



**Groundwater Sample Results,
Level 2 Laboratory Report, Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Report, SDG J16572-1**

*Naval Air Station Oceana
Virginia Beach, Virginia*

July 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

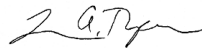
ANALYTICAL REPORT

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

TestAmerica Job ID: 320-16572-1
Client Project/Site: NAS Oceana, VA - 8012 CTO-WE44
Revision: 1

For:
CH2M Hill, Inc.
5701 Cleveland Street
Suite 200
Virginia Beach, Virginia 23462

Attn: Laurie George



Authorized for release by:
1/13/2016 11:02:17 AM

Laura Turpen, Project Manager I
(916)374-4414
laura.turpen@testamericainc.com

LINKS

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

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

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

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Definitions/Glossary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Qualifiers

LCMS

Qualifier	Qualifier Description
M	Manual integrated compound.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
D	The reported value is from a dilution.
Q	One or more quality control criteria failed.
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.

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: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Job ID: 320-16572-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: CH2M Hill, Inc.

Project: NAS Oceana, VA - 8012 CTO-WE44

Report Number: 320-16572-1

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.

Revision

This report was revised January 13, 2016 to include LOD/LOQ data for all samples. No other data changed as a result of this revision.

RECEIPT

The samples were received on 12/22/2015, 12/23/2015, 12/24/2015, 12/29/2015 and 12/31/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.0, 0.2, 0.8, 0.9 and 2.1 C.

Sample OF14-MW06S-1215 (320-16572-2) had a collection time of 12:00 indicated on the COC. the client provided a corrected time via email on December 22, 2015. A copy of this email is included in the report.

Case Narrative

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Job ID: 320-16572-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

PFC

Samples OF14-MW07S-1215 (320-16572-1), OF-MW16-1215 (320-16586-1), OF-MW15-1215 (320-16609-1), OF14-MW08-1215 (320-16615-1), OF-FB01-123015 (320-16649-1), OF14-MW06S-1215 (320-16572-2), OF-MW16P-1215 (320-16586-2), OF-MW09-1215 (320-16609-2), OF14-MW08P-1215 (320-16615-2), OF-INF01-1215 (320-16649-2), OF-MW17-1215 (320-16586-3), OF-MW10-1215 (320-16609-3), OF14-MW12S-1215 (320-16615-3), OF-INF01P-1215 (320-16649-3), OF14-MW07D-1215 (320-16586-4), OF-EB122315 (320-16609-4), OF14-MW11S-1215 (320-16615-4), OF-EFF01-1215 (320-16649-4), OF14-MW06D-1215 (320-16586-5), OF14-MW14-1215 (320-16615-5), OF-EFF01P-1215 (320-16649-5), OF14-MW13S-1215 (320-16615-6), OF-MW12D-1215 (320-16649-6), OF-EB122815 (320-16615-7) and OF-FB02-123015 (320-16649-7) were analyzed for PFCs in accordance with SOP WS-LC-0025. The samples were prepared on 01/04/2016 and 12/26/2015 and analyzed on 01/05/2016, 01/06/2016, 01/07/2016 and 12/30/2015.

Samples OF14-MW08-1215 (320-16615-1)[10X], OF14-MW08-1215 (320-16615-1)[20X], OF14-MW08P-1215 (320-16615-2)[10X], OF14-MW08P-1215 (320-16615-2)[20X], OF14-MW12S-1215 (320-16615-3)[10X], OF14-MW11S-1215 (320-16615-4)[10X], OF-EFF01-1215 (320-16615-4)[10X], OF-EFF01P-1215 (320-16615-5)[10X] and OF14-MW13S-1215 (320-16615-6)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: OF-EB122815 (320-16615-7). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 320-96713.

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: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW07S-1215

Lab Sample ID: 320-16572-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.025		0.0025	0.00079	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.00087	J	0.0025	0.00065	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.078		0.0025	0.00091	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.39	M	0.0025	0.00086	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0053	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW06S-1215

Lab Sample ID: 320-16572-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.016		0.0025	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.19		0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0036		0.0025	0.00065	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.014		0.0025	0.00092	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.21		0.0025	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.17	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW16-1215

Lab Sample ID: 320-16586-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0068		0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00092	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.19	M	0.0025	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.066	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW16P-1215

Lab Sample ID: 320-16586-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0025		0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00093	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.18	M	0.0025	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.074	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW17-1215

Lab Sample ID: 320-16586-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.0023	J	0.0025	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.017		0.0025	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.00099	J	0.0025	0.00065	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0032		0.0025	0.00091	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.035	M	0.0025	0.00086	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.019	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW07D-1215

Lab Sample ID: 320-16586-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0019	J	0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0028	M	0.0025	0.00087	ug/L	1		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW06D-1215

Lab Sample ID: 320-16586-5

No Detections.

Client Sample ID: OF-MW15-1215

Lab Sample ID: 320-16609-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.0086		0.0025	0.00081	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.14		0.0025	0.00076	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00097	J	0.0025	0.00088	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW09-1215

Lab Sample ID: 320-16609-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0015	J	0.0024	0.00071	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0014	J	0.0024	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.013	M	0.0024	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.012	M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW10-1215

Lab Sample ID: 320-16609-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.14		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.14		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.011		0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.069		0.0024	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.71	M	0.0024	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.29	M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-EB122315

Lab Sample ID: 320-16609-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0024	0.00085	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW08-1215

Lab Sample ID: 320-16615-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.39		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.32		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.013		0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0024	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13	J M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.41	D	0.024	0.0077	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.30	D	0.024	0.0072	ug/L	10		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.017	J D	0.024	0.0063	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.55	D	0.024	0.0088	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	5.5	D M	0.024	0.0083	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	12	J D M	0.038	0.012	ug/L	10		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL2	0.44	D	0.048	0.015	ug/L	20		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL2	0.33	D	0.048	0.014	ug/L	20		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW08-1215 (Continued)

Lab Sample ID: 320-16615-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS) - DL2	0.59	D	0.048	0.018	ug/L	20		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL2	5.3	D M	0.048	0.017	ug/L	20		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL2	10	D M	0.077	0.024	ug/L	20		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW08P-1215

Lab Sample ID: 320-16615-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.41		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.015		0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.0	J	0.0024	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.00084	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15	J M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.39	D	0.024	0.0077	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.29	D	0.024	0.0072	ug/L	10		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.013	J D	0.024	0.0063	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.64	D	0.024	0.0088	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	5.0	D M	0.024	0.0084	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	13	J D M	0.038	0.012	ug/L	10		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL2	0.46	D	0.048	0.015	ug/L	20		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL2	0.27	D	0.048	0.014	ug/L	20		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL2	0.017	J D	0.048	0.013	ug/L	20		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL2	0.41	D	0.048	0.018	ug/L	20		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL2	4.7	D M	0.048	0.017	ug/L	20		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL2	11	D M	0.077	0.025	ug/L	20		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW12S-1215

Lab Sample ID: 320-16615-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.037		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.072		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.011		0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J M	0.0024	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.5	J M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.038	D	0.024	0.0077	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.072	D	0.024	0.0072	ug/L	10		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.011	J D	0.024	0.0063	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.041	D	0.024	0.0088	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1.2	D M	0.024	0.0083	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	6.3	D M	0.038	0.012	ug/L	10		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW11S-1215

Lab Sample ID: 320-16615-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.31		0.0023	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.32		0.0023	0.00069	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.023		0.0023	0.00060	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0023	0.00084	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.9	J M	0.0023	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.6	J M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.28	D	0.023	0.0074	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.28	D	0.023	0.0069	ug/L	10		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.018	J D	0.023	0.0060	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.75	D	0.023	0.0084	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	4.8	D M	0.023	0.0080	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	3.0	D M	0.037	0.012	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW14-1215

Lab Sample ID: 320-16615-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0020	J	0.0023	0.00068	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0023	0.00079	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW13S-1215

Lab Sample ID: 320-16615-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.064		0.0023	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.88	J	0.0023	0.00069	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0090		0.0023	0.00060	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.22		0.0023	0.00084	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.1	J M	0.0023	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.1	J M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.061	D	0.023	0.0074	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.88	D	0.023	0.0069	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.096	D	0.023	0.0084	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	3.3	D M	0.023	0.0080	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	4.3	D M	0.037	0.012	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF-EB122815

Lab Sample ID: 320-16615-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.00080	J	0.0023	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0012	J	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-FB01-123015

Lab Sample ID: 320-16649-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.00089	J	0.0023	0.00081	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0029	J M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-INF01-1215

Lab Sample ID: 320-16649-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.010		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0018	J	0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.00089	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.26	M	0.0024	0.00084	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.54	M	0.0039	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-INF01P-1215

Lab Sample ID: 320-16649-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.0088		0.0024	0.00076	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.29		0.0024	0.00071	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0017	J	0.0024	0.00062	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.25	M	0.0024	0.00082	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.53	M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-EFF01-1215

Lab Sample ID: 320-16649-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.052		0.0023	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	1.9	J	0.0023	0.00069	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0042		0.0023	0.00060	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.049		0.0023	0.00085	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.63	M	0.0023	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.1	J M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.054	D	0.023	0.0074	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.8	D	0.023	0.0069	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.029	D	0.023	0.0085	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	0.62	D M	0.023	0.0080	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.0	D M	0.037	0.012	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF-EFF01P-1215

Lab Sample ID: 320-16649-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.053		0.0024	0.00078	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	1.9	J	0.0024	0.00073	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0036		0.0024	0.00064	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.048		0.0024	0.00090	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.62	M	0.0024	0.00085	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.1	J M B	0.0039	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.057	D	0.024	0.0078	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.5	D	0.024	0.0073	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.019	J D	0.024	0.0090	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	0.60	D M	0.024	0.0085	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	0.96	D M	0.039	0.012	ug/L	10		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW12D-1215

Lab Sample ID: 320-16649-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.0044		0.0023	0.00081	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - RA	0.0079		0.0023	0.00069	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RA	0.011	M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-FB02-123015

Lab Sample ID: 320-16649-7

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW07S-1215

Lab Sample ID: 320-16572-1

Date Collected: 12/21/15 15:30

Matrix: Water

Date Received: 12/22/15 10:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.025		0.0025	0.00079	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.00074	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorononanoic acid (PFNA)	0.00087	J	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorobutanesulfonic acid (PFBS)	0.078		0.0025	0.00091	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorohexanesulfonic acid (PFHxS)	0.39	M	0.0025	0.00086	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorooctanesulfonic acid (PFOS)	0.0053	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 19:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	95		25 - 150				12/26/15 07:28	12/30/15 19:53	1
13C4 PFOS	113		25 - 150				12/26/15 07:28	12/30/15 19:53	1
13C5 PFNA	79		25 - 150				12/26/15 07:28	12/30/15 19:53	1
13C4 PFOA	80		25 - 150				12/26/15 07:28	12/30/15 19:53	1
13C4-PFHpA	85		25 - 150				12/26/15 07:28	12/30/15 19:53	1

Client Sample ID: OF14-MW06S-1215

Lab Sample ID: 320-16572-2

Date Collected: 12/21/15 12:05

Matrix: Water

Date Received: 12/22/15 10:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.016		0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorooctanoic acid (PFOA)	0.19		0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorononanoic acid (PFNA)	0.0036		0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorobutanesulfonic acid (PFBS)	0.014		0.0025	0.00092	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorohexanesulfonic acid (PFHxS)	0.21		0.0025	0.00087	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorooctanesulfonic acid (PFOS)	0.17	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 20:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	119		25 - 150				12/26/15 07:28	12/30/15 20:14	1
13C4 PFOS	117		25 - 150				12/26/15 07:28	12/30/15 20:14	1
13C5 PFNA	90		25 - 150				12/26/15 07:28	12/30/15 20:14	1
13C4 PFOA	102		25 - 150				12/26/15 07:28	12/30/15 20:14	1
13C4-PFHpA	109		25 - 150				12/26/15 07:28	12/30/15 20:14	1

Client Sample ID: OF-MW16-1215

Lab Sample ID: 320-16586-1

Date Collected: 12/22/15 09:55

Matrix: Water

Date Received: 12/23/15 11:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 20:35	1
Perfluorooctanoic acid (PFOA)	0.0068		0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 20:35	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 20:35	1
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00092	ug/L		12/26/15 07:28	12/30/15 20:35	1
Perfluorohexanesulfonic acid (PFHxS)	0.19	M	0.0025	0.00087	ug/L		12/26/15 07:28	12/30/15 20:35	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW16-1215

Date Collected: 12/22/15 09:55

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.066	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 20:35	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	113		25 - 150				12/26/15 07:28	12/30/15 20:35	1
13C4 PFOS	120		25 - 150				12/26/15 07:28	12/30/15 20:35	1
13C5 PFNA	85		25 - 150				12/26/15 07:28	12/30/15 20:35	1
13C4 PFOA	93		25 - 150				12/26/15 07:28	12/30/15 20:35	1
13C4-PFHpA	94		25 - 150				12/26/15 07:28	12/30/15 20:35	1

Client Sample ID: OF-MW16P-1215

Date Collected: 12/22/15 10:00

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-2

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00081	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorooctanoic acid (PFOA)	0.0025		0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00066	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00093	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorohexanesulfonic acid (PFHxS)	0.18	M	0.0025	0.00088	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorooctanesulfonic acid (PFOS)	0.074	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 20:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	97		25 - 150				12/26/15 07:28	12/30/15 20:57	1
13C4 PFOS	98		25 - 150				12/26/15 07:28	12/30/15 20:57	1
13C5 PFNA	64		25 - 150				12/26/15 07:28	12/30/15 20:57	1
13C4 PFOA	79		25 - 150				12/26/15 07:28	12/30/15 20:57	1
13C4-PFHpA	81		25 - 150				12/26/15 07:28	12/30/15 20:57	1

Client Sample ID: OF-MW17-1215

Date Collected: 12/22/15 11:15

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-3

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0023	J	0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorooctanoic acid (PFOA)	0.017		0.0025	0.00074	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorononanoic acid (PFNA)	0.00099	J	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorobutanesulfonic acid (PFBS)	0.0032		0.0025	0.00091	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorohexanesulfonic acid (PFHxS)	0.035	M	0.0025	0.00086	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorooctanesulfonic acid (PFOS)	0.019	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 21:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	128		25 - 150				12/26/15 07:28	12/30/15 21:18	1
13C4 PFOS	114		25 - 150				12/26/15 07:28	12/30/15 21:18	1
13C5 PFNA	86		25 - 150				12/26/15 07:28	12/30/15 21:18	1
13C4 PFOA	97		25 - 150				12/26/15 07:28	12/30/15 21:18	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW17-1215

Date Collected: 12/22/15 11:15

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-3

Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4-PFHpA	107		25 - 150	12/26/15 07:28	12/30/15 21:18	1

Client Sample ID: OF14-MW07D-1215

Date Collected: 12/22/15 13:25

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-4

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorooctanoic acid (PFOA)	0.0019	J	0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorohexanesulfonic acid (PFHxS)	0.0028	M	0.0025	0.00087	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 21:39	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
18O2 PFHxS	125		25 - 150	12/26/15 07:28	12/30/15 21:39	1			
13C4 PFOS	114		25 - 150	12/26/15 07:28	12/30/15 21:39	1			
13C5 PFNA	74		25 - 150	12/26/15 07:28	12/30/15 21:39	1			
13C4 PFOA	85		25 - 150	12/26/15 07:28	12/30/15 21:39	1			
13C4-PFHpA	97		25 - 150	12/26/15 07:28	12/30/15 21:39	1			

Client Sample ID: OF14-MW06D-1215

Date Collected: 12/22/15 16:05

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-5

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00081	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00076	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00066	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00093	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.00088	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 22:00	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
18O2 PFHxS	122		25 - 150	12/26/15 07:28	12/30/15 22:00	1			
13C4 PFOS	110		25 - 150	12/26/15 07:28	12/30/15 22:00	1			
13C5 PFNA	80		25 - 150	12/26/15 07:28	12/30/15 22:00	1			
13C4 PFOA	92		25 - 150	12/26/15 07:28	12/30/15 22:00	1			
13C4-PFHpA	94		25 - 150	12/26/15 07:28	12/30/15 22:00	1			

Client Sample ID: OF-MW15-1215

Date Collected: 12/23/15 09:30

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-1

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0086		0.0025	0.00081	ug/L		12/26/15 07:28	12/30/15 22:22	1
Perfluorooctanoic acid (PFOA)	0.14		0.0025	0.00076	ug/L		12/26/15 07:28	12/30/15 22:22	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00066	ug/L		12/26/15 07:28	12/30/15 22:22	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW15-1215

Date Collected: 12/23/15 09:30

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00093	ug/L		12/26/15 07:28	12/30/15 22:22	1
Perfluorohexanesulfonic acid (PFHxS)	0.00097	J	0.0025	0.00088	ug/L		12/26/15 07:28	12/30/15 22:22	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0041	0.0013	ug/L		12/26/15 07:28	12/30/15 22:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				12/26/15 07:28	12/30/15 22:22	1
13C4 PFOS	97		25 - 150				12/26/15 07:28	12/30/15 22:22	1
13C5 PFNA	75		25 - 150				12/26/15 07:28	12/30/15 22:22	1
13C4 PFOA	79		25 - 150				12/26/15 07:28	12/30/15 22:22	1
13C4-PFHpa	93		25 - 150				12/26/15 07:28	12/30/15 22:22	1

Client Sample ID: OF-MW09-1215

Date Collected: 12/23/15 11:00

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-2

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00076	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorooctanoic acid (PFOA)	0.0015	J	0.0024	0.00071	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.00062	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorobutanesulfonic acid (PFBS)	0.0014	J	0.0024	0.00087	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorohexanesulfonic acid (PFHxS)	0.013	M	0.0024	0.00083	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorooctanesulfonic acid (PFOS)	0.012	M	0.0038	0.0012	ug/L		12/26/15 07:28	12/30/15 23:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	125		25 - 150				12/26/15 07:28	12/30/15 23:04	1
13C4 PFOS	119		25 - 150				12/26/15 07:28	12/30/15 23:04	1
13C5 PFNA	92		25 - 150				12/26/15 07:28	12/30/15 23:04	1
13C4 PFOA	104		25 - 150				12/26/15 07:28	12/30/15 23:04	1
13C4-PFHpa	113		25 - 150				12/26/15 07:28	12/30/15 23:04	1

Client Sample ID: OF-MW10-1215

Date Collected: 12/23/15 12:40

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-3

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.14		0.0024	0.00077	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorooctanoic acid (PFOA)	0.14		0.0024	0.00072	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorononanoic acid (PFNA)	0.011		0.0024	0.00063	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorobutanesulfonic acid (PFBS)	0.069		0.0024	0.00088	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorohexanesulfonic acid (PFHxS)	0.71	M	0.0024	0.00083	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorooctanesulfonic acid (PFOS)	0.29	M	0.0038	0.0012	ug/L		12/26/15 07:28	12/30/15 23:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	82		25 - 150				12/26/15 07:28	12/30/15 23:25	1
13C4 PFOS	105		25 - 150				12/26/15 07:28	12/30/15 23:25	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW10-1215

Date Collected: 12/23/15 12:40

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-3

Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	99		25 - 150	12/26/15 07:28	12/30/15 23:25	1
13C4 PFOA	100		25 - 150	12/26/15 07:28	12/30/15 23:25	1
13C4-PFHpA	89		25 - 150	12/26/15 07:28	12/30/15 23:25	1

Client Sample ID: OF-EB122315

Date Collected: 12/23/15 12:50

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-4

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00078	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.00073	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.00064	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00089	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0024	0.00085	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorooctanesulfonic acid (PFOS)	0.0029	U	0.0039	0.0012	ug/L		12/26/15 07:28	12/30/15 23:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	105		25 - 150	12/26/15 07:28	12/30/15 23:47	1
13C4 PFOS	103		25 - 150	12/26/15 07:28	12/30/15 23:47	1
13C5 PFNA	117		25 - 150	12/26/15 07:28	12/30/15 23:47	1
13C4 PFOA	118		25 - 150	12/26/15 07:28	12/30/15 23:47	1
13C4-PFHpA	119		25 - 150	12/26/15 07:28	12/30/15 23:47	1

Client Sample ID: OF14-MW08-1215

Date Collected: 12/28/15 09:20

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-1

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.39		0.0024	0.00077	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorooctanoic acid (PFOA)	0.32		0.0024	0.00072	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorononanoic acid (PFNA)	0.013		0.0024	0.00063	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0024	0.00088	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.00083	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorooctanesulfonic acid (PFOS)	13	J M	0.0038	0.0012	ug/L		01/04/16 09:42	01/05/16 16:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	37		25 - 150	01/04/16 09:42	01/05/16 16:39	1
13C4 PFOS	30		25 - 150	01/04/16 09:42	01/05/16 16:39	1
13C5 PFNA	36		25 - 150	01/04/16 09:42	01/05/16 16:39	1
13C4 PFOA	27		25 - 150	01/04/16 09:42	01/05/16 16:39	1
13C4-PFHpA	41		25 - 150	01/04/16 09:42	01/05/16 16:39	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.41	D	0.024	0.0077	ug/L		01/04/16 09:42	01/06/16 15:41	10
Perfluorooctanoic acid (PFOA)	0.30	D	0.024	0.0072	ug/L		01/04/16 09:42	01/06/16 15:41	10
Perfluorononanoic acid (PFNA)	0.017	J D	0.024	0.0063	ug/L		01/04/16 09:42	01/06/16 15:41	10

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW08-1215

Lab Sample ID: 320-16615-1

Date Collected: 12/28/15 09:20

Matrix: Water

Date Received: 12/29/15 07:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	0.55	D	0.024	0.0088	ug/L		01/04/16 09:42	01/06/16 15:41	10
Perfluorohexanesulfonic acid (PFHxS)	5.5	D M	0.024	0.0083	ug/L		01/04/16 09:42	01/06/16 15:41	10
Perfluorooctanesulfonic acid (PFOS)	12	J D M	0.038	0.012	ug/L		01/04/16 09:42	01/06/16 15:41	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	82		25 - 150				01/04/16 09:42	01/06/16 15:41	10
13C4 PFOS	76		25 - 150				01/04/16 09:42	01/06/16 15:41	10
13C5 PFNA	77		25 - 150				01/04/16 09:42	01/06/16 15:41	10
13C4 PFOA	80		25 - 150				01/04/16 09:42	01/06/16 15:41	10
13C4-PFHpA	92		25 - 150				01/04/16 09:42	01/06/16 15:41	10

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL2

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.44	D	0.048	0.015	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorooctanoic acid (PFOA)	0.33	D	0.048	0.014	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorononanoic acid (PFNA)	0.038	U	0.048	0.013	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorobutanesulfonic acid (PFBS)	0.59	D	0.048	0.018	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorohexanesulfonic acid (PFHxS)	5.3	D M	0.048	0.017	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorooctanesulfonic acid (PFOS)	10	D M	0.077	0.024	ug/L		01/04/16 09:42	01/06/16 16:43	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	87		25 - 150				01/04/16 09:42	01/06/16 16:43	20
13C4 PFOS	100		25 - 150				01/04/16 09:42	01/06/16 16:43	20
13C5 PFNA	86		25 - 150				01/04/16 09:42	01/06/16 16:43	20
13C4 PFOA	83		25 - 150				01/04/16 09:42	01/06/16 16:43	20
13C4-PFHpA	98		25 - 150				01/04/16 09:42	01/06/16 16:43	20

Client Sample ID: OF14-MW08P-1215

Lab Sample ID: 320-16615-2

Date Collected: 12/28/15 09:25

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.41		0.0024	0.00077	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.00072	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorononanoic acid (PFNA)	0.015		0.0024	0.00063	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorobutanesulfonic acid (PFBS)	1.0	J	0.0024	0.00088	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.00084	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorooctanesulfonic acid (PFOS)	15	J M	0.0038	0.0012	ug/L		01/04/16 09:42	01/05/16 17:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	41		25 - 150				01/04/16 09:42	01/05/16 17:00	1
13C4 PFOS	33		25 - 150				01/04/16 09:42	01/05/16 17:00	1
13C5 PFNA	40		25 - 150				01/04/16 09:42	01/05/16 17:00	1
13C4 PFOA	36		25 - 150				01/04/16 09:42	01/05/16 17:00	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW08P-1215

Lab Sample ID: 320-16615-2

Date Collected: 12/28/15 09:25

Matrix: Water

Date Received: 12/29/15 07:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4-PFHpA	42		25 - 150	01/04/16 09:42	01/05/16 17:00	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.39	D	0.024	0.0077	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorooctanoic acid (PFOA)	0.29	D	0.024	0.0072	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorononanoic acid (PFNA)	0.013	J D	0.024	0.0063	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorobutanesulfonic acid (PFBS)	0.64	D	0.024	0.0088	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorohexanesulfonic acid (PFHxS)	5.0	D M	0.024	0.0084	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorooctanesulfonic acid (PFOS)	13	J D M	0.038	0.012	ug/L		01/04/16 09:42	01/06/16 16:12	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	100		25 - 150	01/04/16 09:42	01/06/16 16:12	10
13C4 PFOS	80		25 - 150	01/04/16 09:42	01/06/16 16:12	10
13C5 PFNA	77		25 - 150	01/04/16 09:42	01/06/16 16:12	10
13C4 PFOA	82		25 - 150	01/04/16 09:42	01/06/16 16:12	10
13C4-PFHpA	101		25 - 150	01/04/16 09:42	01/06/16 16:12	10

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL2

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.46	D	0.048	0.015	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorooctanoic acid (PFOA)	0.27	D	0.048	0.014	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorononanoic acid (PFNA)	0.017	J D	0.048	0.013	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorobutanesulfonic acid (PFBS)	0.41	D	0.048	0.018	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorohexanesulfonic acid (PFHxS)	4.7	D M	0.048	0.017	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorooctanesulfonic acid (PFOS)	11	D M	0.077	0.025	ug/L		01/04/16 09:42	01/06/16 17:15	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	115		25 - 150	01/04/16 09:42	01/06/16 17:15	20
13C4 PFOS	113		25 - 150	01/04/16 09:42	01/06/16 17:15	20
13C5 PFNA	89		25 - 150	01/04/16 09:42	01/06/16 17:15	20
13C4 PFOA	105		25 - 150	01/04/16 09:42	01/06/16 17:15	20
13C4-PFHpA	106		25 - 150	01/04/16 09:42	01/06/16 17:15	20

Client Sample ID: OF14-MW12S-1215

Lab Sample ID: 320-16615-3

Date Collected: 12/28/15 10:25

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.037		0.0024	0.00077	ug/L		01/04/16 09:42	01/05/16 17:21	1
Perfluorooctanoic acid (PFOA)	0.072		0.0024	0.00072	ug/L		01/04/16 09:42	01/05/16 17:21	1
Perfluorononanoic acid (PFNA)	0.011		0.0024	0.00063	ug/L		01/04/16 09:42	01/05/16 17:21	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.00088	ug/L		01/04/16 09:42	01/05/16 17:21	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	J M	0.0024	0.00083	ug/L		01/04/16 09:42	01/05/16 17:21	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW12S-1215

Lab Sample ID: 320-16615-3

Date Collected: 12/28/15 10:25

Matrix: Water

Date Received: 12/29/15 07:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	6.5	J M	0.0038	0.0012	ug/L		01/04/16 09:42	01/05/16 17:21	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	70		25 - 150				01/04/16 09:42	01/05/16 17:21	1
13C4 PFOS	38		25 - 150				01/04/16 09:42	01/05/16 17:21	1
13C5 PFNA	39		25 - 150				01/04/16 09:42	01/05/16 17:21	1
13C4 PFOA	75		25 - 150				01/04/16 09:42	01/05/16 17:21	1
13C4-PFHpA	62		25 - 150				01/04/16 09:42	01/05/16 17:21	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.038	D	0.024	0.0077	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorooctanoic acid (PFOA)	0.072	D	0.024	0.0072	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorononanoic acid (PFNA)	0.011	J D	0.024	0.0063	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorobutanesulfonic acid (PFBS)	0.041	D	0.024	0.0088	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorohexanesulfonic acid (PFHxS)	1.2	D M	0.024	0.0083	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorooctanesulfonic acid (PFOS)	6.3	D M	0.038	0.012	ug/L		01/04/16 09:42	01/06/16 17:46	10
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	97		25 - 150				01/04/16 09:42	01/06/16 17:46	10
13C4 PFOS	74		25 - 150				01/04/16 09:42	01/06/16 17:46	10
13C5 PFNA	70		25 - 150				01/04/16 09:42	01/06/16 17:46	10
13C4 PFOA	91		25 - 150				01/04/16 09:42	01/06/16 17:46	10
13C4-PFHpA	100		25 - 150				01/04/16 09:42	01/06/16 17:46	10

Client Sample ID: OF14-MW11S-1215

Lab Sample ID: 320-16615-4

Date Collected: 12/28/15 12:00

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.31		0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorooctanoic acid (PFOA)	0.32		0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorononanoic acid (PFNA)	0.023		0.0023	0.00060	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0023	0.00084	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorohexanesulfonic acid (PFHxS)	5.9	J M	0.0023	0.00080	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorooctanesulfonic acid (PFOS)	3.6	J M	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 17:42	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	47		25 - 150				01/04/16 09:42	01/05/16 17:42	1
13C4 PFOS	65		25 - 150				01/04/16 09:42	01/05/16 17:42	1
13C5 PFNA	64		25 - 150				01/04/16 09:42	01/05/16 17:42	1
13C4 PFOA	77		25 - 150				01/04/16 09:42	01/05/16 17:42	1
13C4-PFHpA	52		25 - 150				01/04/16 09:42	01/05/16 17:42	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW11S-1215

Lab Sample ID: 320-16615-4

Date Collected: 12/28/15 12:00

Matrix: Water

Date Received: 12/29/15 07:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.28	D	0.023	0.0074	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorooctanoic acid (PFOA)	0.28	D	0.023	0.0069	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorononanoic acid (PFNA)	0.018	J D	0.023	0.0060	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorobutanesulfonic acid (PFBS)	0.75	D	0.023	0.0084	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorohexanesulfonic acid (PFHxS)	4.8	D M	0.023	0.0080	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorooctanesulfonic acid (PFOS)	3.0	D M	0.037	0.012	ug/L		01/04/16 09:42	01/06/16 18:17	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	102		25 - 150				01/04/16 09:42	01/06/16 18:17	10
13C4 PFOS	106		25 - 150				01/04/16 09:42	01/06/16 18:17	10
13C5 PFNA	97		25 - 150				01/04/16 09:42	01/06/16 18:17	10
13C4 PFOA	104		25 - 150				01/04/16 09:42	01/06/16 18:17	10
13C4-PFHpA	98		25 - 150				01/04/16 09:42	01/06/16 18:17	10

Client Sample ID: OF14-MW14-1215

Lab Sample ID: 320-16615-5

Date Collected: 12/28/15 13:00

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00073	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorooctanoic acid (PFOA)	0.0020	J	0.0023	0.00068	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00059	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0023	0.00079	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0012	ug/L		01/04/16 09:42	01/06/16 20:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	113		25 - 150				01/04/16 09:42	01/06/16 20:22	1
13C4 PFOS	119		25 - 150				01/04/16 09:42	01/06/16 20:22	1
13C5 PFNA	79		25 - 150				01/04/16 09:42	01/06/16 20:22	1
13C4 PFOA	79		25 - 150				01/04/16 09:42	01/06/16 20:22	1
13C4-PFHpA	88		25 - 150				01/04/16 09:42	01/06/16 20:22	1

Client Sample ID: OF14-MW13S-1215

Lab Sample ID: 320-16615-6

Date Collected: 12/28/15 14:20

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.064		0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorooctanoic acid (PFOA)	0.88	J	0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorononanoic acid (PFNA)	0.0090		0.0023	0.00060	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorobutanesulfonic acid (PFBS)	0.22		0.0023	0.00084	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorohexanesulfonic acid (PFHxS)	4.1	J M	0.0023	0.00080	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorooctanesulfonic acid (PFOS)	5.1	J M	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 18:25	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW13S-1215

Lab Sample ID: 320-16615-6

Date Collected: 12/28/15 14:20

Matrix: Water

Date Received: 12/29/15 07:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	61		25 - 150	01/04/16 09:42	01/05/16 18:25	1
13C4 PFOS	56		25 - 150	01/04/16 09:42	01/05/16 18:25	1
13C5 PFNA	60		25 - 150	01/04/16 09:42	01/05/16 18:25	1
13C4 PFOA	79		25 - 150	01/04/16 09:42	01/05/16 18:25	1
13C4-PFHpA	65		25 - 150	01/04/16 09:42	01/05/16 18:25	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.061	D	0.023	0.0074	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorooctanoic acid (PFOA)	0.88	D	0.023	0.0069	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorononanoic acid (PFNA)	0.018	U	0.023	0.0060	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorobutanesulfonic acid (PFBS)	0.096	D	0.023	0.0084	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorohexanesulfonic acid (PFHxS)	3.3	D M	0.023	0.0080	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorooctanesulfonic acid (PFOS)	4.3	D M	0.037	0.012	ug/L		01/04/16 09:42	01/06/16 18:48	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	96		25 - 150	01/04/16 09:42	01/06/16 18:48	10
13C4 PFOS	83		25 - 150	01/04/16 09:42	01/06/16 18:48	10
13C5 PFNA	67		25 - 150	01/04/16 09:42	01/06/16 18:48	10
13C4 PFOA	71		25 - 150	01/04/16 09:42	01/06/16 18:48	10
13C4-PFHpA	80		25 - 150	01/04/16 09:42	01/06/16 18:48	10

Client Sample ID: OF-EB122815

Lab Sample ID: 320-16615-7

Date Collected: 12/28/15 14:45

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorohexanesulfonic acid (PFHxS)	0.00080	J	0.0023	0.00080	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorooctanesulfonic acid (PFOS)	0.0012	J	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 18:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	134		25 - 150	01/04/16 09:42	01/05/16 18:46	1
13C4 PFOS	152	Q	25 - 150	01/04/16 09:42	01/05/16 18:46	1
13C5 PFNA	137		25 - 150	01/04/16 09:42	01/05/16 18:46	1
13C4 PFOA	135		25 - 150	01/04/16 09:42	01/05/16 18:46	1
13C4-PFHpA	135		25 - 150	01/04/16 09:42	01/05/16 18:46	1

Client Sample ID: OF-FB01-123015

Lab Sample ID: 320-16649-1

Date Collected: 12/30/15 08:45

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 19:07	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-FB01-123015

Lab Sample ID: 320-16649-1

Date Collected: 12/30/15 08:45

Matrix: Water

Date Received: 12/31/15 07:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 19:07	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		01/04/16 09:42	01/05/16 19:07	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00085	ug/L		01/04/16 09:42	01/05/16 19:07	1
Perfluorohexanesulfonic acid (PFHxS)	0.00089	J	0.0023	0.00081	ug/L		01/04/16 09:42	01/05/16 19:07	1
Perfluorooctanesulfonic acid (PFOS)	0.0029	J M	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 19:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	135		25 - 150				01/04/16 09:42	01/05/16 19:07	1
13C4 PFOS	144		25 - 150				01/04/16 09:42	01/05/16 19:07	1
13C5 PFNA	132		25 - 150				01/04/16 09:42	01/05/16 19:07	1
13C4 PFOA	134		25 - 150				01/04/16 09:42	01/05/16 19:07	1
13C4-PFHpA	125		25 - 150				01/04/16 09:42	01/05/16 19:07	1

Client Sample ID: OF-INF01-1215

Lab Sample ID: 320-16649-2

Date Collected: 12/30/15 09:50

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.010		0.0024	0.00077	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.00072	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorononanoic acid (PFNA)	0.0018	J	0.0024	0.00063	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.00089	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	M	0.0024	0.00084	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorooctanesulfonic acid (PFOS)	0.54	M	0.0039	0.0012	ug/L		01/04/16 09:42	01/05/16 19:50	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	121		25 - 150				01/04/16 09:42	01/05/16 19:50	1
13C4 PFOS	112		25 - 150				01/04/16 09:42	01/05/16 19:50	1
13C5 PFNA	97		25 - 150				01/04/16 09:42	01/05/16 19:50	1
13C4 PFOA	103		25 - 150				01/04/16 09:42	01/05/16 19:50	1
13C4-PFHpA	108		25 - 150				01/04/16 09:42	01/05/16 19:50	1

Client Sample ID: OF-INF01P-1215

Lab Sample ID: 320-16649-3

Date Collected: 12/30/15 09:55

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0088		0.0024	0.00076	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorooctanoic acid (PFOA)	0.29		0.0024	0.00071	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorononanoic acid (PFNA)	0.0017	J	0.0024	0.00062	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.00087	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	M	0.0024	0.00082	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorooctanesulfonic acid (PFOS)	0.53	M	0.0038	0.0012	ug/L		01/04/16 09:42	01/05/16 20:11	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-INF01P-1215

Date Collected: 12/30/15 09:55

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-3

Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	124		25 - 150	01/04/16 09:42	01/05/16 20:11	1
13C4 PFOS	102		25 - 150	01/04/16 09:42	01/05/16 20:11	1
13C5 PFNA	86		25 - 150	01/04/16 09:42	01/05/16 20:11	1
13C4 PFOA	95		25 - 150	01/04/16 09:42	01/05/16 20:11	1
13C4-PFHpa	97		25 - 150	01/04/16 09:42	01/05/16 20:11	1

Client Sample ID: OF-EFF01-1215

Date Collected: 12/30/15 10:00

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-4

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.052		0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorooctanoic acid (PFOA)	1.9	J	0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorononanoic acid (PFNA)	0.0042		0.0023	0.00060	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorobutanesulfonic acid (PFBS)	0.049		0.0023	0.00085	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorohexanesulfonic acid (PFHxS)	0.63	M	0.0023	0.00080	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorooctanesulfonic acid (PFOS)	1.1	J M	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 20:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	113		25 - 150	01/04/16 09:42	01/05/16 20:32	1
13C4 PFOS	104		25 - 150	01/04/16 09:42	01/05/16 20:32	1
13C5 PFNA	93		25 - 150	01/04/16 09:42	01/05/16 20:32	1
13C4 PFOA	76		25 - 150	01/04/16 09:42	01/05/16 20:32	1
13C4-PFHpa	104		25 - 150	01/04/16 09:42	01/05/16 20:32	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.054	D	0.023	0.0074	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorooctanoic acid (PFOA)	1.8	D	0.023	0.0069	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorononanoic acid (PFNA)	0.018	U	0.023	0.0060	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorobutanesulfonic acid (PFBS)	0.029	D	0.023	0.0085	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorohexanesulfonic acid (PFHxS)	0.62	D M	0.023	0.0080	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorooctanesulfonic acid (PFOS)	1.0	D M	0.037	0.012	ug/L		01/04/16 09:42	01/06/16 19:19	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	110		25 - 150	01/04/16 09:42	01/06/16 19:19	10
13C4 PFOS	111		25 - 150	01/04/16 09:42	01/06/16 19:19	10
13C5 PFNA	100		25 - 150	01/04/16 09:42	01/06/16 19:19	10
13C4 PFOA	89		25 - 150	01/04/16 09:42	01/06/16 19:19	10
13C4-PFHpa	109		25 - 150	01/04/16 09:42	01/06/16 19:19	10

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-EFF01P-1215

Lab Sample ID: 320-16649-5

Date Collected: 12/30/15 10:05

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.053		0.0024	0.00078	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorooctanoic acid (PFOA)	1.9	J	0.0024	0.00073	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorononanoic acid (PFNA)	0.0036		0.0024	0.00064	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorobutanesulfonic acid (PFBS)	0.048		0.0024	0.00090	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorohexanesulfonic acid (PFHxS)	0.62	M	0.0024	0.00085	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorooctanesulfonic acid (PFOS)	1.1	J M B	0.0039	0.0012	ug/L		01/04/16 09:42	01/05/16 20:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	107		25 - 150				01/04/16 09:42	01/05/16 20:53	1
13C4 PFOS	93		25 - 150				01/04/16 09:42	01/05/16 20:53	1
13C5 PFNA	89		25 - 150				01/04/16 09:42	01/05/16 20:53	1
13C4 PFOA	73		25 - 150				01/04/16 09:42	01/05/16 20:53	1
13C4-PFHpA	94		25 - 150				01/04/16 09:42	01/05/16 20:53	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.057	D	0.024	0.0078	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorooctanoic acid (PFOA)	1.5	D	0.024	0.0073	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorononanoic acid (PFNA)	0.020	U	0.024	0.0064	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorobutanesulfonic acid (PFBS)	0.019	J D	0.024	0.0090	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorohexanesulfonic acid (PFHxS)	0.60	D M	0.024	0.0085	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorooctanesulfonic acid (PFOS)	0.96	D M	0.039	0.012	ug/L		01/04/16 09:42	01/06/16 19:51	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				01/04/16 09:42	01/06/16 19:51	10
13C4 PFOS	118		25 - 150				01/04/16 09:42	01/06/16 19:51	10
13C5 PFNA	107		25 - 150				01/04/16 09:42	01/06/16 19:51	10
13C4 PFOA	102		25 - 150				01/04/16 09:42	01/06/16 19:51	10
13C4-PFHpA	104		25 - 150				01/04/16 09:42	01/06/16 19:51	10

Client Sample ID: OF-MW12D-1215

Lab Sample ID: 320-16649-6

Date Collected: 12/30/15 12:40

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 21:15	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		01/04/16 09:42	01/05/16 21:15	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00085	ug/L		01/04/16 09:42	01/05/16 21:15	1
Perfluorohexanesulfonic acid (PFHxS)	0.0044		0.0023	0.00081	ug/L		01/04/16 09:42	01/05/16 21:15	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	142		25 - 150				01/04/16 09:42	01/05/16 21:15	1
13C4 PFOS	148		25 - 150				01/04/16 09:42	01/05/16 21:15	1
13C5 PFNA	118		25 - 150				01/04/16 09:42	01/05/16 21:15	1
13C4 PFOA	126		25 - 150				01/04/16 09:42	01/05/16 21:15	1
13C4-PFHpA	125		25 - 150				01/04/16 09:42	01/05/16 21:15	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
 Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0079		0.0023	0.00069	ug/L		01/04/16 09:42	01/07/16 13:00	1
Perfluorooctanesulfonic acid (PFOS)	0.011	M	0.0037	0.0012	ug/L		01/04/16 09:42	01/07/16 13:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOS	100		25 - 150				01/04/16 09:42	01/07/16 13:00	1
13C4 PFOA	50		25 - 150				01/04/16 09:42	01/07/16 13:00	1

Client Sample ID: OF-FB02-123015

Lab Sample ID: 320-16649-7

Date Collected: 12/30/15 12:50

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0022	0.00072	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0022	0.00067	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0022	0.00058	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0022	0.00082	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0022	0.00078	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0011	ug/L		01/04/16 09:42	01/05/16 21:36	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	134		25 - 150				01/04/16 09:42	01/05/16 21:36	1
13C4 PFOS	145		25 - 150				01/04/16 09:42	01/05/16 21:36	1
13C5 PFNA	138		25 - 150				01/04/16 09:42	01/05/16 21:36	1
13C4 PFOA	140		25 - 150				01/04/16 09:42	01/05/16 21:36	1
13C4-PFHpA	135		25 - 150				01/04/16 09:42	01/05/16 21:36	1

Isotope Dilution Summary

Client: CH2M Hill, Inc.
 Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)				
		18O2 PFHx (25-150)	13C4 PFOS (25-150)	13C5 PFNA (25-150)	13C4 PFOA (25-150)	13C4-PFHp (25-150)
320-16572-1	OF14-MW07S-1215	95	113	79	80	85
320-16572-2	OF14-MW06S-1215	119	117	90	102	109
320-16586-1	OF-MW16-1215	113	120	85	93	94
320-16586-2	OF-MW16P-1215	97	98	64	79	81
320-16586-3	OF-MW17-1215	128	114	86	97	107
320-16586-4	OF14-MW07D-1215	125	114	74	85	97
320-16586-5	OF14-MW06D-1215	122	110	80	92	94
320-16609-1	OF-MW15-1215	108	97	75	79	93
320-16609-2	OF-MW09-1215	125	119	92	104	113
320-16609-3	OF-MW10-1215	82	105	99	100	89
320-16609-4	OF-EB122315	105	103	117	118	119
320-16615-1	OF14-MW08-1215	37	30	36	27	41
320-16615-1 - DL	OF14-MW08-1215	82	76	77	80	92
320-16615-1 - DL2	OF14-MW08-1215	87	100	86	83	98
320-16615-2	OF14-MW08P-1215	41	33	40	36	42
320-16615-2 - DL	OF14-MW08P-1215	100	80	77	82	101
320-16615-2 - DL2	OF14-MW08P-1215	115	113	89	105	106
320-16615-3	OF14-MW12S-1215	70	38	39	75	62
320-16615-3 - DL	OF14-MW12S-1215	97	74	70	91	100
320-16615-4	OF14-MW11S-1215	47	65	64	77	52
320-16615-4 - DL	OF14-MW11S-1215	102	106	97	104	98
320-16615-5	OF14-MW14-1215	113	119	79	79	88
320-16615-6	OF14-MW13S-1215	61	56	60	79	65
320-16615-6 - DL	OF14-MW13S-1215	96	83	67	71	80
320-16615-7	OF-EB122815	134	152 Q	137	135	135
320-16649-1	OF-FB01-123015	135	144	132	134	125
320-16649-2	OF-INF01-1215	121	112	97	103	108
320-16649-3	OF-INF01P-1215	124	102	86	95	97
320-16649-4	OF-EFF01-1215	113	104	93	76	104
320-16649-4 - DL	OF-EFF01-1215	110	111	100	89	109
320-16649-5	OF-EFF01P-1215	107	93	89	73	94
320-16649-5 - DL	OF-EFF01P-1215	108	118	107	102	104
320-16649-6	OF-MW12D-1215	142	148	118	126	125
320-16649-6 - RA	OF-MW12D-1215		100		50	
320-16649-7	OF-FB02-123015	134	145	138	140	135
LCS 320-96713/2-A	Lab Control Sample	128	119	123	126	132
LCS 320-97173/2-A	Lab Control Sample	84	91	80	79	81
MB 320-96713/1-A	Method Blank	126	126	131	136	131
MB 320-97173/1-A	Method Blank	96	99	86	90	89
MB 320-97173/1-A - RA	Method Blank		116			

Surrogate Legend

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

QC Sample Results

Client: CH2M Hill, Inc.
 Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-96713/1-A
Matrix: Water
Analysis Batch: 97208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 96713

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.00087	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 19:10	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	126		25 - 150	12/26/15 07:28	12/30/15 19:10	1
13C4 PFOS	126		25 - 150	12/26/15 07:28	12/30/15 19:10	1
13C5 PFNA	131		25 - 150	12/26/15 07:28	12/30/15 19:10	1
13C4 PFOA	136		25 - 150	12/26/15 07:28	12/30/15 19:10	1
13C4-PFHpA	131		25 - 150	12/26/15 07:28	12/30/15 19:10	1

Lab Sample ID: LCS 320-96713/2-A
Matrix: Water
Analysis Batch: 97208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 96713

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0383		ug/L		96	60 - 140
Perfluorooctanoic acid (PFOA)	0.0400	0.0549		ug/L		137	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0415		ug/L		104	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0315		ug/L		89	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0362		ug/L		96	60 - 140
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0392		ug/L		102	60 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
18O2 PFHxS	128		25 - 150
13C4 PFOS	119		25 - 150
13C5 PFNA	123		25 - 150
13C4 PFOA	126		25 - 150
13C4-PFHpA	132		25 - 150

Lab Sample ID: MB 320-97173/1-A
Matrix: Water
Analysis Batch: 97302

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 97173

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		01/04/16 09:42	01/05/16 15:56	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		01/04/16 09:42	01/05/16 15:56	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		01/04/16 09:42	01/05/16 15:56	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		01/04/16 09:42	01/05/16 15:56	1
Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.00087	ug/L		01/04/16 09:42	01/05/16 15:56	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	96		25 - 150	01/04/16 09:42	01/05/16 15:56	1

TestAmerica Sacramento

QC Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

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

Lab Sample ID: MB 320-97173/1-A
Matrix: Water
Analysis Batch: 97302

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 97173

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFOS	99		25 - 150	01/04/16 09:42	01/05/16 15:56	1
13C5 PFNA	86		25 - 150	01/04/16 09:42	01/05/16 15:56	1
13C4 PFOA	90		25 - 150	01/04/16 09:42	01/05/16 15:56	1
13C4-PFHpA	89		25 - 150	01/04/16 09:42	01/05/16 15:56	1

Lab Sample ID: LCS 320-97173/2-A
Matrix: Water
Analysis Batch: 97302

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 97173

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0428		ug/L		107	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0421		ug/L		105	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0325		ug/L		92	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0377		ug/L		100	60 - 140
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0459		ug/L		120	60 - 140

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
18O2 PFHxS	84		25 - 150
13C4 PFOS	91		25 - 150
13C5 PFNA	80		25 - 150
13C4 PFOA	79		25 - 150
13C4-PFHpA	81		25 - 150

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

Lab Sample ID: MB 320-97173/1-A
Matrix: Water
Analysis Batch: 97425

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 97173

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS) - RA	0.0030	U	0.0040	0.0013	ug/L		01/04/16 09:42	01/07/16 13:21	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFOS - RA	116		25 - 150	01/04/16 09:42	01/07/16 13:21	1

QC Association Summary

Client: CH2M Hill, Inc.
 Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

LCMS

Prep Batch: 96713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16572-1	OF14-MW07S-1215	Total/NA	Water	3535	
320-16572-2	OF14-MW06S-1215	Total/NA	Water	3535	
320-16586-1	OF-MW16-1215	Total/NA	Water	3535	
320-16586-2	OF-MW16P-1215	Total/NA	Water	3535	
320-16586-3	OF-MW17-1215	Total/NA	Water	3535	
320-16586-4	OF14-MW07D-1215	Total/NA	Water	3535	
320-16586-5	OF14-MW06D-1215	Total/NA	Water	3535	
320-16609-1	OF-MW15-1215	Total/NA	Water	3535	
320-16609-2	OF-MW09-1215	Total/NA	Water	3535	
320-16609-3	OF-MW10-1215	Total/NA	Water	3535	
320-16609-4	OF-EB122315	Total/NA	Water	3535	
LCS 320-96713/2-A	Lab Control Sample	Total/NA	Water	3535	
MB 320-96713/1-A	Method Blank	Total/NA	Water	3535	

Prep Batch: 97173

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16615-1 - DL2	OF14-MW08-1215	Total/NA	Water	3535	
320-16615-1	OF14-MW08-1215	Total/NA	Water	3535	
320-16615-1 - DL	OF14-MW08-1215	Total/NA	Water	3535	
320-16615-2	OF14-MW08P-1215	Total/NA	Water	3535	
320-16615-2 - DL2	OF14-MW08P-1215	Total/NA	Water	3535	
320-16615-2 - DL	OF14-MW08P-1215	Total/NA	Water	3535	
320-16615-3 - DL	OF14-MW12S-1215	Total/NA	Water	3535	
320-16615-3	OF14-MW12S-1215	Total/NA	Water	3535	
320-16615-4	OF14-MW11S-1215	Total/NA	Water	3535	
320-16615-4 - DL	OF14-MW11S-1215	Total/NA	Water	3535	
320-16615-5	OF14-MW14-1215	Total/NA	Water	3535	
320-16615-6	OF14-MW13S-1215	Total/NA	Water	3535	
320-16615-6 - DL	OF14-MW13S-1215	Total/NA	Water	3535	
320-16615-7	OF-EB122815	Total/NA	Water	3535	
320-16649-1	OF-FB01-123015	Total/NA	Water	3535	
320-16649-2	OF-INF01-1215	Total/NA	Water	3535	
320-16649-3	OF-INF01P-1215	Total/NA	Water	3535	
320-16649-4 - DL	OF-EFF01-1215	Total/NA	Water	3535	
320-16649-4	OF-EFF01-1215	Total/NA	Water	3535	
320-16649-5 - DL	OF-EFF01P-1215	Total/NA	Water	3535	
320-16649-5	OF-EFF01P-1215	Total/NA	Water	3535	
320-16649-6 - RA	OF-MW12D-1215	Total/NA	Water	3535	
320-16649-6	OF-MW12D-1215	Total/NA	Water	3535	
320-16649-7	OF-FB02-123015	Total/NA	Water	3535	
LCS 320-97173/2-A	Lab Control Sample	Total/NA	Water	3535	
MB 320-97173/1-A - RA	Method Blank	Total/NA	Water	3535	
MB 320-97173/1-A	Method Blank	Total/NA	Water	3535	

Analysis Batch: 97208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16572-1	OF14-MW07S-1215	Total/NA	Water	WS-LC-0025	96713
320-16572-2	OF14-MW06S-1215	Total/NA	Water	WS-LC-0025	96713
320-16586-1	OF-MW16-1215	Total/NA	Water	WS-LC-0025	96713
320-16586-2	OF-MW16P-1215	Total/NA	Water	WS-LC-0025	96713
320-16586-3	OF-MW17-1215	Total/NA	Water	WS-LC-0025	96713

TestAmerica Sacramento

QC Association Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

LCMS (Continued)

Analysis Batch: 97208 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16586-4	OF14-MW07D-1215	Total/NA	Water	WS-LC-0025	96713
320-16586-5	OF14-MW06D-1215	Total/NA	Water	WS-LC-0025	96713
320-16609-1	OF-MW15-1215	Total/NA	Water	WS-LC-0025	96713
320-16609-2	OF-MW09-1215	Total/NA	Water	WS-LC-0025	96713
320-16609-3	OF-MW10-1215	Total/NA	Water	WS-LC-0025	96713
320-16609-4	OF-EB122315	Total/NA	Water	WS-LC-0025	96713
LCS 320-96713/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	96713
MB 320-96713/1-A	Method Blank	Total/NA	Water	WS-LC-0025	96713

Analysis Batch: 97302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16615-1	OF14-MW08-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-2	OF14-MW08P-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-3	OF14-MW12S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-4	OF14-MW11S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-6	OF14-MW13S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-7	OF-EB122815	Total/NA	Water	WS-LC-0025	97173
320-16649-1	OF-FB01-123015	Total/NA	Water	WS-LC-0025	97173
320-16649-2	OF-INF01-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-3	OF-INF01P-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-4	OF-EFF01-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-5	OF-EFF01P-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-6	OF-MW12D-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-7	OF-FB02-123015	Total/NA	Water	WS-LC-0025	97173
LCS 320-97173/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	97173
MB 320-97173/1-A	Method Blank	Total/NA	Water	WS-LC-0025	97173

Analysis Batch: 97425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16615-1 - DL	OF14-MW08-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-1 - DL2	OF14-MW08-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-2 - DL	OF14-MW08P-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-2 - DL2	OF14-MW08P-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-3 - DL	OF14-MW12S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-4 - DL	OF14-MW11S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-5	OF14-MW14-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-6 - DL	OF14-MW13S-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-4 - DL	OF-EFF01-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-5 - DL	OF-EFF01P-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-6 - RA	OF-MW12D-1215	Total/NA	Water	WS-LC-0025	97173
MB 320-97173/1-A - RA	Method Blank	Total/NA	Water	WS-LC-0025	97173

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW07S-1215

Date Collected: 12/21/15 15:30

Date Received: 12/22/15 10:45

Lab Sample ID: 320-16572-1

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			505.1 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	505.1 mL	1.00 mL	97208	12/30/15 19:53	JRB	TAL SAC

Client Sample ID: OF14-MW06S-1215

Date Collected: 12/21/15 12:05

Date Received: 12/22/15 10:45

Lab Sample ID: 320-16572-2

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			501.6 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	501.6 mL	1.00 mL	97208	12/30/15 20:14	JRB	TAL SAC

Client Sample ID: OF-MW16-1215

Date Collected: 12/22/15 09:55

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-1

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			500.4 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	500.4 mL	1.00 mL	97208	12/30/15 20:35	JRB	TAL SAC

Client Sample ID: OF-MW16P-1215

Date Collected: 12/22/15 10:00

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-2

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			495.9 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	495.9 mL	1.00 mL	97208	12/30/15 20:57	JRB	TAL SAC

Client Sample ID: OF-MW17-1215

Date Collected: 12/22/15 11:15

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-3

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			503.4 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	503.4 mL	1.00 mL	97208	12/30/15 21:18	JRB	TAL SAC

Client Sample ID: OF14-MW07D-1215

Date Collected: 12/22/15 13:25

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-4

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			500.8 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	500.8 mL	1.00 mL	97208	12/30/15 21:39	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW06D-1215

Lab Sample ID: 320-16586-5

Date Collected: 12/22/15 16:05

Matrix: Water

Date Received: 12/23/15 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			494.4 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	494.4 mL	1.00 mL	97208	12/30/15 22:00	JRB	TAL SAC

Client Sample ID: OF-MW15-1215

Lab Sample ID: 320-16609-1

Date Collected: 12/23/15 09:30

Matrix: Water

Date Received: 12/24/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			493.4 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	493.4 mL	1.00 mL	97208	12/30/15 22:22	JRB	TAL SAC

Client Sample ID: OF-MW09-1215

Lab Sample ID: 320-16609-2

Date Collected: 12/23/15 11:00

Matrix: Water

Date Received: 12/24/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			527.2 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	527.2 mL	1.00 mL	97208	12/30/15 23:04	JRB	TAL SAC

Client Sample ID: OF-MW10-1215

Lab Sample ID: 320-16609-3

Date Collected: 12/23/15 12:40

Matrix: Water

Date Received: 12/24/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			522.8 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	522.8 mL	1.00 mL	97208	12/30/15 23:25	JRB	TAL SAC

Client Sample ID: OF-EB122315

Lab Sample ID: 320-16609-4

Date Collected: 12/23/15 12:50

Matrix: Water

Date Received: 12/24/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			514.5 mL	1.00 mL	96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	514.5 mL	1.00 mL	97208	12/30/15 23:47	JRB	TAL SAC

Client Sample ID: OF14-MW08-1215

Lab Sample ID: 320-16615-1

Date Collected: 12/28/15 09:20

Matrix: Water

Date Received: 12/29/15 07:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			522.5 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	522.5 mL	1.00 mL	97302	01/05/16 16:39	JRB	TAL SAC
Total/NA	Prep	3535	DL		522.5 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW08-1215

Date Collected: 12/28/15 09:20

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WS-LC-0025	DL	10	522.5 mL	1.00 mL	97425	01/06/16 15:41	JRB	TAL SAC
Total/NA	Prep	3535	DL2		522.5 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL2	20	522.5 mL	1.00 mL	97425	01/06/16 16:43	JRB	TAL SAC

Client Sample ID: OF14-MW08P-1215

Date Collected: 12/28/15 09:25

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-2

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			519.6 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	519.6 mL	1.00 mL	97302	01/05/16 17:00	JRB	TAL SAC
Total/NA	Prep	3535	DL		519.6 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	519.6 mL	1.00 mL	97425	01/06/16 16:12	JRB	TAL SAC
Total/NA	Prep	3535	DL2		519.6 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL2	20	519.6 mL	1.00 mL	97425	01/06/16 17:15	JRB	TAL SAC

Client Sample ID: OF14-MW12S-1215

Date Collected: 12/28/15 10:25

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-3

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			521 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	521 mL	1.00 mL	97302	01/05/16 17:21	JRB	TAL SAC
Total/NA	Prep	3535	DL		521 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	521 mL	1.00 mL	97425	01/06/16 17:46	JRB	TAL SAC

Client Sample ID: OF14-MW11S-1215

Date Collected: 12/28/15 12:00

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-4

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			543.9 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	543.9 mL	1.00 mL	97302	01/05/16 17:42	JRB	TAL SAC
Total/NA	Prep	3535	DL		543.9 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	543.9 mL	1.00 mL	97425	01/06/16 18:17	JRB	TAL SAC

Client Sample ID: OF14-MW14-1215

Date Collected: 12/28/15 13:00

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-5

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			549.6 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	549.6 mL	1.00 mL	97425	01/06/16 20:22	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW13S-1215

Lab Sample ID: 320-16615-6

Date Collected: 12/28/15 14:20

Matrix: Water

Date Received: 12/29/15 07:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			543.9 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	543.9 mL	1.00 mL	97302	01/05/16 18:25	JRB	TAL SAC
Total/NA	Prep	3535	DL		543.9 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	543.9 mL	1.00 mL	97425	01/06/16 18:48	JRB	TAL SAC

Client Sample ID: OF-EB122815

Lab Sample ID: 320-16615-7

Date Collected: 12/28/15 14:45

Matrix: Water

Date Received: 12/29/15 07:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			544.7 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	544.7 mL	1.00 mL	97302	01/05/16 18:46	JRB	TAL SAC

Client Sample ID: OF-FB01-123015

Lab Sample ID: 320-16649-1

Date Collected: 12/30/15 08:45

Matrix: Water

Date Received: 12/31/15 07:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			538.9 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	538.9 mL	1.00 mL	97302	01/05/16 19:07	JRB	TAL SAC

Client Sample ID: OF-INF01-1215

Lab Sample ID: 320-16649-2

Date Collected: 12/30/15 09:50

Matrix: Water

Date Received: 12/31/15 07:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			517.9 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	517.9 mL	1.00 mL	97302	01/05/16 19:50	JRB	TAL SAC

Client Sample ID: OF-INF01P-1215

Lab Sample ID: 320-16649-3

Date Collected: 12/30/15 09:55

Matrix: Water

Date Received: 12/31/15 07:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			530.4 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	530.4 mL	1.00 mL	97302	01/05/16 20:11	JRB	TAL SAC

Client Sample ID: OF-EFF01-1215

Lab Sample ID: 320-16649-4

Date Collected: 12/30/15 10:00

Matrix: Water

Date Received: 12/31/15 07:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			542.9 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-EFF01-1215

Date Collected: 12/30/15 10:00

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WS-LC-0025		1	542.9 mL	1.00 mL	97302	01/05/16 20:32	JRB	TAL SAC
Total/NA	Prep	3535	DL		542.9 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	542.9 mL	1.00 mL	97425	01/06/16 19:19	JRB	TAL SAC

Client Sample ID: OF-EFF01P-1215

Date Collected: 12/30/15 10:05

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-5

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			511.4 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	511.4 mL	1.00 mL	97302	01/05/16 20:53	JRB	TAL SAC
Total/NA	Prep	3535	DL		511.4 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	511.4 mL	1.00 mL	97425	01/06/16 19:51	JRB	TAL SAC

Client Sample ID: OF-MW12D-1215

Date Collected: 12/30/15 12:40

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-6

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			538.6 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	538.6 mL	1.00 mL	97302	01/05/16 21:15	JRB	TAL SAC
Total/NA	Prep	3535	RA		538.6 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	538.6 mL	1.00 mL	97425	01/07/16 13:00	JRB	TAL SAC

Client Sample ID: OF-FB02-123015

Date Collected: 12/30/15 12:50

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-7

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			559.4 mL	1.00 mL	97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	559.4 mL	1.00 mL	97302	01/05/16 21:36	JRB	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: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

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	01-31-16
Oregon	NELAP	10	CA200005	01-29-16

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
WS-LC-0025	3535	Water	Perfluorobutanesulfonic acid (PFBS)
WS-LC-0025	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
WS-LC-0025	3535	Water	Perfluorooctanesulfonic acid (PFOS)

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
Oregon	NELAP	10	4025	01-09-17

Method Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Method	Method Description	Protocol	Laboratory
WS-LC-0025	Perfluorinated Hydrocarbons	TAL SOP	TAL SAC

Protocol References:

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

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Sample Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-16572-1	OF14-MW07S-1215	Water	12/21/15 15:30	12/22/15 10:45
320-16572-2	OF14-MW06S-1215	Water	12/21/15 12:05	12/22/15 10:45
320-16586-1	OF-MW16-1215	Water	12/22/15 09:55	12/23/15 11:20
320-16586-2	OF-MW16P-1215	Water	12/22/15 10:00	12/23/15 11:20
320-16586-3	OF-MW17-1215	Water	12/22/15 11:15	12/23/15 11:20
320-16586-4	OF14-MW07D-1215	Water	12/22/15 13:25	12/23/15 11:20
320-16586-5	OF14-MW06D-1215	Water	12/22/15 16:05	12/23/15 11:20
320-16609-1	OF-MW15-1215	Water	12/23/15 09:30	12/24/15 11:30
320-16609-2	OF-MW09-1215	Water	12/23/15 11:00	12/24/15 11:30
320-16609-3	OF-MW10-1215	Water	12/23/15 12:40	12/24/15 11:30
320-16609-4	OF-EB122315	Water	12/23/15 12:50	12/24/15 11:30
320-16615-1	OF14-MW08-1215	Water	12/28/15 09:20	12/29/15 07:30
320-16615-2	OF14-MW08P-1215	Water	12/28/15 09:25	12/29/15 07:30
320-16615-3	OF14-MW12S-1215	Water	12/28/15 10:25	12/29/15 07:30
320-16615-4	OF14-MW11S-1215	Water	12/28/15 12:00	12/29/15 07:30
320-16615-5	OF14-MW14-1215	Water	12/28/15 13:00	12/29/15 07:30
320-16615-6	OF14-MW13S-1215	Water	12/28/15 14:20	12/29/15 07:30
320-16615-7	OF-EB122815	Water	12/28/15 14:45	12/29/15 07:30
320-16649-1	OF-FB01-123015	Water	12/30/15 08:45	12/31/15 07:25
320-16649-2	OF-INF01-1215	Water	12/30/15 09:50	12/31/15 07:25
320-16649-3	OF-INF01P-1215	Water	12/30/15 09:55	12/31/15 07:25
320-16649-4	OF-EFF01-1215	Water	12/30/15 10:00	12/31/15 07:25
320-16649-5	OF-EFF01P-1215	Water	12/30/15 10:05	12/31/15 07:25
320-16649-6	OF-MW12D-1215	Water	12/30/15 12:40	12/31/15 07:25
320-16649-7	OF-FB02-123015	Water	12/30/15 12:50	12/31/15 07:25

TestAmerica Sacramento

Corrections to File

TO: Laura Turpen

COPIES: File
NAL_Fentress Perfluorinated Compound Investigation

FROM: Seng Camus
Chemist
CH2M HILL

DATE: December 22, 2015

This memo is to document corrections made to the sample time for NAL Fentress PFC SDG 320-16572-1

Sample ID	Date	Incorrect Time	Correct Time	SDG
OF14-MW06S-1215	12/21/2015	12:00	12:05	320-16572-1

CTO-WF 44

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Chain of Custody Record

TAL-4124 (1007)

Client: C122m Hill Project Manager: Juliana Dean Date: 12-21-15 Chain of Custody Number: 283421

Address: 5701 Cleveland St., Suite 200 Telephone Number (Area Code)/Fax Number: _____ Page: 1 of 1

City: Virginia Beach State: VA Zip Code: 23462 Lab Contact: _____

Project Name and Location (State): Fentress PFCs, VA Carrier/Waybill Number: _____

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix					Containers & Preservatives					Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt	
			Air	Aqueous	Sed	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH			
OF14-MW075-1215	12-21-15	1530	X					X						 Analysis: VOCs (PFCs) Matrix: Air, Aqueous, Sed, Soil, Unpres. Containers: H2SO4, HNO3, HCl, NaOH, ZnAc/NaOH 	
OF14-MW065-1215	12-21-15	1200	X					X							



320-16572 Chain of Custody

Possible Hazard Identification:
 Non-Hazard Flammable Skin Irritant Poison B Unknown Disposal By Lab Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required:
 24 Hours 48 Hours 7 Days 14 Days 21 Days Other: _____

QC Requirements (Specify): _____

1. Relinquished By: [Signature] Date: 12/21/15 Time: 1900
 2. Relinquished By: _____ Date: _____ Time: _____
 3. Relinquished By: _____ Date: _____ Time: _____

1. Received By: [Signature] Date: 12-21-15 Time: 10:05
 2. Received By: _____ Date: _____ Time: _____
 3. Received By: _____ Date: _____ Time: _____

Comments: _____

DISTRIBUTION: X Labeled 01705 04-12-27-15
 WHITE - Returned to Client with Report. CANARY - Stays with the Sample. PINK - Field Copy

CTD - WE 44

TestAmerica

Chain of Custody Record

Temperature on Receipt 0.8°C
Drinking Water? Yes No

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)


Client: C172M Hill
Address: 5701 Cleveland St., Suite 200
 Virginia Beach, VA 23462
City: Virginia Beach
Project Name and Location (State): Feathers PFCs, VA
Contract/Purchase Order/Quote No.: P.N. 669783.FI.WI.03

Project Manager: Juliana Dean
Telephone Number (Area Code)/Fax Number:
Site Contact:
Carrier/Waybill Number:

Date: 12-22-15
Chain of Custody Number: 283422
Page: 1 of 1

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix			Containers & Preservatives						Analysis (Attach list if more space is needed)	
			Air	Aqueous	Sed	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH		ZnAc/NaOH
OF-MW16-1215	12-22-15	0955		X				X					SUCCS (PFCs)
OF-MW16P-1215	12-22-15	1000		X				X					
OF-MW17-1215	12-22-15	1115		X				X					
OFH-MV07D-1215	12-22-15	1325		X				X					
CFM-MW06D-1215	12-22-15	1605		X				X					

Special Instructions/Conditions of Receipt:


 320-16586 Chain of Custody

Possible Hazard Identification:
 Non-Hazard
 Flammable
 Skin Irritant
 Poison B
 Unknown

Sample Disposal:
 Return To Client
 Archive For _____ Months
 Disposal By Lab
 (A fee may be assessed if samples are retained longer than 1 month)

Turn-Around Time Required:
 24 Hours
 48 Hours
 7 Days
 14 Days
 21 Days
 Other _____

QC Requirements (Specify):

1. Relinquished By: [Signature] **Date:** 12/22/15 **Time:** 1900
2. Relinquished By: [Signature] **Date:** 12-23-15 **Time:** 1120
3. Relinquished By: [Signature] **Date:** _____ **Time:** _____

Comments:

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Temperature on Receipt _____
 Drinking Water? Yes No

Chain of Custody Record

TAL-4124 (1007)

Client: **CH2M Hill** Project Manager: **Juliana Dean** Date: **12-21-15** Chain of Custody Number: **283423**


Address: **5701 Cleveland St., Suite 200** Telephone Number (Area Code)/Fax Number: _____ Page **1** of **1**

City: **Virginia Beach** State: **VA** Zip Code: **23462** Site Contact: **Seng Conus** Lab Contact: **Laura Turpen**

Project Name and Location (State): **Peritars PFCs, VA** Carrier/Waybill Number: _____

Contract/Purchase Order/Quote No: **P.N. 669 783 - F.F.W.I. 01**

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix					Containers & Preservatives					Analysis (Attach list if more space is needed)	
			Air	soils	Sed	Soil	Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		
OF-MW15-1215	12-23-15	0930	X				X							5 VOCs (PFCs)
OF-MW09-1215	12-23-15	1100	X				X							
OF-MW10-1215	12-23-15	1240	X				X							
OF-EB122315	12-23-15	1250	X				X							



320-16609 Chain of Custody

Possible Hazard Identification:
 Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For _____ Months Disposal By Lab Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required:
 24 Hours 48 Hours 7 Days 14 Days 21 Days Other _____

1. Relinquished By: *[Signature]* Date: **12/23/15** Time: **1500**

2. Relinquished By: _____ Date: _____ Time: _____

3. Relinquished By: _____ Date: _____ Time: _____

1. Received By: *[Signature]* Date: **12-24-15** Time: **1130**

2. Received By: _____ Date: _____ Time: _____

3. Received By: _____ Date: _____ Time: _____

Comments: _____



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Temperature on Receipt _____

Drinking Water? Yes No

Chain of Custody Record

TAL-4124 (1/007)

Client: **CH2M Hill** Chain of Custody Number: **283477**
 Address: **5701 Cleveland St STE 200** Date: **12/28/15**
 City: **Virginia Beach VA 23462** Lab Number: _____
 Project Name and Location (State): **NAIS FERTISS** Page: **1** of **1**
 Contract/Purchase Order/Quote No.: _____
 Project Manager: **L. Cook**
 Telephone Number (Area Code)/Fax Number: **808 440 0131**
 Site Contact: **Sony Chavis**
 Carrier/Waybill Number: _____

Special Instructions/
Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix					Containers & Preservatives					Analysis (Attach list if more space is needed)			
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc		HNOH		
0F14-MW08-1215	12/28/15	0920	X					X								
0F14-MW08P-1215	12/28/15	0925	X					X								
0F14-MW1ES-1215	12/28/15	1025	X					X								
0F14-MW11S-1215	12/28/15	1200	X					X								
0F14-MW14-1215	12/28/15	1300	X					X								
0F14-MW13S-1215	12/28/15	1420	X					X								
0F14-MW13R-1215	12/28/15	1415	X					X								
0F14-EB122815	12/28/15	1445	X					X								



320-16615 Chain of Custody

Possibly Hazard Identification:
 Non-Hazard Flammable Skin Irritant Poison B Unknown
 Sample Disposal Return To Client Disposal By Lab Archive For _____ Months
 (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required:
 24 Hours 48 Hours 7 Days 14 Days 21 Days Other _____

1. Relinquished By: *[Signature]* Date: **12/28/15** Time: **1600**
 2. Relinquished By: _____ Date: _____ Time: _____
 3. Relinquished By: _____ Date: _____ Time: _____

QC Requirements (Specify):
 1. Received By: *[Signature]* Date: **12/29/15** Time: **720**
 2. Received By: _____ Date: _____ Time: _____
 3. Received By: _____ Date: _____ Time: _____

Comments: _____





Chain of Custody Record

COC No. 147133

For Lab Use Only

Pg. 1 of 1

Analyses Requested

← PRESERVATIVES

A	NONE pH<7
B	HNO ₃ pH<2
C	H ₂ SO ₄ pH<2
D	1+1 HCl pH<2
E	NaOH pH>12
F	ZnAc/NaOH pH>9
G	MeOH
H	Other (note below)

Client Name: **CH2M HILL**
 Project Name: **NALF FENTRESS**
 Address: **5701 CLEVELAND ST STE 200**
 City, State Zip: **VIRGINIA BEACH, VA 23462**
 Phone/Fax: **(757) 518-9666**
 Email: **SENG.CAMUS@CH2M.COM**
 Client Project No. / P.O. No: **669783.FI.WI.D1**
 Invoice To: Client Other (comments)
 Contact/Report To: **SENG CAMUS**

Sample Number	Field Sample ID	Sample Date	Sample Time	Matrix	Container Type (corresponds to Container Packing List)	Number of Containers Submitted	Total
1	OF-FB01-123015	12-30-15	0845	X AQ			
2	OF-INF01-1215		0950	X			
3	OF-INF01P-1215		0955	X			
4	OF-INF01-1215			X			
5	OF-EFF01-1215		1000	X			
6	OF-EFF01P-1215		1005	X			
7	OF-MWIRD-1215		1240	X			
8	OF-PB02-123015	12-30-15	1250	X AQ			
9							
10							



320-18649 Chain of Custody

Sampled By (print): **Toby Stewart VBO**
 Sampler's Signature: *Toby Stewart*
 Company: **CH2M HILL**
 How Shipped? **FEDEX**
 Tracking No: **7753 0823 5864**
 Carrier: **FEDEX**
 1. Relinquished By: *[Signature]* Date: **12/31/15** Time: **725**
 2. Received By: *[Signature]* Date: **12/31/15** Time: **1900**
 3. Relinquished By: _____ Date: _____ Time: _____
 4. Received For Lab By: _____ Date: _____ Time: _____

Comments: **FB01 associated w/ Influent Effluent Sampling**
FB02 associated w/ MWIRD Sampling
*** 7 DAY TAT***

WHITE COPY - REPORT

YELLOW COPY - LABORATORY

PINK COPY - FIELD



Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16572
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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



Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16586
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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



Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16609
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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



Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16615
List Number: 1
Creator: Sadler, Jeremy

List Source: TestAmerica Sacramento

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



Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16649
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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



ANALYTICAL REPORT

Job Number: 320-16572-1

Job Description: NAS Oceana, VA - 8012 CTO-WE44

For:
CH2M Hill, Inc.
5701 Cleveland Street
Suite 200
Virginia Beach, VA 23462
Attention: Laurie George



Approved for release.
Laura Turpen
Project Manager I
1/13/2016 11:05 AM

Laura Turpen, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4414
laura.turpen@testamericainc.com
01/13/2016
Revision: 1

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

The Lab Certification ID# is 4025.

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

TestAmerica Laboratories, Inc.

TestAmerica Sacramento 880 Riverside Parkway, West Sacramento, CA 95605
Tel (916) 373-5600 Fax (916) 372-1059 www.testamericainc.com



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Definitions/Glossary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Qualifiers

LCMS

Qualifier	Qualifier Description
M	Manual integrated compound.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
D	The reported value is from a dilution.
Q	One or more quality control criteria failed.
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.

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: NAS Oceana, VA - 8012 CTO-WE44

Report Number: 320-16572-1

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.

Revision

This report was revised January 13, 2016 to include LOD/LOQ data for all samples. No other data changed as a result of this revision.

RECEIPT

The samples were received on 12/22/2015, 12/23/2015, 12/24/2015, 12/29/2015 and 12/31/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.0, 0.2, 0.8, 0.9 and 2.1 C.

Sample OF14-MW06S-1215 (320-16572-2) had a collection time of 12:00 indicated on the COC. the client provided a corrected time via email on December 22, 2015. A copy of this email is included in the report.

PFC

Samples OF14-MW07S-1215 (320-16572-1), OF-MW16-1215 (320-16586-1), OF-MW15-1215 (320-16609-1), OF14-MW08-1215 (320-16615-1), OF-FB01-123015 (320-16649-1), OF14-MW06S-1215 (320-16572-2), OF-MW16P-1215 (320-16586-2), OF-MW09-1215 (320-16609-2), OF14-MW08P-1215 (320-16615-2), OF-INF01-1215 (320-16649-2), OF-MW17-1215 (320-16586-3), OF-MW10-1215 (320-16609-3), OF14-MW12S-1215 (320-16615-3), OF-INF01P-1215 (320-16649-3), OF14-MW07D-1215 (320-16586-4), OF-EB122315 (320-16609-4), OF14-MW11S-1215 (320-16615-4), OF-EFF01-1215 (320-16649-4), OF14-MW06D-1215 (320-16586-5), OF14-MW14-1215 (320-16615-5), OF-EFF01P-1215 (320-16649-5), OF14-MW13S-1215 (320-16615-6), OF-MW12D-1215 (320-16649-6), OF-EB122815 (320-16615-7) and OF-FB02-123015 (320-16649-7) were analyzed for PFCs in accordance with SOP WS-LC-0025. The samples were prepared on 01/04/2016 and 12/26/2015 and analyzed on 01/05/2016, 01/06/2016, 01/07/2016 and 12/30/2015.

Samples OF14-MW08-1215 (320-16615-1)[10X], OF14-MW08-1215 (320-16615-1)[20X], OF14-MW08P-1215 (320-16615-2)[10X], OF14-MW08P-1215 (320-16615-2)[20X], OF14-MW12S-1215 (320-16615-3)[10X], OF14-MW11S-1215 (320-16615-4)[10X], OF-EFF01-1215 (320-16615-4)[10X], OF-EFF01P-1215 (320-16615-5)[10X] and OF14-MW13S-1215 (320-16615-6)[10X] required

dilution prior to analysis. The reporting limits have been adjusted accordingly.

Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: OF-EB122815 (320-16615-7). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 320-96713.

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: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW07S-1215

Lab Sample ID: 320-16572-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.025		0.0025	0.00079	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.00087	J	0.0025	0.00065	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.078		0.0025	0.00091	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.39	M	0.0025	0.00086	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0053	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW06S-1215

Lab Sample ID: 320-16572-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.016		0.0025	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.19		0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0036		0.0025	0.00065	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.014		0.0025	0.00092	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.21		0.0025	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.17	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW16-1215

Lab Sample ID: 320-16586-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0068		0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00092	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.19	M	0.0025	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.066	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW16P-1215

Lab Sample ID: 320-16586-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0025		0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00093	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.18	M	0.0025	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.074	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW17-1215

Lab Sample ID: 320-16586-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.0023	J	0.0025	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.017		0.0025	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.00099	J	0.0025	0.00065	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0032		0.0025	0.00091	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.035	M	0.0025	0.00086	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.019	M	0.0040	0.0013	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW07D-1215

Lab Sample ID: 320-16586-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0019	J	0.0025	0.00075	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0028	M	0.0025	0.00087	ug/L	1		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW06D-1215

Lab Sample ID: 320-16586-5

No Detections.

Client Sample ID: OF-MW15-1215

Lab Sample ID: 320-16609-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.0086		0.0025	0.00081	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.14		0.0025	0.00076	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00097	J	0.0025	0.00088	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW09-1215

Lab Sample ID: 320-16609-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0015	J	0.0024	0.00071	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0014	J	0.0024	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.013	M	0.0024	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.012	M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-MW10-1215

Lab Sample ID: 320-16609-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.14		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.14		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.011		0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.069		0.0024	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.71	M	0.0024	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.29	M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-EB122315

Lab Sample ID: 320-16609-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0024	0.00085	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW08-1215

Lab Sample ID: 320-16615-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.39		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.32		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.013		0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0024	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13	J M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.41	D	0.024	0.0077	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.30	D	0.024	0.0072	ug/L	10		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.017	J D	0.024	0.0063	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.55	D	0.024	0.0088	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	5.5	D M	0.024	0.0083	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	12	J D M	0.038	0.012	ug/L	10		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL2	0.44	D	0.048	0.015	ug/L	20		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL2	0.33	D	0.048	0.014	ug/L	20		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW08-1215 (Continued)

Lab Sample ID: 320-16615-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS) - DL2	0.59	D	0.048	0.018	ug/L	20		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL2	5.3	D M	0.048	0.017	ug/L	20		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL2	10	D M	0.077	0.024	ug/L	20		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW08P-1215

Lab Sample ID: 320-16615-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.41		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.015		0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.0	J	0.0024	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.00084	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15	J M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.39	D	0.024	0.0077	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.29	D	0.024	0.0072	ug/L	10		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.013	J D	0.024	0.0063	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.64	D	0.024	0.0088	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	5.0	D M	0.024	0.0084	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	13	J D M	0.038	0.012	ug/L	10		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL2	0.46	D	0.048	0.015	ug/L	20		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL2	0.27	D	0.048	0.014	ug/L	20		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL2	0.017	J D	0.048	0.013	ug/L	20		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL2	0.41	D	0.048	0.018	ug/L	20		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL2	4.7	D M	0.048	0.017	ug/L	20		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL2	11	D M	0.077	0.025	ug/L	20		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW12S-1215

Lab Sample ID: 320-16615-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.037		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.072		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.011		0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.00088	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J M	0.0024	0.00083	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.5	J M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.038	D	0.024	0.0077	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.072	D	0.024	0.0072	ug/L	10		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.011	J D	0.024	0.0063	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.041	D	0.024	0.0088	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1.2	D M	0.024	0.0083	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	6.3	D M	0.038	0.012	ug/L	10		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW11S-1215

Lab Sample ID: 320-16615-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.31		0.0023	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.32		0.0023	0.00069	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.023		0.0023	0.00060	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0023	0.00084	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.9	J M	0.0023	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.6	J M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.28	D	0.023	0.0074	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.28	D	0.023	0.0069	ug/L	10		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.018	J D	0.023	0.0060	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.75	D	0.023	0.0084	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	4.8	D M	0.023	0.0080	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	3.0	D M	0.037	0.012	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW14-1215

Lab Sample ID: 320-16615-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0020	J	0.0023	0.00068	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0023	0.00079	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF14-MW13S-1215

Lab Sample ID: 320-16615-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.064		0.0023	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.88	J	0.0023	0.00069	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0090		0.0023	0.00060	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.22		0.0023	0.00084	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.1	J M	0.0023	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.1	J M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.061	D	0.023	0.0074	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.88	D	0.023	0.0069	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.096	D	0.023	0.0084	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	3.3	D M	0.023	0.0080	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	4.3	D M	0.037	0.012	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF-EB122815

Lab Sample ID: 320-16615-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.00080	J	0.0023	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0012	J	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-FB01-123015

Lab Sample ID: 320-16649-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.00089	J	0.0023	0.00081	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0029	J M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-INF01-1215

Lab Sample ID: 320-16649-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.010		0.0024	0.00077	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.00072	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0018	J	0.0024	0.00063	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.00089	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.26	M	0.0024	0.00084	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.54	M	0.0039	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-INF01P-1215

Lab Sample ID: 320-16649-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.0088		0.0024	0.00076	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	0.29		0.0024	0.00071	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0017	J	0.0024	0.00062	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.00087	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.25	M	0.0024	0.00082	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.53	M	0.0038	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-EFF01-1215

Lab Sample ID: 320-16649-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.052		0.0023	0.00074	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	1.9	J	0.0023	0.00069	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0042		0.0023	0.00060	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.049		0.0023	0.00085	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.63	M	0.0023	0.00080	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.1	J M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.054	D	0.023	0.0074	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.8	D	0.023	0.0069	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.029	D	0.023	0.0085	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	0.62	D M	0.023	0.0080	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.0	D M	0.037	0.012	ug/L	10		WS-LC-0025	Total/NA

Client Sample ID: OF-EFF01P-1215

Lab Sample ID: 320-16649-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.053		0.0024	0.00078	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	1.9	J	0.0024	0.00073	ug/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	0.0036		0.0024	0.00064	ug/L	1		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.048		0.0024	0.00090	ug/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.62	M	0.0024	0.00085	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.1	J M B	0.0039	0.0012	ug/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.057	D	0.024	0.0078	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.5	D	0.024	0.0073	ug/L	10		WS-LC-0025	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.019	J D	0.024	0.0090	ug/L	10		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	0.60	D M	0.024	0.0085	ug/L	10		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	0.96	D M	0.039	0.012	ug/L	10		WS-LC-0025	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW12D-1215

Lab Sample ID: 320-16649-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.0044		0.0023	0.00081	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA) - RA	0.0079		0.0023	0.00069	ug/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RA	0.011	M	0.0037	0.0012	ug/L	1		WS-LC-0025	Total/NA

Client Sample ID: OF-FB02-123015

Lab Sample ID: 320-16649-7

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW07S-1215

Lab Sample ID: 320-16572-1

Date Collected: 12/21/15 15:30

Matrix: Water

Date Received: 12/22/15 10:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.025		0.0025	0.00079	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.00074	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorononanoic acid (PFNA)	0.00087	J	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorobutanesulfonic acid (PFBS)	0.078		0.0025	0.00091	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorohexanesulfonic acid (PFHxS)	0.39	M	0.0025	0.00086	ug/L		12/26/15 07:28	12/30/15 19:53	1
Perfluorooctanesulfonic acid (PFOS)	0.0053	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 19:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	95		25 - 150				12/26/15 07:28	12/30/15 19:53	1
13C4 PFOS	113		25 - 150				12/26/15 07:28	12/30/15 19:53	1
13C5 PFNA	79		25 - 150				12/26/15 07:28	12/30/15 19:53	1
13C4 PFOA	80		25 - 150				12/26/15 07:28	12/30/15 19:53	1
13C4-PFHpa	85		25 - 150				12/26/15 07:28	12/30/15 19:53	1

Client Sample ID: OF14-MW06S-1215

Lab Sample ID: 320-16572-2

Date Collected: 12/21/15 12:05

Matrix: Water

Date Received: 12/22/15 10:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.016		0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorooctanoic acid (PFOA)	0.19		0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorononanoic acid (PFNA)	0.0036		0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorobutanesulfonic acid (PFBS)	0.014		0.0025	0.00092	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorohexanesulfonic acid (PFHxS)	0.21		0.0025	0.00087	ug/L		12/26/15 07:28	12/30/15 20:14	1
Perfluorooctanesulfonic acid (PFOS)	0.17	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 20:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	119		25 - 150				12/26/15 07:28	12/30/15 20:14	1
13C4 PFOS	117		25 - 150				12/26/15 07:28	12/30/15 20:14	1
13C5 PFNA	90		25 - 150				12/26/15 07:28	12/30/15 20:14	1
13C4 PFOA	102		25 - 150				12/26/15 07:28	12/30/15 20:14	1
13C4-PFHpa	109		25 - 150				12/26/15 07:28	12/30/15 20:14	1

Client Sample ID: OF-MW16-1215

Lab Sample ID: 320-16586-1

Date Collected: 12/22/15 09:55

Matrix: Water

Date Received: 12/23/15 11:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 20:35	1
Perfluorooctanoic acid (PFOA)	0.0068		0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 20:35	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 20:35	1
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00092	ug/L		12/26/15 07:28	12/30/15 20:35	1
Perfluorohexanesulfonic acid (PFHxS)	0.19	M	0.0025	0.00087	ug/L		12/26/15 07:28	12/30/15 20:35	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW16-1215

Lab Sample ID: 320-16586-1

Date Collected: 12/22/15 09:55

Matrix: Water

Date Received: 12/23/15 11:20

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.066	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 20:35	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	113		25 - 150				12/26/15 07:28	12/30/15 20:35	1
13C4 PFOS	120		25 - 150				12/26/15 07:28	12/30/15 20:35	1
13C5 PFNA	85		25 - 150				12/26/15 07:28	12/30/15 20:35	1
13C4 PFOA	93		25 - 150				12/26/15 07:28	12/30/15 20:35	1
13C4-PFHpa	94		25 - 150				12/26/15 07:28	12/30/15 20:35	1

Client Sample ID: OF-MW16P-1215

Lab Sample ID: 320-16586-2

Date Collected: 12/22/15 10:00

Matrix: Water

Date Received: 12/23/15 11:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00081	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorooctanoic acid (PFOA)	0.0025		0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00066	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.00093	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorohexanesulfonic acid (PFHxS)	0.18	M	0.0025	0.00088	ug/L		12/26/15 07:28	12/30/15 20:57	1
Perfluorooctanesulfonic acid (PFOS)	0.074	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 20:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	97		25 - 150				12/26/15 07:28	12/30/15 20:57	1
13C4 PFOS	98		25 - 150				12/26/15 07:28	12/30/15 20:57	1
13C5 PFNA	64		25 - 150				12/26/15 07:28	12/30/15 20:57	1
13C4 PFOA	79		25 - 150				12/26/15 07:28	12/30/15 20:57	1
13C4-PFHpa	81		25 - 150				12/26/15 07:28	12/30/15 20:57	1

Client Sample ID: OF-MW17-1215

Lab Sample ID: 320-16586-3

Date Collected: 12/22/15 11:15

Matrix: Water

Date Received: 12/23/15 11:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0023	J	0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorooctanoic acid (PFOA)	0.017		0.0025	0.00074	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorononanoic acid (PFNA)	0.00099	J	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorobutanesulfonic acid (PFBS)	0.0032		0.0025	0.00091	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorohexanesulfonic acid (PFHxS)	0.035	M	0.0025	0.00086	ug/L		12/26/15 07:28	12/30/15 21:18	1
Perfluorooctanesulfonic acid (PFOS)	0.019	M	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 21:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	128		25 - 150				12/26/15 07:28	12/30/15 21:18	1
13C4 PFOS	114		25 - 150				12/26/15 07:28	12/30/15 21:18	1
13C5 PFNA	86		25 - 150				12/26/15 07:28	12/30/15 21:18	1
13C4 PFOA	97		25 - 150				12/26/15 07:28	12/30/15 21:18	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW17-1215

Lab Sample ID: 320-16586-3

Date Collected: 12/22/15 11:15

Matrix: Water

Date Received: 12/23/15 11:20

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C4-PFHpA	107		25 - 150	12/26/15 07:28	12/30/15 21:18	1

Client Sample ID: OF14-MW07D-1215

Lab Sample ID: 320-16586-4

Date Collected: 12/22/15 13:25

Matrix: Water

Date Received: 12/23/15 11:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorooctanoic acid (PFOA)	0.0019	J	0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorohexanesulfonic acid (PFHxS)	0.0028	M	0.0025	0.00087	ug/L		12/26/15 07:28	12/30/15 21:39	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 21:39	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
¹⁸ O2 PFHxS	125		25 - 150	12/26/15 07:28	12/30/15 21:39	1			
¹³ C4 PFOS	114		25 - 150	12/26/15 07:28	12/30/15 21:39	1			
¹³ C5 PFNA	74		25 - 150	12/26/15 07:28	12/30/15 21:39	1			
¹³ C4 PFOA	85		25 - 150	12/26/15 07:28	12/30/15 21:39	1			
¹³ C4-PFHpA	97		25 - 150	12/26/15 07:28	12/30/15 21:39	1			

Client Sample ID: OF14-MW06D-1215

Lab Sample ID: 320-16586-5

Date Collected: 12/22/15 16:05

Matrix: Water

Date Received: 12/23/15 11:20

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00081	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00076	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00066	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00093	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.00088	ug/L		12/26/15 07:28	12/30/15 22:00	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 22:00	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
¹⁸ O2 PFHxS	122		25 - 150	12/26/15 07:28	12/30/15 22:00	1			
¹³ C4 PFOS	110		25 - 150	12/26/15 07:28	12/30/15 22:00	1			
¹³ C5 PFNA	80		25 - 150	12/26/15 07:28	12/30/15 22:00	1			
¹³ C4 PFOA	92		25 - 150	12/26/15 07:28	12/30/15 22:00	1			
¹³ C4-PFHpA	94		25 - 150	12/26/15 07:28	12/30/15 22:00	1			

Client Sample ID: OF-MW15-1215

Lab Sample ID: 320-16609-1

Date Collected: 12/23/15 09:30

Matrix: Water

Date Received: 12/24/15 11:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0086		0.0025	0.00081	ug/L		12/26/15 07:28	12/30/15 22:22	1
Perfluorooctanoic acid (PFOA)	0.14		0.0025	0.00076	ug/L		12/26/15 07:28	12/30/15 22:22	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00066	ug/L		12/26/15 07:28	12/30/15 22:22	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW15-1215

Lab Sample ID: 320-16609-1

Date Collected: 12/23/15 09:30

Matrix: Water

Date Received: 12/24/15 11:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00093	ug/L		12/26/15 07:28	12/30/15 22:22	1
Perfluorohexanesulfonic acid (PFHxS)	0.00097	J	0.0025	0.00088	ug/L		12/26/15 07:28	12/30/15 22:22	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0041	0.0013	ug/L		12/26/15 07:28	12/30/15 22:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				12/26/15 07:28	12/30/15 22:22	1
13C4 PFOS	97		25 - 150				12/26/15 07:28	12/30/15 22:22	1
13C5 PFNA	75		25 - 150				12/26/15 07:28	12/30/15 22:22	1
13C4 PFOA	79		25 - 150				12/26/15 07:28	12/30/15 22:22	1
13C4-PFHpa	93		25 - 150				12/26/15 07:28	12/30/15 22:22	1

Client Sample ID: OF-MW09-1215

Lab Sample ID: 320-16609-2

Date Collected: 12/23/15 11:00

Matrix: Water

Date Received: 12/24/15 11:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00076	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorooctanoic acid (PFOA)	0.0015	J	0.0024	0.00071	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.00062	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorobutanesulfonic acid (PFBS)	0.0014	J	0.0024	0.00087	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorohexanesulfonic acid (PFHxS)	0.013	M	0.0024	0.00083	ug/L		12/26/15 07:28	12/30/15 23:04	1
Perfluorooctanesulfonic acid (PFOS)	0.012	M	0.0038	0.0012	ug/L		12/26/15 07:28	12/30/15 23:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	125		25 - 150				12/26/15 07:28	12/30/15 23:04	1
13C4 PFOS	119		25 - 150				12/26/15 07:28	12/30/15 23:04	1
13C5 PFNA	92		25 - 150				12/26/15 07:28	12/30/15 23:04	1
13C4 PFOA	104		25 - 150				12/26/15 07:28	12/30/15 23:04	1
13C4-PFHpa	113		25 - 150				12/26/15 07:28	12/30/15 23:04	1

Client Sample ID: OF-MW10-1215

Lab Sample ID: 320-16609-3

Date Collected: 12/23/15 12:40

Matrix: Water

Date Received: 12/24/15 11:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.14		0.0024	0.00077	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorooctanoic acid (PFOA)	0.14		0.0024	0.00072	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorononanoic acid (PFNA)	0.011		0.0024	0.00063	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorobutanesulfonic acid (PFBS)	0.069		0.0024	0.00088	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorohexanesulfonic acid (PFHxS)	0.71	M	0.0024	0.00083	ug/L		12/26/15 07:28	12/30/15 23:25	1
Perfluorooctanesulfonic acid (PFOS)	0.29	M	0.0038	0.0012	ug/L		12/26/15 07:28	12/30/15 23:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	82		25 - 150				12/26/15 07:28	12/30/15 23:25	1
13C4 PFOS	105		25 - 150				12/26/15 07:28	12/30/15 23:25	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-MW10-1215

Lab Sample ID: 320-16609-3

Date Collected: 12/23/15 12:40

Matrix: Water

Date Received: 12/24/15 11:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C5 PFNA	99		25 - 150	12/26/15 07:28	12/30/15 23:25	1
¹³ C4 PFOA	100		25 - 150	12/26/15 07:28	12/30/15 23:25	1
¹³ C4-PFHpA	89		25 - 150	12/26/15 07:28	12/30/15 23:25	1

Client Sample ID: OF-EB122315

Lab Sample ID: 320-16609-4

Date Collected: 12/23/15 12:50

Matrix: Water

Date Received: 12/24/15 11:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00078	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.00073	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.00064	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00089	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0024	0.00085	ug/L		12/26/15 07:28	12/30/15 23:47	1
Perfluorooctanesulfonic acid (PFOS)	0.0029	U	0.0039	0.0012	ug/L		12/26/15 07:28	12/30/15 23:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹⁸ O2 PFHxS	105		25 - 150	12/26/15 07:28	12/30/15 23:47	1
¹³ C4 PFOS	103		25 - 150	12/26/15 07:28	12/30/15 23:47	1
¹³ C5 PFNA	117		25 - 150	12/26/15 07:28	12/30/15 23:47	1
¹³ C4 PFOA	118		25 - 150	12/26/15 07:28	12/30/15 23:47	1
¹³ C4-PFHpA	119		25 - 150	12/26/15 07:28	12/30/15 23:47	1

Client Sample ID: OF14-MW08-1215

Lab Sample ID: 320-16615-1

Date Collected: 12/28/15 09:20

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.39		0.0024	0.00077	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorooctanoic acid (PFOA)	0.32		0.0024	0.00072	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorononanoic acid (PFNA)	0.013		0.0024	0.00063	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0024	0.00088	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.00083	ug/L		01/04/16 09:42	01/05/16 16:39	1
Perfluorooctanesulfonic acid (PFOS)	13	J M	0.0038	0.0012	ug/L		01/04/16 09:42	01/05/16 16:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹⁸ O2 PFHxS	37		25 - 150	01/04/16 09:42	01/05/16 16:39	1
¹³ C4 PFOS	30		25 - 150	01/04/16 09:42	01/05/16 16:39	1
¹³ C5 PFNA	36		25 - 150	01/04/16 09:42	01/05/16 16:39	1
¹³ C4 PFOA	27		25 - 150	01/04/16 09:42	01/05/16 16:39	1
¹³ C4-PFHpA	41		25 - 150	01/04/16 09:42	01/05/16 16:39	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.41	D	0.024	0.0077	ug/L		01/04/16 09:42	01/06/16 15:41	10
Perfluorooctanoic acid (PFOA)	0.30	D	0.024	0.0072	ug/L		01/04/16 09:42	01/06/16 15:41	10
Perfluorononanoic acid (PFNA)	0.017	J D	0.024	0.0063	ug/L		01/04/16 09:42	01/06/16 15:41	10

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW08-1215

Lab Sample ID: 320-16615-1

Date Collected: 12/28/15 09:20

Matrix: Water

Date Received: 12/29/15 07:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	0.55	D	0.024	0.0088	ug/L		01/04/16 09:42	01/06/16 15:41	10
Perfluorohexanesulfonic acid (PFHxS)	5.5	D M	0.024	0.0083	ug/L		01/04/16 09:42	01/06/16 15:41	10
Perfluorooctanesulfonic acid (PFOS)	12	J D M	0.038	0.012	ug/L		01/04/16 09:42	01/06/16 15:41	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	82		25 - 150				01/04/16 09:42	01/06/16 15:41	10
13C4 PFOS	76		25 - 150				01/04/16 09:42	01/06/16 15:41	10
13C5 PFNA	77		25 - 150				01/04/16 09:42	01/06/16 15:41	10
13C4 PFOA	80		25 - 150				01/04/16 09:42	01/06/16 15:41	10
13C4-PFHpA	92		25 - 150				01/04/16 09:42	01/06/16 15:41	10

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL2

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.44	D	0.048	0.015	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorooctanoic acid (PFOA)	0.33	D	0.048	0.014	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorononanoic acid (PFNA)	0.038	U	0.048	0.013	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorobutanesulfonic acid (PFBS)	0.59	D	0.048	0.018	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorohexanesulfonic acid (PFHxS)	5.3	D M	0.048	0.017	ug/L		01/04/16 09:42	01/06/16 16:43	20
Perfluorooctanesulfonic acid (PFOS)	10	D M	0.077	0.024	ug/L		01/04/16 09:42	01/06/16 16:43	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	87		25 - 150				01/04/16 09:42	01/06/16 16:43	20
13C4 PFOS	100		25 - 150				01/04/16 09:42	01/06/16 16:43	20
13C5 PFNA	86		25 - 150				01/04/16 09:42	01/06/16 16:43	20
13C4 PFOA	83		25 - 150				01/04/16 09:42	01/06/16 16:43	20
13C4-PFHpA	98		25 - 150				01/04/16 09:42	01/06/16 16:43	20

Client Sample ID: OF14-MW08P-1215

Lab Sample ID: 320-16615-2

Date Collected: 12/28/15 09:25

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.41		0.0024	0.00077	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.00072	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorononanoic acid (PFNA)	0.015		0.0024	0.00063	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorobutanesulfonic acid (PFBS)	1.0	J	0.0024	0.00088	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.00084	ug/L		01/04/16 09:42	01/05/16 17:00	1
Perfluorooctanesulfonic acid (PFOS)	15	J M	0.0038	0.0012	ug/L		01/04/16 09:42	01/05/16 17:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	41		25 - 150				01/04/16 09:42	01/05/16 17:00	1
13C4 PFOS	33		25 - 150				01/04/16 09:42	01/05/16 17:00	1
13C5 PFNA	40		25 - 150				01/04/16 09:42	01/05/16 17:00	1
13C4 PFOA	36		25 - 150				01/04/16 09:42	01/05/16 17:00	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW08P-1215

Lab Sample ID: 320-16615-2

Date Collected: 12/28/15 09:25

Matrix: Water

Date Received: 12/29/15 07:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C4-PFHpA	42		25 - 150	01/04/16 09:42	01/05/16 17:00	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.39	D	0.024	0.0077	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorooctanoic acid (PFOA)	0.29	D	0.024	0.0072	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorononanoic acid (PFNA)	0.013	J D	0.024	0.0063	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorobutanesulfonic acid (PFBS)	0.64	D	0.024	0.0088	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorohexanesulfonic acid (PFHxS)	5.0	D M	0.024	0.0084	ug/L		01/04/16 09:42	01/06/16 16:12	10
Perfluorooctanesulfonic acid (PFOS)	13	J D M	0.038	0.012	ug/L		01/04/16 09:42	01/06/16 16:12	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹⁸ O2 PFHxS	100		25 - 150	01/04/16 09:42	01/06/16 16:12	10
¹³ C4 PFOS	80		25 - 150	01/04/16 09:42	01/06/16 16:12	10
¹³ C5 PFNA	77		25 - 150	01/04/16 09:42	01/06/16 16:12	10
¹³ C4 PFOA	82		25 - 150	01/04/16 09:42	01/06/16 16:12	10
¹³ C4-PFHpA	101		25 - 150	01/04/16 09:42	01/06/16 16:12	10

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - DL2

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.46	D	0.048	0.015	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorooctanoic acid (PFOA)	0.27	D	0.048	0.014	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorononanoic acid (PFNA)	0.017	J D	0.048	0.013	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorobutanesulfonic acid (PFBS)	0.41	D	0.048	0.018	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorohexanesulfonic acid (PFHxS)	4.7	D M	0.048	0.017	ug/L		01/04/16 09:42	01/06/16 17:15	20
Perfluorooctanesulfonic acid (PFOS)	11	D M	0.077	0.025	ug/L		01/04/16 09:42	01/06/16 17:15	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹⁸ O2 PFHxS	115		25 - 150	01/04/16 09:42	01/06/16 17:15	20
¹³ C4 PFOS	113		25 - 150	01/04/16 09:42	01/06/16 17:15	20
¹³ C5 PFNA	89		25 - 150	01/04/16 09:42	01/06/16 17:15	20
¹³ C4 PFOA	105		25 - 150	01/04/16 09:42	01/06/16 17:15	20
¹³ C4-PFHpA	106		25 - 150	01/04/16 09:42	01/06/16 17:15	20

Client Sample ID: OF14-MW12S-1215

Lab Sample ID: 320-16615-3

Date Collected: 12/28/15 10:25

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.037		0.0024	0.00077	ug/L		01/04/16 09:42	01/05/16 17:21	1
Perfluorooctanoic acid (PFOA)	0.072		0.0024	0.00072	ug/L		01/04/16 09:42	01/05/16 17:21	1
Perfluorononanoic acid (PFNA)	0.011		0.0024	0.00063	ug/L		01/04/16 09:42	01/05/16 17:21	1
Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.00088	ug/L		01/04/16 09:42	01/05/16 17:21	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	J M	0.0024	0.00083	ug/L		01/04/16 09:42	01/05/16 17:21	1

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW12S-1215

Lab Sample ID: 320-16615-3

Date Collected: 12/28/15 10:25

Matrix: Water

Date Received: 12/29/15 07:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	6.5	J M	0.0038	0.0012	ug/L		01/04/16 09:42	01/05/16 17:21	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	70		25 - 150				01/04/16 09:42	01/05/16 17:21	1
13C4 PFOS	38		25 - 150				01/04/16 09:42	01/05/16 17:21	1
13C5 PFNA	39		25 - 150				01/04/16 09:42	01/05/16 17:21	1
13C4 PFOA	75		25 - 150				01/04/16 09:42	01/05/16 17:21	1
13C4-PFHpA	62		25 - 150				01/04/16 09:42	01/05/16 17:21	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.038	D	0.024	0.0077	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorooctanoic acid (PFOA)	0.072	D	0.024	0.0072	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorononanoic acid (PFNA)	0.011	J D	0.024	0.0063	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorobutanesulfonic acid (PFBS)	0.041	D	0.024	0.0088	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorohexanesulfonic acid (PFHxS)	1.2	D M	0.024	0.0083	ug/L		01/04/16 09:42	01/06/16 17:46	10
Perfluorooctanesulfonic acid (PFOS)	6.3	D M	0.038	0.012	ug/L		01/04/16 09:42	01/06/16 17:46	10
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	97		25 - 150				01/04/16 09:42	01/06/16 17:46	10
13C4 PFOS	74		25 - 150				01/04/16 09:42	01/06/16 17:46	10
13C5 PFNA	70		25 - 150				01/04/16 09:42	01/06/16 17:46	10
13C4 PFOA	91		25 - 150				01/04/16 09:42	01/06/16 17:46	10
13C4-PFHpA	100		25 - 150				01/04/16 09:42	01/06/16 17:46	10

Client Sample ID: OF14-MW11S-1215

Lab Sample ID: 320-16615-4

Date Collected: 12/28/15 12:00

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.31		0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorooctanoic acid (PFOA)	0.32		0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorononanoic acid (PFNA)	0.023		0.0023	0.00060	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0023	0.00084	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorohexanesulfonic acid (PFHxS)	5.9	J M	0.0023	0.00080	ug/L		01/04/16 09:42	01/05/16 17:42	1
Perfluorooctanesulfonic acid (PFOS)	3.6	J M	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 17:42	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	47		25 - 150				01/04/16 09:42	01/05/16 17:42	1
13C4 PFOS	65		25 - 150				01/04/16 09:42	01/05/16 17:42	1
13C5 PFNA	64		25 - 150				01/04/16 09:42	01/05/16 17:42	1
13C4 PFOA	77		25 - 150				01/04/16 09:42	01/05/16 17:42	1
13C4-PFHpA	52		25 - 150				01/04/16 09:42	01/05/16 17:42	1

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW11S-1215

Lab Sample ID: 320-16615-4

Date Collected: 12/28/15 12:00

Matrix: Water

Date Received: 12/29/15 07:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.28	D	0.023	0.0074	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorooctanoic acid (PFOA)	0.28	D	0.023	0.0069	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorononanoic acid (PFNA)	0.018	J D	0.023	0.0060	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorobutanesulfonic acid (PFBS)	0.75	D	0.023	0.0084	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorohexanesulfonic acid (PFHxS)	4.8	D M	0.023	0.0080	ug/L		01/04/16 09:42	01/06/16 18:17	10
Perfluorooctanesulfonic acid (PFOS)	3.0	D M	0.037	0.012	ug/L		01/04/16 09:42	01/06/16 18:17	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	102		25 - 150				01/04/16 09:42	01/06/16 18:17	10
13C4 PFOS	106		25 - 150				01/04/16 09:42	01/06/16 18:17	10
13C5 PFNA	97		25 - 150				01/04/16 09:42	01/06/16 18:17	10
13C4 PFOA	104		25 - 150				01/04/16 09:42	01/06/16 18:17	10
13C4-PFHpA	98		25 - 150				01/04/16 09:42	01/06/16 18:17	10

Client Sample ID: OF14-MW14-1215

Lab Sample ID: 320-16615-5

Date Collected: 12/28/15 13:00

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00073	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorooctanoic acid (PFOA)	0.0020	J	0.0023	0.00068	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00059	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0023	0.00079	ug/L		01/04/16 09:42	01/06/16 20:22	1
Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0012	ug/L		01/04/16 09:42	01/06/16 20:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	113		25 - 150				01/04/16 09:42	01/06/16 20:22	1
13C4 PFOS	119		25 - 150				01/04/16 09:42	01/06/16 20:22	1
13C5 PFNA	79		25 - 150				01/04/16 09:42	01/06/16 20:22	1
13C4 PFOA	79		25 - 150				01/04/16 09:42	01/06/16 20:22	1
13C4-PFHpA	88		25 - 150				01/04/16 09:42	01/06/16 20:22	1

Client Sample ID: OF14-MW13S-1215

Lab Sample ID: 320-16615-6

Date Collected: 12/28/15 14:20

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.064		0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorooctanoic acid (PFOA)	0.88	J	0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorononanoic acid (PFNA)	0.0090		0.0023	0.00060	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorobutanesulfonic acid (PFBS)	0.22		0.0023	0.00084	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorohexanesulfonic acid (PFHxS)	4.1	J M	0.0023	0.00080	ug/L		01/04/16 09:42	01/05/16 18:25	1
Perfluorooctanesulfonic acid (PFOS)	5.1	J M	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 18:25	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW13S-1215

Lab Sample ID: 320-16615-6

Date Collected: 12/28/15 14:20

Matrix: Water

Date Received: 12/29/15 07:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	61		25 - 150	01/04/16 09:42	01/05/16 18:25	1
13C4 PFOS	56		25 - 150	01/04/16 09:42	01/05/16 18:25	1
13C5 PFNA	60		25 - 150	01/04/16 09:42	01/05/16 18:25	1
13C4 PFOA	79		25 - 150	01/04/16 09:42	01/05/16 18:25	1
13C4-PFHpA	65		25 - 150	01/04/16 09:42	01/05/16 18:25	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.061	D	0.023	0.0074	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorooctanoic acid (PFOA)	0.88	D	0.023	0.0069	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorononanoic acid (PFNA)	0.018	U	0.023	0.0060	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorobutanesulfonic acid (PFBS)	0.096	D	0.023	0.0084	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorohexanesulfonic acid (PFHxS)	3.3	D M	0.023	0.0080	ug/L		01/04/16 09:42	01/06/16 18:48	10
Perfluorooctanesulfonic acid (PFOS)	4.3	D M	0.037	0.012	ug/L		01/04/16 09:42	01/06/16 18:48	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	96		25 - 150	01/04/16 09:42	01/06/16 18:48	10
13C4 PFOS	83		25 - 150	01/04/16 09:42	01/06/16 18:48	10
13C5 PFNA	67		25 - 150	01/04/16 09:42	01/06/16 18:48	10
13C4 PFOA	71		25 - 150	01/04/16 09:42	01/06/16 18:48	10
13C4-PFHpA	80		25 - 150	01/04/16 09:42	01/06/16 18:48	10

Client Sample ID: OF-EB122815

Lab Sample ID: 320-16615-7

Date Collected: 12/28/15 14:45

Matrix: Water

Date Received: 12/29/15 07:30

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorohexanesulfonic acid (PFHxS)	0.00080	J	0.0023	0.00080	ug/L		01/04/16 09:42	01/05/16 18:46	1
Perfluorooctanesulfonic acid (PFOS)	0.0012	J	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 18:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	134		25 - 150	01/04/16 09:42	01/05/16 18:46	1
13C4 PFOS	152	Q	25 - 150	01/04/16 09:42	01/05/16 18:46	1
13C5 PFNA	137		25 - 150	01/04/16 09:42	01/05/16 18:46	1
13C4 PFOA	135		25 - 150	01/04/16 09:42	01/05/16 18:46	1
13C4-PFHpA	135		25 - 150	01/04/16 09:42	01/05/16 18:46	1

Client Sample ID: OF-FB01-123015

Lab Sample ID: 320-16649-1

Date Collected: 12/30/15 08:45

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 19:07	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-FB01-123015

Lab Sample ID: 320-16649-1

Date Collected: 12/30/15 08:45

Matrix: Water

Date Received: 12/31/15 07:25

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 19:07	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		01/04/16 09:42	01/05/16 19:07	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00085	ug/L		01/04/16 09:42	01/05/16 19:07	1
Perfluorohexanesulfonic acid (PFHxS)	0.00089	J	0.0023	0.00081	ug/L		01/04/16 09:42	01/05/16 19:07	1
Perfluorooctanesulfonic acid (PFOS)	0.0029	J M	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 19:07	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	135		25 - 150				01/04/16 09:42	01/05/16 19:07	1
13C4 PFOS	144		25 - 150				01/04/16 09:42	01/05/16 19:07	1
13C5 PFNA	132		25 - 150				01/04/16 09:42	01/05/16 19:07	1
13C4 PFOA	134		25 - 150				01/04/16 09:42	01/05/16 19:07	1
13C4-PFHpa	125		25 - 150				01/04/16 09:42	01/05/16 19:07	1

Client Sample ID: OF-INF01-1215

Lab Sample ID: 320-16649-2

Date Collected: 12/30/15 09:50

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.010		0.0024	0.00077	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.00072	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorononanoic acid (PFNA)	0.0018	J	0.0024	0.00063	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.00089	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	M	0.0024	0.00084	ug/L		01/04/16 09:42	01/05/16 19:50	1
Perfluorooctanesulfonic acid (PFOS)	0.54	M	0.0039	0.0012	ug/L		01/04/16 09:42	01/05/16 19:50	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	121		25 - 150				01/04/16 09:42	01/05/16 19:50	1
13C4 PFOS	112		25 - 150				01/04/16 09:42	01/05/16 19:50	1
13C5 PFNA	97		25 - 150				01/04/16 09:42	01/05/16 19:50	1
13C4 PFOA	103		25 - 150				01/04/16 09:42	01/05/16 19:50	1
13C4-PFHpa	108		25 - 150				01/04/16 09:42	01/05/16 19:50	1

Client Sample ID: OF-INF01P-1215

Lab Sample ID: 320-16649-3

Date Collected: 12/30/15 09:55

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0088		0.0024	0.00076	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorooctanoic acid (PFOA)	0.29		0.0024	0.00071	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorononanoic acid (PFNA)	0.0017	J	0.0024	0.00062	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.00087	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	M	0.0024	0.00082	ug/L		01/04/16 09:42	01/05/16 20:11	1
Perfluorooctanesulfonic acid (PFOS)	0.53	M	0.0038	0.0012	ug/L		01/04/16 09:42	01/05/16 20:11	1

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-INF01P-1215

Date Collected: 12/30/15 09:55

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-3

Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	124		25 - 150	01/04/16 09:42	01/05/16 20:11	1
13C4 PFOS	102		25 - 150	01/04/16 09:42	01/05/16 20:11	1
13C5 PFNA	86		25 - 150	01/04/16 09:42	01/05/16 20:11	1
13C4 PFOA	95		25 - 150	01/04/16 09:42	01/05/16 20:11	1
13C4-PFHpA	97		25 - 150	01/04/16 09:42	01/05/16 20:11	1

Client Sample ID: OF-EFF01-1215

Date Collected: 12/30/15 10:00

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-4

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.052		0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorooctanoic acid (PFOA)	1.9	J	0.0023	0.00069	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorononanoic acid (PFNA)	0.0042		0.0023	0.00060	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorobutanesulfonic acid (PFBS)	0.049		0.0023	0.00085	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorohexanesulfonic acid (PFHxS)	0.63	M	0.0023	0.00080	ug/L		01/04/16 09:42	01/05/16 20:32	1
Perfluorooctanesulfonic acid (PFOS)	1.1	J M	0.0037	0.0012	ug/L		01/04/16 09:42	01/05/16 20:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	113		25 - 150	01/04/16 09:42	01/05/16 20:32	1
13C4 PFOS	104		25 - 150	01/04/16 09:42	01/05/16 20:32	1
13C5 PFNA	93		25 - 150	01/04/16 09:42	01/05/16 20:32	1
13C4 PFOA	76		25 - 150	01/04/16 09:42	01/05/16 20:32	1
13C4-PFHpA	104		25 - 150	01/04/16 09:42	01/05/16 20:32	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.054	D	0.023	0.0074	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorooctanoic acid (PFOA)	1.8	D	0.023	0.0069	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorononanoic acid (PFNA)	0.018	U	0.023	0.0060	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorobutanesulfonic acid (PFBS)	0.029	D	0.023	0.0085	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorohexanesulfonic acid (PFHxS)	0.62	D M	0.023	0.0080	ug/L		01/04/16 09:42	01/06/16 19:19	10
Perfluorooctanesulfonic acid (PFOS)	1.0	D M	0.037	0.012	ug/L		01/04/16 09:42	01/06/16 19:19	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	110		25 - 150	01/04/16 09:42	01/06/16 19:19	10
13C4 PFOS	111		25 - 150	01/04/16 09:42	01/06/16 19:19	10
13C5 PFNA	100		25 - 150	01/04/16 09:42	01/06/16 19:19	10
13C4 PFOA	89		25 - 150	01/04/16 09:42	01/06/16 19:19	10
13C4-PFHpA	109		25 - 150	01/04/16 09:42	01/06/16 19:19	10

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-EFF01P-1215

Lab Sample ID: 320-16649-5

Date Collected: 12/30/15 10:05

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.053		0.0024	0.00078	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorooctanoic acid (PFOA)	1.9	J	0.0024	0.00073	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorononanoic acid (PFNA)	0.0036		0.0024	0.00064	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorobutanesulfonic acid (PFBS)	0.048		0.0024	0.00090	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorohexanesulfonic acid (PFHxS)	0.62	M	0.0024	0.00085	ug/L		01/04/16 09:42	01/05/16 20:53	1
Perfluorooctanesulfonic acid (PFOS)	1.1	J M B	0.0039	0.0012	ug/L		01/04/16 09:42	01/05/16 20:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	107		25 - 150				01/04/16 09:42	01/05/16 20:53	1
13C4 PFOS	93		25 - 150				01/04/16 09:42	01/05/16 20:53	1
13C5 PFNA	89		25 - 150				01/04/16 09:42	01/05/16 20:53	1
13C4 PFOA	73		25 - 150				01/04/16 09:42	01/05/16 20:53	1
13C4-PFHpA	94		25 - 150				01/04/16 09:42	01/05/16 20:53	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.057	D	0.024	0.0078	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorooctanoic acid (PFOA)	1.5	D	0.024	0.0073	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorononanoic acid (PFNA)	0.020	U	0.024	0.0064	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorobutanesulfonic acid (PFBS)	0.019	J D	0.024	0.0090	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorohexanesulfonic acid (PFHxS)	0.60	D M	0.024	0.0085	ug/L		01/04/16 09:42	01/06/16 19:51	10
Perfluorooctanesulfonic acid (PFOS)	0.96	D M	0.039	0.012	ug/L		01/04/16 09:42	01/06/16 19:51	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				01/04/16 09:42	01/06/16 19:51	10
13C4 PFOS	118		25 - 150				01/04/16 09:42	01/06/16 19:51	10
13C5 PFNA	107		25 - 150				01/04/16 09:42	01/06/16 19:51	10
13C4 PFOA	102		25 - 150				01/04/16 09:42	01/06/16 19:51	10
13C4-PFHpA	104		25 - 150				01/04/16 09:42	01/06/16 19:51	10

Client Sample ID: OF-MW12D-1215

Lab Sample ID: 320-16649-6

Date Collected: 12/30/15 12:40

Matrix: Water

Date Received: 12/31/15 07:25

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00074	ug/L		01/04/16 09:42	01/05/16 21:15	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		01/04/16 09:42	01/05/16 21:15	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00085	ug/L		01/04/16 09:42	01/05/16 21:15	1
Perfluorohexanesulfonic acid (PFHxS)	0.0044		0.0023	0.00081	ug/L		01/04/16 09:42	01/05/16 21:15	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	142		25 - 150				01/04/16 09:42	01/05/16 21:15	1
13C4 PFOS	148		25 - 150				01/04/16 09:42	01/05/16 21:15	1
13C5 PFNA	118		25 - 150				01/04/16 09:42	01/05/16 21:15	1
13C4 PFOA	126		25 - 150				01/04/16 09:42	01/05/16 21:15	1
13C4-PFHpA	125		25 - 150				01/04/16 09:42	01/05/16 21:15	1

TestAmerica Sacramento

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0079		0.0023	0.00069	ug/L		01/04/16 09:42	01/07/16 13:00	1
Perfluorooctanesulfonic acid (PFOS)	0.011	M	0.0037	0.0012	ug/L		01/04/16 09:42	01/07/16 13:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOS	100		25 - 150				01/04/16 09:42	01/07/16 13:00	1
¹³ C4 PFOA	50		25 - 150				01/04/16 09:42	01/07/16 13:00	1

Client Sample ID: OF-FB02-123015

Date Collected: 12/30/15 12:50

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-7

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0022	0.00072	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0022	0.00067	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0022	0.00058	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0022	0.00082	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0022	0.00078	ug/L		01/04/16 09:42	01/05/16 21:36	1
Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0011	ug/L		01/04/16 09:42	01/05/16 21:36	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹⁸ O2 PFHxS	134		25 - 150				01/04/16 09:42	01/05/16 21:36	1
¹³ C4 PFOS	145		25 - 150				01/04/16 09:42	01/05/16 21:36	1
¹³ C5 PFNA	138		25 - 150				01/04/16 09:42	01/05/16 21:36	1
¹³ C4 PFOA	140		25 - 150				01/04/16 09:42	01/05/16 21:36	1
¹³ C4-PFHpA	135		25 - 150				01/04/16 09:42	01/05/16 21:36	1

Default Detection Limits

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.0025	0.00092	ug/L	WS-LC-0025
Perfluoroheptanoic acid (PFHpA)	0.0025	0.00080	ug/L	WS-LC-0025
Perfluorohexanesulfonic acid (PFHxS)	0.0025	0.00087	ug/L	WS-LC-0025
Perfluorononanoic acid (PFNA)	0.0025	0.00065	ug/L	WS-LC-0025
Perfluorooctanesulfonic acid (PFOS)	0.0040	0.0013	ug/L	WS-LC-0025
Perfluorooctanoic acid (PFOA)	0.0025	0.00075	ug/L	WS-LC-0025

Isotope Dilution Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)				
		3O2 PFHx (25-150)	3C4 PFO (25-150)	3C5 PFN (25-150)	3C4 PFO (25-150)	3C4-PFHp (25-150)
320-16572-1	OF14-MW07S-1215	95	113	79	80	85
320-16572-2	OF14-MW06S-1215	119	117	90	102	109
320-16586-1	OF-MW16-1215	113	120	85	93	94
320-16586-2	OF-MW16P-1215	97	98	64	79	81
320-16586-3	OF-MW17-1215	128	114	86	97	107
320-16586-4	OF14-MW07D-1215	125	114	74	85	97
320-16586-5	OF14-MW06D-1215	122	110	80	92	94
320-16609-1	OF-MW15-1215	108	97	75	79	93
320-16609-2	OF-MW09-1215	125	119	92	104	113
320-16609-3	OF-MW10-1215	82	105	99	100	89
320-16609-4	OF-EB122315	105	103	117	118	119
320-16615-1	OF14-MW08-1215	37	30	36	27	41
320-16615-1 - DL	OF14-MW08-1215	82	76	77	80	92
320-16615-1 - DL2	OF14-MW08-1215	87	100	86	83	98
320-16615-2	OF14-MW08P-1215	41	33	40	36	42
320-16615-2 - DL	OF14-MW08P-1215	100	80	77	82	101
320-16615-2 - DL2	OF14-MW08P-1215	115	113	89	105	106
320-16615-3	OF14-MW12S-1215	70	38	39	75	62
320-16615-3 - DL	OF14-MW12S-1215	97	74	70	91	100
320-16615-4	OF14-MW11S-1215	47	65	64	77	52
320-16615-4 - DL	OF14-MW11S-1215	102	106	97	104	98
320-16615-5	OF14-MW14-1215	113	119	79	79	88
320-16615-6	OF14-MW13S-1215	61	56	60	79	65
320-16615-6 - DL	OF14-MW13S-1215	96	83	67	71	80
320-16615-7	OF-EB122815	134	152 Q	137	135	135
320-16649-1	OF-FB01-123015	135	144	132	134	125
320-16649-2	OF-INF01-1215	121	112	97	103	108
320-16649-3	OF-INF01P-1215	124	102	86	95	97
320-16649-4	OF-EFF01-1215	113	104	93	76	104
320-16649-4 - DL	OF-EFF01-1215	110	111	100	89	109
320-16649-5	OF-EFF01P-1215	107	93	89	73	94
320-16649-5 - DL	OF-EFF01P-1215	108	118	107	102	104
320-16649-6	OF-MW12D-1215	142	148	118	126	125
320-16649-6 - RA	OF-MW12D-1215		100		50	
320-16649-7	OF-FB02-123015	134	145	138	140	135
LCS 320-96713/2-A	Lab Control Sample	128	119	123	126	132
LCS 320-97173/2-A	Lab Control Sample	84	91	80	79	81
MB 320-96713/1-A	Method Blank	126	126	131	136	131
MB 320-97173/1-A	Method Blank	96	99	86	90	89
MB 320-97173/1-A - RA	Method Blank		116			

Surrogate Legend

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

QC Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-96713/1-A
Matrix: Water
Analysis Batch: 97208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 96713

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.00087	ug/L		12/26/15 07:28	12/30/15 19:10	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0013	ug/L		12/26/15 07:28	12/30/15 19:10	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
18O2 PFHxS	126		25 - 150	12/26/15 07:28	12/30/15 19:10	1
13C4 PFOS	126		25 - 150	12/26/15 07:28	12/30/15 19:10	1
13C5 PFNA	131		25 - 150	12/26/15 07:28	12/30/15 19:10	1
13C4 PFOA	136		25 - 150	12/26/15 07:28	12/30/15 19:10	1
13C4-PFHpA	131		25 - 150	12/26/15 07:28	12/30/15 19:10	1

Lab Sample ID: LCS 320-96713/2-A
Matrix: Water
Analysis Batch: 97208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 96713

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0549		ug/L		137	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0415		ug/L		104	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0315		ug/L		89	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0362		ug/L		96	60 - 140
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0392		ug/L		102	60 - 140

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
18O2 PFHxS	128		25 - 150
13C4 PFOS	119		25 - 150
13C5 PFNA	123		25 - 150
13C4 PFOA	126		25 - 150
13C4-PFHpA	132		25 - 150

Lab Sample ID: MB 320-97173/1-A
Matrix: Water
Analysis Batch: 97302

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 97173

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		01/04/16 09:42	01/05/16 15:56	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		01/04/16 09:42	01/05/16 15:56	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		01/04/16 09:42	01/05/16 15:56	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		01/04/16 09:42	01/05/16 15:56	1
Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.00087	ug/L		01/04/16 09:42	01/05/16 15:56	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
18O2 PFHxS	96		25 - 150	01/04/16 09:42	01/05/16 15:56	1

TestAmerica Sacramento

QC Sample Results

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

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

Lab Sample ID: MB 320-97173/1-A
Matrix: Water
Analysis Batch: 97302

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 97173

<i>Isotope Dilution</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C4 PFOS	99		25 - 150	01/04/16 09:42	01/05/16 15:56	1
13C5 PFNA	86		25 - 150	01/04/16 09:42	01/05/16 15:56	1
13C4 PFOA	90		25 - 150	01/04/16 09:42	01/05/16 15:56	1
13C4-PFHpa	89		25 - 150	01/04/16 09:42	01/05/16 15:56	1

Lab Sample ID: LCS 320-97173/2-A
Matrix: Water
Analysis Batch: 97302

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 97173

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
Perfluorooctanoic acid (PFOA)	0.0400	0.0428		ug/L		107	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0421		ug/L		105	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0325		ug/L		92	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0377		ug/L		100	60 - 140
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0459		ug/L		120	60 - 140

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
18O2 PFHxS	84		25 - 150
13C4 PFOS	91		25 - 150
13C5 PFNA	80		25 - 150
13C4 PFOA	79		25 - 150
13C4-PFHpa	81		25 - 150

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

Lab Sample ID: MB 320-97173/1-A
Matrix: Water
Analysis Batch: 97425

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 97173

<i>Analyte</i>	<i>MB MB</i>		<i>LOQ</i>	<i>DL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
Perfluorooctanesulfonic acid (PFOS) - RA	0.0030	U	0.0040	0.0013	ug/L		01/04/16 09:42	01/07/16 13:21	1

<i>Isotope Dilution</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C4 PFOS - RA	116		25 - 150	01/04/16 09:42	01/07/16 13:21	1

QC Association Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

LCMS

Prep Batch: 96713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16572-1	OF14-MW07S-1215	Total/NA	Water	3535	
320-16572-2	OF14-MW06S-1215	Total/NA	Water	3535	
320-16586-1	OF-MW16-1215	Total/NA	Water	3535	
320-16586-2	OF-MW16P-1215	Total/NA	Water	3535	
320-16586-3	OF-MW17-1215	Total/NA	Water	3535	
320-16586-4	OF14-MW07D-1215	Total/NA	Water	3535	
320-16586-5	OF14-MW06D-1215	Total/NA	Water	3535	
320-16609-1	OF-MW15-1215	Total/NA	Water	3535	
320-16609-2	OF-MW09-1215	Total/NA	Water	3535	
320-16609-3	OF-MW10-1215	Total/NA	Water	3535	
320-16609-4	OF-EB122315	Total/NA	Water	3535	
LCS 320-96713/2-A	Lab Control Sample	Total/NA	Water	3535	
MB 320-96713/1-A	Method Blank	Total/NA	Water	3535	

Prep Batch: 97173

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16615-1 - DL	OF14-MW08-1215	Total/NA	Water	3535	
320-16615-1	OF14-MW08-1215	Total/NA	Water	3535	
320-16615-1 - DL2	OF14-MW08-1215	Total/NA	Water	3535	
320-16615-2 - DL	OF14-MW08P-1215	Total/NA	Water	3535	
320-16615-2	OF14-MW08P-1215	Total/NA	Water	3535	
320-16615-2 - DL2	OF14-MW08P-1215	Total/NA	Water	3535	
320-16615-3	OF14-MW12S-1215	Total/NA	Water	3535	
320-16615-3 - DL	OF14-MW12S-1215	Total/NA	Water	3535	
320-16615-4	OF14-MW11S-1215	Total/NA	Water	3535	
320-16615-4 - DL	OF14-MW11S-1215	Total/NA	Water	3535	
320-16615-5	OF14-MW14-1215	Total/NA	Water	3535	
320-16615-6 - DL	OF14-MW13S-1215	Total/NA	Water	3535	
320-16615-6	OF14-MW13S-1215	Total/NA	Water	3535	
320-16615-7	OF-EB122815	Total/NA	Water	3535	
320-16649-1	OF-FB01-123015	Total/NA	Water	3535	
320-16649-2	OF-INF01-1215	Total/NA	Water	3535	
320-16649-3	OF-INF01P-1215	Total/NA	Water	3535	
320-16649-4	OF-EFF01-1215	Total/NA	Water	3535	
320-16649-4 - DL	OF-EFF01-1215	Total/NA	Water	3535	
320-16649-5 - DL	OF-EFF01P-1215	Total/NA	Water	3535	
320-16649-5	OF-EFF01P-1215	Total/NA	Water	3535	
320-16649-6	OF-MW12D-1215	Total/NA	Water	3535	
320-16649-6 - RA	OF-MW12D-1215	Total/NA	Water	3535	
320-16649-7	OF-FB02-123015	Total/NA	Water	3535	
LCS 320-97173/2-A	Lab Control Sample	Total/NA	Water	3535	
MB 320-97173/1-A	Method Blank	Total/NA	Water	3535	
MB 320-97173/1-A - RA	Method Blank	Total/NA	Water	3535	

Analysis Batch: 97208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16572-1	OF14-MW07S-1215	Total/NA	Water	WS-LC-0025	96713
320-16572-2	OF14-MW06S-1215	Total/NA	Water	WS-LC-0025	96713
320-16586-1	OF-MW16-1215	Total/NA	Water	WS-LC-0025	96713
320-16586-2	OF-MW16P-1215	Total/NA	Water	WS-LC-0025	96713
320-16586-3	OF-MW17-1215	Total/NA	Water	WS-LC-0025	96713

TestAmerica Sacramento

QC Association Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

LCMS (Continued)

Analysis Batch: 97208 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16586-4	OF14-MW07D-1215	Total/NA	Water	WS-LC-0025	96713
320-16586-5	OF14-MW06D-1215	Total/NA	Water	WS-LC-0025	96713
320-16609-1	OF-MW15-1215	Total/NA	Water	WS-LC-0025	96713
320-16609-2	OF-MW09-1215	Total/NA	Water	WS-LC-0025	96713
320-16609-3	OF-MW10-1215	Total/NA	Water	WS-LC-0025	96713
320-16609-4	OF-EB122315	Total/NA	Water	WS-LC-0025	96713
LCS 320-96713/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	96713
MB 320-96713/1-A	Method Blank	Total/NA	Water	WS-LC-0025	96713

Analysis Batch: 97302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16615-1	OF14-MW08-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-2	OF14-MW08P-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-3	OF14-MW12S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-4	OF14-MW11S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-6	OF14-MW13S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-7	OF-EB122815	Total/NA	Water	WS-LC-0025	97173
320-16649-1	OF-FB01-123015	Total/NA	Water	WS-LC-0025	97173
320-16649-2	OF-INF01-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-3	OF-INF01P-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-4	OF-EFF01-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-5	OF-EFF01P-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-6	OF-MW12D-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-7	OF-FB02-123015	Total/NA	Water	WS-LC-0025	97173
LCS 320-97173/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	97173
MB 320-97173/1-A	Method Blank	Total/NA	Water	WS-LC-0025	97173

Analysis Batch: 97425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-16615-1 - DL	OF14-MW08-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-1 - DL2	OF14-MW08-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-2 - DL	OF14-MW08P-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-2 - DL2	OF14-MW08P-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-3 - DL	OF14-MW12S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-4 - DL	OF14-MW11S-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-5	OF14-MW14-1215	Total/NA	Water	WS-LC-0025	97173
320-16615-6 - DL	OF14-MW13S-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-4 - DL	OF-EFF01-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-5 - DL	OF-EFF01P-1215	Total/NA	Water	WS-LC-0025	97173
320-16649-6 - RA	OF-MW12D-1215	Total/NA	Water	WS-LC-0025	97173
MB 320-97173/1-A - RA	Method Blank	Total/NA	Water	WS-LC-0025	97173

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW07S-1215

Date Collected: 12/21/15 15:30

Date Received: 12/22/15 10:45

Lab Sample ID: 320-16572-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 19:53	JRB	TAL SAC

Client Sample ID: OF14-MW06S-1215

Date Collected: 12/21/15 12:05

Date Received: 12/22/15 10:45

Lab Sample ID: 320-16572-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 20:14	JRB	TAL SAC

Client Sample ID: OF-MW16-1215

Date Collected: 12/22/15 09:55

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 20:35	JRB	TAL SAC

Client Sample ID: OF-MW16P-1215

Date Collected: 12/22/15 10:00

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 20:57	JRB	TAL SAC

Client Sample ID: OF-MW17-1215

Date Collected: 12/22/15 11:15

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 21:18	JRB	TAL SAC

Client Sample ID: OF14-MW07D-1215

Date Collected: 12/22/15 13:25

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 21:39	JRB	TAL SAC

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW06D-1215

Date Collected: 12/22/15 16:05

Date Received: 12/23/15 11:20

Lab Sample ID: 320-16586-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 22:00	JRB	TAL SAC

Client Sample ID: OF-MW15-1215

Date Collected: 12/23/15 09:30

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 22:22	JRB	TAL SAC

Client Sample ID: OF-MW09-1215

Date Collected: 12/23/15 11:00

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 23:04	JRB	TAL SAC

Client Sample ID: OF-MW10-1215

Date Collected: 12/23/15 12:40

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 23:25	JRB	TAL SAC

Client Sample ID: OF-EB122315

Date Collected: 12/23/15 12:50

Date Received: 12/24/15 11:30

Lab Sample ID: 320-16609-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			96713	12/26/15 07:28	JER	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97208	12/30/15 23:47	JRB	TAL SAC

Client Sample ID: OF14-MW08-1215

Date Collected: 12/28/15 09:20

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 16:39	JRB	TAL SAC
Total/NA	Prep	3535	DL		97173	01/04/16 09:42	HJA	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW08-1215

Date Collected: 12/28/15 09:20

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WS-LC-0025	DL	10	97425	01/06/16 15:41	JRB	TAL SAC
Total/NA	Prep	3535	DL2		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL2	20	97425	01/06/16 16:43	JRB	TAL SAC

Client Sample ID: OF14-MW08P-1215

Date Collected: 12/28/15 09:25

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 17:00	JRB	TAL SAC
Total/NA	Prep	3535	DL		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	97425	01/06/16 16:12	JRB	TAL SAC
Total/NA	Prep	3535	DL2		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL2	20	97425	01/06/16 17:15	JRB	TAL SAC

Client Sample ID: OF14-MW12S-1215

Date Collected: 12/28/15 10:25

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 17:21	JRB	TAL SAC
Total/NA	Prep	3535	DL		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	97425	01/06/16 17:46	JRB	TAL SAC

Client Sample ID: OF14-MW11S-1215

Date Collected: 12/28/15 12:00

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 17:42	JRB	TAL SAC
Total/NA	Prep	3535	DL		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	97425	01/06/16 18:17	JRB	TAL SAC

Client Sample ID: OF14-MW14-1215

Date Collected: 12/28/15 13:00

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97425	01/06/16 20:22	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF14-MW13S-1215

Date Collected: 12/28/15 14:20

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 18:25	JRB	TAL SAC
Total/NA	Prep	3535	DL		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	97425	01/06/16 18:48	JRB	TAL SAC

Client Sample ID: OF-EB122815

Date Collected: 12/28/15 14:45

Date Received: 12/29/15 07:30

Lab Sample ID: 320-16615-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 18:46	JRB	TAL SAC

Client Sample ID: OF-FB01-123015

Date Collected: 12/30/15 08:45

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 19:07	JRB	TAL SAC

Client Sample ID: OF-INF01-1215

Date Collected: 12/30/15 09:50

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 19:50	JRB	TAL SAC

Client Sample ID: OF-INF01P-1215

Date Collected: 12/30/15 09:55

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 20:11	JRB	TAL SAC

Client Sample ID: OF-EFF01-1215

Date Collected: 12/30/15 10:00

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Client Sample ID: OF-EFF01-1215

Date Collected: 12/30/15 10:00

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 20:32	JRB	TAL SAC
Total/NA	Prep	3535	DL		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	97425	01/06/16 19:19	JRB	TAL SAC

Client Sample ID: OF-EFF01P-1215

Date Collected: 12/30/15 10:05

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 20:53	JRB	TAL SAC
Total/NA	Prep	3535	DL		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	DL	10	97425	01/06/16 19:51	JRB	TAL SAC

Client Sample ID: OF-MW12D-1215

Date Collected: 12/30/15 12:40

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 21:15	JRB	TAL SAC
Total/NA	Prep	3535	RA		97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	97425	01/07/16 13:00	JRB	TAL SAC

Client Sample ID: OF-FB02-123015

Date Collected: 12/30/15 12:50

Date Received: 12/31/15 07:25

Lab Sample ID: 320-16649-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			97173	01/04/16 09:42	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	97302	01/05/16 21:36	JRB	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: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

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	01-31-16
Oregon	NELAP	10	CA200005	01-29-16

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
WS-LC-0025	3535	Water	Perfluorobutanesulfonic acid (PFBS)
WS-LC-0025	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
WS-LC-0025	3535	Water	Perfluorooctanesulfonic acid (PFOS)

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
Oregon	NELAP	10	4025	01-09-17

Method Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Method	Method Description	Protocol	Laboratory
WS-LC-0025	Perfluorinated Hydrocarbons	TAL SOP	TAL SAC

Protocol References:

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: CH2M Hill, Inc.
Project/Site: NAS Oceana, VA - 8012 CTO-WE44

TestAmerica Job ID: 320-16572-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-16572-1	OF14-MW07S-1215	Water	12/21/15 15:30	12/22/15 10:45
320-16572-2	OF14-MW06S-1215	Water	12/21/15 12:05	12/22/15 10:45
320-16586-1	OF-MW16-1215	Water	12/22/15 09:55	12/23/15 11:20
320-16586-2	OF-MW16P-1215	Water	12/22/15 10:00	12/23/15 11:20
320-16586-3	OF-MW17-1215	Water	12/22/15 11:15	12/23/15 11:20
320-16586-4	OF14-MW07D-1215	Water	12/22/15 13:25	12/23/15 11:20
320-16586-5	OF14-MW06D-1215	Water	12/22/15 16:05	12/23/15 11:20
320-16609-1	OF-MW15-1215	Water	12/23/15 09:30	12/24/15 11:30
320-16609-2	OF-MW09-1215	Water	12/23/15 11:00	12/24/15 11:30
320-16609-3	OF-MW10-1215	Water	12/23/15 12:40	12/24/15 11:30
320-16609-4	OF-EB122315	Water	12/23/15 12:50	12/24/15 11:30
320-16615-1	OF14-MW08-1215	Water	12/28/15 09:20	12/29/15 07:30
320-16615-2	OF14-MW08P-1215	Water	12/28/15 09:25	12/29/15 07:30
320-16615-3	OF14-MW12S-1215	Water	12/28/15 10:25	12/29/15 07:30
320-16615-4	OF14-MW11S-1215	Water	12/28/15 12:00	12/29/15 07:30
320-16615-5	OF14-MW14-1215	Water	12/28/15 13:00	12/29/15 07:30
320-16615-6	OF14-MW13S-1215	Water	12/28/15 14:20	12/29/15 07:30
320-16615-7	OF-EB122815	Water	12/28/15 14:45	12/29/15 07:30
320-16649-1	OF-FB01-123015	Water	12/30/15 08:45	12/31/15 07:25
320-16649-2	OF-INF01-1215	Water	12/30/15 09:50	12/31/15 07:25
320-16649-3	OF-INF01P-1215	Water	12/30/15 09:55	12/31/15 07:25
320-16649-4	OF-EFF01-1215	Water	12/30/15 10:00	12/31/15 07:25
320-16649-5	OF-EFF01P-1215	Water	12/30/15 10:05	12/31/15 07:25
320-16649-6	OF-MW12D-1215	Water	12/30/15 12:40	12/31/15 07:25
320-16649-7	OF-FB02-123015	Water	12/30/15 12:50	12/31/15 07:25

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97208

Lab Sample ID: STD 320-97208/2 IC Client Sample ID: _____

Date Analyzed: 12/30/15 15:59 Lab File ID: 30DEC2015A6A_008.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanesulfonic Acid (PFHpS)	10.55	Assign Peak	westendorfc	01/04/16 11:57

Lab Sample ID: 320-16572-1 Client Sample ID: OF14-MW07S-1215

Date Analyzed: 12/30/15 19:53 Lab File ID: 30DEC2015A6A_019.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.44	Isomers	barnettj	01/04/16 14:44
Perfluorooctanesulfonic acid (PFOS)	11.13	Isomers	barnettj	01/04/16 15:16

Lab Sample ID: 320-16572-2 Client Sample ID: OF14-MW06S-1215

Date Analyzed: 12/30/15 20:14 Lab File ID: 30DEC2015A6A_020.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.47	Isomers	barnettj	01/04/16 15:15

Lab Sample ID: 320-16586-1 Client Sample ID: OF-MW16-1215

Date Analyzed: 12/30/15 20:35 Lab File ID: 30DEC2015A6A_021.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.43	Isomers	barnettj	01/04/16 14:48
Perfluorooctanesulfonic acid (PFOS)	11.47	Isomers	barnettj	01/04/16 15:14

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97208

Lab Sample ID: 320-16586-2 Client Sample ID: OF-MW16P-1215

Date Analyzed: 12/30/15 20:57 Lab File ID: 30DEC2015A6A_022.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.43	Isomers	barnettj	01/04/16 14:50
Perfluorooctanesulfonic acid (PFOS)	11.47	Isomers	barnettj	01/04/16 15:14

Lab Sample ID: 320-16586-3 Client Sample ID: OF-MW17-1215

Date Analyzed: 12/30/15 21:18 Lab File ID: 30DEC2015A6A_023.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.43	Isomers	barnettj	01/04/16 16:13
Perfluorooctanesulfonic acid (PFOS)	11.12	Isomers	barnettj	01/04/16 14:51

Lab Sample ID: 320-16586-4 Client Sample ID: OF14-MW07D-1215

Date Analyzed: 12/30/15 21:39 Lab File ID: 30DEC2015A6A_024.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.42	Isomers	barnettj	01/04/16 16:18

Lab Sample ID: 320-16609-2 Client Sample ID: OF-MW09-1215

Date Analyzed: 12/30/15 23:04 Lab File ID: 30DEC2015A6A_028.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.43	Isomers	barnettj	01/04/16 16:19
Perfluorooctanesulfonic acid (PFOS)	11.47	Isomers	barnettj	01/04/16 15:11

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97208

Lab Sample ID: 320-16609-3 Client Sample ID: OF-MW10-1215

Date Analyzed: 12/30/15 23:25 Lab File ID: 30DEC2015A6A_029.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.42	Isomers	barnettj	01/04/16 16:20
Perfluorooctanesulfonic acid (PFOS)	11.12	Isomers	barnettj	01/04/16 15:10

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97302

Lab Sample ID: 320-16615-1 Client Sample ID: OF14-MW08-1215

Date Analyzed: 01/05/16 16:39 Lab File ID: 05JAN2016A6A_018.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.42	Isomers	westendor fc	01/06/16 09:01
Perfluorooctanesulfonic acid (PFOS)	11.47	Isomers	westendor fc	01/06/16 09:01

Lab Sample ID: 320-16615-2 Client Sample ID: OF14-MW08P-1215

Date Analyzed: 01/05/16 17:00 Lab File ID: 05JAN2016A6A_019.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.42	Isomers	westendor fc	01/06/16 09:02
Perfluorooctanesulfonic acid (PFOS)	11.46	Isomers	westendor fc	01/06/16 09:02

Lab Sample ID: 320-16615-3 Client Sample ID: OF14-MW12S-1215

Date Analyzed: 01/05/16 17:21 Lab File ID: 05JAN2016A6A_020.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.42	Isomers	westendor fc	01/06/16 09:03
Perfluorooctanesulfonic acid (PFOS)	11.46	Isomers	westendor fc	01/06/16 09:03

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97302

Lab Sample ID: 320-16615-4 Client Sample ID: OF14-MW11S-1215

Date Analyzed: 01/05/16 17:42 Lab File ID: 05JAN2016A6A_021.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.41	Isomers	westendor fc	01/06/16 09:07
Perfluorooctanesulfonic acid (PFOS)	11.46	Isomers	westendor fc	01/06/16 09:07

Lab Sample ID: 320-16615-6 Client Sample ID: OF14-MW13S-1215

Date Analyzed: 01/05/16 18:25 Lab File ID: 05JAN2016A6A_023.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.42	Isomers	westendor fc	01/06/16 09:11
Perfluorooctanesulfonic acid (PFOS)	11.46	Isomers	westendor fc	01/06/16 09:11

Lab Sample ID: 320-16649-1 Client Sample ID: OF-FB01-123015

Date Analyzed: 01/05/16 19:07 Lab File ID: 05JAN2016A6A_025.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.44	Isomers	westendor fc	01/06/16 09:12

Lab Sample ID: 320-16649-2 Client Sample ID: OF-INF01-1215

Date Analyzed: 01/05/16 19:50 Lab File ID: 05JAN2016A6A_027.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.41	Isomers	westendor fc	01/06/16 09:14
Perfluorooctanesulfonic acid (PFOS)	11.46	Isomers	westendor fc	01/06/16 09:14

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97302

Lab Sample ID: 320-16649-3 Client Sample ID: OF-INF01P-1215

Date Analyzed: 01/05/16 20:11 Lab File ID: 05JAN2016A6A_028.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.41	Isomers	westendor fc	01/06/16 09:14
Perfluorooctanesulfonic acid (PFOS)	11.45	Isomers	westendor fc	01/06/16 09:14

Lab Sample ID: 320-16649-4 Client Sample ID: OF-EFF01-1215

Date Analyzed: 01/05/16 20:32 Lab File ID: 05JAN2016A6A_029.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.41	Isomers	westendor fc	01/06/16 09:16
Perfluorooctanesulfonic acid (PFOS)	11.45	Isomers	westendor fc	01/06/16 09:16

Lab Sample ID: 320-16649-5 Client Sample ID: OF-EFF01P-1215

Date Analyzed: 01/05/16 20:53 Lab File ID: 05JAN2016A6A_030.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.41	Isomers	westendor fc	01/06/16 09:16
Perfluorooctanesulfonic acid (PFOS)	11.45	Isomers	westendor fc	01/06/16 09:16

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97425

Lab Sample ID: 320-16615-1 DL Client Sample ID: OF14-MW08-1215 DL

Date Analyzed: 01/06/16 15:41 Lab File ID: 06JAN2016A6A_012.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.36	Isomers	westendor fc	01/07/16 08:42
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:42

Lab Sample ID: 320-16615-2 DL Client Sample ID: OF14-MW08P-1215 DL

Date Analyzed: 01/06/16 16:12 Lab File ID: 06JAN2016A6A_013.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.36	Isomers	westendor fc	01/07/16 08:43
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:43

Lab Sample ID: 320-16615-1 DL2 Client Sample ID: OF14-MW08-1215 DL2

Date Analyzed: 01/06/16 16:43 Lab File ID: 06JAN2016A6A_014.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.36	Isomers	westendor fc	01/07/16 08:44
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:44

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97425

Lab Sample ID: 320-16615-2 DL2 Client Sample ID: OF14-MW08P-1215 DL2

Date Analyzed: 01/06/16 17:15 Lab File ID: 06JAN2016A6A_015.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.36	Isomers	westendor fc	01/07/16 08:44
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:44

Lab Sample ID: 320-16615-3 DL Client Sample ID: OF14-MW12S-1215 DL

Date Analyzed: 01/06/16 17:46 Lab File ID: 06JAN2016A6A_016.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.35	Isomers	westendor fc	01/07/16 08:45
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:45

Lab Sample ID: 320-16615-4 DL Client Sample ID: OF14-MW11S-1215 DL

Date Analyzed: 01/06/16 18:17 Lab File ID: 06JAN2016A6A_017.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.35	Isomers	westendor fc	01/07/16 08:47
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:47

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 97425

Lab Sample ID: 320-16615-6 DL Client Sample ID: OF14-MW13S-1215 DL

Date Analyzed: 01/06/16 18:48 Lab File ID: 06JAN2016A6A_018.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.35	Isomers	westendor fc	01/07/16 08:48
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:48

Lab Sample ID: 320-16649-4 DL Client Sample ID: OF-EFF01-1215 DL

Date Analyzed: 01/06/16 19:19 Lab File ID: 06JAN2016A6A_019.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.35	Isomers	westendor fc	01/07/16 08:50
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:50

Lab Sample ID: 320-16649-5 DL Client Sample ID: OF-EFF01P-1215 DL

Date Analyzed: 01/06/16 19:51 Lab File ID: 06JAN2016A6A_020.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	9.35	Isomers	westendor fc	01/07/16 08:51
Perfluorooctanesulfonic acid (PFOS)	11.39	Isomers	westendor fc	01/07/16 08:51

Lab Sample ID: 320-16649-6 RA Client Sample ID: OF-MW12D-1215 RA

Date Analyzed: 01/07/16 13:00 Lab File ID: 06JAN2016A6A_061.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.42	Isomers	westendor fc	01/07/16 13:39

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00023	06/21/16	12/21/15	Methanol, Lot Baker 115491	5 mL	LCM2PFHxDA_00002	0.1 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.1 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.1 mL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00004	0.1 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.1 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00005	0.1 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00003	0.1 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00006	0.1 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.1 mL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.1 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.1 mL	13C4 PFOS	0.956 ug/mL
LCMPFUDa_00004	0.1 mL	13C2 PFUnA	1 ug/mL					
.LCM2PFHxDA_00002	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112				(Purchased Reagent)	13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112				(Purchased Reagent)	13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpa0515				(Purchased Reagent)	13C4-PFHpa	50 ug/mL
.LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515				(Purchased Reagent)	13C5-PFPeA	50 ug/mL
.LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I				(Purchased Reagent)	13C8 FOSA	50 ug/mL
.LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014				(Purchased Reagent)	13C4 PFBA	50 ug/mL
.LCMPFDA_00005	04/13/19	Wellington Laboratories, Lot MPFDA0414				(Purchased Reagent)	13C2 PFDA	50 ug/mL
.LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714				(Purchased Reagent)	13C2 PFDoA	50 ug/mL
.LCMPFHxA_00006	04/13/19	Wellington Laboratories, Lot MPFHxA0414				(Purchased Reagent)	13C2 PFHxA	50 ug/mL
.LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713				(Purchased Reagent)	1802 PFHxS	47.3 ug/mL
.LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414				(Purchased Reagent)	13C5 PFNA	50 ug/mL
.LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415				(Purchased Reagent)	13C4 PFOA	50 ug/mL
.LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515				(Purchased Reagent)	13C4 PFOS	47.8 ug/mL
.LCMPFUDa_00004	10/31/19	Wellington Laboratories, Lot MPFUDa1014				(Purchased Reagent)	13C2 PFUnA	50 ug/mL
LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
LCMPFUDa_00005	0.2 mL	13C2 PFUnA	1 ug/mL					
.LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112				(Purchased Reagent)	13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112				(Purchased Reagent)	13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpa0515				(Purchased Reagent)	13C4-PFHpa	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCM5PFPEA 00004	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA 00006	12/15/16		Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA 00004	10/31/19		Wellington Laboratories, Lot MPFBA1014		(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA 00004	04/13/19		Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA 00004	07/17/19		Wellington Laboratories, Lot MPFDoA0714		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA 00005	04/13/19		Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS 00004	07/25/18		Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA 00003	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA 00007	04/10/20		Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS 00009	05/15/20		Wellington Laboratories, Lot MPFOS0515		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUDa 00005	10/31/19		Wellington Laboratories, Lot MPFUDa1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-L1_00018	06/29/16	12/30/15	MeOH/H2O, Lot 90285	5 mL	LCPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	25 uL	Perfluorobutyric acid	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid	0.5 ng/mL
							Perfluorododecanoic acid	0.5 ng/mL
							Perfluorodecane Sulfonic acid	0.482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.473 ng/mL
							Perfluorononanoic acid (PFNA)	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.478 ng/mL
Perfluorooctane Sulfonamide	0.5 ng/mL							
Perfluoropentanoic acid	0.5 ng/mL							
Perfluorotetradecanoic acid	0.5 ng/mL							
Perfluorotridecanoic acid	0.5 ng/mL							
Perfluoroundecanoic acid	0.5 ng/mL							

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL					
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)	13C2-PFHxDA	50 ug/mL	
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)	13C2-PFTeDA	50 ug/mL	
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpa0515			(Purchased Reagent)	13C4-PFHpA	50 ug/mL	
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)	13C5-PFPeA	50 ug/mL	
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)	13C8 FOSA	50 ug/mL	
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)	13C4 PFBA	50 ug/mL	
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)	13C2 PFDA	50 ug/mL	
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)	13C2 PFDoA	50 ug/mL	
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)	13C2 PFHxA	50 ug/mL	
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)	1802 PFHxS	47.3 ug/mL	
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)	13C5 PFNA	50 ug/mL	
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)	13C4 PFOA	50 ug/mL	
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL	
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)	13C2 PFUnA	50 ug/mL	
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18		Wellington Laboratories, Lot PFBA0313		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19		Wellington Laboratories, Lot LFFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00003	06/18/18		Wellington Laboratories, Lot PFDA0613		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18		Wellington Laboratories, Lot PFDoA0113		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18		Wellington Laboratories, Lot LFFDS0913		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19		Wellington Laboratories, Lot PFHpA0514		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17		Wellington Laboratories, Lot LFFHpS1112		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19		Wellington Laboratories, Lot PFHxA0514		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19		Wellington Laboratories, Lot LFFHxS0514		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19		Wellington Laboratories, Lot PFNA0514		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00004	10/11/18		Wellington Laboratories, Lot PFOA1013		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17		Wellington Laboratories, Lot PFODA0807		(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19		Wellington Laboratories, Lot LFFOS0614		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18		Wellington Laboratories, Lot FOSA0714I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18		Wellington Laboratories, Lot PFPeA0113		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18		Wellington Laboratories, Lot PFTeDA0613		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
...LCPFuDA_00003	06/19/18		Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)	Perfluoroundecanoic acid	50 ug/mL		
LCPFCSU-L2_00018	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL		
							13C2-PFTeDA	50 ng/mL		
							13C4-PFHpA	50 ng/mL		
							13C5-PFPeA	50 ng/mL		
							13C8 FOSA	50 ng/mL		
							13C4 PFBA	50 ng/mL		
							13C2 PFDA	50 ng/mL		
							13C2 PFDoA	50 ng/mL		
							13C2 PFHxA	50 ng/mL		
							18O2 PFHxS	47.3 ng/mL		
							13C5 PFNA	50 ng/mL		
							13C4 PFOA	50 ng/mL		
							13C4 PFOS	47.8 ng/mL		
							13C2 PFUnA	50 ng/mL		
							LCPFCSU_00040	50 uL	Perfluorobutyric acid	1 ng/mL
					Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL				
					Perfluorodecanoic acid	1 ng/mL				
					Perfluorododecanoic acid	1 ng/mL				
					Perfluorodecane Sulfonic acid (PFHpA)	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 (PFHxS)	0.946 ng/mL				
					Perfluorononanoic acid (PFNA)	1 ng/mL				
					Perfluorooctanoic acid (PFOA)	1 ng/mL				
					Perfluorooctadecanoic acid	1 ng/mL				
Perfluorooctanesulfonic acid (PFOS)	0.956 ng/mL									
Perfluorooctane Sulfonamide	1 ng/mL									
Perfluoropentanoic acid	1 ng/mL									
Perfluorotetradecanoic acid	1 ng/mL									
Perfluorotridecanoic acid	1 ng/mL									
Perfluoroundecanoic acid	1 ng/mL									
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL		
							LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
							LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
							LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
							LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
							LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
							LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
							LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
							LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxS 00004	0.2 mL	1802 PFHxS	0.946 ug/mL
					LCMPFNA 00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA 00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS 00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA 00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA 00003	11/29/17		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA 00003	11/29/17		Wellington Laboratories, Lot M2PFTeDA1112		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA 00003	05/22/20		Wellington Laboratories, Lot M4PFHhPA0515		(Purchased Reagent)		13C4-PFHhPA	50 ug/mL
..LCM5PFPEA 00004	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA 00006	12/15/16		Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00004	10/31/19		Wellington Laboratories, Lot MPFBA1014		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA 00004	04/13/19		Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00004	07/17/19		Wellington Laboratories, Lot MPFDoA0714		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00005	04/13/19		Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00004	07/25/18		Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA 00003	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00007	04/10/20		Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00009	05/15/20		Wellington Laboratories, Lot MPFOS0515		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA 00005	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHhPA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA 00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18		Wellington Laboratories, Lot PFBA0313		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00003	06/18/18		Wellington Laboratories, Lot PFDA0613		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDaA_00003	01/03/18		Wellington Laboratories, Lot PFDaA0113		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18		Wellington Laboratories, Lot LPFDS0913		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19		Wellington Laboratories, Lot PFHpA0514		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17		Wellington Laboratories, Lot LPFHpS1112		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19		Wellington Laboratories, Lot PFHxA0514		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19		Wellington Laboratories, Lot LPFHxS0514		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19		Wellington Laboratories, Lot PFNA0514		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00004	10/11/18		Wellington Laboratories, Lot PFOA1013		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17		Wellington Laboratories, Lot PFODA0807		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19		Wellington Laboratories, Lot LPFOS0614		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18		Wellington Laboratories, Lot FOSA0714I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18		Wellington Laboratories, Lot PFPeA0113		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18		Wellington Laboratories, Lot PFTeDA0613		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00003	06/19/18		Wellington Laboratories, Lot PFUdA0613		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L3_00016	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDaA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid (PFHpA)	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 (PFHxS)	4.73 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctadecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.78 ng/mL
		Perfluorooctane Sulfonamide	5 ng/mL					
		Perfluoropentanoic acid	5 ng/mL					
		Perfluorotetradecanoic acid	5 ng/mL					
		Perfluorotridecanoic acid	5 ng/mL					
		Perfluoroundecanoic acid	5 ng/mL					
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM8FOSA 00006	12/15/16		Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00004	10/31/19		Wellington Laboratories, Lot MPFBA1014		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA 00004	04/13/19		Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00004	07/17/19		Wellington Laboratories, Lot MPFDoA0714		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00005	04/13/19		Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00004	07/25/18		Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA 00003	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00007	04/10/20		Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00009	05/15/20		Wellington Laboratories, Lot MPFOS0515		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00005	10/31/19		Wellington Laboratories, Lot MPFUDa1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid (PFHpA)	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA 00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA 00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA 00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA 00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA 00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA 00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA 00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA 00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA 00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA 00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBFA 00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBFA_00001	10/09/19	Wellington Laboratories, Lot LFFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFFDA 00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFFDoA 00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFFDSA 00001	09/13/18	Wellington Laboratories, Lot LFFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFFHpSA 00001	11/21/17	Wellington Laboratories, Lot LFFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFFHxA 00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFFHxDA 00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFFHxSA_00001	05/09/19	Wellington Laboratories, Lot LFFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFFNA 00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFFOA 00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFFODA 00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFFOS_00004	06/20/19	Wellington Laboratories, Lot LFFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFFOSA 00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFFPeA 00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFFTeDA 00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFFTrDA 00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFFUdA 00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L4_00017	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCPFCFSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.92 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.12 ng/mL
							Perfluorooctane Sulfonamide	20 ng/mL
							Perfluoropentanoic acid	20 ng/mL
							Perfluorotetradecanoic acid	20 ng/mL
							Perfluorotridecanoic acid	20 ng/mL
							Perfluoroundecanoic acid	20 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17		Wellington Laboratories, Lot M2PFTeDA1112		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20		Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00004	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16		Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19		Wellington Laboratories, Lot MPFBA1014		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19		Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19		Wellington Laboratories, Lot MPFDoA0714		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19		Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18		Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20		Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20		Wellington Laboratories, Lot MPFOS0515		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL					
LCPFUDA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL					
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)	Perfluorobutyric acid	50 ug/mL	
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LFFBS1014			(Purchased Reagent)	Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL	
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)	Perfluorodecanoic acid	50 ug/mL	
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDa0113			(Purchased Reagent)	Perfluorododecanoic acid	50 ug/mL	
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LFFDS0913			(Purchased Reagent)	Perfluorodecane Sulfonic acid	48.2 ug/mL	
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL	
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LFFHpS1112			(Purchased Reagent)	Perfluoroheptanesulfonic Acid	47.6 ug/mL	
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)	Perfluorohexanoic acid	50 ug/mL	
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)	Perfluorohexadecanoic acid	50 ug/mL	
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LFFHxS0514			(Purchased Reagent)	Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL	
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)	Perfluorononanoic acid (PFNA)	50 ug/mL	
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)	Perfluorooctanoic acid (PFOA)	50 ug/mL	
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)	Perfluorooctadecanoic acid	50 ug/mL	
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LFFOS0614			(Purchased Reagent)	Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL	
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)	Perfluorooctane Sulfonamide	50 ug/mL	
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)	Perfluoropentanoic acid	50 ug/mL	
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)	Perfluorotetradecanoic acid	50 ug/mL	
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)	Perfluorotridecanoic acid	50 ug/mL	
..LCPFUDA_00003	06/19/18	Wellington Laboratories, Lot PFUDA0613			(Purchased Reagent)	Perfluoroundecanoic acid	50 ug/mL	
LCPFC-L5_00016	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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 PFDaA	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
							LCPFCSU_00039	250 uL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.3 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
		Perfluorooctanoic acid (PFOA)	50 ng/mL					
		Perfluorooctadecanoic acid	50 ng/mL					
		Perfluorooctanesulfonic acid (PFOS)	47.8 ng/mL					
		Perfluorooctane Sulfonamide	50 ng/mL					
		Perfluoropentanoic acid	50 ng/mL					
		Perfluorotetradecanoic acid	50 ng/mL					
		Perfluorotridecanoic acid	50 ng/mL					
		Perfluoroundecanoic acid	50 ng/mL					
LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPeA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDaA_00004	0.2 mL	13C2 PFDaA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHPA0515			(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpa_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpa_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19		Wellington Laboratories, Lot LPFHxS0514		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19		Wellington Laboratories, Lot PFNA0514		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00004	10/11/18		Wellington Laboratories, Lot PFOA1013		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17		Wellington Laboratories, Lot PFODA0807		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19		Wellington Laboratories, Lot LPFOS0614		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18		Wellington Laboratories, Lot FOSA0714I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18		Wellington Laboratories, Lot PFPeA0113		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18		Wellington Laboratories, Lot PFTeDA0613		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18		Wellington Laboratories, Lot PFTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18		Wellington Laboratories, Lot PFUdA0613		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L6_00015	06/29/16	12/30/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00024	100 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
							LCPFCSP_00039	400 uL
					Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL		
					Perfluorodecanoic acid	200 ng/mL		
					Perfluorododecanoic acid	200 ng/mL		
					Perfluorodecane Sulfonic acid	192.8 ng/mL		
					Perfluoroheptanoic acid (PFHpA)	200 ng/mL		
					Perfluoroheptanesulfonic Acid	190.4 ng/mL		
					Perfluorohexanoic acid	200 ng/mL		
					Perfluorohexadecanoic acid	200 ng/mL		
					Perfluorohexanesulfonic acid (PFHxS)	189.2 ng/mL		
					Perfluorononanoic acid (PFNA)	200 ng/mL		
					Perfluorooctanoic acid (PFOA)	200 ng/mL		
					Perfluorooctadecanoic acid	200 ng/mL		
Perfluorooctanesulfonic acid (PFOS)	191.2 ng/mL							
Perfluorooctane Sulfonamide	200 ng/mL							
Perfluoropentanoic acid	200 ng/mL							
Perfluorotetradecanoic acid	200 ng/mL							

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpa_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA 00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTEdA 00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUDa 00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA 00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA 00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA 00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA 00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA 00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA 00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA 00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA 00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFoA 00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA 00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA 00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA 00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTEdA 00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA 00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUDa 00003	06/19/18	Wellington Laboratories, Lot PFUDa0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L7_00015	06/29/16	12/30/15	MeOH/H2O, Lot 090285	2 mL	LCPFCFSU_00024	100 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTEdA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	800 uL	Perfluorobutyric acid	400 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	353.6 ng/mL
							Perfluorodecanoic acid	400 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	400 ng/mL
							Perfluorodecane Sulfonic acid	385.6 ng/mL
							Perfluoroheptanoic acid (PFHpA)	400 ng/mL
							Perfluoroheptanesulfonic Acid	380.8 ng/mL
							Perfluorohexanoic acid	400 ng/mL
							Perfluorohexadecanoic acid	400 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	378.4 ng/mL
							Perfluorononanoic acid (PFNA)	400 ng/mL
							Perfluorooctanoic acid (PFOA)	400 ng/mL
							Perfluorooctadecanoic acid	400 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	382.4 ng/mL
							Perfluorooctane Sulfonamide	400 ng/mL
							Perfluoropentanoic acid	400 ng/mL
							Perfluorotetradecanoic acid	400 ng/mL
							Perfluorotridecanoic acid	400 ng/mL
							Perfluoroundecanoic acid	400 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17		Wellington Laboratories, Lot M2PFTeDA1112		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20		Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00004	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16		Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19		Wellington Laboratories, Lot MPFBA1014		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19		Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19		Wellington Laboratories, Lot MPFDoA0714		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19		Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18		Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20		Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20		Wellington Laboratories, Lot MPFOS0515		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL					
LCPFUDA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL					
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)	Perfluorobutyric acid	50 ug/mL	
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LFFBS1014			(Purchased Reagent)	Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL	
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)	Perfluorodecanoic acid	50 ug/mL	
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDa0113			(Purchased Reagent)	Perfluorododecanoic acid	50 ug/mL	
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LFFDS0913			(Purchased Reagent)	Perfluorodecane Sulfonic acid	48.2 ug/mL	
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL	
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LFFHpS1112			(Purchased Reagent)	Perfluoroheptanesulfonic Acid	47.6 ug/mL	
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)	Perfluorohexanoic acid	50 ug/mL	
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)	Perfluorohexadecanoic acid	50 ug/mL	
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LFFHxS0514			(Purchased Reagent)	Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL	
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)	Perfluorononanoic acid (PFNA)	50 ug/mL	
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)	Perfluorooctanoic acid (PFOA)	50 ug/mL	
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)	Perfluorooctadecanoic acid	50 ug/mL	
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LFFOS0614			(Purchased Reagent)	Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL	
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)	Perfluorooctane Sulfonamide	50 ug/mL	
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)	Perfluoropentanoic acid	50 ug/mL	
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)	Perfluorotetradecanoic acid	50 ug/mL	
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)	Perfluorotridecanoic acid	50 ug/mL	
..LCPFUDA_00003	06/19/18	Wellington Laboratories, Lot PFUDA0613			(Purchased Reagent)	Perfluoroundecanoic acid	50 ug/mL	
LCPFCIC_00015	06/16/16	12/22/15	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00023	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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 PFDaA	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
							LCPFACMXB_00005	125 uL
		Perfluorononanoic acid (PFNA)	50 ng/mL					
		Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL					
		Perfluorooctanoic acid (PFOA)	50 ng/mL					
..LCMPFCSU_00023	06/21/16	12/21/15	Methanol, Lot Baker 115491	5 mL	LCM2PFHxDA_00002	0.1 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.1 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.1 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.1 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.1 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00005	0.1 mL	13C2 PFDA	1 ug/mL
					LCMPFDaA_00003	0.1 mL	13C2 PFDaA	1 ug/mL
					LCMPFHxA_00006	0.1 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.1 mL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.1 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00004	0.1 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00002	11/29/17		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17		Wellington Laboratories, Lot M2PFTeDA1112		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20		Wellington Laboratories, Lot M4PFHFA0515		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20		Wellington Laboratories, Lot M5PFPEA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16		Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19		Wellington Laboratories, Lot MPFBA1014		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00005	04/13/19		Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDaA_00003	07/17/19		Wellington Laboratories, Lot MPFDaA0714		(Purchased Reagent)		13C2 PFDaA	50 ug/mL
..LCMPFHxA_00006	04/13/19		Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18		Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20		Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20		Wellington Laboratories, Lot MPFOS0515		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00004	10/31/19		Wellington Laboratories, Lot MPFUdA1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFACMXB_00005	06/20/19		Wellington Laboratories, Lot PFACMXB0614		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00036	06/21/16	12/21/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFBFA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perfluoro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00005	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perfluoro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perfluoro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL					
LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL					
.LCPFBA_00003	03/05/18		Wellington Laboratories, Lot PFBA0313		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00003	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFBFA_00001	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00003	06/18/18		Wellington Laboratories, Lot PFDA0613		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00003	01/03/18		Wellington Laboratories, Lot PFDoA0113		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDoS_00003	10/06/16		Wellington Laboratories, Lot LPFDoS1011		(Purchased Reagent)		PFDoS (Perfluoro-1-dodecanesulfonate)	48.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFDS_00003	09/13/18		Wellington Laboratories, Lot LPFDS0913		(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
.LCPFDSA_00001	09/13/18		Wellington Laboratories, Lot LPFDS0913		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpA_00004	05/09/19		Wellington Laboratories, Lot PFHpA0514		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpS_00005	01/28/19		Wellington Laboratories, Lot LPFHpS0114		(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
.LCPFHpSA_00001	11/21/17		Wellington Laboratories, Lot LPFHpS1112		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA_00003	05/09/19		Wellington Laboratories, Lot PFHxA0514		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS_00003	05/09/19		Wellington Laboratories, Lot LPFHxS0514		(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
.LCPFHxSA_00001	05/09/19		Wellington Laboratories, Lot LPFHxS0514		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
.LCPFNA_00004	05/09/19		Wellington Laboratories, Lot PFNA0514		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFNS_00002	07/04/17		Wellington Laboratories, Lot LPFNS0712		(Purchased Reagent)		PFNS (Perfluoro-1-nonanesulfonate)	48 ug/mL
.LCPFOA_00004	10/11/18		Wellington Laboratories, Lot PFOA1013		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00004	04/25/17		Wellington Laboratories, Lot PFODA0807		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS_00004	06/20/19		Wellington Laboratories, Lot LPFOS0614		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
.LCPFOSA_00005	07/31/18		Wellington Laboratories, Lot FOSA0714I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA_00003	01/03/18		Wellington Laboratories, Lot PFPeA0113		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
.LCPFPeS_00002	07/04/17		Wellington Laboratories, Lot LFPPeS0712		(Purchased Reagent)		PFPeS (Perfluoro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA_00003	06/19/18		Wellington Laboratories, Lot PFTeDA0613		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA_00003	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA_00003	06/19/18		Wellington Laboratories, Lot PFUdA0613		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perfluoro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00005	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perfluoro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFODA 00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA 00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA 00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUDa 00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
.LCPFBA 00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS 00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA 00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDaA 00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
.LCPFDS 00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
.LCPFDSA 00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpa_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHps 00005	01/28/19	Wellington Laboratories, Lot LPFHpS0114			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
.LCPFHpSA 00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA 00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA 00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS 00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
.LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
.LCPFNA 00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
.LCPFOA 00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA 00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
.LCPFOSA 00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA 00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
.LCPFPeS_00002	07/04/17	Wellington Laboratories, Lot LFPFPeS0712			(Purchased Reagent)		PFPeS (Perflouro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA 00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA 00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUDa 00003	06/19/18	Wellington Laboratories, Lot PFUDa0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LCM2PFHxDA_00002

Rec: 8/14/14 SKV

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

Scanned: 8/18/14 SKV

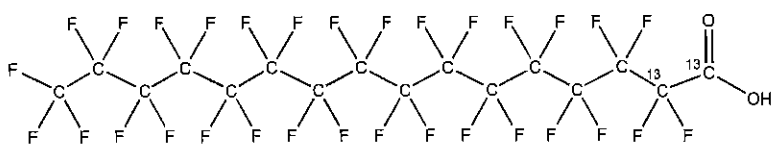


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₄HF₃₁O₂ **MOLECULAR WEIGHT:** 816.11
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 11/29/2012
EXPIRY DATE: (mm/dd/yyyy) 11/29/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 01/10/2013
B.G. Chittim (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

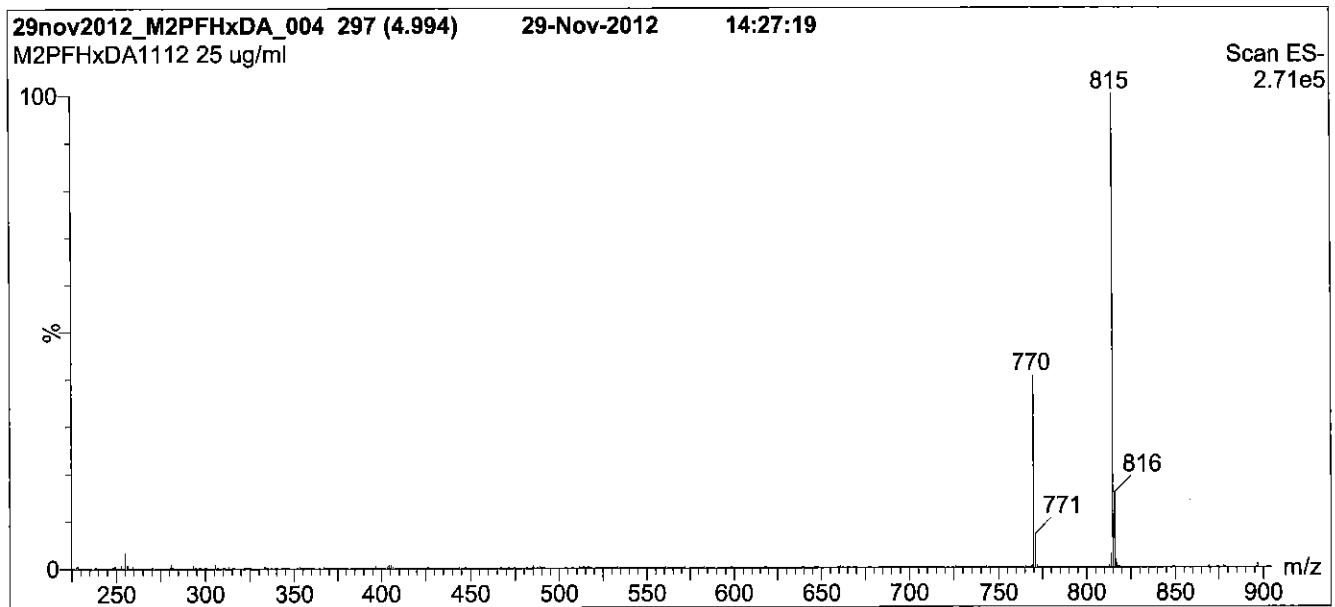
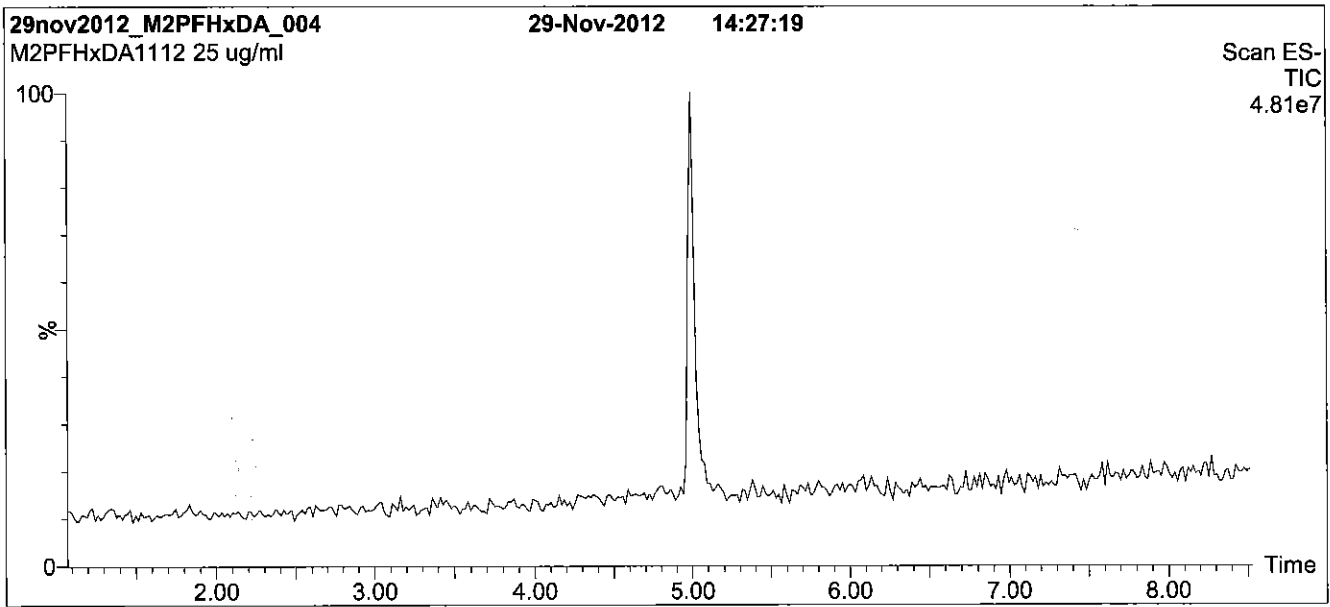
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

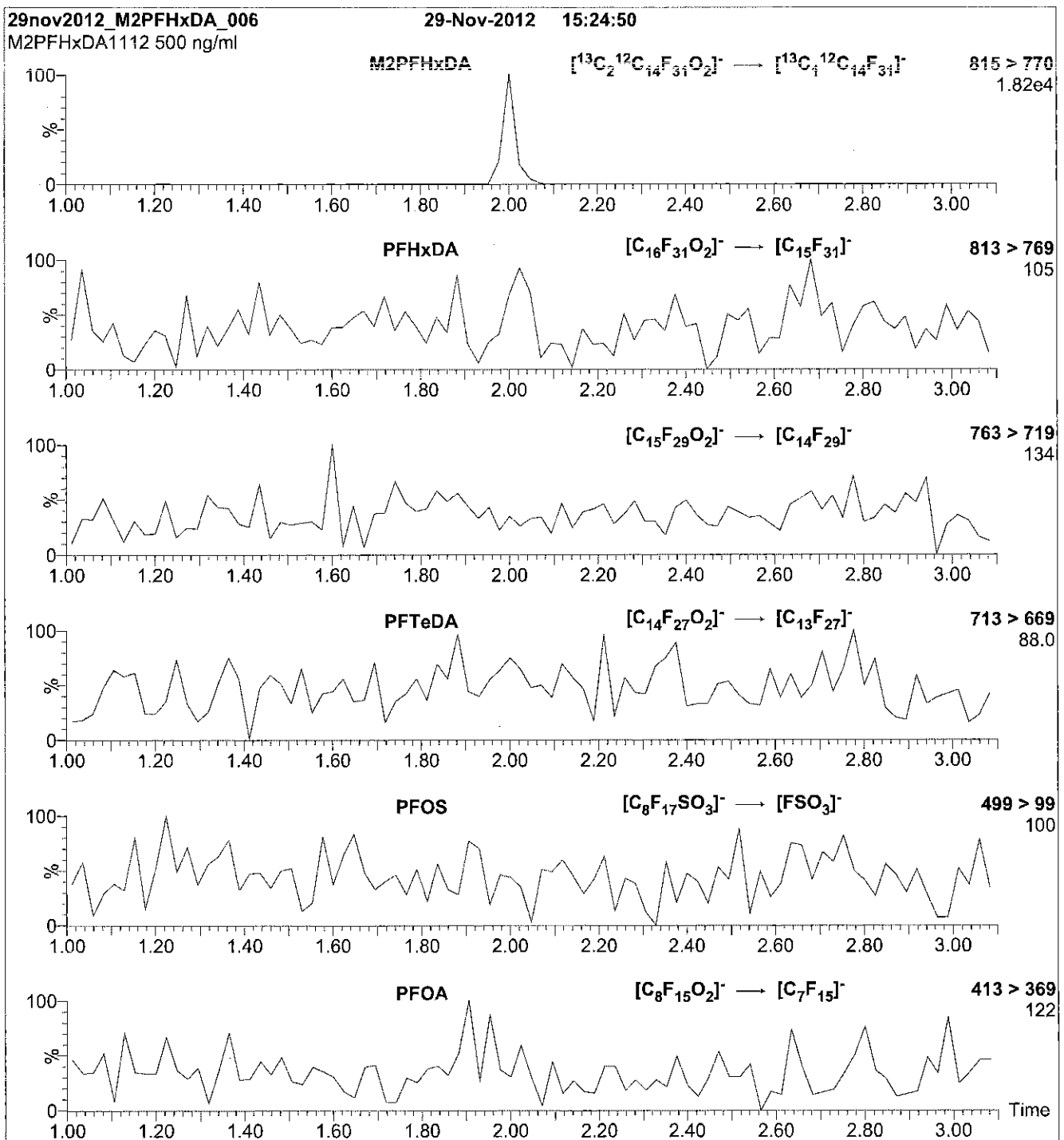
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCM2PFHxDA_00003

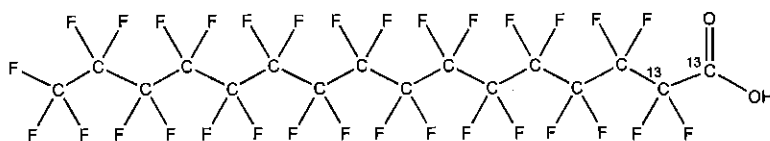


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₂ ¹² C ₁₄ HF ₃₁ O ₂	MOLECULAR WEIGHT:	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2- ¹³ C ₂)
LAST TESTED: (mm/dd/yyyy)	11/29/2012		
EXPIRY DATE: (mm/dd/yyyy)	11/29/2017		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 04/01/2015
 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:

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

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 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.

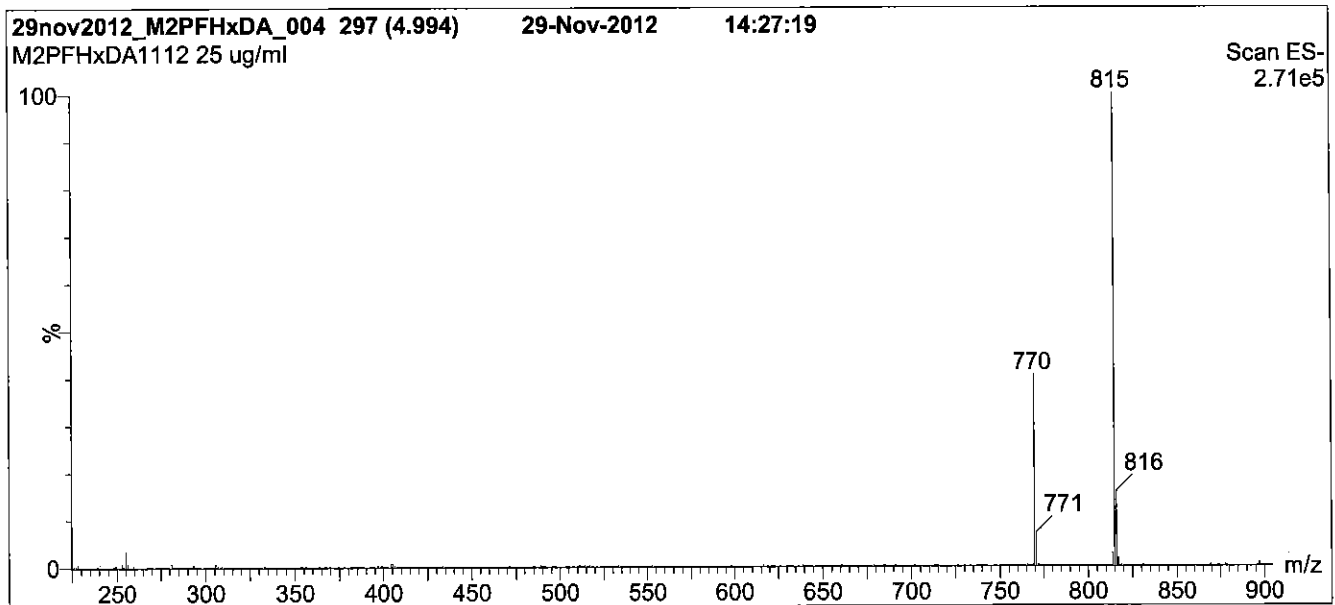
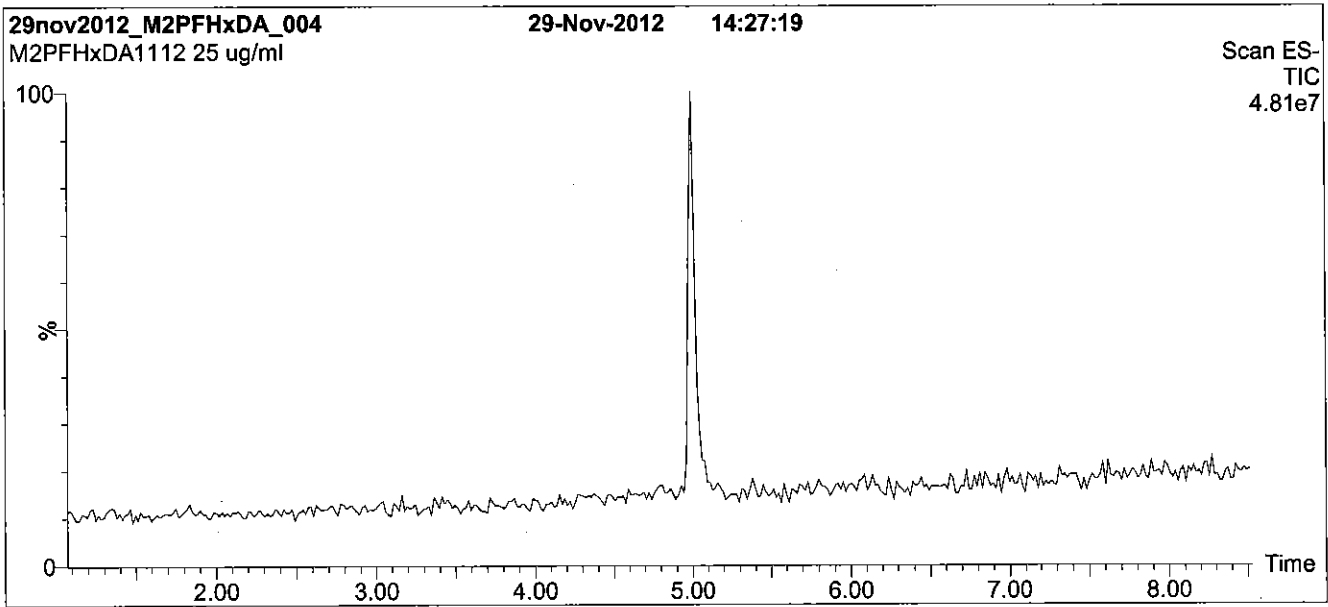
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

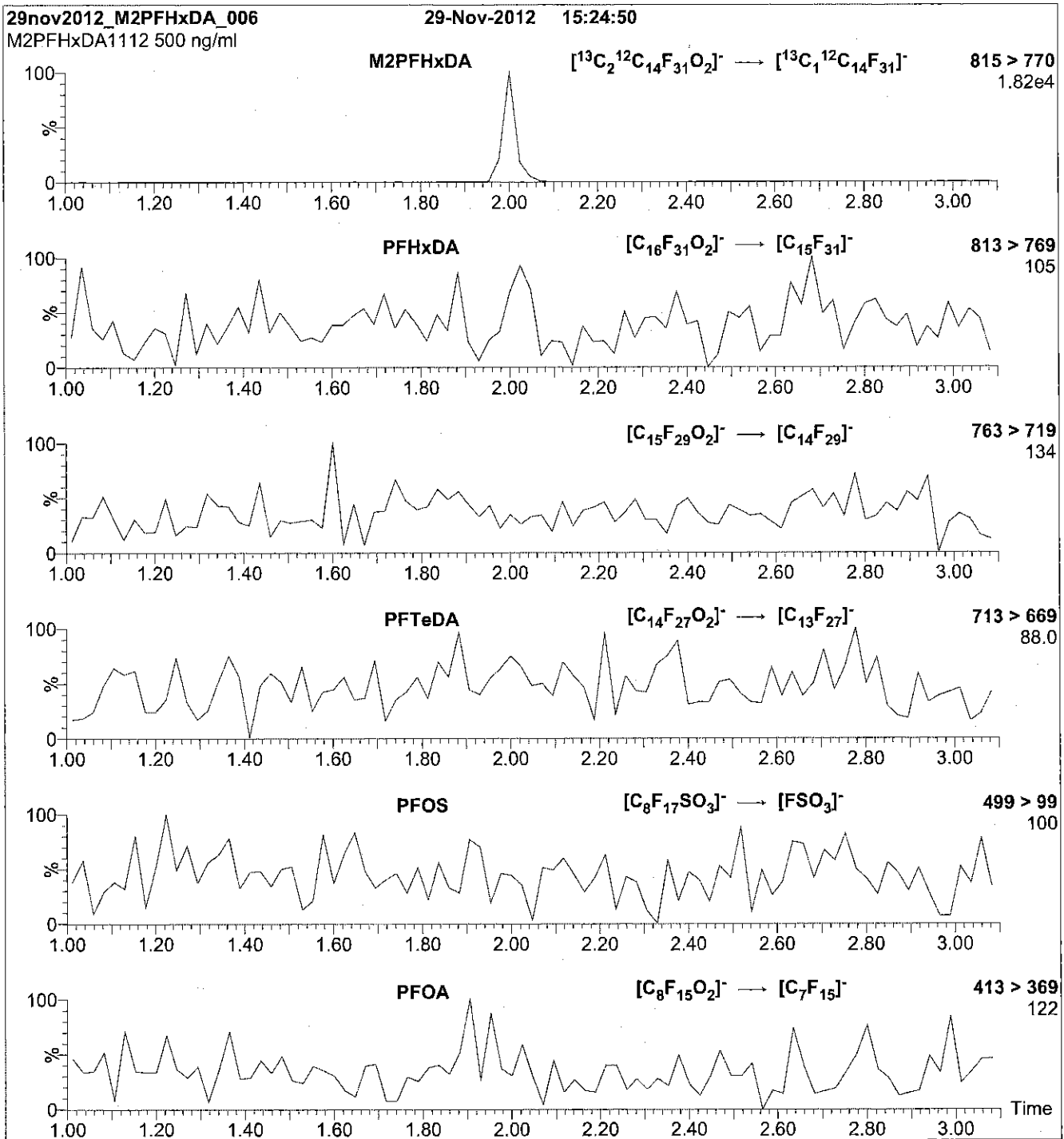
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCM2PFTeDA_00003



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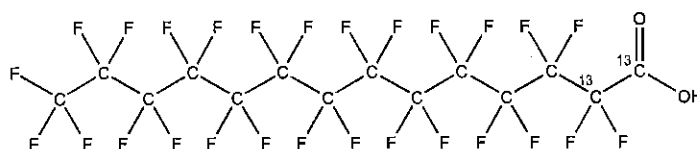
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

LOT NUMBER: M2PFTeDA1112

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₂HF₂₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 716.10
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/29/2012
EXPIRY DATE: (mm/dd/yyyy) 11/29/2017

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim

Date: 04/01/2015
(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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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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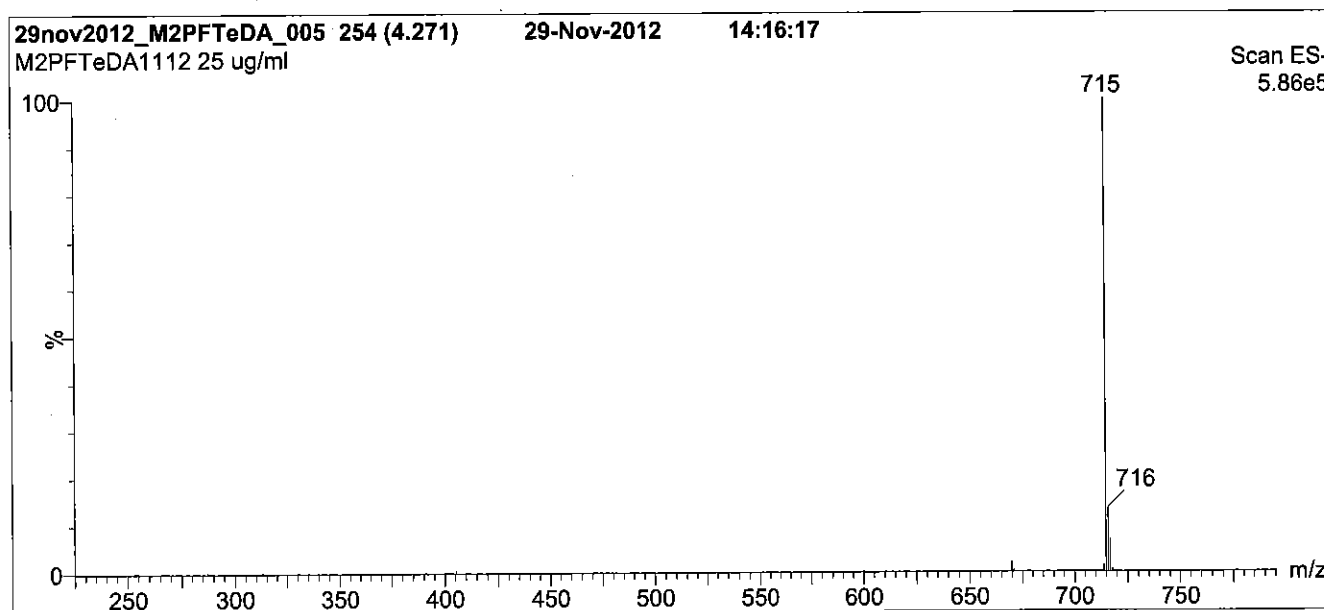
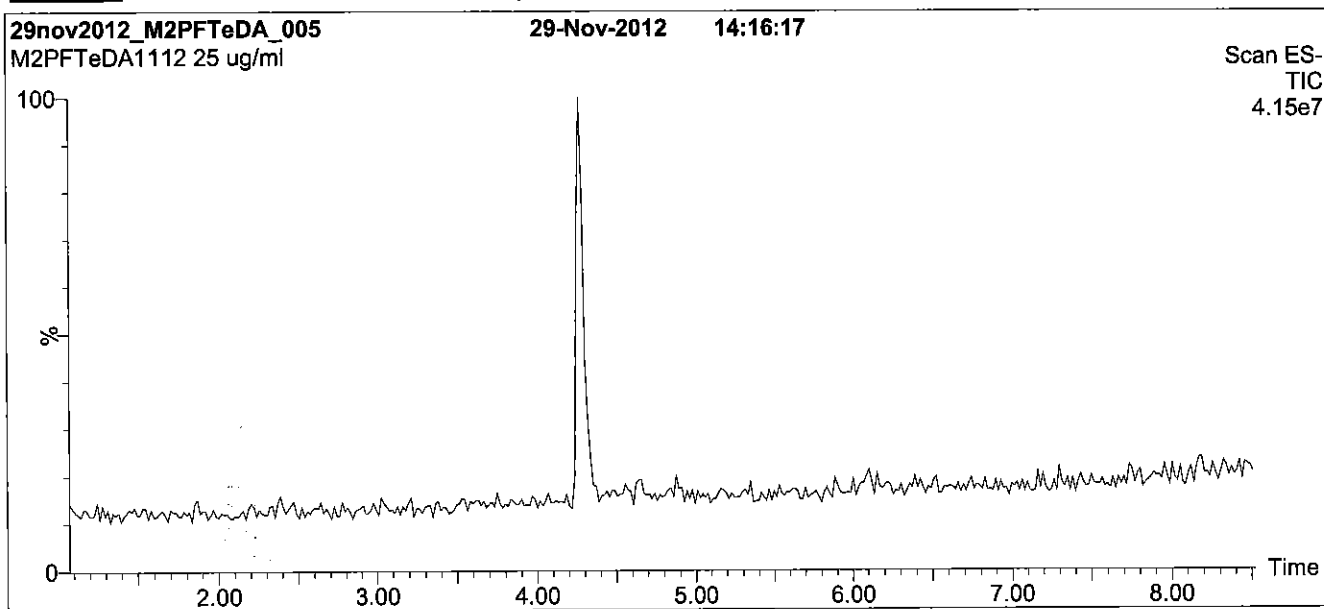
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 100% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

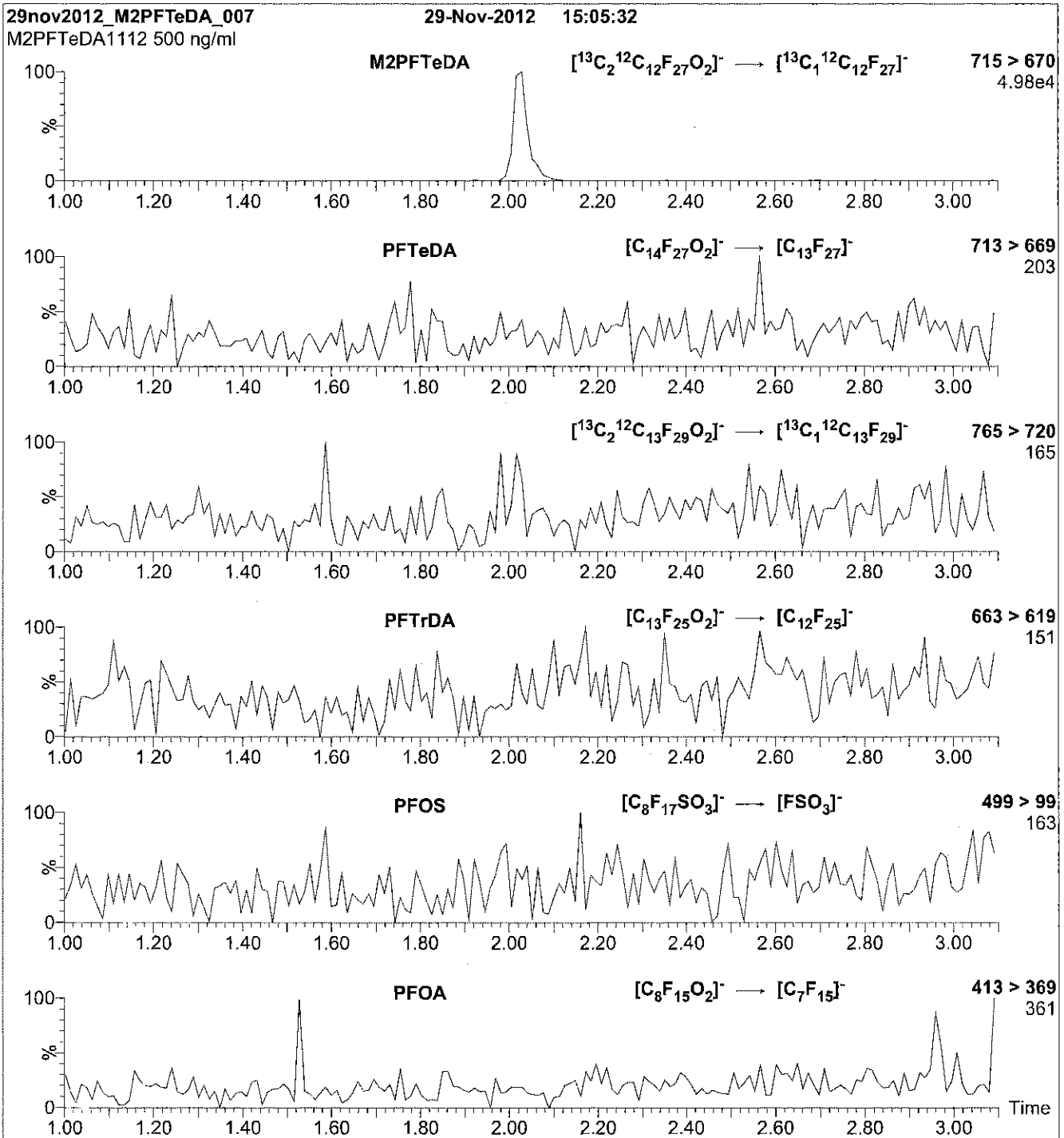
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

Figure 2: M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFTeDA)

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

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

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00003



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LABORATORIES**

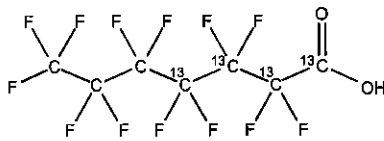
**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid

LOT NUMBER: M4PFHpA0515

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99%¹³C
(1,2,3,4-¹³C₄)

LAST TESTED: (mm/dd/yyyy) 05/22/2015

EXPIRY DATE: (mm/dd/yyyy) 05/22/2020

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 05/25/2015
(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:

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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.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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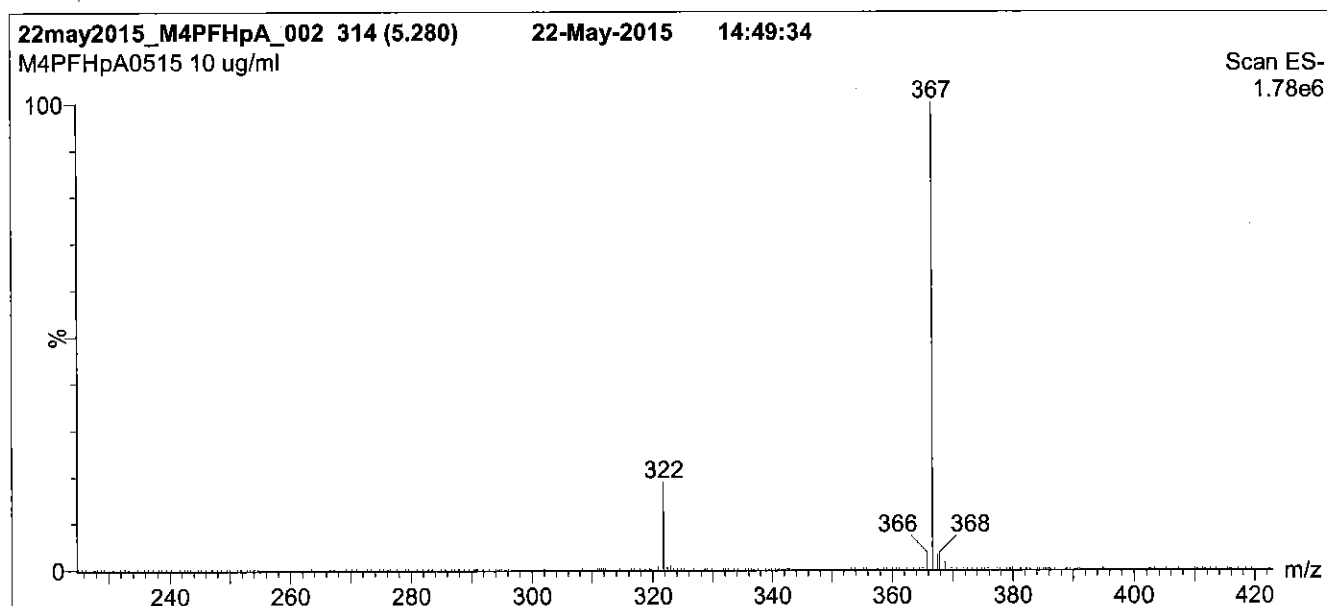
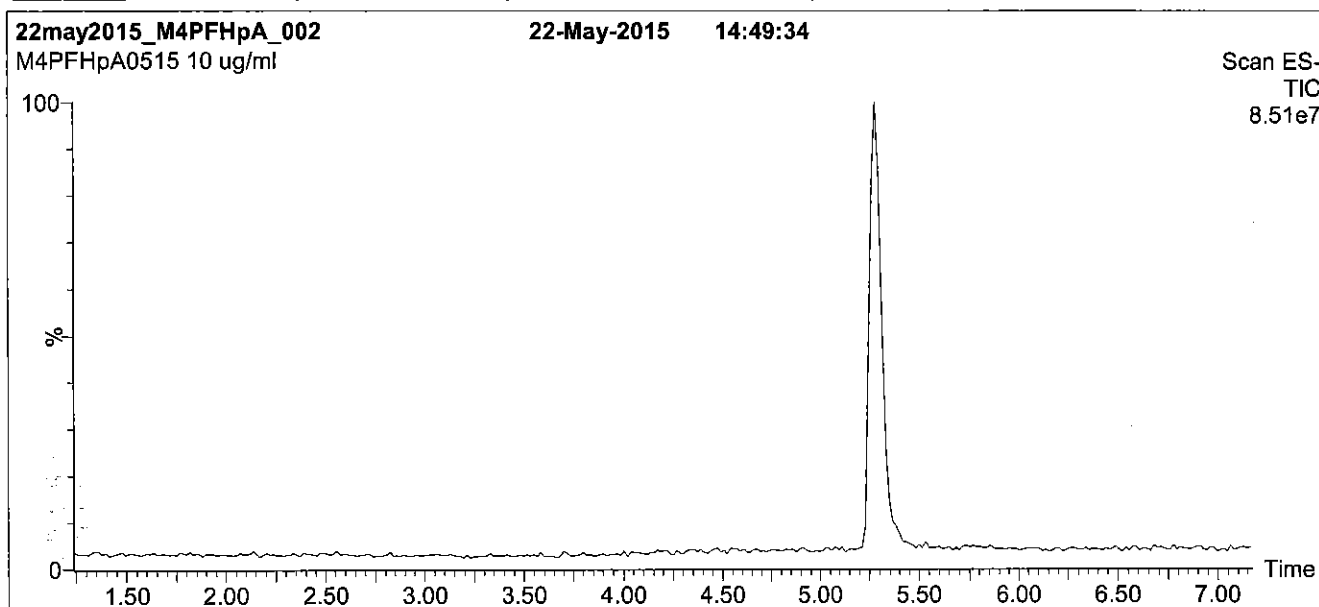
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

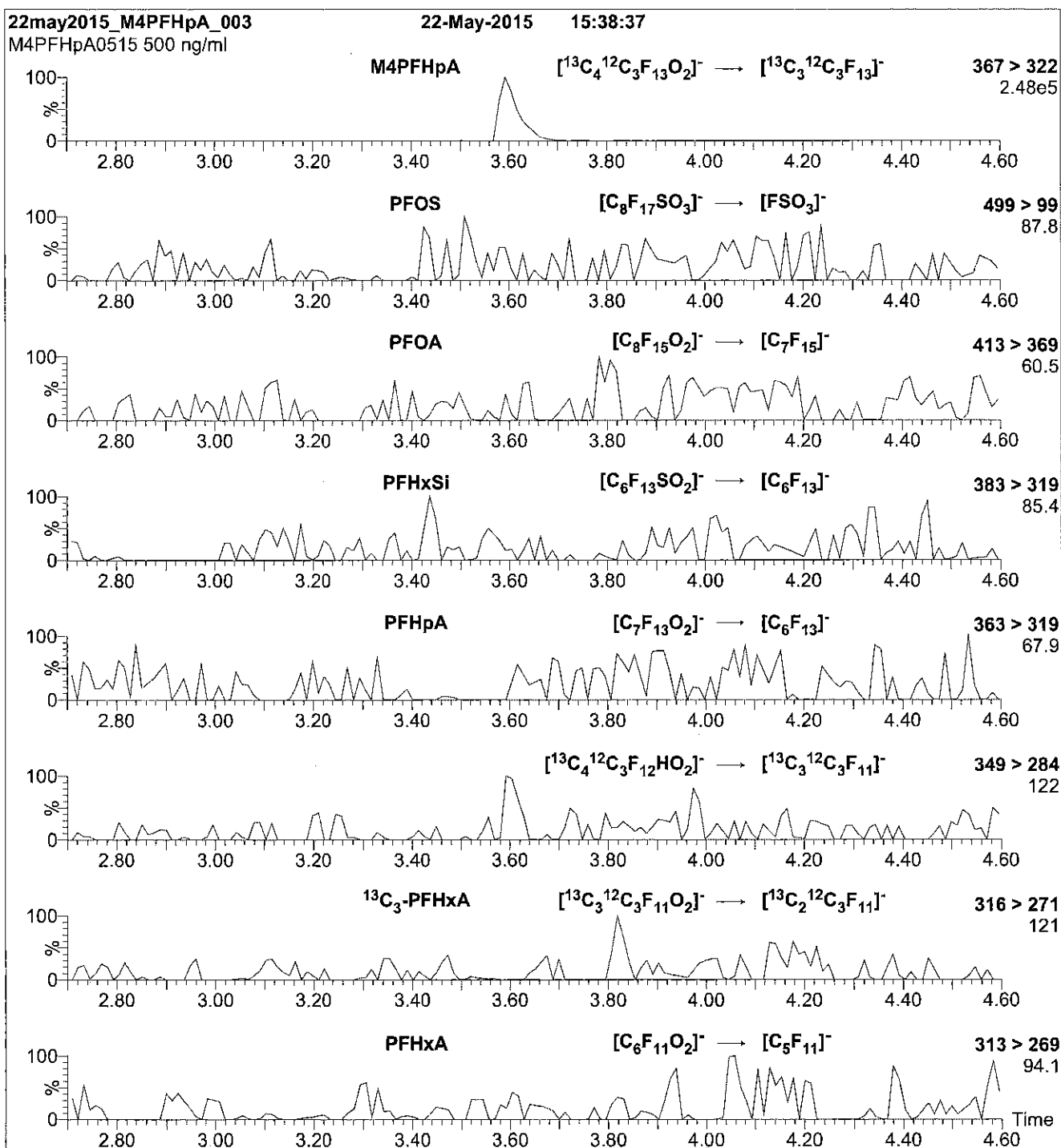
Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

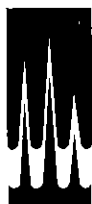
MS Parameters

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

Reagent

LCM5PFPEA_00004

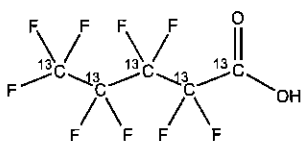
17 11/10/15 SRF



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA **LOT NUMBER:** M5PFPeA0515
COMPOUND: Perfluoro-n-[¹³C₅]pentanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₆HF₉O₂ **MOLECULAR WEIGHT:** 269.01
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(¹³C₅)
LAST TESTED: (mm/dd/yyyy) 05/22/2015
EXPIRY DATE: (mm/dd/yyyy) 05/22/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

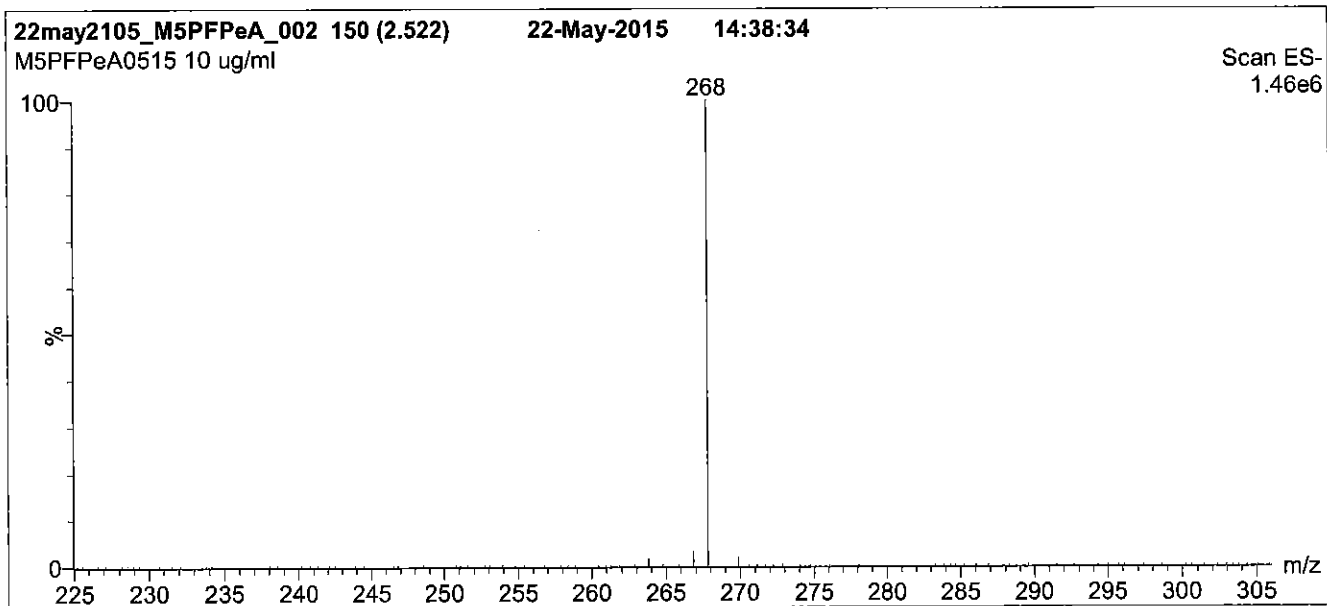
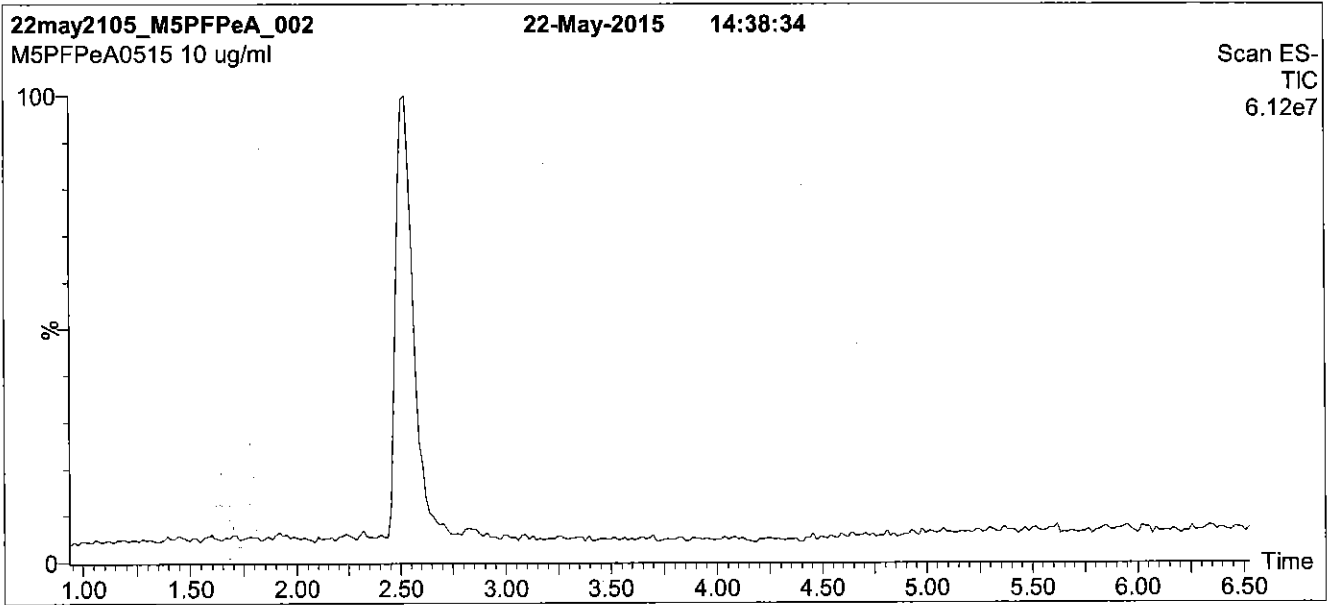
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

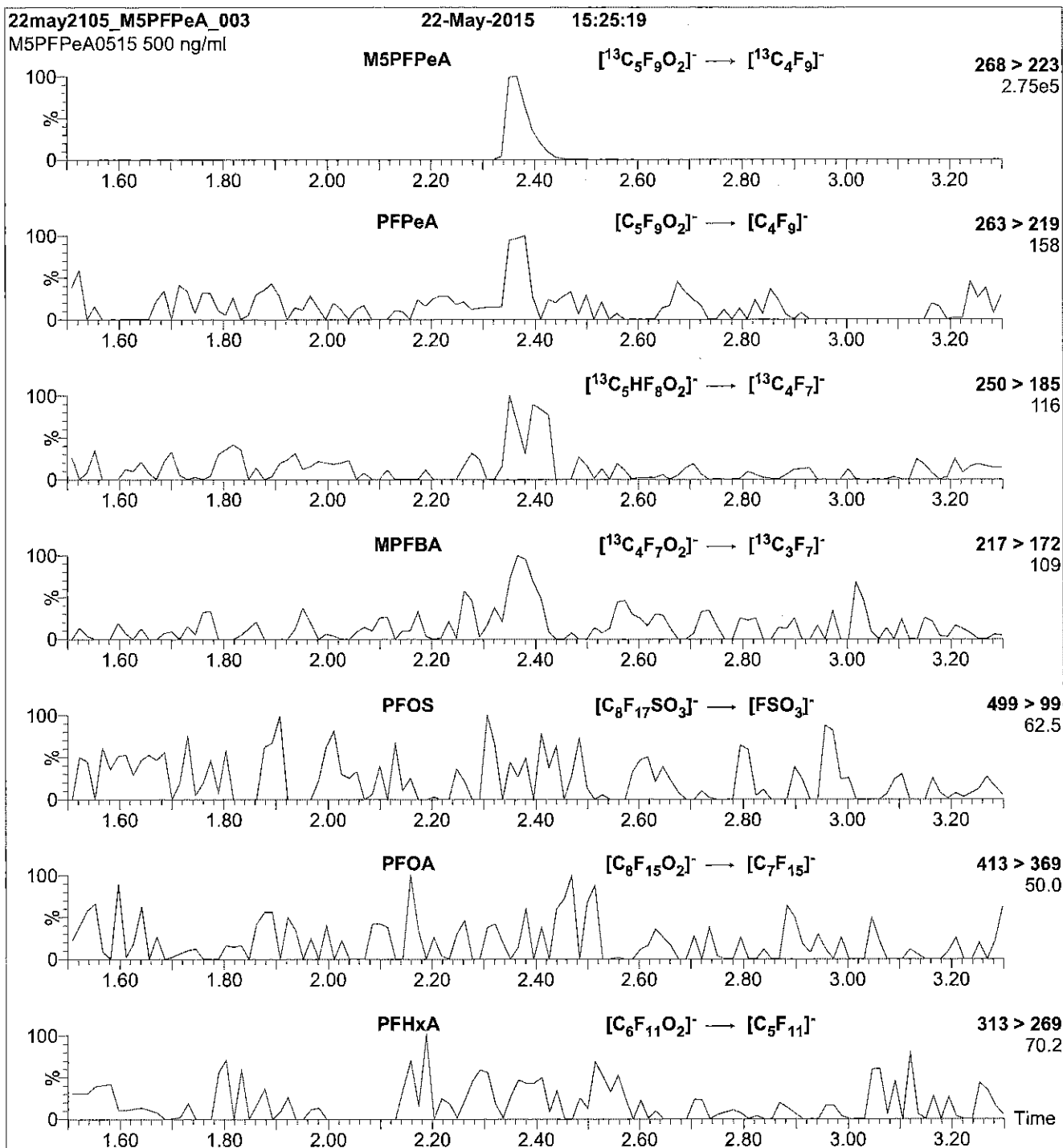
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCM8FOSA_00006

rec: 9/15/15 sv



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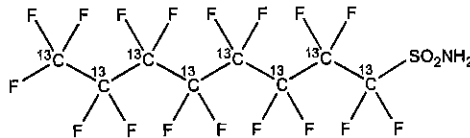
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[¹³C₈]octanesulfonamide

LOT NUMBER: M8FOSA1214I

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/15/2014
EXPIRY DATE: (mm/dd/yyyy) 12/15/2016
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 507.09
SOLVENT(S): Isopropanol
ISOTOPIC PURITY: ≥99% ¹³C
(¹³C₈)

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:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

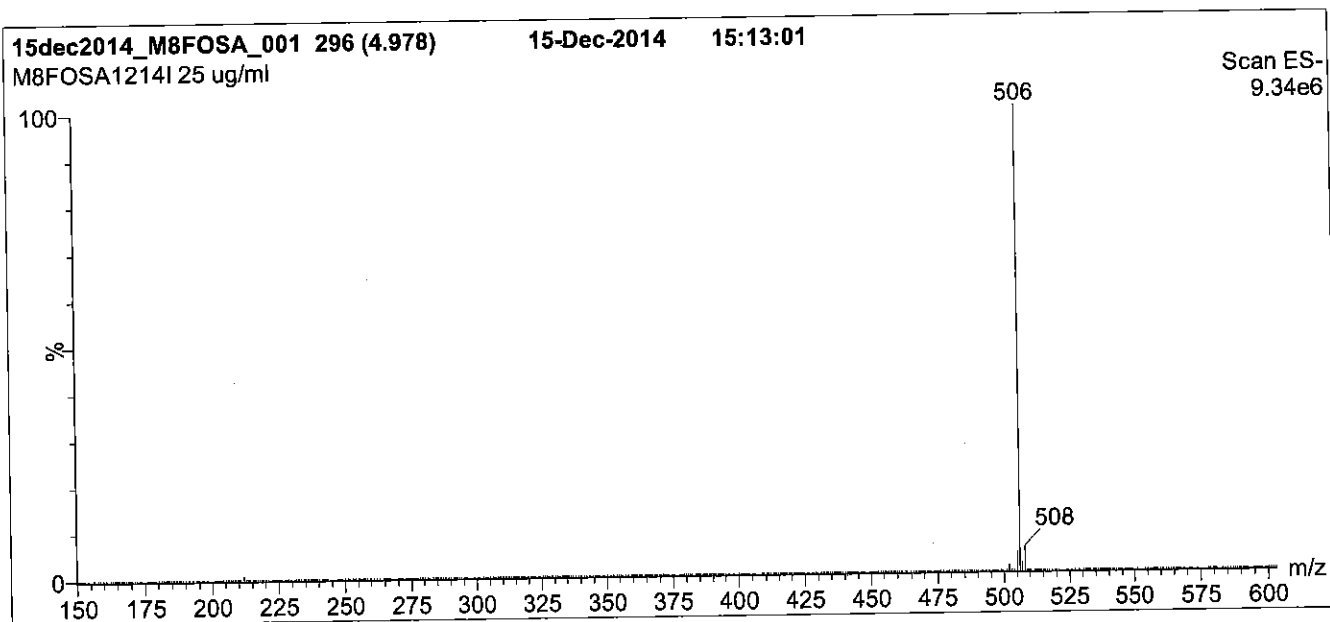
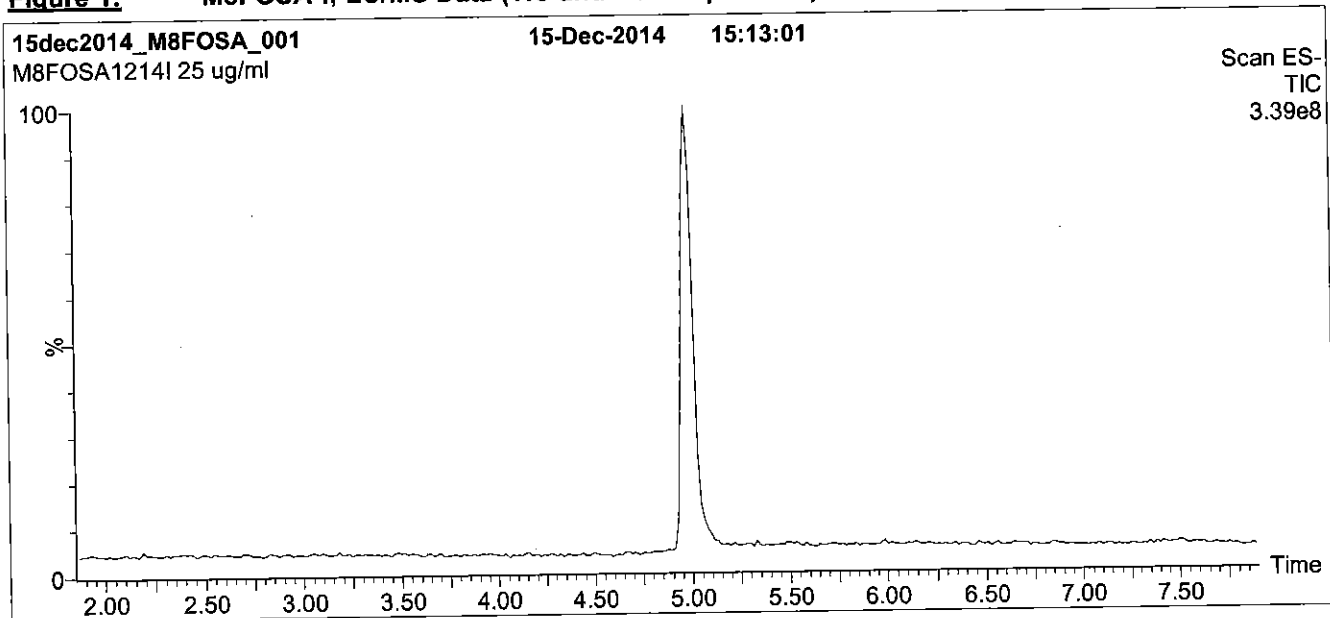
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

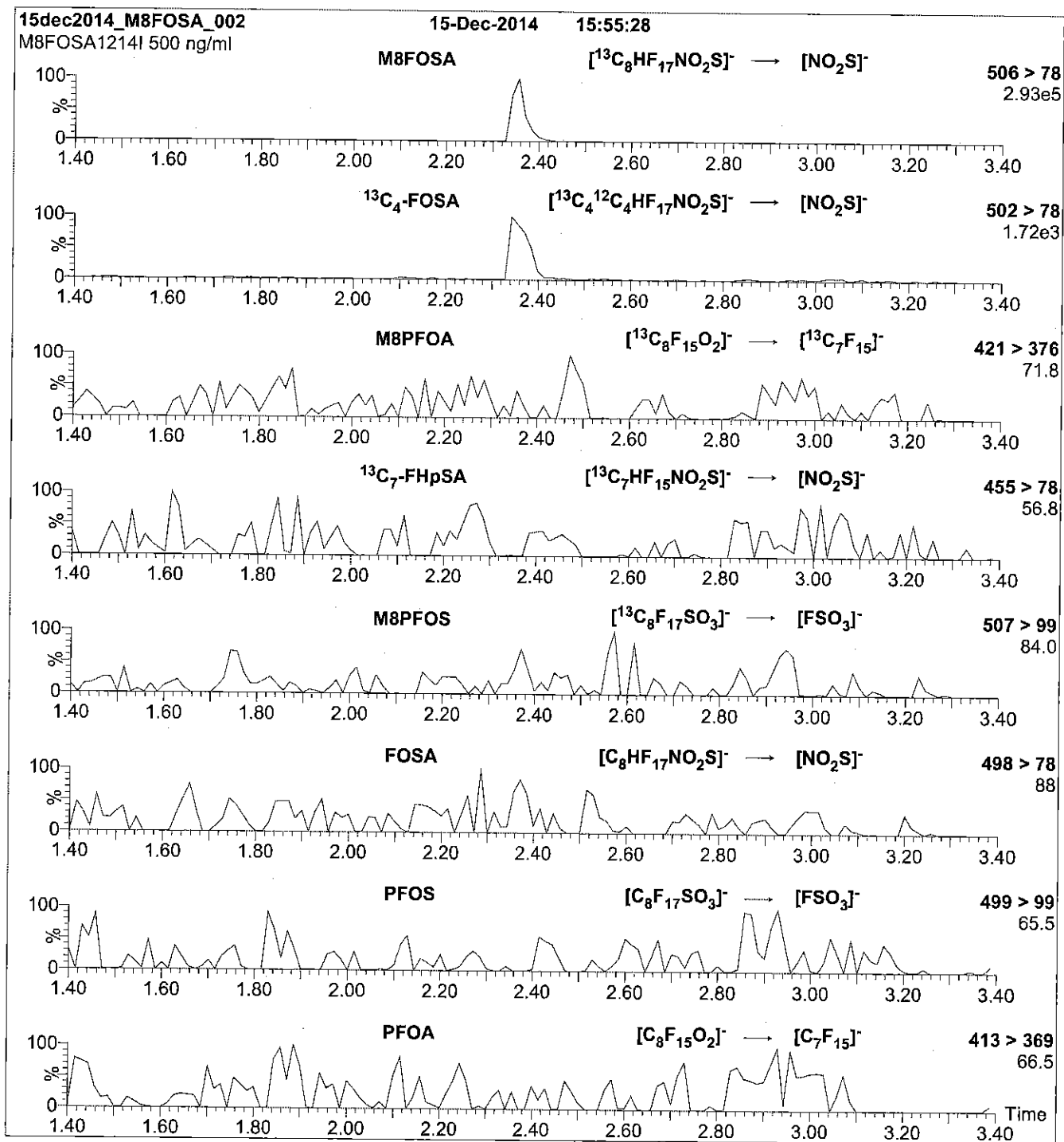
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00004

R: 12/15 SW



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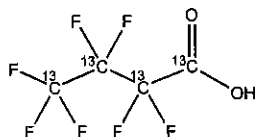
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFBA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid

LOT NUMBER: MPFBA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄HF₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 218.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/31/2014

ISOTOPIC PURITY: ≥99%¹³C
(1,2,3,4-¹³C₄)

EXPIRY DATE: (mm/dd/yyyy) 10/31/2019

RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 03/31/2015
(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.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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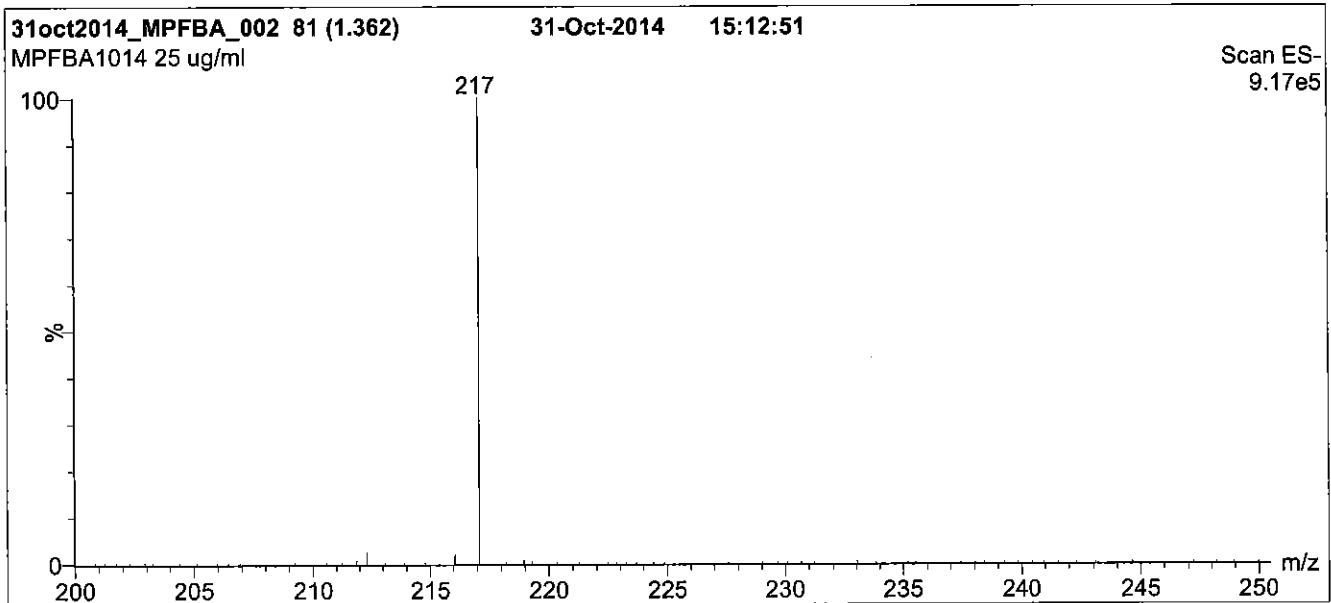
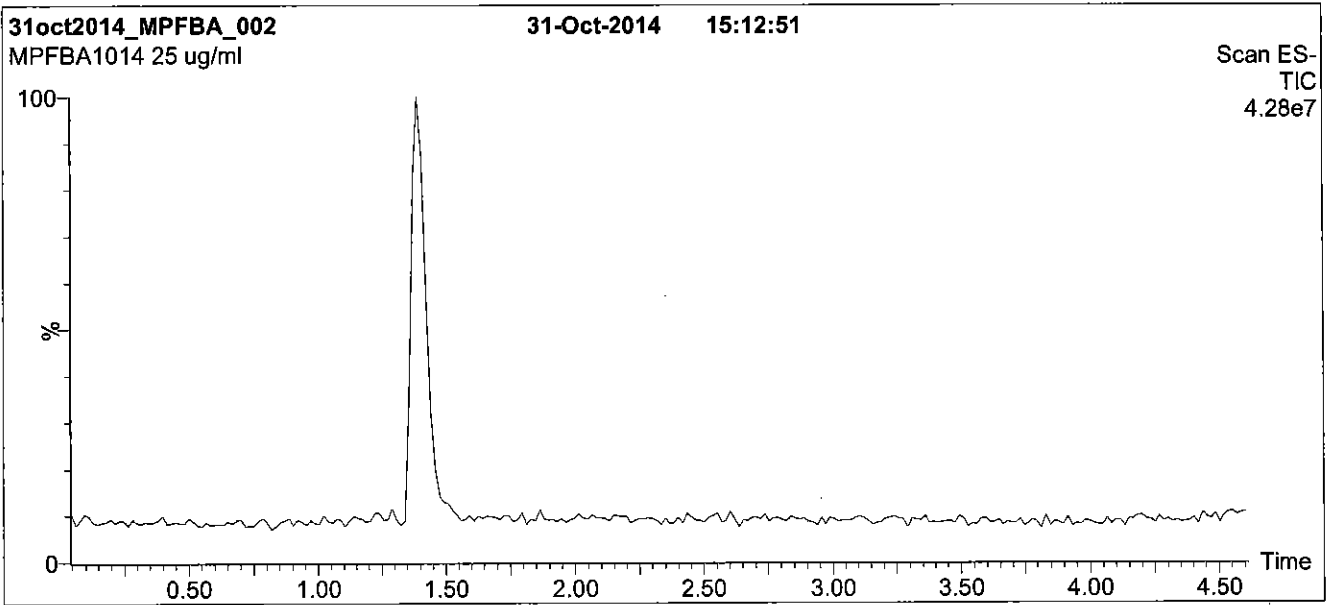
QUALITY MANAGEMENT:

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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

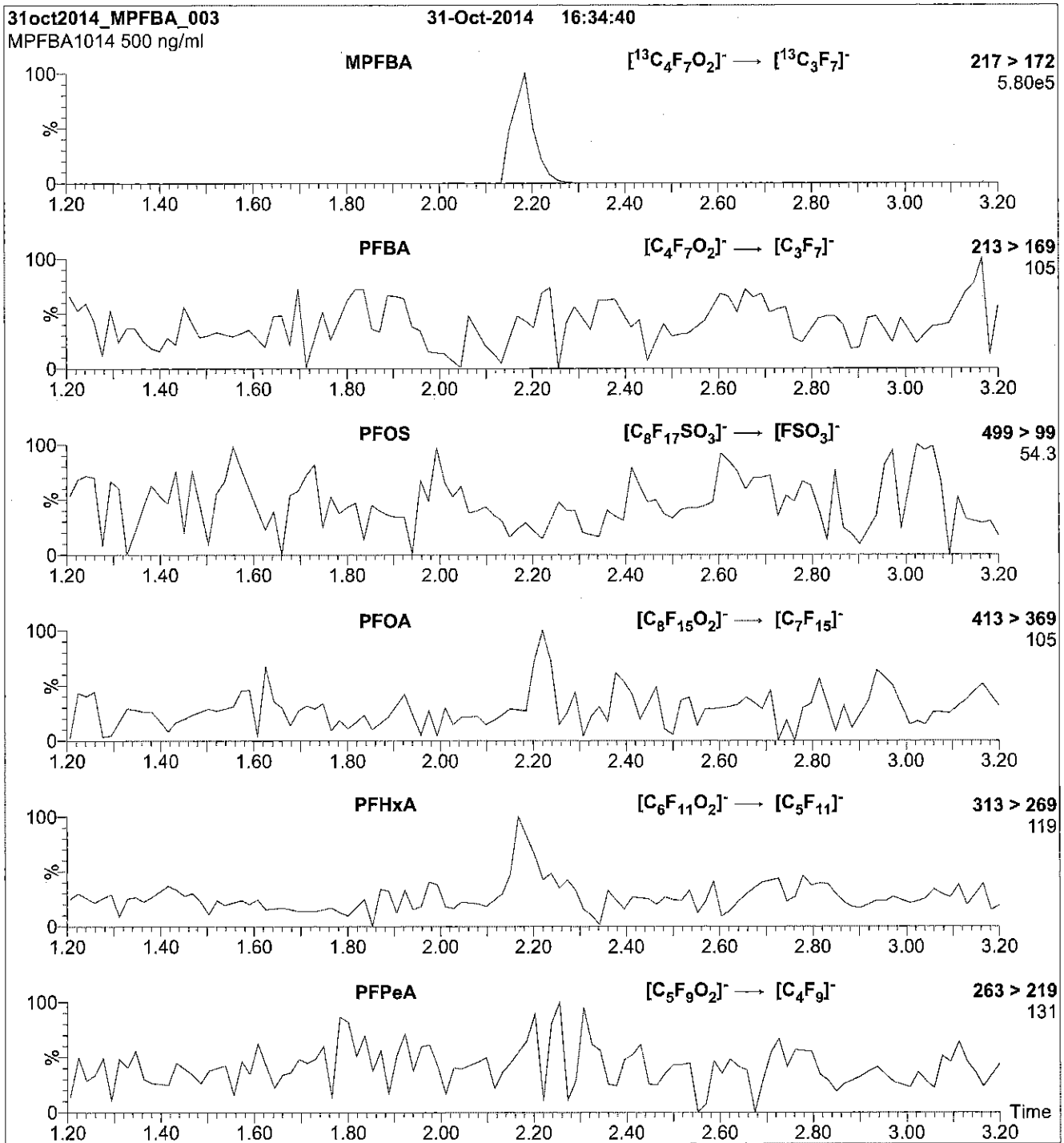
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCMPFDA_00004

R: 10-20-2011
2011
2011
2011



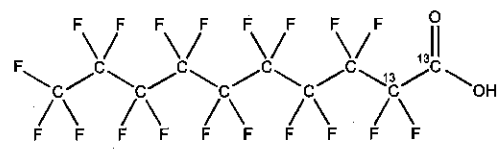
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

12LCMS0262
LCMPFDA-00001

PRODUCT CODE: MPFDA **LOT NUMBER:** MPFDA0411
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE: **CAS #** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₉O₂ **MOLECULAR WEIGHT:** 516.07
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 04/07/2011
EXPIRY DATE: (mm/dd/yyyy) 04/07/2014
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

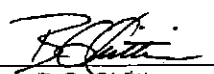
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 04/19/2011
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

Form#: 27, Issued 2004-11-10
Revision#: 1, Revised 2010-07-26

MPFDA0411 (1 of 4)
rev0

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

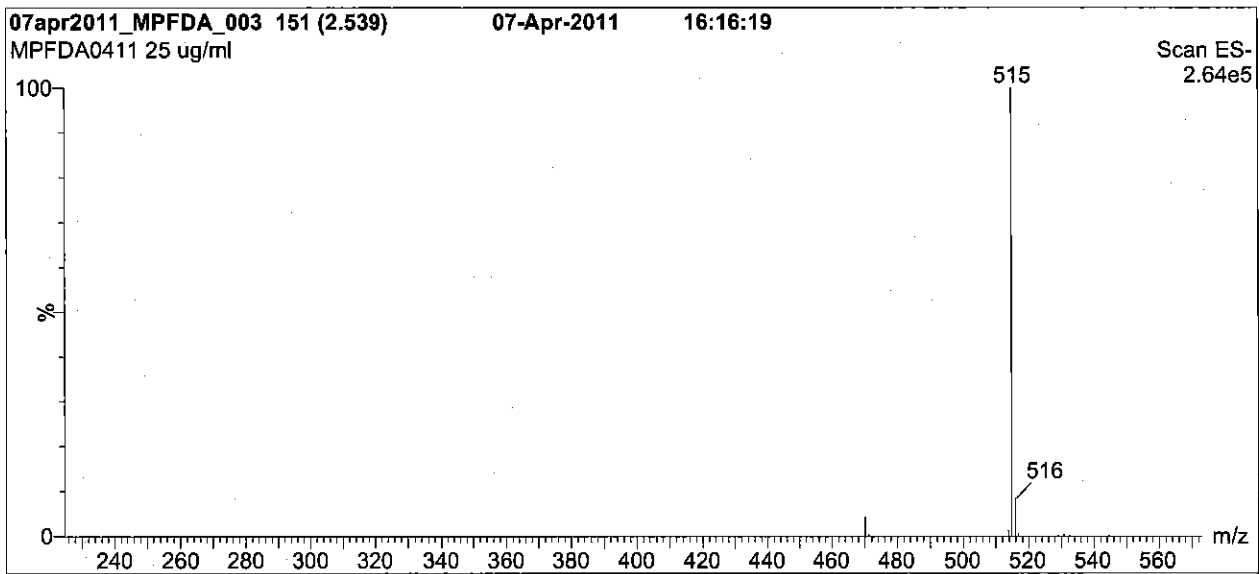
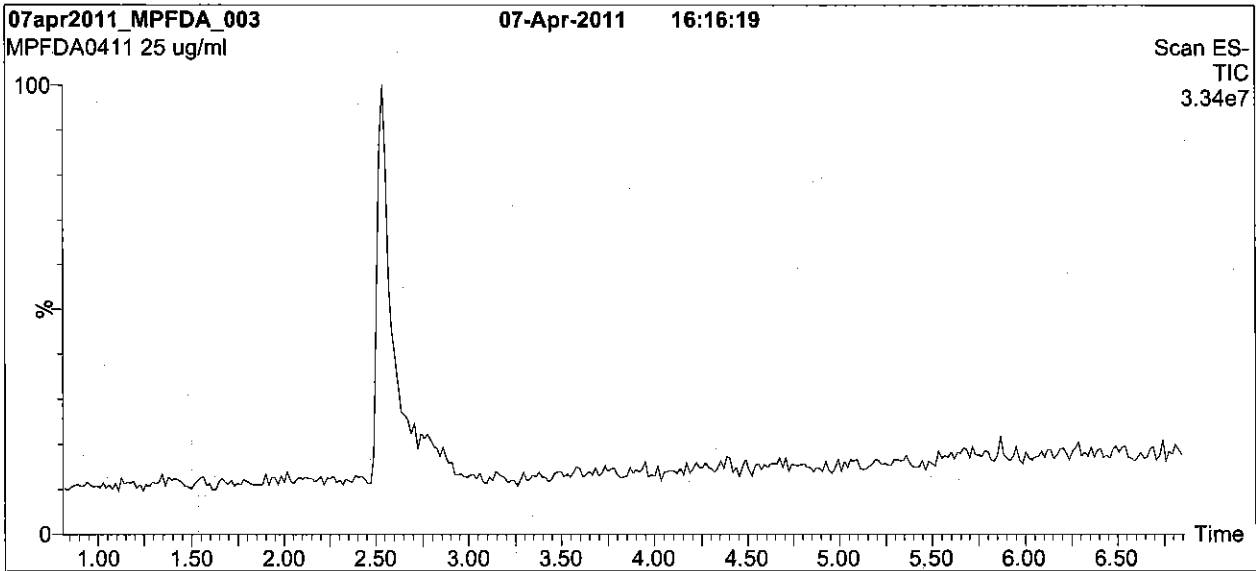
Ongoing stability studies of this product have demonstrated stability in its composition and concentration for the period of time specified by the expiry date in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

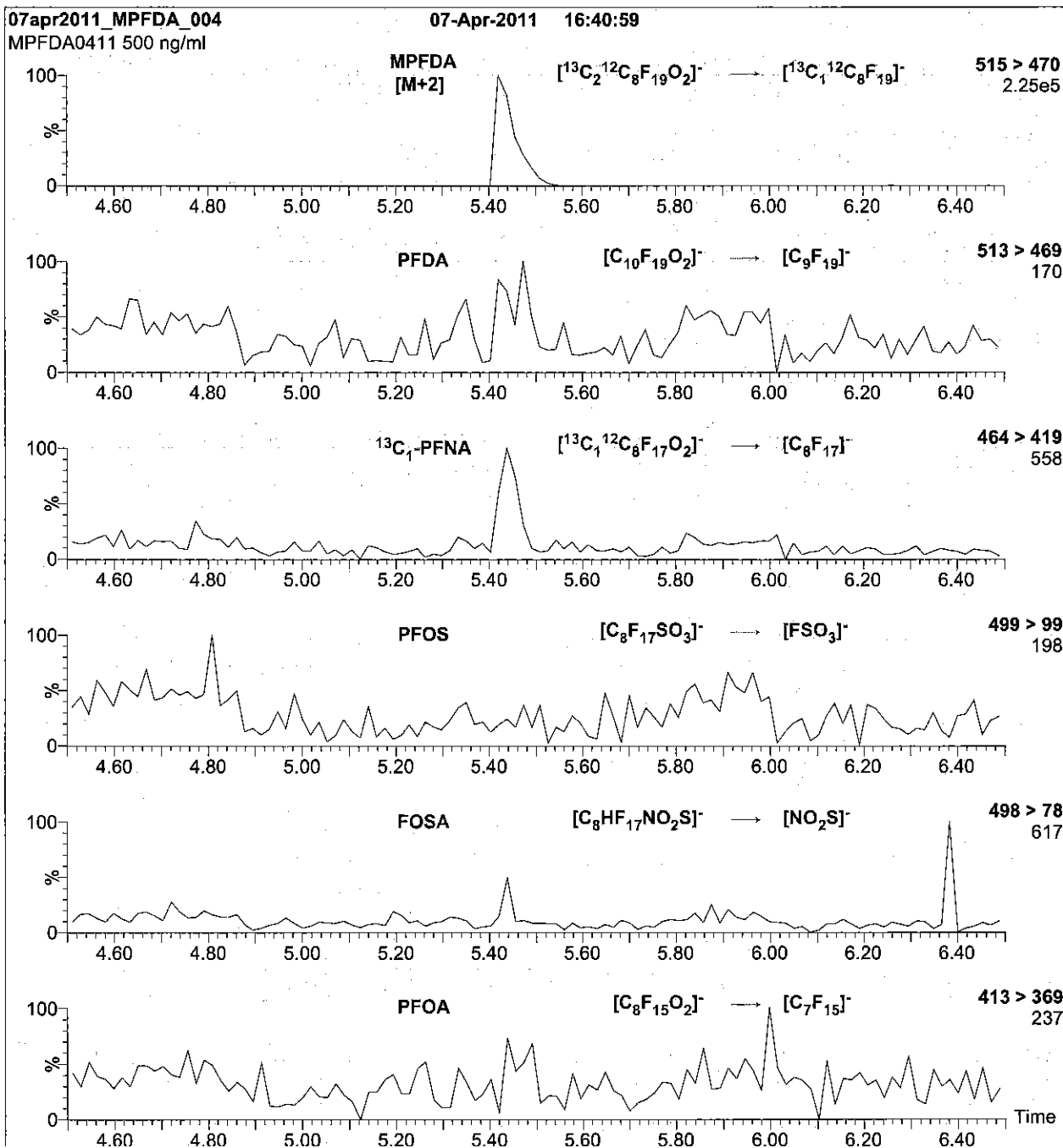
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)

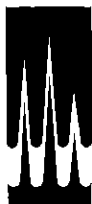
Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

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

Reagent

LCMPFDA_00005



WELLINGTON LABORATORIES

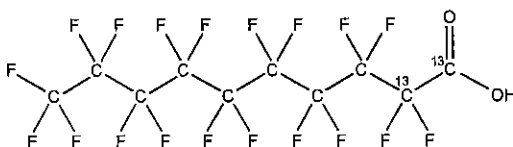
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

LOT NUMBER: MPFDA0414

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 516.07
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/13/2014
EXPIRY DATE: (mm/dd/yyyy) 04/13/2019

ISOTOPIC PURITY: ≥99% ¹³C
 (1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

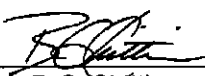
DOCUMENTATION/ DATA ATTACHED:

- 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 ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim

Date: 04/15/2014
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

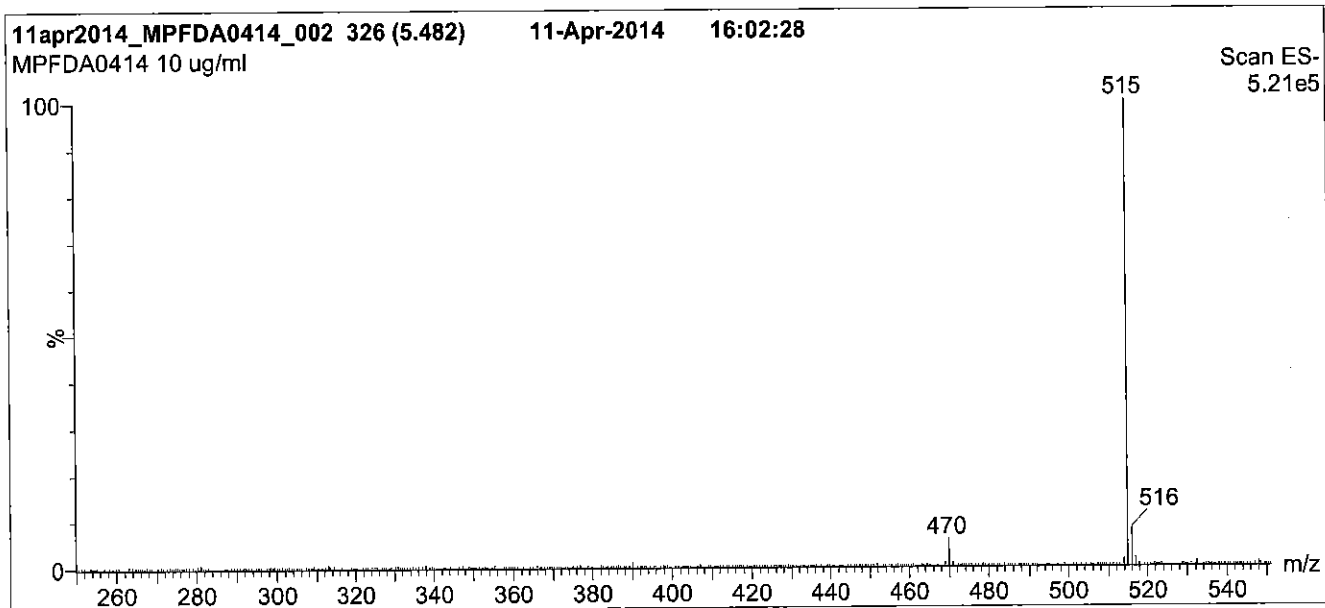
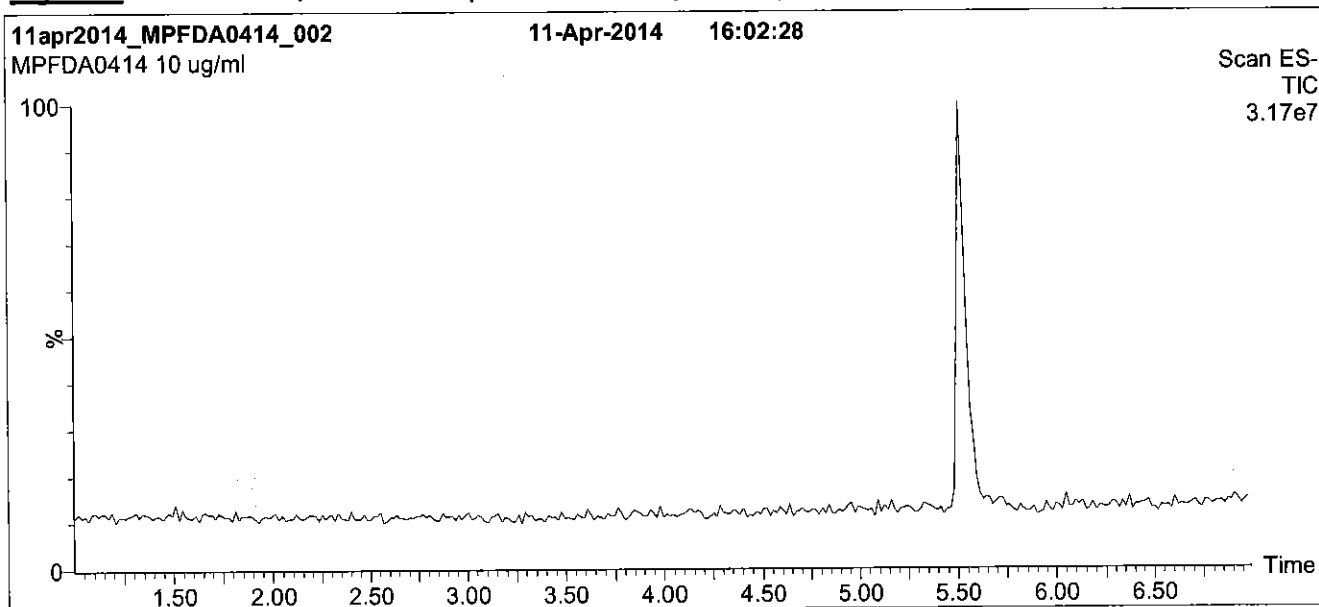
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

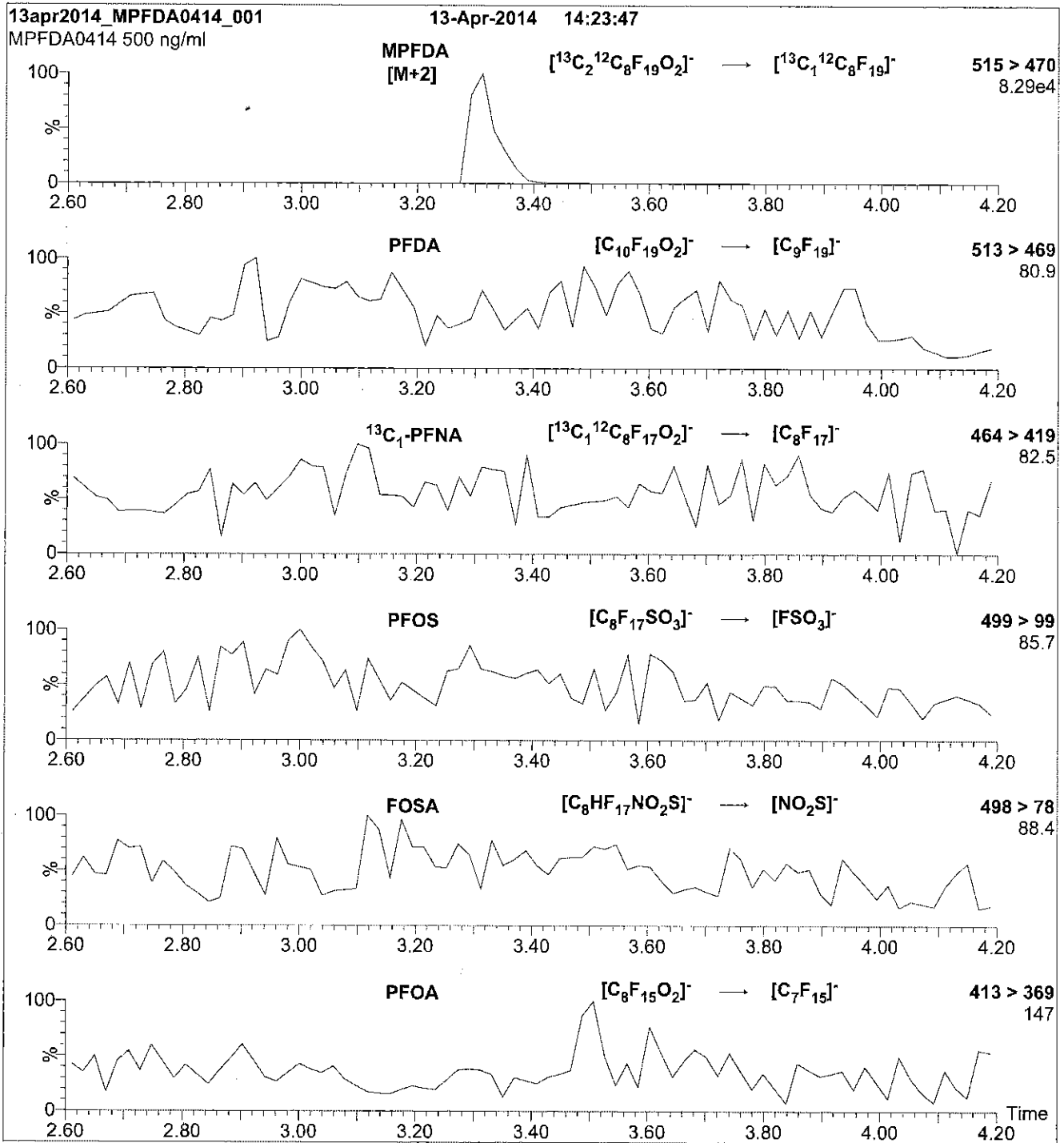
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

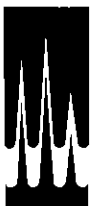
MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFD_oA_00003

P, 2/11/15 SKV

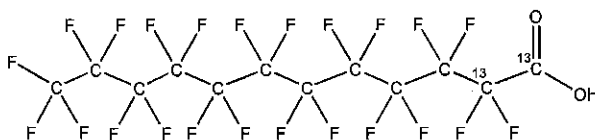


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA **LOT NUMBER:** MPFDoA0714
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂ **MOLECULAR WEIGHT:** 616.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 07/17/2014
EXPIRY DATE: (mm/dd/yyyy) 07/17/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 07/21/2014
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

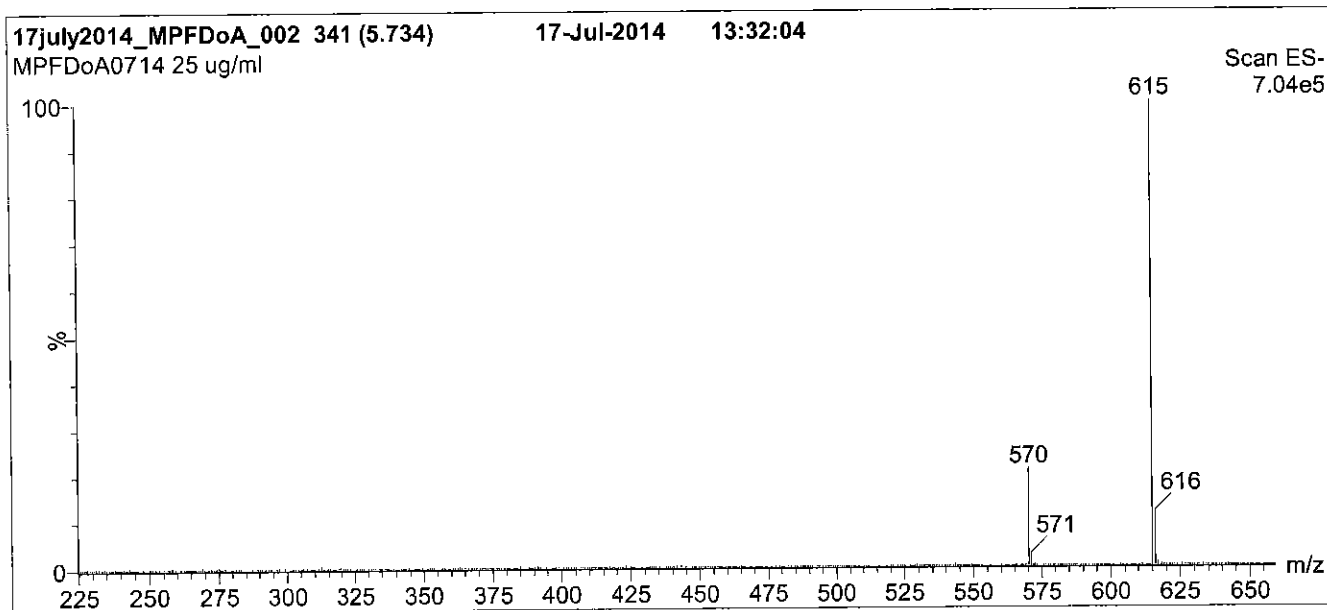
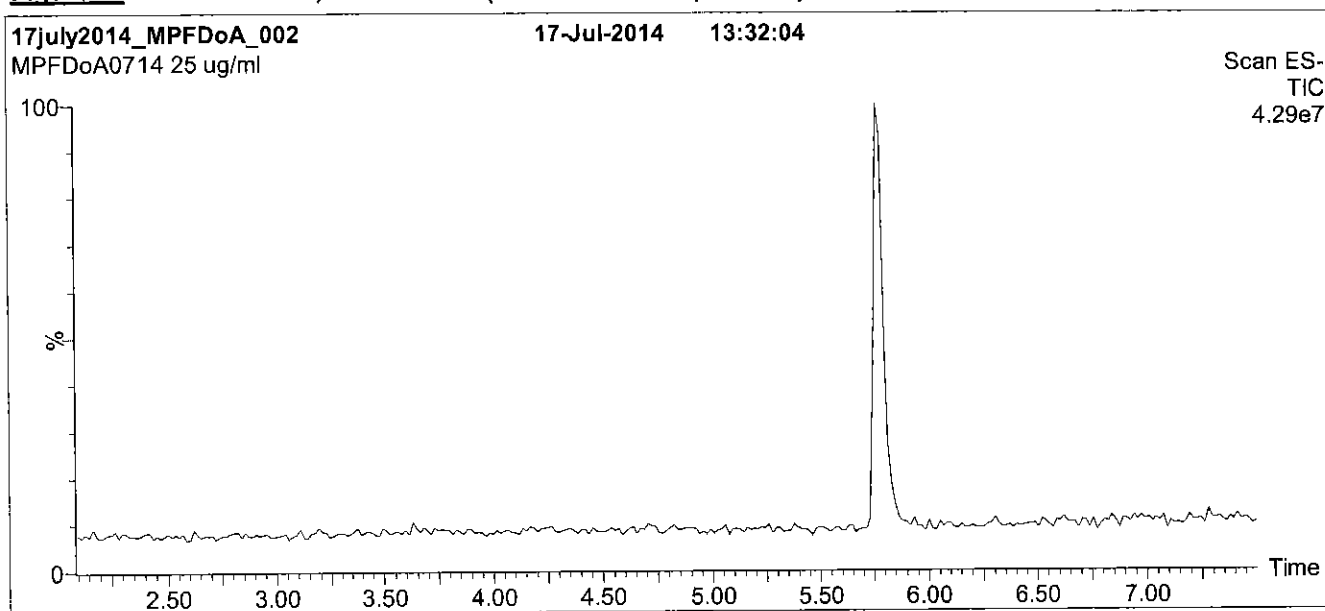
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

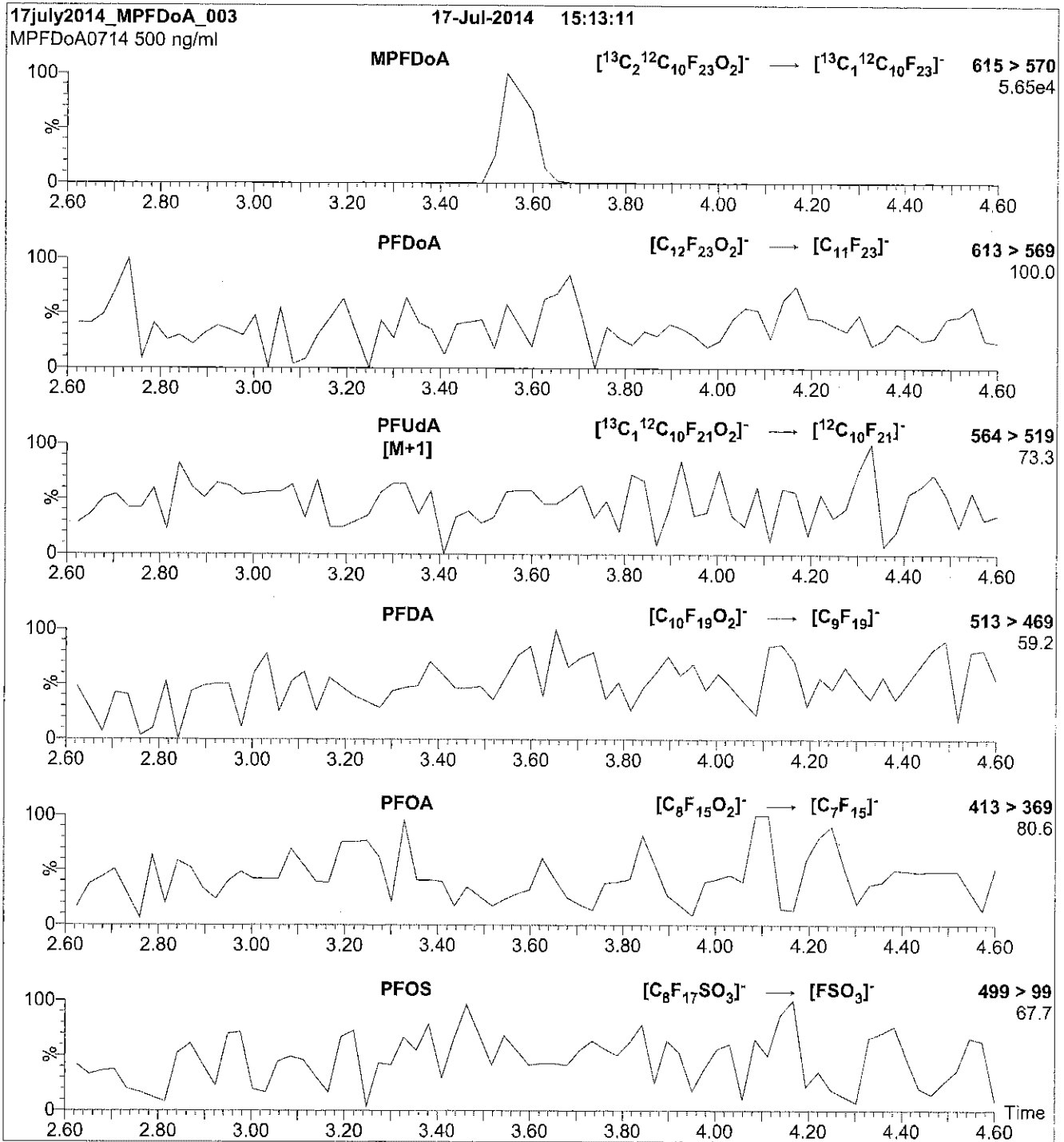
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCMPFD_oA_00004

V: 14/10/15 SKW

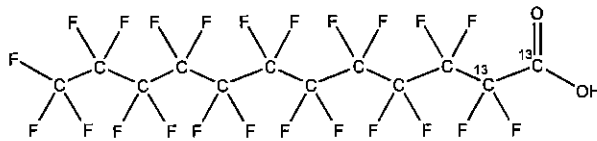


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA LOT NUMBER: MPFDoA0714
COMPOUND: Perfluoro-n-[1,2-13C2]dodecanoic acid

STRUCTURE: CAS #: Not available



MOLECULAR FORMULA: 13C2 12C10 HF23 O2 MOLECULAR WEIGHT: 616.08
CONCENTRATION: 50 +/- 2.5 ug/ml SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98% ISOTOPIC PURITY: >=99% 13C
(1,2-13C2)
LAST TESTED: 07/17/2014
EXPIRY DATE: 07/17/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim Date: 04/01/2015

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:

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

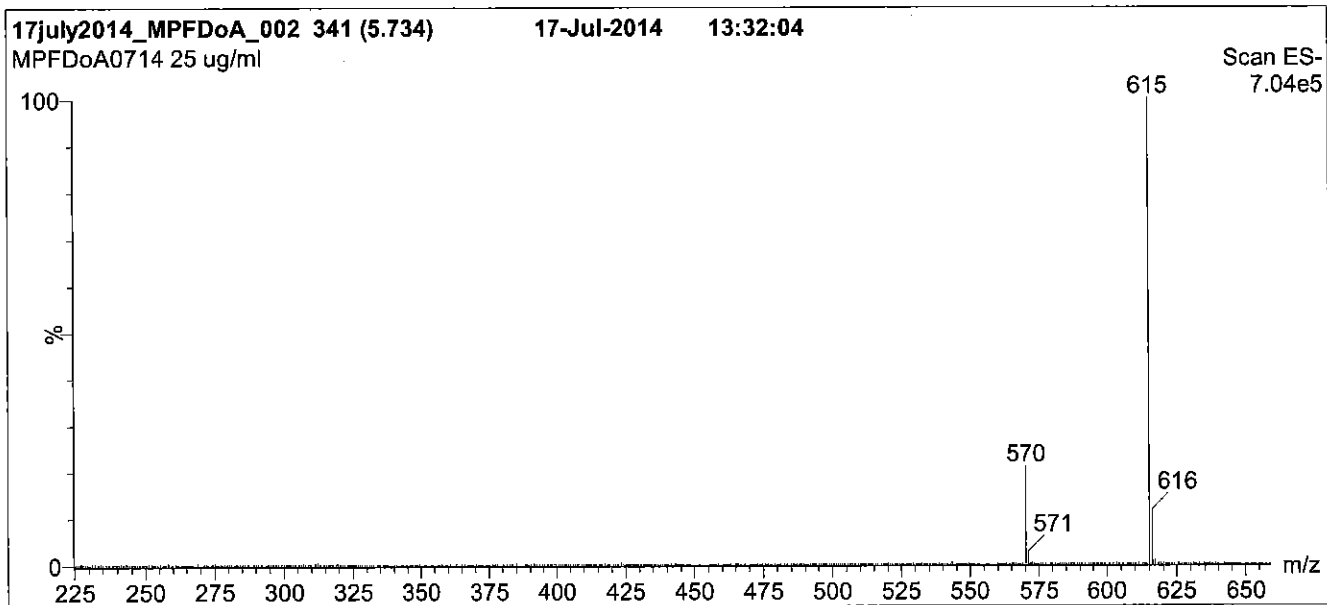
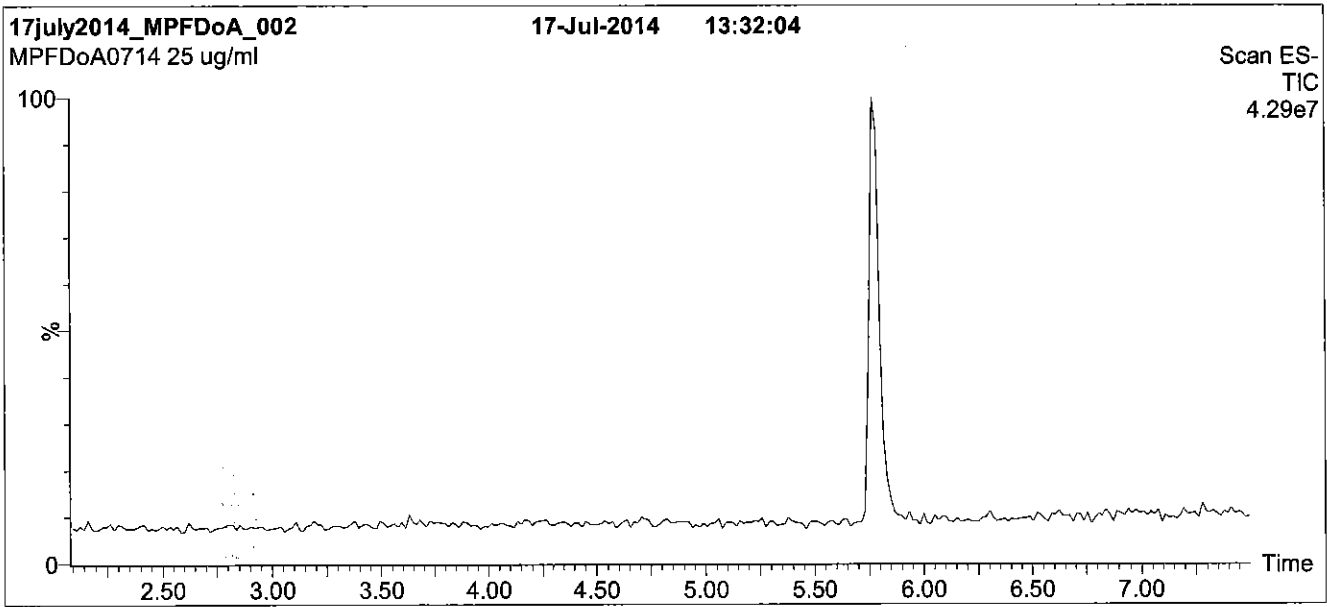
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

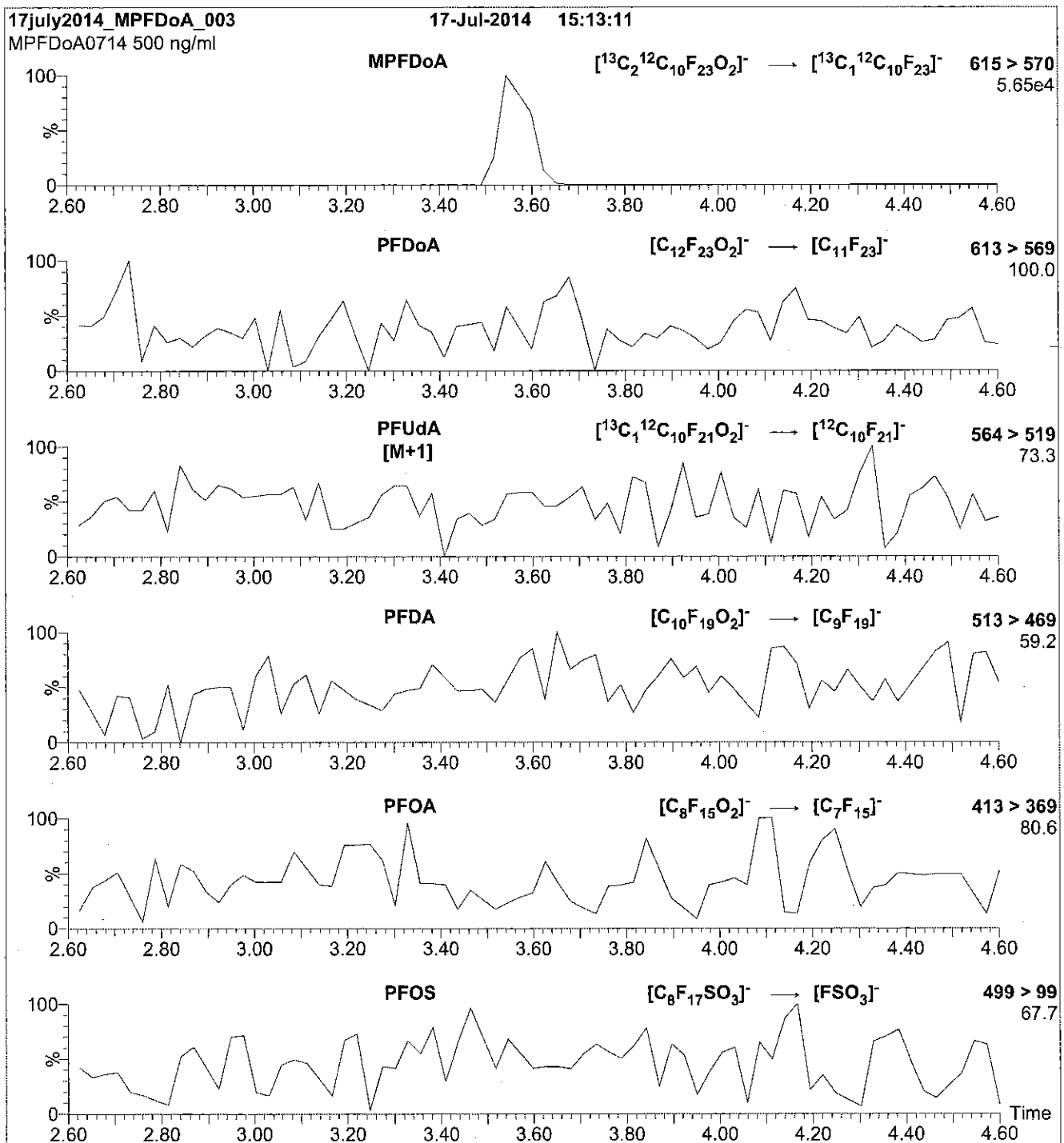
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

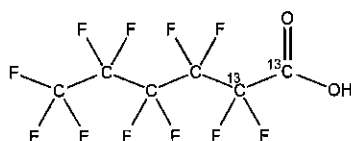
LCMPFHxA_00006



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid
LOT NUMBER: MPFHxA0414
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99%¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 04/13/2014
EXPIRY DATE: (mm/dd/yyyy) 04/13/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim

Date: 04/15/2014

(mm/dd/yyyy)

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

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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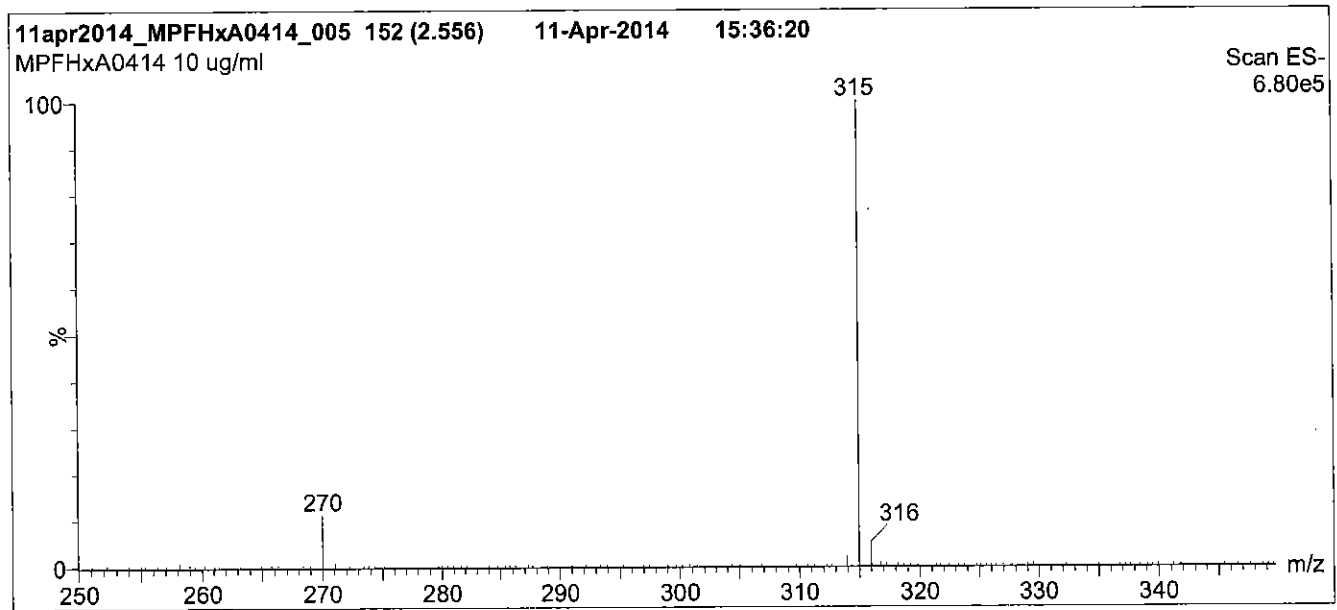
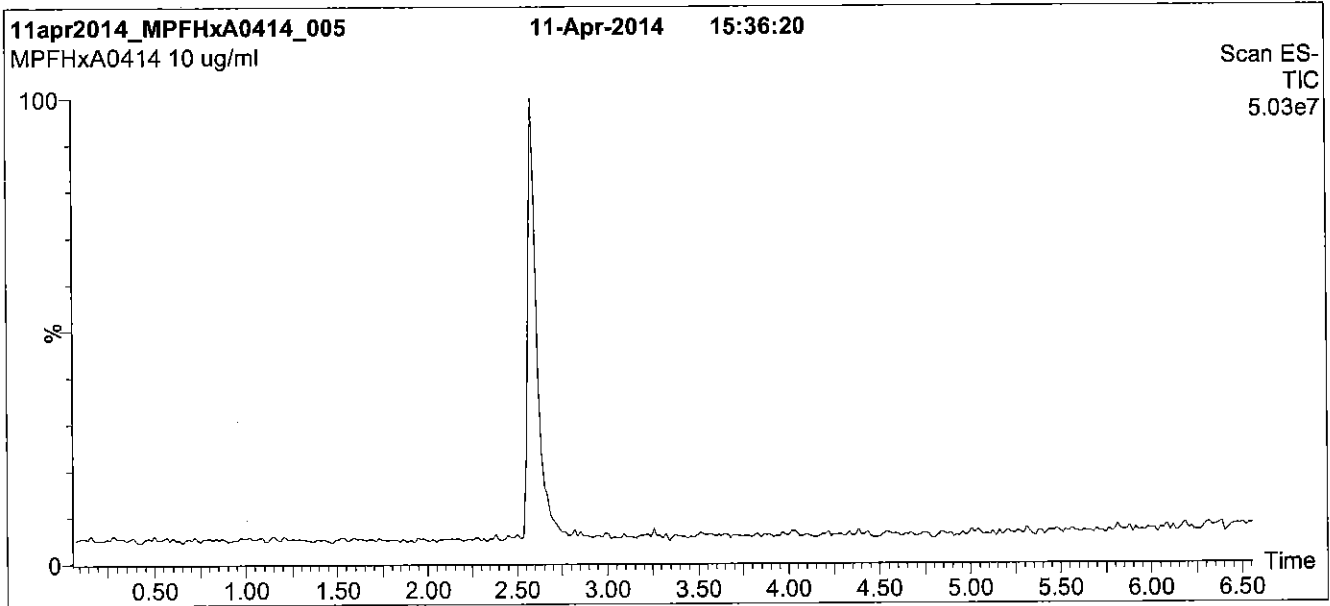
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

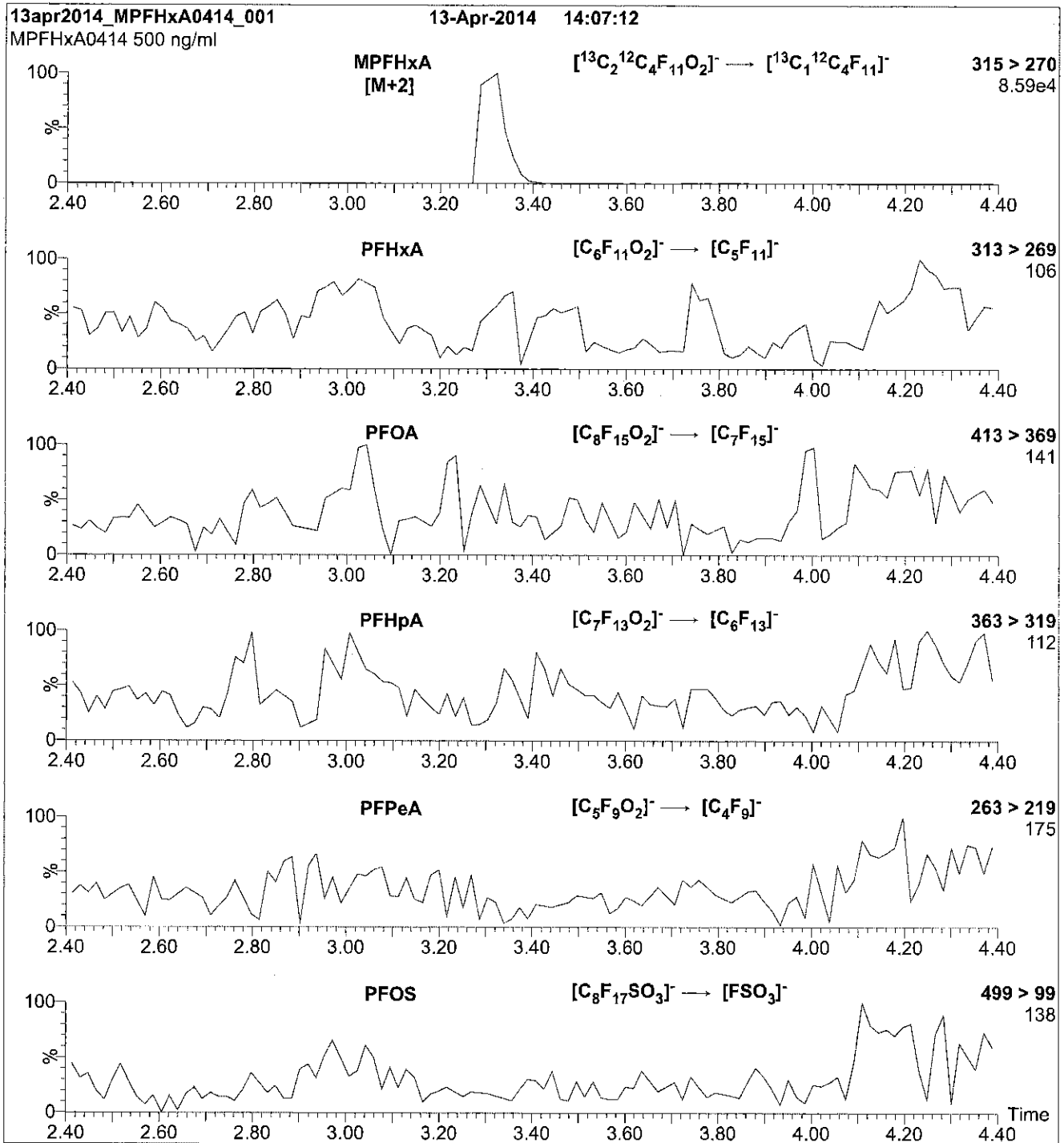
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFHXS_00004

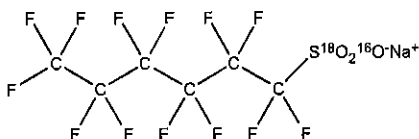


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS **LOT NUMBER:** MPFHxS0713
COMPOUND: Sodium perfluoro-1-hexane^[18O₂]sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₆F₁₃S¹⁸O₂¹⁶O⁻Na⁺ **MOLECULAR WEIGHT:** 426.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.3 ± 2.4 µg/ml (MPFHxS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** >94% (¹⁸O₂)
LAST TESTED: (mm/dd/yyyy) 07/25/2013
EXPIRY DATE: (mm/dd/yyyy) 07/25/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS (C₆F₁₃S¹⁸O₂¹⁶O⁻) has been observed to be up to 10% lower than for PFHxS (C₆F₁₃S¹⁶O₃⁻) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material (¹⁸O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim

Date: 03/30/2015
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

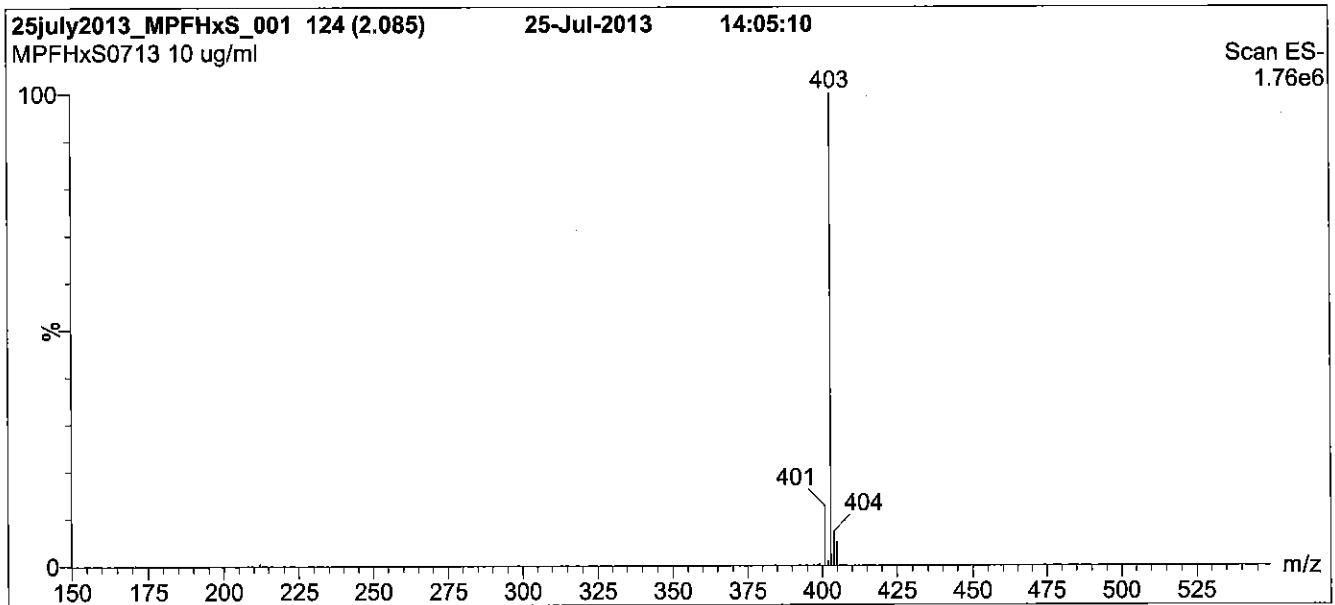
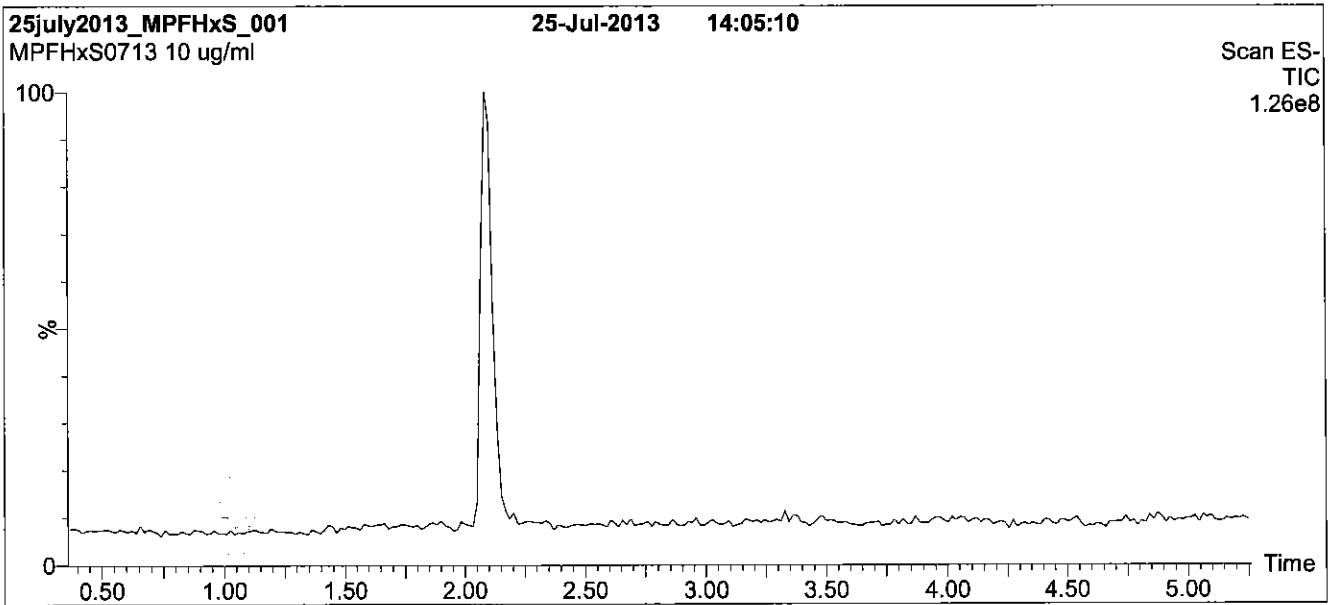
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

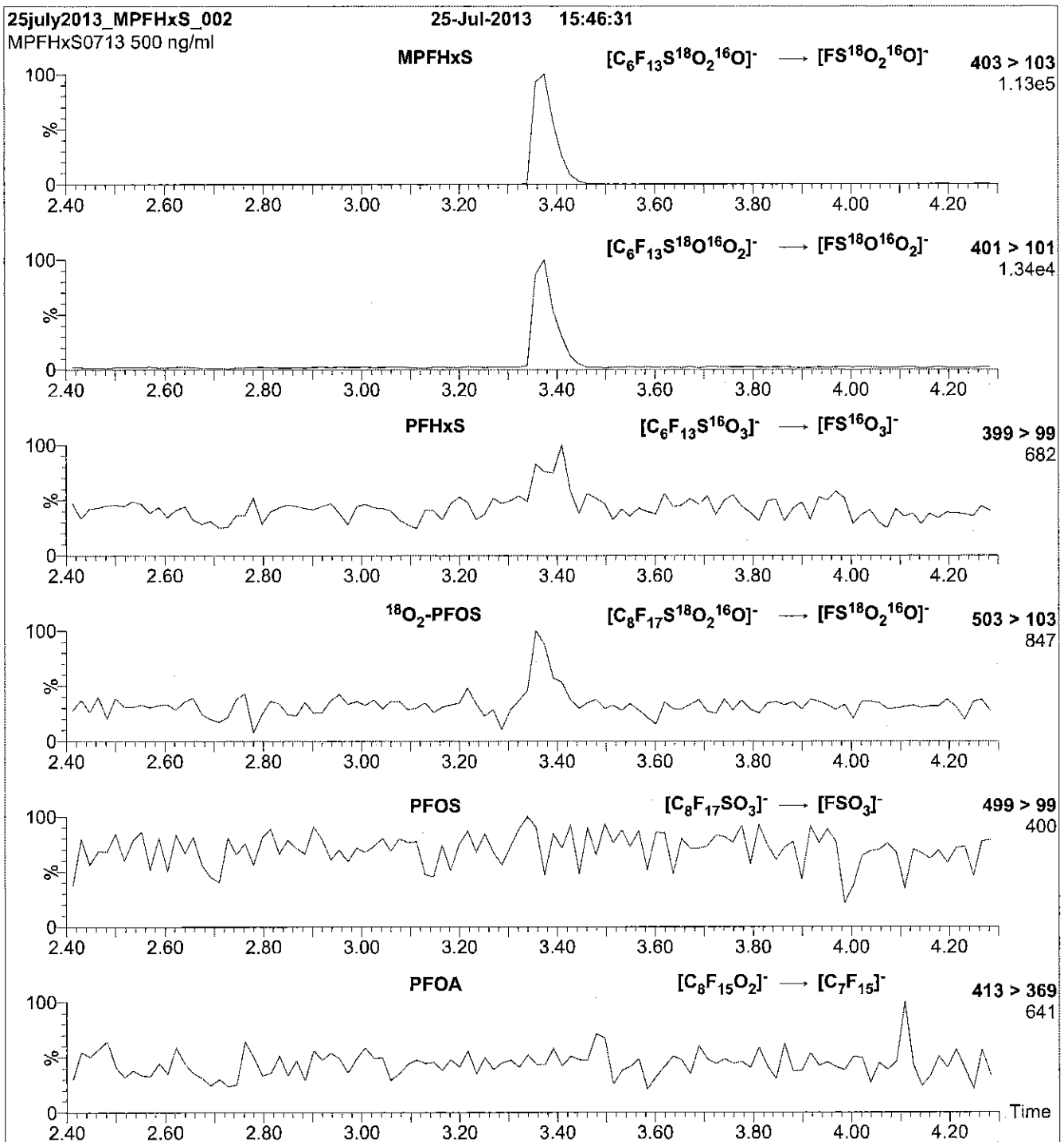
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 30

Reagent

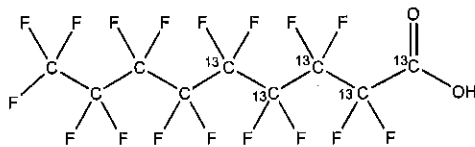
LCMPFNA_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFNA **LOT NUMBER:** MPFNA0414
COMPOUND: Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}\text{C}_5^{12}\text{C}_4\text{HF}_{17}\text{O}_2$ **MOLECULAR WEIGHT:** 469.04
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** $\geq 99\%^{13}\text{C}$
LAST TESTED: (mm/dd/yyyy) 04/13/2014 (1,2,3,4,5-¹³C₅)
EXPIRY DATE: (mm/dd/yyyy) 04/13/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/13/2014
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

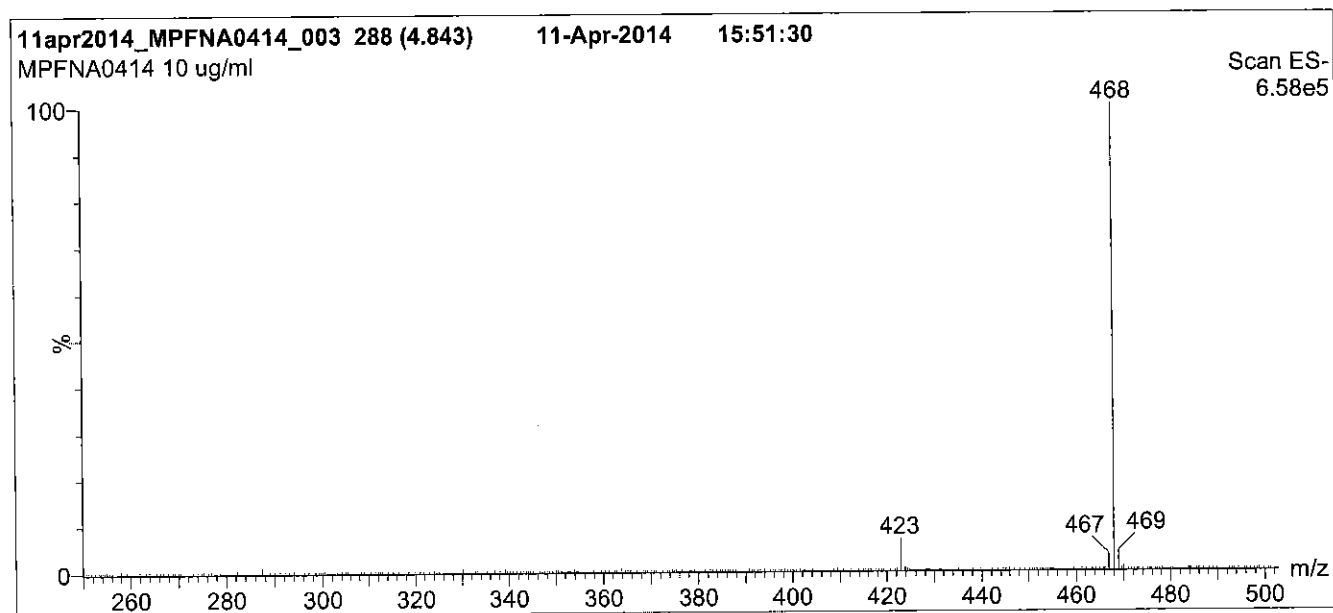
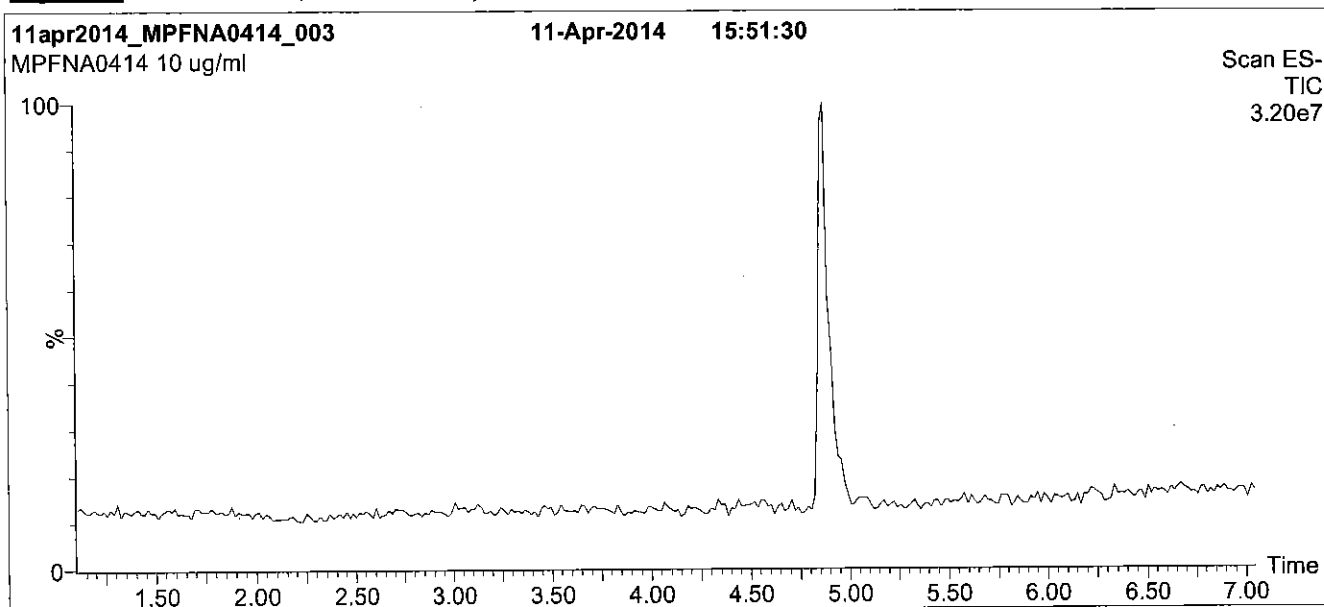
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

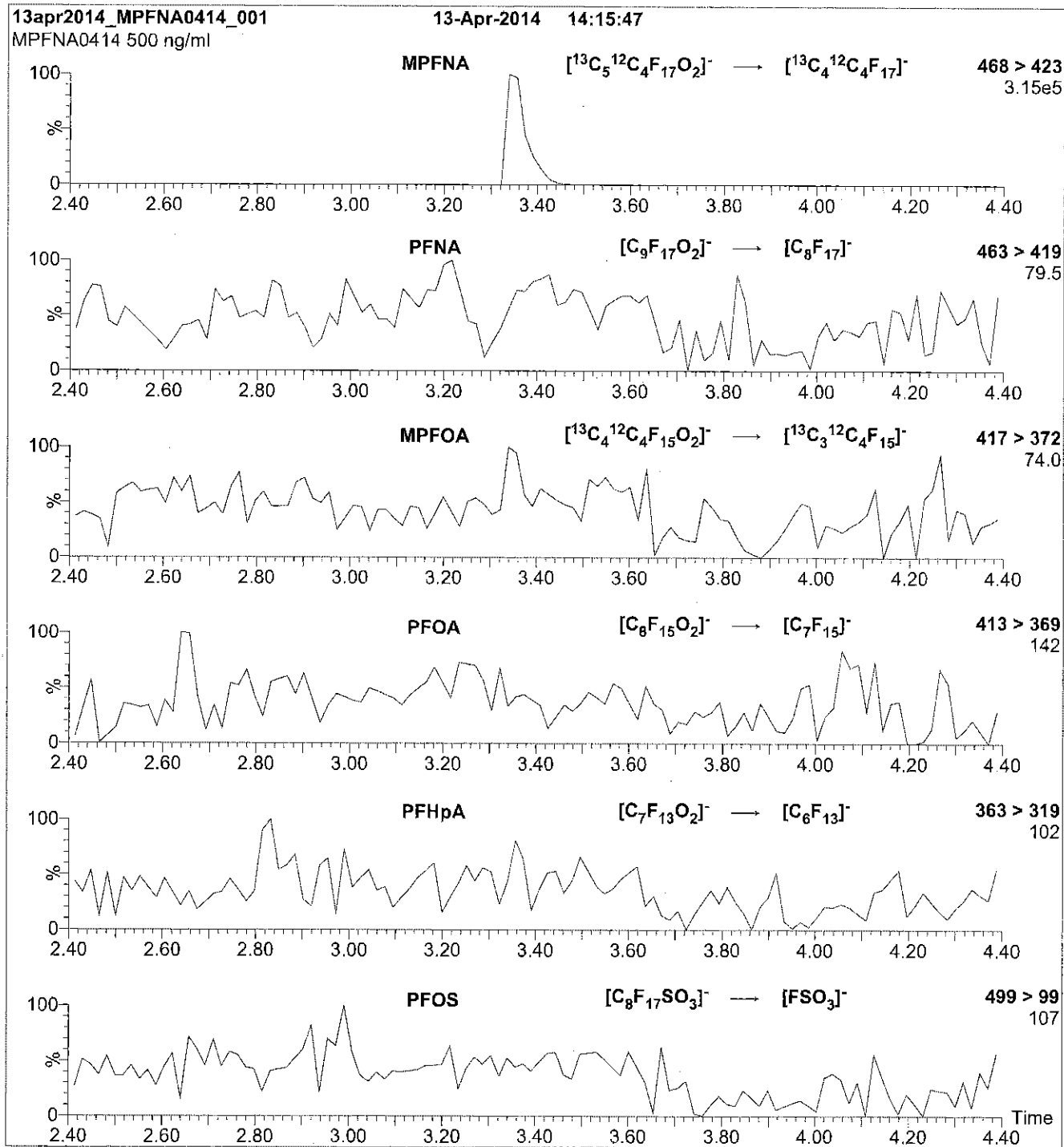
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCMPFOA_00007

r: 9/15/15 SV



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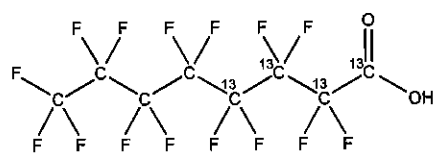
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]octanoic acid

LOT NUMBER: MPFOA0415

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄HF₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/10/2015
EXPIRY DATE: (mm/dd/yyyy) 04/10/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4-¹³C₄)

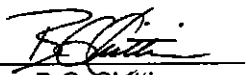
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

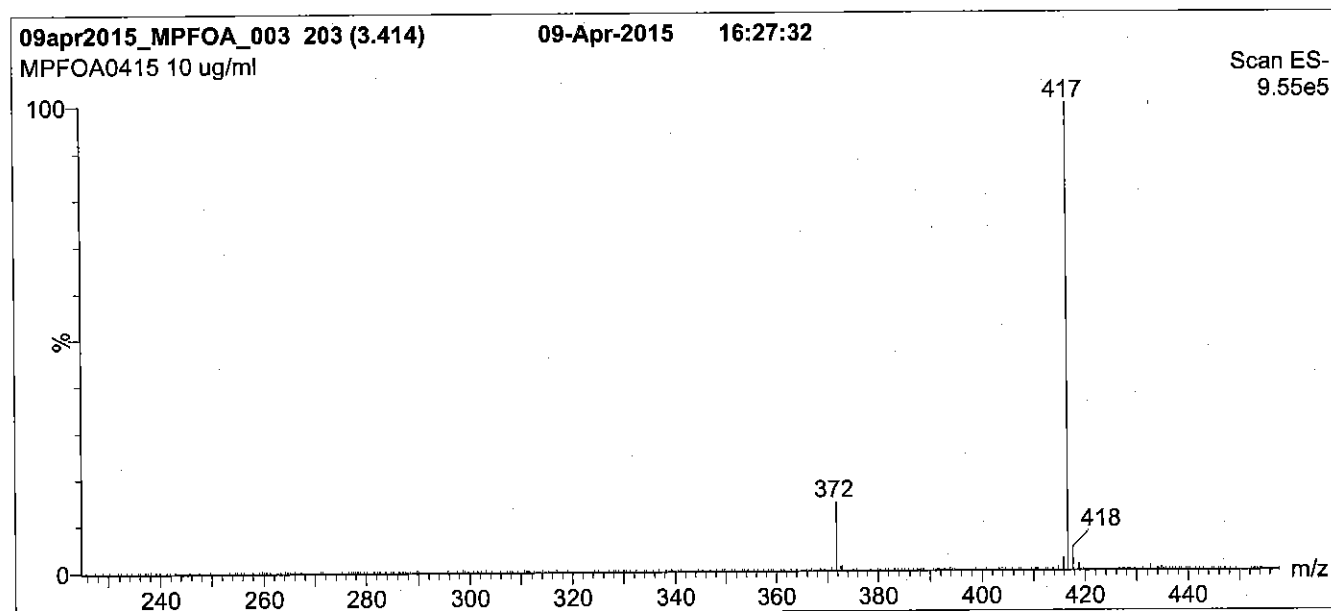
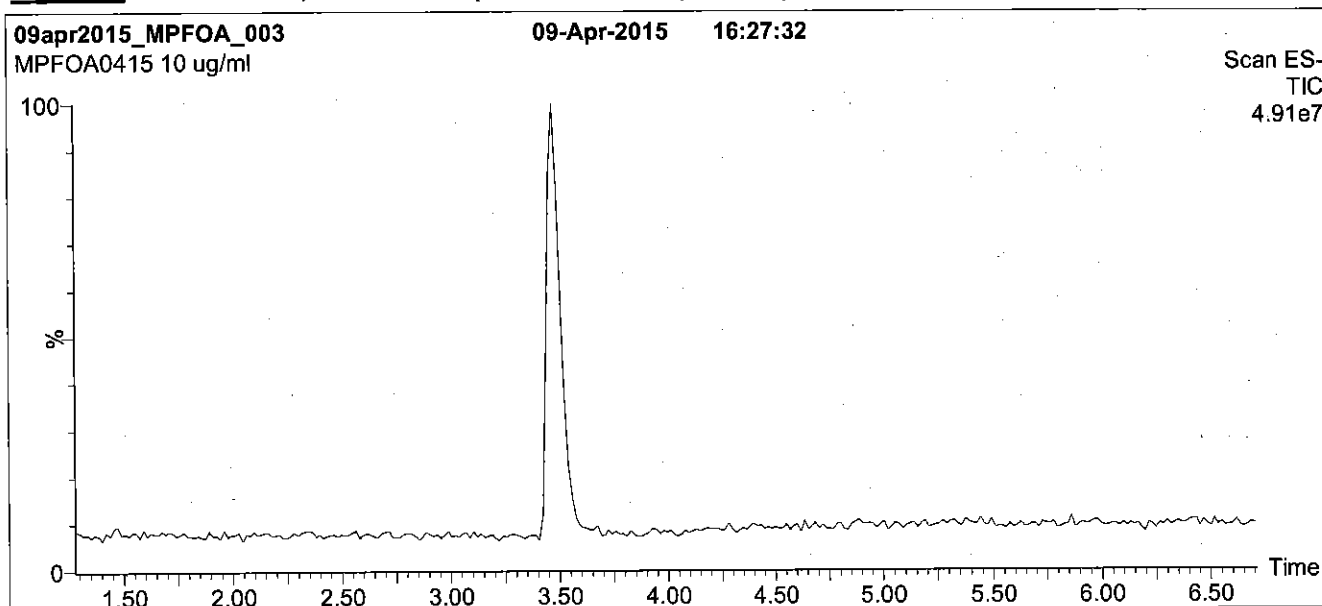
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

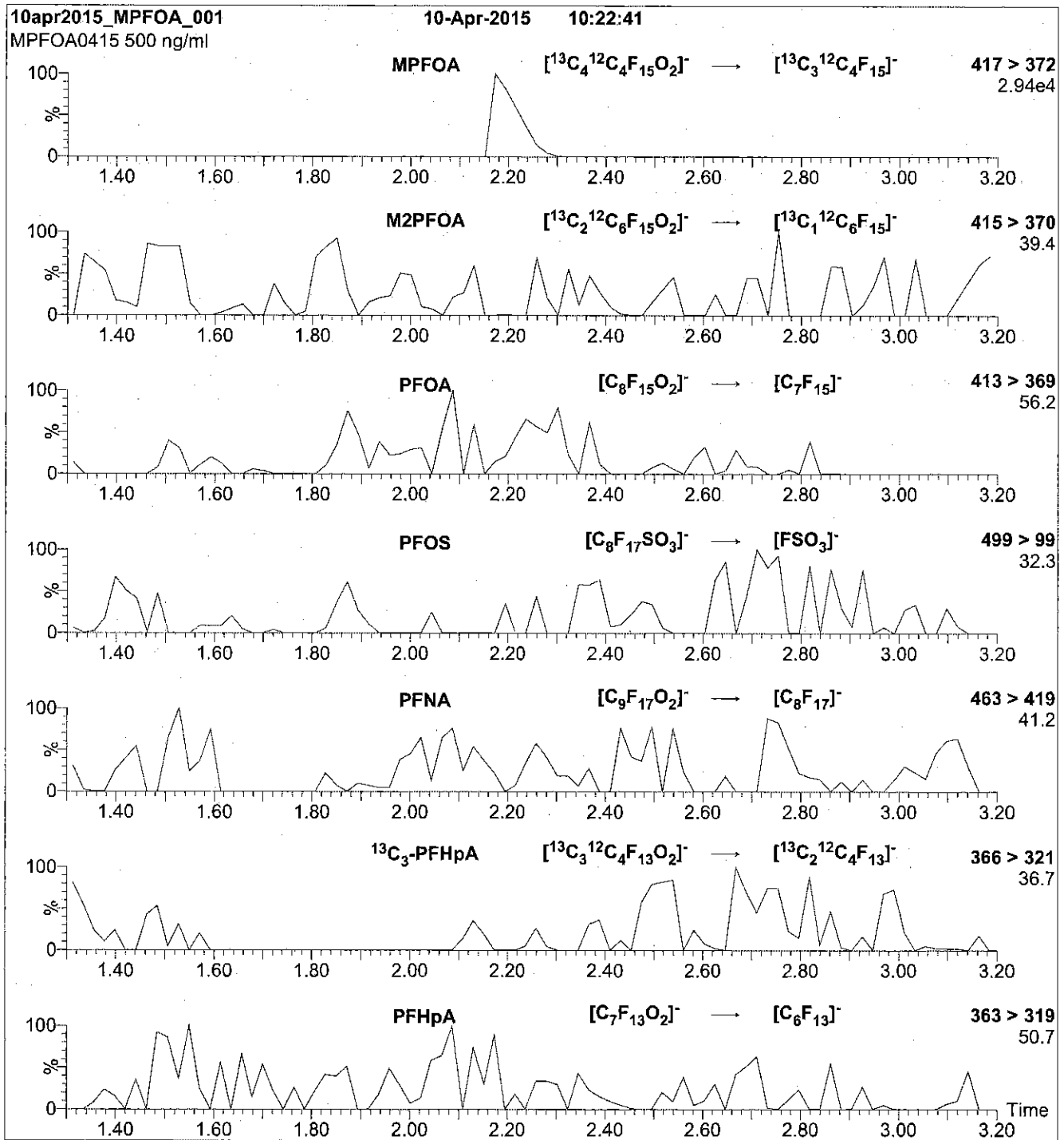
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCMPFOS_00009

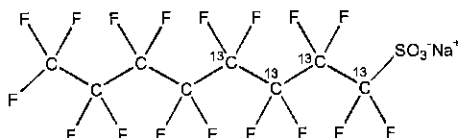
V: 9/15/15



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0515
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 526.08
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.8 ± 2.4 µg/ml (MPFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 05/15/2015 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 05/15/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/28/2015
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

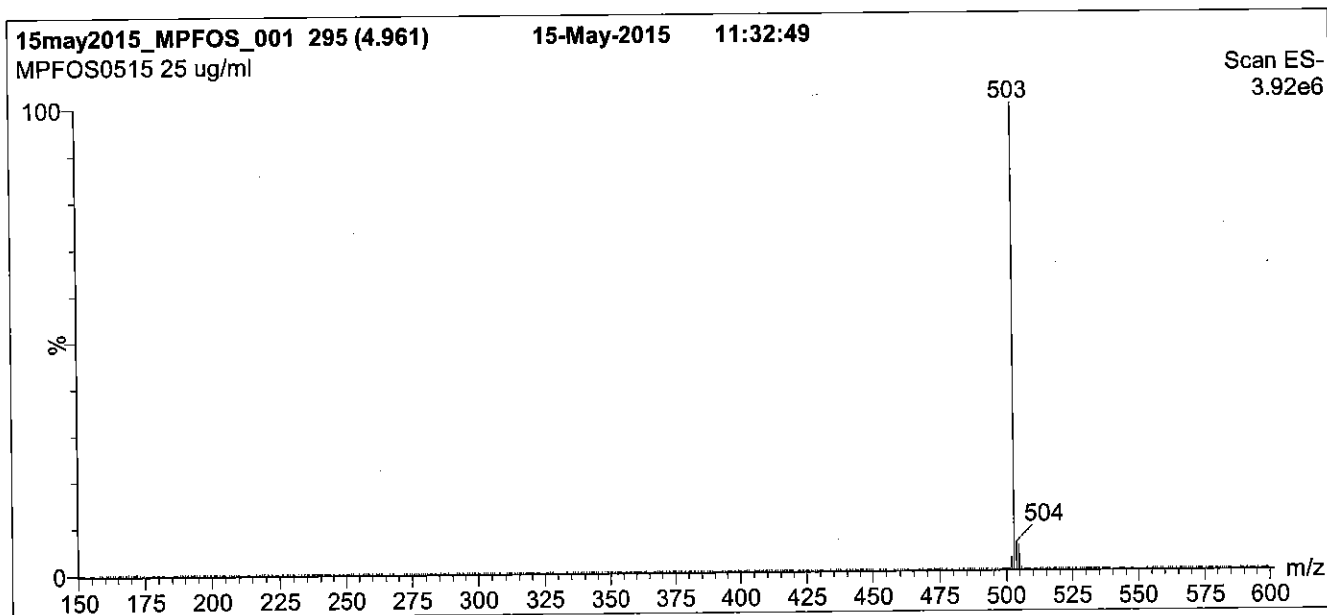
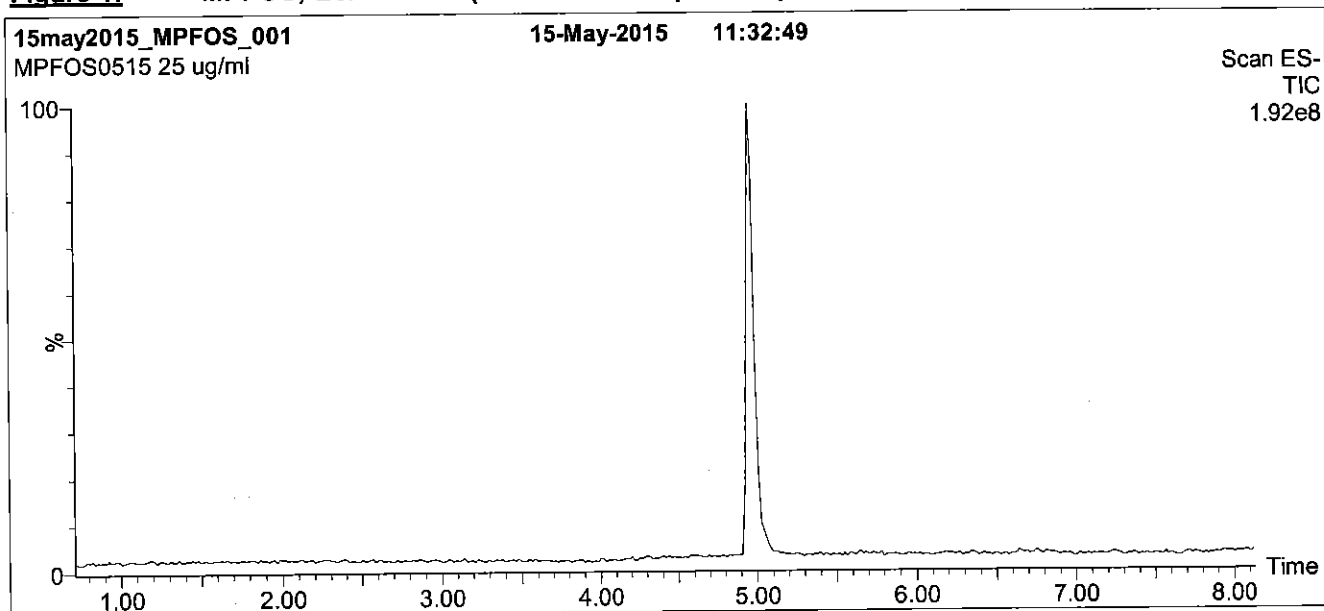
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 45% (80:20 MeOH:ACN) / 55% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

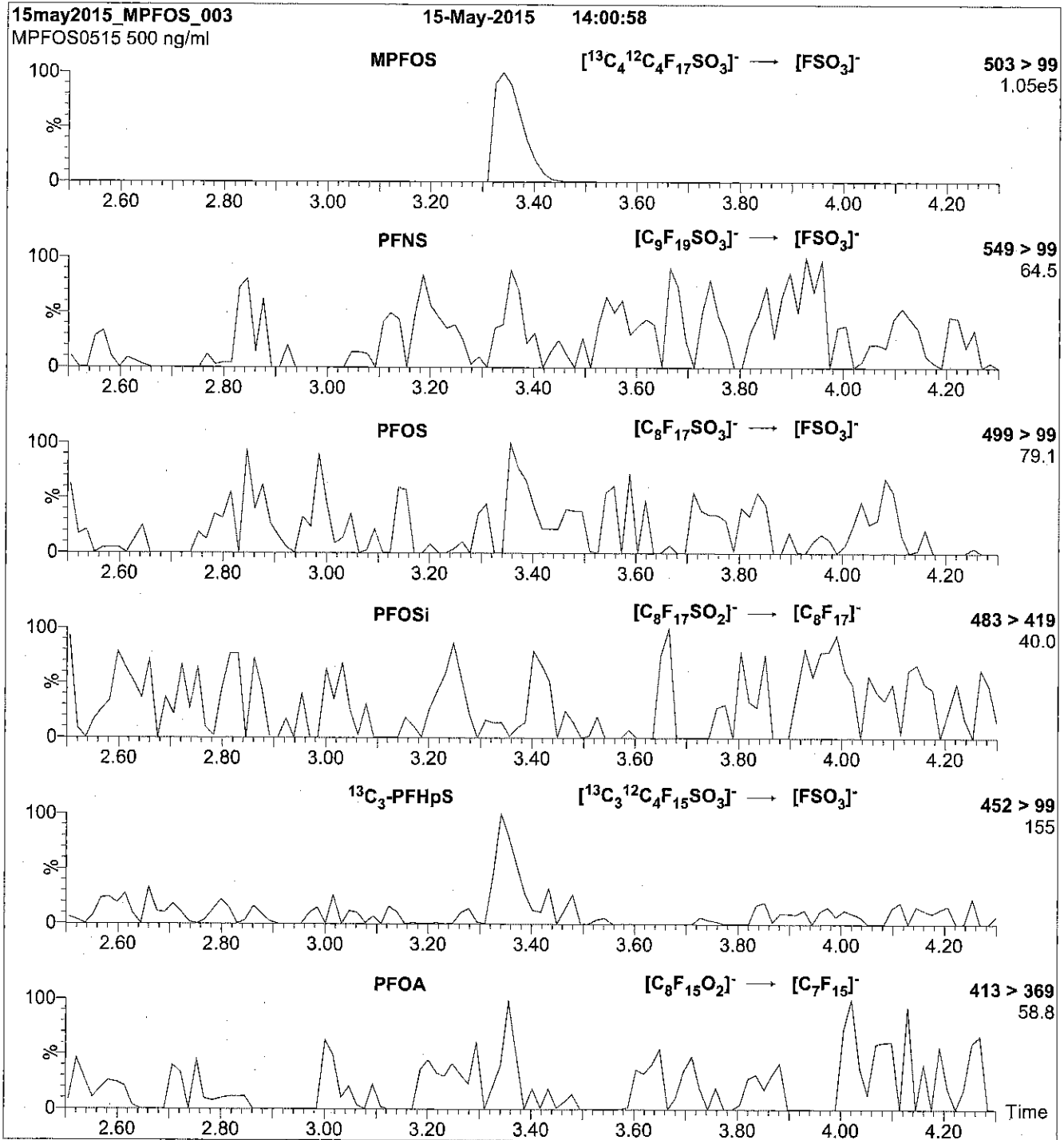
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 60.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.35e-3
 Collision Energy (eV) = 40

Reagent

LCMPFUdA_00004

1:41515 SKU

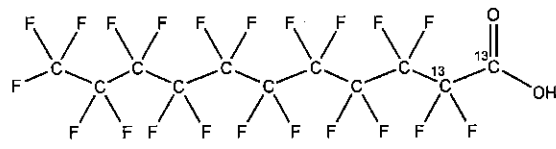


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA **LOT NUMBER:** MPFUdA1014
COMPOUND: Perfluoro-n-[1,2-¹³C₂]undecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₉HF₂₁O₂ **MOLECULAR WEIGHT:** 566.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 10/31/2014
EXPIRY DATE: (mm/dd/yyyy) 10/31/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

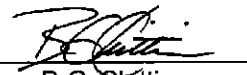
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-¹³C₁-PFUdA (~1%; see Figure 2), 2-¹³C₁-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 11/03/2014
(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.

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

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LIMITED WARRANTY:

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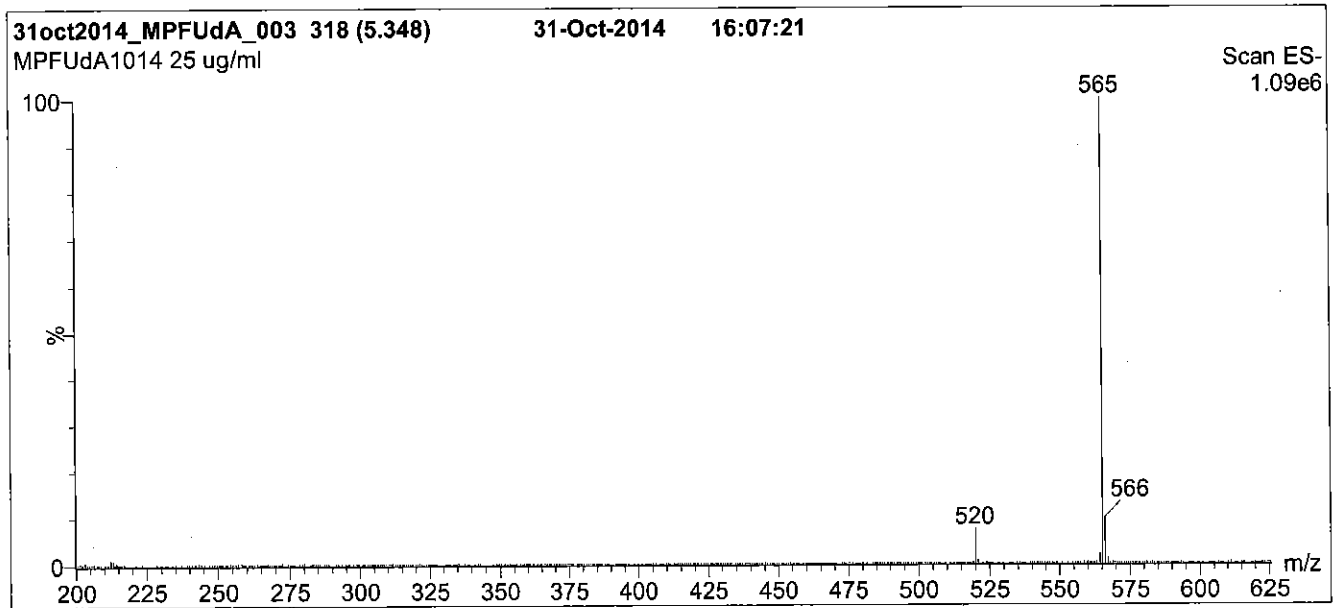
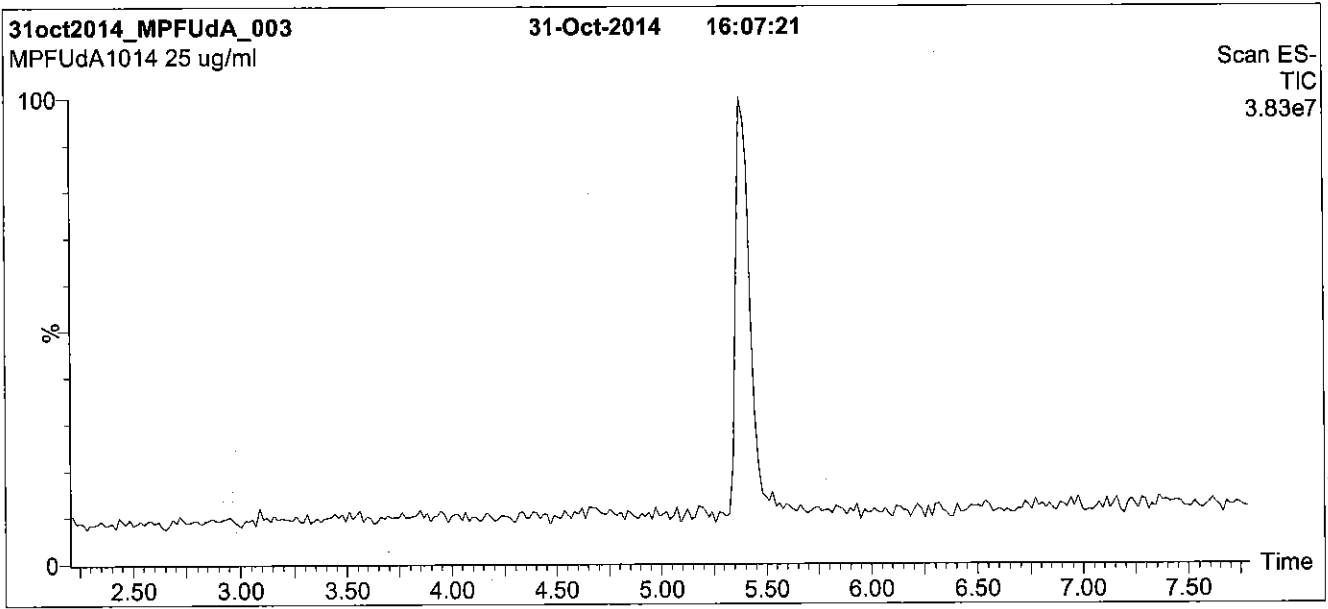
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

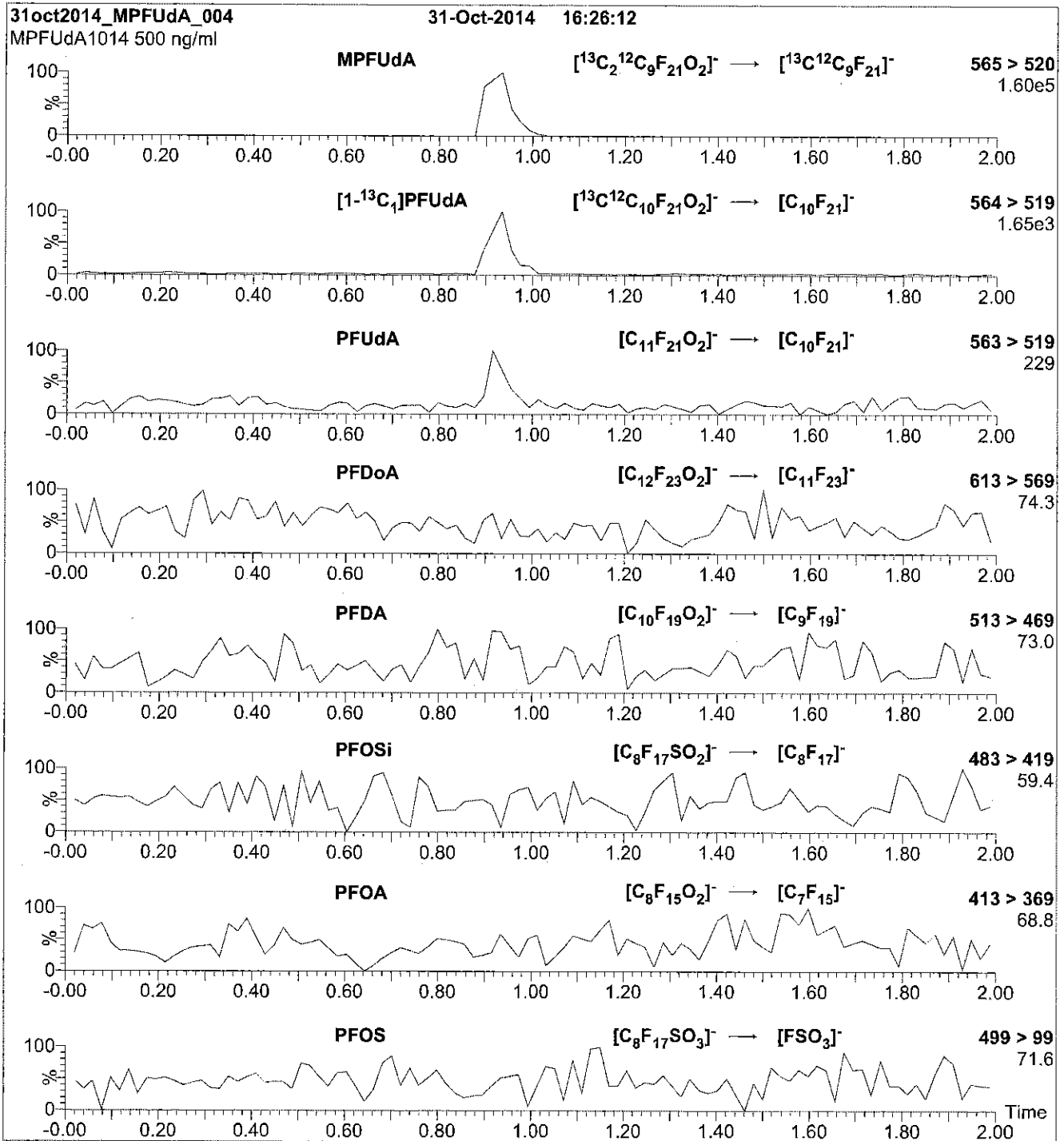
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

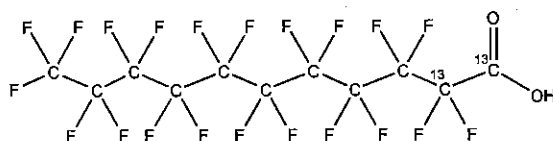
LCMPFUdA_00005



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA **LOT NUMBER:** MPFUdA1014
COMPOUND: Perfluoro-n-[1,2-¹³C₂]undecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₉HF₂₁O₂ **MOLECULAR WEIGHT:** 566.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 10/31/2014
EXPIRY DATE: (mm/dd/yyyy) 10/31/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-¹³C₁-PFUdA (~1%; see Figure 2), 2-¹³C₁-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____


B.G. Chittim

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

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

INTENDED USE:

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

HAZARDS:

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

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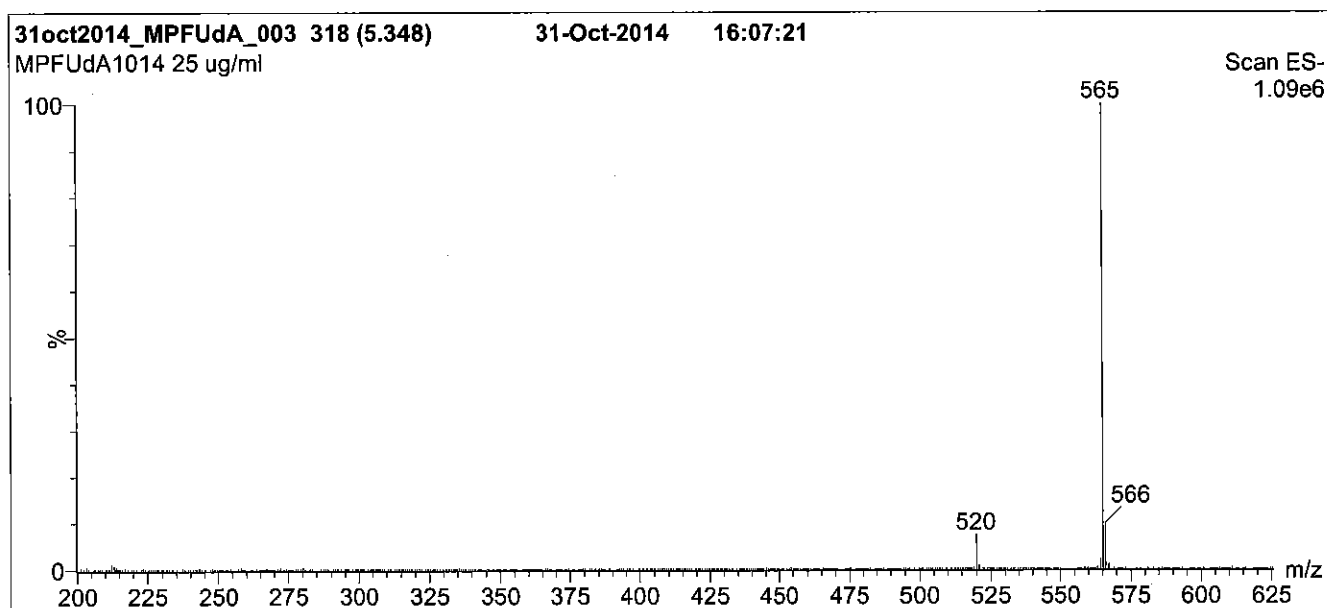
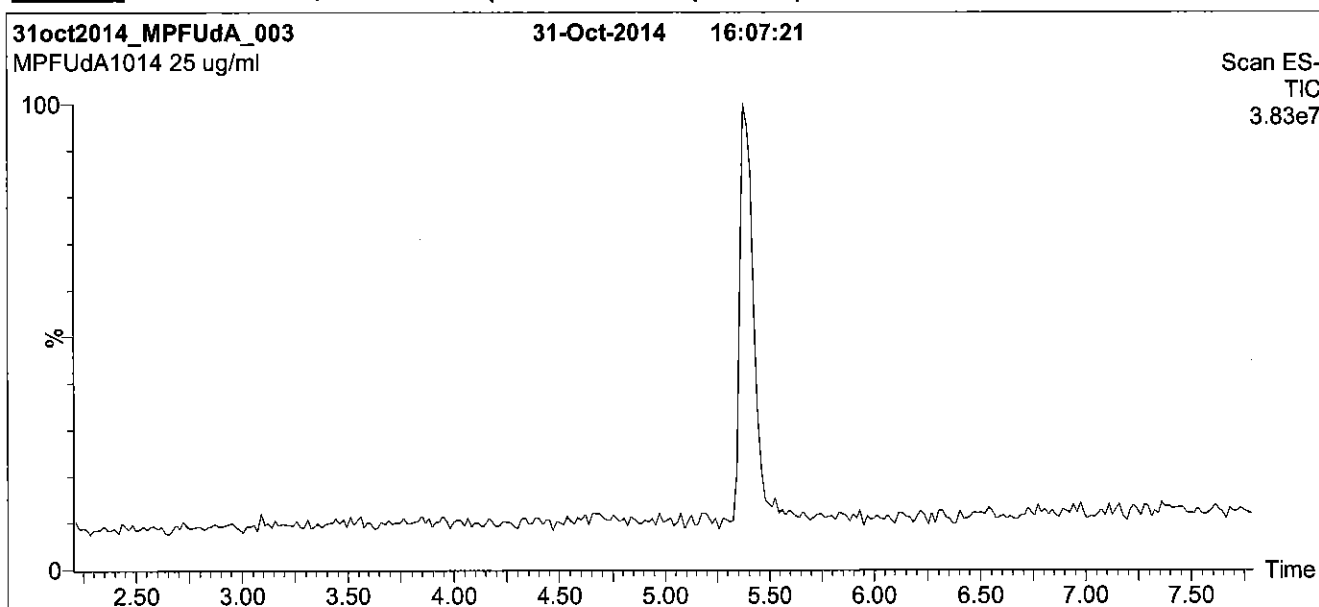
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

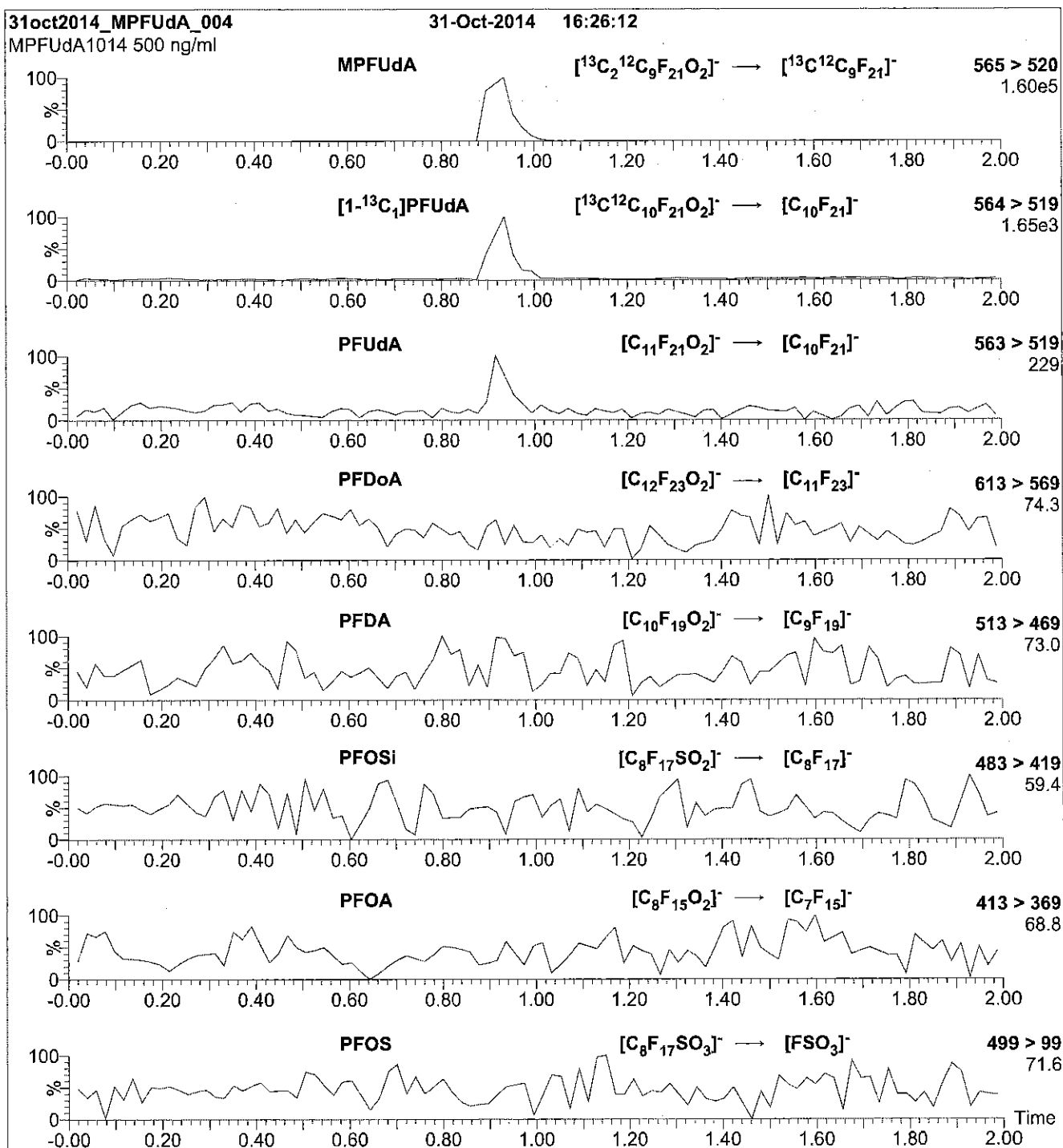
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

LCPFACMXB_00005

P: 3/27/15 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXB

Solution/Mixture of Native Perfluoroalkylcarboxylic Acids and Native Perfluoroalkylsulfonates

<u>PRODUCT CODE:</u>	PFAC-MXB
<u>LOT NUMBER:</u>	PFACMXB0614
<u>SOLVENT(S):</u>	Methanol / Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	06/13/2014
<u>LAST TESTED:</u> (mm/dd/yyyy)	06/20/2014
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	06/20/2019
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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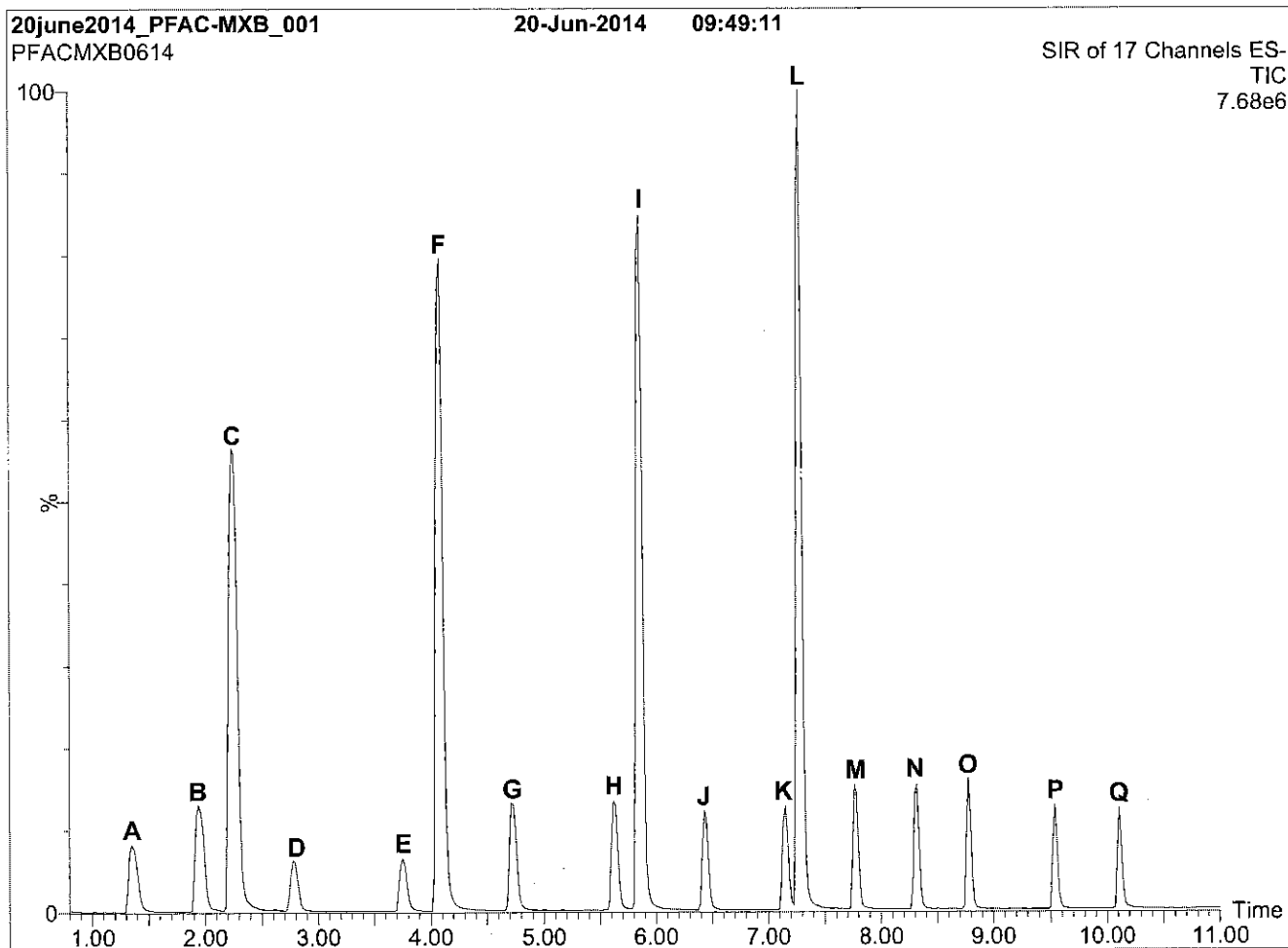
Table A: PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))

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-butanefluorobutanesulfonate	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: 06/20/2014
(mm/dd/yyyy)

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient

Start: 55% H₂O / 45% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 10 min and hold for 3.5 min
before returning to initial conditions in 0.5 min.
Time: 15 min

Flow: 300 μ l/min

MS Parameters

Experiment: SIR of 17 Channels

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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

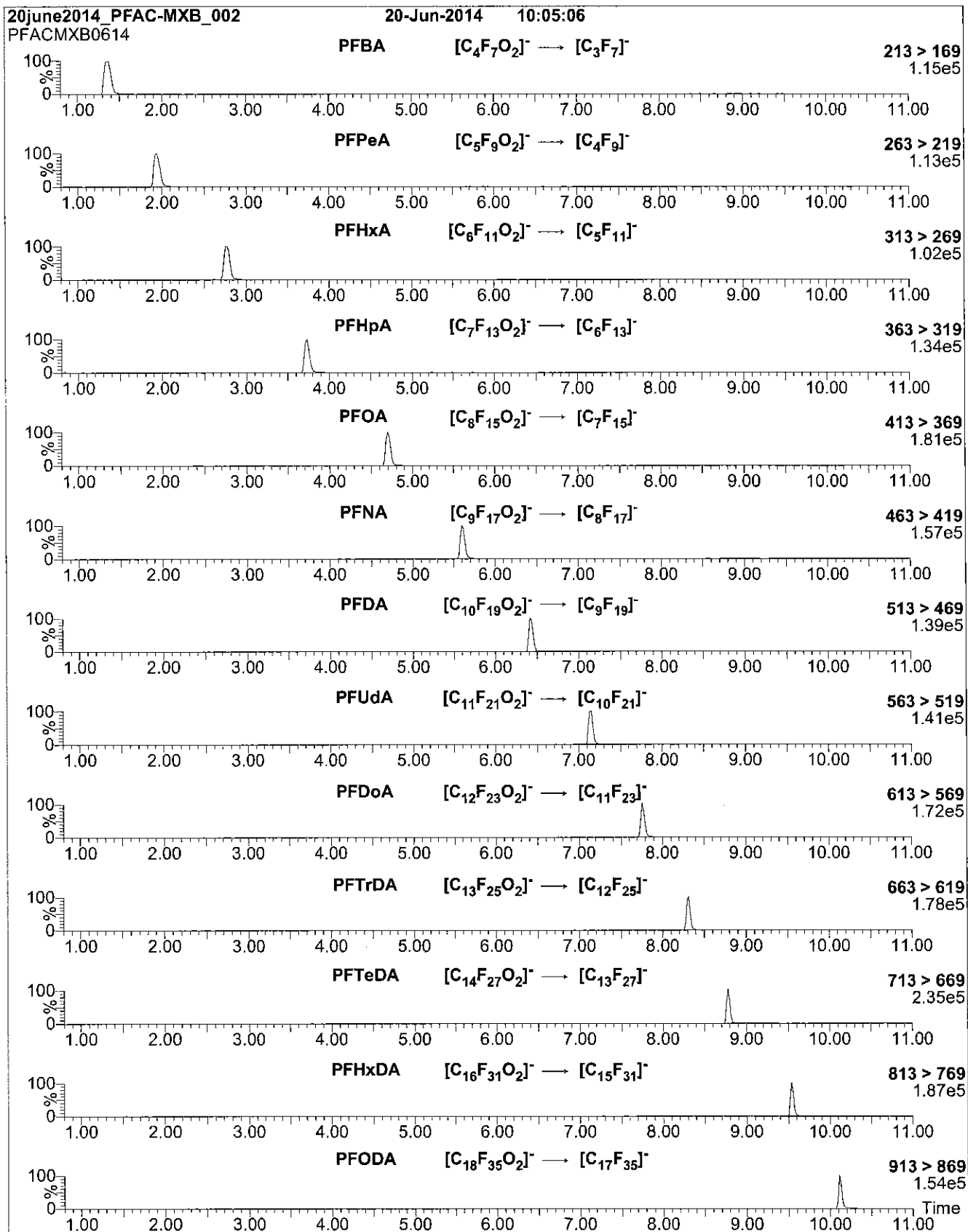
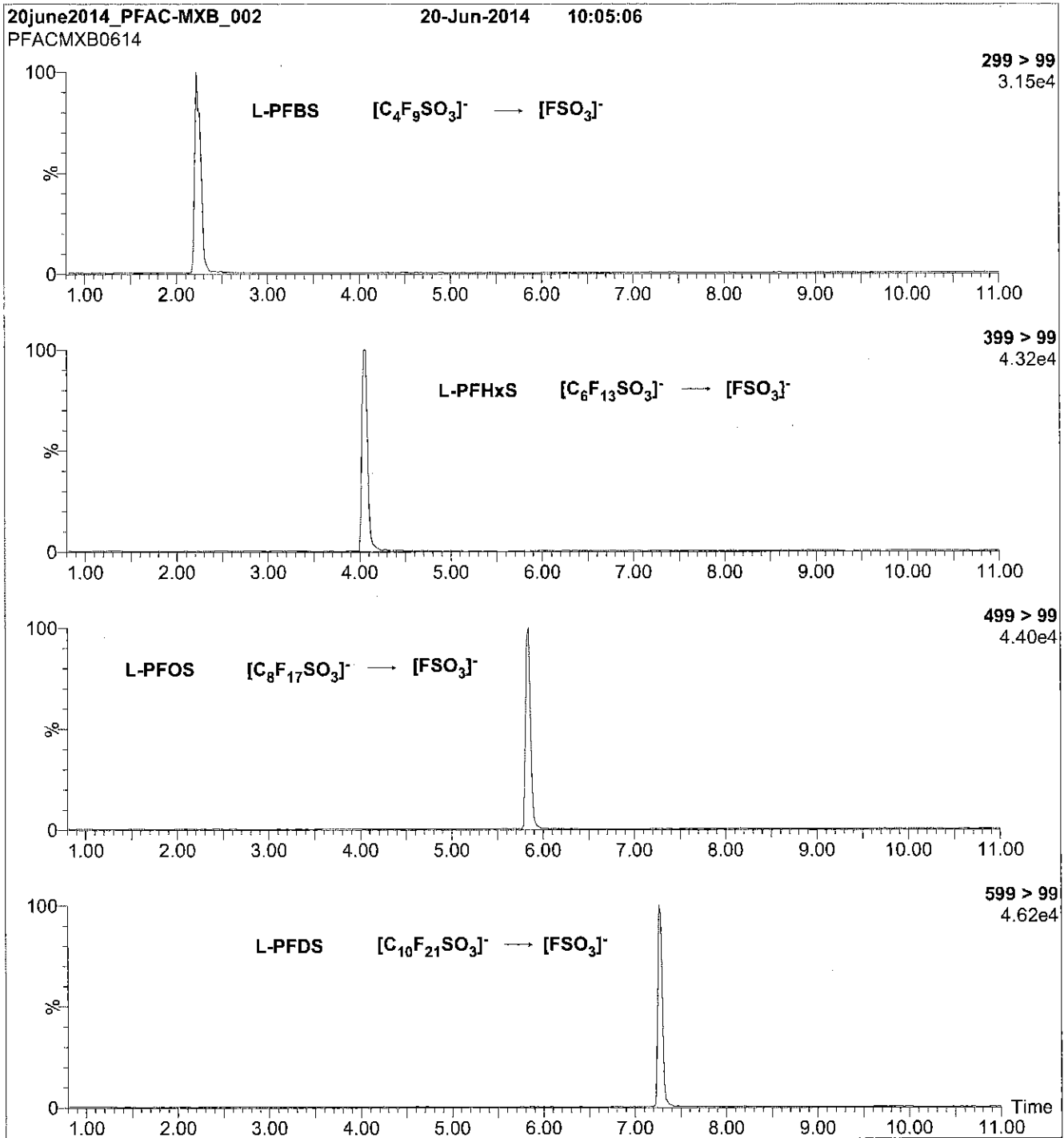


Figure 3: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figures 2 and 3:

Injection: on-column (PFAC-MXB)

Mobile phase: Same as Figure 1

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3

Collision Energy (eV) = 8-50 (variable)

Reagent

LCPFBA_00003

rec 7/15/14



WELLINGTON LABORATORIES

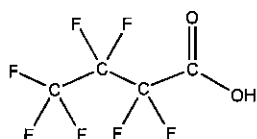
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid

LOT NUMBER: PFBA0313

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: C₄HF₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 214.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/05/2013
EXPIRY DATE: (mm/dd/yyyy) 03/05/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 03/06/2013
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

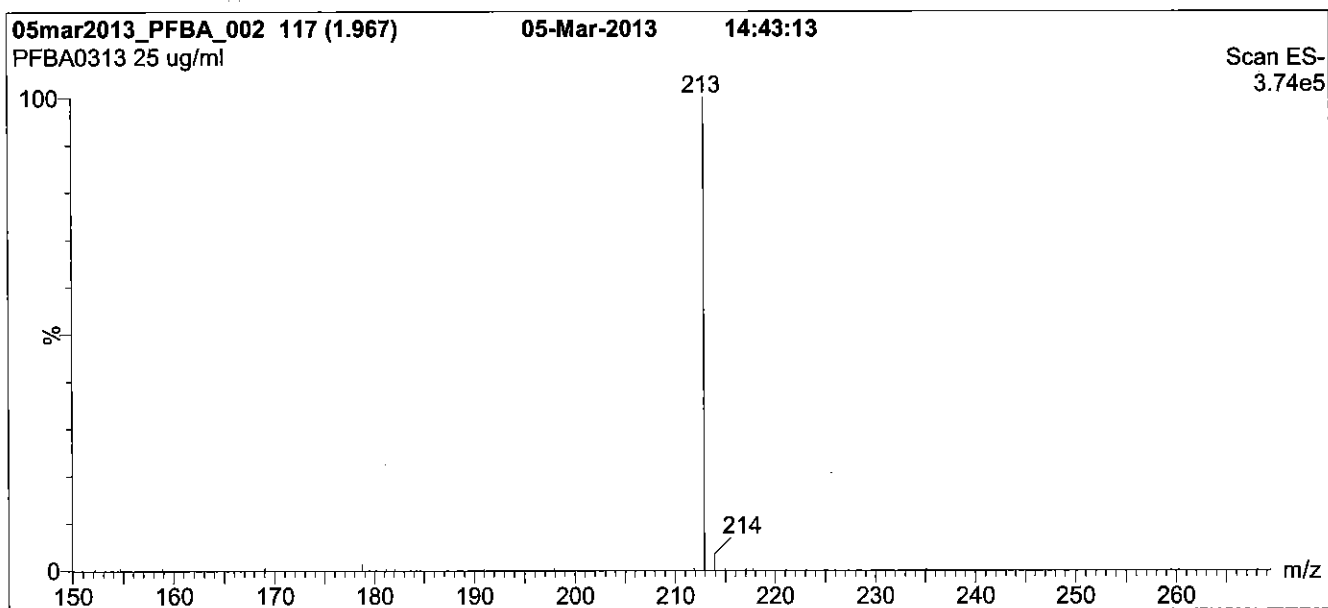
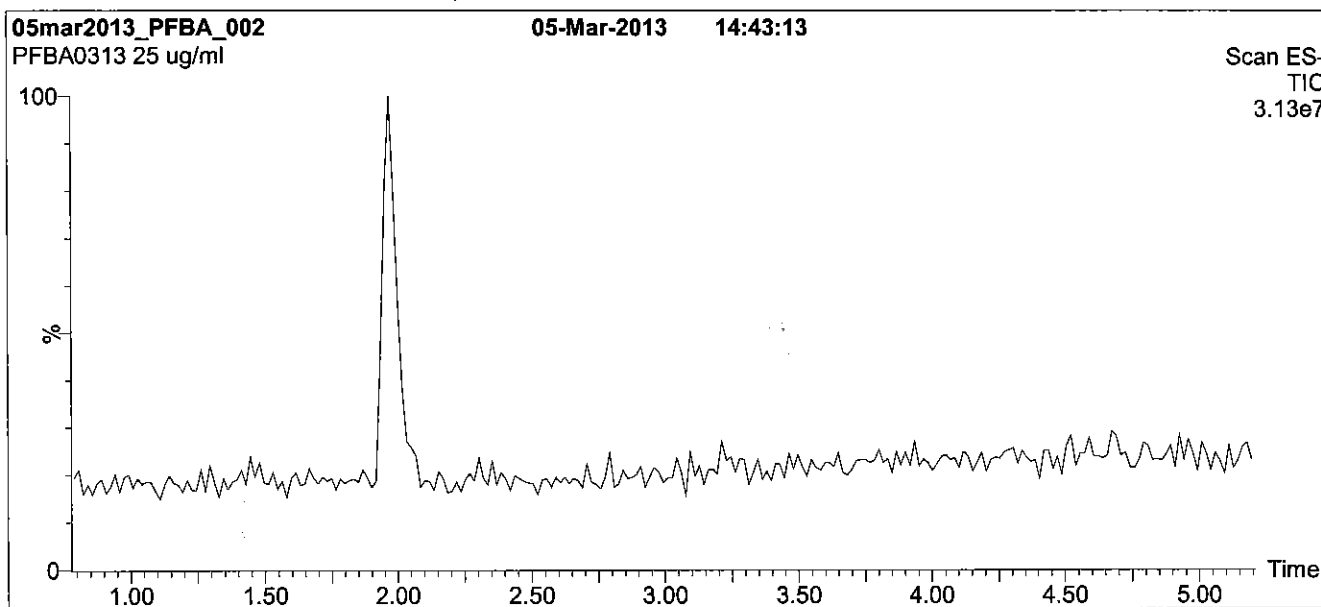
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 25% (80:20 MeOH:ACN) / 75% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

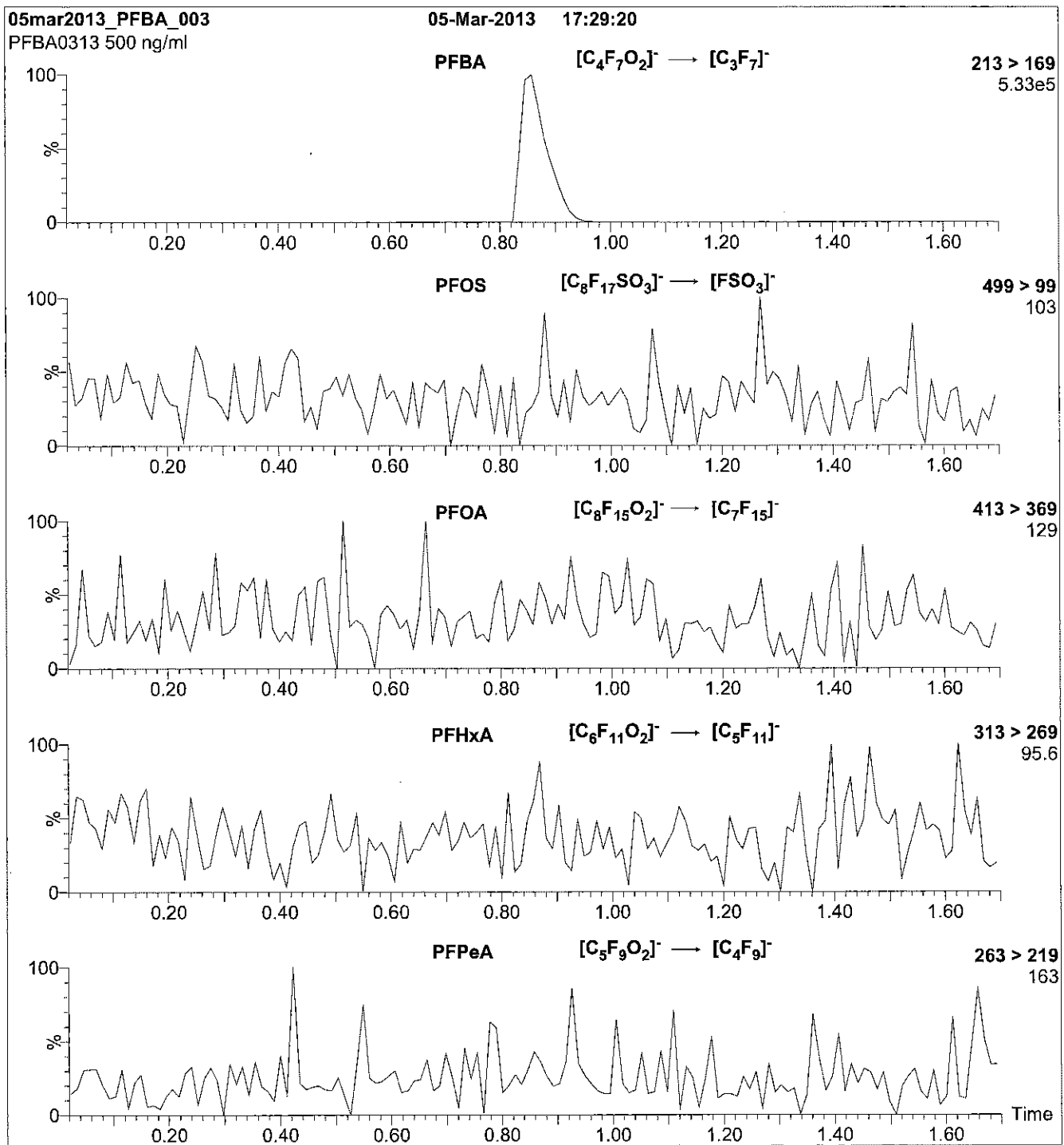
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.70e-3
Collision Energy (eV) = 10

Reagent

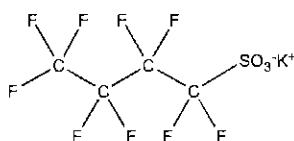
LCPFBS_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

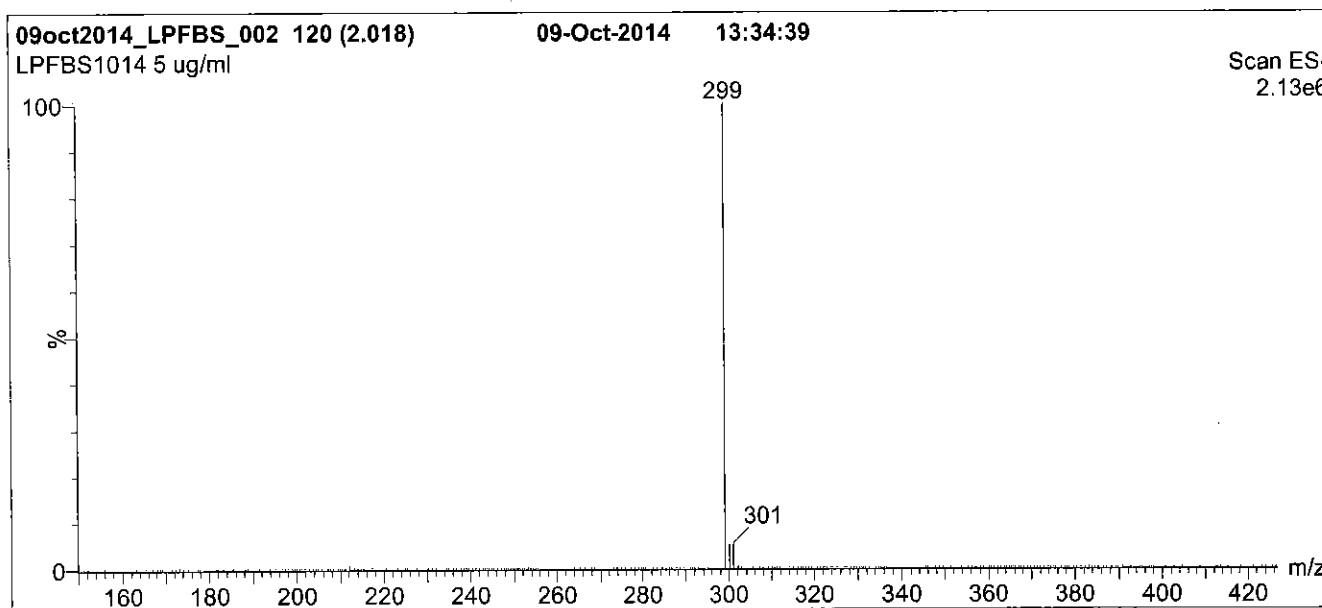
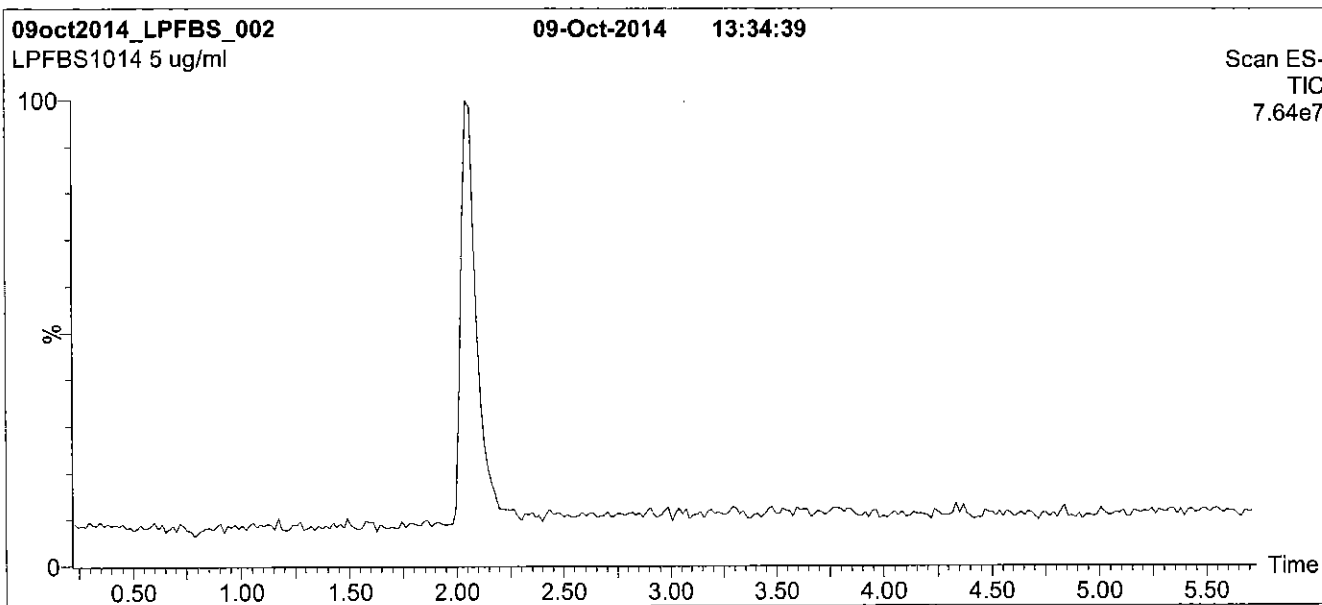
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

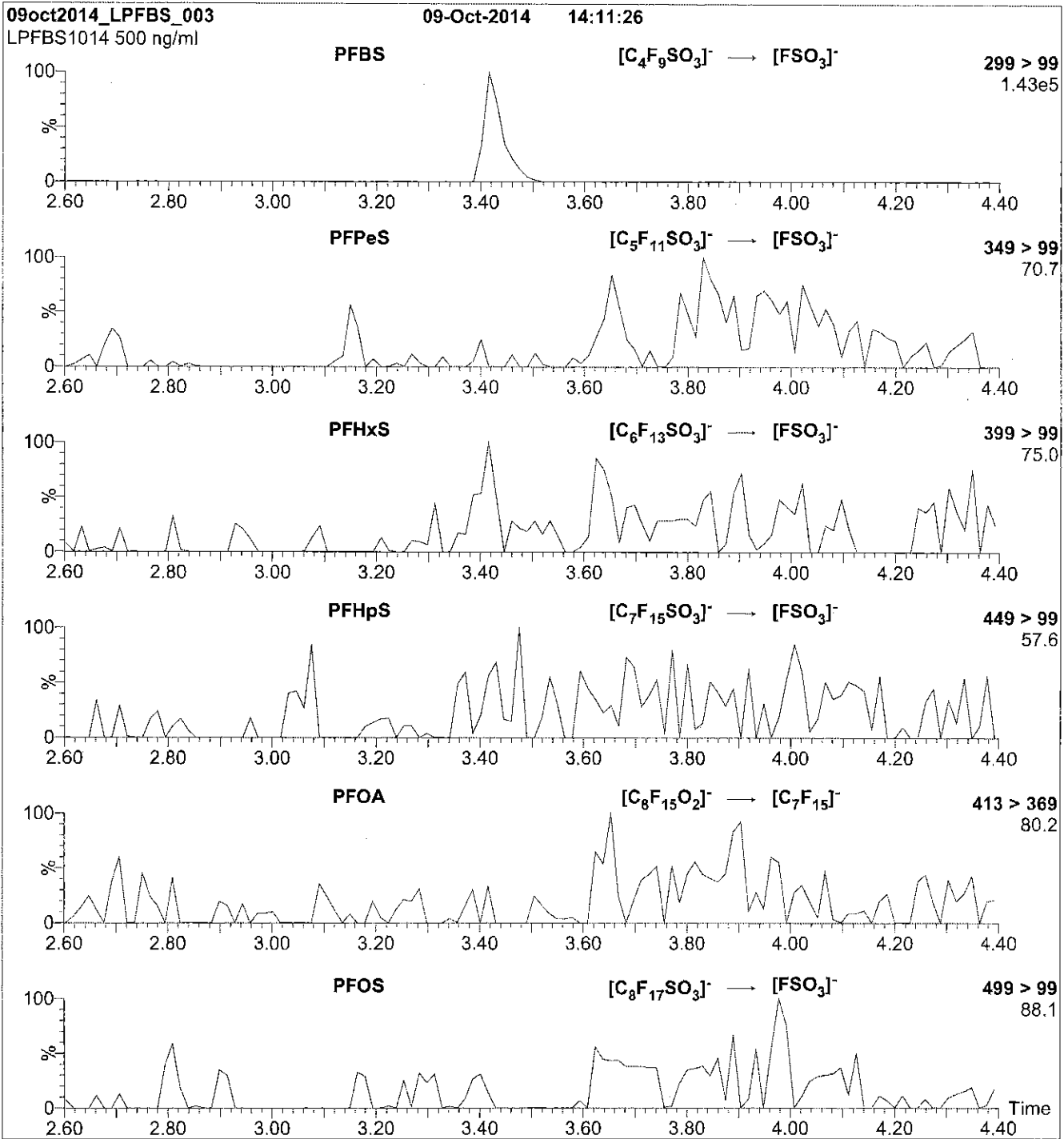
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFDA_00003

rec 7/15/14



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDA

LOT NUMBER:

PFDA0613

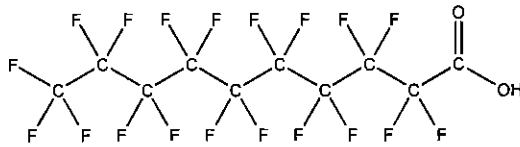
COMPOUND:

Perfluoro-n-decanoic acid

STRUCTURE:

CAS #:

335-76-2



MOLECULAR FORMULA:

C₁₀H_{F₁₉}O₂

MOLECULAR WEIGHT:

514.08

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/19/2013

EXPIRY DATE: (mm/dd/yyyy)

06/19/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% PFNA and ~ 0.1% PFOA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 07/03/2013

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

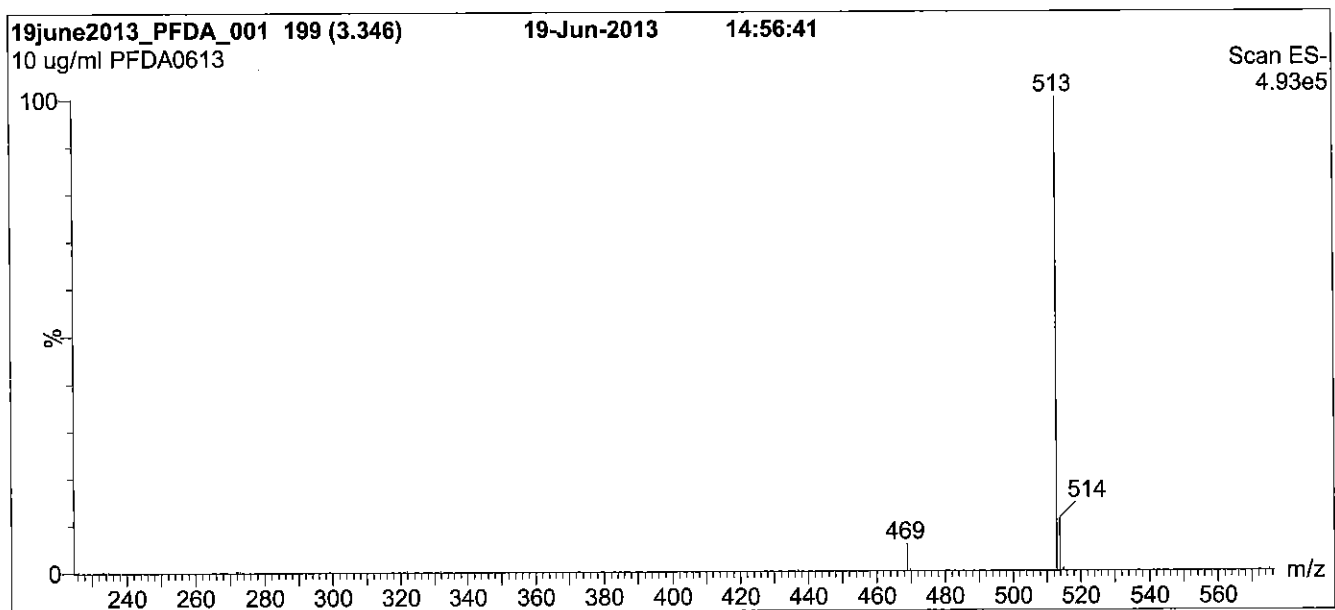
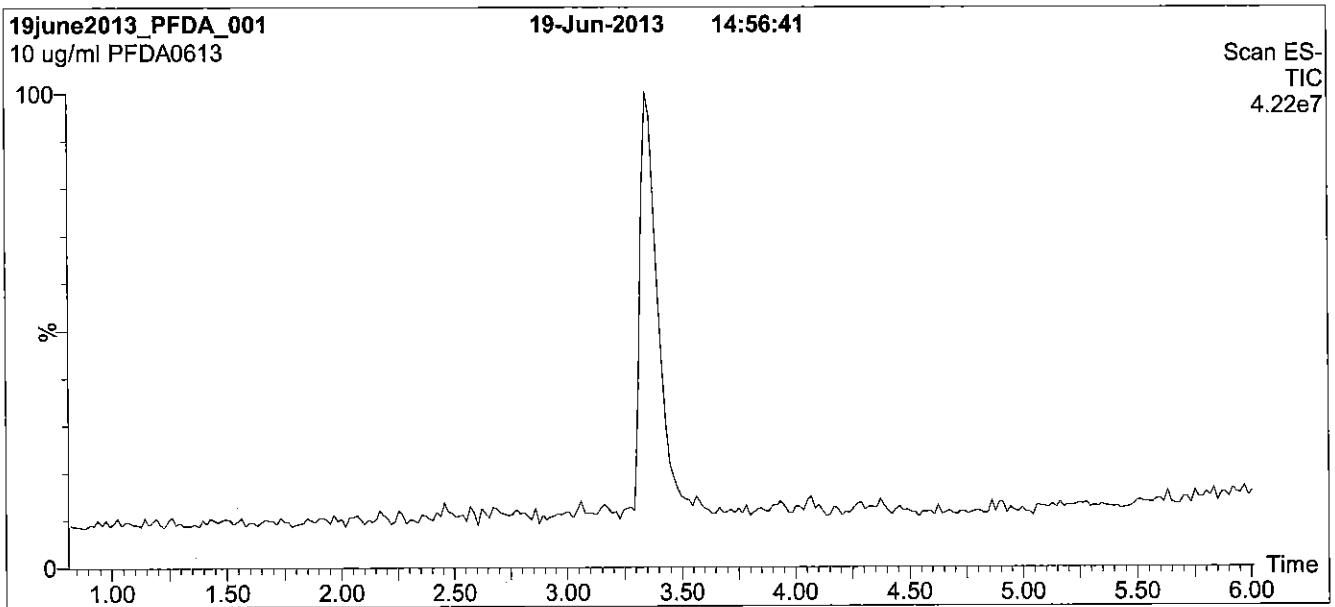
QUALITY MANAGEMENT:

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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

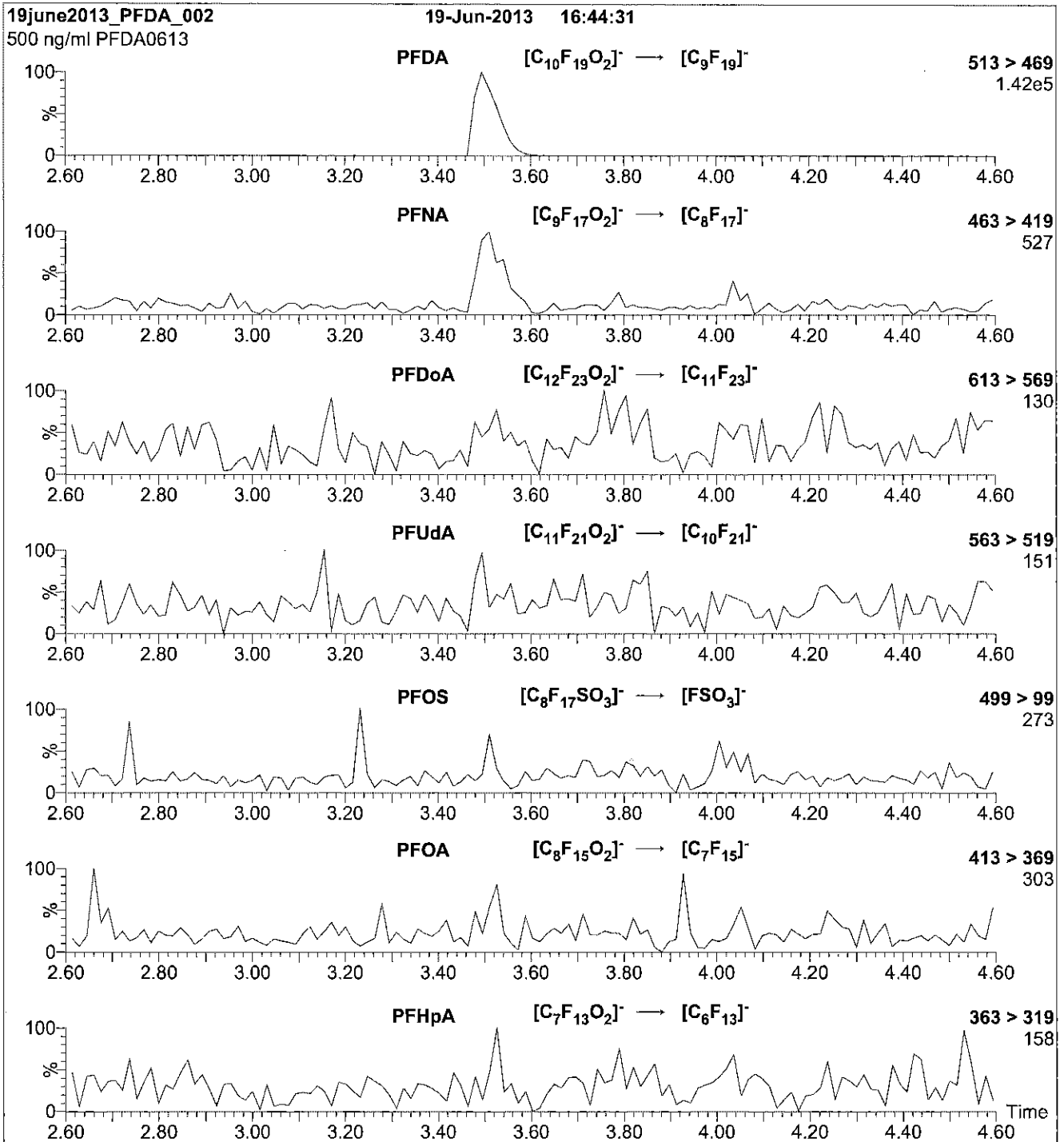
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

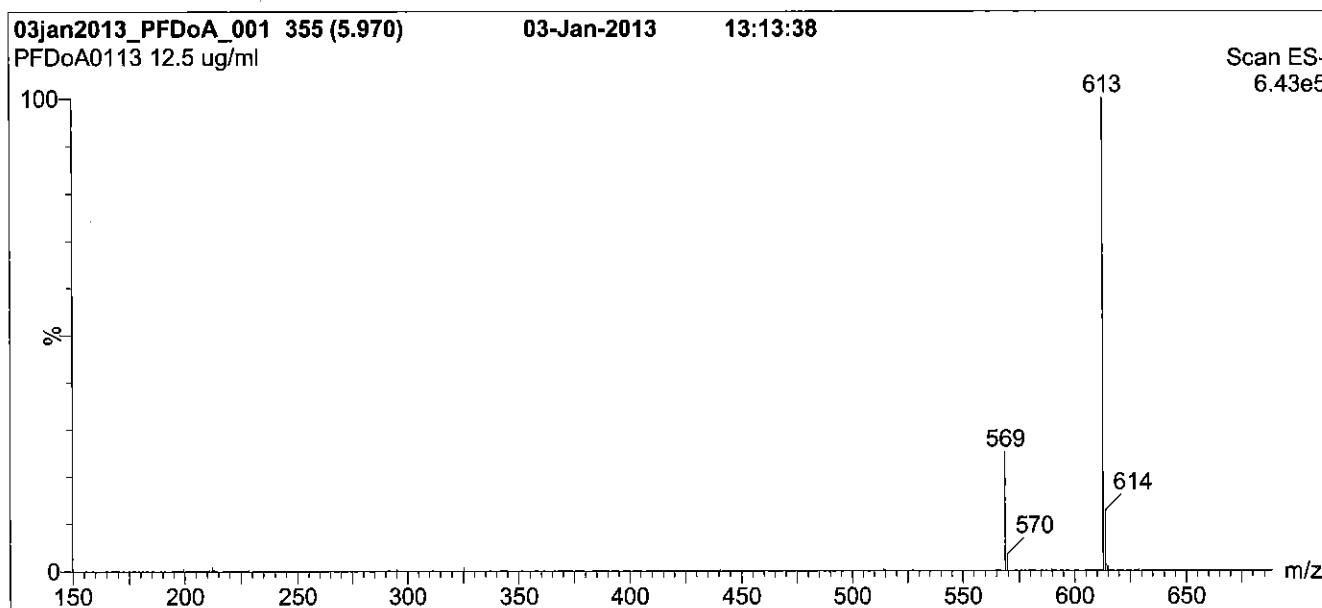
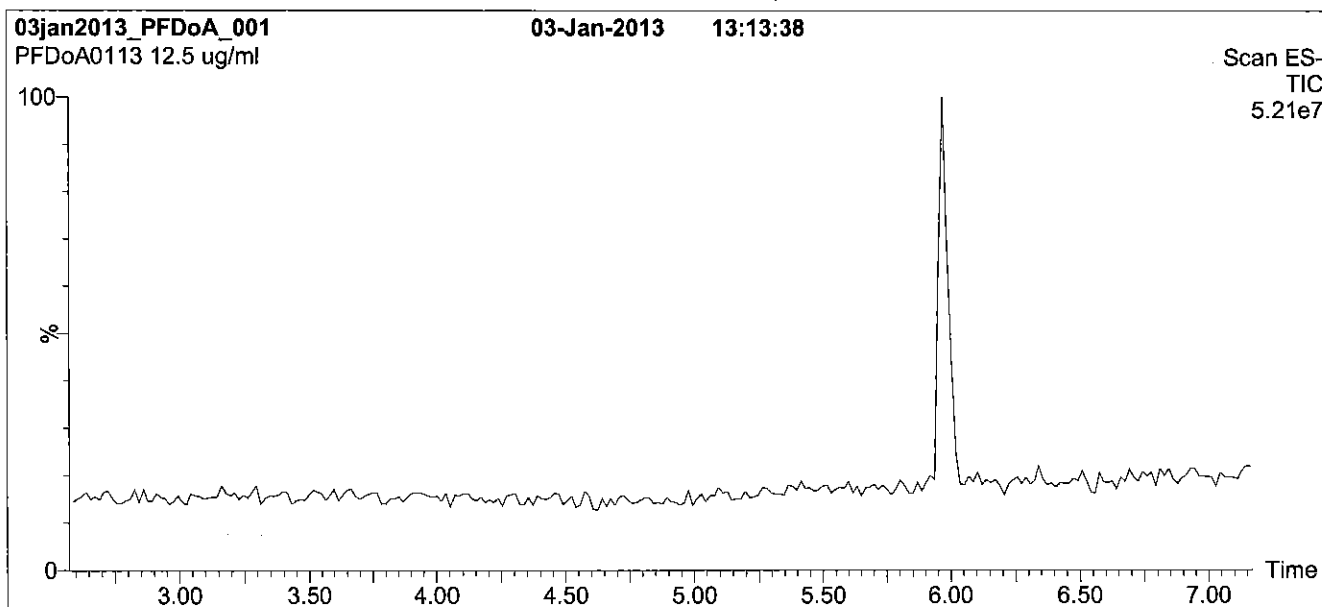
MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00003

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min.
 Return to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

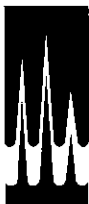
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Reagent

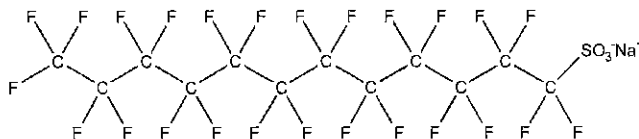
LCPFDoS_00003



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: L-PFDoS **LOT NUMBER:** LPFDoS1011
COMPOUND: Sodium perfluoro-1-dodecanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na **MOLECULAR WEIGHT:** 722.14
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 48.4 ± 2.4 µg/ml (PFDoS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/06/2011
EXPIRY DATE: (mm/dd/yyyy) 10/06/2016
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.3% of sodium perfluoro-1-tetradecanesulfonate and ~ 0.8% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

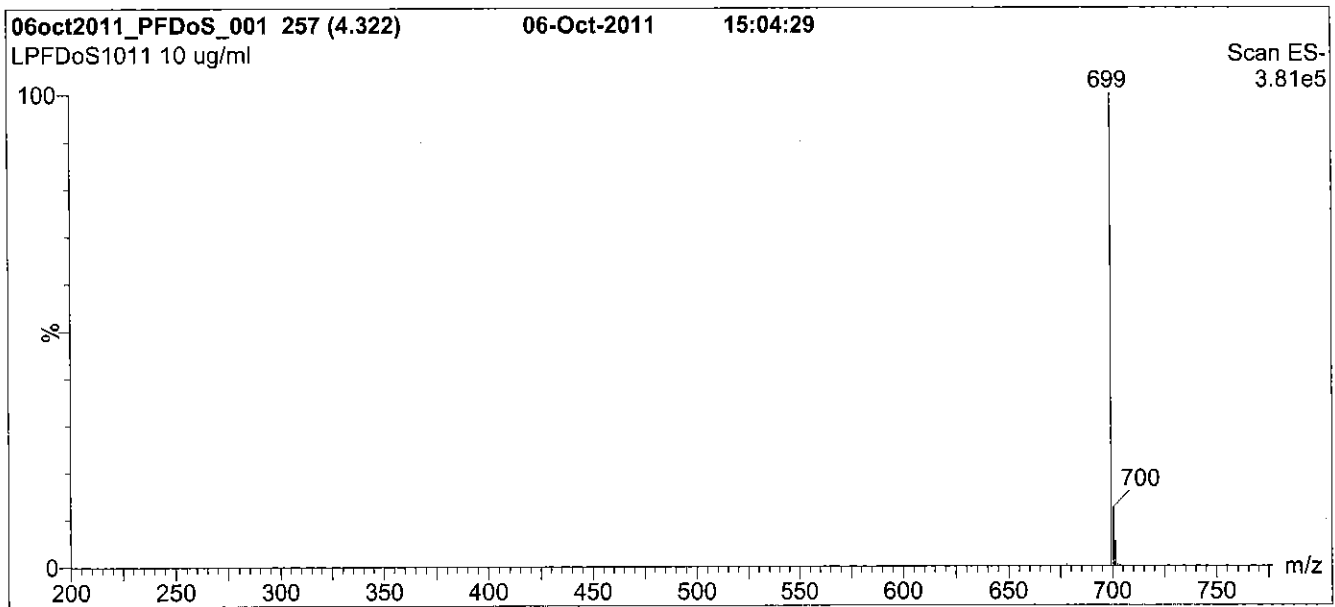
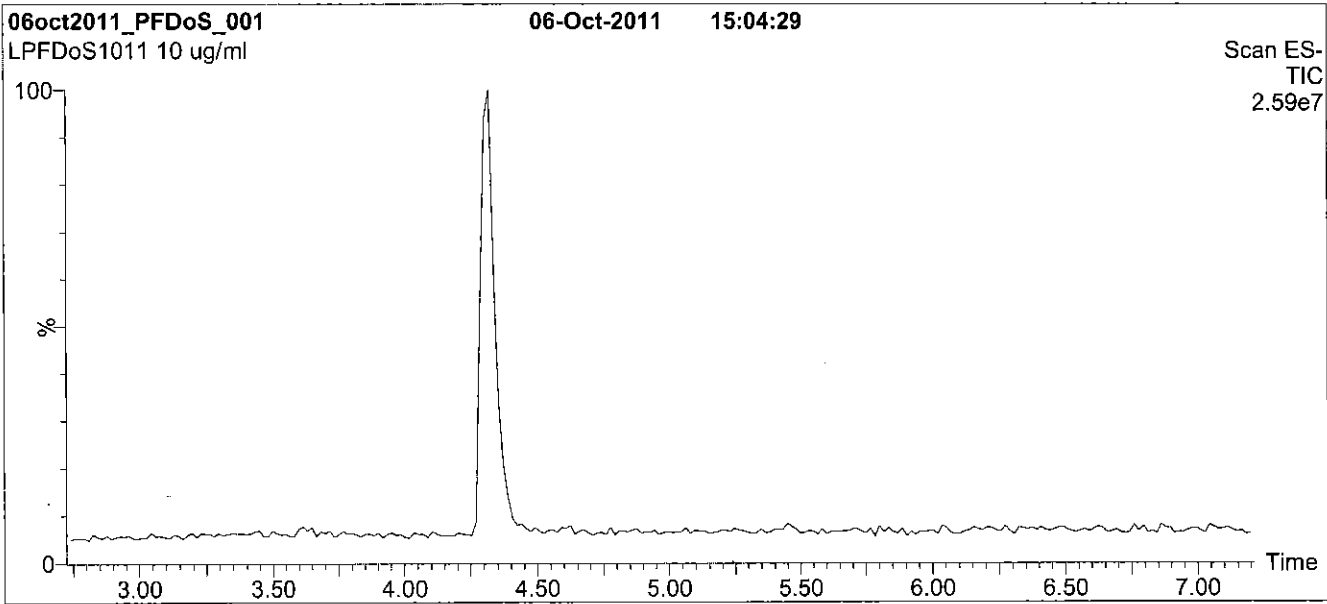
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 65% (80:20 MeOH:ACN) / 35% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

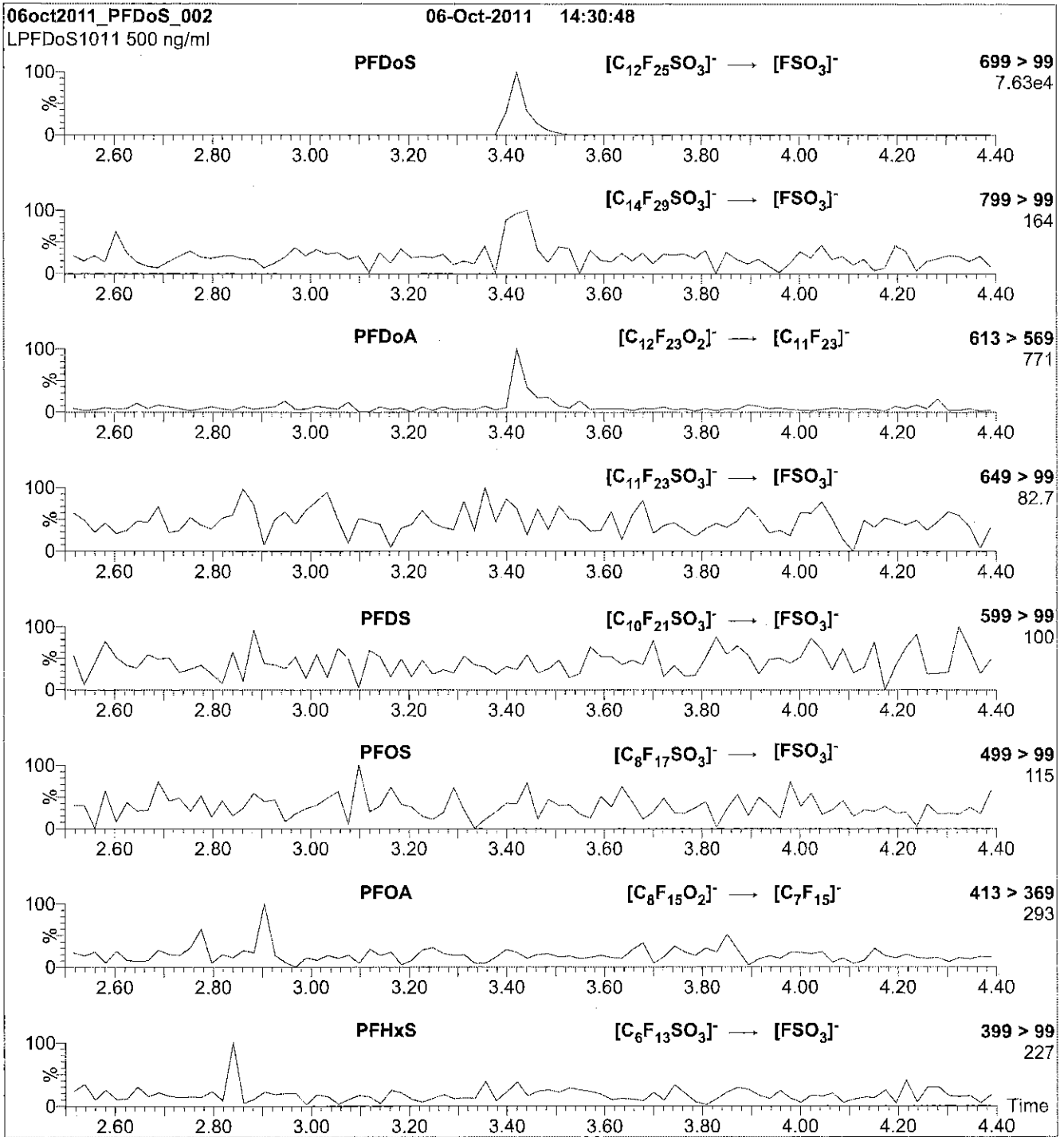
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

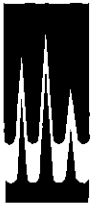
MS Parameters

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

Reagent

LCPFDS_00003

P: 2/11/15 8/



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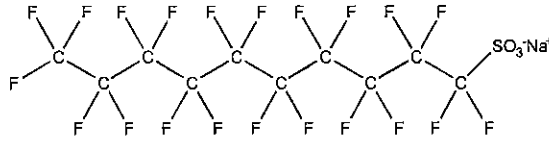
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS
COMPOUND: Sodium perfluoro-1-decanesulfonate

LOT NUMBER: LPFDS0913

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₁₀F₂₁SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
 48.2 ± 2.4 µg/ml (PFDS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/13/2013
EXPIRY DATE: (mm/dd/yyyy) 09/13/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 622.13
SOLVENT(S): Methanol

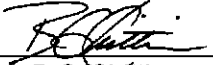
DOCUMENTATION/ DATA ATTACHED:

- 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: 09/23/2013
 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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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:

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.

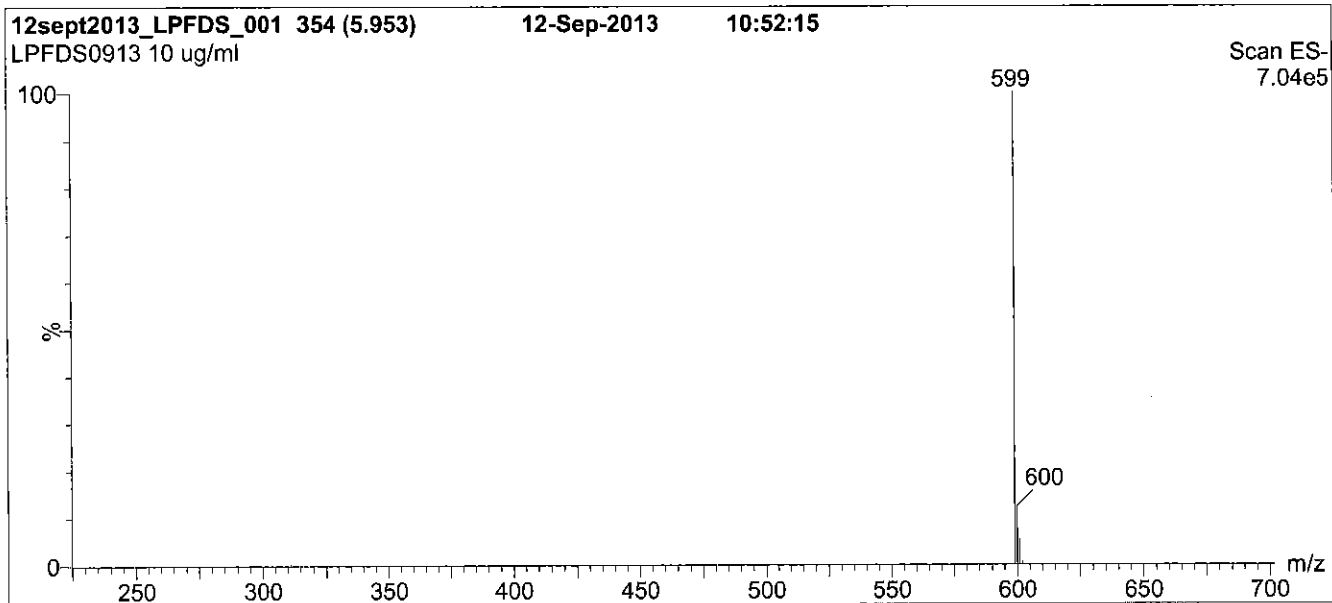
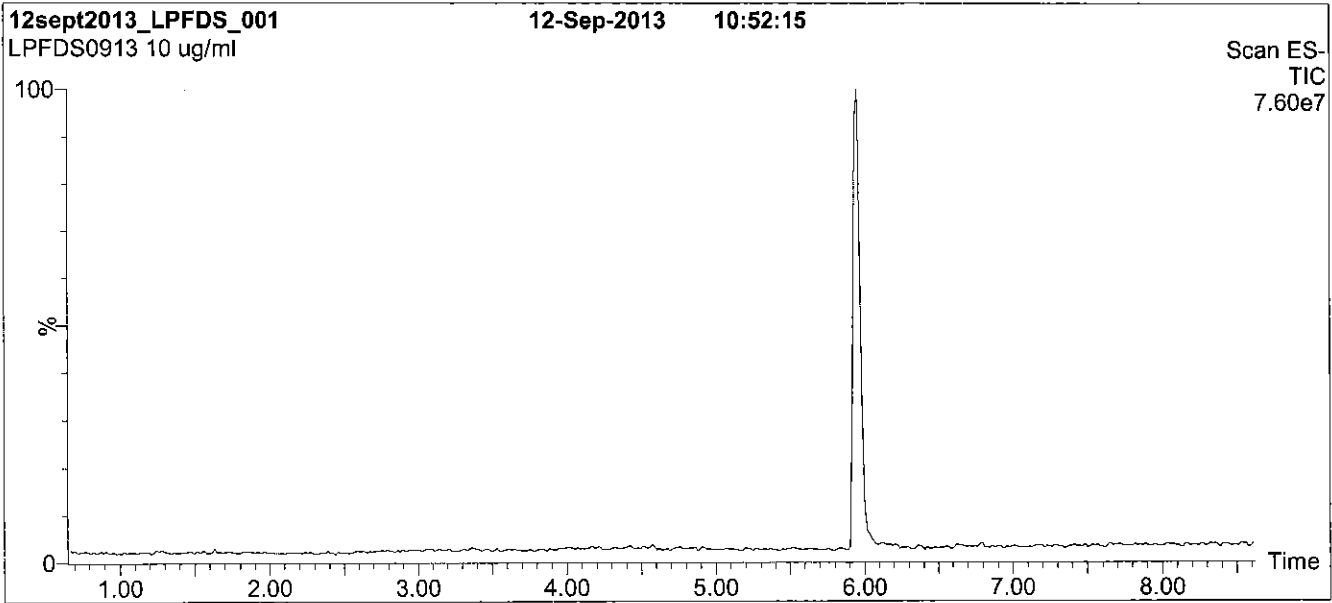
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 45% (80:20 MeOH:ACN) / 55% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 11 min

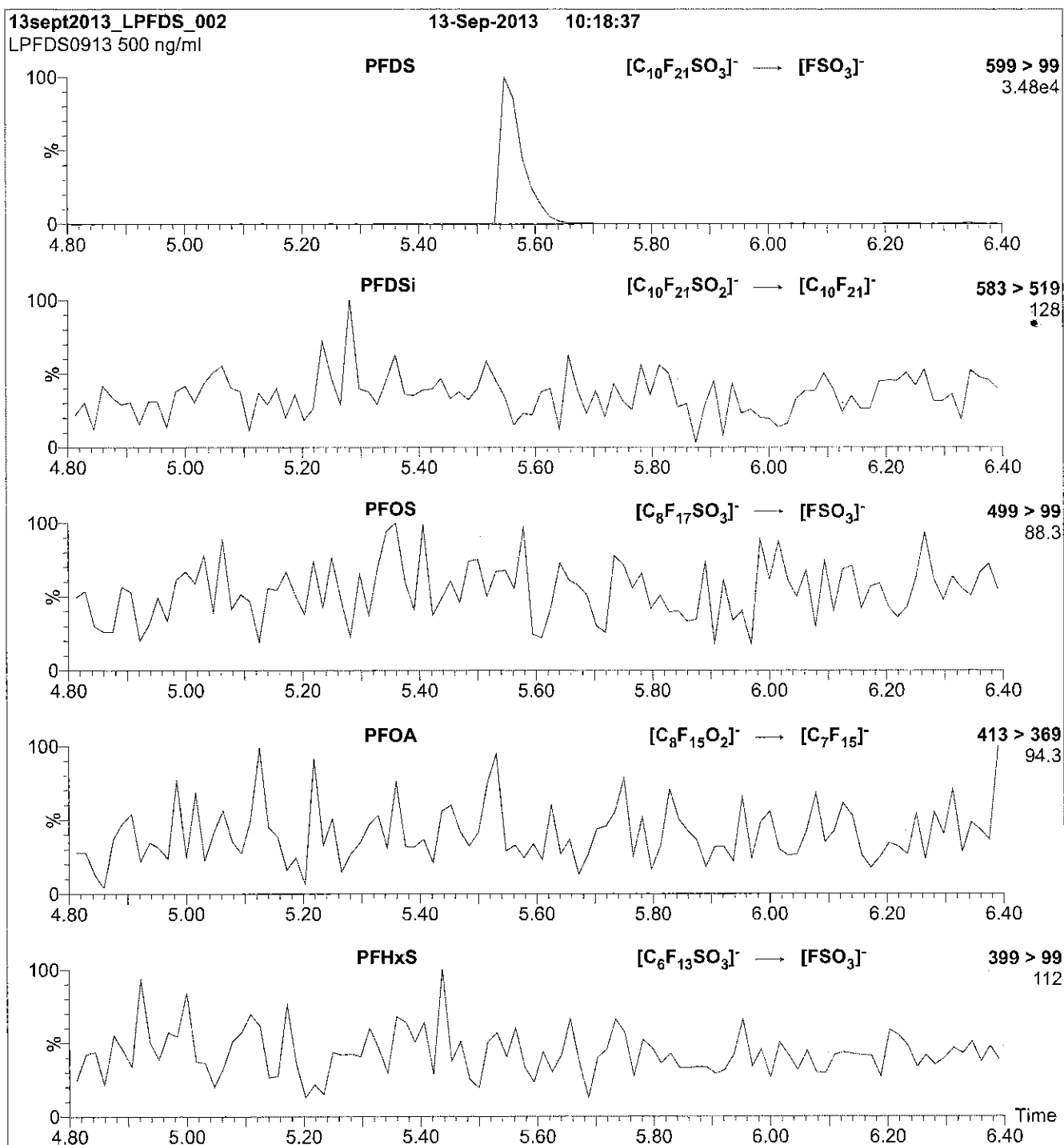
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHpA_00004

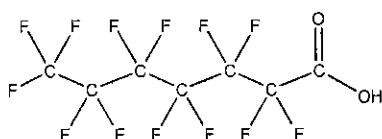


PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0514

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: C₇HF₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/22/2014
(mm/dd/yyyy)

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

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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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.

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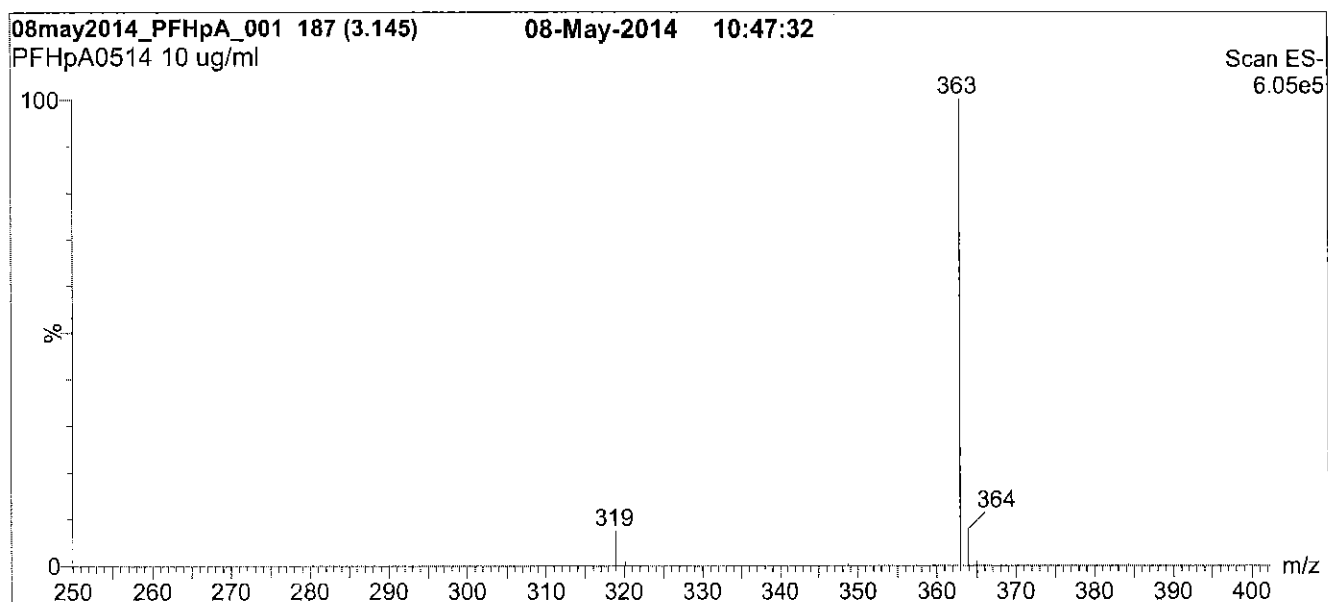
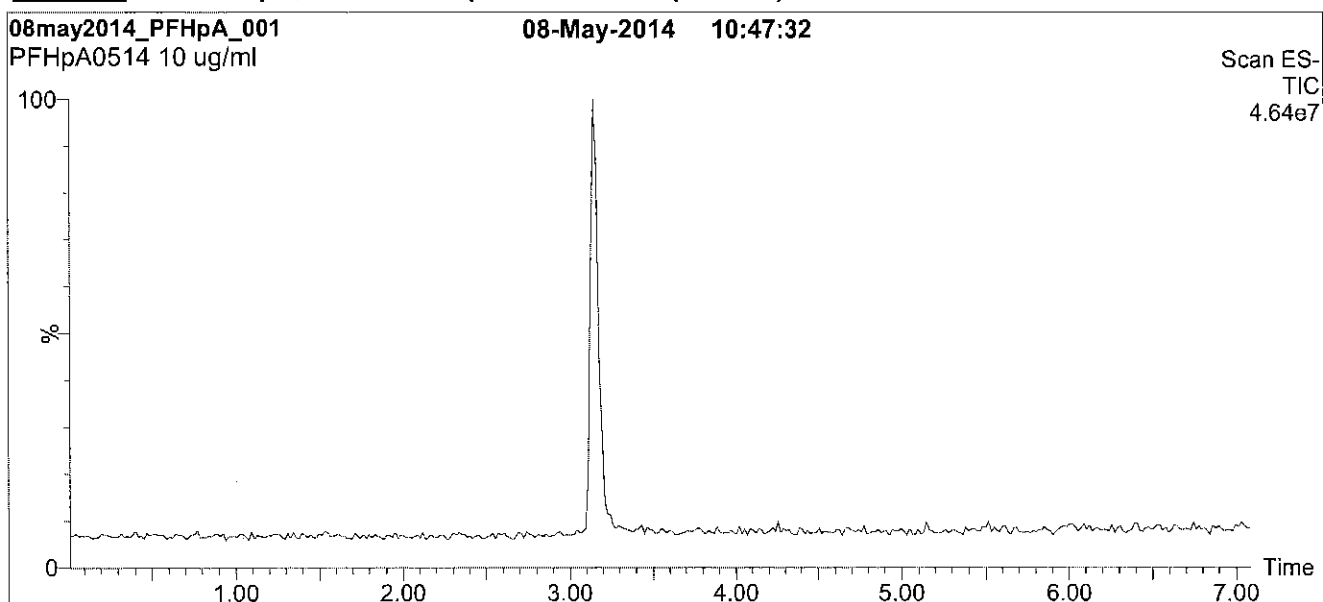
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH C₁₈
1.7 μ m, 2.1 x 100 mm

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

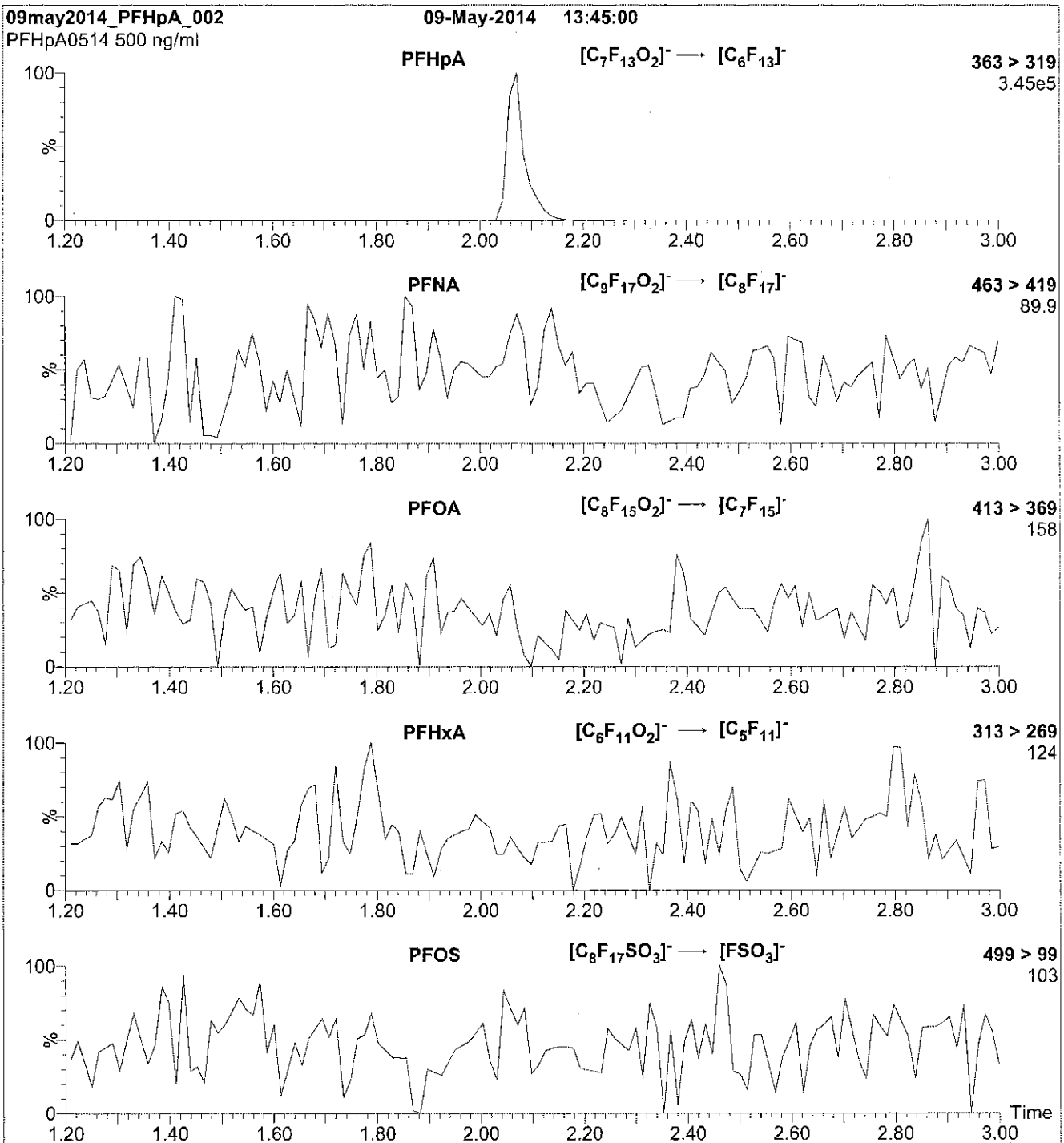
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHpS_00005

P: 4/15/15 SW



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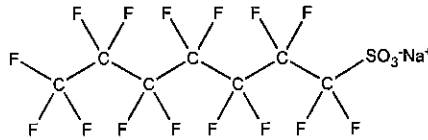
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate

LOT NUMBER: LPFHpS0114

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₇F₁₅SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.6 ± 2.4 µg/ml (PFHpS anion)
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: 472.10
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.
- Contains ~ 0.1% of L-PFHxS (C₅F₁₃SO₃Na) and ~ 0.2% of L-PFOS (C₈F₁₇SO₃Na).

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:

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LIMITED WARRANTY:

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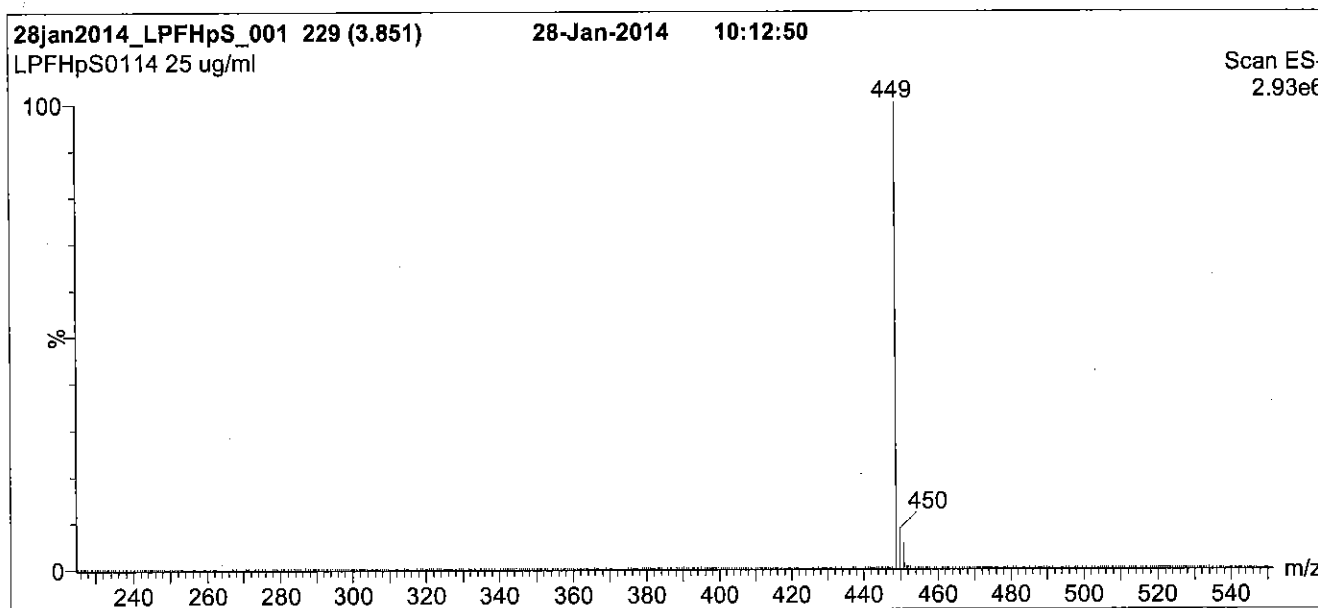
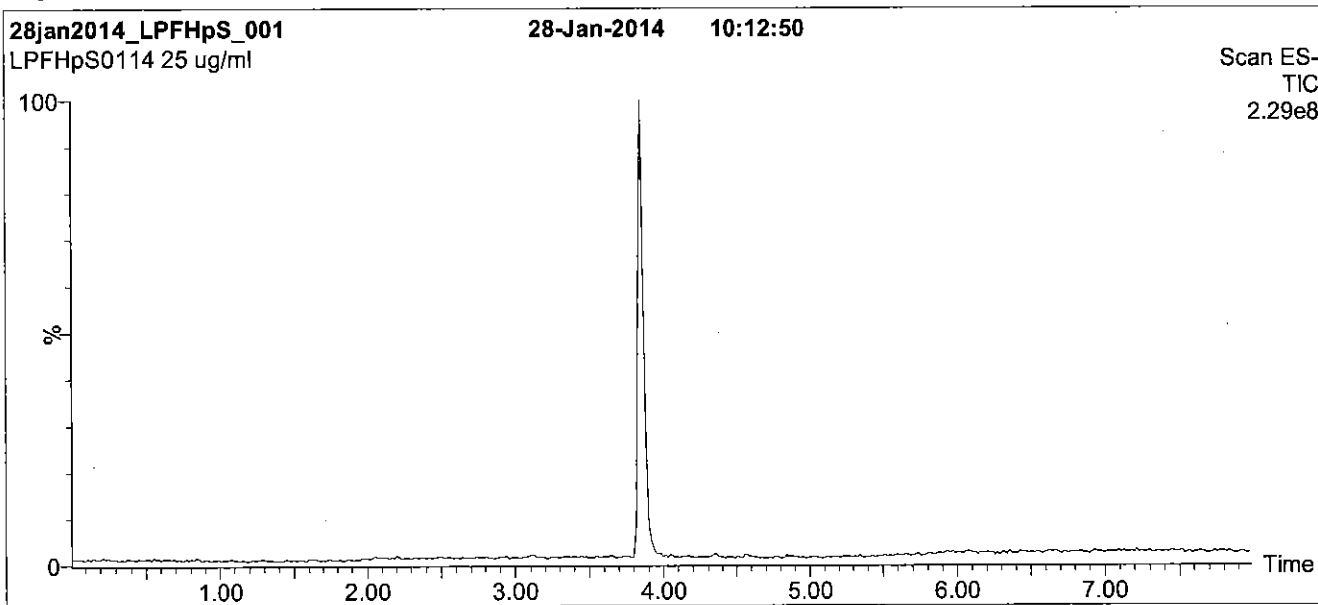
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

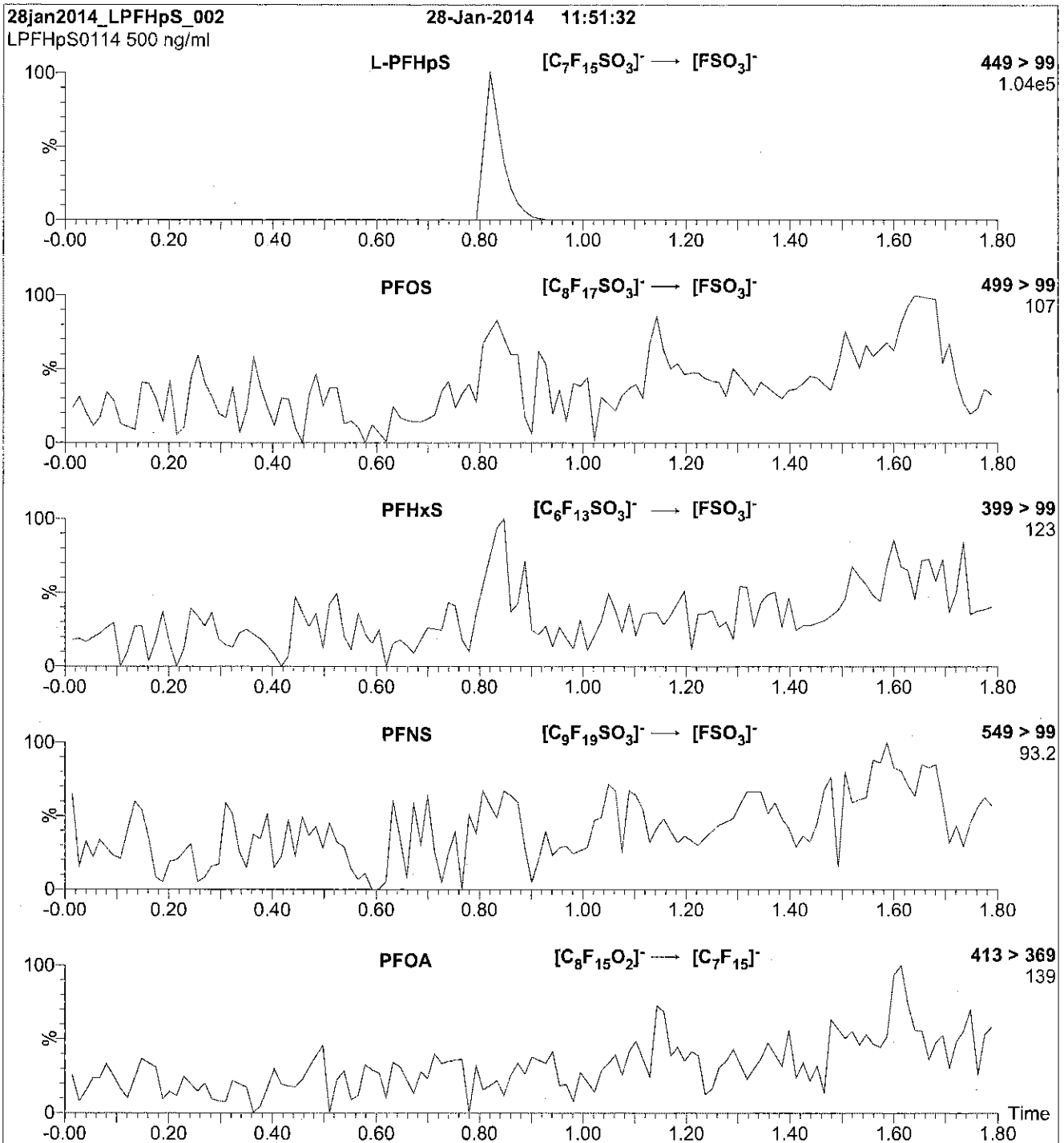
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

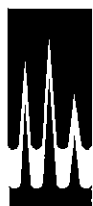
MS Parameters

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

Reagent

LCPFHxA_00003

V# 2/11/15 SW

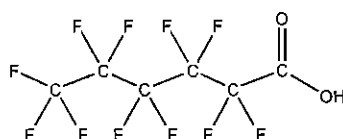


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



MOLECULAR FORMULA: $C_6HF_{11}O_2$ **MOLECULAR WEIGHT:** 314.05
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/22/2014

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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.

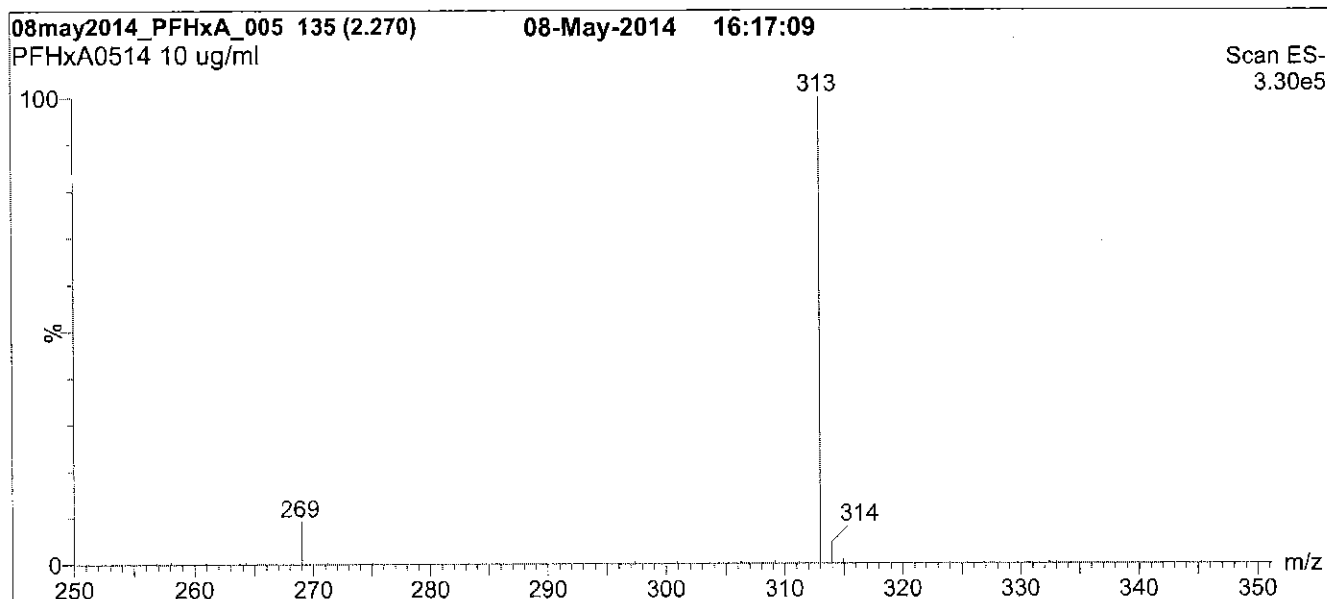
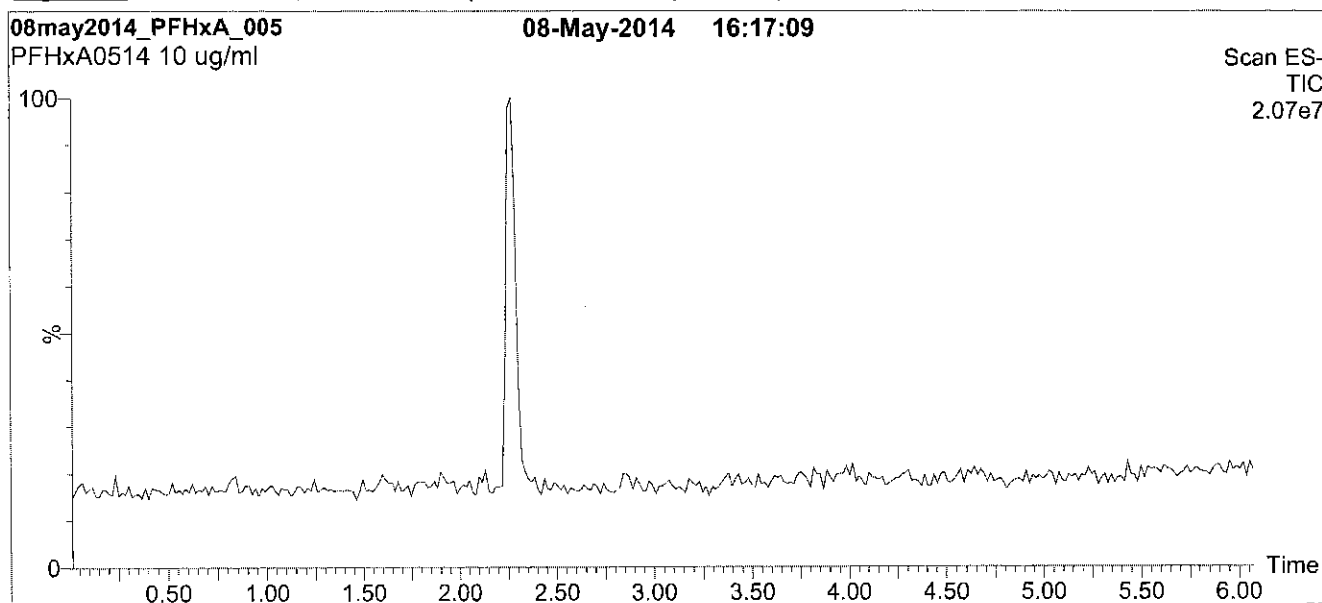
QUALITY MANAGEMENT:

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).



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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 C₁₈
1.7 μ m, 2.1 x 100 mm

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

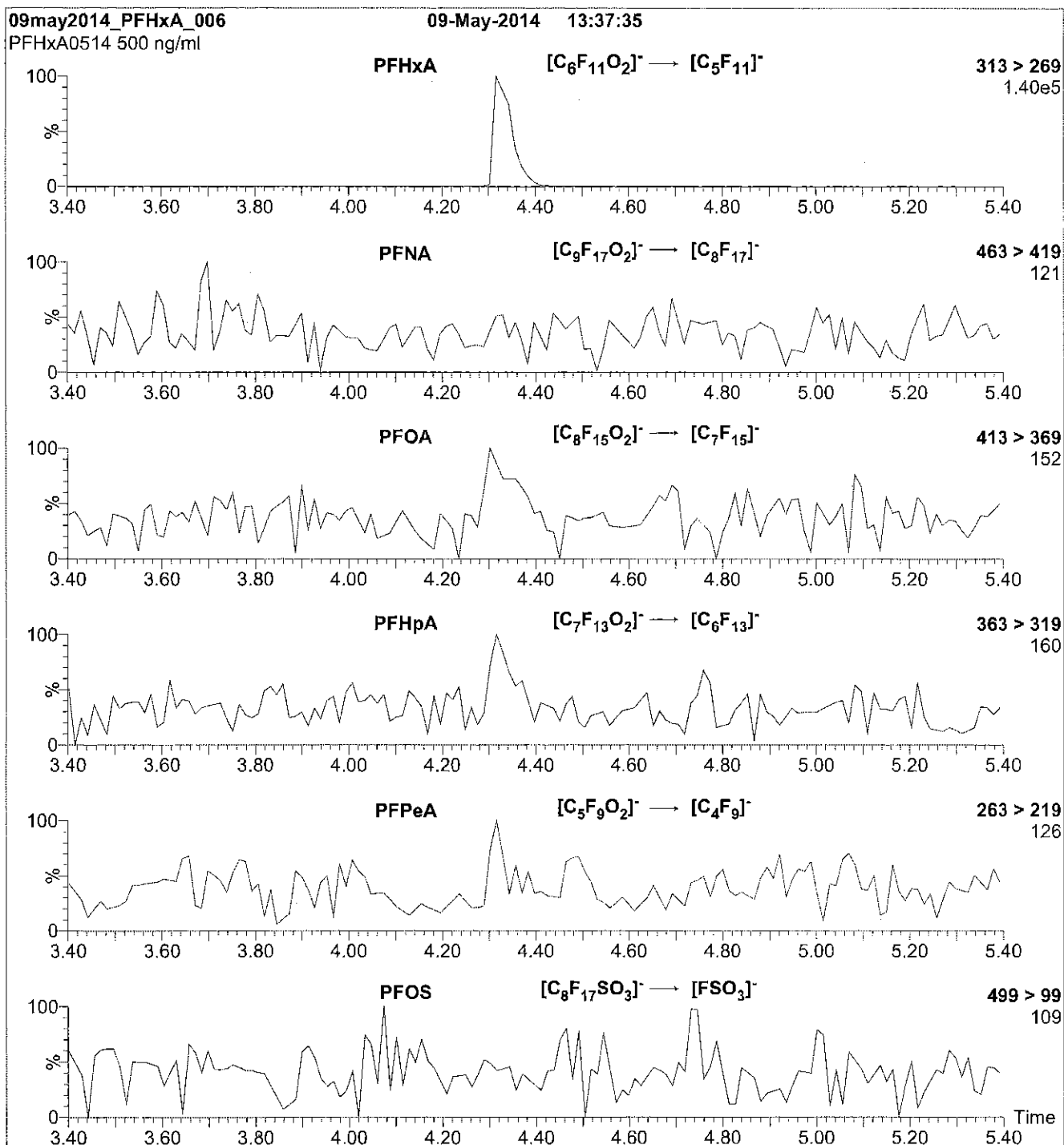
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFHXS_00003



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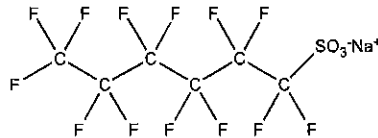
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: LPFHxS0514

STRUCTURE:

CAS #: 82382-12-5



MOLECULAR FORMULA: C₆F₁₃SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
 47.3 ± 2.4 µg/ml (PFHxS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 422.10
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: 05/16/2014
(mm/dd/yyyy)

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

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

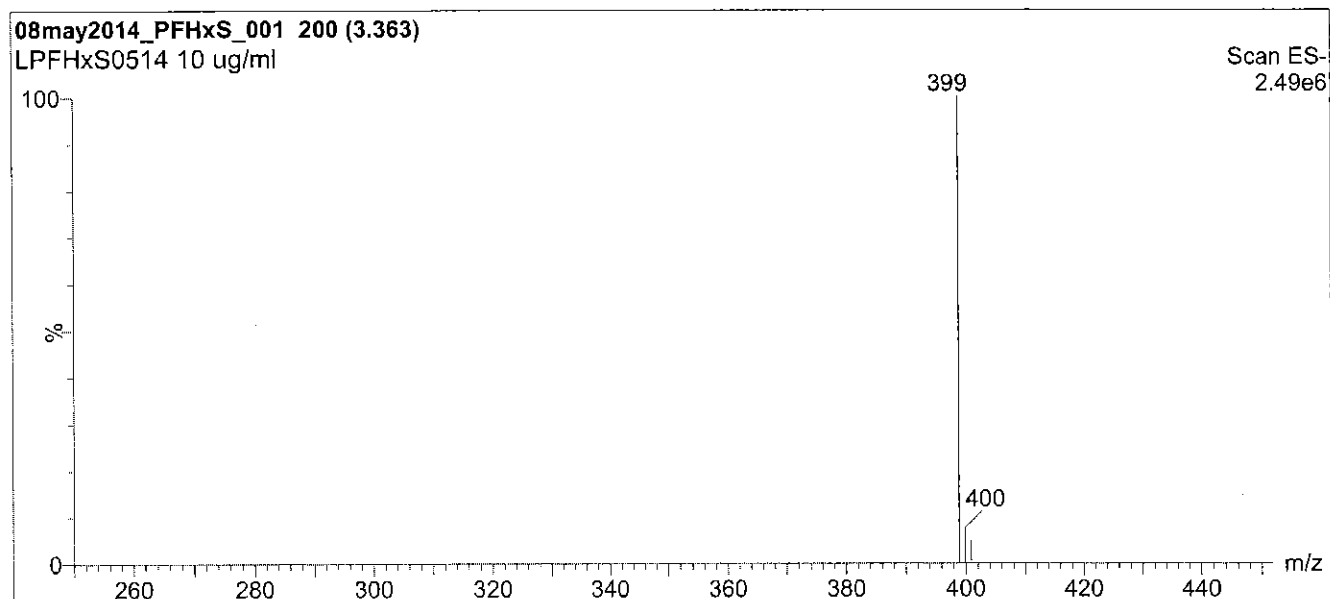
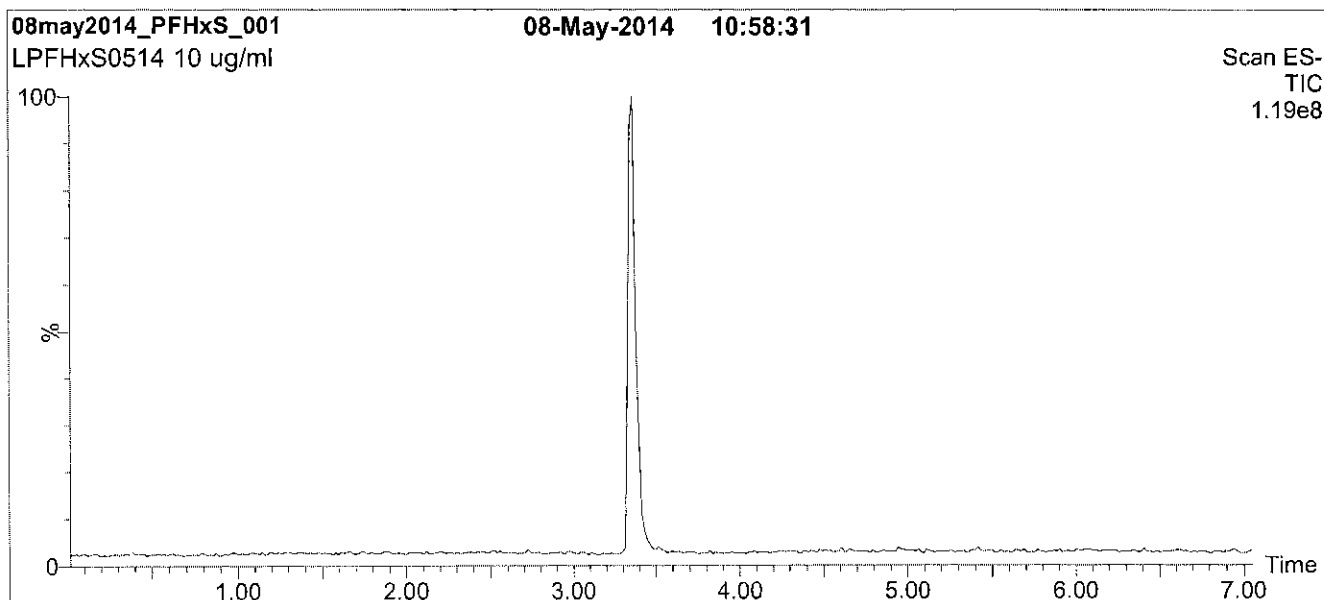
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH C₁₈
1.7 μm, 2.1 x 100 mm

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

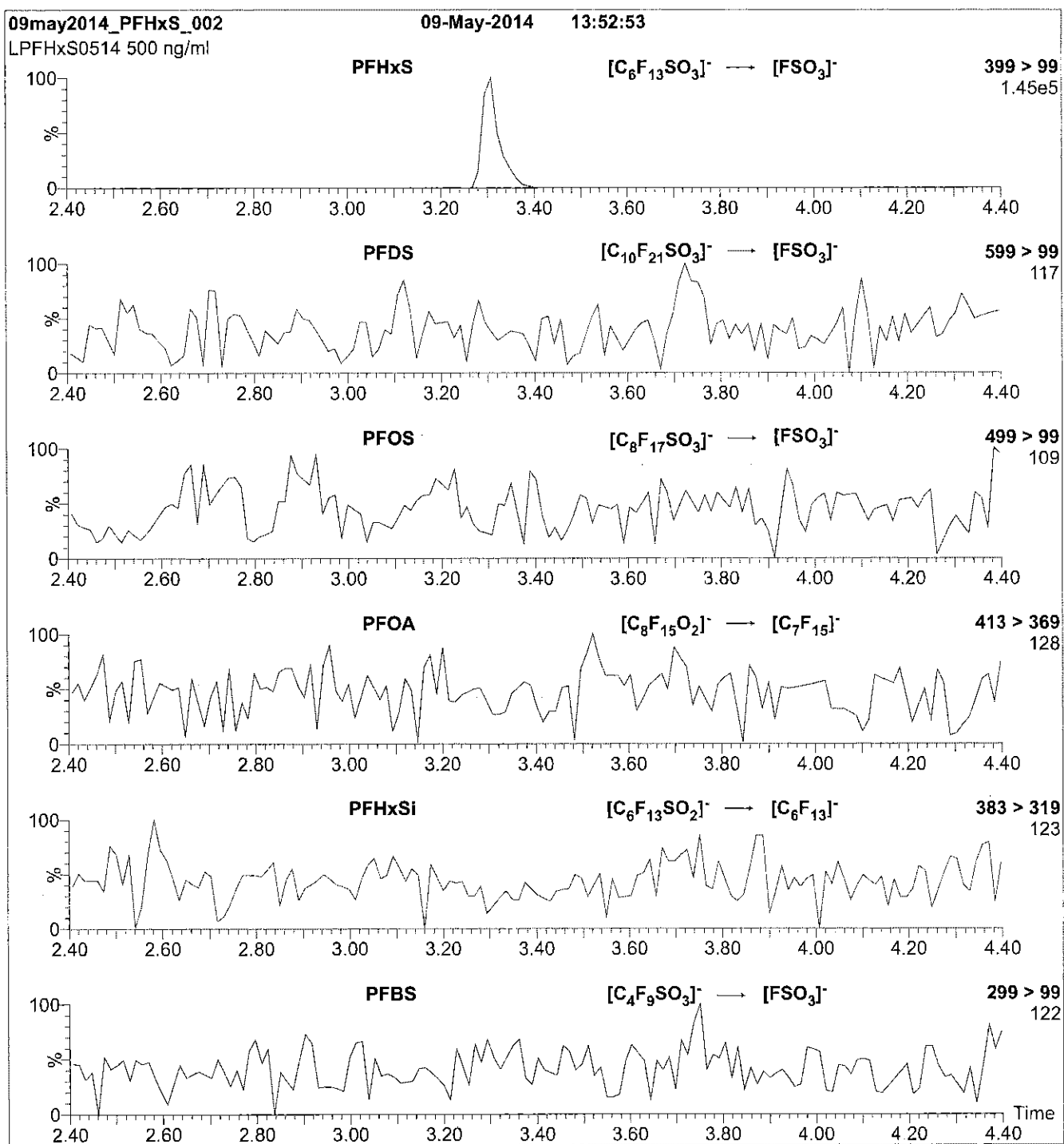
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

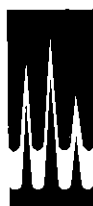
MS Parameters

Collision Gas (mbar) = 3.17e-3
 Collision Energy (eV) = 30

Reagent

LCPFNA_00004

r: 3/27/15 ✓
s:



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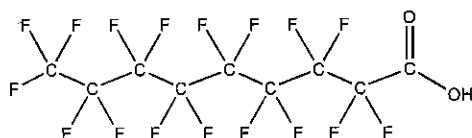
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA0514

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: C₉H₁₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
Water (<1%)

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/22/2014
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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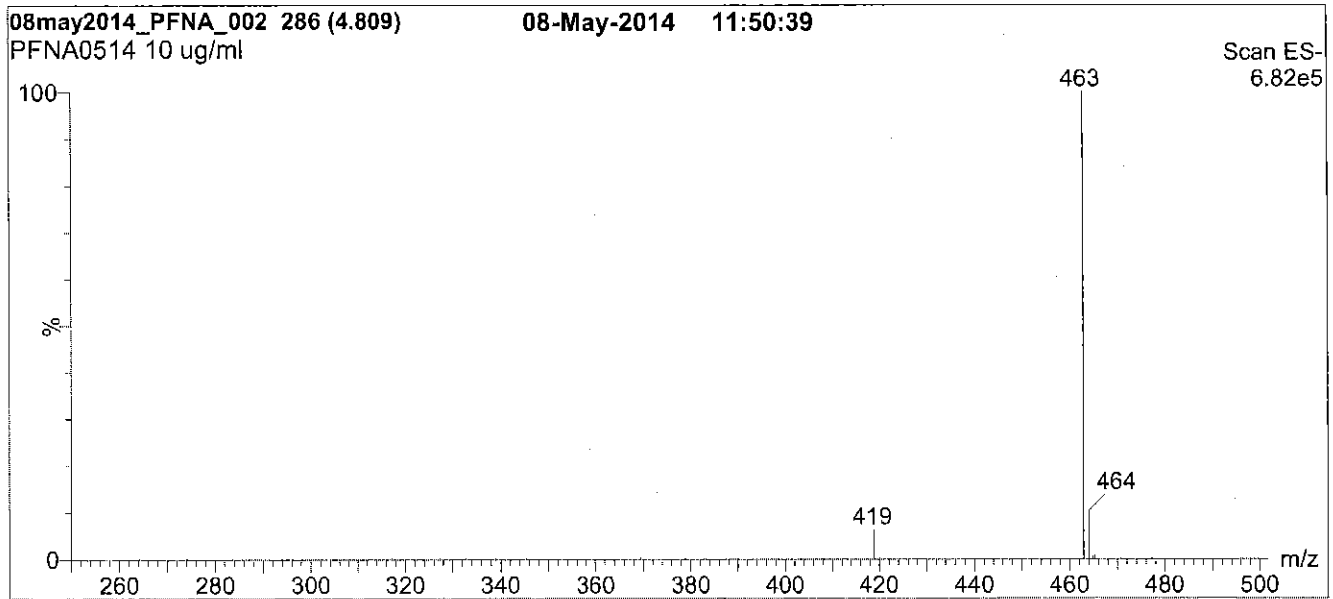
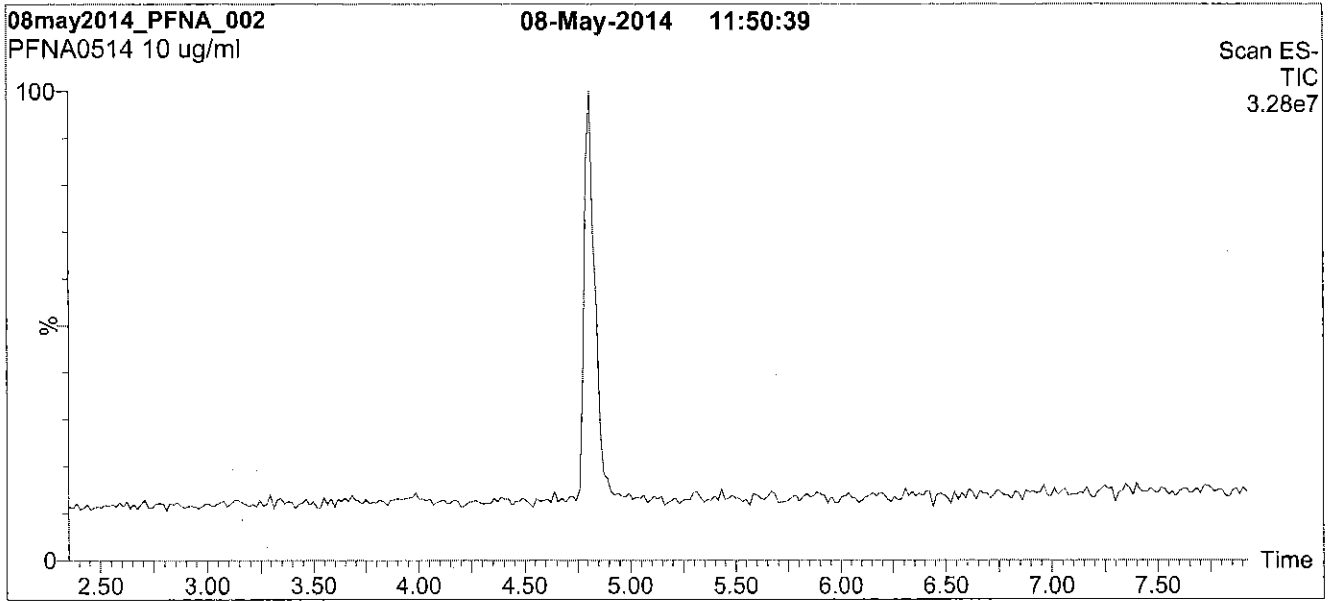
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH C₁₈
1.7 μ m, 2.1 x 100 mm

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

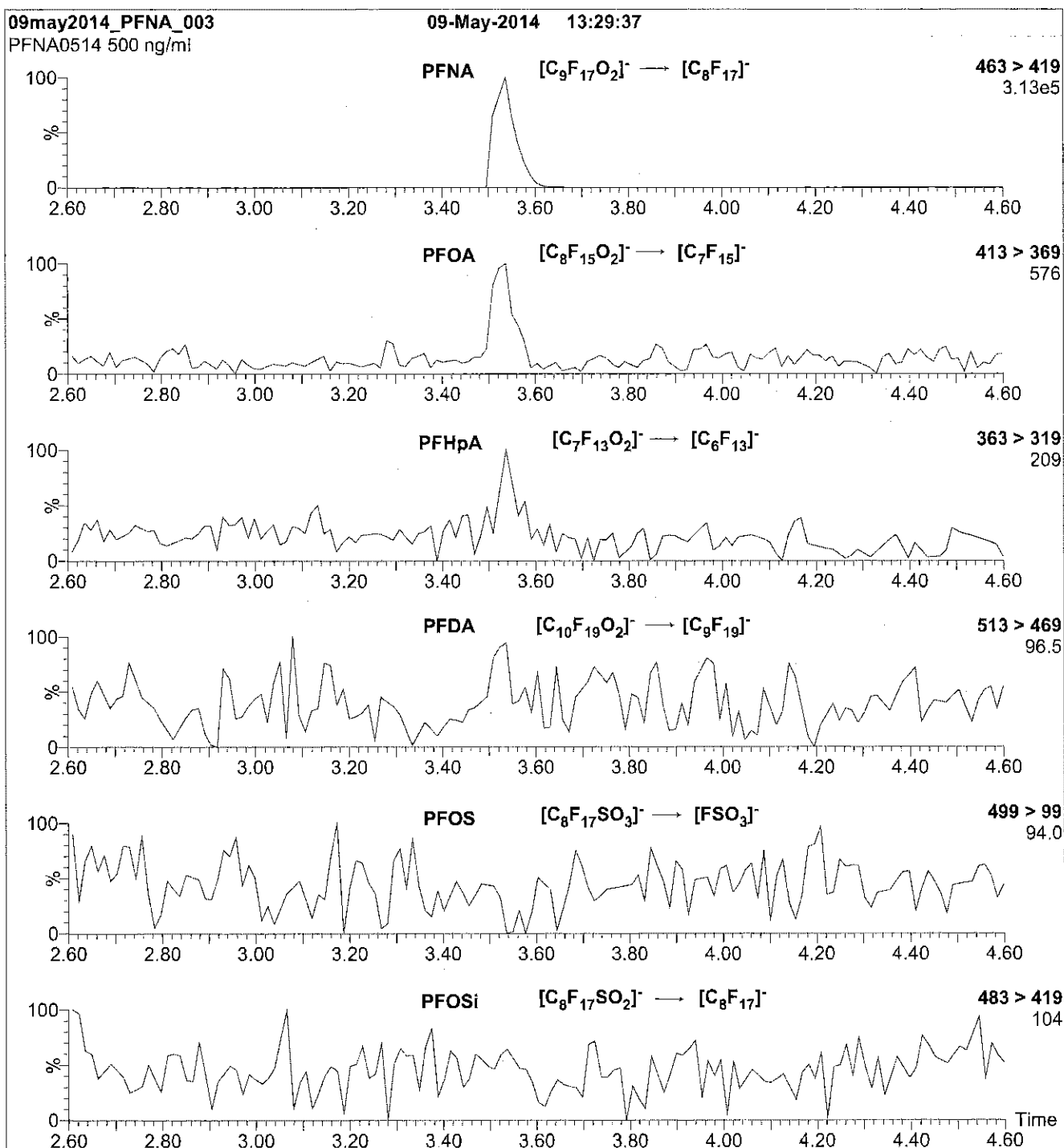
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 11

Reagent

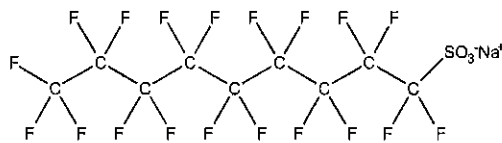
LCPFNS_00002



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CERTIFICATE OF ANALYSIS DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 

B.G. Chittim

Date: 01/15/2013

(mm/dd/yyyy)

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

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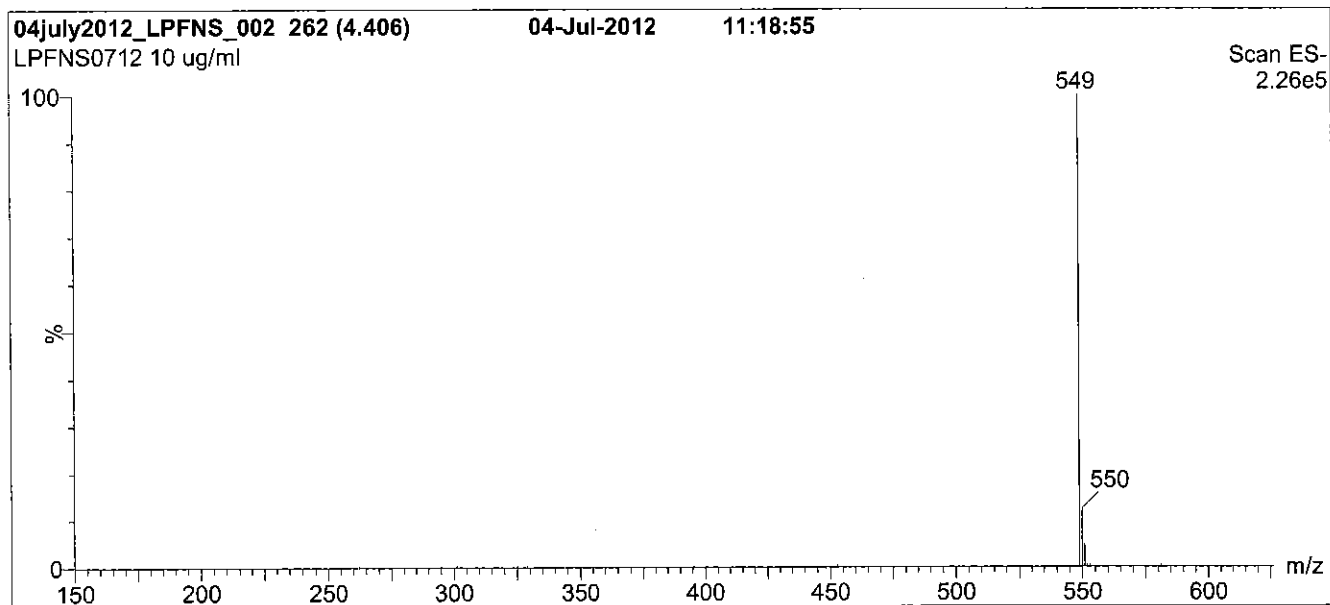
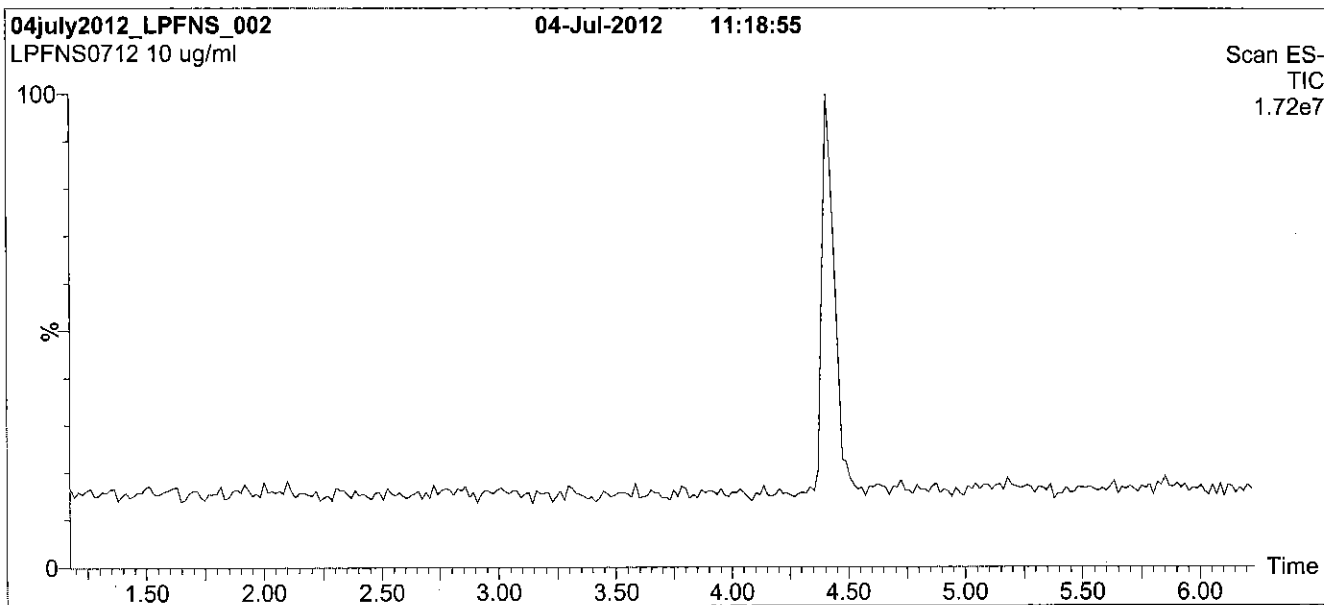
QUALITY MANAGEMENT:

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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 55% (80:20 MeOH:ACN) / 45% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

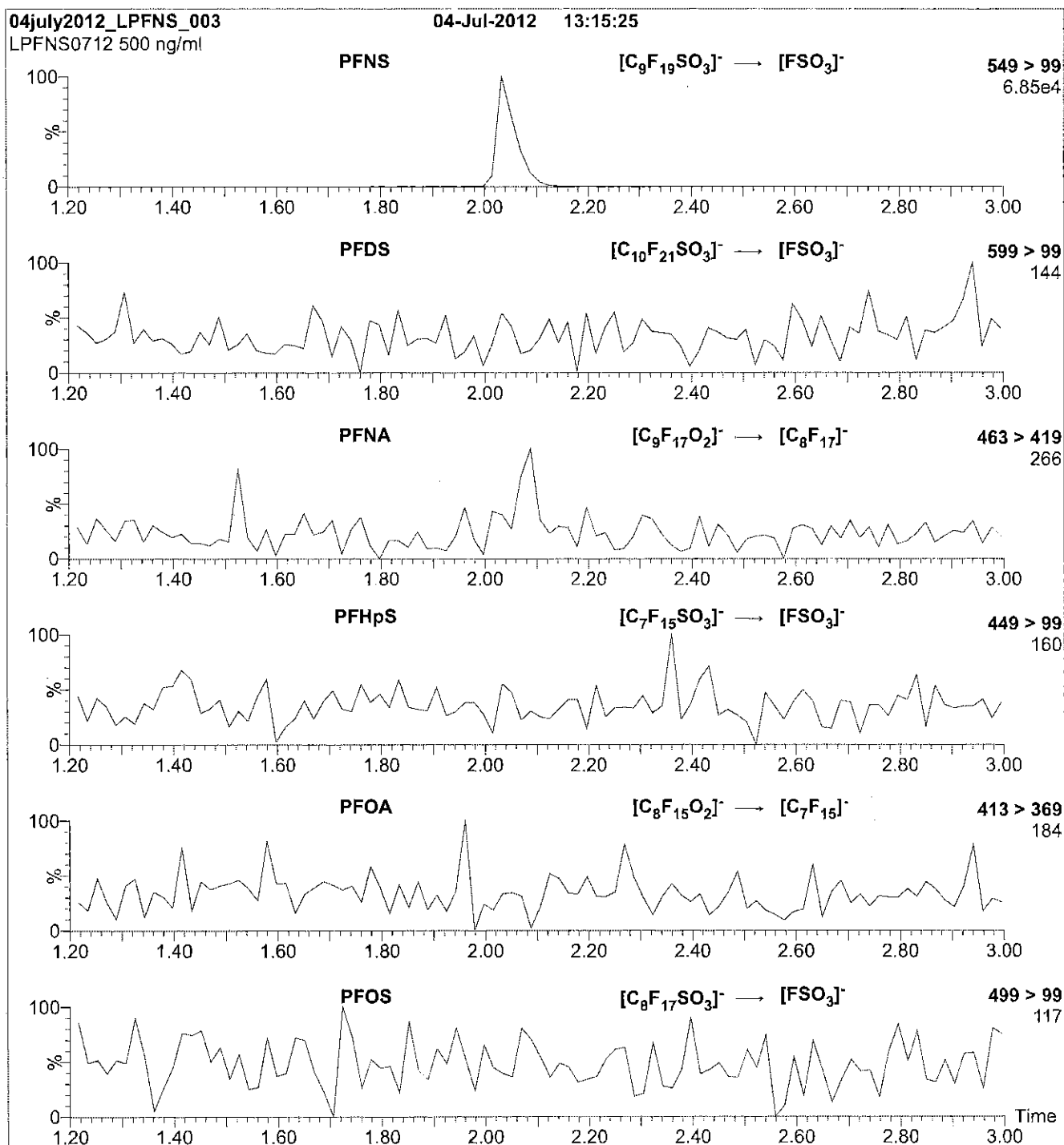
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 65.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFOA_00004



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

Rec 7/15/14

PRODUCT CODE:

PFOA

LOT NUMBER:

PFOA1013

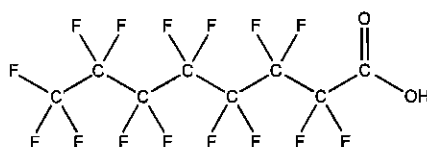
COMPOUND:

Perfluoro-n-octanoic acid

STRUCTURE:

CAS #:

335-67-1



MOLECULAR FORMULA:

$C_8HF_{15}O_2$

MOLECULAR WEIGHT:

414.07

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/11/2013

EXPIRY DATE: (mm/dd/yyyy)

10/11/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/18/2013

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

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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.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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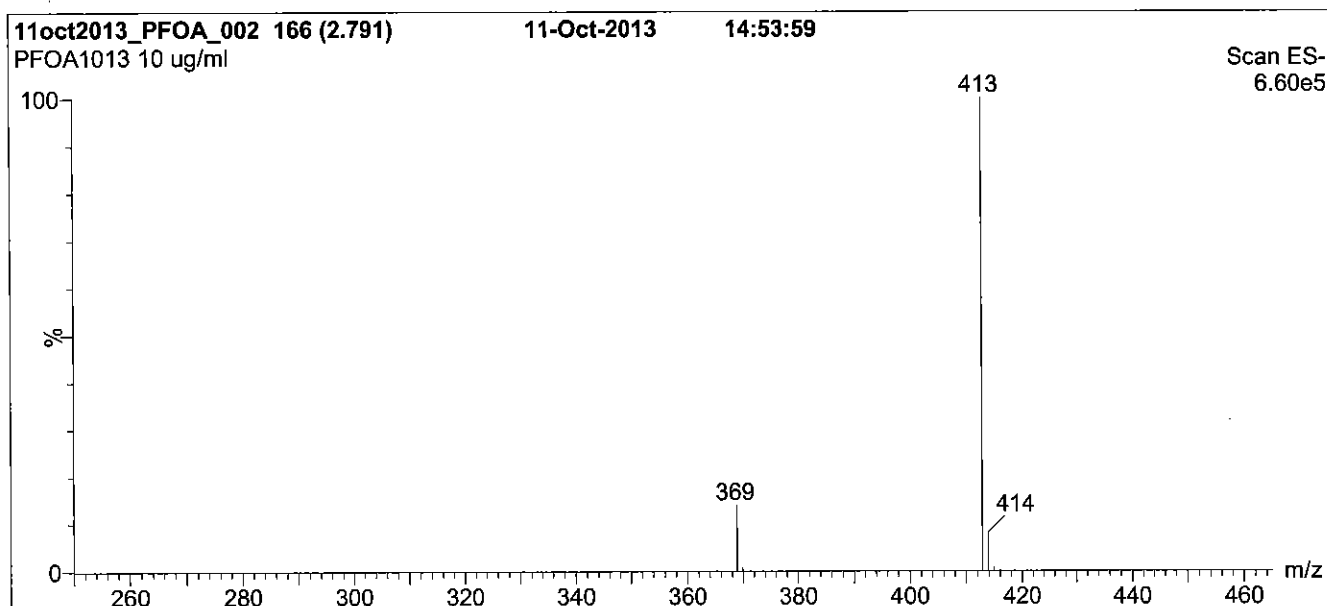
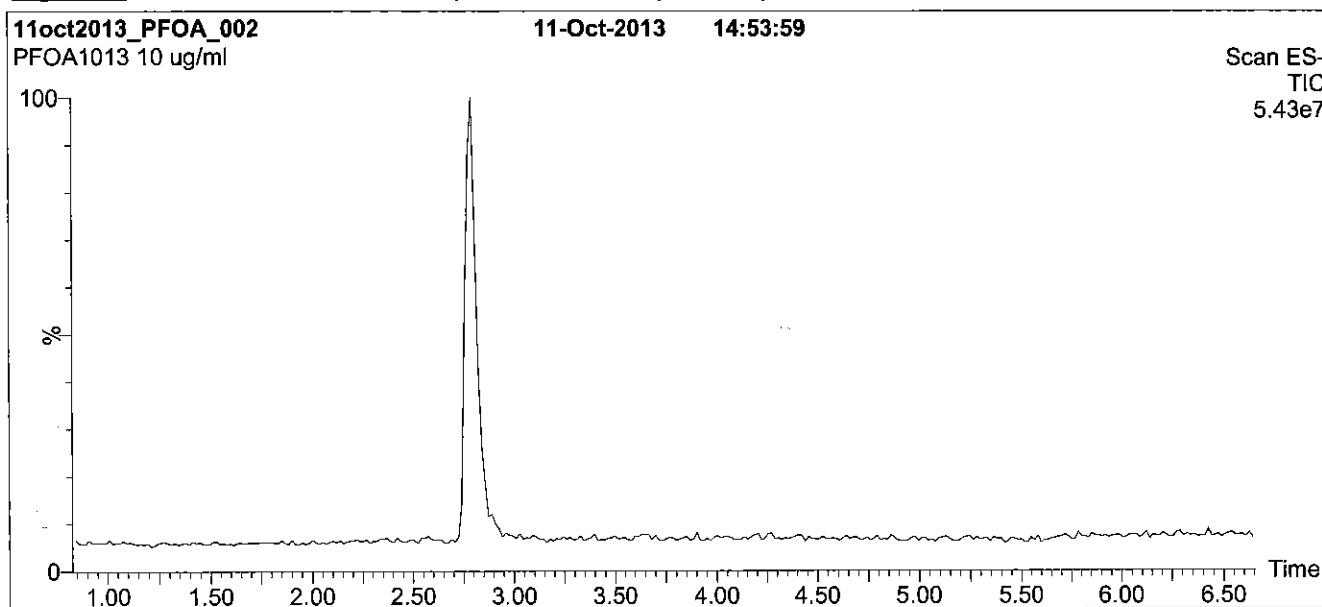
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Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 10 min

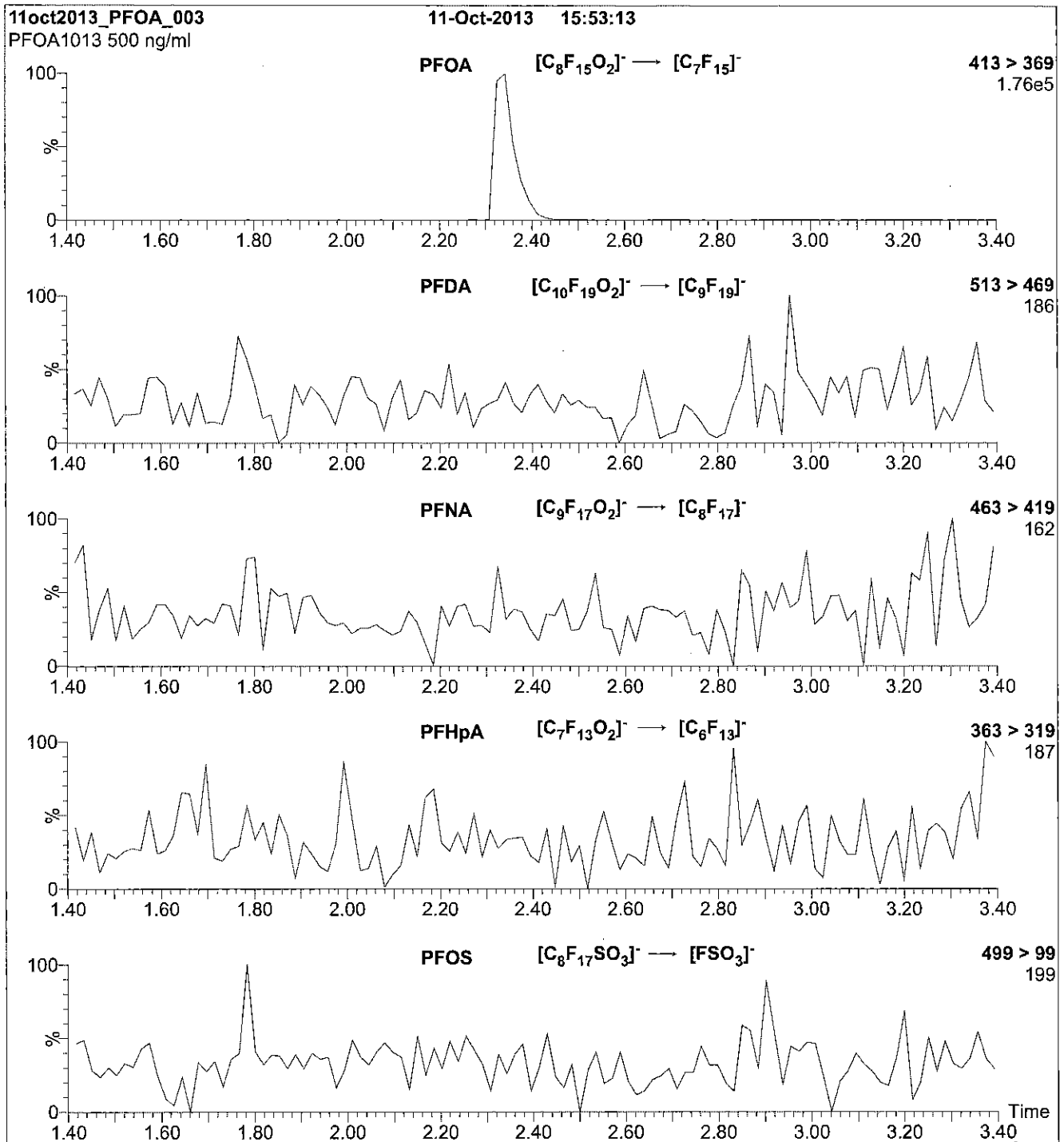
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

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

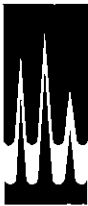
Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFODA_00004

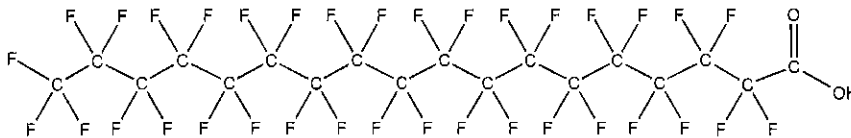


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** 16517-11-6



MOLECULAR FORMULA: C₁₈H_{F₃₆}O₂ **MOLECULAR WEIGHT:** 914.15
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (4%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/25/2014
EXPIRY DATE: (mm/dd/yyyy) 04/25/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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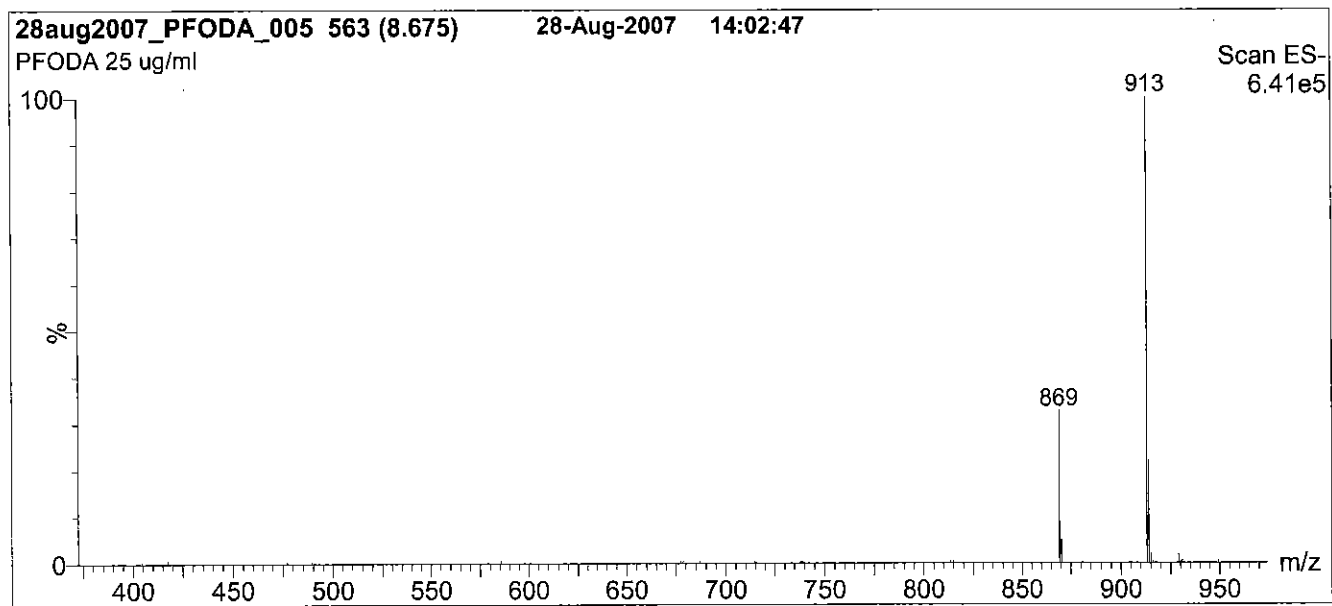
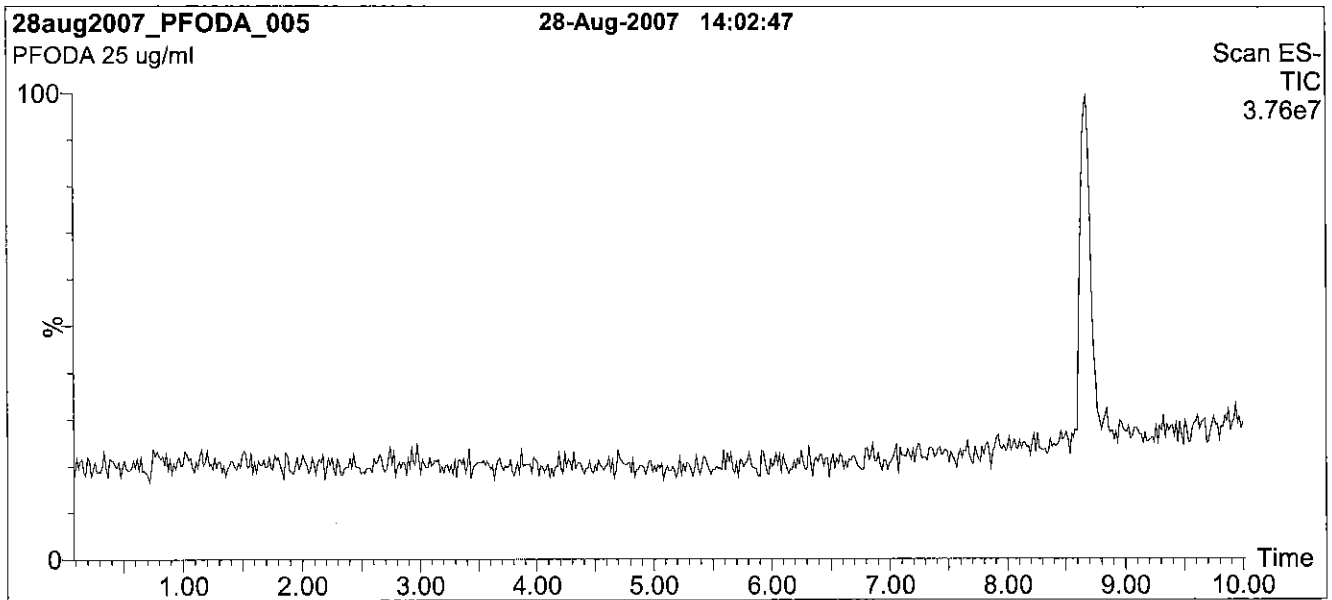
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Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 75% (80:20 MeOH:ACN) / 25% H₂O
(both with 10 mM NH₄OAc buffer)
Hold 5 min. Ramp to 100% organic over 6 min.
Hold 3 min before returning to initial conditions.
Time: 16 min

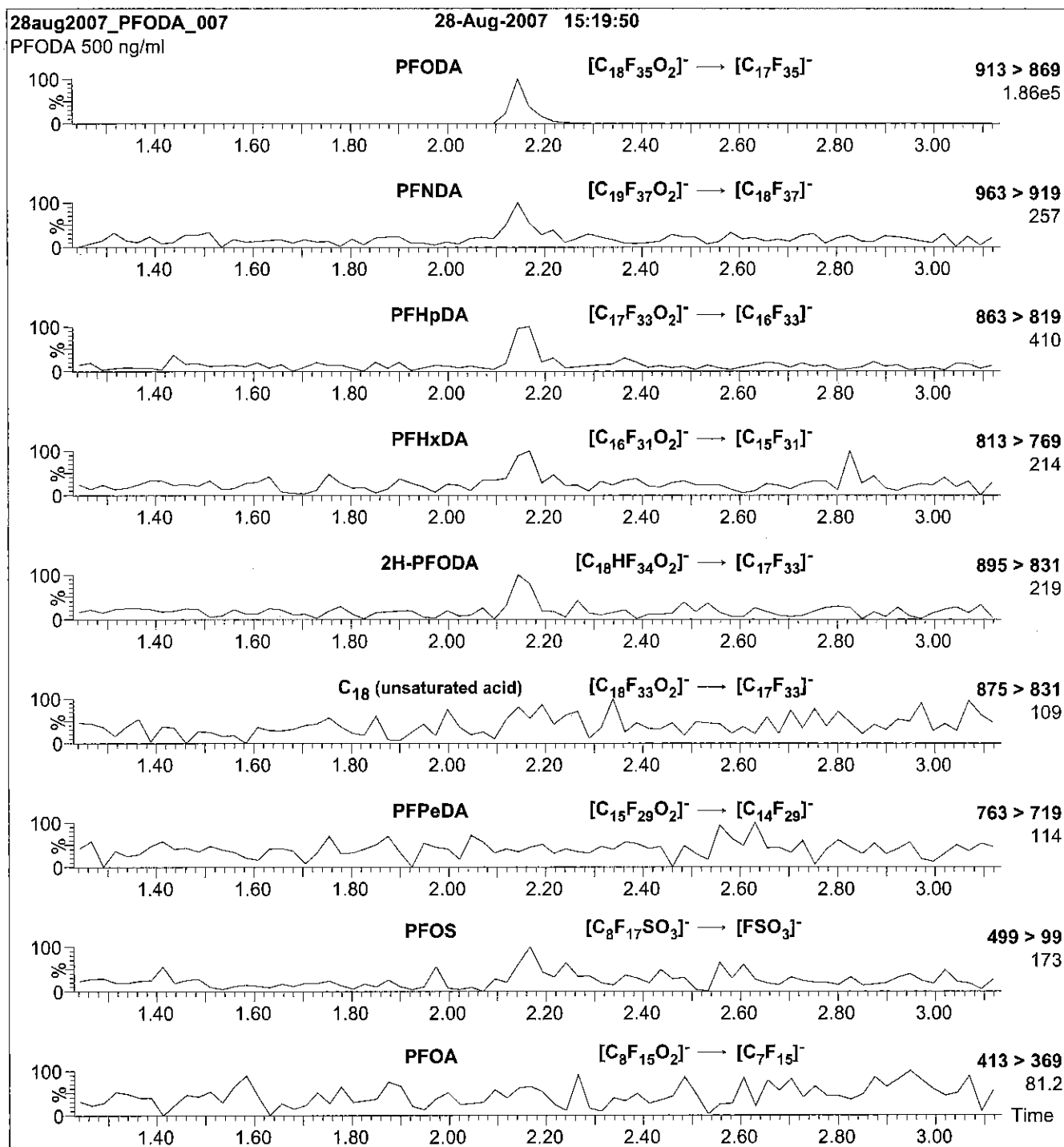
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1100 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 75% (80:20 MeOH:ACN) / 25% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

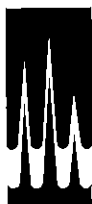
MS Parameters

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

Reagent

LCPFOS_00004

3/17/15 SV



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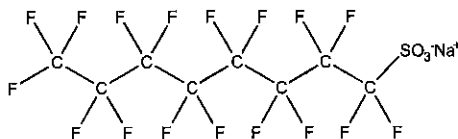
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFOS
COMPOUND: Sodium perfluoro-1-octanesulfonate

LOT NUMBER: LPFOS0614

STRUCTURE:

CAS #: 4021-47-0



MOLECULAR FORMULA: C₈F₁₇SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
 47.8 ± 2.4 µg/ml (PFOS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/20/2014
EXPIRY DATE: (mm/dd/yyyy) 06/20/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 522.11
SOLVENT(S): Methanol

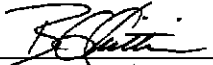
DOCUMENTATION/ DATA ATTACHED:

- 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: 10/27/2014
 (mm/dd/yyyy)

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

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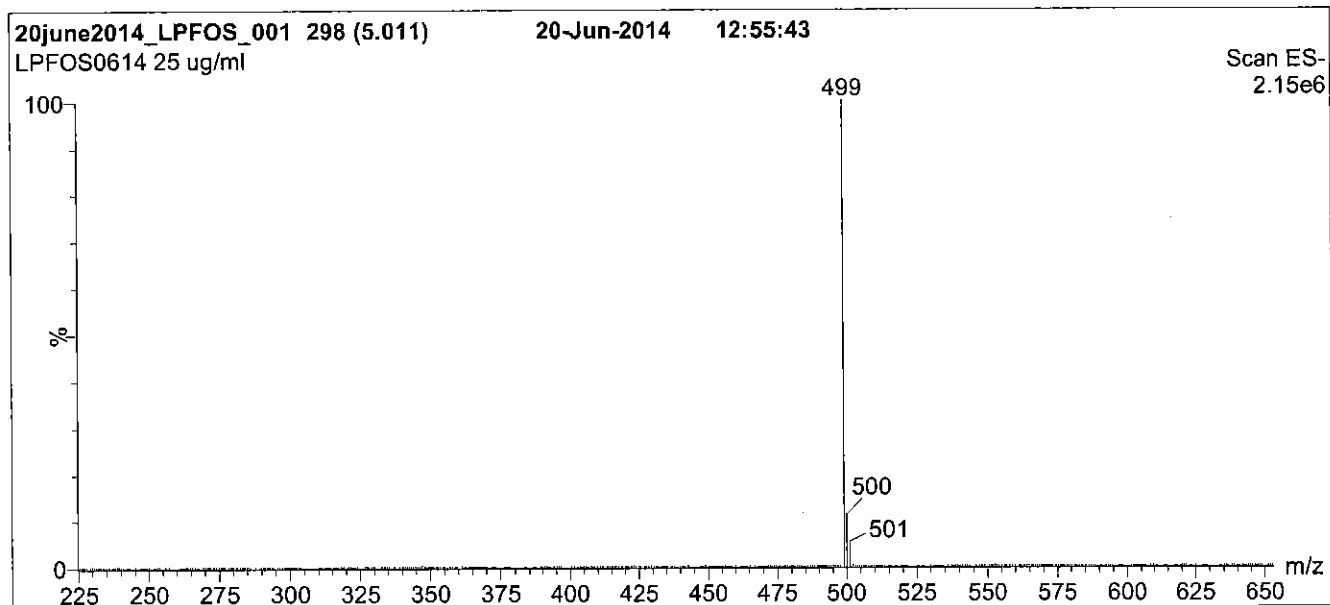
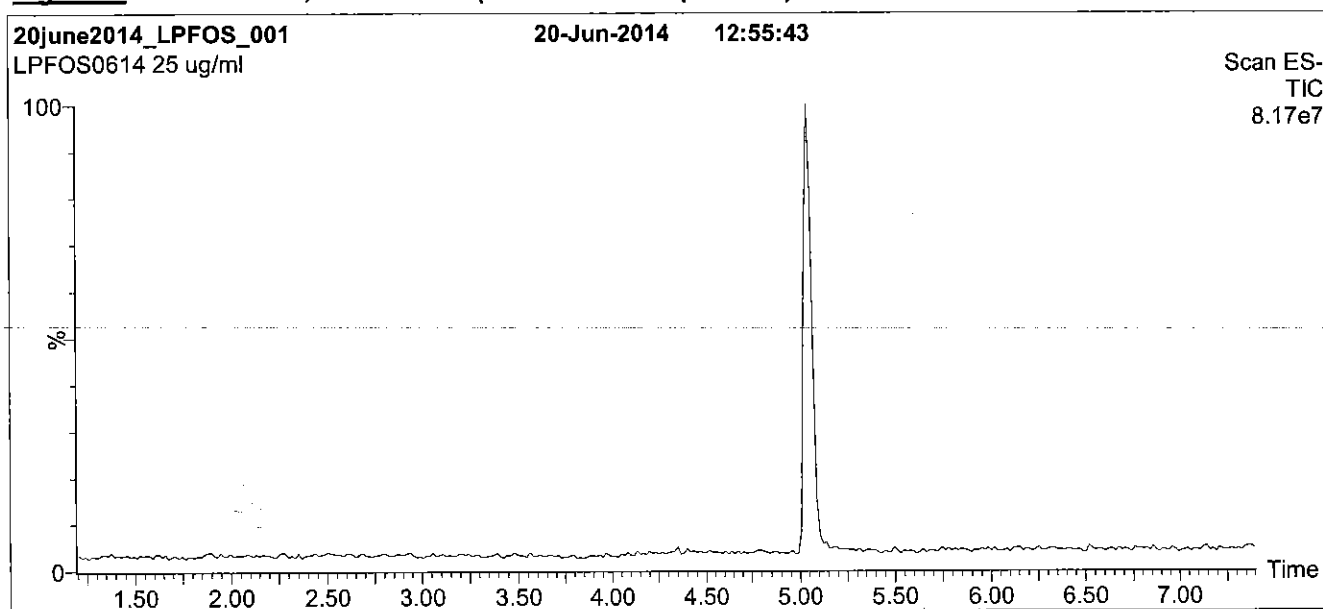
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Figure 1: L-PFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

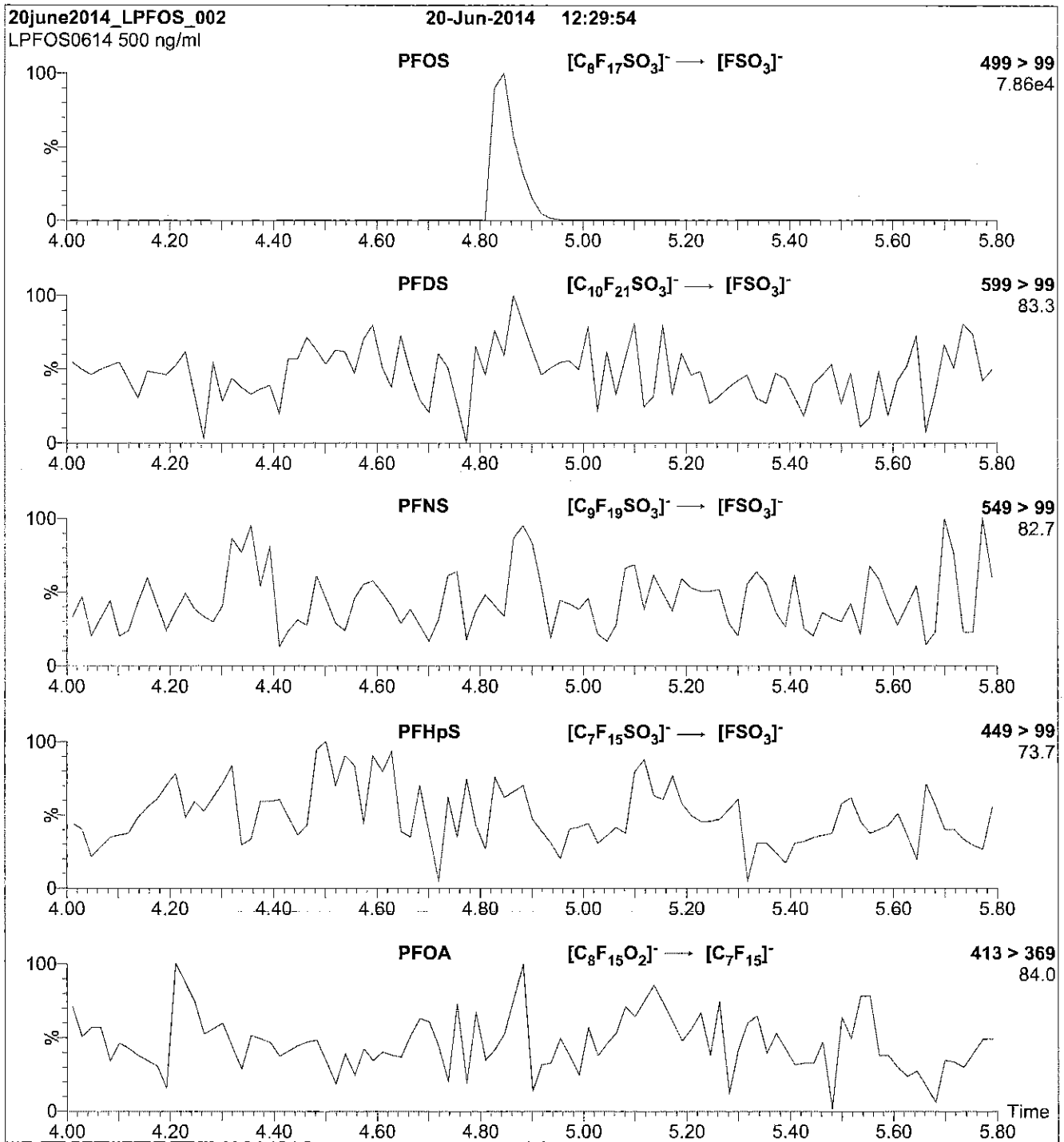
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
 Collision Energy (eV) = 40

Reagent

LCPFOSA_00005

n 2/11/15 BV



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FOSA-I

LOT NUMBER:

FOSA0714I

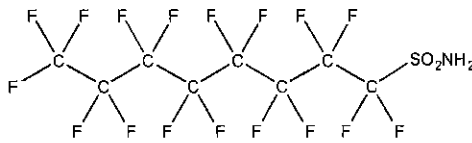
COMPOUND:

Perfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

754-91-6



MOLECULAR FORMULA:

C₈H₂F₁₇NO₂S

MOLECULAR WEIGHT:

499.14

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/31/2014

EXPIRY DATE: (mm/dd/yyyy)

Stability studies ongoing

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/05/2014

(mm/dd/yyyy)

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

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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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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

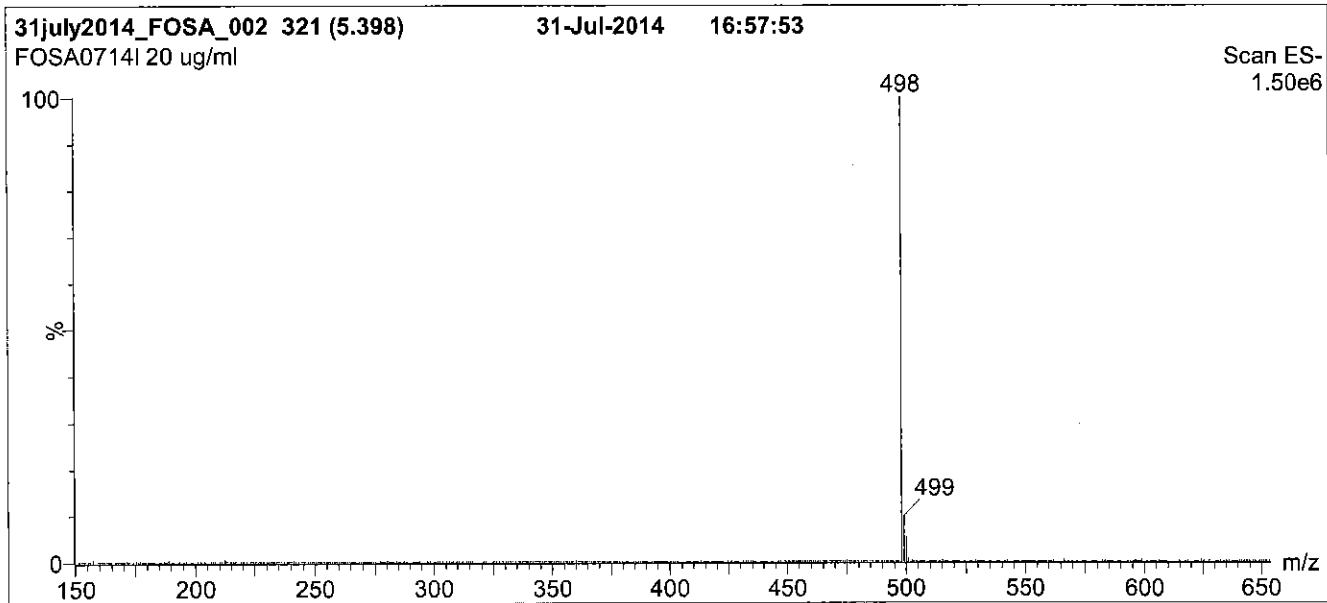
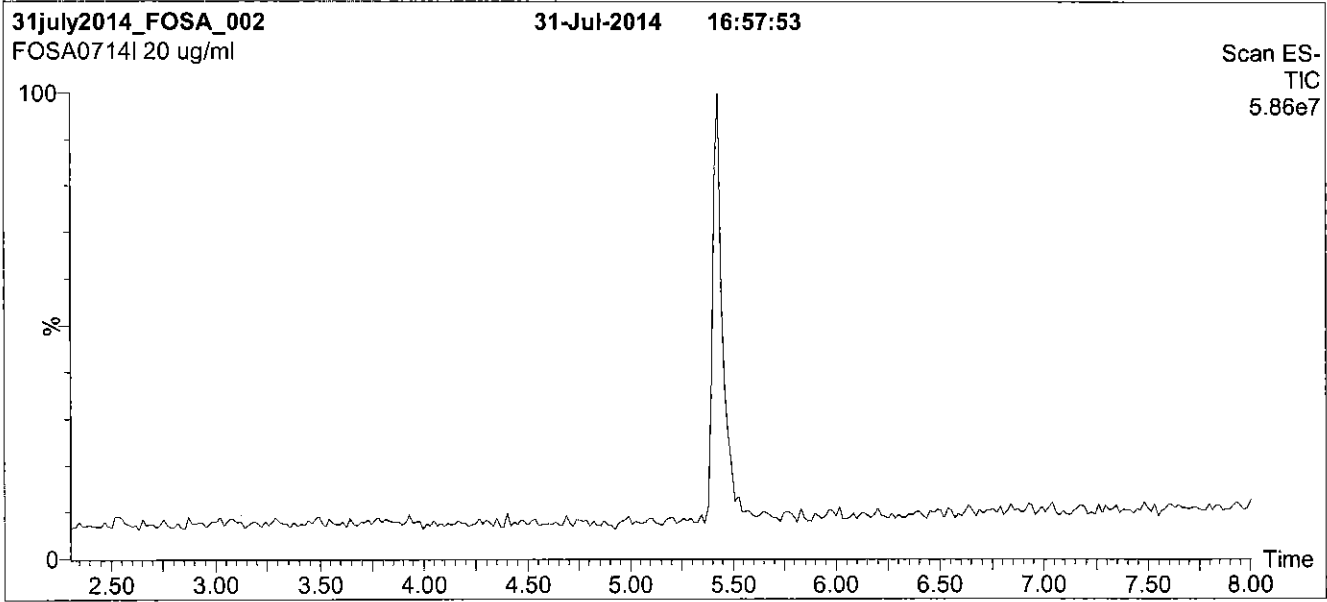
QUALITY MANAGEMENT:

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



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Figure 1: 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 C₁₈
 1.7 μm, 2.1 x 100 mm

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

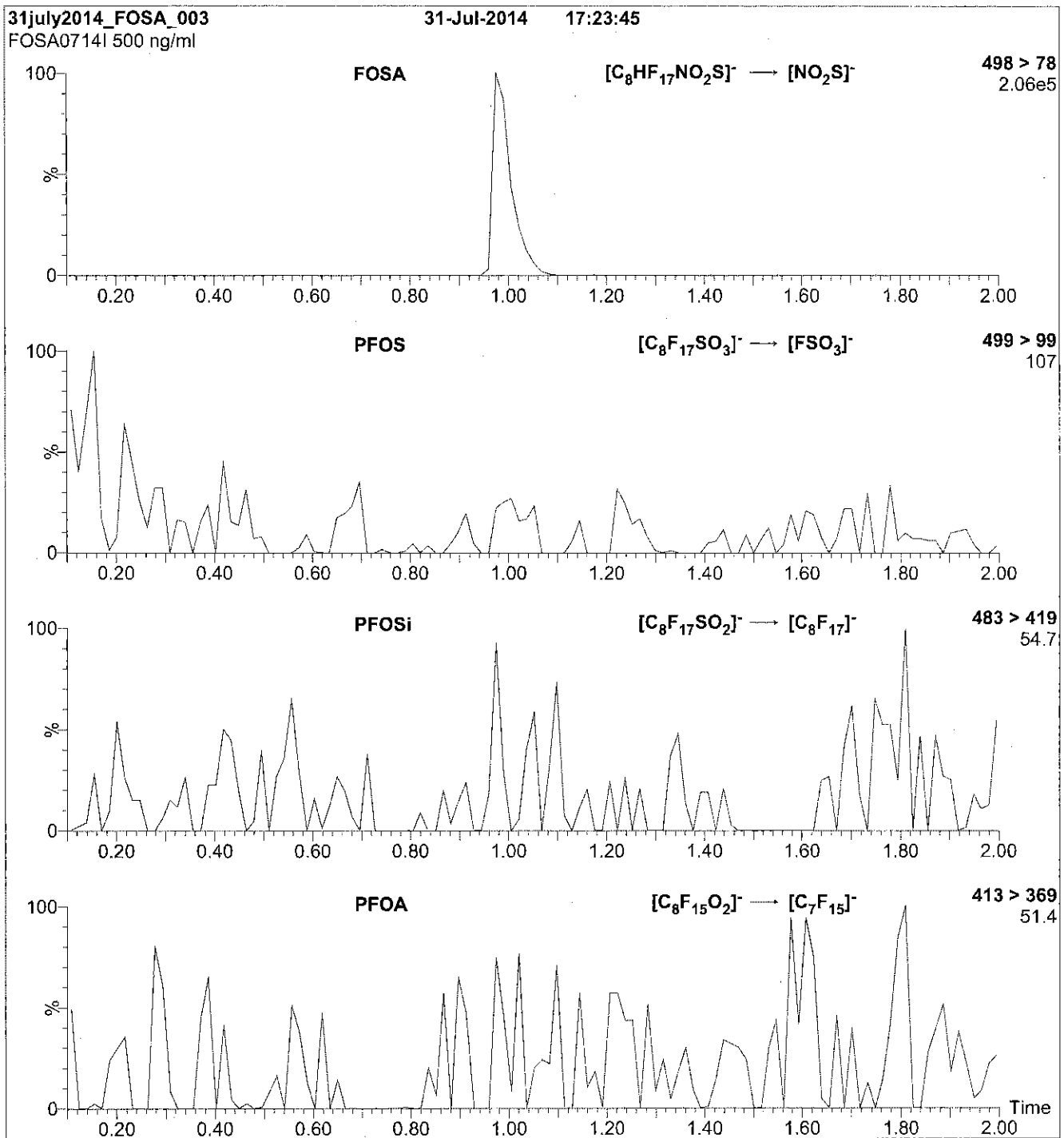
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (150 - 950 amu)

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

Figure 2: FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 30

Reagent

LCFPeA_00003

Rec 7/15/14



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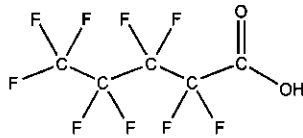
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid

LOT NUMBER: PFPeA0113

STRUCTURE:

CAS #: 2706-90-3



MOLECULAR FORMULA: C₅HF₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 264.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/03/2013
EXPIRY DATE: (mm/dd/yyyy) 01/03/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

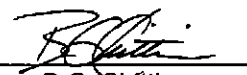
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of C₅H₂F₈O₂ (hydrido - derivative) as measured by ¹⁹F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim
Date: 01/14/2013
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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TRACEABILITY:

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

LIMITED WARRANTY:

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

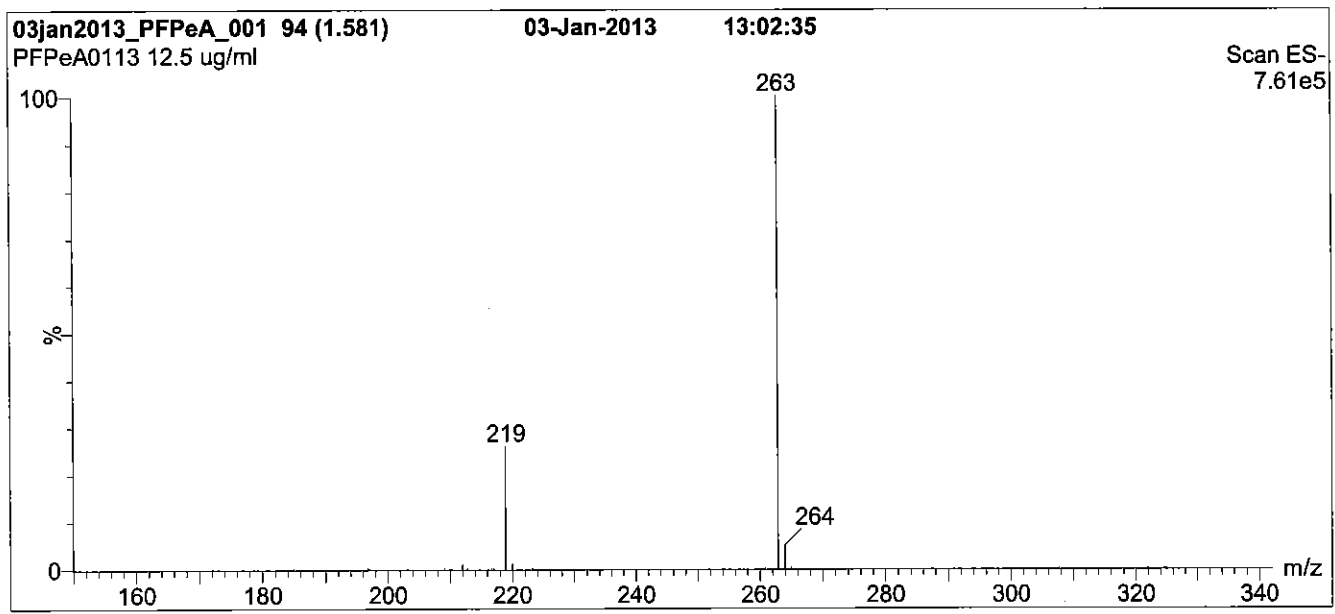
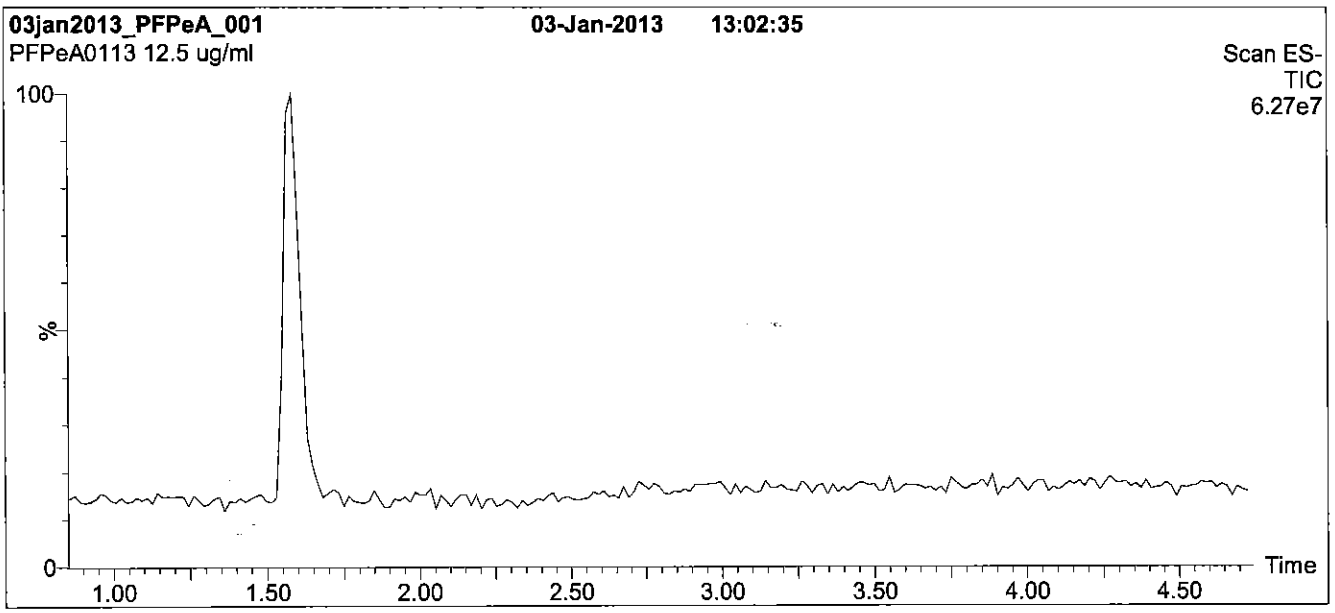
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

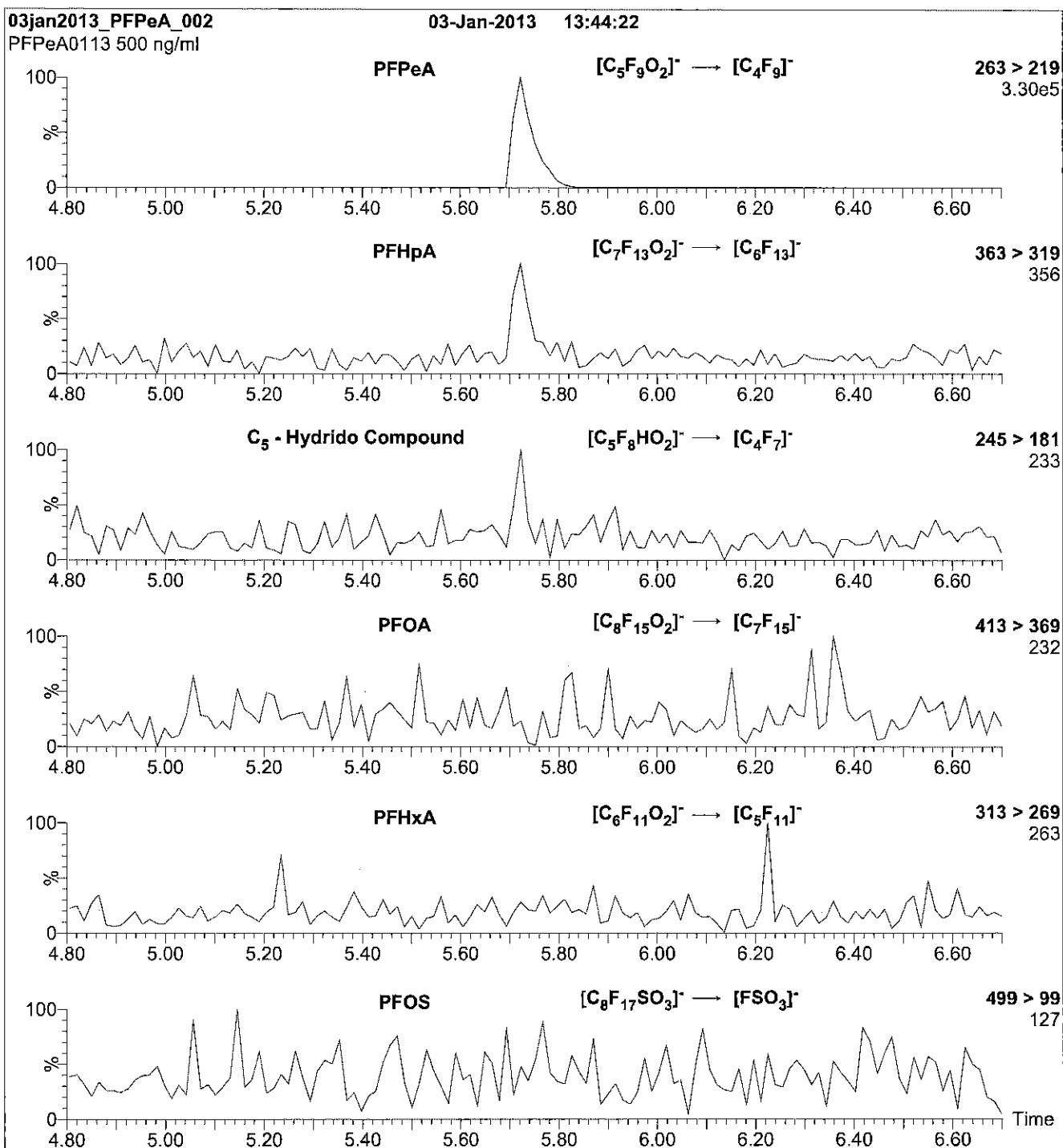
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCFPeS_00002

R 2/11/15 W



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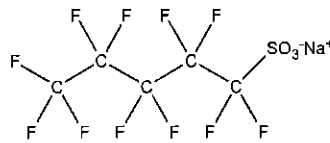
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: LPFPeS0712

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₅F₁₁SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
 46.9 ± 2.3 µg/ml (PFPeS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/04/2012
EXPIRY DATE: (mm/dd/yyyy) 07/04/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 372.09
SOLVENT(S): Methanol

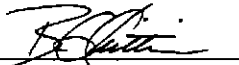
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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LIMITED WARRANTY:

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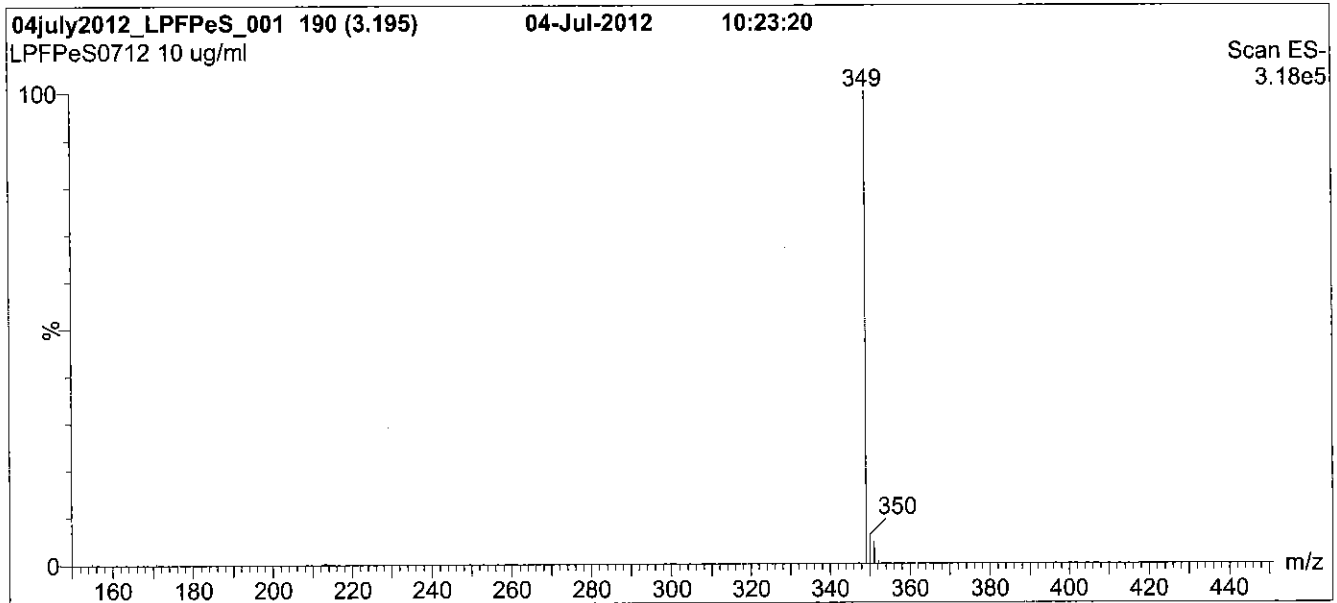
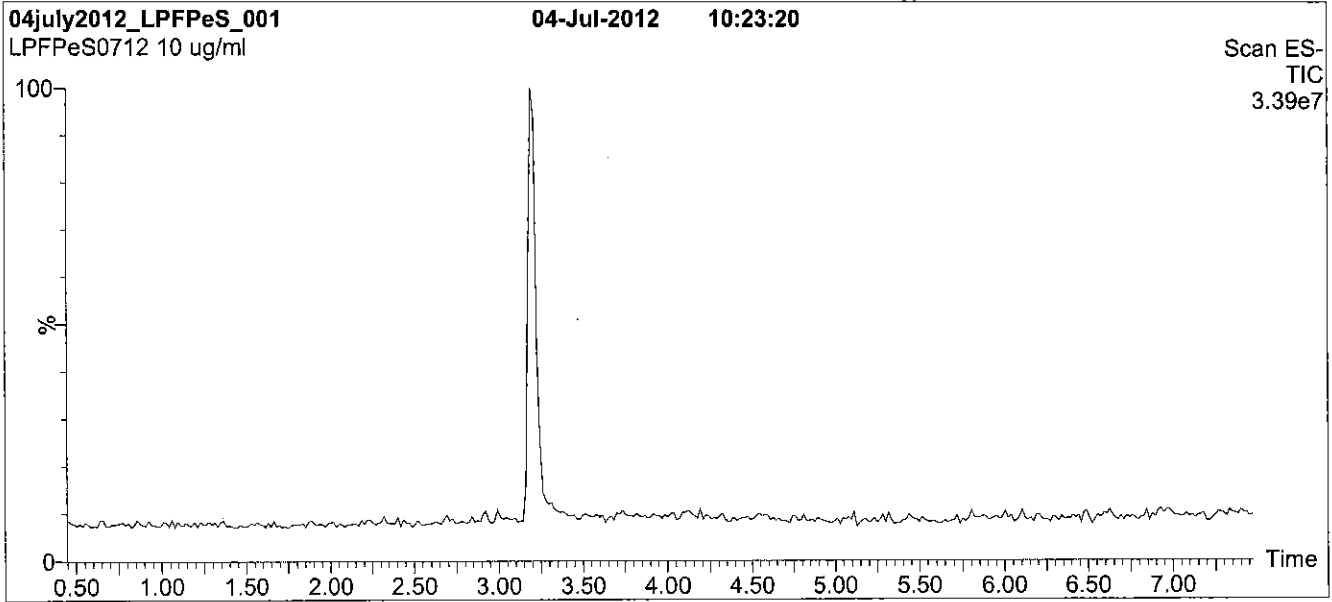
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 40% (80:20 MeOH:ACN) / 60% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions over 0.5 min.
 Time: 10 min

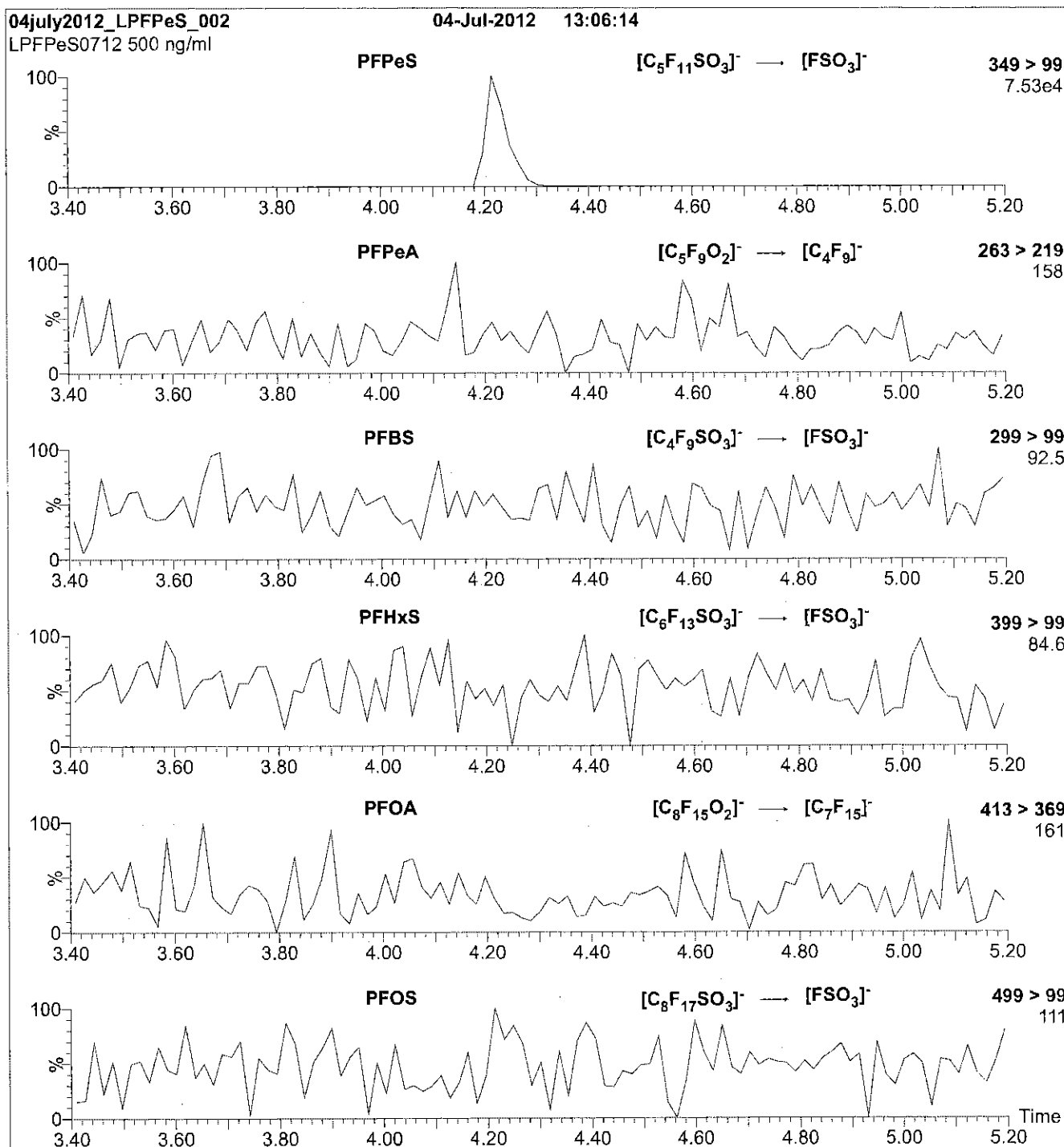
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFTeDA_00003

v: 2/11/15 srw

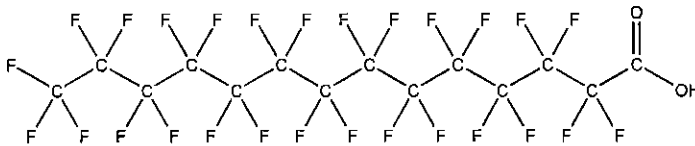


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$ **MOLECULAR WEIGHT:** 714.11
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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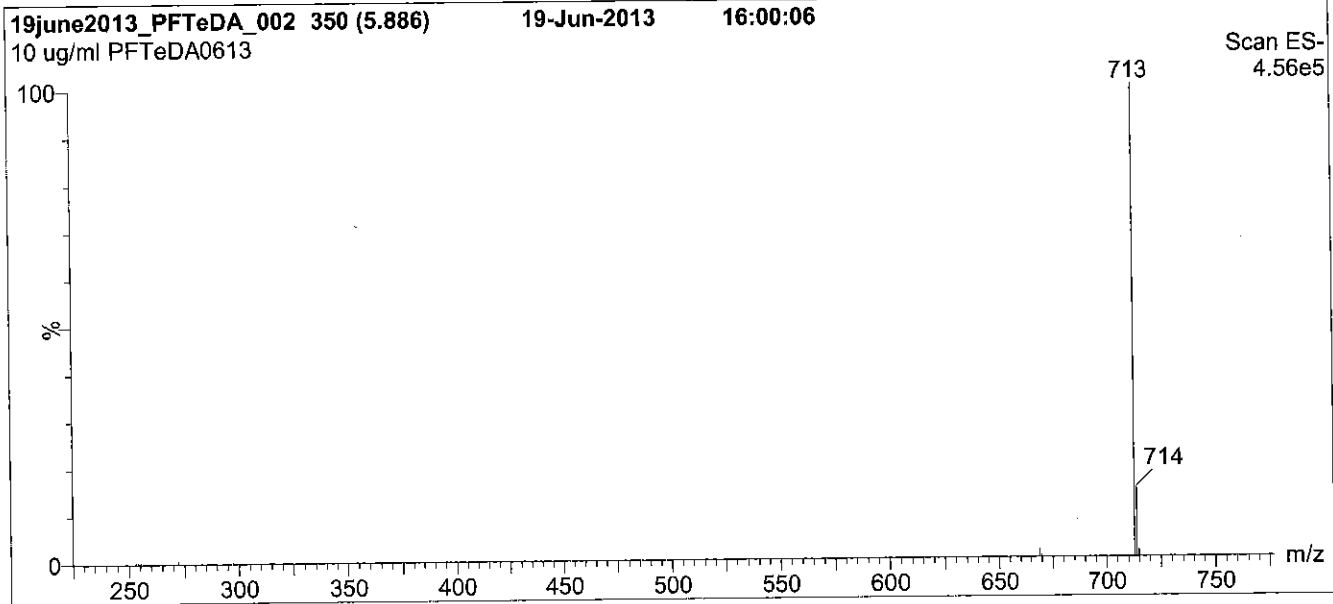
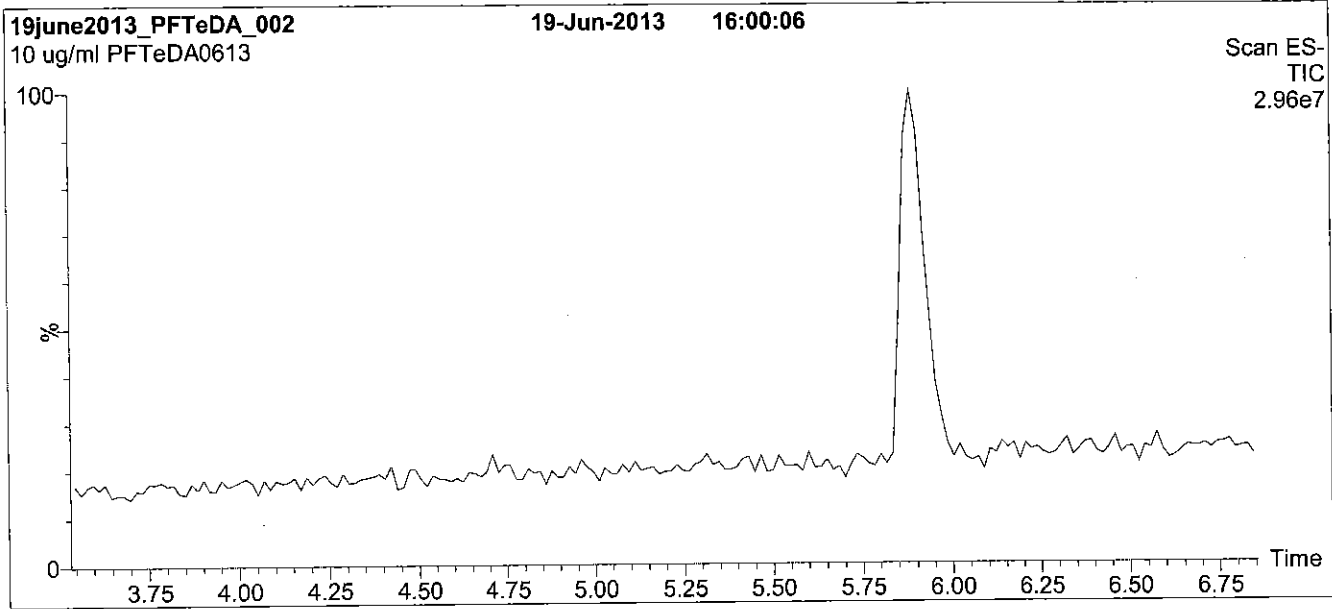
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.50 min.
Time: 10 min

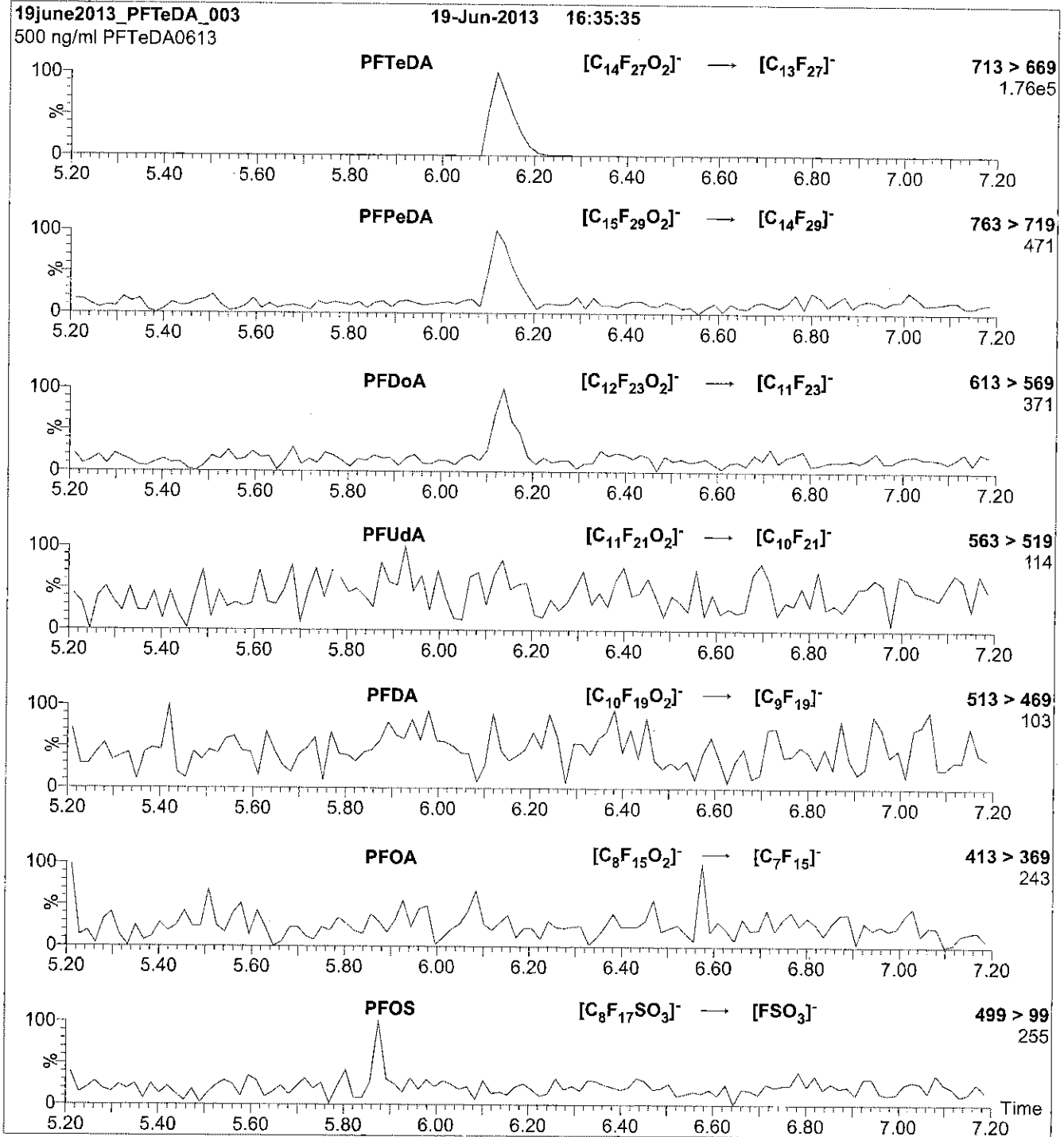
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

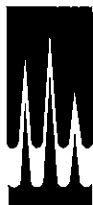
Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 14

Reagent

LCPFT_rDA_00003

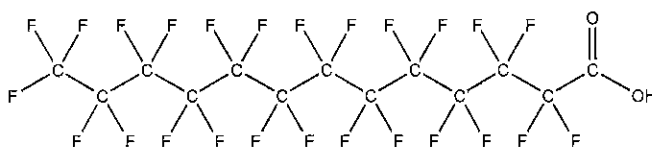


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** 72629-94-8



MOLECULAR FORMULA: $C_{13}H_{26}O_2$ **MOLECULAR WEIGHT:** 664.11
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/10/2013
EXPIRY DATE: (mm/dd/yyyy) 12/10/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

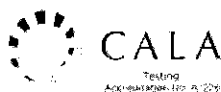
Ongoing stability studies of this product have demonstrated stability in its composition and concentration for the period of time specified by the expiry date in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

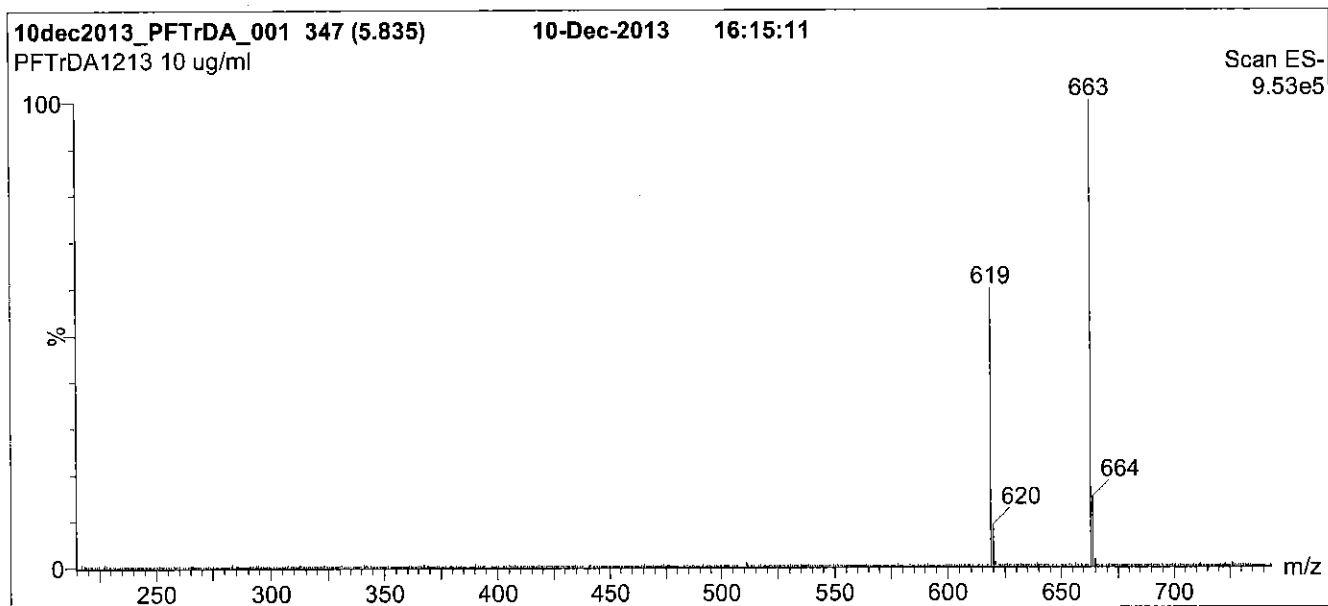
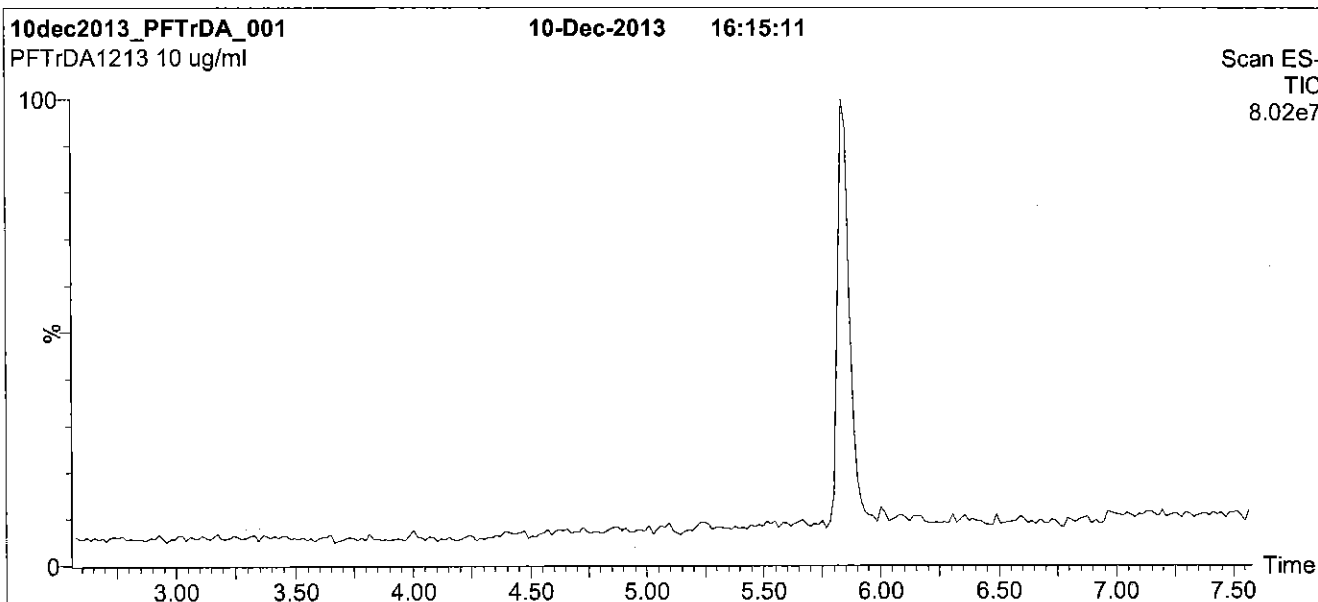
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

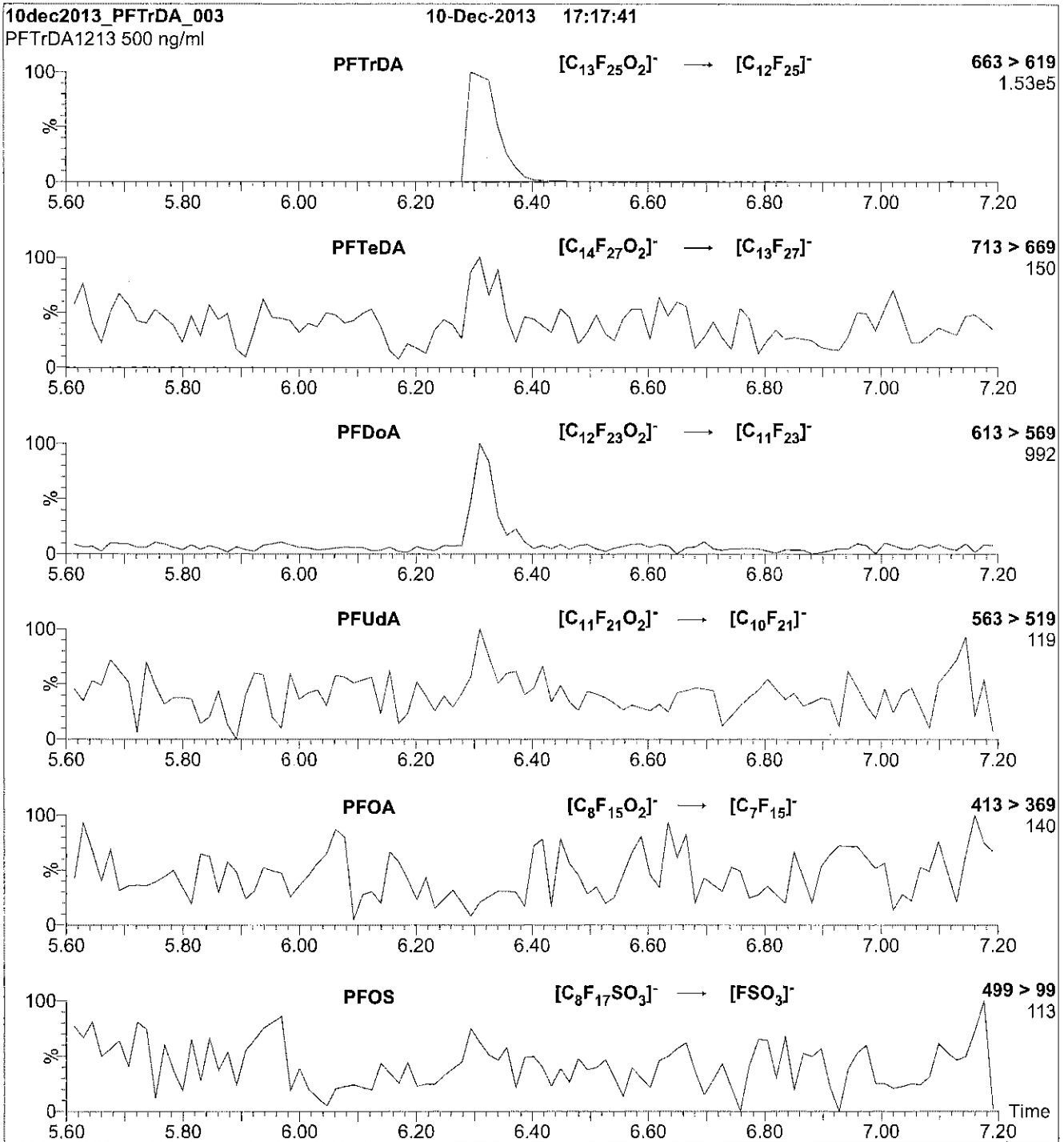
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

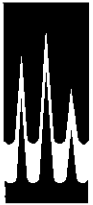
MS Parameters

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

Reagent

LCPFUdA_00003

PC 2/11/15 SFV

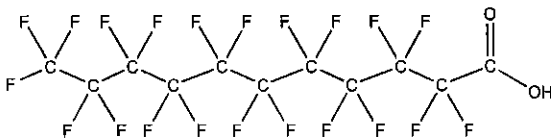


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



MOLECULAR FORMULA: C₁₁HF₂₁O₂ **MOLECULAR WEIGHT:** 564.09
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

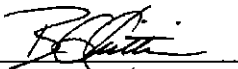
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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

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

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

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

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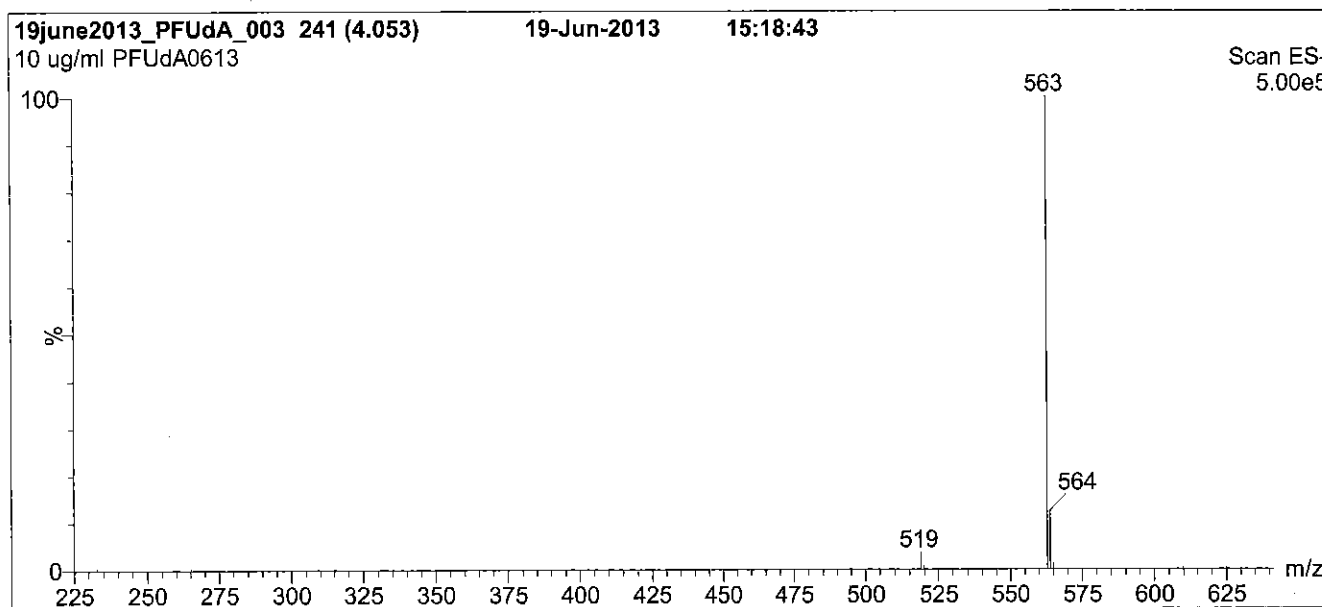
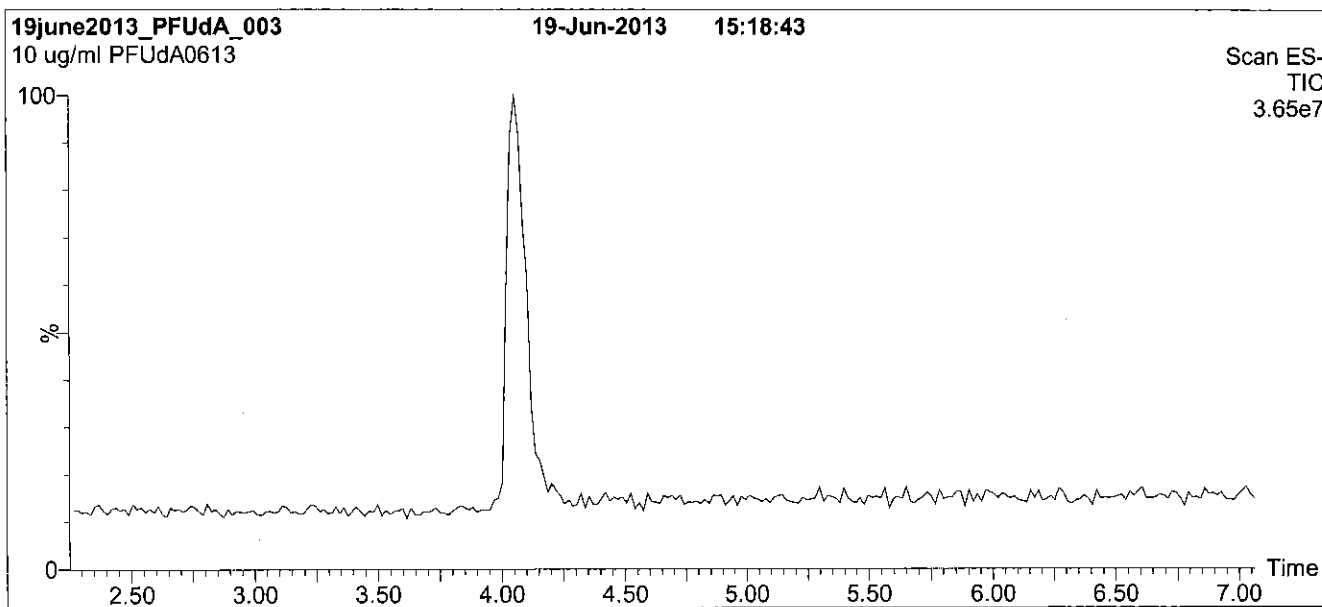
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

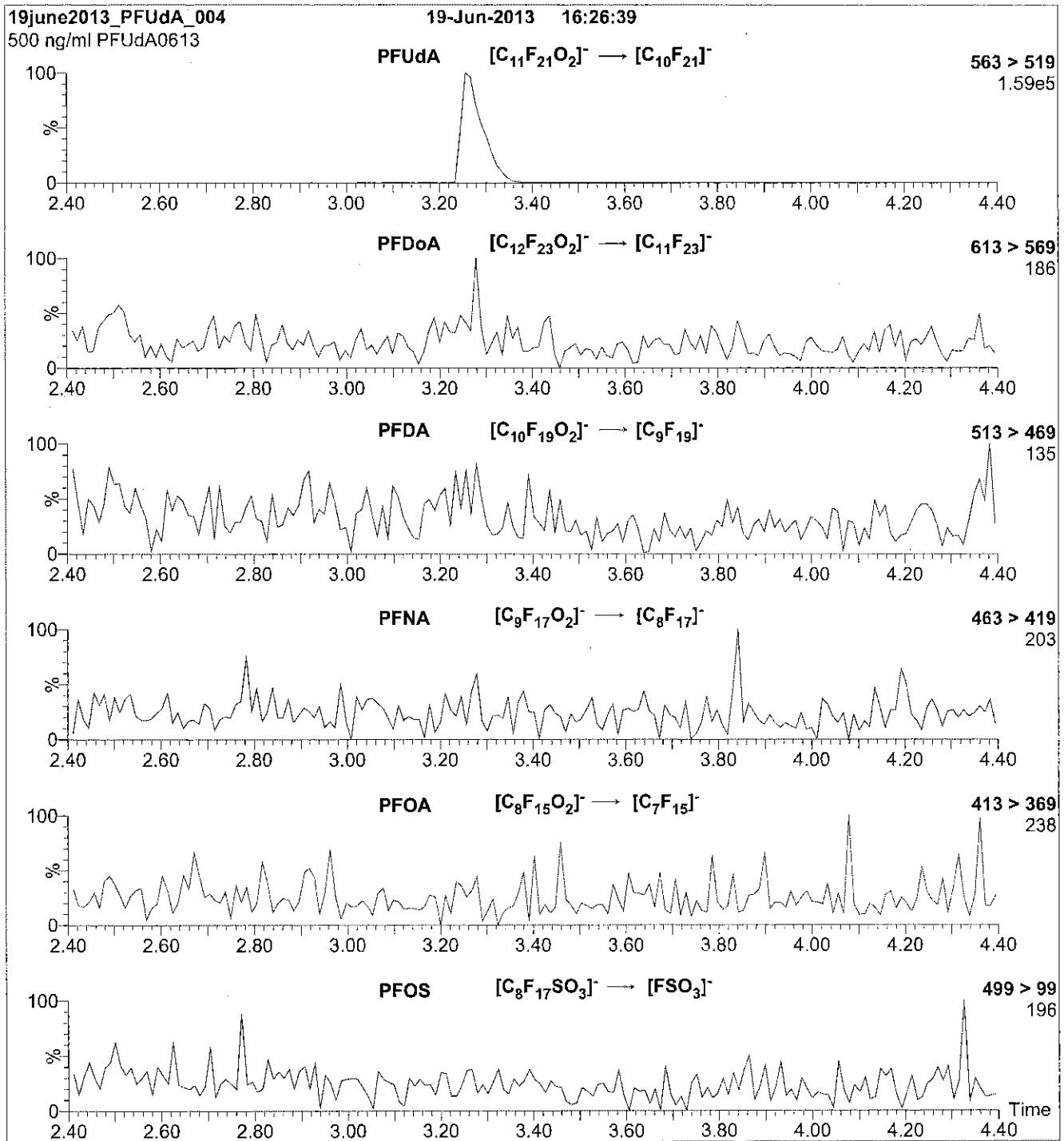
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS)
by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
OF14-MW07S-1215	320-16572-1	85	95	80	113	79
OF14-MW06S-1215	320-16572-2	109	119	102	117	90
OF-MW16-1215	320-16586-1	94	113	93	120	85
OF-MW16P-1215	320-16586-2	81	97	79	98	64
OF-MW17-1215	320-16586-3	107	128	97	114	86
OF14-MW07D-1215	320-16586-4	97	125	85	114	74
OF14-MW06D-1215	320-16586-5	94	122	92	110	80
OF-MW15-1215	320-16609-1	93	108	79	97	75
OF-MW09-1215	320-16609-2	113	125	104	119	92
OF-MW10-1215	320-16609-3	89	82	100	105	99
OF-EB122315	320-16609-4	119	105	118	103	117
OF14-MW08-1215	320-16615-1	41	37	27	30	36
OF14-MW08-1215 DL	320-16615-1 DL	92	82	80	76	77
OF14-MW08-1215 DL2	320-16615-1 DL2	98	87	83	100	86
OF14-MW08P-1215	320-16615-2	42	41	36	33	40
OF14-MW08P-1215 DL	320-16615-2 DL	101	100	82	80	77
OF14-MW08P-1215 DL2	320-16615-2 DL2	106	115	105	113	89
OF14-MW12S-1215	320-16615-3	62	70	75	38	39
OF14-MW12S-1215 DL	320-16615-3 DL	100	97	91	74	70
OF14-MW11S-1215	320-16615-4	52	47	77	65	64
OF14-MW11S-1215 DL	320-16615-4 DL	98	102	104	106	97
OF14-MW14-1215	320-16615-5	88	113	79	119	79
OF14-MW13S-1215	320-16615-6	65	61	79	56	60
OF14-MW13S-1215 DL	320-16615-6 DL	80	96	71	83	67
OF-EB122815	320-16615-7	135	134	135	152	137
OF-FB01-123015	320-16649-1	125	135	134	144	132
OF-INFO1-1215	320-16649-2	108	121	103	112	97
OF-INFO1P-1215	320-16649-3	97	124	95	102	86
OF-EFF01-1215	320-16649-4	104	113	76	104	93
OF-EFF01-1215 DL	320-16649-4 DL	109	110	89	111	100
OF-EFF01P-1215	320-16649-5	94	107	73	93	89
OF-EFF01P-1215 DL	320-16649-5 DL	104	108	102	118	107
OF-MW12D-1215	320-16649-6	125	142	126	148	118
OF-FB02-123015	320-16649-7	135	134	140	145	138

QC LIMITS

13CHpA = 13C4-PFHpA	25-150
PFHxS = 1802 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
	MB 320-96713/1-A	131	126	136	126	131
	MB 320-97173/1-A	89	96	90	99	86
	LCS 320-96713/2-A	132	128	126	119	123
	LCS 320-97173/2-A	81	84	79	91	80

13CHpA = 13C4-PFHpA

PFHxS = 1802 PFHxS

PFOA = 13C4 PFOA

PFOS = 13C4 PFOS

PFNA = 13C5 PFNA

QC LIMITS

25-150

25-150

25-150

25-150

25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
OF-MW12D-1215 RA	320-16649-6 RA	50	100

PFOA = 13C4 PFOA
PFOS = 13C4 PFOS

QC LIMITS
25-150
25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFOS #
	MB 320-97173/1-A RA	116

PFOS = 13C4 PFOS

QC LIMITS
25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 30DEC2015A6A_018.d
 Lab ID: LCS 320-96713/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0383	96	60-140	
Perfluorooctanoic acid (PFOA)	0.0400	0.0549	137	60-140	
Perfluorononanoic acid (PFNA)	0.0400	0.0415	104	60-140	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0315	89	50-150	
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0362	96	60-140	
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0392	102	60-140	
18O2 PFHxS	0.0946	0.121	128	25-150	
13C4 PFOS	0.0956	0.114	119	25-150	
13C5 PFNA	0.100	0.123	123	25-150	
13C4 PFOA	0.100	0.126	126	25-150	
13C4-PFHpA	0.100	0.132	132	25-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 05JAN2016A6A_017.d
 Lab ID: LCS 320-97173/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0389	97	60-140	
Perfluorooctanoic acid (PFOA)	0.0400	0.0428	107	60-140	
Perfluorononanoic acid (PFNA)	0.0400	0.0421	105	60-140	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0325	92	50-150	
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0377	100	60-140	
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0459	120	60-140	
18O2 PFHxS	0.0946	0.0798	84	25-150	
13C4 PFOS	0.0956	0.0872	91	25-150	
13C5 PFNA	0.100	0.0797	80	25-150	
13C4 PFOA	0.100	0.0793	79	25-150	
13C4-PFHpA	0.100	0.0808	81	25-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab File ID: 30DEC2015A6A_017.d Lab Sample ID: MB 320-96713/1-A
 Matrix: Water Date Extracted: 12/26/2015 07:28
 Instrument ID: A6 Date Analyzed: 12/30/2015 19:10
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-96713/2-A	30DEC2015A6 A 018.d	12/30/2015 19:32
OF14-MW07S-1215	320-16572-1	30DEC2015A6 A 019.d	12/30/2015 19:53
OF14-MW06S-1215	320-16572-2	30DEC2015A6 A 020.d	12/30/2015 20:14
OF-MW16-1215	320-16586-1	30DEC2015A6 A 021.d	12/30/2015 20:35
OF-MW16P-1215	320-16586-2	30DEC2015A6 A 022.d	12/30/2015 20:57
OF-MW17-1215	320-16586-3	30DEC2015A6 A 023.d	12/30/2015 21:18
OF14-MW07D-1215	320-16586-4	30DEC2015A6 A 024.d	12/30/2015 21:39
OF14-MW06D-1215	320-16586-5	30DEC2015A6 A 025.d	12/30/2015 22:00
OF-MW15-1215	320-16609-1	30DEC2015A6 A 026.d	12/30/2015 22:22
OF-MW09-1215	320-16609-2	30DEC2015A6 A 028.d	12/30/2015 23:04
OF-MW10-1215	320-16609-3	30DEC2015A6 A 029.d	12/30/2015 23:25
OF-EB122315	320-16609-4	30DEC2015A6 A 030.d	12/30/2015 23:47

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab File ID: 05JAN2016A6A_016.d Lab Sample ID: MB 320-97173/1-A
 Matrix: Water Date Extracted: 01/04/2016 09:42
 Instrument ID: A6 Date Analyzed: 01/05/2016 15:56
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
OF-EFF01P-1215	320-16649-5	05JAN2016A6 A 030.d	01/05/2016 20:53
OF-MW12D-1215	320-16649-6	05JAN2016A6 A 031.d	01/05/2016 21:15

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab File ID: 06JAN2016A6A_062.d Lab Sample ID: MB 320-97173/1-A
 Matrix: Water Date Extracted: 01/04/2016 09:42
 Instrument ID: A6 Date Analyzed: 01/07/2016 13:21
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-97173/2-A	05JAN2016A6 A 017.d	01/05/2016 16:17
OF14-MW08-1215	320-16615-1	05JAN2016A6 A 018.d	01/05/2016 16:39
OF14-MW08P-1215	320-16615-2	05JAN2016A6 A 019.d	01/05/2016 17:00
OF14-MW12S-1215	320-16615-3	05JAN2016A6 A 020.d	01/05/2016 17:21
OF14-MW11S-1215	320-16615-4	05JAN2016A6 A 021.d	01/05/2016 17:42
OF14-MW13S-1215	320-16615-6	05JAN2016A6 A 023.d	01/05/2016 18:25
OF-EB122815	320-16615-7	05JAN2016A6 A 024.d	01/05/2016 18:46
OF-FB01-123015	320-16649-1	05JAN2016A6 A 025.d	01/05/2016 19:07
OF-INF01-1215	320-16649-2	05JAN2016A6 A 027.d	01/05/2016 19:50
OF-INF01P-1215	320-16649-3	05JAN2016A6 A 028.d	01/05/2016 20:11
OF-EFF01-1215	320-16649-4	05JAN2016A6 A 029.d	01/05/2016 20:32
OF-FB02-123015	320-16649-7	05JAN2016A6 A 032.d	01/05/2016 21:36
OF14-MW08-1215 DL	320-16615-1 DL	06JAN2016A6 A 012.d	01/06/2016 15:41
OF14-MW08P-1215 DL	320-16615-2 DL	06JAN2016A6 A 013.d	01/06/2016 16:12
OF14-MW08-1215 DL2	320-16615-1 DL2	06JAN2016A6 A 014.d	01/06/2016 16:43
OF14-MW08P-1215 DL2	320-16615-2 DL2	06JAN2016A6 A 015.d	01/06/2016 17:15
OF14-MW12S-1215 DL	320-16615-3 DL	06JAN2016A6 A 016.d	01/06/2016 17:46
OF14-MW11S-1215 DL	320-16615-4 DL	06JAN2016A6 A 017.d	01/06/2016 18:17
OF14-MW13S-1215 DL	320-16615-6 DL	06JAN2016A6 A 018.d	01/06/2016 18:48
OF-EFF01-1215 DL	320-16649-4 DL	06JAN2016A6 A 019.d	01/06/2016 19:19
OF-EFF01P-1215 DL	320-16649-5 DL	06JAN2016A6 A 020.d	01/06/2016 19:51
OF14-MW14-1215	320-16615-5	06JAN2016A6 A 021.d	01/06/2016 20:22

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab File ID: 06JAN2016A6A_062.d Lab Sample ID: MB 320-97173/1-A
 Matrix: Water Date Extracted: 01/04/2016 09:42
 Instrument ID: A6 Date Analyzed: 01/07/2016 13:21
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
OF-MW12D-1215 RA	320-16649-6 RA	06JAN2016A6 A 061.d	01/07/2016 13:00

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW07S-1215 Lab Sample ID: 320-16572-1
 Matrix: Water Lab File ID: 30DEC2015A6A_019.d
 Analysis Method: WS-LC-0025 Date Collected: 12/21/2015 15:30
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 505.1(mL) Date Analyzed: 12/30/2015 19:53
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.025		0.0025	0.0020	0.00079
335-67-1	Perfluorooctanoic acid (PFOA)	0.27		0.0025	0.0020	0.00074
375-95-1	Perfluorononanoic acid (PFNA)	0.00087	J	0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.078		0.0025	0.0020	0.00091
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.39	M	0.0025	0.0020	0.00086
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0053	M	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	95		25-150
STL00991	13C4 PFOS	113		25-150
STL00995	13C5 PFNA	79		25-150
STL00990	13C4 PFOA	80		25-150
STL01892	13C4-PFHpA	85		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_019.d
 Lims ID: 320-16572-A-1-A Lab Sample ID: 320-16572-1
 Client ID: OF14-MW07S-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 19:53:25 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16572-A-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 12:51:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.036	7.039	-0.003	1.000	372373	39.3			
D 8 13C4-PFHpA	367.0 > 322.0	9.405	9.413	-0.008		906142	42.4	84.9	2504	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.411	9.413	-0.002	1.000	237610	12.7		66.0	
D 11 18O2 PFHxS	403.0 > 84.0	9.440	9.444	-0.004		465126	45.0	95.0	2025	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.440	9.449	-0.009	1.000	1362452	195.5			M M
D 12 13C4 PFOA	417.0 > 372.0	10.522	10.524	-0.002		873520	40.0	80.0	1387	
13 Perfluorooctanoic acid	413.0 > 369.0	10.522	10.528	-0.006	1.000	2289546	135.4		49.9	
	413.0 > 169.0	10.522	10.528	-0.006	1.000	811584	2.82(0.00-0.00)		33.6	
D 16 13C4 PFOS	503.0 > 80.0	11.473	11.478	-0.005		602826	54.1	113	1687	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.125	11.480	-0.355	1.000	34529	2.69		51.6	M M
D 17 13C5 PFNA	468.0 > 423.0	11.496	11.501	-0.005		789968	39.7	79.4	2228	
18 Perfluorononanoic acid	463.0 > 419.0	11.481	11.502	-0.021	1.000	5472	0.4399		8.1	

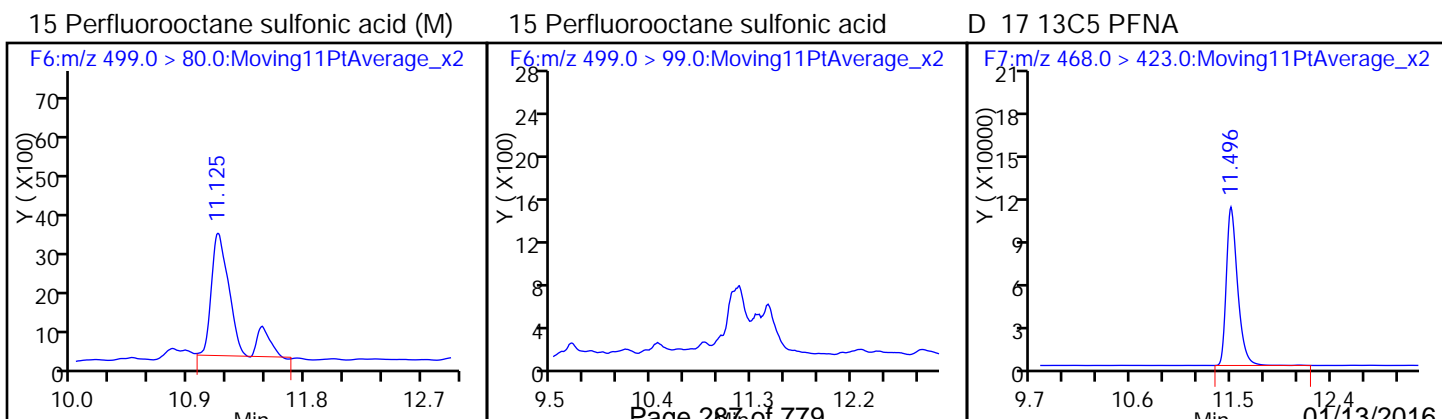
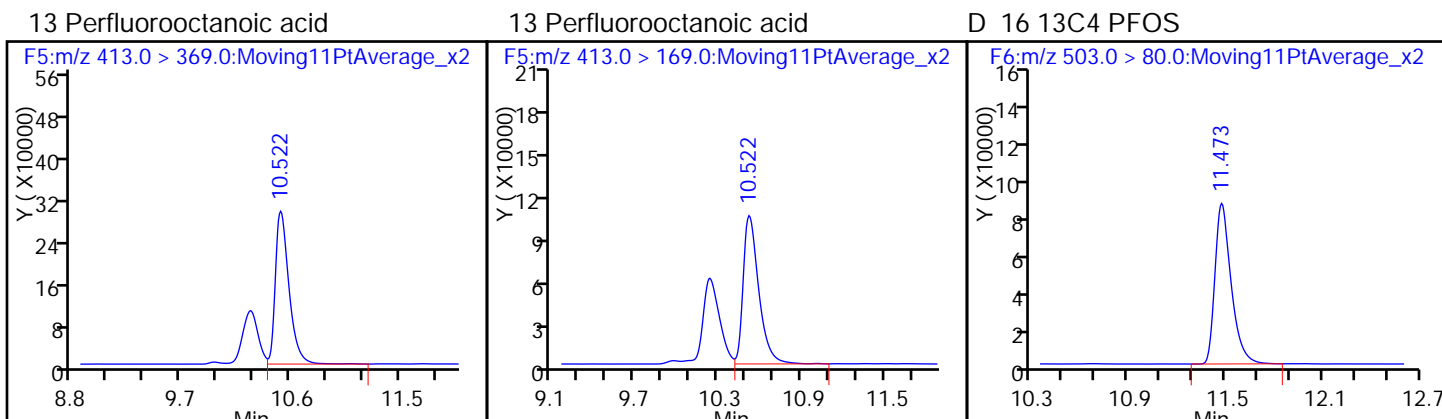
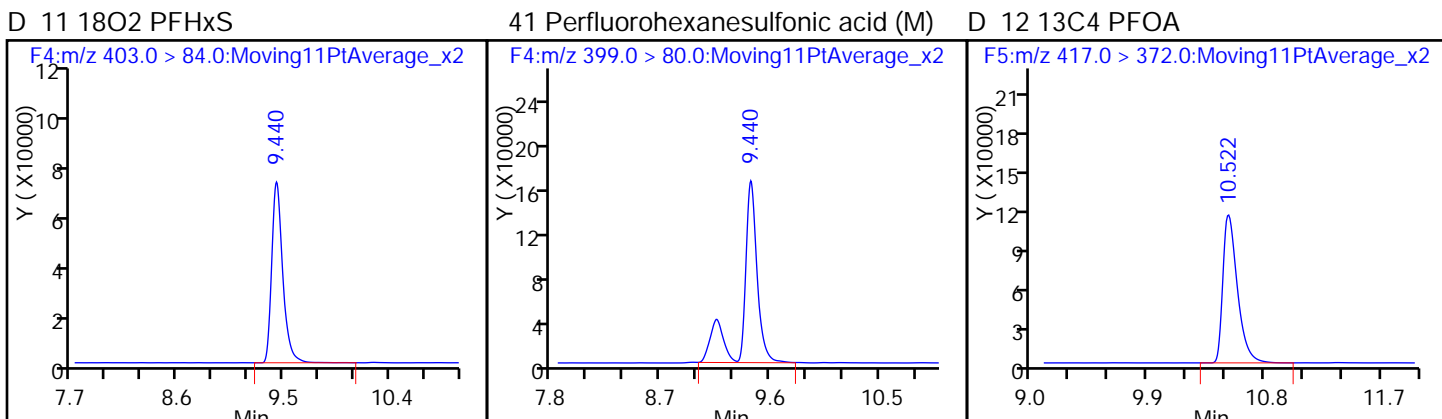
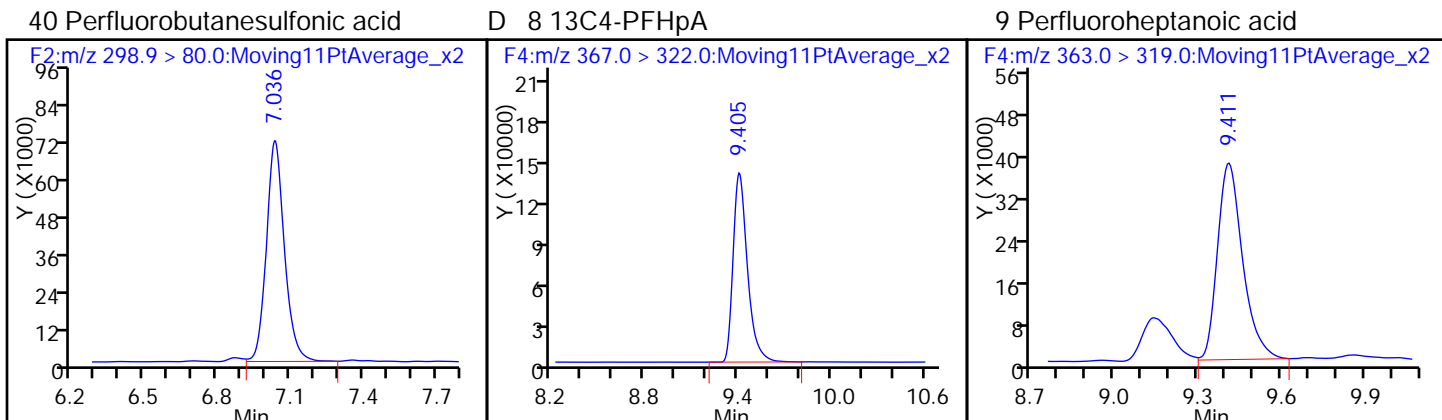
QC Flag Legend

Review Flags

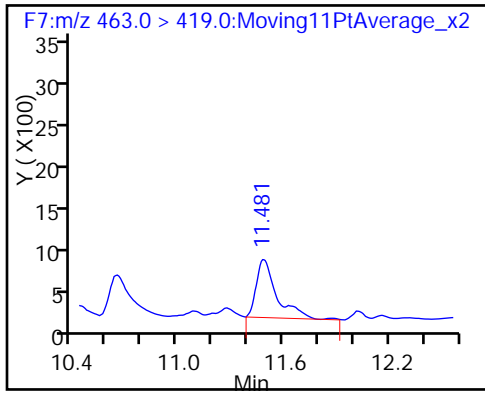
M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_019.d
Injection Date: 30-Dec-2015 19:53:25 Instrument ID: A6
Lims ID: 320-16572-A-1-A Lab Sample ID: 320-16572-1
Client ID: OF14-MW07S-1215
Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL



18 Perfluorononanoic acid



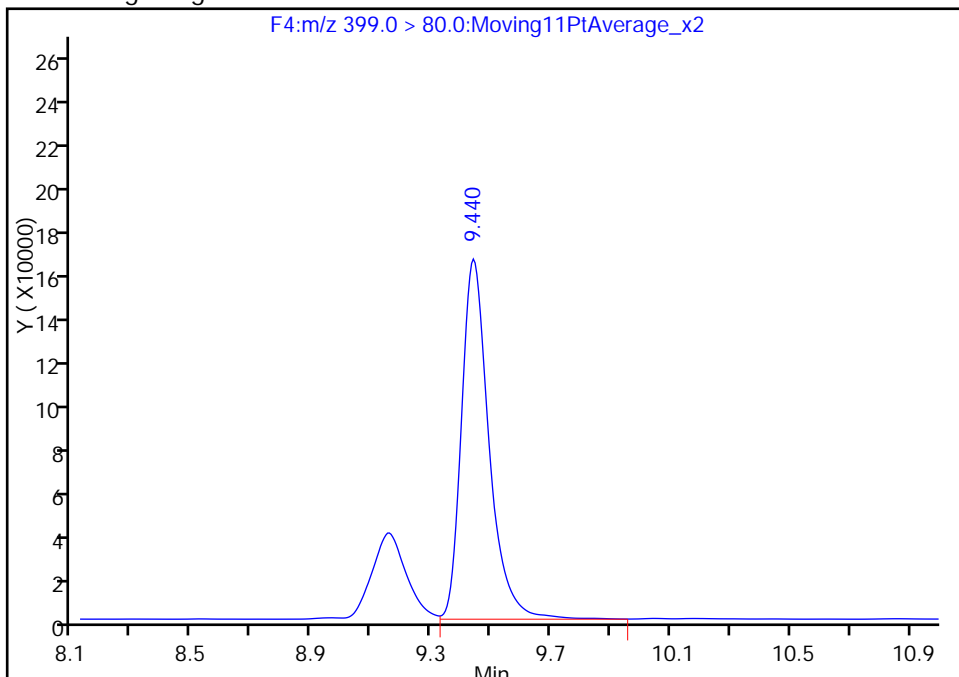
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_019.d
Injection Date: 30-Dec-2015 19:53:25 Instrument ID: A6
Lims ID: 320-16572-A-1-A Lab Sample ID: 320-16572-1
Client ID: OF14-MW07S-1215
Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

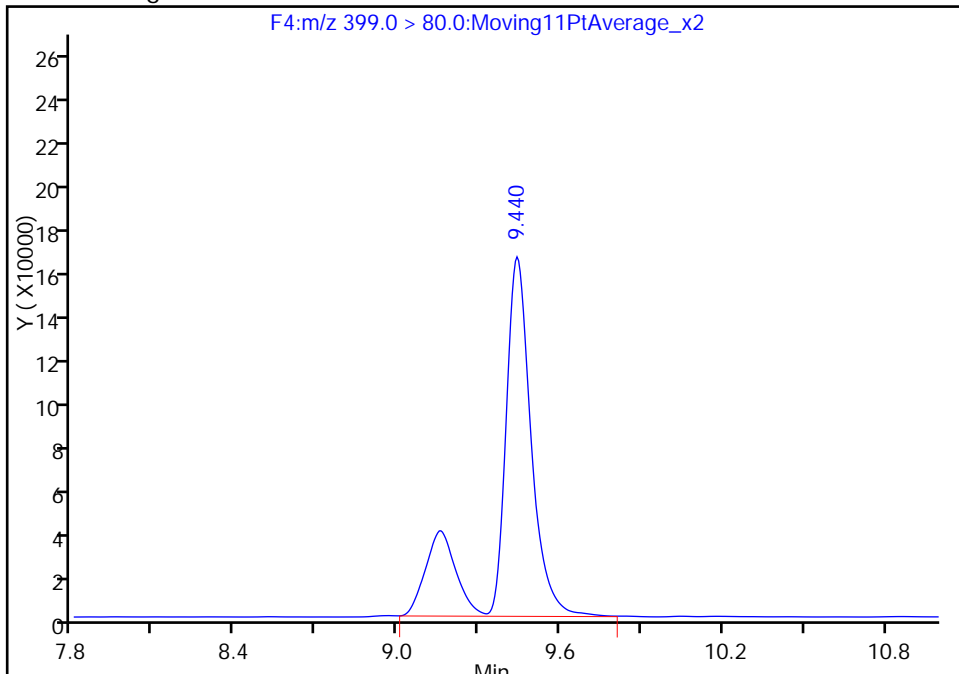
RT: 9.44
Area: 1065369
Amount: 141.7515
Amount Units: ng/ml

Processing Integration Results



RT: 9.44
Area: 1362452
Amount: 195.4882
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 14:44:50
Audit Action: Manually Integrated
Audit Reason: Isomers

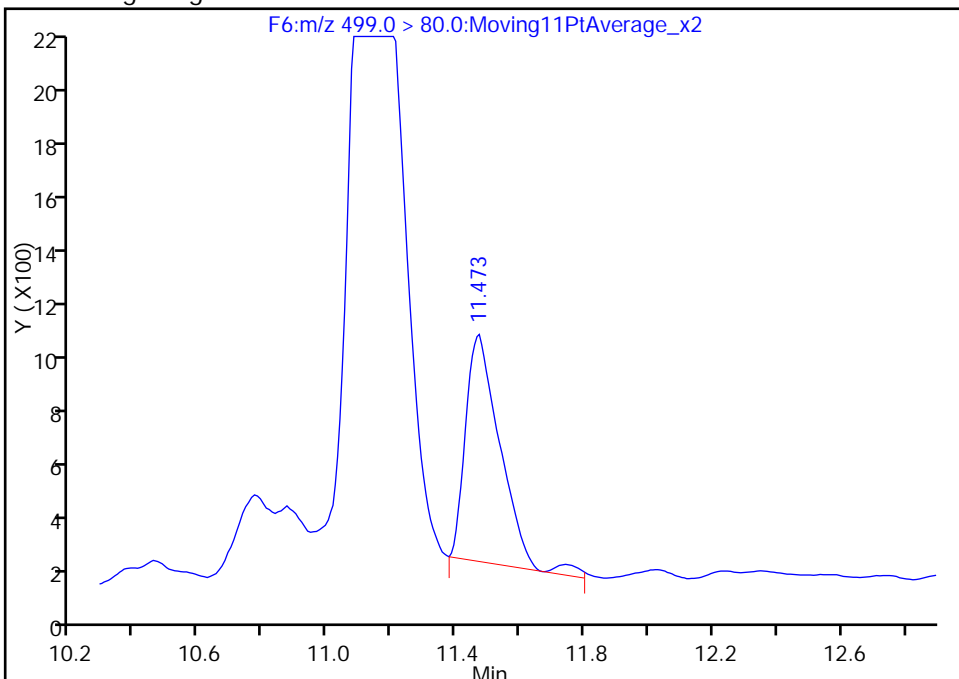
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_019.d
Injection Date: 30-Dec-2015 19:53:25 Instrument ID: A6
Lims ID: 320-16572-A-1-A Lab Sample ID: 320-16572-1
Client ID: OF14-MW07S-1215
Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 13
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

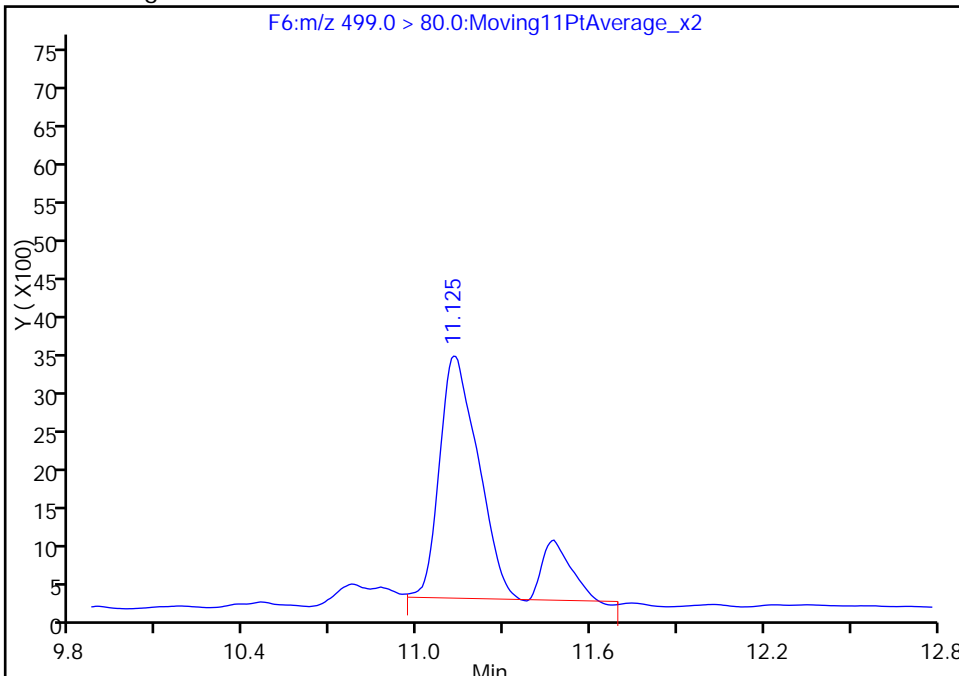
RT: 11.47
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Amount: 0.473776
Amount Units: ng/ml

Processing Integration Results



RT: 11.13
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Amount: 2.691071
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 15:16:23
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW06S-1215 Lab Sample ID: 320-16572-2
 Matrix: Water Lab File ID: 30DEC2015A6A_020.d
 Analysis Method: WS-LC-0025 Date Collected: 12/21/2015 12:05
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 501.6(mL) Date Analyzed: 12/30/2015 20:14
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.016		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.19		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0036		0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.014		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.21		0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.17	M	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	119		25-150
STL00991	13C4 PFOS	117		25-150
STL00995	13C5 PFNA	90		25-150
STL00990	13C4 PFOA	102		25-150
STL01892	13C4-PFHpA	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_020.d
 Lims ID: 320-16572-A-2-A Lab Sample ID: 320-16572-2
 Client ID: OF14-MW06S-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 20:14:40 ALS Bottle#: 4 Worklist Smp#: 14
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16572-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 13:07:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.029	7.039	-0.010	1.000	84191	7.10			
D 8 13C4-PFHpA	367.0 > 322.0	9.405	9.413	-0.008		1159110	54.3	109	2864	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.405	9.413	-0.008	1.000	194309	8.07		78.1	
D 11 18O2 PFHxS	403.0 > 84.0	9.434	9.444	-0.010		582372	56.3	119	1801	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.434	9.449	-0.015	1.000	899932	103.1			
D 12 13C4 PFOA	417.0 > 372.0	10.513	10.524	-0.011		1111946	50.9	102	3167	
13 Perfluorooctanoic acid	413.0 > 369.0	10.513	10.528	-0.015	1.000	2089119	97.0		80.7	
	413.0 > 169.0	10.513	10.528	-0.015	1.000	708750	2.95(0.00-0.00)		51.8	
D 16 13C4 PFOS	503.0 > 80.0	11.473	11.478	-0.005		622560	55.9	117	1430	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.473	11.480	-0.007	1.000	1159316	87.5		1464	M
	499.0 > 99.0	11.473	11.480	-0.007	1.000	496892	2.33(0.00-0.00)		822	M
D 17 13C5 PFNA	468.0 > 423.0	11.496	11.501	-0.005		890783	44.8	89.5	2515	
18 Perfluorononanoic acid	463.0 > 419.0	11.488	11.502	-0.014	1.000	25448	1.81		44.2	

QC Flag Legend

Review Flags

M - Manually Integrated

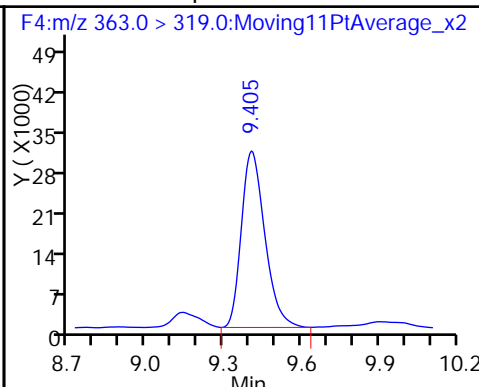
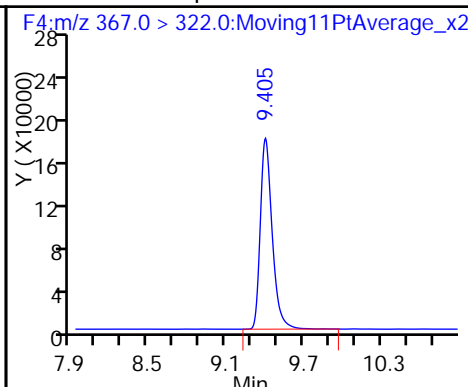
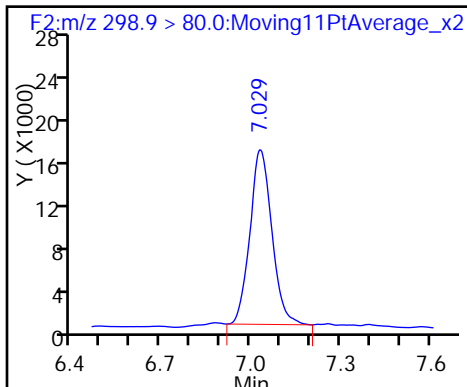
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_020.d
Injection Date: 30-Dec-2015 20:14:40 Instrument ID: A6
Lims ID: 320-16572-A-2-A Lab Sample ID: 320-16572-2
Client ID: OF14-MW06S-1215
Operator ID: JRB ALS Bottle#: 4 Worklist Smp#: 14
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

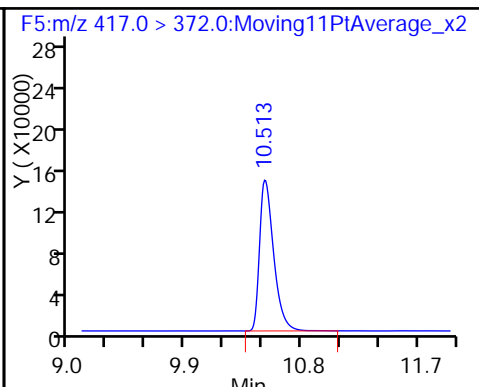
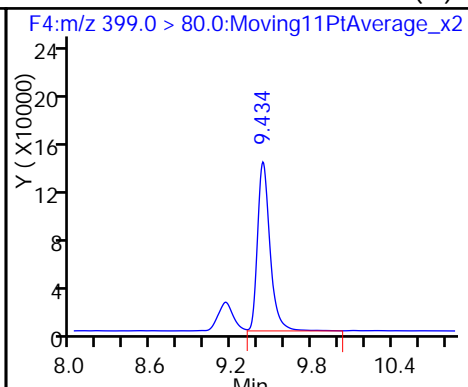
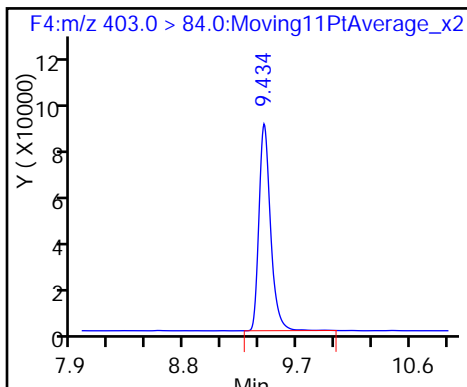
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

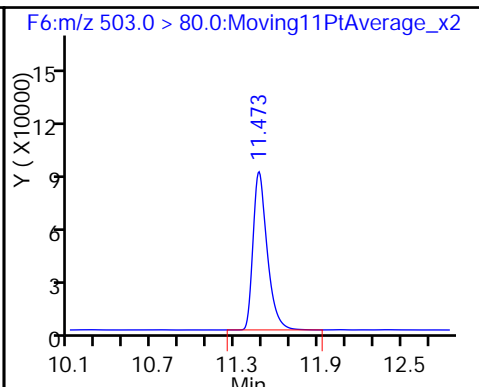
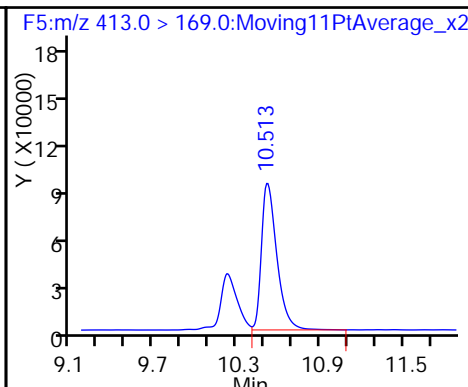
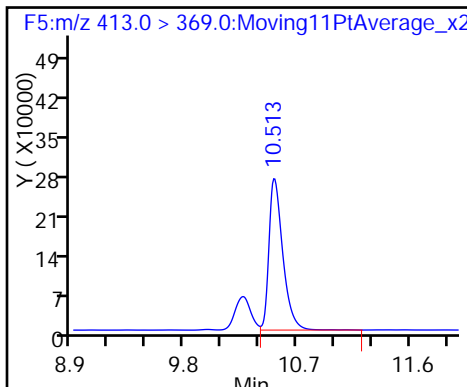
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

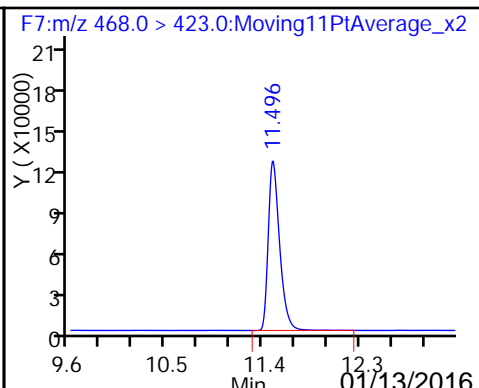
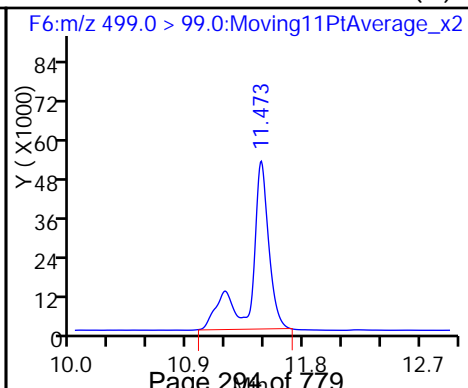
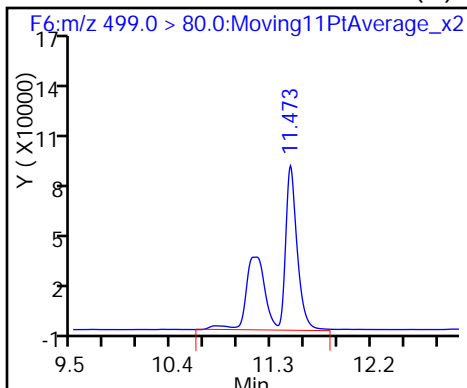
D 16 13C4 PFOS



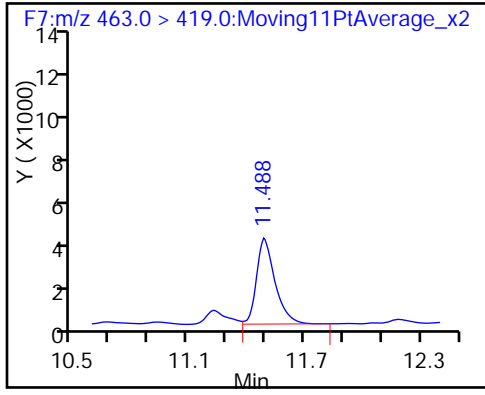
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



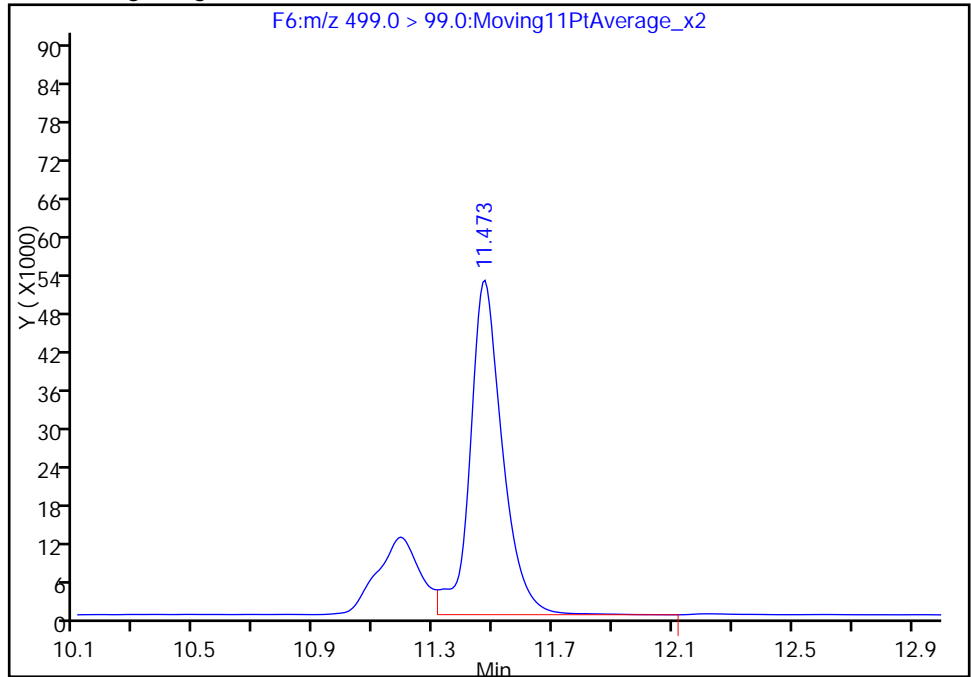
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_020.d
Injection Date: 30-Dec-2015 20:14:40 Instrument ID: A6
Lims ID: 320-16572-A-2-A Lab Sample ID: 320-16572-2
Client ID: OF14-MW06S-1215
Operator ID: JRB ALS Bottle#: 4 Worklist Smp#: 14
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

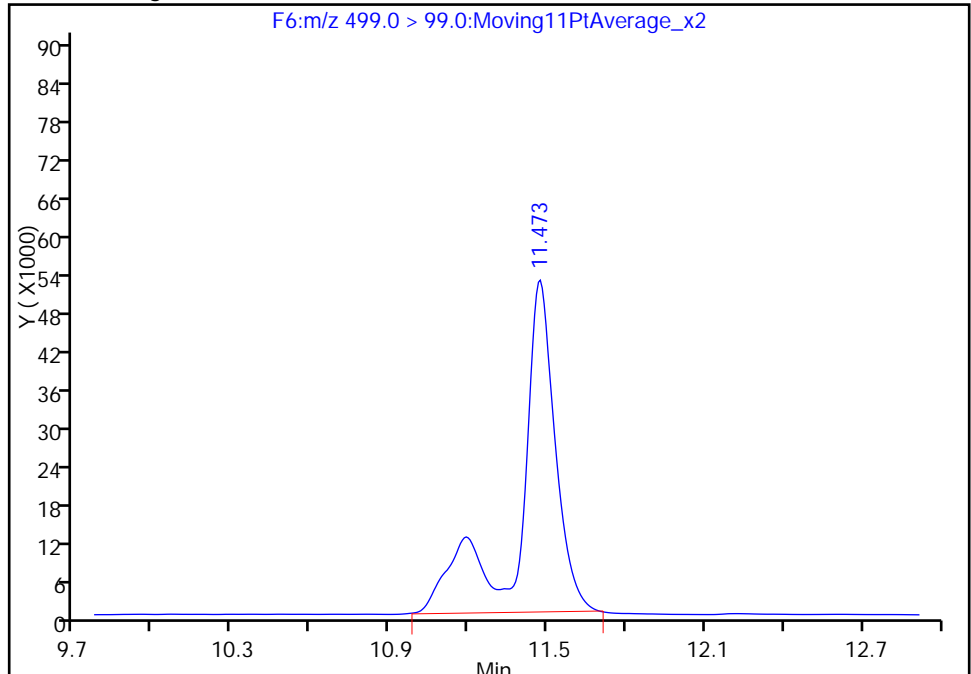
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Amount: 49.493764
Amount Units: ng/ml

Processing Integration Results



RT: 11.47
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Amount: 87.489061
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 14:46:45
Audit Action: Manually Integrated
Audit Reason: Isomers

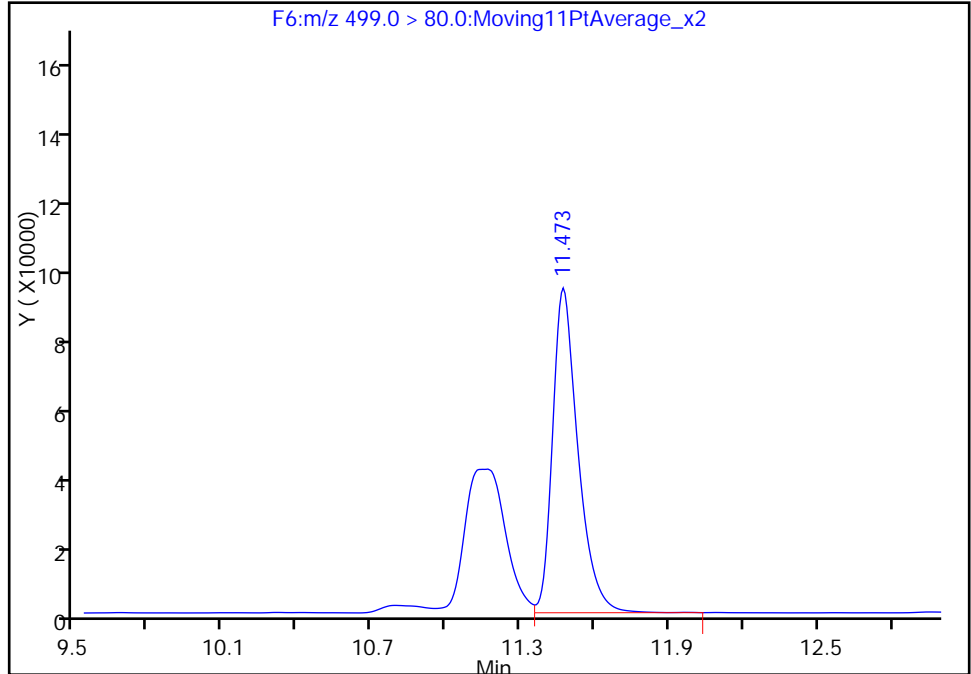
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_020.d
Injection Date: 30-Dec-2015 20:14:40 Instrument ID: A6
Lims ID: 320-16572-A-2-A Lab Sample ID: 320-16572-2
Client ID: OF14-MW06S-1215
Operator ID: JRB ALS Bottle#: 4 Worklist Smp#: 14
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

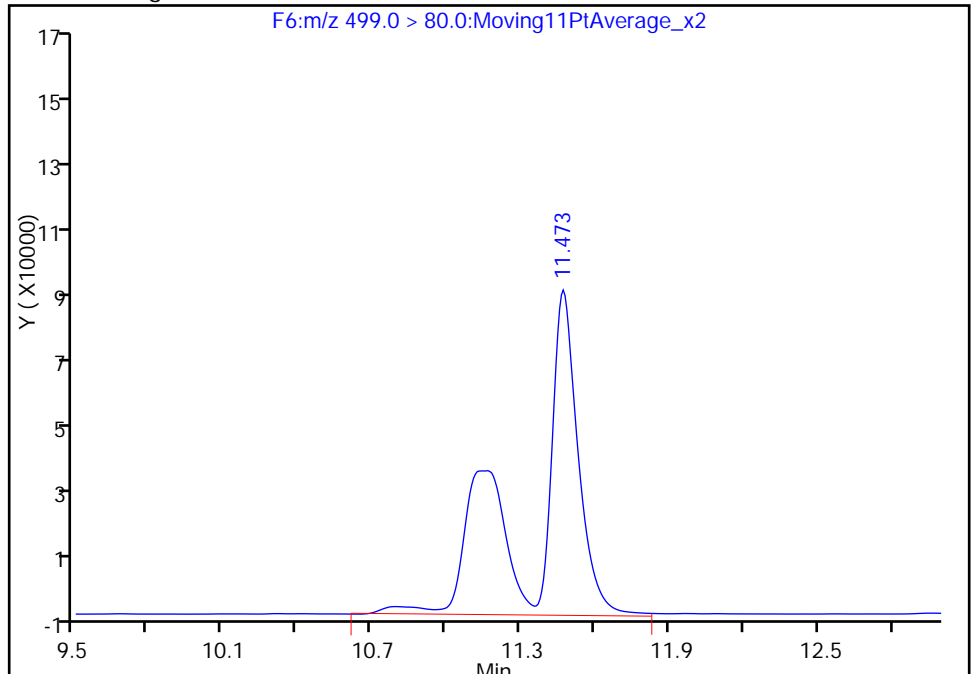
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Amount Units: ng/ml

Processing Integration Results



RT: 11.47
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Amount: 87.489061
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 15:15:36
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-MW16-1215 Lab Sample ID: 320-16586-1
 Matrix: Water Lab File ID: 30DEC2015A6A_021.d
 Analysis Method: WS-LC-0025 Date Collected: 12/22/2015 09:55
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 500.4 (mL) Date Analyzed: 12/30/2015 20:35
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0068		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.19	M	0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.066	M	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	113		25-150
STL00991	13C4 PFOS	120		25-150
STL00995	13C5 PFNA	85		25-150
STL00990	13C4 PFOA	93		25-150
STL01892	13C4-PFHpA	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_021.d
 Lims ID: 320-16586-A-1-A Lab Sample ID: 320-16586-1
 Client ID: OF-MW16-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 20:35:54 ALS Bottle#: 5 Worklist Smp#: 15
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16586-A-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 13:08:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.033	7.039	-0.006	1.000	190858	16.9			
D 8 13C4-PFHpA	367.0 > 322.0	9.405	9.413	-0.008		1000025	46.8	93.7	2699	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.405	9.413	-0.008	1.000	6643	0.1465		6.8	
D 11 18O2 PFHxS	403.0 > 84.0	9.434	9.444	-0.010		554226	53.6	113	1938	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.434	9.449	-0.015	1.000	779437	93.9			M M
D 12 13C4 PFOA	417.0 > 372.0	10.513	10.524	-0.011		1019499	46.7	93.3	2531	
13 Perfluorooctanoic acid	413.0 > 369.0	10.513	10.528	-0.015	1.000	66799	3.38		34.4	
	413.0 > 169.0	10.522	10.528	-0.006	1.001	22890	2.92(0.00-0.00)		21.7	
D 16 13C4 PFOS	503.0 > 80.0	11.466	11.478	-0.012		638780	57.3	120	1989	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.473	11.480	-0.007	1.000	450759	33.2		541	M
	499.0 > 99.0	11.473	11.480	-0.007	1.000	192094	2.35(0.00-0.00)		394	M
D 17 13C5 PFNA	468.0 > 423.0	11.488	11.501	-0.013		845671	42.5	85.0	2761	
18 Perfluorononanoic acid	463.0 > 419.0	11.488	11.502	-0.014	1.000	3133	0.2353		8.3	

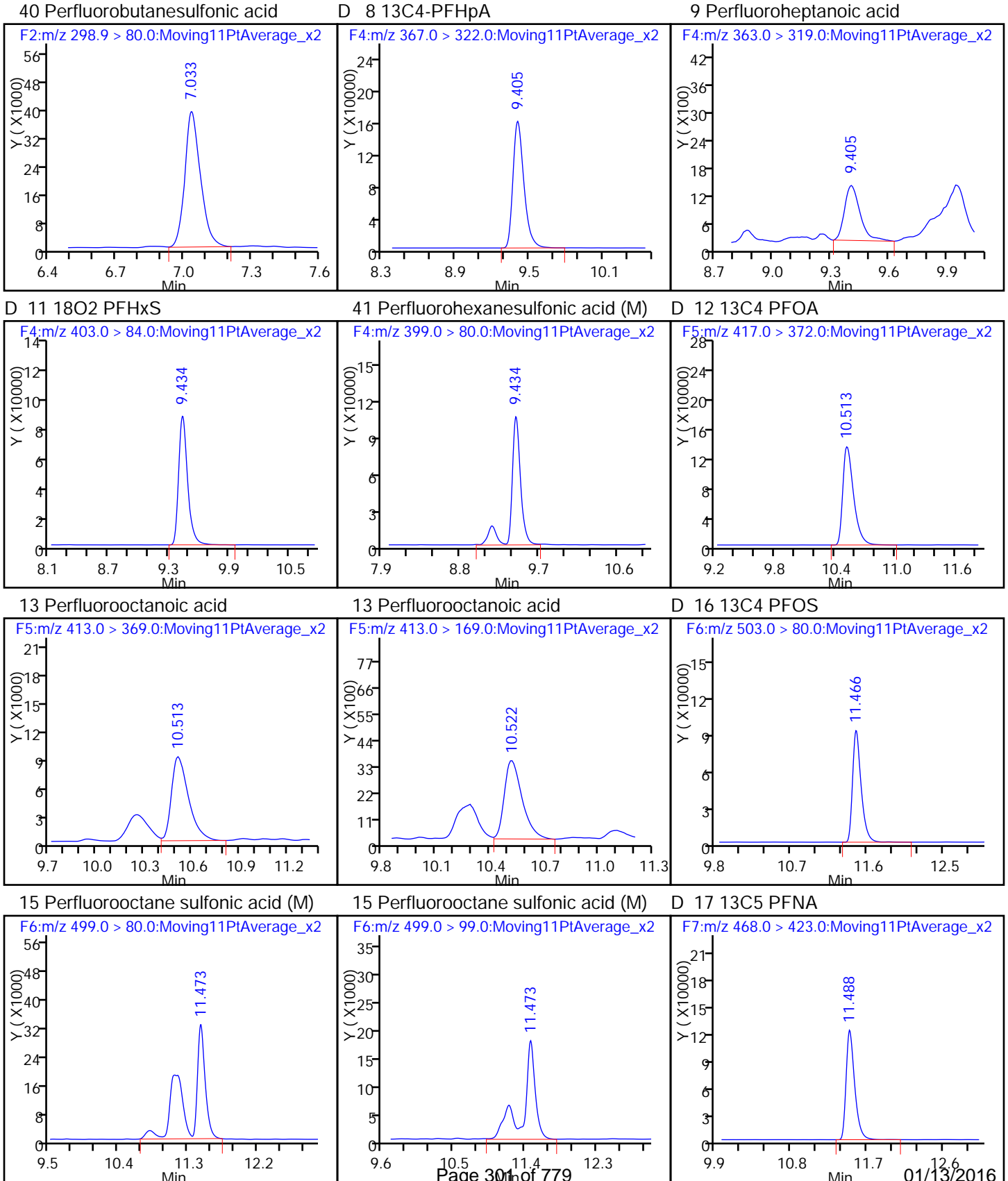
QC Flag Legend

Review Flags

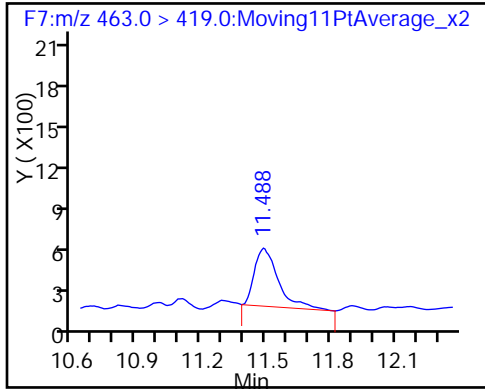
M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_021.d
Injection Date: 30-Dec-2015 20:35:54 Instrument ID: A6
Lims ID: 320-16586-A-1-A Lab Sample ID: 320-16586-1
Client ID: OF-MW16-1215
Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 15
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL



18 Perfluorononanoic acid



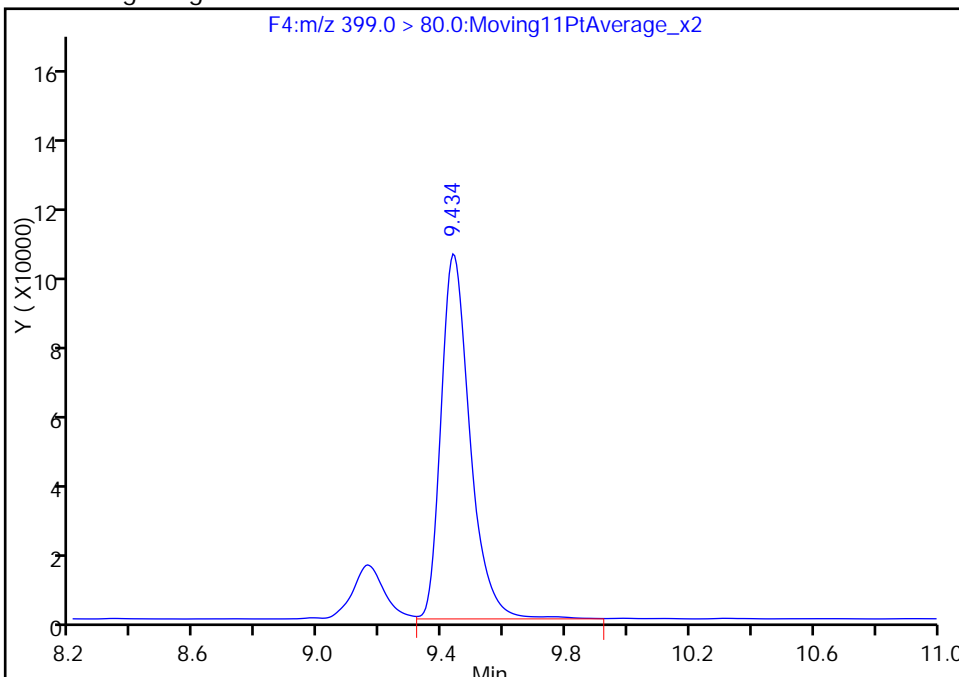
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_021.d
Injection Date: 30-Dec-2015 20:35:54 Instrument ID: A6
Lims ID: 320-16586-A-1-A Lab Sample ID: 320-16586-1
Client ID: OF-MW16-1215
Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 15
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

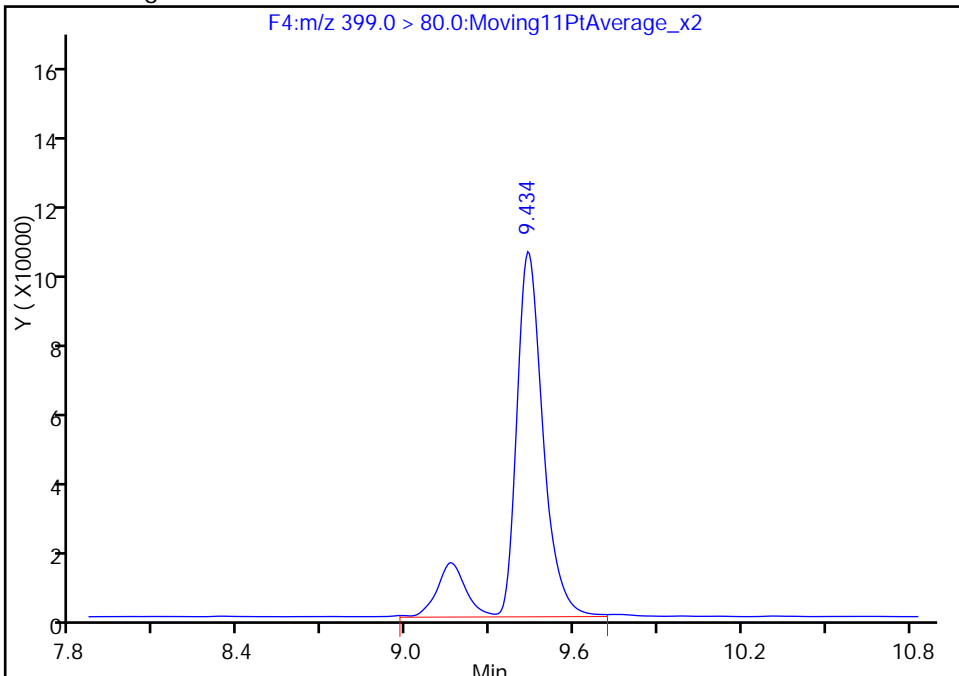
RT: 9.43
Area: 672287
Amount: 75.069937
Amount Units: ng/ml

Processing Integration Results



RT: 9.43
Area: 779437
Amount: 93.856440
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 14:48:46
Audit Action: Manually Integrated
Audit Reason: Isomers

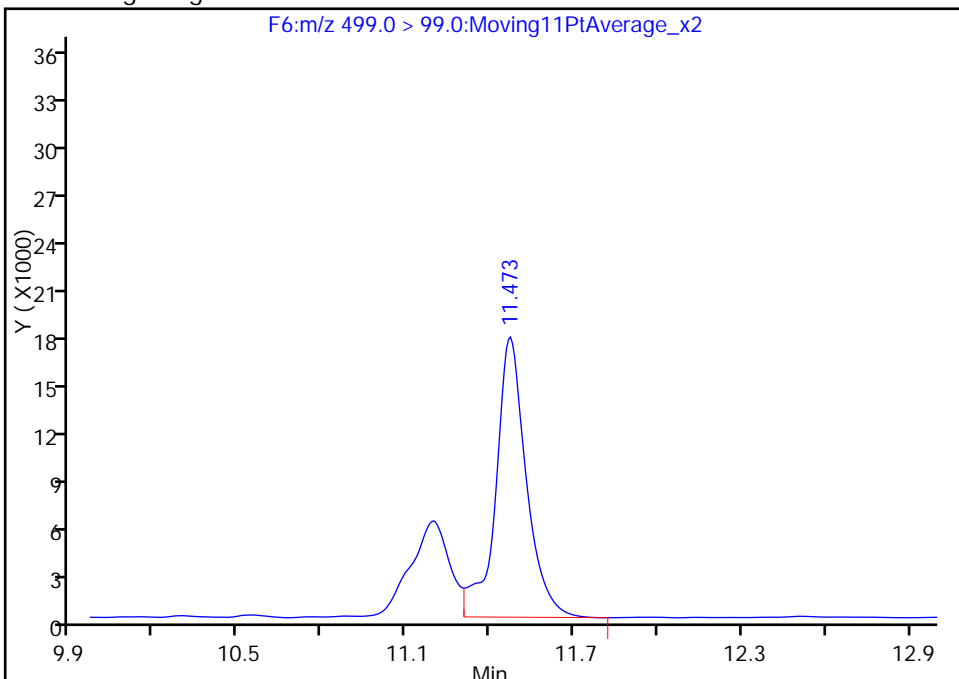
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_021.d
Injection Date: 30-Dec-2015 20:35:54 Instrument ID: A6
Lims ID: 320-16586-A-1-A Lab Sample ID: 320-16586-1
Client ID: OF-MW16-1215
Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 15
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

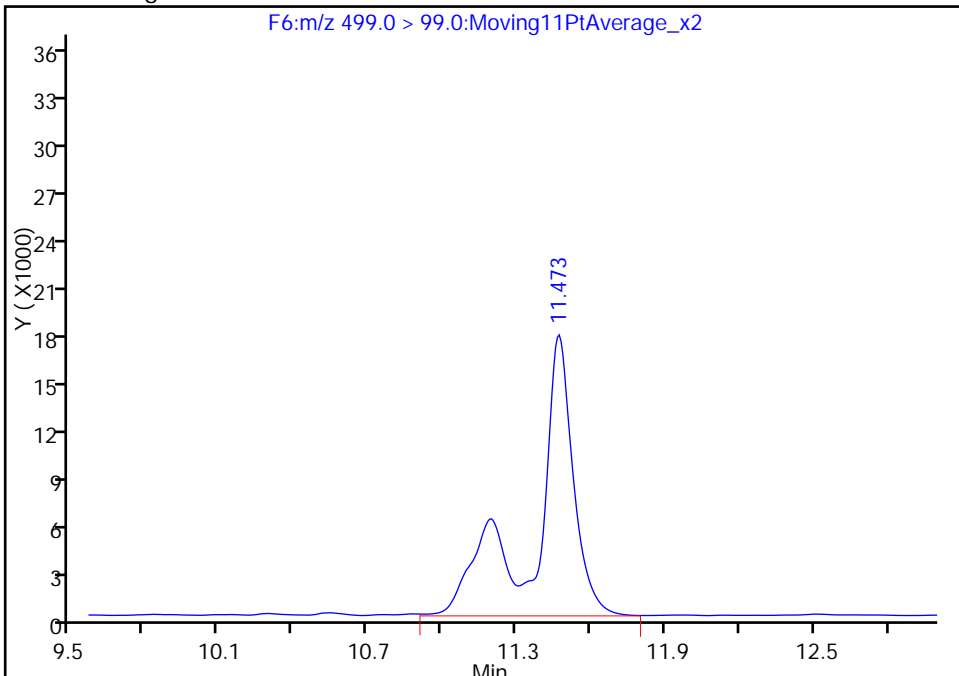
RT: 11.47
Area: 131613
Amount: 16.841005
Amount Units: ng/ml

Processing Integration Results



RT: 11.47
Area: 192094
Amount: 33.153260
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 14:48:46
Audit Action: Manually Integrated
Audit Reason: Isomers

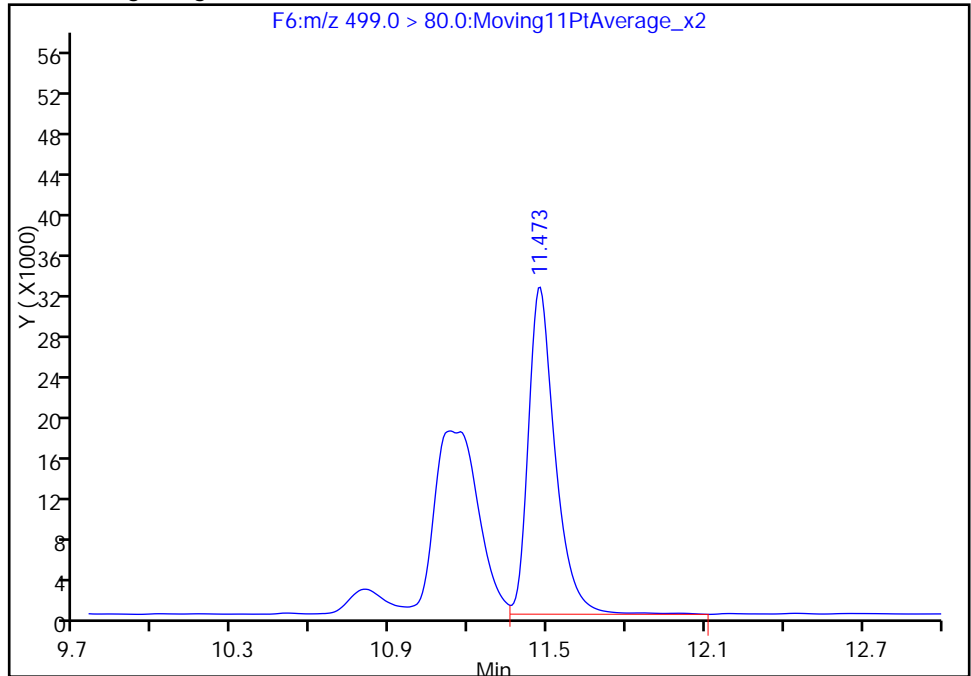
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_021.d
Injection Date: 30-Dec-2015 20:35:54 Instrument ID: A6
Lims ID: 320-16586-A-1-A Lab Sample ID: 320-16586-1
Client ID: OF-MW16-1215
Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 15
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

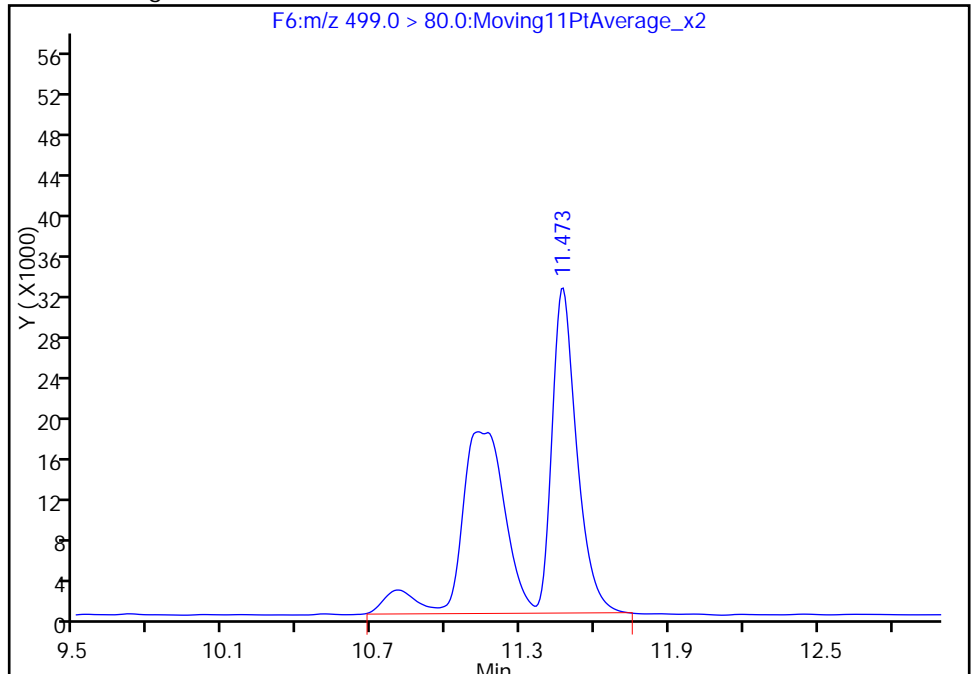
RT: 11.47
Area: 228974
Amount: 16.841005
Amount Units: ng/ml

Processing Integration Results



RT: 11.47
Area: 450759
Amount: 33.153260
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 15:14:56
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-MW16P-1215 Lab Sample ID: 320-16586-2
 Matrix: Water Lab File ID: 30DEC2015A6A_022.d
 Analysis Method: WS-LC-0025 Date Collected: 12/22/2015 10:00
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 495.9(mL) Date Analyzed: 12/30/2015 20:57
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00081
335-67-1	Perfluorooctanoic acid (PFOA)	0.0025		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00066
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.034		0.0025	0.0020	0.00093
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.18	M	0.0025	0.0020	0.00088
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.074	M	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	98		25-150
STL00995	13C5 PFNA	64		25-150
STL00990	13C4 PFOA	79		25-150
STL01892	13C4-PFHpA	81		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_022.d
 Lims ID: 320-16586-A-2-A Lab Sample ID: 320-16586-2
 Client ID: OF-MW16P-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 20:57:08 ALS Bottle#: 6 Worklist Smp#: 16
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16586-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 13:08:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.033	7.039	-0.006	1.000	163921	16.9			
D 8 13C4-PFHpA	367.0 > 322.0	9.405	9.413	-0.008		862389	40.4	80.8	2831	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.393	9.413	-0.020	1.000	3859	0.0397		3.3	
D 11 18O2 PFHxS	403.0 > 84.0	9.434	9.444	-0.010		476605	46.1	97.4	2146	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.434	9.449	-0.015	1.000	651248	91.2			M M
D 12 13C4 PFOA	417.0 > 372.0	10.513	10.524	-0.011		863054	39.5	79.0	2815	
13 Perfluorooctanoic acid	413.0 > 369.0	10.503	10.528	-0.025	1.000	20479	1.23		16.8	
	413.0 > 169.0	10.531	10.528	0.003	1.003	4044	5.06(0.00-0.00)		6.4	
D 16 13C4 PFOS	503.0 > 80.0	11.466	11.478	-0.012		523241	46.9	98.2	1635	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.466	11.480	-0.014	1.000	408512	36.7		839	M
	499.0 > 99.0	11.473	11.480	-0.007	1.001	149177	2.74(0.00-0.00)		219	M
D 17 13C5 PFNA	468.0 > 423.0	11.488	11.501	-0.013		634213	31.9	63.7	2137	

QC Flag Legend

Review Flags

M - Manually Integrated

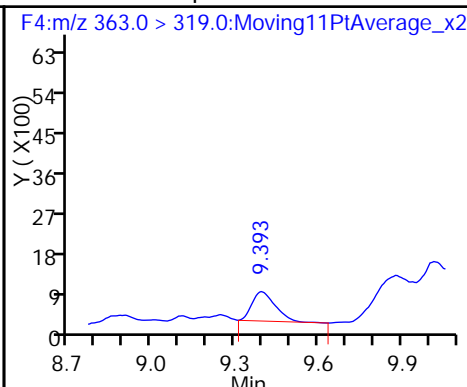
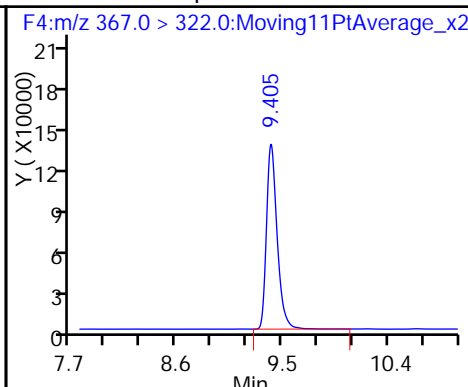
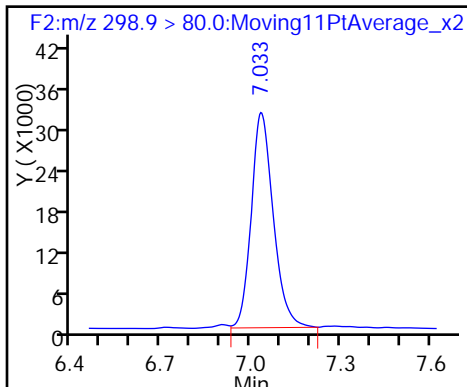
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_022.d
Injection Date: 30-Dec-2015 20:57:08 Instrument ID: A6
Lims ID: 320-16586-A-2-A Lab Sample ID: 320-16586-2
Client ID: OF-MW16P-1215
Operator ID: JRB ALS Bottle#: 6 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

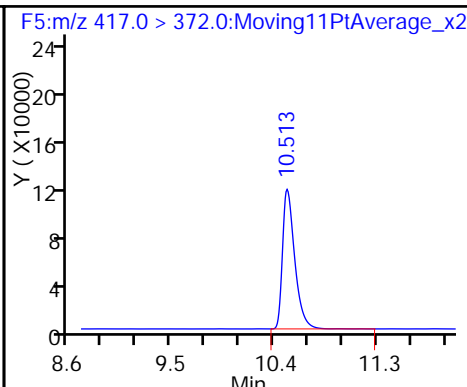
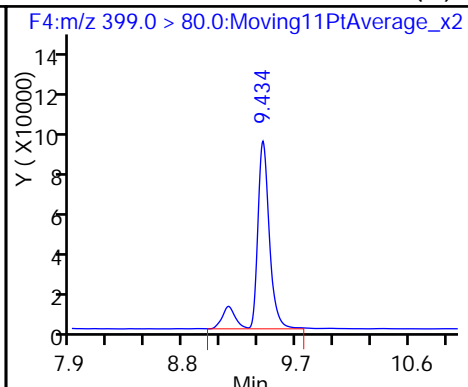
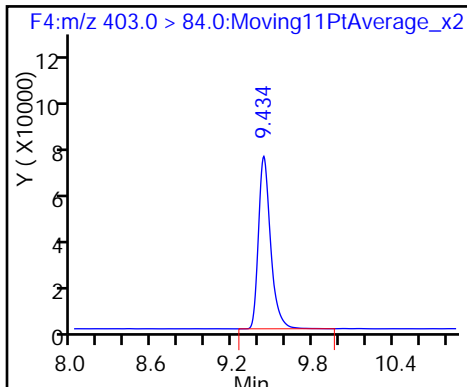
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

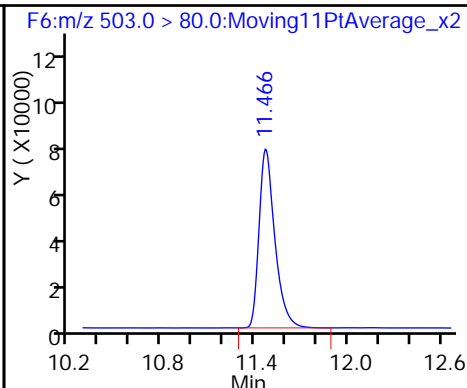
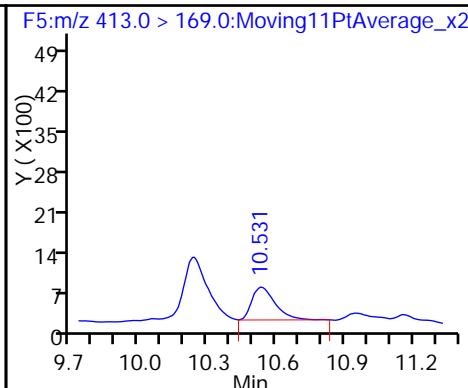
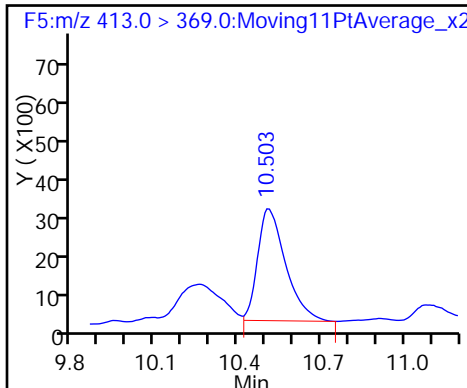
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

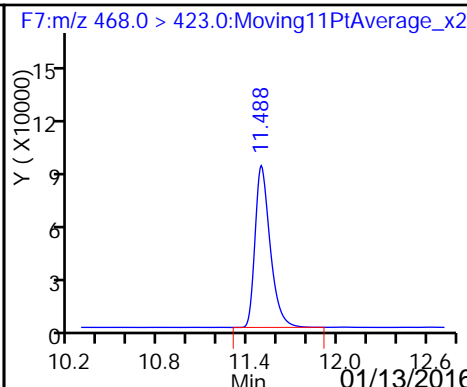
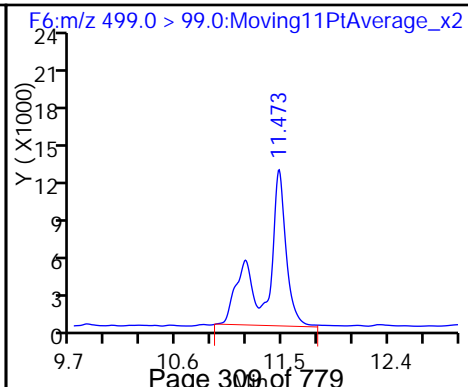
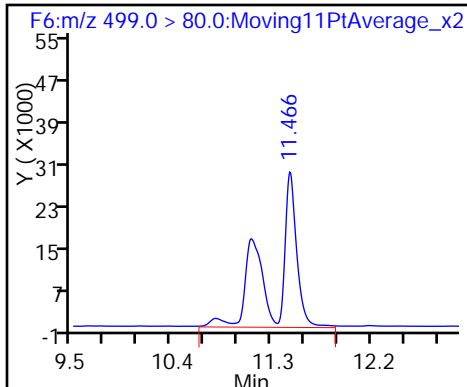
D 16 13C4 PFOS



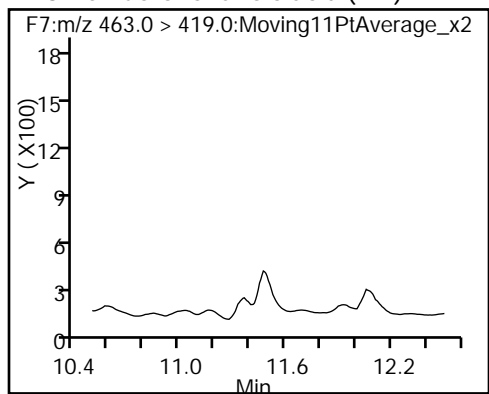
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



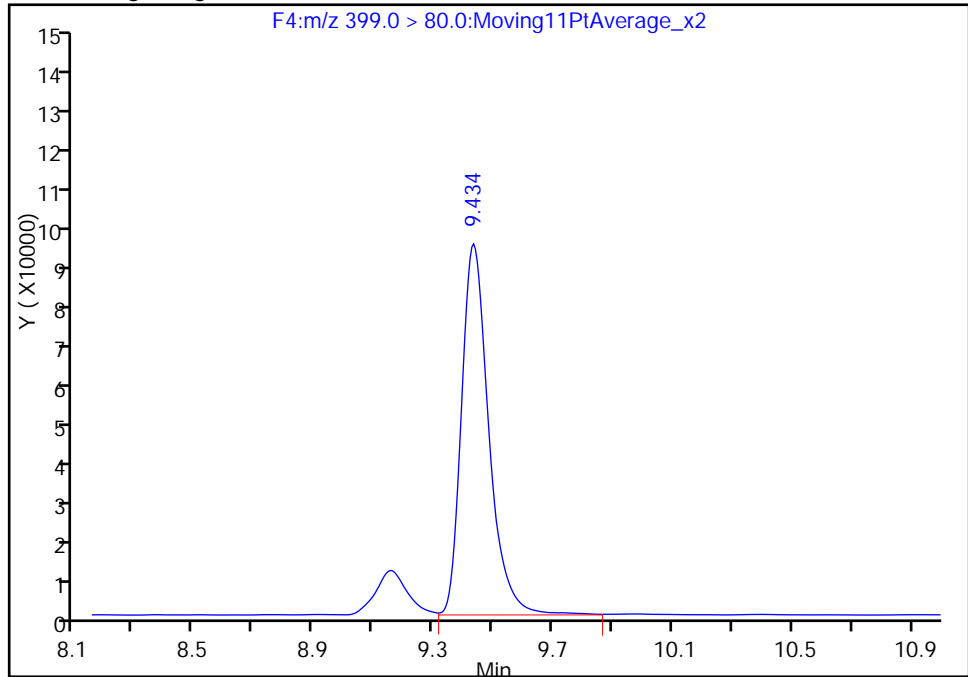
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_022.d
Injection Date: 30-Dec-2015 20:57:08 Instrument ID: A6
Lims ID: 320-16586-A-2-A Lab Sample ID: 320-16586-2
Client ID: OF-MW16P-1215
Operator ID: JRB ALS Bottle#: 6 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

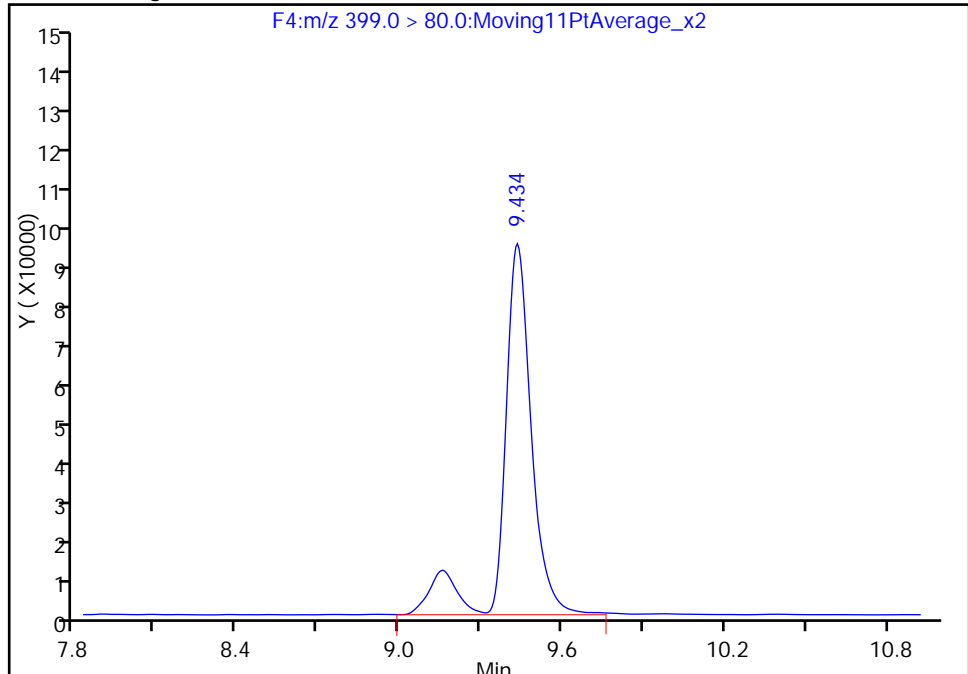
RT: 9.43
Area: 574237
Amount: 74.564277
Amount Units: ng/ml

Processing Integration Results



RT: 9.43
Area: 651248
Amount: 91.192215
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 14:50:12
Audit Action: Manually Integrated
Audit Reason: Isomers

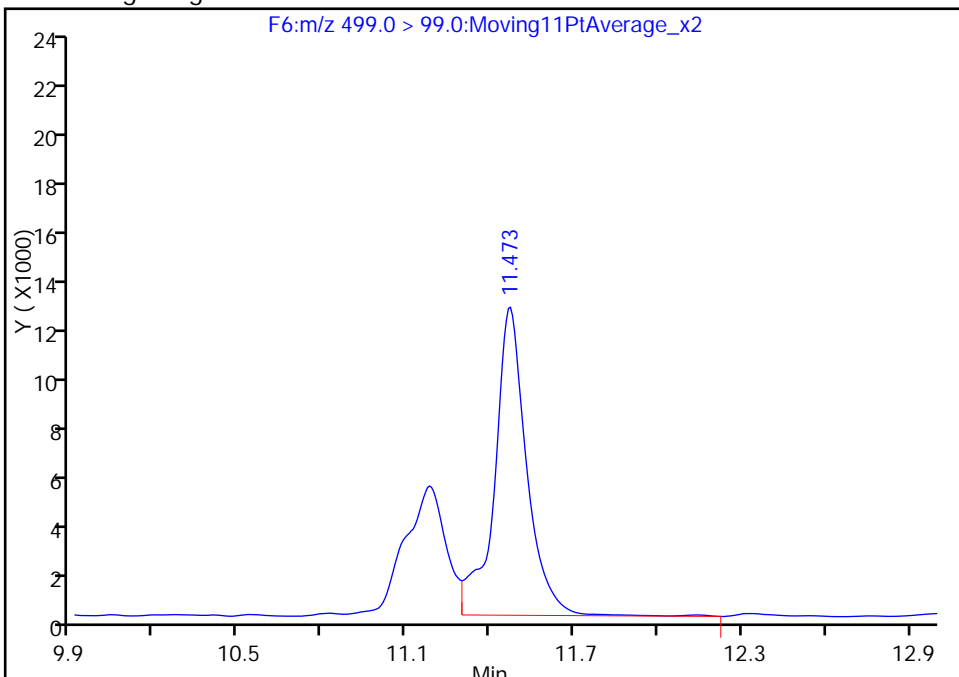
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_022.d
Injection Date: 30-Dec-2015 20:57:08 Instrument ID: A6
Lims ID: 320-16586-A-2-A Lab Sample ID: 320-16586-2
Client ID: OF-MW16P-1215
Operator ID: JRB ALS Bottle#: 6 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

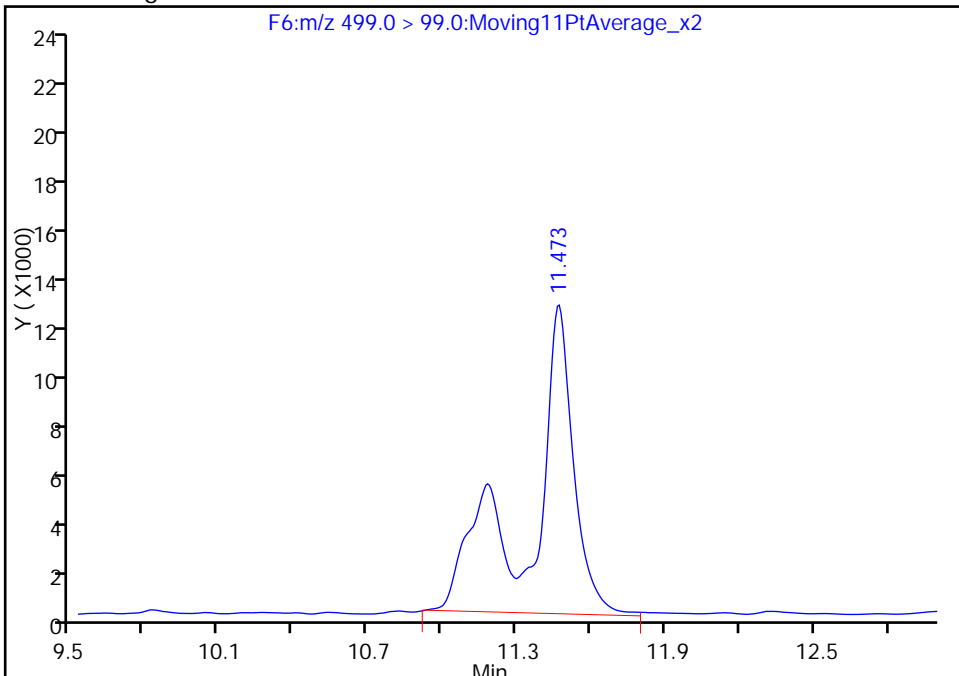
RT: 11.47
Area: 98123
Amount: 18.463303
Amount Units: ng/ml

Processing Integration Results



RT: 11.47
Area: 149177
Amount: 36.680580
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 14:50:12
Audit Action: Manually Integrated
Audit Reason: Isomers

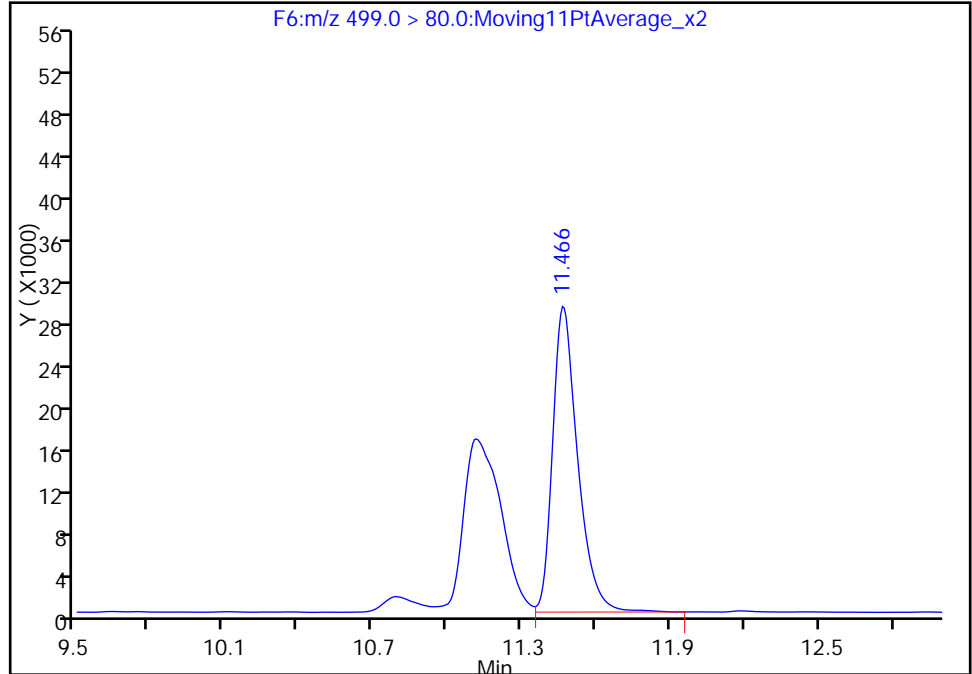
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_022.d
Injection Date: 30-Dec-2015 20:57:08 Instrument ID: A6
Lims ID: 320-16586-A-2-A Lab Sample ID: 320-16586-2
Client ID: OF-MW16P-1215
Operator ID: JRB ALS Bottle#: 6 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

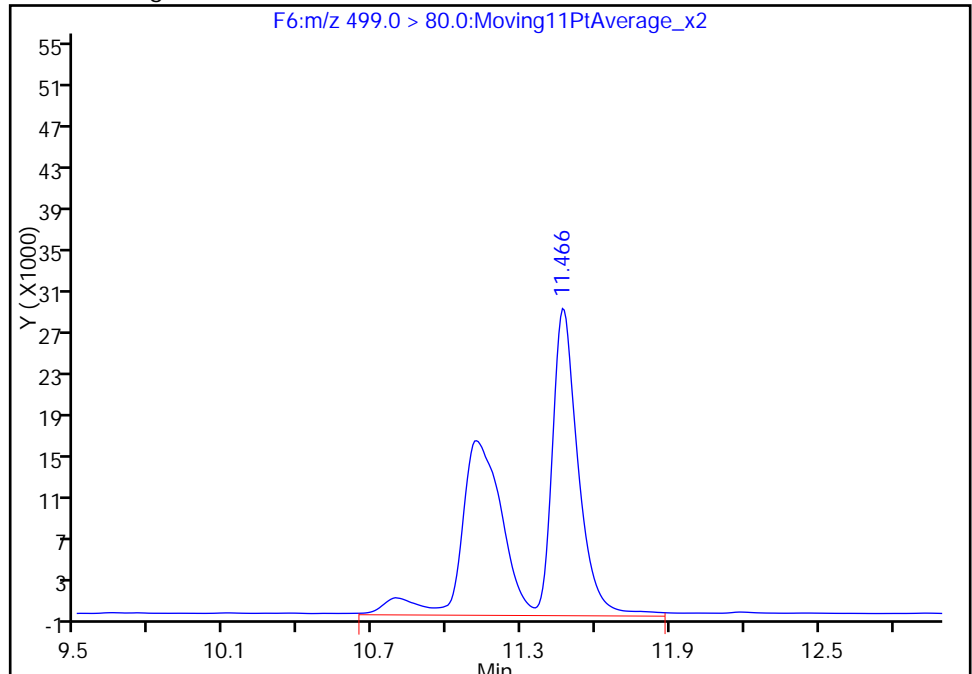
RT: 11.47
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Amount: 18.463303
Amount Units: ng/ml

Processing Integration Results



RT: 11.47
Area: 408512
Amount: 36.680580
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 15:14:31
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-MW17-1215 Lab Sample ID: 320-16586-3
 Matrix: Water Lab File ID: 30DEC2015A6A_023.d
 Analysis Method: WS-LC-0025 Date Collected: 12/22/2015 11:15
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 503.4 (mL) Date Analyzed: 12/30/2015 21:18
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0023	J	0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.017		0.0025	0.0020	0.00074
375-95-1	Perfluorononanoic acid (PFNA)	0.00099	J	0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0032		0.0025	0.0020	0.00091
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.035	M	0.0025	0.0020	0.00086
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.019	M	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	128		25-150
STL00991	13C4 PFOS	114		25-150
STL00995	13C5 PFNA	86		25-150
STL00990	13C4 PFOA	97		25-150
STL01892	13C4-PFHpA	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_023.d
 Lims ID: 320-16586-A-3-A Lab Sample ID: 320-16586-3
 Client ID: OF-MW17-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 21:18:23 ALS Bottle#: 7 Worklist Smp#: 17
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16586-A-3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 16:13:36 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 13:09:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.015	7.039	-0.024	1.000	20416	1.60			
D 8 13C4-PFHpA	367.0 > 322.0	9.399	9.413	-0.014		1147097	53.7	107	2093	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.399	9.413	-0.014	1.000	30889	1.15		13.9	
D 11 18O2 PFHxS	403.0 > 84.0	9.428	9.444	-0.016		628746	60.8	128	2454	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.428	9.449	-0.021	1.000	164253	17.4			M M
D 12 13C4 PFOA	417.0 > 372.0	10.512	10.524	-0.012		1058218	48.4	96.9	2209	
13 Perfluorooctanoic acid	413.0 > 369.0	10.512	10.528	-0.016	1.000	175925	8.59		61.2	
	413.0 > 169.0	10.512	10.528	-0.016	1.000	64096	2.74(0.00-0.00)		45.3	
D 16 13C4 PFOS	503.0 > 80.0	11.465	11.478	-0.013		608267	54.6	114	1931	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.118	11.480	-0.362	1.000	126060	9.74		96.5	M
	499.0 > 99.0	11.465	11.480	-0.015	1.031	49893	2.53(0.00-0.00)		46.8	M
D 17 13C5 PFNA	468.0 > 423.0	11.488	11.501	-0.013		853049	42.9	85.7	1572	
18 Perfluorononanoic acid	463.0 > 419.0	11.481	11.502	-0.021	1.000	6686	0.4977		11.5	

QC Flag Legend

Review Flags

M - Manually Integrated

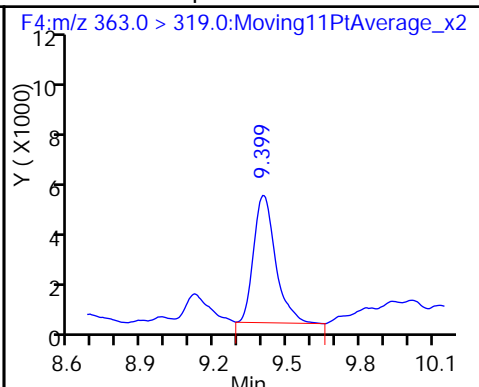
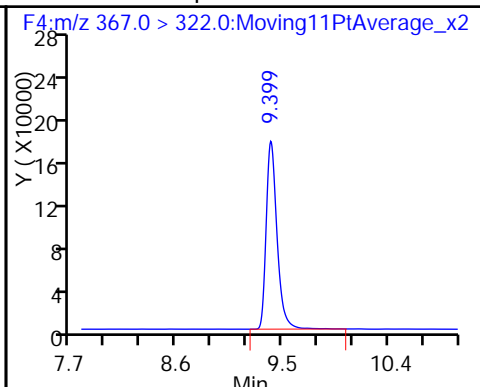
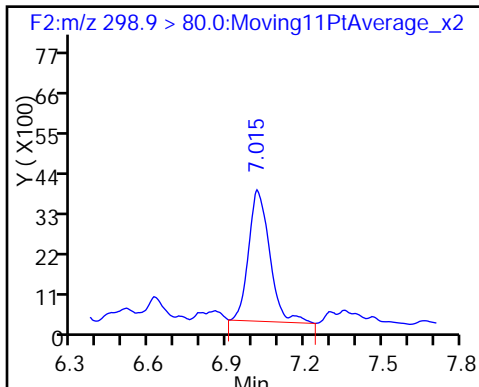
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_023.d
Injection Date: 30-Dec-2015 21:18:23 Instrument ID: A6
Lims ID: 320-16586-A-3-A Lab Sample ID: 320-16586-3
Client ID: OF-MW17-1215
Operator ID: JRB ALS Bottle#: 7 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpa

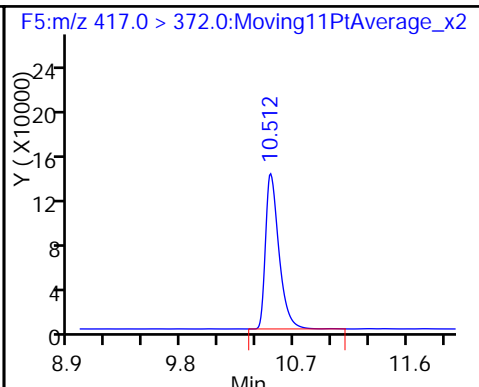
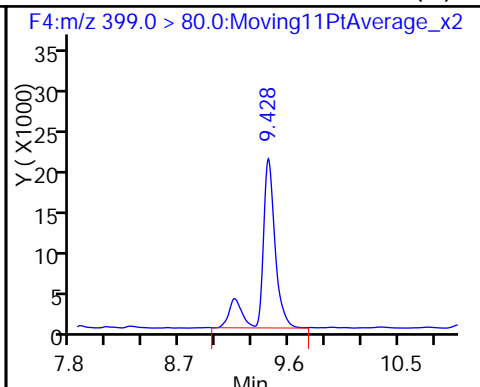
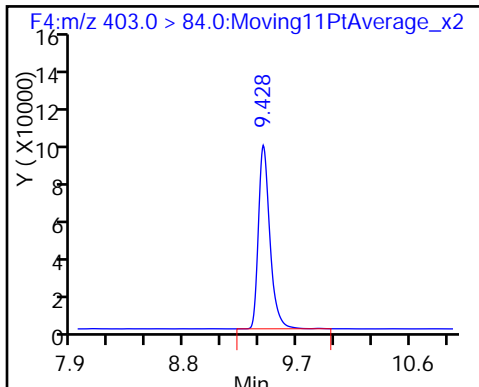
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

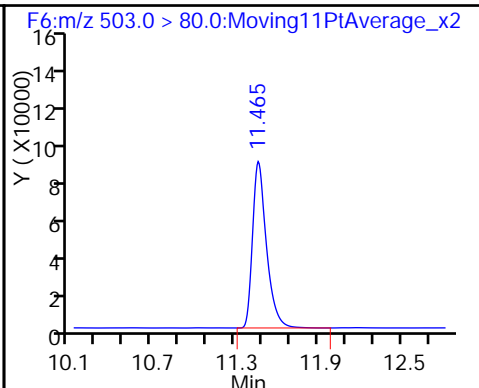
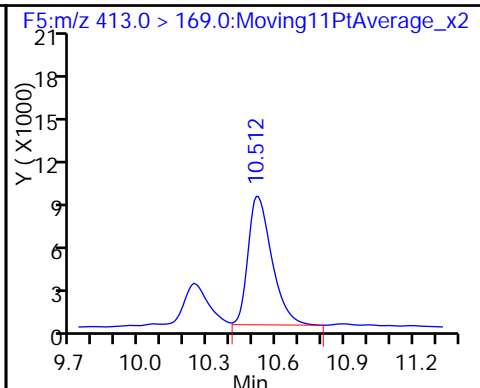
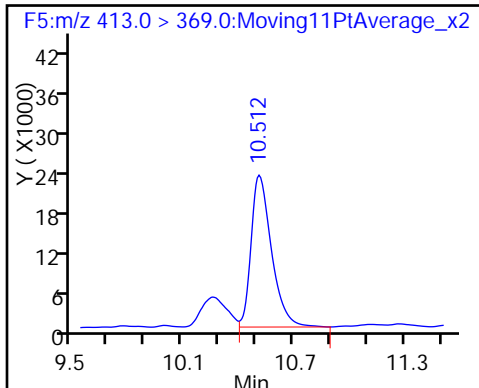
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

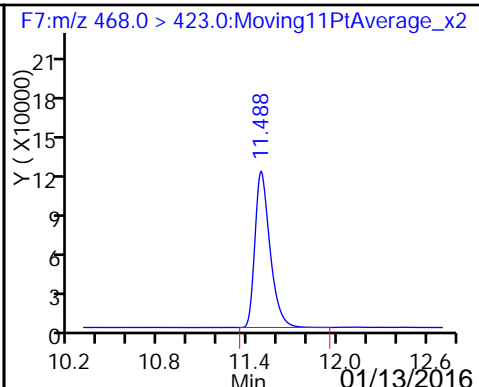
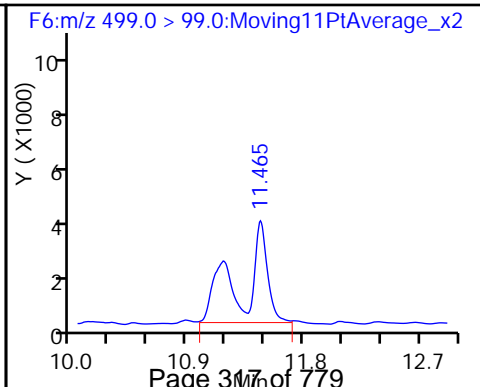
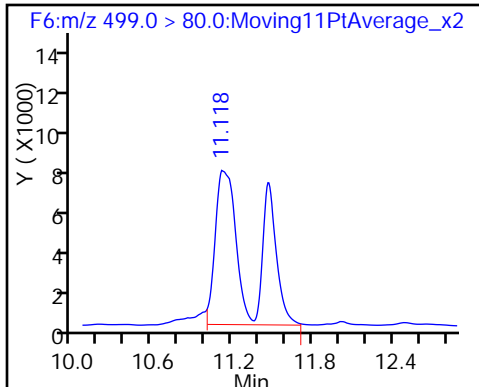
D 16 13C4 PFOS



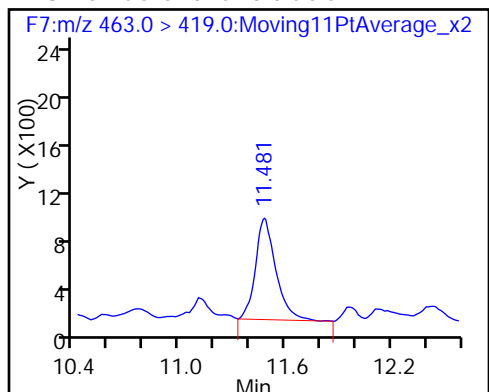
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



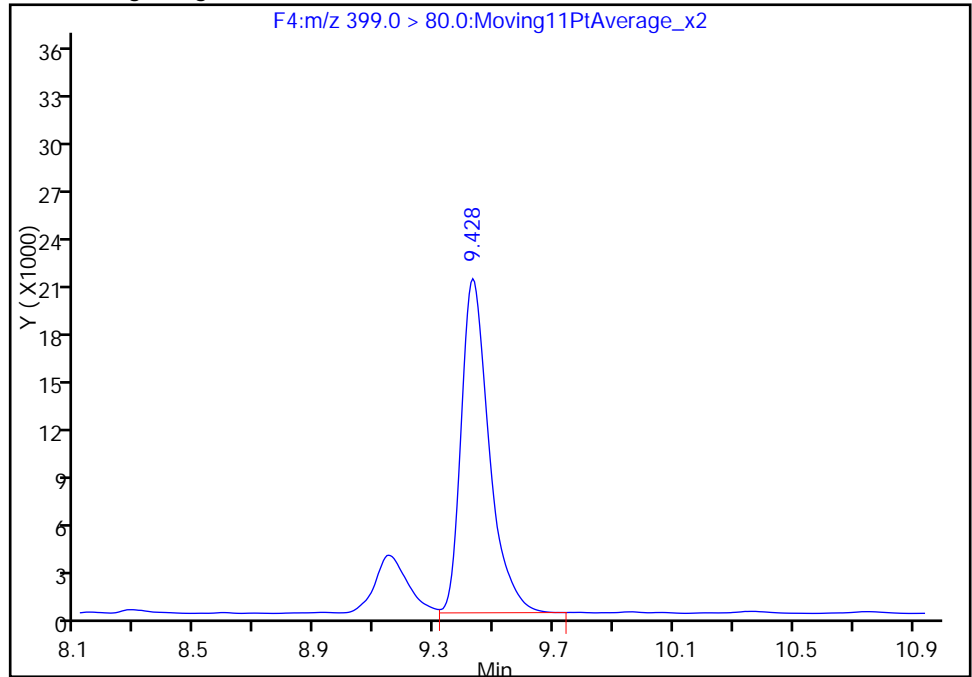
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_023.d
Injection Date: 30-Dec-2015 21:18:23 Instrument ID: A6
Lims ID: 320-16586-A-3-A Lab Sample ID: 320-16586-3
Client ID: OF-MW17-1215
Operator ID: JRB ALS Bottle#: 7 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

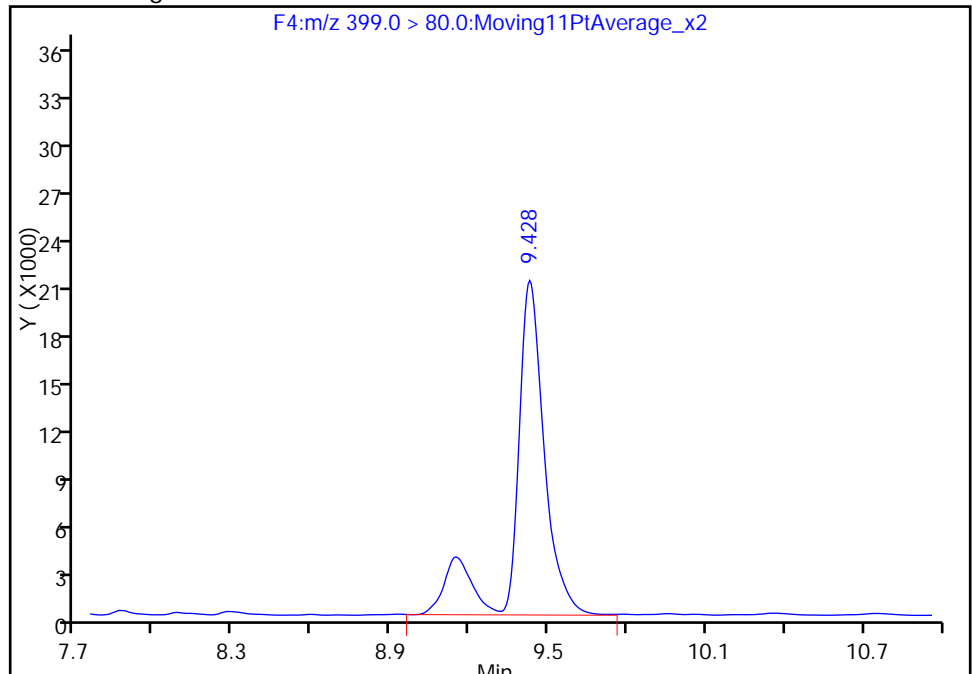
RT: 9.43
Area: 135989
Amount: 13.385259
Amount Units: ng/ml

Processing Integration Results



RT: 9.43
Area: 164253
Amount: 17.434441
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 16:13:06
Audit Action: Manually Integrated
Audit Reason: Isomers

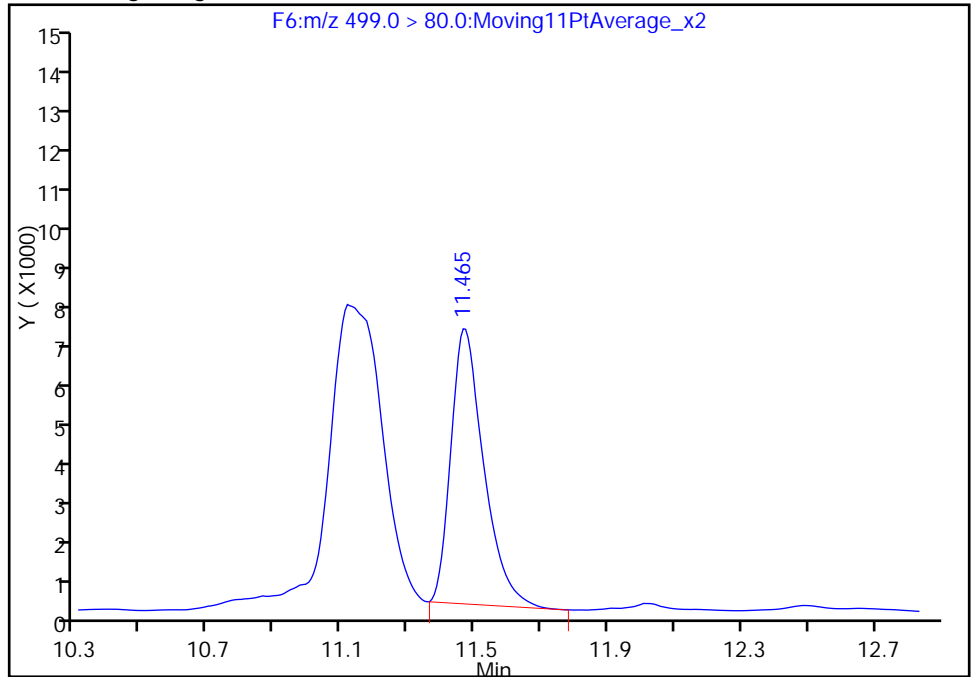
TestAmerica Sacramento

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Injection Date: 30-Dec-2015 21:18:23 Instrument ID: A6
Lims ID: 320-16586-A-3-A Lab Sample ID: 320-16586-3
Client ID: OF-MW17-1215
Operator ID: JRB ALS Bottle#: 7 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

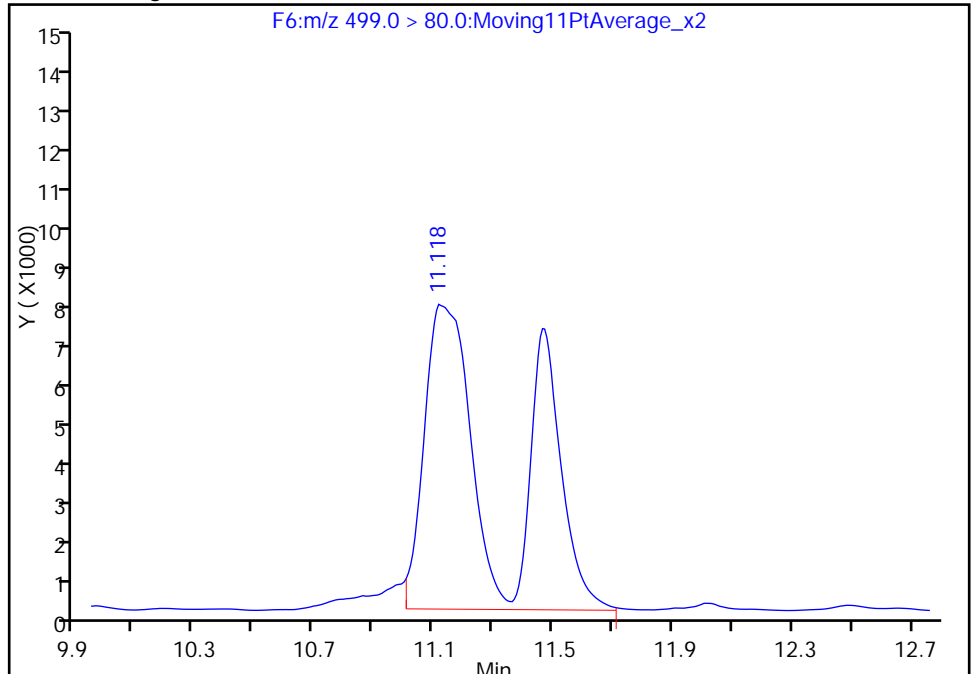
RT: 11.47
Area: 45518
Amount: 3.515783
Amount Units: ng/ml

Processing Integration Results



RT: 11.12
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Amount: 9.736799
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 14:51:50
Audit Action: Manually Integrated
Audit Reason: Isomers

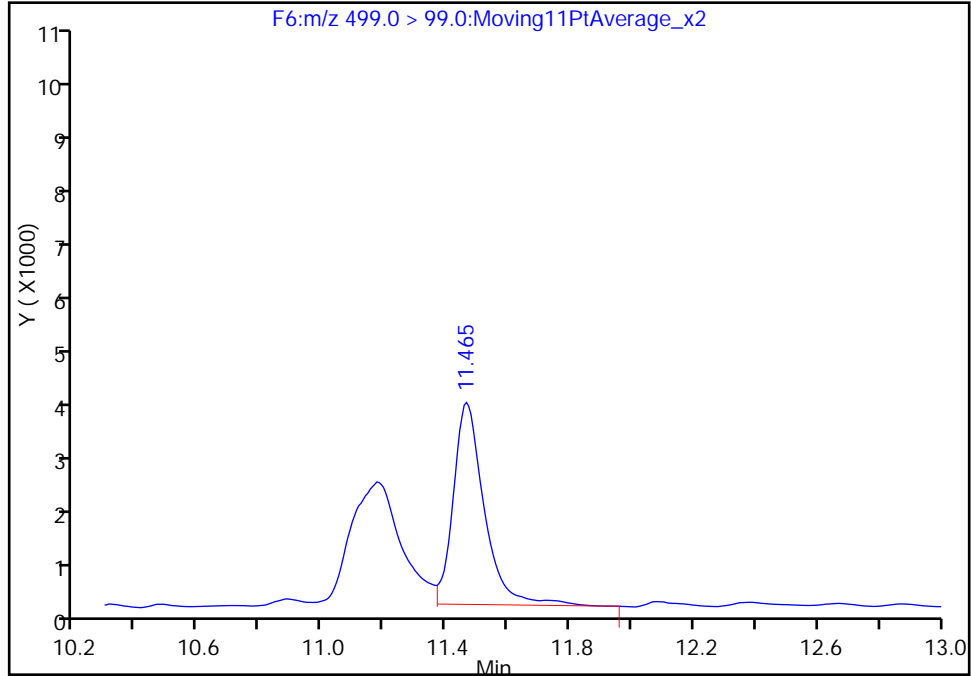
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_023.d
Injection Date: 30-Dec-2015 21:18:23 Instrument ID: A6
Lims ID: 320-16586-A-3-A Lab Sample ID: 320-16586-3
Client ID: OF-MW17-1215
Operator ID: JRB ALS Bottle#: 7 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

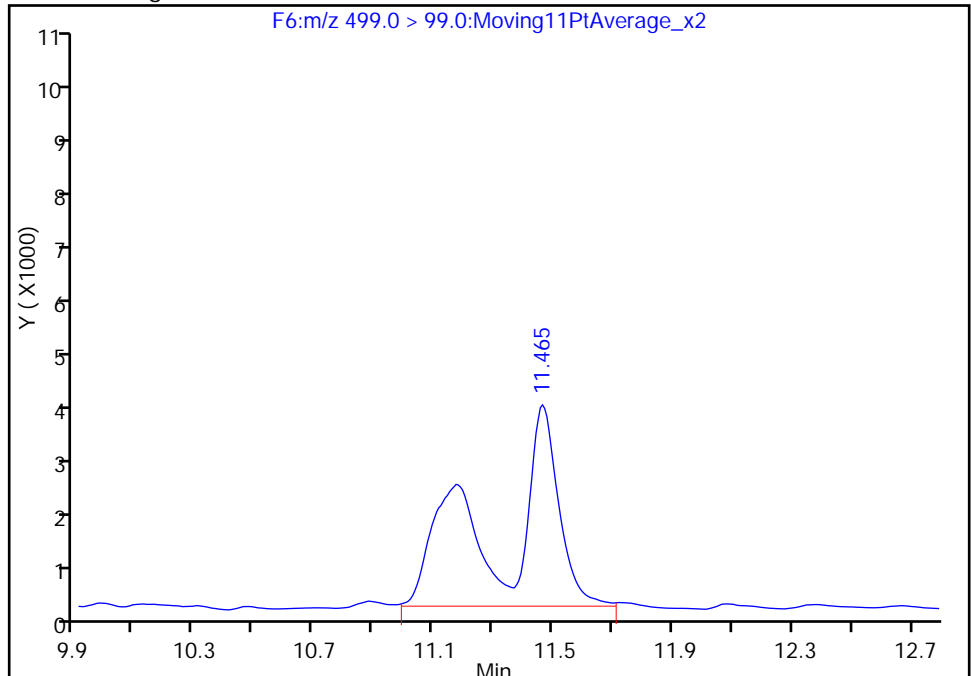
RT: 11.47
Area: 25742
Amount: 3.515783
Amount Units: ng/ml

Processing Integration Results



RT: 11.47
Area: 49893
Amount: 9.736799
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 14:51:50
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW07D-1215 Lab Sample ID: 320-16586-4
 Matrix: Water Lab File ID: 30DEC2015A6A_024.d
 Analysis Method: WS-LC-0025 Date Collected: 12/22/2015 13:25
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 500.8 (mL) Date Analyzed: 12/30/2015 21:39
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	J	0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0028	M	0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	125		25-150
STL00991	13C4 PFOS	114		25-150
STL00995	13C5 PFNA	74		25-150
STL00990	13C4 PFOA	85		25-150
STL01892	13C4-PFHpA	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_024.d
 Lims ID: 320-16586-A-4-A Lab Sample ID: 320-16586-4
 Client ID: OF14-MW07D-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 21:39:38 ALS Bottle#: 8 Worklist Smp#: 18
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16586-A-4-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 16:18:42 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 14:09:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA	367.0 > 322.0	9.399	9.413	-0.014	1037151	48.6		97.1	2504	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.411	9.413	-0.002	3089	-0.0340			2.1	
D 11 18O2 PFHxS	403.0 > 84.0	9.429	9.444	-0.015	609521	58.9		125	2338	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.423	9.449	-0.026	12792	1.40				M M
D 12 13C4 PFOA	417.0 > 372.0	10.513	10.524	-0.011	930363	42.6		85.2	2370	
13 Perfluorooctanoic acid	413.0 > 369.0	10.503	10.528	-0.025	16977	0.9426			12.0	
	413.0 > 169.0	10.503	10.528	-0.025	4397		3.86(0.00-0.00)		8.4	
D 16 13C4 PFOS	503.0 > 80.0	11.466	11.478	-0.012	606244	54.4		114	1628	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.473	11.480	-0.007	3053	0.2366			7.6	
	499.0 > 99.0	11.466	11.480	-0.014	3163		0.97(0.00-0.00)		5.8	
D 17 13C5 PFNA	468.0 > 423.0	11.481	11.501	-0.020	732400	36.8		73.6	1929	
18 Perfluorononanoic acid	463.0 > 419.0	11.488	11.502	-0.014	3621	0.3140			4.6	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_024.d

Injection Date: 30-Dec-2015 21:39:38

Instrument ID: A6

Lims ID: 320-16586-A-4-A

Lab Sample ID: 320-16586-4

Client ID: OF14-MW07D-1215

Operator ID: JRB

ALS Bottle#: 8

Worklist Smp#: 18

Injection Vol: 15.0 ul

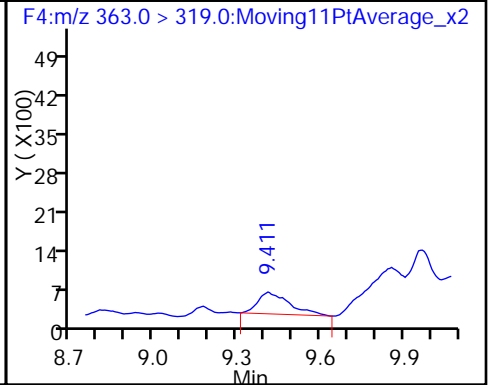
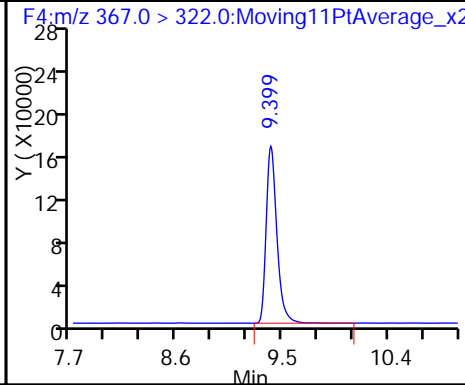
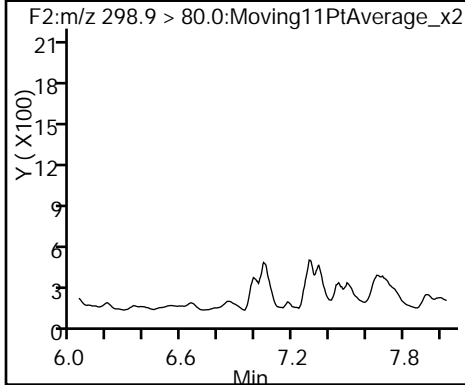
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 8 13C4-PFHpA

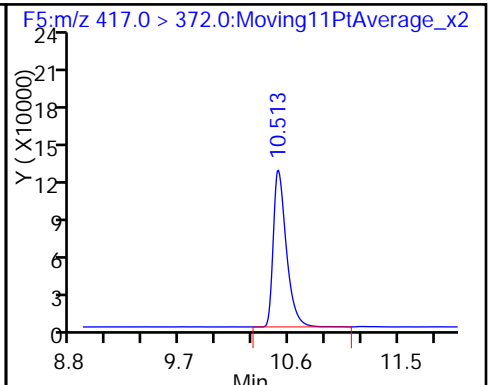
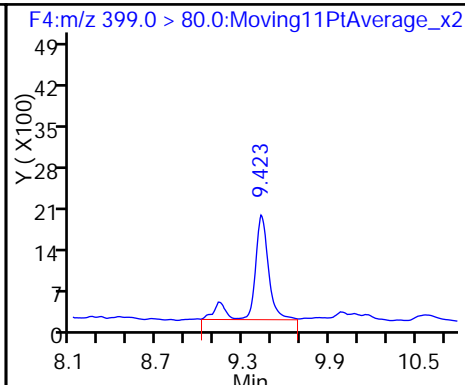
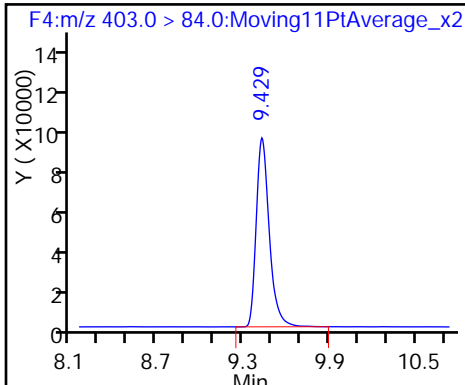
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

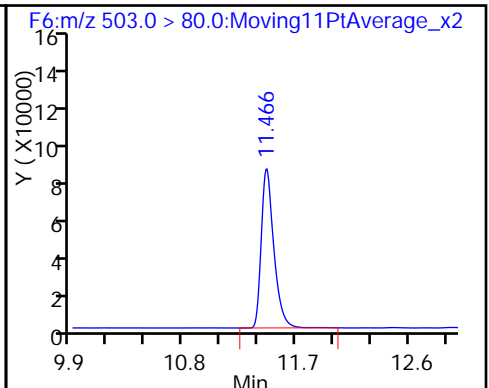
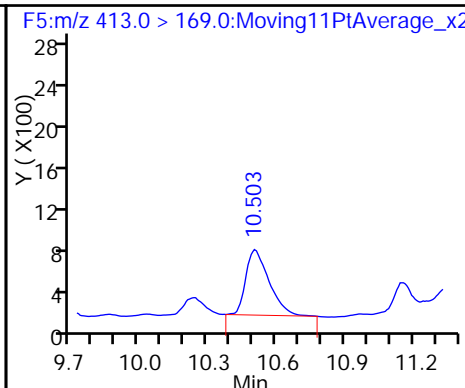
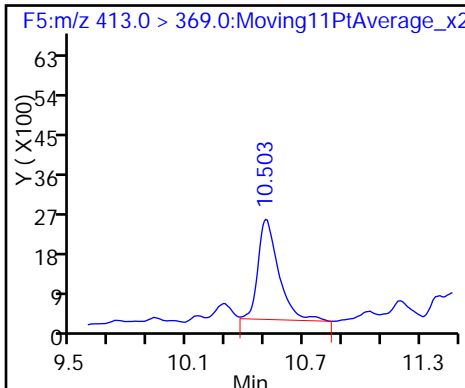
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

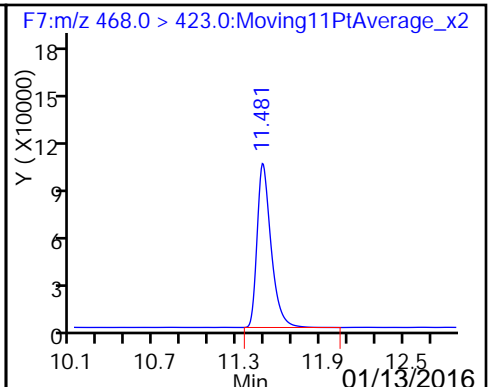
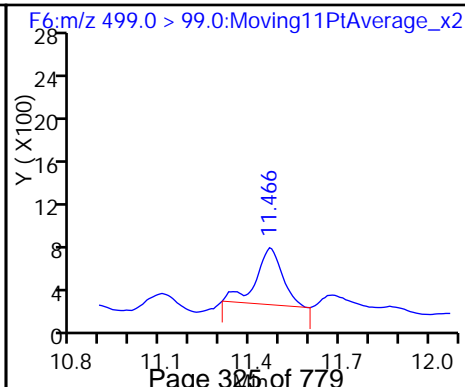
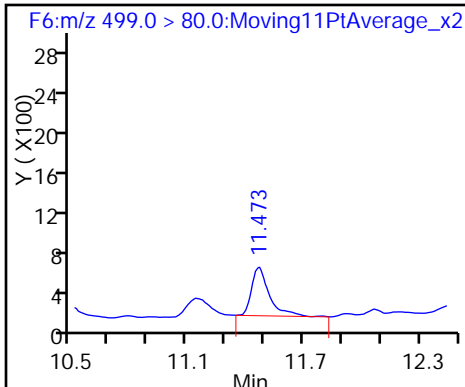
D 16 13C4 PFOS



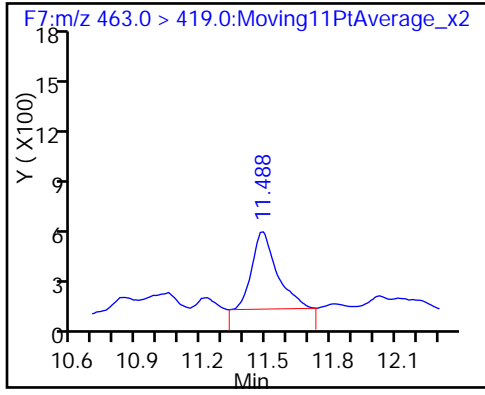
15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid



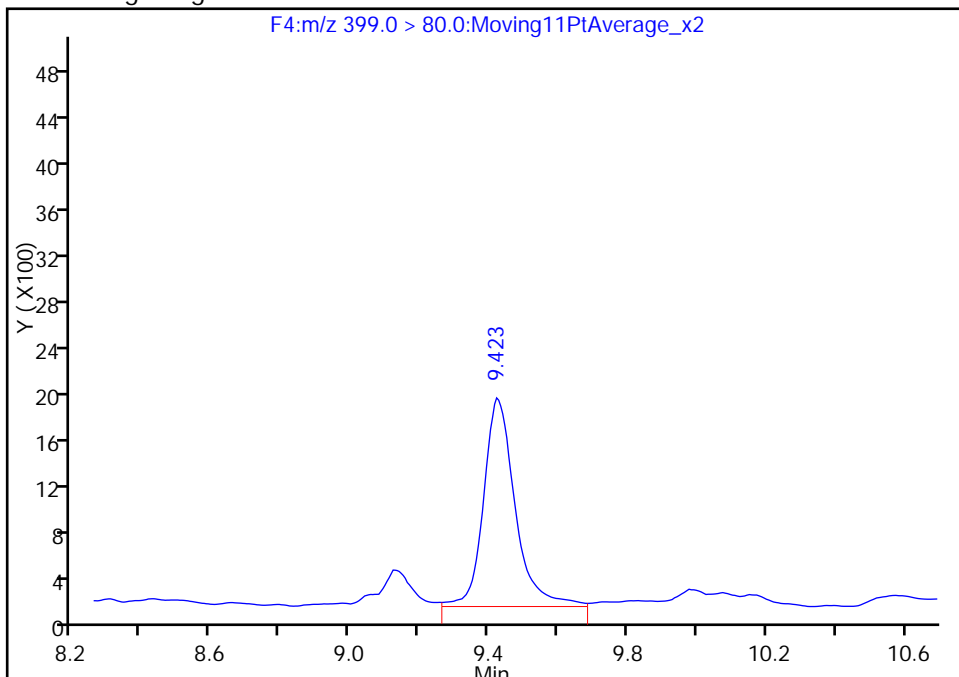
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_024.d
Injection Date: 30-Dec-2015 21:39:38 Instrument ID: A6
Lims ID: 320-16586-A-4-A Lab Sample ID: 320-16586-4
Client ID: OF14-MW07D-1215
Operator ID: JRB ALS Bottle#: 8 Worklist Smp#: 18
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

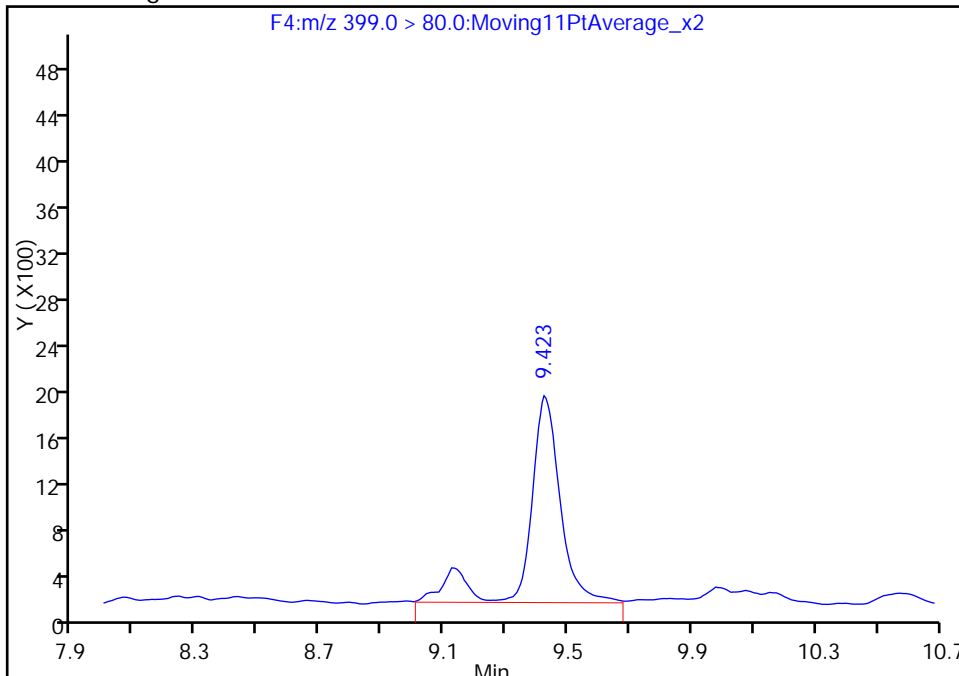
RT: 9.42
Area: 11414
Amount: 1.158904
Amount Units: ng/ml

Processing Integration Results



RT: 9.42
Area: 12792
Amount: 1.400618
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 16:18:41
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW06D-1215 Lab Sample ID: 320-16586-5
 Matrix: Water Lab File ID: 30DEC2015A6A_025.d
 Analysis Method: WS-LC-0025 Date Collected: 12/22/2015 16:05
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 494.4 (mL) Date Analyzed: 12/30/2015 22:00
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00081
335-67-1	Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.0020	0.00076
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00066
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00093
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.0020	0.00088
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	122		25-150
STL00991	13C4 PFOS	110		25-150
STL00995	13C5 PFNA	80		25-150
STL00990	13C4 PFOA	92		25-150
STL01892	13C4-PFHpA	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_025.d
 Lims ID: 320-16586-A-5-A Lab Sample ID: 320-16586-5
 Client ID: OF14-MW06D-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 22:00:52 ALS Bottle#: 9 Worklist Smp#: 19
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16586-A-5-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: barnettj Date: 04-Jan-2016 14:53:44

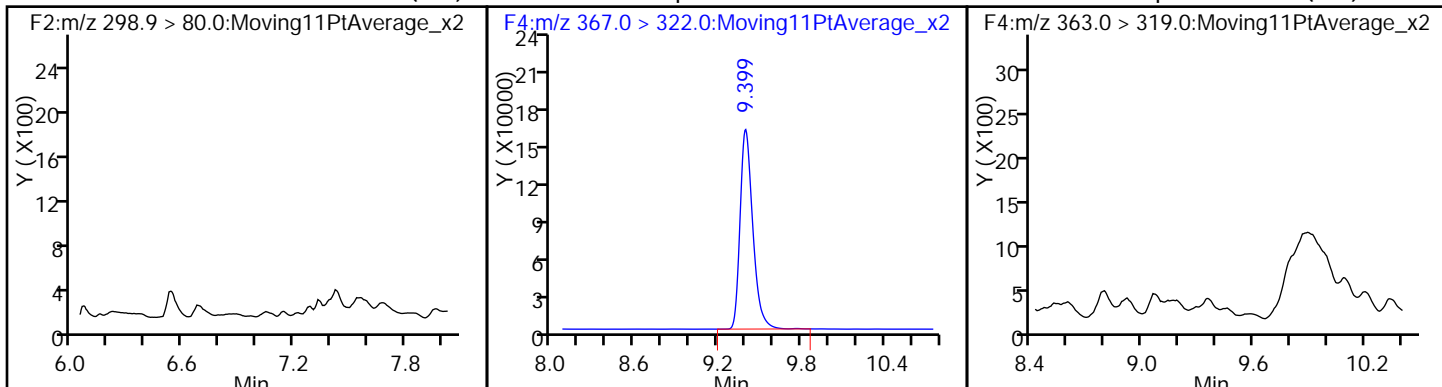
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA	367.0 > 322.0	9.399	9.413	-0.014	1004492	47.0		94.1	3403	
D 11 18O2 PFHxS	403.0 > 84.0	9.428	9.444	-0.016	597715	57.8		122	2105	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.416	9.449	-0.033	2764	0.3086				
D 12 13C4 PFOA	417.0 > 372.0	10.503	10.524	-0.021	1006300	46.1		92.1	2461	
13 Perfluorooctanoic acid	413.0 > 369.0	10.503	10.528	-0.025	3301	0.1694			3.3	
D 16 13C4 PFOS	503.0 > 80.0	11.465	11.478	-0.013	586629	52.6		110	1922	
D 17 13C5 PFNA	468.0 > 423.0	11.481	11.501	-0.020	793240	39.9		79.7	1527	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_025.d
Injection Date: 30-Dec-2015 22:00:52 Instrument ID: A6
Lims ID: 320-16586-A-5-A Lab Sample ID: 320-16586-5
Client ID: OF14-MW06D-1215
Operator ID: JRB ALS Bottle#: 9 Worklist Smp#: 19
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 8 13C4-PFHpA

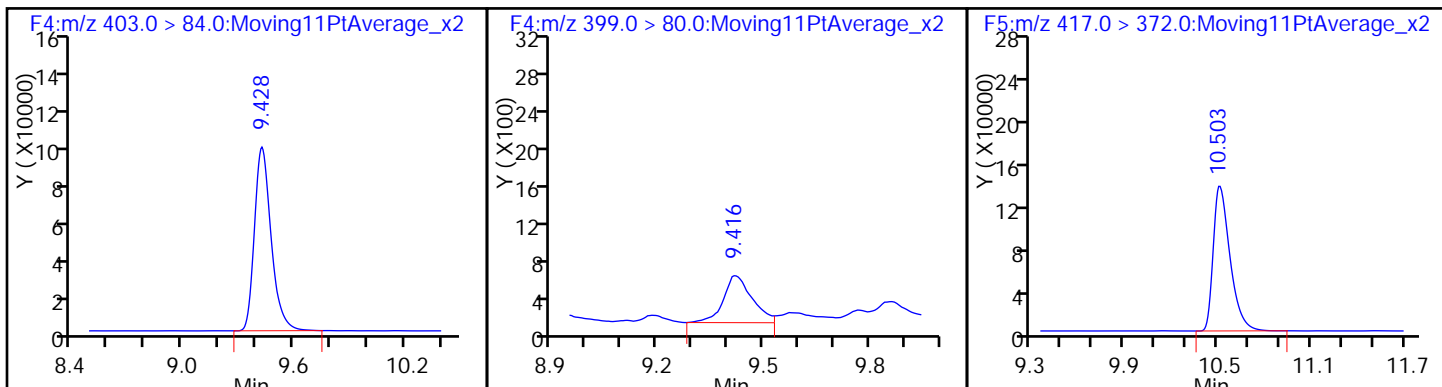
9 Perfluoroheptanoic acid (ND)



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

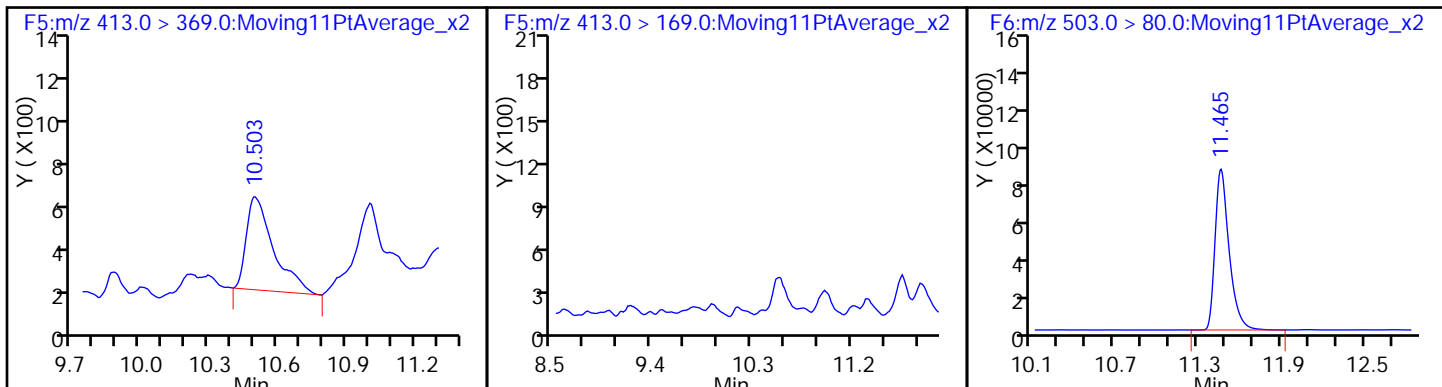
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

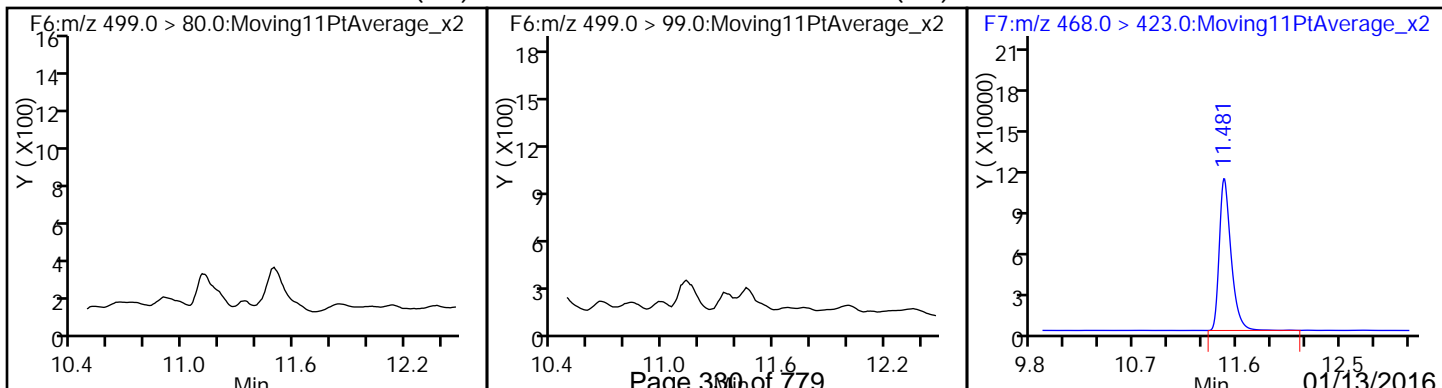
D 16 13C4 PFOS



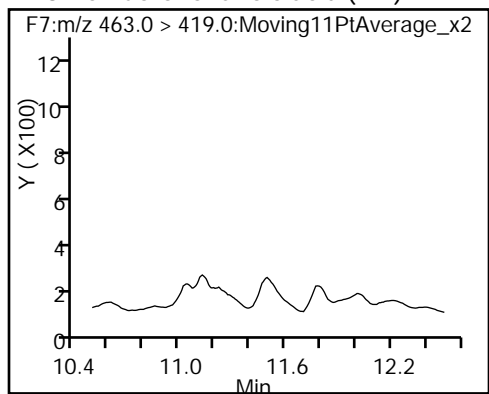
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)

D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-MW15-1215 Lab Sample ID: 320-16609-1
 Matrix: Water Lab File ID: 30DEC2015A6A_026.d
 Analysis Method: WS-LC-0025 Date Collected: 12/23/2015 09:30
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 493.4 (mL) Date Analyzed: 12/30/2015 22:22
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0086		0.0025	0.0020	0.00081
335-67-1	Perfluorooctanoic acid (PFOA)	0.14		0.0025	0.0020	0.00076
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00066
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00093
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00097	J	0.0025	0.0020	0.00088
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0041	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	108		25-150
STL00991	13C4 PFOS	97		25-150
STL00995	13C5 PFNA	75		25-150
STL00990	13C4 PFOA	79		25-150
STL01892	13C4-PFHpA	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_026.d
 Lims ID: 320-16609-B-1-A Lab Sample ID: 320-16609-1
 Client ID: OF-MW15-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 22:22:06 ALS Bottle#: 10 Worklist Smp#: 20
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16609-B-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 13:09:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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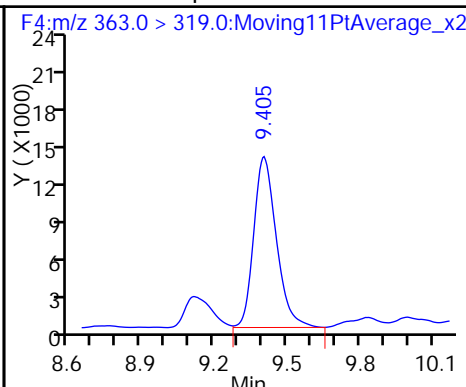
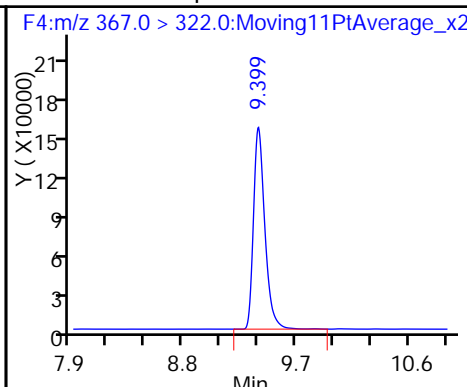
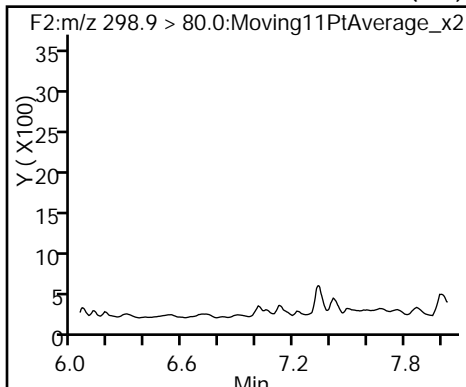
D 8 13C4-PFHpA	367.0 > 322.0	9.399	9.413	-0.014	990668	46.4		92.8	3322	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.405	9.413	-0.008	1.000	89299	4.26		49.4	
D 11 18O2 PFHxS	403.0 > 84.0	9.429	9.444	-0.015	530366	51.3		108	1734	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.429	9.449	-0.020	1.000	3812	0.4797			
D 12 13C4 PFOA	417.0 > 372.0	10.503	10.524	-0.021	862203	39.5		78.9	1856	
13 Perfluorooctanoic acid	413.0 > 369.0	10.513	10.528	-0.015	1.000	1118432	67.0		64.2	
	413.0 > 169.0	10.513	10.528	-0.015	1.000	363503	3.08(0.00-0.00)		39.4	
D 16 13C4 PFOS	503.0 > 80.0	11.466	11.478	-0.012	518427	46.5		97.3	1740	
D 17 13C5 PFNA	468.0 > 423.0	11.481	11.501	-0.020	745652	37.5		74.9	2355	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_026.d
Injection Date: 30-Dec-2015 22:22:06 Instrument ID: A6
Lims ID: 320-16609-B-1-A Lab Sample ID: 320-16609-1
Client ID: OF-MW15-1215
Operator ID: JRB ALS Bottle#: 10 Worklist Smp#: 20
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 8 13C4-PFHpA

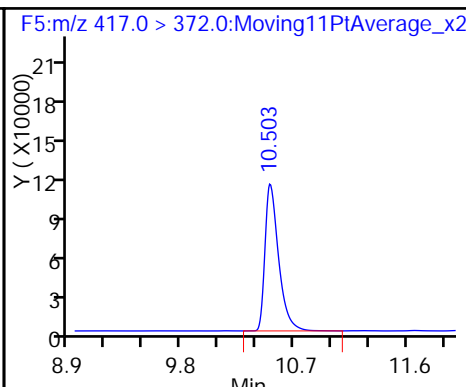
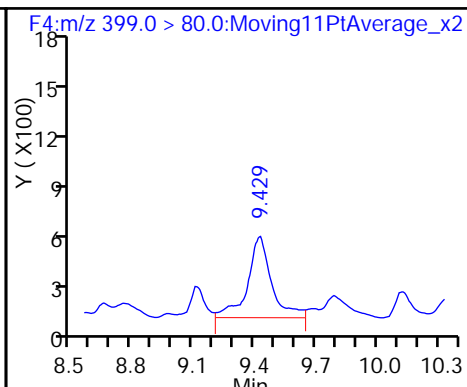
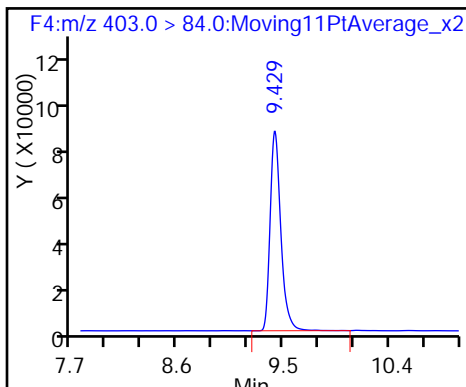
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

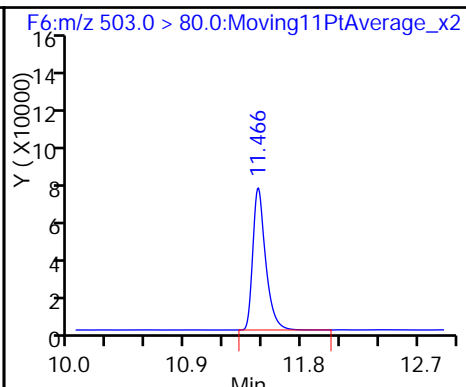
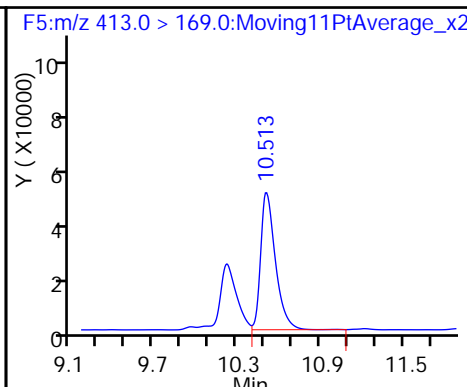
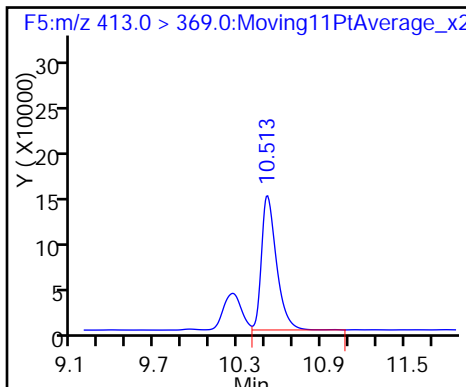
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

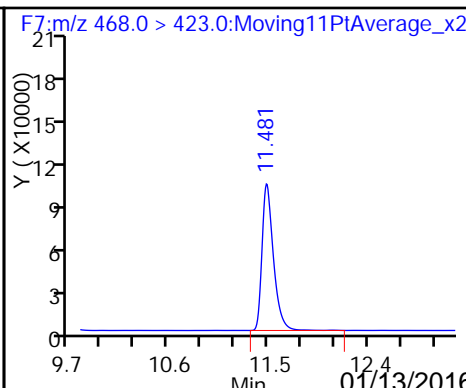
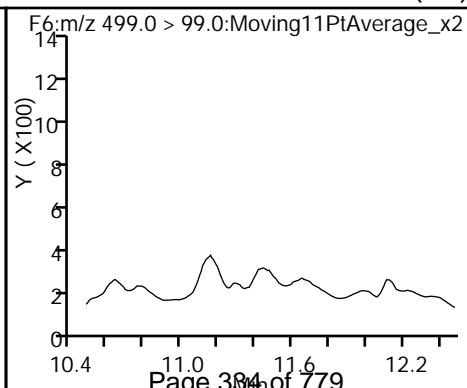
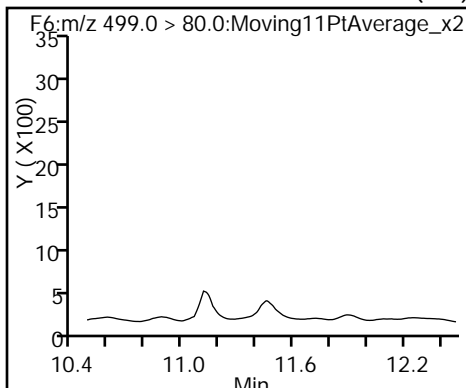
D 16 13C4 PFOS



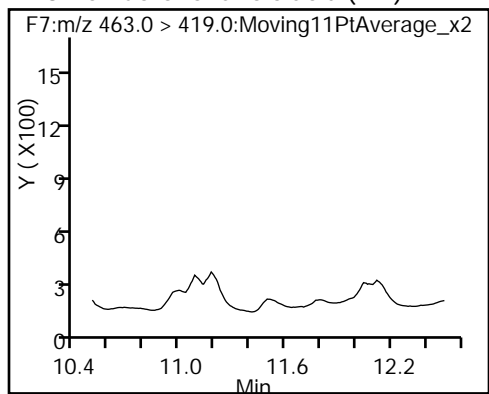
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)

D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-MW09-1215 Lab Sample ID: 320-16609-2
 Matrix: Water Lab File ID: 30DEC2015A6A_028.d
 Analysis Method: WS-LC-0025 Date Collected: 12/23/2015 11:00
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 527.2 (mL) Date Analyzed: 12/30/2015 23:04
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.0019	0.00076
335-67-1	Perfluorooctanoic acid (PFOA)	0.0015	J	0.0024	0.0019	0.00071
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.0019	0.00062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0014	J	0.0024	0.0019	0.00087
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.013	M	0.0024	0.0019	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	M	0.0038	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	125		25-150
STL00991	13C4 PFOS	119		25-150
STL00995	13C5 PFNA	92		25-150
STL00990	13C4 PFOA	104		25-150
STL01892	13C4-PFHpA	113		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_028.d
 Lims ID: 320-16609-A-2-A Lab Sample ID: 320-16609-2
 Client ID: OF-MW09-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 23:04:35 ALS Bottle#: 11 Worklist Smp#: 21
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16609-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 16:20:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: barnettj Date: 04-Jan-2016 15:07:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.026	7.039	-0.013	1.000	8944	0.7206			
D 8 13C4-PFHpA	367.0 > 322.0	9.399	9.413	-0.014		1211607	56.7	113	2975	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.375	9.413	-0.038	1.000	7933	0.1418		3.5	
D 11 18O2 PFHxS	403.0 > 84.0	9.428	9.444	-0.016		609913	58.9	125	2063	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.428	9.449	-0.021	1.000	64774	7.09			M M
D 12 13C4 PFOA	417.0 > 372.0	10.503	10.524	-0.021		1134422	51.9	104	2845	
13 Perfluorooctanoic acid	413.0 > 369.0	10.512	10.528	-0.016	1.000	17291	0.7873		12.0	
	413.0 > 169.0	10.503	10.528	-0.025	0.999	7205	2.40(0.00-0.00)		12.2	
D 16 13C4 PFOS	503.0 > 80.0	11.458	11.478	-0.020		634206	56.9	119	1914	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.465	11.480	-0.015	1.000	85556	6.34		103	M
	499.0 > 99.0	11.458	11.480	-0.022	0.999	46259	1.85(0.00-0.00)		44.8	M
D 17 13C5 PFNA	468.0 > 423.0	11.481	11.501	-0.020		911562	45.8	91.6	2289	
18 Perfluorononanoic acid	463.0 > 419.0	11.488	11.502	-0.014	1.000	3472	0.2419		8.3	

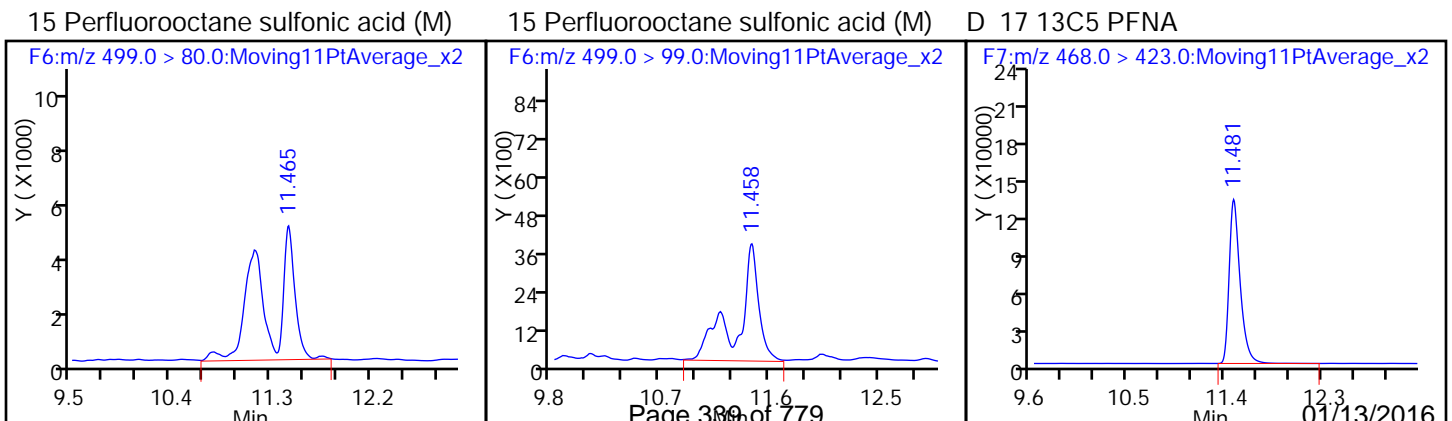
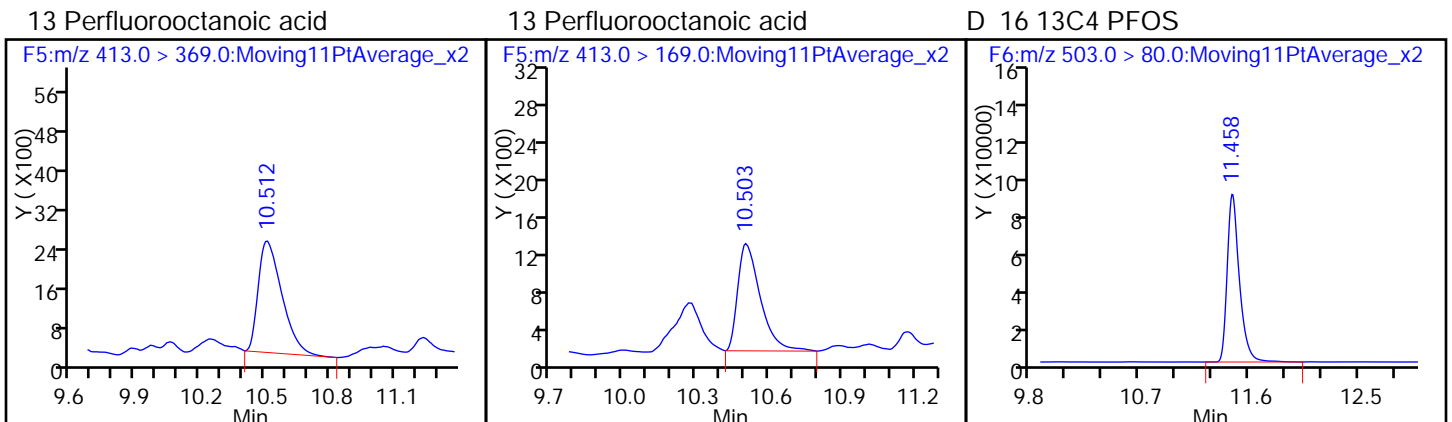
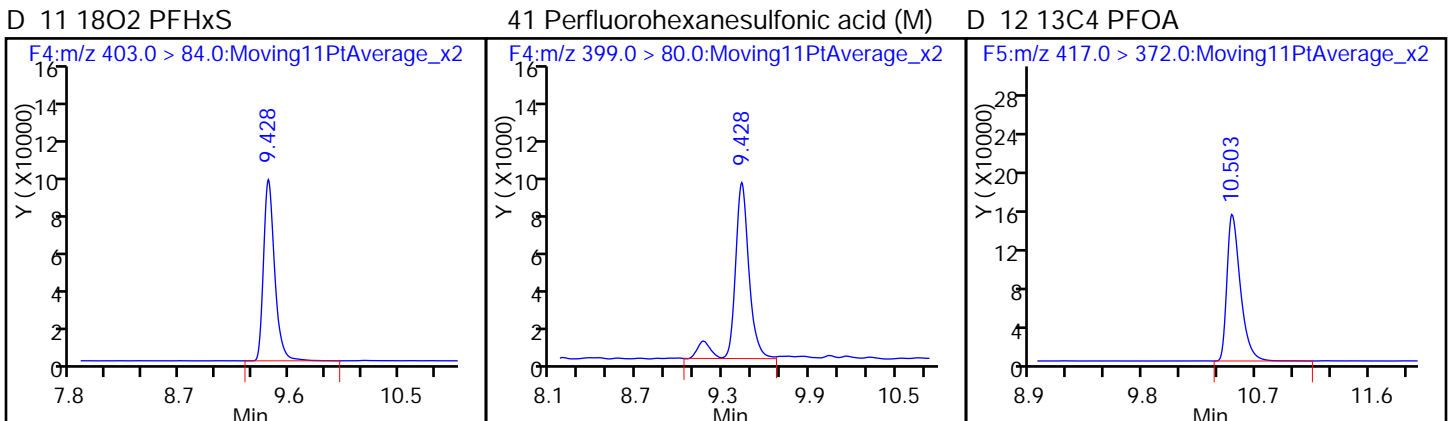
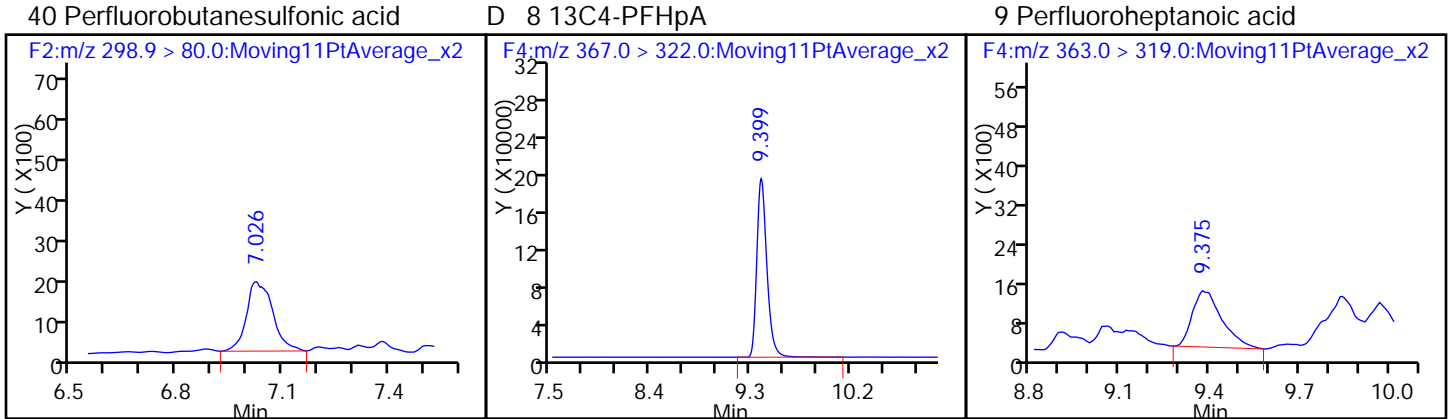
QC Flag Legend

Review Flags

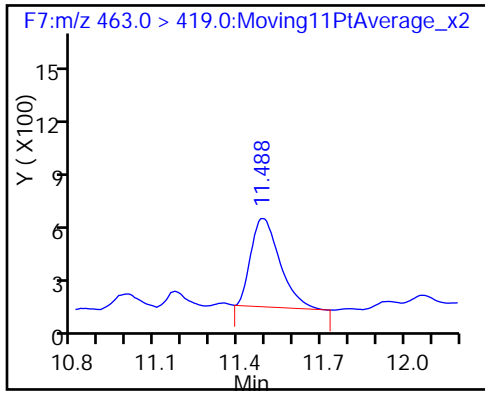
M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_028.d
Injection Date: 30-Dec-2015 23:04:35 Instrument ID: A6
Lims ID: 320-16609-A-2-A Lab Sample ID: 320-16609-2
Client ID: OF-MW09-1215
Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 21
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL



18 Perfluorononanoic acid



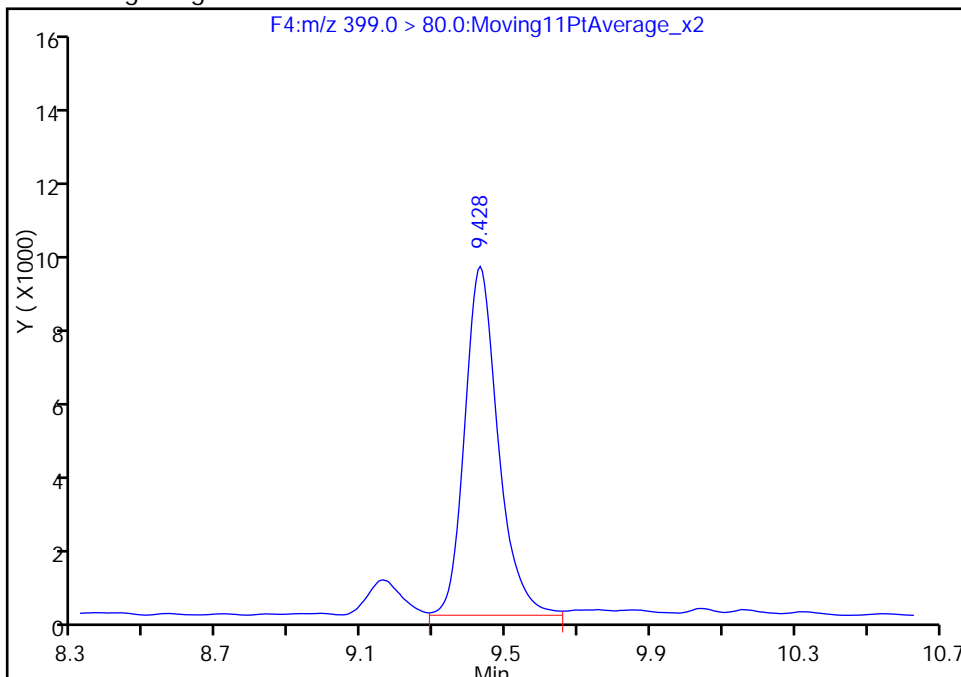
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_028.d
Injection Date: 30-Dec-2015 23:04:35 Instrument ID: A6
Lims ID: 320-16609-A-2-A Lab Sample ID: 320-16609-2
Client ID: OF-MW09-1215
Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 21
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

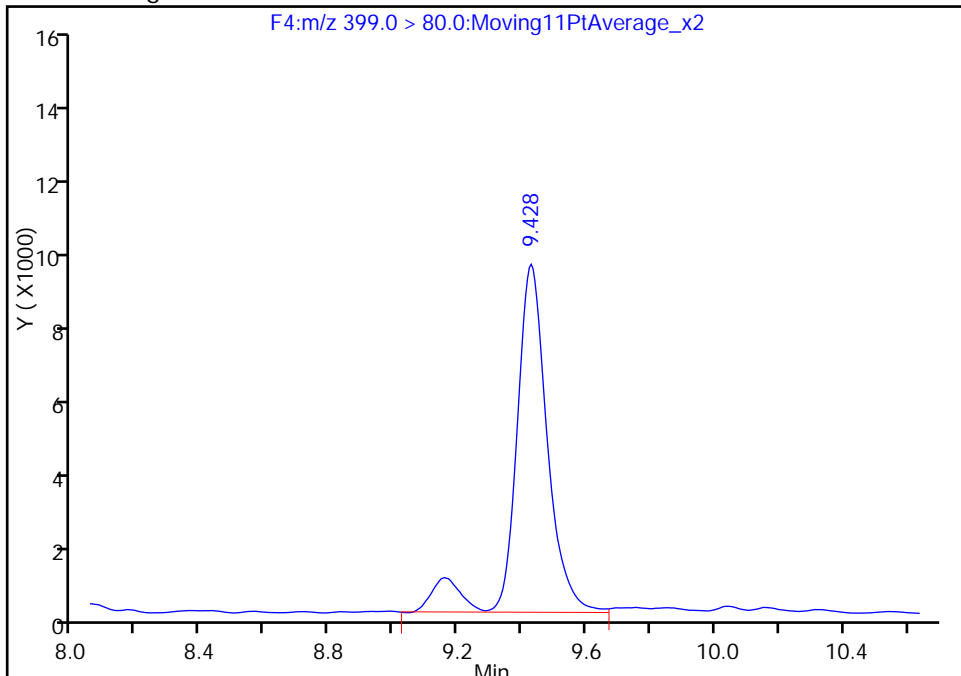
RT: 9.43
Area: 59475
Amount: 6.507835
Amount Units: ng/ml

Processing Integration Results



RT: 9.43
Area: 64774
Amount: 7.087658
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 16:19:59
Audit Action: Manually Integrated
Audit Reason: Isomers

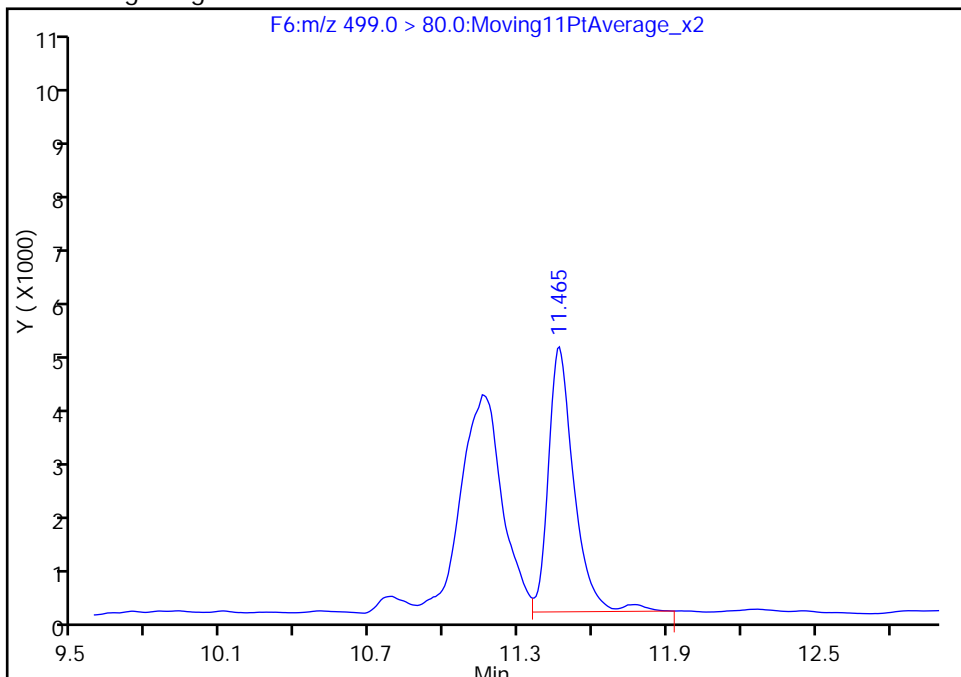
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_028.d
Injection Date: 30-Dec-2015 23:04:35 Instrument ID: A6
Lims ID: 320-16609-A-2-A Lab Sample ID: 320-16609-2
Client ID: OF-MW09-1215
Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 21
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

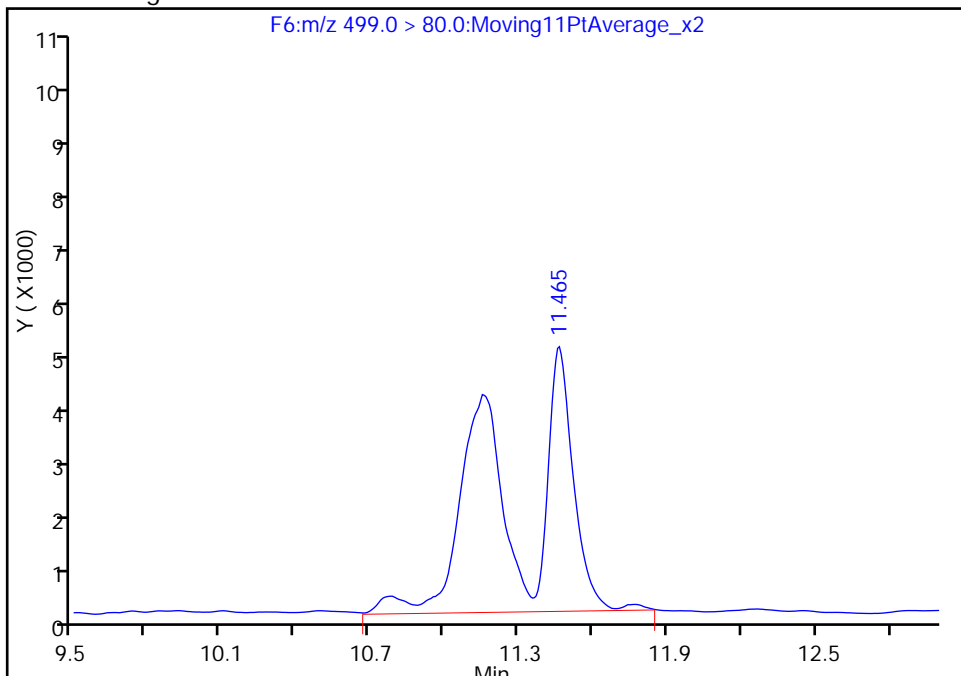
RT: 11.47
Area: 35642
Amount: 2.640370
Amount Units: ng/ml

Processing Integration Results



RT: 11.47
Area: 85556
Amount: 6.338015
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 15:11:33
Audit Action: Manually Integrated
Audit Reason: Isomers

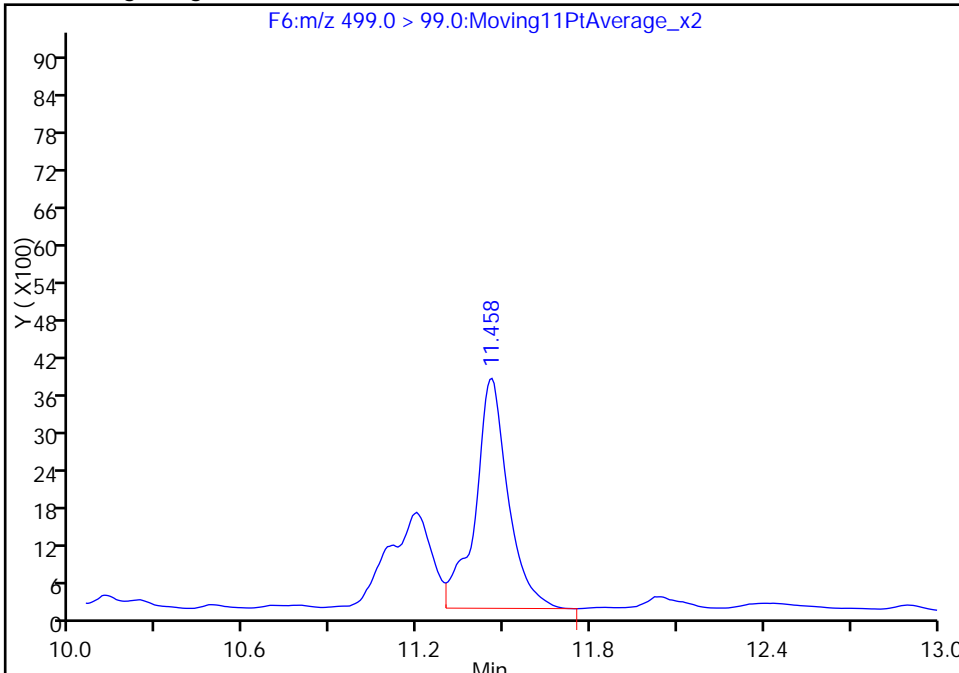
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_028.d
Injection Date: 30-Dec-2015 23:04:35 Instrument ID: A6
Lims ID: 320-16609-A-2-A Lab Sample ID: 320-16609-2
Client ID: OF-MW09-1215
Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 21
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

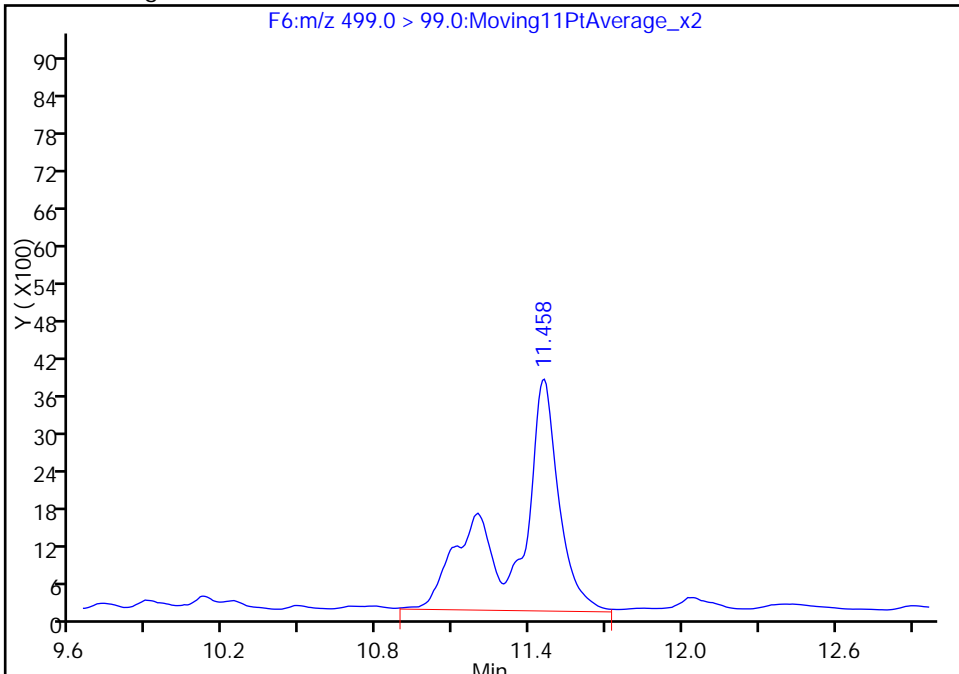
RT: 11.46
Area: 29097
Amount: 2.640370
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 46259
Amount: 6.338015
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 15:11:33
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-MW10-1215 Lab Sample ID: 320-16609-3
 Matrix: Water Lab File ID: 30DEC2015A6A_029.d
 Analysis Method: WS-LC-0025 Date Collected: 12/23/2015 12:40
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 522.8(mL) Date Analyzed: 12/30/2015 23:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.14		0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	0.14		0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.011		0.0024	0.0019	0.00063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.069		0.0024	0.0019	0.00088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.71	M	0.0024	0.0019	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.29	M	0.0038	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	82		25-150
STL00991	13C4 PFOS	105		25-150
STL00995	13C5 PFNA	99		25-150
STL00990	13C4 PFOA	100		25-150
STL01892	13C4-PFHpA	89		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_029.d
 Lims ID: 320-16609-A-3-A Lab Sample ID: 320-16609-3
 Client ID: OF-MW10-1215
 Sample Type: Client
 Inject. Date: 30-Dec-2015 23:25:50 ALS Bottle#: 12 Worklist Smp#: 22
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16609-A-3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 16:20:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 13:11:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.019	7.039	-0.020	1.000	293043	35.8			
D 8 13C4-PFHpA	367.0 > 322.0	9.387	9.413	-0.026		947189	44.4	88.7	1913	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.393	9.413	-0.020	1.000	1421379	73.7		375	
D 11 18O2 PFHxS	403.0 > 84.0	9.422	9.444	-0.022		401817	38.8	82.1	1226	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.422	9.449	-0.027	1.000	2235827	371.3			M M
D 12 13C4 PFOA	417.0 > 372.0	10.503	10.524	-0.021		1096757	50.2	100	1803	
13 Perfluorooctanoic acid	413.0 > 369.0	10.503	10.528	-0.025	1.000	1536533	72.4		121	
	413.0 > 169.0	10.503	10.528	-0.025	1.000	520435	2.95(0.00-0.00)		75.9	
D 16 13C4 PFOS	503.0 > 80.0	11.458	11.478	-0.020		560797	50.3	105	1486	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.118	11.480	-0.362	1.000	1784677	149.5		1705	M
	499.0 > 99.0	11.458	11.480	-0.022	1.031	661966	2.70(0.00-0.00)		571	M
D 17 13C5 PFNA	468.0 > 423.0	11.481	11.501	-0.020		990083	49.7	99.5	1534	
18 Perfluorononanoic acid	463.0 > 419.0	11.481	11.502	-0.021	1.000	90430	5.80		132	

QC Flag Legend

Review Flags

M - Manually Integrated

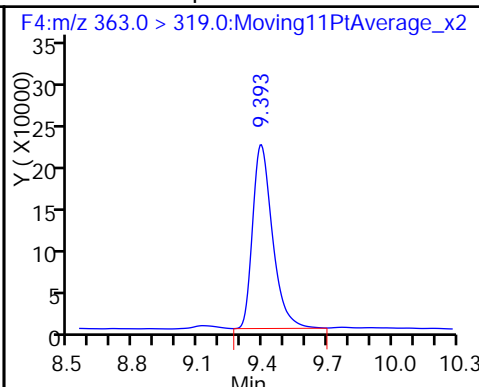
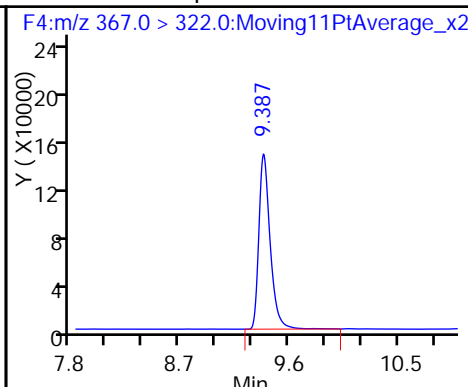
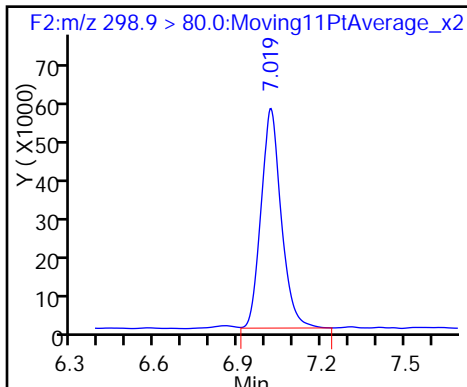
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_029.d
Injection Date: 30-Dec-2015 23:25:50 Instrument ID: A6
Lims ID: 320-16609-A-3-A Lab Sample ID: 320-16609-3
Client ID: OF-MW10-1215
Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 22
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

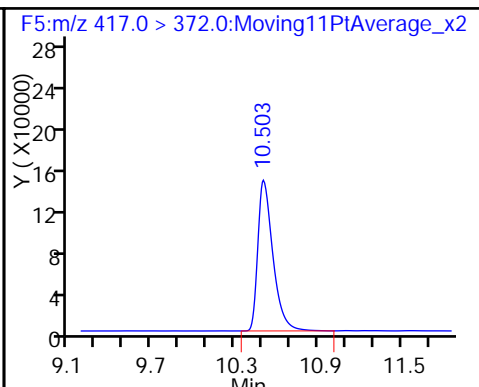
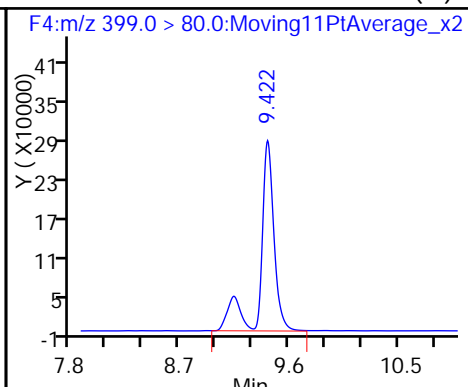
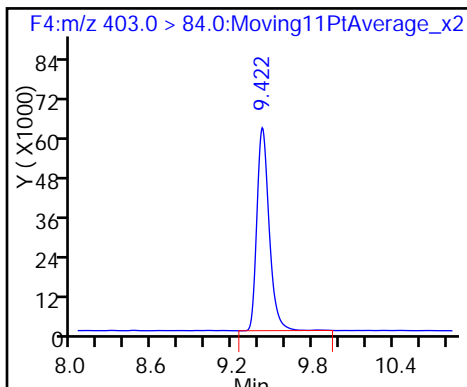
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

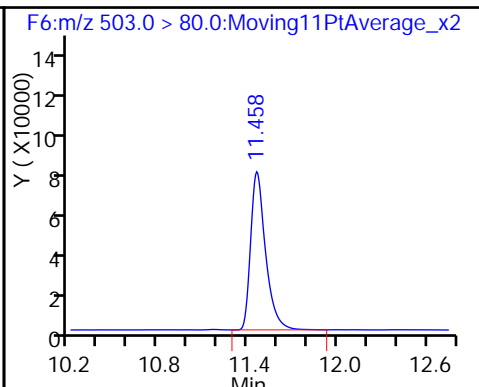
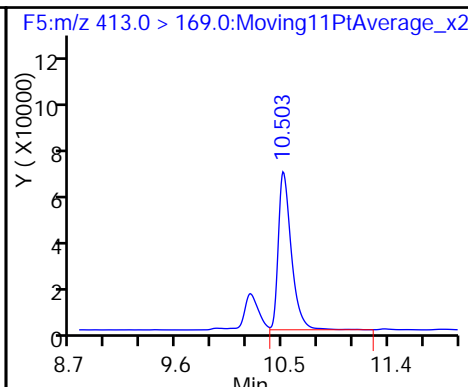
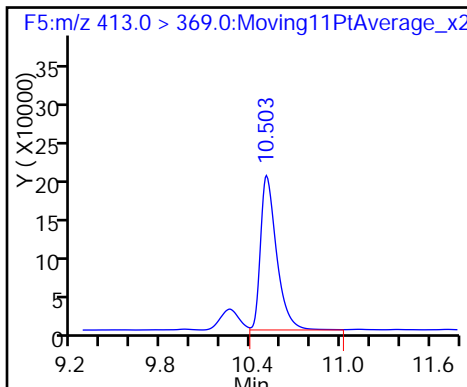
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

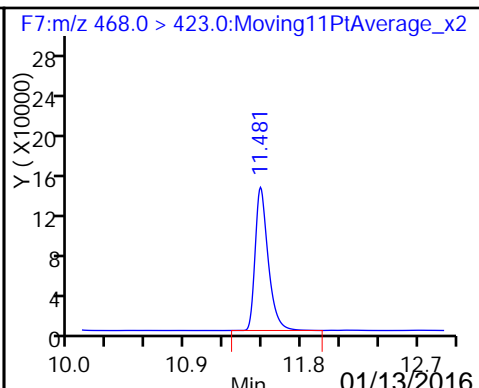
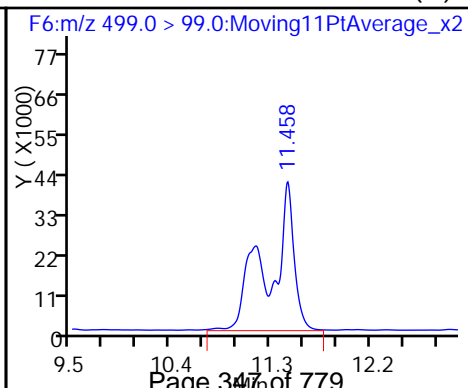
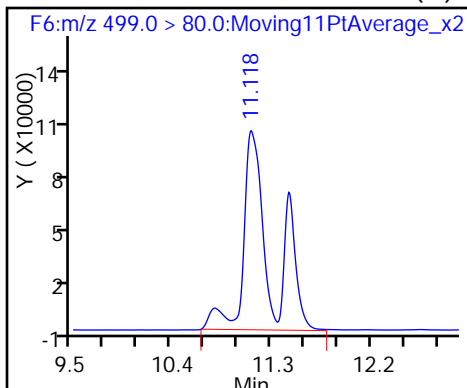
D 16 13C4 PFOS



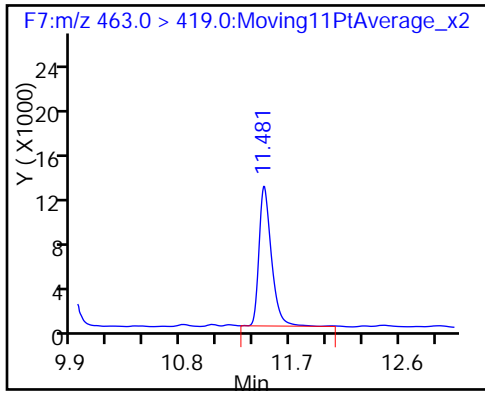
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



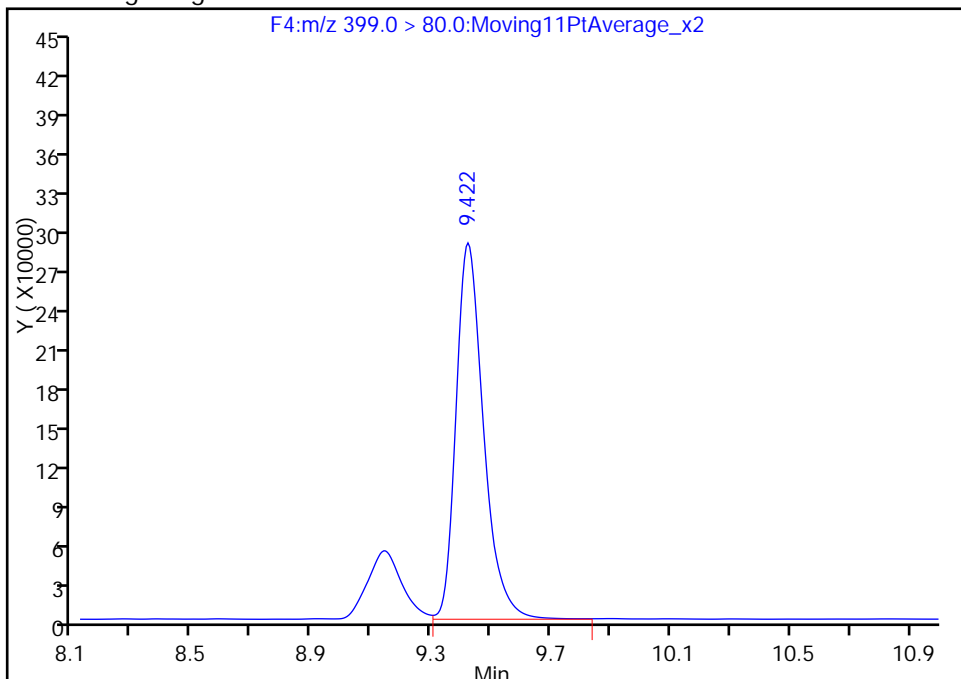
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_029.d
Injection Date: 30-Dec-2015 23:25:50 Instrument ID: A6
Lims ID: 320-16609-A-3-A Lab Sample ID: 320-16609-3
Client ID: OF-MW10-1215
Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 22
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

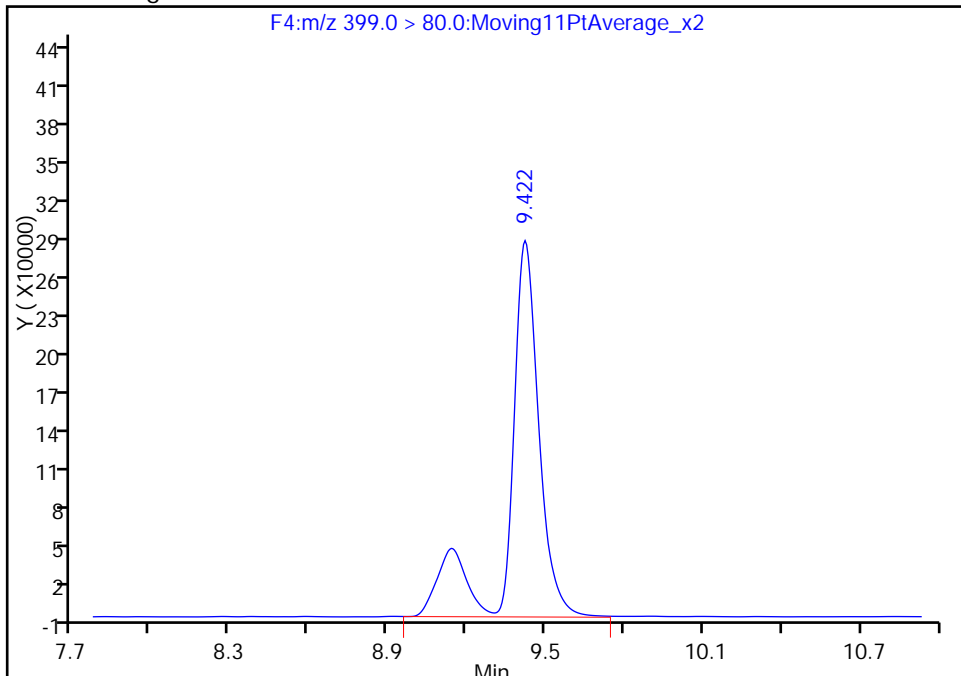
RT: 9.42
Area: 1823995
Amount: 302.9460
Amount Units: ng/ml

Processing Integration Results



RT: 9.42
Area: 2235827
Amount: 371.3469
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 16:20:39
Audit Action: Manually Integrated
Audit Reason: Isomers

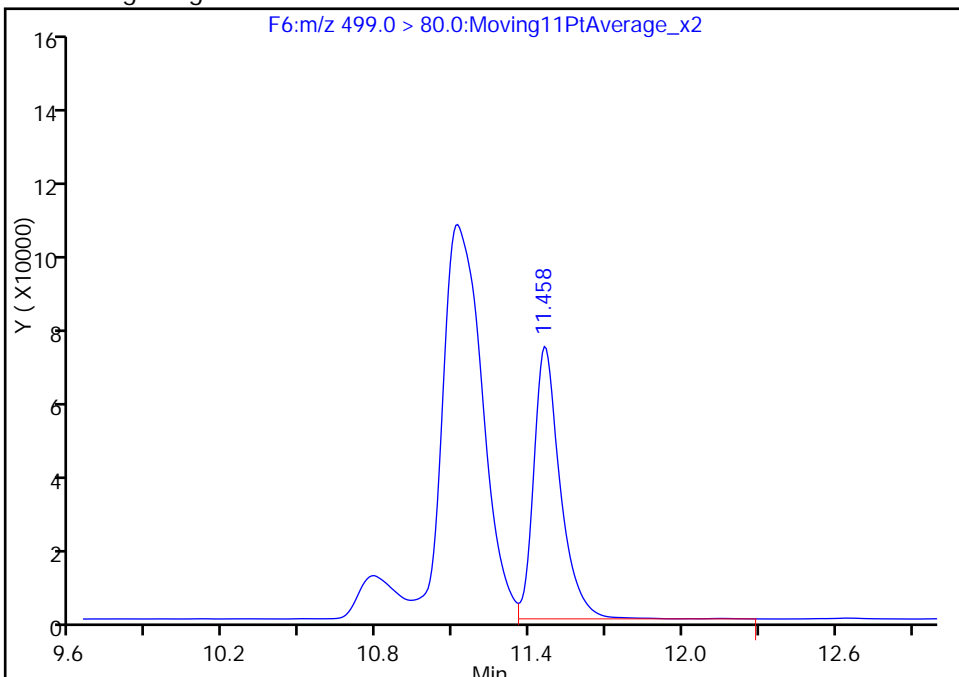
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_029.d
Injection Date: 30-Dec-2015 23:25:50 Instrument ID: A6
Lims ID: 320-16609-A-3-A Lab Sample ID: 320-16609-3
Client ID: OF-MW10-1215
Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 22
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

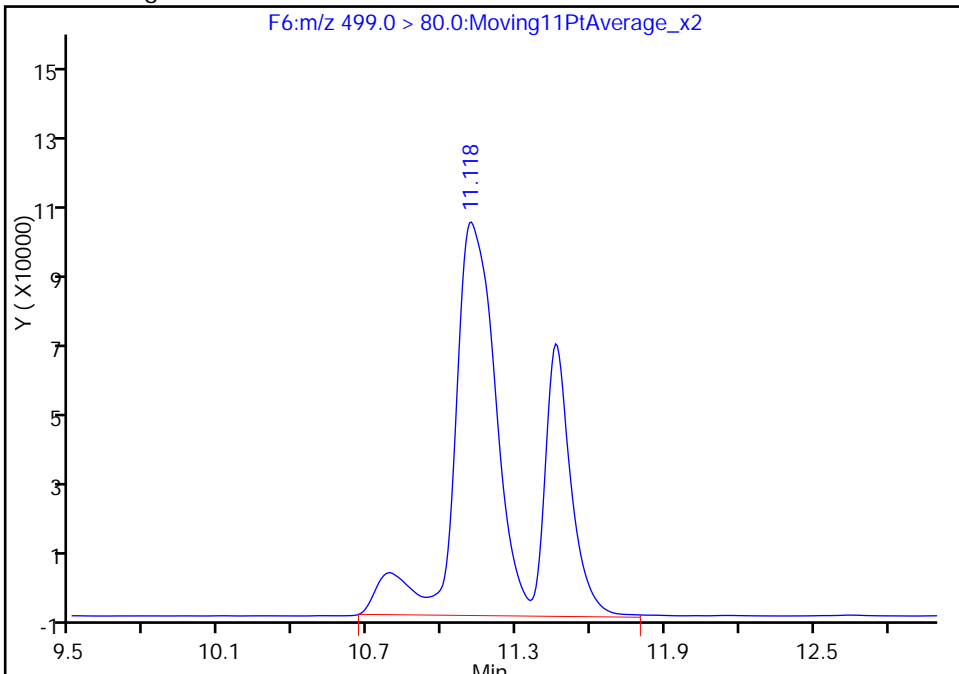
RT: 11.46
Area: 527744
Amount: 44.213079
Amount Units: ng/ml

Processing Integration Results



RT: 11.12
Area: 1784677
Amount: 149.5158
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 15:10:06
Audit Action: Manually Integrated
Audit Reason: Isomers

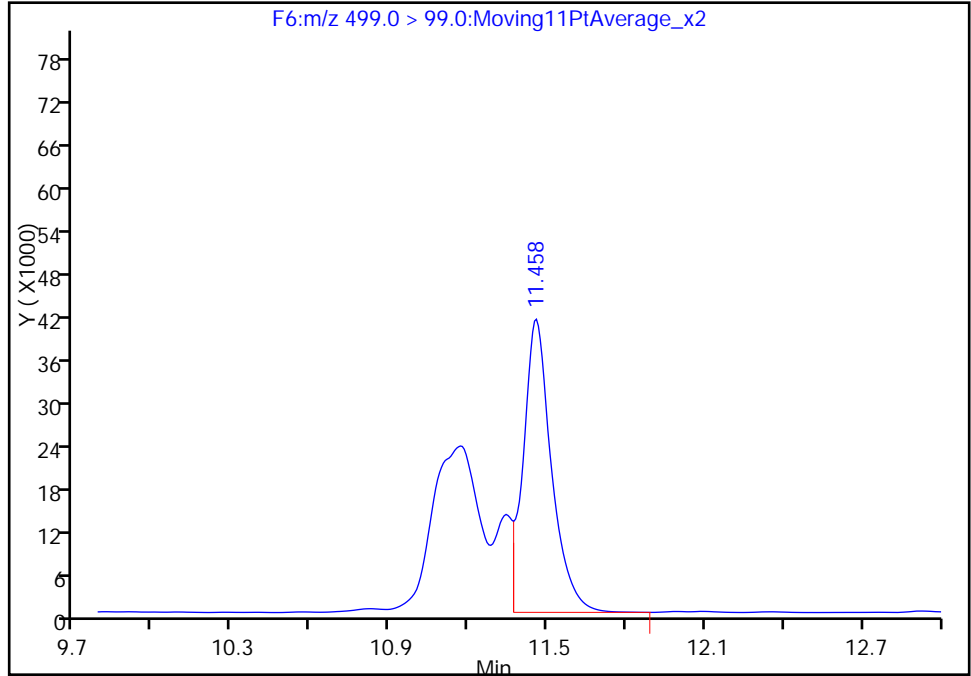
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_029.d
Injection Date: 30-Dec-2015 23:25:50 Instrument ID: A6
Lims ID: 320-16609-A-3-A Lab Sample ID: 320-16609-3
Client ID: OF-MW10-1215
Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 22
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

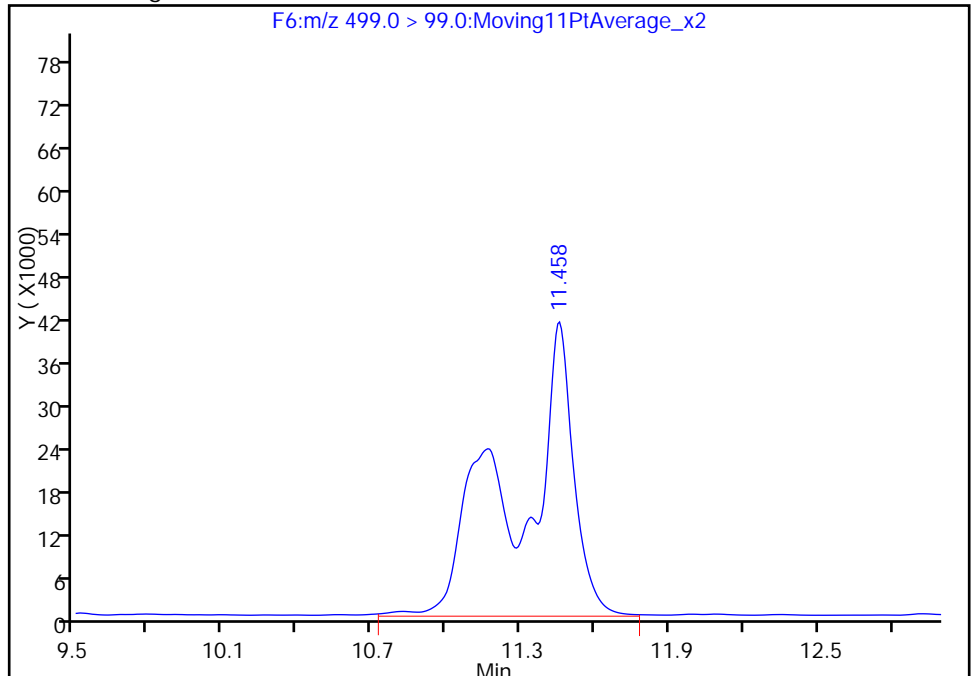
RT: 11.46
Area: 303039
Amount: 44.213079
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 661966
Amount: 149.5158
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 04-Jan-2016 15:10:06
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-EB122315 Lab Sample ID: 320-16609-4
 Matrix: Water Lab File ID: 30DEC2015A6A_030.d
 Analysis Method: WS-LC-0025 Date Collected: 12/23/2015 12:50
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 514.5 (mL) Date Analyzed: 12/30/2015 23:47
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.0019	0.00078
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.0019	0.00073
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.0019	0.00064
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.0019	0.00089
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0024	0.0019	0.00085
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0029	U	0.0039	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	105		25-150
STL00991	13C4 PFOS	103		25-150
STL00995	13C5 PFNA	117		25-150
STL00990	13C4 PFOA	118		25-150
STL01892	13C4-PFHpA	119		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_030.d
 Lims ID: 320-16609-B-4-A Lab Sample ID: 320-16609-4
 Client ID: OF-EB122315
 Sample Type: Client
 Inject. Date: 30-Dec-2015 23:47:02 ALS Bottle#: 13 Worklist Smp#: 23
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16609-B-4-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 16:20:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 14:07:07

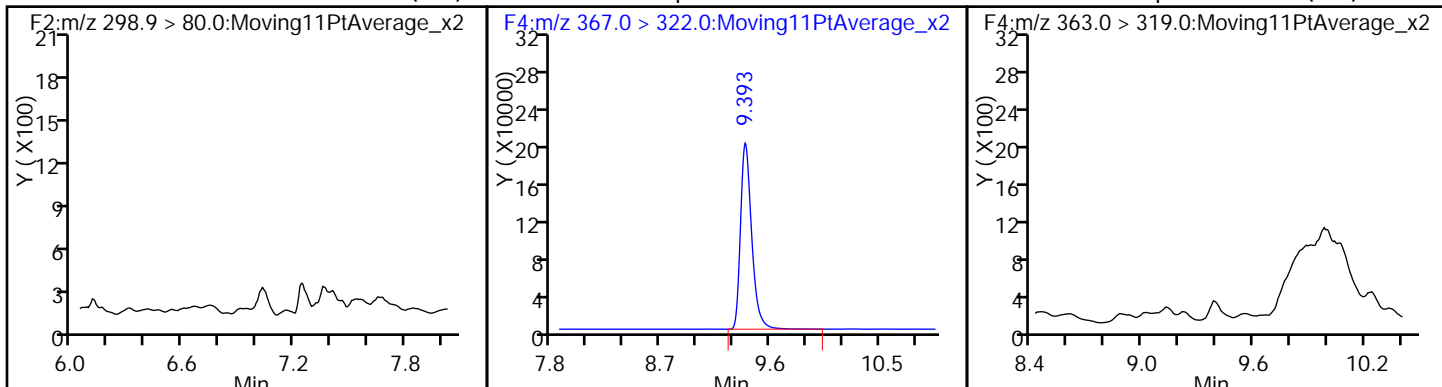
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA	367.0 > 322.0	9.393	9.413	-0.020	1274446	59.7		119	4386	
D 11 18O2 PFHxS	403.0 > 84.0	9.423	9.444	-0.021	514760	49.8		105	2225	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.423	9.449	-0.026	4936	0.6399				
D 12 13C4 PFOA	417.0 > 372.0	10.504	10.524	-0.020	1290524	59.1		118	3422	
13 Perfluorooctanoic acid	413.0 > 369.0	10.522	10.528	-0.006	2051	0.0821			2.7	
	413.0 > 169.0	10.434	10.528	-0.094	2462		0.83(0.00-0.00)		5.5	
D 16 13C4 PFOS	503.0 > 80.0	11.458	11.478	-0.020	548095	49.2		103	1683	
D 17 13C5 PFNA	468.0 > 423.0	11.481	11.501	-0.020	1166503	58.6		117	3701	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_030.d
Injection Date: 30-Dec-2015 23:47:02 Instrument ID: A6
Lims ID: 320-16609-B-4-A Lab Sample ID: 320-16609-4
Client ID: OF-EB122315
Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 23
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 8 13C4-PFHpA

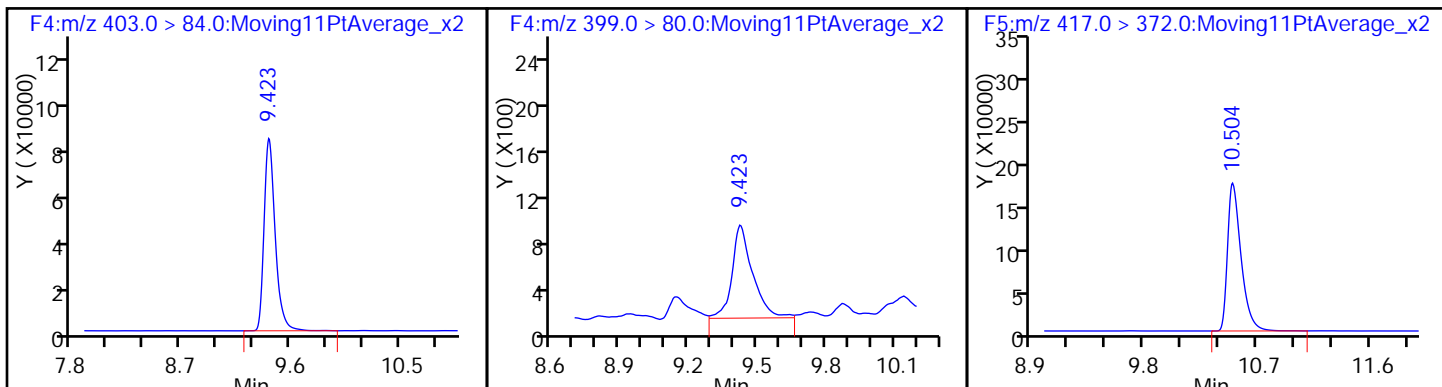
9 Perfluoroheptanoic acid (ND)



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

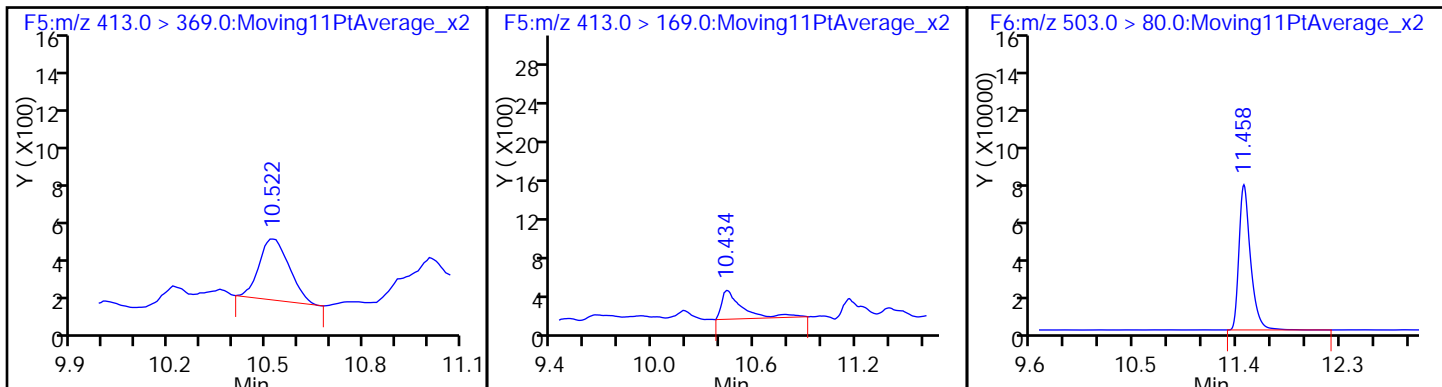
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

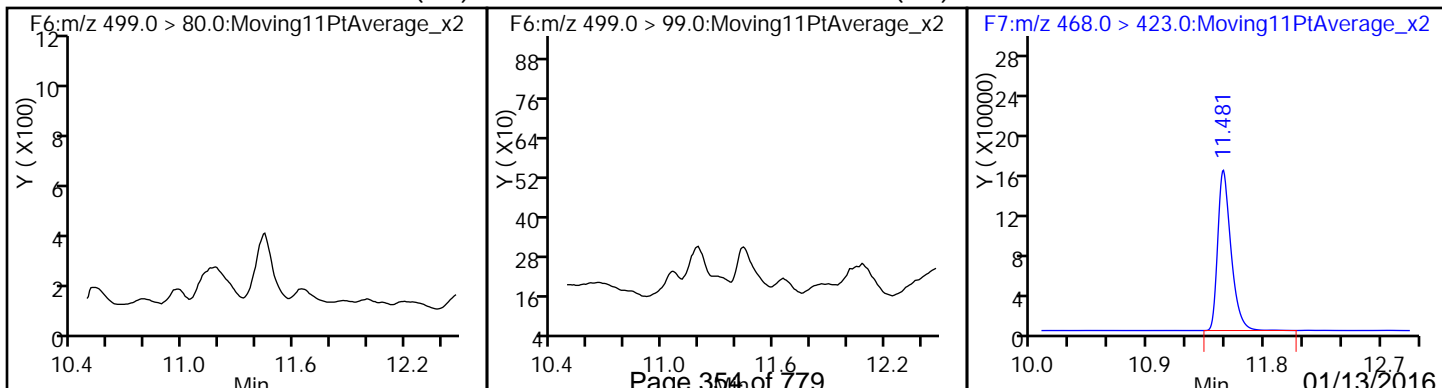
D 16 13C4 PFOS



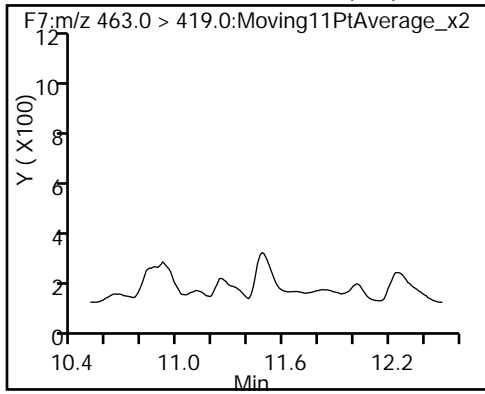
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)

D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW08-1215 Lab Sample ID: 320-16615-1
 Matrix: Water Lab File ID: 05JAN2016A6A_018.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 09:20
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 522.5 (mL) Date Analyzed: 01/05/2016 16:39
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.39		0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	0.32		0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.013		0.0024	0.0019	0.00063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0024	0.0019	0.00088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.0019	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	13	J M	0.0038	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	37		25-150
STL00991	13C4 PFOS	30		25-150
STL00995	13C5 PFNA	36		25-150
STL00990	13C4 PFOA	27		25-150
STL01892	13C4-PFHpA	41		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_018.d
 Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
 Client ID: OF14-MW08-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 16:39:02 ALS Bottle#: 3 Worklist Smp#: 15
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16615-A-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 09:24:24 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:01:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										E
298.9 > 80.0	7.015	7.039	-0.024	1.000	2200048	595.2				E
D 8 13C4-PFHpA										
367.0 > 322.0	9.382	9.413	-0.031		438772	20.5		41.1	886	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.387	9.413	-0.026	1.000	1804808	202.4			278	
D 11 18O2 PFHxS										
403.0 > 84.0	9.417	9.444	-0.027		181654	17.6		37.1	584	
41 Perfluorohexanesulfonic acid										EM
399.0 > 80.0	9.423	9.449	-0.026	1.000	7972642	2929.1				EM
D 12 13C4 PFOA										
417.0 > 372.0	10.504	10.524	-0.020		299619	13.7		27.4	746	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.504	10.528	-0.024	1.000	976374	168.3			33.4	
413.0 > 169.0	10.504	10.528	-0.024	1.000	374167		2.61(0.00-0.00)		23.3	
D 16 13C4 PFOS										
503.0 > 80.0	11.466	11.478	-0.012		160091	14.4		30.0	371	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.466	11.480	-0.014	1.000	23063508	6768.5			172	EM
499.0 > 99.0	11.458	11.480	-0.022	0.999	11310931		2.04(0.00-0.00)		1267	M
D 17 13C5 PFNA										
468.0 > 423.0	11.488	11.501	-0.013		358239	18.0		36.0	1036	
18 Perfluorononanoic acid										
463.0 > 419.0	11.481	11.502	-0.021	1.000	39716	7.04			66.8	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_018.d

Injection Date: 05-Jan-2016 16:39:02

Instrument ID: A6

Lims ID: 320-16615-A-1-A

Lab Sample ID: 320-16615-1

Client ID: OF14-MW08-1215

Operator ID: JRB

ALS Bottle#: 3

Worklist Smp#: 15

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

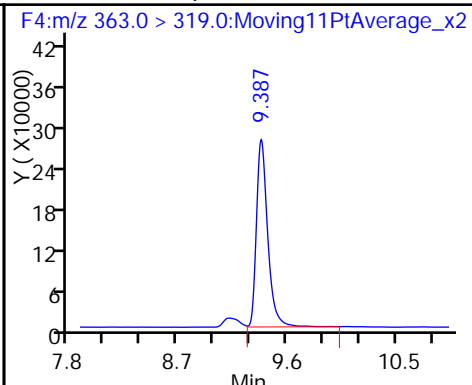
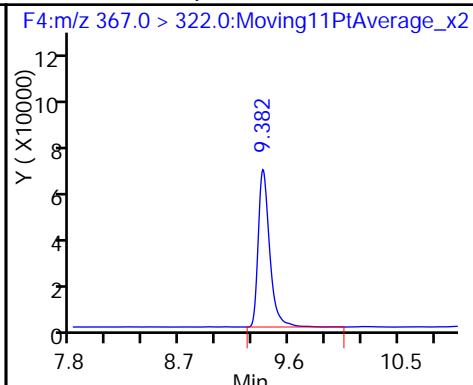
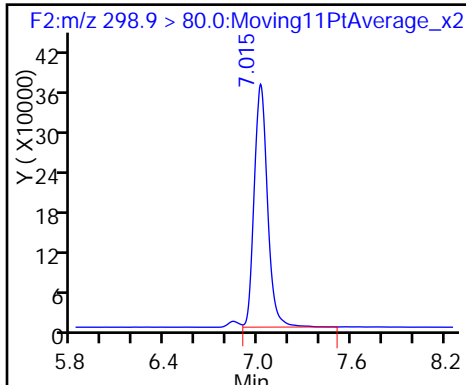
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

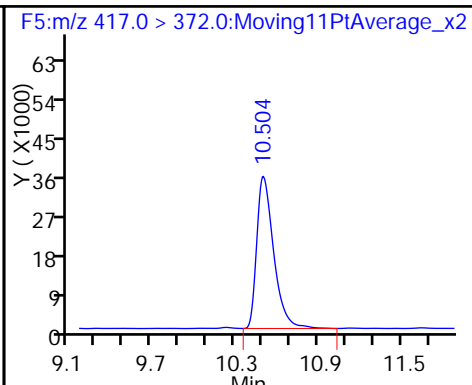
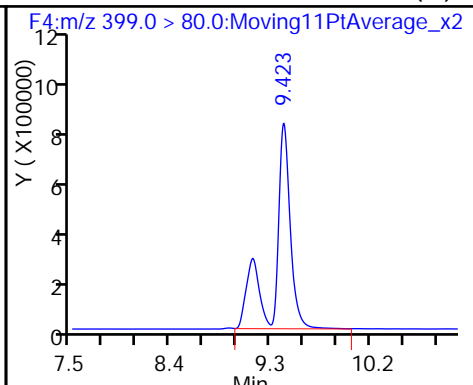
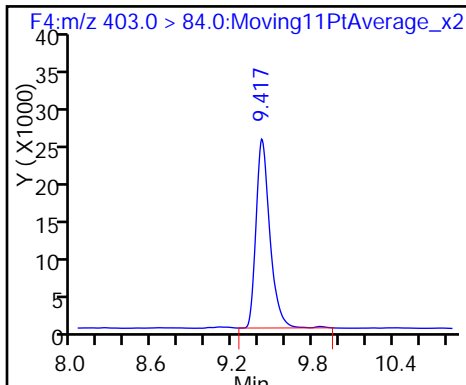
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

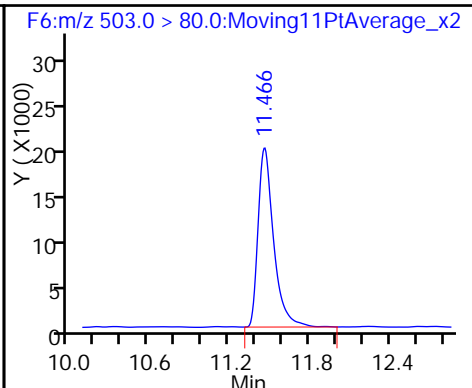
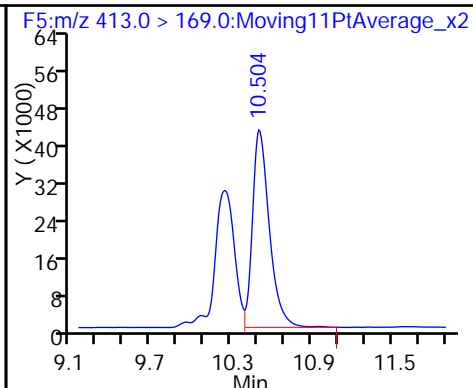
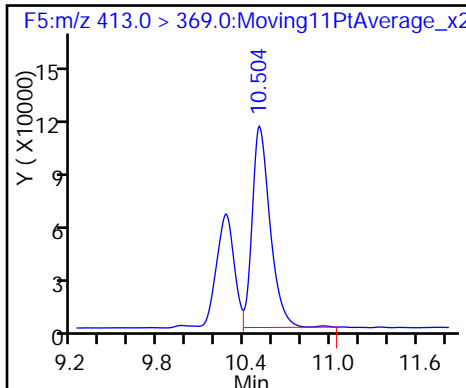
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

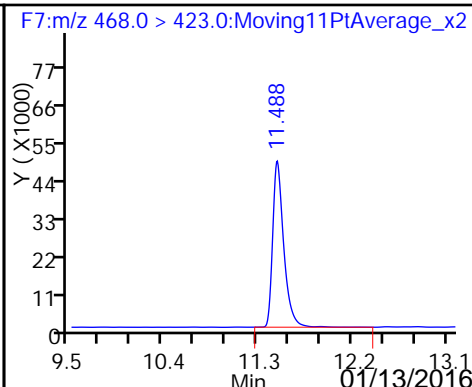
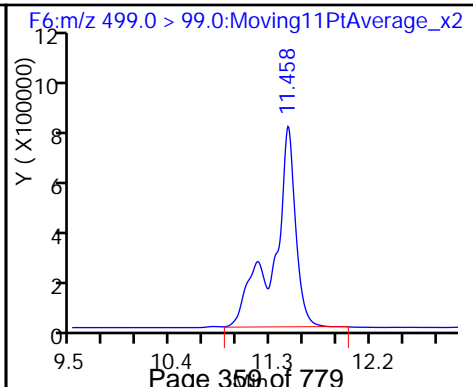
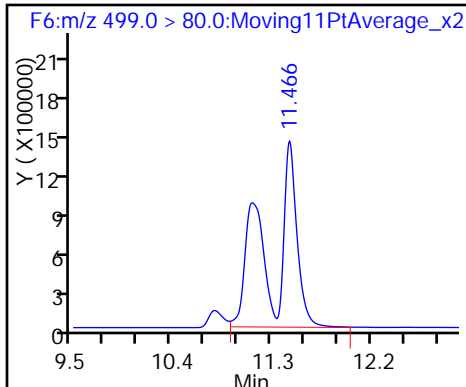
D 16 13C4 PFOS



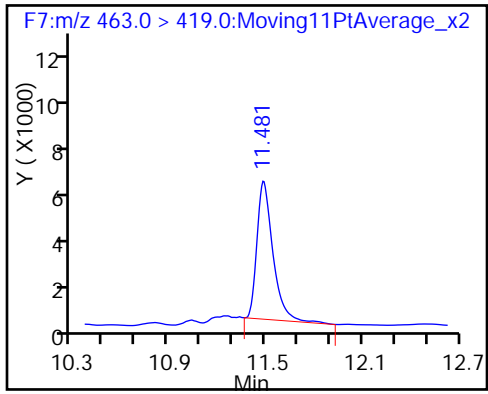
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



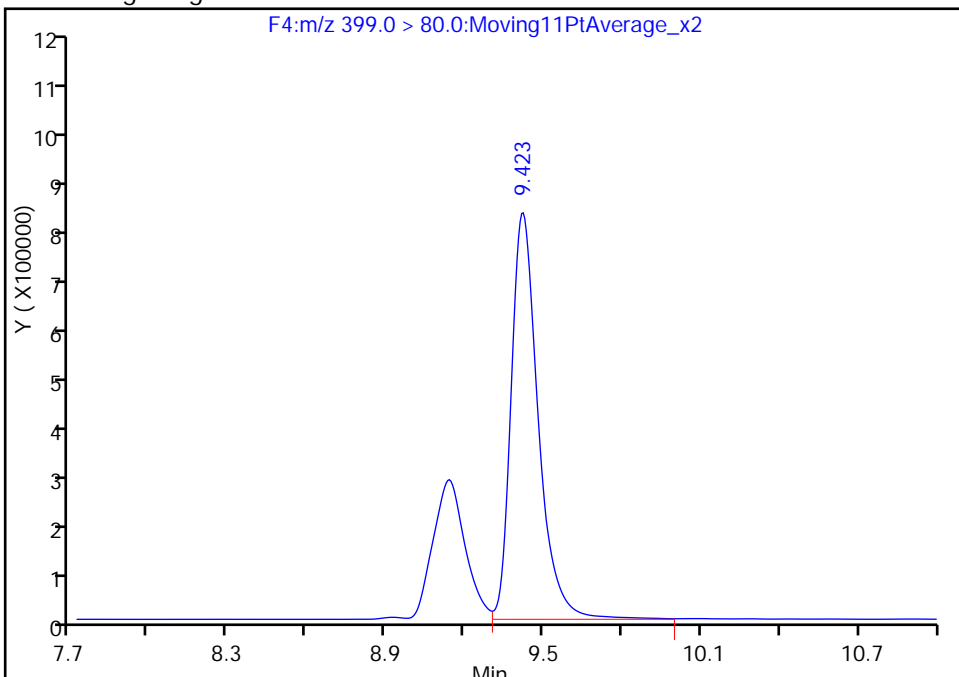
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_018.d
Injection Date: 05-Jan-2016 16:39:02 Instrument ID: A6
Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
Client ID: OF14-MW08-1215
Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 15
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

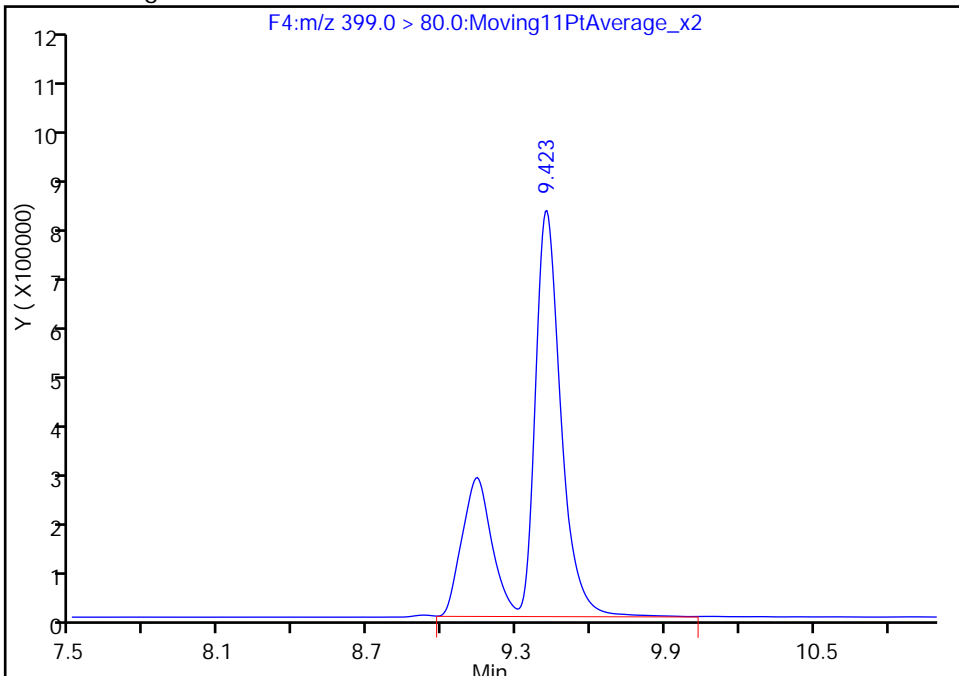
RT: 9.42
Area: 5719201
Amount: 2101.1659
Amount Units: ng/ml

Processing Integration Results



RT: 9.42
Area: 7972642
Amount: 2929.0531
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:01:08
Audit Action: Manually Integrated
Audit Reason: Isomers

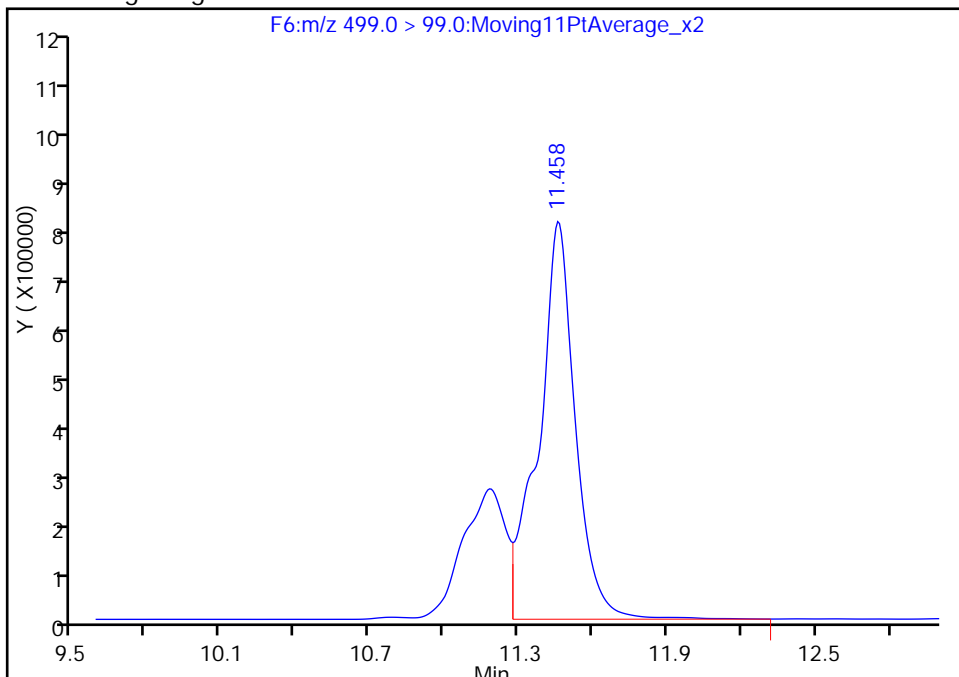
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_018.d
Injection Date: 05-Jan-2016 16:39:02 Instrument ID: A6
Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
Client ID: OF14-MW08-1215
Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 15
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

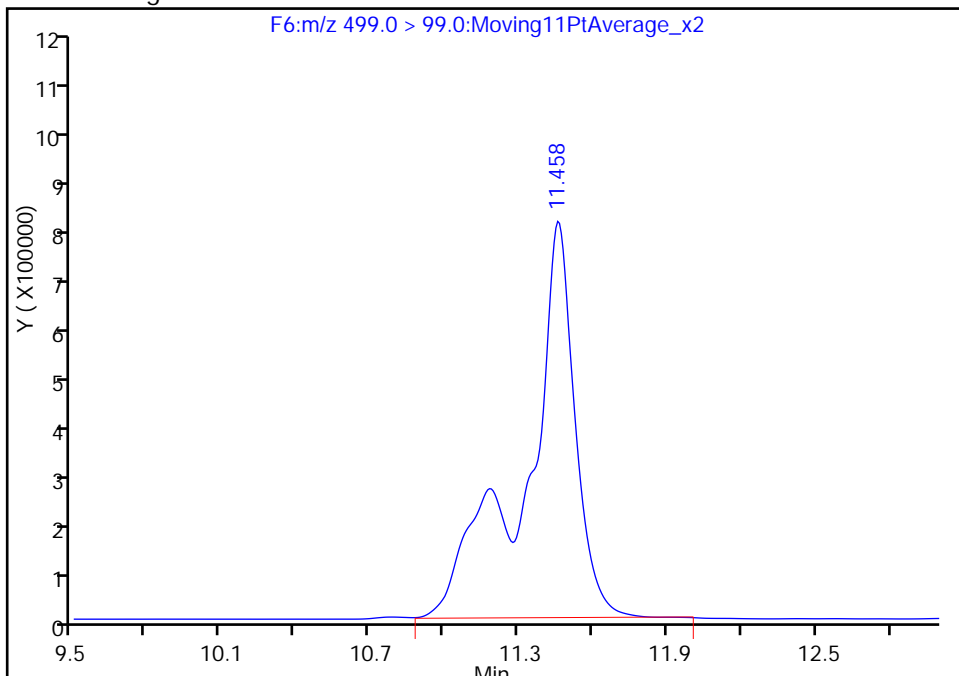
RT: 11.46
Area: 8342658
Amount: 3421.9613
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 11310931
Amount: 6768.4868
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:01:08
Audit Action: Manually Integrated
Audit Reason: Isomers

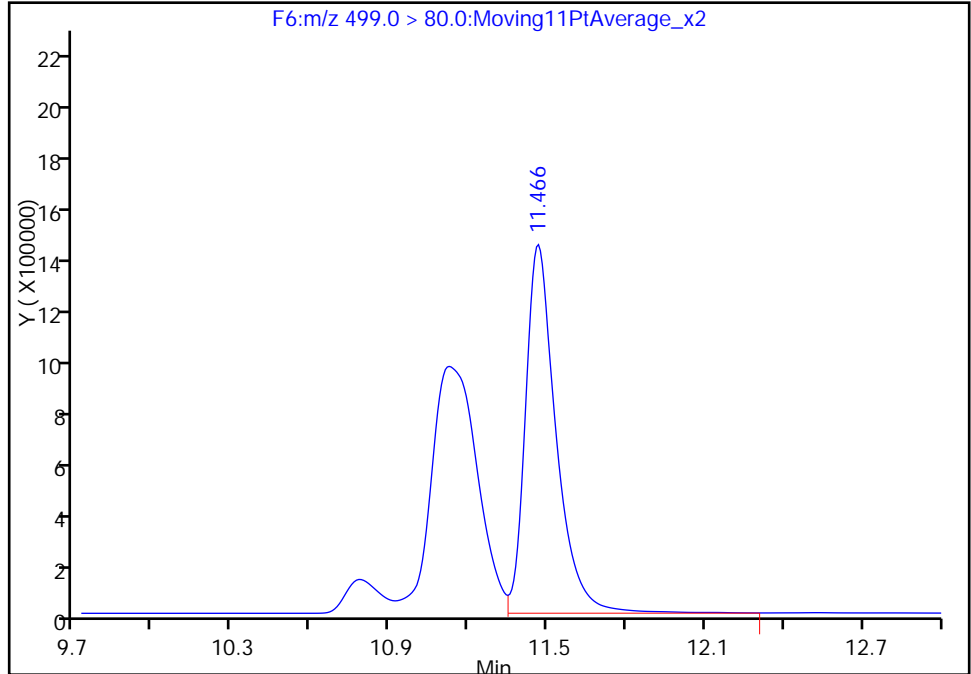
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_018.d
 Injection Date: 05-Jan-2016 16:39:02 Instrument ID: A6
 Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
 Client ID: OF14-MW08-1215
 Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 15
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F6:MRRM

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

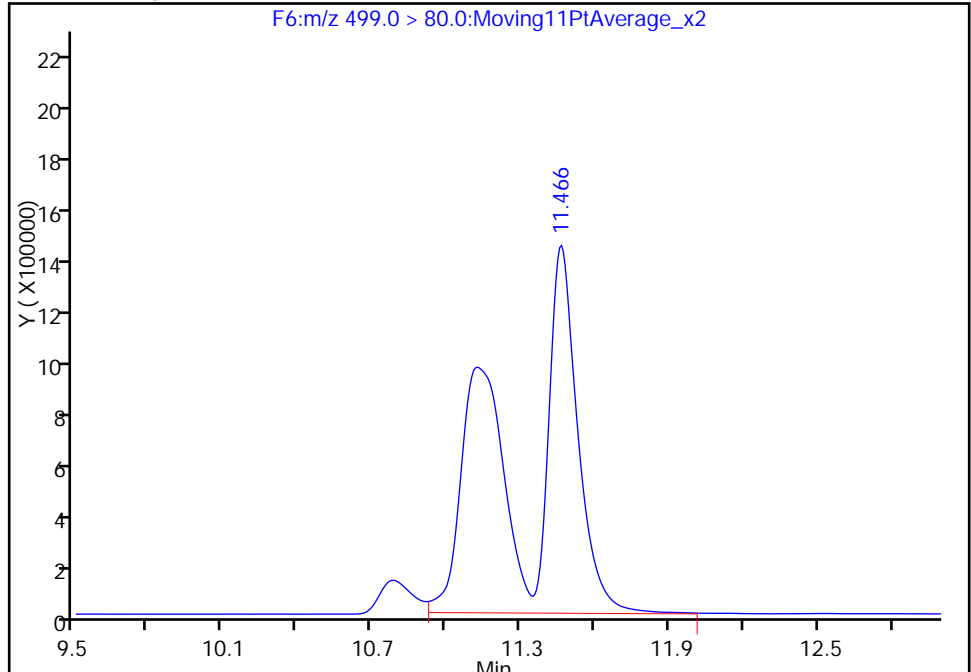
RT: 11.47
 Area: 11660277
 Amount: 3421.9613
 Amount Units: ng/ml

Processing Integration Results



RT: 11.47
 Area: 23063508
 Amount: 6768.4868
 Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:01:08
 Audit Action: Manually Integrated
 Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW08-1215 DL Lab Sample ID: 320-16615-1 DL
 Matrix: Water Lab File ID: 06JAN2016A6A_012.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 09:20
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 522.5 (mL) Date Analyzed: 01/06/2016 15:41
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 10
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	<i>Perfluoroheptanoic acid (PFHpA)</i>	0.41	D	0.024	0.019	0.0077
335-67-1	<i>Perfluorooctanoic acid (PFOA)</i>	0.30	D	0.024	0.019	0.0072
375-95-1	<i>Perfluorononanoic acid (PFNA)</i>	0.017	J D	0.024	0.019	0.0063
375-73-5	<i>Perfluorobutanesulfonic acid (PFBS)</i>	0.55	D	0.024	0.019	0.0088
355-46-4	<i>Perfluorohexanesulfonic acid (PFHxS)</i>	5.5	D M	0.024	0.019	0.0083
1763-23-1	<i>Perfluorooctanesulfonic acid (PFOS)</i>	12	J D M	0.038	0.029	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	82		25-150
STL00991	13C4 PFOS	76		25-150
STL00995	13C5 PFNA	77		25-150
STL00990	13C4 PFOA	80		25-150
STL01892	13C4-PFHpA	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_012.d
 Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
 Client ID: OF14-MW08-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 15:41:21 ALS Bottle#: 17 Worklist Smp#: 20
 Injection Vol: 15.0 ul Dil. Factor: 10.0000
 Sample Info: 320-16615-A-1-A 10x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:42:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.983	6.976	0.007	1.000	364283	28.7			
D 8 13C4-PFHpA	367.0 > 322.0	9.329	9.331	-0.002		157654	4.60	9.2	459	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	1.000	674125	21.3		399	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.358	9.363	-0.005	1.000	1990899	288.2			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.364	9.363	0.001		56258	3.87	8.2	171	
D 12 13C4 PFOA	417.0 > 372.0	10.440	10.452	-0.012		155412	4.02	8.0	412	
13 Perfluorooctanoic acid	413.0 > 369.0	10.440	10.453	-0.013	1.000	514834	15.4		66.0	
	413.0 > 169.0	10.440	10.453	-0.013	1.000	168841	3.05(0.00-0.00)		47.7	
D 16 13C4 PFOS	503.0 > 80.0	11.400	11.405	-0.005		68059	3.64	7.6	221	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	8437384	611.4		327	EM EM
	499.0 > 99.0	11.393	11.408	-0.015	1.000	2951759	2.86(0.00-0.00)		50.3	
D 17 13C5 PFNA	468.0 > 423.0	11.416	11.427	-0.011		124074	3.87	7.7	304	
18 Perfluorononanoic acid	463.0 > 419.0	11.416	11.431	-0.015	1.000	18548	0.8764		33.1	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_012.d

Injection Date: 06-Jan-2016 15:41:21

Instrument ID: A6

Lims ID: 320-16615-A-1-A

Lab Sample ID: 320-16615-1

Client ID: OF14-MW08-1215

Operator ID: JRB

ALS Bottle#: 17

Worklist Smp#: 20

Injection Vol: 15.0 ul

Dil. Factor: 10.0000

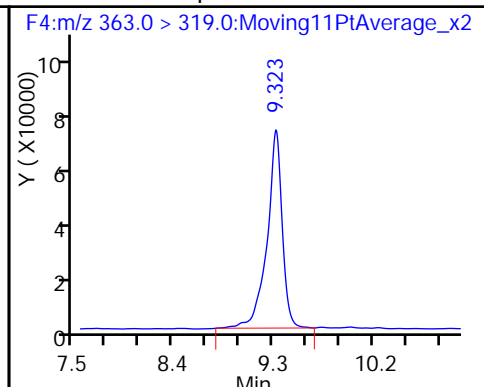
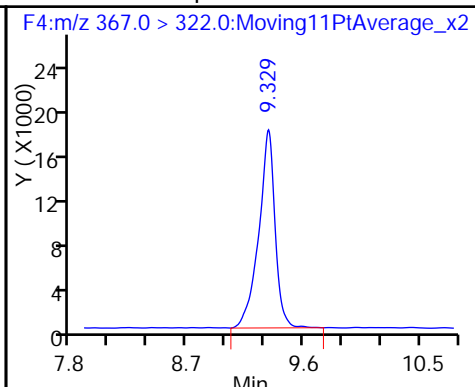
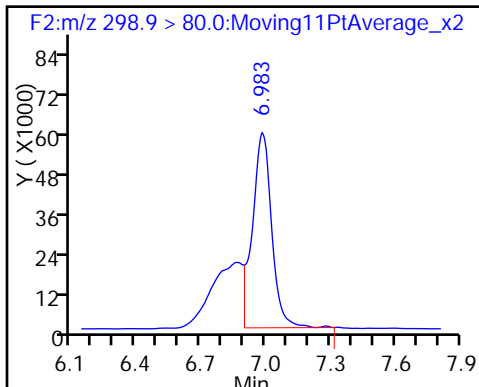
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

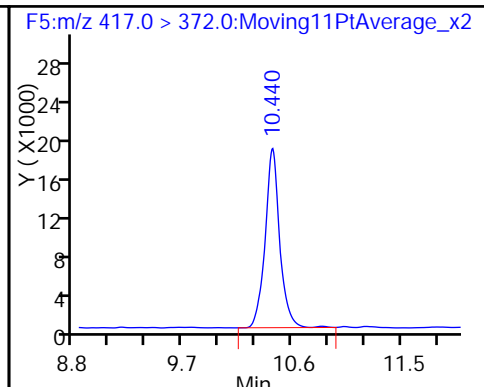
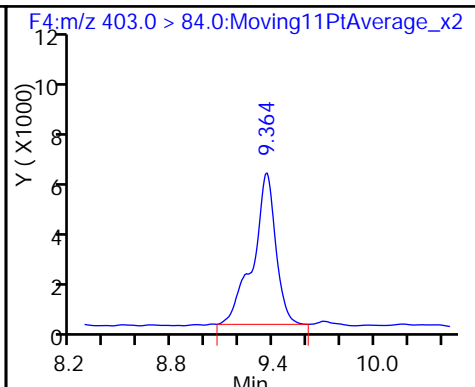
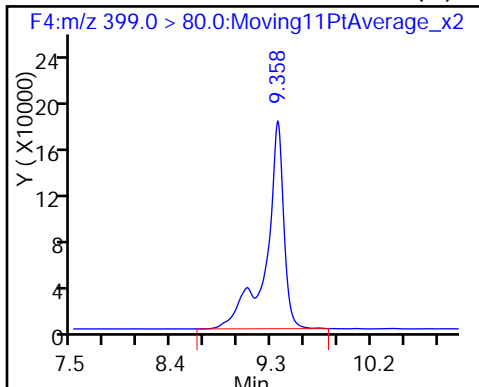
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

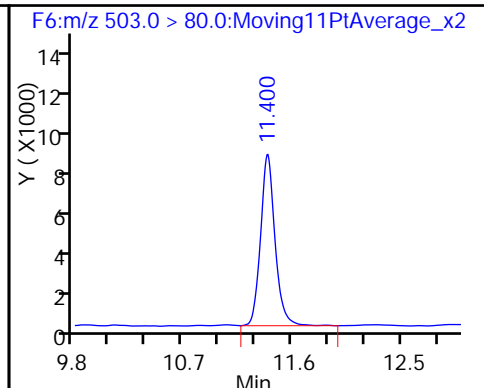
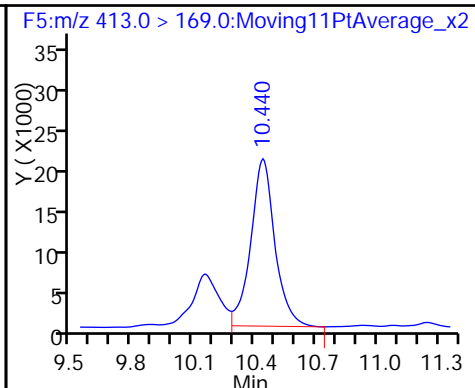
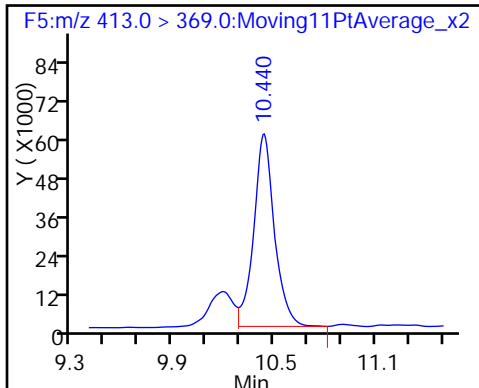
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

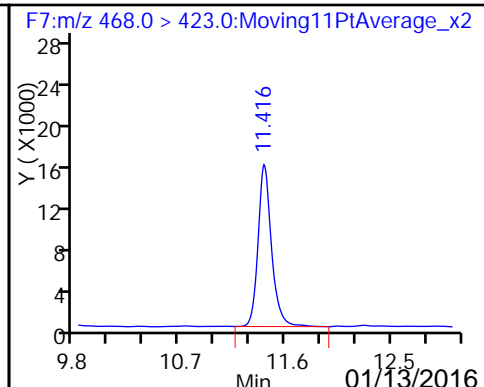
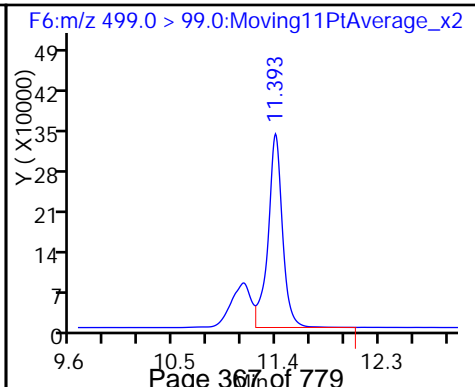
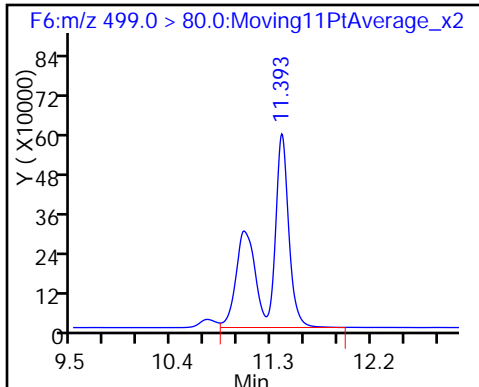
D 16 13C4 PFOS



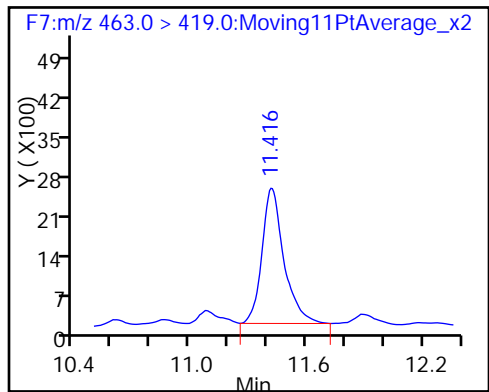
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid



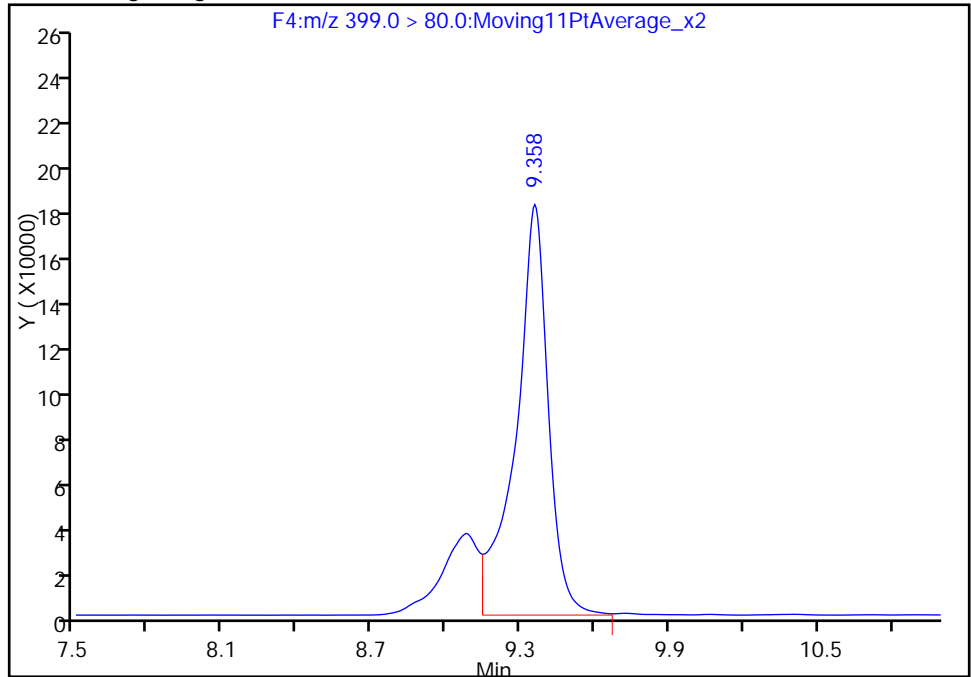
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_012.d
Injection Date: 06-Jan-2016 15:41:21 Instrument ID: A6
Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
Client ID: OF14-MW08-1215
Operator ID: JRB ALS Bottle#: 17 Worklist Smp#: 20
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:M/RM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

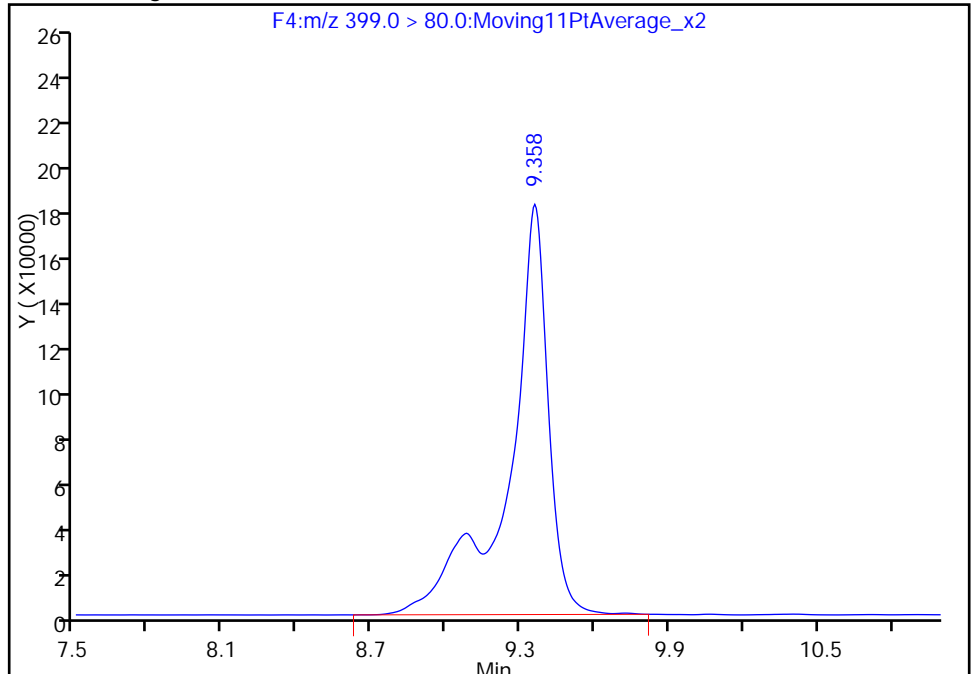
RT: 9.36
Area: 1623734
Amount: 235.0092
Amount Units: ng/ml

Processing Integration Results



RT: 9.36
Area: 1990899
Amount: 288.1504
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:42:12
Audit Action: Manually Integrated
Audit Reason: Isomers

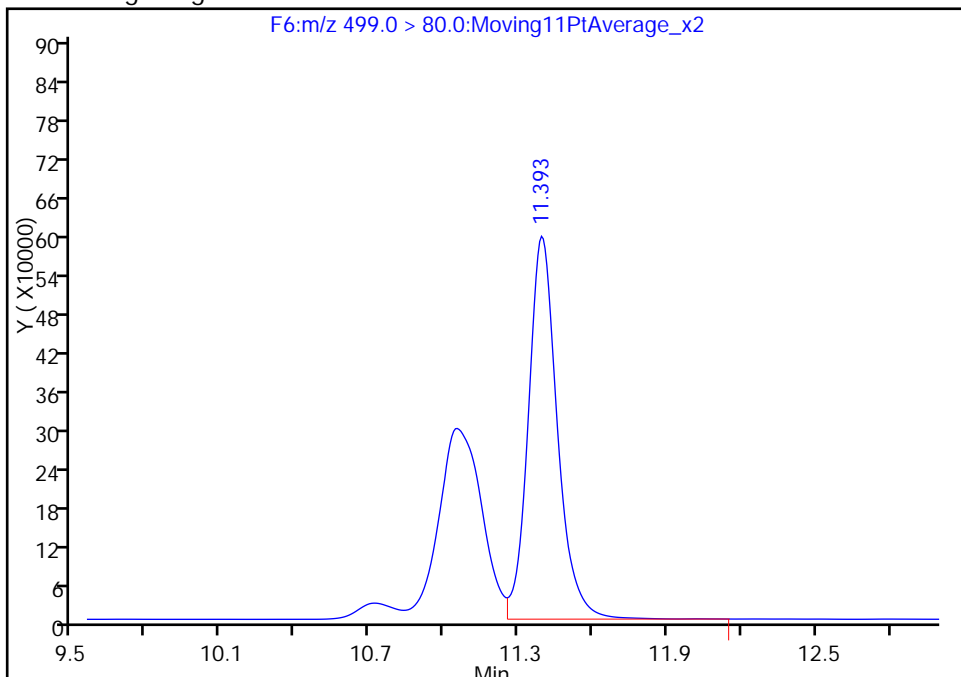
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_012.d
Injection Date: 06-Jan-2016 15:41:21 Instrument ID: A6
Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
Client ID: OF14-MW08-1215
Operator ID: JRB ALS Bottle#: 17 Worklist Smp#: 20
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

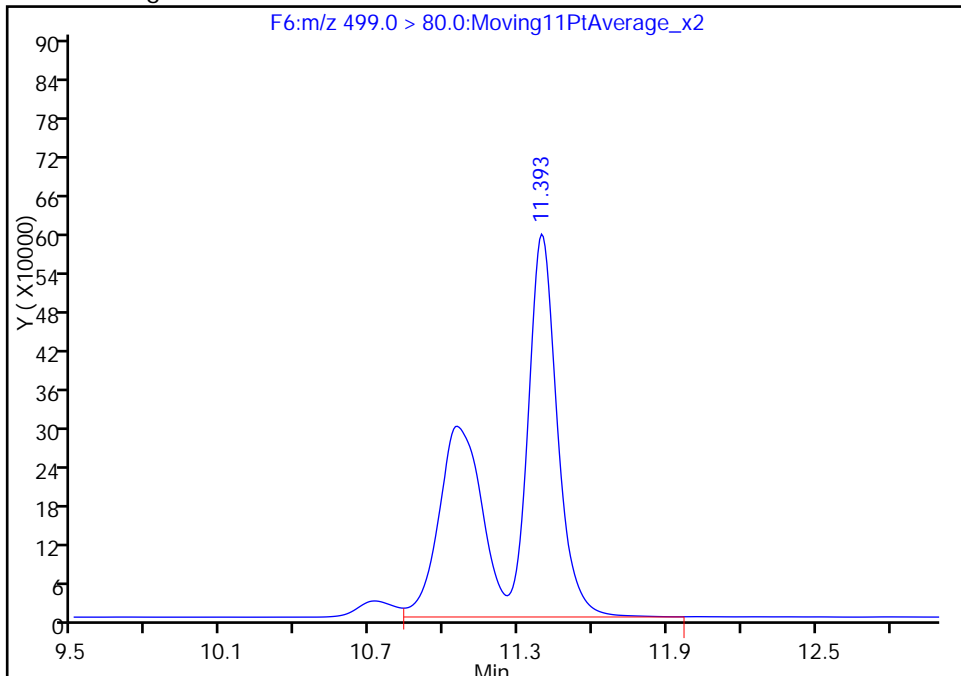
RT: 11.39
Area: 4860815
Amount: 352.2111
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 8437384
Amount: 611.3668
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:42:12
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW08-1215 DL2 Lab Sample ID: 320-16615-1 DL2
 Matrix: Water Lab File ID: 06JAN2016A6A_014.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 09:20
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 522.5 (mL) Date Analyzed: 01/06/2016 16:43
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 20
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	<i>Perfluoroheptanoic acid (PFHpA)</i>	0.44	D	0.048	0.038	0.015
335-67-1	<i>Perfluorooctanoic acid (PFOA)</i>	0.33	D	0.048	0.038	0.014
375-95-1	<i>Perfluorononanoic acid (PFNA)</i>	0.038	U	0.048	0.038	0.013
375-73-5	<i>Perfluorobutanesulfonic acid (PFBS)</i>	0.59	D	0.048	0.038	0.018
355-46-4	<i>Perfluorohexanesulfonic acid (PFHxS)</i>	5.3	D M	0.048	0.038	0.017
1763-23-1	<i>Perfluorooctanesulfonic acid (PFOS)</i>	10	D M	0.077	0.057	0.024

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	87		25-150
STL00991	13C4 PFOS	100		25-150
STL00995	13C5 PFNA	86		25-150
STL00990	13C4 PFOA	83		25-150
STL01892	13C4-PFHpA	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_014.d
 Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
 Client ID: OF14-MW08-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 16:43:48 ALS Bottle#: 19 Worklist Smp#: 26
 Injection Vol: 15.0 ul Dil. Factor: 20.0000
 Sample Info: 320-16615-A-1-A 20x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:44:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.978	6.976	0.002	1.000	207771	15.4			
D 8 13C4-PFHpA	367.0 > 322.0	9.328	9.331	-0.003		84147	2.45	4.9	222	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.328	9.335	-0.007	1.000	388017	11.4		229	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.358	9.363	-0.005	1.000	1026494	139.6			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.358	9.363	-0.005		29945	2.06	4.4	85.8	
D 12 13C4 PFOA	417.0 > 372.0	10.440	10.452	-0.012		80044	2.07	4.1	231	
13 Perfluorooctanoic acid	413.0 > 369.0	10.433	10.453	-0.020	1.000	296236	8.63		72.7	
	413.0 > 169.0	10.447	10.453	-0.006	1.001	109042	2.72(0.00-0.00)		49.9	
D 16 13C4 PFOS	503.0 > 80.0	11.385	11.405	-0.020		44898	2.40	5.0	131	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	4927354	270.6		444	M M
	499.0 > 99.0	11.393	11.408	-0.015	1.000	1810423	2.72(0.00-0.00)		54.0	
D 17 13C5 PFNA	468.0 > 423.0	11.416	11.427	-0.011		69158	2.16	4.3	289	
18 Perfluorononanoic acid	463.0 > 419.0	11.423	11.431	-0.008	1.000	7251	0.3074		16.3	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_014.d

Injection Date: 06-Jan-2016 16:43:48

Instrument ID: A6

Lims ID: 320-16615-A-1-A

Lab Sample ID: 320-16615-1

Client ID: OF14-MW08-1215

Operator ID: JRB

ALS Bottle#: 19

Worklist Smp#: 26

Injection Vol: 15.0 ul

Dil. Factor: 20.0000

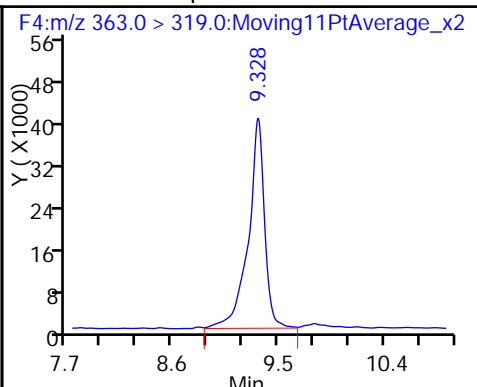
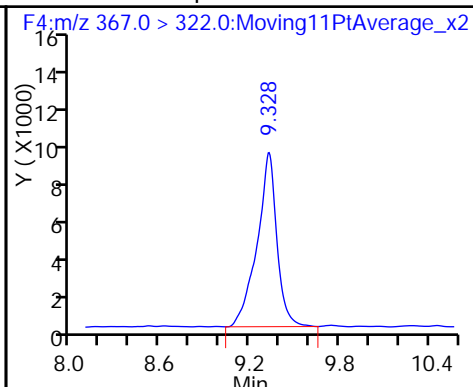
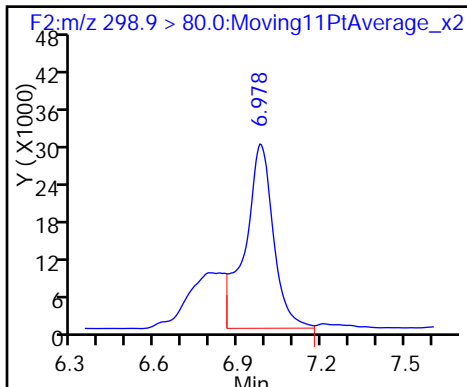
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

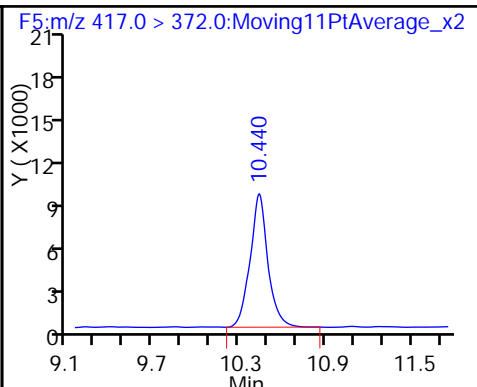
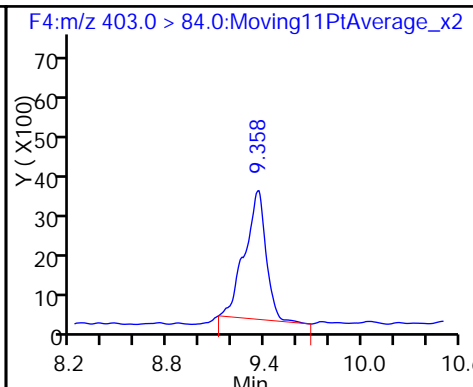
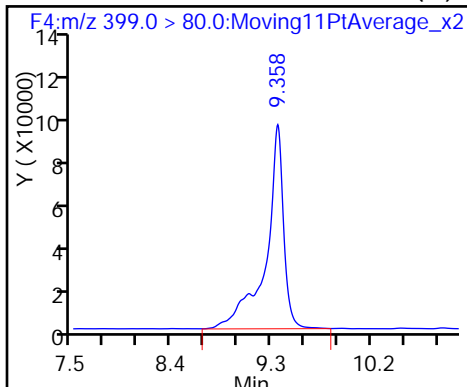
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

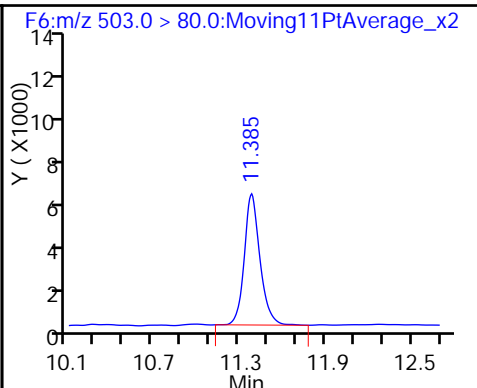
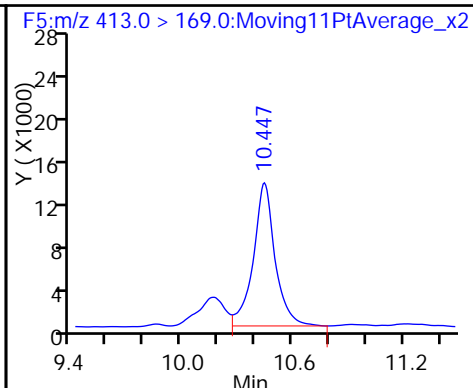
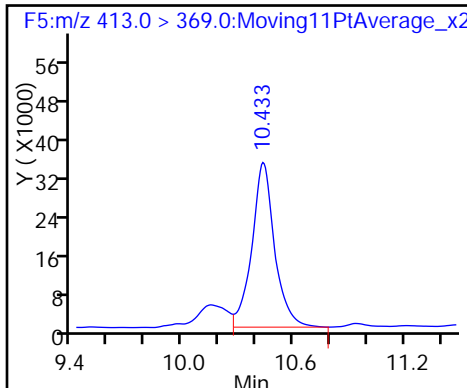
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

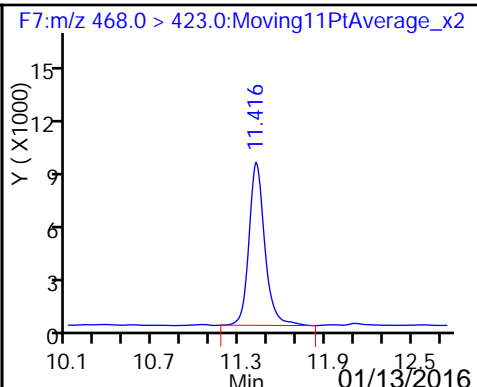
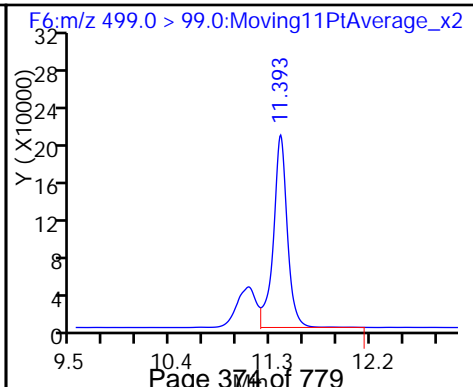
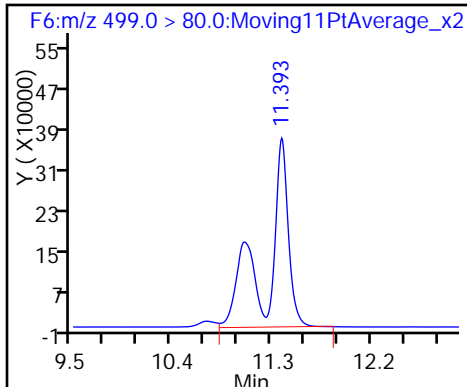
D 16 13C4 PFOS



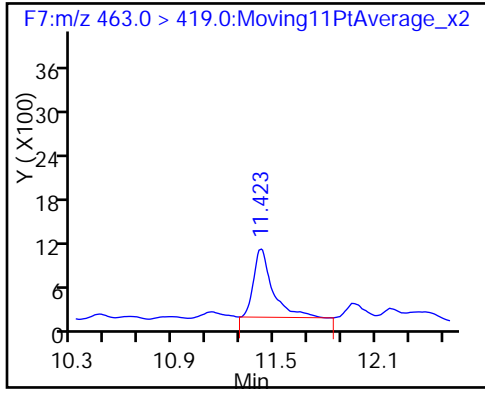
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid



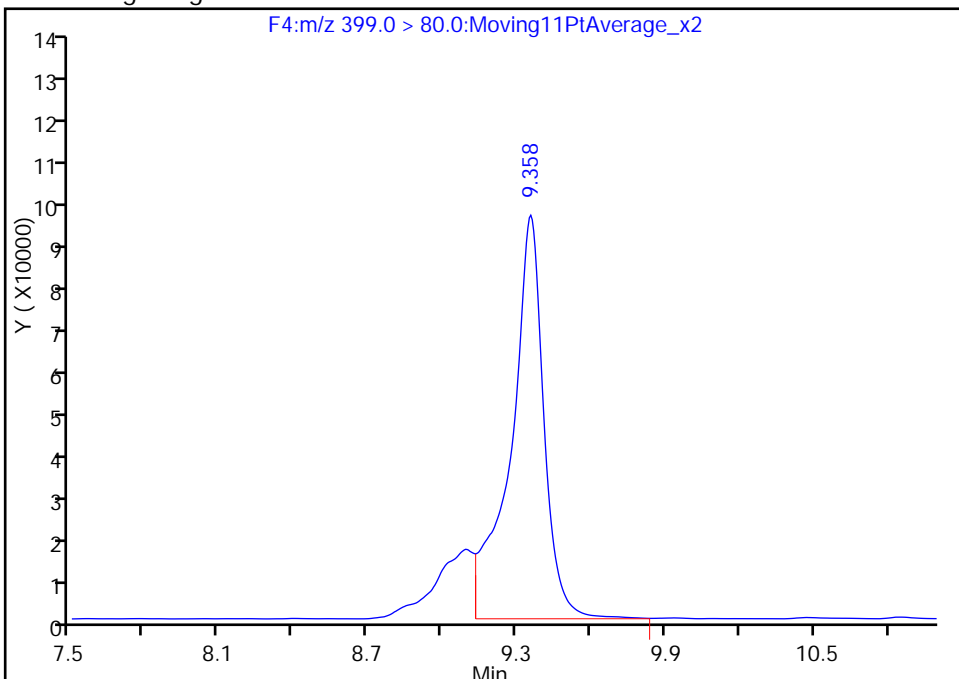
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_014.d
Injection Date: 06-Jan-2016 16:43:48 Instrument ID: A6
Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
Client ID: OF14-MW08-1215
Operator ID: JRB ALS Bottle#: 19 Worklist Smp#: 26
Injection Vol: 15.0 ul Dil. Factor: 20.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:M/RM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

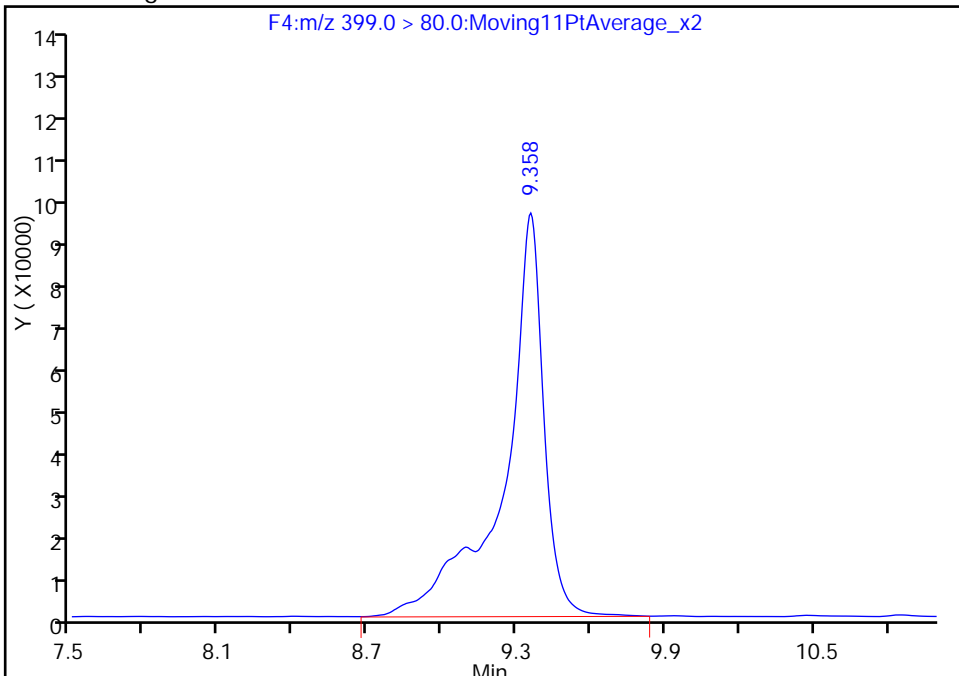
RT: 9.36
Area: 852790
Amount: 115.9423
Amount Units: ng/ml

Processing Integration Results



RT: 9.36
Area: 1026494
Amount: 139.5585
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:44:07
Audit Action: Manually Integrated
Audit Reason: Isomers

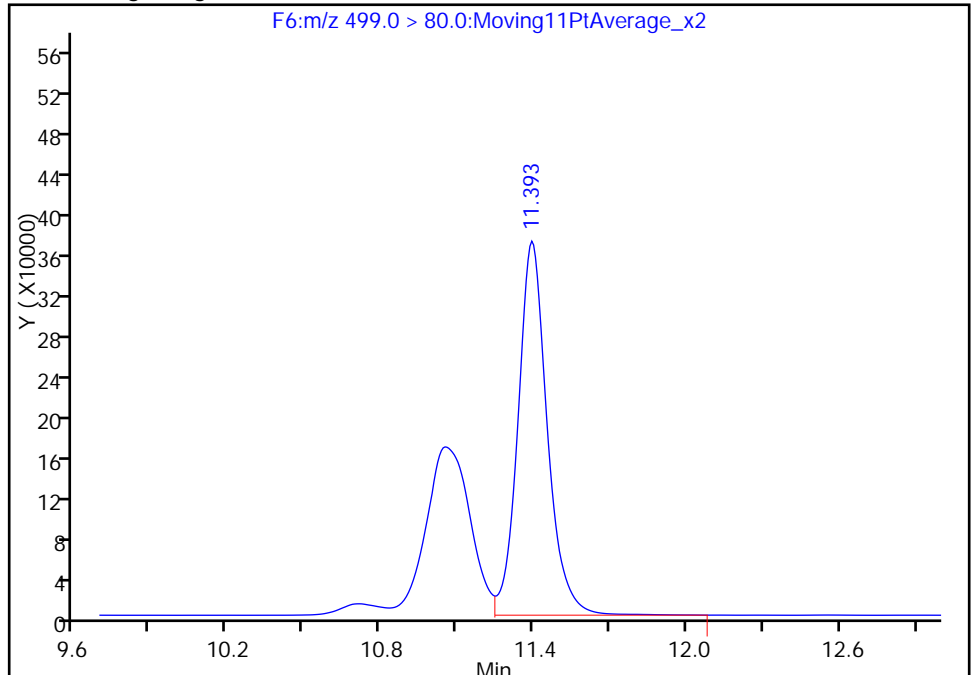
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_014.d
Injection Date: 06-Jan-2016 16:43:48 Instrument ID: A6
Lims ID: 320-16615-A-1-A Lab Sample ID: 320-16615-1
Client ID: OF14-MW08-1215
Operator ID: JRB ALS Bottle#: 19 Worklist Smp#: 26
Injection Vol: 15.0 ul Dil. Factor: 20.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

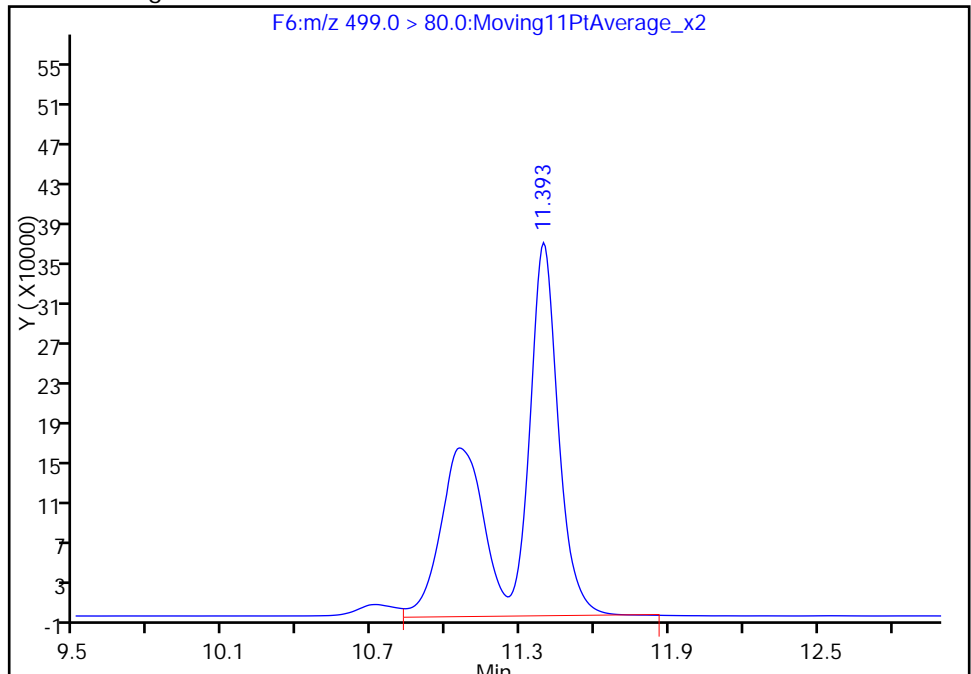
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Amount: 161.5432
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
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Amount: 270.6053
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:44:07
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW08P-1215 Lab Sample ID: 320-16615-2
 Matrix: Water Lab File ID: 05JAN2016A6A_019.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 09:25
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 519.6(mL) Date Analyzed: 01/05/2016 17:00
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.41		0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.015		0.0024	0.0019	0.00063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	J	0.0024	0.0019	0.00088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.6	J M	0.0024	0.0019	0.00084
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J M	0.0038	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	41		25-150
STL00991	13C4 PFOS	33		25-150
STL00995	13C5 PFNA	40		25-150
STL00990	13C4 PFOA	36		25-150
STL01892	13C4-PFHpA	42		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_019.d
 Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
 Client ID: OF14-MW08P-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 17:00:15 ALS Bottle#: 4 Worklist Smp#: 16
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16615-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 09:24:24 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:02:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										E
298.9 > 80.0	7.012	7.039	-0.027	1.000	2192218	531.7				E
D 8 13C4-PFHpA										
367.0 > 322.0	9.376	9.413	-0.037		447805	21.0		41.9	1715	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.382	9.413	-0.031	1.000	1957883	215.1			289	
D 11 18O2 PFHxS										
403.0 > 84.0	9.417	9.444	-0.027		202594	19.6		41.4	494	
41 Perfluorohexanesulfonic acid										EM
399.0 > 80.0	9.417	9.449	-0.032	1.000	8845532	2913.9				EM
D 12 13C4 PFOA										
417.0 > 372.0	10.497	10.524	-0.027		393529	18.0		36.0	819	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.497	10.528	-0.031	1.000	1185215	155.6			36.3	
413.0 > 169.0	10.503	10.528	-0.025	1.001	428873		2.76(0.00-0.00)		24.5	
D 16 13C4 PFOS										
503.0 > 80.0	11.458	11.478	-0.020		175909	15.8		33.0	508	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.458	11.480	-0.022	1.000	29138296	7782.3			178	EM
499.0 > 99.0	11.458	11.480	-0.022	1.000	13849484		2.10(0.00-0.00)		1425	M
D 17 13C5 PFNA										
468.0 > 423.0	11.481	11.501	-0.020		401846	20.2		40.4	888	
18 Perfluorononanoic acid										
463.0 > 419.0	11.481	11.502	-0.021	1.000	49455	7.82			74.9	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_019.d

Injection Date: 05-Jan-2016 17:00:15

Instrument ID: A6

Lims ID: 320-16615-A-2-A

Lab Sample ID: 320-16615-2

Client ID: OF14-MW08P-1215

Operator ID: JRB

ALS Bottle#: 4

Worklist Smp#: 16

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

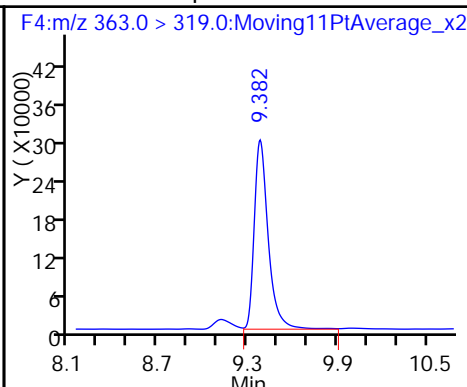
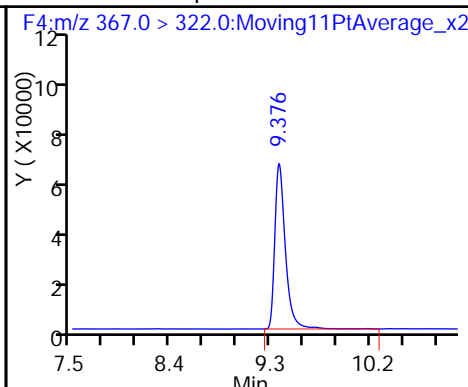
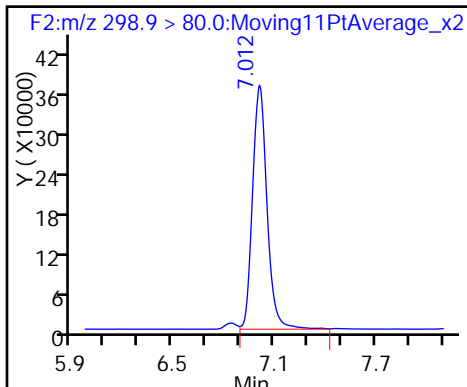
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

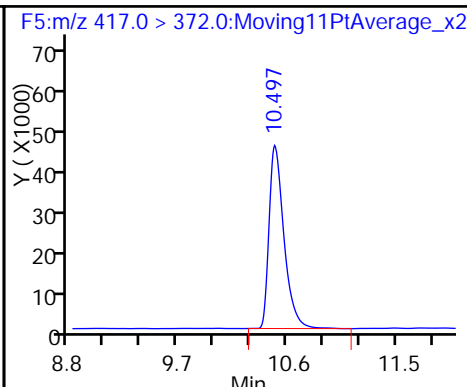
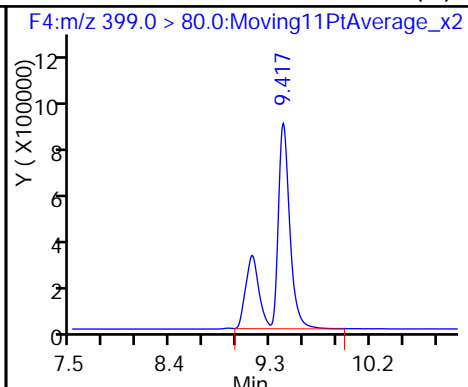
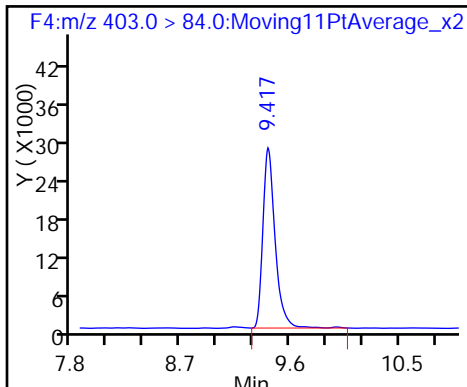
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

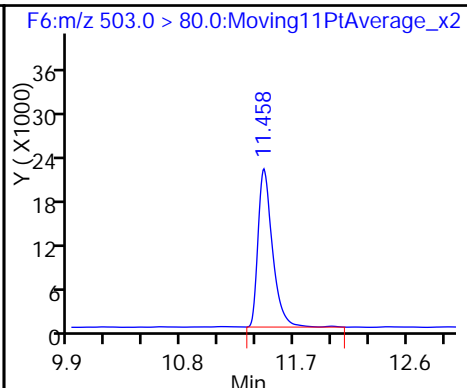
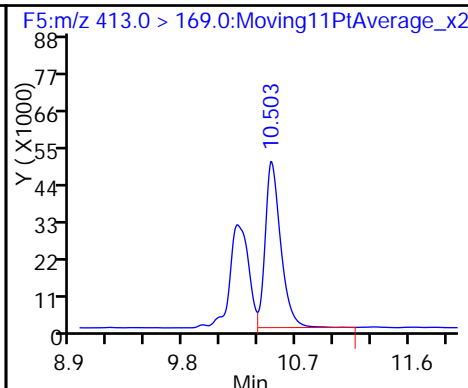
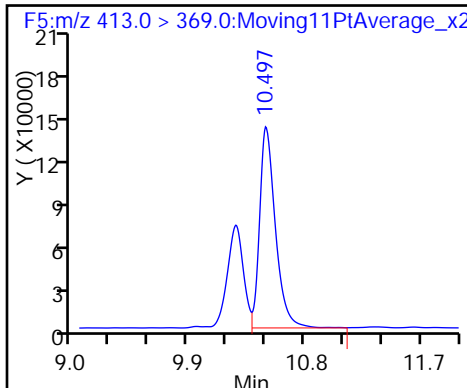
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

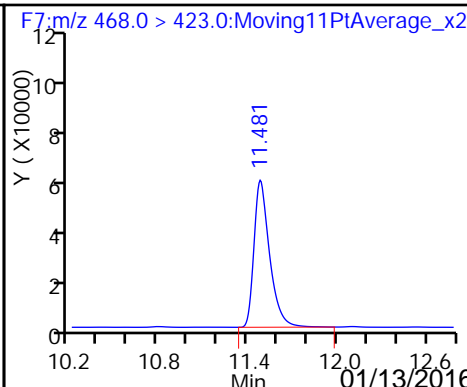
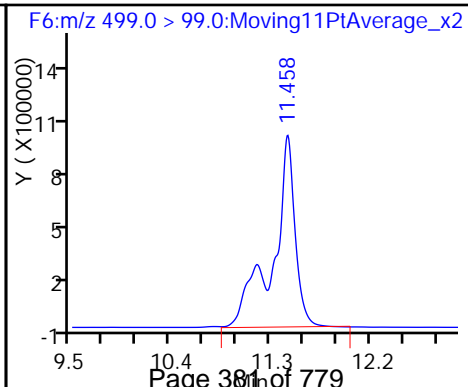
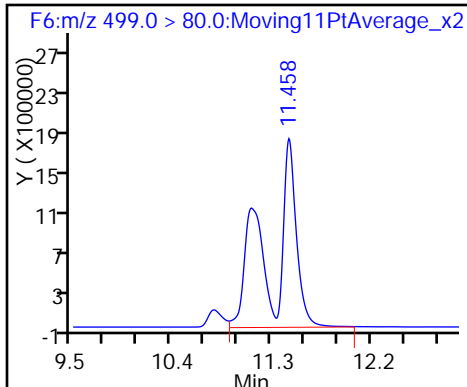
D 16 13C4 PFOS



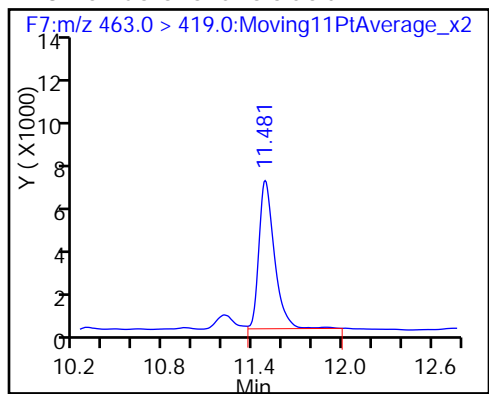
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



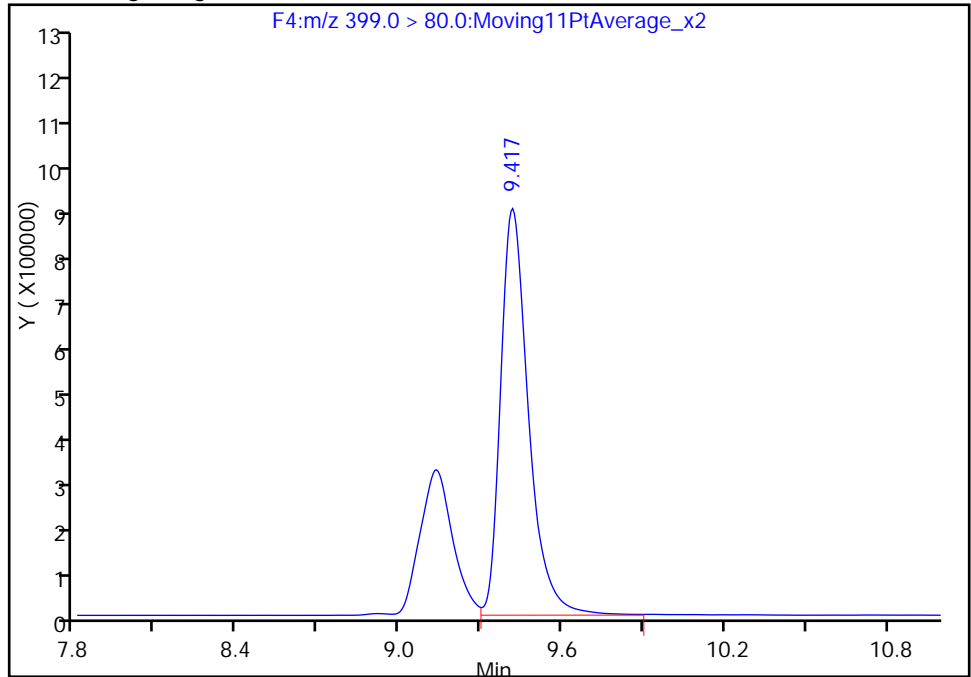
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_019.d
Injection Date: 05-Jan-2016 17:00:15 Instrument ID: A6
Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
Client ID: OF14-MW08P-1215
Operator ID: JRB ALS Bottle#: 4 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

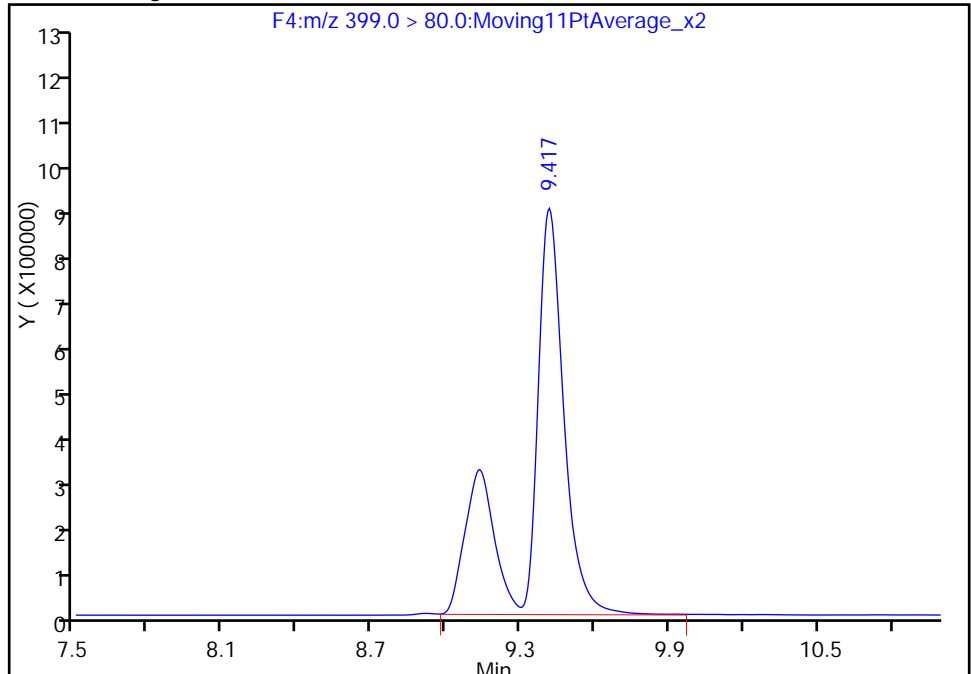
RT: 9.42
Area: 6273038
Amount: 2066.4328
Amount Units: ng/ml

Processing Integration Results



RT: 9.42
Area: 8845532
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Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:02:28
Audit Action: Manually Integrated
Audit Reason: Isomers

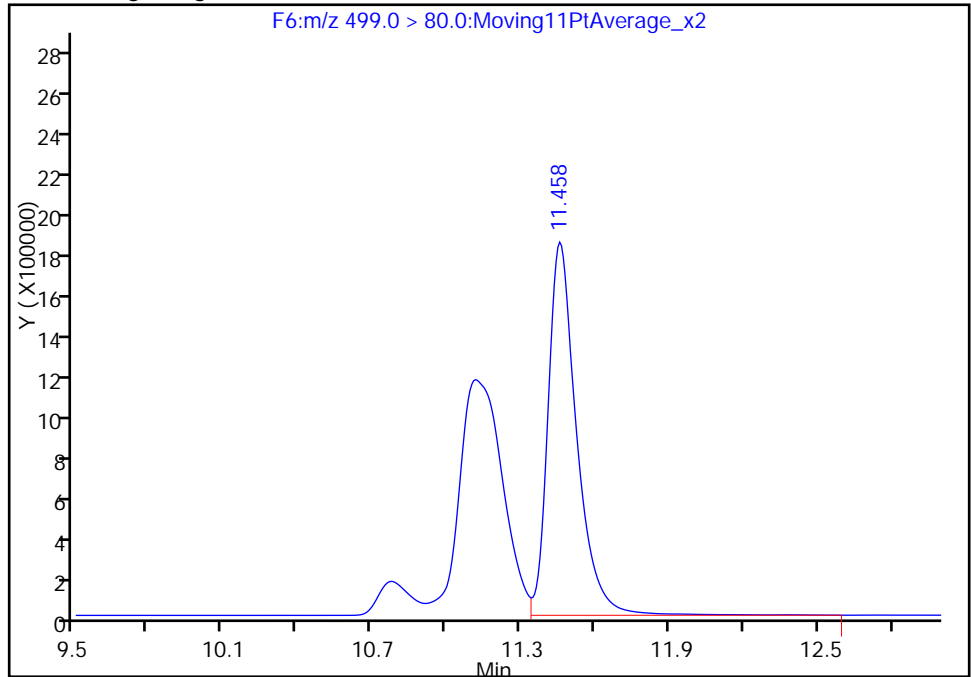
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_019.d
Injection Date: 05-Jan-2016 17:00:15 Instrument ID: A6
Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
Client ID: OF14-MW08P-1215
Operator ID: JRB ALS Bottle#: 4 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

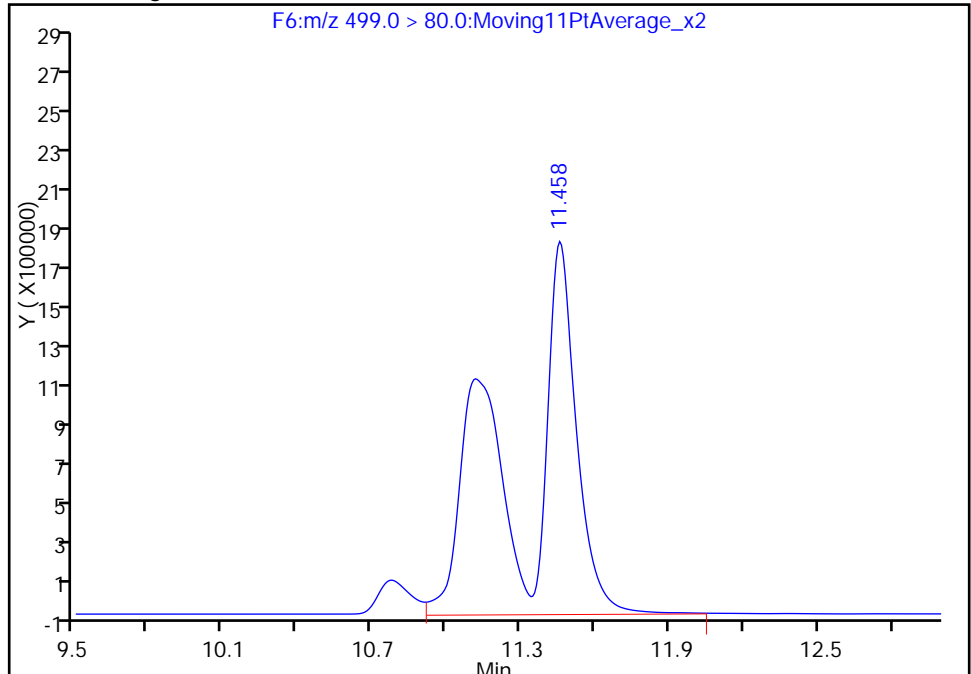
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Area: 14922300
Amount: 3985.4819
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 29138296
Amount: 7782.3226
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:02:28
Audit Action: Manually Integrated
Audit Reason: Isomers

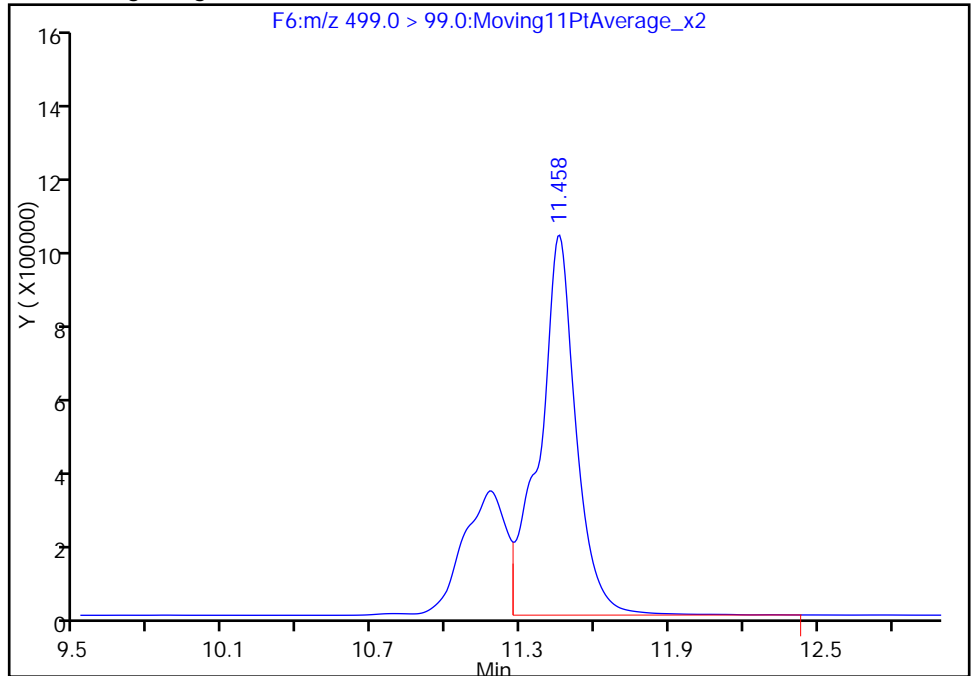
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_019.d
Injection Date: 05-Jan-2016 17:00:15 Instrument ID: A6
Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
Client ID: OF14-MW08P-1215
Operator ID: JRB ALS Bottle#: 4 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRRM

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

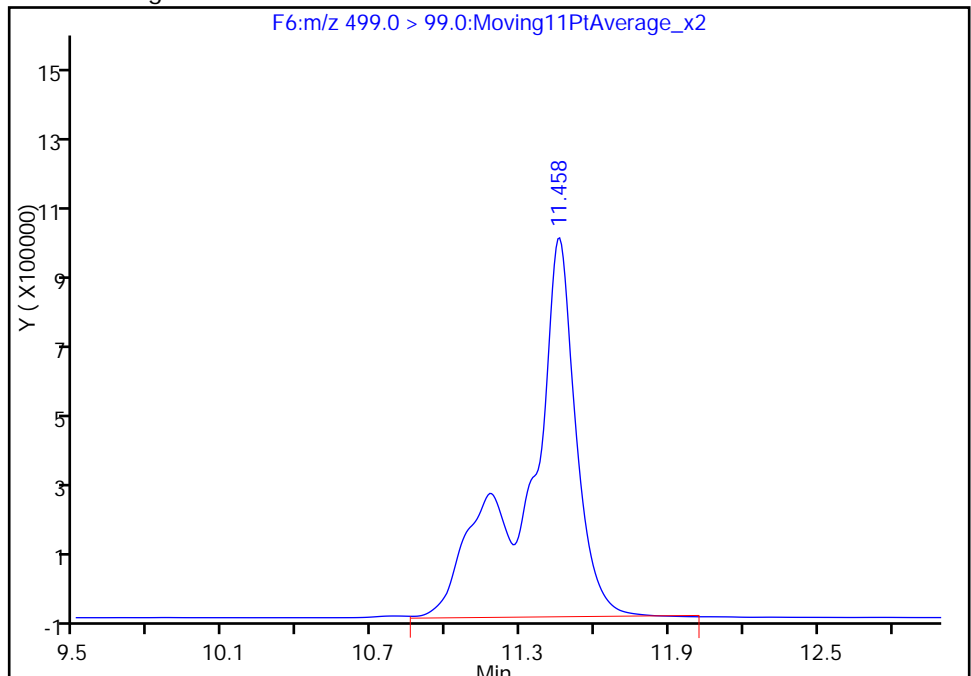
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Area: 10135606
Amount: 3985.4819
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
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Amount: 7782.3226
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:02:28
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW08P-1215 DL Lab Sample ID: 320-16615-2 DL
 Matrix: Water Lab File ID: 06JAN2016A6A_013.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 09:25
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 519.6(mL) Date Analyzed: 01/06/2016 16:12
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 10
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	<i>Perfluoroheptanoic acid (PFHpA)</i>	0.39	D	0.024	0.019	0.0077
335-67-1	<i>Perfluorooctanoic acid (PFOA)</i>	0.29	D	0.024	0.019	0.0072
375-95-1	<i>Perfluorononanoic acid (PFNA)</i>	0.013	J D	0.024	0.019	0.0063
375-73-5	<i>Perfluorobutanesulfonic acid (PFBS)</i>	0.64	D	0.024	0.019	0.0088
355-46-4	<i>Perfluorohexanesulfonic acid (PFHxS)</i>	5.0	D M	0.024	0.019	0.0084
1763-23-1	<i>Perfluorooctanesulfonic acid (PFOS)</i>	13	J D M	0.038	0.029	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	100		25-150
STL00991	13C4 PFOS	80		25-150
STL00995	13C5 PFNA	77		25-150
STL00990	13C4 PFOA	82		25-150
STL01892	13C4-PFHpA	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_013.d
 Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
 Client ID: OF14-MW08P-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 16:12:35 ALS Bottle#: 18 Worklist Smp#: 21
 Injection Vol: 15.0 ul Dil. Factor: 10.0000
 Sample Info: 320-16615-A-2-A 10x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:43:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.987	6.976	0.011	1.000	510772	33.1			
D 8 13C4-PFHpA	367.0 > 322.0	9.329	9.331	-0.002		173862	5.07	10.1	257	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	1.000	715261	20.5		285	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.358	9.363	-0.005	1.000	2205343	262.2			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.346	9.363	-0.017		68486	4.71	10.0	167	
D 12 13C4 PFOA	417.0 > 372.0	10.441	10.452	-0.011		157631	4.08	8.2	592	
13 Perfluorooctanoic acid	413.0 > 369.0	10.441	10.453	-0.012	1.000	513197	15.2		65.9	
	413.0 > 169.0	10.441	10.453	-0.012	1.000	192826	2.66(0.00-0.00)		42.2	
D 16 13C4 PFOS	503.0 > 80.0	11.386	11.405	-0.019		71772	3.84	8.0	243	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	9574656	657.9		365	EM
	499.0 > 99.0	11.393	11.408	-0.015	1.000	3329432	2.88(0.00-0.00)		45.2	EM
D 17 13C5 PFNA	468.0 > 423.0	11.416	11.427	-0.011		124225	3.87	7.7	356	
18 Perfluorononanoic acid	463.0 > 419.0	11.430	11.431	-0.001	1.000	14678	0.6927		32.8	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_013.d

Injection Date: 06-Jan-2016 16:12:35

Instrument ID: A6

Lims ID: 320-16615-A-2-A

Lab Sample ID: 320-16615-2

Client ID: OF14-MW08P-1215

Operator ID: JRB

ALS Bottle#: 18

Worklist Smp#: 21

Injection Vol: 15.0 ul

Dil. Factor: 10.0000

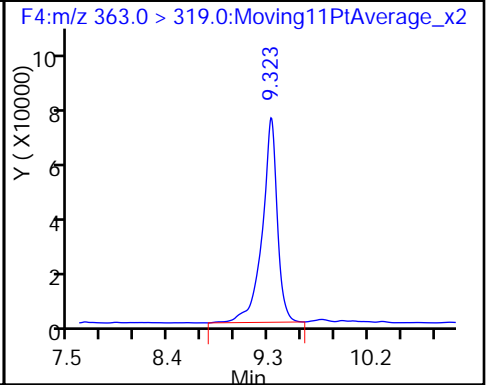
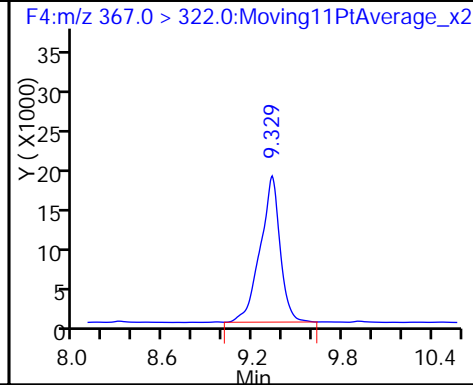
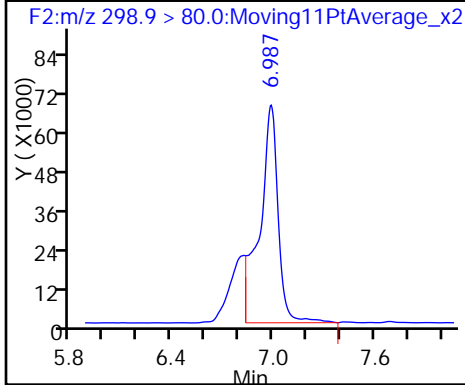
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

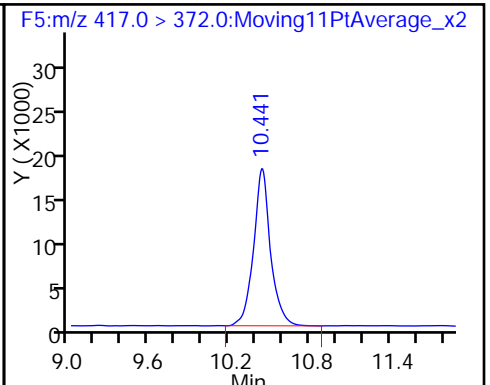
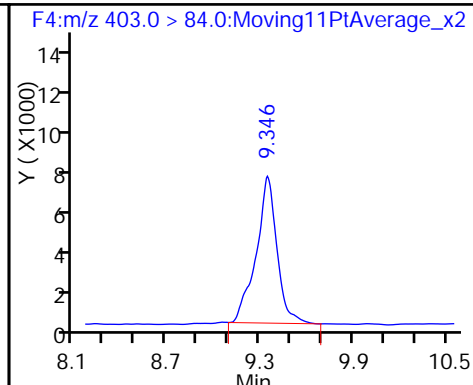
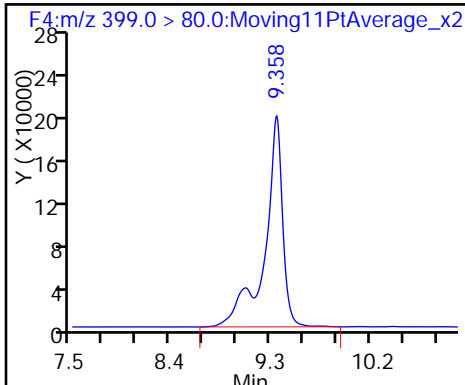
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

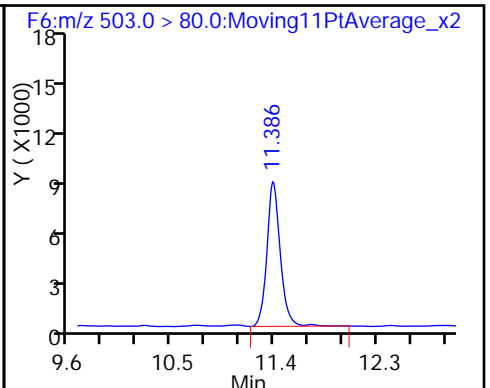
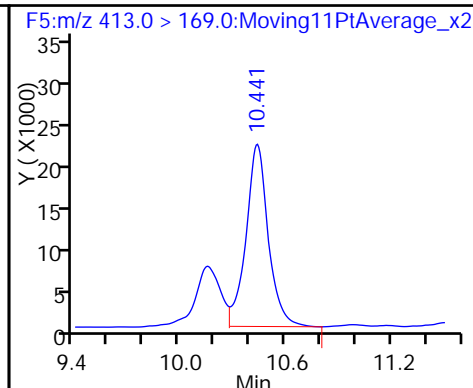
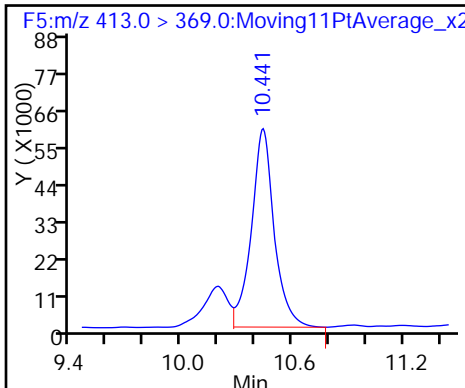
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

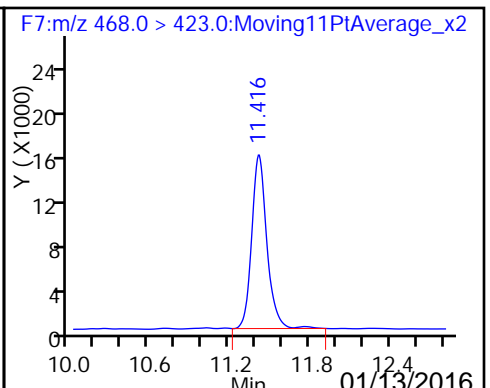
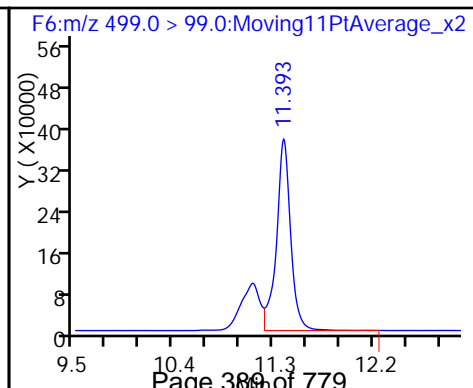
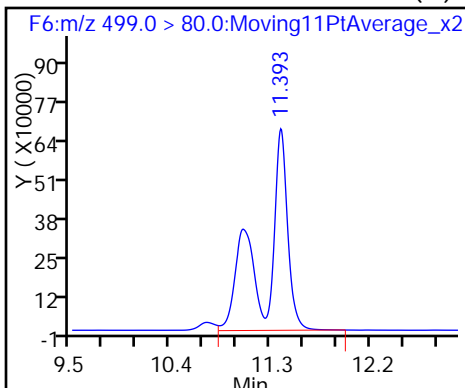
D 16 13C4 PFOS



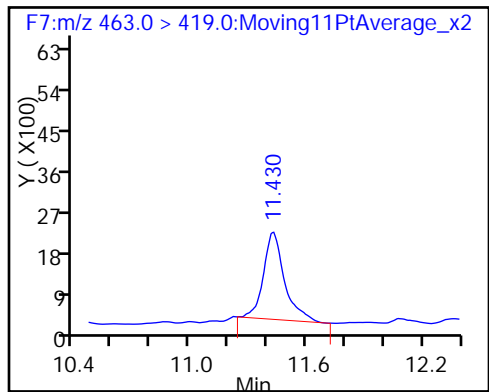
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid



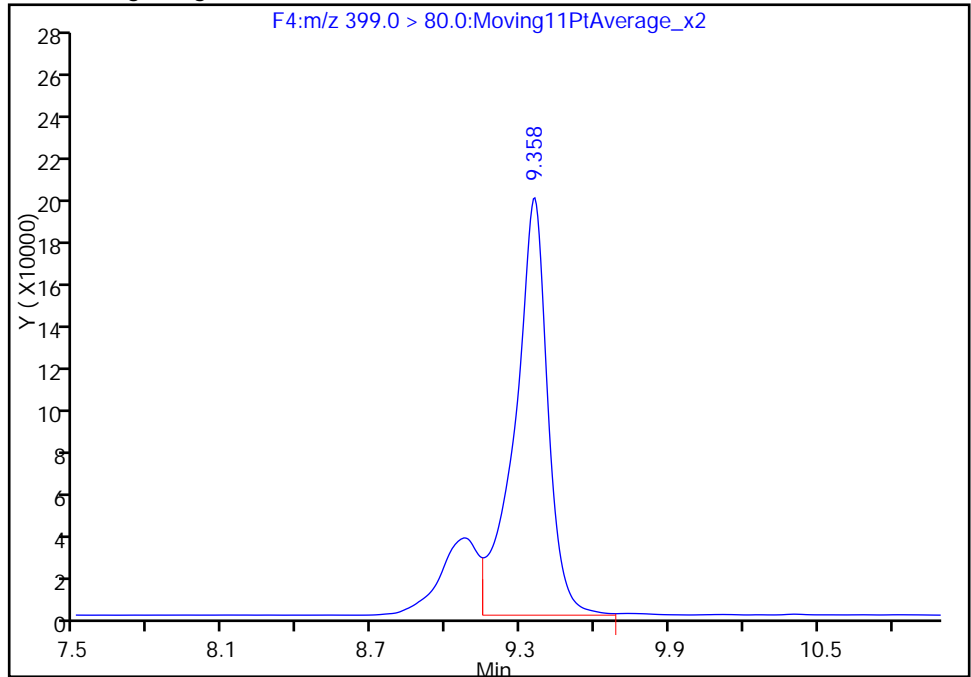
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_013.d
Injection Date: 06-Jan-2016 16:12:35 Instrument ID: A6
Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
Client ID: OF14-MW08P-1215
Operator ID: JRB ALS Bottle#: 18 Worklist Smp#: 21
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:M/RM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

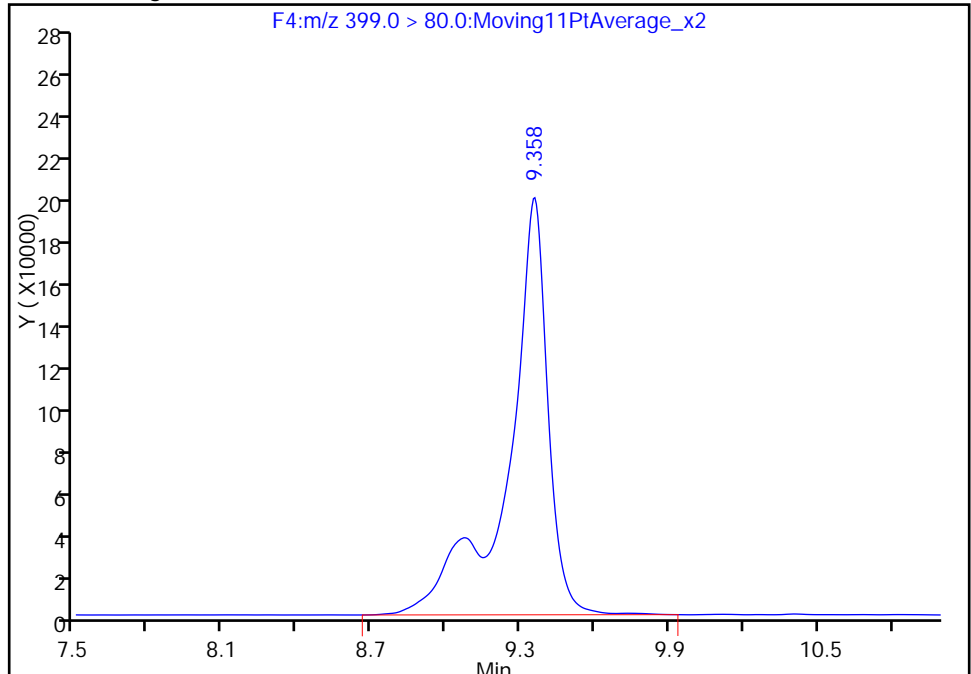
RT: 9.36
Area: 1811710
Amount: 215.3977
Amount Units: ng/ml

Processing Integration Results



RT: 9.36
Area: 2205343
Amount: 262.1975
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:43:04
Audit Action: Manually Integrated
Audit Reason: Isomers

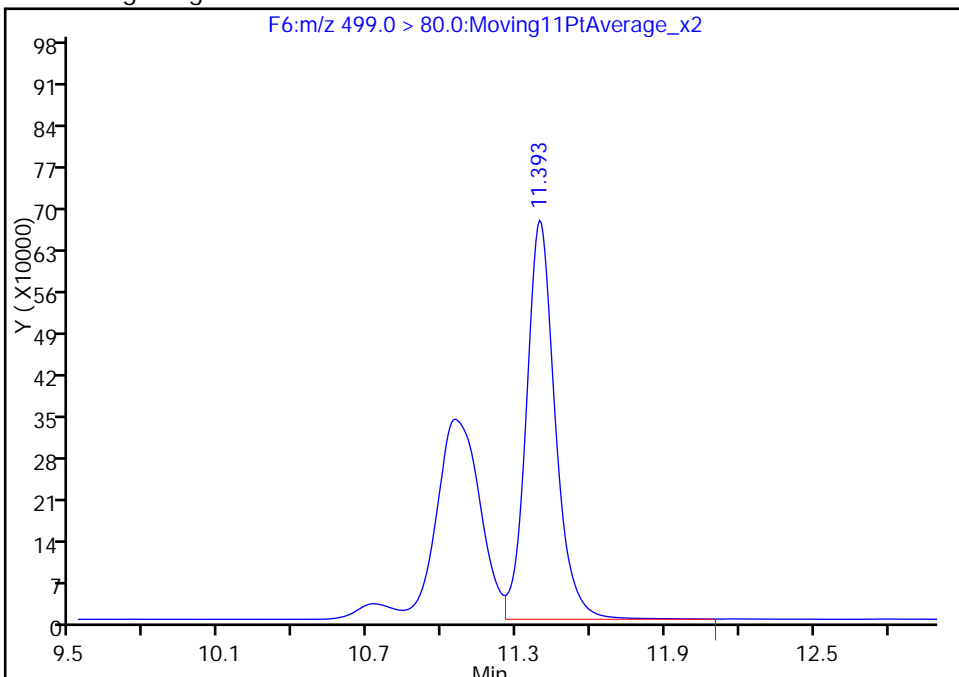
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_013.d
Injection Date: 06-Jan-2016 16:12:35 Instrument ID: A6
Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
Client ID: OF14-MW08P-1215
Operator ID: JRB ALS Bottle#: 18 Worklist Smp#: 21
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

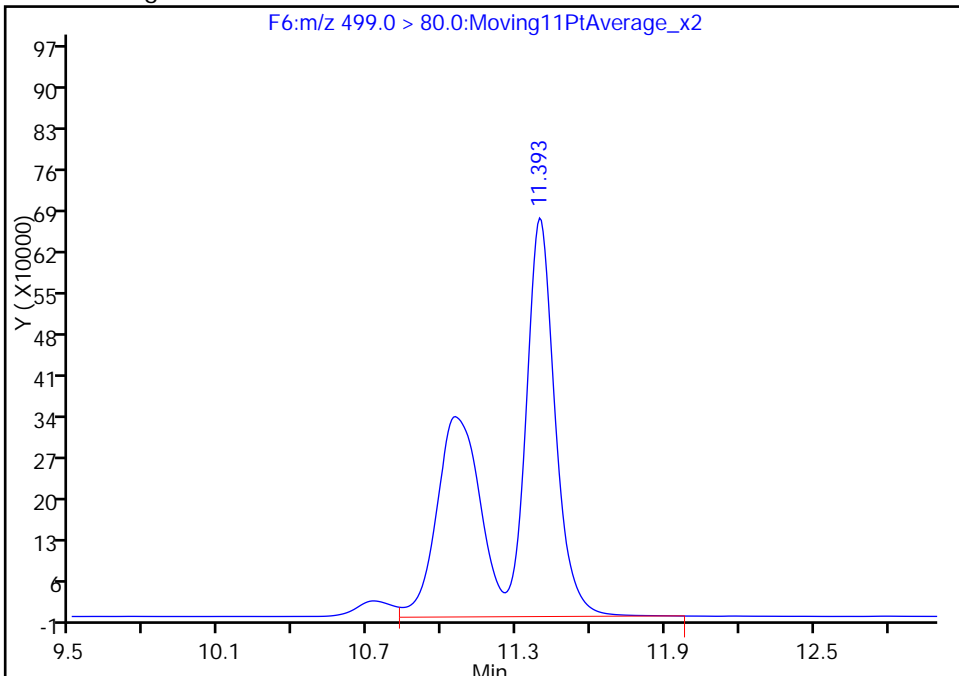
RT: 11.39
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Amount: 375.7066
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 9574656
Amount: 657.8815
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:43:04
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW08P-1215 DL2 Lab Sample ID: 320-16615-2 DL2
 Matrix: Water Lab File ID: 06JAN2016A6A_015.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 09:25
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 519.6(mL) Date Analyzed: 01/06/2016 17:15
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 20
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	<i>Perfluoroheptanoic acid (PFHpA)</i>	0.46	D	0.048	0.038	0.015
335-67-1	<i>Perfluorooctanoic acid (PFOA)</i>	0.27	D	0.048	0.038	0.014
375-95-1	<i>Perfluorononanoic acid (PFNA)</i>	0.017	J D	0.048	0.038	0.013
375-73-5	<i>Perfluorobutanesulfonic acid (PFBS)</i>	0.41	D	0.048	0.038	0.018
355-46-4	<i>Perfluorohexanesulfonic acid (PFHxS)</i>	4.7	D M	0.048	0.038	0.017
1763-23-1	<i>Perfluorooctanesulfonic acid (PFOS)</i>	11	D M	0.077	0.058	0.025

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	115		25-150
STL00991	13C4 PFOS	113		25-150
STL00995	13C5 PFNA	89		25-150
STL00990	13C4 PFOA	105		25-150
STL01892	13C4-PFHpA	106		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_015.d
 Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
 Client ID: OF14-MW08P-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 17:15:02 ALS Bottle#: 20 Worklist Smp#: 27
 Injection Vol: 15.0 ul Dil. Factor: 20.0000
 Sample Info: 320-16615-A-2-A 20x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:44:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.987	6.976	0.011	1.000	192184	10.8			
D 8 13C4-PFHpA	367.0 > 322.0	9.317	9.331	-0.014		90704	2.65	5.3	266	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	1.000	434425	11.8		233	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.358	9.363	-0.005	1.000	1186267	122.0			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.346	9.363	-0.017		39579	2.72	5.8	97.7	
D 12 13C4 PFOA	417.0 > 372.0	10.440	10.452	-0.012		101626	2.63	5.3	261	
13 Perfluorooctanoic acid	413.0 > 369.0	10.440	10.453	-0.013	1.000	307656	7.06		61.9	
	413.0 > 169.0	10.440	10.453	-0.013	1.000	109297	2.81(0.00-0.00)		38.0	
D 16 13C4 PFOS	503.0 > 80.0	11.386	11.405	-0.019		50508	2.70	5.7	203	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	5674689	277.0		425	M
	499.0 > 99.0	11.386	11.408	-0.022	0.999	2650357	2.14(0.00-0.00)		2234	M
D 17 13C5 PFNA	468.0 > 423.0	11.408	11.427	-0.019		71670	2.23	4.5	196	
18 Perfluorononanoic acid	463.0 > 419.0	11.423	11.431	-0.008	1.000	10620	0.4344		27.6	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_015.d

Injection Date: 06-Jan-2016 17:15:02

Instrument ID: A6

Lims ID: 320-16615-A-2-A

Lab Sample ID: 320-16615-2

Client ID: OF14-MW08P-1215

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 27

Injection Vol: 15.0 ul

Dil. Factor: 20.0000

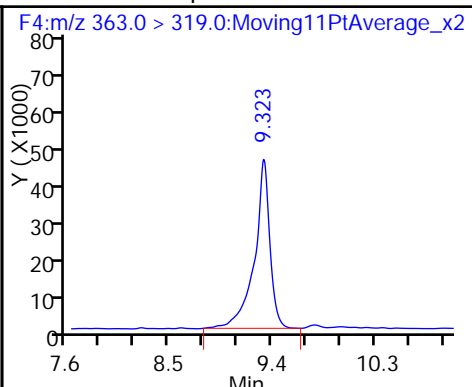
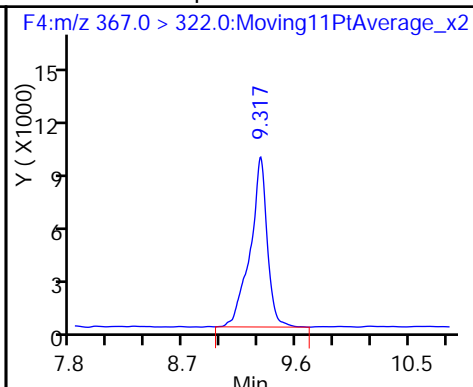
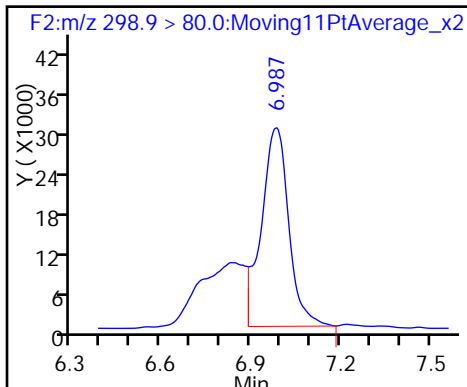
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

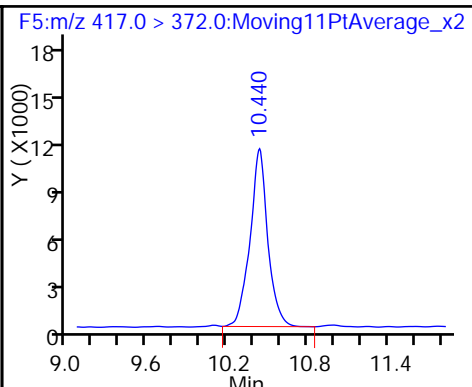
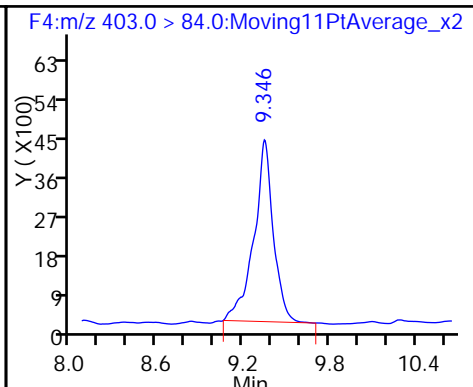
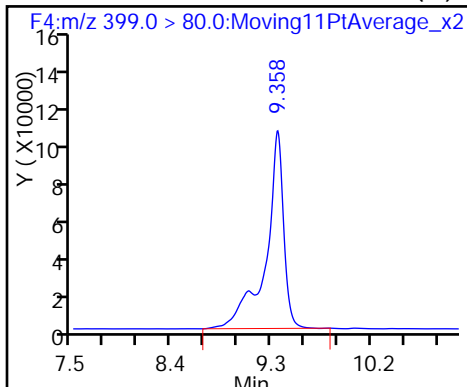
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

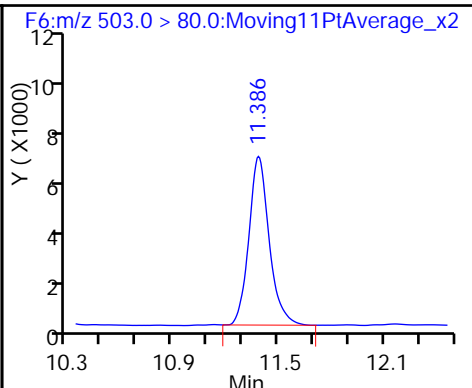
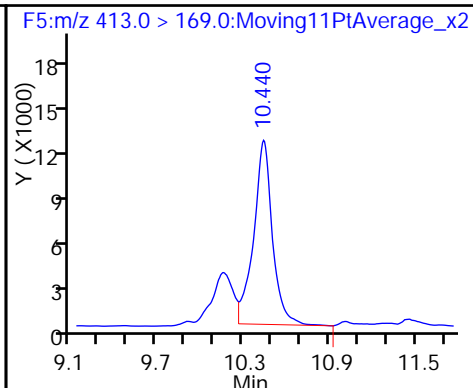
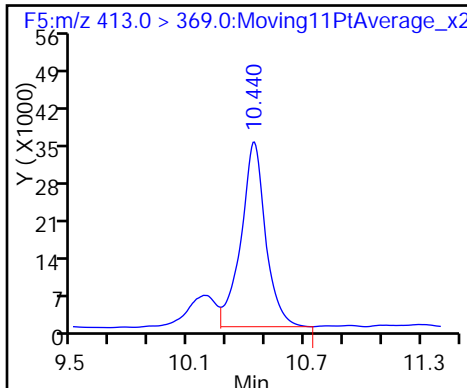
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

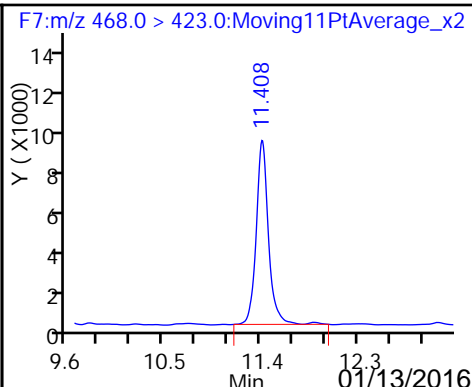
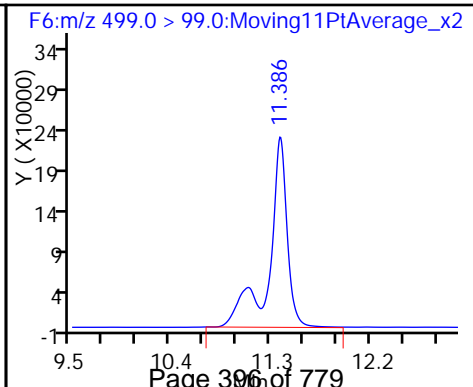
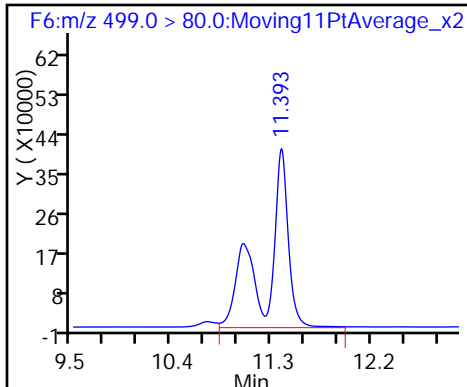
D 16 13C4 PFOS



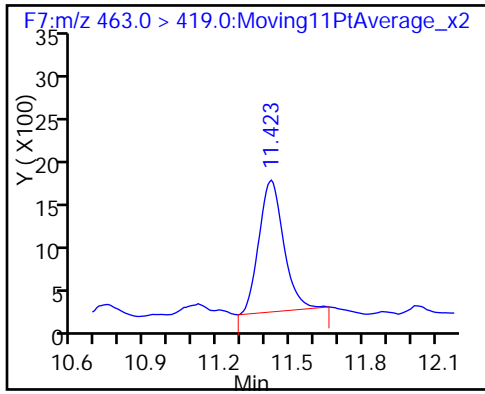
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



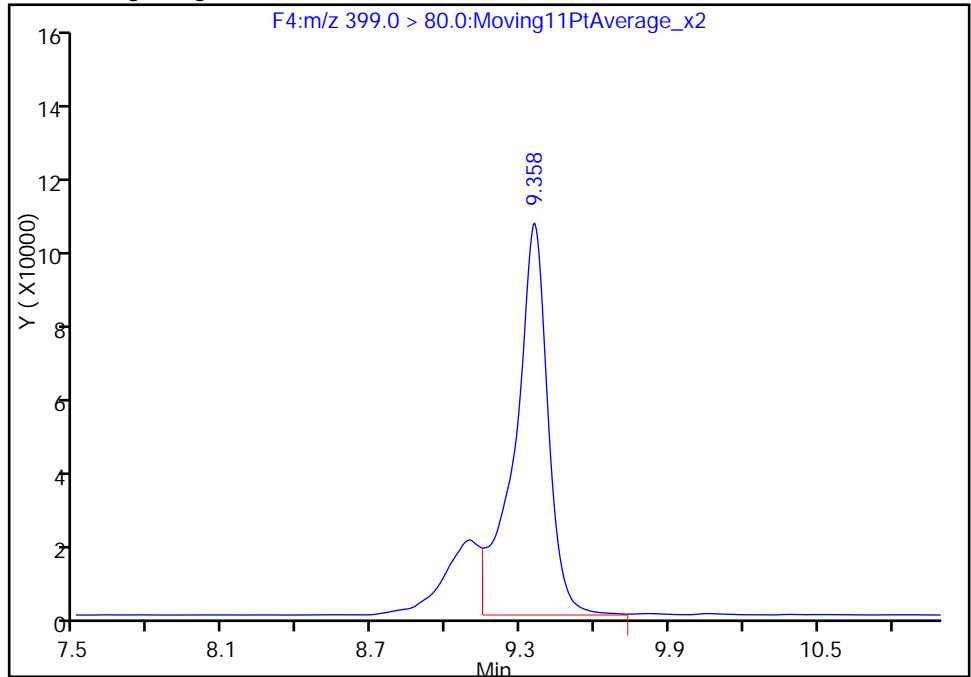
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_015.d
Injection Date: 06-Jan-2016 17:15:02 Instrument ID: A6
Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
Client ID: OF14-MW08P-1215
Operator ID: JRB ALS Bottle#: 20 Worklist Smp#: 27
Injection Vol: 15.0 ul Dil. Factor: 20.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

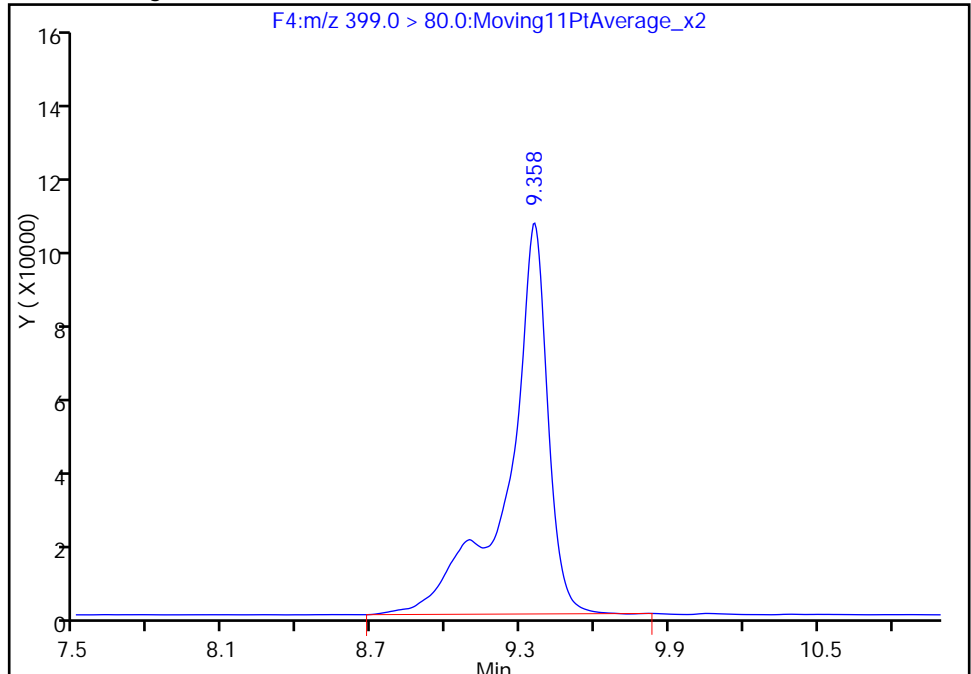
RT: 9.36
Area: 987942
Amount: 101.6227
Amount Units: ng/ml

Processing Integration Results



RT: 9.36
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Amount: 122.0231
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:44:51
Audit Action: Manually Integrated
Audit Reason: Isomers

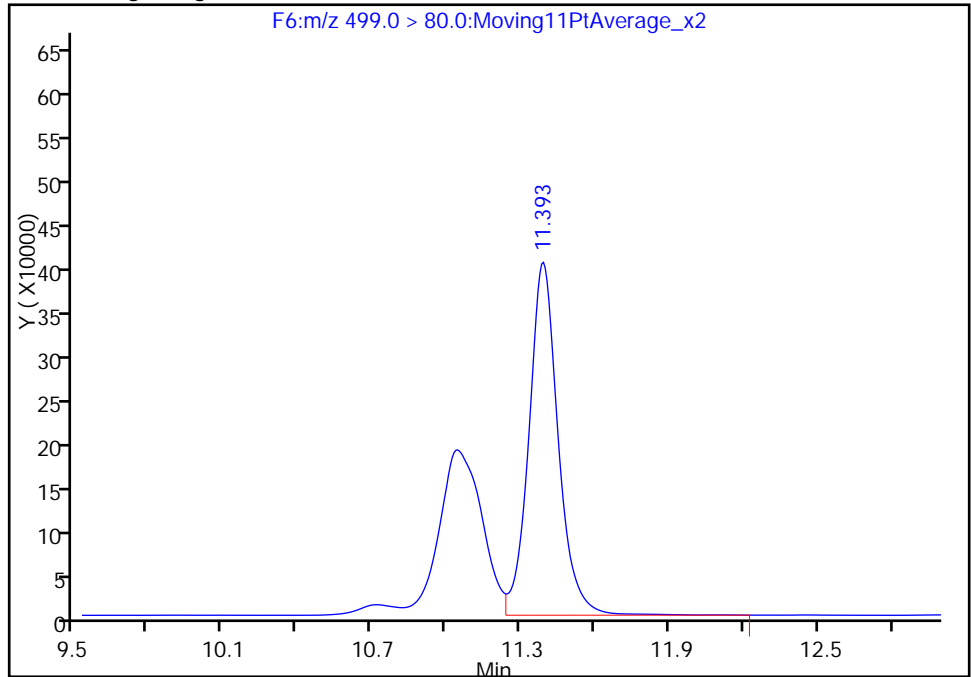
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_015.d
Injection Date: 06-Jan-2016 17:15:02 Instrument ID: A6
Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
Client ID: OF14-MW08P-1215
Operator ID: JRB ALS Bottle#: 20 Worklist Smp#: 27
Injection Vol: 15.0 ul Dil. Factor: 20.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

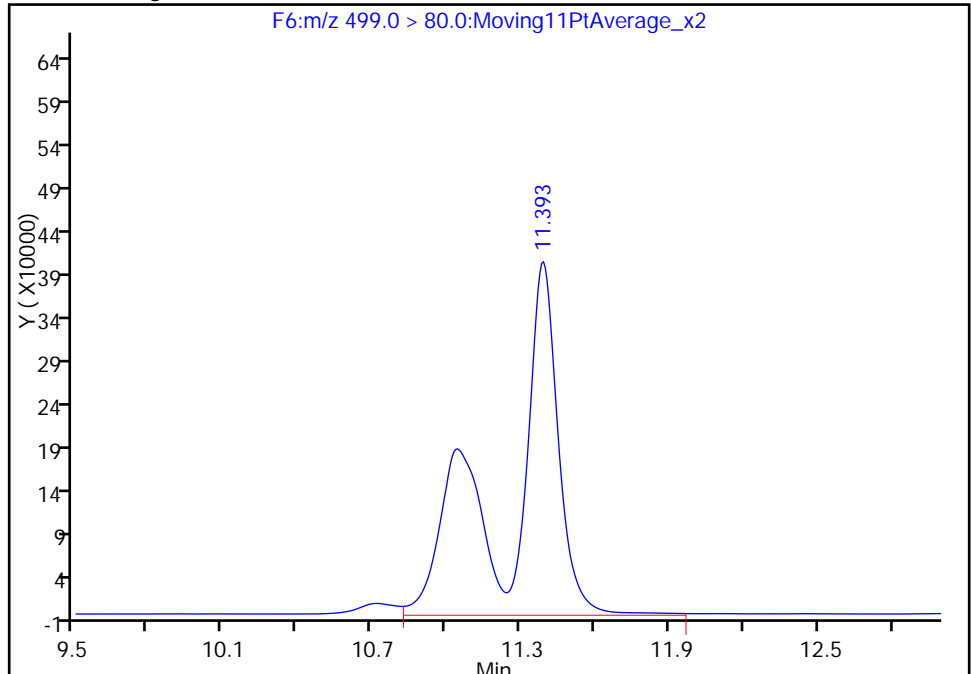
RT: 11.39
Area: 3316019
Amount: 161.8849
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 5674689
Amount: 277.0330
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:44:51
Audit Action: Manually Integrated
Audit Reason: Isomers

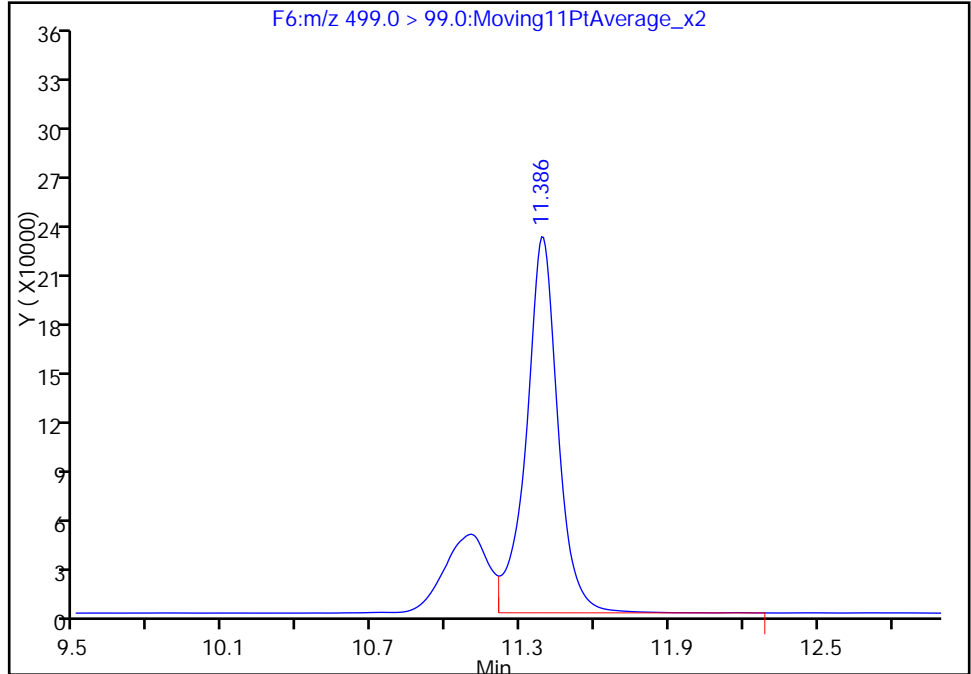
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_015.d
Injection Date: 06-Jan-2016 17:15:02 Instrument ID: A6
Lims ID: 320-16615-A-2-A Lab Sample ID: 320-16615-2
Client ID: OF14-MW08P-1215
Operator ID: JRB ALS Bottle#: 20 Worklist Smp#: 27
Injection Vol: 15.0 ul Dil. Factor: 20.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRRM

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

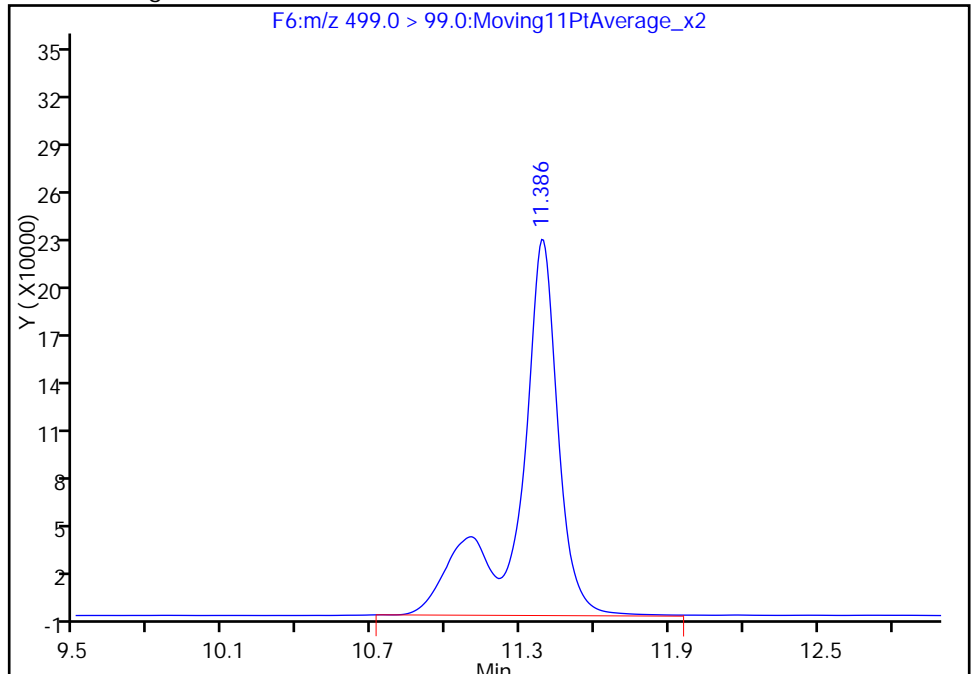
RT: 11.39
Area: 2048997
Amount: 161.8849
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 2650357
Amount: 277.0330
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:44:51
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW12S-1215 Lab Sample ID: 320-16615-3
 Matrix: Water Lab File ID: 05JAN2016A6A_020.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 10:25
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 521(mL) Date Analyzed: 01/05/2016 17:21
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.037		0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	0.072		0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.011		0.0024	0.0019	0.00063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.060		0.0024	0.0019	0.00088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.2	J M	0.0024	0.0019	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.5	J M	0.0038	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	70		25-150
STL00991	13C4 PFOS	38		25-150
STL00995	13C5 PFNA	39		25-150
STL00990	13C4 PFOA	75		25-150
STL01892	13C4-PFHpA	62		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_020.d
 Lims ID: 320-16615-A-3-A Lab Sample ID: 320-16615-3
 Client ID: OF14-MW12S-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 17:21:29 ALS Bottle#: 5 Worklist Smp#: 17
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16615-A-3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 09:24:24 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:03:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.012	7.039	-0.027	1.000	219123	31.3			
D 8 13C4-PFHpA	367.0 > 322.0	9.381	9.413	-0.032		660109	30.9	61.8	1702	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.387	9.413	-0.026	1.000	257441	19.0		149	
D 11 18O2 PFHxS	403.0 > 84.0	9.416	9.444	-0.028		344130	33.3	70.3	910	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.416	9.449	-0.033	1.000	3143763	609.7			EM EM
D 12 13C4 PFOA	417.0 > 372.0	10.496	10.524	-0.028		814708	37.3	74.6	1826	
13 Perfluorooctanoic acid	413.0 > 369.0	10.503	10.528	-0.025	1.000	595600	37.8		115	
	413.0 > 169.0	10.503	10.528	-0.025	1.000	198630	3.00(0.00-0.00)		73.5	
D 16 13C4 PFOS	503.0 > 80.0	11.458	11.478	-0.020		203986	18.3	38.3	532	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.458	11.480	-0.022	1.000	14716263	3389.5		605	EM EM
	499.0 > 99.0	11.458	11.480	-0.022	1.000	7021988	2.10(0.00-0.00)		2704	M
D 17 13C5 PFNA	468.0 > 423.0	11.481	11.501	-0.020		389127	19.5	39.1	977	
18 Perfluorononanoic acid	463.0 > 419.0	11.481	11.502	-0.021	1.000	34892	5.69		77.4	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_020.d

Injection Date: 05-Jan-2016 17:21:29

Instrument ID: A6

Lims ID: 320-16615-A-3-A

Lab Sample ID: 320-16615-3

Client ID: OF14-MW12S-1215

Operator ID: JRB

ALS Bottle#: 5

Worklist Smp#: 17

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

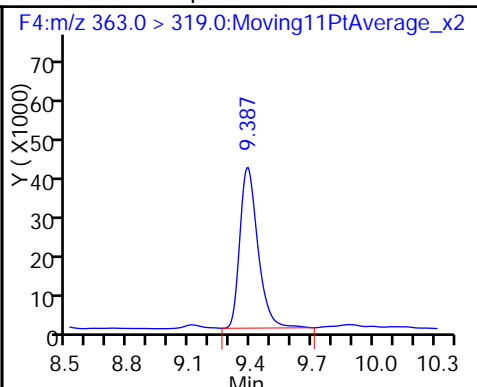
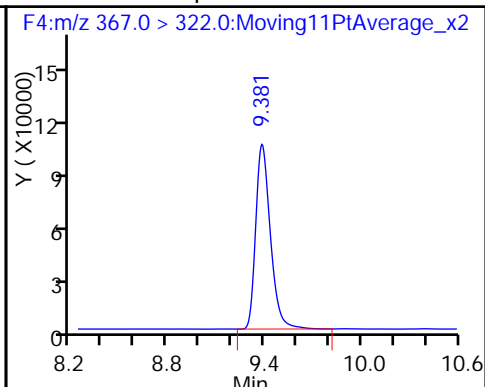
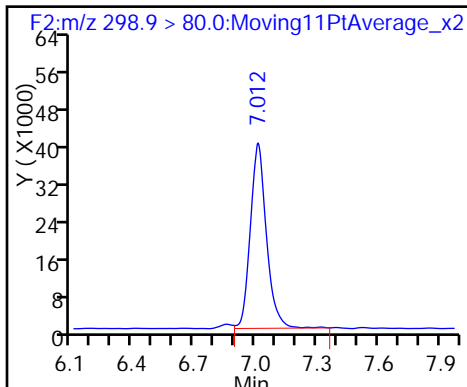
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

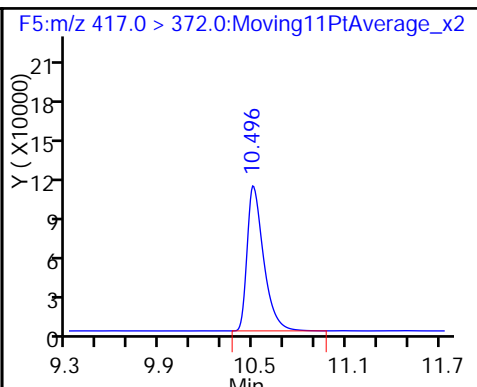
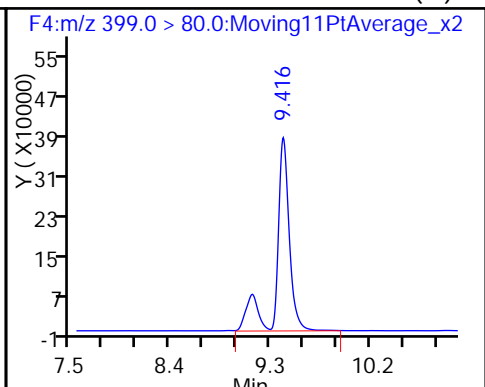
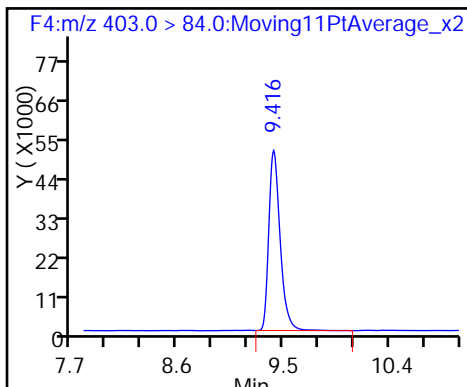
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

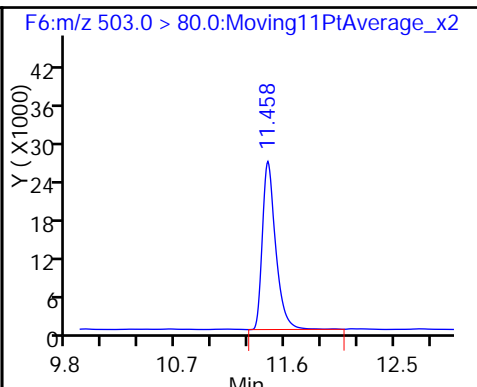
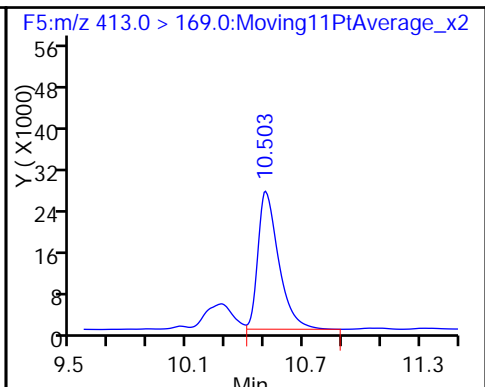
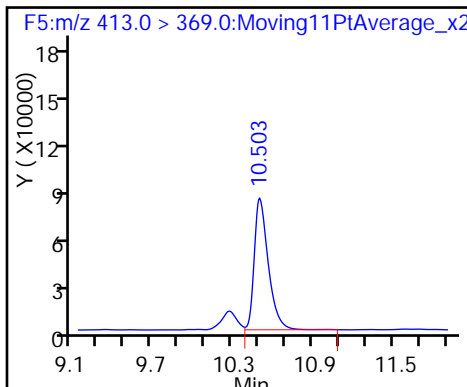
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

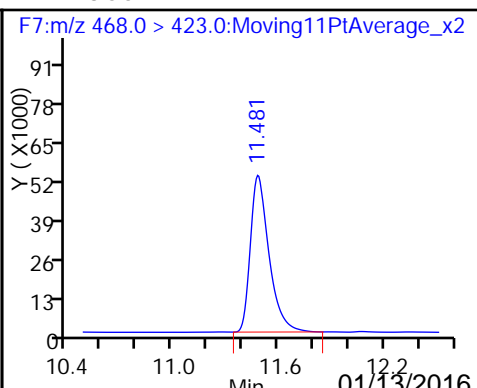
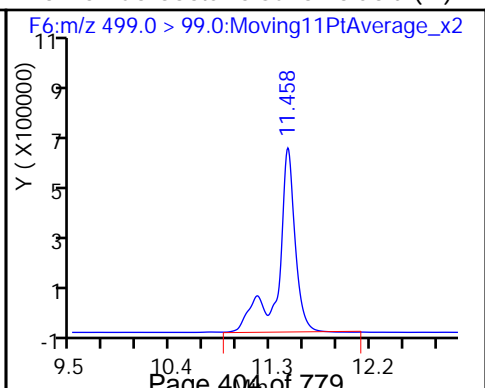
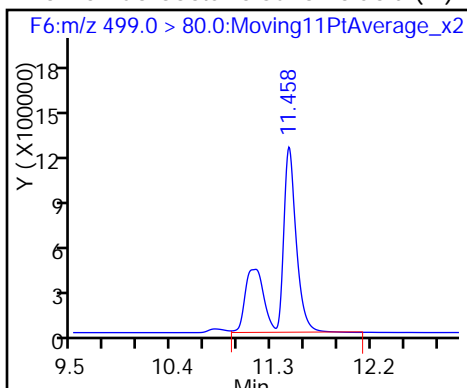
D 16 13C4 PFOS



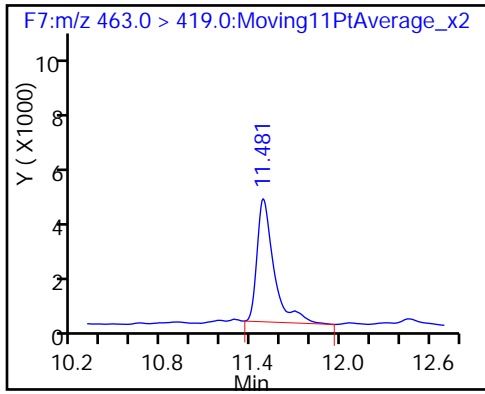
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



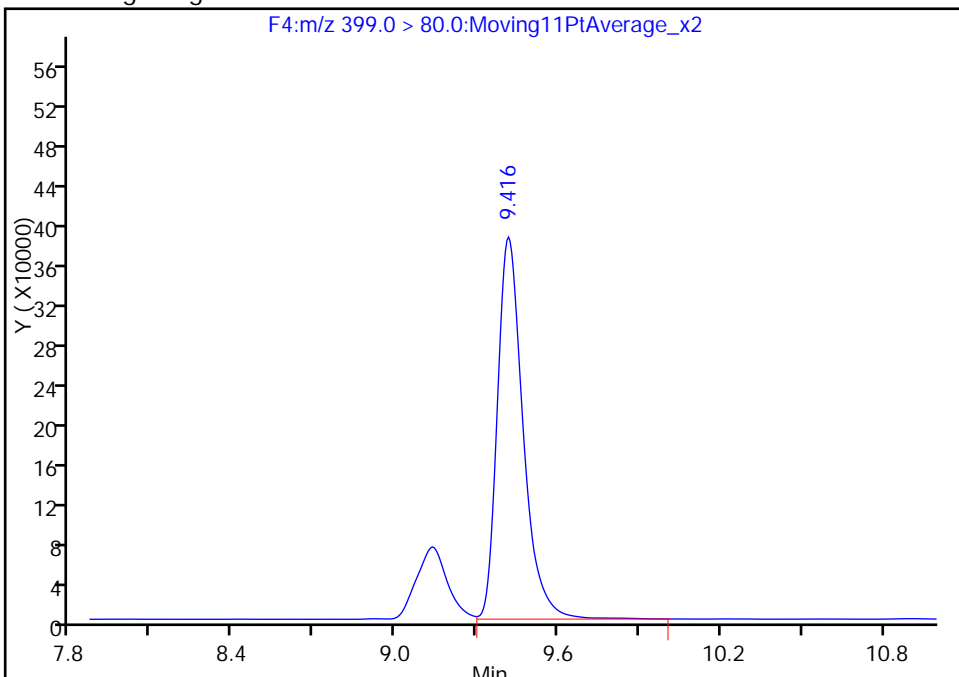
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_020.d
Injection Date: 05-Jan-2016 17:21:29 Instrument ID: A6
Lims ID: 320-16615-A-3-A Lab Sample ID: 320-16615-3
Client ID: OF14-MW12S-1215
Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

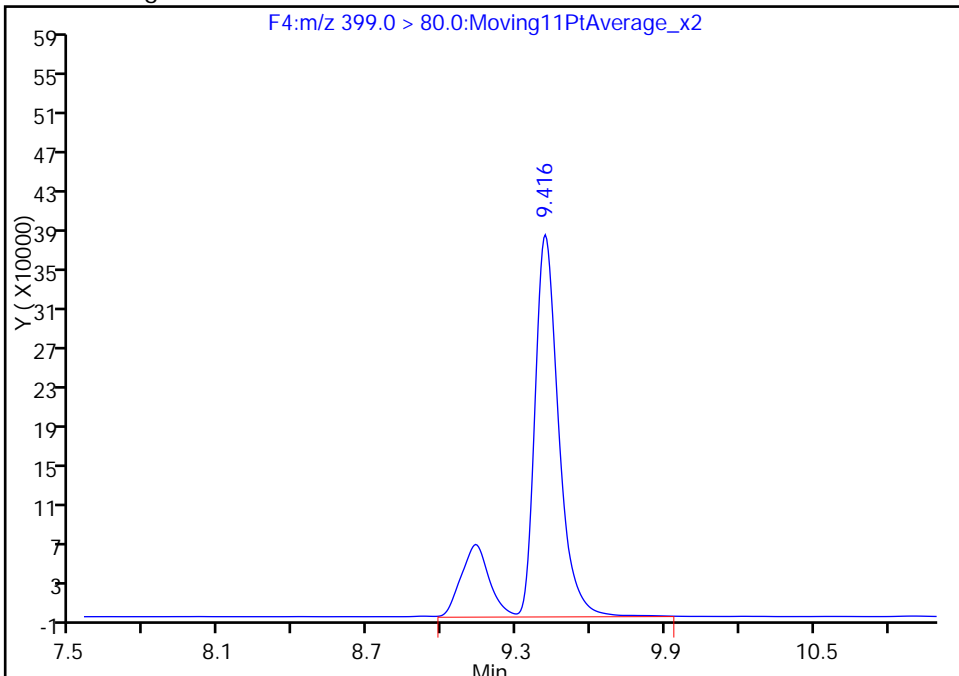
RT: 9.42
Area: 2550722
Amount: 494.6643
Amount Units: ng/ml

Processing Integration Results



RT: 9.42
Area: 3143763
Amount: 609.6734
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:03:54
Audit Action: Manually Integrated
Audit Reason: Isomers

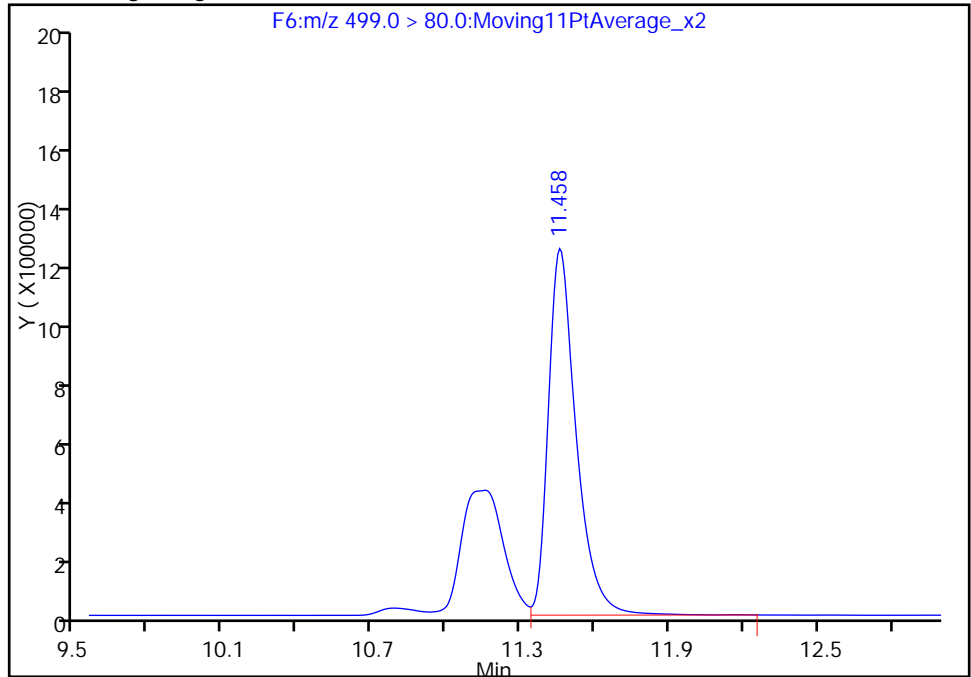
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_020.d
Injection Date: 05-Jan-2016 17:21:29 Instrument ID: A6
Lims ID: 320-16615-A-3-A Lab Sample ID: 320-16615-3
Client ID: OF14-MW12S-1215
Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

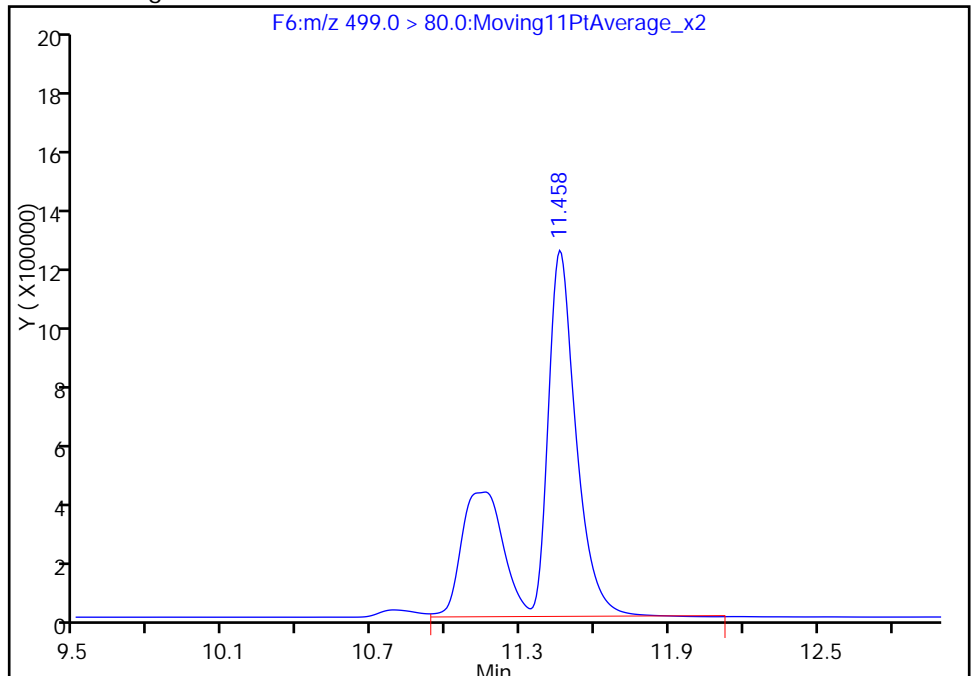
RT: 11.46
Area: 9831872
Amount: 2264.4826
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 14716263
Amount: 3389.4585
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:03:54
Audit Action: Manually Integrated
Audit Reason: Isomers

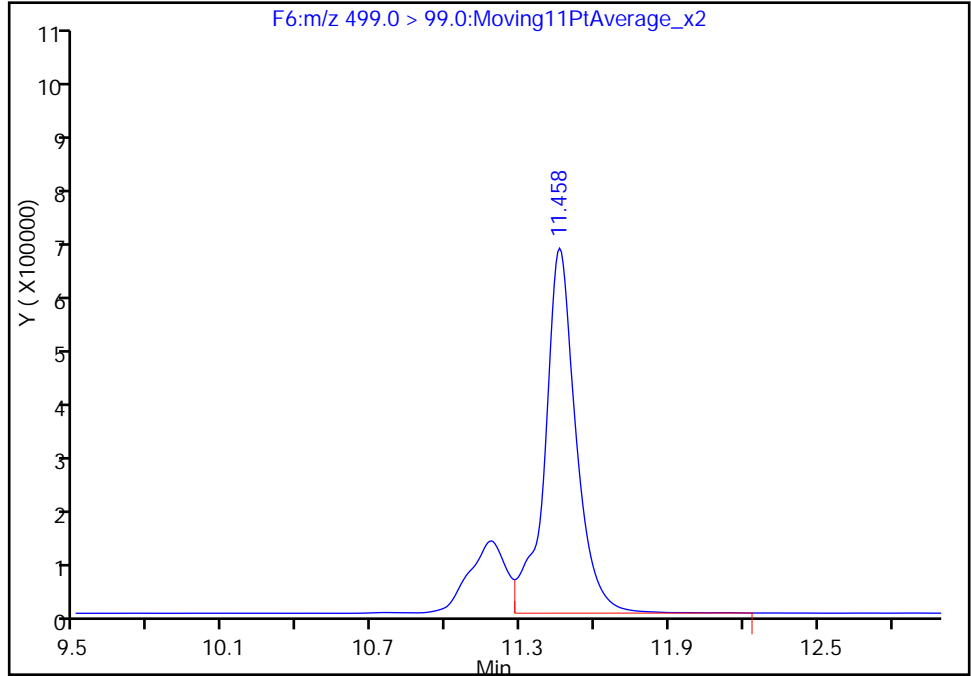
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_020.d
Injection Date: 05-Jan-2016 17:21:29 Instrument ID: A6
Lims ID: 320-16615-A-3-A Lab Sample ID: 320-16615-3
Client ID: OF14-MW12S-1215
Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

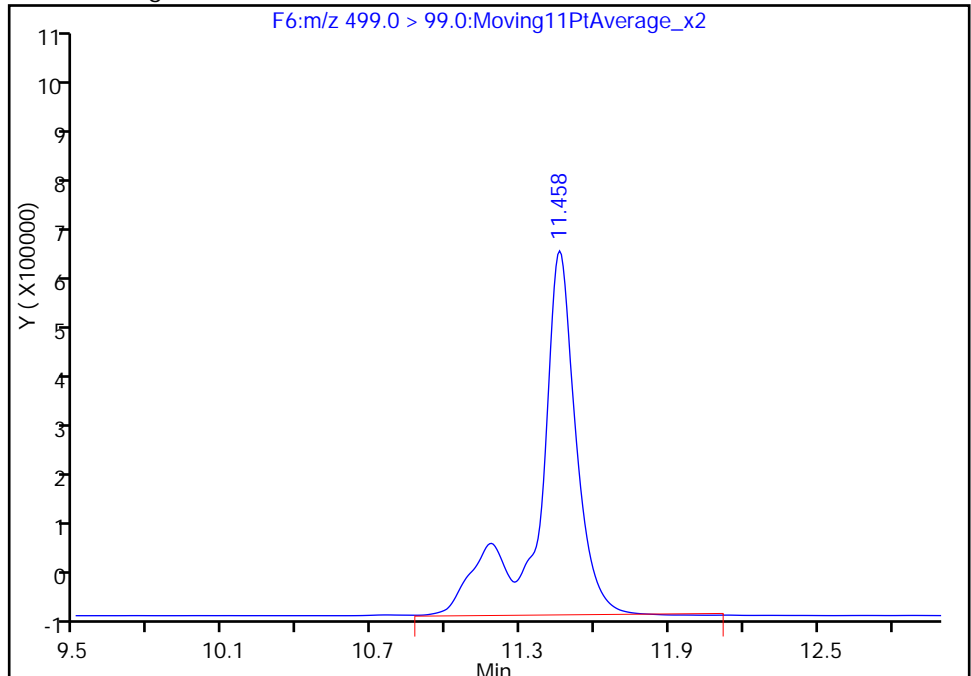
RT: 11.46
Area: 5772358
Amount: 2264.4826
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 7021988
Amount: 3389.4585
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:03:54
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW12S-1215 DL Lab Sample ID: 320-16615-3 DL
 Matrix: Water Lab File ID: 06JAN2016A6A_016.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 10:25
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 521(mL) Date Analyzed: 01/06/2016 17:46
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 10
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	<i>Perfluoroheptanoic acid (PFHpA)</i>	0.038	D	0.024	0.019	0.0077
335-67-1	<i>Perfluorooctanoic acid (PFOA)</i>	0.072	D	0.024	0.019	0.0072
375-95-1	<i>Perfluorononanoic acid (PFNA)</i>	0.011	J D	0.024	0.019	0.0063
375-73-5	<i>Perfluorobutanesulfonic acid (PFBS)</i>	0.041	D	0.024	0.019	0.0088
355-46-4	<i>Perfluorohexanesulfonic acid (PFHxS)</i>	1.2	D M	0.024	0.019	0.0083
1763-23-1	<i>Perfluorooctanesulfonic acid (PFOS)</i>	6.3	D M	0.038	0.029	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	74		25-150
STL00995	13C5 PFNA	70		25-150
STL00990	13C4 PFOA	91		25-150
STL01892	13C4-PFHpA	100		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_016.d
 Lims ID: 320-16615-A-3-A Lab Sample ID: 320-16615-3
 Client ID: OF14-MW12S-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 17:46:15 ALS Bottle#: 21 Worklist Smp#: 22
 Injection Vol: 15.0 ul Dil. Factor: 10.0000
 Sample Info: 320-16615-A-3-A 10x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:45:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.978	6.976	0.002	1.000	31890	2.13			
D 8 13C4-PFHpA	367.0 > 322.0	9.323	9.331	-0.008		171730	5.01	10.0	639	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	1.000	76544	1.99		50.7	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.352	9.363	-0.011	1.000	504613	61.8			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.358	9.363	-0.005		66526	4.58	9.7	210	
D 12 13C4 PFOA	417.0 > 372.0	10.434	10.452	-0.018		176423	4.56	9.1	496	
13 Perfluorooctanoic acid	413.0 > 369.0	10.441	10.453	-0.012	1.000	142623	3.77		66.8	
	413.0 > 169.0	10.448	10.453	-0.005	1.001	43408	3.29(0.00-0.00)		53.5	
D 16 13C4 PFOS	503.0 > 80.0	11.386	11.405	-0.019		65871	3.52	7.4	237	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	4380161	327.9		1271	M
	499.0 > 99.0	11.386	11.408	-0.022	0.999	2177593	2.01(0.00-0.00)		2157	M
D 17 13C5 PFNA	468.0 > 423.0	11.416	11.427	-0.011		111685	3.48	7.0	332	
18 Perfluorononanoic acid	463.0 > 419.0	11.416	11.431	-0.015	1.000	10638	0.5584		19.0	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_016.d

Injection Date: 06-Jan-2016 17:46:15

Instrument ID: A6

Lims ID: 320-16615-A-3-A

Lab Sample ID: 320-16615-3

Client ID: OF14-MW12S-1215

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 22

Injection Vol: 15.0 ul

Dil. Factor: 10.0000

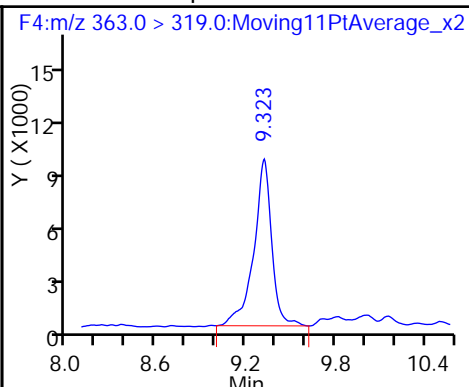
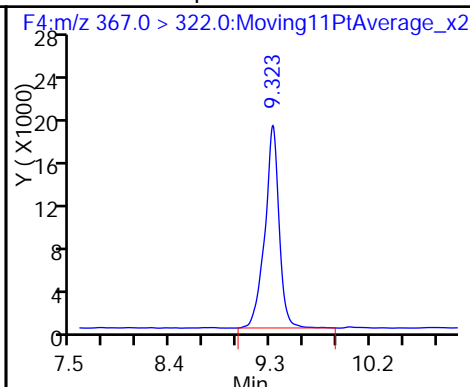
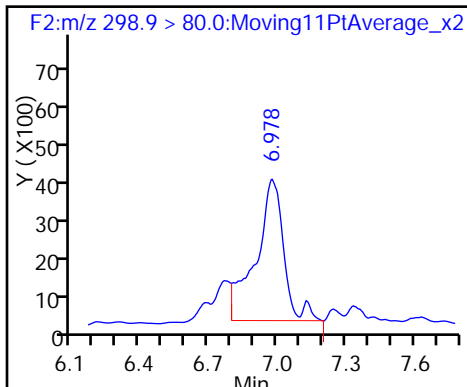
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

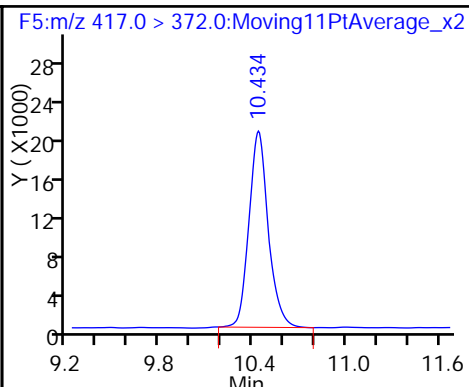
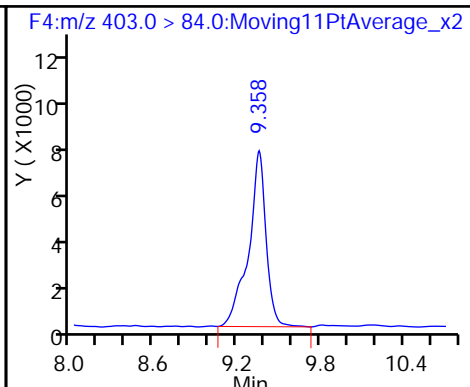
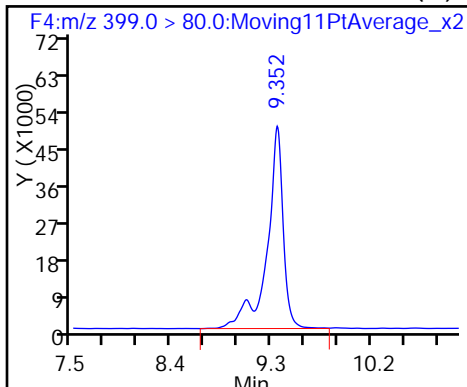
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

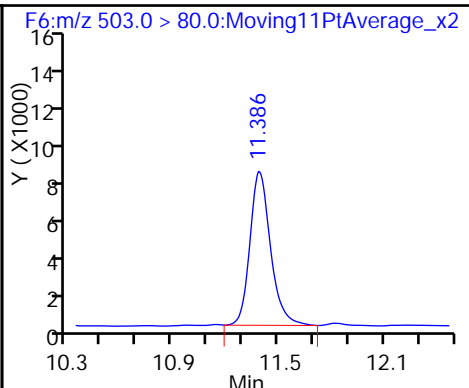
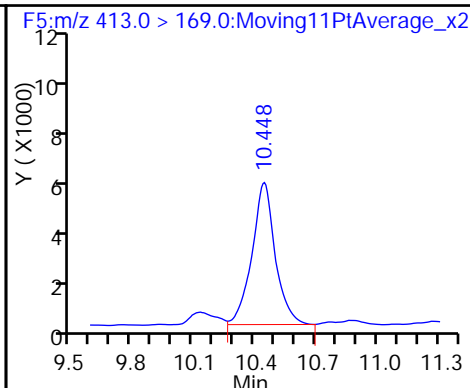
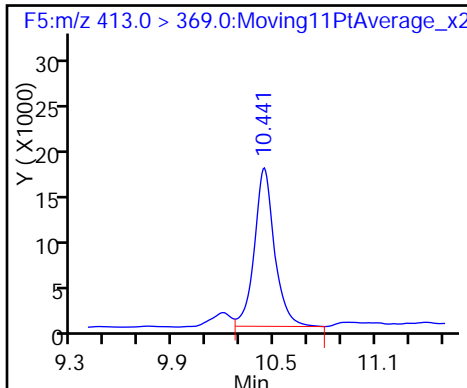
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

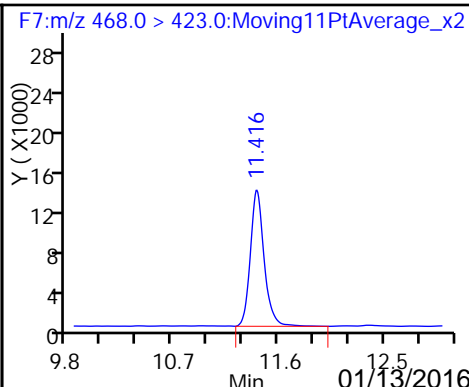
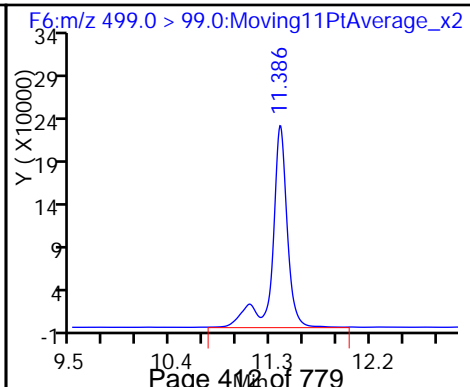
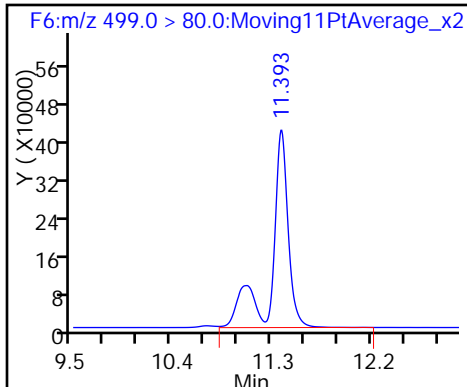
D 16 13C4 PFOS



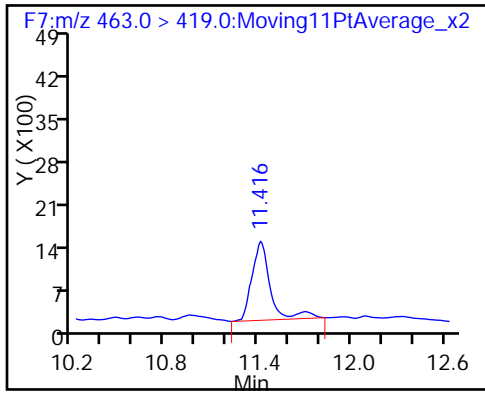
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



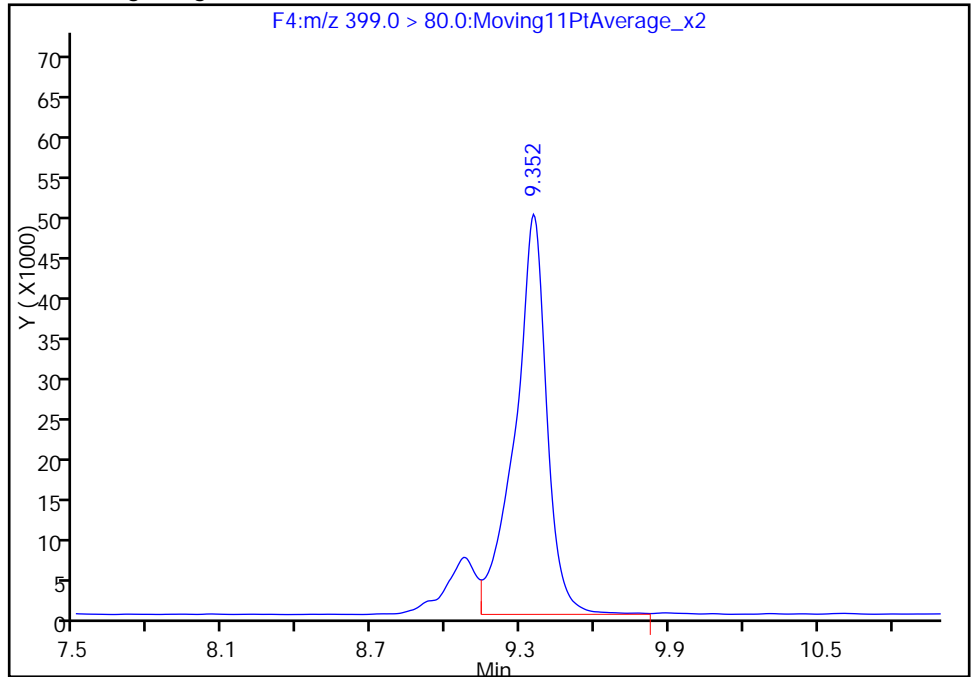
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_016.d
Injection Date: 06-Jan-2016 17:46:15 Instrument ID: A6
Lims ID: 320-16615-A-3-A Lab Sample ID: 320-16615-3
Client ID: OF14-MW12S-1215
Operator ID: JRB ALS Bottle#: 21 Worklist Smp#: 22
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

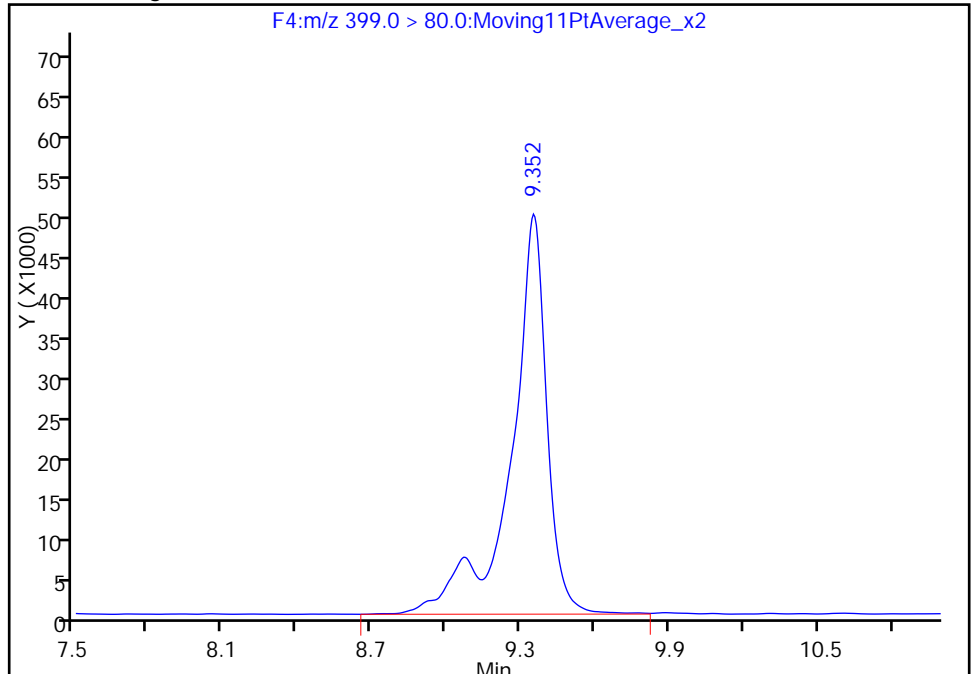
RT: 9.35
Area: 442722
Amount: 54.186856
Amount Units: ng/ml

Processing Integration Results



RT: 9.35
Area: 504613
Amount: 61.761991
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:45:38
Audit Action: Manually Integrated
Audit Reason: Isomers

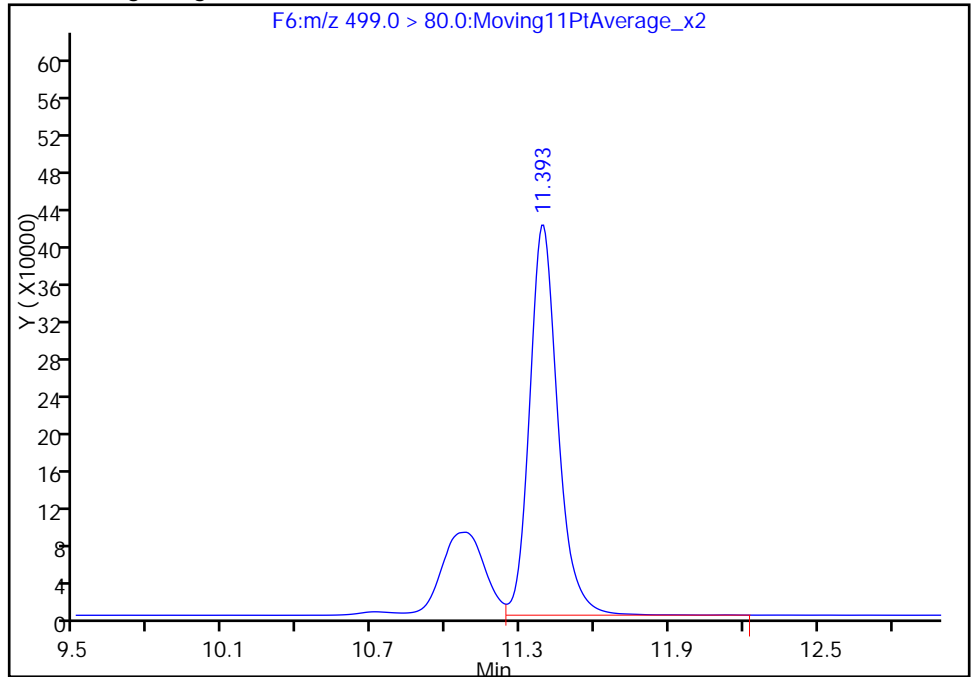
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_016.d
Injection Date: 06-Jan-2016 17:46:15 Instrument ID: A6
Lims ID: 320-16615-A-3-A Lab Sample ID: 320-16615-3
Client ID: OF14-MW12S-1215
Operator ID: JRB ALS Bottle#: 21 Worklist Smp#: 22
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

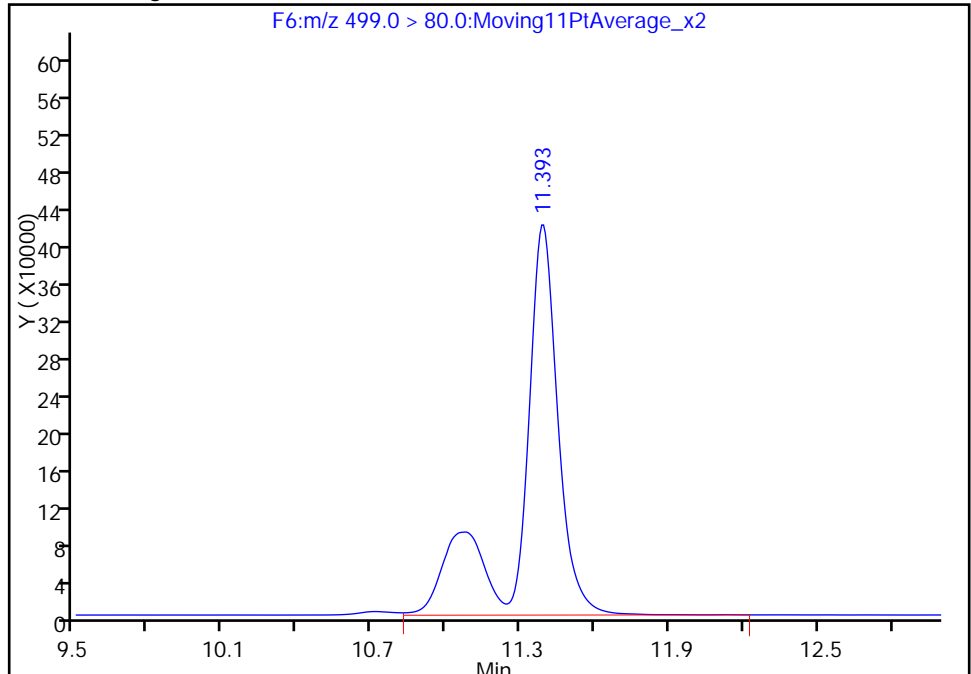
RT: 11.39
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Amount: 247.8131
Amount Units: ng/ml

Processing Integration Results



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Amount: 327.9256
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:45:38
Audit Action: Manually Integrated
Audit Reason: Isomers

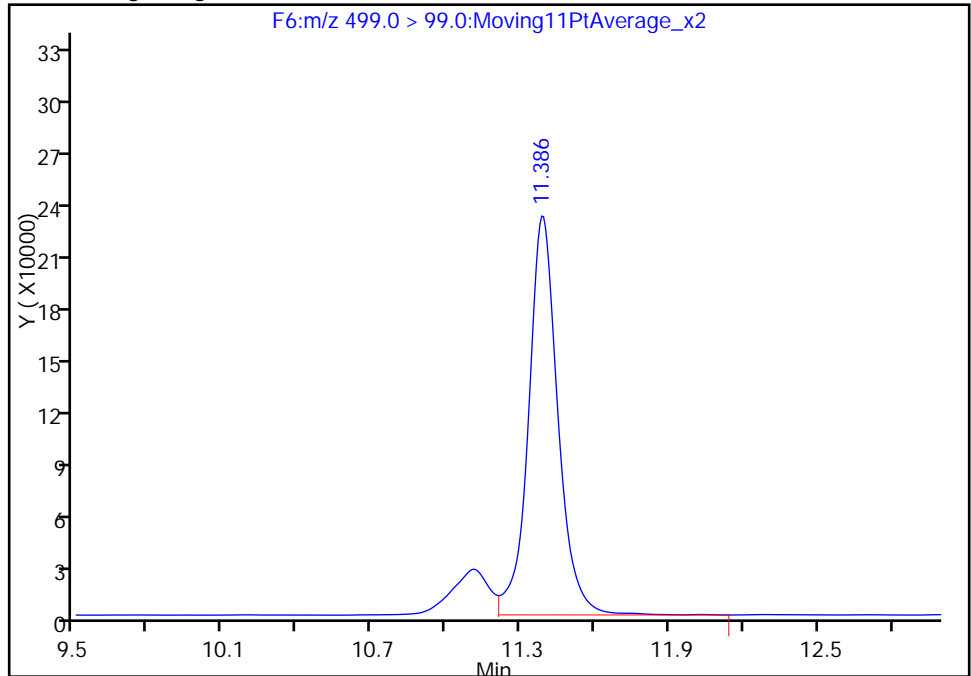
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_016.d
Injection Date: 06-Jan-2016 17:46:15 Instrument ID: A6
Lims ID: 320-16615-A-3-A Lab Sample ID: 320-16615-3
Client ID: OF14-MW12S-1215
Operator ID: JRB ALS Bottle#: 21 Worklist Smp#: 22
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

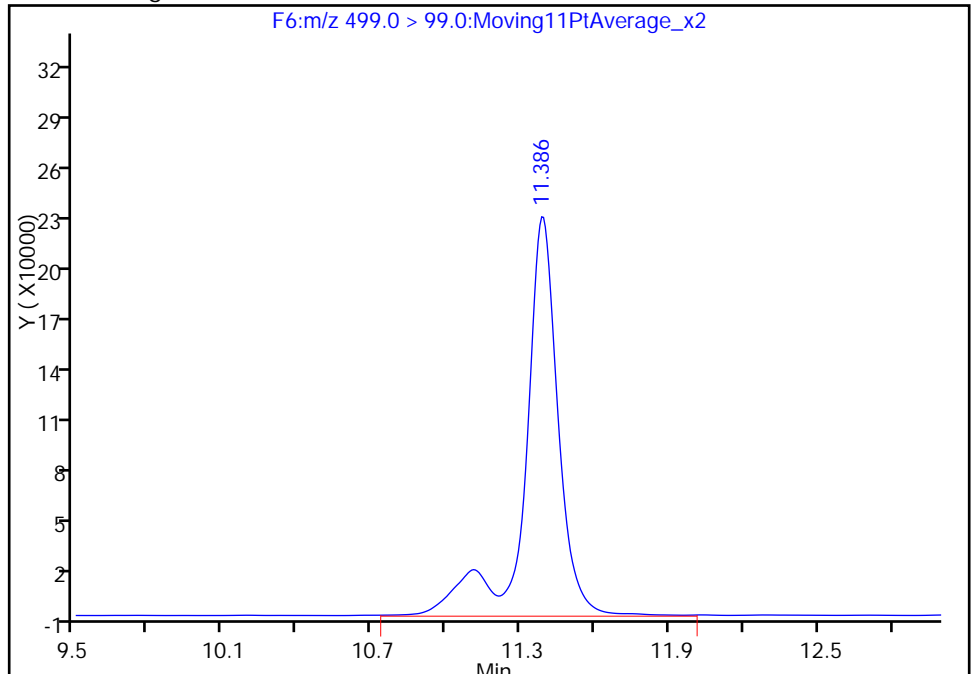
RT: 11.39
Area: 1871744
Amount: 247.8131
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 2177593
Amount: 327.9256
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:45:38
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW11S-1215 Lab Sample ID: 320-16615-4
 Matrix: Water Lab File ID: 05JAN2016A6A_021.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 12:00
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 543.9(mL) Date Analyzed: 01/05/2016 17:42
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.31		0.0023	0.0018	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	0.32		0.0023	0.0018	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.023		0.0023	0.0018	0.00060
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.1	J	0.0023	0.0018	0.00084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.9	J M	0.0023	0.0018	0.00080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.6	J M	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	47		25-150
STL00991	13C4 PFOS	65		25-150
STL00995	13C5 PFNA	64		25-150
STL00990	13C4 PFOA	77		25-150
STL01892	13C4-PFHpA	52		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_021.d
 Lims ID: 320-16615-A-4-A Lab Sample ID: 320-16615-4
 Client ID: OF14-MW11S-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 17:42:44 ALS Bottle#: 6 Worklist Smp#: 18
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16615-A-4-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 09:24:24 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:07:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										E
298.9 > 80.0	7.005	7.039	-0.034	1.000	2814658	598.4				E
D 8 13C4-PFHpA										
367.0 > 322.0	9.375	9.413	-0.038		560351	26.2		52.5	514	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.375	9.413	-0.038	1.000	1933508	169.7			190	
D 11 18O2 PFHxS										
403.0 > 84.0	9.411	9.444	-0.033		231159	22.3		47.2	495	
41 Perfluorohexanesulfonic acid										EM
399.0 > 80.0	9.411	9.449	-0.038	1.000	11110799	3207.8				EM
D 12 13C4 PFOA										
417.0 > 372.0	10.496	10.524	-0.028		838829	38.4		76.8	1339	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.496	10.528	-0.032	1.000	2842027	175.0			71.3	
413.0 > 169.0	10.496	10.528	-0.032	1.000	1033556		2.75(0.00-0.00)		49.1	
D 16 13C4 PFOS										
503.0 > 80.0	11.451	11.478	-0.027		344896	30.9		64.7	575	
15 Perfluorooctane sulfonic acid										EM
499.0 > 80.0	11.458	11.480	-0.022	1.000	14370709	1957.6			165	EM
499.0 > 99.0	11.458	11.480	-0.022	1.000	6637936		2.16(0.00-0.00)		1610	M
D 17 13C5 PFNA										
468.0 > 423.0	11.481	11.501	-0.020		636825	32.0		64.0	1264	
18 Perfluorononanoic acid										
463.0 > 419.0	11.481	11.502	-0.021	1.000	122984	12.3			127	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_021.d

Injection Date: 05-Jan-2016 17:42:44

Instrument ID: A6

Lims ID: 320-16615-A-4-A

Lab Sample ID: 320-16615-4

Client ID: OF14-MW11S-1215

Operator ID: JRB

ALS Bottle#: 6

Worklist Smp#: 18

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

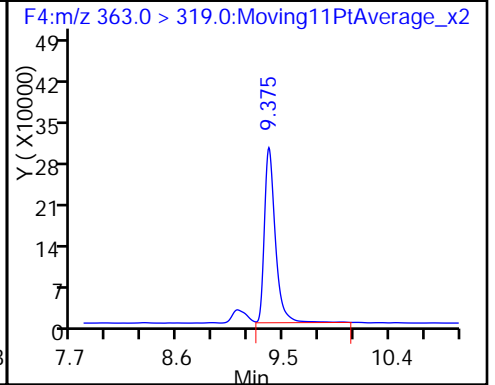
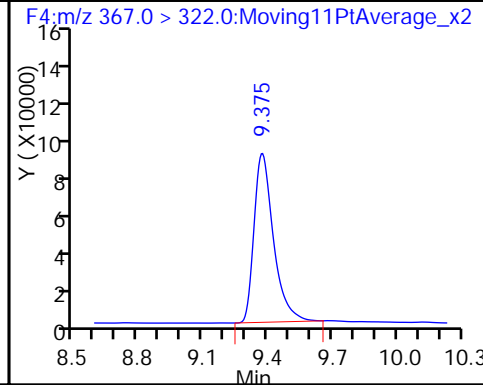
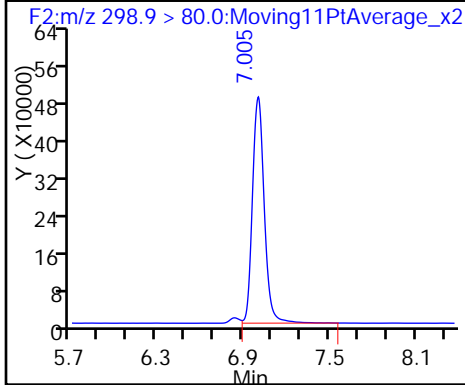
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

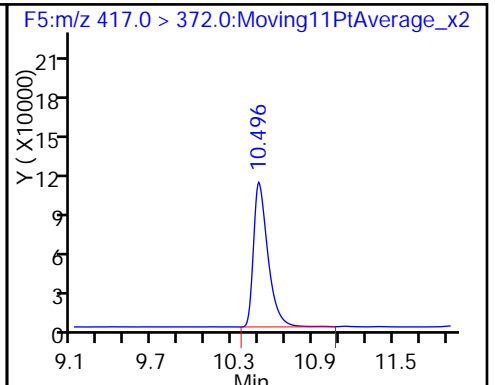
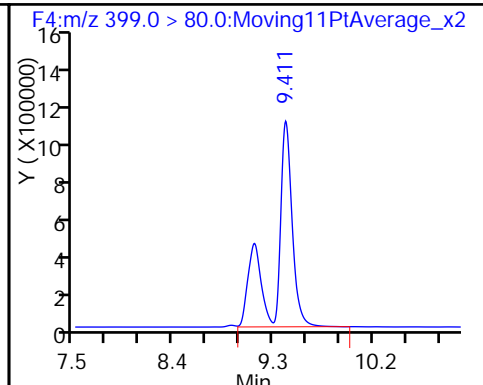
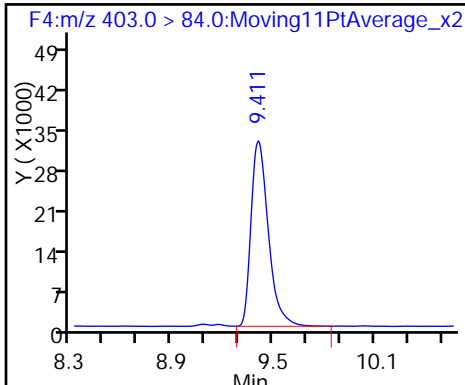
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

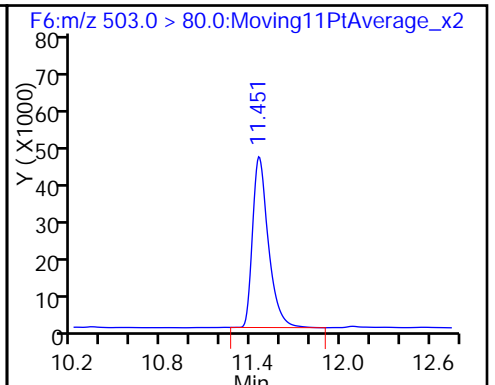
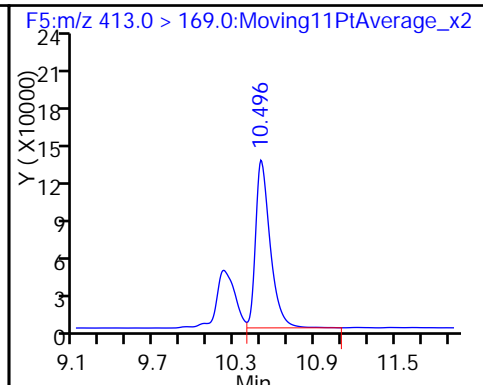
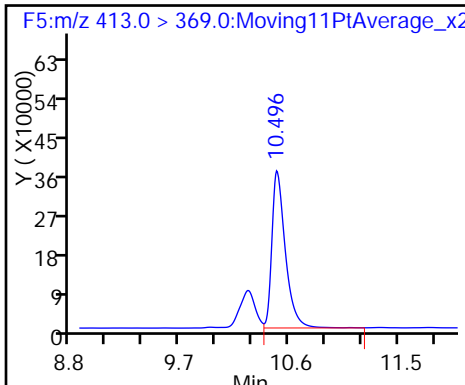
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

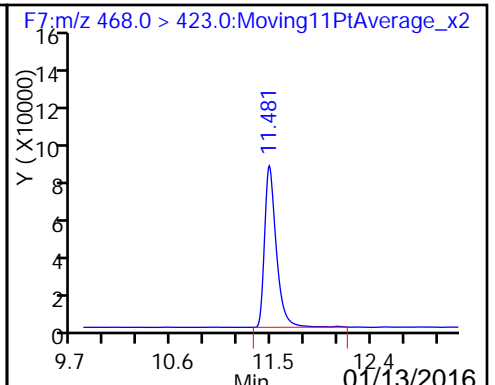
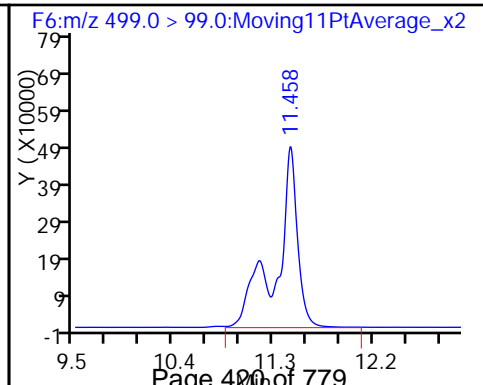
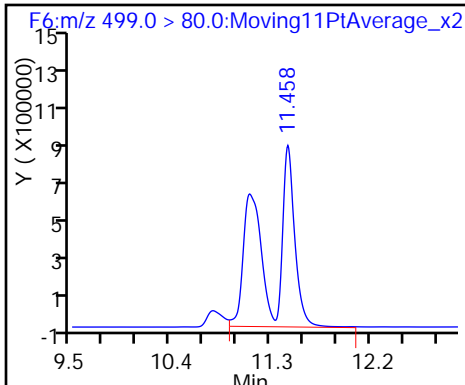
D 16 13C4 PFOS



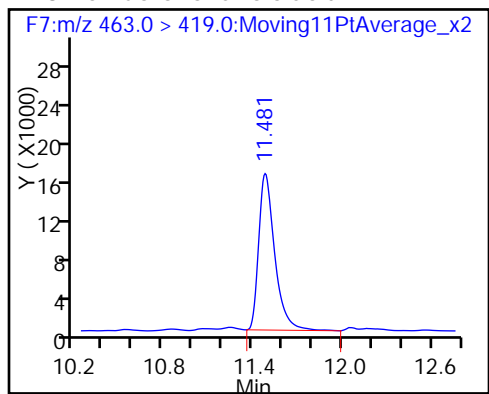
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



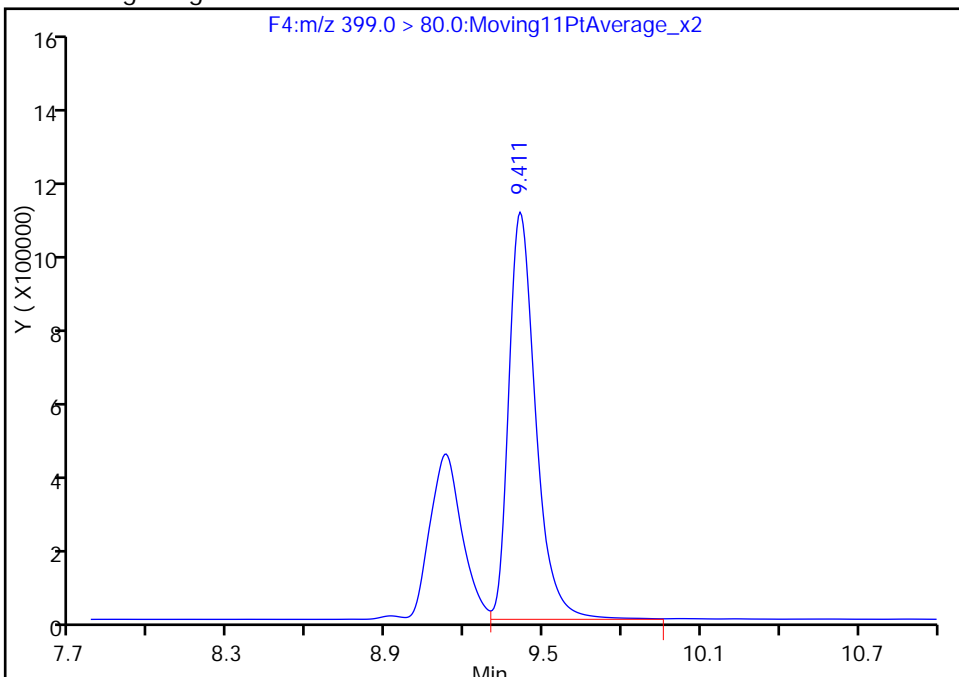
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_021.d
Injection Date: 05-Jan-2016 17:42:44 Instrument ID: A6
Lims ID: 320-16615-A-4-A Lab Sample ID: 320-16615-4
Client ID: OF14-MW11S-1215
Operator ID: JRB ALS Bottle#: 6 Worklist Smp#: 18
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

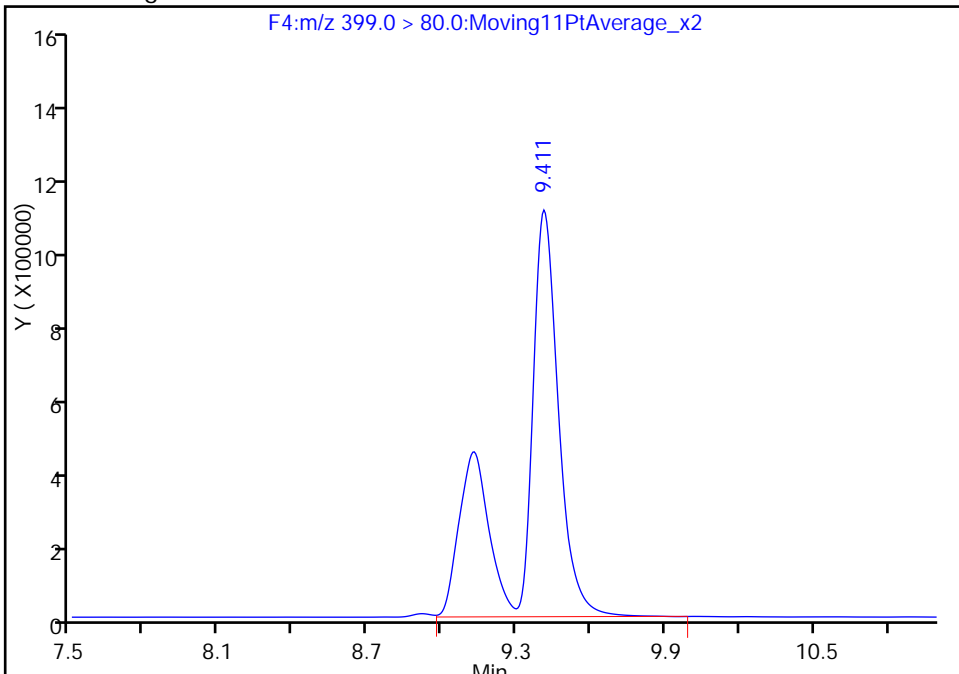
RT: 9.41
Area: 7552770
Amount: 2180.5468
Amount Units: ng/ml

Processing Integration Results



RT: 9.41
Area: 11110799
Amount: 3207.7790
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:07:08
Audit Action: Manually Integrated
Audit Reason: Isomers

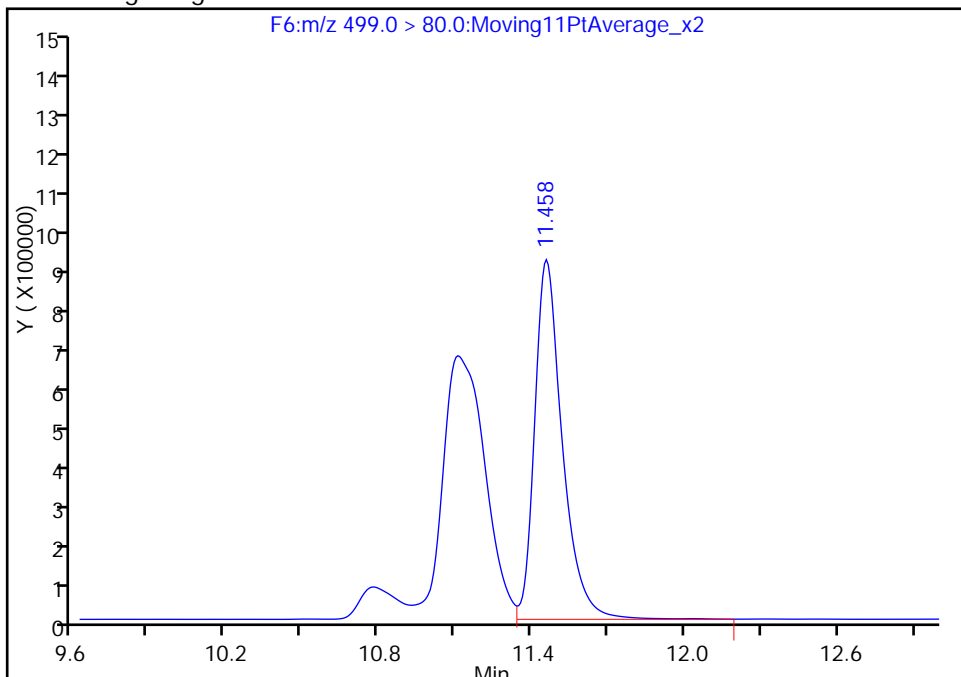
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_021.d
Injection Date: 05-Jan-2016 17:42:44 Instrument ID: A6
Lims ID: 320-16615-A-4-A Lab Sample ID: 320-16615-4
Client ID: OF14-MW11S-1215
Operator ID: JRB ALS Bottle#: 6 Worklist Smp#: 18
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

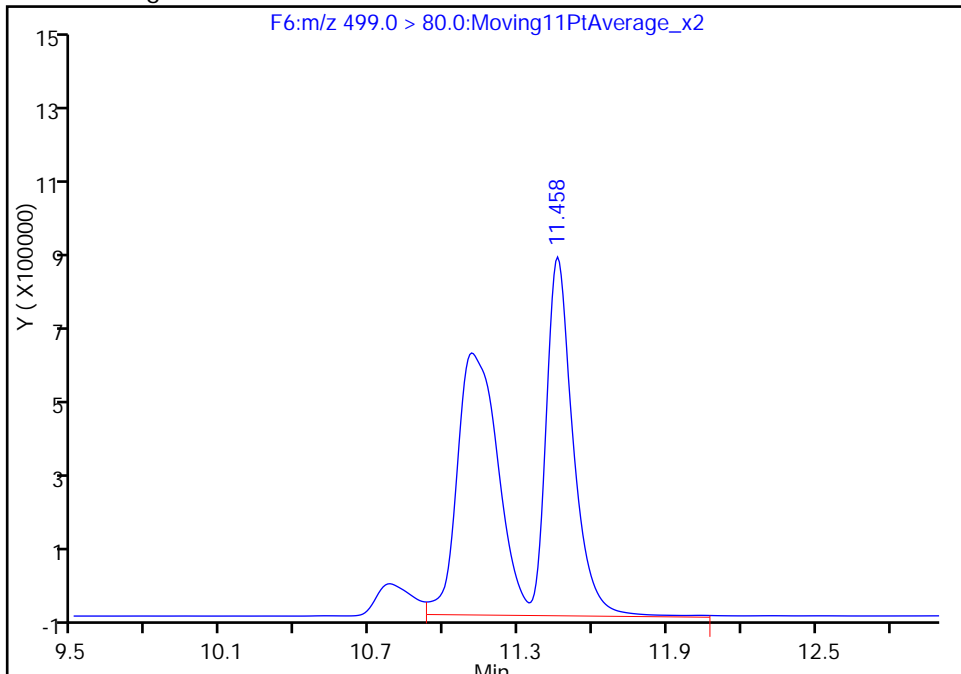
RT: 11.46
Area: 6823020
Amount: 929.4406
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 14370709
Amount: 1957.5965
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:07:08
Audit Action: Manually Integrated
Audit Reason: Isomers

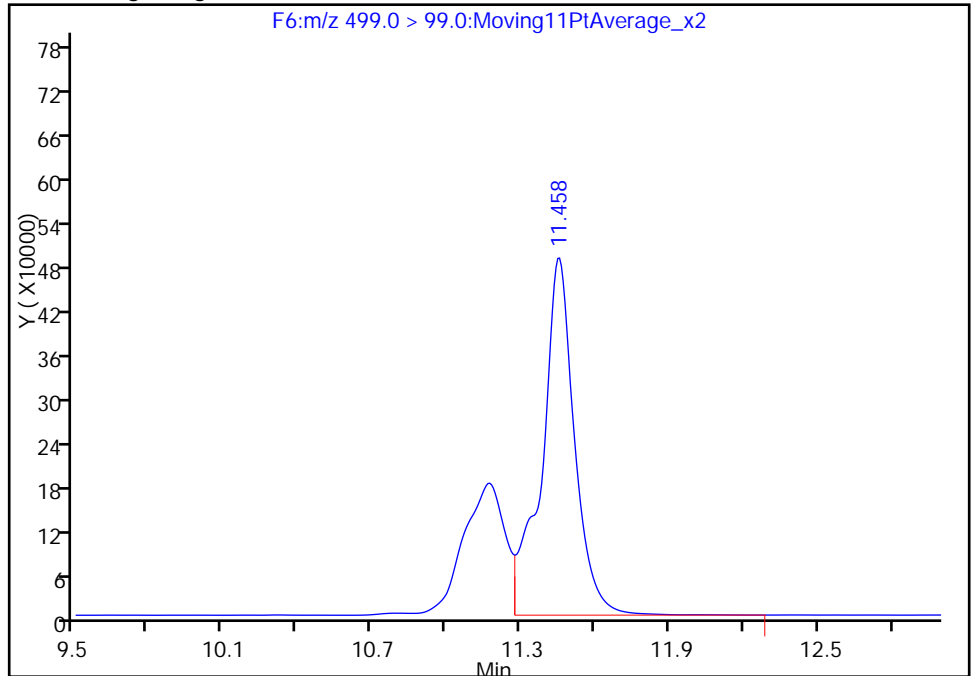
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_021.d
Injection Date: 05-Jan-2016 17:42:44 Instrument ID: A6
Lims ID: 320-16615-A-4-A Lab Sample ID: 320-16615-4
Client ID: OF14-MW11S-1215
Operator ID: JRB ALS Bottle#: 6 Worklist Smp#: 18
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

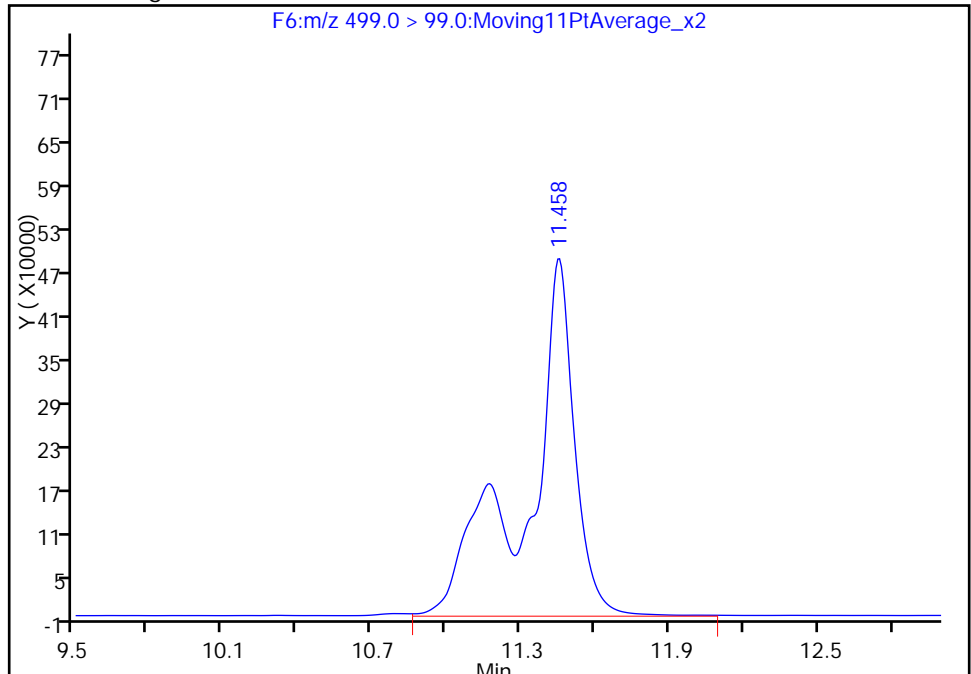
RT: 11.46
Area: 4482556
Amount: 929.4406
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 6637936
Amount: 1957.5965
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:07:08
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW11S-1215 DL Lab Sample ID: 320-16615-4 DL
 Matrix: Water Lab File ID: 06JAN2016A6A_017.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 12:00
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 543.9(mL) Date Analyzed: 01/06/2016 18:17
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 10
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.28	D	0.023	0.018	0.0074
335-67-1	Perfluorooctanoic acid (PFOA)	0.28	D	0.023	0.018	0.0069
375-95-1	Perfluorononanoic acid (PFNA)	0.018	J D	0.023	0.018	0.0060
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.75	D	0.023	0.018	0.0084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.8	D M	0.023	0.018	0.0080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	D M	0.037	0.028	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	102		25-150
STL00991	13C4 PFOS	106		25-150
STL00995	13C5 PFNA	97		25-150
STL00990	13C4 PFOA	104		25-150
STL01892	13C4-PFHpA	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_017.d
 Lims ID: 320-16615-A-4-A Lab Sample ID: 320-16615-4
 Client ID: OF14-MW11S-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 18:17:29 ALS Bottle#: 22 Worklist Smp#: 23
 Injection Vol: 15.0 ul Dil. Factor: 10.0000
 Sample Info: 320-16615-A-4-A 10x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:47:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.978	6.976	0.002	1.000	646382	40.9			
D 8 13C4-PFHpA	367.0 > 322.0	9.323	9.331	-0.008		167213	4.88	9.8	281	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.317	9.335	-0.018	1.000	517916	15.4		155	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.352	9.363	-0.011	1.000	2260168	262.6			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.352	9.363	-0.011		70094	4.82	10.2	204	
D 12 13C4 PFOA	417.0 > 372.0	10.441	10.452	-0.011		200696	5.19	10.4	853	
13 Perfluorooctanoic acid	413.0 > 369.0	10.434	10.453	-0.019	1.000	654707	15.2		85.0	
	413.0 > 169.0	10.434	10.453	-0.019	1.000	255158	2.57(0.00-0.00)		66.6	
D 16 13C4 PFOS	503.0 > 80.0	11.393	11.405	-0.012		94693	5.06	10.6	243	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	3108289	161.9		278	M
	499.0 > 99.0	11.386	11.408	-0.022	0.999	1444631	2.15(0.00-0.00)		1541	M
D 17 13C5 PFNA	468.0 > 423.0	11.409	11.427	-0.018		154880	4.83	9.7	277	
18 Perfluorononanoic acid	463.0 > 419.0	11.409	11.431	-0.022	1.000	26402	1.00		30.1	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_017.d

Injection Date: 06-Jan-2016 18:17:29

Instrument ID: A6

Lims ID: 320-16615-A-4-A

Lab Sample ID: 320-16615-4

Client ID: OF14-MW11S-1215

Operator ID: JRB

ALS Bottle#: 22

Worklist Smp#: 23

Injection Vol: 15.0 ul

Dil. Factor: 10.0000

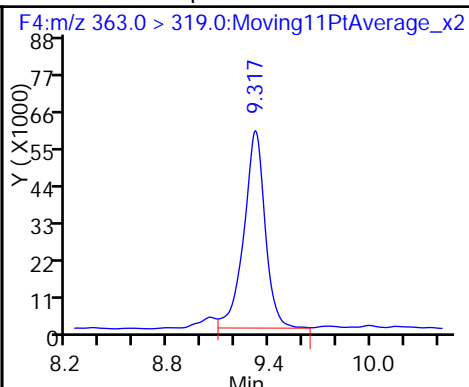
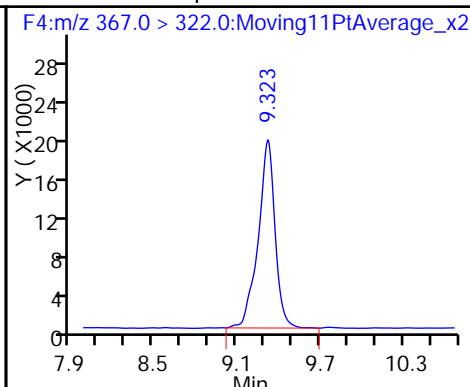
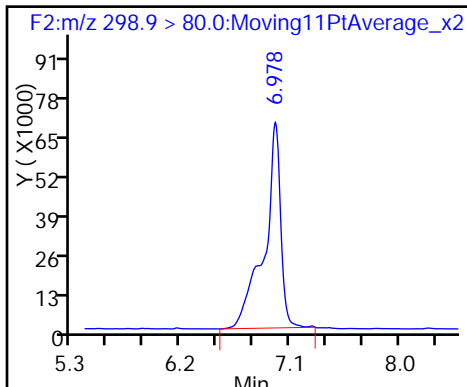
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

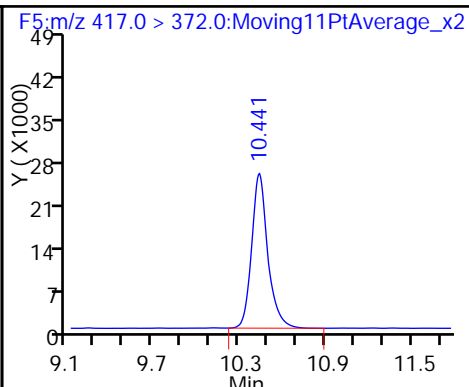
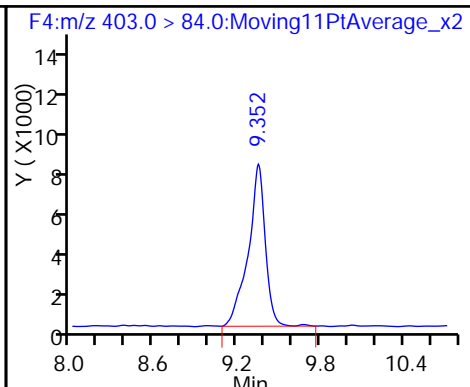
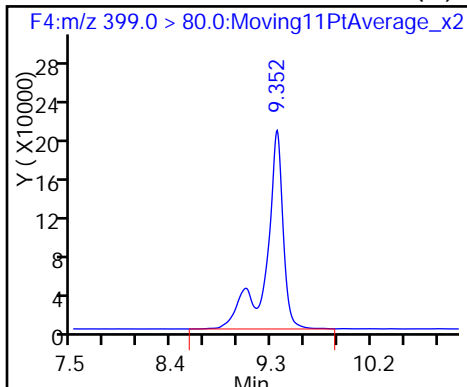
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

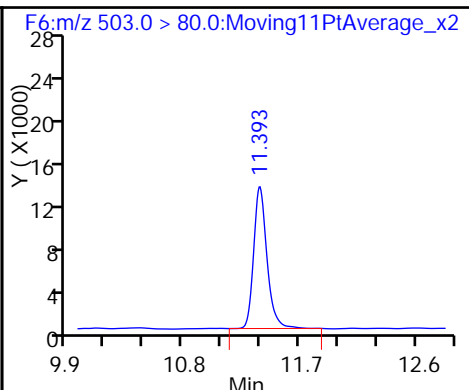
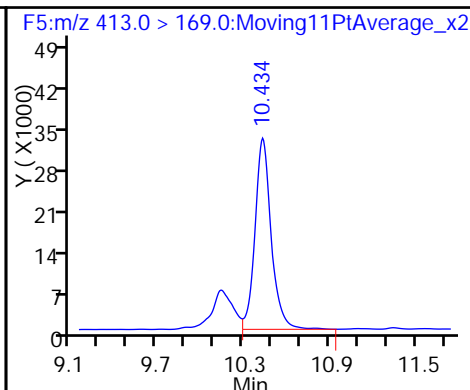
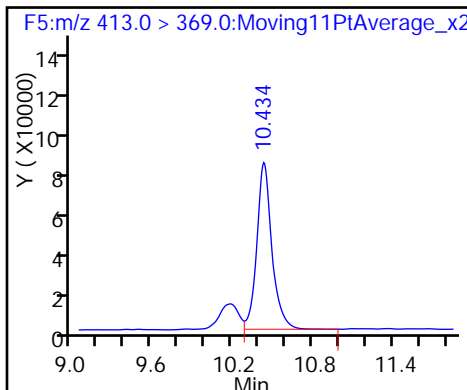
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

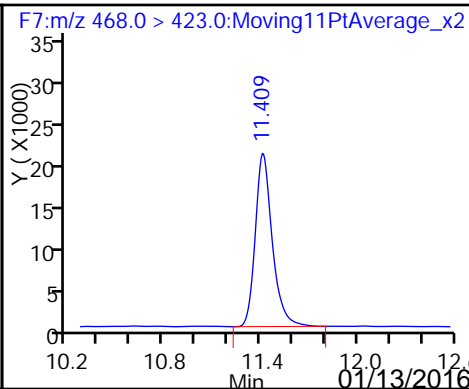
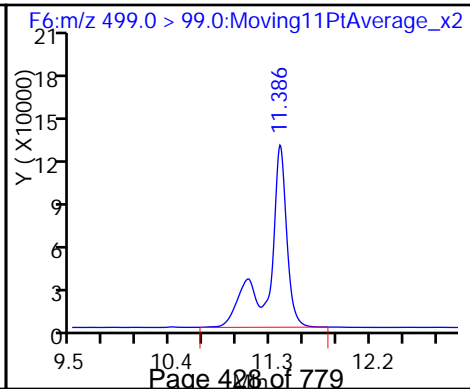
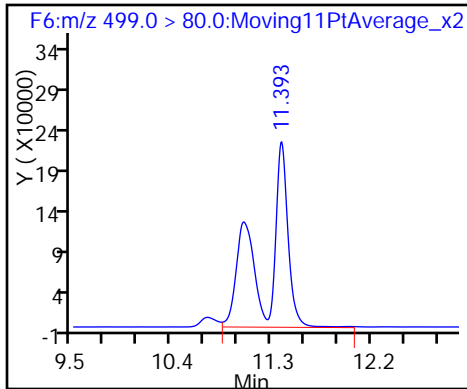
D 16 13C4 PFOS



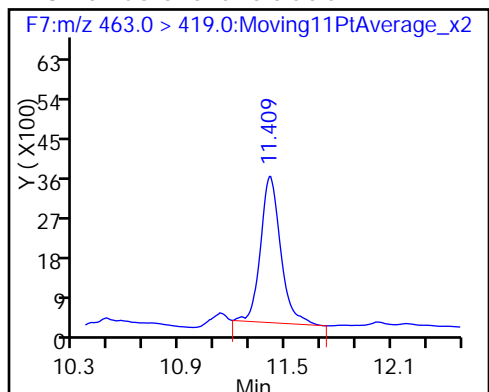
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



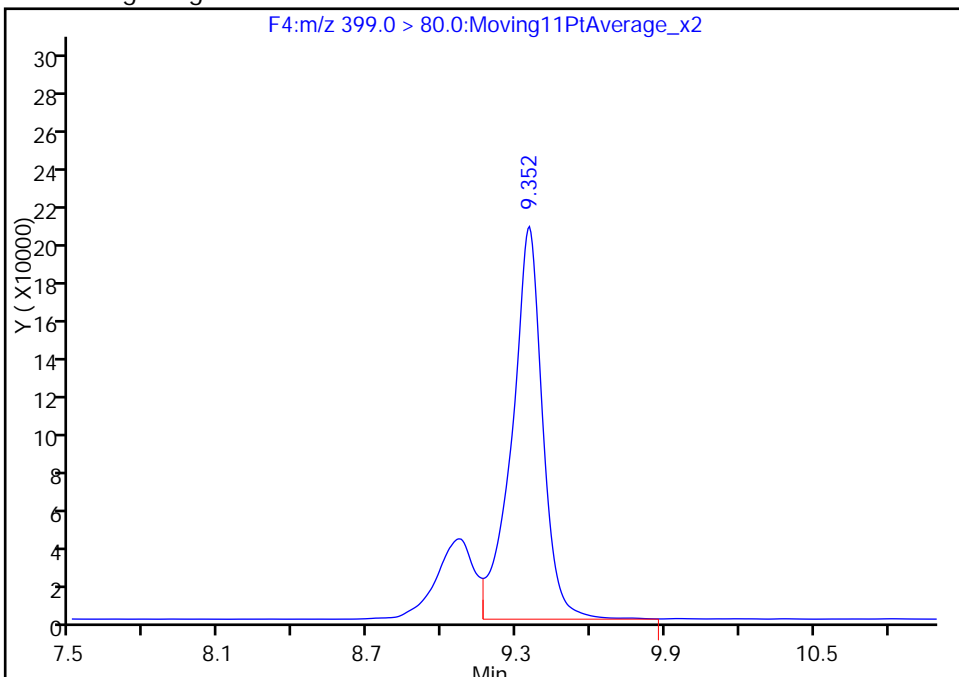
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_017.d
Injection Date: 06-Jan-2016 18:17:29 Instrument ID: A6
Lims ID: 320-16615-A-4-A Lab Sample ID: 320-16615-4
Client ID: OF14-MW11S-1215
Operator ID: JRB ALS Bottle#: 22 Worklist Smp#: 23
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

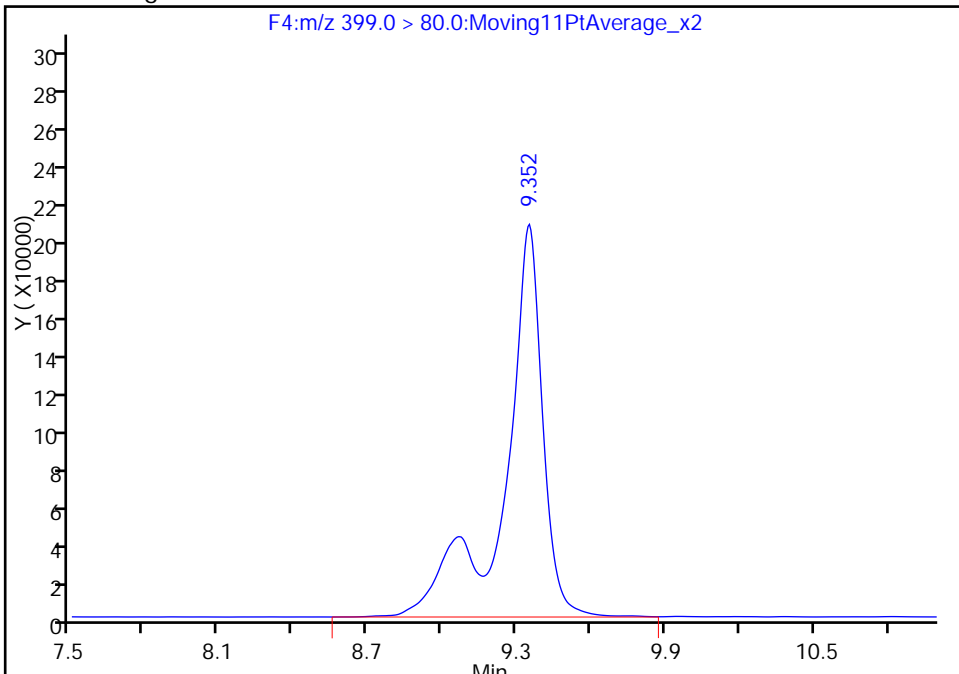
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Amount Units: ng/ml

Processing Integration Results



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Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:47:02
Audit Action: Manually Integrated
Audit Reason: Isomers

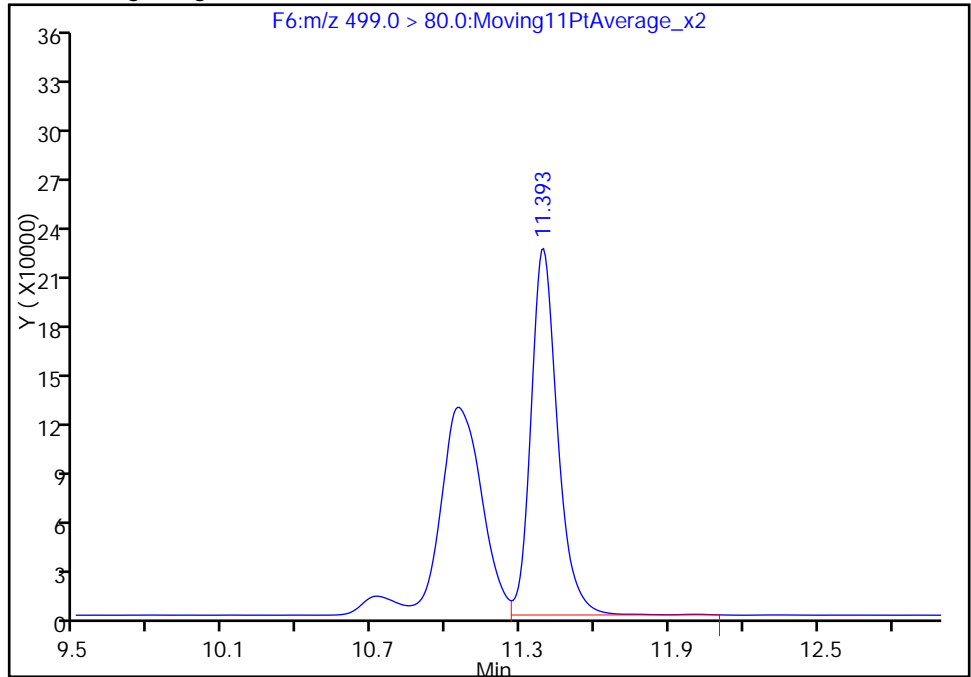
TestAmerica Sacramento

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Injection Date: 06-Jan-2016 18:17:29 Instrument ID: A6
Lims ID: 320-16615-A-4-A Lab Sample ID: 320-16615-4
Client ID: OF14-MW11S-1215
Operator ID: JRB ALS Bottle#: 22 Worklist Smp#: 23
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

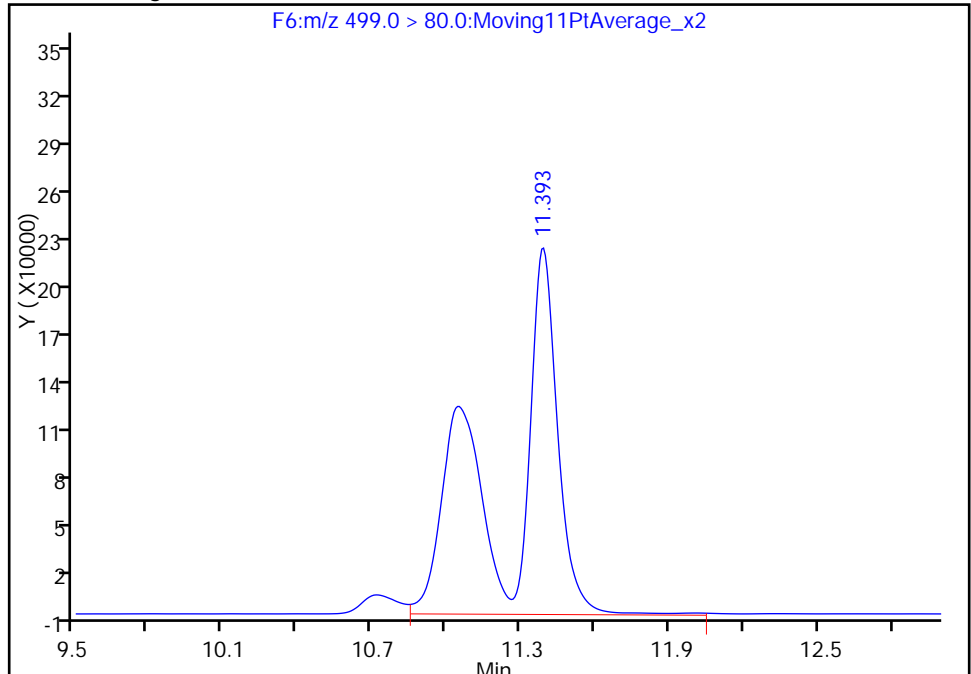
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Amount Units: ng/ml

Processing Integration Results



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Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:47:02
Audit Action: Manually Integrated
Audit Reason: Isomers

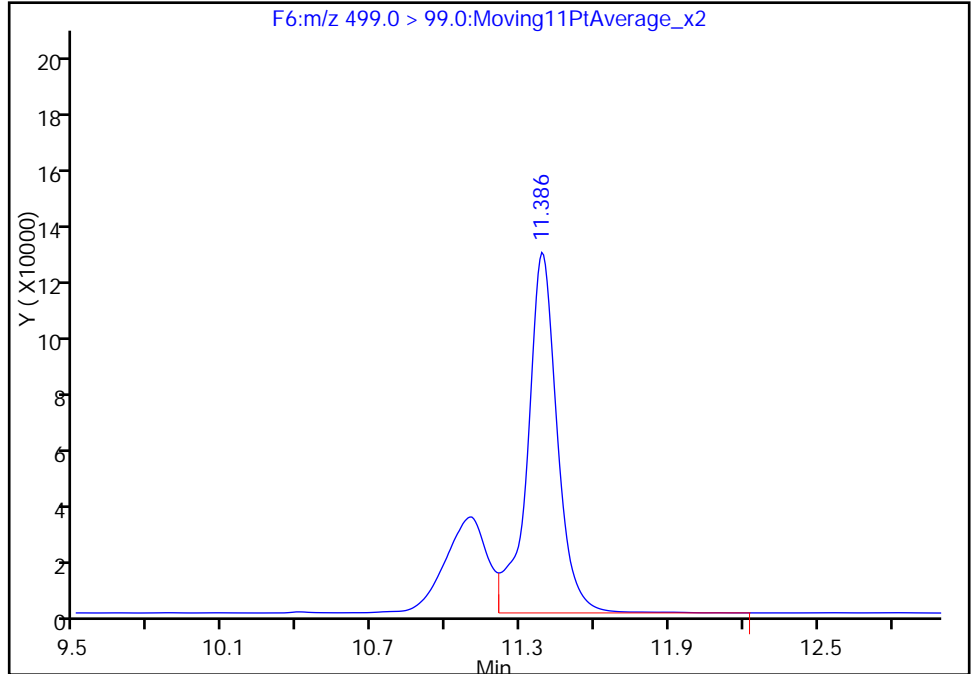
TestAmerica Sacramento

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Injection Date: 06-Jan-2016 18:17:29 Instrument ID: A6
Lims ID: 320-16615-A-4-A Lab Sample ID: 320-16615-4
Client ID: OF14-MW11S-1215
Operator ID: JRB ALS Bottle#: 22 Worklist Smp#: 23
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

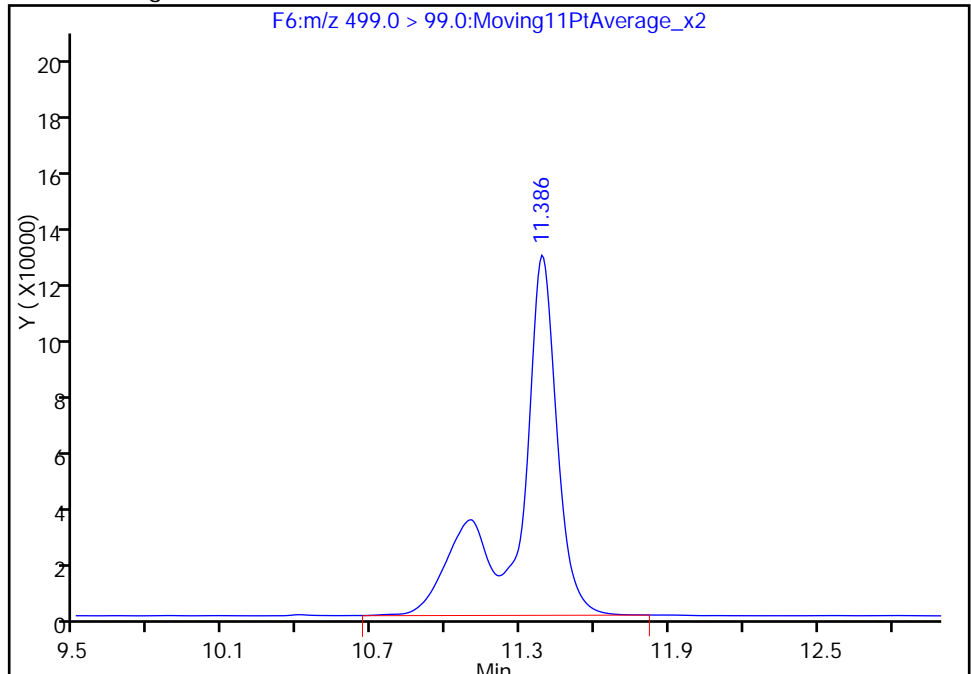
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Amount Units: ng/ml

Processing Integration Results



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Amount: 161.8762
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:47:02
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW14-1215 Lab Sample ID: 320-16615-5
 Matrix: Water Lab File ID: 06JAN2016A6A_021.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 13:00
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 549.6(mL) Date Analyzed: 01/06/2016 20:22
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.0018	0.00073
335-67-1	Perfluorooctanoic acid (PFOA)	0.0020	J	0.0023	0.0018	0.00068
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.0018	0.00059
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.0018	0.00084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J	0.0023	0.0018	0.00079
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0027	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	113		25-150
STL00991	13C4 PFOS	119		25-150
STL00995	13C5 PFNA	79		25-150
STL00990	13C4 PFOA	79		25-150
STL01892	13C4-PFHpA	88		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_021.d
 Lims ID: 320-16615-B-5-A Lab Sample ID: 320-16615-5
 Client ID: OF14-MW14-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 20:22:26 ALS Bottle#: 7 Worklist Smp#: 25
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16615-B-5-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:51:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.987	6.976	0.011	1.000	3577	0.2043				
D 8 13C4-PFHpA										
367.0 > 322.0	9.335	9.331	0.004		1502225	43.8		87.6	3000	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.335	9.335	0.0	1.000	5876	-0.0626			4.0	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.352	9.363	-0.011	1.000	6314	0.6621				
D 11 18O2 PFHxS										
403.0 > 84.0	9.364	9.363	0.001		776533	53.4		113	2023	
D 12 13C4 PFOA										
417.0 > 372.0	10.448	10.452	-0.004		1526184	39.5		78.9	3523	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.448	10.453	-0.005	1.000	36714	1.12			17.3	
413.0 > 169.0	10.448	10.453	-0.005	1.000	15024		2.44(0.00-0.00)		13.9	
D 16 13C4 PFOS										
503.0 > 80.0	11.400	11.405	-0.005		1064042	56.9		119	3128	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.408	11.408	0.0	1.000	11383	0.5276			20.1	
499.0 > 99.0	11.408	11.408	0.0	1.000	4240		2.68(0.00-0.00)		7.6	
D 17 13C5 PFNA										
468.0 > 423.0	11.423	11.427	-0.004		1263025	39.4		78.7	3432	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_021.d

Injection Date: 06-Jan-2016 20:22:26

Instrument ID: A6

Lims ID: 320-16615-B-5-A

Lab Sample ID: 320-16615-5

Client ID: OF14-MW14-1215

Operator ID: JRB

ALS Bottle#: 7

Worklist Smp#: 25

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

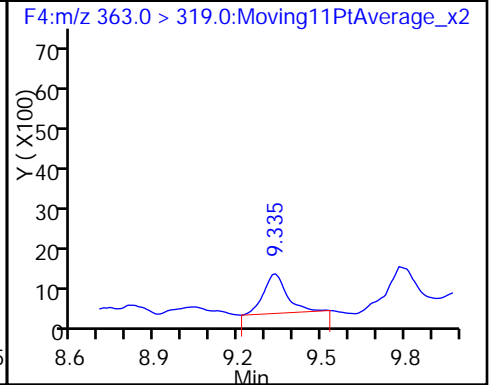
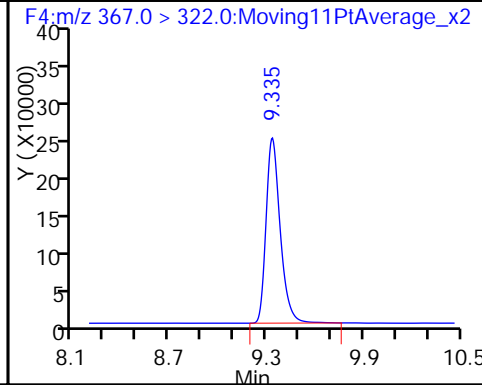
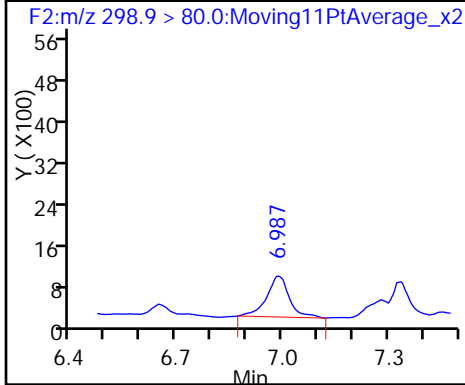
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

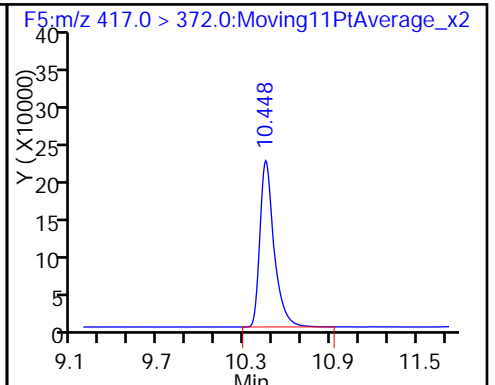
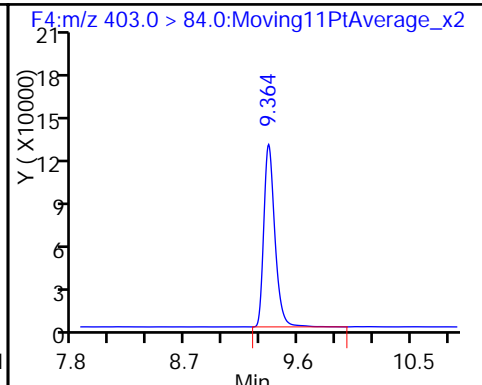
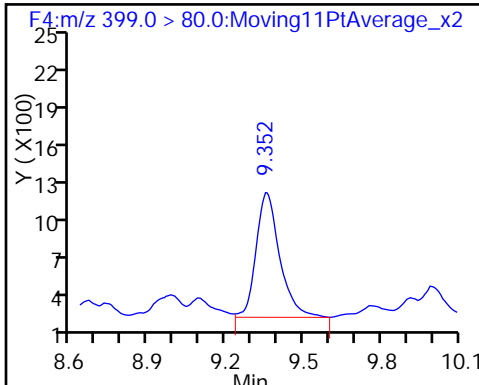
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

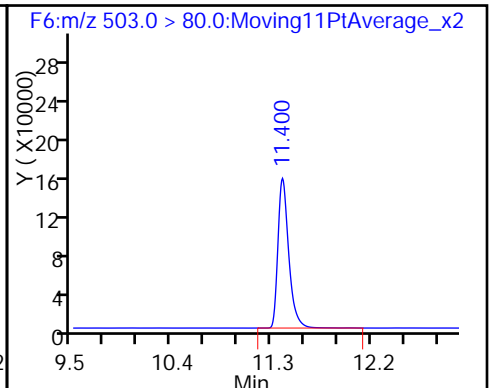
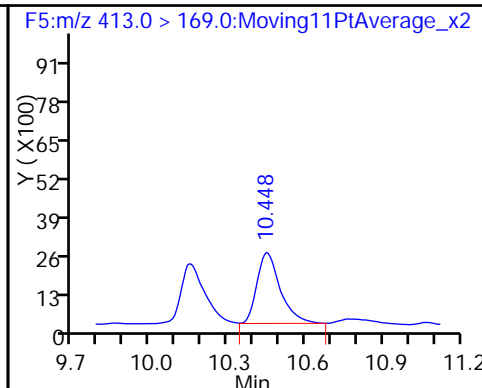
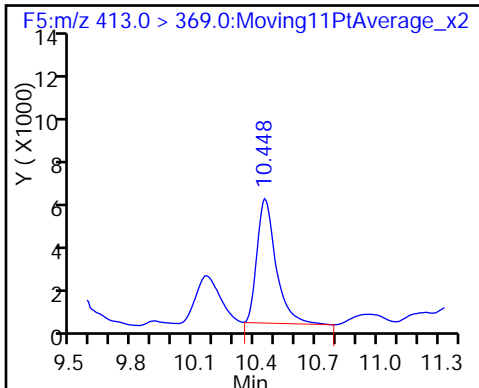
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

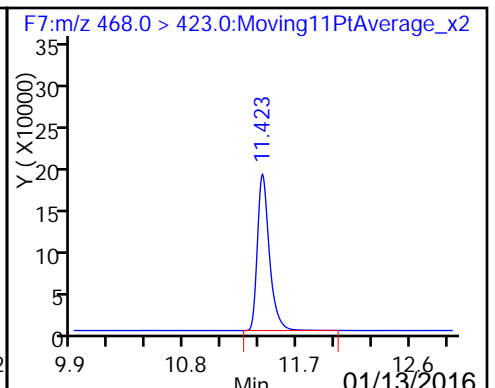
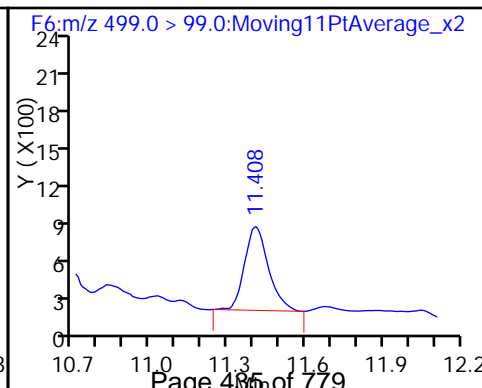
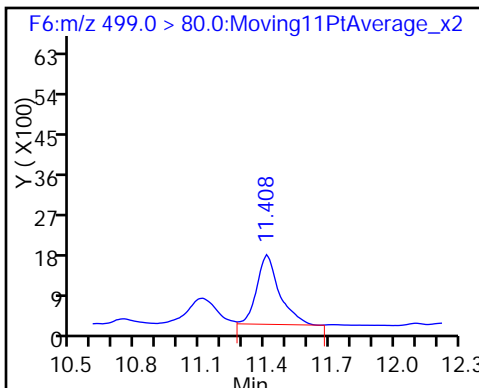
D 16 13C4 PFOS



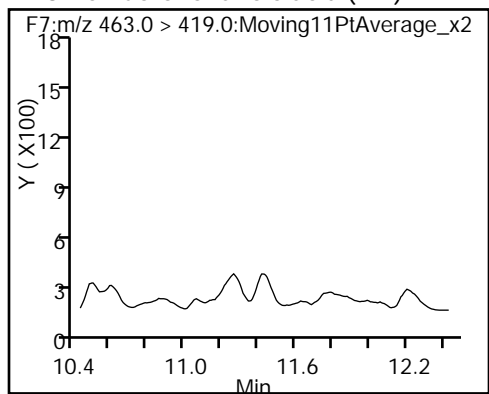
15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW13S-1215 Lab Sample ID: 320-16615-6
 Matrix: Water Lab File ID: 05JAN2016A6A_023.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 14:20
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 543.9(mL) Date Analyzed: 01/05/2016 18:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.064		0.0023	0.0018	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	0.88	J	0.0023	0.0018	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.0090		0.0023	0.0018	0.00060
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.22		0.0023	0.0018	0.00084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.1	J M	0.0023	0.0018	0.00080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.1	J M	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	61		25-150
STL00991	13C4 PFOS	56		25-150
STL00995	13C5 PFNA	60		25-150
STL00990	13C4 PFOA	79		25-150
STL01892	13C4-PFHpA	65		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_023.d
 Lims ID: 320-16615-A-6-A Lab Sample ID: 320-16615-6
 Client ID: OF14-MW13S-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 18:25:13 ALS Bottle#: 8 Worklist Smp#: 20
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16615-A-6-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 09:24:24 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:11:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.008	7.039	-0.031	1.000	728490	119.1			
D 8 13C4-PFHpA	367.0 > 322.0	9.376	9.413	-0.037		696873	32.6	65.3	1469	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.376	9.413	-0.037	1.000	493007	34.7		69.2	
D 11 18O2 PFHxS	403.0 > 84.0	9.417	9.444	-0.027		300551	29.0	61.4	561	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.417	9.449	-0.032	1.000	9954887	2210.5			EM EM
D 12 13C4 PFOA	417.0 > 372.0	10.497	10.524	-0.027		862986	39.5	79.0	1404	
13 Perfluorooctanoic acid	413.0 > 369.0	10.497	10.528	-0.031	1.000	7991726	478.3		69.8	E E
	413.0 > 169.0	10.503	10.528	-0.025	1.001	2807266		2.85(0.00-0.00)	42.0	
D 16 13C4 PFOS	503.0 > 80.0	11.458	11.478	-0.020		299797	26.9	56.3	1177	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.458	11.480	-0.022	1.000	17715411	2776.2		413	EM EM
	499.0 > 99.0	11.458	11.480	-0.022	1.000	7969541		2.22(0.00-0.00)	2630	M
D 17 13C5 PFNA	468.0 > 423.0	11.481	11.501	-0.020		601934	30.2	60.5	1593	
18 Perfluorononanoic acid	463.0 > 419.0	11.481	11.502	-0.021	1.000	46337	4.89		40.3	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_023.d

Injection Date: 05-Jan-2016 18:25:13

Instrument ID: A6

Lims ID: 320-16615-A-6-A

Lab Sample ID: 320-16615-6

Client ID: OF14-MW13S-1215

Operator ID: JRB

ALS Bottle#: 8

Worklist Smp#: 20

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

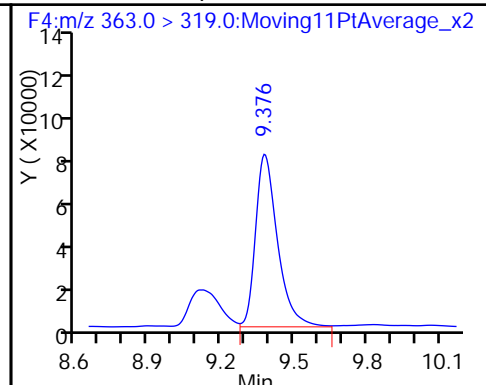
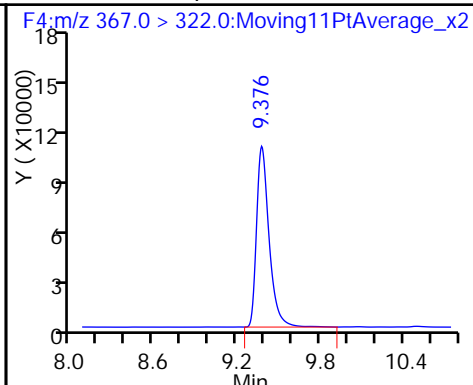
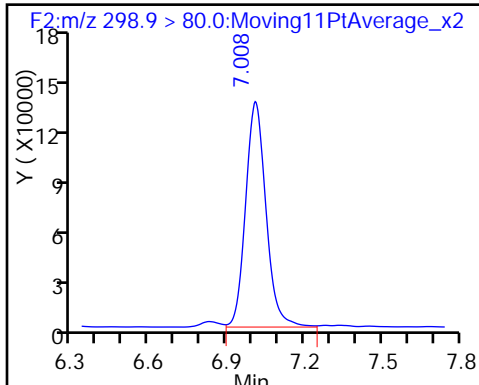
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

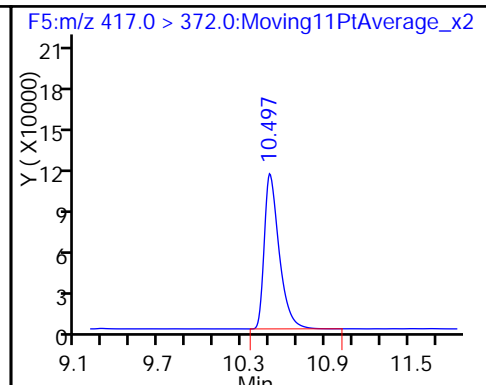
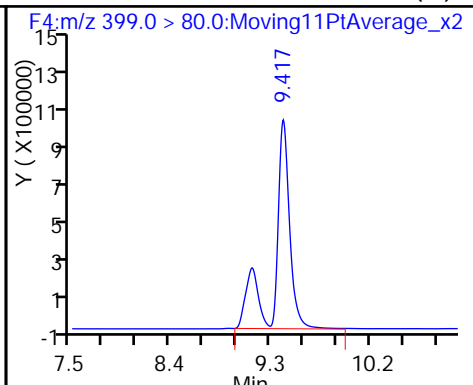
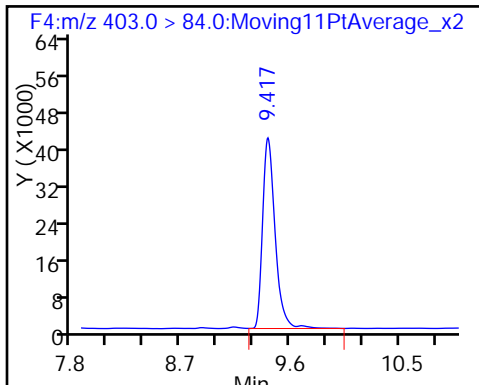
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

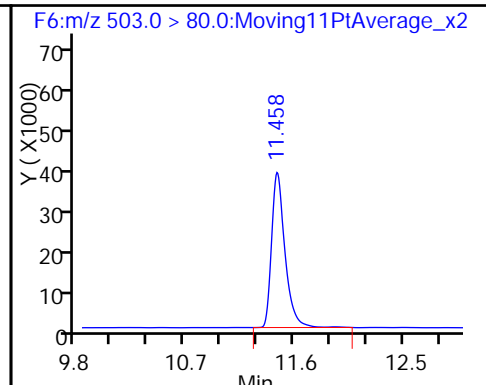
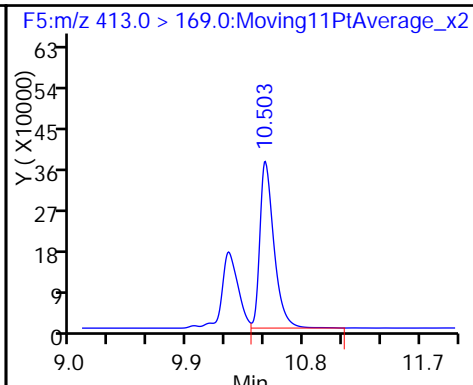
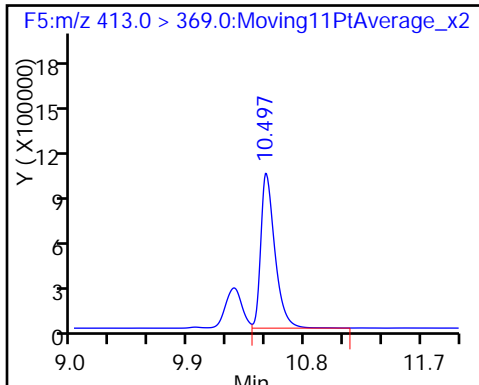
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

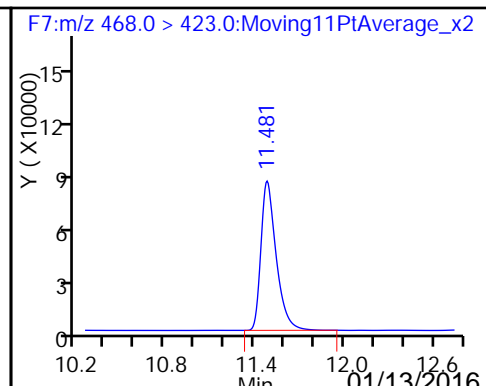
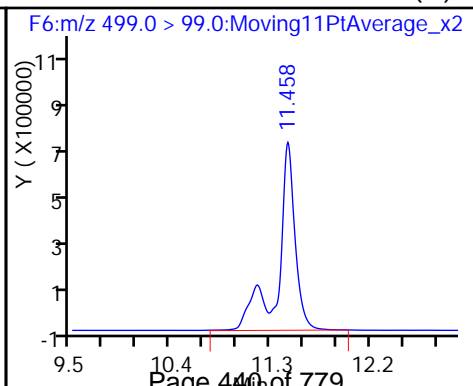
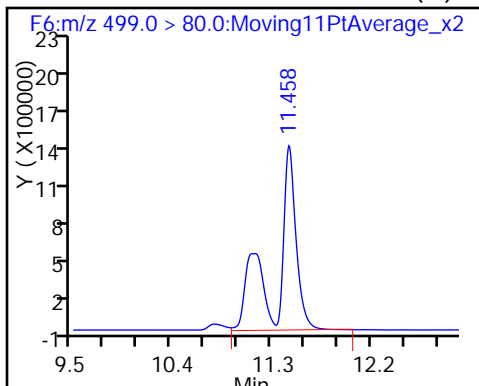
D 16 13C4 PFOS



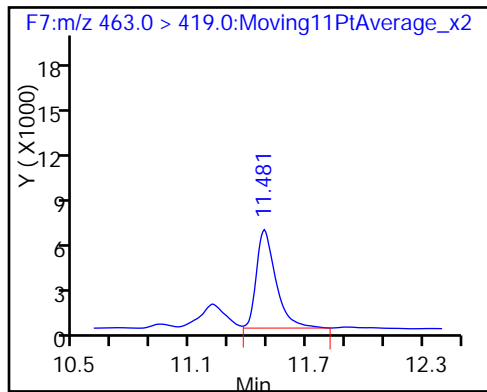
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



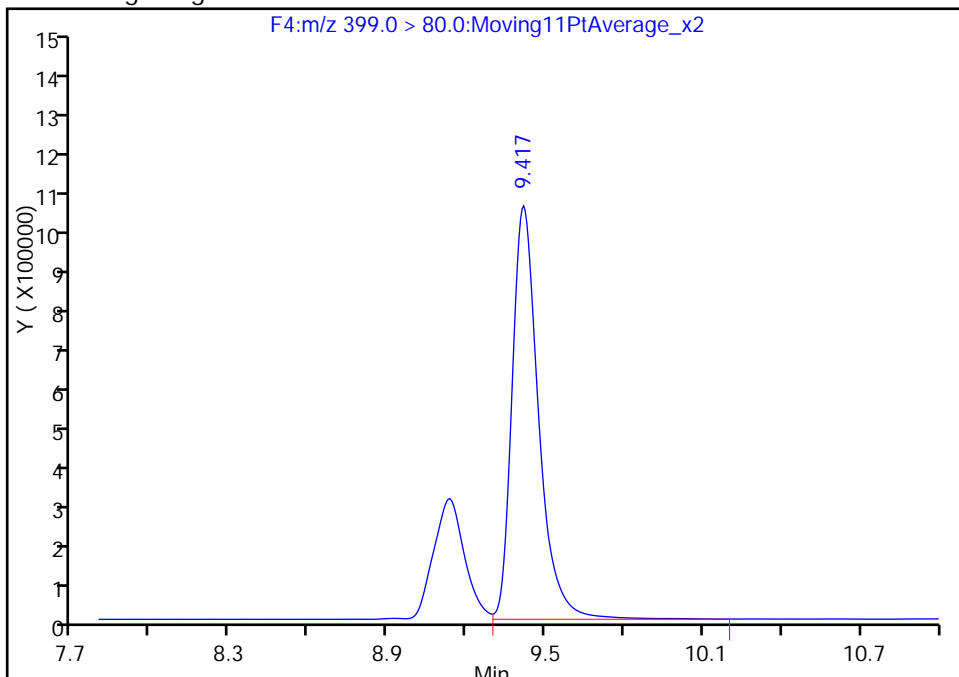
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_023.d
Injection Date: 05-Jan-2016 18:25:13 Instrument ID: A6
Lims ID: 320-16615-A-6-A Lab Sample ID: 320-16615-6
Client ID: OF14-MW13S-1215
Operator ID: JRB ALS Bottle#: 8 Worklist Smp#: 20
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

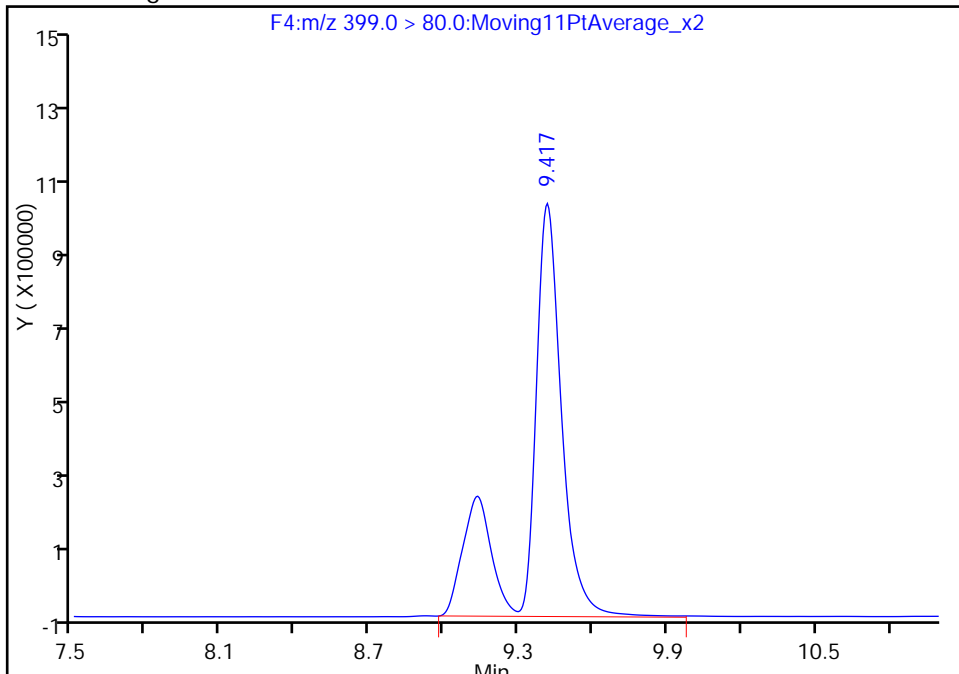
RT: 9.42
Area: 7466947
Amount: 1658.0394
Amount Units: ng/ml

Processing Integration Results



RT: 9.42
Area: 9954887
Amount: 2210.4877
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:11:31
Audit Action: Manually Integrated
Audit Reason: Isomers

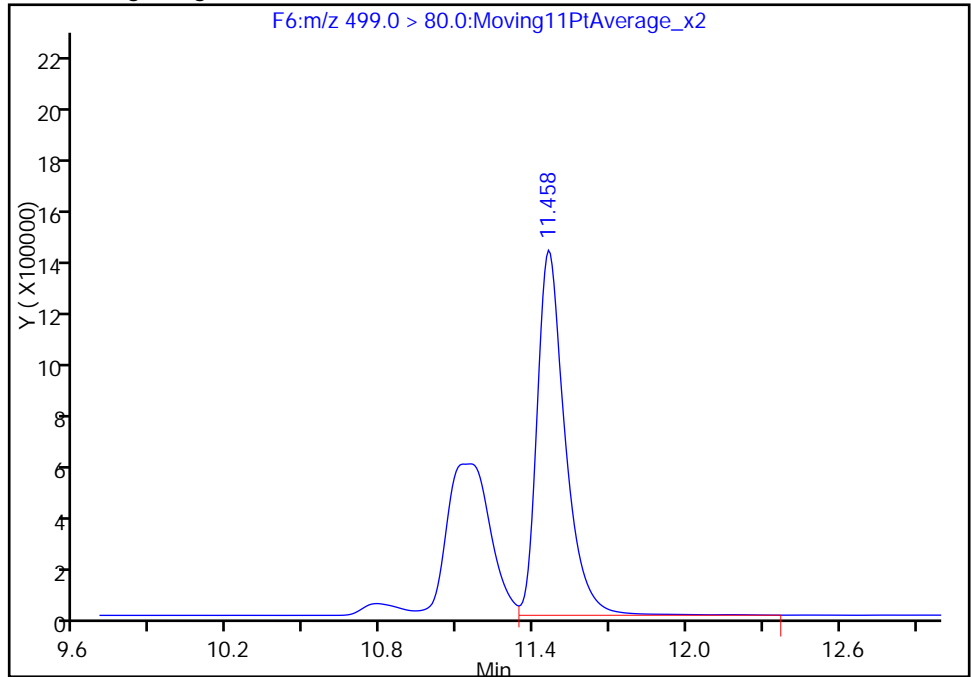
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_023.d
Injection Date: 05-Jan-2016 18:25:13 Instrument ID: A6
Lims ID: 320-16615-A-6-A Lab Sample ID: 320-16615-6
Client ID: OF14-MW13S-1215
Operator ID: JRB ALS Bottle#: 8 Worklist Smp#: 20
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

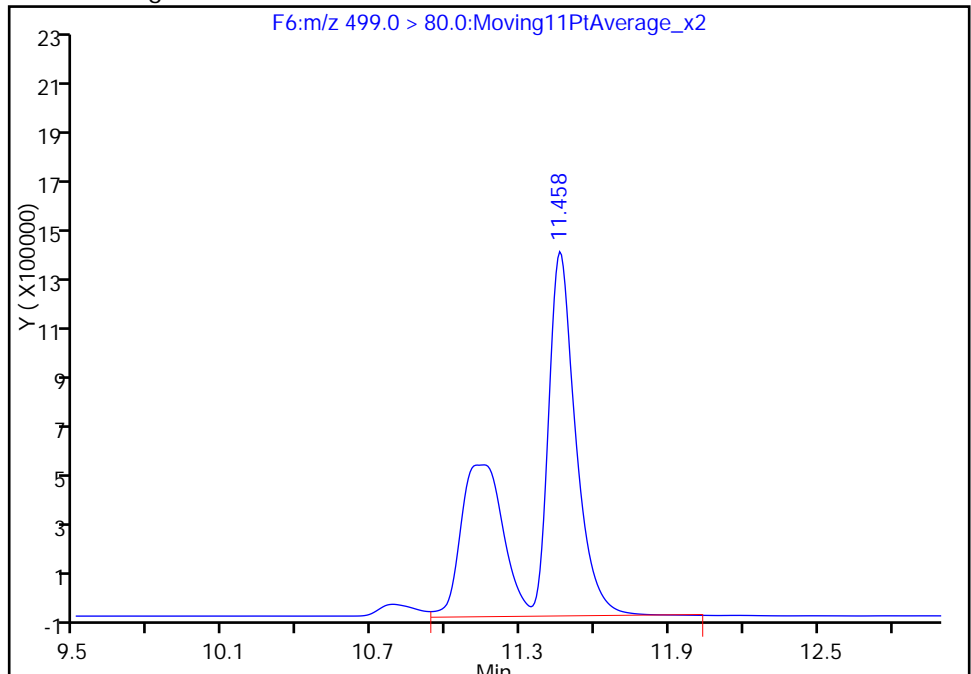
RT: 11.46
Area: 10829778
Amount: 1697.1702
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 17715411
Amount: 2776.2405
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:11:31
Audit Action: Manually Integrated
Audit Reason: Isomers

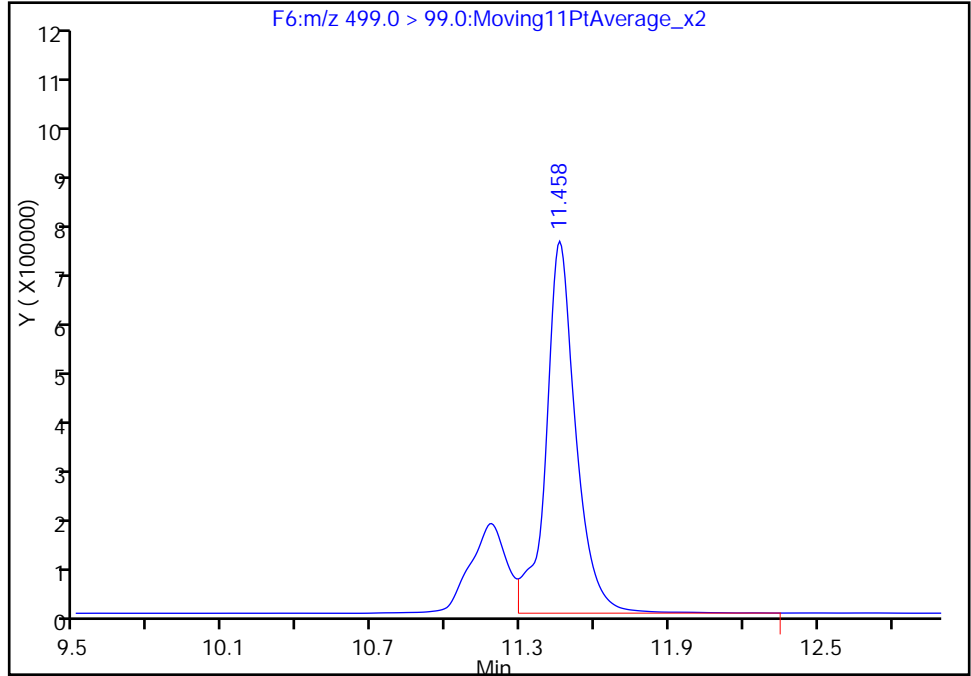
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_023.d
Injection Date: 05-Jan-2016 18:25:13 Instrument ID: A6
Lims ID: 320-16615-A-6-A Lab Sample ID: 320-16615-6
Client ID: OF14-MW13S-1215
Operator ID: JRB ALS Bottle#: 8 Worklist Smp#: 20
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

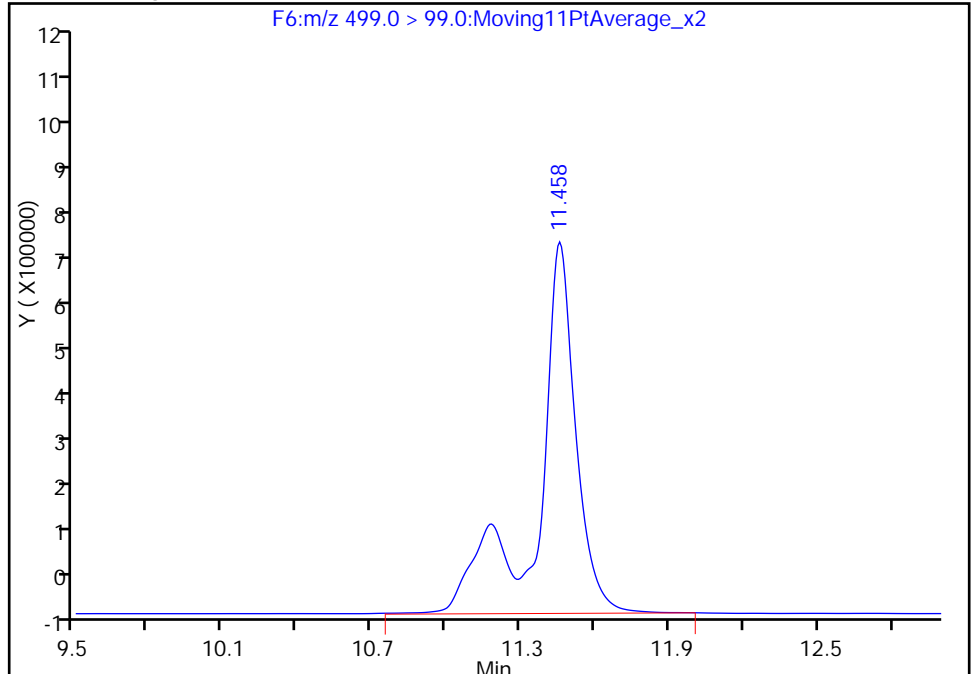
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Amount: 1697.1702
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 7969541
Amount: 2776.2405
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:11:31
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF14-MW13S-1215 DL Lab Sample ID: 320-16615-6 DL
 Matrix: Water Lab File ID: 06JAN2016A6A_018.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 14:20
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 543.9(mL) Date Analyzed: 01/06/2016 18:48
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 10
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	<i>Perfluoroheptanoic acid (PFHpA)</i>	0.061	D	0.023	0.018	0.0074
335-67-1	<i>Perfluorooctanoic acid (PFOA)</i>	0.88	D	0.023	0.018	0.0069
375-95-1	<i>Perfluorononanoic acid (PFNA)</i>	0.018	U	0.023	0.018	0.0060
375-73-5	<i>Perfluorobutanesulfonic acid (PFBS)</i>	0.096	D	0.023	0.018	0.0084
355-46-4	<i>Perfluorohexanesulfonic acid (PFHxS)</i>	3.3	D M	0.023	0.018	0.0080
1763-23-1	<i>Perfluorooctanesulfonic acid (PFOS)</i>	4.3	D M	0.037	0.028	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	96		25-150
STL00991	13C4 PFOS	83		25-150
STL00995	13C5 PFNA	67		25-150
STL00990	13C4 PFOA	71		25-150
STL01892	13C4-PFHpA	80		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_018.d
 Lims ID: 320-16615-A-6-A Lab Sample ID: 320-16615-6
 Client ID: OF14-MW13S-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 18:48:43 ALS Bottle#: 23 Worklist Smp#: 24
 Injection Vol: 15.0 ul Dil. Factor: 10.0000
 Sample Info: 320-16615-A-6-A 10x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:48:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.978	6.976	0.002	1.000	77857	5.25			
D 8 13C4-PFHpA	367.0 > 322.0	9.323	9.331	-0.008		136424	3.98	8.0	272	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	1.000	97090	3.33		32.6	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.352	9.363	-0.011	1.000	1469449	181.8			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.358	9.363	-0.005		65825	4.53	9.6	210	
D 12 13C4 PFOA	417.0 > 372.0	10.426	10.452	-0.026		136660	3.53	7.1	358	
13 Perfluorooctanoic acid	413.0 > 369.0	10.433	10.453	-0.020	1.000	1401188	47.8		76.7	
	413.0 > 169.0	10.440	10.453	-0.013	1.001	529596	2.65(0.00-0.00)		53.9	
D 16 13C4 PFOS	503.0 > 80.0	11.385	11.405	-0.020		73738	3.94	8.3	256	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	3535418	236.4		1054	M
	499.0 > 99.0	11.393	11.408	-0.015	1.000	1648260	2.14(0.00-0.00)		2522	M
D 17 13C5 PFNA	468.0 > 423.0	11.416	11.427	-0.011		107635	3.36	6.7	198	
18 Perfluorononanoic acid	463.0 > 419.0	11.408	11.431	-0.023	1.000	4733	0.2578		11.0	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_018.d

Injection Date: 06-Jan-2016 18:48:43

Instrument ID: A6

Lims ID: 320-16615-A-6-A

Lab Sample ID: 320-16615-6

Client ID: OF14-MW13S-1215

Operator ID: JRB

ALS Bottle#: 23

Worklist Smp#: 24

Injection Vol: 15.0 ul

Dil. Factor: 10.0000

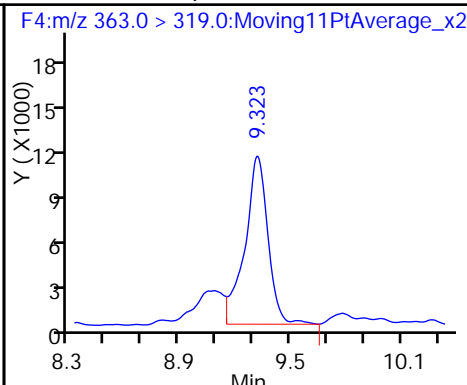
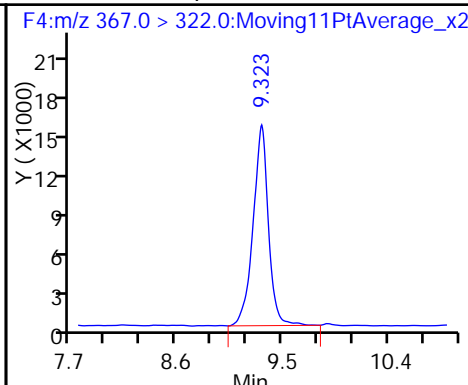
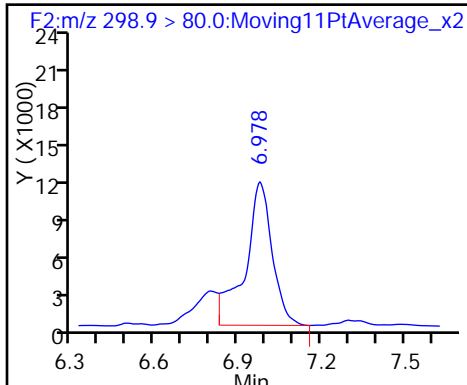
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

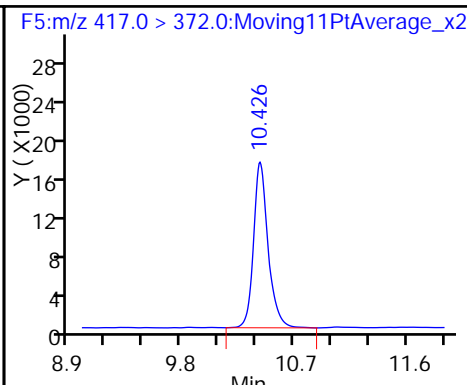
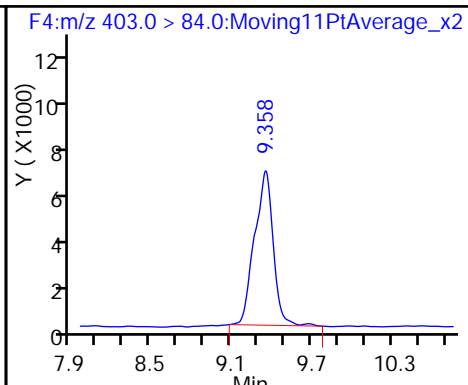
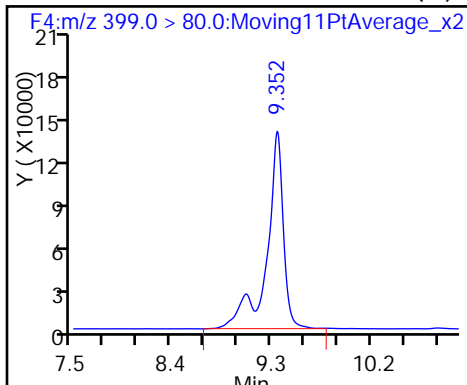
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

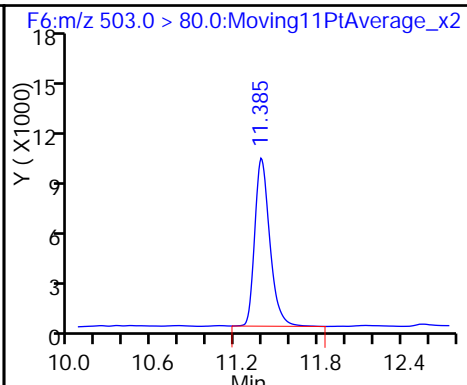
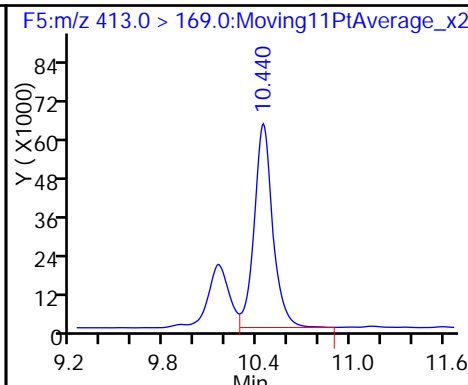
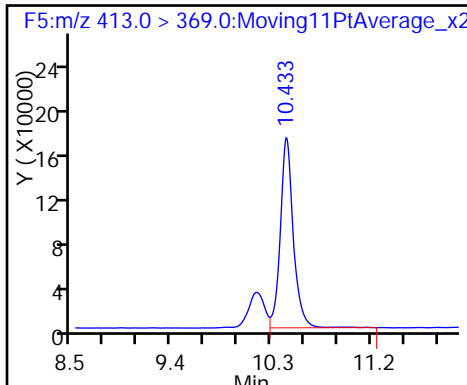
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

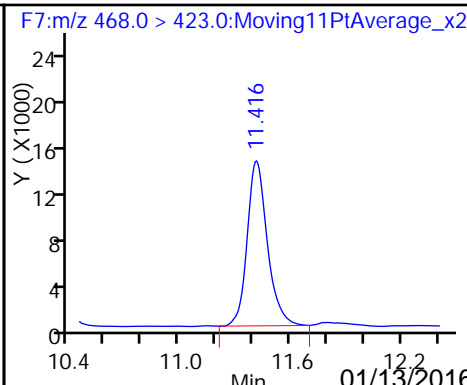
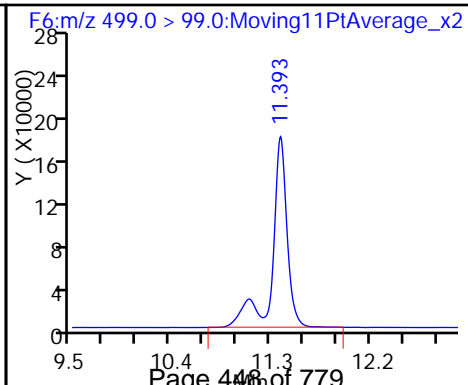
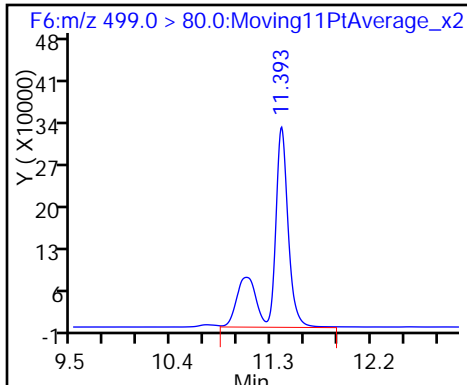
D 16 13C4 PFOS



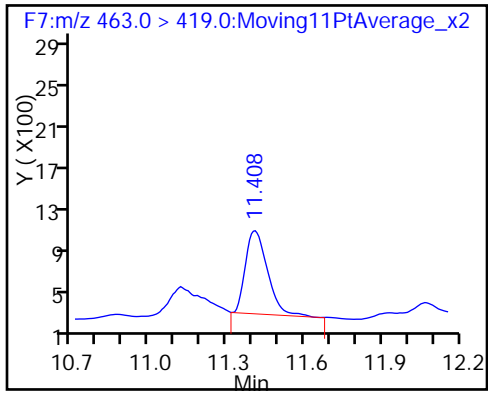
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



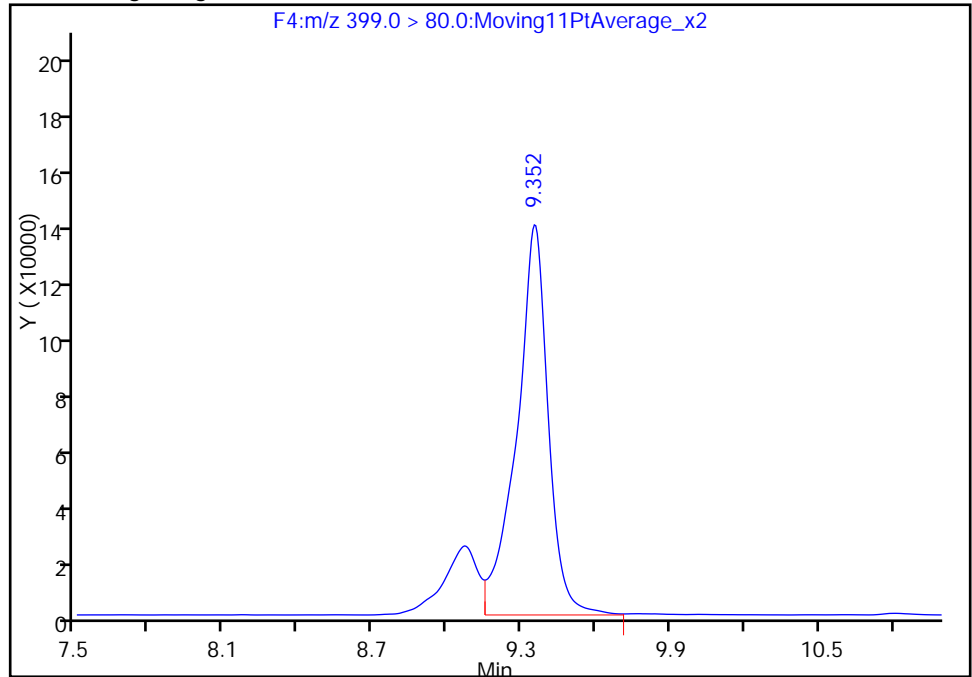
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_018.d
Injection Date: 06-Jan-2016 18:48:43 Instrument ID: A6
Lims ID: 320-16615-A-6-A Lab Sample ID: 320-16615-6
Client ID: OF14-MW13S-1215
Operator ID: JRB ALS Bottle#: 23 Worklist Smp#: 24
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

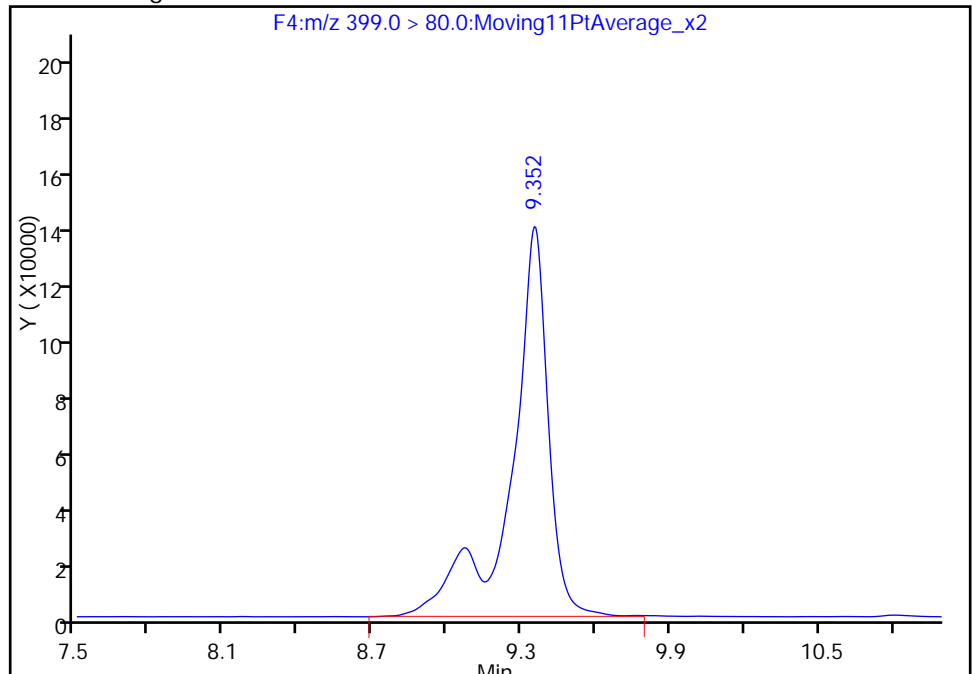
RT: 9.35
Area: 1238198
Amount: 153.1629
Amount Units: ng/ml

Processing Integration Results



RT: 9.35
Area: 1469449
Amount: 181.7682
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:48:16
Audit Action: Manually Integrated
Audit Reason: Isomers

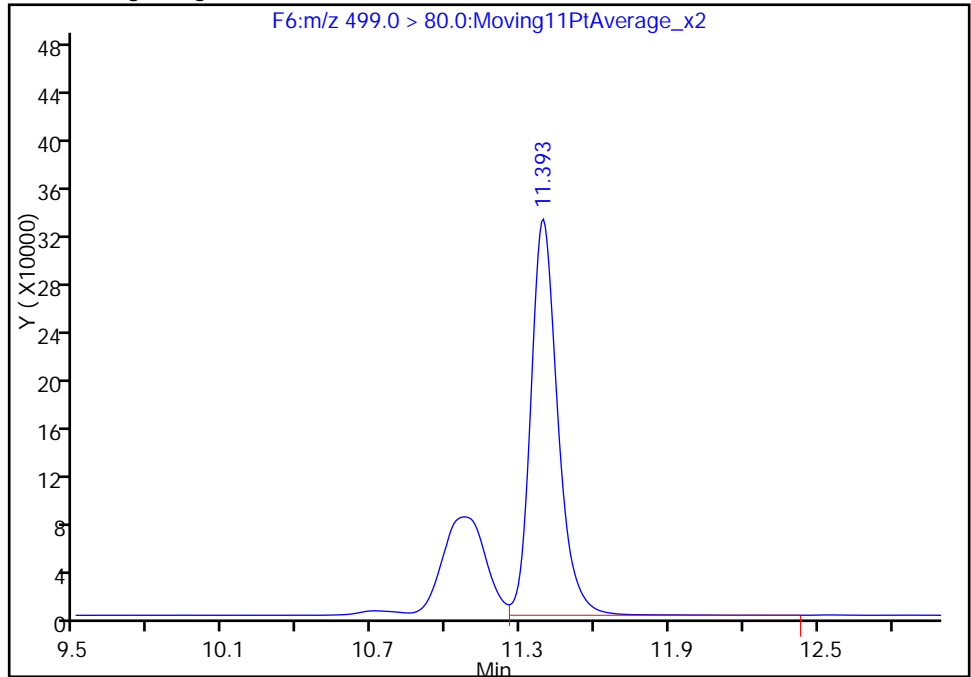
TestAmerica Sacramento

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Injection Date: 06-Jan-2016 18:48:43 Instrument ID: A6
Lims ID: 320-16615-A-6-A Lab Sample ID: 320-16615-6
Client ID: OF14-MW13S-1215
Operator ID: JRB ALS Bottle#: 23 Worklist Smp#: 24
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

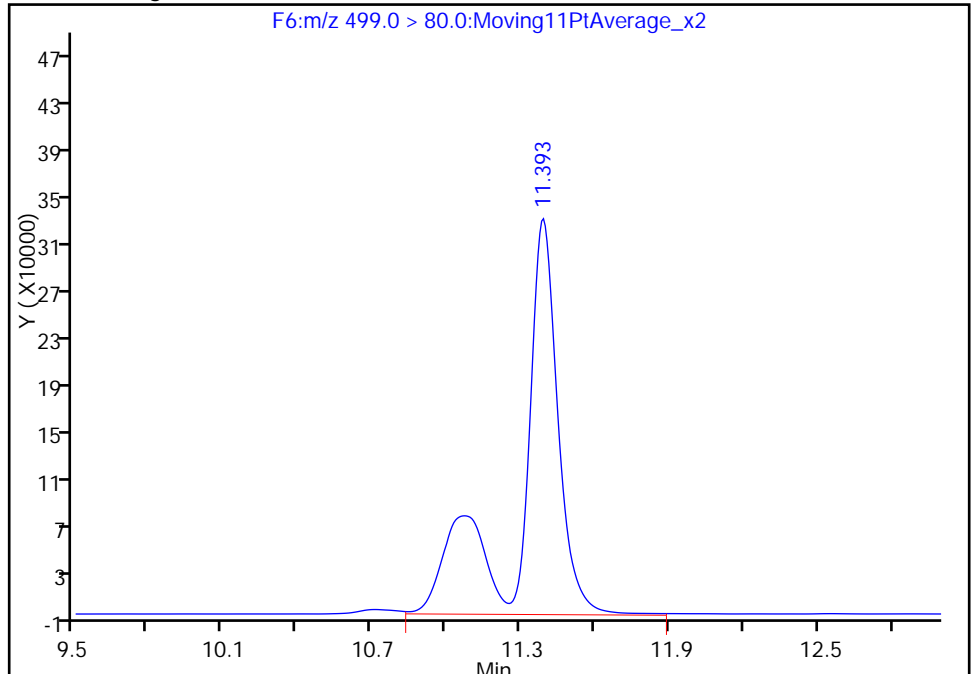
RT: 11.39
Area: 2508134
Amount: 167.7409
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
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Amount: 236.4444
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:48:16
Audit Action: Manually Integrated
Audit Reason: Isomers

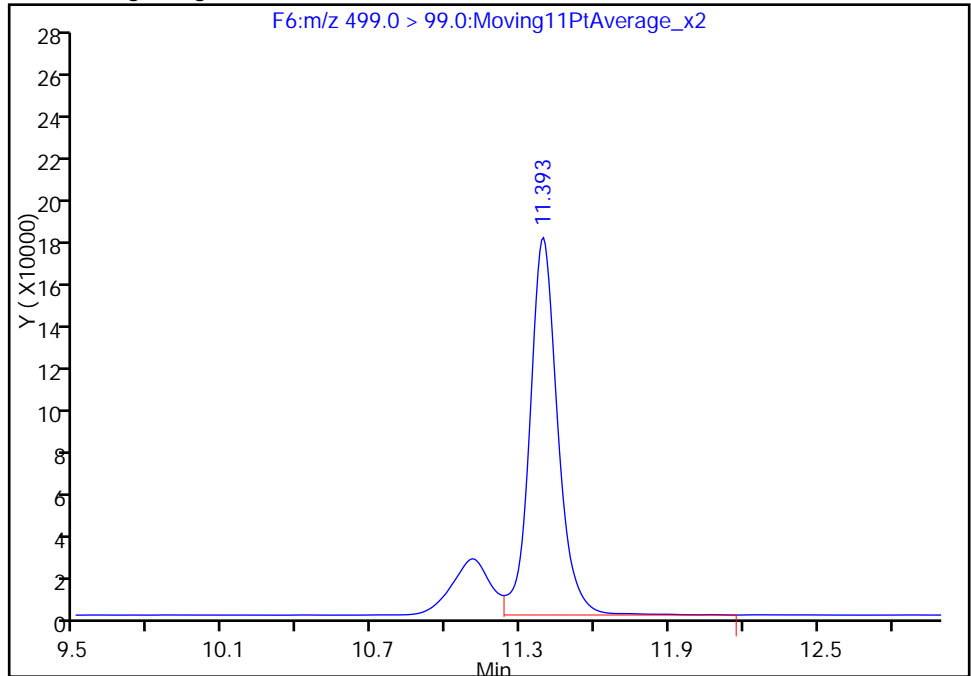
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_018.d
 Injection Date: 06-Jan-2016 18:48:43 Instrument ID: A6
 Lims ID: 320-16615-A-6-A Lab Sample ID: 320-16615-6
 Client ID: OF14-MW13S-1215
 Operator ID: JRB ALS Bottle#: 23 Worklist Smp#: 24
 Injection Vol: 15.0 ul Dil. Factor: 10.0000
 Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

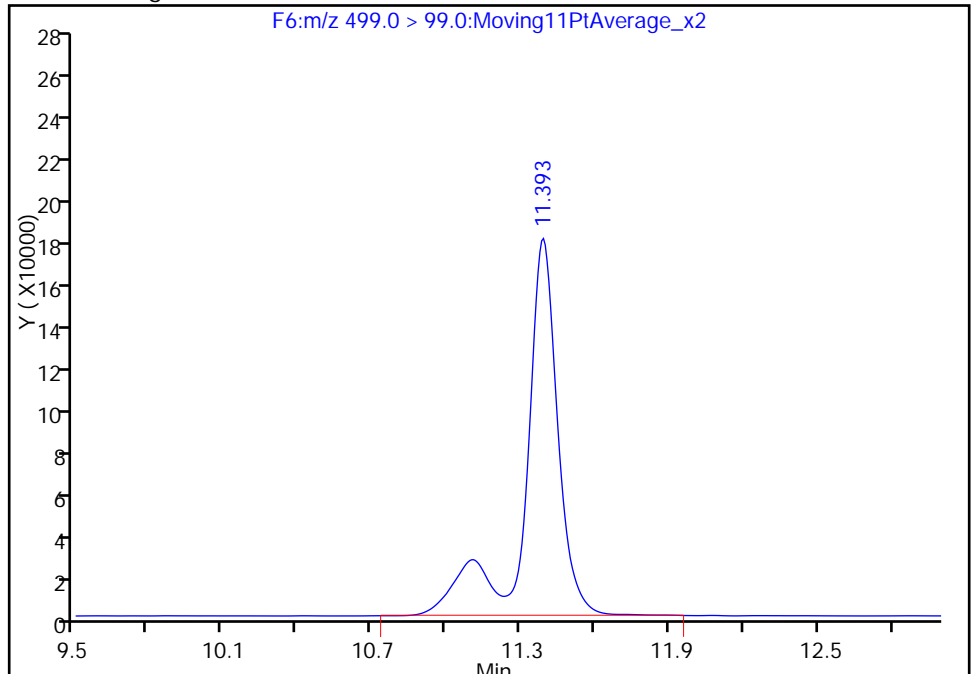
RT: 11.39
 Area: 1386166
 Amount: 167.7409
 Amount Units: ng/ml

Processing Integration Results



RT: 11.39
 Area: 1648260
 Amount: 236.4444
 Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:48:16
 Audit Action: Manually Integrated
 Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-EB122815 Lab Sample ID: 320-16615-7
 Matrix: Water Lab File ID: 05JAN2016A6A_024.d
 Analysis Method: WS-LC-0025 Date Collected: 12/28/2015 14:45
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 544.7(mL) Date Analyzed: 01/05/2016 18:46
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.0018	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.0018	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.0018	0.00060
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.0018	0.00084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00080	J	0.0023	0.0018	0.00080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0012	J	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	134		25-150
STL00991	13C4 PFOS	152	Q	25-150
STL00995	13C5 PFNA	137		25-150
STL00990	13C4 PFOA	135		25-150
STL01892	13C4-PFHpA	135		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_024.d
 Lims ID: 320-16615-A-7-A Lab Sample ID: 320-16615-7
 Client ID: OF-EB122815
 Sample Type: Client
 Inject. Date: 05-Jan-2016 18:46:28 ALS Bottle#: 9 Worklist Smp#: 21
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16615-A-7-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 09:24:24 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:11:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA	367.0 > 322.0	9.382	9.413	-0.031	1445124	67.7		135	2664	
D 11 18O2 PFHxS	403.0 > 84.0	9.411	9.444	-0.033	655688	63.4		134	1939	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.411	9.449	-0.038	4281	0.4357				
D 12 13C4 PFOA	417.0 > 372.0	10.497	10.524	-0.027	1472491	67.4		135	3763	
13 Perfluorooctanoic acid	413.0 > 369.0	10.497	10.528	-0.031	6008	0.2108			5.5	
D 16 13C4 PFOS	503.0 > 80.0	11.458	11.478	-0.020	808777	72.6		152	2264	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.458	11.480	-0.022	11477	0.6667			22.7	
	499.0 > 99.0	11.451	11.480	-0.029	5386		2.13(0.00-0.00)		8.3	
D 17 13C5 PFNA	468.0 > 423.0	11.474	11.501	-0.027	1363943	68.5		137	5889	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_024.d

Injection Date: 05-Jan-2016 18:46:28

Instrument ID: A6

Lims ID: 320-16615-A-7-A

Lab Sample ID: 320-16615-7

Client ID: OF-EB122815

Operator ID: JRB

ALS Bottle#: 9

Worklist Smp#: 21

Injection Vol: 15.0 ul

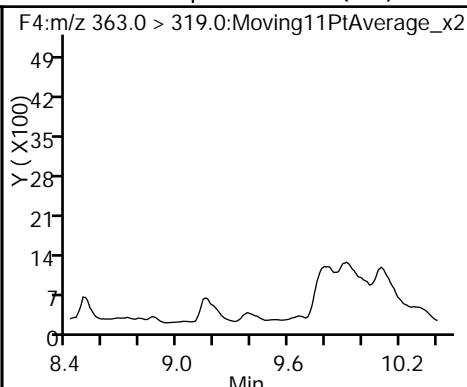
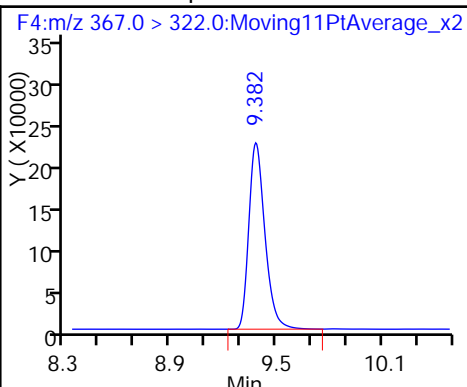
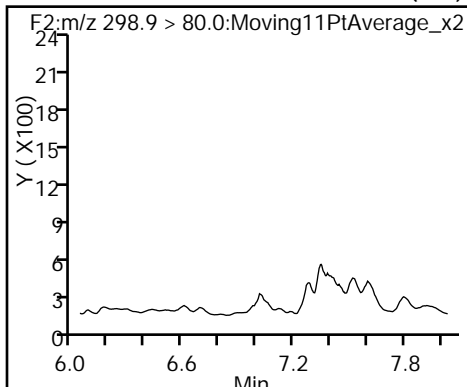
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 8 13C4-PFHpA

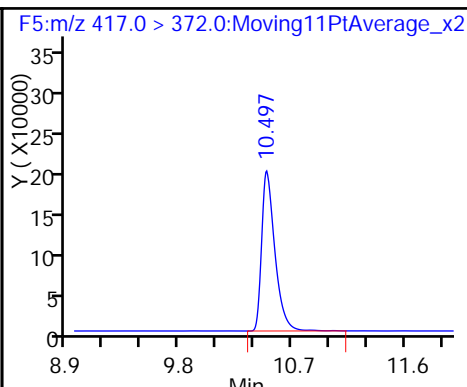
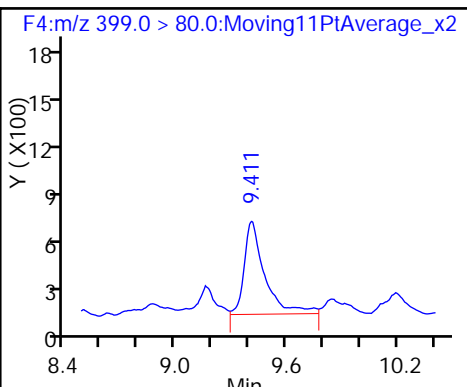
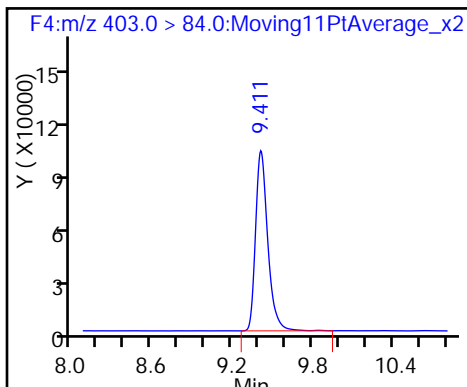
9 Perfluoroheptanoic acid (ND)



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

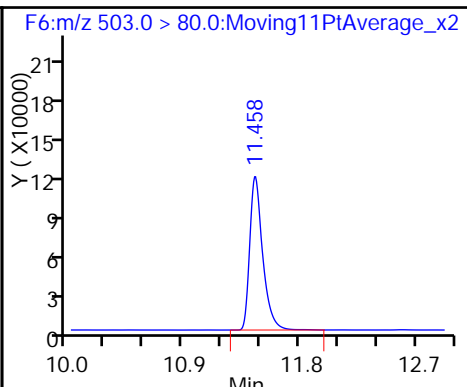
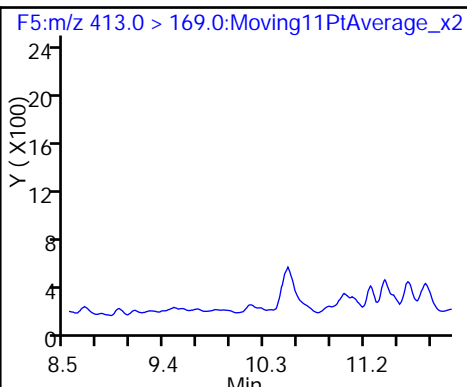
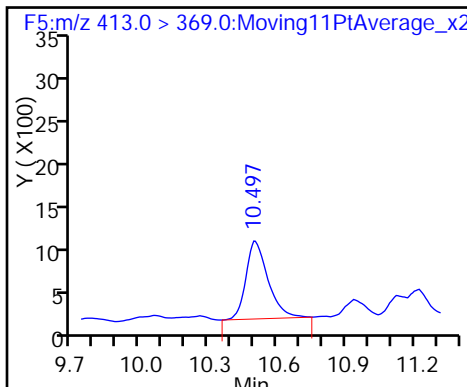
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

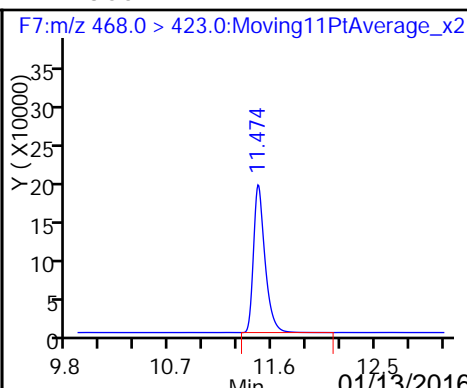
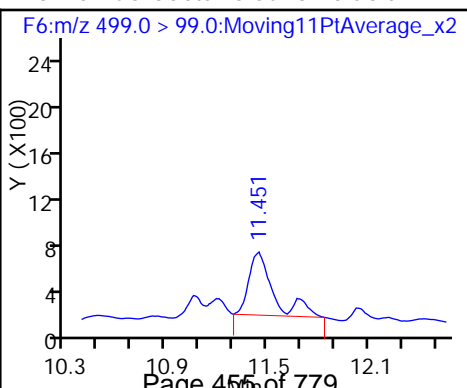
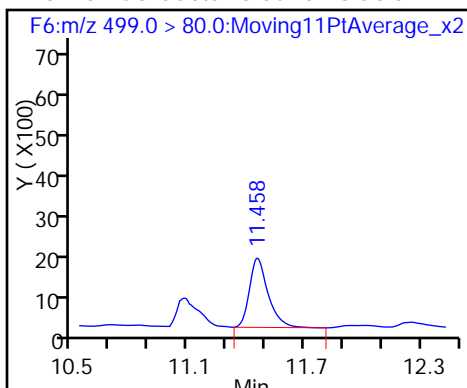
D 16 13C4 PFOS



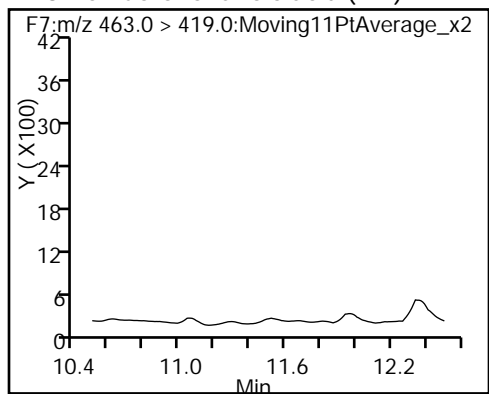
15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-FB01-123015 Lab Sample ID: 320-16649-1
 Matrix: Water Lab File ID: 05JAN2016A6A_025.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 08:45
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 538.9(mL) Date Analyzed: 01/05/2016 19:07
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.0019	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.0019	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.0019	0.00061
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.0019	0.00085
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00089	J	0.0023	0.0019	0.00081
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0029	J M	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	135		25-150
STL00991	13C4 PFOS	144		25-150
STL00995	13C5 PFNA	132		25-150
STL00990	13C4 PFOA	134		25-150
STL01892	13C4-PFHpA	125		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_025.d
 Lims ID: 320-16649-A-1-A Lab Sample ID: 320-16649-1
 Client ID: OF-FB01-123015
 Sample Type: Client
 Inject. Date: 05-Jan-2016 19:07:40 ALS Bottle#: 10 Worklist Smp#: 22
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16649-A-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 09:24:24 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc

Date: 06-Jan-2016 09:12:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA	367.0 > 322.0	9.382	9.413	-0.031	1335991	62.6		125	2873	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.177	9.413	-0.236	5819	0.0339			4.7	
D 11 18O2 PFHxS	403.0 > 84.0	9.411	9.444	-0.033	662524	64.0		135	2277	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.411	9.449	-0.038	4742	0.4777				
D 12 13C4 PFOA	417.0 > 372.0	10.497	10.524	-0.027	1468217	67.2		134	3959	
13 Perfluorooctanoic acid	413.0 > 369.0	10.503	10.528	-0.025	7107	0.2500			4.8	
D 16 13C4 PFOS	503.0 > 80.0	11.458	11.478	-0.020	764711	68.6		144	1802	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.444	11.480	-0.036	25208	1.55			57.2	M
	499.0 > 99.0	11.466	11.480	-0.014	6307		4.00(0.00-0.00)		19.4	M
D 17 13C5 PFNA	468.0 > 423.0	11.474	11.501	-0.027	1312390	65.9		132	3751	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_025.d

Injection Date: 05-Jan-2016 19:07:40

Instrument ID: A6

Lims ID: 320-16649-A-1-A

Lab Sample ID: 320-16649-1

Client ID: OF-FB01-123015

Operator ID: JRB

ALS Bottle#: 10

Worklist Smp#: 22

Injection Vol: 15.0 ul

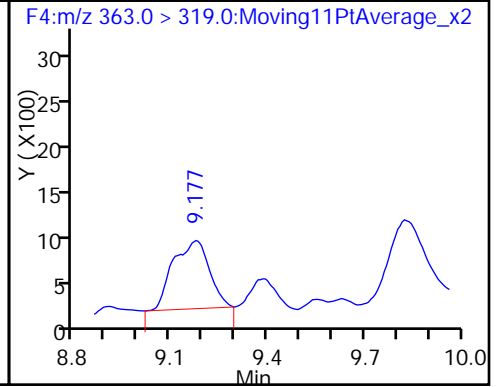
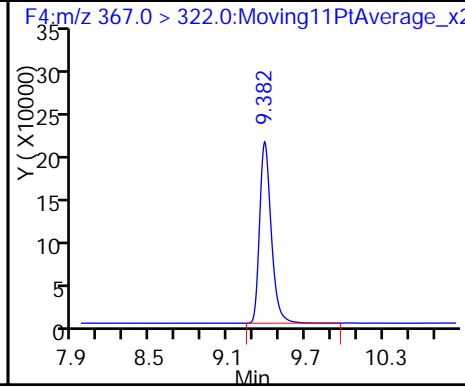
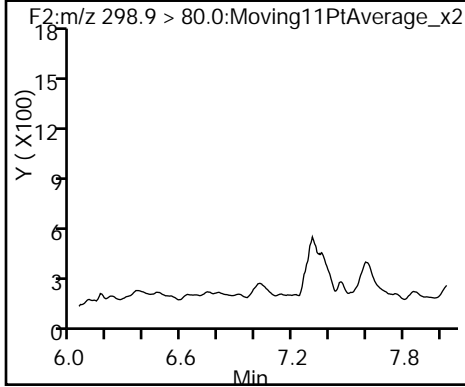
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 8 13C4-PFHpA

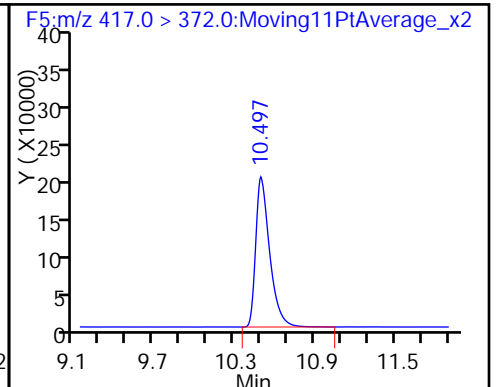
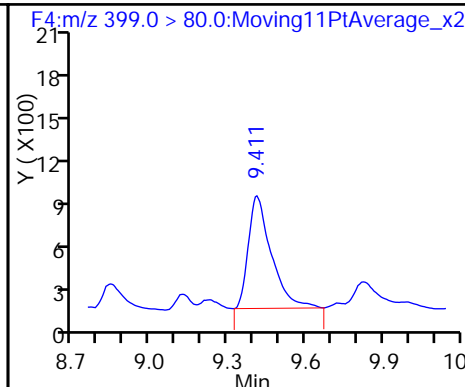
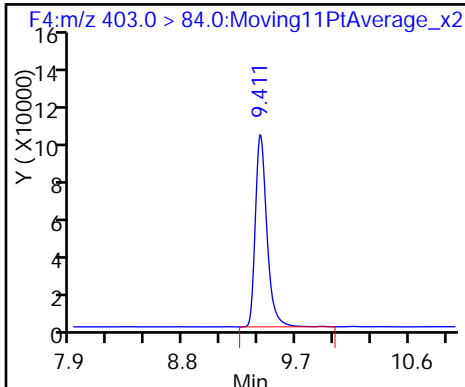
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

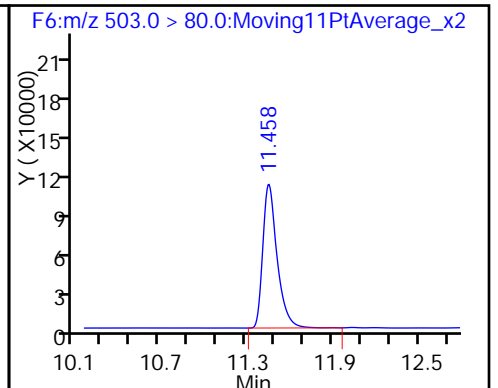
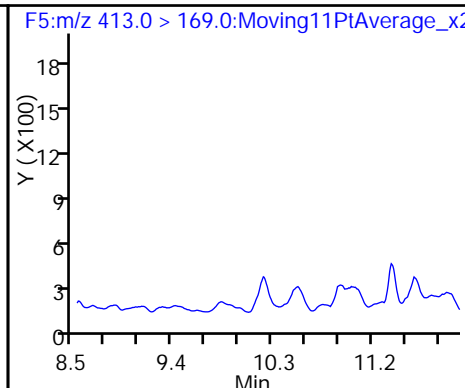
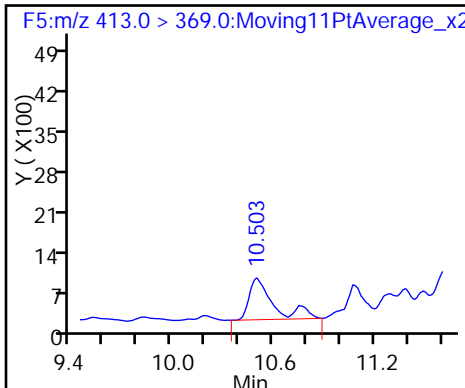
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

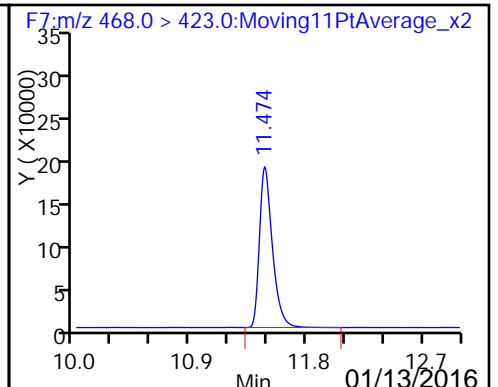
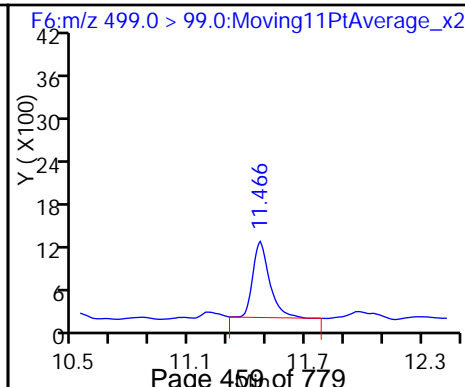
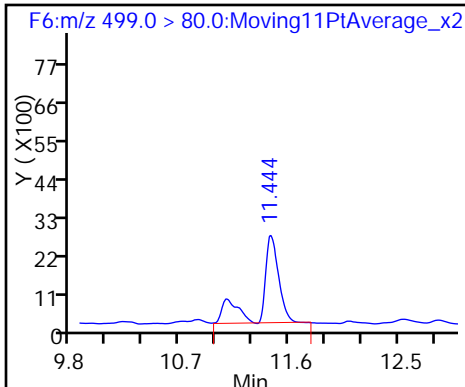
D 16 13C4 PFOS



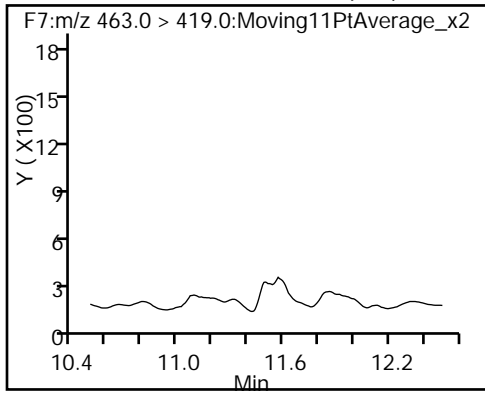
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



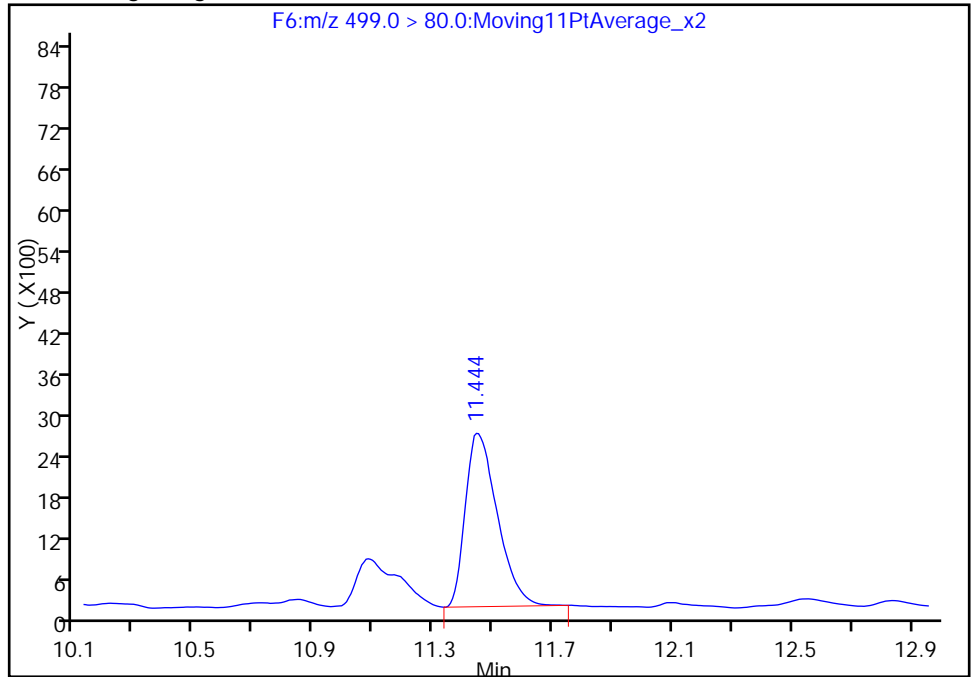
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_025.d
Injection Date: 05-Jan-2016 19:07:40 Instrument ID: A6
Lims ID: 320-16649-A-1-A Lab Sample ID: 320-16649-1
Client ID: OF-FB01-123015
Operator ID: JRB ALS Bottle#: 10 Worklist Smp#: 22
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

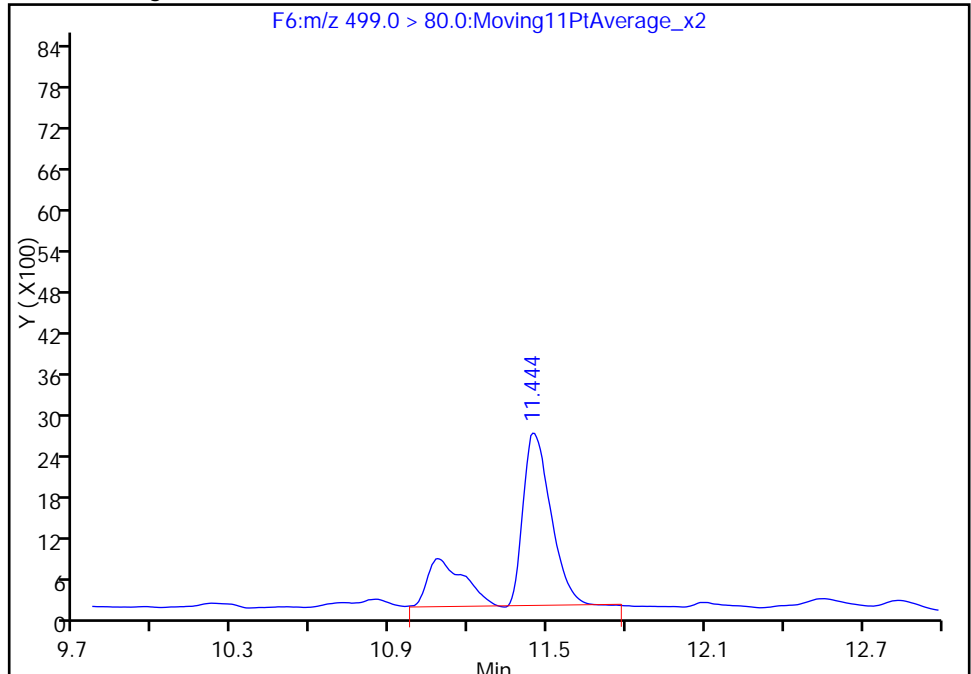
RT: 11.44
Area: 18856
Amount: 1.158472
Amount Units: ng/ml

Processing Integration Results



RT: 11.44
Area: 25208
Amount: 1.548725
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:12:32
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-INF01-1215 Lab Sample ID: 320-16649-2
 Matrix: Water Lab File ID: 05JAN2016A6A_027.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 09:50
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 517.9(mL) Date Analyzed: 01/05/2016 19:50
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.010		0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	0.30		0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	J	0.0024	0.0019	0.00063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.0019	0.00089
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.26	M	0.0024	0.0019	0.00084
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.54	M	0.0039	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	121		25-150
STL00991	13C4 PFOS	112		25-150
STL00995	13C5 PFNA	97		25-150
STL00990	13C4 PFOA	103		25-150
STL01892	13C4-PFHpA	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_027.d
 Lims ID: 320-16649-A-2-A Lab Sample ID: 320-16649-2
 Client ID: OF-INF01-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 19:50:07 ALS Bottle#: 11 Worklist Smp#: 23
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16649-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 10:50:33 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:14:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.008	7.039	-0.031	1.000	73875	6.13			
D 8 13C4-PFHpA	367.0 > 322.0	9.375	9.413	-0.038		1153557	54.0	108	4727	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.381	9.413	-0.032	1.000	125631	5.18		41.4	
D 11 18O2 PFHxS	403.0 > 84.0	9.411	9.444	-0.033		592369	57.3	121	1668	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.411	9.449	-0.038	1.000	1199805	135.2			M M
D 12 13C4 PFOA	417.0 > 372.0	10.496	10.524	-0.028		1120607	51.3	103	2199	
13 Perfluorooctanoic acid	413.0 > 369.0	10.496	10.528	-0.032	1.000	3370178	155.3		98.2	
	413.0 > 169.0	10.496	10.528	-0.032	1.000	1210254	2.78(0.00-0.00)		61.3	
D 16 13C4 PFOS	503.0 > 80.0	11.451	11.478	-0.027		595424	53.4	112	1365	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.458	11.480	-0.022	1.000	3520046	277.8		644	M
	499.0 > 99.0	11.458	11.480	-0.022	1.000	1580914	2.23(0.00-0.00)		2100	M
D 17 13C5 PFNA	468.0 > 423.0	11.473	11.501	-0.028		962778	48.4	96.7	3184	
18 Perfluorononanoic acid	463.0 > 419.0	11.473	11.502	-0.029	1.000	14110	0.9307		18.9	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_027.d

Injection Date: 05-Jan-2016 19:50:07

Instrument ID: A6

Lims ID: 320-16649-A-2-A

Lab Sample ID: 320-16649-2

Client ID: OF-INF01-1215

Operator ID: JRB

ALS Bottle#: 11

Worklist Smp#: 23

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

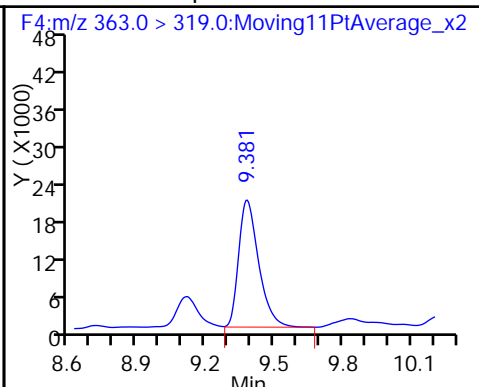
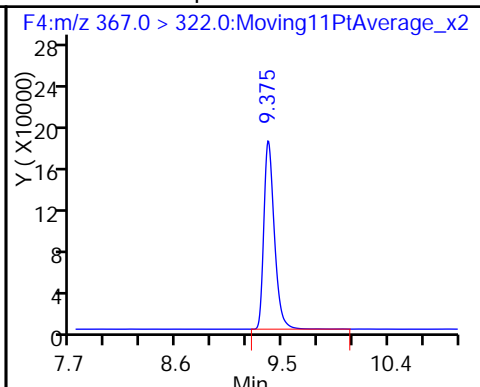
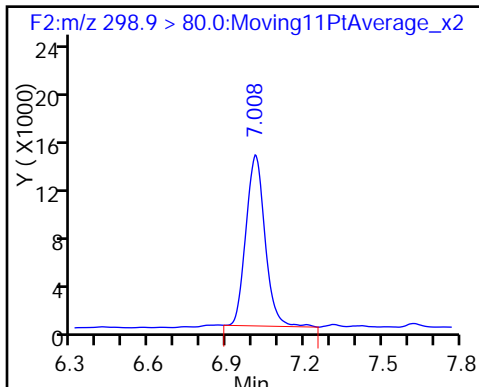
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

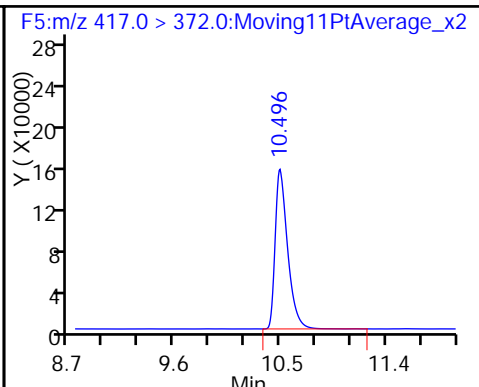
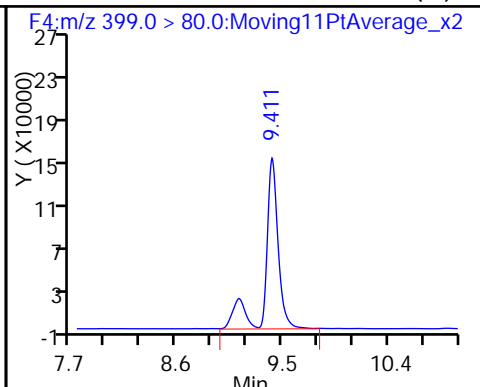
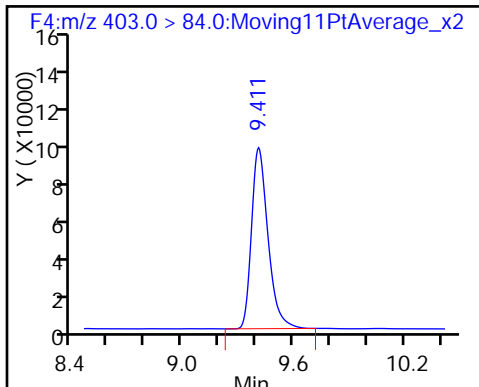
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

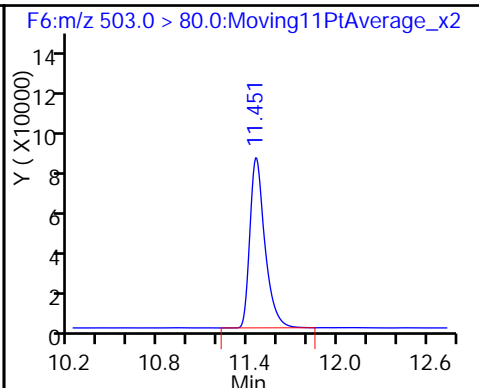
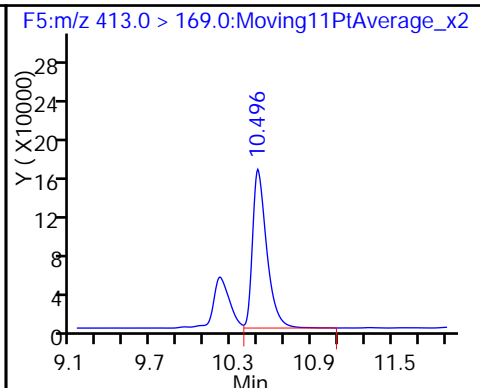
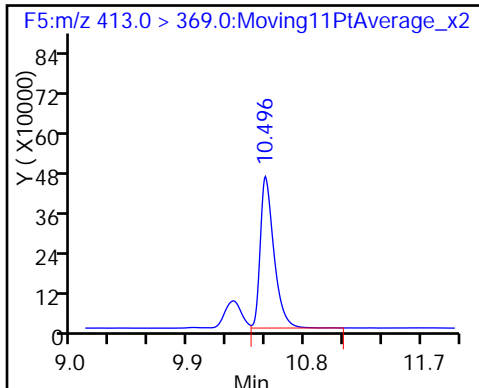
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

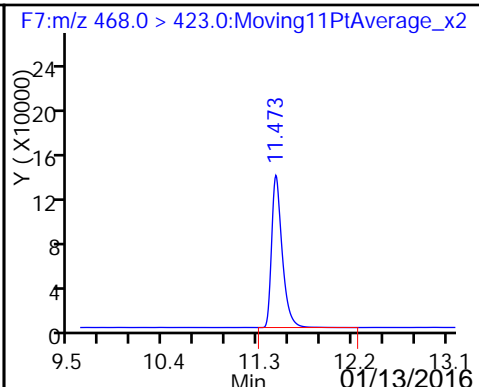
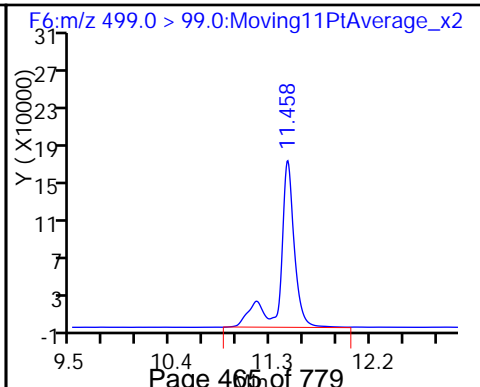
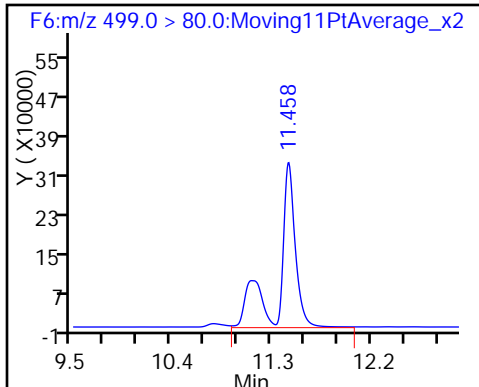
D 16 13C4 PFOS



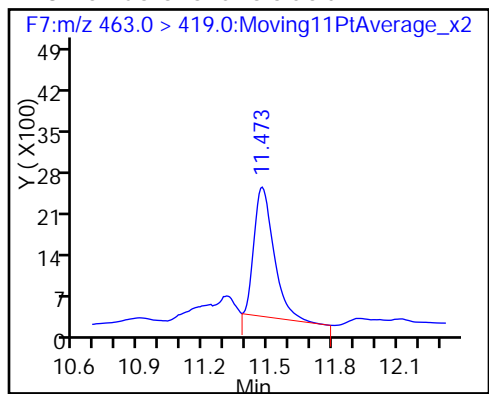
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



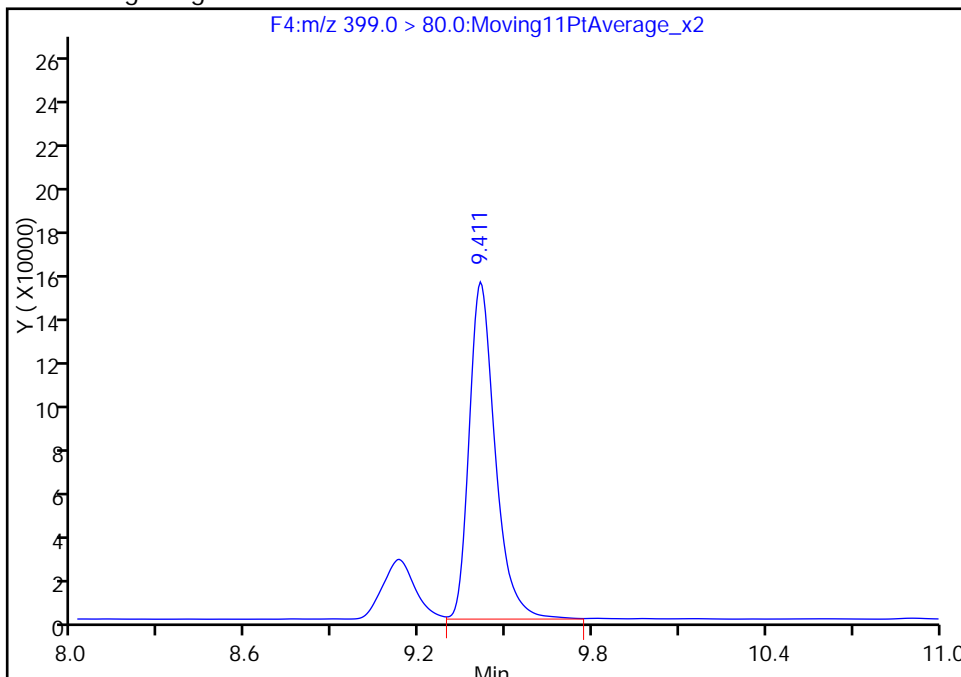
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_027.d
Injection Date: 05-Jan-2016 19:50:07 Instrument ID: A6
Lims ID: 320-16649-A-2-A Lab Sample ID: 320-16649-2
Client ID: OF-INF01-1215
Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 23
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

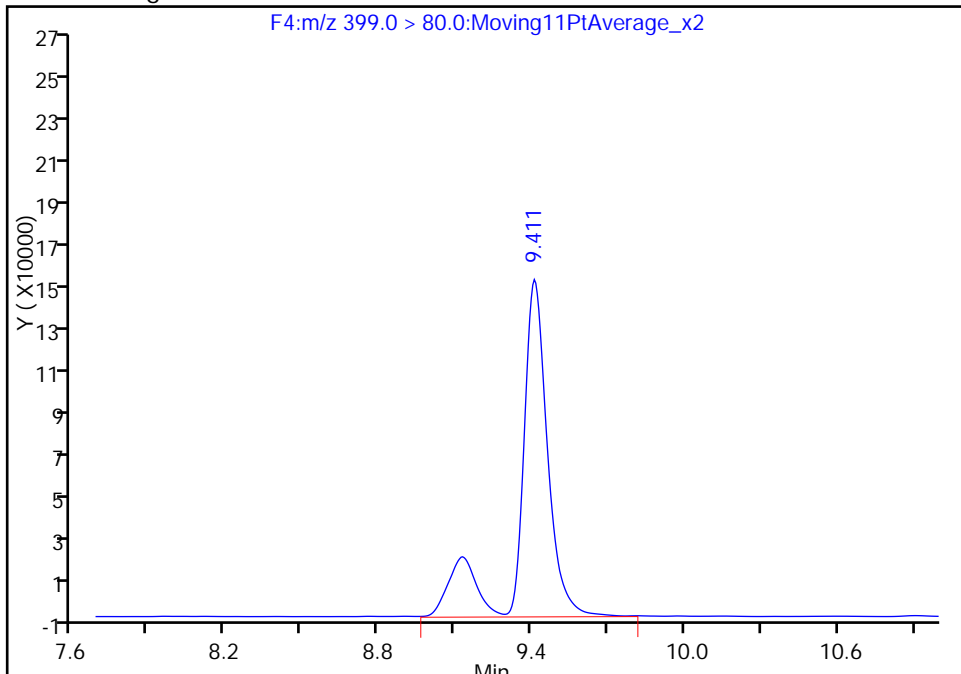
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Area: 975239
Amount: 109.8724
Amount Units: ng/ml

Processing Integration Results



RT: 9.41
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Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:14:10
Audit Action: Manually Integrated
Audit Reason: Isomers

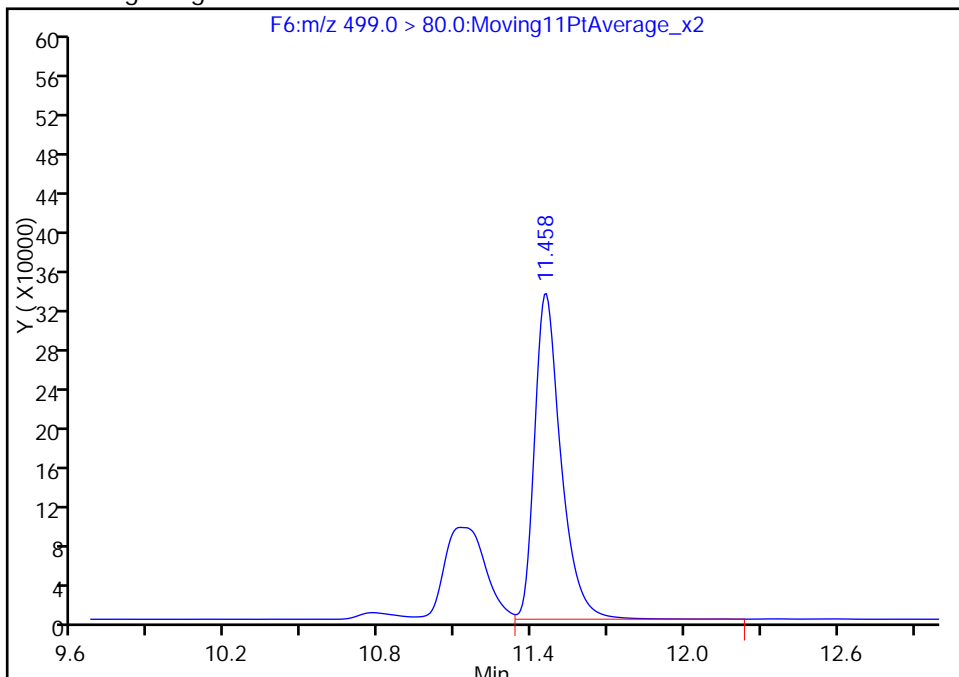
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_027.d
Injection Date: 05-Jan-2016 19:50:07 Instrument ID: A6
Lims ID: 320-16649-A-2-A Lab Sample ID: 320-16649-2
Client ID: OF-INF01-1215
Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 23
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

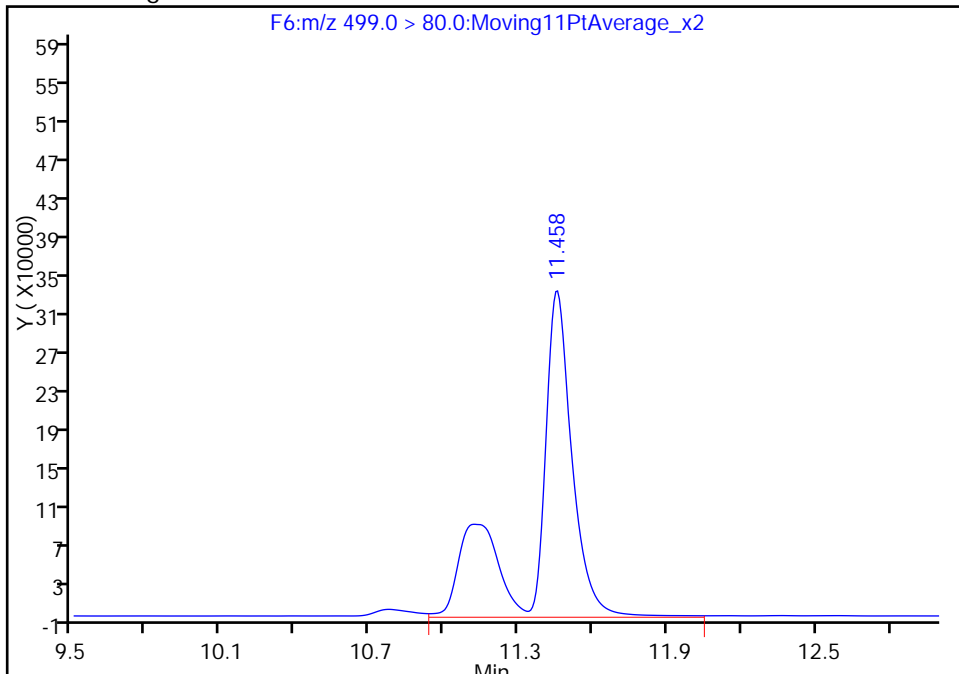
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Area: 2385613
Amount: 188.2378
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 3520046
Amount: 277.7507
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:14:10
Audit Action: Manually Integrated
Audit Reason: Isomers

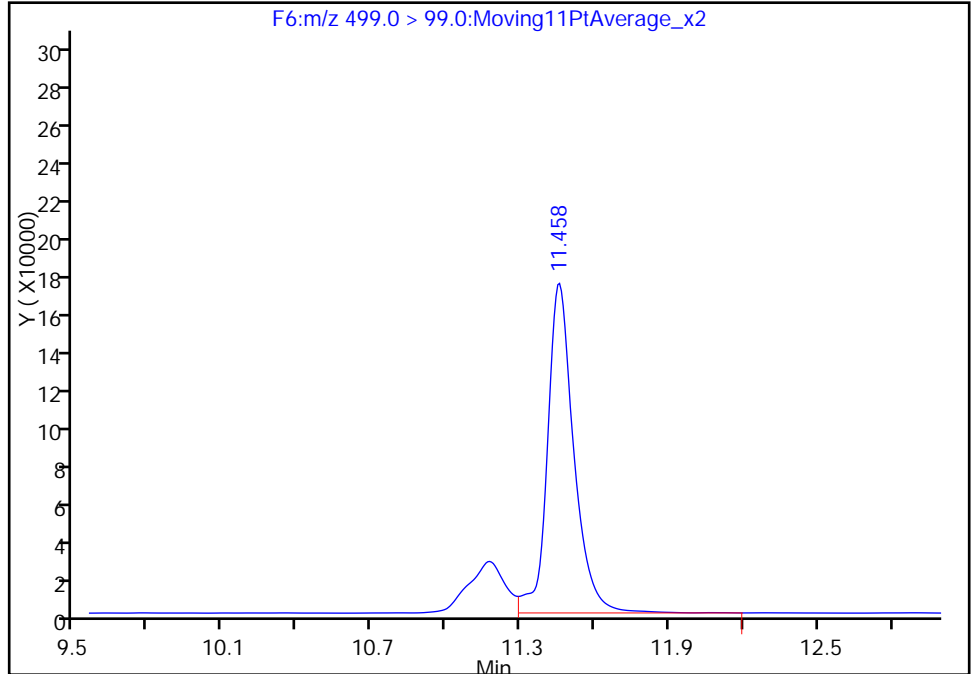
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_027.d
Injection Date: 05-Jan-2016 19:50:07 Instrument ID: A6
Lims ID: 320-16649-A-2-A Lab Sample ID: 320-16649-2
Client ID: OF-INF01-1215
Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 23
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRRM

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

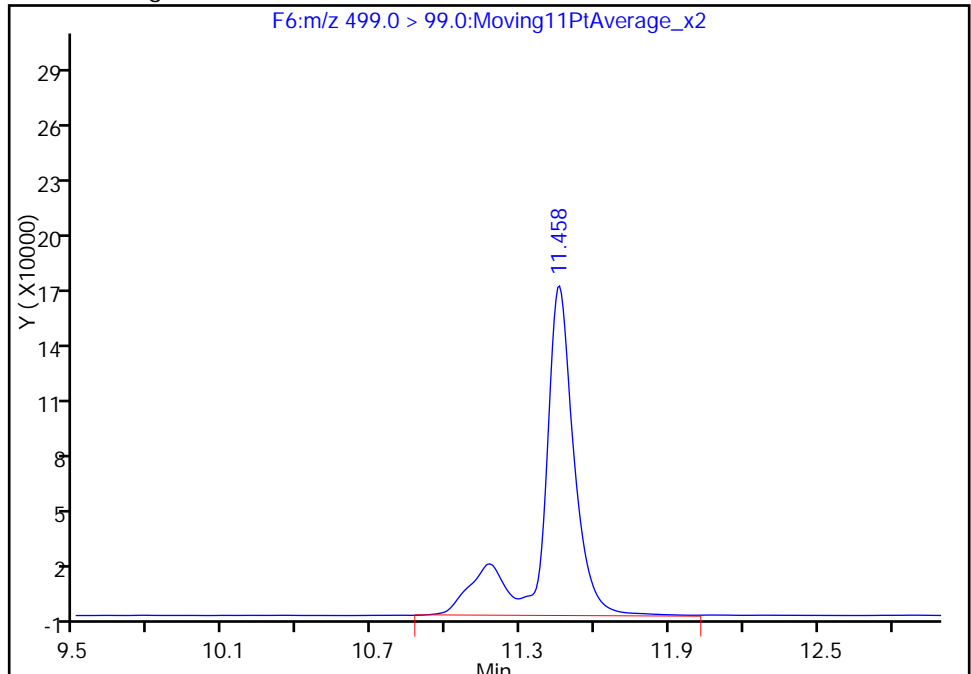
RT: 11.46
Area: 1298298
Amount: 188.2378
Amount Units: ng/ml

Processing Integration Results



RT: 11.46
Area: 1580914
Amount: 277.7507
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-INF01P-1215 Lab Sample ID: 320-16649-3
 Matrix: Water Lab File ID: 05JAN2016A6A_028.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 09:55
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 530.4 (mL) Date Analyzed: 01/05/2016 20:11
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0088		0.0024	0.0019	0.00076
335-67-1	Perfluorooctanoic acid (PFOA)	0.29		0.0024	0.0019	0.00071
375-95-1	Perfluorononanoic acid (PFNA)	0.0017	J	0.0024	0.0019	0.00062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.012		0.0024	0.0019	0.00087
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.25	M	0.0024	0.0019	0.00082
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.53	M	0.0038	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	124		25-150
STL00991	13C4 PFOS	102		25-150
STL00995	13C5 PFNA	86		25-150
STL00990	13C4 PFOA	95		25-150
STL01892	13C4-PFHpA	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_028.d
 Lims ID: 320-16649-A-3-A Lab Sample ID: 320-16649-3
 Client ID: OF-INF01P-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 20:11:21 ALS Bottle#: 12 Worklist Smp#: 24
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16649-A-3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 10:50:33 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:14:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.001	7.039	-0.038	1.000	78995	6.40			
D 8 13C4-PFHpA	367.0 > 322.0	9.376	9.413	-0.037		1035012	48.5	96.9	2347	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.370	9.413	-0.043	1.000	102226	4.68		33.7	
D 11 18O2 PFHxS	403.0 > 84.0	9.405	9.444	-0.039		606126	58.6	124	1555	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.405	9.449	-0.044	1.000	1191125	131.1			M M
D 12 13C4 PFOA	417.0 > 372.0	10.490	10.524	-0.034		1043210	47.7	95.5	2159	
13 Perfluorooctanoic acid	413.0 > 369.0	10.490	10.528	-0.038	1.000	3102078	153.6		103	
	413.0 > 169.0	10.490	10.528	-0.038	1.000	1084314	2.86(0.00-0.00)		63.2	
D 16 13C4 PFOS	503.0 > 80.0	11.451	11.478	-0.027		542058	48.6	102	1955	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.451	11.480	-0.029	1.000	3238858	280.7		731	M
	499.0 > 99.0	11.451	11.480	-0.029	1.000	1561135	2.07(0.00-0.00)		1672	M
D 17 13C5 PFNA	468.0 > 423.0	11.474	11.501	-0.027		859199	43.2	86.3	1933	
18 Perfluorononanoic acid	463.0 > 419.0	11.474	11.502	-0.028	1.000	11892	0.8789		13.8	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_028.d

Injection Date: 05-Jan-2016 20:11:21

Instrument ID: A6

Lims ID: 320-16649-A-3-A

Lab Sample ID: 320-16649-3

Client ID: OF-INF01P-1215

Operator ID: JRB

ALS Bottle#: 12

Worklist Smp#: 24

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

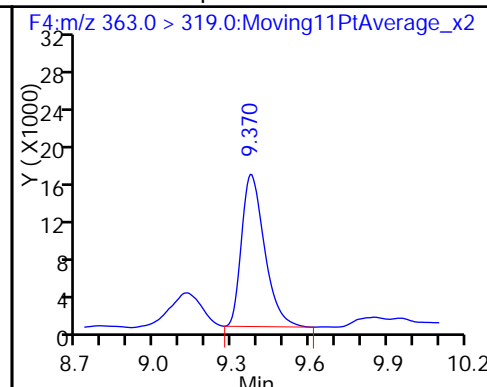
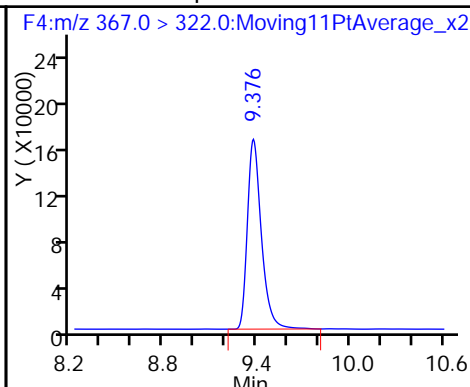
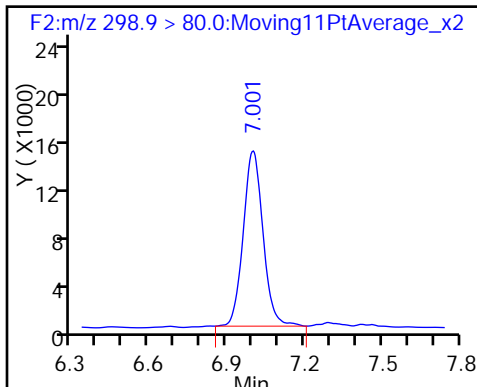
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

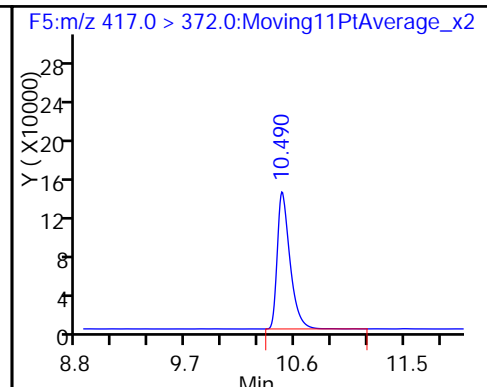
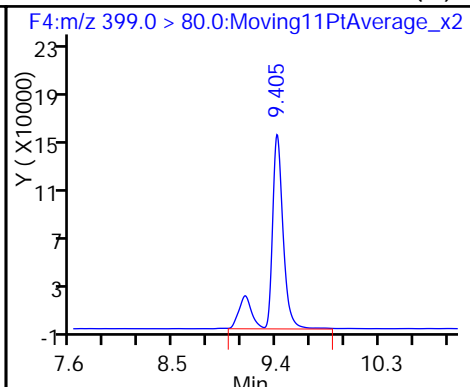
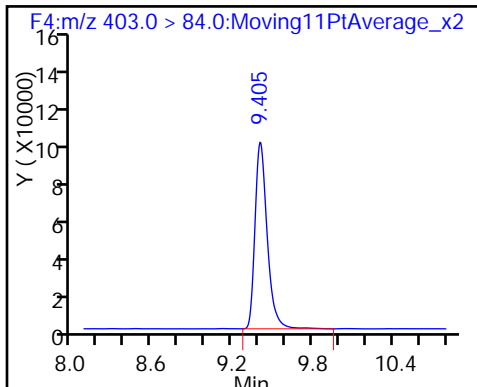
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

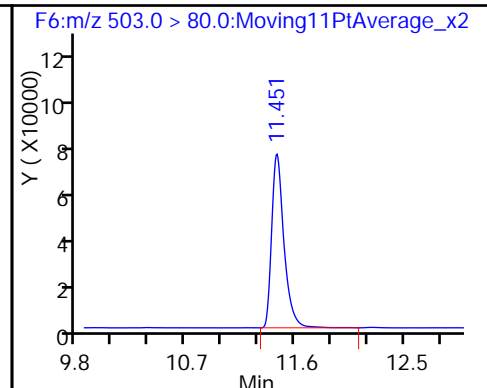
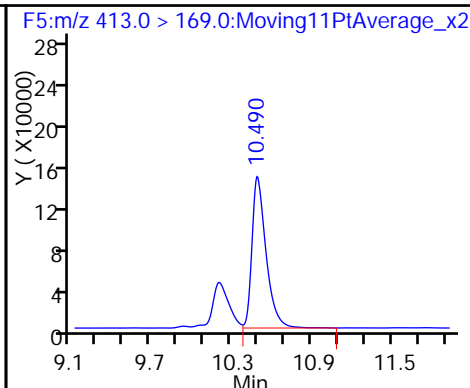
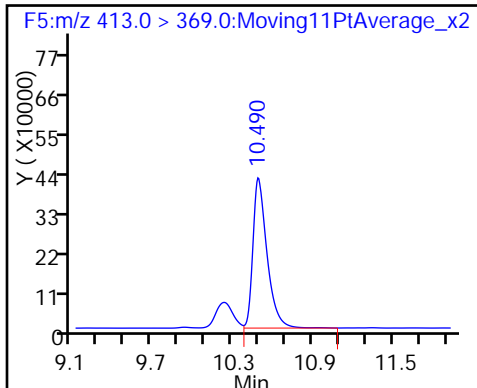
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

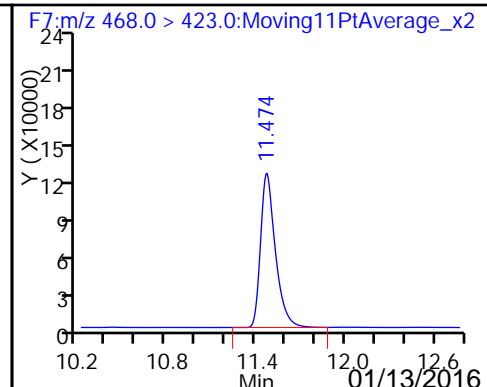
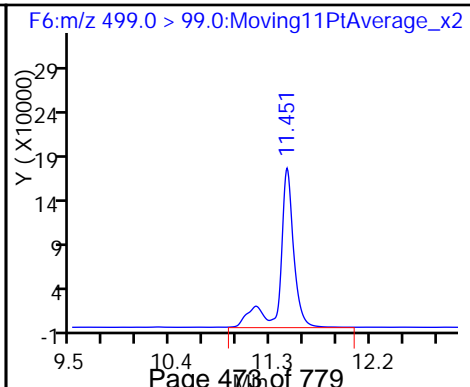
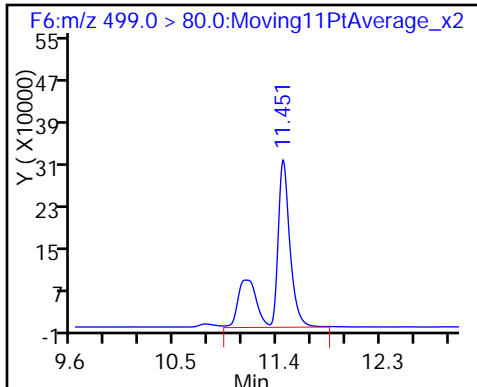
D 16 13C4 PFOS



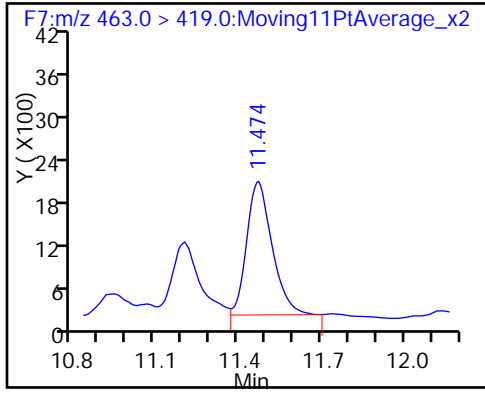
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



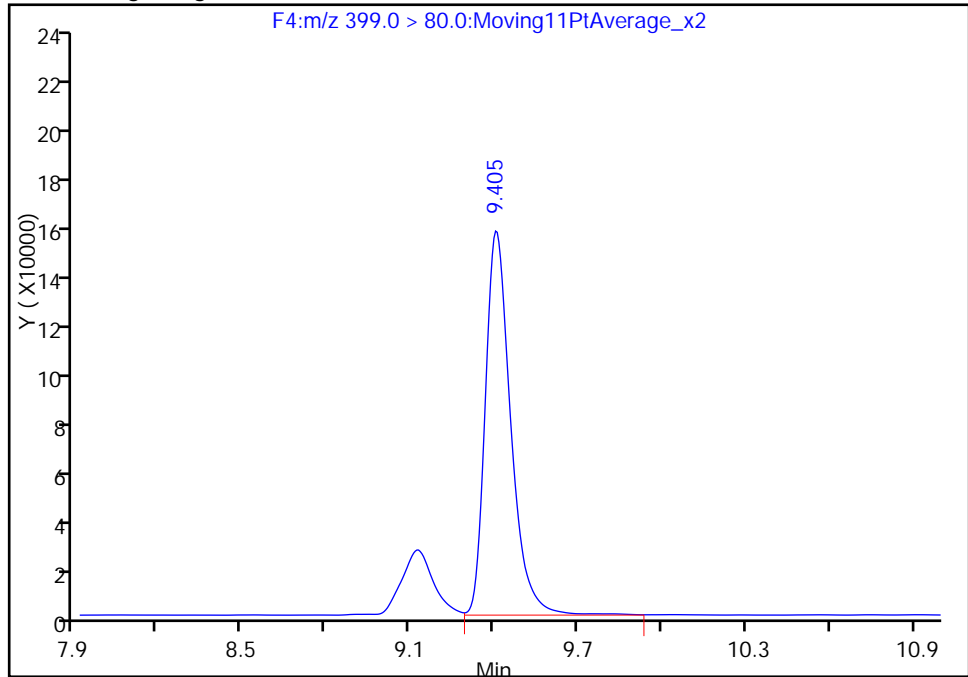
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_028.d
Injection Date: 05-Jan-2016 20:11:21 Instrument ID: A6
Lims ID: 320-16649-A-3-A Lab Sample ID: 320-16649-3
Client ID: OF-INF01P-1215
Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 24
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

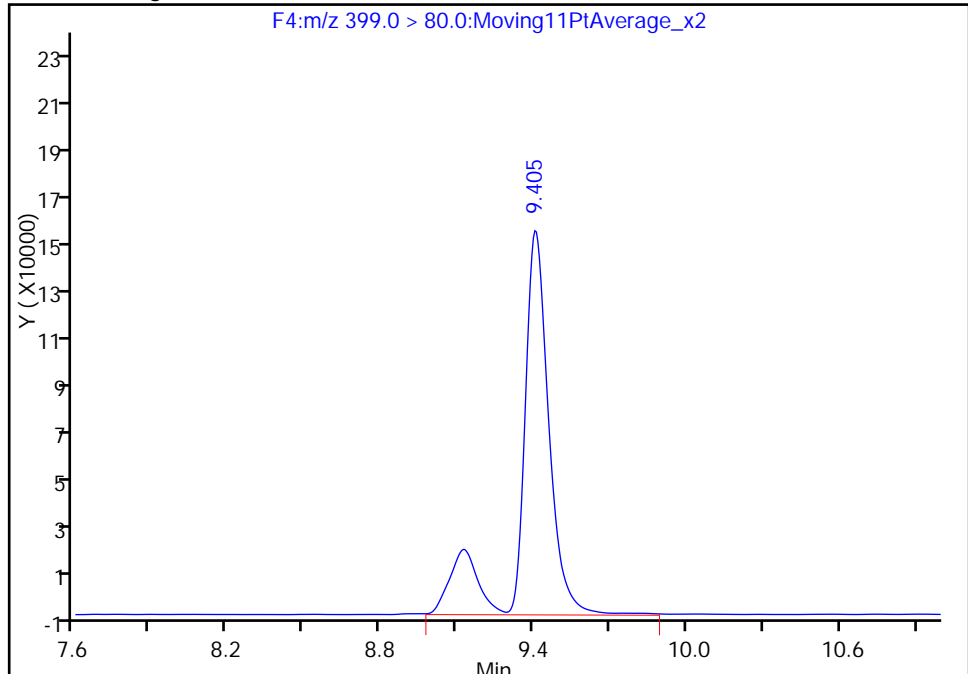
RT: 9.41
Area: 978800
Amount: 107.7708
Amount Units: ng/ml

Processing Integration Results



RT: 9.41
Area: 1191125
Amount: 131.1488
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:14:42
Audit Action: Manually Integrated
Audit Reason: Isomers

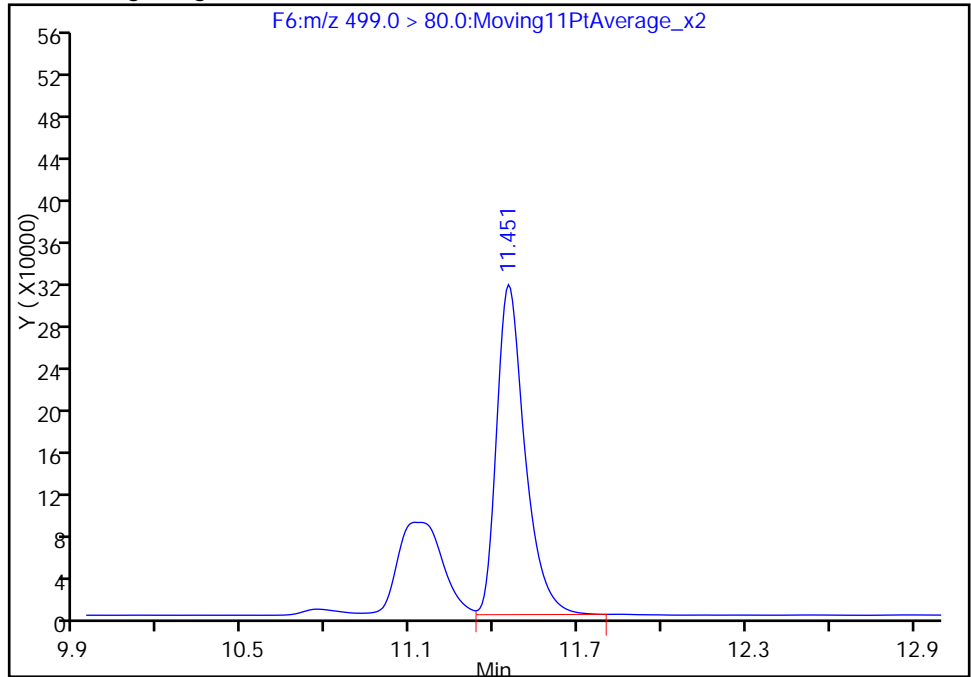
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_028.d
Injection Date: 05-Jan-2016 20:11:21 Instrument ID: A6
Lims ID: 320-16649-A-3-A Lab Sample ID: 320-16649-3
Client ID: OF-INF01P-1215
Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 24
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

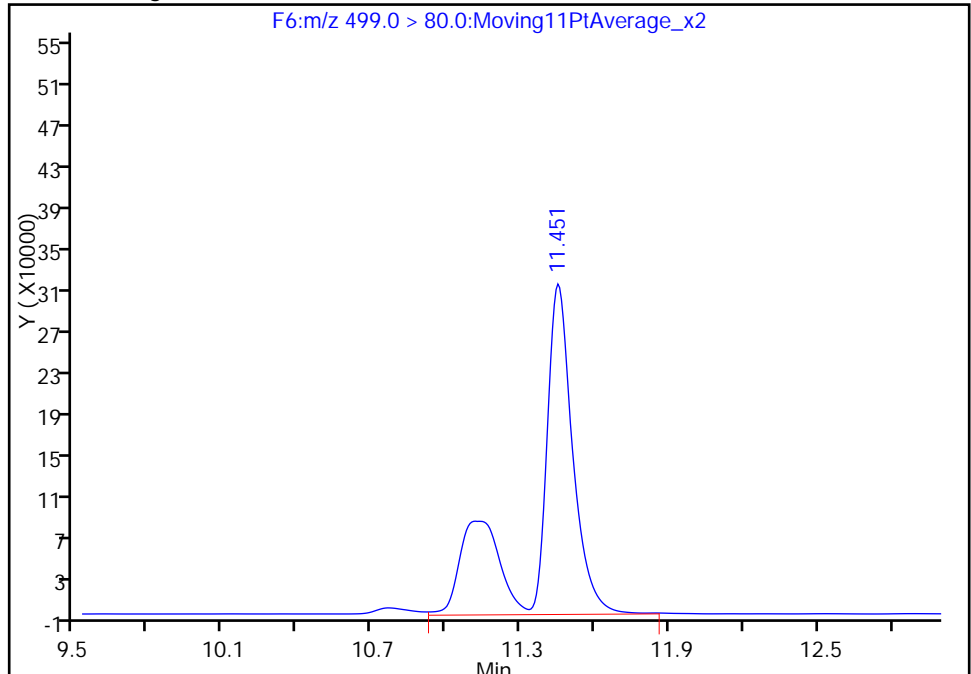
RT: 11.45
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Amount: 190.5052
Amount Units: ng/ml

Processing Integration Results



RT: 11.45
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Amount: 280.7238
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:14:42
Audit Action: Manually Integrated
Audit Reason: Isomers

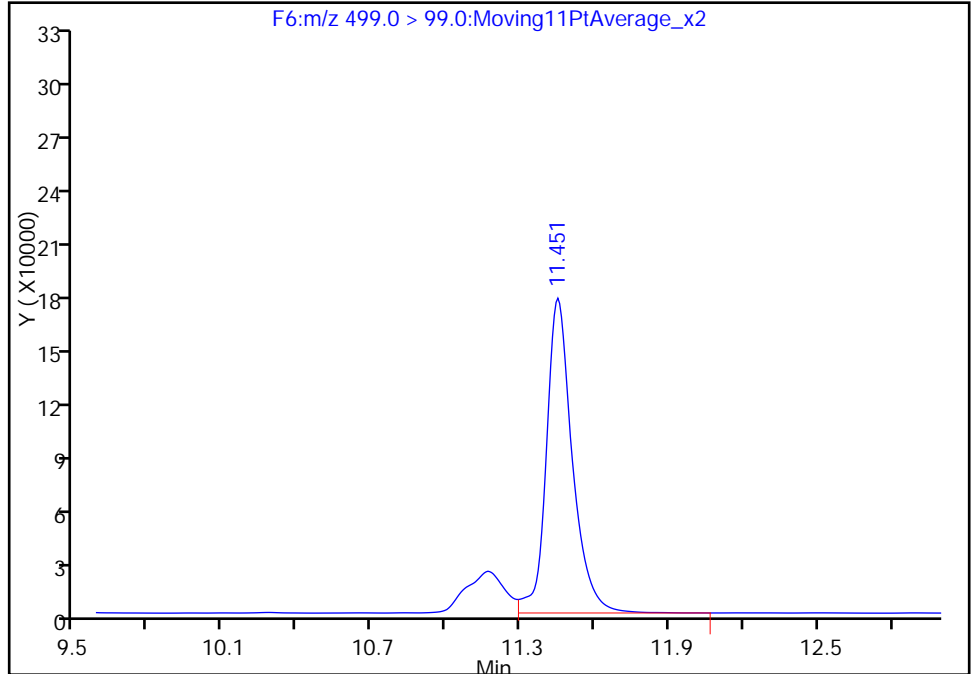
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_028.d
Injection Date: 05-Jan-2016 20:11:21 Instrument ID: A6
Lims ID: 320-16649-A-3-A Lab Sample ID: 320-16649-3
Client ID: OF-INF01P-1215
Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 24
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

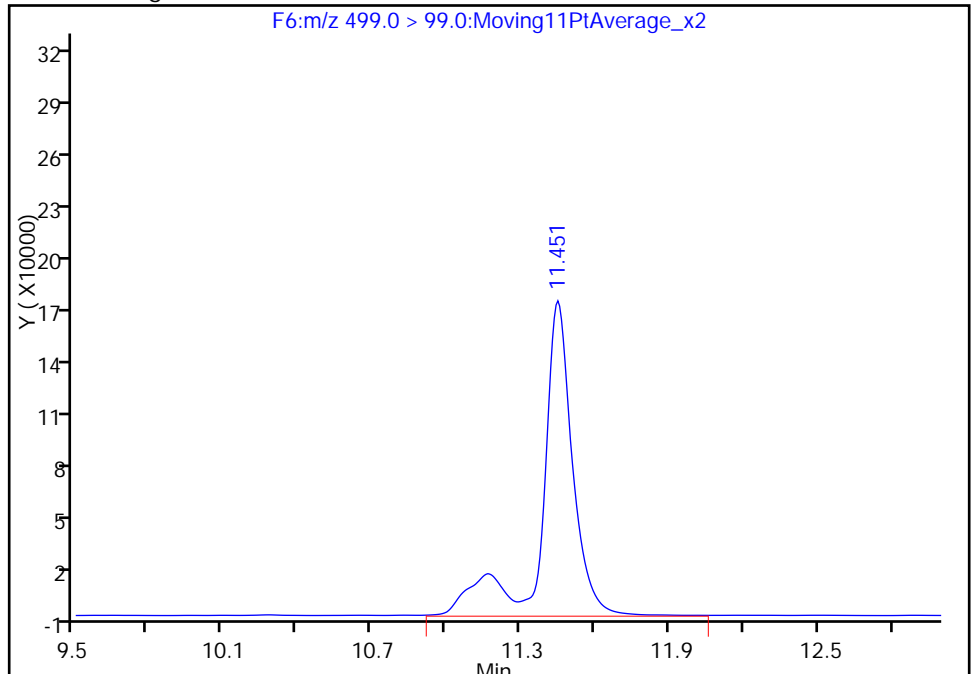
RT: 11.45
Area: 1282237
Amount: 190.5052
Amount Units: ng/ml

Processing Integration Results



RT: 11.45
Area: 1561135
Amount: 280.7238
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:14:42
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-EFF01-1215 Lab Sample ID: 320-16649-4
 Matrix: Water Lab File ID: 05JAN2016A6A_029.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 10:00
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 542.9(mL) Date Analyzed: 01/05/2016 20:32
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.052		0.0023	0.0018	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	J	0.0023	0.0018	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.0042		0.0023	0.0018	0.00060
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.049		0.0023	0.0018	0.00085
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.63	M	0.0023	0.0018	0.00080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.1	J M	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	113		25-150
STL00991	13C4 PFOS	104		25-150
STL00995	13C5 PFNA	93		25-150
STL00990	13C4 PFOA	76		25-150
STL01892	13C4-PFHpA	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_029.d
 Lims ID: 320-16649-A-4-A Lab Sample ID: 320-16649-4
 Client ID: OF-EFF01-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 20:32:35 ALS Bottle#: 13 Worklist Smp#: 25
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16649-A-4-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 10:50:33 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:16:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.001	7.039	-0.038	1.000	300723	26.8			
D 8 13C4-PFHpA	367.0 > 322.0	9.370	9.413	-0.043		1110681	52.0	104	1552	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.375	9.413	-0.038	1.000	645176	28.4		69.0	
D 11 18O2 PFHxS	403.0 > 84.0	9.405	9.444	-0.039		551281	53.3	113	2369	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.405	9.449	-0.044	1.000	2836266	343.4			M M
D 12 13C4 PFOA	417.0 > 372.0	10.489	10.524	-0.035		835367	38.2	76.5	1428	
13 Perfluorooctanoic acid	413.0 > 369.0	10.489	10.528	-0.039	1.000	16854478	1042.2		70.9	E E
	413.0 > 169.0	10.496	10.528	-0.032	1.001	5905096	2.85(0.00-0.00)		47.8	
D 16 13C4 PFOS	503.0 > 80.0	11.451	11.478	-0.027		553500	49.7	104	2145	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.451	11.480	-0.029	1.000	6925191	587.8		463	EM EM
	499.0 > 99.0	11.451	11.480	-0.029	1.000	3092819	2.24(0.00-0.00)		1880	M
D 17 13C5 PFNA	468.0 > 423.0	11.474	11.501	-0.027		921244	46.3	92.6	1938	
18 Perfluorononanoic acid	463.0 > 419.0	11.474	11.502	-0.028	1.000	32885	2.27		23.7	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_029.d

Injection Date: 05-Jan-2016 20:32:35

Instrument ID: A6

Lims ID: 320-16649-A-4-A

Lab Sample ID: 320-16649-4

Client ID: OF-EFF01-1215

Operator ID: JRB

ALS Bottle#: 13

Worklist Smp#: 25

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

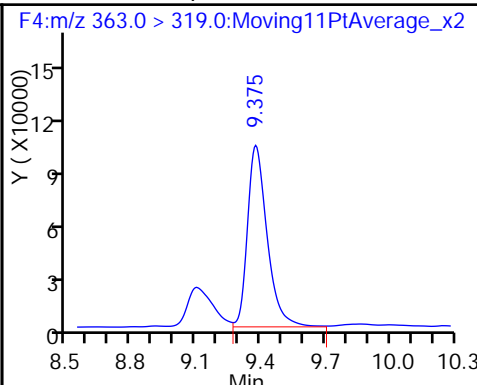
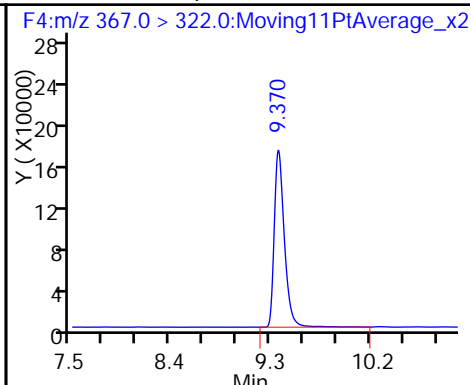
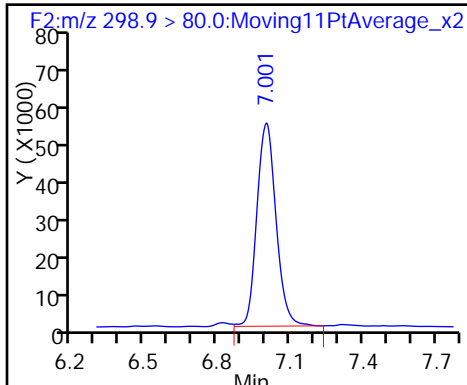
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

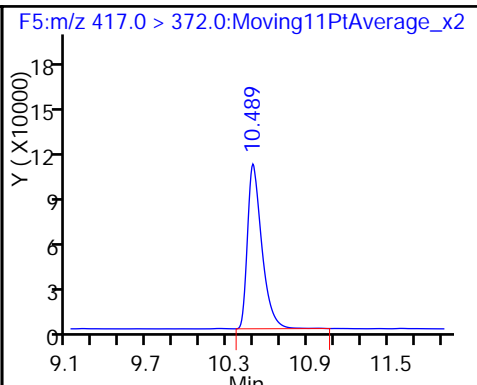
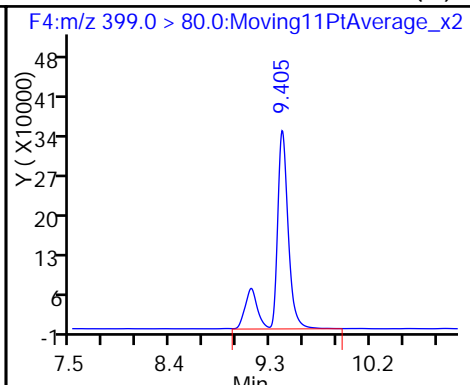
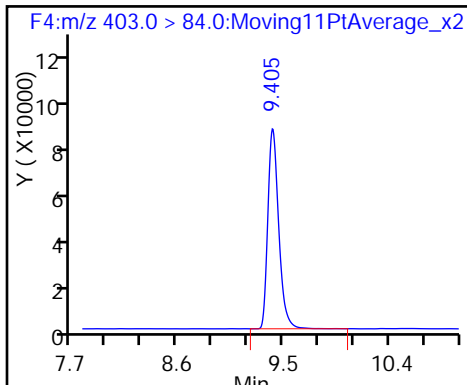
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

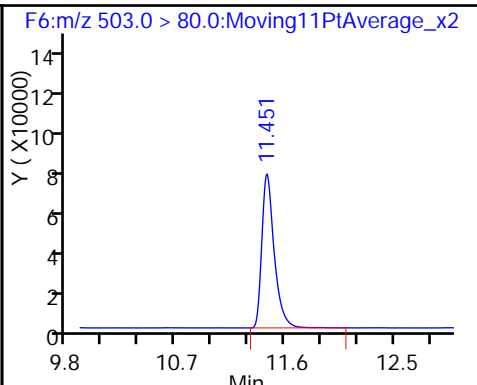
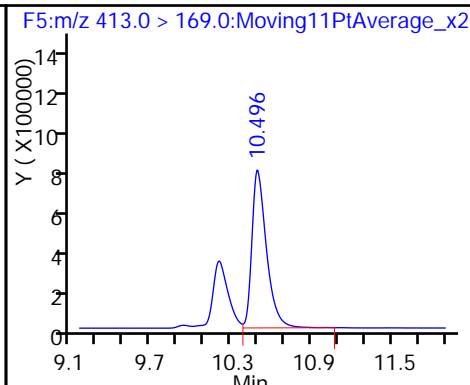
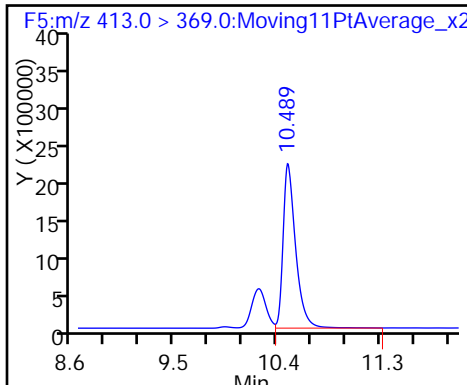
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

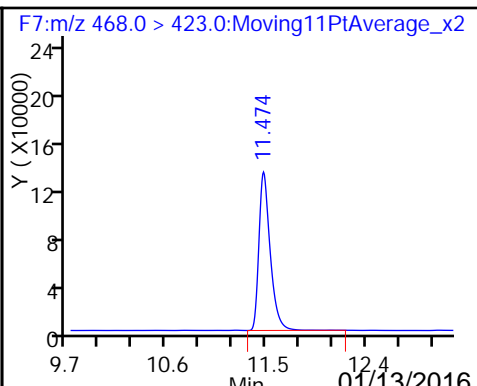
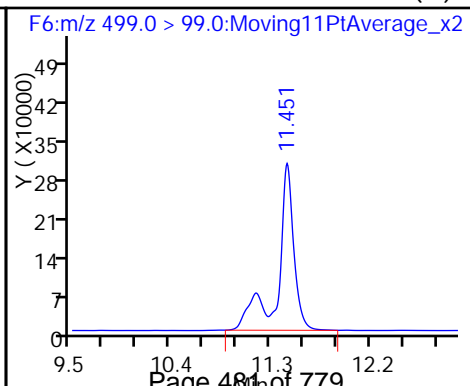
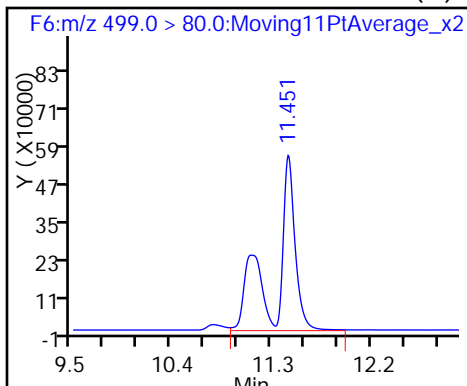
D 16 13C4 PFOS



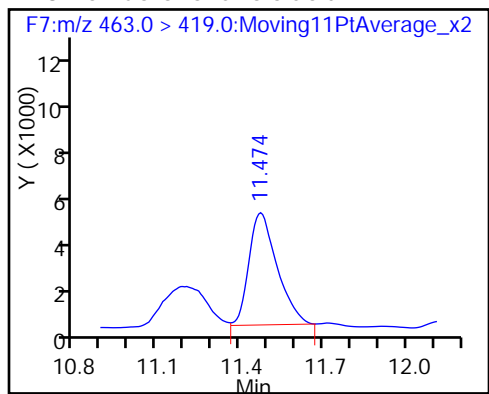
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



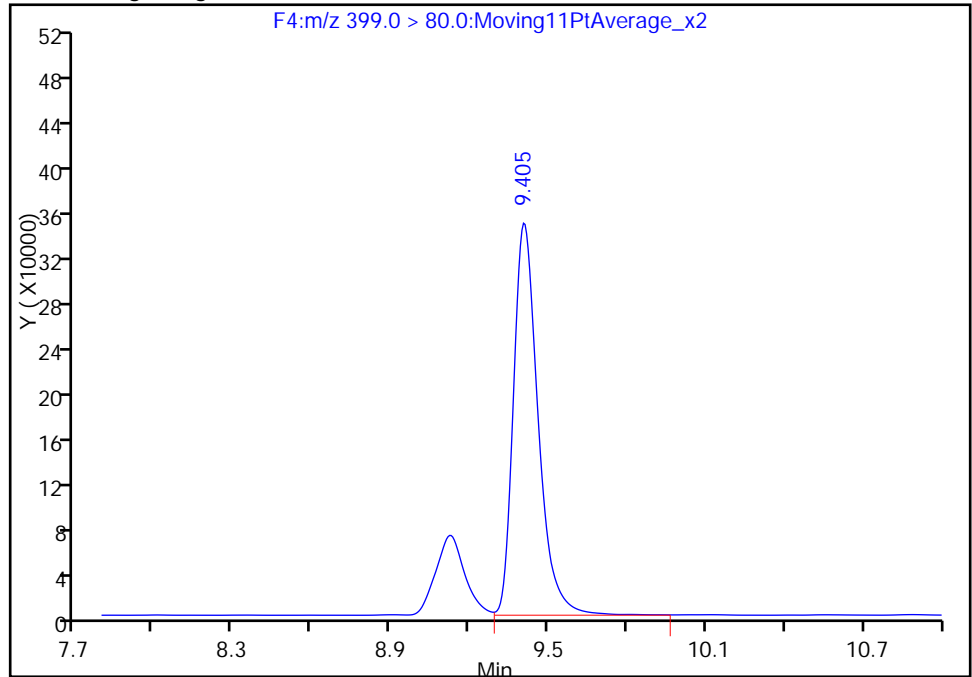
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_029.d
Injection Date: 05-Jan-2016 20:32:35 Instrument ID: A6
Lims ID: 320-16649-A-4-A Lab Sample ID: 320-16649-4
Client ID: OF-EFF01-1215
Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 25
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:M/RM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

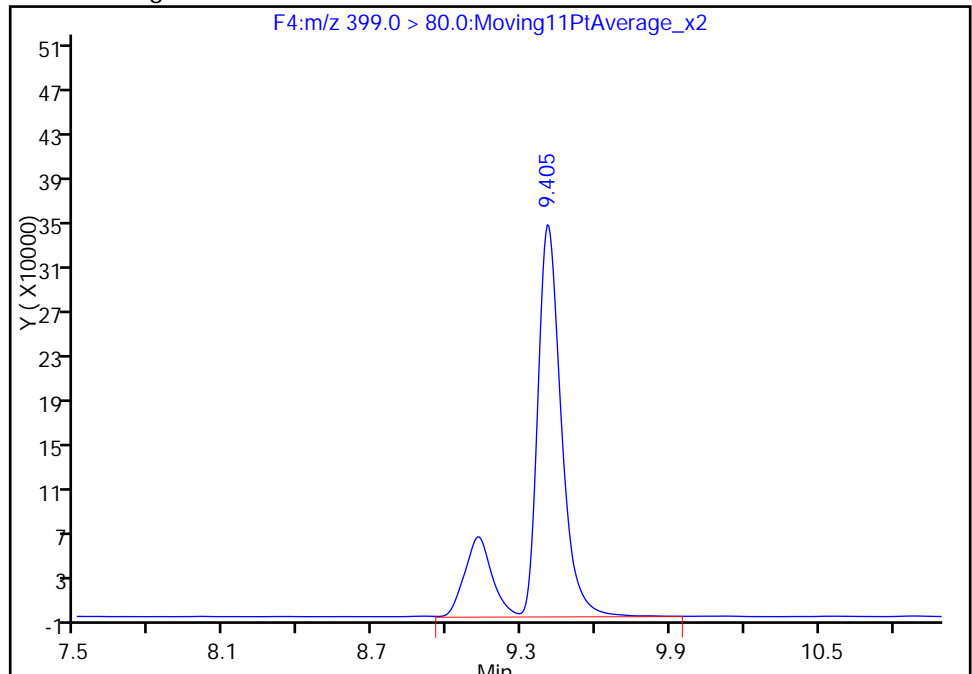
RT: 9.40
Area: 2276706
Amount: 275.6157
Amount Units: ng/ml

Processing Integration Results



RT: 9.40
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Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:16:05
Audit Action: Manually Integrated
Audit Reason: Isomers

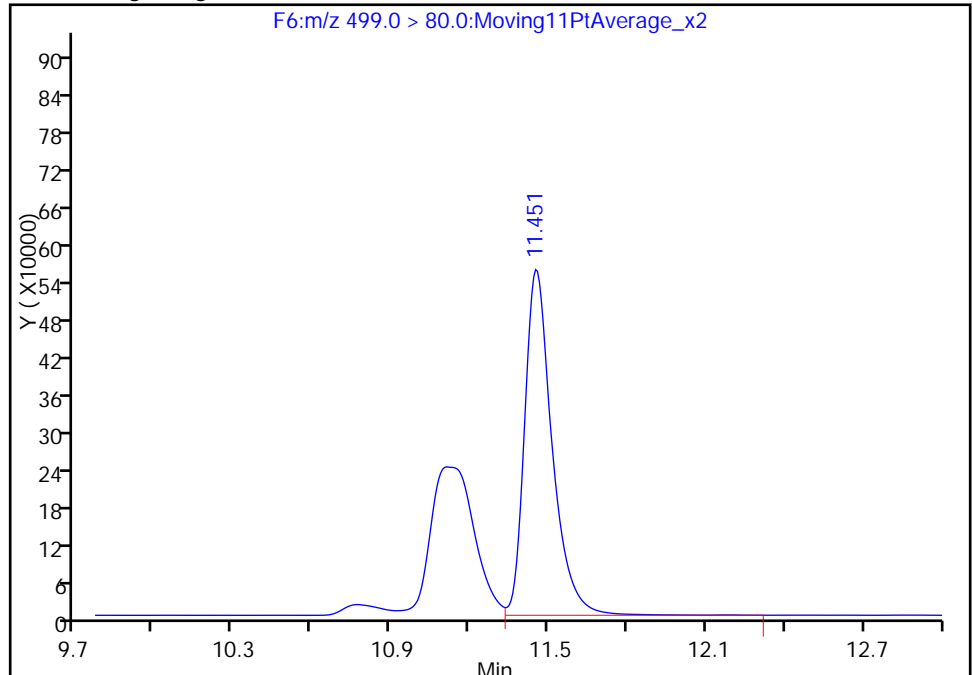
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_029.d
Injection Date: 05-Jan-2016 20:32:35 Instrument ID: A6
Lims ID: 320-16649-A-4-A Lab Sample ID: 320-16649-4
Client ID: OF-EFF01-1215
Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 25
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

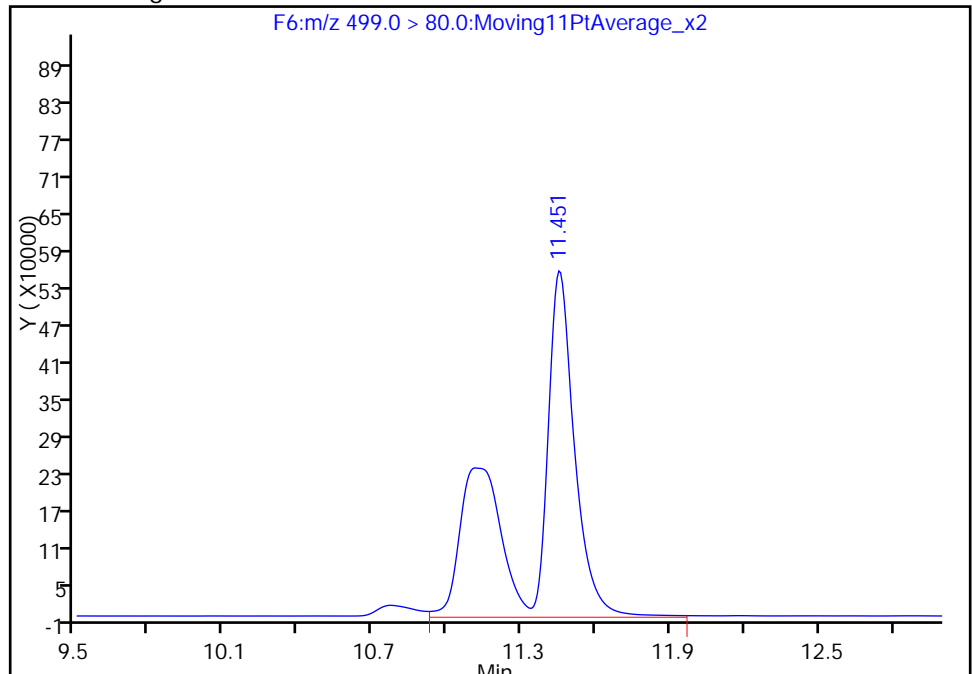
RT: 11.45
Area: 4059962
Amount: 344.6176
Amount Units: ng/ml

Processing Integration Results



RT: 11.45
Area: 6925191
Amount: 587.8239
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:16:05
Audit Action: Manually Integrated
Audit Reason: Isomers

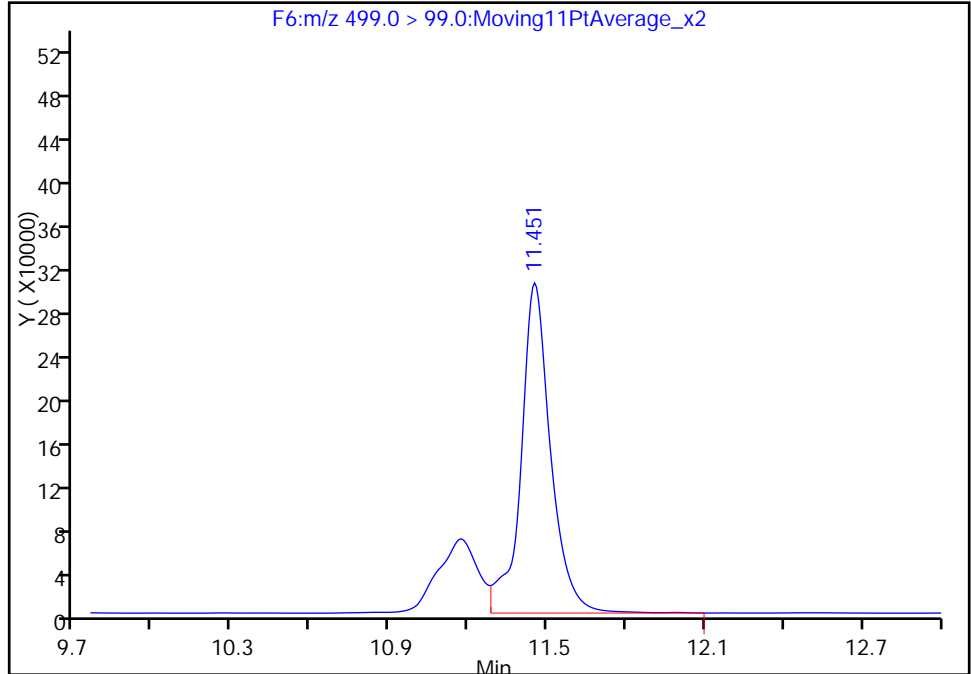
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_029.d
Injection Date: 05-Jan-2016 20:32:35 Instrument ID: A6
Lims ID: 320-16649-A-4-A Lab Sample ID: 320-16649-4
Client ID: OF-EFF01-1215
Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 25
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

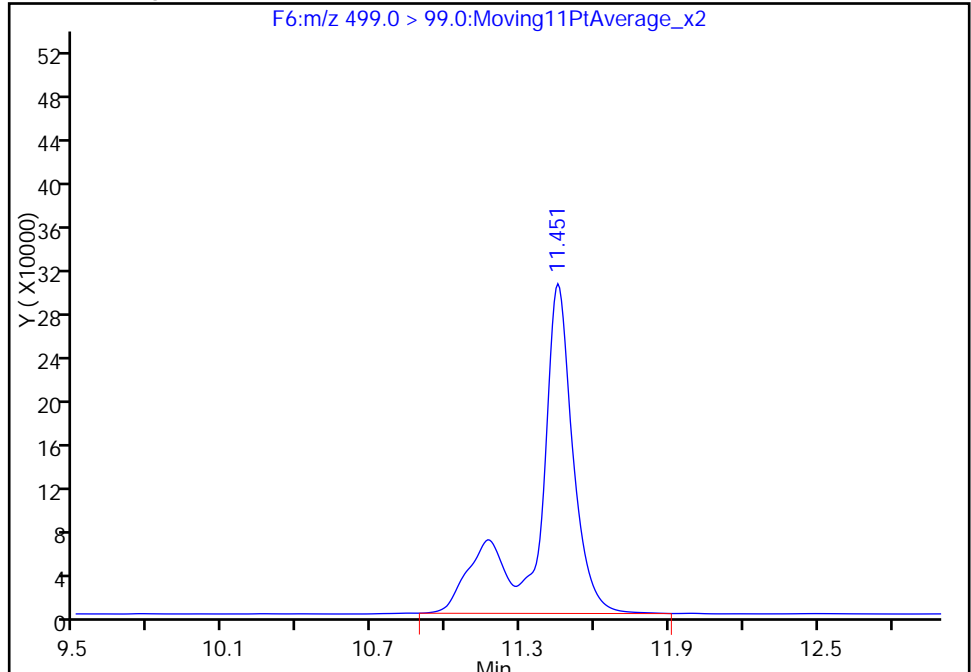
RT: 11.45
Area: 2399534
Amount: 344.6176
Amount Units: ng/ml

Processing Integration Results



RT: 11.45
Area: 3092819
Amount: 587.8239
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:16:05
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-EFF01-1215 DL Lab Sample ID: 320-16649-4 DL
 Matrix: Water Lab File ID: 06JAN2016A6A_019.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 10:00
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 542.9(mL) Date Analyzed: 01/06/2016 19:19
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 10
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	<i>Perfluoroheptanoic acid (PFHpA)</i>	0.054	D	0.023	0.018	0.0074
335-67-1	<i>Perfluorooctanoic acid (PFOA)</i>	1.8	D	0.023	0.018	0.0069
375-95-1	<i>Perfluorononanoic acid (PFNA)</i>	0.018	U	0.023	0.018	0.0060
375-73-5	<i>Perfluorobutanesulfonic acid (PFBS)</i>	0.029	D	0.023	0.018	0.0085
355-46-4	<i>Perfluorohexanesulfonic acid (PFHxS)</i>	0.62	D M	0.023	0.018	0.0080
1763-23-1	<i>Perfluorooctanesulfonic acid (PFOS)</i>	1.0	D M	0.037	0.028	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	110		25-150
STL00991	13C4 PFOS	111		25-150
STL00995	13C5 PFNA	100		25-150
STL00990	13C4 PFOA	89		25-150
STL01892	13C4-PFHpA	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_019.d
 Lims ID: 320-16649-A-4-A Lab Sample ID: 320-16649-4
 Client ID: OF-EFF01-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 19:19:57 ALS Bottle#: 24 Worklist Smp#: 16
 Injection Vol: 15.0 ul Dil. Factor: 10.0000
 Sample Info: 320-16649-A-4-A 10x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:50:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.969	6.976	-0.007	1.000	26876	1.58			
D 8 13C4-PFHpA	367.0 > 322.0	9.323	9.331	-0.008		186353	5.43	10.9	550	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	1.000	117837	2.93		45.3	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.352	9.363	-0.011	1.000	310901	33.5			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.352	9.363	-0.011		75663	5.21	11.0	145	
D 12 13C4 PFOA	417.0 > 372.0	10.434	10.452	-0.018		171583	4.44	8.9	526	
13 Perfluorooctanoic acid	413.0 > 369.0	10.434	10.453	-0.019	1.000	3653370	99.3		91.5	
	413.0 > 169.0	10.434	10.453	-0.019	1.000	1275020	2.87(0.00-0.00)		56.5	
D 16 13C4 PFOS	503.0 > 80.0	11.386	11.405	-0.019		99462	5.32	11.1	424	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	1100441	54.6		519	M
	499.0 > 99.0	11.386	11.408	-0.022	0.999	523629	2.10(0.00-0.00)		1469	M
D 17 13C5 PFNA	468.0 > 423.0	11.409	11.427	-0.018		160284	5.00	10.0	690	
18 Perfluorononanoic acid	463.0 > 419.0	11.416	11.431	-0.015	1.000	5894	0.2156		9.1	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_019.d

Injection Date: 06-Jan-2016 19:19:57

Instrument ID: A6

Lims ID: 320-16649-A-4-A

Lab Sample ID: 320-16649-4

Client ID: OF-EFF01-1215

Operator ID: JRB

ALS Bottle#: 24

Worklist Smp#: 16

Injection Vol: 15.0 ul

Dil. Factor: 10.0000

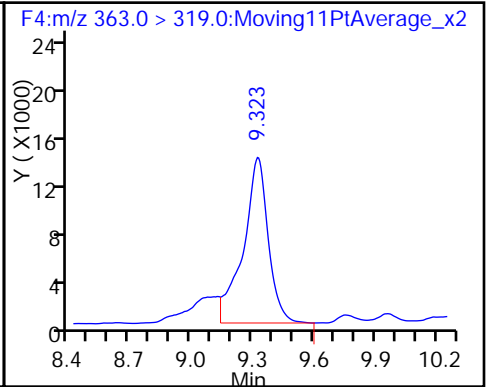
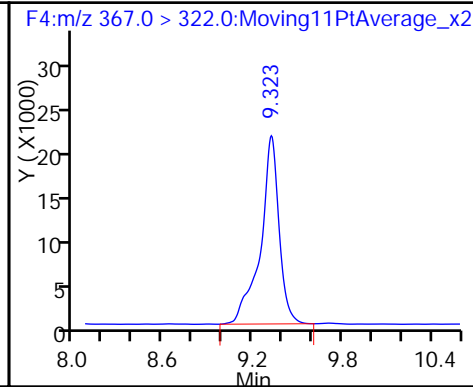
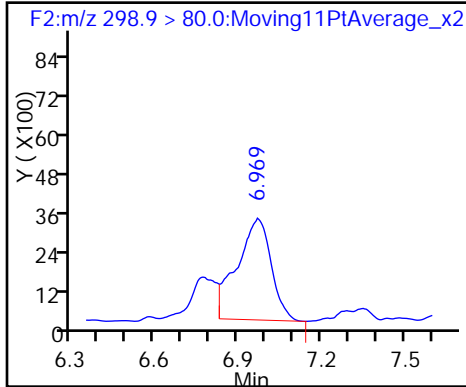
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

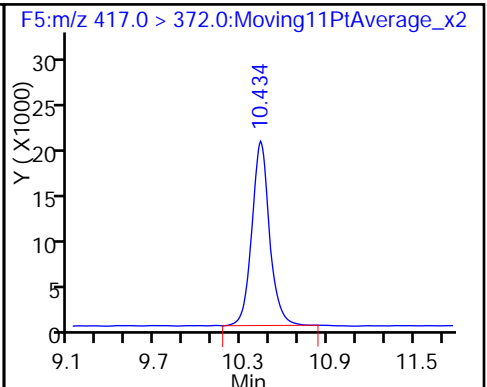
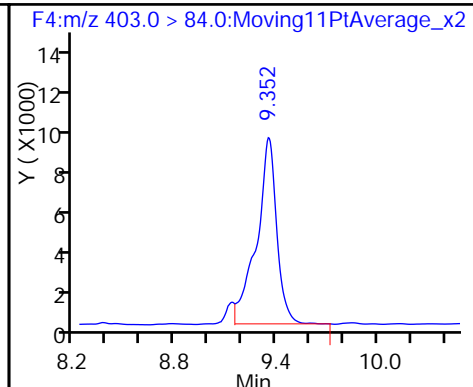
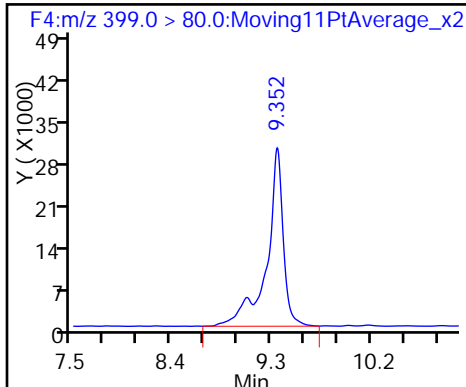
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

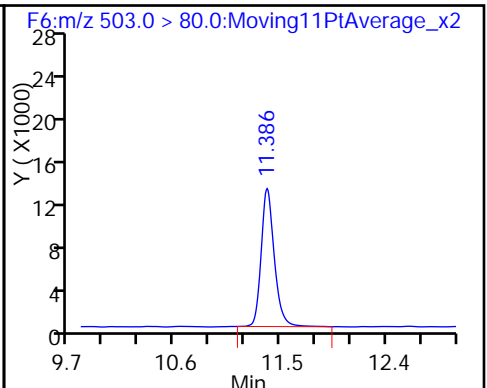
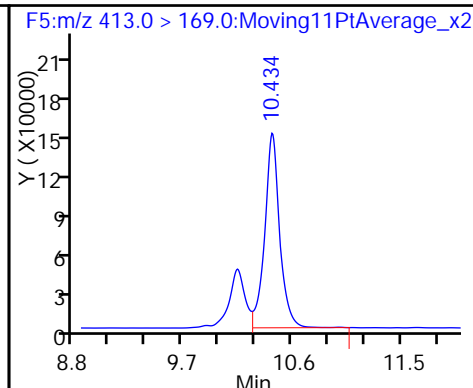
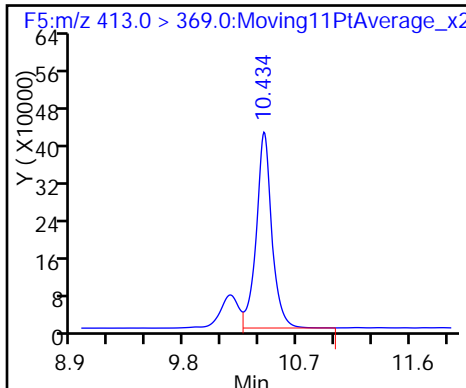
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

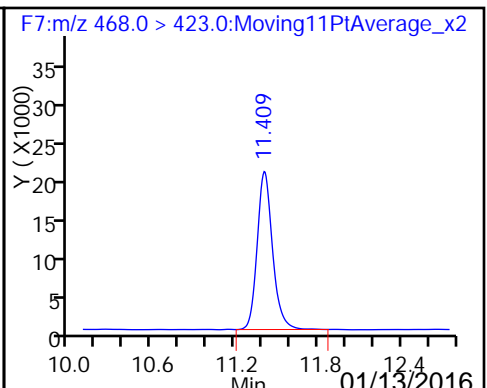
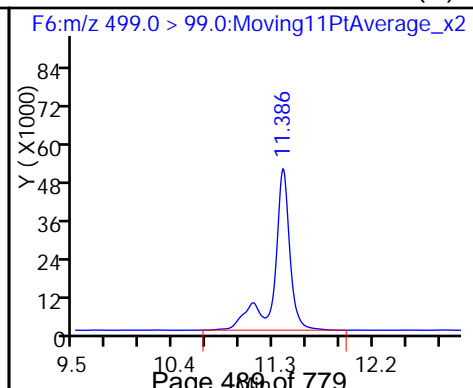
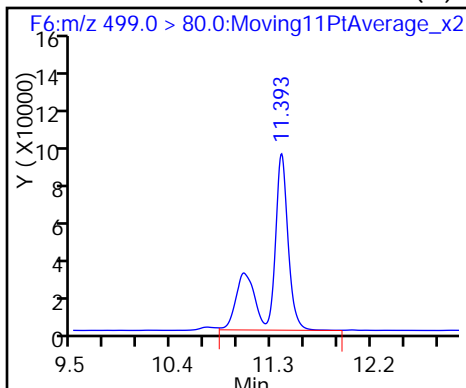
D 16 13C4 PFOS



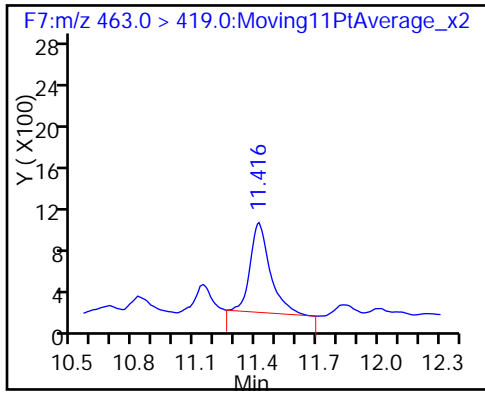
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



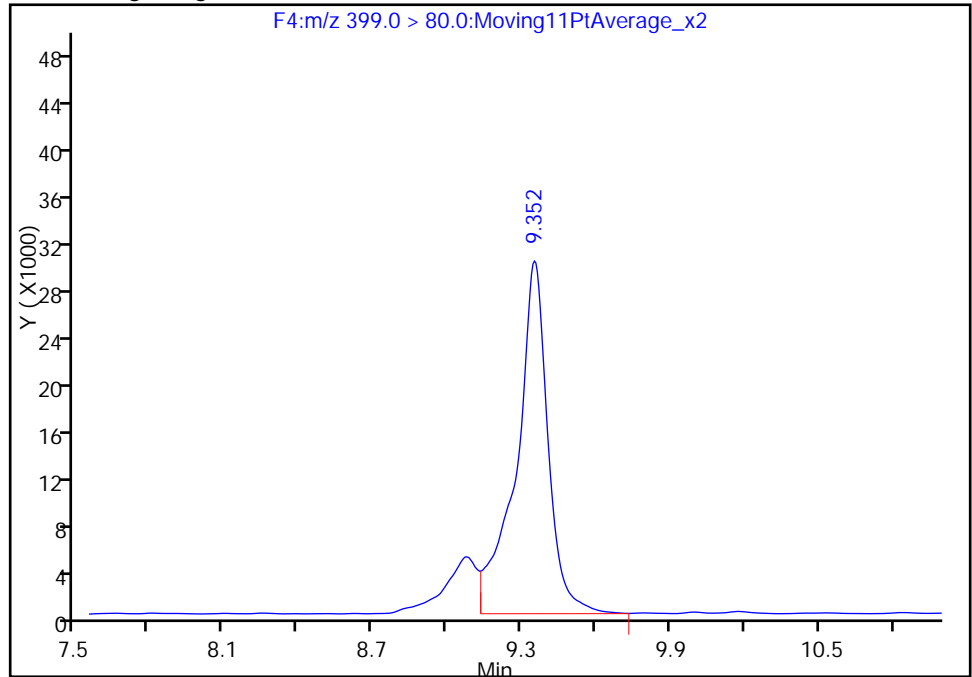
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_019.d
Injection Date: 06-Jan-2016 19:19:57 Instrument ID: A6
Lims ID: 320-16649-A-4-A Lab Sample ID: 320-16649-4
Client ID: OF-EFF01-1215
Operator ID: JRB ALS Bottle#: 24 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

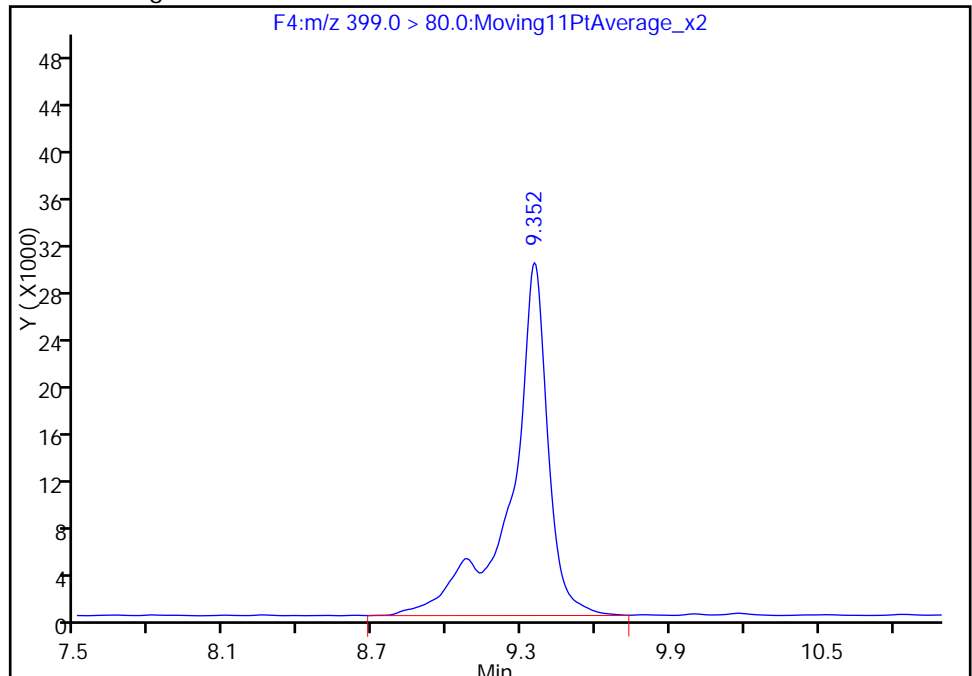
RT: 9.35
Area: 266086
Amount: 28.634706
Amount Units: ng/ml

Processing Integration Results



RT: 9.35
Area: 310901
Amount: 33.457449
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:50:40
Audit Action: Manually Integrated
Audit Reason: Isomers

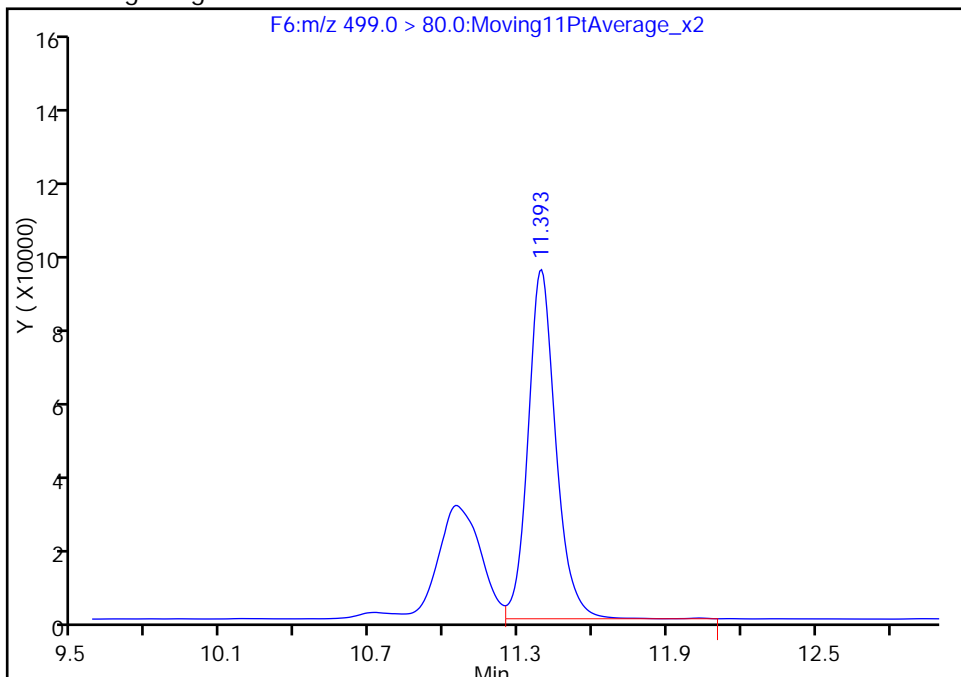
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_019.d
Injection Date: 06-Jan-2016 19:19:57 Instrument ID: A6
Lims ID: 320-16649-A-4-A Lab Sample ID: 320-16649-4
Client ID: OF-EFF01-1215
Operator ID: JRB ALS Bottle#: 24 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

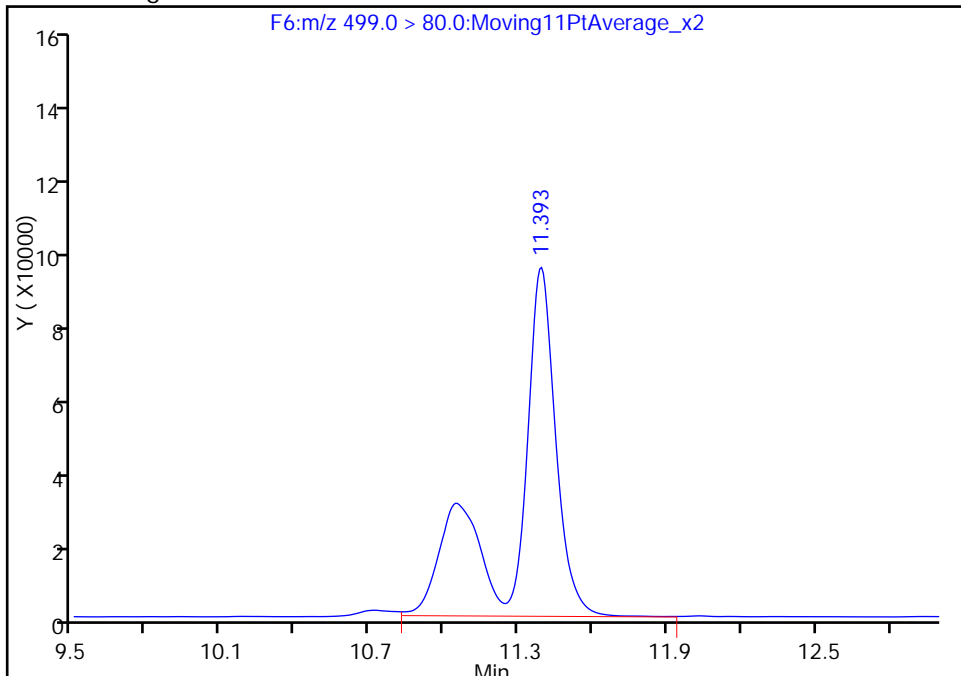
RT: 11.39
Area: 740292
Amount: 36.705017
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 1100441
Amount: 54.561857
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:50:40
Audit Action: Manually Integrated
Audit Reason: Isomers

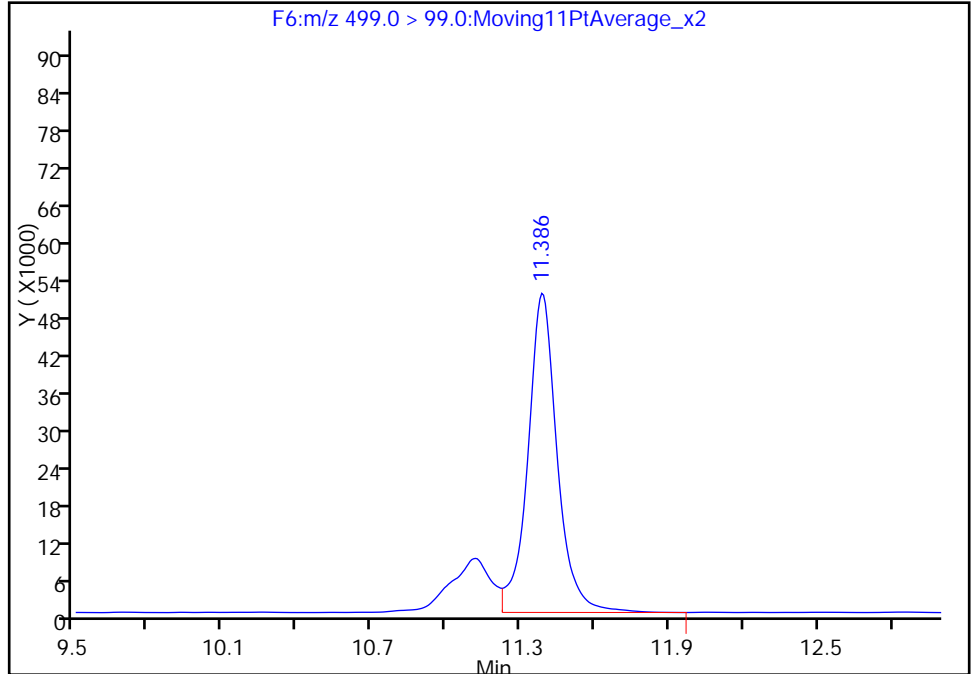
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_019.d
Injection Date: 06-Jan-2016 19:19:57 Instrument ID: A6
Lims ID: 320-16649-A-4-A Lab Sample ID: 320-16649-4
Client ID: OF-EFF01-1215
Operator ID: JRB ALS Bottle#: 24 Worklist Smp#: 16
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

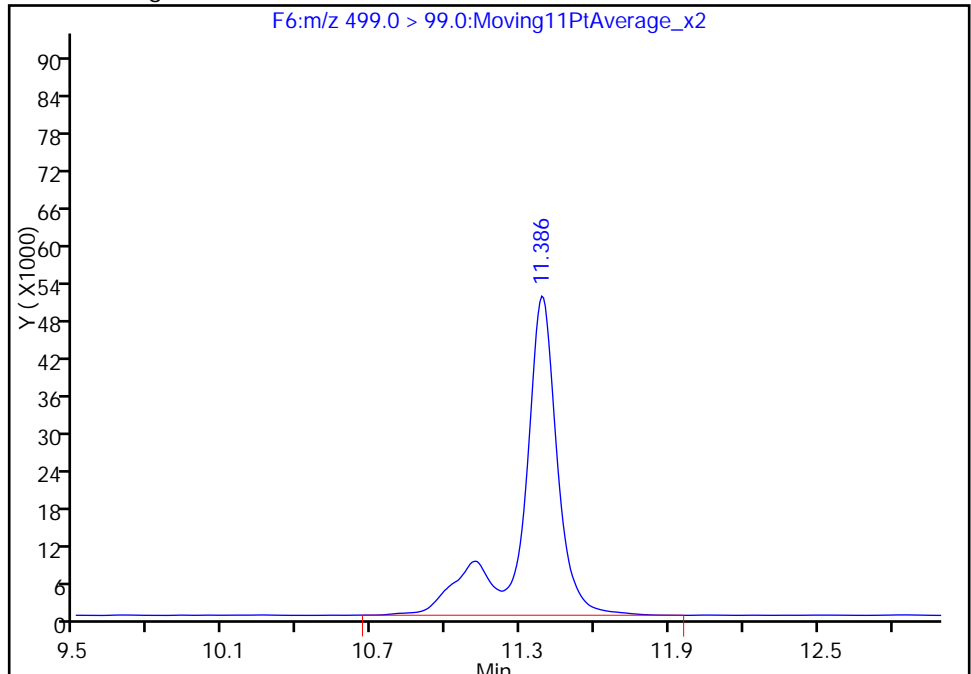
RT: 11.39
Area: 423818
Amount: 36.705017
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 523629
Amount: 54.561857
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:50:40
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-EFF01P-1215 Lab Sample ID: 320-16649-5
 Matrix: Water Lab File ID: 05JAN2016A6A_030.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 10:05
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 511.4 (mL) Date Analyzed: 01/05/2016 20:53
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.053		0.0024	0.0020	0.00078
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	J	0.0024	0.0020	0.00073
375-95-1	Perfluorononanoic acid (PFNA)	0.0036		0.0024	0.0020	0.00064
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.048		0.0024	0.0020	0.00090
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.62	M	0.0024	0.0020	0.00085
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.1	J M B	0.0039	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	107		25-150
STL00991	13C4 PFOS	93		25-150
STL00995	13C5 PFNA	89		25-150
STL00990	13C4 PFOA	73		25-150
STL01892	13C4-PFHpA	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_030.d
 Lims ID: 320-16649-A-5-A Lab Sample ID: 320-16649-5
 Client ID: OF-EFF01P-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 20:53:49 ALS Bottle#: 14 Worklist Smp#: 26
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16649-A-5-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 11:24:11 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK048

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:16:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.001	7.039	-0.038	1.000	260258	24.5			
D 8 13C4-PFHpA	367.0 > 322.0	9.376	9.413	-0.037		1005801	47.1	94.2	1617	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.376	9.413	-0.037	1.000	560841	27.3		79.7	
D 11 18O2 PFHxS	403.0 > 84.0	9.411	9.444	-0.033		521810	50.4	107	1526	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.405	9.449	-0.044	1.000	2461339	314.8			M M
D 12 13C4 PFOA	417.0 > 372.0	10.490	10.524	-0.034		793331	36.3	72.6	1285	
13 Perfluorooctanoic acid	413.0 > 369.0	10.497	10.528	-0.031	1.000	15076331	981.6		75.6	E E
	413.0 > 169.0	10.490	10.528	-0.038	0.999	5390668	2.80(0.00-0.00)		45.5	
D 16 13C4 PFOS	503.0 > 80.0	11.451	11.478	-0.027		495350	44.4	93.0	1285	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.451	11.480	-0.029	1.000	6141509	582.5		448	EM EM
	499.0 > 99.0	11.451	11.480	-0.029	1.000	2159889	2.84(0.00-0.00)		58.1	
D 17 13C5 PFNA	468.0 > 423.0	11.474	11.501	-0.027		881479	44.3	88.6	2507	
18 Perfluorononanoic acid	463.0 > 419.0	11.474	11.502	-0.028	1.000	25669	1.85		26.7	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_030.d

Injection Date: 05-Jan-2016 20:53:49

Instrument ID: A6

Lims ID: 320-16649-A-5-A

Lab Sample ID: 320-16649-5

Client ID: OF-EFF01P-1215

Operator ID: JRB

ALS Bottle#: 14

Worklist Smp#: 26

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

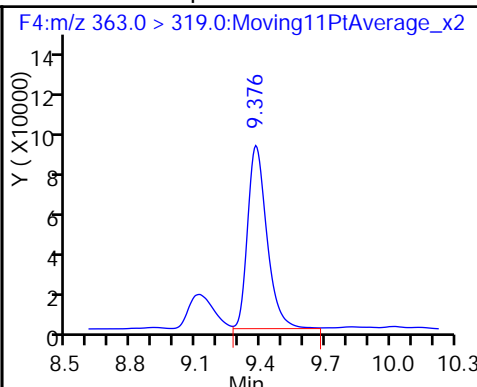
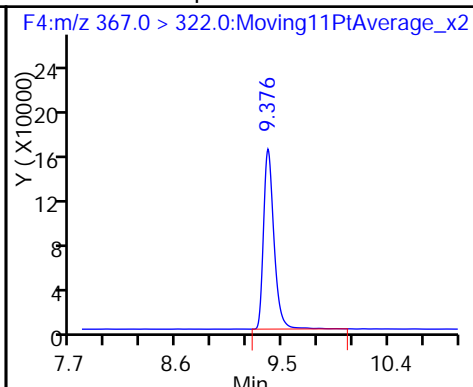
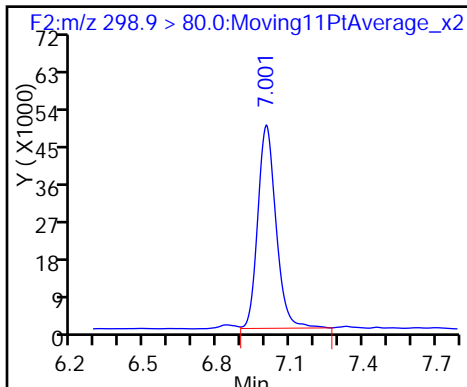
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

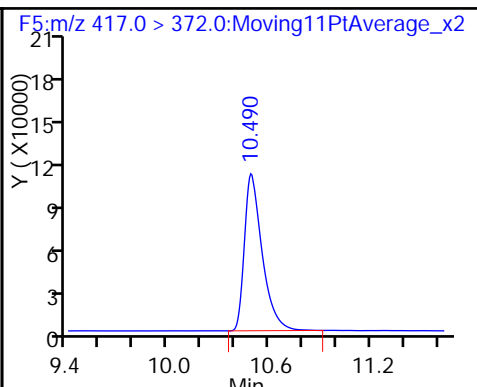
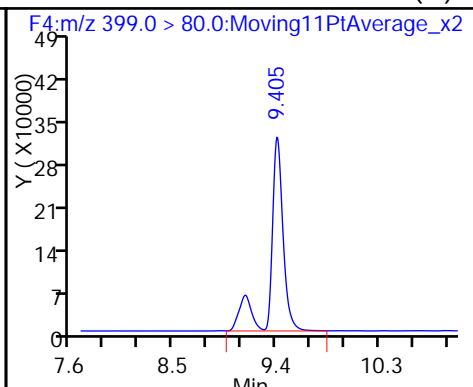
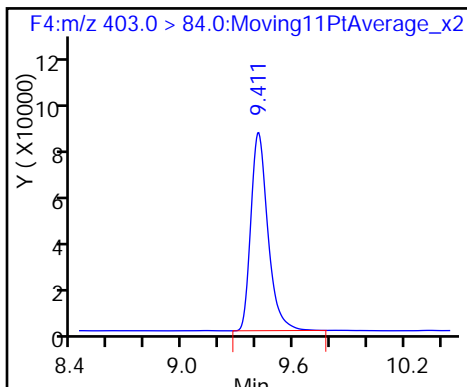
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid (M)

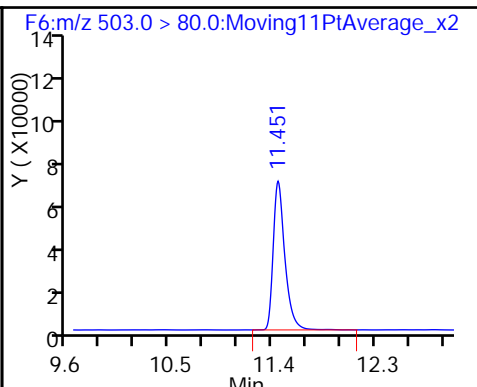
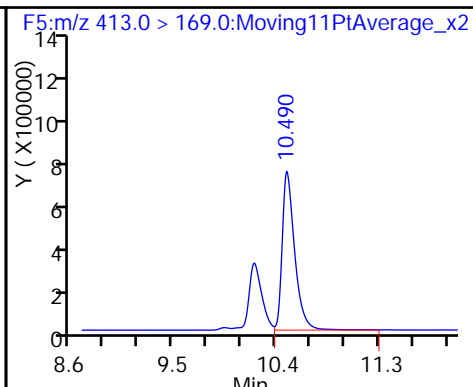
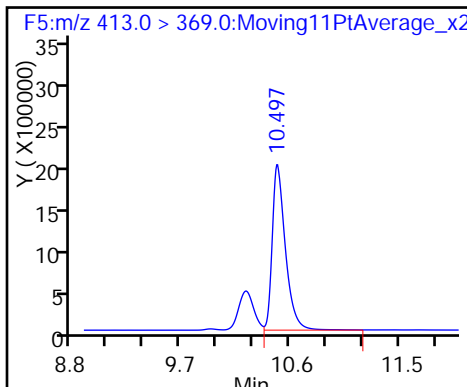
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

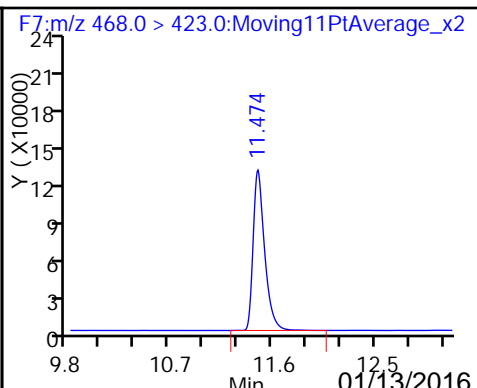
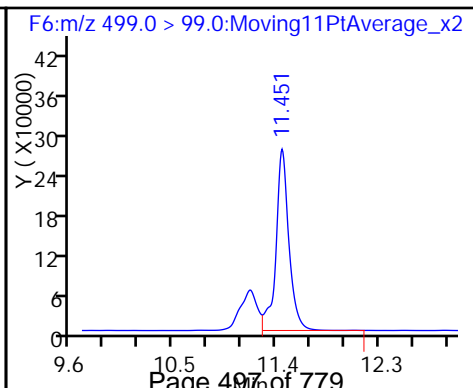
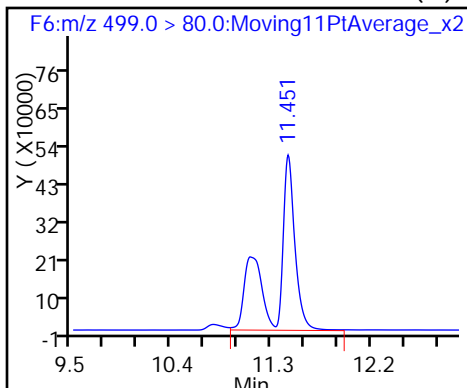
D 16 13C4 PFOS



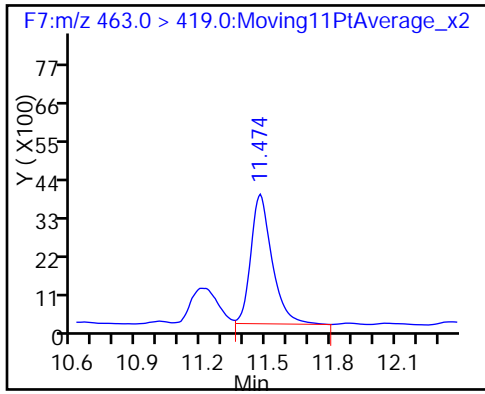
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid



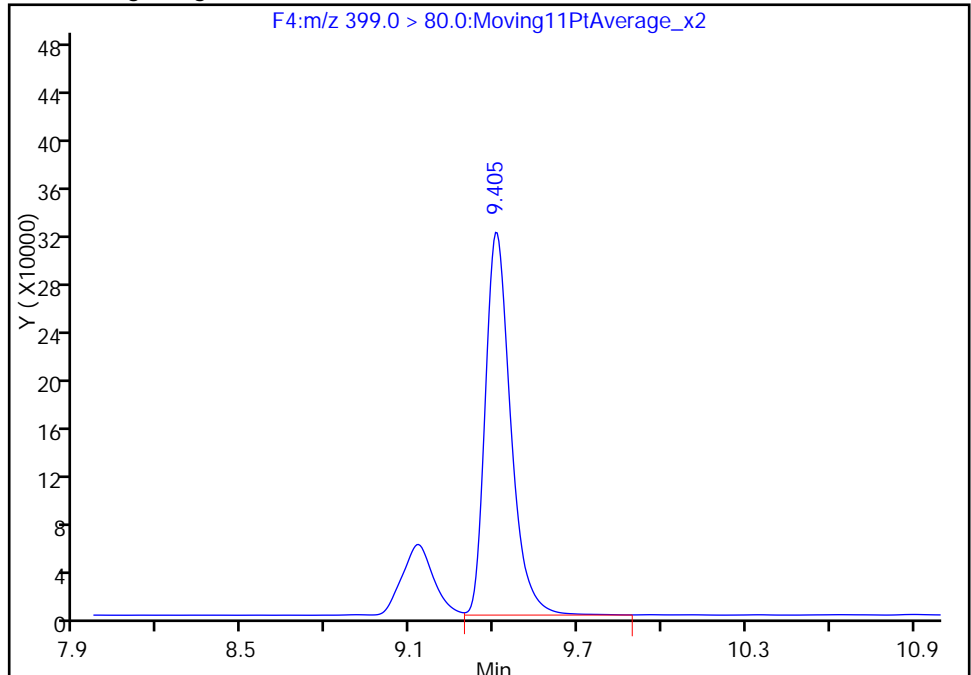
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_030.d
Injection Date: 05-Jan-2016 20:53:49 Instrument ID: A6
Lims ID: 320-16649-A-5-A Lab Sample ID: 320-16649-5
Client ID: OF-EFF01P-1215
Operator ID: JRB ALS Bottle#: 14 Worklist Smp#: 26
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

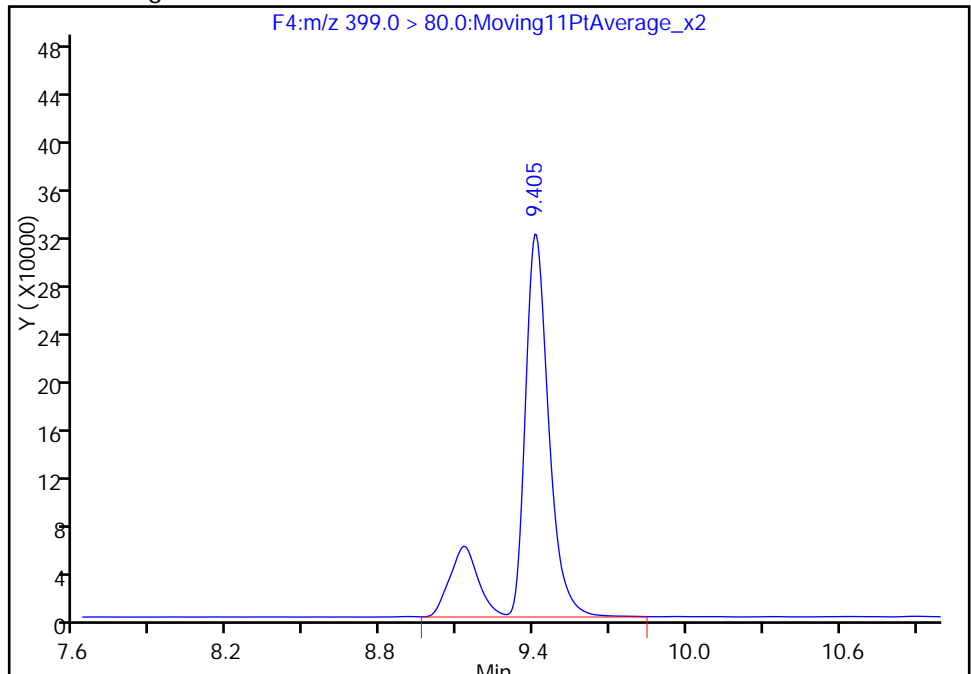
RT: 9.40
Area: 2002493
Amount: 256.1112
Amount Units: ng/ml

Processing Integration Results



RT: 9.40
Area: 2461339
Amount: 314.7958
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:16:55
Audit Action: Manually Integrated
Audit Reason: Isomers

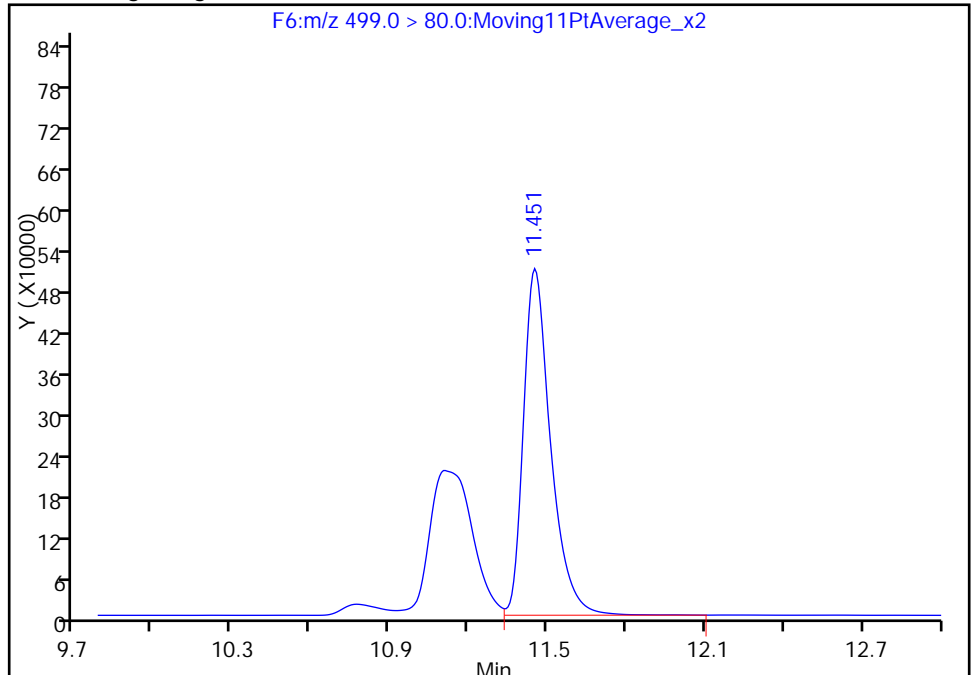
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_030.d
Injection Date: 05-Jan-2016 20:53:49 Instrument ID: A6
Lims ID: 320-16649-A-5-A Lab Sample ID: 320-16649-5
Client ID: OF-EFF01P-1215
Operator ID: JRB ALS Bottle#: 14 Worklist Smp#: 26
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

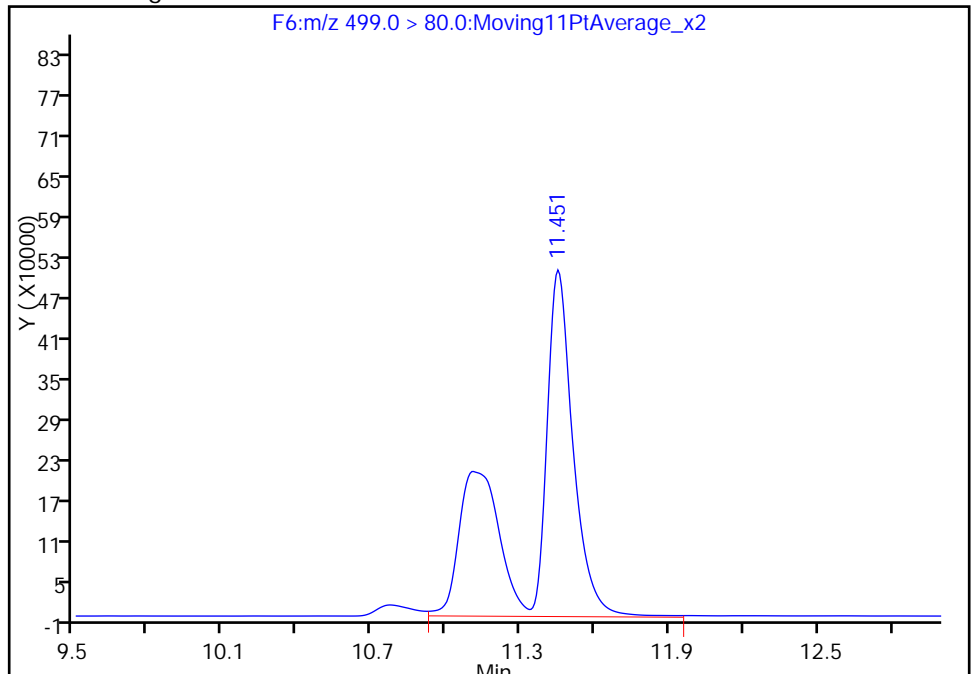
RT: 11.45
Area: 3677587
Amount: 348.8060
Amount Units: ng/ml

Processing Integration Results



RT: 11.45
Area: 6141509
Amount: 582.5002
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 06-Jan-2016 09:16:55
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-EFF01P-1215 DL Lab Sample ID: 320-16649-5 DL
 Matrix: Water Lab File ID: 06JAN2016A6A_020.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 10:05
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 511.4 (mL) Date Analyzed: 01/06/2016 19:51
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 10
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	<i>Perfluoroheptanoic acid (PFHpA)</i>	0.057	D	0.024	0.020	0.0078
335-67-1	<i>Perfluorooctanoic acid (PFOA)</i>	1.5	D	0.024	0.020	0.0073
375-95-1	<i>Perfluorononanoic acid (PFNA)</i>	0.020	U	0.024	0.020	0.0064
375-73-5	<i>Perfluorobutanesulfonic acid (PFBS)</i>	0.019	J D	0.024	0.020	0.0090
355-46-4	<i>Perfluorohexanesulfonic acid (PFHxS)</i>	0.60	D M	0.024	0.020	0.0085
1763-23-1	<i>Perfluorooctanesulfonic acid (PFOS)</i>	0.96	D M	0.039	0.029	0.012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	108		25-150
STL00991	13C4 PFOS	118		25-150
STL00995	13C5 PFNA	107		25-150
STL00990	13C4 PFOA	102		25-150
STL01892	13C4-PFHpA	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_020.d
 Lims ID: 320-16649-A-5-A Lab Sample ID: 320-16649-5
 Client ID: OF-EFF01P-1215
 Sample Type: Client
 Inject. Date: 06-Jan-2016 19:51:13 ALS Bottle#: 25 Worklist Smp#: 17
 Injection Vol: 15.0 ul Dil. Factor: 10.0000
 Sample Info: 320-16649-A-5-A 10x
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:51:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.974	6.976	-0.002	1.000	15951	0.9520			
D 8 13C4-PFHpA	367.0 > 322.0	9.323	9.331	-0.008		179115	5.22	10.4	421	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	1.000	112084	2.90		44.2	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.352	9.363	-0.011	1.000	281456	30.8			M M
D 11 18O2 PFHxS	403.0 > 84.0	9.352	9.363	-0.011		74320	5.11	10.8	186	
D 12 13C4 PFOA	417.0 > 372.0	10.440	10.452	-0.012		196828	5.09	10.2	679	
13 Perfluorooctanoic acid	413.0 > 369.0	10.433	10.453	-0.020	1.000	3300418	78.2		96.6	
	413.0 > 169.0	10.440	10.453	-0.013	1.001	1211596	2.72(0.00-0.00)		55.8	
D 16 13C4 PFOS	503.0 > 80.0	11.393	11.405	-0.012		105174	5.62	11.8	374	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.393	11.408	-0.015	1.000	1049618	49.2		530	M
	499.0 > 99.0	11.393	11.408	-0.015	1.000	511413	2.05(0.00-0.00)		1075	M
D 17 13C5 PFNA	468.0 > 423.0	11.416	11.427	-0.011		172174	5.37	10.7	417	
18 Perfluorononanoic acid	463.0 > 419.0	11.401	11.431	-0.030	1.000	5496	0.1871		6.7	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_020.d

Injection Date: 06-Jan-2016 19:51:13

Instrument ID: A6

Lims ID: 320-16649-A-5-A

Lab Sample ID: 320-16649-5

Client ID: OF-EFF01P-1215

Operator ID: JRB

ALS Bottle#: 25

Worklist Smp#: 17

Injection Vol: 15.0 ul

Dil. Factor: 10.0000

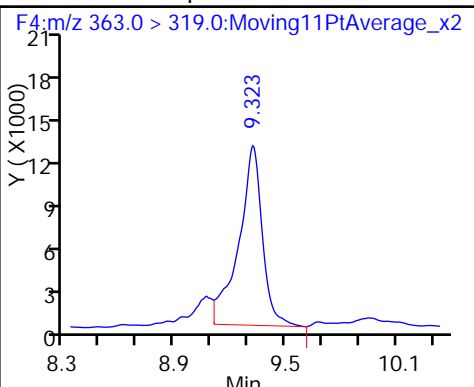
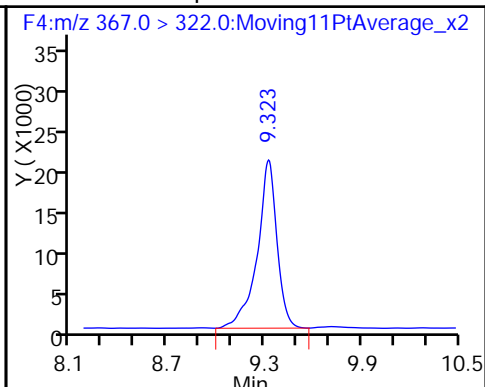
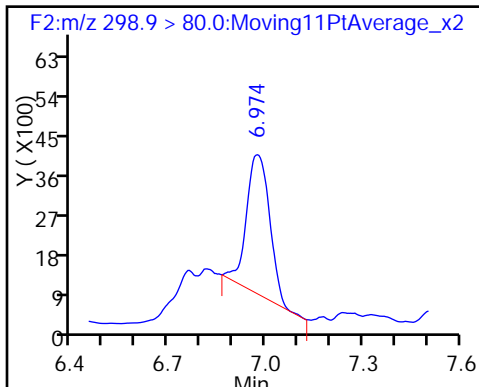
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

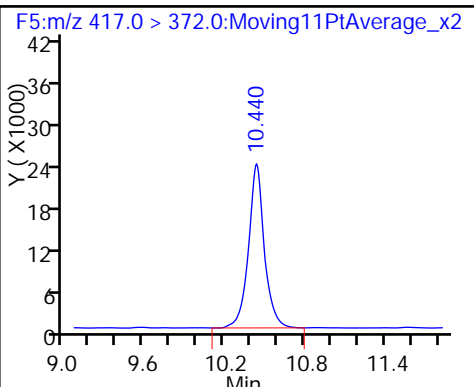
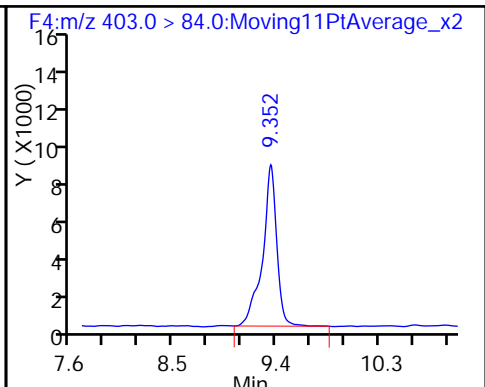
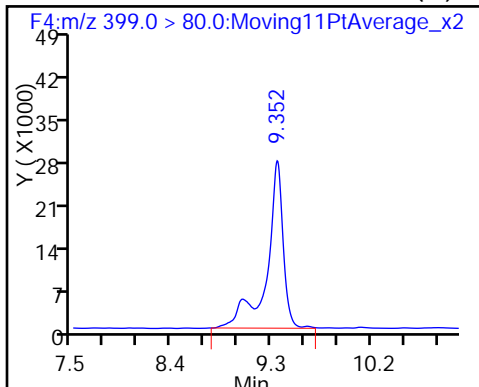
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS

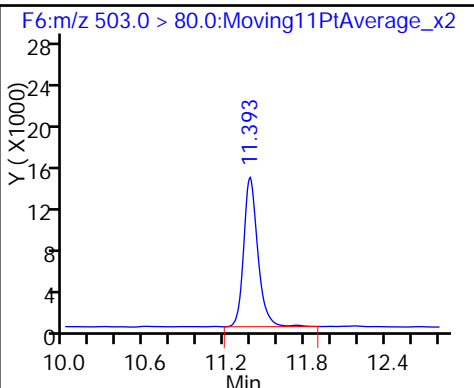
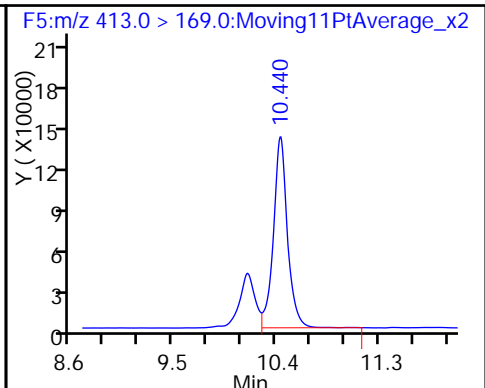
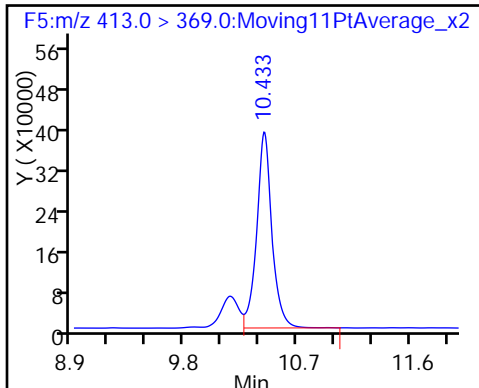
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

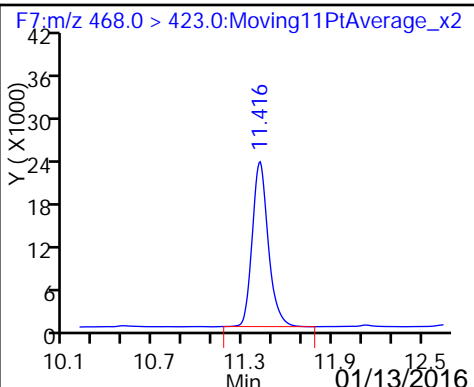
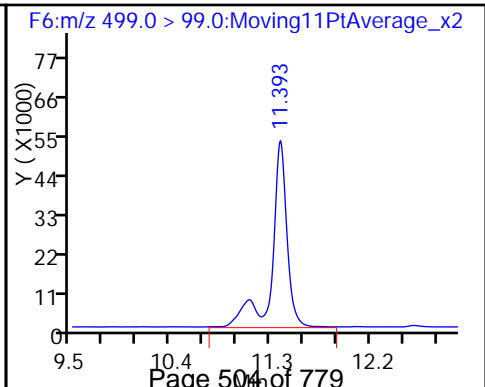
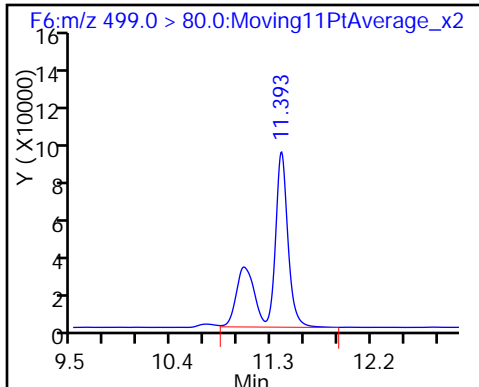
D 16 13C4 PFOS



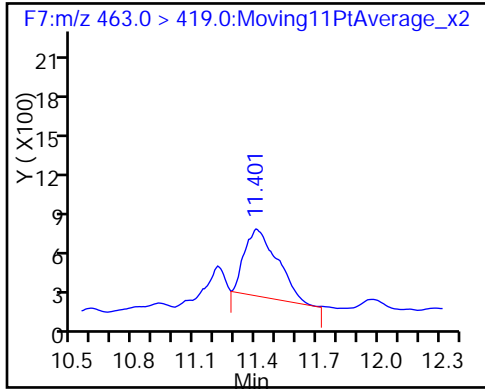
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



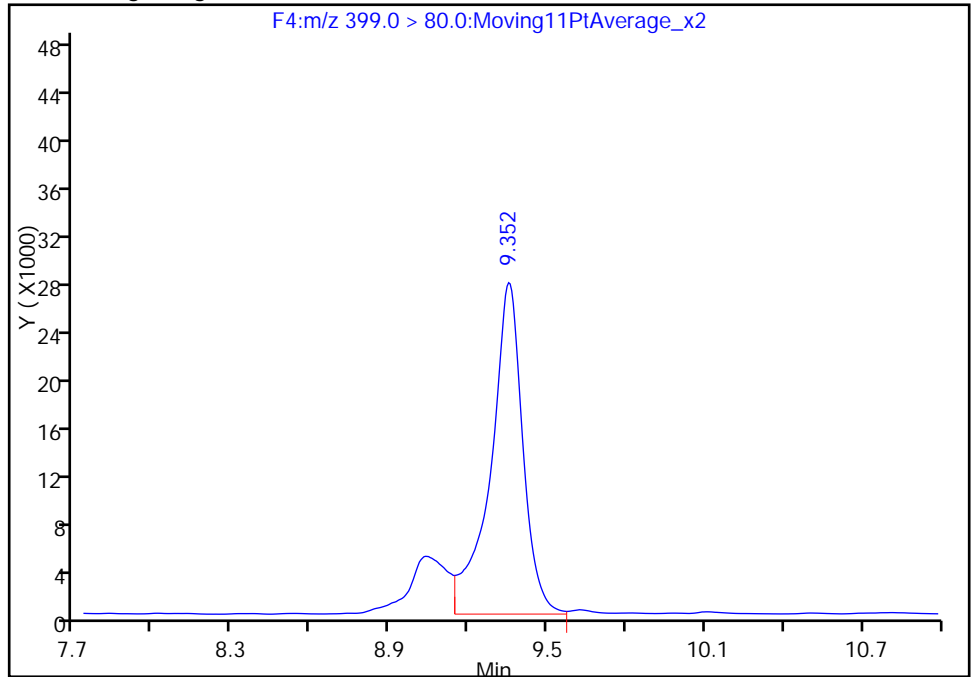
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_020.d
Injection Date: 06-Jan-2016 19:51:13 Instrument ID: A6
Lims ID: 320-16649-A-5-A Lab Sample ID: 320-16649-5
Client ID: OF-EFF01P-1215
Operator ID: JRB ALS Bottle#: 25 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F4:M/RM

41 Perfluorohexanesulfonic acid, CAS: 355-46-4

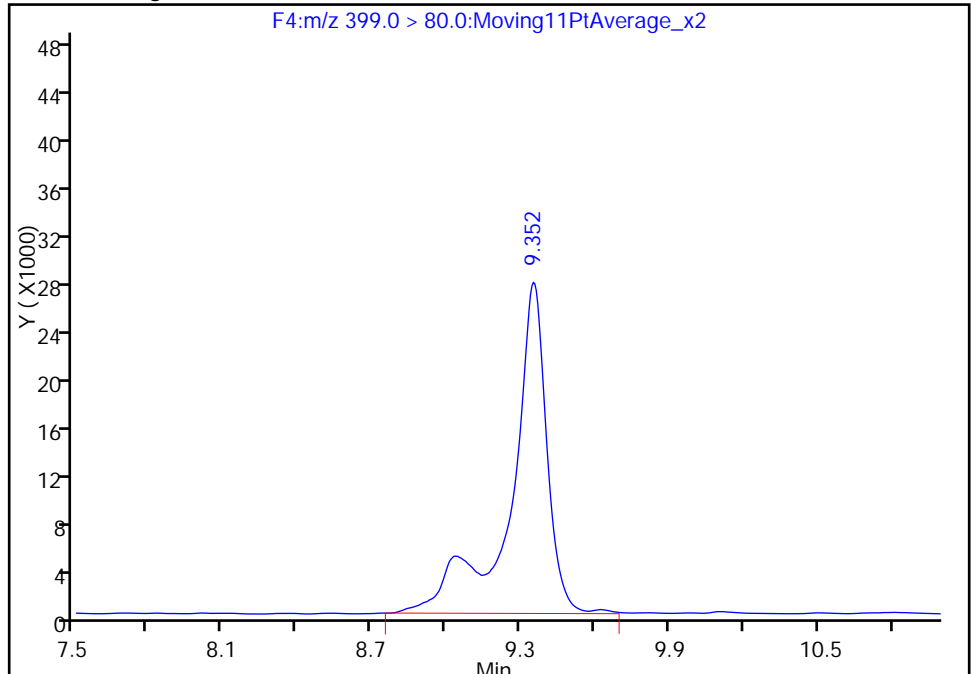
RT: 9.35
Area: 232866
Amount: 25.512596
Amount Units: ng/ml

Processing Integration Results



RT: 9.35
Area: 281456
Amount: 30.836074
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:51:30
Audit Action: Manually Integrated
Audit Reason: Isomers

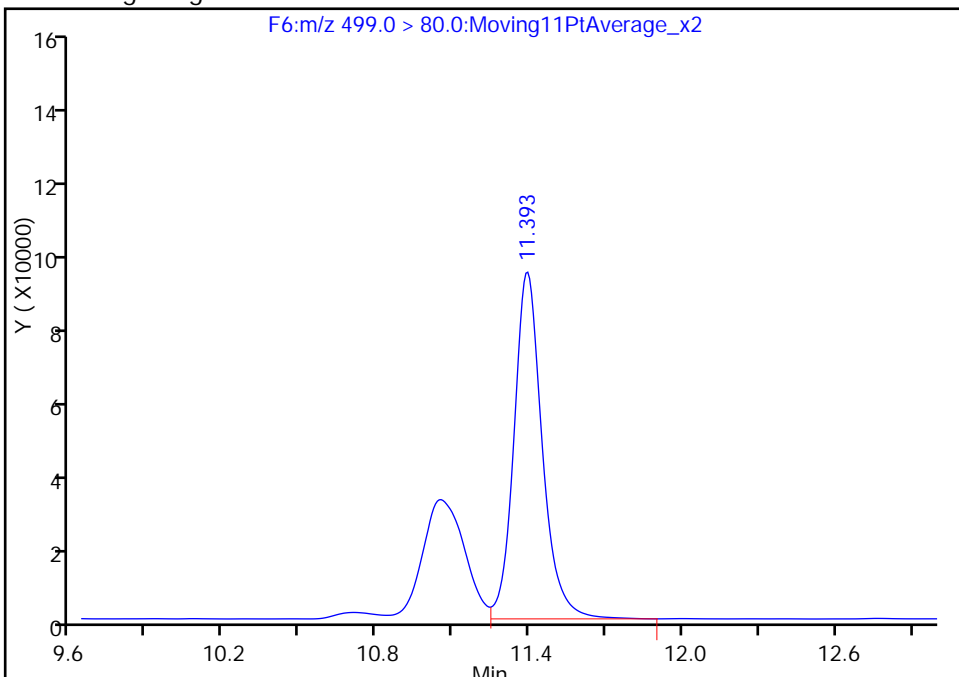
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_020.d
Injection Date: 06-Jan-2016 19:51:13 Instrument ID: A6
Lims ID: 320-16649-A-5-A Lab Sample ID: 320-16649-5
Client ID: OF-EFF01P-1215
Operator ID: JRB ALS Bottle#: 25 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:M/RM

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

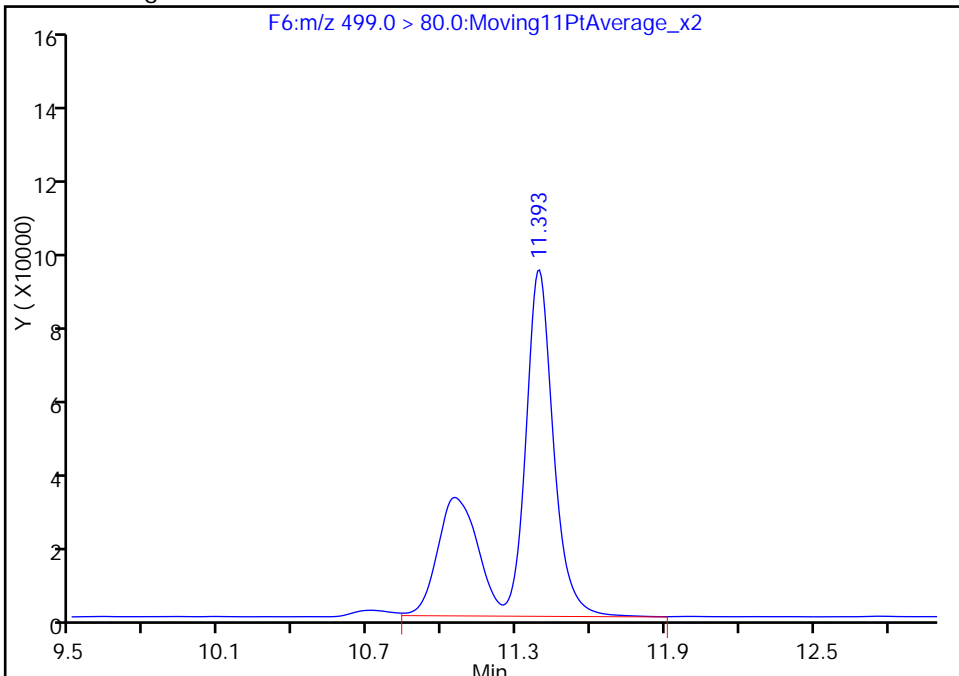
RT: 11.39
Area: 700073
Amount: 32.825738
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 1049618
Amount: 49.215562
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:51:30
Audit Action: Manually Integrated
Audit Reason: Isomers

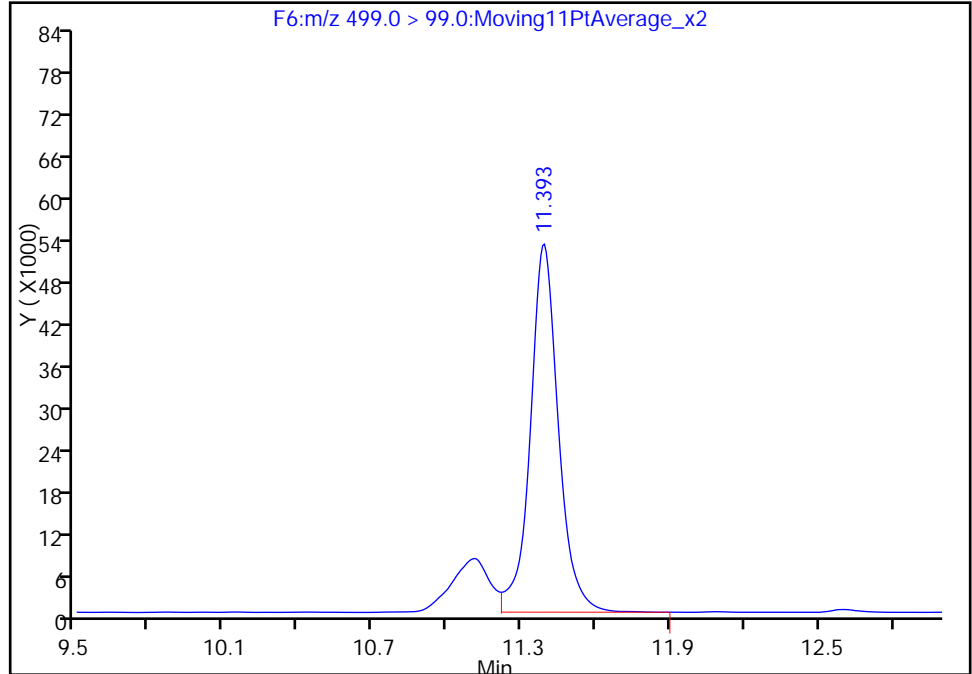
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_020.d
Injection Date: 06-Jan-2016 19:51:13 Instrument ID: A6
Lims ID: 320-16649-A-5-A Lab Sample ID: 320-16649-5
Client ID: OF-EFF01P-1215
Operator ID: JRB ALS Bottle#: 25 Worklist Smp#: 17
Injection Vol: 15.0 ul Dil. Factor: 10.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

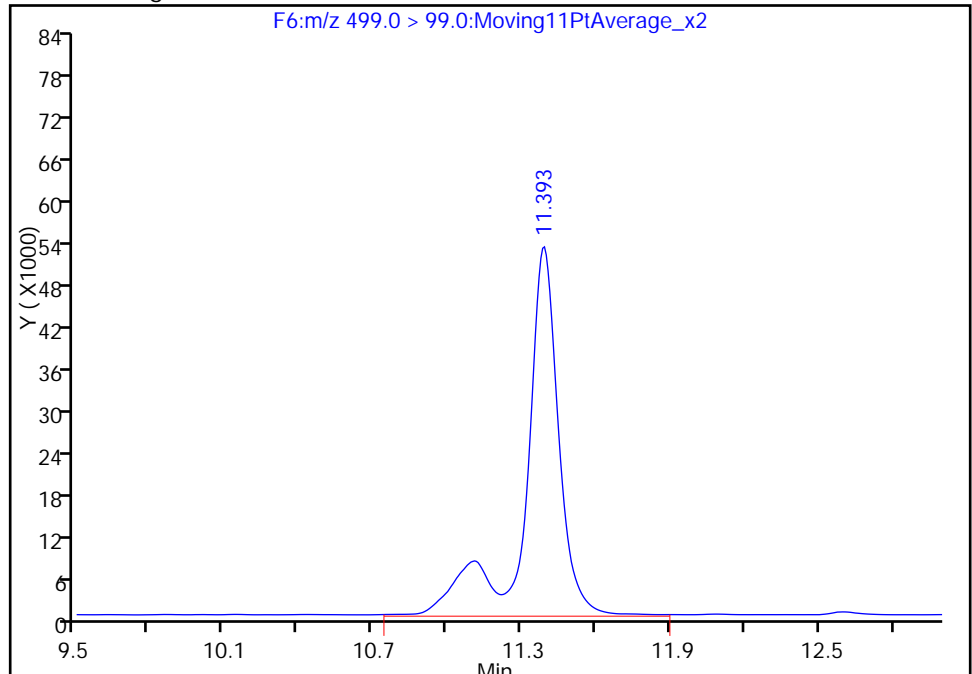
RT: 11.39
Area: 414193
Amount: 32.825738
Amount Units: ng/ml

Processing Integration Results



RT: 11.39
Area: 511413
Amount: 49.215562
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 08:51:30
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-MW12D-1215 Lab Sample ID: 320-16649-6
 Matrix: Water Lab File ID: 05JAN2016A6A_031.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 12:40
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 538.6(mL) Date Analyzed: 01/05/2016 21:15
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.0019	0.00074
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.0019	0.00061
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.0019	0.00085
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0044		0.0023	0.0019	0.00081

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	142		25-150
STL00991	13C4 PFOS	148		25-150
STL00995	13C5 PFNA	118		25-150
STL00990	13C4 PFOA	126		25-150
STL01892	13C4-PFHpA	125		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_031.d
 Lims ID: 320-16649-A-6-A Lab Sample ID: 320-16649-6
 Client ID: OF-MW12D-1215
 Sample Type: Client
 Inject. Date: 05-Jan-2016 21:15:03 ALS Bottle#: 15 Worklist Smp#: 27
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16649-A-6-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 11:24:11 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK048

First Level Reviewer: westendorfc Date: 07-Jan-2016 13:38:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.015	7.039	-0.024	1.000	4207	0.2978			
D 8 13C4-PFHpA	367.0 > 322.0	9.376	9.413	-0.037		1335510	62.5	125	3101	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.364	9.413	-0.049	1.000	12383	0.2760		1.8	
D 11 18O2 PFHxS	403.0 > 84.0	9.405	9.444	-0.039		694174	67.1	142	1950	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.399	9.449	-0.050	1.000	24402	2.35			
D 12 13C4 PFOA	417.0 > 372.0	10.490	10.524	-0.034		1376911	63.0	126	3258	
13 Perfluorooctanoic acid	413.0 > 369.0	10.490	10.528	-0.038	1.000	161349	6.05		51.9	
	413.0 > 169.0	10.490	10.528	-0.038	1.000	51188	3.15(0.00-0.00)		34.0	
D 16 13C4 PFOS	503.0 > 80.0	11.451	11.478	-0.027		786021	70.5	148	2238	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.451	11.480	-0.029	1.000	134499	8.04		181	M
	499.0 > 99.0	11.451	11.480	-0.029	1.000	67180	2.00(0.00-0.00)		80.8	M
D 17 13C5 PFNA	468.0 > 423.0	11.467	11.501	-0.034		1169510	58.8	118	3936	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_031.d

Injection Date: 05-Jan-2016 21:15:03

Instrument ID: A6

Lims ID: 320-16649-A-6-A

Lab Sample ID: 320-16649-6

Client ID: OF-MW12D-1215

Operator ID: JRB

ALS Bottle#: 15

Worklist Smp#: 27

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

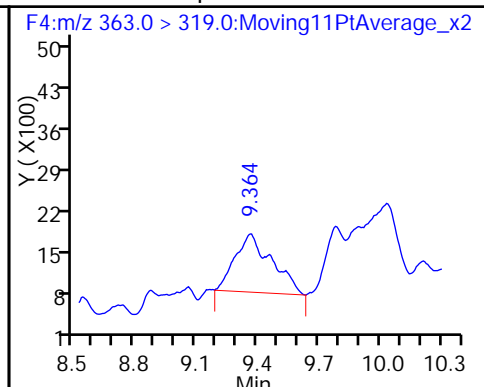
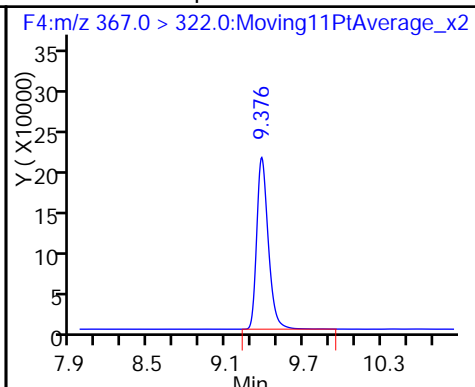
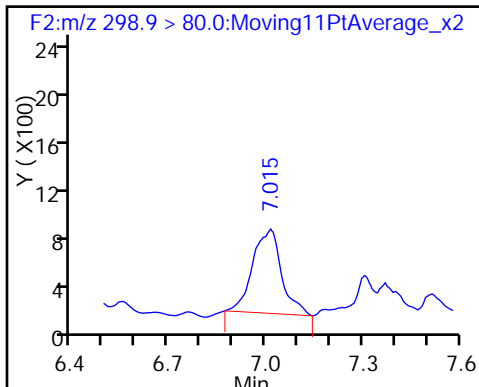
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

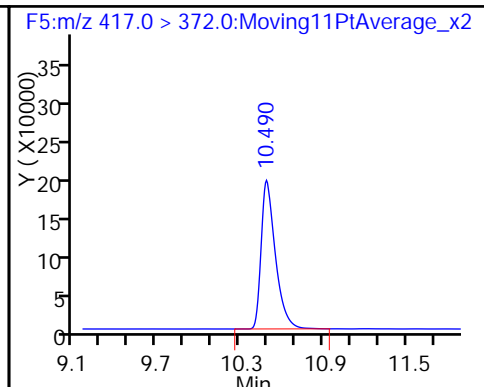
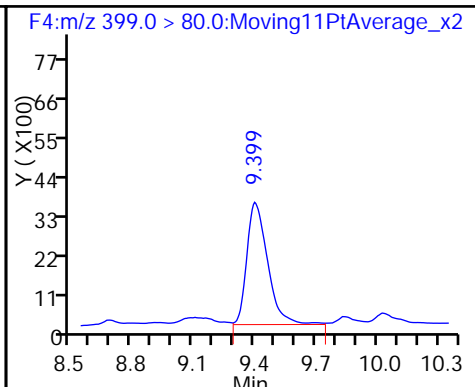
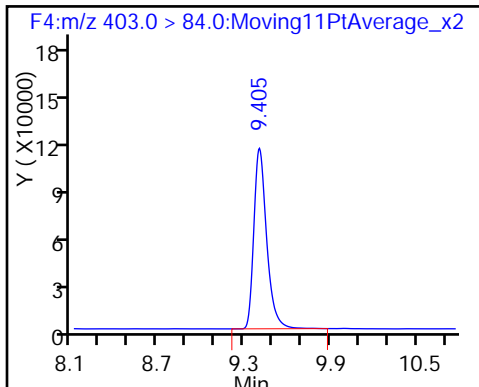
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

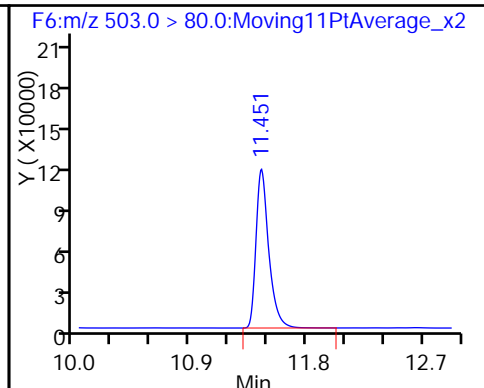
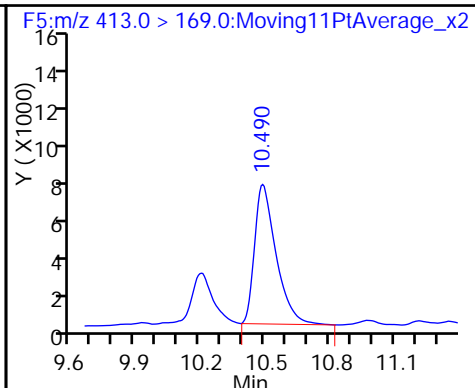
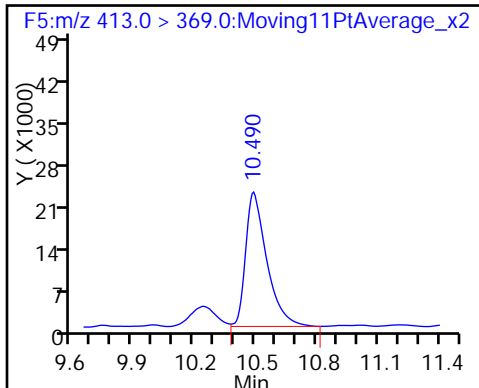
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

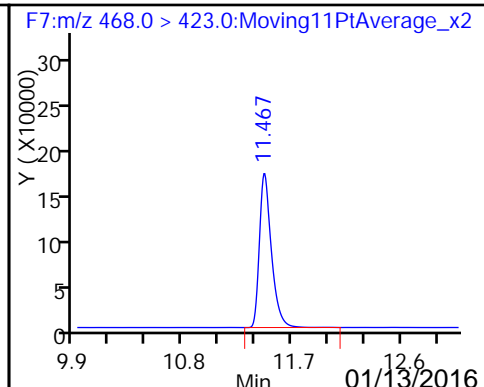
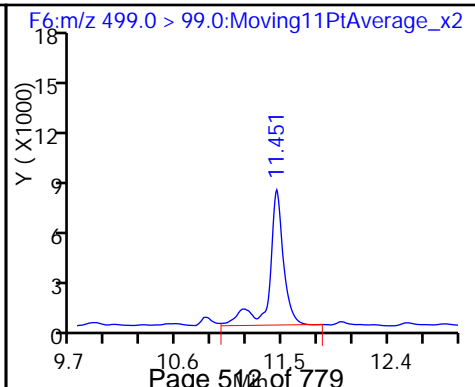
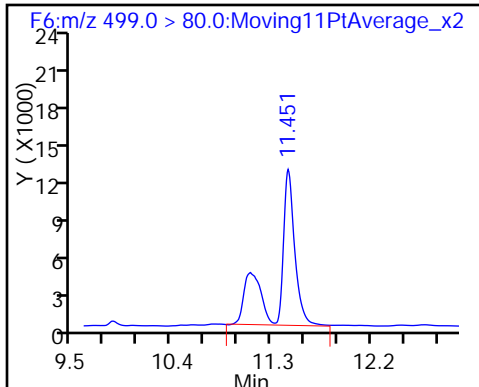
D 16 13C4 PFOS



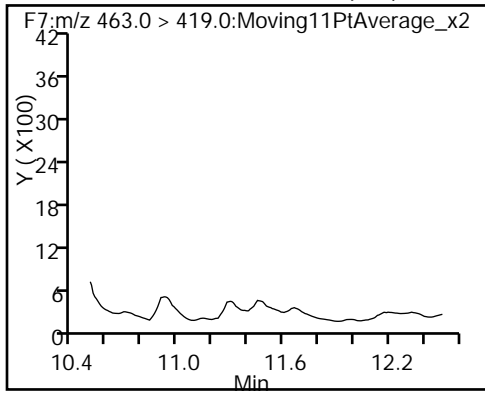
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-MW12D-1215 RA Lab Sample ID: 320-16649-6 RA
 Matrix: Water Lab File ID: 06JAN2016A6A_061.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 12:40
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 538.6(mL) Date Analyzed: 01/07/2016 13:00
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0079		0.0023	0.0019	0.00069
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.011	M	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	100		25-150
STL00990	13C4 PFOA	50		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_061.d
 Lims ID: 320-16649-A-6-A Lab Sample ID: 320-16649-6
 Client ID: OF-MW12D-1215
 Sample Type: Client
 Inject. Date: 07-Jan-2016 13:00:04 ALS Bottle#: 15 Worklist Smp#: 36
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16649-A-6-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:33 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 13:36:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.992	6.976	0.016	1.000	2045	0.1835			
D 8 13C4-PFHpA	367.0 > 322.0	9.358	9.331	0.027		959130	28.0	55.9	2833	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.352	9.335	0.017	1.000	4668	-0.0144		3.2	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.387	9.363	0.024	1.000	10093	1.66			
D 11 18O2 PFHxS	403.0 > 84.0	9.387	9.363	0.024		494274	34.0	71.9	2858	
D 12 13C4 PFOA	417.0 > 372.0	10.468	10.452	0.016		964576	24.9	49.9	2921	
13 Perfluorooctanoic acid	413.0 > 369.0	10.468	10.453	0.015	1.000	87547	4.23		50.9	
	413.0 > 169.0	10.482	10.453	0.029	1.001	36463	2.40(0.00-0.00)		40.4	
D 16 13C4 PFOS	503.0 > 80.0	11.422	11.405	0.017		896259	47.9	100	2175	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.422	11.408	0.014	1.000	104786	5.77		214	M
	499.0 > 99.0	11.422	11.408	0.014	1.000	64192	1.63(0.00-0.00)		116	M
D 17 13C5 PFNA	468.0 > 423.0	11.445	11.427	0.018		764904	23.8	47.7	1799	
18 Perfluorononanoic acid	463.0 > 419.0	11.423	11.431	-0.008	1.000	3038	0.2329		4.7	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_061.d

Injection Date: 07-Jan-2016 13:00:04

Instrument ID: A6

Lims ID: 320-16649-A-6-A

Lab Sample ID: 320-16649-6

Client ID: OF-MW12D-1215

Operator ID: JRB

ALS Bottle#: 15

Worklist Smp#: 36

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

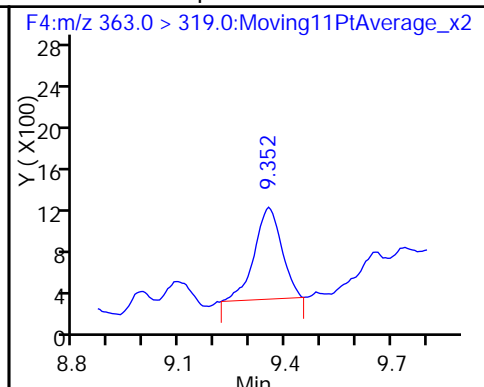
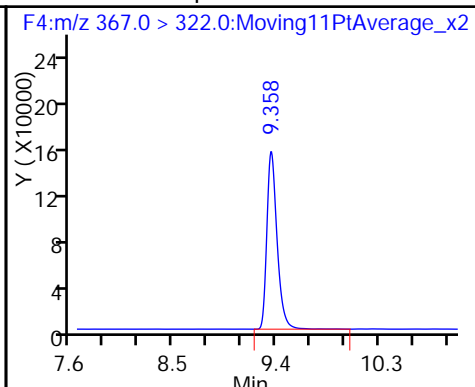
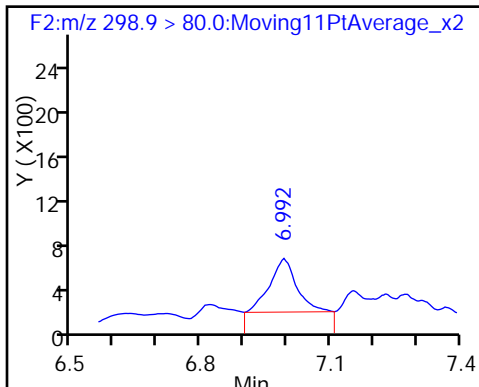
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 8 13C4-PFHpA

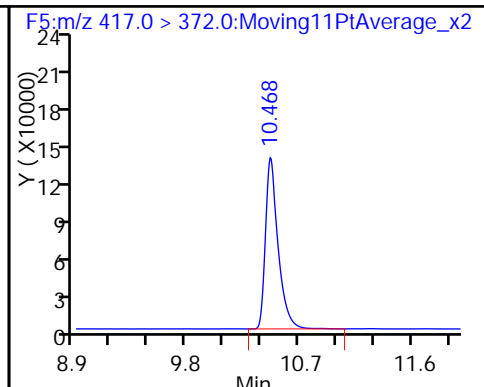
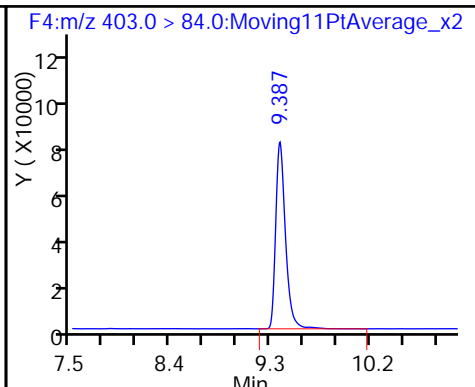
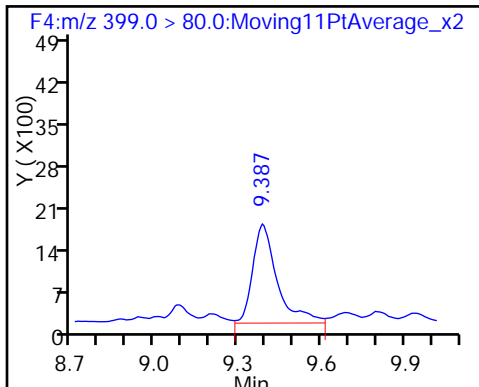
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

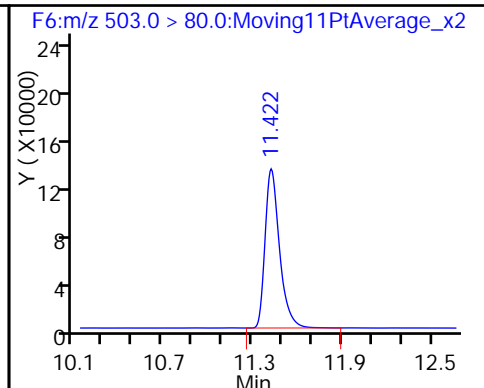
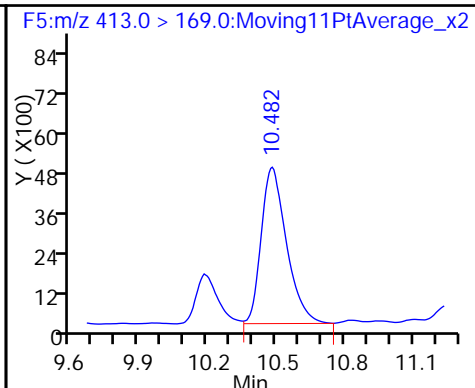
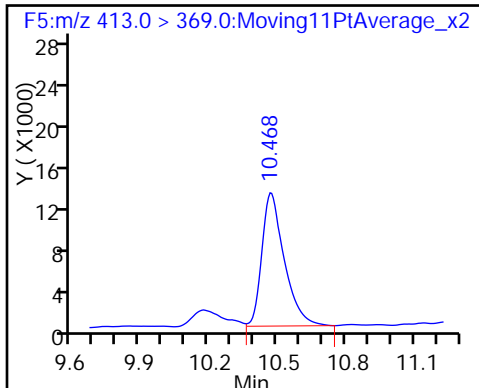
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

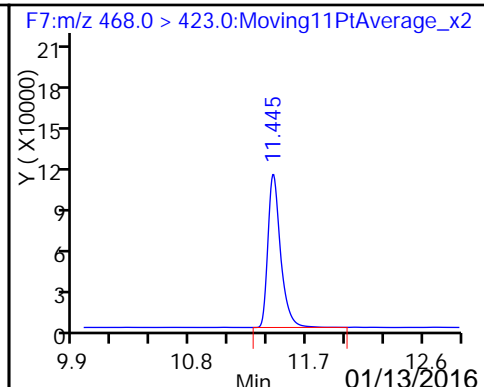
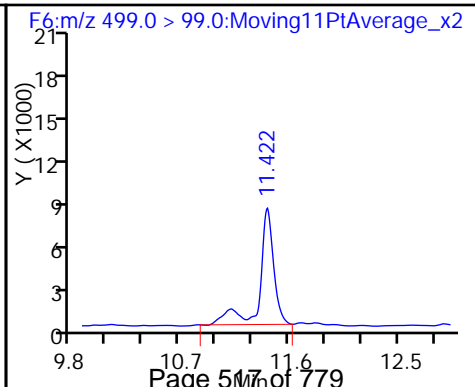
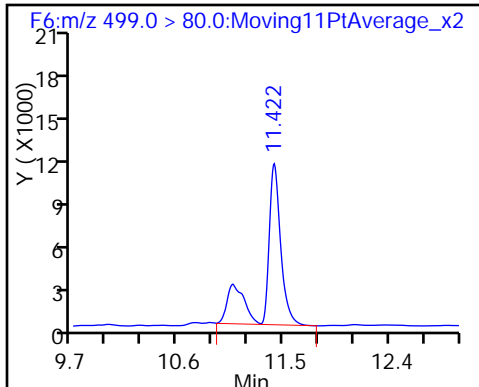
D 16 13C4 PFOS



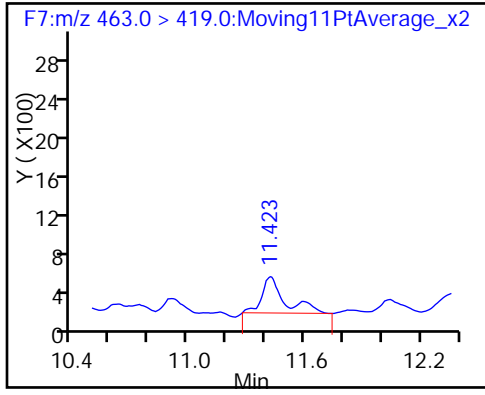
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)

D 17 13C5 PFNA



18 Perfluorononanoic acid



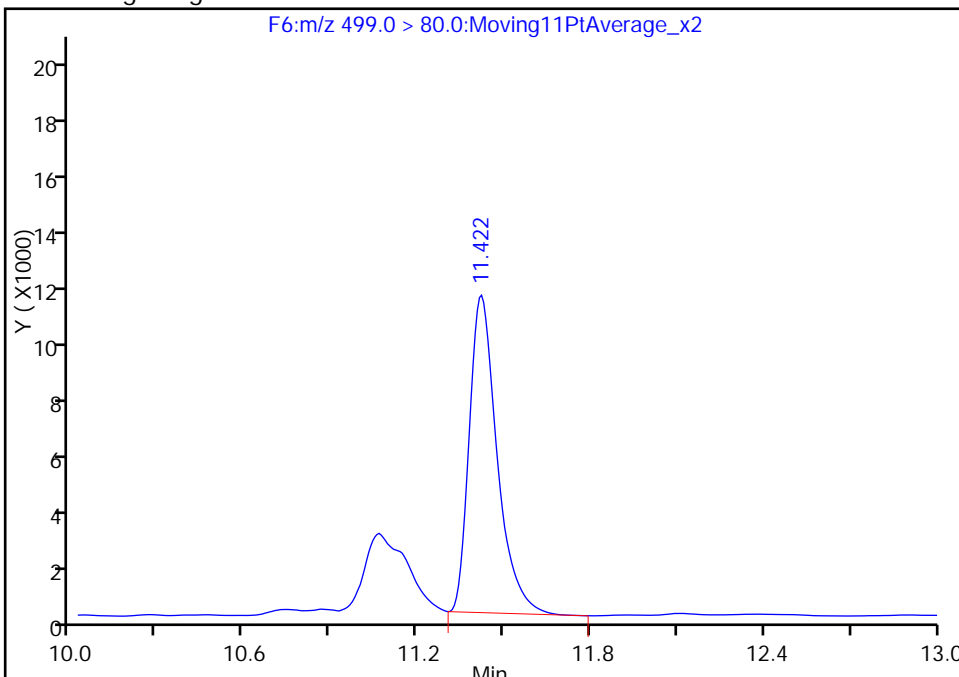
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_061.d
Injection Date: 07-Jan-2016 13:00:04 Instrument ID: A6
Lims ID: 320-16649-A-6-A Lab Sample ID: 320-16649-6
Client ID: OF-MW12D-1215
Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 36
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

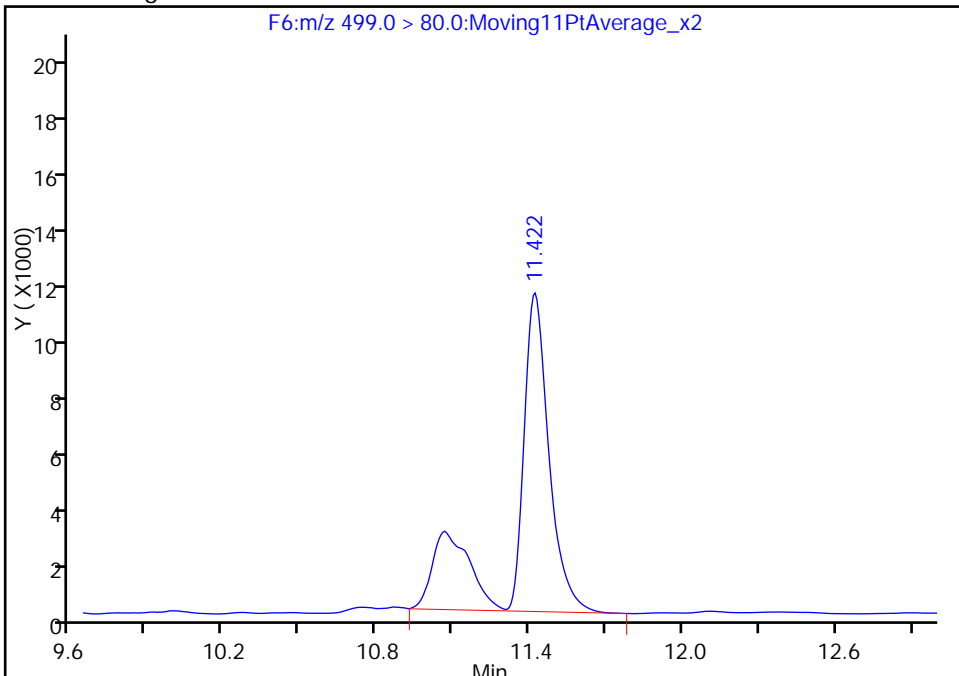
RT: 11.42
Area: 75717
Amount: 4.166193
Amount Units: ng/ml

Processing Integration Results



RT: 11.42
Area: 104786
Amount: 5.765664
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 13:39:44
Audit Action: Manually Integrated
Audit Reason: Isomers

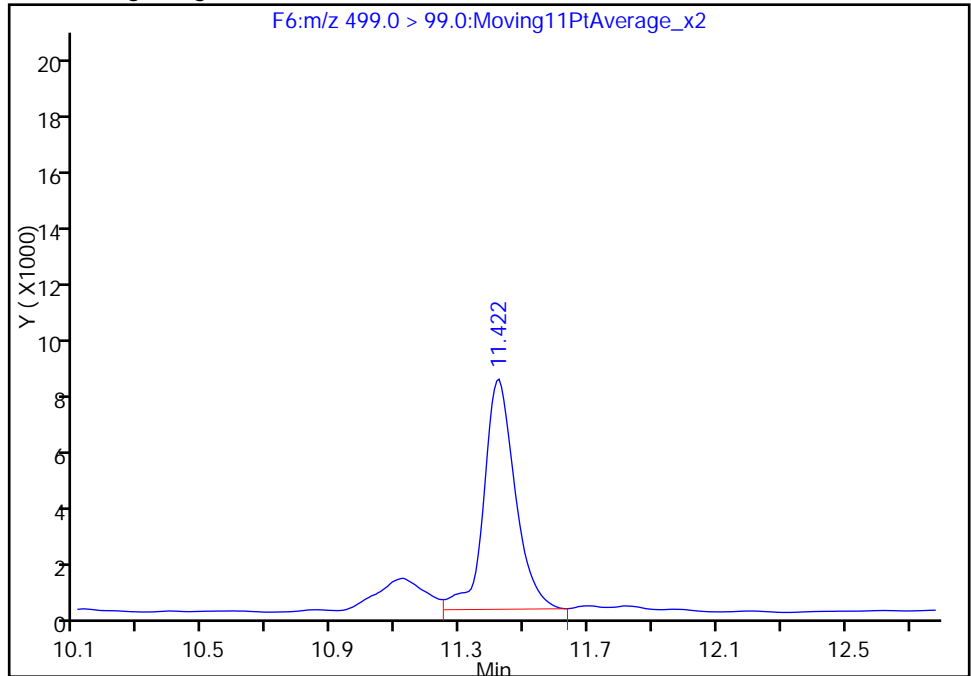
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_061.d
Injection Date: 07-Jan-2016 13:00:04 Instrument ID: A6
Lims ID: 320-16649-A-6-A Lab Sample ID: 320-16649-6
Client ID: OF-MW12D-1215
Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 36
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

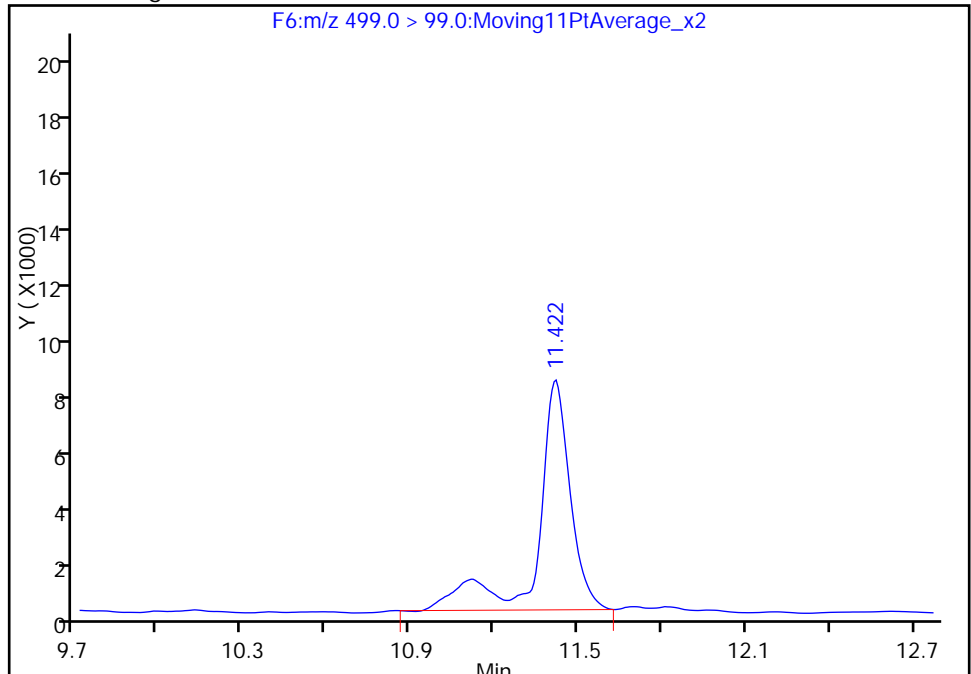
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Amount Units: ng/ml

Processing Integration Results



RT: 11.42
Area: 64192
Amount: 5.765664
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 07-Jan-2016 13:39:44
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: OF-FB02-123015 Lab Sample ID: 320-16649-7
 Matrix: Water Lab File ID: 05JAN2016A6A_032.d
 Analysis Method: WS-LC-0025 Date Collected: 12/30/2015 12:50
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 559.4 (mL) Date Analyzed: 01/05/2016 21:36
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0022	0.0018	0.00072
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018	U	0.0022	0.0018	0.00067
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0022	0.0018	0.00058
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0022	0.0018	0.00082
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0022	0.0018	0.00078
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0027	0.0011

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	134		25-150
STL00991	13C4 PFOS	145		25-150
STL00995	13C5 PFNA	138		25-150
STL00990	13C4 PFOA	140		25-150
STL01892	13C4-PFHpA	135		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_032.d
 Lims ID: 320-16649-A-7-A Lab Sample ID: 320-16649-7
 Client ID: OF-FB02-123015
 Sample Type: Client
 Inject. Date: 05-Jan-2016 21:36:17 ALS Bottle#: 16 Worklist Smp#: 28
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-16649-A-7-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 10:50:33 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:18:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA	367.0 > 322.0	9.376	9.413	-0.037	1445156	67.7		135	3681	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.352	9.413	-0.061	1825	-0.1184			2.0	
D 11 18O2 PFHxS	403.0 > 84.0	9.411	9.444	-0.033	654792	63.3		134	2173	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.429	9.449	-0.020	2160	0.2202				
D 12 13C4 PFOA	417.0 > 372.0	10.490	10.524	-0.034	1525229	69.8		140	3676	
13 Perfluorooctanoic acid	413.0 > 369.0	10.497	10.528	-0.031	10301	0.3489			8.6	
	413.0 > 169.0	10.497	10.528	-0.031	2753		3.74(0.00-0.00)		3.9	
D 16 13C4 PFOS	503.0 > 80.0	11.451	11.478	-0.027	773295	69.4		145	2938	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.458	11.480	-0.022	5253	0.3192			10.2	
	499.0 > 99.0	11.444	11.480	-0.036	2970		1.77(0.00-0.00)		7.5	
D 17 13C5 PFNA	468.0 > 423.0	11.474	11.501	-0.027	1374204	69.0		138	3276	
18 Perfluorononanoic acid	463.0 > 419.0	11.474	11.502	-0.028	3579	0.1654			7.5	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_032.d

Injection Date: 05-Jan-2016 21:36:17

Instrument ID: A6

Lims ID: 320-16649-A-7-A

Lab Sample ID: 320-16649-7

Client ID: OF-FB02-123015

Operator ID: JRB

ALS Bottle#: 16

Worklist Smp#: 28

Injection Vol: 15.0 ul

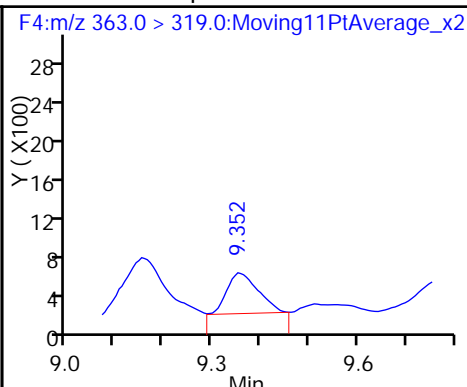
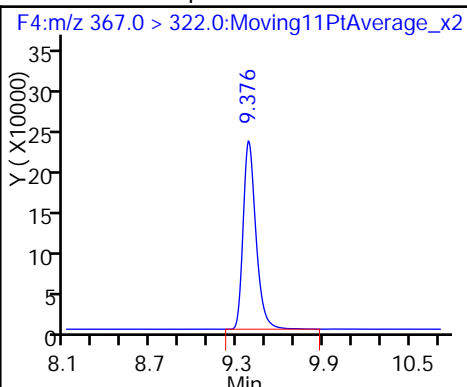
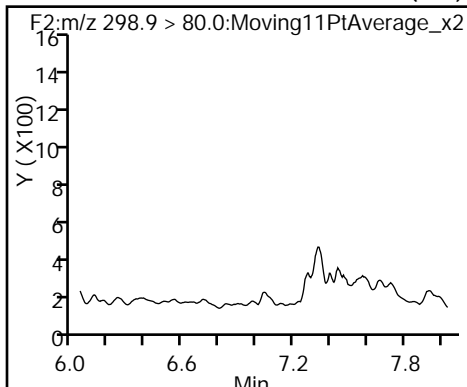
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 8 13C4-PFHpA

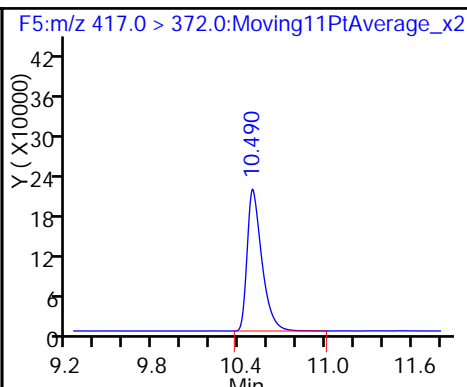
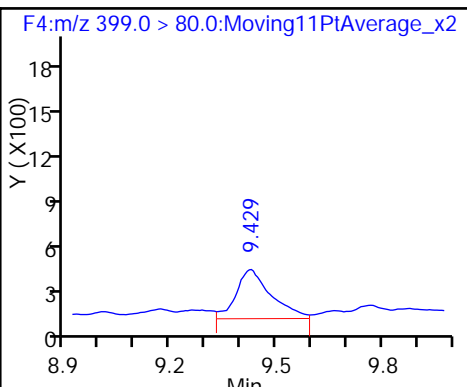
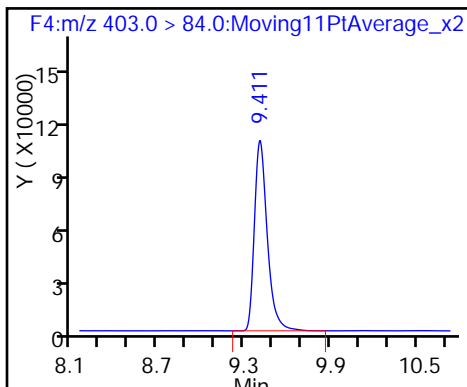
9 Perfluoroheptanoic acid



D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

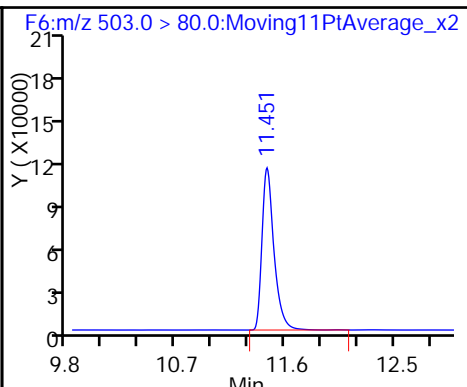
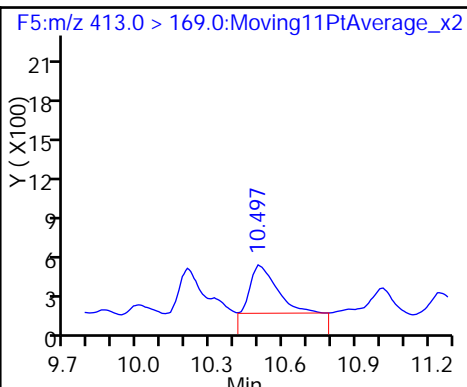
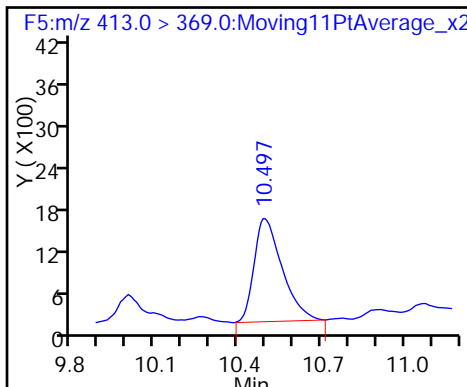
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

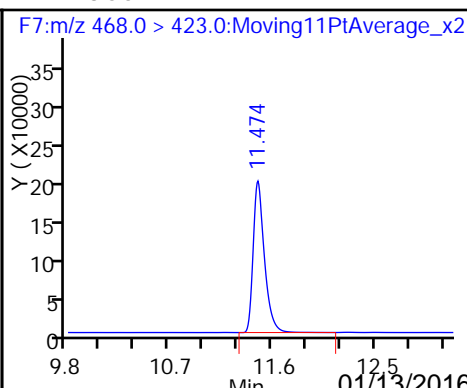
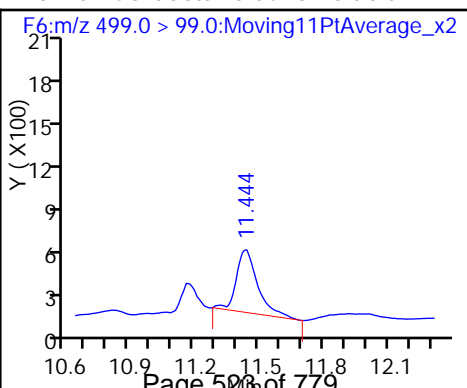
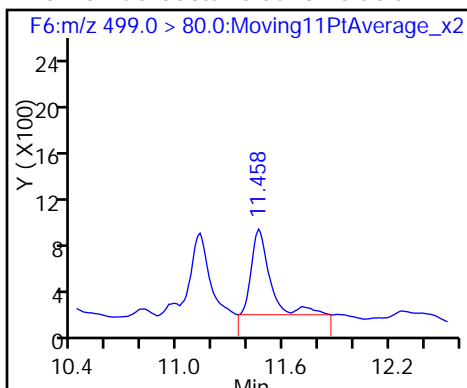
D 16 13C4 PFOS



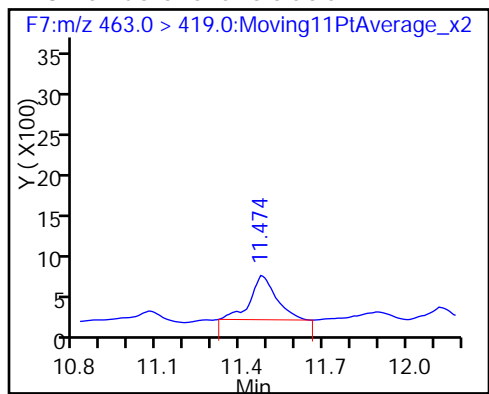
15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

D 17 13C5 PFNA



18 Perfluorononanoic acid



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

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1 Analy Batch No.: 97208

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/30/2015 15:59 Calibration End Date: 12/30/2015 18:07 Calibration ID: 18294

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-97208/2	30DEC2015A6A_008.d
Level 2	STD 320-97208/3	30DEC2015A6A_009.d
Level 3	STD 320-97208/4	30DEC2015A6A_010.d
Level 4	STD 320-97208/5	30DEC2015A6A_011.d
Level 5	STD 320-97208/6	30DEC2015A6A_012.d
Level 6	STD 320-97208/7	30DEC2015A6A_013.d
Level 7	STD 320-97208/8	30DEC2015A6A_014.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	5.794	5.812	5.800	5.803	5.800	5.800	5.800				5.552 - 6.052	5.801
Perfluoropentanoic acid (PFPeA)	6.932	6.928	6.932	6.923	6.923	6.928	6.923				6.677 - 7.177	6.927
Perfluorobutanesulfonic acid (PFBS)	7.043	7.036	7.040	7.040	7.040	7.040	7.036				6.789 - 7.289	7.039
Perfluorohexanoic acid (PFHxA)	++++	8.181	8.181	8.176	8.176	8.176	8.170				7.926 - 8.426	8.177
Perfluoroheptanoic acid (PFHpA)	9.423	9.417	9.417	9.411	9.411	9.411	9.405				9.163 - 9.663	9.414
Perfluorohexanesulfonic acid (PFHxS)	++++	9.452	9.446	9.440	9.446	9.446	9.440				9.199 - 9.699	9.445
Perfluoroheptanesulfonic Acid (PFHpS)	++++	10.531	10.531	10.522	10.522	10.531	10.522				10.280 - 10.780	10.527
Perfluorooctanoic acid (PFOA)	10.540	10.531	10.531	10.522	10.531	10.522	10.522				10.278 - 10.778	10.528
Perfluorooctanesulfonic acid (PFOS)	11.487	11.480	11.480	11.480	11.480	11.480	11.473				11.230 - 11.730	11.480
Perfluorononanoic acid (PFNA)	11.503	11.503	11.503	11.503	11.503	11.503	11.496				11.252 - 11.752	11.502
Perfluorodecanoic acid (PFDA)	12.342	12.331	12.331	12.331	12.331	12.331	12.331				12.083 - 12.583	12.333
Perfluorooctane Sulfonamide (FOSA)	12.849	12.860	12.860	12.860	12.860	12.860	12.860				12.608 - 13.108	12.858
Perfluorodecane Sulfonic acid	13.015	13.014	13.005	13.006	13.006	13.006	12.996				12.757 - 13.257	13.007
Perfluoroundecanoic acid (PFUnA)	++++	13.058	13.058	13.050	13.050	13.059	13.049				12.803 - 13.303	13.054
Perfluorododecanoic acid (PFDoA)	13.666	13.682	13.664	13.666	13.666	13.666	13.664				13.418 - 13.918	13.668
Perfluorotridecanoic Acid (PFTriA)	14.182	14.181	14.181	14.182	14.182	14.182	14.181				13.932 - 14.432	14.182
Perfluorotetradecanoic acid (PFTeA)	++++	14.621	14.621	14.615	14.615	14.615	14.614				14.368 - 14.868	14.617
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++	15.238	15.234	15.235	15.235	15.230	15.228				14.984 - 15.484	15.233
Perfluoro-n-octadecanoic acid (PFODA)	15.591	15.590	15.580	15.581	15.576	15.576	15.575				15.332 - 15.832	15.581
13C4 PFBA	5.809	5.803	5.803	5.800	5.797	5.797	5.797				5.551 - 6.051	5.801
13C5-PFPeA	6.928	6.923	6.928	6.923	6.923	6.923	6.918				6.674 - 7.174	6.924
13C2 PFHxA	8.181	8.181	8.176	8.176	8.176	8.176	8.170				7.927 - 8.427	8.177
13C4-PFHpA	9.417	9.417	9.417	9.411	9.411	9.411	9.405				9.163 - 9.663	9.413
18O2 PFHxS	9.446	9.446	9.446	9.440	9.440	9.440	9.440				9.194 - 9.694	9.443
13C4 PFOA	10.531	10.531	10.522	10.522	10.522	10.522	10.522				10.274 - 10.774	10.525
13C4 PFOS	11.480	11.480	11.480	11.473	11.480	11.480	11.473				11.228 - 11.728	11.478
13C5 PFNA	11.503	11.503	11.503	11.496	11.503	11.503	11.496				11.251 - 11.751	11.501
13C2 PFDA	12.342	12.342	12.331	12.331	12.331	12.342	12.331				12.086 - 12.586	12.336
13C8 FOSA	12.860	12.860	12.860	12.860	12.860	12.860	12.860				12.610 - 13.110	12.860
13C2 PFUnA	13.059	13.058	13.058	13.050	13.058	13.050	13.049				12.804 - 13.304	13.055
13C2 PFDoA	13.666	13.673	13.664	13.666	13.666	13.666	13.664				13.416 - 13.916	13.666
13C2-PFTeDA	14.622	14.621	14.621	14.615	14.615	14.615	14.614				14.368 - 14.868	14.618
13C2-PFHxDA	15.240	15.238	15.234	15.235	15.235	15.230	15.228				14.984 - 15.484	15.234

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1 Analy Batch No.: 97208

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/30/2015 15:59 Calibration End Date: 12/30/2015 18:07 Calibration ID: 18294

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-97208/2	30DEC2015A6A_008.d
Level 2	STD 320-97208/3	30DEC2015A6A_009.d
Level 3	STD 320-97208/4	30DEC2015A6A_010.d
Level 4	STD 320-97208/5	30DEC2015A6A_011.d
Level 5	STD 320-97208/6	30DEC2015A6A_012.d
Level 6	STD 320-97208/7	30DEC2015A6A_013.d
Level 7	STD 320-97208/8	30DEC2015A6A_014.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	8864.6 9957.6	9354.4 8444.2	9840.6 8464.5	9637.2	Ave		9223.31429			6.9		50.0				
13C5-PFPeA	21532 21869	20836 18280	21643 18596	21376	Ave		20590.2771			7.3		50.0				
13C2 PFHxA	18066 18243	18546 14918	18418 15153	18768	Ave		17444.6429			9.5		50.0				
13C4-PFHpA	23761 20773	24105 17351	23106 17236	23147	Ave		21354.0257			13.9		50.0				
18O2 PFHxS	11559 10712	10835 8490.8	11269 8271.9	11290	Ave		10346.7291			13.3		50.0				
13C4 PFOA	26499 21477	24729 16065	25734 15800	22638	Ave		21848.7914			20.1		50.0				
13C4 PFOS	12739 11339	12612 8998.2	12176 8250.1	11903	Ave		11145.4363			16.1		50.0				
13C5 PFNA	21654 20175	21711 15516	22070 16603	21600	Ave		19904.2829			13.6		50.0				
13C2 PFDA	22806 18310	21907 14977	21345 15479	20781	Ave		19372.2400			16.3		50.0				
13C8 FOSA	31170 28703	31201 25344	31060 25425	29893	Ave		28970.7686			9.0		50.0				
13C2 PFUnA	29118 25553	29565 19488	30108 20708	28926	Ave		26209.4600			16.9		50.0				
13C2 PFDoA	30139 27867	29538 23363	30512 23897	29706	Ave		27860.1943			10.8		50.0				
13C2-PFTeDA	25392 22883	24416 20129	23336 21369	23810	Ave		23047.7543			7.8		50.0				
13C2-PFHxDA	31649 26974	27748 26195	28906 28651	27797	Ave		28274.1686			6.2		50.0				

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-16572-1Analy Batch No.: 97208

SDG No.: _____

Instrument ID: A6GC Column: Acquity ID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 12/30/2015 15:59Calibration End Date: 12/30/2015 18:07Calibration ID: 18294

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															
Perfluorobutanoic acid (PFBA)	17214 12295	11809 12290	15420	13967	14587	AveID		1.5134			13.8		35.0				
Perfluoropentanoic acid (PFPeA)	26722 17611	23995 17943	21200	20784	20648	AveID		1.0310			11.3		35.0				
Perfluorobutanesulfonic acid (PFBS)	13486 7945.2	10878 8303.2	9361.8	9917.9	9836.4	AveID		0.9625			11.4		50.0				
Perfluorohexanoic acid (PFHxA)	++++ 16756	28018 16578	22412	19937	20363	AveID		1.1872			14.0		35.0				
Perfluoroheptanoic acid (PFHpA)	32132 17755	29922 17393	23751	23106	21942	L1ID	0.1834	1.0153						1.0000		0.9900	
Perfluorohexanesulfonic acid (PFHxS)	++++ 5935.0	6889.0 5994.6	8623.9	8333.0	7386.9	AveID		0.7087			6.3		35.0				
Perfluoroheptanesulfonic Acid (PFHpS)	++++ 5590.9	6575.6 5318.3	7099.8	6777.6	7473.9	AveID		0.5998			8.6		50.0				
Perfluorooctanoic acid (PFOA)	22458 15539	26863 15364	24119	23353	20048	AveID		0.9680			7.9		35.0				
Perfluorooctanesulfonic acid (PFOS)	13883 9051.5	9424.7 8821.5	12516	13158	12204	AveID		1.0174			12.2		35.0				
Perfluorononanoic acid (PFNA)	14874 12540	17472 13155	18320	17214	15984	AveID		0.7874			5.9		35.0				
Perfluorodecanoic acid (PFDA)	33776 14579	31161 13888	20084	20104	17355	L2ID	0.3063	0.9466						0.9900		0.9900	
Perfluorooctane Sulfonamide (FOSA)	27178 21054	26791 21263	28643	23677	24075	AveID		0.8501			4.8		35.0				
Perfluorodecane Sulfonic acid	8529.0 5688.0	9094.4 4971.8	8657.5	8127.2	6865.5	AveID		0.6607			7.3		50.0				
Perfluoroundecanoic acid (PFUnA)	++++ 17182	45829 16519	28275	26727	21972	L2ID	0.7009	0.8428						0.9980		0.9900	
Perfluorododecanoic acid (PFDoA)	22496 17287	28411 17609	24104	22084	20455	AveID		0.7789			10.6		35.0				
Perfluorotridecanoic Acid (PFTriA)	25622 20034	22465 18914	31198	29340	25187	AveID		0.8819			10.9		50.0				
Perfluorotetradecanoic acid (PFTeA)	++++ 12779	25626 13088	19416	16167	14915	L1ID	0.3206	0.5447						1.0000		0.9900	
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 25783	300308 26276	82214	40790	31688	L2ID	9.1623	0.9783						0.9920		0.9900	
Perfluoro-n-octadecanoic acid (PFODA)	30962 22192	28064 24875	26686	23085	22881	AveID		0.9201			10.9		50.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

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

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1 Analy Batch No.: 97208

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/30/2015 15:59 Calibration End Date: 12/30/2015 18:07 Calibration ID: 18294

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-97208/2	30DEC2015A6A_008.d
Level 2	STD 320-97208/3	30DEC2015A6A_009.d
Level 3	STD 320-97208/4	30DEC2015A6A_010.d
Level 4	STD 320-97208/5	30DEC2015A6A_011.d
Level 5	STD 320-97208/6	30DEC2015A6A_012.d
Level 6	STD 320-97208/7	30DEC2015A6A_013.d
Level 7	STD 320-97208/8	30DEC2015A6A_014.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 6	LVL 7			
13C4 PFBA	Ave	443232 422211	467720 423223	492031	481861	497882	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	1076594 913976	1041809 929823	1082161	1068800	1093434	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	903310 745898	927299 757664	920907	938402	912145	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	1188032 867526	1205251 861779	1155304	1157367	1038650	50.0 50.0	50.0 50.0	50.0	50.0	50.0
1802 PFHxS	Ave	546735 401614	512493 391259	533043	534000	506658	47.3 47.3	47.3 47.3	47.3	47.3	47.3
13C4 PFOA	Ave	1324966 803233	1236427 790024	1286686	1131887	1073854	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	608913 430115	602871 394354	582030	568952	542028	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	1082682 775810	1085566 830168	1103494	1080022	1008757	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDA	Ave	1140321 748864	1095341 773955	1067230	1039074	915499	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	1558483 1267178	1560042 1271249	1553007	1494651	1435159	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	1455916 974423	1478248 1035414	1505376	1446301	1277633	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	1506948 1168142	1476891 1194826	1525583	1485304	1393374	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	1269585 1006432	1220793 1068425	1166810	1190513	1144156	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	1582450 1309727	1387397 1432563	1445289	1389840	1348693	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-16572-1Analy Batch No.: 97208

SDG No.: _____

Instrument ID: A6GC Column: Acquity ID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 12/30/2015 15:59Calibration End Date: 12/30/2015 18:07Calibration ID: 18294

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-97208/2	30DEC2015A6A_008.d
Level 2	STD 320-97208/3	30DEC2015A6A_009.d
Level 3	STD 320-97208/4	30DEC2015A6A_010.d
Level 4	STD 320-97208/5	30DEC2015A6A_011.d
Level 5	STD 320-97208/6	30DEC2015A6A_012.d
Level 6	STD 320-97208/7	30DEC2015A6A_013.d
Level 7	STD 320-97208/8	30DEC2015A6A_014.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 6	LVL 7			
Perfluorobutanoic acid (PFBA)		AveID	8607 2459070	11809 4916079	77098	279345	729363	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	13361 3522225	23995 7177300	106002	415681	1032401	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	5961 1404708	9616 2936011	41379	175348	434769	0.442 177	0.884 354	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	++++ 3351222	28018 6631089	112062	398734	1018149	++++ 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		L1ID	16066 3550975	29922 6957377	118753	462111	1097117	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	++++ 1122893	6517 2268372	40791	157660	349402	++++ 189	0.946 378	4.73	18.9	47.3
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	++++ 1064513	6260 2025210	33795	129045	355760	++++ 190	0.952 381	4.76	19.0	47.6
Perfluorooctanoic acid (PFOA)		AveID	11229 3107862	26863 6145798	120593	467065	1002383	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorooctanesulfonic acid (PFOS)		AveID	6636 1730650	9010 3373346	59827	251574	583366	0.478 191	0.956 382	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		AveID	7437 2508079	17472 5261950	91599	344289	799210	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorodecanoic acid (PFDA)		L2ID	16888 2915825	31161 5555201	100420	402074	867739	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	13589 4210700	26791 8505090	143213	473531	1203725	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorodecane Sulfonic acid		AveID	4111 1096650	8767 1917113	41729	156693	330917	0.482 193	0.964 386	4.82	19.3	48.2
Perfluoroundecanoic acid (PFUnA)		L2ID	++++ 3436444	45829 6607681	141373	534542	1098610	++++ 200	1.00 400	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	11248 3457477	28411 7043792	120520	441677	1022739	0.500 200	1.00 400	5.00	20.0	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1 Analy Batch No.: 97208

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 12/30/2015 15:59 Calibration End Date: 12/30/2015 18:07 Calibration ID: 18294

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorotridecanoic Acid (PFTriA)		AveID	12811 4006721	22465 7565431	155992	586795	1259346	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		L1ID	++++ 2555763	25626 5235158	97081	323334	745757	++++ 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	++++ 5156506	300308 10510274	411068	815798	1584383	++++ 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	15481 4438389	28064 9949967	133430	461696	1144059	0.500 200	1.00 400	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution L1ID = Linear 1/conc IsoDil L2ID = Linear 1/conc^2 IsoDil
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TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_008.d
 Lims ID: Std L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 30-Dec-2015 15:59:52 ALS Bottle#: 17 Worklist Smp#: 2
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L1
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 13:26:25 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 04-Jan-2016 11:52:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.809	5.801	0.008	443232	48.1		96.1	1538	
2 Perfluorobutyric acid	212.9 > 169.0	5.794	5.802	-0.008	8607	0.6416		128	35.4	
D 3 13C5-PFPeA	267.9 > 223.0	6.928	6.924	0.004	1076594	52.3		105	3293	
4 Perfluoropentanoic acid	262.9 > 219.0	6.932	6.927	0.005	13361	0.6019		120	5.9	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.043	7.039	0.004	5961	NC			34.8	
	298.9 > 99.0	7.033	7.039	-0.006	3341		1.78(0.00-0.00)		11.3	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.043	7.039	0.004	5961	0.5358		121		
7 Perfluorohexanoic acid	313.0 > 269.0	8.170	8.176	-0.006	18140	0.8457		169	69.5	
D 6 13C2 PFHxA	315.0 > 270.0	8.181	8.177	0.004	903310	51.8		104	2085	
D 8 13C4-PFHpA	367.0 > 322.0	9.417	9.413	0.004	1188032	55.6		111	3604	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.423	9.413	0.010	16066	0.4853		97.1	11.6	
D 11 18O2 PFHxS	403.0 > 84.0	9.446	9.444	0.002	546735	52.8		112	1617	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.470	9.449	0.021	6001	NC			25.4	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.470	9.449	0.021	6001	0.7325		155		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.531	10.524	0.007		1324966	60.6		121	3449	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.540	10.528	0.012	1.000	11229	0.4378		87.6	14.3	
413.0 > 169.0	10.503	10.528	-0.025	0.996	2768		4.06(0.00-0.00)	87.6	7.0	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.550	10.530	0.020	1.000	1941	0.2540		53.4		M
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.550	10.530	0.020	1.000	1941	NC			6.1	M
D 16 13C4 PFOS										
503.0 > 80.0	11.480	11.478	0.002		608913	54.6		114	1601	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.487	11.480	0.007	1.000	6636	0.5120		107	16.9	
499.0 > 99.0	11.473	11.480	-0.007	0.999	2694		2.46(0.00-0.00)	107	10.3	
D 17 13C5 PFNA										
468.0 > 423.0	11.503	11.501	0.002		1082682	54.4		109	3287	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	7437	0.4362		87.2	24.1	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.342	12.333	0.009	1.000	16888	0.4587		91.7	36.9	
D 19 13C2 PFDA										
515.0 > 470.0	12.342	12.336	0.006		1140321	58.9		118	1822	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.849	12.858	-0.009	1.000	13589	0.5129		103	40.6	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1558483	53.8		108	2057	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.015	13.007	0.008	1.000	4111	NC			22.7	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.015	13.007	0.008	1.000	4111	0.4885		101		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.050	13.053	-0.003	1.000	31509	0.4523		90.5	71.8	
D 26 13C2 PFUnA										
565.0 > 520.0	13.059	13.054	0.005		1455916	55.5		111	3913	
D 28 13C2 PFDaA										
615.0 > 570.0	13.666	13.666	0.0		1506948	54.1		108	2563	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.666	13.668	-0.002	1.000	11248	0.4791		95.8	11.7	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	12811	0.4820		96.4	14.1	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.622	14.618	0.004		1269585	55.1		110	3292	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.622	14.618	0.004	1.000	25520	0.9658		193	14.6	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.240	15.234	0.006	1.000	327868	1.75		351	497	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.240	15.234	0.006		1582450	56.0		112	3601	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.591	15.582	0.009	1.000	15481	0.5582	112	19.8	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L1_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_008.d

Injection Date: 30-Dec-2015 15:59:52

Instrument ID: A6

Lims ID: Std L1

Client ID:

Operator ID: JRB

ALS Bottle#: 17

Worklist Smp#: 2

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

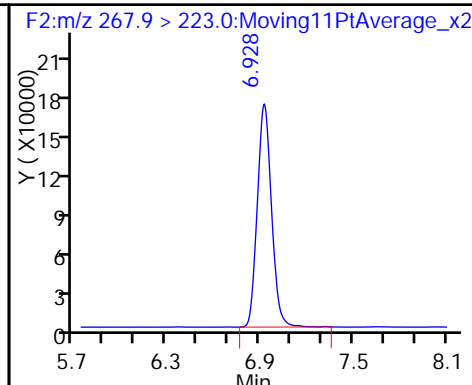
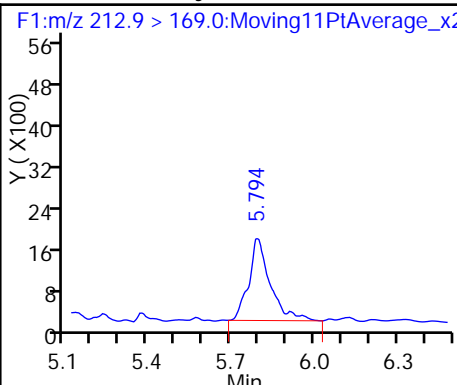
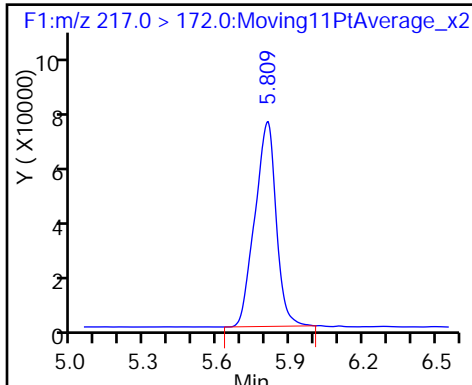
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

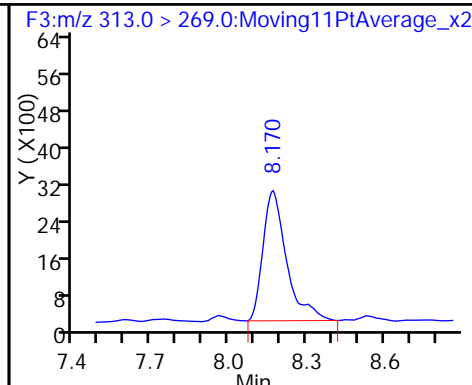
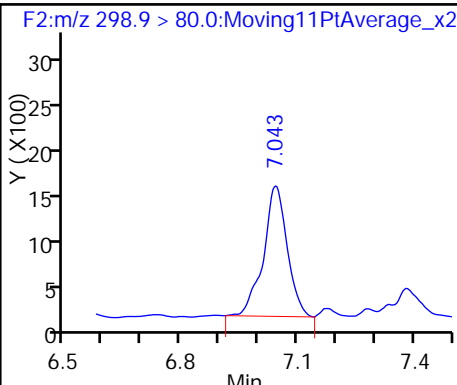
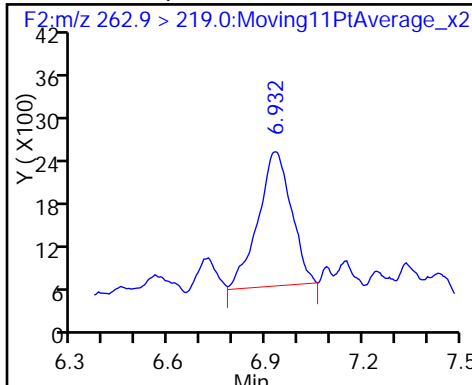
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

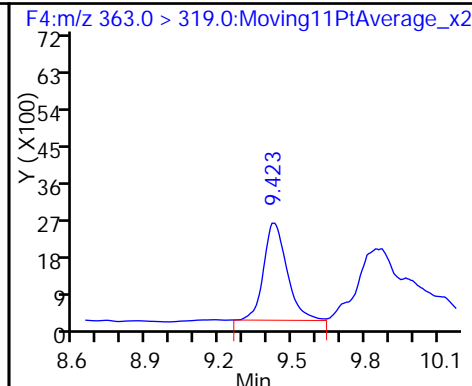
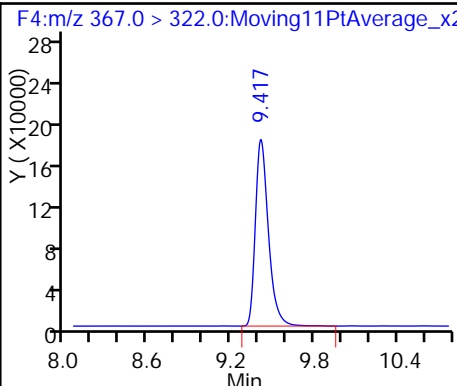
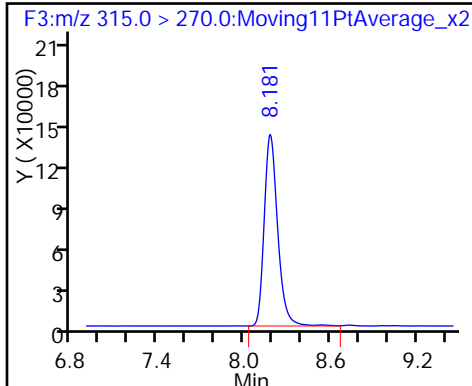
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

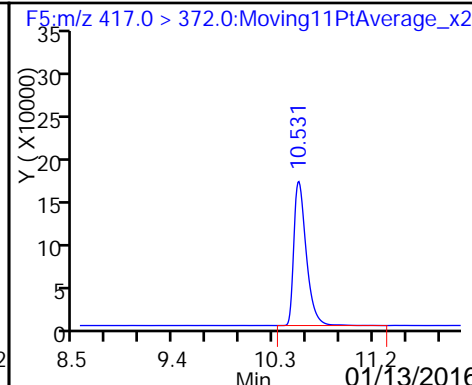
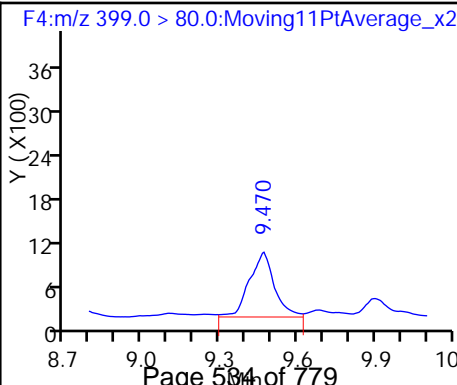
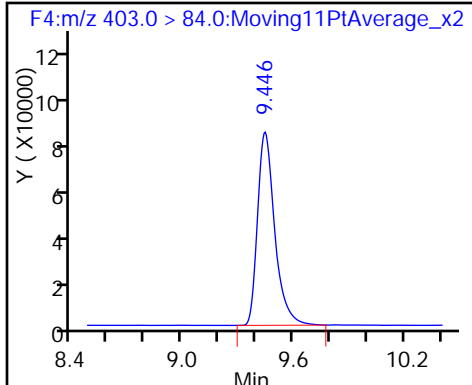
9 Perfluoroheptanoic acid

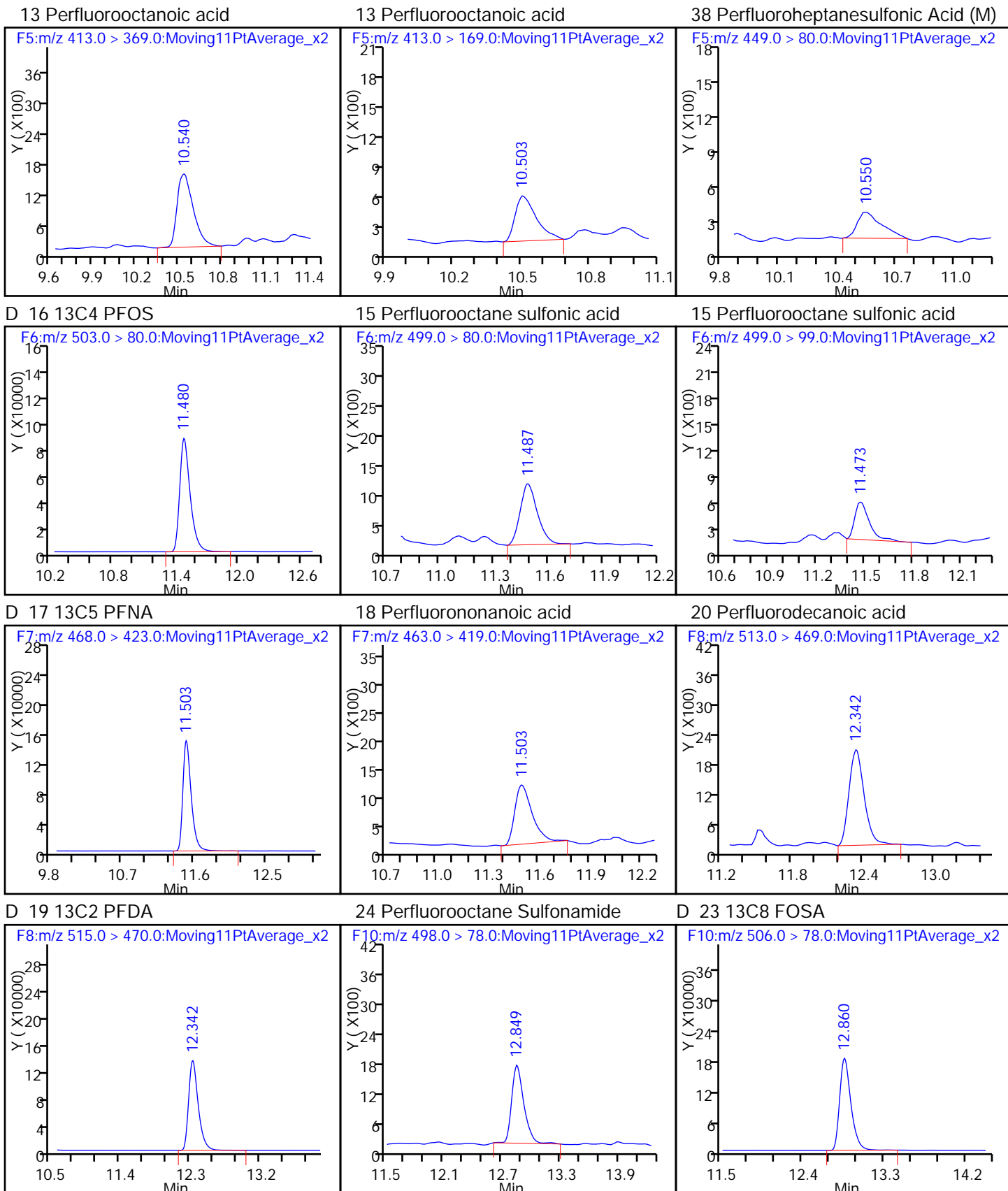


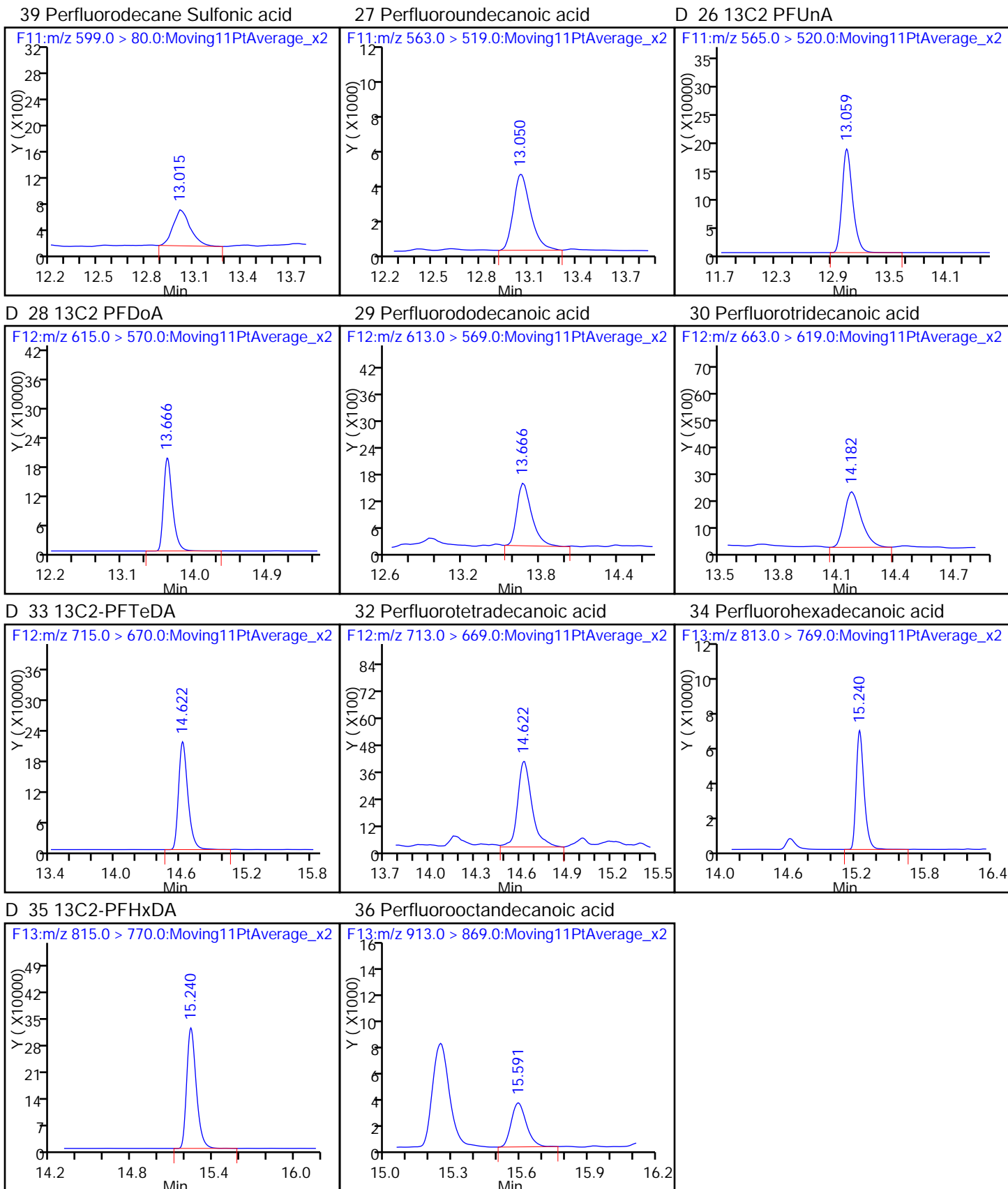
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







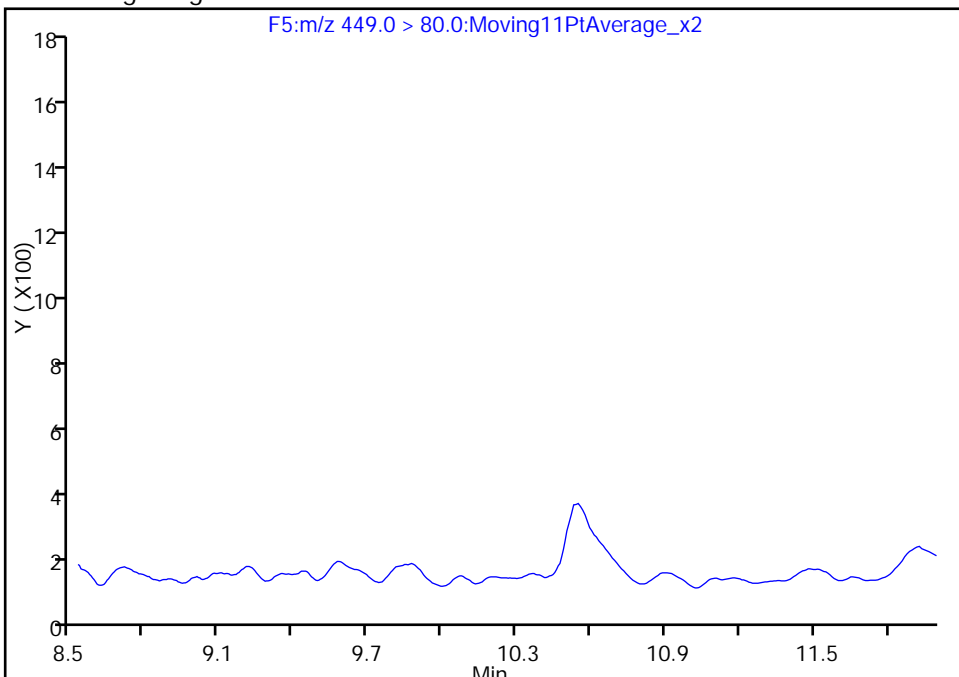
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_008.d
Injection Date: 30-Dec-2015 15:59:52 Instrument ID: A6
Lims ID: Std L1
Client ID:
Operator ID: JRB ALS Bottle#: 17 Worklist Smp#: 2
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F5:MRM

38 Perfluoroheptanesulfonic Acid, CAS: 375-92-8

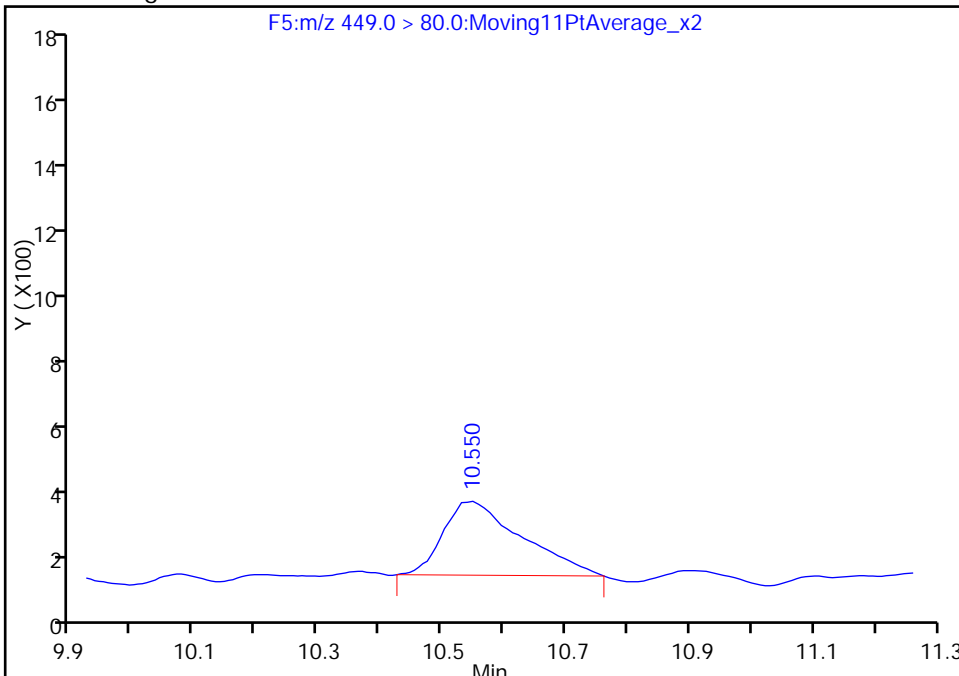
Not Detected
Expected RT: 10.53

Processing Integration Results



RT: 10.55
Area: 1941
Amount: 0.254024
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 04-Jan-2016 11:57:17
Audit Action: Manually Integrated
Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_009.d
 Lims ID: Std L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 30-Dec-2015 16:21:06 ALS Bottle#: 18 Worklist Smp#: 3
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L2
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 13:26:31 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 04-Jan-2016 12:36:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.803	5.801	0.002	467720	50.7		101	1773	
2 Perfluorobutyric acid	212.9 > 169.0	5.812	5.802	0.010	11809	0.8342		83.4	43.9	
D 3 13C5-PFPeA	267.9 > 223.0	6.923	6.924	-0.001	1041809	50.6		101	2028	
4 Perfluoropentanoic acid	262.9 > 219.0	6.928	6.927	0.001	23995	1.12		112	9.6	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.036	7.039	-0.003	9616	NC			37.2	
	298.9 > 99.0	7.029	7.039	-0.010	3408		2.82(0.00-0.00)		10.9	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.036	7.039	-0.003	9616	0.9220		104		
7 Perfluorohexanoic acid	313.0 > 269.0	8.181	8.176	0.005	28018	1.27		127	101	
D 6 13C2 PFHxA	315.0 > 270.0	8.181	8.177	0.004	927299	53.2		106	2854	
D 8 13C4-PFHpA	367.0 > 322.0	9.417	9.413	0.004	1205251	56.4		113	3806	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.417	9.413	0.004	29922	1.04		104	25.7	
D 11 18O2 PFHxS	403.0 > 84.0	9.446	9.444	0.002	512493	49.5		105	2097	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.452	9.449	0.003	6517	NC			18.9	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.452	9.449	0.003	6517	0.8487		89.7		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.531	10.524	0.007		1236427	56.6		113	3227	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.531	10.528	0.003	1.000	26863	1.12		112	30.0	
413.0 > 169.0	10.531	10.528	0.003	1.000	12181		2.21(0.00-0.00)	112	20.9	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.531	10.530	0.001	1.000	6260	0.8275		86.9		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.531	10.530	0.001	1.000	6260	NC			22.7	
D 16 13C4 PFOS										
503.0 > 80.0	11.480	11.478	0.002		602871	54.1		113	2689	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.480	11.480	0.0	1.000	9010	0.7022		73.4	25.8	
499.0 > 99.0	11.487	11.480	0.007	1.001	6852		1.31(0.00-0.00)	73.4	25.1	
D 17 13C5 PFNA										
468.0 > 423.0	11.503	11.501	0.002		1085566	54.5		109	2393	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	17472	1.02		102	47.3	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	31161	1.18		118	98.0	
D 19 13C2 PFDA										
515.0 > 470.0	12.342	12.336	0.006		1095341	56.5		113	1582	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	26791	1.01		101	71.3	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1560042	53.8		108	1507	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.014	13.007	0.007	1.000	8767	NC			37.8	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.014	13.007	0.007	1.000	8767	1.05		109		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.058	13.053	0.005	1.000	45829	1.01		101	98.2	
D 26 13C2 PFUnA										
565.0 > 520.0	13.058	13.054	0.004		1478248	56.4		113	2539	
D 28 13C2 PFDoA										
615.0 > 570.0	13.673	13.666	0.007		1476891	53.0		106	2395	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.682	13.668	0.014	1.000	28411	1.23		123	29.1	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.181	14.182	-0.001	1.000	22465	0.8624		86.2	22.6	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.621	14.618	0.003		1220793	53.0		106	2763	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.621	14.618	0.003	1.000	25626	1.00		100	14.9	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.238	15.234	0.004	1.000	300308	1.03		103	518	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.238	15.234	0.004		1387397	49.1		98.1	2938	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid
 913.0 > 869.0 15.590 15.582 0.008 1.000 28064 1.03 103 40.2

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_009.d

Injection Date: 30-Dec-2015 16:21:06

Instrument ID: A6

Lims ID: Std L2

Client ID:

Operator ID: JRB

ALS Bottle#: 18

Worklist Smp#: 3

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

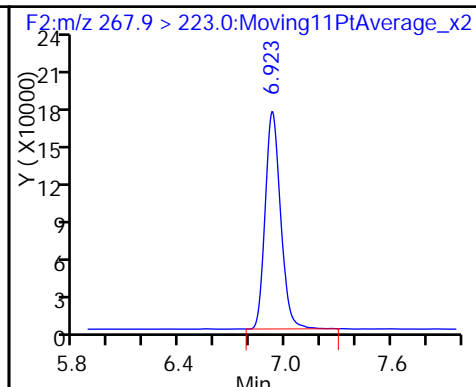
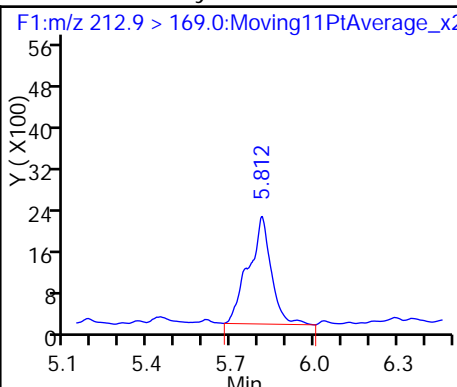
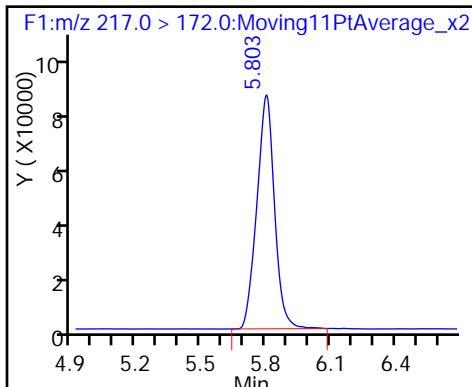
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

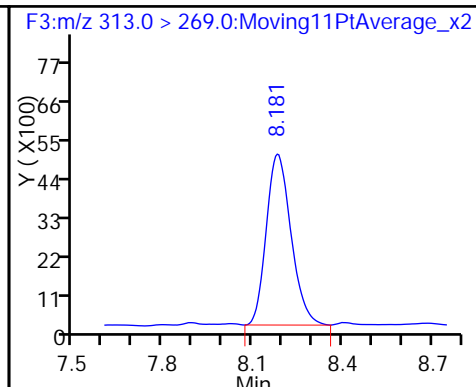
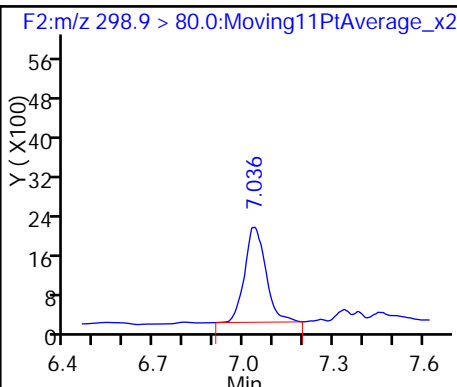
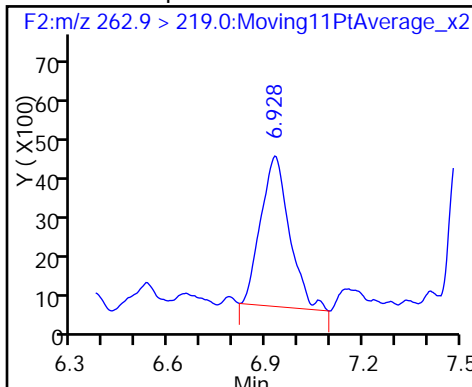
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

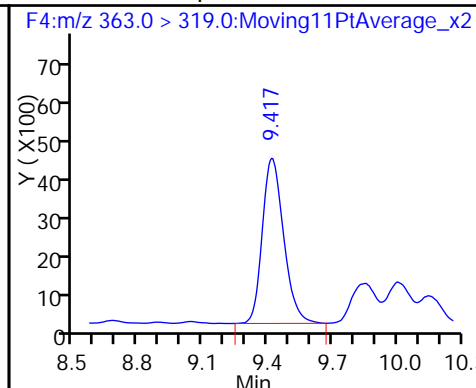
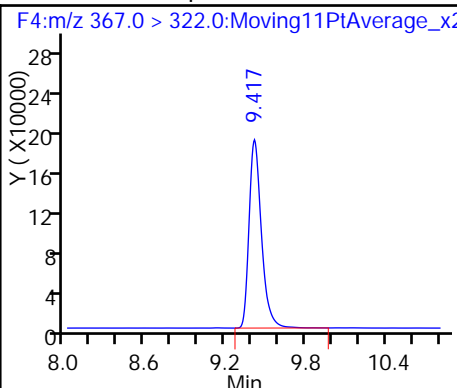
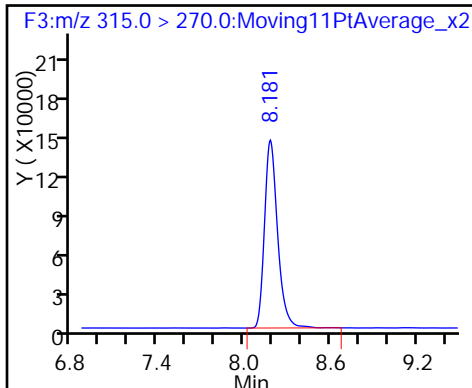
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

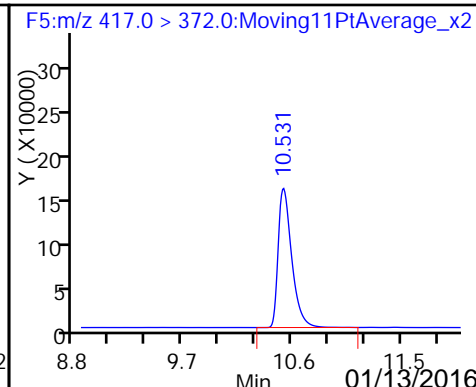
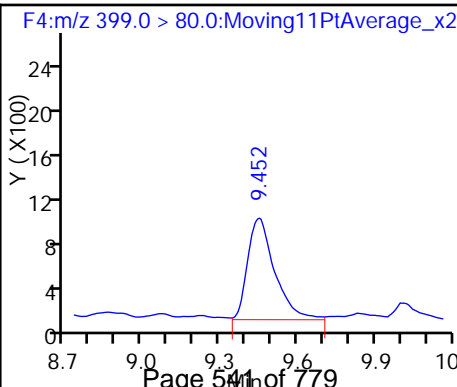
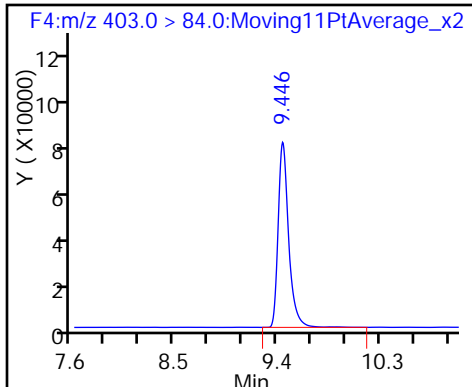
9 Perfluoroheptanoic acid

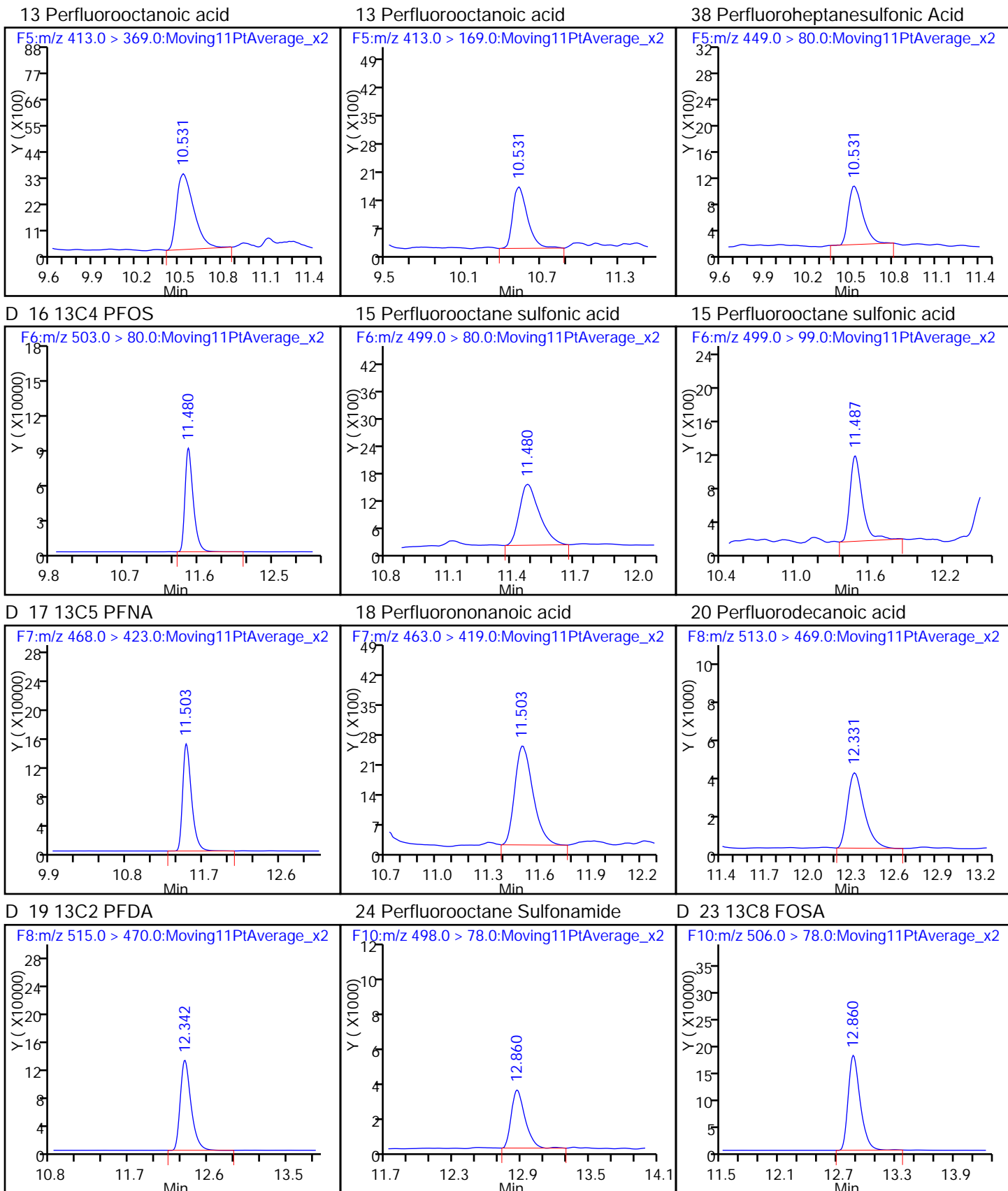


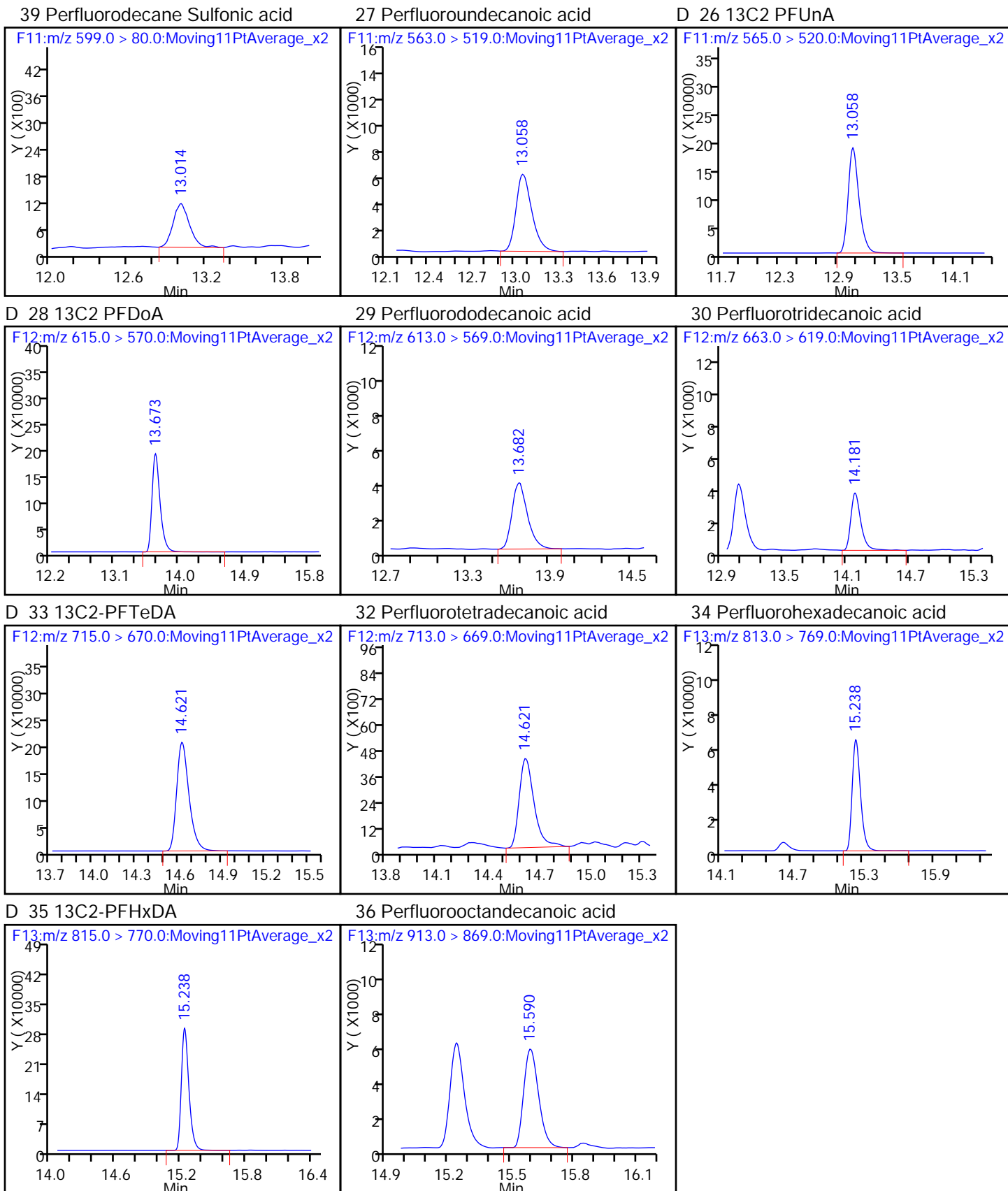
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_010.d
 Lims ID: Std L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 30-Dec-2015 16:42:19 ALS Bottle#: 19 Worklist Smp#: 4
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L3
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 13:26:36 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.803	5.801	0.002	492031	53.3		107	2073	
2 Perfluorobutyric acid	212.9 > 169.0	5.800	5.802	-0.002	77098	5.18		104	223	
D 3 13C5-PFPeA	267.9 > 223.0	6.928	6.924	0.004	1082161	52.6		105	2053	
4 Perfluoropentanoic acid	262.9 > 219.0	6.932	6.927	0.005	106002	4.75		95.0	34.8	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.040	7.039	0.001	41379	NC			134	
	298.9 > 99.0	7.047	7.039	0.008	24519		1.69(0.00-0.00)		73.3	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.040	7.039	0.001	41379	3.81		86.3		
7 Perfluorohexanoic acid	313.0 > 269.0	8.181	8.176	0.005	112062	5.12		102	289	
D 6 13C2 PFHxA	315.0 > 270.0	8.176	8.177	-0.001	920907	52.8		106	2774	
D 8 13C4-PFHpA	367.0 > 322.0	9.417	9.413	0.004	1155304	54.1		108	2707	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.417	9.413	0.004	118753	4.88		97.6	106	
D 11 18O2 PFHxS	403.0 > 84.0	9.446	9.444	0.002	533043	51.5		109	2008	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.446	9.449	-0.003	40791	NC			104	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.446	9.449	-0.003	40791	5.11		108		
D 12 13C4 PFOA	417.0 > 372.0	10.522	10.524	-0.002	1286686	58.9		118	2311	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.531	10.528	0.003	1.000	120593	4.84		96.8	110	
413.0 > 169.0	10.531	10.528	0.003	1.000	40318		2.99(0.00-0.00)	96.8	53.9	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.531	10.530	0.001	1.000	33795	4.63		97.2		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.531	10.530	0.001	1.000	33795	NC			116	
D 16 13C4 PFOS										
503.0 > 80.0	11.480	11.478	0.002		582030	52.2		109	1853	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.480	11.480	0.0	1.000	59827	4.83		101	157	
499.0 > 99.0	11.480	11.480	0.0	1.000	30129		1.99(0.00-0.00)	101	110	
D 17 13C5 PFNA										
468.0 > 423.0	11.503	11.501	0.002		1103494	55.4		111	3414	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	91599	5.27		105	244	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	100420	4.65		92.9	322	
D 19 13C2 PFDA										
515.0 > 470.0	12.331	12.336	-0.005		1067230	55.1		110	1177	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	143213	5.42		108	317	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1553007	53.6		107	1713	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.005	13.007	-0.002	1.000	41729	NC			116	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.005	13.007	-0.002	1.000	41729	5.19		108		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.058	13.053	0.005	1.000	141373	4.74		94.8	387	
D 26 13C2 PFUnA										
565.0 > 520.0	13.058	13.054	0.004		1505376	57.4		115	5016	
D 28 13C2 PFDoA										
615.0 > 570.0	13.664	13.666	-0.002		1525583	54.8		110	3117	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.664	13.668	-0.004	1.000	120520	5.07		101	135	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.181	14.182	-0.001	1.000	155992	5.80		116	144	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.621	14.618	0.003		1166810	50.6		101	1910	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.621	14.618	0.003	1.000	97081	5.25		105	54.4	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.234	15.234	0.0	1.000	411068	4.41		88.1	597	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.234	15.234	0.0		1445289	51.1		102	3022	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.580	15.582	-0.002	1.000	133430	4.75		95.1	184	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L3_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_010.d

Injection Date: 30-Dec-2015 16:42:19

Instrument ID: A6

Lims ID: Std L3

Client ID:

Operator ID: JRB

ALS Bottle#: 19

Worklist Smp#: 4

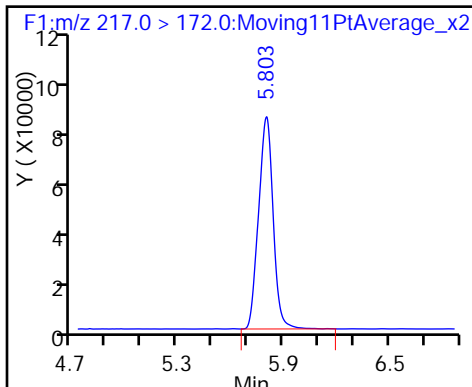
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

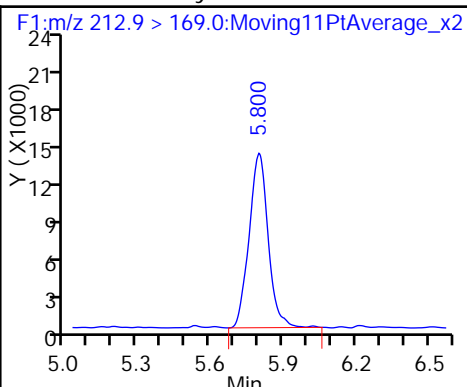
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

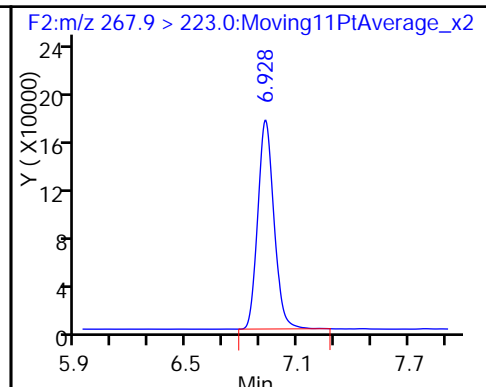
D 1 13C4 PFBA



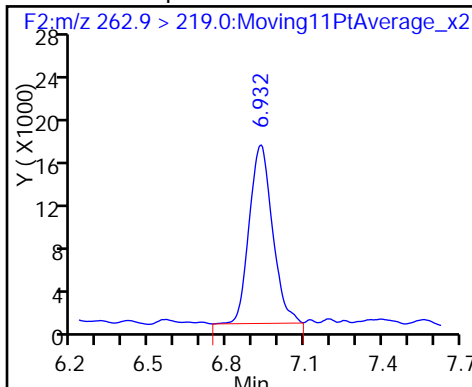
2 Perfluorobutyric acid



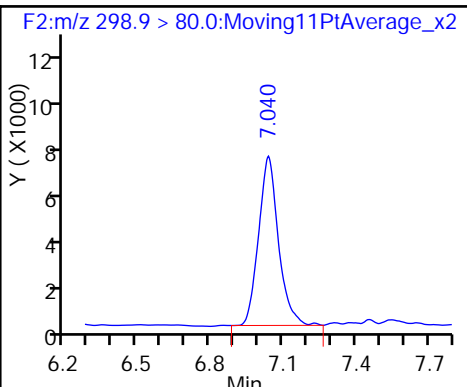
D 3 13C5-PFPeA



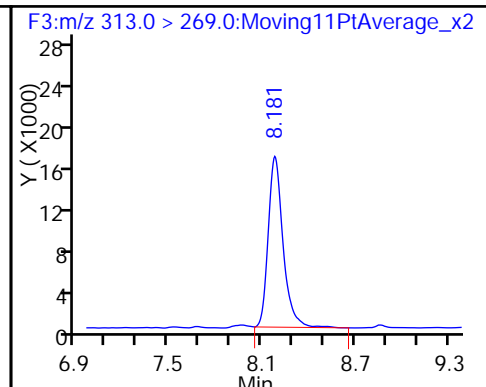
4 Perfluoropentanoic acid



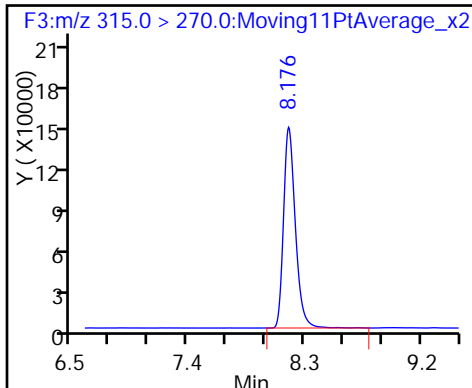
40 Perfluorobutanesulfonic acid



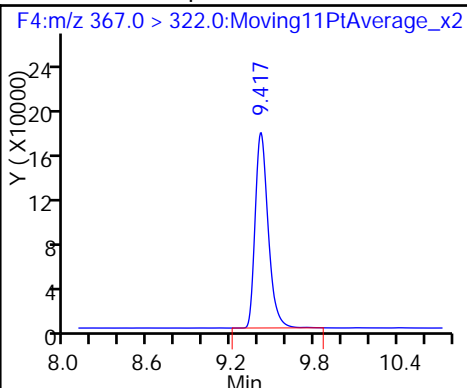
7 Perfluorohexanoic acid



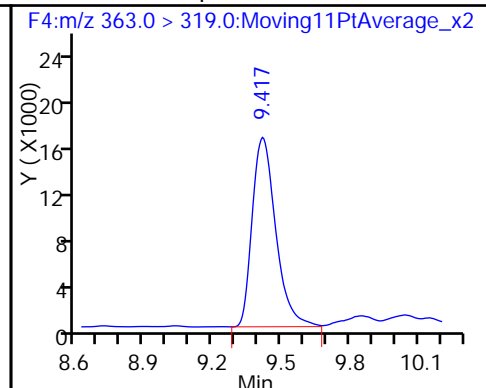
D 6 13C2 PFHxA



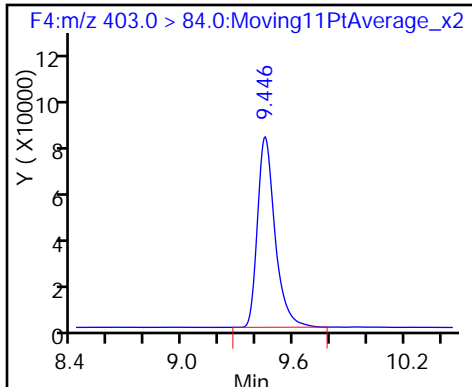
D 8 13C4-PFHpA



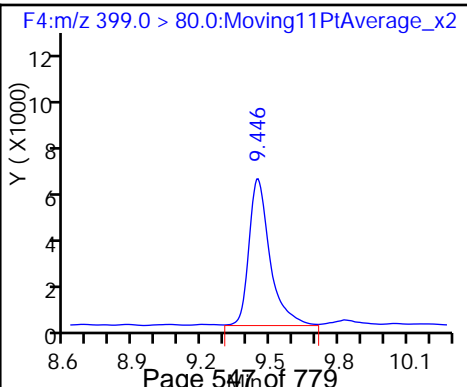
9 Perfluoroheptanoic acid



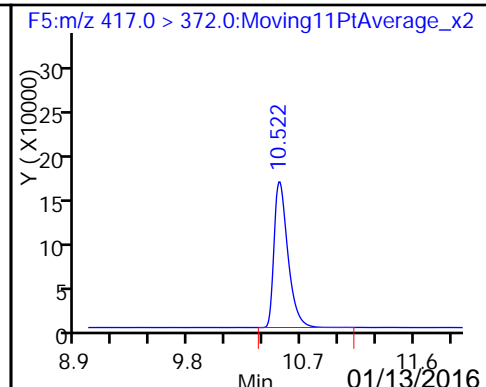
D 11 18O2 PFHxS

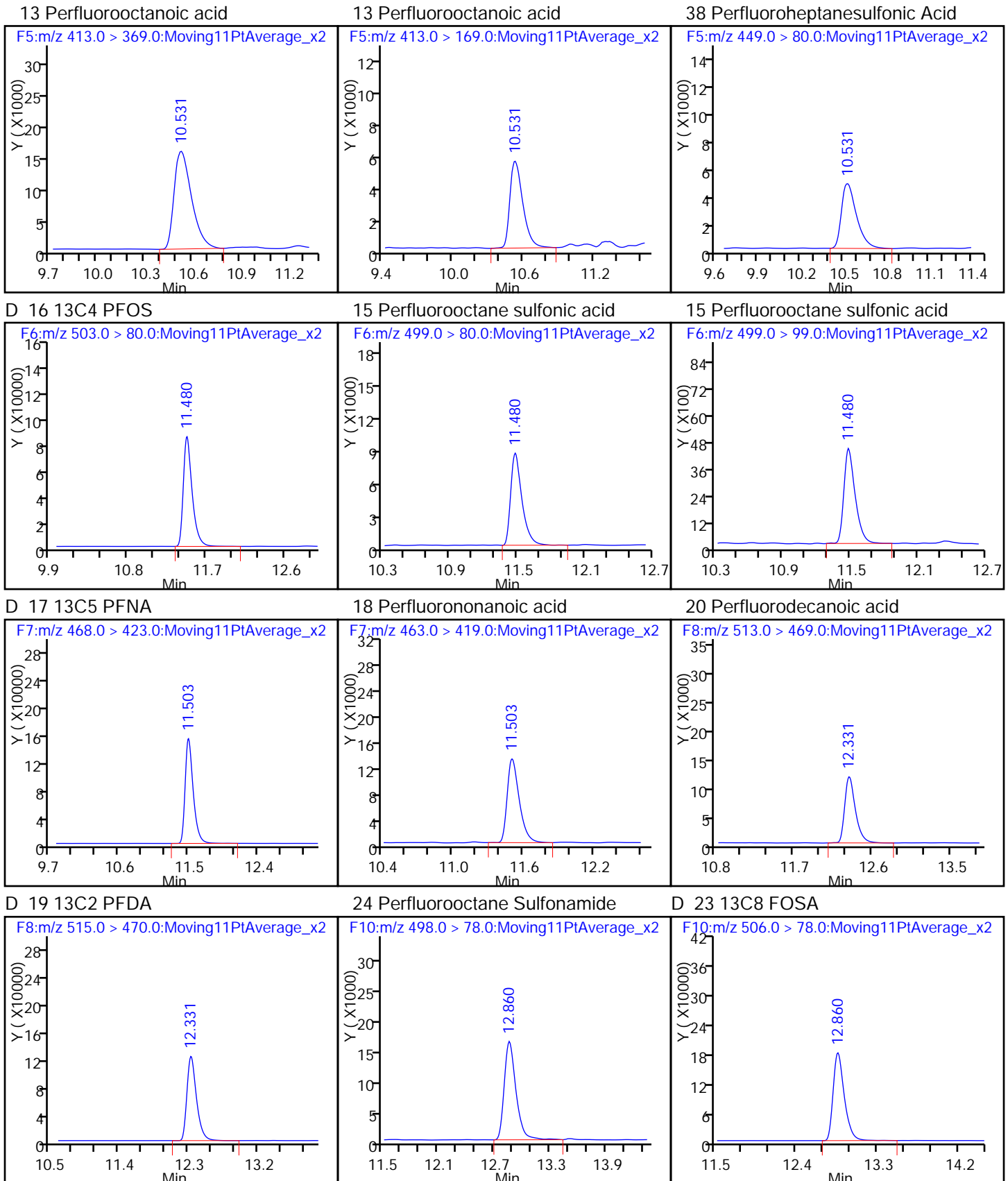


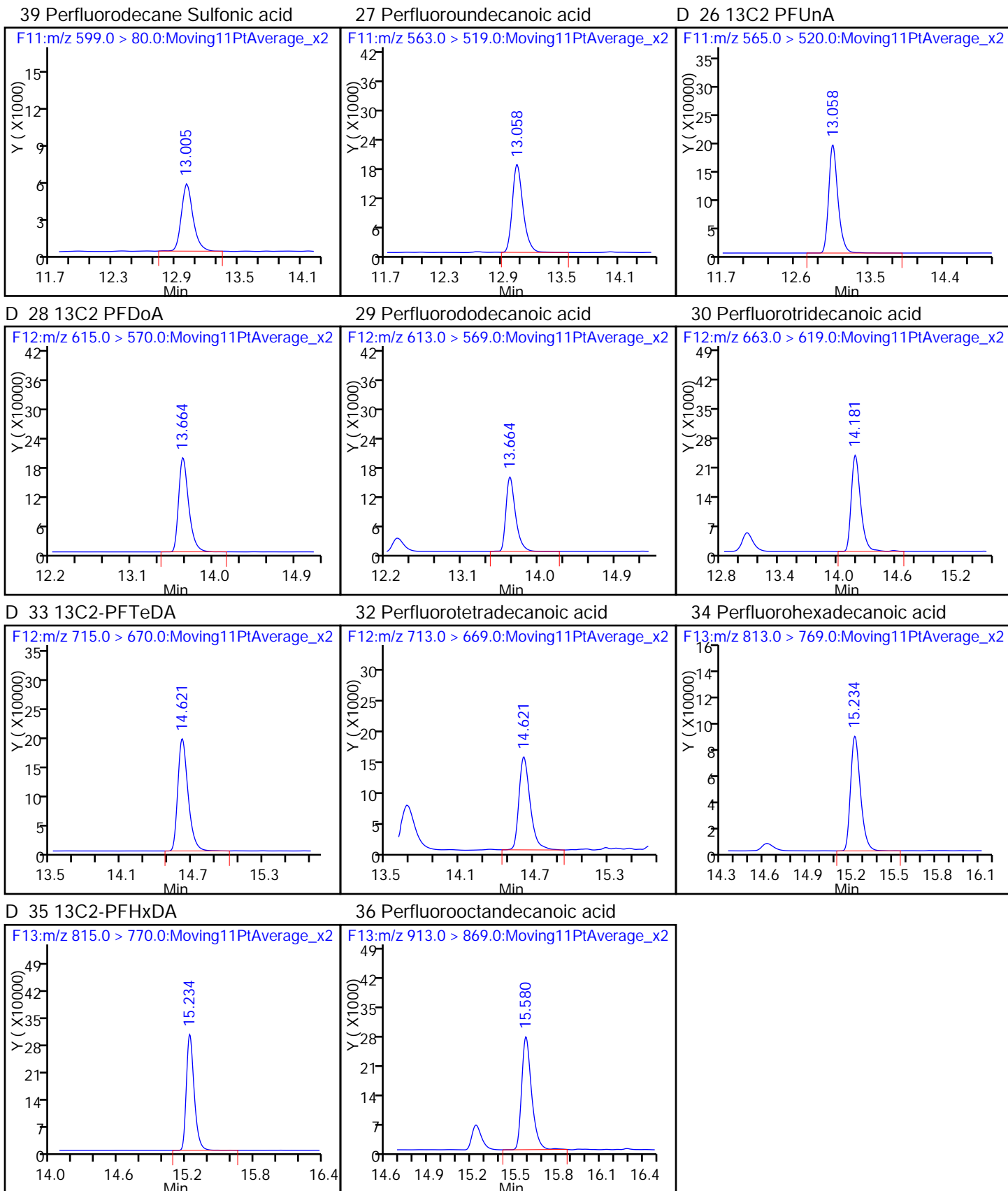
41 Perfluorohexanesulfonic acid



D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_011.d
 Lims ID: Std L4
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 30-Dec-2015 17:03:32 ALS Bottle#: 20 Worklist Smp#: 5
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 13:26:42 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: barnettj Date: 07-Jan-2016 11:24:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.800	5.801	-0.001	481861	52.2		104	1910	
2 Perfluorobutyric acid	212.9 > 169.0	5.803	5.802	0.001	279345	19.2		95.8	877	
D 3 13C5-PFPeA	267.9 > 223.0	6.923	6.924	-0.001	1068800	51.9		104	2196	
4 Perfluoropentanoic acid	262.9 > 219.0	6.923	6.927	-0.004	415681	18.9		94.3	194	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.040	7.039	0.001	175348	NC			419	
	298.9 > 99.0	7.043	7.039	0.004	96250		1.82(0.00-0.00)		326	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.040	7.039	0.001	175348	16.1		91.3		
7 Perfluorohexanoic acid	313.0 > 269.0	8.176	8.176	0.0	398734	17.9		89.5	881	
D 6 13C2 PFHxA	315.0 > 270.0	8.176	8.177	-0.001	938402	53.8		108	2780	
D 8 13C4-PFHpA	367.0 > 322.0	9.411	9.413	-0.002	1157367	54.2		108	2864	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.411	9.413	-0.002	462111	19.5		97.4	368	
D 11 18O2 PFHxS	403.0 > 84.0	9.440	9.444	-0.004	534000	51.6		109	2347	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.440	9.449	-0.009	157660	NC			433	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.440	9.449	-0.009	157660	19.7		104		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.522	10.524	-0.002		1131887	51.8		104	1757	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.522	10.528	-0.006	1.000	467065	21.3		107	391	
413.0 > 169.0	10.522	10.528	-0.006	1.000	150626		3.10(0.00-0.00)	107	337	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.522	10.530	-0.008	1.000	129045	18.1		94.9		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.522	10.530	-0.008	1.000	129045	NC			421	
D 16 13C4 PFOS										
503.0 > 80.0	11.473	11.478	-0.005		568952	51.0		107	2396	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.480	11.480	0.0	1.000	251574	20.8		109	254	
499.0 > 99.0	11.480	11.480	0.0	1.000	139923		1.80(0.00-0.00)	109	332	
D 17 13C5 PFNA										
468.0 > 423.0	11.496	11.501	-0.005		1080022	54.3		109	3157	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	344289	20.2		101	839	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	402074	20.1		101	1059	
D 19 13C2 PFDA										
515.0 > 470.0	12.331	12.336	-0.005		1039074	53.6		107	1754	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	473531	18.6		93.2	743	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1494651	51.6		103	1283	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.006	13.007	-0.001	1.000	156693	NC			540	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.006	13.007	-0.001	1.000	156693	19.9		103		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.050	13.053	-0.003	1.000	534542	21.1		105	890	
D 26 13C2 PFUnA										
565.0 > 520.0	13.050	13.054	-0.004		1446301	55.2		110	3575	
D 28 13C2 PFDaA										
615.0 > 570.0	13.666	13.666	0.0		1485304	53.3		107	3317	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.666	13.668	-0.002	1.000	441677	19.1		95.4	558	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	586795	22.4		112	558	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.615	14.618	-0.003		1190513	51.7		103	2041	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.618	-0.003	1.000	323334	19.4		97.0	207	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.235	15.234	0.001	1.000	815798	18.7		93.5	1083	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.235	15.234	0.001		1389840	49.2		98.3	2425	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid
 913.0 > 869.0 15.581 15.582 -0.001 1.000 461696 16.9 84.5 585

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_011.d

Injection Date: 30-Dec-2015 17:03:32

Instrument ID: A6

Lims ID: Std L4

Client ID:

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 5

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

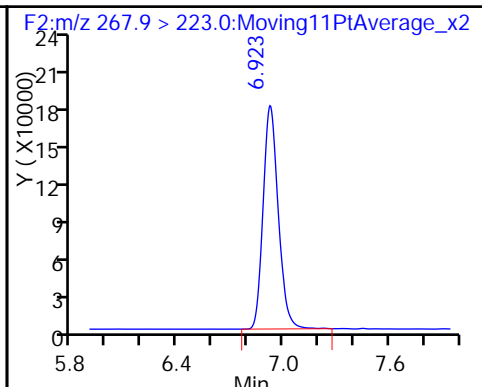
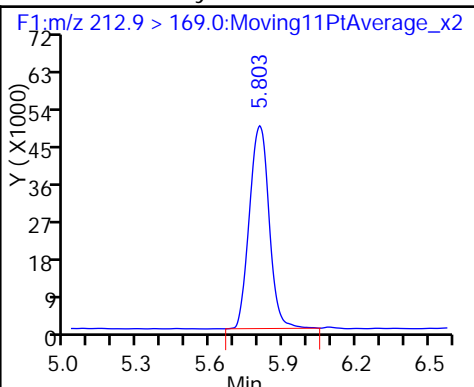
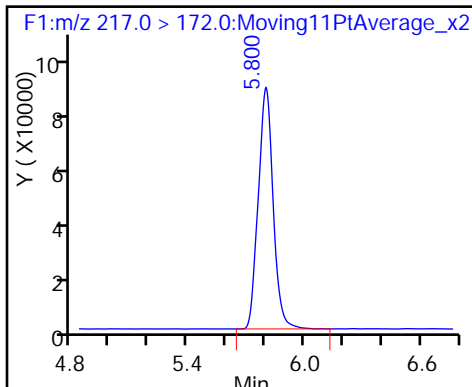
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

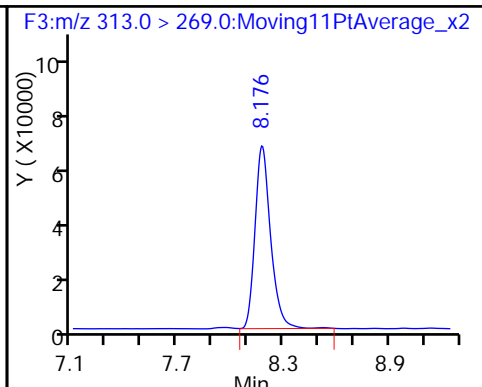
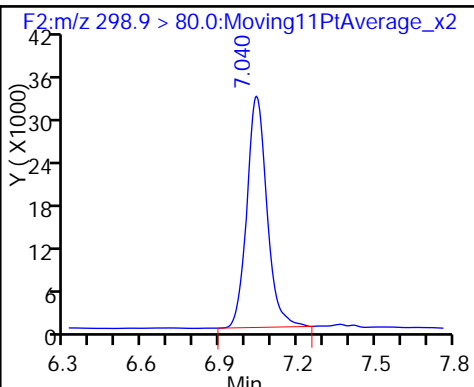
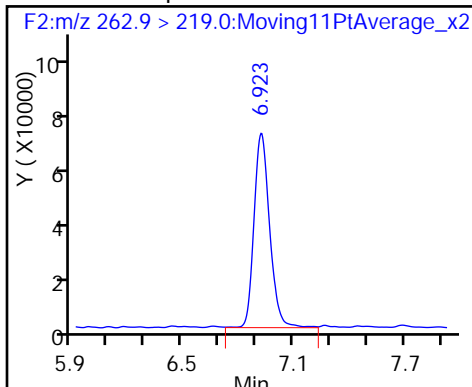
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

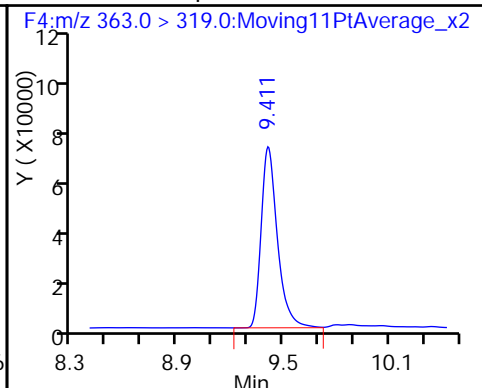
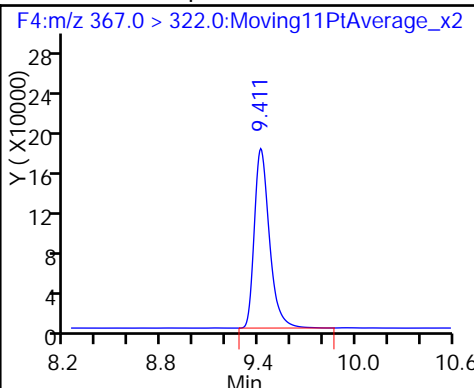
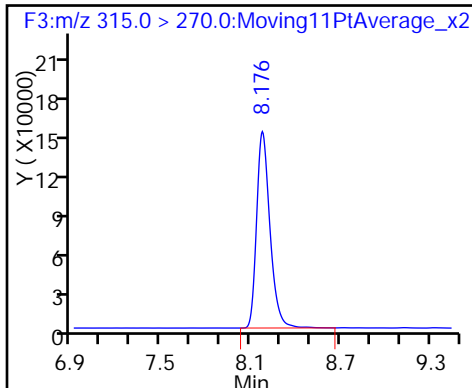
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

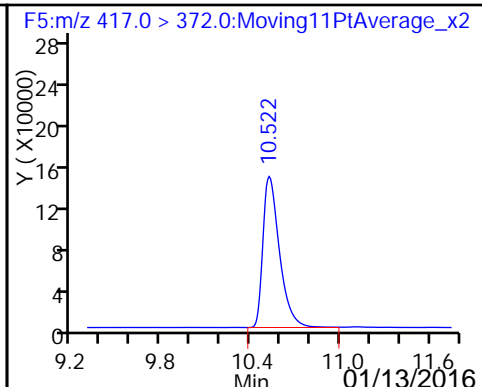
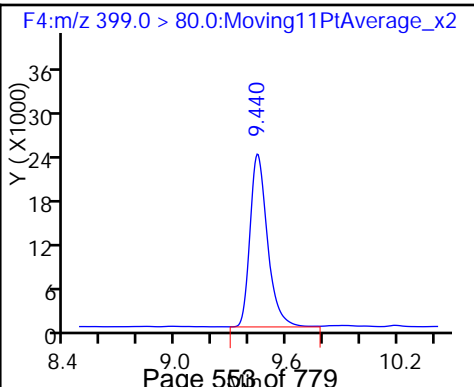
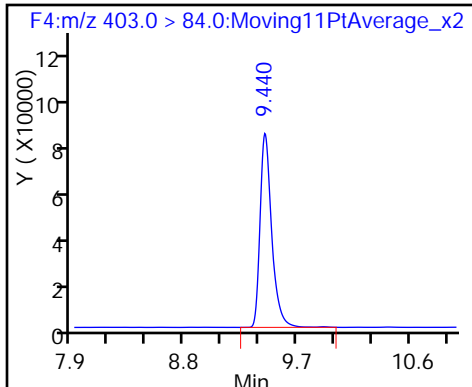
9 Perfluoroheptanoic acid

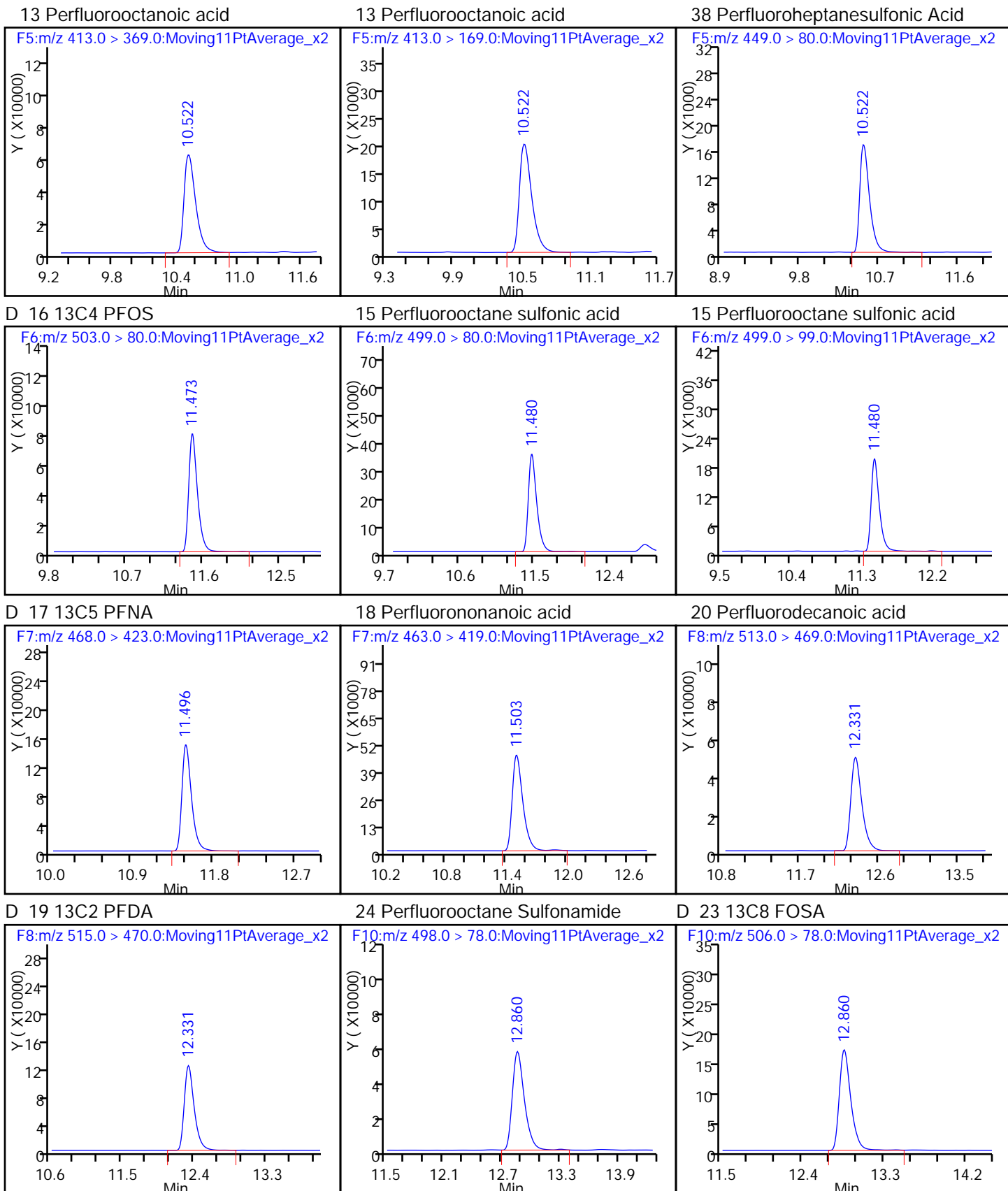


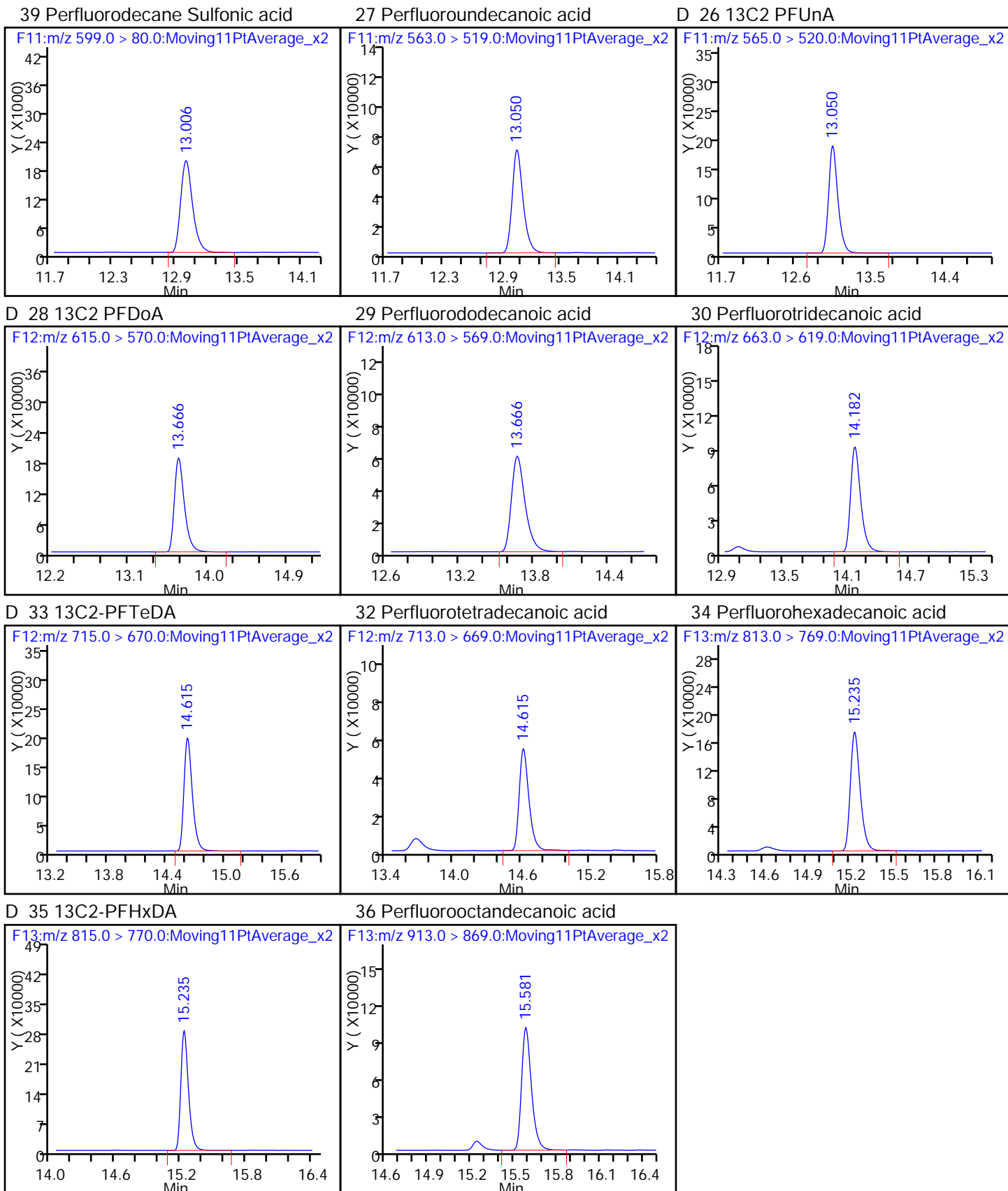
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_012.d
 Lims ID: Std L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 30-Dec-2015 17:24:45 ALS Bottle#: 21 Worklist Smp#: 6
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 13:26:48 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 04-Jan-2016 11:47:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.797	5.801	-0.004	497882	54.0		108	1609	
2 Perfluorobutyric acid	212.9 > 169.0	5.800	5.802	-0.002	729363	48.4		96.8	2447	
D 3 13C5-PFPeA	267.9 > 223.0	6.923	6.924	-0.001	1093434	53.1		106	1999	
4 Perfluoropentanoic acid	262.9 > 219.0	6.923	6.927	-0.004	1032401	45.8		91.6	361	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.040	7.039	0.001	434769	NC			703	
	298.9 > 99.0	7.036	7.039	-0.003	240519		1.81(0.00-0.00)		572	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.040	7.039	0.001	434769	42.2		95.4		
7 Perfluorohexanoic acid	313.0 > 269.0	8.176	8.176	0.0	1018149	47.0		94.0	1450	
D 6 13C2 PFHxA	315.0 > 270.0	8.176	8.177	-0.001	912145	52.3		105	2393	
D 8 13C4-PFHpA	367.0 > 322.0	9.411	9.413	-0.002	1038650	48.6		97.3	3441	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.411	9.413	-0.002	1097117	51.8		104	795	
D 11 18O2 PFHxS	403.0 > 84.0	9.440	9.444	-0.004	506658	49.0		104	1822	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.446	9.449	-0.003	349402	NC			1037	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.446	9.449	-0.003	349402	46.0		97.3		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.522	10.524	-0.002		1073854	49.1		98.3	2269	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.531	10.528	0.003	1.000	1002383	48.2		96.4	822	
413.0 > 169.0	10.531	10.528	0.003	1.000	366086		2.74(0.00-0.00)	96.4	500	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.522	10.530	-0.008	1.000	355760	52.3		110		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.522	10.530	-0.008	1.000	355760	NC			1204	
D 16 13C4 PFOS										
503.0 > 80.0	11.480	11.478	0.002		542028	48.6		102	1703	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.480	11.480	0.0	1.000	583366	50.6		106	263	
499.0 > 99.0	11.480	11.480	0.0	1.000	284155		2.05(0.00-0.00)	106	585	
D 17 13C5 PFNA										
468.0 > 423.0	11.503	11.501	0.002		1008757	50.7		101	2288	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	799210	50.3		101	2281	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	867739	49.7		99.5	2425	
D 19 13C2 PFDA										
515.0 > 470.0	12.331	12.336	-0.005		915499	47.3		94.5	2129	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	1203725	49.3		98.7	1360	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1435159	49.5		99.1	1247	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.006	13.007	-0.001	1.000	330917	NC			1215	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.006	13.007	-0.001	1.000	330917	44.2		91.6		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.050	13.053	-0.003	1.000	1098610	50.2		100	1638	
D 26 13C2 PFUnA										
565.0 > 520.0	13.058	13.054	0.004		1277633	48.7		97.5	2343	
D 28 13C2 PFDaA										
615.0 > 570.0	13.666	13.666	0.0		1393374	50.0		100	3154	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.666	13.668	-0.002	1.000	1022739	47.1		94.2	1360	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	1259346	51.2		102	1059	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.615	14.618	-0.003		1144156	49.6		99.3	2688	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.618	-0.003	1.000	745757	48.5		97.1	464	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.235	15.234	0.001	1.000	1584383	48.7		97.5	1879	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.235	15.234	0.001		1348693	47.7		95.4	2578	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.576	15.582	-0.006	1.000	1144059	44.6	89.2	1359	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_012.d

Injection Date: 30-Dec-2015 17:24:45

Instrument ID: A6

Lims ID: Std L5

Client ID:

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 6

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

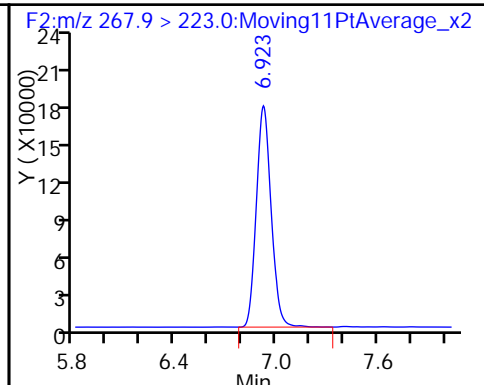
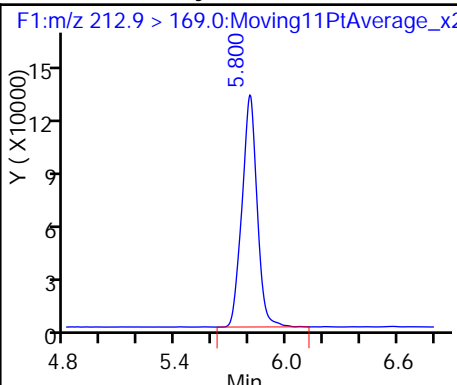
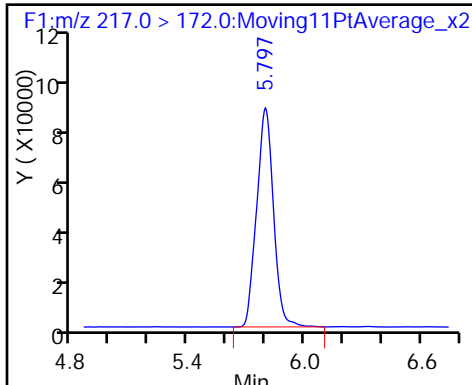
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

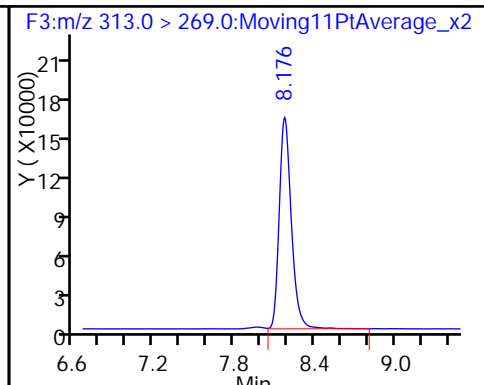
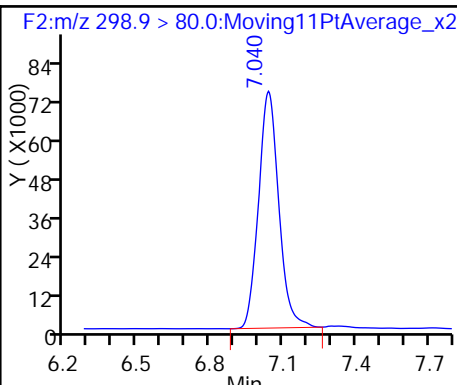
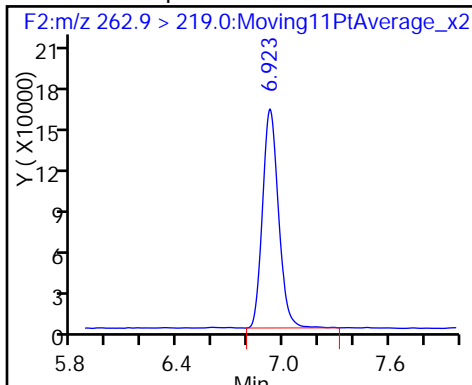
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

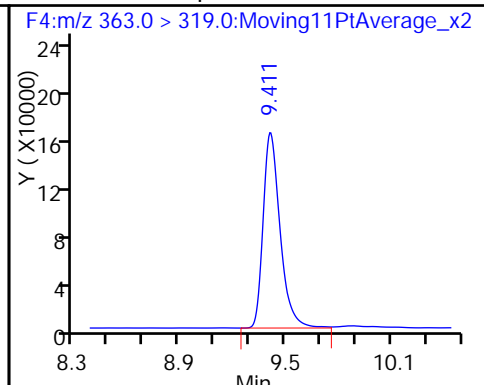
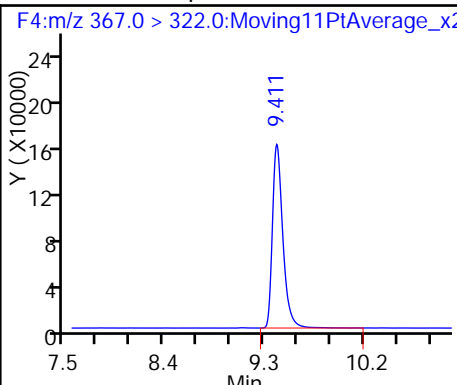
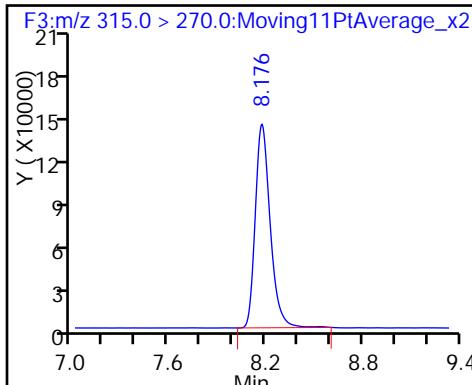
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

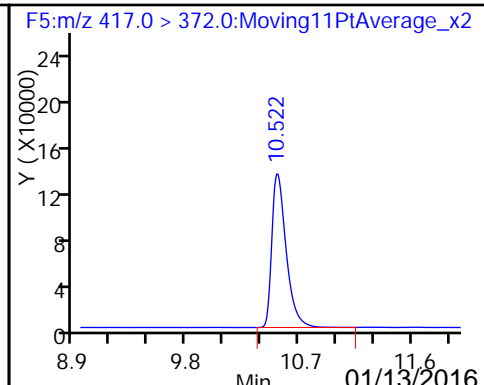
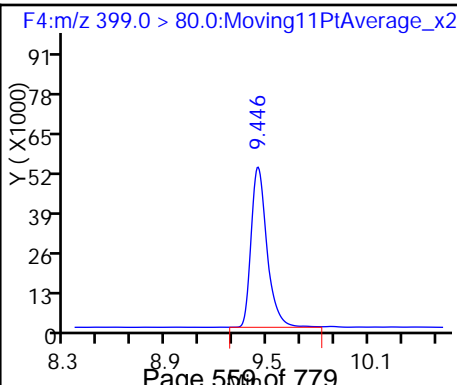
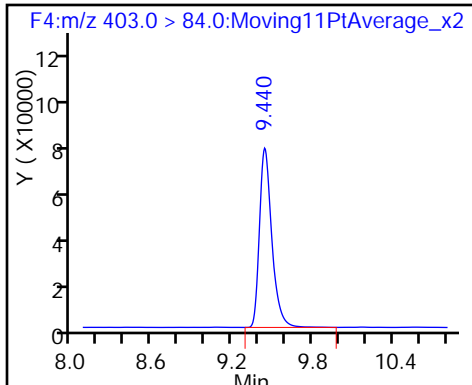
9 Perfluoroheptanoic acid

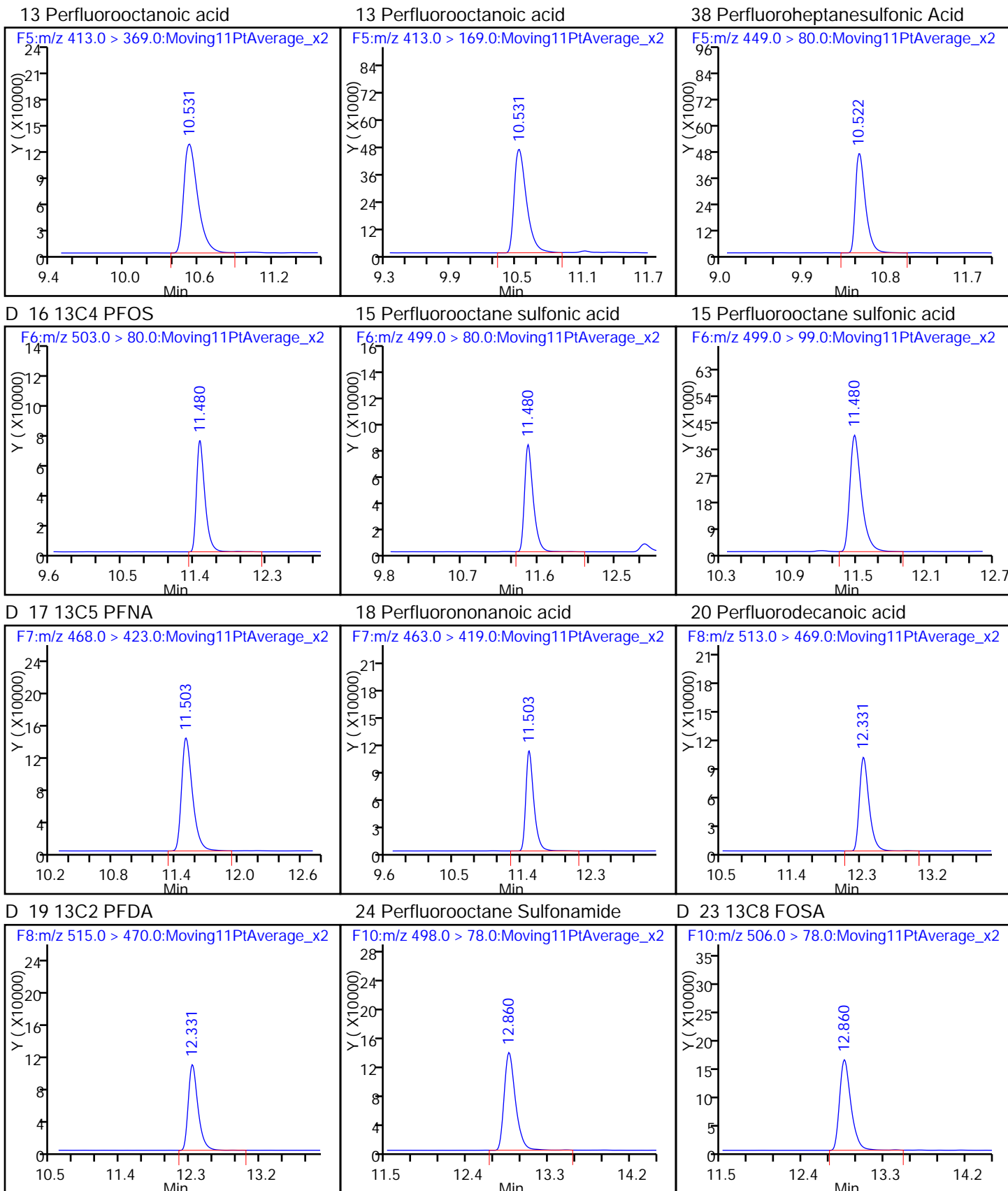


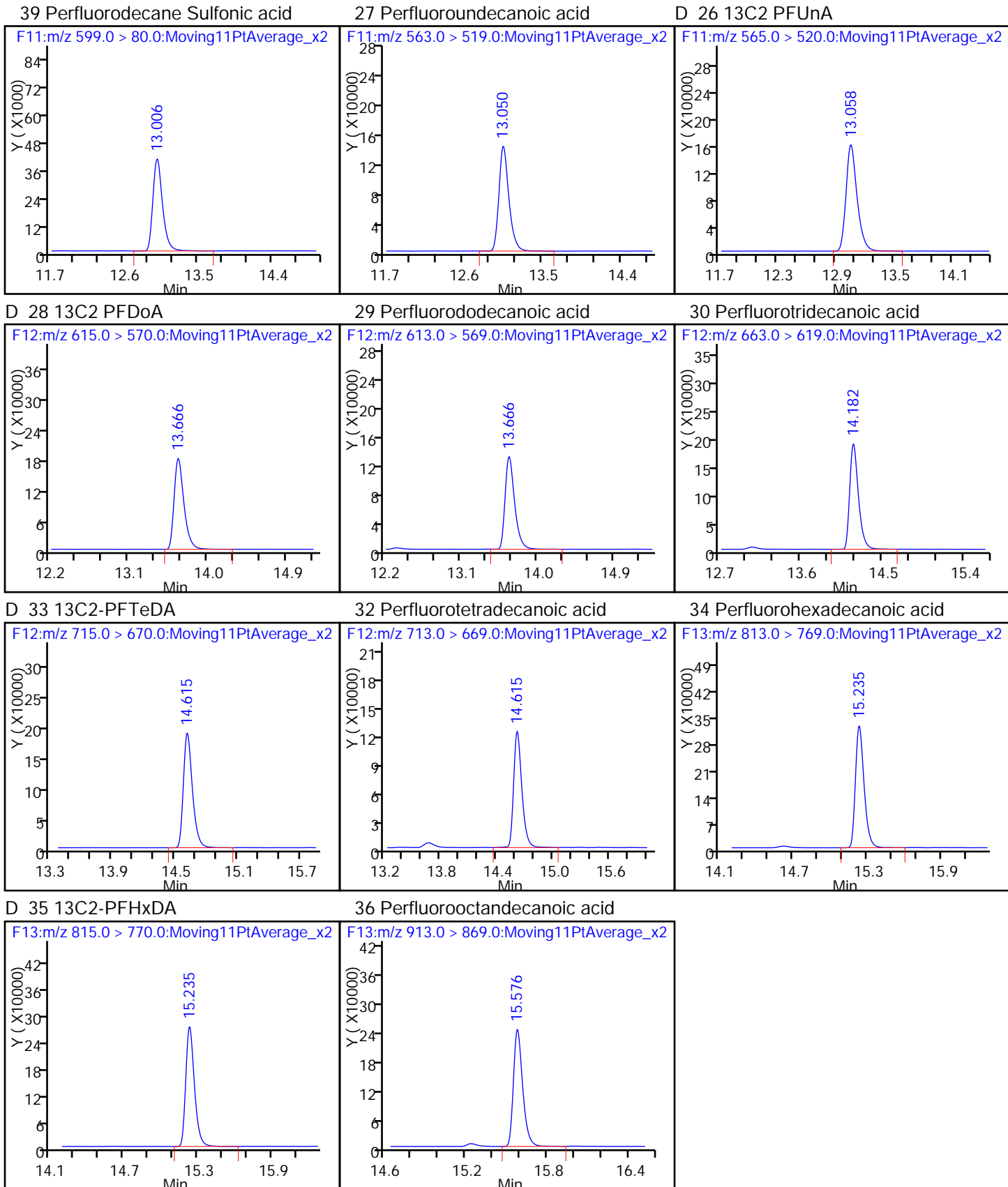
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_013.d
 Lims ID: Std L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 30-Dec-2015 17:45:58 ALS Bottle#: 22 Worklist Smp#: 7
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L6
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 13:26:53 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.797	5.801	-0.004	422211	45.8		91.6	1087	
2 Perfluorobutyric acid	212.9 > 169.0	5.800	5.802	-0.002	1.000	2459070	192.4	96.2	5137	
D 3 13C5-PFPeA	267.9 > 223.0	6.923	6.924	-0.001	913976	44.4		88.8	1935	
4 Perfluoropentanoic acid	262.9 > 219.0	6.928	6.927	0.001	1.000	3522225	186.9	93.4	1167	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.040	7.039	0.001	1.000	1404708	NC		2883	
	298.9 > 99.0	7.040	7.039	0.001	1.000	775119	1.81(0.00-0.00)		1606	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.040	7.039	0.001	1.000	1404708	171.9	97.2		
7 Perfluorohexanoic acid	313.0 > 269.0	8.176	8.176	0.0	1.000	3351222	189.2	94.6	2299	
D 6 13C2 PFHxA	315.0 > 270.0	8.176	8.177	-0.001	745898	42.8		85.5	2322	
D 8 13C4-PFHpA	367.0 > 322.0	9.411	9.413	-0.002	867526	40.6		81.3	1809	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.411	9.413	-0.002	1.000	3550975	201.4	101	1810	
D 11 18O2 PFHxS	403.0 > 84.0	9.446	9.444	0.002	401614	38.8		82.1	1544	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.446	9.449	-0.003	1.000	1122893	NC		2578	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.446	9.449	-0.003	1.000	1122893	186.6	98.6		
D 12 13C4 PFOA	417.0 > 372.0	10.522	10.524	-0.002	803233	36.8		73.5	1152	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.522	10.528	-0.006	1.000	3107862	199.9		99.9	3076	
413.0 > 169.0	10.531	10.528	0.003	1.001	1104916		2.81(0.00-0.00)	99.9	1376	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.531	10.530	0.001	1.000	1064513	197.2		104		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.531	10.530	0.001	1.000	1064513	NC			2626	
D 16 13C4 PFOS										
503.0 > 80.0	11.480	11.478	0.002		430115	38.6		80.7	1499	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.480	11.480	0.0	1.000	1730650	189.0		98.9	248	
499.0 > 99.0	11.480	11.480	0.0	1.000	916485		1.89(0.00-0.00)	98.9	2571	
D 17 13C5 PFNA										
468.0 > 423.0	11.503	11.501	0.002		775810	39.0		78.0	2185	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	2508079	205.3		103	4491	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	2915825	205.3		103	3539	
D 19 13C2 PFDA										
515.0 > 470.0	12.342	12.336	0.006		748864	38.7		77.3	1114	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	4210700	195.4		97.7	2340	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1267178	43.7		87.5	962	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.006	13.007	-0.001	1.000	1096650	NC			1511	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.006	13.007	-0.001	1.000	1096650	184.5		95.7		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.059	13.053	0.006	1.000	3436444	208.4		104	2836	
D 26 13C2 PFUnA										
565.0 > 520.0	13.050	13.054	-0.004		974423	37.2		74.4	2376	
D 28 13C2 PFDaA										
615.0 > 570.0	13.666	13.666	0.0		1168142	41.9		83.9	1867	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.666	13.668	-0.002	1.000	3457477	190.0		95.0	3517	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	4006721	194.5		97.2	3140	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.615	14.618	-0.003		1006432	43.7		87.3	2223	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.618	-0.003	1.000	2555763	200.2		100	1430	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.230	15.234	-0.004	1.000	5156506	216.2		108	3268	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.230	15.234	-0.004		1309727	46.3		92.6	2767	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.576	15.582	-0.006	1.000	4438389	206.5		103	3343	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L6_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_013.d

Injection Date: 30-Dec-2015 17:45:58

Instrument ID: A6

Lims ID: Std L6

Client ID:

Operator ID: JRB

ALS Bottle#: 22

Worklist Smp#: 7

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

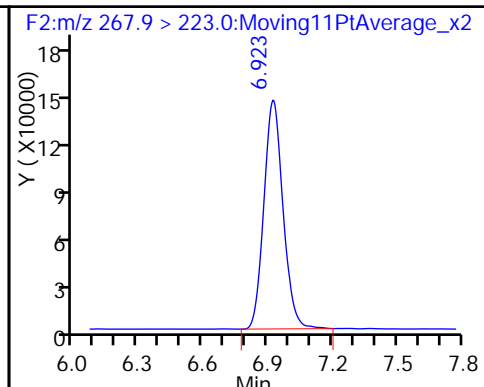
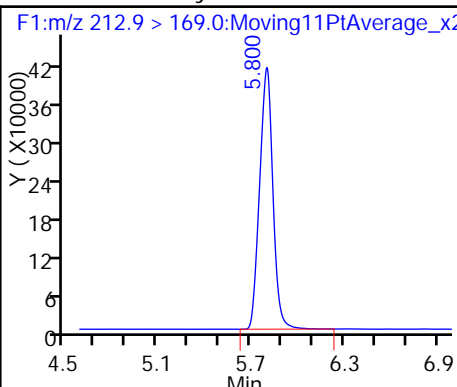
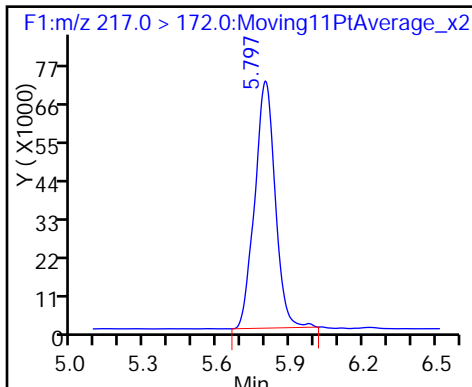
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

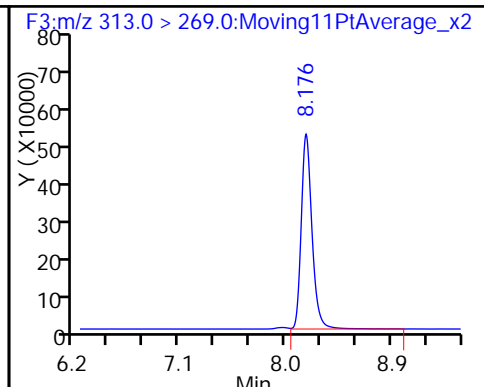
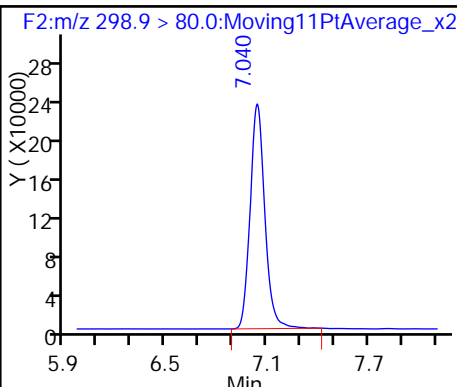
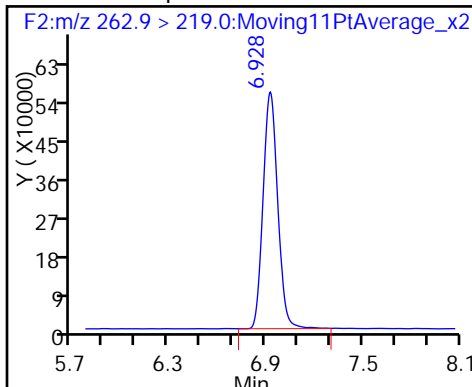
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

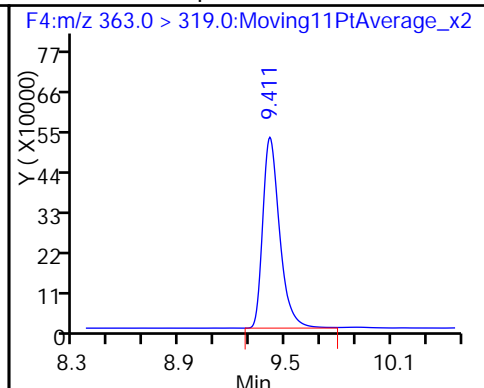
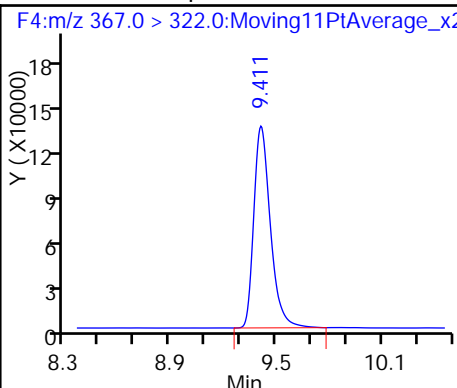
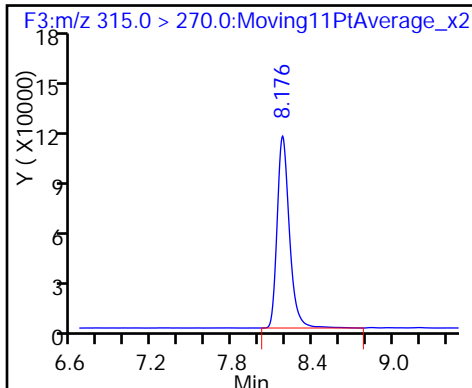
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

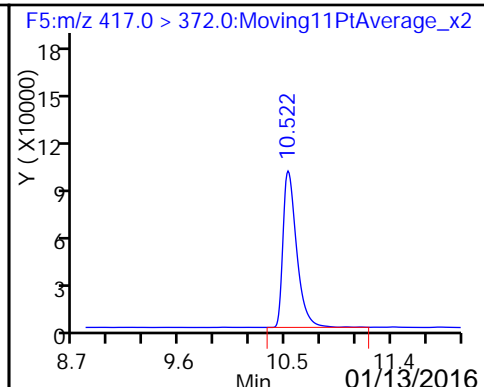
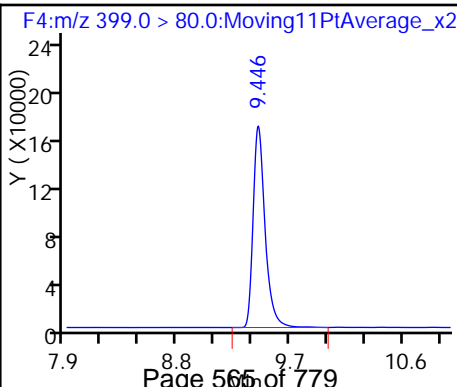
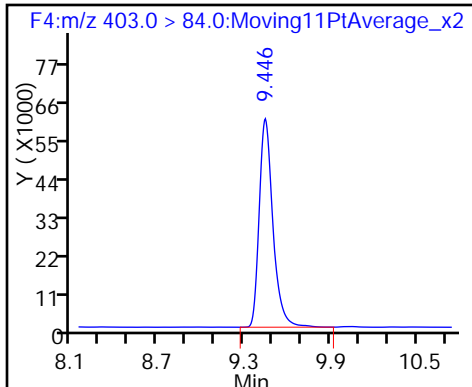
9 Perfluoroheptanoic acid

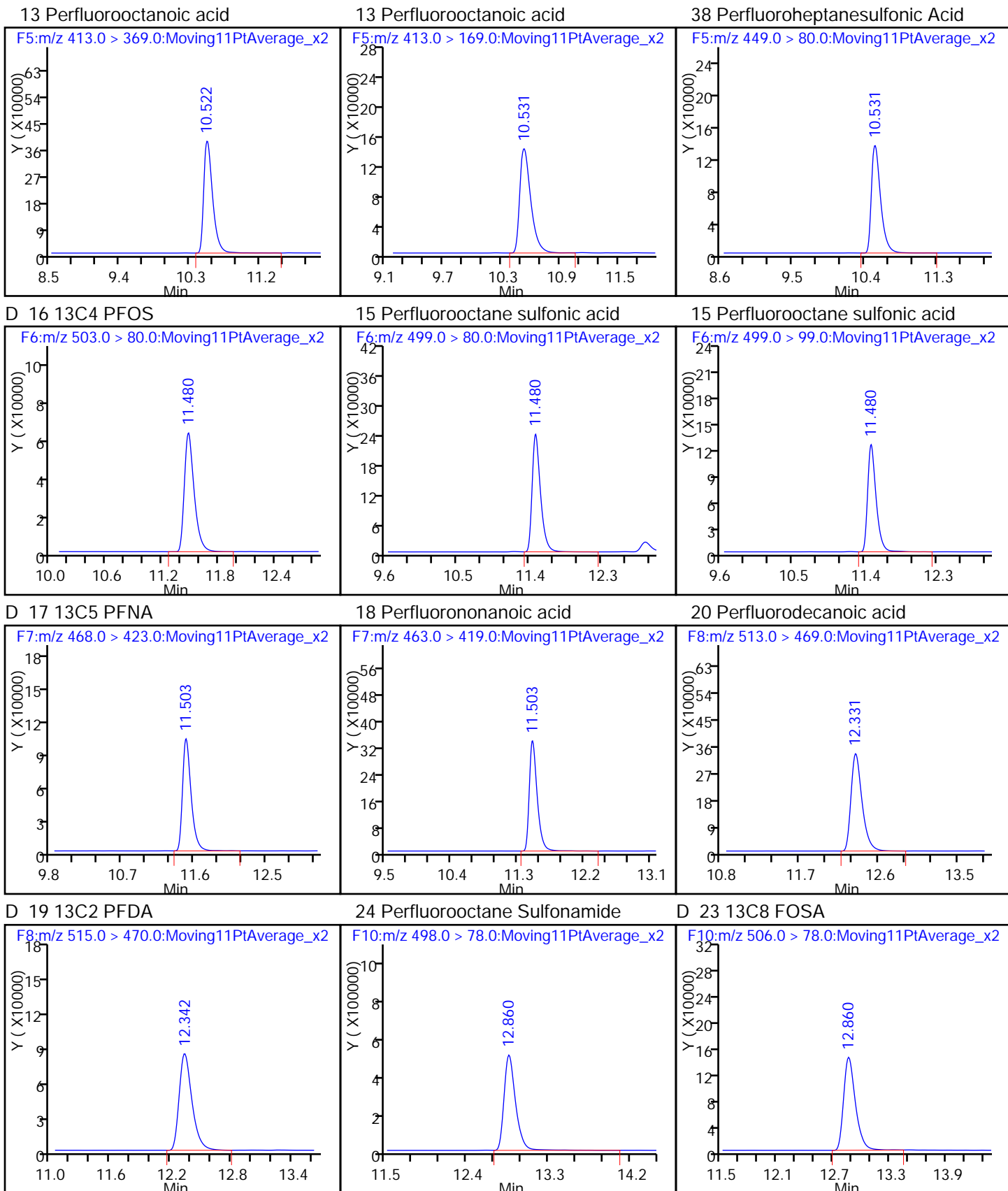


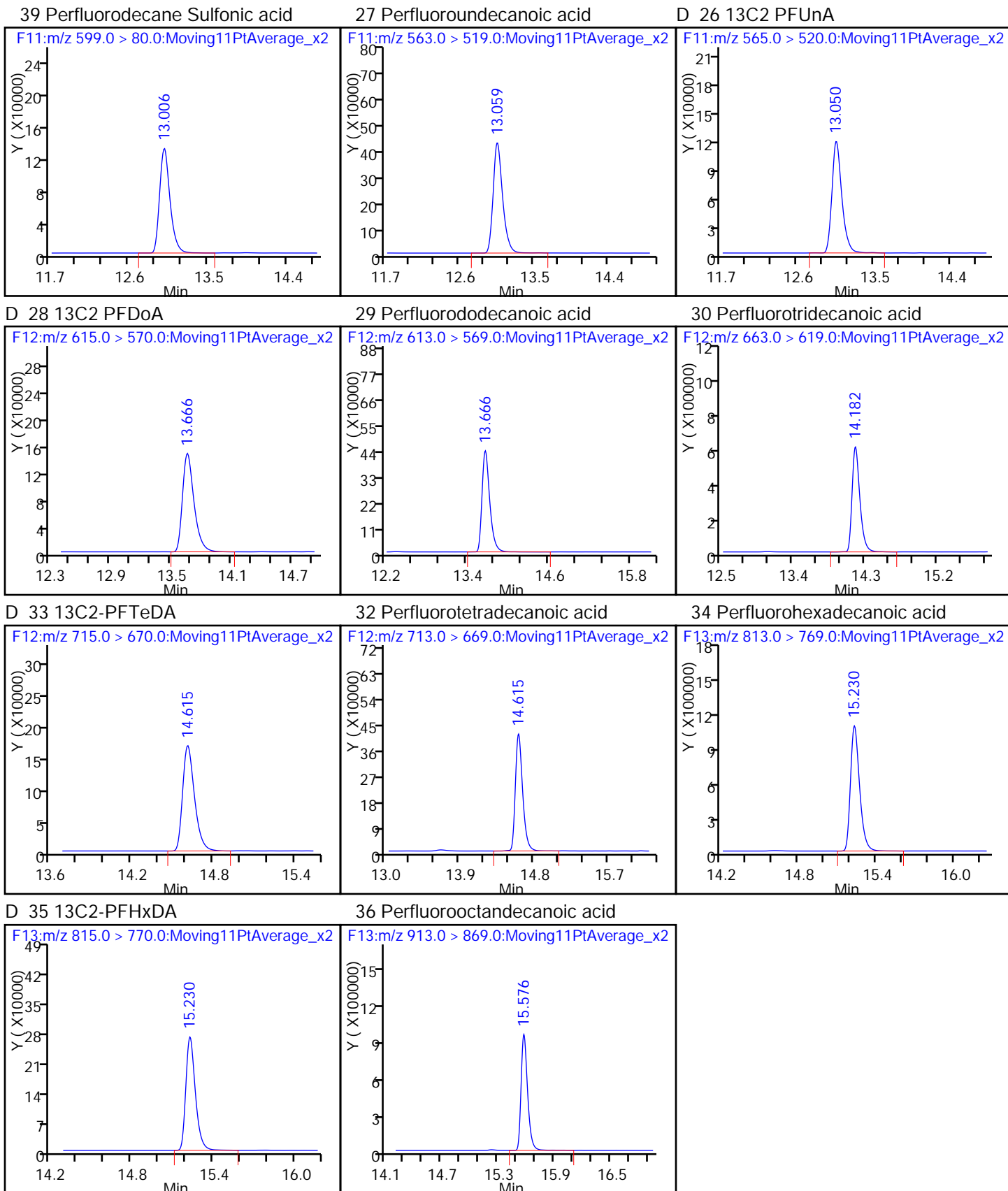
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Lims ID: Std L7
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 30-Dec-2015 18:07:14 ALS Bottle#: 23 Worklist Smp#: 8
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L7
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 13:26:59 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.797	5.801	-0.004		423223	45.9		91.8	1254	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.802	-0.002	1.000	4916079	383.8		95.9	7708	
D 3 13C5-PFPeA										
267.9 > 223.0	6.918	6.924	-0.006		929823	45.2		90.3	1785	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.923	6.927	-0.004	1.000	7177300	374.3		93.6	1580	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.036	7.039	-0.003	1.000	2936011	NC			4176	
298.9 > 99.0	7.036	7.039	-0.003	1.000	1547006		1.90(0.00-0.00)		2171	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.036	7.039	-0.003	1.000	2936011	368.8		104		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.170	8.176	-0.006	1.000	6631089	368.6		92.1	1716	
D 6 13C2 PFHxA										
315.0 > 270.0	8.170	8.177	-0.007		757664	43.4		86.9	1736	
D 8 13C4-PFHpA										
367.0 > 322.0	9.405	9.413	-0.008		861779	40.4		80.7	2526	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.405	9.413	-0.008	1.000	6957377	397.4		99.3	2813	
D 11 18O2 PFHxS										
403.0 > 84.0	9.440	9.444	-0.004		391259	37.8		79.9	1184	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.440	9.449	-0.009	1.000	2268372	NC			3819	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.440	9.449	-0.009	1.000	2268372	386.9		102		
D 12 13C4 PFOA										
417.0 > 372.0	10.522	10.524	-0.002		790024	36.2		72.3	1454	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.522	10.528	-0.006	1.000	6145798	401.8		100	2274	
413.0 > 169.0	10.522	10.528	-0.006	1.000	2190688		2.81(0.00-0.00)	100	2679	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.522	10.530	-0.008	1.000	2025210	409.3		107		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.522	10.530	-0.008	1.000	2025210	NC			3846	
D 16 13C4 PFOS										
503.0 > 80.0	11.473	11.478	-0.005		394354	35.4		74.0	1597	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.473	11.480	-0.007	1.000	3373346	401.9		105	222	
499.0 > 99.0	11.473	11.480	-0.007	1.000	1784378		1.89(0.00-0.00)	105	2447	
D 17 13C5 PFNA										
468.0 > 423.0	11.496	11.501	-0.005		830168	41.7		83.4	3117	
18 Perfluorononanoic acid										
463.0 > 419.0	11.496	11.502	-0.006	1.000	5261950	402.5		101	7135	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	5555201	378.8		94.7	4257	
D 19 13C2 PFDA										
515.0 > 470.0	12.331	12.336	-0.005		773955	40.0		79.9	1936	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	8505090	393.5		98.4	3392	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1271249	43.9		87.8	833	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.996	13.007	-0.011	1.000	1917113	NC			3433	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.996	13.007	-0.011	1.000	1917113	351.7		91.2		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.049	13.053	-0.004	1.000	6607681	377.7		94.4	4147	
D 26 13C2 PFUnA										
565.0 > 520.0	13.049	13.054	-0.005		1035414	39.5		79.0	2177	
D 28 13C2 PFDoA										
615.0 > 570.0	13.664	13.666	-0.002		1194826	42.9		85.8	2122	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.664	13.668	-0.004	1.000	7043792	378.4		94.6	3964	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.181	14.182	-0.001	1.000	7565431	359.0		89.7	3563	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.614	14.618	-0.004		1068425	46.4		92.7	2210	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.614	14.618	-0.004	1.000	5235158	401.6		100	2345	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.228	15.234	-0.006	1.000	10510274	440.2		110	3487	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.228	15.234	-0.006		1432563	50.7		101	2505	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.575	15.582	-0.007	1.000	9949967	452.5		113	4254	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L7_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d

Injection Date: 30-Dec-2015 18:07:14

Instrument ID: A6

Lims ID: Std L7

Client ID:

Operator ID: JRB

ALS Bottle#: 23

Worklist Smp#: 8

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

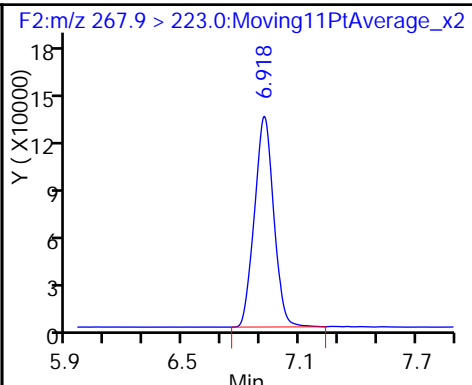
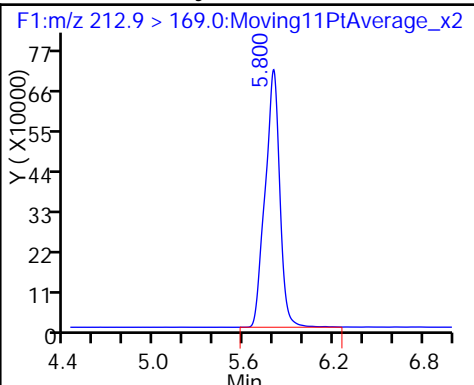
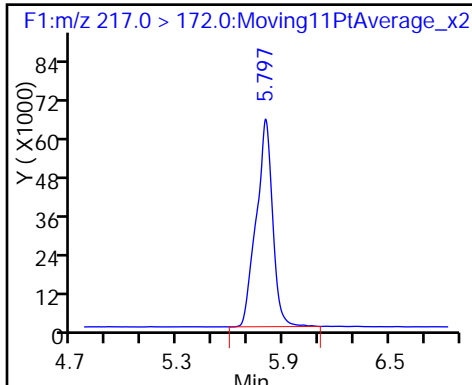
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

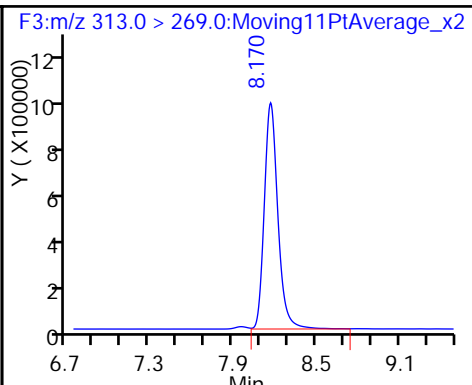
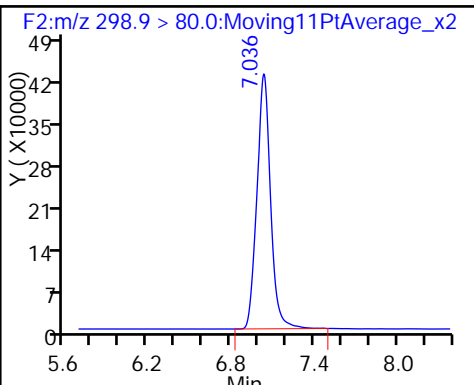
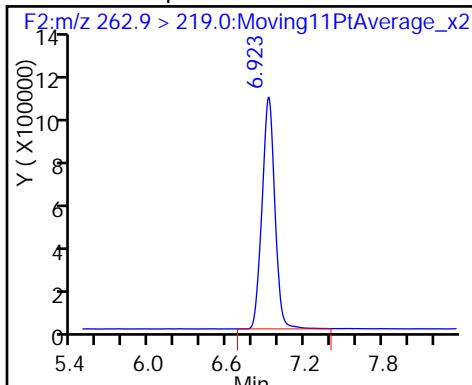
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

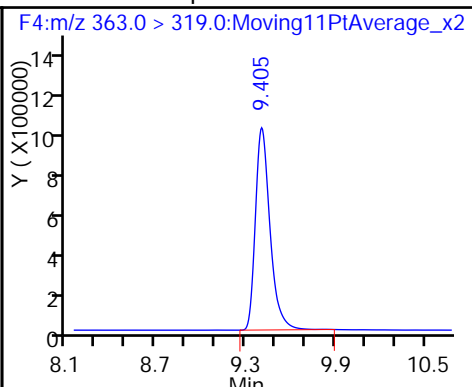
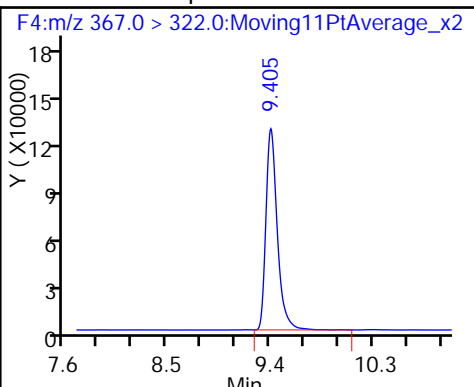
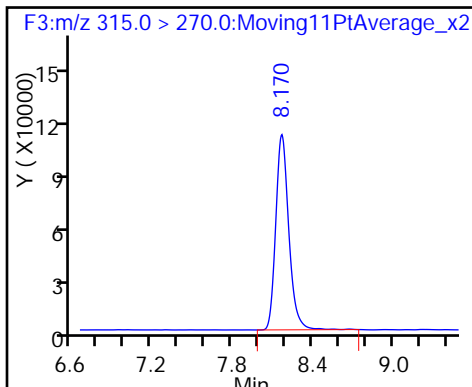
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

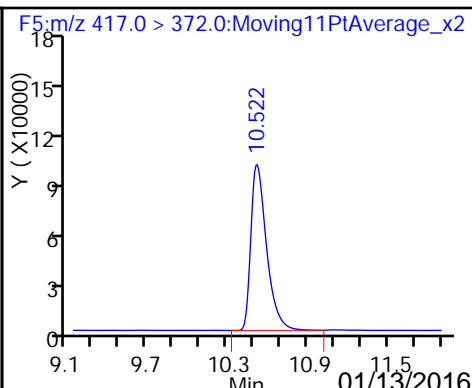
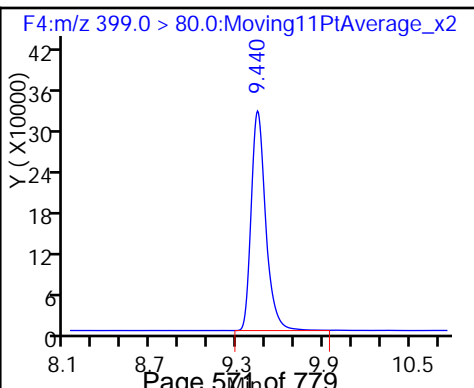
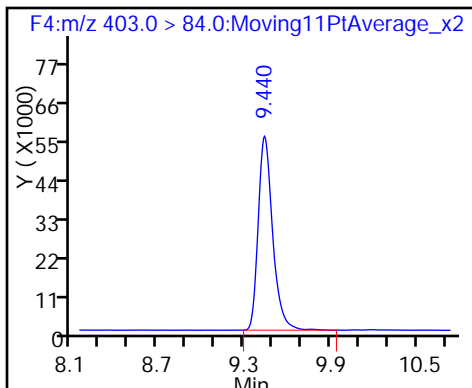
9 Perfluoroheptanoic acid

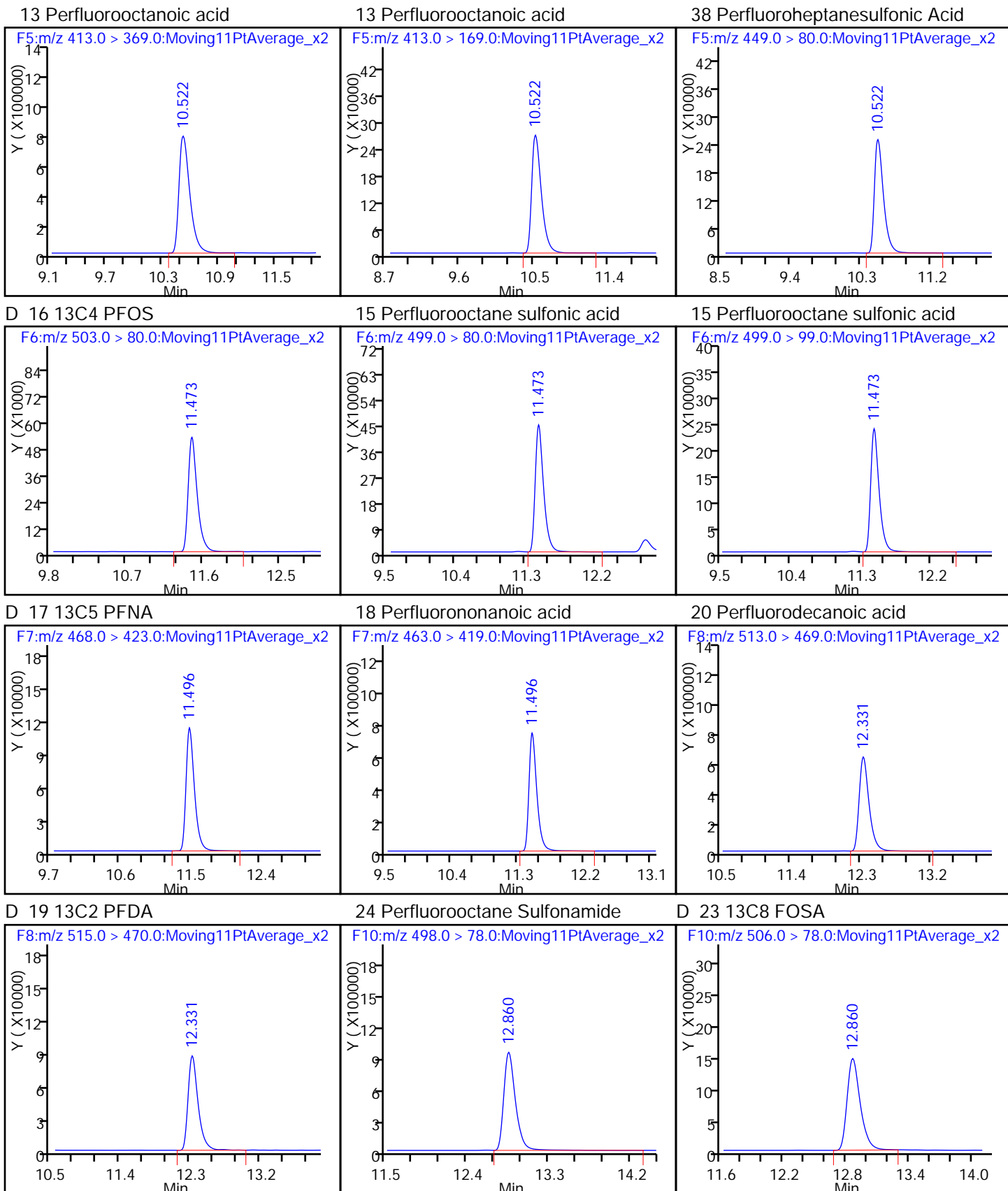


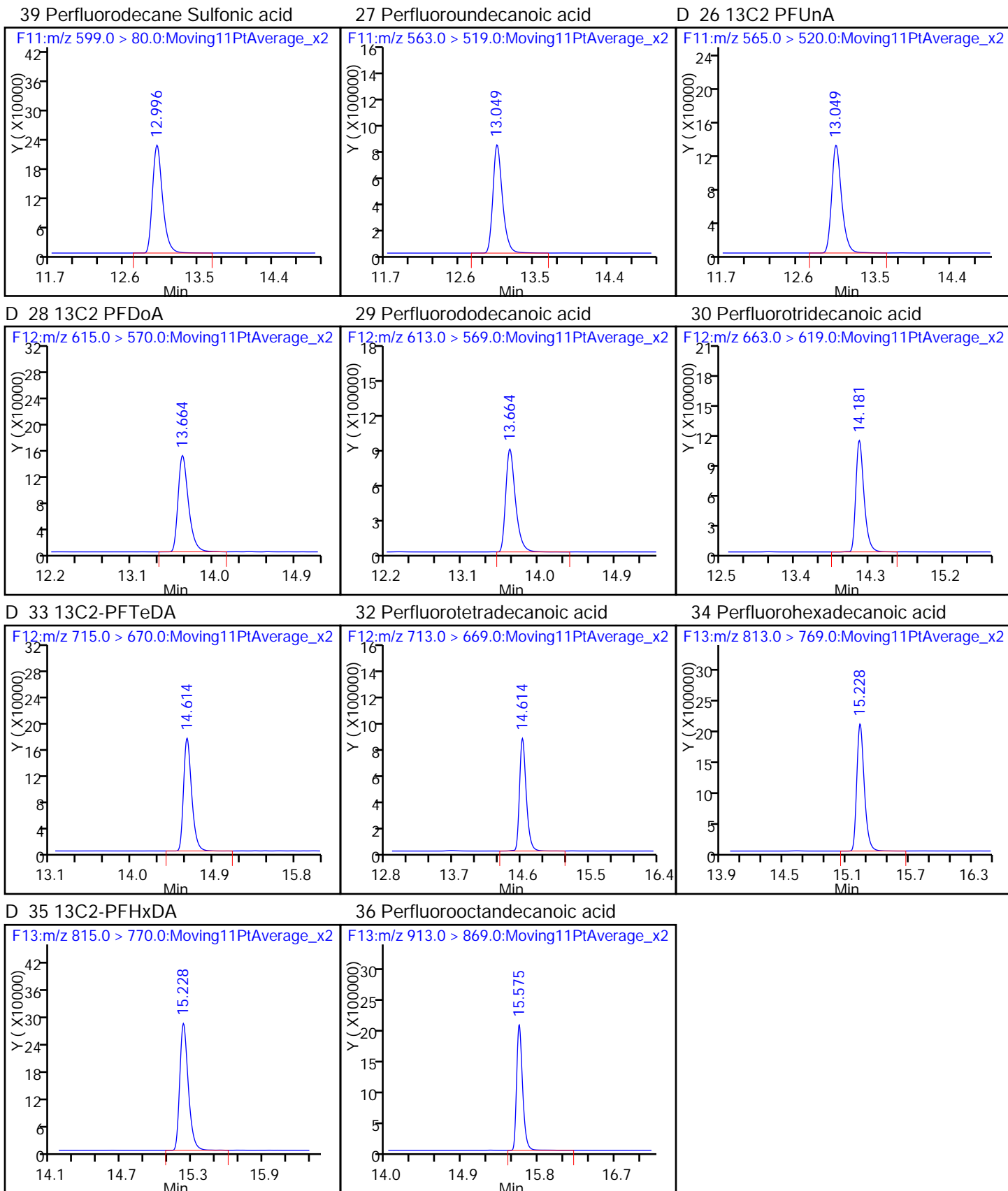
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







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

Lab Name: TestAmerica Sacramento

Job No.: 320-16572-1

Analy Batch No.: 97425

SDG No.: _____

Instrument ID: A6

GC Column: Acquity

ID: 2.1 (mm)

Heated Purge: (Y/N) N

Calibration Start Date: 01/06/2016 11:00

Calibration End Date: 01/06/2016 14:07

Calibration ID: 18386

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-97425/4	06JAN2016A6A_003.d
Level 2	STD 320-97425/5	06JAN2016A6A_004.d
Level 3	STD 320-97425/6	06JAN2016A6A_005.d
Level 4	STD 320-97425/7	06JAN2016A6A_006.d
Level 5	STD 320-97425/8	06JAN2016A6A_007.d
Level 6	STD 320-97425/9	06JAN2016A6A_008.d
Level 7	STD 320-97425/10	06JAN2016A6A_009.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	++++	5.760	5.760	5.763	5.760	5.763	5.763				5.513 - 6.013	5.762
Perfluoropentanoic acid (PFPeA)	6.850	6.859	6.868	6.868	6.868	6.868	6.868				6.614 - 7.114	6.864
Perfluorobutanesulfonic acid (PFBS)	6.951	6.983	6.978	6.983	6.978	6.978	6.983				6.726 - 7.226	6.976
Perfluorohexanoic acid (PFHxA)	++++	8.105	8.105	8.111	8.105	8.105	8.105				7.852 - 8.352	8.106
Perfluoroheptanoic acid (PFHpA)	++++	9.340	9.340	9.340	9.335	9.335	9.335				9.085 - 9.585	9.338
Perfluorohexanesulfonic acid (PFHxS)	++++	9.369	9.364	9.370	9.364	9.364	9.370				9.113 - 9.613	9.367
Perfluorooctanoic acid (PFOA)	10.448	10.454	10.454	10.454	10.448	10.455	++++				10.203 - 10.703	10.452
Perfluoroheptanesulfonic Acid (PFHpS)	++++	10.461	10.454	10.454	10.448	10.455	10.455				10.206 - 10.706	10.455
Perfluorooctanesulfonic acid (PFOS)	++++	11.415	11.407	11.407	11.407	11.407	11.408				11.158 - 11.658	11.409
Perfluorononanoic acid (PFNA)	++++	11.437	11.430	11.430	11.430	11.430	11.430				11.181 - 11.681	11.431
Perfluorodecanoic acid (PFDA)	++++	12.259	12.259	12.259	12.259	12.259	12.259				12.010 - 12.510	12.259
Perfluorooctane Sulfonamide (FOSA)	12.808	12.808	12.798	12.798	12.808	12.798	12.808				12.555 - 13.055	12.805
Perfluorodecane Sulfonic acid	++++	12.933	12.934	12.923	12.923	12.923	12.923				12.679 - 13.179	12.927
Perfluoroundecanoic acid (PFUnA)	++++	12.985	12.975	12.975	12.975	12.975	12.975				12.728 - 13.228	12.977
Perfluorododecanoic acid (PFDoA)	++++	13.602	13.602	13.592	13.593	13.593	13.593				13.347 - 13.847	13.596
Perfluorotridecanoic Acid (PFTriA)	14.121	14.113	14.113	14.113	14.113	14.113	14.113				13.864 - 14.364	14.114
Perfluorotetradecanoic acid (PFTeA)	++++	14.556	14.550	14.543	14.543	14.543	14.543				14.299 - 14.799	14.546
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++	15.179	15.179	15.174	15.175	15.174	15.175				14.927 - 15.427	15.176
Perfluoro-n-octadecanoic acid (PFODA)	15.526	15.521	15.521	15.516	15.511	15.511	15.511				15.267 - 15.767	15.517
13C4 PFBA	5.770	5.760	5.764	5.760	5.760	5.763	5.763				5.513 - 6.013	5.763
13C5-PFPeA	6.845	6.868	6.863	6.868	6.863	6.868	6.868				6.613 - 7.113	6.863
13C2 PFHxA	8.073	8.105	8.105	8.105	8.100	8.105	8.105				7.850 - 8.350	8.100
13C4-PFHpA	9.317	9.334	9.334	9.334	9.329	9.335	9.335				9.081 - 9.581	9.331
18O2 PFHxS	9.346	9.369	9.370	9.364	9.364	9.364	9.364				9.113 - 9.613	9.363
13C4 PFOA	10.448	10.454	10.454	10.454	10.448	10.448	++++				10.202 - 10.702	10.451
13C4 PFOS	11.407	11.407	11.407	11.407	11.400	11.400	11.408				11.155 - 11.655	11.405
13C5 PFNA	11.430	11.430	11.430	11.430	11.423	11.423	11.423				11.177 - 11.677	11.427
13C2 PFDA	12.269	12.269	12.259	12.259	12.259	12.259	12.259				12.012 - 12.512	12.262
13C8 FOSA	12.808	12.808	12.808	12.798	12.798	12.808	12.808				12.555 - 13.055	12.805
13C2 PFUnA	12.985	12.985	12.985	12.975	12.975	12.975	12.975				12.729 - 13.229	12.979
13C2 PFDoA	13.602	13.602	13.602	13.592	13.593	13.593	13.593				13.347 - 13.847	13.597
13C2-PFTeDA	14.556	14.550	14.550	14.550	14.543	14.543	14.543				14.298 - 14.798	14.548
13C2-PFHxDA	15.185	15.179	15.179	15.174	15.175	15.174	15.175				14.927 - 15.427	15.177

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1 Analy Batch No.: 97425

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/06/2016 11:00 Calibration End Date: 01/06/2016 14:07 Calibration ID: 18386

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-97425/4	06JAN2016A6A_003.d
Level 2	STD 320-97425/5	06JAN2016A6A_004.d
Level 3	STD 320-97425/6	06JAN2016A6A_005.d
Level 4	STD 320-97425/7	06JAN2016A6A_006.d
Level 5	STD 320-97425/8	06JAN2016A6A_007.d
Level 6	STD 320-97425/9	06JAN2016A6A_008.d
Level 7	STD 320-97425/10	06JAN2016A6A_009.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	22006 19482	18358 16776	18493 14397	19333	Ave		18406.4514			12.9			50.0			
13C5-PFPeA	41415 36220	36075 31382	36080 26157	36098	Ave		34775.0943			13.7			50.0			
13C2 PFHxA	37308 35023	33477 28729	34858 24475	35081	Ave		32707.3343			13.7			50.0			
13C4-PFHpA	41596 35961	35607 28849	35888 25677	36467	Ave		34292.3743			15.5			50.0			
1802 PFHxS	17450 15501	14981 12677	14774 11207	15123	Ave		14530.3685			13.9			50.0			
13C4 PFOA	46930 37212	40201 29810	39436 ++++	38503	Ave		38682.0300			14.2			50.0			
13C4 PFOS	22523 20647	19610 15494	19146 13472	19993	Ave		18697.7585			16.7			50.0			
13C5 PFNA	38125 32365	35301 27084	33369 24124	34190	Ave		32079.9400			15.1			50.0			
13C2 PFDA	37350 31884	34249 26237	32644 22181	31464	Ave		30858.2714			16.5			50.0			
13C8 FOSA	48165 43393	43646 39780	42607 35461	45676	Ave		42675.3714			9.6			50.0			
13C2 PFUnA	45523 38348	41748 32204	38731 26569	40827	Ave		37707.1829			16.9			50.0			
13C2 PFDoA	51755 43289	42553 37648	43782 31988	45588	Ave		42371.9486			14.7			50.0			
13C2-PFTeDA	46263 39867	38119 36352	37871 33953	38041	Ave		38637.9086			9.9			50.0			
13C2-PFHxDA	58299 51737	47898 45288	48307 45126	46983	Ave		49090.8771			9.4			50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-16572-1Analy Batch No.: 97425

SDG No.: _____

Instrument ID: A6GC Column: Acquity ID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 01/06/2016 11:00Calibration End Date: 01/06/2016 14:07Calibration ID: 18386

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															
Perfluorobutanoic acid (PFBA)	++++ 23169	24140 20349	25810	26186	27631	AveID		1.3796			2.8		35.0				
Perfluoropentanoic acid (PFPeA)	42202 30054	42591 24863	36324	35570	35042	AveID		1.0096			7.9		35.0				
Perfluorobutanesulfonic acid (PFBS)	19715 13834	15569 11697	15199	16129	16506	AveID		1.0663			3.3		50.0				
Perfluorohexanoic acid (PFHxA)	++++ 31333	39883 24984	38147	36360	36202	AveID		1.0779			5.9		35.0				
Perfluoroheptanoic acid (PFHpA)	++++ 29196	43077 25146	37315	37686	35860	L1ID	0.2576	0.9904						1.0000		0.9900	
Perfluorohexanesulfonic acid (PFHxS)	++++ 7438.9	7664.9 6627.2	9293.0	9075.6	8781.6	AveID		0.5809			6.8		35.0				
Perfluorooctanoic acid (PFOA)	55320 30381	42731 ++++	45107	39218	37557	AveID		1.0721			6.8		35.0				
Perfluoroheptanesulfonic Acid (PFHpS)	++++ 7709.3	7770.0 6566.6	11766	9950.7	9504.7	AveID		0.4923			14.4		50.0				
Perfluorooctanesulfonic acid (PFOS)	++++ 15255	19101 12858	18248	20086	19508	AveID		0.9693			2.3		35.0				
Perfluorononanoic acid (PFNA)	++++ 23372	28953 20356	29188	28821	28235	AveID		0.8528			2.5		35.0				
Perfluorodecanoic acid (PFDA)	++++ 24880	40962 21244	36572	34870	31233	AveID		1.0517			9.8		35.0				
Perfluorooctane Sulfonamide (FOSA)	45166 39187	43795 33689	42437	45292	43789	AveID		0.9819			2.8		35.0				
Perfluorodecane Sulfonic acid	++++ 6769.0	8182.6 6131.0	10529	9466.3	9979.6	AveID		0.4693			9.8		50.0				
Perfluoroundecanoic acid (PFUnA)	++++ 27383	67003 23463	39623	37065	31640	L1ID	0.7047	0.8657						0.9990		0.9900	
Perfluorododecanoic acid (PFDoA)	++++ 29902	31774 25076	35508	35713	34241	AveID		0.7850			2.7		35.0				
Perfluorotridecanoic Acid (PFTriA)	54118 33598	45991 28608	51702	47074	42772	AveID		1.0164			10.1		50.0				
Perfluorotetradecanoic acid (PFTeA)	++++ 22249	48467 20751	26255	27849	25679	L1ID	0.3445	0.6237						0.9980		0.9900	
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 42224	309262 38875	98663	58642	54457	L2ID	6.1613	1.0885						0.9940		0.9900	
Perfluoro-n-octadecanoic acid (PFODA)	51910 37000	43562 35518	41854	41405	45432	AveID		1.0048			6.5		50.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

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

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1 Analy Batch No.: 97425

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/06/2016 11:00 Calibration End Date: 01/06/2016 14:07 Calibration ID: 18386

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-97425/4	06JAN2016A6A_003.d
Level 2	STD 320-97425/5	06JAN2016A6A_004.d
Level 3	STD 320-97425/6	06JAN2016A6A_005.d
Level 4	STD 320-97425/7	06JAN2016A6A_006.d
Level 5	STD 320-97425/8	06JAN2016A6A_007.d
Level 6	STD 320-97425/9	06JAN2016A6A_008.d
Level 7	STD 320-97425/10	06JAN2016A6A_009.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 6	LVL 7			
13C4 PFBA	Ave	1100289 838778	917918 719839	924661	966659	974114	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	2070727 1569088	1803753 1307833	1804009	1804891	1810982	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	1865383 1436454	1673860 1223768	1742911	1754050	1751141	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	2079820 1442468	1780345 1283868	1794402	1823374	1798054	50.0 50.0	50.0 50.0	50.0	50.0	50.0
1802 PFHxS	Ave	825371 599642	708591 530090	698789	715340	733182	47.3 47.3	47.3 47.3	47.3	47.3	47.3
13C4 PFOA	Ave	2346513 1490496	2010054 +++++	1971801	1925127	1860618	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C4 PFOS	Ave	1076576 740605	937336 643966	915179	955663	986945	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	1906270 1354219	1765061 1206211	1668440	1709507	1618271	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDA	Ave	1867484 1311848	1712440 1109038	1632183	1573185	1594217	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	2408227 1989023	2182292 1773048	2130331	2283786	2169673	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	2276171 1610211	2087377 1328469	1936537	2041366	1917383	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	2587745 1882387	2127674 1599382	2189120	2279400	2164474	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	2313172 1817616	1905953 1697645	1893525	1902026	1993331	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	2914936 2264391	2394888 2256284	2415341	2349134	2586833	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-16572-1Analy Batch No.: 97425

SDG No.: _____

Instrument ID: A6GC Column: Acquity ID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 01/06/2016 11:00Calibration End Date: 01/06/2016 14:07Calibration ID: 18386

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-97425/4	06JAN2016A6A_003.d
Level 2	STD 320-97425/5	06JAN2016A6A_004.d
Level 3	STD 320-97425/6	06JAN2016A6A_005.d
Level 4	STD 320-97425/7	06JAN2016A6A_006.d
Level 5	STD 320-97425/8	06JAN2016A6A_007.d
Level 6	STD 320-97425/9	06JAN2016A6A_008.d
Level 7	STD 320-97425/10	06JAN2016A6A_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	++++ 4633772	24140 8139792	129049	523714	1381546	++++ 200	1.00 400	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	21101 6010884	42591 9945285	181620	711397	1752091	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	8714 2445937	13763 4136098	67181	285156	729585	0.442 177	0.884 354	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	++++ 6266689	39883 9993754	190734	727190	1810095	++++ 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		L1ID	++++ 5839203	43077 10058302	186574	753725	1793000	++++ 200	1.00 400	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	++++ 1407431	7251 2507742	43956	171711	415372	++++ 189	0.946 378	4.73	18.9	47.3
Perfluorooctanoic acid (PFOA)		AveID	27660 6076103	42731 ++++	225535	784363	1877840	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	++++ 1467858	7397 2500568	56008	189461	452423	++++ 190	0.952 381	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	++++ 2916813	18261 4917016	87224	384036	932484	++++ 191	0.956 382	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		AveID	++++ 4674483	28953 8142347	145939	576424	1411768	++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecanoic acid (PFDA)		AveID	++++ 4976064	40962 8497438	182858	697392	1561638	++++ 200	1.00 400	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	22583 7837373	43795 13475405	212187	905836	2189426	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorodecane Sulfonic acid		AveID	++++ 1305054	7888 2364097	50751	182511	481016	++++ 193	0.964 386	4.82	19.3	48.2
Perfluoroundecanoic acid (PFUnA)		L1ID	++++ 5476584	67003 9385325	198113	741290	1581984	++++ 200	1.00 400	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	++++ 5980430	31774 10030582	177540	714262	1712069	++++ 200	1.00 400	5.00	20.0	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1 Analy Batch No.: 97425

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 01/06/2016 11:00 Calibration End Date: 01/06/2016 14:07 Calibration ID: 18386

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorotridecanoic Acid (PFTriA)		AveID	27059 6719579	45991 11443058	258508	941479	2138582	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		L1ID	++++ 4449710	48467 8300566	131273	556971	1283969	++++ 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	++++ 8444706	309262 15550097	493314	1172831	2722865	++++ 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	25955 7400052	43562 14207142	209271	828096	2271591	0.500 200	1.00 400	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution L1ID = Linear 1/conc IsoDil L2ID = Linear 1/conc^2 IsoDil
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TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_003.d
 Lims ID: Std L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 06-Jan-2016 11:00:14 ALS Bottle#: 17 Worklist Smp#: 4
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L1
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 08-Jan-2016 09:42:13 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc Date: 06-Jan-2016 13:12:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.770	5.763	0.007	1100289	59.8		120	3539	
2 Perfluorobutyric acid	212.9 > 169.0	5.773	5.763	0.010	16932	0.5577		112	52.8	
D 3 13C5-PFPeA	267.9 > 223.0	6.845	6.863	-0.018	2070727	59.5		119	3613	
4 Perfluoropentanoic acid	262.9 > 219.0	6.850	6.864	-0.014	21101	0.5046		101	4.0	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.951	6.976	-0.025	8714	NC			22.2	
	298.9 > 99.0	6.960	6.976	-0.016	3275		2.66(0.00-0.00)		8.6	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.951	6.976	-0.025	8714	0.4683		106		
D 6 13C2 PFHxA	315.0 > 270.0	8.073	8.100	-0.027	1865383	57.0		114	5614	
7 Perfluorohexanoic acid	313.0 > 269.0	8.078	8.102	-0.024	42576	1.06		212	151	
D 8 13C4-PFHpA	367.0 > 322.0	9.317	9.331	-0.014	2079820	60.6		121	5858	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	22331	0.2820		56.4	25.5	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.340	9.363	-0.023	5460	NC			23.2	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.340	9.363	-0.023	5460	0.5386		114		
D 11 18O2 PFHxS	403.0 > 84.0	9.346	9.363	-0.017	825371	56.8		120	2764	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.448	10.452	-0.004		2346513	60.7		121	4027	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.448	10.453	-0.005	1.000	27660	0.5498		110	23.8	
413.0 > 169.0	10.448	10.453	-0.005	1.000	10714		2.58(0.00-0.00)	110	16.7	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.462	10.456	0.006	1.000	7077	0.6383		134		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.462	10.456	0.006	1.000	7077	NC			34.0	
D 16 13C4 PFOS										
503.0 > 80.0	11.407	11.405	0.002		1076576	57.6		120	3229	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.407	11.408	-0.001	1.000	14032	0.6428		134	39.3	
499.0 > 99.0	11.407	11.408	-0.001	1.000	6454		2.17(0.00-0.00)	134	22.8	
D 17 13C5 PFNA										
468.0 > 423.0	11.430	11.427	0.003		1906270	59.4		119	4548	
18 Perfluorononanoic acid										
463.0 > 419.0	11.430	11.431	-0.001	1.000	19151	0.5890		118	50.3	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.269	12.260	0.009	1.000	33222	0.8458		169	117	
D 19 13C2 PFDA										
515.0 > 470.0	12.269	12.262	0.007		1867484	60.5		121	4040	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		2408227	56.4		113	1772	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	22583	0.4775		95.5	84.0	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.944	12.929	0.015	1.000	6581	NC			21.3	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.944	12.929	0.015	1.000	6581	0.6226		129		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.985	12.978	0.007	1.000	52610	0.5210		104	119	
D 26 13C2 PFUnA										
565.0 > 520.0	12.985	12.979	0.006		2276171	60.4		121	2191	
D 28 13C2 PFDaA										
615.0 > 570.0	13.602	13.597	0.005		2587745	61.1		122	2998	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.602	13.597	0.005	1.000	17179	0.4228		84.6	16.3	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.121	14.114	0.007	1.000	27059	0.5144		103	22.4	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.556	14.548	0.008		2313172	59.9		120	4195	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.563	14.549	0.014	1.000	36970	0.5930		119	14.0	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.185	15.177	0.008	1.000	405837	1.54		309	419	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.185	15.177	0.008		2914936	59.4		119	2803	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
--------	----	--------	--------	--------	----------	--------------	---------------	------	-----	-------

36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.526	15.517	0.009	1.000	25955	0.4991		99.8	22.7	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L1_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_003.d

Injection Date: 06-Jan-2016 11:00:14

Instrument ID: A6

Lims ID: Std L1

Client ID:

Operator ID: JRB

ALS Bottle#: 17

Worklist Smp#: 4

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

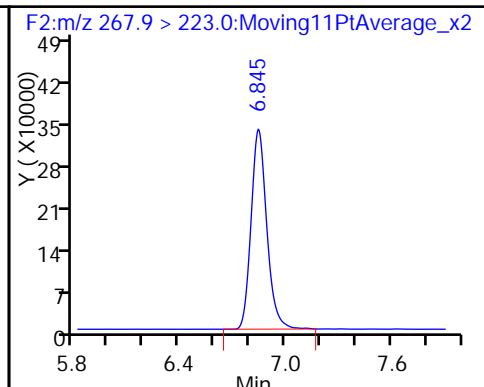
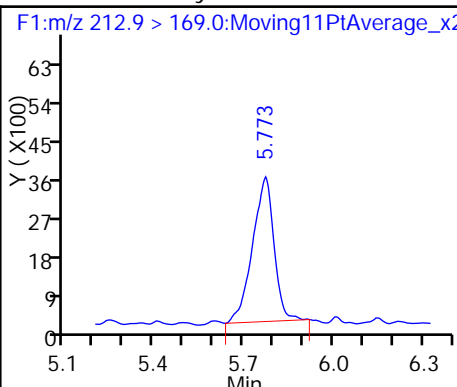
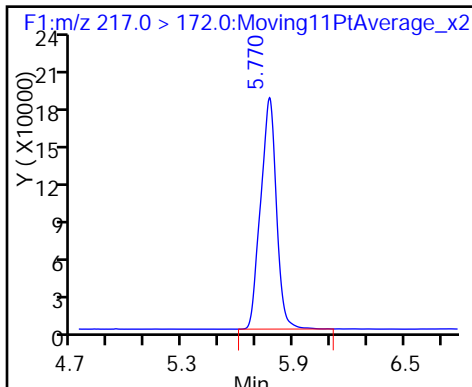
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

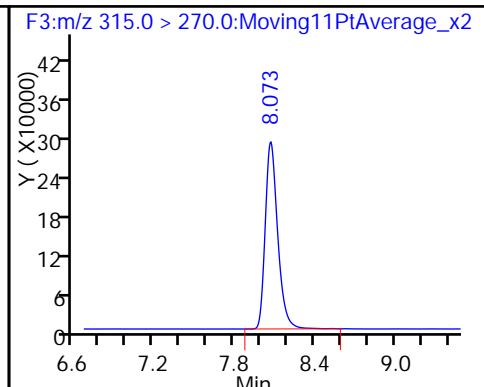
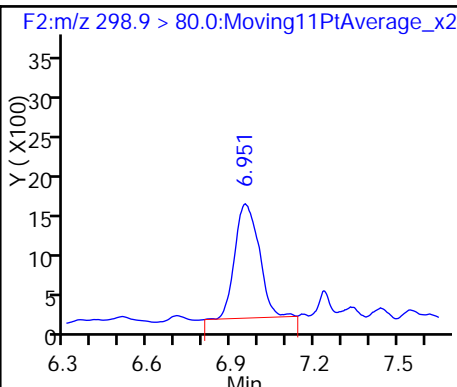
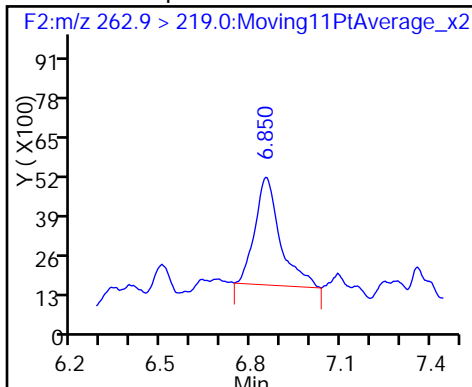
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

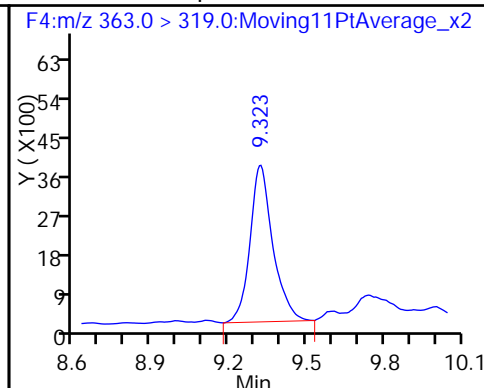
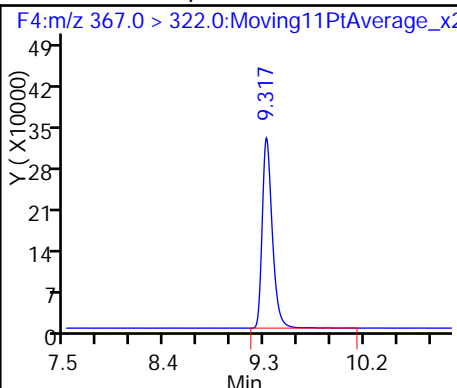
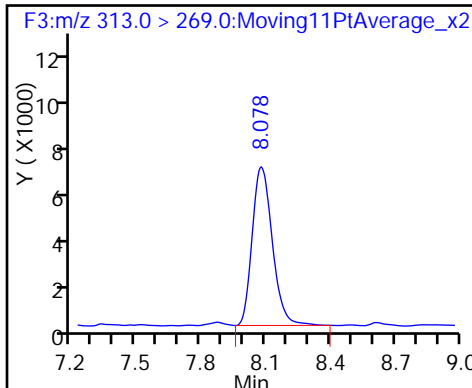
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

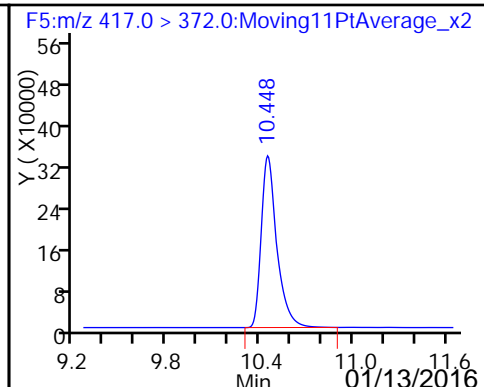
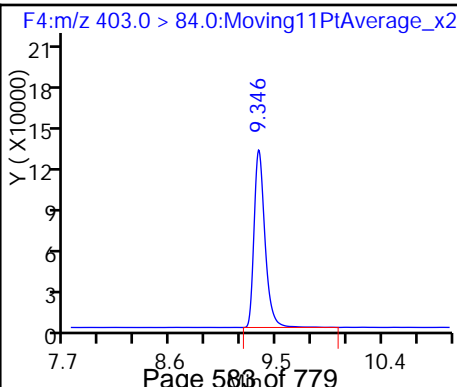
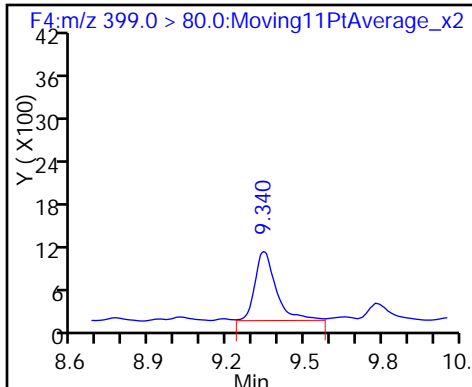
9 Perfluoroheptanoic acid

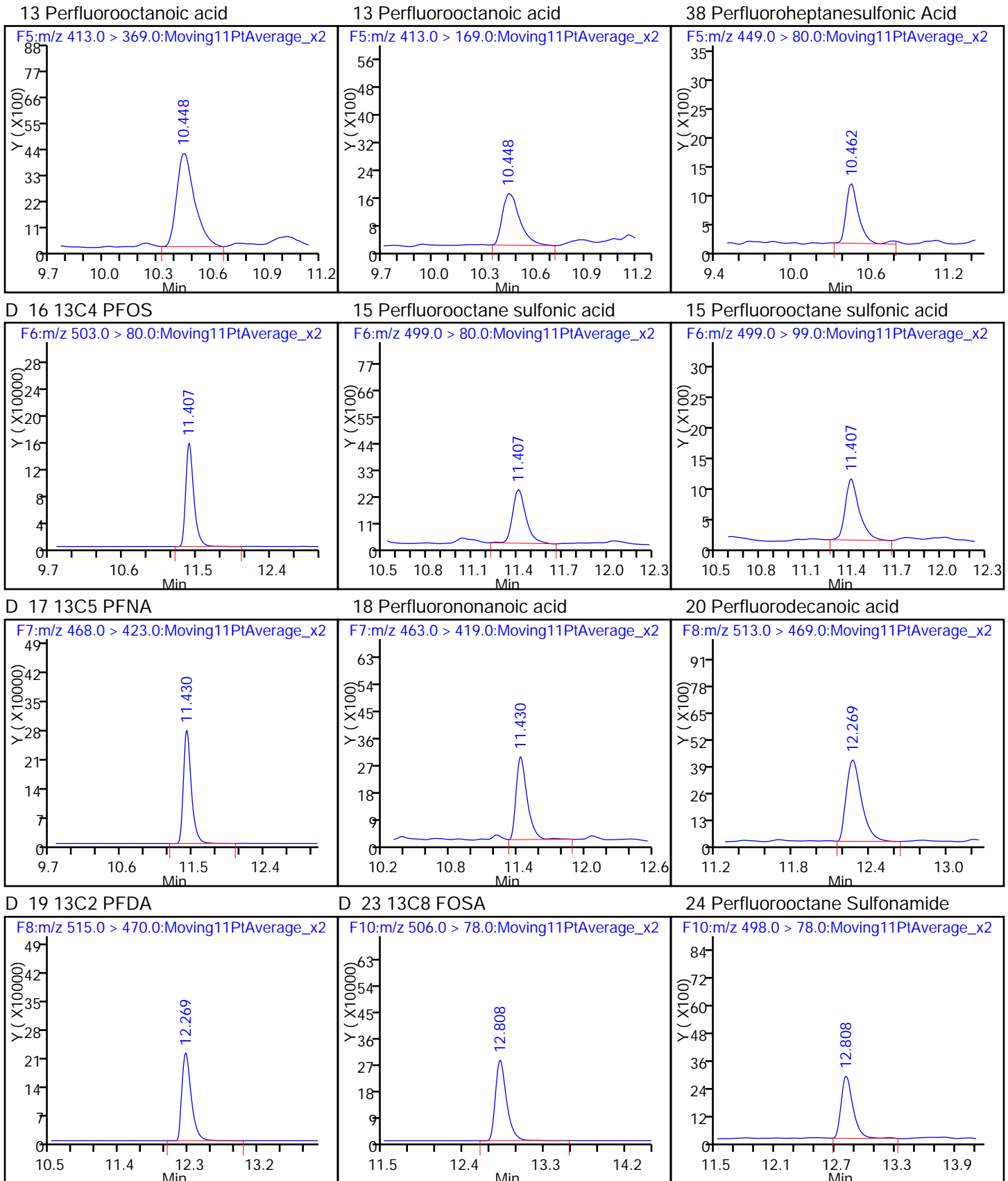


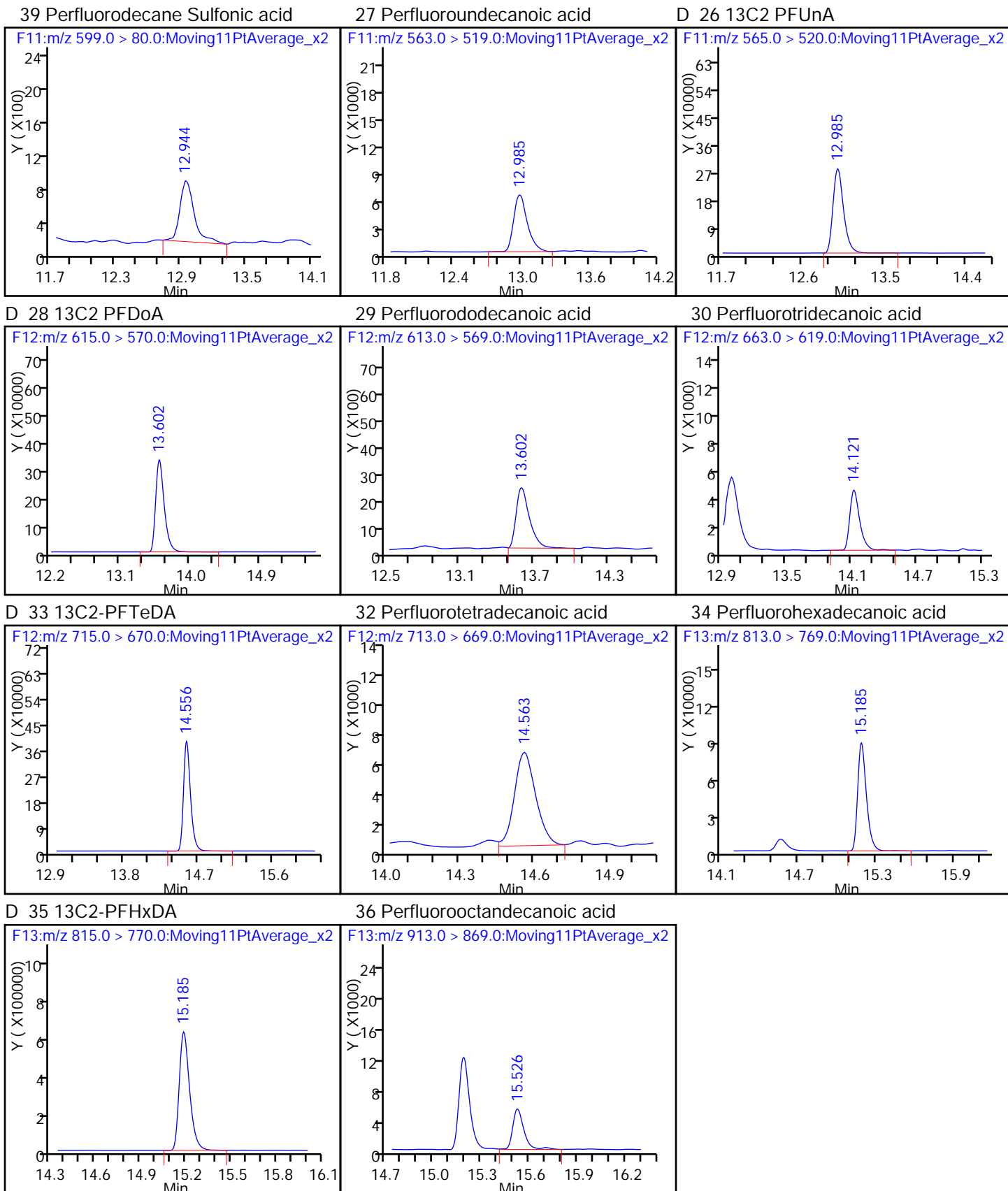
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_004.d
 Lims ID: Std L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 06-Jan-2016 11:31:27 ALS Bottle#: 18 Worklist Smp#: 5
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L2
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 08-Jan-2016 09:42:18 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc Date: 06-Jan-2016 13:47:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.760	5.763	-0.003	917918	49.9		99.7	3104	
2 Perfluorobutyric acid	212.9 > 169.0	5.760	5.763	-0.003	24140	0.9531		95.3	65.6	
D 3 13C5-PFPeA	267.9 > 223.0	6.868	6.863	0.005	1803753	51.9		104	3379	
4 Perfluoropentanoic acid	262.9 > 219.0	6.859	6.864	-0.005	42591	1.17		117	6.8	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.983	6.976	0.007	13763	NC			38.3	
	298.9 > 99.0	6.978	6.976	0.002	8379		1.64(0.00-0.00)		21.8	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.983	6.976	0.007	13763	0.8616		97.5		
D 6 13C2 PFHxA	315.0 > 270.0	8.105	8.100	0.005	1673860	51.2		102	3834	
7 Perfluorohexanoic acid	313.0 > 269.0	8.105	8.102	0.003	39883	1.11		111	140	
D 8 13C4-PFHpA	367.0 > 322.0	9.334	9.331	0.003	1780345	51.9		104	5290	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.340	9.335	0.005	43077	0.9614		96.1	41.8	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.369	9.363	0.006	7251	NC			23.5	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.369	9.363	0.006	7251	0.8332		88.1		
D 11 18O2 PFHxS	403.0 > 84.0	9.369	9.363	0.006	708591	48.8		103	2398	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.454	10.452	0.002		2010054	52.0		104	5751	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.454	10.453	0.001	1.000	42731	0.99		99.1	37.3	
413.0 > 169.0	10.461	10.453	0.008	1.001	13495		3.17(0.00-0.00)	99.1	24.0	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.461	10.456	0.005	1.000	7397	0.7662		80.5		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.461	10.456	0.005	1.000	7397	NC			35.7	
D 16 13C4 PFOS										
503.0 > 80.0	11.407	11.405	0.002		937336	50.1		105	3003	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.415	11.408	0.007	1.000	18261	0.9607		100	34.5	
499.0 > 99.0	11.407	11.408	-0.001	0.999	11604		1.57(0.00-0.00)	100	42.3	
D 17 13C5 PFNA										
468.0 > 423.0	11.430	11.427	0.003		1765061	55.0		110	3758	
18 Perfluorononanoic acid										
463.0 > 419.0	11.437	11.431	0.006	1.000	28953	0.9617		96.2	63.4	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.259	12.260	-0.001	1.000	40962	1.14		114	106	
D 19 13C2 PFDA										
515.0 > 470.0	12.269	12.262	0.007		1712440	55.5		111	3573	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		2182292	51.1		102	1665	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	43795	1.02		102	107	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.933	12.929	0.004	1.000	7888	NC			36.2	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.933	12.929	0.004	1.000	7888	0.8571		88.9		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.985	12.978	0.007	1.000	67003	1.04		104	90.3	
D 26 13C2 PFUnA										
565.0 > 520.0	12.985	12.979	0.006		2087377	55.4		111	2589	
D 28 13C2 PFDaA										
615.0 > 570.0	13.602	13.597	0.005		2127674	50.2		100	2878	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.602	13.597	0.005	1.000	31774	0.9511		95.1	24.2	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.113	14.114	-0.001	1.000	45991	1.06		106	37.9	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.550	14.548	0.002		1905953	49.3		98.7	3311	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.556	14.549	0.007	1.000	48467	1.27		127	17.4	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.179	15.177	0.002	1.000	309262	1.02		102	330	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.179	15.177	0.002		2394888	48.8		97.6	3611	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
--------	----	--------	--------	--------	----------	--------------	---------------	------	-----	-------

36 Perfluorooctadecanoic acid
 913.0 > 869.0 15.521 15.517 0.004 1.000 43562 1.02 102 46.3

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_004.d

Injection Date: 06-Jan-2016 11:31:27

Instrument ID: A6

Lims ID: Std L2

Client ID:

Operator ID: JRB

ALS Bottle#: 18

Worklist Smp#: 5

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

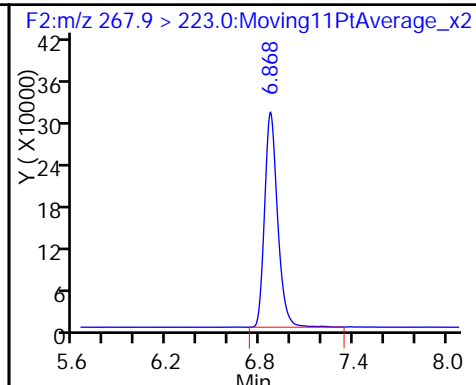
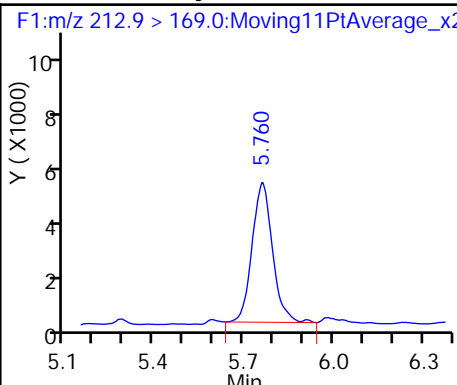
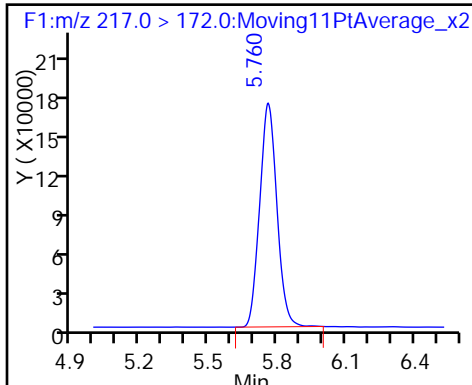
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

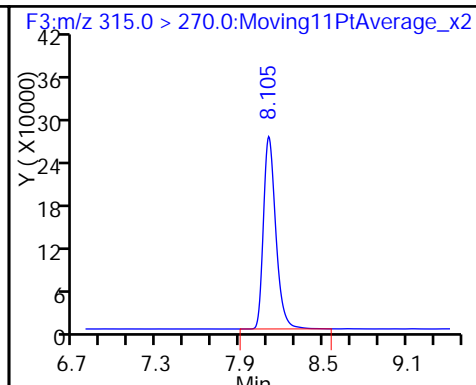
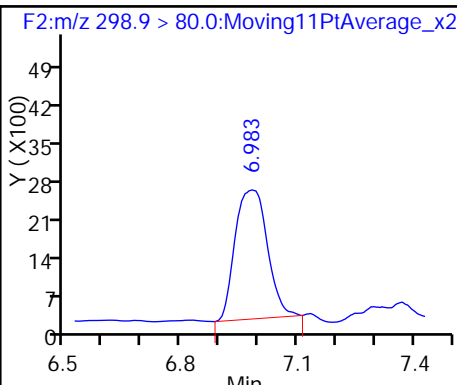
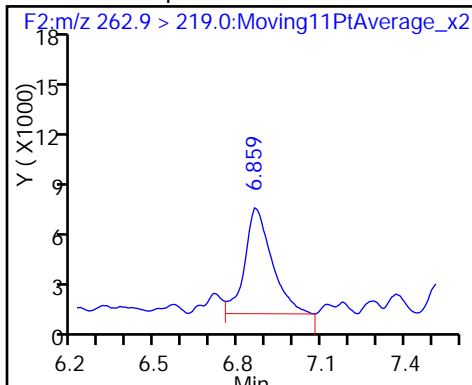
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

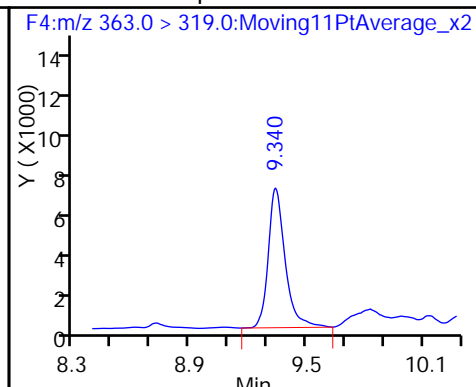
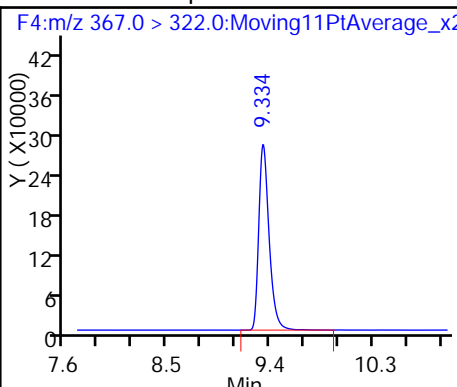
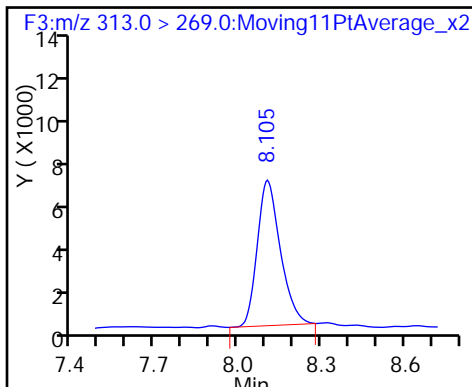
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

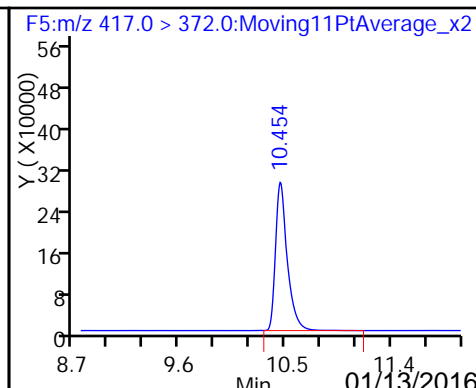
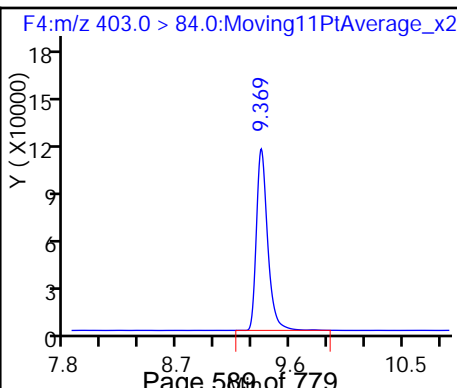
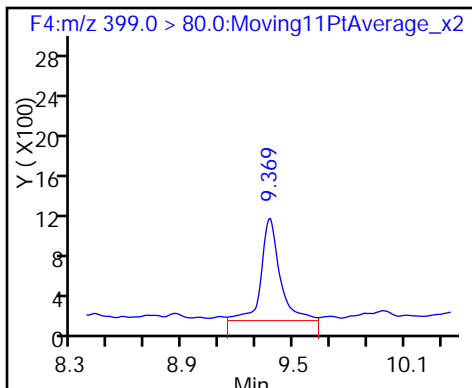
9 Perfluoroheptanoic acid

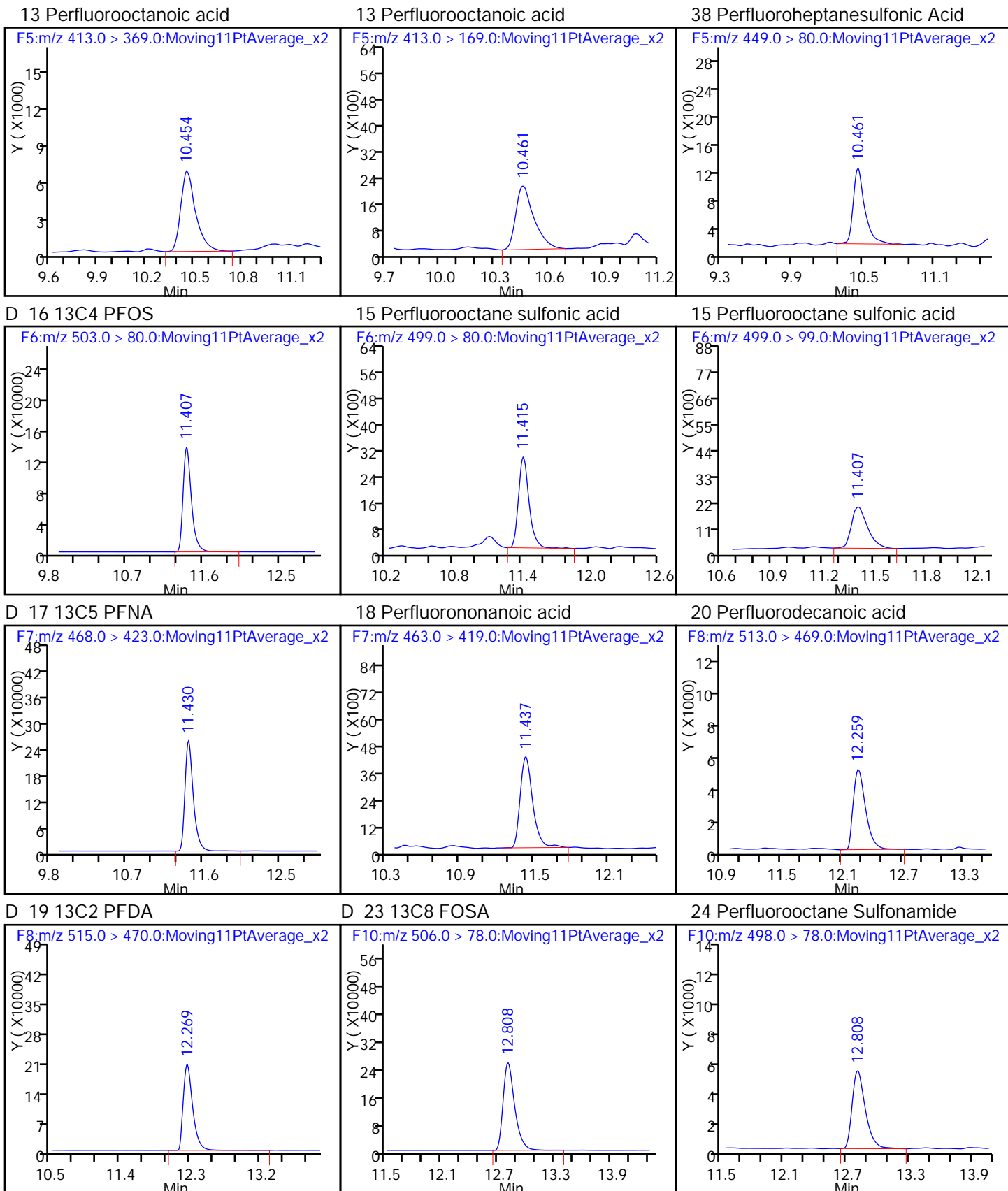


41 Perfluorohexanesulfonic acid

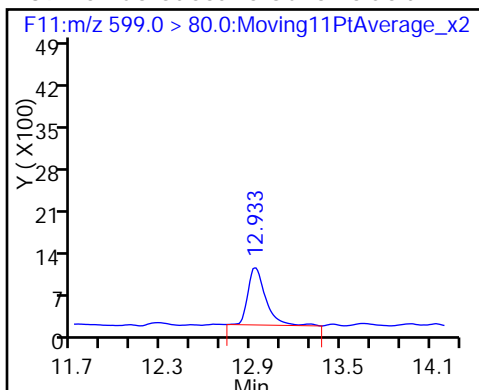
D 11 18O2 PFHxS

D 12 13C4 PFOA

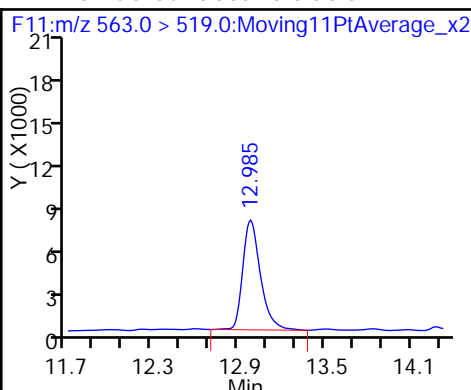




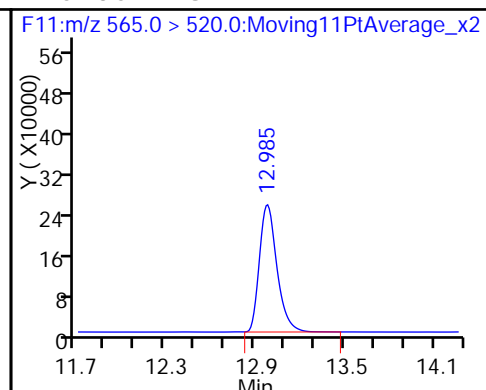
39 Perfluorodecane Sulfonic acid



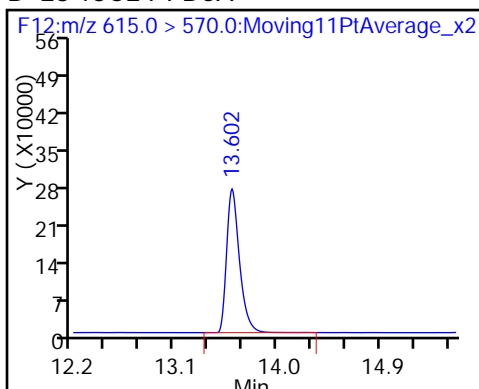
27 Perfluoroundecanoic acid



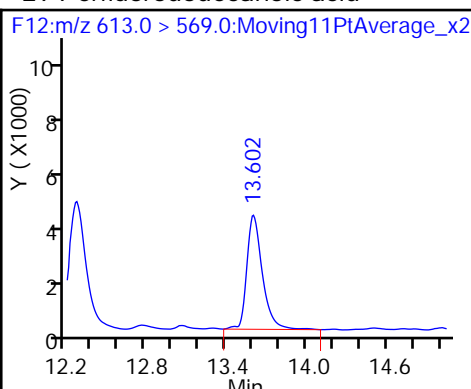
D 26 13C2 PFUnA



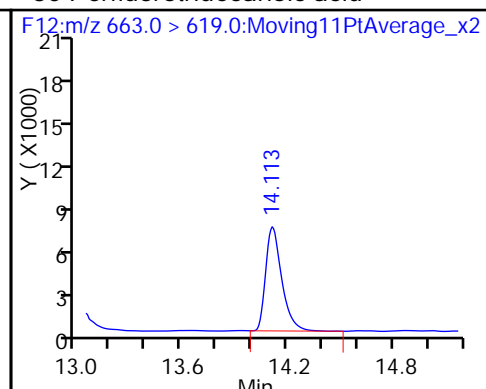
D 28 13C2 PFDaA



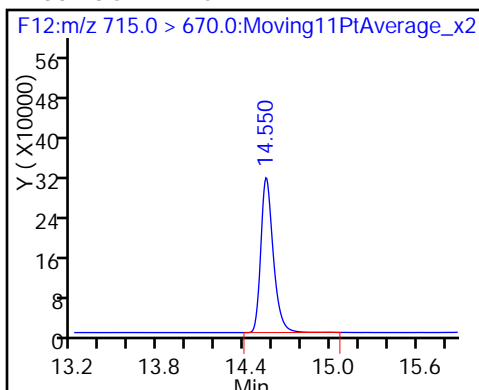
29 Perfluorododecanoic acid



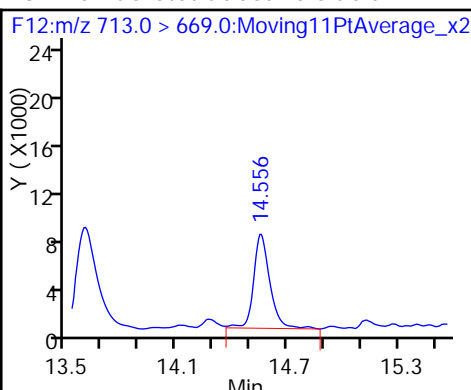
30 Perfluorotridecanoic acid



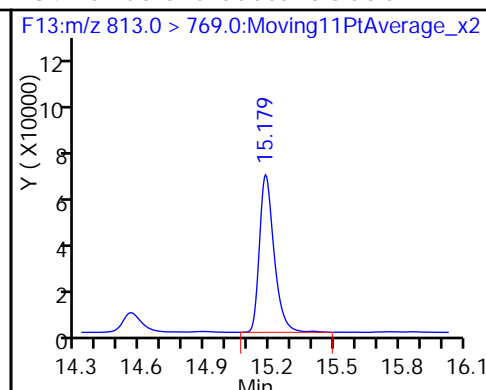
D 33 13C2-PFTeDA



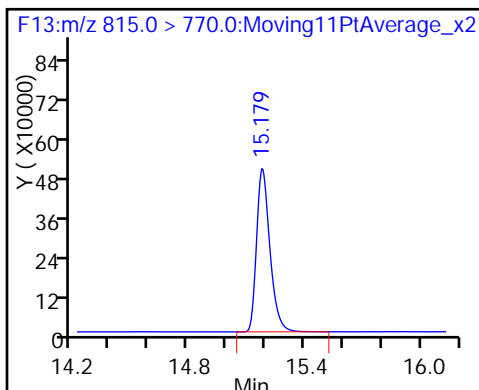
32 Perfluorotetradecanoic acid



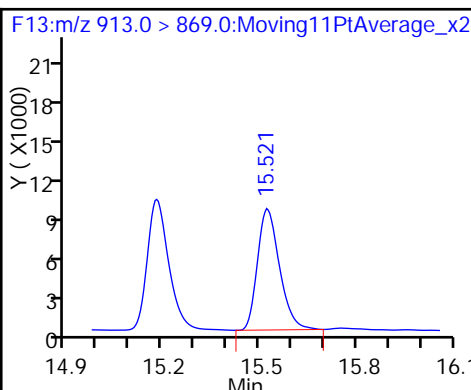
34 Perfluorohexadecanoic acid



D 35 13C2-PFHxDA



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_005.d
 Lims ID: Std L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 06-Jan-2016 12:02:41 ALS Bottle#: 19 Worklist Smp#: 6
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L3
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 08-Jan-2016 09:42:22 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc Date: 06-Jan-2016 13:11:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.764	5.763	0.001	924661	50.2		100	3200	
2 Perfluorobutyric acid	212.9 > 169.0	5.760	5.763	-0.003	129049	5.06		101	399	
D 3 13C5-PFPeA	267.9 > 223.0	6.863	6.863	0.0	1804009	51.9		104	3173	
4 Perfluoropentanoic acid	262.9 > 219.0	6.868	6.864	0.004	181620	4.99		99.7	38.0	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.978	6.976	0.002	67181	NC			170	
	298.9 > 99.0	6.978	6.976	0.002	34118		1.97(0.00-0.00)		68.1	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.978	6.976	0.002	67181	4.26		96.5		
D 6 13C2 PFHxA	315.0 > 270.0	8.105	8.100	0.005	1742911	53.3		107	4549	
7 Perfluorohexanoic acid	313.0 > 269.0	8.105	8.102	0.003	190734	5.08		102	575	
D 8 13C4-PFHpA	367.0 > 322.0	9.334	9.331	0.003	1794402	52.3		105	3654	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.340	9.335	0.005	186574	4.99		99.8	182	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.364	9.363	0.001	43956	NC			137	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.364	9.363	0.001	43956	5.12		108		
D 11 18O2 PFHxS	403.0 > 84.0	9.370	9.363	0.007	698789	48.1		102	2254	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.454	10.452	0.002		1971801	51.0		102	5017	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.454	10.453	0.001	1.000	225535	5.33		107	160	
413.0 > 169.0	10.454	10.453	0.001	1.000	73127		3.08(0.00-0.00)	107	95.4	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.454	10.456	-0.002	1.000	56008	5.94		125		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.454	10.456	-0.002	1.000	56008	NC			120	
D 16 13C4 PFOS										
503.0 > 80.0	11.407	11.405	0.002		915179	48.9		102	1884	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.407	11.408	-0.001	1.000	87224	4.70		98.3	194	
499.0 > 99.0	11.407	11.408	-0.001	1.000	45208		1.93(0.00-0.00)	98.3	88.8	
D 17 13C5 PFNA										
468.0 > 423.0	11.430	11.427	0.003		1668440	52.0		104	4039	
18 Perfluorononanoic acid										
463.0 > 419.0	11.430	11.431	-0.001	1.000	145939	5.13		103	369	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.259	12.260	-0.001	1.000	182858	5.33		107	640	
D 19 13C2 PFDA										
515.0 > 470.0	12.259	12.262	-0.003		1632183	52.9		106	2348	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		2130331	49.9		99.8	1827	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.798	12.805	-0.007	1.000	212187	5.07		101	507	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.934	12.929	0.005	1.000	50751	NC			145	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.934	12.929	0.005	1.000	50751	5.65		117		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.975	12.978	-0.003	1.000	198113	5.09		102	221	
D 26 13C2 PFUnA										
565.0 > 520.0	12.985	12.979	0.006		1936537	51.4		103	2158	
D 28 13C2 PFDaA										
615.0 > 570.0	13.602	13.597	0.005		2189120	51.7		103	2966	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.602	13.597	0.005	1.000	177540	5.17		103	126	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.113	14.114	-0.001	1.000	258508	5.81		116	179	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.550	14.548	0.002		1893525	49.0		98.0	3987	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.550	14.549	0.001	1.000	131273	4.25		85.1	45.1	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.179	15.177	0.002	1.000	493314	4.69		93.8	488	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.179	15.177	0.002		2415341	49.2		98.4	3444	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.521	15.517	0.004	1.000	209271	4.76		95.1	207	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L3_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_005.d

Injection Date: 06-Jan-2016 12:02:41

Instrument ID: A6

Lims ID: Std L3

Client ID:

Operator ID: JRB

ALS Bottle#: 19

Worklist Smp#: 6

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

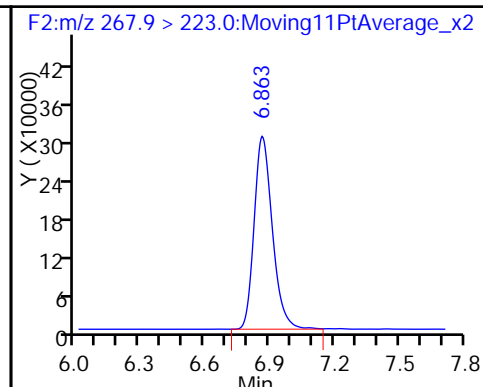
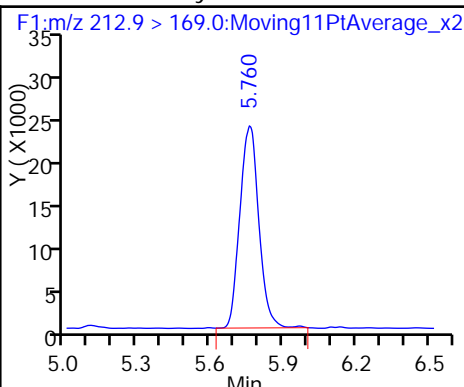
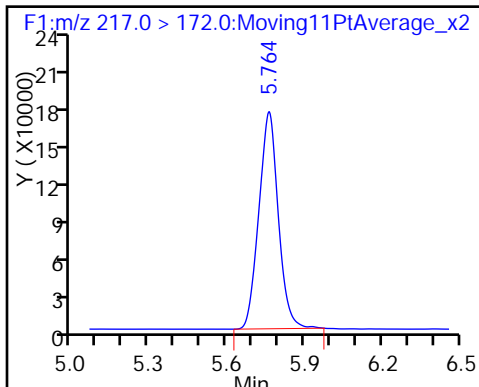
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

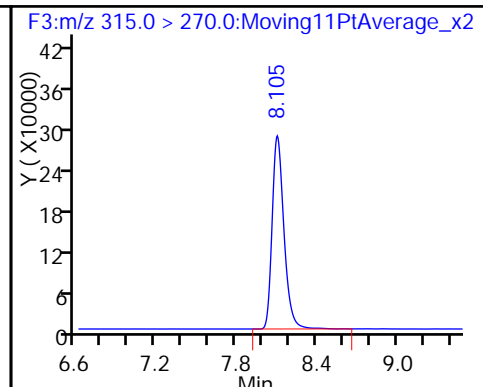
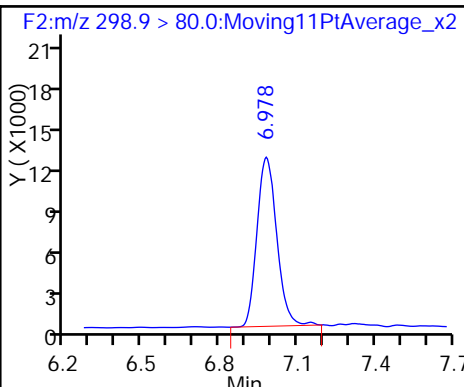
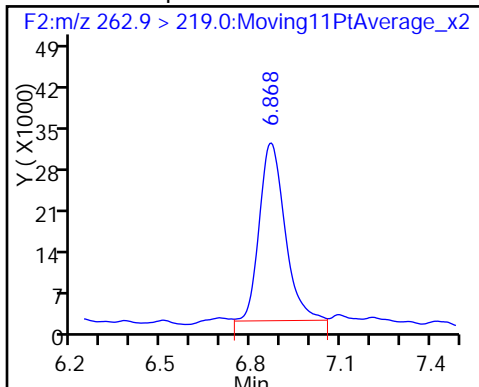
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

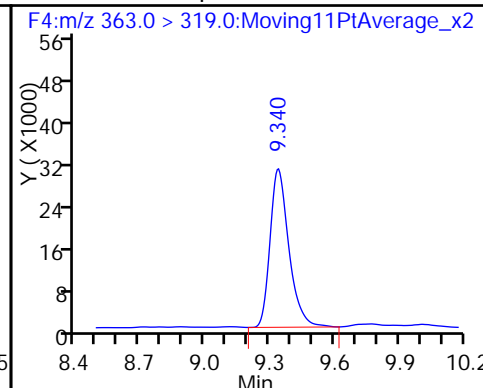
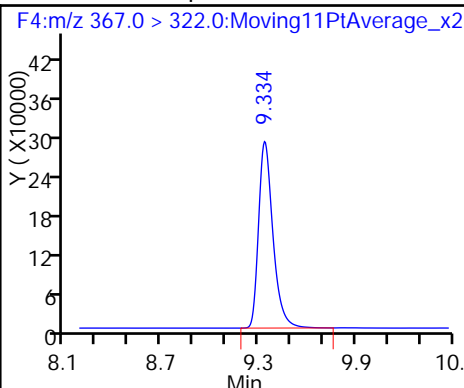
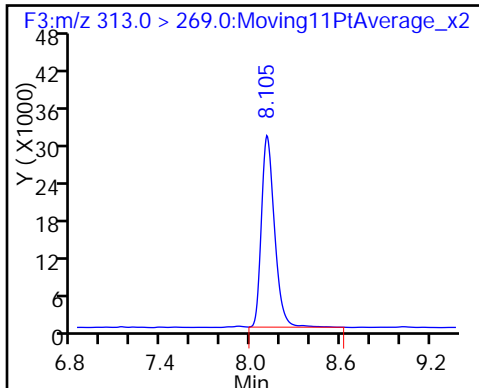
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

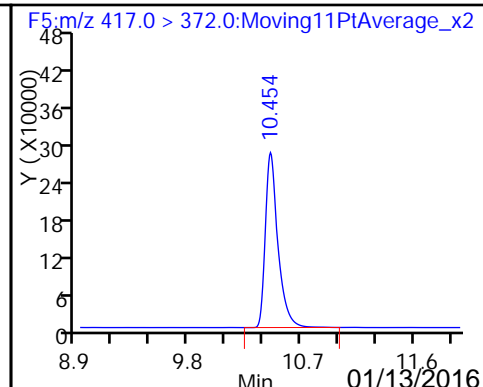
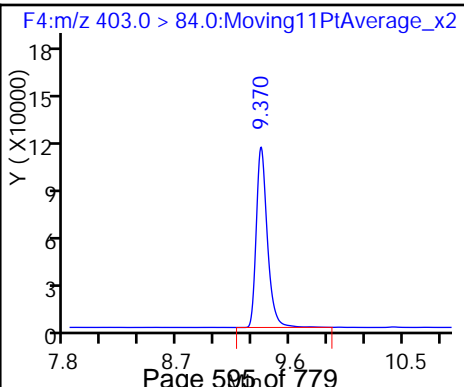
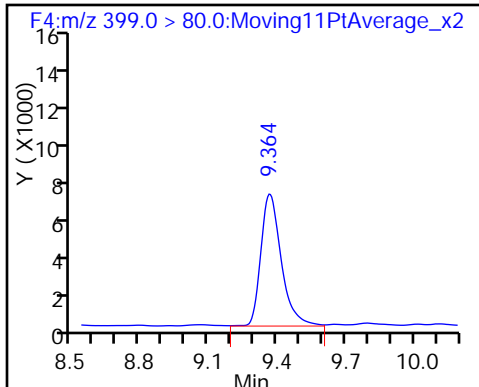
9 Perfluoroheptanoic acid

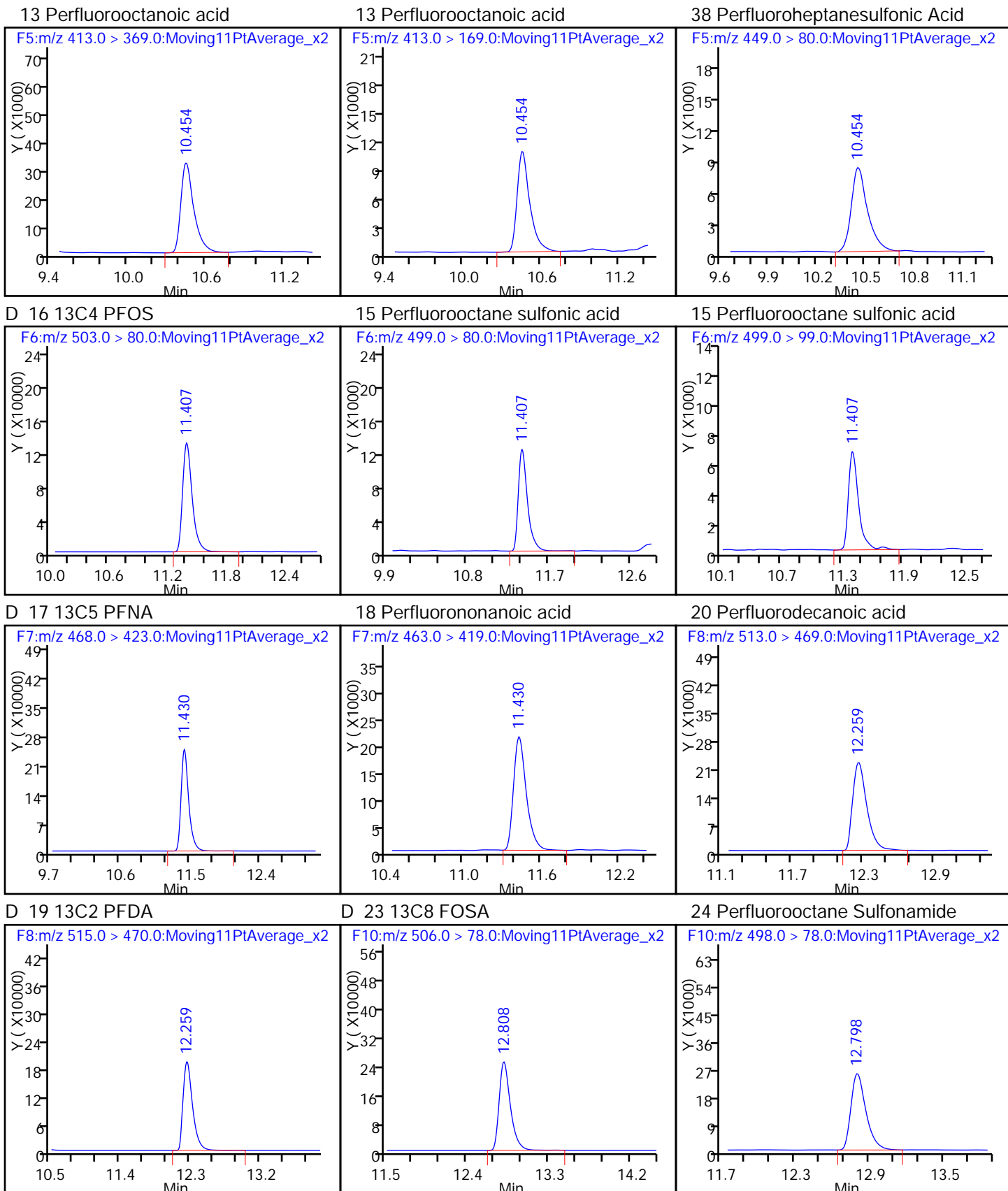


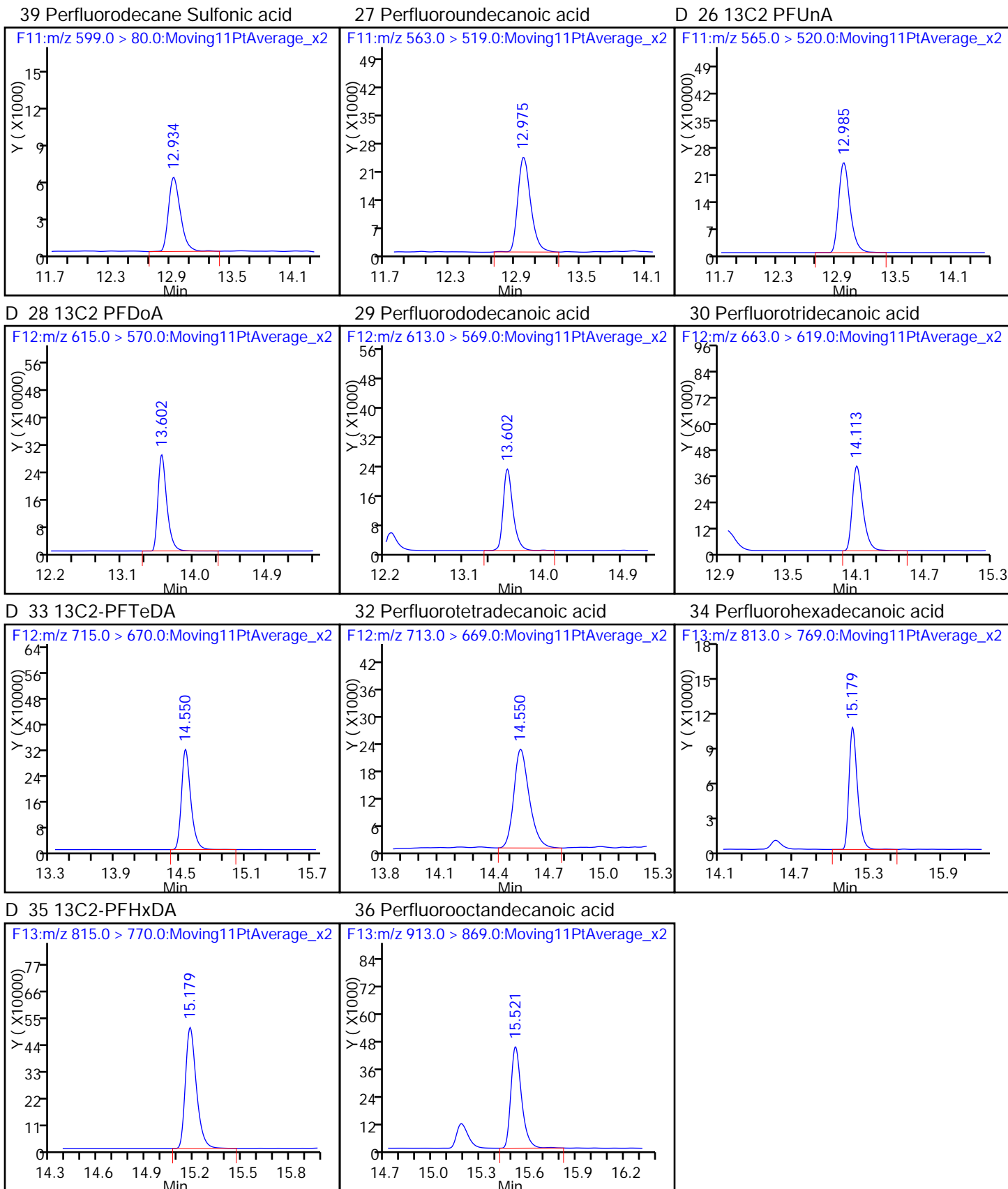
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_006.d
 Lims ID: Std L4
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 06-Jan-2016 12:33:54 ALS Bottle#: 20 Worklist Smp#: 7
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 08-Jan-2016 09:42:24 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc Date: 06-Jan-2016 13:15:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.760	5.763	-0.003	966659	52.5		105	4055	
2 Perfluorobutyric acid	212.9 > 169.0	5.763	5.763	0.0	523714	19.6		98.2	1756	
D 3 13C5-PFPeA	267.9 > 223.0	6.868	6.863	0.005	1804891	51.9		104	3157	
4 Perfluoropentanoic acid	262.9 > 219.0	6.868	6.864	0.004	711397	19.5		97.6	170	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.983	6.976	0.007	285156	NC			937	
	298.9 > 99.0	6.978	6.976	0.002	154188		1.85(0.00-0.00)		329	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.983	6.976	0.007	285156	17.7		100		
D 6 13C2 PFHxA	315.0 > 270.0	8.105	8.100	0.005	1754050	53.6		107	4316	
7 Perfluorohexanoic acid	313.0 > 269.0	8.111	8.102	0.009	727190	19.2		96.2	1554	
D 8 13C4-PFHpA	367.0 > 322.0	9.334	9.331	0.003	1823374	53.2		106	4307	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.340	9.335	0.005	753725	20.6		103	721	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.370	9.363	0.007	171711	NC			468	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.370	9.363	0.007	171711	19.5		103		
D 11 18O2 PFHxS	403.0 > 84.0	9.364	9.363	0.001	715340	49.2		104	2555	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.454	10.452	0.002		1925127	49.8		99.5	4647	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.454	10.453	0.001	1.000	784363	19.0		95.0	598	
413.0 > 169.0	10.454	10.453	0.001	1.000	284871		2.75(0.00-0.00)	95.0	410	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.454	10.456	-0.002	1.000	189461	19.2		101		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.454	10.456	-0.002	1.000	189461	NC			781	
D 16 13C4 PFOS										
503.0 > 80.0	11.407	11.405	0.002		955663	51.1		107	2442	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.407	11.408	-0.001	1.000	384036	19.8		104	252	
499.0 > 99.0	11.407	11.408	-0.001	1.000	198698		1.93(0.00-0.00)	104	647	
D 17 13C5 PFNA										
468.0 > 423.0	11.430	11.427	0.003		1709507	53.3		107	5719	
18 Perfluorononanoic acid										
463.0 > 419.0	11.430	11.431	-0.001	1.000	576424	19.8		98.8	2319	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.259	12.260	-0.001	1.000	697392	21.1		105	1575	
D 19 13C2 PFDA										
515.0 > 470.0	12.259	12.262	-0.003		1573185	51.0		102	3360	
D 23 13C8 FOSA										
506.0 > 78.0	12.798	12.805	-0.007		2283786	53.5		107	1787	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	905836	20.2		101	1826	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.923	12.929	-0.006	1.000	182511	NC			674	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.923	12.929	-0.006	1.000	182511	19.5		101		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.975	12.978	-0.003	1.000	741290	20.2		101	1208	
D 26 13C2 PFUnA										
565.0 > 520.0	12.975	12.979	-0.004		2041366	54.1		108	1678	
D 28 13C2 PFDaA										
615.0 > 570.0	13.592	13.597	-0.005		2279400	53.8		108	2995	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.592	13.597	-0.005	1.000	714262	20.0		99.8	583	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.113	14.114	-0.001	1.000	941479	20.3		102	563	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.550	14.548	0.002		1902026	49.2		98.5	3497	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.543	14.549	-0.006	1.000	556971	19.0		95.2	197	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.174	15.177	-0.003	1.000	1172831	18.0		89.9	860	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.174	15.177	-0.003		2349134	47.9		95.7	2939	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.516	15.517	-0.001	1.000	828096	18.1		90.4	753	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_006.d

Injection Date: 06-Jan-2016 12:33:54

Instrument ID: A6

Lims ID: Std L4

Client ID:

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 7

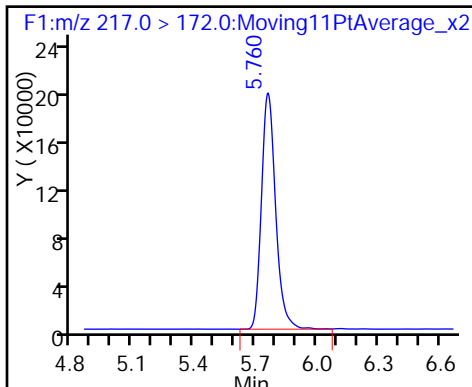
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

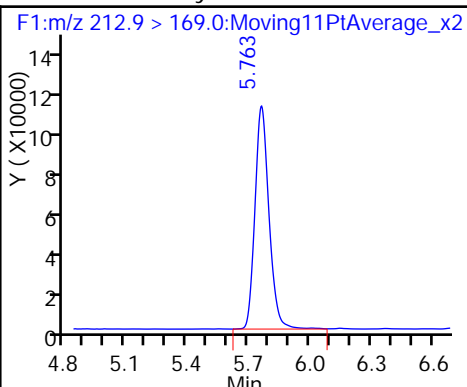
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

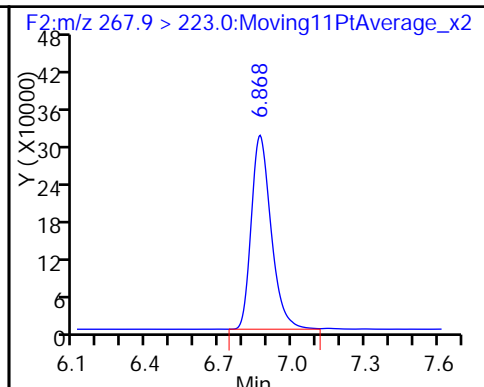
D 1 13C4 PFBA



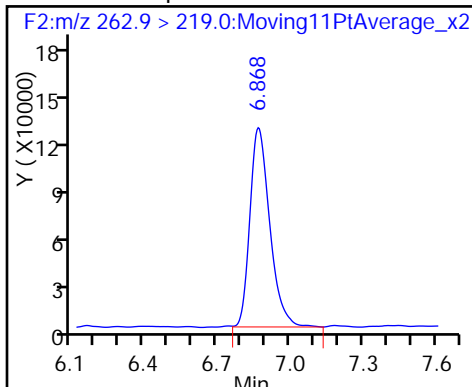
2 Perfluorobutyric acid



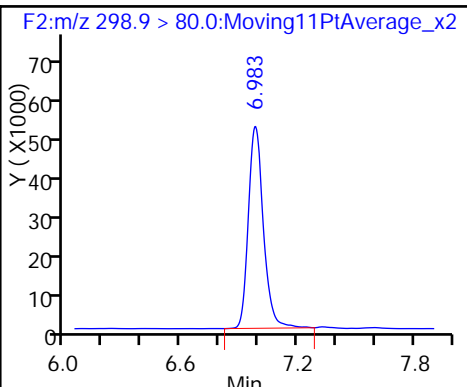
D 3 13C5-PFPeA



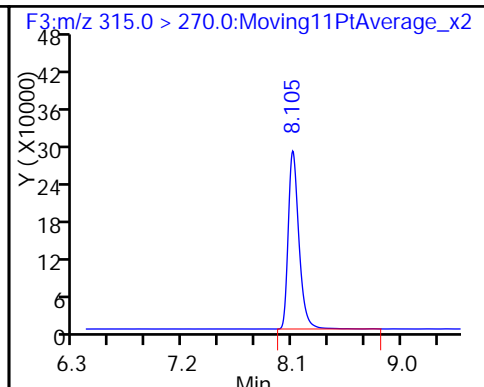
4 Perfluoropentanoic acid



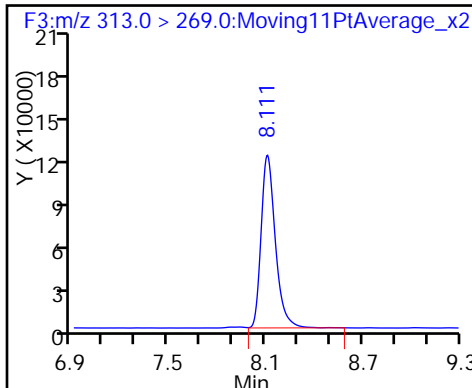
40 Perfluorobutanesulfonic acid



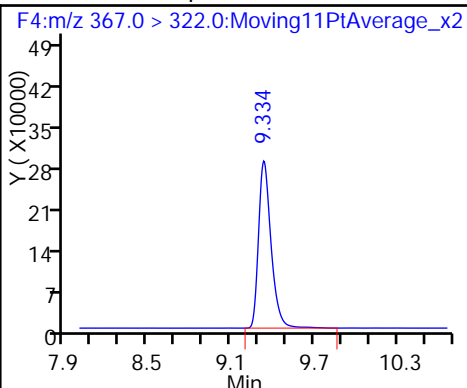
D 6 13C2 PFHxA



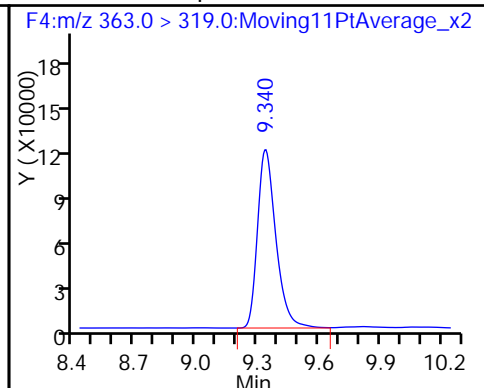
7 Perfluorohexanoic acid



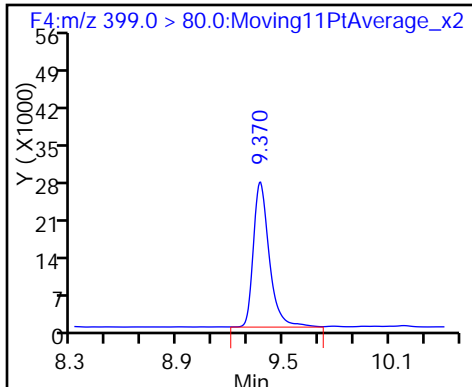
D 8 13C4-PFHpA



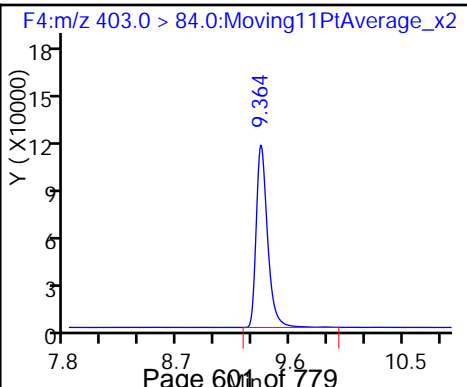
9 Perfluoroheptanoic acid



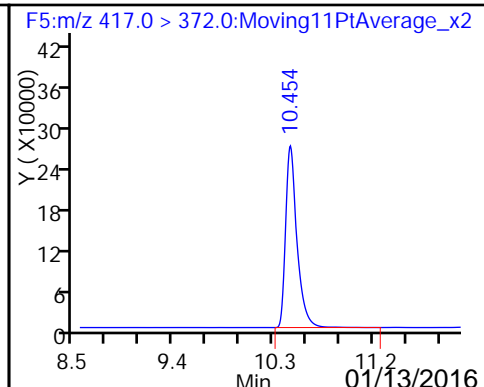
41 Perfluorohexanesulfonic acid

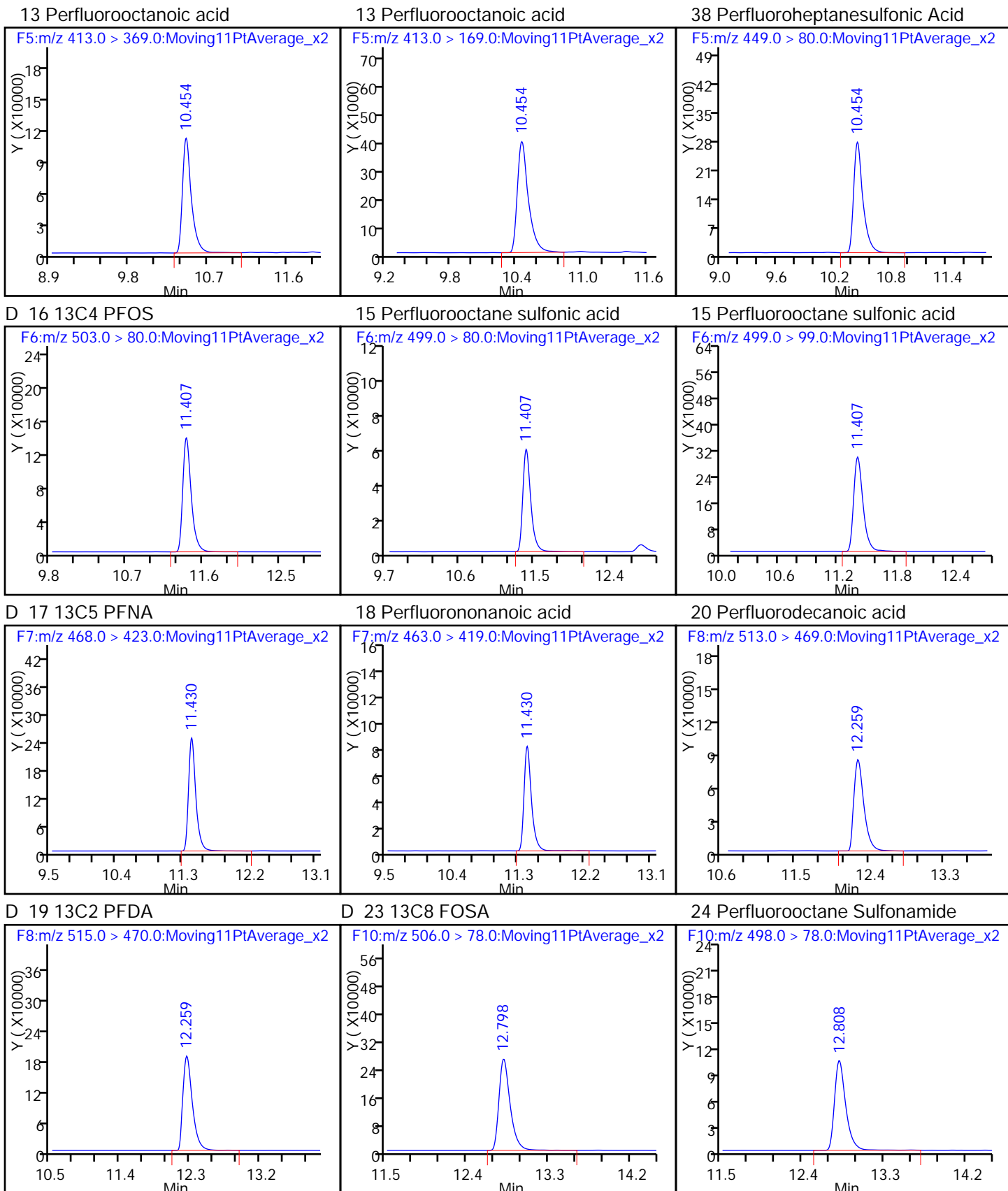


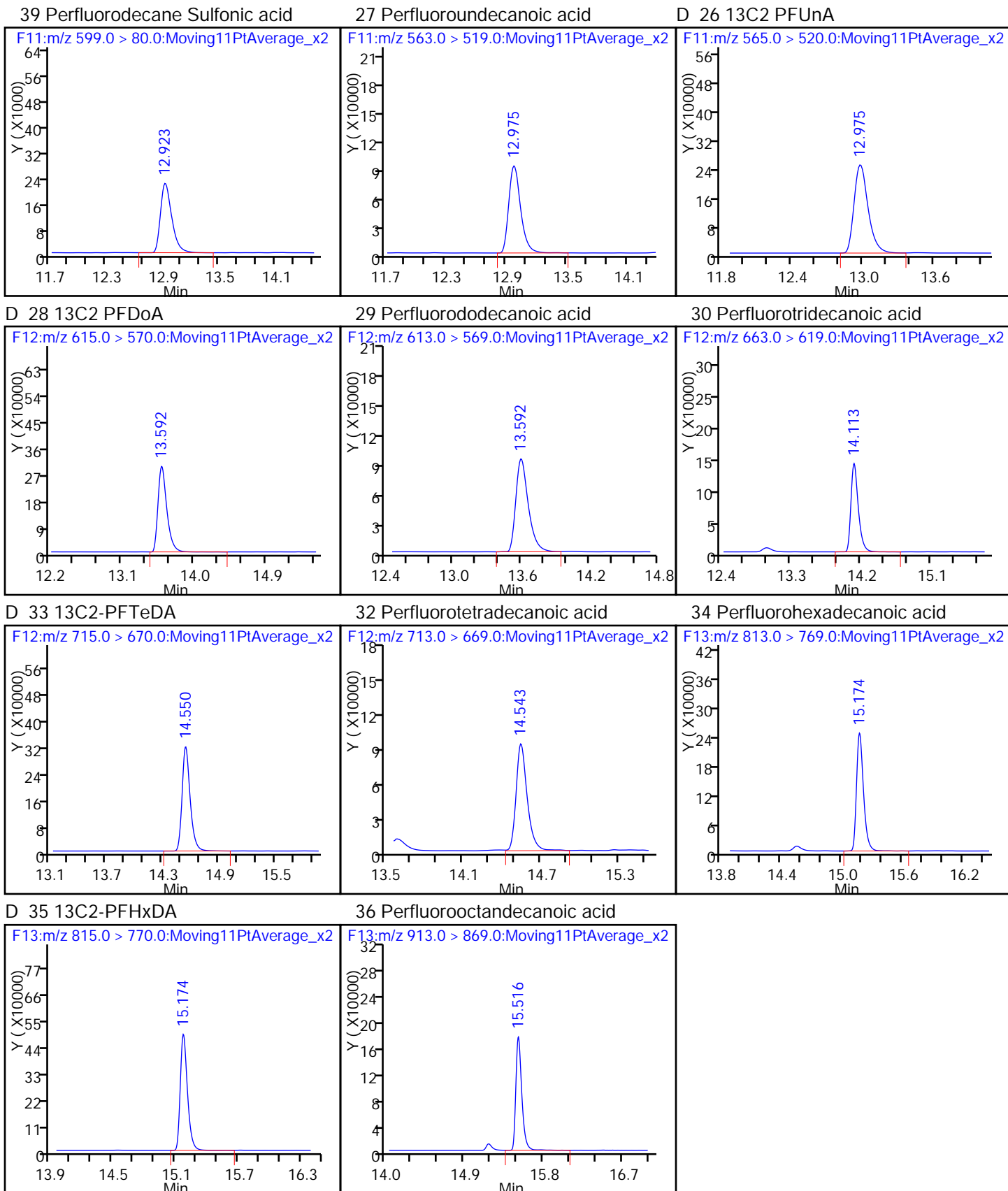
D 11 18O2 PFHxS



D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_007.d
 Lims ID: Std L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 06-Jan-2016 13:05:08 ALS Bottle#: 21 Worklist Smp#: 8
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 08-Jan-2016 09:42:08 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: barnettj Date: 08-Jan-2016 09:29:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.760	5.763	-0.003	974114	52.9		106	3246	
2 Perfluorobutyric acid	212.9 > 169.0	5.760	5.763	-0.003	1381546	51.4		103	3503	
D 3 13C5-PFPeA	267.9 > 223.0	6.863	6.863	0.0	1810982	52.1		104	4023	
4 Perfluoropentanoic acid	262.9 > 219.0	6.868	6.864	0.004	1752091	47.9		95.8	345	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.978	6.976	0.002	729585	NC			1544	
	298.9 > 99.0	6.978	6.976	0.002	421493		1.73(0.00-0.00)		862	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.978	6.976	0.002	729585	44.1		99.9		
D 6 13C2 PFHxA	315.0 > 270.0	8.100	8.100	0.0	1751141	53.5		107	4946	
7 Perfluorohexanoic acid	313.0 > 269.0	8.105	8.102	0.003	1810095	47.9		95.9	1889	
D 8 13C4-PFHpA	367.0 > 322.0	9.329	9.331	-0.002	1798054	52.4		105	6242	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.335	9.335	0.0	1793000	50.1		100	1429	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.364	9.363	0.001	415372	NC			1120	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.364	9.363	0.001	415372	46.1		97.5		
D 11 18O2 PFHxS	403.0 > 84.0	9.364	9.363	0.001	733182	50.5		107	2067	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.448	10.452	-0.004		1860618	48.1		96.2	5092	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.448	10.453	-0.005	1.000	1877840	47.1		94.1	1807	
413.0 > 169.0	10.455	10.453	0.002	1.001	696089		2.70(0.00-0.00)	94.1	746	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.448	10.456	-0.008	1.000	452423	44.5		93.5		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.448	10.456	-0.008	1.000	452423	NC			2217	
D 16 13C4 PFOS										
503.0 > 80.0	11.400	11.405	-0.005		986945	52.8		110	2497	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.407	11.408	-0.001	1.000	932484	46.6		97.5	307	
499.0 > 99.0	11.400	11.408	-0.008	0.999	513363		1.82(0.00-0.00)	97.5	928	
D 17 13C5 PFNA										
468.0 > 423.0	11.423	11.427	-0.004		1618271	50.4		101	3599	
18 Perfluorononanoic acid										
463.0 > 419.0	11.430	11.431	-0.001	1.000	1411768	51.1		102	2070	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.259	12.260	-0.001	1.000	1561638	46.6		93.1	2966	
D 19 13C2 PFDA										
515.0 > 470.0	12.259	12.262	-0.003		1594217	51.7		103	2725	
D 23 13C8 FOSA										
506.0 > 78.0	12.798	12.805	-0.007		2169673	50.8		102	2852	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.798	12.805	-0.007	1.000	2189426	51.4		103	2144	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.923	12.929	-0.006	1.000	481016	NC			1461	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.923	12.929	-0.006	1.000	481016	49.6		103		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.975	12.978	-0.003	1.000	1581984	46.8		93.7	1808	
D 26 13C2 PFUnA										
565.0 > 520.0	12.975	12.979	-0.004		1917383	50.8		102	3819	
D 28 13C2 PFDaA										
615.0 > 570.0	13.593	13.597	-0.004		2164474	51.1		102	2899	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.593	13.597	-0.004	1.000	1712069	50.4		101	1226	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.113	14.114	-0.001	1.000	2138582	48.6		97.2	1619	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.543	14.548	-0.005		1993331	51.6		103	3588	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.543	14.549	-0.006	1.000	1283969	47.0		94.0	491	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.175	15.177	-0.002	1.000	2722865	52.1		104	1876	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.175	15.177	-0.002		2586833	52.7		105	2994	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid
 913.0 > 869.0 15.511 15.517 -0.006 1.000 2271591 52.2 104 1559

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_007.d

Injection Date: 06-Jan-2016 13:05:08

Instrument ID: A6

Lims ID: Std L5

Client ID:

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 8

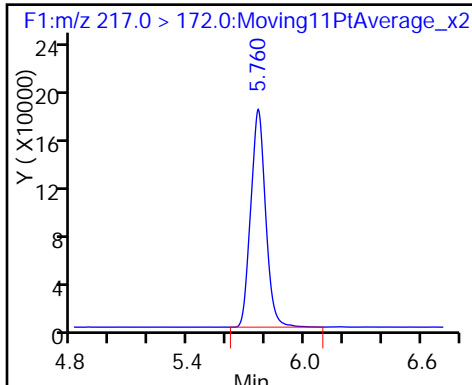
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

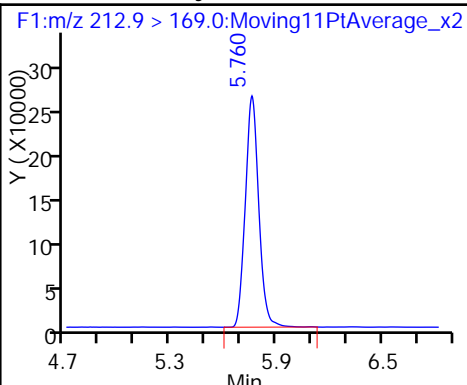
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

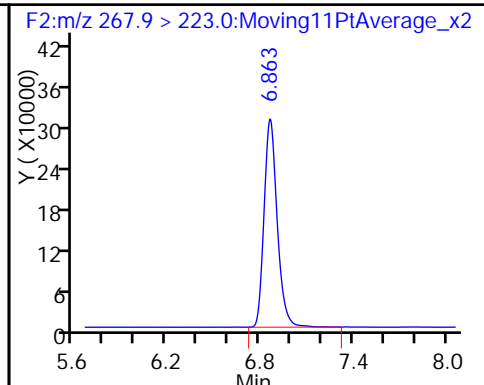
D 1 13C4 PFBA



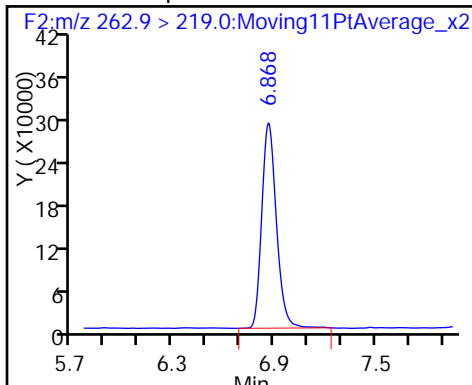
2 Perfluorobutyric acid



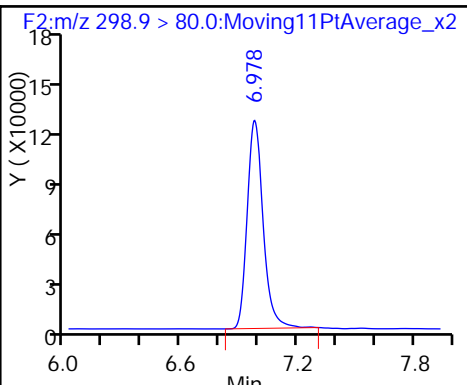
D 3 13C5-PFPeA



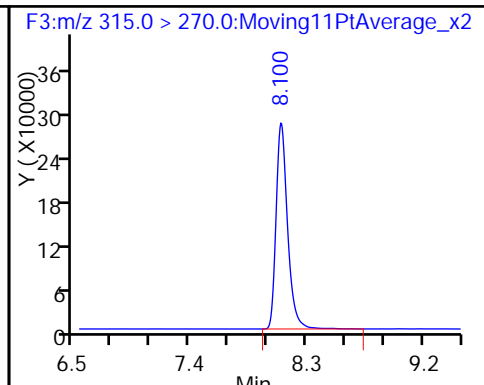
4 Perfluoropentanoic acid



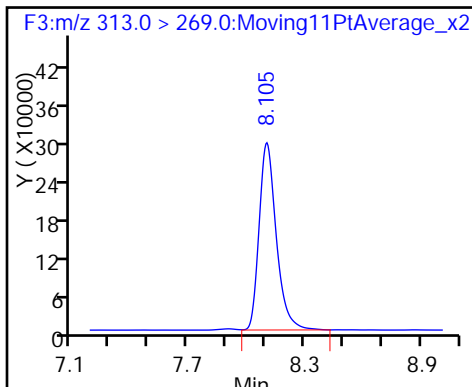
40 Perfluorobutanesulfonic acid



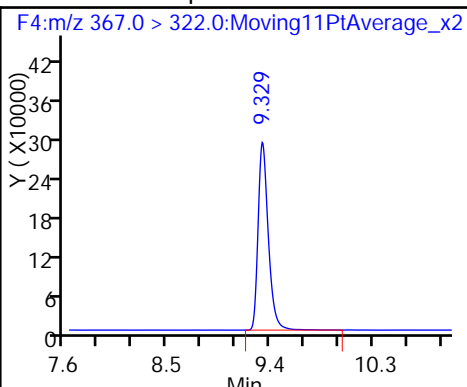
D 6 13C2 PFHxA



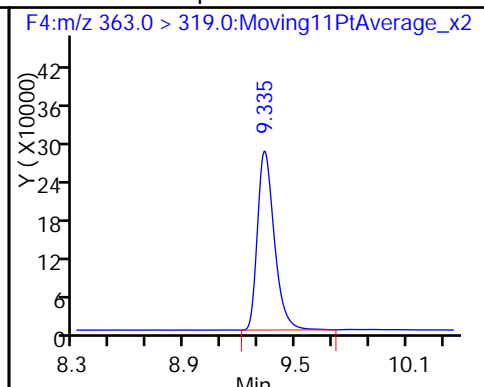
7 Perfluorohexanoic acid



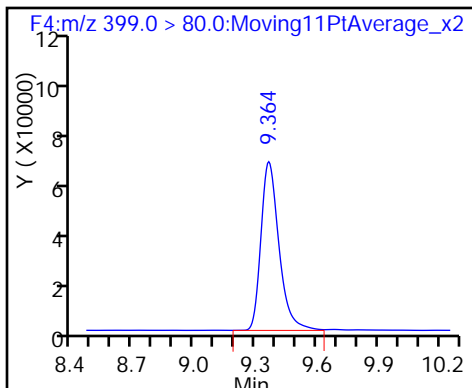
D 8 13C4-PFHpA



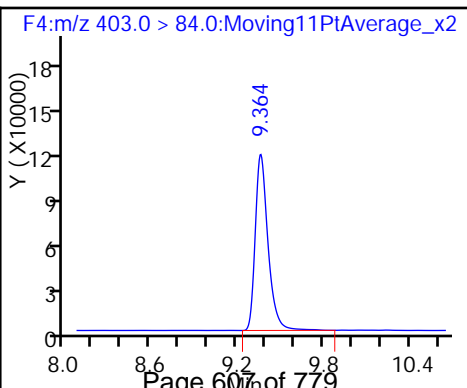
9 Perfluoroheptanoic acid



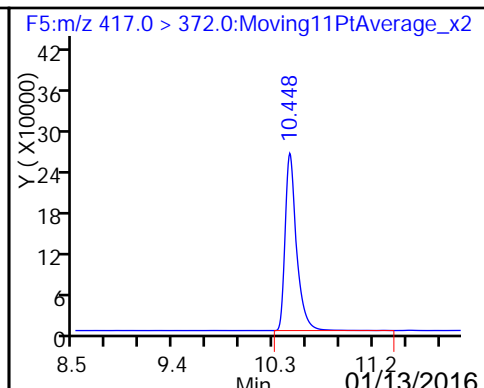
41 Perfluorohexanesulfonic acid

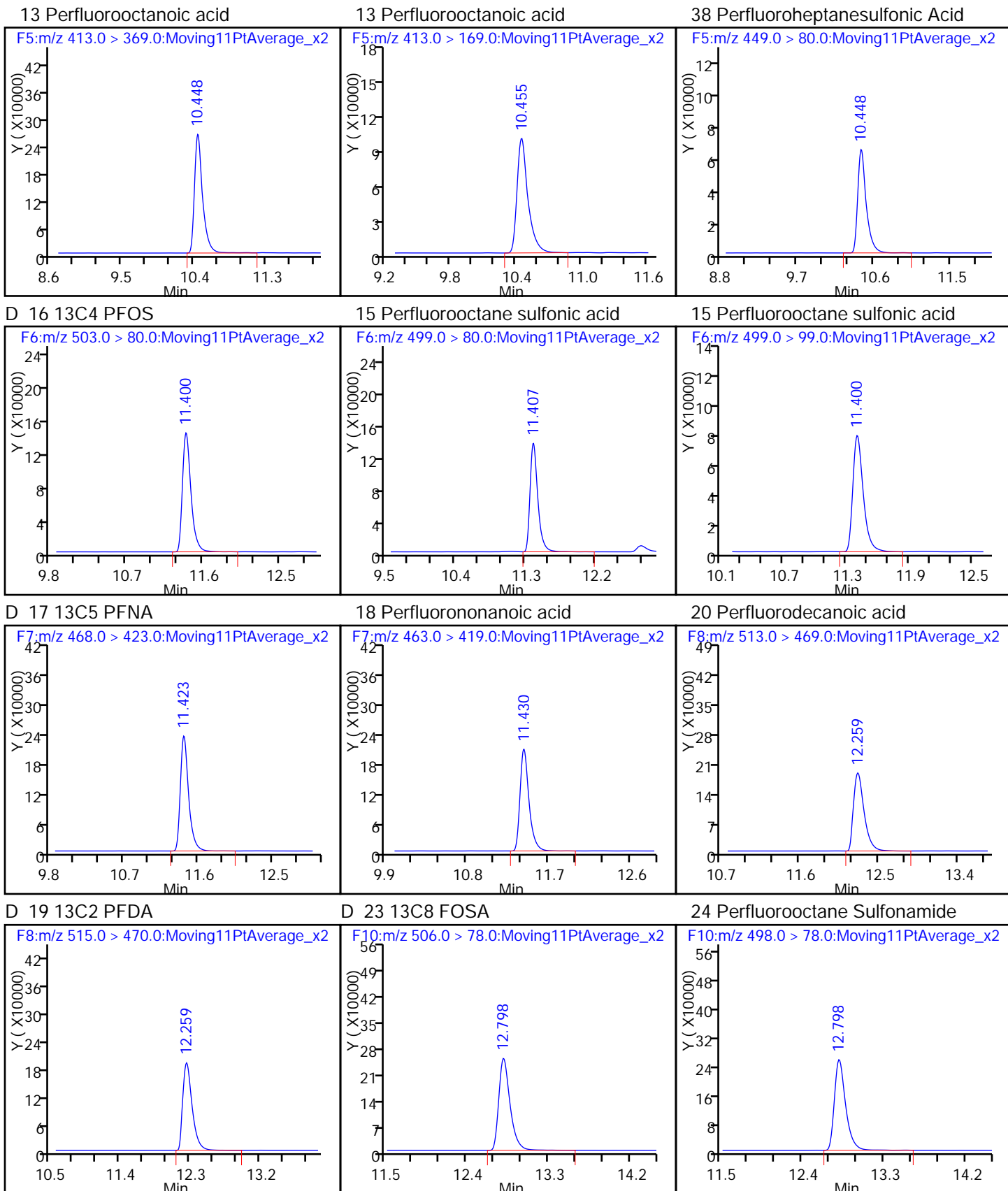


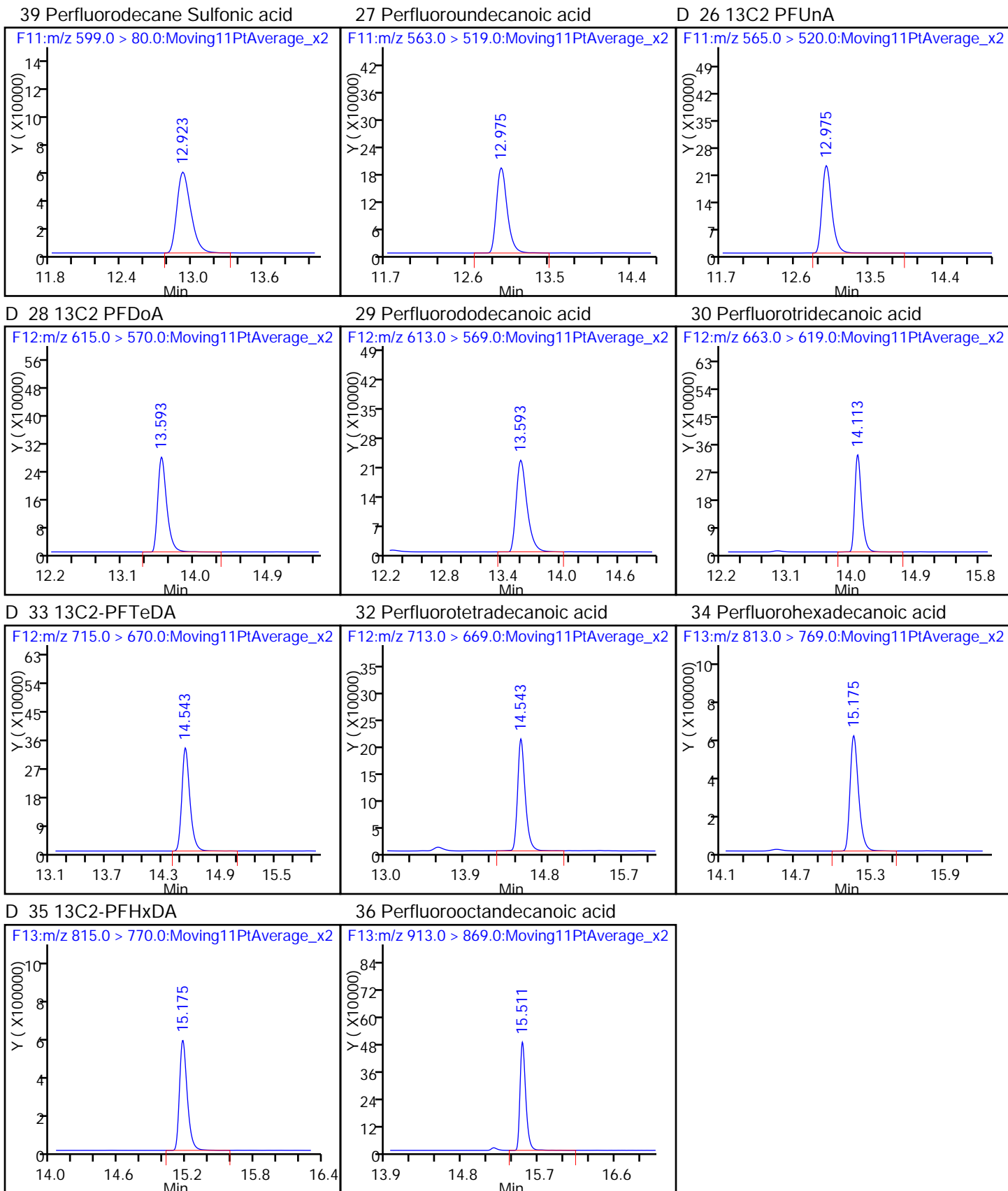
D 11 18O2 PFHxS



D 12 13C4 PFOA







TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_008.d
 Lims ID: Std L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 06-Jan-2016 13:36:20 ALS Bottle#: 22 Worklist Smp#: 9
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L6
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 08-Jan-2016 09:42:28 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc Date: 06-Jan-2016 14:45:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.763	5.763	0.0	838778	45.6		91.1	2135	
2 Perfluorobutyric acid	212.9 > 169.0	5.763	5.763	0.0	4633772	200.2		100	10202	
D 3 13C5-PFPeA	267.9 > 223.0	6.868	6.863	0.005	1569088	45.1		90.2	4125	
4 Perfluoropentanoic acid	262.9 > 219.0	6.868	6.864	0.004	6010884	189.7		94.9	1494	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.978	6.976	0.002	2445937	NC			4737	
	298.9 > 99.0	6.978	6.976	0.002	1398904		1.75(0.00-0.00)		2259	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.978	6.976	0.002	2445937	180.9		102		
D 6 13C2 PFHxA	315.0 > 270.0	8.105	8.100	0.005	1436454	43.9		87.8	3764	
7 Perfluorohexanoic acid	313.0 > 269.0	8.105	8.102	0.003	6266689	202.4		101	2633	
D 8 13C4-PFHpA	367.0 > 322.0	9.335	9.331	0.004	1442468	42.1		84.1	2677	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.335	9.335	0.0	5839203	204.1		102	2485	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.364	9.363	0.001	1407431	NC			2994	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.364	9.363	0.001	1407431	191.1		101		
D 11 18O2 PFHxS	403.0 > 84.0	9.364	9.363	0.001	599642	41.3		87.2	1539	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.448	10.452	-0.004		1490496	38.5		77.1	5463	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.455	10.453	0.002	1.000	6076103	190.1		95.1	3493	
413.0 > 169.0	10.455	10.453	0.002	1.000	2199718		2.76(0.00-0.00)	95.1	2125	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.455	10.456	-0.001	1.000	1467858	192.4		101		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.455	10.456	-0.001	1.000	1467858	NC			2115	
D 16 13C4 PFOS										
503.0 > 80.0	11.400	11.405	-0.005		740605	39.6		82.9	1912	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.407	11.408	-0.001	1.000	2916813	194.2		102	352	
499.0 > 99.0	11.400	11.408	-0.008	0.999	1586237		1.84(0.00-0.00)	102	2049	
D 17 13C5 PFNA										
468.0 > 423.0	11.423	11.427	-0.004		1354219	42.2		84.4	2031	
18 Perfluorononanoic acid										
463.0 > 419.0	11.430	11.431	-0.001	1.000	4674483	202.4		101	6025	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.259	12.260	-0.001	1.000	4976064	180.3		90.2	5224	
D 19 13C2 PFDA										
515.0 > 470.0	12.259	12.262	-0.003		1311848	42.5		85.0	1567	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		1989023	46.6		93.2	1771	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	7837373	200.7		100	2094	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.923	12.929	-0.006	1.000	1305054	NC			3269	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.923	12.929	-0.006	1.000	1305054	179.5		93.1		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.975	12.978	-0.003	1.000	5476584	195.6		97.8	3709	
D 26 13C2 PFUnA										
565.0 > 520.0	12.975	12.979	-0.004		1610211	42.7		85.4	2155	
D 28 13C2 PFDoA										
615.0 > 570.0	13.593	13.597	-0.004		1882387	44.4		88.9	2196	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.593	13.597	-0.004	1.000	5980430	202.3		101	3080	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.113	14.114	-0.001	1.000	6719579	175.6		87.8	2747	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.543	14.548	-0.005		1817616	47.0		94.1	3132	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.543	14.549	-0.006	1.000	4449710	188.9		94.5	1430	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.174	15.177	-0.003	1.000	8444706	200.4		100	3335	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.174	15.177	-0.003		2264391	46.1		92.3	3227	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.511	15.517	-0.006	1.000	7400052	195.6	97.8	3153	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L6_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_008.d

Injection Date: 06-Jan-2016 13:36:20

Instrument ID: A6

Lims ID: Std L6

Client ID:

Operator ID: JRB

ALS Bottle#: 22

Worklist Smp#: 9

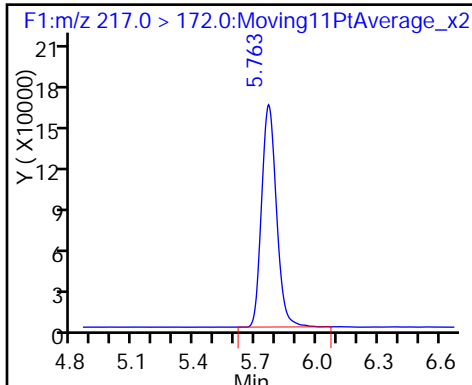
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

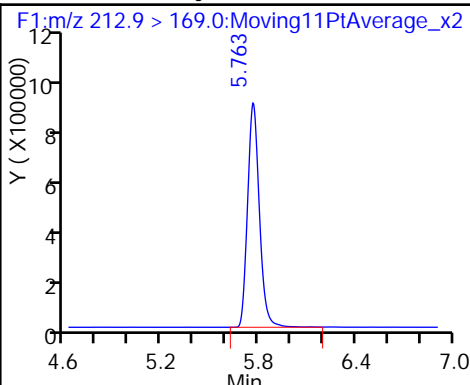
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

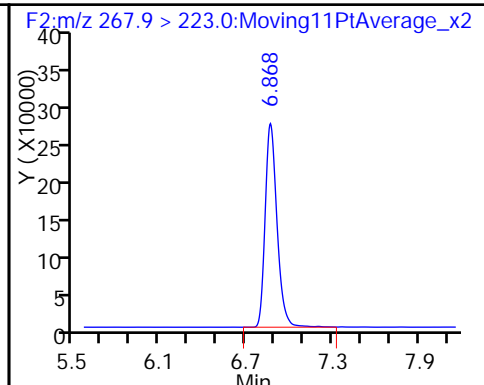
D 1 13C4 PFBA



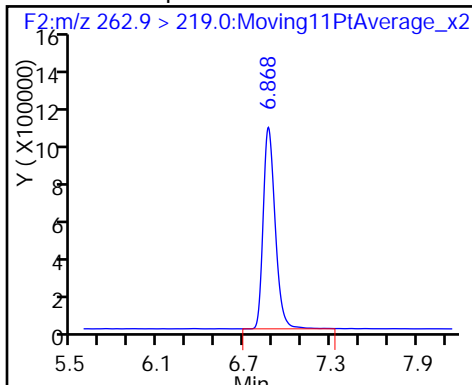
2 Perfluorobutyric acid



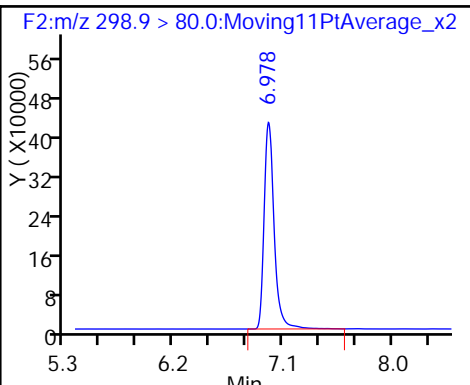
D 3 13C5-PFPeA



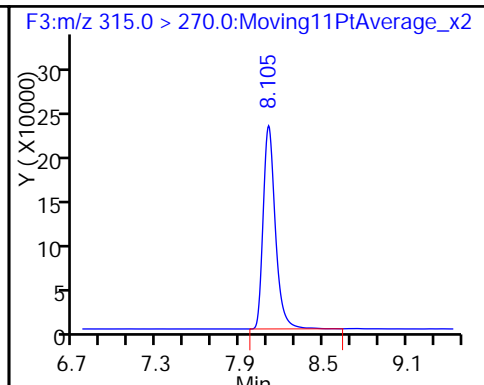
4 Perfluoropentanoic acid



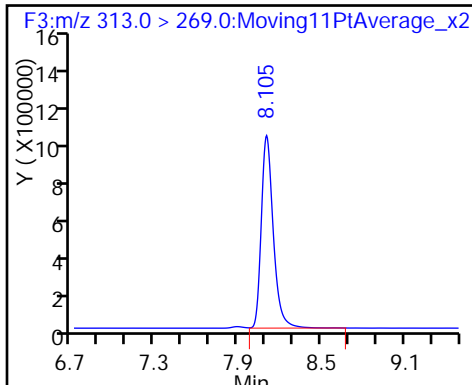
40 Perfluorobutanesulfonic acid



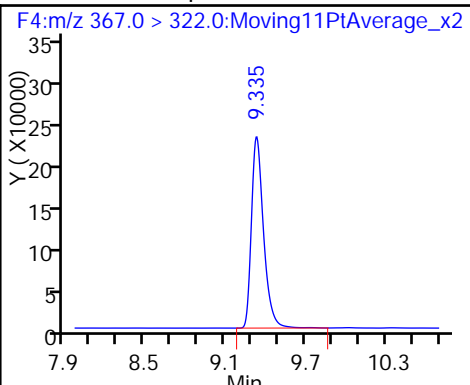
D 6 13C2 PFHxA



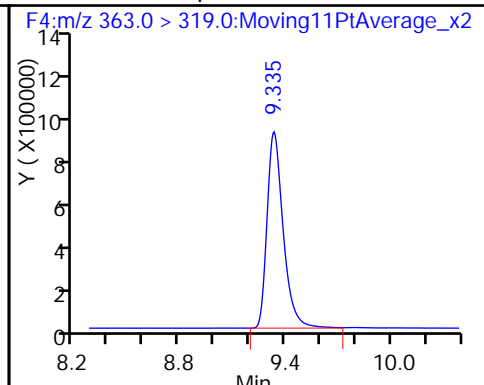
7 Perfluorohexanoic acid



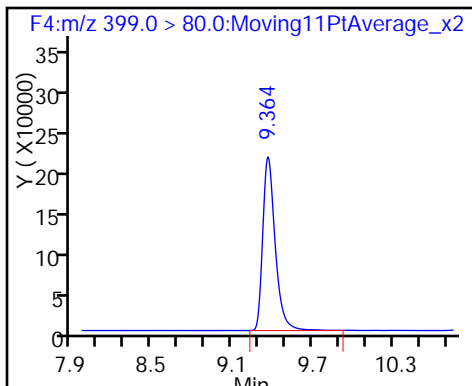
D 8 13C4-PFHpA



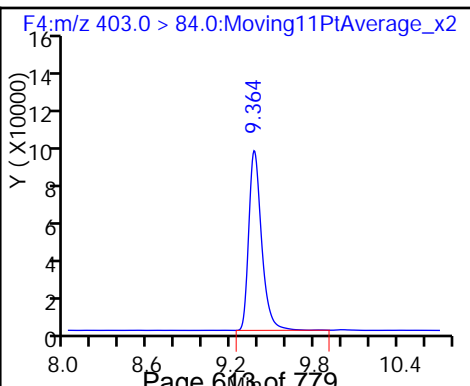
9 Perfluoroheptanoic acid



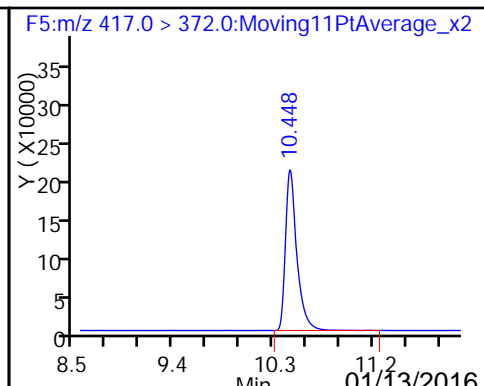
41 Perfluorohexanesulfonic acid

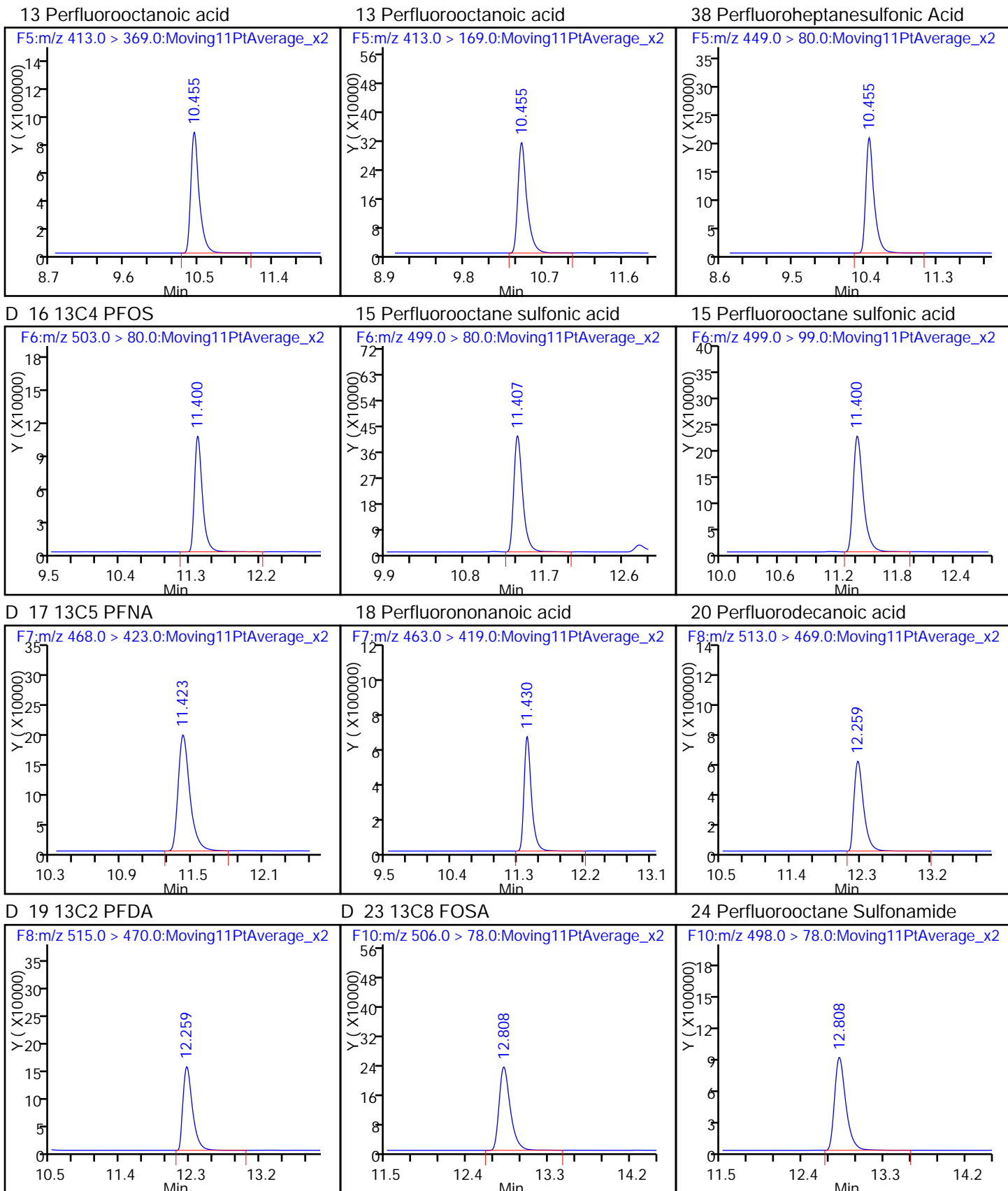


D 11 18O2 PFHxS

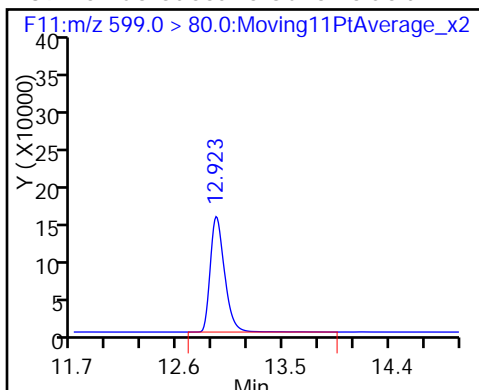


D 12 13C4 PFOA

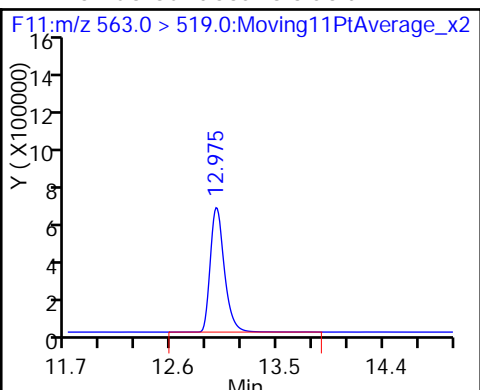




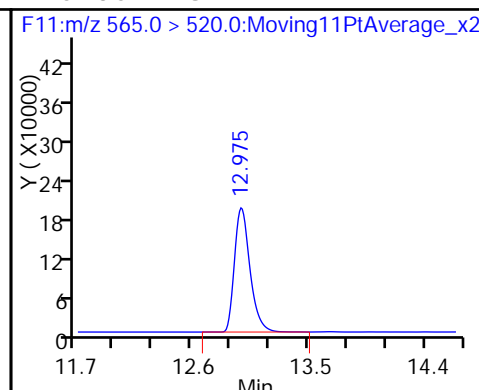
39 Perfluorodecane Sulfonic acid



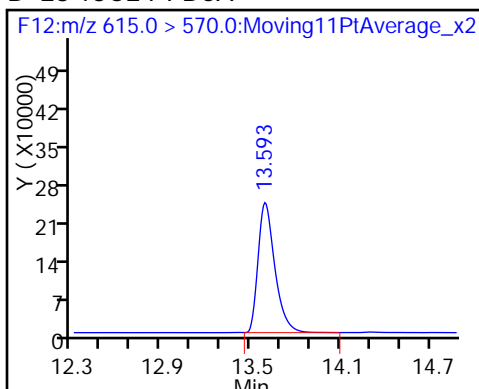
27 Perfluoroundecanoic acid



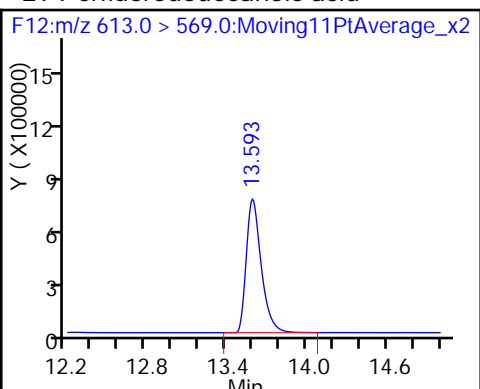
D 26 13C2 PFUnA



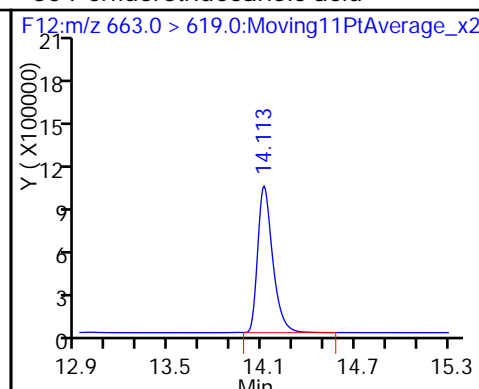
D 28 13C2 PFDaA



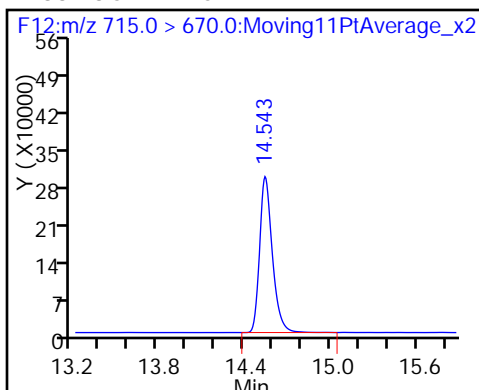
29 Perfluorododecanoic acid



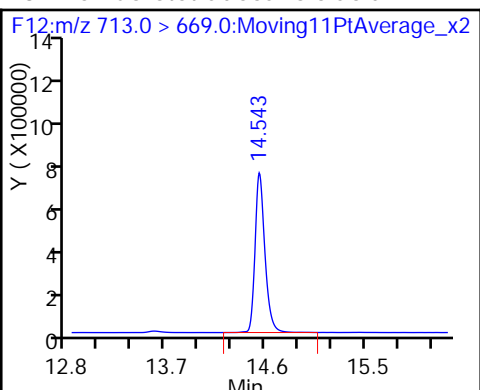
30 Perfluorotridecanoic acid



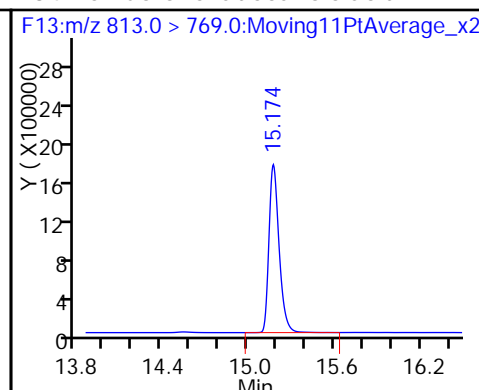
D 33 13C2-PFTeDA



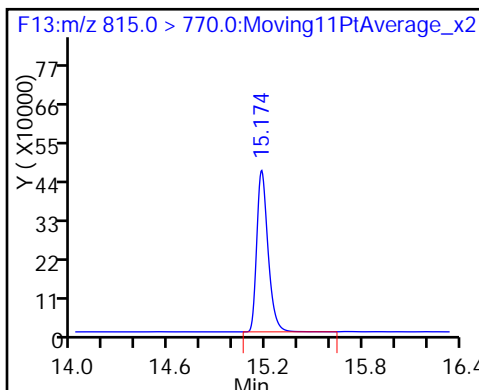
32 Perfluorotetradecanoic acid



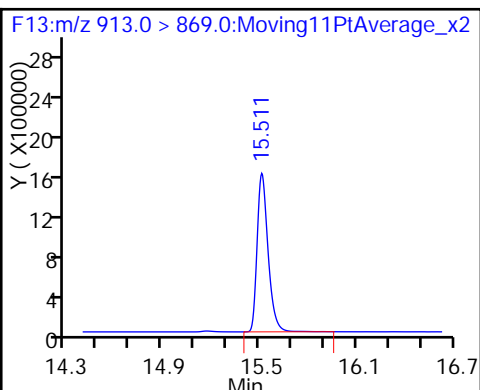
34 Perfluorohexadecanoic acid



D 35 13C2-PFHxDA



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Lims ID: Std L7
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 06-Jan-2016 14:07:35 ALS Bottle#: 23 Worklist Smp#: 10
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L7
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 08-Jan-2016 09:42:32 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc Date: 06-Jan-2016 14:53:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.763	5.763	0.0	719839	39.1		78.2	2139	
2 Perfluorobutyric acid	212.9 > 169.0	5.763	5.763	0.0	1.000	8139792	409.8	102	10442	
D 3 13C5-PFPeA	267.9 > 223.0	6.868	6.863	0.005	1307833	37.6		75.2	3640	
4 Perfluoropentanoic acid	262.9 > 219.0	6.868	6.864	0.004	1.000	9945285	376.6	94.1	1779	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.983	6.976	0.007	1.000	4136098	NC		8449	
	298.9 > 99.0	6.983	6.976	0.007	1.000	2272698	1.82(0.00-0.00)		1854	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.983	6.976	0.007	1.000	4136098	346.1	97.9		
D 6 13C2 PFHxA	315.0 > 270.0	8.105	8.100	0.005	1223768	37.4		74.8	3204	
7 Perfluorohexanoic acid	313.0 > 269.0	8.105	8.102	0.003	1.000	9993754	378.8	94.7	2049	
D 8 13C4-PFHpA	367.0 > 322.0	9.335	9.331	0.004	1283868	37.4		74.9	3001	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.335	9.335	0.0	1.000	10058302	395.3	98.8	6202	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.370	9.363	0.007	1.000	2507742	NC		2952	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.370	9.363	0.007	1.000	2507742	385.2	102		
D 11 18O2 PFHxS	403.0 > 84.0	9.364	9.363	0.001	530090	36.5		77.1	1417	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.455	10.452	0.003		1218290	31.5		63.0	1919	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.455	10.453	0.002	1.000	9780690	374.4		93.6	3216	
413.0 > 169.0	10.455	10.453	0.002	1.000	3770949		2.59(0.00-0.00)	93.6	3606	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.455	10.456	-0.001	1.000	2500568	377.0		99.0		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.455	10.456	-0.001	1.000	2500568	NC			4018	
D 16 13C4 PFOS										
503.0 > 80.0	11.408	11.405	0.003		643966	34.4		72.1	1472	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.408	11.408	0.0	1.000	4917016	376.5		98.5	284	
499.0 > 99.0	11.408	11.408	0.0	1.000	2655413		1.85(0.00-0.00)	98.5	3707	
D 17 13C5 PFNA										
468.0 > 423.0	11.423	11.427	-0.004		1206211	37.6		75.2	2293	
18 Perfluorononanoic acid										
463.0 > 419.0	11.430	11.431	-0.001	1.000	8142347	395.8		98.9	6745	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.259	12.260	-0.001	1.000	8497438	364.3		91.1	4587	
D 19 13C2 PFDA										
515.0 > 470.0	12.259	12.262	-0.003		1109038	35.9		71.9	2348	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		1773048	41.5		83.1	2483	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	13475405	387.0		96.8	3077	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.923	12.929	-0.006	1.000	2364097	NC			3617	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.923	12.929	-0.006	1.000	2364097	373.9		97.0		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.975	12.978	-0.003	1.000	9385325	407.2		102	4321	
D 26 13C2 PFUnA										
565.0 > 520.0	12.975	12.979	-0.004		1328469	35.2		70.5	1113	
D 28 13C2 PFDaA										
615.0 > 570.0	13.593	13.597	-0.004		1599382	37.7		75.5	2006	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.593	13.597	-0.004	1.000	10030582	399.4		99.9	3267	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.113	14.114	-0.001	1.000	11443058	352.0		88.0	3192	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.543	14.548	-0.005		1697645	43.9		87.9	2413	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.543	14.549	-0.006	1.000	8300566	415.5		104	2313	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.175	15.177	-0.002	1.000	15550097	440.9		110	3561	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.175	15.177	-0.002		2256284	46.0		91.9	3222	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.511	15.517	-0.006	1.000	14207142	442.0	111	3756	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L7_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d

Injection Date: 06-Jan-2016 14:07:35

Instrument ID: A6

Lims ID: Std L7

Client ID:

Operator ID: JRB

ALS Bottle#: 23

Worklist Smp#: 10

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

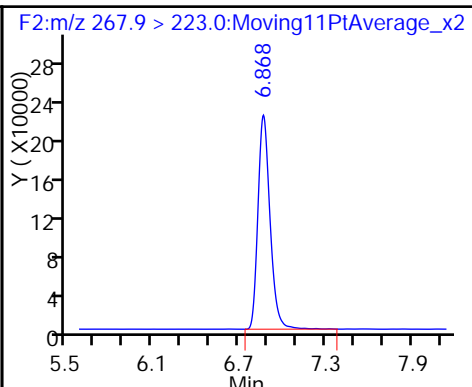
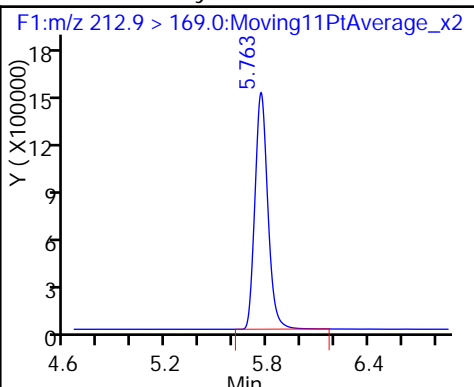
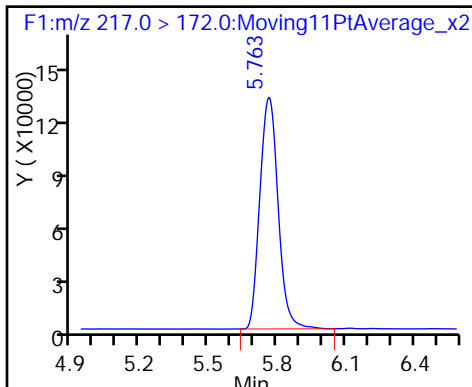
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

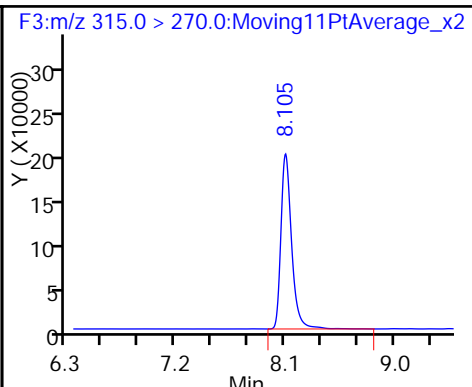
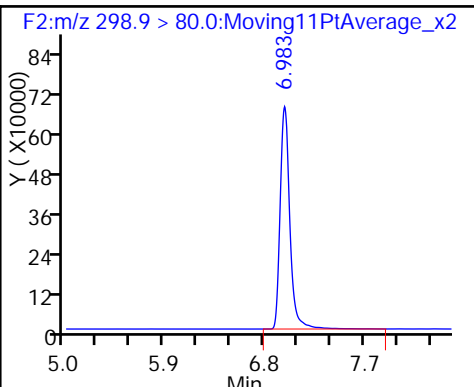
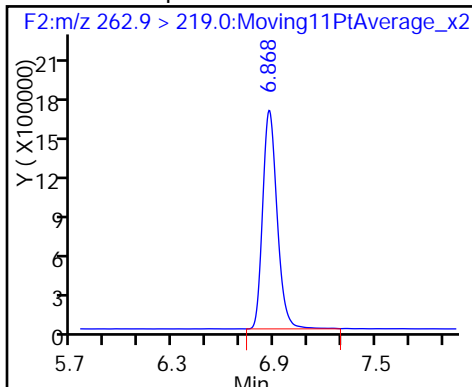
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

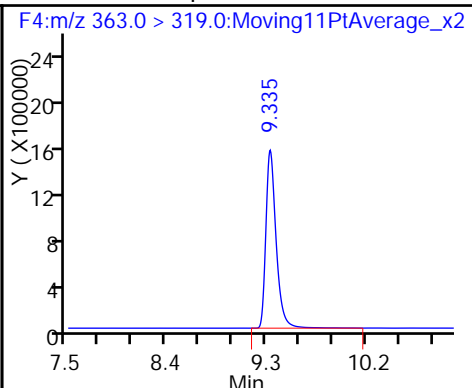
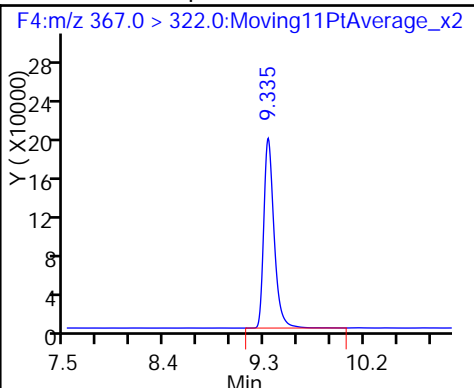
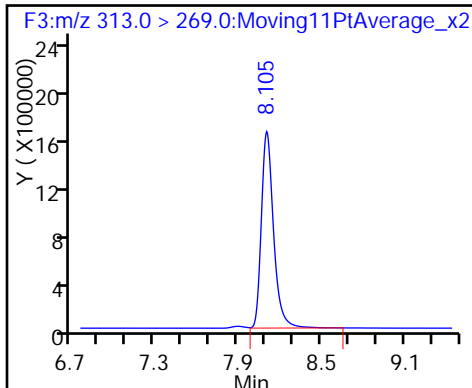
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

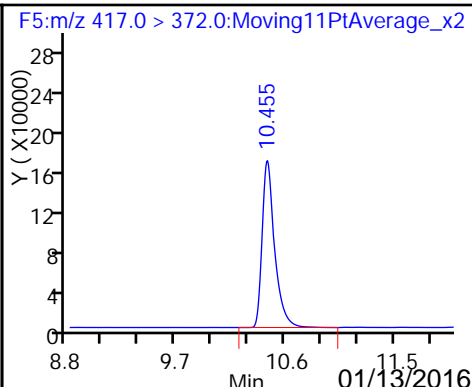
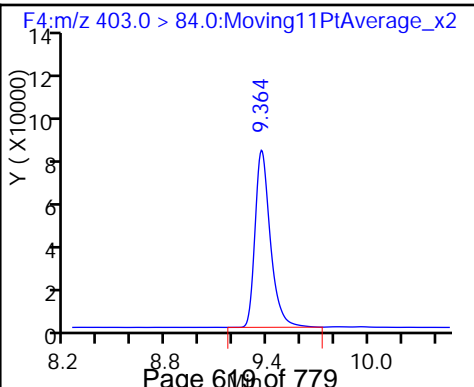
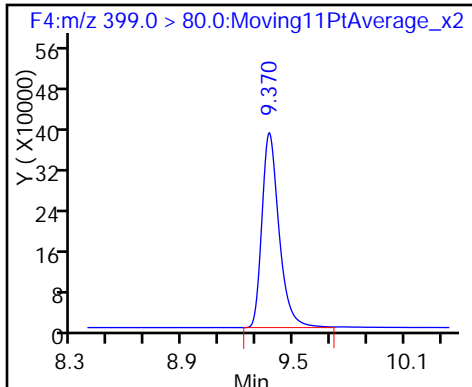
9 Perfluoroheptanoic acid

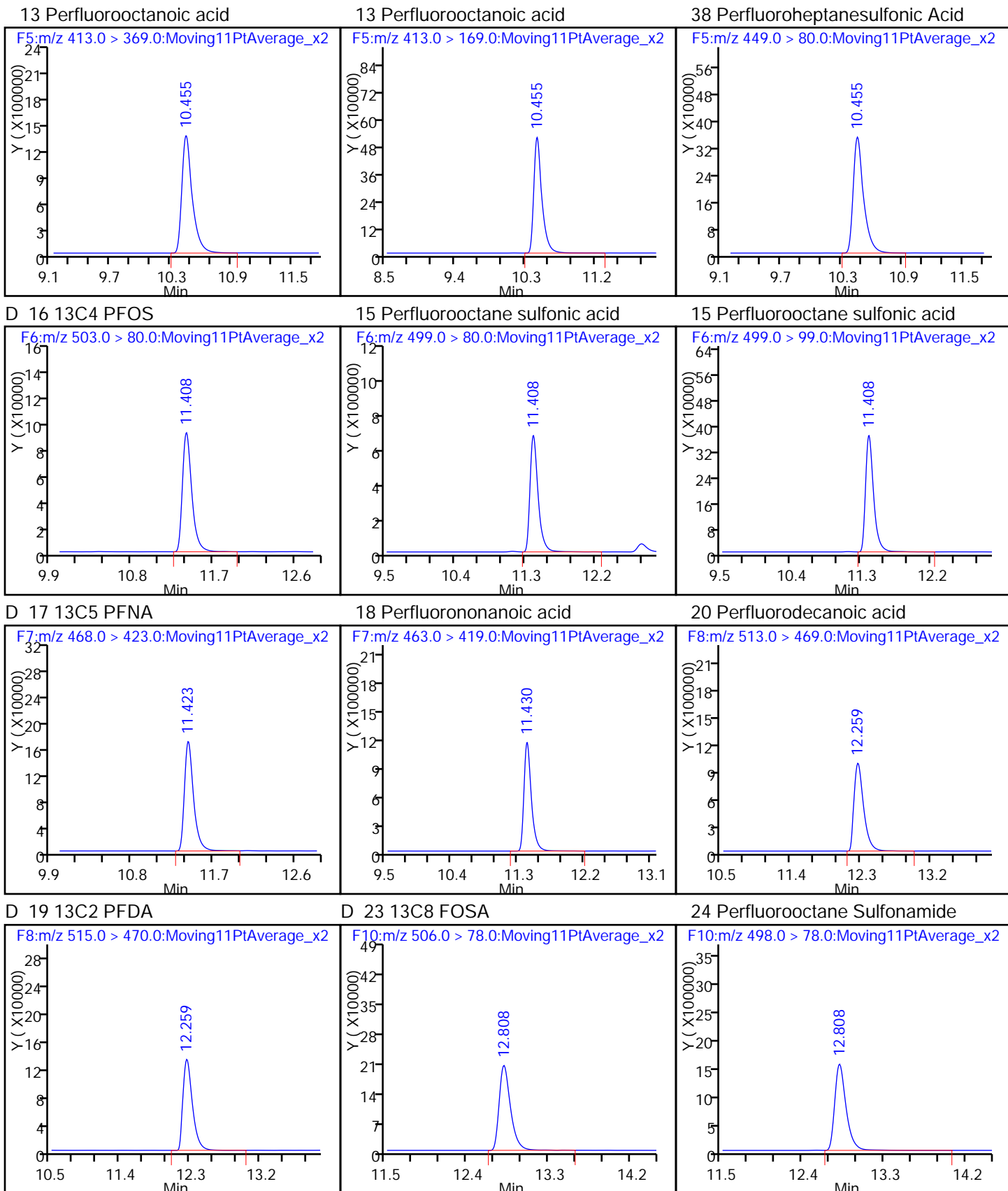


41 Perfluorohexanesulfonic acid

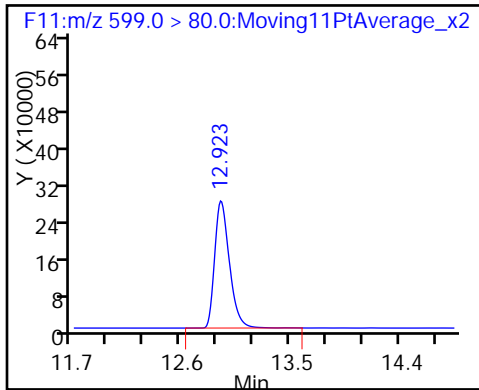
D 11 18O2 PFHxS

D 12 13C4 PFOA

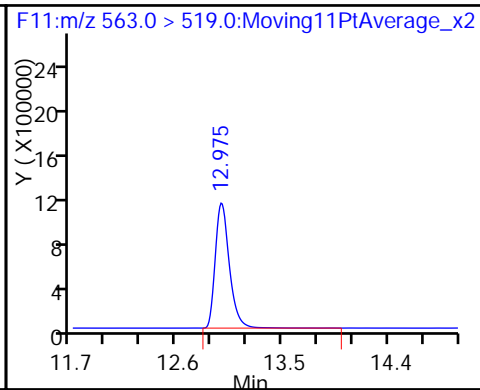




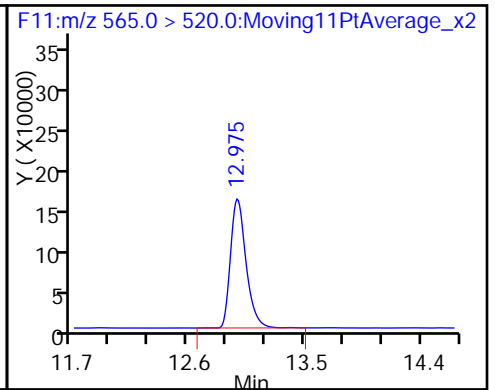
39 Perfluorodecane Sulfonic acid



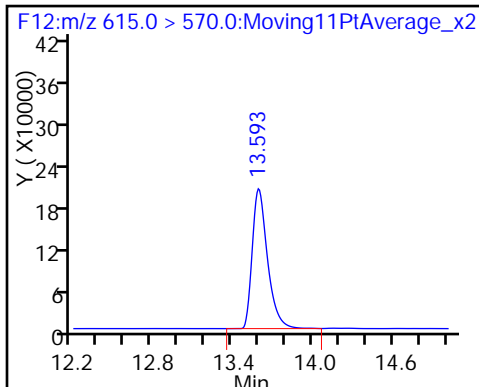
27 Perfluoroundecanoic acid



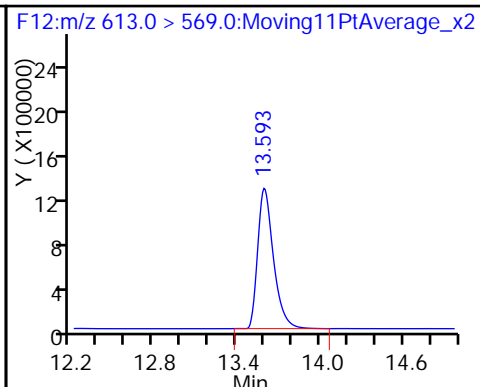
D 26 13C2 PFUnA



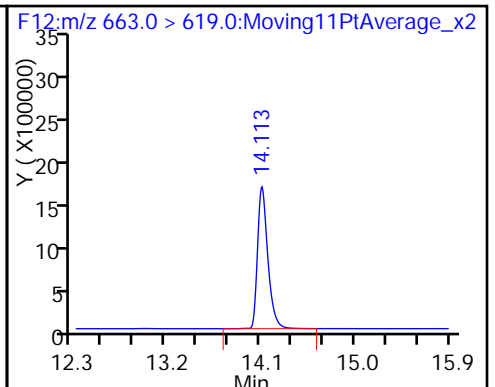
D 28 13C2 PFDaA



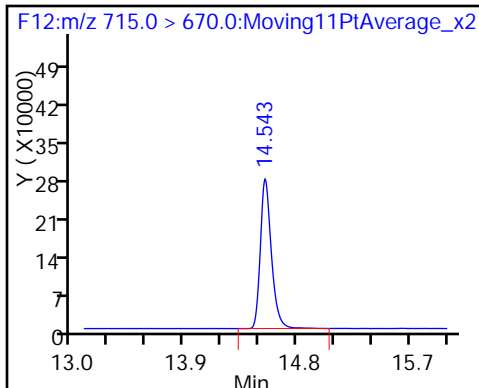
29 Perfluorododecanoic acid



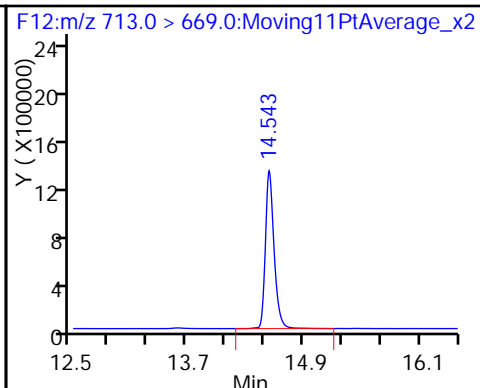
30 Perfluorotridecanoic acid



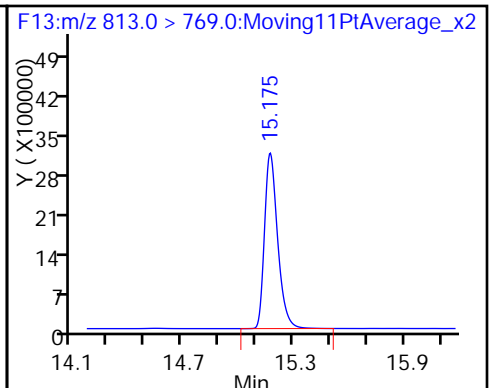
D 33 13C2-PFTeDA



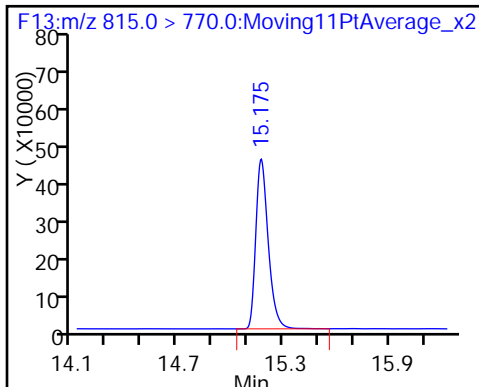
32 Perfluorotetradecanoic acid



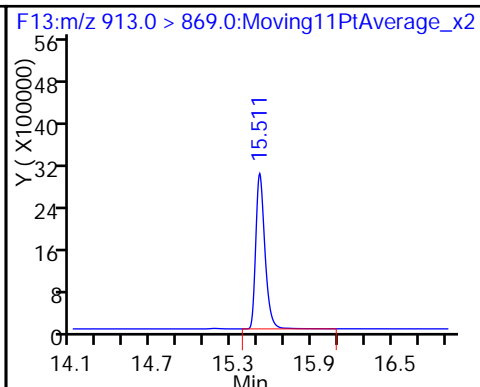
34 Perfluorohexadecanoic acid



D 35 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: ICV 320-97208/10 Calibration Date: 12/30/2015 18:49
 Instrument ID: A6 Calib Start Date: 12/30/2015 15:59
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/30/2015 18:07
 Lab File ID: 30DEC2015A6A_016.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.513	1.544		51.0	50.0	2.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.074		52.1	50.0	4.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.187	1.126		47.4	50.0	-5.2	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.050		51.5	50.0	3.1	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9680	0.9667		49.9	50.0	-0.1	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.017	1.081		50.7	47.8	6.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.7874	0.8089		51.4	50.0	2.7	25.0
Perfluorodecanoic acid (PFDA)	L2ID		1.020		53.6	50.0	7.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8501	0.8725		51.3	50.0	2.6	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.8673		51.6	50.0	3.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7789	0.7335		47.1	50.0	-5.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8819	0.9746		55.3	50.0	10.5	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5635		51.1	50.0	2.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.187		51.3	50.0	2.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9201	0.8045		43.7	50.0	-12.6	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_016.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 30-Dec-2015 18:49:41 ALS Bottle#: 24 Worklist Smp#: 10
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A4*sub6

Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d

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

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.800	5.801	-0.001		469464	50.9		102	2091	
2 Perfluorobutyric acid										
212.9 > 169.0	5.800	5.802	-0.002	1.000	724921	51.0			1685	
D 3 13C5-PFPeA										
267.9 > 223.0	6.923	6.924	-0.001		1077712	52.3		105	2047	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.923	6.927	-0.004	1.000	1157729	52.1			460	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.040	7.039	0.001	1.000	448822	NC			853	
298.9 > 99.0	7.040	7.039	0.001	1.000	252233		1.78(0.00-0.00)		727	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.176	8.176	0.0	1.000	1064052	47.4			1798	
D 6 13C2 PFHxA										
315.0 > 270.0	8.176	8.177	-0.001		945331	54.2		108	2703	
D 8 13C4-PFHpA										
367.0 > 322.0	9.411	9.413	-0.002		1150029	53.9		108	3914	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.411	9.413	-0.002	1.000	1207822	51.5			777	
D 11 18O2 PFHxS										
403.0 > 84.0	9.440	9.444	-0.004		511211	49.4		104	1491	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.440	9.449	-0.009	1.000	342005	NC			1076	
D 12 13C4 PFOA										
417.0 > 372.0	10.522	10.524	-0.002		1145776	52.4		105	3531	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.522	10.528	-0.006	1.000	1107671	49.9			926	
413.0 > 169.0	10.522	10.528	-0.006	1.000	416885		2.66(0.00-0.00)		775	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
14 Perfluoroheptane Sulfonate	449.0 > 80.0	10.522	10.530	-0.008	1.000	323827	NC		1089	
D 16 13C4 PFOS	503.0 > 80.0	11.473	11.478	-0.005		559835	50.2	105	2373	
15 Perfluorooctane sulfonic acid	499.0 > 80.0	11.473	11.480	-0.007	1.000	604481	50.7		285	
	499.0 > 99.0	11.473	11.480	-0.007	1.000	340825	1.77(0.00-0.00)		943	
D 17 13C5 PFNA	468.0 > 423.0	11.496	11.501	-0.005		1054121	53.0	106	1759	
18 Perfluorononanoic acid	463.0 > 419.0	11.496	11.502	-0.006	1.000	852699	51.4		2196	
20 Perfluorodecanoic acid	513.0 > 469.0	12.331	12.333	-0.002	1.000	1020834	53.6		3618	
D 19 13C2 PFDA	515.0 > 470.0	12.331	12.336	-0.005		1000416	51.6	103	1528	
24 Perfluorooctane Sulfonamide	498.0 > 78.0	12.860	12.858	0.002	1.000	1272299	51.3		1341	
D 23 13C8 FOSA	506.0 > 78.0	12.860	12.860	0.0		1458166	50.3	101	1627	
25 Perfluorodecane Sulfonate	599.0 > 80.0	12.996	13.007	-0.011	1.000	368190	NC		944	
27 Perfluoroundecanoic acid	563.0 > 519.0	13.050	13.053	-0.003	1.000	1178907	51.6		2243	
D 26 13C2 PFUnA	565.0 > 520.0	13.050	13.054	-0.004		1359290	51.9	104	1916	
D 28 13C2 PFDoA	615.0 > 570.0	13.666	13.666	0.0		1453923	52.2	104	3019	
29 Perfluorododecanoic acid	613.0 > 569.0	13.666	13.668	-0.002	1.000	1066464	47.1		1023	
30 Perfluorotridecanoic acid	663.0 > 619.0	14.174	14.182	-0.008	1.000	1416943	55.3		1220	
D 33 13C2-PFTeDA	715.0 > 670.0	14.609	14.618	-0.009		1155638	50.1	100	2257	
32 Perfluorotetradecanoic acid	713.0 > 669.0	14.615	14.618	-0.003	1.000	819208	51.1		483	
34 Perfluorohexadecanoic acid	813.0 > 769.0	15.230	15.234	-0.004	1.000	1725444	51.3		1824	
D 35 13C2-PFHxDA	815.0 > 770.0	15.230	15.234	-0.004		1453358	51.4	103	2654	
36 Perfluorooctandecanoic acid	913.0 > 869.0	15.571	15.582	-0.011	1.000	1169602	43.7		1227	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFCIC_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_016.d

Injection Date: 30-Dec-2015 18:49:41

Instrument ID: A6

Lims ID: ICV

Client ID:

Operator ID: JRB

ALS Bottle#: 24

Worklist Smp#: 10

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

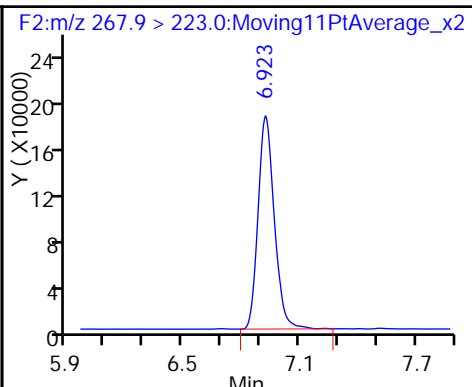
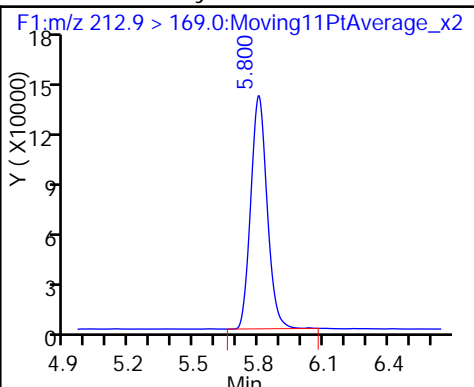
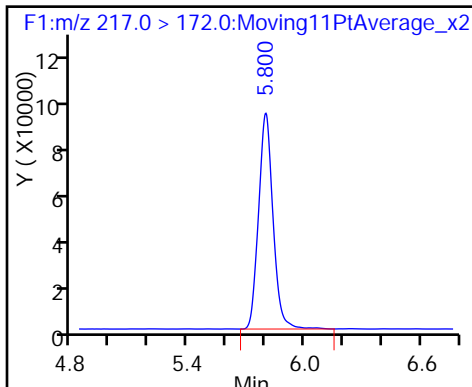
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

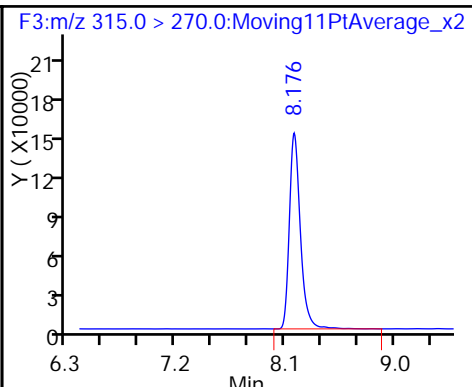
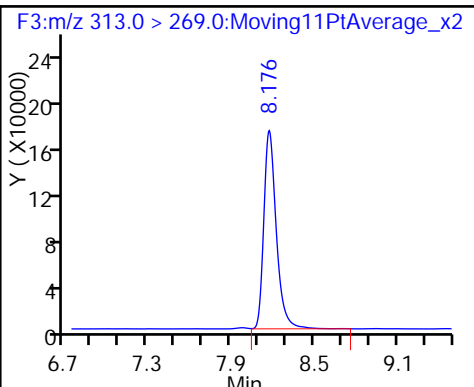
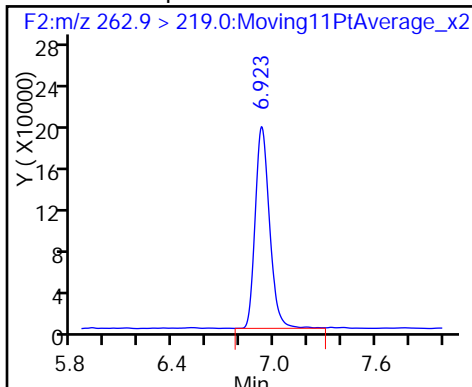
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

7 Perfluorohexanoic acid

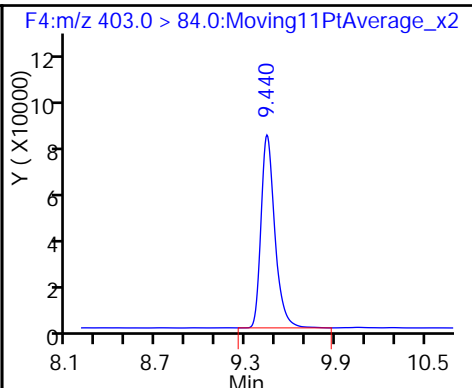
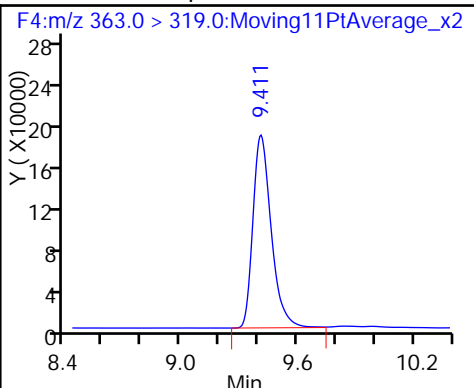
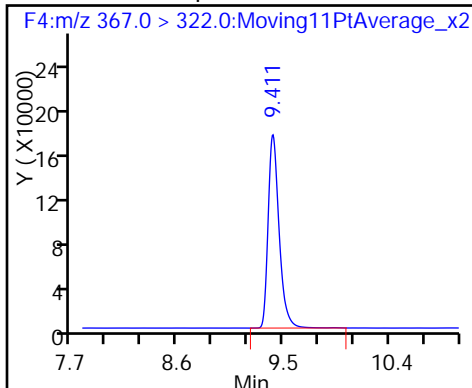
D 6 13C2 PFHxA



D 8 13C4-PFHpA

9 Perfluoroheptanoic acid

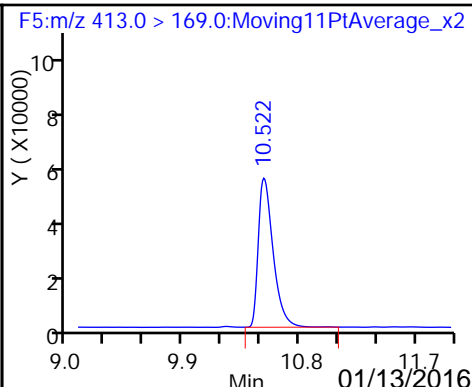
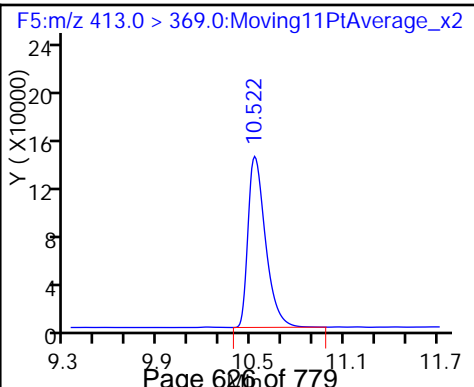
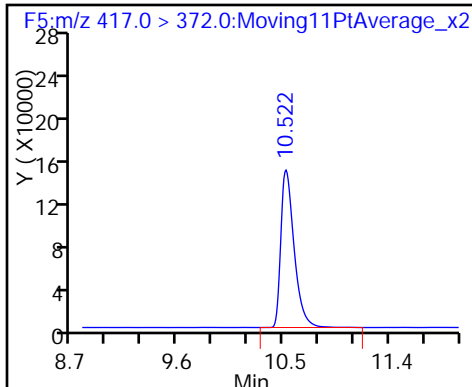
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid

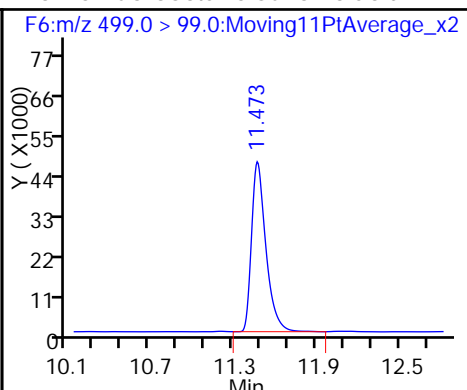
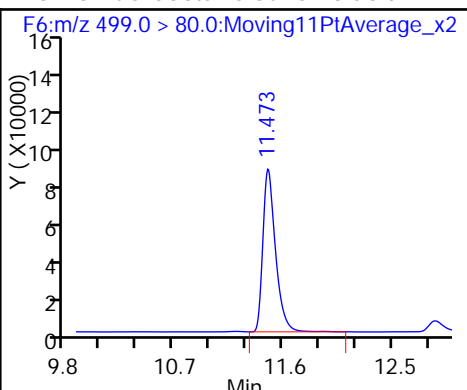
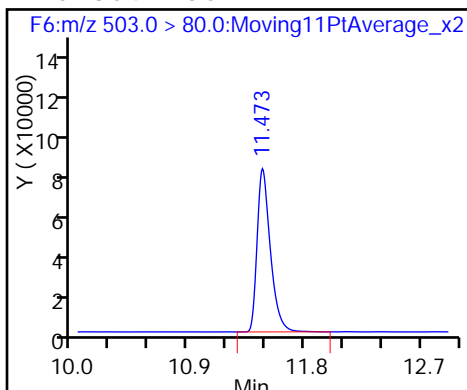
13 Perfluorooctanoic acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

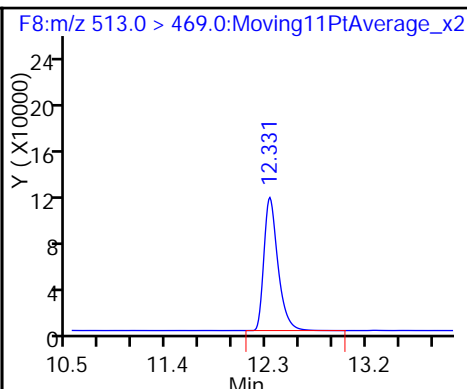
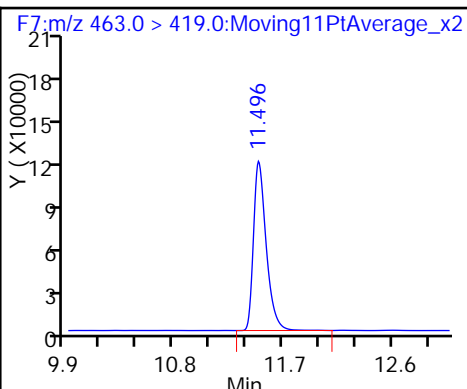
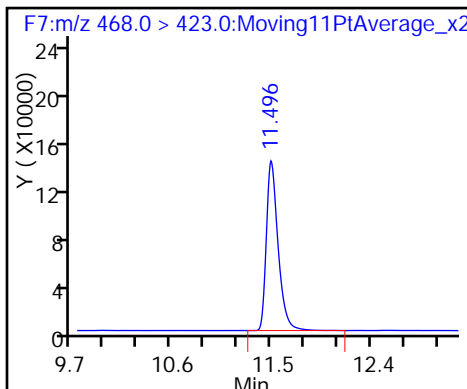
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

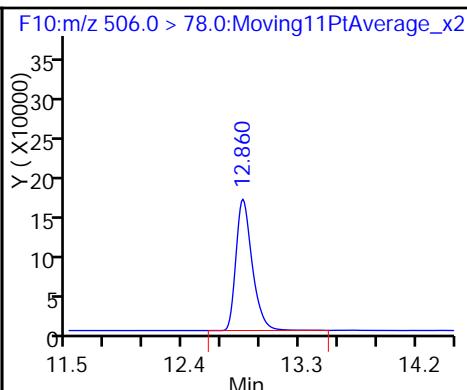
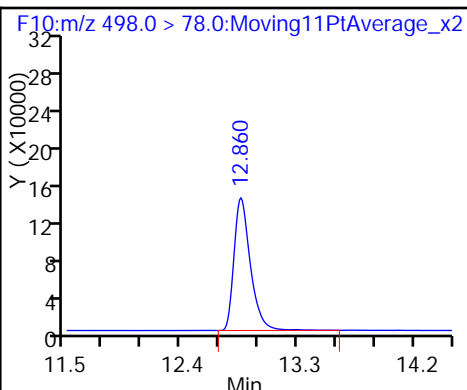
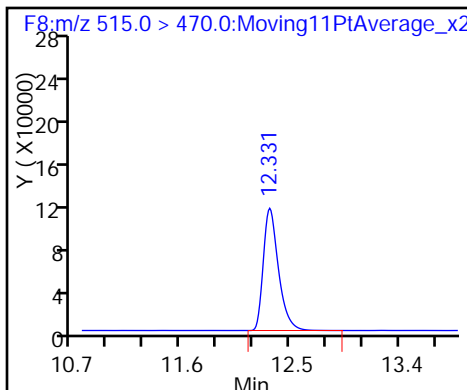
20 Perfluorodecanoic acid



D 19 13C2 PFDA

24 Perfluorooctane Sulfonamide

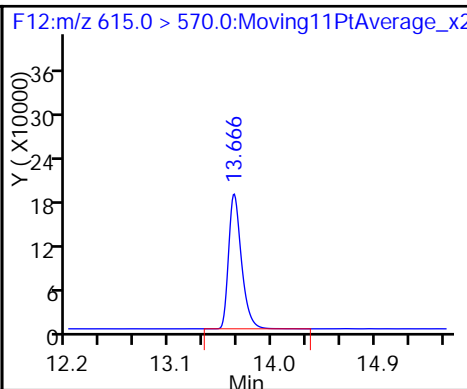
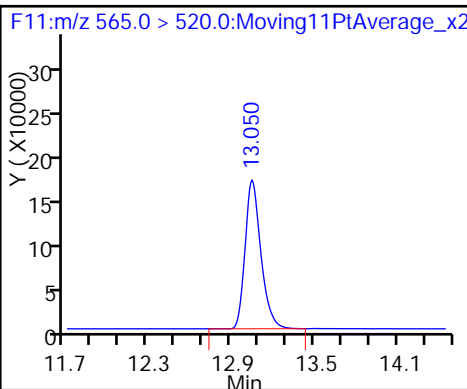
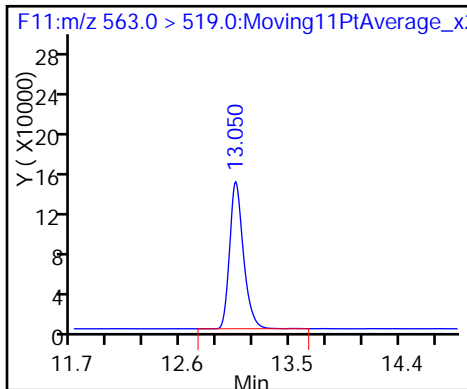
D 23 13C8 FOSA



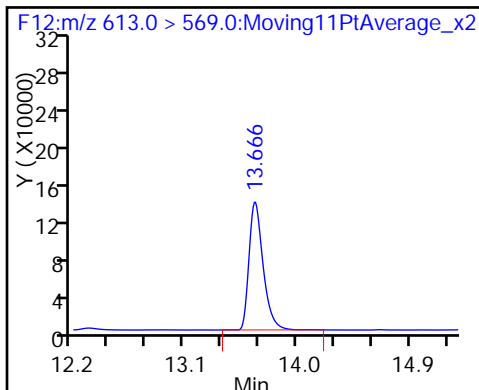
27 Perfluoroundecanoic acid

D 26 13C2 PFUnA

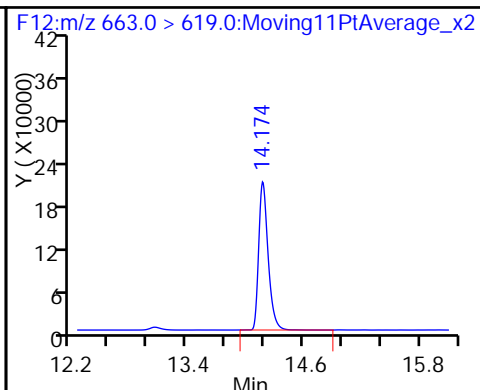
D 28 13C2 PFDoA



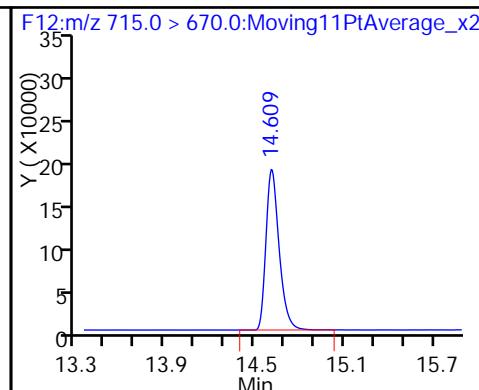
29 Perfluorododecanoic acid



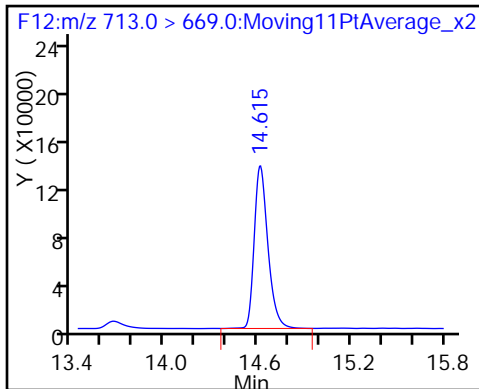
30 Perfluorotridecanoic acid



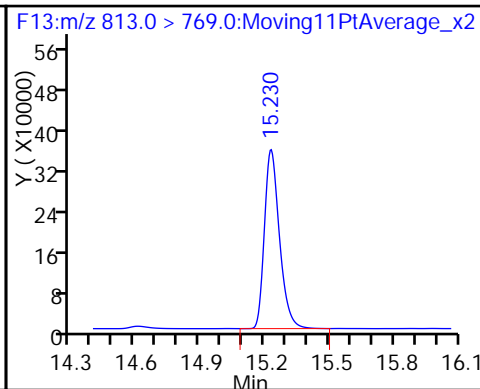
D 33 13C2-PFTeDA



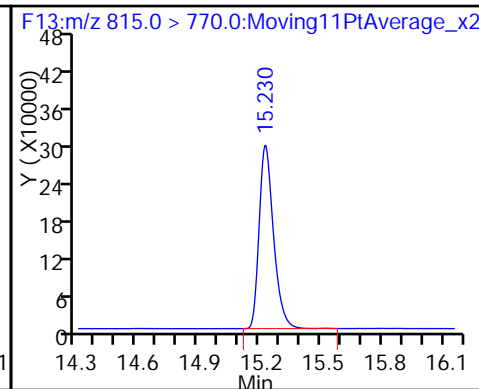
32 Perfluorotetradecanoic acid



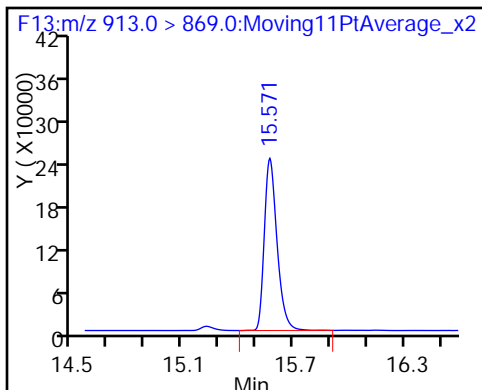
34 Perfluorohexadecanoic acid



D 35 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97208/27 Calibration Date: 12/30/2015 22:43
 Instrument ID: A6 Calib Start Date: 12/30/2015 15:59
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/30/2015 18:07
 Lab File ID: 30DEC2015A6A_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.513	1.417		46.8	50.0	-6.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.9429		45.7	50.0	-8.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9625	0.9255		42.5	44.2	-3.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.187	1.208		50.9	50.0	1.7	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.038		50.9	50.0	1.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.7087	0.6731		44.9	47.3	-5.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.5998	0.5789		45.9	47.6	-3.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9680	0.9451		48.8	50.0	-2.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.017	0.9580		45.0	47.8	-5.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.7874	0.8271		52.5	50.0	5.0	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9612		50.4	50.0	0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8501	0.9025		53.1	50.0	6.2	25.0
Perfluorodecane Sulfonic acid	AveID	0.6607	0.4958		36.2	48.2	-24.9	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.8781		52.3	50.0	4.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7789	0.7226		46.4	50.0	-7.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8819	0.9250		52.4	50.0	4.9	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5639		51.2	50.0	2.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.267		55.4	50.0	10.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9201	0.8299		45.1	50.0	-9.8	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_027.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Dec-2015 22:43:21 ALS Bottle#: 21 Worklist Smp#: 27
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:50 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 12:52:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.791	5.801	-0.010	365984	39.7		79.4	1689	
2 Perfluorobutyric acid	212.9 > 169.0	5.791	5.802	-0.011	518539	46.8		93.6	1698	
D 3 13C5-PFPeA	267.9 > 223.0	6.909	6.924	-0.015	864690	42.0		84.0	2019	
4 Perfluoropentanoic acid	262.9 > 219.0	6.909	6.927	-0.018	815306	45.7		91.5	343	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.029	7.039	-0.010	310513	NC			769	
	298.9 > 99.0	7.022	7.039	-0.017	188081		1.65(0.00-0.00)		762	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.029	7.039	-0.010	310513	42.5		96.2		
7 Perfluorohexanoic acid	313.0 > 269.0	8.160	8.176	-0.016	792459	50.9		102	1357	
D 6 13C2 PFHxA	315.0 > 270.0	8.160	8.177	-0.017	656192	37.6		75.2	1549	
D 8 13C4-PFHpA	367.0 > 322.0	9.393	9.413	-0.020	837556	39.2		78.4	2289	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.399	9.413	-0.014	869105	50.9		102	723	
D 11 18O2 PFHxS	403.0 > 84.0	9.428	9.444	-0.016	359045	34.7		73.4	1423	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.428	9.449	-0.021	241676	NC			494	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.428	9.449	-0.021	241676	44.9		95.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.503	10.524	-0.021		888203	40.7		81.3	2401	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.503	10.528	-0.025	1.000	839397	48.8		97.6	850	
413.0 > 169.0	10.503	10.528	-0.025	1.000	286164		2.93(0.00-0.00)		683	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.503	10.530	-0.027	1.000	258679	45.9		96.5		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.503	10.530	-0.027	1.000	258679	NC			838	
D 16 13C4 PFOS										
503.0 > 80.0	11.458	11.478	-0.020		448735	40.3		84.2	1331	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.458	11.480	-0.022	1.000	429897	45.0		94.2	259	
499.0 > 99.0	11.458	11.480	-0.022	1.000	216441		1.99(0.00-0.00)		495	
D 17 13C5 PFNA										
468.0 > 423.0	11.481	11.501	-0.020		820010	41.2		82.4	3126	
18 Perfluorononanoic acid										
463.0 > 419.0	11.481	11.502	-0.021	1.000	678215	52.5		105	1802	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.310	12.333	-0.023	1.000	757513	50.4		101	1596	
D 19 13C2 PFDA										
515.0 > 470.0	12.310	12.336	-0.026		788120	40.7		81.4	1683	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.849	12.858	-0.009	1.000	876382	53.1		106	914	
D 23 13C8 FOSA										
506.0 > 78.0	12.849	12.860	-0.011		971103	33.5		67.0	1071	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.985	13.007	-0.022	1.000	224362	NC			346	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.985	13.007	-0.022	1.000	224362	36.2		75.1		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.032	13.053	-0.021	1.000	927635	52.3		105	1686	
D 26 13C2 PFUnA										
565.0 > 520.0	13.032	13.054	-0.022		1056389	40.3		80.6	1940	
D 28 13C2 PFDaA										
615.0 > 570.0	13.648	13.666	-0.018		1161235	41.7		83.4	2077	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.648	13.668	-0.020	1.000	839081	46.4		92.8	1368	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.159	14.182	-0.023	1.000	1074115	52.4		105	1078	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.596	14.618	-0.022		967601	42.0		84.0	2955	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.602	14.618	-0.016	1.000	654855	51.2		102	400	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.215	15.234	-0.019	1.000	1471659	55.4		111	2024	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.215	15.234	-0.019		1241549	43.9		87.8	2466	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.551	15.582	-0.031	1.000	963725	45.1	90.2	1297	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_027.d

Injection Date: 30-Dec-2015 22:43:21

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 27

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

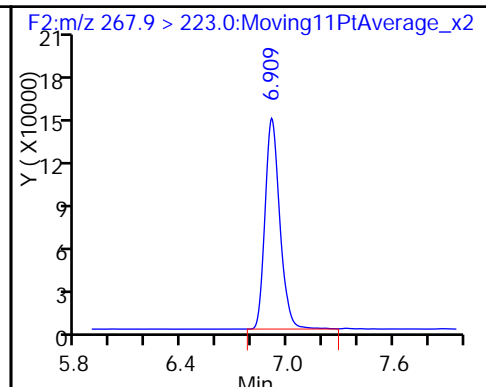
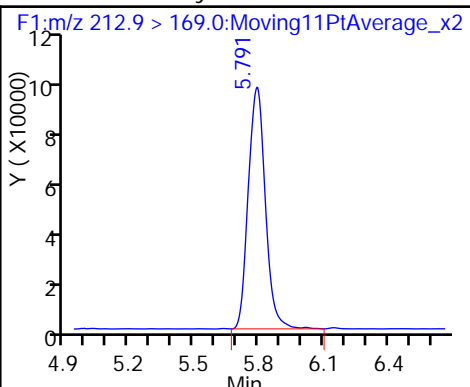
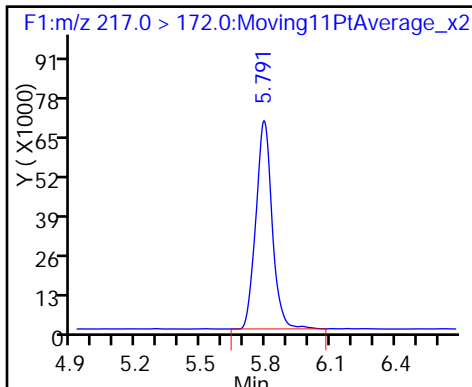
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

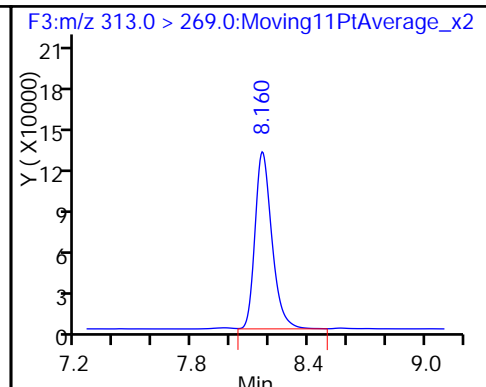
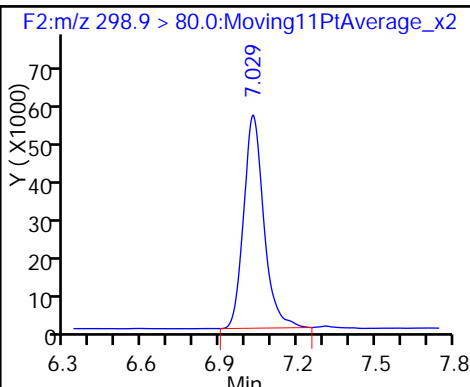
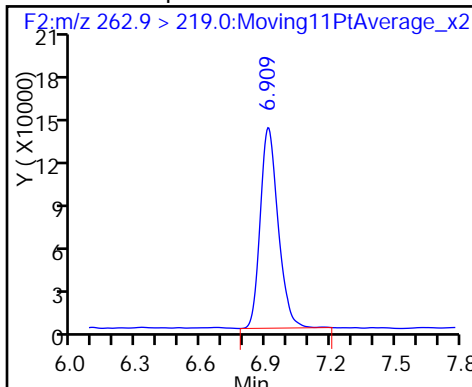
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

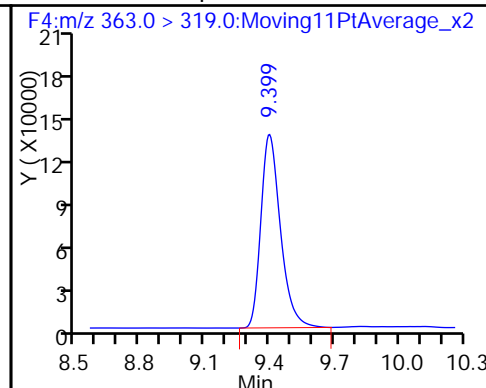
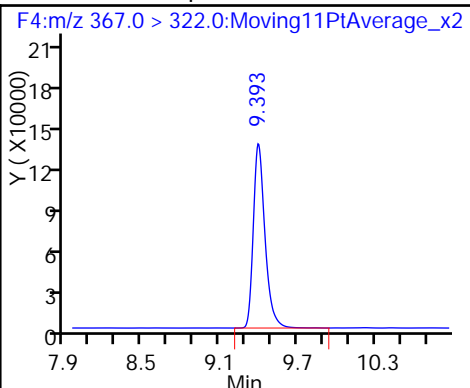
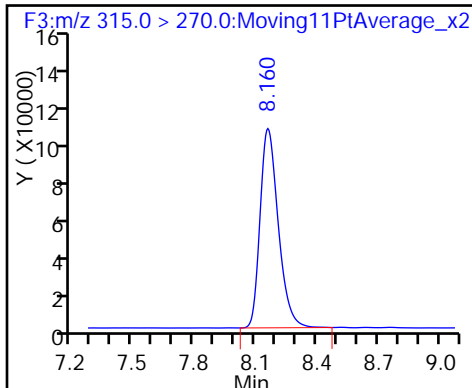
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

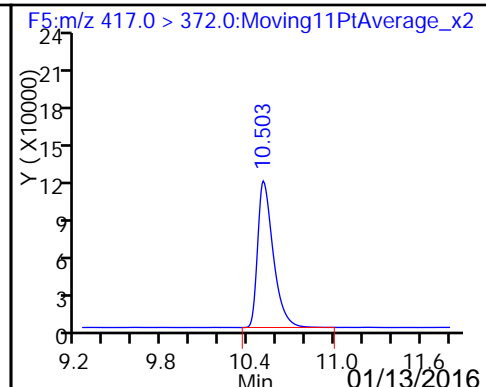
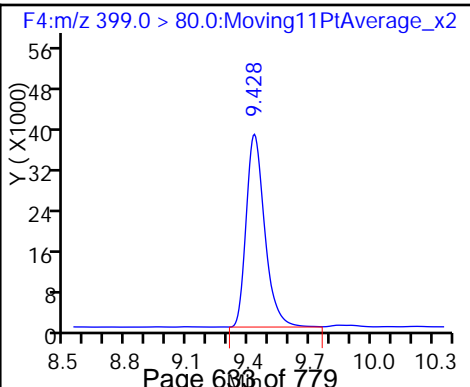
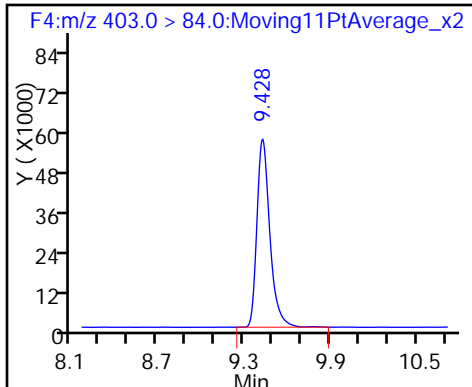
9 Perfluoroheptanoic acid

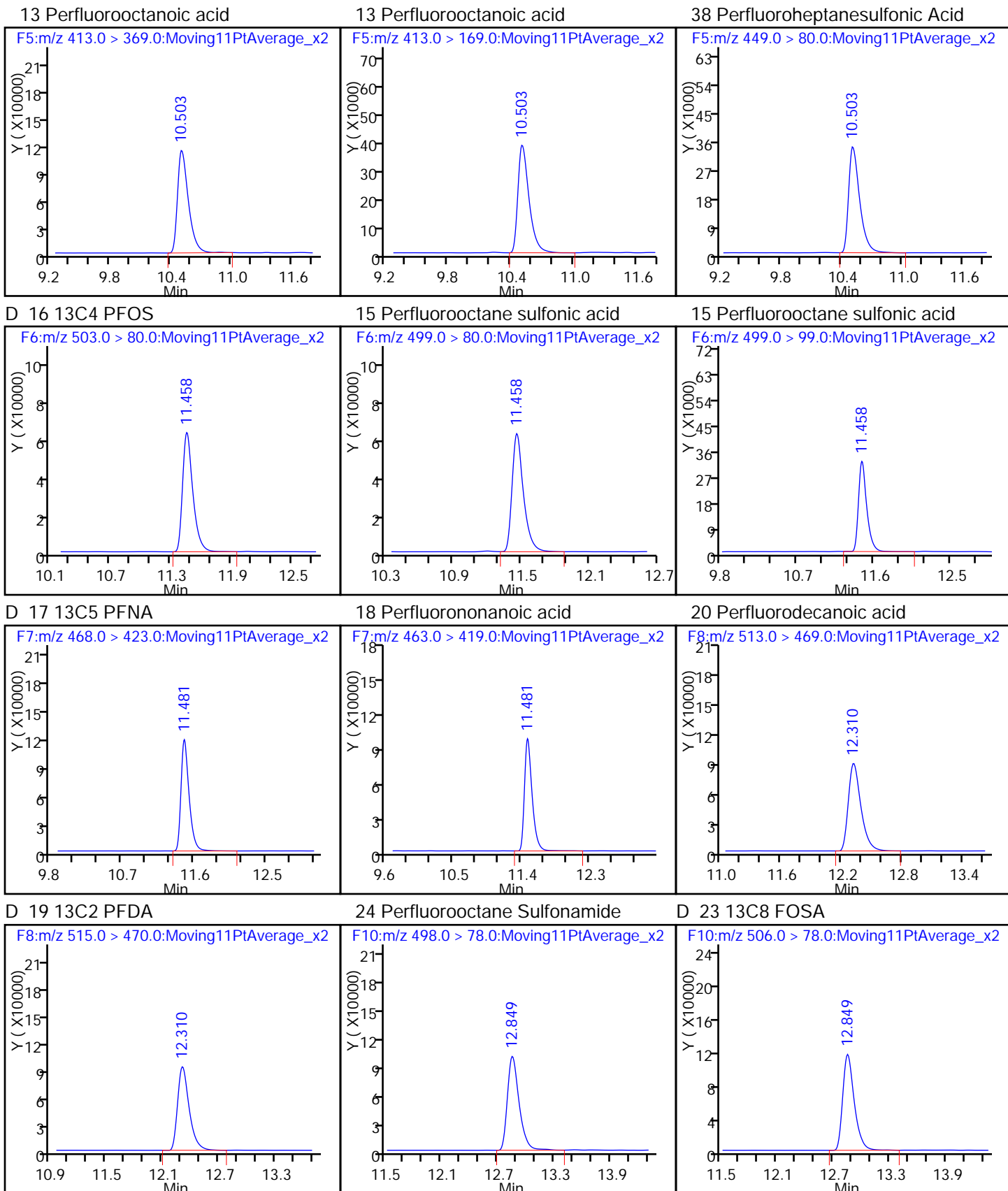


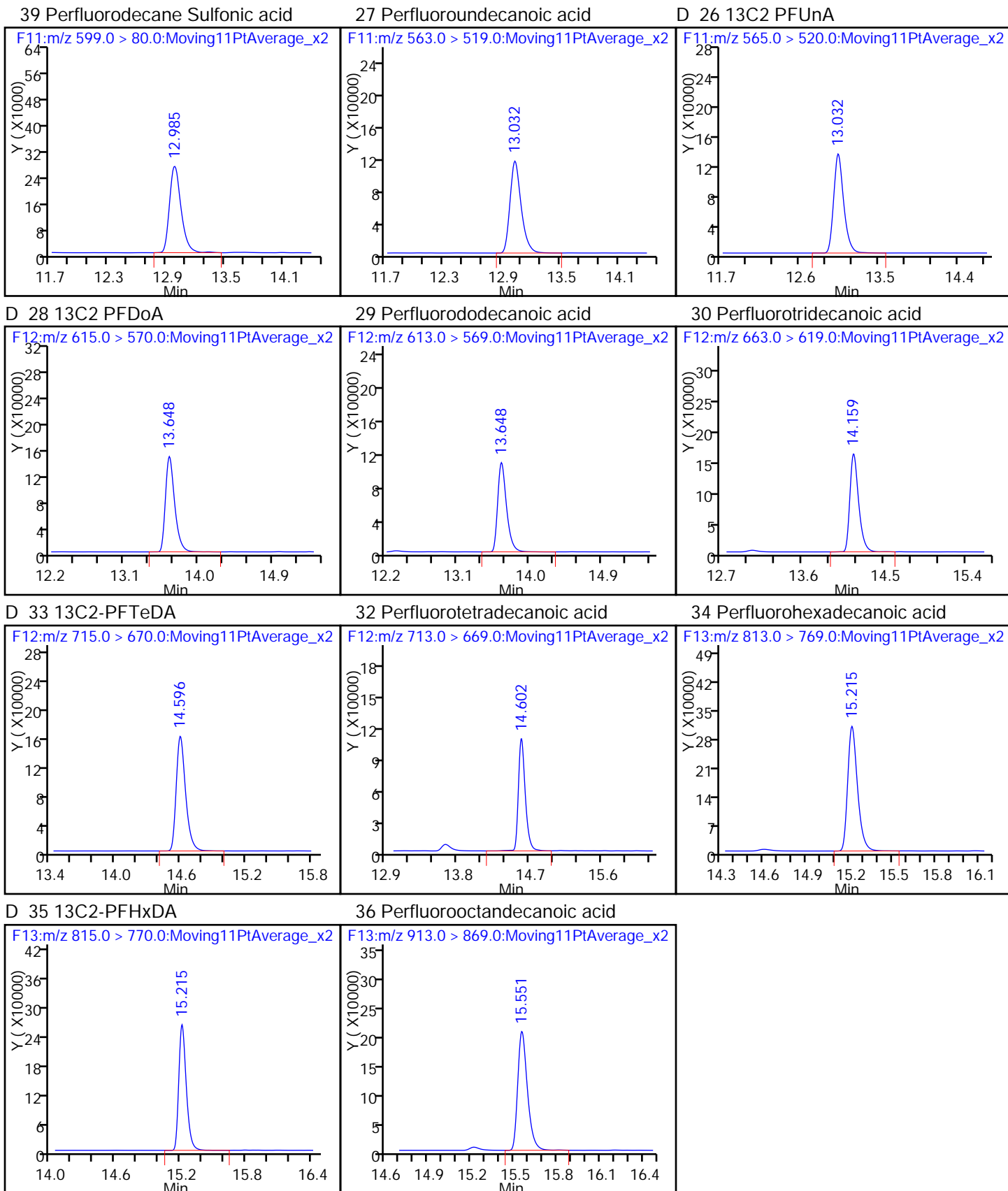
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97208/28 Calibration Date: 12/31/2015 01:33
 Instrument ID: A6 Calib Start Date: 12/30/2015 15:59
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/30/2015 18:07
 Lab File ID: 30DEC2015A6A_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.513	1.479		19.5	20.0	-2.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.055		20.5	20.0	2.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9625	0.9264		17.0	17.7	-3.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.187	1.052		17.7	20.0	-11.4	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.001		19.5	20.0	-2.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.7087	0.6762		18.1	18.9	-4.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9680	0.9646		19.9	20.0	-0.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.5998	0.5596		17.8	19.0	-6.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.017	1.012		19.0	19.1	-0.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.7874	0.8307		21.1	20.0	5.5	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.995		20.7	20.0	3.5	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8501	0.8909		21.0	20.0	4.8	25.0
Perfluorodecane Sulfonic acid	AveID	0.6607	0.5360		15.6	19.3	-18.9	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.8749		20.3	20.0	1.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7789	0.7468		19.2	20.0	-4.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8819	0.9214		20.9	20.0	4.5	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5472		19.5	20.0	-2.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.521		21.7	20.0	8.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9201	0.8592		18.7	20.0	-6.6	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_035.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 31-Dec-2015 01:33:11 ALS Bottle#: 20 Worklist Smp#: 28
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:57 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: barnettj Date: 04-Jan-2016 15:22:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.785	5.801	-0.016	461765	50.1		100	1881	
2 Perfluorobutyric acid	212.9 > 169.0	5.785	5.802	-0.017	273214	19.5		97.7	891	
D 3 13C5-PFPeA	267.9 > 223.0	6.909	6.924	-0.015	1077931	52.4		105	2426	
4 Perfluoropentanoic acid	262.9 > 219.0	6.909	6.927	-0.018	454772	20.5		102	144	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.026	7.039	-0.013	151541	NC			465	
	298.9 > 99.0	7.029	7.039	-0.010	80815		1.88(0.00-0.00)		267	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.026	7.039	-0.013	151541	17.0		96.2		
7 Perfluorohexanoic acid	313.0 > 269.0	8.160	8.176	-0.016	408726	17.7		88.6	722	
D 6 13C2 PFHxA	315.0 > 270.0	8.160	8.177	-0.017	971297	55.7		111	3390	
D 8 13C4-PFHpA	367.0 > 322.0	9.393	9.413	-0.020	1207241	56.5		113	2612	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.399	9.413	-0.014	483592	19.5		97.7	383	
D 11 18O2 PFHxS	403.0 > 84.0	9.429	9.444	-0.015	437636	42.3		89.4	2123	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.429	9.449	-0.020	118375	NC			397	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.429	9.449	-0.020	118375	18.1		95.4		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.503	10.524	-0.021		1165470	53.3		107	3224	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.503	10.528	-0.025	1.000	449670	19.9		99.6	380	
413.0 > 169.0	10.503	10.528	-0.025	1.000	142215		3.16(0.00-0.00)		315	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.513	10.530	-0.017	1.000	116633	17.8		93.3		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.513	10.530	-0.017	1.000	116633	NC			509	
D 16 13C4 PFOS										
503.0 > 80.0	11.458	11.478	-0.020		523294	47.0		98.2	1850	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.458	11.480	-0.022	1.000	211846	19.0		99.5	287	
499.0 > 99.0	11.466	11.480	-0.014	1.001	119575		1.77(0.00-0.00)		442	
D 17 13C5 PFNA										
468.0 > 423.0	11.481	11.501	-0.020		1058800	53.2		106	2495	
18 Perfluorononanoic acid										
463.0 > 419.0	11.481	11.502	-0.021	1.000	351797	21.1		105	960	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.311	12.333	-0.022	1.000	399319	20.7		104	1142	
D 19 13C2 PFDA										
515.0 > 470.0	12.311	12.336	-0.025		1002835	51.8		104	1412	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	455873	21.0		105	1027	
D 23 13C8 FOSA										
506.0 > 78.0	12.849	12.860	-0.011		1279221	44.2		88.3	1669	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.985	13.007	-0.022	1.000	113134	NC			317	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.985	13.007	-0.022	1.000	113134	15.6		81.1		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.032	13.053	-0.021	1.000	481184	20.3		102	666	
D 26 13C2 PFUnA										
565.0 > 520.0	13.032	13.054	-0.022		1374980	52.5		105	3028	
D 28 13C2 PFDoA										
615.0 > 570.0	13.648	13.666	-0.018		1398335	50.2		100	2433	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.648	13.668	-0.020	1.000	417698	19.2		95.9	568	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.159	14.182	-0.023	1.000	515340	20.9		104	500	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.596	14.618	-0.022		1090234	47.3		94.6	3212	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.596	14.618	-0.022	1.000	306044	19.5		97.5	177	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.210	15.234	-0.024	1.000	850659	21.7		109	1208	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.210	15.234	-0.024		1325550	46.9		93.8	2690	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.546	15.582	-0.036	1.000	480571	18.7	93.4	657	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_035.d

Injection Date: 31-Dec-2015 01:33:11

Instrument ID: A6

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 28

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

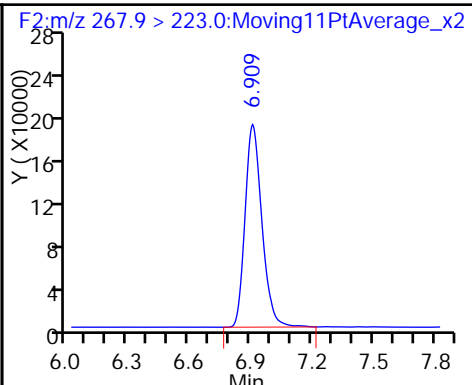
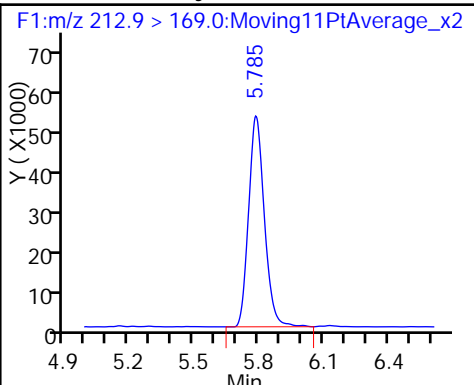
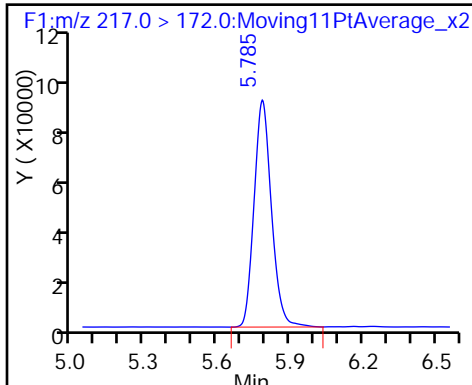
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

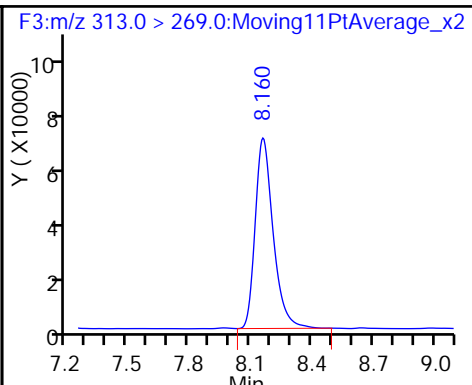
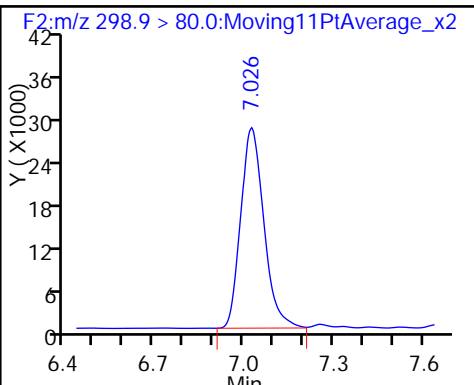
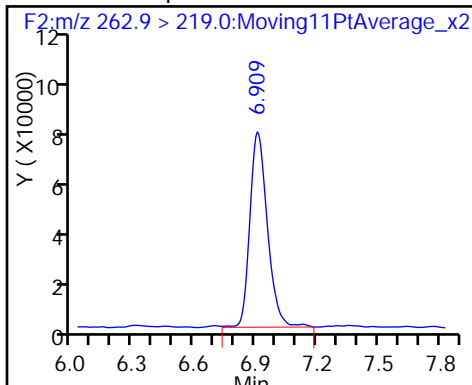
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

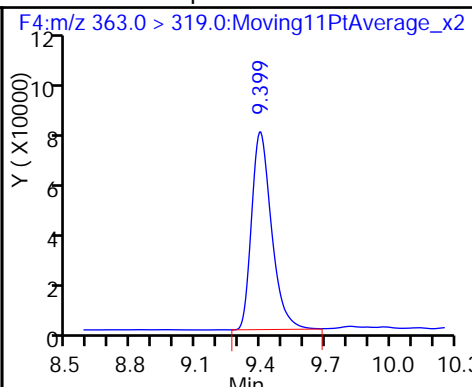
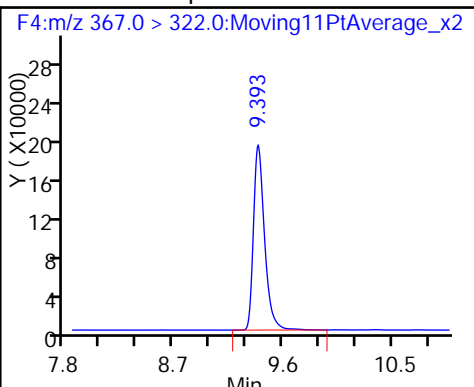
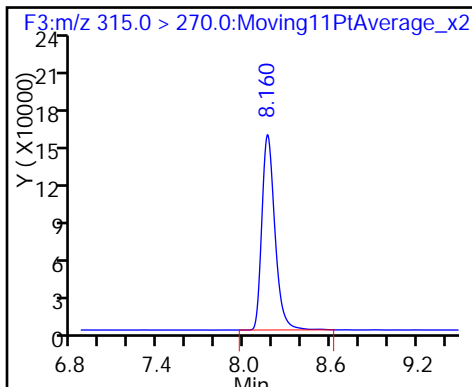
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

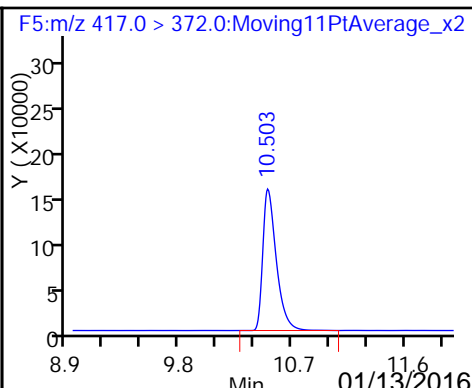
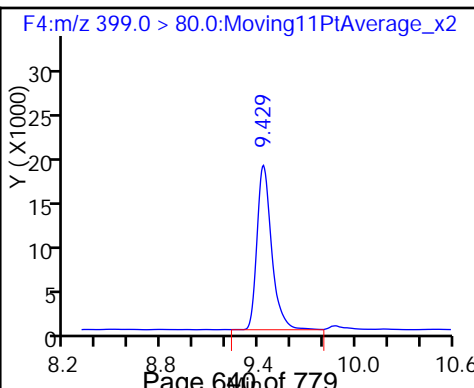
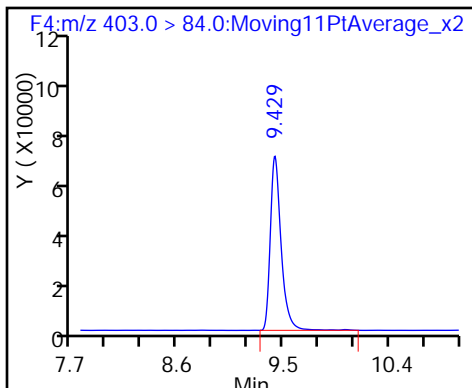
9 Perfluoroheptanoic acid

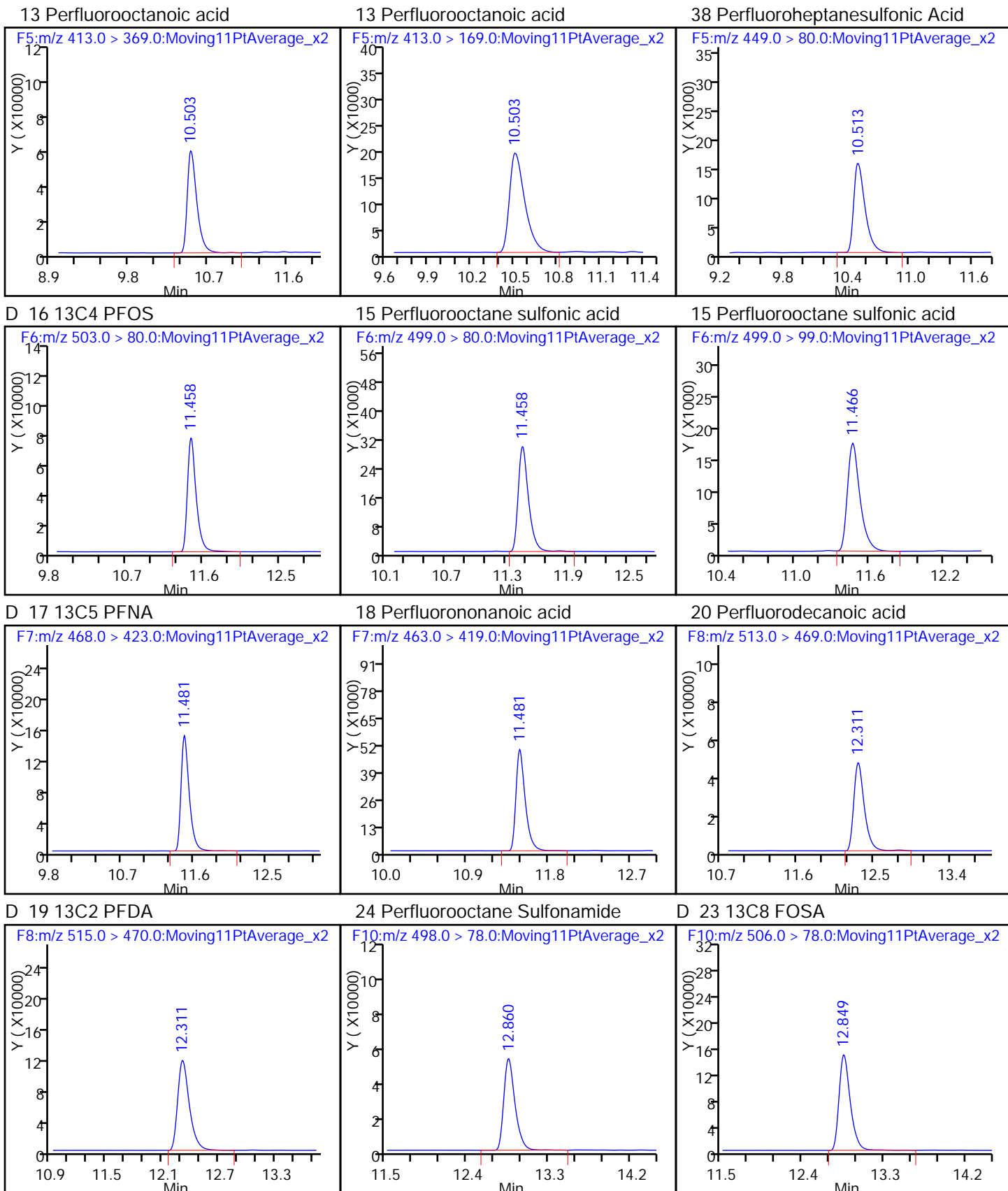


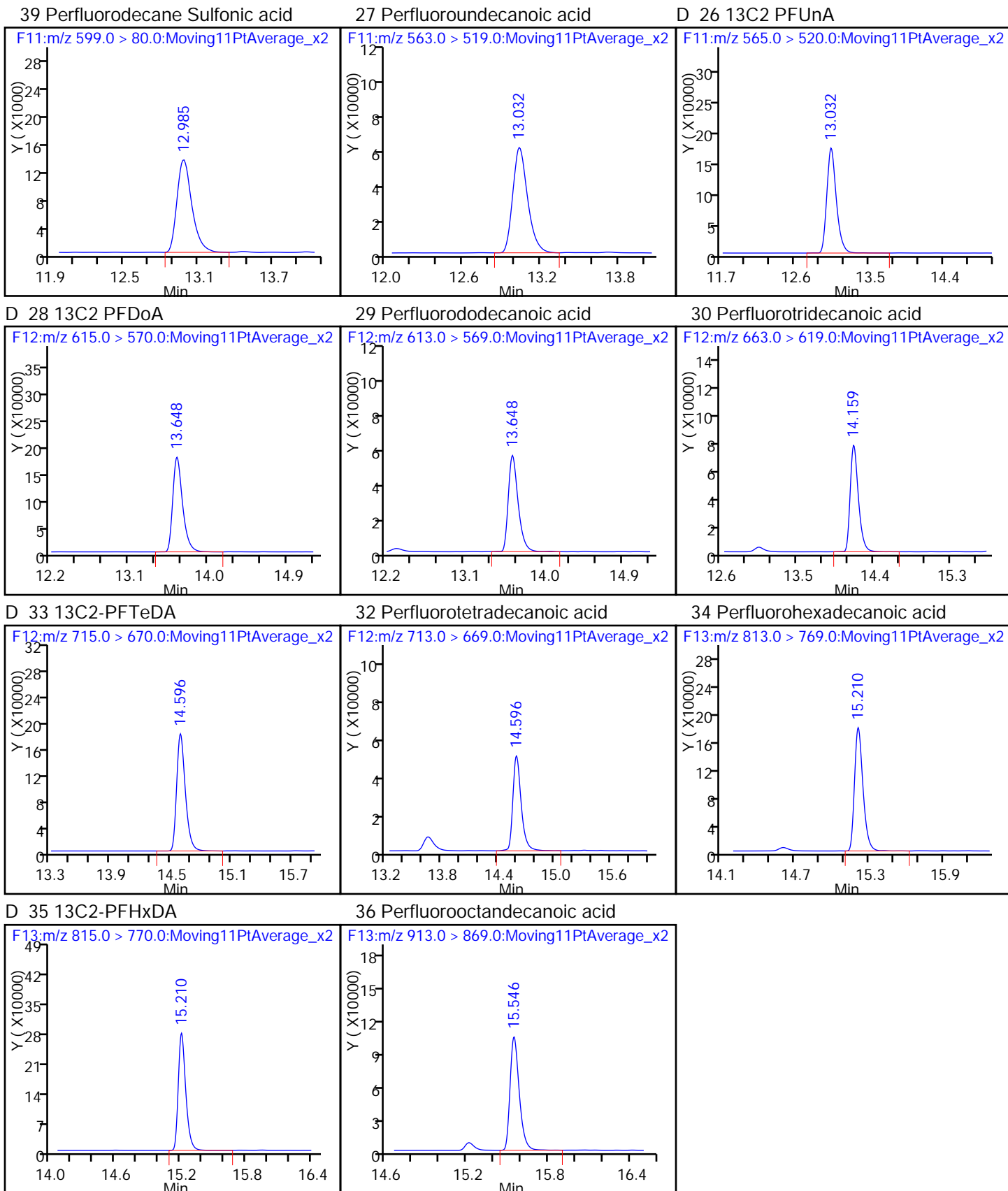
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97302/2 Calibration Date: 01/05/2016 11:19
 Instrument ID: A6 Calib Start Date: 12/30/2015 15:59
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/30/2015 18:07
 Lab File ID: 05JAN2016A6A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.513	1.472		19.4	20.0	-2.8	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.028		19.9	20.0	-0.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9625	0.9808		18.0	17.7	1.9	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.187	1.153		19.4	20.0	-2.9	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.002		19.6	20.0	-2.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.7087	0.6872		18.3	18.9	-3.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.5998	0.5985		19.0	19.0	-0.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9680	0.9316		19.2	20.0	-3.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.017	0.9584		18.0	19.1	-5.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.7874	0.7928		20.1	20.0	0.7	25.0
Perfluorodecanoic acid (PFDA)	L2ID		1.001		20.8	20.0	4.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8501	0.8674		20.4	20.0	2.0	25.0
Perfluorodecane Sulfonic acid	AveID	0.6607	0.6500		19.0	19.3	-1.6	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9159		21.3	20.0	6.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7789	0.7421		19.1	20.0	-4.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8819	0.9852		22.3	20.0	11.7	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5273		18.8	20.0	-6.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.097		13.1	20.0	-34.7*	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9201	0.8117		17.6	20.0	-11.8	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_004.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 05-Jan-2016 11:19:48 ALS Bottle#: 20 Worklist Smp#: 2
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 05-Jan-2016 16:03:02 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK012

First Level Reviewer: westendorfc Date: 05-Jan-2016 11:44:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.791	5.801	-0.010	581732	63.1		126	1935	
2 Perfluorobutyric acid	212.9 > 169.0	5.791	5.802	-0.011	342434	19.4		97.2	1218	
D 3 13C5-PFPeA	267.9 > 223.0	6.918	6.924	-0.006	1283963	62.4		125	1874	
4 Perfluoropentanoic acid	262.9 > 219.0	6.918	6.927	-0.009	527915	19.9		99.7	238	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.033	7.039	-0.006	216456	NC			518	
	298.9 > 99.0	7.036	7.039	-0.003	117220		1.85(0.00-0.00)		318	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.033	7.039	-0.006	216456	18.0		102		
7 Perfluorohexanoic acid	313.0 > 269.0	8.170	8.176	-0.006	494555	19.4		97.1	816	
D 6 13C2 PFHxA	315.0 > 270.0	8.170	8.177	-0.007	1072149	61.5		123	2430	
D 8 13C4-PFHpA	367.0 > 322.0	9.405	9.413	-0.008	1310934	61.4		123	3453	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.411	9.413	-0.002	525272	19.6		97.8	369	
D 11 18O2 PFHxS	403.0 > 84.0	9.440	9.444	-0.004	590462	57.1		121	1927	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.440	9.449	-0.009	162313	NC			457	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.440	9.449	-0.009	162313	18.3		97.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.522	10.524	-0.002		1305491	59.8		120	2676	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.522	10.528	-0.006	1.000	486461	19.2		96.2	480	
413.0 > 169.0	10.522	10.528	-0.006	1.000	167898		2.90(0.00-0.00)		295	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.522	10.530	-0.008	1.000	154746	19.0		99.8		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.522	10.530	-0.008	1.000	154746	NC			720	
D 16 13C4 PFOS										
503.0 > 80.0	11.480	11.478	0.002		649061	58.2		122	1780	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.480	11.480	0.0	1.000	248831	18.0		94.2	254	
499.0 > 99.0	11.480	11.480	0.0	1.000	142992		1.74(0.00-0.00)		456	
D 17 13C5 PFNA										
468.0 > 423.0	11.503	11.501	0.002		1154390	58.0		116	2478	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	366090	20.1		101	1017	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	437970	20.8		104	800	
D 19 13C2 PFDA										
515.0 > 470.0	12.331	12.336	-0.005		1093919	56.5		113	2009	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	597779	20.4		102	1111	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1722899	59.5		119	2068	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.014	13.007	0.007	1.000	170163	NC			435	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.014	13.007	0.007	1.000	170163	19.0		98.4		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.058	13.053	0.005	1.000	549280	21.3		106	838	
D 26 13C2 PFUnA										
565.0 > 520.0	13.058	13.054	0.004		1499290	57.2		114	3982	
D 28 13C2 PFDaA										
615.0 > 570.0	13.675	13.666	0.009		1638972	58.8		118	3604	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.675	13.668	0.007	1.000	486498	19.1		95.3	664	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.189	14.182	0.007	1.000	645866	22.3		112	679	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.628	14.618	0.010		1245918	54.1		108	3623	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.628	14.618	0.010	1.000	345698	18.8		93.9	210	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.245	15.234	0.011	1.000	719139	13.1		65.3	1262	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.245	15.234	0.011		1477666	52.3		105	3078	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.586	15.582	0.004	1.000	532116	17.6	88.2	768	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_004.d

Injection Date: 05-Jan-2016 11:19:48

Instrument ID: A6

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 2

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

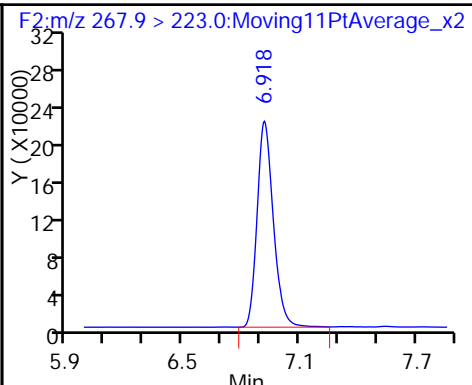
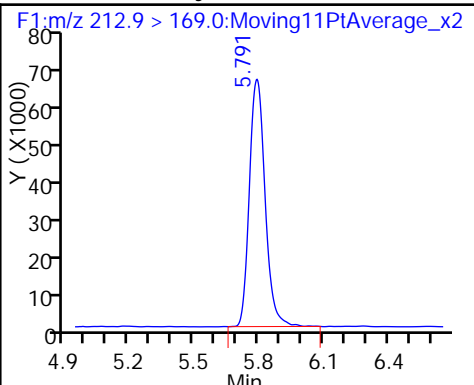
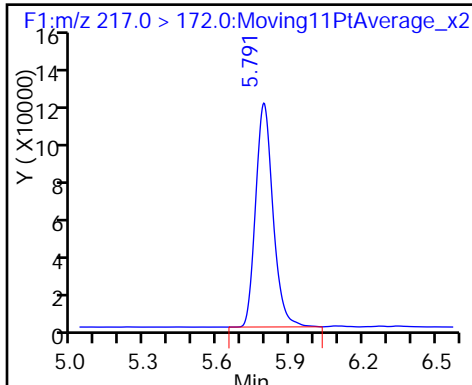
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

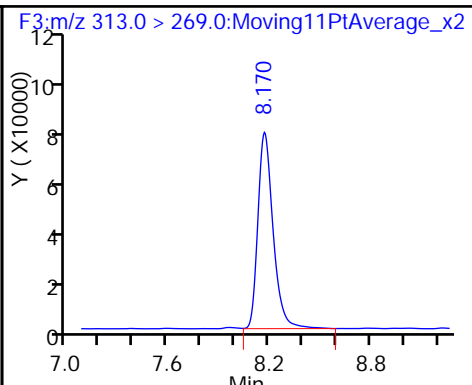
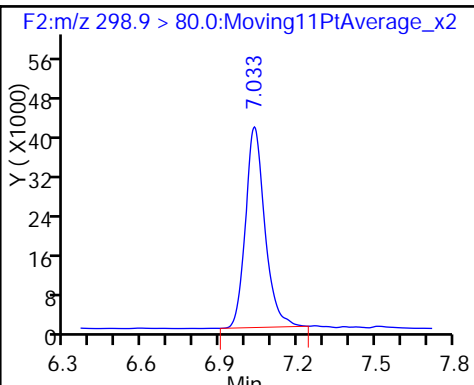
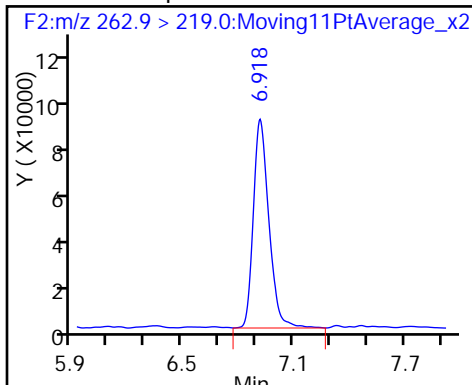
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

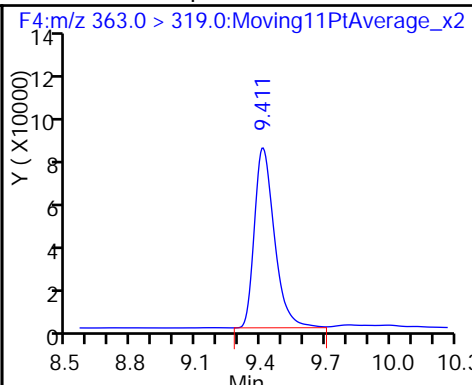
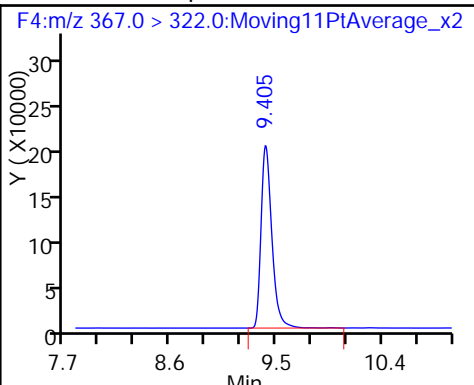
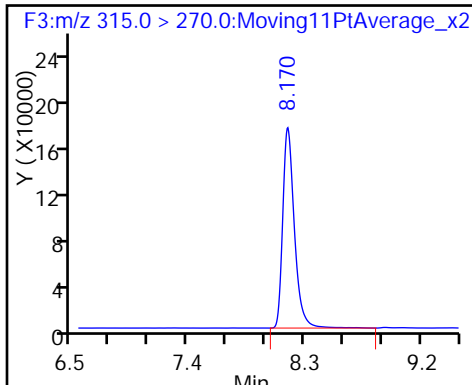
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

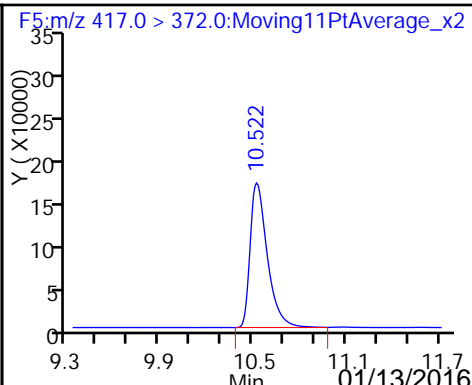
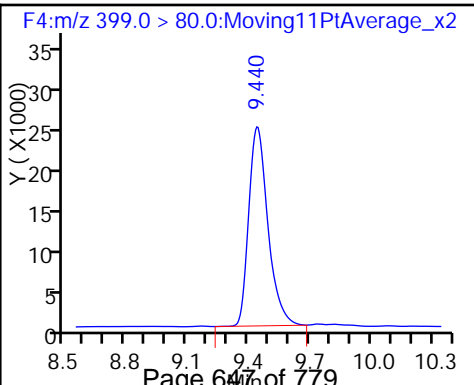
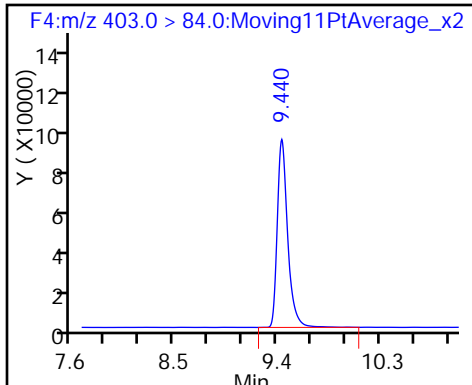
9 Perfluoroheptanoic acid

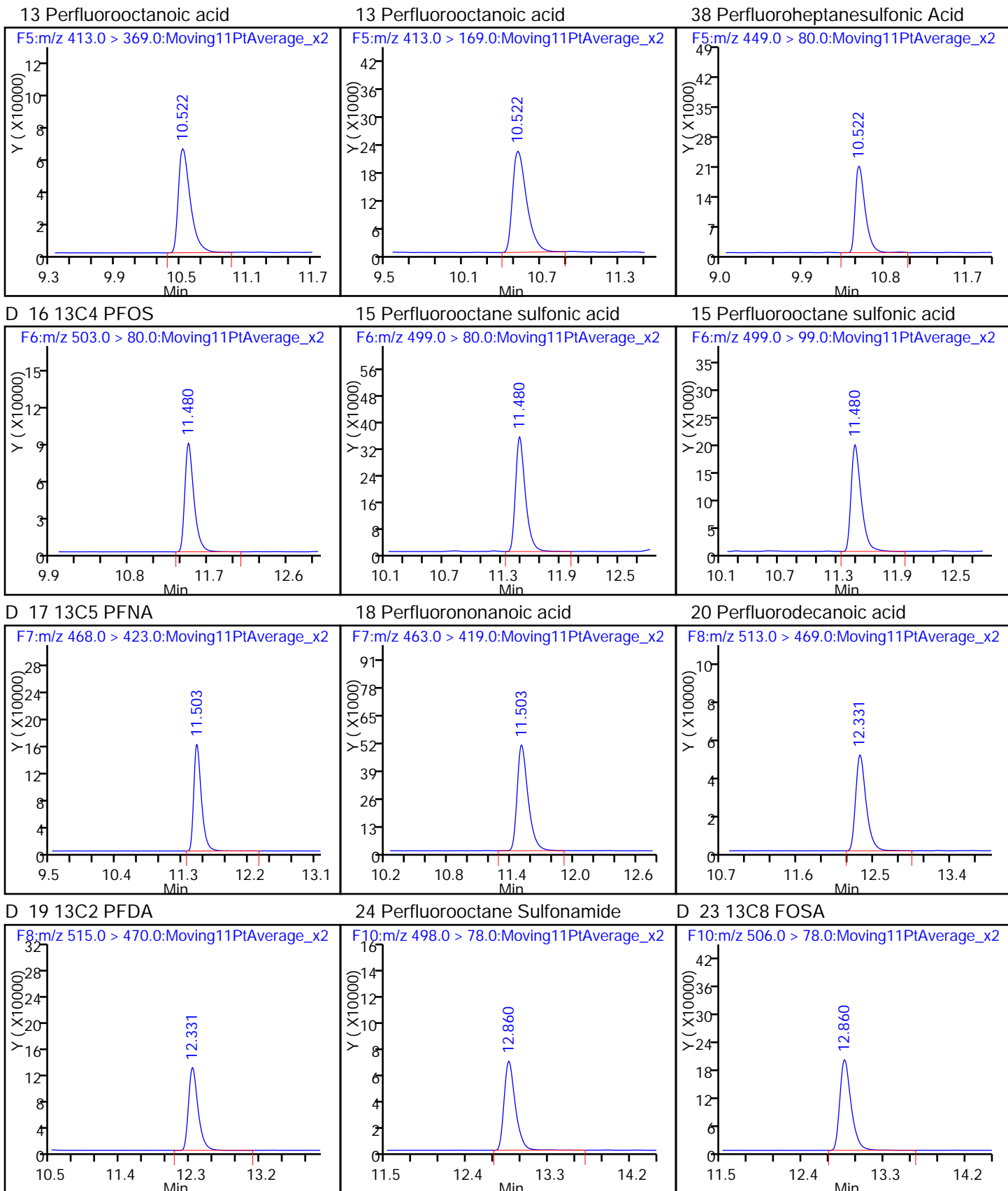


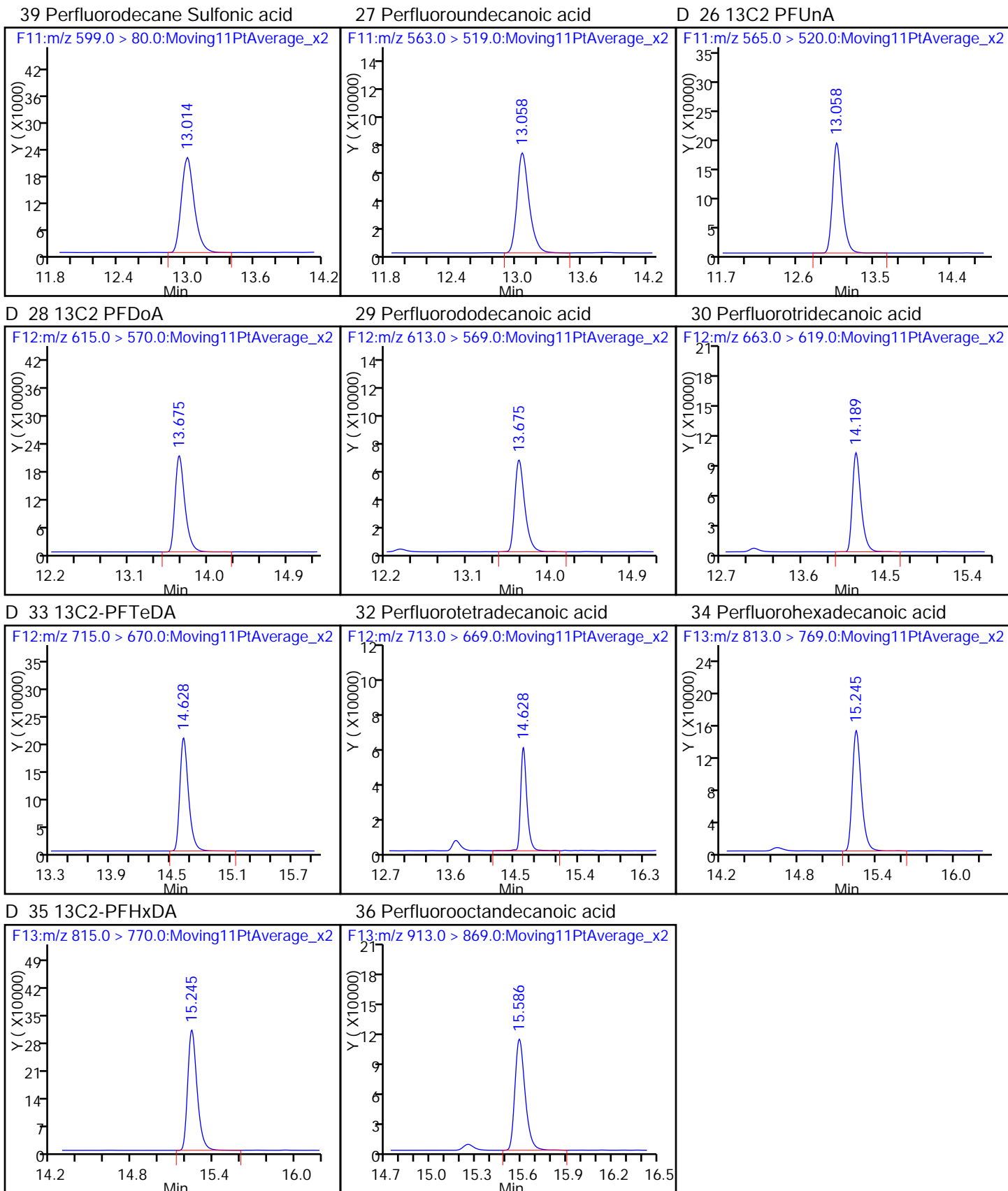
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97302/3 Calibration Date: 01/05/2016 11:48
 Instrument ID: A6 Calib Start Date: 12/30/2015 15:59
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/30/2015 18:07
 Lab File ID: 05JAN2016A6A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.513	1.775		1.17	1.00	17.3	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.239		1.20	1.00	20.2	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9625	1.068		0.981	0.884	11.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.187	1.435		1.21	1.00	20.9	50.0
Perfluoroheptanoic acid (PFHpA)	L1ID		0.9270		0.732	1.00	-26.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.7087	0.8474		1.13	0.946	19.6	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.5998	0.5809		0.922	0.952	-3.2	50.0
Perfluorooctanoic acid (PFOA)	AveID	0.9680	1.047		1.08	1.00	8.2	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.017	1.369		1.29	0.956	34.6	50.0
Perfluorononanoic acid (PFNA)	AveID	0.7874	0.9176		1.17	1.00	16.5	50.0
Perfluorodecanoic acid (PFDA)	L2ID		1.147		0.888	1.00	-11.2	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8501	0.9045		1.06	1.00	6.4	50.0
Perfluorodecane Sulfonic acid	AveID	0.6607	0.5718		0.834	0.964	-13.4	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.750		1.26	1.00	25.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7789	0.7515		0.965	1.00	-3.5	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8819	1.382		1.57	1.00	56.7*	50.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.9072		1.08	1.00	7.7	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		4.899		0.200	1.00	-535.8*	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9201	0.7610		0.827	1.00	-17.3	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_005.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 05-Jan-2016 11:48:52 ALS Bottle#: 18 Worklist Smp#: 3
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 11:24:11 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 05-Jan-2016 12:30:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.803	5.801	0.002	604274	65.5		131	2043	
2 Perfluorobutyric acid	212.9 > 169.0	5.791	5.802	-0.011	1.000	21453	1.17	117	70.3	
D 3 13C5-PFPeA	267.9 > 223.0	6.932	6.924	0.008	1336337	64.9		130	1595	
4 Perfluoropentanoic acid	262.9 > 219.0	6.932	6.927	0.005	1.000	33118	1.20	120	12.1	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.050	7.039	0.011	1.000	12802	NC		27.9	
	298.9 > 99.0	7.047	7.039	0.008	1.000	6835	1.87(0.00-0.00)		18.3	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.050	7.039	0.011	1.000	12802	0.9809	111		
7 Perfluorohexanoic acid	313.0 > 269.0	8.192	8.176	0.016	1.000	32613	1.21	121	98.8	
D 6 13C2 PFHxA	315.0 > 270.0	8.187	8.177	0.010	1136411	65.1		130	1914	
D 8 13C4-PFHpA	367.0 > 322.0	9.429	9.413	0.016	1366120	64.0		128	2808	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.417	9.413	0.004	1.000	25329	0.7324	73.2	13.2	
D 11 18O2 PFHxS	403.0 > 84.0	9.458	9.444	0.014	641369	62.0		131	2684	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.458	9.449	0.009	1.000	10870	NC		26.3	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.458	9.449	0.009	1.000	10870	1.13	120		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.540	10.524	0.016		1411287	64.6		129	2340	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.549	10.528	0.021	1.000	29563	1.08		108	20.2	
413.0 > 169.0	10.559	10.528	0.031	1.001	8163		3.62(0.00-0.00)		11.6	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.540	10.530	0.010	1.000	8264	0.9220		96.8		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.540	10.530	0.010	1.000	8264	NC			19.6	
D 16 13C4 PFOS										
503.0 > 80.0	11.487	11.478	0.009		714288	64.1		134	3819	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.487	11.480	0.007	1.000	19562	1.29		135	39.1	
499.0 > 99.0	11.495	11.480	0.015	1.001	11521		1.70(0.00-0.00)		39.5	
D 17 13C5 PFNA										
468.0 > 423.0	11.511	11.501	0.010		1179662	59.3		119	3138	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	21648	1.17		117	54.8	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.352	12.333	0.019	1.000	27181	0.8879		88.8	82.3	
D 19 13C2 PFDA										
515.0 > 470.0	12.342	12.336	0.006		1185069	61.2		122	1910	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.870	12.858	0.012	1.000	30634	1.06		106	69.4	
D 23 13C8 FOSA										
506.0 > 78.0	12.870	12.860	0.010		1693481	58.5		117	1705	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	13.015	13.007	0.008	1.000	8237	NC			30.7	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	13.015	13.007	0.008	1.000	8237	0.8343		86.6		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.067	13.053	0.014	1.000	54116	1.26		126	129	
D 26 13C2 PFUnA										
565.0 > 520.0	13.067	13.054	0.013		1546365	59.0		118	2312	
D 28 13C2 PFDaA										
615.0 > 570.0	13.676	13.666	0.010		1588492	57.0		114	2833	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.676	13.668	0.008	1.000	23876	0.9648		96.5	46.2	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.190	14.182	0.008	1.000	43903	1.57		157	48.7	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.629	14.618	0.011		1244792	54.0		108	3456	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.642	14.618	0.024	1.000	28822	1.08		108	16.2	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.245	15.234	0.011	1.000	155630	-4.36		-435.8	271	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.245	15.234	0.011		1487890	52.6		105	3476	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.591	15.582	0.009	1.000	24176	0.8270	82.7	38.7	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_005.d

Injection Date: 05-Jan-2016 11:48:52

Instrument ID: A6

Lims ID: CCV L2

Client ID:

Operator ID: JRB

ALS Bottle#: 18

Worklist Smp#: 3

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

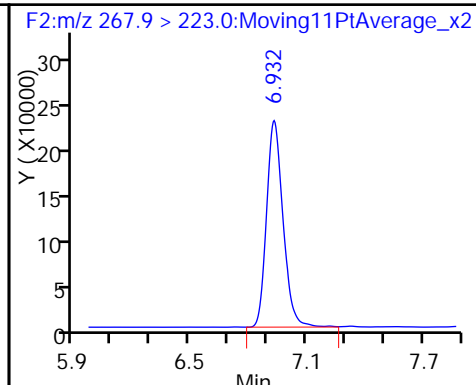
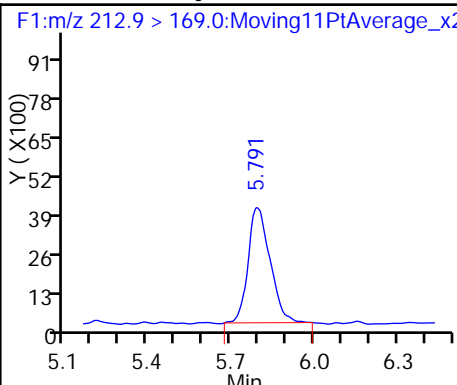
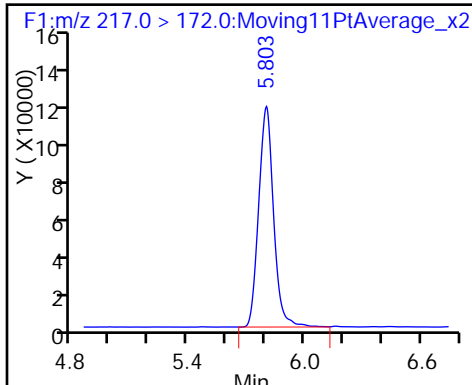
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

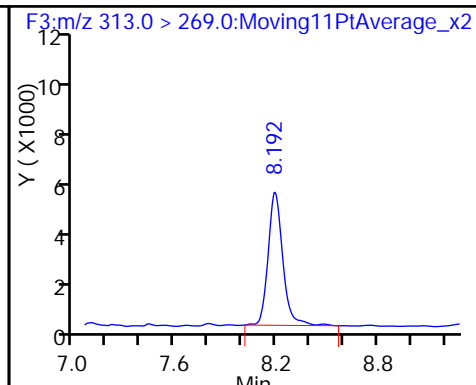
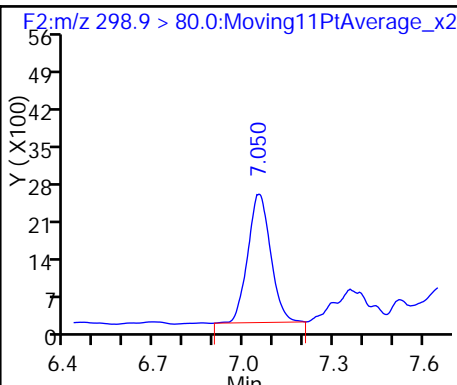
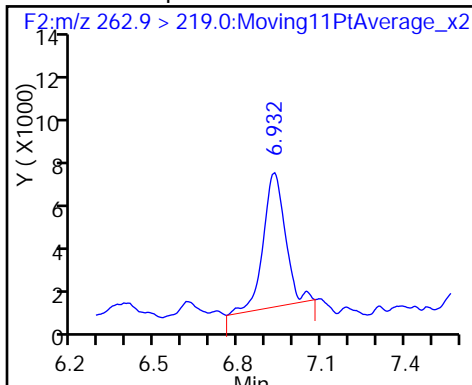
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

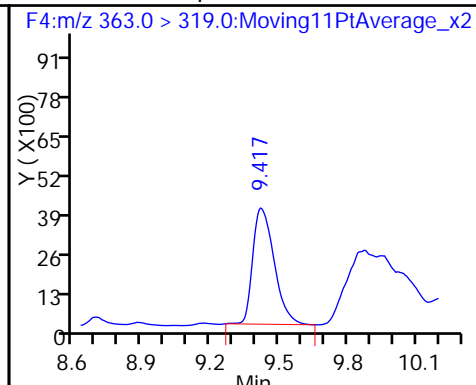
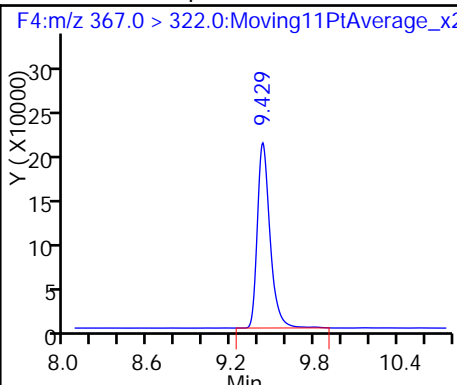
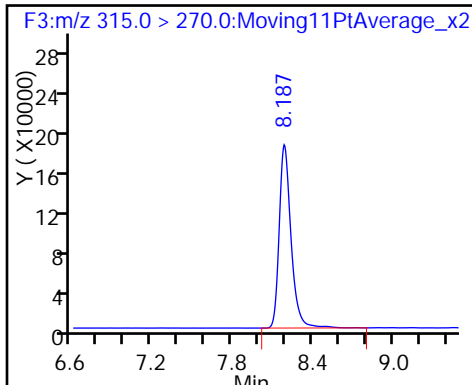
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

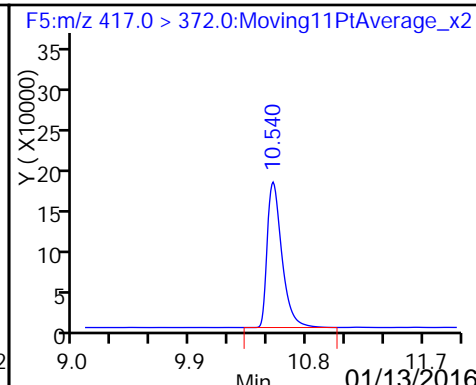
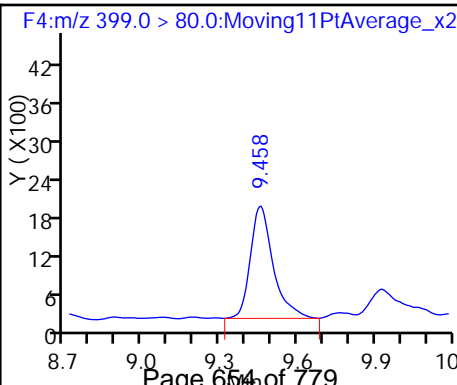
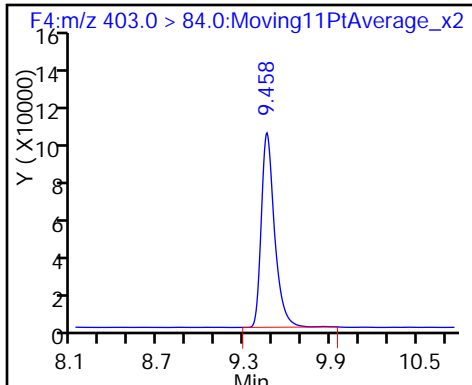
9 Perfluoroheptanoic acid

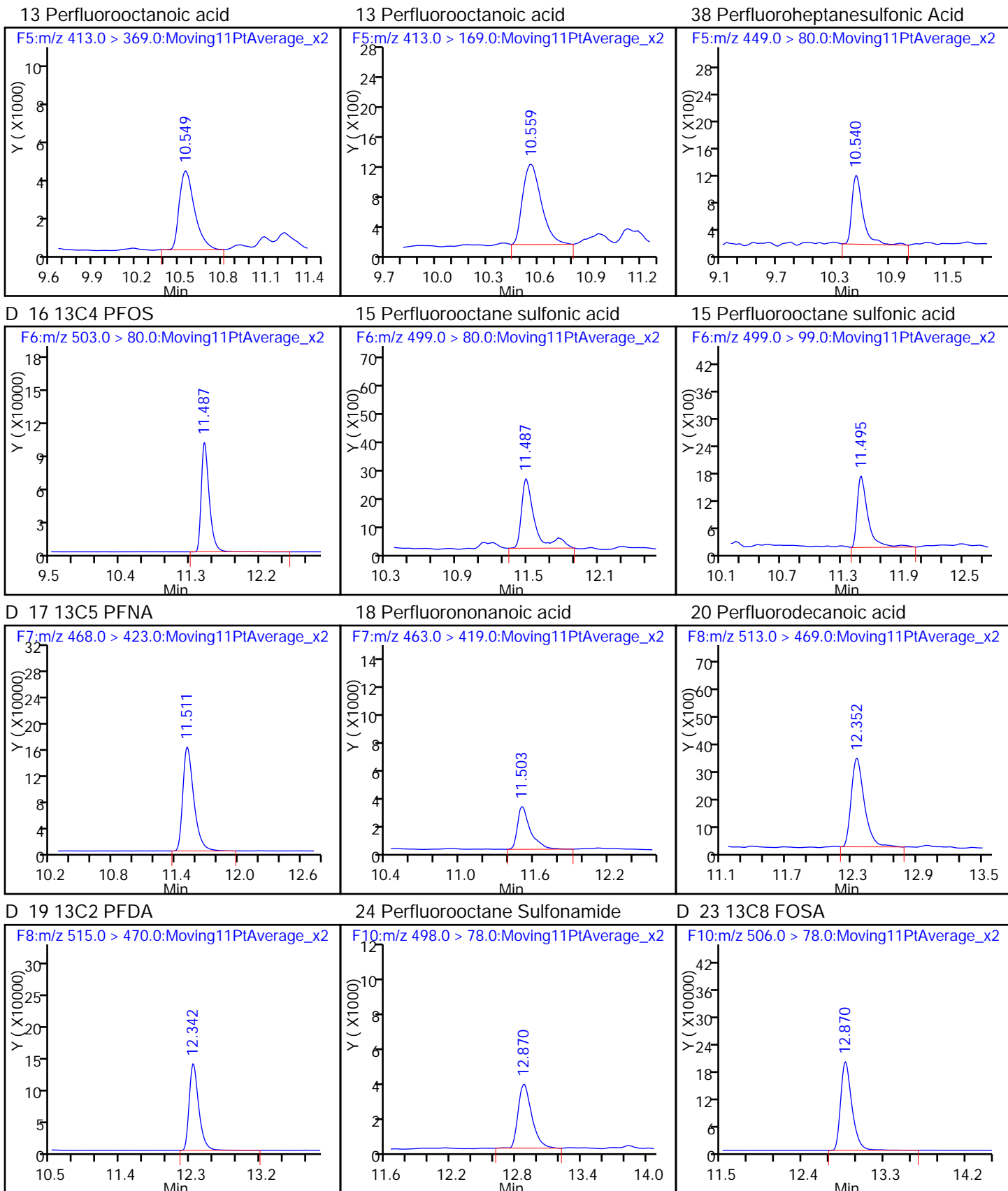


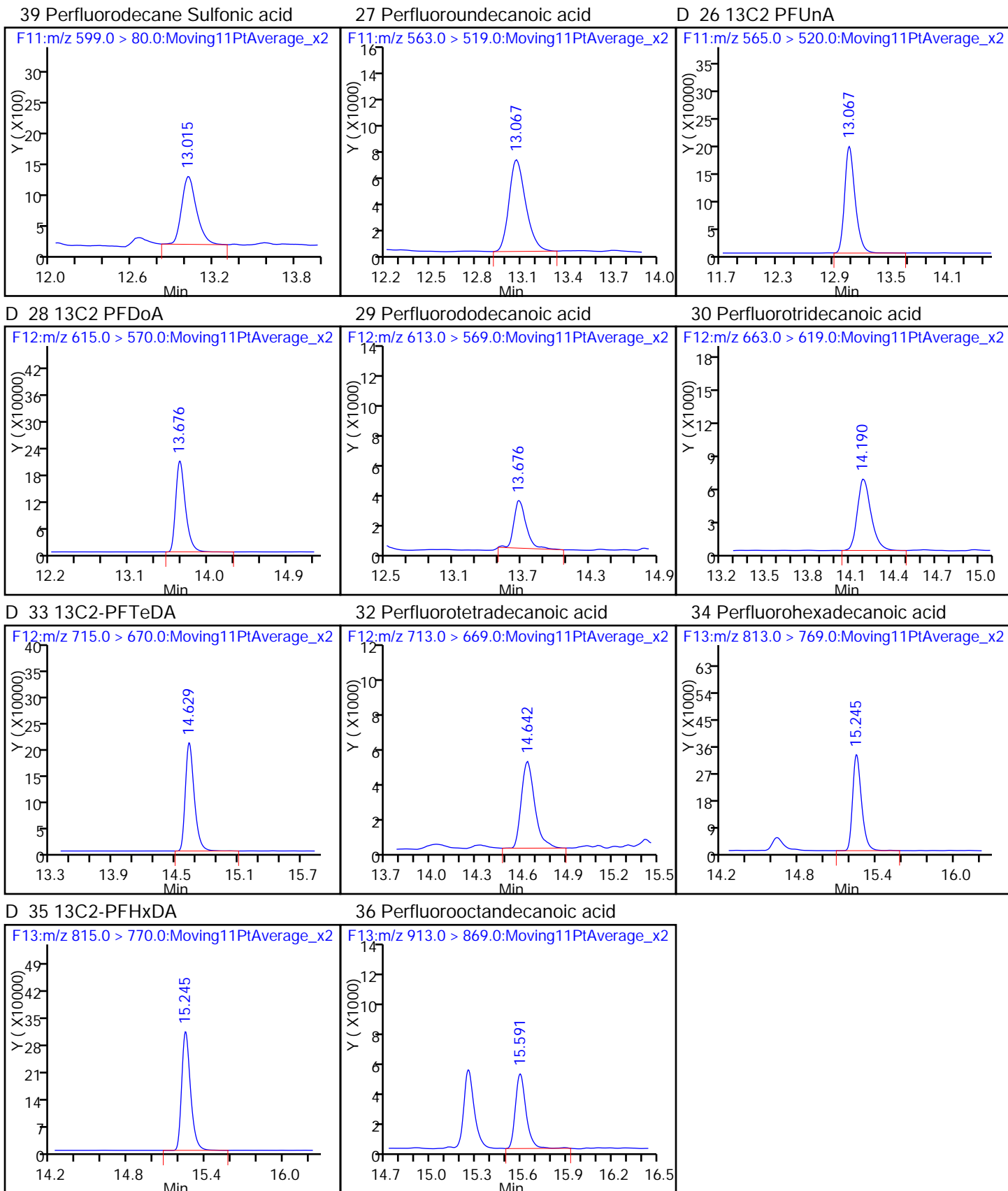
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97302/12 Calibration Date: 01/05/2016 15:21
 Instrument ID: A6 Calib Start Date: 12/30/2015 15:59
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/30/2015 18:07
 Lab File ID: 05JAN2016A6A_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.513	1.473		48.7	50.0	-2.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.9860		47.8	50.0	-4.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9625	0.9616		44.2	44.2	-0.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.187	1.105		46.5	50.0	-7.0	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		0.9924		48.7	50.0	-2.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.7087	0.6776		45.2	47.3	-4.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.5998	0.5502		43.7	47.6	-8.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9680	0.9733		50.3	50.0	0.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.017	1.206		56.7	47.8	18.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.7874	0.8324		52.9	50.0	5.7	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.8884		46.6	50.0	-6.8	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8501	0.9434		55.5	50.0	11.0	25.0
Perfluorodecane Sulfonic acid	AveID	0.6607	0.6301		46.0	48.2	-4.6	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.8482		50.4	50.0	0.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7789	0.7650		49.1	50.0	-1.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8819	0.9122		51.7	50.0	3.4	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5263		47.7	50.0	-4.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.078		45.7	50.0	-8.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9201	0.8969		48.7	50.0	-2.5	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_015.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 05-Jan-2016 15:21:07 ALS Bottle#: 21 Worklist Smp#: 12
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 05-Jan-2016 16:04:10 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK012

First Level Reviewer: westendorfc Date: 05-Jan-2016 15:50:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.785	5.801	-0.016	333016	36.1		72.2	1218	
2 Perfluorobutyric acid	212.9 > 169.0	5.785	5.802	-0.017	490628	48.7		97.4	1363	
D 3 13C5-PFPeA	267.9 > 223.0	6.909	6.924	-0.015	747982	36.3		72.7	1928	
4 Perfluoropentanoic acid	262.9 > 219.0	6.909	6.927	-0.018	737483	47.8		95.6	326	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.026	7.039	-0.013	331598	NC			751	
	298.9 > 99.0	7.026	7.039	-0.013	178049		1.86(0.00-0.00)		480	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.026	7.039	-0.013	331598	44.2		99.9		
7 Perfluorohexanoic acid	313.0 > 269.0	8.165	8.176	-0.011	714325	46.5		93.0	948	
D 6 13C2 PFHxA	315.0 > 270.0	8.160	8.177	-0.017	646658	37.1		74.1	2005	
D 8 13C4-PFHpA	367.0 > 322.0	9.399	9.413	-0.014	775052	36.3		72.6	1816	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.405	9.413	-0.008	769160	48.7		97.4	1156	
D 11 18O2 PFHxS	403.0 > 84.0	9.434	9.444	-0.010	369027	35.7		75.4	1350	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.434	9.449	-0.015	250039	NC			737	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.434	9.449	-0.015	250039	45.2		95.6		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.513	10.524	-0.011		781055	35.7		71.5	1575	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.522	10.528	-0.006	1.000	760213	50.3		101	721	
413.0 > 169.0	10.522	10.528	-0.006	1.000	263778		2.88(0.00-0.00)		682	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.522	10.530	-0.008	1.000	227554	43.7		91.7		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.522	10.530	-0.008	1.000	227554	NC			878	
D 16 13C4 PFOS										
503.0 > 80.0	11.473	11.478	-0.005		415311	37.3		78.0	1406	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.473	11.480	-0.007	1.000	500835	56.7		119	237	
499.0 > 99.0	11.473	11.480	-0.007	1.000	246765		2.03(0.00-0.00)		388	
D 17 13C5 PFNA										
468.0 > 423.0	11.496	11.501	-0.005		688668	34.6		69.2	1603	
18 Perfluorononanoic acid										
463.0 > 419.0	11.496	11.502	-0.006	1.000	573216	52.9		106	1645	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	660387	46.6		93.2	1441	
D 19 13C2 PFDA										
515.0 > 470.0	12.331	12.336	-0.005		743347	38.4		76.7	1163	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	938806	55.5		111	1221	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		995167	34.4		68.7	907	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.996	13.007	-0.011	1.000	263863	NC			1162	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.996	13.007	-0.011	1.000	263863	46.0		95.4		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.050	13.053	-0.003	1.000	833083	50.4		101	1910	
D 26 13C2 PFUnA										
565.0 > 520.0	13.050	13.054	-0.004		982217	37.5		75.0	3063	
D 28 13C2 PFDaA										
615.0 > 570.0	13.666	13.666	0.0		1071852	38.5		76.9	1729	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.666	13.668	-0.002	1.000	819999	49.1		98.2	872	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.174	14.182	-0.008	1.000	977704	51.7		103	837	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.609	14.618	-0.009		905693	39.3		78.6	2356	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.615	14.618	-0.003	1.000	564097	47.7		95.4	367	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.230	15.234	-0.004	1.000	1155045	45.7		91.4	1588	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.225	15.234	-0.009		1102353	39.0		78.0	2752	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.561	15.582	-0.021	1.000	961389	48.7	97.5	1353	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_015.d

Injection Date: 05-Jan-2016 15:21:07

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 12

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

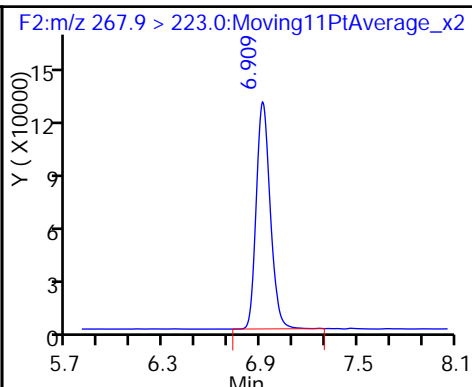
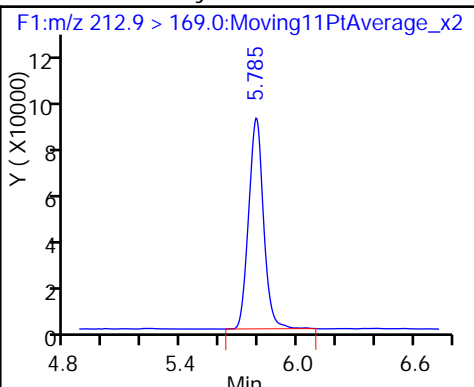
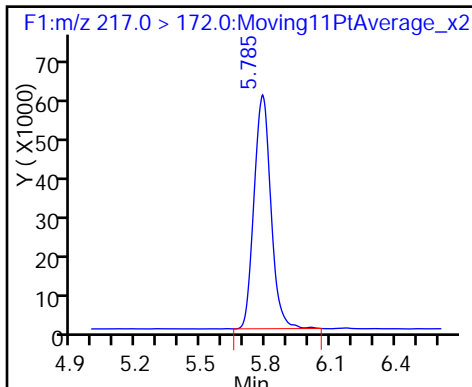
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

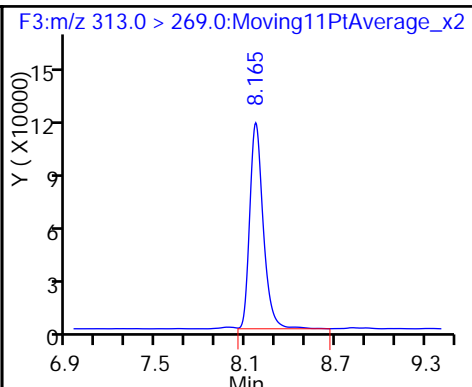
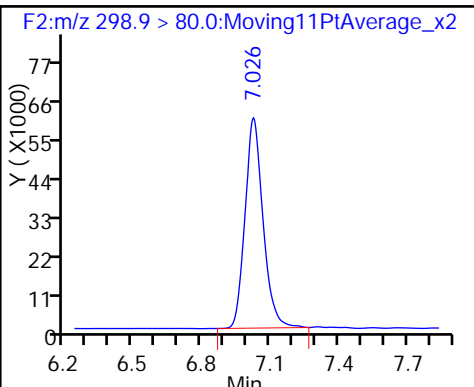
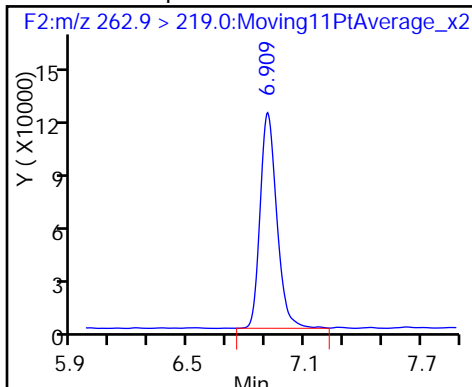
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

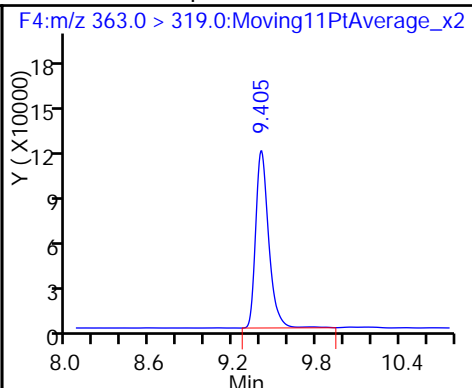
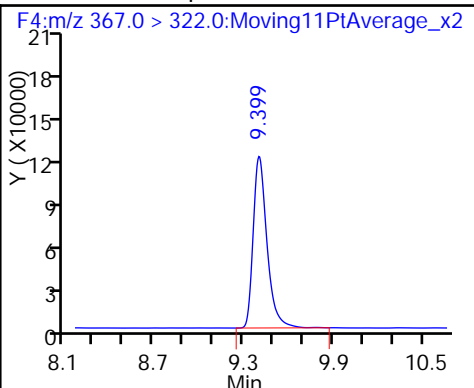
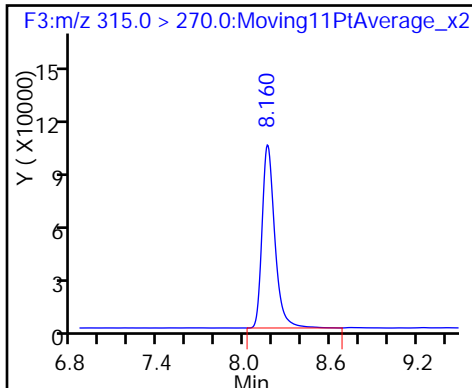
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

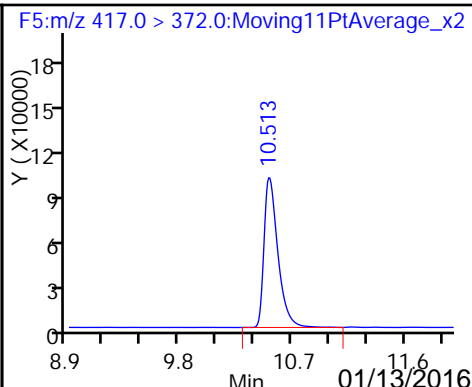
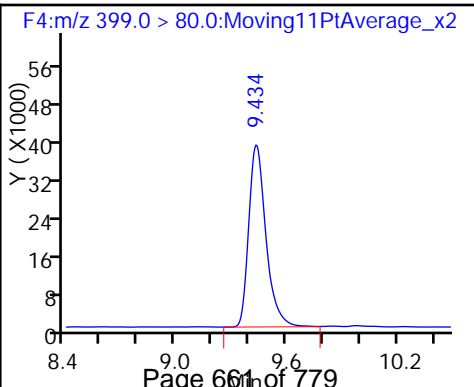
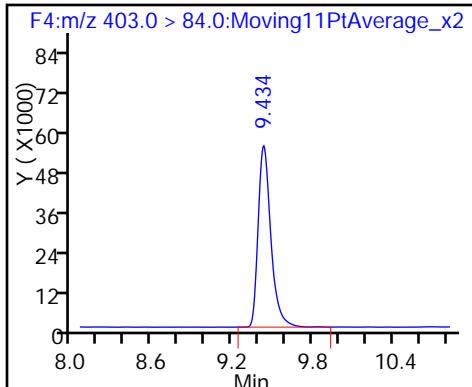
9 Perfluoroheptanoic acid

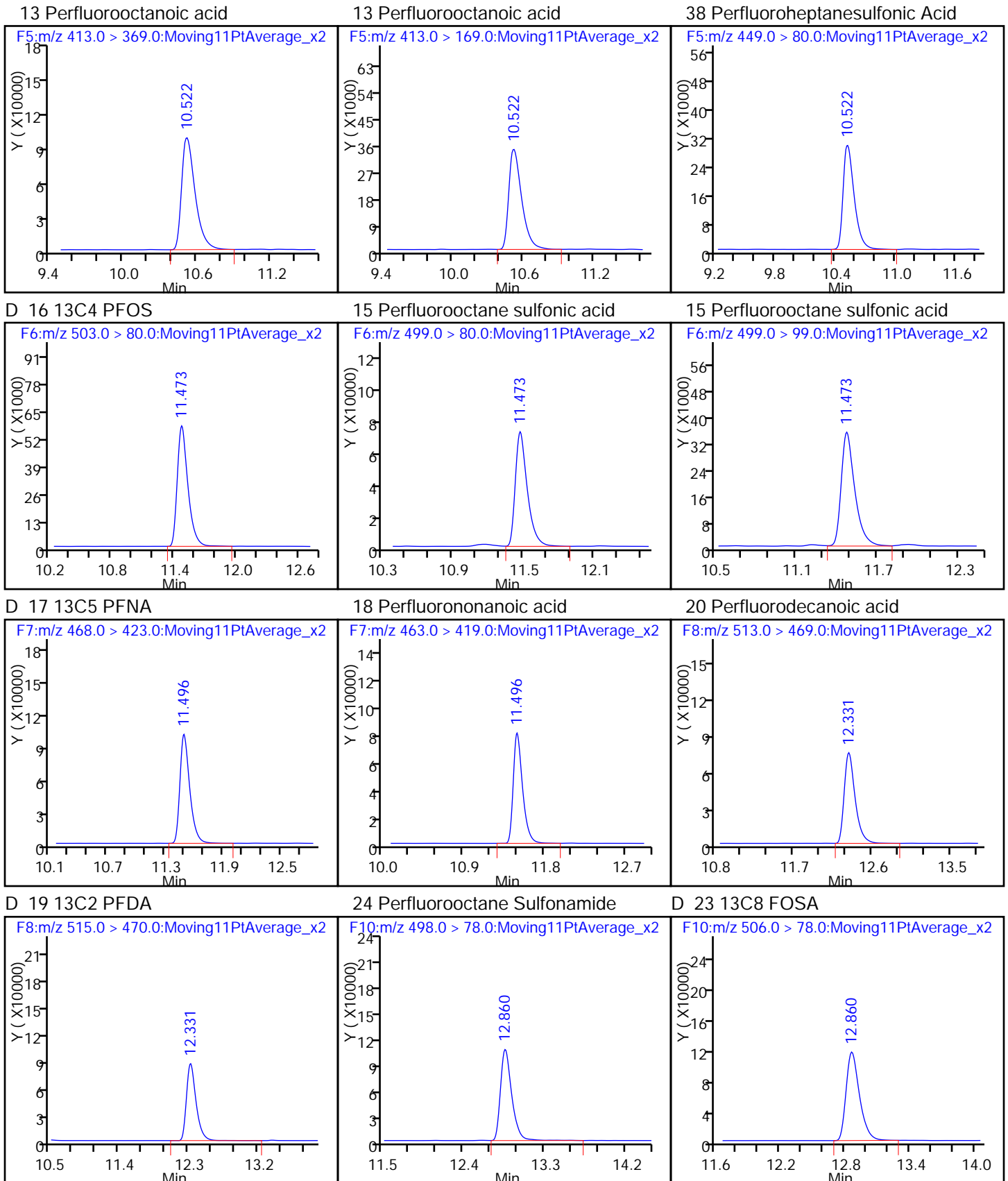


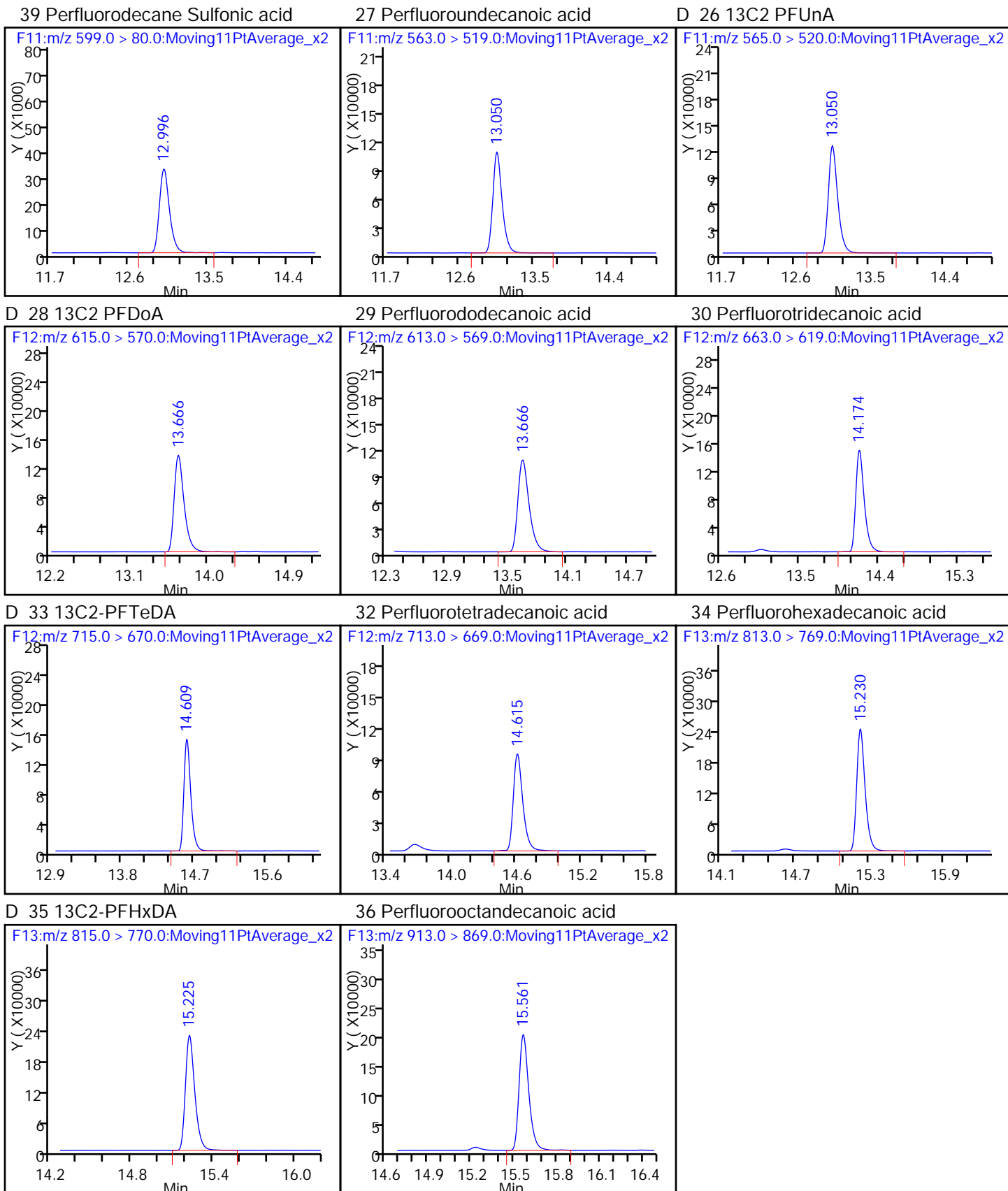
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97302/29 Calibration Date: 01/05/2016 19:28
 Instrument ID: A6 Calib Start Date: 12/30/2015 15:59
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/30/2015 18:07
 Lab File ID: 05JAN2016A6A_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.513	1.435		19.0	20.0	-5.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	1.012		19.6	20.0	-1.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9625	0.8843		16.2	17.7	-8.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.187	1.125		19.0	20.0	-5.2	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.055		20.6	20.0	3.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.7087	0.6495		17.3	18.9	-8.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.5998	0.5747		18.2	19.0	-4.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9680	0.9371		19.4	20.0	-3.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.017	0.9799		18.4	19.1	-3.7	25.0
Perfluorononanoic acid (PFNA)	AveID	0.7874	0.8455		21.5	20.0	7.4	25.0
Perfluorodecanoic acid (PFDA)	L2ID		1.005		20.9	20.0	4.5	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8501	0.9405		22.1	20.0	10.6	25.0
Perfluorodecane Sulfonic acid	AveID	0.6607	0.5833		17.0	19.3	-11.7	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9500		22.1	20.0	10.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7789	0.7435		19.1	20.0	-4.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8819	0.9934		22.5	20.0	12.6	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5678		20.3	20.0	1.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.275		16.7	20.0	-16.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9201	0.8939		19.4	20.0	-2.9	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_026.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 05-Jan-2016 19:28:54 ALS Bottle#: 20 Worklist Smp#: 29
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 10:50:33 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.776	5.801	-0.025	530809	57.6		115	2092	
2 Perfluorobutyric acid	212.9 > 169.0	5.779	5.802	-0.023	304638	19.0		94.8	877	
D 3 13C5-PFPeA	267.9 > 223.0	6.895	6.924	-0.029	1197208	58.1		116	1969	
4 Perfluoropentanoic acid	262.9 > 219.0	6.900	6.927	-0.027	484418	19.6		98.1	169	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.015	7.039	-0.024	196295	NC			393	
	298.9 > 99.0	7.019	7.039	-0.020	108823		1.80(0.00-0.00)		294	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.015	7.039	-0.024	196295	16.2		91.9		
7 Perfluorohexanoic acid	313.0 > 269.0	8.149	8.176	-0.027	474211	19.0		94.8	818	
D 6 13C2 PFHxA	315.0 > 270.0	8.149	8.177	-0.028	1053460	60.4		121	2706	
D 8 13C4-PFHpA	367.0 > 322.0	9.387	9.413	-0.026	1231203	57.7		115	3618	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.387	9.413	-0.026	519484	20.6		103	515	
D 11 18O2 PFHxS	403.0 > 84.0	9.417	9.444	-0.027	593875	57.4		121	1799	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.417	9.449	-0.032	154279	NC			439	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.417	9.449	-0.032	154279	17.3		91.6		
D 12 13C4 PFOA	417.0 > 372.0	10.497	10.524	-0.027	1252999	57.3		115	3296	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.504	10.528	-0.024	1.000	469681	19.4		96.8	460	
413.0 > 169.0	10.504	10.528	-0.024	1.000	187959		2.50(0.00-0.00)		348	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.504	10.530	-0.026	1.000	159454	18.2		95.8		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.504	10.530	-0.026	1.000	159454	NC			380	
D 16 13C4 PFOS										
503.0 > 80.0	11.458	11.478	-0.020		696595	62.5		131	2236	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.458	11.480	-0.022	1.000	273039	18.4		96.3	275	
499.0 > 99.0	11.458	11.480	-0.022	1.000	148088		1.84(0.00-0.00)		338	
D 17 13C5 PFNA										
468.0 > 423.0	11.481	11.501	-0.020		1158763	58.2		116	3064	
18 Perfluorononanoic acid										
463.0 > 419.0	11.481	11.502	-0.021	1.000	391878	21.5		107	937	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.321	12.333	-0.012	1.000	437443	20.9		105	1170	
D 19 13C2 PFDA										
515.0 > 470.0	12.311	12.336	-0.025		1088544	56.2		112	2399	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	597434	22.1		111	1336	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		1588130	54.8		110	911	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.985	13.007	-0.022	1.000	163897	NC			541	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.985	13.007	-0.022	1.000	163897	17.0		88.3		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.032	13.053	-0.021	1.000	587028	22.1		111	909	
D 26 13C2 PFUnA										
565.0 > 520.0	13.032	13.054	-0.022		1544861	58.9		118	3988	
D 28 13C2 PFDoA										
615.0 > 570.0	13.648	13.666	-0.018		1585602	56.9		114	2901	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.648	13.668	-0.020	1.000	471558	19.1		95.5	693	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.167	14.182	-0.015	1.000	630045	22.5		113	642	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.602	14.618	-0.016		1339029	58.1		116	3302	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.596	14.618	-0.022	1.000	360146	20.3		101	194	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.215	15.234	-0.019	1.000	808795	16.7		83.5	1219	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.215	15.234	-0.019		1656579	58.6		117	2503	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.546	15.582	-0.036	1.000	566950	19.4		97.1	598	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_026.d

Injection Date: 05-Jan-2016 19:28:54

Instrument ID: A6

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 29

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

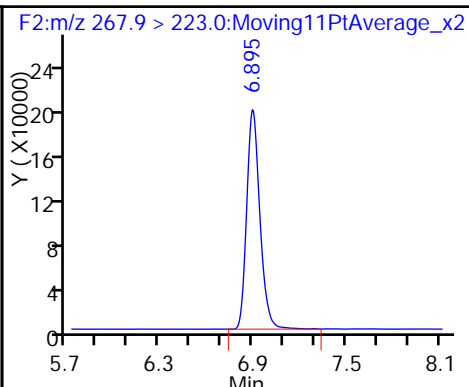
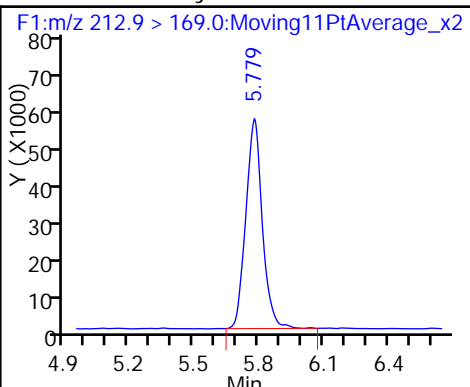
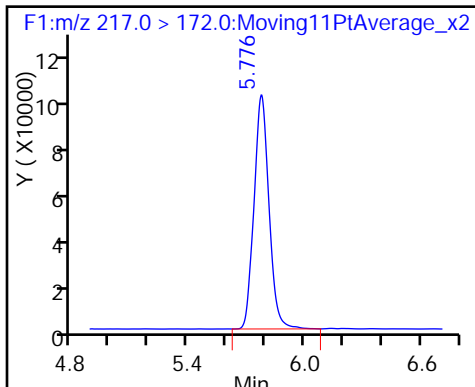
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

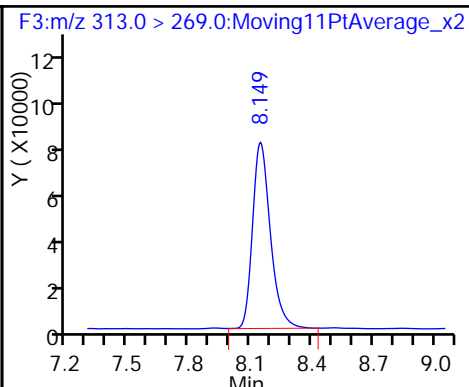
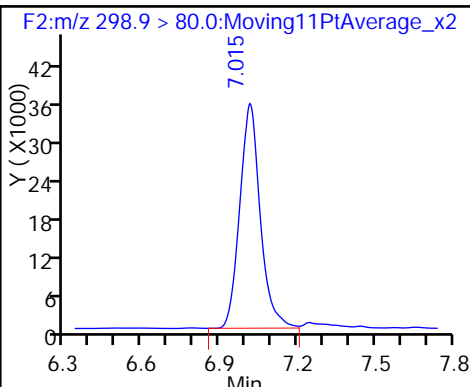
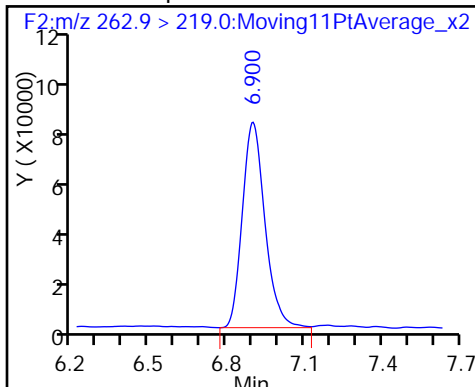
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

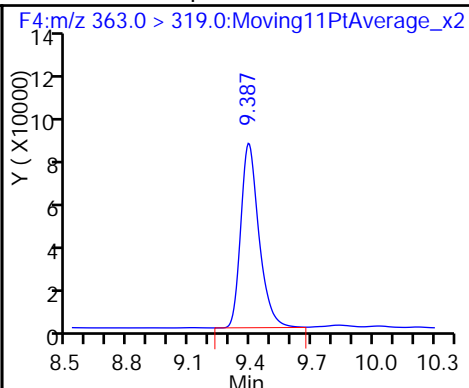
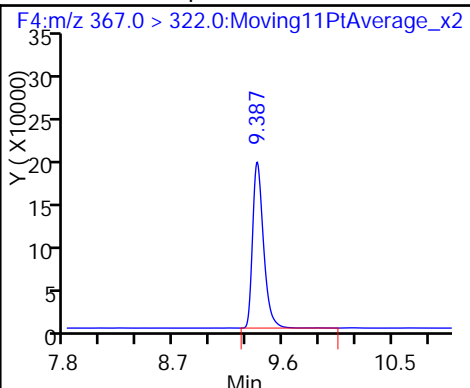
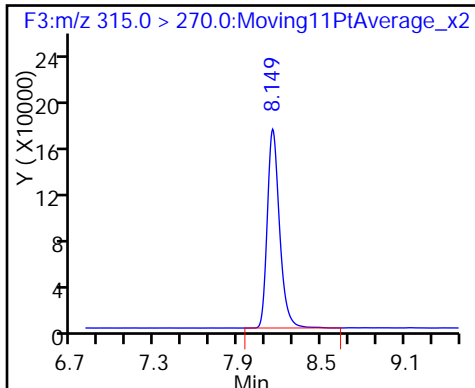
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

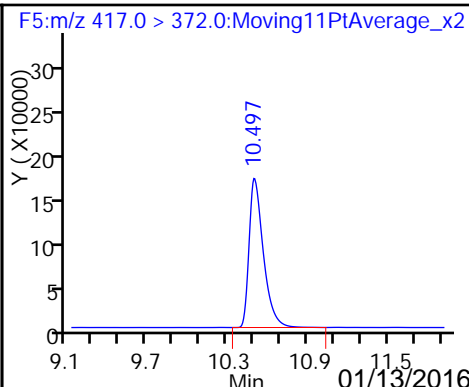
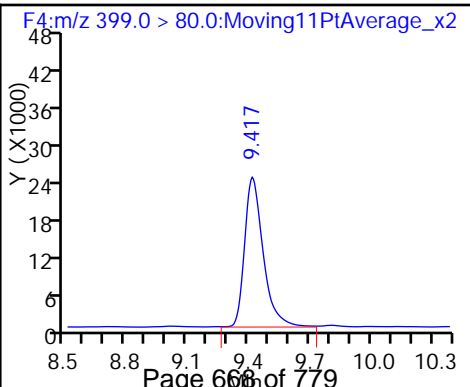
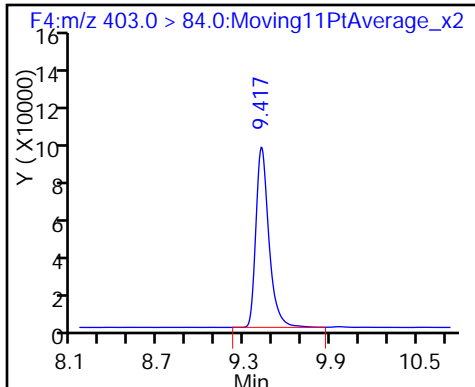
9 Perfluoroheptanoic acid

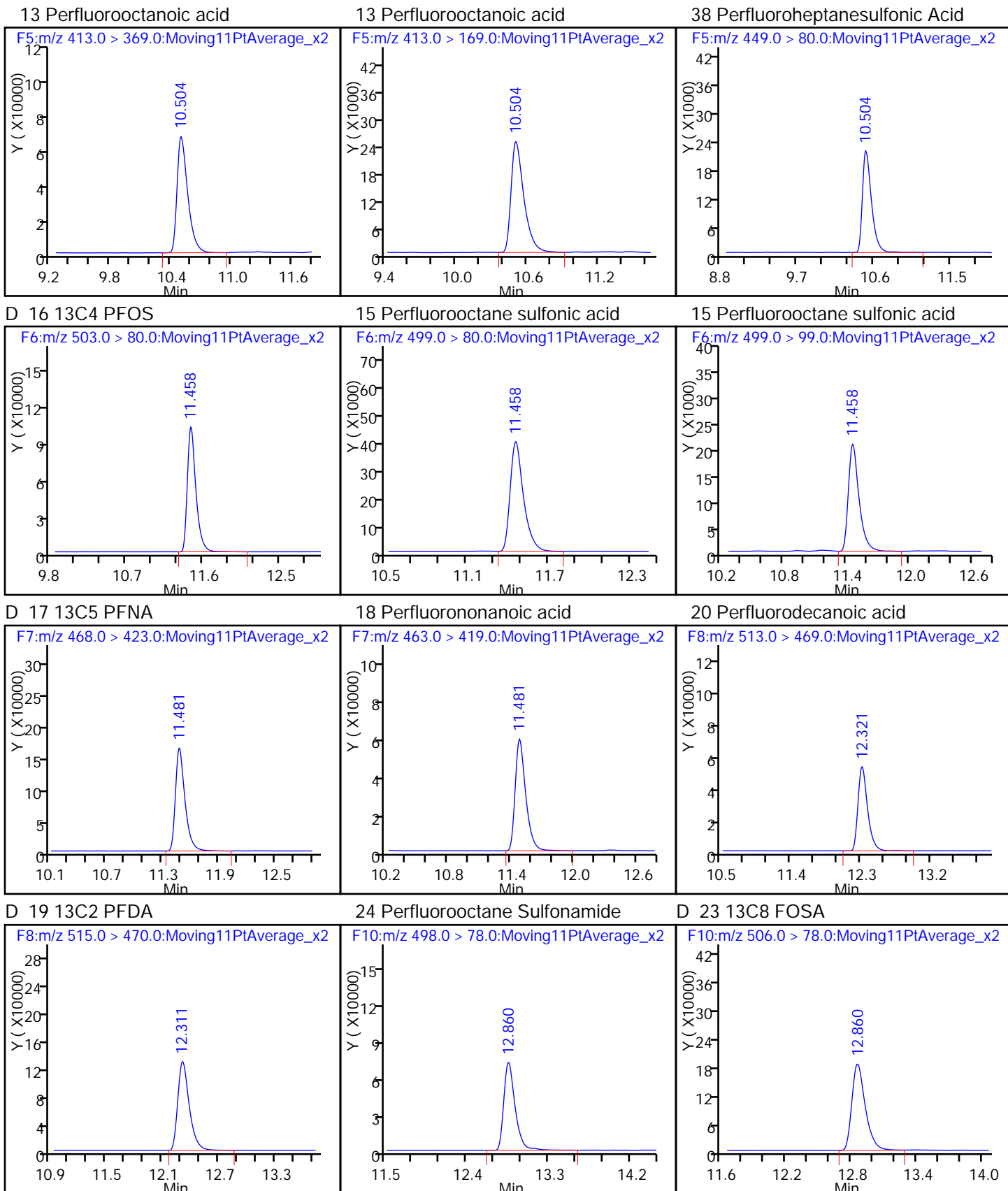


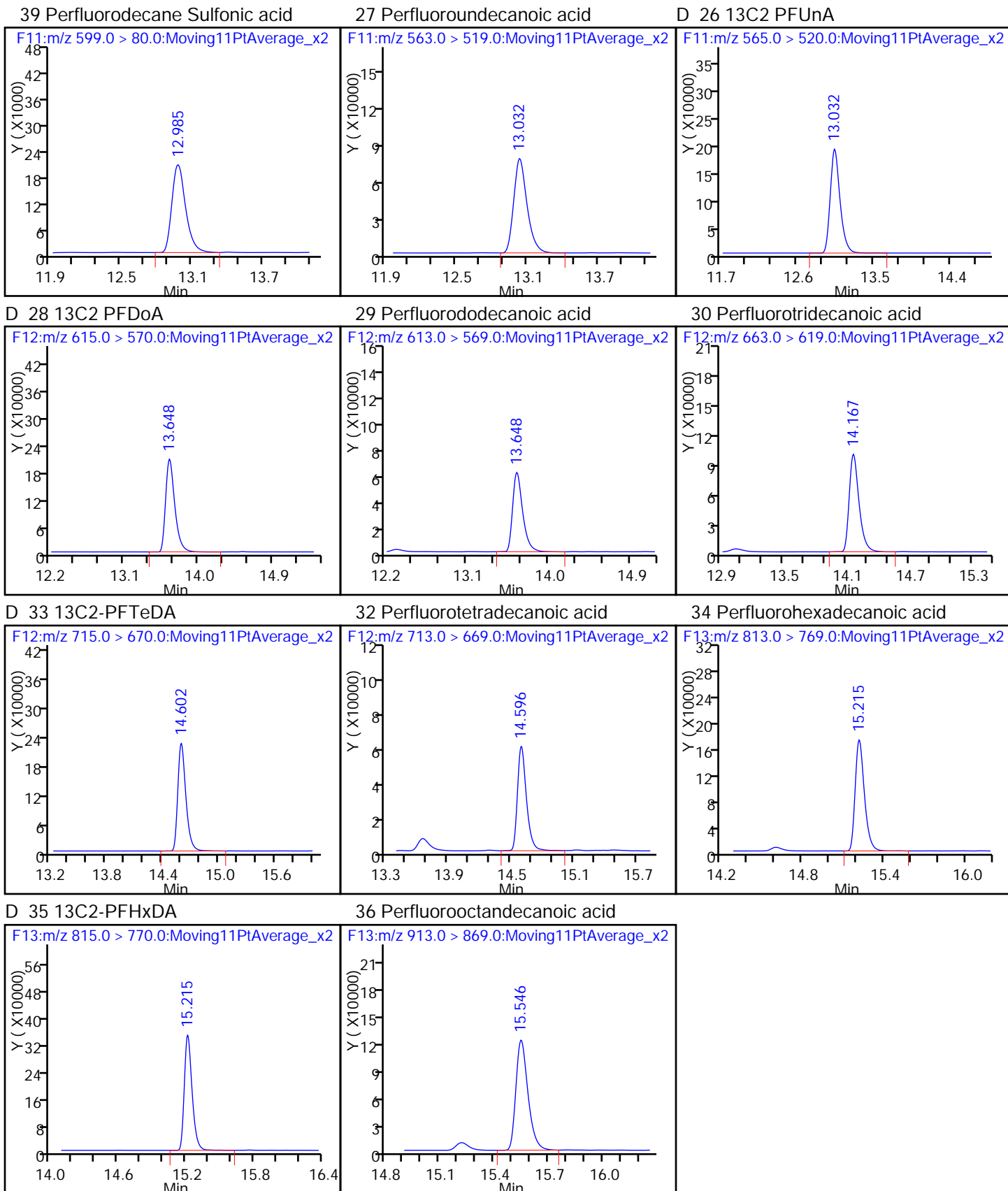
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97302/30 Calibration Date: 01/05/2016 21:57
 Instrument ID: A6 Calib Start Date: 12/30/2015 15:59
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/30/2015 18:07
 Lab File ID: 05JAN2016A6A_033.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.513	1.464		48.4	50.0	-3.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.031	0.9785		47.5	50.0	-5.1	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9625	0.9503		43.6	44.2	-1.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.187	1.094		46.1	50.0	-7.9	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.022		50.2	50.0	0.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.7087	0.6586		43.9	47.3	-7.1	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.5998	0.5914		46.9	47.6	-1.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9680	0.9497		49.1	50.0	-1.9	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.017	1.041		48.9	47.8	2.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.7874	0.7895		50.1	50.0	0.3	25.0
Perfluorodecanoic acid (PFDA)	L2ID		1.032		54.2	50.0	8.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8501	0.8986		52.9	50.0	5.7	25.0
Perfluorodecane Sulfonic acid	AveID	0.6607	0.5550		40.5	48.2	-16.0	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.8849		52.7	50.0	5.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7789	0.7863		50.5	50.0	1.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8819	0.9399		53.3	50.0	6.6	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5625		51.0	50.0	2.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.026		43.1	50.0	-13.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9201	0.8265		44.9	50.0	-10.2	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_033.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 05-Jan-2016 21:57:31 ALS Bottle#: 21 Worklist Smp#: 30
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 10:51:43 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc Date: 06-Jan-2016 09:18:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.773	5.801	-0.028	554513	60.1		120	2074	
2 Perfluorobutyric acid	212.9 > 169.0	5.773	5.802	-0.029	811797	48.4		96.7	2227	
D 3 13C5-PFPeA	267.9 > 223.0	6.891	6.924	-0.033	1160182	56.3		113	2319	
4 Perfluoropentanoic acid	262.9 > 219.0	6.895	6.927	-0.032	1135199	47.5		94.9	429	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.008	7.039	-0.031	448362	NC			689	
	298.9 > 99.0	7.008	7.039	-0.031	253020		1.77(0.00-0.00)		780	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.008	7.039	-0.031	448362	43.6		98.7		
7 Perfluorohexanoic acid	313.0 > 269.0	8.138	8.176	-0.038	1081949	46.1		92.1	1271	
D 6 13C2 PFHxA	315.0 > 270.0	8.138	8.177	-0.039	989166	56.7		113	2267	
D 8 13C4-PFHpA	367.0 > 322.0	9.382	9.413	-0.031	1155173	54.1		108	3416	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.382	9.413	-0.031	1181093	50.2		100	816	
D 11 18O2 PFHxS	403.0 > 84.0	9.411	9.444	-0.033	504923	48.8		103	1533	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.411	9.449	-0.038	332516	NC			779	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.411	9.449	-0.038	332516	43.9		92.9		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.490	10.524	-0.034		1127122	51.6		103	3159	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.497	10.528	-0.031	1.000	1070387	49.1		98.1	820	
413.0 > 169.0	10.497	10.528	-0.031	1.000	403543		2.65(0.00-0.00)		842	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.497	10.530	-0.033	1.000	341417	46.9		98.6		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.497	10.530	-0.033	1.000	341417	NC			1190	
D 16 13C4 PFOS										
503.0 > 80.0	11.451	11.478	-0.027		579713	52.0		109	1822	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.451	11.480	-0.029	1.000	603453	48.9		102	271	
499.0 > 99.0	11.451	11.480	-0.029	1.000	339611		1.78(0.00-0.00)		679	
D 17 13C5 PFNA										
468.0 > 423.0	11.474	11.501	-0.027		1068111	53.7		107	3412	
18 Perfluorononanoic acid										
463.0 > 419.0	11.474	11.502	-0.028	1.000	843273	50.1		100	1571	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.311	12.333	-0.022	1.000	985105	54.2		108	2705	
D 19 13C2 PFDA										
515.0 > 470.0	12.300	12.336	-0.036		954251	49.3		98.5	2462	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.849	12.858	-0.009	1.000	1288587	52.9		106	781	
D 23 13C8 FOSA										
506.0 > 78.0	12.849	12.860	-0.011		1434020	49.5		99.0	640	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.975	13.007	-0.032	1.000	324433	NC			1034	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.975	13.007	-0.032	1.000	324433	40.5		84.0		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.023	13.053	-0.030	1.000	1179754	52.7		105	1942	
D 26 13C2 PFUnA										
565.0 > 520.0	13.023	13.054	-0.031		1333272	50.9		102	3005	
D 28 13C2 PFDaA										
615.0 > 570.0	13.639	13.666	-0.027		1445630	51.9		104	1926	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.639	13.668	-0.029	1.000	1136762	50.5		101	1345	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.159	14.182	-0.023	1.000	1358683	53.3		107	1141	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.589	14.618	-0.029		1201005	52.1		104	2934	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.589	14.618	-0.029	1.000	813164	51.0		102	493	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.210	15.234	-0.024	1.000	1483161	43.1		86.1	1592	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.210	15.234	-0.024		1421727	50.3		101	2598	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid
 913.0 > 869.0 15.536 15.582 -0.046 1.000 1194786 44.9 89.8 1641

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_033.d

Injection Date: 05-Jan-2016 21:57:31

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 30

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

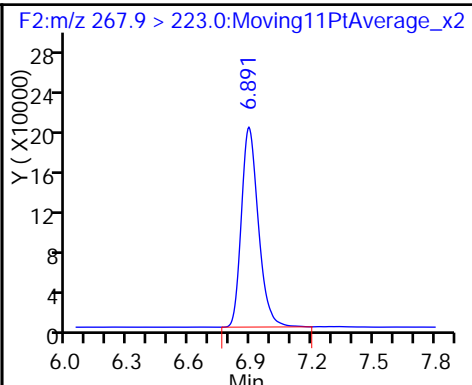
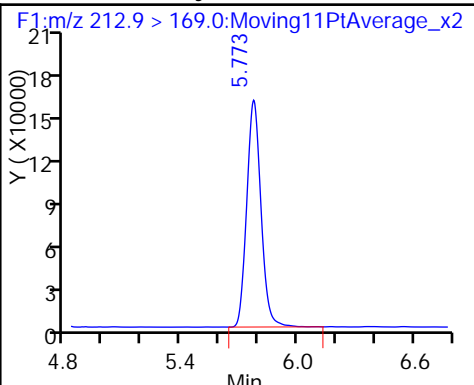
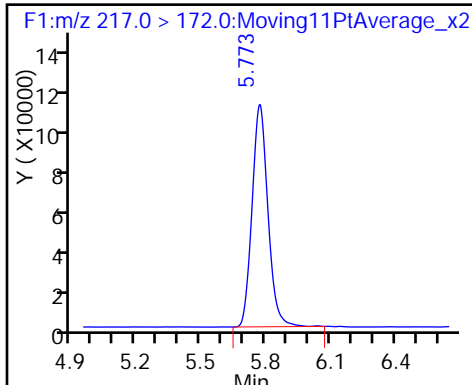
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

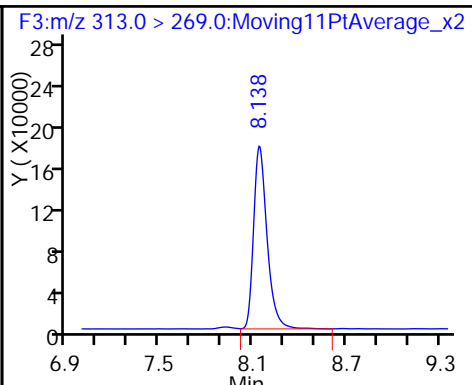
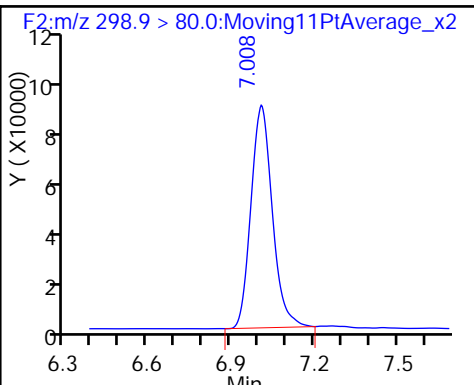
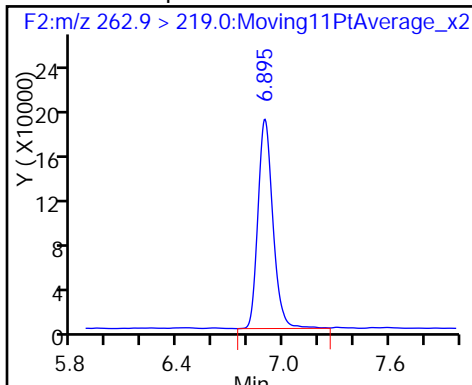
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

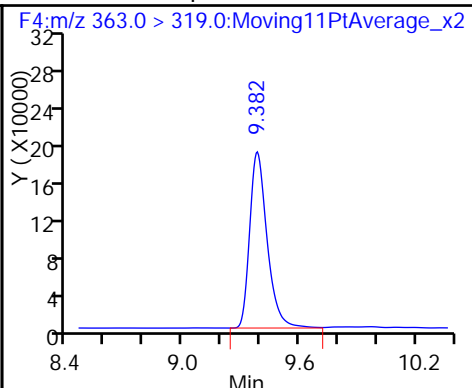
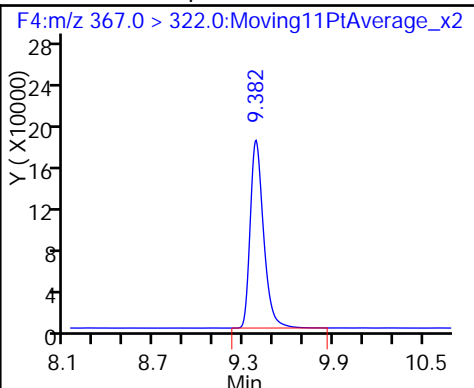
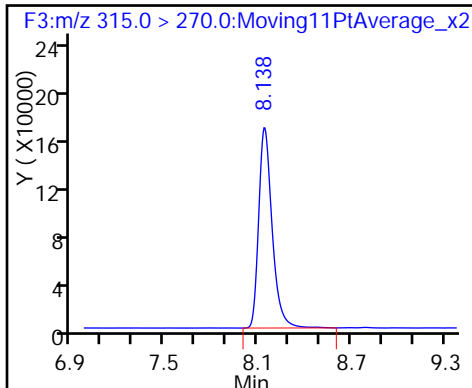
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

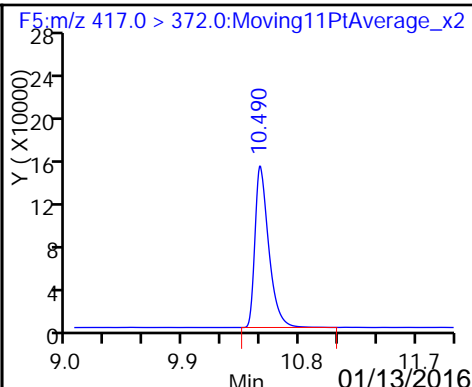
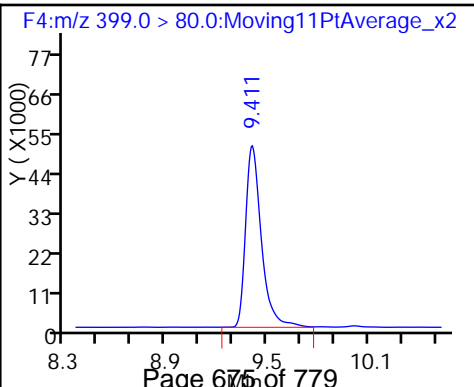
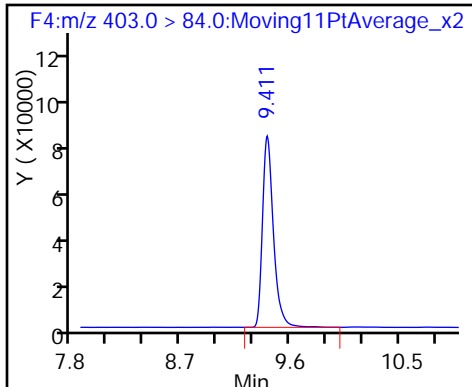
9 Perfluoroheptanoic acid

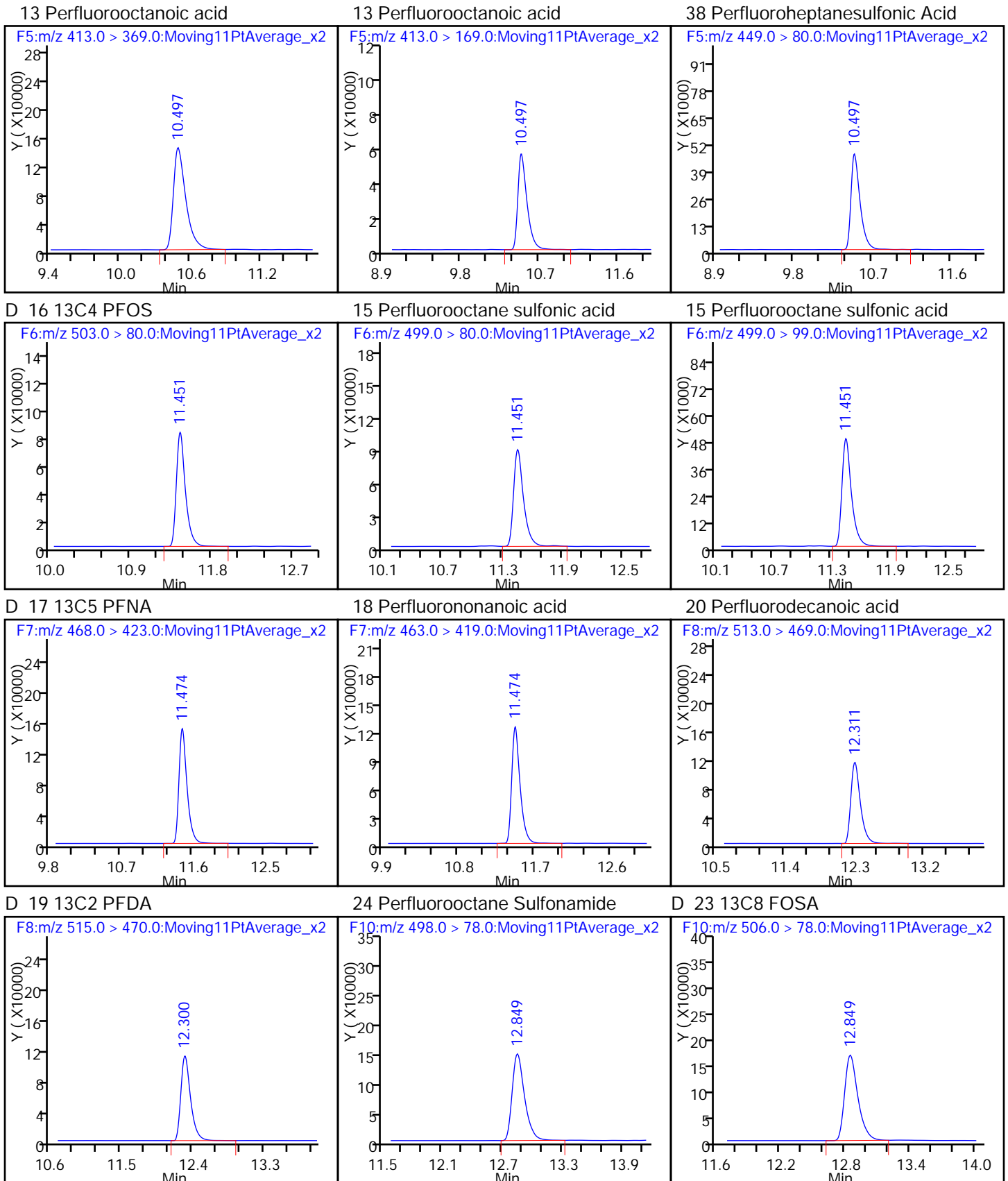


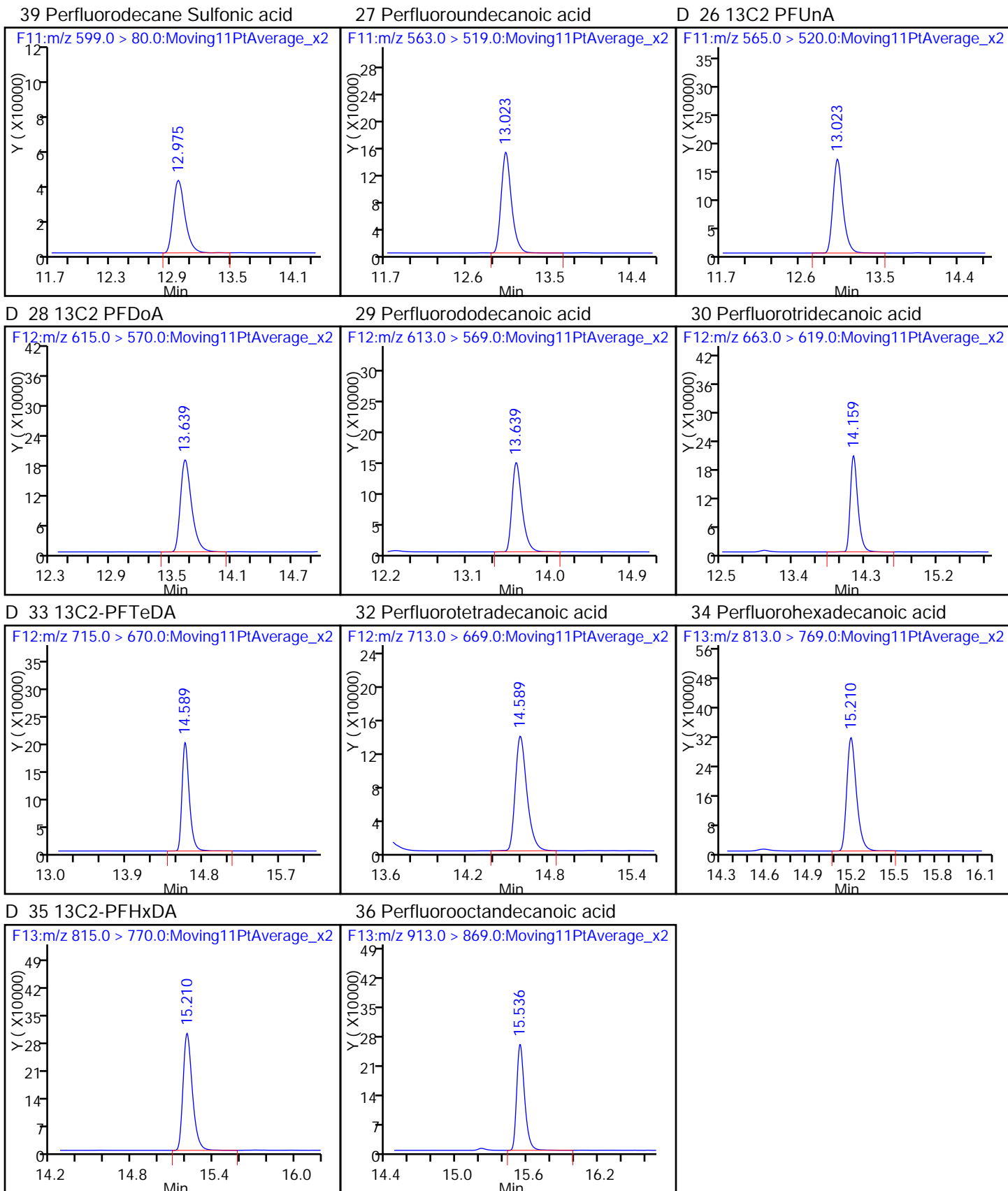
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: ICV 320-97425/12 Calibration Date: 01/06/2016 15:10
 Instrument ID: A6 Calib Start Date: 01/06/2016 11:00
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 01/06/2016 14:07
 Lab File ID: 06JAN2016A6A_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.380	1.535		55.6	50.0	11.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	1.034		51.2	50.0	2.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.078	1.040		48.2	50.0	-3.5	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.072		53.9	50.0	7.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	1.086		50.7	50.0	1.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9693	1.101		54.2	47.8	13.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8528	0.8938		52.4	50.0	4.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.052	1.037		49.3	50.0	-1.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9819	1.071		54.5	50.0	9.0	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.9454		53.8	50.0	7.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7850	0.8474		54.0	50.0	7.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.016	1.037		51.0	50.0	2.1	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.6595		52.3	50.0	4.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.433		60.2	50.0	20.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.005	1.196		59.5	50.0	19.0	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_011.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 06-Jan-2016 15:10:03 ALS Bottle#: 24 Worklist Smp#: 12
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A4*sub6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:12 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:39:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.763	5.763	0.0	963805	52.4		105	3158	
2 Perfluorobutyric acid	212.9 > 169.0	5.763	5.763	0.0	1479028	55.6			3513	
D 3 13C5-PFPeA	267.9 > 223.0	6.868	6.863	0.005	1831385	52.7		105	3238	
4 Perfluoropentanoic acid	262.9 > 219.0	6.872	6.864	0.008	1893220	51.2			371	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.978	6.976	0.002	790444	NC			1442	
	298.9 > 99.0	6.983	6.976	0.007	484020		1.63(0.00-0.00)		1141	
D 6 13C2 PFHxA	315.0 > 270.0	8.105	8.100	0.005	1900587	58.1		116	4021	
7 Perfluorohexanoic acid	313.0 > 269.0	8.105	8.102	0.003	1975911	48.2			2102	
D 8 13C4-PFHpA	367.0 > 322.0	9.335	9.331	0.004	1764489	51.5		103	3508	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.335	9.335	0.0	1891719	53.9			1237	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.370	9.363	0.007	461623	NC			1346	
D 11 18O2 PFHxS	403.0 > 84.0	9.364	9.363	0.001	751938	51.7		109	2073	
D 12 13C4 PFOA	417.0 > 372.0	10.455	10.452	0.003	1881136	48.6		97.3	4172	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.455	10.453	0.002	1.000	2043807	50.7			1125	
413.0 > 169.0	10.455	10.453	0.002	1.000	723854		2.82(0.00-0.00)		1077	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.455	10.456	-0.001	1.000	467858	NC			1362	
D 16 13C4 PFOS										
503.0 > 80.0	11.408	11.405	0.003		912616	48.8		102	2666	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.408	11.408	0.0	1.000	1003627	54.2			374	
499.0 > 99.0	11.408	11.408	0.0	1.000	536003		1.87(0.00-0.00)		1120	
D 17 13C5 PFNA										
468.0 > 423.0	11.430	11.427	0.003		1695160	52.8		106	5498	
18 Perfluorononanoic acid										
463.0 > 419.0	11.430	11.431	-0.001	1.000	1515199	52.4			2173	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.259	12.260	-0.001	1.000	1668187	49.3			2483	
D 19 13C2 PFDA										
515.0 > 470.0	12.259	12.262	-0.003		1608228	52.1		104	2733	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		2248048	52.7		105	3138	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	2406818	54.5			1416	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.923	12.929	-0.006	1.000	461427	NC			1365	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.975	12.978	-0.003	1.000	1867649	53.8			1909	
D 26 13C2 PFUnA										
565.0 > 520.0	12.975	12.979	-0.004		1975614	52.4		105	2185	
D 28 13C2 PFDoA										
615.0 > 570.0	13.593	13.597	-0.004		2132598	50.3		101	2947	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.593	13.597	-0.004	1.000	1807175	54.0			1323	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.113	14.114	-0.001	1.000	2211993	51.0			1365	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.543	14.548	-0.005		2153360	55.7		111	3433	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.543	14.549	-0.006	1.000	1406506	52.3			451	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.169	15.177	-0.008	1.000	3055714	60.2			2206	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.169	15.177	-0.008		2896657	59.0		118	3518	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.506	15.517	-0.011	1.000	2549821	59.5			1464	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFCIC_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_011.d

Injection Date: 06-Jan-2016 15:10:03

Instrument ID: A6

Lims ID: ICV

Client ID:

Operator ID: JRB

ALS Bottle#: 24

Worklist Smp#: 12

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

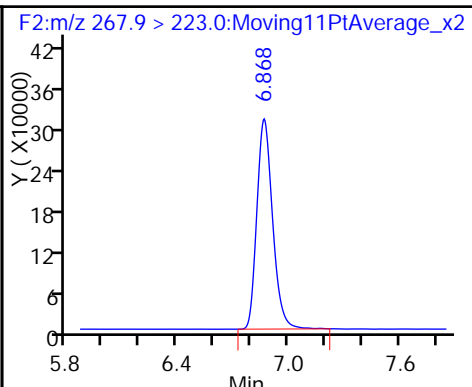
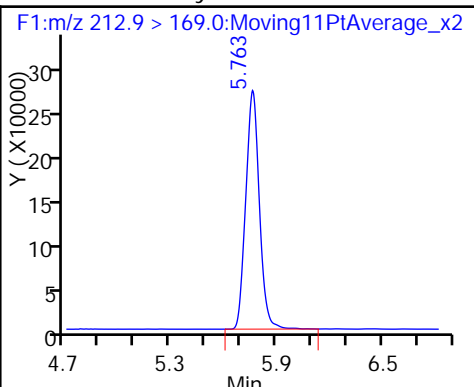
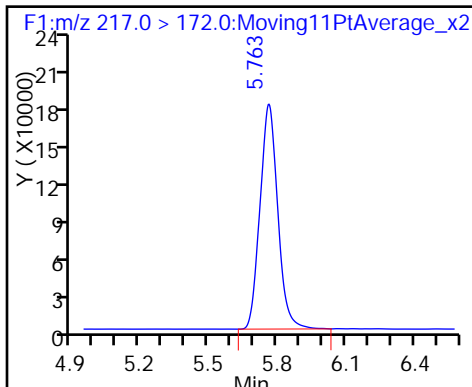
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

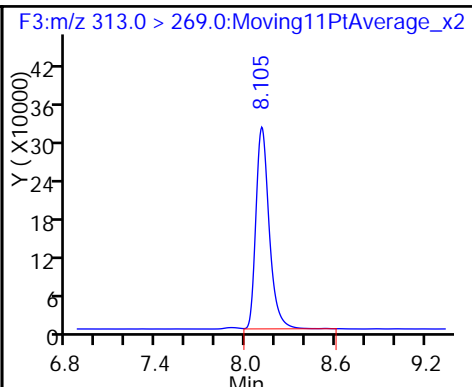
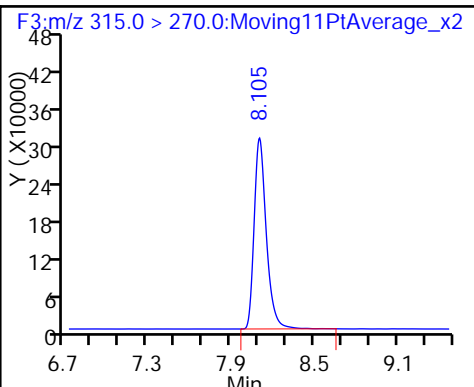
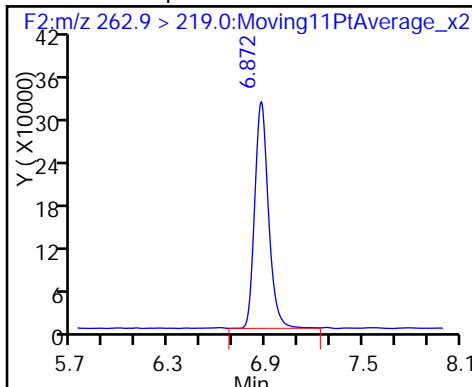
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 6 13C2 PFHxA

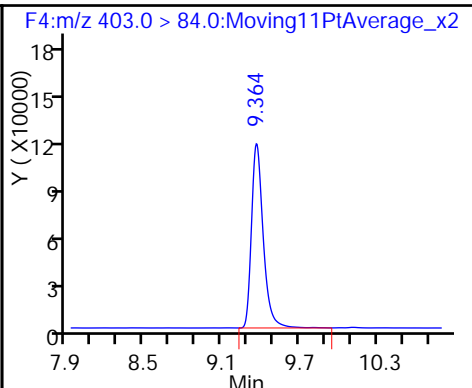
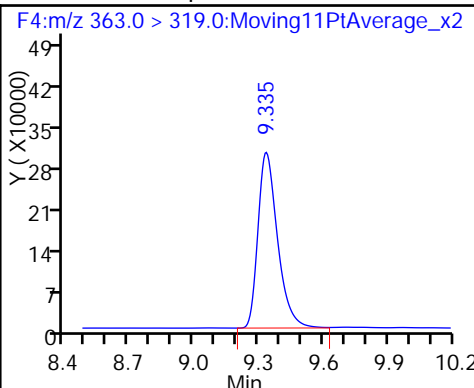
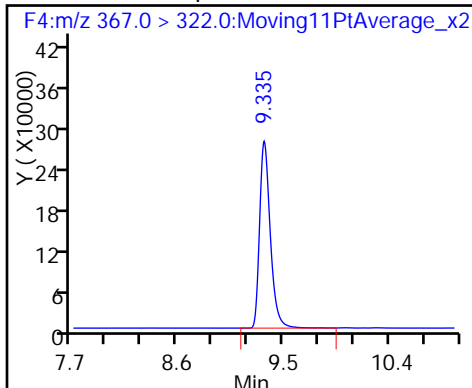
7 Perfluorohexanoic acid



D 8 13C4-PFHpA

9 Perfluoroheptanoic acid

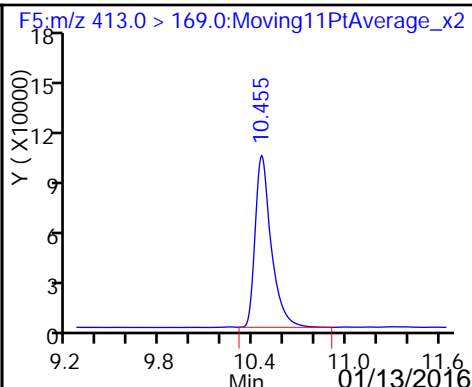
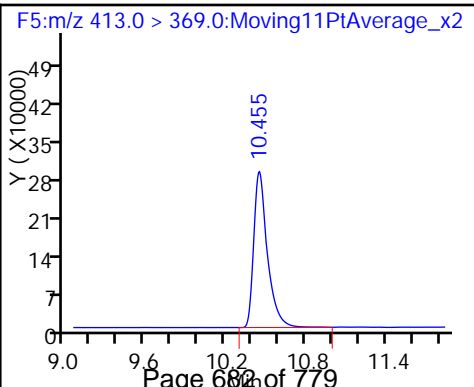
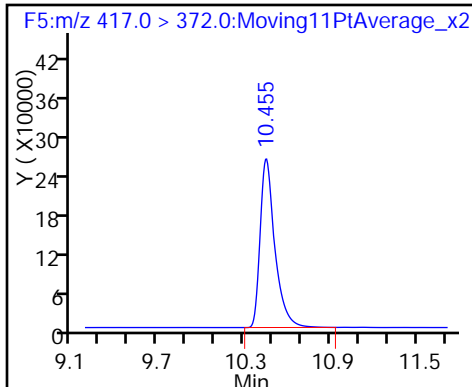
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid

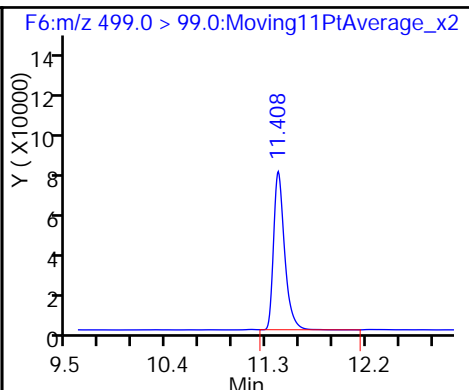
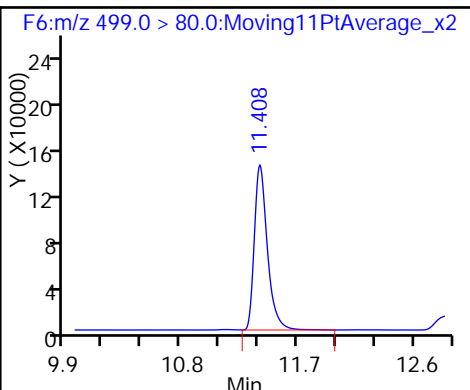
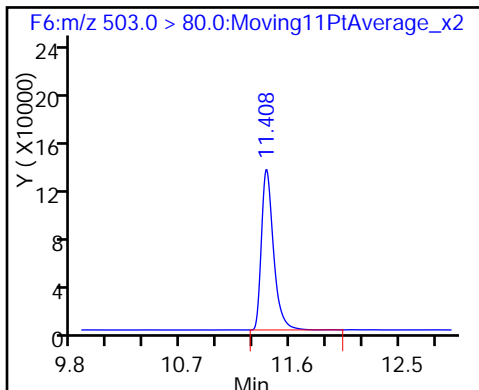
13 Perfluorooctanoic acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

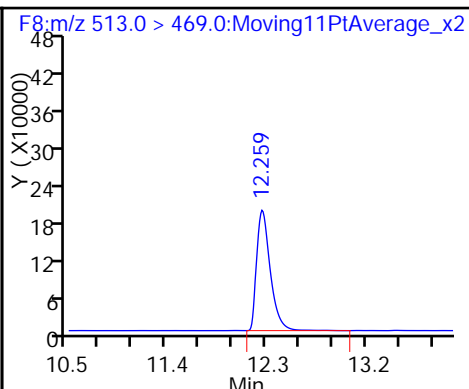
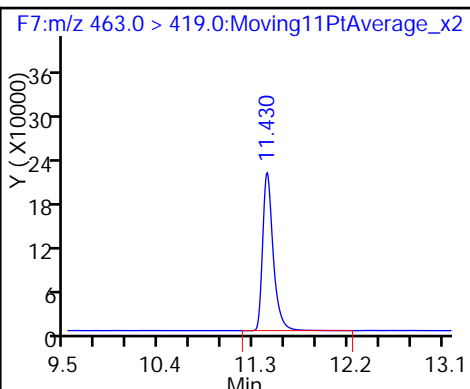
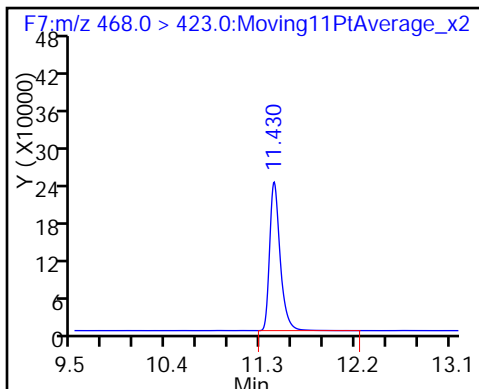
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

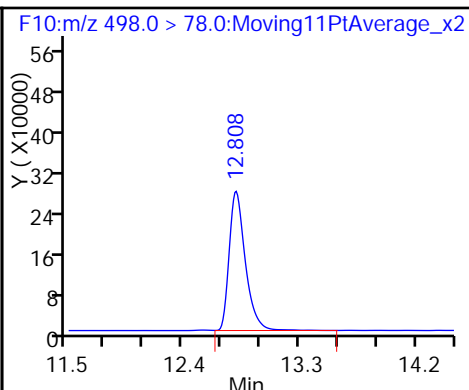
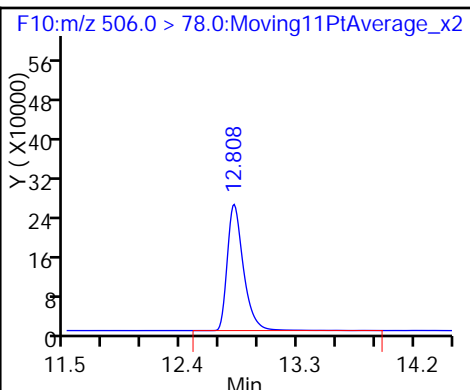
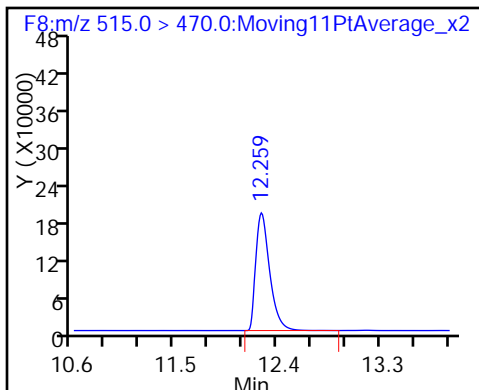
20 Perfluorodecanoic acid



D 19 13C2 PFDA

D 23 13C8 FOSA

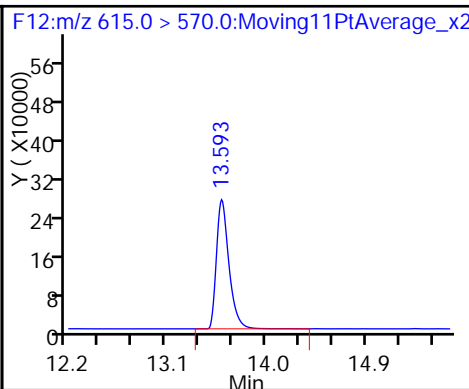
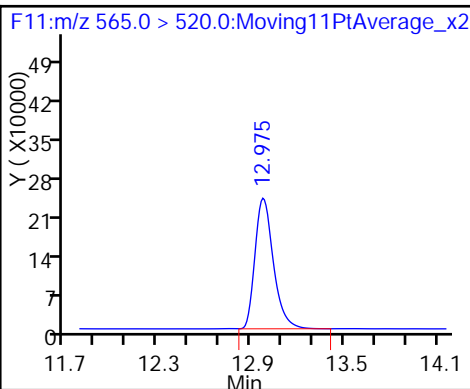
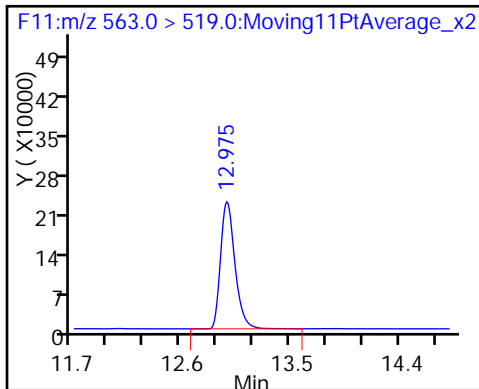
24 Perfluorooctane Sulfonamide



27 Perfluoroundecanoic acid

D 26 13C2 PFUnA

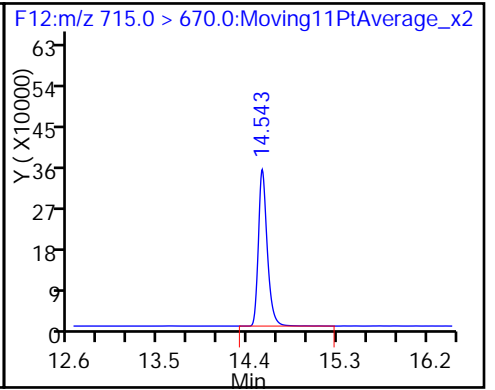
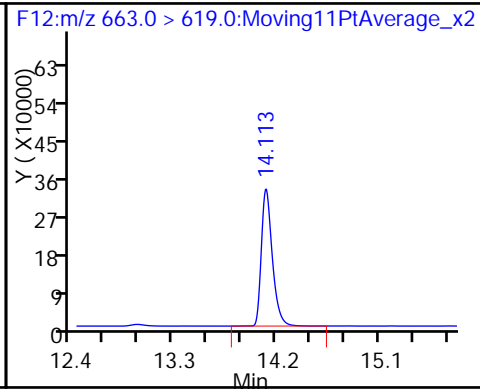
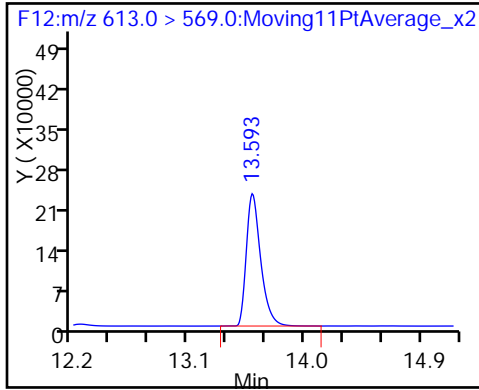
D 28 13C2 PFDoA



29 Perfluorododecanoic acid

30 Perfluorotridecanoic acid

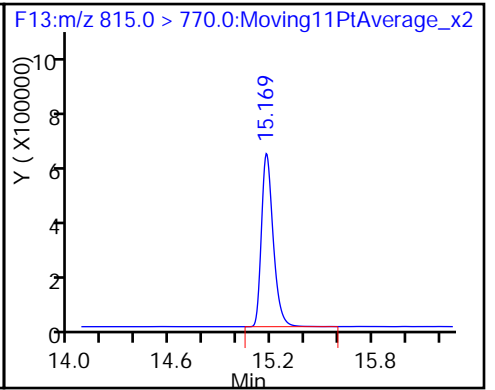
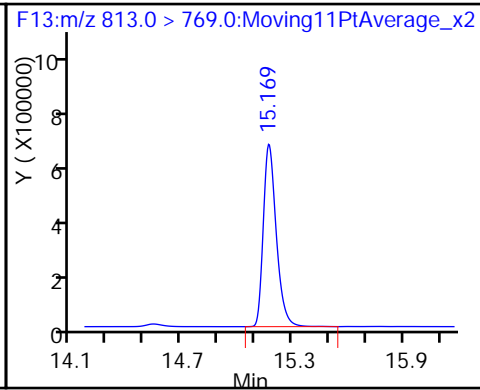
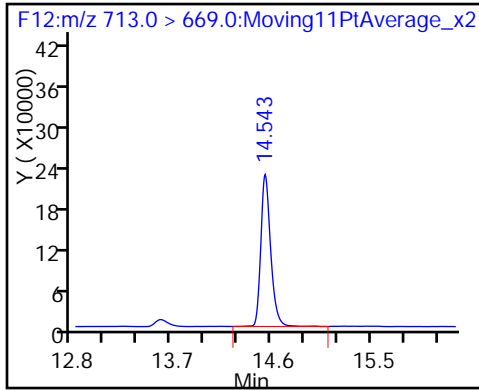
D 33 13C2-PFTeDA



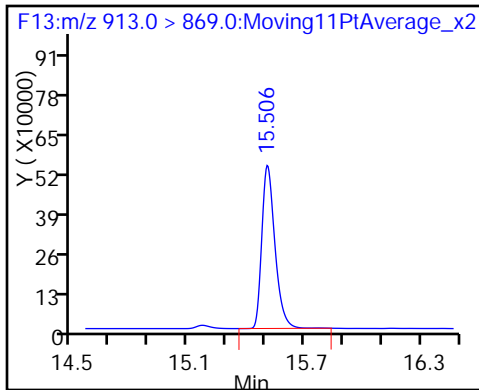
32 Perfluorotetradecanoic acid

34 Perfluorohexadecanoic acid

D 35 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97425/15 Calibration Date: 01/06/2016 20:53
 Instrument ID: A6 Calib Start Date: 01/06/2016 11:00
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 01/06/2016 14:07
 Lab File ID: 06JAN2016A6A_022.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.380	1.435		52.0	50.0	4.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	0.9765		48.4	50.0	-3.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.066	1.015		42.1	44.2	-4.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.078	1.075		49.9	50.0	-0.2	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.010		50.7	50.0	1.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.5809	0.5439		44.3	47.3	-6.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.4923	0.4583		44.3	47.6	-6.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	0.9831		45.8	50.0	-8.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9693	0.9820		48.4	47.8	1.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8528	0.8760		51.4	50.0	2.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.052	0.9845		46.8	50.0	-6.4	25.0
Perfluorooctane Sulfonylamide (FOSA)	AveID	0.9819	1.034		52.6	50.0	5.3	25.0
Perfluorodecane Sulfonic acid	AveID	0.4693	0.4468		45.9	48.2	-4.8	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.8841		50.2	50.0	0.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7850	0.7690		49.0	50.0	-2.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.016	1.011		49.7	50.0	-0.6	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.6046		47.9	50.0	-4.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.186		48.8	50.0	-2.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.005	0.9052		45.0	50.0	-9.9	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_022.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 06-Jan-2016 20:53:40 ALS Bottle#: 21 Worklist Smp#: 15
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:24 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.766	5.763	0.003	811988	44.1		88.2	3260	
2 Perfluorobutyric acid	212.9 > 169.0	5.763	5.763	0.0	1164941	52.0		104	2963	
D 3 13C5-PFPeA	267.9 > 223.0	6.868	6.863	0.005	1555022	44.7		89.4	3276	
4 Perfluoropentanoic acid	262.9 > 219.0	6.868	6.864	0.004	1518491	48.4		96.7	280	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.978	6.976	0.002	580643	NC			1313	
	298.9 > 99.0	6.978	6.976	0.002	349640		1.66(0.00-0.00)		718	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.978	6.976	0.002	580643	42.1		95.2		
D 6 13C2 PFHxA	315.0 > 270.0	8.105	8.100	0.005	1468481	44.9		89.8	4508	
7 Perfluorohexanoic acid	313.0 > 269.0	8.105	8.102	0.003	1579128	49.9		99.8	1951	
D 8 13C4-PFHpA	367.0 > 322.0	9.329	9.331	-0.002	1550550	45.2		90.4	3785	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.329	9.335	-0.006	1566258	50.7		101	1317	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.364	9.363	0.001	332999	NC			826	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.364	9.363	0.001	332999	44.3		93.6		
D 11 18O2 PFHxS	403.0 > 84.0	9.364	9.363	0.001	612210	42.1		89.1	1508	
D 12 13C4 PFOA	417.0 > 372.0	10.448	10.452	-0.004	1673586	43.3		86.5	5322	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.448	10.453	-0.005	1.000	1645281	45.8		91.7	883	
413.0 > 169.0	10.448	10.453	-0.005	1.000	593498		2.77(0.00-0.00)		944	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.448	10.456	-0.008	1.000	385013	44.3		93.1		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.448	10.456	-0.008	1.000	385013	NC			1136	
D 16 13C4 PFOS										
503.0 > 80.0	11.400	11.405	-0.005		843625	45.1		94.4	2184	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.400	11.408	-0.008	1.000	828417	48.4		101	406	
499.0 > 99.0	11.400	11.408	-0.008	1.000	444326		1.86(0.00-0.00)		1199	
D 17 13C5 PFNA										
468.0 > 423.0	11.423	11.427	-0.004		1419148	44.2		88.5	4502	
18 Perfluorononanoic acid										
463.0 > 419.0	11.423	11.431	-0.008	1.000	1243203	51.4		103	2896	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.259	12.260	-0.001	1.000	1388204	46.8		93.6	4415	
D 19 13C2 PFDA										
515.0 > 470.0	12.259	12.262	-0.003		1410028	45.7		91.4	3692	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		1875011	43.9		87.9	2226	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	1938185	52.6		105	1365	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.923	12.929	-0.006	1.000	380054	NC			1099	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.923	12.929	-0.006	1.000	380054	45.9		95.2		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.965	12.978	-0.013	1.000	1514987	50.2		100	2089	
D 26 13C2 PFUnA										
565.0 > 520.0	12.965	12.979	-0.014		1713590	45.4		90.9	3272	
D 28 13C2 PFDoA										
615.0 > 570.0	13.584	13.597	-0.013		1951002	46.0		92.1	2297	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.584	13.597	-0.013	1.000	1500243	49.0		98.0	1394	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.098	14.114	-0.016	1.000	1971983	49.7		99.4	1377	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.530	14.548	-0.018		1772657	45.9		91.8	2553	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.537	14.549	-0.012	1.000	1179624	47.9		95.8	397	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.159	15.177	-0.018	1.000	2313350	48.8		97.6	1652	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.159	15.177	-0.018		2197446	44.8		89.5	2984	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.496	15.517	-0.021	1.000	1766040	45.0		90.1	1254	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_022.d

Injection Date: 06-Jan-2016 20:53:40

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 15

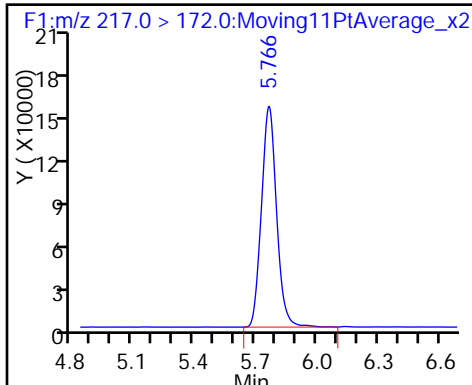
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

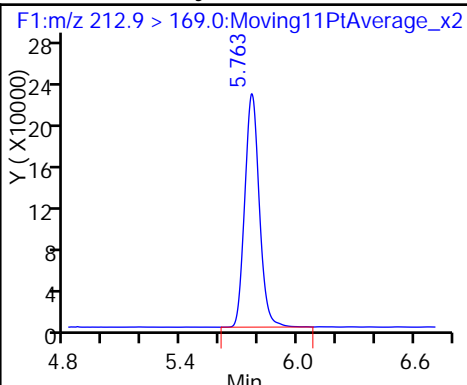
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

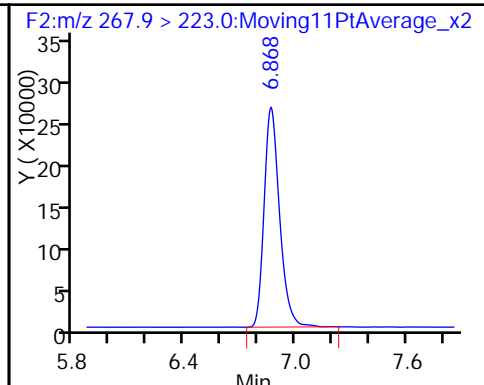
D 1 13C4 PFBA



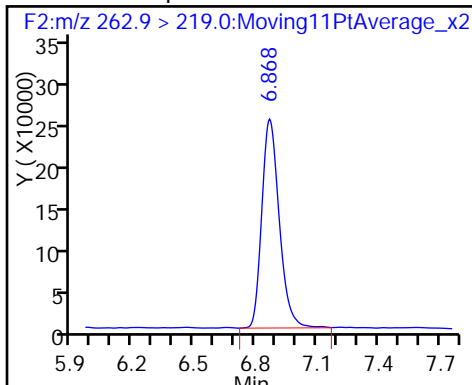
2 Perfluorobutyric acid



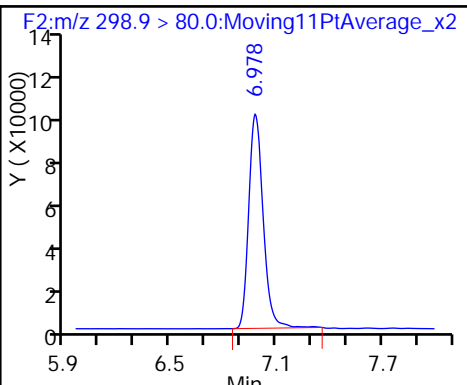
D 3 13C5-PFPeA



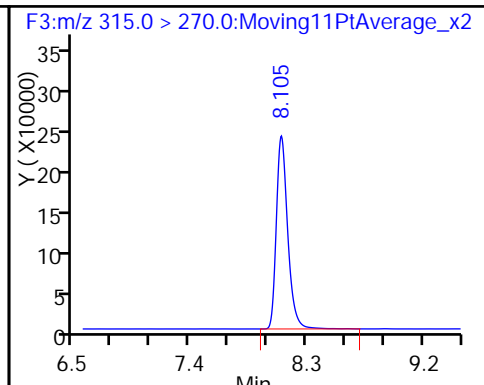
4 Perfluoropentanoic acid



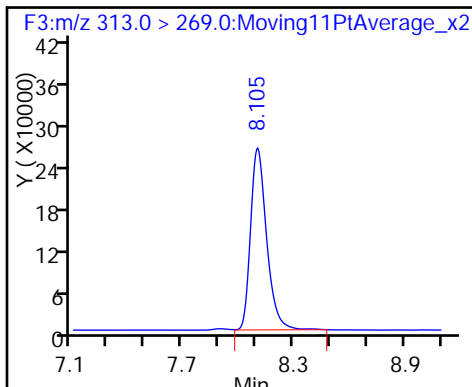
40 Perfluorobutanesulfonic acid



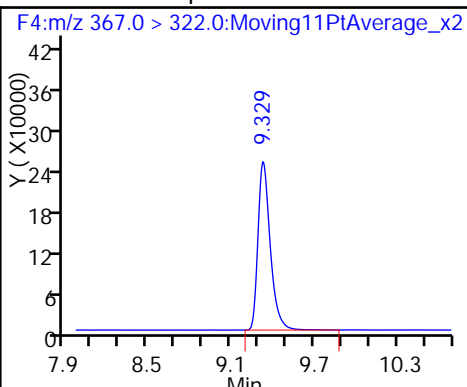
D 6 13C2 PFHxA



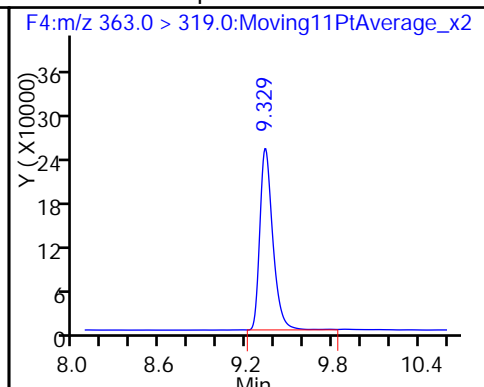
7 Perfluorohexanoic acid



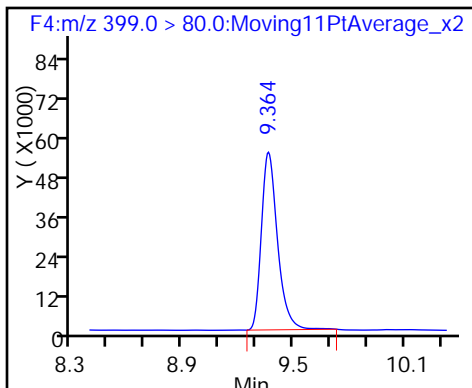
D 8 13C4-PFHpA



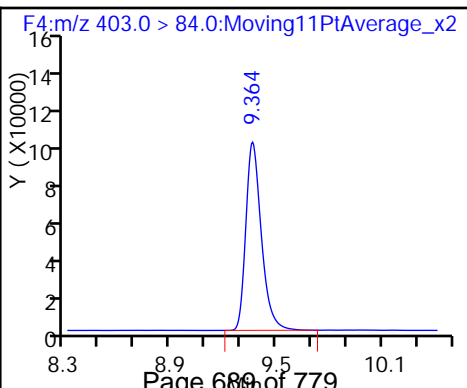
9 Perfluoroheptanoic acid



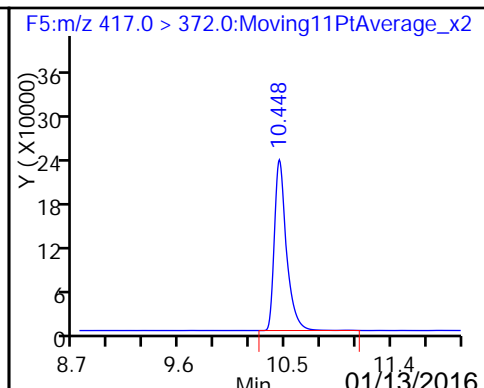
41 Perfluorohexanesulfonic acid

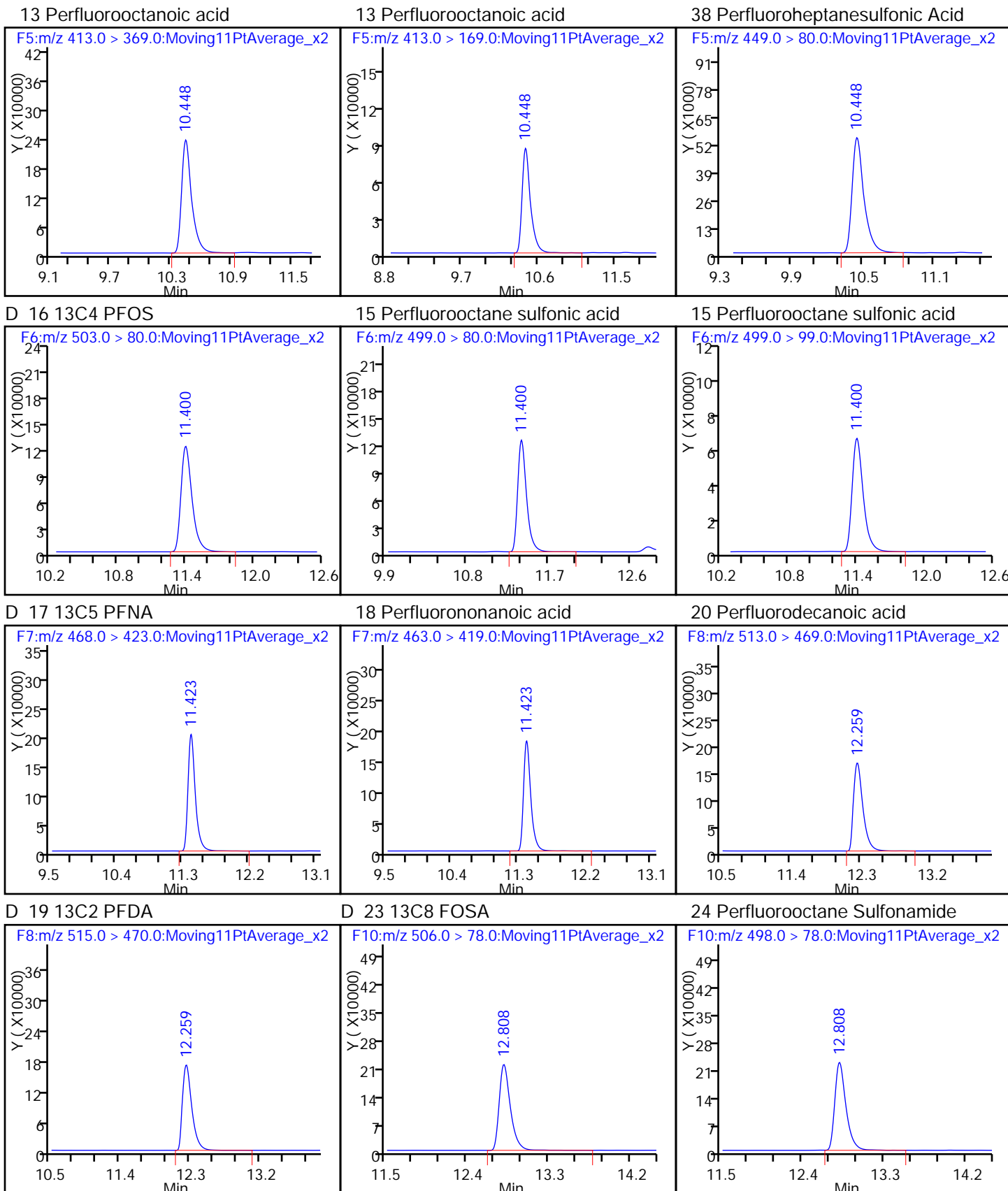


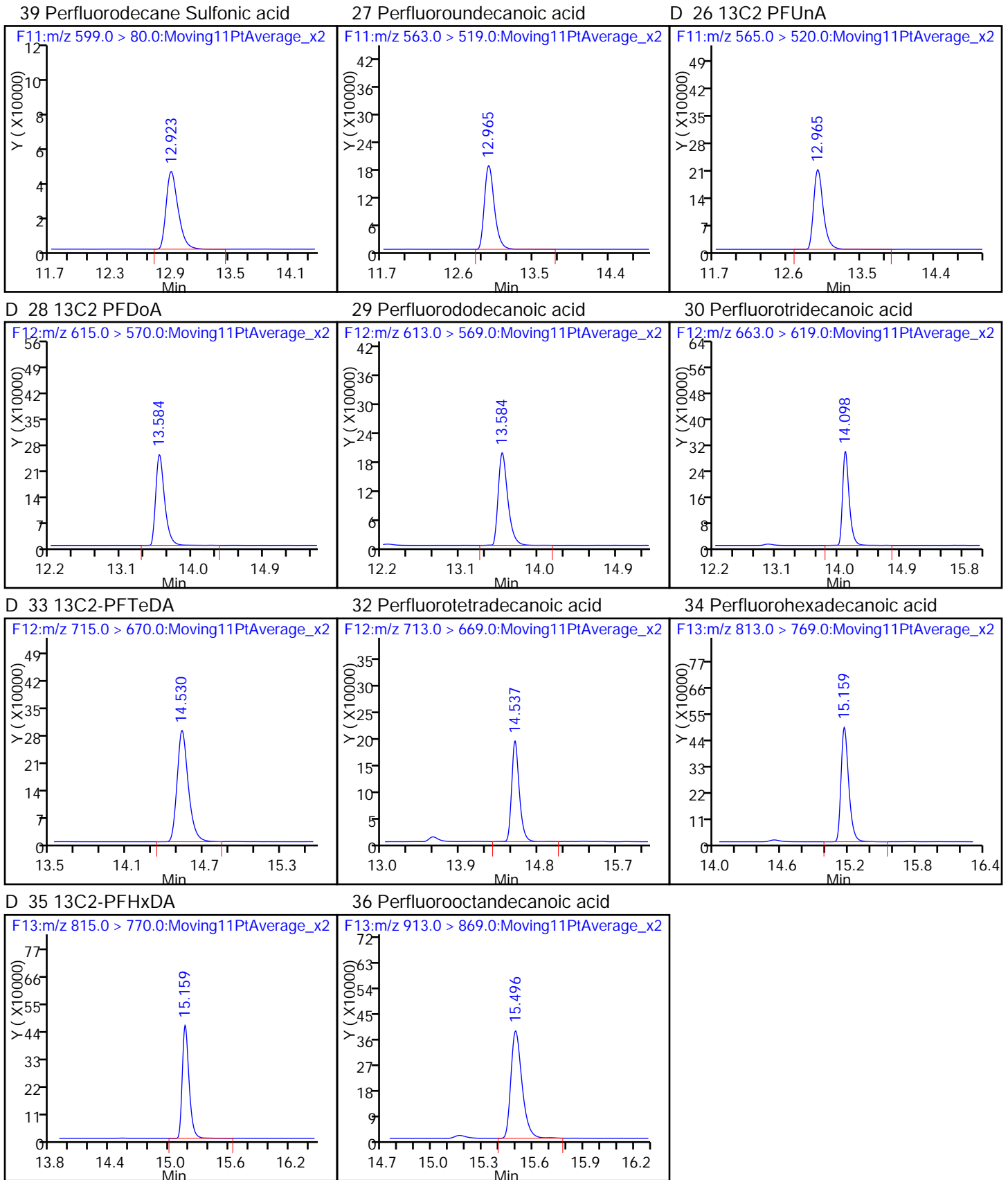
D 11 18O2 PFHxS



D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97425/34 Calibration Date: 01/07/2016 00:32
 Instrument ID: A6 Calib Start Date: 01/06/2016 11:00
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 01/06/2016 14:07
 Lab File ID: 06JAN2016A6A_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.380	1.357		19.7	20.0	-1.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	0.9573		19.0	20.0	-5.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.066	1.195		19.8	17.7	12.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.078	1.076		20.0	20.0	-0.2	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.037		20.7	20.0	3.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.5809	0.5962		19.4	18.9	2.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.4923	0.3913		15.1	19.0	-20.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	1.029		19.2	20.0	-4.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9693	0.9260		18.3	19.1	-4.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8528	0.9108		21.4	20.0	6.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.052	1.027		19.5	20.0	-2.4	25.0
Perfluorooctane Sulfonylamide (FOSA)	AveID	0.9819	1.113		22.7	20.0	13.4	25.0
Perfluorodecane Sulfonic acid	AveID	0.4693	0.4093		16.8	19.3	-12.8	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.8235		18.2	20.0	-8.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7850	0.8240		21.0	20.0	5.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.016	0.9939		19.6	20.0	-2.2	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.6598		20.6	20.0	3.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.532		22.5	20.0	12.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.005	1.225		24.4	20.0	22.0	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_029.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 07-Jan-2016 00:32:16 ALS Bottle#: 20 Worklist Smp#: 34
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 08-Jan-2016 09:44:47 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc Date: 07-Jan-2016 08:57:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.763	5.763	0.0	858133	46.6		93.2	2941	
2 Perfluorobutyric acid	212.9 > 169.0	5.760	5.763	-0.003	465946	19.7		98.4	879	
D 3 13C5-PFPeA	267.9 > 223.0	6.863	6.863	0.0	1579526	45.4		90.8	4053	
4 Perfluoropentanoic acid	262.9 > 219.0	6.863	6.864	-0.001	604801	19.0		94.8	144	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.974	6.976	-0.002	245268	NC			526	
	298.9 > 99.0	6.974	6.976	-0.002	140160		1.75(0.00-0.00)		271	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.974	6.976	-0.002	245268	19.8		112		
D 6 13C2 PFHxA	315.0 > 270.0	8.094	8.100	-0.006	1443088	44.1		88.2	4664	
7 Perfluorohexanoic acid	313.0 > 269.0	8.100	8.102	-0.002	621103	20.0		99.8	1090	
D 8 13C4-PFHpA	367.0 > 322.0	9.323	9.331	-0.008	1563477	45.6		91.2	6051	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	648593	20.7		103	690	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.352	9.363	-0.011	130950	NC			495	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.352	9.363	-0.011	130950	19.4		103		
D 11 18O2 PFHxS	403.0 > 84.0	9.358	9.363	-0.005	549144	37.8		79.9	1767	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.441	10.452	-0.011		1633829	42.2		84.5	2703	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.441	10.453	-0.012	1.000	672358	19.2		96.0	630	
413.0 > 169.0	10.441	10.453	-0.012	1.000	243899		2.76(0.00-0.00)		370	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.441	10.456	-0.015	1.000	128544	15.1		79.5		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.441	10.456	-0.015	1.000	128544	NC			700	
D 16 13C4 PFOS										
503.0 > 80.0	11.393	11.405	-0.012		824723	44.1		92.3	2366	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.393	11.408	-0.015	1.000	305473	18.3		95.5	331	
499.0 > 99.0	11.393	11.408	-0.015	1.000	172689		1.77(0.00-0.00)		560	
D 17 13C5 PFNA										
468.0 > 423.0	11.416	11.427	-0.011		1386261	43.2		86.4	3536	
18 Perfluorononanoic acid										
463.0 > 419.0	11.416	11.431	-0.015	1.000	505045	21.4		107	1014	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.249	12.260	-0.011	1.000	565408	19.5		97.6	1341	
D 19 13C2 PFDA										
515.0 > 470.0	12.249	12.262	-0.013		1376408	44.6		89.2	3658	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		1530952	35.9		71.7	1309	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	681624	22.7		113	1216	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.913	12.929	-0.016	1.000	136158	NC			449	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.913	12.929	-0.016	1.000	136158	16.8		87.2		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.965	12.978	-0.013	1.000	557097	18.2		91.1	537	
D 26 13C2 PFUnA										
565.0 > 520.0	12.965	12.979	-0.014		1691310	44.9		89.7	3008	
D 28 13C2 PFDaA										
615.0 > 570.0	13.583	13.597	-0.014		1830685	43.2		86.4	2486	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.583	13.597	-0.014	1.000	603394	21.0		105	429	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.098	14.114	-0.016	1.000	727776	19.6		97.8	622	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.530	14.548	-0.018		1752398	45.4		90.7	2961	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.530	14.549	-0.019	1.000	483157	20.6		103	161	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.154	15.177	-0.023	1.000	1121915	22.5		112	1102	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.154	15.177	-0.023		2344996	47.8		95.5	3065	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.486	15.517	-0.031	1.000	897329	24.4	122	822	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_029.d

Injection Date: 07-Jan-2016 00:32:16

Instrument ID: A6

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 34

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

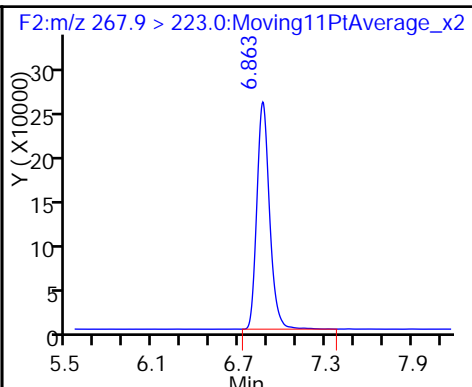
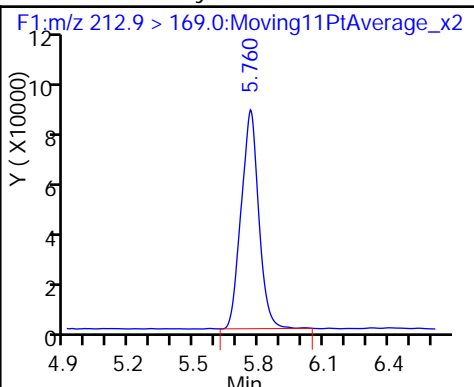
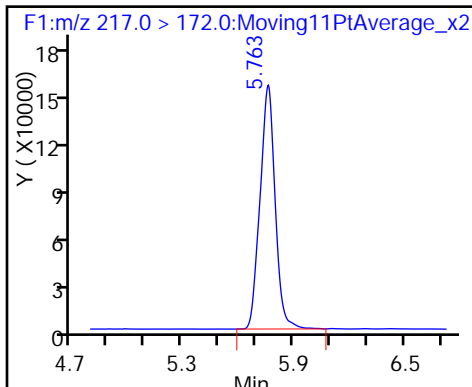
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

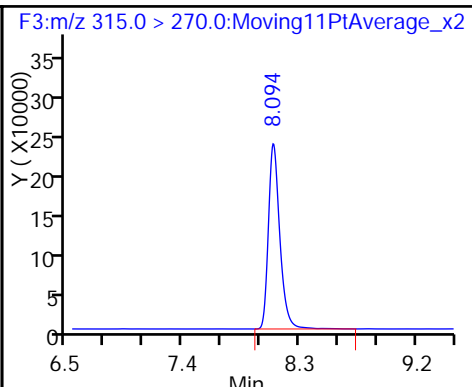
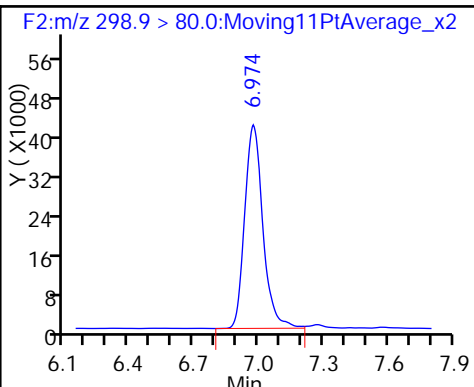
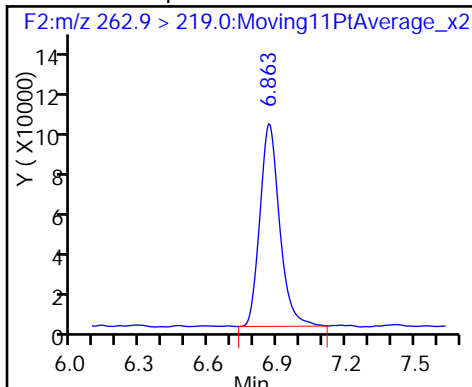
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

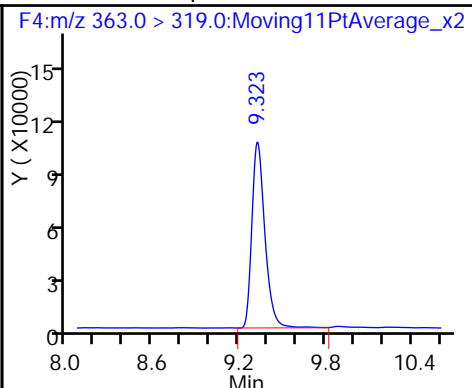
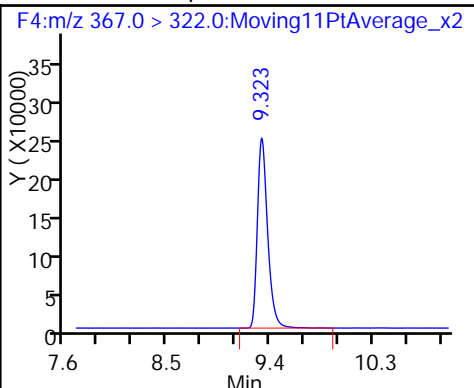
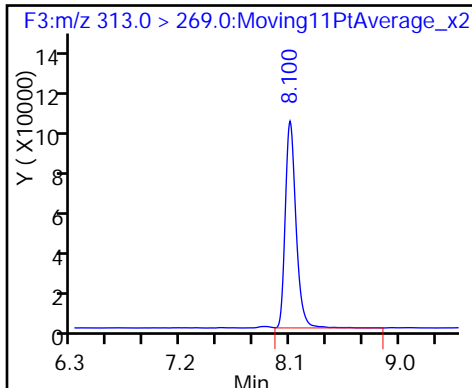
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

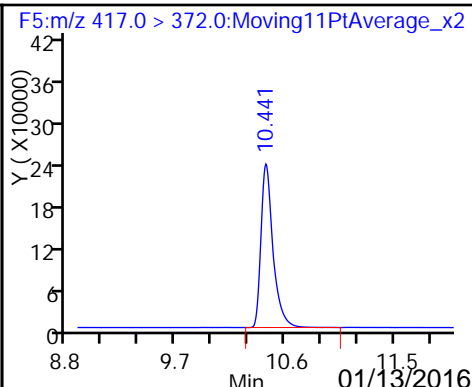
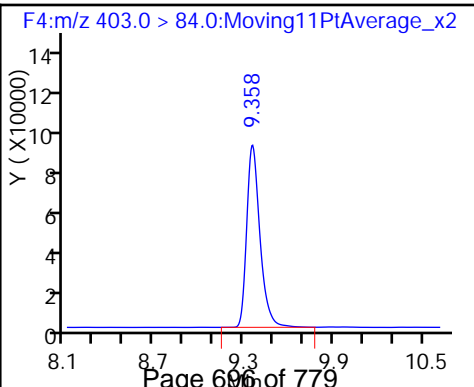
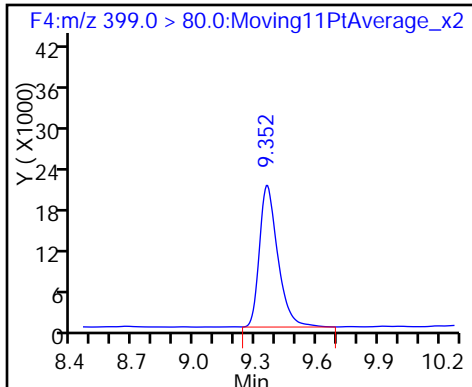
9 Perfluoroheptanoic acid

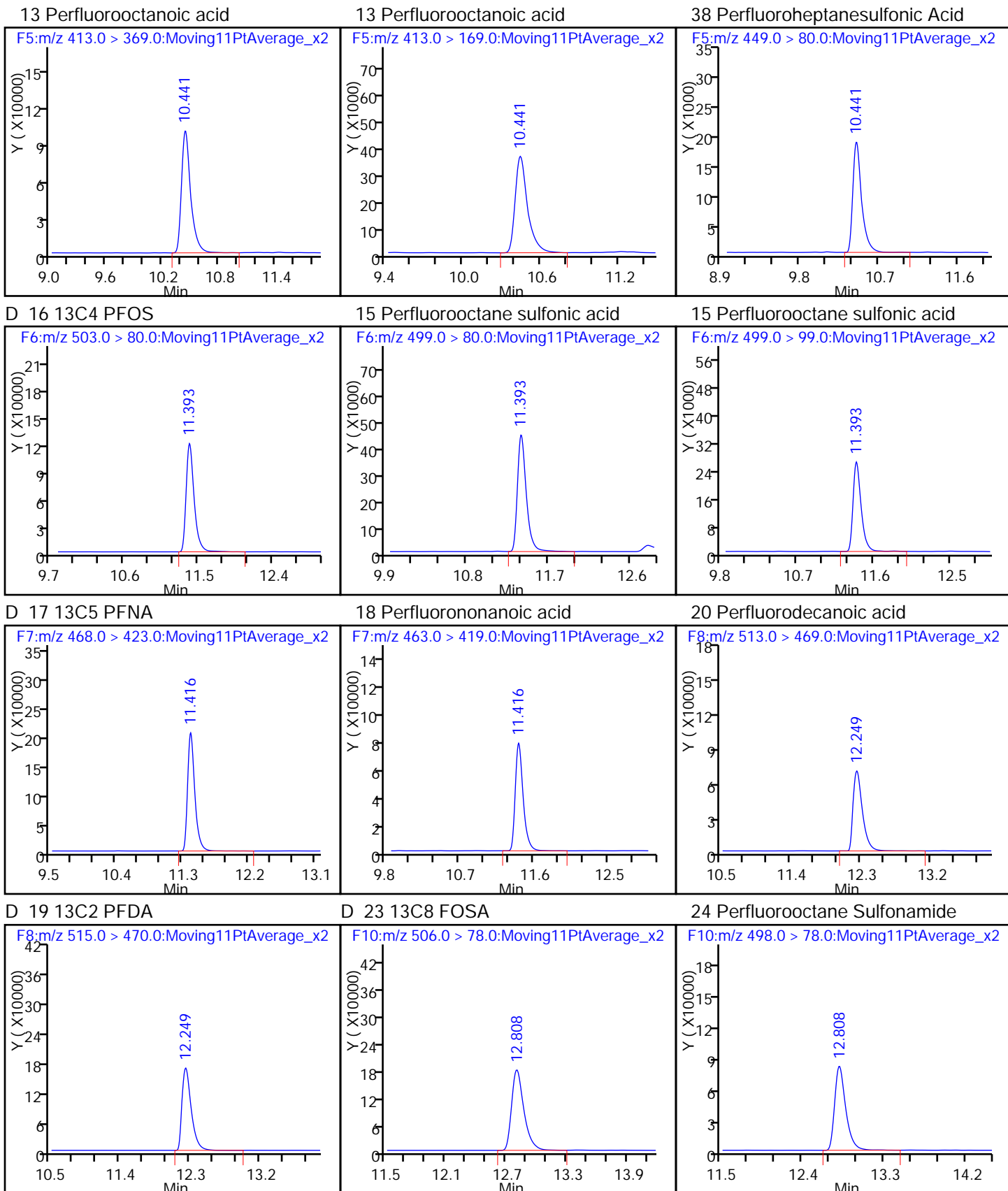


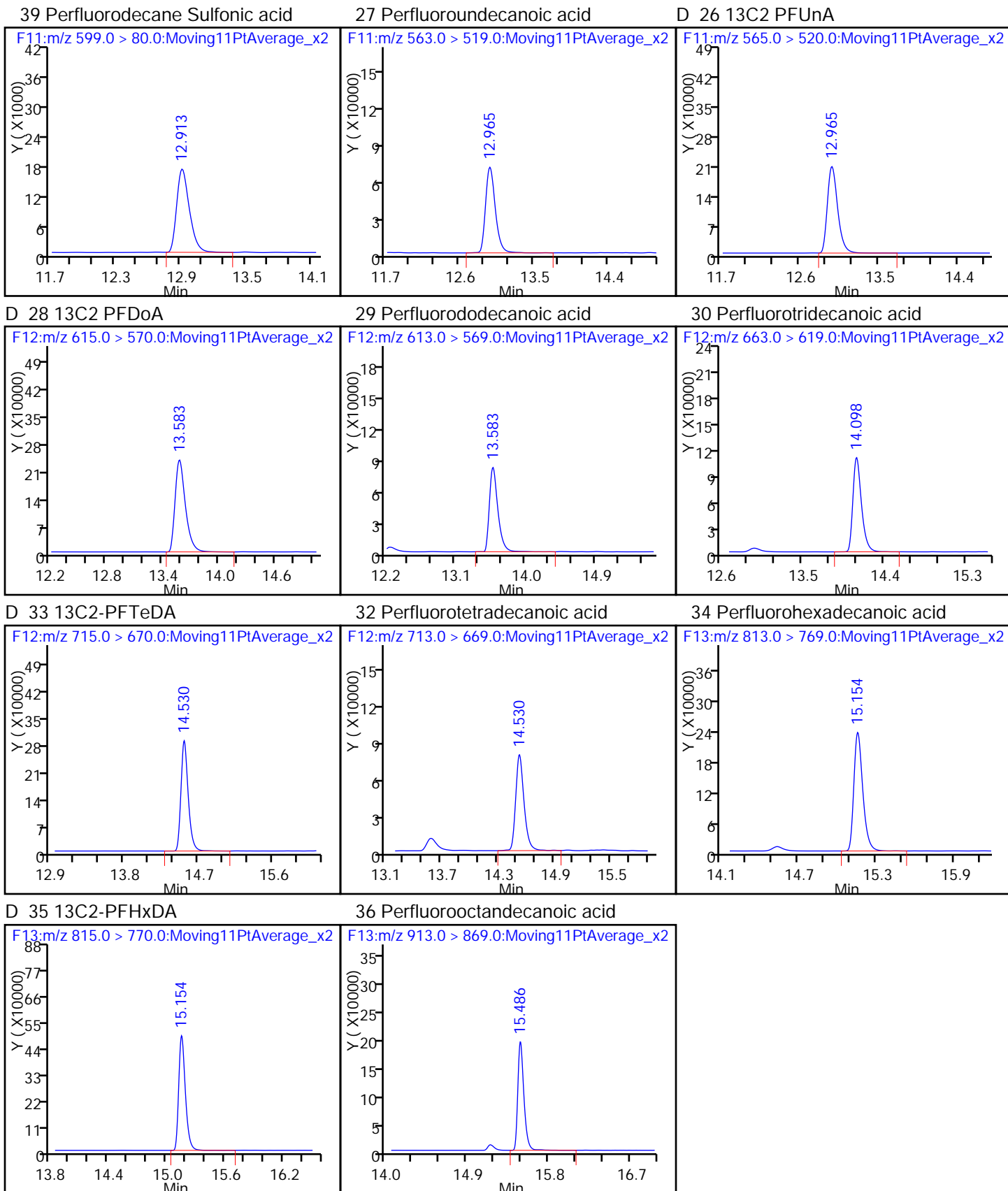
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97425/35 Calibration Date: 01/07/2016 10:24
 Instrument ID: A6 Calib Start Date: 01/06/2016 11:00
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 01/06/2016 14:07
 Lab File ID: 06JAN2016A6A_056.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.380	1.474		53.4	50.0	6.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	1.000		49.5	50.0	-0.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.066	1.136		47.1	44.2	6.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.078	1.033		47.9	50.0	-4.2	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		0.9793		49.2	50.0	-1.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.5809	0.4292		34.9	47.3	-26.1*	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	0.9518		44.4	50.0	-11.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.4923	0.2725		26.4	47.6	-44.6*	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9693	0.8478		41.8	47.8	-12.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8528	0.8476		49.7	50.0	-0.6	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.052	1.019		48.4	50.0	-3.1	25.0
Perfluorooctane Sulfonylamide (FOSA)	AveID	0.9819	1.076		54.8	50.0	9.6	25.0
Perfluorodecane Sulfonic acid	AveID	0.4693	0.1786		18.3	48.2	-61.9*	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.8402		47.7	50.0	-4.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7850	0.8155		51.9	50.0	3.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.016	1.024		50.4	50.0	0.8	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5566		44.0	50.0	-11.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.037		42.0	50.0	-16.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.005	0.7738		38.5	50.0	-23.0	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_056.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 07-Jan-2016 10:24:53 ALS Bottle#: 21 Worklist Smp#: 35
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:33 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 13:18:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.745	5.763	-0.018	503132	27.3		54.7	2552	
2 Perfluorobutyric acid	212.9 > 169.0	5.745	5.763	-0.018	741775	53.4		107	2636	
D 3 13C5-PFPeA	267.9 > 223.0	6.850	6.863	-0.013	1187715	34.2		68.3	2775	
4 Perfluoropentanoic acid	262.9 > 219.0	6.850	6.864	-0.014	1187987	49.5		99.1	346	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.960	6.976	-0.016	523539	NC			973	
	298.9 > 99.0	6.960	6.976	-0.016	315432		1.66(0.00-0.00)		784	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.960	6.976	-0.016	523539	47.1		107		
D 6 13C2 PFHxA	315.0 > 270.0	8.089	8.100	-0.011	968428	29.6		59.2	2497	
7 Perfluorohexanoic acid	313.0 > 269.0	8.089	8.102	-0.013	1000157	47.9		95.8	1495	
D 8 13C4-PFHpA	367.0 > 322.0	9.323	9.331	-0.008	1079911	31.5		63.0	2298	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.323	9.335	-0.012	1057539	49.2		98.4	1466	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.352	9.363	-0.011	211607	NC			568	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.352	9.363	-0.011	211607	34.9		73.9		
D 11 18O2 PFHxS	403.0 > 84.0	9.352	9.363	-0.011	493007	33.9		71.7	2035	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.440	10.452	-0.012		1052044	27.2		54.4	2900	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.440	10.453	-0.013	1.000	1001297	44.4		88.8	961	
413.0 > 169.0	10.440	10.453	-0.013	1.000	310476		3.23(0.00-0.00)		530	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.447	10.456	-0.009	1.000	211322	26.4		55.4		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.447	10.456	-0.009	1.000	211322	NC			753	
D 16 13C4 PFOS										
503.0 > 80.0	11.400	11.405	-0.005		778667	41.6		87.1	2702	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.400	11.408	-0.008	1.000	660166	41.8		87.5	366	
499.0 > 99.0	11.393	11.408	-0.015	0.999	370734		1.78(0.00-0.00)		923	
D 17 13C5 PFNA										
468.0 > 423.0	11.416	11.427	-0.011		800354	24.9		49.9	2001	
18 Perfluorononanoic acid										
463.0 > 419.0	11.416	11.431	-0.015	1.000	678366	49.7		99.4	636	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.249	12.260	-0.011	1.000	779088	48.4		96.9	1464	
D 19 13C2 PFDA										
515.0 > 470.0	12.249	12.262	-0.013		764726	24.8		49.6	1472	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		1279345	30.0		60.0	2282	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	1376253	54.8		110	1926	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.913	12.929	-0.016	1.000	140224	NC			417	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.913	12.929	-0.016	1.000	140224	18.3		38.1		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.964	12.978	-0.014	1.000	772499	47.7		95.4	1357	
D 26 13C2 PFUnA										
565.0 > 520.0	12.964	12.979	-0.015		919393	24.4		48.8	2298	
D 28 13C2 PFDaA										
615.0 > 570.0	13.583	13.597	-0.014		993549	23.4		46.9	1466	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.583	13.597	-0.014	1.000	810226	51.9		104	843	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.098	14.114	-0.016	1.000	1017533	50.4		101	1520	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.530	14.548	-0.018		847682	21.9		43.9	2009	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.530	14.549	-0.019	1.000	553013	44.0		88.1	288	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.159	15.177	-0.018	1.000	1030529	42.0		84.0	1854	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.159	15.177	-0.018		1011121	20.6		41.2	2845	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.486	15.517	-0.031	1.000	768794	38.5	77.0	1160	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_056.d

Injection Date: 07-Jan-2016 10:24:53

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 35

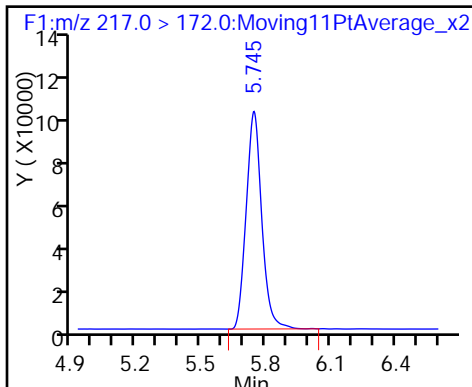
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

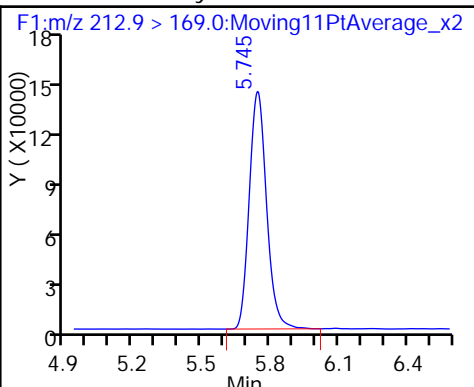
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

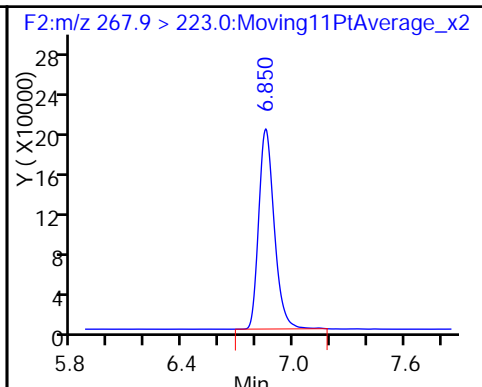
D 1 13C4 PFBA



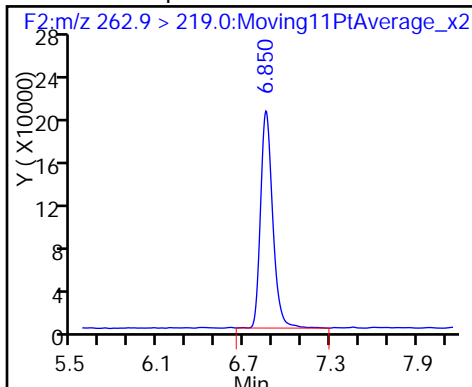
2 Perfluorobutyric acid



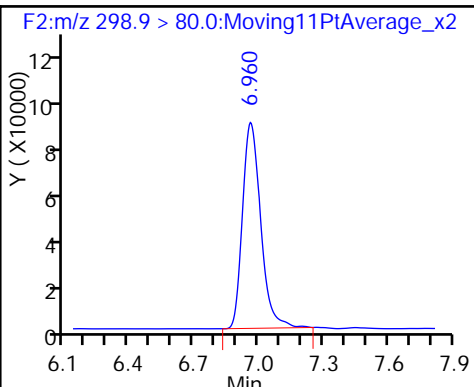
D 3 13C5-PFPeA



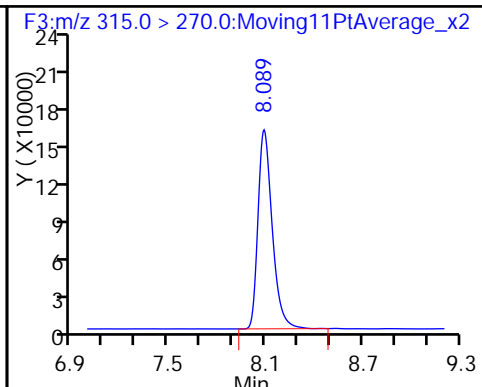
4 Perfluoropentanoic acid



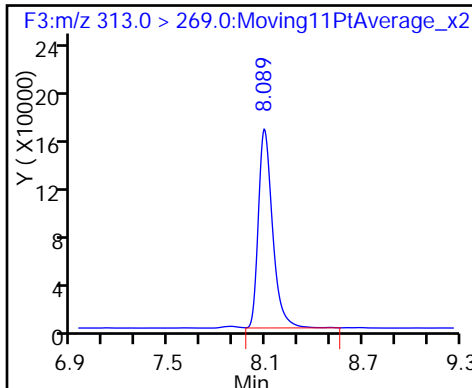
40 Perfluorobutanesulfonic acid



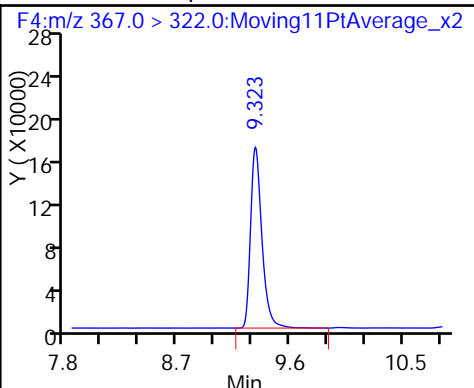
D 6 13C2 PFHxA



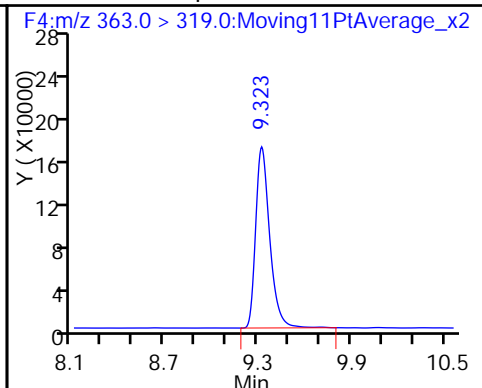
7 Perfluorohexanoic acid



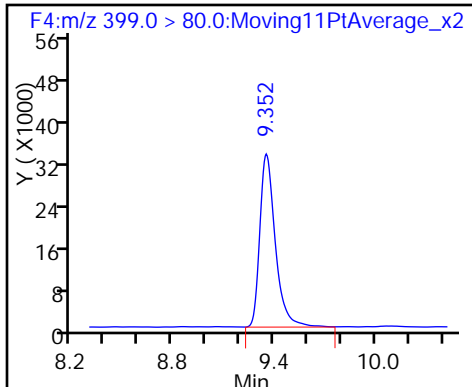
D 8 13C4-PFHpA



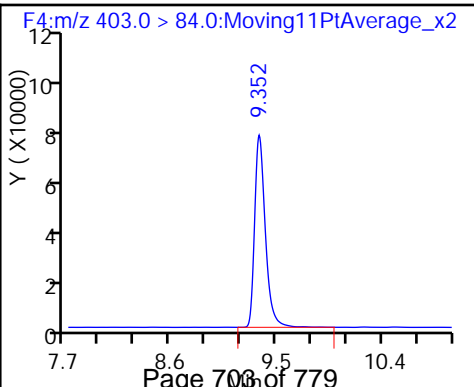
9 Perfluoroheptanoic acid



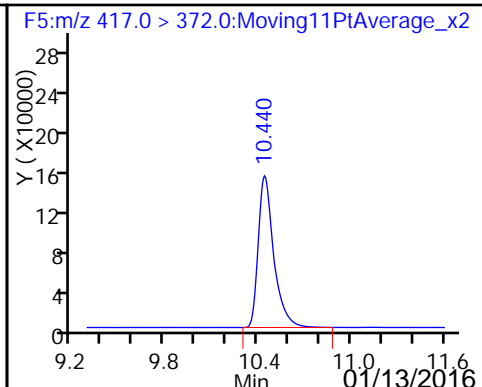
41 Perfluorohexanesulfonic acid

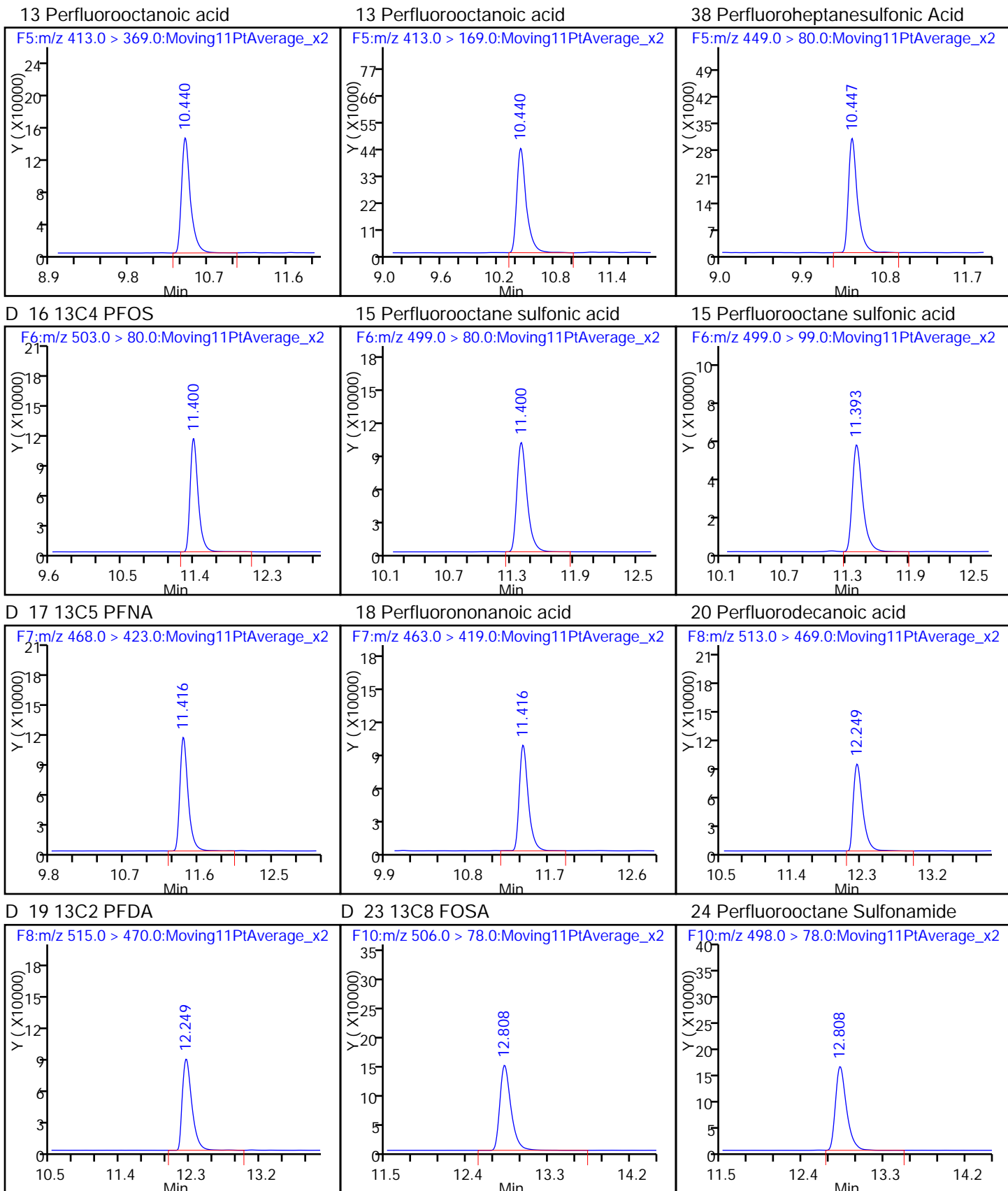


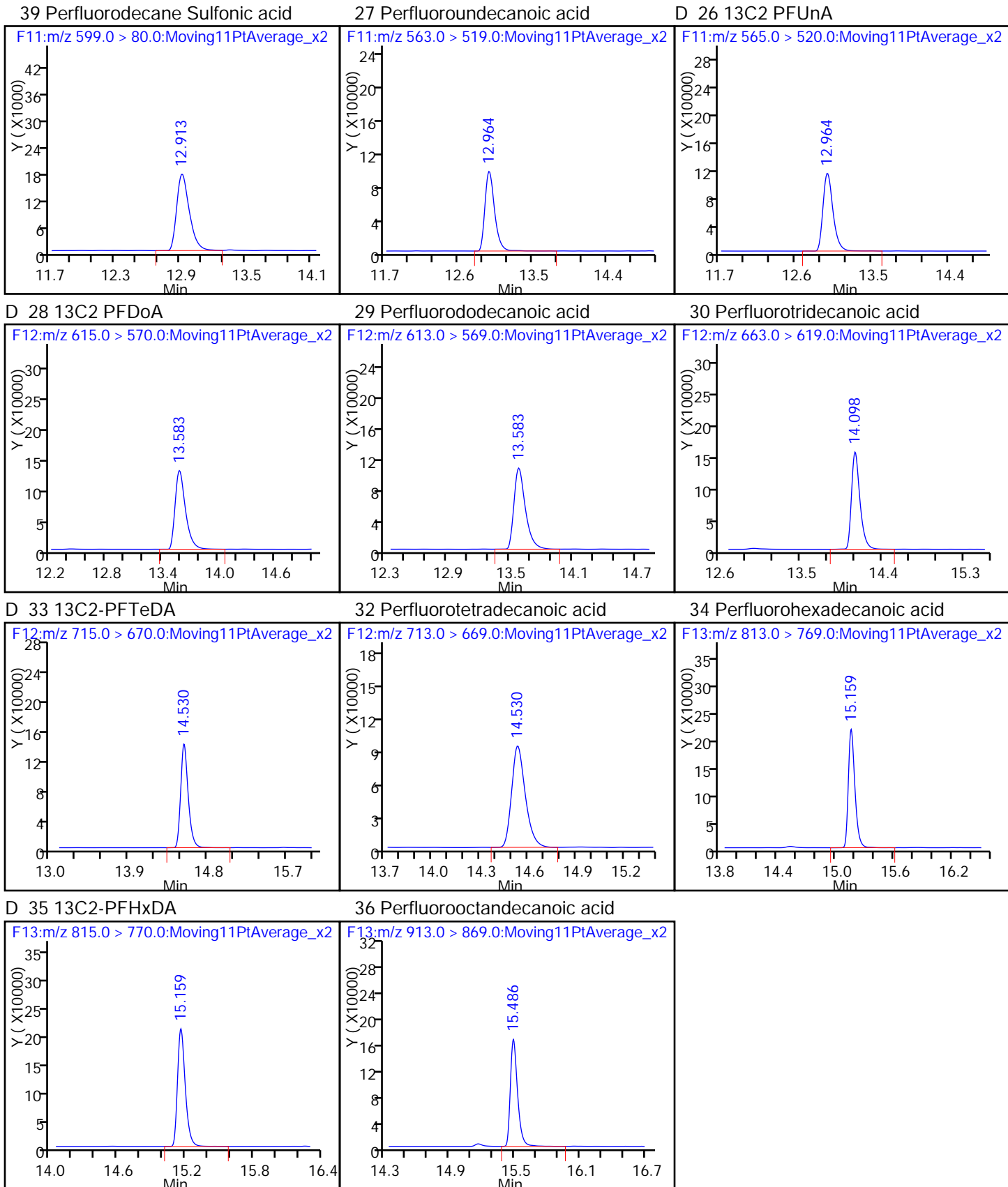
D 11 18O2 PFHxS



D 12 13C4 PFOA







FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Lab Sample ID: CCV 320-97425/39 Calibration Date: 01/07/2016 14:16
 Instrument ID: A6 Calib Start Date: 01/06/2016 11:00
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 01/06/2016 14:07
 Lab File ID: 06JAN2016A6A_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.380	1.448		21.0	20.0	4.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.010	0.997		19.8	20.0	-1.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.066	1.112		18.4	17.7	4.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.078	1.035		19.2	20.0	-4.0	25.0
Perfluoroheptanoic acid (PFHpA)	L1ID		1.106		22.1	20.0	10.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.5809	0.4306		14.0	18.9	-25.9*	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	0.4923	0.2121		8.20	19.0	-56.9*	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.072	0.9674		18.0	20.0	-9.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9693	0.7503		14.8	19.1	-22.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8528	0.8982		21.1	20.0	5.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	1.052	0.9731		18.5	20.0	-7.5	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9819	1.106		22.5	20.0	12.7	25.0
Perfluorodecane Sulfonic acid	AveID	0.4693	0.1704		7.00	19.3	-63.7*	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.8384		18.5	20.0	-7.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7850	0.7795		19.9	20.0	-0.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.016	1.014		20.0	20.0	-0.2	25.0
Perfluorotetradecanoic acid (PFTeA)	L1ID		0.5957		18.5	20.0	-7.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.211		16.6	20.0	-17.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.005	0.7987		15.9	20.0	-20.5	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_064.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 07-Jan-2016 14:16:55 ALS Bottle#: 20 Worklist Smp#: 39
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:38 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 14:59:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.751	5.763	-0.012	650933	35.4		70.7	2369	
2 Perfluorobutyric acid	212.9 > 169.0	5.754	5.763	-0.009	376949	21.0		105	899	
D 3 13C5-PFPeA	267.9 > 223.0	6.863	6.863	0.0	1330086	38.2		76.5	2038	
4 Perfluoropentanoic acid	262.9 > 219.0	6.863	6.864	-0.001	530548	19.8		98.8	204	
5 Perfluorobutane Sulfonate	298.9 > 80.0	6.987	6.976	0.011	211309	NC			456	
	298.9 > 99.0	6.987	6.976	0.011	133747		1.58(0.00-0.00)		386	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	6.987	6.976	0.011	211309	18.4		104		
D 6 13C2 PFHxA	315.0 > 270.0	8.121	8.100	0.021	1131023	34.6		69.2	2857	
7 Perfluorohexanoic acid	313.0 > 269.0	8.121	8.102	0.019	468049	19.2		96.0	1135	
D 8 13C4-PFHpA	367.0 > 322.0	9.340	9.331	0.009	1206589	35.2		70.4	2513	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.340	9.335	0.005	533687	22.1		110	710	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.370	9.363	0.007	87534	NC			265	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.370	9.363	0.007	87534	14.0		74.1		
D 11 18O2 PFHxS	403.0 > 84.0	9.370	9.363	0.007	508244	35.0		73.9	1498	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.448	10.452	-0.004		1173069	30.3		60.7	3081	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.448	10.453	-0.005	1.000	453949	18.0		90.2	396	
413.0 > 169.0	10.448	10.453	-0.005	1.000	169094		2.68(0.00-0.00)		238	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.448	10.456	-0.008	1.000	77313	8.20		43.1		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.448	10.456	-0.008	1.000	77313	NC			286	
D 16 13C4 PFOS										
503.0 > 80.0	11.400	11.405	-0.005		915139	48.9		102	1879	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.400	11.408	-0.008	1.000	274648	14.8		77.4	345	
499.0 > 99.0	11.400	11.408	-0.008	1.000	156543		1.75(0.00-0.00)		323	
D 17 13C5 PFNA										
468.0 > 423.0	11.416	11.427	-0.011		932429	29.1		58.1	2482	
18 Perfluorononanoic acid										
463.0 > 419.0	11.423	11.431	-0.008	1.000	335004	21.1		105	710	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.249	12.260	-0.011	1.000	343760	18.5		92.5	845	
D 19 13C2 PFDA										
515.0 > 470.0	12.249	12.262	-0.013		883185	28.6		57.2	1674	
D 23 13C8 FOSA										
506.0 > 78.0	12.808	12.805	0.003		1376287	32.3		64.5	3137	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.808	12.805	0.003	1.000	609079	22.5		113	1105	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.913	12.929	-0.016	1.000	62897	NC			212	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.913	12.929	-0.016	1.000	62897	7.00		36.3		
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.964	12.978	-0.014	1.000	354657	18.5		92.7	602	
D 26 13C2 PFUnA										
565.0 > 520.0	12.954	12.979	-0.025		1057601	28.0		56.1	2092	
D 28 13C2 PFDaA										
615.0 > 570.0	13.574	13.597	-0.023		1128905	26.6		53.3	2413	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.574	13.597	-0.023	1.000	351976	19.9		99.3	415	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.090	14.114	-0.024	1.000	458009	20.0		99.8	630	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.524	14.548	-0.024		978693	25.3		50.7	2178	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.524	14.549	-0.025	1.000	268981	18.5		92.5	115	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.149	15.177	-0.028	1.000	546656	16.6		82.9	1089	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.149	15.177	-0.028		1143989	23.3		46.6	1995	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
--------	----	--------	--------	--------	----------	--------------	---------------	------	-----	-------

36 Perfluorooctadecanoic acid
 913.0 > 869.0 15.476 15.517 -0.041 1.000 360653 15.9 79.5 598

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_064.d

Injection Date: 07-Jan-2016 14:16:55

Instrument ID: A6

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 39

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

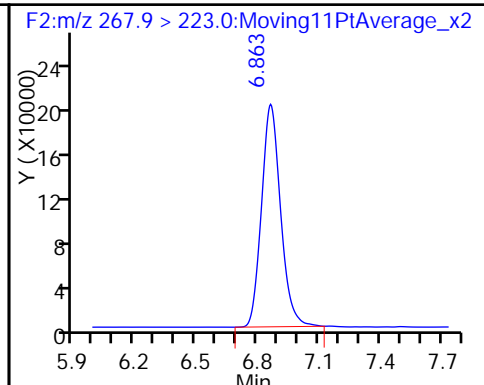
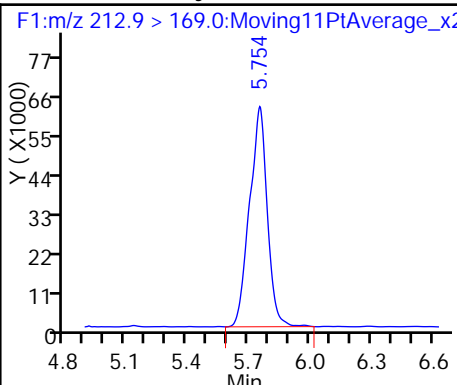
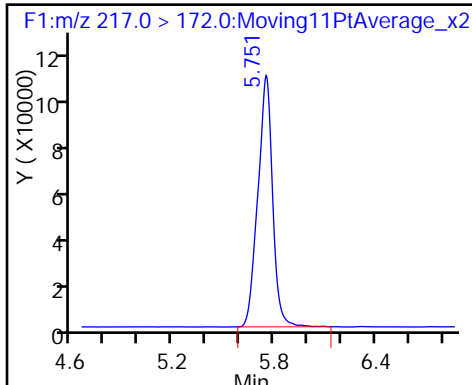
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

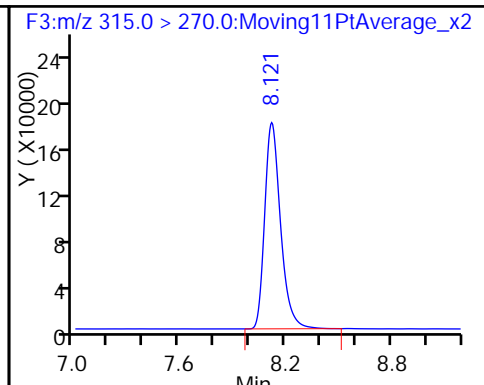
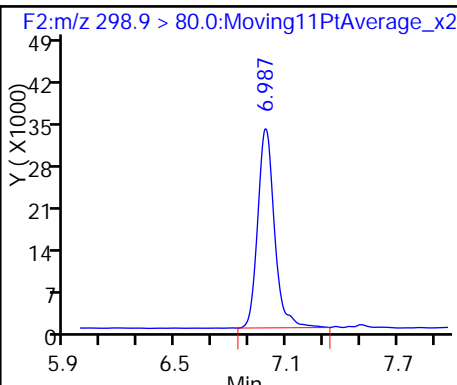
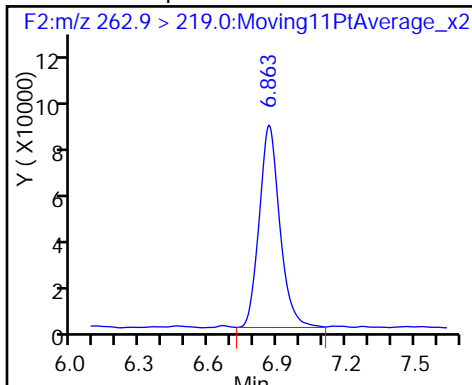
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

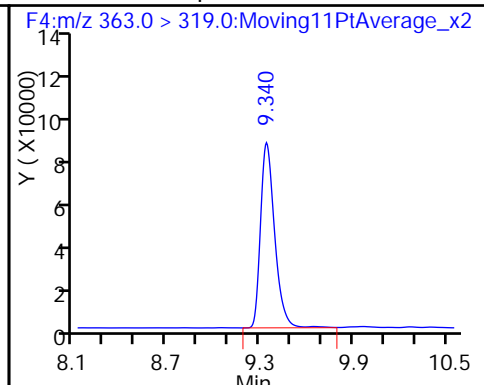
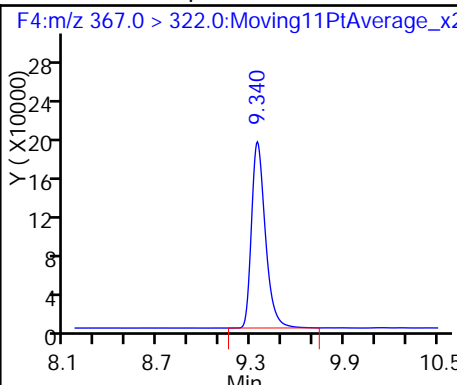
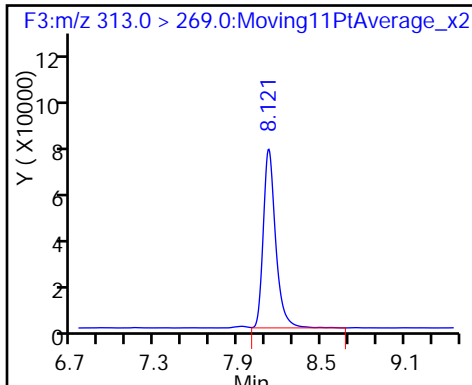
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

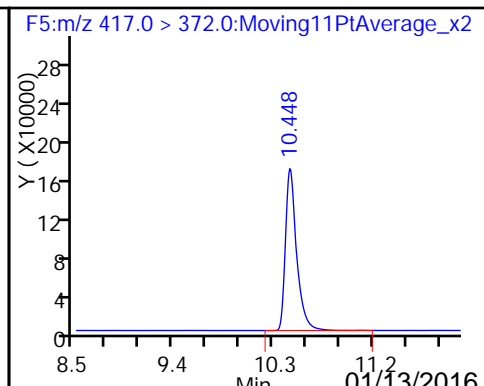
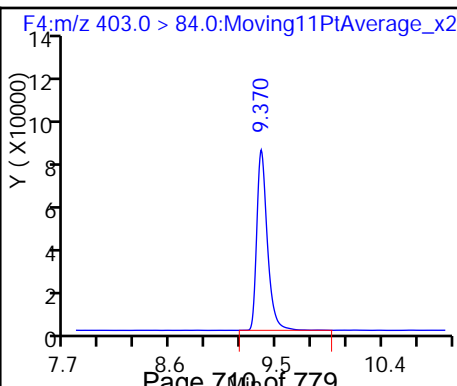
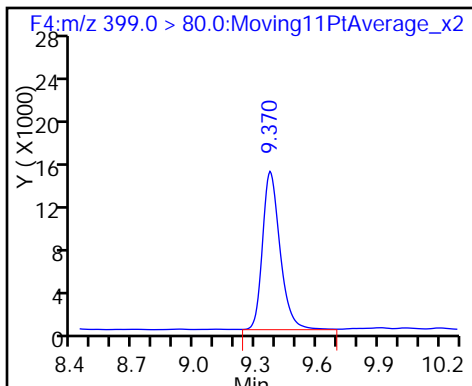
9 Perfluoroheptanoic acid

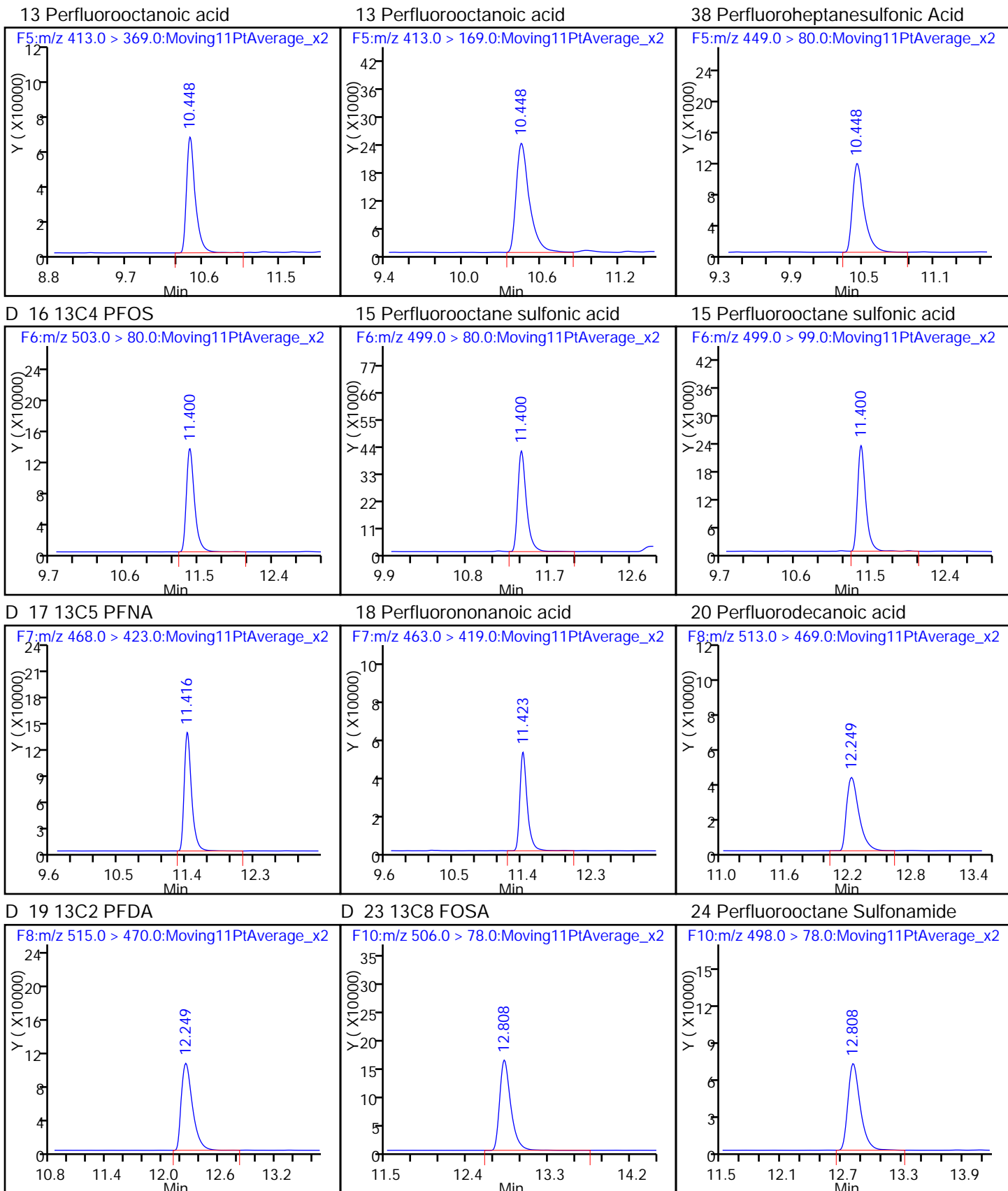


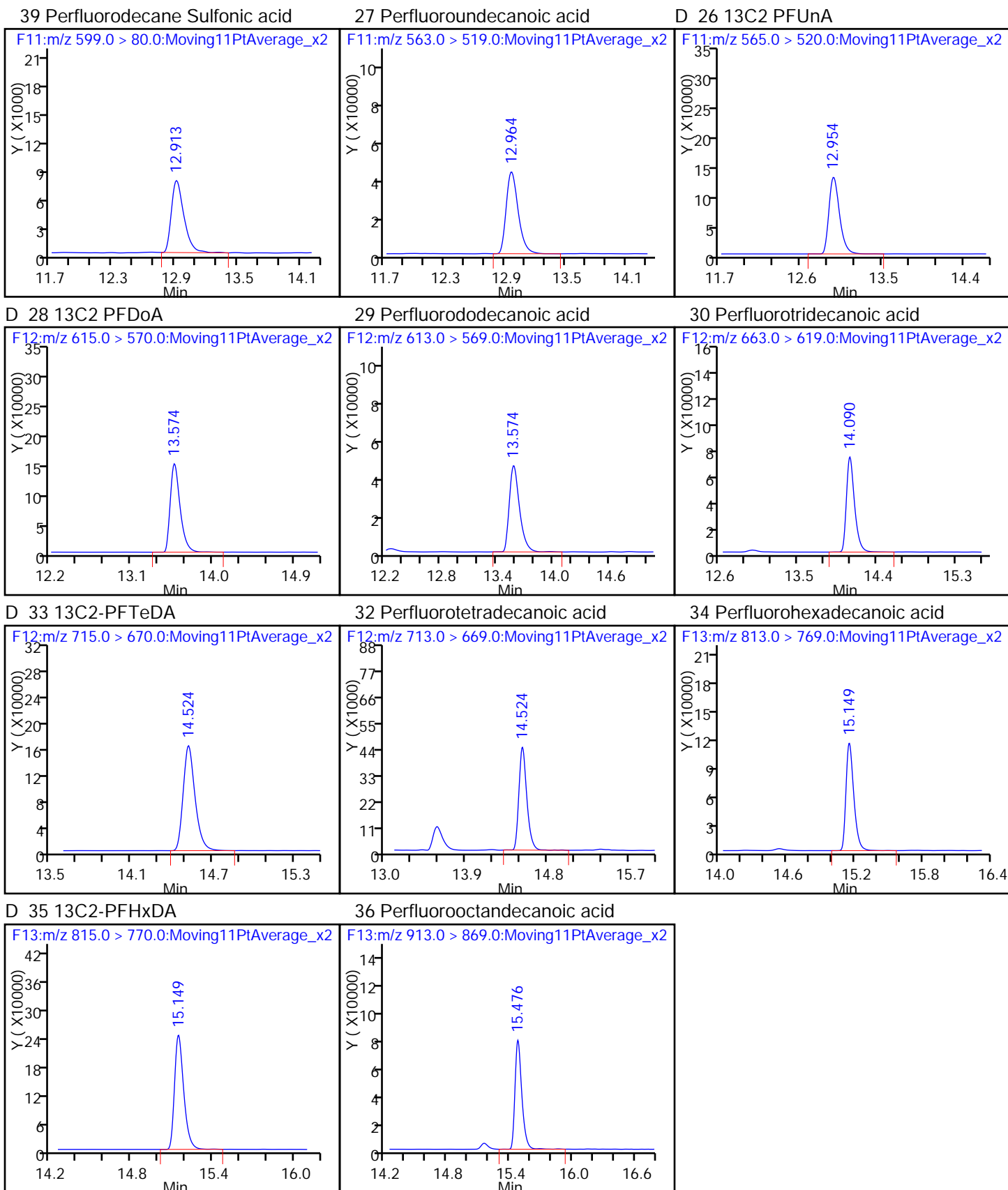
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

D 12 13C4 PFOA







FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-96713/1-A
 Matrix: Water Lab File ID: 30DEC2015A6A_017.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 500.00 (mL) Date Analyzed: 12/30/2015 19:10
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	126		25-150
STL00991	13C4 PFOS	126		25-150
STL00995	13C5 PFNA	131		25-150
STL00990	13C4 PFOA	136		25-150
STL01892	13C4-PFHpA	131		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_017.d
 Lims ID: MB 320-96713/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 30-Dec-2015 19:10:58 ALS Bottle#: 1 Worklist Smp#: 11
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-96713/1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 12:39:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.797	5.801	-0.004	578336	62.7		125	2053	
2 Perfluorobutyric acid	212.9 > 169.0	5.819	5.802	0.017	2809	0.1605			10.6	
D 3 13C5-PFPeA	267.9 > 223.0	6.923	6.924	-0.001	1291875	62.7		125	2676	
4 Perfluoropentanoic acid	262.9 > 219.0	6.951	6.927	0.024	1966	0.0738			1.1	
7 Perfluorohexanoic acid	313.0 > 269.0	8.192	8.176	0.016	8306	0.3146			24.8	
D 6 13C2 PFHxA	315.0 > 270.0	8.170	8.177	-0.007	1111904	63.7		127	2041	
D 8 13C4-PFHpA	367.0 > 322.0	9.411	9.413	-0.002	1403880	65.7		131	3711	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.411	9.413	-0.002	2108	-0.1067			2.1	
D 11 18O2 PFHxS	403.0 > 84.0	9.440	9.444	-0.004	616340	59.6		126	2408	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.440	9.449	-0.009	2139	NC			5.4	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.440	9.449	-0.009	2139	0.2316				
D 12 13C4 PFOA	417.0 > 372.0	10.522	10.524	-0.002	1483440	67.9		136	3149	
13 Perfluorooctanoic acid	413.0 > 369.0	10.531	10.528	0.003	4943	0.1721			4.6	
D 16 13C4 PFOS	503.0 > 80.0	11.473	11.478	-0.005	673234	60.4		126	2070	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 17 13C5 PFNA										
468.0 > 423.0	11.496	11.501	-0.005		1306438	65.6		131	3122	
18 Perfluorononanoic acid										
463.0 > 419.0	11.503	11.502	0.001	1.000	2715	0.1320			7.4	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	14671	0.2836			25.5	
D 19 13C2 PFDA										
515.0 > 470.0	12.331	12.336	-0.005		1276413	65.9		132	1975	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.849	12.858	-0.009	1.000	6460	0.4130			26.1	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		920022	31.8		63.5	880	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.985	13.007	-0.022	1.000	2115	NC			9.2	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.985	13.007	-0.022	1.000	2115	0.2273				
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.050	13.053	-0.003	1.000	31596	0.4162			57.7	
D 26 13C2 PFUnA										
565.0 > 520.0	13.050	13.054	-0.004		1497485	57.1		114	2709	
D 28 13C2 PFDaA										
615.0 > 570.0	13.657	13.666	-0.009		1255572	45.1		90.1	2356	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.666	13.668	-0.002	1.000	7692	0.3932			10.5	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.182	14.182	0.0	1.000	6115	0.2761			7.6	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.609	14.618	-0.009		846169	36.7		73.4	2330	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.609	14.618	-0.009	1.000	11529	0.2542			7.4	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.225	15.234	-0.009	1.000	238796	0.3548			431	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.225	15.234	-0.009		1219374	43.1		86.3	2396	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.566	15.582	-0.016	1.000	8440	0.3653			13.7	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_017.d

Injection Date: 30-Dec-2015 19:10:58

Instrument ID: A6

Lims ID: MB 320-96713/1-A

Client ID:

Operator ID: JRB

ALS Bottle#: 1

Worklist Smp#: 11

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

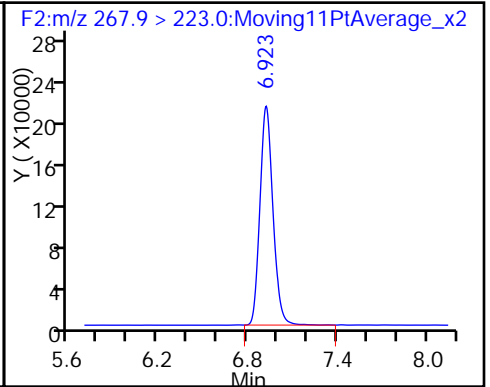
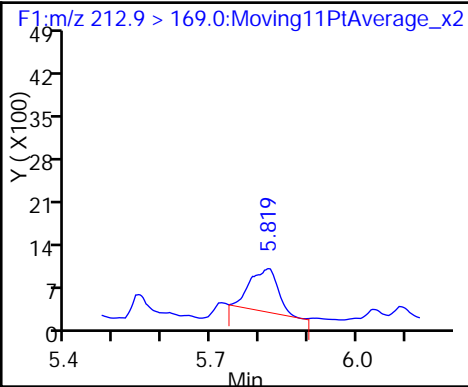
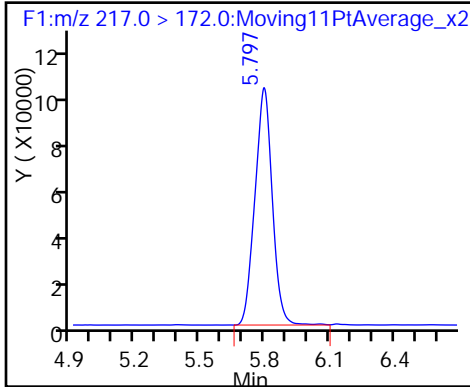
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

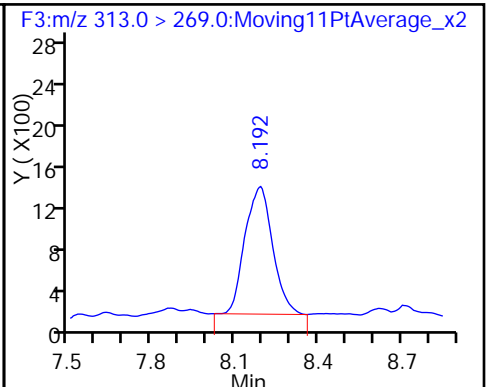
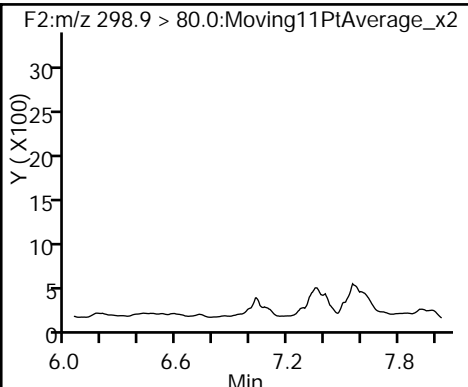
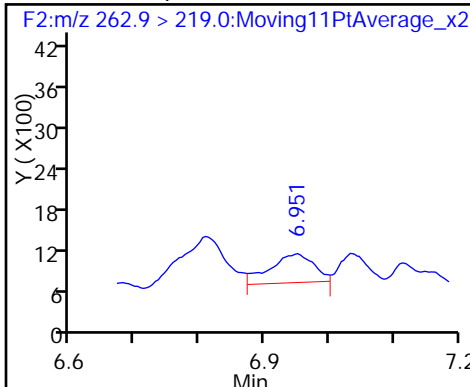
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid (ND)

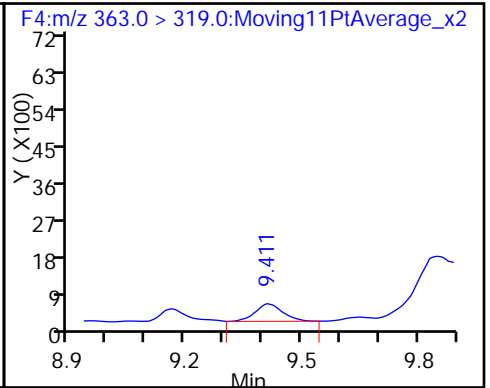
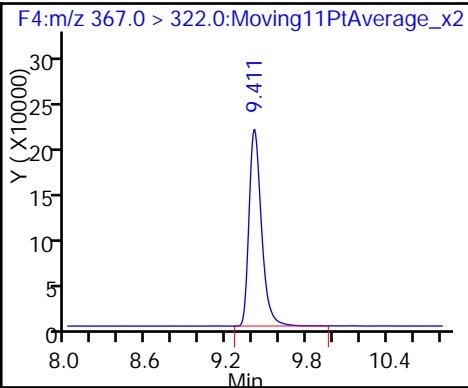
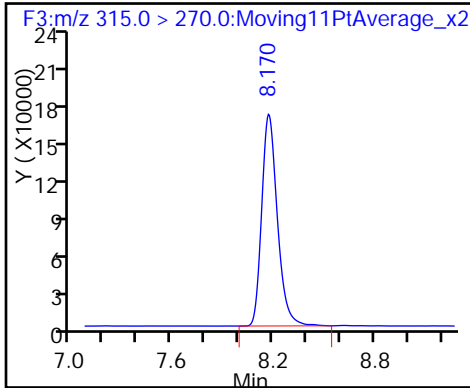
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

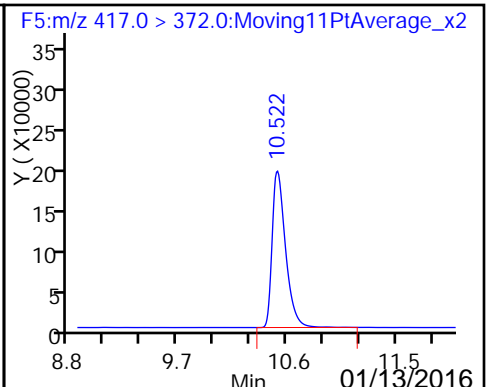
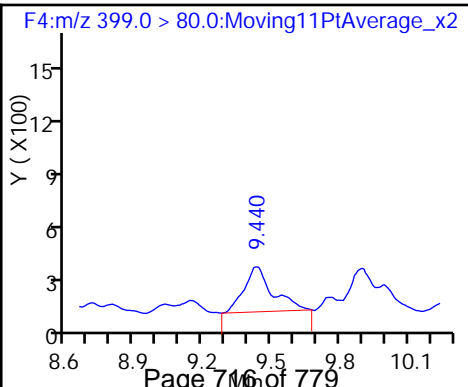
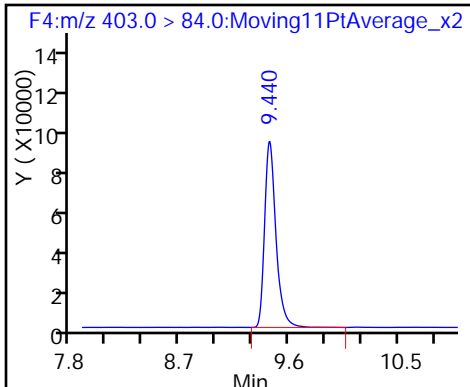
9 Perfluoroheptanoic acid

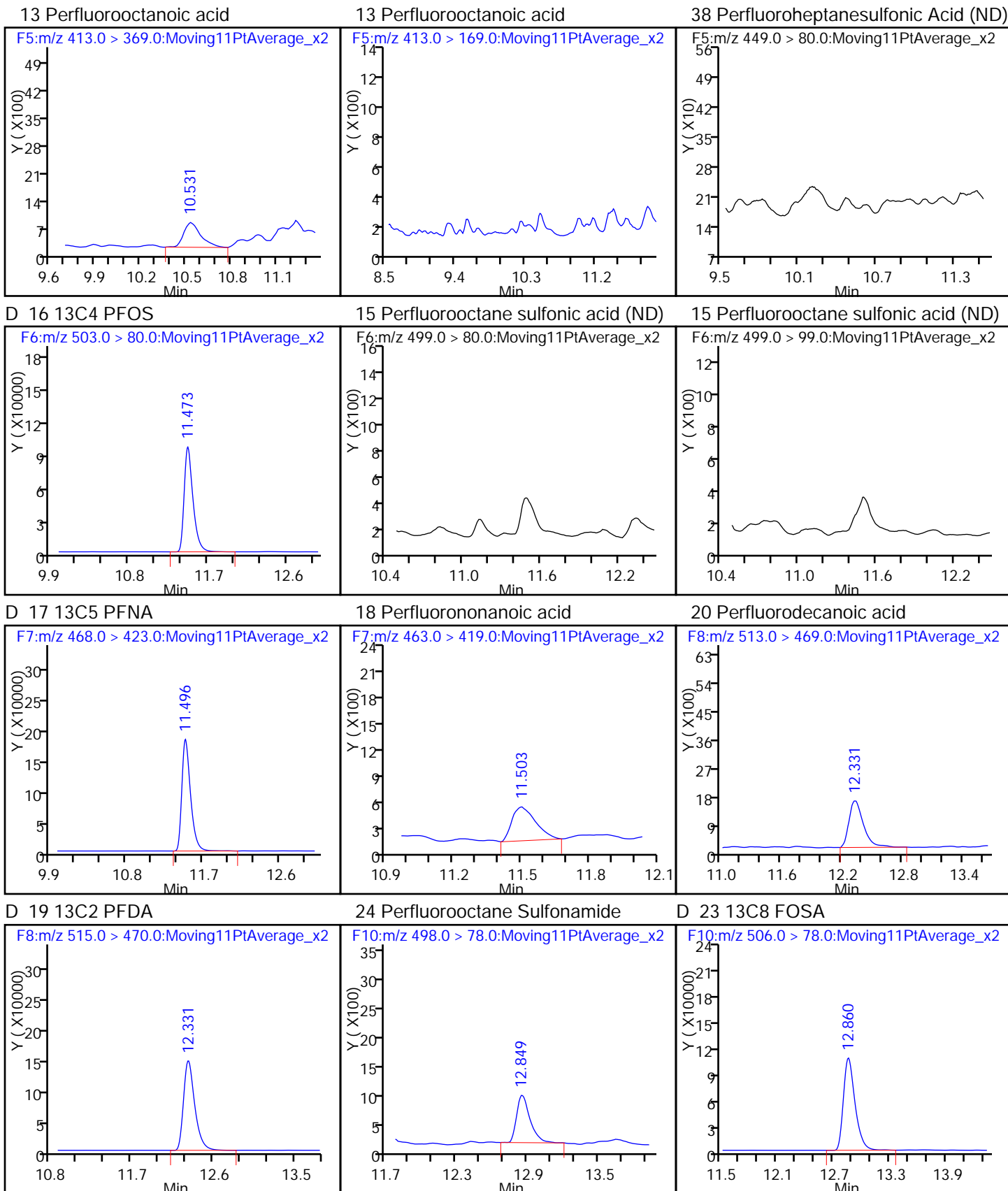


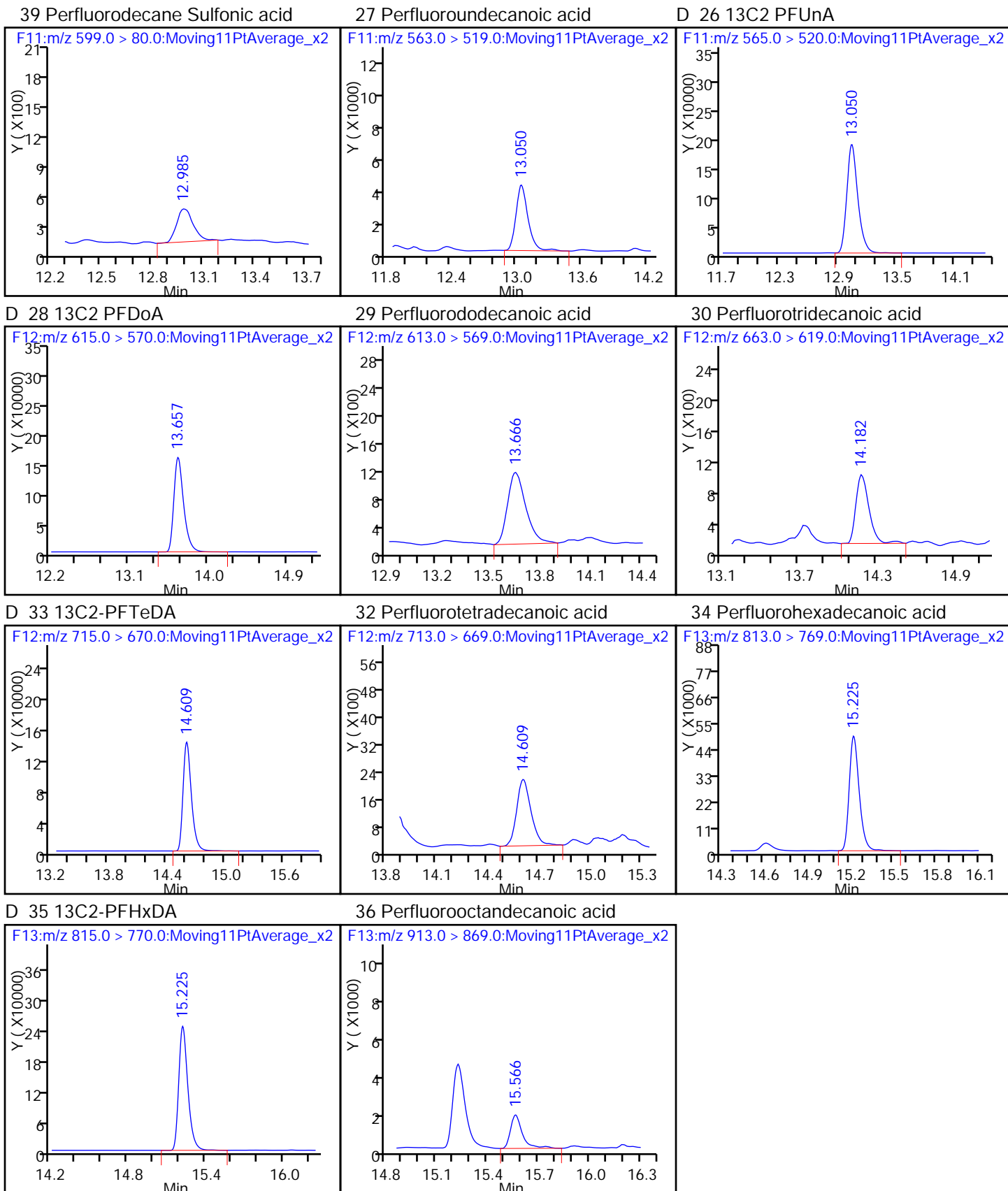
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-97173/1-A
 Matrix: Water Lab File ID: 05JAN2016A6A_016.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 500 (mL) Date Analyzed: 01/05/2016 15:56
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0020	U	0.0025	0.0020	0.00087

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	96		25-150
STL00991	13C4 PFOS	99		25-150
STL00995	13C5 PFNA	86		25-150
STL00990	13C4 PFOA	90		25-150
STL01892	13C4-PFHpA	89		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_016.d
 Lims ID: MB 320-97173/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 05-Jan-2016 15:56:35 ALS Bottle#: 1 Worklist Smp#: 13
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-97173/1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 11:24:11 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK048

First Level Reviewer: westendorfc Date: 07-Jan-2016 09:25:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.797	5.801	-0.004	390497	42.3		84.7	1183	
2 Perfluorobutyric acid	212.9 > 169.0	5.797	5.802	-0.005	5282	0.4469			13.3	
D 3 13C5-PFPeA	267.9 > 223.0	6.928	6.924	0.004	935126	45.4		90.8	1301	
4 Perfluoropentanoic acid	262.9 > 219.0	6.960	6.927	0.033	2942	0.1526			1.8	
7 Perfluorohexanoic acid	313.0 > 269.0	8.198	8.176	0.022	9175	0.4905			21.2	
D 6 13C2 PFHxA	315.0 > 270.0	8.187	8.177	0.010	787857	45.2		90.3	1578	
D 8 13C4-PFHpA	367.0 > 322.0	9.429	9.413	0.016	949245	44.5		88.9	1852	
9 Perfluoroheptanoic acid	363.0 > 319.0	9.440	9.413	0.027	2991	-0.0255			2.0	
D 11 18O2 PFHxS	403.0 > 84.0	9.458	9.444	0.014	469292	45.4		95.9	2051	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.440	9.449	-0.009	2021	NC			5.6	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.440	9.449	-0.009	2021	0.2874				
D 12 13C4 PFOA	417.0 > 372.0	10.540	10.524	0.016	985785	45.1		90.2	1939	
13 Perfluorooctanoic acid	413.0 > 369.0	10.540	10.528	0.012	3711	0.1945			2.8	
D 16 13C4 PFOS	503.0 > 80.0	11.487	11.478	0.009	526546	47.2		98.8	2827	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.487	11.480	0.007	1.000	60951	5.44			88.1	
499.0 > 99.0	11.495	11.480	0.015	1.001	37180		1.64(0.00-0.00)		92.2	
D 17 13C5 PFNA										
468.0 > 423.0	11.511	11.501	0.010		854744	42.9		85.9	2331	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.352	12.333	0.019	1.000	7403	0.1506			22.6	
D 19 13C2 PFDA										
515.0 > 470.0	12.342	12.336	0.006		824646	42.6		85.1	1791	
D 23 13C8 FOSA										
506.0 > 78.0	12.880	12.860	0.020		355440	12.3		24.5	520	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.059	13.053	0.006	1.000	10816	-0.2540			18.0	
D 26 13C2 PFUnA										
565.0 > 520.0	13.059	13.054	0.005		1079532	41.2		82.4	2313	
D 28 13C2 PFDoA										
615.0 > 570.0	13.675	13.666	0.009		906911	32.6		65.1	2130	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.197	14.182	0.015	1.000	3423	0.2140			3.4	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.622	14.618	0.004		694873	30.1		60.3	1500	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.635	14.618	0.017	1.000	7264	0.1466			5.5	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.235	15.234	0.001	1.000	77568	-4.99			167	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.235	15.234	0.001		1050021	37.1		74.3	2305	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_016.d

Injection Date: 05-Jan-2016 15:56:35

Instrument ID: A6

Lims ID: MB 320-97173/1-A

Client ID:

Operator ID: JRB

ALS Bottle#: 1

Worklist Smp#: 13

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

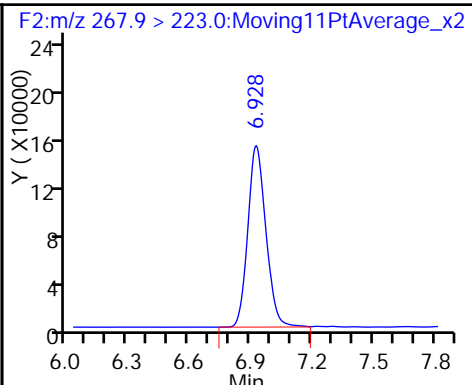
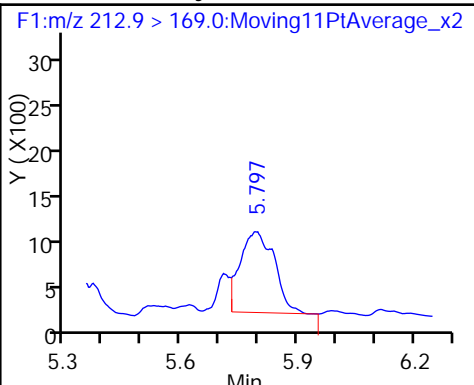
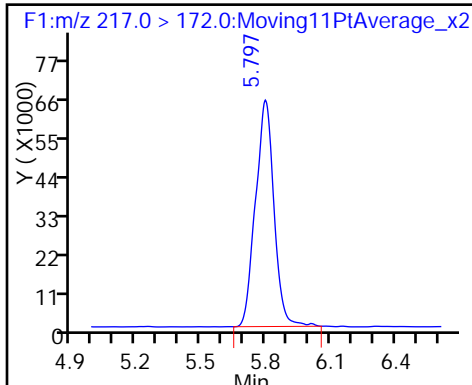
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

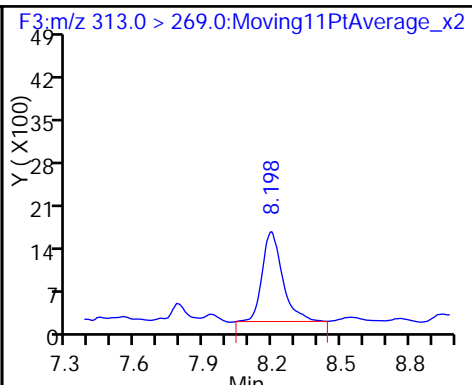
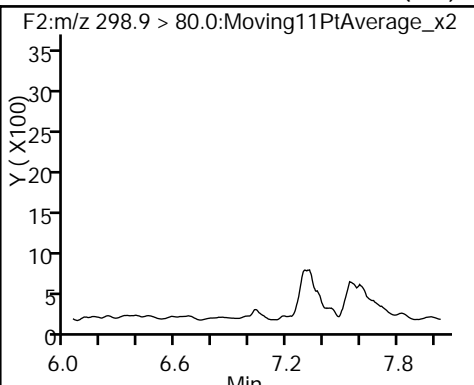
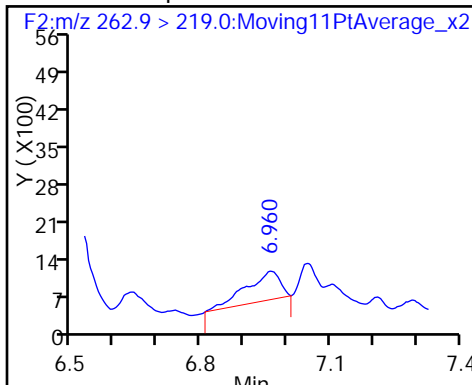
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid (ND)

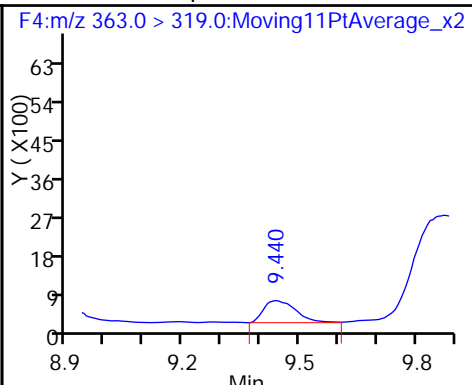
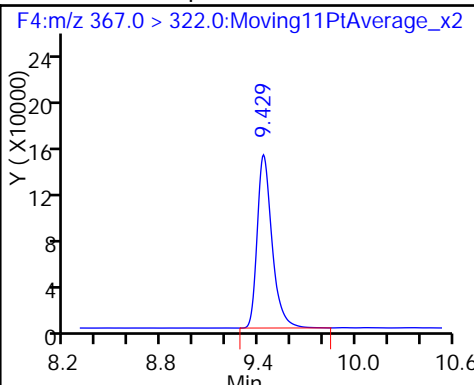
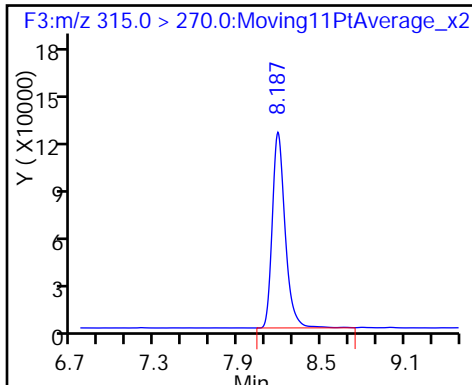
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

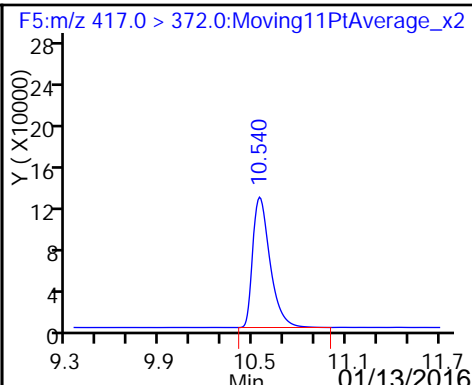
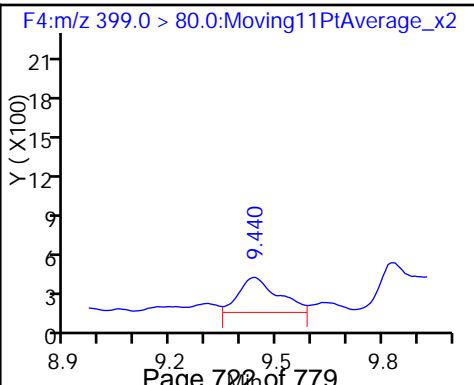
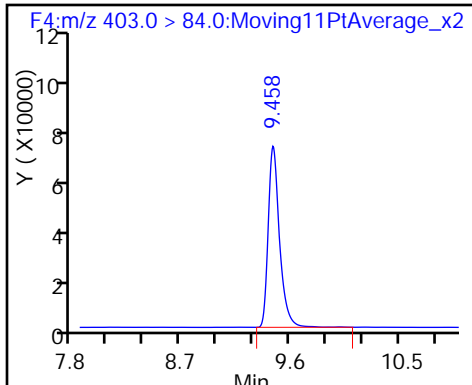
9 Perfluoroheptanoic acid

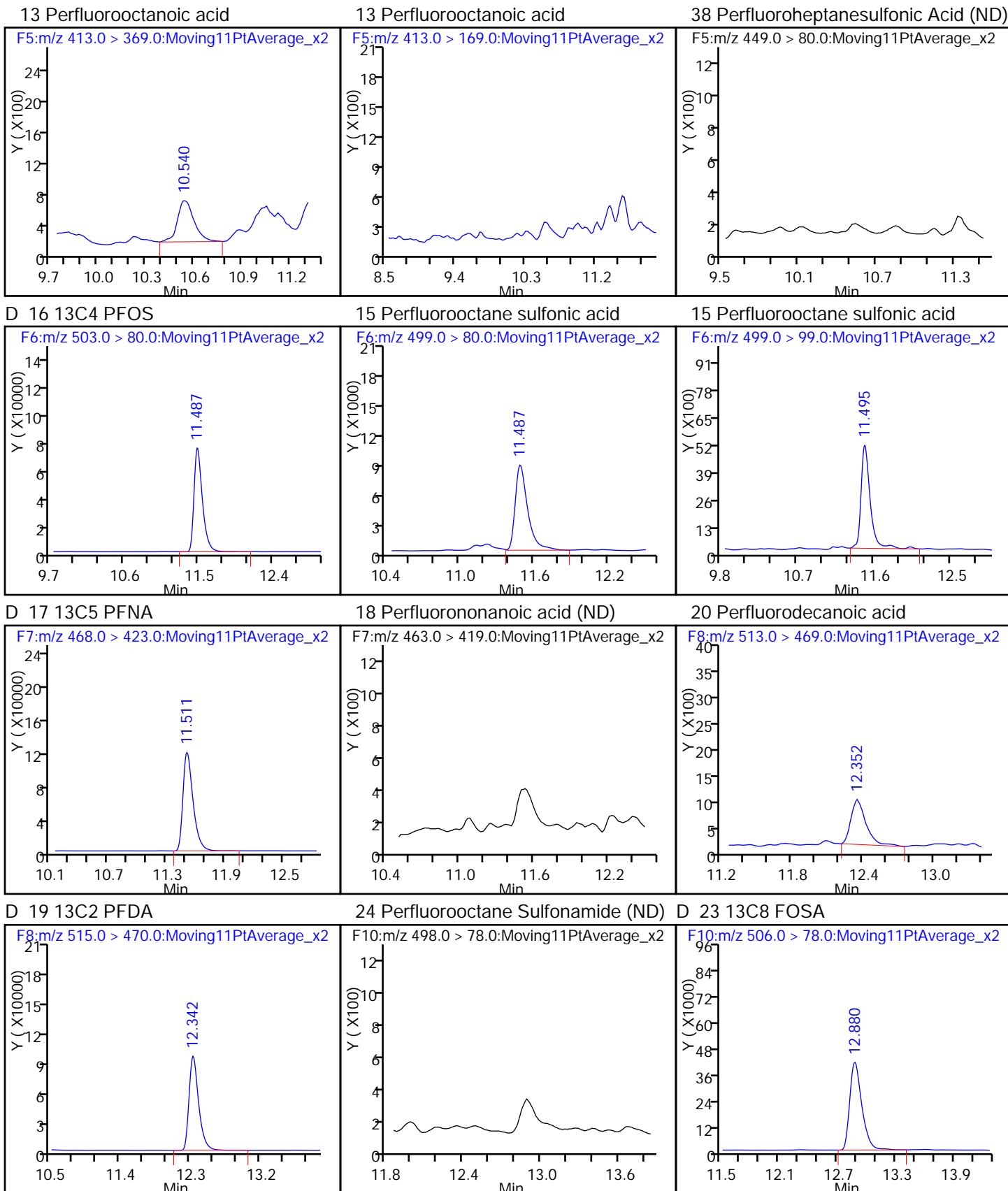


D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA

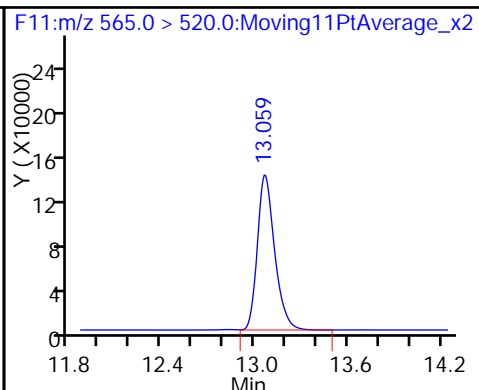
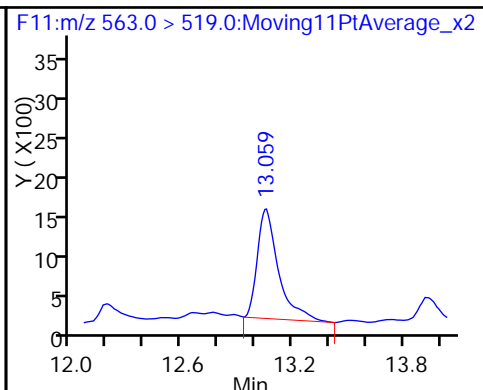
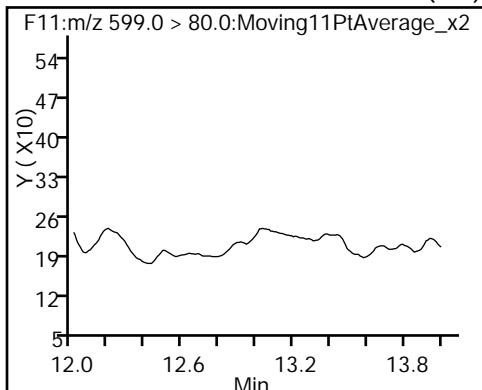




39 Perfluorodecane Sulfonic acid (ND)

27 Perfluoroundecanoic acid

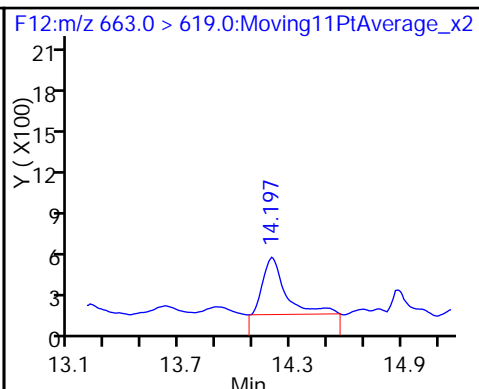
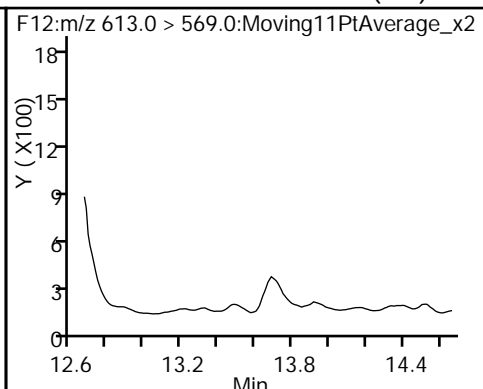
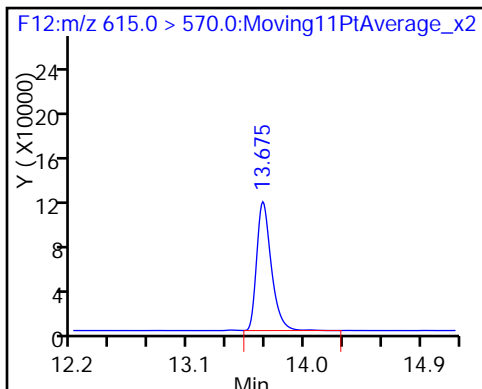
D 26 13C2 PFUnA



D 28 13C2 PFDaA

29 Perfluorododecanoic acid (ND)

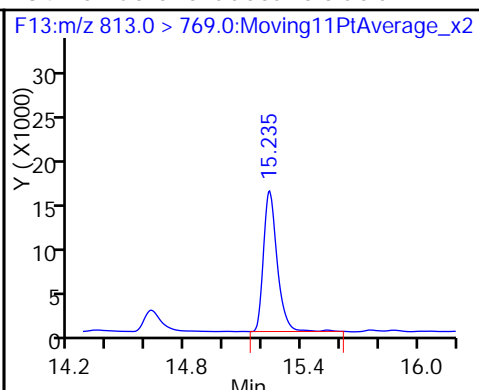
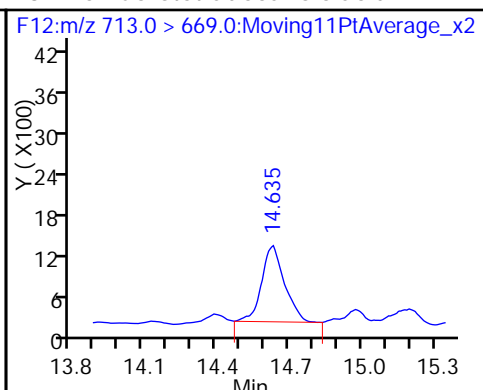
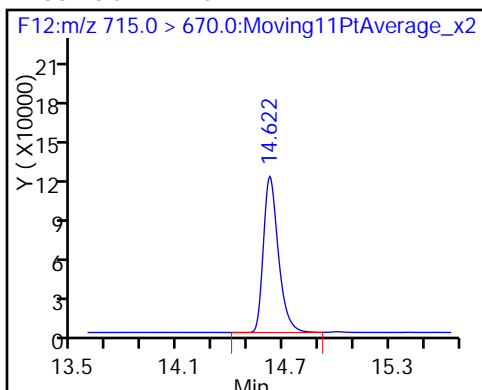
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

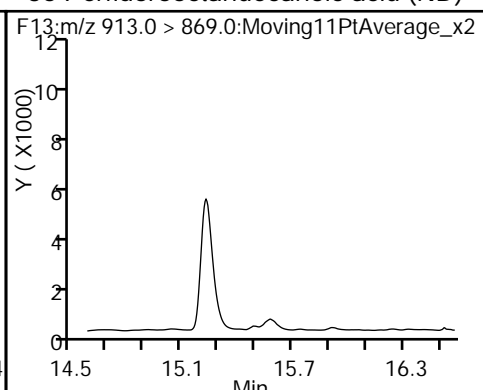
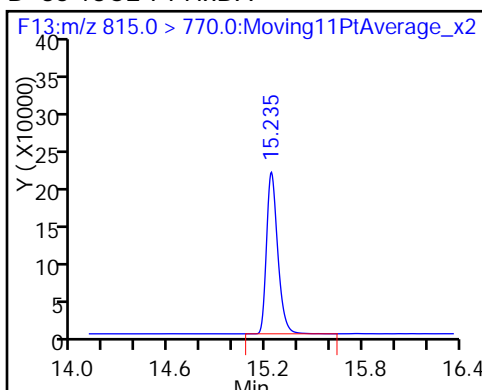
32 Perfluorotetradecanoic acid

34 Perfluorohexadecanoic acid



D 35 13C2-PFHxDA

36 Perfluorooctadecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-97173/1-A RA
 Matrix: Water Lab File ID: 06JAN2016A6A_062.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 500 (mL) Date Analyzed: 01/07/2016 13:21
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97425 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0030	0.0013

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_062.d
 Lims ID: MB 320-97173/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 07-Jan-2016 13:21:20 ALS Bottle#: 1 Worklist Smp#: 37
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-97173/1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 07-Jan-2016 15:58:33 Calib Date: 06-Jan-2016 14:07:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK014

First Level Reviewer: westendorfc Date: 07-Jan-2016 14:19:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.0 > 172.0	5.751	5.763	-0.012	664204	36.1		72.2	2296	
2 Perfluorobutyric acid	212.9 > 169.0	5.754	5.763	-0.009	5015	0.2736			17.2	
D 3 13C5-PFPeA	267.9 > 223.0	6.859	6.863	-0.004	1484604	42.7		85.4	3856	
4 Perfluoropentanoic acid	262.9 > 219.0	6.780	6.864	-0.084	1772	0.0591			1.1	
5 Perfluorobutane Sulfonate	298.9 > 80.0	7.221	6.976	0.245	1323	NC			7.6	
40 Perfluorobutanesulfonic acid	298.9 > 80.0	7.221	6.976	0.245	1323	0.0993				
D 6 13C2 PFHxA	315.0 > 270.0	8.105	8.100	0.005	1202230	36.8		73.5	3271	
7 Perfluorohexanoic acid	313.0 > 269.0	8.100	8.102	-0.002	10197	0.3934			33.5	
D 8 13C4-PFHpA	367.0 > 322.0	9.335	9.331	0.004	1289947	37.6		75.2	4201	
10 Perfluorohexane Sulfonate	399.0 > 80.0	9.370	9.363	0.007	1613	NC			5.0	
41 Perfluorohexanesulfonic acid	399.0 > 80.0	9.370	9.363	0.007	1613	0.2221				
D 11 18O2 PFHxS	403.0 > 84.0	9.364	9.363	0.001	591214	40.7		86.0	1638	
D 12 13C4 PFOA	417.0 > 372.0	10.455	10.452	0.003	1317623	34.1		68.1	3563	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid	413.0 > 369.0	10.455	10.453	0.002	1.000	3523	0.1247		4.2	
D 16 13C4 PFOS	503.0 > 80.0	11.407	11.405	0.002		1034143	55.3	116	4208	
D 17 13C5 PFNA	468.0 > 423.0	11.430	11.427	0.003		1033675	32.2	64.4	2883	
20 Perfluorodecanoic acid	513.0 > 469.0	12.290	12.260	0.030	1.000	7732	0.3881		25.0	
D 19 13C2 PFDA	515.0 > 470.0	12.259	12.262	-0.003		947265	30.7	61.4	2808	
D 23 13C8 FOSA	506.0 > 78.0	12.819	12.805	0.014		456245	10.7	21.4	1353	
27 Perfluoroundecanoic acid	563.0 > 519.0	12.975	12.978	-0.003	1.000	16503	0.1197		20.2	
D 26 13C2 PFUnA	565.0 > 520.0	12.975	12.979	-0.004		1006878	26.7	53.4	1689	
D 28 13C2 PFDoA	615.0 > 570.0	13.593	13.597	-0.004		862593	20.4	40.7	1739	
29 Perfluorododecanoic acid	613.0 > 569.0	13.432	13.597	-0.165	1.000	1007	0.0744		2.3	
D 33 13C2-PFTeDA	715.0 > 670.0	14.537	14.548	-0.011		673880	17.4	34.9	1647	
32 Perfluorotetradecanoic acid	713.0 > 669.0	14.530	14.549	-0.019	1.000	10559	0.3714		5.5	
34 Perfluorohexadecanoic acid	813.0 > 769.0	15.159	15.177	-0.018	1.000	75654	-1.63		152	
D 35 13C2-PFHxDA	815.0 > 770.0	15.159	15.177	-0.018		1056291	21.5	43.0	3068	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160106-27625.b\06JAN2016A6A_062.d

Injection Date: 07-Jan-2016 13:21:20

Instrument ID: A6

Lims ID: MB 320-97173/1-A

Client ID:

Operator ID: JRB

ALS Bottle#: 1

Worklist Smp#: 37

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

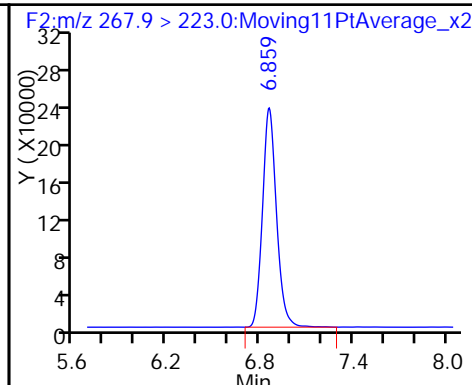
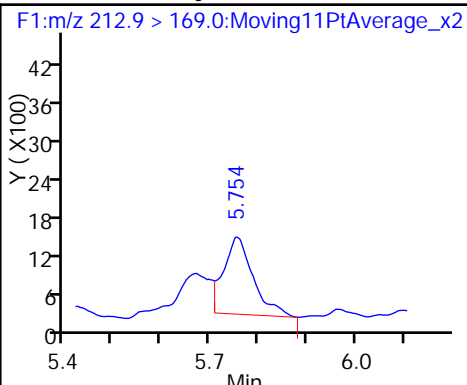
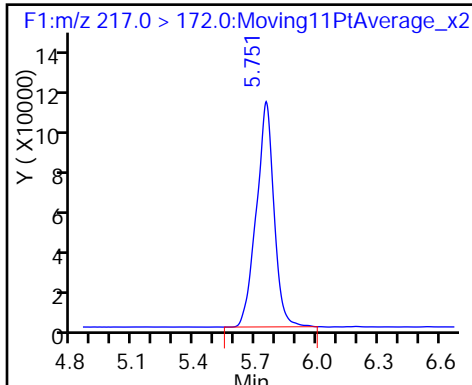
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

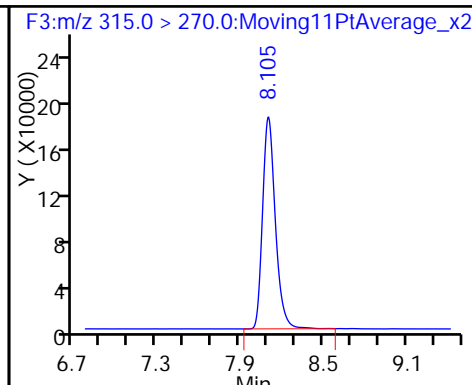
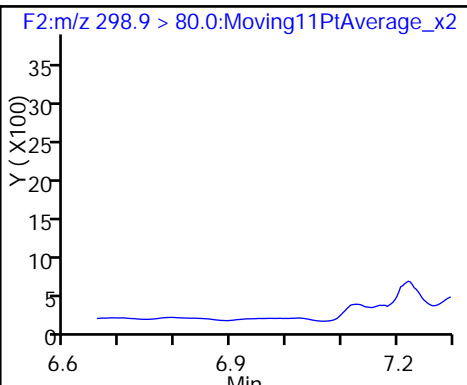
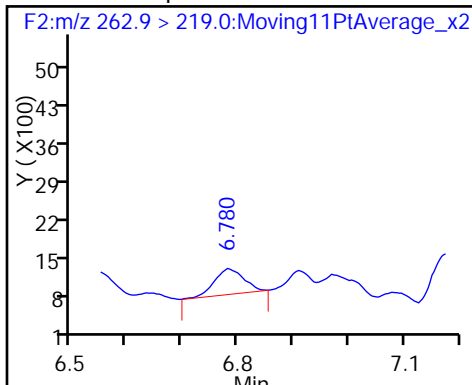
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

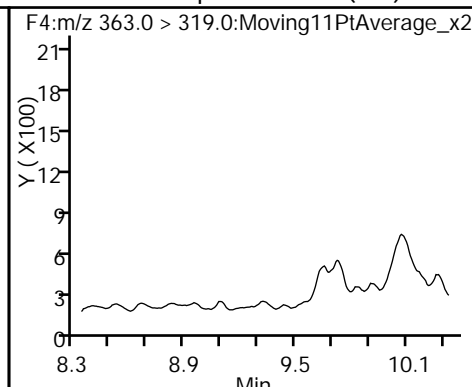
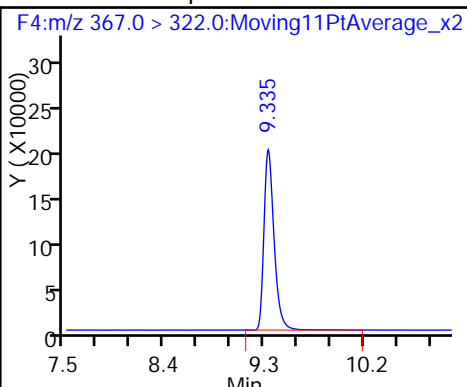
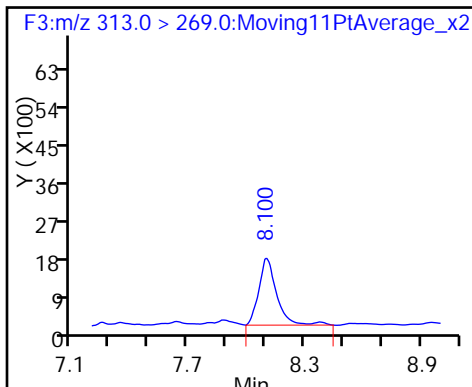
D 6 13C2 PFXxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

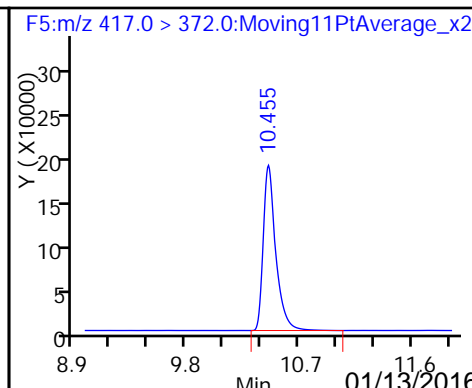
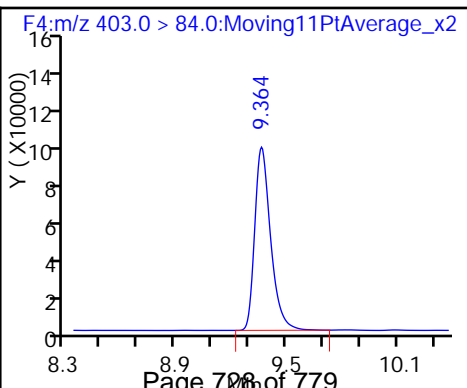
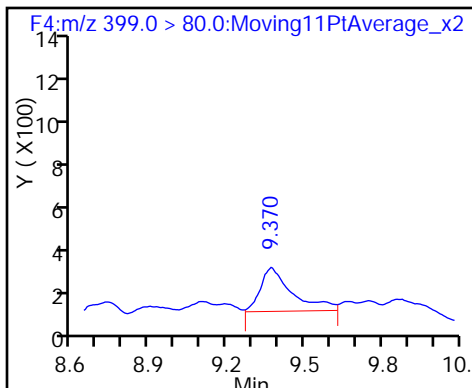
9 Perfluoroheptanoic acid (ND)

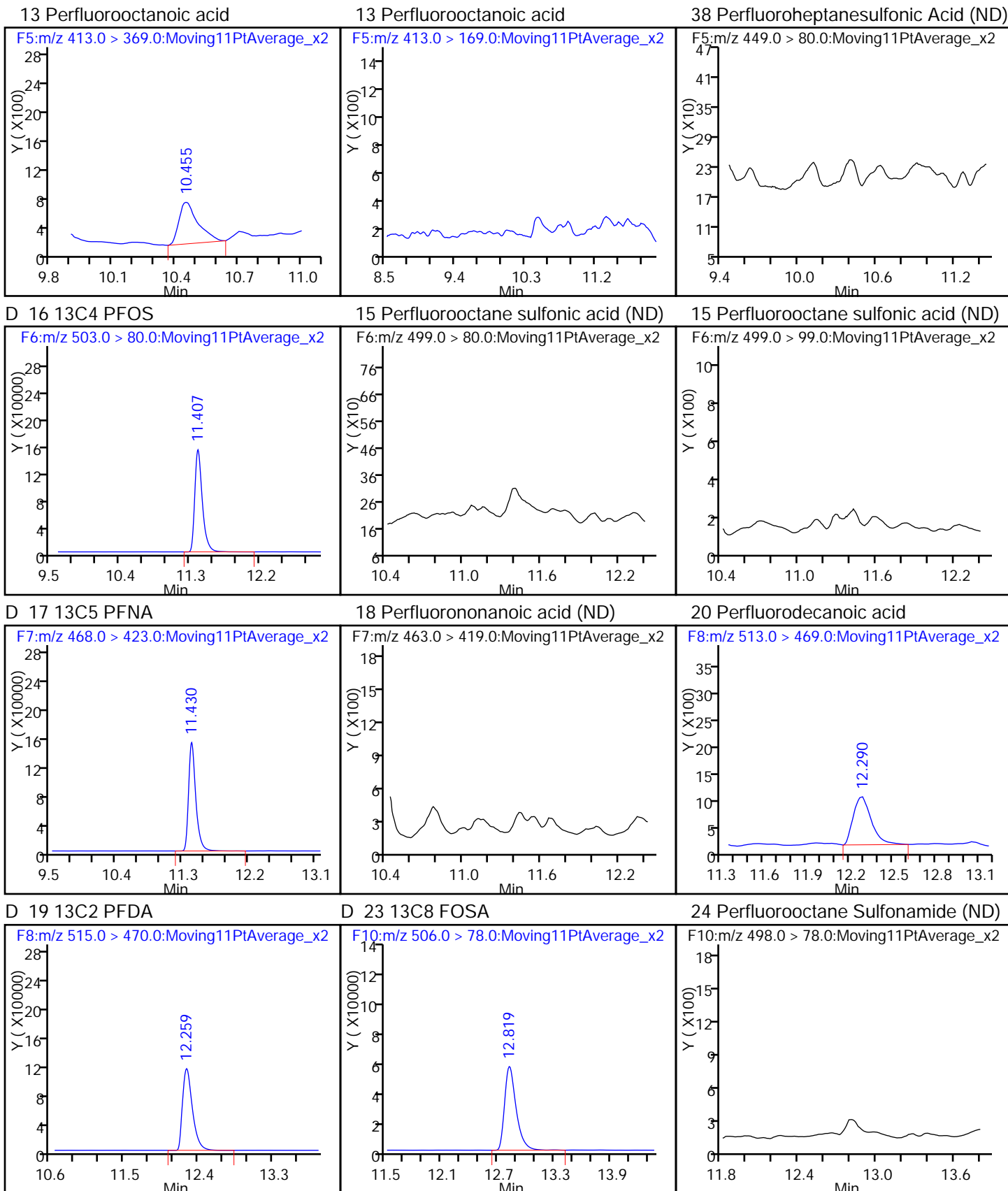


41 Perfluorohexanesulfonic acid

D 11 18O2 PFXxS

D 12 13C4 PFOA

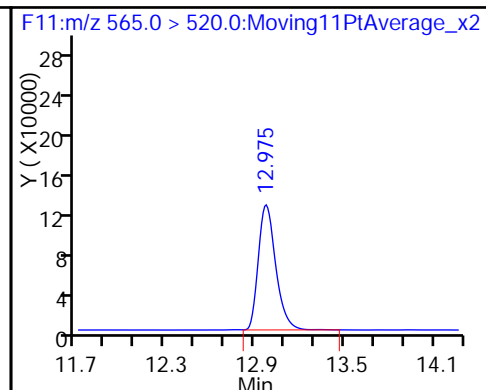
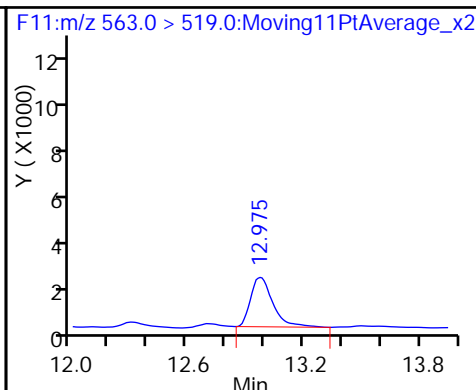
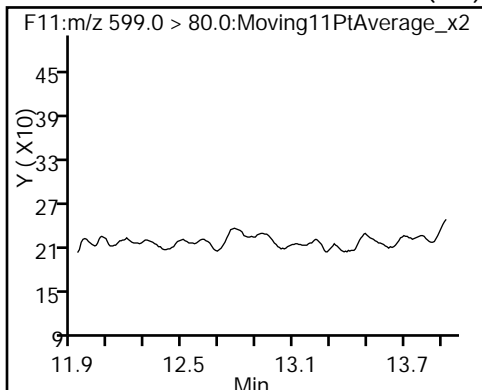




39 Perfluorodecane Sulfonic acid (ND)

27 Perfluoroundecanoic acid

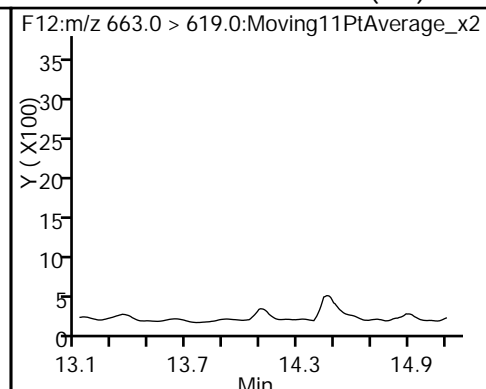
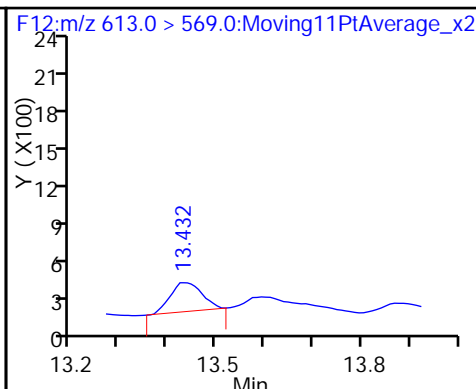
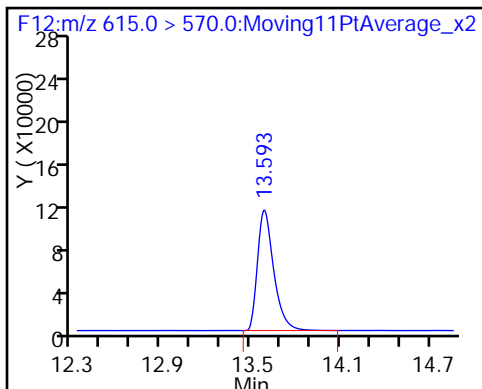
D 26 13C2 PFUnA



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

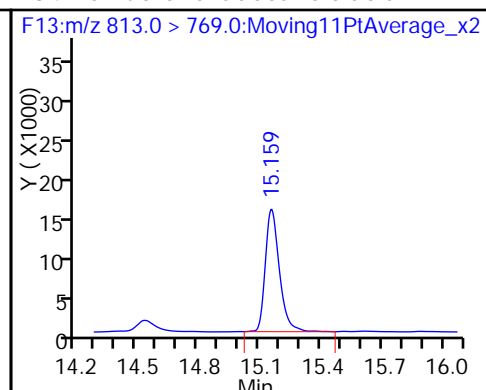
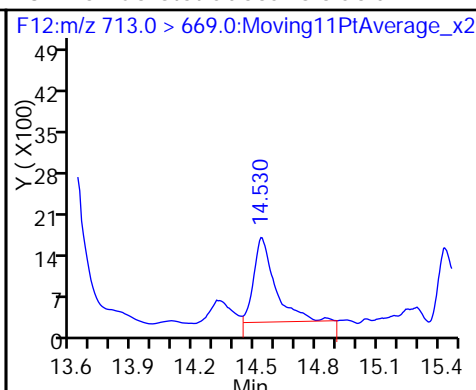
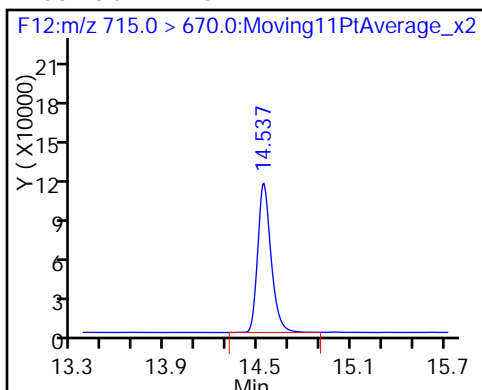
30 Perfluorotridecanoic acid (ND)



D 33 13C2-PFTeDA

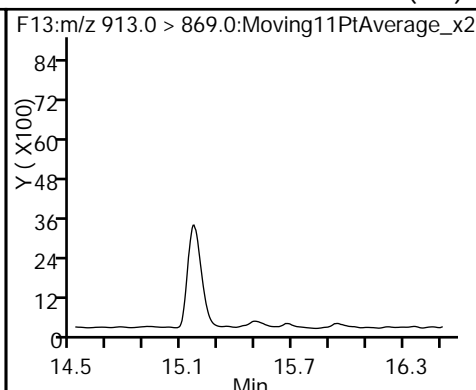
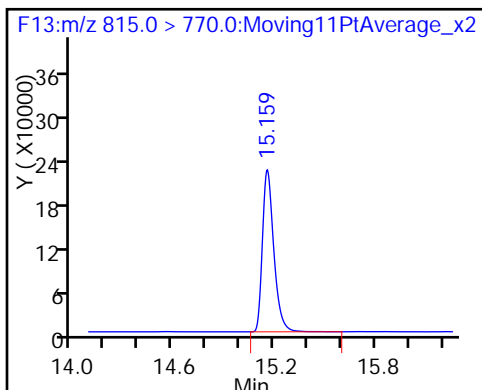
32 Perfluorotetradecanoic acid

34 Perfluorohexadecanoic acid



D 35 13C2-PFHxDA

36 Perfluorooctadecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-96713/2-A
 Matrix: Water Lab File ID: 30DEC2015A6A_018.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 12/26/2015 07:28
 Sample wt/vol: 500.00 (mL) Date Analyzed: 12/30/2015 19:32
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97208 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0383		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0549		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0415		0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0315		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0362		0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0392		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	128		25-150
STL00991	13C4 PFOS	119		25-150
STL00995	13C5 PFNA	123		25-150
STL00990	13C4 PFOA	126		25-150
STL01892	13C4-PFHpA	132		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_018.d
 Lims ID: LCS 320-96713/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 30-Dec-2015 19:32:11 ALS Bottle#: 2 Worklist Smp#: 12
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: LCS 320-96713/2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2016 15:52:39 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK011

First Level Reviewer: westendorfc Date: 04-Jan-2016 12:39:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.797	5.801	-0.004		543560	58.9		118	1864	
2 Perfluorobutyric acid										
212.9 > 169.0	5.797	5.802	-0.005	1.000	322321	19.6		98.0	927	
D 3 13C5-PFPeA										
267.9 > 223.0	6.918	6.924	-0.006		1294998	62.9		126	2790	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.918	6.927	-0.009	1.000	499429	18.7		93.5	198	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.036	7.039	-0.003	1.000	200116	NC			635	
298.9 > 99.0	7.036	7.039	-0.003	1.000	100715		1.99(0.00-0.00)		261	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.036	7.039	-0.003	1.000	200116	15.7		89.0		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.171	8.176	-0.005	1.000	502943	18.4		91.8	1045	
D 6 13C2 PFHxA										
315.0 > 270.0	8.171	8.177	-0.006		1154112	66.2		132	2582	
D 8 13C4-PFHpA										
367.0 > 322.0	9.405	9.413	-0.008		1404509	65.8		132	3263	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.405	9.413	-0.008	1.000	551354	19.2		95.8	337	
D 11 18O2 PFHxS										
403.0 > 84.0	9.434	9.444	-0.010		625190	60.4		128	1528	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.434	9.449	-0.015	1.000	169564	NC			560	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.434	9.449	-0.015	1.000	169564	18.1		95.7		
D 12 13C4 PFOA										
417.0 > 372.0	10.512	10.524	-0.012		1380174	63.2		126	2733	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.522	10.528	-0.006	1.000	733609	27.5		137	620	
413.0 > 169.0	10.522	10.528	-0.006	1.000	256974		2.85(0.00-0.00)		458	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.522	10.530	-0.008	1.000	158204	19.8		104		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.522	10.530	-0.008	1.000	158204	NC			617	
D 16 13C4 PFOS										
503.0 > 80.0	11.472	11.478	-0.006		636618	57.1		119	2735	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.472	11.480	-0.008	1.000	265381	19.6		102	357	
499.0 > 99.0	11.472	11.480	-0.008	1.000	139608		1.90(0.00-0.00)		513	
D 17 13C5 PFNA										
468.0 > 423.0	11.495	11.501	-0.006		1224603	61.5		123	4782	
18 Perfluorononanoic acid										
463.0 > 419.0	11.488	11.502	-0.014	1.000	400519	20.8		104	856	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	464931	20.2		101	1213	
D 19 13C2 PFDA										
515.0 > 470.0	12.321	12.336	-0.015		1197005	61.8		124	1788	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	381248	28.7		144	587	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		780443	26.9		53.9	1190	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.995	13.007	-0.012	1.000	124823	NC			501	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.995	13.007	-0.012	1.000	124823	14.2		73.6		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.041	13.053	-0.012	1.000	511432	20.3		102	1145	
D 26 13C2 PFUnA										
565.0 > 520.0	13.041	13.054	-0.013		1459872	55.7		111	5334	
D 28 13C2 PFDoA										
615.0 > 570.0	13.657	13.666	-0.009		1236683	44.4		88.8	2985	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.657	13.668	-0.011	1.000	390186	20.3		101	446	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.174	14.182	-0.008	1.000	383782	17.6		88.0	521	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.609	14.618	-0.009		868179	37.7		75.3	2356	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.609	14.618	-0.009	1.000	229139	16.4		82.1	164	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.224	15.234	-0.010	1.000	708252	19.9		99.5	1016	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.224	15.234	-0.010		1279425	45.3		90.5	2589	
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.566	15.582	-0.016	1.000	473891	20.8		104	713	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_018.d

Injection Date: 30-Dec-2015 19:32:11

Instrument ID: A6

Lims ID: LCS 320-96713/2-A

Client ID:

Operator ID: JRB

ALS Bottle#: 2

Worklist Smp#: 12

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

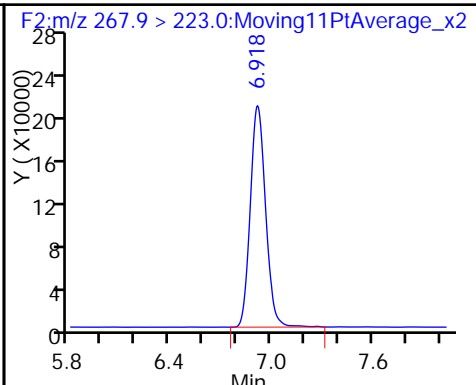
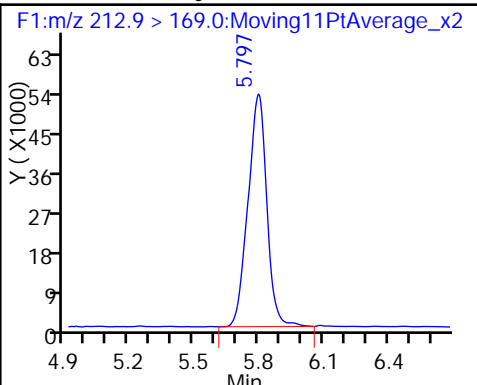
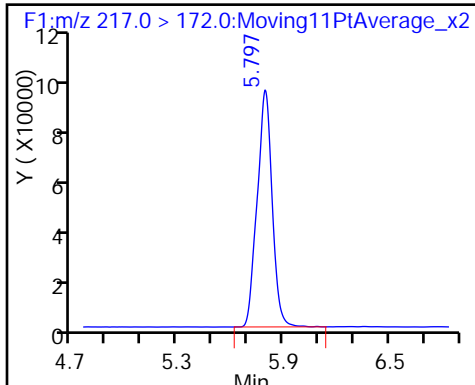
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

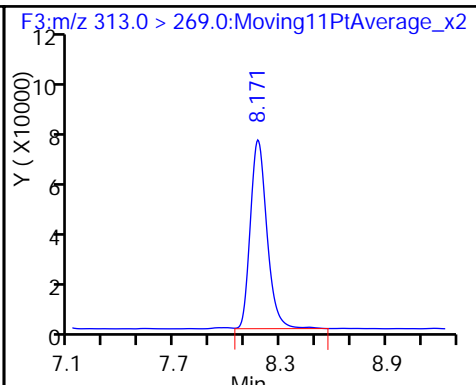
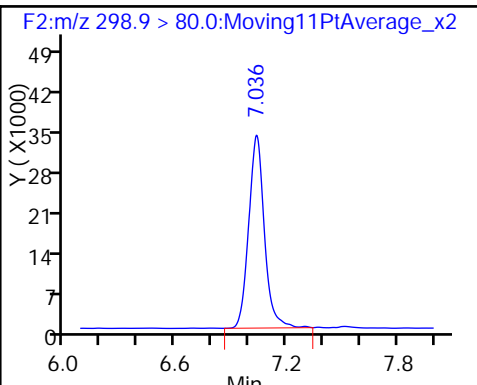
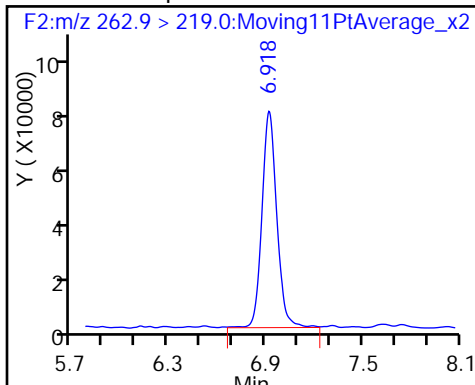
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

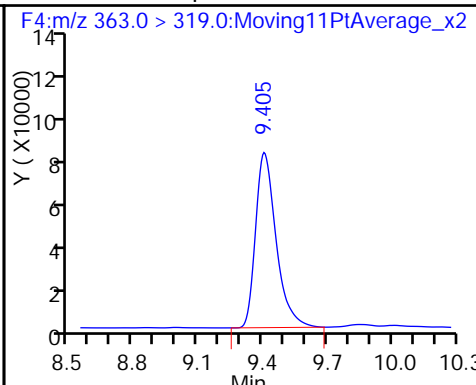
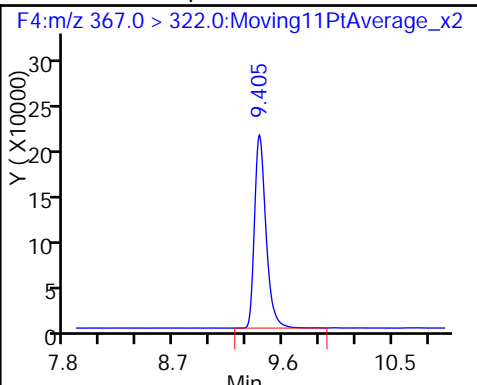
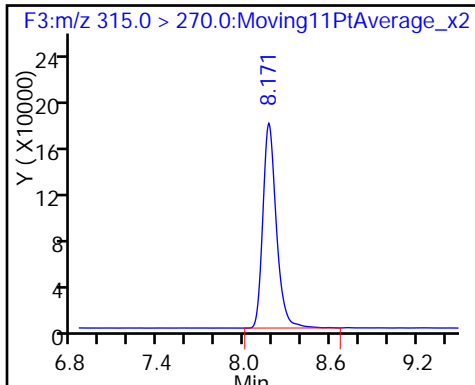
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

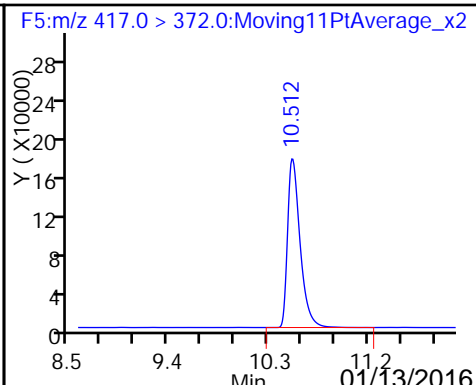
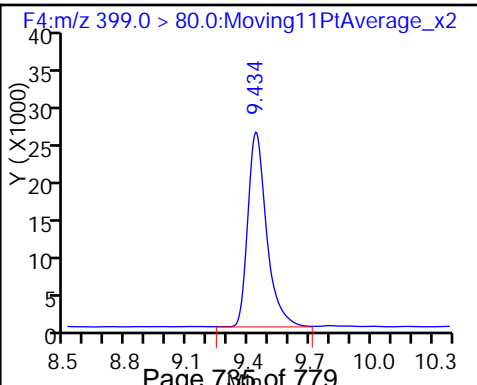
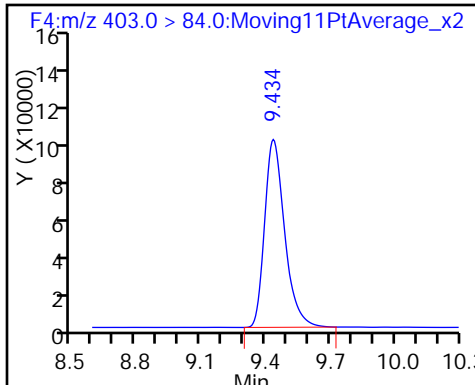
9 Perfluoroheptanoic acid

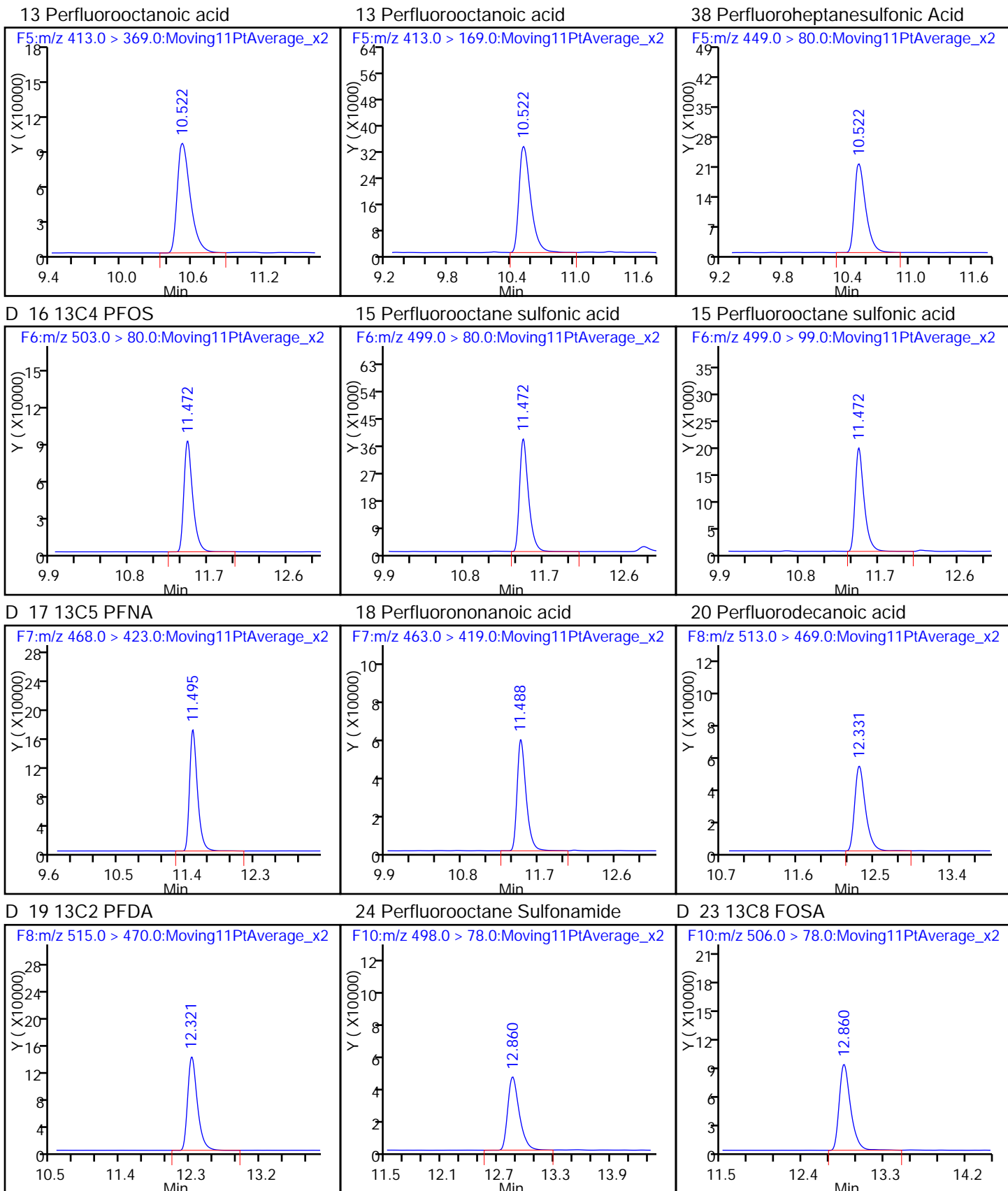


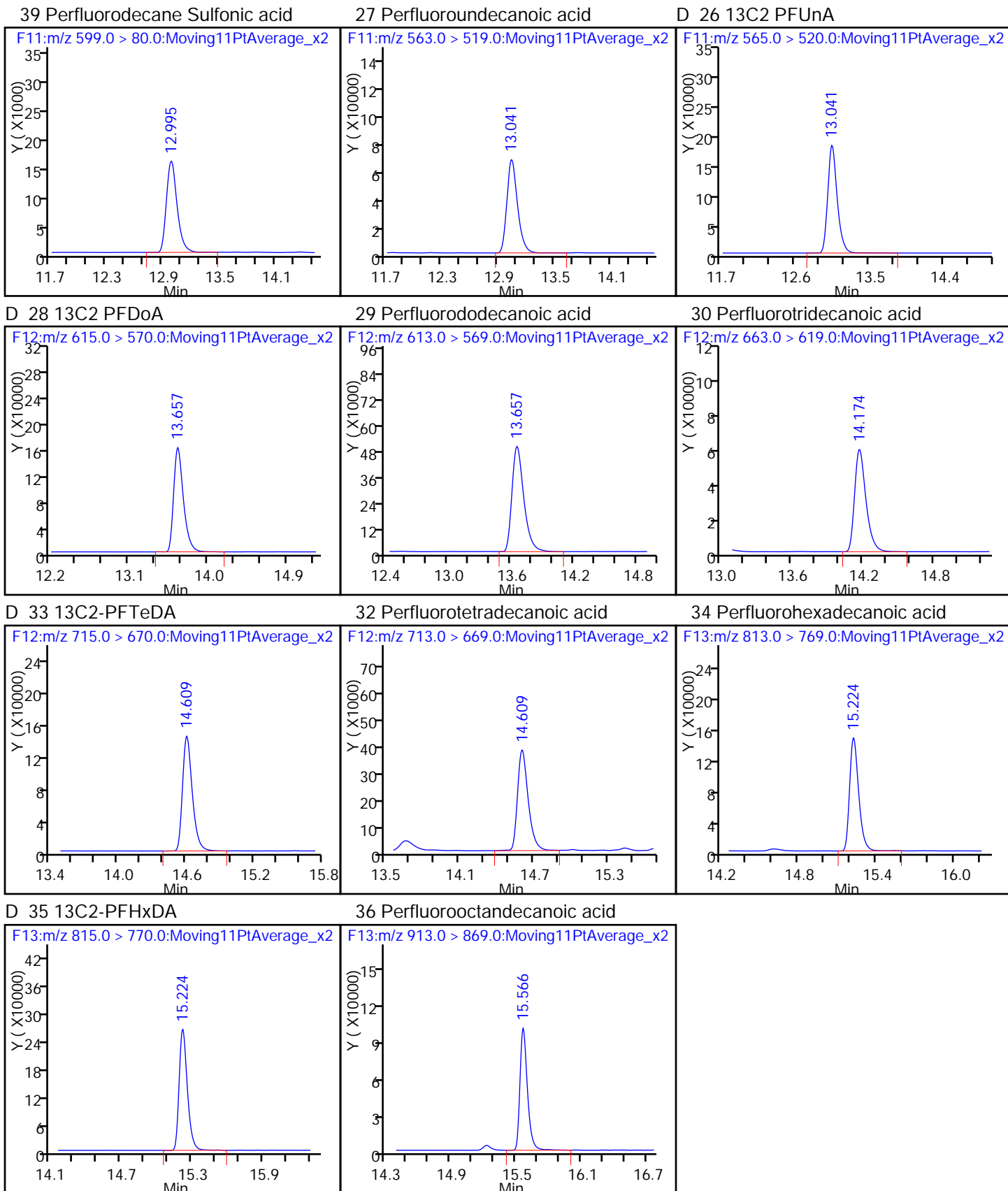
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-97173/2-A
 Matrix: Water Lab File ID: 05JAN2016A6A_017.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 01/04/2016 09:42
 Sample wt/vol: 500 (mL) Date Analyzed: 01/05/2016 16:17
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 97302 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0389		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0428		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0421		0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0325		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0377		0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0459		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	84		25-150
STL00991	13C4 PFOS	91		25-150
STL00995	13C5 PFNA	80		25-150
STL00990	13C4 PFOA	79		25-150
STL01892	13C4-PFHpA	81		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_017.d
 Lims ID: LCS 320-97173/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 05-Jan-2016 16:17:48 ALS Bottle#: 2 Worklist Smp#: 14
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: LCS 320-97173/2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2016 09:24:24 Calib Date: 30-Dec-2015 18:07:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20160104-27551.b\30DEC2015A6A_014.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.785	5.801	-0.016		366020	39.7		79.4	1395	
2 Perfluorobutyric acid										
212.9 > 169.0	5.782	5.802	-0.020	1.000	218244	19.7		98.5	710	
D 3 13C5-PFPeA										
267.9 > 223.0	6.905	6.924	-0.019		813259	39.5		79.0	1253	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.909	6.927	-0.018	1.000	325642	19.4		97.1	146	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	7.022	7.039	-0.017	1.000	136392	NC			450	
298.9 > 99.0	7.022	7.039	-0.017	1.000	73398		1.86(0.00-0.00)		256	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.022	7.039	-0.017	1.000	136392	16.2		91.8		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.160	8.176	-0.016	1.000	330649	18.6		93.0	756	
D 6 13C2 PFHxA										
315.0 > 270.0	8.160	8.177	-0.017		748596	42.9		85.8	2495	
D 8 13C4-PFHpA										
367.0 > 322.0	9.393	9.413	-0.020		862902	40.4		80.8	1835	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.399	9.413	-0.014	1.000	344003	19.5		97.3	398	
D 11 18O2 PFHxS										
403.0 > 84.0	9.429	9.444	-0.015		413052	39.9		84.4	1421	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.429	9.449	-0.020	1.000	116533	NC			314	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.429	9.449	-0.020	1.000	116533	18.8		99.5		
D 12 13C4 PFOA										
417.0 > 372.0	10.513	10.524	-0.011		866198	39.6		79.3	1968	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.513	10.528	-0.015	1.000	359056	21.4		107	495	
413.0 > 169.0	10.522	10.528	-0.006	1.001	116513		3.08(0.00-0.00)		280	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.513	10.530	-0.017	1.000	110433	18.1		95.1		
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.513	10.530	-0.017	1.000	110433	NC			215	
D 16 13C4 PFOS										
503.0 > 80.0	11.473	11.478	-0.005		486095	43.6		91.2	1356	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.473	11.480	-0.007	1.000	237446	22.9		120	250	
499.0 > 99.0	11.473	11.480	-0.007	1.000	137133		1.73(0.00-0.00)		368	
D 17 13C5 PFNA										
468.0 > 423.0	11.488	11.501	-0.013		793225	39.9		79.7	1632	
18 Perfluorononanoic acid										
463.0 > 419.0	11.496	11.502	-0.006	1.000	262980	21.1		105	719	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.331	12.333	-0.002	1.000	290503	19.4		97.2	679	
D 19 13C2 PFDA										
515.0 > 470.0	12.321	12.336	-0.015		776035	40.1		80.1	1172	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.860	12.858	0.002	1.000	271688	21.2		106	680	
D 23 13C8 FOSA										
506.0 > 78.0	12.860	12.860	0.0		752674	26.0		52.0	1316	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.996	13.007	-0.011	1.000	97056	NC			260	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.996	13.007	-0.011	1.000	97056	14.4		74.9		
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.050	13.053	-0.003	1.000	343053	20.3		102	549	
D 26 13C2 PFUnA										
565.0 > 520.0	13.050	13.054	-0.004		980356	37.4		74.8	1217	
D 28 13C2 PFDoA										
615.0 > 570.0	13.657	13.666	-0.009		875926	31.4		62.9	2499	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.657	13.668	-0.011	1.000	275240	20.2		101	463	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.174	14.182	-0.008	1.000	326822	21.2		106	437	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.609	14.618	-0.009		715435	31.0		62.1	2217	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.609	14.618	-0.009	1.000	184594	18.8		93.8	123	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.225	15.234	-0.009	1.000	469989	18.1		90.3	794	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.225	15.234	-0.009		1047463	37.0		74.1	2455	
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.556	15.582	-0.026	1.000	418169	25.9		130	813	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160105-27590.b\05JAN2016A6A_017.d

Injection Date: 05-Jan-2016 16:17:48

Instrument ID: A6

Lims ID: LCS 320-97173/2-A

Client ID:

Operator ID: JRB

ALS Bottle#: 2

Worklist Smp#: 14

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

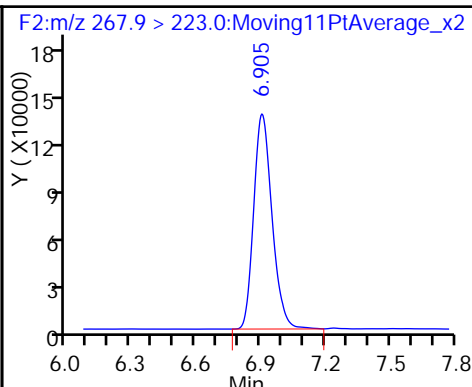
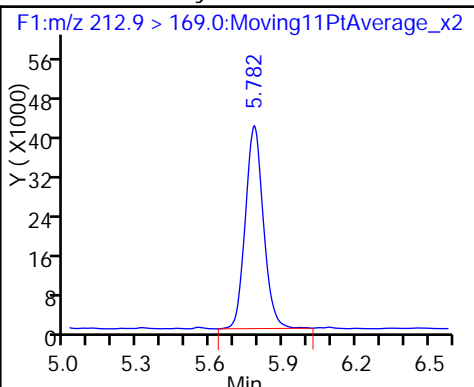
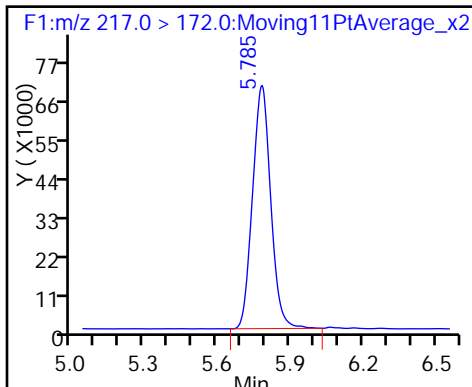
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

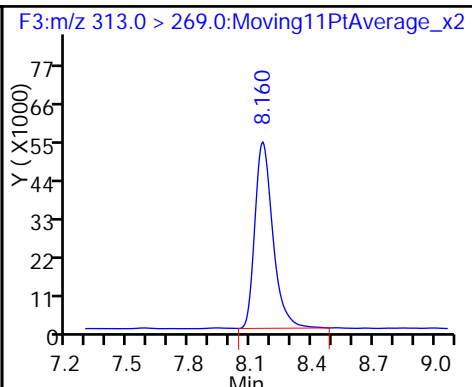
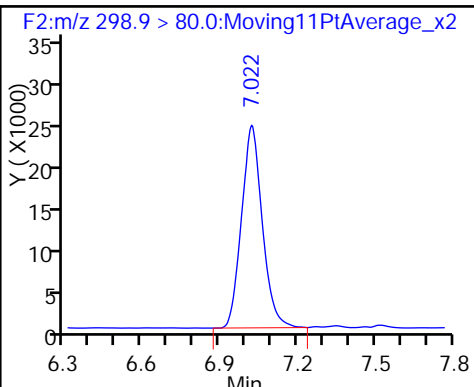
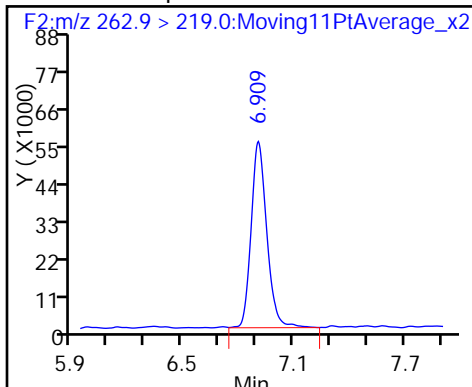
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

40 Perfluorobutanesulfonic acid

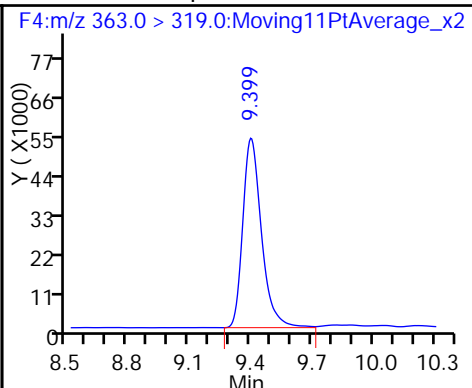
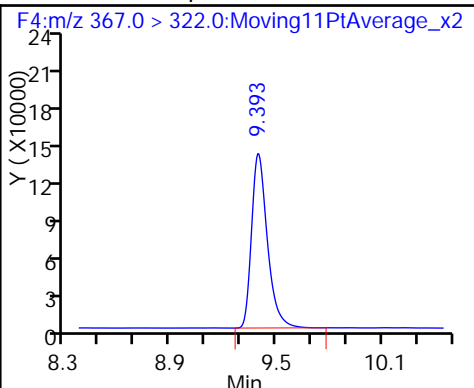
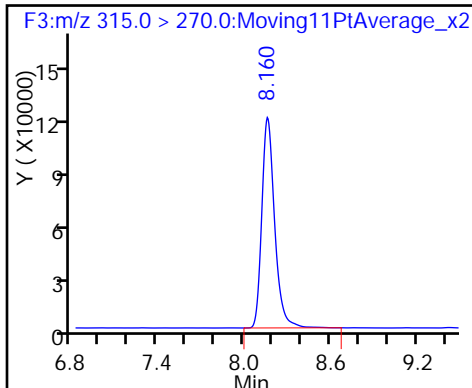
7 Perfluorohexanoic acid



D 6 13C2 PFHxA

D 8 13C4-PFHpA

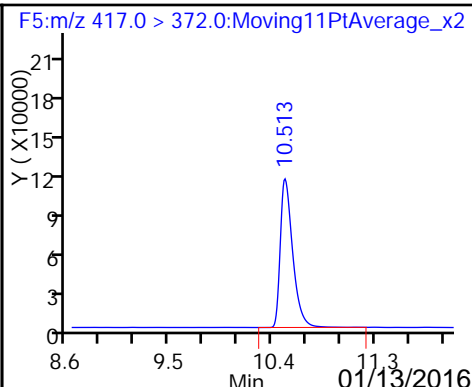
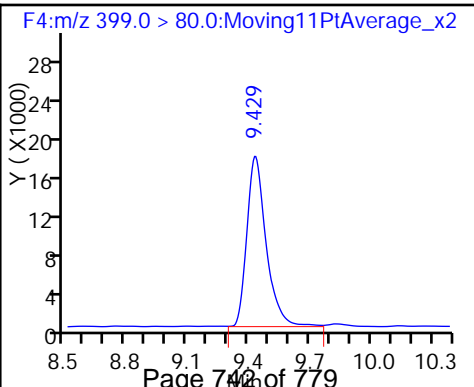
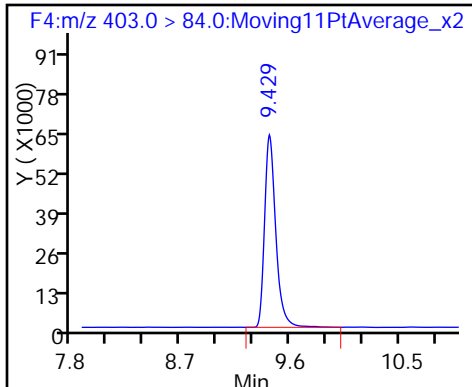
9 Perfluoroheptanoic acid

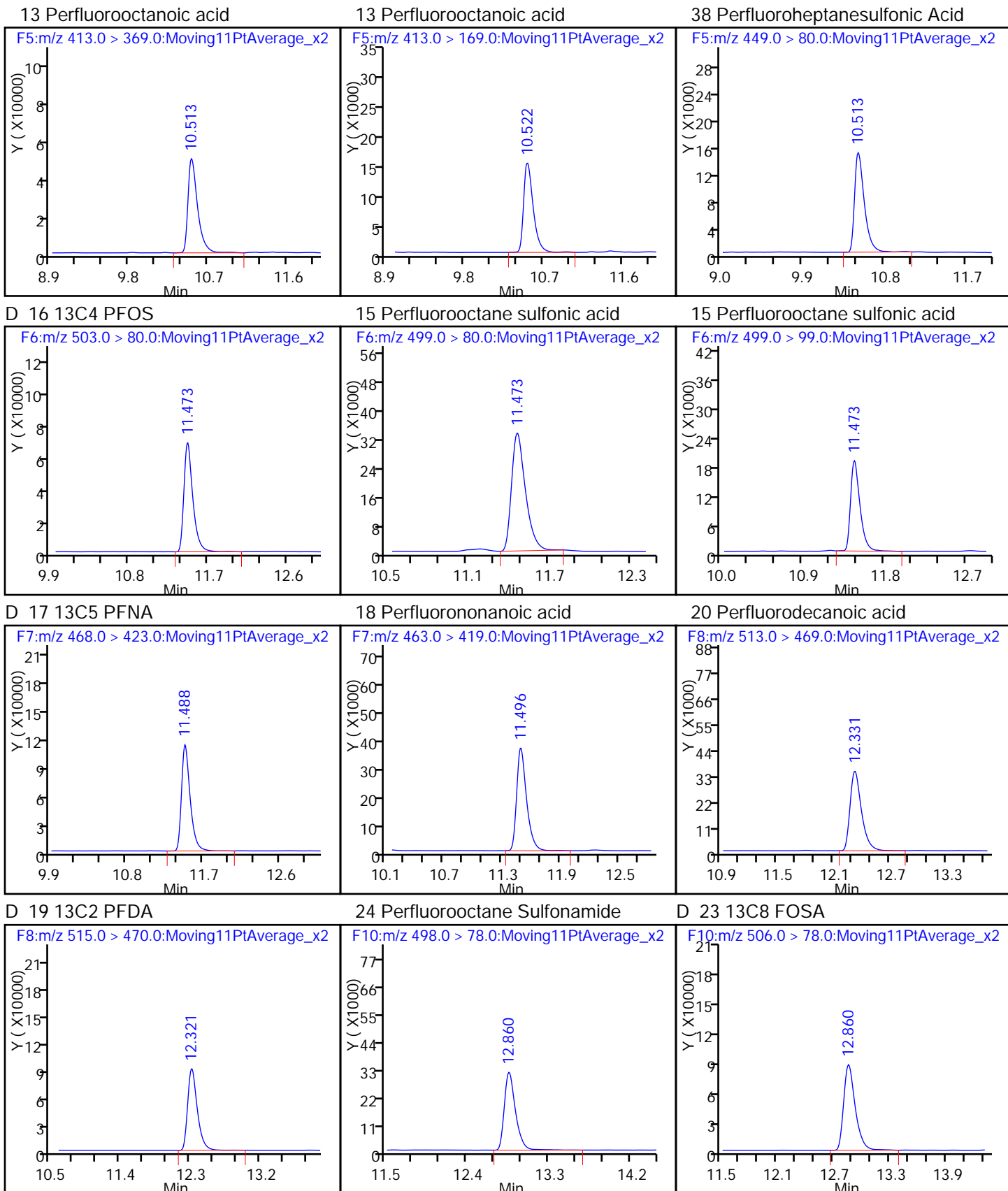


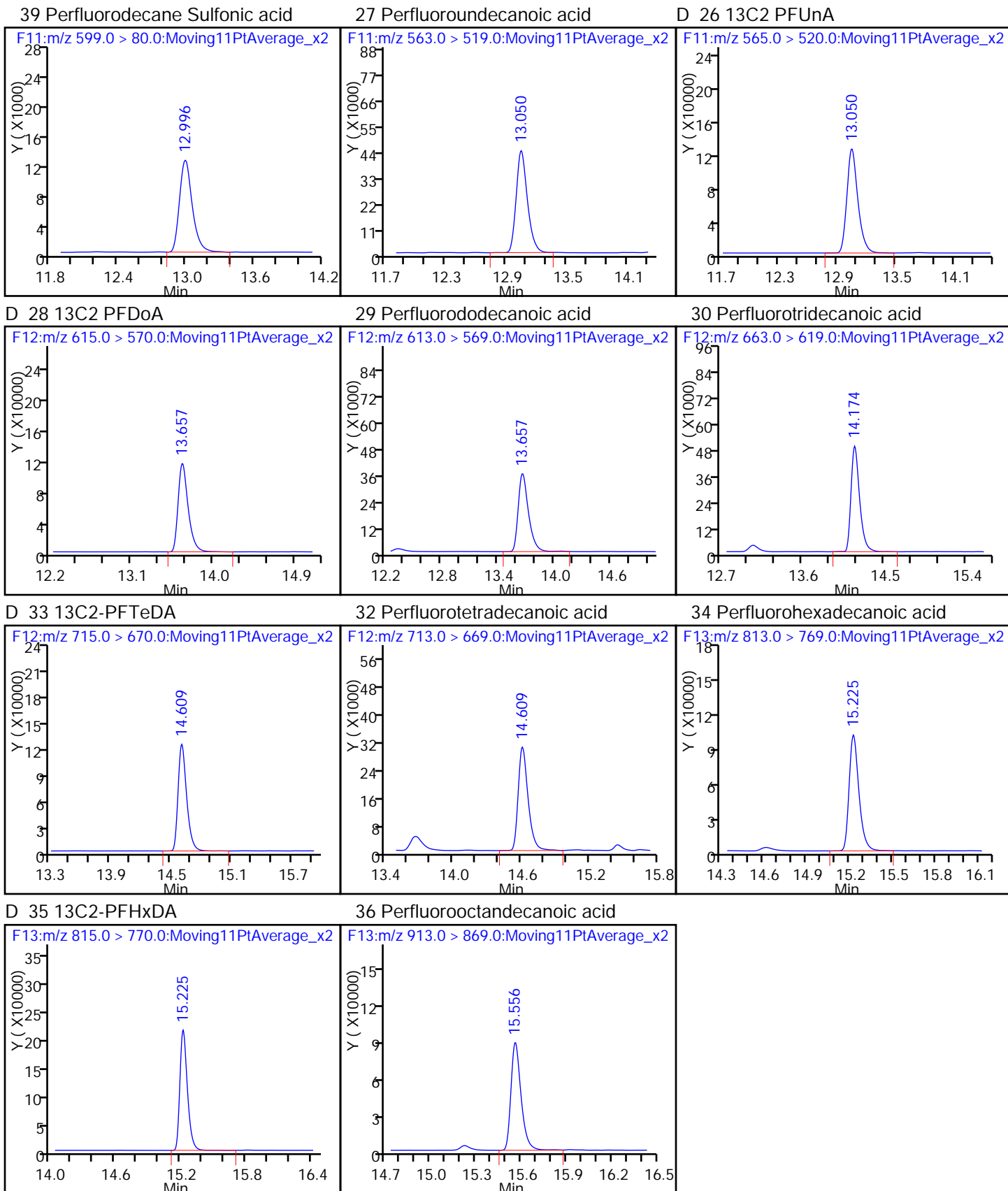
D 11 18O2 PFHxS

41 Perfluorohexanesulfonic acid

D 12 13C4 PFOA







LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Start Date: 12/30/2015 15:59

Analysis Batch Number: 97208 End Date: 12/31/2015 05:26

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-97208/2 IC		12/30/2015 15:59	1	30DEC2015A6A_00 8.d	Acquity 2.1(mm)
STD 320-97208/3 IC		12/30/2015 16:21	1	30DEC2015A6A_00 9.d	Acquity 2.1(mm)
STD 320-97208/4 IC		12/30/2015 16:42	1	30DEC2015A6A_01 0.d	Acquity 2.1(mm)
STD 320-97208/5 IC		12/30/2015 17:03	1	30DEC2015A6A_01 1.d	Acquity 2.1(mm)
STD 320-97208/6 IC		12/30/2015 17:24	1	30DEC2015A6A_01 2.d	Acquity 2.1(mm)
STD 320-97208/7 IC		12/30/2015 17:45	1	30DEC2015A6A_01 3.d	Acquity 2.1(mm)
STD 320-97208/8 IC		12/30/2015 18:07	1	30DEC2015A6A_01 4.d	Acquity 2.1(mm)
ZZZZZ		12/30/2015 18:28	1		Acquity 2.1(mm)
ICV 320-97208/10		12/30/2015 18:49	1	30DEC2015A6A_01 6.d	Acquity 2.1(mm)
MB 320-96713/1-A		12/30/2015 19:10	1	30DEC2015A6A_01 7.d	Acquity 2.1(mm)
LCS 320-96713/2-A		12/30/2015 19:32	1	30DEC2015A6A_01 8.d	Acquity 2.1(mm)
320-16572-1		12/30/2015 19:53	1	30DEC2015A6A_01 9.d	Acquity 2.1(mm)
320-16572-2		12/30/2015 20:14	1	30DEC2015A6A_02 0.d	Acquity 2.1(mm)
320-16586-1		12/30/2015 20:35	1	30DEC2015A6A_02 1.d	Acquity 2.1(mm)
320-16586-2		12/30/2015 20:57	1	30DEC2015A6A_02 2.d	Acquity 2.1(mm)
320-16586-3		12/30/2015 21:18	1	30DEC2015A6A_02 3.d	Acquity 2.1(mm)
320-16586-4		12/30/2015 21:39	1	30DEC2015A6A_02 4.d	Acquity 2.1(mm)
320-16586-5		12/30/2015 22:00	1	30DEC2015A6A_02 5.d	Acquity 2.1(mm)
320-16609-1		12/30/2015 22:22	1	30DEC2015A6A_02 6.d	Acquity 2.1(mm)
CCV 320-97208/27		12/30/2015 22:43	1	30DEC2015A6A_02 7.d	Acquity 2.1(mm)
320-16609-2		12/30/2015 23:04	1	30DEC2015A6A_02 8.d	Acquity 2.1(mm)
320-16609-3		12/30/2015 23:25	1	30DEC2015A6A_02 9.d	Acquity 2.1(mm)
320-16609-4		12/30/2015 23:47	1	30DEC2015A6A_03 0.d	Acquity 2.1(mm)
CCV 320-97208/28		12/31/2015 01:33	1	30DEC2015A6A_03 5.d	Acquity 2.1(mm)
CCV 320-97208/40		12/31/2015 05:26	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Start Date: 01/05/2016 11:19

Analysis Batch Number: 97302 End Date: 01/06/2016 01:08

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-97302/2		01/05/2016 11:19	1	05JAN2016A6A_00 4.d	Acquity 2.1(mm)
CCV 320-97302/3 CCVL		01/05/2016 11:48	1	05JAN2016A6A_00 5.d	Acquity 2.1(mm)
ZZZZZ		01/05/2016 12:10	1		Acquity 2.1(mm)
ZZZZZ		01/05/2016 12:31	1		Acquity 2.1(mm)
ZZZZZ		01/05/2016 12:52	100		Acquity 2.1(mm)
ZZZZZ		01/05/2016 13:13	100		Acquity 2.1(mm)
ZZZZZ		01/05/2016 13:34	100		Acquity 2.1(mm)
ZZZZZ		01/05/2016 13:56	1		Acquity 2.1(mm)
ZZZZZ		01/05/2016 14:17	1		Acquity 2.1(mm)
ZZZZZ		01/05/2016 14:38	1		Acquity 2.1(mm)
CCV 320-97302/12		01/05/2016 15:21	1	05JAN2016A6A_01 5.d	Acquity 2.1(mm)
MB 320-97173/1-A		01/05/2016 15:56	1	05JAN2016A6A_01 6.d	Acquity 2.1(mm)
LCS 320-97173/2-A		01/05/2016 16:17	1	05JAN2016A6A_01 7.d	Acquity 2.1(mm)
320-16615-1		01/05/2016 16:39	1	05JAN2016A6A_01 8.d	Acquity 2.1(mm)
320-16615-2		01/05/2016 17:00	1	05JAN2016A6A_01 9.d	Acquity 2.1(mm)
320-16615-3		01/05/2016 17:21	1	05JAN2016A6A_02 0.d	Acquity 2.1(mm)
320-16615-4		01/05/2016 17:42	1	05JAN2016A6A_02 1.d	Acquity 2.1(mm)
ZZZZZ		01/05/2016 18:03	1		Acquity 2.1(mm)
320-16615-6		01/05/2016 18:25	1	05JAN2016A6A_02 3.d	Acquity 2.1(mm)
320-16615-7		01/05/2016 18:46	1	05JAN2016A6A_02 4.d	Acquity 2.1(mm)
320-16649-1		01/05/2016 19:07	1	05JAN2016A6A_02 5.d	Acquity 2.1(mm)
CCV 320-97302/29		01/05/2016 19:28	1	05JAN2016A6A_02 6.d	Acquity 2.1(mm)
320-16649-2		01/05/2016 19:50	1	05JAN2016A6A_02 7.d	Acquity 2.1(mm)
320-16649-3		01/05/2016 20:11	1	05JAN2016A6A_02 8.d	Acquity 2.1(mm)
320-16649-4		01/05/2016 20:32	1	05JAN2016A6A_02 9.d	Acquity 2.1(mm)
320-16649-5		01/05/2016 20:53	1	05JAN2016A6A_03 0.d	Acquity 2.1(mm)
320-16649-6		01/05/2016 21:15	1	05JAN2016A6A_03 1.d	Acquity 2.1(mm)
320-16649-7		01/05/2016 21:36	1	05JAN2016A6A_03 2.d	Acquity 2.1(mm)
CCV 320-97302/30		01/05/2016 21:57	1	05JAN2016A6A_03 3.d	Acquity 2.1(mm)
ZZZZZ		01/06/2016 01:08	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Instrument ID: A6 Start Date: 01/06/2016 11:00

Analysis Batch Number: 97425 End Date: 01/07/2016 14:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-97425/4 IC		01/06/2016 11:00	1	06JAN2016A6A_00 3.d	Acquity 2.1(mm)
STD 320-97425/5 IC		01/06/2016 11:31	1	06JAN2016A6A_00 4.d	Acquity 2.1(mm)
STD 320-97425/6 IC		01/06/2016 12:02	1	06JAN2016A6A_00 5.d	Acquity 2.1(mm)
STD 320-97425/7 IC		01/06/2016 12:33	1	06JAN2016A6A_00 6.d	Acquity 2.1(mm)
STD 320-97425/8 IC		01/06/2016 13:05	1	06JAN2016A6A_00 7.d	Acquity 2.1(mm)
STD 320-97425/9 IC		01/06/2016 13:36	1	06JAN2016A6A_00 8.d	Acquity 2.1(mm)
STD 320-97425/10 IC		01/06/2016 14:07	1	06JAN2016A6A_00 9.d	Acquity 2.1(mm)
ZZZZZ		01/06/2016 14:38	1		Acquity 2.1(mm)
ICV 320-97425/12		01/06/2016 15:10	1	06JAN2016A6A_01 1.d	Acquity 2.1(mm)
320-16615-1 DL		01/06/2016 15:41	10	06JAN2016A6A_01 2.d	Acquity 2.1(mm)
320-16615-2 DL		01/06/2016 16:12	10	06JAN2016A6A_01 3.d	Acquity 2.1(mm)
320-16615-1 DL2		01/06/2016 16:43	20	06JAN2016A6A_01 4.d	Acquity 2.1(mm)
320-16615-2 DL2		01/06/2016 17:15	20	06JAN2016A6A_01 5.d	Acquity 2.1(mm)
320-16615-3 DL		01/06/2016 17:46	10	06JAN2016A6A_01 6.d	Acquity 2.1(mm)
320-16615-4 DL		01/06/2016 18:17	10	06JAN2016A6A_01 7.d	Acquity 2.1(mm)
320-16615-6 DL		01/06/2016 18:48	10	06JAN2016A6A_01 8.d	Acquity 2.1(mm)
320-16649-4 DL		01/06/2016 19:19	10	06JAN2016A6A_01 9.d	Acquity 2.1(mm)
320-16649-5 DL		01/06/2016 19:51	10	06JAN2016A6A_02 0.d	Acquity 2.1(mm)
320-16615-5		01/06/2016 20:22	1	06JAN2016A6A_02 1.d	Acquity 2.1(mm)
CCV 320-97425/15		01/06/2016 20:53	1	06JAN2016A6A_02 2.d	Acquity 2.1(mm)
CCV 320-97425/34		01/07/2016 00:32	1	06JAN2016A6A_02 9.d	Acquity 2.1(mm)
CCV 320-97425/35		01/07/2016 10:24	1	06JAN2016A6A_05 6.d	Acquity 2.1(mm)
320-16649-6 RA		01/07/2016 13:00	1	06JAN2016A6A_06 1.d	Acquity 2.1(mm)
MB 320-97173/1-A RA		01/07/2016 13:21	1	06JAN2016A6A_06 2.d	Acquity 2.1(mm)
CCV 320-97425/39		01/07/2016 14:16	1	06JAN2016A6A_06 4.d	Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Batch Number: 96713 Batch Start Date: 12/26/15 07:28 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 12/29/15 10:45

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00023	LCPFCSU 00036
MB 320-96713/1		3535, WS-LC-0025				500.00 mL	1.00 mL	50 uL	
LCS 320-96713/2		3535, WS-LC-0025				500.00 mL	1.00 mL	50 uL	20 uL
320-16572-1	OF14-MW07S-1215	3535, WS-LC-0025	T	548.47 g	43.41 g	505.1 mL	1.00 mL	50 uL	
320-16572-2	OF14-MW06S-1215	3535, WS-LC-0025	T	544.18 g	42.61 g	501.6 mL	1.00 mL	50 uL	
320-16586-1	OF-MW16-1215	3535, WS-LC-0025	T	544.75 g	44.33 g	500.4 mL	1.00 mL	50 uL	
320-16586-2	OF-MW16P-1215	3535, WS-LC-0025	T	538.32 g	42.40 g	495.9 mL	1.00 mL	50 uL	
320-16586-3	OF-MW17-1215	3535, WS-LC-0025	T	547.26 g	43.86 g	503.4 mL	1.00 mL	50 uL	
320-16586-4	OF14-MW07D-1215	3535, WS-LC-0025	T	543.06 g	42.31 g	500.8 mL	1.00 mL	50 uL	
320-16586-5	OF14-MW06D-1215	3535, WS-LC-0025	T	536.88 g	42.44 g	494.4 mL	1.00 mL	50 uL	
320-16609-1	OF-MW15-1215	3535, WS-LC-0025	T	536.68 g	43.29 g	493.4 mL	1.00 mL	50 uL	
320-16609-2	OF-MW09-1215	3535, WS-LC-0025	T	571.90 g	44.72 g	527.2 mL	1.00 mL	50 uL	
320-16609-3	OF-MW10-1215	3535, WS-LC-0025	T	567.48 g	44.67 g	522.8 mL	1.00 mL	50 uL	
320-16609-4	OF-EB122315	3535, WS-LC-0025	T	558.22 g	43.77 g	514.5 mL	1.00 mL	50 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Batch Number: 96713 Batch Start Date: 12/26/15 07:28 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 12/29/15 10:45

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O: 561013
H2O Lot used	12/02/15
Pipette ID	CN15436
Analyst who added reagent	JER
SU Reagent Drop	JER
SU Reagent Drop Witness	C. HYTREK
Solvent Lot #	540408
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk Lot Number	002535183A

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Batch Number: 97173 Batch Start Date: 01/04/16 09:42 Batch Analyst: Arauz, Horacio J

Batch Method: 3535 Batch End Date: 01/04/16 19:55

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00024	LCPFCSU 00039
MB 320-97173/1		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	
LCS 320-97173/2		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
320-16615-1	OF14-MW08-1215	3535, WS-LC-0025	T	567.16 g	44.62 g	522.5 mL	1.00 mL	50 uL	
320-16615-2	OF14-MW08P-1215	3535, WS-LC-0025	T	564.15 g	44.56 g	519.6 mL	1.00 mL	50 uL	
320-16615-3	OF14-MW12S-1215	3535, WS-LC-0025	T	566.73 g	45.72 g	521 mL	1.00 mL	50 uL	
320-16615-4	OF14-MW11S-1215	3535, WS-LC-0025	T	588.25 g	44.35 g	543.9 mL	1.00 mL	50 uL	
320-16615-5	OF14-MW14-1215	3535, WS-LC-0025	T	593.44 g	43.82 g	549.6 mL	1.00 mL	50 uL	
320-16615-6	OF14-MW13S-1215	3535, WS-LC-0025	T	588.31 g	44.45 g	543.9 mL	1.00 mL	50 uL	
320-16615-7	OF-EB122815	3535, WS-LC-0025	T	588.81 g	44.11 g	544.7 mL	1.00 mL	50 uL	
320-16649-1	OF-FB01-123015	3535, WS-LC-0025	T	583.14 g	44.22 g	538.9 mL	1.00 mL	50 uL	
320-16649-2	OF-INF01-1215	3535, WS-LC-0025	T	562.32 g	44.45 g	517.9 mL	1.00 mL	50 uL	
320-16649-3	OF-INF01P-1215	3535, WS-LC-0025	T	574.14 g	43.72 g	530.4 mL	1.00 mL	50 uL	
320-16649-4	OF-EFF01-1215	3535, WS-LC-0025	T	586.81 g	43.89 g	542.9 mL	1.00 mL	50 uL	
320-16649-5	OF-EFF01P-1215	3535, WS-LC-0025	T	555.56 g	44.18 g	511.4 mL	1.00 mL	50 uL	
320-16649-6	OF-MW12D-1215	3535, WS-LC-0025	T	582.42 g	43.79 g	538.6 mL	1.00 mL	50 uL	
320-16649-7	OF-FB02-123015	3535, WS-LC-0025	T	603.5 g	44.07 g	559.4 mL	1.00 mL	50 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-16572-1

SDG No.: _____

Batch Number: 97173 Batch Start Date: 01/04/16 09:42 Batch Analyst: Arauz, Horacio J

Batch Method: 3535 Batch End Date: 01/04/16 19:55

Batch Notes	
Balance ID	QA-070
Batch Comment	MeOH 557955
H2O Lot used	01-04-2016
Pipette ID	EC15219
Analyst who added reagent	HJA
SU Reagent Drop	HJA
SU Reagent Drop Witness	SNE
Solvent Lot #	562564
Solvent Name	0.3% Ammonium hydroxide/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	Wax 500mg
Solid Phase Extraction Disk Lot Number	002535183A

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): 16572, 16586, 16609

Work List ID(s): 27551

Extraction Batch: 96713

Analysis Batch(es): 97208

Delivery Rank: 4

Due Date: 12/29/15

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

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

1st Level (Analyst): JRB 1/4/16

Date: _____

2nd Level Reviewer: MWJ

Date: 1/5/2016

9

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Open: 12/26/2015 7:28:47AM

Batch End: 12/29/15 16:45

Sharon Re
with 9671A

Batch Number: 320-96713

Method Code: 320-3535_IVWT-320

Solid-Phase Extraction (SPE)

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs		Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
					Adj1	Adj2					
1 MB-320-96713/1 N/A	N/A		500.00 mL 1.00 mL				N/A	N/A	N/A		MB 320-96713/1-A
2 LCS-320-96713/2 N/A	N/A		500.00 mL 1.00 mL				N/A	N/A	N/A		LCS 320-96713/2-A
3 320-16572-A-1 (PFC_IDA_DOD5)	N/A (320-16572-1)	548.47 g 43.41 g	505.1 mL 1.00 mL				12/29/15	12_Days	4		320-16572-A-1-A
4 320-16572-A-2 (PFC_IDA_DOD5)	N/A (320-16572-1)	544.18 g 42.61 g	501.6 mL 1.00 mL				12/29/15	12_Days	4		320-16572-A-2-A
5 320-16586-A-1 (PFC_IDA_DOD5)	N/A (320-16572-1)	544.75 g 44.33 g	500.4 mL 1.00 mL				12/29/15	12_Days	4		320-16586-A-1-A
6 320-16586-A-2 (PFC_IDA_DOD5)	N/A (320-16572-1)	538.32 g 42.40 g	495.9 mL 1.00 mL				12/29/15	12_Days	4		320-16586-A-2-A
7 320-16586-A-3 (PFC_IDA_DOD5)	N/A (320-16572-1)	547.26 g 43.86 g	503.4 mL 1.00 mL				12/29/15	12_Days	4		320-16586-A-3-A
8 320-16586-A-4 (PFC_IDA_DOD5)	N/A (320-16572-1)	543.06 g 42.31 g	500.8 mL 1.00 mL				12/29/15	12_Days	4		320-16586-A-4-A
9 320-16586-A-5 (PFC_IDA_DOD5)	N/A (320-16572-1)	536.88 g 42.44 g	494.4 mL 1.00 mL				12/29/15	12_Days	4		320-16586-A-5-A
10 320-16609-B-1 (PFC_IDA_DOD5)	N/A (320-16572-1)	536.68 g 43.29 g	493.4 mL 1.00 mL				12/29/15	12_Days	4		320-16609-B-1-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)





Batch Number: 320-96713

Analyst: Reed, Jonathan E

Batch Open: 12/26/2015 7:28:47AM

Method Code: 320-3535_IWWT-320

Batch End:

Sample ID	N/A (320-16572-1)	571.90 g		527.2 mL		12/29/15	12_Days	4		
		44.72 g		1.00 mL						
11	320-16609-A-2 (PFC_IDA_DOD5)	N/A (320-16572-1)	571.90 g		527.2 mL		12/29/15	12_Days	4	
12	320-16609-A-3 (PFC_IDA_DOD5)	N/A (320-16572-1)	567.48 g		522.8 mL		12/29/15	12_Days	4	
13	320-16609-B-4 (PFC_IDA_DOD5)	N/A (320-16572-1)	558.22 g		514.5 mL		12/29/15	12_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Open: 12/26/2015 7:28:47AM

Batch End:

Batch Number: 320-96713

Method Code: 320-3535_IVWT-320

	Batch Notes
First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk Lot Number	002535183A
H2O Lot used	12/02/15
Pipette ID	CN15436
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	540408
Analyst who added reagent	JER
SU Reagent Drop	JER
SU Reagent Drop Witness	<i>C. Hyatt</i>
Acid Name	NA
Acid Lot	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl Lot #	NA
SOP Number	WS-LC-0025
Batch Comment	0.1N NaOH/H2O: 561013

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Number: 320-96713

Method Code: 320-3535_IWWT-320

Batch Open: 12/26/2015 7:28:47AM

Batch End:

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-96713



Analyst: Reed, Jonathan E

Batch Open: 12/26/2015 7:28:47AM

Method Code: 320-3535_IWWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-96713/1	LCMPFCSU_00023	50.0 uL	1.00 mL		
LCS 320-96713/2	LCMPFCSU_00023	50.0 uL	1.00 mL		
LCS 320-96713/2	LCPFCSU_00036	20.0 uL	1.00 mL		
320-16572-A-1	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16572-A-2	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16586-A-1	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16586-A-2	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16586-A-3	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16586-A-4	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16586-A-5	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16609-B-1	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16609-A-2	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16609-A-3	LCMPFCSU_00023	50.0 uL	1.00 mL		
320-16609-B-4	LCMPFCSU_00023	50.0 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-96713

Analyst: Reed, Jonathan E

Batch Open: 12/26/2015 7:28:47AM

Method Code: 320-3535_IWWT-320

Batch End:

Reagent	Other Reagents:	Amount/Units	Lot#:

Preparation Batch Number(s): 96713 Test: PFC-2

Earliest Holding Time: 12/28/15

Sample List Tab		1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method		✓	✓
All necessary NCMs filed (including holding time)		✓	✓
Method/sample/login/QAS checked and correct		✓	✓
Worksheet Tab		1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved		NA	NA
Weights in anticipated range and not targeted		✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)		✓	✓
The pH is transcribed correctly in TALS		NA	NA
All additional information transcribed into TALS is correct and raw data is attached		✓	✓
Comments are transcribed correctly in TALS		✓	✓
Reagents Tab		1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS		✓	✓
All spike amounts correct and added to necessary samples and QC		✓	✓
Batch Information		1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly		✓	✓
All necessary 'batch information' complete and entered into TALS correctly		✓	✓

1st Level Reviewer: 

Date: 12/29/15

2nd Level Reviewer: HSA

Date: 12-29-15

Comments: _____

HPLC/LCMS Data Review Checklist

Job Number(s): 16615, 16649

Work List ID(s): 27590, 27625

Extraction Batch: 97173

Analysis Batch(es): 97302, 97425

Delivery Rank: 4

Due Date: 1/4/16

A. Calibration/Instrument Run QC	97425	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch#	<u>97208, 97446</u>	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	<u>4/8/2016</u>	✓	✓	
• RF _{average} criteria appropriate for the method.		✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).		✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).				✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?		✓	✓	
• All curve points show calculated concentrations.		✓	✓	
3. Peaks correctly ID'd by data system.		✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.				✓
B. QA/QC				
1. Are all QC samples properly linked in TALS?		✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.		✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.		✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?				✓
5. Holding Times were met for prep and analytical.		✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	<u>NCM</u>	✓	✓	
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>46092</u>	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?		✓	✓	
3. Have all flags been reviewed for appropriateness?		✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?				
5. Was QC Checker run for this job?		✓	✓	

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

1st Level (Analyst): JRB

Date: 1/7/16

2nd Level Reviewer: MW

Date: 1/8/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Arauz, Horacio J

Batch Open: 1/4/2016 9:42:20AM

Batch End: 1/6/16 19:55

Batch Number: 320-97173

Method Code: 320-3535_I\WWT-320

Solid-Phase Extraction (SPE)







Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmt FinAmt	Rcvd	PHS		Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
					Adj1	Adj2					
1 MB~320-97173/1 N/A	N/A		500 mL 1.00 mL				N/A	N/A	N/A		320-97173-1-A
2 LCS-320-97173/2 N/A	N/A		500 mL 1.00 mL				N/A	N/A	N/A		320-97173-2-A
3 320-16615-A-1 (PFC_IDA_DOD5)	N/A (320-16572-1)	567.16 g 44.62 g	522.5 mL 1.00 mL				1/4/16	5_Day_RUSH	4		320-16615-A-1-A
4 320-16615-A-2 (PFC_IDA_DOD5)	N/A (320-16572-1)	564.15 g 44.56 g	519.6 mL 1.00 mL				1/4/16	5_Day_RUSH	4		320-16615-A-2-A
5 320-16615-A-3 (PFC_IDA_DOD5)	N/A (320-16572-1)	566.73 g 45.72 g	521 mL 1.00 mL				1/4/16	5_Day_RUSH	4		320-16615-A-3-A
6 320-16615-A-4 (PFC_IDA_DOD5)	N/A (320-16572-1)	588.25 g 44.35 g	543.9 mL 1.00 mL				1/4/16	5_Day_RUSH	4		320-16615-A-4-A
7 320-16615-B-5 (PFC_IDA_DOD5)	N/A (320-16572-1)	593.44 g 43.82 g	549.6 mL 1.00 mL				1/4/16	5_Day_RUSH	4		320-16615-B-5-A
8 320-16615-A-6 (PFC_IDA_DOD5)	N/A (320-16572-1)	588.31 g 44.45 g	543.9 mL 1.00 mL				1/4/16	5_Day_RUSH	4		320-16615-A-6-A
9 320-16615-A-7 (PFC_IDA_DOD5)	N/A (320-16572-1)	588.81 g 44.11 g	544.7 mL 1.00 mL				1/4/16	5_Day_RUSH	4		320-16615-A-7-A
10 320-16649-A-1 (PFC_IDA_DOD5)	N/A (320-16572-1)	583.14 g 44.22 g	538.9 mL 1.00 mL				1/4/16	5_Day_RUSH	4		320-16649-A-1-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-97173 Analyst: Arauz, Horacio J Batch Open: 1/4/2016 9:42:20AM

Method Code: 320-3535_I\NWT-320 Batch End:

Line	Sample ID	Weight (g)	Volume (mL)	Date	Instrument	Replicates	Barcode
11	320-16649-A-2 (PFC_IDA_DOD5)	562.32 g	517.9 mL	1/4/16	5_Day_RUSH	4	
		44.45 g	1.00 mL				
12	320-16649-A-3 (PFC_IDA_DOD5)	574.14 g	530.4 mL	1/4/16	5_Day_RUSH	4	
		43.72 g	1.00 mL				
13	320-16649-A-4 (PFC_IDA_DOD5)	586.81 g	542.9 mL	1/4/16	5_Day_RUSH	4	
		43.89 g	1.00 mL				
14	320-16649-A-5 (PFC_IDA_DOD5)	555.56 g	511.4 mL	1/4/16	5_Day_RUSH	4	
		44.18 g	1.00 mL				
15	320-16649-A-6 (PFC_IDA_DOD5)	582.42 g	538.6 mL	1/4/16	5_Day_RUSH	4	
		43.79 g	1.00 mL				
16	320-16649-A-7 (PFC_IDA_DOD5)	503.5 g	559.4 mL	1/4/16	5_Day_RUSH	4	
		44.07 g	1.00 mL				

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-97173

Analyst: Arauz, Horacio J

Batch Open: 1/4/2016 9:42:20AM

Method Code: 320-3535_IVWT-320

Batch End:

	Batch Notes
First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	Wax 500mg
Solid Phase Extraction Disk Lot Number	002535183A
H2O Lot used	01-04-2016
Pipette ID	EC15219
Solvent Name	0.3% Ammonium hydroxide/MeOH
Solvent Lot #	562564
Analyst who added reagent	HJA
SU Reagent Drop	HJA
SU Reagent Drop Witness	SNE
Acid Name	NA
Acid Lot	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl Lot #	NA
SOP Number	WS-LC-0025
Batch Comment	MeOH 557955

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-97173

Method Code: 320-3535_IVWT-320

Batch Open: 1/4/2016 9:42:20AM

Batch End:

Analyst: Arauz, Horacio J

Comments

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-97173

Batch Open: 1/4/2016 9:42:20AM

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-97173/1	LCMPFCSU_00024	50 uL	1.00 mL	HJA 1-4-16	SNE 1/4/16
LCS 320-97173/2	LCMPFCSU_00024	50 uL	1.00 mL		
LCS 320-97173/2	LCMPFCSU_00024	20 uL	1.00 mL		
320-16615-A-1	LCMPFCSU_00024	50 uL	1.00 mL		
320-16615-A-2	LCMPFCSU_00024	50 uL	1.00 mL		
320-16615-A-3	LCMPFCSU_00024	50 uL	1.00 mL		
320-16615-A-4	LCMPFCSU_00024	50 uL	1.00 mL		
320-16615-B-5	LCMPFCSU_00024	50 uL	1.00 mL		
320-16615-A-6	LCMPFCSU_00024	50 uL	1.00 mL		
320-16615-A-7	LCMPFCSU_00024	50 uL	1.00 mL		
320-16649-A-1	LCMPFCSU_00024	50 uL	1.00 mL		
320-16649-A-2	LCMPFCSU_00024	50 uL	1.00 mL		
320-16649-A-3	LCMPFCSU_00024	50 uL	1.00 mL		
320-16649-A-4	LCMPFCSU_00024	50 uL	1.00 mL		
320-16649-A-5	LCMPFCSU_00024	50 uL	1.00 mL		
320-16649-A-6	LCMPFCSU_00024	50 uL	1.00 mL		
320-16649-A-7	LCMPFCSU_00024	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-97173

Method Code: 320-3535_IVWT-320

Batch Open: 1/4/2016 9:42:20AM

Batch End:

Analyst: Arauz, Horacio J

Reagent	Other Reagents:	Amount/Units	Lot#:

Preparation Batch Number(s): 320-97173 Test: PRC-L

Earliest Holding Time: 1-4-16 / 1-5-16

Sample List Tab		1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method		/	✓
All necessary NCMs filed (including holding time)		/	✓
Method/sample/login/QAS checked and correct		/	✓
Worksheet Tab		1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved		NA	NA
Weights in anticipated range and not targeted		/	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)		/	✓
The pH is transcribed correctly in TALS		NA	NA
All additional information transcribed into TALS is correct and raw data is attached		/	✓
Comments are transcribed correctly in TALS		/	✓
Reagents Tab		1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS		/	✓
All spike amounts correct and added to necessary samples and QC		/	✓
Batch Information		1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly		/	✓
All necessary 'batch information' complete and entered into TALS correctly		/	✓

1st Level Reviewer: 
 2nd Level Reviewer: SNE

Date: 1/04/16
 Date: 1/5/16

Comments: _____

Shipping and Receiving Documents

Corrections to File

TO: Laura Turpen

COPIES: File
NAL_Fentress Perfluorinated Compound Investigation

FROM: Seng Camus
Chemist
CH2M HILL

DATE: December 22, 2015

This memo is to document corrections made to the sample time for NAL Fentress PFC SDG 320-16572-1

Sample ID	Date	Incorrect Time	Correct Time	SDG
OF14-MW06S-1215	12/21/2015	12:00	12:05	320-16572-1

CTO-WE 44

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt 0.2°C Drinking Water? Yes No

Client: C12M Hill Project Manager: Juliana Dean Chain of Custody Number: 283421

Address: 5701 Cleveland St., Suite 200 Date: 12-21-15

City: Virginia Beach State: VA Zip Code: 23462 Lab Number: _____

Project Name and Location (State): Fentress PFCs, VA

Carrier/Waybill Number: _____

Site Contact: _____ Lab Contact: _____

Analysis (Attach list if more space is needed): _____

Special Instructions/Conditions of Receipt: _____

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix			Containers & Preservatives								
			Aqueous	Sed	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH			
OF14-MW075-1215	12-21-15	1530	X			X								
OF14-MW065-1215	12-21-15	1700	X			X								



320-16572 Chain of Custody

Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Archive For _____ Months

Sample Disposal: Disposal By Lab (A fee may be assessed if samples are retained longer than 1 month)

QC Requirements (Specify): _____

Turn Around Time Required	24 Hours	48 Hours	7 Days	14 Days	21 Days	Other
<input type="checkbox"/> 24 Hours	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Relinquished By	Date	Time
<u>[Signature]</u>	<u>12/21/15</u>	<u>1900</u>

2. Relinquished By	Date	Time
<u>[Signature]</u>	<u>12-21-15</u>	<u>1045</u>

3. Relinquished By	Date	Time
_____	_____	_____

Comments: _____

DISTRIBUTION: WHITE - Returned to Client With Report; CANARY - Stays with the Sample; PINK - Field Copy

CTD - WE 44
 Temperature on Receipt 0.8°C

Chain of Custody Record

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: **CH2M Hill** Project Manager: **Juliana Dean** Chain of Custody Number: **283422**
 Address: **5701 Cleveland St., Suite 200** Telephone Number (Area Code)/Fax Number: **12-22-15** Date: **12-22-15**
 City: **Virginia Beach** State: **VA** Zip Code: **23462** Lab Number: **283422** Page: **1** of **1**

Site Contact: _____ Lab Contact: _____
 Carrier/Waybill Number: _____
 Project Name and Location (State): **Fentress PFCs, VA**
 Contract/Purchase Order/Quote No.: **P.N. 669783.FI.WI.03**

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix			Containers & Preservatives					Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt	
			Air	Soil	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH			ZnAc/NaOH
OF-MW16-1215	12-22-15	0955	X			X						SVOCS (PFCs)	
OF-MW16P-1215	12-22-15	1000	X			X							
OF-MW17-1215	12-22-15	1115	X			X							
OFH-MV07D-1215	12-22-15	1325	X			X							
OFM-MV06D-1215	12-22-15	1605	X			X							



Possible Hazard Identification:
 Non-Hazard Flammable Skin Irritant Poison B Unknown
 24 Hours 48 Hours 7 Days 14 Days 21 Days Other _____

Sample Disposal:
 Return To Client Disposal By Lab Archive For _____ Months
 (A fee may be assessed if samples are retained longer than 1 month)

QC Requirements (Specify): _____

Relinquished By: **[Signature]** Date: **12/22/15** Time: **1900**
 Relinquished By: **[Signature]** Date: **12-23-15** Time: **1120**
 Relinquished By: _____ Date: _____ Time: _____

Comments: _____

CTO-WE 44

TestAmerica

Chain of Custody Record

Temperature on Receipt _____

THE LEADER IN ENVIRONMENTAL TESTING

Drinking Water? Yes No

TAL-4124 (1007)

Client: **C142M Hill** Project Manager: **Juliana Dean** Chain of Custody Number: **283423**

Address: **5701 Cleveland St., Suite 200** Telephone Number (Area Code)/Fax Number: **12-21-15** Lab Number: **12-21-15** Page **1** of **1**

City: **Virginia Beach** Site Contact: **Seng Conus** Lab Contact: **Laura Turpen**

State: **VA** Zip Code: **23462** Carrier/Waybill Number: _____

Project Name and Location (State): **PEAKERS PFCs, VA**

Contract/Purchase Order/Quote No: **P.N. 669 783.FE.WI.01**

Special Instructions/Conditions of Receipt: _____

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix				Containers & Preservatives				Analysis (Attach list if more space is needed)	
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl		NaOH
OF-MW15-1215	12-23-15	0930	X				X					SVOCS (PFCs)
OF-MW09-1215	12-23-15	1100	X				X					
OF-MW10-1215	12-23-15	1240	X				X					
OF-EB122315	12-23-15	1250	X				X					
Peri pump												



Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

QC Requirements (Specify): _____

Sample Disposal: 24 Hours 48 Hours 7 Days 14 Days 21 Days Other _____

1. Relinquished By: *[Signature]* Date: **12/23/15** Time: **1400**

2. Relinquished By: _____ Date: _____ Time: _____

3. Relinquished By: _____ Date: _____ Time: _____

1. Received By: *[Signature]* Date: **12-24-15** Time: **1130**

2. Received By: _____ Date: _____ Time: _____

3. Received By: _____ Date: _____ Time: _____

Comments: _____

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Temperature on Receipt _____

Drinking Water? Yes No

Chain of Custody Record

TAL-4124 (1007)

Client: **CH2M Hill** Project Manager: **L. Cook** Chain of Custody Number: **283477**
 Address: **5701 Cleveland St STE 200** Telephone Number (Area Code)/Fax Number: **808 440 0131** Date: **12/28/15**
 City: **Virginia Beach VA** Zip Code: **23462** Site Contact: **Sony Chang** Lab Contact: _____
 Project Name and Location (State): **NAIS FEWIPRESS** Carrier/Weight Number: _____
 Contract/Purchase Order/Quote No.: _____

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix					Containers & Preservatives					Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt	
			Air	Aqueous	Sed	Soil	Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH			
0F14-MW08-1215	12/28/15	0920	X	X				X							
0F14-MW08P-1215	12/28/15	0925	X	X				X							
0F14-MW12S-1215	12/28/15	1025	X	X				X							
0F14-MW11S-1215	12/28/15	1200	X	X				X							
0F14-MW14-1215	12/28/15	1300	X	X				X							
0F14-MW13S-1215	12/28/12	1420	X	X				X							
0F14-MW13R-1215	12/28/15		X	X				X							
0F14-EB122815	12/28/15	1945	X	X				X							



320-16615 Chain of Custody

Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For _____ Months

Turn Around Time Required: 24 Hours 48 Hours 7 Days 14 Days 21 Days Other _____

QC Requirements (Specify)	Received By	Date	Time
1. Relinquished By	<i>[Signature]</i>	12/28/15	1600
2. Relinquished By	<i>[Signature]</i>	12/28/15	730
3. Relinquished By			

Comments: _____

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Slays with the Sample; PINK - Field Copy

Chain of Custody Record

Analyses Requested

Pg. 1 of 1

- ← PRESERVATIVES
- A NONE pH<7
 - B HNO₃ pH<2
 - C H₂SO₄ pH<2
 - D 1+1 HCl pH<2
 - E NaOH pH>12
 - F ZnAc/NaOH pH>9
 - G MeOH
 - H Other (note below)

Project Name
NAUF FENTRESS

Client Project No. / P.O. No.
669783.FI.WI.B1

Invoice To Client
 Other (comments)

Contact/Report To
SENG CAMUS

Client Name
CH2M HILL

Address
5701 CLEVELAND ST STE 200

City, State Zip
VIRGINIA BEACH, VA 23462

Phone/Fax
(757) 518-9666

Email
SENG.CAMUS@CH2M.COM

For Lab Use Only

Cart

VOA Rack/Tray

Receipt Log No

Project Chemist

Work Order No

Schedule	Matrix Code	Sample Number	Field Sample ID	Cooler ID	Sample Date	Sample Time	G M P	G R A B	Matrix	Total
1	OF-FB01	123015			12-30-15	0845	X	X	AR	
2	OF-INF01	1215				0950	X	X		
3	OF-INF01P	1215				0955	X	X		
4	OF-INF01	1215					X	X		
5	OF-EFF01	1215				1000	X	X		
6	OF-EFF01P	1215				1005	X	X		
7	OF-MW12D	1215				1240	X	X		
8	OF-PB02	123015			12-30-15	1250	X	X	AR	
9										
10										



320-16649 Chain of Custody

Comments
FB01 associated w/ Influent Effluent Sampling
FB02 associated w/ MW12D Sampling
7 DAY TAT

How Shipped? **FEDEX** Carrier

Tracking No **7753 0823 5864** Date **12/30/15**

1 Relinquished By **[Signature]** Date **12/31/15** Time **725**

2 Received By **[Signature]** Date **12/31/15** Time **725**

Sampled By (print)
Toby Stewart VBO

Sampler's Signature
[Signature]

Company
CH2M HILL

WHITE COPY - REPORT

YELLOW COPY - LABORATORY

PINK COPY - FIELD

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16572
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16586
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16609
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16615
List Number: 1
Creator: Sadler, Jeremy

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	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	

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-16572-1

Login Number: 16649
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	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	

Data Validation Summary

Oceana CTO-WE44, NALF Fentress

TO: Juliana Dean/VBO
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: January 18, 2015

Introduction

The following data validation report discusses the data validation process and findings for TestAmerica Laboratories for SDG 320-16572-1.

Samples were analyzed using the following analytical method:

- WS-LC-0025 Perfluorinated Hydrocarbons

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
OF14-MW07S-1215	Water
OF14-MW06S-1215	Water
OF-MW16-1215	Water
OF-MW16P-1215	Water
OF-MW17-1215	Water
OF14-MW07D-1215	Water
OF14-MW06D-1215	Water
OF-MW15-1215	Water
OF-MW09-1215	Water
OF-MW10-1215	Water
OF-EB122315	Water
OF-MW08-1215	Water

Sample Name	Matrix
OF-MW08P-1215	Water
OF-MW12-1215	Water
OF-MW11-1215	Water
OF-MW14-1215	Water
OF-MW13-1215	Water
OF-EB122815	Water
OF-FB01-123015	Water
OF-INF01-1215	Water
OF-INF01P-1215	Water
OF-EFF01-1215	Water
OF-EFF01P-1215	Water
OF-MW12D-1215	Water
OF-FB02-123015	Water
OF14-MW07S-1215	Water

Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Sampling and Analysis Plan Perfluorinated Compound Investigation, Naval Auxiliary Landing Field Fentress, Chesapeake, Virginia Contract Task Order WE44 (December 2015) and National Functional Guidelines for Organic Data Review (2014) as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Tuning Instrument
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Laboratory Control Samples
- Isotope Dilution Analyte
- 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 SDG was received complete and intact.

Technical Holding Times

According to the chain of custody records, sampling was performed on the days of 12/21-23, 28, and 30/2015. Samples were received at the laboratory on the days of 12/22, 23, 24, 29 and 31/2015. All sample preparation and analyses were performed within holding time requirements.

Blanks

Several compounds were detected in the equipment blanks as listed below. Affected data are summarized in **Attachment 1**.

Blank ID	Compound	Conc.	Units
OF-EB122315	Perfluorohexanesulfonic acid (PFHxS)	0.0012	UG_L
OF-EB122815	Perfluorohexanesulfonic acid (PFHxS)	0.00080	UG_L
OF-EB122815	Perfluorooctanesulfonic acid (PFOS)	0.0012	UG_L
OF-FB01-123015	Perfluorohexanesulfonic acid (PFHxS)	0.00089	UG_L
OF-FB01-123015	Perfluorooctanesulfonic acid (PFOS)	0.0029	UG_L

Field Duplicate Precision

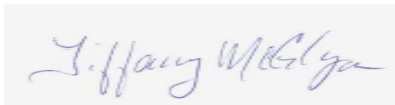
Perfluorooctanoic Acid (PFOA) did not meet required precision criteria in native sample OF-MW16-1215 and field duplicate OF-MW16P-1215. Affected data are summarized in **Attachment 1**.

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,

A handwritten signature in blue ink, reading "Tiffany McGlynn", is displayed within a light gray rectangular box.

Tiffany McGlynn

Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

Qualifier Code Reference

Value	Description
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

Value	Description
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
OF-MW07D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180334.2	3425890.7	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW07	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180277.8	3425510.2	Perfluoroalkyl Compounds	OF14-MW07S-1215	WG	Ground water	21-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB01-123015	WQ	Water for QC samples	30-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16P-1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122815	WQ	Water for QC samples	28-Dec-15
OF17-MW12D	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176363.2	3425741	Perfluoroalkyl Compounds	OF-MW12D-1215	WG	Ground water	30-Dec-15
OF-MW09	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12175503.4	3423977.3	Perfluoroalkyl Compounds	OF-MW09-1215	WG	Ground water	23-Dec-15
OF14-MW06D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179691.8	3425673.8	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF14-MW06	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179681	3425677.1	Perfluoroalkyl Compounds	OF14-MW06S-1215	WG	Ground water	21-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16P-1215	WG	Ground water	22-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-MW15	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179699.5	3422779.9	Perfluoroalkyl Compounds	OF-MW15-1215	WG	Ground water	23-Dec-15
OF14-MW06	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179681	3425677.1	Perfluoroalkyl Compounds	OF14-MW06S-1215	WG	Ground water	21-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB02-123015	WQ	Water for QC samples	30-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF17-MW12D	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176363.2	3425741	Perfluoroalkyl Compounds	OF-MW12D-1215	WG	Ground water	30-Dec-15
OF17-MW10	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176411.4	3424904.2	Perfluoroalkyl Compounds	OF-MW10-1215	WG	Ground water	23-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122315	WQ	Water for QC samples	23-Dec-15
OF-MW09	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12175503.4	3423977.3	Perfluoroalkyl Compounds	OF-MW09-1215	WG	Ground water	23-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB02-123015	WQ	Water for QC samples	30-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF-MW17	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180094.2	3426333.1	Perfluoroalkyl Compounds	OF-MW17-1215	WG	Ground water	22-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB02-123015	WQ	Water for QC samples	30-Dec-15
OF14-MW06	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179681	3425677.1	Perfluoroalkyl Compounds	OF14-MW06S-1215	WG	Ground water	21-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16-1215	WG	Ground water	22-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF-MW09	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12175503.4	3423977.3	Perfluoroalkyl Compounds	OF-MW09-1215	WG	Ground water	23-Dec-15
OF-MW15	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179699.5	3422779.9	Perfluoroalkyl Compounds	OF-MW15-1215	WG	Ground water	23-Dec-15
OF-MW09	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12175503.4	3423977.3	Perfluoroalkyl Compounds	OF-MW09-1215	WG	Ground water	23-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122315	WQ	Water for QC samples	23-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB02-123015	WQ	Water for QC samples	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15

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
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122315	WQ	Water for QC samples	23-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01-1215	WI	(into system)	30-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122815	WQ	Water for QC samples	28-Dec-15
OF-MW17	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180094.2	3426333.1	Perfluoroalkyl Compounds	OF-MW17-1215	WG	Ground water	22-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF-MW14	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179740.2	3424028.8	Perfluoroalkyl Compounds	OF-MW14-1215	WG	Ground water	28-Dec-15
OF14-MW06D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179691.8	3425673.8	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01P-1215	WI	(into system)	30-Dec-15
OF14-MW06	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179681	3425677.1	Perfluoroalkyl Compounds	OF14-MW06S-1215	WG	Ground water	21-Dec-15
OF-MW15	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179699.5	3422779.9	Perfluoroalkyl Compounds	OF-MW15-1215	WG	Ground water	23-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01-1215	WI	(into system)	30-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01P-1215	WI	(into system)	30-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF-MW07	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180277.8	3425510.2	Perfluoroalkyl Compounds	OF14-MW07S-1215	WG	Ground water	21-Dec-15
OF17-MW10	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176411.4	3424904.2	Perfluoroalkyl Compounds	OF-MW10-1215	WG	Ground water	23-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01P-1215	WI	(into system)	30-Dec-15
OF-MW07	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180277.8	3425510.2	Perfluoroalkyl Compounds	OF14-MW07S-1215	WG	Ground water	21-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB02-123015	WQ	Water for QC samples	30-Dec-15
OF-MW07D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180334.2	3425890.7	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16-1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16P-1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-MW17	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180094.2	3426333.1	Perfluoroalkyl Compounds	OF-MW17-1215	WG	Ground water	22-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF-MW17	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180094.2	3426333.1	Perfluoroalkyl Compounds	OF-MW17-1215	WG	Ground water	22-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF17-MW10	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176411.4	3424904.2	Perfluoroalkyl Compounds	OF-MW10-1215	WG	Ground water	23-Dec-15
OF-MW07	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180277.8	3425510.2	Perfluoroalkyl Compounds	OF14-MW07S-1215	WG	Ground water	21-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122315	WQ	Water for QC samples	23-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB01-123015	WQ	Water for QC samples	30-Dec-15
OF17-MW12D	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176363.2	3425741	Perfluoroalkyl Compounds	OF-MW12D-1215	WG	Ground water	30-Dec-15

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
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16P-1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-MW07D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180334.2	3425890.7	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW15	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179699.5	3422779.9	Perfluoroalkyl Compounds	OF-MW15-1215	WG	Ground water	23-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01-1215	WI	(into system)	30-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB01-123015	WQ	Water for QC samples	30-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01P-1215	WI	(into system)	30-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122815	WQ	Water for QC samples	28-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF-MW15	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179699.5	3422779.9	Perfluoroalkyl Compounds	OF-MW15-1215	WG	Ground water	23-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01-1215	WI	(into system)	30-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01P-1215	WI	(into system)	30-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16P-1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB02-123015	WQ	Water for QC samples	30-Dec-15
OF-MW17	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180094.2	3426333.1	Perfluoroalkyl Compounds	OF-MW17-1215	WG	Ground water	22-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF14-MW06D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179691.8	3425673.8	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-MW09	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12175503.4	3423977.3	Perfluoroalkyl Compounds	OF-MW09-1215	WG	Ground water	23-Dec-15
OF-MW14	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179740.2	3424028.8	Perfluoroalkyl Compounds	OF-MW14-1215	WG	Ground water	28-Dec-15
OF17-MW12D	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176363.2	3425741	Perfluoroalkyl Compounds	OF-MW12D-1215	WG	Ground water	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16P-1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF17-MW12D	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176363.2	3425741	Perfluoroalkyl Compounds	OF-MW12D-1215	WG	Ground water	30-Dec-15
OF-MW07D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180334.2	3425890.7	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW07D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180334.2	3425890.7	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122315	WQ	Water for QC samples	23-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF14-MW06	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179681	3425677.1	Perfluoroalkyl Compounds	OF14-MW06S-1215	WG	Ground water	21-Dec-15
OF17-MW10	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176411.4	3424904.2	Perfluoroalkyl Compounds	OF-MW10-1215	WG	Ground water	23-Dec-15

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
OF-MW07D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180334.2	3425890.7	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-MW09	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12175503.4	3423977.3	Perfluoroalkyl Compounds	OF-MW09-1215	WG	Ground water	23-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB01-123015	WQ	Water for QC samples	30-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122315	WQ	Water for QC samples	23-Dec-15
OF-MW14	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179740.2	3424028.8	Perfluoroalkyl Compounds	OF-MW14-1215	WG	Ground water	28-Dec-15
OF-MW07	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180277.8	3425510.2	Perfluoroalkyl Compounds	OF14-MW07S-1215	WG	Ground water	21-Dec-15
OF-MW15	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179699.5	3422779.9	Perfluoroalkyl Compounds	OF-MW15-1215	WG	Ground water	23-Dec-15
OF14-MW06D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179691.8	3425673.8	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122815	WQ	Water for QC samples	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01P-1215	WI	(into system)	30-Dec-15
OF-MW14	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179740.2	3424028.8	Perfluoroalkyl Compounds	OF-MW14-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF-MW14	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179740.2	3424028.8	Perfluoroalkyl Compounds	OF-MW14-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF17-MW12D	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176363.2	3425741	Perfluoroalkyl Compounds	OF-MW12D-1215	WG	Ground water	30-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF14-MW06	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179681	3425677.1	Perfluoroalkyl Compounds	OF14-MW06S-1215	WG	Ground water	21-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB01-123015	WQ	Water for QC samples	30-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122815	WQ	Water for QC samples	28-Dec-15
OF17-MW10	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176411.4	3424904.2	Perfluoroalkyl Compounds	OF-MW10-1215	WG	Ground water	23-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01-1215	WR	(from system)	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01-1215	WI	(into system)	30-Dec-15
OF17-MW12	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176350.1	3425741.1	Perfluoroalkyl Compounds	OF-MW12-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-MW17	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180094.2	3426333.1	Perfluoroalkyl Compounds	OF-MW17-1215	WG	Ground water	22-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-EB122815	WQ	Water for QC samples	28-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15

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
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
		OCEANA_NAS			320-16572-1			Perfluoroalkyl Compounds	OF-FB01-123015	WQ	Water for QC samples	30-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08-1215	WG	Ground water	28-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF17-MW11	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176761.8	3425306.3	Perfluoroalkyl Compounds	OF-MW11-1215	WG	Ground water	28-Dec-15
OF14-MW06D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179691.8	3425673.8	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW07	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180277.8	3425510.2	Perfluoroalkyl Compounds	OF14-MW07S-1215	WG	Ground water	21-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16-1215	WG	Ground water	22-Dec-15
OF17-MW10	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176411.4	3424904.2	Perfluoroalkyl Compounds	OF-MW10-1215	WG	Ground water	23-Dec-15
OF-MW14	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179740.2	3424028.8	Perfluoroalkyl Compounds	OF-MW14-1215	WG	Ground water	28-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16-1215	WG	Ground water	22-Dec-15
OF-MW08	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12176530.4	3423321.8	Perfluoroalkyl Compounds	OF-MW08P-1215	WG	Ground water	28-Dec-15
OF-INF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177903	3425225.1	Perfluoroalkyl Compounds	OF-INF01-1215	WI	(into system)	30-Dec-15
OF14-MW06D	SITE 00014	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12179691.8	3425673.8	Perfluoroalkyl Compounds	1215	WG	Ground water	22-Dec-15
OF-MW13S	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12178087.1	3425956.7	Perfluoroalkyl Compounds	OF-MW13-1215	WG	Ground water	28-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16-1215	WG	Ground water	22-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15
OF-MW16	SITE 00017	OCEANA_NAS	WLM	Monitoring well	320-16572-1	12180598.4	3426435.8	Perfluoroalkyl Compounds	OF-MW16-1215	WG	Ground water	22-Dec-15
OF-EFF01	SITE 00017	OCEANA_NAS	WF	facility	320-16572-1	12177919.1	3425268.5	Perfluoroalkyl Compounds	OF-EFF01P-1215	WR	(from system)	30-Dec-15