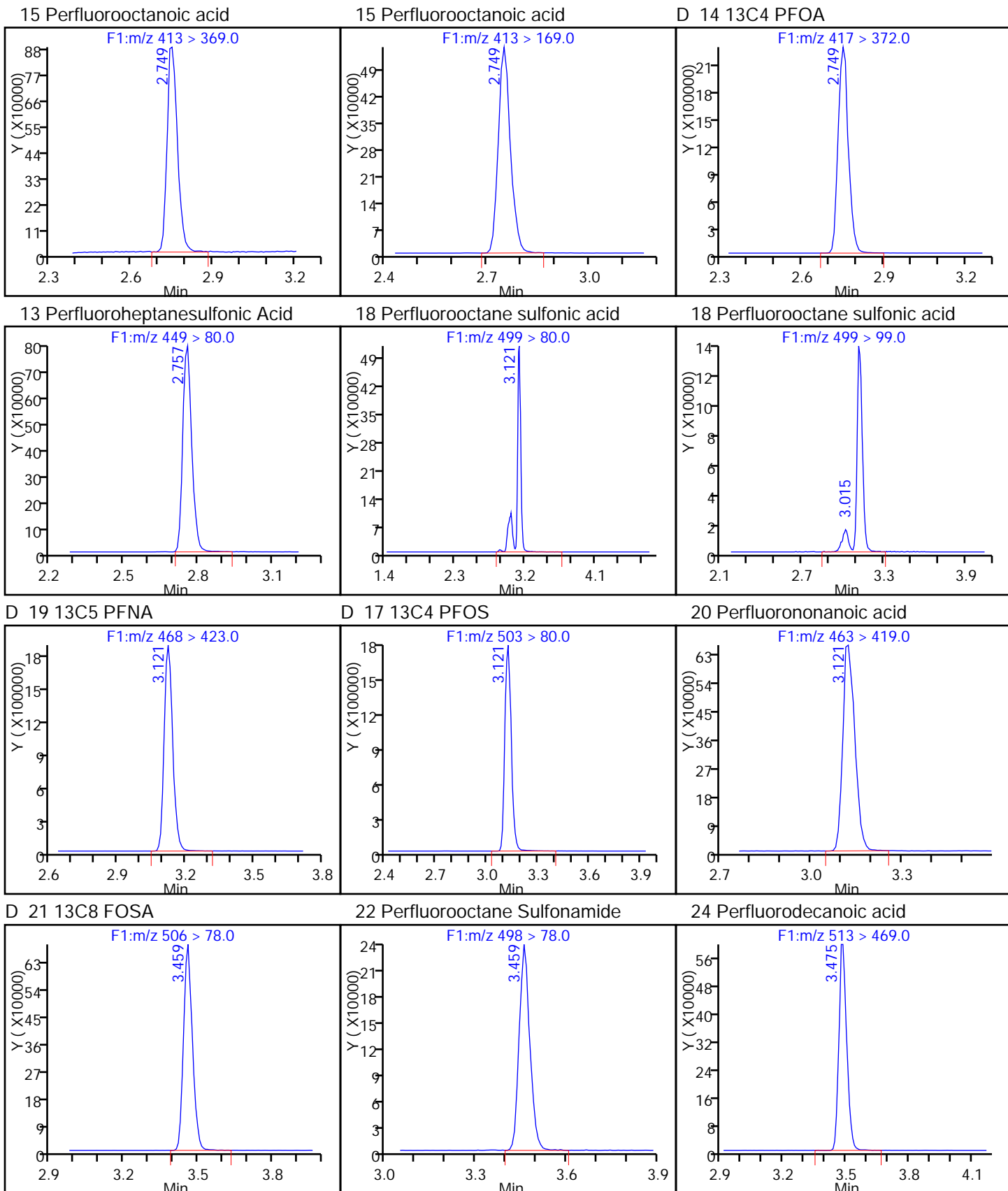
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

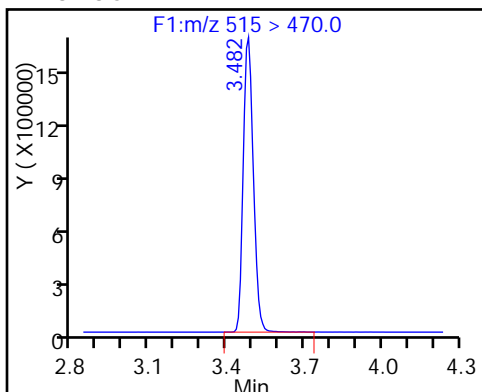
1 Perfluorobutyric acid

D 4 13C5-PFPeA

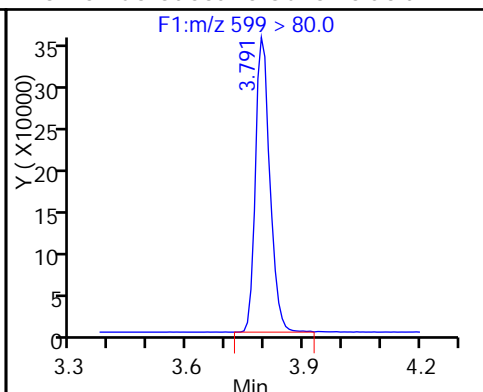




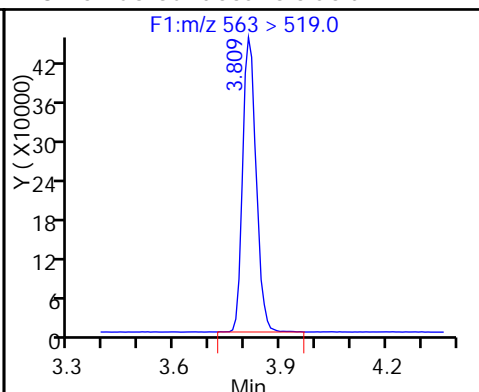
D 23 13C2 PFDA



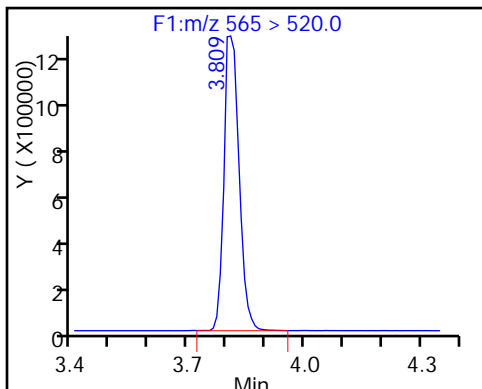
26 Perfluorodecane Sulfonic acid



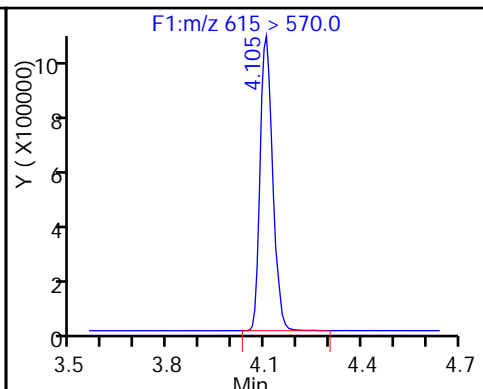
28 Perfluoroundecanoic acid



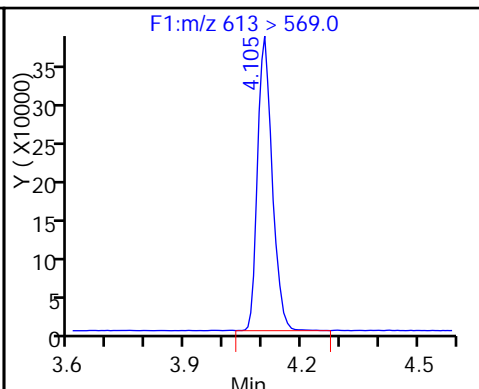
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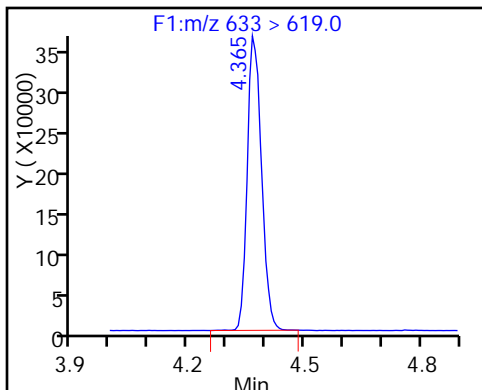
D 30 13C2 PFDa



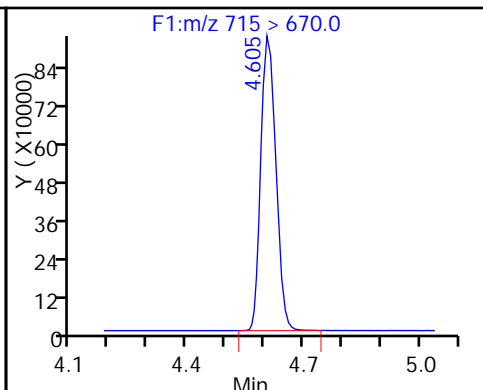
29 Perfluorododecanoic acid



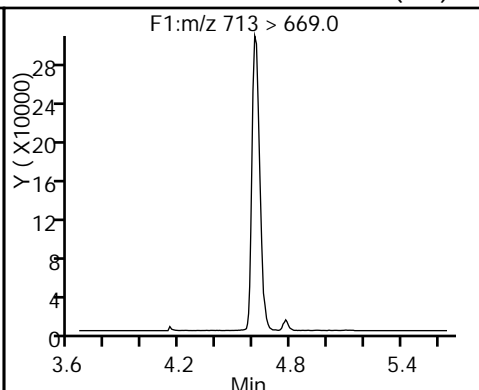
31 Perfluorotridecanoic acid



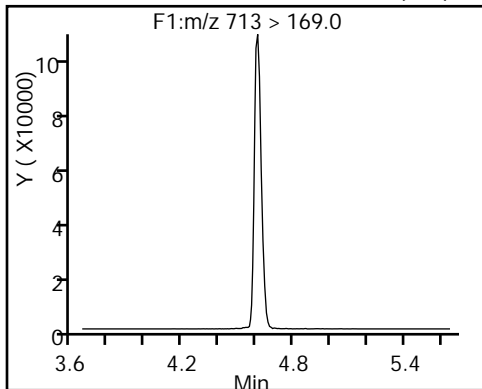
D 32 13C2-PFTeDa



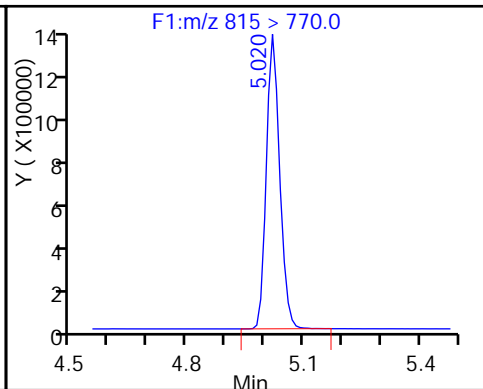
33 Perfluorotetradecanoic acid (ND)



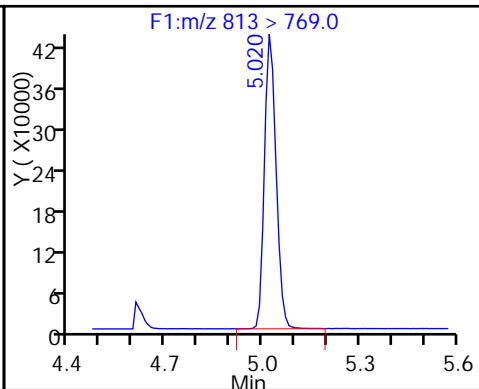
33 Perfluorotetradecanoic acid (ND)



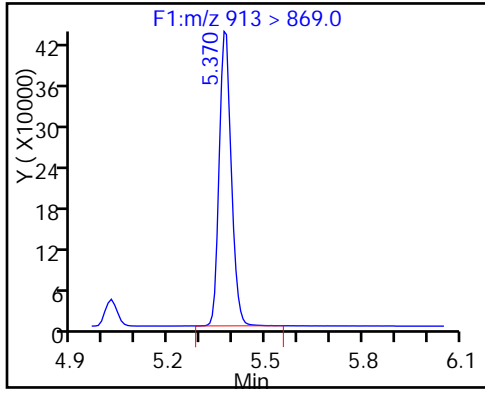
D 34 13C2-PFHxDa



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-02R-0816 MS MS Lab Sample ID: 320-20867-3 MS
 Matrix: Water Lab File ID: 22AUG2016D_015_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 10:35
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 252 (mL) Date Analyzed: 08/23/2016 07:31
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	38.4	M	2.5	2.0	0.74
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	36.6	J	4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	80		25-150
STL00991	13C4 PFOS	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_015_p1_e1.d
 Lims ID: 320-20867-A-3-B MS
 Client ID: GW14-02R-0816 MS
 Sample Type: MS
 Inject. Date: 23-Aug-2016 07:31:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Aug-2016 16:12:36 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: XAWRK007

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:12:35

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	1.507	1.522	-0.015		3505330	25.8		51.7	255937	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	1080884	17.8		89.2	3007	
D 4 13C5-PFPeA										
267.9 > 223.0	1.774	1.797	-0.023		4357053	40.4		80.9	310424	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.774	1.797	-0.023	1.000	1411464	15.8		79.2	7505	M
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	3733223	18.2		103		
298.9 > 99.0	1.808	1.837	-0.029	0.995	1588078		2.35(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		3930053	40.5		81.0	467719	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	1382401	18.2		91.0	15835	
12 Perfluoroheptanoic acid										
363 > 319.0	2.387	2.427	-0.040	1.000	1435831	17.5		87.3	16057	
D 11 13C4-PFHpA										
367 > 322.0	2.387	2.430	-0.043		3932765	40.8		81.5	293250	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.402	2.446	-0.044	1.000	2484379	16.9		92.6		M
D 10 18O2 PFHxS										
403 > 84.0	2.402	2.446	-0.044		6264077	55.7		118	431822	
D 47 M2-6:2FTS										
429 > 409.0	2.732	2.749	-0.017		505	0.009101		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.711	2.751	-0.040	0.000	0	0		0.0		

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	2.740	2.798	-0.058	1.000	1512466	19.4		96.9	9580	
413 > 169.0	2.749	2.798	-0.049	1.003	909749		1.66(0.90-1.10)		83800	M
D 14 13C4 PFOA										
417 > 372.0	2.740	2.798	-0.058		3863315	40.1		80.2	288660	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.749	2.807	-0.058	1.000	2001354	19.4		102		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.096	3.110	-0.013	1.000	1803101	18.4		99.3	12973	
499 > 99.0	3.015	3.110	-0.094	0.974	399226		4.52(0.90-1.10)		4597	
D 19 13C5 PFNA										
468 > 423.0	3.113	3.177	-0.064		2887766	36.3		72.6	169946	
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		4218688	51.4		108	176680	
20 Perfluorononanoic acid										
463 > 419.0	3.121	3.183	-0.062	1.000	1047626	18.2		90.8	22049	
D 21 13C8 FOSA										
506 > 78.0	3.451	3.474	-0.023		525880	3.51		7.0	100491	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.458	3.475	-0.017	1.000	173655	17.9		89.7	21893	
D 42 M2-8:2FTS										
529 > 509.0	3.466	3.504	-0.038		940	0.0187		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.466	3.504	-0.038	1.000	7376	NR		0.0		
24 Perfluorodecanoic acid										
513 > 469.0	3.482	3.546	-0.064	1.000	698735	16.9		84.4	26502	
D 23 13C2 PFDA										
515 > 470.0	3.474	3.546	-0.072		2105037	28.9		57.9	406005	
D 45 d3-NMeFOSAA										
573 > 419.0	3.625	3.670	-0.045		2109	0.0795		0.0		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.634	3.675	-0.041	1.002	341	NR		0.0		
D 46 d5-NEtFOSAA										
589 > 419.0	3.781	3.843	-0.062		1615	0.0558		0.0		
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.790	3.863	-0.073	1.000	608587	11.2		58.3		
28 Perfluoroundecanoic acid										
563 > 519.0	3.809	3.880	-0.072	1.000	487528	16.3		81.4	23627	
D 27 13C2 PFUnA										
565 > 520.0	3.809	3.880	-0.072		1382269	24.8		49.7	269767	
D 52 d-N-MeFOSA-M										
515 > 169.0	3.947	3.957	-0.010		245	0.006385		0.0		
54 MeFOSA										
512 > 169.0	4.164	3.964	0.200	1.000	290	NR		0.0		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.143	4.147	-0.004		640	0.0173		0.0		
D 30 13C2 PFDoA										
615 > 570.0	4.104	4.183	-0.079		1310516	24.6		49.3	243238	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorododecanoic acid	613 > 569.0	4.104	4.185	-0.081	1.000	446663	17.2	86.0	23578	
31 Perfluorotridecanoic acid	633 > 619.0	4.365	4.452	-0.087	1.000	514821	20.0	100	68724	
D 32 13C2-PFTeDA	715 > 670.0	4.606	4.697	-0.091		1942219	41.2	82.3	751283	
33 Perfluorotetradecanoic acid	713 > 669.0	4.606	4.701	-0.095	1.000	658180	29.9	149	23209	
	713 > 169.0	4.606	4.701	-0.095	1.000	187399		3.51(0.00-0.00)	70215	
D 34 13C2-PFHxDA	815 > 770.0	5.020	5.125	-0.105		2852379	43.3	86.6	568603	
35 Perfluorohexadecanoic acid	813 > 769.0	5.020	5.127	-0.107	1.000	914906	28.1	141	10067	
36 Perfluorooctadecanoic acid	913 > 869.0	5.378	5.509	-0.131	1.000	954414	31.8	159	7351	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_015_p1_e1.d

Injection Date: 23-Aug-2016 07:31:00

Instrument ID: A8

Lims ID: 320-20867-A-3-B MS

Client ID: GW14-02R-0816 MS

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

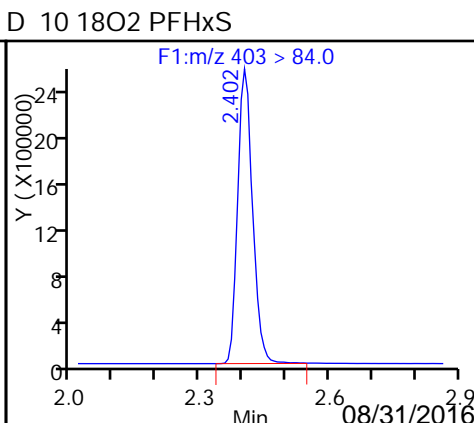
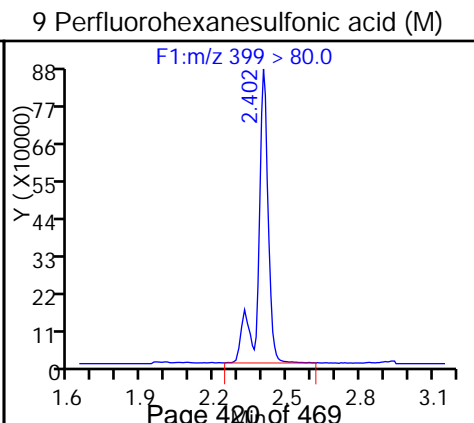
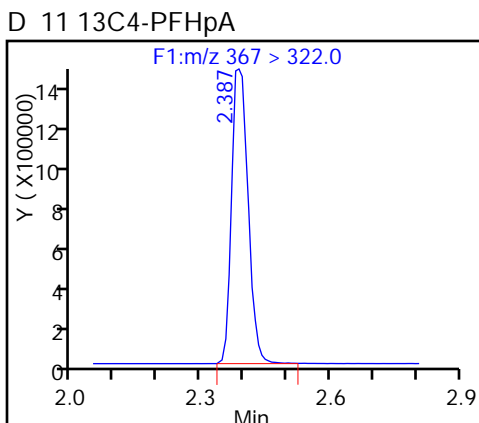
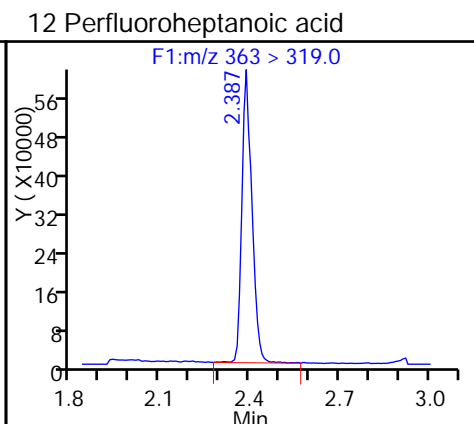
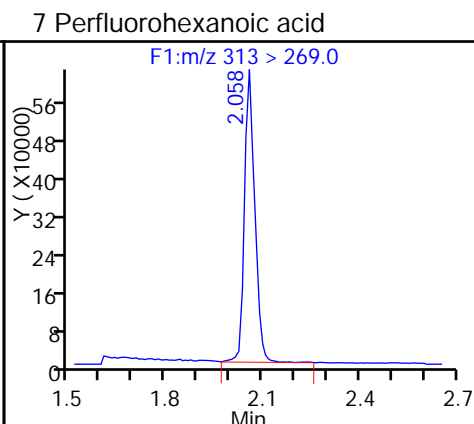
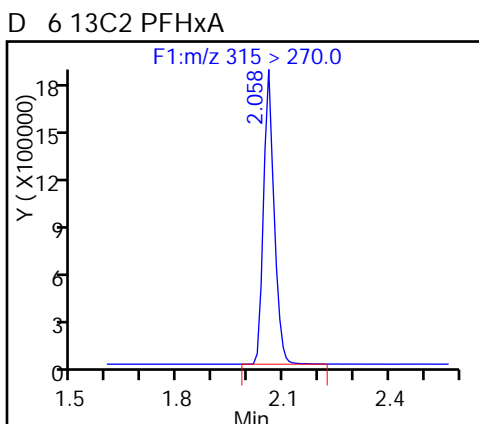
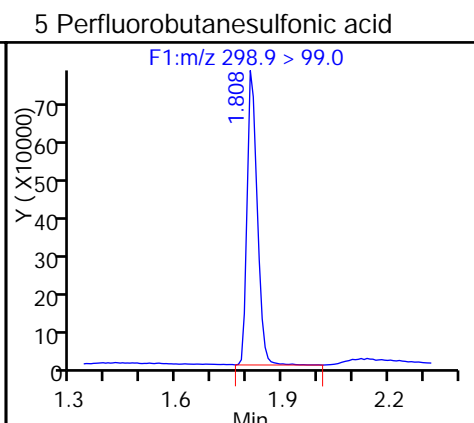
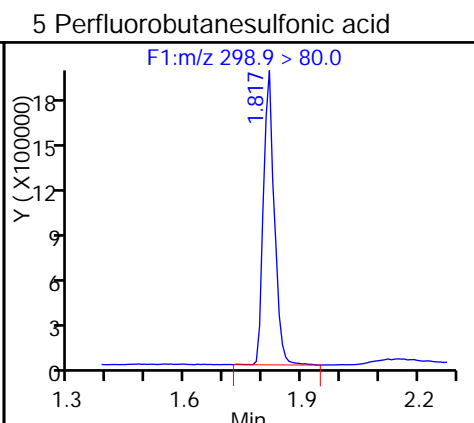
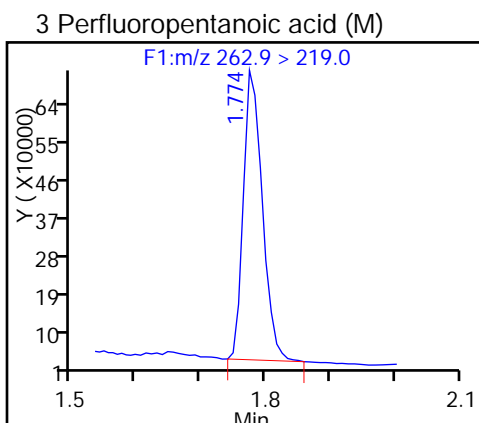
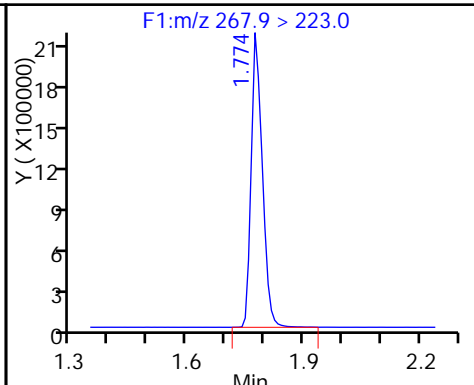
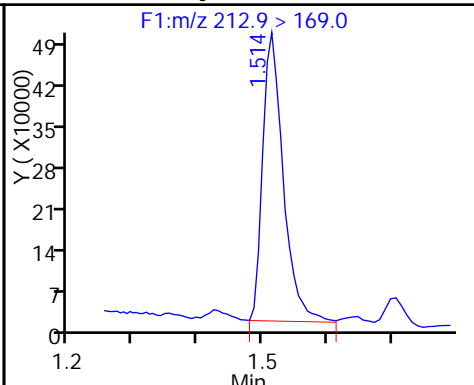
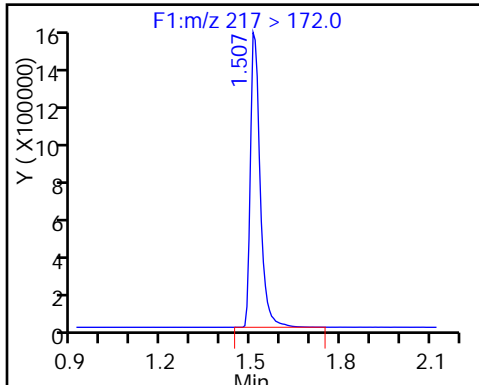
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

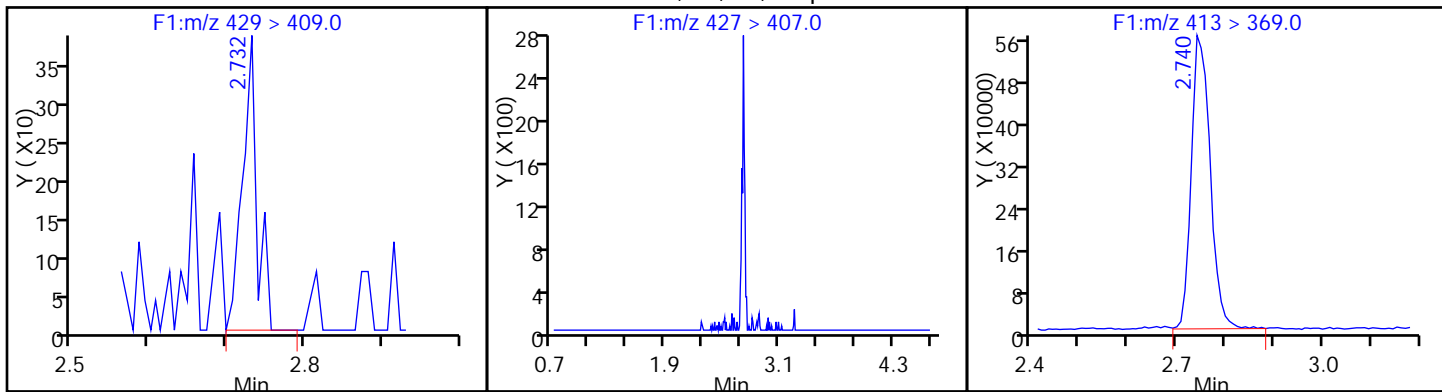
1 Perfluorobutyric acid

D 4 13C5-PFPeA



D 47 M2-6:2FTS

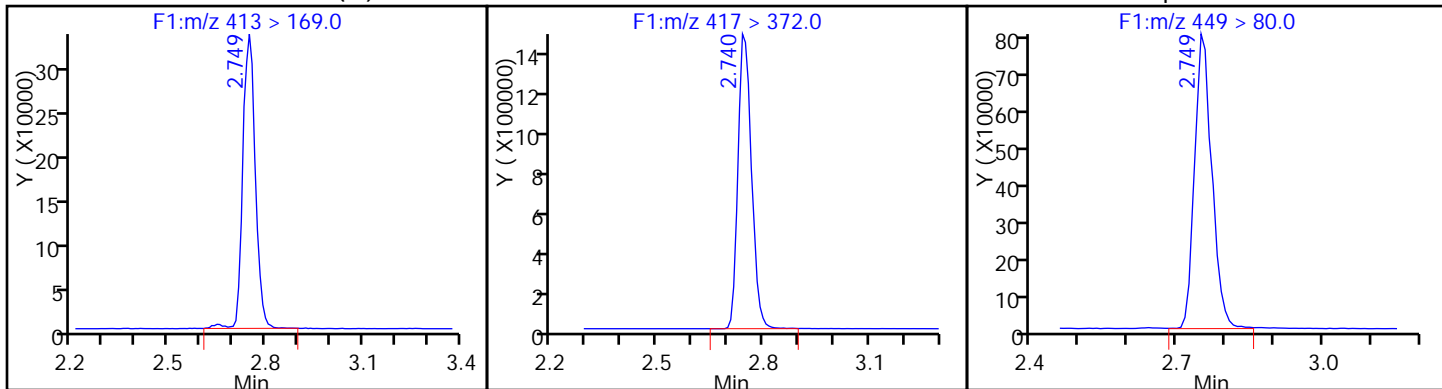
48 Sodium 1H,1H,2H,2H-perfluorooctane15 Perfluorooctanoic acid



15 Perfluorooctanoic acid (M)

D 14 13C4 PFOA

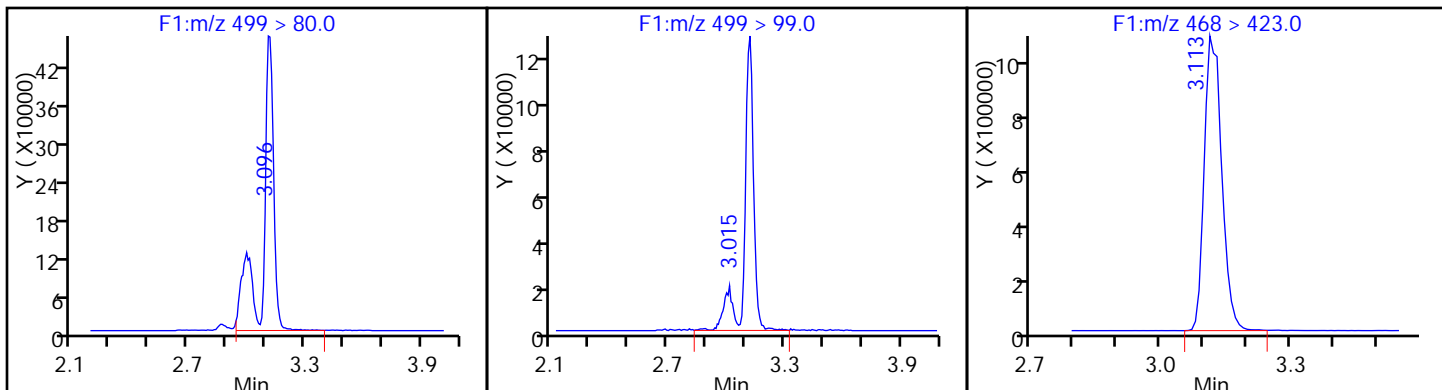
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

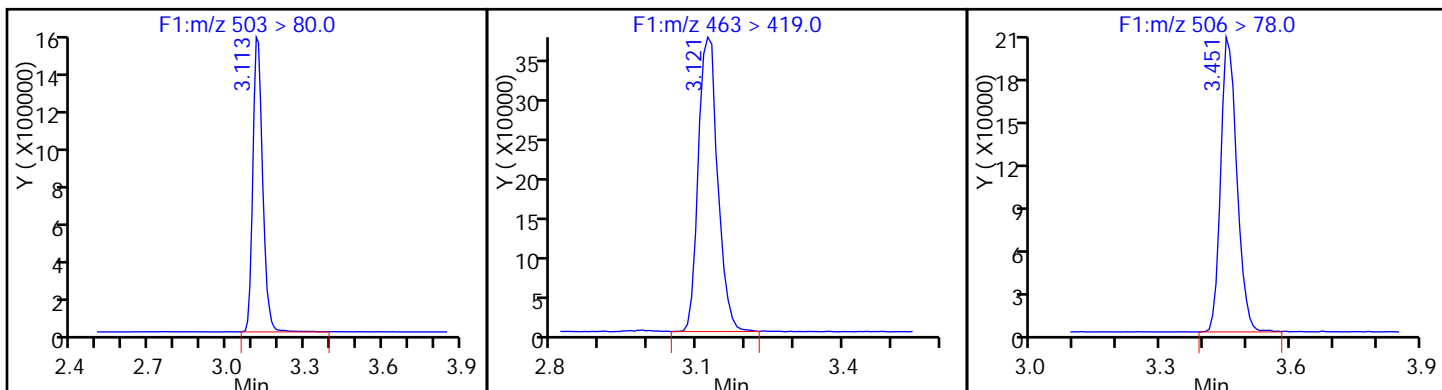
D 19 13C5 PFNA



D 17 13C4 PFOS

20 Perfluorononanoic acid

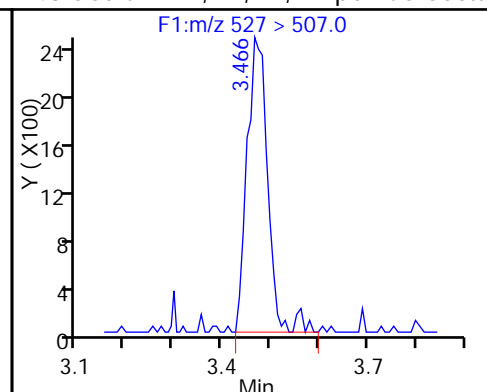
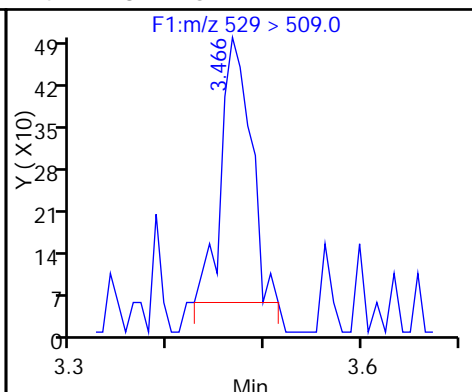
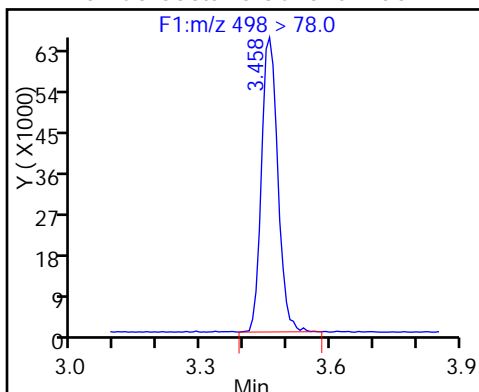
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 42 M2-8:2FTS

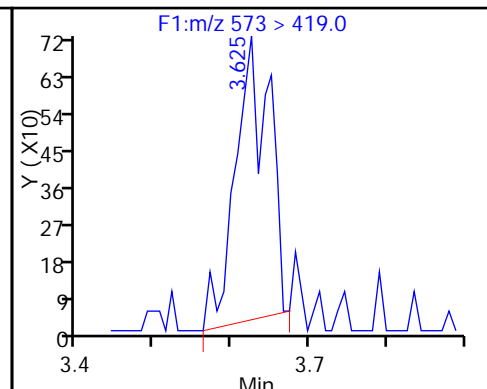
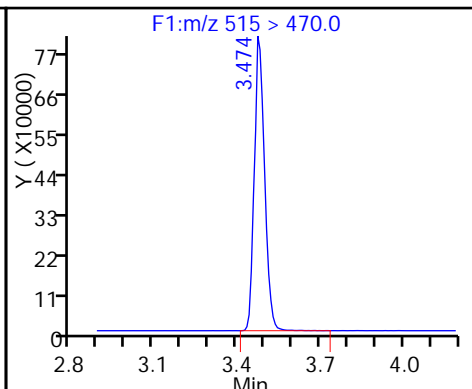
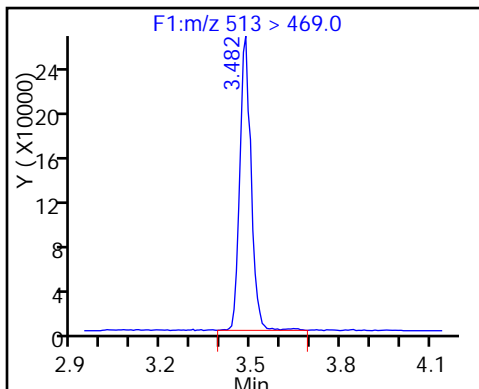
43 Sodium 1H,1H,2H,2H-perfluorooctane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

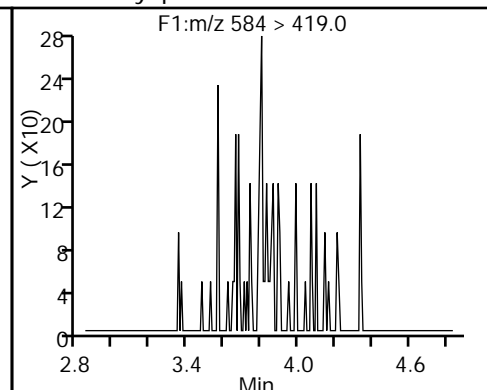
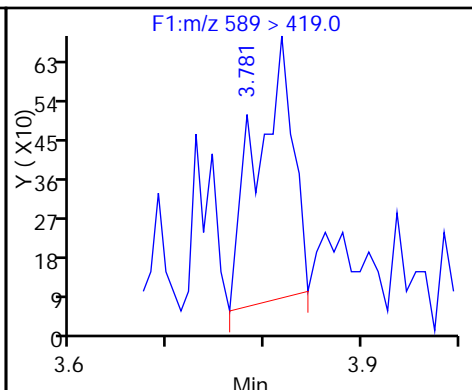
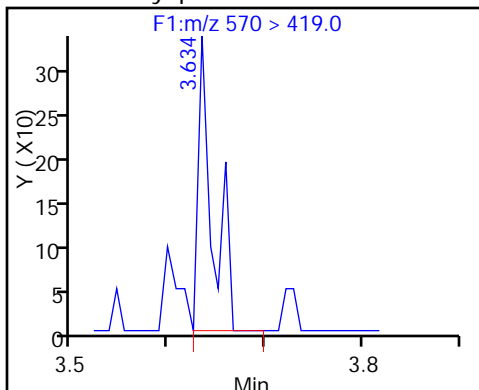
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamid

46 d5-NEtFOSAA

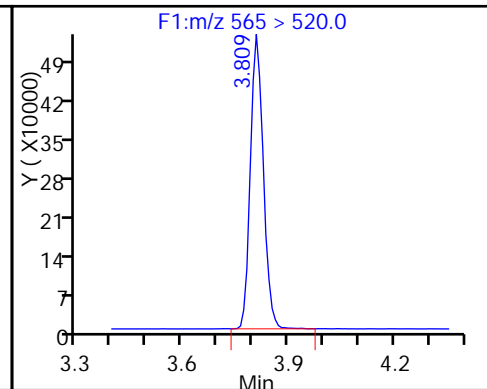
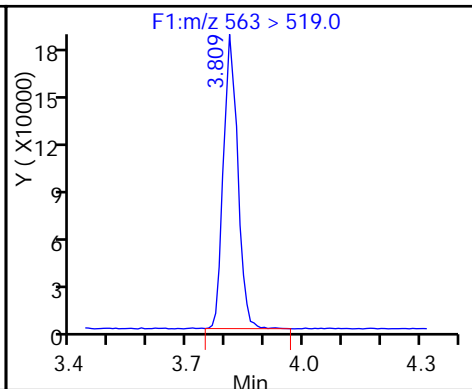
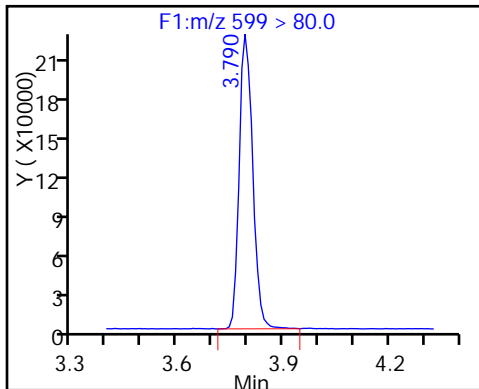
49 N-ethyl perfluorooctane sulfonamid (ND)



26 Perfluorodecane Sulfonic acid

28 Perfluoroundecanoic acid

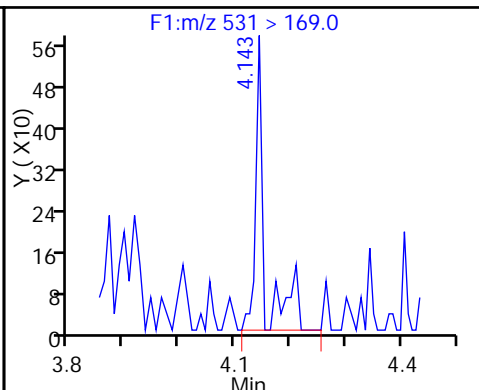
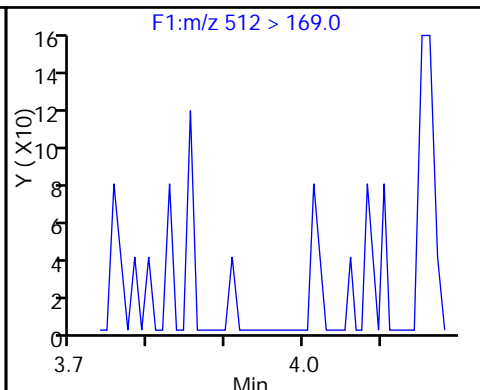
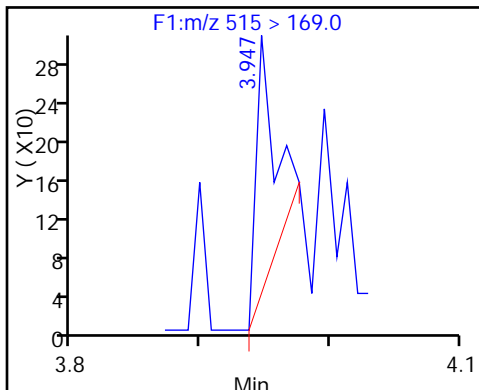
D 27 13C2 PFUnA



D 52 d-N-MeFOSA-M

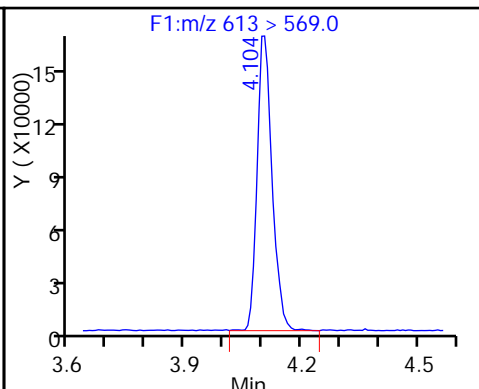
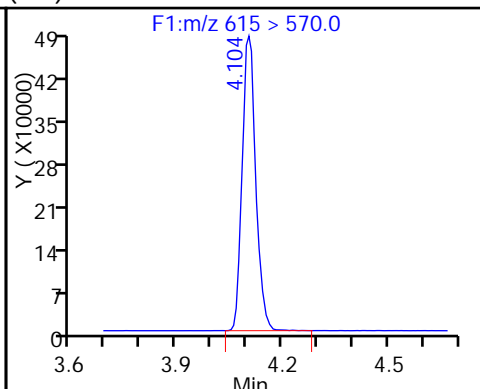
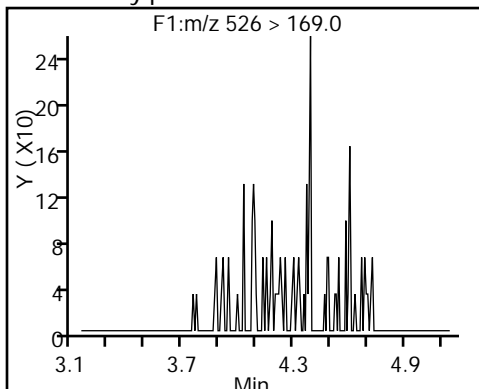
54 MeFOSA

D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami (NB) 13C2 PFDaA

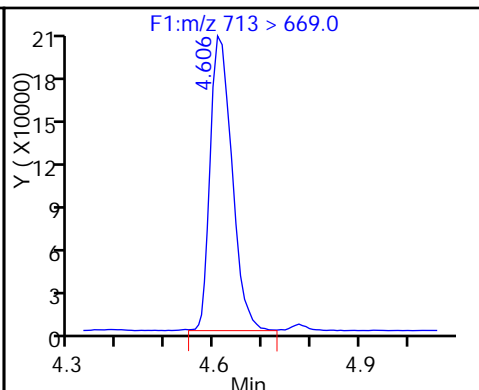
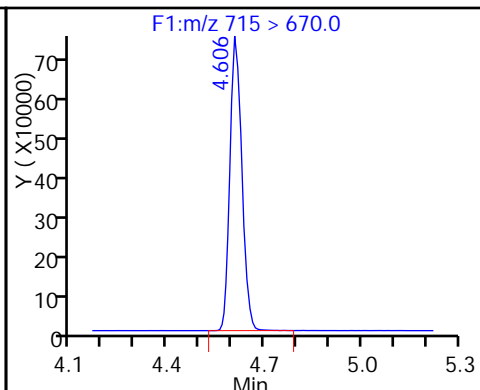
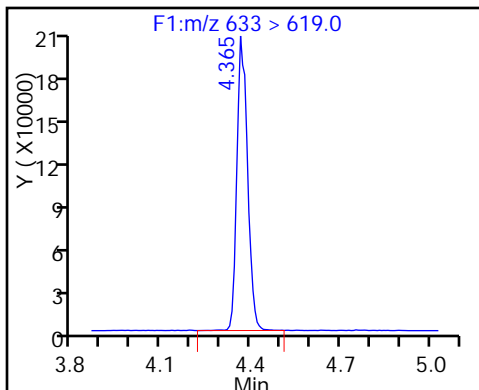
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

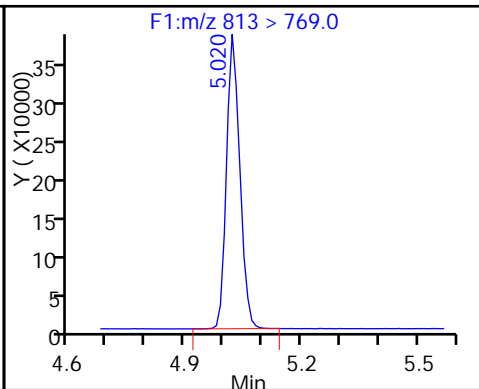
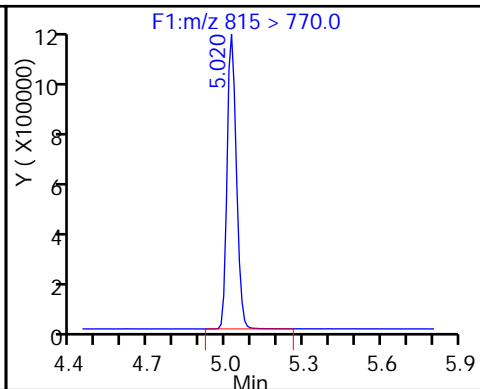
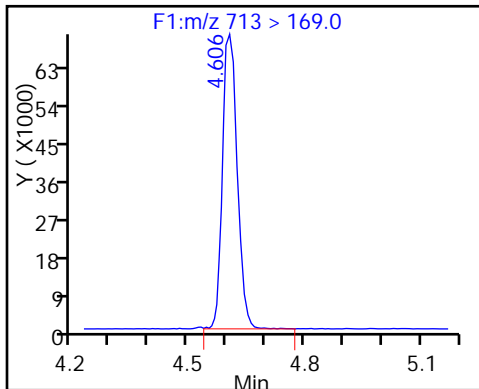
33 Perfluorotetradecanoic acid



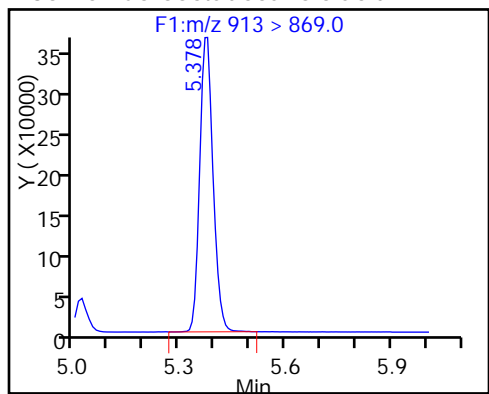
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

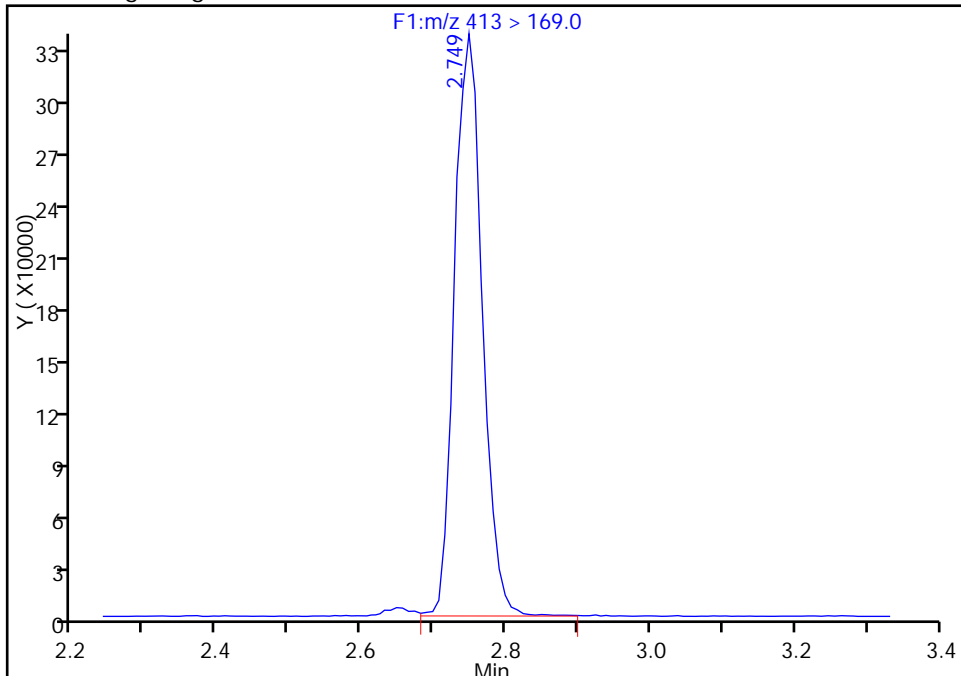
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Injection Date: 23-Aug-2016 07:31:00 Instrument ID: A8
Lims ID: 320-20867-A-3-B MS
Client ID: GW14-02R-0816 MS
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

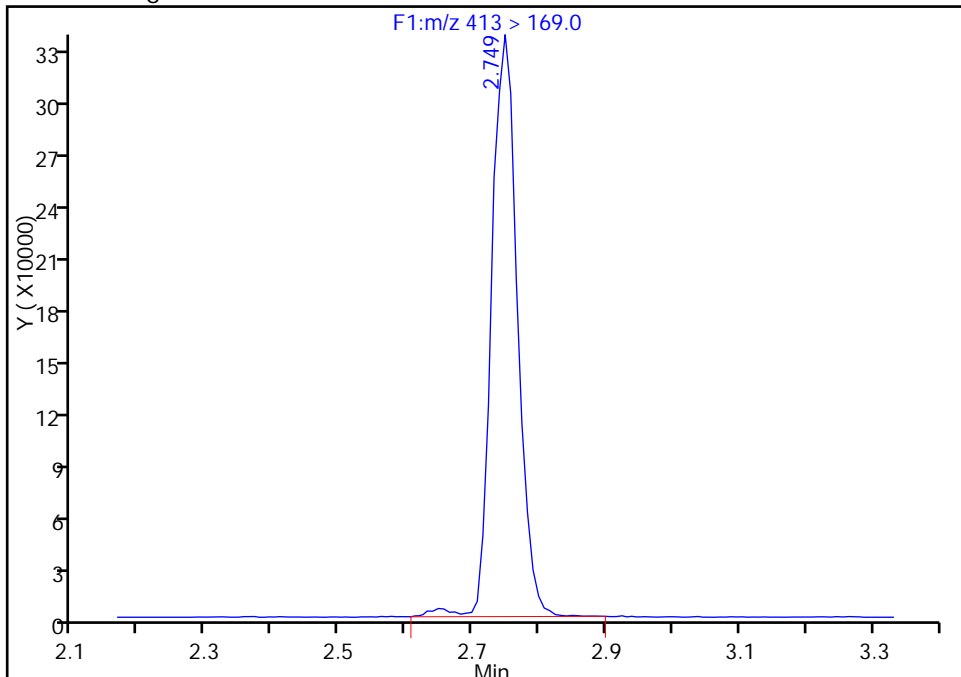
RT: 2.75
Area: 901008
Amount: 19.377909
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 909749
Amount: 19.377909
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 29-Aug-2016 16:12:35
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1
 SDG No.: _____
 Client Sample ID: GW14-02R-0816 MSD MSD Lab Sample ID: 320-20867-3 MSD
 Matrix: Water Lab File ID: 22AUG2016D_016_p1_e1.d
 Analysis Method: 537 (Modified) Date Collected: 08/10/2016 10:35
 Extraction Method: 3535 Date Extracted: 08/16/2016 14:29
 Sample wt/vol: 253.4 (mL) Date Analyzed: 08/23/2016 07:39
 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.: 123791 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	41.5		2.5	2.0	0.74
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.0	M	3.9	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	84		25-150
STL00991	13C4 PFOS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_016_p1_e1.d
 Lims ID: 320-20867-A-3-C MSD
 Client ID: GW14-02R-0816 MSD
 Sample Type: MSD
 Inject. Date: 23-Aug-2016 07:39:00 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\20160823-33801.b\PFC_A8_Full.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 31-Aug-2016 09:26:28 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: XAWRK049

First Level Reviewer: chandrasenas Date: 29-Aug-2016 16:16:59

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	1.507	1.522	-0.015		3764033	27.7		55.5	231569	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	1251862	19.2		96.2	3952	
D 4 13C5-PFPeA										
267.9 > 223.0	1.774	1.797	-0.023		4802855	44.6		89.1	310935	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.774	1.797	-0.023	1.000	1657535	16.9		84.4	7468	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.808	1.837	-0.029	1.000	3931225	18.8		106		
298.9 > 99.0	1.808	1.837	-0.029	1.000	1634958		2.40(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.058	2.089	-0.031		4145998	42.7		85.5	619608	
7 Perfluorohexanoic acid										
313 > 269.0	2.058	2.090	-0.032	1.000	1495786	18.7		93.3	14986	M
12 Perfluoroheptanoic acid										
363 > 319.0	2.387	2.427	-0.040	1.000	1543755	17.8		89.0	15263	
D 11 13C4-PFHpA										
367 > 322.0	2.380	2.430	-0.050		4148708	43.0		86.0	424595	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.402	2.446	-0.044	1.000	2561275	17.1		94.0		M
D 10 18O2 PFHxS										
403 > 84.0	2.395	2.446	-0.051		6361910	56.6		120	320152	
15 Perfluorooctanoic acid										
413 > 369.0	2.740	2.798	-0.058	1.000	1723607	21.0		105	11772	
413 > 169.0	2.740	2.798	-0.058	1.000	1000590		1.72(0.90-1.10)		42311	
D 14 13C4 PFOA										
417 > 372.0	2.740	2.798	-0.058		4060881	42.2		84.3	310941	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.749	2.807	-0.058	1.000	2048427	20.0		105		08/31/2016

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	3.121	3.110	0.012	1.000	2029034	20.8		112	184565	M
499 > 99.0	3.000	3.110	-0.109	0.961	439286		4.62(0.90-1.10)		3970	
D 19 13C5 PFNA										
468 > 423.0	3.113	3.177	-0.064		2908536	36.6		73.1	207249	
D 17 13C4 PFOS										
503 > 80.0	3.113	3.177	-0.064		4209257	51.3		107	147324	
20 Perfluorononanoic acid										
463 > 419.0	3.113	3.183	-0.070	1.000	1096502	18.9		94.3	18892	
D 21 13C8 FOSA										
506 > 78.0	3.458	3.474	-0.016		128913	0.8599		1.7	50842	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.451	3.475	-0.024	1.000	44169	18.6		93.1	8109	
D 42 M2-8:2FTS										
529 > 509.0	3.451	3.504	-0.053		1059	0.0210		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.466	3.504	-0.038	1.005	14937	NR		0.0		
24 Perfluorodecanoic acid										
513 > 469.0	3.482	3.546	-0.064	1.000	663248	17.3		86.4	21425	
D 23 13C2 PFDA										
515 > 470.0	3.474	3.546	-0.072		1951328	26.8		53.7	768565	
D 45 d3-NMeFOSAA										
573 > 419.0	3.634	3.670	-0.036		1850	0.0697		0.0		
D 46 d5-NEtFOSAA										
589 > 419.0	3.800	3.843	-0.043		2896	0.1000		0.0		
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.790	3.863	-0.073	1.000	558342	10.3		53.7		
28 Perfluoroundecanoic acid										
563 > 519.0	3.809	3.880	-0.072	1.000	401390	17.2		86.0	19891	
D 27 13C2 PFUnA										
565 > 520.0	3.800	3.880	-0.080		1076547	19.3		38.7	203622	
D 52 d-N-MeFOSA-M										
515 > 169.0	3.947	3.957	-0.010		401	0.0105		0.0		
D 30 13C2 PFDoA										
615 > 570.0	4.104	4.183	-0.079		1067061	20.1		40.1	130946	
29 Perfluorododecanoic acid										
613 > 569.0	4.097	4.185	-0.088	1.000	390496	18.5		92.4	20803	
31 Perfluorotridecanoic acid										
633 > 619.0	4.365	4.452	-0.087	1.000	479932	23.0		115	40980	
D 32 13C2-PFTeDA										
715 > 670.0	4.606	4.697	-0.091		1829974	38.8		77.6	234002	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.606	4.701	-0.095	1.000	727362	40.6		203	33163	
713 > 169.0	4.606	4.701	-0.095	1.000	200164		3.63(0.00-0.00)		76711	
D 34 13C2-PFHxDA										
815 > 770.0	5.021	5.125	-0.105		2868407	43.6		87.1	378647	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.021	5.127	-0.107	1.000	1011574	38.2		191	11018	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913 > 869.0	5.371	5.509	-0.138	1.000	1006470	41.0	205	8037	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_016_p1_e1.d

Injection Date: 23-Aug-2016 07:39:00 Instrument ID: A8

Lims ID: 320-20867-A-3-C MSD

Client ID: GW14-02R-0816 MSD

Operator ID: A8

ALS Bottle#: 0 Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

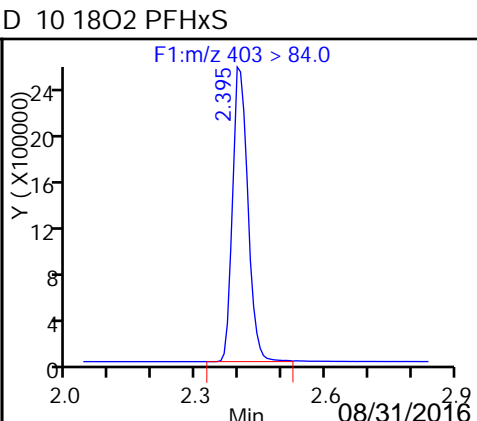
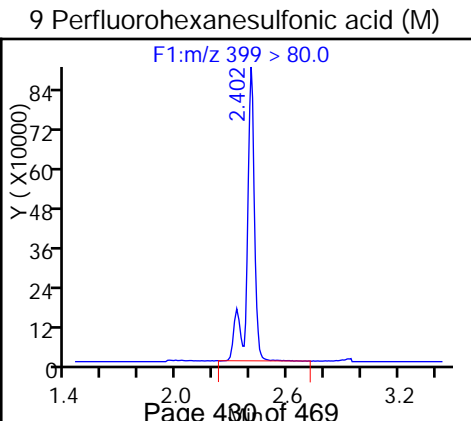
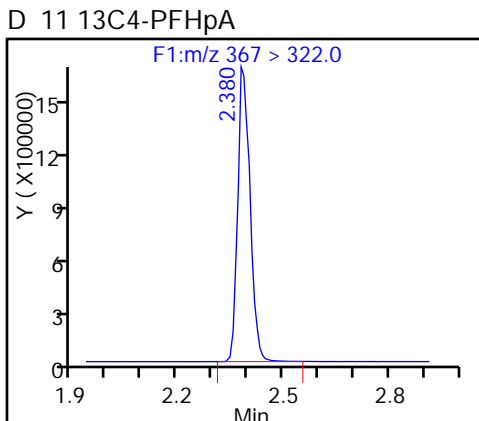
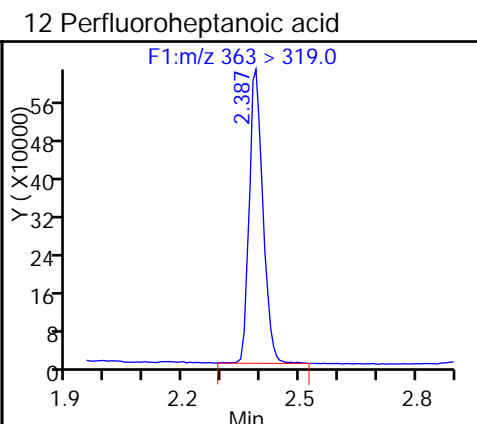
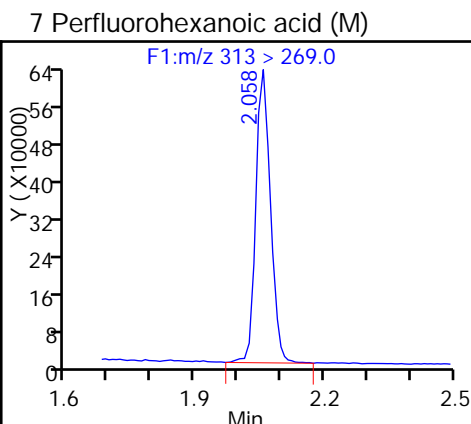
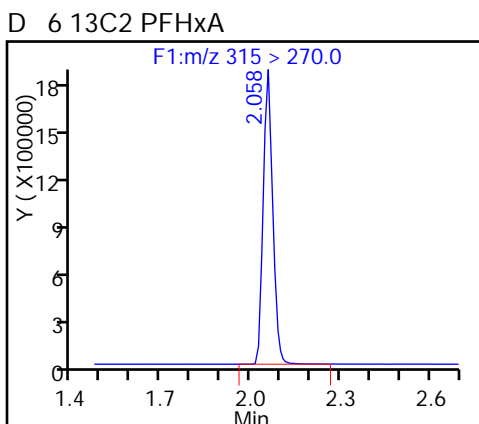
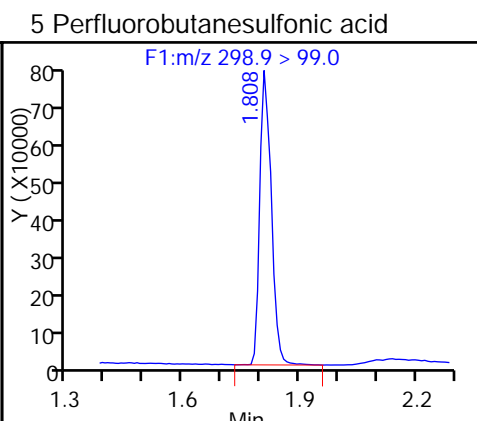
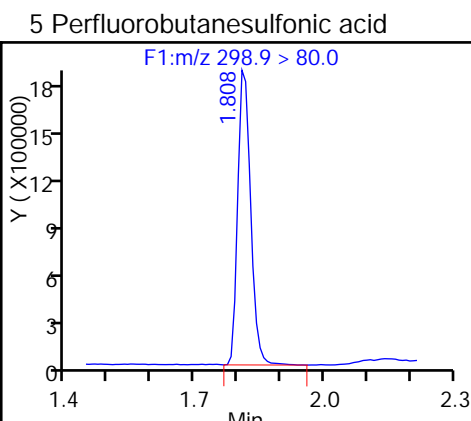
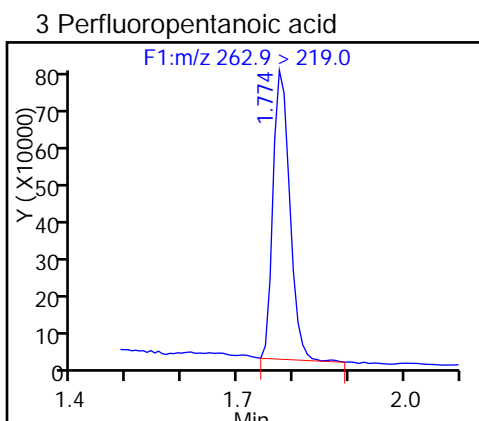
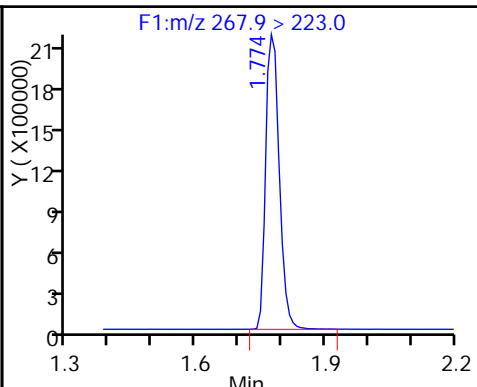
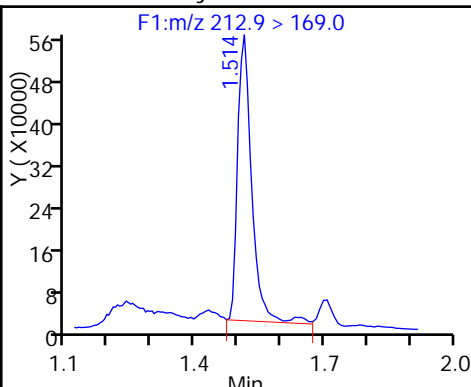
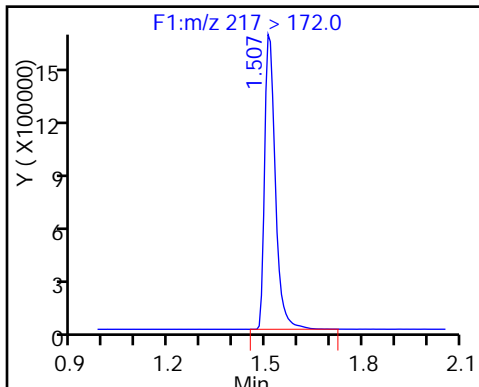
Method: PFC_A8_Full

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

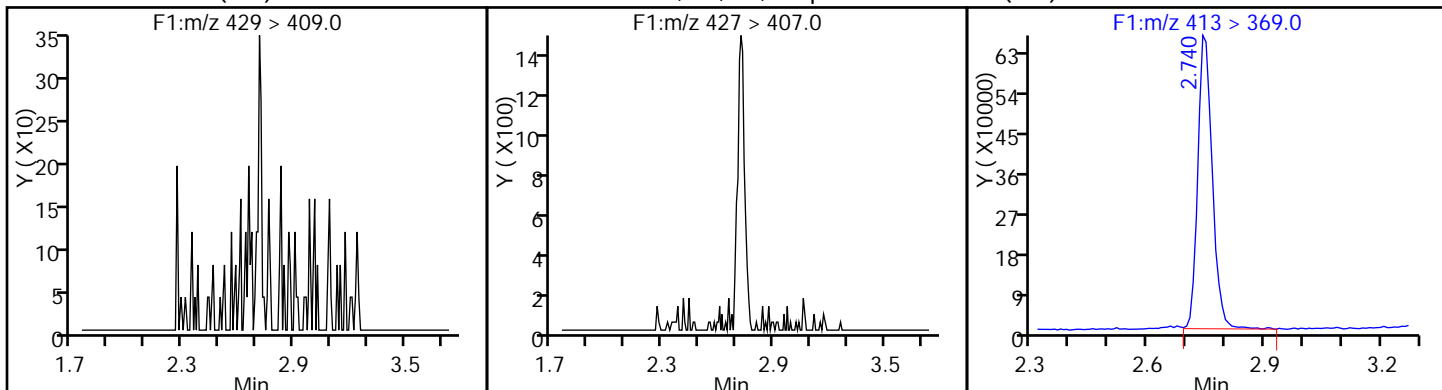
1 Perfluorobutyric acid

D 4 13C5-PFPeA



D 47 M2-6:2F5 (ND)

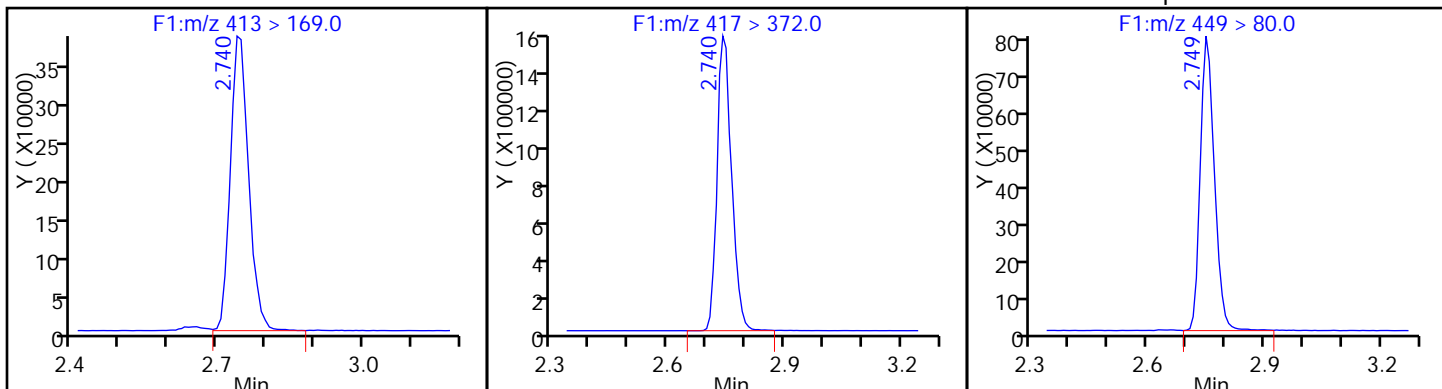
48 Sodium 1H,1H,2H,2H-perfluorooctane(SF)perfluorooctanoic acid



15 Perfluorooctanoic acid

D 14 13C4 PFOA

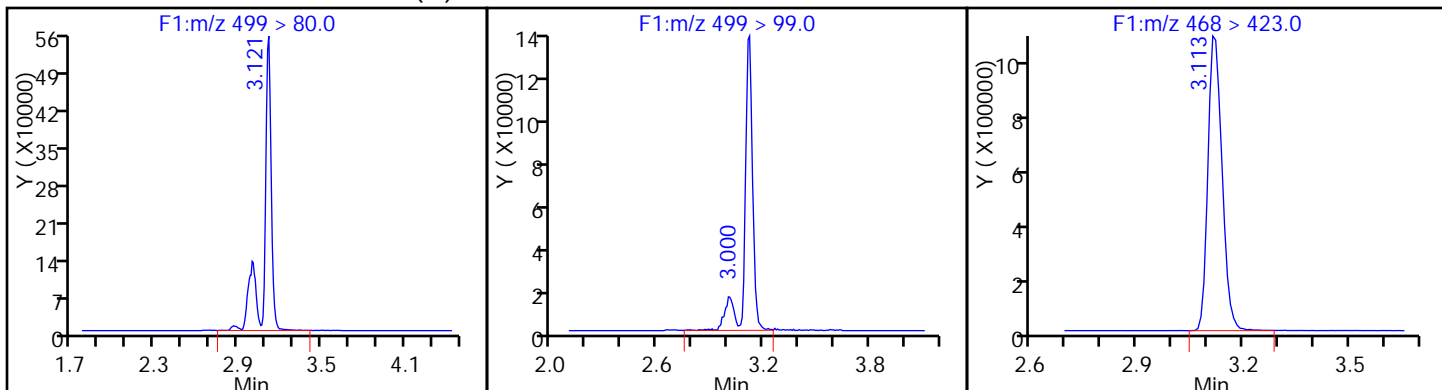
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid (M)

18 Perfluorooctane sulfonic acid

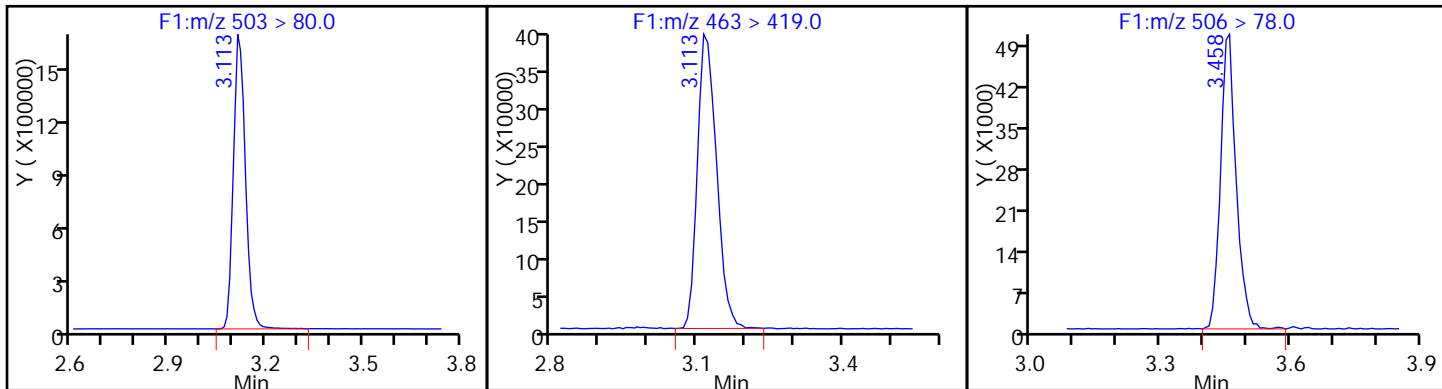
D 19 13C5 PFNA



D 17 13C4 PFOS

20 Perfluorononanoic acid

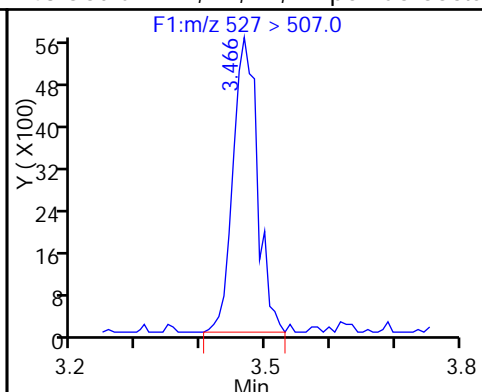
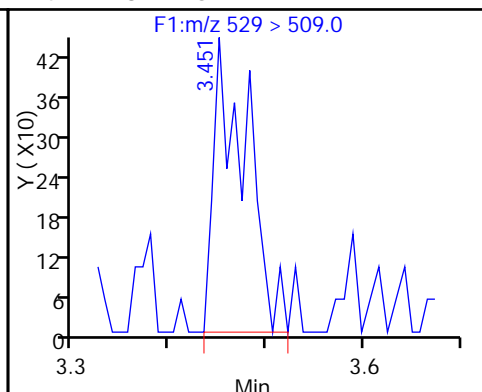
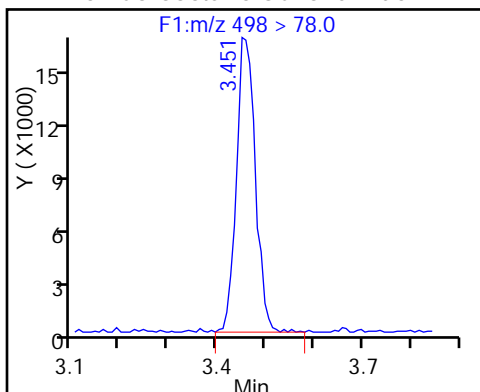
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 42 M2-8:2FTS

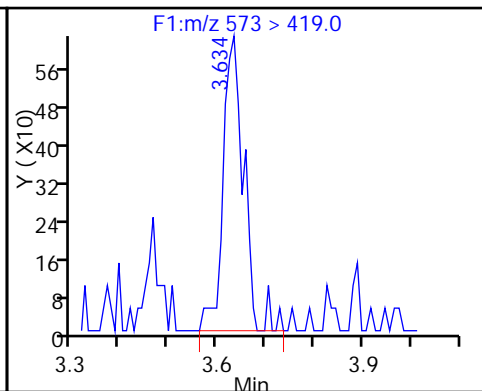
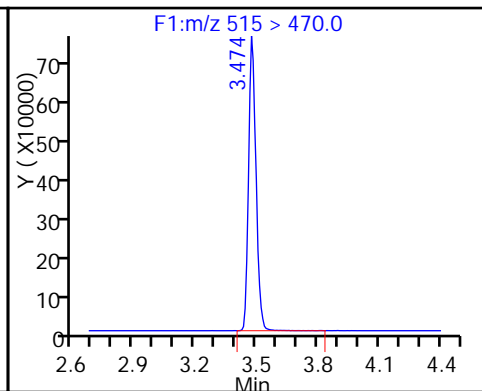
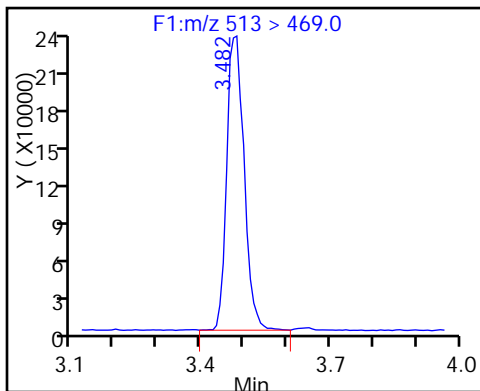
43 Sodium 1H,1H,2H,2H-perfluorooctane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

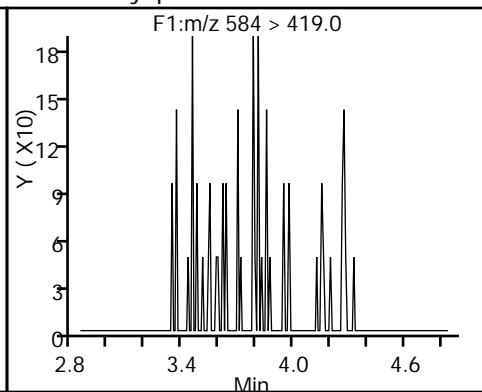
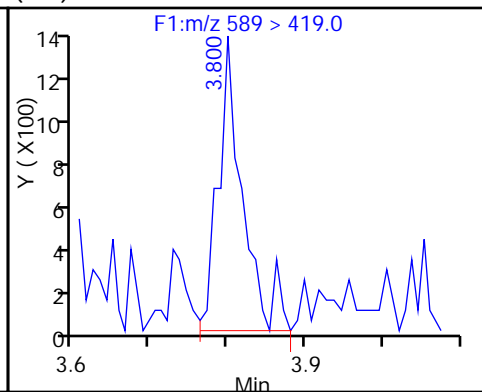
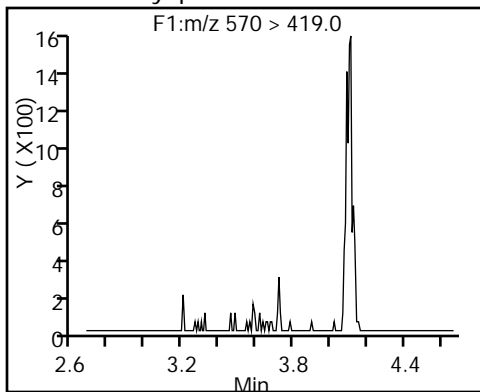
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamide (ND)

D 46 d5-NEtFOSAA

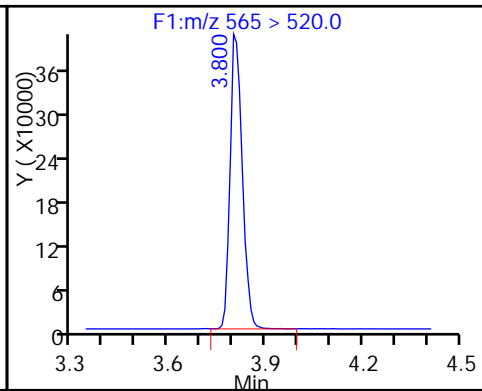
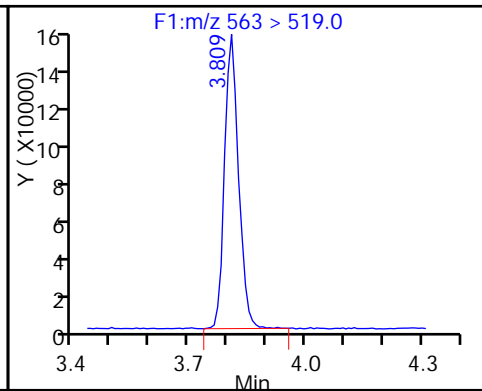
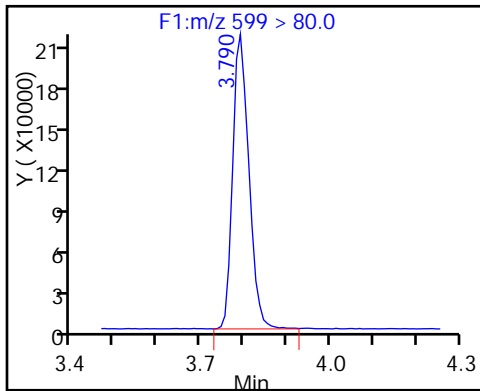
49 N-ethyl perfluorooctane sulfonamide (ND)



26 Perfluorodecane Sulfonic acid

28 Perfluoroundecanoic acid

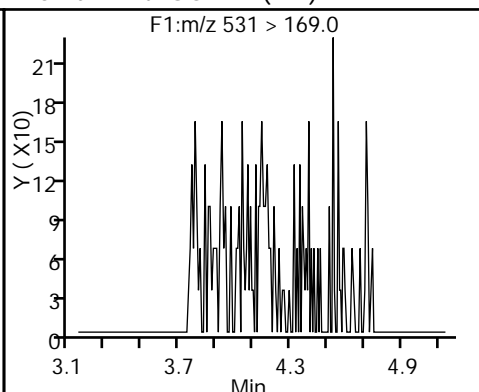
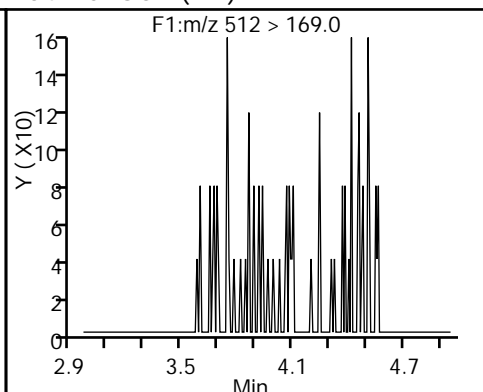
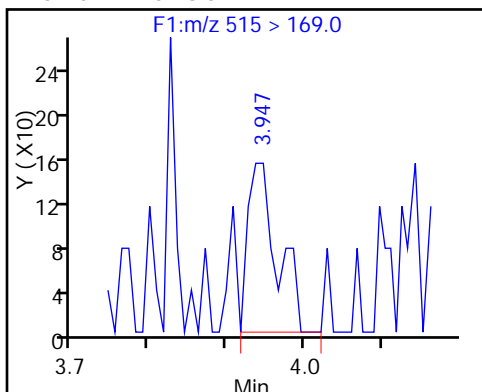
D 27 13C2 PFUnA



D 52 d-N-MeFOSA-M

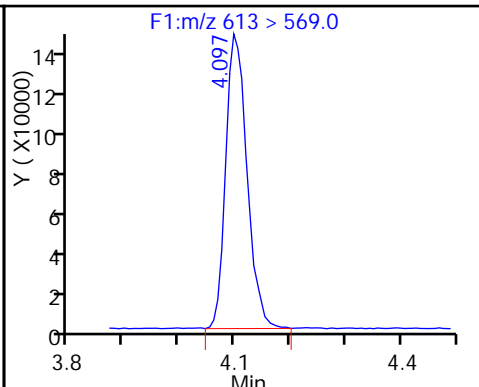
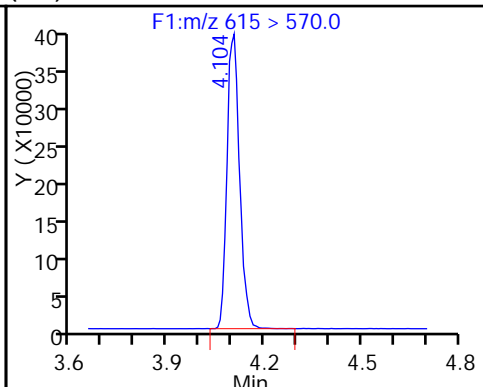
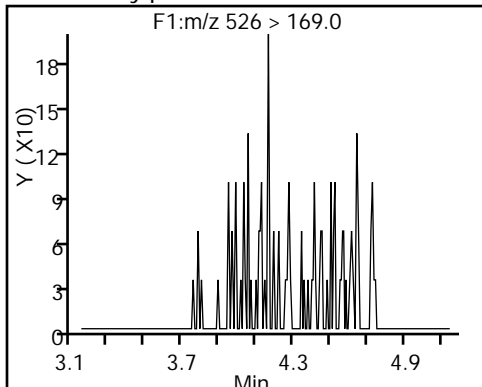
54 MeFOSA (ND)

D 51 d-N-EtFOSA-M (ND)



53 N-ethylperfluoro-1-octanesulfonami (ND) 13C2 PFDaA

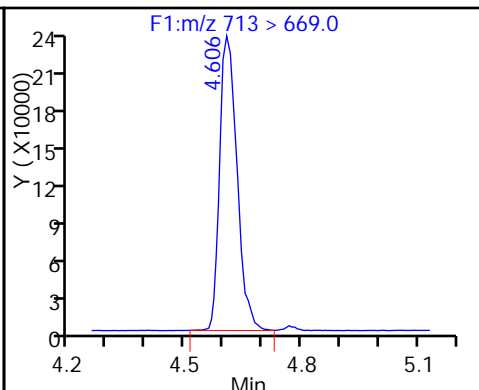
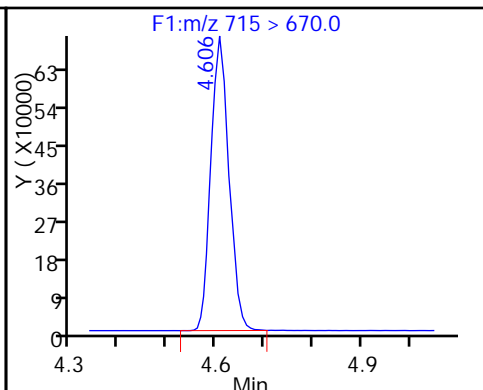
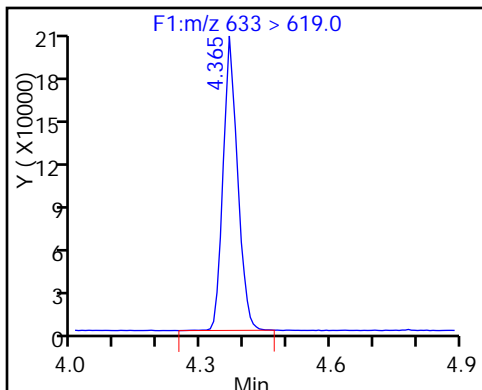
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

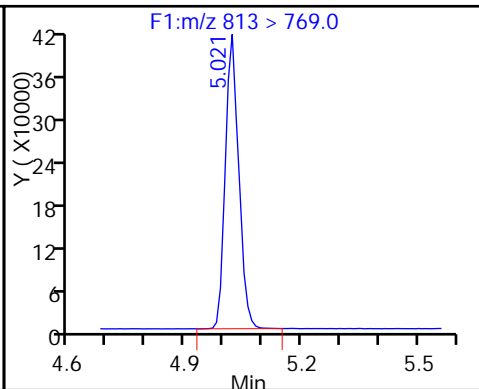
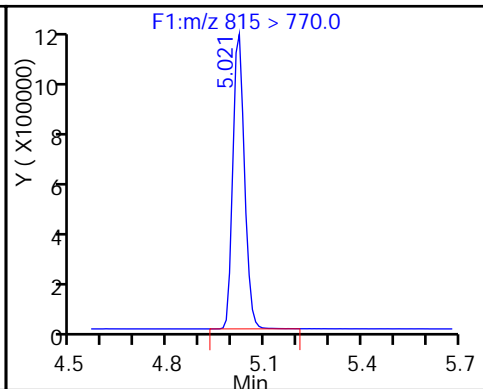
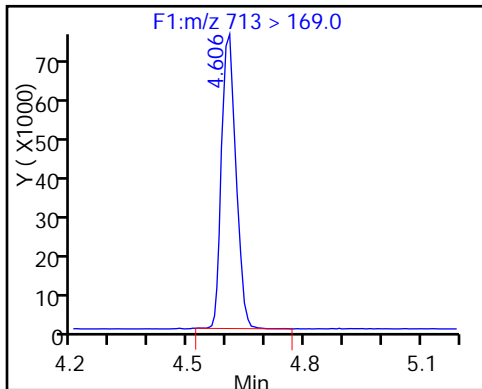
33 Perfluorotetradecanoic acid



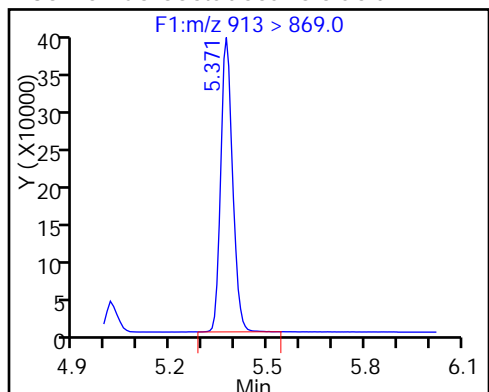
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

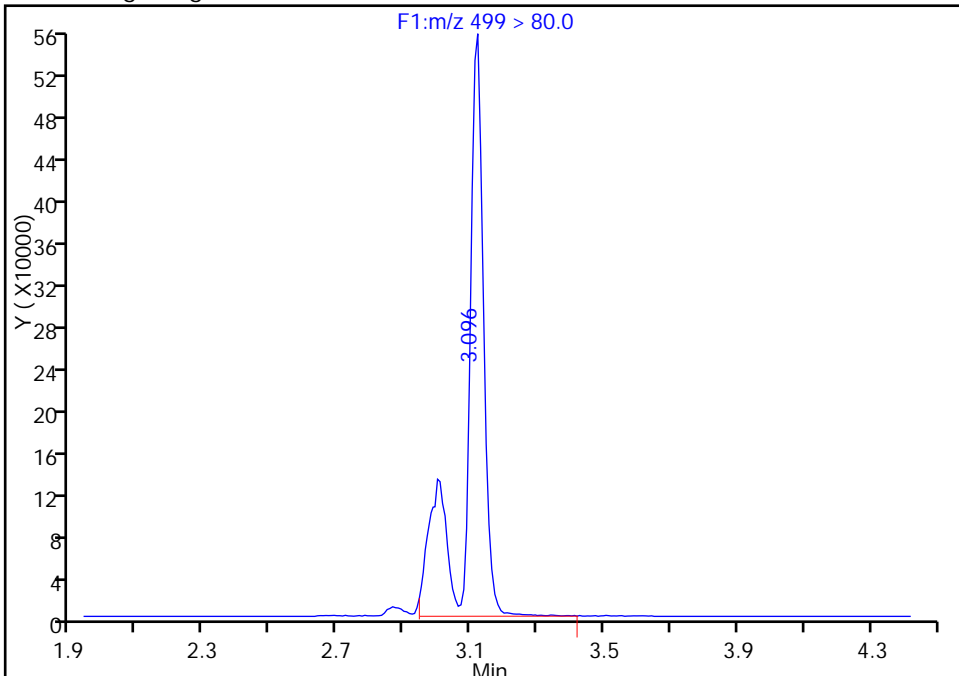
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b\22AUG2016D_016_p1_e1.d
Injection Date: 23-Aug-2016 07:39:00 Instrument ID: A8
Lims ID: 320-20867-A-3-C MSD
Client ID: GW14-02R-0816 MSD
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 1

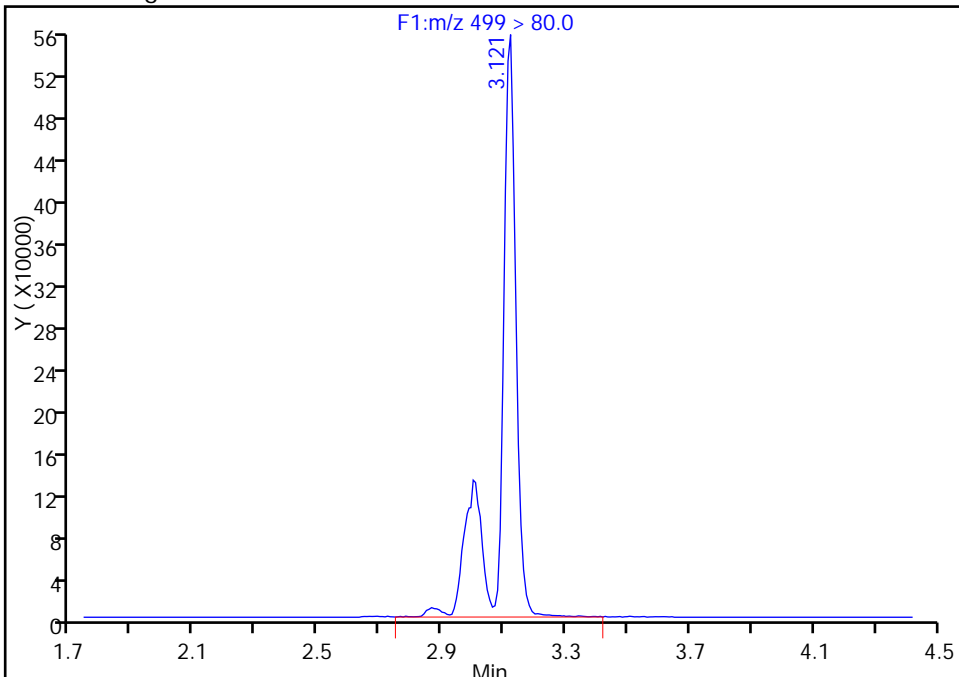
RT: 3.10
Area: 1989749
Amount: 20.374386
Amount Units: ng/ml

Processing Integration Results



RT: 3.12
Area: 2029034
Amount: 20.776652
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 31-Aug-2016 09:26:28
Audit Action: Manually Integrated

Audit Reason: Isomers

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-20867-1

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.: 320-20867-1

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.: 320-20867-1

SDG No.: _____

Instrument ID: A8 Start Date: 08/23/2016 05:24

Analysis Batch Number: 123791 End Date: 08/23/2016 11:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-123791/2		08/23/2016 05:24	1	22AUG2016C_040_p1 el.d	Acquity 2.1(mm)
CCV 320-123791/3		08/23/2016 05:31	1		Acquity 2.1(mm)
MB 320-122455/1-A		08/23/2016 06:24	1	22AUG2016D_006_p1 el.d	Acquity 2.1(mm)
LCS 320-122455/2-A		08/23/2016 06:31	1	22AUG2016D_007_p1 el.d	Acquity 2.1(mm)
320-20867-1		08/23/2016 06:39	1	22AUG2016D_008_p1 el.d	Acquity 2.1(mm)
320-20867-2		08/23/2016 06:46	1	22AUG2016D_009_p1 el.d	Acquity 2.1(mm)
320-20867-3		08/23/2016 06:54	1	22AUG2016D_010_p1 el.d	Acquity 2.1(mm)
CCV 320-123791/16		08/23/2016 07:09	1	22AUG2016D_012_p1 el.d	Acquity 2.1(mm)
CCV 320-123791/17		08/23/2016 07:16	1		Acquity 2.1(mm)
320-20867-3 MS		08/23/2016 07:31	1	22AUG2016D_015_p1 el.d	Acquity 2.1(mm)
320-20867-3 MSD		08/23/2016 07:39	1	22AUG2016D_016_p1 el.d	Acquity 2.1(mm)
320-20867-4		08/23/2016 07:46	1	22AUG2016D_017_p1 el.d	Acquity 2.1(mm)
320-20867-5		08/23/2016 07:54	1	22AUG2016D_018_p1 el.d	Acquity 2.1(mm)
320-20867-6		08/23/2016 08:01	1	22AUG2016D_019_p1 el.d	Acquity 2.1(mm)
320-20867-7		08/23/2016 08:09	1	22AUG2016D_020_p1 el.d	Acquity 2.1(mm)
320-20867-8		08/23/2016 08:16	1	22AUG2016D_021_p1 el.d	Acquity 2.1(mm)
320-20867-9		08/23/2016 08:24	1	22AUG2016D_022_p1 el.d	Acquity 2.1(mm)
320-20867-10		08/23/2016 08:31	1	22AUG2016D_023_p1 el.d	Acquity 2.1(mm)
CCV 320-123791/29		08/23/2016 08:46	1	22AUG2016D_025_p1 el.d	Acquity 2.1(mm)
CCV 320-123791/30		08/23/2016 08:54	1		Acquity 2.1(mm)
CCV 320-123791/43		08/23/2016 10:31	1		Acquity 2.1(mm)
CCV 320-123791/44		08/23/2016 10:39	1		Acquity 2.1(mm)
CCV 320-123791/48		08/23/2016 11:09	1		Acquity 2.1(mm)
CCV 320-123791/49		08/23/2016 11:16	1		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.: 320-20867-1

SDG No.: _____

Batch Number: 122455 Batch Start Date: 08/16/16 14:29 Batch Analyst: Marchenko, Veronika P

Batch Method: 3535 Batch End Date: 08/17/16 13:04

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00043	LCPFCSP 00053
MB 320-122455/1		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	
LCS 320-122455/2		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
320-20867-A-1	GW14-01R-0816	3535, 537 (Modified)	T	281.43 g	27.24 g	254.2 mL	0.5 mL	25 uL	
320-20867-A-2	GW14-01RP-0816	3535, 537 (Modified)	T	302.61 g	27.05 g	275.6 mL	0.5 mL	25 uL	
320-20867-A-3	GW14-02R-0816	3535, 537 (Modified)	T	271.96 g	28.89 g	243.1 mL	0.5 mL	25 uL	
320-20867-A-3 MS	GW14-02R-0816 MS	3535, 537 (Modified)	T	281.03 g	29.07 g	252 mL	0.5 mL	25 uL	20 uL
320-20867-A-3 MSD	GW14-02R-0816 MSD	3535, 537 (Modified)	T	282.12 g	28.77 g	253.4 mL	0.5 mL	25 uL	20 uL
320-20867-A-4	GW14-EB01-081016 -GW	3535, 537 (Modified)	T	288.80 g	27.12 g	261.7 mL	0.5 mL	25 uL	
320-20867-A-5	GW14-FB01-081016	3535, 537 (Modified)	T	287.53 g	27.16 g	260.4 mL	0.5 mL	25 uL	
320-20867-A-6	GW14-06R-0816	3535, 537 (Modified)	T	290.23 g	27.96 g	262.3 mL	0.5 mL	25 uL	
320-20867-A-7	GW14-03R-0816	3535, 537 (Modified)	T	300.79 g	27.27 g	273.5 mL	0.5 mL	25 uL	
320-20867-A-8	GW14-05-0816	3535, 537 (Modified)	T	289.41 g	27.38 g	262 mL	0.5 mL	25 uL	
320-20867-A-9	GW14-07-0816	3535, 537 (Modified)	T	304.96 g	27.04 g	277.9 mL	0.5 mL	25 uL	
320-20867-A-10	GW14-08-0816	3535, 537 (Modified)	T	300.96 g	27.71 g	273.3 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.: 320-20867-1

SDG No.: _____

Batch Number: 122455 Batch Start Date: 08/16/16 14:29

Batch Analyst: Marchenko, Veronika P

Batch Method: 3535 Batch End Date: 08/17/16 13:04

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1% NaOH/H2O: 645197
H2O ID	8/10/16
Hexane ID	0000135581
Manifold ID	5,9
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.

Job Number(s): 20159; 20867; 20915
 Extraction Batch: 123019; 122455; 122544
 Delivery Rank 3; 4

Work List ID(s): 33801
 Analysis Batch(es): 123791; 123792
 Due Date: 8/24/16; 8/15/16; 8/19/16

A. Calibration/Instrument Run QC	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>123741; 123742</u>	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• RF _{average} criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r > 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 > 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓	✓	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): [Signature] Date: 8/30/16
 2nd Level Reviewer: [Signature] Date: 8/31/2016

61886; 61888; 61918; 61920; 61891; 61904; 61984

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 22AUG2016C_PFC
Instrument Name: A8
Data Directory: \\ChromNA\Sacramento\ChromData\A8\20160823-33801.b
QC Batching: Disabled

Worklist Number: 33801
Chrom Method: PFC_A8_Full
Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 123791	LC PFC ICAL Raw Batch: 123792	LC PFAS ICAL Raw Batch: 123793
# 1 RB	# 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	# 4 RB
# 5 MB 320-123019/1-A	# 5 MB 320-123019/1-A	# 5 MB 320-123019/1-A	# 5 MB 320-123019/1-A
# 6 LCS 320-123019/2-A	# 6 LCS 320-123019/2-A	# 6 LCS 320-123019/2-A	# 6 LCS 320-123019/2-A
# 7 LCSD 320-123019/3-A	# 7 LCSD 320-123019/3-A	# 7 LCSD 320-123019/3-A	# 7 LCSD 320-123019/3-A
# 8 320-21059-A-1-A	# 8 320-21059-A-1-A	# 8 320-21059-A-1-A	# 8 320-21059-A-1-A
# 9 RB	# 9 RB	# 9 RB	# 9 RB
# 10 MB 320-122455/1-A	# 10 MB 320-122455/1-A	# 10 MB 320-122455/1-A	# 10 MB 320-122455/1-A
# 11 LCS 320-122455/2-A	# 11 LCS 320-122455/2-A	# 11 LCS 320-122455/2-A	# 11 LCS 320-122455/2-A
# 12 320-20867-A-1-A	# 12 320-20867-A-1-A	# 12 320-20867-A-1-A	# 12 320-20867-A-1-A
# 13 320-20867-A-2-A	# 13 320-20867-A-2-A	# 13 320-20867-A-2-A	# 13 320-20867-A-2-A
# 14 320-20867-A-3-A	# 14 320-20867-A-3-A	# 14 320-20867-A-3-A	# 14 320-20867-A-3-A
# 15 RB	# 15 RB	# 15 RB	# 15 RB
# 16 CCV L4	# 16 CCV L4	# 16 CCV L4	# 16 CCV L4
# 17 CCV L4 Add-on	# 17 CCV L4 Add-on	# 17 CCV L4 Add-on	# 17 CCV L4 Add-on
# 18 RB	# 18 RB	# 18 RB	# 18 RB
# 19 320-20867-A-3-B MS	# 19 320-20867-A-3-B MS	# 19 320-20867-A-3-B MS	# 19 320-20867-A-3-B MS
# 20 320-20867-A-3-C MSD	# 20 320-20867-A-3-C MSD	# 20 320-20867-A-3-C MSD	# 20 320-20867-A-3-C MSD
# 21 320-20867-A-4-A	# 21 320-20867-A-4-A	# 21 320-20867-A-4-A	# 21 320-20867-A-4-A
# 22 320-20867-A-5-A	# 22 320-20867-A-5-A	# 22 320-20867-A-5-A	# 22 320-20867-A-5-A
# 23 320-20867-A-6-A	# 23 320-20867-A-6-A	# 23 320-20867-A-6-A	# 23 320-20867-A-6-A
# 24 320-20867-A-7-A	# 24 320-20867-A-7-A	# 24 320-20867-A-7-A	# 24 320-20867-A-7-A
# 25 320-20867-A-8-A	# 25 320-20867-A-8-A	# 25 320-20867-A-8-A	# 25 320-20867-A-8-A
# 26 320-20867-A-9-A	# 26 320-20867-A-9-A	# 26 320-20867-A-9-A	# 26 320-20867-A-9-A
# 27 320-20867-A-10-A	# 27 320-20867-A-10-A	# 27 320-20867-A-10-A	# 27 320-20867-A-10-A
# 28 RB	# 28 RB	# 28 RB	# 28 RB
# 29 CCV L5	# 29 CCV L5	# 29 CCV L5	# 29 CCV L5
# 30 CCV L5 Add-on	# 30 CCV L5 Add-on	# 30 CCV L5 Add-on	# 30 CCV L5 Add-on
# 31 RB	# 31 RB	# 31 RB	# 31 RB
# 32 MB 320-122544/1-A	# 32 MB 320-122544/1-A	# 32 MB 320-122544/1-A	# 32 MB 320-122544/1-A
# 33 LCS 320-122544/2-A	# 33 LCS 320-122544/2-A	# 33 LCS 320-122544/2-A	# 33 LCS 320-122544/2-A
# 34 LCSD 320-122544/3-A	# 34 LCSD 320-122544/3-A	# 34 LCSD 320-122544/3-A	# 34 LCSD 320-122544/3-A
# 35 320-20915-A-1-A	# 35 320-20915-A-1-A	# 35 320-20915-A-1-A	# 35 320-20915-A-1-A
# 36 320-20915-A-2-A	# 36 320-20915-A-2-A	# 36 320-20915-A-2-A	# 36 320-20915-A-2-A
# 37 320-20915-A-3-A	# 37 320-20915-A-3-A	# 37 320-20915-A-3-A	# 37 320-20915-A-3-A
# 38 320-20915-A-4-A	# 38 320-20915-A-4-A	# 38 320-20915-A-4-A	# 38 320-20915-A-4-A
# 39 320-20915-A-5-A	# 39 320-20915-A-5-A	# 39 320-20915-A-5-A	# 39 320-20915-A-5-A
# 40 320-20915-A-6-A	# 40 320-20915-A-6-A	# 40 320-20915-A-6-A	# 40 320-20915-A-6-A
# 41 320-20915-A-7-A	# 41 320-20915-A-7-A	# 41 320-20915-A-7-A	# 41 320-20915-A-7-A
# 42 RB	# 42 RB	# 42 RB	# 42 RB
# 43 CCV L4	# 43 CCV L4	# 43 CCV L4	# 43 CCV L4
# 44 CCV L4 Add-on	# 44 CCV L4 Add-on	# 44 CCV L4 Add-on	# 44 CCV L4 Add-on
# 45 RB	# 45 RB	# 45 RB	# 45 RB
# 46 320-20915-A-8-A	# 46 320-20915-A-8-A	# 46 320-20915-A-8-A	# 46 320-20915-A-8-A
# 47 RB	# 47 RB	# 47 RB	# 47 RB
# 48 CCV L5	# 48 CCV L5	# 48 CCV L5	# 48 CCV L5
# 49 CCV L5 Add-on	# 49 CCV L5 Add-on	# 49 CCV L5 Add-on	# 49 CCV L5 Add-on
# 50 RB	# 50 RB	# 50 RB	# 50 RB

Curve in AB 123741
Time Stamp NCM
61888
check Tune NCM
61886

Curve in AB 123742
Time Stamp NCM 61918

#40

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123019





Analyst: Norans, Rhianne M

Batch Open: 8/19/2016 7:03:02AM

Method Code: 320-3535_IVWT-320

Batch End: 8-20-16 10:10

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-320-123019/1 N/A	N/A		500 mL				N/A	N/A	N/A		
			1.0 mL								
2 LCS-320-123019/2 N/A	N/A		500 mL				N/A	N/A	N/A		
			1.0 mL								
3 LCSD-320-123019/3 N/A	N/A		500 mL				N/A	N/A	N/A		
			1.0 mL								
320-21059-A-1 (PFC_IDA)	777000119847 (320-21059-1)	563.13 g	494 mL				8/24/16	10_Days	3		
		59.09 g	1.0 mL								

10x

Page 448 of 469

08/31/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123019

Analyst: Norans, Rhianna M

Batch Open: 8/19/2016 7:03:02AM

Method Code: 320-3535_IWWT-320

Batch End:

Batch Notes

Manifold ID ~~3~~

Methanol ID 697386

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 8/19/16

Pipette ID MD05306, MG05455

Solvent Name 0.3% NH4OH/MeOH

Solvent Lot # 702940

Analyst ID - Reagent Drop HSA

Analyst ID - SU Reagent Drop VPM

Analyst ID - SU Reagent Drop VPM

Witness

Acid Name NA

Acid ID NA

Reagent ID NA

Reagent Lot Number NA

NaCl ID NA

Page 449 of 469

08/31/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123019

Analyst: Norans, Rhianne M

Batch Open: 8/19/2016 7:03:02AM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1% NaOH/H2O: 645197

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123019

Analyst: Norans, Rhianna M

Batch Open: 8/19/2016 7:03:02AM

Method Code: 320-3535_IVWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-123019/1	LCMPFCSU_00043	50 uL	1.0 mL	HSA 8-19-16 ↓	VPM 8-19-16 ↓
LCS 320-123019/2	LCMPFCSU_00043	50 uL	1.0 mL		
LCS 320-123019/2	LCPFCSU_00049	20 uL	1.0 mL		
LCSD 320-123019/3	LCMPFCSU_00043	50 uL	1.0 mL		
LCSD 320-123019/3	LCPFCSU_00049	20 uL	1.0 mL		
320-21059-A-1	LCMPFCSU_00043	50 uL	1.0 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

Page 451 of 469

08/31/2016

Preparation Batch Number(s): 320-123019 Test: PFC-L

Earliest Holding Time: 8-21-16

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: HSA

Date: 8-22-16

2nd Level Reviewer: VPM

Date: 8/22/16

Comments: _____

#37

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122455











Analyst: Marchenko, Veronika P

Batch Open: 8/16/2016 2:29:07PM

Method Code: 320-3535_IVWT-320

Batch End: 8-17-16 13:04 PM

Solid-Phase Extraction (SPE)

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-122455/1 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.5 mL								
2 LCS-320-122455/2 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.5 mL								
3 320-20867-A-1 (PFC_IDA_DOD5)	N/A (320-20867-1)	281.43 g	254.2 mL				8/15/16	23_Days	4		
		27.24 g	0.5 mL								
320-20867-A-2 (PFC_IDA_DOD5)	N/A (320-20867-1)	302.61 g	275.6 mL				8/15/16	23_Days	4		
		27.05 g	0.5 mL								
320-20867-A-3 (PFC_IDA_DOD5)	N/A (320-20867-1)	271.96 g	243.1 mL				8/15/16	23_Days	4		
		28.89 g	0.5 mL								
6 320-20867-A-3-MS (PFC_IDA_DOD5)	N/A (320-20867-1)	281.03 g	252 mL				8/15/16	23_Days	4		
		29.07 g	0.5 mL								
7 320-20867-A-3-MSD (PFC_IDA_DOD5)	N/A (320-20867-1)	282.12 g	253.4 mL				8/15/16	23_Days	4		
		28.77 g	0.5 mL								
8 320-20867-A-4 (PFC_IDA_DOD5)	N/A (320-20867-1)	288.80 g	261.7 mL				8/15/16	23_Days	4		
		27.12 g	0.5 mL								
9 320-20867-A-5 (PFC_IDA_DOD5)	N/A (320-20867-1)	287.53 g	260.4 mL				8/15/16	23_Days	4		
		27.16 g	0.5 mL								
10 320-20867-A-6 (PFC_IDA_DOD5)	N/A (320-20867-1)	290.23 g	262.3 mL				8/15/16	23_Days	4		
		27.96 g	0.5 mL								

Page 453 of 469
08/31/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)





Batch Number: 320-122455

Analyst: Marchenko, Veronika P

Batch Open: 8/16/2016 2:29:07PM

Method Code: 320-3535_IVWT-320

Batch End:

11	320-20867-A-7 (PFC_IDA_DOD5)	N/A (320-20867-1)	300.79 g	273.5 mL				8/15/16	23_Days	4	
			27.27 g	0.5 mL							
12	320-20867-A-8 (PFC_IDA_DOD5)	N/A (320-20867-1)	289.41 g	262 mL				8/15/16	23_Days	4	
			27.38 g	0.5 mL							
13	320-20867-A-9 (PFC_IDA_DOD5)	N/A (320-20867-1)	304.96 g	277.9 mL				8/15/16	23_Days	4	
			27.04 g	0.5 mL							
14	320-20867-A-10 (PFC_IDA_DOD5)	N/A (320-20867-1)	300.96 g	273.3 mL				8/15/16	23_Days	4	
			27.71 g	0.5 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122455

Analyst: Marchenko, Veronika P

Batch Open: 8/16/2016 2:29:07PM

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

Manifold ID 5,9

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 8/10/16

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 HJA

Witness

Acid Name NA

Acid ID NA

Reagent ID NA

Reagent Lot Number NA

NaCl ID NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122455

Analyst: Marchenko, Veronika P

Batch Open: 8/16/2016 2:29:07PM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1% NaOH/H2O: 645197

Comments

320-20867-A-1	Method Comments: DOD site, Screen-caution
320-20867-A-2	Method Comments: DOD site, Screen-caution
320-20867-A-3	Method Comments: DOD site, Screen-caution
320-20867-A-3~MS	Method Comments: DOD site, Screen-caution
320-20867-A-3~MSD	Method Comments: DOD site, Screen-caution
320-20867-A-4	Method Comments: DOD site, Screen-caution
320-20867-A-5	Method Comments: DOD site, Screen-caution
320-20867-A-6	Method Comments: DOD site, Screen-caution
320-20867-A-7	Method Comments: DOD site, Screen-caution
320-20867-A-8	Method Comments: DOD site, Screen-caution
320-20867-A-9	Method Comments: DOD site, Screen-caution
320-20867-A-10	Method Comments: DOD site, Screen-caution

Page 456 of 469

08/31/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122455

Analyst: Marchenko, Veronika P

Batch Open: 8/16/2016 2:29:07PM

Method Code: 320-3535_IVWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-122455/1	LCMPFCSU_00043	25 uL	0.5 mL	VPM 8-16-16	HSA 8-16-16
LCS 320-122455/2	LCMPFCSU_00043	25 uL	0.5 mL	↓	↓
LCS 320-122455/2	LCPCSP_00053	20 uL	0.5 mL		
320-20867-A-1	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-2	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-3	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-3 MS	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-3 MS	LCPCSP_00053	20 uL	0.5 mL		
320-20867-A-3 MSD	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-3 MSD	LCPCSP_00053	20 uL	0.5 mL		
320-20867-A-4	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-5	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-6	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-7	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-8	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-9	LCMPFCSU_00043	25 uL	0.5 mL		
320-20867-A-10	LCMPFCSU_00043	25 uL	0.5 mL		

Page 457 of 469

08/31/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122455

Analyst: Marchenko, Veronika P

Batch Open: 8/16/2016 2:29:07PM

Method Code: 320-3535_IVWT-320

Batch End:

Other Reagents:

Reagent

Amount/Units

Lot#:

Page 458 of 469

08/31/2016

Printed : 8/16/2016

Page 7 of 7

TestAmerica Sacramento

Preparation Batch Number(s): 122455 Test: PFC-10A-0005
 Earliest Holding Time: 8/17/16

Sample List Tab		1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method		/	/
All necessary NCMs filed (including holding time)		NA	NA
Method/sample/login/QAS checked and correct		/	/
Worksheet Tab		1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved		/	/
Weights in anticipated range and not targeted		NA	NA
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

Date: 8/17/16

2nd Level Reviewer: HJA

Date: 8-17-16

Comments: _____

#38

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122544

Analyst: Norans, Rhianne M

Batch Open: 8/17/2016 7:07:12AM

Method Code: 320-3535_IVWT-320

Batch End: 8-18-16 12:36 PM

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-320-122544/1 N/A	N/A		500 mL				N/A	N/A	N/A		
			1.0 mL								
2 LCS-320-122544/2 N/A	N/A		500 mL				N/A	N/A	N/A		
			1.0 mL								
3 LCSD-320-122544/3 N/A	N/A		500 mL				N/A	N/A	N/A		
			1.0 mL								
4 320-20915-A-1 (PFC_IDA)	N/A (320-20915-1)	569.58 g	522.5 mL				8/19/16	15_Days	4	iOx	
		47.12 g	1.0 mL								
5 320-20915-A-2 (PFC_IDA)	N/A (320-20915-1)	560.65 g	514.3 mL				8/19/16	15_Days	4		
		46.36 g	1.0 mL								
6 320-20915-A-3 (PFC_IDA)	N/A (320-20915-1)	566.55 g	522.4 mL				8/19/16	15_Days	4		
		44.18 g	1.0 mL								
7 320-20915-A-4 (PFC_IDA)	N/A (320-20915-1)	559.64 g	515.7 mL				8/19/16	15_Days	4		
		43.95 g	1.0 mL								
8 320-20915-A-5 (PFC_IDA)	N/A (320-20915-1)	571.92 g	527.1 mL				8/19/16	15_Days	4		
		44.81 g	1.0 mL								
9 320-20915-A-6 (PFC_IDA)	N/A (320-20915-1)	541.53 g	496.4 mL				8/19/16	15_Days	4		
		45.09 g	1.0 mL								
10 320-20915-A-7 (PFC_IDA)	N/A (320-20915-1)	560.44 g	516.1 mL				8/19/16	15_Days	4		
		44.37 g	1.0 mL								

Page 460 of 469

08/31/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122544


Analyst: Norans, Rhianna M

Batch Open: 8/17/2016 7:07:12AM

Method Code: 320-3535_IVWT-320

Batch End:

11

320-20915-A-8 (PFC_IDA)	N/A (320-20915-1)	569.35 g	525.5 mL				8/19/16	15_Days	4	 320-20915-A-8-A
		43.87 g	1.0 mL							

Page 461 of 469

08/31/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122544

Analyst: Norans, Rhianna M

Batch Open: 8/17/2016 7:07:12AM

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

Manifold ID	1
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	HJA
Witness	
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

Page 462 of 469

08/17/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122544

Analyst: Norans, Rhianne M

Batch Open: 8/17/2016 7:07:12AM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1% NaOH/H2O: 645197

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122544

Analyst: Norans, Rhianne M

Batch Open: 8/17/2016 7:07:12AM

Method Code: 320-3535_IVWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-122544/1	LCMPFCSU_00043	50 uL	1.0 mL	JPM 8/17/16	HJA 8-17-16
LCS 320-122544/2	LCMPFCSU_00043	50 uL	1.0 mL	↓	↓
LCS 320-122544/2	LCPFCSP_00049	20 uL	1.0 mL		
LCSD 320-122544/3	LCMPFCSU_00043	50 uL	1.0 mL		
LCSD 320-122544/3	LCPFCSP_00049	20 uL	1.0 mL		
320-20915-A-1	LCMPFCSU_00043	50 uL	1.0 mL		
320-20915-A-2	LCMPFCSU_00043	50 uL	1.0 mL		
320-20915-A-3	LCMPFCSU_00043	50 uL	1.0 mL		
320-20915-A-4	LCMPFCSU_00043	50 uL	1.0 mL		
320-20915-A-5	LCMPFCSU_00043	50 uL	1.0 mL		
320-20915-A-6	LCMPFCSU_00043	50 uL	1.0 mL		
320-20915-A-7	LCMPFCSU_00043	50 uL	1.0 mL		
320-20915-A-8	LCMPFCSU_00043	50 uL	1.0 mL		

Page 464 of 469

08/31/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-122544

Analyst: Norans, Rhianne M

Batch Open: 8/17/2016 7:07:12AM

Method Code: 320-3535_IVWT-320

Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

Page 465 of 469

08/31/2016

Preparation Batch Number(s): 122544

Test: PFC-IDA

Earliest Holding Time: 8-15-16

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

Date: 8/18/16

2nd Level Reviewer: NSH

Date: 8-8-16

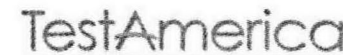
Comments: _____

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



THE LEADER IN ENVIRONMENTAL TESTING

Client Information		Sampler: <u>L. Rakerink</u>		Lab PM: Kellmann, Jill		Carrier Tracking No(s):		COC No: 320-12234-2765.6			
Client Contact: Mr. Michael Zamboni		Phone: <u>(666) 581-3828</u>		E-Mail: jill.kellmann@testamericainc.com				Page: <u>1</u> of <u>1</u>			
Company: CH2M Hill, Inc.				Analysis Requested				Job #:			
Address: 2411 Dulles Corner Park Suite 500		Due Date Requested:						 320-20867 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): <u>21 days</u>									
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#:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) PFC_IDA_DODS - PFOA/PFOS		Total Number of containers		Other:			
Site: <u>Dahlgren, VA</u>											
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/soil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA_DODS - PFOA/PFOS	Total Number of containers	Special Instructions/Note:	
				Preservation Code							
<u>GW14-01R-0816</u>		<u>8/10/16</u>	<u>1030</u>	<u>G</u>	<u>Water</u>		<u>X</u>		<u>2</u>		
<u>GW14-01RP-0816</u>		<u>8/10/16</u>	<u>1035</u>	<u>G</u>	<u>Water</u>		<u>X</u>		<u>2</u>		
<u>GW14-02R-0816</u>		<u>8/10/16</u>	<u>1035</u>	<u>G</u>	<u>W</u>	<u>X</u>	<u>X</u>		<u>6</u>		
<u>GW14-EB01-081016-GW</u>		<u>8/10/16</u>	<u>1140</u>	<u>G</u>	<u>W</u>		<u>X</u>		<u>2</u>		
<u>GW14-FB01-081016</u>		<u>8/10/16</u>	<u>1200</u>	<u>G</u>	<u>W</u>		<u>X</u>		<u>2</u>		
<u>GW14-06R-0816</u>		<u>8/10/16</u>	<u>1010</u>	<u>G</u>	<u>W</u>		<u>X</u>		<u>2</u>		
<u>GW14-03R-0816</u>		<u>8/10/16</u>	<u>1135</u>	<u>G</u>	<u>W</u>		<u>X</u>		<u>2</u>		
<u>GW14-05-0816</u>		<u>8/10/16</u>	<u>1510</u>	<u>G</u>	<u>W</u>		<u>X</u>		<u>2</u>		
<u>GW14-07</u>											
<u>GW14-07-0816</u>		<u>8/10/16</u>	<u>1455</u>	<u>G</u>	<u>W</u>		<u>X</u>		<u>2</u>		
<u>GW14-08-0816</u>		<u>8/10/16</u>	<u>1450</u>	<u>G</u>	<u>W</u>		<u>X</u>		<u>2</u>		
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: <u>[Signature]</u>			Date/Time: <u>8/10/16 1120</u>		Company: <u>CH2M</u>		Received by: <u>[Signature]</u>		Date/Time: <u>8/11/16 0930</u>		Company: <u>TAWS</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 type="checkbox"/> No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks: <u>2.2</u>					

Page 1 of 1
08312016

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-20867-1

Login Number: 20867
List Number: 1
Creator: Nelson, Kym D

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	
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	

Contst_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CHNM_Code	Analysis_Group	Analytical_Method	PFC_Code	Lab_Code	Lab_Name	Extraction_Method	Result_Type	Lab_Oper	Sample_Media	QC_Level	DateTime_Collected	Date_Recd	LabHead_Name	Teacher/Time	Extraction_Date	Extraction_Time	Analyte_Date	Analyte_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Loss	Chm_Name	Analysis_ID	Analyte_Value	Original_Analyte_Value	Result_Limit	Lab_Quaffier	Validator_Quaffier	QC_Column_Type	Analyte_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL_Detection_Limit	OCM_Version	DL	LOD	LOQ	SDS	Analysis_Batch	Validator_Name	Val_Date
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			COBALT	740144-4	99	99	PCT	*	*		FRG	TRG	MSA	115	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			COPPER	7440-50-9	99	99	PCT	*	*		FRG	TRG	MSA	118	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			IRON	7440-18-0	163	163	PCT	*	*		FRG	TRG	MSA	118	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			LEAD	7440-19-0	99	99	PCT	*	*		FRG	TRG	MSA	118	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			LI	7440-09-4	198	198	PCT	*	*		FRG	TRG	MSA	118	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			MANGANESE	7440-19-6	110	110	PCT	*	*		FRG	TRG	MSA	115	87													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			NICKEL	7440-02-0	110	110	PCT	*	*		FRG	TRG	MSA	117	85													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			POTASSIUM	7440-09-0	117	117	PCT	*	*		FRG	TRG	MSA	115	87													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			SELENIUM	7782-49-2	90	90	PCT	*	*		FRG	TRG	MSA	115	87													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			SILVER	7440-22-4	90	90	PCT	*	*		FRG	TRG	MSA	116	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			SODIUM	7440-23-0	90	90	PCT	*	*		FRG	TRG	MSA	116	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			THALLIUM	7440-23-1	1667	1667	PCT	*	*		FRG	TRG	MSA	117	85													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			TUNGSTEN	7440-26-1	81	81	PCT	*	*		FRG	TRG	MSA	117	85													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			VANADIUM	7440-62-2	104	104	PCT	*	*		FRG	TRG	MSA	115	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			ZINC	7440-66-4	100	100	PCT	*	*		FRG	TRG	MSA	119	83													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			ALUMINUM	7429-96-5	205	205	U/L	U	U		FRG	TRG	MSA	115	87													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			ANTIMONY	7440-36-0	5500	5500	U/L	U	U		FRG	TRG	MSA	120	80													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			ARSENIC	7440-18-2	3000	3000	U/L	U	U		FRG	TRG	MSA	116	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			BARBITURIC ACID	7440-38-6	2000	2000	U/L	U	U		FRG	TRG	MSA	115	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			BARIUM	7440-39-0	5500	5500	U/L	U	U		FRG	TRG	MSA	115	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			BERYLLIUM	7440-47-7	6500	6500	U/L	U	U		FRG	TRG	MSA	116	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			BI	7440-43-1	200	200	U/L	U	U		FRG	TRG	MSA	117	85													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			CADMIUM	7440-49-0	3000	3000	U/L	U	U		FRG	TRG	MSA	115	87													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			CA	7440-48-0	20	20	U/L	U	U		FRG	TRG	MSA	117	85													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			CHLORINE	7782-42-4	20	20	U/L	U	U		FRG	TRG	MSA	116	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			COPPER	7440-50-9	100	100	U/L	U	U		FRG	TRG	MSA	118	86													
N4041010801	JZ05		D4019N1513	NOV6	NETAL	6024A	MET	EMAK	EMAK LABORATORIES	NA	TOTAL	MSD	W	4	08/19/2016	08/19/2016		08/19/2016	19:32:00	08/19/2016	19:32:00	HClB-025	50.00	2			IRON	7440-18-0	100	100	U/L	U	U		FRG	TRG	MSA	118	86													

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
GW14-02R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903139.9	6811479.04	Perfluoroalkyl Compounds	GW14-02R-0816	WG	Ground water	10-Aug-16
GW14-01R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903046.8	6811479.69	Perfluoroalkyl Compounds	GW14-01R-0816	WG	Ground water	10-Aug-16
		DAHLGREN_NSWC			320-20867-1			Perfluoroalkyl Compounds	GW14-EB01-081016-GW	WQ	Water for QC samples	10-Aug-16
GW14-06R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903182.6	6811537.59	Perfluoroalkyl Compounds	GW14-06R-0816	WG	Ground water	10-Aug-16
GW14-01R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903046.8	6811479.69	Perfluoroalkyl Compounds	GW14-01RP-0816	WG	Ground water	10-Aug-16
GW14-07	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903237.1	6811558.96	Perfluoroalkyl Compounds	GW14-07-0816	WG	Ground water	10-Aug-16
GW14-08	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11902777.2	6811371.63	Perfluoroalkyl Compounds	GW14-08-0816	WG	Ground water	10-Aug-16
GW14-08	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11902777.2	6811371.63	Perfluoroalkyl Compounds	GW14-08-0816	WG	Ground water	10-Aug-16
GW14-03R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903146.6	6811519.17	Perfluoroalkyl Compounds	GW14-03R-0816	WG	Ground water	10-Aug-16
GW14-06R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903182.6	6811537.59	Perfluoroalkyl Compounds	GW14-06R-0816	WG	Ground water	10-Aug-16
GW14-05	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903190.7	6811493.17	Perfluoroalkyl Compounds	GW14-05-0816	WG	Ground water	10-Aug-16
		DAHLGREN_NSWC			320-20867-1			Perfluoroalkyl Compounds	GW14-FB01-081016	WQ	Water for QC samples	10-Aug-16
GW14-02R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903139.9	6811479.04	Perfluoroalkyl Compounds	GW14-02R-0816	WG	Ground water	10-Aug-16
GW14-05	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903190.7	6811493.17	Perfluoroalkyl Compounds	GW14-05-0816	WG	Ground water	10-Aug-16
GW14-03R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903146.6	6811519.17	Perfluoroalkyl Compounds	GW14-03R-0816	WG	Ground water	10-Aug-16
		DAHLGREN_NSWC			320-20867-1			Perfluoroalkyl Compounds	GW14-EB01-081016-GW	WQ	Water for QC samples	10-Aug-16
		DAHLGREN_NSWC			320-20867-1			Perfluoroalkyl Compounds	GW14-FB01-081016	WQ	Water for QC samples	10-Aug-16
GW14-01R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903046.8	6811479.69	Perfluoroalkyl Compounds	GW14-01RP-0816	WG	Ground water	10-Aug-16
GW14-01R	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903046.8	6811479.69	Perfluoroalkyl Compounds	GW14-01R-0816	WG	Ground water	10-Aug-16
GW14-07	SITE 00014	DAHLGREN_NSWC	WLM	Monitoring well	320-20867-1	11903237.1	6811558.96	Perfluoroalkyl Compounds	GW14-07-0816	WG	Ground water	10-Aug-16