



**Groundwater Sample Results,  
Level 2 Laboratory Report, Level 4 Laboratory Report,  
Electronic Data Deliverable, Data Validation Report,  
and the Sample Location Report, SDG J21000-1**

*Naval Surface Warfare Center Dahlgren  
Dahlgren, Virginia*

July 2019

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

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

TestAmerica Job ID: 320-21000-1  
Client Project/Site: Navy CLEAN 8012-CTO-JU25 Dahlgren

For:  
CH2M Hill, Inc.  
2411 Dulles Corner Park  
Suite 500  
Herndon, Virginia 20171

Attn: Mr. Michael Zamboni



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Authorized for release by:  
9/7/2016 2:30:24 PM

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### LINKS

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[www.testamericainc.com](http://www.testamericainc.com)

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

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 320-21000-1

## Qualifiers

### LCMS

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

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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: 320-21000-1

**Job ID: 320-21000-1**

**Laboratory: TestAmerica Sacramento**

**Narrative**

## CASE NARRATIVE

**Client: CH2M Hill, Inc.**

**Project: Navy CLEAN 8012-CTO-JU25 Dahlgren**

**Report Number: 320-21000-1**

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

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

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

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

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

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

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

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

### **RECEIPT**

The samples were received on 08/17/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.3 C.

### **PFAS**

The injection times in the LIM system do not match the injection times listed on the instrument printout. The instrument printout listing the injection times can be found at the end of the run log section. GW23-17SGW-0816 (320-21000-1), GW23-16GW-0816 (320-21000-2), GW23-17DGW-0816 (320-21000-3), GW23-17DGWP-0816 (320-21000-4), GW23-13GW-0816 (320-21000-5), GW23-07GW-0816 (320-21000-6), GW23-09GW-0816 (320-21000-7), GW23-11GW-0816 (320-21000-8), GW23-12GW-0816 (320-21000-9), GW23-15GW-0816 (320-21000-10), GW23-14GW-0816 (320-21000-11), (CCV 320-124380/16), (CCV 320-124380/17), (CCV 320-124380/2), (CCV 320-124380/24), (CCV 320-124380/25), (CCV 320-124380/3), (ICV 320-123741/10), (LCS 320-123056/2-A), (LCSD 320-123056/3-A) and (MB 320-123056/1-A)

The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/-

# Case Narrative

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

TestAmerica Job ID: 320-21000-1

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## Job ID: 320-21000-1 (Continued)

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### Laboratory: TestAmerica Sacramento (Continued)

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.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 320-123056.

Samples GW23-17SGW-0816 (320-21000-1), GW23-16GW-0816 (320-21000-2), GW23-17DGW-0816 (320-21000-3), GW23-17DGWP-0816 (320-21000-4), GW23-13GW-0816 (320-21000-5), GW23-07GW-0816 (320-21000-6) and GW23-14GW-0816 (320-21000-11) had a light orange color.

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

# Detection Summary

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

TestAmerica Job ID: 320-21000-1

## Client Sample ID: GW23-17SGW-0816

## Lab Sample ID: 320-21000-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	5.3	M	2.3	0.70	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-16GW-0816

## Lab Sample ID: 320-21000-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	5.0	M	2.3	0.69	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	11	M	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-17DGW-0816

## Lab Sample ID: 320-21000-3

No Detections.

## Client Sample ID: GW23-17DGWP-0816

## Lab Sample ID: 320-21000-4

No Detections.

## Client Sample ID: GW23-13GW-0816

## Lab Sample ID: 320-21000-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	7.7	M	2.3	0.69	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.3	M	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-07GW-0816

## Lab Sample ID: 320-21000-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	18	M	2.4	0.73	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-09GW-0816

## Lab Sample ID: 320-21000-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	6.9	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.2	J M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-11GW-0816

## Lab Sample ID: 320-21000-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	17	M	2.5	0.74	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.0	M	3.9	1.3	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-12GW-0816

## Lab Sample ID: 320-21000-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	9.3	M	2.2	0.67	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.3	M	3.6	1.1	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-15GW-0816

## Lab Sample ID: 320-21000-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	13	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.1	M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Detection Summary

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

TestAmerica Job ID: 320-21000-1

**Client Sample ID: GW23-14GW-0816**

**Lab Sample ID: 320-21000-11**

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.7	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.0	M	3.6	1.2	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento





# Client Sample Results

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

TestAmerica Job ID: 320-21000-1

## Client Sample ID: GW23-17SGW-0816

Date Collected: 08/15/16 14:10

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-1

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.3	M	2.3	0.70	ng/L	-	08/19/16 10:27	08/26/16 19:03	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	1.2	ng/L	-	08/19/16 10:27	08/26/16 19:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	73		25 - 150				08/19/16 10:27	08/26/16 19:03	1
<sup>13</sup> C4 PFOS	119		25 - 150				08/19/16 10:27	08/26/16 19:03	1

## Client Sample ID: GW23-16GW-0816

Date Collected: 08/15/16 14:15

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-2

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.0	M	2.3	0.69	ng/L	-	08/19/16 10:27	08/26/16 19:10	1
Perfluorooctanesulfonic acid (PFOS)	11	M	3.7	1.2	ng/L	-	08/19/16 10:27	08/26/16 19:10	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	111		25 - 150				08/19/16 10:27	08/26/16 19:10	1
<sup>13</sup> C4 PFOS	123		25 - 150				08/19/16 10:27	08/26/16 19:10	1

## Client Sample ID: GW23-17DGW-0816

Date Collected: 08/15/16 15:35

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-3

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U M	2.4	0.71	ng/L	-	08/19/16 10:27	08/26/16 19:18	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.8	1.2	ng/L	-	08/19/16 10:27	08/26/16 19:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	80		25 - 150				08/19/16 10:27	08/26/16 19:18	1
<sup>13</sup> C4 PFOS	123		25 - 150				08/19/16 10:27	08/26/16 19:18	1

## Client Sample ID: GW23-17DGWP-0816

Date Collected: 08/15/16 15:40

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-4

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U M	2.3	0.70	ng/L	-	08/19/16 10:27	08/26/16 19:25	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U M	3.8	1.2	ng/L	-	08/19/16 10:27	08/26/16 19:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	82		25 - 150				08/19/16 10:27	08/26/16 19:25	1
<sup>13</sup> C4 PFOS	120		25 - 150				08/19/16 10:27	08/26/16 19:25	1

TestAmerica Sacramento

# Client Sample Results

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

TestAmerica Job ID: 320-21000-1

## Client Sample ID: GW23-13GW-0816

Date Collected: 08/15/16 15:55

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-5

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.7	M	2.3	0.69	ng/L		08/19/16 10:27	08/26/16 19:33	1
Perfluorooctanesulfonic acid (PFOS)	5.3	M	3.7	1.2	ng/L		08/19/16 10:27	08/26/16 19:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	100		25 - 150				08/19/16 10:27	08/26/16 19:33	1
13C4 PFOS	124		25 - 150				08/19/16 10:27	08/26/16 19:33	1

## Client Sample ID: GW23-07GW-0816

Date Collected: 08/16/16 11:05

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-6

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	18	M	2.4	0.73	ng/L		08/19/16 10:27	08/26/16 19:40	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	1.2	ng/L		08/19/16 10:27	08/26/16 19:40	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	72		25 - 150				08/19/16 10:27	08/26/16 19:40	1
13C4 PFOS	111		25 - 150				08/19/16 10:27	08/26/16 19:40	1

## Client Sample ID: GW23-09GW-0816

Date Collected: 08/16/16 11:15

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-7

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	6.9	M	2.4	0.71	ng/L		08/19/16 10:27	08/26/16 19:48	1
Perfluorooctanesulfonic acid (PFOS)	3.2	J M	3.8	1.2	ng/L		08/19/16 10:27	08/26/16 19:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	97		25 - 150				08/19/16 10:27	08/26/16 19:48	1
13C4 PFOS	131		25 - 150				08/19/16 10:27	08/26/16 19:48	1

## Client Sample ID: GW23-11GW-0816

Date Collected: 08/16/16 14:05

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-8

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	17	M	2.5	0.74	ng/L		08/19/16 10:27	08/26/16 20:25	1
Perfluorooctanesulfonic acid (PFOS)	6.0	M	3.9	1.3	ng/L		08/19/16 10:27	08/26/16 20:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOA	81		25 - 150				08/19/16 10:27	08/26/16 20:25	1
13C4 PFOS	122		25 - 150				08/19/16 10:27	08/26/16 20:25	1

TestAmerica Sacramento

# Client Sample Results

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

TestAmerica Job ID: 320-21000-1

## Client Sample ID: GW23-12GW-0816

Date Collected: 08/16/16 14:20

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-9

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	9.3	M	2.2	0.67	ng/L		08/19/16 10:27	08/26/16 20:33	1
Perfluorooctanesulfonic acid (PFOS)	4.3	M	3.6	1.1	ng/L		08/19/16 10:27	08/26/16 20:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	96		25 - 150				08/19/16 10:27	08/26/16 20:33	1
<sup>13</sup> C4 PFOS	128		25 - 150				08/19/16 10:27	08/26/16 20:33	1

## Client Sample ID: GW23-15GW-0816

Date Collected: 08/16/16 16:20

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-10

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	13	M	2.4	0.71	ng/L		08/19/16 10:27	08/26/16 20:40	1
Perfluorooctanesulfonic acid (PFOS)	5.1	M	3.8	1.2	ng/L		08/19/16 10:27	08/26/16 20:40	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	101		25 - 150				08/19/16 10:27	08/26/16 20:40	1
<sup>13</sup> C4 PFOS	125		25 - 150				08/19/16 10:27	08/26/16 20:40	1

## Client Sample ID: GW23-14GW-0816

Date Collected: 08/16/16 16:00

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-11

Matrix: Water

### Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.7	M	2.3	0.68	ng/L		08/19/16 10:27	08/26/16 20:48	1
Perfluorooctanesulfonic acid (PFOS)	4.0	M	3.6	1.2	ng/L		08/19/16 10:27	08/26/16 20:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	98		25 - 150				08/19/16 10:27	08/26/16 20:48	1
<sup>13</sup> C4 PFOS	124		25 - 150				08/19/16 10:27	08/26/16 20:48	1

# Isotope Dilution Summary

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

TestAmerica Job ID: 320-21000-1

## 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 <sub>2</sub> (25-150)	3C4 PFO <sub>3</sub> (25-150)
320-21000-1	GW23-17SGW-0816	73	119
320-21000-2	GW23-16GW-0816	111	123
320-21000-3	GW23-17DGW-0816	80	123
320-21000-4	GW23-17DGWP-0816	82	120
320-21000-5	GW23-13GW-0816	100	124
320-21000-6	GW23-07GW-0816	72	111
320-21000-7	GW23-09GW-0816	97	131
320-21000-8	GW23-11GW-0816	81	122
320-21000-9	GW23-12GW-0816	96	128
320-21000-10	GW23-15GW-0816	101	125
320-21000-11	GW23-14GW-0816	98	124
LCS 320-123056/2-A	Lab Control Sample	122	119
LCSD 320-123056/3-A	Lab Control Sample Dup	122	121
MB 320-123056/1-A	Method Blank	125	121

#### 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: 320-21000-1

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

**Lab Sample ID: MB 320-123056/1-A**  
**Matrix: Water**  
**Analysis Batch: 124380**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 123056**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	0.75	ng/L		08/19/16 10:27	08/26/16 18:40	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.3	ng/L		08/19/16 10:27	08/26/16 18:40	1
Isotope Dilution		MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C4 PFOA		125		25 - 150			08/19/16 10:27	08/26/16 18:40	1
13C4 PFOS		121		25 - 150			08/19/16 10:27	08/26/16 18:40	1

**Lab Sample ID: LCS 320-123056/2-A**  
**Matrix: Water**  
**Analysis Batch: 124380**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 123056**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanoic acid (PFOA)	40.0	38.2		ng/L		96	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	32.7		ng/L		88	60 - 140
Isotope Dilution		LCS %Recovery	LCS Qualifier	Limits			
13C4 PFOA		122		25 - 150			
13C4 PFOS		119		25 - 150			

**Lab Sample ID: LCSD 320-123056/3-A**  
**Matrix: Water**  
**Analysis Batch: 124380**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 123056**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Perfluorooctanoic acid (PFOA)	40.0	43.8		ng/L		110	60 - 140	14	30
Perfluorooctanesulfonic acid (PFOS)	37.1	33.7		ng/L		91	60 - 140	3	30
Isotope Dilution		LCSD %Recovery	LCSD Qualifier	Limits					
13C4 PFOA		122		25 - 150					
13C4 PFOS		121		25 - 150					

# QC Association Summary

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

TestAmerica Job ID: 320-21000-1

## LCMS

### Prep Batch: 123056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-21000-1	GW23-17SGW-0816	Total/NA	Water	3535	
320-21000-2	GW23-16GW-0816	Total/NA	Water	3535	
320-21000-3	GW23-17DGW-0816	Total/NA	Water	3535	
320-21000-4	GW23-17DGWP-0816	Total/NA	Water	3535	
320-21000-5	GW23-13GW-0816	Total/NA	Water	3535	
320-21000-6	GW23-07GW-0816	Total/NA	Water	3535	
320-21000-7	GW23-09GW-0816	Total/NA	Water	3535	
320-21000-8	GW23-11GW-0816	Total/NA	Water	3535	
320-21000-9	GW23-12GW-0816	Total/NA	Water	3535	
320-21000-10	GW23-15GW-0816	Total/NA	Water	3535	
320-21000-11	GW23-14GW-0816	Total/NA	Water	3535	
MB 320-123056/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-123056/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-123056/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 124380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-21000-1	GW23-17SGW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-2	GW23-16GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-3	GW23-17DGW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-4	GW23-17DGWP-0816	Total/NA	Water	537 (Modified)	123056
320-21000-5	GW23-13GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-6	GW23-07GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-7	GW23-09GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-8	GW23-11GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-9	GW23-12GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-10	GW23-15GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-11	GW23-14GW-0816	Total/NA	Water	537 (Modified)	123056
MB 320-123056/1-A	Method Blank	Total/NA	Water	537 (Modified)	123056
LCS 320-123056/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	123056
LCSD 320-123056/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	123056

# Lab Chronicle

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

TestAmerica Job ID: 320-21000-1

## Client Sample ID: GW23-17SGW-0816

Date Collected: 08/15/16 14:10

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-1

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			268 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 19:03	SBC	TAL SAC

## Client Sample ID: GW23-16GW-0816

Date Collected: 08/15/16 14:15

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-2

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			270.3 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 19:10	SBC	TAL SAC

## Client Sample ID: GW23-17DGW-0816

Date Collected: 08/15/16 15:35

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-3

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			262.7 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 19:18	SBC	TAL SAC

## Client Sample ID: GW23-17DGWP-0816

Date Collected: 08/15/16 15:40

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-4

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			266.1 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 19:25	SBC	TAL SAC

## Client Sample ID: GW23-13GW-0816

Date Collected: 08/15/16 15:55

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-5

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			270.1 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 19:33	SBC	TAL SAC

## Client Sample ID: GW23-07GW-0816

Date Collected: 08/16/16 11:05

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-6

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			255.6 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 19:40	SBC	TAL SAC

TestAmerica Sacramento

# Lab Chronicle

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

TestAmerica Job ID: 320-21000-1

**Client Sample ID: GW23-09GW-0816**

**Lab Sample ID: 320-21000-7**

**Date Collected: 08/16/16 11:15**

**Matrix: Water**

**Date Received: 08/17/16 09:25**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.4 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 19:48	SBC	TAL SAC

**Client Sample ID: GW23-11GW-0816**

**Lab Sample ID: 320-21000-8**

**Date Collected: 08/16/16 14:05**

**Matrix: Water**

**Date Received: 08/17/16 09:25**

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 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 20:25	SBC	TAL SAC

**Client Sample ID: GW23-12GW-0816**

**Lab Sample ID: 320-21000-9**

**Date Collected: 08/16/16 14:20**

**Matrix: Water**

**Date Received: 08/17/16 09:25**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.8 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 20:33	SBC	TAL SAC

**Client Sample ID: GW23-15GW-0816**

**Lab Sample ID: 320-21000-10**

**Date Collected: 08/16/16 16:20**

**Matrix: Water**

**Date Received: 08/17/16 09:25**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.8 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 20:40	SBC	TAL SAC

**Client Sample ID: GW23-14GW-0816**

**Lab Sample ID: 320-21000-11**

**Date Collected: 08/16/16 16:00**

**Matrix: Water**

**Date Received: 08/17/16 09:25**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274 mL	0.5 mL	123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1			124380	08/26/16 20:48	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: 320-21000-1

## 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: 320-21000-1

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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: 320-21000-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-21000-1	GW23-17SGW-0816	Water	08/15/16 14:10	08/17/16 09:25
320-21000-2	GW23-16GW-0816	Water	08/15/16 14:15	08/17/16 09:25
320-21000-3	GW23-17DGW-0816	Water	08/15/16 15:35	08/17/16 09:25
320-21000-4	GW23-17DGWP-0816	Water	08/15/16 15:40	08/17/16 09:25
320-21000-5	GW23-13GW-0816	Water	08/15/16 15:55	08/17/16 09:25
320-21000-6	GW23-07GW-0816	Water	08/16/16 11:05	08/17/16 09:25
320-21000-7	GW23-09GW-0816	Water	08/16/16 11:15	08/17/16 09:25
320-21000-8	GW23-11GW-0816	Water	08/16/16 14:05	08/17/16 09:25
320-21000-9	GW23-12GW-0816	Water	08/16/16 14:20	08/17/16 09:25
320-21000-10	GW23-15GW-0816	Water	08/16/16 16:20	08/17/16 09:25
320-21000-11	GW23-14GW-0816	Water	08/16/16 16:00	08/17/16 09:25



**TestAmerica Sacramento**

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

**Chain of Custody Record**



<b>Client Information</b>		Sampler: <u>Lisa Raterink</u>		Lab PM: <u>Kellmann, Jill</u>		Carrier Tracking No(s):		COC No: <u>320-12234-2765.1</u>	
Client Contact: <u>Mr. Michael Zamboni</u>		Phone: <u>666 581 3828</u>		E-Mail: <u>jill.kellmann@testamericainc.com</u>				Page: <u>Page 1 of 1</u>	
Company: <u>CH2M Hill, Inc.</u>								Job #:	
Address: <u>2411 Dulles Corner Park Suite 500</u>		Due Date Requested:						<b>Analysis Requested</b>  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: <u>Herndon</u>		TAT Requested (days):							
State, Zip: <u>VA, 20171</u>									
Phone: <u>703-376-5301(Tel)</u>		PO #:		32008-7-105420 CLEAN 8012 JM05					
Email: <u>mzamboni@ch2m.com</u>		WO #:							
Project Name: <u>Navy CLEAN 8012-CTO-JU25 Dahlgren</u>		Project #:		32008186					
Site: <u>NSF Dahlgren, VA</u>		SSOW#:							
<b>Sample Identification</b>		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	
								Field Filtered Sample (Yes or No)	
								Perform MS/MSD (Yes or No)	
								PFC_IDA_D005 - PFOA/PFOS	
								Total Number of containers	
								Special Instructions/Note:	
<u>GW23-17SGW-0816</u>		<u>8/15/16</u>		<u>1410</u>		<u>G</u>		<u>Water</u>	
<u>GW23-16GW-0816</u>		<u>8/15/16</u>		<u>1415</u>		<u>G</u>		<u>Water</u>	
<u>GW23-17DGW-0816</u>		<u>8/15/16</u>		<u>1535</u>		<u>G</u>		<u>Water</u>	
<u>GW23-17D4WP-0816</u>		<u>8/15/16</u>		<u>1540</u>		<u>G</u>		<u>Water</u>	
<u>GW23-13GW-0816</u>		<u>8/15/16</u>		<u>1555</u>		<u>G</u>		<u>Water</u>	
<u>GW23-07GW-0816</u>		<u>8/16/16</u>		<u>1105</u>		<u>G</u>		<u>Water</u>	
<u>GW23-09GW-0816</u>		<u>8/16/16</u>		<u>1115</u>		<u>G</u>		<u>Water</u>	
<u>GW23-11GW-0816</u>		<u>8/16/16</u>		<u>1405</u>		<u>G</u>		<u>Water</u>	
<u>GW23-12GW-0816</u>		<u>8/16/16</u>		<u>1420</u>		<u>G</u>		<u>Water</u>	
<u>GW23-15GW-0816</u>		<u>8/16/16</u>		<u>1430</u>		<u>G</u>		<u>Water</u>	
<u>GW23-14GW-0816</u>		<u>8/16/16</u>		<u>1600</u>		<u>G</u>		<u>Water</u>	
<b>Possible Hazard Identification</b>					<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>				
<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 checked="" 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>8/16/16 1730</u>		Company:		Received by: <u>[Signature]</u>		Date/Time: <u>8/17/16 09:35</u>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <u>2.3°C re</u>					

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9/7/2016



# Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-21000-1

**Login Number: 21000**  
**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: 320-21000-1

Job Description: Navy CLEAN 8012-CTO-JU25 Dahlgren

For:

CH2M Hill, Inc.

2411 Dulles Corner Park

Suite 500

Herndon, VA 20171

Attention: Mr. Michael Zamboni



Approved for release.  
Jill Kellmann  
Manager of Project Management  
9/7/2016 2:32 PM

---

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

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# Definitions/Glossary

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

TestAmerica Job ID: 320-21000-1

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## Qualifiers

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### LCMS

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

---

## Glossary

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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: 320-21000-1

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

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

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

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

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

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

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

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

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

### **RECEIPT**

The samples were received on 08/17/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.3 C.

### **PFAS**

The injection times in the LIM system do not match the injection times listed on the instrument printout. The instrument printout listing the injection times can be found at the end of the run log section. GW23-17SGW-0816 (320-21000-1), GW23-16GW-0816 (320-21000-2), GW23-17DGW-0816 (320-21000-3), GW23-17DGWP-0816 (320-21000-4), GW23-13GW-0816 (320-21000-5), GW23-07GW-0816 (320-21000-6), GW23-09GW-0816 (320-21000-7), GW23-11GW-0816 (320-21000-8), GW23-12GW-0816 (320-21000-9), GW23-15GW-0816 (320-21000-10), GW23-14GW-0816 (320-21000-11), (CCV 320-124380/16), (CCV 320-124380/17), (CCV 320-124380/2), (CCV 320-124380/24), (CCV 320-124380/25), (CCV 320-124380/3), (ICV 320-123741/10), (LCS 320-123056/2-A), (LCSD 320-123056/3-A) and (MB 320-123056/1-A)

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.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 320-123056.

Samples GW23-17SGW-0816 (320-21000-1), GW23-16GW-0816 (320-21000-2), GW23-17DGW-0816 (320-21000-3), GW23-17DGWP-0816 (320-21000-4), GW23-13GW-0816 (320-21000-5), GW23-07GW-0816 (320-21000-6) and GW23-14GW-0816 (320-21000-11) had a light orange color.

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

# Detection Summary

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

TestAmerica Job ID: 320-21000-1

## Client Sample ID: GW23-17SGW-0816

## Lab Sample ID: 320-21000-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	5.3	M	2.3	0.70	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-16GW-0816

## Lab Sample ID: 320-21000-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	5.0	M	2.3	0.69	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	11	M	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-17DGW-0816

## Lab Sample ID: 320-21000-3

No Detections.

## Client Sample ID: GW23-17DGWP-0816

## Lab Sample ID: 320-21000-4

No Detections.

## Client Sample ID: GW23-13GW-0816

## Lab Sample ID: 320-21000-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	7.7	M	2.3	0.69	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.3	M	3.7	1.2	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-07GW-0816

## Lab Sample ID: 320-21000-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	18	M	2.4	0.73	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-09GW-0816

## Lab Sample ID: 320-21000-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	6.9	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.2	J M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-11GW-0816

## Lab Sample ID: 320-21000-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	17	M	2.5	0.74	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.0	M	3.9	1.3	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-12GW-0816

## Lab Sample ID: 320-21000-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	9.3	M	2.2	0.67	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.3	M	3.6	1.1	ng/L	1		537 (Modified)	Total/NA

## Client Sample ID: GW23-15GW-0816

## Lab Sample ID: 320-21000-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	13	M	2.4	0.71	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.1	M	3.8	1.2	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Detection Summary

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

TestAmerica Job ID: 320-21000-1

**Client Sample ID: GW23-14GW-0816**

**Lab Sample ID: 320-21000-11**

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.7	M	2.3	0.68	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.0	M	3.6	1.2	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

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

TestAmerica Job ID: 320-21000-1

**Client Sample ID: GW23-17SGW-0816**

**Lab Sample ID: 320-21000-1**

Date Collected: 08/15/16 14:10

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.3	M	2.3	0.70	ng/L		08/19/16 10:27	08/26/16 19:03	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	1.2	ng/L		08/19/16 10:27	08/26/16 19:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	73		25 - 150				08/19/16 10:27	08/26/16 19:03	1
<sup>13</sup> C4 PFOS	119		25 - 150				08/19/16 10:27	08/26/16 19:03	1

**Client Sample ID: GW23-16GW-0816**

**Lab Sample ID: 320-21000-2**

Date Collected: 08/15/16 14:15

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	5.0	M	2.3	0.69	ng/L		08/19/16 10:27	08/26/16 19:10	1
Perfluorooctanesulfonic acid (PFOS)	11	M	3.7	1.2	ng/L		08/19/16 10:27	08/26/16 19:10	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	111		25 - 150				08/19/16 10:27	08/26/16 19:10	1
<sup>13</sup> C4 PFOS	123		25 - 150				08/19/16 10:27	08/26/16 19:10	1

**Client Sample ID: GW23-17DGW-0816**

**Lab Sample ID: 320-21000-3**

Date Collected: 08/15/16 15:35

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U M	2.4	0.71	ng/L		08/19/16 10:27	08/26/16 19:18	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.8	1.2	ng/L		08/19/16 10:27	08/26/16 19:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	80		25 - 150				08/19/16 10:27	08/26/16 19:18	1
<sup>13</sup> C4 PFOS	123		25 - 150				08/19/16 10:27	08/26/16 19:18	1

**Client Sample ID: GW23-17DGWP-0816**

**Lab Sample ID: 320-21000-4**

Date Collected: 08/15/16 15:40

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.9	U M	2.3	0.70	ng/L		08/19/16 10:27	08/26/16 19:25	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U M	3.8	1.2	ng/L		08/19/16 10:27	08/26/16 19:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	82		25 - 150				08/19/16 10:27	08/26/16 19:25	1
<sup>13</sup> C4 PFOS	120		25 - 150				08/19/16 10:27	08/26/16 19:25	1

# Client Sample Results

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

TestAmerica Job ID: 320-21000-1

**Client Sample ID: GW23-13GW-0816**

**Lab Sample ID: 320-21000-5**

Date Collected: 08/15/16 15:55

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	7.7	M	2.3	0.69	ng/L		08/19/16 10:27	08/26/16 19:33	1
Perfluorooctanesulfonic acid (PFOS)	5.3	M	3.7	1.2	ng/L		08/19/16 10:27	08/26/16 19:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	100		25 - 150				08/19/16 10:27	08/26/16 19:33	1
<sup>13</sup> C4 PFOS	124		25 - 150				08/19/16 10:27	08/26/16 19:33	1

**Client Sample ID: GW23-07GW-0816**

**Lab Sample ID: 320-21000-6**

Date Collected: 08/16/16 11:05

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	18	M	2.4	0.73	ng/L		08/19/16 10:27	08/26/16 19:40	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	1.2	ng/L		08/19/16 10:27	08/26/16 19:40	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	72		25 - 150				08/19/16 10:27	08/26/16 19:40	1
<sup>13</sup> C4 PFOS	111		25 - 150				08/19/16 10:27	08/26/16 19:40	1

**Client Sample ID: GW23-09GW-0816**

**Lab Sample ID: 320-21000-7**

Date Collected: 08/16/16 11:15

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	6.9	M	2.4	0.71	ng/L		08/19/16 10:27	08/26/16 19:48	1
Perfluorooctanesulfonic acid (PFOS)	3.2	J M	3.8	1.2	ng/L		08/19/16 10:27	08/26/16 19:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	97		25 - 150				08/19/16 10:27	08/26/16 19:48	1
<sup>13</sup> C4 PFOS	131		25 - 150				08/19/16 10:27	08/26/16 19:48	1

**Client Sample ID: GW23-11GW-0816**

**Lab Sample ID: 320-21000-8**

Date Collected: 08/16/16 14:05

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	17	M	2.5	0.74	ng/L		08/19/16 10:27	08/26/16 20:25	1
Perfluorooctanesulfonic acid (PFOS)	6.0	M	3.9	1.3	ng/L		08/19/16 10:27	08/26/16 20:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	81		25 - 150				08/19/16 10:27	08/26/16 20:25	1
<sup>13</sup> C4 PFOS	122		25 - 150				08/19/16 10:27	08/26/16 20:25	1

# Client Sample Results

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

TestAmerica Job ID: 320-21000-1

**Client Sample ID: GW23-12GW-0816**

**Lab Sample ID: 320-21000-9**

Date Collected: 08/16/16 14:20

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	9.3	M	2.2	0.67	ng/L		08/19/16 10:27	08/26/16 20:33	1
Perfluorooctanesulfonic acid (PFOS)	4.3	M	3.6	1.1	ng/L		08/19/16 10:27	08/26/16 20:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	96		25 - 150				08/19/16 10:27	08/26/16 20:33	1
<sup>13</sup> C4 PFOS	128		25 - 150				08/19/16 10:27	08/26/16 20:33	1

**Client Sample ID: GW23-15GW-0816**

**Lab Sample ID: 320-21000-10**

Date Collected: 08/16/16 16:20

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	13	M	2.4	0.71	ng/L		08/19/16 10:27	08/26/16 20:40	1
Perfluorooctanesulfonic acid (PFOS)	5.1	M	3.8	1.2	ng/L		08/19/16 10:27	08/26/16 20:40	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	101		25 - 150				08/19/16 10:27	08/26/16 20:40	1
<sup>13</sup> C4 PFOS	125		25 - 150				08/19/16 10:27	08/26/16 20:40	1

**Client Sample ID: GW23-14GW-0816**

**Lab Sample ID: 320-21000-11**

Date Collected: 08/16/16 16:00

Matrix: Water

Date Received: 08/17/16 09:25

**Method: 537 (Modified) - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2.7	M	2.3	0.68	ng/L		08/19/16 10:27	08/26/16 20:48	1
Perfluorooctanesulfonic acid (PFOS)	4.0	M	3.6	1.2	ng/L		08/19/16 10:27	08/26/16 20:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<sup>13</sup> C4 PFOA	98		25 - 150				08/19/16 10:27	08/26/16 20:48	1
<sup>13</sup> C4 PFOS	124		25 - 150				08/19/16 10:27	08/26/16 20:48	1

# Default Detection Limits

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

TestAmerica Job ID: 320-21000-1

## 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: 320-21000-1

## 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)
320-21000-1	GW23-17SGW-0816	73	119
320-21000-2	GW23-16GW-0816	111	123
320-21000-3	GW23-17DGW-0816	80	123
320-21000-4	GW23-17DGWP-0816	82	120
320-21000-5	GW23-13GW-0816	100	124
320-21000-6	GW23-07GW-0816	72	111
320-21000-7	GW23-09GW-0816	97	131
320-21000-8	GW23-11GW-0816	81	122
320-21000-9	GW23-12GW-0816	96	128
320-21000-10	GW23-15GW-0816	101	125
320-21000-11	GW23-14GW-0816	98	124
LCS 320-123056/2-A	Lab Control Sample	122	119
LCSD 320-123056/3-A	Lab Control Sample Dup	122	121
MB 320-123056/1-A	Method Blank	125	121

### 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: 320-21000-1

## Method: 537 (Modified) - Perfluorinated Hydrocarbons

**Lab Sample ID: MB 320-123056/1-A**  
**Matrix: Water**  
**Analysis Batch: 124380**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 123056**

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		08/19/16 10:27	08/26/16 18:40	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.3	ng/L		08/19/16 10:27	08/26/16 18:40	1
Isotope Dilution	MB	MB	Limits				Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
<sup>13</sup> C4 PFOA	125		25 - 150				08/19/16 10:27	08/26/16 18:40	1
<sup>13</sup> C4 PFOS	121		25 - 150				08/19/16 10:27	08/26/16 18:40	1

**Lab Sample ID: LCS 320-123056/2-A**  
**Matrix: Water**  
**Analysis Batch: 124380**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 123056**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	
Perfluorooctanoic acid (PFOA)	40.0	38.2		ng/L		96	60 - 140	
Perfluorooctanesulfonic acid (PFOS)	37.1	32.7		ng/L		88	60 - 140	
Isotope Dilution	LCS	LCS	Limits				Limits	
	%Recovery	Qualifier						
<sup>13</sup> C4 PFOA	122		25 - 150					
<sup>13</sup> C4 PFOS	119		25 - 150					

**Lab Sample ID: LCSD 320-123056/3-A**  
**Matrix: Water**  
**Analysis Batch: 124380**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 123056**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	40.0	43.8		ng/L		110	60 - 140	14	30
Perfluorooctanesulfonic acid (PFOS)	37.1	33.7		ng/L		91	60 - 140	3	30
Isotope Dilution	LCSD	LCSD	Limits				Limits		
	%Recovery	Qualifier							
<sup>13</sup> C4 PFOA	122		25 - 150						
<sup>13</sup> C4 PFOS	121		25 - 150						

# QC Association Summary

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

TestAmerica Job ID: 320-21000-1

## LCMS

### Prep Batch: 123056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-21000-1	GW23-17SGW-0816	Total/NA	Water	3535	
320-21000-2	GW23-16GW-0816	Total/NA	Water	3535	
320-21000-3	GW23-17DGW-0816	Total/NA	Water	3535	
320-21000-4	GW23-17DGWP-0816	Total/NA	Water	3535	
320-21000-5	GW23-13GW-0816	Total/NA	Water	3535	
320-21000-6	GW23-07GW-0816	Total/NA	Water	3535	
320-21000-7	GW23-09GW-0816	Total/NA	Water	3535	
320-21000-8	GW23-11GW-0816	Total/NA	Water	3535	
320-21000-9	GW23-12GW-0816	Total/NA	Water	3535	
320-21000-10	GW23-15GW-0816	Total/NA	Water	3535	
320-21000-11	GW23-14GW-0816	Total/NA	Water	3535	
MB 320-123056/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-123056/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-123056/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 124380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-21000-1	GW23-17SGW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-2	GW23-16GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-3	GW23-17DGW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-4	GW23-17DGWP-0816	Total/NA	Water	537 (Modified)	123056
320-21000-5	GW23-13GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-6	GW23-07GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-7	GW23-09GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-8	GW23-11GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-9	GW23-12GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-10	GW23-15GW-0816	Total/NA	Water	537 (Modified)	123056
320-21000-11	GW23-14GW-0816	Total/NA	Water	537 (Modified)	123056
MB 320-123056/1-A	Method Blank	Total/NA	Water	537 (Modified)	123056
LCS 320-123056/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	123056
LCSD 320-123056/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	123056

# Lab Chronicle

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

TestAmerica Job ID: 320-21000-1

## Client Sample ID: GW23-17SGW-0816

Date Collected: 08/15/16 14:10

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 19:03	SBC	TAL SAC

## Client Sample ID: GW23-16GW-0816

Date Collected: 08/15/16 14:15

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 19:10	SBC	TAL SAC

## Client Sample ID: GW23-17DGW-0816

Date Collected: 08/15/16 15:35

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 19:18	SBC	TAL SAC

## Client Sample ID: GW23-17DGWP-0816

Date Collected: 08/15/16 15:40

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 19:25	SBC	TAL SAC

## Client Sample ID: GW23-13GW-0816

Date Collected: 08/15/16 15:55

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 19:33	SBC	TAL SAC

## Client Sample ID: GW23-07GW-0816

Date Collected: 08/16/16 11:05

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 19:40	SBC	TAL SAC

TestAmerica Sacramento

# Lab Chronicle

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

TestAmerica Job ID: 320-21000-1

## Client Sample ID: GW23-09GW-0816

Date Collected: 08/16/16 11:15

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 19:48	SBC	TAL SAC

## Client Sample ID: GW23-11GW-0816

Date Collected: 08/16/16 14:05

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 20:25	SBC	TAL SAC

## Client Sample ID: GW23-12GW-0816

Date Collected: 08/16/16 14:20

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 20:33	SBC	TAL SAC

## Client Sample ID: GW23-15GW-0816

Date Collected: 08/16/16 16:20

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 20:40	SBC	TAL SAC

## Client Sample ID: GW23-14GW-0816

Date Collected: 08/16/16 16:00

Date Received: 08/17/16 09:25

## Lab Sample ID: 320-21000-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			123056	08/19/16 10:27	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	124380	08/26/16 20:48	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: 320-21000-1

## 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: 320-21000-1

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<b>Method</b>	<b>Method Description</b>	<b>Protocol</b>	<b>Laboratory</b>
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: 320-21000-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-21000-1	GW23-17SGW-0816	Water	08/15/16 14:10	08/17/16 09:25
320-21000-2	GW23-16GW-0816	Water	08/15/16 14:15	08/17/16 09:25
320-21000-3	GW23-17DGW-0816	Water	08/15/16 15:35	08/17/16 09:25
320-21000-4	GW23-17DGWP-0816	Water	08/15/16 15:40	08/17/16 09:25
320-21000-5	GW23-13GW-0816	Water	08/15/16 15:55	08/17/16 09:25
320-21000-6	GW23-07GW-0816	Water	08/16/16 11:05	08/17/16 09:25
320-21000-7	GW23-09GW-0816	Water	08/16/16 11:15	08/17/16 09:25
320-21000-8	GW23-11GW-0816	Water	08/16/16 14:05	08/17/16 09:25
320-21000-9	GW23-12GW-0816	Water	08/16/16 14:20	08/17/16 09:25
320-21000-10	GW23-15GW-0816	Water	08/16/16 16:20	08/17/16 09:25
320-21000-11	GW23-14GW-0816	Water	08/16/16 16:00	08/17/16 09:25



LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1

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.: 320-21000-1

SDG No.: \_\_\_\_\_

Instrument ID: A8 Analysis Batch Number: 124380

Lab Sample ID: 320-21000-1 Client Sample ID: GW23-17SGW-0816

Date Analyzed: 08/26/16 19:03 Lab File ID: 26AUG2016G\_034\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.77	Isomers	chandrase nas	09/06/16 10:31

Lab Sample ID: 320-21000-2 Client Sample ID: GW23-16GW-0816

Date Analyzed: 08/26/16 19:10 Lab File ID: 26AUG2016G\_035\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Isomers	chandrase nas	09/06/16 10:33
Perfluorooctanesulfonic acid (PFOS)	3.14	Isomers	chandrase nas	09/06/16 10:33

Lab Sample ID: 320-21000-3 Client Sample ID: GW23-17DGW-0816

Date Analyzed: 08/26/16 19:18 Lab File ID: 26AUG2016G\_036\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Baseline	chandrase nas	09/06/16 10:37

Lab Sample ID: 320-21000-4 Client Sample ID: GW23-17DGWP-0816

Date Analyzed: 08/26/16 19:25 Lab File ID: 26AUG2016G\_037\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Incomplete Integration	chandrase nas	09/06/16 10:47
Perfluorooctanesulfonic acid (PFOS)	3.14	Assign Peak	chandrase nas	09/06/16 10:47

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Instrument ID: A8 Analysis Batch Number: 124380

Lab Sample ID: 320-21000-5 Client Sample ID: GW23-13GW-0816

Date Analyzed: 08/26/16 19:33 Lab File ID: 26AUG2016G\_038\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.77	Isomers	chandrase nas	09/06/16 10:51
Perfluorooctanesulfonic acid (PFOS)	3.02	Baseline	chandrase nas	09/06/16 10:51

Lab Sample ID: 320-21000-6 Client Sample ID: GW23-07GW-0816

Date Analyzed: 08/26/16 19:40 Lab File ID: 26AUG2016G\_039\_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	09/06/16 10:52

Lab Sample ID: 320-21000-7 Client Sample ID: GW23-09GW-0816

Date Analyzed: 08/26/16 19:48 Lab File ID: 26AUG2016G\_040\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Isomers	chandrase nas	09/06/16 10:57
Perfluorooctanesulfonic acid (PFOS)	3.02	Baseline	chandrase nas	09/06/16 10:57

Lab Sample ID: 320-21000-8 Client Sample ID: GW23-11GW-0816

Date Analyzed: 08/26/16 20:25 Lab File ID: 26AUG2016G\_045\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Isomers	chandrase nas	09/06/16 11:00
Perfluorooctanesulfonic acid (PFOS)	3.01	Baseline	chandrase nas	09/06/16 11:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Instrument ID: A8 Analysis Batch Number: 124380

Lab Sample ID: 320-21000-9 Client Sample ID: GW23-12GW-0816

Date Analyzed: 08/26/16 20:33 Lab File ID: 26AUG2016G\_046\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Isomers	chandrase nas	09/06/16 11:02
Perfluorooctanesulfonic acid (PFOS)	3.13	Baseline	chandrase nas	09/06/16 11:02

Lab Sample ID: 320-21000-10 Client Sample ID: GW23-15GW-0816

Date Analyzed: 08/26/16 20:40 Lab File ID: 26AUG2016G\_047\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.77	Isomers	chandrase nas	09/06/16 11:05
Perfluorooctanesulfonic acid (PFOS)	3.01	Baseline	chandrase nas	09/06/16 11:05

Lab Sample ID: 320-21000-11 Client Sample ID: GW23-14GW-0816

Date Analyzed: 08/26/16 20:48 Lab File ID: 26AUG2016G\_048\_p1\_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.75	Isomers	chandrase nas	09/06/16 11:07
Perfluorooctanesulfonic acid (PFOS)	3.01	Assign Peak	chandrase nas	09/06/16 11:09

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
<b>LCMPFCSU_00043</b>	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	
<b>LCPFCL-L1_00021</b>	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.: 320-21000-1

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	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTEDA_00006	12/07/20		Wellington Laboratories, Lot M2PFTEDA1115		(Purchased Reagent)		13C2-PFTEDA	50 ug/mL
..LCM4PFHFA_00006	05/22/20		Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00007	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_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.: 320-21000-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA 00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS 00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA 00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS 00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA 00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHpS 00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA 00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA 00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br 00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA 00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA 00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA 00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br 00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA 00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA 00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA 00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA 00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS 00004	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
...LCPFDA 00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA 00005	01/30/20		Wellington Laboratories, Lot 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.: 320-21000-1

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
<b>LCPFC-L2_00022</b>	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.: 320-21000-1

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.: 320-21000-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHps_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00004	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
...LCPFDA_00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00005	01/30/20		Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHps_00008	11/06/20		Wellington Laboratories, Lot LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
...LCPFNA_00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFOA_00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00004	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00004	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
<b>LCPFC-L3_00019</b>	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.: 320-21000-1

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.: 320-21000-1

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.: 320-21000-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFHpA 00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
...LCPFHpS 00008	11/06/20		Wellington Laboratories, Lot LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA 00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA 00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br 00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
...LCPFNA 00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
...LCPFOA 00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA 00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA 00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane 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
...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
<b>LCPFC-L4_00022</b>	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 Sulfonamide	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.: 320-21000-1

SDG No.: \_\_\_\_\_

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-21000-1

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
<b>LCPFC-L5_00020</b>	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_00056	250 uL
					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.: 320-21000-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctadecanoic acid	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	46.4 ng/mL
							Perfluorooctane Sulfonamide	50 ng/mL
							Perfluoropentanoic acid	50 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
							Perfluoroundecanoic acid	50 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTEDA_00006	1000 uL	13C2-PFTEDA	1 ug/mL
					LCM4PFHFA_00006	1000 uL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTEDA_00006	12/07/20		Wellington Laboratories, Lot M2PFTEDA1115		(Purchased Reagent)		13C2-PFTEDA	50 ug/mL
..LCM4PFHFA_00006	05/22/20		Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00007	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHFA_00005	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHFS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-dr_00001	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	1 ug/mL



REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00004	01/30/20		Wellington Laboratories, Lot PFBA0115		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00004	10/09/19		Wellington Laboratories, Lot LPPBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20		Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPPDS0615		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpa_00005	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHpS_00008	11/06/20		Wellington Laboratories, Lot LPPHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00005	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..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
<b>LCPFC-L6_00019</b>	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.: 320-21000-1

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.: 320-21000-1

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
<b>LCPFC-L7_00019</b>	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.: 320-21000-1

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.: 320-21000-1

SDG No.:

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-21000-1

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.: 320-21000-1

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
<b>LCPFC2-L2_00002</b>	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 M262FOSAA0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FOSAA_00001	04/13/17		WELLINGTON, Lot M282FOSAA0414		(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.: 320-21000-1

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.: 320-21000-1

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.: 320-21000-1

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
					(Purchased Reagent)		d-N-EtFOSA-M	50 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-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.: 320-21000-1

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
<b>LCPFC2-L5_00002</b>	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.: 320-21000-1

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
<b>LCPPFC2-L6_00002</b>	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPPFC2SP_00013	1000 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	189.6 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	191.6 ng/mL
							N-ethylperfluoro-1-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.: 320-21000-1

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
<b>LCPFC2-L7_00002</b>	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.: 320-21000-1

SDG No.: \_\_\_\_\_

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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration							
					Reagent ID	Volume Added									
							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							
							LCPFACMXB_00007	125 uL	Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL					
.LCMPFCSU_00043	12/02/16	06/02/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	Perfluorooctanoic acid (PFOA)	50 ng/mL							
							13C2-PFHxDA	1 ug/mL							
							LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL					
							LCM4PFHFA_00006	1000 uL	13C4-PFHFA	1 ug/mL					
							LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL					
							LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL					
							LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL					
							LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL					
							LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL					
							LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL					
							LCMPFHxS_00007	1000 uL	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							
..LCPFACMXB_00007	11/06/20	Wellington Laboratories, Lot PFCMXB1115			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL							
							Perfluorooctanoic acid (PFOA)	2 ug/mL							
LCPFCSU_00053	01/06/17	07/06/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	100 uL	Perfluorobutyric acid	0.5 ug/mL							
							LCPFBS_00003	100 uL	Perfluorobutane Sulfonate	0.442 ug/mL					
							LCPFBSA_00001	100 uL	Perfluorobutanesulfonic acid	0.442 ug/mL					
							LCPFDA_00004	100 uL	Perfluorodecanoic acid	0.5 ug/mL					
							LCPFDoA_00004	100 uL	Perfluorododecanoic acid	0.5 ug/mL					
							LCPFDS_00005	100 uL	Perfluorodecane Sulfonate	0.482 ug/mL					
									Perfluorodecane Sulfonic acid	0.482 ug/mL					
							LCPFHFA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL					

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHps_00008	100 uL	Perfluoroheptane Sulfonate	0.476 ug/mL
							Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA 00004	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA 00004	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00001	100 uL	Perfluorohexane Sulfonate	0.455 ug/mL
							Perfluorohexanesulfonic acid	0.455 ug/mL
					LCPFNA 00005	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFNS_00002	100 uL	PFNS (Perflouro-1-nonanesulfonate)	0.48 ug/mL
					LCPFOA 00005	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA 00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00001	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA 00006	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA 00004	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFPeS_00002	100 uL	PFPeS (Perflouro-1-pentanesulfonate)	0.469 ug/mL
					LCPFTeDA 00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA 00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUda 00004	100 uL	Perfluoroundecanoic acid	0.5 ug/mL
.LCPFBA 00004	01/30/20		Wellington Laboratories, Lot PFBA0115				(Purchased Reagent) Perfluorobutyric acid	50 ug/mL
.LCPFBS 00003	10/09/19		Wellington Laboratories, Lot LPFBS1014				(Purchased Reagent) Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFBSA 00001	10/09/19		Wellington Laboratories, Lot LPFBS1014				(Purchased Reagent) Perfluorobutanesulfonic acid	44.2 ug/mL
.LCPFDA 00004	07/02/20		Wellington Laboratories, Lot PFDA0615				(Purchased Reagent) Perfluorodecanoic acid	50 ug/mL
.LCPFDoA 00004	01/30/20		Wellington Laboratories, Lot PFDoA0115				(Purchased Reagent) Perfluorododecanoic acid	50 ug/mL
.LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615				(Purchased Reagent) Perfluorodecane Sulfonate Perfluorodecane Sulfonic acid	48.2 ug/mL 48.2 ug/mL
.LCPFHpA 00005	01/22/21		Wellington Laboratories, Lot PFHpA0116				(Purchased Reagent) Perfluoroheptanoic acid	50 ug/mL
.LCPFHps_00008	11/06/20		Wellington Laboratories, Lot LPFHpS1115				(Purchased Reagent) Perfluoroheptane Sulfonate Perfluoroheptanesulfonic Acid	47.6 ug/mL 47.6 ug/mL
.LCPFHxA 00004	12/22/20		Wellington Laboratories, Lot PFHxA1215				(Purchased Reagent) Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA 00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707				(Purchased Reagent) Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00001	07/03/20		Wellington Laboratories, Lot brPFHxSK0615				(Purchased Reagent) Perfluorohexane Sulfonate Perfluorohexanesulfonic acid	45.5 ug/mL 45.5 ug/mL
.LCPFNA 00005	10/23/20		Wellington Laboratories, Lot PFNA1015				(Purchased Reagent) Perfluorononanoic acid	50 ug/mL
.LCPFNS_00002	07/04/17		Wellington Laboratories, Lot LPFNS0712				(Purchased Reagent) PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
.LCPFOA 00005	11/06/20		Wellington Laboratories, Lot PFOA1115				(Purchased Reagent) Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA 00005	01/30/20		Wellington Laboratories, Lot PFODA0115				(Purchased Reagent) Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00001	10/14/20		Wellington Laboratories, Lot brPFOSK1015				(Purchased Reagent) Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA 00006	09/02/17		Wellington Laboratories, Lot FOSA0815I				(Purchased Reagent) Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA 00004	01/30/20		Wellington Laboratories, Lot PFPeA0115				(Purchased Reagent) Perfluoropentanoic acid	50 ug/mL
.LCPFPeS_00002	07/04/17		Wellington Laboratories, Lot LFPPeS0712				(Purchased Reagent) PFPeS (Perflouro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA 00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215				(Purchased Reagent) Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA 00004	12/10/18		Wellington Laboratories, Lot PFTTrDA1213				(Purchased Reagent) Perfluorotridecanoic acid	50 ug/mL
.LCPFUda 00004	08/19/20		Wellington Laboratories, Lot PFUda0815				(Purchased Reagent) Perfluoroundecanoic acid	50 ug/mL



Reagent

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**LC6:2FTS\_00001**

r: 7hclis ev  
s: 7hclis sw

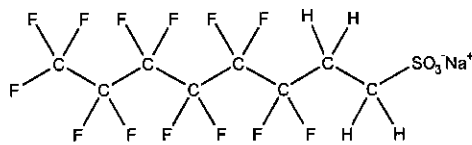


# WELLINGTON LABORATORIES

## 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:** C<sub>8</sub>H<sub>4</sub>F<sub>13</sub>SO<sub>3</sub>Na **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

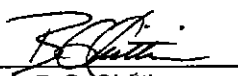
**DOCUMENTATION/ DATA ATTACHED:**

- 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.

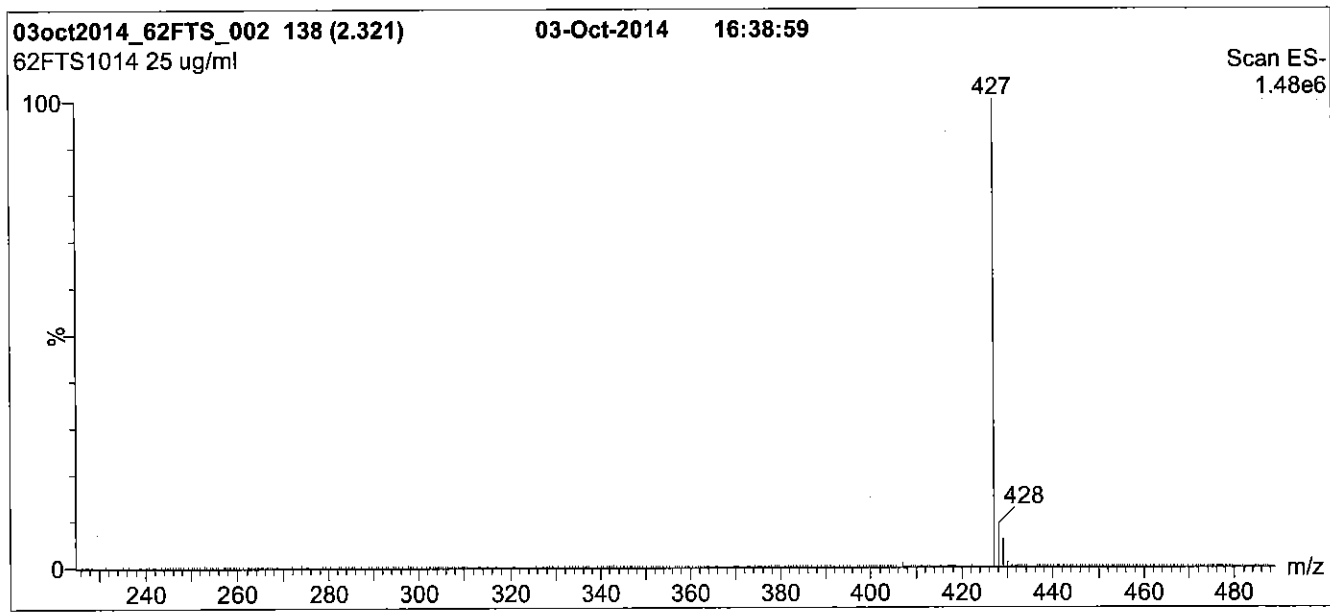
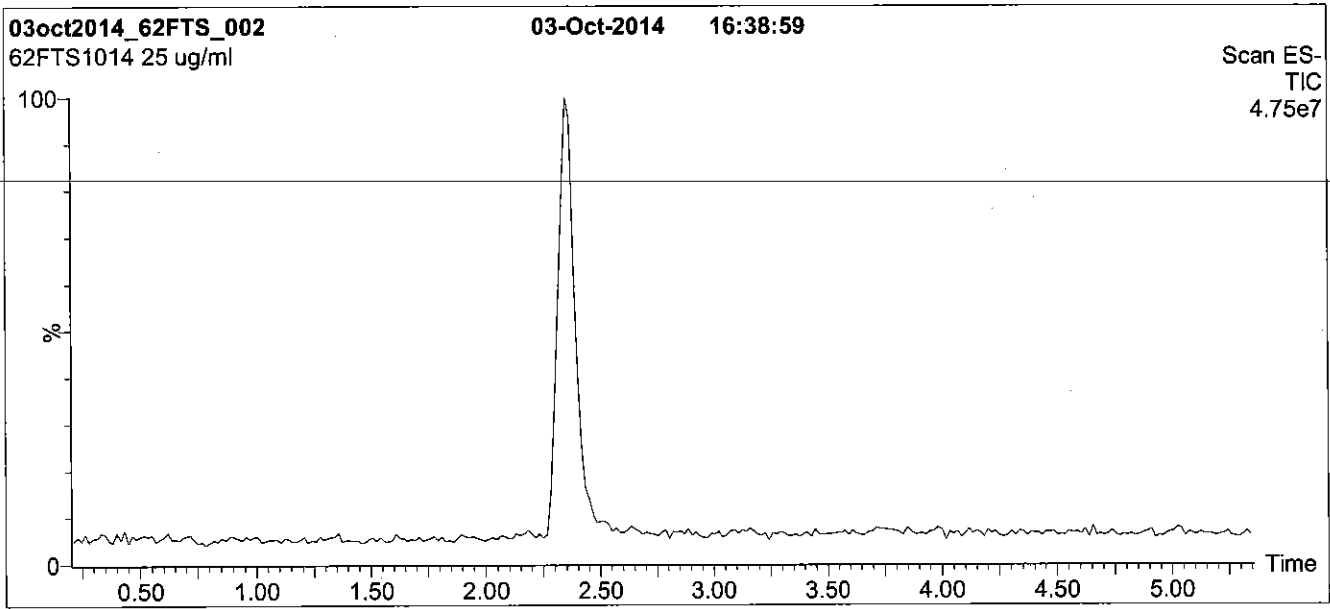
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto: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**

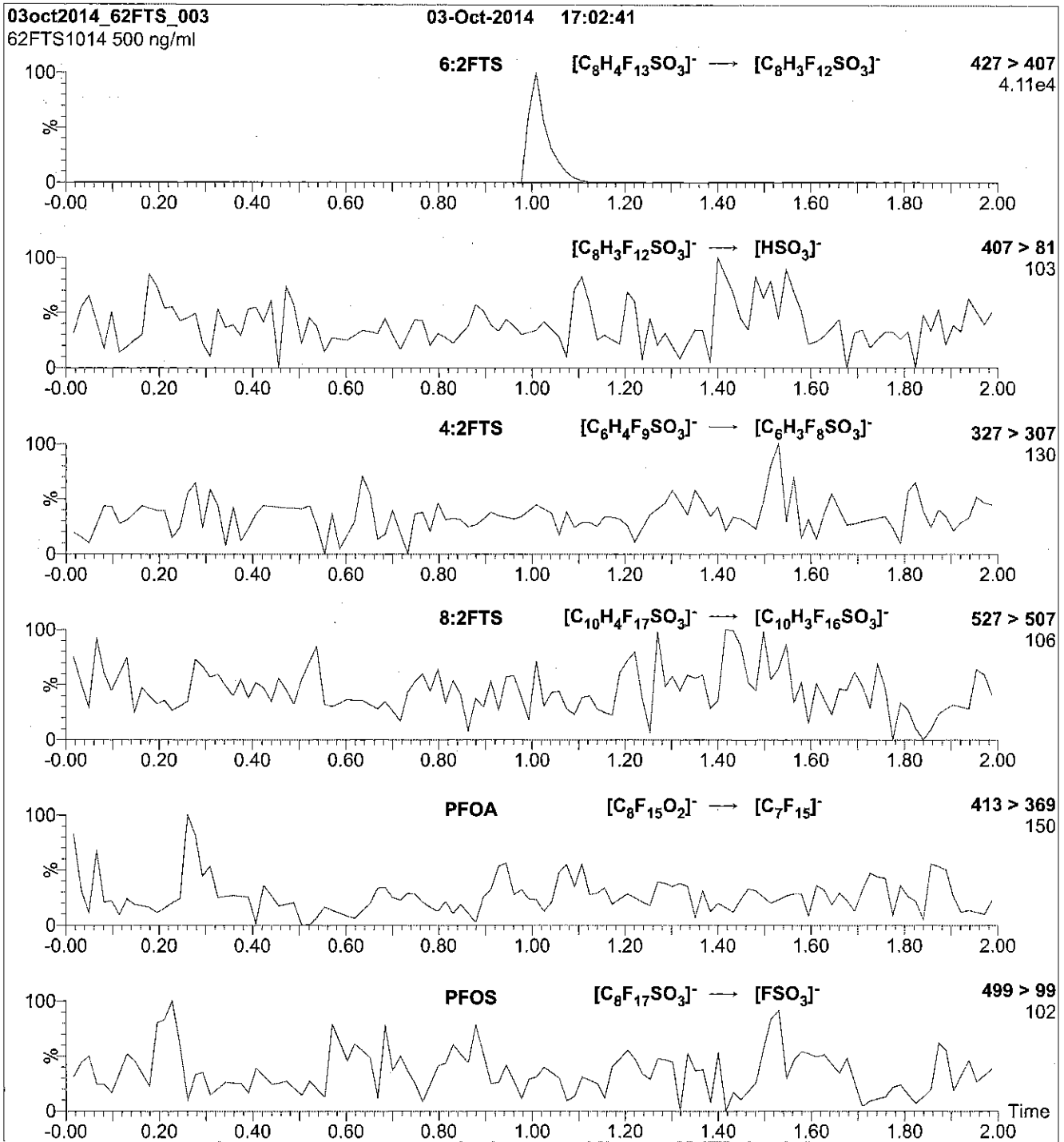
**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>, 1.7  $\mu$ m, 2.1 x 100 mm  
**Mobile phase:** Gradient  
 Start: 55% (80:20 MeOH:ACN) / 45% H<sub>2</sub>O (both with 10 mM NH<sub>4</sub>OAc buffer)  
 Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.  
 Time: 10 min

**Flow:** 300  $\mu$ 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  $\mu$ l (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

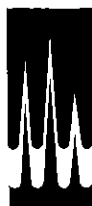
Collision Gas (mbar) = 3.50e-3  
Collision Energy (eV) = 25

Reagent

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**LC8 : 2FTS \_ 00001**

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

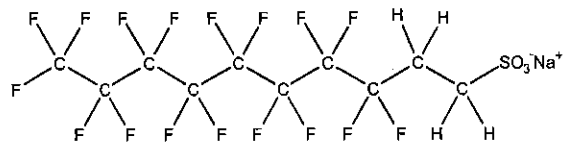


# WELLINGTON LABORATORIES

## 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:** C<sub>10</sub>H<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **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

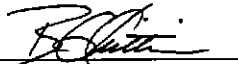
**DOCUMENTATION/ DATA ATTACHED:**

- 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

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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.

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### **TRACEABILITY:**

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### **EXPIRY DATE / PERIOD OF VALIDITY:**

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

### **LIMITED WARRANTY:**

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

### **QUALITY MANAGEMENT:**

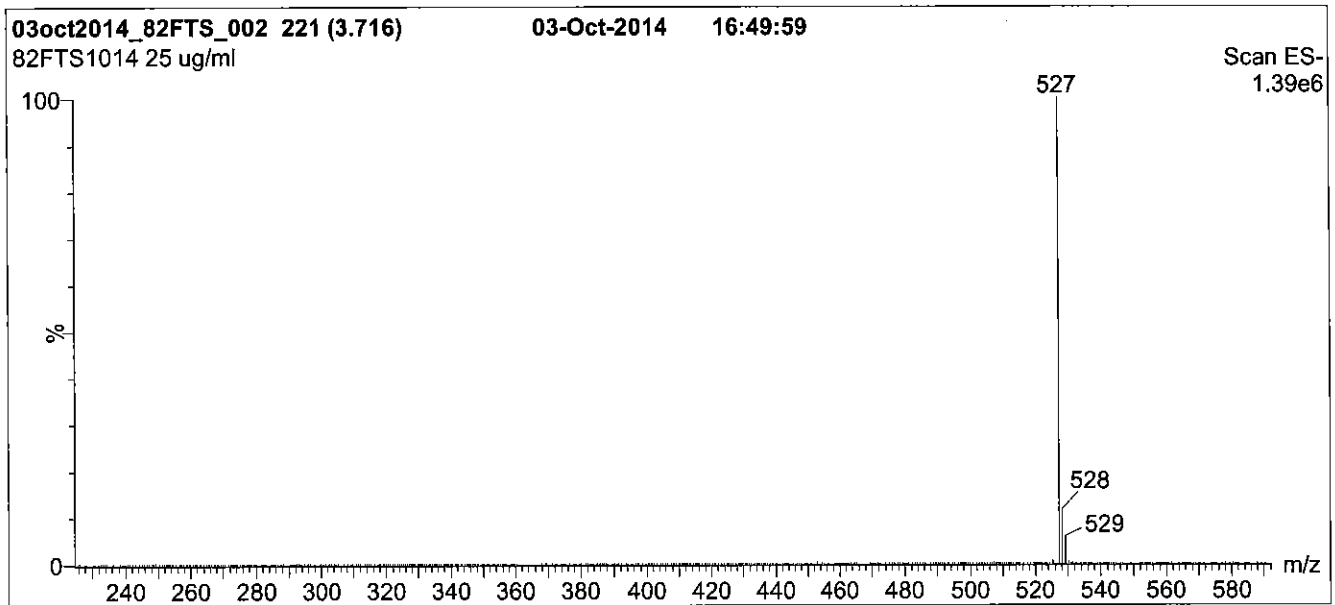
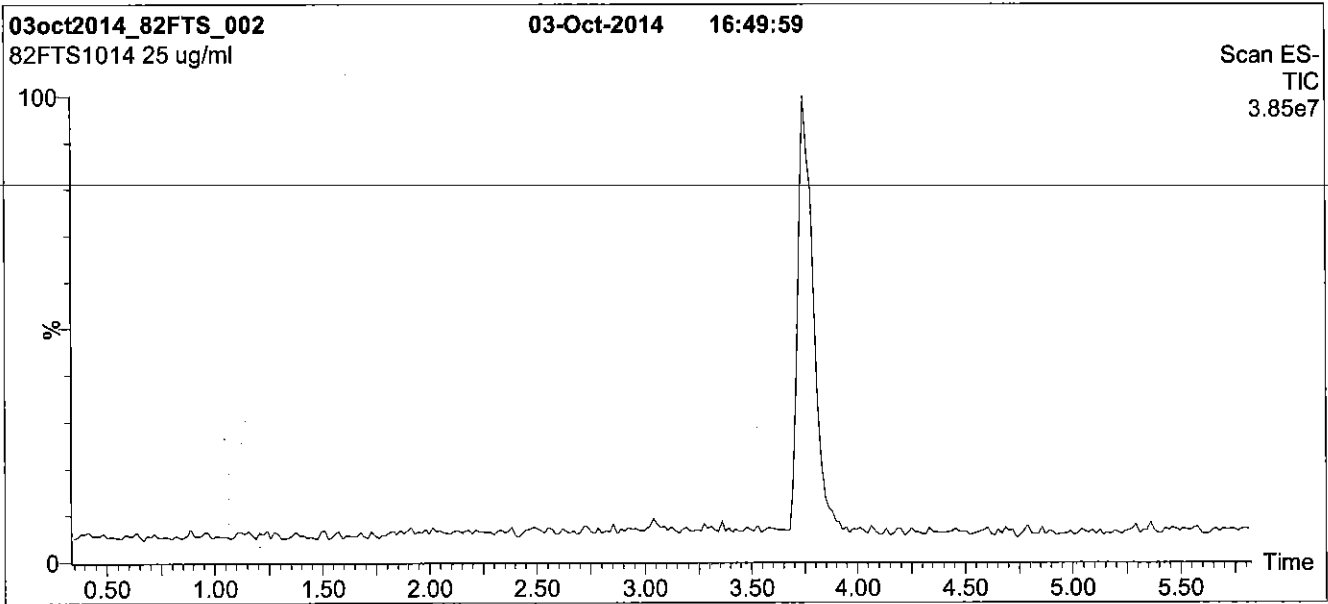
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 55% (80:20 MeOH:ACN) / 45% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min.  
Return to initial conditions in 0.5 min.  
Time: 10 min

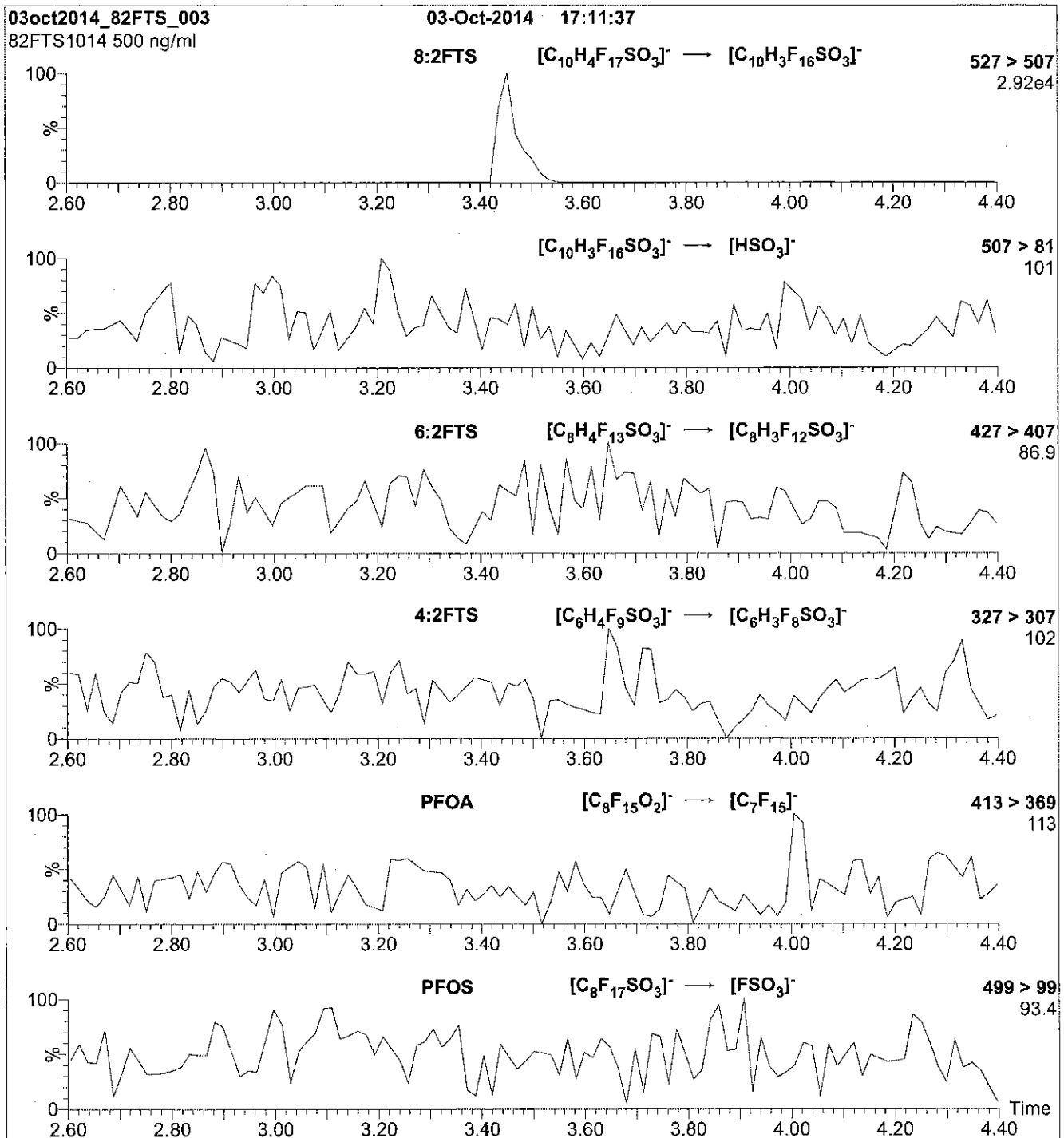
**Flow:** 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml 8:2FTS)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCd-NEtFOSA-M\_00001**

C: 7/16/15 8/



# WELLINGTON LABORATORIES

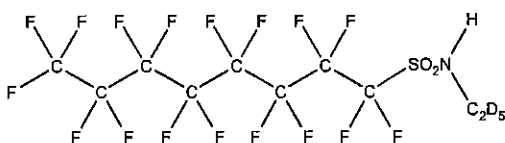
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** d-N-EtFOSA-M  
**COMPOUND:** N-ethyl-d<sub>5</sub>-perfluoro-1-octanesulfonamide

**LOT NUMBER:** dNEtFOSA0314M

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>10</sub>D<sub>5</sub>HF<sub>17</sub>NO<sub>2</sub>S  
**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% <sup>2</sup>H<sub>5</sub>

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

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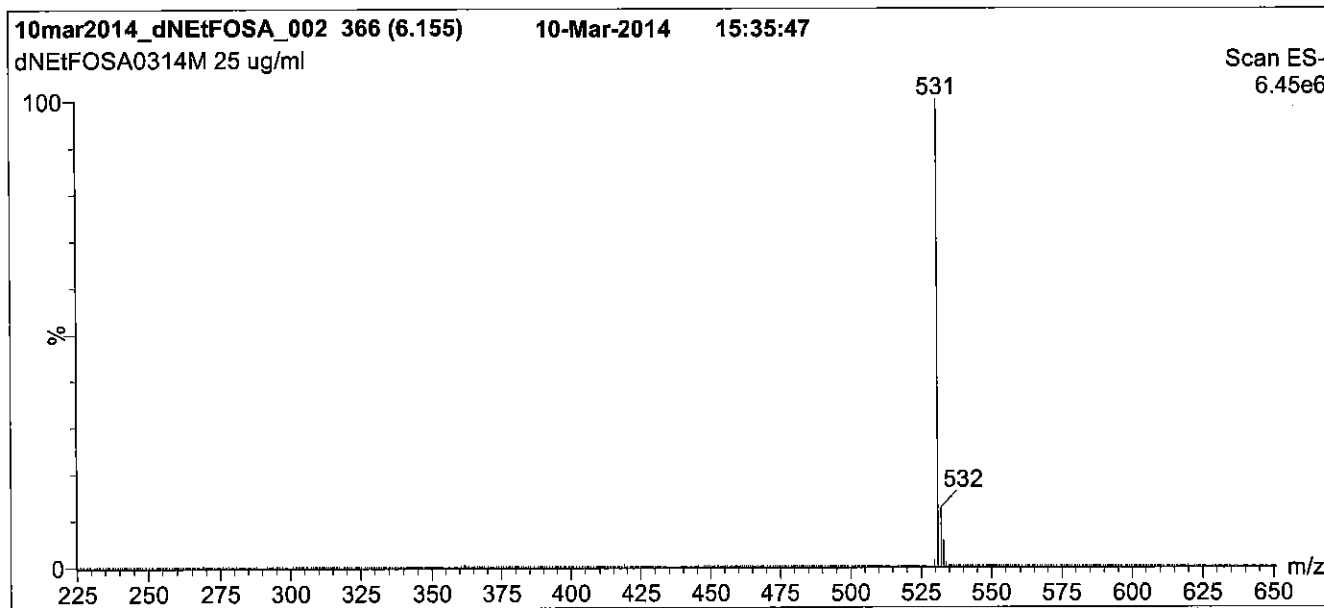
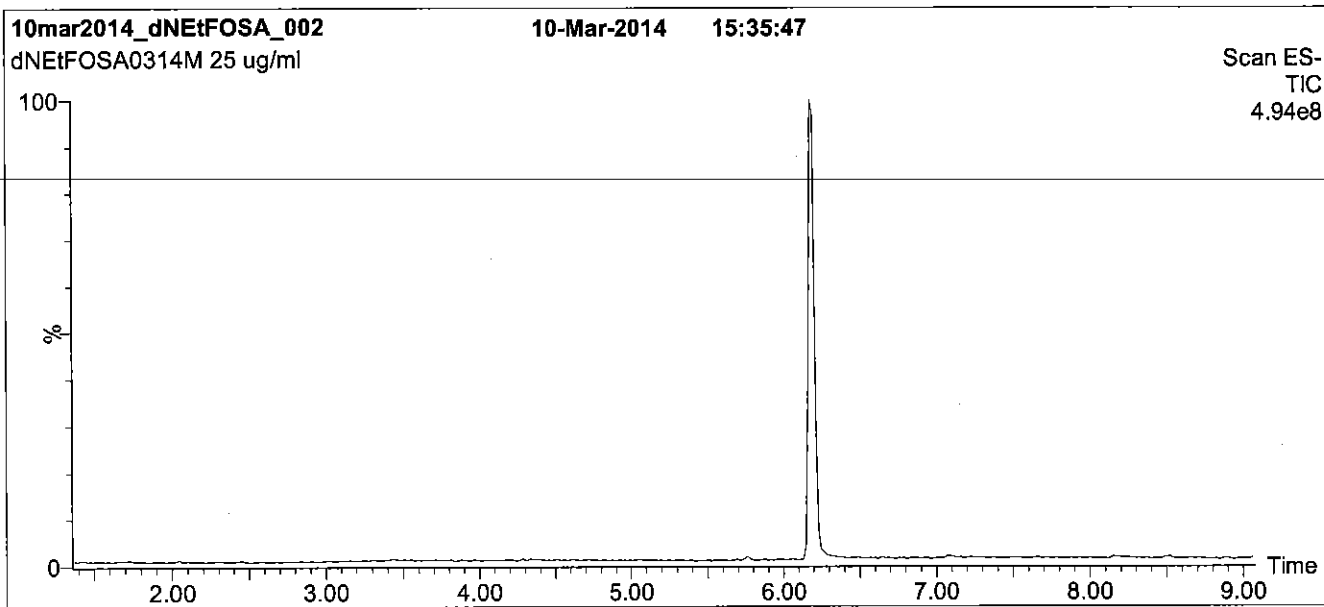
**QUALITY MANAGEMENT:**

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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 RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 40% H<sub>2</sub>O / 60% (80:20 MeOH:ACN)  
 (both with 10mM NH<sub>4</sub>OAc 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

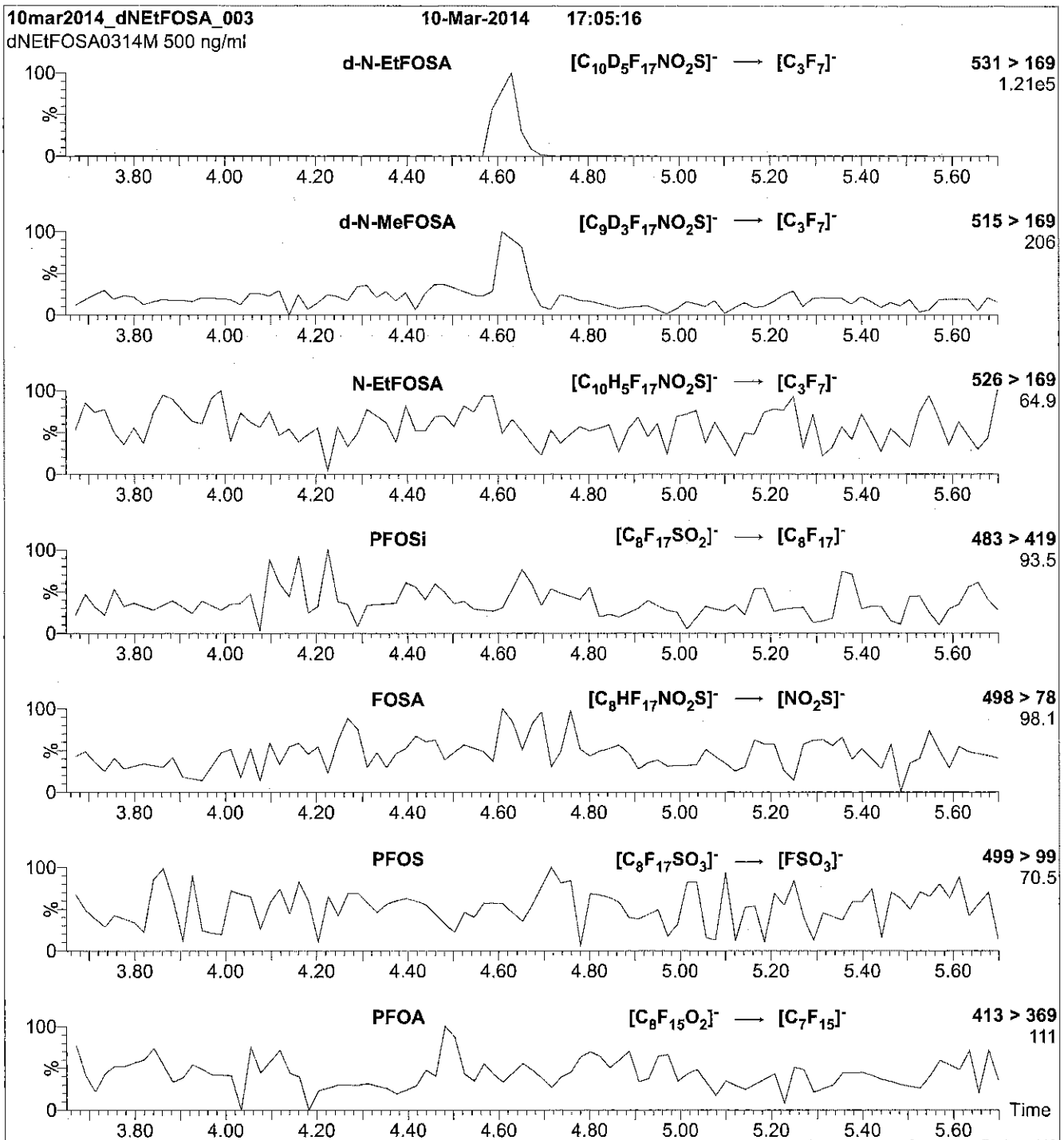
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml d-N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCd-NMeFOSA-M\_00001**



r: 7/16/15 SKW



# WELLINGTON LABORATORIES

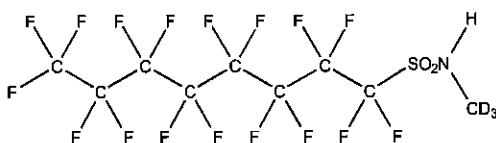
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** d-N-MeFOSA-M  
**COMPOUND:** N-methyl-d<sub>3</sub>-perfluoro-1-octanesulfonamide

**LOT NUMBER:** dNMeFOSA0114M

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>9</sub>D<sub>3</sub>HF<sub>17</sub>NO<sub>2</sub>S  
**CONCENTRATION:** 50 ± 2.5 µg/ml  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 01/28/2014  
**EXPIRY DATE:** (mm/dd/yyyy) 01/28/2019  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 516.19  
**SOLVENT(S):** Methanol  
**ISOTOPIC PURITY:** ≥98% <sup>2</sup>H<sub>3</sub>

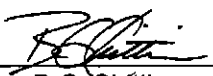
**DOCUMENTATION/ DATA ATTACHED:**

- 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

### **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.

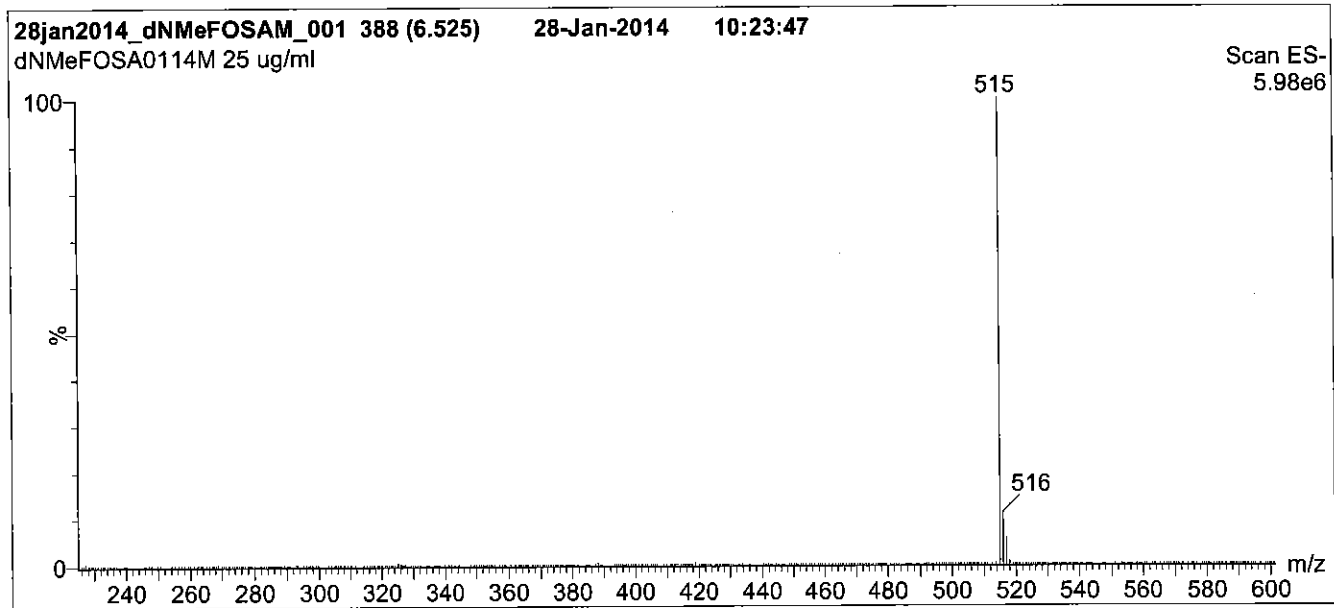
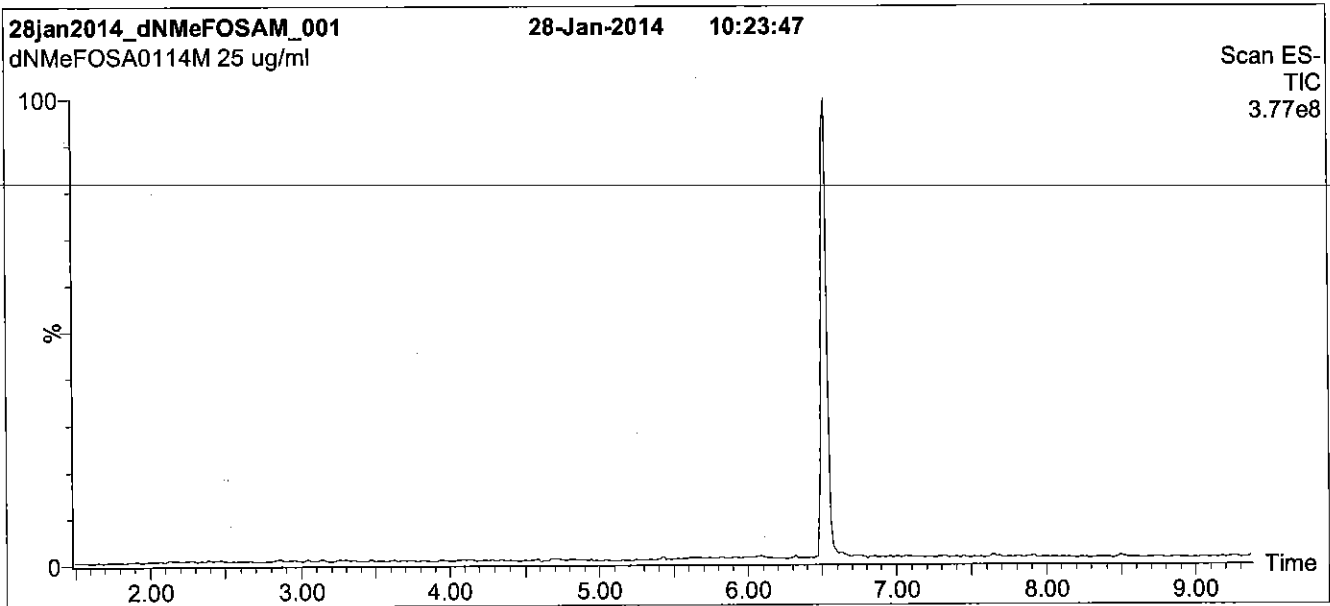
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

**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 RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 50% H<sub>2</sub>O / 50% (80:20 MeOH:ACN)  
 (both with 10mM NH<sub>4</sub>OAc 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

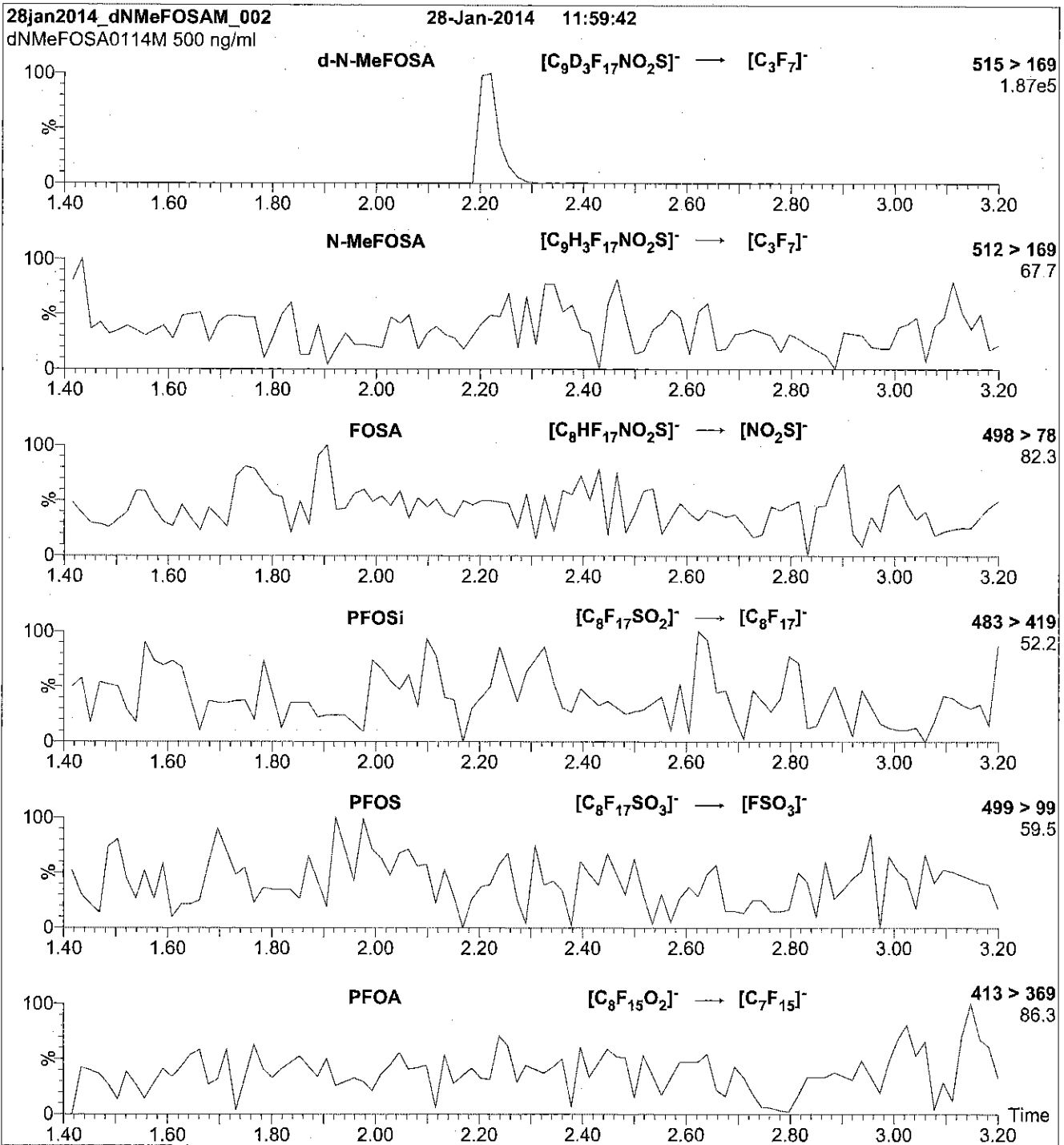
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml d-N-MeFOSA-M)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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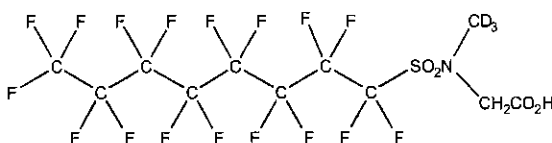
**LCd3-NMeFOSAA\_00001**



# 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:** C<sub>11</sub>D<sub>3</sub>H<sub>3</sub>F<sub>17</sub>NO<sub>4</sub>S **MOLECULAR WEIGHT:** 574.23  
**CONCENTRATION:** 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol  
 Water (<1%)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥98% <sup>2</sup>H<sub>3</sub>  
**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)

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.

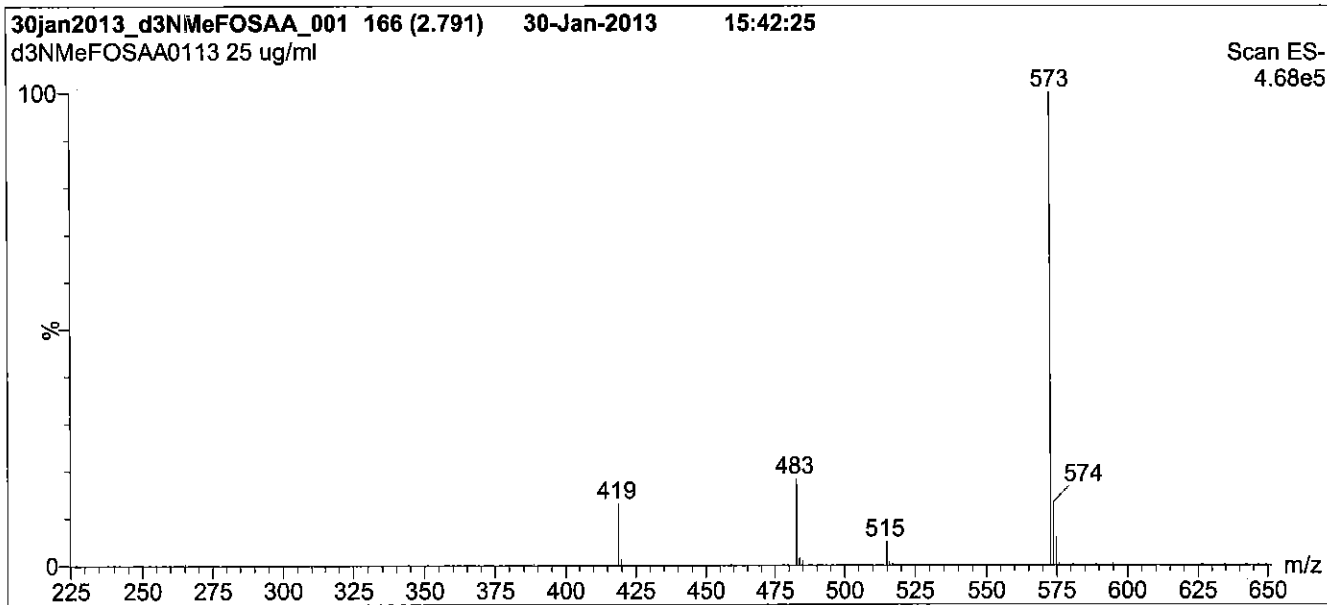
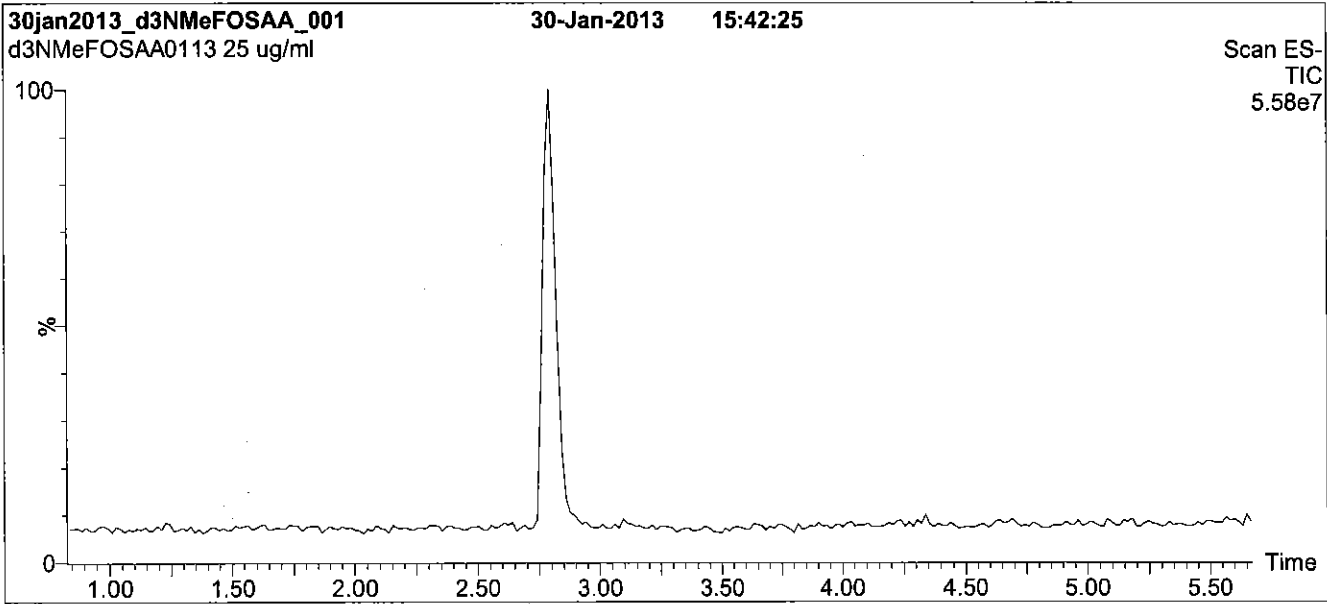
**QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

**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 RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
 Start: 65% (80:20 MeOH:ACN) / 35% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ l/min

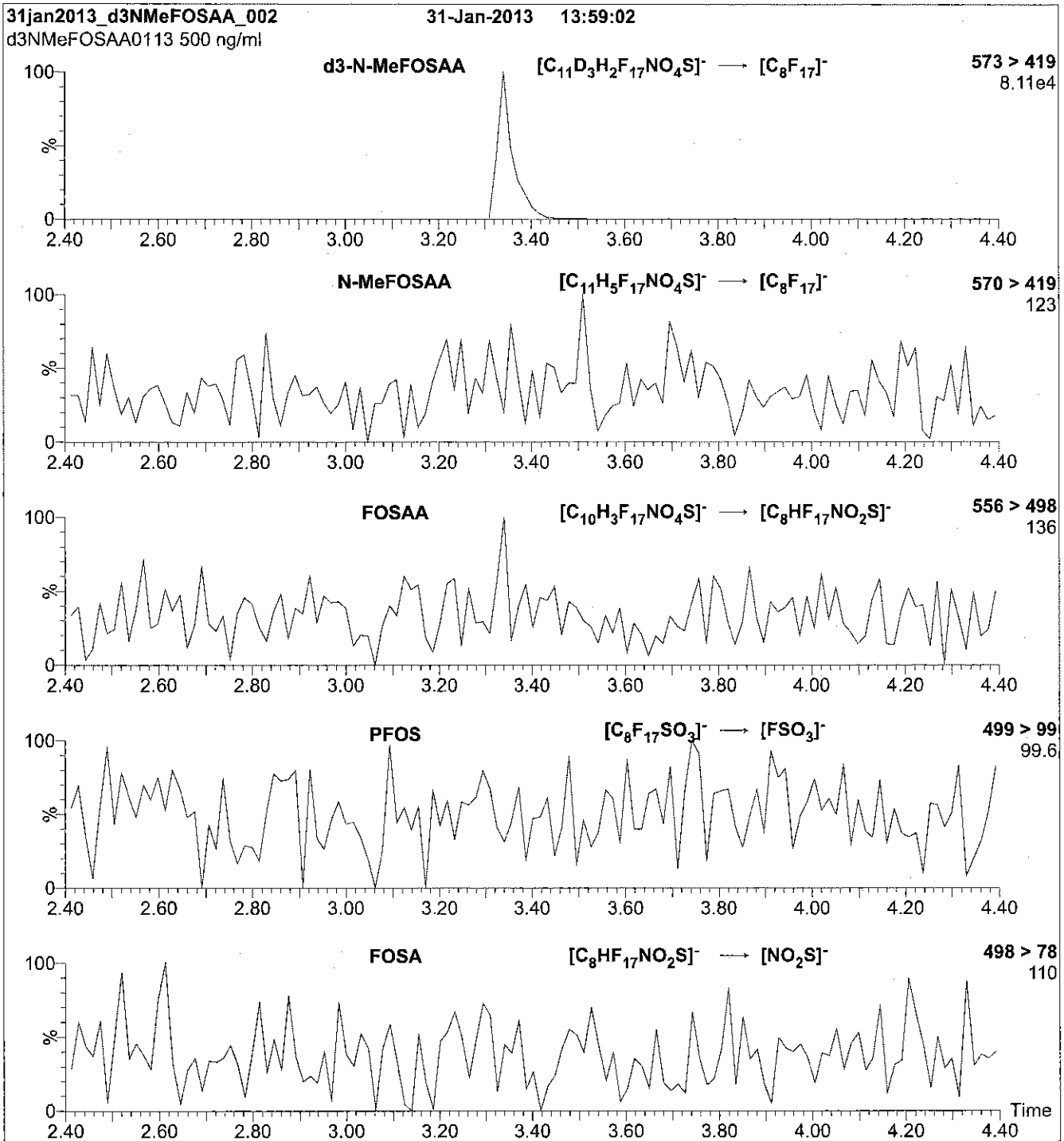
**MS Parameters**

**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  $\mu$ l (500 ng/ml d3-N-MeFOSAA)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCd5-NEtFOSAA\_00001**

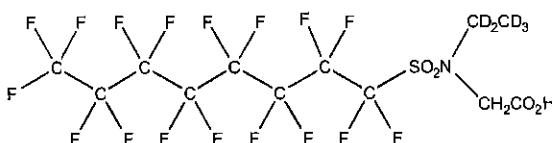


# WELLINGTON LABORATORIES

## 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:** C<sub>12</sub>D<sub>5</sub>H<sub>3</sub>F<sub>17</sub>NO<sub>4</sub>S  
**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% <sup>2</sup>H<sub>5</sub>

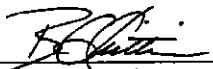
### DOCUMENTATION/ DATA ATTACHED:

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

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

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### **EXPIRY DATE / PERIOD OF VALIDITY:**

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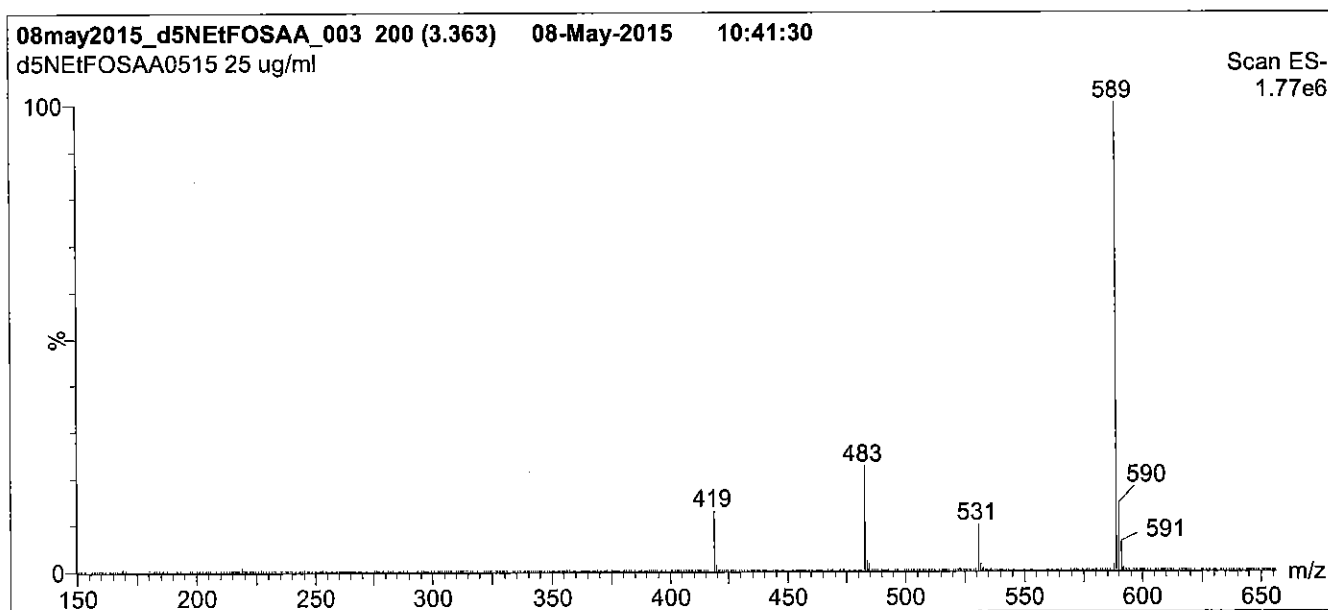
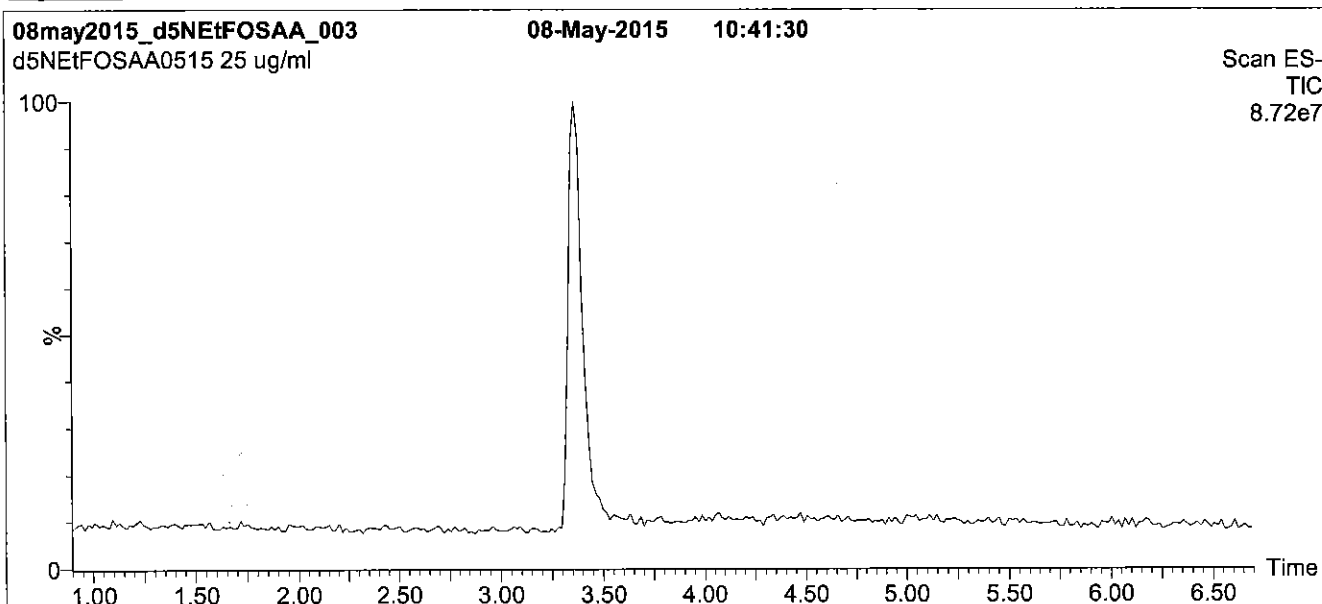
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**Figure 1: d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
 Start: 65% (80:20 MeOH:ACN) / 35% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>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

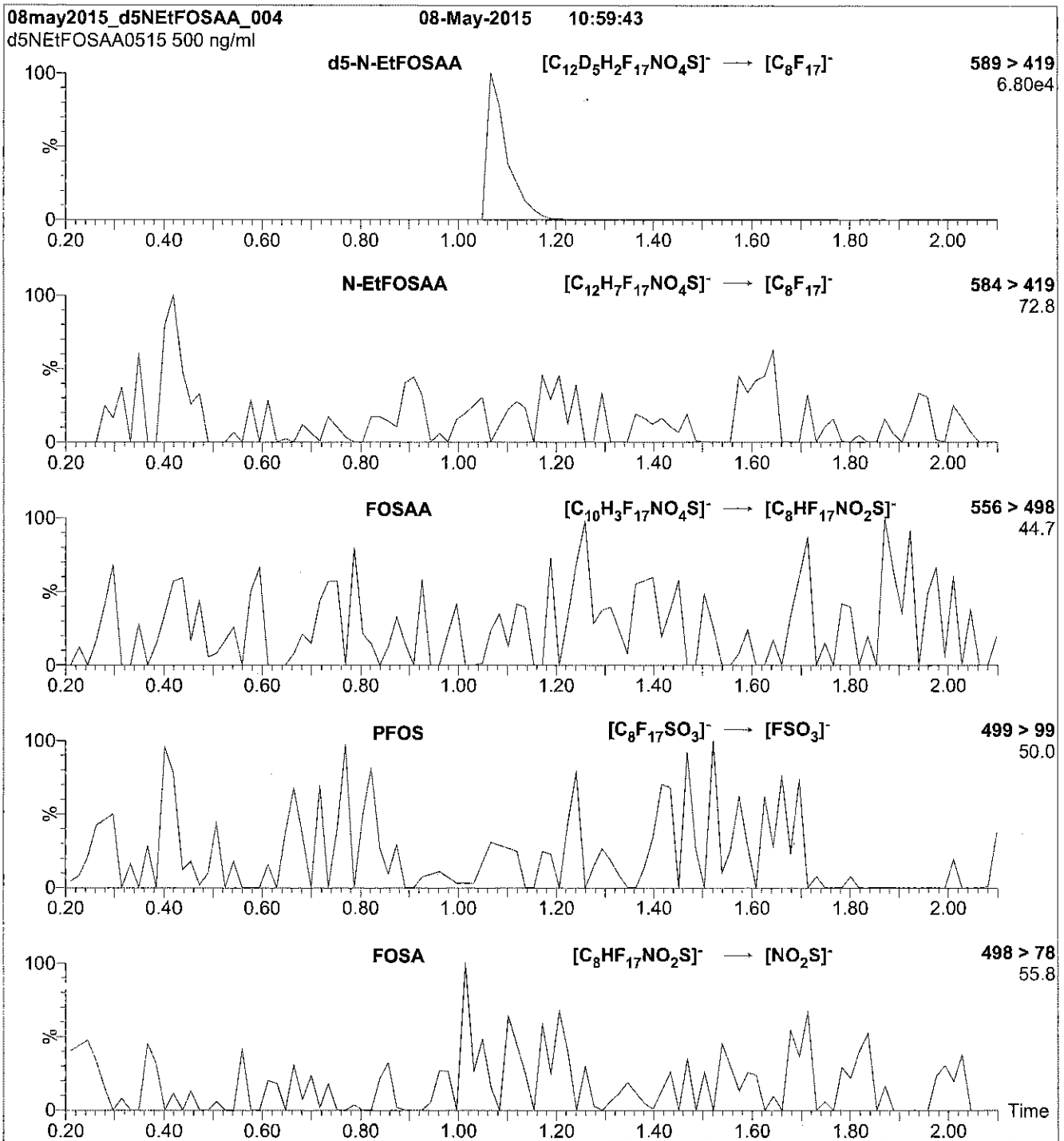
**Flow:** 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml d5-N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCM2-6:FTS\_00001**

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

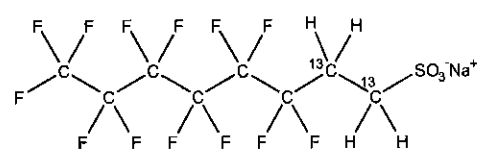


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2-6:2FTS **LOT NUMBER:** M262FTS0714  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluoro-[1,2-<sup>13</sup>C<sub>2</sub>]octane sulfonate

**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>H<sub>4</sub><sup>13</sup>SO<sub>3</sub>Na **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% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 07/15/2014 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 07/15/2017  
**RECOMMENDED STORAGE:** Refrigerate ampoule

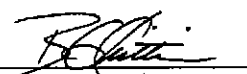
**DOCUMENTATION/ DATA ATTACHED:**

- 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 <sup>34</sup>S (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



### **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.

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

### **LIMITED WARRANTY:**

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

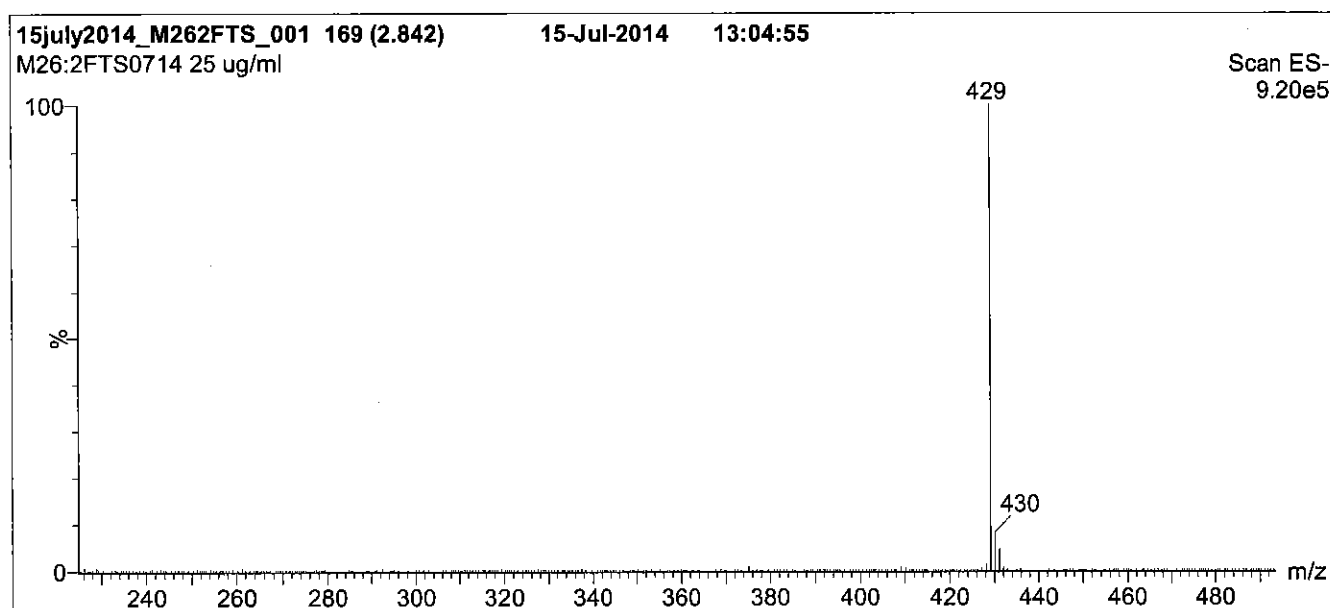
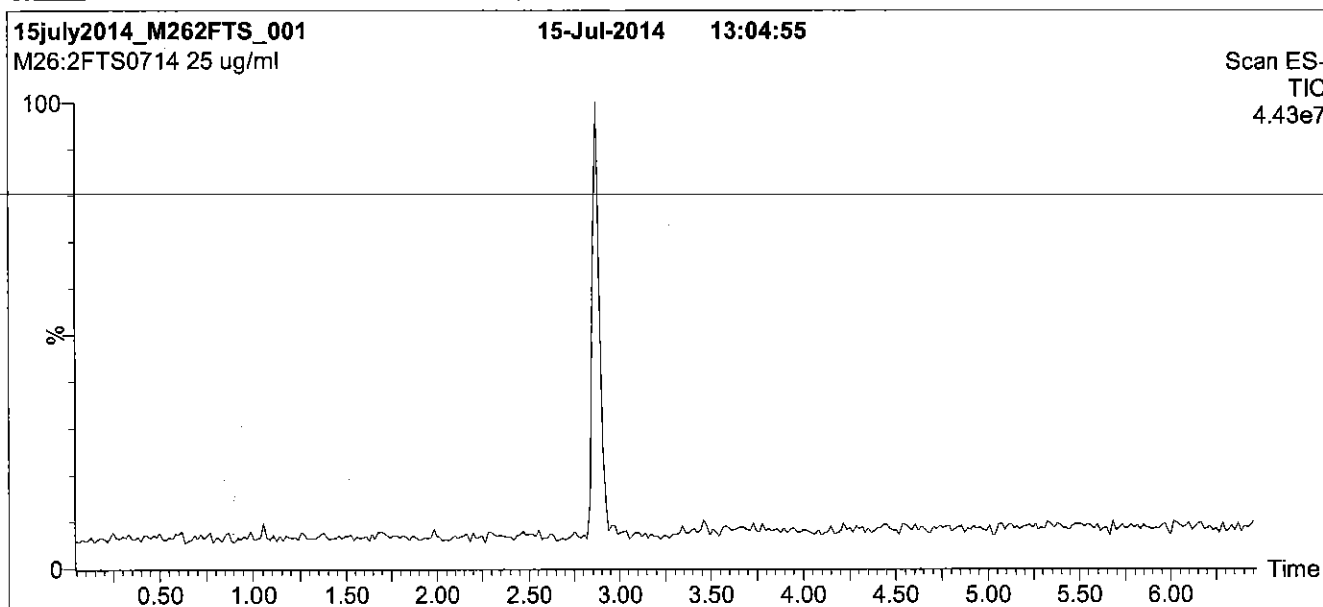
### **QUALITY MANAGEMENT:**

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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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 55% (80:20 MeOH:ACN) / 45% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>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

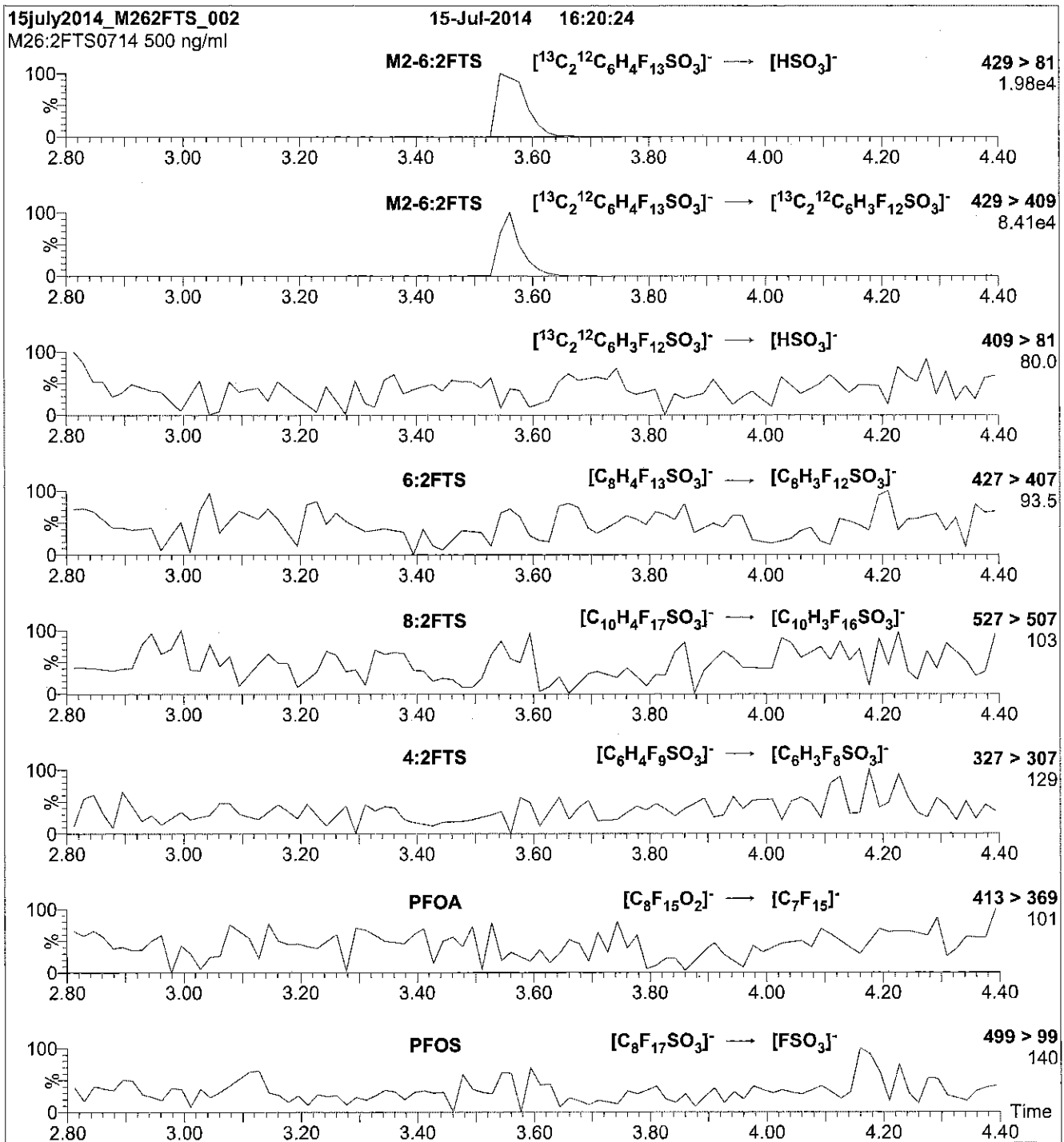
**Flow:** 300  $\mu$ l/min

**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  $\mu\text{l}$  (500 ng/ml M2-6:2FTS)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20%  $\text{H}_2\text{O}$   
(both with 10 mM  $\text{NH}_4\text{OAc}$  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

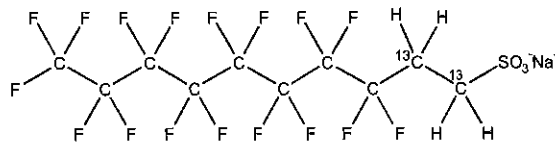


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2-8:2FTS **LOT NUMBER:** M282FTS0414  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluoro-[1,2-<sup>13</sup>C<sub>2</sub>]decane sulfonate

**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>8</sub>H<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **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% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 04/13/2014 (1,2-<sup>13</sup>C<sub>2</sub>)  
**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 <sup>34</sup>S (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).

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

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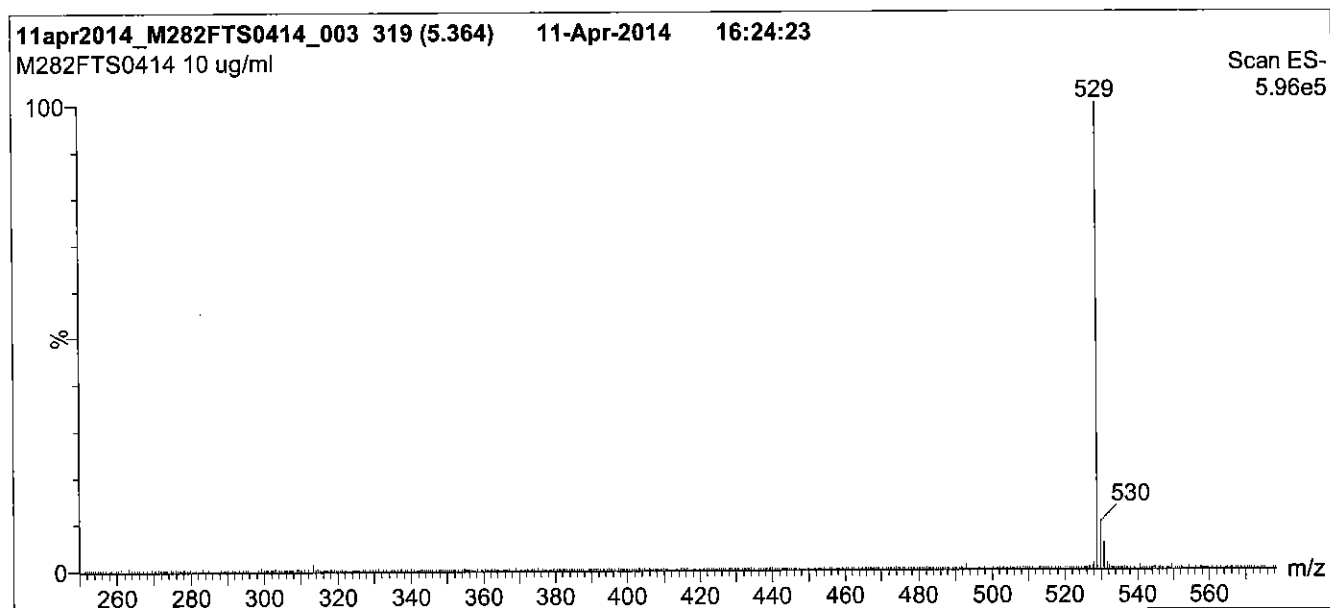
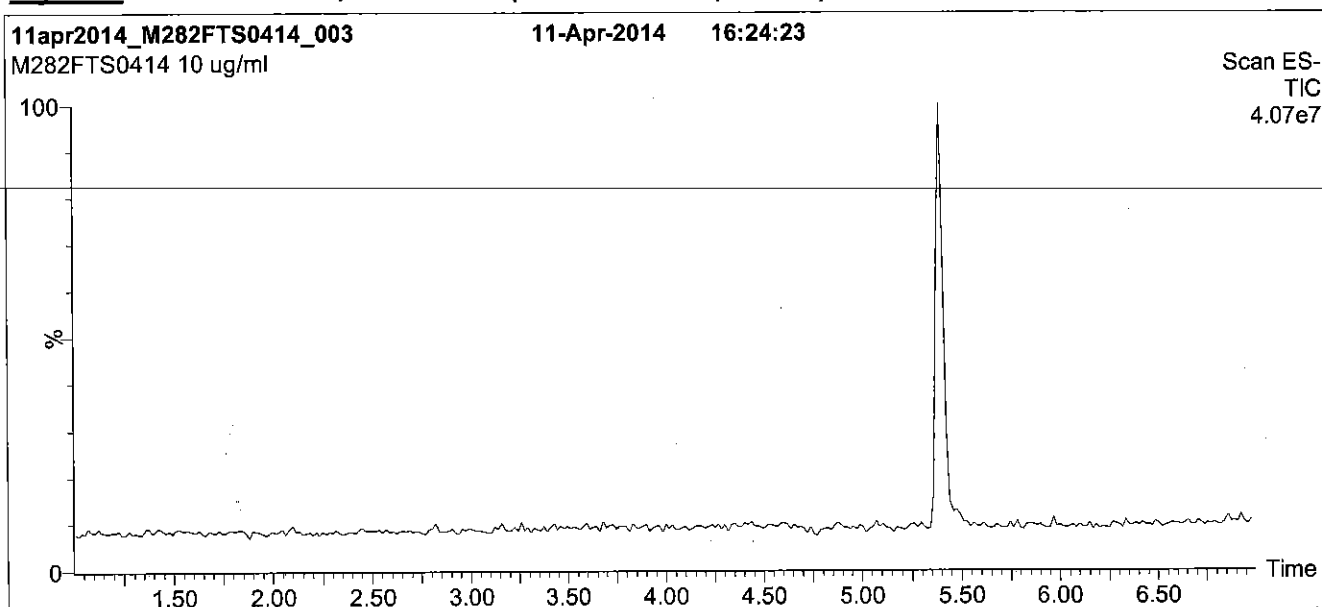
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**Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>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

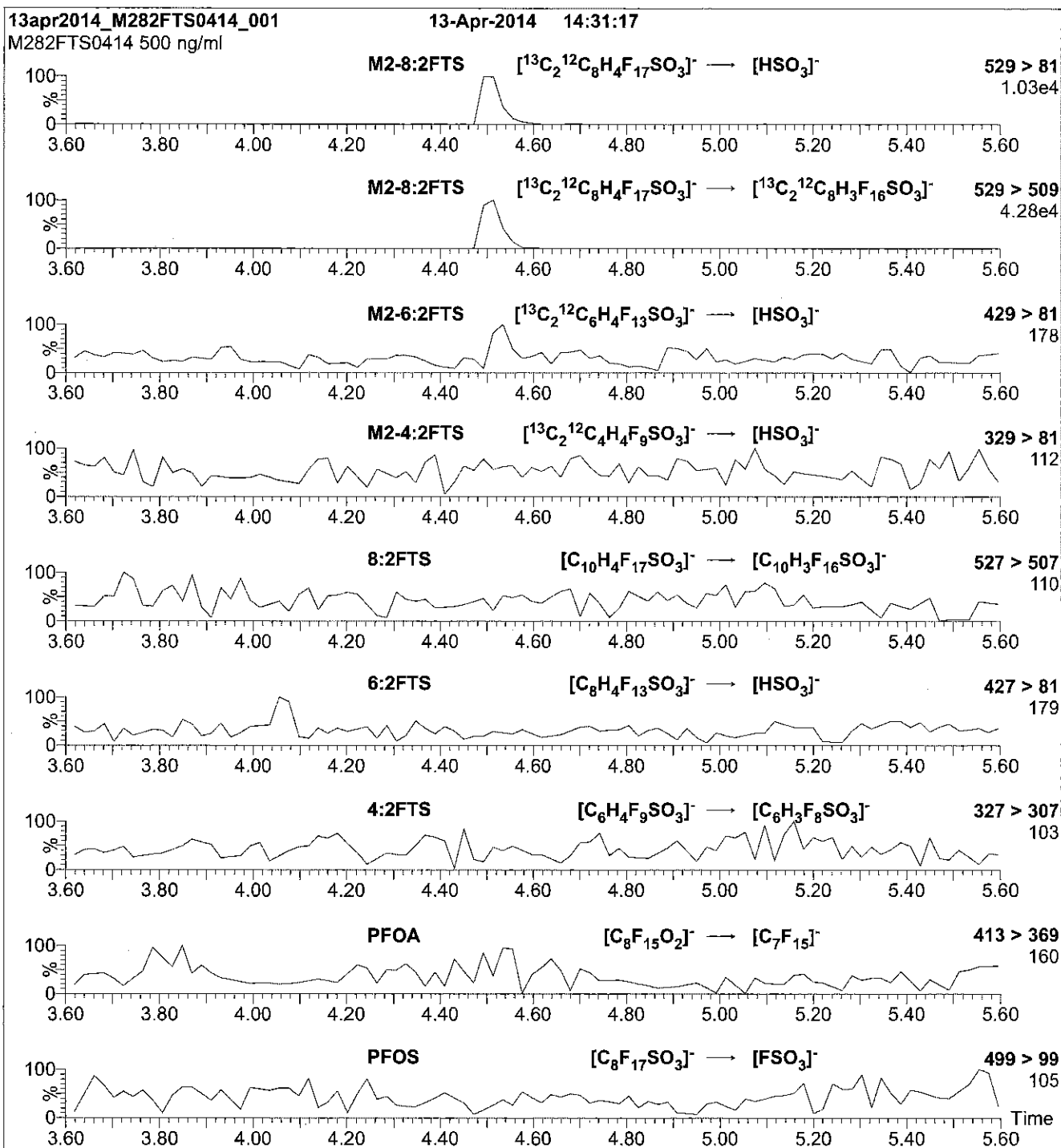
Flow: 300  $\mu$ l/min

**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  $\mu\text{l}$  (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20%  $\text{H}_2\text{O}$   
 (both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

**MS Parameters**

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



Reagent

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**LCN-EtFOSA-M\_00002**

P: 7/16/15 SW



# WELLINGTON LABORATORIES

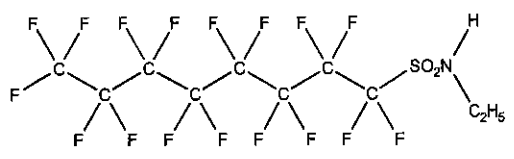
## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

**LOT NUMBER:** NEIFOSA0714M

**STRUCTURE:**

**CAS #:** 4151-50-2



**MOLECULAR FORMULA:** C<sub>10</sub>H<sub>6</sub>F<sub>17</sub>NO<sub>2</sub>S  
**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)

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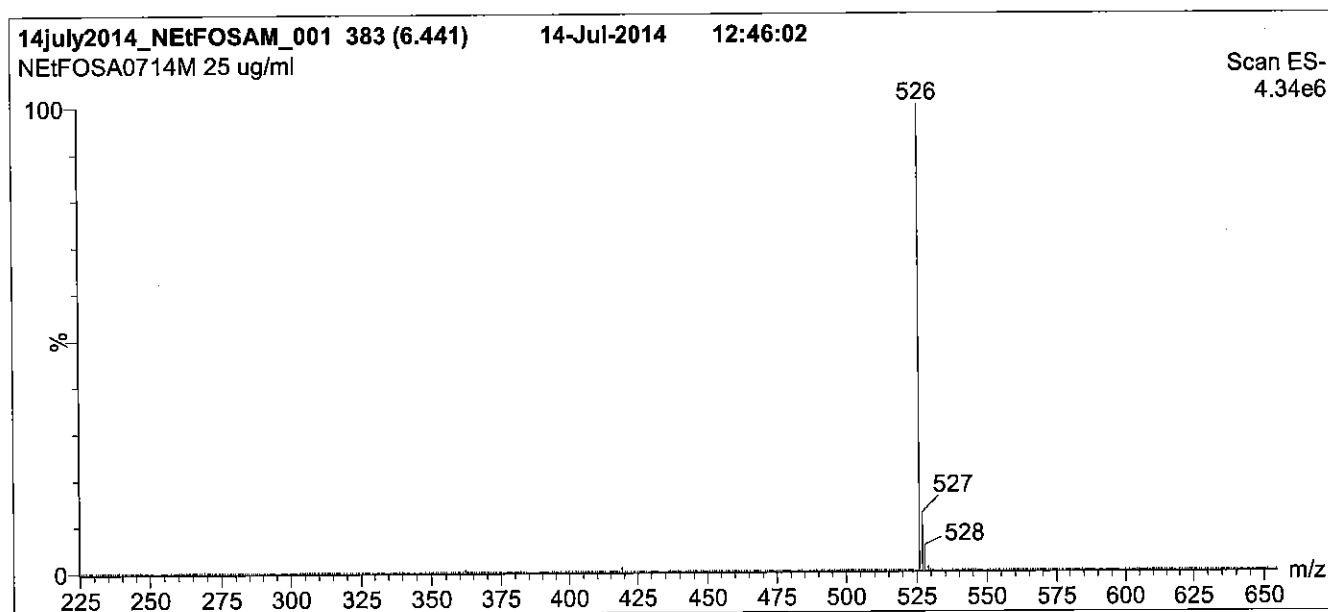
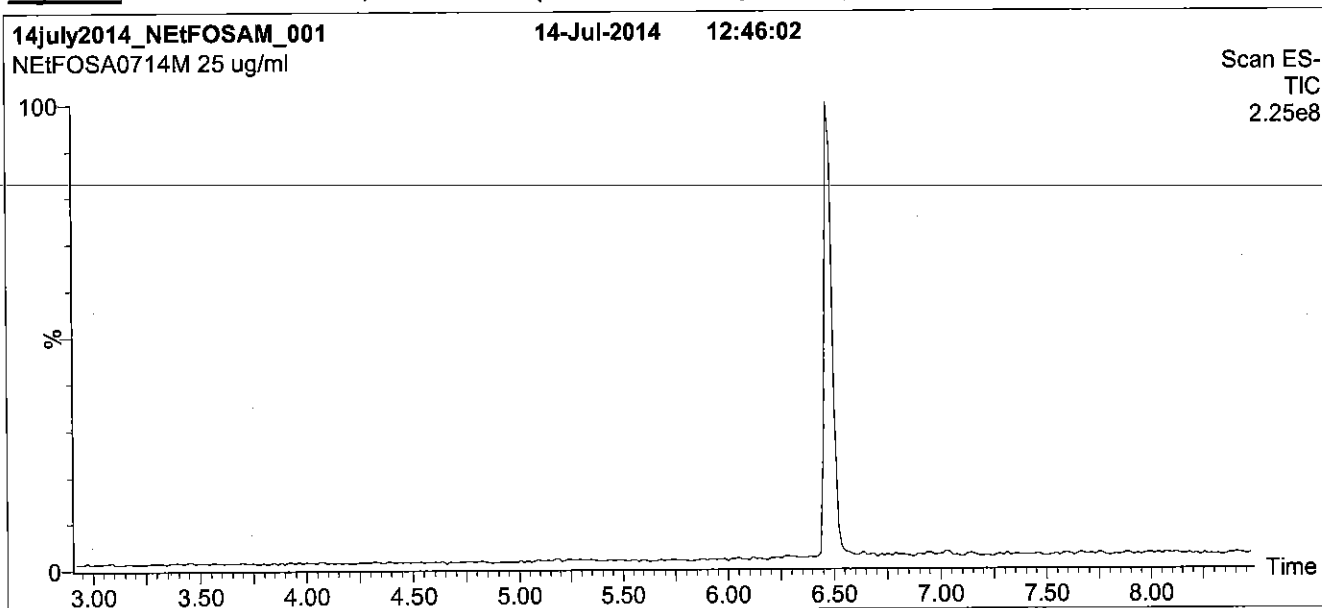
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**Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 45% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>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

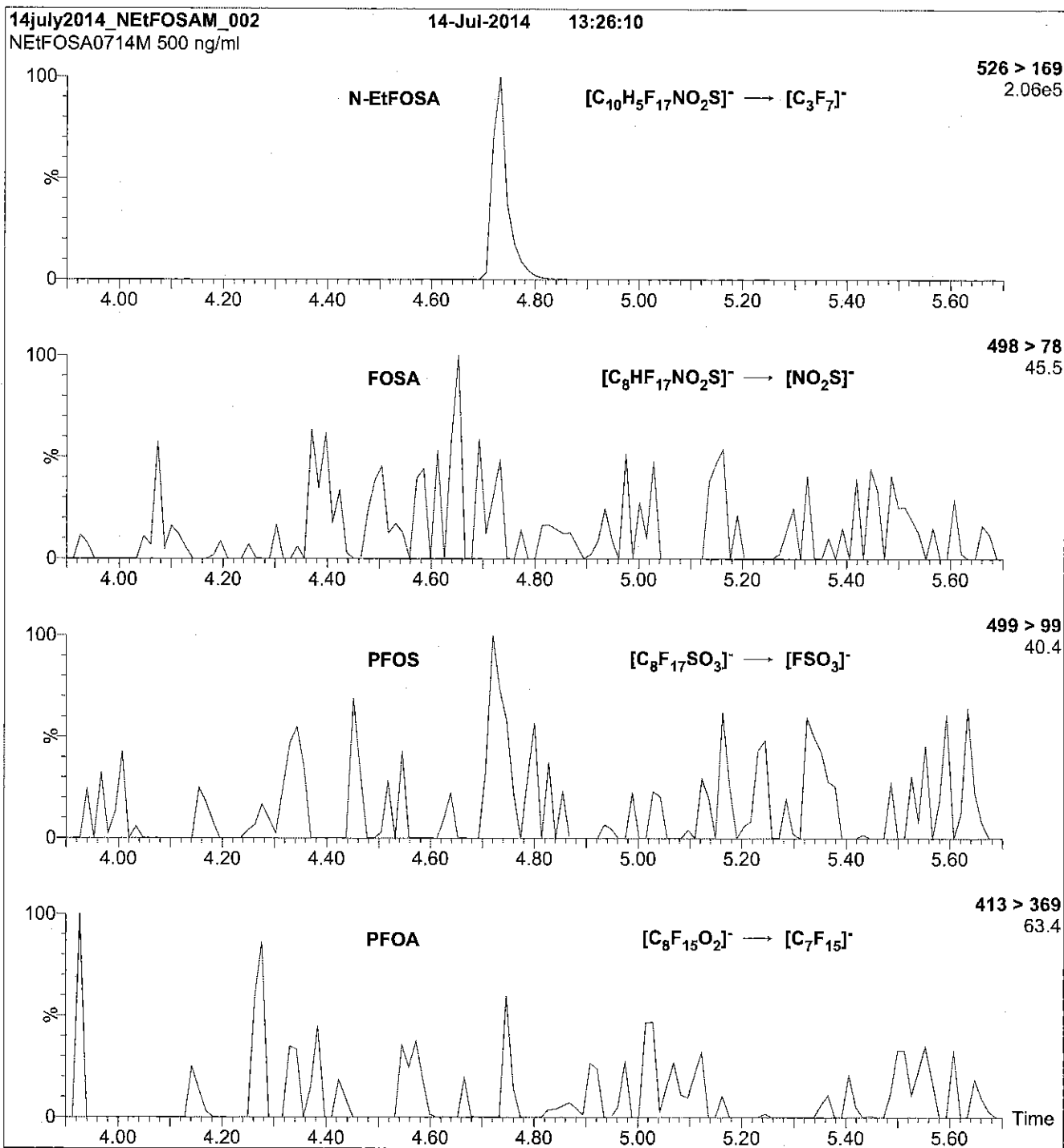
**Flow:** 300  $\mu$ l/min

**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-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

**Injection:** Direct loop injection  
 10  $\mu$ l (500 ng/ml N-EtFOSA-M)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCN-ETFOSAA\_00001**

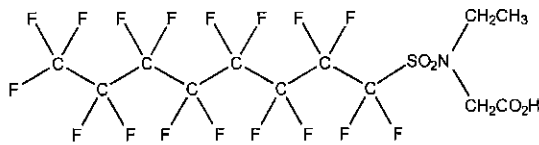


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



**MOLECULAR FORMULA:** C<sub>12</sub>H<sub>8</sub>F<sub>17</sub>NO<sub>4</sub>S  
**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.

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 B.G. Chittim

**Date:** 04/06/2015  
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Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

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

**QUALITY MANAGEMENT:**

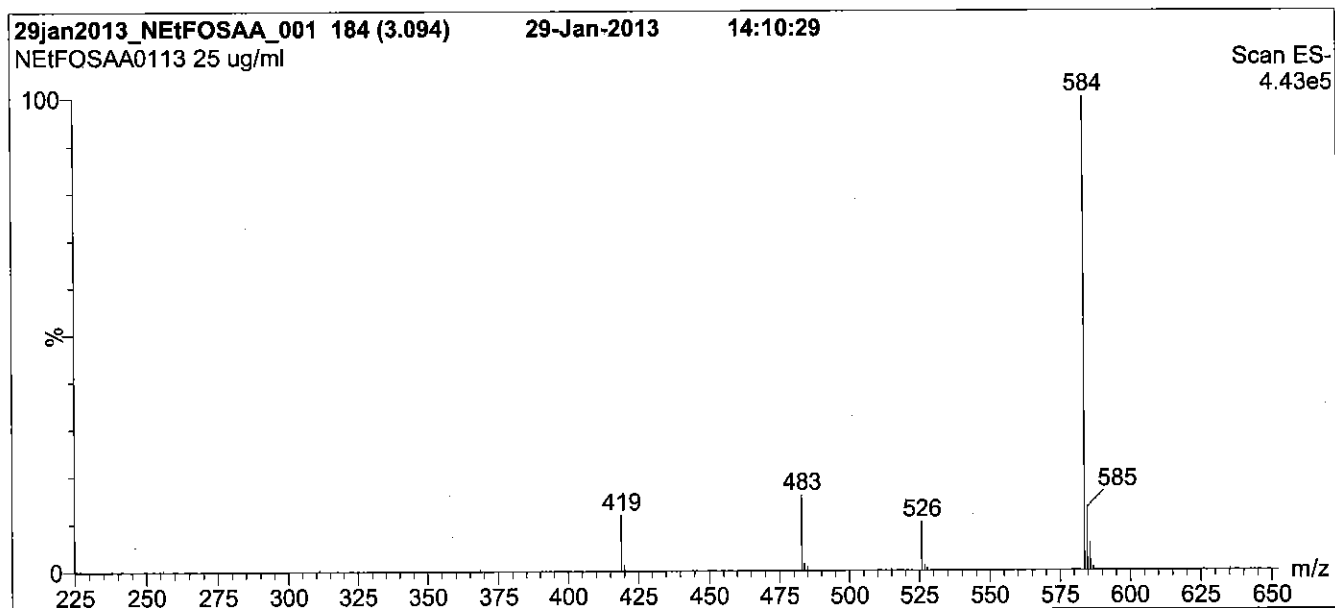
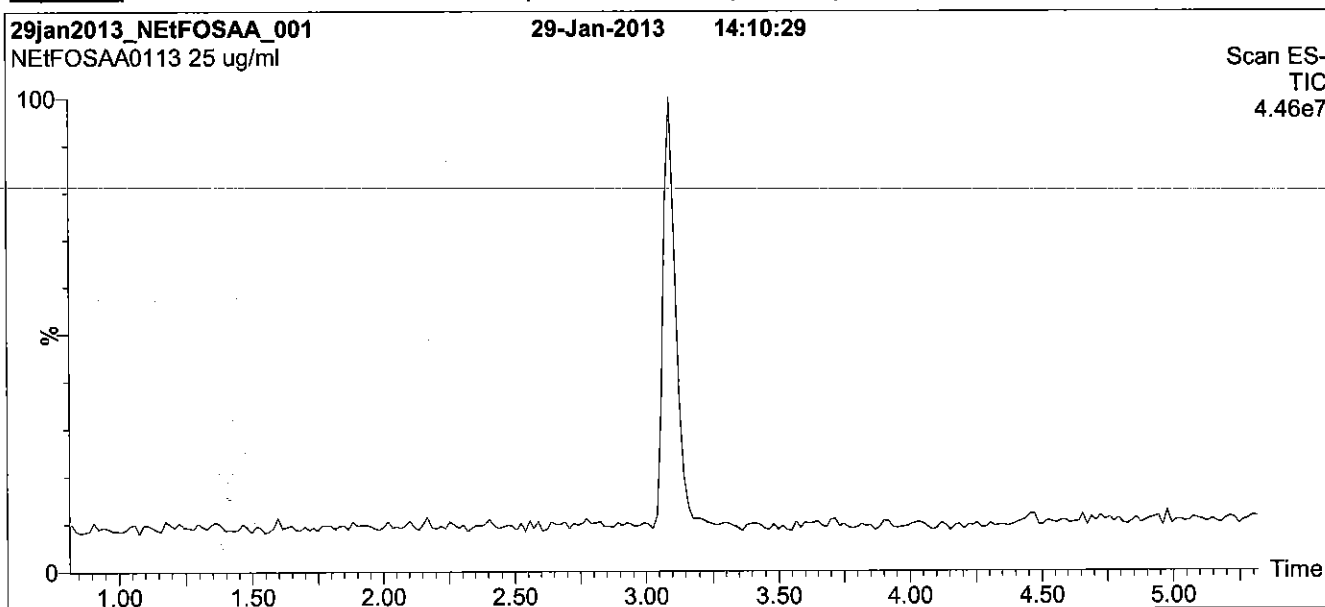
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*



**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 RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 65% (80:20 MeOH:ACN) / 35% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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

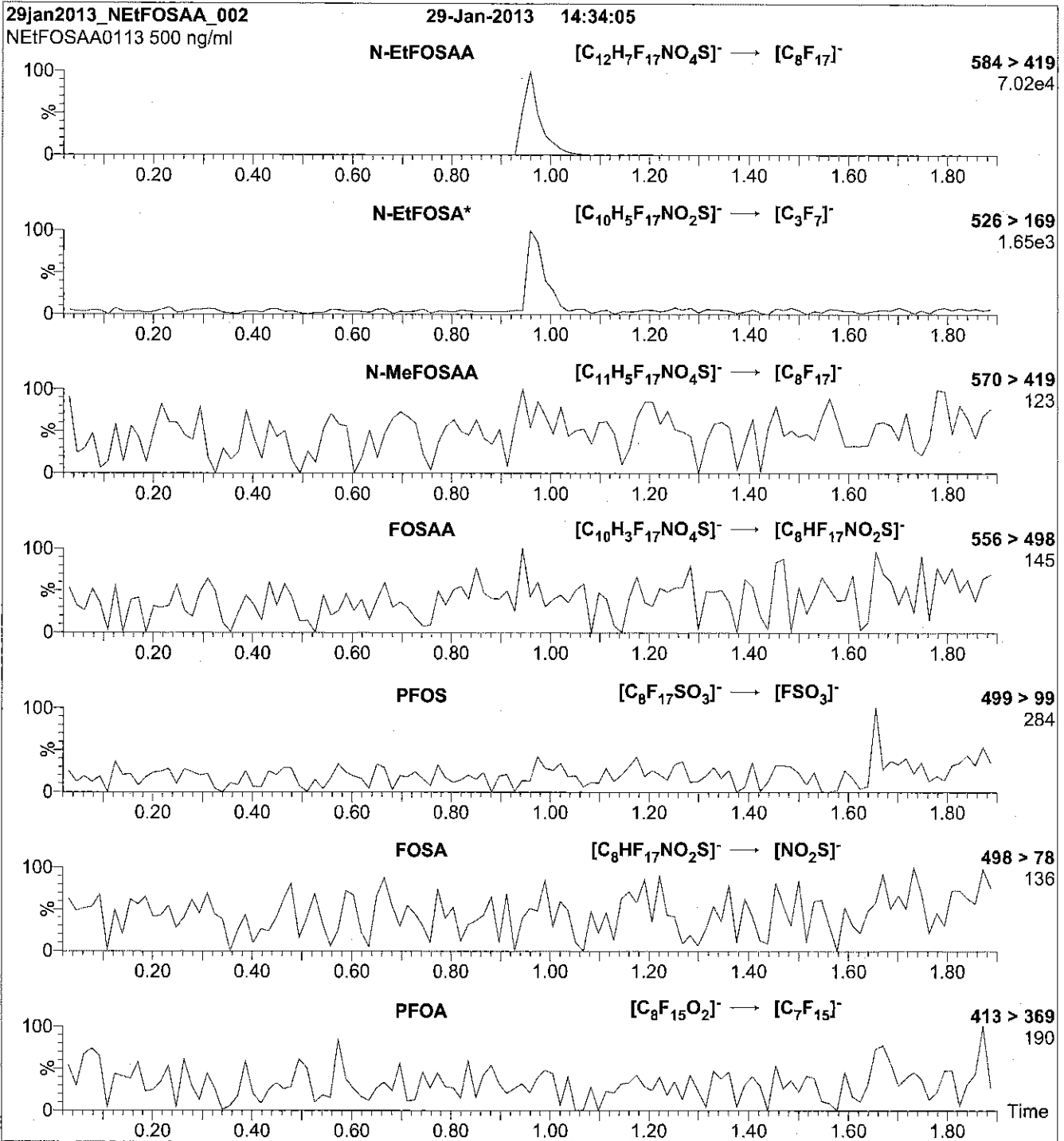
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml N-EtFOSAA)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCN-MeFOSA-M\_00001**

V: 7/16/15 SPW



# WELLINGTON LABORATORIES

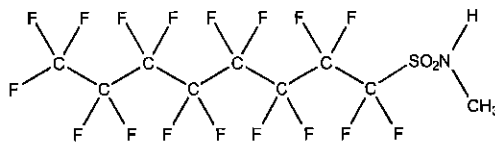
## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

**LOT NUMBER:** NMeFOSA0714M

**STRUCTURE:**

**CAS #:** 31506-32-8



**MOLECULAR FORMULA:** C<sub>9</sub>H<sub>4</sub>F<sub>17</sub>NO<sub>2</sub>S  
**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

### **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:**

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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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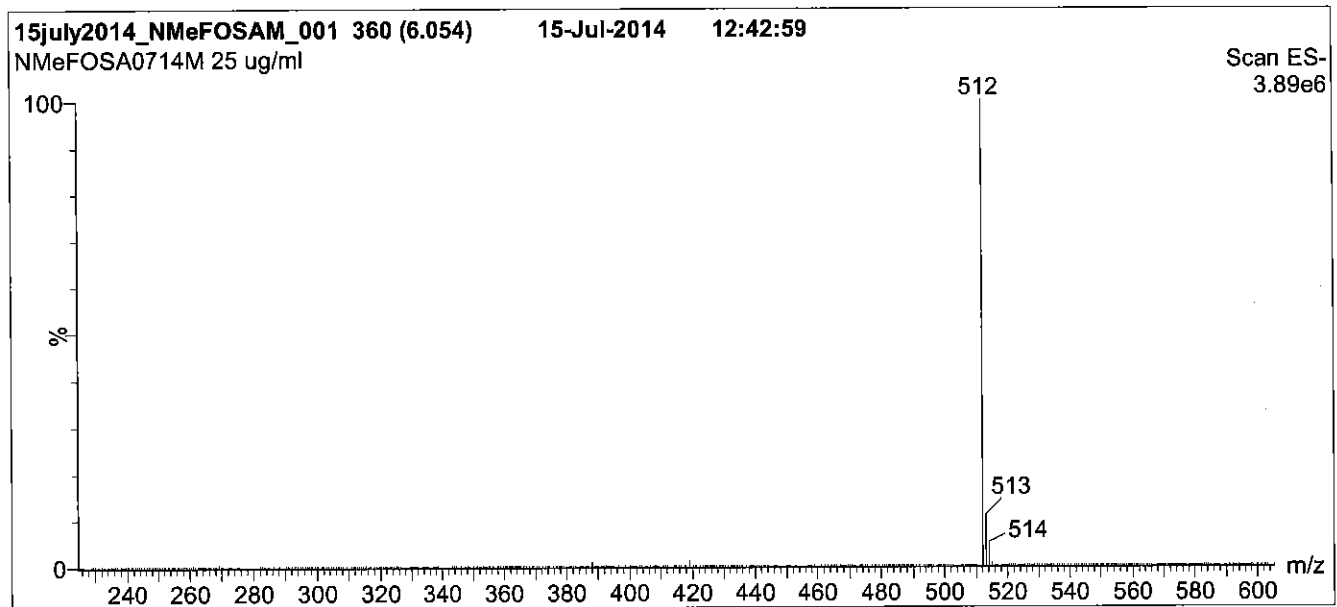
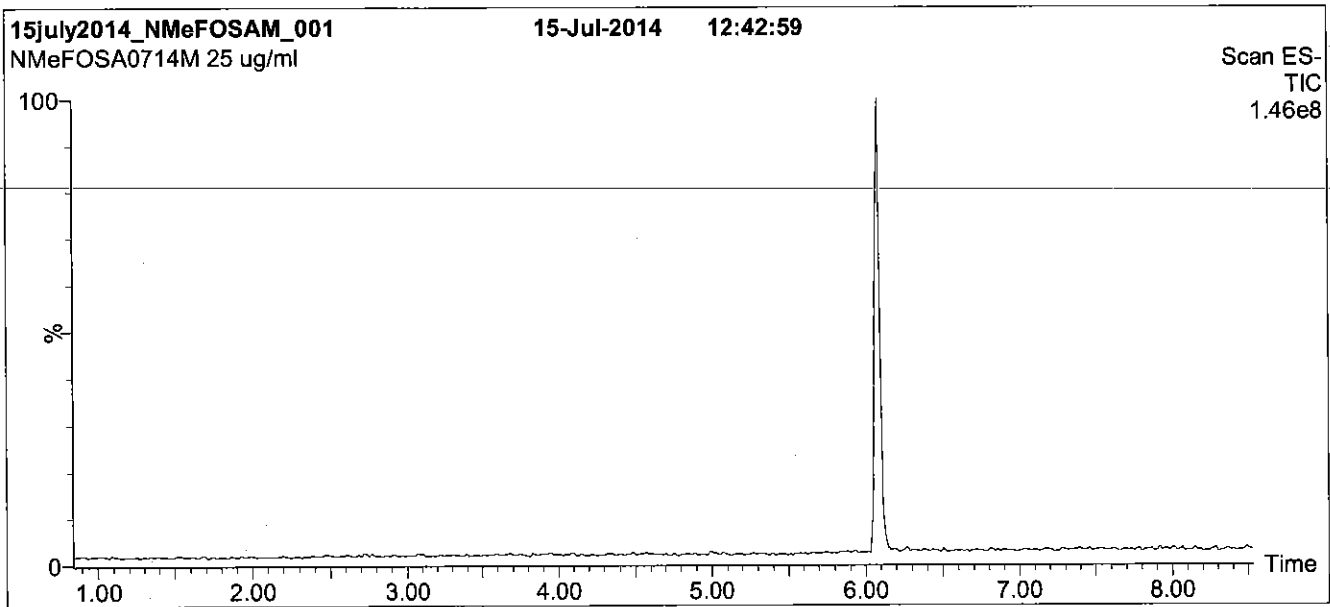
### **QUALITY MANAGEMENT:**

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: 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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 45% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>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

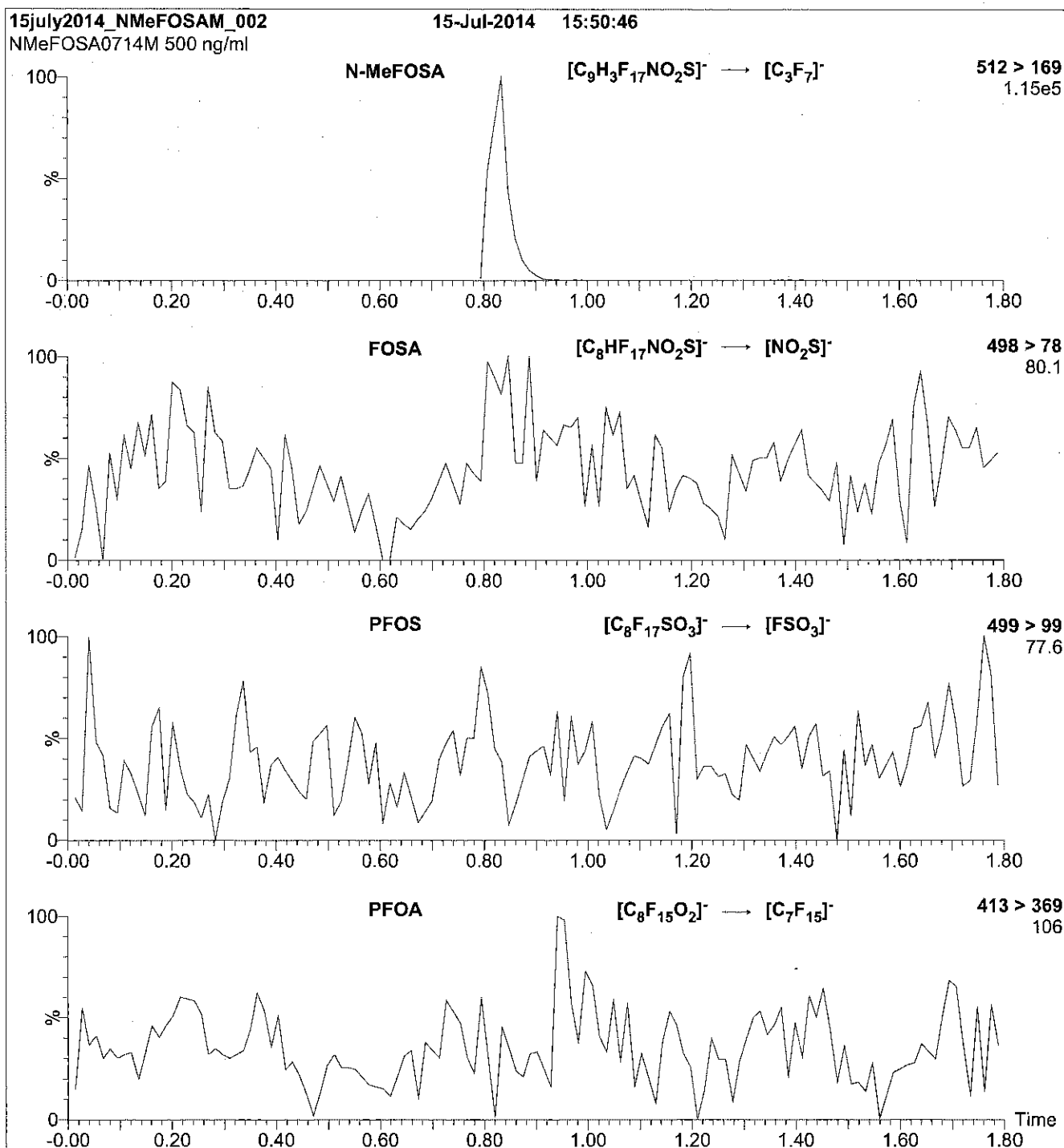
**Flow:** 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml N-MeFOSA-M)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCN-MeFOSAA\_00001**



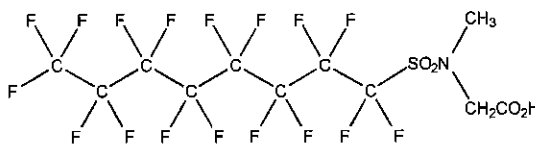


**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

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

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



**MOLECULAR FORMULA:** C<sub>11</sub>H<sub>6</sub>F<sub>17</sub>NO<sub>4</sub>S **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

**INTENDED USE:**

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**HAZARDS:**

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**SYNTHESIS / CHARACTERIZATION:**

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**HOMOGENEITY:**

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, 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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where  $x$  is expressed as a relative standard uncertainty of the individual parameter.

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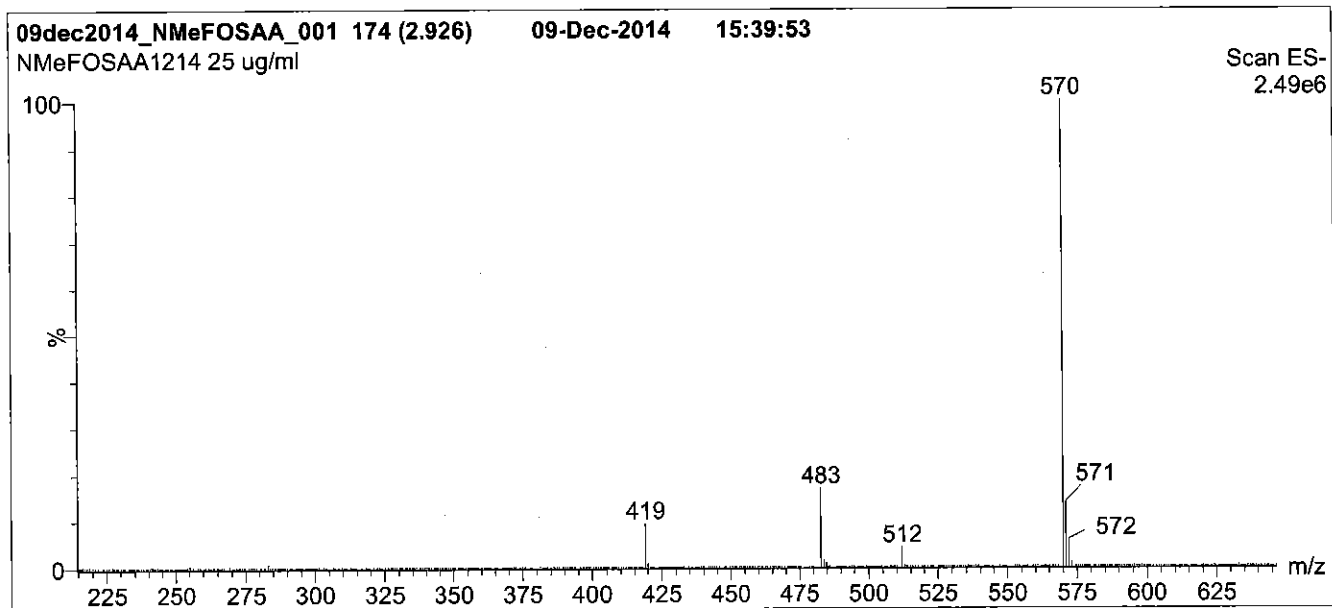
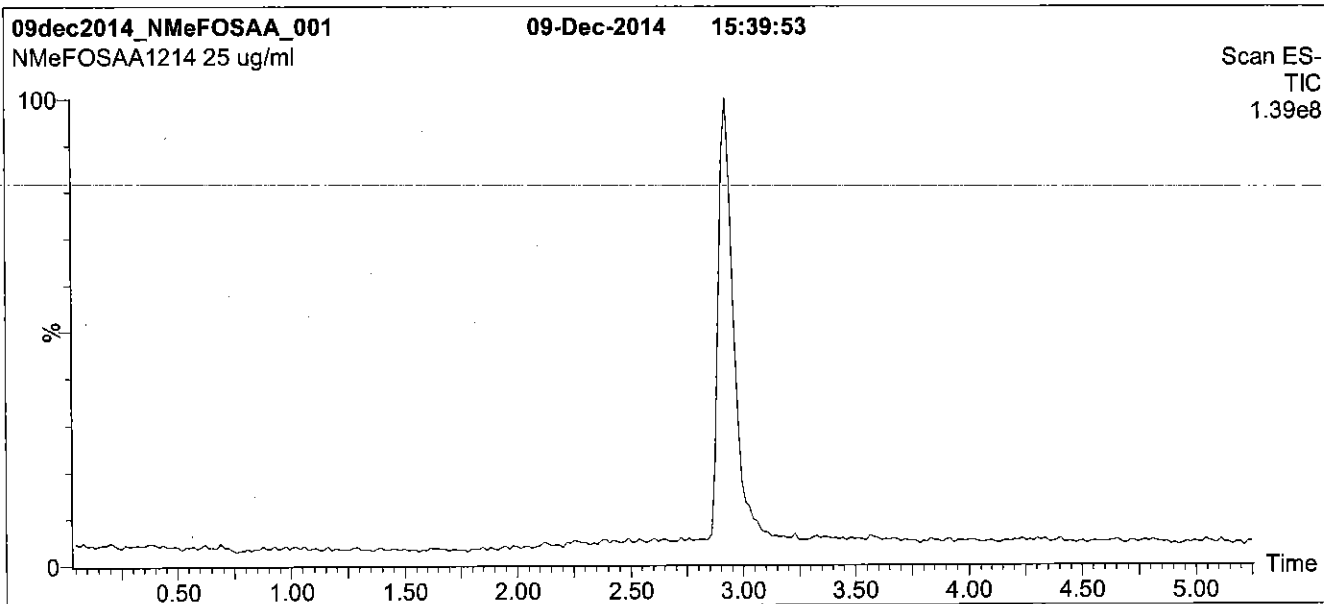
**QUALITY MANAGEMENT:**

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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 RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 65% (80:20 MeOH:ACN) / 35% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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

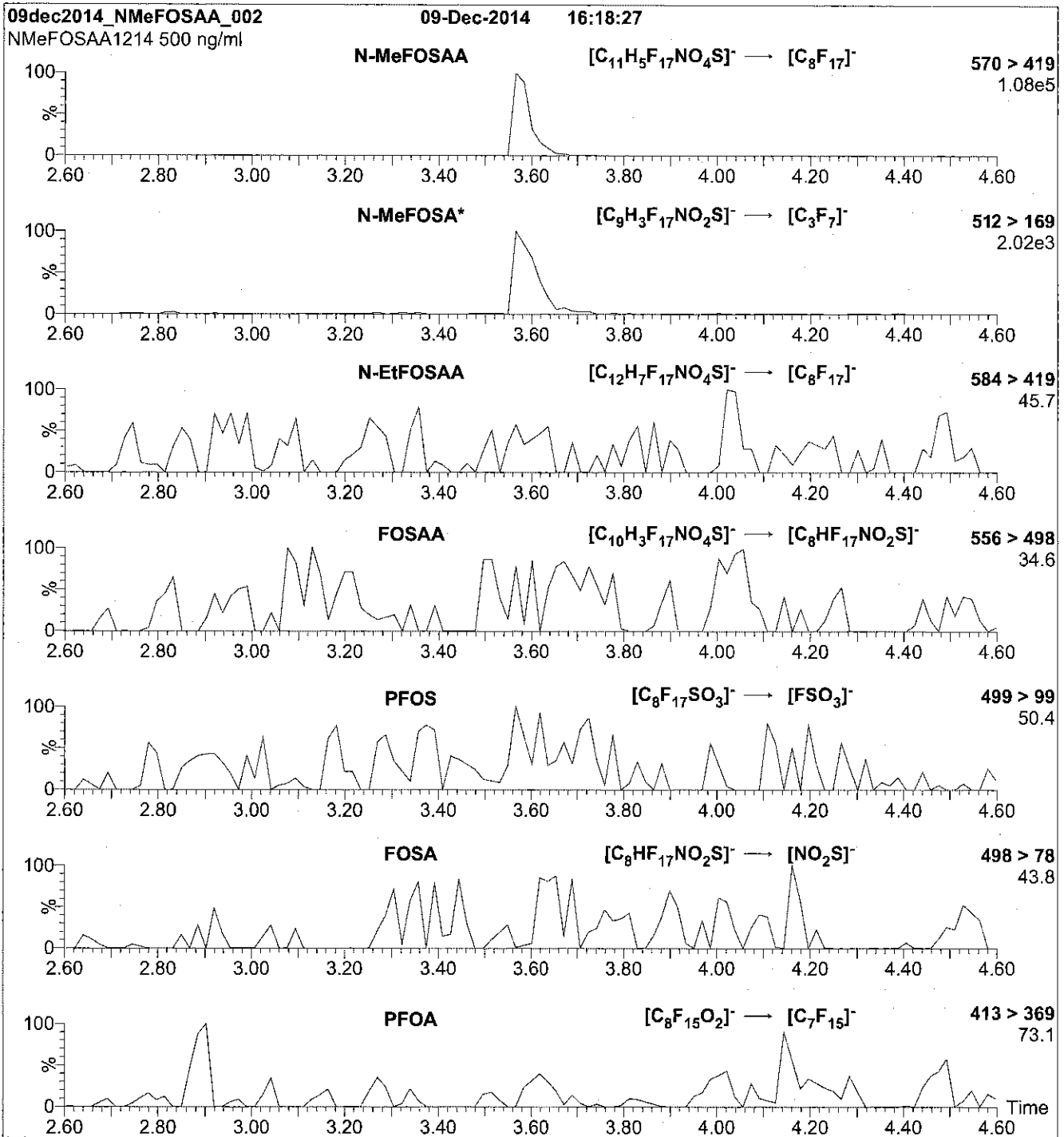
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFACMXB\_00007**



**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

**PFAC-MXB**

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

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

**DESCRIPTION:**

PFAC-MXB is a solution/mixture of thirteen native perfluoroalkylcarboxylic acids (C<sub>4</sub>-C<sub>14</sub>, C<sub>16</sub>, and C<sub>18</sub>) and four native perfluoroalkylsulfonates (C<sub>4</sub>, C<sub>6</sub>, C<sub>8</sub> and C<sub>10</sub>). 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**

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

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

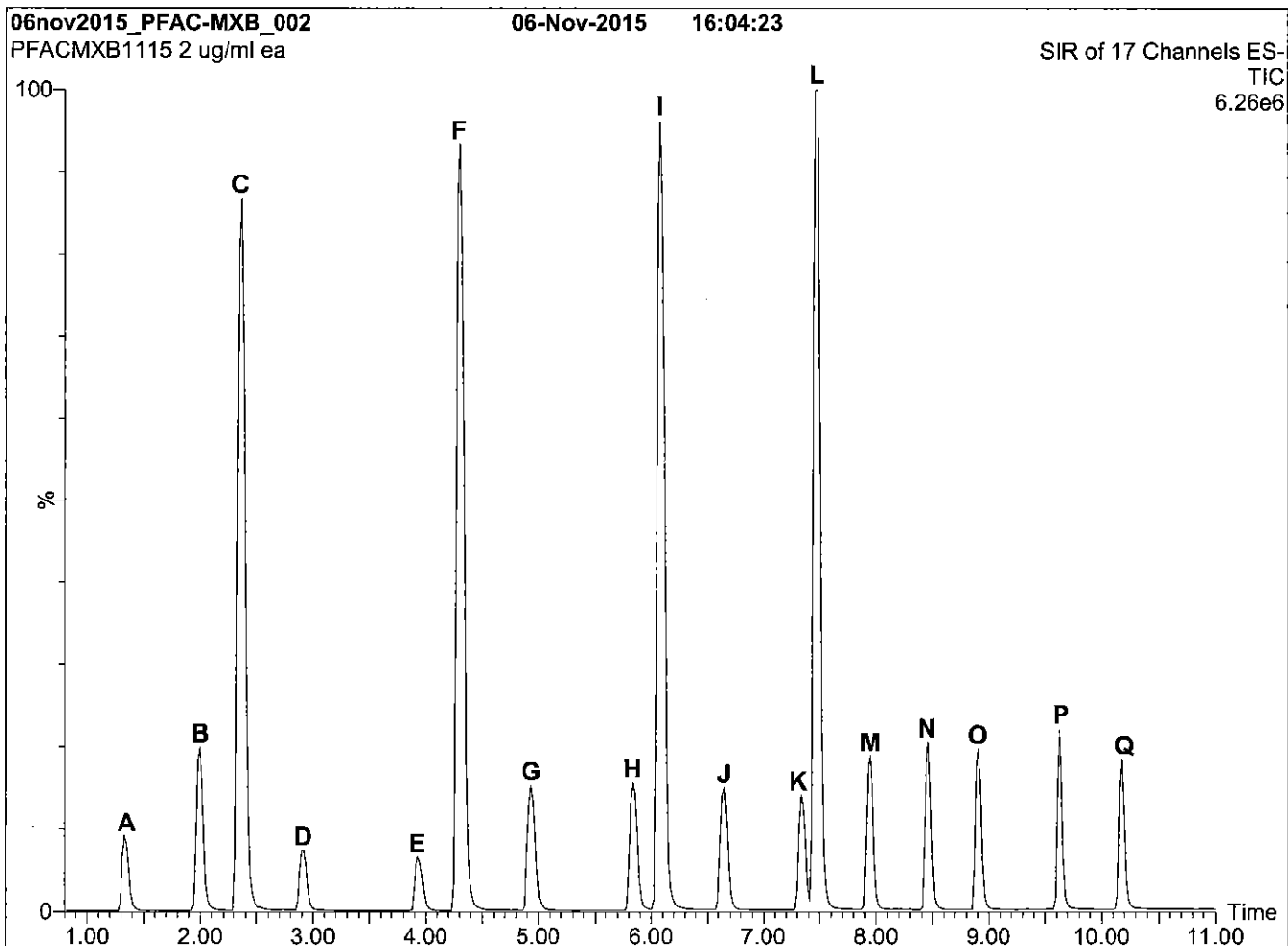
Name	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Perfluoro-n-butanoic acid	PFBA	2000		A
Perfluoro-n-pentanoic acid	PFPeA	2000		B
Perfluoro-n-hexanoic acid	PFHxA	2000		D
Perfluoro-n-heptanoic acid	PFHpA	2000		E
Perfluoro-n-octanoic acid	PFOA	2000		G
Perfluoro-n-nonanoic 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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 55% H<sub>2</sub>O / 45% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>OAc 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

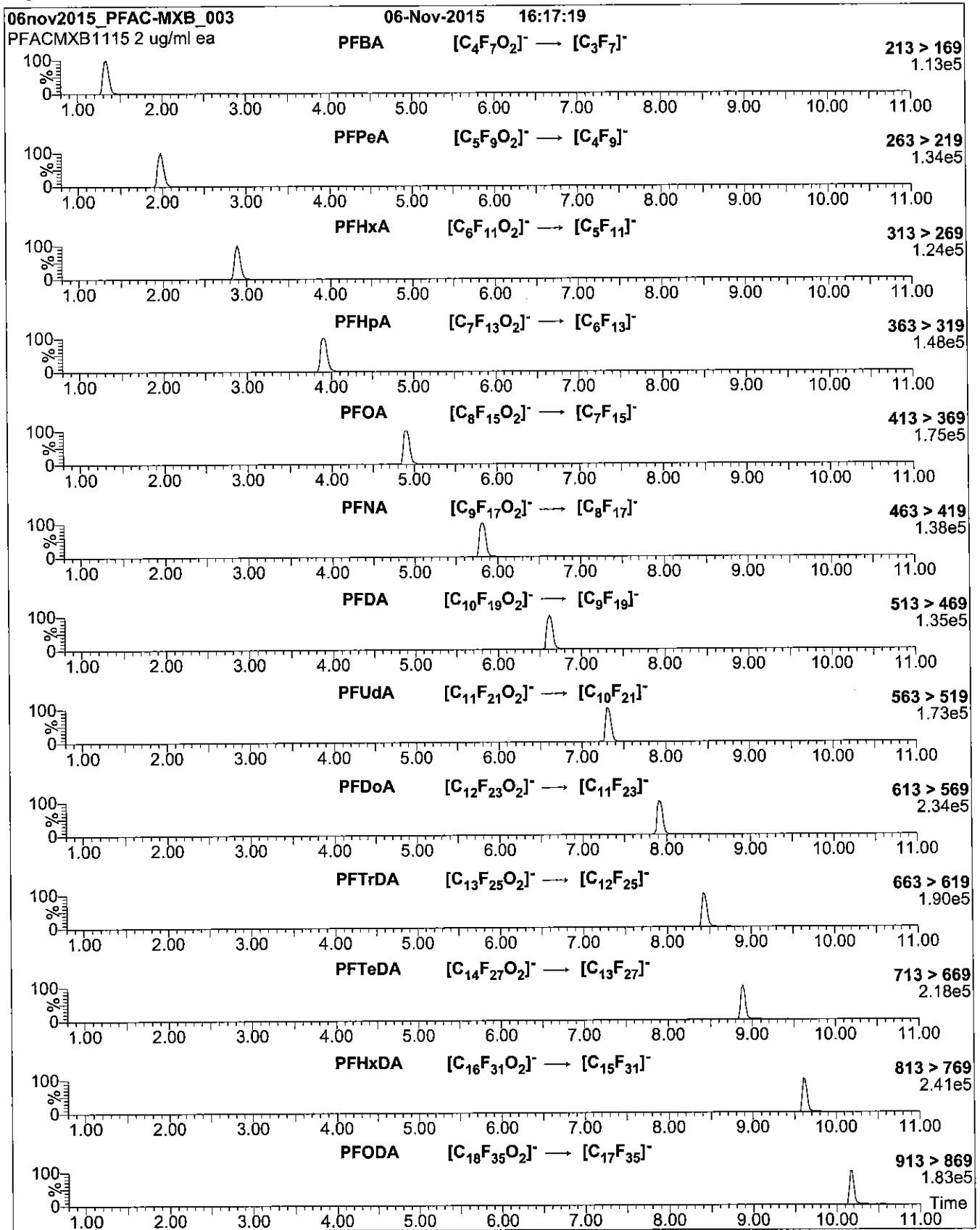
**Flow:** 300  $\mu$ l/min

**MS Parameters**

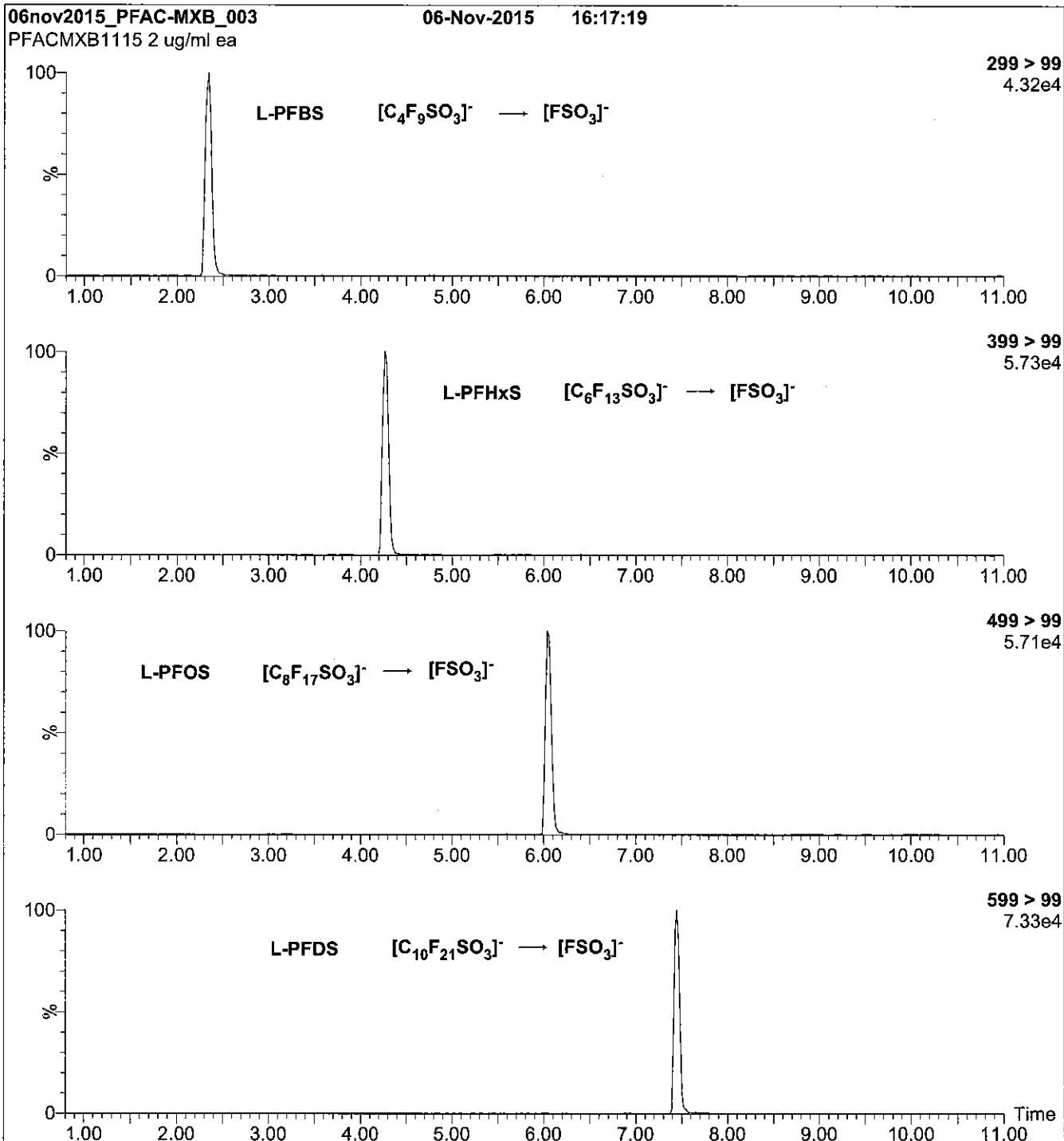
Experiment: SIR of 17 Channels

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  $\mu$ /min

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

Reagent

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**LCPFBA\_00004**



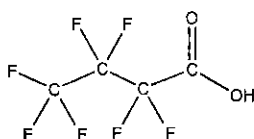
R: 2125/16 CBW

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

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

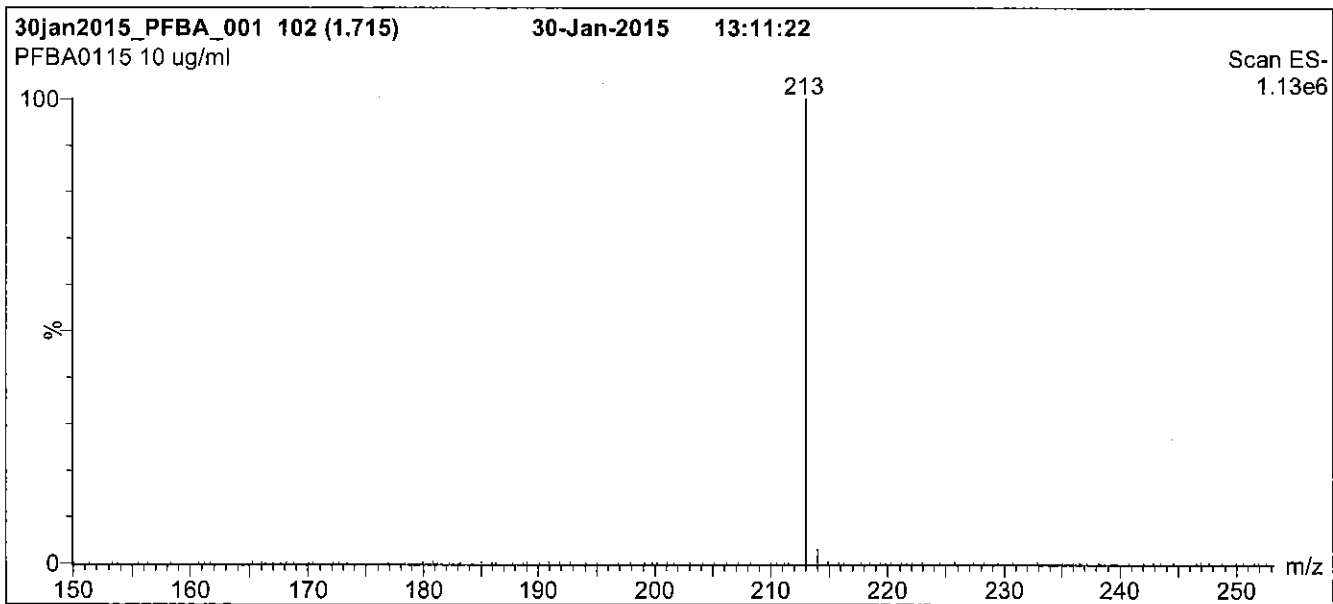
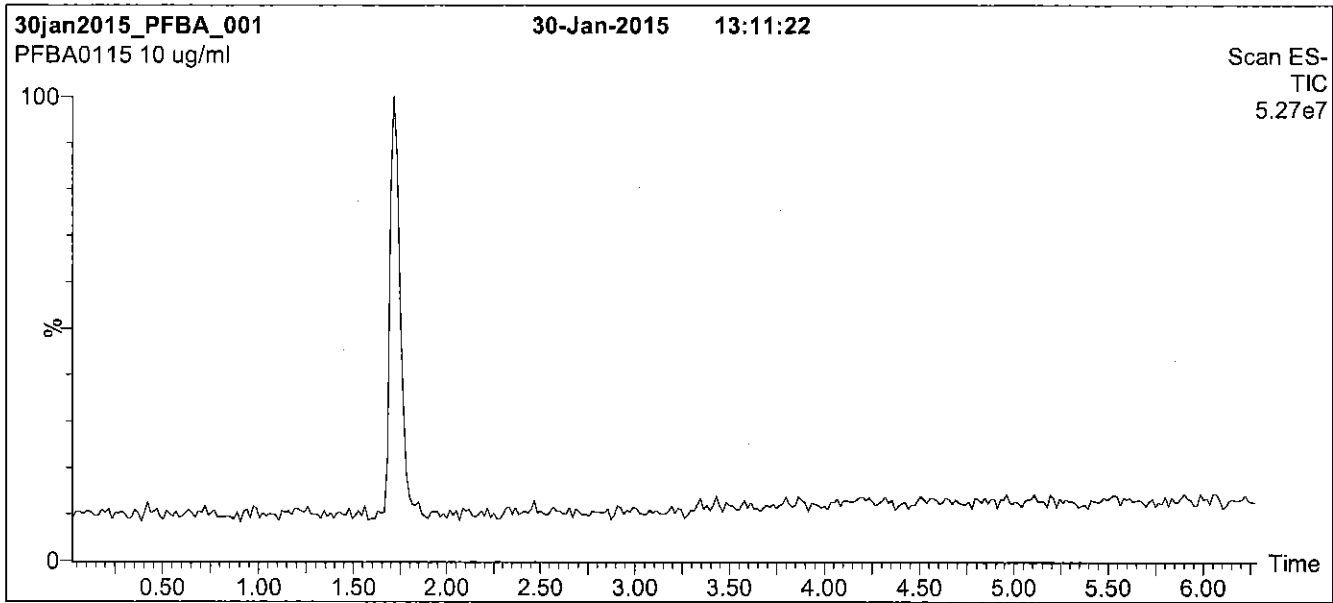
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 30% (80:20 MeOH:ACN) / 70% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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

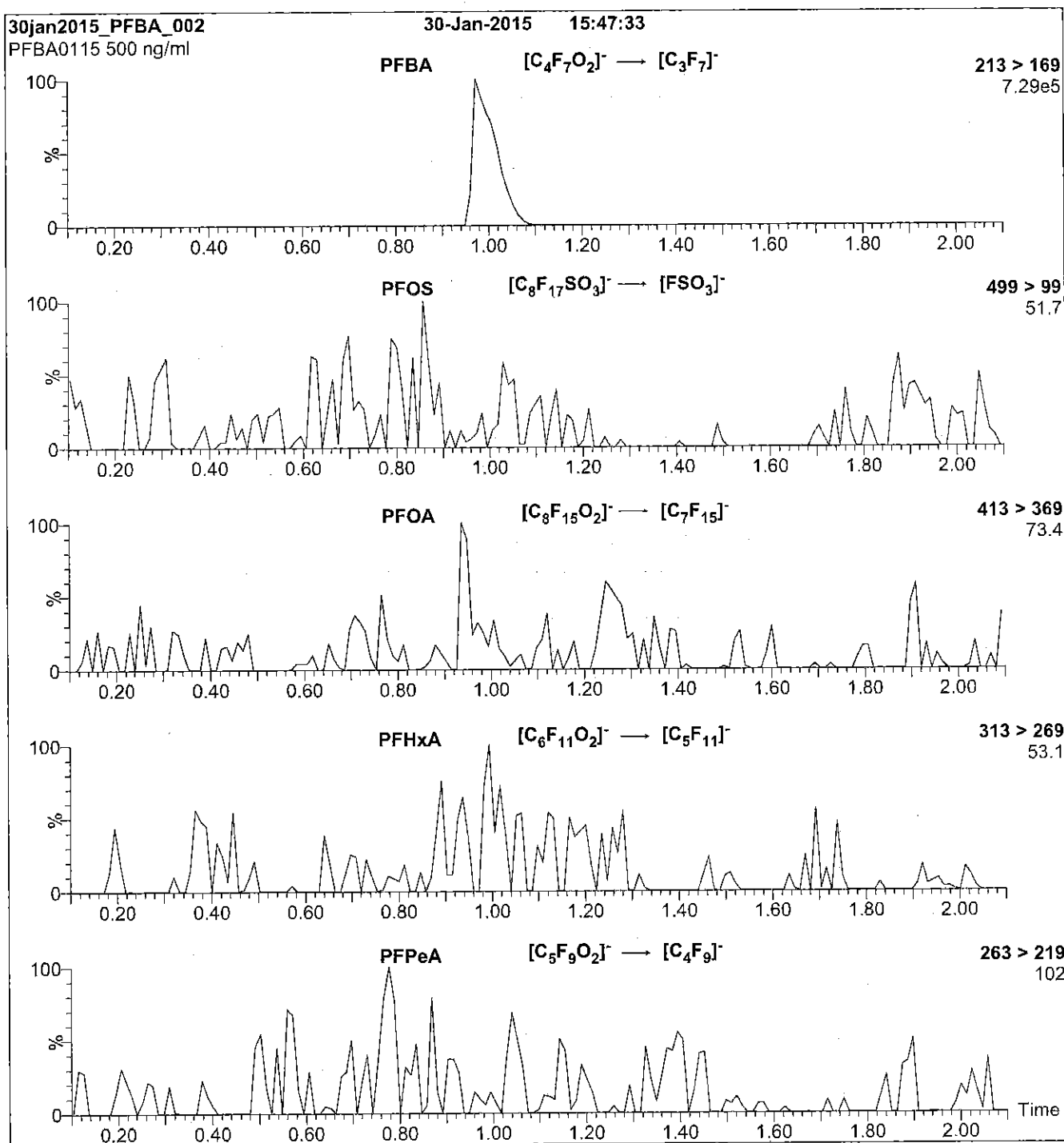
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml PFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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



Reagent

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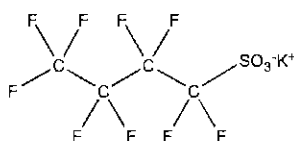
**LCPFBS\_00003**



# 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:** C<sub>4</sub>F<sub>9</sub>SO<sub>3</sub>K      **MOLECULAR WEIGHT:** 338.19  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (K salt)      **SOLVENT(S):** Methanol  
44.2 ± 2.2 µg/ml (PFBS anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 10/09/2014  
**EXPIRY DATE:** (mm/dd/yyyy) 10/09/2019  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:

B.G. Chittim

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

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

### **INTENDED USE:**

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

### **HAZARDS:**

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

### **SYNTHESIS / CHARACTERIZATION:**

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.

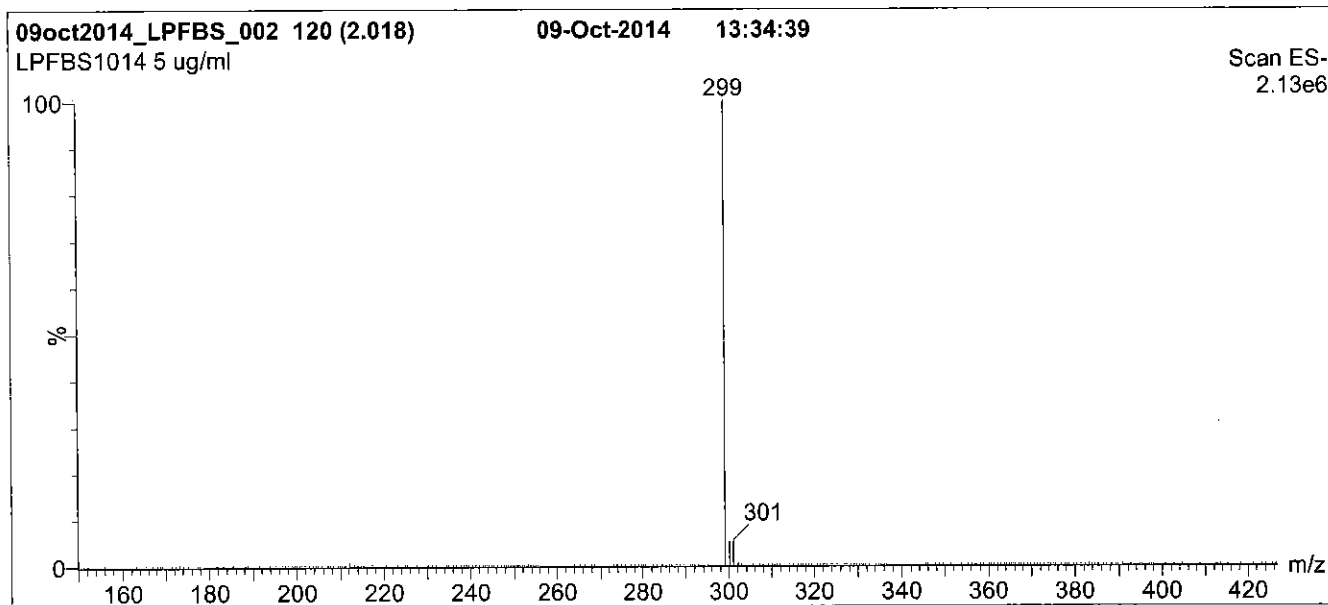
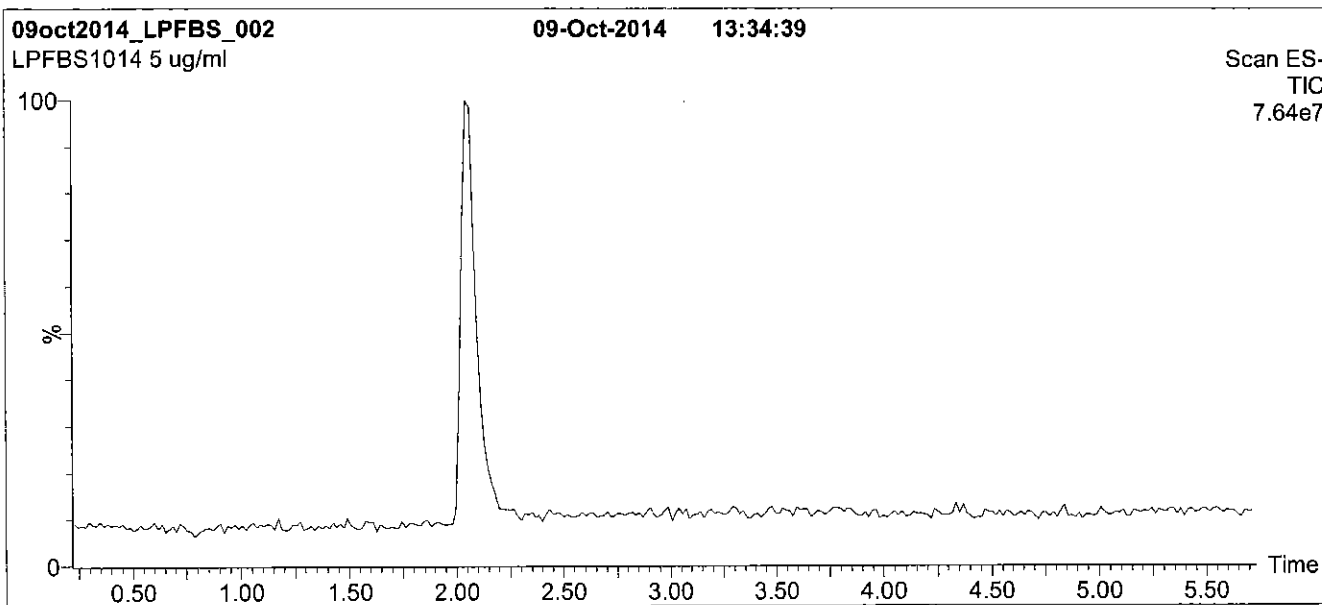
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 40% (80:20 MeOH:ACN) / 60% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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

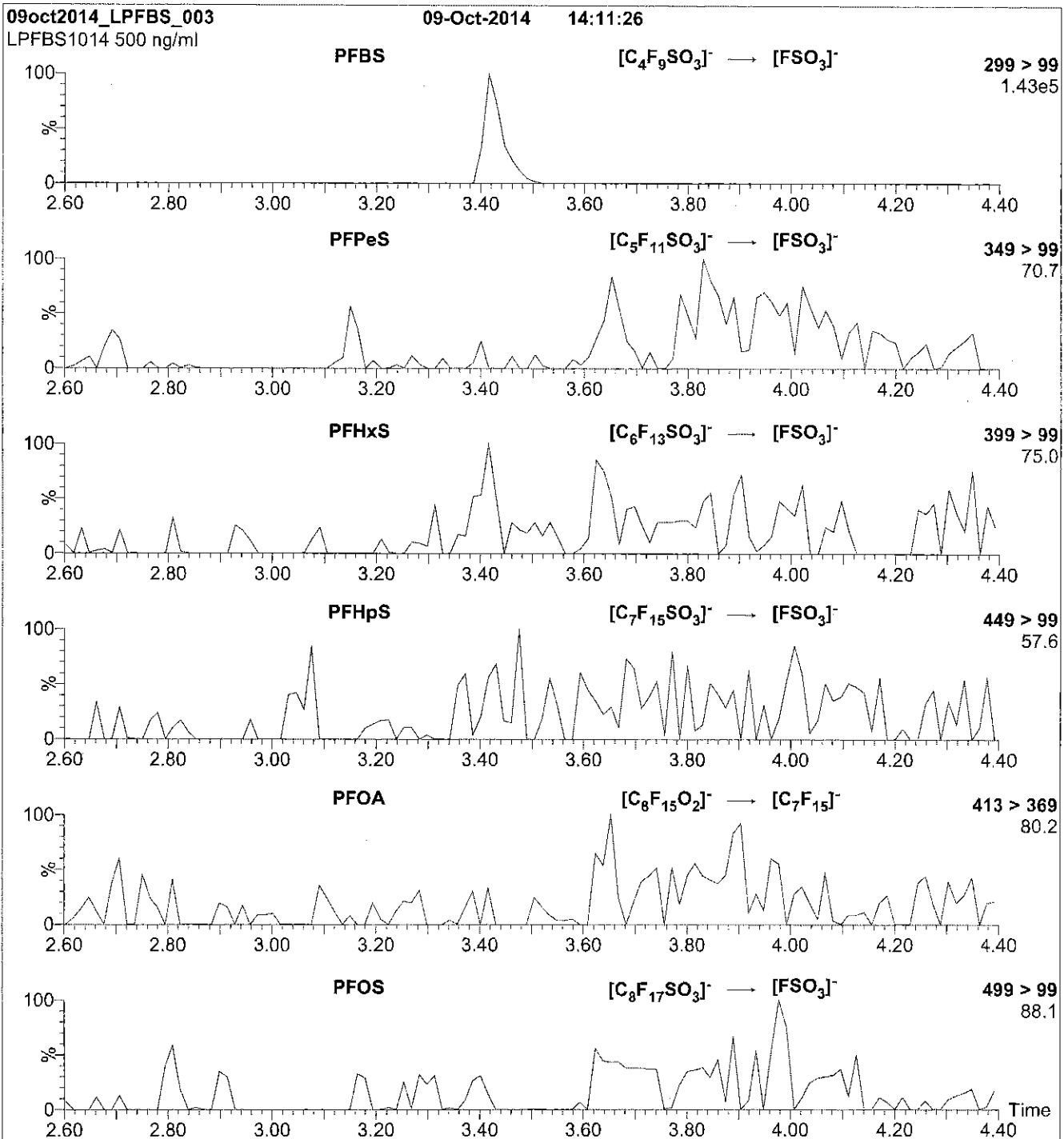
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFBS\_00004**



Rec. 3/29/16 JRB ✓

605236

ID: LCPFBS\_00004

Exp: 10/09/19 Prpd: CBW

PF-1-butanesulfonate K sa

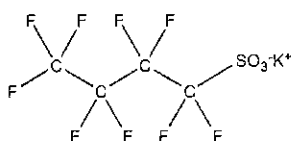


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

**STRUCTURE:** **CAS #:** 29420-49-3



**MOLECULAR FORMULA:** C<sub>4</sub>F<sub>9</sub>SO<sub>3</sub>K **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

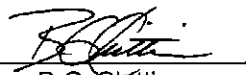
**DOCUMENTATION/ DATA ATTACHED:**

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

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

### **INTENDED USE:**

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### **HOMOGENEITY:**

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

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

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

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### **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:**

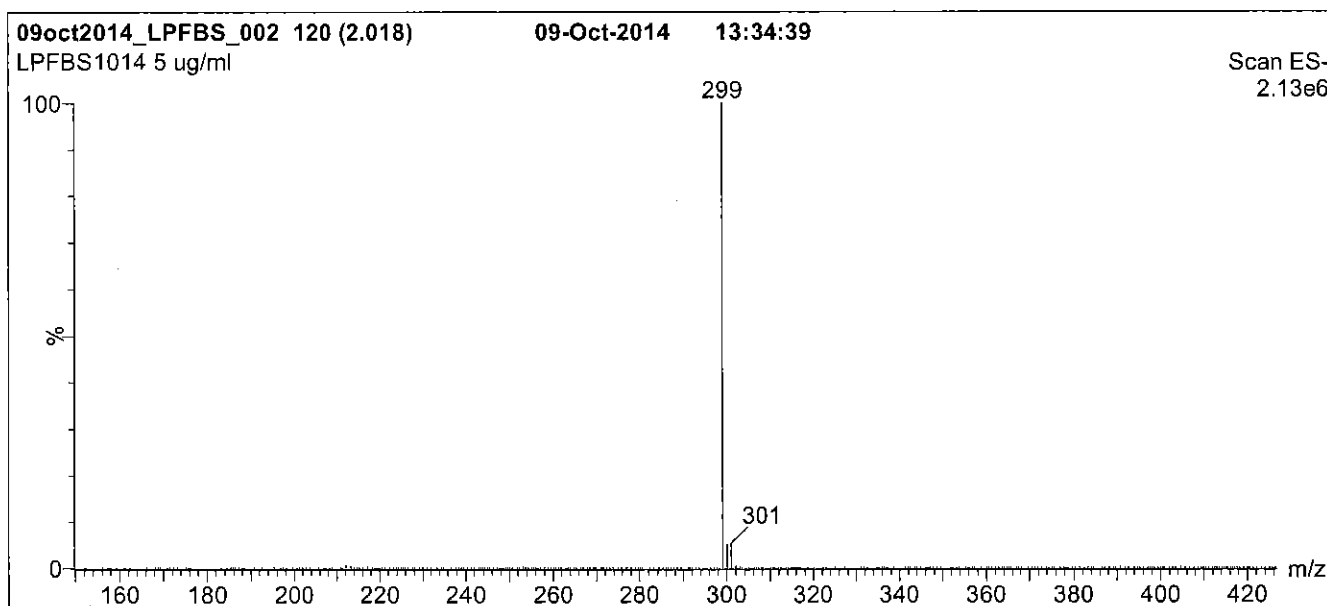
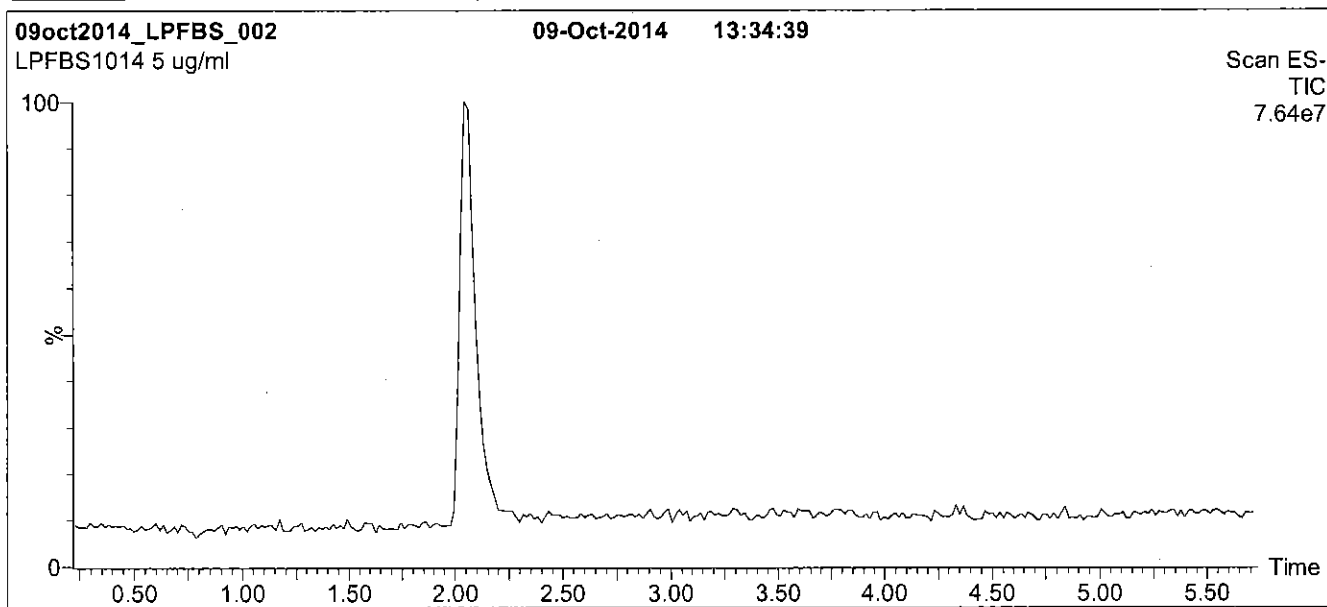
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
 Start: 40% (80:20 MeOH:ACN) / 60% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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

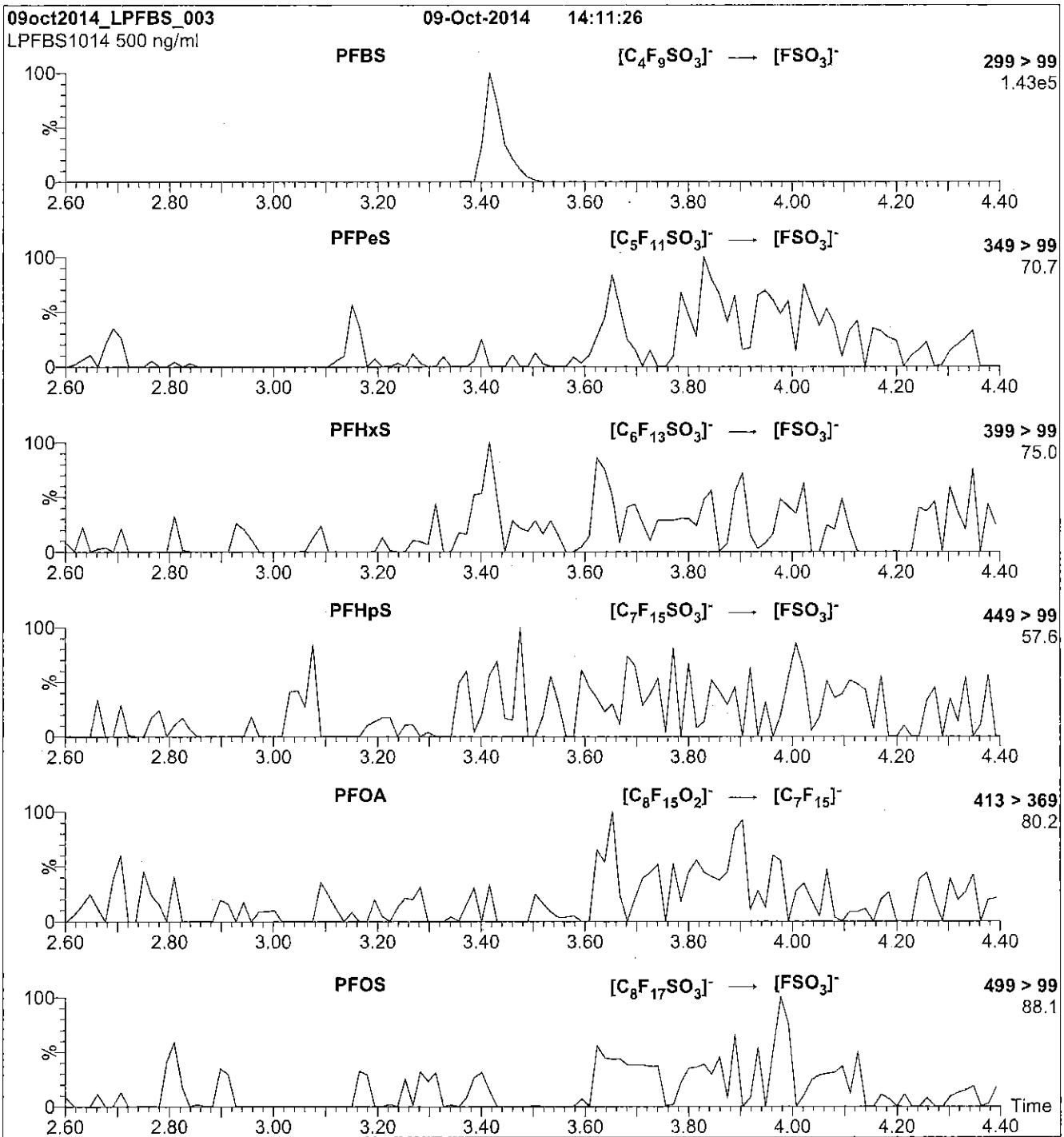
**Flow:** 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml L-PFBS)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFDA\_00004**

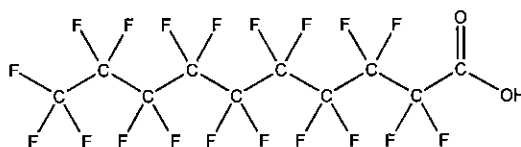


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



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

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By: \_\_\_\_\_

  
 B.G. Chittim

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

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

### **INTENDED USE:**

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

### **HAZARDS:**

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

### **SYNTHESIS / CHARACTERIZATION:**

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

### **HOMOGENEITY:**

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

### **UNCERTAINTY:**

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

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

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

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

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

### **TRACEABILITY:**

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

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

### **LIMITED WARRANTY:**

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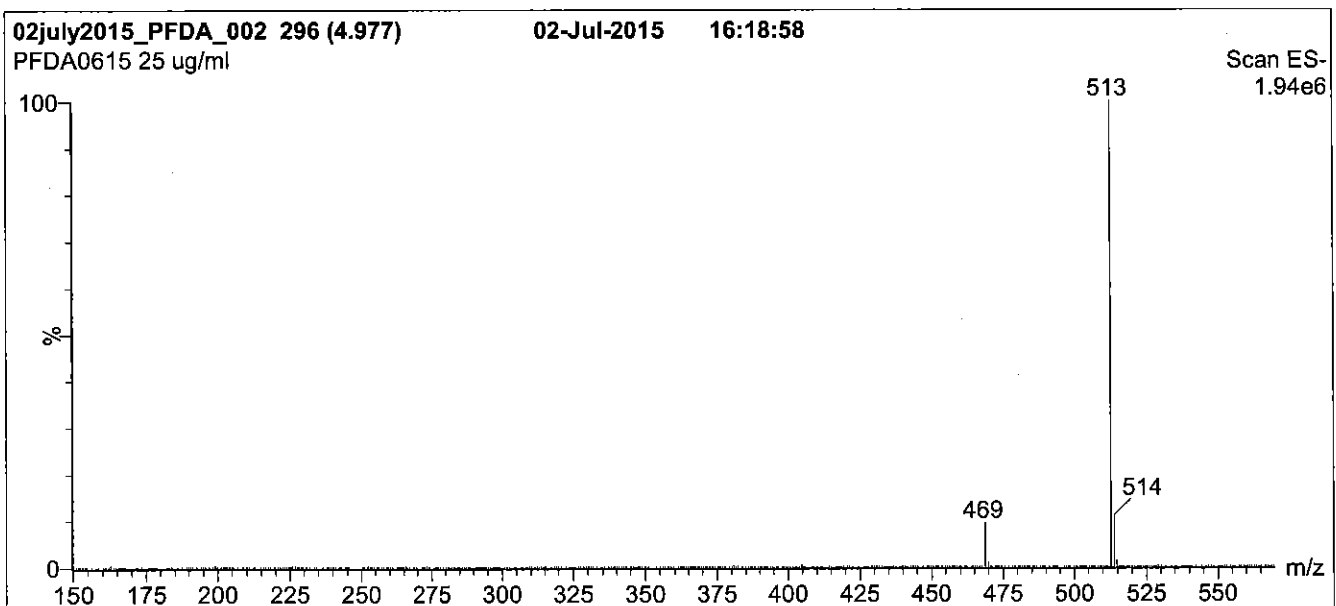
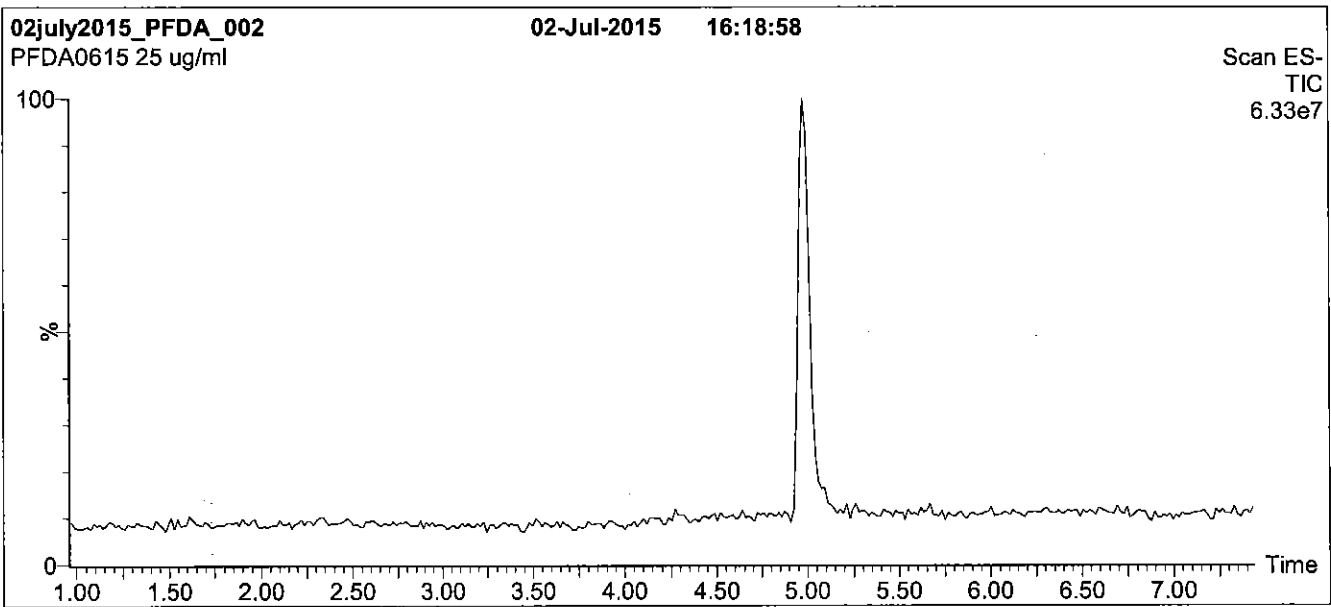
### **QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>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

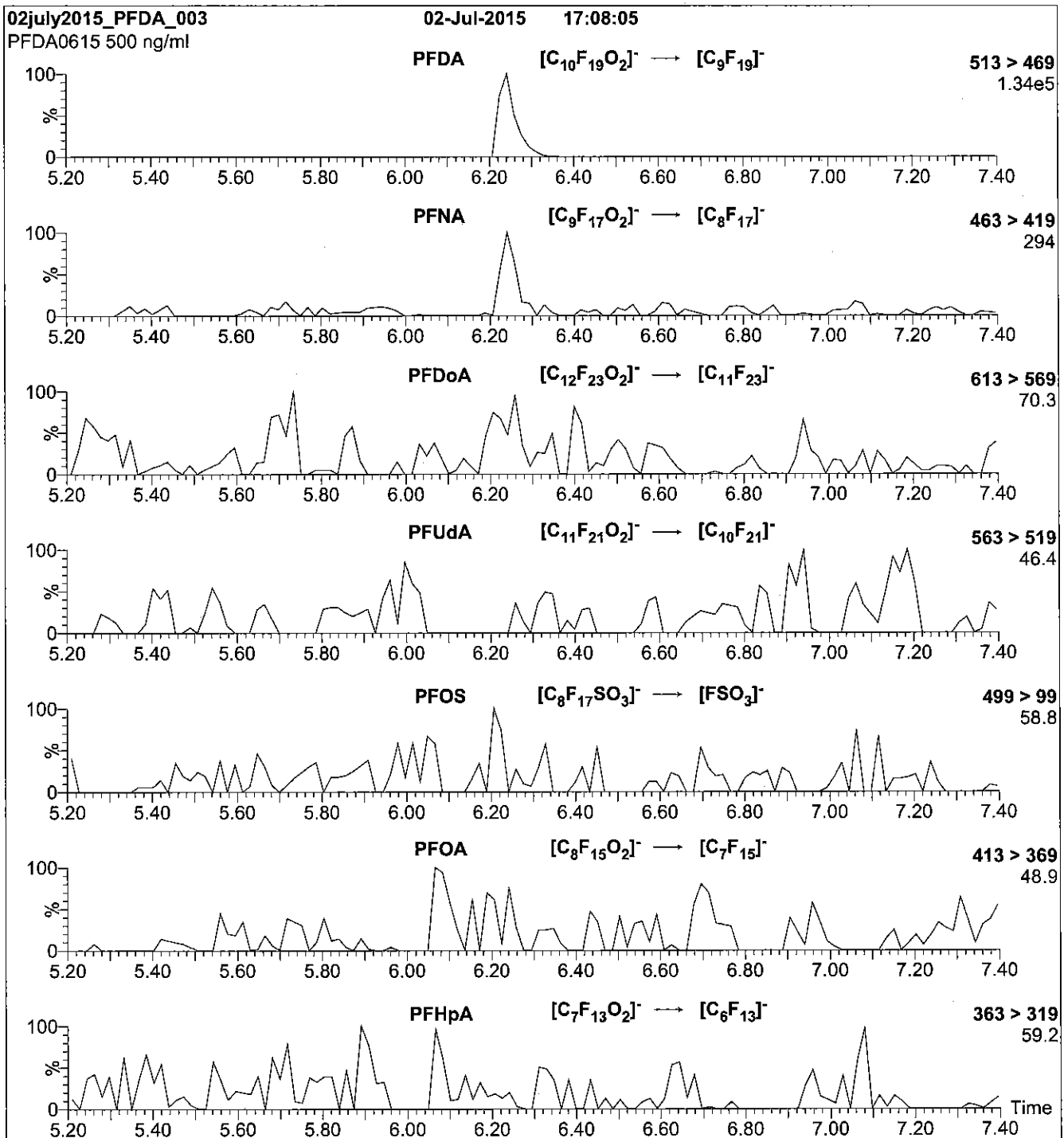
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFDoA\_00004**



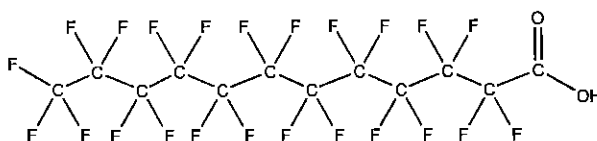


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



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

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By: \_\_\_\_\_

  
 B.G. Chittim

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

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

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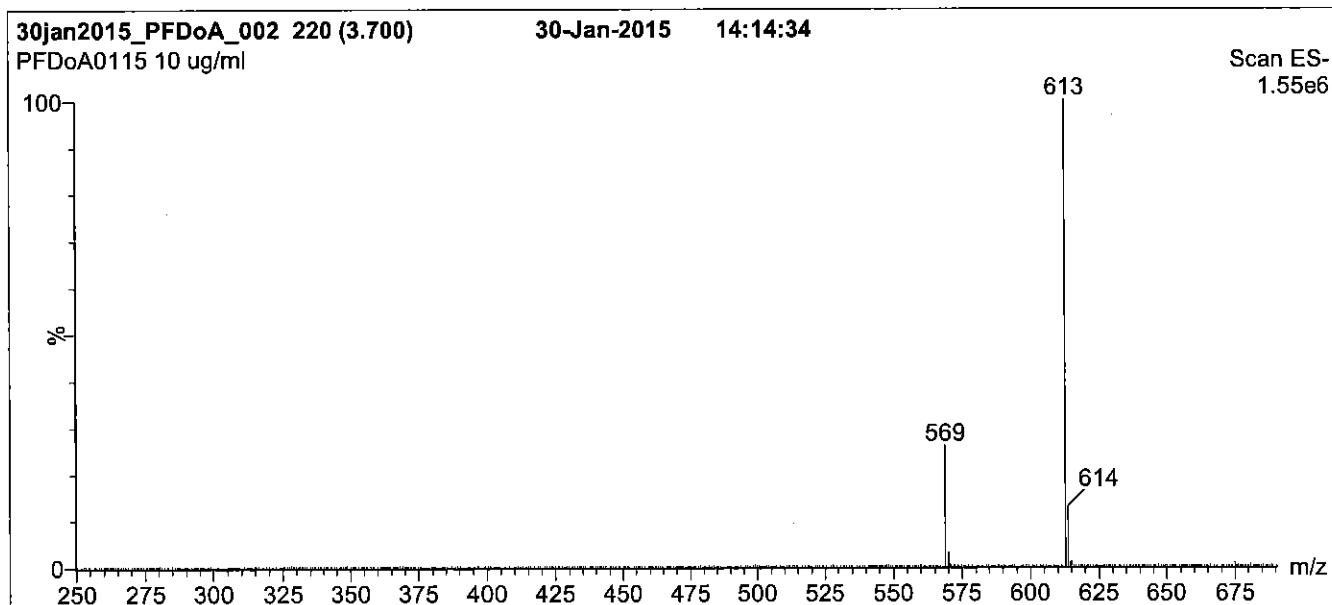
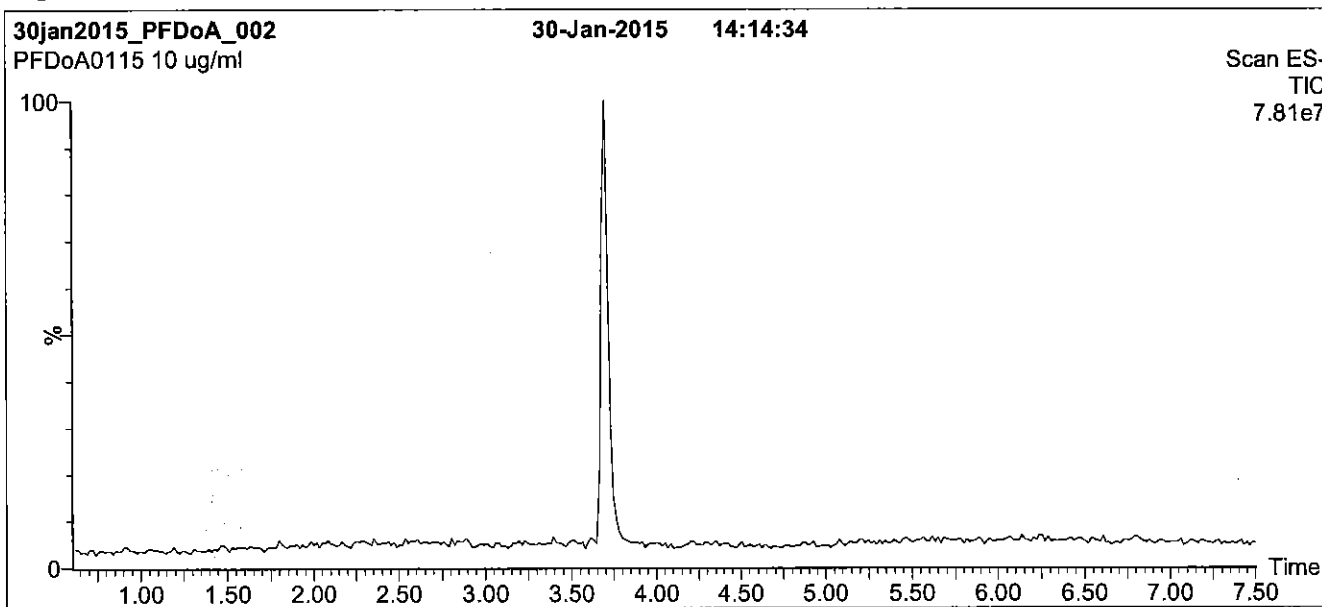
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**Figure 1: PFD<sub>o</sub>A; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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

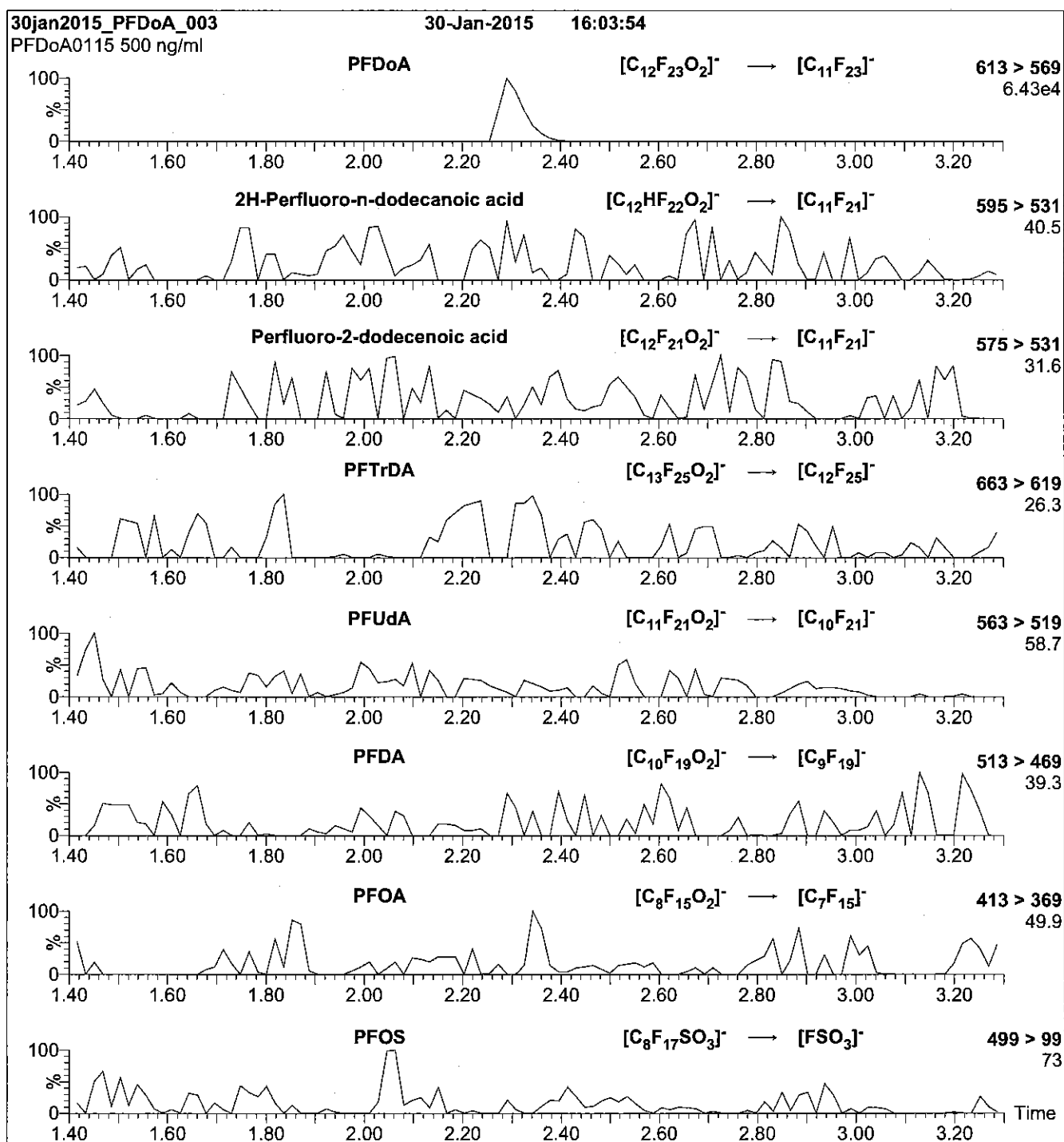
**Flow:** 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml PFD0A)

**MS Parameters**

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

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

**Flow:** 300  $\mu$ l/min

Reagent

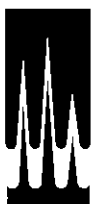
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**LCPFDS\_00005**



605240  
 ID: LCPFDS\_00005  
 Exp: 07/02/20 Prpd: CBW  
 PF-1-decanesulfonate sodi

Rec. 3/29/16 JRB

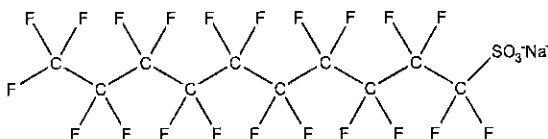


**WELLINGTON**  
 LABORATORIES

**CERTIFICATE OF ANALYSIS**  
 DOCUMENTATION

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

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



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

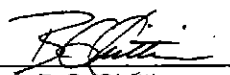
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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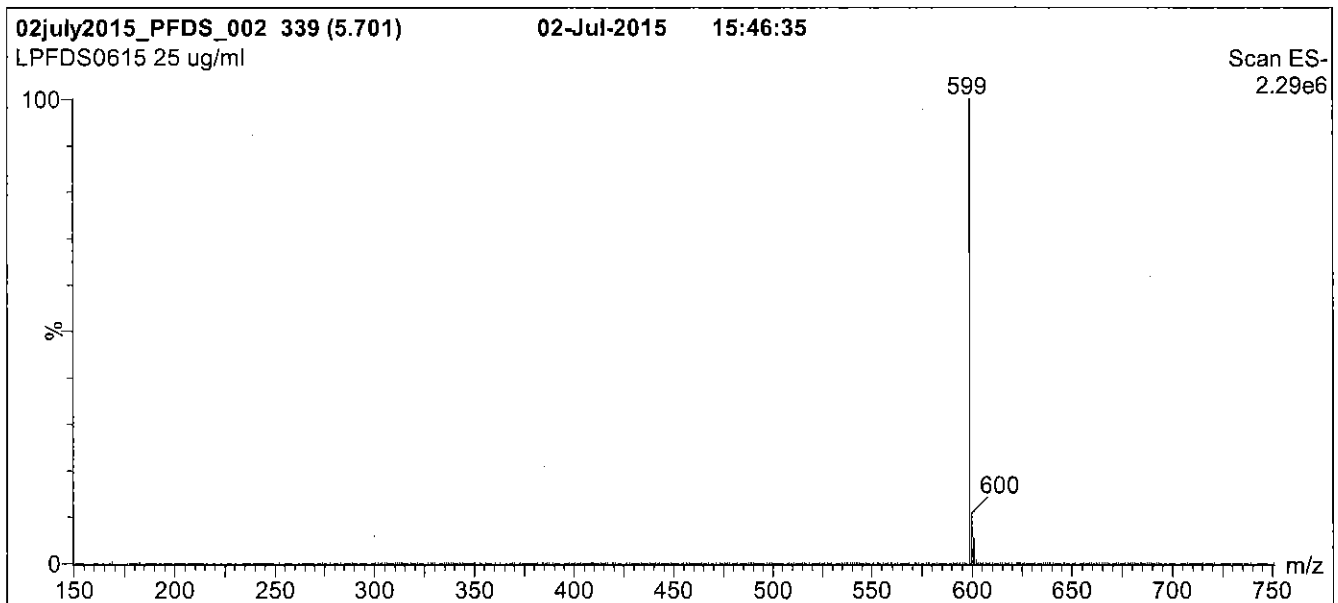
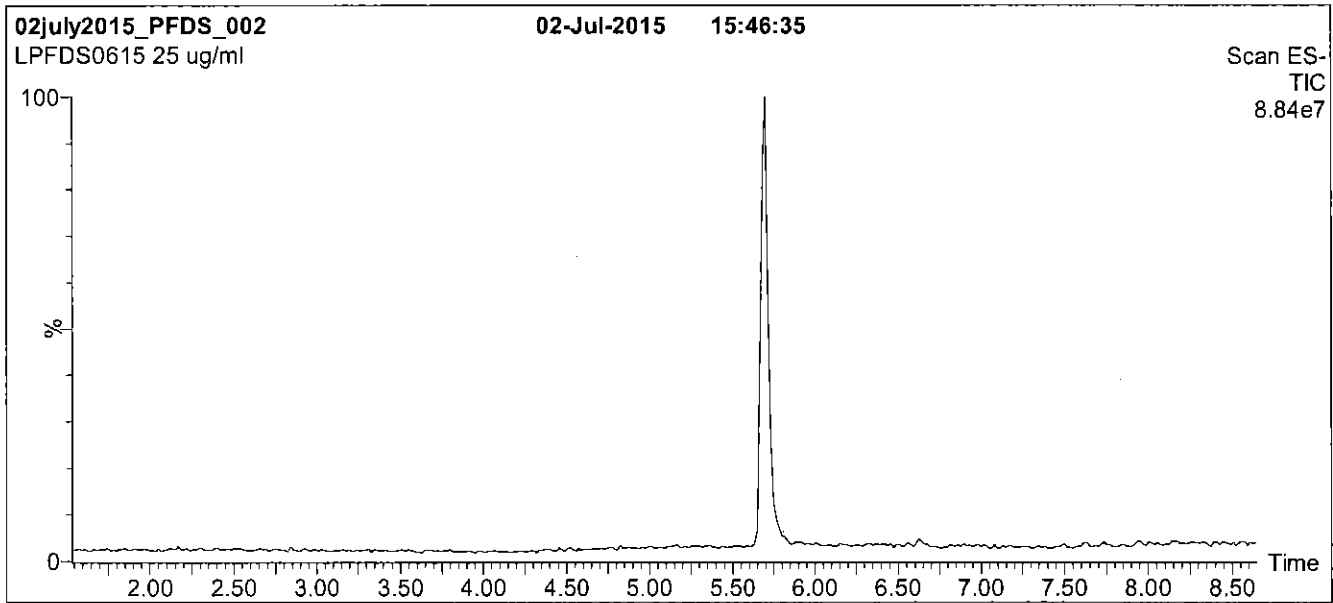
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**Figure 1: L-PFDS; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>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  $\mu$ l/min

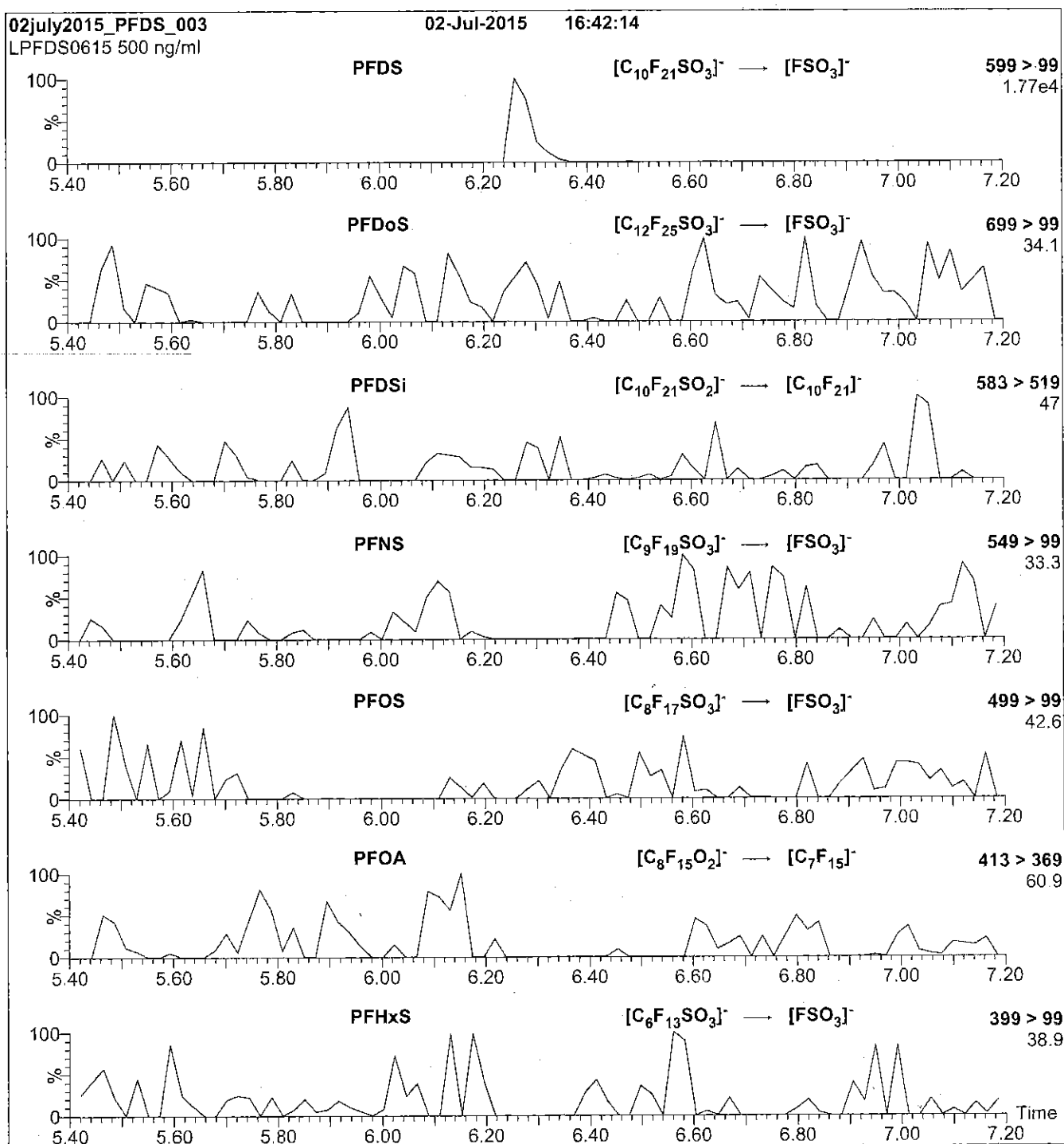
**MS Parameters**

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  $\mu$ l (500 ng/ml L-PFDS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFHpA\_00005**



# WELLINGTON LABORATORIES

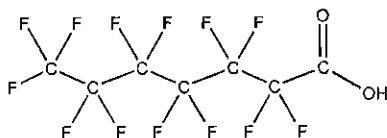
## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

**LOT NUMBER:** PFHpA0116

**STRUCTURE:**

**CAS #:** 375-85-9



**MOLECULAR FORMULA:** C<sub>7</sub>HF<sub>13</sub>O<sub>2</sub>  
**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

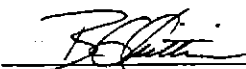
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**ADDITIONAL INFORMATION:**

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

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

**Date:** 02/02/2016  
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Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

### LIMITED WARRANTY:

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

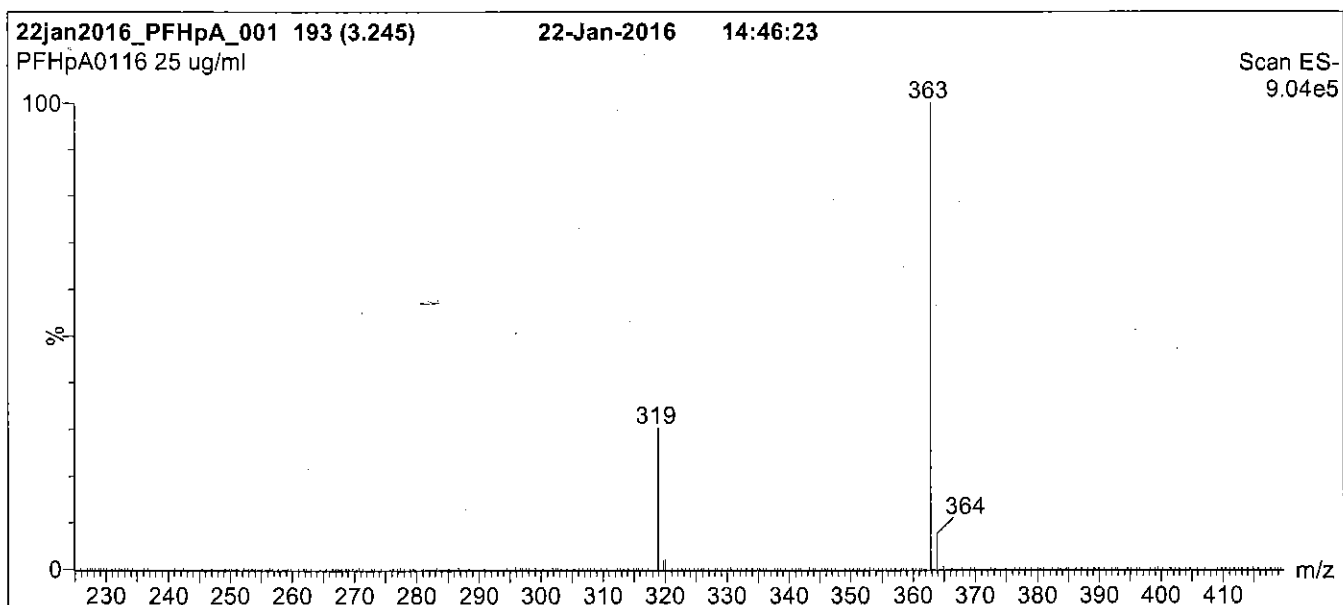
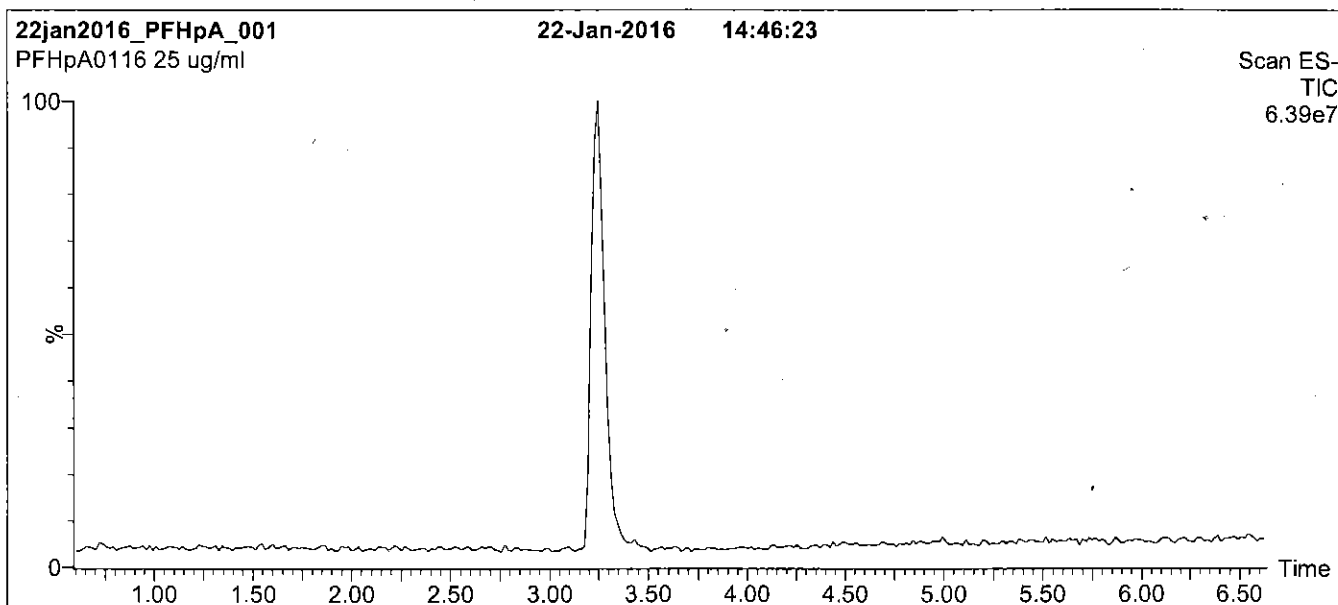
### QUALITY MANAGEMENT:

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



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 55% (80:20 MeOH:ACN) / 45% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>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

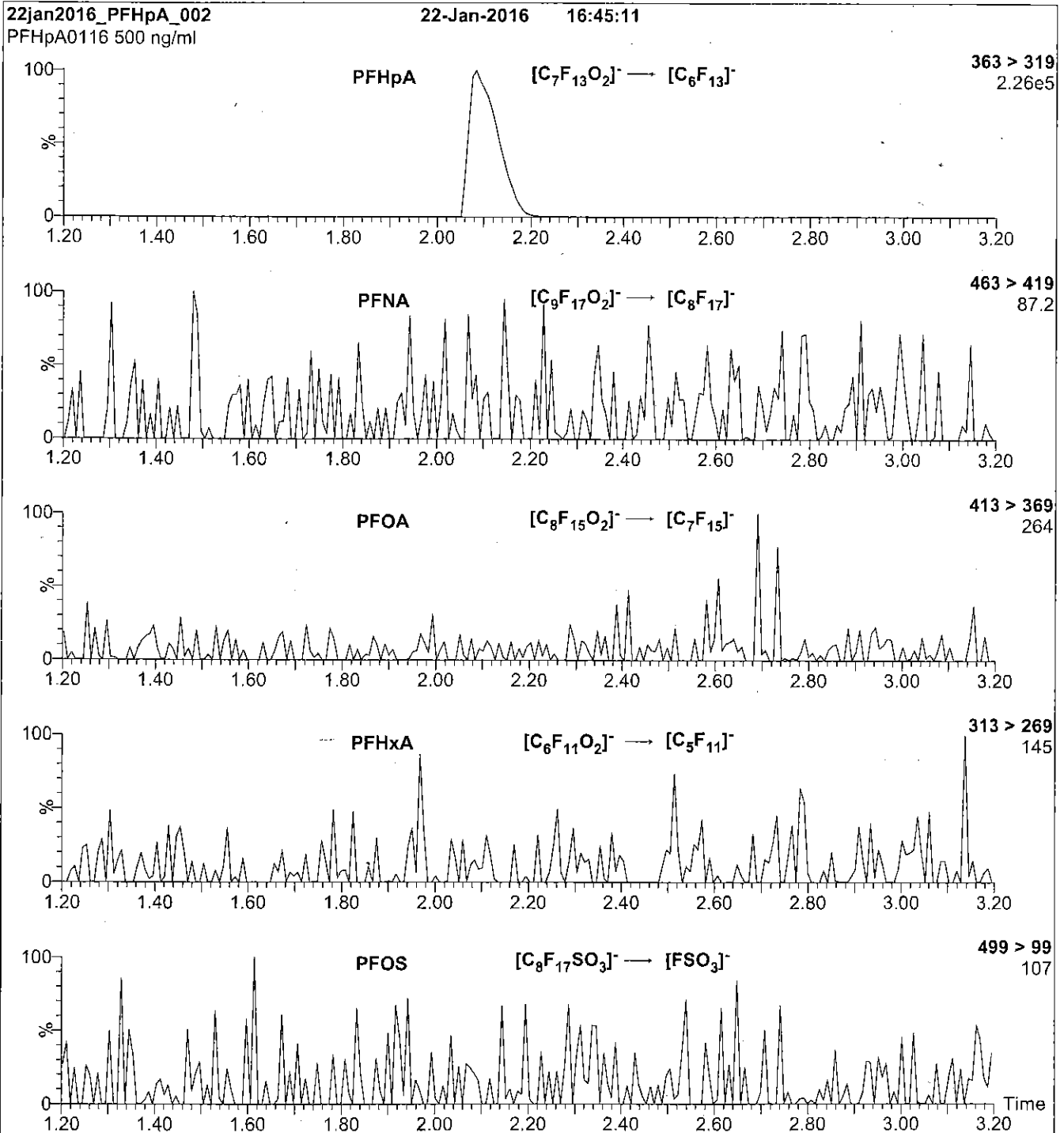
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

---

**LCPFHpS\_00008**



627751  
ID: LCPFHpS\_00008  
Exp: 11/06/20 Ppt: CBW  
PFHpS at 47.6ug/mL

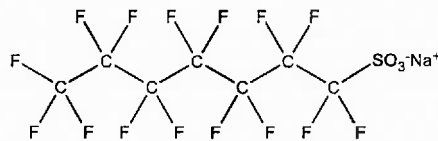
R: 5/10/16 CBW



**WELLINGTON**  
LABORATORIES

**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

**PRODUCT CODE:** L-PFHpS **LOT NUMBER:** LPFHpS1115  
**COMPOUND:** Sodium perfluoro-1-heptanesulfonate  
**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>7</sub>F<sub>15</sub>SO<sub>3</sub>Na **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 (C<sub>8</sub>F<sub>13</sub>SO<sub>3</sub>Na) and ~ 0.2% of L-PFOS (C<sub>8</sub>F<sub>17</sub>SO<sub>3</sub>Na).

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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



### **INTENDED USE:**

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

### **HAZARDS:**

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

### **SYNTHESIS / CHARACTERIZATION:**

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

### **HOMOGENEITY:**

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

### **UNCERTAINTY:**

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

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

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

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

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

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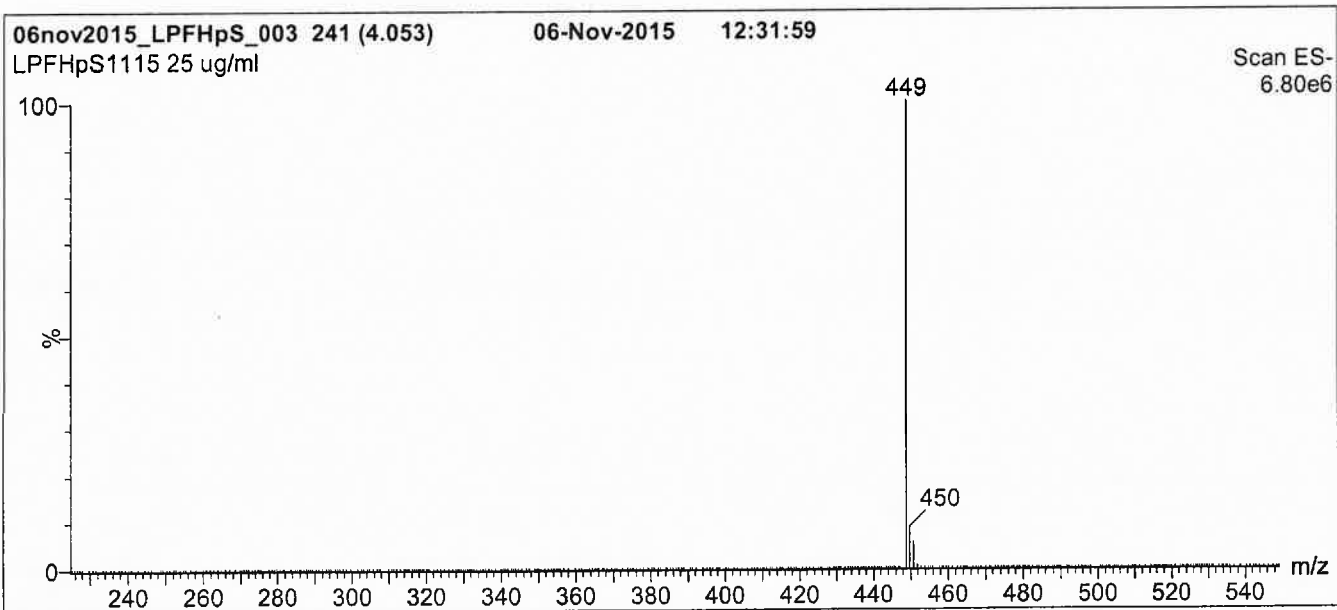
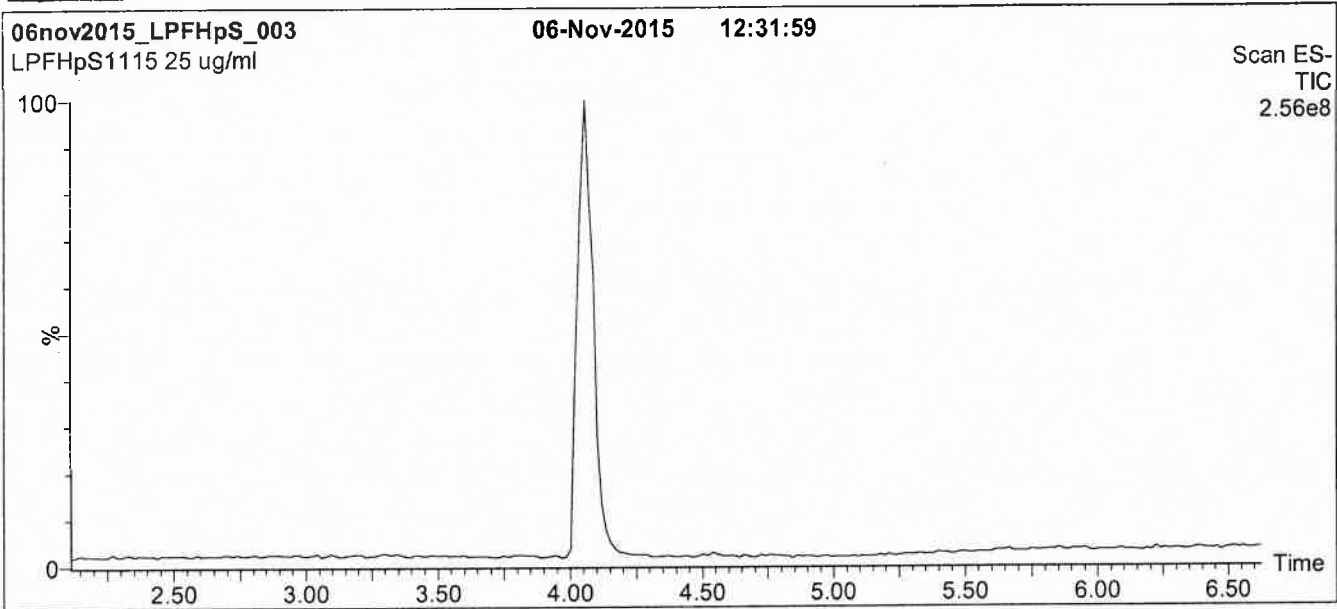
### **QUALITY MANAGEMENT:**

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 RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>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

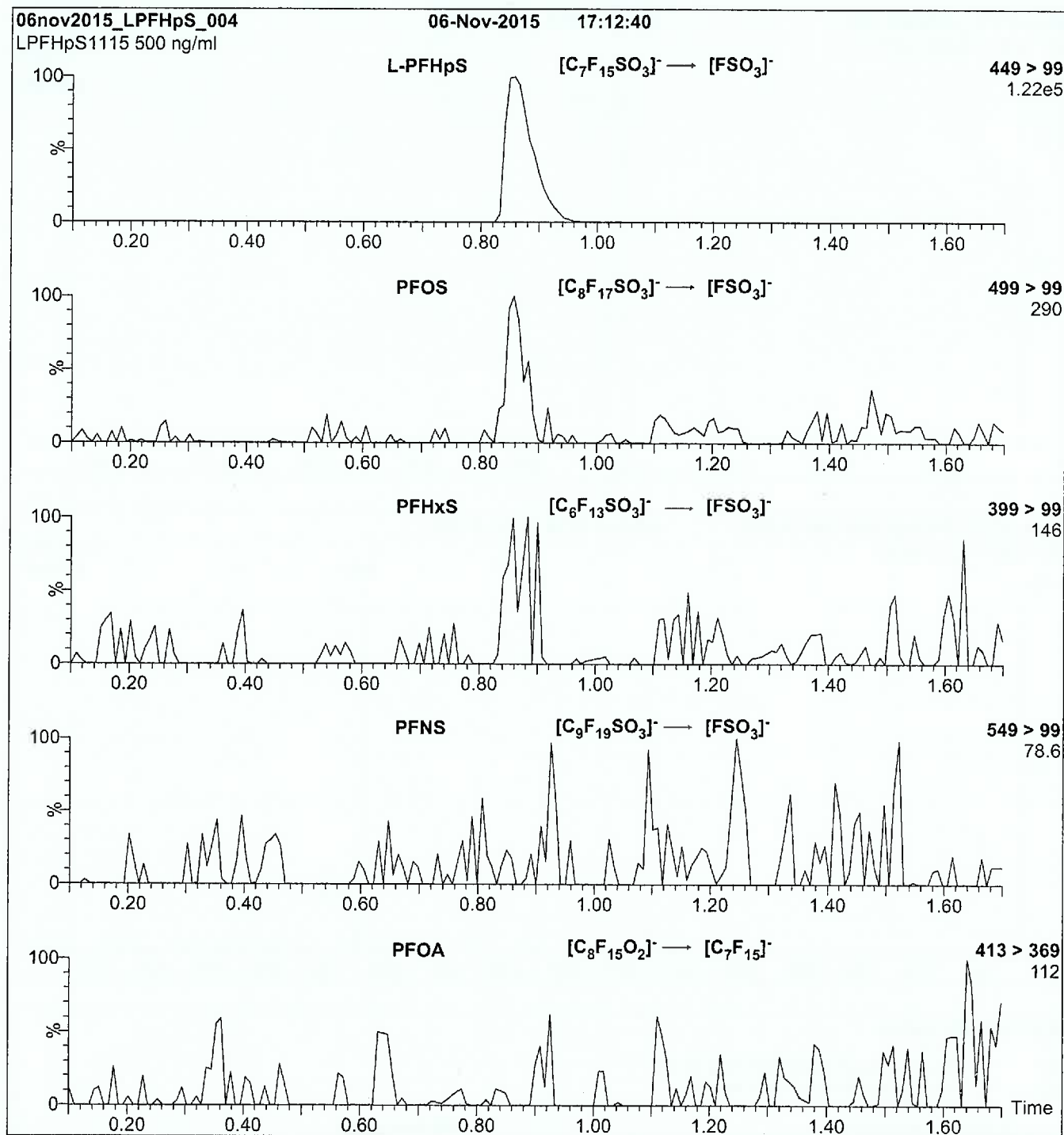
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml L-PFHpS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFHxA\_00004**



609702  
 ID: LCPFHxA\_00004  
 Exp: 12/22/20 Prpd: CBW  
 PF-n-hexanoic acid

R: 4/7/16 CBW

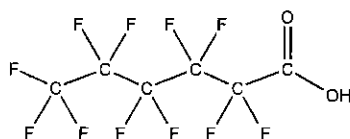


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



**MOLECULAR FORMULA:** C<sub>6</sub>HF<sub>11</sub>O<sub>2</sub> **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: B.G. Crittitt Date: 12/23/2015  
 B.G. Crittitt (mm/dd/yyyy)

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

**INTENDED USE:**

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**HAZARDS:**

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**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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:**

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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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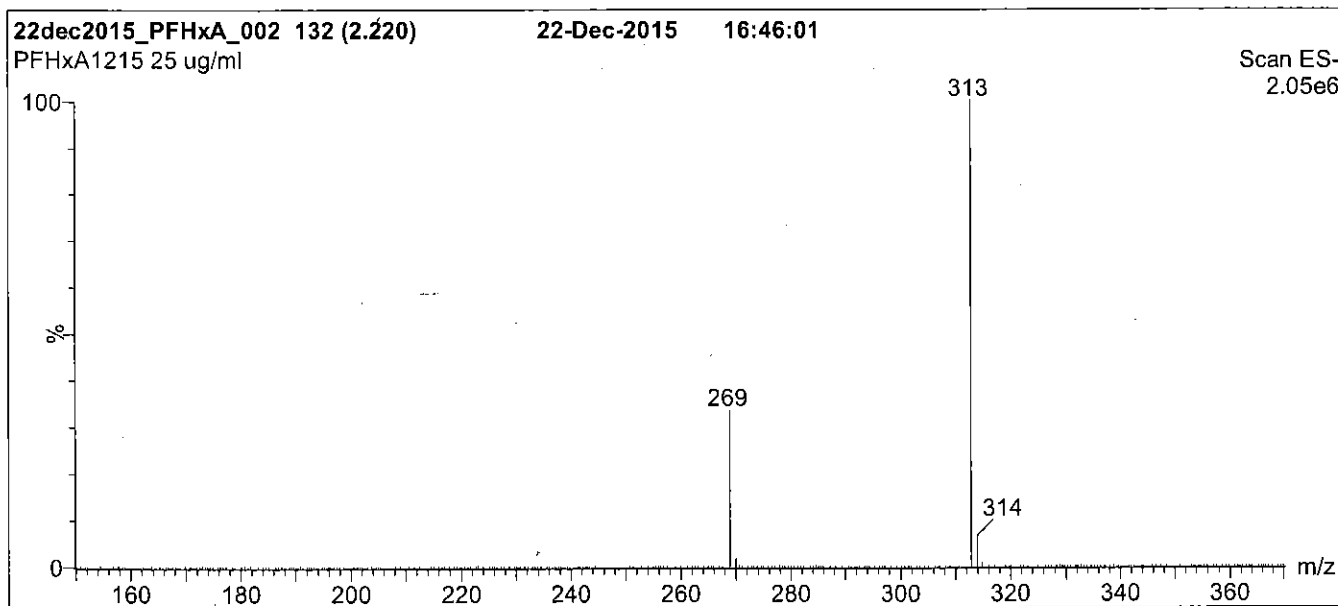
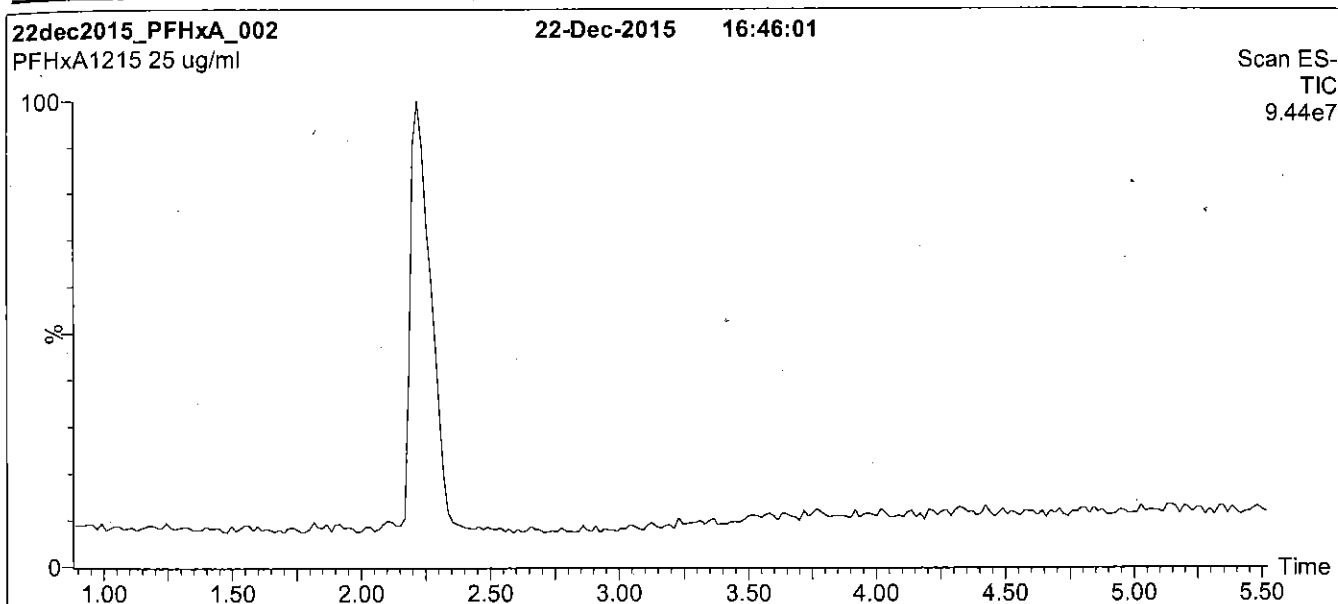
**QUALITY MANAGEMENT:**

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**Figure 1: 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**

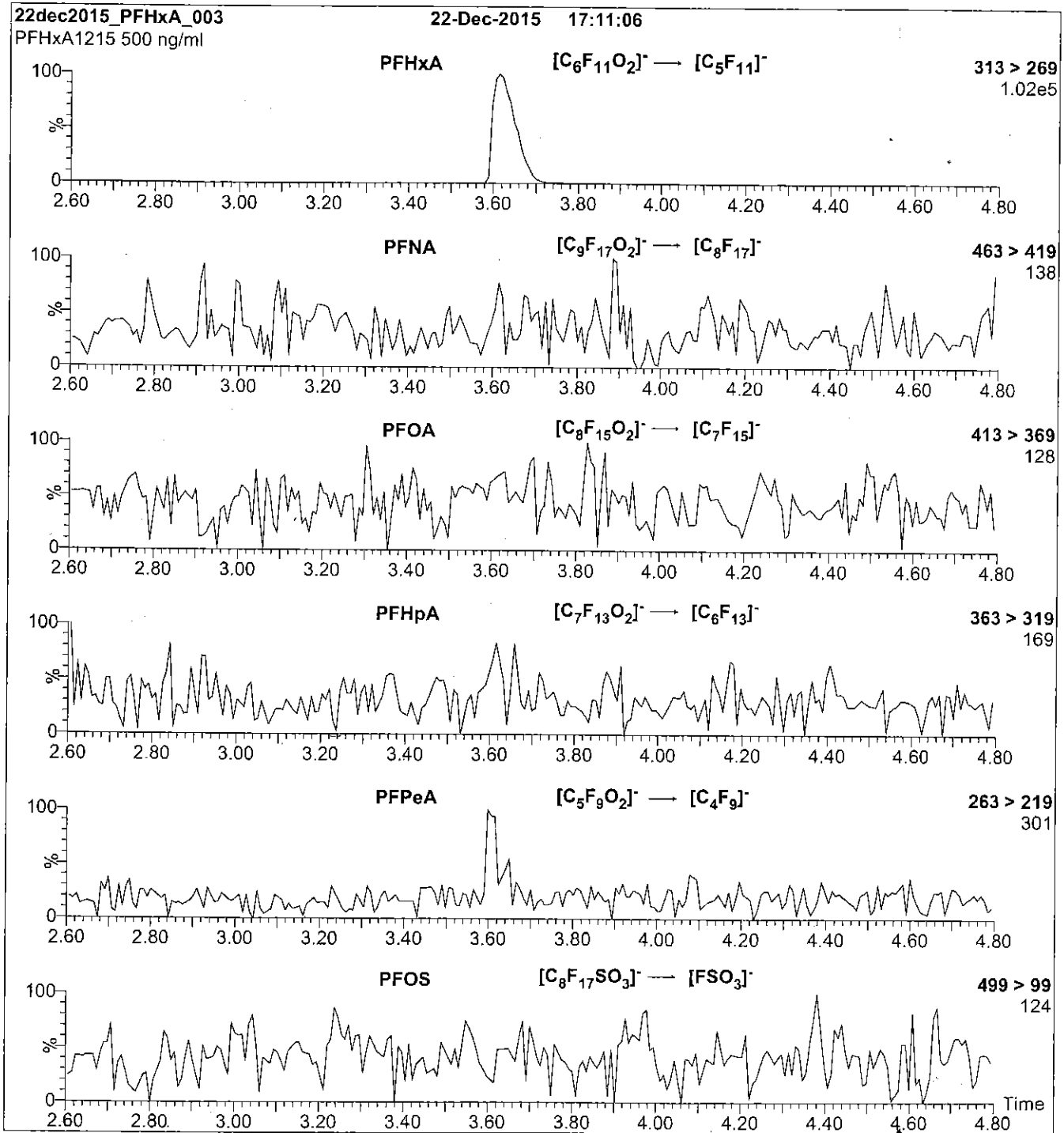
Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm  
 Mobile phase: Gradient  
 Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)  
 Ramp to 90% organic over 7 min and hold for 2 min  
 before returning to initial conditions in 0.5 min.  
 Time: 10 min

Flow: 300  $\mu$ 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  $\mu$ l (500 ng/ml PFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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



Reagent

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**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 <sup>19</sup>F-NMR  
Figure 1: LC/MS Data (TIC and Mass Spectrum)  
Figure 2: LC/MS Data  
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

### ADDITIONAL INFORMATION:

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

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

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**Table A: br-PFHxSK; Isomeric Components and Percent Composition (by <sup>19</sup>F-NMR)\***

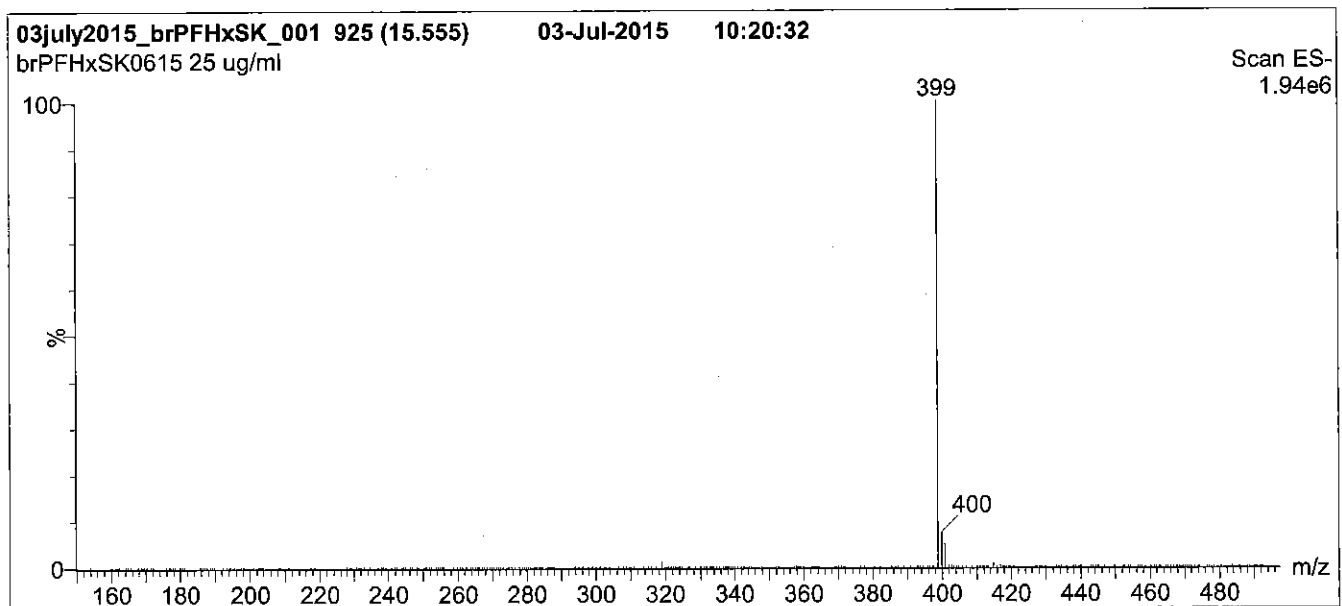
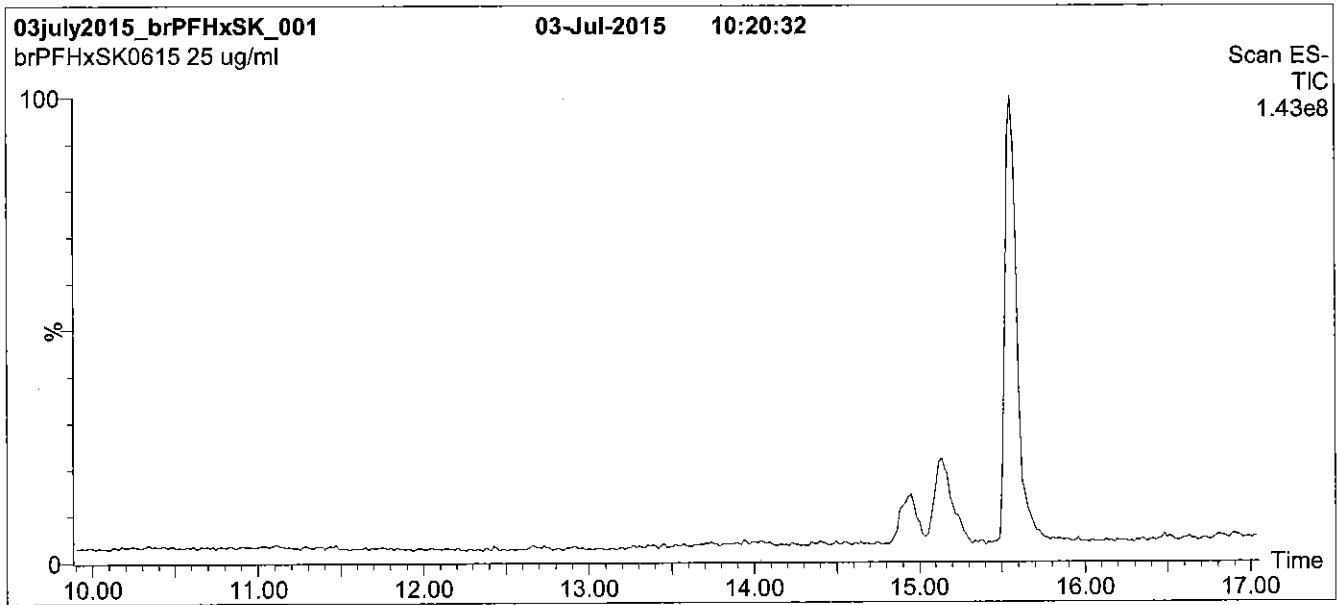
Isomer	Name	Structure	Percent Composition by <sup>19</sup> F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> <sup>-</sup> K <sup>+</sup>	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> <sup>-</sup> K <sup>+</sup>   CF <sub>3</sub>	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> <sup>-</sup> K <sup>+</sup>   CF <sub>3</sub>	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> <sup>-</sup> K <sup>+</sup>   CF <sub>3</sub>	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> <sup>-</sup> K <sup>+</sup>   CF <sub>3</sub>	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	CF <sub>3</sub>   CF <sub>3</sub> CCF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> <sup>-</sup> K <sup>+</sup>   CF <sub>3</sub>	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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 20% (80:20 MeOH:ACN) / 80% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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

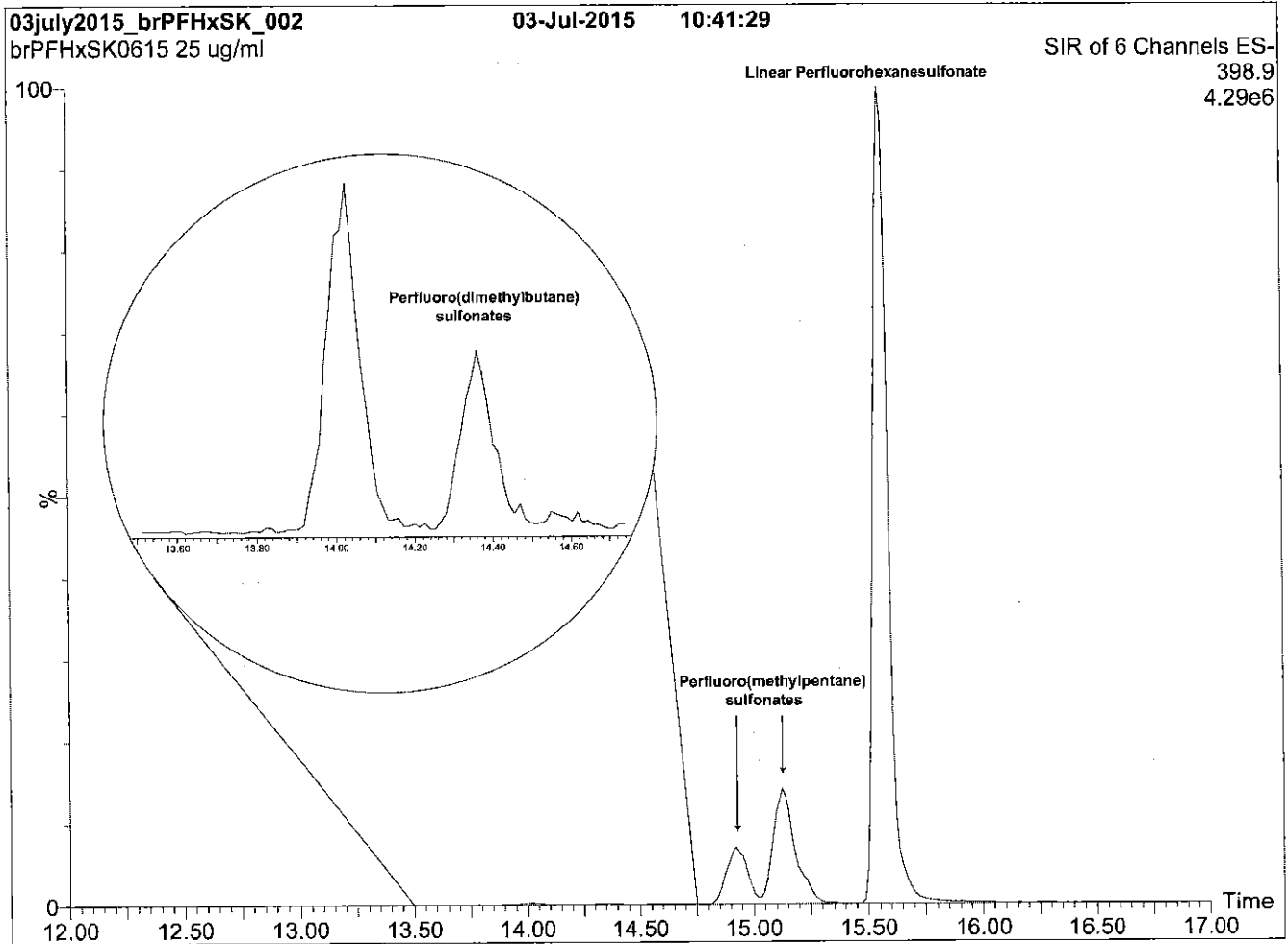
**Flow:** 300  $\mu$ l/min

**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 RP<sub>18</sub>  
1.7 μm, 2.1 x 100 mm

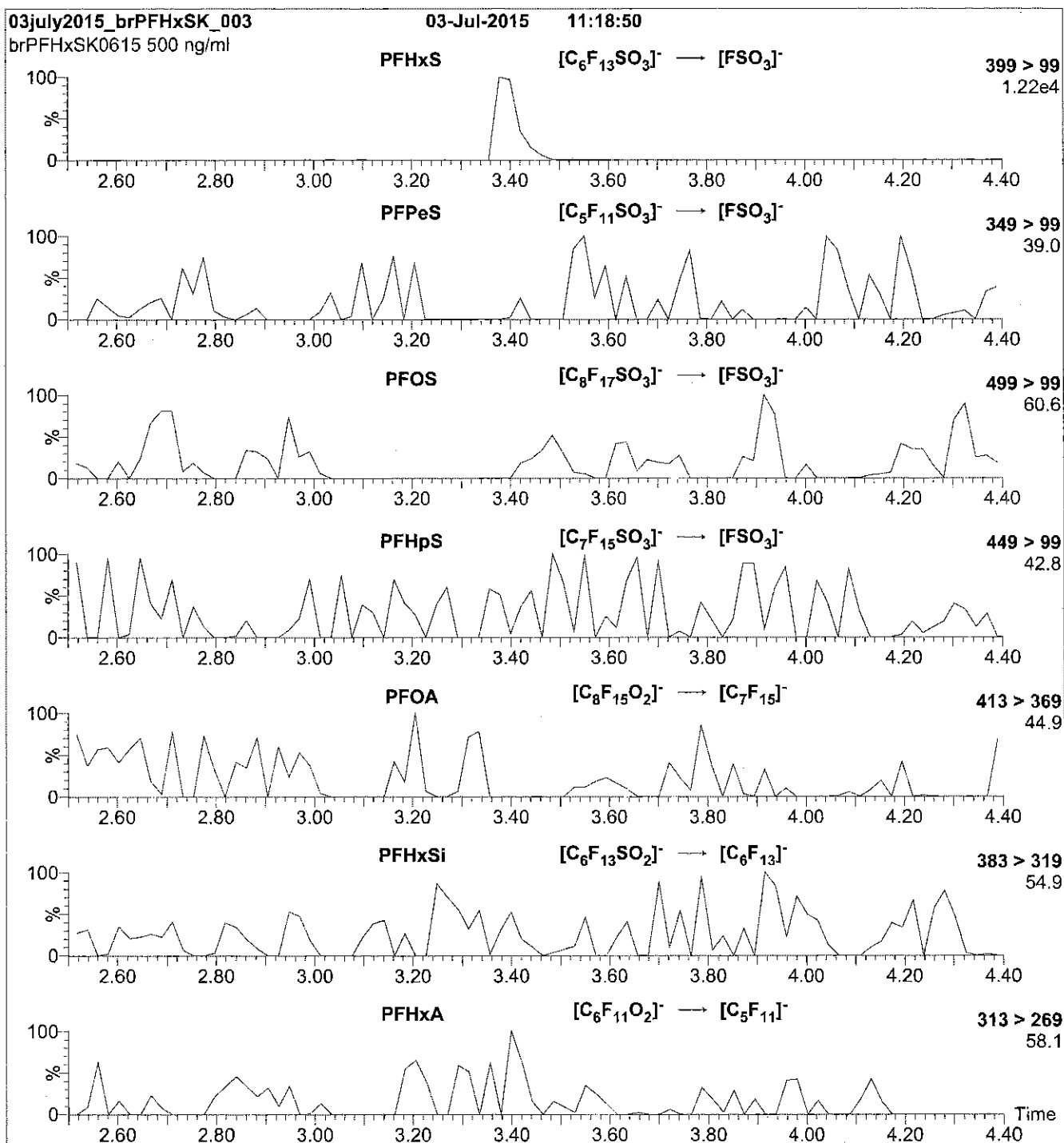
**Mobile phase:** Gradient  
Start: 20% (80:20 MeOH:ACN) / 80% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 50% organic over 14 min. Ramp to  
90% organic over 3 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 20 min

**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  $\mu$ l (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFNA\_00005**





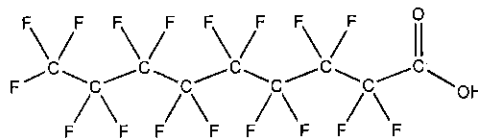
R: 4/7/16 CBW

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:** C<sub>9</sub>H<sub>F<sub>17</sub></sub>O<sub>2</sub>  
**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.

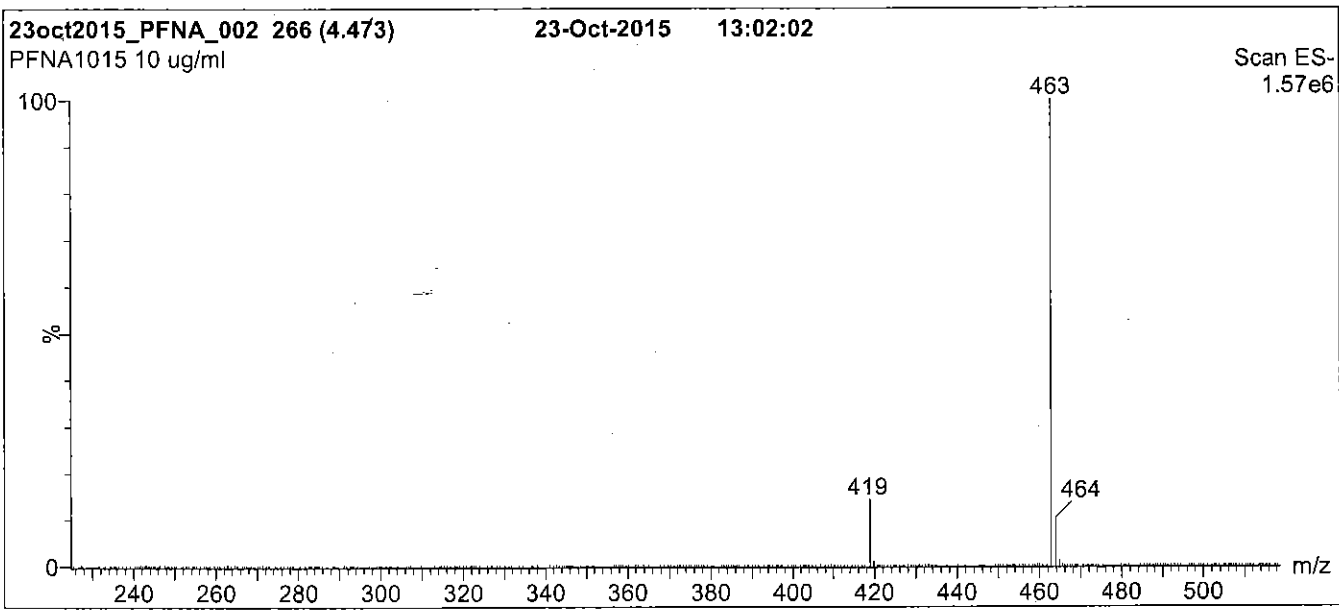
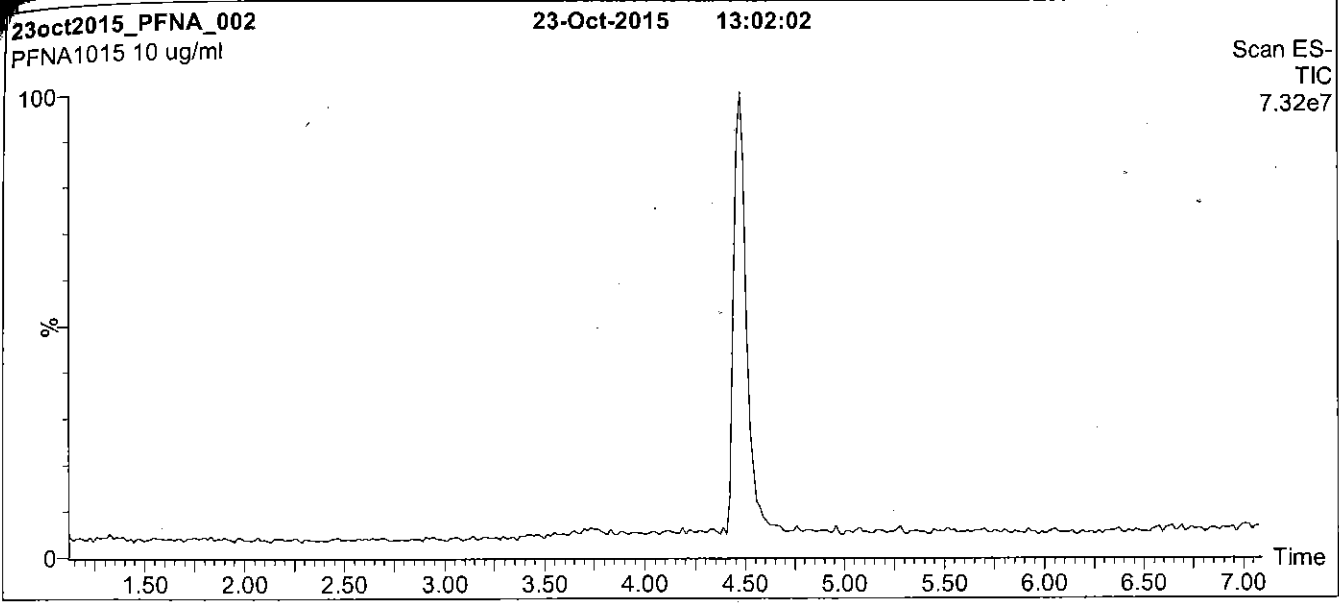
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

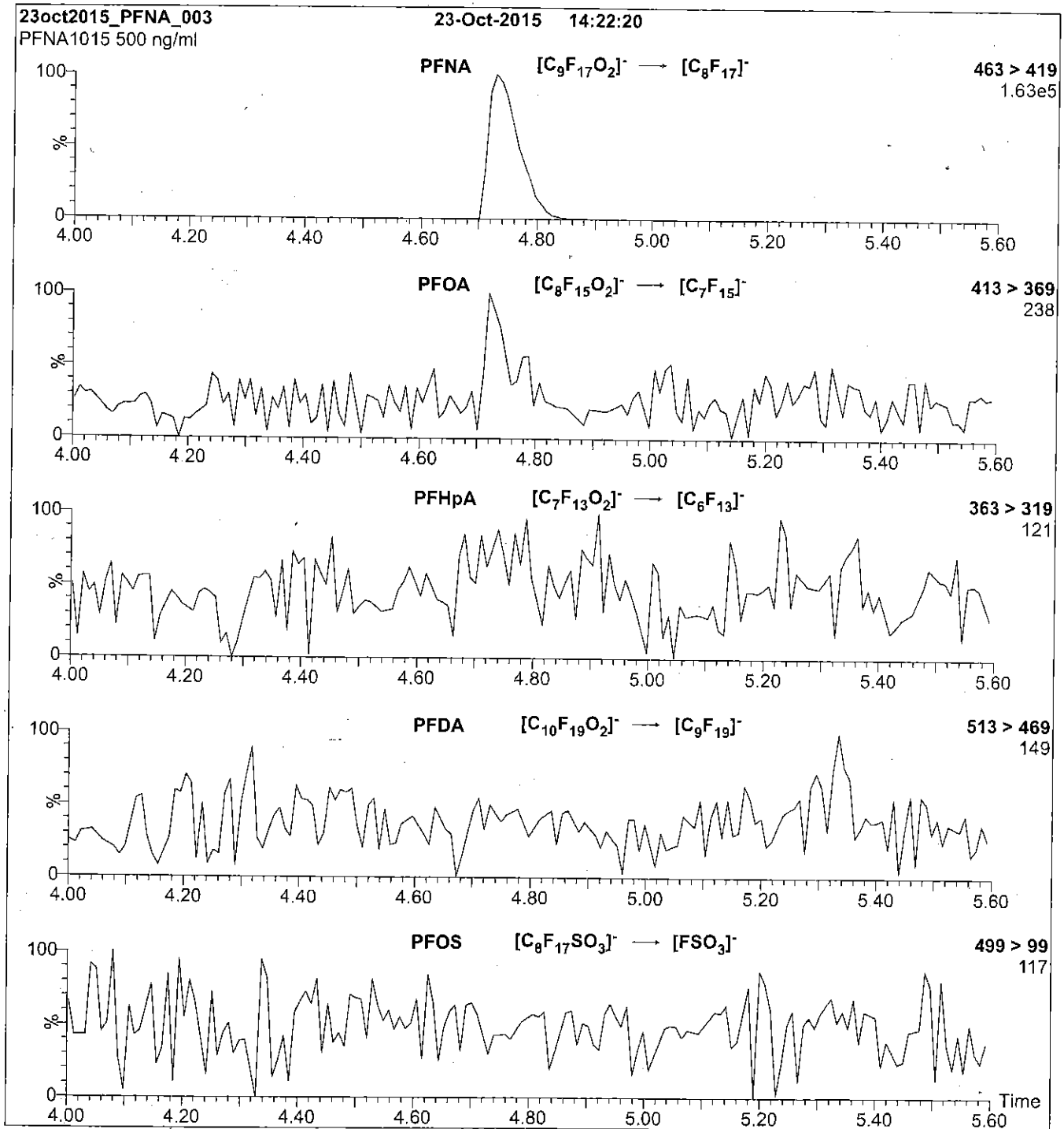
**Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

<b>LC:</b>	Waters Acquity Ultra Performance LC
<b>MS:</b>	Micromass Quattro <i>micro</i> API MS
<b>Chromatographic Conditions</b>	
Column:	Acquity UPLC BEH Shield RP <sub>18</sub> 1.7 $\mu$ m, 2.1 x 100 mm
Mobile phase:	Gradient Start: 50% (80:20 MeOH:ACN) / 50% H <sub>2</sub> O (both with 10 mM NH <sub>4</sub> 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 $\mu$ l/min
<b>MS Parameters</b>	
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  $\mu$ l (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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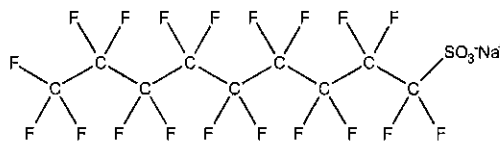
**LCPFNS\_00002**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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



**MOLECULAR FORMULA:** C<sub>9</sub>F<sub>19</sub>SO<sub>3</sub>Na      **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.

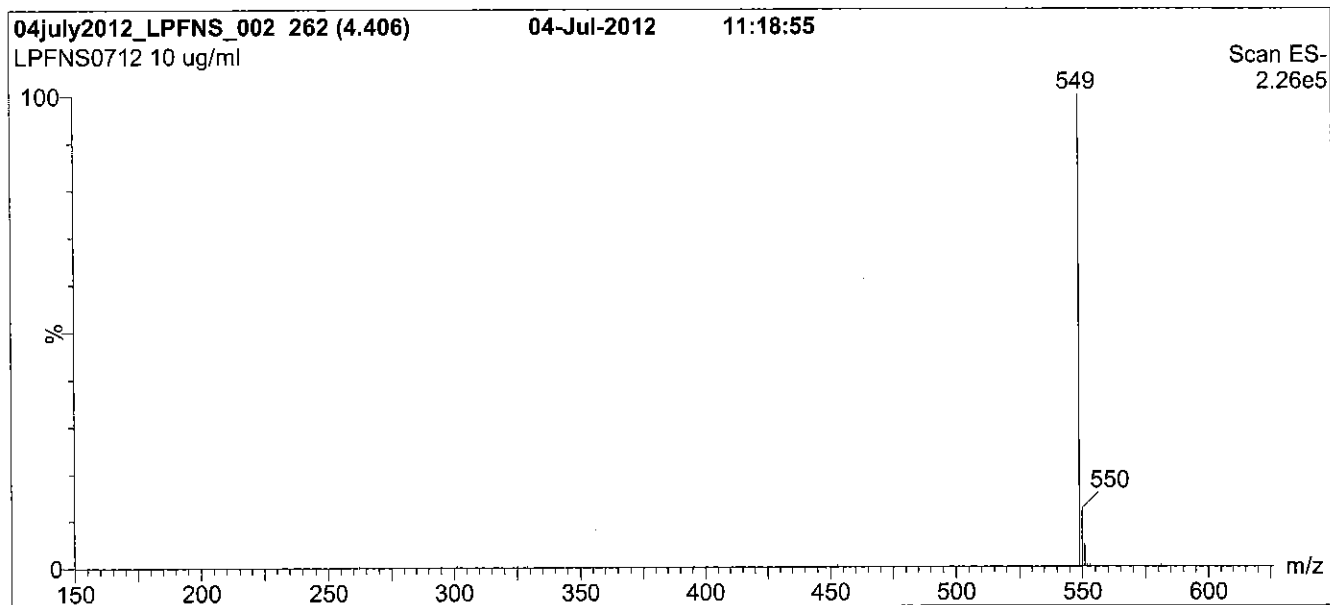
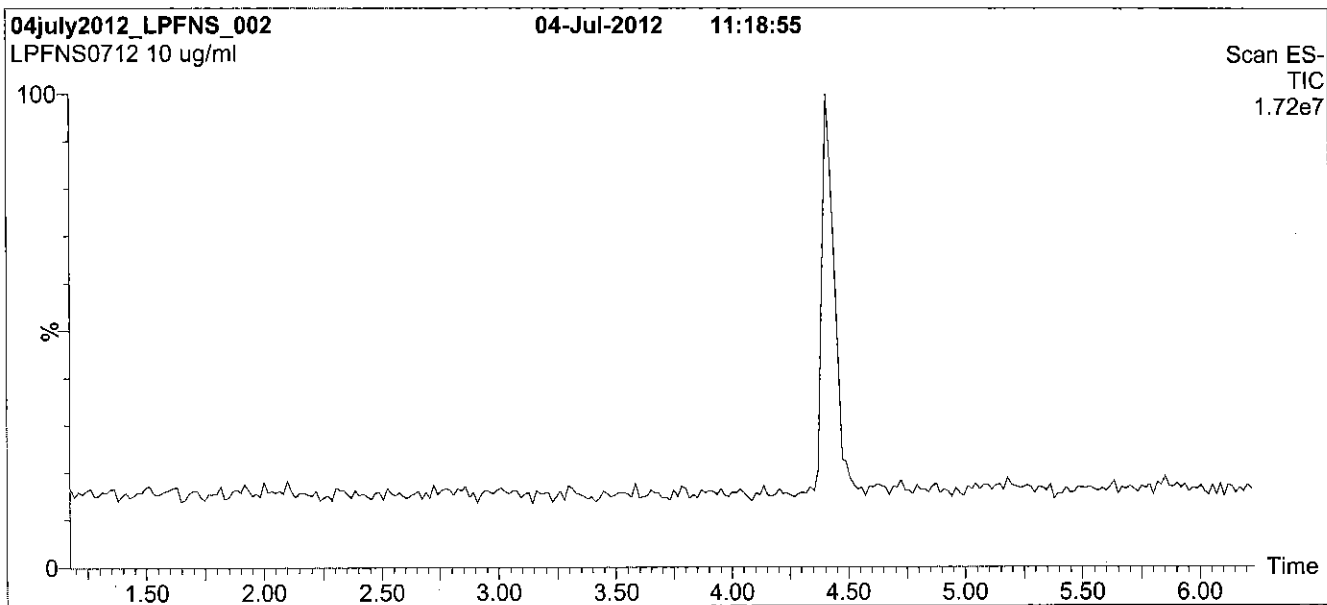
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 55% (80:20 MeOH:ACN) / 45% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ l/min

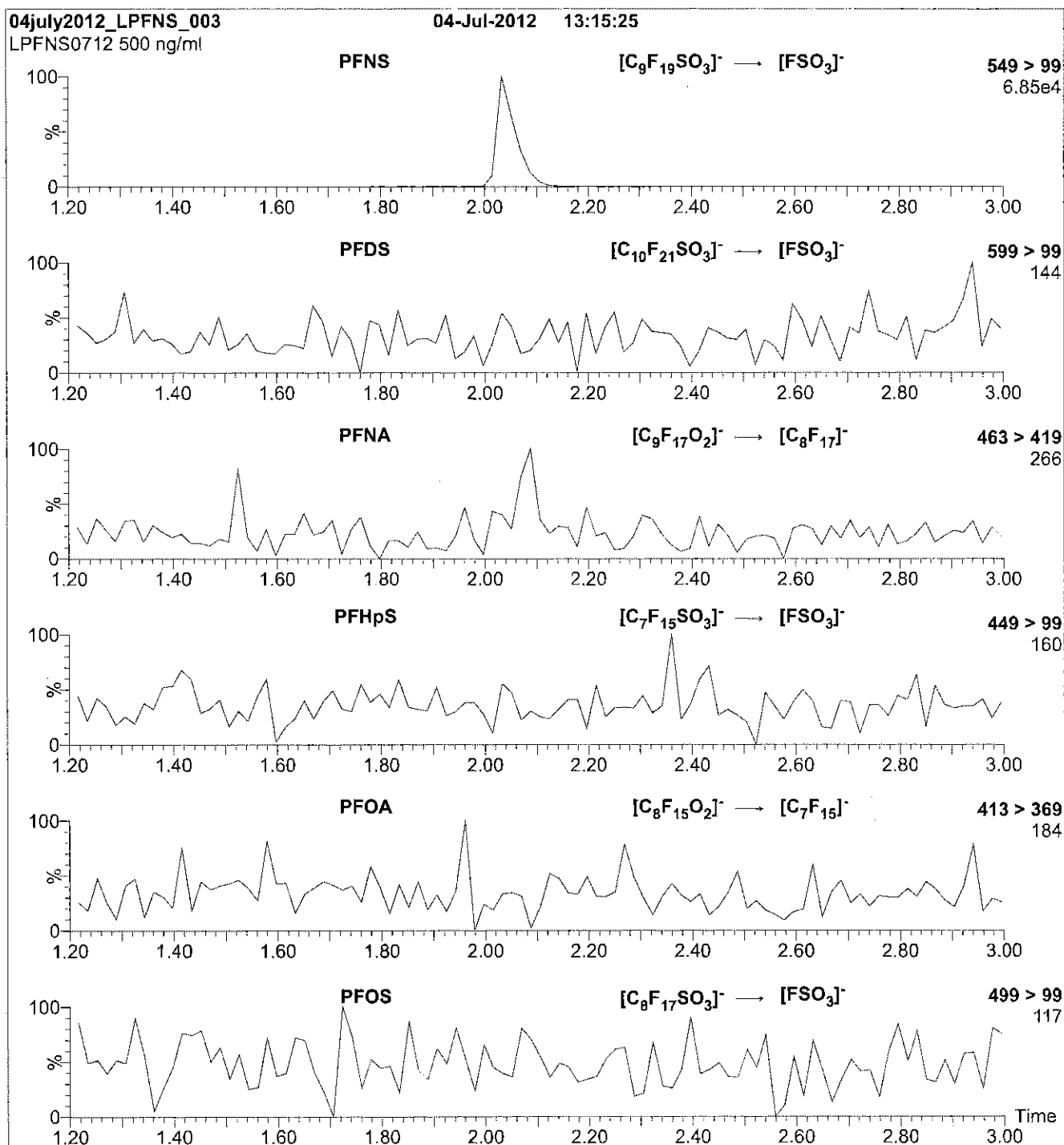
**MS Parameters**

**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  $\mu$ l (500 ng/ml L-PFNS)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.54e-3  
 Collision Energy (eV) = 45

Reagent

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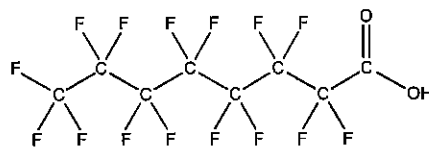
**LCPFOA\_00005**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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



**MOLECULAR FORMULA:**  $C_8H_{16}F_{16}O_2$   
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$   
**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

**MOLECULAR WEIGHT:** 414.07  
**SOLVENT(S):** Methanol  
 Water (<1%)

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By: \_\_\_\_\_

  
 B.G. Chittim

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

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

### **INTENDED USE:**

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

### **HAZARDS:**

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

### **SYNTHESIS / CHARACTERIZATION:**

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

### **HOMOGENEITY:**

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

### **UNCERTAINTY:**

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

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

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

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

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

### **TRACEABILITY:**

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

### **EXPIRY DATE / PERIOD OF VALIDITY:**

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

### **LIMITED WARRANTY:**

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

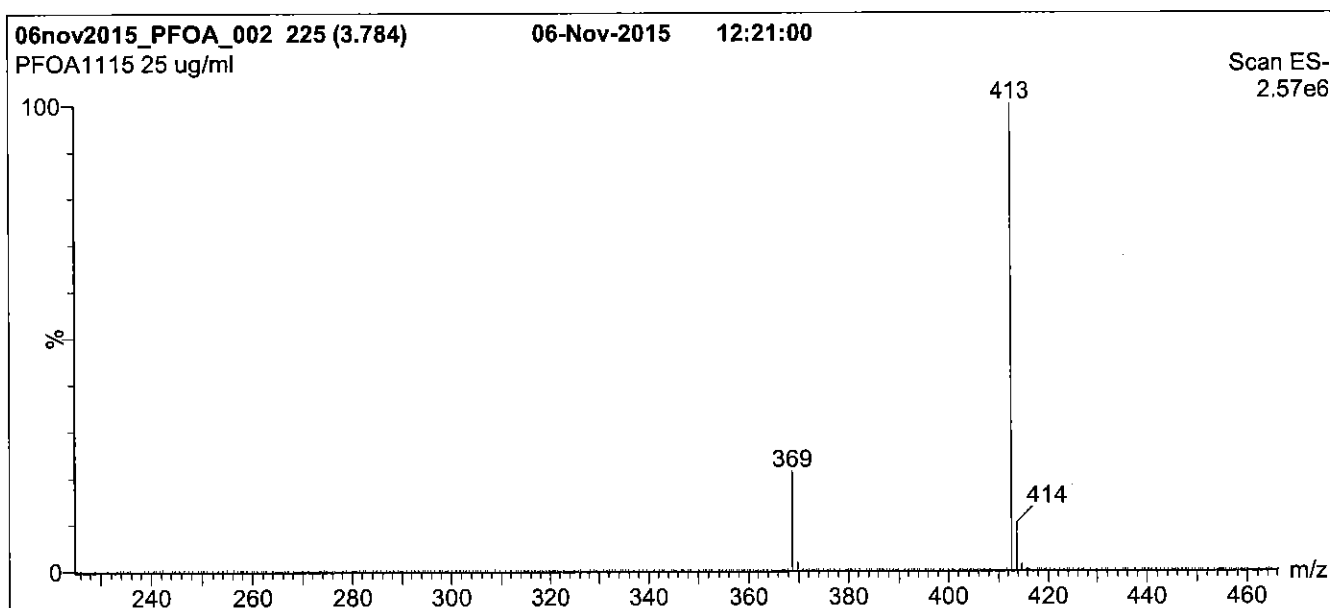
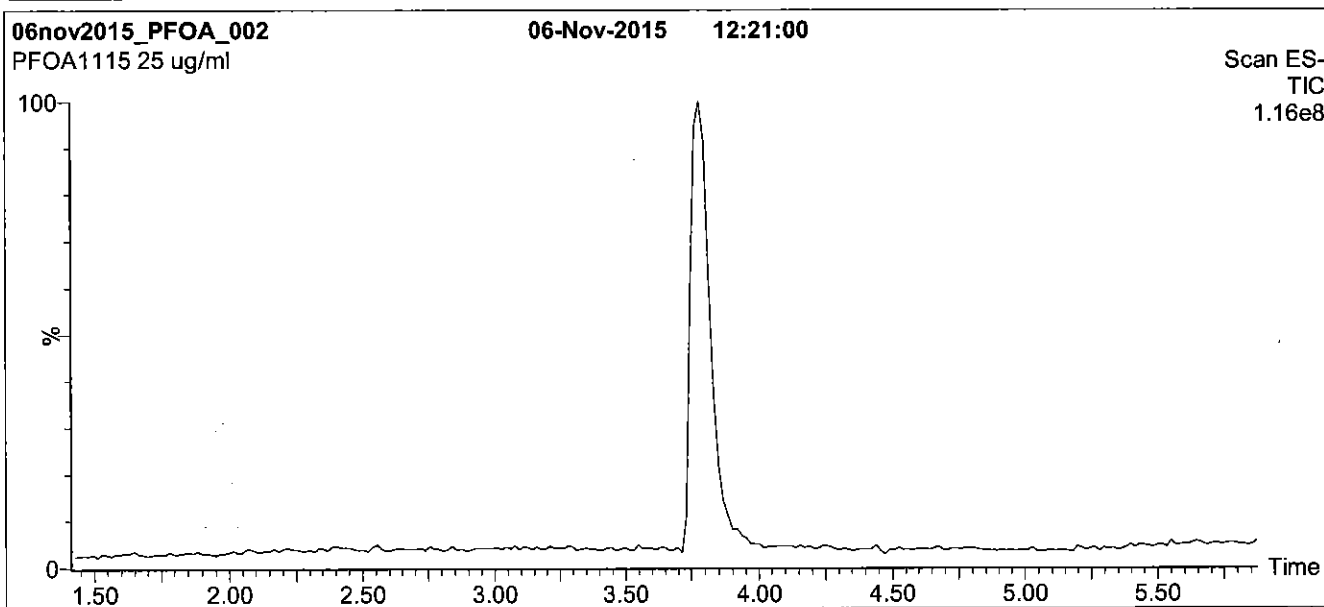
### **QUALITY MANAGEMENT:**

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



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>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

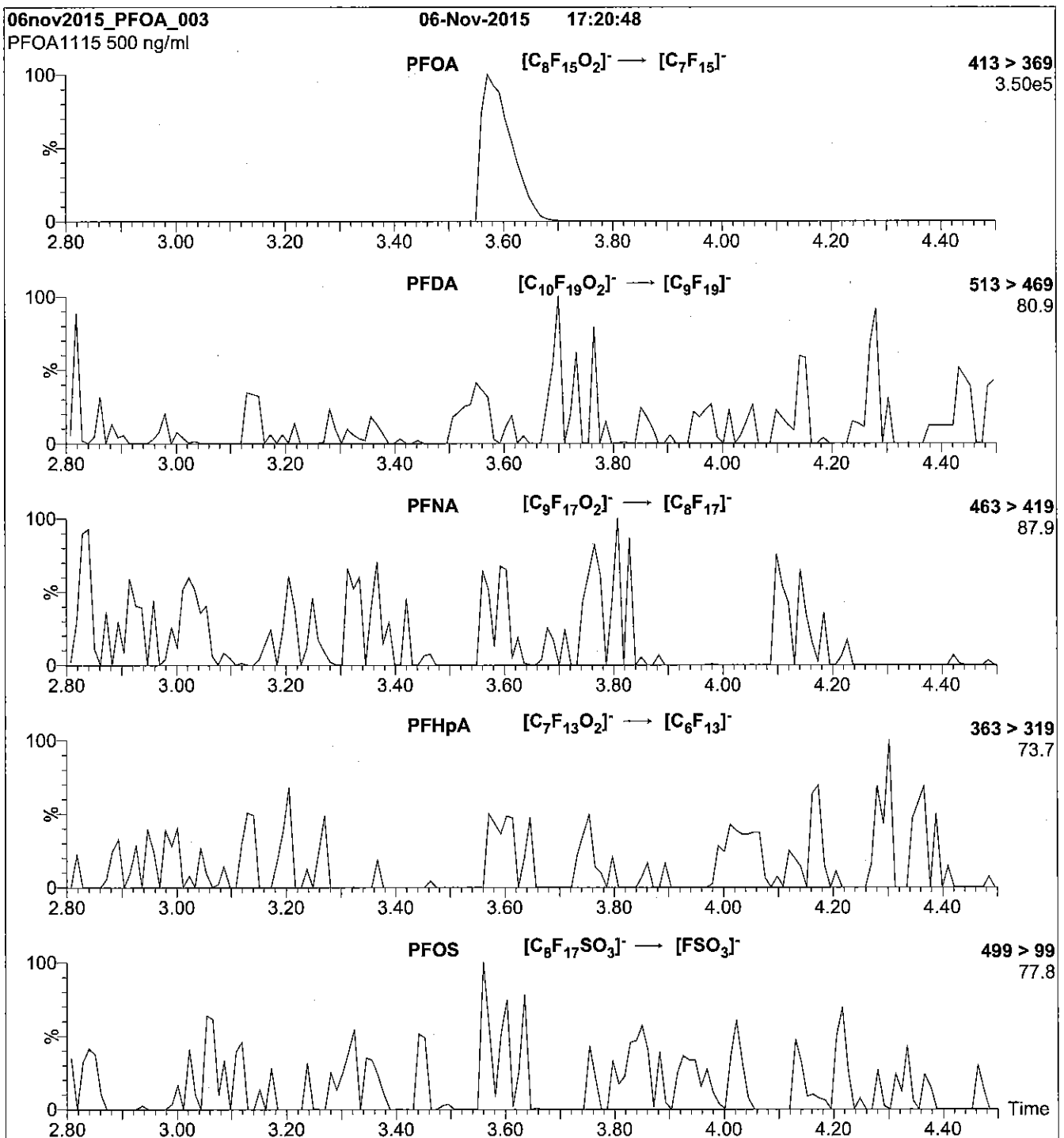
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.17e-3  
Collision Energy (eV) = 10

Reagent

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**LCPFODA\_00005**

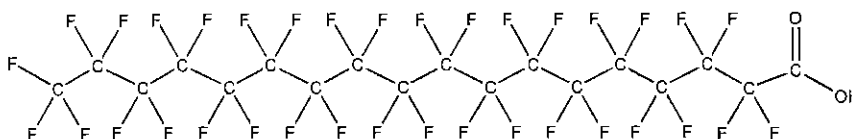


605234

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

<b>MOLECULAR FORMULA:</b>	$C_{18}H_{35}O_2$	<b>MOLECULAR WEIGHT:</b>	914.14
<b>CONCENTRATION:</b>	$50 \pm 2.5 \mu\text{g/ml}$	<b>SOLVENT(S):</b>	Methanol Water (<1%)
<b>CHEMICAL PURITY:</b>	>98%		
<b>LAST TESTED:</b> (mm/dd/yyyy)	01/30/2015		
<b>EXPIRY DATE:</b> (mm/dd/yyyy)	01/30/2020		
<b>RECOMMENDED STORAGE:</b>	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.

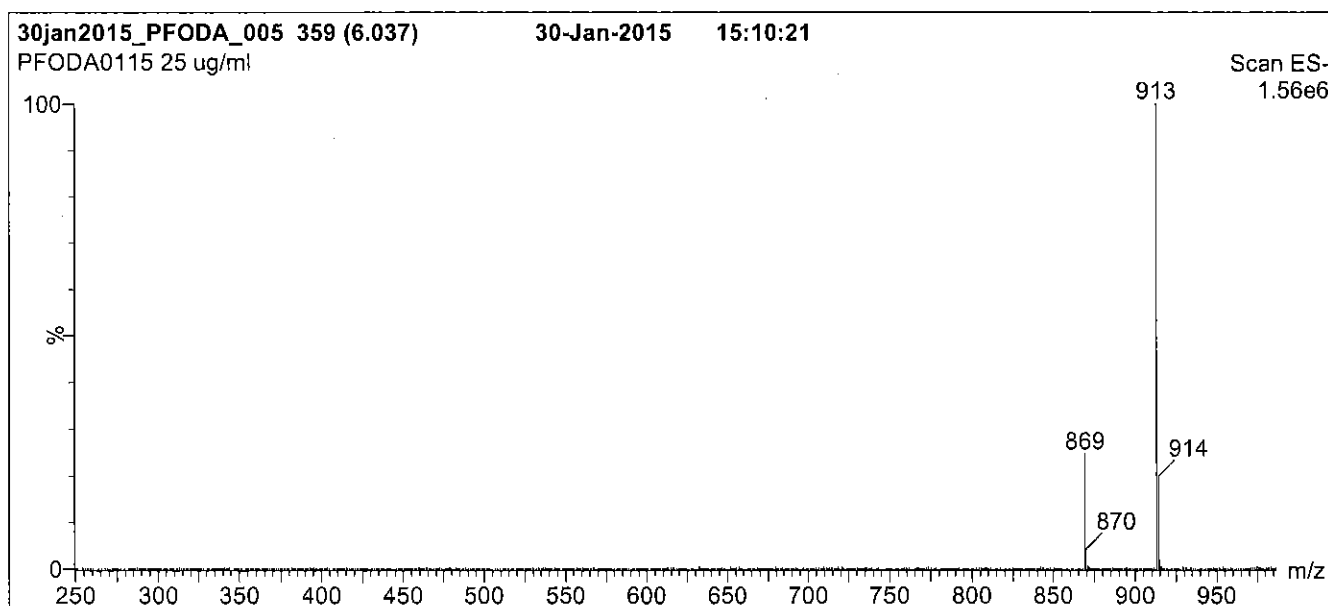
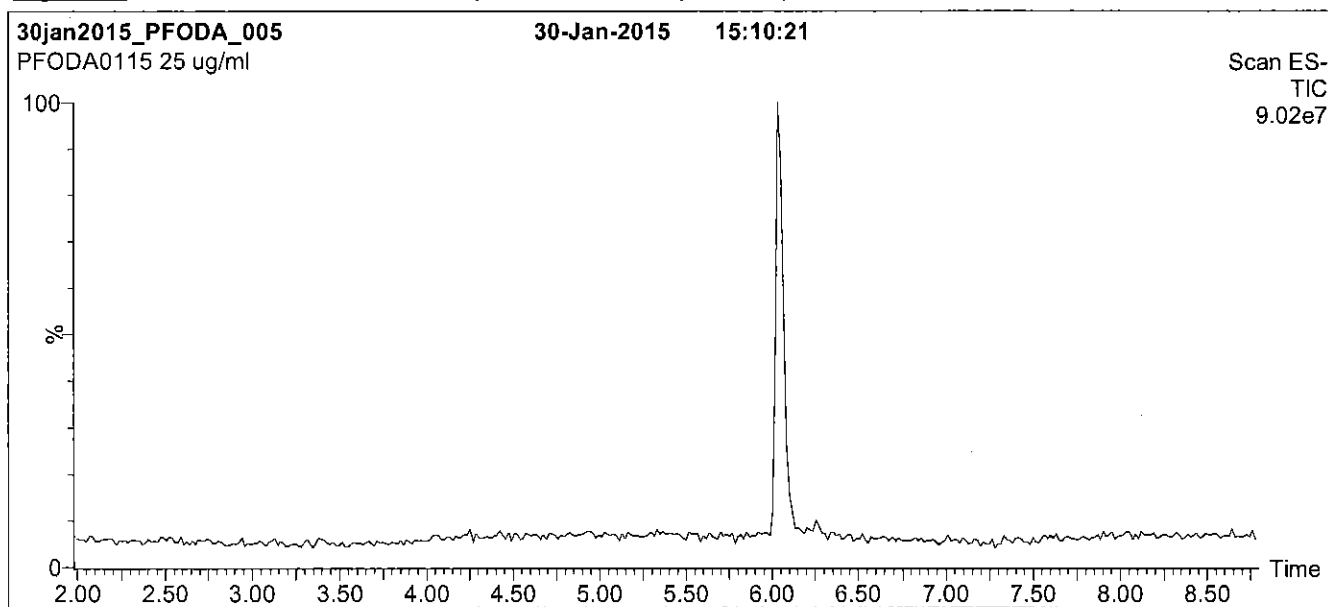
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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

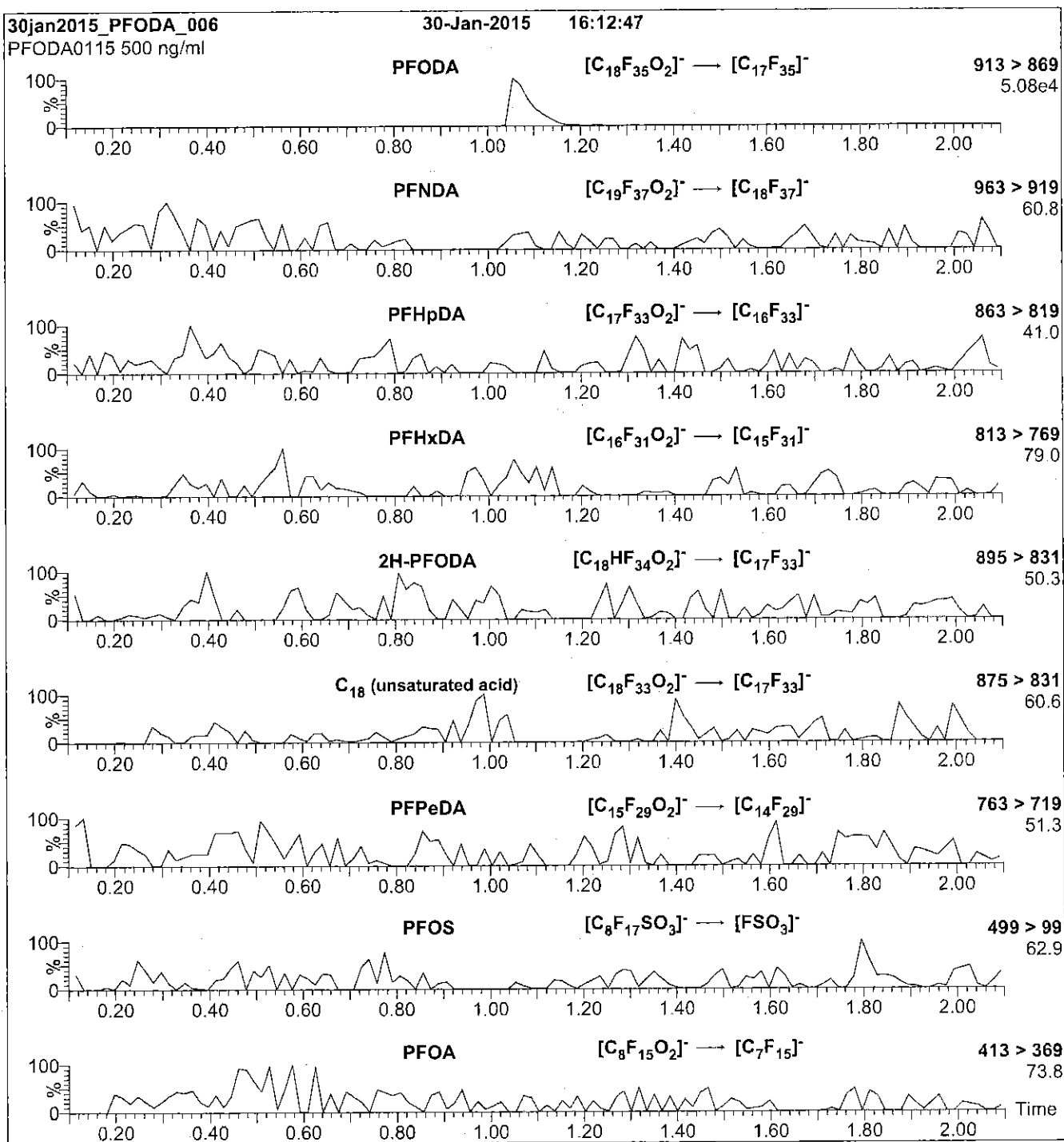
Flow: 300  $\mu$ l/min

**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% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300 µl/min

**MS Parameters**

Collision Gas (mbar) = 3.31e-3  
 Collision Energy (eV) = 15

Reagent

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**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 <sup>19</sup>F-NMR  
Figure 1: LC/MS Data (TIC and Mass Spectrum)  
Figure 2: LC/MS Data (SIR)  
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

### ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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### **INTENDED USE:**

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

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\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

**Table A: br-PFOSK; Isomeric Components and Percent Composition (by <sup>19</sup>F-NMR)\***

Isomer	Name	Structure	Percent Composition by <sup>19</sup> F-NMR
1	Potassium perfluoro-1-octanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF(SO <sub>3</sub> )K <sup>+</sup>   CF <sub>3</sub>	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF <sub>3</sub> CF <sub>2</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF <sub>3</sub> CF(CF <sub>3</sub> )CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	CF <sub>3</sub> -C(CF <sub>3</sub> ) <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF <sub>3</sub> CF <sub>2</sub> -C(CF <sub>3</sub> ) <sub>2</sub> -CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF <sub>3</sub> -CF(CF <sub>3</sub> )-CF(CF <sub>3</sub> )-CF <sub>2</sub> CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>   CF <sub>3</sub>	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF <sub>3</sub> -CF(CF <sub>3</sub> )-CF <sub>2</sub> -CF(CF <sub>3</sub> )-CF <sub>2</sub> SO <sub>3</sub> K <sup>+</sup>   CF <sub>3</sub>   CF <sub>3</sub>	0.07

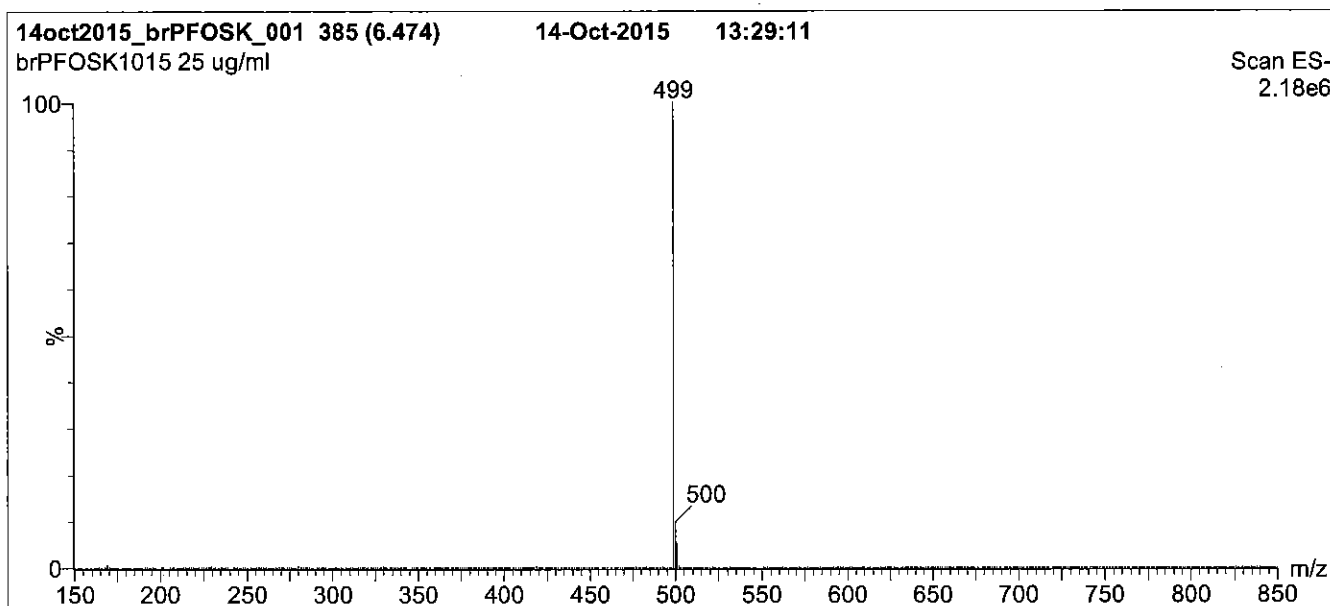
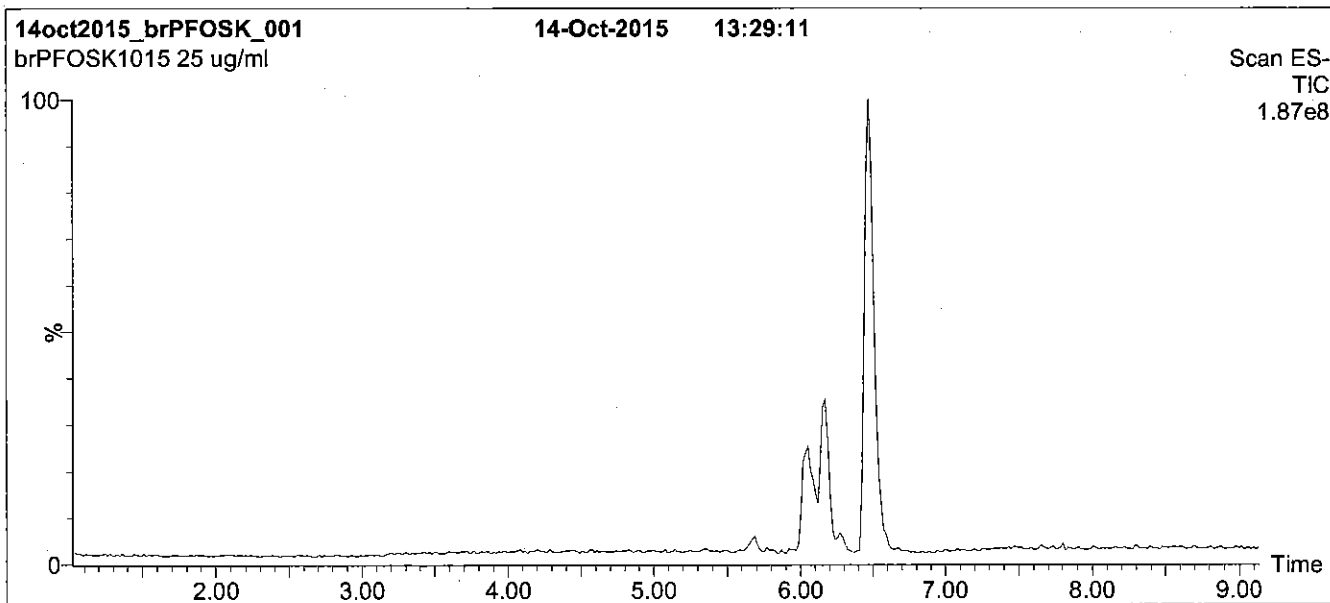
\* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.

\*\* 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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 45% (80:20 MeOH:ACN) / 55% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ l/min

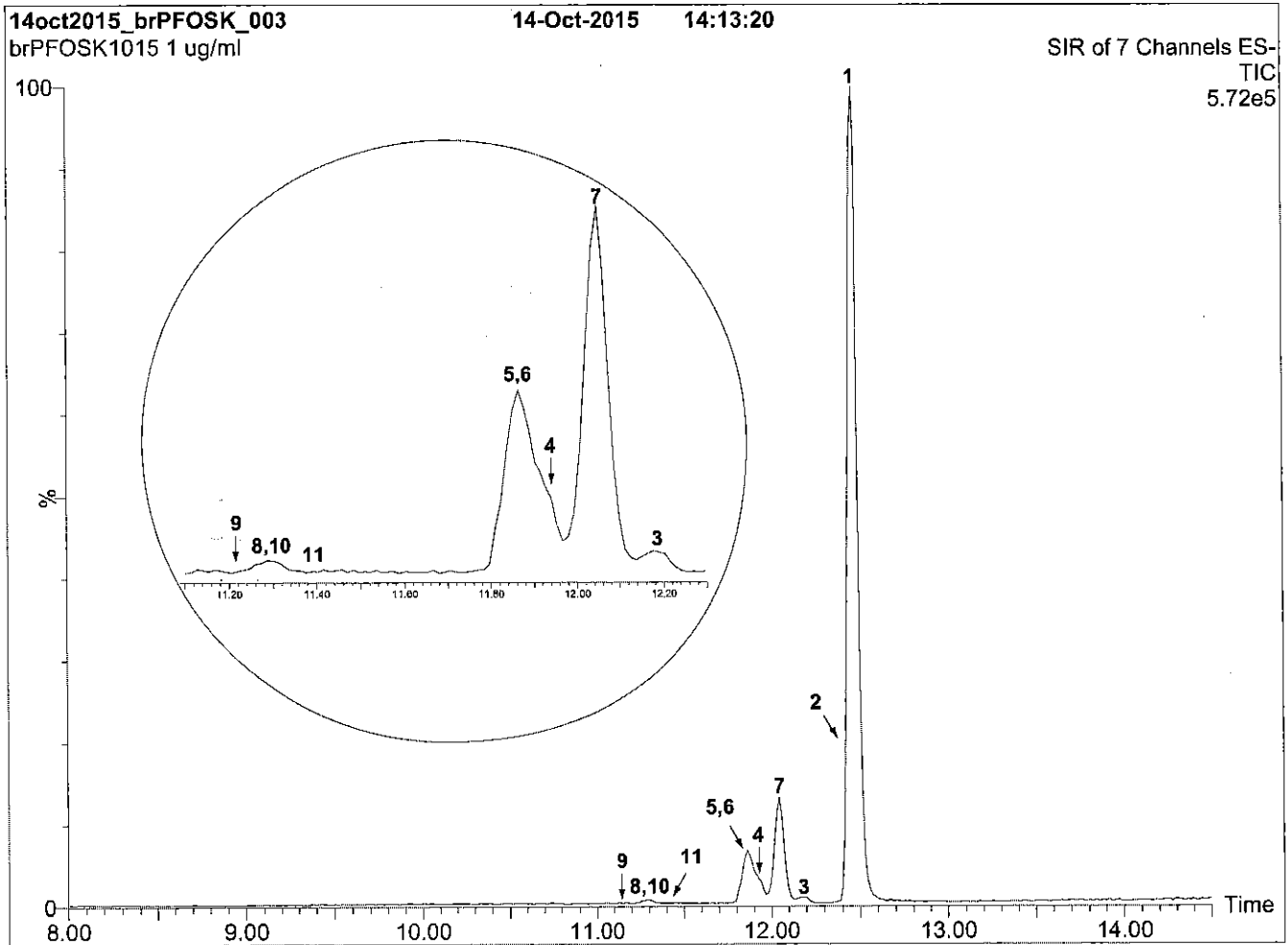
**MS Parameters**

**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

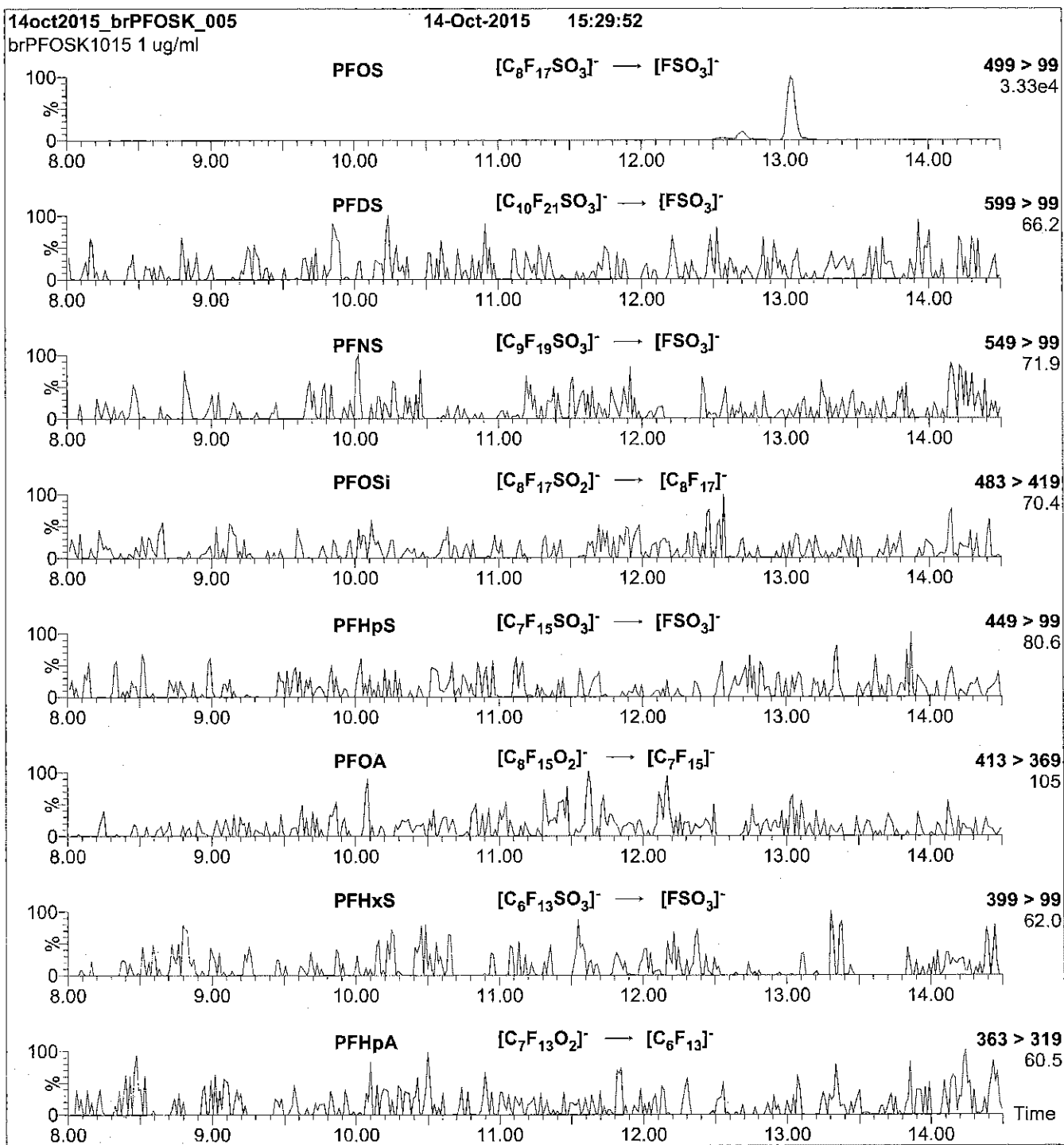
**Chromatographic Conditions:**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub> (1.7  $\mu$ m, 2.1 x 100 mm)  
**Injection:** 1.0  $\mu$ g/ml of br-PFOSK  
**Mobile Phase:** Gradient  
45% (80:20 MeOH:ACN) / 55% H<sub>2</sub>O (both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ l/min

**MS Conditions:**

SIR (ES<sup>-</sup>)  
Source = 110 °C  
Desolvation = 325 °C  
Cone Voltage = 60V

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



**Conditions for Figure 3:**

Injection: On-column  
 Mobile phase: Same as Figure 2  
 Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFOSA\_00006**

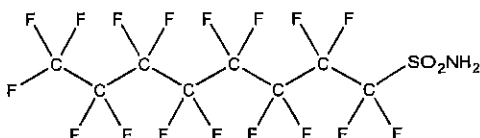


# WELLINGTON LABORATORIES

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

### **INTENDED USE:**

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### **UNCERTAINTY:**

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

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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.

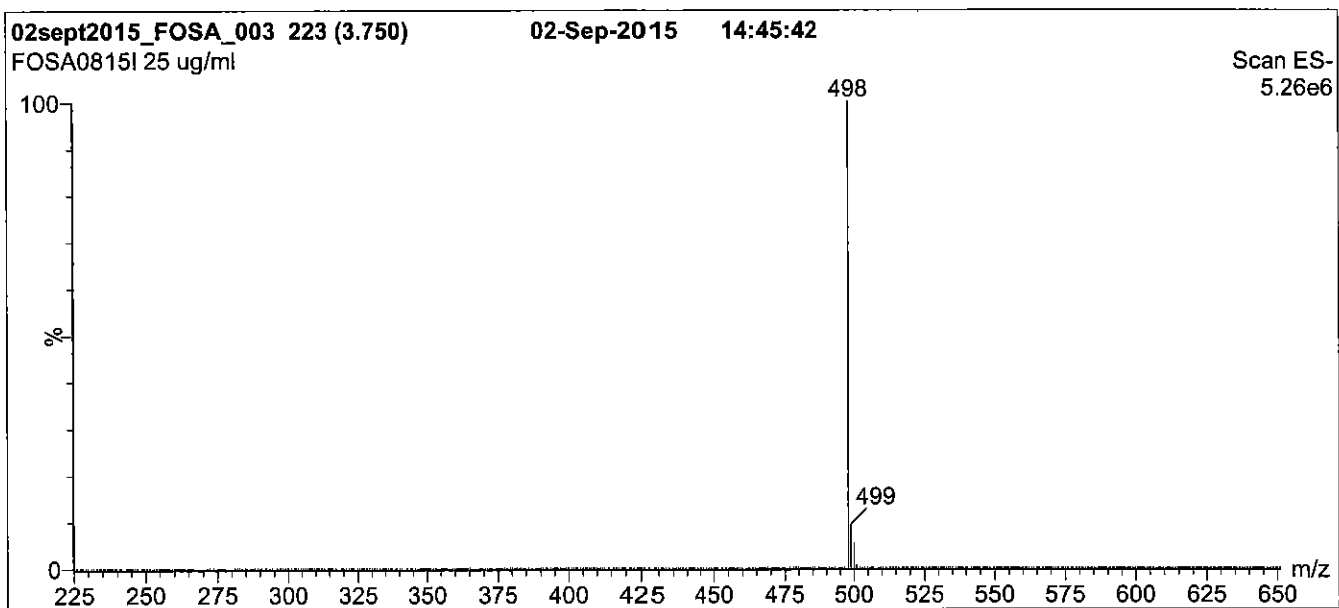
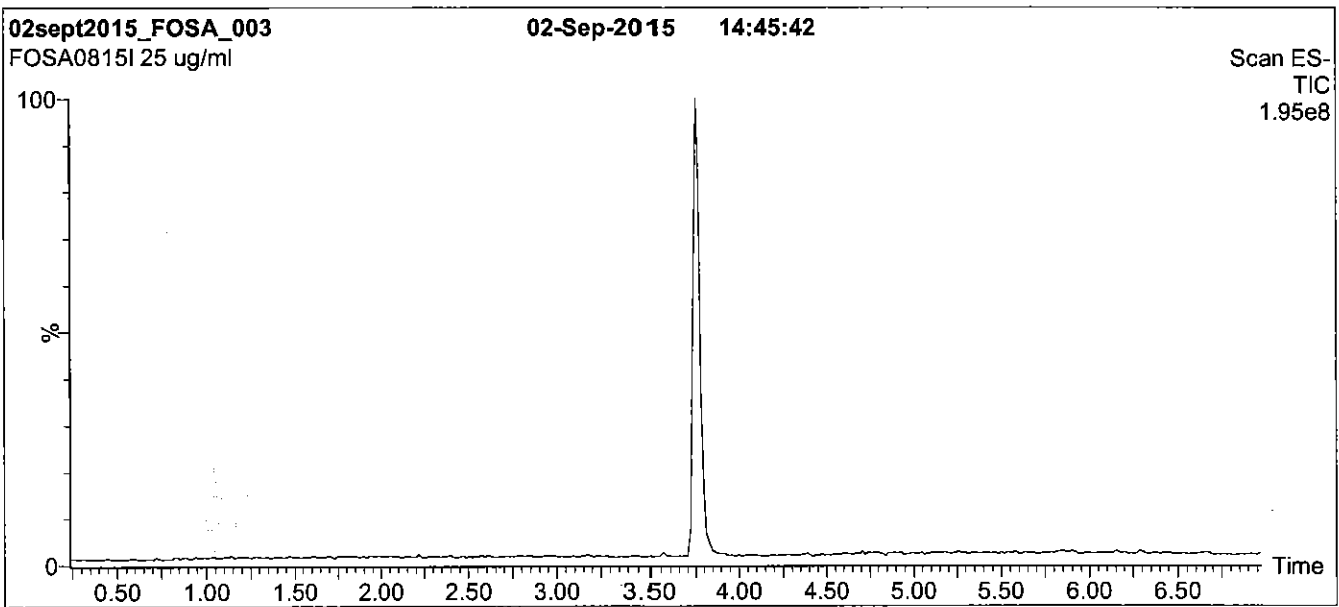
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>1a</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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

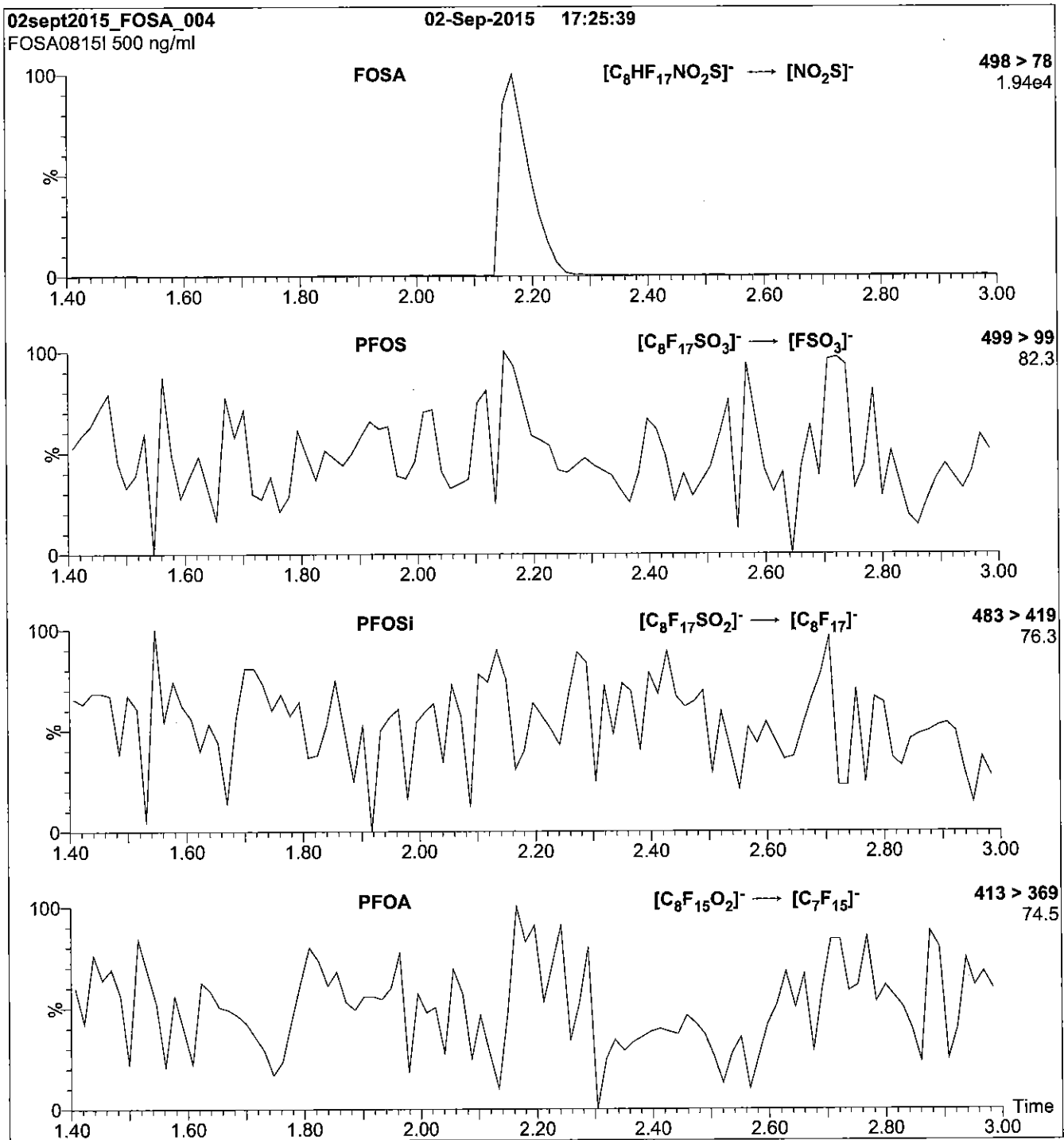
**Flow:** 300  $\mu$ l/min

**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: FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu$ l (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCFPeA\_00004**

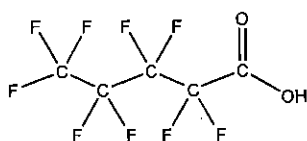




# WELLINGTON LABORATORIES

## 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  $^{19}\text{F}$  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

### **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.

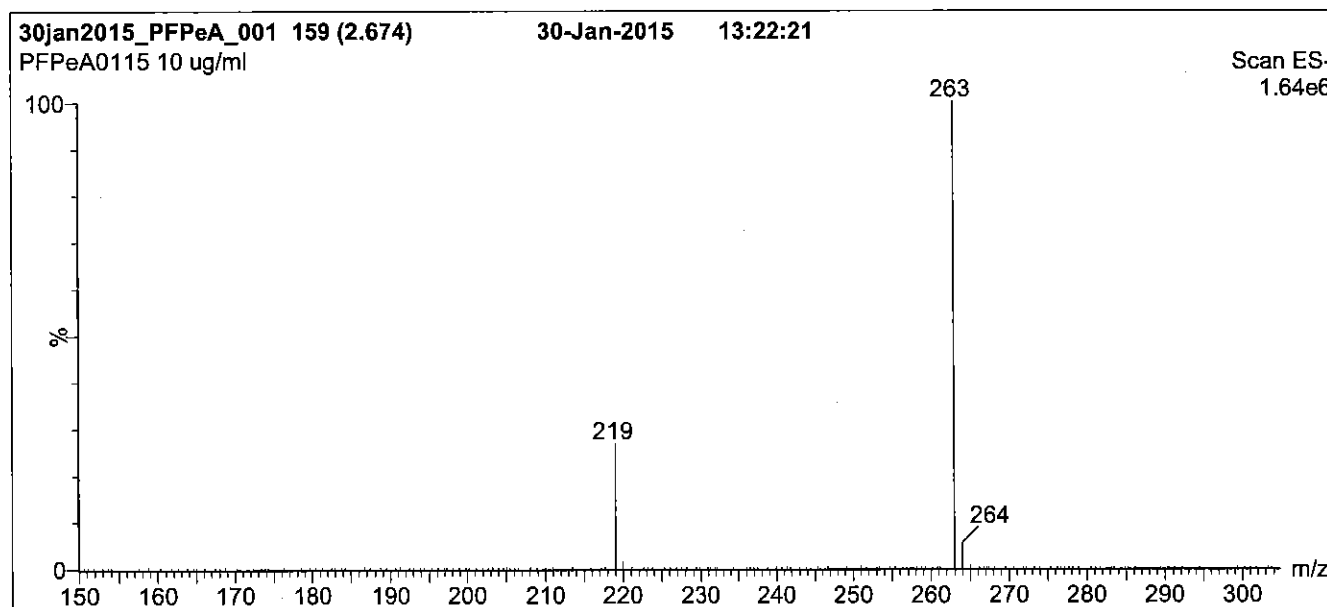
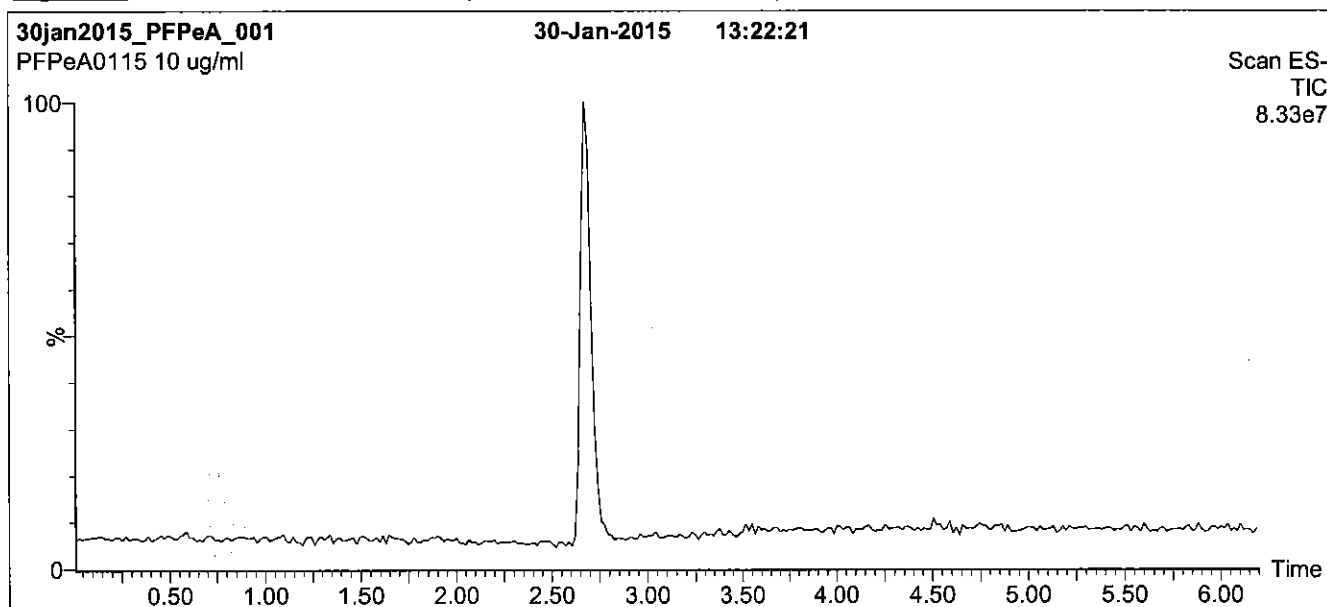
### **QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
 Start: 30% (80:20 MeOH:ACN) / 70% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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

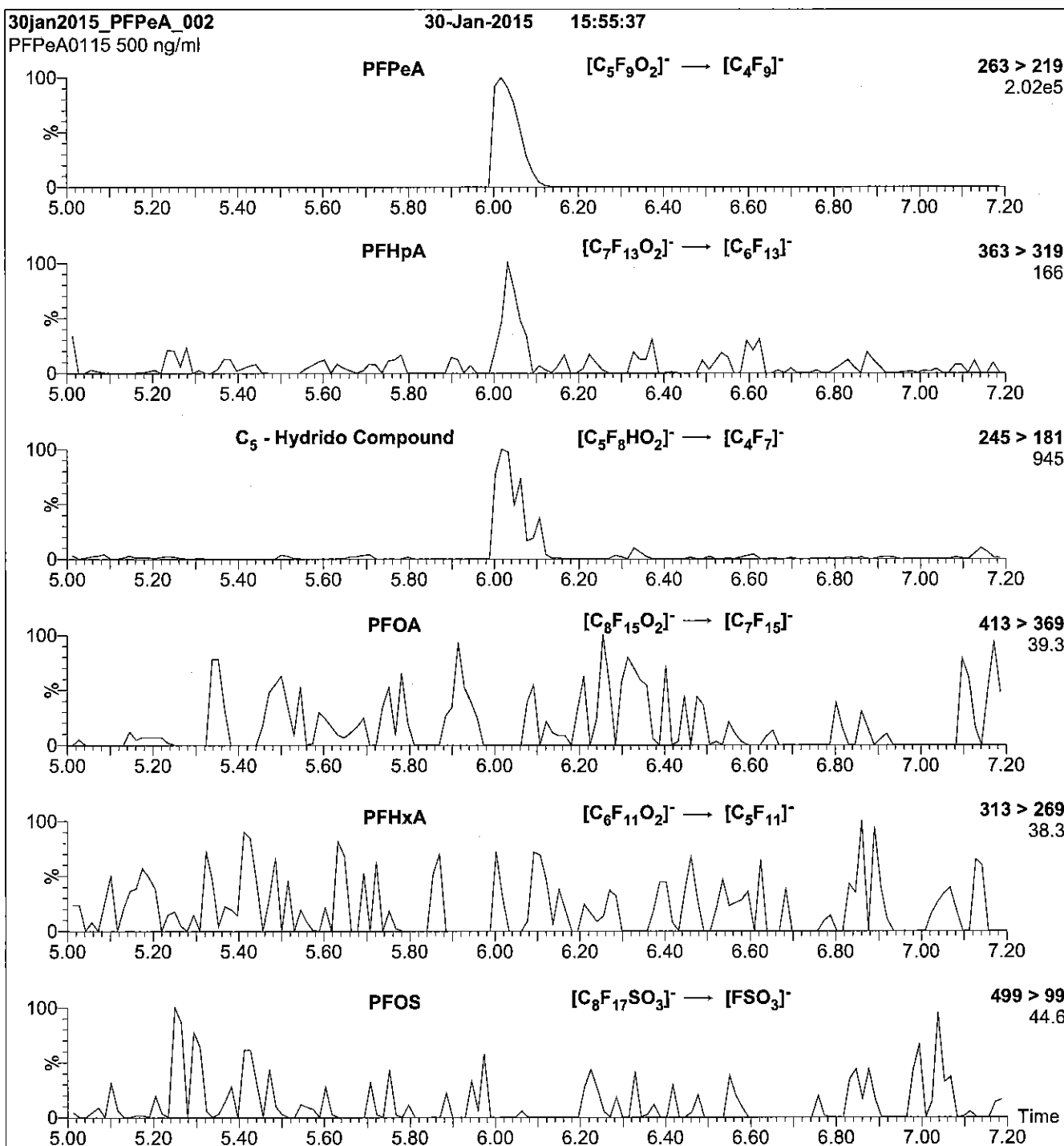
**Flow:** 300  $\mu$ l/min

**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 µl (500 ng/ml PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300 µl/min

**MS Parameters**

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

Reagent

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**LCFPeS\_00002**

R 2445 2



# WELLINGTON LABORATORIES

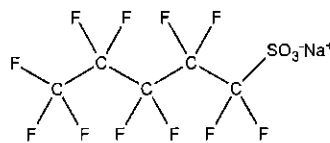
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** L-PFPeS  
**COMPOUND:** Sodium perfluoro-1-pentanesulfonate

**LOT NUMBER:** LPFPeS0712

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>5</sub>F<sub>11</sub>SO<sub>3</sub>Na  
**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.

### **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:

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

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.

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### **EXPIRY DATE / PERIOD OF VALIDITY:**

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

### **LIMITED WARRANTY:**

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

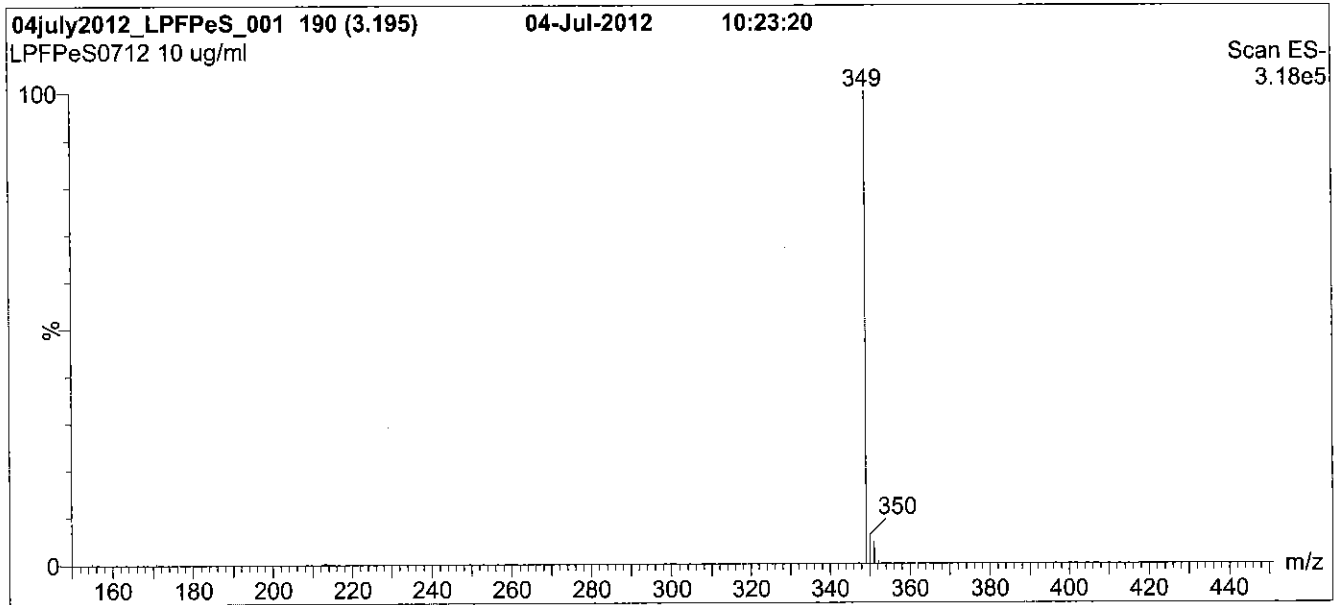
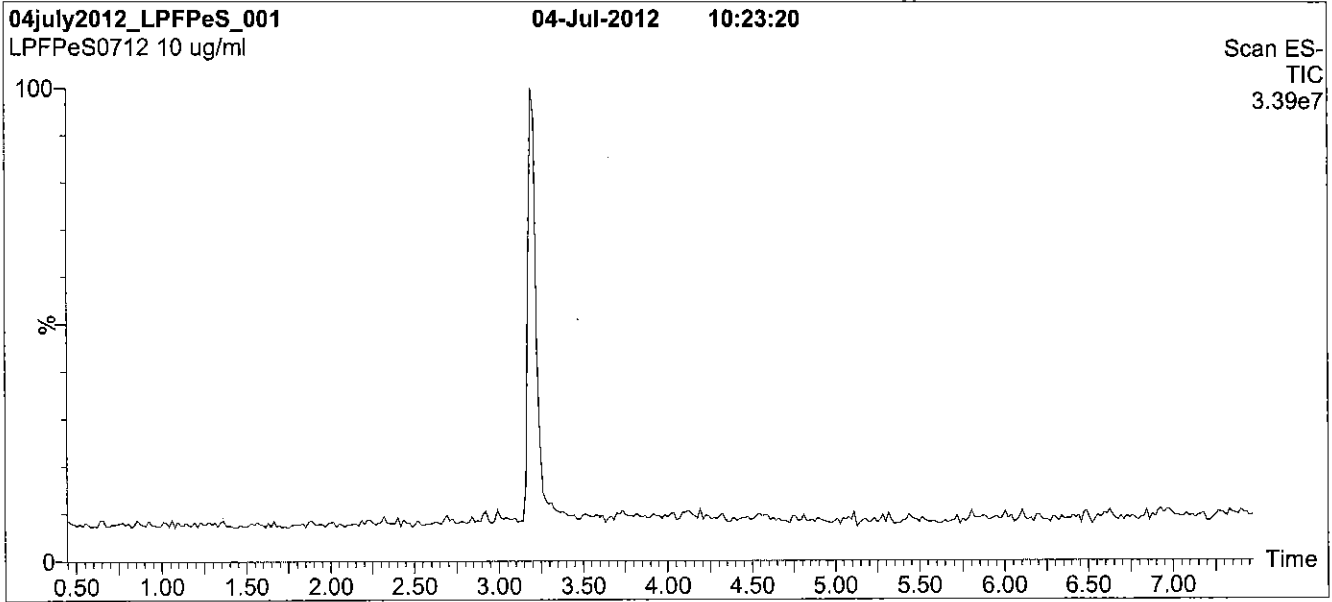
### **QUALITY MANAGEMENT:**

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



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 40% (80:20 MeOH:ACN) / 60% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ l/min

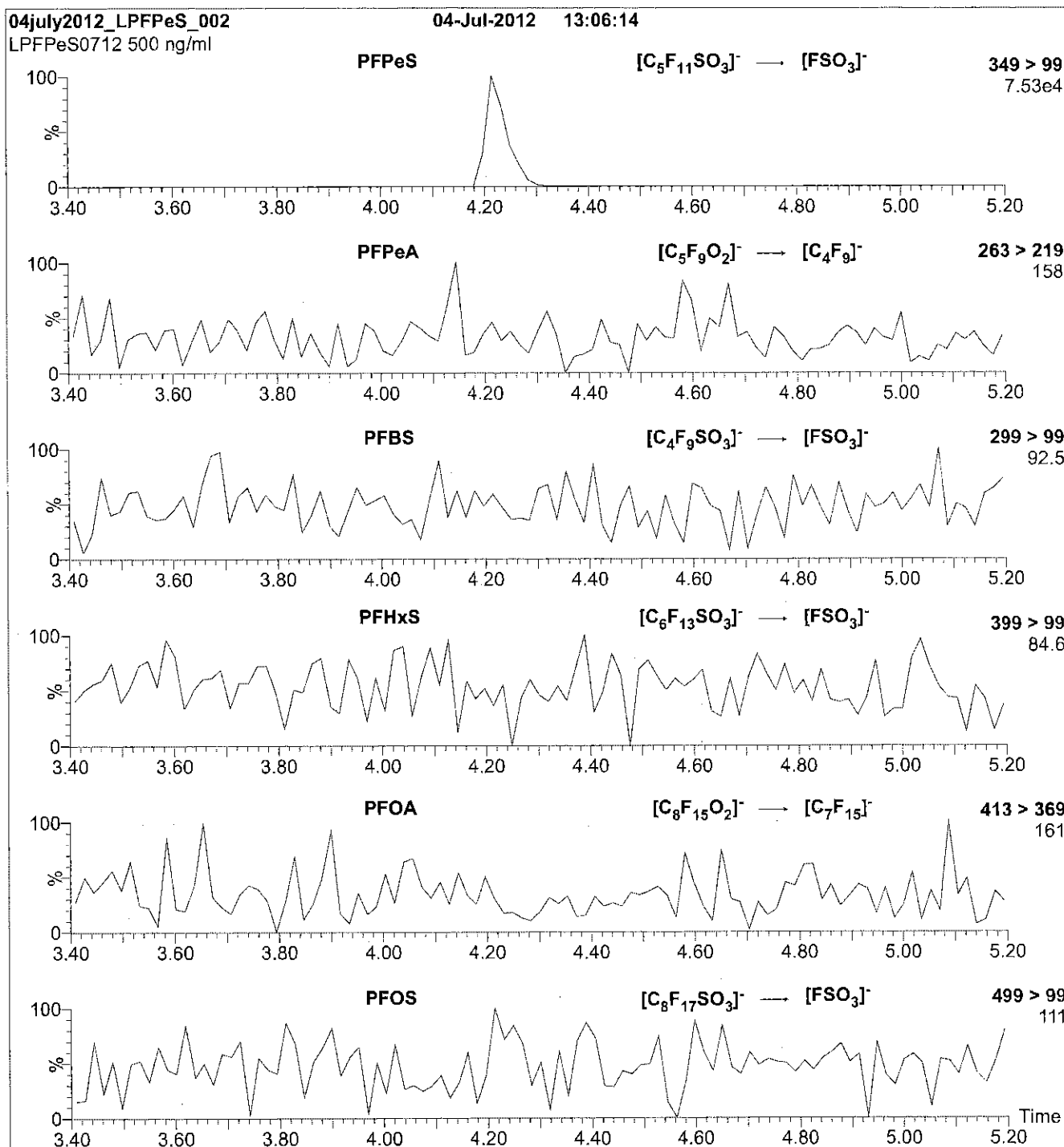
**MS Parameters**

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  $\mu$ l (500 ng/ml L-PFPeS)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

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

Reagent

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**LCPFTeDA\_00004**



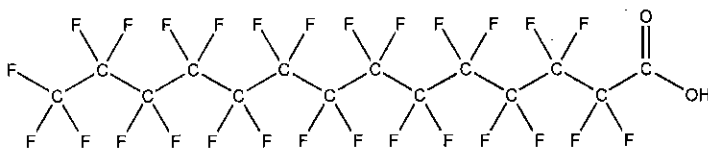
R: 4/7/16 CBW

609636

ID: LCPFTeDA\_00004

Exp: 12/09/20 Pripd: CBW

PF-n-tetradecanoic acid

**WELLINGTON**  
LABORATORIES**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION**PRODUCT CODE:** PFTeDA **LOT NUMBER:** PFTeDA1215  
**COMPOUND:** Perfluoro-n-tetradecanoic acid**STRUCTURE:** **CAS #:** 376-06-7

**MOLECULAR FORMULA:**  $C_{14}H_{27}O_2$  **MOLECULAR WEIGHT:** 714.11  
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$  **SOLVENT(S):** Methanol  
 Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 12/09/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 12/09/2020  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

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**EXPIRY DATE / PERIOD OF VALIDITY:**

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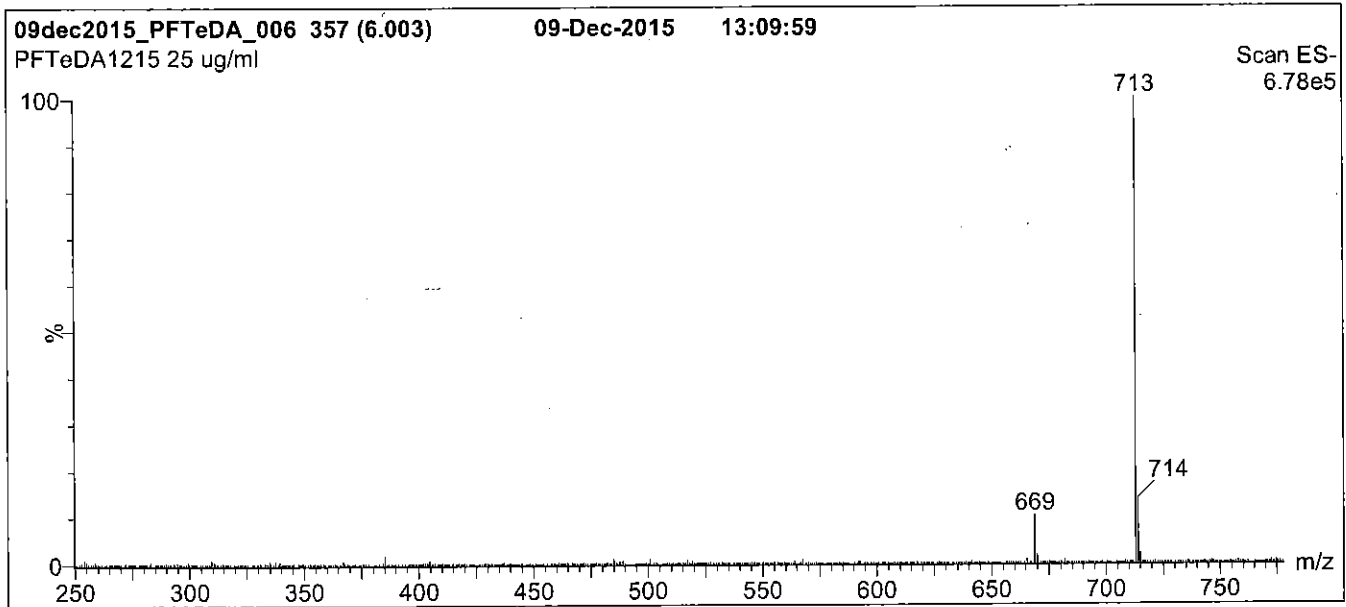
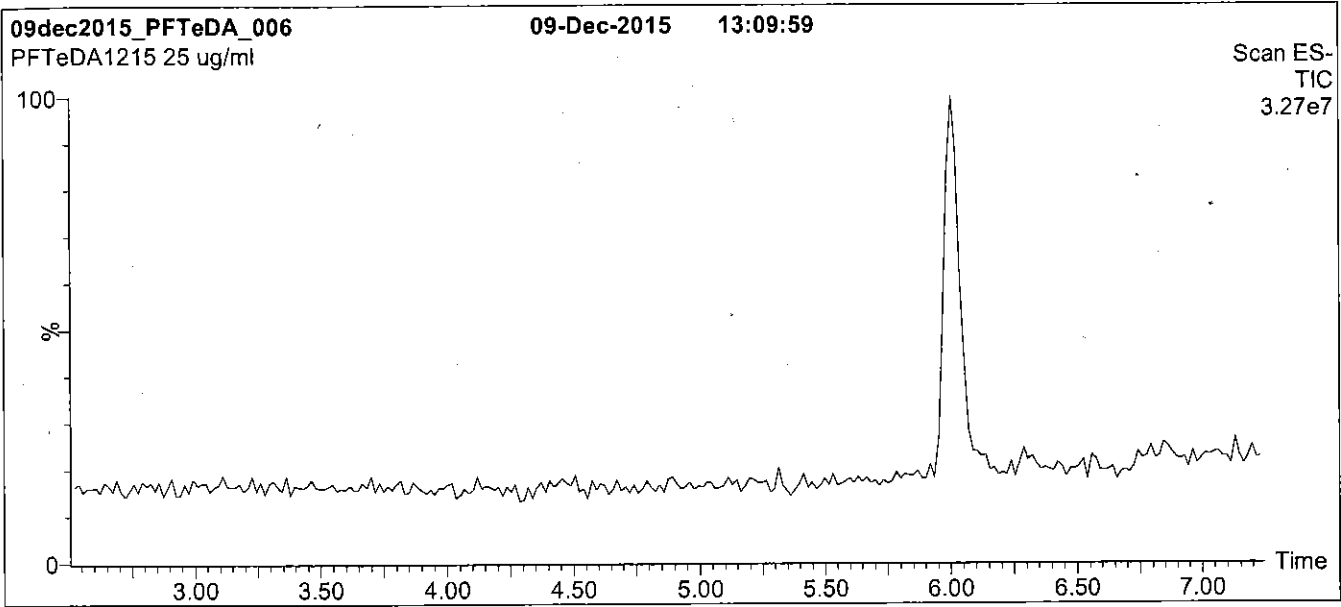
**QUALITY MANAGEMENT:**

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



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 65% (80:20 MeOH:ACN) / 35% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc 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

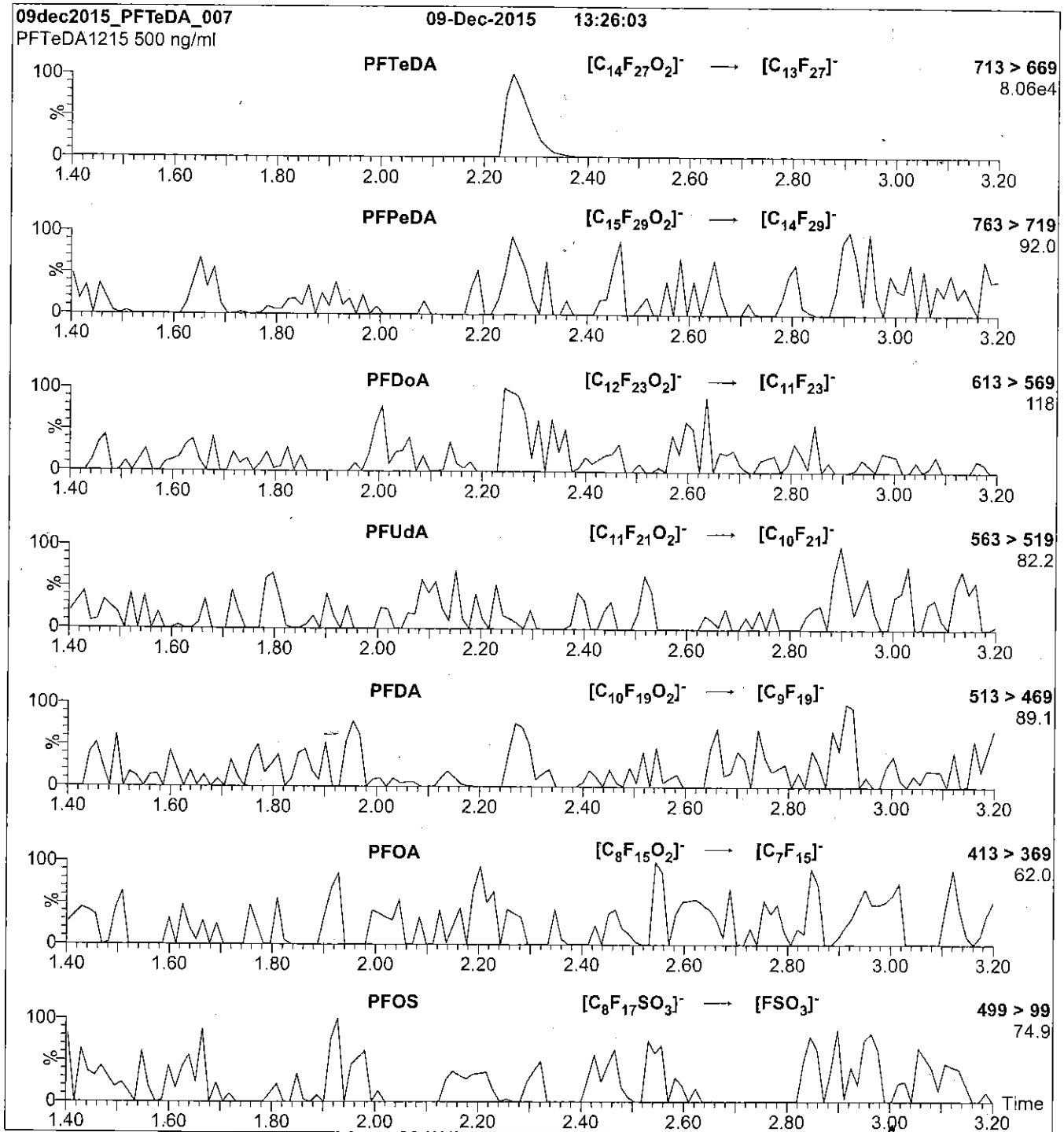
Flow: 300 µl/min

**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  $\mu$ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.43e-3  
Collision Energy (eV) = 14

Reagent

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**LCPFT<sub>r</sub>DA\_00004**



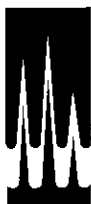
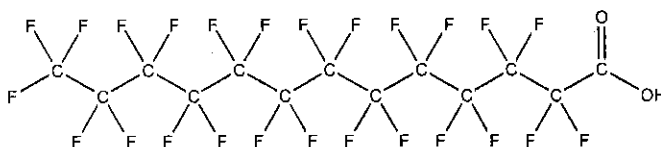
R: 4/7/16 CBW

609697

ID: LCPFTrDA\_00004

Exp: 12/10/18 Ppdt: CBW

PF-n-tridecanoic acid

**WELLINGTON**  
LABORATORIES**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION**PRODUCT CODE:** PFTTrDA **LOT NUMBER:** PFTTrDA1213  
**COMPOUND:** Perfluoro-n-tridecanoic acid**STRUCTURE:** **CAS #:** 72629-94-8

**MOLECULAR FORMULA:**  $C_{13}HF_{25}O_2$  **MOLECULAR WEIGHT:** 664.11  
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$  **SOLVENT(S):** Methanol  
 Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 12/10/2013  
**EXPIRY DATE:** (mm/dd/yyyy) 12/10/2018  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ( $C_{11}HF_{21}O_2$ ); ~ 0.4% of PFDaA ( $C_{12}HF_{23}O_2$ ), and ~ 0.1% of PFTeDA ( $C_{14}HF_{27}O_2$ ).

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:

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

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



### **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.

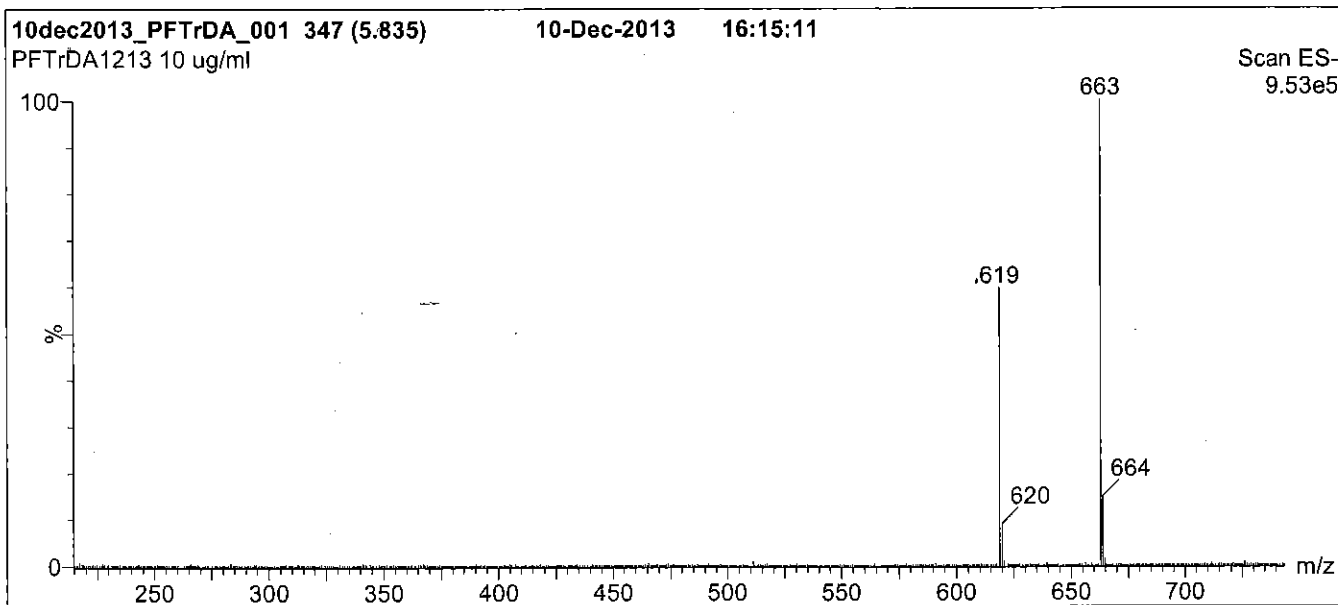
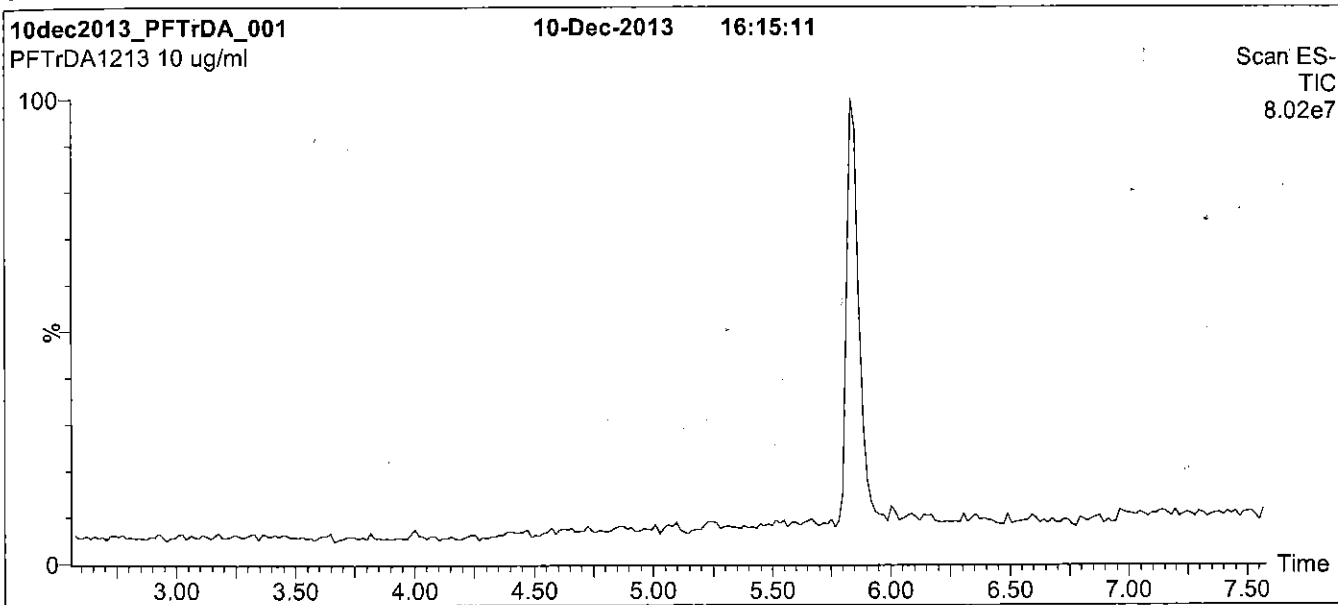
### **QUALITY MANAGEMENT:**

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](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
 Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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

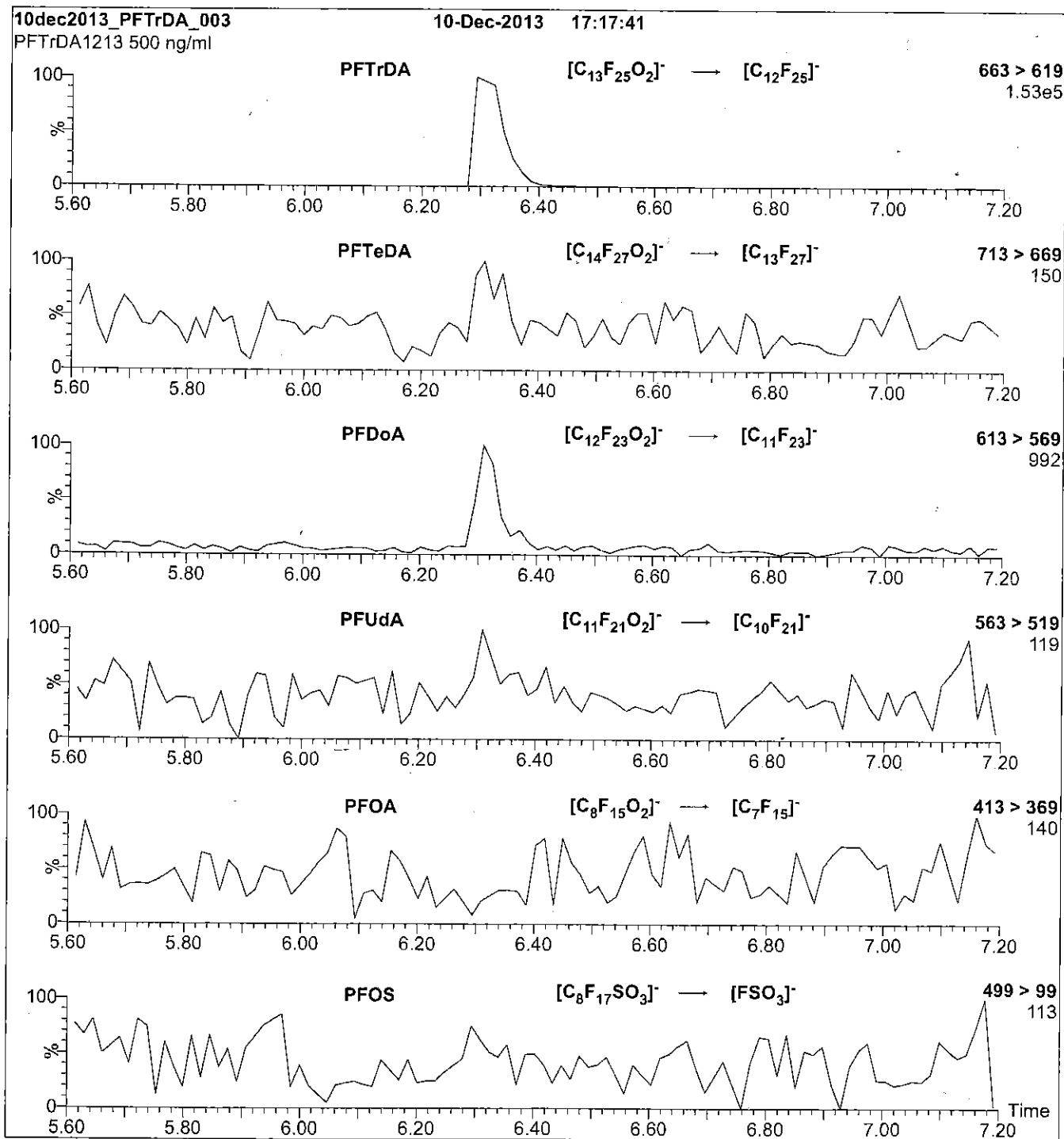
Flow: 300  $\mu$ l/min

**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  $\mu$ l (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.28e-3  
Collision Energy (eV) = 15

Reagent

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**LCPFUdA\_00004**



605242  
 ID: LCPFUDa\_00004  
 Exp: 08/19/20 Prpe: CBW  
 PF-n-undecanoic acid

Rec. 3/29/16 JRB ✓



**WELLINGTON  
 LABORATORIES**

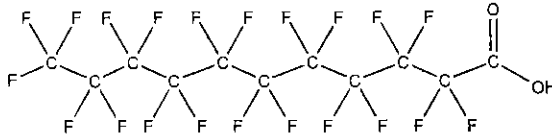
**CERTIFICATE OF ANALYSIS  
 DOCUMENTATION**

**PRODUCT CODE:** PFUdA  
**COMPOUND:** Perfluoro-n-undecanoic acid

**LOT NUMBER:** PFUdA0815

**STRUCTURE:**

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



**MOLECULAR FORMULA:**  $C_{11}HF_{21}O_2$   
**CONCENTRATION:**  $50 \pm 2.5 \mu\text{g/ml}$

**MOLECULAR WEIGHT:** 564.09  
**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

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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.

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

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### **EXPIRY DATE / PERIOD OF VALIDITY:**

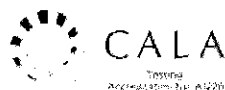
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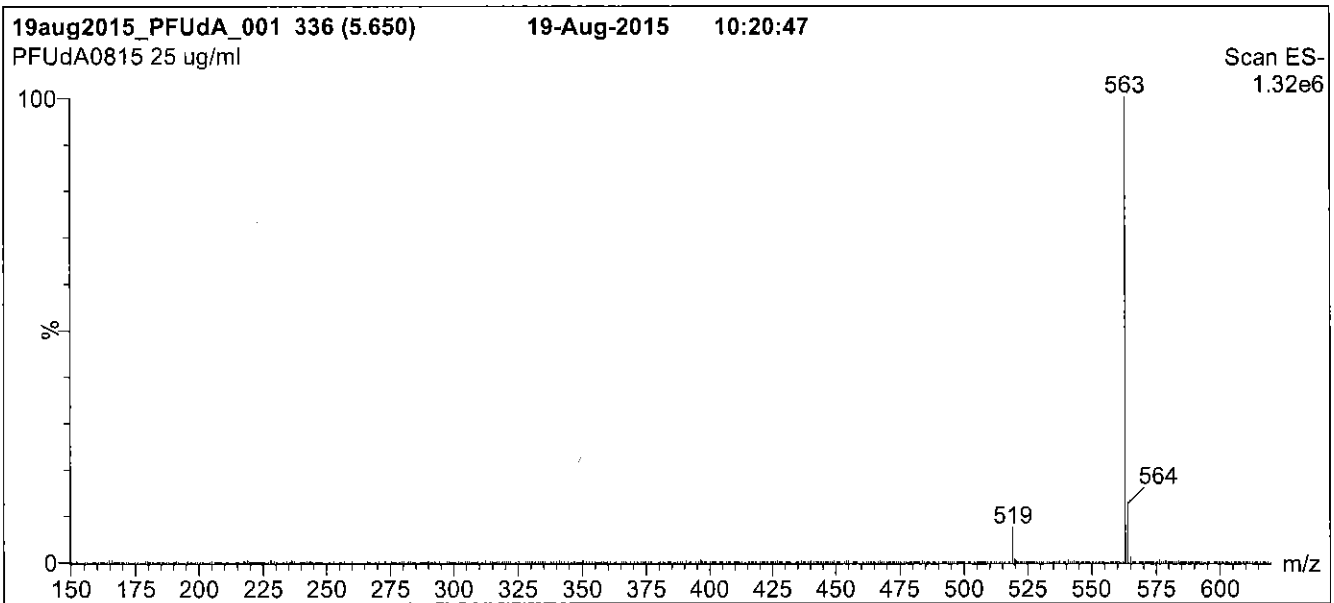
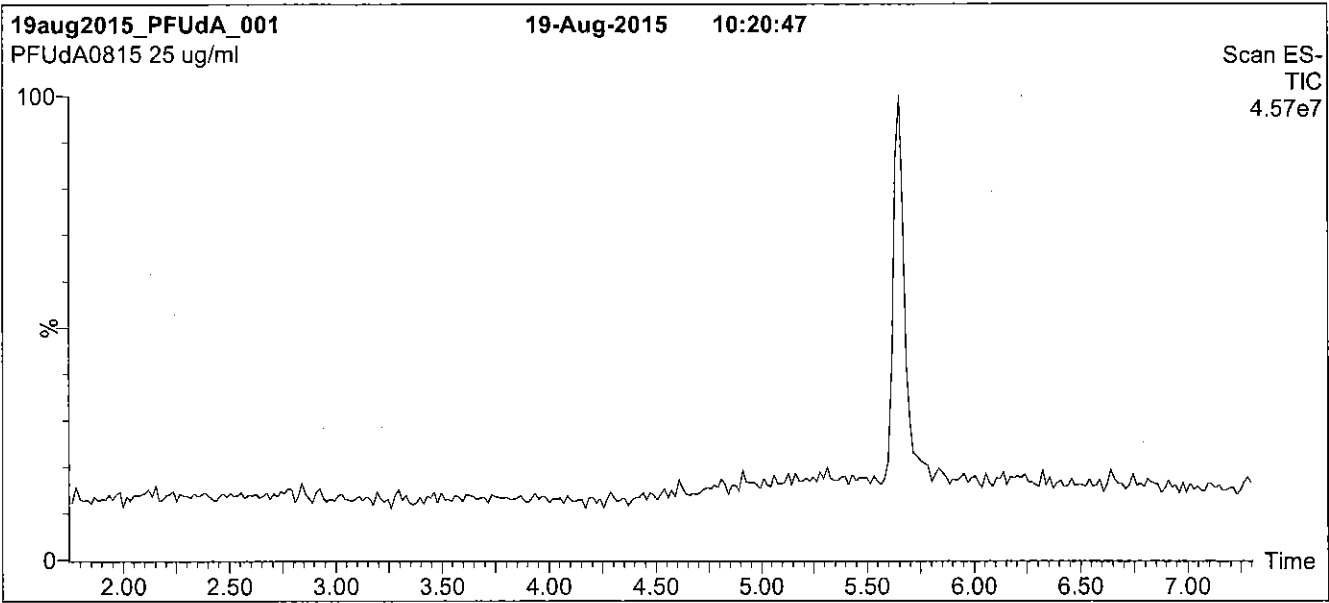
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**Figure 1: PFUdA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

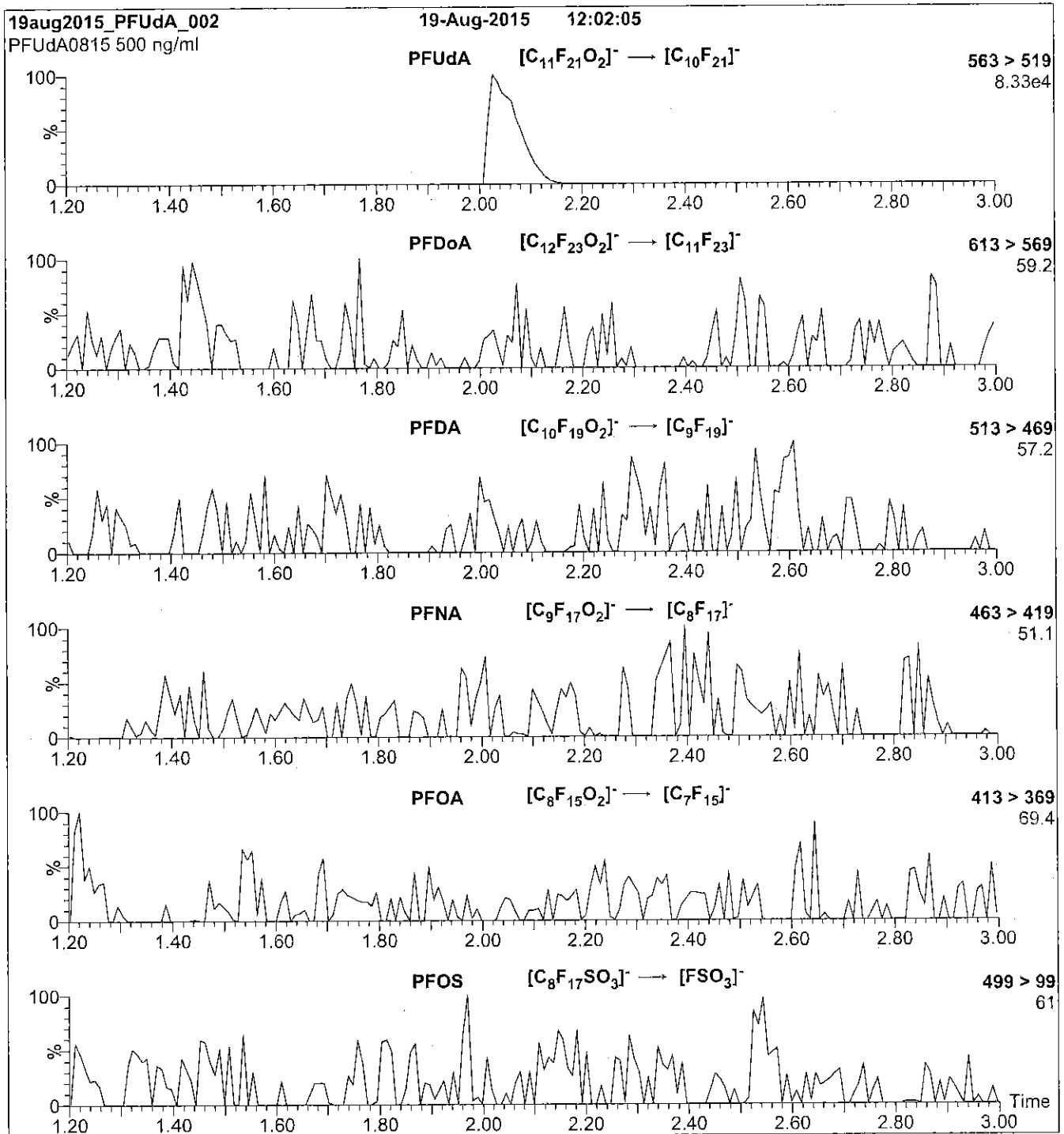
Mobile phase: Gradient  
 Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)  
 Ramp to 90% organic over 7 min and hold for 2 min  
 before returning to initial conditions in 0.5 min.  
 Time: 10 min

Flow: 300  $\mu$ 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  $\mu$ l (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ 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.: 320-21000-1

SDG No.: \_\_\_\_\_

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
GW23-17SGW-0816	320-21000-1	73	119
GW23-16GW-0816	320-21000-2	111	123
GW23-17DGW-0816	320-21000-3	80	123
GW23-17DGWP-0816	320-21000-4	82	120
GW23-13GW-0816	320-21000-5	100	124
GW23-07GW-0816	320-21000-6	72	111
GW23-09GW-0816	320-21000-7	97	131
GW23-11GW-0816	320-21000-8	81	122
GW23-12GW-0816	320-21000-9	96	128
GW23-15GW-0816	320-21000-10	101	125
GW23-14GW-0816	320-21000-11	98	124
	MB 320-123056/1-A	125	121
	LCS 320-123056/2-A	122	119
	LCSD 320-123056/3-A	122	121

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.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 26AUG2016G\_032\_p1\_e1.d  
 Lab ID: LCS 320-123056/2-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	40.0	38.2	96	60-140	
Perfluorooctanesulfonic acid (PFOS)	37.1	32.7	88	60-140	
13C4 PFOA	100	122	122	25-150	
13C4 PFOS	95.6	114	119	25-150	

# Column to be used to flag recovery and RPD values  
 FORM III 537 (Modified)

FORM III  
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low Lab File ID: 26AUG2016G\_033\_p1\_e1.d

Lab ID: LCSD 320-123056/3-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanoic acid (PFOA)	40.0	43.8	110	14	30	60-140	
Perfluorooctanesulfonic acid (PFOS)	37.1	33.7	91	3	30	60-140	
13C4 PFOA	100	122	122			25-150	
13C4 PFOS	95.6	115	121			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.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 26AUG2016G\_031\_p1\_e1.d Lab Sample ID: MB 320-123056/1-A  
 Matrix: Water Date Extracted: 08/19/2016 10:27  
 Instrument ID: A8 Date Analyzed: 08/26/2016 18:40  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-123056/2-A	26AUG2016G_032_p1_e1.d	08/26/2016 18:48
	LCSD 320-123056/3-A	26AUG2016G_033_p1_e1.d	08/26/2016 18:55
GW23-17SGW-0816	320-21000-1	26AUG2016G_034_p1_e1.d	08/26/2016 19:03
GW23-16GW-0816	320-21000-2	26AUG2016G_035_p1_e1.d	08/26/2016 19:10
GW23-17DGW-0816	320-21000-3	26AUG2016G_036_p1_e1.d	08/26/2016 19:18
GW23-17DGWP-0816	320-21000-4	26AUG2016G_037_p1_e1.d	08/26/2016 19:25
GW23-13GW-0816	320-21000-5	26AUG2016G_038_p1_e1.d	08/26/2016 19:33
GW23-07GW-0816	320-21000-6	26AUG2016G_039_p1_e1.d	08/26/2016 19:40
GW23-09GW-0816	320-21000-7	26AUG2016G_040_p1_e1.d	08/26/2016 19:48
GW23-11GW-0816	320-21000-8	26AUG2016G_045_p1_e1.d	08/26/2016 20:25
GW23-12GW-0816	320-21000-9	26AUG2016G_046_p1_e1.d	08/26/2016 20:33
GW23-15GW-0816	320-21000-10	26AUG2016G_047_p1_e1.d	08/26/2016 20:40
GW23-14GW-0816	320-21000-11	26AUG2016G_048_p1_e1.d	08/26/2016 20:48

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-17SGW-0816 Lab Sample ID: 320-21000-1  
 Matrix: Water Lab File ID: 26AUG2016G\_034\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/15/2016 14:10  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 268 (mL) Date Analyzed: 08/26/2016 19:03  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	5.3	M	2.3	1.9	0.70
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	73		25-150
STL00991	13C4 PFOS	119		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_034\_p1\_e1.d  
 Lims ID: 320-21000-A-1-A  
 Client ID: GW23-17SGW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 19:03:00 ALS Bottle#: 0 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info:  
 Operator ID: A8 Instrument ID: A8  
 Method: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:31:40 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:31:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.765	2.798	-0.033	1.000	218745	2.84			1120	M
413 > 169.0	2.757	2.798	-0.041	0.997	141967		1.54(0.90-1.10)		3776	M
D 14 13C4 PFOA										
417 > 372.0	2.757	2.798	-0.041		3508942	36.4		72.9	269421	
D 17 13C4 PFOS										
503 > 80.0	3.138	3.177	-0.039		4653988	56.7		119	83116	

**QC Flag Legend**

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_034\_p1\_e1.d

Injection Date: 26-Aug-2016 19:03:00

Instrument ID: A8

Lims ID: 320-21000-A-1-A

Lab Sample ID: 320-21000-1

Client ID: GW23-17SGW-0816

Operator ID: A8

ALS Bottle#: 0

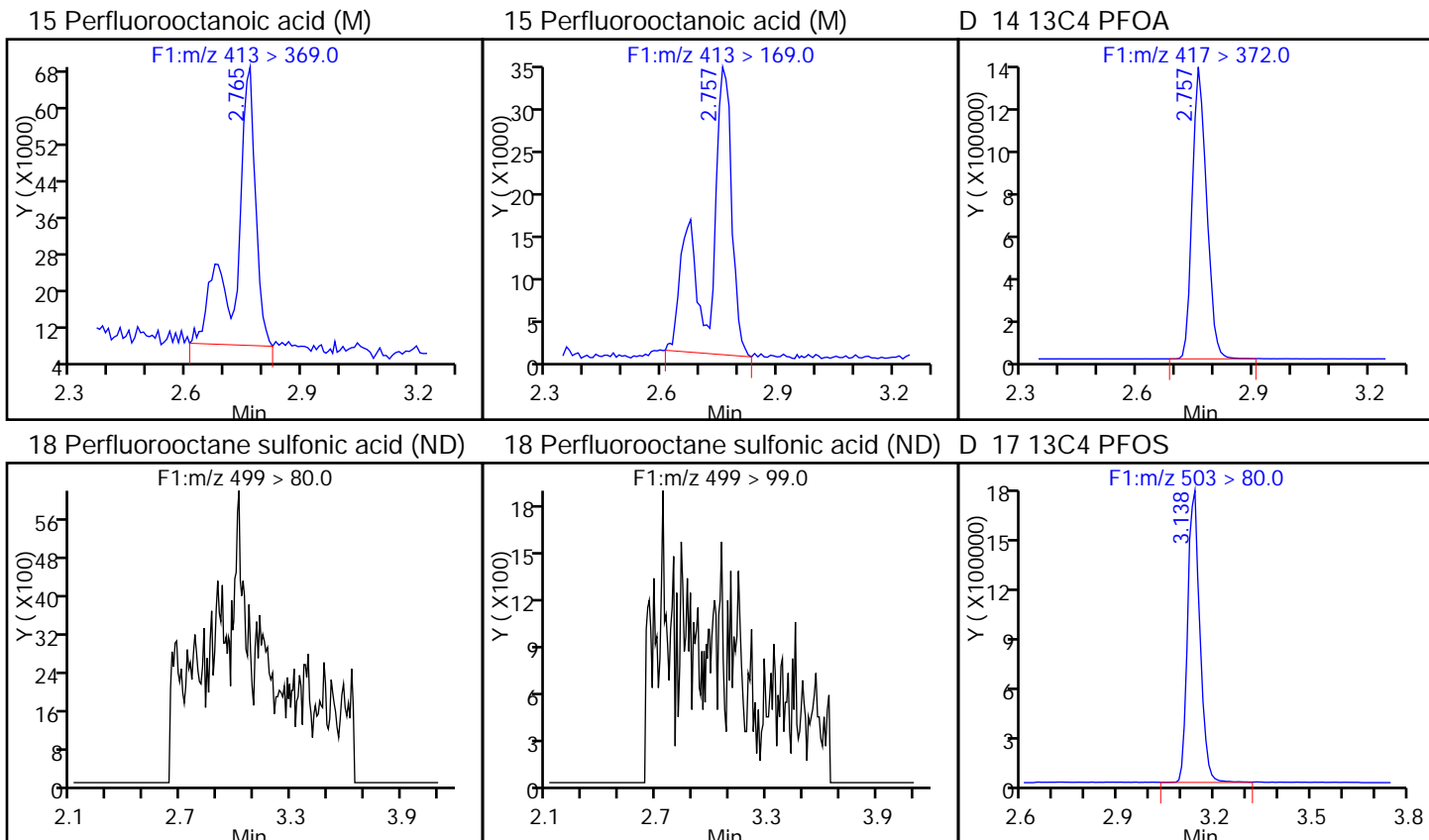
Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL





TestAmerica Sacramento

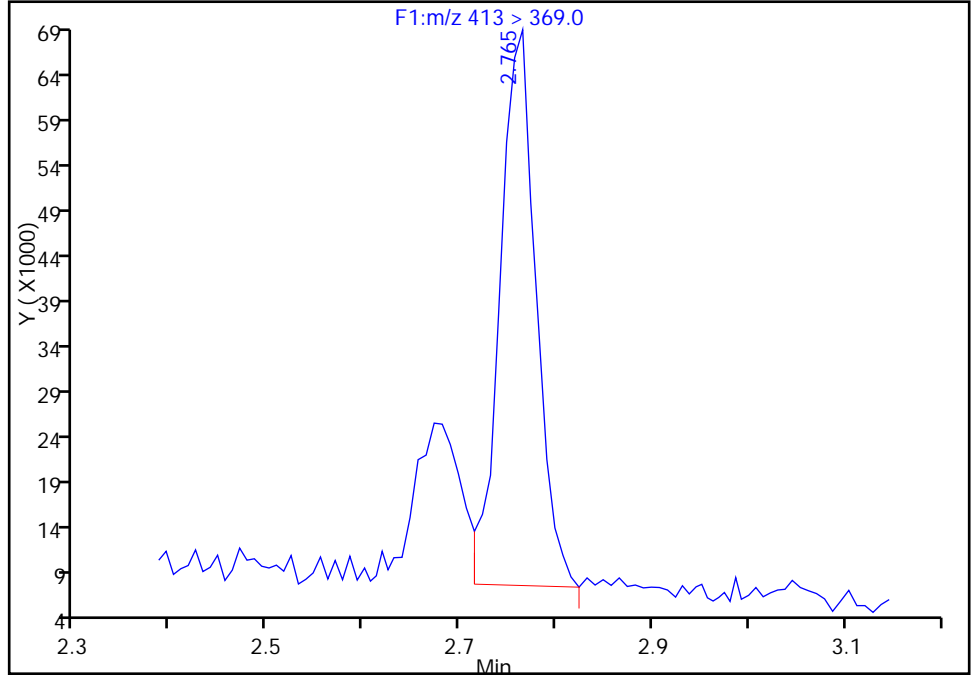
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_034\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:03:00 Instrument ID: A8  
Lims ID: 320-21000-A-1-A Lab Sample ID: 320-21000-1  
Client ID: GW23-17SGW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

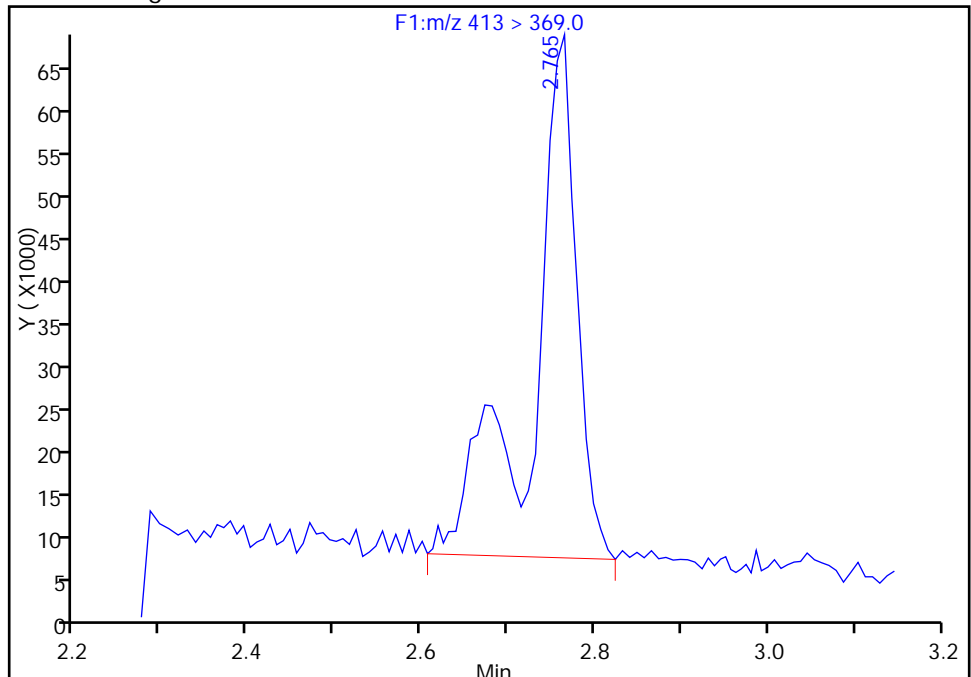
RT: 2.77  
Area: 159491  
Amount: 1.995563  
Amount Units: ng/ml

Processing Integration Results



RT: 2.77  
Area: 218745  
Amount: 2.843808  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:31:39

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

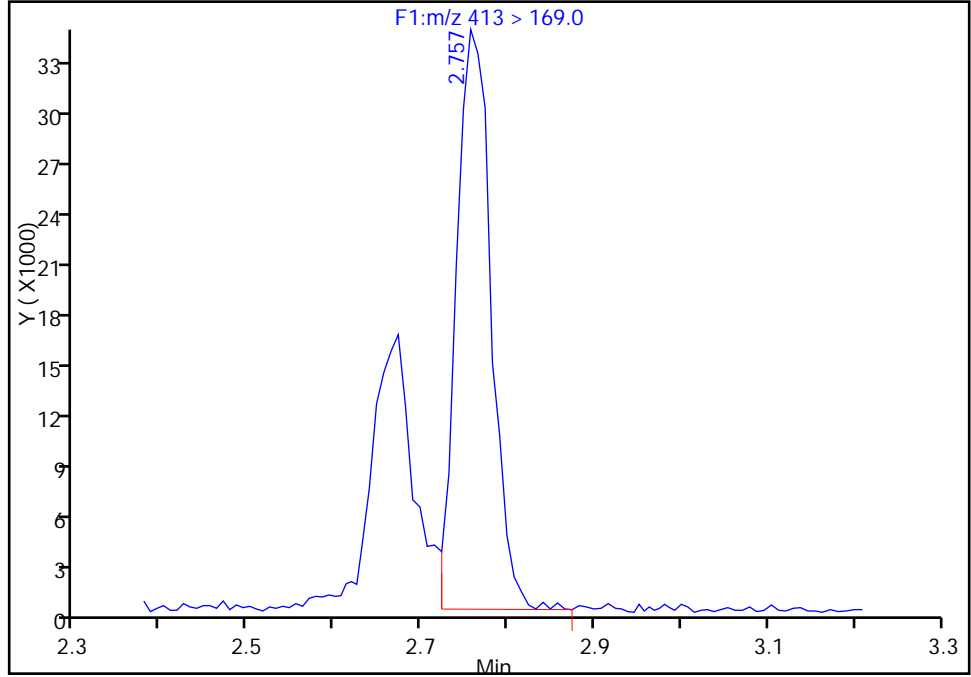
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_034\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:03:00 Instrument ID: A8  
Lims ID: 320-21000-A-1-A Lab Sample ID: 320-21000-1  
Client ID: GW23-17SGW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

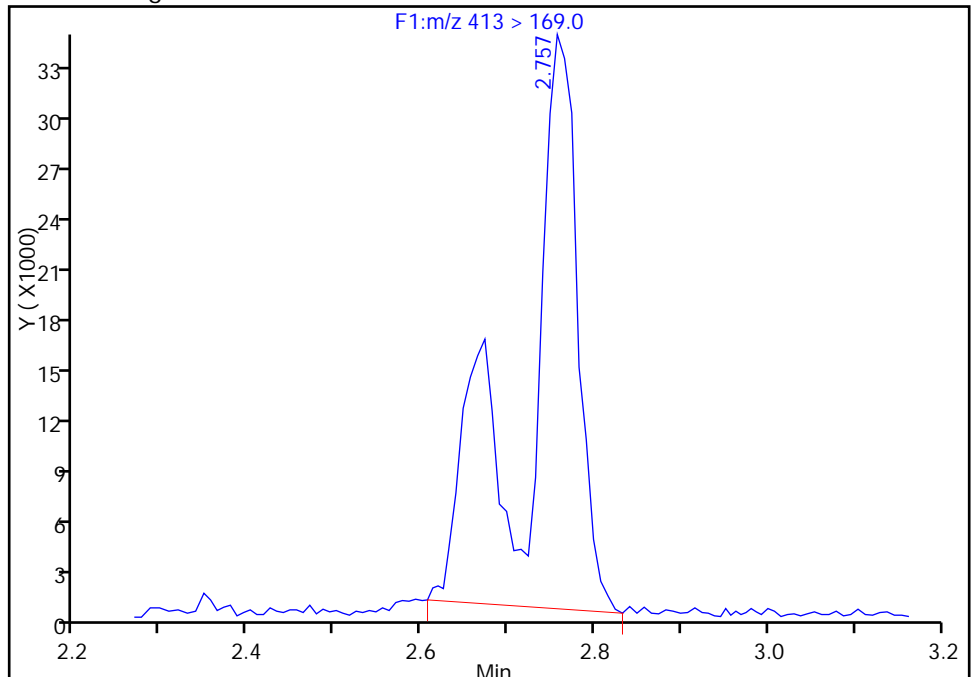
RT: 2.76  
Area: 95107  
Amount: 1.995563  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 141967  
Amount: 2.843808  
Amount Units: ng/ml

Manual Integration Results



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-16GW-0816 Lab Sample ID: 320-21000-2  
 Matrix: Water Lab File ID: 26AUG2016G\_035\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/15/2016 14:15  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 270.3(mL) Date Analyzed: 08/26/2016 19:10  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	5.0	M	2.3	1.8	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	M	3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	111		25-150
STL00991	13C4 PFOS	123		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_035\_p1\_e1.d

Lims ID: 320-21000-A-2-A

Client ID: GW23-16GW-0816

Sample Type: Client

Inject. Date: 26-Aug-2016 19:10:00

ALS Bottle#: 0

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Sample Info:

Operator ID: A8

Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\PFC\_A8\_Full.m

Limit Group: LC PFC\_DOD ICAL

Last Update: 06-Sep-2016 10:33:48

Calib Date: 22-Aug-2016 18:23:00

Integrator: Picker

Quant Method: Isotopic Dilution

Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d

Column 1 :

Det: F1(0.00 :6.60 )

Process Host: XAWRK024

First Level Reviewer: chandrasenas

Date: 06-Sep-2016 10:33:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.760	2.798	-0.038	1.000	319512	2.71			3141	M
413 > 169.0	2.760	2.798	-0.038	1.000	203770		1.57(0.90-1.10)		18801	M
D 14 13C4 PFOA										
417 > 372.0	2.760	2.798	-0.038		5353273	55.6		111	489617	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.140	3.110	0.031	1.000	673175	6.02			17715	M
499 > 99.0	3.131	3.110	0.022	0.997	136431		4.93(0.90-1.10)		6819	M
D 17 13C4 PFOS										
503 > 80.0	3.131	3.177	-0.046		4821400	58.7		123	209809	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_035\_p1\_e1.d

Injection Date: 26-Aug-2016 19:10:00

Instrument ID: A8

Lims ID: 320-21000-A-2-A

Lab Sample ID: 320-21000-2

Client ID: GW23-16GW-0816

Operator ID: A8

ALS Bottle#: 0

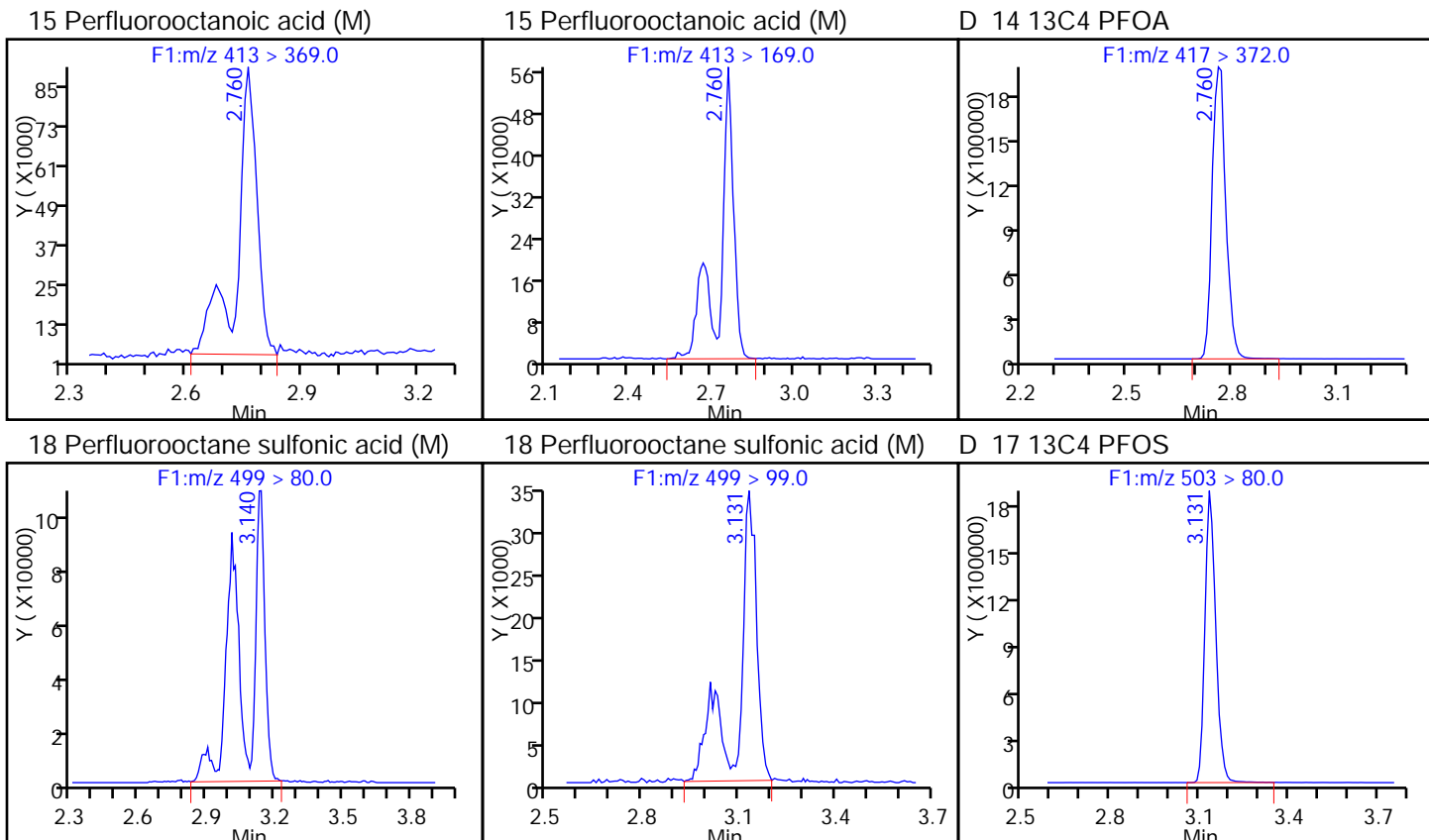
Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL



TestAmerica Sacramento

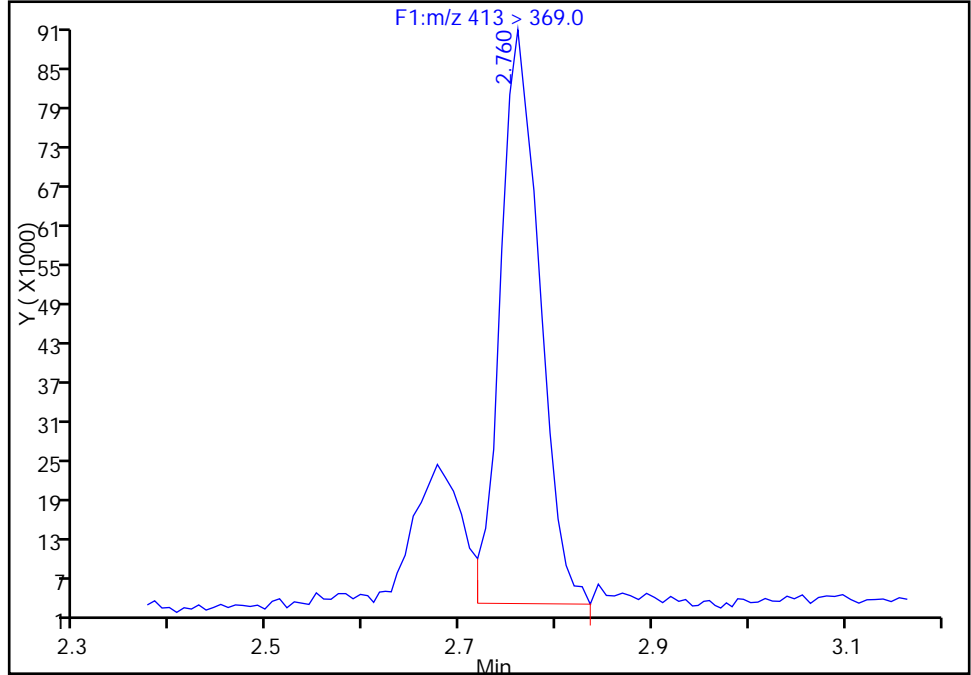
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_035\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:10:00 Instrument ID: A8  
Lims ID: 320-21000-A-2-A Lab Sample ID: 320-21000-2  
Client ID: GW23-16GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

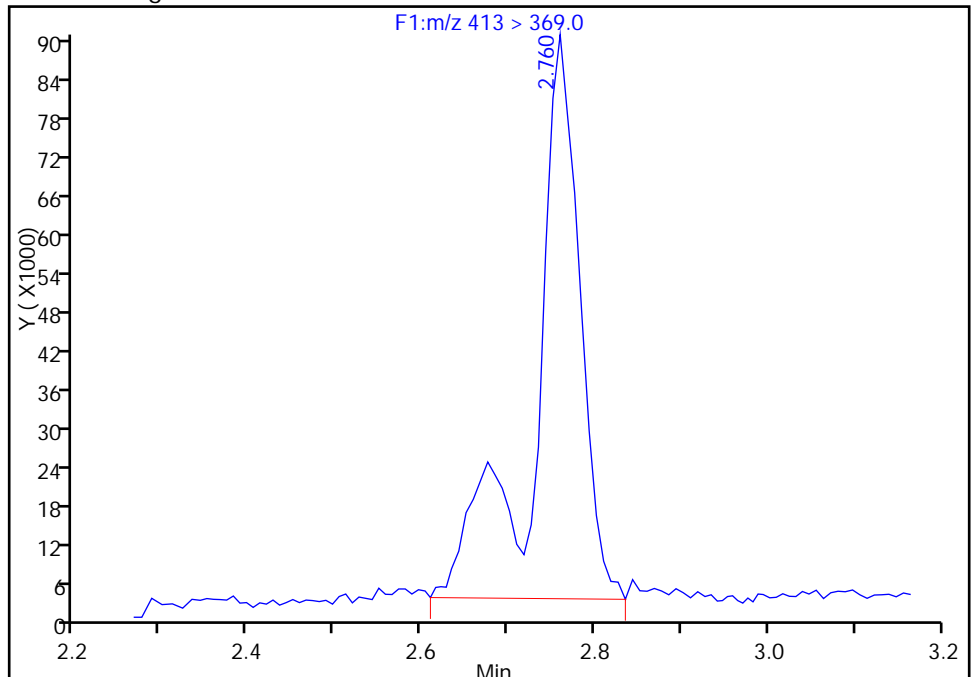
RT: 2.76  
Area: 246903  
Amount: 2.029175  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 319512  
Amount: 2.710495  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:33:48  
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

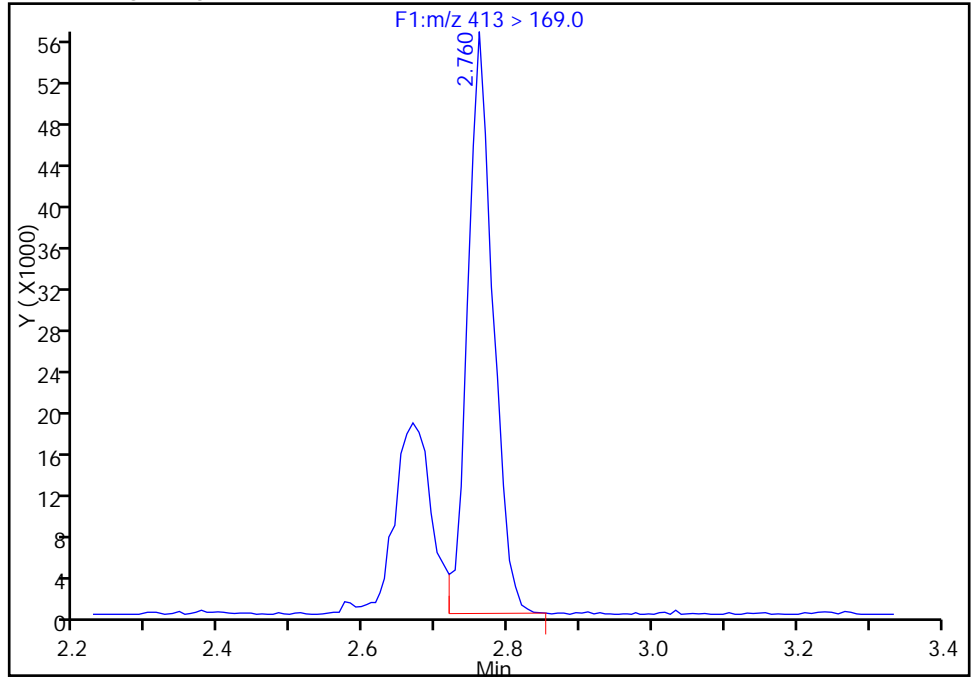
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_035\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:10:00 Instrument ID: A8  
Lims ID: 320-21000-A-2-A Lab Sample ID: 320-21000-2  
Client ID: GW23-16GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

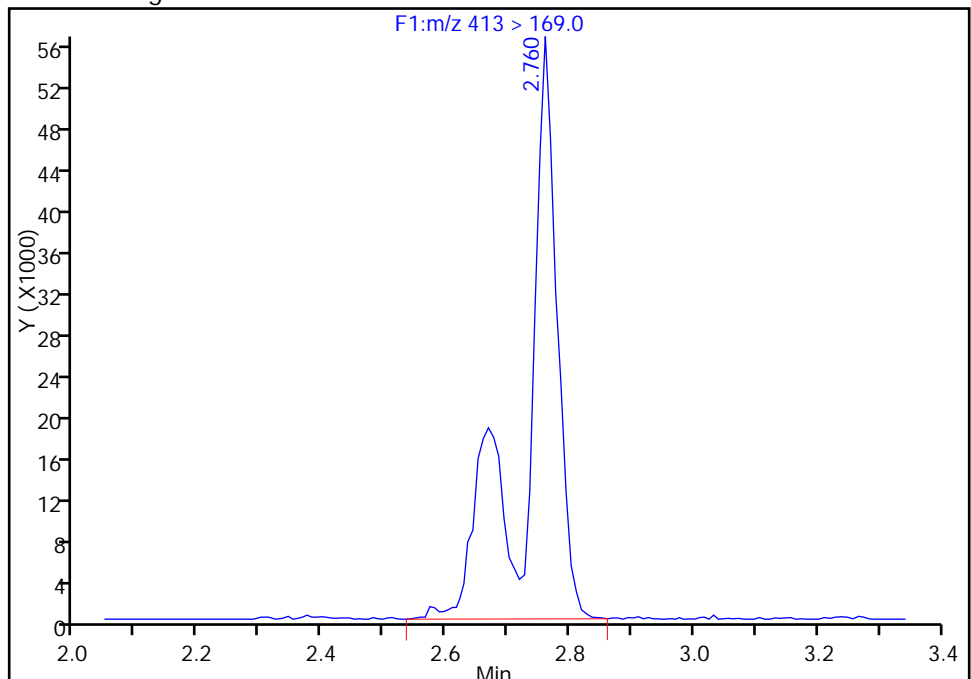
RT: 2.76  
Area: 136559  
Amount: 2.029175  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 203770  
Amount: 2.710495  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:33:48

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

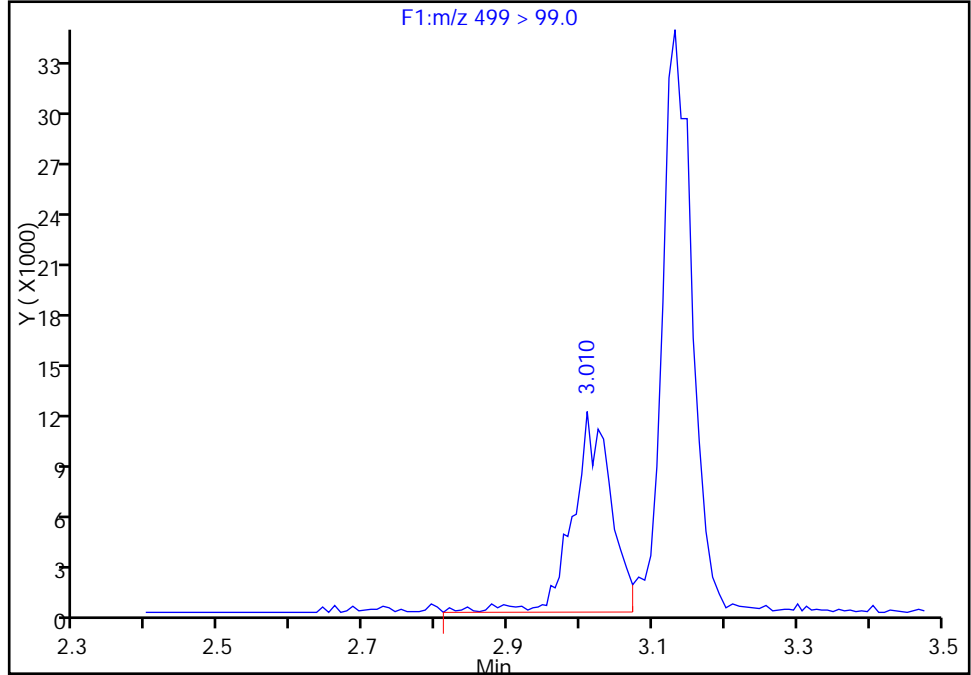
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_035\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:10:00 Instrument ID: A8  
Lims ID: 320-21000-A-2-A Lab Sample ID: 320-21000-2  
Client ID: GW23-16GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

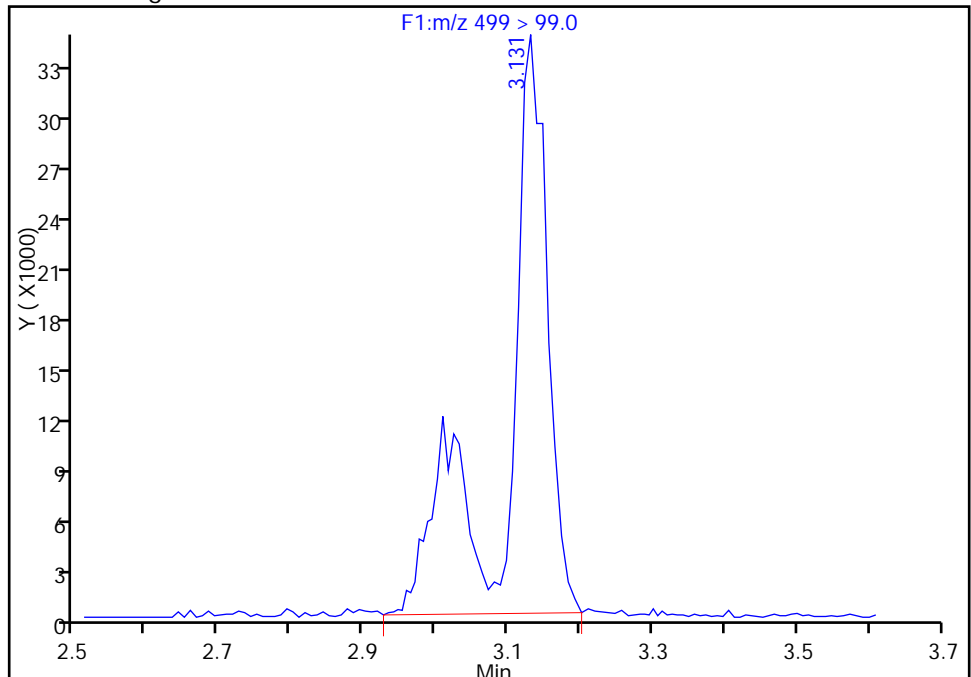
RT: 3.01  
Area: 43335  
Amount: 6.130811  
Amount Units: ng/ml

Processing Integration Results



RT: 3.13  
Area: 136431  
Amount: 6.017921  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:33:48  
Audit Action: Manually Integrated

Audit Reason: Isomers



TestAmerica Sacramento

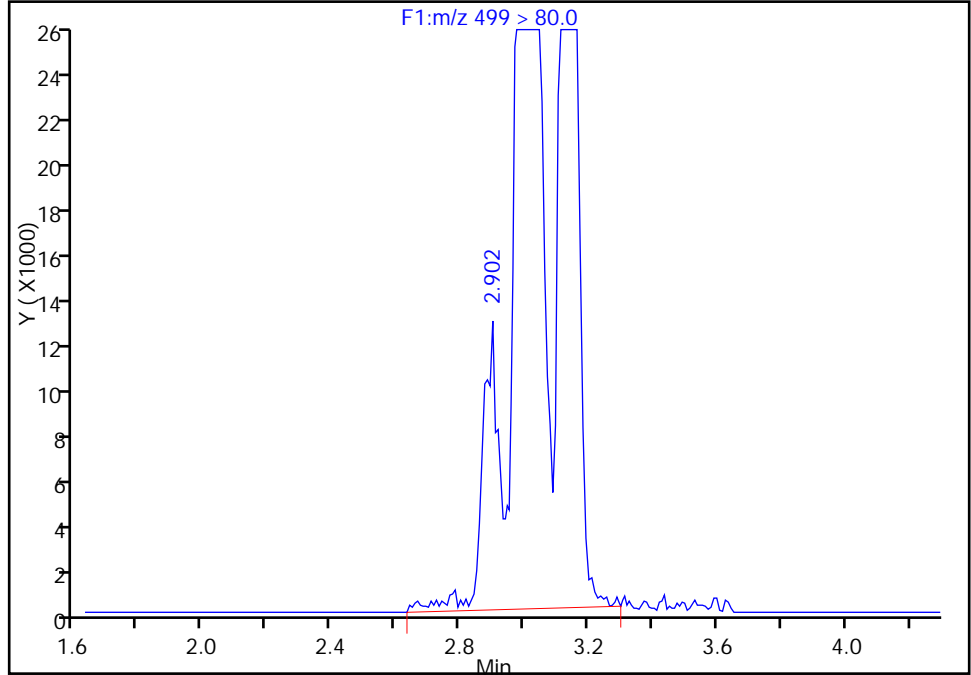
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_035\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:10:00 Instrument ID: A8  
Lims ID: 320-21000-A-2-A Lab Sample ID: 320-21000-2  
Client ID: GW23-16GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

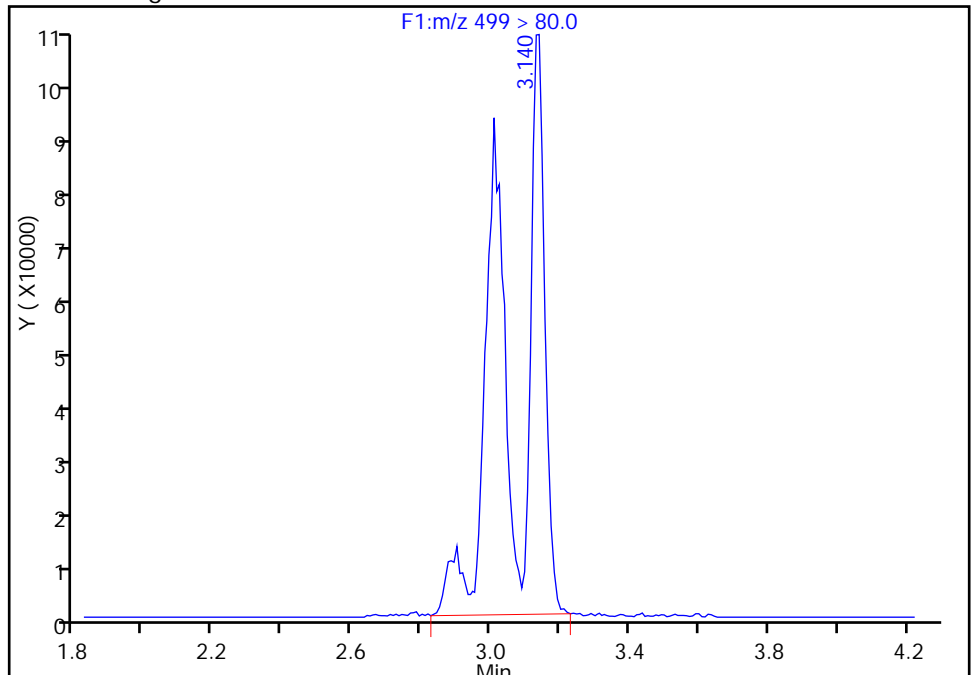
RT: 2.90  
Area: 685803  
Amount: 6.130811  
Amount Units: ng/ml

Processing Integration Results



RT: 3.14  
Area: 673175  
Amount: 6.017921  
Amount Units: ng/ml

Manual Integration Results



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-17DGW-0816 Lab Sample ID: 320-21000-3  
 Matrix: Water Lab File ID: 26AUG2016G\_036\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/15/2016 15:35  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 262.7(mL) Date Analyzed: 08/26/2016 19:18  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U M	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	80		25-150
STL00991	13C4 PFOS	123		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_036\_p1\_e1.d  
 Lims ID: 320-21000-A-3-A  
 Client ID: GW23-17DGW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 19:18:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:37:24 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:37:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.762	2.798	-0.036	1.000	13247	-0.1144			136	M
413 > 169.0	2.762	2.798	-0.036	1.000	6395		2.07(0.90-1.10)		748	M
D 14 13C4 PFOA										
417 > 372.0	2.762	2.798	-0.036		3840518	39.9		79.7	376705	
D 17 13C4 PFOS										
503 > 80.0	3.132	3.177	-0.045		4823293	58.8		123	469548	

**QC Flag Legend**

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_036\_p1\_e1.d

Injection Date: 26-Aug-2016 19:18:00

Instrument ID: A8

Lims ID: 320-21000-A-3-A

Lab Sample ID: 320-21000-3

Client ID: GW23-17DGW-0816

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

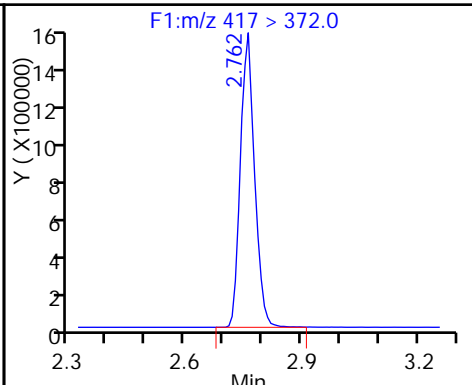
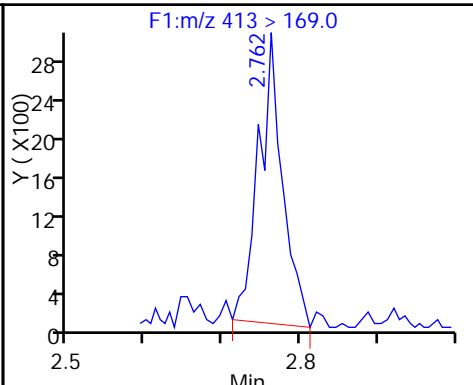
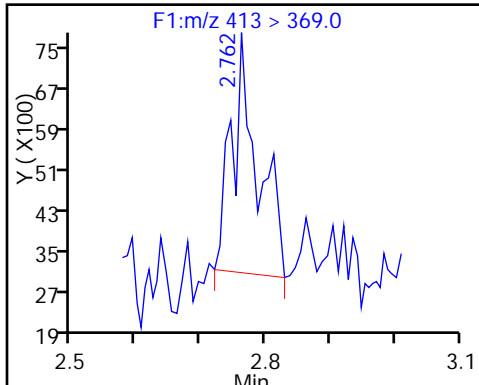
Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

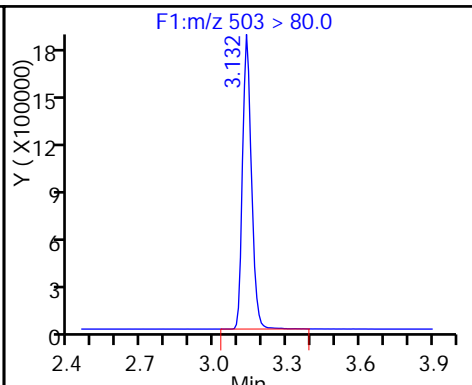
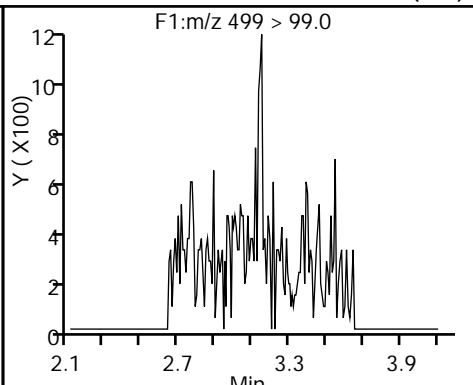
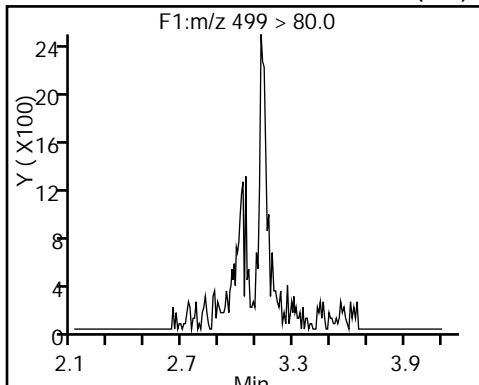
D 14 13C4 PFOA



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

D 17 13C4 PFOS



TestAmerica Sacramento

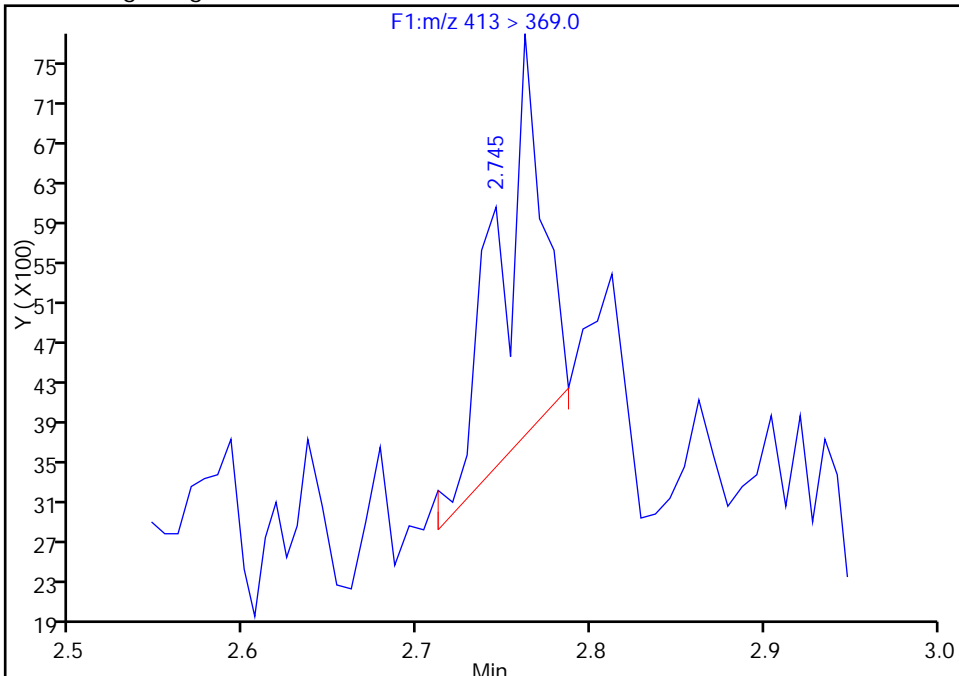
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_036\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:18:00 Instrument ID: A8  
Lims ID: 320-21000-A-3-A Lab Sample ID: 320-21000-3  
Client ID: GW23-17DGW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 10  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

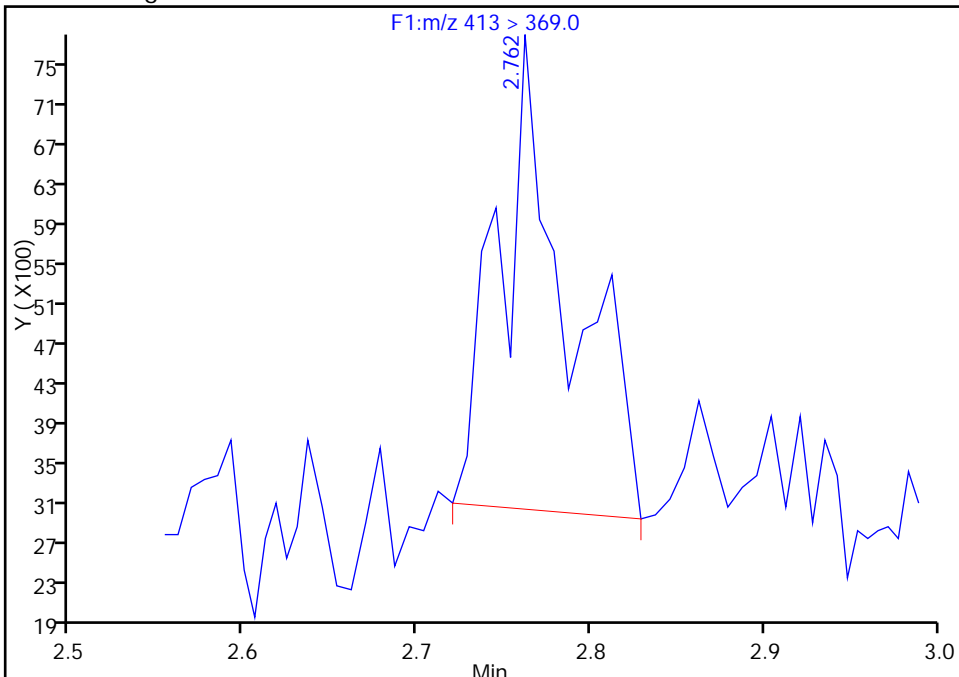
RT: 2.75  
Area: 7108  
Amount: -0.194648  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 13247  
Amount: -0.114353  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:37:24  
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

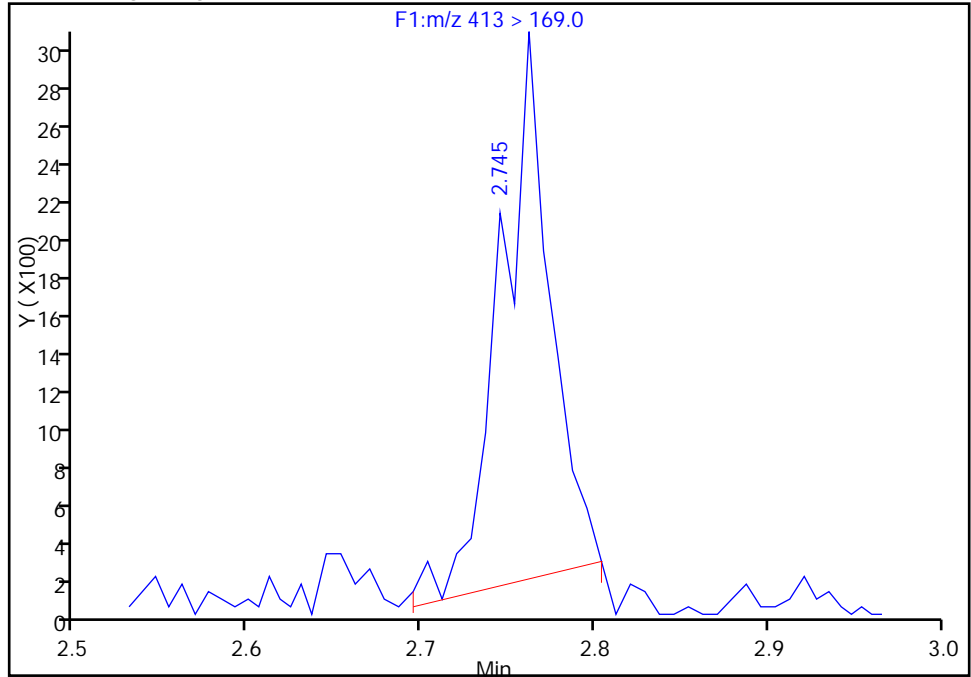
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_036\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:18:00 Instrument ID: A8  
Lims ID: 320-21000-A-3-A Lab Sample ID: 320-21000-3  
Client ID: GW23-17DGW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 10  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

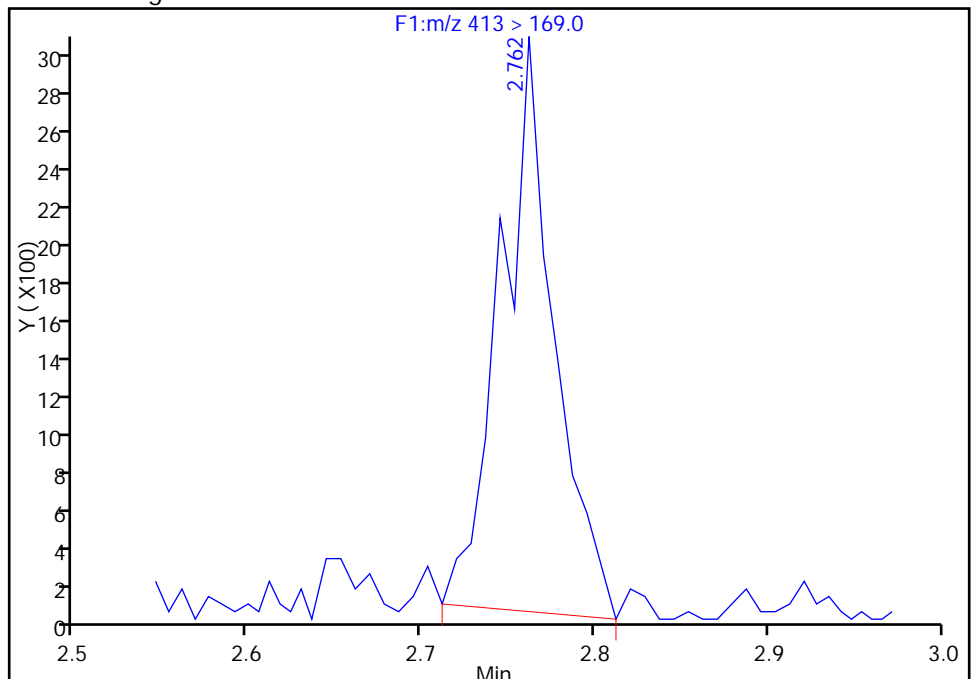
RT: 2.75  
Area: 5728  
Amount: -0.194648  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 6395  
Amount: -0.114353  
Amount Units: ng/ml

Manual Integration Results



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-17DGWP-0816 Lab Sample ID: 320-21000-4  
 Matrix: Water Lab File ID: 26AUG2016G\_037\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/15/2016 15:40  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 266.1(mL) Date Analyzed: 08/26/2016 19:25  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U M	2.3	1.9	0.70
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U M	3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	82		25-150
STL00991	13C4 PFOS	120		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_037\_p1\_e1.d  
 Lims ID: 320-21000-A-4-A  
 Client ID: GW23-17DGWP-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 19:25:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:49:03 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:49:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.757	2.798	-0.041	1.000	9615	-0.1657			105	M
413 > 169.0	2.757	2.798	-0.041	1.000	4451		2.16(0.90-1.10)		472	
D 14 13C4 PFOA										
417 > 372.0	2.757	2.798	-0.041		3962418	41.1		82.3	489425	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.138	3.110	0.029	1.000	17118	0.1564			703	M
499 > 99.0	3.146	3.110	0.037	1.003	4235		4.04(0.90-1.10)		192	M
D 17 13C4 PFOS										
503 > 80.0	3.130	3.177	-0.047		4716023	57.5			120	329500

QC Flag Legend

Review Flags

M - Manually Integrated



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_037\_p1\_e1.d

Injection Date: 26-Aug-2016 19:25:00

Instrument ID: A8

Lims ID: 320-21000-A-4-A

Lab Sample ID: 320-21000-4

Client ID: GW23-17DGWP-0816

Operator ID: A8

ALS Bottle#: 0

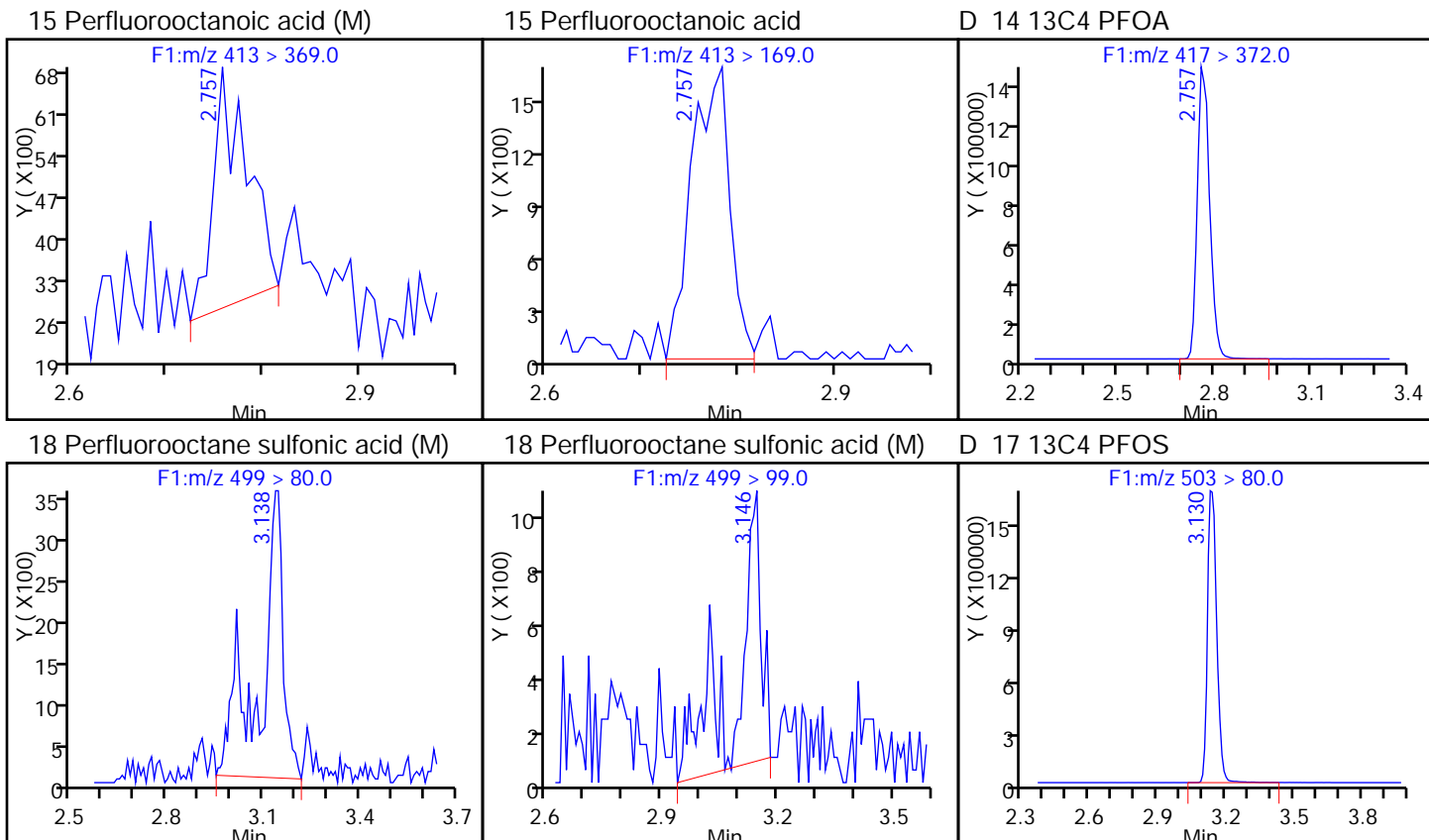
Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL



TestAmerica Sacramento

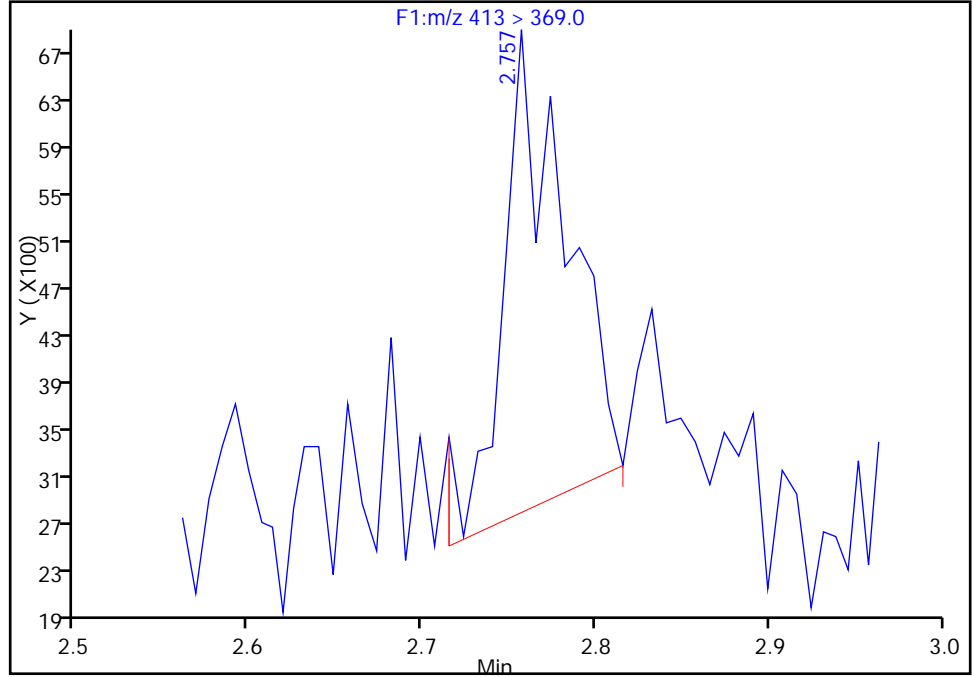
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_037\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:25:00 Instrument ID: A8  
Lims ID: 320-21000-A-4-A Lab Sample ID: 320-21000-4  
Client ID: GW23-17DGWP-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 11  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

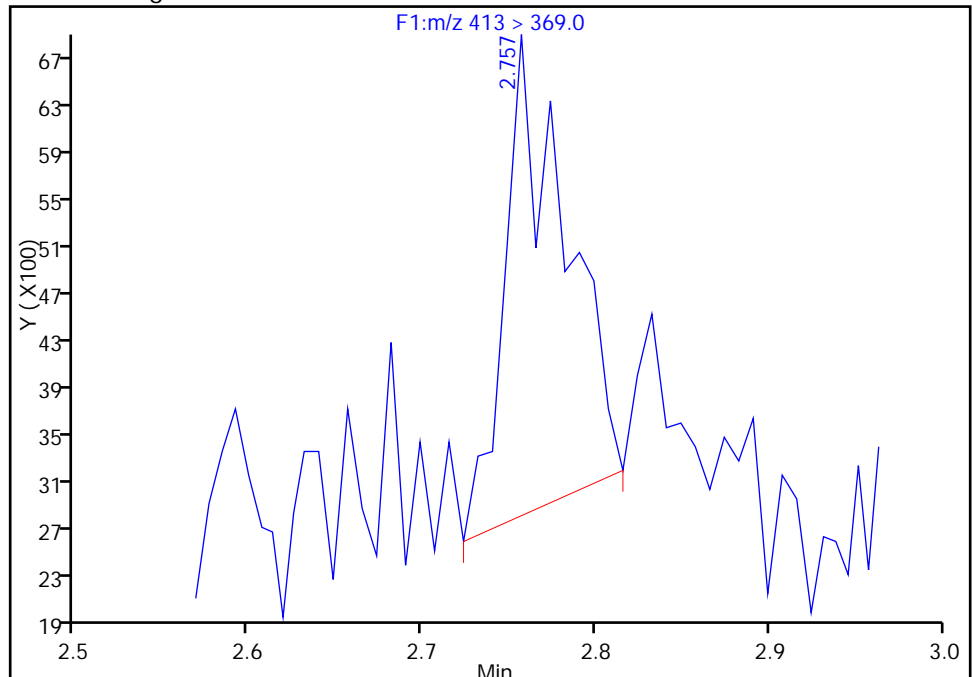
RT: 2.76  
Area: 9909  
Amount: -0.161999  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 9615  
Amount: -0.165726  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:47:22  
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

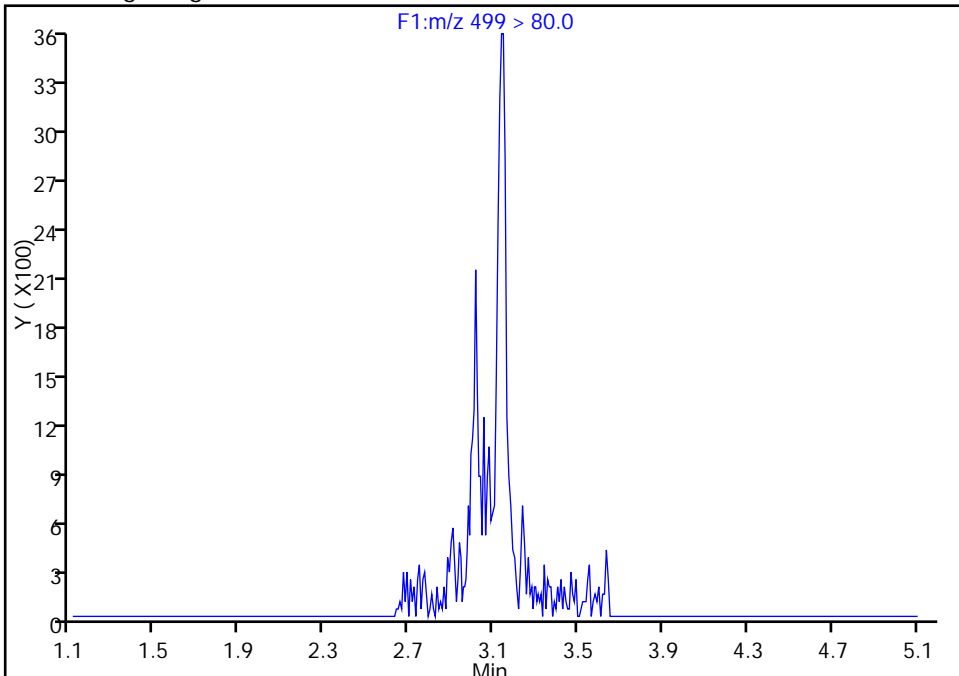
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_037\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:25:00 Instrument ID: A8  
Lims ID: 320-21000-A-4-A Lab Sample ID: 320-21000-4  
Client ID: GW23-17DGWP-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 11  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

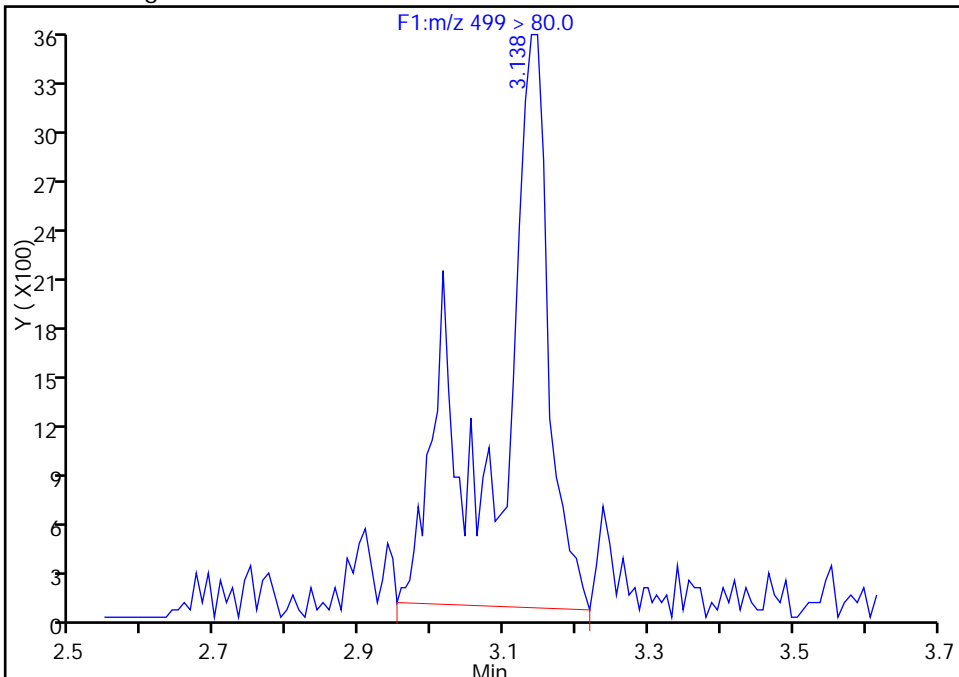
Not Detected  
Expected RT: 3.11

Processing Integration Results



Manual Integration Results

RT: 3.14  
Area: 17118  
Amount: 0.156448  
Amount Units: ng/ml



Reviewer: chandrasenas, 06-Sep-2016 10:47:22  
Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

TestAmerica Sacramento

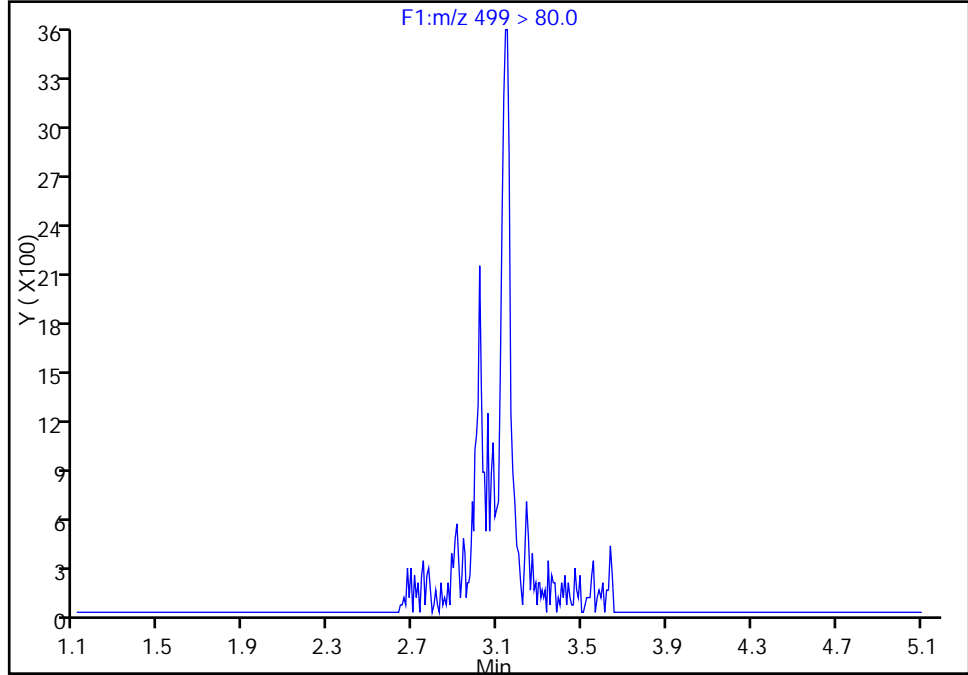
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_037\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:25:00 Instrument ID: A8  
Lims ID: 320-21000-A-4-A Lab Sample ID: 320-21000-4  
Client ID: GW23-17DGWP-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 11  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

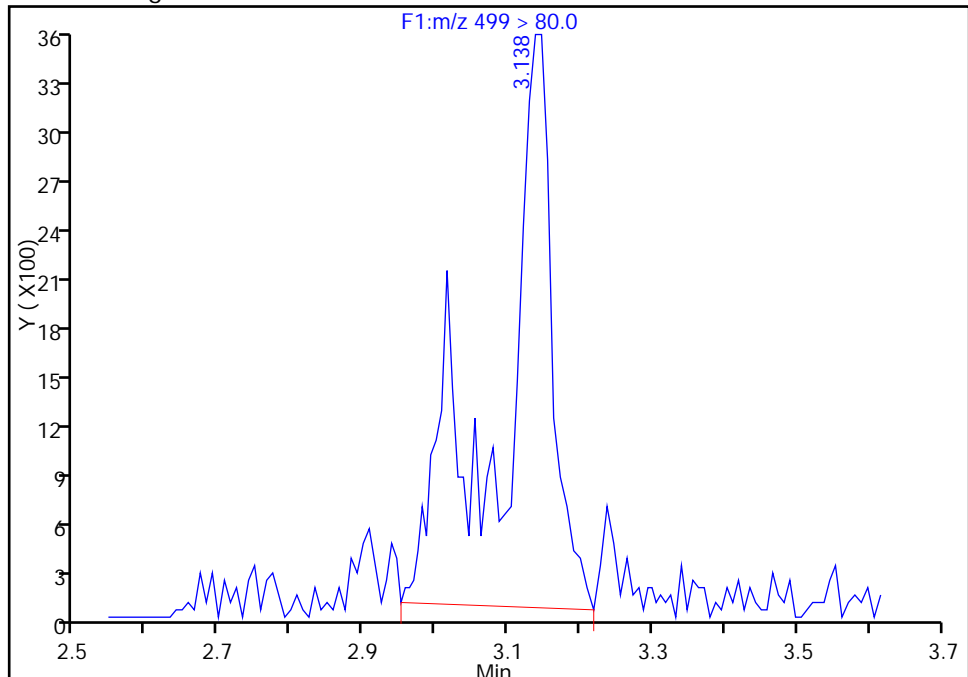
Not Detected  
Expected RT: 3.11

Processing Integration Results



RT: 3.14  
Area: 17118  
Amount: 0.156448  
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

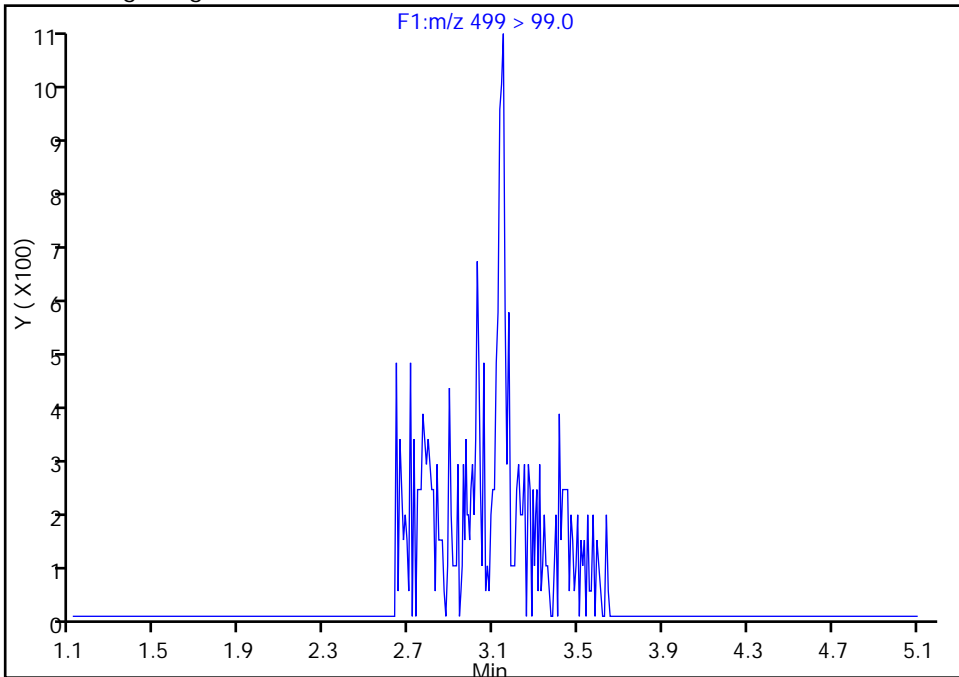
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_037\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:25:00 Instrument ID: A8  
Lims ID: 320-21000-A-4-A Lab Sample ID: 320-21000-4  
Client ID: GW23-17DGWP-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 11  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

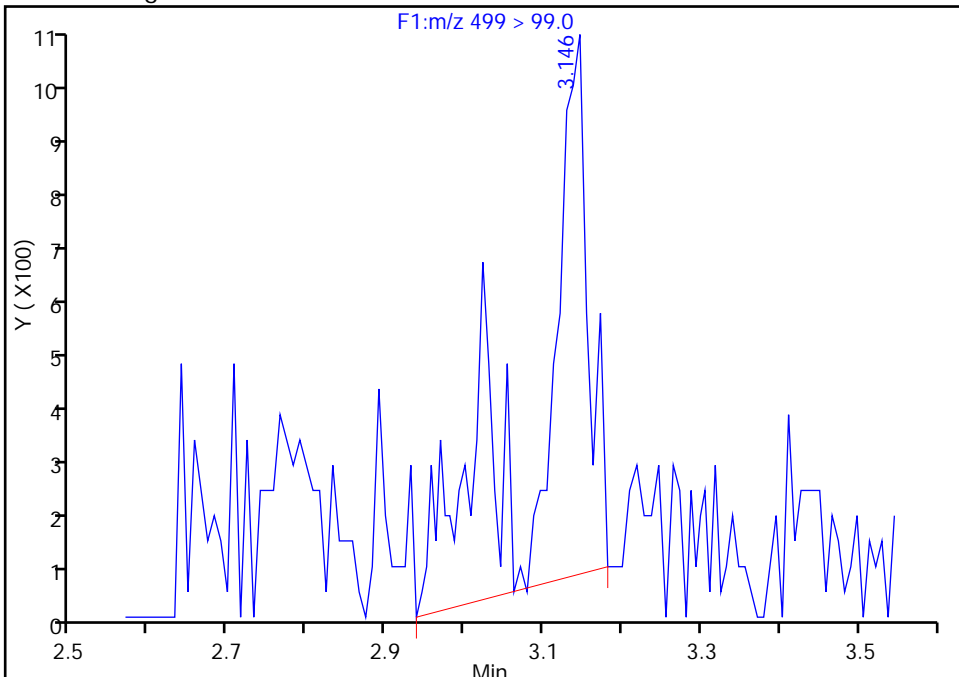
Not Detected  
Expected RT: 3.11

Processing Integration Results



Manual Integration Results

RT: 3.15  
Area: 4235  
Amount: 0.156448  
Amount Units: ng/ml



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-13GW-0816 Lab Sample ID: 320-21000-5  
 Matrix: Water Lab File ID: 26AUG2016G\_038\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/15/2016 15:55  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 270.1(mL) Date Analyzed: 08/26/2016 19:33  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	7.7	M	2.3	1.9	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.3	M	3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	100		25-150
STL00991	13C4 PFOS	124		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_038\_p1\_e1.d  
 Lims ID: 320-21000-A-5-A  
 Client ID: GW23-13GW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 19:33:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:51:16 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:51:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.766	2.798	-0.032	1.000	426120	4.16			2465	M
413 > 169.0	2.766	2.798	-0.032	1.000	262683		1.62(0.90-1.10)		12432	M
D 14 13C4 PFOA										
417 > 372.0	2.757	2.798	-0.041		4809696	49.9		99.9	262335	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.016	3.110	-0.093	1.000	325958	2.89			5137	M
499 > 99.0	3.138	3.110	0.029	1.041	52111		6.26(0.90-1.10)		1687	M
D 17 13C4 PFOS										
503 > 80.0	3.138	3.177	-0.039		4864306	59.3			124	171108

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_038\_p1\_e1.d

Injection Date: 26-Aug-2016 19:33:00

Instrument ID: A8

Lims ID: 320-21000-A-5-A

Lab Sample ID: 320-21000-5

Client ID: GW23-13GW-0816

Operator ID: A8

ALS Bottle#: 0

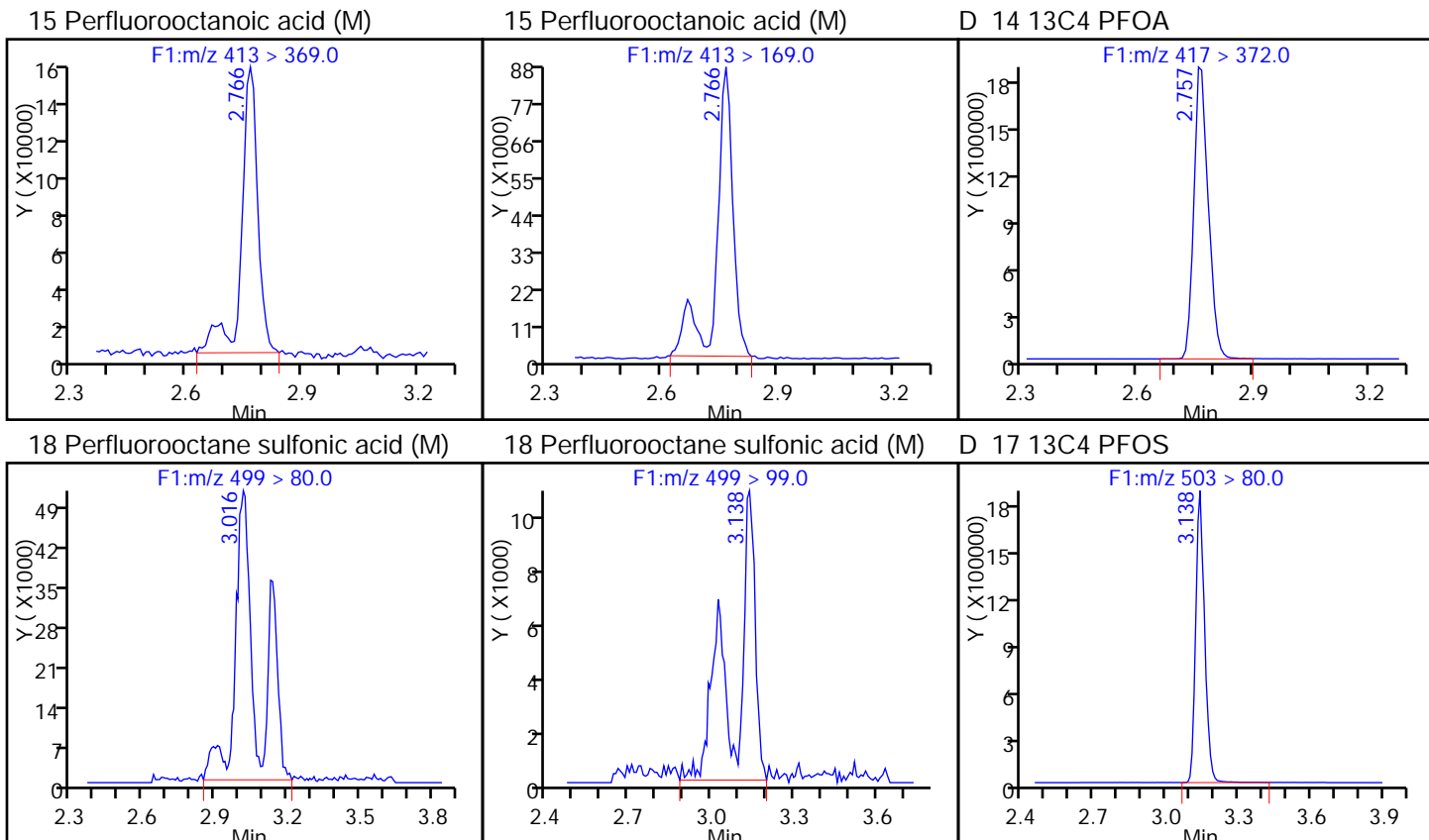
Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL





TestAmerica Sacramento

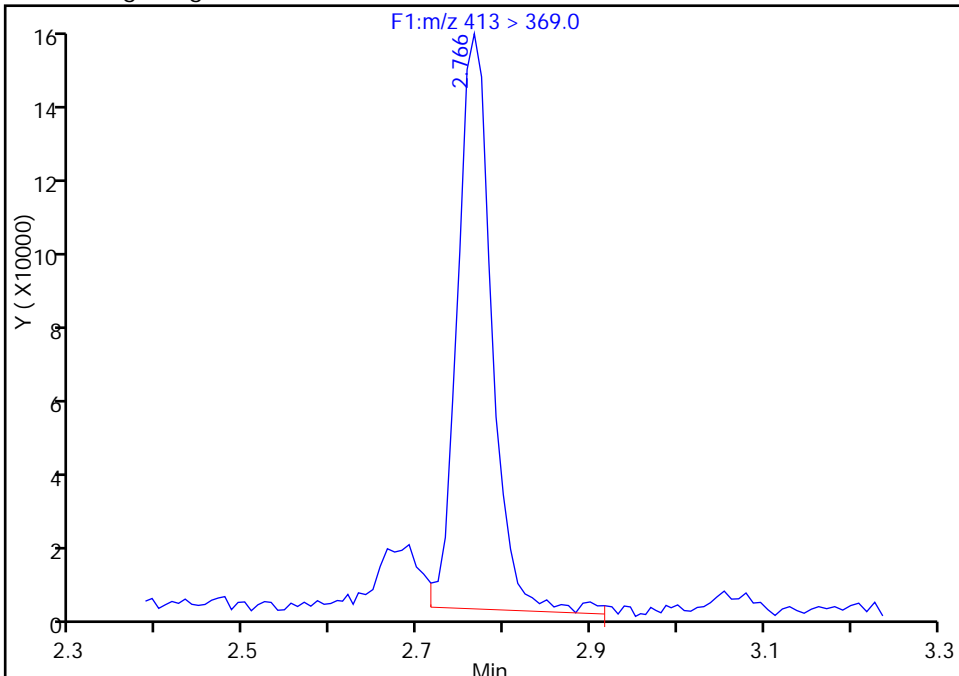
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_038\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:33:00 Instrument ID: A8  
Lims ID: 320-21000-A-5-A Lab Sample ID: 320-21000-5  
Client ID: GW23-13GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12  
Injection Vol: 2.0 ul 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

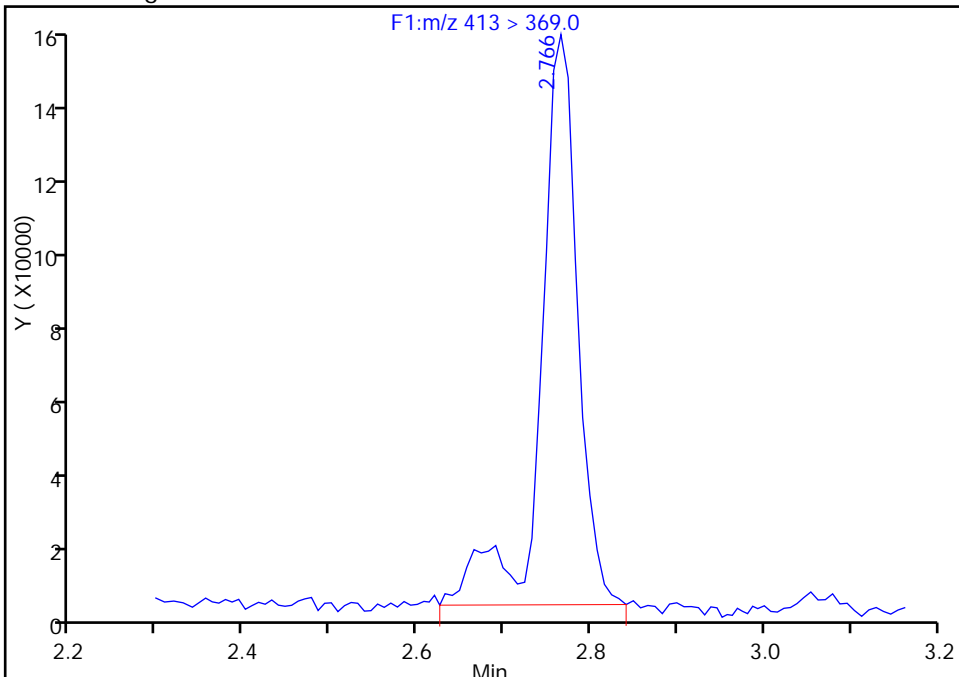
RT: 2.77  
Area: 398492  
Amount: 3.874191  
Amount Units: ng/ml

Processing Integration Results



RT: 2.77  
Area: 426120  
Amount: 4.162735  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:51:16  
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

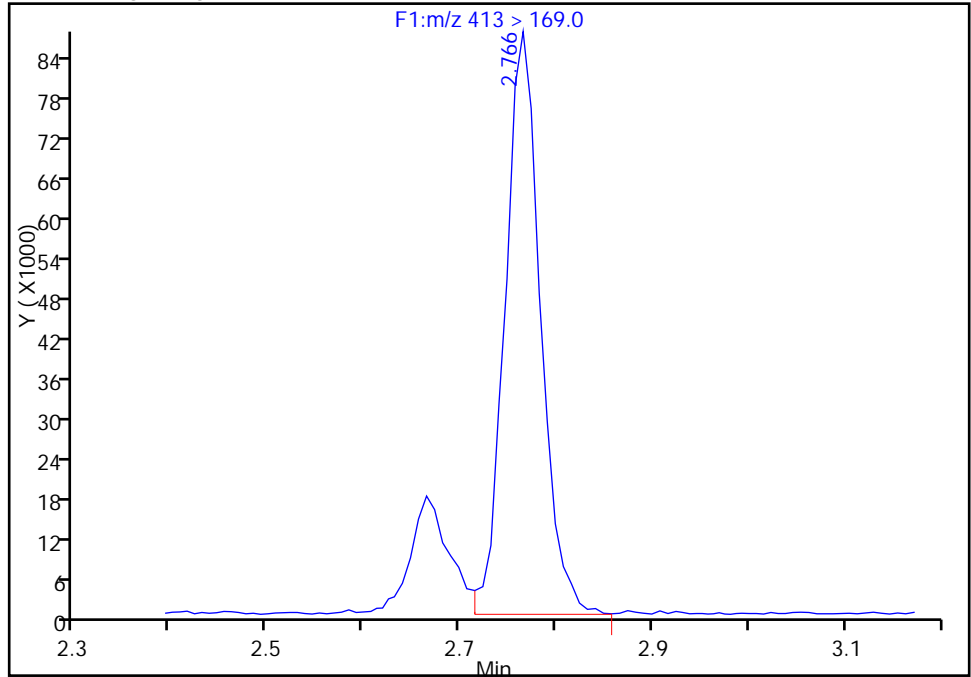
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_038\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:33:00 Instrument ID: A8  
Lims ID: 320-21000-A-5-A Lab Sample ID: 320-21000-5  
Client ID: GW23-13GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12  
Injection Vol: 2.0 ul 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

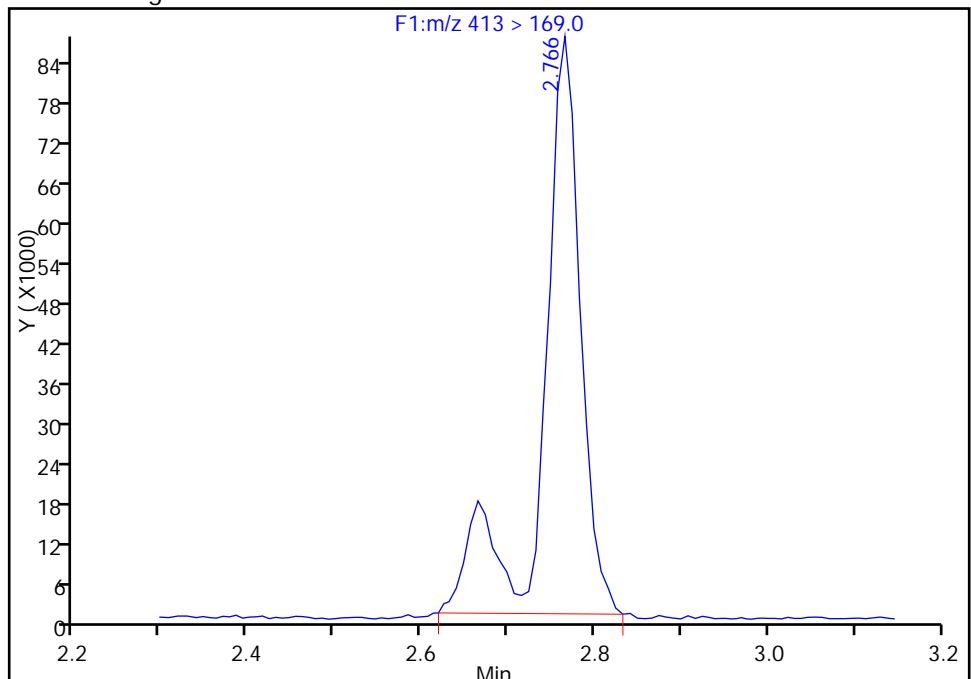
RT: 2.77  
Area: 225146  
Amount: 3.874191  
Amount Units: ng/ml

Processing Integration Results



RT: 2.77  
Area: 262683  
Amount: 4.162735  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:51:16

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

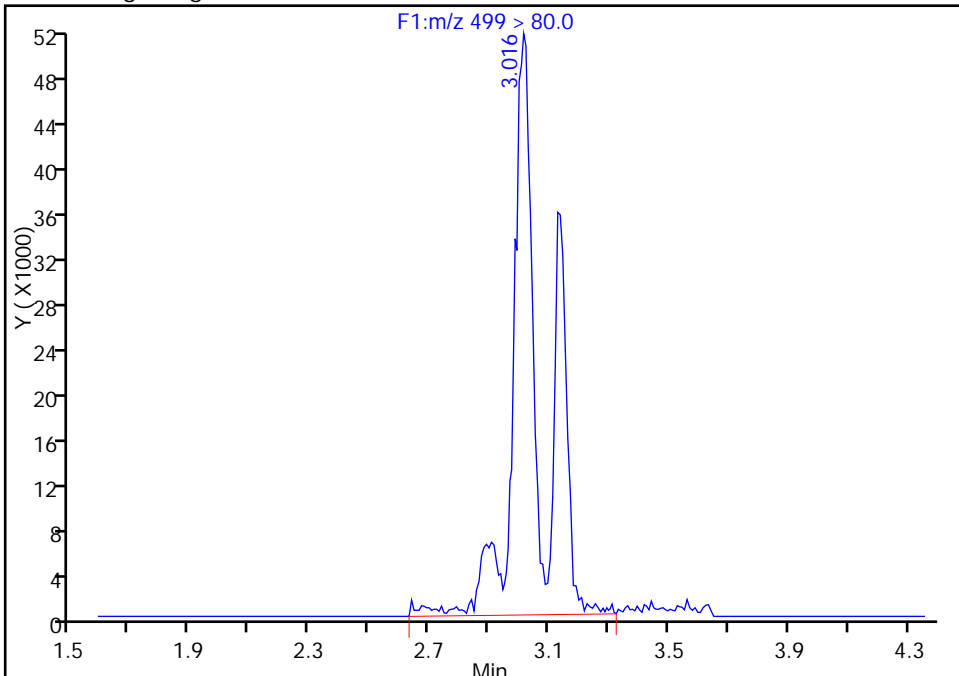
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_038\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:33:00 Instrument ID: A8  
Lims ID: 320-21000-A-5-A Lab Sample ID: 320-21000-5  
Client ID: GW23-13GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

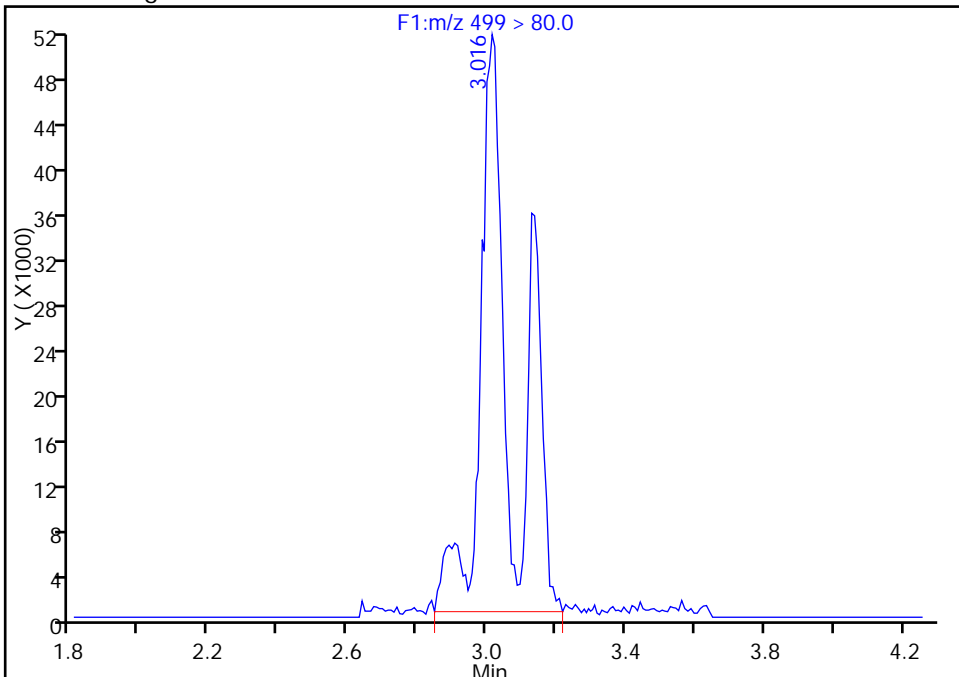
RT: 3.02  
Area: 345810  
Amount: 3.064138  
Amount Units: ng/ml

Processing Integration Results



RT: 3.02  
Area: 325958  
Amount: 2.888234  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:51:16  
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

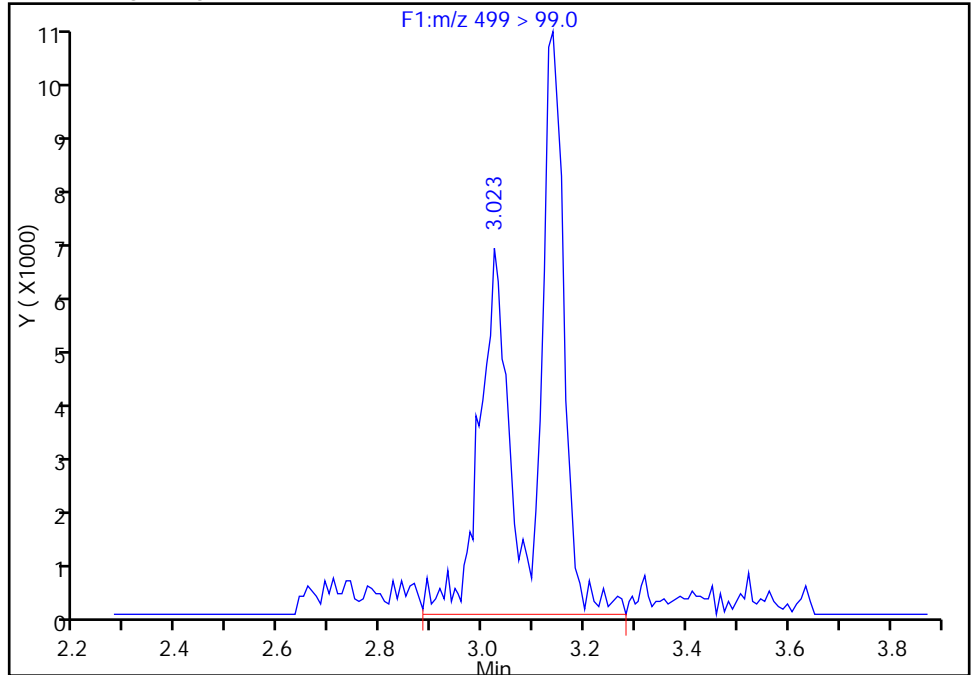
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_038\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:33:00 Instrument ID: A8  
Lims ID: 320-21000-A-5-A Lab Sample ID: 320-21000-5  
Client ID: GW23-13GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

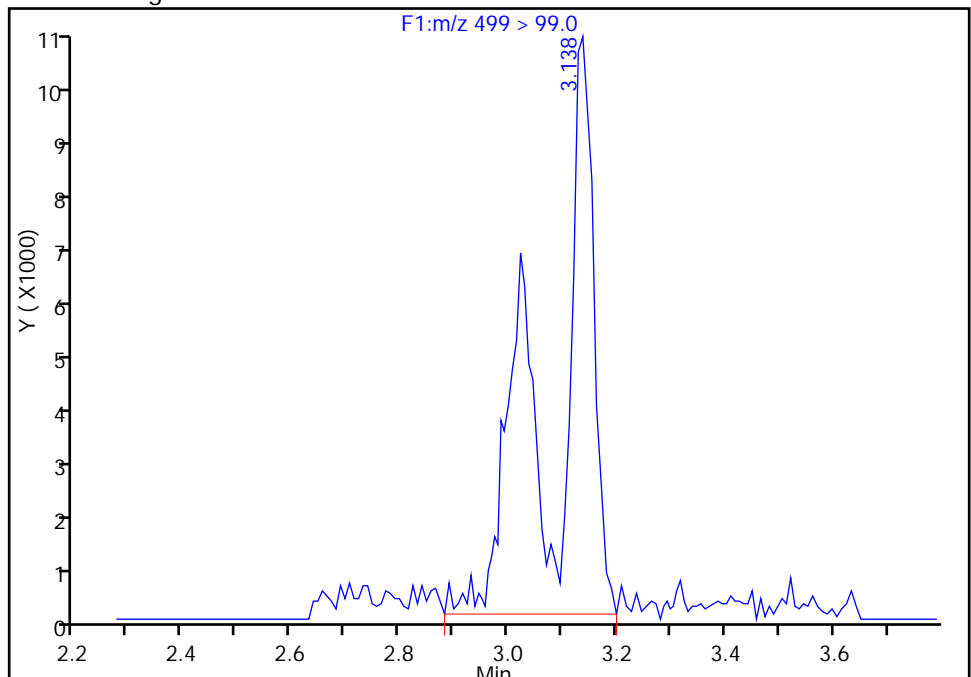
RT: 3.02  
Area: 55129  
Amount: 3.064138  
Amount Units: ng/ml

Processing Integration Results



RT: 3.14  
Area: 52111  
Amount: 2.888234  
Amount Units: ng/ml

Manual Integration Results



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-07GW-0816 Lab Sample ID: 320-21000-6  
 Matrix: Water Lab File ID: 26AUG2016G\_039\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/16/2016 11:05  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 255.6(mL) Date Analyzed: 08/26/2016 19:40  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	18	M	2.4	2.0	0.73
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	72		25-150
STL00991	13C4 PFOS	111		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_039\_p1\_e1.d  
 Lims ID: 320-21000-A-6-A  
 Client ID: GW23-07GW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 19:40:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:52:48 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:52:48

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	646294	9.09			1212	M
413 > 169.0	2.758	2.798	-0.040	1.003	450628		1.43(0.90-1.10)		11062	M
D 14 13C4 PFOA										
417 > 372.0	2.749	2.798	-0.049		3460187	35.9		71.8	182398	
D 17 13C4 PFOS										
503 > 80.0	3.130	3.177	-0.047		4371253	53.3		111	45780	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_039\_p1\_e1.d

Injection Date: 26-Aug-2016 19:40:00

Instrument ID: A8

Lims ID: 320-21000-A-6-A

Lab Sample ID: 320-21000-6

Client ID: GW23-07GW-0816

Operator ID: A8

ALS Bottle#: 0

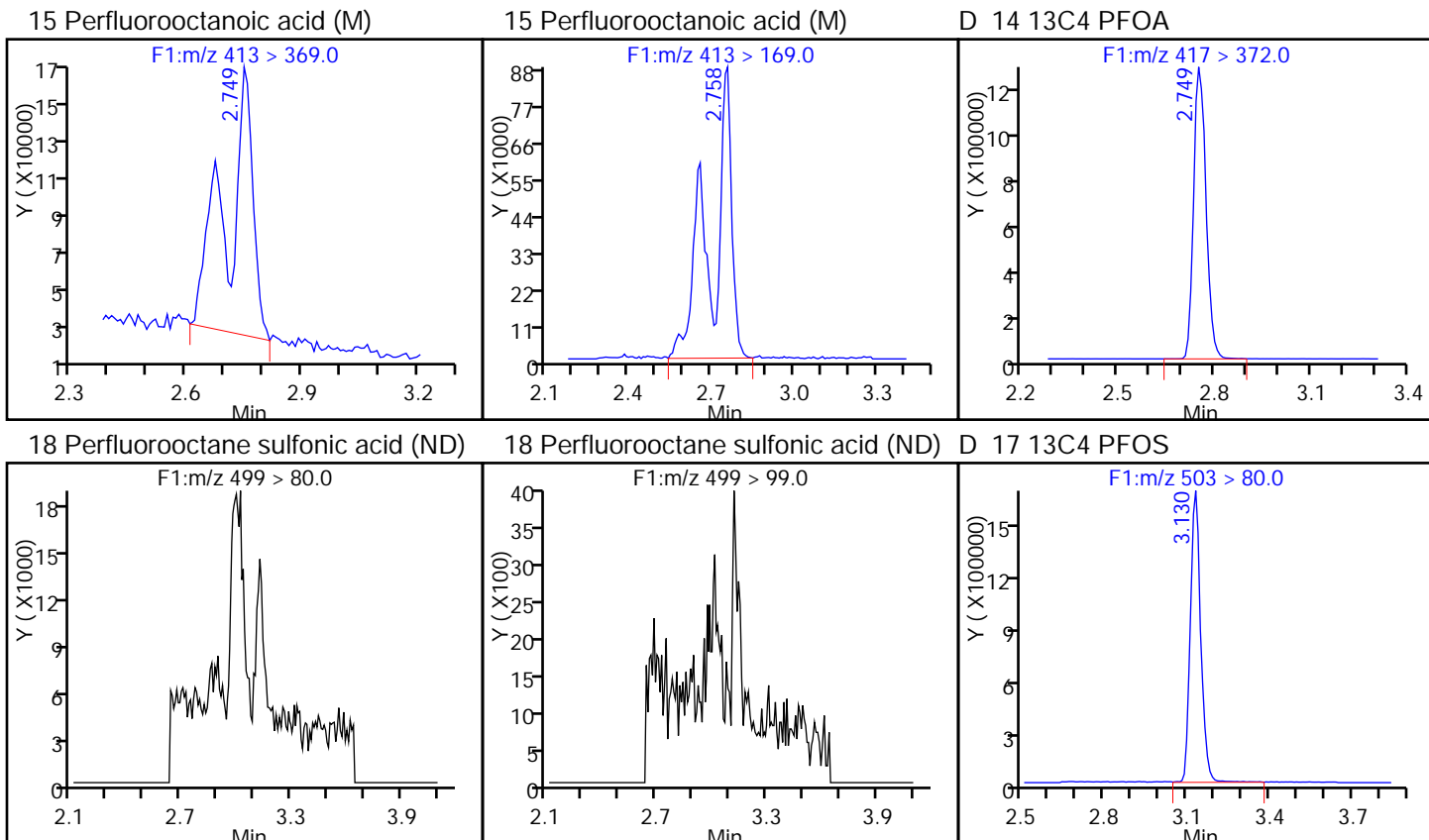
Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL



TestAmerica Sacramento

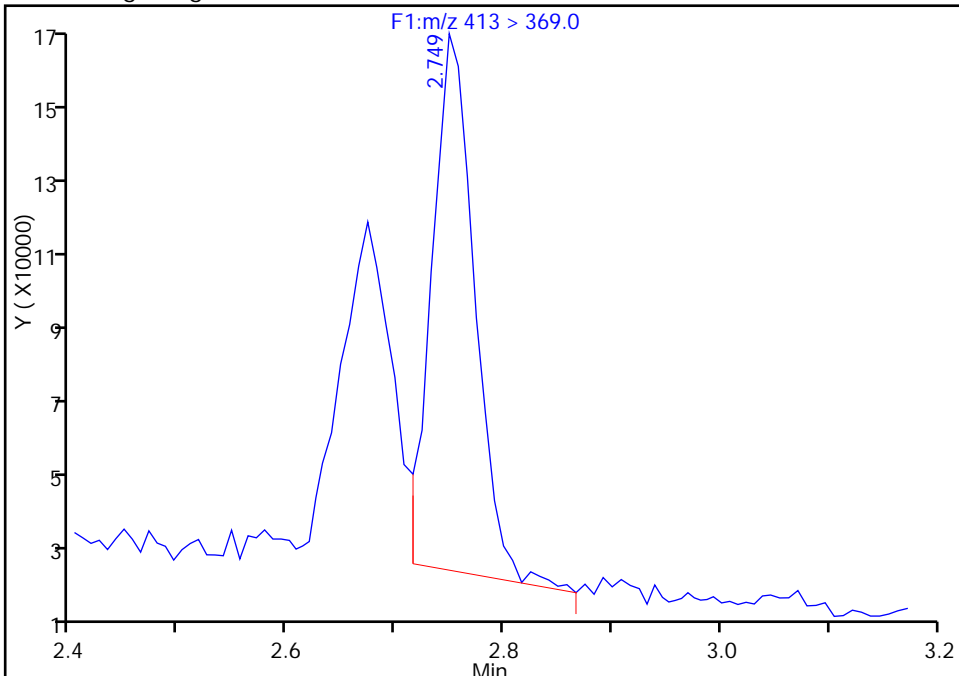
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_039\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:40:00 Instrument ID: A8  
Lims ID: 320-21000-A-6-A Lab Sample ID: 320-21000-6  
Client ID: GW23-07GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 13  
Injection Vol: 2.0 ul 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: 1

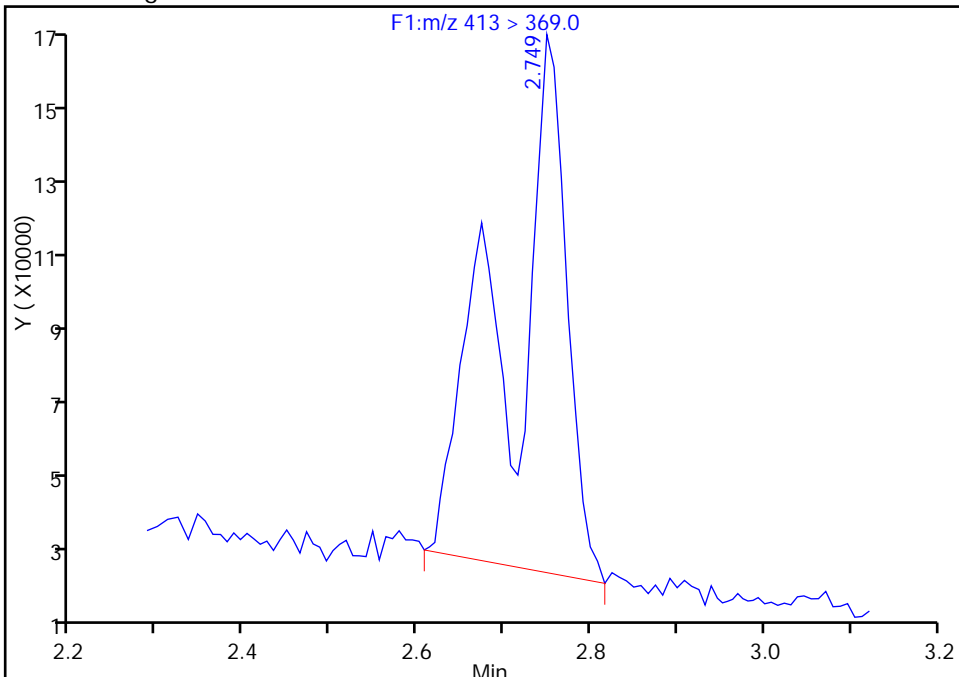
RT: 2.75  
Area: 373127  
Amount: 5.129113  
Amount Units: ng/ml

Processing Integration Results



RT: 2.75  
Area: 646294  
Amount: 9.094711  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:52:48  
Audit Action: Manually Integrated

Audit Reason: Isomers



TestAmerica Sacramento

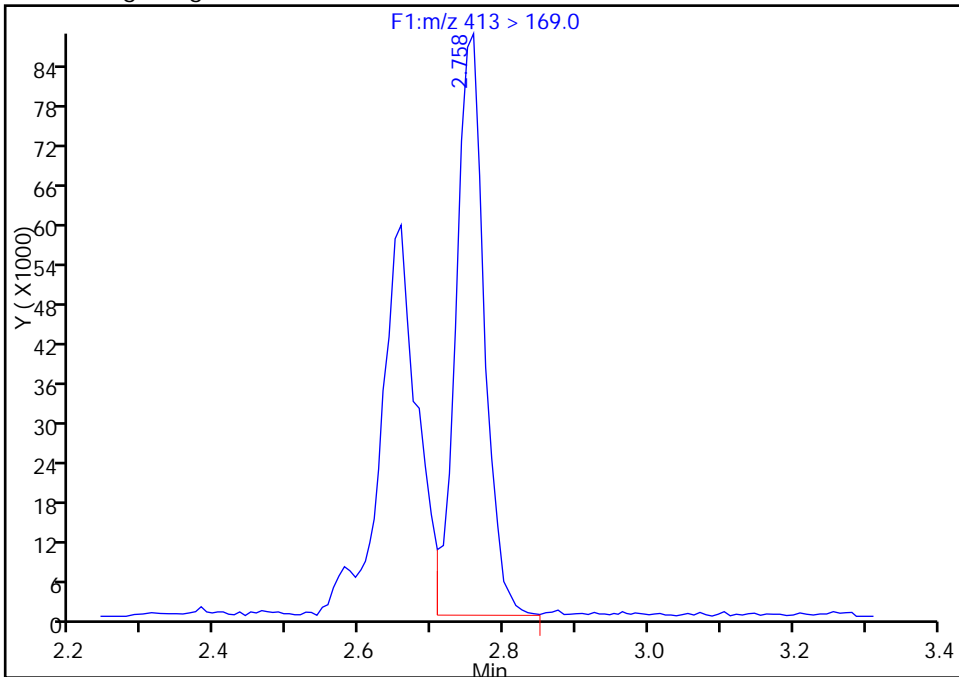
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_039\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:40:00 Instrument ID: A8  
Lims ID: 320-21000-A-6-A Lab Sample ID: 320-21000-6  
Client ID: GW23-07GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 13  
Injection Vol: 2.0 ul 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

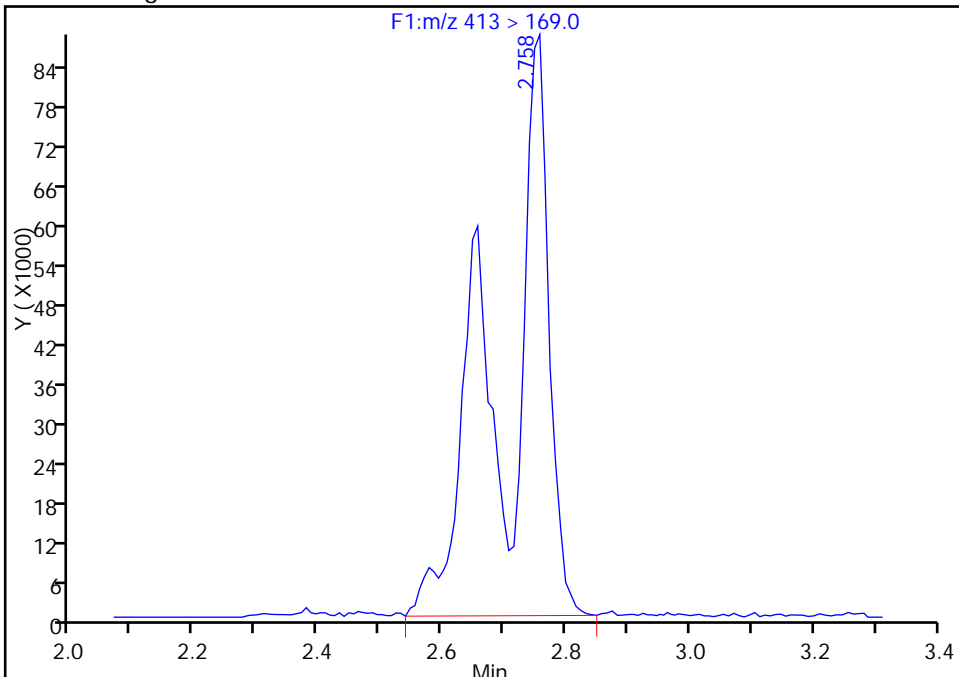
RT: 2.76  
Area: 241813  
Amount: 5.129113  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 450628  
Amount: 9.094711  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:52:48

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-09GW-0816 Lab Sample ID: 320-21000-7  
 Matrix: Water Lab File ID: 26AUG2016G\_040\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/16/2016 11:15  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 264.4 (mL) Date Analyzed: 08/26/2016 19:48  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	6.9	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.2	J M	3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	97		25-150
STL00991	13C4 PFOS	131		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_040\_p1\_e1.d  
 Lims ID: 320-21000-A-7-A  
 Client ID: GW23-09GW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 19:48:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:57:35 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: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:57:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.757	2.798	-0.042	1.000	370116	3.67			2727	M
413 > 169.0	2.765	2.798	-0.033	1.003	254590		1.45(0.90-1.10)		18009	M
D 14 13C4 PFOA										
417 > 372.0	2.757	2.798	-0.042		4694409	48.7		97.5	372073	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.015	3.110	-0.094	1.000	203568	1.71			2840	M
499 > 99.0	3.129	3.110	0.020	1.038	30738		6.62(0.90-1.10)		1277	M
D 17 13C4 PFOS										
503 > 80.0	3.129	3.177	-0.048		5122702	62.4			131	120682

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_040\_p1\_e1.d

Injection Date: 26-Aug-2016 19:48:00

Instrument ID: A8

Lims ID: 320-21000-A-7-A

Lab Sample ID: 320-21000-7

Client ID: GW23-09GW-0816

Operator ID: A8

ALS Bottle#: 0

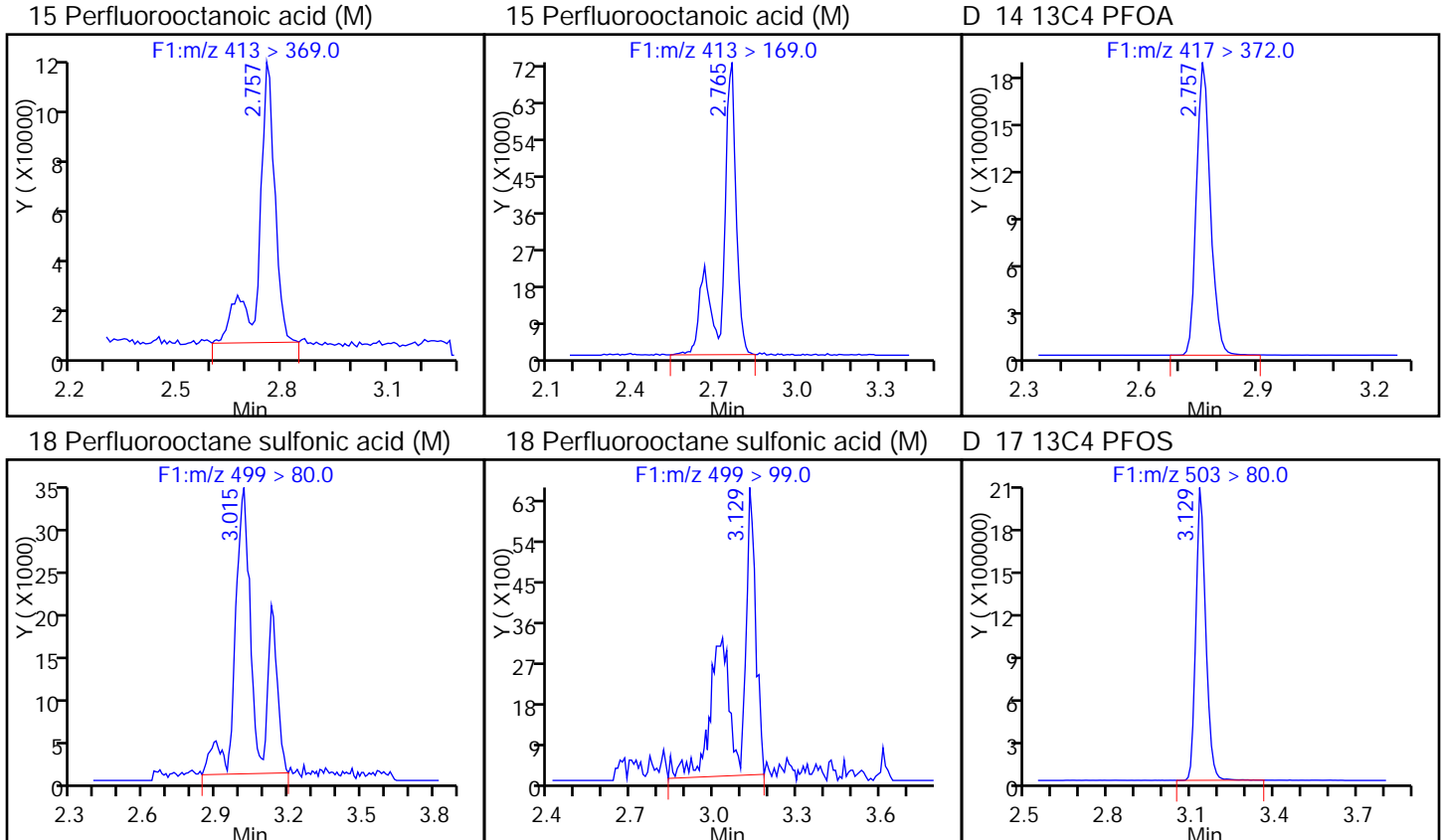
Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL



TestAmerica Sacramento

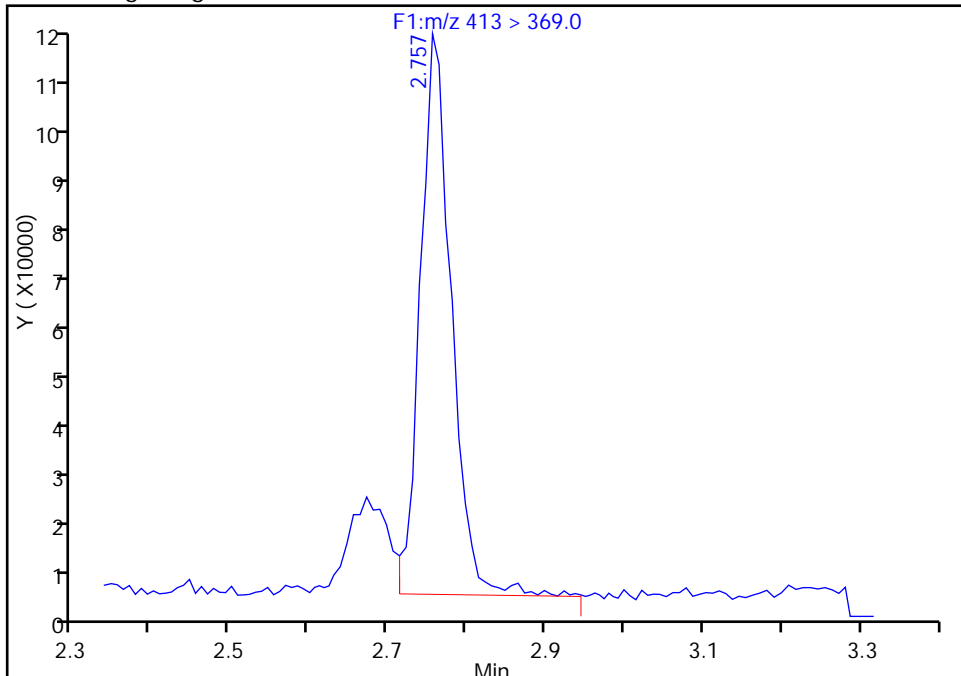
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_040\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:48:00 Instrument ID: A8  
Lims ID: 320-21000-A-7-A Lab Sample ID: 320-21000-7  
Client ID: GW23-09GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14  
Injection Vol: 2.0 ul 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

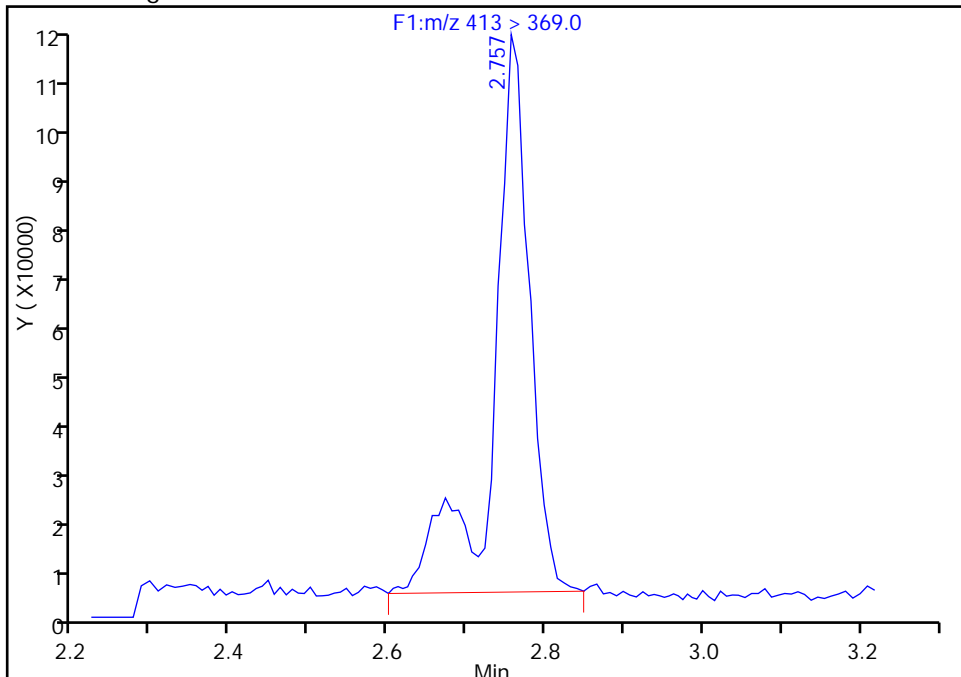
RT: 2.76  
Area: 314672  
Amount: 3.079493  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 370116  
Amount: 3.672765  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:57:35  
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

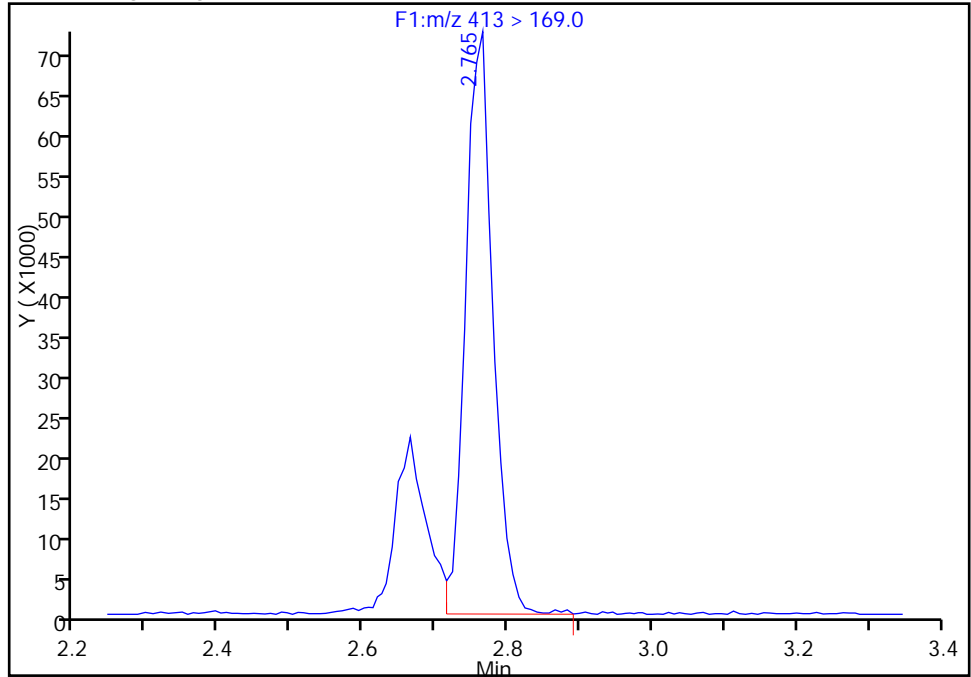
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_040\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:48:00 Instrument ID: A8  
Lims ID: 320-21000-A-7-A Lab Sample ID: 320-21000-7  
Client ID: GW23-09GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14  
Injection Vol: 2.0 ul 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

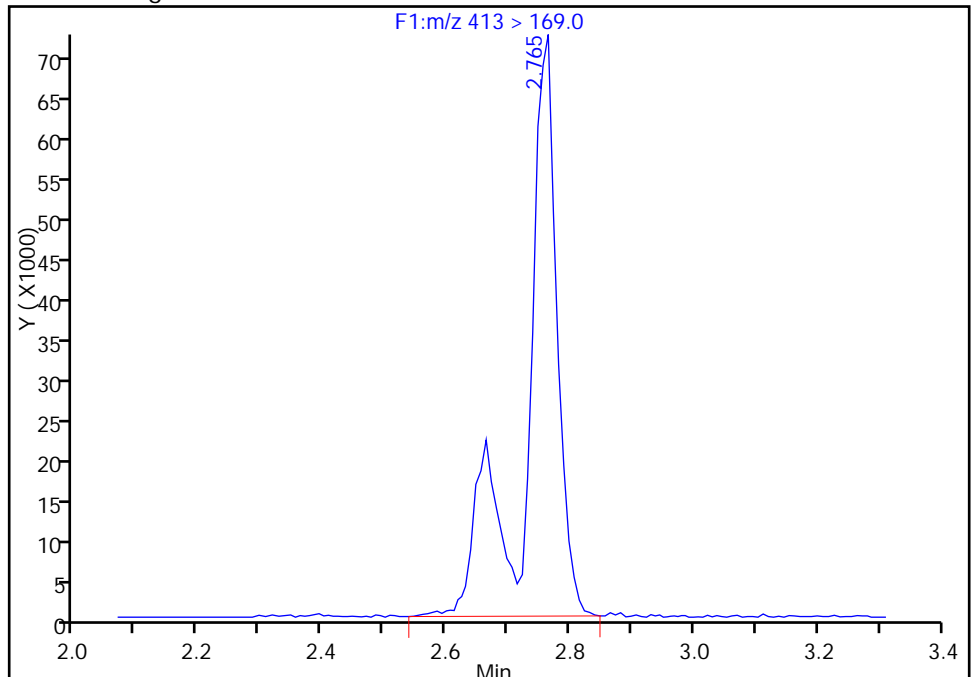
RT: 2.76  
Area: 190905  
Amount: 3.079493  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 254590  
Amount: 3.672765  
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

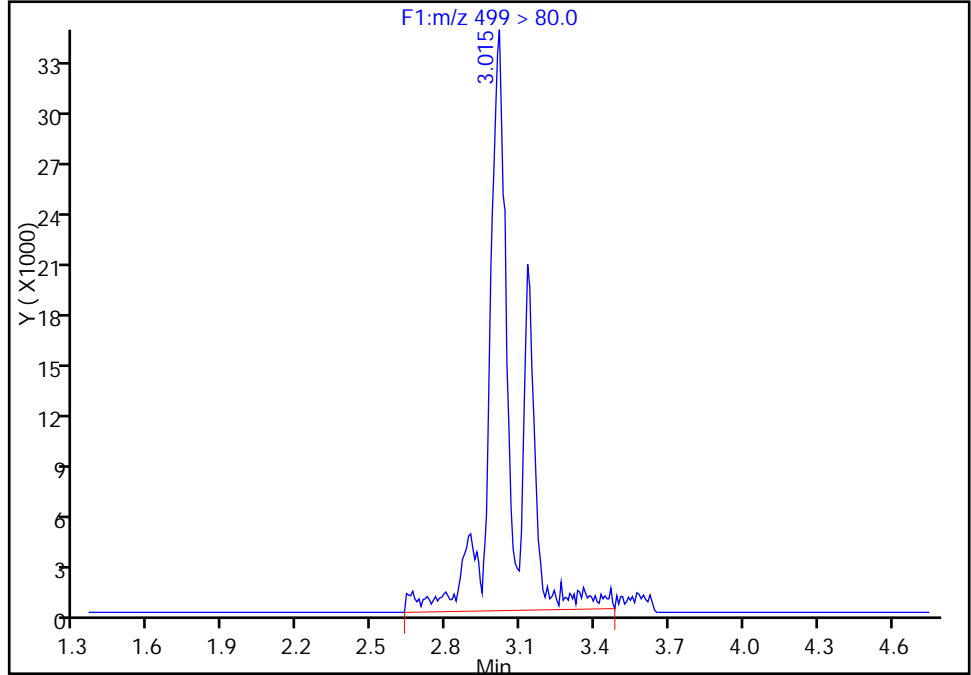
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_040\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:48:00 Instrument ID: A8  
Lims ID: 320-21000-A-7-A Lab Sample ID: 320-21000-7  
Client ID: GW23-09GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

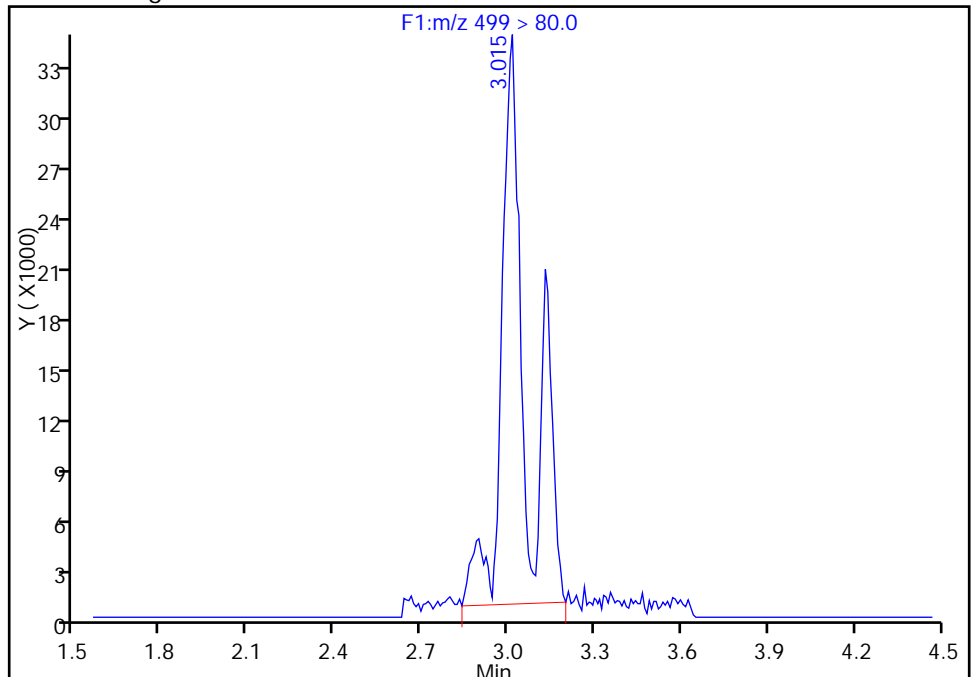
RT: 3.01  
Area: 241583  
Amount: 2.032633  
Amount Units: ng/ml

Processing Integration Results



RT: 3.01  
Area: 203568  
Amount: 1.712782  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 10:57:35  
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

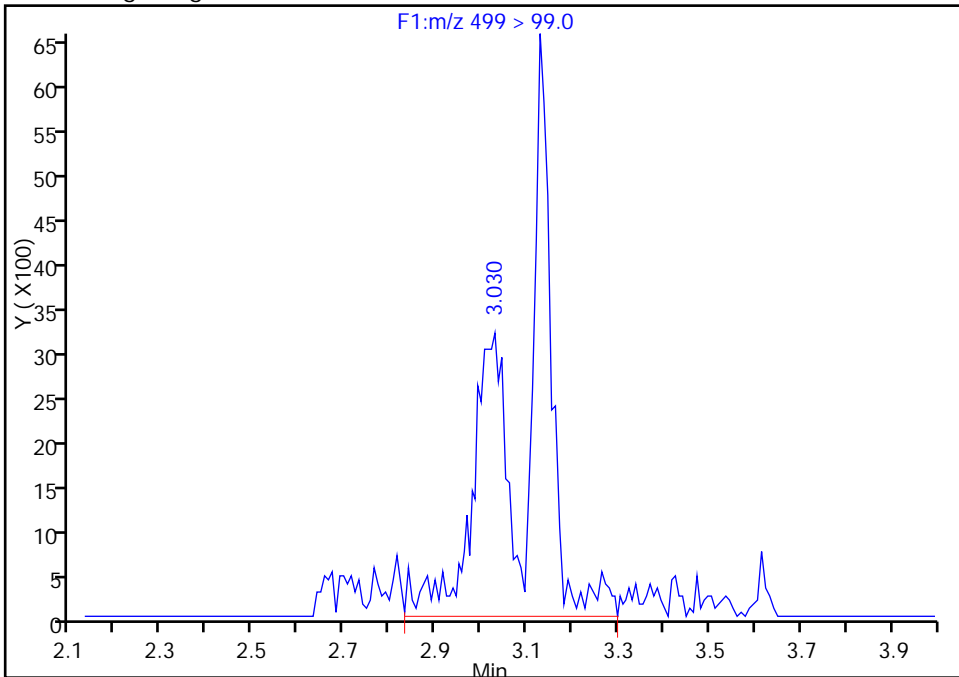
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_040\_p1\_e1.d  
Injection Date: 26-Aug-2016 19:48:00 Instrument ID: A8  
Lims ID: 320-21000-A-7-A Lab Sample ID: 320-21000-7  
Client ID: GW23-09GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

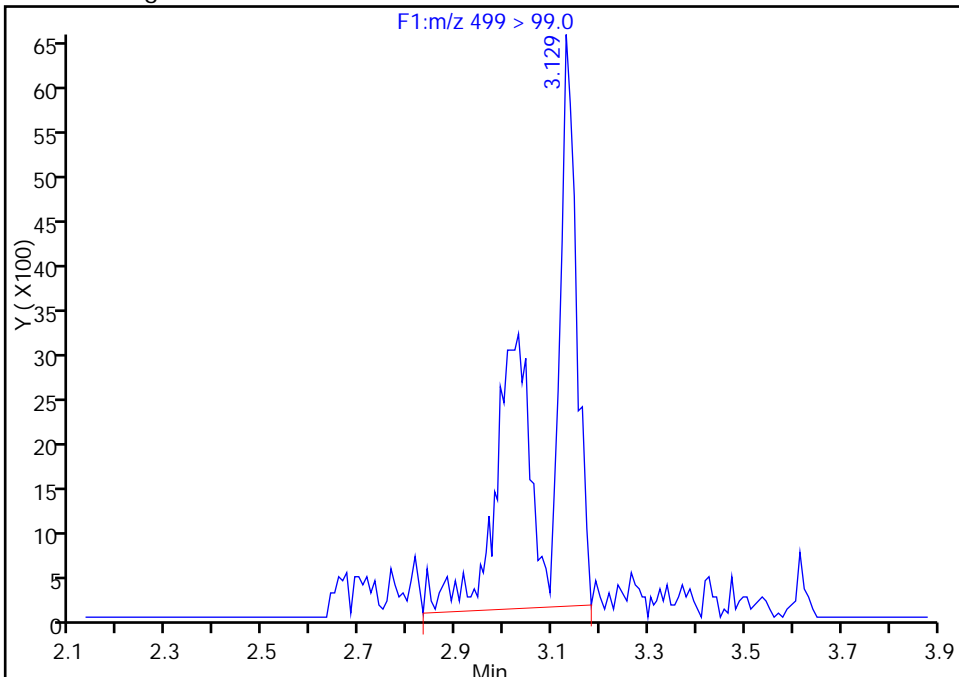
RT: 3.03  
Area: 34466  
Amount: 2.032633  
Amount Units: ng/ml

Processing Integration Results



RT: 3.13  
Area: 30738  
Amount: 1.712782  
Amount Units: ng/ml

Manual Integration Results





FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-11GW-0816 Lab Sample ID: 320-21000-8  
 Matrix: Water Lab File ID: 26AUG2016G\_045\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/16/2016 14:05  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 254(mL) Date Analyzed: 08/26/2016 20:25  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	17	M	2.5	2.0	0.74
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.0	M	3.9	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	81		25-150
STL00991	13C4 PFOS	122		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_045\_p1\_e1.d  
 Lims ID: 320-21000-A-8-A  
 Client ID: GW23-11GW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 20:25:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 11:00:52 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 11:00:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.762	2.798	-0.036	1.000	704436	8.83			6251	M
413 > 169.0	2.762	2.798	-0.036	1.000	458462		1.54(0.90-1.10)		23815	M
D 14 13C4 PFOA										
417 > 372.0	2.762	2.798	-0.036		3882426	40.3		80.6	237315	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.011	3.110	-0.098	1.000	335786	3.03			4671	M
499 > 99.0	3.011	3.110	-0.098	1.000	39803		8.44(0.90-1.10)		1756	M
D 17 13C4 PFOS										
503 > 80.0	3.132	3.177	-0.045		4783263	58.3		122	119728	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_045\_p1\_e1.d

Injection Date: 26-Aug-2016 20:25:00

Instrument ID: A8

Lims ID: 320-21000-A-8-A

Lab Sample ID: 320-21000-8

Client ID: GW23-11GW-0816

Operator ID: A8

ALS Bottle#: 0

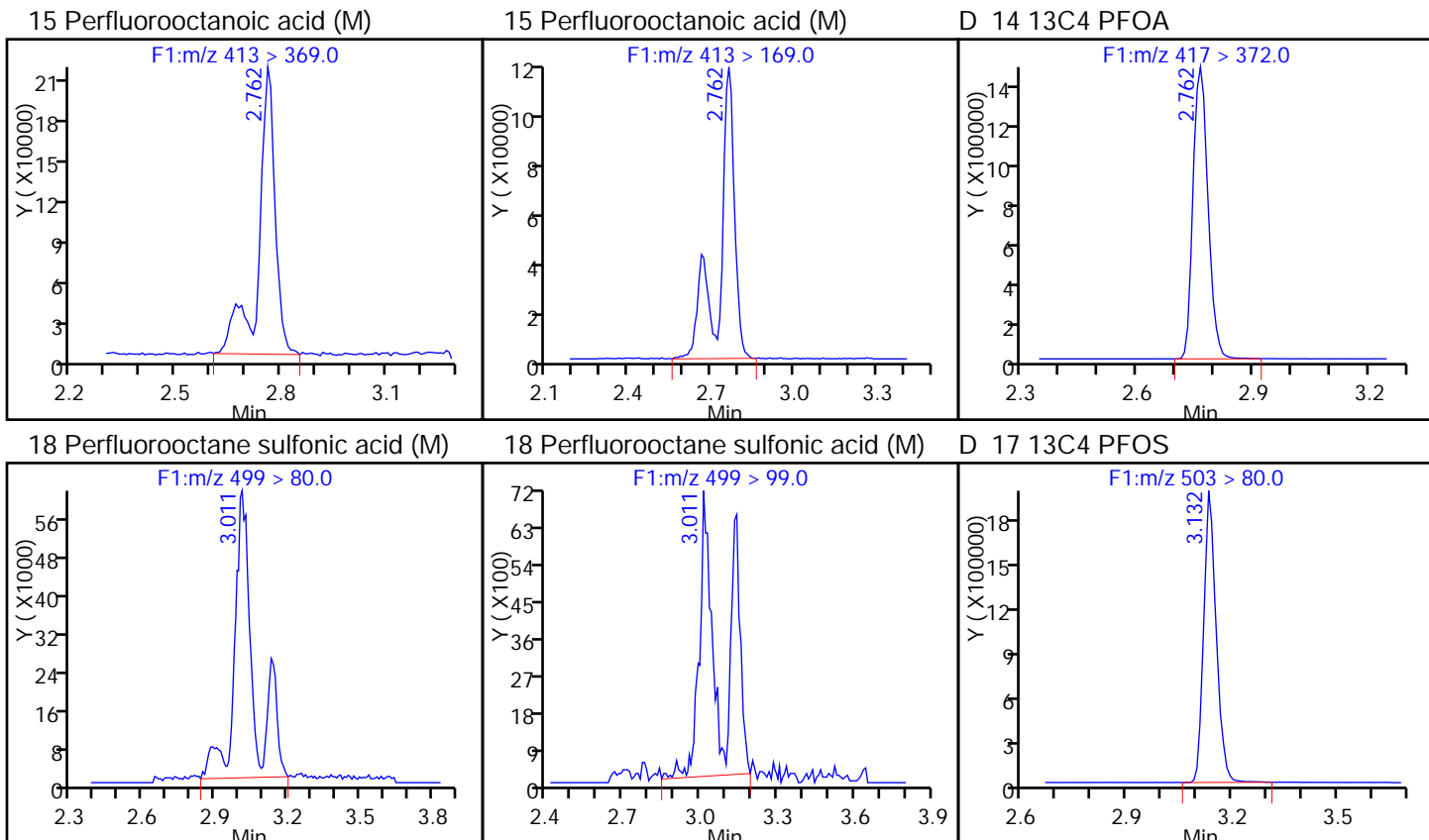
Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL



TestAmerica Sacramento

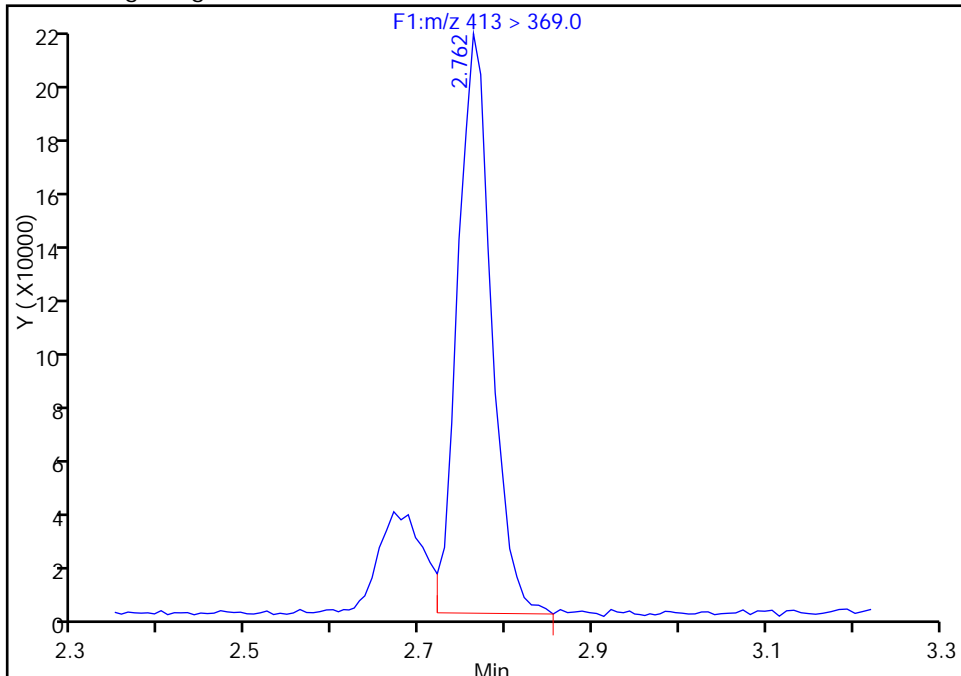
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_045\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:25:00 Instrument ID: A8  
Lims ID: 320-21000-A-8-A Lab Sample ID: 320-21000-8  
Client ID: GW23-11GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 19  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

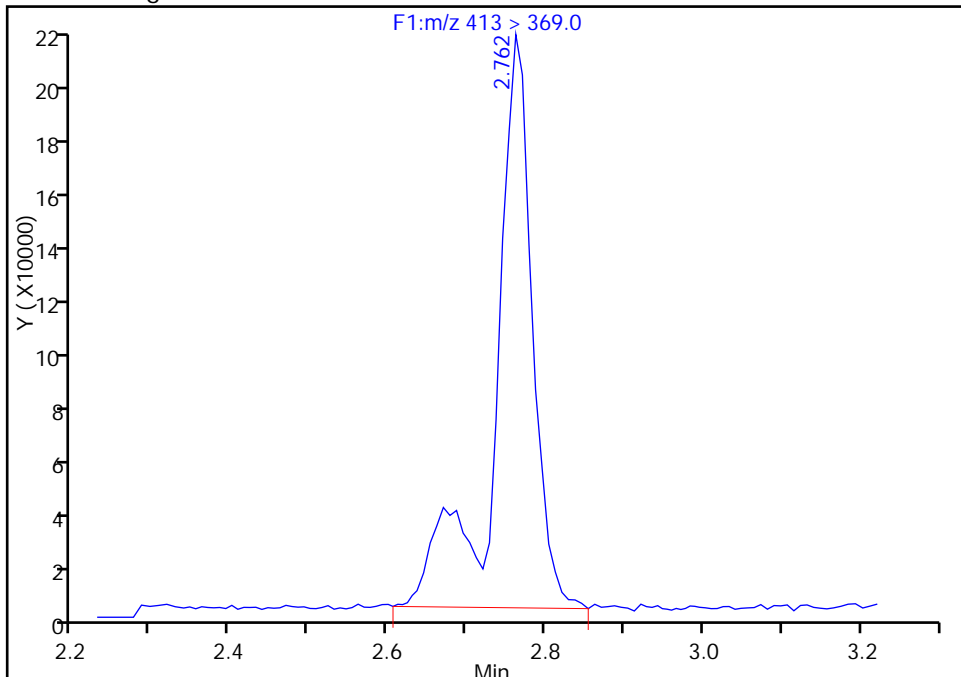
RT: 2.76  
Area: 573766  
Amount: 7.135934  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 704436  
Amount: 8.826580  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 11:00:52  
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

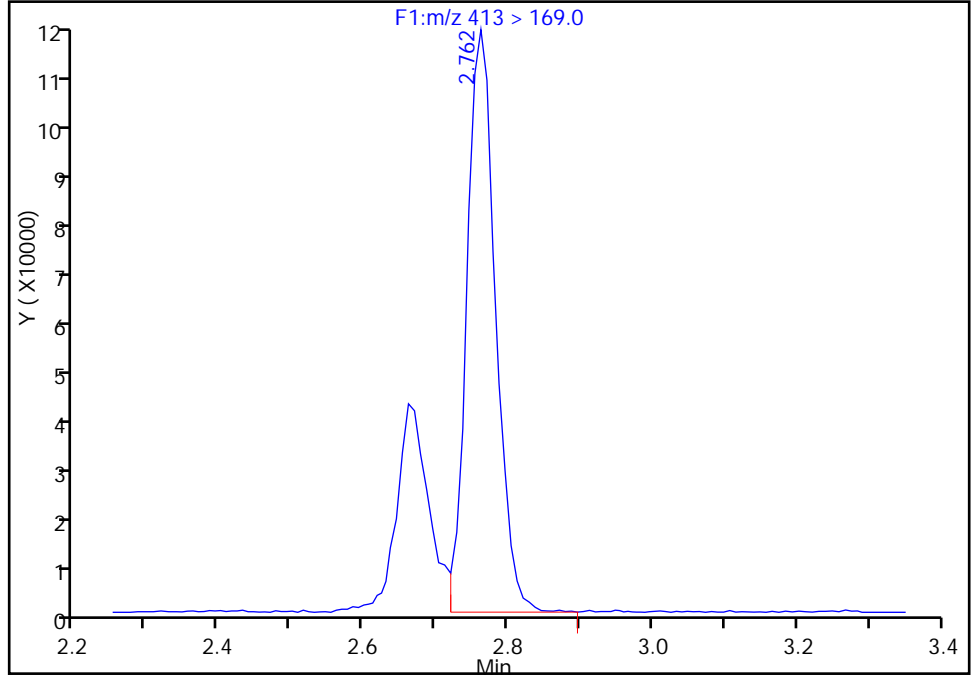
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_045\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:25:00 Instrument ID: A8  
Lims ID: 320-21000-A-8-A Lab Sample ID: 320-21000-8  
Client ID: GW23-11GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 19  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

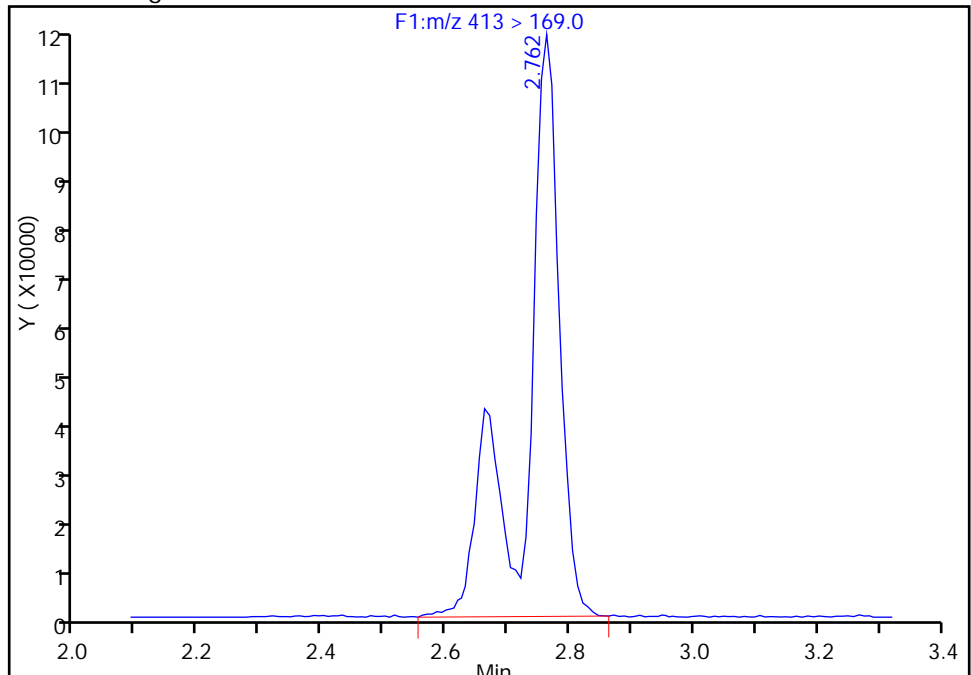
RT: 2.76  
Area: 328707  
Amount: 7.135934  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 458462  
Amount: 8.826580  
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

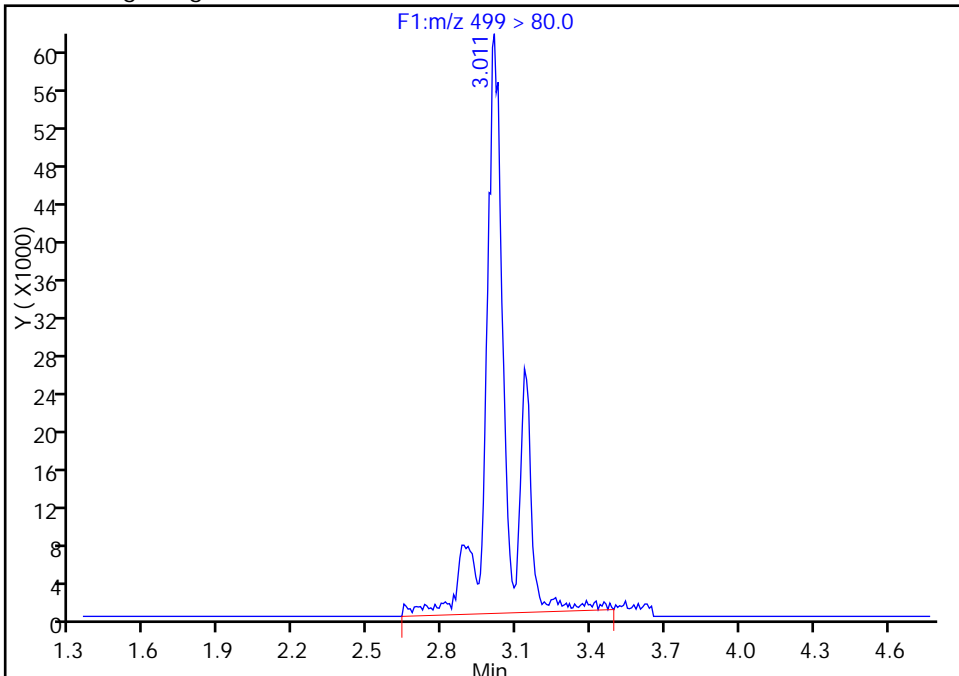
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_045\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:25:00 Instrument ID: A8  
Lims ID: 320-21000-A-8-A Lab Sample ID: 320-21000-8  
Client ID: GW23-11GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 19  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

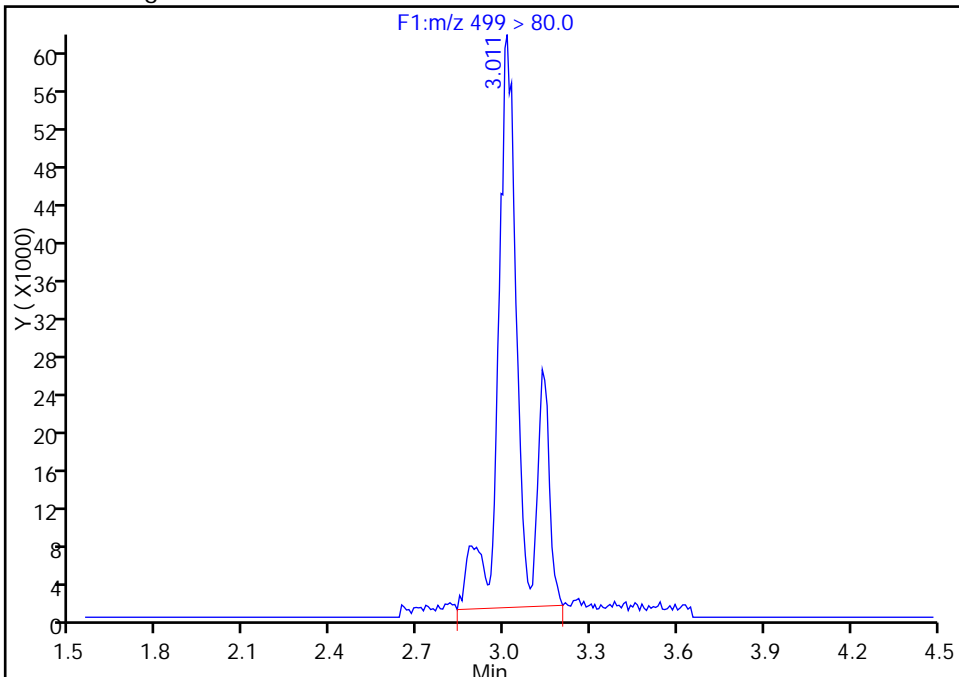
RT: 3.01  
Area: 374353  
Amount: 3.373252  
Amount Units: ng/ml

Processing Integration Results



RT: 3.01  
Area: 335786  
Amount: 3.025729  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 11:00:52  
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

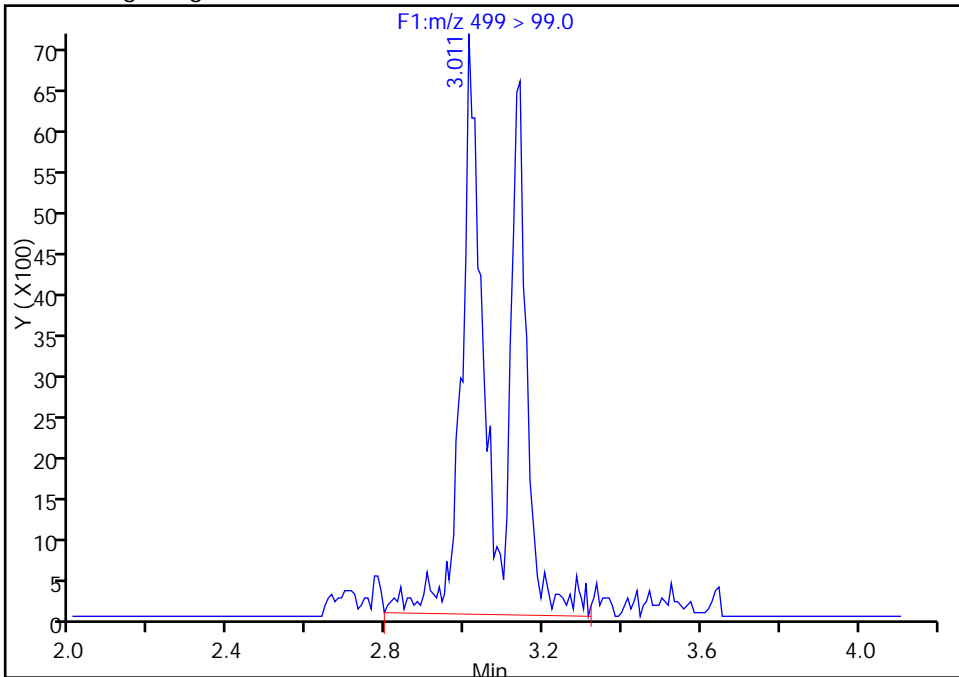
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_045\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:25:00 Instrument ID: A8  
Lims ID: 320-21000-A-8-A Lab Sample ID: 320-21000-8  
Client ID: GW23-11GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 19  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

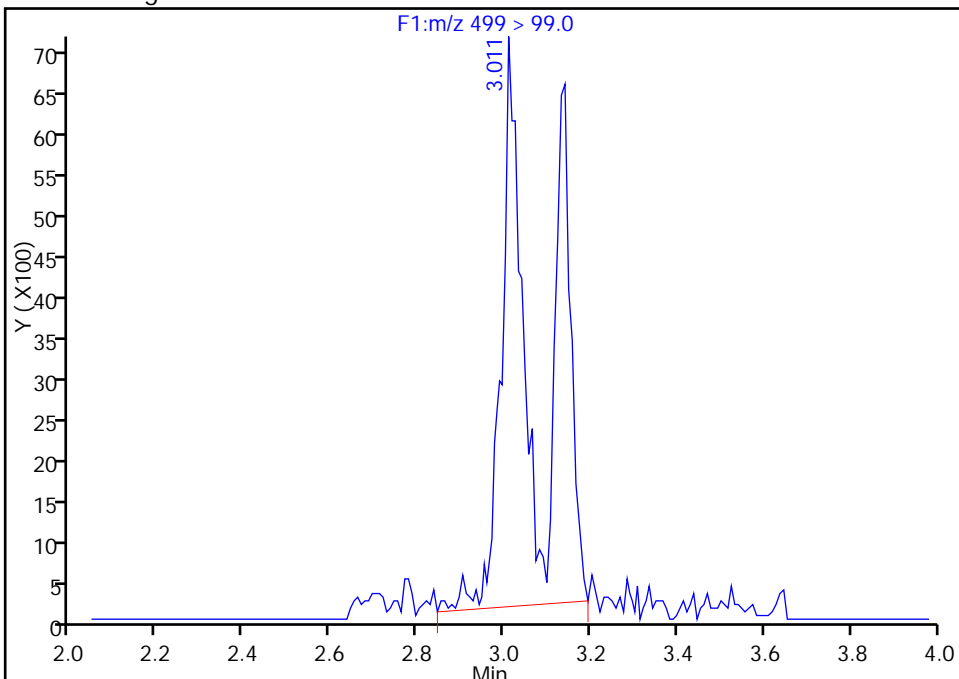
RT: 3.01  
Area: 44860  
Amount: 3.373252  
Amount Units: ng/ml

Processing Integration Results



RT: 3.01  
Area: 39803  
Amount: 3.025729  
Amount Units: ng/ml

Manual Integration Results



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-12GW-0816 Lab Sample ID: 320-21000-9  
 Matrix: Water Lab File ID: 26AUG2016G\_046\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/16/2016 14:20  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 279.8 (mL) Date Analyzed: 08/26/2016 20:33  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	9.3	M	2.2	1.8	0.67
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.3	M	3.6	2.7	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	96		25-150
STL00991	13C4 PFOS	128		25-150



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_046\_p1\_e1.d  
 Lims ID: 320-21000-A-9-A  
 Client ID: GW23-12GW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 20:33:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 11:02:46 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 11:02:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.762	2.798	-0.036	1.000	503868	5.19			4411	M
413 > 169.0	2.753	2.798	-0.045	0.997	333700		1.51(0.90-1.10)		27012	M
D 14 13C4 PFOA										
417 > 372.0	2.753	2.798	-0.045		4616904	47.9		95.9	305002	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.132	3.110	0.023	1.000	278173	2.38			2998	M
499 > 99.0	3.132	3.110	0.023	1.000	51612		5.39(0.90-1.10)		2406	M
D 17 13C4 PFOS										
503 > 80.0	3.132	3.177	-0.045		5038303	61.4		128	138801	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_046\_p1\_e1.d

Injection Date: 26-Aug-2016 20:33:00

Instrument ID: A8

Lims ID: 320-21000-A-9-A

Lab Sample ID: 320-21000-9

Client ID: GW23-12GW-0816

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

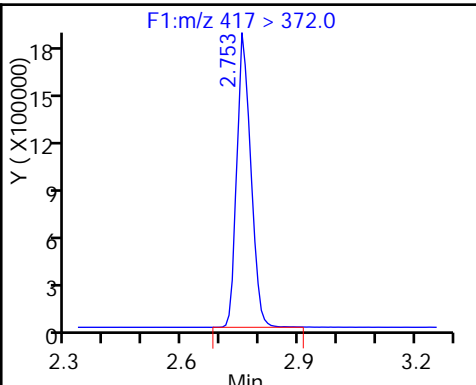
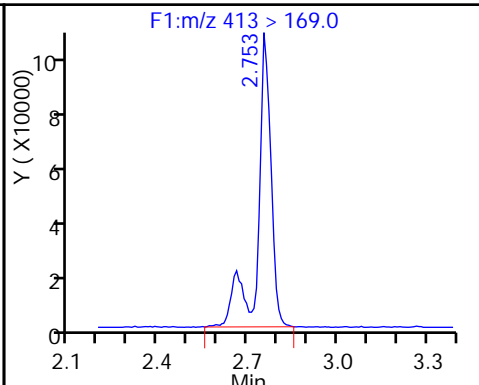
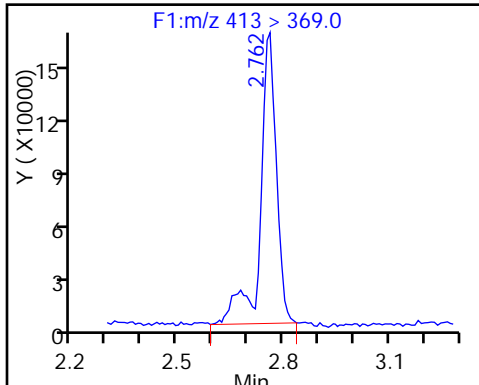
Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

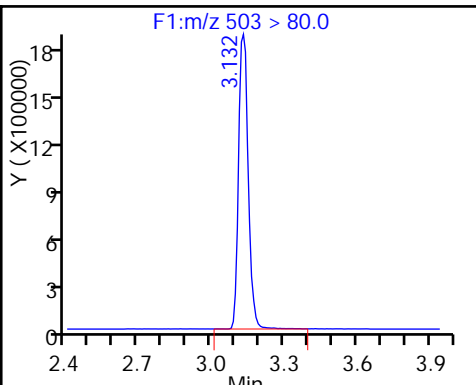
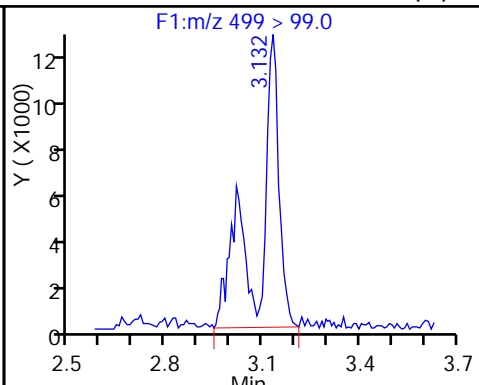
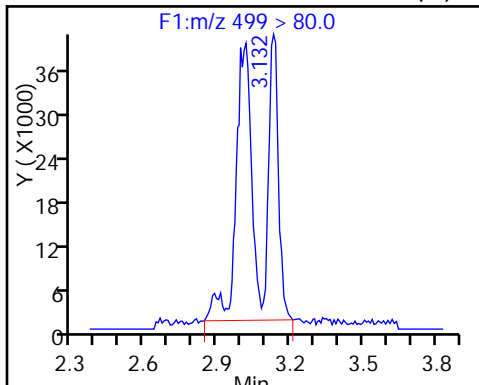
D 14 13C4 PFOA



18 Perfluorooctane sulfonic acid (M)

18 Perfluorooctane sulfonic acid (M)

D 17 13C4 PFOS



TestAmerica Sacramento

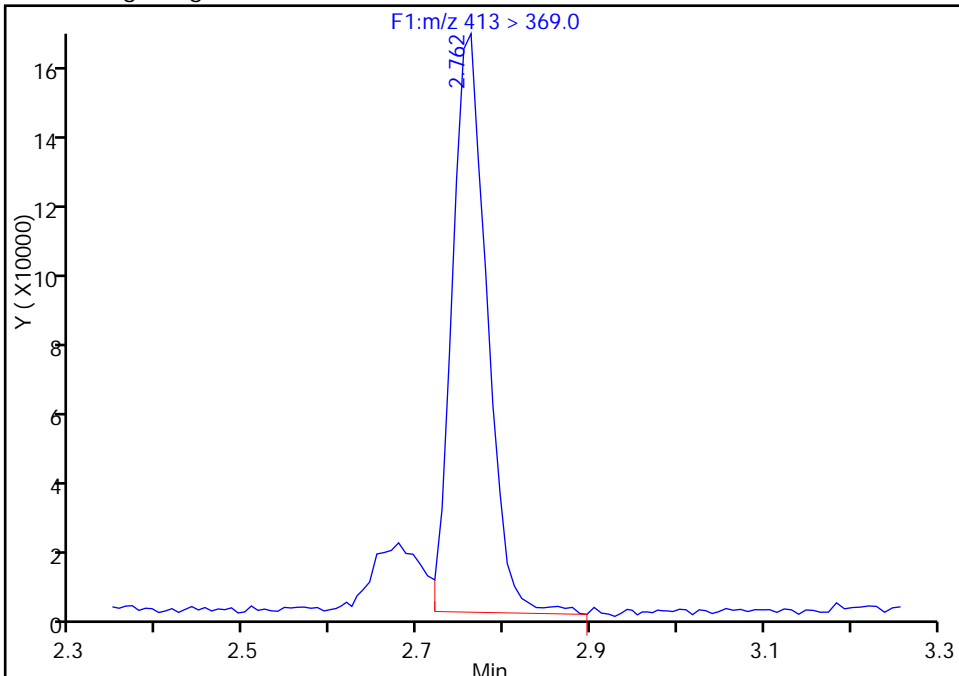
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_046\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:33:00 Instrument ID: A8  
Lims ID: 320-21000-A-9-A Lab Sample ID: 320-21000-9  
Client ID: GW23-12GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

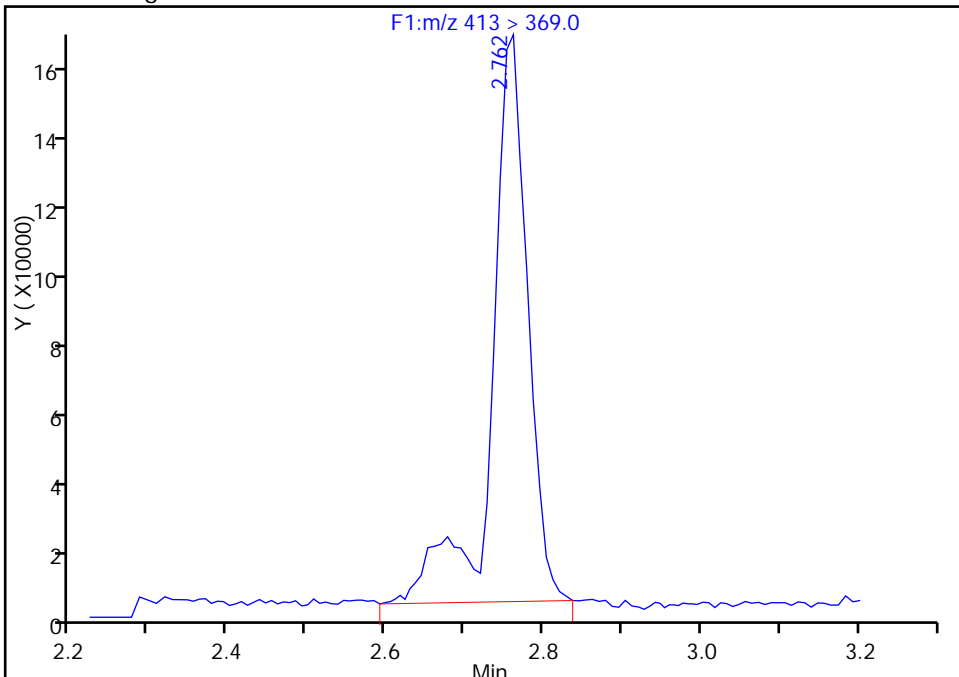
RT: 2.76  
Area: 445299  
Amount: 4.557240  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 503868  
Amount: 5.194471  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 11:02:46  
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_046\_p1\_e1.d

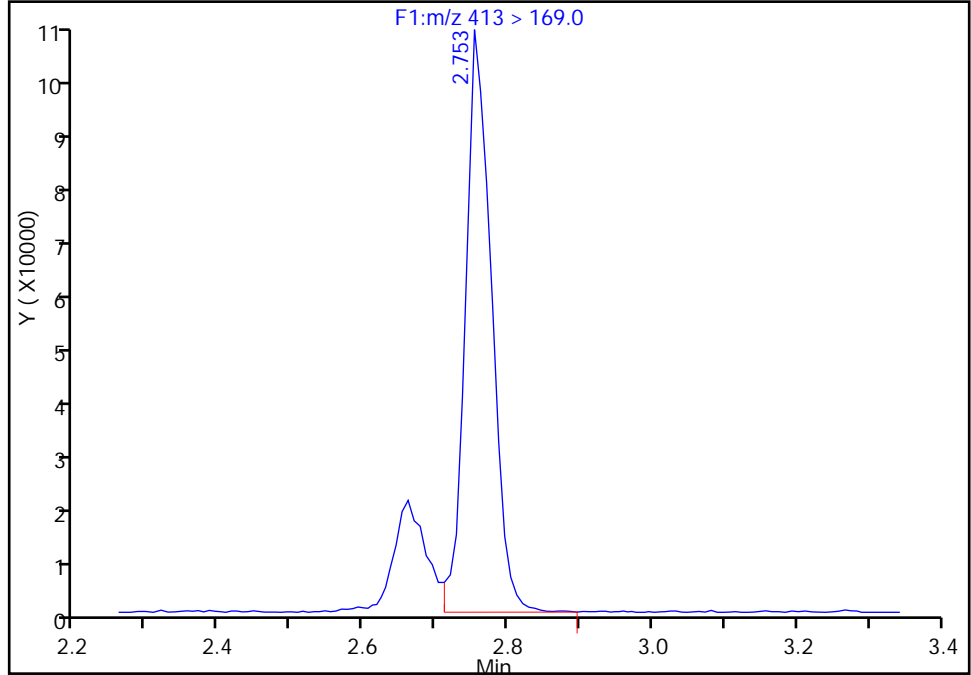
Injection Date: 26-Aug-2016 20:33:00 Instrument ID: A8  
Lims ID: 320-21000-A-9-A Lab Sample ID: 320-21000-9  
Client ID: GW23-12GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

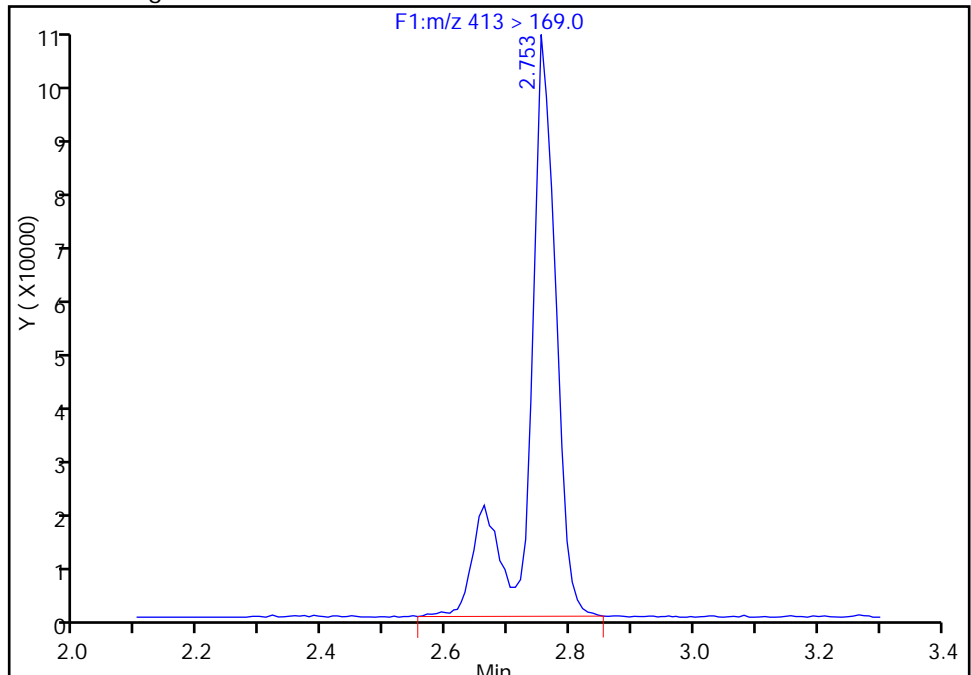
RT: 2.75  
Area: 270898  
Amount: 4.557240  
Amount Units: ng/ml

Processing Integration Results



RT: 2.75  
Area: 333700  
Amount: 5.194471  
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

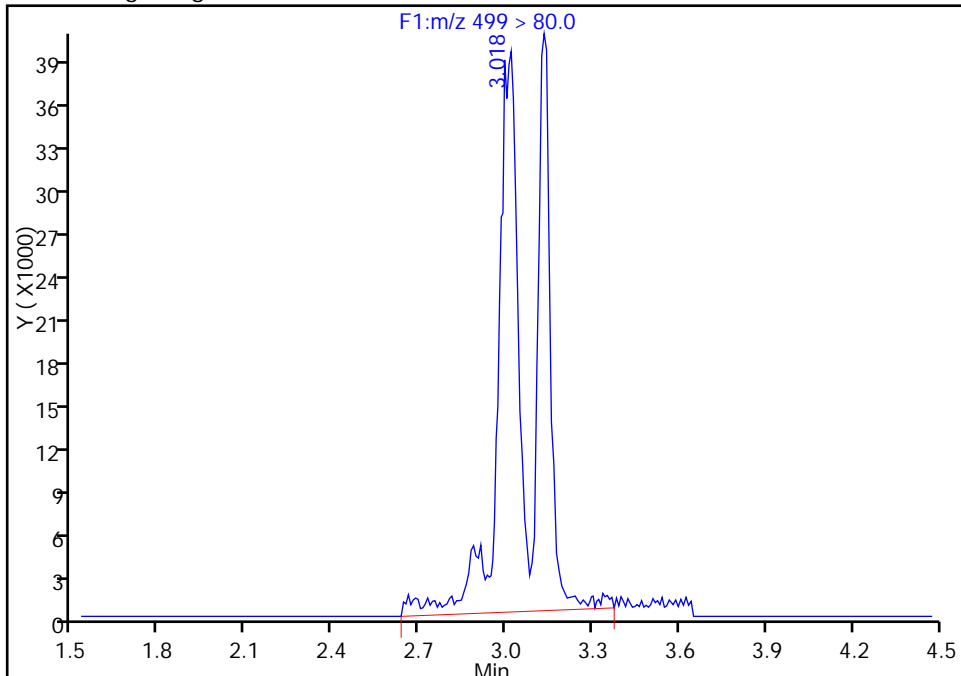
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_046\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:33:00 Instrument ID: A8  
Lims ID: 320-21000-A-9-A Lab Sample ID: 320-21000-9  
Client ID: GW23-12GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

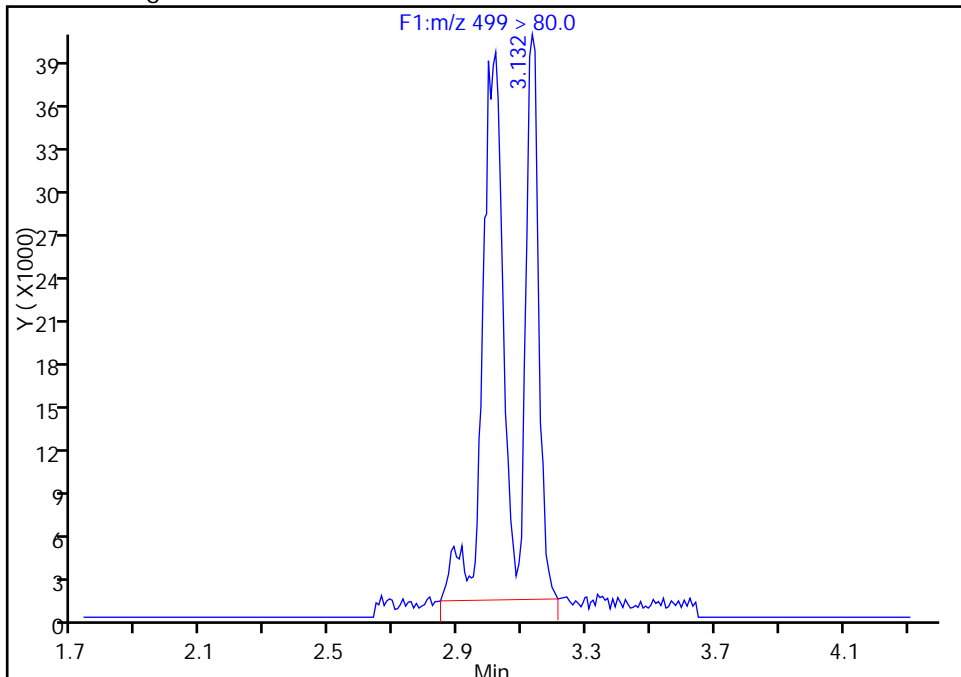
RT: 3.02  
Area: 314672  
Amount: 2.691941  
Amount Units: ng/ml

Processing Integration Results



RT: 3.13  
Area: 278173  
Amount: 2.379701  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 11:02:46  
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

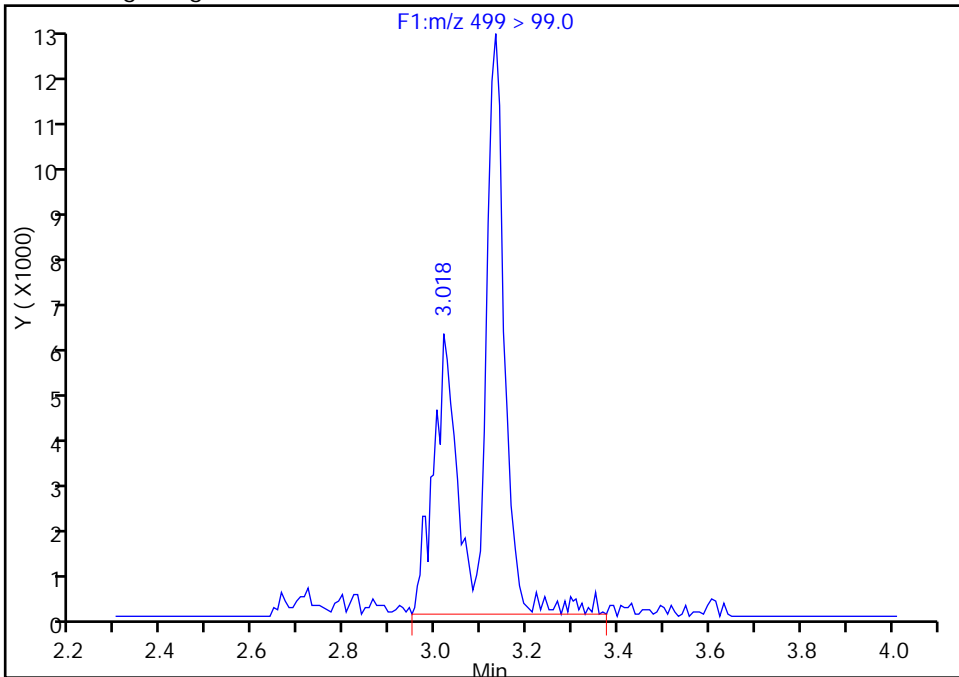
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Injection Date: 26-Aug-2016 20:33:00 Instrument ID: A8  
Lims ID: 320-21000-A-9-A Lab Sample ID: 320-21000-9  
Client ID: GW23-12GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

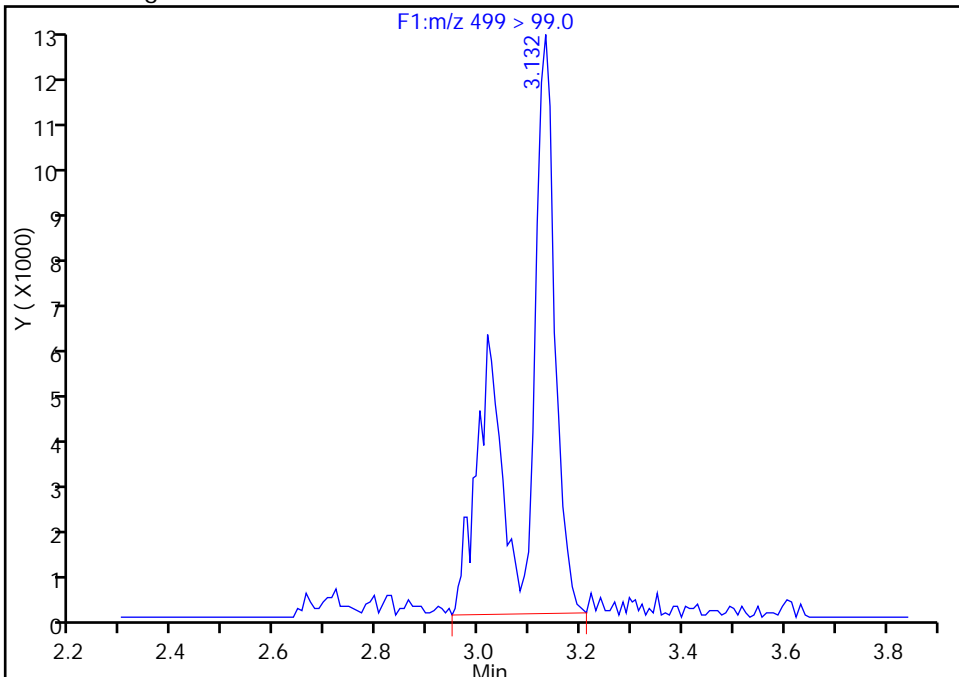
RT: 3.02  
Area: 53649  
Amount: 2.691941  
Amount Units: ng/ml

Processing Integration Results



RT: 3.13  
Area: 51612  
Amount: 2.379701  
Amount Units: ng/ml

Manual Integration Results



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-15GW-0816 Lab Sample ID: 320-21000-10  
 Matrix: Water Lab File ID: 26AUG2016G\_047\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/16/2016 16:20  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 263.8 (mL) Date Analyzed: 08/26/2016 20:40  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	13	M	2.4	1.9	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.1	M	3.8	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	101		25-150
STL00991	13C4 PFOS	125		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_047\_p1\_e1.d  
 Lims ID: 320-21000-A-10-A  
 Client ID: GW23-15GW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 20:40:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 11:05:01 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: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 11:05:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413 > 369.0	2.765	2.798	-0.033	1.000	689184	6.83			6041	M
413 > 169.0	2.757	2.798	-0.041	0.997	435545		1.58(0.90-1.10)		24252	M
D 14 13C4 PFOA										
417 > 372.0	2.757	2.798	-0.041		4865359	50.5		101	458182	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.007	3.110	-0.102	1.000	307294	2.70			2258	M
499 > 99.0	3.129	3.110	0.020	1.040	54337		5.66(0.90-1.10)		3307	M
D 17 13C4 PFOS										
503 > 80.0	3.129	3.177	-0.048		4912809	59.9		125	86862	

QC Flag Legend

Review Flags

M - Manually Integrated



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_047\_p1\_e1.d

Injection Date: 26-Aug-2016 20:40:00

Instrument ID: A8

Lims ID: 320-21000-A-10-A

Lab Sample ID: 320-21000-10

Client ID: GW23-15GW-0816

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

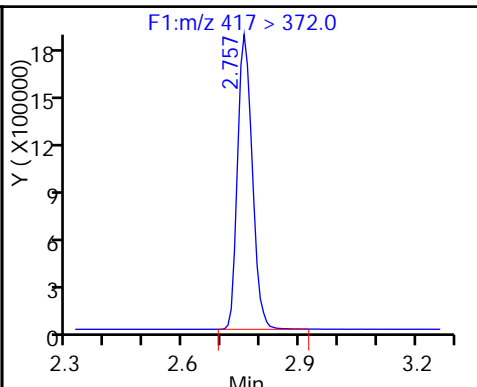
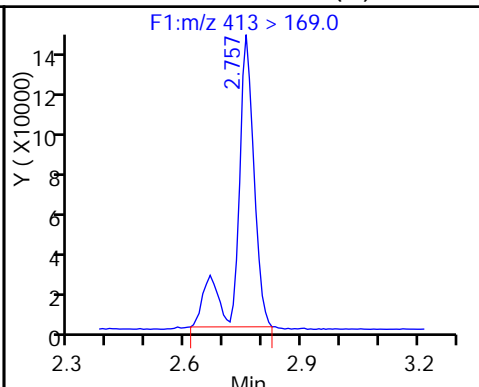
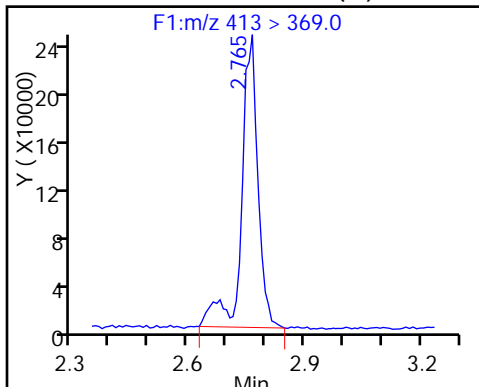
Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

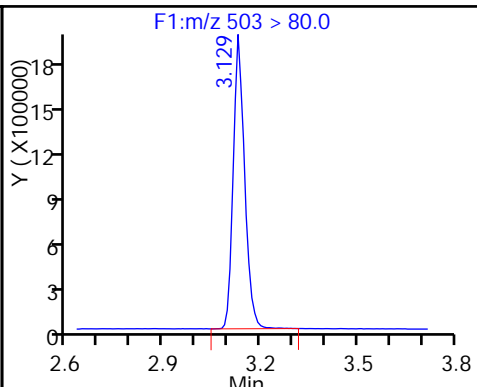
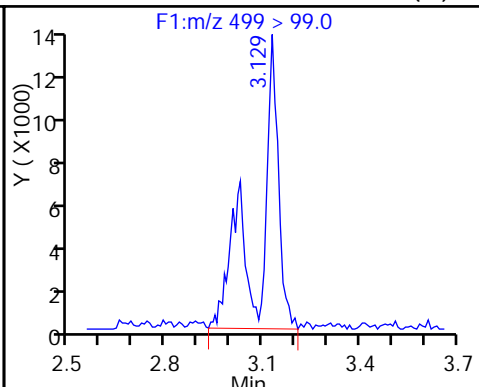
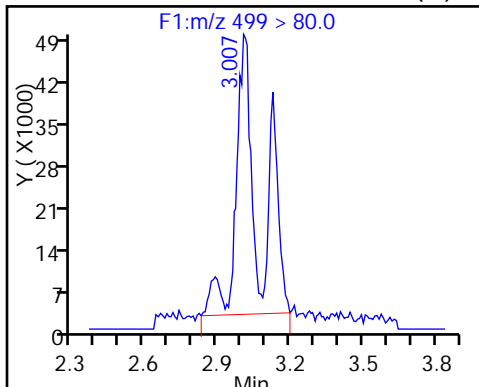
D 14 13C4 PFOA



18 Perfluorooctane sulfonic acid (M)

18 Perfluorooctane sulfonic acid (M)

D 17 13C4 PFOS



TestAmerica Sacramento

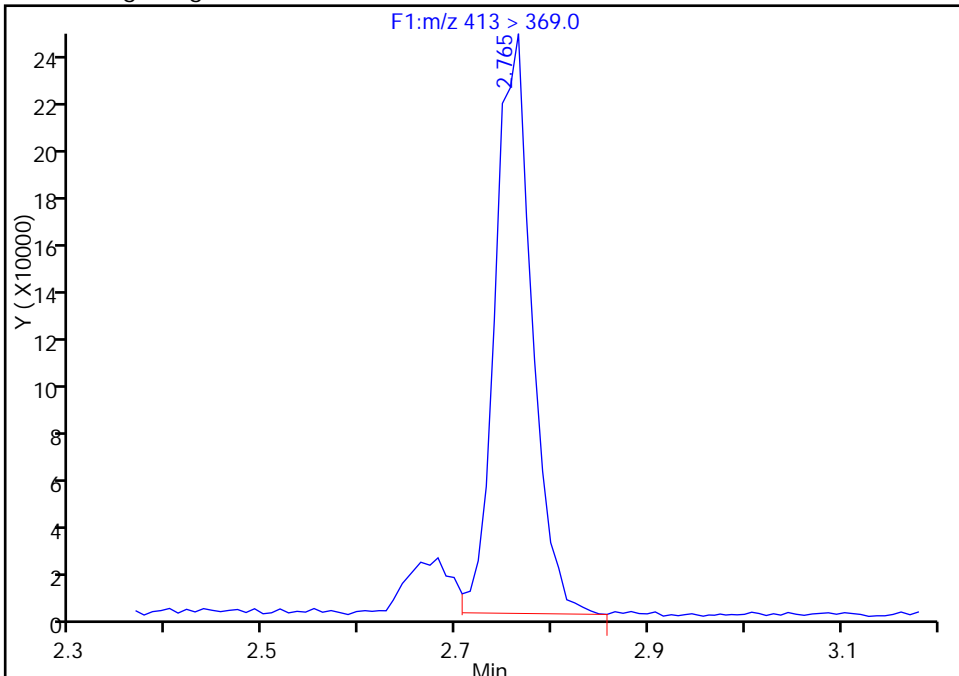
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_047\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:40:00 Instrument ID: A8  
Lims ID: 320-21000-A-10-A Lab Sample ID: 320-21000-10  
Client ID: GW23-15GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

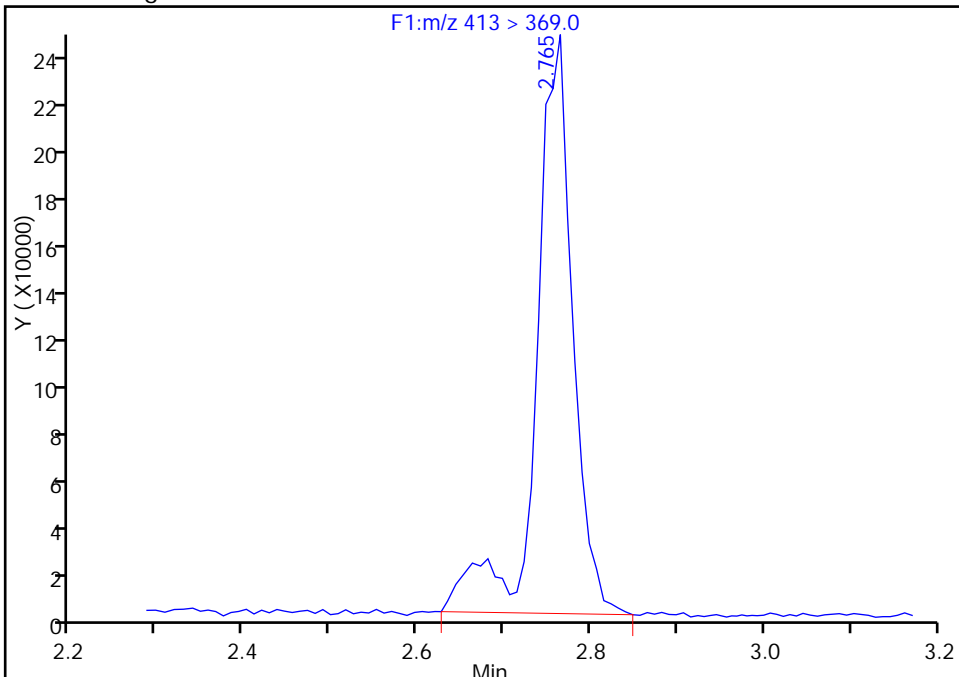
RT: 2.76  
Area: 625479  
Amount: 6.170084  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 689184  
Amount: 6.827800  
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

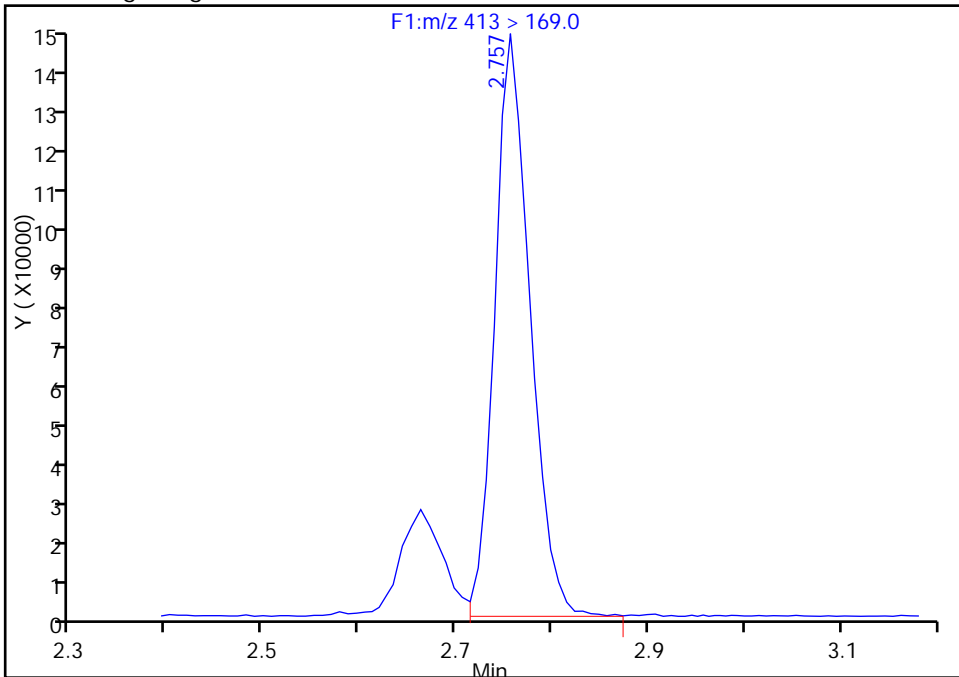
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Injection Date: 26-Aug-2016 20:40:00 Instrument ID: A8  
Lims ID: 320-21000-A-10-A Lab Sample ID: 320-21000-10  
Client ID: GW23-15GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

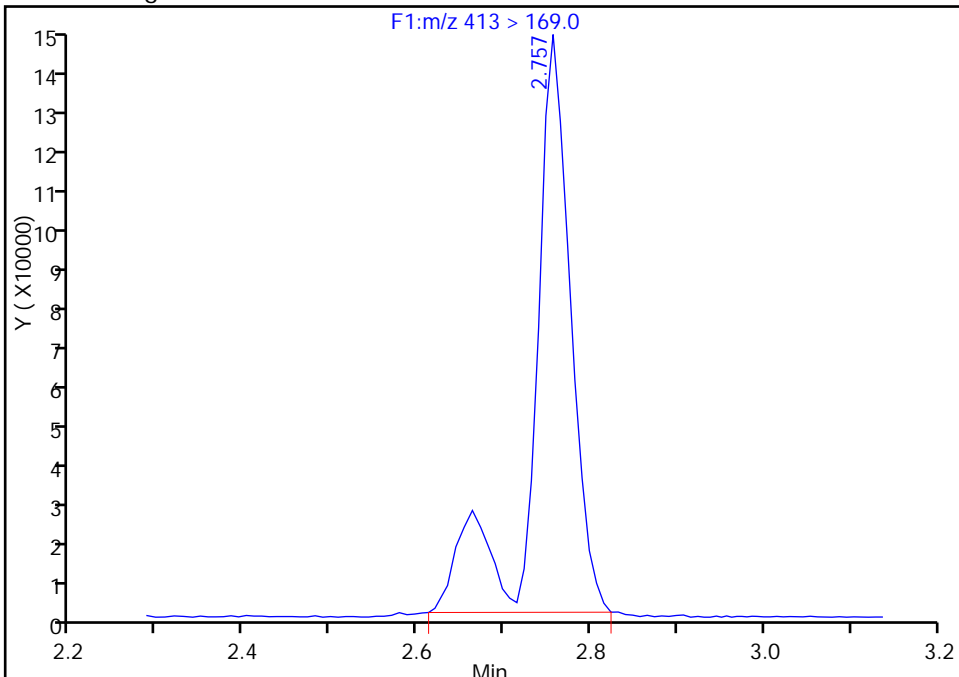
RT: 2.76  
Area: 371860  
Amount: 6.170084  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 435545  
Amount: 6.827800  
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

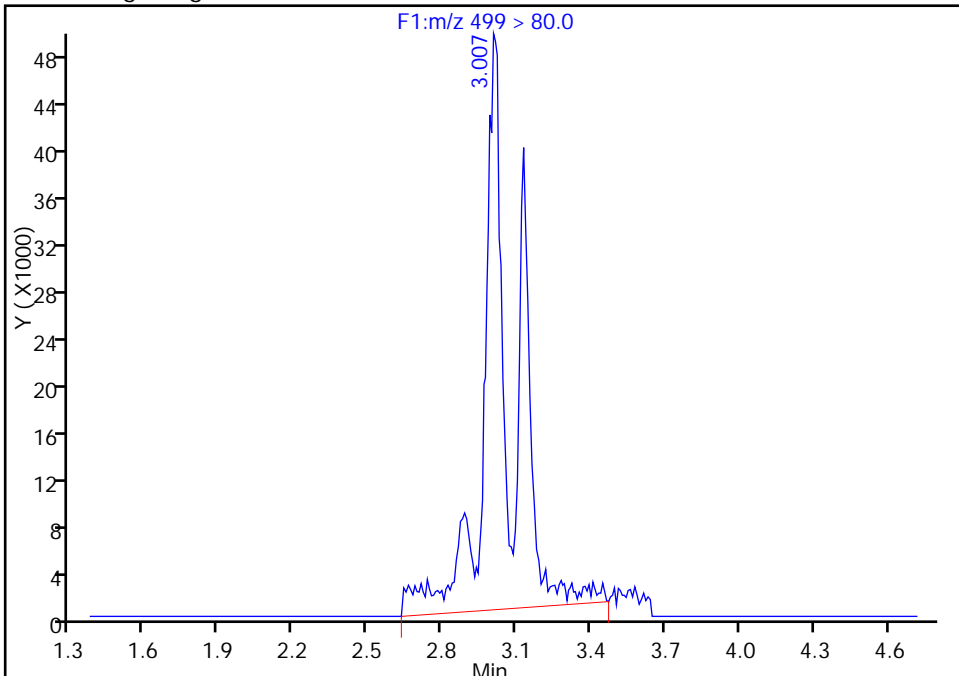
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_047\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:40:00 Instrument ID: A8  
Lims ID: 320-21000-A-10-A Lab Sample ID: 320-21000-10  
Client ID: GW23-15GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

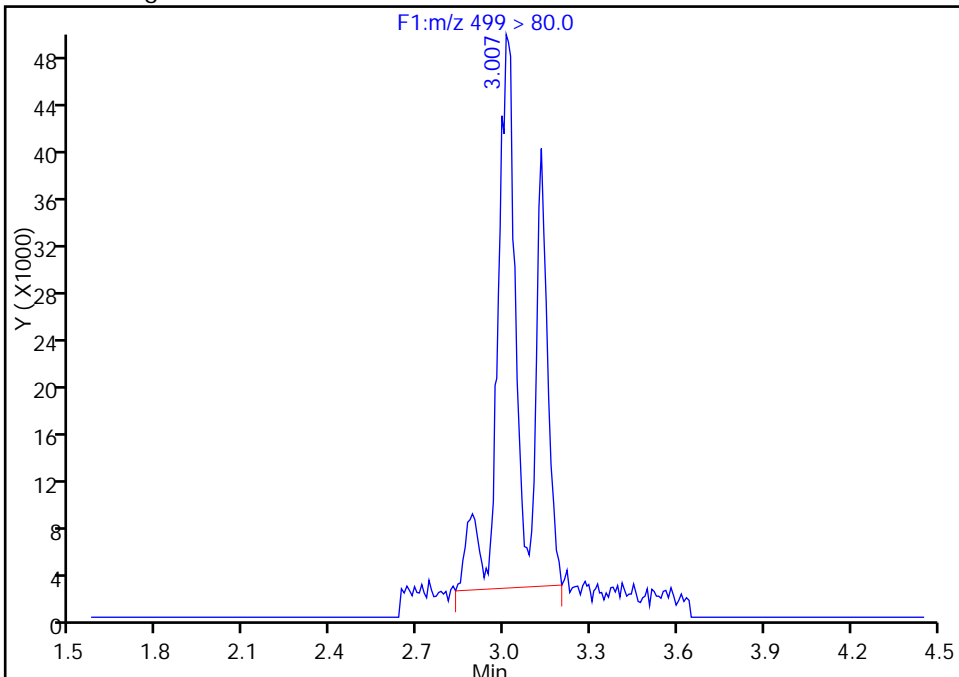
RT: 3.01  
Area: 395036  
Amount: 3.465760  
Amount Units: ng/ml

Processing Integration Results



RT: 3.01  
Area: 307294  
Amount: 2.695975  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 11:05:01  
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

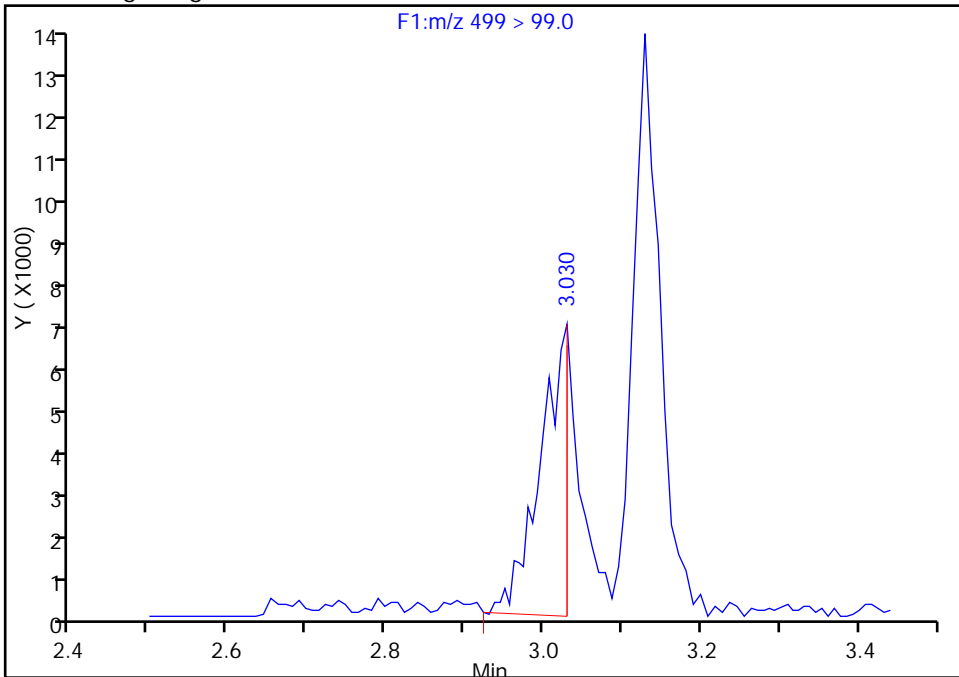
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_047\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:40:00 Instrument ID: A8  
Lims ID: 320-21000-A-10-A Lab Sample ID: 320-21000-10  
Client ID: GW23-15GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

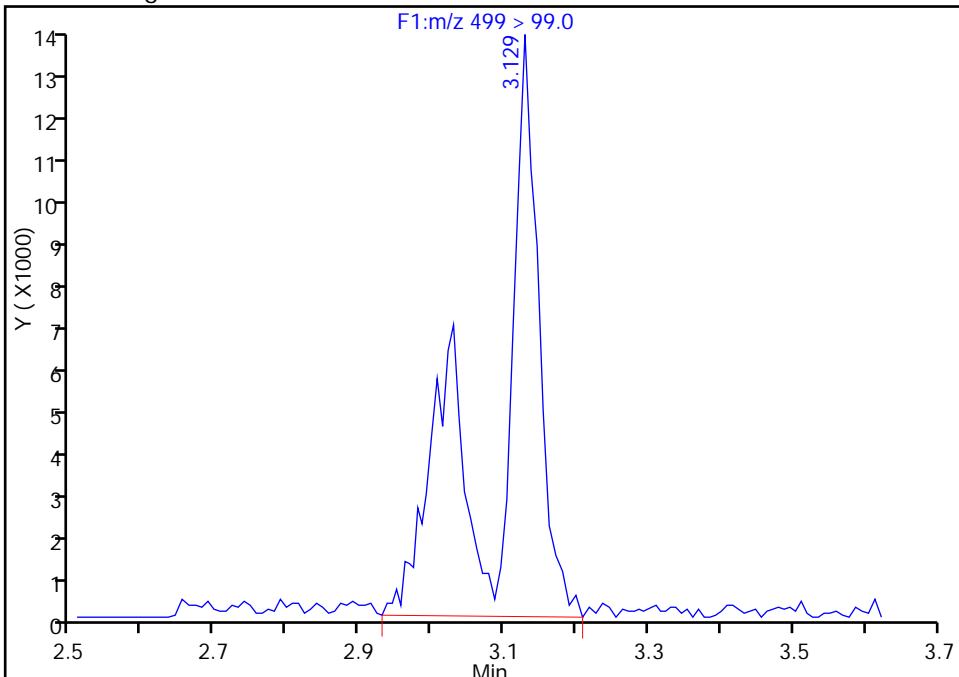
RT: 3.03  
Area: 14913  
Amount: 3.465760  
Amount Units: ng/ml

Processing Integration Results



RT: 3.13  
Area: 54337  
Amount: 2.695975  
Amount Units: ng/ml

Manual Integration Results



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: GW23-14GW-0816 Lab Sample ID: 320-21000-11  
 Matrix: Water Lab File ID: 26AUG2016G\_048\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: 08/16/2016 16:00  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 274 (mL) Date Analyzed: 08/26/2016 20:48  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.7	M	2.3	1.8	0.68
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	4.0	M	3.6	2.7	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	98		25-150
STL00991	13C4 PFOS	124		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_048\_p1\_e1.d  
 Lims ID: 320-21000-A-11-A  
 Client ID: GW23-14GW-0816  
 Sample Type: Client  
 Inject. Date: 26-Aug-2016 20:48:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 11:09:18 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: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 11:09:18

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	165655	1.48			855	M
413 > 169.0	2.762	2.798	-0.036	1.003	107778		1.54(0.90-1.10)		4138	M
D 14 13C4 PFOA										
417 > 372.0	2.754	2.798	-0.044		4719807	49.0		98.0	377101	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.010	3.110	-0.099	1.000	248213	2.20			3486	M
499 > 99.0	3.018	3.110	-0.091	1.003	20590		12.06(0.90-1.10)		487	M
D 17 13C4 PFOS										
503 > 80.0	3.132	3.177	-0.045		4865647	59.3			124	167222

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_048\_p1\_e1.d

Injection Date: 26-Aug-2016 20:48:00

Instrument ID: A8

Lims ID: 320-21000-A-11-A

Lab Sample ID: 320-21000-11

Client ID: GW23-14GW-0816

Operator ID: A8

ALS Bottle#: 0

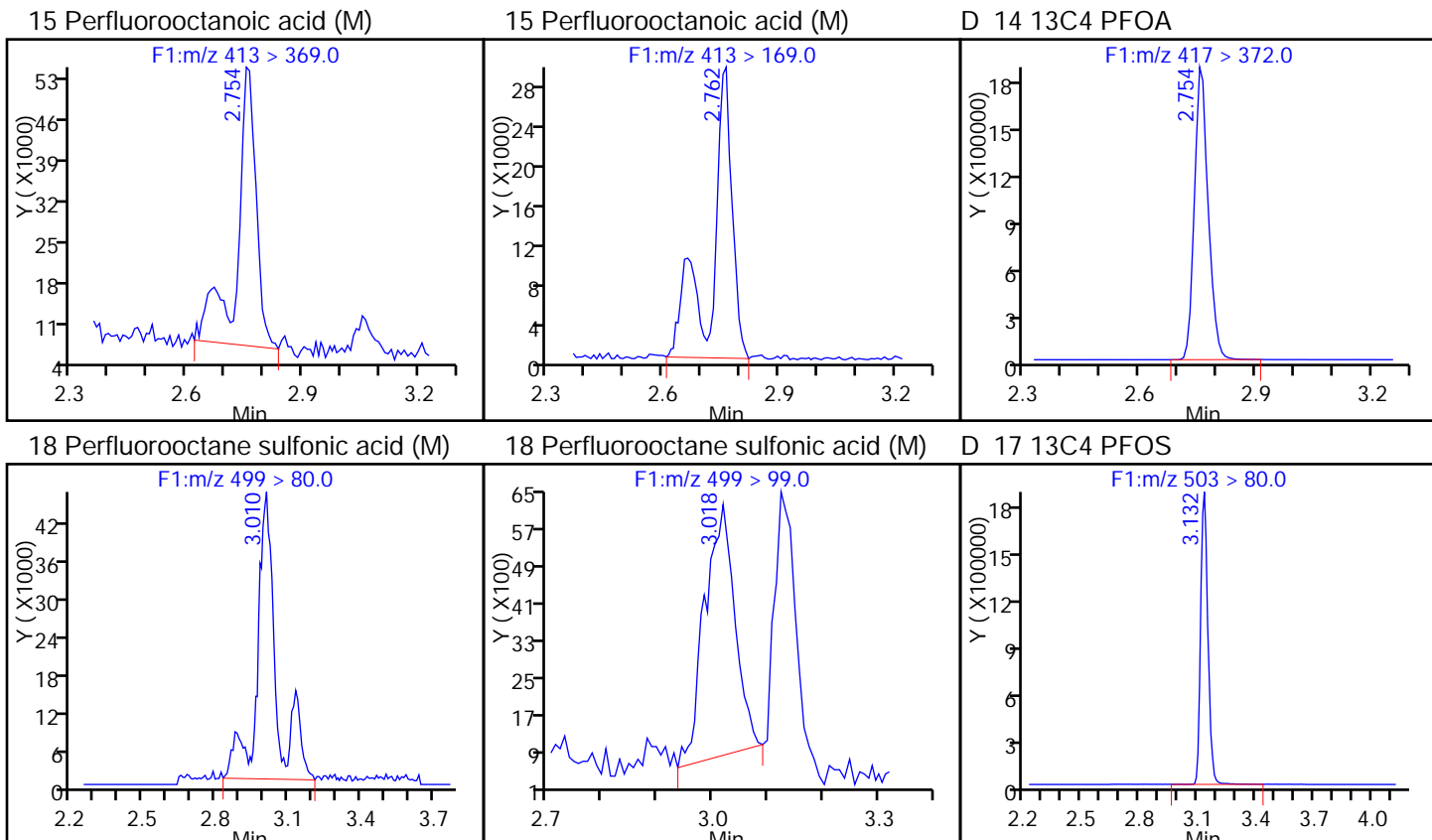
Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL





TestAmerica Sacramento

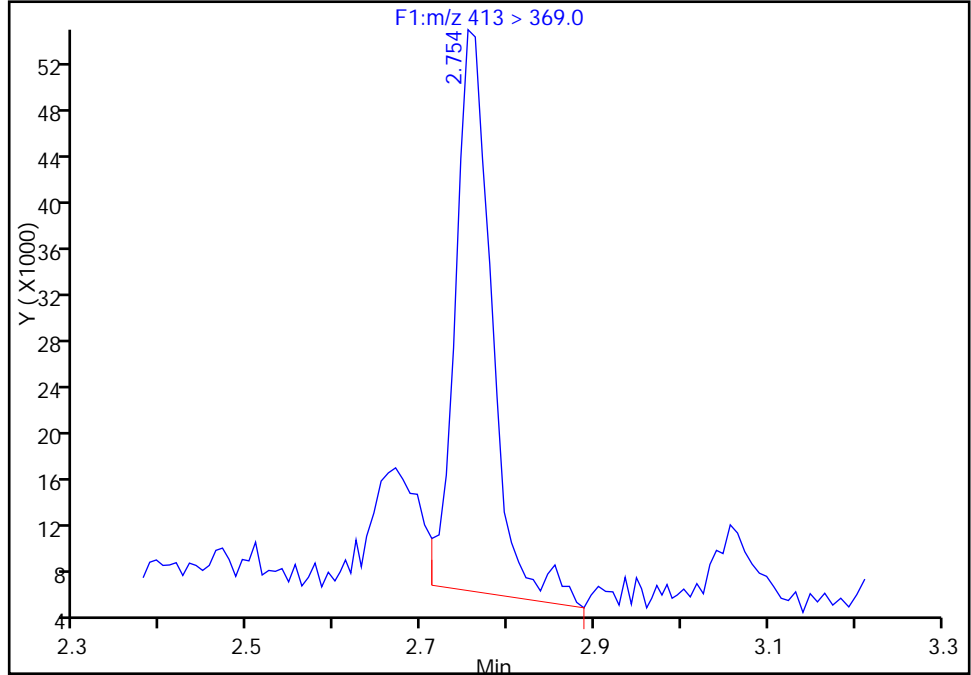
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_048\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:48:00 Instrument ID: A8  
Lims ID: 320-21000-A-11-A Lab Sample ID: 320-21000-11  
Client ID: GW23-14GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

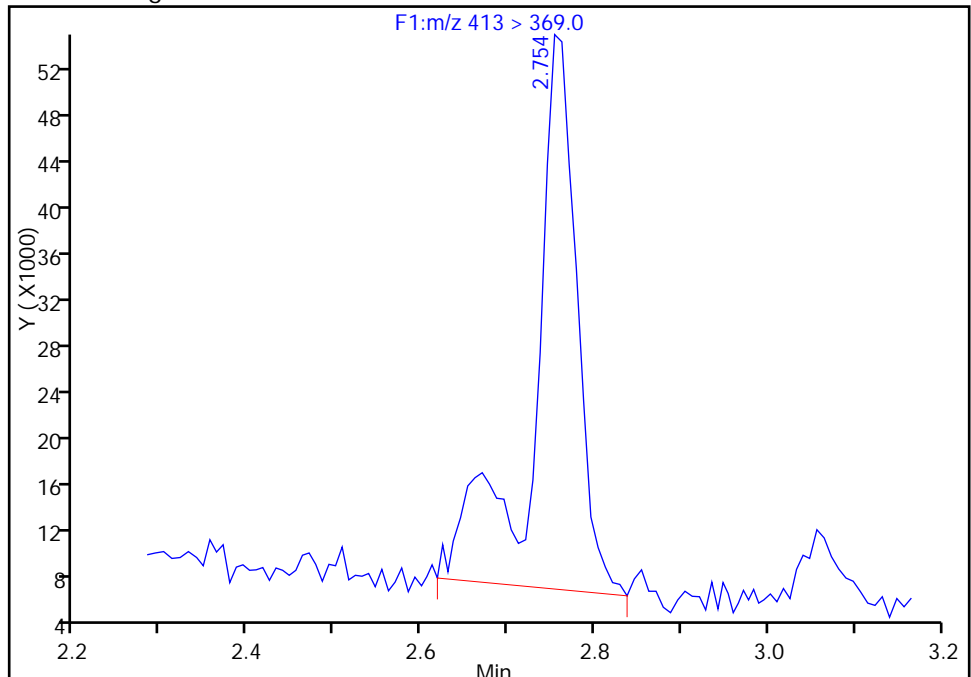
RT: 2.75  
Area: 141661  
Amount: 1.220053  
Amount Units: ng/ml

Processing Integration Results



RT: 2.75  
Area: 165655  
Amount: 1.475416  
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Sep-2016 11:07:29  
Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

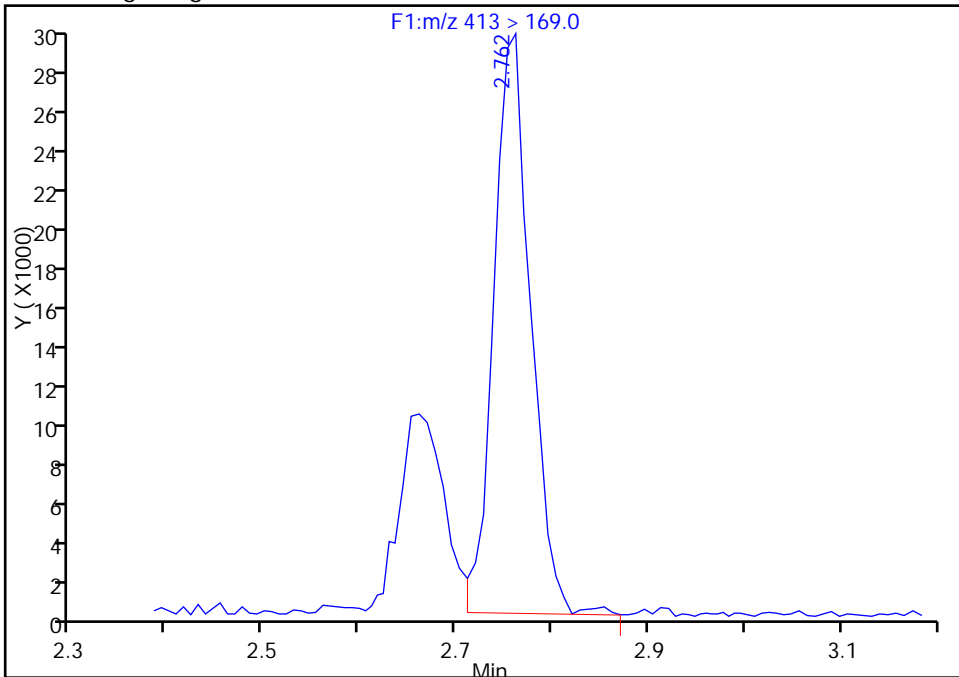
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_048\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:48:00 Instrument ID: A8  
Lims ID: 320-21000-A-11-A Lab Sample ID: 320-21000-11  
Client ID: GW23-14GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

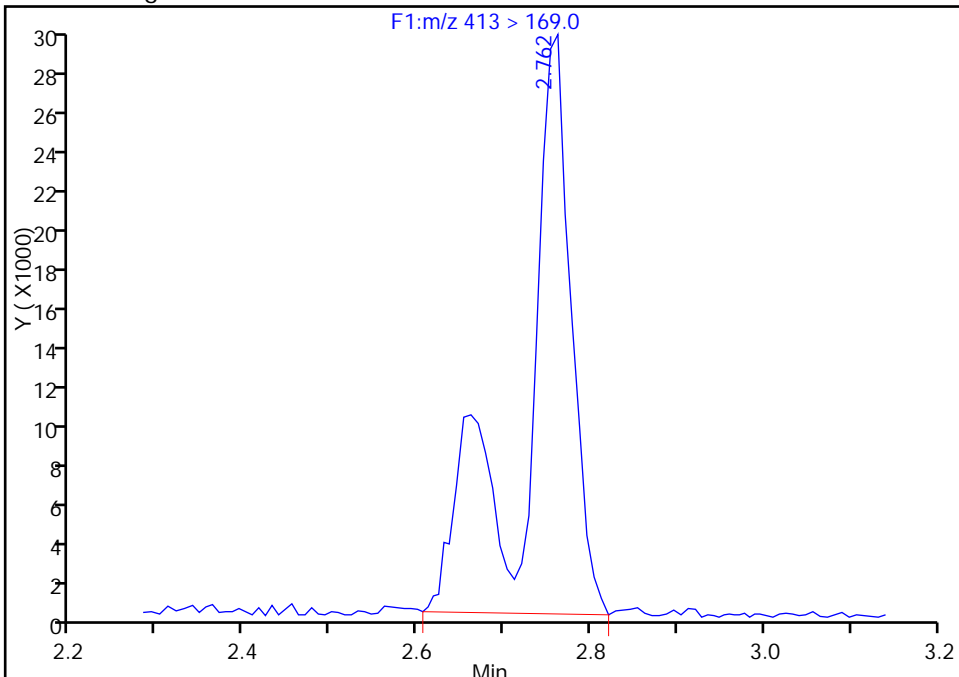
RT: 2.76  
Area: 76944  
Amount: 1.220053  
Amount Units: ng/ml

Processing Integration Results



RT: 2.76  
Area: 107778  
Amount: 1.475416  
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

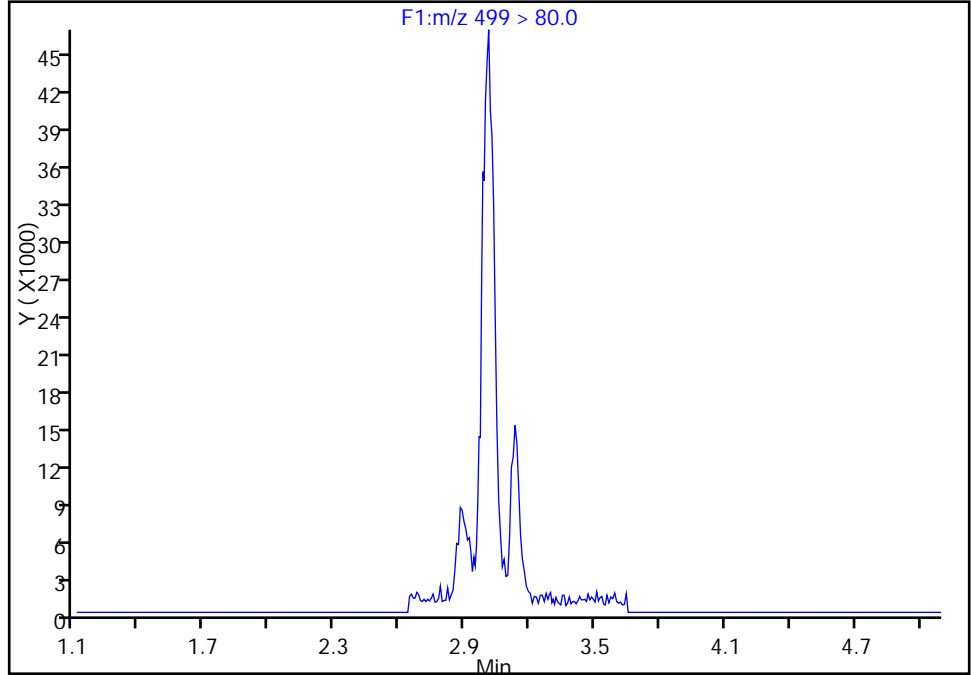
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_048\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:48:00 Instrument ID: A8  
Lims ID: 320-21000-A-11-A Lab Sample ID: 320-21000-11  
Client ID: GW23-14GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 1

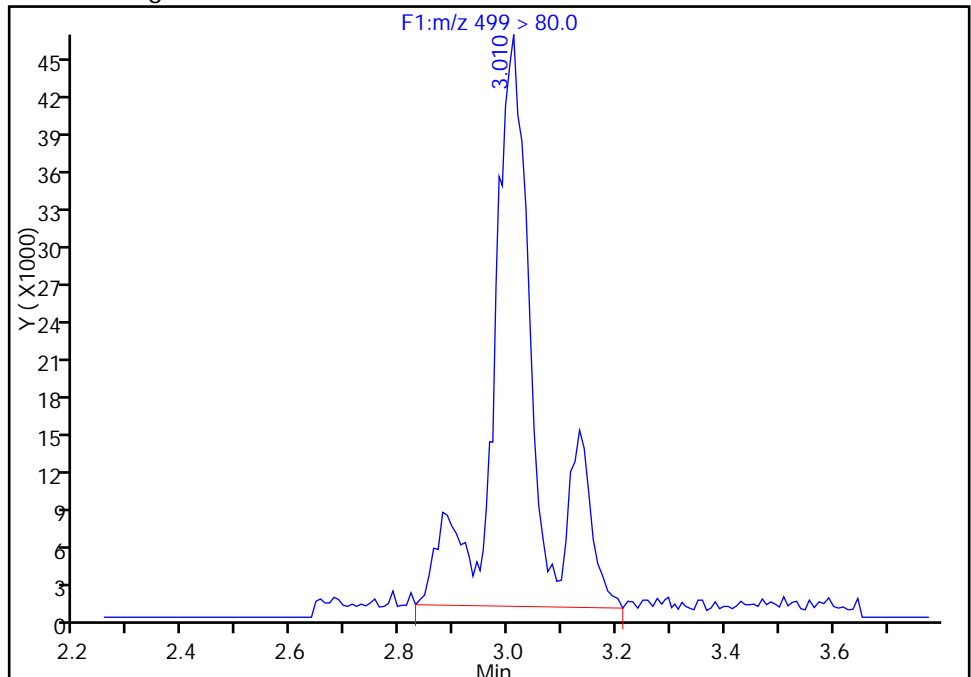
Not Detected  
Expected RT: 3.11

Processing Integration Results



Manual Integration Results

RT: 3.01  
Area: 248213  
Amount: 2.198749  
Amount Units: ng/ml



Reviewer: chandrasenas, 06-Sep-2016 11:09:18

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

TestAmerica Sacramento

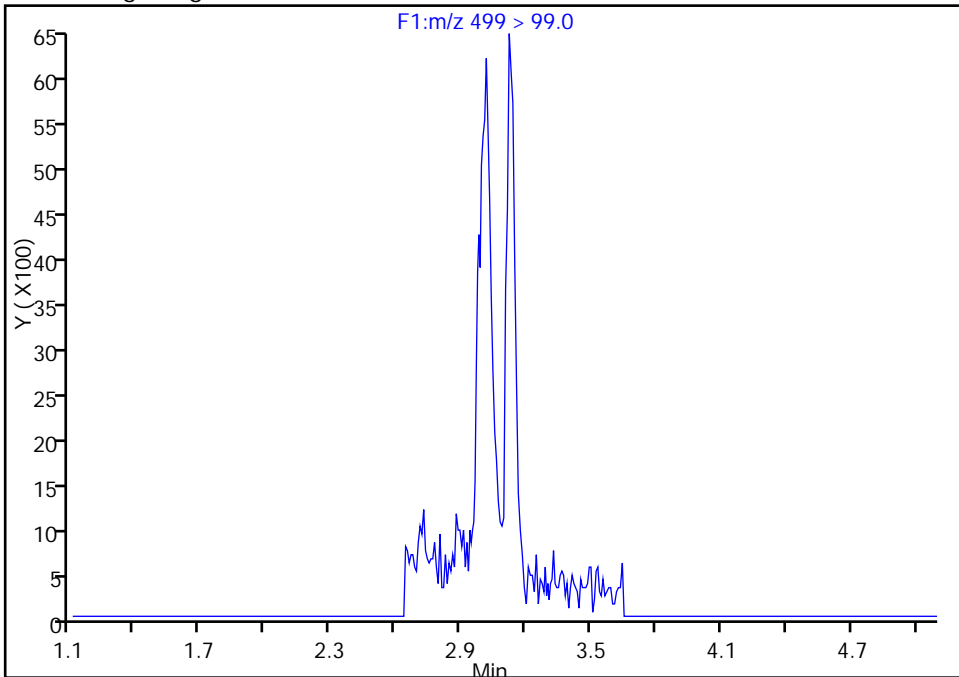
Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_048\_p1\_e1.d  
Injection Date: 26-Aug-2016 20:48:00 Instrument ID: A8  
Lims ID: 320-21000-A-11-A Lab Sample ID: 320-21000-11  
Client ID: GW23-14GW-0816  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

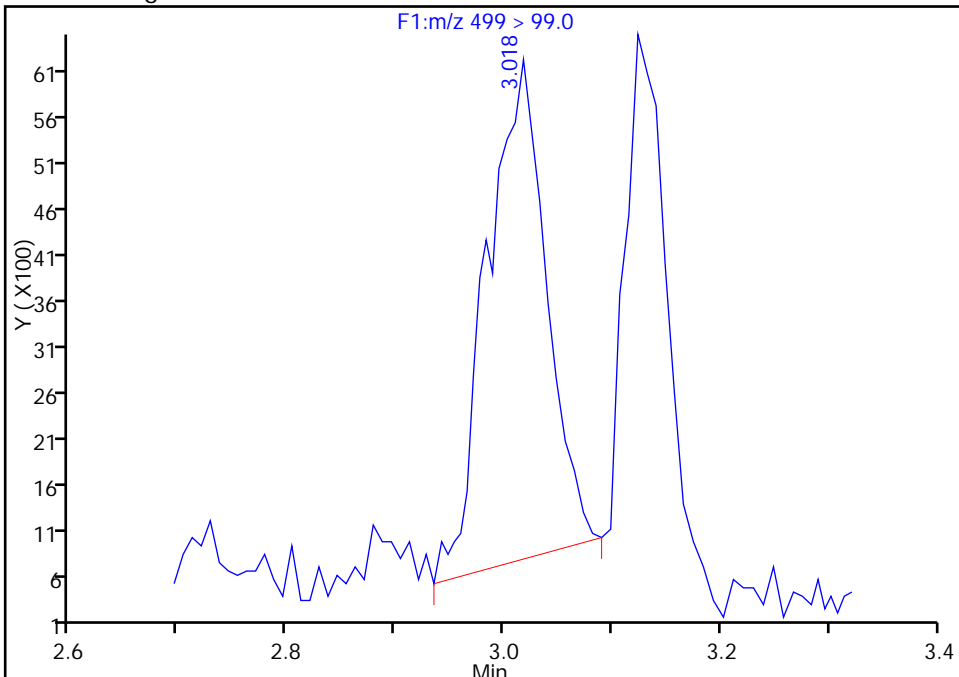
Not Detected  
Expected RT: 3.11

Processing Integration Results



Manual Integration Results

RT: 3.02  
Area: 20590  
Amount: 2.198749  
Amount Units: ng/ml



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

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1 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.: 320-21000-1 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.: 320-21000-1 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.: 320-21000-1 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.: 320-21000-1 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.: 320-21000-1 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.: 320-21000-1Analy 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 <sup>2</sup> OR COD	#	MIN R <sup>2</sup> 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	130471	120361	124751	119981	AveID	0.8640				2.9		35.0				
	105603		++++														
Perfluoropentanoic acid (PFPeA)	120100	118251	117248	114663	115166	AveID	1.0225				4.7		35.0				
	92815		++++														
Perfluorobutanesulfonic acid (PFBS)	181127	195243	175791	190563	170633	AveID	1.5525				7.3		50.0				
	152092		++++														
Perfluorohexanoic acid (PFHxA)	105844	98723	96488	97483	93818	AveID	0.9664				6.2		35.0				
	84767		++++														
Perfluoroheptanoic acid (PFHpA)	117296	108541	101560	95980	99284	AveID	1.0458				7.6		35.0				
	83180		++++														
Perfluorohexanesulfonic acid (PFHxS)	156152	127798	136986	117053	116271	AveID	1.1130				14.8		35.0				
	108284		++++														
6:2FTS	60458	61841	50293	47174		L1ID	0.3095	0.7802						0.9970		0.9900	
	39005	46220	++++														
Perfluorooctanoic acid (PFOA)	152560	110188	129758	107285	106912	L1ID	0.2863	0.9954						0.9990		0.9900	
	88906		71073														
Perfluoroheptanesulfonic Acid (PFHpS)	99250	104163	93841	98477	102064	AveID	1.1660				5.2		50.0				
	93410		79372														
Perfluorooctanesulfonic acid (PFOS)	102032	95584	89494	89025	90309	AveID	1.1090				6.7		35.0				
	87386		82646														
Perfluorononanoic acid (PFNA)	81208	90175	85388	82316	80735	AveID	0.9990				1.8		35.0				
	73396		62982														
Perfluorooctane Sulfonamide (FOSA)	150948	151179	141802	143561	140317	AveID	0.9205				6.6		35.0				
	119787		++++														

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

## CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-21000-1Analy 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.: 320-21000-1 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.: 320-21000-1 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.: 320-21000-1 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
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## RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-21000-1Analy 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	184885	28657	58625		2236049	4.74	0.474	19.0	0.948	47.4
					953559	++++						
				8763302						190	++++	



## RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-21000-1Analy 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.: 320-21000-1Analy Batch No.: 123741

SDG No.: \_\_\_\_\_

Instrument ID: A8GC Column: AcquityID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 08/22/2016 16:24Calibration End Date: 08/22/2016 18:23Calibration ID: 24558

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
Perfluorododecanoic acid (PFDoA)		AveID	27989		57201		265619	0.500		1.00		5.00
			9919508	1068419	18487887	2663493	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	
Perfluorotridecanoic Acid (PFTriA)		AveID	26974		54948		262523	0.500		1.00		5.00
			10167082	1097864	18092756	2615170	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	
Perfluorotetradecanoic acid (PFTeA)		AveID	25341		47138		217626	0.500		1.00		5.00
			8439988	922649	15654064	2191064	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	
Perfluoro-n-hexadecanoic acid (PFHxDA)		AveID	+++++		90454		326259	+++++		1.00		5.00
			12316500	1238761	22095352	3154285	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	
Perfluoro-n-octadecanoic acid (PFODA)		L1ID	+++++		57967		277255	+++++		1.00		5.00
			11787356	1098298	22519325	2785296	200	20.0	400	50.0		
			LVL 11	LVL 12	LVL 13	LVL 14	LVL 11	LVL 12	LVL 13	LVL 14	LVL 10	

## Curve Type Legend:

AveID = Average isotope dilution
L1ID = Linear 1/conc IsoDil

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_004\_p1\_e1.d  
 Lims ID: IC L1  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 22-Aug-2016 16:24:00 ALS Bottle#: 0 Worklist Smp#: 2  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info:  
 Operator ID: A8 Instrument ID: A8  
 Sublist: chrom-PFC\_A8\_Full\*sub4  
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 24-Aug-2016 08:46:35 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 24-Aug-2016 08:02:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA										
217 > 172.0	1.527	1.522	0.005		6819363	50.3		101	582978	
1 Perfluorobutyric acid										
212.9 > 169.0	1.527	1.524	0.003	1.000	59609	0.5059		101	567	
D 4 13C5-PFPeA										
267.9 > 223.0	1.808	1.797	0.011		5597748	51.9		104	495526	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.808	1.797	0.011	1.000	60050	0.5246		105	1171	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.842	1.837	0.005	1.000	80058	0.4732		107		
298.9 > 99.0	1.842	1.837	0.005	1.000	34143		2.34(0.00-0.00)	107		
D 6 13C2 PFHxA										
315 > 270.0	2.099	2.089	0.010		4903718	50.6		101	260893	
7 Perfluorohexanoic acid										
313 > 269.0	2.099	2.090	0.009	1.000	52922	0.5584		112	2967	
12 Perfluoroheptanoic acid										
363 > 319.0	2.441	2.427	0.014	1.000	58648	0.5730		115	2258	
D 11 13C4-PFHpA										
367 > 322.0	2.441	2.430	0.011		4893456	50.7		101	401779	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.456	2.446	0.010	1.000	71049	0.5858		129		
D 10 18O2 PFHxS										
403 > 84.0	2.456	2.446	0.010		5154474	45.8		96.9	399231	
15 Perfluorooctanoic acid										
413 > 369.0	2.818	2.798	0.020	1.000	76280	0.4644		92.9	381	
413 > 169.0	2.818	2.798	0.020	1.000	38469		1.98(0.90-1.10)	92.9	4683	
D 14 13C4 PFOA										
417 > 372.0	2.818	2.798	0.020		5095403	52.9		106	317072	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.827	2.807	0.020	1.000	47243	0.5031		106		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.201	3.110	0.092	1.000	47343	0.5300		114	7590	
499 > 99.0	3.192	3.110	0.083	0.997	12270		3.86(0.90-1.10)	114	3298	
D 19 13C5 PFNA										
468 > 423.0	3.192	3.177	0.015		4074257	51.2		102	297820	
D 17 13C4 PFOS										
503 > 80.0	3.201	3.177	0.024		3849977	46.9		98.1	247883	
20 Perfluorononanoic acid										
463 > 419.0	3.210	3.183	0.027	1.000	40604	0.4988		99.8	1803	
D 21 13C8 FOSA										
506 > 78.0	3.480	3.474	0.006		7475619	49.9		99.7	405641	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.480	3.475	0.005	1.000	75474	0.5484		110	5552	
24 Perfluorodecanoic acid										
513 > 469.0	3.560	3.546	0.014	1.000	37498	0.5022		100	3205	
D 23 13C2 PFDA										
515 > 470.0	3.560	3.546	0.014		3795163	52.2		104	681576	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.878	3.863	0.015	1.000	23143	0.4688		97.3		
D 27 13C2 PFUnA										
565 > 520.0	3.896	3.883	0.013		3001492	53.9		108	338255	
28 Perfluoroundecanoic acid										
563 > 519.0	3.896	3.880	0.016	1.000	36538	0.5616		112	1918	
D 30 13C2 PFDaA										
615 > 570.0	4.202	4.183	0.019		2648230	49.8		99.6	341859	
29 Perfluorododecanoic acid										
613 > 569.0	4.212	4.185	0.027	1.000	27989	0.5334		107	1855	
31 Perfluorotridecanoic acid										
633 > 619.0	4.482	4.452	0.030	1.000	26974	0.5198		104	304	
D 32 13C2-PFTeDA										
715 > 670.0	4.723	4.697	0.026		2369944	50.2		100	859601	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.723	4.701	0.022	1.000	25341	0.5695		114	241	
713 > 169.0	4.723	4.701	0.022	1.000	8897		2.85(0.00-0.00)	114	1890	
D 34 13C2-PFHxDA										
815 > 770.0	5.155	5.125	0.030		2924589	44.4		88.8	392815	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.162	5.127	0.035	1.000	54346	0.8273		165	485	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.545	5.509	0.036	1.000	17636	0.6641		133	195	

Reagents:

LCPFC-L1\_00021

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_004\_p1\_e1.d

Injection Date: 22-Aug-2016 16:24:00

Instrument ID: A8

Lims ID: IC L1

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

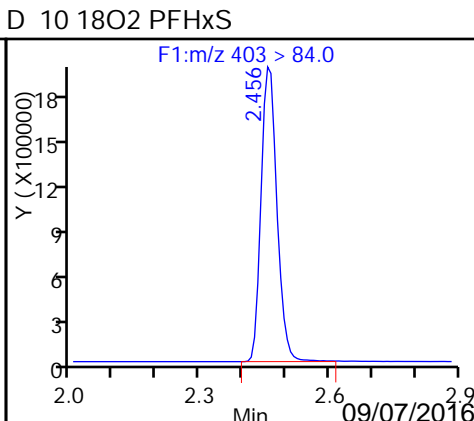
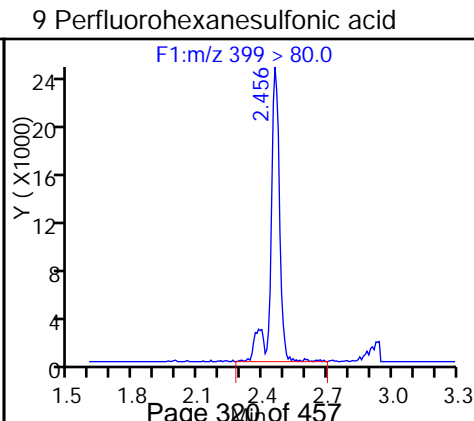
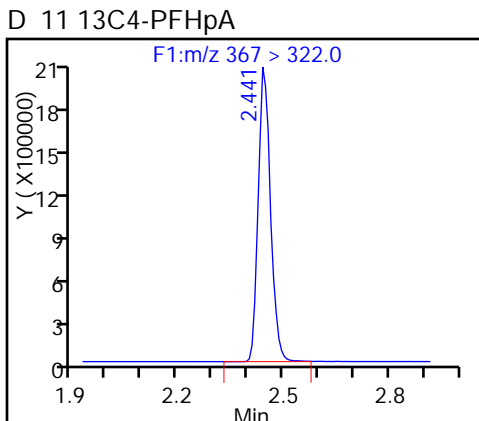
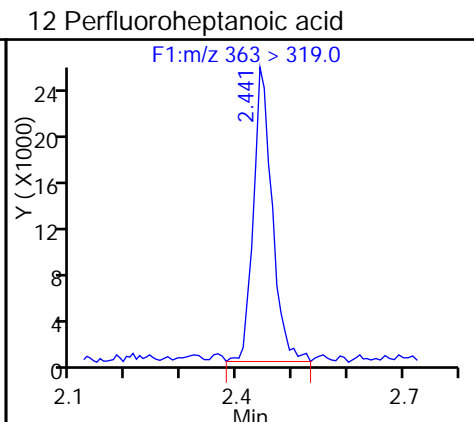
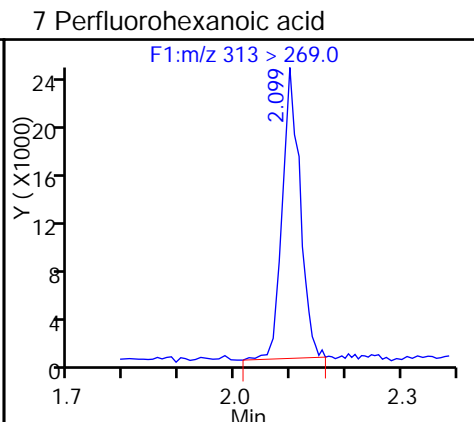
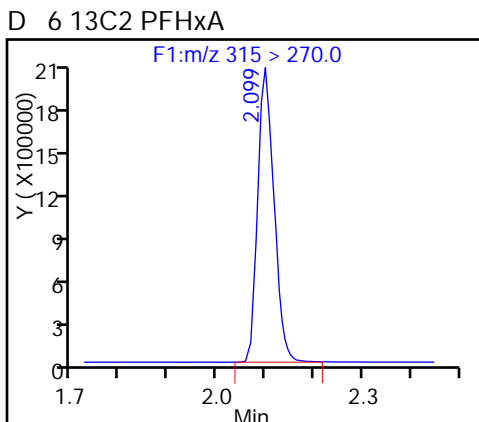
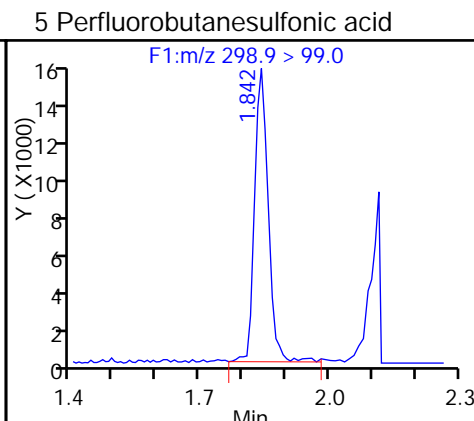
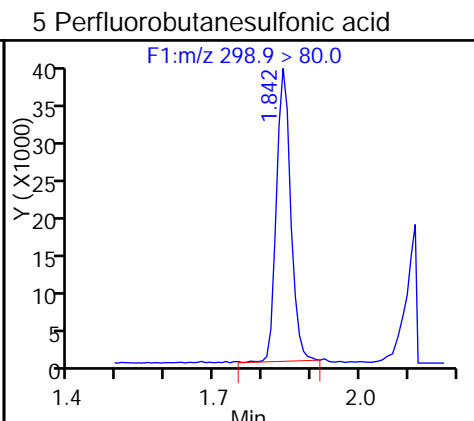
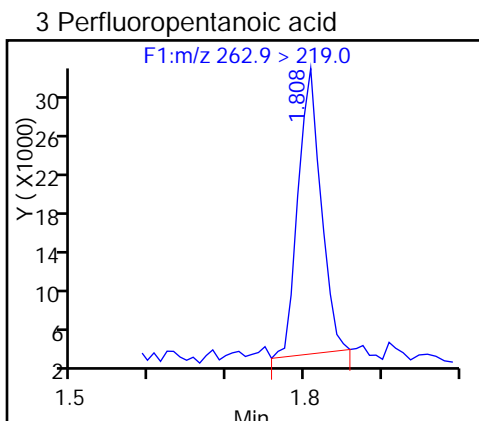
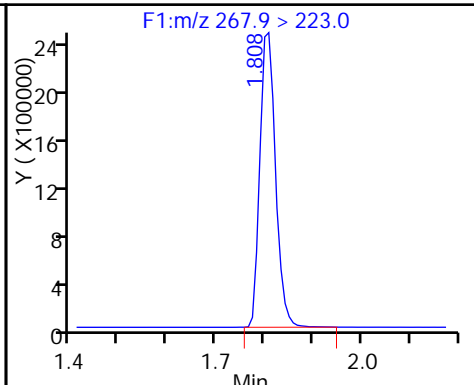
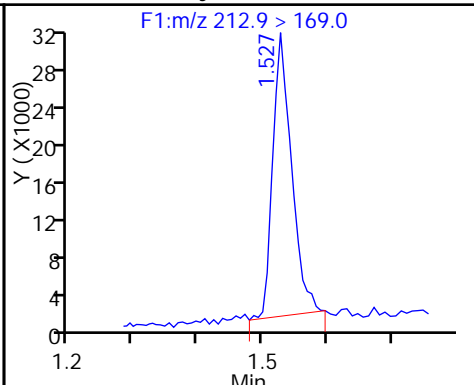
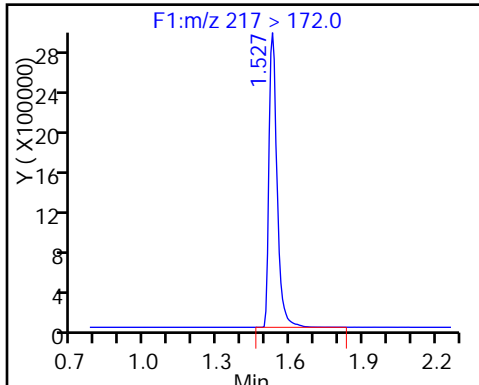
Method: PFC\_A8\_Full

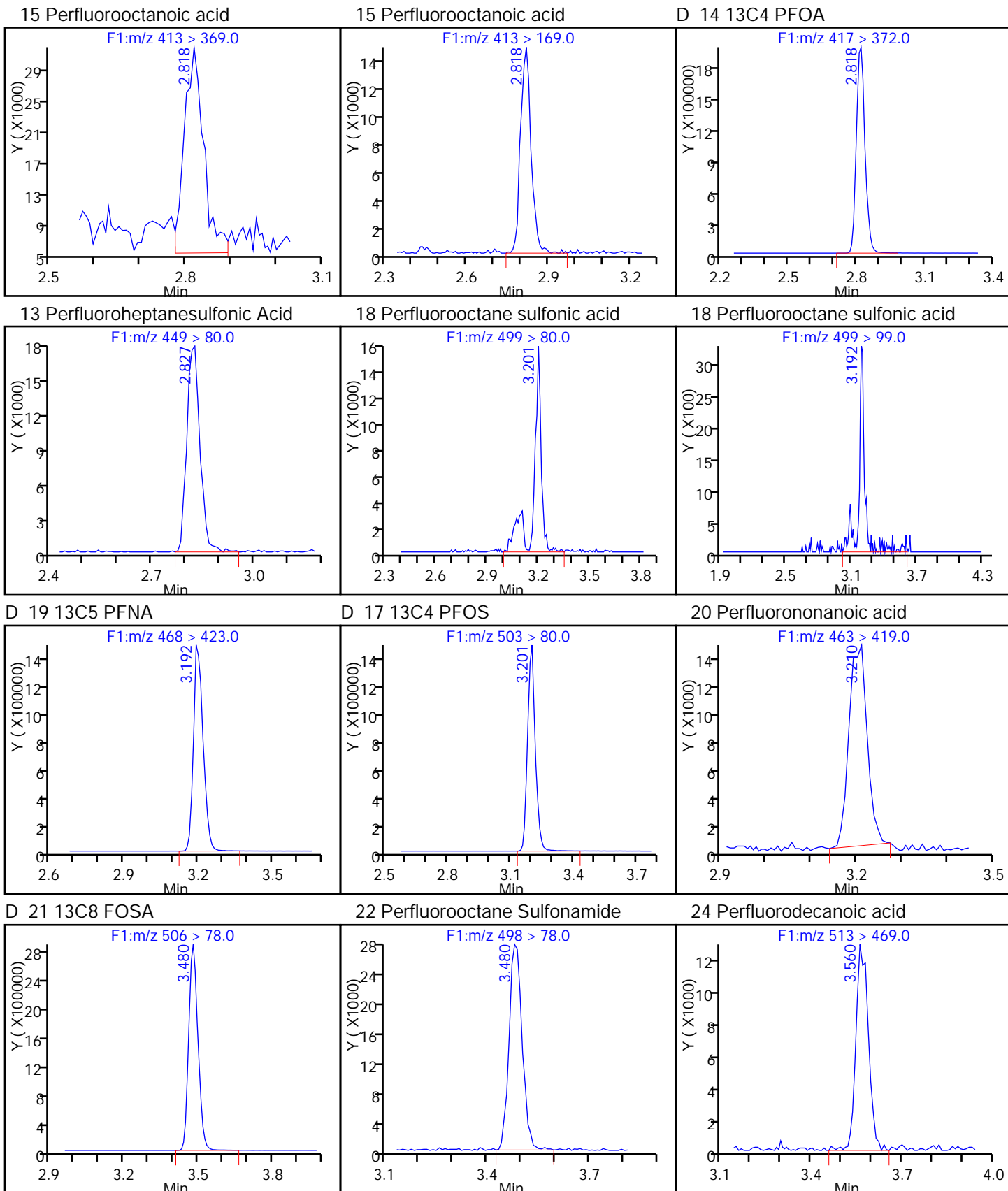
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

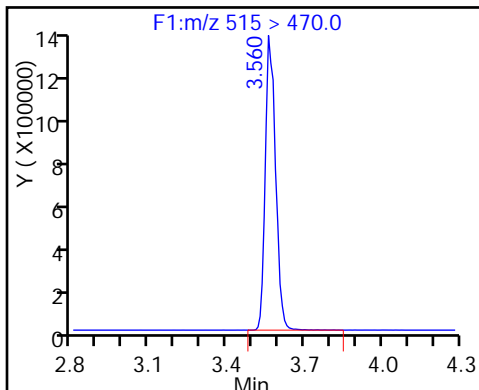
1 Perfluorobutyric acid

D 4 13C5-PFPeA

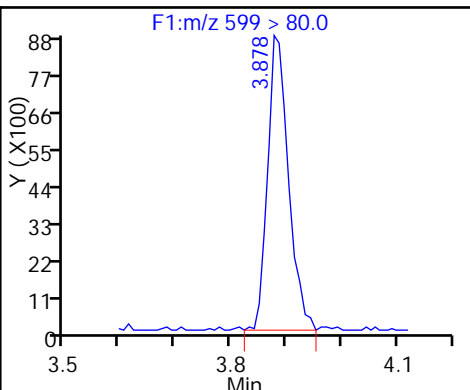




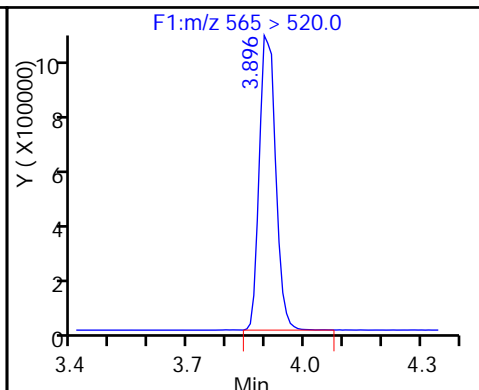
D 23 13C2 PFDA



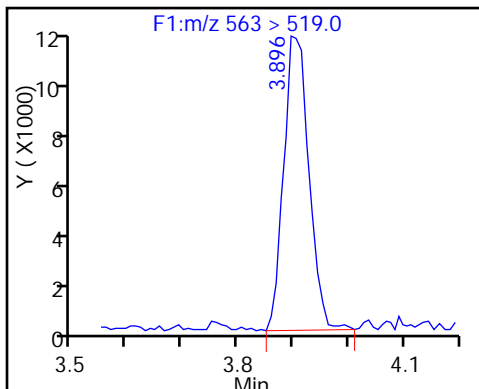
26 Perfluorodecane Sulfonic acid



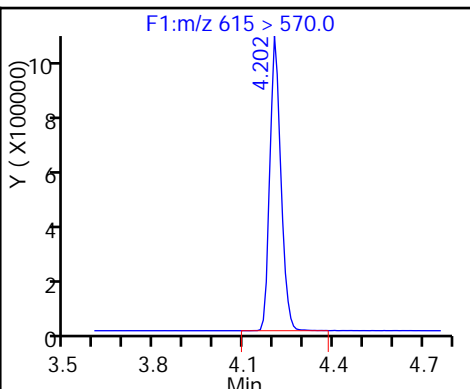
D 27 13C2 PFUnA



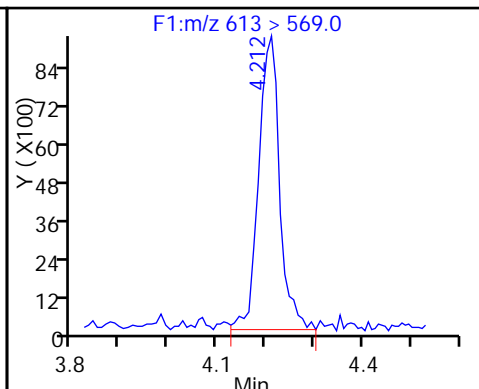
28 Perfluoroundecanoic acid



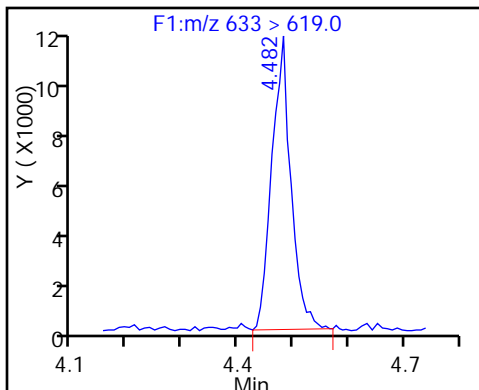
D 30 13C2 PFDaA



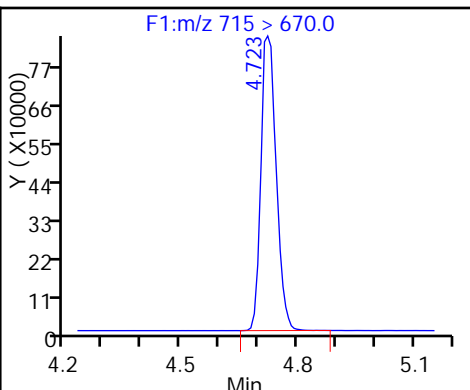
29 Perfluorododecanoic acid



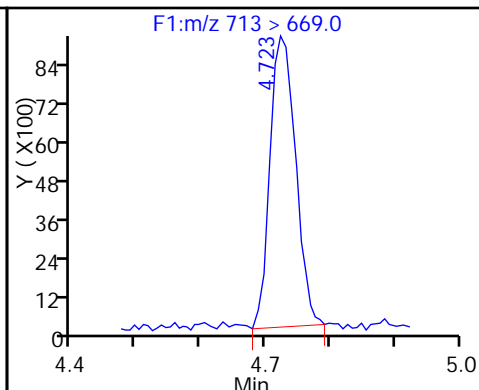
31 Perfluorotridecanoic acid



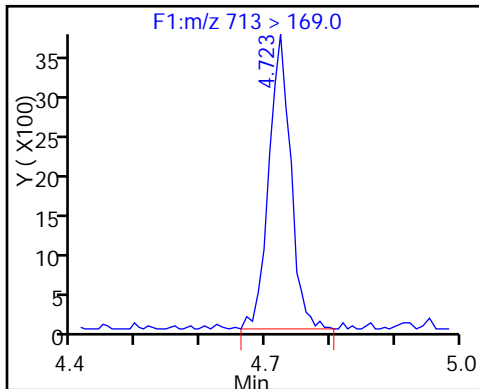
D 32 13C2-PFTeDA



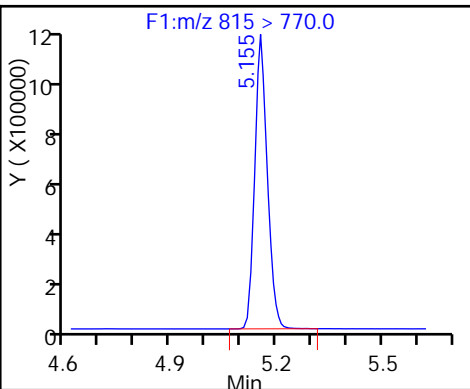
33 Perfluorotetradecanoic acid



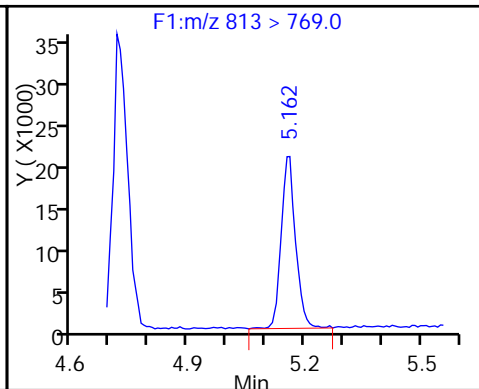
33 Perfluorotetradecanoic acid



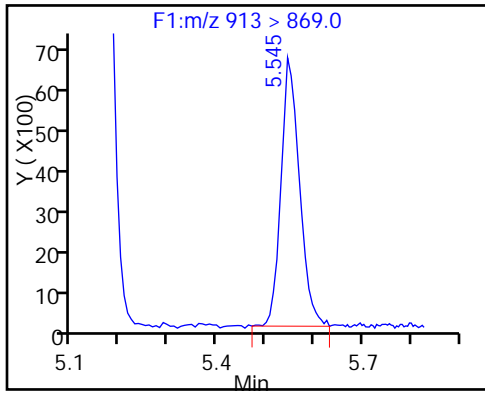
D 34 13C2-PFHxDA



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

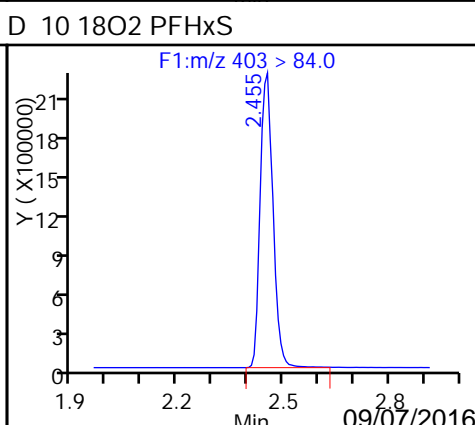
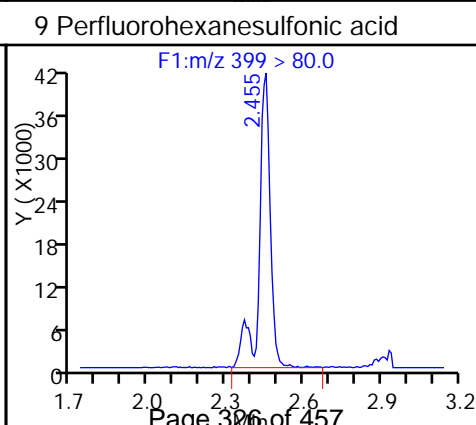
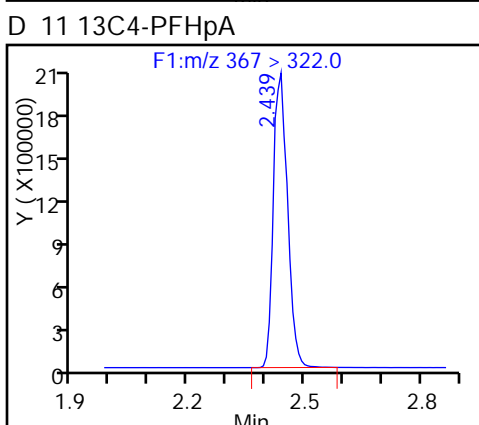
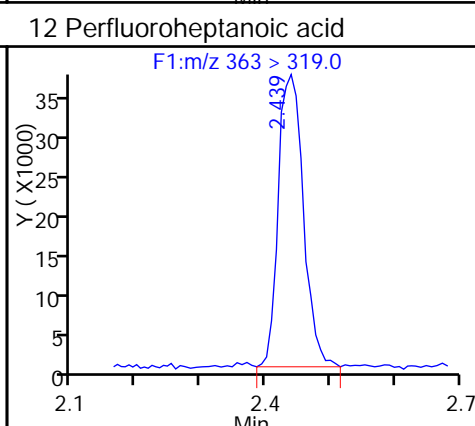
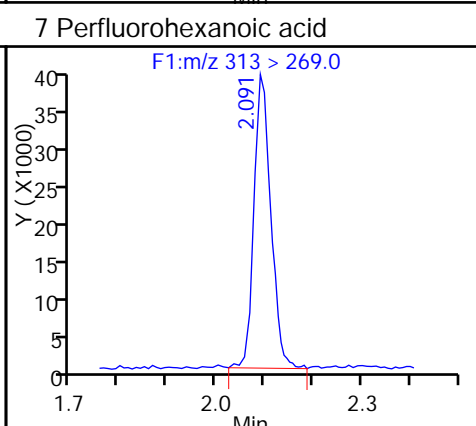
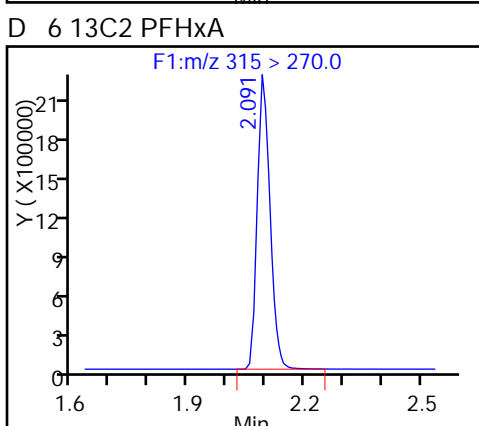
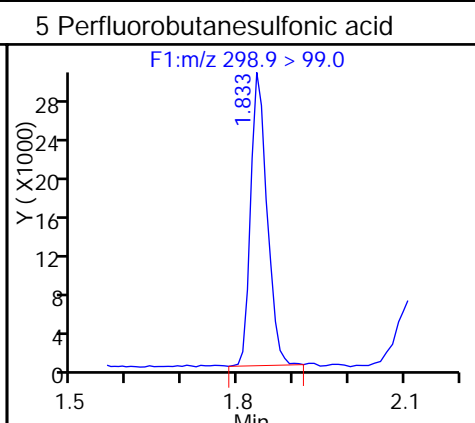
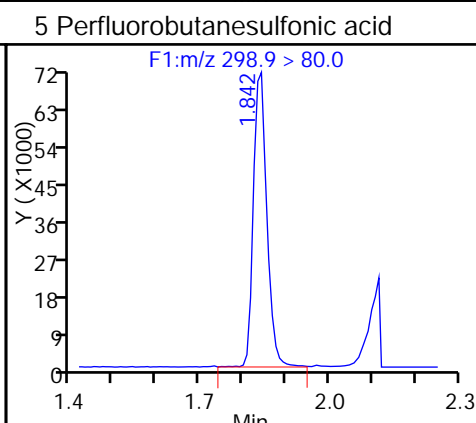
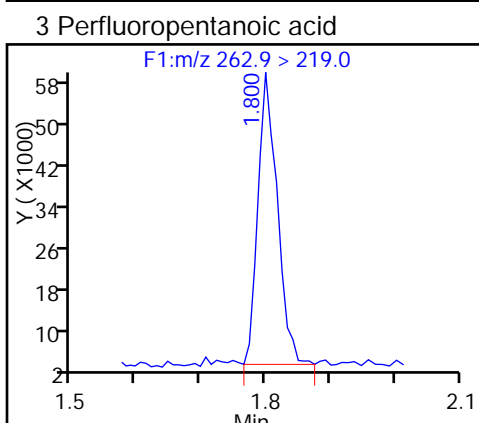
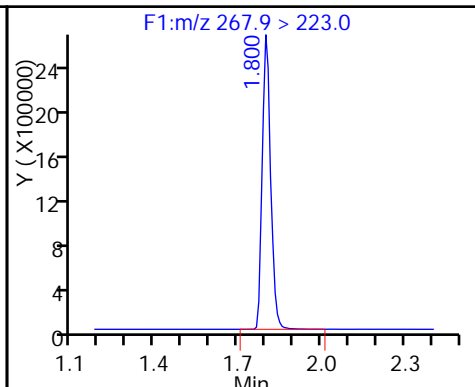
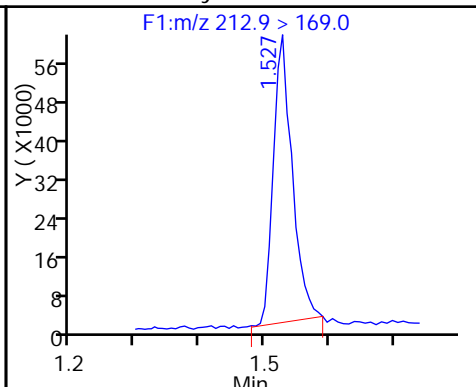
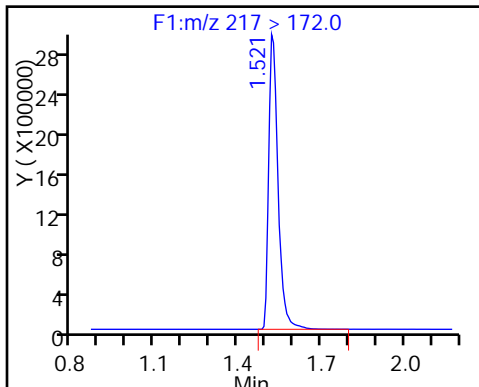
Method: PFC\_A8\_Full

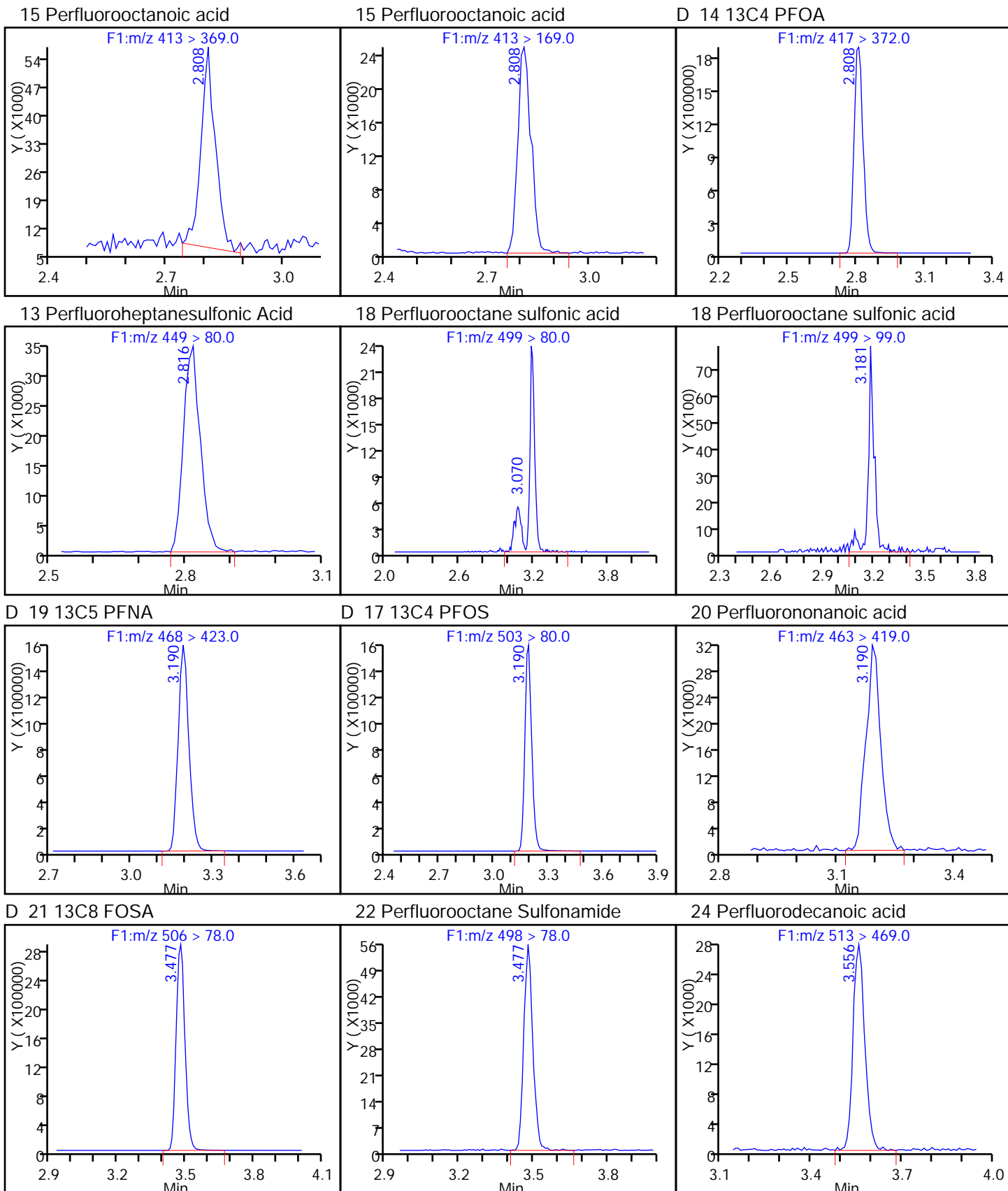
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

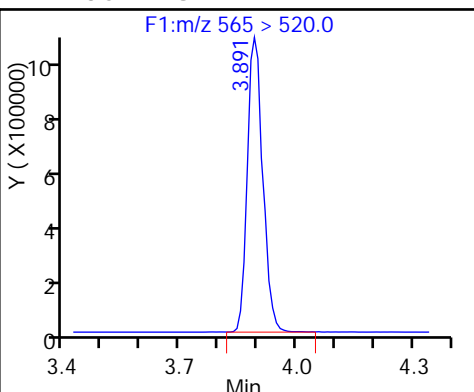
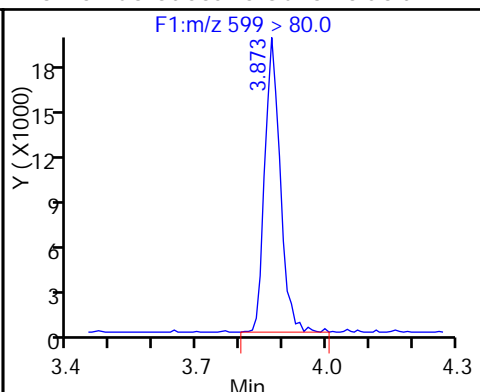
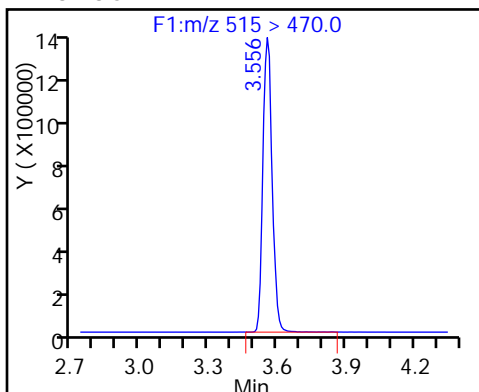




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

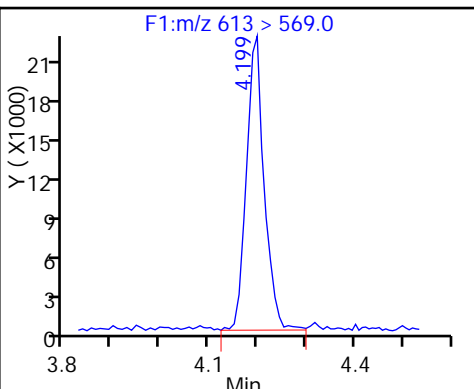
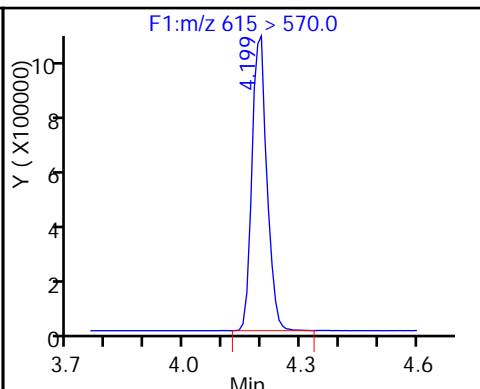
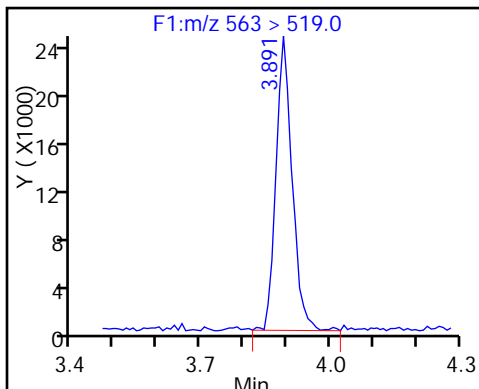
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

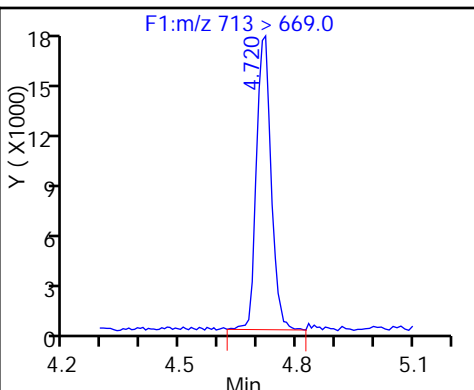
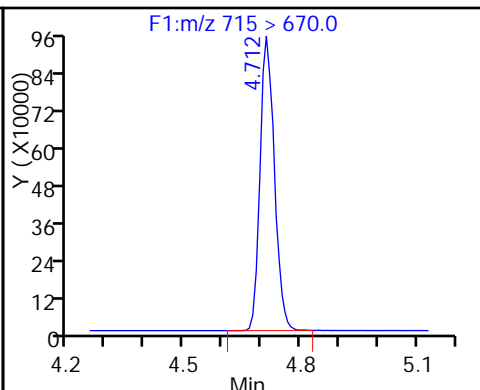
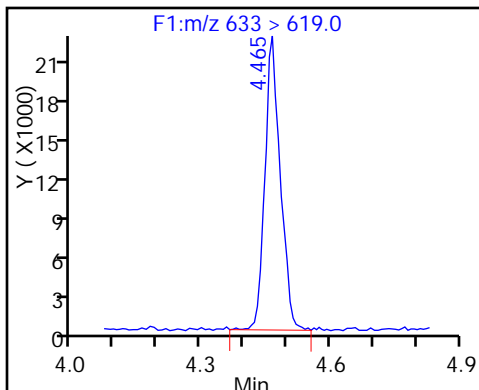
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

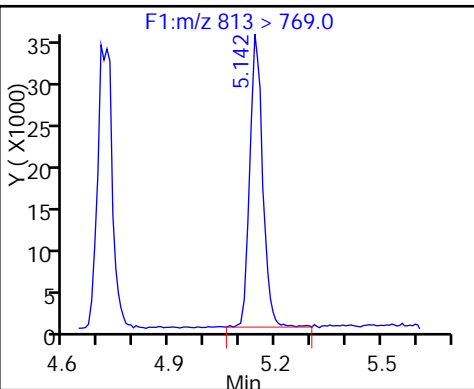
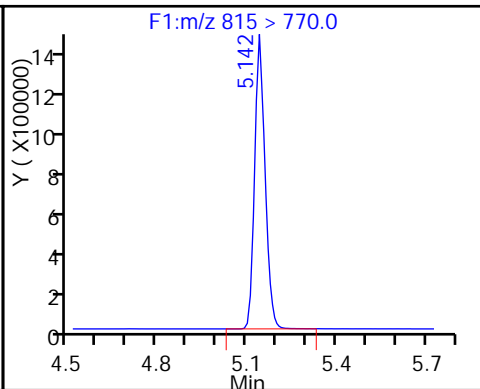
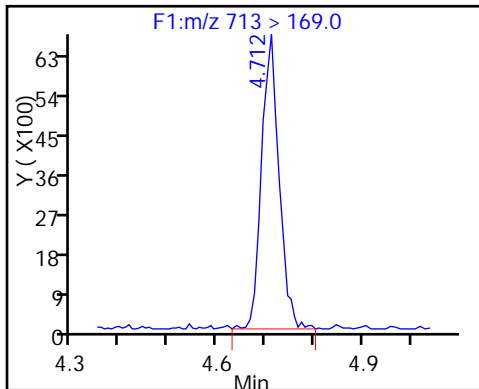
33 Perfluorotetradecanoic acid



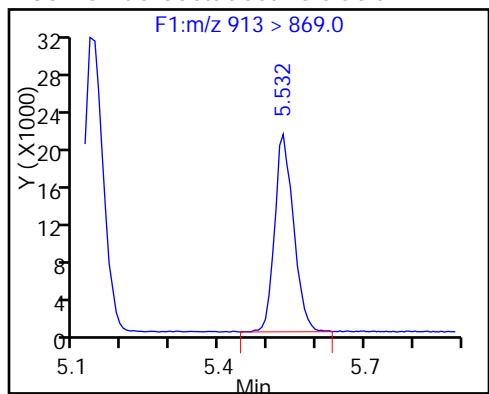
33 Perfluorotetradecanoic acid

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
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.807	2.807	0.0	1.000	485823	4.99		105		
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	
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	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.478	3.475	0.003	1.000	701587	4.83		96.5	52629	
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	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.864	3.863	0.001	1.000	240619	4.70		97.6		
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	
29 Perfluorododecanoic acid										
613 > 569.0	4.187	4.185	0.002	1.000	265619	4.98		99.5	14463	
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	
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	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.127	5.127	0.0	1.000	326259	4.88		97.6	2931	
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

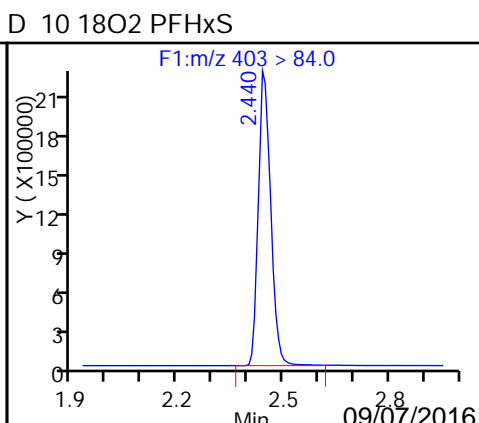
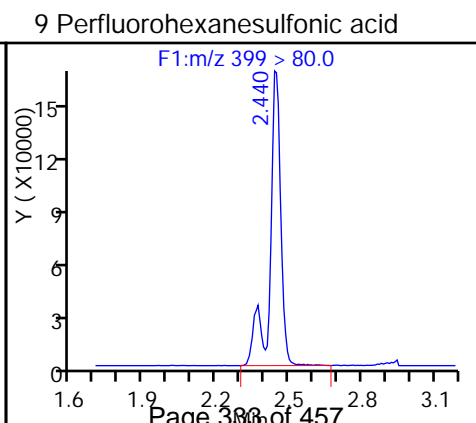
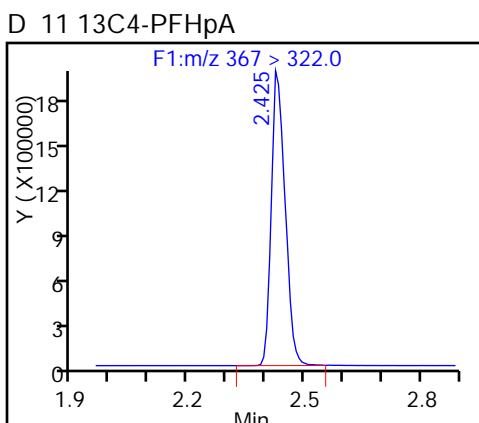
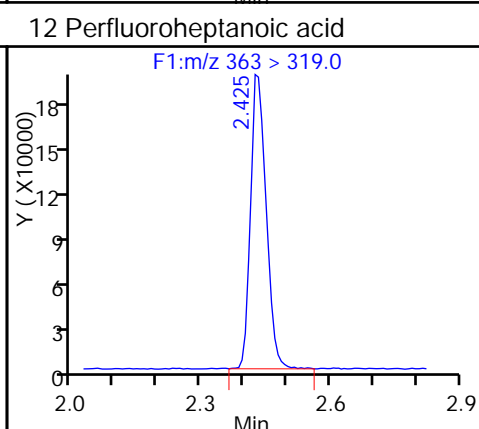
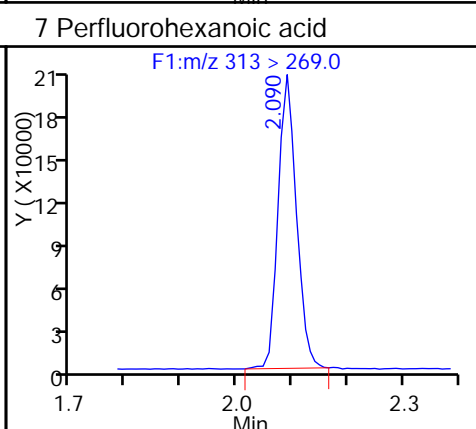
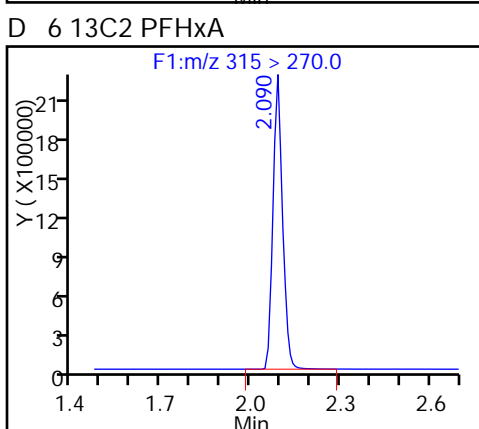
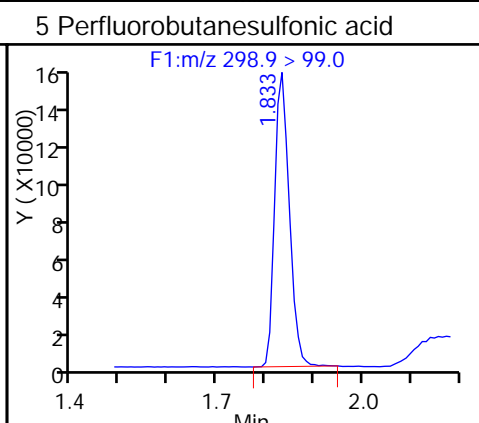
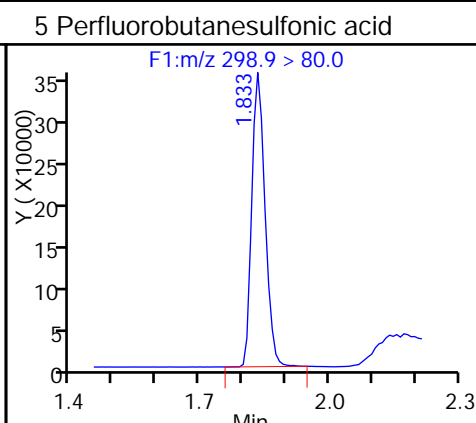
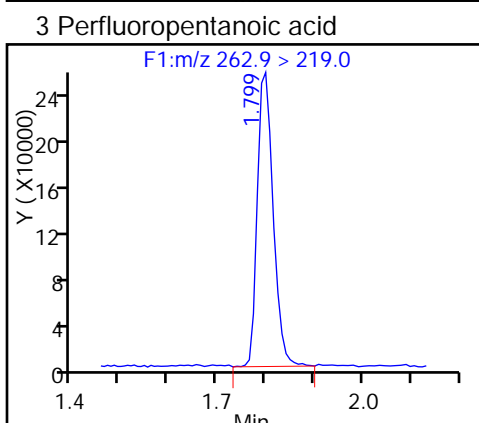
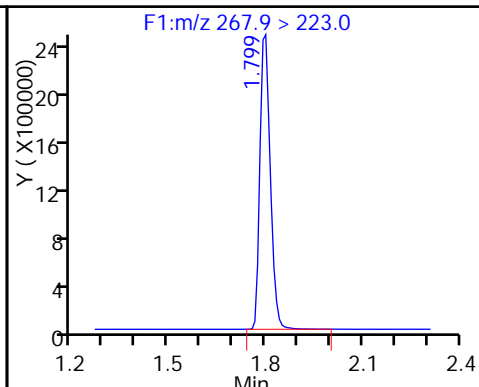
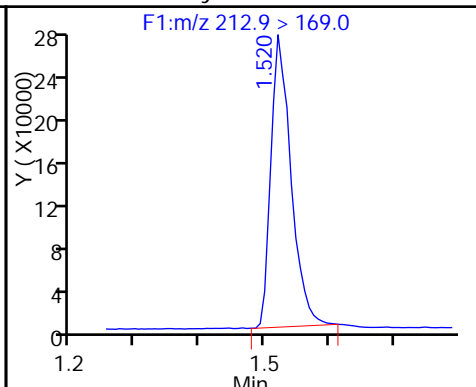
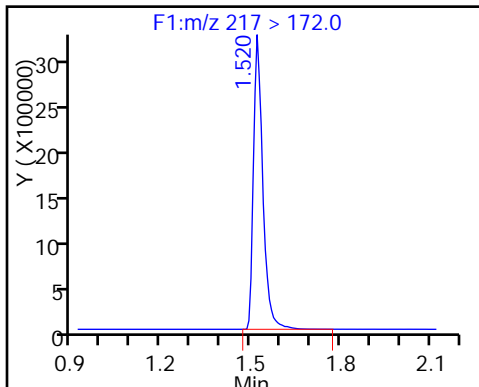
Method: PFC\_A8\_Full

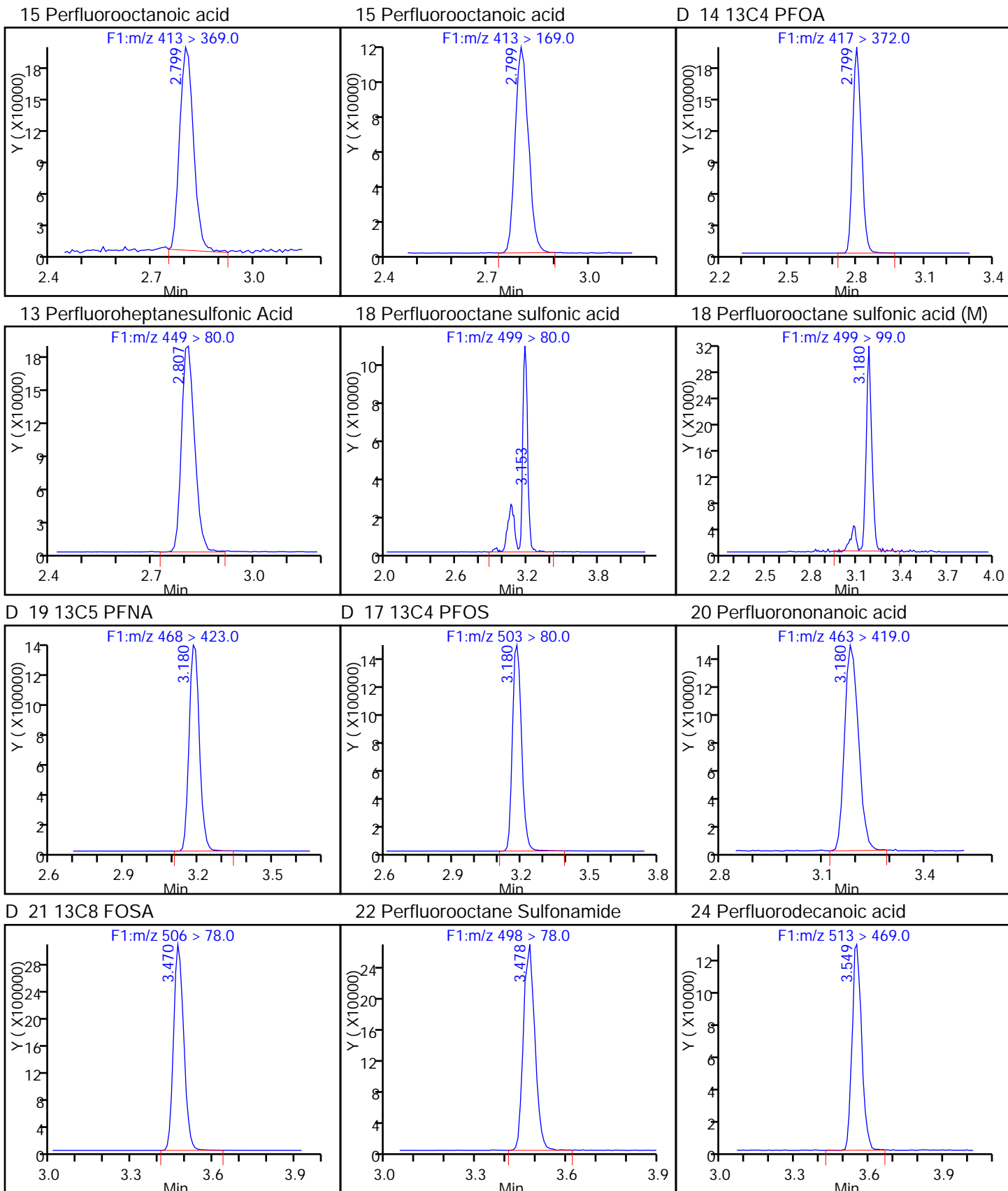
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

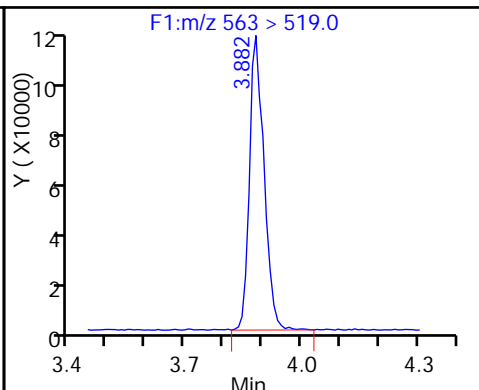
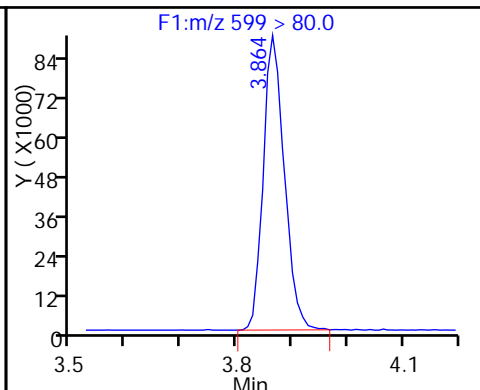
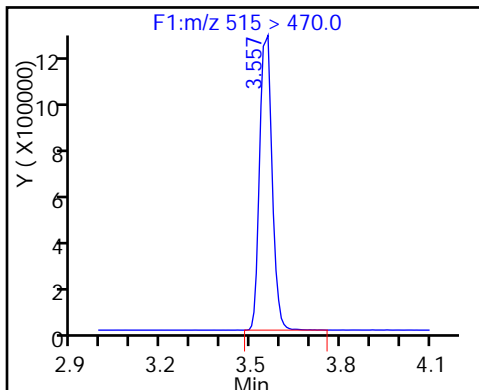




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

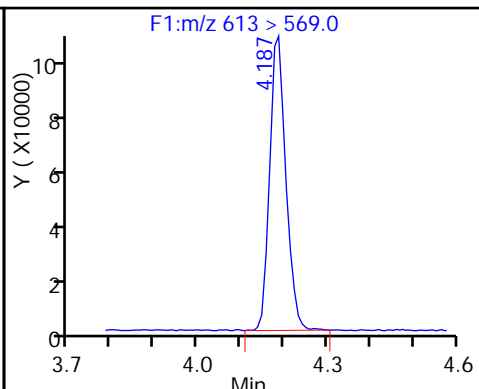
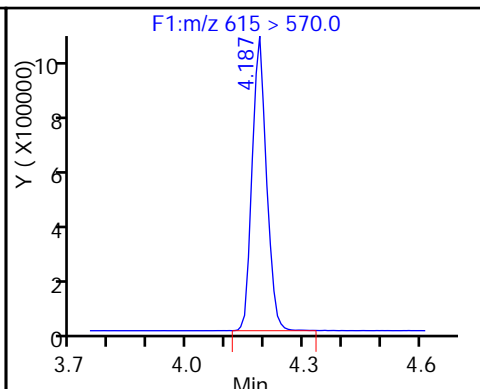
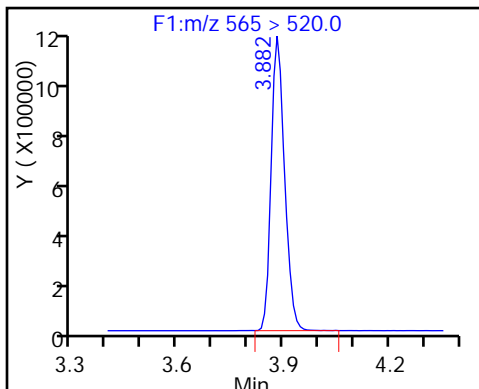
28 Perfluoroundecanoic acid



D 27 13C2 PFUnA

D 30 13C2 PFDaA

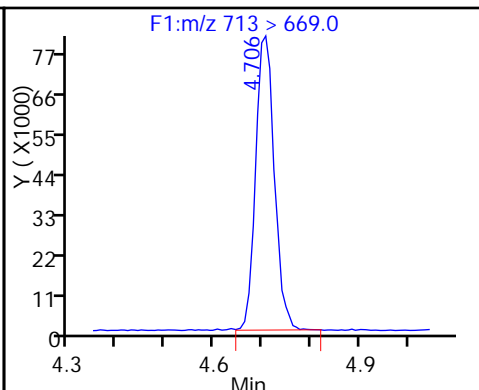
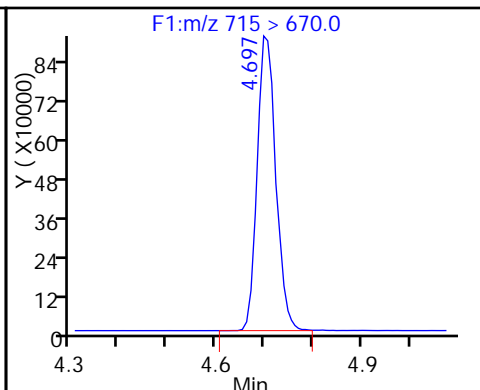
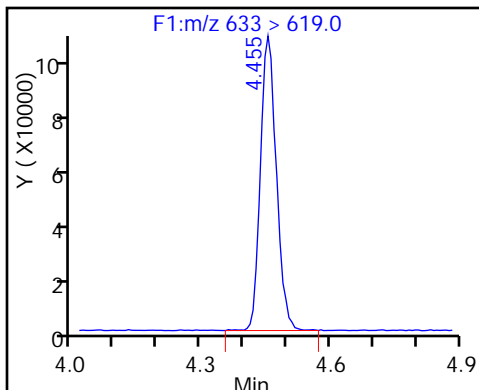
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

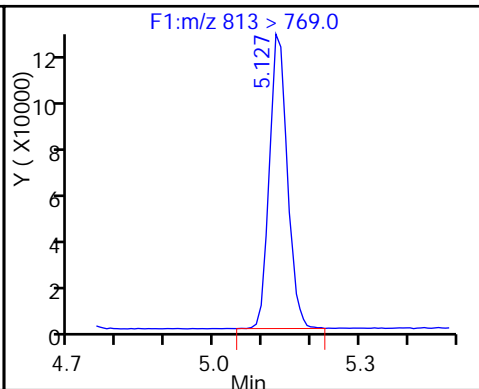
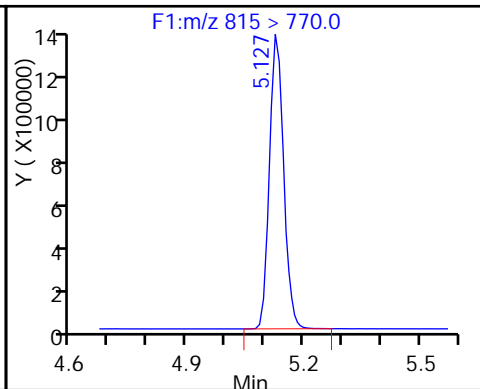
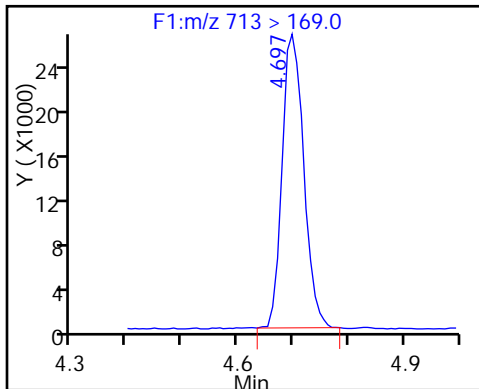
33 Perfluorotetradecanoic acid



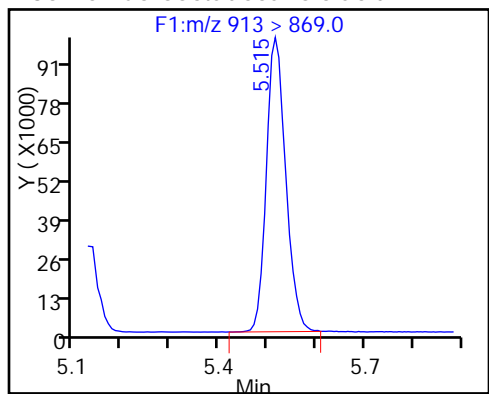
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

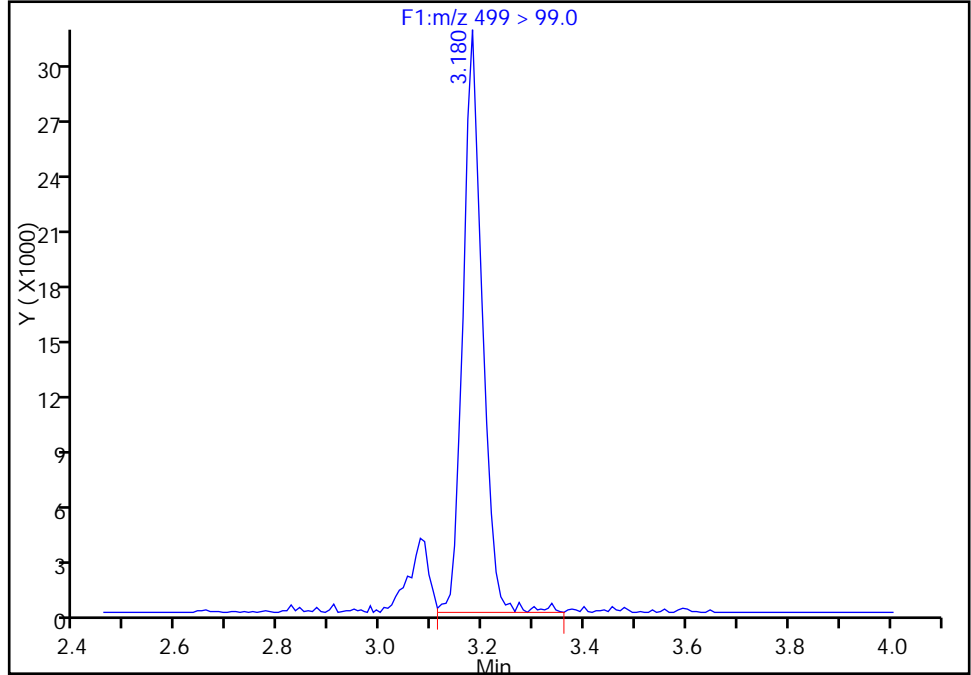
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Injection Date: 22-Aug-2016 16:38:00 Instrument ID: A8  
Lims ID: IC L3  
Client ID:  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

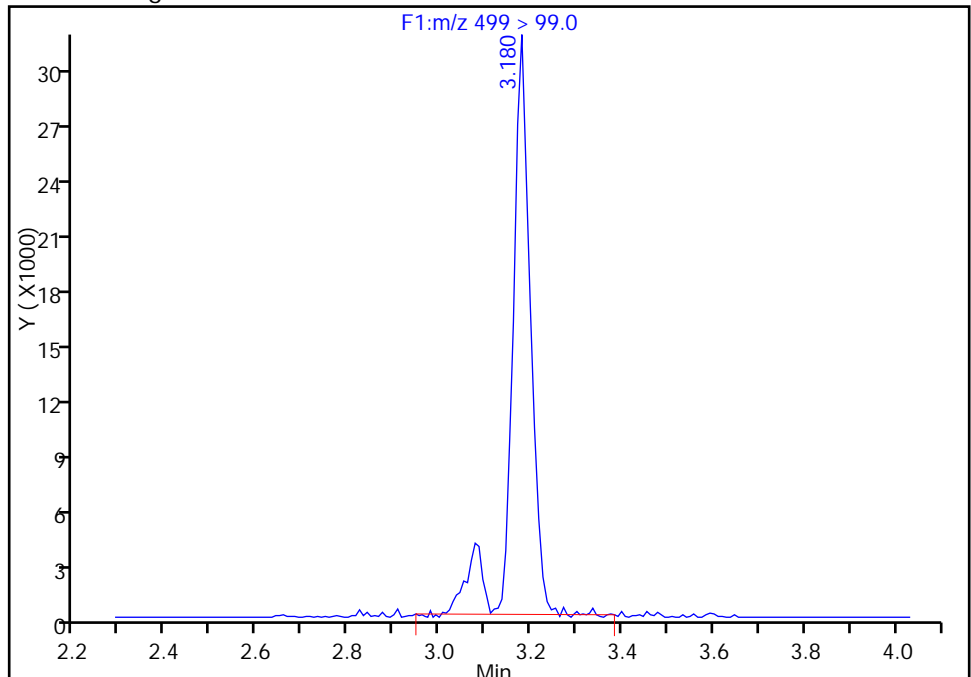
RT: 3.18  
Area: 84307  
Amount: 4.526361  
Amount Units: ng/ml

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

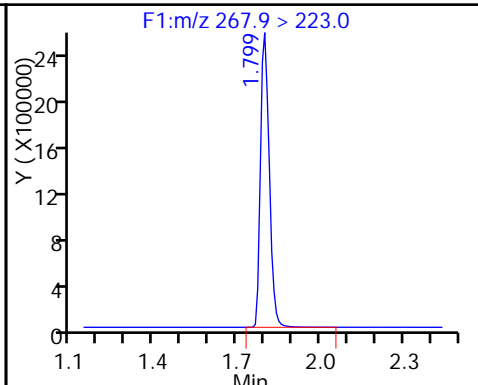
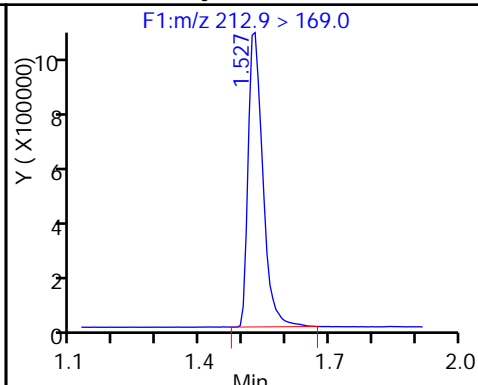
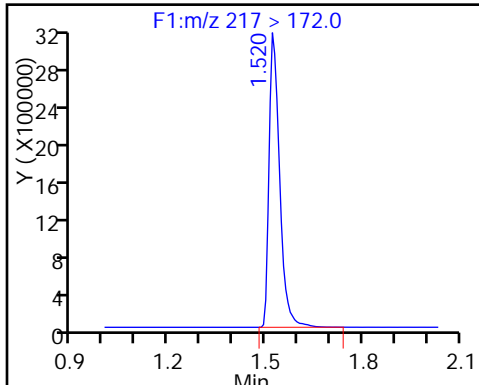
Amount Added: 1.00

Units: mL

D 2 13C4 PFBA

1 Perfluorobutyric acid

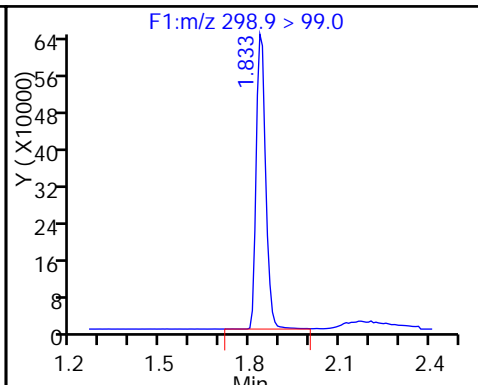
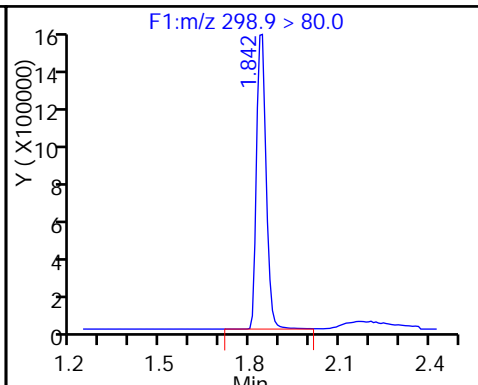
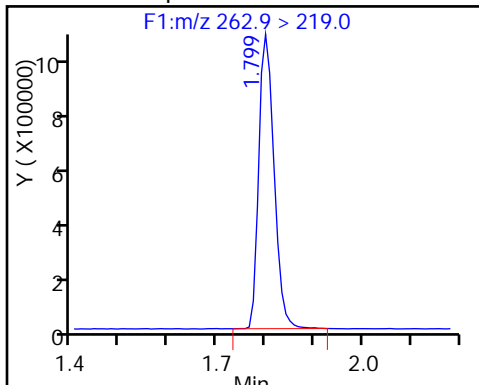
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

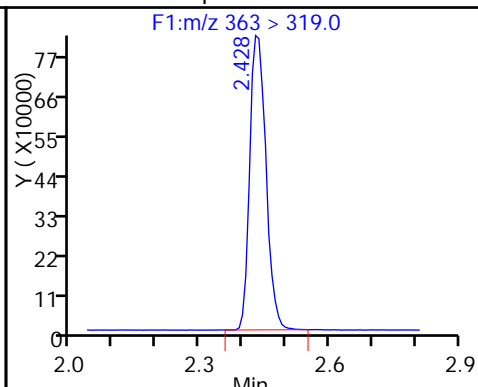
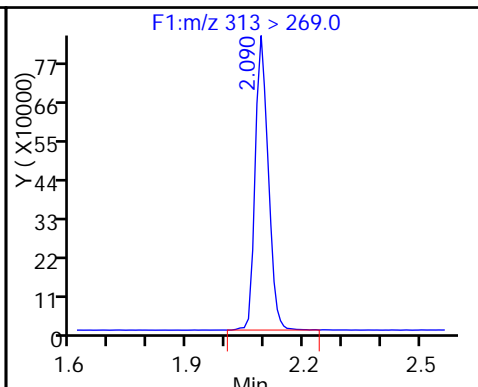
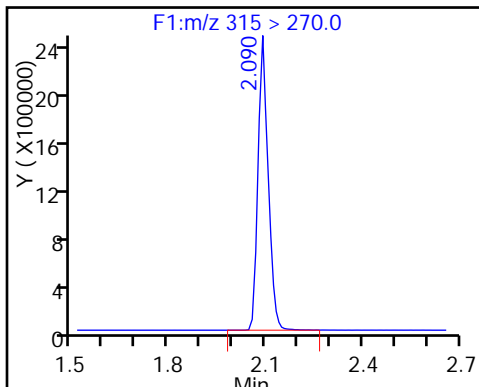
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

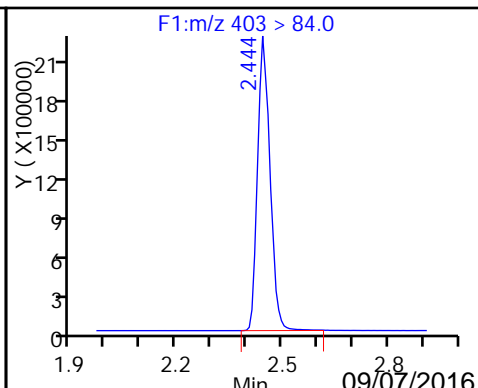
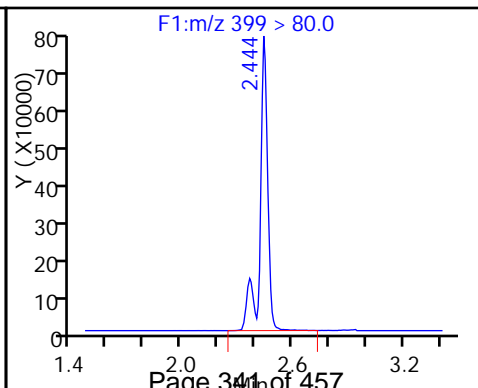
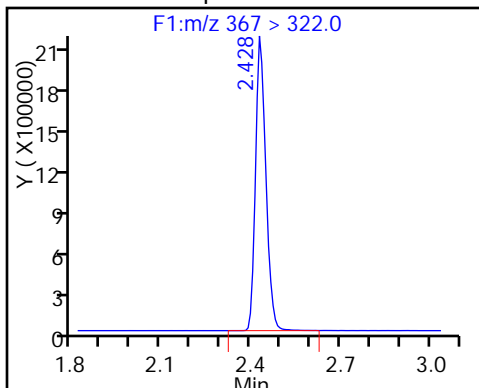
12 Perfluoroheptanoic acid

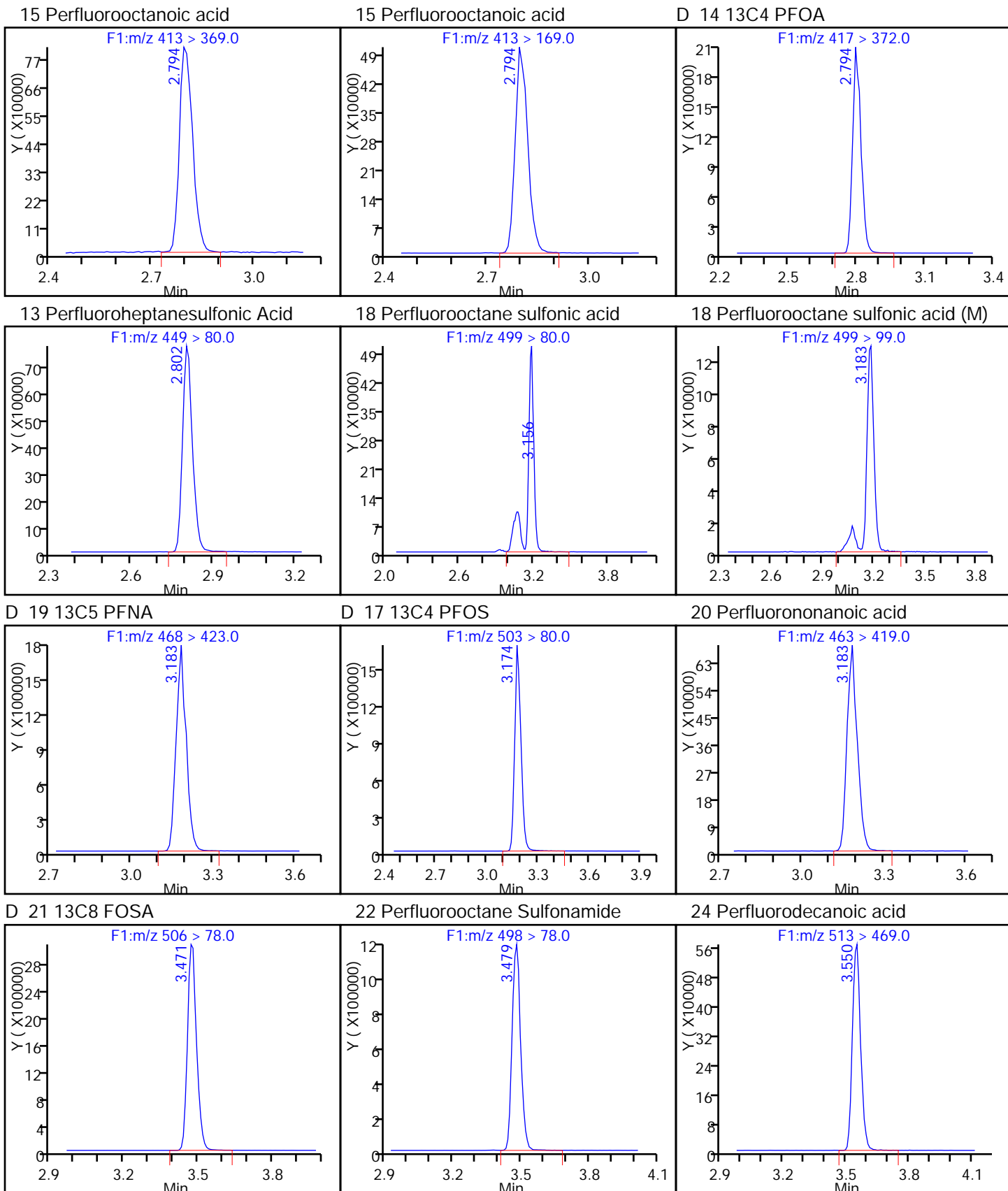


D 11 13C4-PFHpA

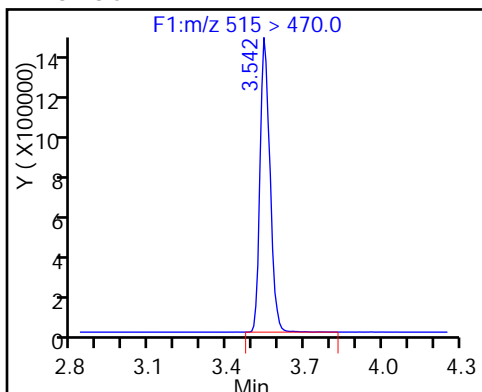
9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

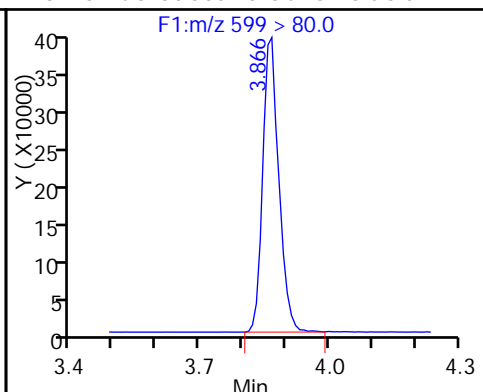




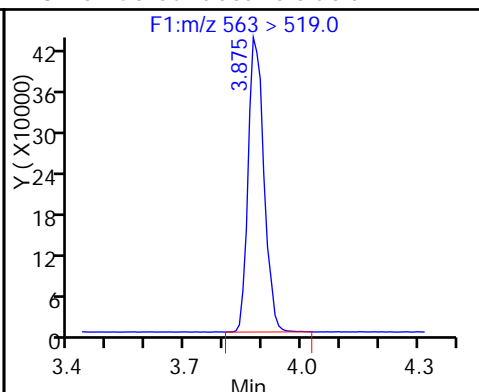
D 23 13C2 PFDA



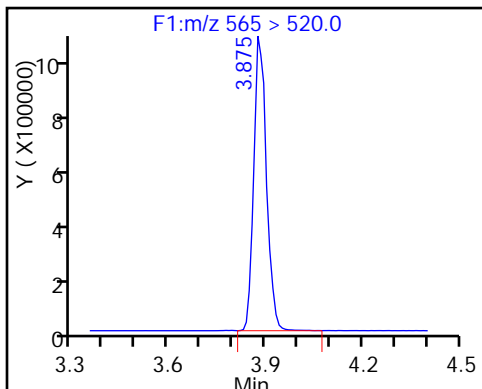
26 Perfluorodecane Sulfonic acid



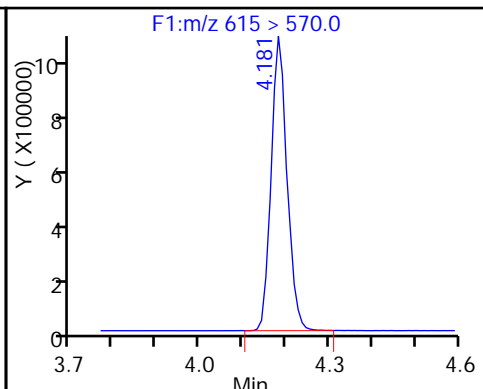
28 Perfluoroundecanoic acid



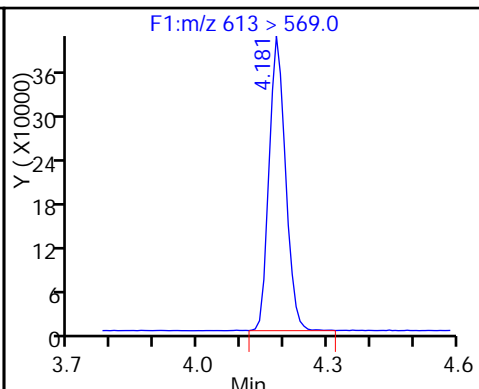
D 27 13C2 PFUa



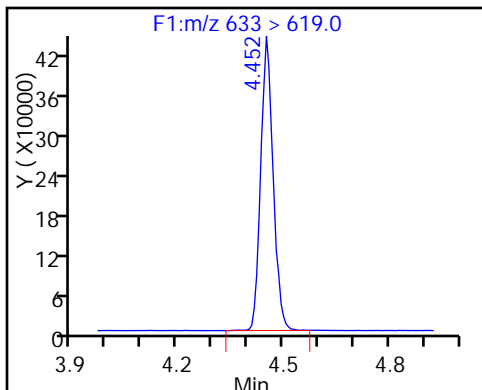
D 30 13C2 PFDa



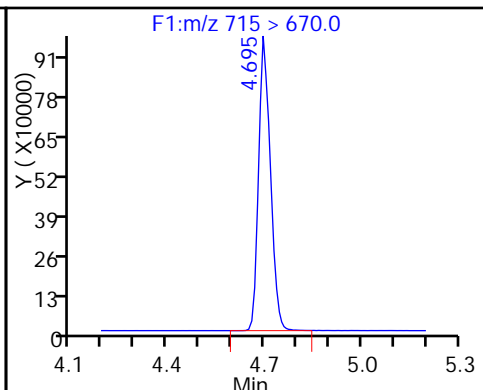
29 Perfluorododecanoic acid



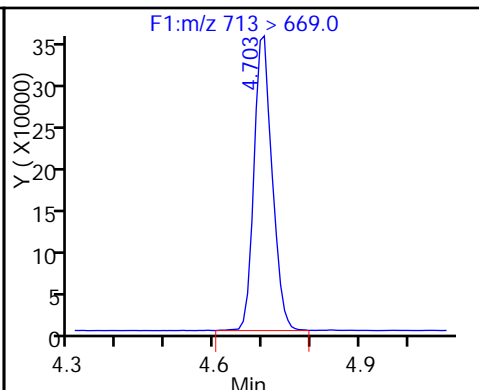
31 Perfluorotridecanoic acid



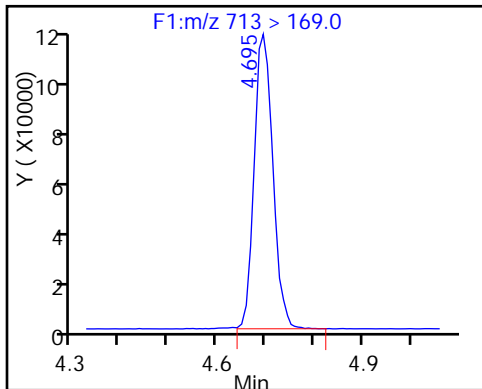
D 32 13C2-PFTeDA



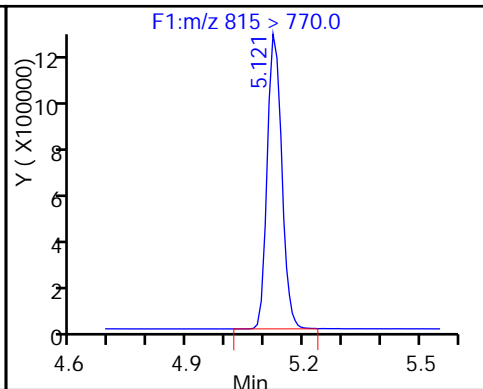
33 Perfluorotetradecanoic acid



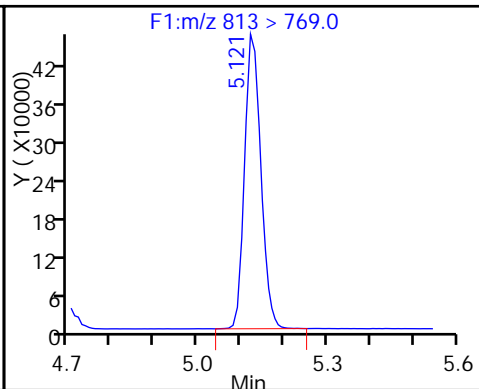
33 Perfluorotetradecanoic acid



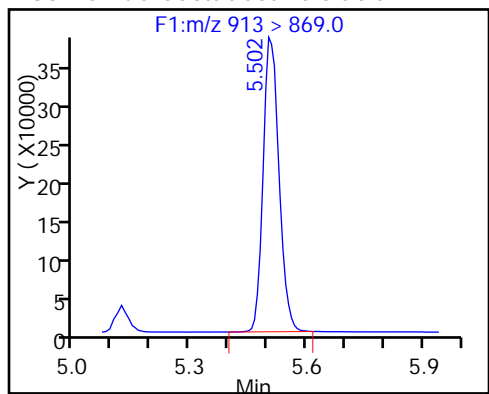
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

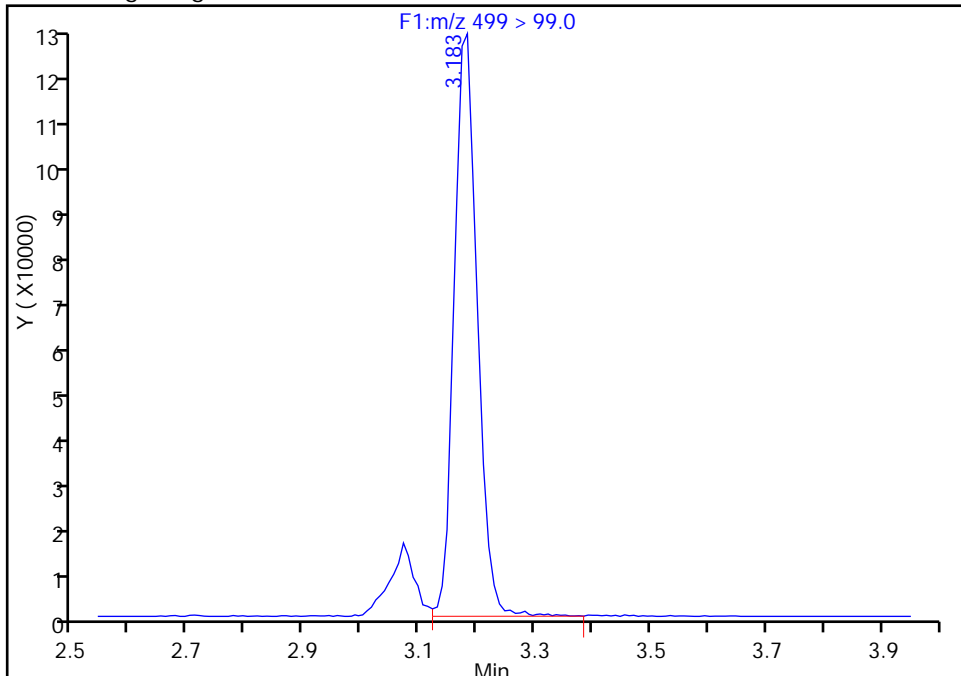
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Injection Date: 22-Aug-2016 16:46:00 Instrument ID: A8  
Lims ID: IC L4  
Client ID:  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 5  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

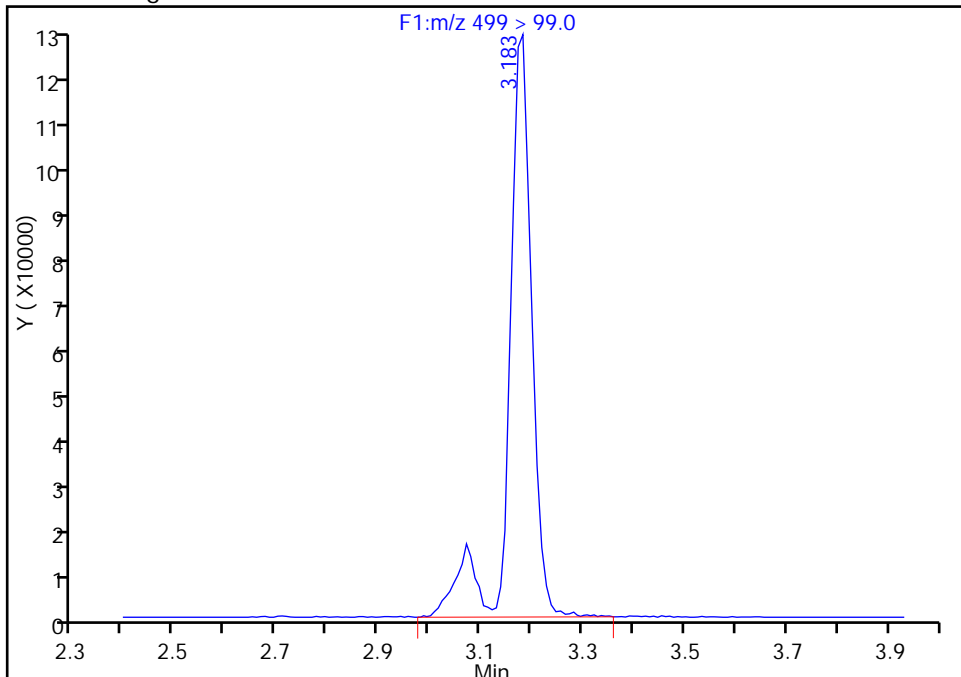
RT: 3.18  
Area: 343079  
Amount: 18.480583  
Amount Units: ng/ml

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
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

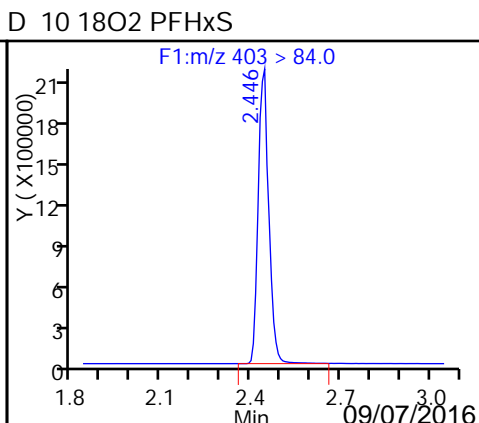
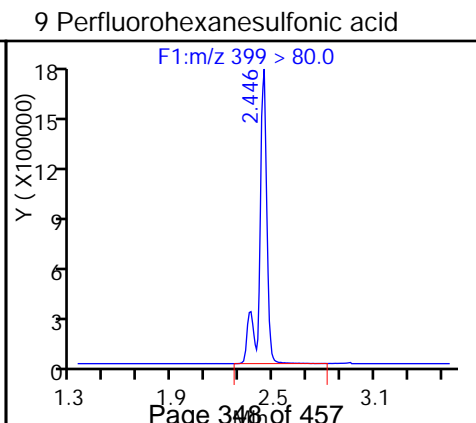
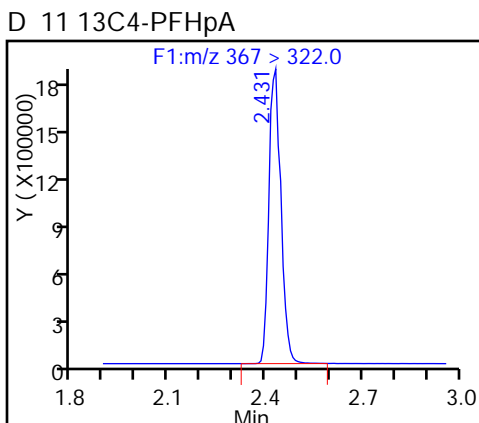
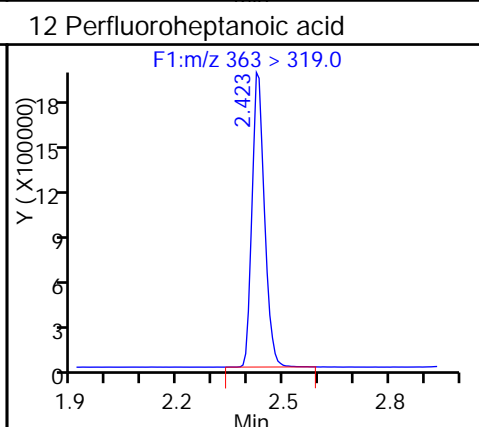
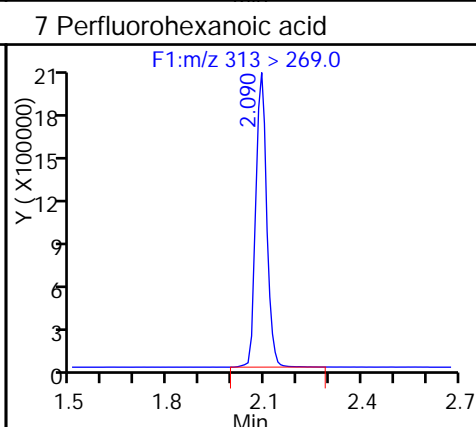
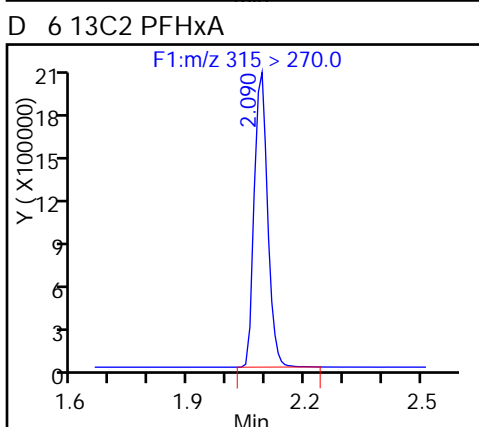
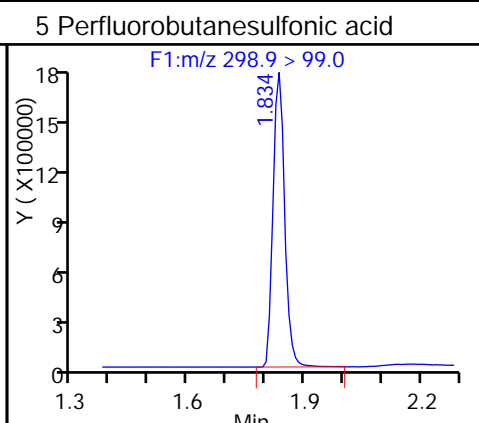
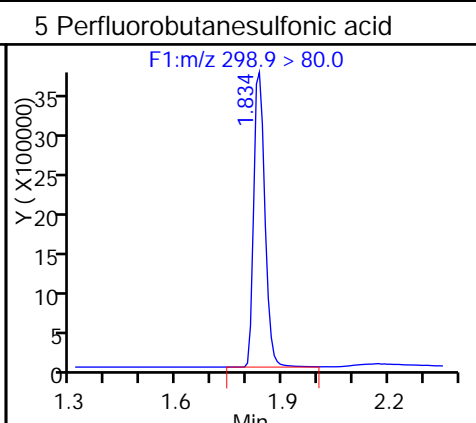
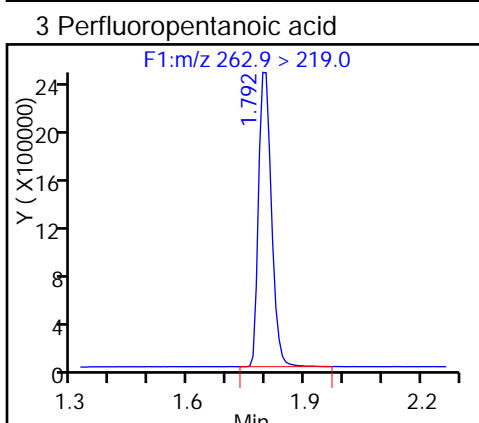
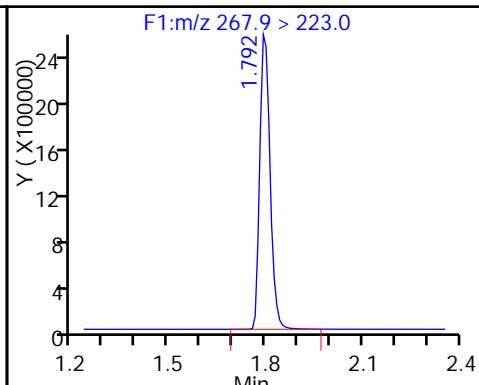
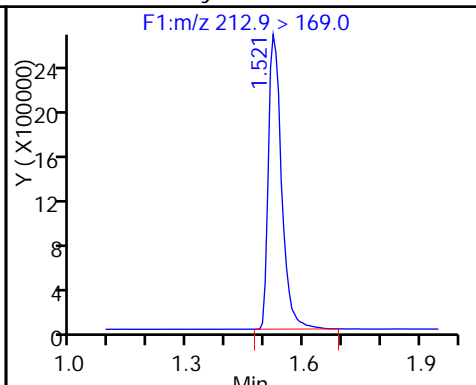
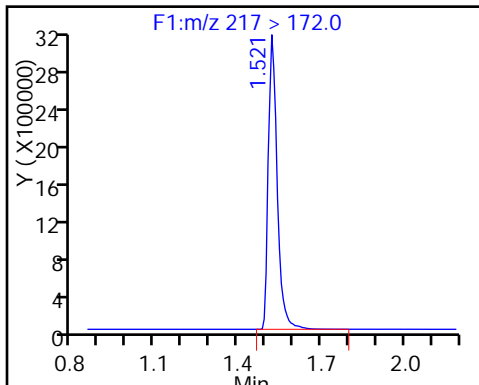
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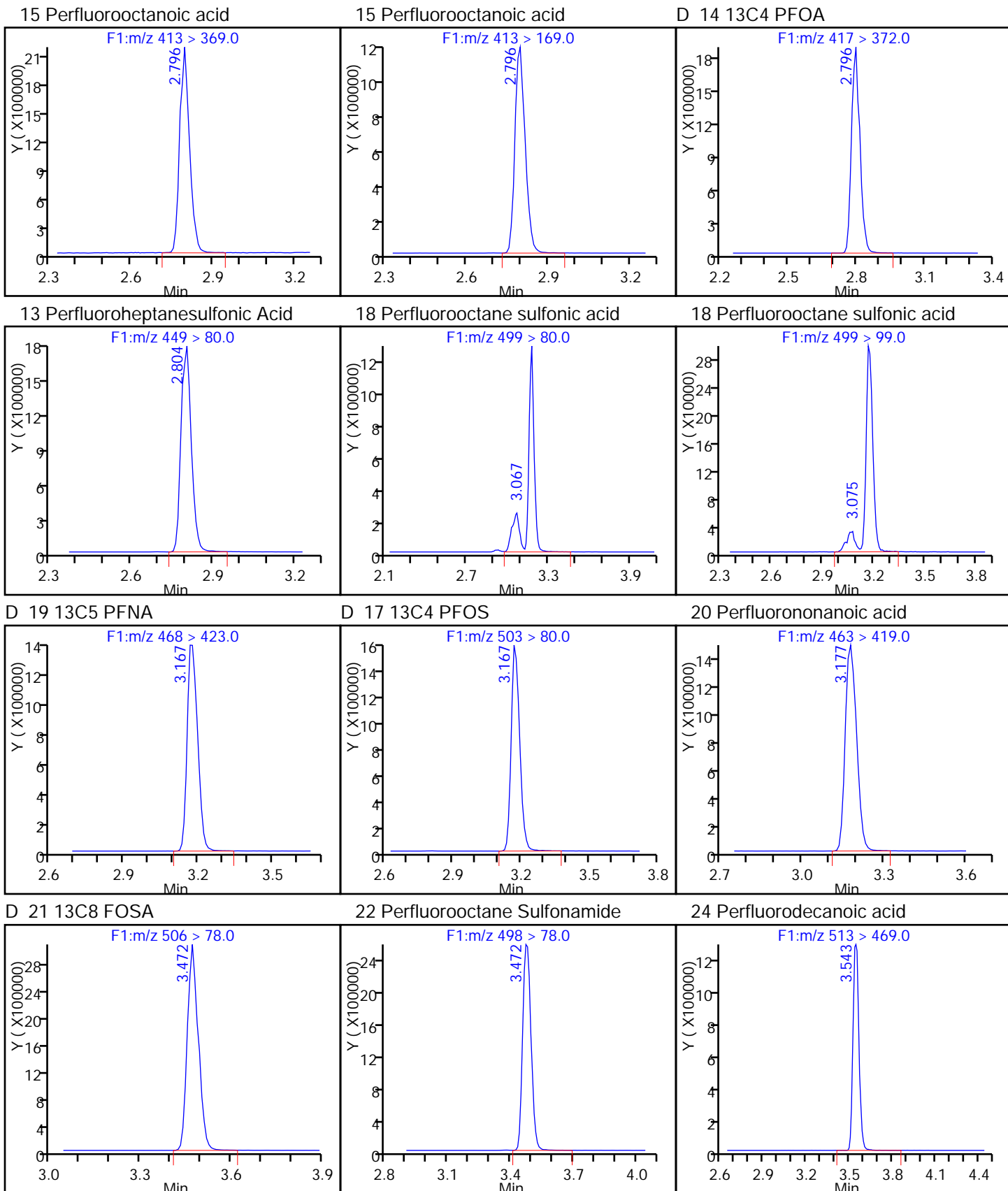


D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

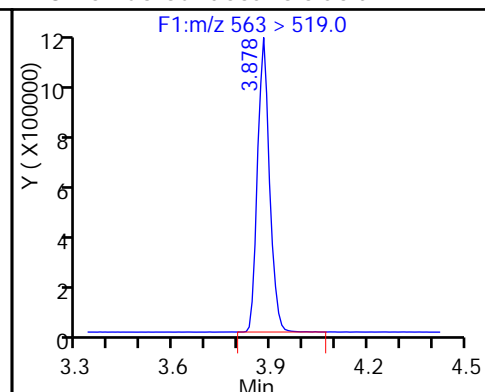
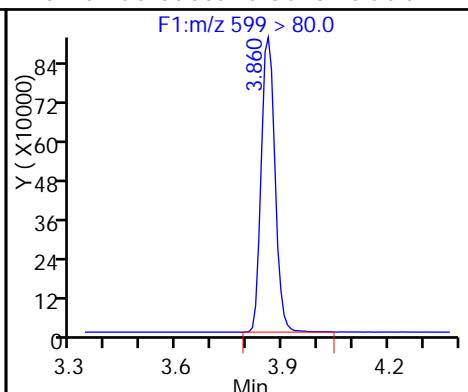
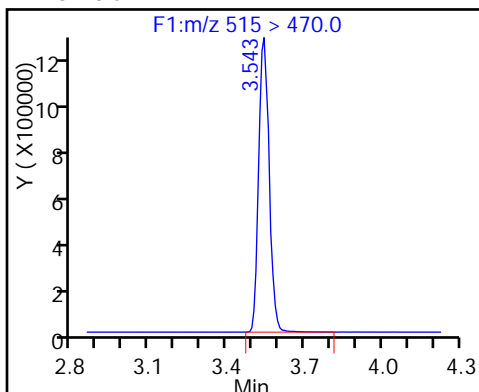




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

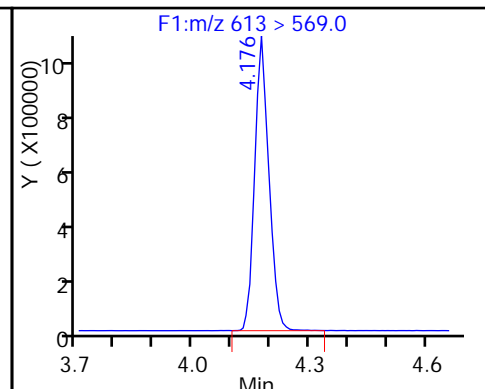
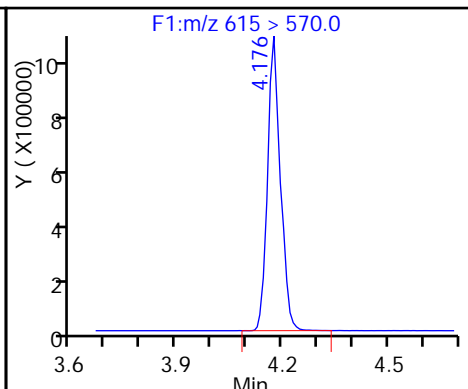
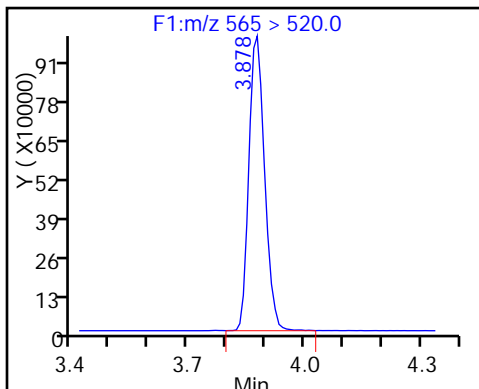
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

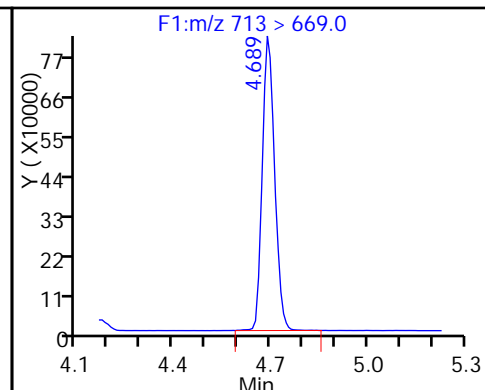
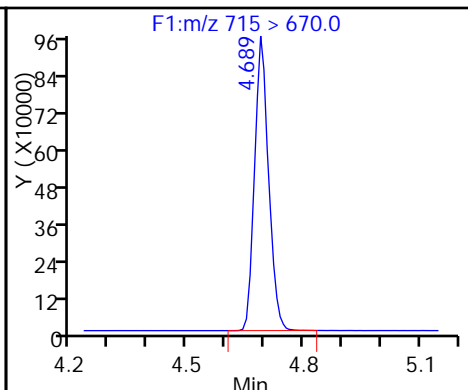
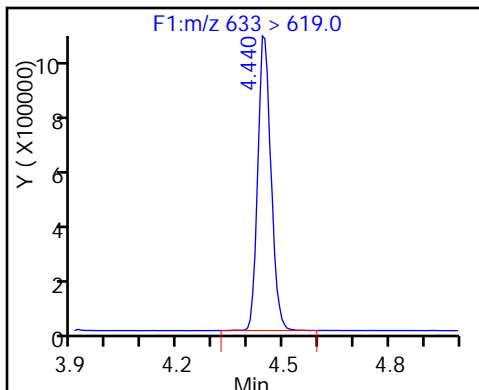
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

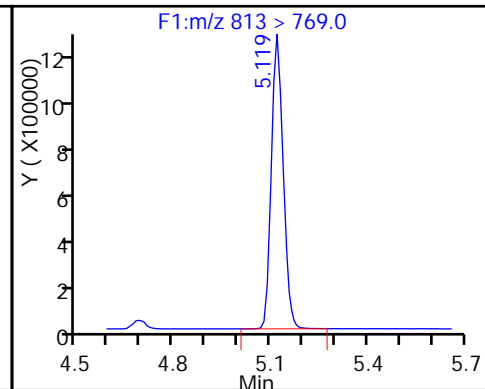
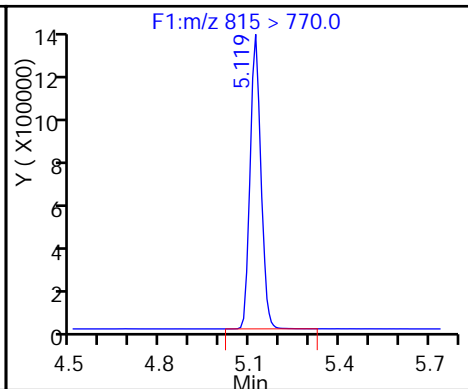
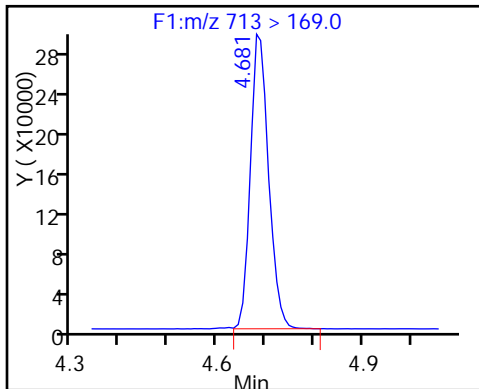
33 Perfluorotetradecanoic acid



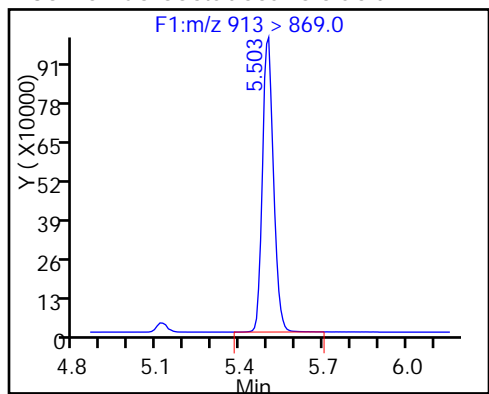
33 Perfluorotetradecanoic acid

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

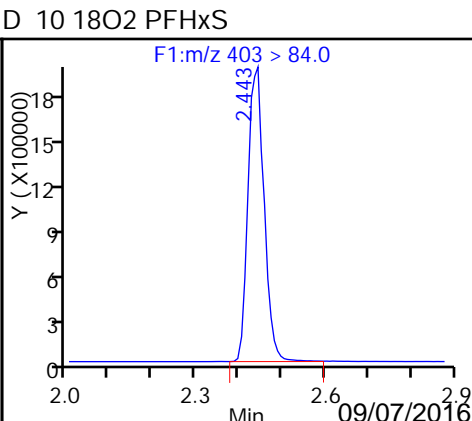
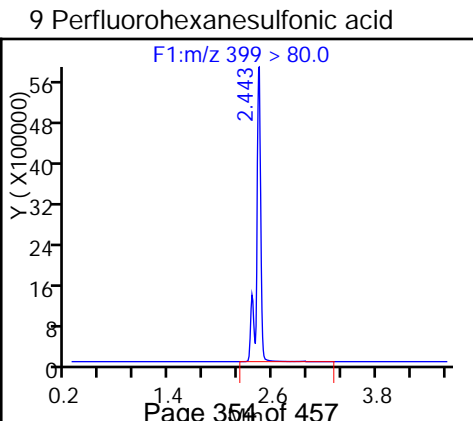
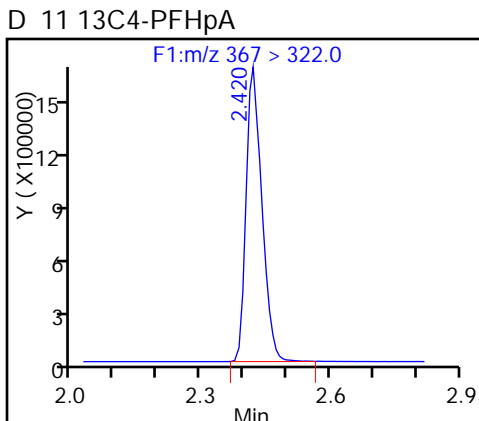
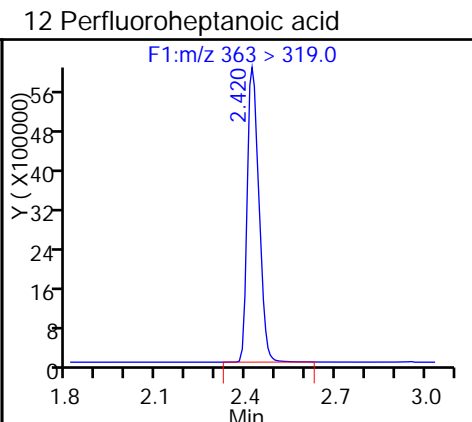
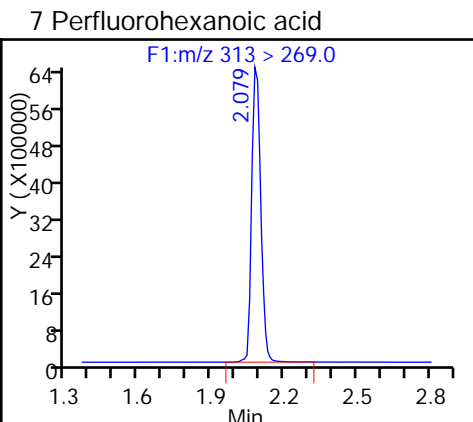
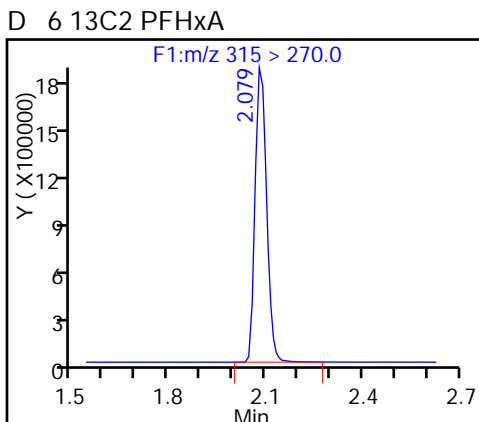
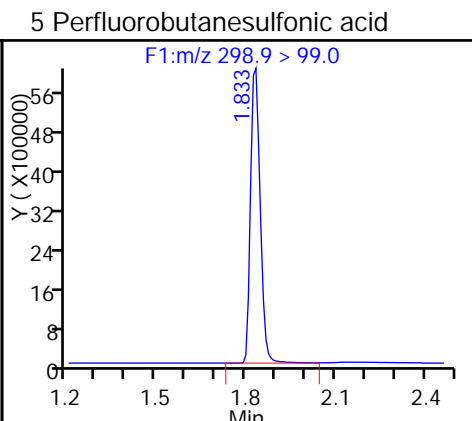
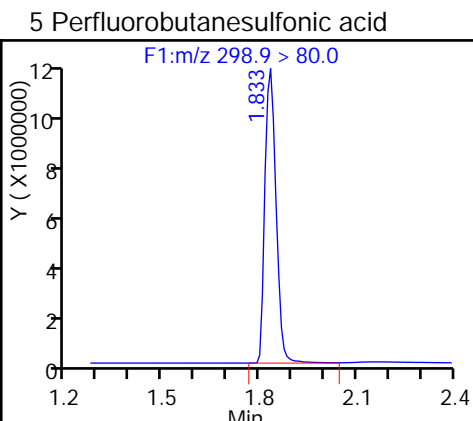
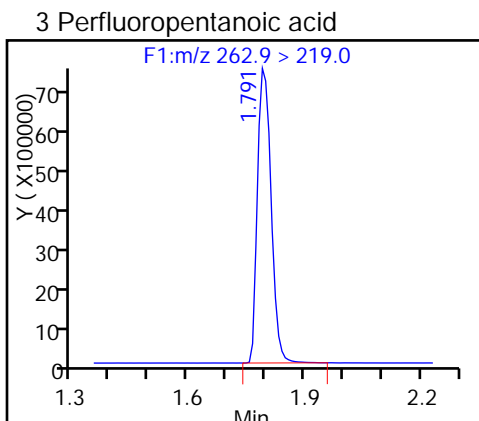
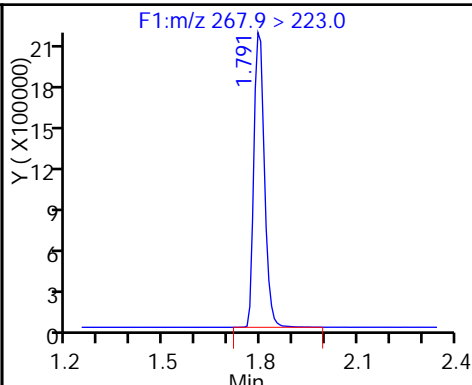
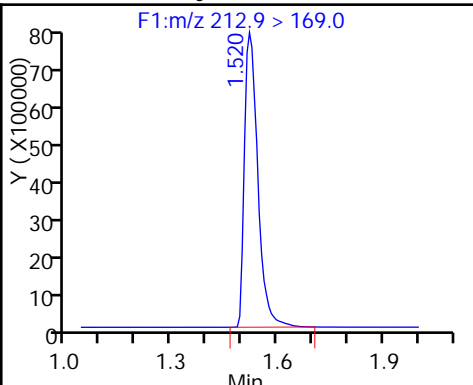
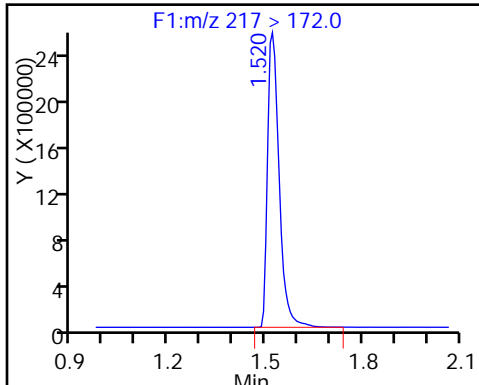
Method: PFC\_A8\_Full

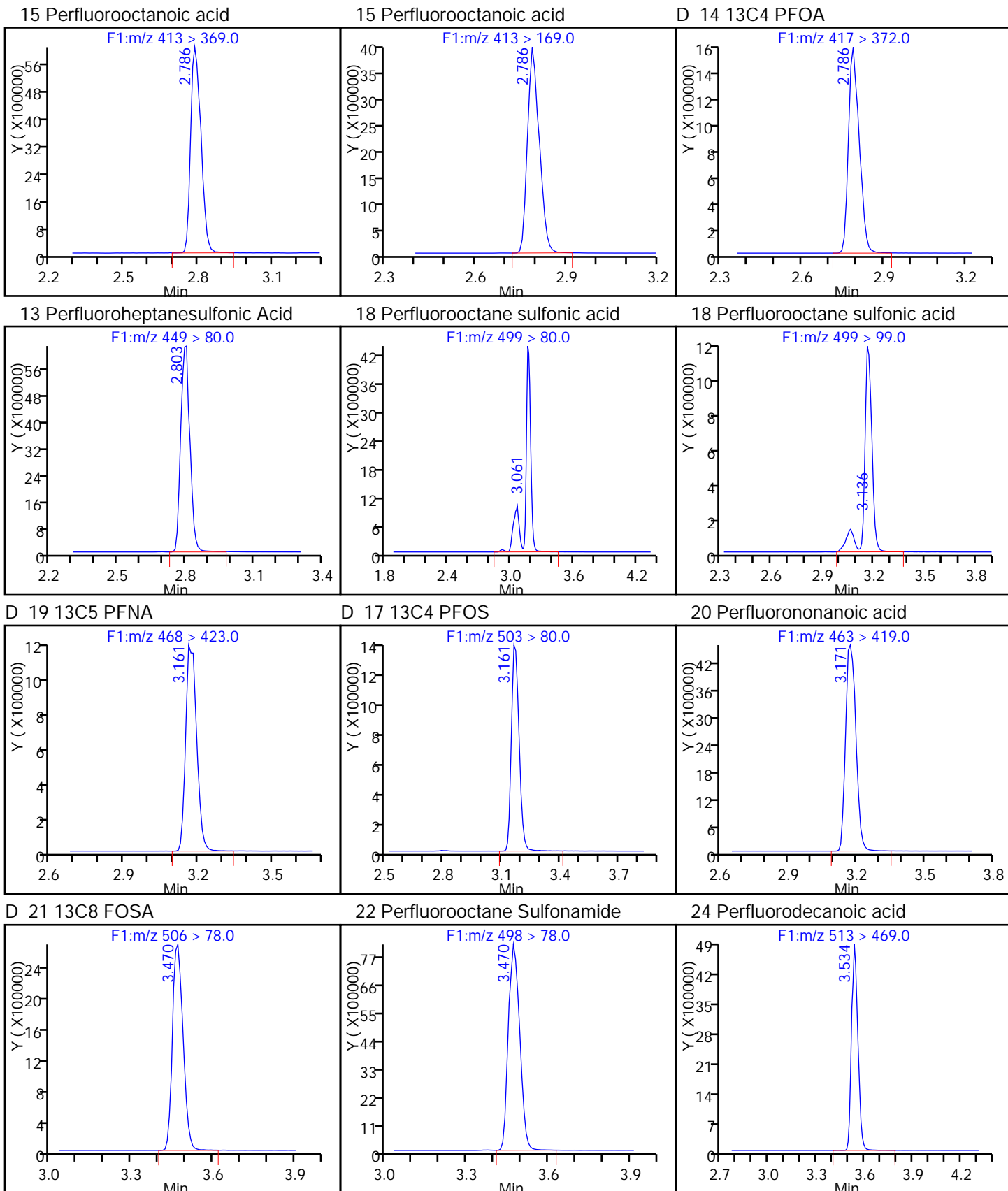
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA



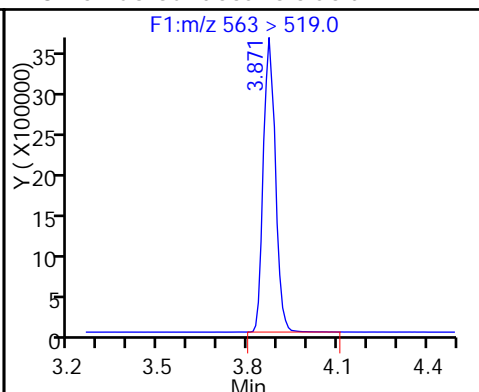
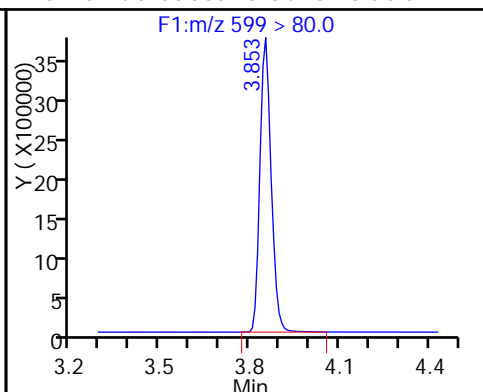
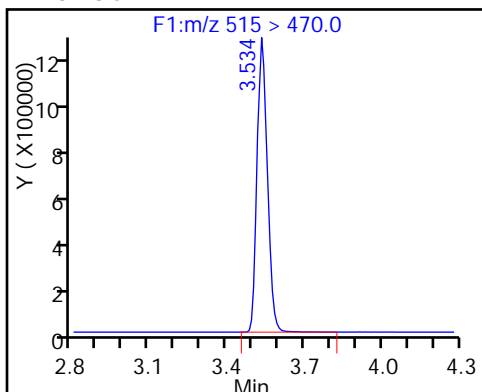




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

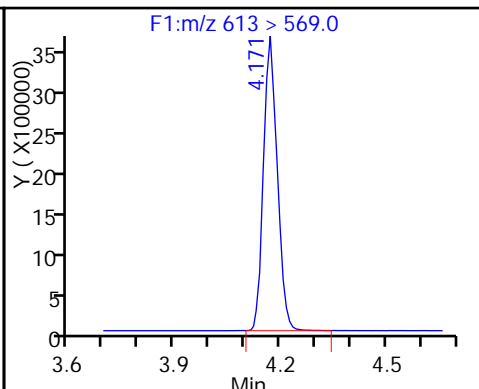
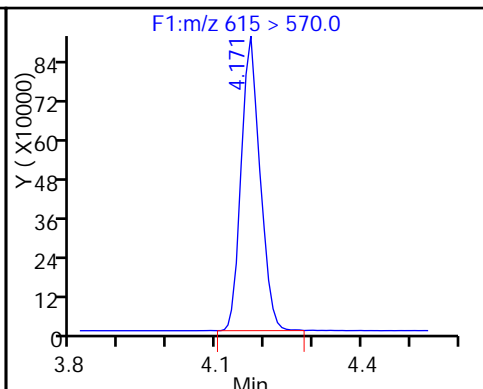
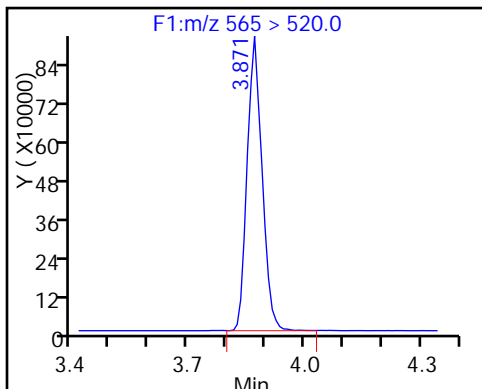
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

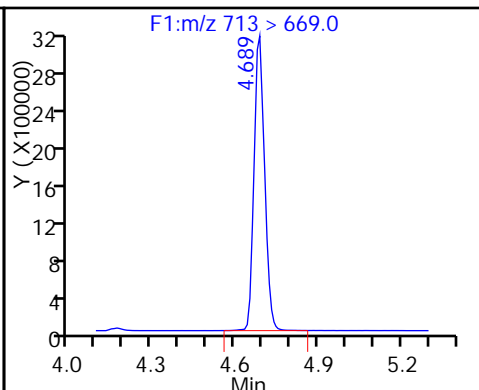
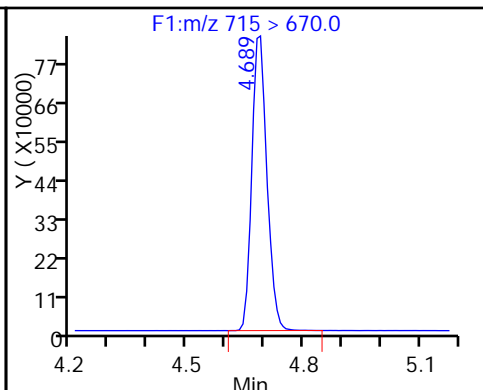
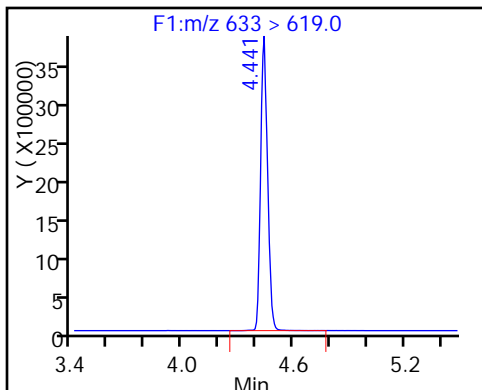
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

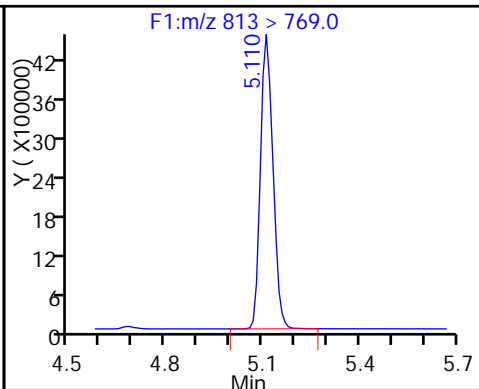
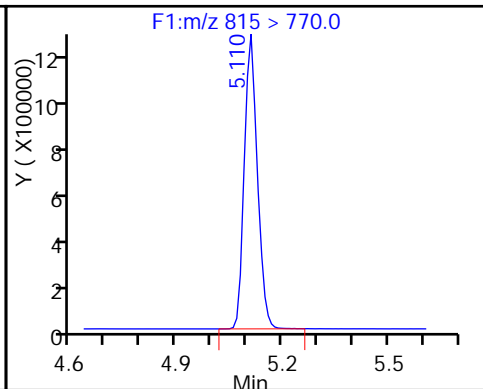
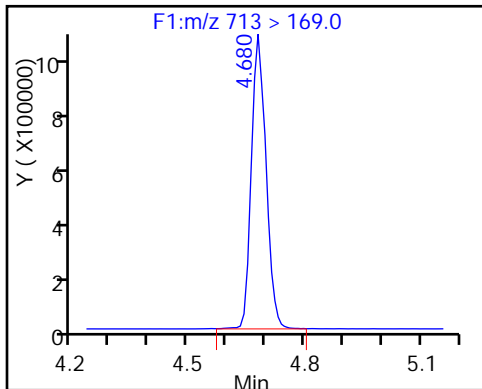
33 Perfluorotetradecanoic acid



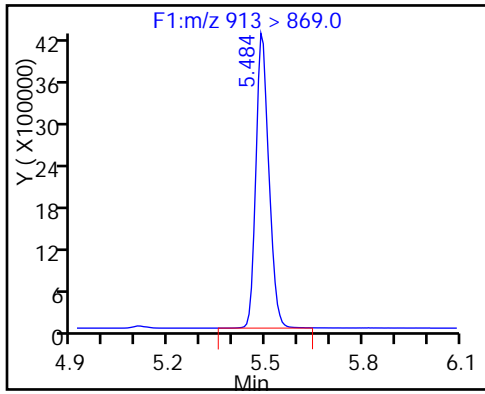
33 Perfluorotetradecanoic acid

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

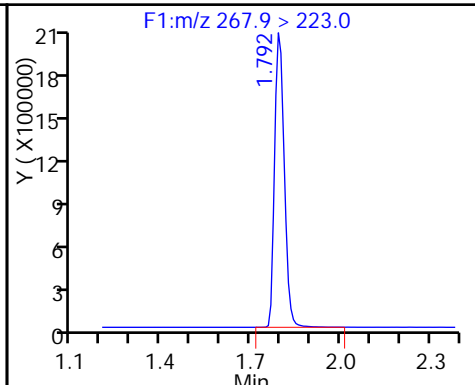
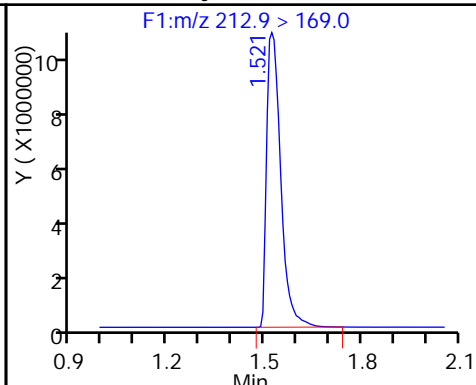
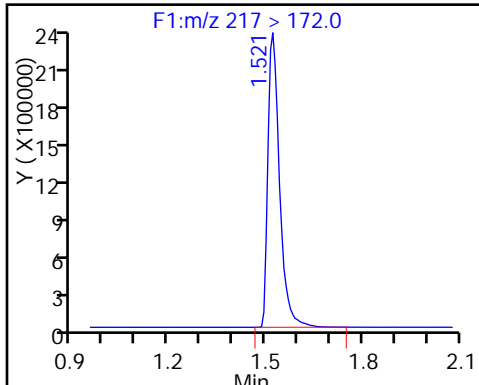
Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

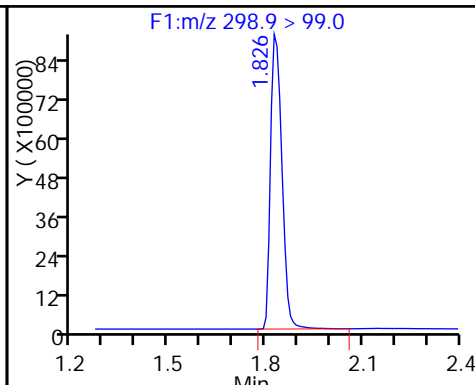
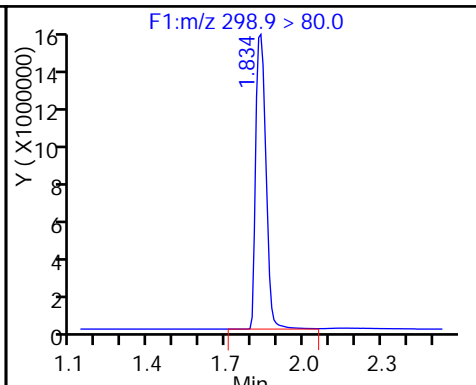
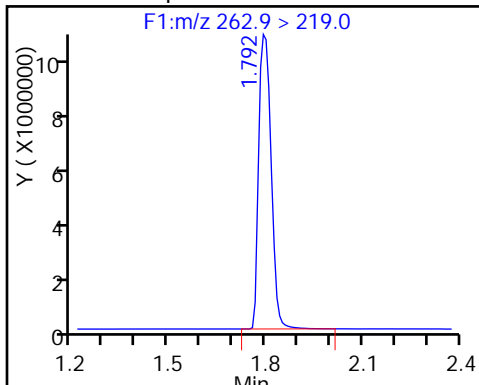
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

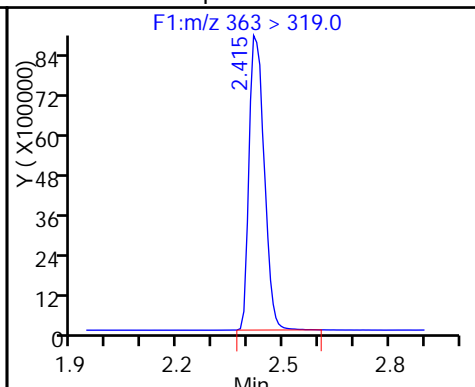
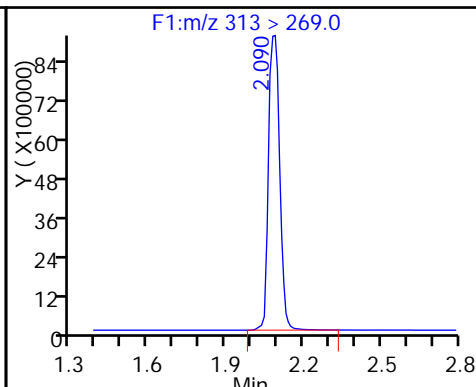
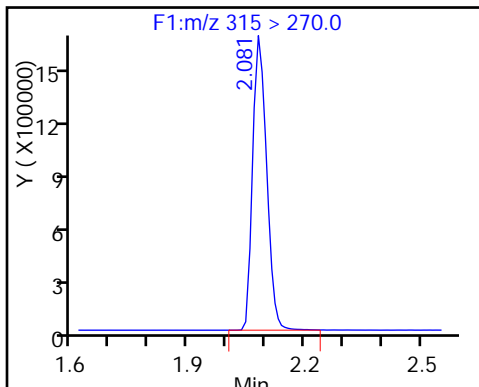
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

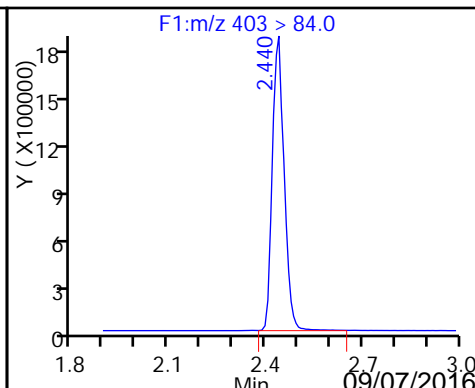
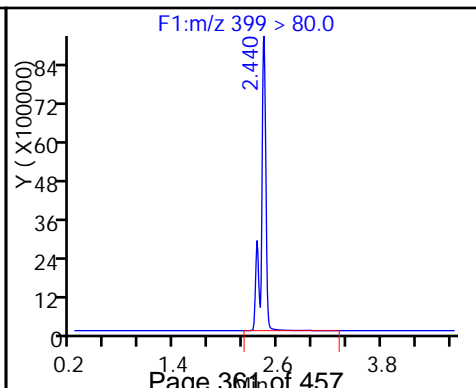
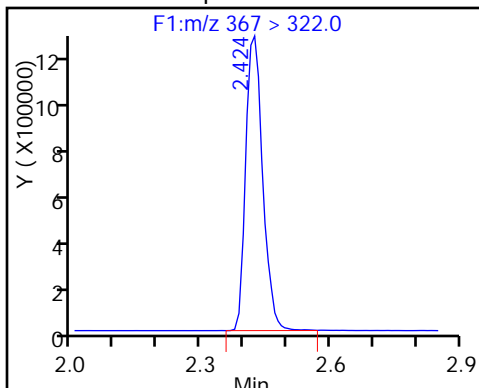
12 Perfluoroheptanoic acid

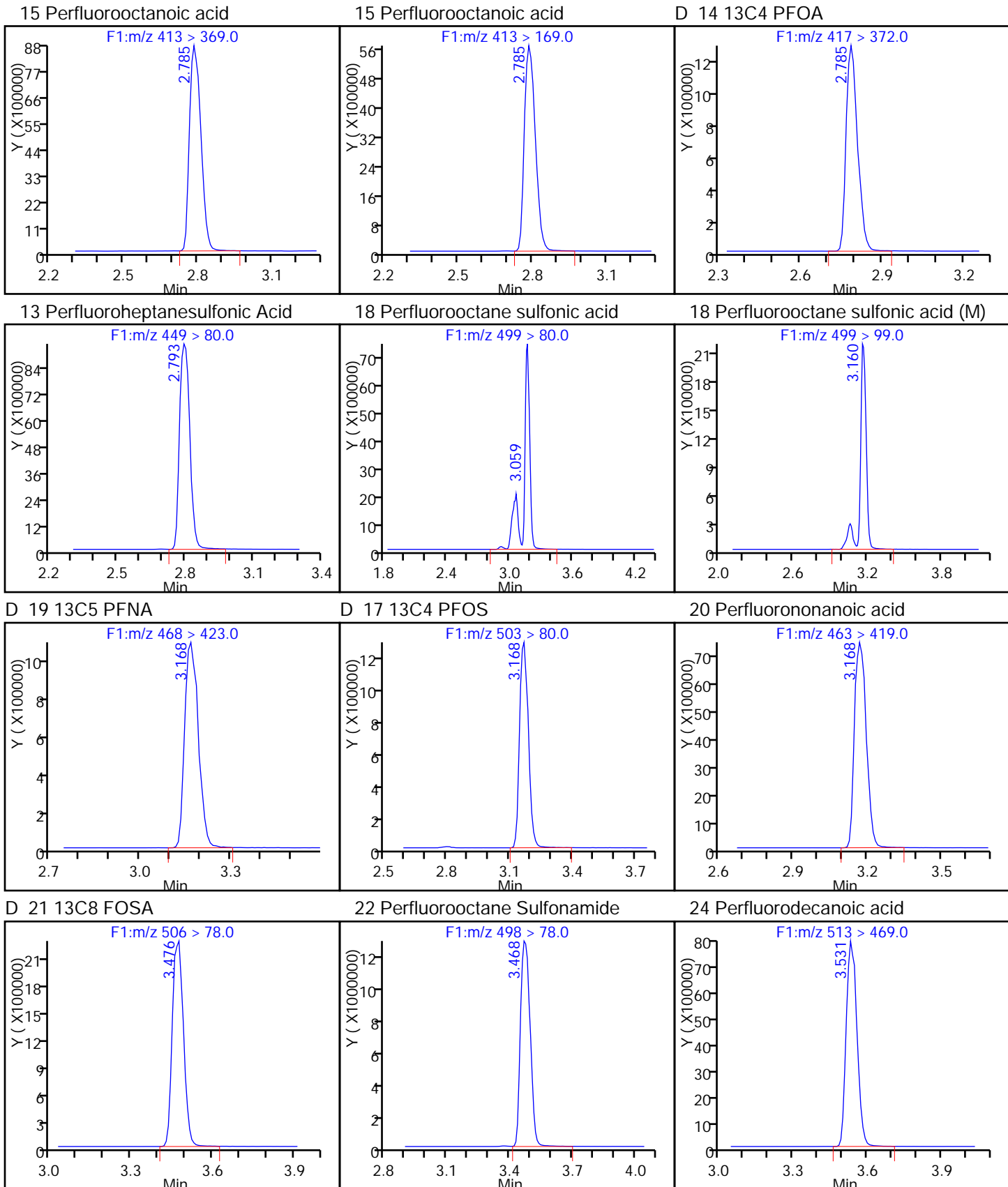


D 11 13C4-PFHpA

9 Perfluorohexanesulfonic acid

D 10 18O2 PFHxS

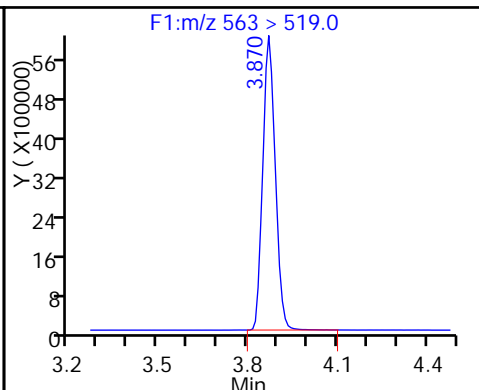
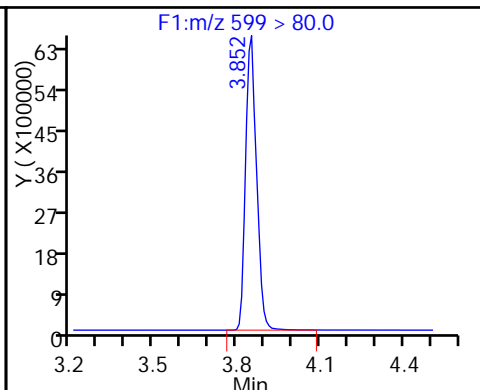
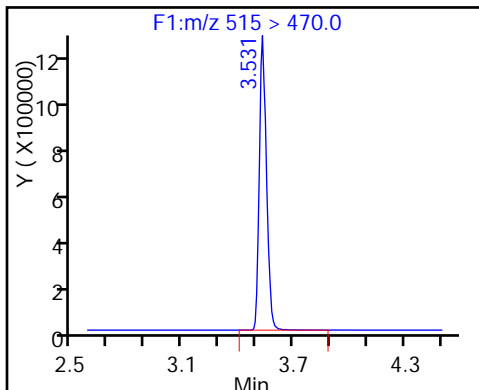




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

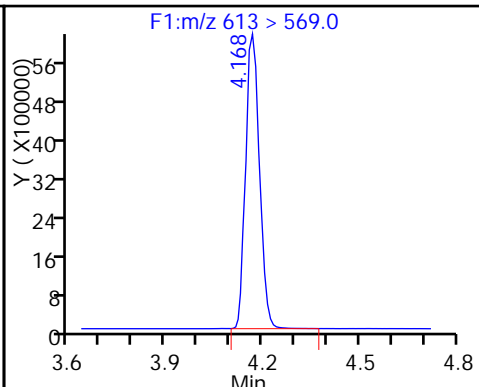
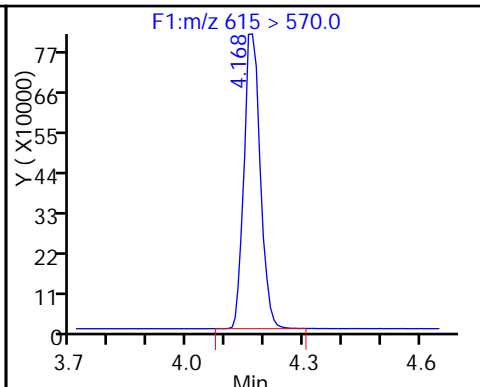
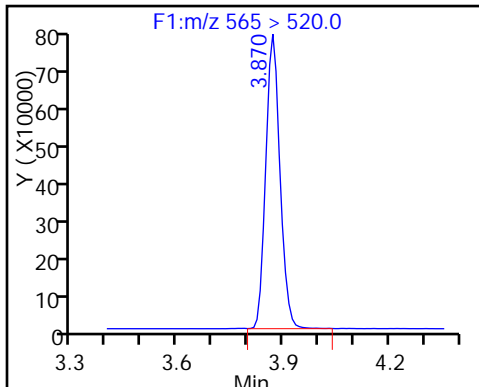
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

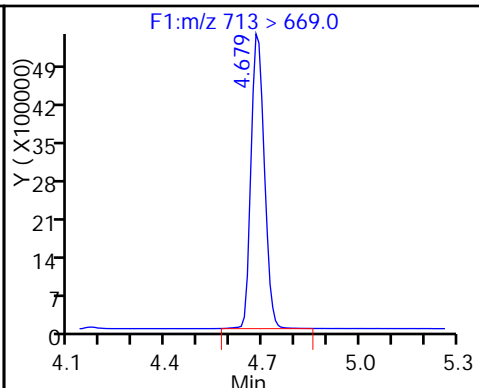
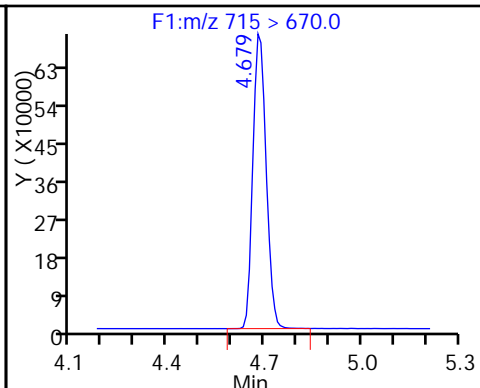
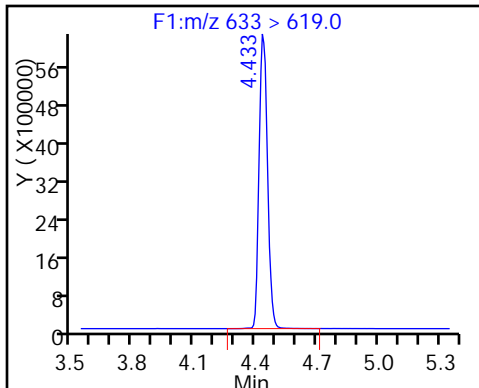
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

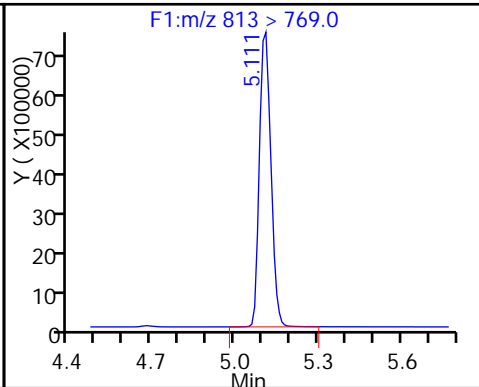
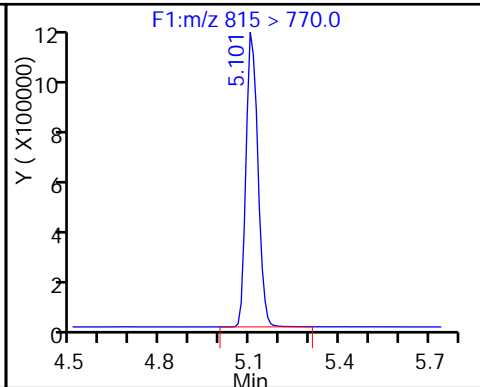
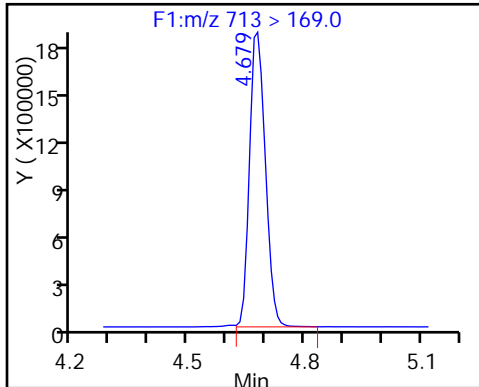
33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

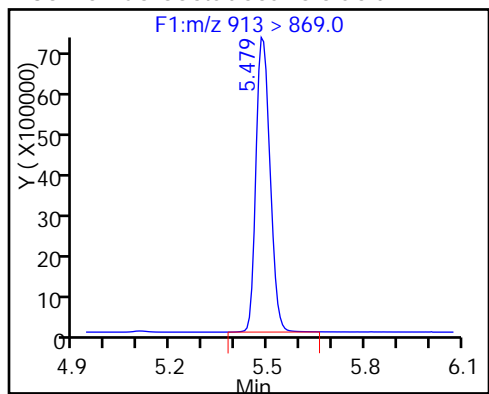
D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid





36 Perfluorooctadecanoic acid



TestAmerica Sacramento

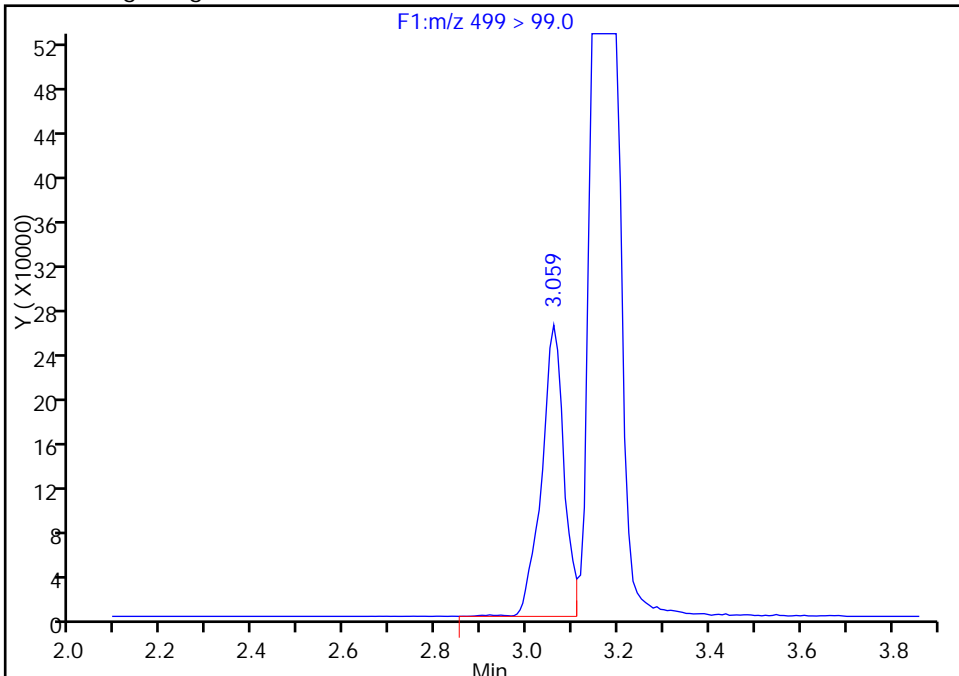
Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_010\_p1\_e1.d  
Injection Date: 22-Aug-2016 17:08:00 Instrument ID: A8  
Lims ID: IC L7  
Client ID:  
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL  
Column: Detector F1(0.00 :6.60 )

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

Signal: 2

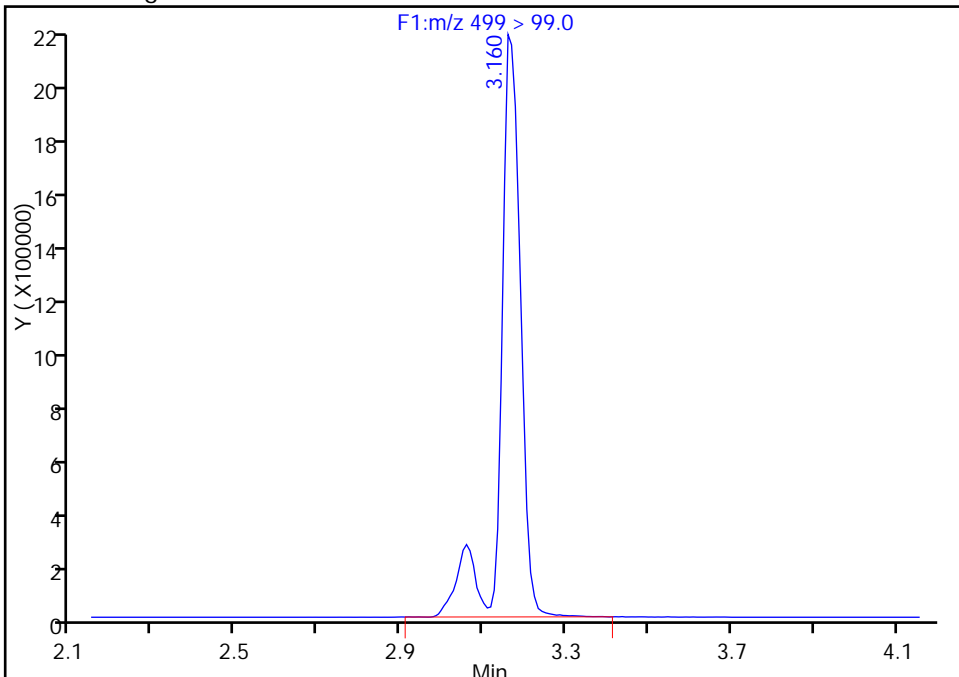
RT: 3.06  
Area: 889436  
Amount: 371.4615  
Amount Units: ng/ml

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

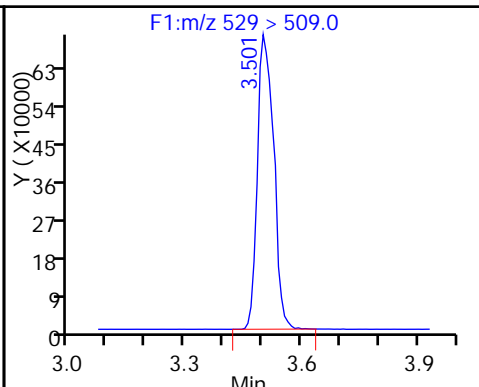
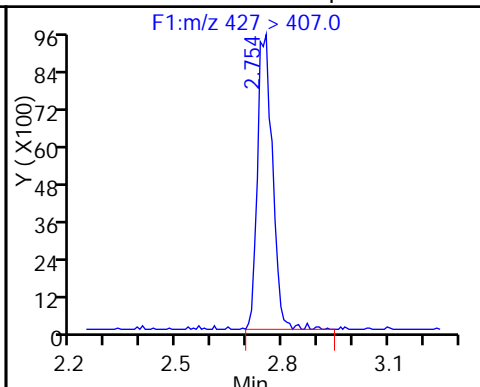
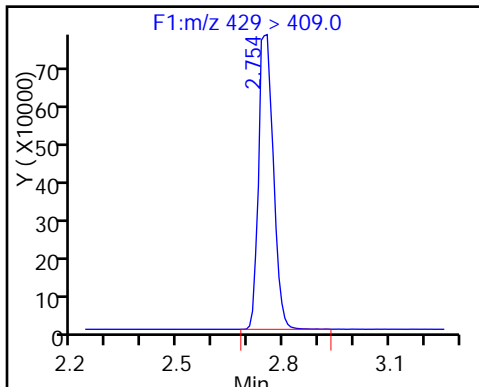
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.754	2.749	0.005		2296963	41.4		87.1		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.754	2.751	0.003	1.000	28657	0.3629		76.6		
D 42 M2-8:2FTS										
529 > 509.0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

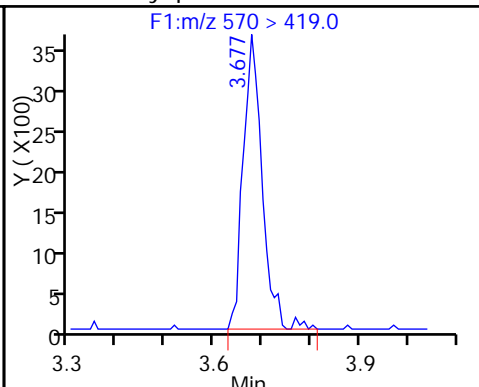
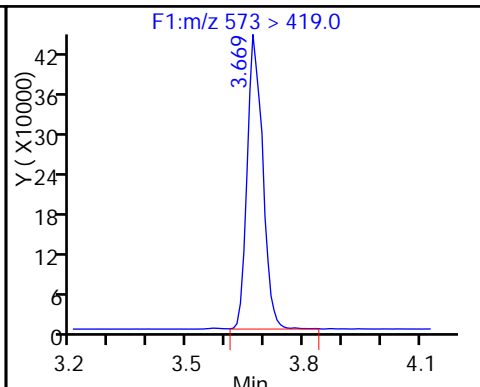
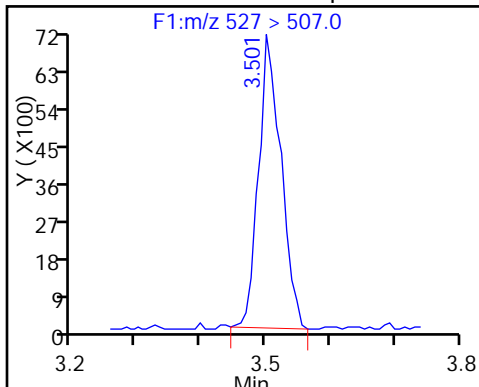
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



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

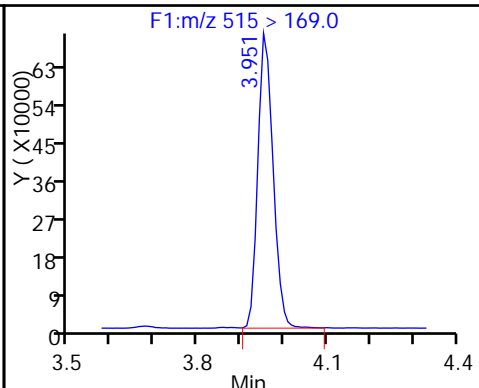
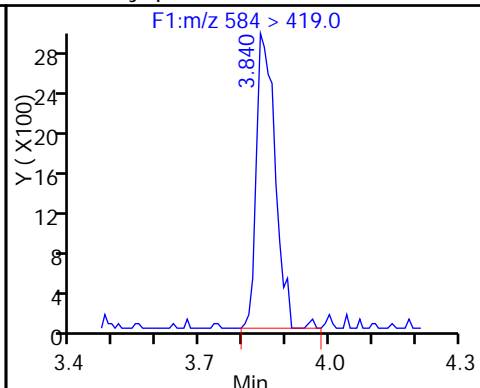
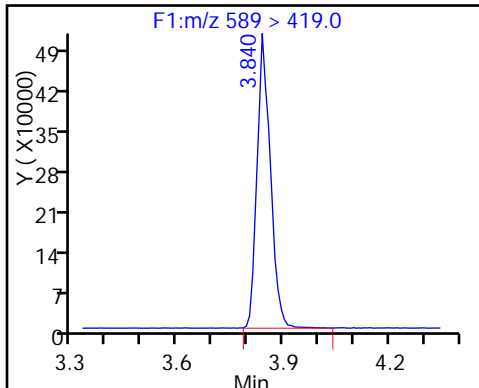
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

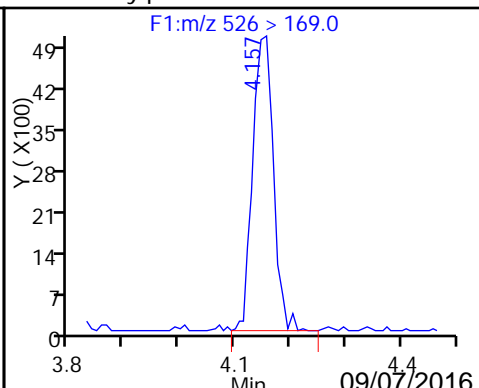
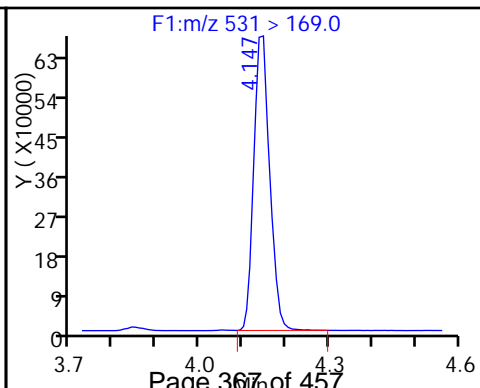
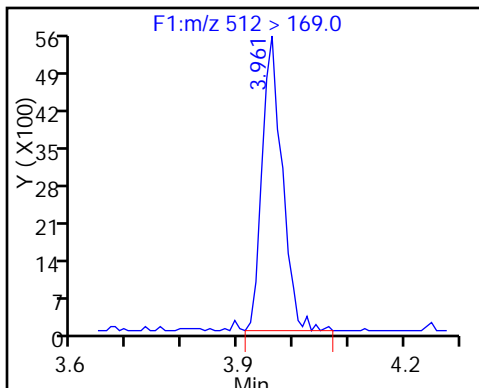
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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

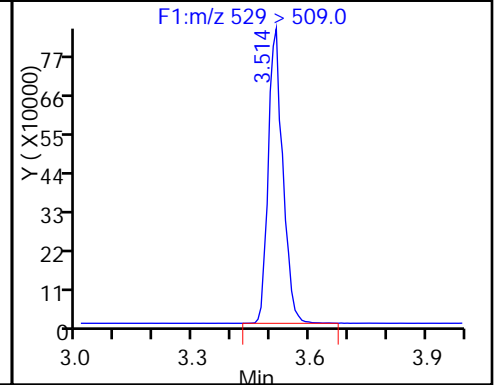
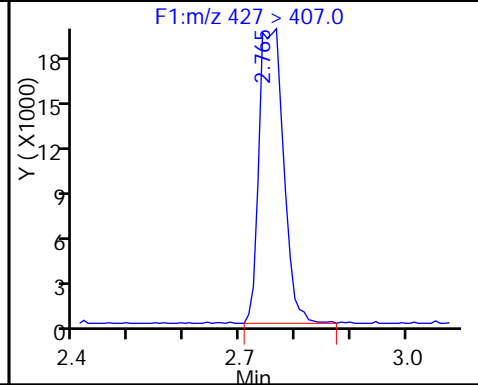
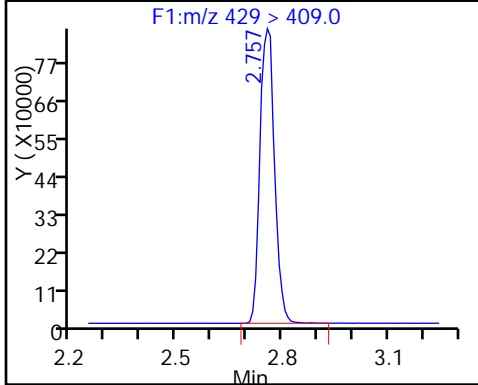
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.757	2.749	0.008		2495968	45.0		94.7		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.765	2.751	0.014	1.000	58625	1.03		109		
D 42 M2-8:2FTS										
529 > 509.0	3.514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

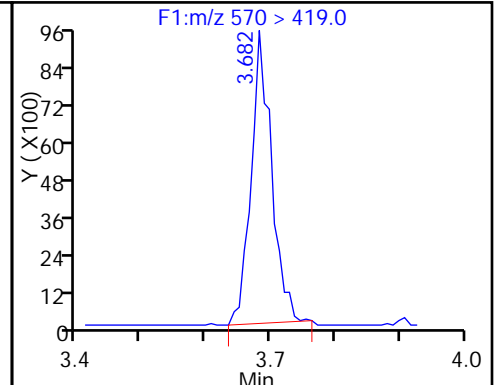
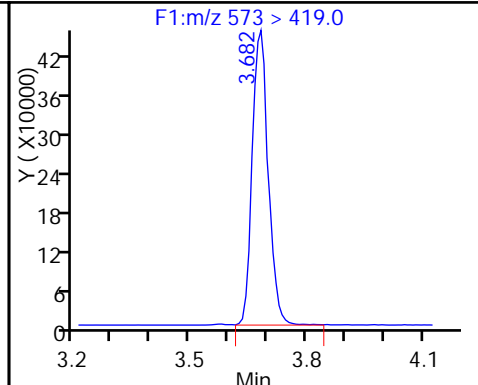
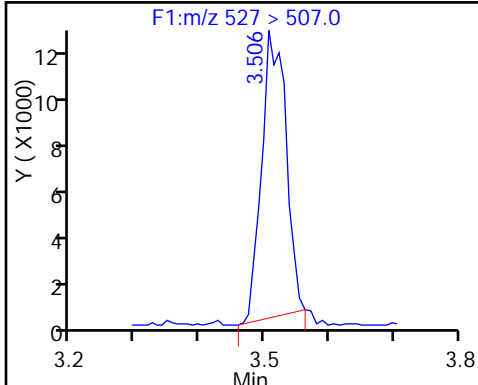
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



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

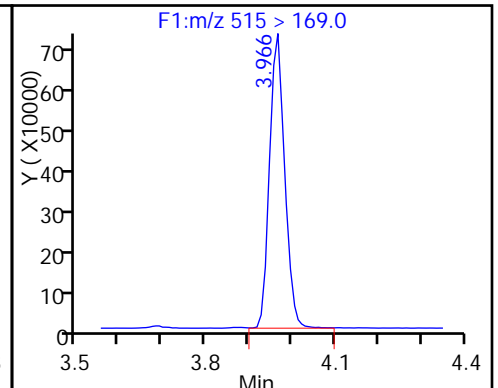
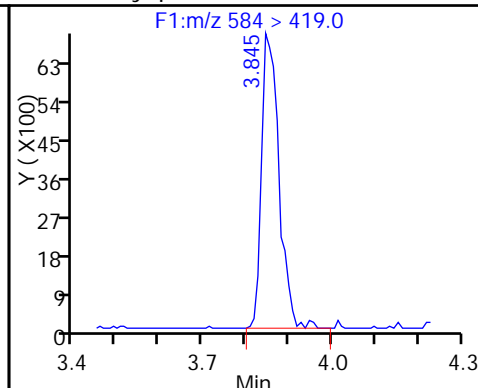
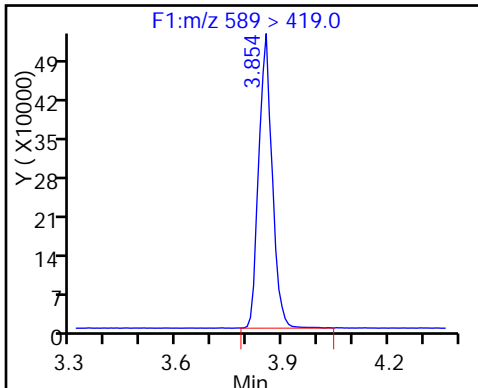
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

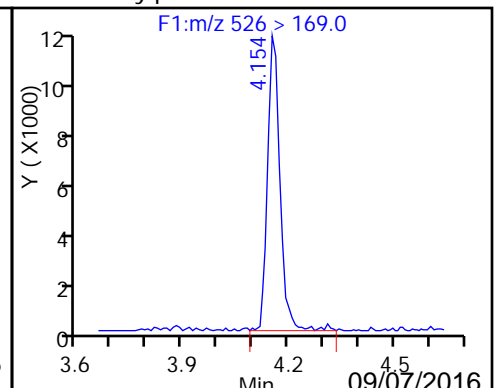
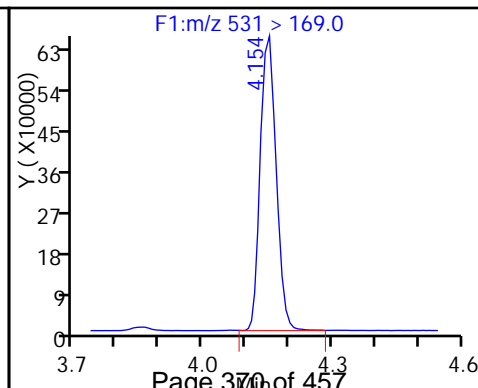
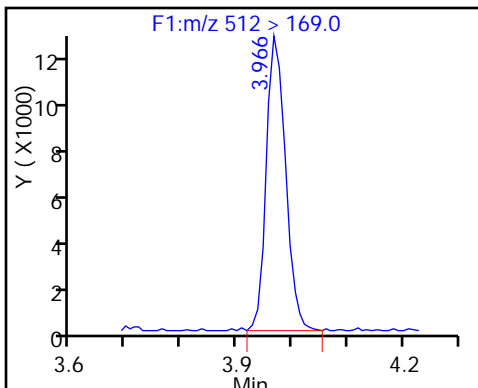
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_016\_p1\_e1.d

Injection Date: 22-Aug-2016 17:53:00

Instrument ID: A8

Lims ID: IC L3 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

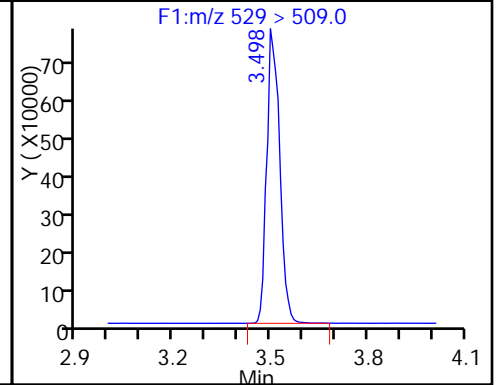
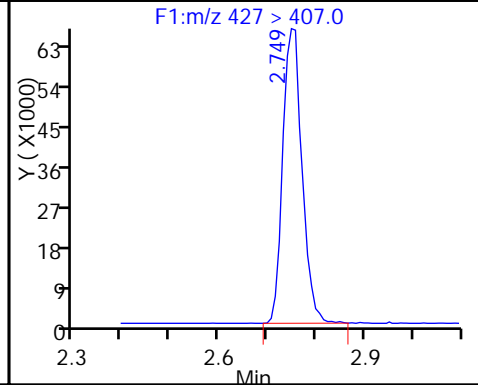
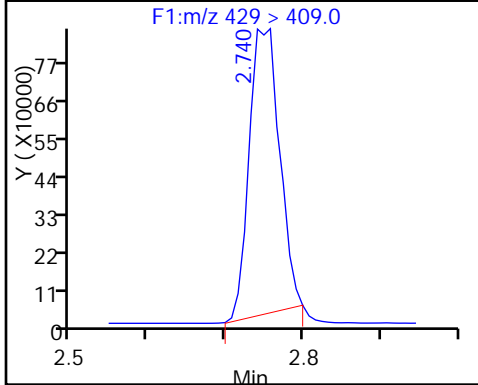
Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

D 47 M2-6:2FTS

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

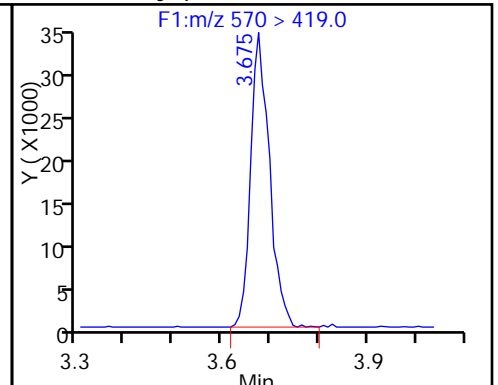
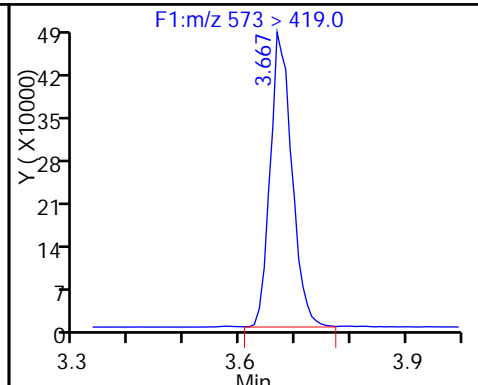
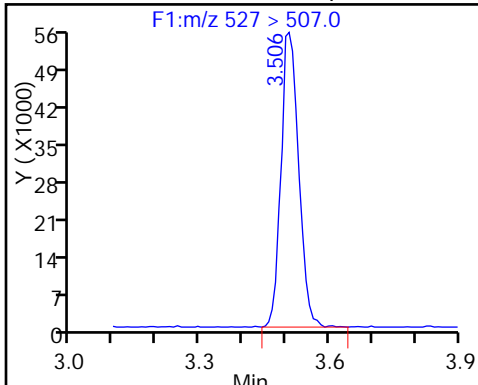
D 42 M2-8:2FTS



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

D 45 d3-NMeFOSAA

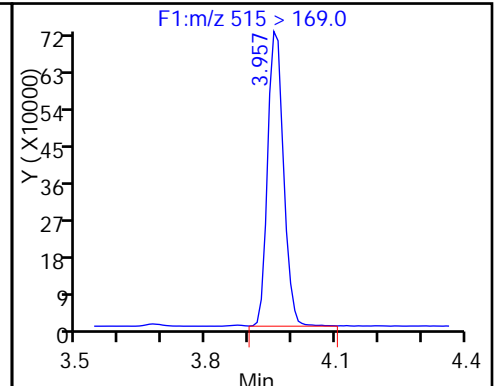
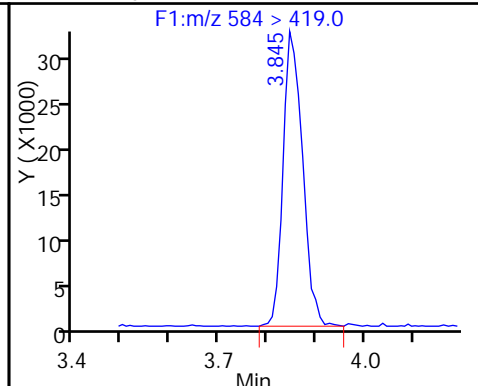
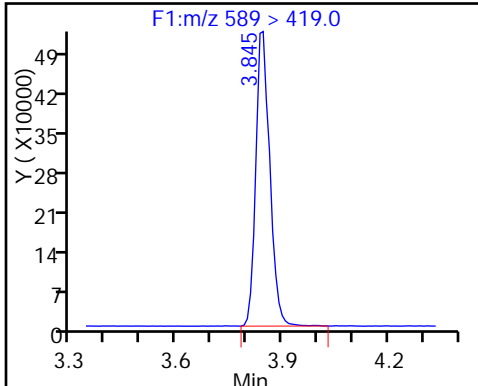
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

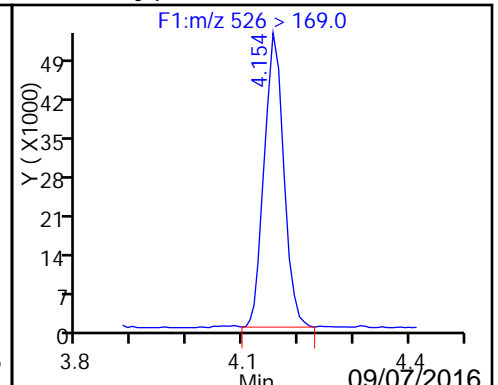
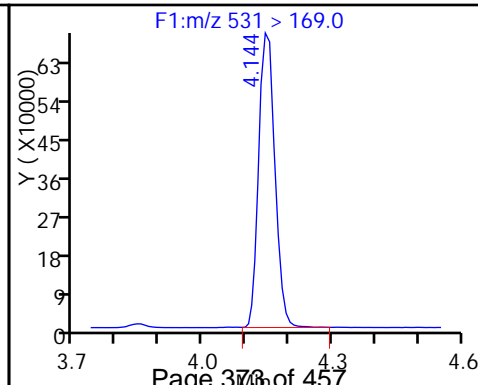
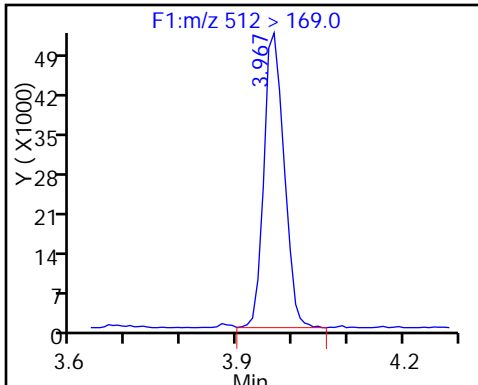
D 52 d-N-MeFOSA-M



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

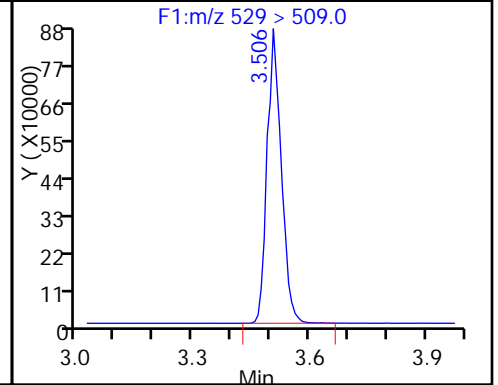
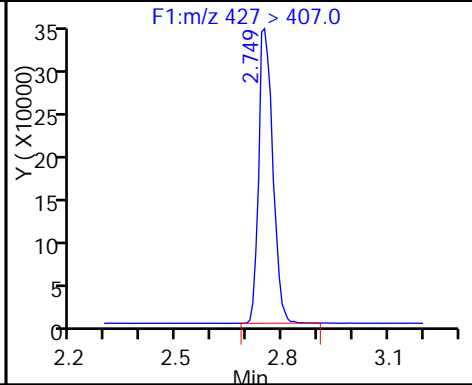
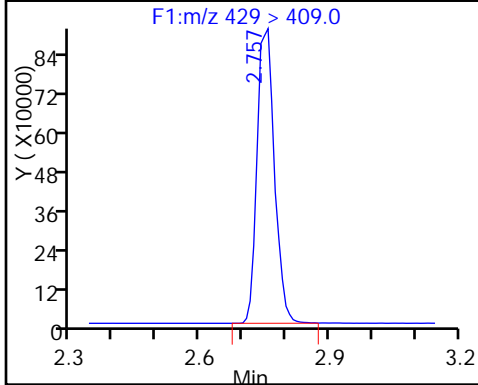
Amount Added: 1.00

Units: mL

D 47 M2-6:2FTS

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

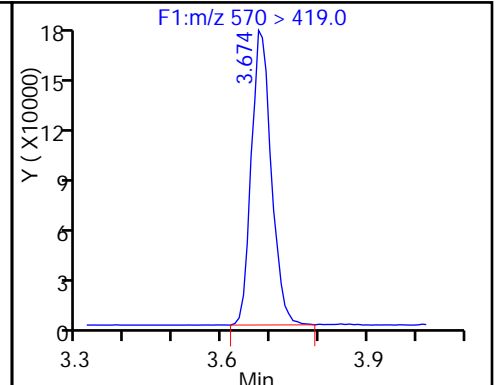
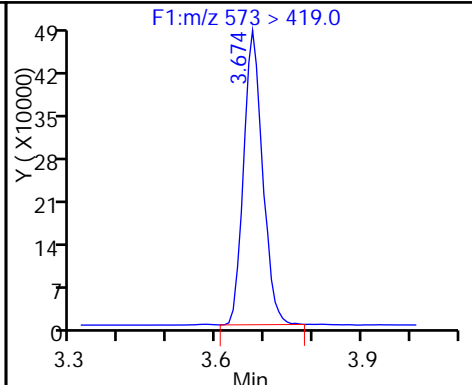
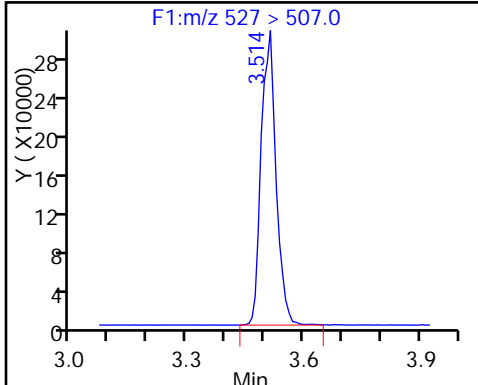
D 42 M2-8:2FTS



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

D 45 d3-NMeFOSAA

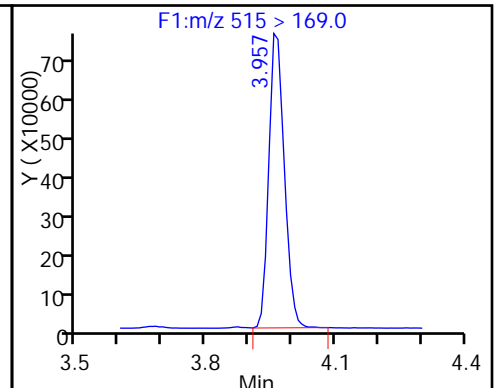
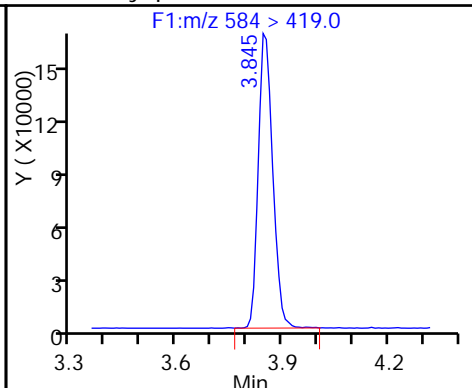
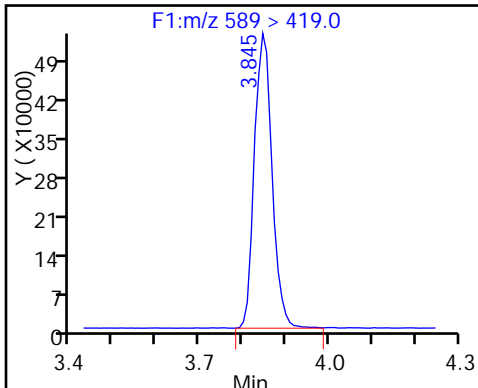
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

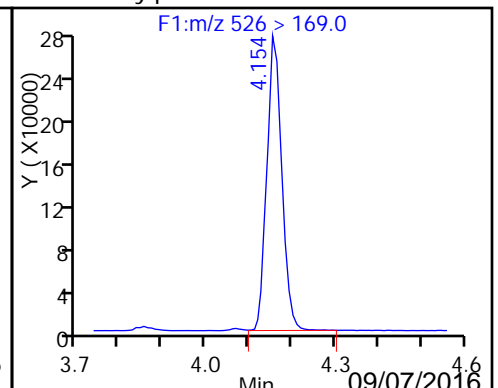
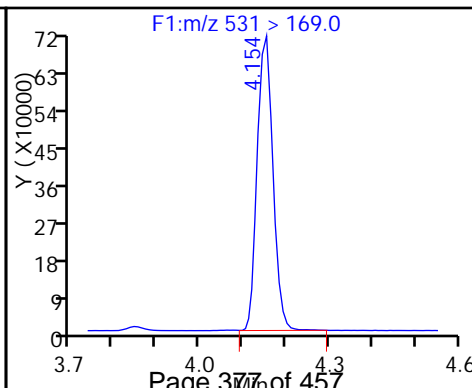
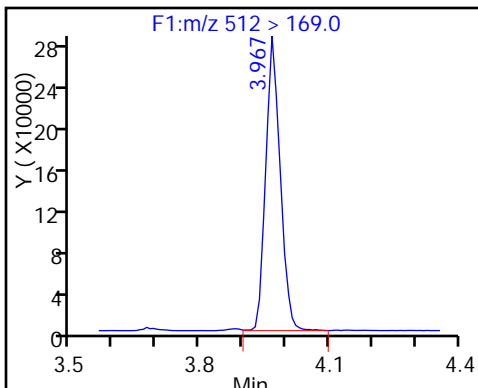
D 52 d-N-MeFOSA-M



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



Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_018\_p1\_e1.d

Injection Date: 22-Aug-2016 18:08:00

Instrument ID: A8

Lims ID: IC L5 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

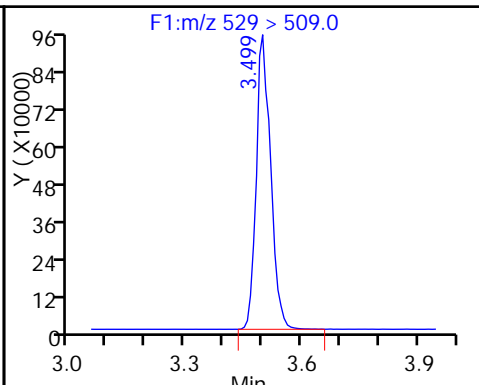
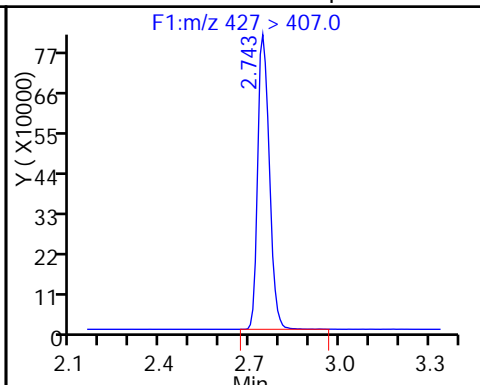
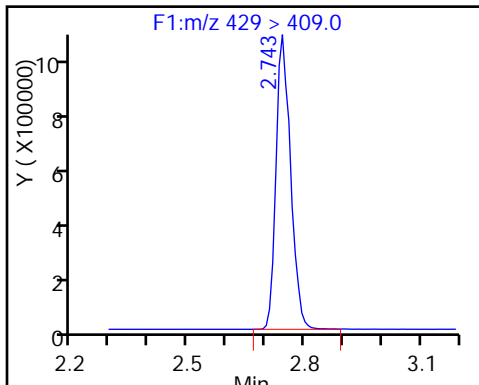
Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

D 47 M2-6:2FTS

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

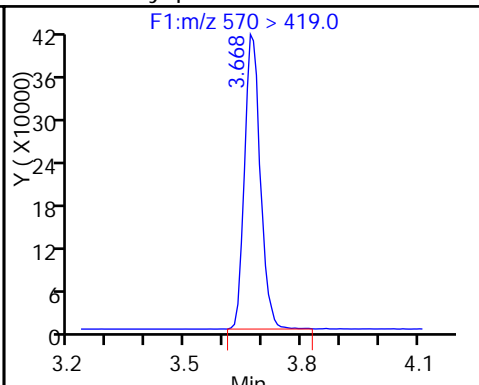
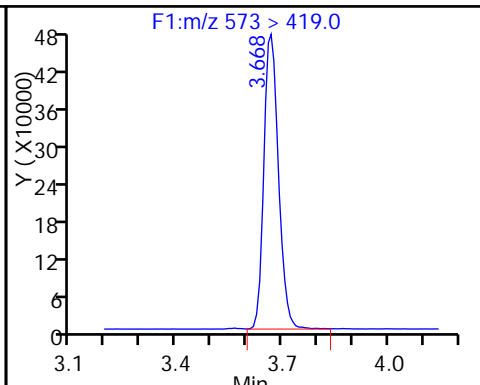
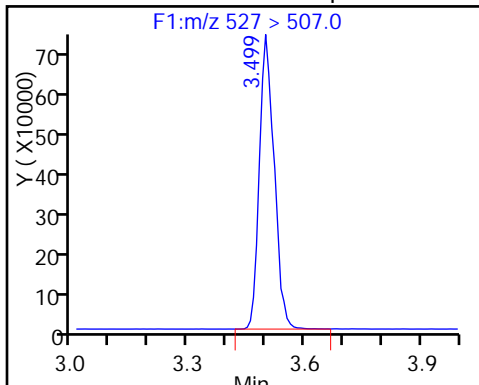
D 42 M2-8:2FTS



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

D 45 d3-NMeFOSAA

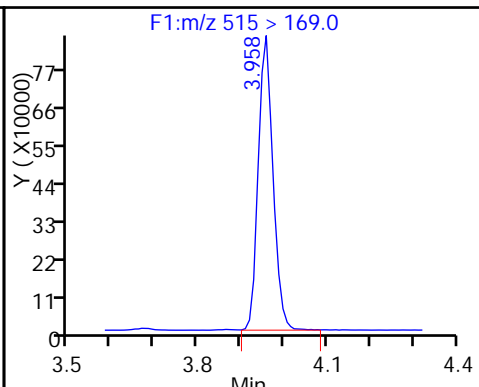
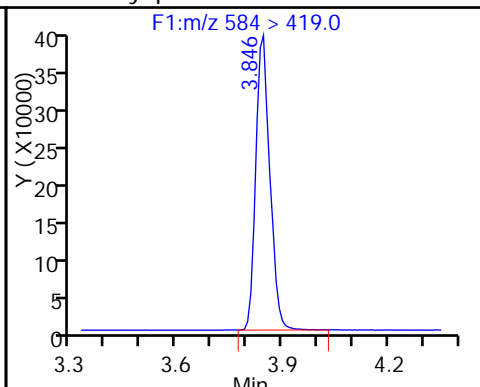
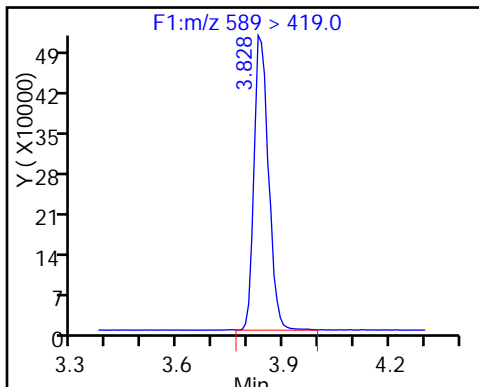
44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamid

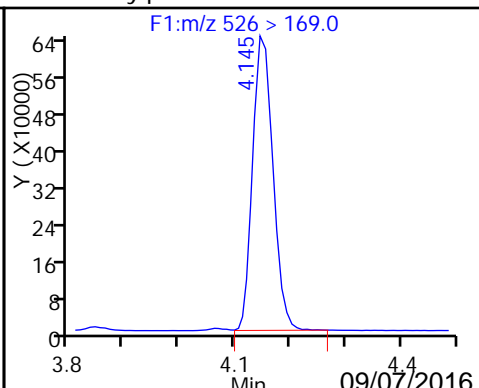
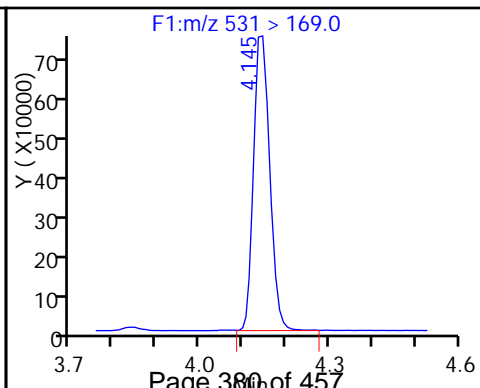
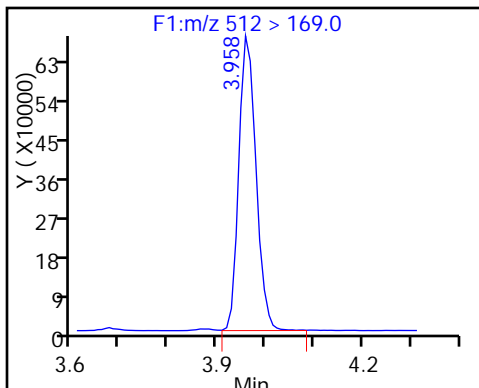
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami





TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_019\_p1\_e1.d  
 Lims ID: IC L6 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 22-Aug-2016 18:16:00 ALS Bottle#: 0 Worklist Smp#: 17  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info:  
 Operator ID: A8 Instrument ID: A8  
 Sublist: chrom-PFC\_A8\_Full\*sub4  
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 24-Aug-2016 08:50:26 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK029

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.745	2.749	-0.004		2891381	52.1		110		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.745	2.751	-0.006	1.000	8763302	184.1		97.1		
D 42 M2-8:2FTS										
529 > 509.0	3.501	3.504	-0.003		2763434	54.8		114		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.493	3.504	-0.011	0.998	8325021	185.6		96.9		
D 45 d3-NMeFOSAA										
573 > 419.0	3.661	3.670	-0.009		1395248	52.6		105		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.669	3.675	-0.006	1.002	5271643	218.3		109		
D 46 d5-NEtFOSAA										
589 > 419.0	3.840	3.843	-0.003		1479945	51.1		102		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.840	3.844	-0.004	1.000	4987775	223.3		112		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.952	3.957	-0.005		2107210	54.9		110		
54 MeFOSA										
512 > 169.0	3.961	3.964	-0.003	1.000	7305572	206.2		103		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.138	4.147	-0.009		2012551	54.3		109		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.148	4.153	-0.005	1.000	7477876	219.1		110		

Reagents:

LCPFC2-L6\_00002 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_019\_p1\_e1.d

Injection Date: 22-Aug-2016 18:16:00

Instrument ID: A8

Lims ID: IC L6 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 17

Injection Vol: 2.0 ul

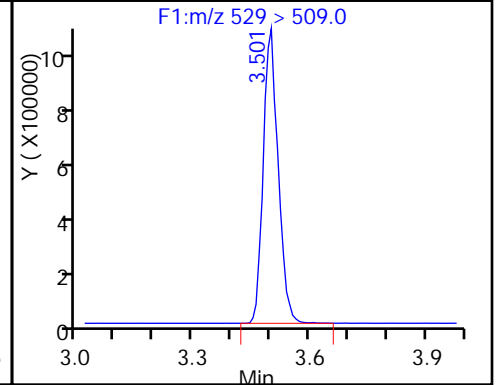
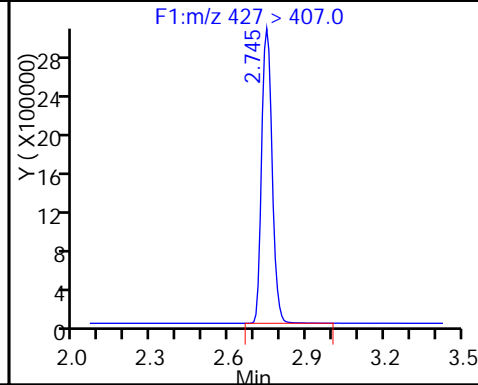
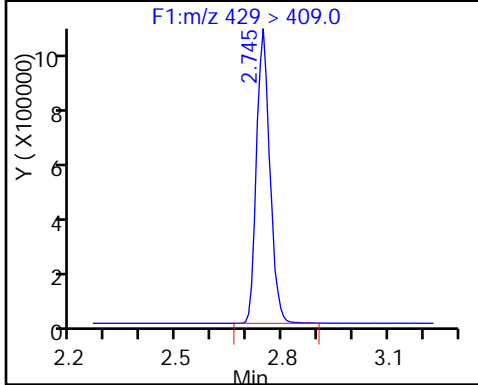
Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

D 47 M2-6:2FTS

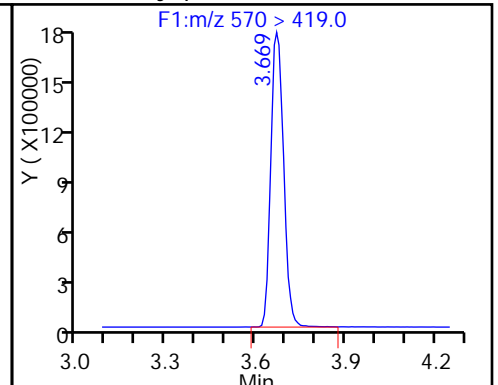
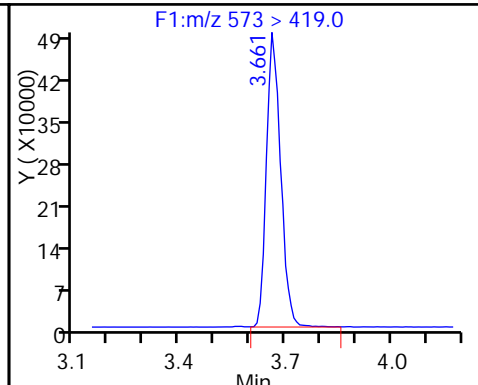
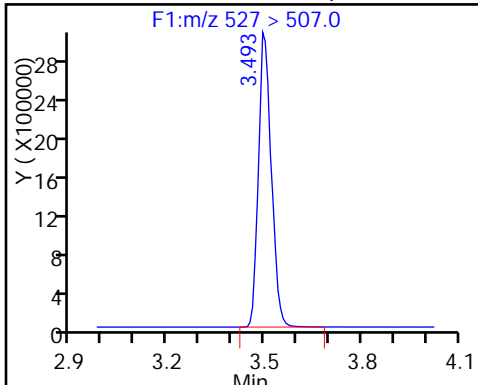
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



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

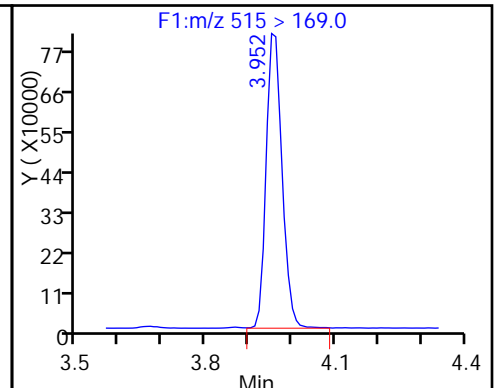
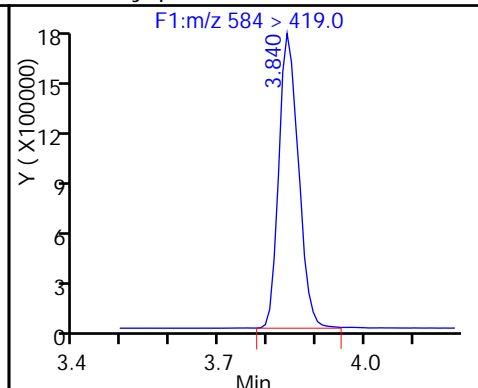
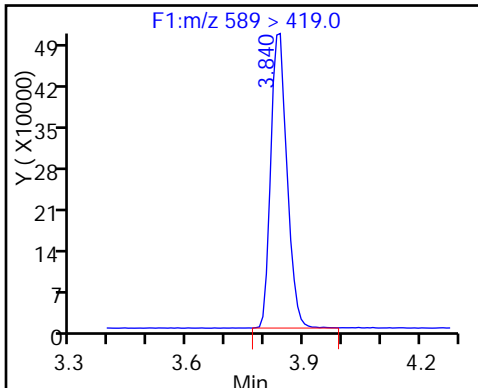
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

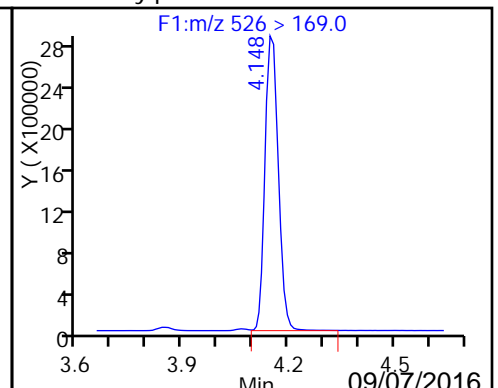
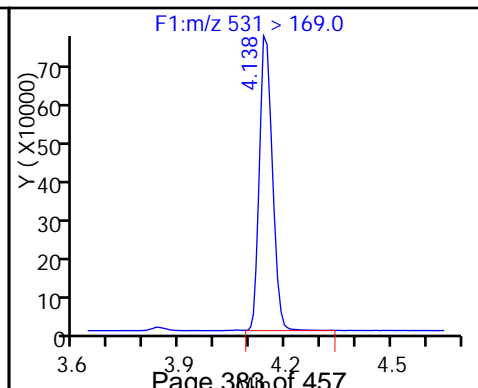
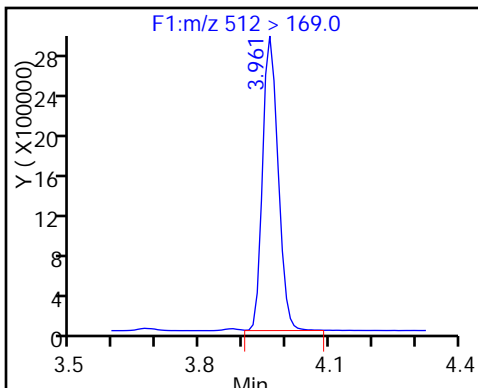
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami





TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Lims ID: IC L7 Add-on  
 Client ID:  
 Sample Type: IC Calib Level: 7  
 Inject. Date: 22-Aug-2016 18:23:00 ALS Bottle#: 0 Worklist Smp#: 18  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info:  
 Operator ID: A8 Instrument ID: A8  
 Sublist: chrom-PFC\_A8\_Full\*sub4  
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 24-Aug-2016 08:50:36 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK029

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.750	2.749	0.001		3191432	57.5		121		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.750	2.751	-0.001	1.000	17306540	329.8		87.0		
D 42 M2-8:2FTS										
529 > 509.0	3.509	3.504	0.005		2970600	58.9		123		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.509	3.504	0.005	1.000	16890474	350.3		91.4		
D 45 d3-NMeFOSAA										
573 > 419.0	3.669	3.670	-0.001		1324197	49.9		99.8		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.677	3.675	0.002	1.002	10903399	475.7		119		
D 46 d5-NEtFOSAA										
589 > 419.0	3.849	3.843	0.006		1411088	48.7		97.4		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.849	3.844	0.005	1.000	10282683	482.7		121		
D 52 d-N-MeFOSA-M										
515 > 169.0	3.961	3.957	0.004		1948532	50.8		102		
54 MeFOSA										
512 > 169.0	3.971	3.964	0.007	1.000	15151517	462.4		116		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.151	4.147	0.004		1908583	51.5		103		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.161	4.153	0.008	1.000	14937252	461.5		115		

Reagents:

LCPFC2-L7\_00002 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d

Injection Date: 22-Aug-2016 18:23:00

Instrument ID: A8

Lims ID: IC L7 Add-on

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 18

Injection Vol: 2.0 ul

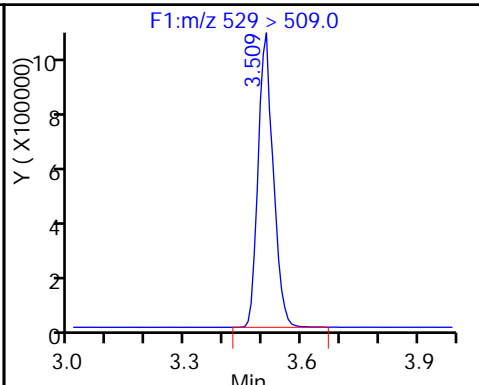
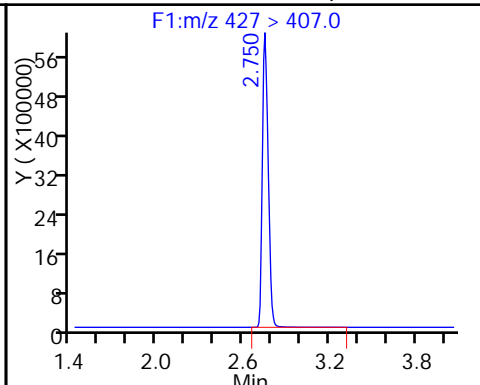
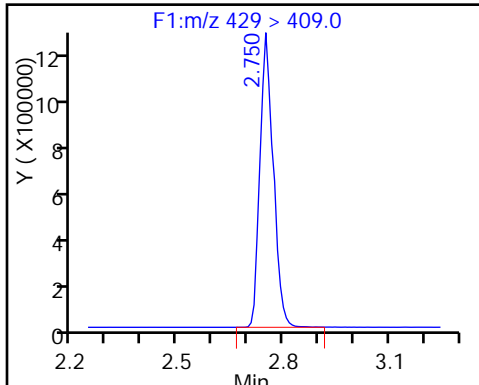
Dil. Factor: 1.0000

Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

D 47 M2-6:2FTS

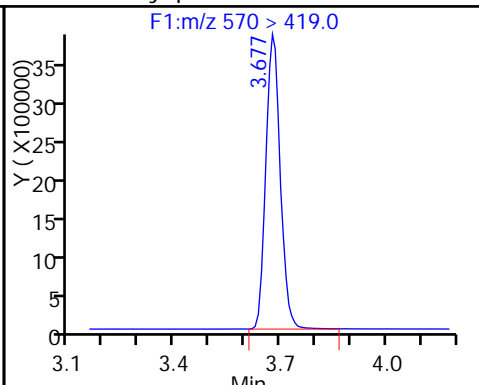
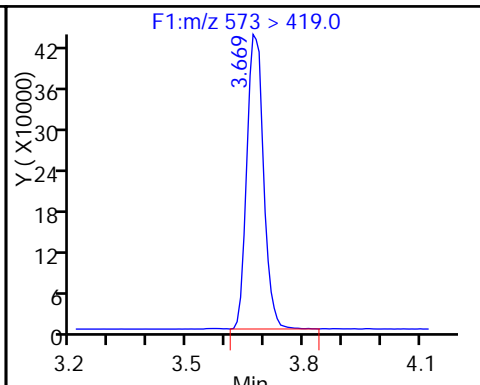
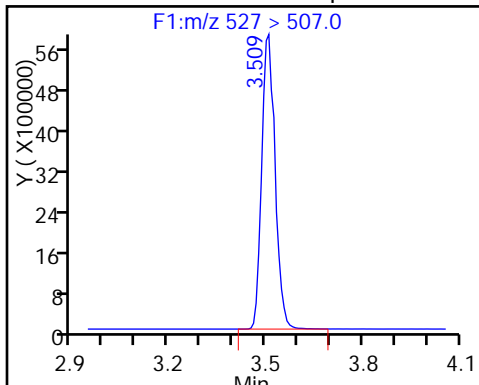
48 Sodium 1H,1H,2H,2H-perfluorooctane D 42 M2-8:2FTS



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

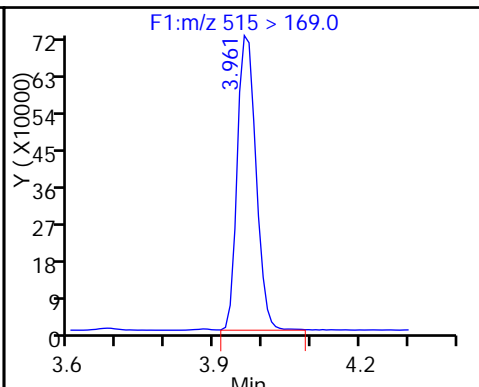
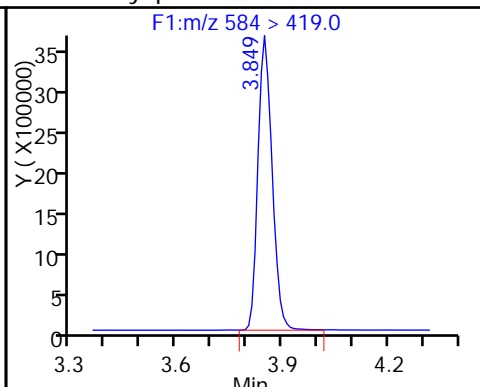
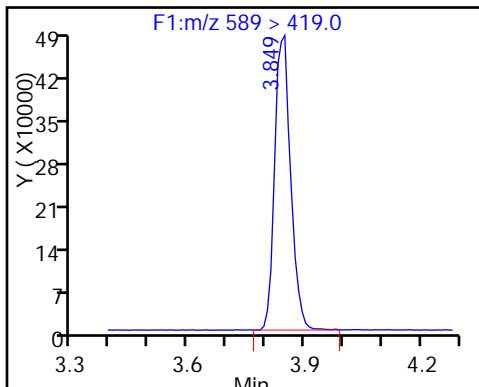
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

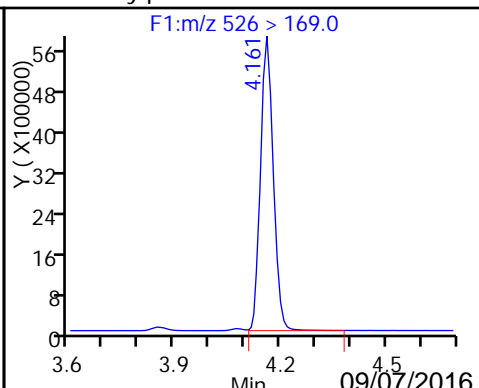
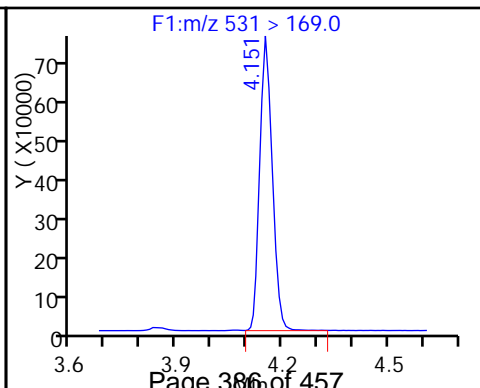
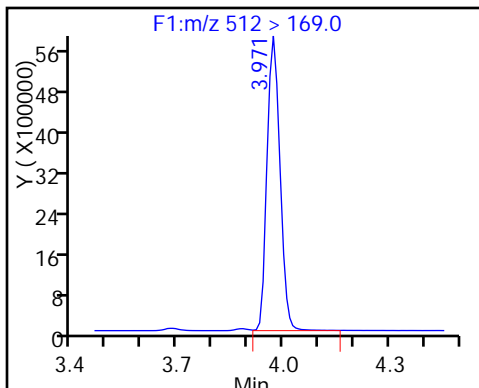
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami







FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-123741/10 Calibration Date: 08/22/2016 17:23  
 Instrument ID: A8 Calib Start Date: 08/22/2016 16:24  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/22/2016 18:23  
 Lab File ID: 22AUG2016A\_012\_p1\_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8640	0.9408		54.4	50.0	8.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.040		50.9	50.0	1.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.803		51.4	44.3	16.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	1.030		53.3	50.0	6.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.152		55.1	50.0	10.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.104		46.9	47.3	-0.8	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.146		57.3	50.0	14.6	25.0
Perfluorooheptanesulfonic Acid (PFHpS)	AveID	1.166	1.215		49.6	47.6	4.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.033		51.7	50.0	3.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.065		45.9	47.8	-4.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9916		53.9	50.0	7.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	1.074		54.6	50.0	9.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.6498		51.1	48.3	6.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.063		49.0	50.0	-1.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	1.045		52.7	50.0	5.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	1.043		53.2	50.0	6.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.8433		50.2	50.0	0.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.166		47.0	50.0	-6.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.9920		43.1	50.0	-13.8	25.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_012\_p1\_e1.d  
 Lims ID: ICV  
 Client ID:  
 Sample Type: ICV  
 Inject. Date: 22-Aug-2016 17:23:00 ALS Bottle#: 0 Worklist Smp#: 10  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info:  
 Operator ID: A8 Instrument ID: A8  
 Sublist:  
 Method: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 24-Aug-2016 08:49:05 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK029

First Level Reviewer: westendorfc Date: 23-Aug-2016 17:57:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.521	1.522	-0.001		7289635	53.7		107	645518	
1 Perfluorobutyric acid										
212.9 > 169.0	1.521	1.524	-0.003	1.000	6858125	54.4			83509	
D 4 13C5-PFPeA										
267.9 > 223.0	1.792	1.797	-0.005		5958573	55.3		111	694323	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.792	1.797	-0.005	1.000	6199484	50.9			103549	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.834	1.837	-0.003	1.000	9566868	51.4				
298.9 > 99.0	1.834	1.837	-0.003	1.000	4141086		2.31(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.080	2.089	-0.009		5025353	51.8		104	521201	
7 Perfluorohexanoic acid										
313 > 269.0	2.080	2.090	-0.010	1.000	5177414	53.3			318345	
12 Perfluoroheptanoic acid										
363 > 319.0	2.423	2.427	-0.004	1.000	5669007	55.1			115952	
D 11 13C4-PFHpA										
367 > 322.0	2.415	2.430	-0.015		4922220	51.0		102	463385	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.430	2.446	-0.016	1.000	6254681	46.9				
D 10 18O2 PFHxS										
403 > 84.0	2.430	2.446	-0.016		5671374	50.4		107	591468	
15 Perfluorooctanoic acid										
413 > 369.0	2.779	2.798	-0.019	1.000	6101214	57.3			25420	
413 > 169.0	2.787	2.798	-0.011	1.003	3399696		1.79(0.90-1.10)		211150	
D 14 13C4 PFOA										
417 > 372.0	2.787	2.798	-0.011		5321747	55.3		111	508887	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.787	2.807	-0.020	1.000	5052147	49.6				
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.166	3.110	0.057	1.000	4444026	45.9			524037	
499 > 99.0	3.166	3.110	0.057	1.000	1040588		4.27(0.90-1.10)		185340	
D 19 13C5 PFNA										
468 > 423.0	3.158	3.177	-0.019		4515776	56.8		114	308665	
D 17 13C4 PFOS										
503 > 80.0	3.166	3.177	-0.011		4177159	50.9		106	211786	
20 Perfluorononanoic acid										
463 > 419.0	3.158	3.183	-0.025	1.000	4664095	51.7			119915	
D 21 13C8 FOSA										
506 > 78.0	3.476	3.474	0.002		7844476	52.3		105	286400	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.468	3.475	-0.007	1.000	7778751	53.9			263354	
24 Perfluorodecanoic acid										
513 > 469.0	3.532	3.546	-0.014	1.000	3969234	54.6			205338	
D 23 13C2 PFDA										
515 > 470.0	3.524	3.546	-0.022		3695904	50.8		102	669719	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.846	3.863	-0.017	1.000	2739816	51.1				
28 Perfluoroundecanoic acid										
563 > 519.0	3.864	3.880	-0.016	1.000	3271004	49.0			151149	
D 27 13C2 PFUnA										
565 > 520.0	3.864	3.880	-0.016		3077415	55.3		111	395923	
D 30 13C2 PFDoA										
615 > 570.0	4.158	4.183	-0.025		2933765	55.2		110	357774	
29 Perfluorododecanoic acid										
613 > 569.0	4.168	4.185	-0.017	1.000	3065324	52.7			125272	
31 Perfluorotridecanoic acid										
633 > 619.0	4.430	4.452	-0.022	1.000	3059491	53.2			200152	
D 32 13C2-PFTeDA										
715 > 670.0	4.677	4.697	-0.020		2511793	53.2		106	480828	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.677	4.701	-0.024	1.000	2474099	50.2			19102	
713 > 169.0	4.677	4.701	-0.024	1.000	831755		2.97(0.00-0.00)		160080	
D 34 13C2-PFHxDA										
815 > 770.0	5.101	5.125	-0.024		3447174	52.4		105	432164	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.101	5.127	-0.026	1.000	3421758	47.0			26734	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.473	5.509	-0.036	1.000	2910135	43.1			21746	

Reagents:

LCPFCIC\_00019

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_012\_p1\_e1.d

Injection Date: 22-Aug-2016 17:23:00

Instrument ID: A8

Lims ID: ICV

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

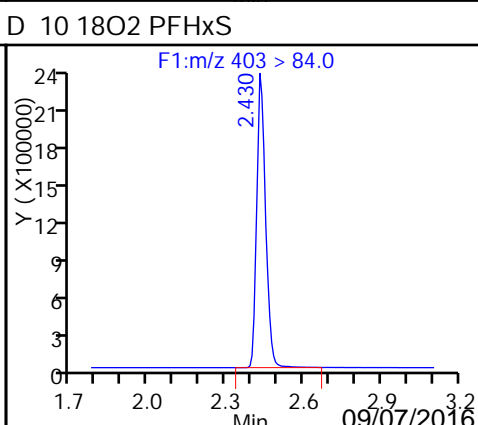
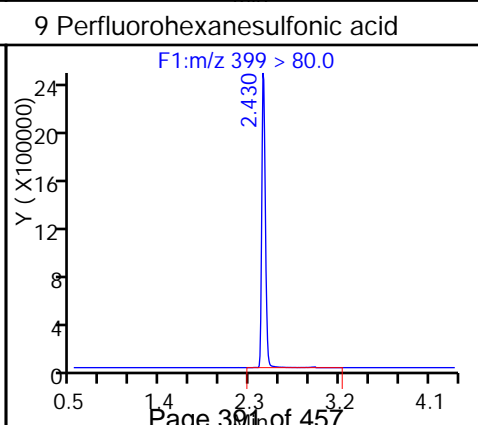
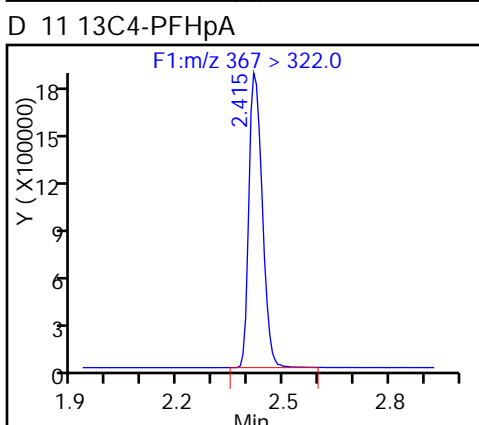
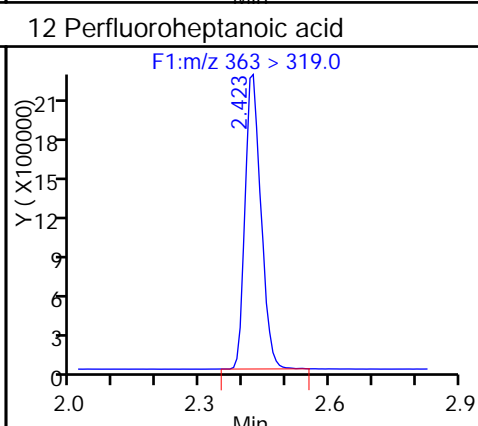
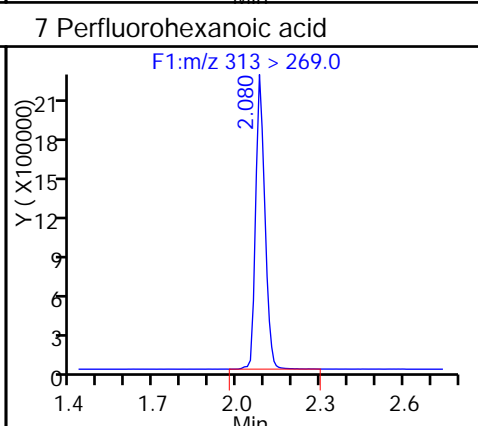
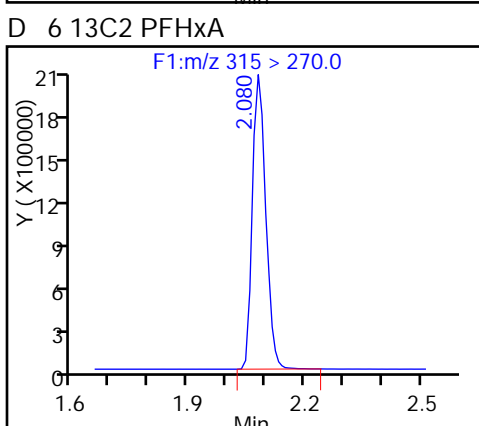
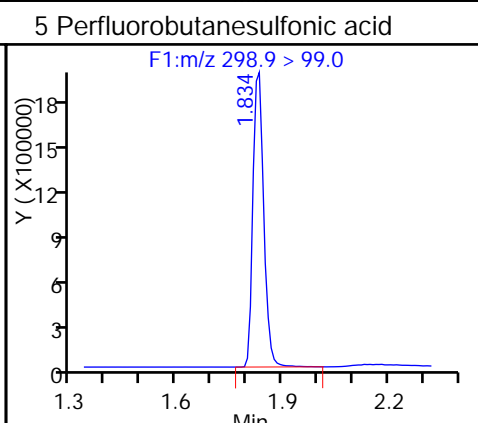
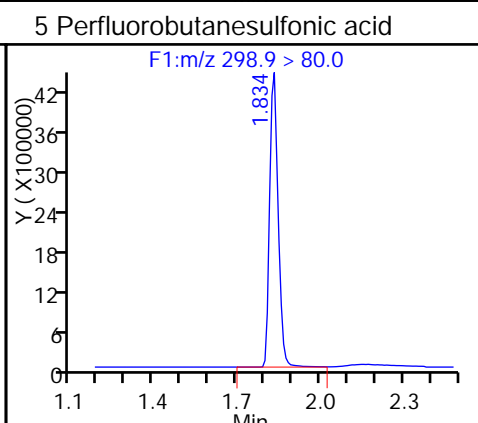
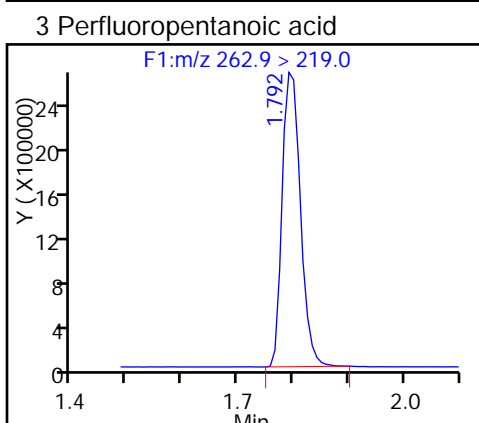
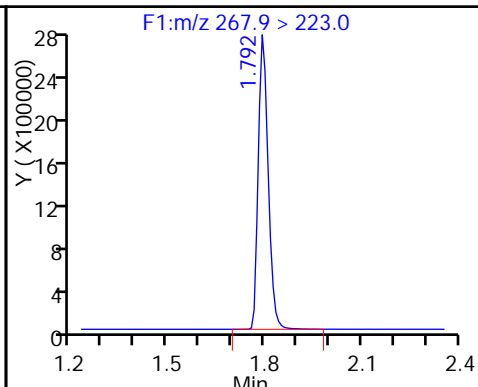
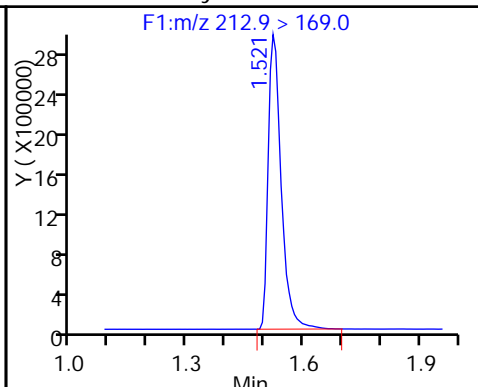
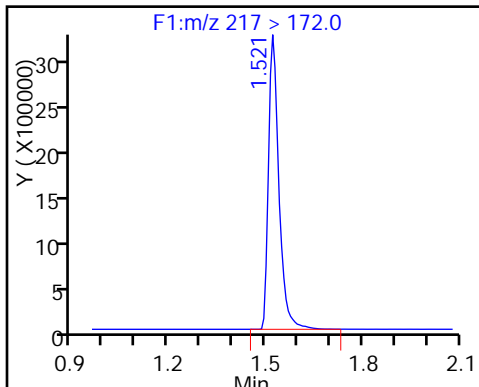
Method: PFC\_A8\_Full

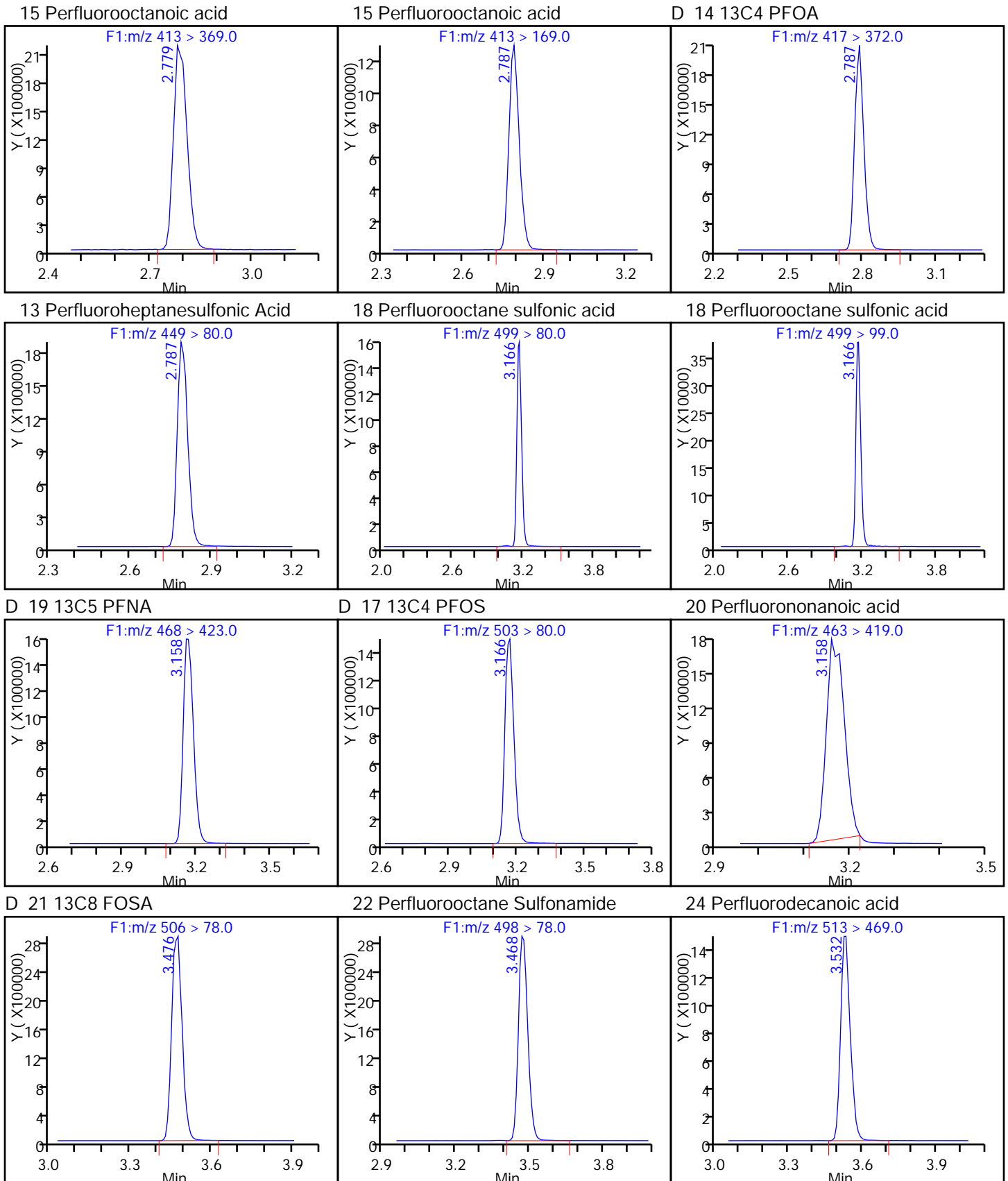
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

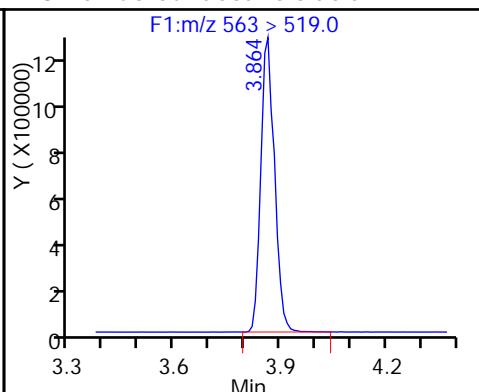
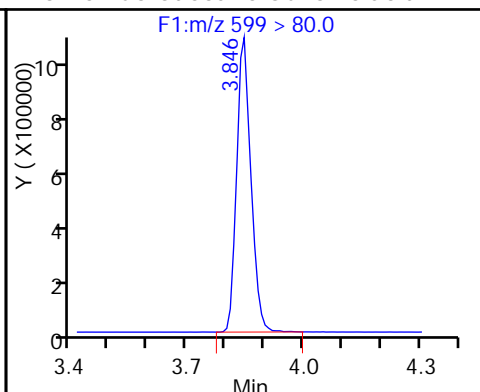
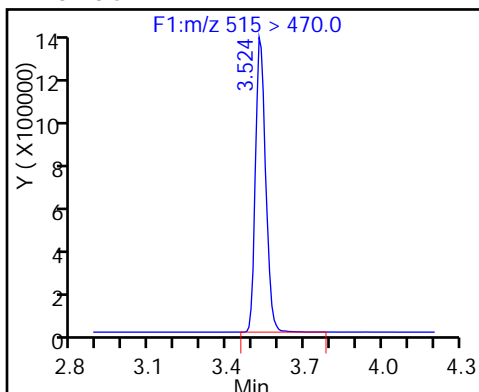




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

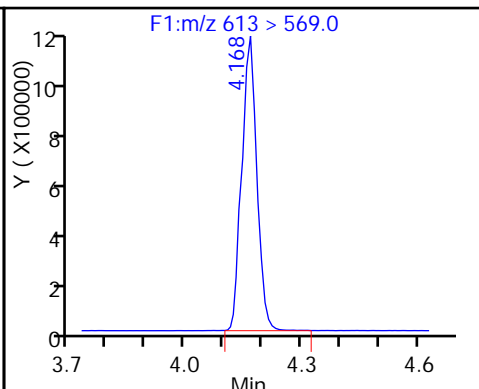
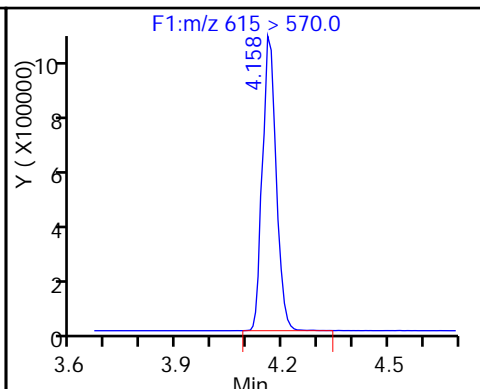
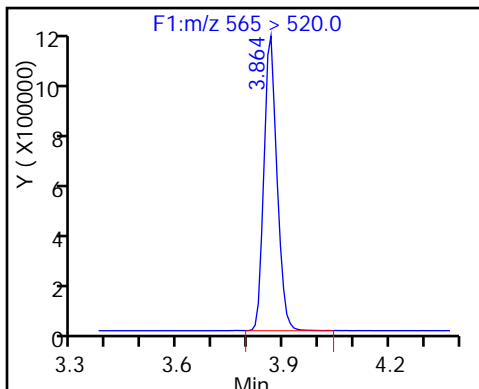
28 Perfluoroundecanoic acid



D 27 13C2 PFuNA

D 30 13C2 PFDaA

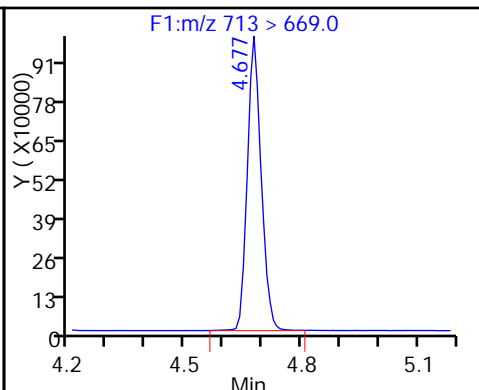
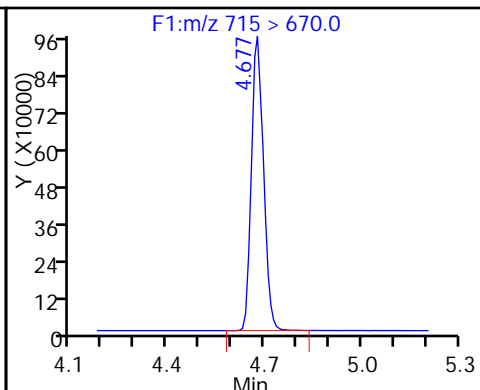
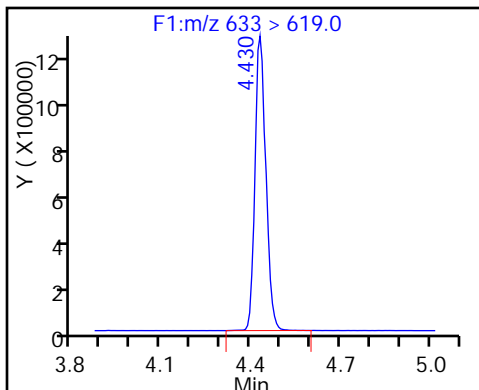
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

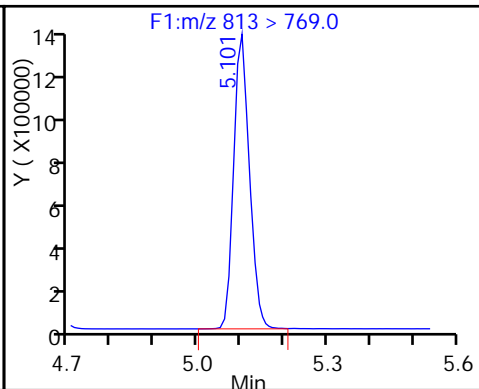
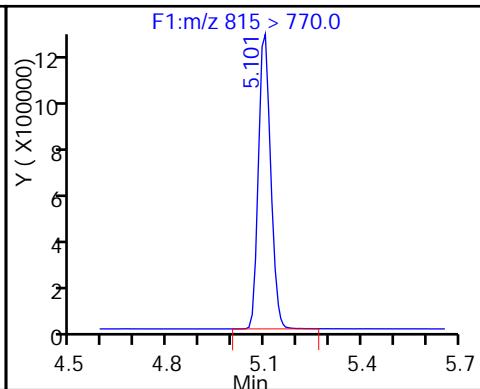
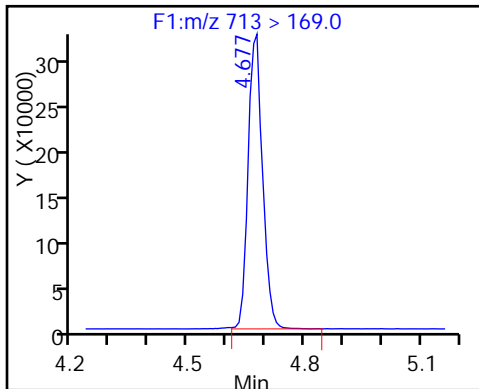
33 Perfluorotetradecanoic acid



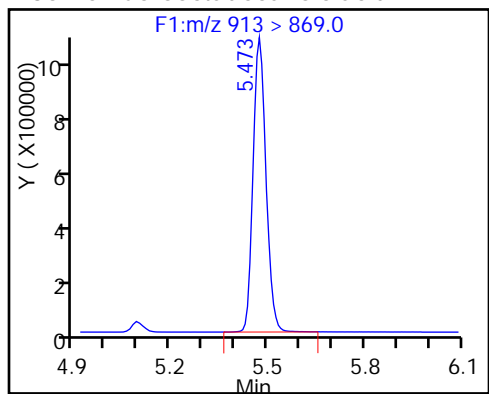
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-124380/2 Calibration Date: 08/26/2016 18:18  
 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: 26AUG2016G\_028\_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	0.9011		20.9	20.0	4.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.041		20.4	20.0	1.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.615		18.4	17.7	4.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.998		20.6	20.0	3.2	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.032		19.7	20.0	-1.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.043		17.1	18.2	-6.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.230		20.1	19.0	5.5	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.120		22.2	20.0	11.1	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.069		17.9	18.6	-3.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.035		20.7	20.0	3.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9498		20.6	20.0	3.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	0.9885		20.1	20.0	0.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.5988		18.8	19.3	-2.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	0.9894		18.3	20.0	-8.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	1.000		20.2	20.0	0.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9493		19.4	20.0	-3.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.7561		18.0	20.0	-10.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	0.9499		15.3	20.0	-23.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.7832		13.9	20.0	-30.6*	25.0



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_028\_p1\_e1.d  
 Lims ID: CCV L4  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 26-Aug-2016 18:18:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:22:00 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:21:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA										
217 > 172.0	1.513	1.522	-0.009		7781477	57.4		115	827678	
1 Perfluorobutyric acid										
212.9 > 169.0	1.520	1.524	-0.004	1.000	2804880	20.9		104	28697	
D 4 13C5-PFPeA										
267.9 > 223.0	1.791	1.797	-0.006		6051566	56.2		112	912543	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.791	1.797	-0.006	1.000	2521048	20.4		102	56539	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.825	1.837	-0.012	1.000	3797394	18.4		104		
298.9 > 99.0	1.825	1.837	-0.012	1.000	1585496		2.40(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.068	2.089	-0.021		5171277	53.3		107	1084330	
7 Perfluorohexanoic acid										
313 > 269.0	2.068	2.090	-0.022	1.000	2063816	20.6		103	122251	
12 Perfluoroheptanoic acid										
363 > 319.0	2.404	2.427	-0.023	1.000	2173471	19.7		98.7	43817	
D 11 13C4-PFHpA										
367 > 322.0	2.404	2.430	-0.026		5264192	54.6		109	565597	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.419	2.446	-0.027	1.000	2525272	17.1		93.7		
D 10 18O2 PFHxS										
403 > 84.0	2.419	2.446	-0.027		6291694	56.0		118	482945	
15 Perfluorooctanoic acid										
413 > 369.0	2.767	2.798	-0.031	1.000	2541395	22.2		111	30687	
413 > 169.0	2.767	2.798	-0.031	1.000	1395676		1.82(0.90-1.10)		110457	
D 14 13C4 PFOA										
417 > 372.0	2.759	2.798	-0.039		5672783	58.9		118	358276	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.767	2.807	-0.040	1.000	2260149	20.1		105		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.024	3.110	-0.085	1.000	1915238	17.9		96.4	108111	
499 > 99.0	3.031	3.110	-0.078	1.002	431856		4.43(0.90-1.10)		5640	
D 19 13C5 PFNA										
468 > 423.0	3.139	3.177	-0.038		4725123	59.4		119	279460	
D 17 13C4 PFOS										
503 > 80.0	3.139	3.177	-0.038		4613894	56.2		118	299095	
20 Perfluorononanoic acid										
463 > 419.0	3.147	3.183	-0.036	1.000	1956216	20.7		104	58402	
D 21 13C8 FOSA										
506 > 78.0	3.460	3.474	-0.014		8399186	56.0		112	459318	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.460	3.475	-0.015	1.000	3190834	20.6		103	138920	
24 Perfluorodecanoic acid										
513 > 469.0	3.500	3.546	-0.046	1.000	1640313	20.1		100	97789	
D 23 13C2 PFDA										
515 > 470.0	3.500	3.546	-0.046		4148537	57.0		114	1499234	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.815	3.863	-0.048	1.000	1114358	18.8		97.7		
28 Perfluoroundecanoic acid										
563 > 519.0	3.833	3.880	-0.047	1.000	1361005	18.3		91.3	71488	
D 27 13C2 PFUnA										
565 > 520.0	3.833	3.880	-0.047		3438868	61.8		124	394859	
D 30 13C2 PFDoA										
615 > 570.0	4.125	4.183	-0.058		3126359	58.8		118	274021	
29 Perfluorododecanoic acid										
613 > 569.0	4.132	4.185	-0.053	1.000	1250133	20.2		101	73632	
31 Perfluorotridecanoic acid										
633 > 619.0	4.400	4.452	-0.052	1.000	1187168	19.4		96.9	92208	
D 32 13C2-PFTeDA										
715 > 670.0	4.644	4.697	-0.053		2563505	54.3		109	330303	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.644	4.701	-0.057	1.000	945531	18.0		90.0	7845	
713 > 169.0	4.634	4.701	-0.067	0.998	320124		2.95(0.00-0.00)		64339	
D 34 13C2-PFHxDA										
815 > 770.0	5.060	5.125	-0.065		3205566	48.7		97.4	587937	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.060	5.127	-0.067	1.000	1187843	15.3		76.6	5555	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.422	5.509	-0.087	1.000	979433	13.9		69.4	6509	

## Reagents:

LCPFC-L4\_00022

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_028\_p1\_e1.d

Injection Date: 26-Aug-2016 18:18:00

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

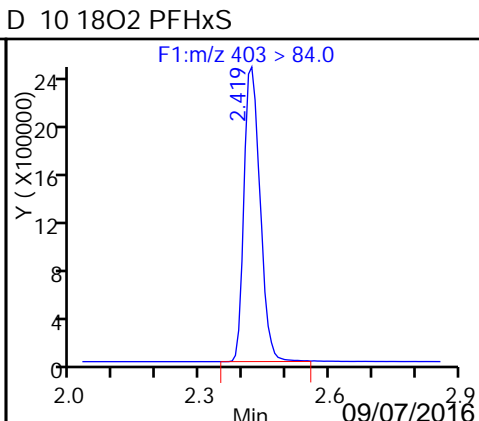
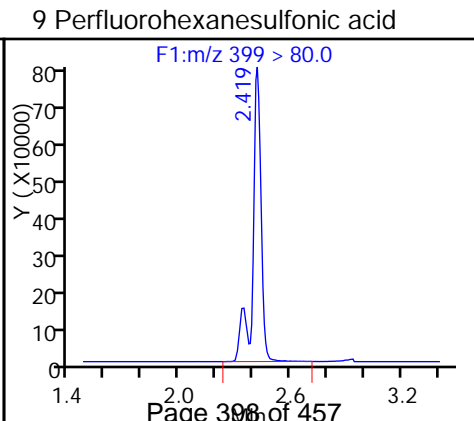
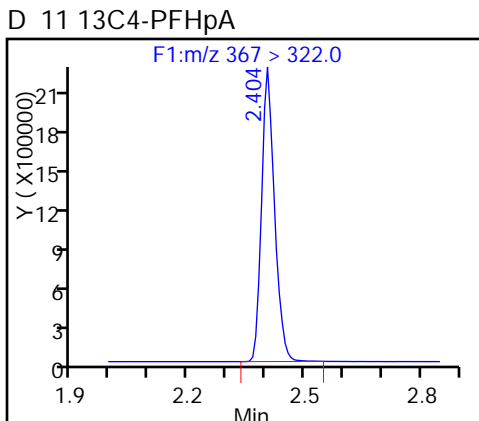
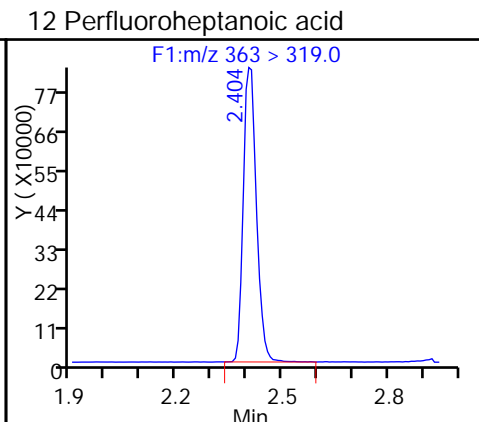
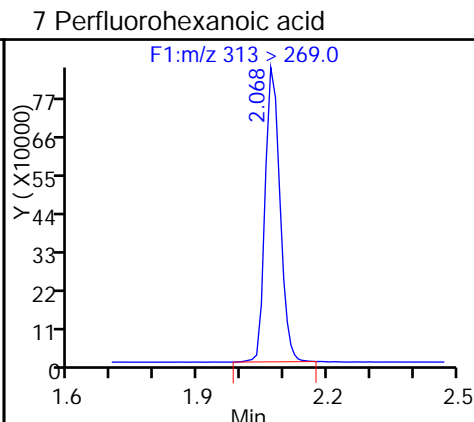
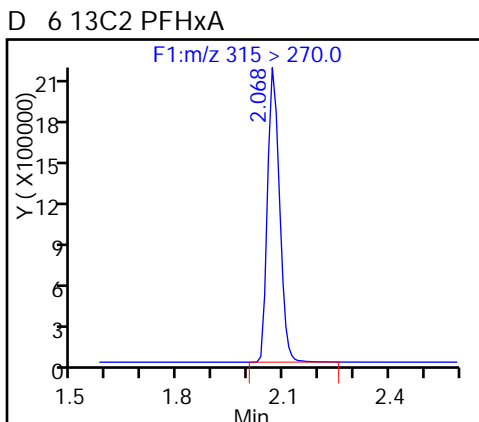
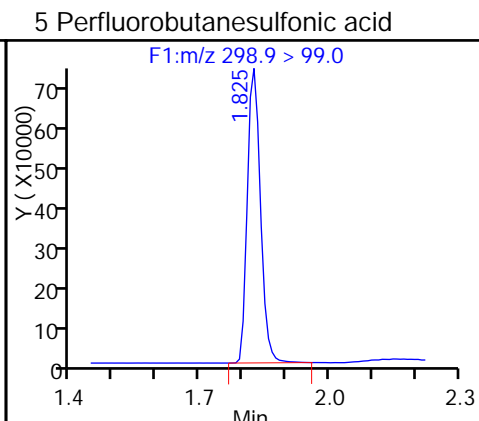
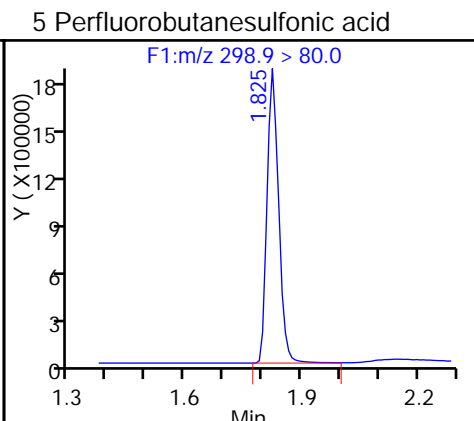
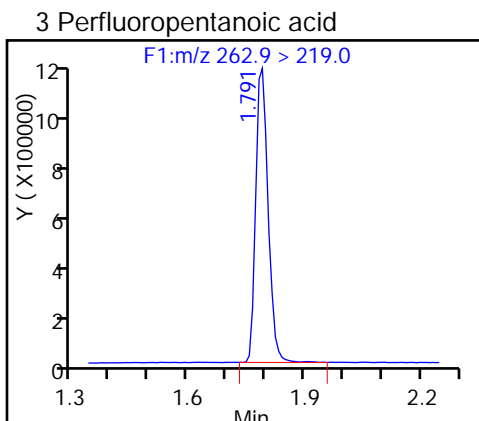
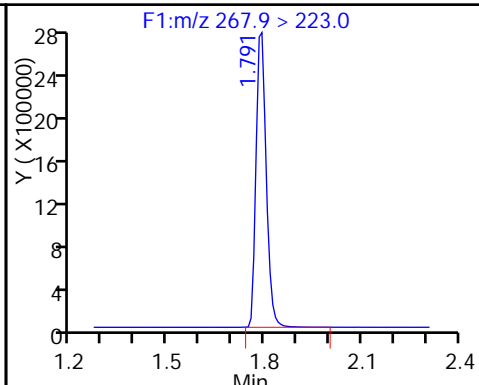
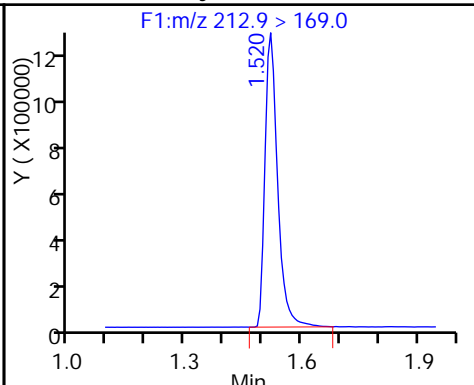
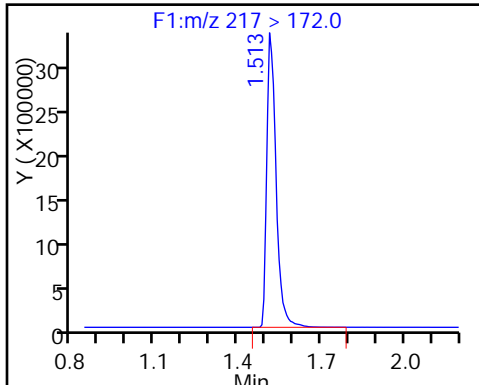
Method: PFC\_A8\_Full

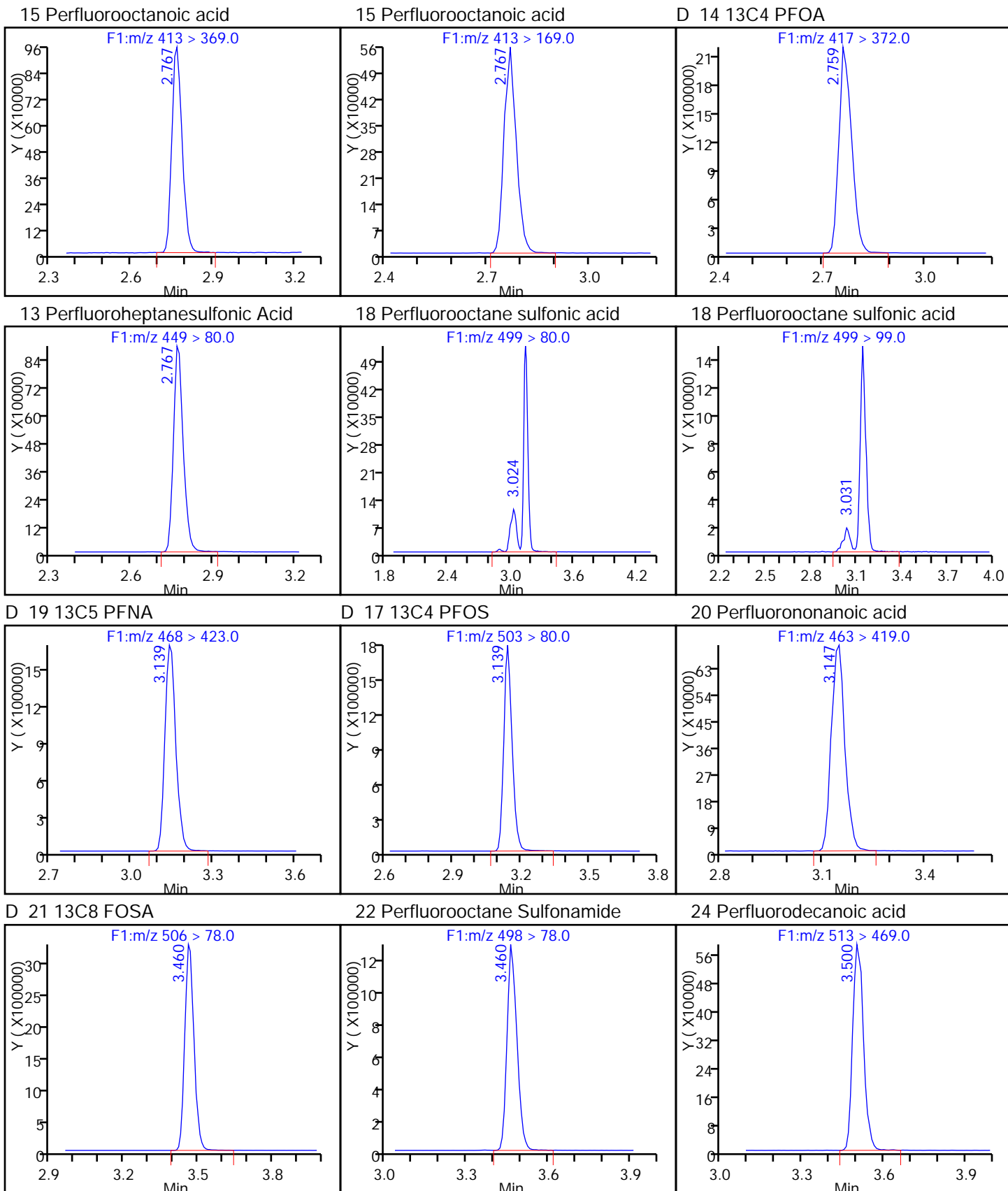
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

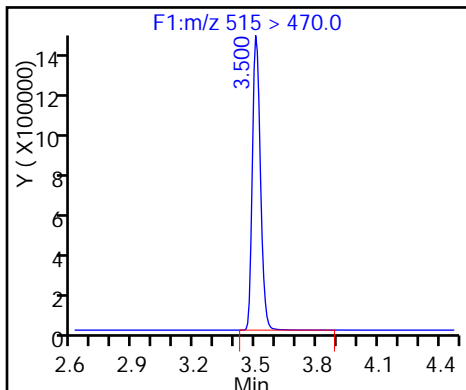
1 Perfluorobutyric acid

D 4 13C5-PFPeA

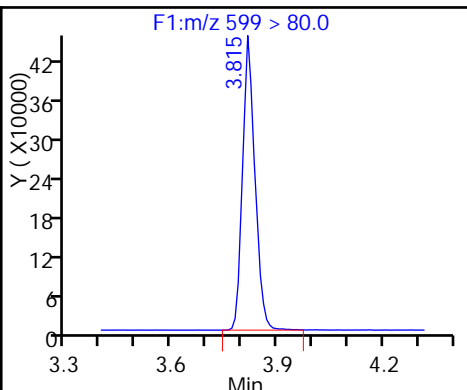




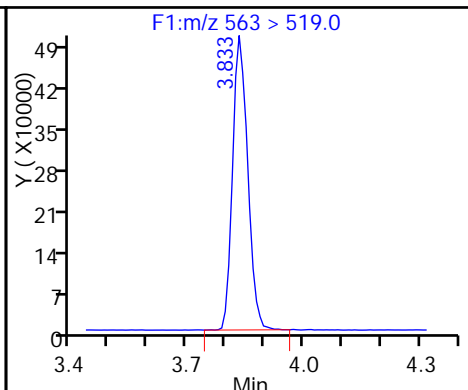
D 23 13C2 PFDA



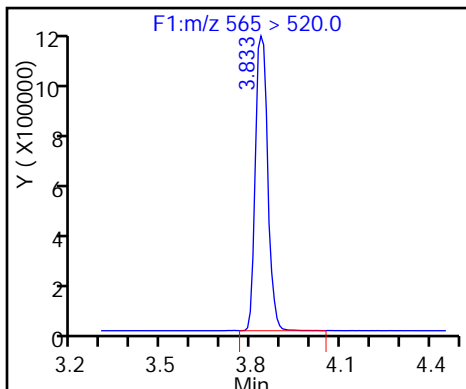
26 Perfluorodecane Sulfonic acid



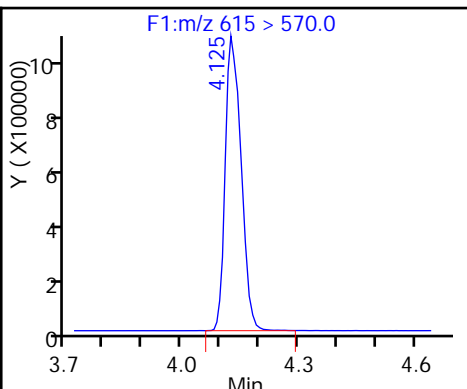
28 Perfluoroundecanoic acid



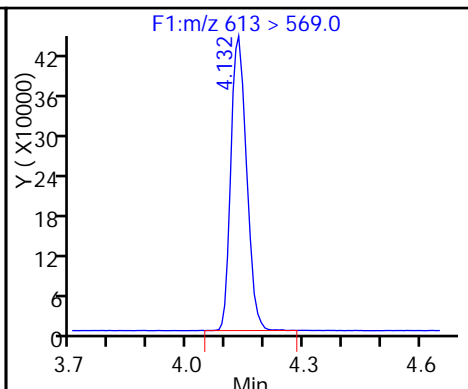
D 27 13C2 PFUa



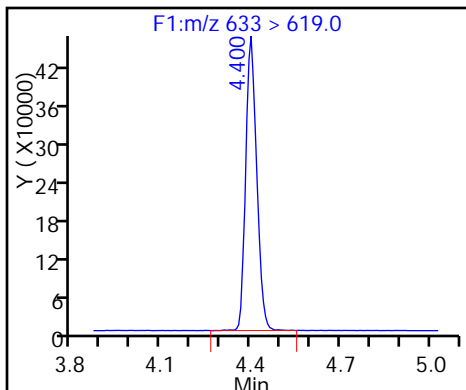
D 30 13C2 PFDa



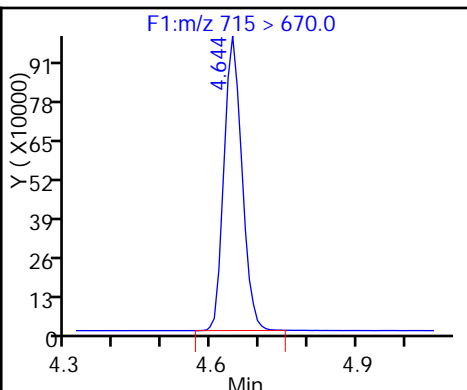
29 Perfluorododecanoic acid



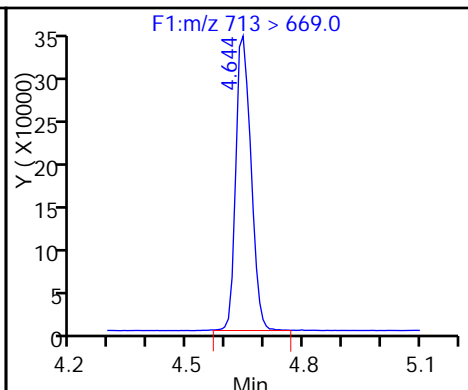
31 Perfluorotridecanoic acid



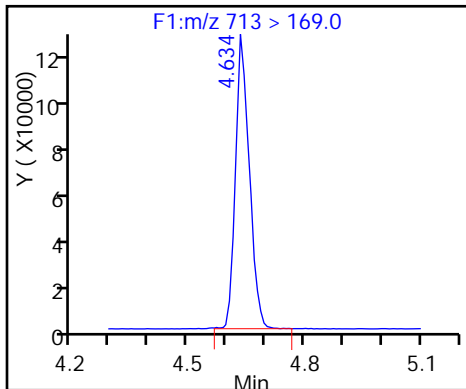
D 32 13C2-PFTeDa



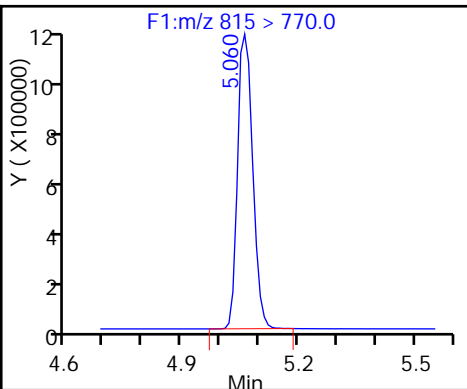
33 Perfluorotetradecanoic acid



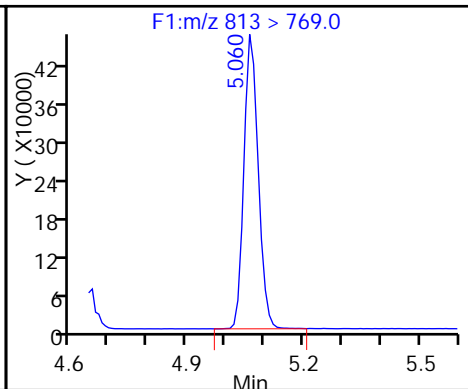
33 Perfluorotetradecanoic acid



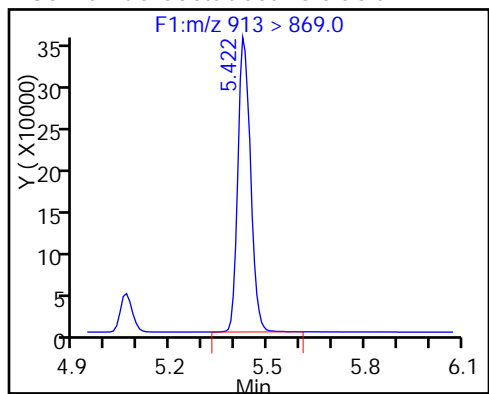
D 34 13C2-PFHxDa



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-124380/16 Calibration Date: 08/26/2016 20:03  
 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: 26AUG2016G\_042\_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	0.9016		52.2	50.0	4.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	1.054		51.6	50.0	3.1	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.674		47.7	44.2	7.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9829		50.9	50.0	1.7	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.014		48.5	50.0	-3.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.063		43.5	45.5	-4.5	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.042		52.1	50.0	4.1	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.201		49.0	47.6	3.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.074		44.9	46.4	-3.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.049		52.5	50.0	5.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9755		53.0	50.0	6.0	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	1.002		50.9	50.0	1.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.5824		45.8	48.2	-5.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	1.049		48.4	50.0	-3.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	0.9746		49.2	50.0	-1.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9468		48.3	50.0	-3.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.7887		46.9	50.0	-6.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	1.033		41.6	50.0	-16.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.8330		36.3	50.0	-27.5*	25.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_042\_p1\_e1.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 26-Aug-2016 20:03:00 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:58:18 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:58:18

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	1.515	1.522	-0.007		7378926	54.4		109	610489	
1 Perfluorobutyric acid										
212.9 > 169.0	1.515	1.524	-0.009	1.000	6652479	52.2		104	64701	
D 4 13C5-PFPeA										
267.9 > 223.0	1.784	1.797	-0.013		5716745	53.0		106	867308	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.784	1.797	-0.013	1.000	6027748	51.6		103	109051	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	9204197	47.7		108		
298.9 > 99.0	1.817	1.837	-0.020	1.000	4006984		2.30(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.059	2.089	-0.030		4915373	50.7		101	660917	
7 Perfluorohexanoic acid										
313 > 269.0	2.059	2.090	-0.031	1.000	4831287	50.9		102	276679	
12 Perfluoroheptanoic acid										
363 > 319.0	2.397	2.427	-0.030	1.000	5056913	48.5		97.0	110227	
D 11 13C4-PFHpA										
367 > 322.0	2.397	2.430	-0.033		4986908	51.7		103	410395	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.412	2.446	-0.034	1.000	6016542	43.5		95.5		
D 10 18O2 PFHxS										
403 > 84.0	2.412	2.446	-0.034		5883389	52.3		111	472987	
15 Perfluorooctanoic acid										
413 > 369.0	2.750	2.798	-0.048	1.000	5611668	52.1		104	68330	
413 > 169.0	2.759	2.798	-0.039	1.003	3216135		1.74(0.90-1.10)		190970	
D 14 13C4 PFOA										
417 > 372.0	2.750	2.798	-0.048		5384211	55.9		112	415818	



Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.767	2.807	-0.040	1.000	5391101	49.0		103		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.023	3.110	-0.086	1.000	4698311	44.9		96.8	131062	
499 > 99.0	3.023	3.110	-0.086	1.000	1065929		4.41(0.90-1.10)		11719	
D 19 13C5 PFNA										
468 > 423.0	3.130	3.177	-0.047		4426398	55.7		111	399945	
D 17 13C4 PFOS										
503 > 80.0	3.130	3.177	-0.047		4508156	54.9		115	244186	
20 Perfluorononanoic acid										
463 > 419.0	3.130	3.183	-0.053	1.000	4644274	52.5		105	203666	
D 21 13C8 FOSA										
506 > 78.0	3.459	3.474	-0.015		8092733	54.0		108	330729	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.459	3.475	-0.016	1.000	7894181	53.0		106	336602	
24 Perfluorodecanoic acid										
513 > 469.0	3.491	3.546	-0.055	1.000	3965409	50.9		102	358067	
D 23 13C2 PFDA										
515 > 470.0	3.491	3.546	-0.055		3958040	54.4		109	372094	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.801	3.863	-0.062	1.000	2647688	45.8		95.0		
28 Perfluoroundecanoic acid										
563 > 519.0	3.819	3.880	-0.061	1.000	3133875	48.4		96.8	169102	
D 27 13C2 PFUnA										
565 > 520.0	3.819	3.880	-0.061		2988215	53.7		107	364985	
D 30 13C2 PFDoA										
615 > 570.0	4.121	4.183	-0.062		2975706	56.0		112	364329	
29 Perfluorododecanoic acid										
613 > 569.0	4.121	4.185	-0.064	1.000	2900106	49.2		98.4	146931	
31 Perfluorotridecanoic acid										
633 > 619.0	4.388	4.452	-0.064	1.000	2817492	48.3		96.6	263458	
D 32 13C2-PFTeDA										
715 > 670.0	4.630	4.697	-0.067		2581200	54.7		109	495397	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.630	4.701	-0.071	1.000	2346946	46.9		93.9	38323	
713 > 169.0	4.630	4.701	-0.071	1.000	779005		3.01(0.00-0.00)		145031	
D 34 13C2-PFHxDA										
815 > 770.0	5.047	5.125	-0.078		3448211	52.4		105	442465	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.047	5.127	-0.080	1.000	3073963	41.6		83.3	15884	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.407	5.509	-0.102	1.000	2478642	36.3		72.5	16200	

## Reagents:

LCPFC-L5\_00020

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_042\_p1\_e1.d

Injection Date: 26-Aug-2016 20:03:00

Instrument ID: A8

Lims ID: CCV L5

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

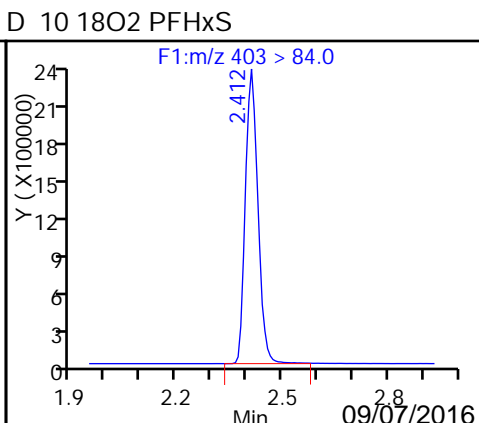
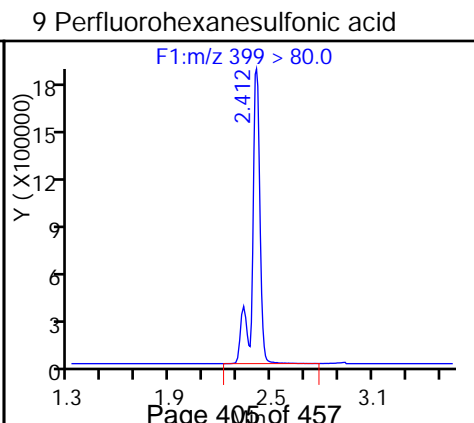
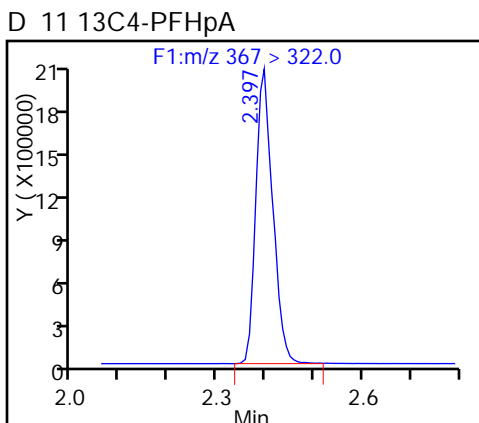
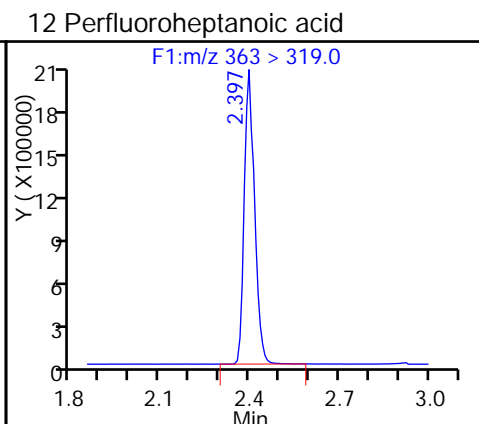
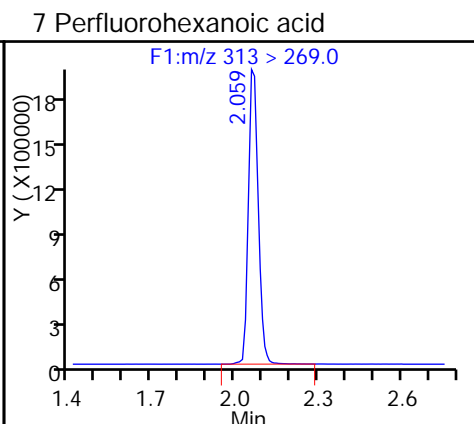
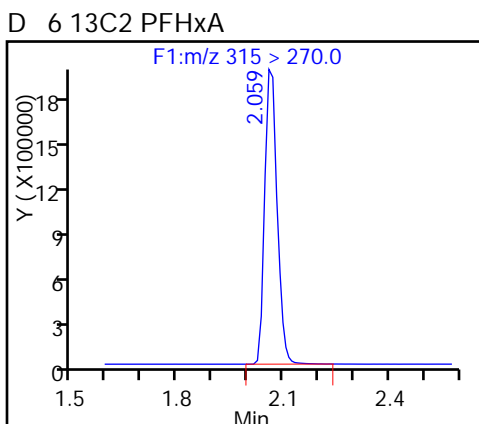
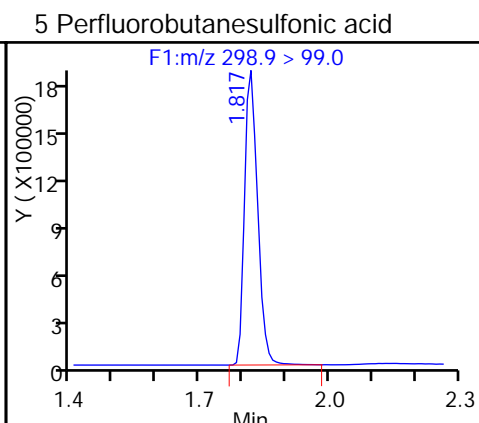
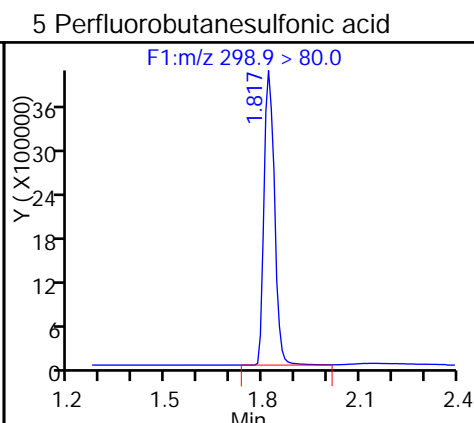
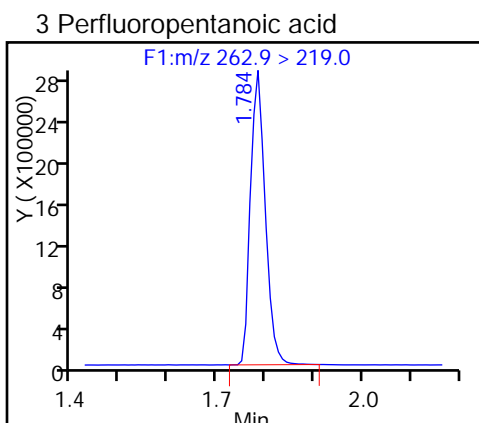
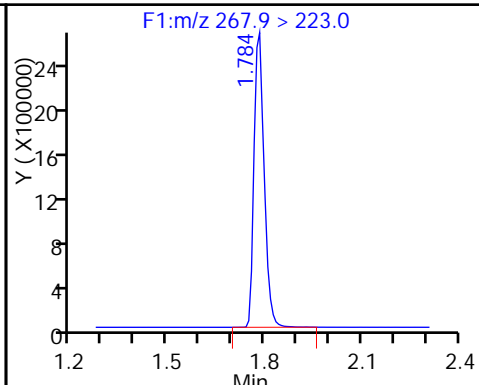
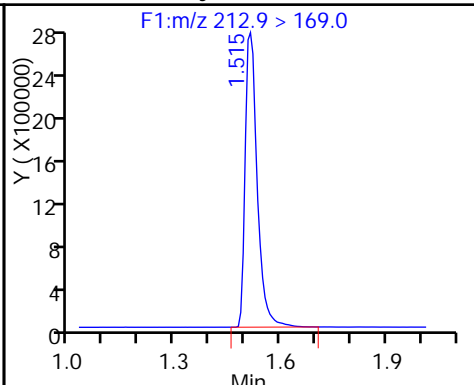
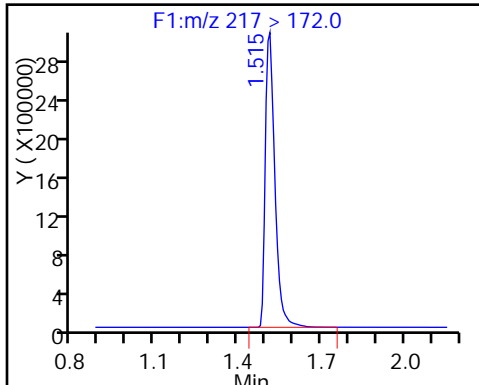
Method: PFC\_A8\_Full

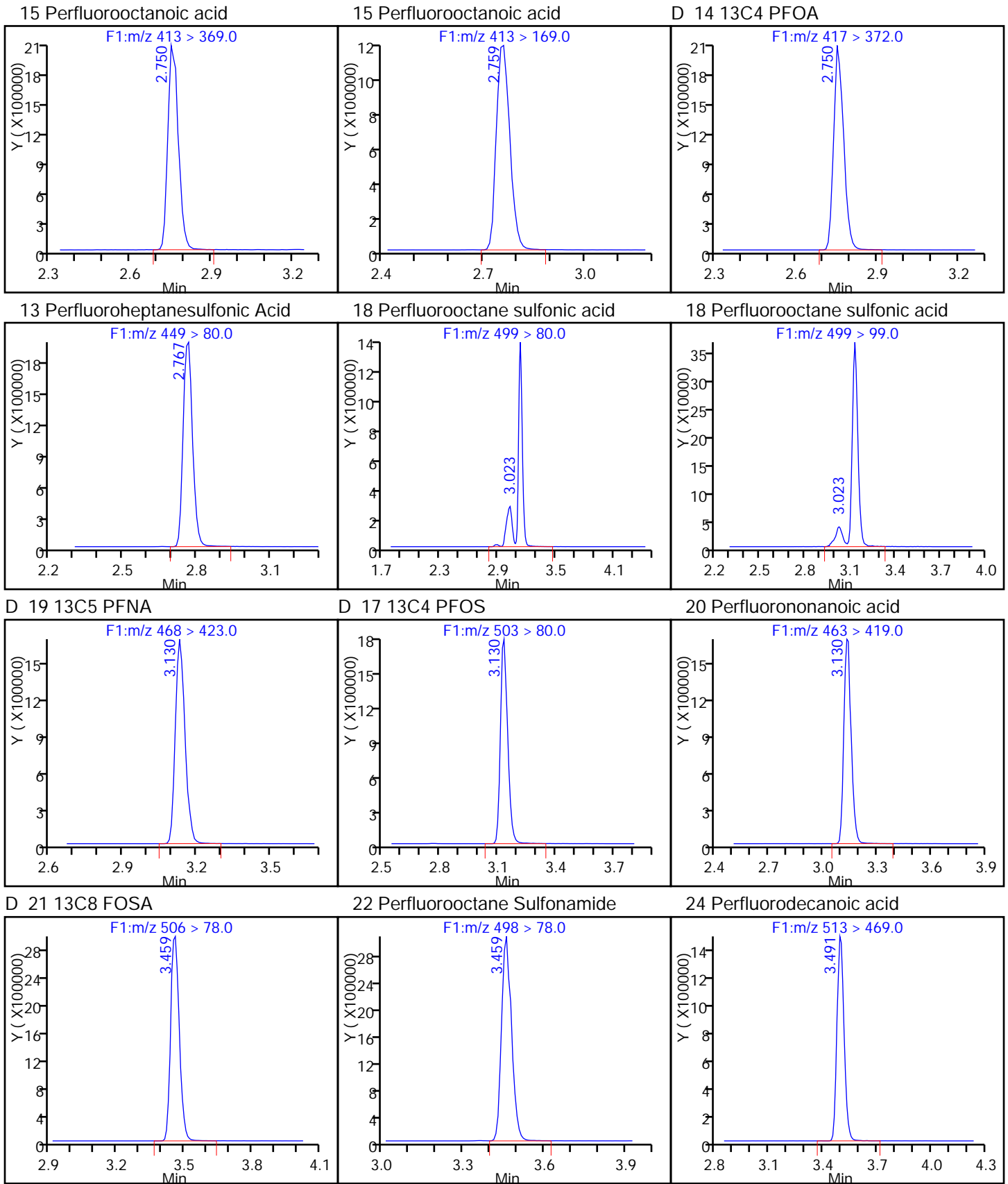
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

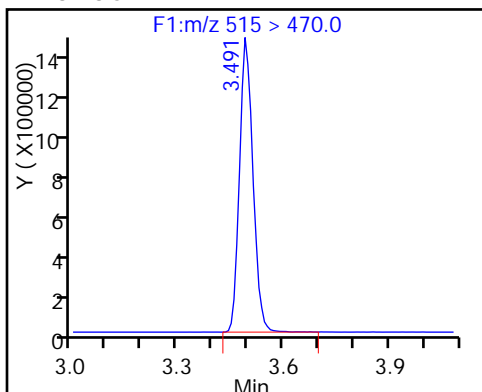
1 Perfluorobutyric acid

D 4 13C5-PFPeA

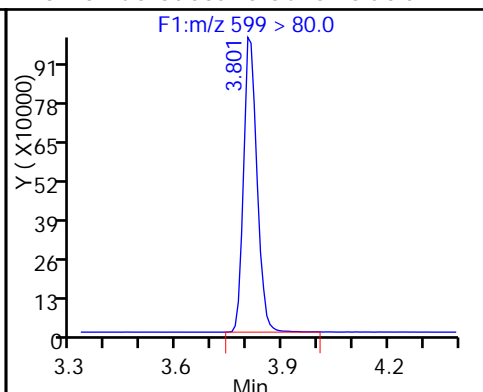




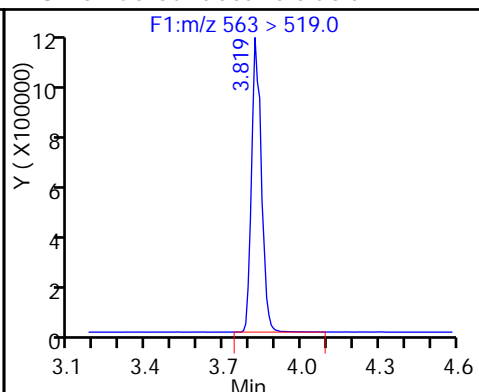
D 23 13C2 PFDA



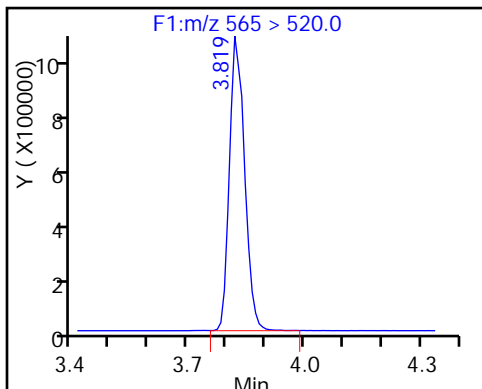
26 Perfluorodecane Sulfonic acid



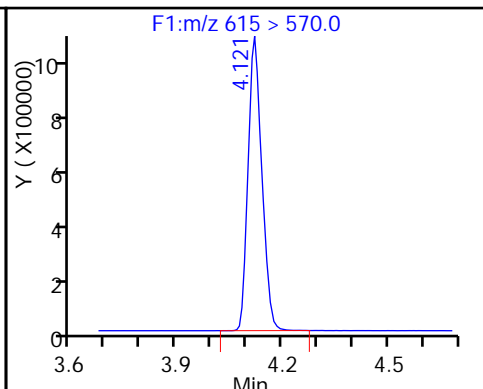
28 Perfluoroundecanoic acid



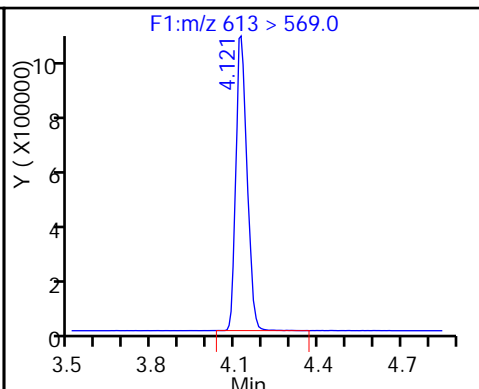
D 27 13C2 PFUa



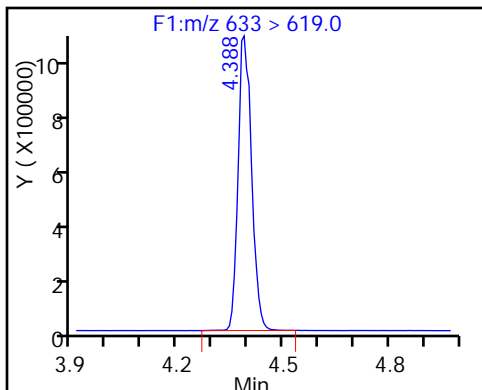
D 30 13C2 PFDa



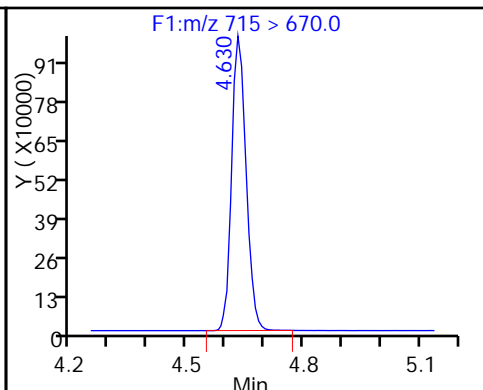
29 Perfluorododecanoic acid



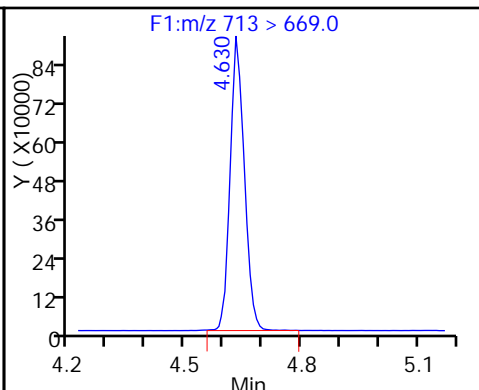
31 Perfluorotridecanoic acid



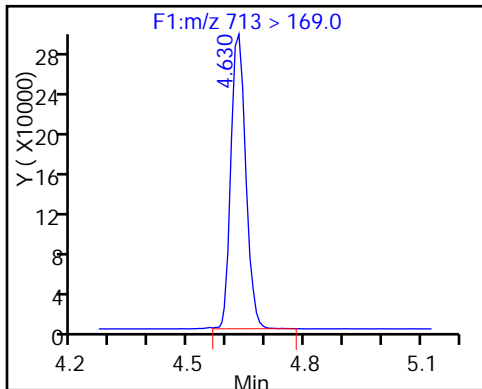
D 32 13C2-PFTeDA



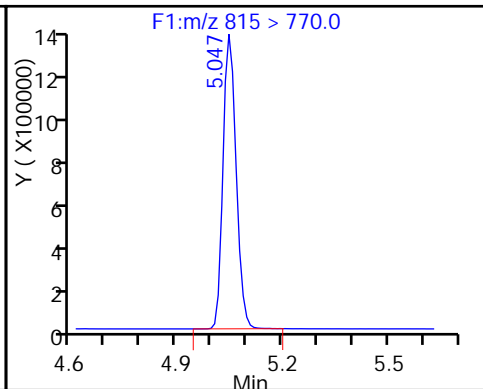
33 Perfluorotetradecanoic acid



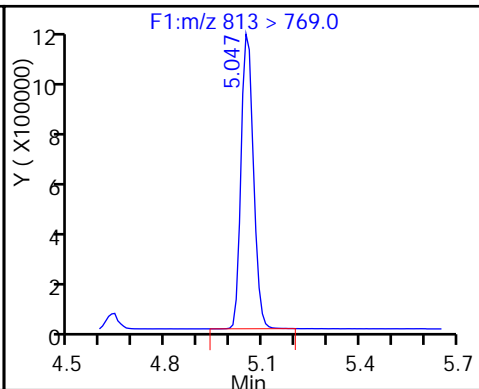
33 Perfluorotetradecanoic acid



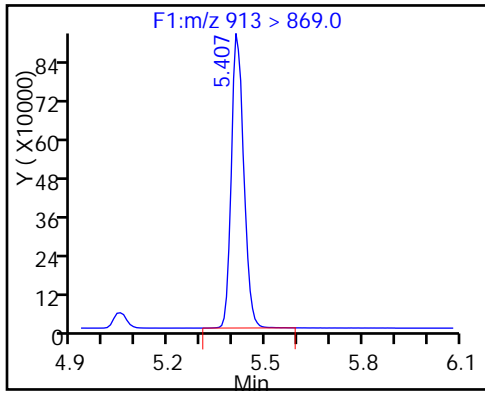
D 34 13C2-PFHxDa



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-124380/24 Calibration Date: 08/26/2016 21:03  
 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: 26AUG2016G\_050\_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	0.9210		21.3	20.0	6.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.023	0.9913		19.4	20.0	-3.1	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.553	1.597		18.2	17.7	2.9	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9664	0.9703		20.1	20.0	0.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.046	1.005		19.2	20.0	-3.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.113	1.060		17.3	18.2	-4.8	25.0
Perfluorooctanoic acid (PFOA)	L1ID		1.036		20.5	20.0	2.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.166	1.220		19.9	19.0	4.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.109	1.092		18.3	18.6	-1.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.999	1.061		21.2	20.0	6.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9205	0.9426		20.5	20.0	2.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9838	0.9843		20.0	20.0	0.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6130	0.6021		18.9	19.3	-1.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.084	0.9892		18.3	20.0	-8.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9906	0.9854		19.9	20.0	-0.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9798	0.9866		20.1	20.0	0.7	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.8401	0.7855		18.7	20.0	-6.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.240	0.9804		15.8	20.0	-21.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	L1ID		0.8284		14.7	20.0	-26.7*	25.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_050\_p1\_e1.d  
 Lims ID: CCV L4  
 Client ID:  
 Sample Type: CCV  
 Inject. Date: 26-Aug-2016 21:03:00 ALS Bottle#: 0 Worklist Smp#: 24  
 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\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 11:10:05 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: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 11:10:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA										
217 > 172.0	1.514	1.522	-0.008		8004082	59.0		118	858353	
1 Perfluorobutyric acid										
212.9 > 169.0	1.514	1.524	-0.010	1.000	2948582	21.3		107	36535	
D 4 13C5-PFPeA										
267.9 > 223.0	1.783	1.797	-0.014		6315861	58.6		117	1018794	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.783	1.797	-0.014	1.000	2504335	19.4		96.9	46916	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	3861405	18.2		103		
298.9 > 99.0	1.817	1.837	-0.020	1.000	1645462		2.35(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.069	2.089	-0.020		5207268	53.7		107	556293	
7 Perfluorohexanoic acid										
313 > 269.0	2.069	2.090	-0.021	1.000	2021108	20.1		100	142457	
12 Perfluoroheptanoic acid										
363 > 319.0	2.397	2.427	-0.030	1.000	2142853	19.2		96.1	47092	
D 11 13C4-PFHpA										
367 > 322.0	2.397	2.430	-0.033		5330065	55.2		110	695642	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.420	2.446	-0.026	1.000	2637919	17.3		95.2		
D 10 18O2 PFHxS										
403 > 84.0	2.413	2.446	-0.033		6468397	57.5		122	429837	
15 Perfluorooctanoic acid										
413 > 369.0	2.759	2.798	-0.039	1.000	2427947	20.5		103	33961	
413 > 169.0	2.759	2.798	-0.039	1.000	1433239		1.69(0.90-1.10)		126153	
D 14 13C4 PFOA										
417 > 372.0	2.768	2.798	-0.030		5860085	60.8		122	410961	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.768	2.807	-0.039	1.000	2346944	19.9		105		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.024	3.110	-0.085	1.000	2048337	18.3		98.5	56333	
499 > 99.0	3.024	3.110	-0.085	1.000	460792		4.45(0.90-1.10)		8624	
D 19 13C5 PFNA										
468 > 423.0	3.131	3.177	-0.046		4688791	59.0		118	550044	
D 17 13C4 PFOS										
503 > 80.0	3.131	3.177	-0.046		4829525	58.8		123	471756	
20 Perfluorononanoic acid										
463 > 419.0	3.139	3.183	-0.044	1.000	1990235	21.2		106	86556	
D 21 13C8 FOSA										
506 > 78.0	3.468	3.474	-0.006		8670332	57.8		116	294141	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.460	3.475	-0.015	1.000	3269075	20.5		102	249402	
24 Perfluorodecanoic acid										
513 > 469.0	3.499	3.546	-0.047	1.000	1678160	20.0		100	108396	
D 23 13C2 PFDA										
515 > 470.0	3.499	3.546	-0.047		4262301	58.6		117	563178	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.812	3.863	-0.051	1.000	1172947	18.9		98.2		
28 Perfluoroundecanoic acid										
563 > 519.0	3.830	3.880	-0.050	1.000	1403179	18.3		91.3	84031	
D 27 13C2 PFUnA										
565 > 520.0	3.821	3.880	-0.059		3546197	63.7		127	254332	
D 30 13C2 PFDoA										
615 > 570.0	4.123	4.183	-0.060		3146226	59.2		118	383813	
29 Perfluorododecanoic acid										
613 > 569.0	4.116	4.185	-0.069	1.000	1240076	19.9		99.5	78690	
31 Perfluorotridecanoic acid										
633 > 619.0	4.389	4.452	-0.063	1.000	1241654	20.1		101	121984	
D 32 13C2-PFTeDA										
715 > 670.0	4.631	4.697	-0.066		2733968	57.9		116	354353	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.631	4.701	-0.070	1.000	988537	18.7		93.5	12048	
713 > 169.0	4.622	4.701	-0.079	0.998	344062		2.87(0.00-0.00)		129869	
D 34 13C2-PFHxDA										
815 > 770.0	5.048	5.125	-0.077		3364875	51.1		102	349880	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.048	5.127	-0.079	1.000	1233872	15.8		79.0	5566	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.407	5.509	-0.102	1.000	1042556	14.7		73.3	7172	

Reagents:

LCPFC-L4\_00022

Amount Added: 1.00

Units: mL



Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_050\_p1\_e1.d

Injection Date: 26-Aug-2016 21:03:00

Instrument ID: A8

Lims ID: CCV L4

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

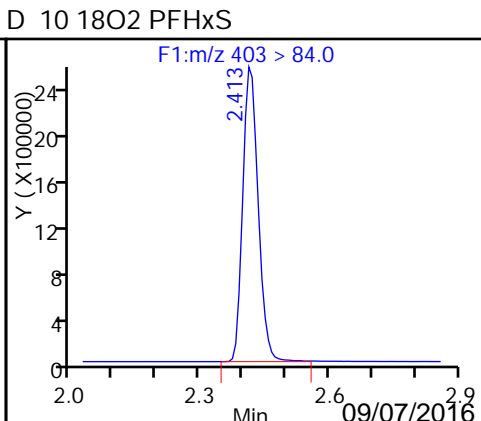
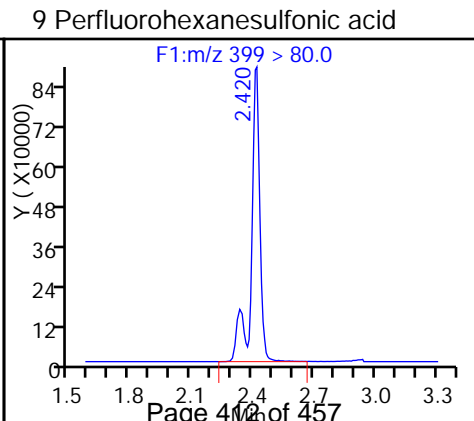
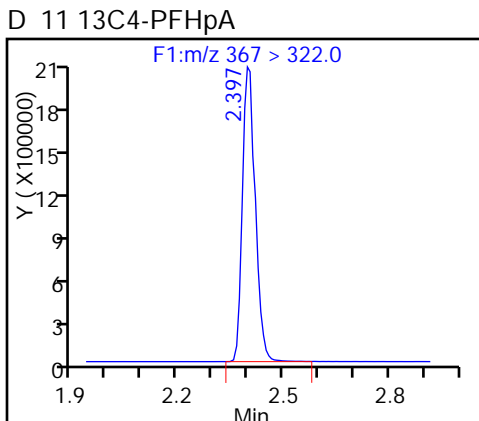
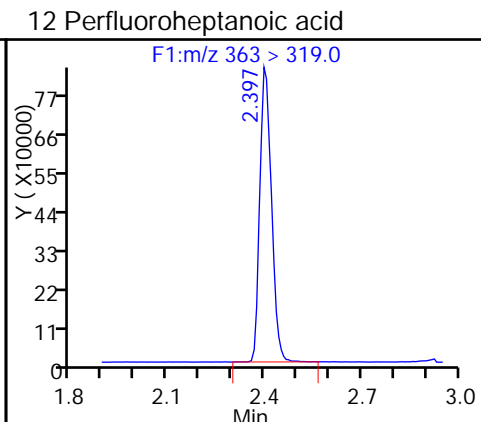
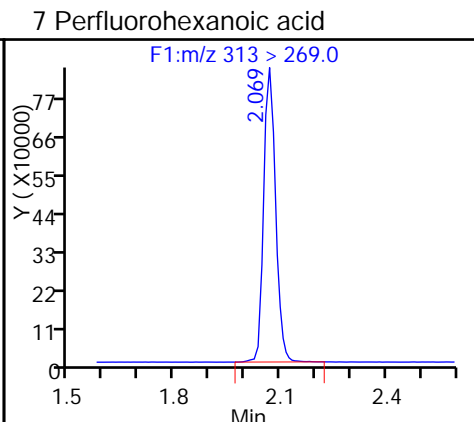
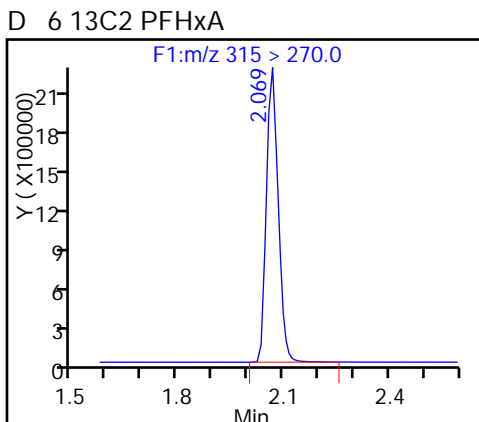
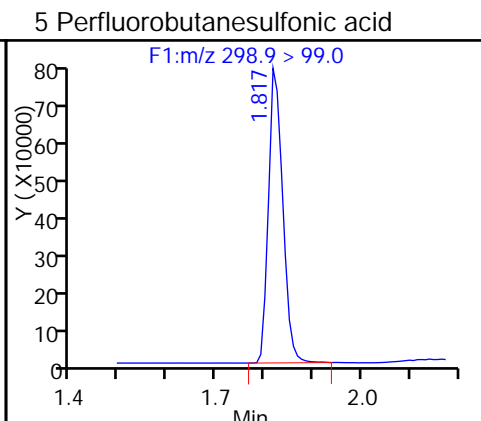
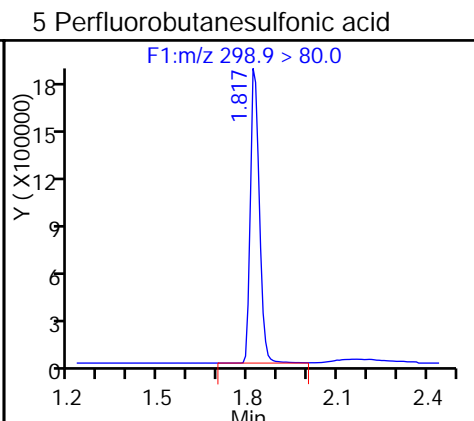
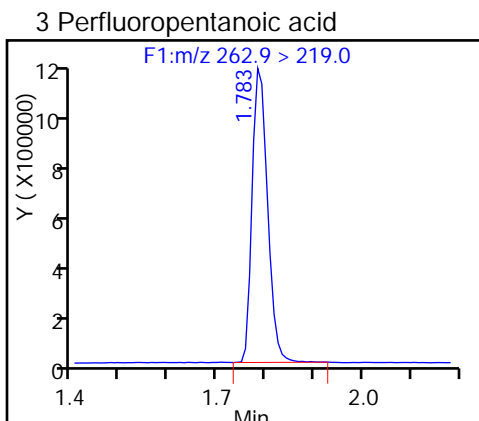
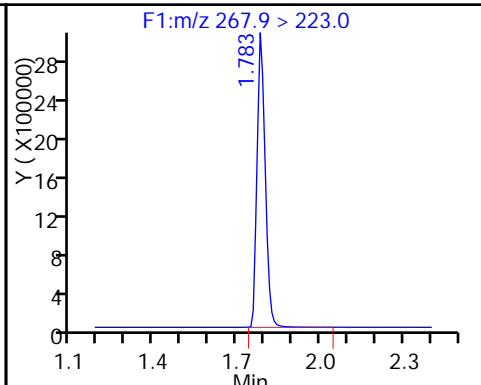
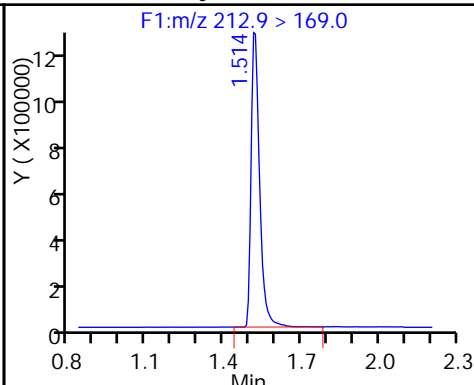
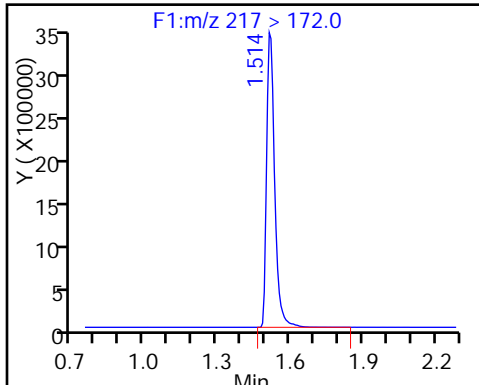
Method: PFC\_A8\_Full

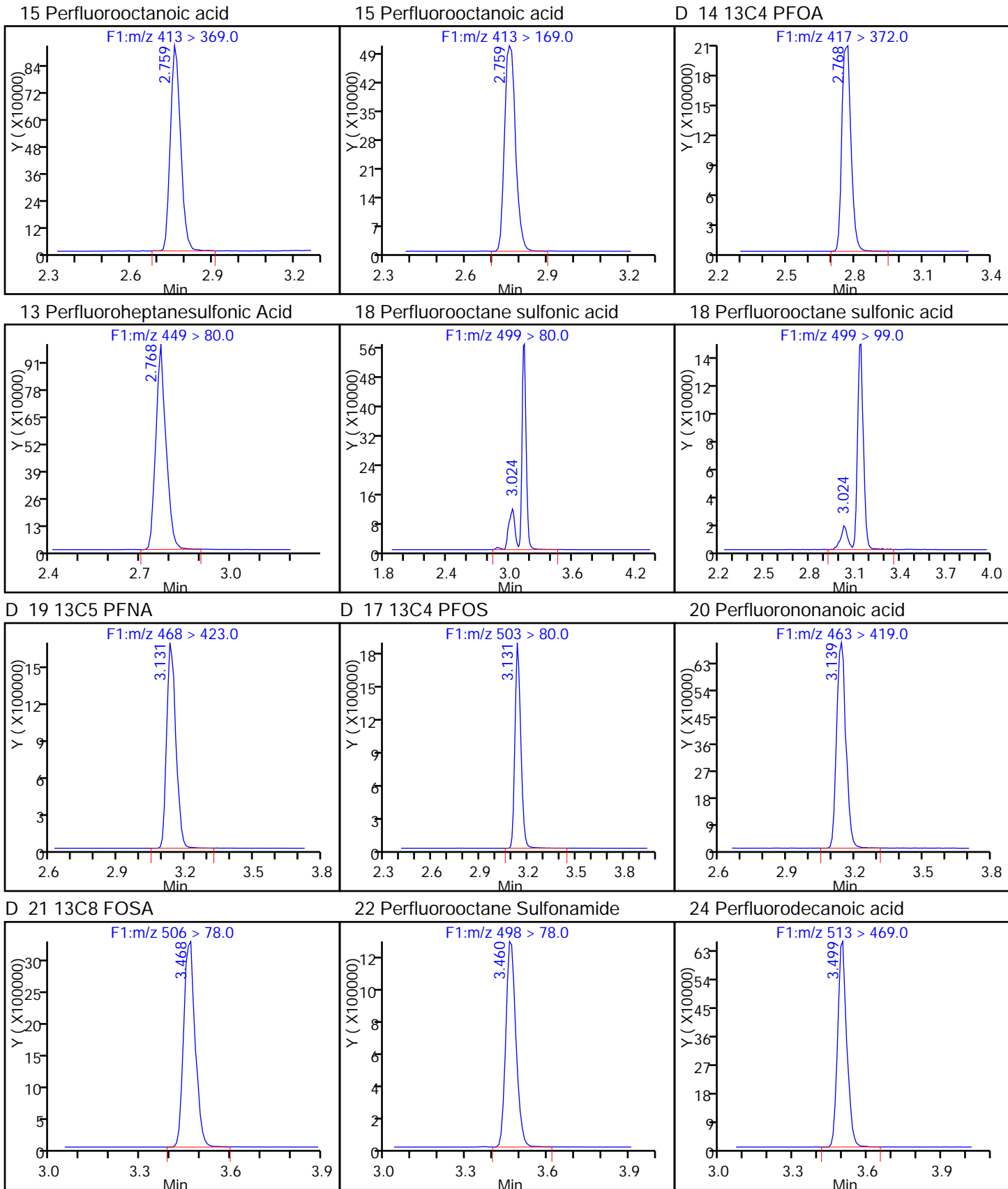
Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

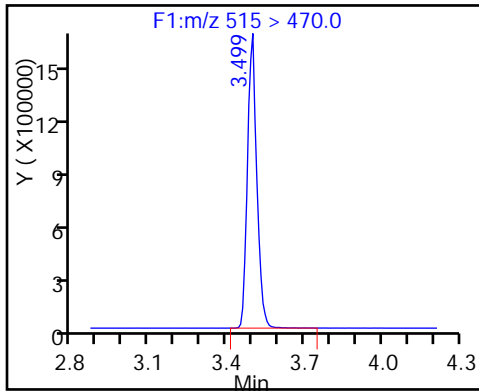
1 Perfluorobutyric acid

D 4 13C5-PFPeA

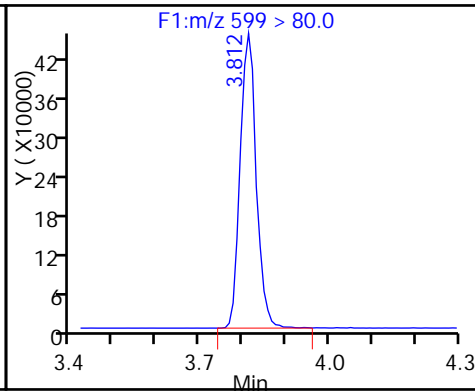




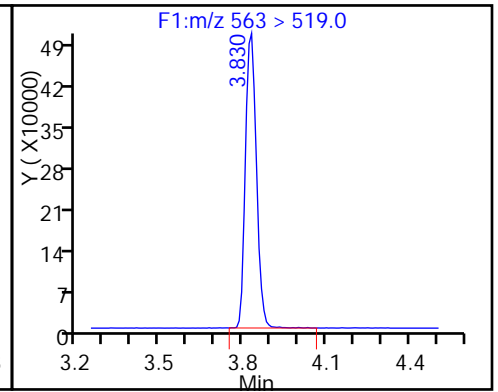
D 23 13C2 PFDA



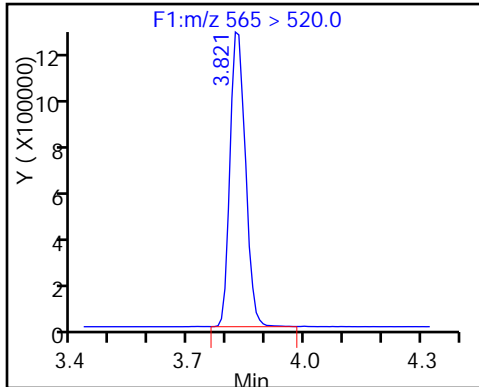
26 Perfluorodecane Sulfonic acid



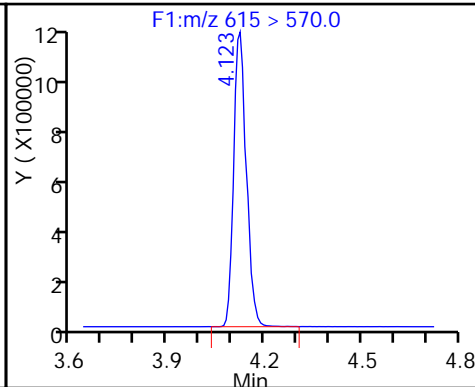
28 Perfluoroundecanoic acid



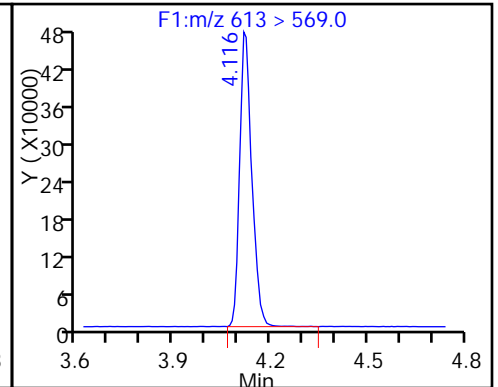
D 27 13C2 PFUa



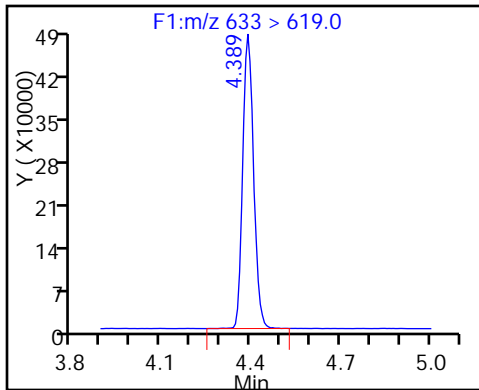
D 30 13C2 PFDa



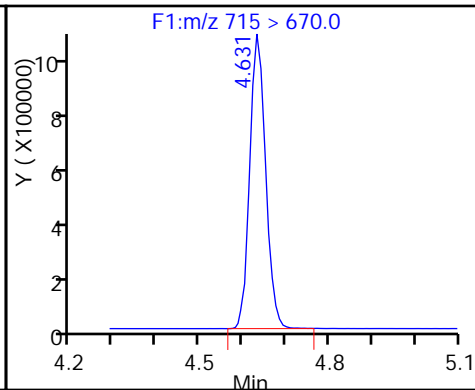
29 Perfluorododecanoic acid



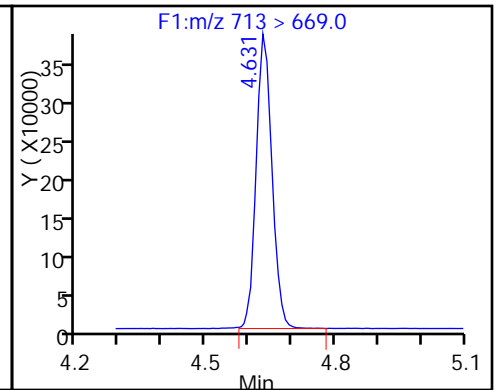
31 Perfluorotridecanoic acid



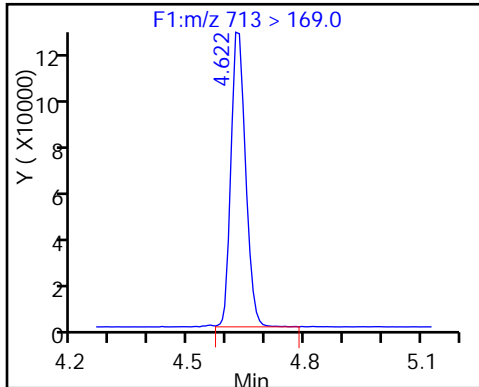
D 32 13C2-PFTeDA



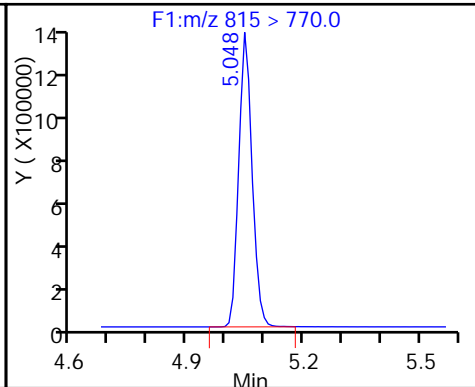
33 Perfluorotetradecanoic acid



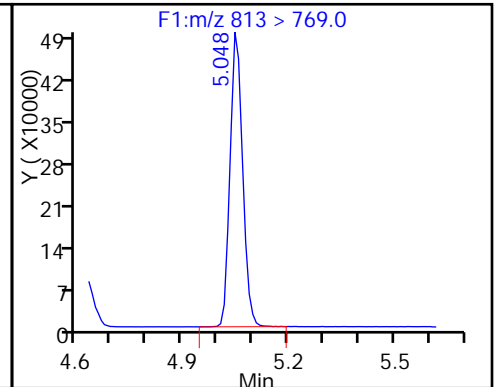
33 Perfluorotetradecanoic acid



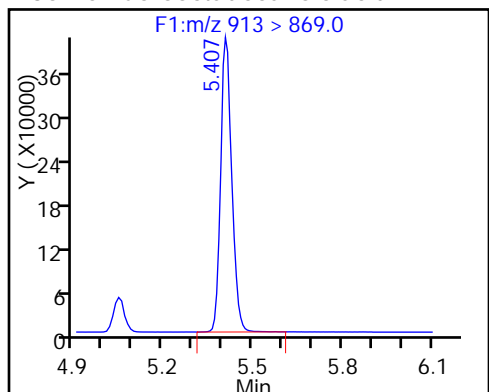
D 34 13C2-PFHxDa



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-123056/1-A  
 Matrix: Water Lab File ID: 26AUG2016G\_031\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 250 (mL) Date Analyzed: 08/26/2016 18:40  
 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.: 124380 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	125		25-150
STL00991	13C4 PFOS	121		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_031\_p1\_e1.d  
 Lims ID: MB 320-123056/1-A  
 Client ID:  
 Sample Type: MB  
 Inject. Date: 26-Aug-2016 18:40:00 ALS Bottle#: 0 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info:  
 Operator ID: A8 Instrument ID: A8  
 Method: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:27:55 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:27:55

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	8164844	60.2		120	858779	
D 4 13C5-PFPeA	267.9 > 223.0	1.791	1.797	-0.006	6516150	60.5		121	705896	
D 6 13C2 PFHxA	315 > 270.0	2.069	2.089	-0.020	5406393	55.7		111	568332	
7 Perfluorohexanoic acid	313 > 269.0	2.069	2.090	-0.021	5966	0.0571			336	
D 11 13C4-PFHpA	367 > 322.0	2.401	2.430	-0.029	5495920	57.0		114	458606	
9 Perfluorohexanesulfonic acid	399 > 80.0	2.409	2.446	-0.037	23138	0.1540				
D 10 18O2 PFHxS	403 > 84.0	2.417	2.446	-0.029	6383303	56.8		120	367686	
15 Perfluorooctanoic acid	413 > 369.0	2.770	2.798	-0.028	13329	-0.1760			112	
	413 > 169.0	2.770	2.798	-0.028	7758		1.72(0.90-1.10)		777	
D 14 13C4 PFOA	417 > 372.0	2.762	2.798	-0.036	5997193	62.3		125	440206	
D 19 13C5 PFNA	468 > 423.0	3.142	3.177	-0.035	4889508	61.5		123	433657	
D 17 13C4 PFOS	503 > 80.0	3.142	3.177	-0.035	4731646	57.7		121	468398	
D 21 13C8 FOSA	506 > 78.0	3.463	3.474	-0.011	1773464	11.8		23.7	230771	
22 Perfluorooctane Sulfonamide	498 > 78.0	3.463	3.475	-0.012	1533	0.0470			133	
D 23 13C2 PFDA	515 > 470.0	3.502	3.546	-0.044	4370951	60.1		120	786729	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 45 d3-NMeFOSAA										
573 > 419.0	3.647	3.670	-0.023		2514	0.0947		0.0		
D 46 d5-NEtFOSAA										
589 > 419.0	3.825	3.843	-0.018		5126	0.1770		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.816	3.844	-0.028	0.998	285	NR				
28 Perfluoroundecanoic acid										
563 > 519.0	3.825	3.880	-0.055	1.000	7533	0.1075			474	
D 27 13C2 PFUnA										
565 > 520.0	3.834	3.880	-0.046		3231093	58.1		116	436180	
D 52 d-N-MeFOSA-M										
515 > 169.0	3.965	3.957	0.008		267	0.006958		0.0		
54 MeFOSA										
512 > 169.0	4.142	3.964	0.178	1.000	229	NR				
D 30 13C2 PFDoA										
615 > 570.0	4.125	4.183	-0.058		2969748	55.8		112	350192	
D 32 13C2-PFTeDA										
715 > 670.0	4.644	4.697	-0.053		2295859	48.7		97.3	445628	
D 34 13C2-PFHxDA										
815 > 770.0	5.061	5.125	-0.064		3317169	50.4		101	436653	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.061	5.127	-0.066	1.000	31194	0.4234			358	

### QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_031\_p1\_e1.d

Injection Date: 26-Aug-2016 18:40:00

Instrument ID: A8

Lims ID: MB 320-123056/1-A

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

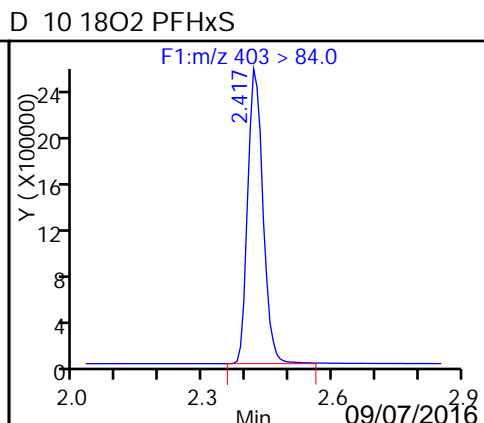
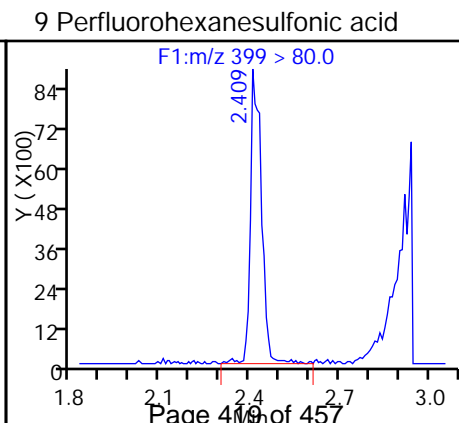
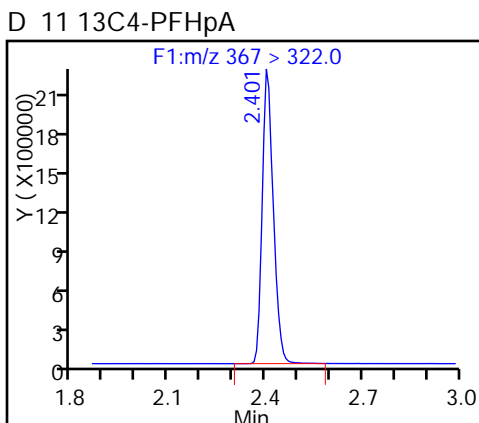
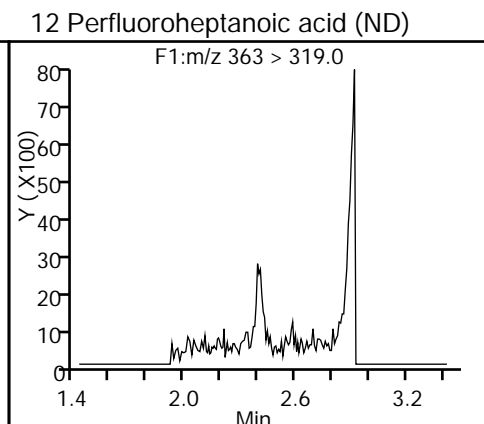
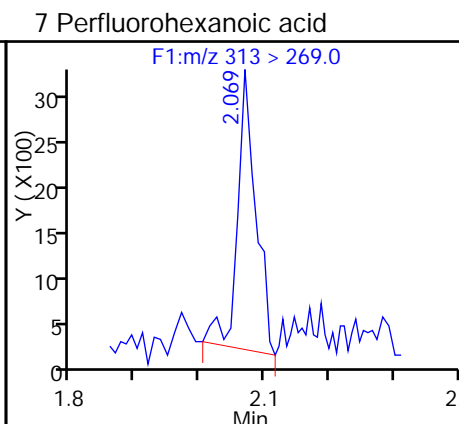
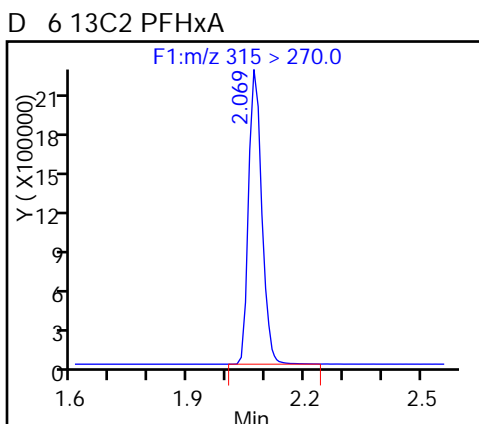
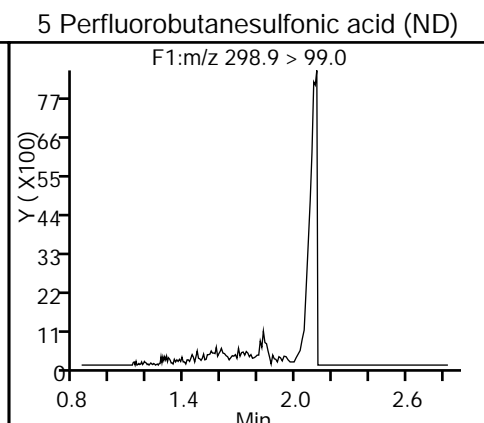
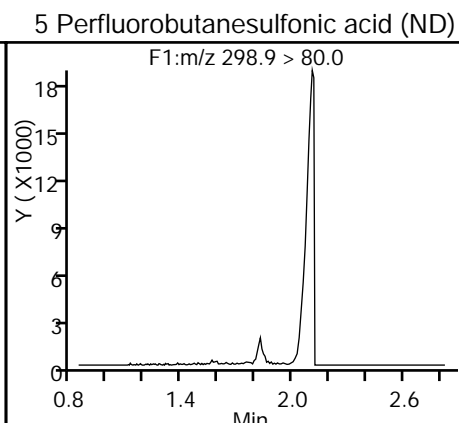
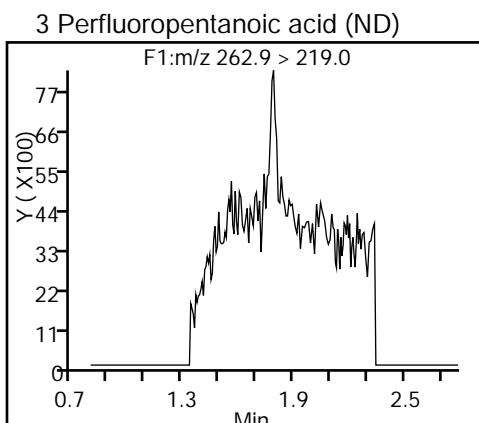
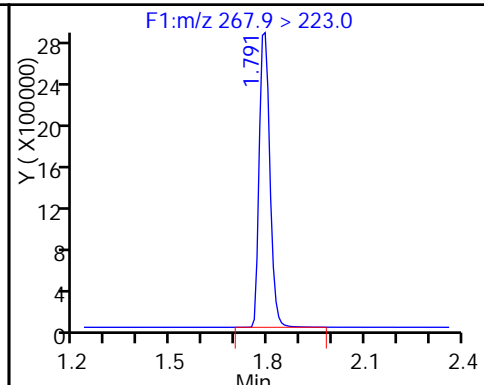
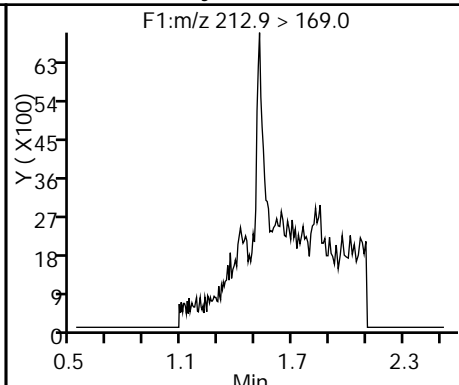
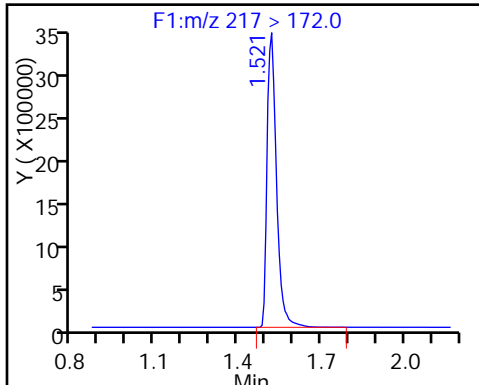
Method: PFC\_A8\_Full

Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid (ND)

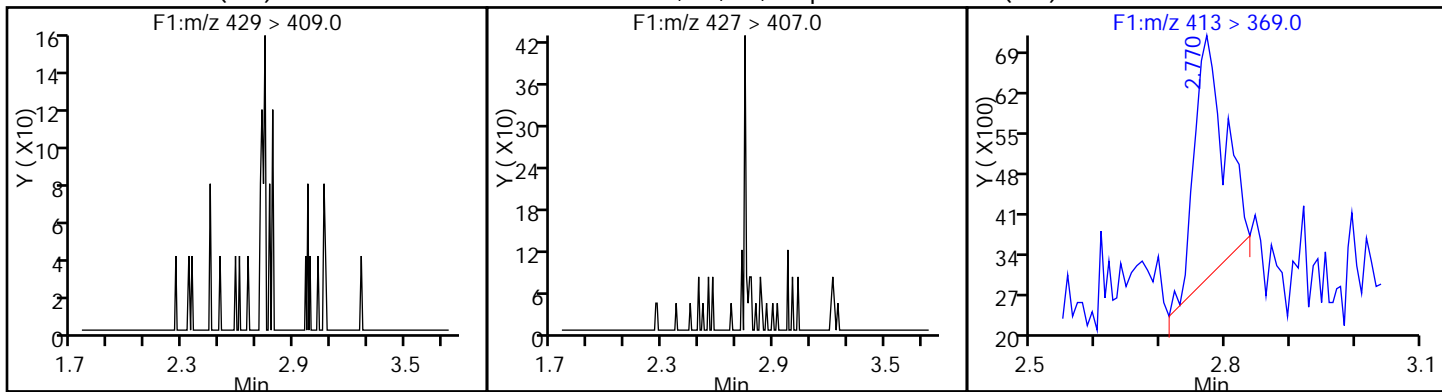
D 4 13C5-PFPeA





D 47 M2-6:2F5 (ND)

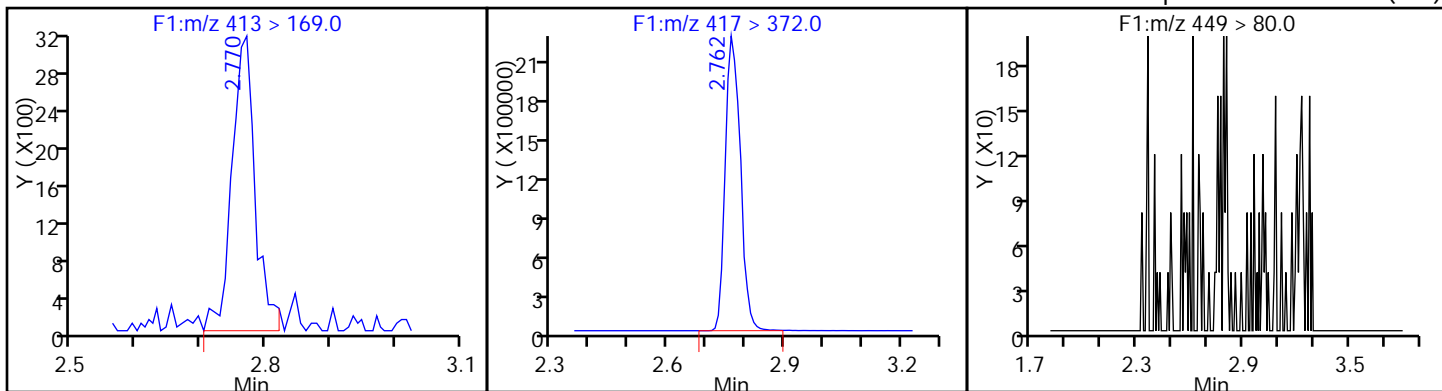
48 Sodium 1H,1H,2H,2H-perfluorooctane(SF)perfluorooctanoic acid



15 Perfluorooctanoic acid

D 14 13C4 PFOA

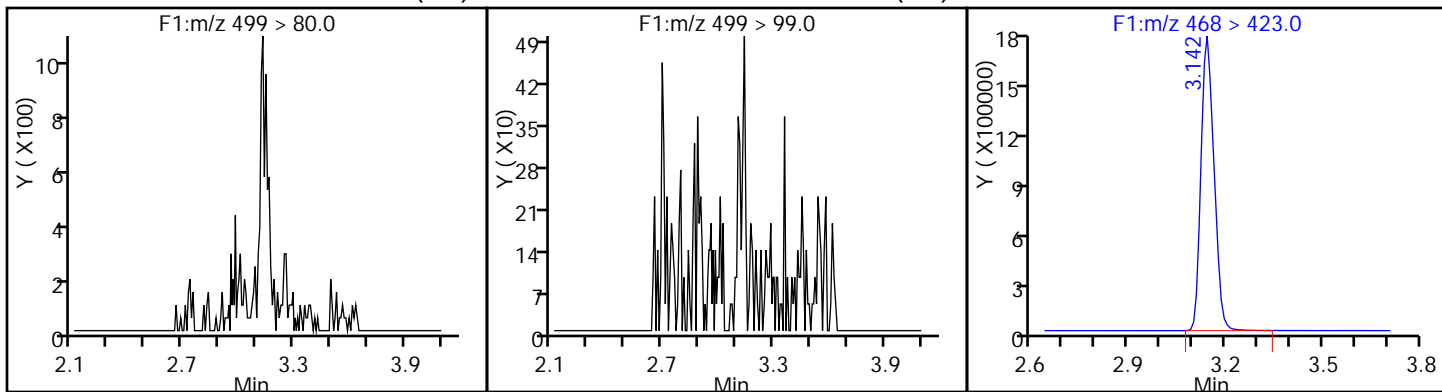
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

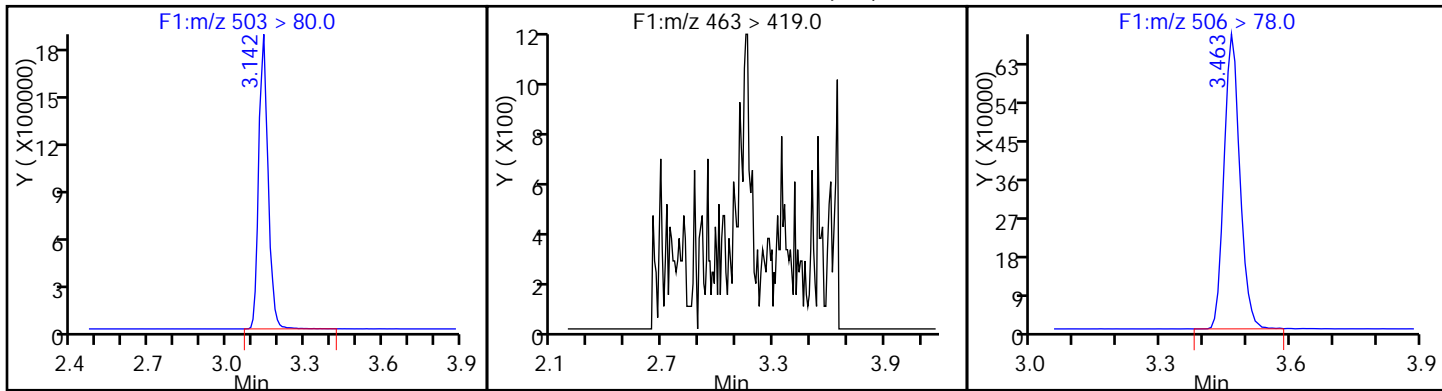
D 19 13C5 PFNA



D 17 13C4 PFOS

20 Perfluorononanoic acid (ND)

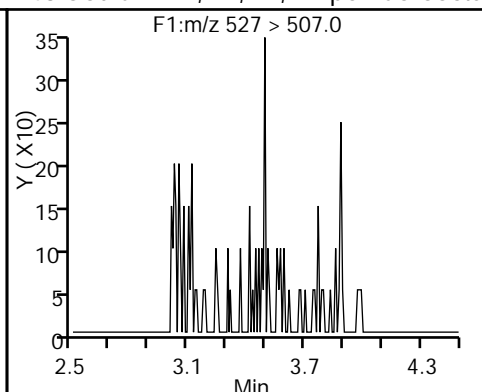
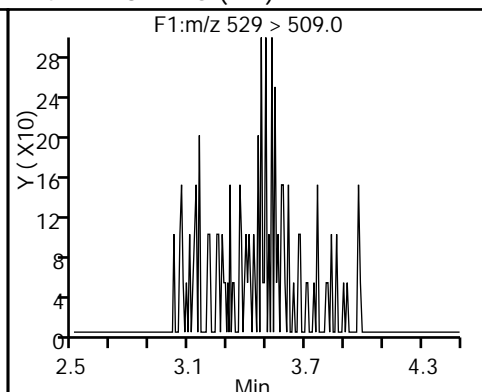
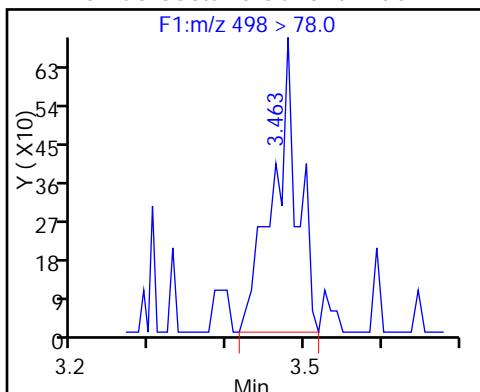
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 42 M2-8:2FTS (ND)

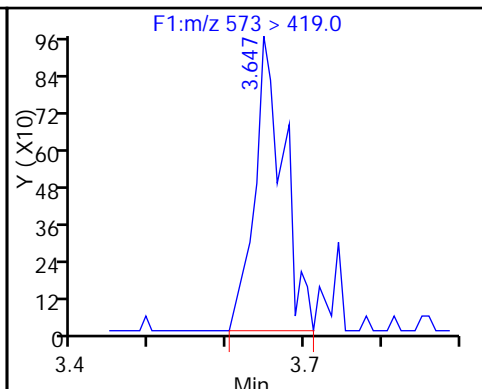
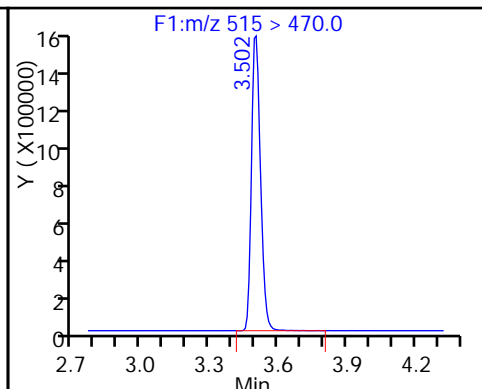
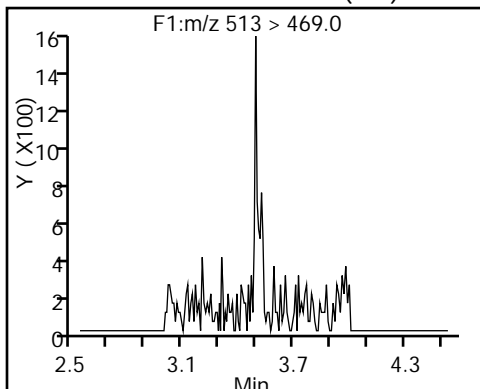
43 Sodium 1H,1H,2H,2H-perfluorooctane (ND)



24 Perfluorodecanoic acid (ND)

D 23 13C2 PFDA

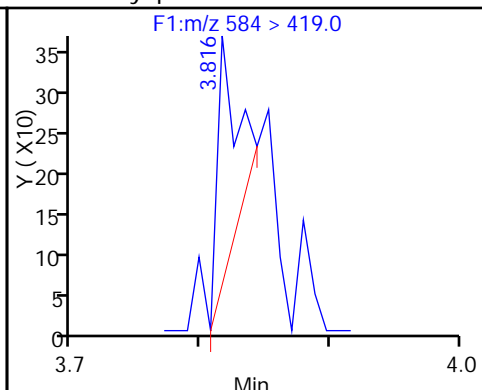
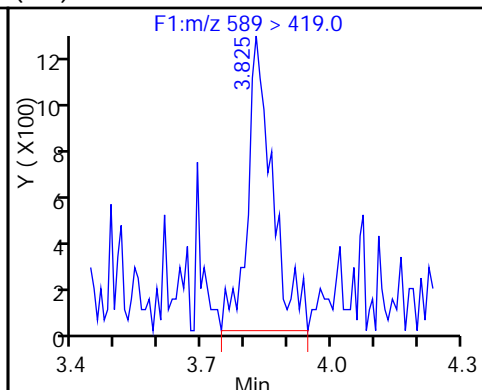
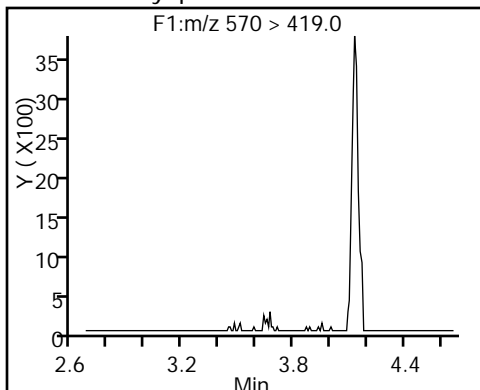
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamide (ND)

D 48 d5-NEtFOSAA

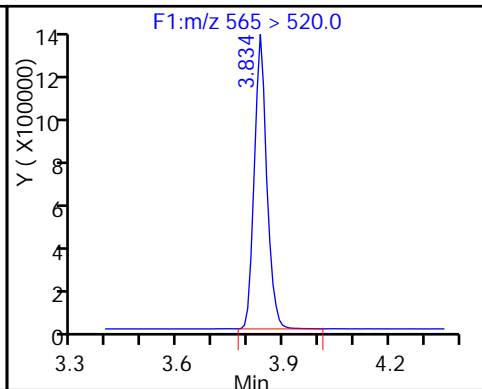
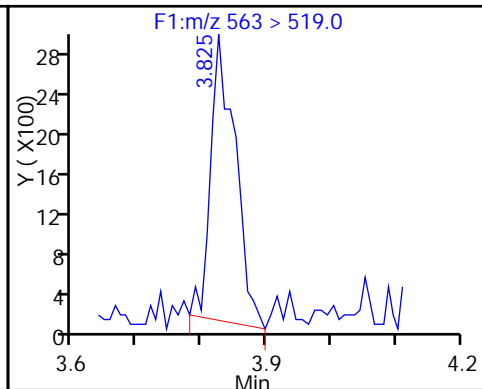
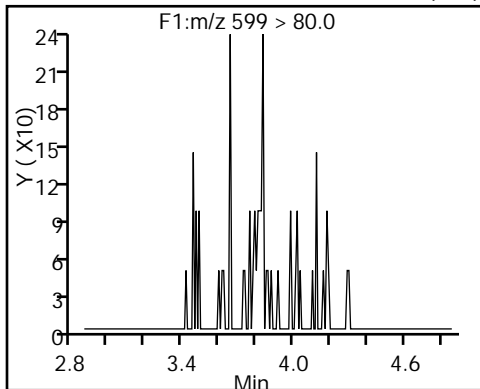
49 N-ethyl perfluorooctane sulfonamid



26 Perfluorodecane Sulfonic acid (ND)

28 Perfluoroundecanoic acid

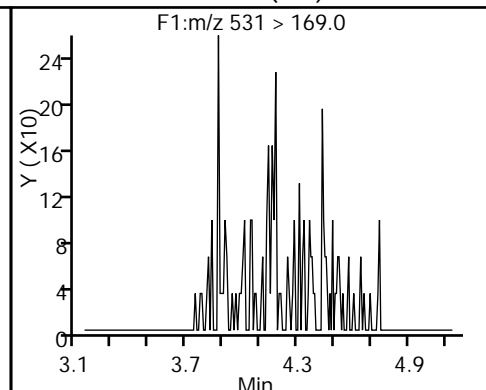
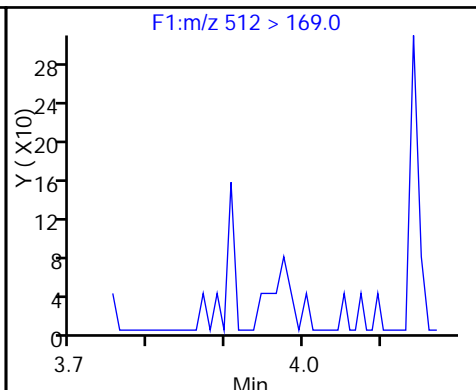
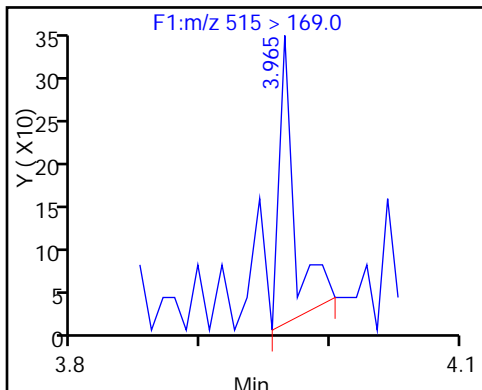
D 27 13C2 PFUnA



D 52 d-N-MeFOSA-M

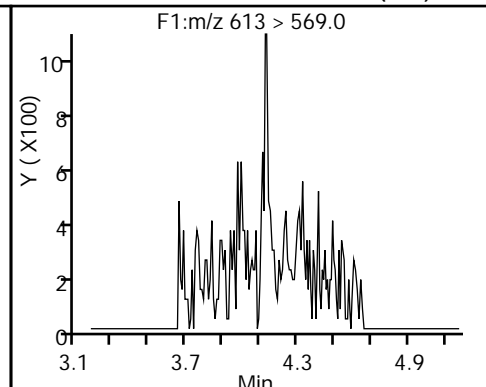
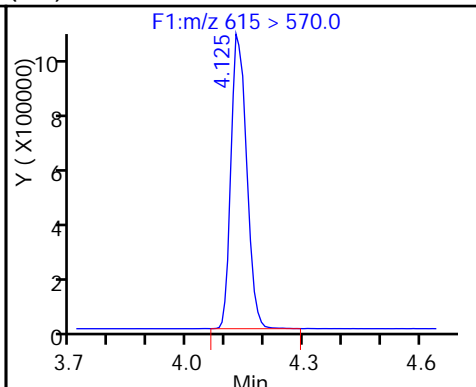
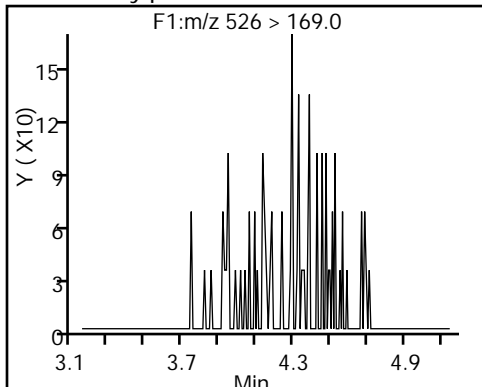
54 MeFOSA

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



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

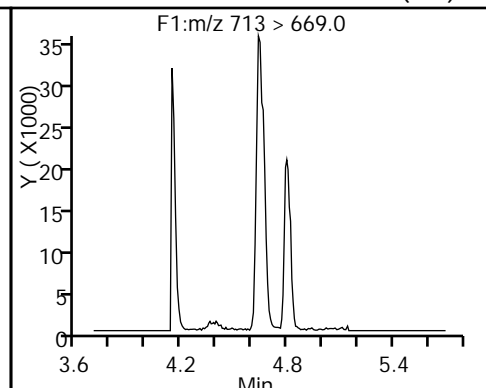
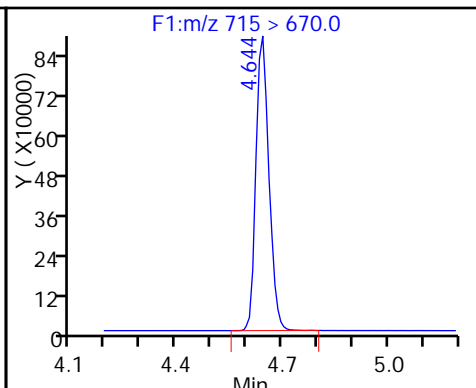
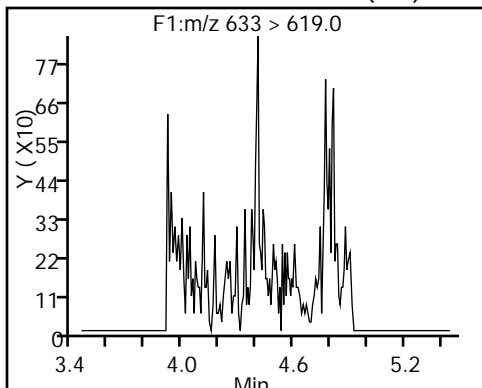
29 Perfluorododecanoic acid (ND)



31 Perfluorotridecanoic acid (ND)

D 32 13C2-PFTeDA

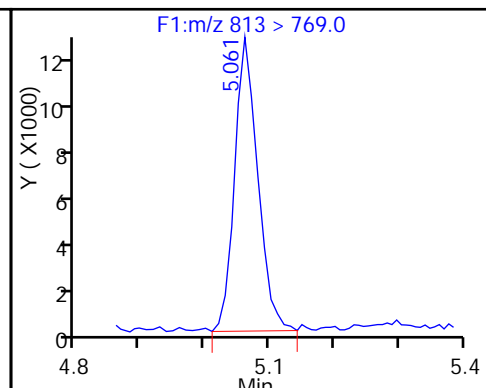
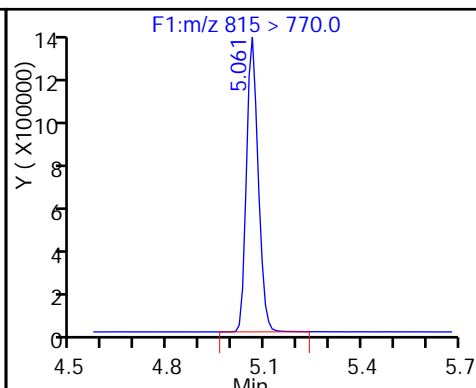
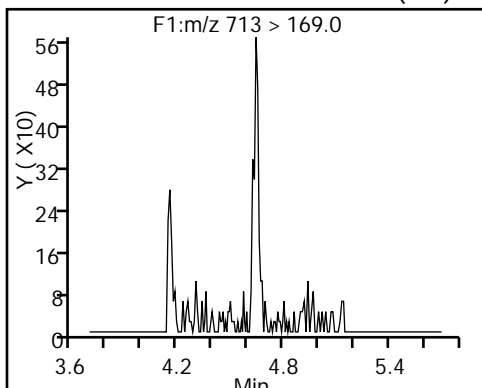
33 Perfluorotetradecanoic acid (ND)



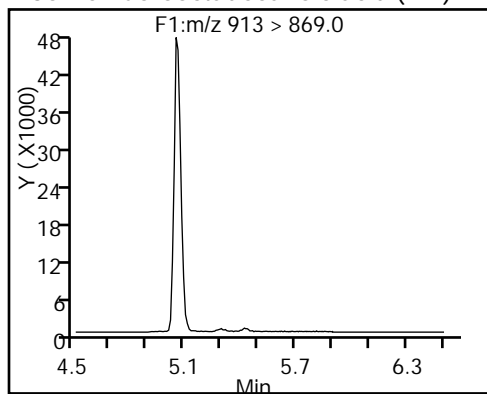
33 Perfluorotetradecanoic acid (ND)

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid (ND)



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCS 320-123056/2-A  
 Matrix: Water Lab File ID: 26AUG2016G\_032\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 250 (mL) Date Analyzed: 08/26/2016 18:48  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	38.2		2.5	2.0	0.75
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	32.7		4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	122		25-150
STL00991	13C4 PFOS	119		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_032\_p1\_e1.d

Lims ID: LCS 320-123056/2-A

Client ID:

Sample Type: LCS

Inject. Date: 26-Aug-2016 18:48:00

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Sample Info:

Operator ID: A8

Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\PFC\_A8\_Full.m

Limit Group: LC PFC\_DOD ICAL

Last Update: 06-Sep-2016 10:28:49

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: XAWRK024

First Level Reviewer: chandrasenas

Date: 06-Sep-2016 10:28:49

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 8291605 61.1 122 600649

1 Perfluorobutyric acid

212.9 > 169.0 1.521 1.524 -0.003 1.000 2648091 18.5 92.4 26418

D 4 13C5-PFPeA

267.9 > 223.0 1.784 1.797 -0.013 6501510 60.3 121 742916

3 Perfluoropentanoic acid

262.9 > 219.0 1.792 1.797 -0.005 1.000 2189755 16.5 82.3 31421

5 Perfluorobutanesulfonic acid

298.9 > 80.0 1.826 1.837 -0.011 1.000 3729678 17.4 98.5

298.9 > 99.0 1.826 1.837 -0.011 1.000 1524169 2.45(0.00-0.00)

D 6 13C2 PFHxA

315 > 270.0 2.070 2.089 -0.019 5436007 56.0 112 767172

7 Perfluorohexanoic acid

313 > 269.0 2.070 2.090 -0.020 1.000 1881141 17.9 89.5 109030

12 Perfluoroheptanoic acid

363 > 319.0 2.404 2.427 -0.023 1.000 2021024 17.7 88.6 47854

D 11 13C4-PFHpA

367 > 322.0 2.404 2.430 -0.026 5454388 56.5 113 530471

9 Perfluorohexanesulfonic acid

399 > 80.0 2.419 2.446 -0.027 1.000 2294614 15.0 82.1

D 10 18O2 PFHxS

403 > 84.0 2.427 2.446 -0.019 6522590 58.0 123 315889

15 Perfluorooctanoic acid

413 > 369.0 2.767 2.798 -0.031 1.000 2261402 19.1 95.5 26953

413 > 169.0 2.767 2.798 -0.031 1.000 1308172 1.73(0.90-1.10) 86840

D 14 13C4 PFOA

417 > 372.0 2.767 2.798 -0.031 5857443 60.8 122 454477

13 Perfluoroheptanesulfonic Acid

449 > 80.0 2.775 2.807 -0.032 1.000 2045425 of 457 17.9 94.1 09/07/2016

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.123	3.110	0.014	1.000	1774894	16.4		88.1	274420	
499 > 99.0	3.139	3.110	0.030	1.005	408984		4.34(0.90-1.10)		43570	
D 19 13C5 PFNA										
468 > 423.0	3.131	3.177	-0.046		5035972	63.3		127	419132	
D 17 13C4 PFOS										
503 > 80.0	3.139	3.177	-0.038		4678356	57.0		119	331533	
20 Perfluorononanoic acid										
463 > 419.0	3.139	3.183	-0.044	1.000	1849459	18.4		91.9	61504	
D 21 13C8 FOSA										
506 > 78.0	3.461	3.474	-0.013		2308772	15.4		30.8	151824	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.469	3.475	-0.006	1.000	801101	18.8		94.2	77320	
24 Perfluorodecanoic acid										
513 > 469.0	3.501	3.546	-0.045	1.000	1508279	17.1		85.6	135091	
D 23 13C2 PFDA										
515 > 470.0	3.501	3.546	-0.045		4478192	61.6		123	534522	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.814	3.863	-0.049	1.000	969916	16.2		83.9		
28 Perfluoroundecanoic acid										
563 > 519.0	3.832	3.880	-0.048	1.000	1231339	16.5		82.6	56734	
D 27 13C2 PFUnA										
565 > 520.0	3.832	3.880	-0.048		3436428	61.8		124	476225	
D 30 13C2 PFDoA										
615 > 570.0	4.131	4.183	-0.052		3197409	60.1		120	371462	
29 Perfluorododecanoic acid										
613 > 569.0	4.131	4.185	-0.054	1.000	1154968	18.2		91.2	70611	
31 Perfluorotridecanoic acid										
633 > 619.0	4.406	4.452	-0.046	1.000	979916	15.6		78.2	73339	
D 32 13C2-PFTeDA										
715 > 670.0	4.644	4.697	-0.053		2571127	54.5		109	566683	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.644	4.701	-0.057	1.000	960234	17.9		89.4	5684	
713 > 169.0	4.644	4.701	-0.057	1.000	282967		3.39(0.00-0.00)		55579	
D 34 13C2-PFHxDA										
815 > 770.0	5.061	5.125	-0.064		3377035	51.3		103	434798	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.061	5.127	-0.066	1.000	1113495	14.0		70.2	11432	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.423	5.509	-0.086	1.000	1175046	16.2		81.1	6965	

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_032\_p1\_e1.d

Injection Date: 26-Aug-2016 18:48:00

Instrument ID: A8

Lims ID: LCS 320-123056/2-A

Client ID:

Operator ID: A8

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

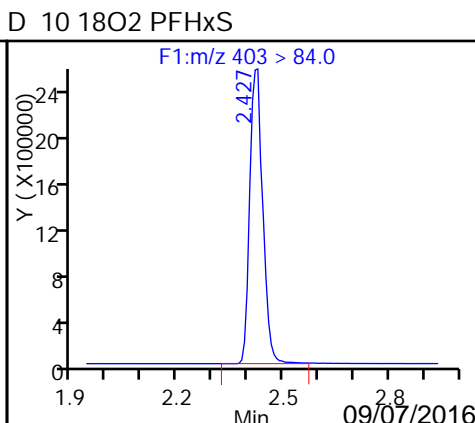
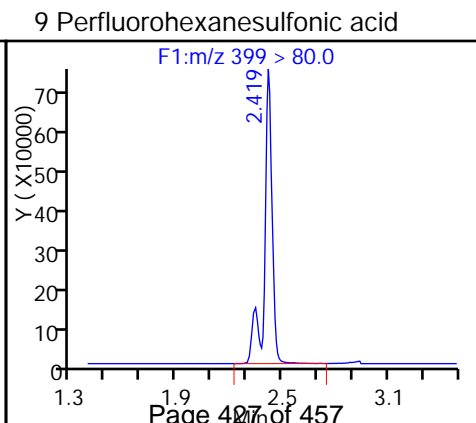
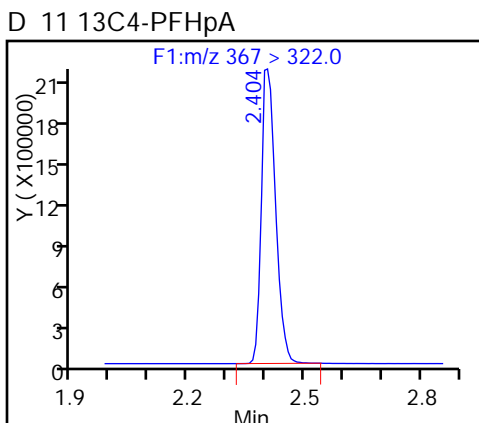
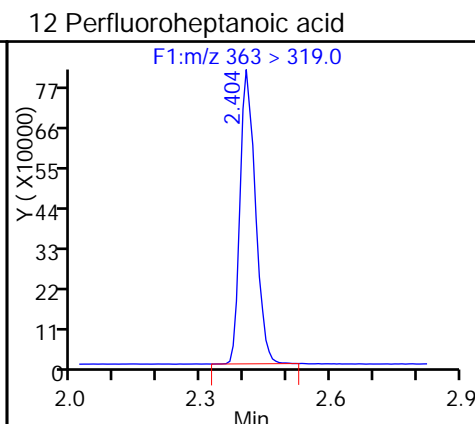
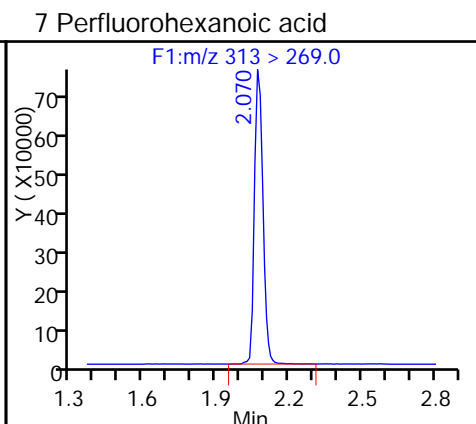
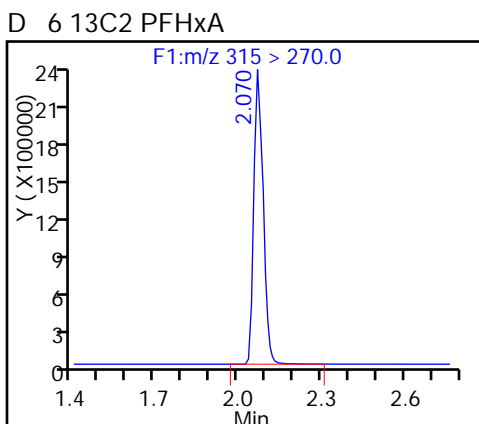
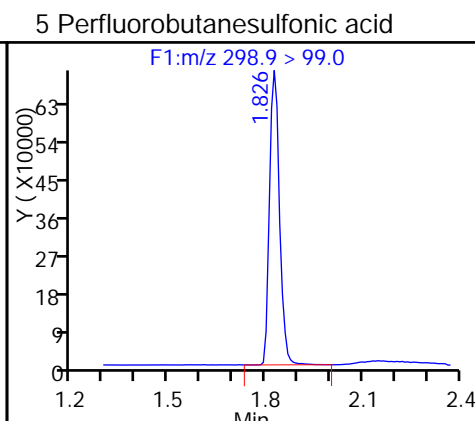
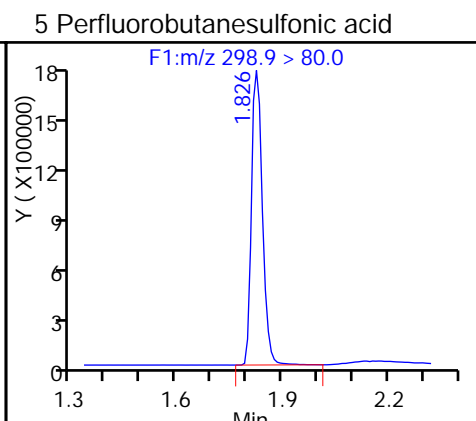
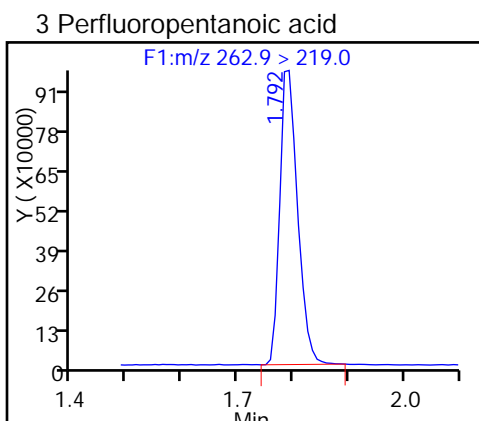
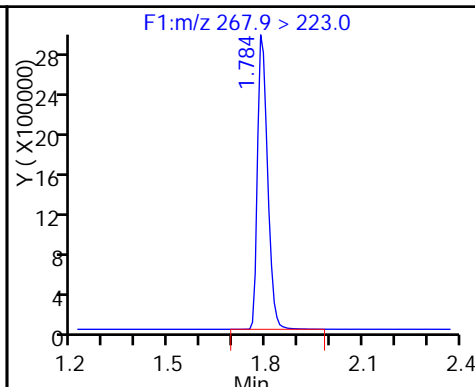
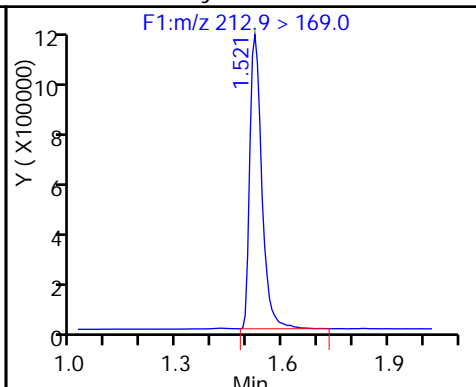
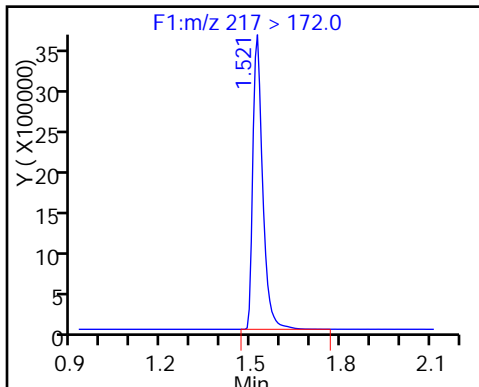
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Limit Group: LC PFC\_DOD ICAL

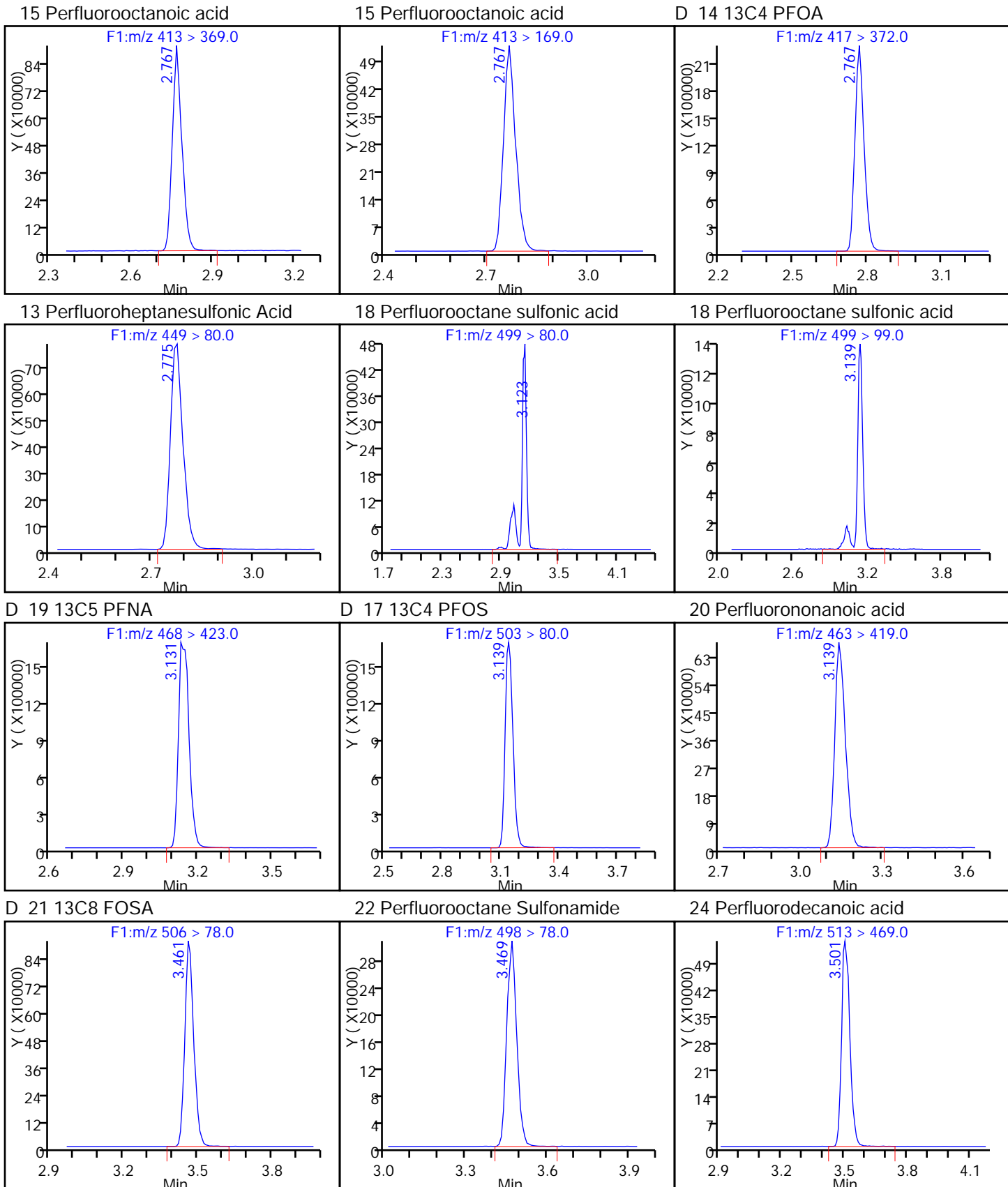
D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA



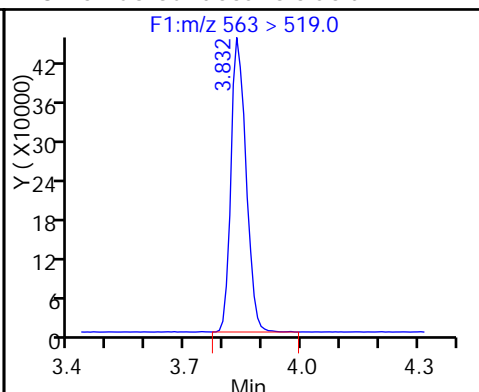
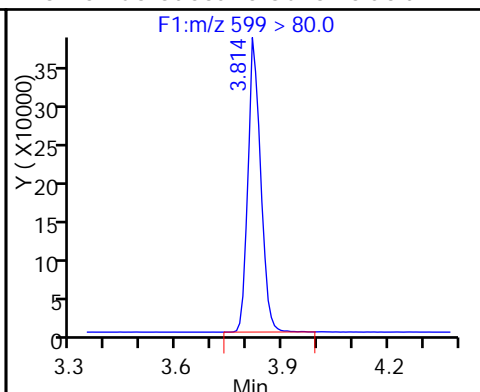
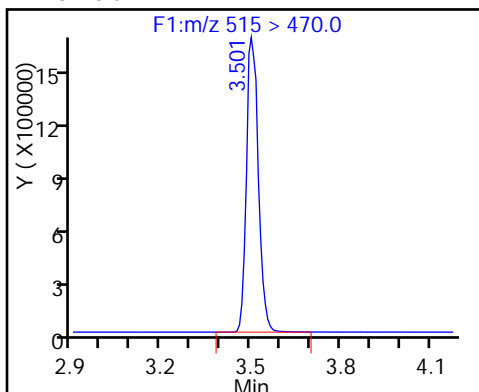




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

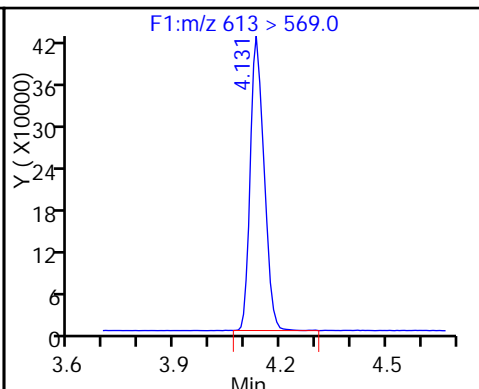
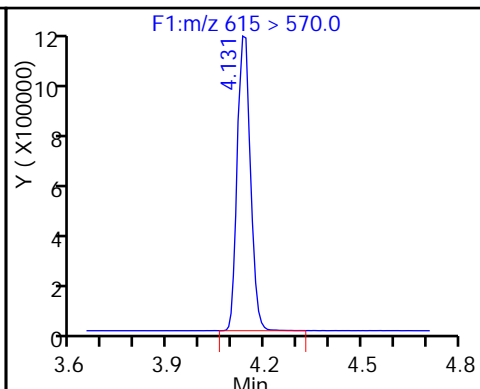
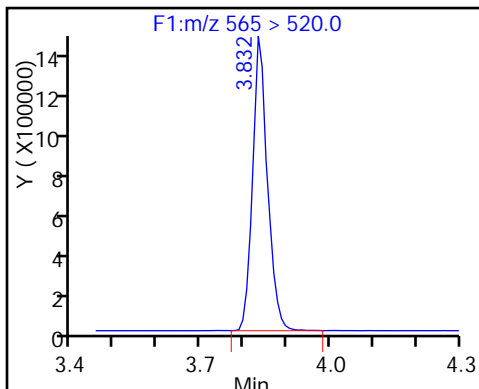
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

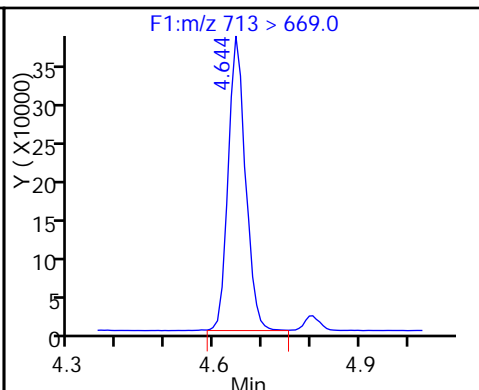
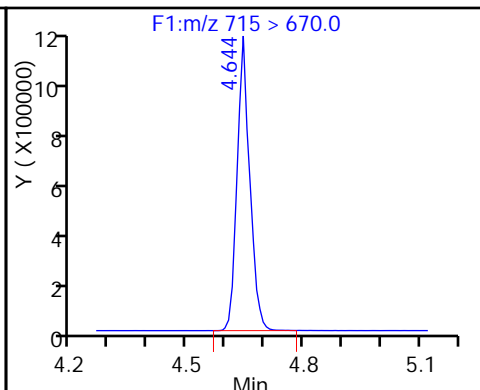
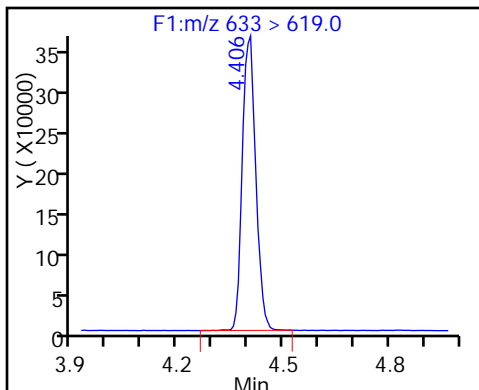
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

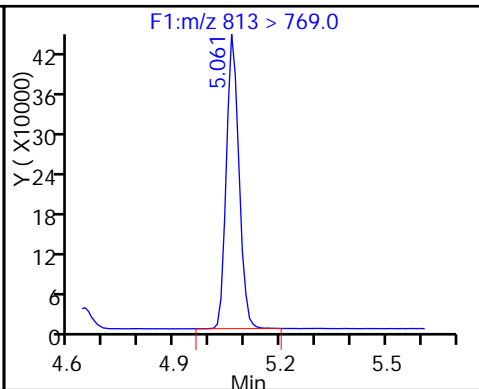
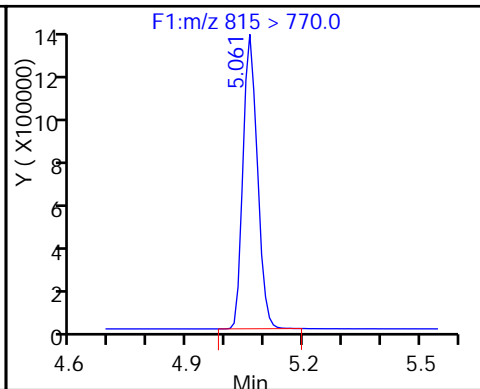
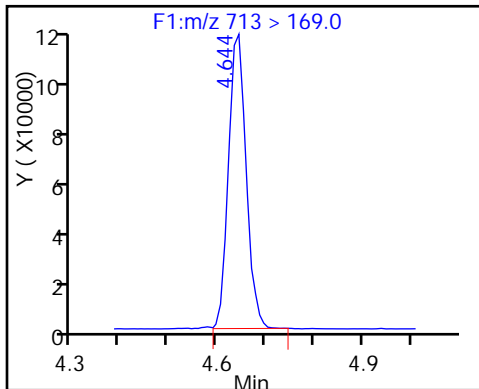
33 Perfluorotetradecanoic acid



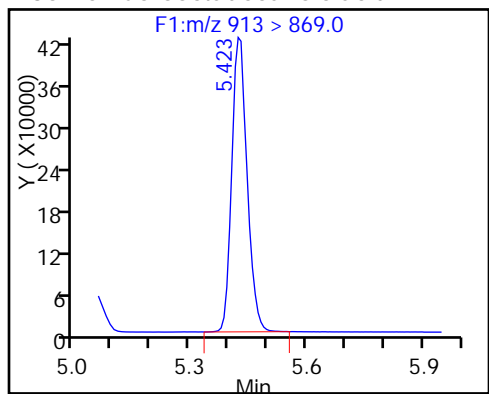
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCSD 320-123056/3-A  
 Matrix: Water Lab File ID: 26AUG2016G\_033\_p1\_e1.d  
 Analysis Method: 537 (Modified) Date Collected: \_\_\_\_\_  
 Extraction Method: 3535 Date Extracted: 08/19/2016 10:27  
 Sample wt/vol: 250 (mL) Date Analyzed: 08/26/2016 18:55  
 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.: 124380 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	43.8		2.5	2.0	0.75
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	33.7		4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	122		25-150
STL00991	13C4 PFOS	121		25-150

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_033\_p1\_e1.d  
 Lims ID: LCSD 320-123056/3-A  
 Client ID:  
 Sample Type: LCSD  
 Inject. Date: 26-Aug-2016 18:55:00 ALS Bottle#: 0 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info:  
 Operator ID: A8 Instrument ID: A8  
 Method: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\PFC\_A8\_Full.m  
 Limit Group: LC PFC\_DOD ICAL  
 Last Update: 06-Sep-2016 10:29:45 Calib Date: 22-Aug-2016 18:23:00  
 Integrator: Picker  
 Quant Method: Isotopic Dilution Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160823-33789.b\22AUG2016A\_020\_p1\_e1.d  
 Column 1 : Det: F1(0.00 :6.60 )  
 Process Host: XAWRK024

First Level Reviewer: chandrasenas Date: 06-Sep-2016 10:29:45

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	1.514	1.522	-0.008		8263002	60.9		122	722433	
1 Perfluorobutyric acid										
212.9 > 169.0	1.521	1.524	-0.003	1.000	2850187	20.0		99.8	28180	
D 4 13C5-PFPeA										
267.9 > 223.0	1.783	1.797	-0.014		6537869	60.7		121	990012	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.783	1.797	-0.014	1.000	2366510	17.7		88.5	43187	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.817	1.837	-0.020	1.000	3957476	18.2		103		
298.9 > 99.0	1.826	1.837	-0.011	1.005	1615403		2.45(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.069	2.089	-0.020		5605397	57.8		116	596302	
7 Perfluorohexanoic acid										
313 > 269.0	2.069	2.090	-0.021	1.000	2064666	19.1		95.3	132209	
12 Perfluoroheptanoic acid										
363 > 319.0	2.405	2.427	-0.022	1.000	2197435	19.4		97.0	44524	
D 11 13C4-PFHpA										
367 > 322.0	2.397	2.430	-0.033		5414377	56.1		112	555881	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.420	2.446	-0.026	1.000	2453404	15.7		86.4		
D 10 18O2 PFHxS										
403 > 84.0	2.420	2.446	-0.026		6627822	59.0		125	541194	
15 Perfluorooctanoic acid										
413 > 369.0	2.759	2.798	-0.039	1.000	2586700	21.9		110	26777	
413 > 169.0	2.768	2.798	-0.030	1.003	1424676		1.82(0.90-1.10)		132308	
D 14 13C4 PFOA										
417 > 372.0	2.768	2.798	-0.030		5854468	60.8		122	433543	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.768	2.807	-0.039	1.000	2200994	19.0		100	09/07/2016	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.024	3.110	-0.085	1.000	1853237	16.9		90.8	658	
499 > 99.0	3.024	3.110	-0.085	1.000	427248		4.34(0.90-1.10)		4129	
D 19 13C5 PFNA										
468 > 423.0	3.130	3.177	-0.047		5004596	62.9		126	298600	
D 17 13C4 PFOS										
503 > 80.0	3.139	3.177	-0.038		4739281	57.7		121	219226	
20 Perfluorononanoic acid										
463 > 419.0	3.130	3.183	-0.053	1.000	1955860	19.6		97.8	56230	
D 21 13C8 FOSA										
506 > 78.0	3.460	3.474	-0.014		2576665	17.2		34.4	198698	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.460	3.475	-0.015	1.000	931796	19.6		98.2	88696	
24 Perfluorodecanoic acid										
513 > 469.0	3.492	3.546	-0.054	1.000	1625510	18.5		92.7	96450	
D 23 13C2 PFDA										
515 > 470.0	3.492	3.546	-0.054		4455378	61.3		123	799690	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.813	3.863	-0.050	1.000	1004890	16.5		85.8		
28 Perfluoroundecanoic acid										
563 > 519.0	3.831	3.880	-0.049	1.000	1295194	17.9		89.3	70164	
D 27 13C2 PFUnA										
565 > 520.0	3.831	3.880	-0.049		3345745	60.1		120	618977	
D 30 13C2 PFDoA										
615 > 570.0	4.123	4.183	-0.060		3148614	59.2		118	388301	
29 Perfluorododecanoic acid										
613 > 569.0	4.130	4.185	-0.055	1.000	1194636	19.2		95.8	87377	
31 Perfluorotridecanoic acid										
633 > 619.0	4.397	4.452	-0.055	1.000	1078816	17.5		87.4	82332	
D 32 13C2-PFTeDA										
715 > 670.0	4.641	4.697	-0.056		2669582	56.6		113	353667	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.641	4.701	-0.060	1.000	1097998	20.8		104	9089	
713 > 169.0	4.632	4.701	-0.069	0.998	312618		3.51(0.00-0.00)		61597	
D 34 13C2-PFHxDA										
815 > 770.0	5.058	5.125	-0.067		3731576	56.7		113	490023	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.058	5.127	-0.069	1.000	1300460	16.6		83.2	10931	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.422	5.509	-0.087	1.000	1372462	19.2		95.8	7140	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b\26AUG2016G\_033\_p1\_e1.d

Injection Date: 26-Aug-2016 18:55:00 Instrument ID: A8

Lims ID: LCSD 320-123056/3-A

Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 7

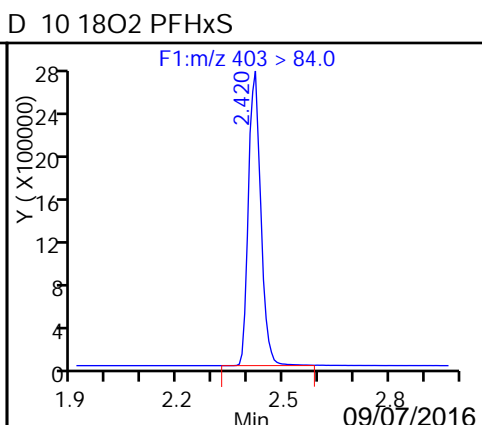
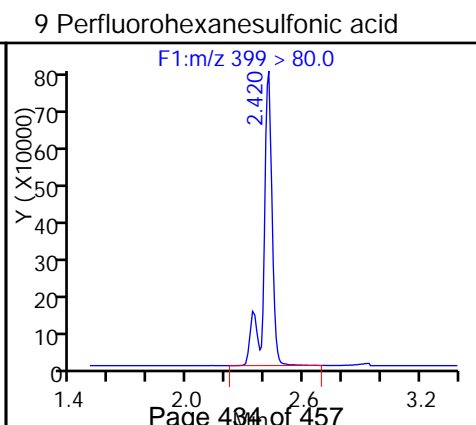
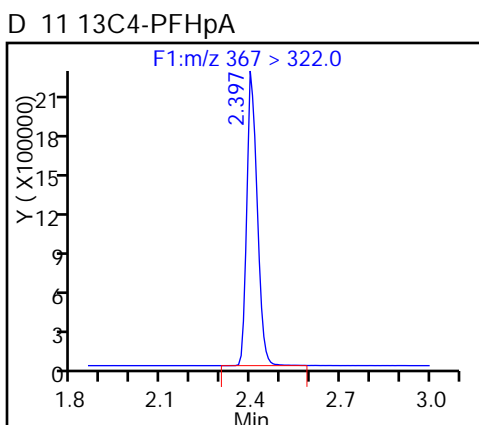
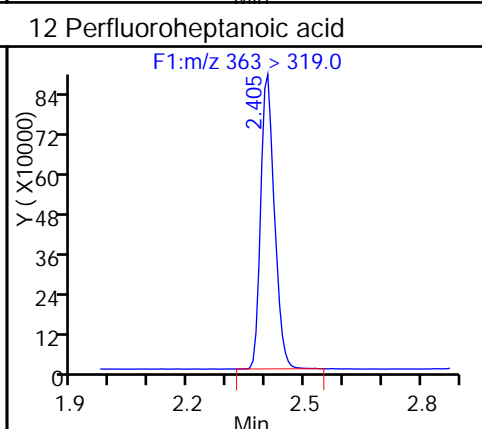
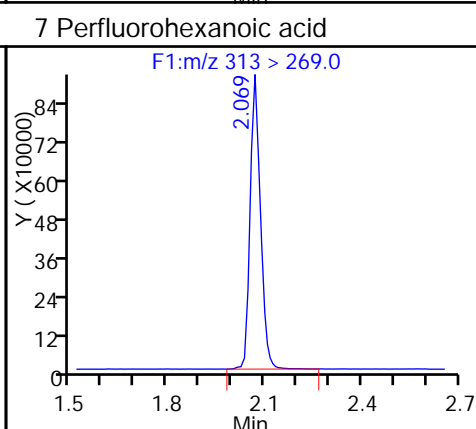
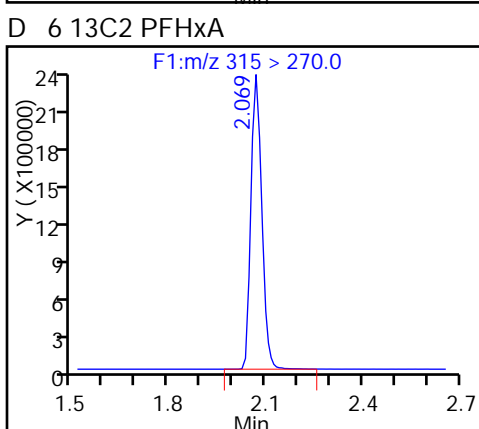
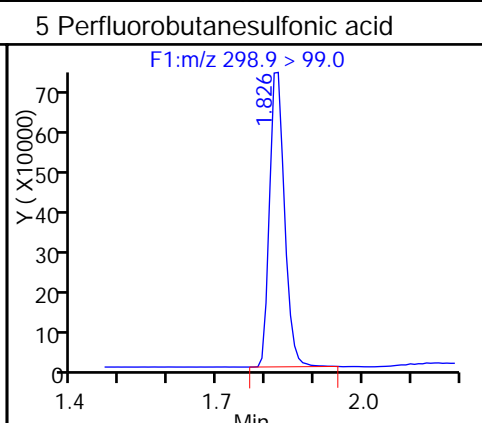
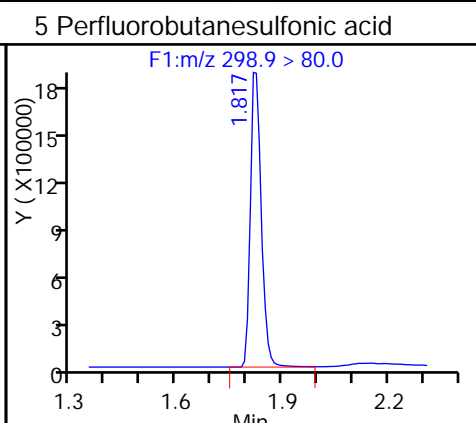
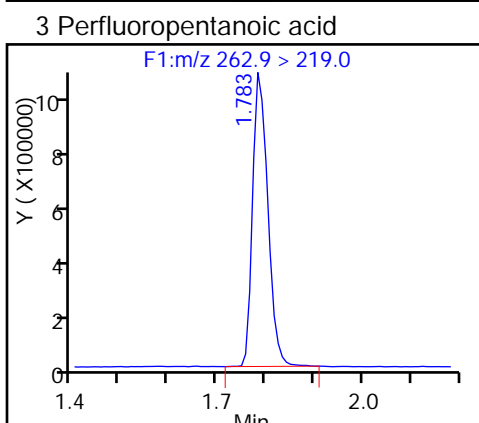
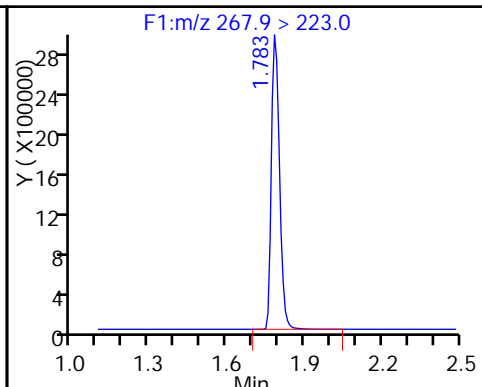
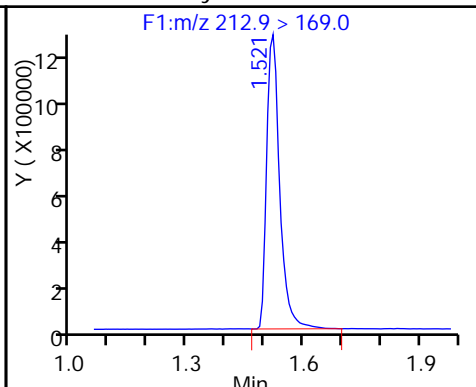
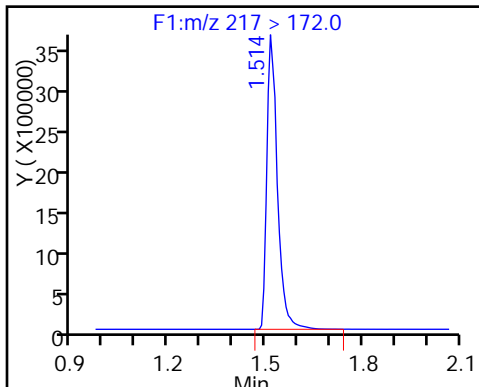
Injection Vol: 2.0 ul Dil. Factor: 1.0000

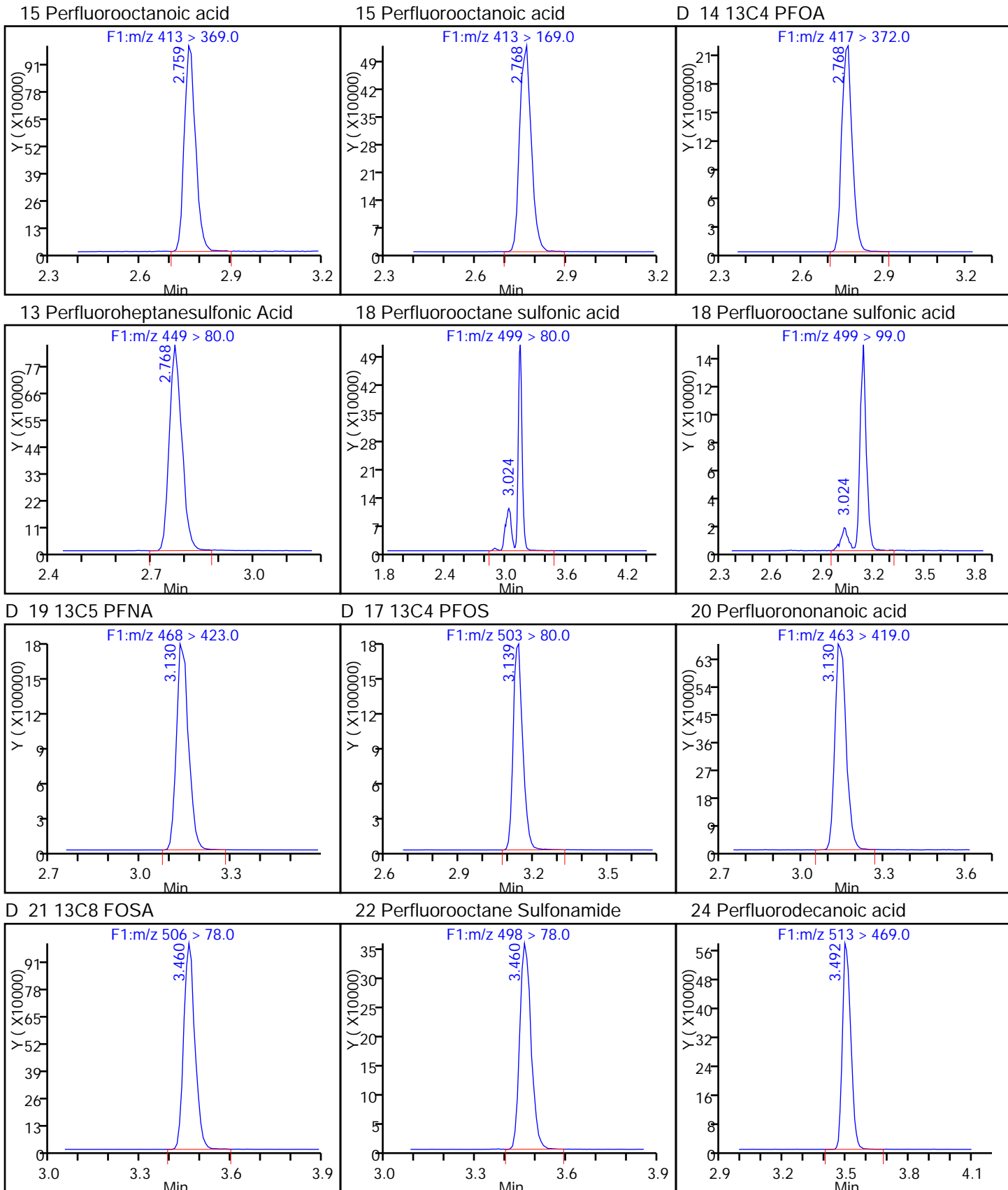
Method: PFC\_A8\_Full Limit Group: LC PFC\_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA



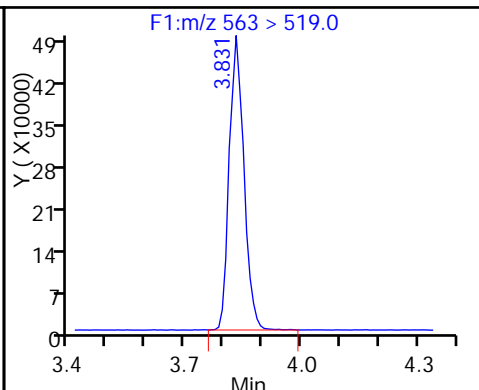
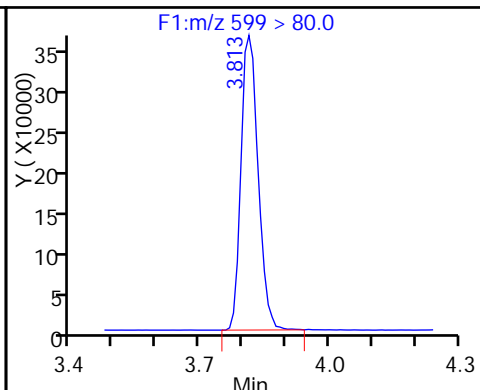
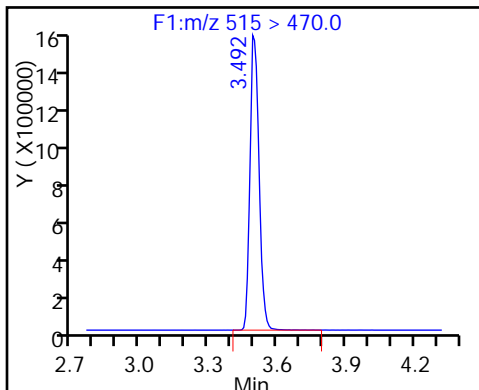




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

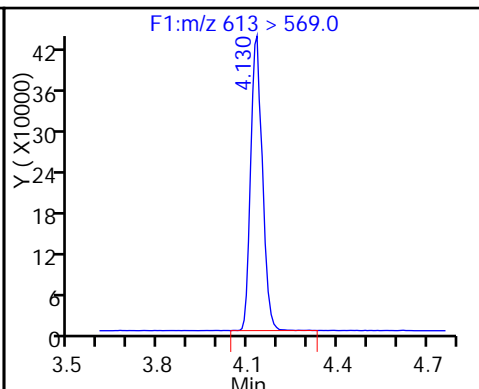
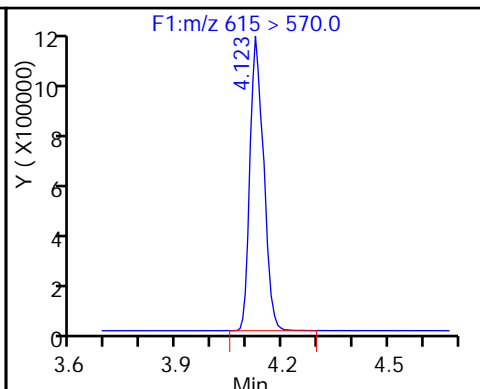
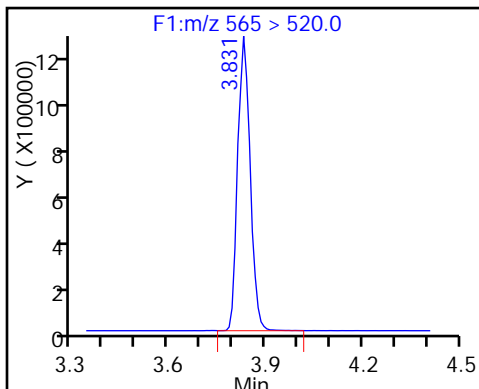
28 Perfluoroundecanoic acid



D 27 13C2 PFUa

D 30 13C2 PFDa

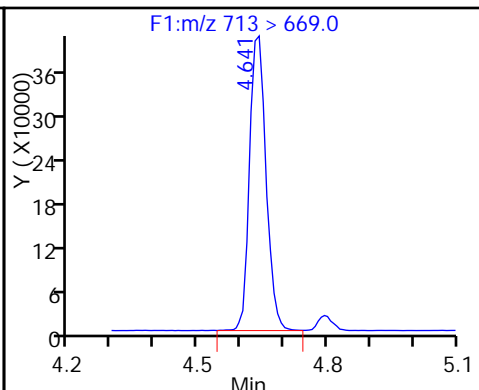
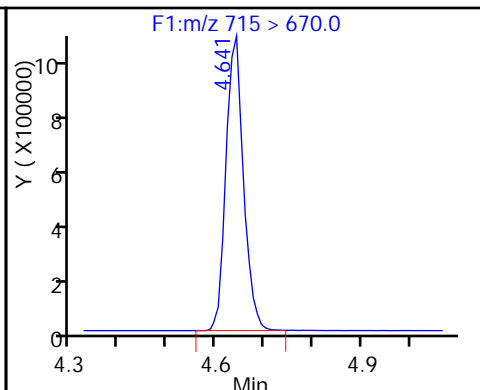
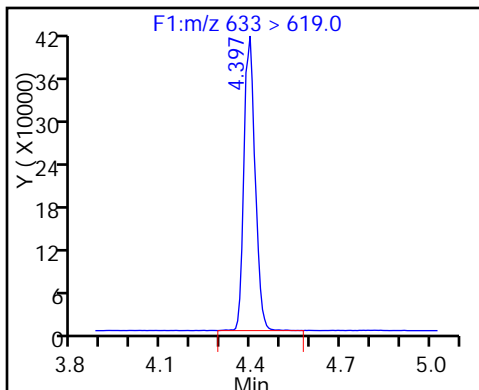
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

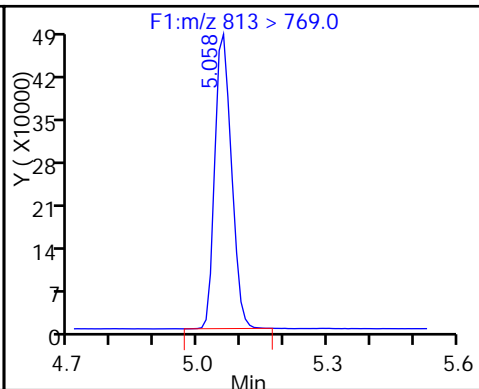
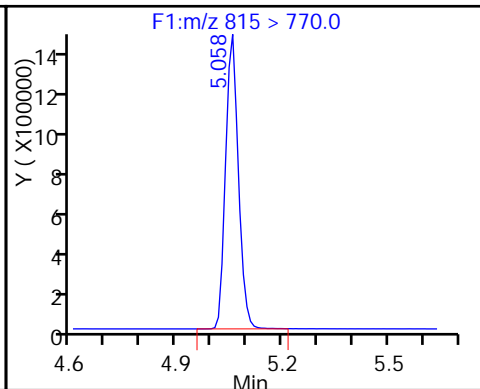
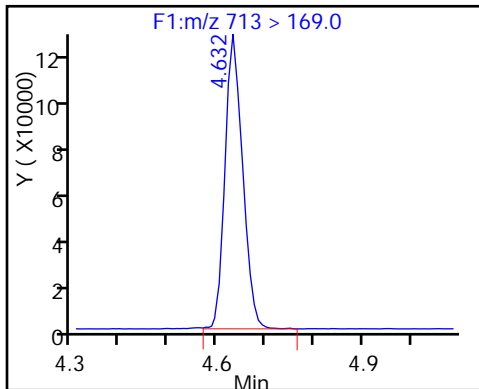
33 Perfluorotetradecanoic acid



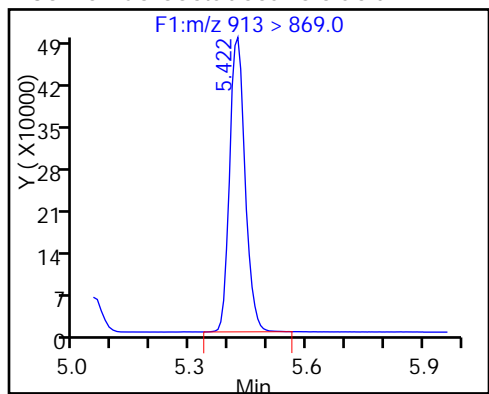
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1

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.: 320-21000-1

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.: 320-21000-1

SDG No.: \_\_\_\_\_

Instrument ID: A8 Start Date: 08/26/2016 18:18

Analysis Batch Number: 124380 End Date: 08/26/2016 21:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-124380/2		08/26/2016 18:18	1	26AUG2016G_028_p1_el.d	Acquity 2.1(mm)
CCV 320-124380/3		08/26/2016 18:25	1		Acquity 2.1(mm)
MB 320-123056/1-A		08/26/2016 18:40	1	26AUG2016G_031_p1_el.d	Acquity 2.1(mm)
LCS 320-123056/2-A		08/26/2016 18:48	1	26AUG2016G_032_p1_el.d	Acquity 2.1(mm)
LCSD 320-123056/3-A		08/26/2016 18:55	1	26AUG2016G_033_p1_el.d	Acquity 2.1(mm)
320-21000-1		08/26/2016 19:03	1	26AUG2016G_034_p1_el.d	Acquity 2.1(mm)
320-21000-2		08/26/2016 19:10	1	26AUG2016G_035_p1_el.d	Acquity 2.1(mm)
320-21000-3		08/26/2016 19:18	1	26AUG2016G_036_p1_el.d	Acquity 2.1(mm)
320-21000-4		08/26/2016 19:25	1	26AUG2016G_037_p1_el.d	Acquity 2.1(mm)
320-21000-5		08/26/2016 19:33	1	26AUG2016G_038_p1_el.d	Acquity 2.1(mm)
320-21000-6		08/26/2016 19:40	1	26AUG2016G_039_p1_el.d	Acquity 2.1(mm)
320-21000-7		08/26/2016 19:48	1	26AUG2016G_040_p1_el.d	Acquity 2.1(mm)
CCV 320-124380/16		08/26/2016 20:03	1	26AUG2016G_042_p1_el.d	Acquity 2.1(mm)
CCV 320-124380/17		08/26/2016 20:10	1		Acquity 2.1(mm)
320-21000-8		08/26/2016 20:25	1	26AUG2016G_045_p1_el.d	Acquity 2.1(mm)
320-21000-9		08/26/2016 20:33	1	26AUG2016G_046_p1_el.d	Acquity 2.1(mm)
320-21000-10		08/26/2016 20:40	1	26AUG2016G_047_p1_el.d	Acquity 2.1(mm)
320-21000-11		08/26/2016 20:48	1	26AUG2016G_048_p1_el.d	Acquity 2.1(mm)
CCV 320-124380/24		08/26/2016 21:03	1	26AUG2016G_050_p1_el.d	Acquity 2.1(mm)
CCV 320-124380/25		08/26/2016 21:10	1		Acquity 2.1(mm)

Sample Name	Acquisition Date & Time
RB	8/26/2016 13:20
RB	8/26/2016 13:28
RB	8/26/2016 13:35
CCV L2	8/26/2016 13:43
CCV L2 ADD ON	8/26/2016 13:50
RB	8/26/2016 13:58
CCV L5	8/26/2016 14:05
CCV L5 ADD ON	8/26/2016 14:13
RB	8/26/2016 14:20
PFC LC PFOSR00001	8/26/2016 14:28
mb 320-122332/1-a	8/26/2016 14:35
lcs 320-122332/2-a	8/26/2016 14:43
320-20901-a-1-a	8/26/2016 14:50
320-20901-a-1-b du	8/26/2016 14:58
320-20901-a-1-c ms	8/26/2016 15:05
320-20901-a-2-a	8/26/2016 15:13
320-20901-a-3-a	8/26/2016 15:20
320-20901-a-4-a	8/26/2016 15:28
320-20901-a-5-a	8/26/2016 15:35
RB	8/26/2016 15:43
CCV L4	8/26/2016 15:50
CCV L4 ADD ON	8/26/2016 15:58
RB	8/26/2016 16:05
320-20901-a-6-a	8/26/2016 16:13
320-20901-a-7-a	8/26/2016 16:20
320-20900-a-1-a	8/26/2016 16:28
320-20900-a-1-b du	8/26/2016 16:35
320-20900-a-1-c ms	8/26/2016 16:43
320-20900-a-2-a	8/26/2016 16:50
320-20900-a-3-a	8/26/2016 16:58
320-20900-a-4-a	8/26/2016 17:05
320-20900-a-5-a	8/26/2016 17:13
RB	8/26/2016 17:20
CCV L5	8/26/2016 17:28
CCV L5 ADD ON	8/26/2016 17:35
RB	8/26/2016 17:43
RB	8/26/2016 17:50
CCV L4	8/26/2016 17:58
CCV L4 ADD ON	8/26/2016 18:05
RB	8/26/2016 18:13
mb 320-123056/1-a	8/26/2016 18:20
lcs 320-123056/2-a	8/26/2016 18:28
lcsd 320-123056/3-a	8/26/2016 18:35
320-21000-a-1-a	8/26/2016 18:43
320-21000-a-2-a	8/26/2016 18:50
320-21000-a-3-a	8/26/2016 18:58

320-21000-a-4-a	8/26/2016 19:05
320-21000-a-5-a	8/26/2016 19:13
320-21000-a-6-a	8/26/2016 19:20
320-21000-a-7-a	8/26/2016 19:28
RB	8/26/2016 19:35
CCV L5	8/26/2016 19:43
CCV L5 ADD ON	8/26/2016 19:50
RB	8/26/2016 19:58
320-21000-a-8-a	8/26/2016 20:05
320-21000-a-9-a	8/26/2016 20:13
320-21000-a-10-a	8/26/2016 20:20
320-21000-a-11-a	8/26/2016 20:28
RB	8/26/2016 20:35
CCV L4	8/26/2016 20:43
CCV L4 ADD ON	8/26/2016 20:50
RB	8/26/2016 20:58
RB	8/26/2016 21:05
CCV L5	8/26/2016 21:13
CCV L5 ADD ON	8/26/2016 21:20
RB	8/26/2016 21:28
320-20859-a-4-a 10X	8/26/2016 21:35
320-20859-a-4-b ms 10	8/26/2016 21:43
320-20859-a-4-c msd 1	8/26/2016 21:50
320-20854-a-4-a 10X	8/26/2016 21:58
320-20112-a-21-a 10X	8/26/2016 22:05
320-20898-a-3-a 10X	8/26/2016 22:13
320-20898-a-4-a 10X	8/26/2016 22:20
320-20898-a-3-a	8/26/2016 22:28
320-20898-a-4-a	8/26/2016 22:35
RB	8/26/2016 22:43
CCV L4	8/26/2016 22:50
CCV L4 ADD ON	8/26/2016 22:58
RB	8/26/2016 23:05
mb 320-119400/1-a	8/26/2016 23:13
lcs 320-119400/2-a	8/26/2016 23:20
320-20457-a-6-a	8/26/2016 23:28
320-20457-a-7-a	8/26/2016 23:35
320-20457-a-8-a	8/26/2016 23:43
320-20457-a-8-b du	8/26/2016 23:50
320-20457-a-8-c ms	8/26/2016 23:58
320-20457-a-9-a	8/27/2016 0:05
RB	8/27/2016 0:13
CCV L5	8/27/2016 0:20
CCV L5 ADD ON	8/27/2016 0:28
RB	8/27/2016 0:35
mb 320-119881/1-a	8/27/2016 0:43
lcs 320-119881/2-a	8/27/2016 0:50

320-20457-b-8-a	8/27/2016 0:58
320-20457-b-8-b ms	8/27/2016 1:05
320-20457-b-8-c msd	8/27/2016 1:13
RB	8/27/2016 1:20
CCV L4	8/27/2016 1:28
CCV L4 ADD ON	8/27/2016 1:35
RB	8/27/2016 1:43



LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Batch Number: 123056 Batch Start Date: 08/19/16 10:26 Batch Analyst: Marchenko, Veronika P

Batch Method: 3535 Batch End Date: 08/20/16 16:05

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00043	LCPFCSP 00053
MB 320-123056/1		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	
LCS 320-123056/2		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
LCSD 320-123056/3		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
320-21000-A-1	GW23-17SGW-0816	3535, 537 (Modified)	T	296.54 g	28.53 g	268 mL	0.5 mL	25 uL	
320-21000-A-2	GW23-16GW-0816	3535, 537 (Modified)	T	297.99 g	27.70 g	270.3 mL	0.5 mL	25 uL	
320-21000-A-3	GW23-17DGW-0816	3535, 537 (Modified)	T	291.50 g	28.77 g	262.7 mL	0.5 mL	25 uL	
320-21000-A-4	GW23-17DGWP-0816	3535, 537 (Modified)	T	294.58 g	28.47 g	266.1 mL	0.5 mL	25 uL	
320-21000-A-5	GW23-13GW-0816	3535, 537 (Modified)	T	298.66 g	28.60 g	270.1 mL	0.5 mL	25 uL	
320-21000-A-6	GW23-07GW-0816	3535, 537 (Modified)	T	284.34 g	28.75 g	255.6 mL	0.5 mL	25 uL	
320-21000-A-7	GW23-09GW-0816	3535, 537 (Modified)	T	291.58 g	27.18 g	264.4 mL	0.5 mL	25 uL	
320-21000-A-8	GW23-11GW-0816	3535, 537 (Modified)	T	281.71 g	27.68 g	254 mL	0.5 mL	25 uL	
320-21000-A-9	GW23-12GW-0816	3535, 537 (Modified)	T	307.20 g	27.40 g	279.8 mL	0.5 mL	25 uL	
320-21000-A-10	GW23-15GW-0816	3535, 537 (Modified)	T	291.33 g	27.50 g	263.8 mL	0.5 mL	25 uL	
320-21000-A-11	GW23-14GW-0816	3535, 537 (Modified)	T	302.30 g	28.30 g	274 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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21000-1

SDG No.: \_\_\_\_\_

Batch Number: 123056 Batch Start Date: 08/19/16 10:26

Batch Analyst: Marchenko, Veronika P

Batch Method: 3535 Batch End Date: 08/20/16 16:05

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1% NaOH/H2O: 645197
H2O ID	8/19/16
Hexane ID	0000135581
Manifold ID	6,9
Methanol ID	697386
Pipette ID	MD05306, MG05455
Analyst ID - Reagent Drop	VPM
Analyst ID - SU Reagent Drop	VPM
Analyst ID - SU Reagent Drop Witness	HJA
Solvent Lot #	702940
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002736075A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

## HPLC/LCMS Data Review Checklist

Job Number(s): 21000

Work List ID(s): 33901

Extraction Batch: 123056


Analysis Batch(es): 124380

Delivery Rank: 4

Due Date: 8/21/16

A. Calibration/Instrument Run QC	1 <sup>st</sup> Level	2 <sup>nd</sup> Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>123741</u>	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• RF <sub>average</sub> criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ( $r \geq 0.995$ ).	✓	✓	
• 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# <u>62569, 62571</u>	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

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

1<sup>st</sup> Level (Analyst):  JRB 9/7/16 Date: 09/06/16

2<sup>nd</sup> Level Reviewer:  M. Way Date: 9/7/2016

TestAmerica Laboratories  
Worklist QC Batch Report

Worklist Name: 26AUG2016H\_PFC  
Instrument Name: A8  
Data Directory: \\ChromNA\Sacramento\ChromData\A8\20160826-33909.b  
QC Batching: Disabled

Worklist Number: 33909  
Chrom Method: PFC\_A8\_Full  
Limit Group Batching: Enabled

Prep: 123056  
AB: 124380

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 124380	LC PFC ICAL Raw Batch: 124381	LC PFAS ICAL Raw Batch: 124382
# 1 RB	# 1 RB	# 1 RB	
# 2 CCV L4	# 2 CCV L4	# 2 CCV L4	# 2 CCV L4
# 3 CCV L4 Add-on	# 3 CCV L4 Add-on	# 3 CCV L4 Add-on	# 3 CCV L4 Add-on
# 4 RB	# 4 RB	# 4 RB	
# 5 MB 320-123056/1-A	# 5 MB 320-123056/1-A		
# 6 LCS 320-123056/2-A	# 6 LCS 320-123056/2-A		
# 7 LCSD 320-123056/3-A	# 7 LCSD 320-123056/3-A		
# 8 320-21000-A-1-A	# 8 320-21000-A-1-A		
# 9 320-21000-A-2-A	# 9 320-21000-A-2-A		
#10 320-21000-A-3-A	#10 320-21000-A-3-A		
#11 320-21000-A-4-A	#11 320-21000-A-4-A		
#12 320-21000-A-5-A	#12 320-21000-A-5-A		
#13 320-21000-A-6-A	#13 320-21000-A-6-A		
#14 320-21000-A-7-A	#14 320-21000-A-7-A		
#15 RB	#15 RB	#15 RB	
#16 CCV L5	#16 CCV L5	#16 CCV L5	#16 CCV L5
#17 CCV L5 Add-on	#17 CCV L5 Add-on	#17 CCV L5 Add-on	#17 CCV L5 Add-on
#18 RB	#18 RB	#18 RB	
#19 320-21000-A-8-A	#19 320-21000-A-8-A		
#20 320-21000-A-9-A	#20 320-21000-A-9-A		
#21 320-21000-A-10-A	#21 320-21000-A-10-A		
#22 320-21000-A-11-A	#22 320-21000-A-11-A		
#23 RB	#23 RB	#23 RB	
#24 CCV L4	#24 CCV L4	#24 CCV L4	#24 CCV L4
#25 CCV L4 Add-on	#25 CCV L4 Add-on	#25 CCV L4 Add-on	#25 CCV L4 Add-on
#26 RB	#26 RB	#26 RB	

Curve w/ 33789 ~~AB 123741~~ 88C  
AB 123741 9/6/16

Time Stamp NCM: 62569 } attached to ICV 123741/10 + samples.  
Check Tune NCM: 62571 }

#41

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123056











Analyst: Marchenko, Veronika P

Batch Open: 8/19/2016 10:26:51AM

Method Code: 320-3535\_IVWT-320

Batch End: 8-20-16 10:05

## 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-320-123056/1 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.5 mL								
2 LCS-320-123056/2 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.5 mL								
3 LCSD-320-123056/3 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.5 mL								
4 320-21000-A-1 (PFC_IDA_DOD5)	N/A (320-21000-1)	296.54 g	268 mL				8/21/16	23_Days	4		
		28.53 g	0.5 mL								
5 320-21000-A-2 (PFC_IDA_DOD5)	N/A (320-21000-1)	297.99 g	270.3 mL				8/21/16	23_Days	4		
		27.70 g	0.5 mL								
6 320-21000-A-3 (PFC_IDA_DOD5)	N/A (320-21000-1)	291.50 g	262.7 mL				8/21/16	23_Days	4		
		28.77 g	0.5 mL								
7 320-21000-A-4 (PFC_IDA_DOD5)	N/A (320-21000-1)	294.58 g	266.1 mL				8/21/16	23_Days	4		
		28.47 g	0.5 mL								
8 320-21000-A-5 (PFC_IDA_DOD5)	N/A (320-21000-1)	298.66 g	270.1 mL				8/21/16	23_Days	4		
		28.60 g	0.5 mL								
9 320-21000-A-6 (PFC_IDA_DOD5)	N/A (320-21000-1)	284.34 g	255.6 mL				8/21/16	23_Days	4		
		28.75 g	0.5 mL								
10 320-21000-A-7 (PFC_IDA_DOD5)	N/A (320-21000-1)	291.58 g	264.4 mL				8/21/16	23_Days	4		
		27.18 g	0.5 mL								

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)





Batch Number: 320-123056

Analyst: Marchenko, Veronika P

Batch Open: 8/19/2016 10:26:51AM

Method Code: 320-3535\_IVWT-320

Batch End:

11	320-21000-A-8 (PFC_IDA_DOD5)	N/A (320-21000-1)	281.71 g	254 mL				8/21/16	23_Days	4	
			27.68 g	0.5 mL							
12	320-21000-A-9 (PFC_IDA_DOD5)	N/A (320-21000-1)	307.20 g	279.8 mL				8/21/16	23_Days	4	
			27.40 g	0.5 mL							
13	320-21000-A-10 (PFC_IDA_DOD5)	N/A (320-21000-1)	291.33 g	263.8 mL				8/21/16	23_Days	4	
			27.50 g	0.5 mL							
14	320-21000-A-11 (PFC_IDA_DOD5)	N/A (320-21000-1)	302.30 g	274 mL				8/21/16	23_Days	4	
			28.30 g	0.5 mL							

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123056

Analyst: Marchenko, Veronika P

Batch Open: 8/19/2016 10:26:51AM

Method Code: 320-3535\_IVWT-320

Batch End:

## Batch Notes

Manifold ID	6,9
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	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

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123056

Analyst: Marchenko, Veronika P

Batch Open: 8/19/2016 10:26:51AM

Method Code: 320-3535\_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1% NaOH/H2O: 645197

## Comments

320-21000-A-1	Method Comments: DOD site, Screen-caution
320-21000-A-2	Method Comments: DOD site, Screen-caution
320-21000-A-3	Method Comments: DOD site, Screen-caution
320-21000-A-4	Method Comments: DOD site, Screen-caution
320-21000-A-5	Method Comments: DOD site, Screen-caution
320-21000-A-6	Method Comments: DOD site, Screen-caution
320-21000-A-7	Method Comments: DOD site, Screen-caution
320-21000-A-8	Method Comments: DOD site, Screen-caution
320-21000-A-9	Method Comments: DOD site, Screen-caution
320-21000-A-10	Method Comments: DOD site, Screen-caution
320-21000-A-11	Method Comments: DOD site, Screen-caution

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123056

Analyst: Marchenko, Veronika P

Batch Open: 8/19/2016 10:26:51AM

Method Code: 320-3535\_IVWT-320

Batch End:

## Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-123056/1	LCMPFCSU_00043	25 uL	0.5 mL	VPM 8-19-16	HJD 8-19-16
LCS 320-123056/2	LCMPFCSU_00043	25 uL	0.5 mL	↓	↓
LCS 320-123056/2	LCPFCSP_00053	20 uL	0.5 mL		
LCSD 320-123056/3	LCMPFCSU_00043	25 uL	0.5 mL		
LCSD 320-123056/3	LCPFCSP_00053	20 uL	0.5 mL		
320-21000-A-1	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-2	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-3	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-4	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-5	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-6	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-7	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-8	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-9	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-10	LCMPFCSU_00043	25 uL	0.5 mL		
320-21000-A-11	LCMPFCSU_00043	25 uL	0.5 mL		

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123056

Analyst: Marchenko, Veronika P

Batch Open: 8/19/2016 10:26:51AM

Method Code: 320-3535\_IVWT-320

Batch End:

## Other Reagents:

**Reagent**

**Amount/Units**

**Lot#:**

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Printed : 8/19/2016

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TestAmerica Sacramento

Preparation Batch Number(s): 123056 Test: PFC-10A-0005  
 Earliest Holding Time: 8/22/16

Sample List Tab		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> 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 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> 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 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> 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 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> Level Reviewer
Date and time accurate and entered into TALS correctly		/	/
All necessary 'batch information' complete and entered into TALS correctly		/	/

1<sup>st</sup> Level Reviewer: VPM

Date: 8/20/16

2<sup>nd</sup> Level Reviewer: HJA

Date: 8-22-16

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**

<b>Client Information</b>	Sampler: <u>Lisa Roderick</u>	Lab PM: <u>Kellmann, Jill</u>	Carrier Tracking No(s):	COC No: <u>320-12234-2765.1</u>
Client Contact: <u>Mr. Michael Zamboni</u>	Phone: <u>616 581 3828</u>	E-Mail: <u>jill.kellmann@testamericainc.com</u>		Page: <u>Page 1 of 1</u>
Company: <u>CH2M Hill, Inc.</u>	<b>Analysis Requested</b>			Job #:

Address: <u>2411 Dulles Corner Park Suite 500</u>	Due Date Requested:	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) PFC_IDA_D005 - PFOA/PFOS	Total Number of Containers	Preservation Codes: A - HCL                      M - Hexane B - NaOH                    N - None C - Zn Acetate              O - AsNaO2 D - Nitric Acid              P - Na2O4S E - NaHSO4                  Q - Na2SO3 F - MeOH                    R - Na2S2O3 G - Amchlor                S - H2SO4 H - Ascorbic Acid          T - TSP Dodecahydrate I - Ice                              U - Acetone J - DI Water                 V - MCAA K - EDTA                      W - ph 4-5 L - EDA                        Z - other (specify)
City: <u>Herndon</u>	TAT Requested (days):			
State, Zip: <u>VA, 20171</u>	PO #: <u>10006-7-105420 CLEAN 8012 JM05</u>			
Phone: <u>703-376-5301(Tel)</u>	WO #:			
Email: <u>mzamboni@ch2m.com</u>	Project #: <u>32008186</u>			Other:
Project Name: <u>Navy CLEAN 8012-CTO-JU25 Dahlgren</u>	SSOW#:			
Site: <u>NSF Dahlgren, VA</u>				

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA_D005 - PFOA/PFOS	Total Number of Containers	Special Instructions/Note:
				Preservation Code:	X	X	N		
<u>GW23-17SGW-0816</u>	<u>8/15/16</u>	<u>1410</u>	<u>G</u>	<u>Water</u>					
<u>GW23-16GW-0816</u>	<u>8/15/16</u>	<u>1415</u>	<u>G</u>	<u>Water</u>					
<u>GW23-17DGW-0816</u>	<u>8/15/16</u>	<u>1535</u>	<u>G</u>	<u>Water</u>					
<u>GW23-17D4WP-0816</u>	<u>8/15/16</u>	<u>1540</u>	<u>G</u>	<u>Water</u>					
<u>GW23-13GW-0816</u>	<u>8/15/16</u>	<u>1555</u>	<u>G</u>	<u>Water</u>					
<u>GW23-07GW-0816</u>	<u>8/16/16</u>	<u>1105</u>	<u>G</u>	<u>Water</u>					
<u>GW23-09GW-0816</u>	<u>8/16/16</u>	<u>1115</u>	<u>G</u>	<u>Water</u>					
<u>GW23-11GW-0816</u>	<u>8/16/16</u>	<u>1405</u>	<u>G</u>	<u>Water</u>					
<u>GW23-12GW-0816</u>	<u>8/16/16</u>	<u>1420</u>	<u>G</u>	<u>Water</u>					
<u>GW23-15GW-0816</u>	<u>8/16/16</u>	<u>1420</u>	<u>G</u>	<u>Water</u>					
<u>GW23-14GW-0816</u>	<u>8/16/16</u>	<u>1600</u>	<u>G</u>	<u>Water</u>					



320-21000 Chain of Custody

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month ) <input type="checkbox"/> Return To Client <input checked="" 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>8/16/16 1730</u>	Company:	Received by: <u>[Signature]</u> Date/Time: <u>8/17/16 09:35</u> Company: <u>TAF</u>
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:

Custody Seals Intact:  Yes  No    Custody Seal No.: \_\_\_\_\_    Cooler Temperature(s) °C and Other Remarks: 2.3°C re

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# Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-21000-1

**Login Number: 21000**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

<b>Question</b>	<b>Answer</b>	<b>Comment</b>
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	











Contmst_ID	DO_City_Num	Phase	Installation_ID	Sample Name	Chem_Code	Analysis_Group	Analysis_Method	PRC_Code	Lab_Code	Lab_Name	Extraction_Method	Result_Type	Lab_Uncertainty	Sample_Media	QC_Level	Date/Time_Collected	Date_Received	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Loss	Chm_Name	QC_Column_Type	Analysis_Value	Original_Analysis_Value	Result_Limits	Lab_Qualifier	Validator_Qualifier	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QML_Minimum	DL	LOD	LOQ	SDC	Analysis_Batch	Validation_Value	Val_Date		
N6247010012	J525	U	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016	06/19/2016















## 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

<b>SDG</b>	<b>Sample Name</b>	<b>Matrix</b>
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

<b>Value</b>	<b>Description</b>
%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
GW23-14	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904790.8	6804581.4	Perfluoroalkyl Compounds	GW23-14GW-0816	WG	Ground water	16-Aug-16
GW23-14	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904790.8	6804581.4	Perfluoroalkyl Compounds	GW23-14GW-0816	WG	Ground water	16-Aug-16
GW23-17S	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904973.1	6804315.38	Perfluoroalkyl Compounds	GW23-17SGW-0816	WG	Ground water	15-Aug-16
GW23-17D	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904973.1	6804315.38	Perfluoroalkyl Compounds	GW23-17DGW-0816	WG	Ground water	15-Aug-16
GW23-17D	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904973.1	6804315.38	Perfluoroalkyl Compounds	GW23-17DGWP-0816	WG	Ground water	15-Aug-16
GW23-07	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904721.9	6804934.6	Perfluoroalkyl Compounds	GW23-07GW-0816	WG	Ground water	16-Aug-16
GW23-09	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904701.1	6804686.42	Perfluoroalkyl Compounds	GW23-09GW-0816	WG	Ground water	16-Aug-16
GW23-17S	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904973.1	6804315.38	Perfluoroalkyl Compounds	GW23-17SGW-0816	WG	Ground water	15-Aug-16
GW23-07	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904721.9	6804934.6	Perfluoroalkyl Compounds	GW23-07GW-0816	WG	Ground water	16-Aug-16
GW23-15	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904578	6804448.55	Perfluoroalkyl Compounds	GW23-15GW-0816	WG	Ground water	16-Aug-16
GW23-16	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904747.2	6804261.7	Perfluoroalkyl Compounds	GW23-16GW-0816	WG	Ground water	15-Aug-16
GW23-15	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904578	6804448.55	Perfluoroalkyl Compounds	GW23-15GW-0816	WG	Ground water	16-Aug-16
GW23-12	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904739.2	6804513	Perfluoroalkyl Compounds	GW23-12GW-0816	WG	Ground water	16-Aug-16
GW23-13	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904790.7	6804408.11	Perfluoroalkyl Compounds	GW23-13GW-0816	WG	Ground water	15-Aug-16
GW23-11	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904604.8	6804596.99	Perfluoroalkyl Compounds	GW23-11GW-0816	WG	Ground water	16-Aug-16
GW23-12	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904739.2	6804513	Perfluoroalkyl Compounds	GW23-12GW-0816	WG	Ground water	16-Aug-16
GW23-17D	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904973.1	6804315.38	Perfluoroalkyl Compounds	GW23-17DGW-0816	WG	Ground water	15-Aug-16
GW23-17D	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904973.1	6804315.38	Perfluoroalkyl Compounds	GW23-17DGWP-0816	WG	Ground water	15-Aug-16
GW23-16	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904747.2	6804261.7	Perfluoroalkyl Compounds	GW23-16GW-0816	WG	Ground water	15-Aug-16
GW23-09	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904701.1	6804686.42	Perfluoroalkyl Compounds	GW23-09GW-0816	WG	Ground water	16-Aug-16
GW23-13	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904790.7	6804408.11	Perfluoroalkyl Compounds	GW23-13GW-0816	WG	Ground water	15-Aug-16
GW23-11	SITE 00023	DAHLGREN_NSWC	WLM	Monitoring well	320-21000-1	11904604.8	6804596.99	Perfluoroalkyl Compounds	GW23-11GW-0816	WG	Ground water	16-Aug-16